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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE



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OF COMMERCE

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Office

PATENTS

March 1, 1994



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 1, 1994 Volume 1160 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update

Accession by Slovenia

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Slovenia deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on December 1, 1993. Slovenia will become the 62nd Contracting State of the PCT on March 1, 1994. Consequently, nationals and residents of Slovenia are entitled to the file international applications on and after March 1, 1994, and from the same date it is possible to file international applications designating and electing Slovenia (country Code: SI).

Accession by Trinidad and Tobago

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Trinidad and Tobago deposited its instruments of accession to the Patent Cooperation Treaty (PCT) on December 10, 1993. Trinidad and Tobago will become the 63rd Contracting State of the PCT on March 10, 1994. Consequently, nationals

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and residents of Trinidad and Togago are entitled to file international applications on and after March 10, 1994, and from the same date it is possible to file international applications designating and electing Trinidad and Tobago (country code: TT).

Withdrawl of Reservation by Poland

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Poland has withdrawn its reservation under Article 64(2) of the Patent Cooperation Treaty (PCT) concerning the time limit for furnishing a translation of an international application to the Polish Patent Office as an elected Office. Poland will become bound by the provisions Of PCt Chapter II without any reservations on March 1, 1994.

At present, and until March 1, 1994, where Poland is designed in an international application, a translation of the international application in Polish must be furnished to the Polish Patent Office within 20 months from the priority date, even where Poland is elected for the purposes of Chapter II and the 30-month time limit under PCT Article 39(1) applies for entry into the national phase of processing.

From March 1, 1994, for an international application in relation to which Poland was elected in a demand for intrnational preliminary examination or in a later election, prior to the expiration of the 19th month from the priority date, the time limit for furnishing a translation of the international application into Polish to the Polish Patent Office as an elected Office will be 30 months from the priority date. This 30-month time limit will apply also to international application filed before March 1, 1994, provided that, on that date, the time limit of 20 months from the priority date has not expired.

Declaration of Continuation by Georgia

The United States Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that Georgia, on January 18, 1994, deposited a declaration the effect of which is that the PCT is applied by Georgia. Consequently, as from January 18, 1994, nationals and residents of Georgia are entitled to file international applications under the PCT, and Georgia (country code:GE) may be designated and elected in international applications. Applicants are, under the PCT Regulations, afforded the possibility of requesting the extension of the effects of any international application filed on or after December 25, 1991 (the date on which the Soviet Union ceased to exis!) to States which have made a declaration of continuation. PCT Rule 32 will allow the extension to Georgia of international applications filed between December 25, 1991, and March 18, 1994.

The applicant in respect of each international application concerned, or his agent, will receive a notification from the International Bureau of WIPO, informing him about the possibility and the applicable conditions for extending the effects of his international application toGeorgia.

Listing of PCT Member Countries

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(1)	Central African Republic[2]	Accession	15	September 1971	24	January 1978
(2)	Senegal[2]	Ratification	08	March 1972	24	January 1978
(3)	Madagascar	Ratification	27	March 1972	24	January 1978
(4)	Malawi	Accession	16	May 1972	24	January 1978
(5)	Cameroon[2]	Accession	15	March 1973	24	January 1978
(6)	Chad[2]	Accession	12	February 1974	24	January 1978
(7)	Togo[2]	Ratification	28	January 1975	24	January 1978
(8)	Gabon[2]	Accession	06	March 1975	24	January 1978
(9)	United States of America	Ratification	26	November 1975	24	January 1978
(10)	Germany[3]	Ratification	19	July 1976	24	January 1978
(11)	Congo[2]	Accession	08	August 1977	24	January 1978
(12)	Switzerland[3]	Ratification	14	September 1977	24	January 1978
(13)	United Kingdom[3]	Ratification	24	October 1977	24	January 1978
(14)	France[3]	Ratification	25	November 1977	25	February 1978
(15)	Russian Federation	Ratification	29	December 1977	29	March 1978
(16)	Brazil	Ratification	09	January 1978	09	April 1978
(17)	Luxembourg[3]	Ratification	31	January 1978	30	April 1978
(18)	Sweden[3]	Ratification	17	February 1978	17	May 1978
(19)	Japan	Ratification	01	July 1978	01	October 1978
(20)	Denmark[3]	Ratification	01	September 1978	01	December 1978
(21)	Austria[3]	Ratification	23	January 1979	23	April 1979
(22)	Monaco[3]	Ratification	22	March 1979	22	June 1979
(23)	Netherlands[3]	Ratification	10	April 1979	10	July 1979
(24)	Romania	Ratification	23	April 1979	23	July 1979
(25)	Norway	Ratification	01	October 1979	01	January 1980
(26)	Liechtenstein[3]	Accession	19	December 1979	19	March 1980
(27)	Australia	Accession	31	December 1979	31	March 1980
(28)	Hungary	Ratification	27	March 1980	27	June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08	April 1980	08	July 1980
(30)	Finland	Ratification	01	July 1980	01	October 1980
(31)	Belgium[3]	Ratification	14	September 1981	14	December 1981
(32)	Sri Lanka	Accession	26	November 1981	26	February 1982
(33)	Mauritania[2]	Accession	13	January 1983	13	April 1983
(34)	Sudan	Accession	16	January 1984	16	April 1984
(35)	Bulgaria	Accession	21	February 1984	21	May 1984
(36)	Republic of Korea (South Korea)	Accession	10	May 1984	10	August 1984
(37)	Mali[2]	Accession	19	July 1984	19	October 1984
(38)	Barbados	Accession	12	December 1984	12	March 1985
(39)	Italy[3]	Ratification	28	December 1984	28	March 1985
(40)	Benin[2]	Accession	26	November 1986	26	February 1987
(41)	Burkina Faso[2]	Accession	21	December 1988	21	March 1989

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(42)	Spain[3]	Accession	16	August 1989	16	November 1989
(43)	Canada	Ratification	02	October 1989	02	January 1990
(44)	Greece[3]	Accession	09	July 1990	09	October 1990
(45)	Poland	Accession	25	September 1990	25	December 1990
(46)	Cote d'Ivoire[2]	Ratification	31	January 1991	30	April 1991
(47)	Guinea[2]	Accession	27	February 1991	27	May 1991
(48)	Mongolia	Accession	27	February 1991	27	May 1991
(49)	Czech Republic	Declaration[4]	18	December 1992	01	January 1993
(50)	Ireland[3]	Ratification	01	May 1992	01	August 1992
(51)	Portugal[3]	Accession	24	August 1992	24	November 1992
(52)	New Zealand	Accession	01	September 1992	01	December 1992
(53)	Ukraine	Declaration[4]	21	September 1992	25	December 1991
(54)	Viet Nam	Accession	10	December 1992	10	March 1993
(55)	Slovak Republic	Declaration[4]	30	December 1992	01	January 1993
(56)	Niger[2]	Accession	21	December 1992	21	March 1993
(57)	Kazakhstan	Declaration[4]	16	February 1993	25	December 1991
(58)	Belarus	Declaration[4]	14	April 1993	25	December 1991
(59)	Latvia	Accession	07	June 1993	07	September 1993
(60)	Uzebekistan	Declaration[4]	18	August 1993	25	December 1991
(61)	China	Accession	01	October 1993	01	January 1994
(62)	Slovenia	Accession	01	December 1993	01	March 1994
(63)	Trinidad and Tobago	Accession	10	December 1993	10	March 1994
(64)	Georgia	Declaration	18	January 1994	25	December 1991

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.

[4]Declaration of continued application.

Feb. 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignments to Panel for A Decision Without a Hearing as of January 31, 1994.

Chemical Discipline -	March 16, 1992 *
Mechanical Discipline -	March 4, 1993
Electrical Discipline -	April 2, 1993 *

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of January 31, 1994.

Chemical -	September 16, 1991 *
Mechanical -	June 7, 1993
Electrical -	October 23, 1991 *

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of January, 1994.

Affirmed	94
Affirmed-in-Part	35
Reversed	68
Total Decided	197

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on January 26, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,995,114 through 4,996,719
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 24, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,644,588 through 4,646,361
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 22, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utiility Patents 4,374,439 through 4,375,106
Reissue Patents based on the above identified patents.

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No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 19, 1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 32,254	06/499,969	9/30/86
(4,307,053)	(06/179,373)	(12/22/81)
Re 32,616	06/892,305	3/01/88
(4,559,442)	(06/500,524)	(12/17/85)
4,306,495	06/236,777	12/22/81
4,306,881	06/237,223	12/22/81
4,306,882	06/237,225	12/22/81
4,307,065	06/223,666	12/22/81
4,307,076	06/218,594	12/22/81
4,307,134	06/219,066	12/22/81
4,307,173	06/234,031	12/22/81
4,307,174	06/229,619	12/22/81
4,307,192	06/223,110	12/22/81
4,558,467	06/578,330	12/17/85
4,558,475	06/515,137	12/17/85
4,558,482	06/644,138	12/17/85
4,558,483	06/572,834	12/17/85
4,558,496	06/660,744	12/17/85
4,558,502	06/651,465	12/17/85
4,558,505	06/631,590	12/17/85
4,558,512	06/627,613	12/17/85
4,558,513	06/488,386	12/17/85
4,558,516	06/584,625	12/17/85
4,558,521	06/606,665	12/17/85
4,558,522	06/577,745	12/17/85
4,558,525	06/221,433	12/17/85
4,558,527	06/699,216	12/17/85
4,558,528	06/475,374	12/17/85
4,558,532	06/567,812	12/17/85
4,558,535	06/636,953	12/17/85
4,558,538	06/469,635	12/17/85
4,558,539	06/623,387	12/17/85
4,558,540	06/461,994	12/17/85
4,558,543	06/724,805	12/17/85
4,558,548	06/552,416	12/17/85
4,558,550	06/527,364	12/17/85
4,558,551	06/436,756	12/17/85
4,558,559	06/550,107	12/17/85
4,558,562	06/634,378	12/17/85
4,558,563	06/628,442	12/17/85
4,558,567	06/602,339	12/17/85
4,558,568	06/673,372	12/17/85
4,558,569	06/572,720	12/17/85
4,558,571	06/532,562	12/17/85
4,558,574	06/514,797	12/17/85
4,558,575	06/584,406	12/17/85
4,558,577	06/455,577	12/17/85
4,558,578	06/442,763	12/17/85
4,558,579	06/552,463	12/17/85
4,558,582	06/539,989	12/17/85
4,558,585	06/590,921	12/17/85
4,558,589	06/659,173	12/17/85
4,558,592	06/610,153	12/17/85
4,558,597	06/688,853	12/17/85
4,558,598	06/618,227	12/17/85
4,558,604	06/425,083	12/17/85
4,558,607	06/554,806	12/17/85
4,558,610	06/350,392	12/17/85
4,558,617	06/570,961	12/17/85
4,558,619	06/696,860	12/17/85
4,558,620	06/658,211	12/17/85
4,558,622	06/548,669	12/17/85
4,558,623	06/577,854	12/17/85
4,558,628	06/619,564	12/17/85
4,558,629	06/560,078	12/17/85
4,558,630	06/656,402	12/17/85
4,558,631	06/443,946	12/17/85
4,558,632	06/432,446	12/17/85
4,558,635	06/639,550	12/17/85
4,558,638	06/467,484	12/17/85
4,558,640	06/589,696	12/17/85
4,558,645	06/565,736	12/17/85
4,558,648	06/534,175	12/17/85
4,558,649	06/508,965	12/17/85
4,558,650	06/556,966	12/17/85
4,558,652	06/739,510	12/17/85
4,558,653	06/691,281	12/17/85

Patent Number	Serial Number	Issue Date
4,558,654	06/657,340	12/17/85
4,558,655	06/577,625	12/17/85
4,558,656	06/480,851	12/17/85
4,558,658	06/554,520	12/17/85
4,558,662	06/691,211	12/17/85
4,558,664	06/662,658	12/17/85
4,558,665	06/645,526	12/17/85
4,558,666	06/634,846	12/17/85
4,558,674	06/588,215	12/17/85
4,558,676	06/474,595	12/17/85
4,558,677	06/637,673	12/17/85
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4,887,766	07/230,493	12/19/89
4,887,771	07/135,361	12/19/89
4,887,779	07/127,491	12/19/89
4,887,782	07/298,073	12/19/89
4,887,786	07/172,253	12/19/89
4,887,789	07/186,513	12/19/89
4,887,794	07/266,001	12/19/89
4,887,797	07/279,543	12/19/89
4,887,818	07/142,442	12/19/89
4,887,820	07/332,691	12/19/89
4,887,821	07/224,062	12/19/89
4,887,824	07/052,286	12/19/89
4,887,826	07/204,716	12/19/89
4,887,827	07/238,190	12/19/89
4,887,829	07/035,360	12/19/89
4,887,834	07/111,032	12/19/89
4,887,837	07/266,320	12/19/89
4,887,838	07/188,818	12/19/89
4,887,848	07/264,767	12/19/89
4,887,852	07/287,122	12/19/89
4,887,854	07/183,070	12/19/89
4,887,874	07/324,465	12/19/89
4,887,880	07/239,170	12/19/89
4,887,883	07/208,939	12/19/89
4,887,885	07/081,394	12/19/89
4,887,896	07/250,699	12/19/89
4,887,902	07/154,705	12/19/89
4,887,906	07/179,769	12/19/89
4,887,909	07/185,021	12/19/89
4,887,917	07/326,421	12/19/89
4,887,919	06/815,566	12/19/89
4,887,926	07/272,235	12/19/89
4,887,931	07/313,994	12/19/89
4,887,934	07/264,669	12/19/89
4,887,939	07/264,839	12/19/89
4,887,946	07/255,956	12/19/89
4,887,952	07/152,478	12/19/89
4,887,958	06/917,900	12/19/89
4,887,960	07/223,396	12/19/89

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4,887,963	07/326,804	12/19/89	4,888,359
4,887,965	07/228,359	12/19/89	4,888,372
4,887,971	07/269,612	12/19/89	4,888,373
4,887,975	07/320,583	12/19/89	4,888,385
4,887,990	07/252,940	12/19/89	4,888,390
4,887,992	07/151,069	12/19/89	4,888,399
4,887,995	06/693,629	12/19/89	4,888,405
4,887,998	07/132,418	12/19/89	4,888,409
4,888,006	07/151,330	12/19/89	4,888,417
4,888,007	07/081,353	12/19/89	4,888,421
4,888,012	07/144,318	12/19/89	4,888,423
4,888,017	07/073,504	12/19/89	4,888,429
4,888,018	07/290,711	12/19/89	4,888,437
4,888,020	06/587,950	12/19/89	4,888,440
4,888,032	06/571,812	12/19/89	4,888,445
4,888,034	07/295,798	12/19/89	4,888,452
4,888,036	07/271,559	12/19/89	4,888,455
4,888,039	07/272,933	12/19/89	4,888,463
4,888,043	06/876,748	12/19/89	4,888,464
4,888,047	07/176,510	12/19/89	4,888,467
4,888,048	07/213,877	12/19/89	4,888,469
4,888,050	07/154,821	12/19/89	4,888,480
4,888,051	07/233,710	12/19/89	4,888,487
4,888,052	07/201,446	12/19/89	4,888,493
4,888,057	07/213,116	12/19/89	4,888,494
4,888,059	07/136,344	12/19/89	4,888,508
4,888,060	07/011,417	12/19/89	4,888,525
4,888,096	07/292,359	12/19/89	4,888,526
4,888,105	07/156,067	12/19/89	4,888,529
4,888,109	07/272,708	12/19/89	4,888,530
4,888,110	07/025,963	12/19/89	4,888,537
4,888,117	07/196,175	12/19/89	4,888,538
4,888,138	07/269,363	12/19/89	4,888,540
4,888,142	07/139,109	12/19/89	4,888,549
4,888,145	06/535,256	12/19/89	4,888,551
4,888,156	07/188,242	12/19/89	4,888,556
4,888,163	07/301,134	12/19/89	4,888,565
4,888,175	07/270,947	12/19/89	4,888,578
4,888,179	07/144,229	12/19/89	4,888,581
4,888,187	07/215,496	12/19/89	4,888,585
4,888,188	07/191,356	12/19/89	4,888,594
4,888,206	07/198,440	12/19/89	4,888,595
4,888,207	06/589,799	12/19/89	4,888,598
4,888,219	07/373,819	12/19/89	4,888,607
4,888,221	07/225,889	12/19/89	4,888,615
4,888,223	07/190,445	12/19/89	4,888,638
4,888,230	07/245,768	12/19/89	4,888,654
4,888,232	07/058,929	12/19/89	4,888,664
4,888,249	07/329,904	12/19/89	4,888,667
4,888,251	07/231,059	12/19/89	4,888,669
4,888,256	07/222,587	12/19/89	4,888,686
4,888,259	07/279,890	12/19/89	4,888,699
4,888,282	07/058,054	12/19/89	4,888,704
4,888,283	07/193,236	12/19/89	4,888,710
4,888,292	06/620,213	12/19/89	4,888,712
4,888,293	07/071,968	12/19/89	4,888,718
4,888,297	07/110,996	12/19/89	4,888,719
4,888,302	07/330,961	12/19/89	4,888,747
4,888,314	06/884,538	12/19/89	4,888,764
4,888,328	07/166,285	12/19/89	4,888,776
4,888,332	06/687,455	12/19/89	4,888,777
4,888,333	07/230,846	12/19/89	4,888,787
4,888,351	07/268,623	12/19/89	4,888,807
4,888,358	07/236,697	12/19/89	4,888,810
	07/352,631	12/19/89	
	07/210,337	12/19/89	
	07/210,336	12/19/89	
	07/044,185	12/19/89	
	06/802,282	12/19/89	
	07/251,741	12/19/89	
	07/230,398	12/19/89	
	07/280,746	12/19/89	
	06/867,169	12/19/89	
	07/098,317	12/19/89	
	06/915,446	12/19/89	
	07/258,062	12/19/89	
	07/069,788	12/19/89	
	07/279,593	12/19/89	
	07/119,083	12/19/89	
	07/234,038	12/19/89	
	07/316,484	12/19/89	
	07/093,740	12/19/89	
	07/177,982	12/19/89	
	07/207,764	12/19/89	
	07/246,668	12/19/89	
	07/131,167	12/19/89	
	07/306,566	12/19/89	
	07/235,609	12/19/89	
	07/115,912	12/19/89	
	06/779,727	12/19/89	
	06/735,162	12/19/89	
	06/731,005	12/19/89	
	07/236,722	12/19/89	
	07/294,067	12/19/89	
	07/185,500	12/19/89	
	07/174,997	12/19/89	
	07/060,283	12/19/89	
	07/115,164	12/19/89	
	07/201,856	12/19/89	
	07/209,398	12/19/89	
	07/284,515	12/19/89	
	07/228,140	12/19/89	
	07/178,190	12/19/89	
	07/263,523	12/19/89	
	07/331,764	12/19/89	
	07/165,355	12/19/89	
	07/272,984	12/19/89	
	07/245,104	12/19/89	
	07/148,697	12/19/89	
	07/255,836	12/19/89	
	06/935,974	12/19/89	
	07/215,387	12/19/89	
	07/338,728	12/19/89	
	07/254,211	12/19/89	
	06/944,255	12/19/89	
	07/274,654	12/19/89	
	07/134,854	12/19/89	
	07/131,984	12/19/89	
	07/117,112	12/19/89	
	07/148,526	12/19/89	
	07/222,480	12/19/89	
	07/297,656	12/19/89	
	07/131,802	12/19/89	
	07/283,663	12/19/89	
	07/307,427	12/19/89	
	07/249,511	12/19/89	
	07/298,068	12/19/89	
	07/299,726	12/19/89	

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re 33,367 (4,711,950)	07/204,563 (06/925,270)	10/02/90 (12/08/87)	6/09/88 (10/31/86)	12/16/93

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re 33,756 (4,825,547)	07/563,319 (07/033,468)	12/03/91 (5/02/89)	7/27/90 (4/02/87)	12/01/93
4,446,164	06/491,555	5/01/84	5/04/83	12/16/93
4,521,402	06/581,368	6/04/85	2/17/84	12/17/93
4,532,650	06/494,762	7/30/85	5/12/83	12/17/93
4,796,921	07/009,782	1/10/89	2/02/87	12/17/93
4,817,977	07/088,794	4/04/89	8/24/87	12/17/93
4,832,882	06/927,842	5/23/89	11/06/86	12/17/93
4,844,157	07/217,447	7/04/89	7/11/88	12/16/93
4,862,604	07/237,889	9/05/89	8/29/88	12/16/93
4,864,695	07/200,057	9/12/89	5/27/88	12/16/93
4,867,316	07/189,357	9/19/89	5/02/88	12/16/93
4,871,183	07/013,753	10/03/89	2/12/87	12/16/93
4,404,687	06/438,963	9/20/83	9/24/82	12/21/93
4,456,808	06/355,195	6/26/84	3/05/82	12/21/93
4,501,323	06/453,064	2/26/85	12/27/82	12/21/93
4,531,582	06/547,408	7/30/85	10/31/83	12/10/93
4,539,702	06/568,715	9/03/85	1/06/84	11/30/93
4,724,835	06/889,596	2/16/88	7/25/86	12/21/93
4,767,074	06/776,609	8/30/88	9/16/85	12/16/93
4,773,226	07/070,693	9/27/88	7/07/87	12/21/93
4,796,987	07/035,219	1/10/88	4/07/87	11/15/93
4,818,314	06/906,655	4/04/89	9/12/86	12/21/93
4,836,186	07/003,756	6/06/89	1/16/87	12/03/93
4,840,393	07/151,944	6/20/89	2/03/88	12/10/93
4,843,675	07/248,107	7/04/89	9/23/88	12/21/93
4,849,738	07/117,223	7/18/89	11/05/87	11/30/93
4,856,144	07/121,313	8/15/89	11/16/87	12/17/93
4,862,346	06/751,304	8/29/89	7/02/85	12/10/93
4,870,163	06/770,808	9/26/89	8/29/85	12/17/93
4,411,778	06/307,967	10/25/83	10/02/81	9/22/93
4,485,363	06/334,779	11/27/84	12/28/81	12/21/93
4,488,370	06/352,712	12/18/84	2/26/82	12/21/93
4,492,305	06/511,851	1/08/85	7/08/83	12/21/93
4,523,596	06/648,469	6/18/85	9/10/84	9/22/93
4,534,490	06/677,596	8/13/85	12/03/84	1/07/94
4,535,747	06/476,057	8/20/85	3/17/83	12/21/93
4,543,240	06/591,076	9/24/85	1/14/85	1/07/94
4,557,326	06/690,171	12/10/85	1/10/85	12/21/93
4,735,731	06/851,754	4/05/88	4/14/86	9/21/93
4,785,945	07/064,218	11/15/88	6/18/87	11/30/93
4,793,181	07/057,050	12/27/88	6/02/87	1/07/94
4,793,182	07/057,034	12/27/88	6/02/87	1/07/94
4,848,828	07/041,765	7/11/89	4/15/87	12/21/93
4,845,952	07/112,973	7/11/89	10/23/87	11/23/93
4,850,249	07/149,851	7/25/89	1/29/88	10/26/93
4,853,785	07/197,353	8/01/89	5/23/88	12/21/93
4,854,359	06/814,451	8/08/89	12/30/85	10/21/93
4,858,453	07/228,879	8/22/89	8/05/88	12/21/93
4,913,554	07/199,730	4/03/90	5/27/88	12/16/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,313,332, Re. S.N. 08/114,348, Sept. 1, 1993, Cl. 72/406, ROTARY FORGING MACHINE, William A. Penny, Owner of Record: *Penny and Giles, Blackwood, Wales,* Attorney or Agent: James M. Slattery, Ex. Gp.: 3201

4,997,277, Re. S.N. 08/026,156, March 3, 1993, Cl. 356/73.1, OPTICAL FIBER EVALUATION METHOD AND SYSTEM, Tsuneo Horiguchi, et. al., Owner of Record: *Nippon Telegraph and Telephone Corp., Tokyo, Japan,* Attorney or Agent: Robert J. Frank, Ex. Gp.: 2505

4,977,353, Re. S.N. 08/114,521, Dec. 10, 1992, COMMUNICATION SYSTEMS FOR SINGLE POINT EMERGENCY LIGHTING, Mohoammed A. Helal, et. al., Owner of Record: *Minitronics PTY Limited Brookvale, New South Wales,* Attorney or Agent: J.C. Holman, Ex. Gp.: 2500

5,021,854, Re. S.N. 08/072,191, June 3, 1993, Cl. 257/438, SILICON AVALANCHE PHOTODIODE ARRAY, Gerald C. Huth, Owner of Record: *Xsirius Photonics, Inc., Fullerton, Calif.,* Attorney or Agent: Leo Stanger, Ex. Gp.: 2503

5,024,646, Re. S.N. 08/080,455, June 18, 1993, Cl. 494/16, OPTIMUM FIXED ANGLE CENTRIFUGE ROTOR, Mark L. Lewis, et. al., Owner of Record: *Beckman Instruments Inc., Fullerton, Calif.,* Attorney or Agent: Wen Liu, Ex. Gp.: 2402

5,037,900, Re. S.N. 08/102,769, Aug. 6, 1993, Cl. 525/423, COMPOSITION OF POLYARYLATE POLYAMIDE, POLYETHYLENE TEREPHTHALATE AND EPOXY RESIN, Kenji Yoshino, et. al., Owner of Record: *Inventor,* Attorney or Agent: Austin R. Miller, Ex. Gp.: 1501

5,047,733, Re. S.N. 08/118,673, Sept. 10, 1993, Cl. 331/14, PLL SYNTHESIZER PROVIDING RAPID FREQUENCY CHANGEOVER, Kazuyuki Nonaka, et. al., Owner of Record: Fujitsu VLSI Limited & Fujitsu Aichi, Japan, Attorney or Agent: Mel R. Quintos, Ex. Gp.: 2502

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5,052,157, Re. S.N. 08/110,656, Aug. 19, 1993, Cl. 52/126.6, FLOORING SYSTEM ESPECIALLY FOR FACILITIES WHICH HOUSE DATA PROCESSING EQUIPMENT, A.R.E. Ducroux, et. al., Owner of Record: *Guilford (Delaware), Inc., Atlanta, Georgia*, Attorney or Agent: John S. Pratt, Ex. Gp.: 3504

5,058,512, Re. S.N. 08/142,530, Oct. 22, 1993, Cl. 110/238, WASTE OIL DELIVERY SYSTEMS, Werner O. Specht, Owner of Record: *FL Industries, Inc., Livingston, N.J.*, Attorney or Agent: Robert M. Rodrick, Ex. Gp.: 3404

5,095,122, Re. S.N. 08/145,706, Oct. 28, 1933, Cl. 548/453, DIKETOPYYRROLOPYRROLE PIGMENTS IN PLATELET FORM, Phillippe Bugnon, et. al., Owner of Record: *CIBA-GEIGY Corporation, Ardsley, N.Y.*, Attorney or Agent: JoAnn Vill, Ex. Gp.: 1201

5,143,325, Re. S.N. 08/167,191, Dec. 13, 1991, Cl. 244/134, ELECTROMAGNETIC REPULSION SYSTEM FOR REMOVING CONTAMINANTS SUCH AS ICE FROM THE SURFACES OF AIRCRAFT AND OTHER OBJECTS, Peter B. Zieve, et. al., Owner of Record: *Electroimpact, Inc., Seattle, Wash.*, Attorney or Agent: Clark A. Puntigam, Ex. Gp.: 3105

5,220,876, Re. S.N. 08/163,007, Dec. 7, 1993, Cl. 111/130, VARIABLE RATE APPLICATION SYSYEM, Robert J. Monson, et. al., Owner of Record: *AG-Chem Equipment Co., Inc., Minnetonka, Minn.*, Attorney or Agent: Robert C. Klinger, Ex. Gp.: 3501

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,777,066, Reexam. No. 90/003,295, Dec. 23, 1993, Cl. 375/114, METHOD AND SYSTEM FOR SYNCHRONIZING THE TRANSMISSION OF DIGITAL DATA WHILE PROVIDING VARIABLE LENGTH FILLER CODE, David C. Nicholas, Owner of Record: *Iowa State University Research Foundation, Ames, Iowa*, Attorney or Agent: James J. Hill, Emrich & Dithmar, Chicago, Ill., Ex. Gp.: 2614, Requester: Ted R. Rittmaster, Spensley, Horn, Jubas & Lubitz, Los Angeles, Calif.

4,225,647, Reexam. No. 90/003,300, Jan. 10, 1994, Cl. 428/336, ARTICLES HAVING THIN, CONTINUOUS, IMPERVIOUS COATINGS, Richard A. Parent, Owner of Record: *Inventor*, Attorney or Agent: Allen D. Darden, Baton Rouge, La., Ex. Gp.: 1509, Requester: Owner, Baton Rouge, La.

4,971,202, Reexam. No. 90/003,301, Jan. 7, 1994, Cl. 206/511, STACKABLE RECYCLING CRATE, Thomas Box, Owner of Record: *Spectrum International, Inc., Tinton Falls, N.J.*, Attorney or Agent: Alan B. Clement, Hedman, Gibson & Costigan, New York, N.Y., Ex. Gp.: 2401, Requester: Owner

5,105,973, Reexam. No. 90/003,302, Jan. 10, 1994, Cl. 220/606, BEVERIDGE CONTAINER WITH IMPROVED BOTTOM STRENGTH, K. Reed Jentzesch, et. al., Owner of Record: *Ball Corp., Muncie, Ind.*, Attorney or Agent: Gilbert E. Alberding, Legal Dept., Ball Corp., Muncie, Ind., Ex. Gp.: 2401, Requester: Thomas K. Stine, Wallenstein, Wagner & Hattis, Ltd., Chicago, Ill.

5,159,135, Reexam. No. 90/003,297, Jan. 4, 1994, Cl. 800/205, GENETIC ENGINEERING OF COTTON PLANTS AND LINING, Paul F. Umbeck, Owner of Record: Agracetus, Inc., Middleton, Wis., Attorney or Agent: Nicholas J. Seay, Quarles & Brady, Madison, Wis., Ex. Gp.: 1804, Requester: Peter Georges, Breneman & Georges, Alexandria, Va.

5,170,257, Reexam. No. 90/003,294, Dec. 22, 1993, Cl. 358/298, METHOD AND APPARATUS FOR CALIBRATING HALFTONE OUTPUT FROM AN IMAGESETTING DEVICE, James M. Burns, Owner of Record: *Southwest Software, Inc., Austin, Tex.*, Attorney or Agent: Kevin L. Daffer, Arnold, White & Durkee, Houston, Tex., Ex. Gp.: 2108, Requester: Hill, Steadman & Simpson, Chicago, Ill.

5,197,768, Reexam. No. 90/003,296, Jan. 3, 1994, Cl. 285/105, RESTRAINED JOINT HAVING ELASTOMER-BACKED LOCKING SEGMENTS, Randall C. Conner, Owner of Record: *American Cast Iron Pipe Company, Birmingham, Ala.*, Attorney or Agent: John C. Kerrins, Kerkam, Stowell, Kondracki, & Clarke, Falls Church, Va., Ex. Gp.: 3501, Requester: Heinz Zimmermann, Munich, Germany

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Erratum

"All reference to Reexamination certificate No. B1 5,059,279 (2176) appearing in the *Official Gazette* of January 4, 1994 should be deleted since no reexamination certificate was granted."

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 10, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
40,050	70/040,050	4/07/1903
90,965	71/066,173	4/08/1913
90,982	71/067,231	4/08/1913
90,986	71/064,338	4/08/1913
302,187	71/330/549	4/04/1933
302,212	71/330,639	4/04/1933
302,232	71/331,753	4/04/1933
302,252	71/332,359	4/04/1933
302,259	71/331,563	4/04/1933
444,757	71/514,777	4/07/1953
572,808	71/543,075	4/07/1953
572,809	71/546,294	4/07/1953
572,813	71/557,909	4/07/1953
572,818	71/573,213	4/07/1953
572,823	71/589,706	4/07/1953
572,837	71/603,353	4/07/1953
572,840	71/606,641	4/07/1953
572,841	71/606,642	4/07/1953
572,842	71/606,643	4/07/1953
572,850	71/609,651	4/07/1953
572,863	71/615,242	4/07/1953
572,871	71/617,015	4/07/1953
572,874	71/617,395	4/07/1953
572,904	71/621,723	4/07/1953
572,911	71/622,765	4/07/1953
572,912	71/622,839	4/07/1953
572,914	71/623,028	4/07/1953
572,916	71/623,165	4/07/1953
572,917	71/623,166	4/07/1953
572,918	71/623,184	4/07/1953
572,924	71/624,091	4/07/1953
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956,411	72/404,052	4/03/1973
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956,592	72/404,276	4/03/1973
956,593	72/404,280	4/03/1973
956,594	72/407,283	4/03/1973
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956,650	72/404,369	4/03/1973
956,651	72/407,115	4/03/1973
956,660	72/380,877	4/03/1973
956,663	72/402,518	4/03/1973
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956,707	72/384,390	4/03/1973
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956,711	72/404,081	4/03/1973
956,712	72/364,076	4/03/1973
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956,717	72/407,316	4/03/1973
956,718	72/413,679	4/03/1973
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Regarding Industrial Property In The Kygyz Republic

The following notice is reprinted from the December 1993 edition of "Industrial Property" published by the World Intellectual Property Organization, giving the status of industrial property protection in the Kyrgyz Republic:

The present situation of industrial property protection in the Kyrgyz Republic is summerized below.

I. Legislation

(1) Pending the enactment of the industrial property laws, the Government of the Kyrgyz Republic adopted, on August 2, 1993, the Provisional Regulations on Industrial Property, which cover inventions, utility models, industrial designs and trademarks. It is possible, as of August 2, 1993, to file applicastions for the grant of patents for inventions and for the registration of utility models, industrial designs and trademarks with the Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic.

II. Application of International Treaties

(2) The Kyrgyz Republic intends to become party to the Convention Establishing the World Intellectual Property Organization (WIPO), to the Paris Convention for the Protection of Industrial Property, to the Madrid Agreement Concerning the International Registration of Marks, to the Patent Cooperation Treaty (PCT) and to the Nice Agreement Concening the International Classification of Goods and Services for the Purposes of the Registration of Marks.

(3) Announcements will be made as soon as the Kyrgyz Republic becomes party to the treaties mentioned in paragraph (2), above, or to any other treaties administered by WIPO. Details will be given at that stage of the procedures to be followed to confirm the application to the Kyrgyz Republic of certain international applications under the PCT and certain international registrations under the Madrid Agreement.

III. Reregistration of Industrial Property Titles Granted by the Patent Office of the Soviet Union and Further Processing of Pending Applications

(4) The owner of a patent for invention, an inventor's certificate, an industrial design patent or certificate granted by the Patent Office of the Soviet Union and still in force may file directly with the Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic before May 1, 1994, a request for the grant of a Kyrgyz patent for invention, design patent or trademark certificate.

(5) An applicant of an application for a patent for invention, for an industrial design patent or for a trademark certificate filed before August 2, 1993, with the express or implied intention of obtaining protection also in the Kyrgyz Republic and pending with the Patent Office of the Russian Federation may file with Patent Department of the State Committee on Science and New Technologies of the Kyrgyz Republic before May 1, 1994, a request that the application be further processed under Kyrgyz legislation.

IV. Procedural Provisions

(6) The procedures referred to in paragraphs (1), (4) and (5) are subject to payment of the prescribed fees.

V. Address of the Patent Office

Patent Department of the State Committee on Science and New Technology
87, Isanov St.
720001 Bishkek
Kyrgyz Republic

Telephone: (3312) 21 54 86
21 54 94

Facsimile: (3312) 21 25 91

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Procedures For Restarting Response Periods

The purpose of this notice is to announce revised procedures for restarting response periods set in patent related matters. Occasionally, mail from the Patent and Trademark Office (PTO) is received late at the correspondence address or the mail is delayed in leaving the PTO.

The following revised procedures are effective immediately and will be followed in processing a petition to reset a period for response due to late receipt of a PTO action or due to a postmark date which is later than the mail date printed on a PTO action. The authority to decide such petitions is delegated to the Group Director, where the PTO action involved in the petition was mailed by a patent examining group

Petition to reset a period for response due to late receipt of a PTO action

The PTO will grant a petition to restart the previously set period for response to a PTO action to run from the date of receipt of the PTO action at the correspondence address when the following criteria are met: (1) the petition is filed within two weeks of the date of receipt of the PTO action at the correspondence address; (2) a substantial portion of the set response period had elapsed on the date of receipt (e.g., at least one month of a two or three month response period had elapsed); and (3) the petition includes (a) evidence showing the date of receipt of the PTO action at the correspondence address (e.g., a copy of the PTO action having the date of receipt of the PTO action at the correspondence address stamped thereon, a copy of the envelope (which contained the PTO action) having the date of the receipt of the PTO action at the correspondence address stamped thereon, etc.), and (b) a statement (verified if made by other than a registered practioner) setting forth the date of receipt of the PTO action at the correspondence address and explaining how the evidence being presented establishes the date of receipt of the PTO action at the correspondence address.

There is no statutory requirement that a shortened statutory period of longer than thirty days to respond to a PTO action be reset due to delay in the mail or in the PTO. However, when a substantial portion of the set response period had elapsed on the date of receipt at the correspondence address (e.g., at least one month of a two or three month response period had elapsed), the procedures set forth above for late receipt of a PTO action are available. Where a PTO action was received with less than two months remaining in a shortened statutory period of three months, the period may be restarted from the date of receipt. Where the period remaining is between two and three months, the period will be reset only in extraordinary situations - e.g., complex PTO action suggesting submission of comparative data.

Petitions to reset a period for response due to a postmark date later than the mail date printed on a PTO action

The PTO will grant a petition to restart the previously set period for response to a PTO action to run from the postmark date shown on the PTO mailing envelope which contained the PTO action when the following criteria are met: (1) the petition is filed within two weeks of the date of receipt of the PTO action at the correspondence address; (2) the response period was for payment of the issue fee[1]or the response period set was one month or thirty days[2] and (3) the petition includes (a) evidence showing the date of receipt of the PTO action at the correspondence address (e.g., a copy of the PTO action having the date of receipt of the PTO action at the correspondence address stamped thereon, ect.), (b) a copy of the envelope which contained the PTO action showing the postmark date, and (c) a statement (verified if made by other than a registered practitioner) setting forth the date of receipt of the PTO action at the correspondence address and stating that the PTO action was received in the post-marked envelope.

The provisions of 37 CFR 1.8 and 1.10 apply to the filing of the above-noted petitions with regard to the requirement that the petition be filed within two weeks of the date of receipt of the PTO action.

The showings outlined above may not be sufficient if there are circumstances that point to a conclusion that the PTO action may have been delayed after receipt rather than a conclusion that the PTO action was delayed in the mail or in the PTO.

Feb. 3, 1994 CHARLES E. VAN HORN
Patent Policy and Projects Administrator
Office of the Assistant Commissioner for Patents

[1]35 USC 151 permits payment of the issue fee within three months of the date that the Notice of Allowance is mailed to the applicant.
[2]35 USC 133 does not permit a response period to be less than thiry days from the date the PTO action is given or mailed to the applicant.

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Registration To Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on October 13, 1993 were mailed to 1,216 candidates. There were 415 persons who successfully passed the examination. The following list contains the names of those persons who passed the examination and have been given provisional recognition pursuant to 37 CFR § 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR §10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds be furnished to the Director of Enrollment and Discipline on or before April 15, 1994.

January 25, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Ackerman, Stephen B., 21 Connelly Dr., Staatsburg, N.Y. 12580
Adams, Kimberley Kay, 224 Ward Pl., South Orange, N.J. 07079
Aiani, Ronald John, 35 Raider Dr., Warrenton, Va. 22186
Albin, Loren D., 117 Gresham Ave., N., Oakdale, Minn. 55128
Alford, William Edward, 1628 Quail Dr., Milpitas, Calif. 95035
Allen, Michael Bruce, 400 E. Randolph Dr., #905, Chicago, Ill. 60601
Anastasi, John Nicholas, 16 Villager Rd., Chester, N.H. 03036
Anderson, Erik Arthur, 4849 Coventry Pkwy., Ft. Wayne, Ind. 46804
Anderson, William Edwin II, 4200 Parklawn Ave., #201, Edina, Minn. 55435
Angelovich, Michael Bryan, 2611 W. 45th St.v #B, Austin, Tex. 78731
Anolick, Simon Benjamin, 1016 Greenleaf St., Evanston, Ill. 60202
Armstrong, John E., 21 White Dr., Newark, Del. 19702-2813
Arndt, Barbara E., 12700 Lake Ave., #1905, Lakewood, Ohio 44107
Arnold, Patrick J. Jr., 1164 Hutchings Ave., Glenview, Ill. 60025
Aronoff, Michael Jay, 505 Old Crossing Dr., Baltimore, Md. 21208
Bach, Joseph, 909-19 Oakdale Dr., Hillsborough, N.C. 27278
Baldwin, Craig A., 1515 W. Farnum St., Royal Oak, Miss. 48067
Balgenorth, Charles Raymond, 5251-L E. Ocean Blvd., Long Beach, Calif. 90803

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Banowsky, James Richard, 4009 Wood Castle St., Norman, Okla. 73072
Bateman, Randall B., 2691 S. Kenwood St., Salt Lake City, Utah 84106
Bean, Lloyd Fitzgerald II, 34 Walbar St., Rochester, N.Y. 14609
Beck, David G., 1880 Laguna St., San Francisco, Calif. 94115
Becker, Edward A., 308 Meadows,,Lde Rd., #301, Milford, Conn. 06460
Becker, Robert David, 657 Francisco, San Francisco, Calif. 94133
Bell, Howard Otha, 250 Hoyt St., Brooklyn, N.Y. 11217
Bergen, Grady K., 2501 Oak Hill Cir., #1034, Ft. Worth, Tex. 76109
Bobb, Mark A., 295 Rhinecliff Dr., Rochester, N.Y. 14618
Bockhorst, Anne Elizabeth, 8859 Eagleview Dr., #11, West Chester, Ohio 45069
Boisvert, Marie-Claire Irene, 801 S. 15th St., #824, Arlington, Va. 22202
Bourgeois, Mark Paul, 317 Horseshoe Ln., Vestal, N.Y. 13850
Bracken, Catherine E., 5427 Mercedes, Dallas, Tex. 75206
Bradin, David S., 1459 Mecascin St.,, #5315, Atlanta, Ga. 30309
Brake, R. Edward, 1703 Tyvale Ct., Vienna, Va. 22182
Brambani, Louise A., 1915 Whitman Dr., Knoxville, Tenn. 37909
Brill, Charles A., 2317 Butler, Carrollton, Tex. 75007
Brown, Daniel Richard, 7225 Stonybrooke Dr., North Richard Hills, Tex. 76180
Brown, Kenneth M., One Fawn Hill Run, Kinnelon, N.J. 07405
Brown, Sally J., 9306 S. 2700 West, West Jordan, Utah 84088
Bryant, Joy L., P.O. Box 2272, Poquoson, Va. 23662
Buchanan, Karen A., 8709 Drumlin Hgts. Dr., Baldwinsville, N.Y. 13027
Burke, Michelle Jeannine, 91 Centre St., Concord, N.H. 03301
Burr, Matthew E., 618 Byrne, Houston, Tex. 77009
Canavan, Patrick Desmond, 41 Eastern Pkwy., #9C, Brooklyn, N.Y. 11238
Canavan, Robert T., 2072 Amwell Rd., Somerset, N.J. 08873
Carlson, Brian Alan, 4409 Rosser Square, Dallas, Tex. 75244
Carlson, John Eric, 23560 Loomis Ct., Farmington, Mich. 48336
Carter, Jeffrey David, 1525 Lincoln Cir., #400, McLean, Va. 22102
Casey, Mark J., 12 Rutherford Ave., Haverhill, Mass. 01830
Caywood, Michael, 8411 Greenflint Ln., Austin, Tex. 78759
Chang, Chi-Ping, 613 Nantucket Ct., Walnut Creek, Calif. 94598
Chang, Emil Chun-Ning, 445 Lynbrook Dr., Pacifica, Calif. 94044
Cherry, E. Chris, 1718 Brook View, Doraville, Ga. 30340
Cho, Kenneth Kunho, 235 E. 40th St., #39F, New York, N.Y. 10016
Christopher, John, 31 Fells Rd., Wellesley, Mass. 02181
Cipolla, John S., 6807 Greenbrier Dr., Brecksville, Ohio 44141
Cobbin, Philip Thomas, RR#2 Box 918B, Canaan, N.H. 03741
Cohn, Arthur J., 11 Piedmont Ct., Baltimore, Md. 21227
Coleman, Kimberli Brooke, 7800 E. Lincoln Dr., #2011, Scottsdale, Ariz. 85250
Collins, Catherine Sarah, 1941 Dartmoor Ct., Ft. Worth, Tex. 76110
Coonan, Scott James, P.O. Box 247, Lightfoot, Va. 23090
Costanza, Kevin Samuel, 302 N. Tacoma Ave., #B, Tacoma, Wash. 98403
Cotterell, Gregory F., 6 Spring Farm Ln., North Oaks, Minn. 55127
Cover, Kathi Anne, 1616 Royal Crest, #69, Austin, Tex. 78741
Cox, Donald James Jr., 5039 East Ocean Blvd., #10, Long Beach, Calif. 90803
Crenshaw, Henry Thomas Jr., 2807 24th St., Lubbock, Tex. 79410
Crew, Darren Rumney, P.O. Box 34249, Philadelphia, Pa. 19101
Crissey, Todd Matthew, 625 W. Deming Pl., #2F, Chicago, Ill. 60614
Culliss, Gary Alan, 381 N. Tessier Dr., St. Petersburg Beach, Fla. 33706-2815
Curtin, Jeffrey Bryan, 2238 Sunrise Dr., Appleton, Wis. 54914
Curtin, John E., 803 Dow Rd., Bridgewater, N.J. 08807
Dagg, David A., 129 Overlook Rd., Arlington, Mass. 02174
Dani, William Paul, 5440 Rockbluff Dr., N.E., Comstock Park, Mich. 49321
Darden, Loletta L., 27 Carriage Rd., Cranston, R.I. 02920
Dawydiak, Walter, 57 Wooded Ct., Calverton, N.Y. 11933
De Leon, Ruben C., 1094 Woodbriar, Grapevine, Tex. 76051
De Vos, Daniel Maurice, 1711 Festival Dr., Houston, Tex. 77062
Deffebach, Harry L. III, 1527 Druid Valley Dr., #E, Atlanta, Ga. 30329
DeFranco, Judith A., 730 Sunset Dr., San Carlos, Calif. 94010
DeFrank, Edmond Arthur, 20723 Lemarsh St., Unit C, Chatsworth, Calif. 91311
Denko, J. Scott, 2358 NW Johnson, Portland, Oreg. 97210
Depke, Robert James, 6863 N. Wildwood, Chicago, Ill. 60646
DeSantis, Nancy J., 7480 Singing Hills Dr., #G-207, Boulder, Colo. 80301
Dik, Daniel Kurt, 1159 Highland Dr., Monterey Park, Calif. 91754
Dixon, Keith Lamont, 20717 Crystal Hill Cr., #N, Germantown, Md. 20874
Dixon, W. Michael, 52 Larry Ln., Cortland, Ohio 44410
Dodd, Jeanne Dolores, 4962 Grandview Cir., Midland, Miss. 48640
Donato, Mario J. Jr., 3982 Cocoplum Cir., Coconut Creek, Fla. 33063
Dopp, Kyle Walker, 640 East 100 North, Bountiful, Utah 84010
Dunbar, Margaret Mary, RR 2 Box 15, Potlatch, Id. 83855
Durdik, Paul A., 70 St. Paul St., #4, Boston, Mass. 02146-6527
Durney, Edward G., 11 Rosalita Ln., Millbrae, Calif. 94030
Dylan, Tyler M., 905 Fassler Ave., Pacifica, Calif. 94044
Dym, Susie R., Weizman 34B, Rehovot ISRAEL
Eastley, Brian J., 145 Lexington Rd., Concord, Mass. 01742-3708
Eldredge, John Walter, 2010 Domador, San Clemente, Calif. 92673
Ellis, Vincent John, 212 Austin Dr., Stafford, Va. 22554
Erhardt, Paul W., 12 Apgar Rd., Long Valley, N.J. 07853
Estevez, Enrique G., 2409 Debden Dr., Tallahassee, Fla. 32308
Etheridge, James Lewis, 1809 Westcliff Dr. - 125, Newport Beach, Calif. 92660
Ethier, Marguerite Frances, 555 John Muir Dr., #811, San Francisco, Calif. 94132
Etkin, Edward, 4804 Bedford Ave., #3C, Brooklyn, N.Y. 11235
Fagin, Kenneth Michael, 2000 Commonwealth Ave., #408, Brighton, Mass. 02135
Fails, Charles H., 460 Springs End Ln., Marietta, Ga. 30068
Fairchild, Jeffery N., 8810 Winding Prairie Trail, Belvidere, Ill. 61008
Falcoff, Monte Lee, 16221 Beechwood Ave., Beverly Hills, Mich. 48025
Farrell, Marc J., 3718 Parkview Ave., #2, Pittsburgh, Pa. 15213
Feder, Daniel G., 5628 Neosho, St. Louis, Mo 63109
Federbush, Alan, 3003 Canterbury Way, Mt. Kisco, N.Y. 10549
Field, Bret E., 1945 Edgewood Rd., Redwood City, Calif. 94062
Fienberg, Karen Dana, Poms, Smith, Lande & Rose, 2029 Century Park East, 38th Fl., Los Angeles, Calif. 90067-3024
Flesner, Larry Dean, 5041 Caywood St., San Diego, Calif. 92117
Flight, James Arthur, 1364 McDowell Rd., #202, Naperville, Ill. 60563
Flink, Frank B. Jr., 8347 Fontana, Prairie Village, Kans. 66207
Flint, Paula Jean, 919 W. Altgeld, #2, Chicago, Ill. 60614
Frantz, Keith Edward, 1623 Crosby St., Rockford, Ill. 52627
Freeman, Corrine Marie, 19 Sunlight, Irvine, Calif. 92715
Freeman, David B., 6609 Cresthill Dr., Davenport, Iowa 52806
Fuelling, Michael L., 14007 Parent Rd., New Haven, Ind. 46774-9716
Funk, Steven Ross, 1748 Hollywood Ave. NE, Minneapolis, Minn. 55418
Furrer, Brian Patrick, 2607 13th Ave. West, Seattle, Wash. 98119
Gadiano, Christina Miriam, 1316 Sundial Dr., Reston, Va. 22094
Gaetje, Clay E., 2760 Kelvin Ave., #3312, Irvine, Calif. 92714
Galasso, Raymond Matthew, 19727 Pierson Dr., Northville, Mich. 48167
Garvey, John M., 14 Grayson Rd., Winchester, Mass. 01890
Genin, Kent E., 750 N. Rush St., #708, Chicago, Ill. 60611
Gerard, Gregory Gerald, 4838 N. Frank Pkwy., Norridge, Ill. 60656
Geselowitz, Michael N., 226 Fountain St., #101, New Haven, Conn. 06515
Gibb, Frederick W., 9214 Whitemont Dr., Richmond, Va. 23294
Gilly, Richard P., 5644 N. Wayne St., #3, Chicago, Ill. 60660
Glass, Martin Scott, 65 Clymer St., Port Jefferson Station, N.Y. 11776

Glueck, Daniel S., 5704 Chapman Mill Dr., #400, Rockville, Md. 20852-5555
Golden, Philip Thomas, 722 Ralfallen St., Houston, Tex. 77008
Gorbatoff, Timothy George, 30863 Crest Forest, Farmington Hills, Mich. 48331
Gordan, Elias Martin, 4030 Pulaski St., E. Chicago, Ind. 46312
Grubb, Timothy Franklin, 18792 Haven Ln., Yorba Linda, Calif. 92686
Gupta, Krishnendu, 79 Kosmas St., Marlborough, Mass. 01752
Haas, Steven M, 756 Westridge Dr., Akron, Ohio 44333
Haerter, Martin W., 58 Burr Rd., E. Northport, N.Y. 11731
Hahn, James Iido, 11725 Concord St., Cerritos, Calif. 90701
Halt, Gerald Bernard, Jr., 123 E. Third St., Media, Pa. 19063
Hamaty, Christopher Jacob, 6715 Tildenwood Ln., Rockville, Md. 20852
Hamburg, M. Michael, 1793 Snowden Cir., Rochester Hills, Mich. 48306
Hanna, Michael Richard, 74 Brucewood St., W. Roxbury, Mass. 02132
Hare, Christopher A., 103 Dorantes Ave., San Francisco, Calif. 94116
Harr, Curtis Vernon, 2501 26th Ave. S., Unit 9, Grand Forks, N. Dak. 58201
Hartt, Jacqueline E., 418 Norwood Ct., Oviedo, Fla. 32765
Haulard, Marcel Leon, 2273 Kettington Ct., St. Louis, Mo 63017
Haupt, Keith Raymond, 9986 Somerset Dr. Loveland, Ohio 45140
Hauser, Robert Scott, 309 James St., Falls Church, Va. 22046
Havel, Dennis George, 407 Nickleby Way, Louisville, Ky. 40245
Hayden, John F., 21 Oakwood Knoll Rd., Ipswich, Mass. 01938
Henderson, Melodie W., 30 Sylvan Ridge, Middlefield, Conn. 06455
Heppermann, Roger Anthony, 4429 N. Winchester, #3A, Chicago, Ill. 60640
Highlander, Steven Lee, 17121 Flatwood Dr., Derwood, Md. 20855
Hodgson, Rodney T., 822 Pinesbridge Rd., Ossining, N.Y. 10562
Holloway, Sheryl Sue, 274 Rodney Ave., Encinitas, Calif. 92024
Huston, Marilyn McConnell, 2801 Cason, Houston, Tex. 77005
Imbra, Richard J., 3312 Granada Ave., San Diego, Calif. 92104
Jack, Kenneth H., 934 N. Shefford, Wichita, KS 67212
Jacobs, Adam Heath, 10561 Curtis Ave., Omaha, Nebr. 68134
Jacobs, Christopher A., 1500 Waltham Rd., #B, Columbus, Ohio 43221
Jacobsen, Eric DeVerne, P. 0. Box 6068, Boulder, Colo. 80303
Jenkins, Marylee, 235 W. 56th St., #26P, New York, N.Y. 10019
Jennings, Charles David, 7762 Sportsman Club Rd., N.E., Bainbridge Island, Wash. 98110
Jensen, Eric, 3757 SW 4th Place, Gainesville, Fla. 32607
Jensen, Eric P., 934 Winsray Ct., Cincinnati, Ohio 45224
Johnson, J. Michael, 2225 Roscomare Rd., Los Angeles, Calif. 90077
Jones, Brian Conrad, 8711 Seasons Way, Lanham, Md. 20706
Joran, A. David, 727 Dunne Ct., #1, Brooklyn, N.Y. 11235
Jordan, Kristin Kay, 14800 Enterprise Dr., #19D, Farmers Branch, Tex. 75234
Joyce, Gerald Patrick III, 4036-D Quail Glenn Ct., Charlotte, N.C. 28226
Kaiser, AnneMarie, 655 Baker St., #C-210, Costa Mesa, Calif. 92660
Kaku, Janet K., 4970 Moorpark, San Jose, Calif. 95129
Kalis, Janal Marie, 1314 Marquette Ave., #2808, Minneapolis, Minn. 55403
Kang, Grant Dongjin, 2010 Wissant Ln., St. Louis, Mo 63146
Kanzaki, Kim, 1850 Graves Rd., #128, Norcross, Ga. 30093
Koch, Stephen Patrick, 6353 Edloe, Houston, Tex. 77005-3617
Konstas, Kristins L., 445 W. 54th St., #2A, New York, N.Y. 10019
Korniczky, Michael L., 3513 N. Sheffield, #1, Chicago, Ill. 60657
Kovaleski, Michele Ann, 398 Poet's Way, Mahwah, N J 07430
Kross, Michael, 468 Wellesley Ave., Mill Valley, Calif. 94941
LaMarche, Patricia Ann, 175 Gleasondale Rd., Stow, Mass. 01775
Langen, Max Nicholas, 1000 S. Harbour Island, #2204, Tampa, Fla. 33602
Larson, David L., 105 Castilian Way, San Mateo, Calif. 94402
Larson, James E., 208 Crestwood Ln., Largo, Fla. 34640
Le, Hung Tien, 6675 Linda Vista Rd., #39, San Diego, Calif. 92111
LeCroy, David Paul, 5204 50th St., #A102, Lubbock, Tex. 79414
Lee, Joseph Hanlim, 3400 Ave. of the Arts, #F310, Costa Mesa, Calif. 92626
Lee, Julie Eunyoung, 77 W. 55th St., #5D, New York, N.Y. 10019
Lee, Otto Oswald Chau-Hiu, 828 Franklins St., #707, San Francisco, Calif. 94102
Lloyd, Robert D., 709 W. Royal Palm Rd., Boca Raton, Fla. 33486
Loeffler, James M., 2 Pueblo Ct., Coram, N.Y. 11727
Longfellow, James Phillip, 850 N. Randolph St., #934, Arlington, Va. 22203
Luebbering, Thomas B., 405 W. 62nd Terrace, Kansas City, Mo 64113
Lundquist, Ronald Clinton, 4901 Clear Spring Rd., Minnetonka, Minn. 55345
Lyons, Gregory R., 8916 Whitney St., Silver Spring, Md. 20901
Mac Rae, Warren Kent, 54-44 Little Neck Pkwy., #1M, Little Neck, N.Y. 11362
Macke, Richard Christian, 75 Biehl St., Newport, Ky. 41071
Maddock, Paul A., 4332 N. Dayton, #105, Chicago, Ill. 60613
Mahaney, F. T. Alexandra, 4282 Cordobes Cove, San Diego, Calif. 92130
Malilay, Grace Poblacion, 2549 Dupont Ave. S., Minneapolis, Minn. 55405
Malloy, Jennie Sue, 55 Ocean Lane Dr., Unit 1034, Key Biscayne, Fla. 33155
Mandelblatt, Jill Michele Netka, 1768 Beacon St., #43, Brookline, Mass. 02146
Marino, Francis Edward, 9 Hazeltine Rd., Upton, Mass. 01568
Mark, Elizabeth Anne, 3506 Rosedale Ave., Dallas, Tex. 75205
Marks, David L., 6110 Ivymount Rd., Baltimore, Md. 21209
Marsh, Sandra Gooding, 1919 Buttercup Dr., Birmingham, Ala. 35226
Martin, Kevin D., 6169 N. Portsmouth Ave., Boise, Id. 83703
Martin, Meredith Leigh, 400 N. McClurg Ct., #2915, Chicago, Ill. 60611
Matos, Peter A., 15449 SW 47th Terrace, Miami, Fla. 33185
McClaughry, David Arnold, 9121 Nottingham Crt., Clarkston, Mich. 48348
McAllister, Douglas M., 2 Hotchkiss Terr., Seymour, Conn. 06483
McAusland, K. Iain, 1454 Crespi Dr., San Jose, Calif. 95129
McBride, Kevin G., 781 Walden Rd., Winnetka, Ill. 60093
McCall, Eugene C., Jr., 336 Pine Forest Dr., Greenville, S.C. 29605
McCoy, Rhonda L., 5690 Fordham Cir., #102, Canton, Mich. 48187
McDaniel, Karen D., 1725 Hillcrest Ave., St. Paul, Minn. 55116
McKeon, Michael J., 1505 Crystal Dr., #802, Arlington, Va. 22202
McKiernan, Thomas Edward, 22614 Pointe Dr., St. Clair Shores, Mich. 48081
McMurtry, Robert J., 347 Western Ave., Clarendon Hills, Ill. 60514
McQuien, Larry Jay, 11605 Pine Creek Ct,, Aledo, Tex. 76008
Merritello, Carol A., St., 555 W. Madison #2701, Chicago, Ill. 60661
Meyer, Joel R., 5150 S.W. Dover Ln., Portland, Oreg. 97225
Migut, Maureen M., 1601 East St., Pt. Pleasant Beach, N.J. 08742-4124
Miles, Kirk M., 407 Cinder Rd., Edison, N.J. 08820
Miller, Deborah, 1325 18th St., N.W., #601, Washington, D.C. 20036
Miller, Laura Beth, 1660 N. LaSalle, Unit 2401, Chicago, Ill. 60614
Miller, Ronald James, 45 Brighton Way, #2-South, St. Louis, Mo. 63105
Miller, William D., 7216 Lensfield Ct., Alexandria, Va. 22310
Minke, Richard Carl, 201 E. 77th St., #7D, New York, N.Y. 10021
Mohlenhoff, Dale George, 5509 N. Capitol Ave., Indianapolis, Ind. 46208

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Moore, Harold C., 5 Lapis Circle, W. Orange, N.J. 07052
Morneault, Monique Ann, 1137 St. Andrews Ct., Algonquin, Ill. 60102
Morse, Raymond Wilson, 2442 Michigan Dr., Claremont, Calif. 91711
Munger, John Edward, 714 W. Fullerton Pkwy., Chicago, Ill. 60614
Murphy, Leonard Edward, 916 W. Schubert, #3, Chicago, Ill. 60614
Murray, Michael L., 7719 Hampson St., New Orleans, La. 70118
Musser, Arlene K., 2553 Grafton Ave. N., Oakdale, Minn. 55128
Nagle, John Stephen, 2013 Serpentine Terr., Silver Spring, Md. 20904
Nagy, Paul Gabriel, 30432 Via Victoria, Rancho Palos Verdes, Calif. 90274
Napolitano, Eileen, 98 Central Ln., Secaucus, N.J. 07094
Nataupsky, Steven J., 1512 E. Ocean Blvd., Newport Beach, Calif. 92661
Nebel, Heidi Sease, 5512 Meredith, #17, Des Moines, Iowa 50310
Nelson, Robert Wayne, 54 Washington St., Concord, N.H. 03301
Nguyen, Joseph Anh, 555 E. Washington Ave., #305, Sunnyvale, Calif. 94086
Nietupski, Raymond M., 6 Cherry St., Millbury, Mass. 01527
O'Brian, David Mark, 19214 Woodglen, Katy, Tex. 77449
O'Brien, Sean W., 7601 E. Treasure Dr., #722, North Bay Village, Fla. 33141
O'Dea, Sean William, 30 Panorama Dr., Huntington, N.Y. 11743
O'Toole, Kevin John, 3243 Jellison St., Wheat Ridge, Colo. 80033
Ogawa, Richard T., 550 Shannon Way, #6103, Redwood City, Calif. 94065
Ogilvie, John W. L., 1211 Yale Ave., Salt Lake City, Utah 84105-1516
Olson, Katharyn Elinor, 198 Potomac Dr., Basking Ridge, N.J. 07920
Ostrowski, Henry Stanley, 4500 W. Fourth St., Appleton, Wis. 54915
Owens, Jonathan Ottly, 124 Beach Park Blvd., Foster City, Calif. 94404
Palomar, Linda Lorraine, 2445 N. Seminary Garden Apt., Chicago, Ill. 60614
Park, John K., 1936 Flint Rock Rd., Diamond Bar, Calif. 91765
Parks, Kenneth R., 542 W. 112th St., #5J, New York, N.Y. 10025
Pastel, Christopher Robert, 211 Maeder Ave., Merrick, N.Y. 11566
Patras, Patrick L., 3660 N. Lake Shore Dr., #1113, Chicago, Ill. 60613
Patterson, Barden Todd, 2835 Skinner Ln., Richmond, Tex. 77469
Pentzke, Robert Ervin, 6925 E. Berry Ave., Buena Park, Calif. 90620-1630
Perque, Chris P., 251 Elmeer Ave., Metairie, La. 70005
Peterman, Brian William, 6209 John Chisom Ln., Austin, Tex. 78749
Peterson, David, 3645 Dunsmuir Cir., Pleasanton, Calif. 94588
Petuchowski, Samuel Judah, 7401 Jackson Ave., Takoma Park, Md. 20912
Phillips, Steven Bradley, 5313 Bakers Mill Rd., Durham, N.C. 27707
Pinchak, George Lawrence, Jr., 4894 Oakdale Ave., Willoughby, Ohio 44094
Pisoni, Jeannine M., 405 N. Wabash , #2408, Chicago, Ill. 60611
Polikowski, Anthony John, 64 Water St., Marlborough, Mass. 01752
Pollack, Caleb Jay, 415 E. 80th St.; , New York, N.Y. 10021
Pophal, Michael C., 71 E. 224th St., Euclid, Ohio 44123
Posz, David Garrett, 230 Cityline Ave., Atlanta, Ga. 30308
Pritzkau, Michael M., 3177 Ames St., Wheatridge, Colo. 80214
Raicu, Eugen, 1931 Dwight Way, #7, Berkeley, Calif. 94704
Ramos, Robert Troy, 1349-C Goshen St., San Diego, Calif. 92110
Ranney, Kathleen A., 555 W. Madison St., #913-1, Chicago, Ill. 60661
Rasche, Patrick W., 13291-D Blueberry Ln., #202, Fairfax, Va. 22033
Reed, Jerry O., 4712 Clearview Dr., Bartlesville, Okla. 74006
Reich, John Christopher, 5330 Oliver Ave. South, Minneapolis, Minn. 55419
Reid, Frank Edgar, 4504 Alamance Dr., Baytown, Tex. 77521
Renzoni, George E., 4728 NE 178th St., Seattle, Wash. 98155
Resh, Linda S., 2217 Edgebrooke Dr., Lisle, Ill. 60532
Rey, Clifford Forrest, 3232 Central Ave., Spring Valley, Calif. 91977
Ricci, Christopher P., 1295 Washington St., Braintree, Mass. 02184
Richards, Marc V., 2650 N. Lakeview, #3802, Chicago, Ill. 60614
Rizzi, Steven Jay, 345 E. 81st St., #3K, New York, N.Y. 10028
Rodriguez, Joan Stiefel, 1031 Brice Rd., Rockville, Md. 20852
Rolnik, Robert Christopher, 845 Happfield Dr., Arlington Hgts., Ill. 60004
Roof, Carl J., 50-D Clubhouse Ln., Fairfield, Ohio 45014
Rosenblum, David J., 240 E. 83rd St., #1B, New York, N.Y. 10028
Ryan, Joseph B., 15 Eyre Ln., Locust Valley, N.Y. 11560
Sage, George Patrick II, 11504 35th St., Lake Mill., Gobles, Mich. 49055
Sako, Bradley Tadashi, 3770 Flora Vista Ave., #308, Santa Clara, Calif. 95051
Salenieks, Raimond J., 2120 Emberwood Way, Escondido, Calif. 92029
Samuels, Steven B., 549 Pewter Dr., Exton, Pa. 19341
Saraceni, Paul Michael, 4216 Cabell Dr., #435, Dallas, Tex. 75204
Sarfatis, Brandi Wickline, 4724 Gulfstream Dr., Dallas, Tex. 75244
Sarracino, John Matthew, 330 Westline Dr,, #B-225, Alameda, Calif. 94501
Savarese, Antonio Paul, 46 Cyprus Ave., Brentwood, N.Y. 11717
Sayfie, Robert Joseph, 2545 Breton Rd., S.E., Grand Rapids, Mich. 49546
Schaefer, Stephen Reunold, 2222 Q St., N.W., #24, Washington, D.C., 20008
Schaier, Arthur Graham, 300 E. 59th St., #2903, New York, N.Y. 10022
Scholten, Jill Adair, 3311 Quail Walk Ln., Danville, Calif. 94506
Schroeder, Debra L., 1715 Alabama Ave., Ft. Wayne, Ind. 46805
Schuette, June Bouscaren, 12 Guyencourt Rd., Greenville, Del. 19807
Schultz, Christopher S., 48 Farmview Dr., Cumberland, R.I. 02864
Schwartz, Stephen M., 37 Hambrick Rd., Nitro, WV 25143
Scott, Gene, 3857 Birch St., Newport Beach, Calif. 92660
Scott, Timothy Luke, 6631 Wakefield Dr., #519, Alexandria, Va. 22307
Scull, Peter B., 6748 E. Eugie Terr, Scottsdale, Ariz. 85254
Seavello, Suzanne Frances, 256 Echo Ave., #1, Campbell, Calif. 95008
Sedlar, Jeffrey Alexander, 700 N. Main, Chesaning, Mich. 48616
Setter, Michael J., 214 Brushcreek, #3W, Kansas City, Mo. 64112
Shallenburger, Joe Henry, 4851 Cedar Springs Rd., #181, Dallas, Tex. 75219
Sheerin, Howard H., 320 Peninsula Ave., #301, San Mateo, Calif. 94401
Shusterman, Daniel M., 6614 Sawmill Rd., Dallas, Tex. 75252
Siegesmund, Rudolf Odd, 6604 Del Norte, Dallas, Tex. 75225
Silverman, Alexander Elias, 261 La Cuesta Dr., Portola Valley, Calif. 94028
Simmons, Lane Richard, 631 Hoopes, #2, Idaho Falls, Id. 83401
Sittler, Douglas L., 525 W. Carpenter, Moberly, Mo 65270
Skarlatos, Nicholas Joseph, 3101 S. Barrington Ave., #15, West Los Angeles, Calif. 90066
Sloan, Leif R., 707 Continental Cir., #1332, Mountain View, Calif. 94040
Smith, Darryl Alan, 27684 Aquamarine, Mission Viejo, Calif. 92691
Smith, Gregory J., 859 Osterman Ave., Deerfield, Ill. 60015
Smith, J. Mark, 155 Ash St., Denver, Colo. 80220
Smith, Nancy A., 101 1/2 E. 33rd St., 2nd Floor, Baltimore, Md. 21218
Smith, Pamela Christi, 749 Seneca St., Palo Alto, Calif. 94301
Smith, Von Roland, 815 E. Northcliffe Dr., Salt Lake City, Utah 84103
Snowden, Margaret M., 37 Aztec, San Francisco, Calif. 94110

Snyder, George Louis, Jr., 1115 Delaware Ave., #3, Buffalo, N.Y. 14209
Snyder, Ross Daniel, 616 W. Wilson Ave., #K, Glendale, Calif. 91203-2469
Song, James Y., 1 Palmatum, Irvine, Calif. 92720
Speed, Gary N., 615 Asbury Rd., Little Rock, Ak. 72211
Speight, Howard L., 12610 Trail Hollow Dr., Houston, Tex. 77024
Stadelman, Gary R., 331 Crabapple Dr., Washington, Pa. 15301
Stasik, Eric L., 106 Preston Ridge Ct., Cary, N.C. 27513
Steffensmeier, Michael Daniel, 803 Addy Rd., Columbus, Ohio 43214
Steinberg, Beverlee Gail, 2305 Butler Dr., Friendswood, Tex. 77546
Stettner, Derek C., 20 Bog Rd., #22, Concord, N.H. 03303
Steubing, Mary M., 41 Jewett St., Pepperell, Mass. 01463
Stokes, Cloyce Blaine, 760 Ivy St., Denver, Colo. 80220
Su, Henry Chao-Ion, 107 King William Dr., Williamsburg, Va. 23188-1920
Summerfield, Craig A., 2244 Greenfield Dr., Glenview, Ill. 60025
Swanson, Kevin Ray, 928 Grand Ave., #103, St. Paul, Minn. 55105
Swartz, Douglas William, 767 Glencoe St., Denver, Colo. 80220
Swift, Stephen Christopher, 1720 Ala Moana Blvd., #807A, Honolulu, HI 96815-1307
Szecsy, Alek P., 17 Marges Way, Hopewell Junction, N.Y. 12533
Taylor, Martha Kellar, 667 Paxson Ave., Mercerville, N.J. 08619
Tegreene, Clarence T., 7511 - 18th Ave. N.E., Seattle, Wash. 98115
Tejwani, Manu J., 1327 Ethan Ct., Yorktown Hgts., N.Y. 10598
Thomas, Mark A., 320 N. Yale Ave., #2B, Villa Park, Ill. 60181
Thompson, David Steven, 3724 E. 35th, Spokane, Wash. 99223
Tichane, David Michael, 276 Cherry St., Katonah, N.Y. 10536
Tower, Andrew Patrick, 5614 Indian Circle, Houston, Tex. 77056
Tran, Bao Q., 8610 Southwestern Blvd., #301, Dallas, Tex. 75067
Trenholm, Michael H., 12741 Moran Way, San Diego, Calif. 92129
Treska, Edward J., 21695 Superior Ln., Lake Forest, Calif. 92630
Trock, Kevin Charles, 3322 N. Racine Ave., Chicago, Ill. 60657
Tsou, Paul, 8995 Forestview Dr., Manassas, Va. 22111
van Es, Jonathan Pieter, 1155 West Lill, Chicago, Ill. 60614
Vanderlaan, Christopher A., 3403 Stoneridge Ct., Calabasas, Calif. 91302
Viksnins, Ann Sturtz, 4705 Isabel Ave., Minneapolis, Minn. 55406
Voelzke, Joel D., 10355 Silverton Ave., Tujunga, Calif. 91042
Wakefield, Charles P., 151 N. Michigan Ave., #1718, Chicago, Ill. 60601
Wakeman, Scott Tallmadge, 2126 Surrey Rd., #4, Cleveland Hgts., Ohio 44106
Walker, Brian D., 5990 Arapaho, #14B, Dallas, Tex. 75248
Walsh, Maria Cowan, 5716 N. Monte Vista Dr., Paradise Valley, Ariz. 85253
Walter, John Franklin, 7302 S. View Ct., Fairfax Station, Va. 22039
Ward, Michael J., 2431 W. Pensacola, Chicago, Ill. 60618
Wardas, Mark Andrew, 1226 Carmen Dr., Glendale, Calif. 91207
Waring, George Donald, 2413 Jackson Dr., Woodbridge, Ill. 60517
Watson, John F., 47 S. Stonington Dr., Palatine, Ill. 60067
Weeks, Martin Alden, 1909 Aladdin, Norman, Okla. 73072
Weems, Robert C., P.O. Box 1585, Ross, Calif. 94957
Weide, Randal Scott, 1041 Noria St., Laguna Beach, Calif. 92651
Weingaertner, Scott Thomas, 310 Lynwood St., Piscataway, N.J. 08854
Weinstein, Mitchell Jayson, 547 Mallard Ln., Deerfield, Ill. 60015
Wendler, Helen E., 100 Powder Mill Rd., Sudbury, Mass. 01776
White, Mark Phillip, 143 Elm St., Marblehead, Mass. 01945
Whittaker, Malcolm Edwin, 3129 S.W. 27th Ave., Miami, Fla. 33133
Wichmann, Steven Charles, 2505-5 Woodlake Rd., S.W., Grand Rapids, Mich. 49509
Wieczorek, Mark Donald, 3030 Braxton Wood Ct., Fairfax, Va. 22031
Wight, Stephen Alan, 16308 SW Estuary Dr., #204, Beaverton, Oreg. 97006
Wilkes, Christine Marie, 91 Centre St., Concord, N.H. 03301
Wong, Sharon, 14013 Captains Row, #218, Marina Del Rey, Calif. 90292
Wong, Steve A. 3550 Ruffin Rd., #133, San Diego, Calif. 92123
Worrall, Robert Jones, P.O. Box 33712, Washington, D.C. 20033
Young, Alan Woodbury, 6 Keanes Ave., Concord, N.H. 03301
Yu, Samson G., 526B Civic Dr., Walnut Creek, Calif. 94596
Yun, Allen C., 1613 Auburn Ave., Rockville, Md. 20850
Zawacki, Robert M., 3850 Woodhaven Rd., #801, Philadelphia, Pa. 19154
Zeitler, Robert J., 1324 W. Barry, Chicago, Ill. 60657
Zotos, Frederic Peter, 28 Old Coach Rd., Cohasset, Mass. 02025
Zullow, Keith Adam, 83-85 MacDougal St., #11, New York, N.Y. 10012

Certificates of Correction for week of March 1, 1994

PP: 8,132	5,042,928	5,117,974	5,150,513
Re: 33,010	5,044,891	5,118,803	5,150,519
D.313,064	5,045,469	5,119,222	5,151,264
D.322,012	5,048,740	5,119,238	5,151,497
D.324,463	5,052,712	5,120,882	5,152,408
D.327,234	5,053,478	5,121,052	5,153,122
D.334,950	5,055,231	5,121,230	5,153,819
4,232,552	5,055,579	5,121,795	5,153,984
4,674,687	5,059,461	5,122,166	5,154,015
4,774,339	5,061,885	5,122,995	5,154,755
4,801,311	5,064,952	5,126,481	5,154,949
4,816,434	5,066,231	5,126,834	5,155,520
4,830,214	5,068,219	5,128,348	5,155,881
4,878,193	5,070,561	5,129,116	5,155,908
4,893,567	5,074,067	5,129,444	5,156,161
4,900,791	5,075,232	5,129,535	5,157,166
4,907,344	5,077,307	5,130,446	5,157,830
4,933,356	5,077,327	5,132,335	5,160,273
4,940,456	5,077,383	5,132,431	5,160,650
4,943,950	5,077,817	5,132,432	5,160,948
4,944,231	5,079,127	5,135,882	5,160,983
4,944,910	5,079,289	5,136,114	5,161,673
4,945,171	5,081,147	5,136,264	5,161,862
4,960,875	5,081,679	5,136,734	5,162,364
4,966,173	5,082,974	5,137,542	5,163,003
4,969,319	5,083,650	5,137,607	5,163,060
4,970,563	5,084,383	5,137,980	5,163,975
4,977,800	5,087,584	5,138,138	5,164,298
4,978,505	5,088,066	5,138,199	5,164,321
4,983,346	5,090,212	5,138,263	5,164,462
4,984,070	5,091,942	5,138,443	5,165,999
4,991,579	5,092,920	5,139,821	5,166,394
4,991,605	5,093,179	5,140,231	5,168,062
4,999,348	5,093,315	5,140,297	5,168,078
5,000,098	5,095,106	5,140,652	5,168,385
5,000,204	5,095,351	5,141,612	5,169,932
5,000,560	5,096,332	5,141,939	5,169,984
5,000,572	5,096,667	5,142,092	5,170,210
5,001,290	5,100,416	5,143,513	5,170,217
5,006,195	5,101,289	5,143,932	5,170,677
5,006,807	5,104,155	5,144,039	5,171,470
5,010,198	5,104,475	5,144,916	5,171,835
5,015,490	5,106,595	5,144,987	5,172,778
5,015,574	5,107,293	5,145,273	5,173,955
5,016,639	5,108,663	5,146,397	5,175,001
5,020,516	5,109,169	5,146,728	5,175,367
5,020,843	5,109,772	5,146,955	5,175,690
5,030,956	5,109,934	5,147,539	5,176,851
5,032,889	5,112,853	5,147,747	5,176,958
5,033,739	5,113,249	5,147,907	5,177,068
5,035,803	5,114,473	5,148,408	5,177,123
5,037,290	5,115,459	5,149,487	5,177,199
5,039,311	5,115,659	5,149,719	5,177,254

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5,177,373	5,185,317	5,192,772	5,200,860	5,207,673	5,214,737	5,219,243	5,225,894
5,177,554	5,185,365	5,192,890	5,201,518	5,207,915	5,214,769	5,219,399	5,226,040
5,177,758	5,185,482	5,193,065	5,201,936	5,208,148	5,214,942	5,219,413	5,226,472
5,179,019	5,185,488	5,194,058	5,201,988	5,208,152	5,215,151	5,219,564	5,226,492
5,179,357	5,185,496	5,194,359	5,202,284	5,208,384	5,215,181	5,219,810	5,226,621
5,180,065	5,187,358	5,195,043	5,202,428	5,208,505	5,215,328	5,219,896	5,226,670
5,180,437	5,187,461	5,195,671	5,202,720	5,208,747	5,215,538	5,219,928	5,226,973
5,180,459	5,187,511	5,195,843	5,202,782	5,209,295	5,215,608	5,220,064	5,228,029
5,180,581	5,187,589	5,196,301	5,203,219	5,209,904	5,215,642	5,220,696	5,228,040
5,180,635	5,187,644	5,196,496	5,203,244	5,209,923	5,215,816	5,220,853	5,228,334
5,180,656	5,187,730	5,196,506	5,203,398	5,209,971	5,216,289	5,221,307	5,228,391
5,181,291	5,188,034	5,196,992	5,204,039	5,210,262	5,216,454	5,221,871	5,228,416
5,182,053	5,188,195	5,197,050	5,204,108	5,212,056	5,216,500	5,222,218	5,229,297
5,182,427	5,189,045	5,197,068	5,204,386	5,212,088	5,216,710	5,222,356	5,230,284
5,182,579	5,189,469	5,197,448	5,204,692	5,212,172	5,216,711	5,222,852	5,230,435
5,182,582	5,189,536	5,197,726	5,204,714	5,212,470	5,216,747	5,222,878	5,232,049
5,182,606	5,190,610	5,198,428	5,205,059	5,212,547	5,217,732	5,223,489	5,237,449
5,182,615	5,190,637	5,198,615	5,205,087	5,212,601	5,217,768	5,223,713	5,237,908
5,182,717	5,190,729	5,198,685	5,205,182	5,212,738	5,218,027	5,224,167	5,240,516
5,182,971	5,190,890	5,198,835	5,205,436	5,212,778	5,218,143	5,224,376	5,240,790
5,183,477	5,191,626	5,199,928	5,205,525	5,212,826	5,218,238	5,224,812	5,240,892
5,183,572	5,191,707	5,200,041	5,205,779	5,212,948	5,218,529	5,224,915	5,244,704
5,183,926	5,192,261	5,200,416	5,205,902	5,213,568	5,218,826	5,224,990	5,250,414
5,185,107	5,192,632	5,200,584	5,206,400	5,213,982	5,218,833	5,225,260	5,254,794
5,185,193	5,192,694	5,200,832	5,206,513	5,214,735	5,219,082	5,225,616	5,261,871
						5,225,658	5,265,875

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 3-7, 1994

Date Issued	Type of Proceeding[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
1-3	EX	74/838,244	Sommer Corp.	2(d)	Refusal Reversed		"MONARCH" (& lion design) [distributorship services in the field of food products & food-related products]	"MONARCH" [wheat flour]; "CAMPECHE MONARCH" [frozen shrimp]; MONARCH" [flatware, etc.] [each of the 3 cited marks owned by a different entity]	No
1-3	EX	74/125,358	Stanley M. Sakai	2(d)	Refusal Affirmed		"USAGI YOJIMBO" [clothing]	"USAGI" [women's sports-wear]	No
1-6	EX	74/138,512	Life Ins. Co. of Virginia	2(e)(1): disclaimer	Refusal Reversed (in both cases)		"ADDED OPTIONS" [annuity underwriting services]; "ADDED OPTIONS" (and design) [annuity underwriting services]		No
	EX	74/146,629							
1-6	EX	74/047,388	Litigation Sciences, Inc.	2(e)(1): whether matter asserted for reg'n. is registrable under the provisions of Sec. 2(f)	Refusal Affirmed (on both grounds)		"GRAPHIC EVIDENCE" [producing, charts, graphs, video presentations, computer-generated animation,etc., for use in legal proceedings]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
1-6	OPP	84,817	Frame King Moulding, Inc. v. AHT Industries, Inc.	2(d)	Opposition Sustained	"FRAME KING" [retail store services specializing in picture frames, etc.]	"FRAME KING EXPRESS" [custom picture framing & matting services rendered to the general public; retail store services in the field of picture frames, etc.]		No
1-6	EX	74/095,369	Fina Oil and Chemical Co.	whether matter asserted for reg'n is inherently distinctive or is, rather, nondistinctive background design	Refusal Reversed (in both cases)		shield designs (one lined for color)		No
	EX	74/095,628							

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate were for which they are intended.

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Box 11	Electronic Ordering Service (EOS).
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Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
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Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box Interference	Communications relating to interferences and applications and patents involved in interference.
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Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
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Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
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	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Naprona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	2/13/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	12/31/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/23/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	10/23/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	3/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/21/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/03/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	2/17/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	5/27/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	4/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/27/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/23/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/28/92
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/16/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/08/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	8/31/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	3/11/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Feb. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,005,494 to 4,009,493 inclusive
Plant Patents ..... 4,013 to 4,018

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of January 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	12/15/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/03/93	11/18/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/23/93	10/08/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/18/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/09/93	9/15/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	10/10/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/11/93	10/18/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	10/21/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/20/93	11/01/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/30/93	11/24/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/19/93	11/10/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/16/93	11/11/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	8/13/93	11/11/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	10/02/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

MARCH 1, 1994

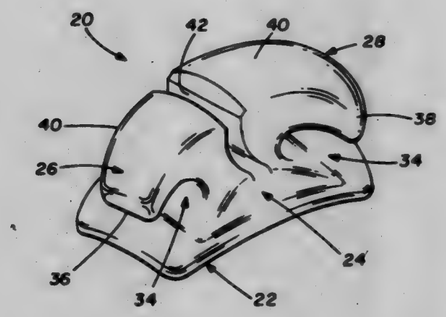
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,216,583 (2234th)

ORTHODONTIC APPLIANCE

James M. Reynolds, Lubbock, Tex., assignor to Class One Orthodontics, Inc., Lubbock, Tex.

Reexamination Request No. 90/003,083, Jun. 4, 1993.
Reexamination Certificate for Patent No. 4,216,583, issued Aug. 12, 1980, Ser. No. 930,577, Aug. 3, 1978.
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—9



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–11 is confirmed.

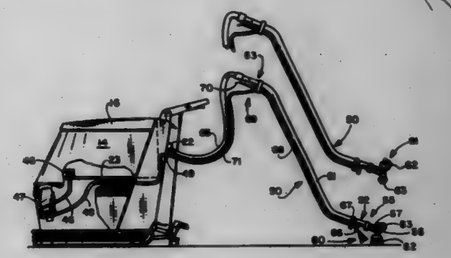
1. An orthodontic appliance comprising:
a base having an inwardly facing surface on one side thereof adapted for attaching the appliance and a body portion extending outwardly from the other side of said base;
said body portion having a length substantially shorter than the length of the base and a width at least slightly narrower than the width of the base;
a pair of wings extending in opposite directions from the body portion of said base, each wing having a length substantially shorter than the length of the body portion and a width substantially narrower than the width of the body portion to define wire receiving slots between the base and the ends of said wings;
the wings tapering from a relatively narrow incisal surface at one end of one of the wings to a relatively wider gingival surface at the opposite end of the other wing, said wings form a gentle wedge-like shape in both length and width directions so that food tends to move past the appliance during patient chewing;
the wing having the gingival surface defining a relatively larger slot than the wing with the incisal surface to prevent impingement of gingival tissue;
the wings defining an outwardly facing domed surface which is entirely curved in both the length and width directions and which thereby presents a comfortable surface to the mouth tissue of the patient characterized by an absence of angular edges; and
a cross slot extending into said body portion between the wings and configured to receive therein a dental appliance of predetermined dimensions.

B1 4,893,375 (2235th)

DUAL MODE FLOOR SCRUBBING MACHINE

Richard L. Girman, Glen Ellyn; Gary E. Palmer, Roselle; Gust G. Gotsis, Naperville, and Ralph Weimer, Wheaton, all of Ill., assignors to Restaurant Technology, Inc., Oakbrook, Ill.

Reexamination Request No. 90/002,833, Sep. 11, 1992.
Reexamination Certificate for Patent No. 4,893,375, issued Jan. 16, 1990, Ser. No. 325,559, Mar. 17, 1989.
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—321



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 4 is cancelled.
Claims 1 and 5 are determined to be patentable as amended.
Claims 2–3 dependent on an amended claim, are determined to be patentable.
New claims 6 and 7 are added and determined to be patentable.

1. Floor scrubbing apparatus for use either as a walk-behind scrubber or as a manually-operated scrubber comprising:
a chassis having support wheels;
a rotary brush carried by said chassis in a position to scrub a floor;
a first motor for driving said rotary brush;
first dispensing means for dispensing cleaning solution on said floor to be worked by said rotary brush;
first vacuum recovery means including a recovery reservoir, vacuum motor means for generating a vacuum in said reservoir, and pick-up means behind said rotary brush for recovering spent solution worked by said rotary brush in cleaning said floor and for delivering said spent solution to said recovery reservoir;
and a manually-operated scrub and recovery device adapted for selective connection to said apparatus and comprising
a hand-held wand adapted for maneuvering by an operator and including an elongated rigid vacuum tube having one end connectable to said recovery reservoir thereby to draw in air and solution through the other end thereof,
second dispensing means for dispensing cleaning solution under pressure on said floor under manual control of said operator at a location adjacent said other end of said rigid vacuum tube,
[and] convertible means coupled to said other end of said rigid vacuum tube, [for movement between first and second use positions,] said convertible means including a *working head being adapted for rotational movement between first and second use positions, a* second brush *mounted on said working head and adapted for movement between first and second use positions said second brush being positioned to*

scrub the floor when said working head is positioned in said first use position, and a second vacuum recovery means *mounted on said working head and* communicating with said rigid vacuum tube[,] *and positioned to recover spent solution from said floor under suction when said working head is positioned in said second use position, and further including means for rotatably mounting said working head to said other end of said rigid vacuum tube of said wand such that said head may be converted between said first and second use positions by hand rotation of said head about said other end of said vacuum tube,*

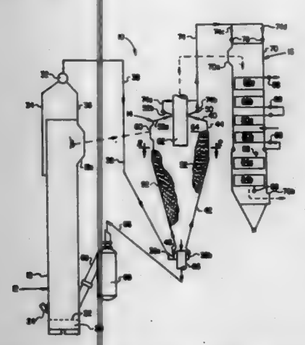
whereby said operator may use said apparatus without said scrub and recovery device as a [walk behind] *walk-behind* floor scrubbing machine or said operator may attach said scrub and recovery device to said apparatus, dispense cleaning solution under pressure on the floor adjacent said convertible means and use said second brush in said first use position to work said solution onto said floor and then move said second vacuum recovery means to recover the spent solution and store the same in said recovery reservoir.

B1 4,920,924 (2236th)

FLUIDIZED BED STEAM GENERATING SYSTEM INCLUDING A STEAM COOLED CYCLONE SEPARATOR

Iqbal F. Abdulally, Randolph; Alfred S. Touma, West Caldwell, and Peter Bartkowiak, Denville, all of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Reexamination Request No. 90/002,795, Jul. 27, 1992.
Reexamination Certificate for Patent No. 4,920,924, issued May 1, 1990, Ser. No. 395,865, Aug. 18, 1989.
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 7–9, 12–13 is confirmed.

Claims 1–6, 10–11 are cancelled.

4. The steam generating system of claim 1 wherein said means for connecting said steam drum to said tubes forming said outer housing of said separator comprises a first ring header connected in fluid flow communication with the lower ends of said tubes forming said outer housing of said separator, and a second ring header connected in fluid flow communication with the upper ends of said tubes forming said outer housing of said separator.

B1 5,021,348 (2237th)

ATTENUATED HEPATITIS A VIRUS

Paula A. Giesa, Lansdale; Maurice R. Hilleman, Lafayette Hill, and Philip J. Provost, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Reexamination Request No. 90/002,770, Jul. 1, 1992.
Reexamination Certificate for Patent No. 5,021,348, issued Jun. 4, 1991, Ser. No. 609,677, May 14, 1984.
Continuation of Ser. No. 437,095, Oct. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 71,648, Sep. 4, 1979, abandoned
Int. Cl.[5] C12N *7/08*
U.S. Cl. 435—237

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–29 is confirmed.

1. A method of attenuating the virulence of hepatitis A virus comprising passaging the virus at least once in a tissue culture in which hepatitis A virus is capable of replicating using as inoculum a human clinical specimen containing hepatitis A virus.

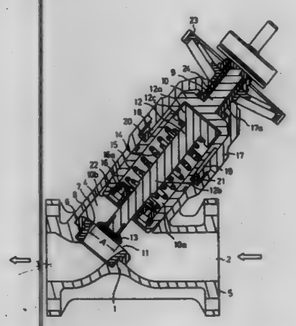
7. A process for propagating human hepatitis A virus in vitro in cell culture comprising inoculating a cell culture in which hepatitis A virus is capable of replicating using as inoculum a human clinical specimen containing hepatitis A virus but in which clinical specimen hepatitis A virus is not capable of replicating, incubating the susceptible cell culture until the presence of hepatitis A virus is detected in the susceptible cell culture, and harvesting the hepatitis A virus from the cell culture.

B1 5,174,332 (2238th)

CONSTANT FLOW VALVE

Ikuo Yokoyama, and Katsuhiro Onishi, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Miyazaki, Japan

Reexamination Request No. 90/003,120, Jul. 8, 1993.
Reexamination Certificate for Patent No. 5,174,332, issued Dec. 29, 1992, Ser. No. 689,905, May 30, 1991.
PCT No. PCT/JP90/01259, § 371 Date May 30, 1991, § 102(e) Date May 30, 1991, PCT Pub. No. WO91/05194, PCT Pub. Date Apr. 18, 1991
Claims priority, application Japan, Sep. 30, 1989, 1253762
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—517



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

Claims 2–5, dependent on an amended claim, are determined to be patentable.

1. A constant flow valve comprising a stop-valve-type valve body having inlet and oulet passages which follow a curve of an inside partition wall, and a hollow chamber disposed between the inlet and oulet passages to communicate with the inlet passage, an axis of the hollow chamber being inclined at a certain angle with respect to an axis of the inlet passage; [and] *an* opening arranged inside the valve body to connect the outlet passage with the hollow chamber, having an inner circumferential face tapered inwardly from an upstream side toward a downstream side; a lid body fitted to the valve body; a spindle supported by the lid body and movable back and forth along an axis thereof which substantially matches the axis of the opening; a cylinder integrally arranged at a lower end of the spindle on the upstream side to be movable back and forth inside the hollow chamber, a lower end face of the cylinder being capable of coming into contact with a valve seat portion of the opening; a valve shaft freely arranged inside the cylinder substantially on the axis of the opening; a valve plug on the upstream side fitted to a front end of the valve shaft to form an orifice between the valve plug and the opening; at least one of the valve shaft and the valve plug being formed as a solid article; and a plurality of springs having different spring constants and being disposed inside the cylinder to force the valve plug away from the opening in such a manner that the expanding or contracting actions of the springs start at different timings in response to changes in a fluid pressure.

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STATUTORY INVENTION REGISTRATIONS

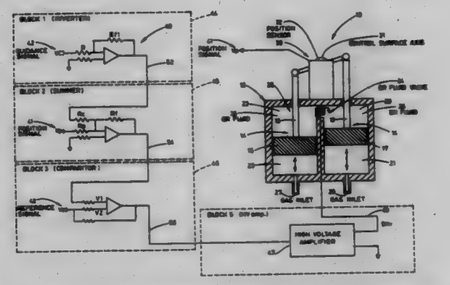
PUBLISHED MARCH 1, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1292
ELECTRO-RHEOLOGICAL FLUID DAMPED ACTUATOR

Ronald A. Marsh, Fargo, N. Dak., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1992, Ser. No. 950,581
Int. Cl.[5] F15B *13/16, 21/04*
U.S. Cl. 60—326 **7 Claims**



7. A method for damping an actuator, said actuator comprising a cylindrical housing defining at least two interior chambers and further having moveable elements disposed in each said chamber further isolating and defining separate hydraulic chambers and pneumatic chambers, the movement of said moveable elements in response to pneumatic forces controls the orientation and displacement of a control surface with respect to a control surface axis, and method of damping comprising the steps of:

placing a position sensor proximate said control surface which generates a signal corresponding to a position of said control surface with respect to said control surface axis;

inserting a electro-rheological fluid valve between the hydraulic chambers and in communication therewith, said electro-rheological fluid valve adapted for restricting the flow between said hydraulic chambers;

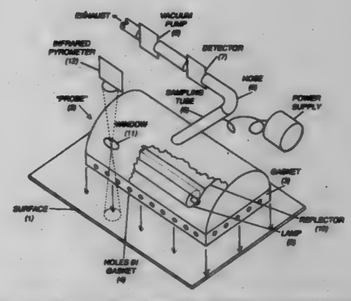
filling said hydraulic chambers and said electro-rheological fluid valve with an electro-rheological fluid whereby said electro-rheological fluid flow provides an active and variable damping force on said moveable elements; and

connecting an electrical circuit having a plurality of input signals and an output signal to said electro-rheological fluid valve, said input signals include said position sensor signal and another signal corresponding to a position to which said actuator is commanded, said output signal creates an electric field proximate said electro-rheological fluid valve whereby the viscosity of said electro-rheological fluid exposed to said electric field is varied in accordance with a magnitude of said electric field, which in turn restricts and hydraulic flow through said electro-rheological fluid valve to achieve a damping effect.

H1293
CONTACT HAZARD MONITOR

Hugh R. Carlon, Fallston, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 31, 1992, Ser. No. 999,345
Int. Cl.[5] G01N *30/00*
U.S. Cl. 73—23.2 **5 Claims**



1. A contact hazard monitor of a surface contaminated with toxic materials, comprising:

a hollow heat producing probe having a base for separable engagement to said surface,

a pliable heat resistant gasket attached to said base, said gasket sealing said probe to said surface, said gasket having a plurality of openings for the passage of ambient air,

a sampling tube connected to said probe,

a detector of said toxic material connected to said sampling tube, and

a vacuum pump for drawing said toxic material through said detector from said sampling tube, whereby said toxic material is removed from said surface.

H1294
SILVER HALIDE PHOTOGRAPHIC EMULSION

Sumito Yamada, and Tetsuo Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 662,591, Mar. 1, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,508
Claims priority, application Japan, Mar. 2, 1990, 2-51165
Int. Cl.[5] G03C *1/005, 1/06*
U.S. Cl. 430—567 **9 Claims**

1. A photographic silver halide emulsion comprising silver chorobromide grains containing at least 98.5 mol % silver chloride or silver chloride grains, wherein tabular grains having a thickness of less than 0.5 μm, a diameter of at least 0.5 μm and an aspect ratio of at least 2/1 account for at least 50% of the total projected area of the silver halide grains, and said tabular grains are formed in the presence of a compound of a metal belonging to Group VIII of the Periodic Table selected from the group consisting of iron, ruthenium and osmium.

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REISSUES

MARCH 1, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,553

VALE OPERATING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

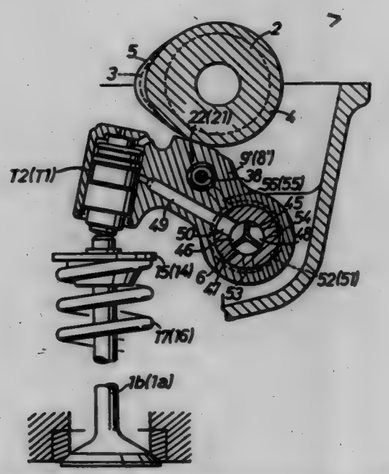
Tsuneo Konno, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 4,777,914, dated Oct. 18, 1988, Ser. No. 89,972, Aug. 27, 1987. Continuation of Ser. No. 386,716, Jul. 31, 1989, abandoned. Application for reissue Aug. 27, 1990, Ser. No. 573,271

Claims priority, application Japan, Aug. 27, 1986, 61-200955; Oct. 13, 1986, 1-242676

Int. Cl.[5] F01L *1/34, 1/26*

U.S. Cl. 123—90.4 19 Claims



17. For use in an internal combustion engine having a cylinder, intake and exhaust valves operable in said cylinder, selective valve operating means comprising:

a rocker shaft having a hollow interior defining a fluid supply means;

a plurality of rocker arms mounted for pivotal movement on said rocker shaft, said rocker arms including at least one drive rocker arm having an end operably connecting one of said valves;

a camshaft rotatably driven by said engine;

cam means mounted for rotation on said camshaft and operably engaging the follower surface of selected rocker arms;

hydraulically operated, selectively actuable coupling means carried by said rocker arms for selectively connecting or disconnecting adjacent rocker arms;

a hydraulic lash adjuster operably connecting said driver rocker arm to its associated valve;

fluid supply passages through said rocker arms communicating at one end with said fluid supply means in said rocker shaft and at the other end with said coupling means and said lash adjuster, respectively; and

wherein said rocker arms include a free rocker arm interposed between a pair of driver rocker arms and said coupling means including couplers for selectively connecting said free rocker arm to each adjacent drier rocker arm.

Re. 34,554

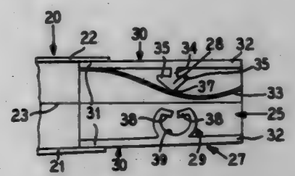
BAGS WITH RECLOSABLE PLASTIC FASTENER HAVING AUTOMATIC SEALING GASKET MEANS

Steven Ausait, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Original No. 4,892,414, dated Jan. 9, 1990, Ser. No. 308,932, Feb. 6, 1989. Continuation-in-part of Ser. No. 214,941, Jul. 5, 1988, abandoned. Application for reissue Dec. 11, 1991, Ser. No. 804,979

Int. Cl.[5] B65D *33/16, 33/24*

U.S. Cl. 383—63 42 Claims



2. A bag or package [according to claim 1,] *formed by wall panels having an openable mouth carrying an elongate reclosable extruded plastic zipper extending across the inside of said mouth said zipper having complementary profiles separably interlockable in a closed condition of the zipper;*

gasket flange extending along substantially the full length of the profiles for separably sealingly gripping interengagement by and between said profiles in said closed condition of the zipper;

and means attaching at least one side of the gasket flange so that it is positioned within the bag mouth so that the gasket flange means does not apply an opening force to the zipper due to internal forces on the wall panels; and wherein said zipper profiles have base webs secured to respective walls of said bag or package, and said gasket flange [means] is attached to one of said base webs.

Re. 34,555

GUIDE SLEEVE, GUIDE POST AND IMPROVED BALL BEARING ASSEMBLY

Ronald L. Hanaway, 30210 E. Eight Mile Rd., Farmington Hills, Mich. 48236

Original No. 5,096,307, dated Mar. 17, 1992, Ser. No. 644,532, Jan. 23, 1991. Application for reissue Aug. 10, 1992, Ser. No. 931,876

Int. Cl.[5] F16C *29/04*

U.S. Cl. 384—49 10 Claims

10. In combination, a guide post having a longitudinal axis and a longitudinal slot substantially throughout its length and having end portions;

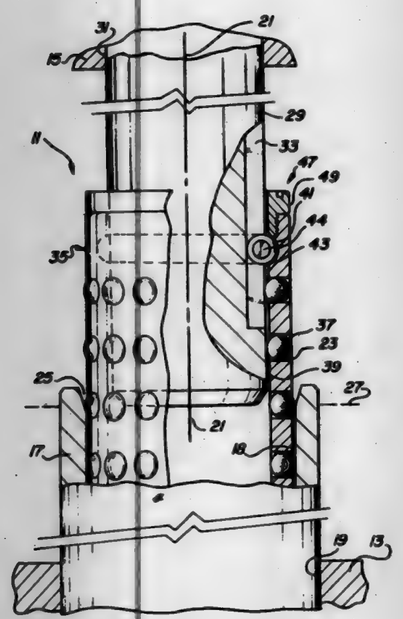
a cylindrical ball bearing cage having a co-axial longitudinal bore adjustably receiving said guide post, and adapted for relative longitudinal and rotary movements thereon;

said ball bearing cage mounting a plurality of spaced circularly arranged ball bearings extending substantially the length of said cage and projecting inwardly and outwardly thereof, respectively, there being an internal open top annular recess in said cage spaced inwardly of one end thereof, and terminating in a threaded counter bore extending to said one end;

a key positioned within said longitudinal slot, said key being alternately registerable with opposite ends of said slot, limiting rectilinear movements of said ball cage relative to said guide post, a portion of said key being positioned within said cage annular recess;

an end cap having a depending shank threaded into said counter bore;

there being an internal annual open bottom recess upon the end of said shank cooperatively receiving a portion of said key; and



said cage including its recess and cap recess being adapted for rotary sliding movement relative to said key in a direction at right angles to said axis, said cap trapping said key within said ball cage.

Re. 34,556

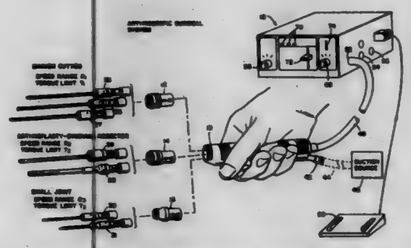
SURGICAL SYSTEM FOR POWERED INSTRUMENTS

Douglas D. Sjostrom, Wakefield, and Edvin Zoungas, Pinehurst, both of Mass., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Original No. 4,705,038, dated Nov. 10, 1987, Ser. No. 693,779, Jan. 23, 1985. Continuation of Ser. No. 312,878, Feb. 17, 1989, abandoned. Application for reissue Jun. 12, 1991, Ser. No. 714,334

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—170 **62 Claims**



1. A surgical system adapted to operate a set of different surgical devices having different operational limits, comprising:

a handpiece adapted to alternately receive a proximal portion of each of said surgical devices,

said set of surgical devices,

each of said surgical devices having an indicator on its proximal portion that denotes its operational limit, *said operational limit corresponding to a range of operation of said surgical device,*

said handpiece including automatic sensor means for sensing said indicator;

a motor for driving said handpiece, *said motor having a range of operation that includes a pair of endpoints*; and

means responsive to said sensor [to] *means for* automatically [establish the operational limit of said motor] *changing at least one of said endpoints* in accordance with the *operational limit of the* respective surgical device received by said handpiece *so that the operating range of said motor corresponds to the range of operation of said surgical device, and precluding selection of said operation of said motor outside of said endpoints but not between said endpoints.*

PLANT PATENTS

GRANTED MARCH 1, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,614

ROSE PLANT DICREVIVAL

Patrick Dickson, Newtownards, Ireland, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Mar. 2, 1993, Ser. No. 26,315

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its ease of propagation by softwood or hardwood cuttings; its dark green, glossy, disease-resistant foliage; its bright, deep pink flowers; and its constant display of flowers during the growing season.

8,615

HYBRID TEA ROSE PLANT NAMED 'TANEKIAM'

Hans Evers, Uetersen, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 4, 1992, Ser. No. 986,434

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its high production of long stemmed cut flowers, its elegant bud and flower shape, its good vase life, its few thorns and its strong wiry stems.

8,616

GRANDIFLORA ROSE PLANT NAMED DEVUNICAN

Stanley G. Marciel, and Jeanne A. Marciel, both of Aptos, Calif., assignors to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Nov. 10, 1992, Ser. No. 974,117

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the grandiflora rose class, substantially as shown and described.

8,617

ROSE PLANT KORBACOL

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Mar. 29, 1993, Ser. No. 38,150

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright growth; its large, bright yellow flower; its intense, fruit-like flower fragrance; its dark green, leathery foliage; and the presence of small thorns on stems.

8,618

HYBRID TEA ROSE PLANT NAMED 'TANRIKAS'

Hans Evers, Uetersen, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 4, 1992, Ser. No. 985,880

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its long, straight stems; its good production of cut flowers per m^2 of greenhouse; its excellent vase life; its large, clear salmon pink flowers, and its dark green, glossy, disease-resistant foliage.

8,619

HYBRID TEA ROSE PLANT NAMED 'MEIVAMO'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Nov. 24, 1992, Ser. No. 981,059

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance elegant long lasting double blossoms which are Poppy Red widely suffused with light Carmine Rose,

(b) forms blossom petals on mature blooms that tend to enclose the central portion of the blossoms unlike those of the Keiromo variety,

(c) exhibits a growth habit substantially identical to that of the Keiromo variety (U.S. Plant Pat. No. 7,138),

(d) is well adapted for greenhouse forcing to produce cut flowers,

(e) exhibits strong and vigorous glossy vegetation, and

(f) is not particularly affected by cryptogamic diseases; substantially as herein shown and described.

8,620

ROSE PLANT: ODEM

Carmi Carmel, Moshav Ha'yogev, Israel, assignor to Yoval Agriculture Products, Ltd., Moshav Ha'yogev, Israel

Filed Oct. 29, 1991, Ser. No. 783,931

Claims priority, application Israel, Oct. 30, 1990, 1625/90

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of a rose plant of a Hybrid Tea rose variety, named Odem, as shown and described, and consisting mainly of plants being vigorous growing, showing a smaller flower than Carola, containing a large number of petals, having non-fragrant flowers, with petals' color dark red/-current red/RHS 46 AB, with a small-sized yellow spot at their base, with early and prolific flower production, and having fast and good propagating features.

8,621

APPLE TREE—OBROGALA CULTIVAR

Richard R. Olsen, and Larry M. Olsen, both of Prosser, Wash., assignors to Stark Brothers Nurseries and Orchards, Louisiana, Mo.

Filed May 6, 1992, Ser. No. 879,215

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct Gala-type apple tree cultivar having the following combination of charcterictics:

(a) forms attractive fruit of excellent flavor and texture having a Nopal Red blush over approximately 90 to 100 percent of the skin with hints of striping on less colored fruit and greater red coloration than the Tenroy cultivar,

(b) begins color development on the fruit skin approximately 10 days earlier than the Tenroy cultivar,

(c) forms fruit which matures for harvest approximately 2 to 4 days earlier than the Tenroy cultivar,

(d) forms fruit which tends to be somewhat more conical than that of the Tenroy cultivar, and

(e) forms lenticels which tend to be irregularly rounded in the

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substantial absence of lenticels which are elongated as commonly exhibited by the Tenroy cultivar;

substantially as herein shown and described.

8,622

STRAWBERRY PLANT NAMED CARTRES

Jose M. A. Lopez, Tudela - Navarra, Spain, assignor to Plantas de Navarra, S.A., Valtierra, Spain

Filed Jun. 19, 1992, Ser. No. 901,502

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry, substantially as shown and described.

8,623

STRAWBERRY PLANT NAMED CARTUNO

Jose M. A. Lopez, Tudela-Navarra, Spain, assignor to Plantas de Navarra, S.A., Valtierra, Spain

Filed Jun. 19, 1992, Ser. No. 901,589

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry, substantially as shown and described.

8,624

STANDARD CARNATION NAMED RIMINI

Jean-Louis Descleux, Angers, France, assignor to Laboratorie De Physilogie Vegetale, Le Pradet, France

Filed Nov. 4, 1992, Ser. No. 971,407

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—73.1 1 Claim

1. A new and distinctive hybrid standard carnation plant, substantially as herein shown and described, characterized in particular by its recurrent profuse production of very large size flowers, the petals of which are in general of reddish color, said plant having more than 120 leaves on a thick stems, with a bell-shaped thick calyx.

8,625

GUZMANIA PLANT NAMED ZENITH

Henri De Meyer, Destelbergen, Belgium, assignor to H. De Meyer-De Rouck, Laarne, Belgium

Filed Mar. 18, 1993, Ser. No. 34,758

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.3 1 Claim

1. A new and distinct cultivar of Guzmania plant named Zenith, as illustrated and described.

PATENTS

GRANTED MAR. 1, 1994

ERRATA

For CLASS	See PATENT NO.
083-038	5,289,783
168-014	5,289,878
172-197	5,289,879
172-799	5,289,880
473-047	5,290,030
384-129	5,290,069
384-625	5,290,070
407-011	5,290,135
409-233	5,290,136
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348-805	5,291,295
348-044	5,291,297
315-323	5,291,299
395-425	5,291,442
370-085	5,291,511

PATENTS

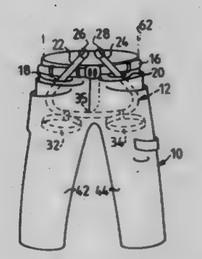
GRANTED MARCH 1, 1994

GENERAL AND MECHANICAL

5,289,590
COMBINED WORKING TROUSERS AND SAFETY HARNESS

Mikael Larson, Mörtån 705, S-840 76 Stugun, Sweden

PCT No. PCT/SE91/00238, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/15130, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 927,491
Claims priority, application Sweden, Mar. 30, 1990, 9001176-8
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—227 3 Claims



1. A pair of work trousers having a built-in safety harness, comprising:

a safety harness including:

two thigh bands arranged to encircle a wearer's respective thighs adjacent the wearer's crotch;

a buttocks support band having a transversely extending central portion arranged to engage a wearer's buttocks from below and thereby potentially support the wearer from under those buttocks; the buttocks support band further including end portions which are arranged to spiral from opposite ends of said central portion, upwards and laterally outwards, forwards and then medially inwards and terminate adjacent one another in front of the wearer, near the wearer's waist, in respective structures adapted for attachment to a safety line for potentially supporting the wearer via the buttocks support band;

securements securing the two thigh bands at rear portions thereof, besides one another to said central portion of said buttocks support band;

a pair of lining trousers having two respective leg portions depending from a torso portion having an upper end;

a pair of outerwear trousers having two respective leg portions depending from a torso portion having an upper end provided with a waist belt for closely encircling the wearer's waist;

securements securing the thigh bands and buttocks support band of the safety harness onto the pair of lining trousers;

said pair of outerwear trousers having means defining two slots provided therethrough frontally of said torso portion thereof adjacent said waist belt;

a securement securing plural sites on said upper end of said lining trousers to corresponding plural sites on said upper end of said outerwear trousers;

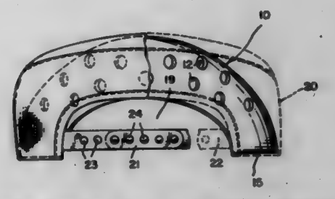
upper parts of said end portions of said buttocks support band extending out from between said lining trousers and said outerwear trousers through respective ones of said slots so that said structures adapted for attachment to a safety line are accessible frontally of the wearer from outside said outerwear trousers; and

securements securing said upper parts of said end portions of said buttocks support band to said waist belt.

5,289,591
HARD BALL GOLF HAT

Kelvin D. Andersen, 303 E. 60th St., New York, N.Y. 10022

Filed Oct. 25, 1991, Ser. No. 765,553
Int. Cl.[5] A42B *3/12*
U.S. Cl. 2—411 17 Claims

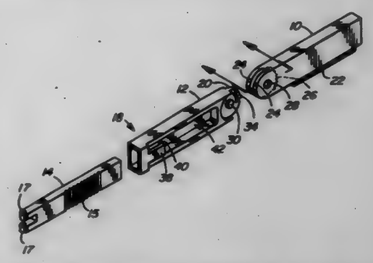


1. A plastic safety insert for a soft sports cap in combination with said sports cap, said plastic safety insert including a hemispherical dome, said dome substantially conforming to the shape of a human head, said plastic safety insert having a bottom portion, said bottom portion substantially on a plane, said plastic safety insert having a rear portion, said dome further substantially conforming to the shape of said sports cap, said plastic safety insert including a sizing cut out, said sizing ut out curved and extending upward from said bottom portion at said rear portion of said plastic safety insert, said cut out substantially spanning said rear portion, and said sports cap including a crown having a size; means at a backside of the sports cap to adjust the size of the crown; and a return binding to act as a flap to fit over the edge of said dome, whereby said plastic safety insert when inserted within said return binding in said sports cap is held in place under said crown of said sports cap maintaining the outward appearance of said sports cap.

5,289,592
EYE GLASS HOLDER

Reijo J. Paivarinta, #710-522 Moberly Rd., Vancouver, B.C., Canada V5Z 4G4

Filed Apr. 3, 1992, Ser. No. 863,707
Int. Cl.[5] A61F *9/02;* A41D *21/00*
U.S. Cl. 2—431 12 Claims



1. A safety glass or spectacle assembly for use with a pair of ear defenders having a pair of lobes for sealing engagement with ears of a user, comprising:

(a) a safety glass or spectacle frame;

(b) an elongated set of arms each attachable to sides of said frame and each arm having a ratchet swivel assembly positioned remotely from said frame; and

(c) means for affixing ends of said arms remote from said frame to respective lobes of said ear defender;

wherein said arms can be pivoted about said ratchet swivel

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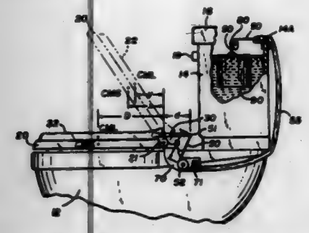
assembly to provide vertical pivoting of said frame about an axis remote from said frame.

5,289,593

AUTOMATIC CLOSURE FOR TOILET SEAT

James C. Lawrence, 851 Harrison, Valparaiso, Ind. 46383

Filed Mar. 18, 1993, Ser. No. 9,900
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—246.1 6 Claims



4. Self-lowering apparatus for lowering a toilet seat member in combination with a flush toilet, the toilet being of the type that has a water tank mounted adjacent and rearward thereof on a horizontal surface of a bowl, which tank when in operation holds water and the level of water in the tank falls upon flushing of the toilet, comprising:

a toilet seat member having means for securing it to the toilet bowl and having a rearward pivot for pivoting of said member slightly more than 90 degrees between a lowered position and a raised position, said seat member including an extension arm extending generally rearward beyond said pivot, said arm connected at one end to said seat member so as to pivot with it, such that, as the seat member pivots upward between said lowered and raised positions, the extension arm pivots downward slightly more than 90 degrees, said member having a tipping position of approximately 90 degrees with respect to said horizontal surface, which, if slightly forward thereof, said member tends to pivot downward by gravity;

a flexible cable connected at one end to said arm and at its other end to a weight at least partially submerged in the water in the tank, so that said weight will exert greater force on said cable when the water level falls in the tank than when the tank is full;

means mounting the cable so that the torque exerted by said weight through said cable in response to the draining of the tank during flushing when said seat member is in said raised position is sufficient to pivot said arm causing said seat member to pivot forward to beyond said tipping position but insufficient to raise said seat member when said seat member is in the lowered position.

5,289,594

WATER SAVER TOILET FLUSH CONTROL SYSTEM

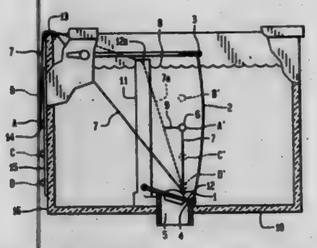
Tadeusz K. Wiewiorowski, 2620 Danbury Dr., New Orleans, La. 70131, and Dwight S. Nunley, 500 Oakwood Dr., Gretna, La. 70056

Filed May 27, 1993, Ser. No. 69,204
Int. Cl.[5] E03D *1/24, 1/35*
U.S. Cl. 4—415 11 Claims

1. An apparatus for variably controlling the volume of discharge water from a toilet of the type having a tank with an overflow pipe with a top portion and a flush port therein, a valve seat surrounding said port and capable of accommodating a flapper-type flush valve for opening and closing said flush port, a lift arm for activating said flush valve, and a flush line connecting said lift arm to said flush valve, the apparatus comprising of:

(a) a non-buoyant flush valve having top and bottom sides and having an eyelet member for the free passage of a flexible line;

(b) a buoyancy means for providing adequate buoyancy to said flush valve so that it remains open during discharge of a predetermined volume of water from the tank, but not so much buoyancy that it will counteract the hydrostatic pressure upon the flush valve in its closed position;



(c) a flexible line which freely passes through said eyelet member and is secured at one end to said buoyancy means, and at its other end is secured to a means for adjusting the distance between the flush valve and said buoyancy means; and

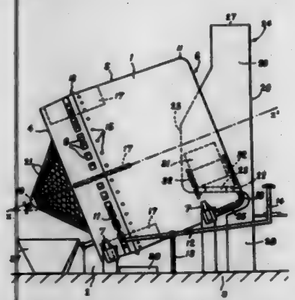
(d) a means for adjusting the distance between the flush valve and said buoyancy means, wherein said adjusting means is located outside of said tank.

5,289,595

DRY-OPERATED ROTARY COMPOSTING TOILET

Jean-Louis Roche, Saint-Privat, France, assignor to Centre d'Experimentation et de Documentation sur les Energies Renouvelables, Nyons, France

PCT No. PCT/FR91/00728, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992, PCT Pub. No. WO92/04851, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 16, 1991, Ser. No. 857,933
Claims priority, application France, Sep. 16, 1990, 90 11774
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—489 10 Claims



1. Dry-operated composting toilet comprising a substantially horizontal toilet seat (22) connected with a gravity discharge hole (23) which extends vertically, a receiving tank (1) having an associated longitudinal axis (x-x') forming an angle (α) with respect to a horizontal plane, said tank (1) having a receiving orifice (6) which extends at least partly under the seat (22), means for rotatably mounting the tank (1) so that the tank (1) is inclined and rotatable about its longitudinal axis of symmetry (x-x'), which axis forms with the horizontal plane an angle (α) at least equal to 15°, the tank (1) and the seat (22) being relatively mounted in such a way that the entire discharge hole

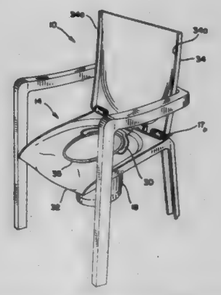
(23) is positioned directly, vertically above the receiving orifice (6) of the tank (1).

5,289,596

COMMODE OF UNITARY CONSTRUCTION

Eric P. Rose, Van Nuys, and David Hodge, El Granada, both of Calif., assignors to Guardian Products, Inc., Simi Valley, Calif.

Division of Ser. No. 648,236, Jan. 30, 1991, Pat. No. 5,197,152.
This application Jan. 4, 1993, Ser. No. 401
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—479 10 Claims



1. A commode chair having a molded plastic construction comprising:

a unitary molded plastic structure in the form of a chair with a plurality of generally vertical legs, a generally horizontal seat with a front and rear supported by said legs and a chair back extending upward from said seat at the rear thereof;

said seat comprising a seat pan and a cover, said cover being hingedly connected to said seat pan at the rear thereof such that the cover is pivotable form a generally horizontal position wherein it is supported by the seat pan to a generally vertical position wherein it can rest against said chair back;

said seat pan comprising a toilet seat having a central opening and an upper seating surface sculpted and configured in molded form to accommodate and support the posterior of the human anatomy in the seating position including a downwardly curved front portion for supporting the user's legs and a contoured recessed area surrounding the central opening on the sides and rear of the toilet seat, the surface of the cover which contacts the toilet seat when the cover is in the generally horizontal position being sculpted and configured in the molded form as the reciprocal of the toilet seat so as to provide a mating surface therefor and the opposite surface of the cover being thus configured similar to the toilet seat so as to also accommodate and support the posterior of the human anatomy in the seating position when in the generally horizontal position resting against the toilet seat;

said cover being capable, because of its surface configuration, of providing lumbar support for a commode chair occupant when the cover is in the generally vertical position resting against the chair back.

5,289,597

METHOD AND APPARATUS FOR HAIR TREATMENT

Leo E. Sidola, 723 Barker Row, Nanty-Glo, Pa. 15943

Filed Jun. 29, 1990, Ser. No. 545,495
Int. Cl.[5] A45D *19/08*
U.S. Cl. 4—519 10 Claims

1. A hair treatment sink assembly which comprises:

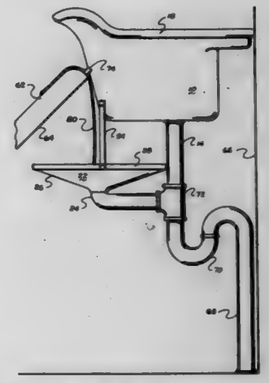
a. a base portion;

b. lateral walls completely surrounding said base portion and extending upwardly therefrom, said lateral walls comprised of a front wall, rear wall, and two side walls;

c. an upper peripheral rim formed by the termination of said upwardly extending lateral walls;

d. a head and neck rest formed in said upper peripheral rim and located in said front wall;

e. a first drain line connected to and extending downwardly from said base portion to drain said base portion;



f. a drip collection tray attached to said lateral walls and located below said upper peripheral rim, said drip collection tray having an outer peripheral boundary extending outwardly from portions of said lateral walls such that said head and neck rest overlie said tray within said boundary to collect material falling from said rim outside of said lateral walls; and

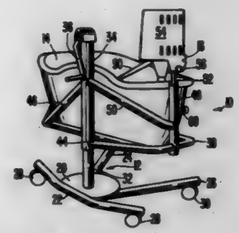
g. a second drain line extending downwardly from said drip collection tray and connected to said first drain line to drain the collected material.

5,289,598

WHIRLPOOL BATH WITH REMOVABLE TANK

Lawrence E. Madeon, Jr., 61 Lambeth Dr., Upper St. Clair, Pa. 15241

Filed Feb. 3, 1993, Ser. No. 12,944
Int. Cl.[5] E03C *1/328*
U.S. Cl. 4—541.1 15 Claims



1. A whirlpool bath comprising:

a support frame for resting on a support surface, said support frame including a support section and means for raising or lowering said support section relative to said support surface,

a tank for containing water removably supported on said support section but not attached thereto,

impeller means for creating a stream of water under pressure in said tank, said impeller means including a water dis-

charge system and an external discharge nozzle connected to said water discharge system, said impeller means being operative alternatively to either create a stream of water under pressure in said tank or to pump water from said tank through said water discharge system to said external discharge nozzle, and

said support frame having impeller mounting means thereon for separately and removably mounting said impeller means on said support section to extend into said tank, said impeller mounting means operating to permit said impeller means to be raised or lowered relative to both said support section and tank,

said tank and said impeller means being independently removable from said support section.

5,289,599

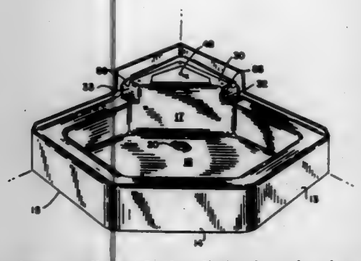
FOOT BATHING FIXTURE

Jonathan M. Hintz, Sheboygan Falls, and Alan D. Bengtson, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.

Continuation of Ser. No. 884,320, May 11, 1992, abandoned, which is a continuation of Ser. No. 640,175, Jan. 11, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,942

Int. Cl.[5] A47K *3/022, 3/22*

U.S. Cl. 4—613 **3 Claims**



1. A shower stall base for installation in an interior corner defined by intersecting walls of a room, said base comprising:

a bottom wall with a drain;

a plurality of generally vertical side walls extending upwardly from said bottom wall to define a foot bath area;

a pedestal structure extending above said side walls and suitable to be positioned adjacent the intersecting walls, said pedestal structure being connected to at least two of said side walls, said pedestal structure having a seat support portion on a top thereof to support a seating arrangement, the pedestal structure including a side wall facing the foot bath area, the pedestal structure defining an internal cavity inside the pedestal;

a pump located in said cavity, said pump having intake and outlet conduits connected thereto in the cavity, the pump assisting in operating a foot bath function;

a first opening through the top of said pedestal seat support portion, the first opening covered by an external cover member which when removed provides unencumbered access to said pump by a user that is standing on the base, the base being configured such that when installed in said room corner the pump can be serviced without requiring access through said room walls or an underside of the base;

a second opening in a portion of said side wall facing the foot bath area for mounting a control for the pump; and

said cover member forming a cover and seat assembly that removably closes the first opening while providing a seating surface on its upper end.

5,289,600

MATTRESS BASE ASSEMBLY KIT

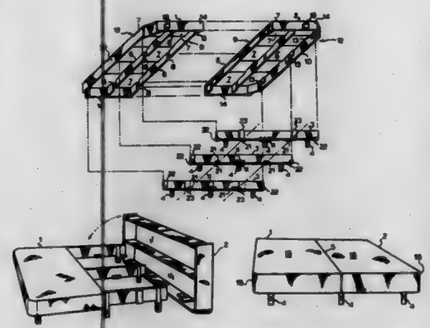
William Schermel, Mississauga, Canada, assignor to Halcyon Waterbed Inc., Downsview, Canada

Filed Feb. 26, 1993, Ser. No. 22,921

Claims priority, application Canada, Jan. 11, 1993, 2087071

Int. Cl.[5] A47C *19/00*

U.S. Cl. 5—400 **10 Claims**



1. A kit for assembly of a mattress supporting base comprising:

a frame having a top mattress supporting platform, the platform being supported by a plurality of spaced apart longitudinal stringers, each stringer having a series of longitudinally spaced apart openings, the openings being transversely aligned thus defining a series of continuous passageways through said stringer across the assembled width of the frame, each frame comprising a longitudinal outside edge member, along an outside edge of each frame remote from said inside edge, the outside edge member having a series of longitudinally spaced apart inwardly open sockets, each socket being transversely aligned with an associated one of said passageways and engageable with an extreme end of an associated beam;

a plurality of transverse beams each engageable in an associated one of said passageways; and

a plurality of leg means, downwardly protruding from each of said beams.

5,289,601

INTERLOCKING FOAM WATERBED MATTRESS

Richard A. LaBianco, 318 Driftwood Rd., Corona Del Mar, Calif. 92625

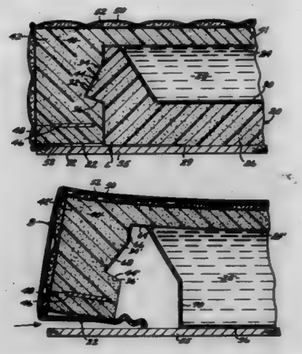
Filed Jul. 13, 1989, Ser. No. 379,638

Int. Cl.[5] A47C *27/08*

U.S. Cl. 5—451 **11 Claims**

11. In a mattress construction, a water mattress, a resilient peripheral cushion extending about said water mattress, a flexible cover for said resilient cushion, said resilient cushion including a peripheral inner rail and a peripheral outer rail, the interior surface of the inner rail providing peripheral support for said water mattress, said inner rail and outer rail including

facing generally vertical surfaces, and interengaging means on each of said facing generally vertical surfaces, interlocking said



surfaces thereby preventing relative vertical movement between said inner and outer rails.

5,289,602

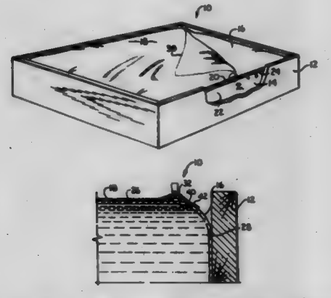
WATER MATTRESS LINING AND SHEETING SYSTEM

Edward A. Trader, 849 Valley La., Riverside, Mo. 64150

Filed Jan. 8, 1993, Ser. No. 2,273

Int. Cl.[5] A47C *27/08, 21/02*

U.S. Cl. 5—451 **6 Claims**



1. In a water bed system including a water mattress with substantially horizontal top and bottom surfaces interconnected by a substantially vertical side portion, said mattress being positioned in a base receptacle, the improvement comprising:

(a) a resilient base receptacle liner having bottom and sidewalls defining a mattress-holding compartment, and a top perimeter margin, said top perimeter margin contacting and partially overlying a portion of the top surface of said mattress;

(b) a mattress covering in covering relationship to the remainder of said top portion of said mattress inside of said top perimeter margin and presenting a perimeter margin; and

(c) means continuously coupling the perimeter margin of said liner with the perimeter margin of said mattress covering.

5,289,603

MEDICAL BED WITH DEVICE FOR RETAINING PATIENT

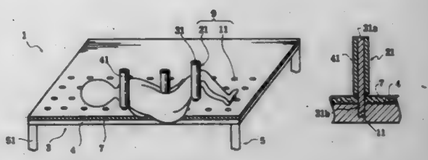
Noboru Kumagai, 150 Tomioka-cho, Sano-shi, Tochigi-ken, Japan

Filed Nov. 13, 1992, Ser. No. 976,148

Claims priority, application Japan, Jun. 26, 1992, 4-44605[U]

Int. Cl.[5] A61G *7/06*

U.S. Cl. 5—621 **18 Claims**



6. A medical bed comprising:

a bed plate on which a patient is laid in a desired posture; and

means for adjustably retaining the patient in the desired posture in such a manner that the patient is prevented from moving along said bed plate, the retaining means comprises:

blocking means to be fitted on said bed plate for blocking motion of the patient along said bed plate; and

fitting means for removably fitting said blocking means to said bed plate at an appropriate position to adapt said blocking means for the desired posture of the patient, and so that said blocking means fitted on said bed plate maintains said appropriate position, in which said fitting means can be operated by simply placing said blocking means on said bed plate at said appropriate position, and whereby said blocking means is firmly positioned in said appropriate position.

5,289,604

ELECTRIC TOOTHBRUSH WITH DEMOUNTABLE BRUSH SECTION

Gerhard Kressner, Altenstadt/Höchst, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

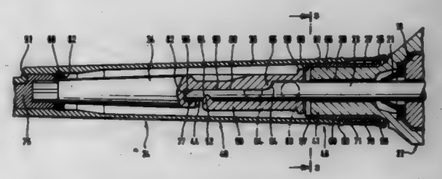
PCT No. PCT/DE90/00673, § 371 Date May 5, 1992, § 102(e) Date May 5, 1992, PCT Pub. No. WO91/07117, PCT Pub. Date May 30, 1991

PCT Filed Sep. 5, 1990, Ser. No. 855,707

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1989, 3937853

Int. Cl.[5] A61C *17/34;* A46B *13/02*

U.S. Cl. 15—22.1 **19 Claims**



1. An electric toothbrush comprising

(a) a handle section including an electric motor drive and a drive shaft;

(b) a brush section including a brush shaft for driving a rotary bristle supporting structure and a housing for receiving said brush shaft as well as for mounting said bristle supporting structure;

(c) engaging structure including a mounting sleeve for coupling said brush shaft with said drive shaft, said mounting

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sleeve including forcing structure for forcing said brush shaft from any drive position into alignment with a predetermined coupling position during the coupling operation of said drive shaft and said brush shaft;

(d) coupling structure for connecting said brush section to said handle section, said coupling structure including means for positioning said brush section in its proper location relative to said handle section, with coupling structure associated with said housing of said brush section and with said handle section in relative cooperation; and

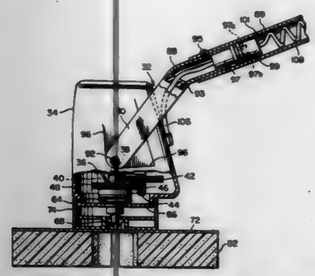
(e) locking structure on said brush shaft engaging complementary abutment structure on said drive shaft for locating said brush section relative to said handle section in an axial and a radial direction with respect to a longitudinal center line of said brush shaft.

5,289,605

DC POWERED SCRUBBER

Joseph M. Armbruster, 4700 N.E. 47th St., Lighthouse Point, Fla. 33064

Filed Dec. 10, 1991, Ser. No. 804,581
Int. Cl.[5] B60S *3/06*; A47L *11/282, 11/38*
U.S. Cl. 15—97.1 **14 Claims**



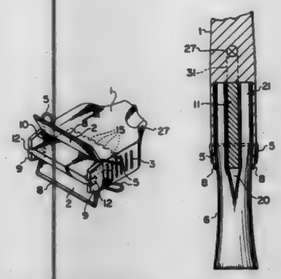
1. A scrubber comprising a rotatable scrubber unit adapted to engage a surface to be scrubbed, a power head, means drivingly connecting the power head to the scrubber unit, handle means, means pivotally connecting the handle means to said power head, and means supplying electrical power to said power head, said powder head including an electric motor, said means supplying electrical power to the power head including means connecting the motor with a source of electric power to drive the scrubber unit with an operator of the scrubber manipulating and controlling the scrubber from said handle means, said means drivingly connecting the power head to the scrubber unit including an output shaft from the motor, a gear reduction assembly connected to the output shaft, said gear reduction assembly including an output shaft, clutch means incorporated into the output shaft of the reduction gear assembly with the clutch means including an output shaft connected to the scrubber unit, said clutch means including opposed clutch plates with one of the clutch plates being integral with the output shaft of the reduction ear assembly, said clutch plates including facing opposed surfaces with sad surface on one of said plates including a plurality of circumferential spaced recesses oriented in substantially equally spaced relation, the other of said plates including a plurality of circumferentially spaced recesses in the axial surface of the plate, a plurality of ball detents in engagement with the recesses, and resilient means biasing said clutch plates together to retain the clutch plates in driving relation but enabling one of the clutch plates to move axially and permit relative rotation of the clutch plates when a predetermined load through the clutch means has been exceeded.

5,289,606

UNITARY PAINT BRUSH AND BRISTLE HOLDER

Blake A. Ledingham, 501 - 1200 West Pender Street, Vancouver, B. C., Canada V6E 2S9

Filed Oct. 30, 1992, Ser. No. 968,771
Int. Cl.[5] A46B *3/02*
U.S. Cl. 15—168 **19 Claims**



1. A paint brush comprising:

(a) a paint brush body and handle extending from one end of the body, the body having another end which is provided with an elogated cavity adapted for receiving a group of bristles, said cavity being defined by first and second opposed end walls and first and second sides extending therebetween;

(b) a pair of hinged members secured to a respective one of the first side and second side of the body, and projecting over the cavity, the hinged members securing the bristles when moved to a closed position, and releasing the bristles when moved to an open position;

(c) resilient movable securing means for securing the hinged members in the closed position and releasing the hinged members for movement to the second open position; and

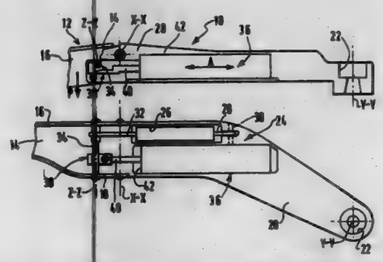
(d) a group of bristles secured within the cavity of the body, and between the pair of hinged members.

5,289,607

MOTOR VEHICLE SCREEN WIPING APPARATUS INCLUDING MEANS FOR VARYING WIPING PRESSURE

Maurice Journee, Reilly, France, assignor to Paul Journee S.A., Colombes, France

Filed Feb. 12, 1993, Ser. No. 17,383
Claims priority, application France, Feb. 12, 1992, 92 01569
Int. Cl.[5] B60S *1/32*
U.S. Cl. 15—250.20 **11 Claims**



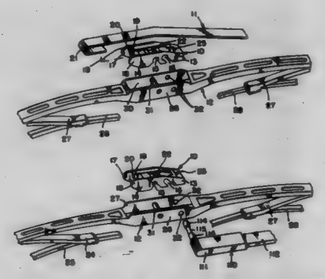
1. A screen wiping apparatus comprising: a drive head heaving a pivot axis; a wiper arm for carrying at least one wiper blade, said wiper arm pivotally mounted on the drive head for movement with respect to the drive head about the pivot axis; and wiping torque-applying means coupled between the drive head and the wiper arm for applying a wiping torque to the wiper arm, the wiping torque applying means having a substantially constant torque-applying means which includes at least one spring coupled to the wiper arm and drive head for applying to the wiper arm a substantially constant nominal wiping torque; and said torque-applying means further including complementary torque-applying means for applying a complementary torque, said complementary torque applying means having an actuator, the actuator having an actuator body and an output member movable in the actuator body, the actuator body being mounted on the drive head and the output member being connected to the wiper arm, the complementary torque applying means further having a coupling member coupling the wiper to the output member of the actuator; said output member mounting the coupling member for movement therewith in a direction of displacement at right angles to the pivot axis, the coupling member having a working surface, the wiper arm carrying an elongated pin that has an axis parallel to the pivot axis, and the apparatus further including a roller rotatably mounted on the wiper arm pin for rotation about the wiper arm pin axis and for engagement with the working surface of the coupling member whereby movement of the coupling member varies the magnitude of the complementary torque.

5,289,608

WINDSHIELD WIPER FRAME CONNECTOR WHICH ACCOMODATES DIFFERENT SIZE WIPER ARMS

In K. Kim, Ansan, Rep. of Korea, assignor to Alberee Product Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 784,514, Oct. 29, 1991, abandoned. This application May 26, 1992, Ser. No. 888,154
Int. Cl.[5] B60S *1/40*
U.S. Cl. 15—250.32 **3 Claims**



1. A windshield wiper frame connector for connecting a wiper blade unit to a wiper arm said connector comprising:

an elongated body member having a pair of spaced opposing sidewalls, each said sidewall defining an inner and outer surface, said inner surfaces facing one another, a cross-member formed between and connecting said pair of sidewalls, said cross member extending substantially perpendicular to said sidewalls, each of said sidewalls having a front wing portion as an extension of said sidewalls, said front wing portions also defining the inner surfaces;

a first slot disposed in a lower portion of said body member for rotatably receiving a transverse pin of a wiper blade unit;

a second slot disposed in said lower portion of said body member adjacent to said first slot for rotatably receiving a pin of a pin type wiper arm;

an arc-shaped surface located within said second slot, said arc-shaped surface being provided to cooperate with a reduced diameter portion of said pin of a pin type wiper arm;

a pair of opposing first raised portions disposed on said opposing inner surfaces of said front wing portions of said sidewalls;

a pair of opposing second raised portions disposed on said opposing inner surfaces of said front wing portions of the sidewalls, said pair of first raised portions being adjacent to said pair of second raised portions, said first and second raised portions defining therebetween a first space of predetermined width for receiving and locking outer surfaces of a hook portion of a hook type wiper arm of a first width;

a pair of stoppers disposed on said pair of second raised portions; said stoppers projecting inwardly toward each other;

said stoppers and said cross-member defining therebetween a second space of a width less than said predetermined width of said first space for alternatively receiving and locking outer surfaces of a hook portion of a hook type wiper arm of a second width different than said first width; and

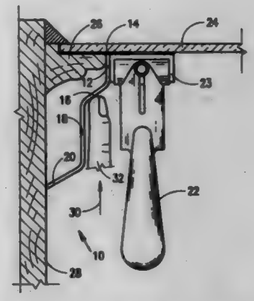
an upper seat and a lower seat disposed on each said inner surface of said sidewalls, said upper and lower seats being provided for engaging and supporting said hook portion of the hook type wiper arms.

5,289,609

GUIDE FOR CLEANING PAINT FROM WINDOWS

Rudolph C. Olson, Rte. 1, Box 1874, Fort Gibson, Okla. 74434

Filed Mar. 2, 1992, Ser. No. 844,535
Int. Cl.[5] E04F *21/00*
U.S. Cl. 15—257.01 **5 Claims**



1. A guide for removing excess dry paint from a window having a frame said guide to be used with a razor blade scraper or the like having a flat side edge, which guide comprises:

a first panel having a pair of opposed edges, one of said edges having a straight elongated blade that is placed against said window flush with a sash or glazing of said window, said first panel positioned substantially vertical to said window so that said first panel provides guiding support for said flat side edge of said scraper;

a second panel extending from said opposed edge of said first panel, said second panel being in angular relation to said first panel;

a third panel extending from said second panel, said third panel being substantially parallel with said first panel wherein said scraper is then moved across said window along said elongated blade;

a fourth panel extending from said third panel wherein said fourth panel is substantially parallel with said second panel and is held in one hand of a user while the other hand moves said scraper, to remove excess dry paint on said window except for a thin band covered by said blade, each said panel being free of protrusions in order to be closely placed against said frame or a wall surrounding said window; and

said panels forming means to hold the guide so that said first panel and said window form a space in which said scraper is manipulated with said side edge in full contact with said

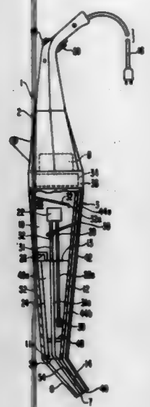
first panel without any part of said second, third or fourth panels or said user's guide-holding hand intruding into said space.

5,289,610

RECYCLING EXTRACTION CLEANER AND DRIER

Clifford L. Monson, 6115 130th Ave., NE., Kirkland, Wash. 98033

Filed Nov. 23, 1992, Ser. No. 980,206
Int. Cl.[5] A47L 5/24
U.S. Cl. 15—320 13 Claims



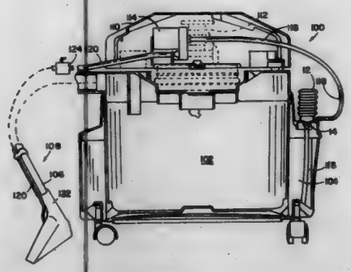
1. A recycling extraction cleaner and drier for cleaning a surface comprising:
a body member for housing internal cleaner components;
said body member including a vacuum blower chamber and a nozzle head formed at opposite ends of said body member, said nozzle head including a drying air discharge means, a cleaning fluid discharge head, and a vacuum intake means;
a fluid receiving chamber removably mounted on said body member adjacent to said nozzle head for containing cleaning fluid, means connecting said fluid receiving chamber to said cleaning fluid discharge head;
a plenum chamber formed on said body member between said vacuum blower chamber and said fluid receiving chamber, said plenum chamber being in communication with said fluid receiving chamber;
a vacuum generating means mounted on said body member in said vacuum blower chamber for creating a vacuum in said plenum chamber and an exhaust air flow in said vacuum blower chamber;
drying air conduit means extending within said body member from said vacuum blower chamber to said drying air discharge means, said drying air conduit means operating to conduct the exhaust air flow from said vacuum generating means to said drying air discharge means; and
a vacuum conduit means connecting said vacuum intake means to said plenum chamber.

5,289,611

EXTRACTOR WITH MANUAL PRIMING PUMP

Robert A. Yonkers, Grandville, and Richard L. Norwood, Rockford, both of Mich., assignors to Bissell Inc., Grand Rapids, Mich.

Filed Sep. 3, 1991, Ser. No. 753,741
Int. Cl.[5] A47L 7/00
U.S. Cl. 15—321 16 Claims



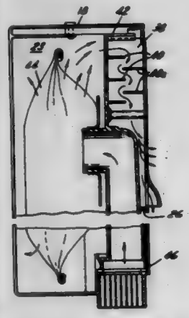
1. An extractor comprising:
a floor supported assembly of a cleaning solution tank, a recovery tank, a housing over said recovery tank, a vacuum fan mounted to said housing and operatively connected with said recovery tank, a non-self-priming pump in fluid communication with said cleaning solution tank and mounted to said housing;
a separate cleaning tool connected in fluid communication with said recovery tank;
a cleaning solution feed line interconnecting said non-self-priming pump and said cleaning tool;
a manually operated priming pump operatively connected with said non-self-priming pump to prime said non-self-priming pump; and
a check valve operatively connected in said cleaning solution feed line, in fluid communication with said manually operated priming pump, said check valve being operatively connected between said manually operated priming pump and said cleaning solution tank.

5,289,612

NOISE REDUCTION SYSTEM FOR HARD BODY VACUUM

William K. Glean, III, Anderson, S.C., assignor to Ryobi Motor Products Corporation, Easley, S.C.

Filed Aug. 13, 1992, Ser. No. 929,310
Int. Cl.[5] A47L 9/00
U.S. Cl. 15—326 13 Claims



1. An upright vacuum cleaner having a head assembly and

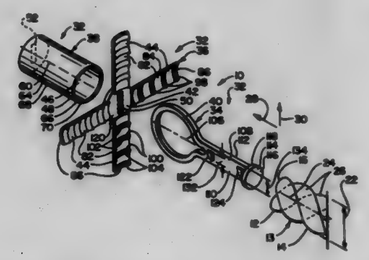
an electric motor for driving a blower, said vacuum cleaner comprising:
a rigid filter bag body attached in upright relation to said head assembly and having a fixed housing and a removable cover defining an enclosed cavity therebetween, said housing provided with a pressurized dirty air inlet in communication with said blower, and an exhaust vent for venting filtered exhaust air to atmosphere;
a muffler affixed to said housing within said cavity in the region of said exhaust vent to define a baffle chamber between said muffler and said housing, said muffler forming an air entrance spaced from said exhaust vent requiring exhaust air exiting said cavity to flow through said baffle chamber; and
a series of baffles located within said baffle chamber between said air entrance and said exhaust vent for reducing exhaust air noise emitted from said upright vacuum cleaner.

5,289,613

COND END COVER

Michael L. Kohl, 1694[illegible]W, Bakerview Rd., Bellingham, Wash. 98226

Filed Feb. 12, 1992, Ser. No. 835,240
Int. Cl.[5] F16G 11/00
U.S. Cl. 16—108 20 Claims



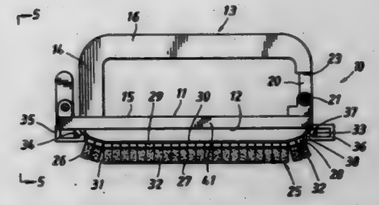
1. An end cover assembly to cover an end of a cord, said assembly having a pull axis, and comprising:
a) a clinch means comprising a central body portion having through slot means and arm means connected to said central body portion for inward gripping movement toward said pull axis;
b) a sleeve means having a front and rear end, and defining an interior chamber arranged to receive therein said central body portion and engage said arm means to urge said arm means in said gripping movement toward said pull axis;
c) a pull member having a forward manually engageable pull portion and a rear foot portion;
d) said slot means of the body portion of the clinch means being configured relative to said pull portion and said foot portion so that when said pull portion is passed through said slot means, said foot portion is in abutting engagement with said clinch means,
whereby said pull member can be moved into pulling engagement with said clinch means and moved forwardly through said sleeve means to urge said arm means in gripping movement toward the pull axis, with said assembly then covering said end portion of said cord.

5,289,614

EXTRA-VEHICULAR ACTIVITY TRANSLATION TOOL

Leslie S. Hartz, Seabrook, Tex., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 931,468
Int. Cl.[5] E05B 1/00
U.S. Cl. 16—114 R 15 Claims



1. A portable hand-held device for attachment to selected surfaces comprising:
a base member;
a flexible gripping member having a central portion with a forward face bounded by longitudinal edges and opposite ends and a rearward face member formed of a flexible sheet bonded to the central portion and having enlarged end portions extending past the opposite ends of the central portion;
means for slidingly coupling said enlarged end portions of said flexible gripping member to said base member to normally position said central portion of said flexible gripping member against said base member;
attachment means on said forward face to said flexible gripping member for releasably attaching said central portion of said gripping member to a substantially complementary opposing surface; and
means on said base member for retaining said central portion of said flexible gripping member against said base member whenever said flexible gripping member is in readiness for attachment to a substantially complementary opposing surface and for freeing said flexible gripping member for peeling movement away from said base member whenever said hand-held device is to be detached from the opposing surface.

5,289,615

AIRCRAFT DOOR HINGE MECHANISM

Eddie D. Banks, Renton; Tomio Hamatani, Seattle, both of Wash.; Hajime Kishi, Kagamihara, Japan, and Richard B. Odell, Kirkland, Takayoshi Urasawa, Bellvue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

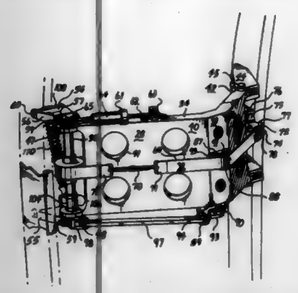
Filed Nov. 8, 1991, Ser. No. 791,663
Int. Cl.[5] E05D 3/06, 15/28; B64C 1/14
U.S. Cl. 16—366 19 Claims

1. A translating motion hinge assembly for connecting an aircraft door to a fuselage wherein, the door is adapted to be seated in a closed position in a door opening formed in the fuselage, the hinge assembly comprising:
a hinge fitting having first and second opposed ends, said hinge fitting first end being pivotally attached to the aircraft fuselage adjacent the door opening and said hinge fitting being positioned so that when said door is in the closed position, said hinge fitting is spaced from the door opening;
a universal shaft rotatably attached to said hinge fitting second end, said universal shaft including at least one linkage element for connecting the door to said universal shaft so that the aircraft door pivots around said second end of said hinge fitting in unison with the rotation of said shaft;
a first fixed sprocket attached to the aircraft fuselage adja-

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cent the location said hinge fitting is attached to the fuselage and a second sprocket mounted for rotation to said universal shaft, and

a drive belt assembly including an open-ended rubber belt, said rubber belt having a pair of opposed ends, and an adjustable tensioner for connecting said ends of said drive



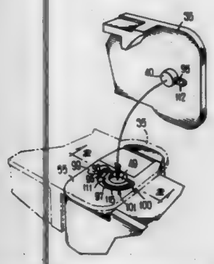
belt wherein, said rubber belt is coupled to said sprockets so that when said hinge fitting is moved from the door closed position to a door open position, said drive belt causes said universal shaft to rotate so as to maintain the door in a substantially parallel orientation relative to the fuselage opening.

5,289,616

HINGE WITH MOTION LIMITING MECHANISM

Yoshihiko Taniyama, 9380 Old Southwick Pass, Fulton County Alpharetta, Ga. 30202

Filed Sep. 8, 1992, Ser. No. 941,547
Int. Cl.[5] E05D *11/06*
U.S. Cl. 16—376 **8 Claims**



1. A motion limiting mechanism adapted for use with a hinge comprising:

a first member having a first substantially planar surface;

a second member having a second substantially planar surface, wherein said first and second surfaces are disposed parallel and in close proximity to one another;

a hinge for allowing rotational movement between said first and second members, said hinge comprising a circular depression on said first surface and a matingly engagable circular protrusion on said second surface, wherein an axis of rotation of said members is substantially coaxial with said circular depression and perpendicular to said first and second surfaces;

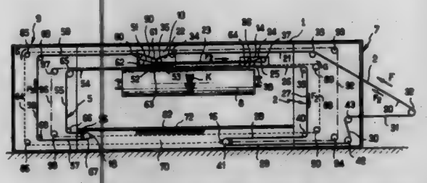
a motion limiting mechanism for limiting rotation between said first and second members, said motion limiting mechanism comprising; a rib on said second surface having a first end connected to said first protrusion and a second end disposed radially outward from said first end, wherein a height of said second end is greater than said first end, and an arcuate depression on said first surface having a radius of curvature centered on said circular depression, having first and second endwalls, said arcuate depression being matingly engagable with said rib allowing said rib to freely move within said depression and between said first and second endwalls whereby relative rotation between said first and second members is limited by an angular dimension of said arcuate depression around said circular depression.

5,289,617

SPREADING AND LAP-FORMING MACHINE

Robert Jean, Fouqueville; Bernard Chatelet, and Bernard Jourde, both of Elbeuf, all of France, assignors to Asselin (Societe Anonyme), Elbeuf, France

PCT No. PCT/FR92/00461, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/21799, PCT Pub. Date Dec. 10, 1992
PCT Filed May 22, 1991, Ser. No. 969,828
Claims priority, application France, Jun. 3, 1991, 91 06634
Int. Cl.[5] D01G *15/46, 25/00*; D04H *1/74*
U.S. Cl. 19—163 **6 Claims**



1. A spreading and lap-forming machine for converting a web (4) to a lap (6) by folding in pleats, comprising two conveyor-belts (2, 5) which are each following separate closed paths (20 to 31, 50 to 59) and associated with rollers (32 to 43, 60 to 69) for respective guiding and displacement of said conveyor-belts, the closed paths (20 to 31, 50 to 59) being external to each other and adjacent to each other in a pinching zone (23, 53) delimited by guide rollers (35, 61; 38, 64) carried by an input carriage (10) and an output carriage (14) displaceable in translational motion in a horizontal direction perpendicular to axes of the rollers (32 to 43, 60 to 69), the guide rollers comprising two pinching rollers (35, 61) which are each associated with a different one of the conveyor-belts and about which the conveyor-belts (2, 5) define between them a pinching line constituting a beginning of the pinching zone, means (20, 21, 22) for transporting the web (4) to the beginning of the pinching zone (23, 53), an apron (8) moves in a direction parallel to the axes of the rollers (32 to 43, 60 to 69) and which receives the web (4) as it passes out of the pinching zone (23, 53), and driving means (84, 85, 88, 89) for applying reciprocating movements of translation to the input carriage (10) and to the output carriage (14), wherein said machine includes means (34) for defining a section (22) for the web (4) on a first conveyor-belt (2), said section (22) being located upstream of the pinching line and inclined towards said line, wherein the pinching roller (35) associated with the first conveyor-belt causes said first conveyor-belt (2) to make a turn through an angle (B) greater than 90 degrees and smaller than 180 degrees, and wherein the pinching line is located in an intermediate angular position between the beginning and the end of said turn, and wherein the means which defines for the web (4), the section (22) which is inclined towards the pinching line, comprises a roller (34) mounted on the input carriage (10).

5,289,618

APPARATUS FOR MAKING A NONWOVEN WEB

Ernst Fehrer, Auf der Gugl 28, A-4020 Linz (Österreich), Austria

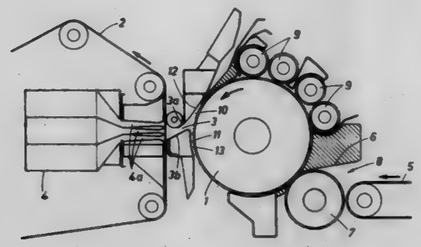
Filed Dec. 1, 1992, Ser. No. 983,760
Claims priority, application Austria, Dec. 5, 1991, A 2418/91; Oct. 2, 1992, A 1944/92; Oct. 12, 1992, A 2002/92
Int. Cl.[5] D01G *25/00*
U.S. Cl. 19—304 **2 Claims**

1. An apparatus for making a nonwoven web, comprising

(a) a carding drum having an axis and a predetermined working width and operable to rotate in a predetermined direction,

(b) a continuously movable, air-permeable fiber collecting member radially spaced from a peripheral portion of the carding drum, the fiber collecting member having a fiber collecting surface facing the peripheral carding drum portion and a surface opposite the fiber collecting surface, wherein a vertical plane extending through the axis of the carding drum intersects said fiber collecting member at a web forming locus,

(c) a suction duct leading from the peripheral carding drum portion to the fiber collecting surface, the suction duct being defined between



(1) a duct wall leading with respect to the direction of rotation of the carding drum and

(2) a duct wall trailing with respect to the direction of rotation of the carding drum,

(d) two carding drum guards extending over the working width of the carding drum,

(1) a leading one of the drum guards extending from the leading duct wall in a direction opposite to the direction of rotation of the carding drum and

(2) a trailing one of the drum guards extending from the trailing duct wall in the direction of rotation of the carding drum,

(3) the carding drum guards defining air supply passages with the peripheral carding drum portion, the air supply passages extending over the working width of the carding drum and opening into the suction duct, and

(e) a suction box adjoining the opposite surface of the fiber collecting member and operable to suck a fiber entraining air stream through the air supply passages, the suction duct and the air-permeable fiber collecting member to detach fibers from the peripheral carding drum portion and to deposit the detached fibers on the fiber collecting surface to form said nonwoven web.

5,289,619

APPARATUS FOR BINDING ITEMS AND METHOD OF USING SAME

Joseph Pileggi, 1465 Broad St., Dresher, Pa. 19025

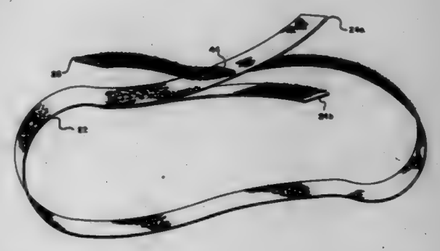
Continuation-in-part of Ser. No. 861,105, Mar. 31, 1992. This application Jul. 16, 1992, Ser. No. 915,017
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—306 **7 Claims**

1. A utility band comprising:

an elongated strip of material having a first and second ends;

the second end of the band formed from two juxtaposed segments of material, the first juxtaposed segment being wider than the second juxtaposed segment, each segment including an interior face;

first and second mating portions of a hook and loop-type fastening material, said first mating portion attached to both sides of the first end of said strip, and said second mating portion is secured to the interior faces of the second end juxtaposed segments such that the second fastening material portion can enclose and fasten to both sides of the first mating portion thereby establishing a fasten length of the strip; and



wherein an opening is positioned in the first juxtaposed segment of said second end at an intermediate position thereof to receive the first end of said strip passing therethrough for adjusting the fastened length of said strip.

5,289,620

Patent Not Issued For This Number

5,289,621

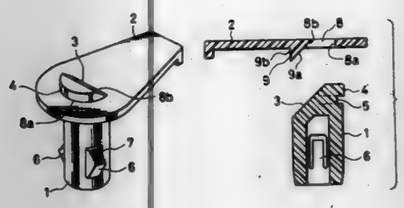
PLASTIC FASTENER

Yoshio Kaneko, Chigasaki, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Jun. 3, 1993, Ser. No. 70,827
Claims priority, application Japan, Jun. 4, 1992, 4-185626
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—453 **6 Claims**

1. A fastener that can be readily disengaged, comprising: a post member having engaging claw means on a peripheral face at an end of the post member, and a contact plate member that

engages with a top end of the post member to thereby act in concert with the engaging claw means to clamp panels therebetween; wherein the top end of the post member is formed as an inclined face portion that slopes upward from a point on the peripheral surface of the post member midway up along the length of the top end; a peripherally extending engaging portion is formed on a peripheral surface on the opposite side to that of the inclined face portion, and the contact plate member has a through hole formed therein to receive the top end of the post member, with part of an edge of said hole contacting the inclined face portion and another part of the edge engaging with the engaging portion.

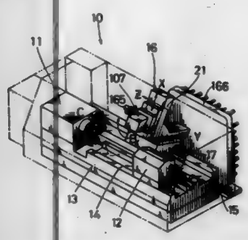


5,289,622

CARRIAGE STRUCTURE OF NC LATHE

Seigo Minagawa, Osaka, Japan, assignor to Dainichi Kinzoku Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 845,187, Mar. 2, 1992, Pat. No. 5,214,829. This application Mar. 8, 1993, Ser. No. 28,553
Claims priority, application Japan, Mar. 11, 1991, 3-104890
Int. Cl.[5] B23P *13/02*; B23B *1/00*
U.S. Cl. 29—27 R 4 Claims



1. A method of machining a work by using an NC lathe having a headstock for rotating the work around C-axis, a tailstock disposed in opposed relationship with said headstock, a carriage movable relative to said headstock in directions of Z-axis parallel to the C-axis, X-axis and Y-axis perpendicular to said Z-axis, respectively, a tool spindle rotatably mounted on said carriage around B-axis perpendicular to the X-axis and the Y-axis, and a spindle rotatably mounted on said tool spindle around an axis perpendicular to the B-axis, comprising the steps of:

holding the work between said headstock and said tailstock;

indexing said tool spindle around the B-axis;

mounting a cutting tool on said spindle and indexing the position of said spindle at 0° around said axis perpendicular to the B-axis;

driving said headstock in one direction;

moving said carriage to form a first surface of the work;

indexing the position of said spindle at 180° to orient a cutting edge of the cutting tool in a reverse direction;

driving said headstock in a reverse direction; and

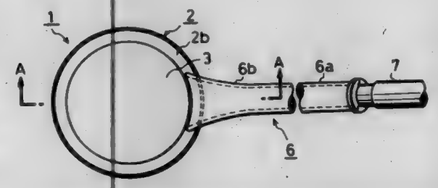
moving said carriage to form a second surface of the work.

5,289,623

SHIM ATTACHING/DETACHING TOOL FOR ENGINE TAPPET

Kizuku Ohtsubo, Fujisawa, Japan, assignor to Fuji Oozx Inc., Fujisawa, Japan

Filed Mar. 26, 1993, Ser. No. 38,233
Claims priority, application Japan, May 28, 1992, 4-042189[U]
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—213.1 7 Claims



1. A shim attaching/detaching tool for a tappet of an internal combustion engine wherein an annular side wall stands upright from the upper end of a cylindrical body of said tappet which upper surface is closed with an upper wall and a shim is detachably received in a circular cavity defined by said annular side wall to adjust a valve clearance as desired, comprising:

an air supplying tube having a predetermined length and communicated with a compressed air supply source,

an air blowing tube integrally connected to said air supplying tube, a flat nozzle formed at an opening portion of said air blowing tube at the foremost end of the same, a largest height of said flat nozzle being dimensioned so as not to exceed a height of said shim projected above the upper end face of said annular side wall when said opening portion of said air blowing tube is brought in contact with the fitting portion of said shim fitted into said circular cavity

right-angled projections being formed on the opposite sides of said nozzle while extending in the forward direction.

5,289,624

RETRACTOR SERVICE REPLACEMENT METHOD

Karl F. Wagner, Jr, Brighton; Kevin S. O'Neil, Livonia, and Doyle E. Brown, Rochester Hills, all of Mich., assignors to Takata Inc., Auburn Hills and General Motors Corporation, Detroit, both of Mich.

Filed May 28, 1992, Ser. No. 890,567
Int. Cl.[5] B23P *6/00*, *19/04*
U.S. Cl. 29—402.08 3 Claims

1. A method for replacing a single retractor in a vehicle seat belt system of the type having two retractors, each retractor winding a belt having an end extending through a belt slot of a latch member and sewn to itself, said method comprising the steps of:

cutting the belt end of the one belt wound by the one retractor which is to be replaced so that the one retractor and one belt may be disassembled from the vehicle, while the other retractor remains installed in the vehicle;

installing a replacement retractor winding a belt having a belt end carrying a hook member;

hooking the hook member through the belt slot of the latch member; and



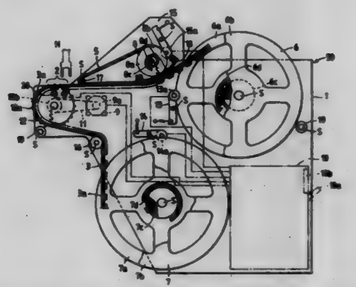
permanently installing a keeper member on the hook member to prevent the subsequent unhooking of the hook member from the latch member.

5,289,625

METHOD FOR SUPPLYING ARTICLES AND APPARATUS THEREFOR

Sachio Umetsu, Kawasaki; Toshio Tsuda; Yusaku Azuma, both of Yokohama; Toshihiko Miura, Kawasaki; Katsumi Ishihara, Yokohama, and Teiji Ohsaka, Ushiku, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,931, Nov. 26, 1991, abandoned, which is a division of Ser. No. 503,745, Apr. 3, 1990, Pat. No. 5,090,113. This application May 17, 1993, Ser. No. 62,039
Claims priority, application Japan, Apr. 5, 1989, 1-039597; Apr. 5, 1989, 1-084881; Apr. 5, 1989, 1-084882; Apr. 5, 1989, 1-084883; Apr. 5, 1989, 1-084884; Apr. 5, 1989, 1-084885; Mar. 8, 1990, 2-59692; Mar. 8, 1990, 2-59693; Mar. 8, 1990, 2-59694
Int. Cl.[5] B23P *19/00*, *21/00*; H05K *13/00*
U.S. Cl. 29—426.3 11 Claims



1. An article feeding method in which a tape supporting articles is stored in a cassette, the cassette is mounted in a cassette mounting position of a robot, and the tape in the cassette is transported, thereby feeding the articles to an article pick-up position of a robot hand, comprising steps of:

supplying the articles to the pick-up position by mounting the cassette in the cassette mounting position of the robot to transport the tape in the cassette;

transmitting a light signal indicating an article feeding state of the cassette from a cassette sender to a robot receiver; and

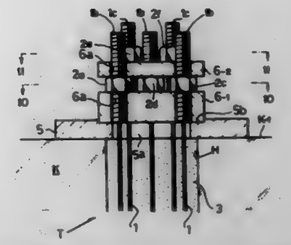
effecting a pick-up operation by the robot hand at the robot on the basis of receiving the light signal.

5,289,626

FOUNDATION ANCHOR AND METHOD FOR SECURING SAME TO A FOUNDATION

Satoru Mochida, and Akemi Nojiri, both of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 498,216, Mar. 23, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 995,676
Claims priority, application Japan, Mar. 27, 1989, 1-74284
Int. Cl.[5] B23P *11/00*; E21D *20/00*, *21/00*
U.S. Cl. 29—452 7 Claims



1. A method for securing a foundation anchor to the foundation of a structure, wherein the foundation anchor comprises a plurality of elongated tension members, each of which has a free end and a fixed end, said fixed ends being secured in hardened grout embedded in foundation supporting earth, said free ends having threads formed thereon and being of sufficient length to extend through a foundation anchor hole and to be secured on one side of the foundation, comprising the steps of:

(a) providing a first anchor plate of predetermined size, having upper and lower faces, and having holes therethrough matching in number said plurality of elongated tension members;

(b) placing and centering said first anchor plate over a rim of said foundation anchor hole;

(c) inserting said threaded free ends of said tension members through said holes in said first anchor plate;

(d) threading first nuts onto said threaded free ends of a first group of tension members until pressure bearing contact is made between said first nuts and the said upper face of said first anchor plate;

(e) continuing to thread said first nuts in pressure bearing contact with said upper face of said first anchor plate until said first group of tension members are tensioned;

(f) providing a second anchor plate having upper and lower faces and having substantially the same dimensions as said first anchor plate, said second anchor plate having holes therethrough in equal number and diameter and alignable with said holes in said first anchor plate, and said second anchor plate having upper and lower faces;

(g) aligning said second anchor plate over said first anchor plate;

(h) concentrically aligning said holes in said second anchor plate with said holes in said first anchor plate;

(i) inserting said threaded free ends of said tension members through said holes in said second anchor plate;

(j) placing the said lower face of said second anchor plate in pressure bearing contact with said first nuts previously threaded into pressure bearing contact with said upper face of said first anchor plate;

(k) threading second nuts onto the threaded free ends of a second group of tension members until pressure bearing contact is made between said second nuts and the said upper face of said second anchor plate; and

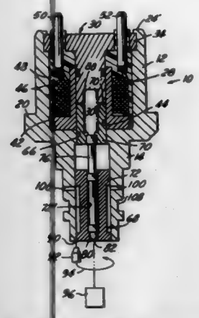
(l) continuing to thread said second nuts into pressure bearing contact with said upper face of said second anchor plate until said second group of tension members are tensioned.

5,289,627

FUEL INJECTOR ASSEMBLY AND CALIBRATION METHOD

Mark S. Cerny, Sterling Hgts, and James F. Prestel, Rochester, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1992, Ser. No. 993,206
Int. Cl.[5] H01F 41/02
U.S. Cl. 29—602.1 5 Claims



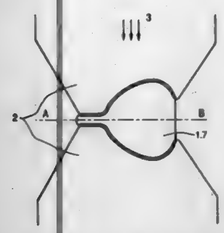
1. A method of assembling and calibrating a fuel injector which includes a tubular housing with opposite open ends, comprising: inserting an electromagnetic actuator subassembly into one end opening of the housing; securing the electromagnetic actuator subassembly in the housing to prevent any axial movement; inserting a valve subassembly including a movable valve, a valve support and seat, and an armature into the opposite end opening of the housing; establishing a desired maximum valve opening by gapping the armature a predetermined space from a stationary portion of the injector while the valve is in its closed seated operational position; permanently attaching the valve support and seat to the housing thus establishing the desired opening calibration of the fuel injector.

5,289,628

METHOD OF PRODUCING A THIN FILM MAGNETIC HEAD

Yuuji Omata, Toyonaka, and Tatsuo Mifune, Hirakata both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 865,583
Claims priority, application Japan, Apr. 9, 1991, 3-076239
Int. Cl.[5] G11B 5/42
U.S. Cl. 29—603 5 Claims



1. A method of producing a thin film magnetic head having a magnetic core assembly which comprises a lower magnetic layer formed on a non-magnetic substrate, a magnetic gap layer, a conductive coil layer sandwiched between insulating layers, and an upper magnetic layer, at least one of the lower and upper magnetic layers being formed of a soft magnetic amorphous alloy thin film of a given pattern shape, said method comprising the steps of:

preparing a soft magnetic thin film to directly or magnetically contact the soft magnetic amorphous alloy thin film so that an external magnetic field can effectively be applied, during an in-field heat treatment, to the soft magnetic amorphous alloy thin film of the head core assembly in a direction at a right angle to a direction of a magnetic flux path in head core;

inducing uniaxial magnetic anisotropy in the soft magnetic amorphous alloy thin film through the in-field heat treatment in the external magnetic field; and

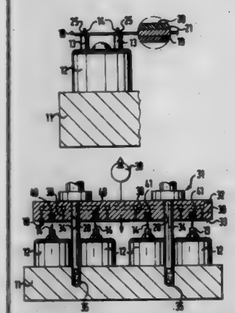
removing the soft magnetic thin film after the in-field heat treatment.

5,289,629

APPARATUS FOR JOINING A CONDUCTOR TRACK FOIL TO AN ELECTRICAL COMPONENT

Horst Stade, Blaichach, and Helmut Deringer, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 788,383, Nov. 6, 1991, Pat. No. 5,193,270.
This application Oct. 28, 1992, Ser. No. 968,070
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041507
Int. Cl.[5] B23P 19/04; B26D 7/02
U.S. Cl. 29—743 3 Claims



1. An apparatus (31) for mounting a conductor track foil (18) onto an electrical component (12) having aligned contact pins (14), said apparatus including:

a plate (32) having an end face (33) which serves to receive and hold the conductor track foil (18) thereon, said plate (32) includes suction openings (38) therein connected to a vacuum source (39), means for aligning and positionally fixing the conductor track foil (18) relative to the end face (33) of said plate (32) and for aligning and positionally fixing the plate 932) relative to the electrical component (12), said face (33) includes aligned recesses (40) for receiving the aligned contact pins (14) of said electrical component, said aligned contact pins penetrate through the conductor track foil (18) when said end face of said plate having said conductor track foil secured thereon is lowered onto the electrical component (12).

5,289,630

PROCESS FOR FABRICATING MULTILAYER PRINTED CIRCUITS

Donald R. Ferrier, Thomaston; Donald P. Cullen, West Hartford; Edward Donlon, Bethlehem; Gary B. Larson, Cheshire; William J. Decesare, Wolcott, and John L. Cordani, Waterbury, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation-in-part of Ser. No. 734,247, Jul. 22, 1991, abandoned. This application Oct. 29, 1991, Ser. No. 783,974
Int. Cl.[5] H05K 3/36
U.S. Cl. 29—830 4 Claims

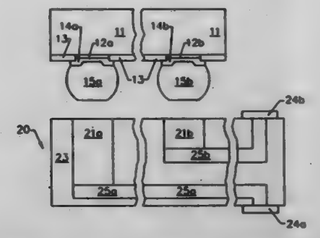
1. In a method for manufacturing a multilayer printed circuit having metallized through-holes, wherein (a) a multilayer structure is assembled as an alternating array of one or more copper circuitry innerlayers and one or more layers of partially-cured dielectric substrate material; (b) the multilayer structure is thereafter subjected to heat and pressure to cure the structure into an integral multilayer composite in which copper surfaces of said copper circuitry innerlayer are bonded to the now-cured dielectric substrate material in contact therewith; and (c) the multilayer composite is thereafter provided with one or more through-holes which are thereafter metallized; the improvement comprising the steps of (i) treating the copper surfaces of said copper circuitry innerlayer, prior to its use in assembly of said multilayer structure, to form thereon a conversion coating of copper oxide; (ii) thereafter subjecting said copper surfaces having said conversion coating of copper oxide thereon to the action of a dissolution agent effective to controllably dissolve and remove at least a portion of said copper oxide form said copper surfaces; and (iii) thereafter utilizing said copper circuitry innerlayer in assembly of said multilayer structure, and wherein said subjecting of said copper surfaces having said conversion coating of copper oxide thereon to the action of a dissolution agent according to step (ii) comprises providing a vessel containing said dissolution agent; immersing in said dissolution agent in said vessel the circuitry innerlayer having said conversion coating of copper oxide on its copper surfaces, for a time effective to controllably dissolve and remove said conversion coating of copper oxide from said copper surfaces according to step (ii); and substantially continuously recirculating said dissolution agent from said vessel to and through an ion exchange resin effective to substantially remove copper ions from said dissolution agent, and returning the so-treated dissolution agent to said vessel.

5,289,631

METHOD FOR TESTING, BURN-IN, AND/OR PROGRAMMING OF INTEGRATED CIRCUIT CHIPS

Nicholas G. Koopman, Raleigh; Glenn A. Rinne, Cary; Iwona Turlik, Raleigh, and Edward K. Yung, Carrboro, all of N.C., assignors to MCNC, Research Triangle Park, N.C.

Filed Mar. 4, 1992, Ser. No. 845,996
Int. Cl.[5] H05K 3/34
U.S. Cl. 29—840 9 Claims



1. A method of testing an integrated circuit chip having a plurality of input/output pads on one face thereof, comprising the steps of:

providing a temporary substrate, having a plurality of temporary substrate pads at one face thereof, at locations corresponding to input/output pads on an integrated circuit chip;

forming a sacrificial conductor layer on said temporary substrate pads;

placing an integrated circuit chip adjacent said temporary substrate, with the input/output pads thereof adjacent said sacrificial conductor layer, and a solder bump between a respective input/output pad and said sacrificial conductor layer;

heating said solder bumps to form a solid phase mechanical and electrical connection between corresponding input-/output pads and temporary substrate pads;

testing said integrated circuit chip on said temporary substrate;

dissolving said sacrificial conductor layer into said solder bumps; and

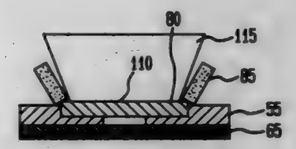
removing said integrated circuit chip, including said solder bumps having the dissolved sacrificial conductor layer therein, from said temporary substrate.

5,289,632

APPLYING CONDUCTIVE LINES TO INTEGRATED CIRCUITS

Pedro A. Chalco, Yorktown; Matthew F. Cali, Harriman; Leertis Economikos, Wappingers Falls, and James L. Speidell, Poughquag, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,458
Int. Cl.[5] H05K 3/02
U.S. Cl. 29—846 27 Claims



1. A method of applying a conductive line to a substrate, comprising the steps of:

aligning a conductive line in juxtaposition with a selected area of a substrate, said conductive line being suspended in a carrier having a carrier opening therethrough, said carrier opening being defined by sidewalls, and said conductive line being suspended by said sidewalls of said carrier opening;

bonding said conductive line to said selected area of said substrate; and

detaching said conductive line from said carrier.

5,289,633

PROCESS OF MANUFACTURING AN ELECTRICAL INTERCONNECTION ASSEMBLY

Osamu Okafuji; Akiyoshi Sato, and Yamaguchi, Akio, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 786,658, Nov. 1, 1991, Pat. No. 5,156,557.
This application Jul. 30, 1992, Ser. No. 921,772
Claims priority, application Japan, Nov. 6, 1990, 2-299068; Nov. 6, 1990, 2-299069; Jan. 21, 1991, 3-5337
Int. Cl.[5] H05K 3/10, 13/06
U.S. Cl. 29—850 7 Claims

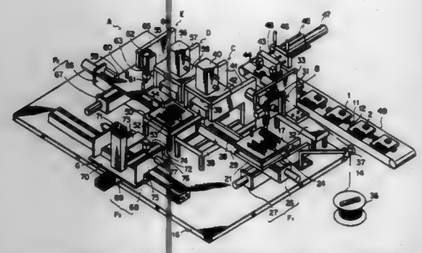
1. A process of manufacturing an electrical interconnection assembly wherein a plurality of wire receiving terminals are mounted on an insulating support body and interconnected in a predetermined wiring pattern by an insulated wire, comprising at least the steps of:

arranging a continuous length of insulated electrical wire onto a wire laying pallet which has a plurality of wire

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laying pins mounted in a plurality of rows thereon, said plurality of wire laying pin moving to and from a projecting position in which said wire laying pins project from said wire laying pallet, said wire laying pallet further having a plurality of wire forcing ribs along said rows of said wire laying pins; and

placing onto said wire laying pins of said wire laying pallet an insulating support body on which a plurality of wire receiving terminals are mounted, each wire receiving



terminal having at an end thereof a wire receiving plate portion having a slot formed therein and each wire receiving terminal having a terminal portion at the other end thereof, and said insulating support body has a plurality of wire holding bosses provided thereon to push down said wire laying pins to move from said projecting position therein urging said insulated wire to be released from said wire laying pins and inserted between said wire holding bosses and therein transferring said insulated wire to said insulating support body.

5,289,634

VALVE ASSEMBLING METHOD AND ASSEMBLED VALVE CHECKING METHOD

Sueyoshi Makino; Tateyuki Inagi, both of Hamamatsu; Hideo Ishizuka, Shizuoka; Tadashi Shimada, Toyokawa; Asashi Nishikiori, Hamamatsu; Yoshiaki Suwa, Ayabe, and Masahiko Adachi, Kyoto, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nitto Seiko Kabushiki Kaisha, Kyoto, both of Japan

Filed Jul. 23, 1992, Ser. No. 920,821

Claims priority, application Japan, Jul. 30, 1991, 3-190323

Int. Cl.[5] B23D *15/00*

U.S. Cl. 29—890.124 **10 Claims**



1. A method of assembling a valve, said method comprising the steps of:

moving a spring (4) into a valve hole (2), the length of said spring being longer than the depth of said valve hole, said valve hole being formed in a valve body (1), said valve hole having a side wall;

applying an external force to said spring to position said spring against said side wall of said valve hole;

providing a spool (3) having an inner hole (3_1) and a lower end, and using a spool holding means (30) to clamp said spool and to position said spool such that an upper end of said spring is located within said inner hole of said spool;

using said spool holding means to move said spool directly over said valve hole; and

unclamping said spool holding means such that said lower end of said spool is engaged within said valve hole.

5,289,635

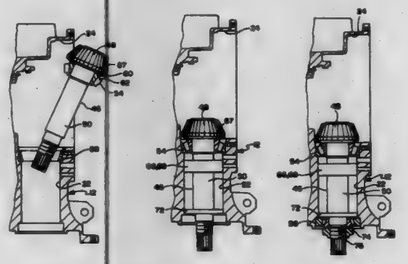
METHOD OF ASSEMBLY FOR A NORTH-SOUTH AUTOMATIC TRANSAXLE

Berthold Martin, Shelby Township, Oceana County; James R. Klotz, Mt. Clemens; Steven A. Mikel, Farmington Hills, and Michael A. Bartolino, St. Clair Shores, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1992, Ser. No. 995,392

Int. Cl.[5] B23P *11/00*; **F16H** *37/00*

U.S. Cl. 29—893.1 **20 Claims**



1. A method of assembly for a north-south transaxle, said method comprising the steps of:

providing a case with a longitudinal passageway and a cavity at one end of the passageway having an opening generally perpendicular to the passageway;

providing a transfer shaft having a head portion and a shaft portion extending longitudinally from the head portion;

installing a front bearing about the transfer shaft and in the passageway;

inserting the shaft portion through the opening and into the cavity and rotating the transfer shaft such that the shaft portion enters the passageway and extending the shaft portion through the passageway;

installing a rear bearing about the transfer shaft and in the passageway; and

retaining the front and rear bearings and transfer shaft in the passageway.

5,289,636

ELECTRIC SHAVING APPARATUS

Reinhold Eichhorn, Idstein-Kröftel; Gerhard Schäfer, Frankfurt; Klaus Oprach, Schwalbach; Sigrun Hickel, Schmitten, and Helmut Dürr, Frankfurt, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

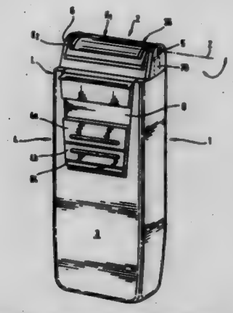
Filed Aug. 18, 1992, Ser. No. 931,857

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1991, 4128217

Int. Cl.[5] B26B *19/10*

U.S. Cl. 30—43.92 **26 Claims**

1. An electric shaving apparatus comprising housing structure, a pivotally mounted short-hair cutter assembly mounted on said housing structure, a long-hair trimmer mounted on said housing structure, a first manually operable slide switch slidably arranged on said housing structure and coupled to both said pivotally mounted short-hair cutter assembly and said long-hair trimmer, said first slide switch for operating said pivotally mounted short-hair cutter assembly and for displacing said long-hair trimmer, and a second manually operable slide switch arranged on said housing structure and coupled to said first slide switch for automatically following movement of said first slide switch into a first control position, said second



slide switch being moveable from said first control position relative to said first slide switch to a second position in which said second slide switch contacts said short-hair cutter assembly and locks the pivotal movement of said short-hair cutter assembly.

5,289,637

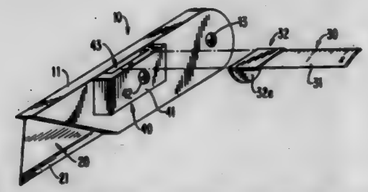
UTILITY KNIFE

John Coffey, Box 703, Shelter Island, N.Y. 11964

Filed Mar. 25, 1992, Ser. No. 857,320

Int. Cl.[5] B26B *11/00, 3/00, 29/00*

U.S. Cl. 30—294 **20 Claims**



1. A utility knife body for receiving a cutting blade and for use in combination with a tape measure having a tape with an extensible end portion, which comprises:

a) a handle portion for holding a planar cutting blade along a lengthwise axis of the handle portion;

b) holding means attached to the handle portion for attaching the extensible end portion of the tape directly to said handle, said holding means having means for receiving the extensible end portion of the tape and movable securing means for releasably securing the extensible end portion of the tape directly to said handle, said means for receiving the extensible end portion of the tape being laterally offset from the lengthwise plane in which the cutting blade is oriented.

5,289,638

SAFETY CAN OPENER

Jack Chase, 1860 NW. 107th Ter., Coral Springs, Fla. 33071

Filed Feb. 19, 1993, Ser. No. 20,834

Int. Cl.[5] B67B *7/46*

U.S. Cl. 30—417 **9 Claims**

1. A can opener for opening a can having an end lid joined to the wall of a main body by a rim that includes inner and outer lid surfaces folded over the upper edge of the wall, whereby the lid is separated from the wall by cutting through the outer lid surface while simultaneously bending the outer lid surface above the cut outwardly while the wall is held vertically, the opener comprising:

a) a housing having a contact face;

b) an elongate gripping member having a long axis extending upward from the housing;

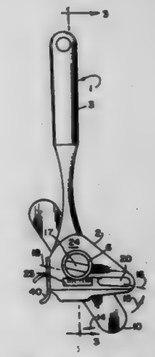
c) a drive shaft having a long axis and provided at a first end with screw threads;

d) a drive wheel connected to a second end of said drive shaft,

said drive wheel having an outer face located away from said drive shaft and a curved and toothed or serrated inner face located toward the drive shaft, the inner face curving from an obtuse angle to the axis of the drive shaft at the perimeter to substantially parallel to the drive shaft at the innermost portion adjacent the drive shaft;

e) means rotatably mounting the drive shaft in the housing with the drive wheel extending from the contact face and the threaded first end extending from an opposed face of the housing;

f) turning means threadably mounted on the first end, whereby, when the turning means is rotated in a first direction, the drive wheel is rotated and pulled toward the contact face, and, when the turning means is rotated in a



second direction, the drive wheel is moved away from the contact face to permit entry of a can rim therebetween;

g) securing means connected to the shaft for preventing complete unscrewing of the turning means from the drive shaft;

h) a cutter wheel axle mounted in a recess in the housing with the axis thereof oriented transverse to the axis of the drive shaft;

i) a cutter wheel rotatably mounted on the axle, the cutter wheel having a greater upper diameter and a lesser lower diameter, to thereby present a sharp, outwardly-flaring, upper cutter edge which extends out from the recess beyond the contact face, located at a position opposite and between the outermost and innermost portions of the inner face of the drive wheel;

j) the contact face and the inner face of the drive wheel defining a space below the drive shaft for receiving the upper rim of a can with the drive wheel engaging the inner surface of the rim and, as the drive wheel is rotated in the first direction, the drive wheel bends the inner surface outwards, forces the outer surface against the cutting wheel, and rotates the can past the cutting wheel, thereby cutting through the lid and simultaneously bending the cut lid outwardly for ease of removal and replacement.

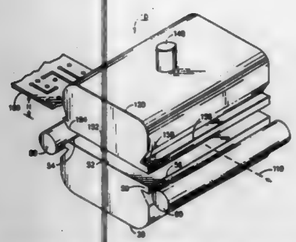
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5,289,639

FLUID TREATMENT APPARATUS AND METHOD

Steven L. Bard, Endwell; Jeffrey D. Jones, Newark; Robert H. Katyl, Vestal; Ronald J. Moore, Binghamton, and Oscar A. Moreno, Vestal, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 10, 1992, Ser. No. 911,610
Int. Cl.[5] F26B 7/00
U.S. Cl. 34—12 27 Claims



18. A method for treating a substrate with a fluid, comprising the steps of:

transporting said substrate over a surface, of finite dimensions, including an entrance edge and an exit edge and characterized by an axis extending from said entrance edge to said exit edge, said transporting being carried out at a distance, H, from said surface, from said entrance edge to said exit edge, along a direction which is substantially parallel to said axis; and

impinging at least a first row of at least two fluid jets upon said substrate, emanating from a first row of at least two, spaced-apart fluid jet injectors, said first row of fluid jet injectors being aligned transversely to said axis and penetrating said surface, and therefore said first row of fluid jets is aligned transversely to said axis, each of said fluid jet injectors being characterized by a diameter, D, the ratio H/D ranging from about 0.2 to about 15, said first row of fluid jet injectors being positioned closer to said entrance edge than to said exit edge, whereby after said impinging step, more than half the fluid associated with said first row of fluid jets flows in a direction substantially opposite to the direction of transport of said substrate.

5,289,640

APPARATUS AND METHOD FOR PREFERENTIALLY SEPARATING VOLATILIZABLE COMPONENTS OF A MATRIX

Mark M. McCabe, Lowell, Mass., assignor to RETEC/Tetra, LC, The Woodlands, Tex.

Continuation-in-part of Ser. No. 683,289, Apr. 10, 1991, Pat. No. 5,216,821. This application Apr. 15, 1993, Ser. No. 47,805
Int. Cl.[5] F26B 3/00
U.S. Cl. 34—29 16 Claims

1. An apparatus for preferentially separating a high vapor pressure component from a low vapor pressure component, wherein at least a portion of each volatilizable component is volatilized from a matrix, comprising:

a) a housing having

i) a housing inlet,

ii) a housing outlet,

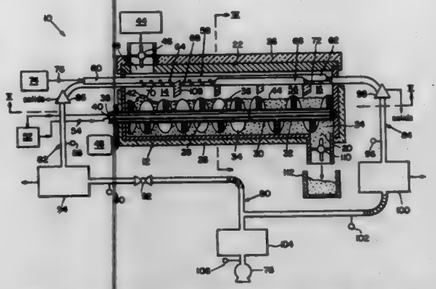
iii) a one first gas outlet, and

iv) at least one second gas outlet, which is sufficiently remote from the first gas outlet to enable preferential separation of a volatilized high vapor pressure component from a volatilized low vapor pressure component within the housing means;

b) conveying means for conveying the matrix from the housing inlet through the housing to the housing outlet;

c) volatilizing means for volatilizing at least a portion of the high vapor pressure and the low vapor pressure components of the matrix within said housing; and

d) means for preferentially directing said volatilized high vapor pressure component out of the housing through said



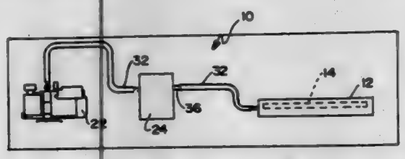
first gas outlet and for preferentially directing the volatilized low vapor pressure component out of the housing through the second gas outlet, thereby preferentially separating the high vapor pressure component from the low vapor pressure component of the matrix.

5,289,641

CHEMICAL VAPOR TRAP AND VACUUM DRYING SYSTEM INCLUDING SAME

John Balamuta, Elmhurst, and Richard C. Fuksa, Park Ridge, both of Ill., assignors to Welch Vacuum Technology, Inc., Skokie, Ill.

Filed Nov. 23, 1992, Ser. No. 980,504
Int. Cl.[5] F26B 21/06
U.S. Cl. 34—75 18 Claims



1. An apparatus for selectively removing undesired components from a heated vapor phase and hot liquid phase evolving from a sample in a heated drying chamber and passing into a vacuum source for inducing a vacuum in said sample drying chamber, said apparatus comprising:

a housing;

a condenser in said housing for cooling said heated vapor phase to cause said undesired components to condense out of said heated vapor phase to form a separated liquid condensate phase and a remaining stripped vapor phase;

a collector in said housing positioned to receive and collect sample liquids and said separated liquid condensate phase from the condenser, said collector including a sealing layer of a liquid sealing material, said liquid sealing material having a specific gravity less than that of said liquid condensate and having a vapor pressure at ambient collector temperatures of less than that of said sample liquid and said liquid condensate so that the sealing layer floats on top of collected sample liquid and said liquid condensate and sample liquid and condensing liquid condensate formed in the condenser falls through the sealing layer and is trapped thereunder;

means for connecting the condenser to said sample drying chamber;

means for connecting the condenser and collector to said vacuum source; and

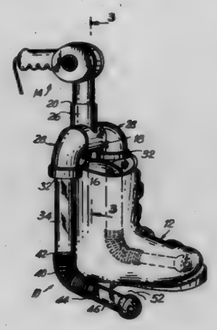
means for maintaining the pressure within said collector above a predetermined minimum pressure so that said liquid sealing layer is effective to prevent re-vaporization of said collected sample liquid and said liquid condensate into said stripped vapor phase exiting the collector and travelling to said vacuum source.

5,289,642

PORTABLE DRYER

Charles W. Sloan, 97 5th Ave., 5A, New York, N.Y. 10003

Filed Apr. 5, 1993, Ser. No. 42,667
Int. Cl.[5] F26B 25/00
U.S. Cl. 34—104 6 Claims



1. A portable dryer for drying moisture from the interior from an article to be dried, comprising air means; a distribution collar communicating with said air means; and articulated tubing having one end communicating with said distribution collar and a second end placed within the interior of the article to be dried; wherein said articulated tubing includes a non-flexible upper tubing having one end communicating with said distribution collar, a flexible joint having one end communicating with a second end of said non-flexible tube, and a non-flexible lower tube inserted within the article to be dried and having a first end communicating with said flexible joint and a second end from which air flows in to the article to be dried.

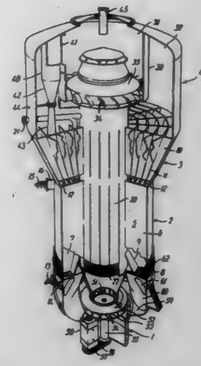
5,289,643

APPARATUS FOR DRYING A MOIST PARTICULATE MATERIAL WITH SUPERHEATED STEAM

Arne S. Jensen, Sovaeget, Denmark, assignor to Niro A/S, Sorborg, Denmark

PCT No. PCT/DK91/00197, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/01201, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 961,674
Claims priority, application Denmark, Jul. 9, 1990, 1652/90
Int. Cl.[5] B26B 17/12
U.S. Cl. 34—169 5 Claims

1. An apparatus for drying a moist particulate material having a non-uniform particle size with superheated steam, said apparatus comprising a lower cylindrical part (2) having a number of parallel, substantial vertically elongated chambers (6, 7) located in ring form, one or more of the chambers (7) having a closed bottom and the remaining chambers (6) having a steam-permeable bottom (8), the adjacent chambers (6) being interconnected through openings (62) in the chamber walls (5) at the lower ends of the chambers (6), and an upper conical part (3) which is also divided into chambers (10), which at its lower end is connected to the chambers (6) of the cylindrical part (2) of the apparatus and which at the top is connected to a transfer zone (32), the chambers of the conical part (3) of the apparatus being divided into smaller chambers (10) by means of inclined guide plates (11), means (15) for supplying moist particulate material to a chamber (6) having a steam-permeable bottom, means (13) for discharging dried material from a chamber (7) having a closed bottom, means (51) for supplying superheated steam to the area below the steam-permeable chamber bottoms (8), means (51) for discharging steam from



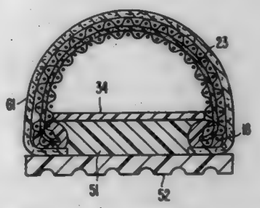
the transfer zone, and means (20) for reheating the discharged steam and recirculating it to the area below the steam-permeable chamber bottoms (8), characterized in that at least part of the inclined guide pates (11) in the conical part (3) of the apparatus is provided with means (70, 71) for heating the plates (11).

5,289,644

WATERPROOF FOOTWEAR

Kathleen R. Driskill, Townsend; Robert L. Hean, Wilmington, and Jean Norvell, Newark, all of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 729,504, Jul. 12, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 47,345
Int. Cl.[5] A43C 13/08; A43B 23/07
U.S. Cl. 36—14 39 Claims



1. An article of waterproof footwear which comprises:

(a) an upper comprised of a water-permeable layer and having a proximal opening for receiving a wearer's foot, a proximal edge surrounding the proximal opening, a distal opening, a distal edge surrounding the distal opening, and inside and outside surfaces;

(b) a polymeric binding adhered to and encapsulating the distal edge of the upper and covering a portion of the inside and outside surfaces of the upper adjacent to the distal edge, wherein an inner surface of the polymeric binding is formed;

(c) a separate waterproof insole having a top surface for supporting the wearer's foot and a bottom surface adhesively bonded without stitching to the inner surface of the polymeric binding; and

(d) an outer sole attached to the bottom surface of the waterproof insole and polymeric binding of the upper.

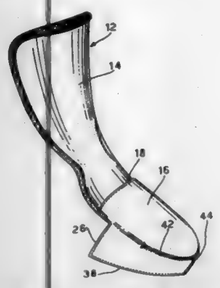
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,645

INNER LINING FOR SKI BOOTS HAVING A ONE PIECE TONGUE ASSEMBLY

Antonello Marega, Montebelluna, and Andrea Gabrielli, Predazzo, both of Italy, assignors to Calzaturificio Tecnica SpA, Treviso, Italy

Continuation of Ser. No. 606,594, Oct. 31, 1990, abandoned. This application Jun. 29, 1993, Ser. No. 83,394
Claims priority, application Italy, Nov. 9, 1989, 22069 B/89
Int. Cl.[5] A43B *23/26*
U.S. Cl. 36—54 **6 Claims**



1. In a lining shoe for a fore-entry ski boot, said shoe having a sole, an upper part which includes a toe, a rear part which includes a heel, a leg part and a tongue assembly, the improvement wherein the tongue assembly comprises:

(a) a continuous tongue extending from near an uppermost part of the leg part to said upper part and being securely attached to the upper part at an uppermost edge thereof, said uppermost edge being at a vertical intermediate of position sole said and an ankle level of a wearer of the shoe;

(b) a depending portion of said upper part securely attached to said sole; and

(c) a depending portion edge securely attached to a free edge of said rear part, said free edge being at a position between said toe and said uppermost edge of the upper part.

5,289,646

ATHLETIC SHOE

Junichi Kiyosawa, Kobe, Japan, assignor to Asics Corporation, Hyogo, Japan

Continuation of Ser. No. 639,270, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 427,565, Oct. 27, 1989, Pat. No. 5,024,006. This application Mar. 12, 1992, Ser. No. 849,833
Claims priority, application Japan, Jan. 26, 1989, 1-8061
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] A43B *23/26*
U.S. Cl. 36—83 **25 Claims**

1. An athletic shoe comprising:

a sole;

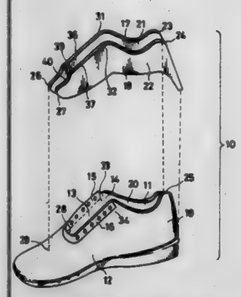
an upper body disposed on said sole and defining a throat opening for insertion of a foot;

said upper body including,

a vamp portion which defines an elongate U-shaped opening forwardly extending in a lengthwise direction from said throat opening, and

a shoe tongue which covers said U-shaped opening along the lengthwise direction thereof; wherein

said shoe tongue includes side portions which are each secured to said vamp at lengthwise separated locations so as to establish respective intermediate sections of said shoe tongue side portions that are unsecured to said vamp



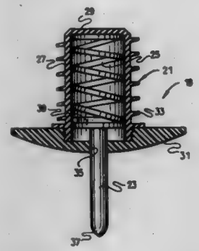
along at least a major lengthwise extent of said U-shaped opening between said lengthwise separated locations.

5,289,647

SHOE WITH RETRACTABLE SPIKES

Donald R. Mercer, P.O. Box 367, Thomaston, Ga. 30286

Continuation of Ser. No. 947,529, Sep. 21, 1992, abandoned. This application Sep. 8, 1993, Ser. No. 118,095
Int. Cl.[5] A43B *5/00*; A43C *15/00*
U.S. Cl. 36—134 **5 Claims**



1. A shoe, comprising:

a shoe upper;

a shoe sole, attached to the shoe upper and defining an underside walking surface having a plurality of closed end bores openly extending in a predetermined arrangement inward from said surface; and

a plurality of individual spike assemblies each removably secured in one of said bores and including;

a unitary housing having a hollow cylinder with a closed upper end and an open lower end and threads on an outer surface of the cylinder for threading the housing into one of said bores in the shoe sole;

a spike having an upper end and a lower end, the upper end being positioned within said housing and the lower end extending downward out of the housing to past said walking surface; and

a spring within said housing for biasing the lower end of said spike downward to said extended position, while allowing the lower end of said spike to be pushed upward into a retracted position within the housing.

5,289,648

MACHINE ARRANGEMENT FOR RECEIVING, STORING AND DISTRIBUTING TRACK BALLAST

Josef Theurer, Vienna, and Herbert Wörgötter, Gallneukirchen, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria

Filed Aug. 5, 1992, Ser. No. 925,495
Claims priority, application Austria, Sep. 3, 1991, 1737/91
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] E02F *5/22*
U.S. Cl. 37—104 **9 Claims**



1. A mobile machine arrangement for receiving, storing and distributing track ballast, the machine arrangement being mounted on the track for mobility in an operating direction and comprising

(a) a first machine frame,

(b) a second machine frame succeeding the first machine frame in the operating direction and having a forward end in the operating direction,

(c) a ballast storage device mounted on the first machine frame, the ballast storage device comprising

(1) a ballast conveyor band arranged at a bottom of the ballast storage device and extending longitudinally in the direction of the track, the ballast conveyor band having a forward end in the operating direction and

(2) the ballast storage device having outlet means below the ballast conveyor band forward end,

(d) a ballast plow arrangement vertically adjustably mounted on the first machine frame behind the ballast storage device outlet means in the operating direction,

(e) a ballast receiving device mounted on the second machine frame and arranged to receive the track ballast, and

(f) a ballast transport device projecting from the second machine frame end towards the first machine frame, the ballast transport device having

(1) an input end preceding the ballast receiving device in the operating direction and arranged to receive the track ballast, and

(2) an output end arranged to deliver the received track ballast to the ballast conveyor band.

5,289,649

PERPETUAL CALENDAR

Felipe P. Perez, 1917 #41 Col., Del Parque, Mexico 15960

Continuation of Ser. No. 556,749, Jul. 23, 1990, abandoned. This application Feb. 10, 1992, Ser. No. 833,815
Claims priority, application Mexico, Jan. 12, 1990, 19108
Int. Cl.[5] G09D *3/08*
U.S. Cl. 40—113 **6 Claims**

1. A perpetual calendar, comprising:

a base member;

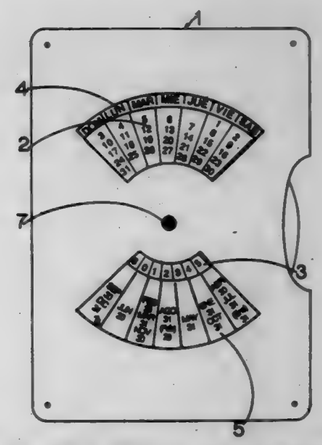
a top member joined to the base member, the top member defining a first window and a second window, the first window and second window both having arcuate openings;

a rotating disk having a center of rotation, the rotating disk supported for rotation about its center, intermediate the base member and the top member;

the first window having a first arcuate opening, such that sides of the first window lie along a first pair of spaced apart radial lines extending from the center of rotation of the rotating disk when the first window is in registration with a portion of a first disk indicia carried on the rotating disk corresponding to a calendar month, edges of the first arcuate opening of the first window in spaced apart relation between the first pair of spaced apart radial lines, the first window having a first edge margin opposite the center of rotation of the rotating disk, the first edge margin containing a first perimeter indicia representing the days of the week;

the second window having a second arcuate opening, such that sides of the second window lie along a second pair of spaced apart radial lines extending from the center of rotation of the rotating disk when the second window is in registration with a second disk indicia carried on the rotating disk corresponding to a year finding key number, edges of the second arcuate opening of the second window in spaced apart relation between the second pair of spaced apart radial lines, the second window having a second edge margin opposite the center of rotation of the rotating disk, the second edge margin containing a second perimeter indicia representing months of a year;

the first disk indicia on the rotating disk defining a plurality of monthly calendars arranged in a circle centered on the center of rotation of the rotating disk of thirty one days represented by the numbers 1 through 31 representing the days of the month, the first disk indicia visible through the



first window in the top member, the first disk indicia of the rotating disk combining with the first perimeter indicia of the first window to create a thirty one day calendar in any location of the first window when the first window is in registration with the first disk indicia;

the second disk indicia on the rotating disk defining a series of year finding key numbers arranged in a circle centered on the center of rotation of the rotating disk corresponding to a year index, the series of year finding key numbers visible through the second window opening in the top member, the series of year finding key numbers combining with the second perimeter indicia of the second window to create the year index; and

a matrix for use in obtaining a year finding key number by determining the intersection between a first table having the two last numbers of a year and a second table having the first two numbers of a year, whereby the combination of the year finding key number and the second perimeter indicia determine the second disk indicia revealed in the second window, which in cooperation with the first perimeter indicia and the first disk indicia revealed in the first window, is capable of providing monthly calendars for 5,812 years.

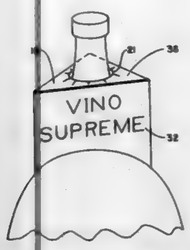
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5,289,650

BOTTLE ADVERTISER

Brian Follett, North Vancouver; Richard Herron, White Rock; Wendy Dayton, North Vancouver; Pat Bussword, Bowen Island; Don Manders, and James Farries, both of Calgary, all of Canada, assignors to Alberta Distillers Limited, Burnaby, Canada

Filed Jan. 3, 1991, Ser. No. 637,280
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—310 7 Claims



2. An advertising display device for mounting on a bottle of a type having a top, neck, shoulder and body, comprising:

a tube having a front, back and two flat side surfaces forming a rectangular cross-section, open at a bottom and having a closed top surface attached to said back side surface, said top surface having a central opening for permitting the passage therethrough of the bottle top and neck and a bottom of said side surfaces being shaped to provide four points for contacting the shoulder of said bottle,

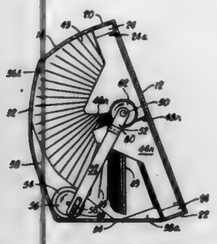
each of said side surfaces being wider across a bottom thereof than across a top thereof so that said device can be stacked inside or atop another such device.

5,289,651

PHOTO DISPLAY DEVICES

Thomas L. Byers, 5840 Stewart Dr., Mustang, Okla. 73064

Continuation-in-part of Ser. No. 628,164, Dec. 17, 1990. This application Jul. 2, 1992, Ser. No. 908,300
Int. Cl.[5] G09F *19/02*
U.S. Cl. 40—533 10 Claims



1. A device for storage and display of photographs comprising:

a housing having a generally rectangular open front with top, bottom and opposite sides;

a frame defining upper and lower photograph viewing areas, said frame being releasably positioned over said open front of the housing;

a spindle assembly including plural envelopes resiliently secured successively therearound, each envelope containing photos viewable through each side, said spindle assembly being rotatably positioned in bisection of said housing open front;

a ratchet wheel secured on one end of said spindle assembly and rotatable therewith;

a ratchet arm having first and second ends with said first end rotatively secured to one end of said spindle assembly and extending a ratchet pawl into engagement with said ratchet wheel; and

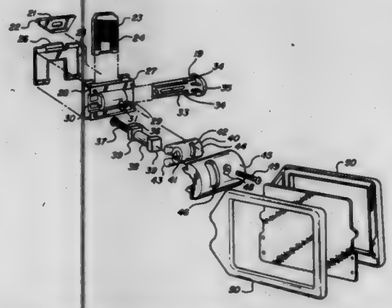
a motor and crank wheel slidingly engaged with the ratchet arm second end to cause angular reciprocation and movement of the ratchet pawl to cause intermittent rotations of the ratchet wheel thereby to move each successive envelope from the upper viewing area to the lower viewing area.

5,289,652

ADVERTISING DISPLAY MOUNTING DEVICE

George Kringel, Westport; Robert S. Frichette, Trumbull, and James E. Richardson, Weston, all of Conn., assignors to ActMedia, Inc., Darien, Conn.

Continuation of Ser. No. 311,743, Feb. 17, 1989, abandoned. This application May 20, 1991, Ser. No. 704,835
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—642 18 Claims



5. A mounting device for removably attaching an object to a price channel structure comprising:

first means including first teeth and a first clip;

second means including a second clip for cooperating with said first clip to engage the price channel structure and a body having,

a slot formed therein to receive said first means, and

a channel formed therein and oriented in non-parallel relation to said slot; and

slide means formed for sliding cooperation with said channel of said second means, said slide means including second teeth; and

attachment means for connecting the object to said second means and including a resilient connector means;

wherein said second teeth cooperate with said first teeth to force said first means and said second means into and out of engagement with the price channel structure, said first and second means being engaged with the price channel structure by moving said slide means in one direction along said channel and said first and second means being disengaged from the price channel structure by reversing the direction of movement of said slide means along said channel.

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FIREARM LOCKING DEVICE

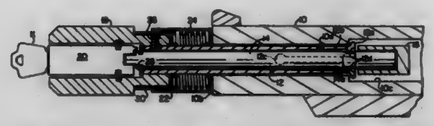
Laszlo L. Szelenyi, 21 Margo Ct., and Ludovic Biro, 1224 Cromwell Hills Dr., both of Cromwell, Conn. 06416

Filed Dec. 30, 1992, Ser. No. 998,514
Int. Cl.[5] F41A *17/44*
U.S. Cl. 42—70.11 8 Claims

1. A firearm locking device for use with a firearm having a barrel and a cartridge receiving chamber communicating with a bore of the barrel, said device comprising:

a sleeve of resilient material and having a length somewhat longer than said barrel bore such that an inner end of said sleeve extends into the chamber when said sleeve is provided inside said barrel,

an elongated element rotatably received inside said sleeve and having an inner end portion of eccentric cross section such that it cooperates with the inside of said sleeve to cause said sleeve inner end to deform radially outwardly when said elongated element is rotated relative said sleeve from an unlocked to a locked angular position, and



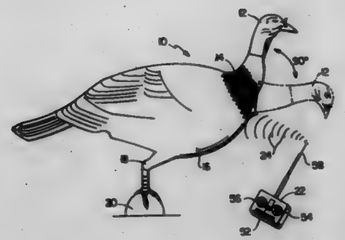
said sleeve inner end being of non-circular cross sectional shape such that at least one radially inwardly projecting protuberance is adapted to be angularly aligned with said eccentric inner end portion of said elongated element to define said locked angular position of said elongated element, and a plastic cap provided on the inner end of said elongated element, said cap having an outside diameter of at least approximately equal to that of said sleeve outside diameter, said sleeve inner end defining at least one slot to facilitate radial deformation thereof by rotation of said elongated element.

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ANIMATED WILDFOWL DECOY

Arthur Denny, P.O. Box 9, Franklin, N.Y. 13775, and William Heaney, HC 64 Box 63A, Oneonta, N.Y. 13820

Filed Jan. 19, 1993, Ser. No. 4,853
Int. Cl.[5] A01M *31/06*
U.S. Cl. 43—2 19 Claims



1. An animated wildfowl decoy and movement control means comprising:

a) hollow head, neck and body portions having an external appearance simulating a live wildfowl;

b) first motor means actuable in response to first electrical signals;

c) first motion transmission means connecting said first motor means to at least one of said head and neck portions to effect reciprocating, up and down movement of said head and neck portions with respect to said body portion in response to actuation of said first motor means;

d) second motor means actuable in response to second electrical signals;

e) second motion transmission means connecting said second motor means to said head portion to effect reciprocating, twisting movement of said head portion with respect to said neck portion in response to actuation of said second motor means; and

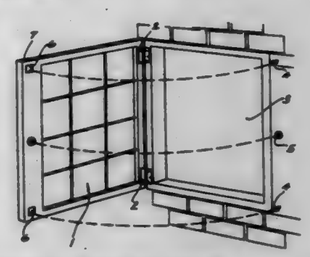
f) means for selectively causing generation of said first and second electrical signals from a position remote from said decoy.

5,289,655

SAFETY RELEASE SECURITY GRILLE

Fausto Marmora, and Daniele A. Marmora, both of 1-10 Glebe Street, Glebe 2037 (NSW), Australia

PCT No. PCT/AU91/00044, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO91/12403, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 8, 1991, Ser. No. 910,040
Claims priority, application Australia, Feb. 8, 1990, PJ 8527
Int. Cl.[5] E05B *65/10*
U.S. Cl. 49—141 9 Claims



1. A window security grille including:

first attachment means at a first edge of the grille, being securable to an exterior wall proximate or within a window opening of a building and allowing release or pivotable movement of the grille relative to such wall;

anchor means rigidly attachable to the wall proximate the window opening to be opposite the first attachment means;

second attachment means, at a second edge of the grille opposite the first edge, including a locking portion and an actuating device both being secured to the grille and the actuating device moving the locking portion between locked and released positions, the locking portion lockingly engaging the anchor means when in the locked position when the grille is closed to secure the grille closed and releasing same when in the released position;

and a release control device connected to the wall and including a handle end and an opposite actuating end inserted through the wall and protruding from the wall to engage and rotatably drive the actuating device when the grille is closed against the window opening.

5,289,656

GEARED CASEMENT WINDOW HINGES

Gregory V. Vetter, Owatonna, Minn., assignor to Truth Division of SPX Corporation, Owatonna, Minn.

Filed Jul. 6, 1992, Ser. No. 908,464
Int. Cl.[5] E05D *15/42*
U.S. Cl. 49—230 18 Claims

1. In a window having a window sash and window frame, a hinged structure for supporting opposite sides of the sash on the frame, comprising:

first and second tracks on opposite sides of the window frame adjacent said opposite sash sides when said sash is closed;

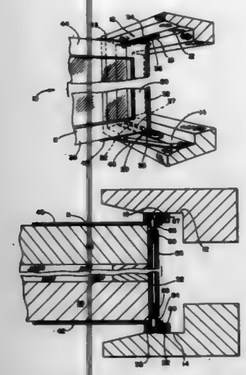
a shaft having first and second ends;

C-shaped shoes rotatably secured to opposite shaft ends, said C-shaped shoes being slidably secured to each of said tracks and supporting said shaft ends for longitudinal movement along their respective tracks;

gears fixed to opposite ends of said shaft;

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racks associated with each of said tracks and engaging said gears;



first and second sash arms secured to the opposite side sashes; and

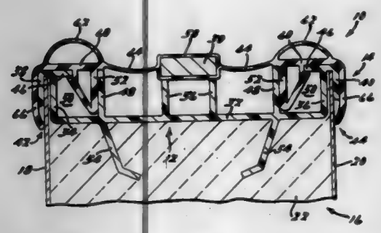
means for carrying said sash arms with said shaft.

5,289,657

REFRIGERATOR GASKET AND RETAINER

Lowell M. Kiel, Seymour, Ind., assignor to The Standard Products Company, Cleveland, Ohio

Filed Mar. 13, 1992, Ser. No. 851,424
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—478.1 24 Claims



1. A gasket assembly, comprising:

a retainer and a gasket;

said retainer having a base elongated in a longitudinal direction and extending in a lateral direction, a first fastening means having a first channel for accepting a portion of a shell of a cabinet and thereby securing said retainer to said shell, a second fastening means having a second channel for accepting a portion of a liner of said cabinet and thereby securing said retainer to said liner, a third fastening means for securing said retainer and said gasket in an interlocking relationship, said first and second channels being oriented in a first direction and a second direction, each of said first and second directions being substantially perpendicular to said longitudinal and said lateral directions; and

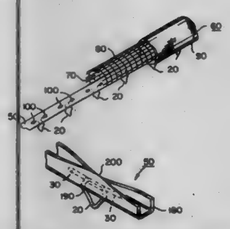
said gasket having at least one platform elongated in a longitudinal direction and extending in a lateral direction, at least one flexible bumper attached to said platform and for contacting a portion of a door, and a magnetic fastening means attached to said platform and for releasably securing said door to said cabinet in a closed position, said magnetic fastening means defining a first planar surface adapted to contact a second planar surface in flush engagement when said door is in said closed position, said bumper being spaced laterally apart from said magnetic fastening means.

5,289,658

METHOD AND APPARATUS FOR PROVIDING A GASKET SEAL BETWEEN SURFACES

Leonard Lusen, Lansdale, and John B. Huis, Gleanmoore, both of Pa., assignors to The Bentley-Harris Manufacturing Company, Lionville, Pa.

Continuation of Ser. No. 703,281, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 589,792, Sep. 28, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 995,924
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—492.1 9 Claims



1. A gasket for sealing a space between two surfaces in an oven comprising:

frame means comprising a substantially U-shaped channel for providing a rigid substrate to the gasket and conforming the gasket to a shape substantially corresponding to a shape of one of the surfaces;

a plurality of individual clip members for securing the gasket between the two surfaces;

said channel having slots formed therein corresponding to desired locations of the clip members, said clip members being interfitted within the slots and the channel having side wall portions adjacent the slots, said side wall portions being pinched together int he region of the clip member to fixedly secure the clip members with respect to the channel;

a plurality of receiving apertures in one of the surfaces, the clip members being interfaced to the channel in corresponding relationship to the apertures to fixedly hold the clip members, thereby securing the gasket between the two surfaces; and

resilient means fitted over the frame means such that the frame means reside in an interior space of the resilient means and the clip members extend outwardly through the resilient means to be engaged with the receiving apertures for filling the space between the two surfaces in the oven and ensuring that the gasket adequately seals the space between the two surfaces.

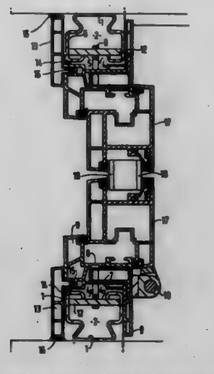
5,289,659

WINDOW AND DOOR ASSEMBLIES

Ian Harrison, Barnsley, United Kingdom, assignor to John Carr (Press Lock) Limited, South Yorkshire, United Kingdom

PCT No. PCT/GB90/00849, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991, PCT Pub. No. WO90/15217, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 1, 1990, Ser. No. 777,341
Claims priority, application United Kingdom, Jun. 8, 1989, 8913226
Int. Cl.[5] E06B 3/00
U.S. Cl. 49—501 4 Claims

1. A door or window assembly comprising a rigid first frame defining an opening, and a second frame selectively fitting into and closing off the opening in the first frame, the first frame having a surface part with an opening leading into a channel section partly defined by side walls of said first frame, the second frame including retaining means comprising a bolt and anchor part assembly, the anchor part selectively resting within a recessed part of the second frame to be level with or flush with a surface of the second frame that is selectively located adjacent the surface of the first frame which includes



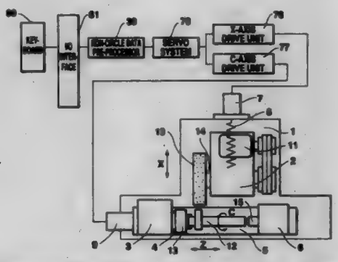
said opening, the anchor part selectively entering said channel section through said opening and the retaining means then being operated to securely engage the anchor part with the first frame to prevent the second frame from being withdrawn from the first frame wherein the second frame includes a glazing unit or door structure, carried by a third frame.

5,289,660

METHOD AND APPARATUS FOR GRINDING NON-CIRCULAR WORKPIECE

Fumitoshi Terasaki, and Tatsuhiro Yoshimura, both of Niwa, Japan, assignors to Okuma Corporation, Nagoya, Japan

Filed Apr. 22, 1993, Ser. No. 52,183
Claims priority, application Japan, Apr. 25, 1992, 4-131532
Int. Cl.[5] B24B 19/12, 51/00
U.S. Cl. 51—165.71 2 Claims



2. An apparatus for machining a workpiece into a non-circular configuration by rotating the workpiece fixedly mounted on a main spindle about the main spindle and causing a tool to engage the rotating workpiece in a direction perpendicular to the axis of the main spindle while controlling the forward and backward movement of the tool, said apparatus comprising:

a) means for storing the shape of the workpiece as a group of points represented by polar coordinates about the axial center of the main spindle as an origin;

b) means for storing the size of the tool;

c) means for converting said group of points representing the shape of the workpiece into profile data representing the profile of the workpiece;

d) means for preparing division point data dividing the profile data of the workpiece shape into line segments of minute and equal length;

e) means for preparing reference X/C axes data representing the relationship between the position of the tool head and the rotational angle of the main spindle when the tool engages the workpiece at each of said division points;

f) means for preparing temporary X/C axes data by selecting the division points in said reference X/C axes data at a given rate;

g) means for calculating at least one of the velocity, acceleration and rate of acceleration change in each of the tool head and main spindle when the workpiece is machined in accordance with said temporary X/C axes data and for judging whether or not the calculated value exceeds a threshold;

h) means for changing said rate of selecting if the calculated value exceeds the threshold;

i) means for determining said temporary X/C axes data as modified X/C axes data when the calculated value does not exceed the threshold; and

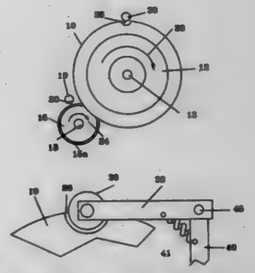
j) means for controlling the tool head and main spindle in accordance with said modified X/C axes data.

5,289,661

NOTCH BEVELING ON SEMICONDUCTOR WAFER EDGES

Joel B. Jones, Bonham, and Lawrence D. Dyer, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1992, Ser. No. 995,447
Int. Cl.[5] B24B 9/08
U.S. Cl. 51—283 E 14 Claims



11. A method for polishing the edge of a semiconductor wafer and including both sides of the edge of the wafer in a fiduciary mark notch, comprising the steps of:

polishing the edge of the semiconductor wafer with a first polishing wheel;

polishing simultaneously both sides of the edge of the semiconductor wafer in the fiduciary notch with a second polishing wheel; and

rotating the semiconductor wafer, first polishing wheel and second polishing wheel during polishing of the wafer edge and the notch edge.

5,289,662

WALL COPING SYSTEM

Gary M. Castle, 9004 Montpelier Dr., Laurel, Md. 20708

Filed Jul. 22, 1992, Ser. No. 916,910
Int. Cl.[5] E04H 1/00
U.S. Cl. 52—287.1 18 Claims

1. A coping system for covering the top of a parapet wall, said system comprising:

an anchor element of inverted, downwardly open channel shape defining a first central web of first predetermined length for extending across the top of the wall and having front and rear sides extending downwardly from said web

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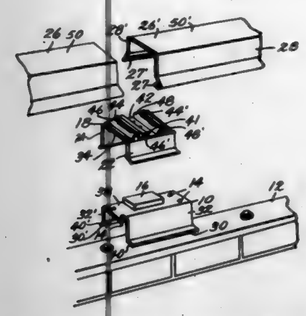
to define bottom edges, each of said sides defining an outwardly sloping flange portion adjacent to said bottom edge;

means for use in operative relationship with said anchor element for securing a plurality of said anchor elements in predetermined spaced relation along the top of said wall;

a resilient means for positioning on said first web;

a support element of inverted, downwardly open channel shape defining a second central web of substantially said first predetermined length for resting on said anchor element and on said resilient means and having front and rear legs extending downwardly from said second web;

a plate element attached to said second web, said plate element of a second predetermined length substantially equal to said first predetermined length;



first and second sealant strips attached to said plate element, each of said strips extending substantially along the entire length of said plate element;

reinforcing means in operative relationship with said sealant strips and with said plate element for helping to hold said strips in position on said plate element and for stiffening and reinforcing said plate element; and

coping elements, each of said coping elements of inverted, downwardly open channel shape, defining a third central web of substantially said first predetermined length and having first and second sides extending downwardly from said third web to define bottom hook edges for engagement with said sloping flange portions of said anchor element, whereby said coping elements are positioned in sealing relationship on said sealant strips for directing water passing between ends of said coping elements to a side of said wall.

5,289,663

FLOOR MOLDING

Werner Schlüter, Iserlohn, Fed. Rep. of Germany, assignor to Schluter Systems GmbH, Iserlohn, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 985,889

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141600

Int. Cl.[5] E04B *1/00*

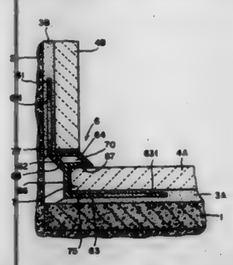
U.S. Cl. 52—287.1 **13 Claims**

1. A floor molding forming a transition at a corner between a floor and a wall disposed at a right angle to the floor, the floor having floor tiles and the wall having wall tiles, with each tile having a bottom surface, a side edge and a top surface, comprising:

a wall bracket securable between the wall and the wall tiles including a wall bracket leg disposed adjacent to the side edge of the wall tile facing the corner;

a floor bracket securable between the floor and the floor tiles at a distance from said wall bracket and forming a gap therebetween, said floor bracket having an L-shaped member including a floor bracket leg disposed adjacent to the side edge of the floor tile facing the corner and a floor bracket arm, connected to said floor bracket leg, disposed adjacent to the top surface of the floor tile; said floor bracket forming a pocket for receiving the floor tile; and

an elastic plastic bridge coupled between said wall bracket leg and said floor bracket arm across the gap, said bridge



contacting said floor bracket arm adjacent to the top surface of the floor tile whereby said bridge permits relative movement between said wall bracket and said floor bracket while maintaining the transition between the wall and the floor.

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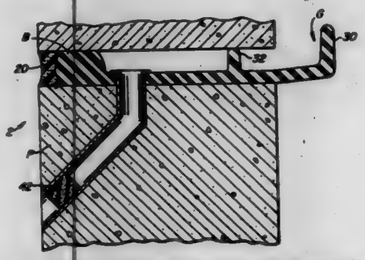
BACK DRAINAGE SYSTEM FOR EXTERIOR PANELS

Michael C. Rizza, 2863 Encina Camino, Walnut Creek, Calif. 94598, and Maurice Lafayette, 3440 Enterprise Ave., Hayward, Calif. 94545

Filed Jul. 17, 1992, Ser. No. 916,052

Int. Cl.[5] E04B *1/41*

U.S. Cl. 52—302.1 **10 Claims**



1. In a wall panel wall system for a building including;

a plurality of wall panels having an exterior weather surface, an interior plenum exposed surface, and panel side edges extending the preselected thickness of said panels form said exterior weather surface to said interior plenum surface for abutment to similar said panels to form a continuous building exterior wall;

means affixed to said panels for supporting said panels from a structural member of said building;

said panels as supported from said building abutted to form at least one horizontal or diagonal joint at said side edges between said panels and at least one vertical joint between said panels;

a caulking system for said joints between said panels comprising in combination:

an elastic gutter support member for forming a barrier between said horizontally or diagonally abutted panels, said gutter support member including,

a backing portion having wedged placement between said horizontally or diagonally abutted panels; and,

a gutter portion attached to and supported from said backing portion, said gutter portion extending along a bottom edge of said joint from said backing portion along said preselected thickness of said panels towards and beyond said interior plenum exposed surface of said panels;

an upwardly exposed gutter edge attached to and supported from said gutter portion beyond the plane of the plenum exposed potion of said panels;

said gutter portion and said upwardly exposed gutter edge being elastically mounted with respect to said backing portion to enable insertion of said backing portion in wedged placement between said panels with elastic deformation of said gutter portion and said gutter edge during insertion between said panels; and,

at least one weep tube communicated to drain said gutter bottom at one end and extending along said vertical joint to and toward the weather exposed surface of said panels at the other end for discharging water from the interior of said gutter to the exterior weather exposed surface of said panels.

5,289,665

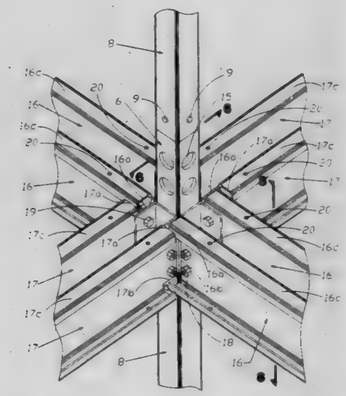
ORTHOGONAL FRAMEWORK FOR MODULAR BUILDING SYSTEMS

Gregory J. Higgins, 275 Greenwich St., New York, N.Y. 10007

Filed Sep. 26, 1991, Ser. No. 766,816

Int. Cl.[5] E04C *3/30*

U.S. Cl. 52—721 **15 Claims**



1. An orthogonal framework comprising a hollow square connecting tube, means in the end of said connecting tube for connecting hollow square posts to the connecting tube in vertical alignment with each other; a U-shaped bracket including means for removably connecting the bracket to the connecting tube, and at least one pair of beams connected to said bracket; said bracket having vertically and outwardly extending flanges located to be in vertical alignment with the orthogonally adjacent faces of said connecting tube and said beams being C shaped in cross section and separately respectively connected to the flanges of the bracket, each beam having a vertical web including a flat inner face secured to an associated one of said flanges whereby said flat inner faces of the beams are aligned with the adjacent faces of the connecting tube.

5,289,666

APPARATUS FOR APPLYING LABEL TAGS

Thomas W. Hamilton, Stoke Poges, United Kingdom, assignor to T. W. Hamilton Design Ltd., Burnham, United Kingdom

Filed Mar. 20, 1986, Ser. No. 841,858

Int. Cl.[5] B65B *5/04, 35/20*

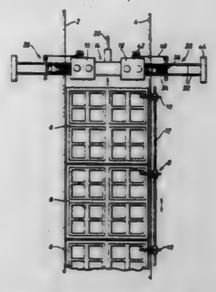
U.S. Cl. 53—252 **10 Claims**

1. Apparatus for applying label tags, each said tag having a leading end and a stepped portion, said apparatus comprising a dispensing head defining a linear breach channel for receiving the leading tag of a row of tags,

a cartridge for housing a row of tags,

means coupling the cartridge to the dispensing head to direct the row of tags towards the breach channel,

a tag extraction assembly having tag engaging means movable into the channel into engagement with the stepped portion of the leading tag to displace the leading tag along said channel in one direction,



a displacement member for receiving the leading tag and operable to displace the tag along the said channel in the opposite direction, and

guide means defining a curved path leading away from the linear direction of the channel for guiding the leading end of the leading tag, when displaced by the tag extraction assembly, along the curved path, into engagement with the displacement member.

5,289,667

Patent Not Issued For This Number

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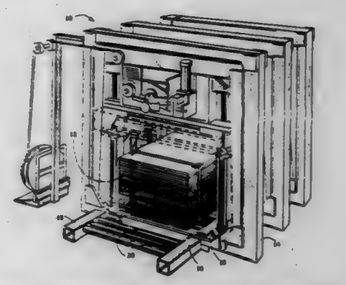
EDGE PROTECTOR DELIVERY AND POSITIONING APPARATUS AND METHOD

Brian T. Meyer, 13735 S. Lavergne, Crestwood, Ill. 60445

Filed Dec. 10, 1992, Ser. No. 988,735

Int. Cl.[5] B65B *61/22*

U.S. Cl. 53—410 **8 Claims**



8. A method of protecting the edges of a package around which a strapping is to be strapped by use of an edge protector apparatus for each edge to be protected, comprising the steps of

(a) providing a package support on which the package to be strapped is disposed, said package having at least one edge to be protected from damage by said strapping;

(b) providing in a stacked nested relationship a plurality of

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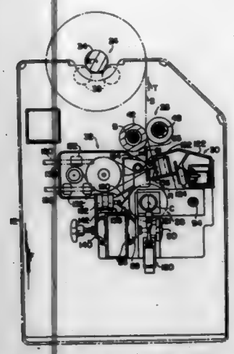
edge protectors within a magazine, at least one magazine being associated with each edge to be protected;
(c) dispensing a single edge protector from each said magazine through a magazine opening, said magazine opening having a predetermined size, shape and included angle to permit dispensing of only a single edge protector at a time, and dispensing said single edge protector to a saddle shuttle assembly associated with each said edge to be protected;
(d) resiliently engaging said single edge protector with resiliently mounted clips on said saddle shuttle assembly and shuttling said single edge protector by means of said saddle shuttle assembly from each said edge protector magazine to each said edge to be protected, wherein said edge protector is brought into contact with each said package edge to be protected and said resiliently mounted clips are retracted to disengage said edge protector.
(e) extending a retaining means from said package support to said edge of said package so that said edge protector is retained immediately adjacent said package edge; and
(f) looping a strapping around said package and over each said edge, said retaining means and said saddle shuttle assembly providing a guide to said strapping during looping so that said strapping is positioned directly over said edge protector.

5,289,669

CORELESS WINDER AND METHOD OF USE

H. Joseph Gerber, West Hartford; Claude LeBlond, Broadbrook; Kevin Williams, East Windsor; Alex Zusmanovich, South Windsor, and A. Bruce Plumley, Meriden, all of Conn., assignors to Gerber Garment Technologies, Inc., Tolland, Conn.

Filed Apr. 8, 1991, Ser. No. 681,887
Int. Cl.[5] B65B *51/04, 61/06, 63/04*
U.S. Cl. 53—415 **45 Claims**



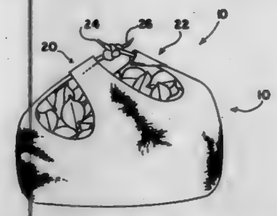
33. A method for winding discrete sections of a continuous web of sheet material into separate tubes, said method comprising:
advancing said sheet material along a path of travel from a supply of such material to a station disposed remotely thereof;
providing means for winding a discrete length of sheet material bout itself and about a first axis of rotation and for allowing such winding of different discrete lengths of sheet material in this manner;
providing means for cutting said sheet material completely through to form a leading free edge in said sheet material;
providing said winding means with a means for gripping marginal side edges of a section of sheet material to be wound adjacent said leading free edge;
advancing a discrete length of said sheet material to said station and winding it about itself and about said first axis of rotation to form a tube of material by gripping the marginal side edges of the web section to be wound adjacent the leading free edge thereof and thereafter winding the web section about itself;
cutting said sheet material completely through to form a leading free edge extending generally transversely of its length at a point therealong separating the wound section from that which succeeds it and coinciding with the end of one discrete length and the beginning of another;
fastening the tube so that it remains held in a tubular form when it is released from the station; and
releasing the tube rolled on said winding means and advancing the next section of sheet material to the station by advancing the leading free edge of the next discrete length of said sheet material to said winding means to enable winding and fastening of the next discrete length of sheet material into tube form in the same manner.

5,289,670

METHOD AND APPARATUS FOR HANDLING TOBACCO AND OTHER BULK GOODS

Estace L. Morgan, Sanford, and Alvin R. Tilley, Fuquay-Varina, both of N.C., assignors to Universal Protector Corporation, Fuquay-Varina, N.C.

Filed Sep. 2, 1992, Ser. No. 939,598
Int. Cl.[5] B65B *11/48*; B65D *65/00, 30/00*
U.S. Cl. 53—461 **9 Claims**



1. A method of handling and containerizing tobacco for shipment from the farm to market and then to processing, comprising the steps of:
a) filling the central portion of a flexible sheet with tobacco;
b) threading one corner of the sheet through a sleeve formed in a first adjacent sleeve corner;
c) threading a second corner of the sheet through a sleeve formed in a second adjacent sleeve corner;
d) pulling the first and second corners through the respective sleeves and pulling the sheet up around the tobacco so as to generally wrap the sheet around the tobacco so as to contain the tobacco within a sleeve sheet; and
e) securing the first and second corners together so as to containerize and secure the tobacco within the sleeve sheet.

5,289,671

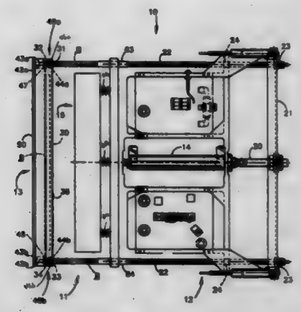
PACKAGING MACHINE AND METHOD

Bernard Lerner, Aurora; Rick S. Wehrmann, Hudson, and William M. Crossner, Tallmadge, all of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Sep. 30, 1992, Ser. No. 954,305
Int. Cl.[5] B65B *57/08*
U.S. Cl. 53—479 **13 Claims**

1. A packaging machine for loading bags including a bag sealing section, the sealing section comprising:
a) a frame structure;
b) a light beam source mounted on the frame structure and adapted to emit a light beam along a path;
c) a heater bar and a seal bar each connected to the frame structure and located near a segment of the light beam path;

d) a reciprocatable housing for a selected one of the seal bar and heater bar;
e) a reciprocatable support movably connected to the frame structure and including a prime mover, the support carrying a selected one of the bars and being adapted to bring the bars together and thereby clamp a loaded bag against the heater bar;
f) at least one reflective device connected to the housing and located in the path of the light source beam for reflecting such light beam when emitted by the light beam source;



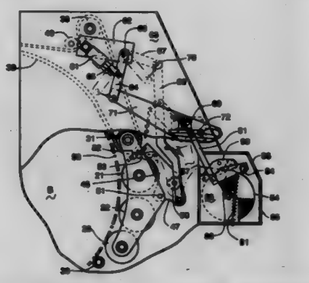
g) a receiver for receiving a reflection from the reflective device;
h) control means for sensing reception of the reflection by the receiver and controlling operation of said bag-sealing section based upon such reception;
i) the support defining at least one interrupter, there being one interrupter for each reflective device, each interrupter interrupting the light beam upon reciprocation of the housing during contact between the heater bar and seal bar; and,
j) a sensing device for sensing the beam interruption.

5,289,672

NET SUPPLY APPARATUS FOR ROUND BALERS

Kenneth R. Underhill, Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Jul. 23, 1992, Ser. No. 917,875
Int. Cl.[5] B65B *11/04*
U.S. Cl. 53—587 **3 Claims**



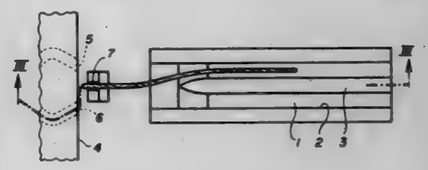
1. In a round baler having a chamber in which cylindrical bales of crop material are formed,
a net supply assembly,
means for dispensing net fed from said supply assembly into said bale chamber for wrapping a bale formed in said chamber,
means for serving said net after it has been wrapped around said bale,
control means operably connected to said net supply assembly and said severing means so that said net is restrained from further feeding from said net supply assembly under conditions where said balse has been wrapped and said means for severing is operative, the improvement comprising
said net supply assembly including means for receiving a roll of net,
means through which said net is fed from said roll to said dispensing means to thereby reduce the diameter of said roll of net,
net braking means comprising a transverse element having operative and inoperative positions,
a mounting assembly including means for mounting said transverse element for bearing against the outer surface of said roll of net in said operative position to restrain said net from being fed and for being adjacent and free of contact with said outer surface in its inoperative position,
said transverse element comprises a rigid transverse bar extending generally parallel to said roll of net, and flexible means secured to and moveable with said transverse bar,
said flexible means interposed between said rigid bar and the outer surface of said roll of net for operative contact with the outer surface of said roll of net under conditions where said net braking means is in said operative position, and
said flexible means encompasses at least a portion of said rigid bar and is spaced therefrom under conditions where said net braking means is in said inoperative position.

5,289,673

DEVICE TO UNTWIST, UNRAVEL AND OPEN UP A TEXTILE YARN

Rémi Cottenceau, Viry, and Erwin Zaercher, Le Lignon, both of France, assignors to Mesdan S.p.A., Salo, Italy

Continuation of Ser. No. 218,857, Jul. 14, 1988, Pat. No. 5,167,111. This application Aug. 19, 1992, Ser. No. 931,978
Claims priority, application Switzerland, Jul. 15, 1987, 2702/87-8; May 16, 1988, 1834/88-5
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] D01H *15/00*
U.S. Cl. 57—1 UN **5 Claims**



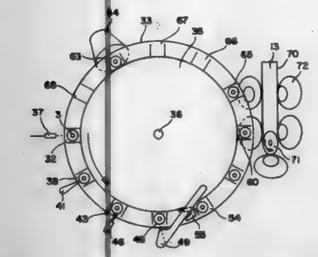
1. A device for loosening, unravelling and opening-up a textile yarn comprising:
fluid flip flop circuit means for receiving pressurized air at an input and for alternately feeding each one of at least two exit nozzles with pressurized air received at said input; and
channel means for receiving the pressurized air exiting from said at least two exit nozzles of said fluid flip flop circuit means and for directing the pressurized air against the textile yarn, thereby loosening, unravelling and opening-up the textile yarn, wherein
said channel means is open at each end and has a side longitudinal opening.

5,289,674

WINDING MACHINE WITH AN IN-LINE PACKAGE PREPARER, AND AN IMPROVED SPINNING-WINDING METHOD

Roberto Badiali, Pordenone; Amedeo Quaia, Porcia, and Luciano Bertoli, Pordenone, all of Italy, assignors to Savio, Pordenone, Italy

Continuation of Ser. No. 719,780, Jun. 24, 1991, abandoned.
This application Dec. 14, 1992, Ser. No. 990,949
Claims priority, application Italy, Jun. 29, 1990, 20812 A/90
Int. Cl.[5] D01H *9/10*; B65H *54/00*
U.S. Cl. 57—281 2 Claims



1. A method of preparing packages, comprising:
(a) prearranging packages of yarn having a core, during spinning by inserting a yarn end through a yarn tube, wherein said prearranging step comprises rotating the yarn package in an opposite direction to the yarn windings and searching for the yarn end by a suction nozzle disposed in proximity to a base of the yarn tube, rotating the prearranged package in the direction of the yarn windings and traversing the package surface with a claw-shaped implement so that the yarn end is arranged parallel to the package axis, retaining the yarn end by a curved nozzle, cutting the yarn end to length and then drawing the cut yarn end into the tube which forms the core of the package;
(b) sensing whether the yarn end has been grasped or not grasped by a suction means during said prearranging step, and recycling the package for which the yarn end has not been grasped back to said prearranging step;
(c) conveying the prearranged packages to a package carrier at a winding station; and
(d) fully loading the package carrier; wherein during said prearranging and conveying steps, the packages are maintained in a substantially vertical position.

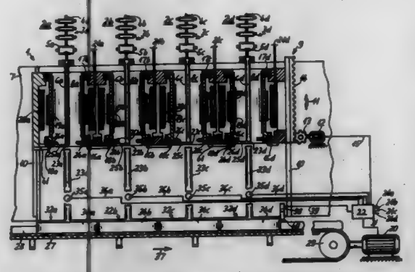
5,289,675

POT SPINNING ASSEMBLY WITH MOVABLE POT

Karl-Josef Brockmanns, Willich; Robert Hartel, Aachen, and Josef Dericks, Mönchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AgG & Co., Menchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,547
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108929
Int. Cl.[5] D01H *7/74, 1/08*
U.S. Cl. 57—312 13 Claims

1. A pot spinning assembly, comprising a spinning pot having a lower edge region, an inner wall and a longitudinal central axis, a yarn guide having an outlet opening extending into said spinning pot, means for displacing said spinning pot along said longitudinal central axis between an upper end position and a lower end position for causing a relative motion between said spinning pot and said yarn guide during a spinning process, and means for depositing a yarn in layers and forming a spinning cake on said inner wall of said spinning pot,
said outlet opening of said yarn guide being located in the vicinity of said lower edge region of said spinning pot when said spinning pot is in said upper end position,
a yarn holder for receiving yarn from said spinning pot, and a substantially horizontal transport apparatus for moving said yarn holder into a rewinding position at said spinning



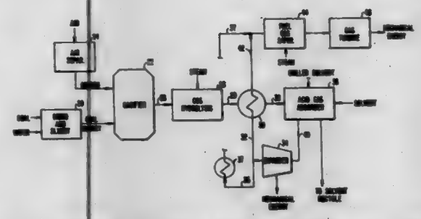
pot in a substantially horizontal direction, means for rewinding the spinning cake onto said yarn holder in the rewinding position with said spinning pot, and means for moving said yarn holder away from the rewinding position at said spinning pot in a substantially horizontal direction when said spinning pot is in said upper end position.

5,289,676

EFFICIENT LOW TEMPERATURE SOLVENT REMOVAL OF ACID GASES

Charles R. Brown, Berkeley, Calif., and Robert Geosits, N. Potomac, Md., assignors to Bechtel Group, Inc., San Francisco, Calif.

Division of Ser. No. 780,610, Oct. 23, 1991, Pat. No. 5,220,782.
This application Feb. 3, 1993, Ser. No. 12,694
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.02 5 Claims



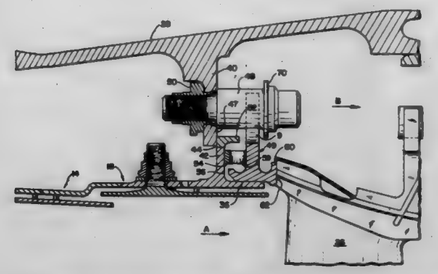
1. A method for removing hydrogen sulfide from a high pressure gas stream having a pressure above about 200 psia, said method comprising:
contacting the high pressure gas stream with a solvent in a low temperature gas treating environment having a temperature less than about 40° F. to remove hydrogen sulfide and thereby to produce a clean gas stream having a hydrogen sulfide content less than that present in the uncleaned high pressure gas stream;
expanding the clean gas stream to produce a cooled gas stream; and
extracting heat from the high pressure gas stream prior to entering the low temperature gas treating environment by heat exchange between the high pressure gas stream and the cooled gas stream directly after it has been expanded.

5,289,677

COMBINED SUPPORT AND SEAL RING FOR A COMBUSTOR

David W. Jarrell, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 16, 1992, Ser. No. 991,230
Int. Cl.[5] F02C *7/20*
U.S. Cl. 60—39.31 9 Claims



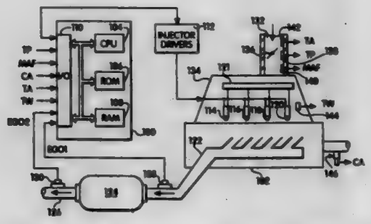
1. A combined support and seal ring for a combustor of a gas turbine engine having an annular line defining a combustion chamber,
said liner including an outer shell member having an outwardly extending radial flange located adjacent a downstream end relative to the gases flowing in said combustion chamber,
an annular diffuser case concentrically mounted relative to said annular liner having a plurality of circumferentially spaced inwardly radially extending lugs having a downstream facing surface engaging said flange,
said combined support and seal ring having an inner diameter portion having a sealing surface and an outer diameter portion having a plurality of spline members,
a bushing attached to said diffuser lug engaging and being in sliding relation with said spline members,
a stator vane located downstream of said combustor having a platform with an annular sealing edge, and
means for urging said sealing surface of said combined support and seal ring to be in contact with said annular sealing edge
whereby said combined support and seal ring functions to support and seal said combustor.

5,289,678

APPARATUS AND METHOD OF ON-BOARD CATALYTIC CONVERTER EFFICIENCY MONITORING

Peter J. Grutter, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 25, 1992, Ser. No. 983,069
Int. Cl.[5] F01N *3/00*
U.S. Cl. 60—277 4 Claims



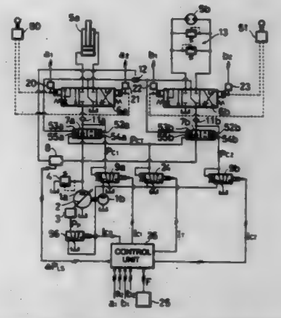
1. An apparatus for monitoring catalytic converter efficiency in treating exhaust gas from an internal combustion engine, comprising:
a catalytic converter;
first exhaust gas conduit means for passing upstream exhaust gas from the engine to the catalytic converter;
switch-type first EGO sensor means exposed to the upstream exhaust gas for generating a first EGO signal corresponding to oxygen content level of the upstream exhaust gas;
second exhaust gas conduit means for passing downstream exhaust gas from the catalytic converter;
switch-type second EGO sensor means exposed to the downstream exhaust gas in the second exhaust gas conduit means, for generating a second EGO signal corresponding to oxygen content level in the downstream exhaust gas;
fuel control means having a normal operating mode for controlling the air to fuel ratio at which fuel is supplied to the engine in response to a fuel flow control signal generated by a dual closed loop feedback system based at least in part on switching frequency of both said first EGO sensor means and said second EGO sensor means; and
comparison means for determining a catalytic converter efficiency value based on the ratio of switching frequency of the first EGO sensor means and second EGO sensor means during operation of said fuel control means in said normal operating mode and for comparing the efficiency value to a predetermined stored value corresponding to minimum acceptable efficiency of the catalytic converter, and for initiating a catalytic converter failure signal when the catalytic converter efficiency value indicates catalytic converter efficiency below the minimum acceptable efficiency.

5,289,679

HYDRAULIC DRIVE SYSTEM WITH PRESSURE COMPENSATING VALVE

Gen Yasuda, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00589, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/19821, PCT Pub. Date Nov. 12, 1992
PCT Filed May 8, 1992, Ser. No. 956,493
Claims priority, application Japan, May 9, 1991, 3-132175
Int. Cl.[5] F16D *31/00, 33/00*
U.S. Cl. 60—422 8 Claims



1. A hydraulic drive system for a construction machine comprising a hydraulic pump (1*a*); a plurality of hydraulic actuators (5*a*, 5*b*) driven by a hydraulic fluid delivered from said hydraulic fluid; a plurality of flow control valves (6*a*, 6*b*) for controlling respective flow rates of the hydraulic fluid supplied from said hydraulic pump to said hydraulic actuators dependent upon input amounts of manipulation means (50, 51); a plurality of distribution compensating valves (7*a*, 7*b*) for controlling respective differential pressures across said plural-

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ity of flow control valves, said distribution compensating valves (**7***a*, **7***b*) respectively having first pressure bearing chambers (**52***a*, **52***b*) subjected to pressures upstream of the associated flow control valves for acting in a valve-closing direction, second pressure bearing chambers (**53***a*, **53***b*) subjected to pressures downstream of the associated flow control valves for acting in a valve-opening direction, and third pressure bearing chambers (**54***a*, **54***b*) subjected to first control pressures (P_{C1}, P_{C2}) for acting in the valve-closing direction to reduce target values of the differential pressures across the associated flow control valves; differential pressure sensor means (**8**) for detecting a differential pressure between a pressure of the hydraulic fluid delivered from said hydraulic pump and a maximum load pressure among said plurality of hydraulic actuators; first proportional control valve means (**9***a*, **9***b*) for producing said first control pressures (P_{C1}, P_{C2}) dependent upon first control currents (I_{C1}, I_{C2}); and first computing control means (**26**, **203**, **218**) for calculating at least one target reducing value (ΔP_{C1}, ΔP_{C2}) to reduce the target values of the differential pressures across said plurality of flow control valves based on a detected value (ΔP_{LS}) of said differential pressure sensor means, and outputting the corresponding first control currents to said first proportional control valve means, wherein the hydraulic drive system further comprises:

(a) a fourth pressure bearing chamber (**55***a*, **55***b*) provided in at least one of said plurality of distribution compensating valves (**7***a*, **7***b*) and subjected to a second control pressure (P_{CT}) for acting in the valve-opening direction to set a target value (ΔP_T) of the differential pressure across the associated flow control valve (**6***a*, **6***b*);

(b) second proportional control valve mean (**24**) for producing said second control pressure (P_{CT}) dependent upon a second control current (I_T);

(c) signal generating means (**25**, **20–23**) for outputting a signal (F, a_1, a_2, b_1, b_2) relating to the target value (ΔP_T) of the differential pressure across the associated flow control valve (**6***a*, **6***b*); and

(d) second computing control means (**26**, **204–218**) for calculating the target value (ΔP_T) of the differential pressure across said associated flow control valve dependent upon the signal from said signal generating means, and outputting the corresponding second control current (I_T) to said second proportional control valve means (**24**).

5,289,680

TWO PUMP HYDRAULIC SYSTEM WITH RELIEF VALVES HAVING DIFFERENT RELIEF PRESSURES

Mitsuhiko Obe, and Hironobu Kubota, both of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Mar. 8, 1991, Ser. No. 666,785
Claims priority, application Japan, Mar. 9, 1990, 2-59605; Mar. 9, 1990, 2-59606
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—422 **3 Claims**

1. A hydraulic circuit for delivering pressurized fluid to a working vehicle comprising:

a first pump;

a second pump;

a first actuator;

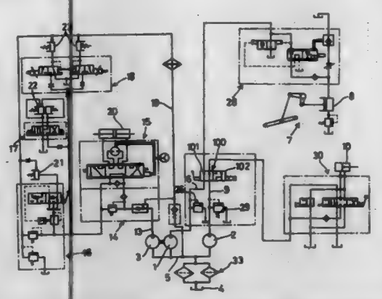
a second actuator;

a selector valve being switchable between a first position for connecting said first pump to said first actuator and said second pump to said second actuator, and a second position for connecting said first pump and said second pump to only said second actuator;

a first relief valve disposed between said selector valve and said first pump, said first relief valve having a first predetermined relief pressure;

a second relief valve disposed between said selector valve and said second pump, said second relief valve having a second predetermined relief pressure; and

said first predetermined relief pressure of said first relief valve having a higher relief pressure than said second predetermined relief pressure of said second relief valve;



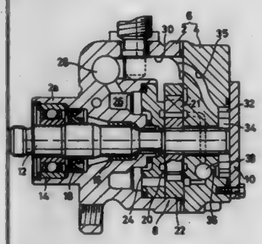
whereby resonance chattering produced by the opening and closing of said first and second relief valves is avoided.

5,289,681

POWER STEERING SYSTEM

Hiroto Iwata, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 815,408
Claims priority, application Japan, Jan. 16, 1991, 3-15877
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—428 **10 Claims**



1. A power steering system comprising:

a power steering mechanism;

a vane pump and drive means therefor for delivering a discharged oil to the power steering mechanism, the vane pump including a rotating rotor having a plurality of moving vanes and a passageway leading to a rear surface of the vanes;

a subpump having a driven member driven for rotation by the drive means; and

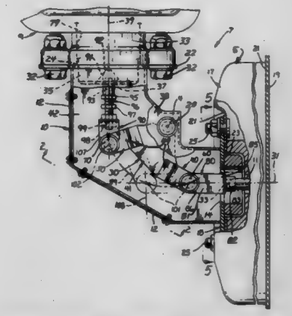
a control valve having a movable valve member which is movable whenever a number of revolutions of the subpump reaches a preset value, the control valve having an inlet port connected in fluid circuit with a fluid discharge outlet on the subpump, the control valve having an outlet port connected in fluid circuit with the passageway leading to the rear surface of the vanes of the vane pump, discharged oil from either the vane pump or the subpump being delivered to the passageway to act upon the rear surface of the vanes of the vane pump in response to the driven member of the subpump being rotatingly driven below the preset value, discharged oil from the fluid discharge outlet of the subpump being diverted by the passageway leading to the rear surface of the vanes in the vane pump and to the power steering mechanism in response to the driven member of the subpump being rotatingly driven above the preset value.

5,289,682

ARRANGEMENT OF A MASTER CYLINDER AND BRAKE BOOSTER

William R. Gill, Fremont, Ind.; Charles Wagner, Madison Heights, and Michael H. Gulick, Waterford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1992, Ser. No. 998,075
Int. Cl.[5] B60T *13/00*
U.S. Cl. 60—547.1 **2 Claims**



1. An arrangement for a master cylinder and a vacuum booster for an automotive vehicle comprising:

a vacuum booster magnifying a force input of a vehicle operator, the booster having a force output rod having a first travel axis generally parallel with a travel axis of the vehicle, and the booster having a housing for attachment to the vehicle;

a master cylinder for fluidly actuating a braking system, the master cylinder having a housing with a piston slidably mounted therein, the master cylinder piston having a second travel axis generally perpendicular to the first travel axis;

a tubular enclosed conduit relay housing having a first end connected with the booster housing, the relay housing having a first opening encircling the first travel axis and a second opening encircling the second travel axis, the relay housing being connected with and supporting the master cylinder housing at a position spaced away from the vacuum booster housing;

relay pin means mounted within the relay housing;

a relay link pivotally mounted with respect to the relay housing by the pin means, the relay link being encircled within the relay housing and having first and second arms on a common radius from the relay pin means for transmitting force between the booster and the master cylinder;

first pin means mounted on the first arm;

second pin means mounted on the second arm;

a first clevis means encircled within the relay housing, the first clevis means having a first end for compressive force transmittal engagement with the booster output rod and for pivotal mounting with respect to the booster output rod, and the first clevis means having a second end pivotally connected with the first pin means providing a third pivotal axis between the first clevis and the first arm being fixed with respect to the first arm and the first clevis means;

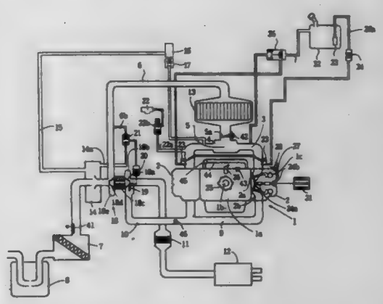
a second clevis means encircled by the relay housing, the second clevis having a second end pivotally connected to the second pin means to provide a fixed fourth pivotal axis with the second arm, the second clevis having a first end alpha portion having an internal threaded bore of a first hand thread, the second clevis also having a threaded rod threadably inserted within the first end alpha portion, and the second clevis first end having a beta portion pivotally mounted with respect to the master cylinder piston, the first end beta portion having an internally threaded bore for receiving the threaded rod, the threads of the first end beta internal bore being of an opposite hand of the first end alpha internal bore, and the second clevis having torsion nut means on the threaded rod to facilitate rotation of the same to selectively adjust the distance between the alpha and beta portions of the second clevis first end to set the limits of travel of the master cylinder piston.

5,289,683

METHOD FOR CONTROLLING SUPERCHARGING PRESSURE IN AN AUTOMOTIVE ENGINE

Masaru Kurihara, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 86,616
Claims priority, application Japan, Jul. 23, 1992, 4-197202
Int. Cl.[5] F02B *37/12*
U.S. Cl. 60—602 **3 Claims**



1. A method for controlling supercharging pressure in an automotive engine having a turbocharger, a wastegate valve for controlling a flow rate of exhaust gas applied to a turbine of the turbocharger, and an actuator for controlling the wastegate valve, comprising the steps of:

setting a standard supercharging pressure dependent on characteristics of the wastegate valve;

setting a desired supercharging pressure in accordance with engine operating conditions;

calculating a difference between the desired supercharging pressure and the standard supercharging pressure;

detecting an actual supercharging pressure;

calculating a ratio of said difference to a detected actual supercharging pressure; and

calculating a control value applied to the actuator based on said calculated ratio so as to smoothly control said supercharging pressure.

5,289,684

CHARGING PRESSURE CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE WITH A DUAL TURBOCHARGER SYSTEM

Mamoru Yoshioka; Kunihiko Nakata, both of Susono, and Hiroki Wada, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 31, 1992, Ser. No. 923,251
Claims priority, application Japan, Aug. 2, 1991, 3-216522; Aug. 9, 1991, 3-223668; Apr. 1, 1992, 4-105293
Int. Cl.[5] F02B *37/12*
U.S. Cl. 60—612 **11 Claims**

1. A charging pressure control apparatus for an internal combustion engine with a dual turbocharger system comprising:

a multi-cylinder internal combustion engine having at least one air intake and at least one exhaust outlet, wherein the engine includes first and second groups of cylinders;

an exhaust manifold connected with the at least one engine

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exhaust outlet, the exhaust manifold including a first portion connected to the first group of the cylinders and a second portion connected to the second group of the cylinders, the first portion and the second portion of the exhaust manifold being joined to each other with a connecting conduit;

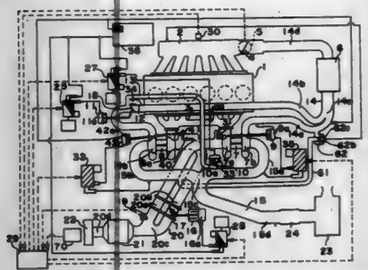
a first turbocharger and a second turbocharger arranged in parallel with each other, each said turbocharger including a turbine and a turbine driven compressor, the turbines being connected to the engine exhaust outlet with the exhaust manifold and the compressors being connected to the air intake of the engine;

an air intake line including a first intake conduit connected with the first turbocharger compressor and a second intake conduit connected with the second turbocharger compressor, the air intake line being connected with the engine air intake;

an exhaust line including a first exhaust conduit connected with the first portion of the exhaust manifold, in which the first turbocharger turbine is installed, a second exhaust conduit connected with the second portion of the exhaust manifold, in which the second turbocharger turbine is installed;

an intake switching valve installed downstream of the second turbocharger compressor in the second intake conduit for opening and closing the second intake conduit;

an exhaust switching valve installed downstream of the second turbocharger turbine in the second exhaust conduit for opening and closing the second exhaust conduit;



an exhaust bypass conduit connecting a portion of the second exhaust conduit upstream of the exhaust switching valve with any one of a portion of the first exhaust conduit downstream of the first turbocharger turbine and a portion of the second exhaust conduit downstream of the exhaust switching valve;

an exhaust bypass valve installed in the exhaust bypass conduit for opening and closing the exhaust bypass conduit;

a first diaphragm actuator coupled to the exhaust bypass valve, the first diaphragm actuator including a diaphragm chamber to which a charging pressure is introduced and from which the charging pressure bleeds via a first duty control solenoid valve corresponding to a decrease in an opening degree of the exhaust bypass valve;

a waste gate valve installed in a passage bypassing the first turbocharger turbine;

a second diaphragm actuator coupled to the waste gate valve, the second actuator including a diaphragm chamber to which a charging pressure is introduced and from which the charging pressure bleeds via a second duty control solenoid valve, an increase in the duty ratio of the second duty control solenoid valve corresponding to a decrease in an opening degree of the waste gate valve;

atmospheric pressure detecting means for detecting atmospheric pressure which varies according to altitude; and

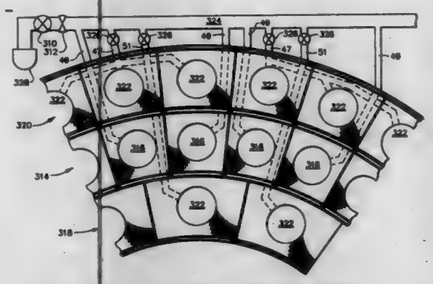
duty control condition changing means for changing a duty control condition of at least one of the fist duty control solenoid valve and the second duty control solenoid valve in accordance with an atmospheric pressure detected by the atmospheric pressure detecting means, the duty control condition changing means including means for setting an initial duty ratio of the first duty control solenoid valve to a greater value at relatively high altitudes than at relatively low altitudes for controlling an opening degree of the exhaust bypass valve.

5,289,685

FUEL SUPPLY SYSTEM FOR A GAS TURBINE ENGINE

Robert J. Hoffa, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 16, 1992, Ser. No. 976,864
Int. Cl.[5] F02C *7/228*
U.S. Cl. 60—739 **3 Claims**



1. A gas turbine engine fuel control comprising:

a triple annular combustor comprising a central ring of pilot fuel nozzles and inner and outer rings of main fuel nozzles,

a fuel manifold connecting said combustor to a fuel source;

a fuel metering valve controlling the flow of fuel from said fuel source to said fuel manifold;

a plurality of conduits connecting said pilot nozzles to said manifold; and

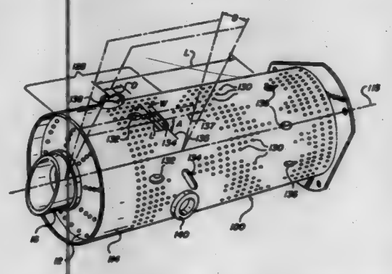
a plurality of selectively controllable fuel staging valves controlling the flow of fuel from said manifold to said main nozzles.

5,289,686

LOW NOX GAS TURBINE COMBUSTOR LINER WITH ELLIPTICAL APERTURES FOR AIR SWIRLING

Mohan K. Razdan; Jacob T. McLeroy, both of Indianapolis, and Hukam C. Mongia, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1992, Ser. No. 974,759
Int. Cl.[5] F23R *3/10*
U.S. Cl. 60—755 **3 Claims**



1. A can type combustion liner for a gas turbine engine combustor comprising:

a cylindrical wall having a dome at an upstream end and an exit opening at a downstream end,

the dome having a fuel inlet at the upstream end and a swirler around the fuel inlet for introducing swirl air into the combustion liner adjacent the fuel inlet,

a plurality of circumferentially spaced primary air holes in the cylindrical wall that are located downstream of the fuel inlet for introducing primary air into the combustion liner to stabilize and substantially complete combustion within a primary combustion zone, and

a plurality of circumferentially spaced air slots in the cylindrical wall that are located downstream from the primary air holes and in the primary combustion zone for introducing compressor discharge air into the combustion liner to cool hot spots in the primary combustion zone,

each of the air slots having a length dimension in the direction of a major axis thereof exceeding a width dimension of the slot perpendicular to the major axis, and

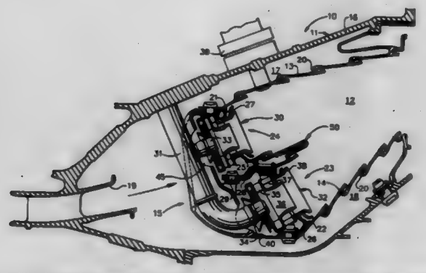
each of the major axes intercepting an angle in a range of between zero degrees and 90 degrees relative to a corresponding one of a plurality of lines in the cylindrical wall each parallel to a longitudinal centerline of the cylindrical wall and intersecting respective ones of the major axes of the air slots so that compressor discharge air entering the primary combustion zone through the air slots induces a swirling motion in the primary combustion zone.

5,289,687

ONE-PIECE COWL FOR A DOUBLE ANNULAR COMBUSTOR

Eric J. Kress, Loveland; Joseph F. Savelli, West Chester; David W. Parry, and John M. Koshoffer, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 30, 1992, Ser. No. 860,398
Int. Cl.[5] F23R *3/50*
U.S. Cl. 60—747 **10 Claims**



1. A double annular combustor having concentrically disposed inner and outer annular combustors, comprising:

a) an inner dome having an inner portion and an outer portion;

b) an outer dome having an inner portion and an outer portion, said outer dome inner portion being connected to said inner dome outer portion;

c) a carburetor contained in each of said inner and outer domes;

d) a one-piece cowl upstream of said inner and outer domes which forms a high pressure region between said cowl and said domes, said cowl having an inner annular portion, an outer annular portion, and a radial middle portion connecting said inner and outer cowl annular portions upstream and structurally independent of said outer dome inner portion and said inner dome outer portion;

e) an inner liner connected to said inner dome inner portion and said cowl inner annular portion; and

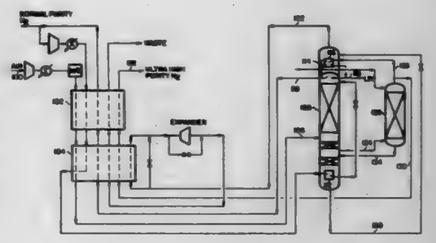
f) an outer liner connected to said outer dome outer portion and said cowl outer annular portion.

5,289,688

INTER-COLUMN HEAT INTEGRATION FOR MULTI-COLUMN DISTILLATION SYSTEM

Rakesh Agrawal, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 15, 1991, Ser. No. 793,032
Int. Cl.[5] F25J *3/04*
U.S. Cl. 62—24 **9 Claims**



1. In a process for separation of a multi-component stream comprising at least one volatile component A and at least one component of lower volatility C, said multi-component stream contaminated with impurities I having a volatility greater than component A wherein said multi-component stream is introduced to a multi-column distillation system incorporating a side column having a reboiler associated therewith, said side column effecting separation and recovery of at least one component in said multi-component stream, the improvement which comprises:

(a) introducing said multi-component stream to a first column wherein a first column overhead fraction enriched in component A and a first column bottoms fraction enriched in component C is obtained;

(b) withdrawing a first column liquid fraction containing A contaminated with impurities I from said first column at a point intermediate said first column overhead fraction and an introduction point of said multi-component stream to said first column;

(c) introducing said first column liquid fraction to an upper portion of said side column and recovering component A contaminated with impurities I as a first side column overhead fraction and recovering A of high purity as a first side column bottoms fraction;

(d) withdrawing from said side column a first side column liquid fraction for vaporizing at least a portion thereof in a boiler/condenser;

(e) withdrawing a first column vapor fraction from said first column at a point intermediate the introduction point of said multicomponent stream to said first column and a withdrawal point of said first column liquid fraction and condensing at least a portion of said first column vapor fraction against said first side column liquid fraction in said boiler/condenser as set forth in step (d); (f) recovering and returning at least a portion of resulting vaporized first side column liquid fraction to said side column; and

(g) recovering and utilizing at least a portion of resulting condensed first column vapor fraction obtained in step (e) as reflux in said multi-column distillation system.

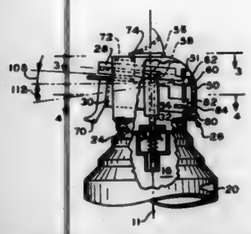
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,689

ENVIRONMENTALLY FRIENDLY HISTOLOGICAL TISSUE FREEZING PROCESS

John H. Cornwell, Kinnelon, and Daniel E. Behler, Jr., Parsippany, both of N.J., assignors to Cornwell Corporation, Riverdale, N.J.

Filed Oct. 18, 1991, Ser. No. 779,355
The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—64 8 Claims



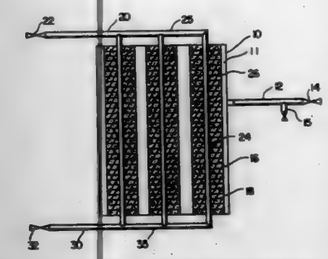
1. In a process for freezing a tissue specimen prior to sectioning thereof, including: positioning the tissue specimen; and applying a spray of a halogenated hydrocarbon gas directly on a selected portion of the tissue specimen, the improvement which comprises utilizing as said halogenated hydrocarbon a combination of tetrafluoroethane and monochlorodifluoromethane and controlling the rate of spray to correspond to the type of specimen until the specimen is frozen to allow ready sectioning.

5,289,690

REFRIGERANT RECYCLING SYSTEM

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation of Ser. No. 653,768, Feb. 11, 1991. This application Aug. 6, 1992, Ser. No. 925,995
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] F28D *7/00, 17/00*
U.S. Cl. 62—77 27 Claims



1. Apparatus for being detachably connected to a system containing a chemical and capable of selectively evacuating said chemical in a gaseous state from said system, storing said chemical for a selected time, and selectively charging said chemical to said system, comprising:

a vessel having a chamber capable of maintaining a pressurized gas therein, gas inlet means for directing gaseous chemical to and from said chamber, and connection means for connecting said gas inlet to a chemical system containing said chemical,

a solid adsorbent comprising a metal salt capable of forming complex compound with said gaseous chemical which is capable of alternatively absorbing and desorbing said gaseous chemical, said metal salt comprising a metal halide, oxide, sulfate, sulfite, nitrate, nitrite or oxalate in which the metal is an alkali metal, alkaline earth metal, transition metal, aluminum, or zinc,

a double metal salt in which the two metals are selected from strontium, sodium, aluminum, silver, gold, calcium, magnesium and cobalt,

ammonium chloride, or

a double metal salt in which one metal is an alkali or alkaline earth metal, and

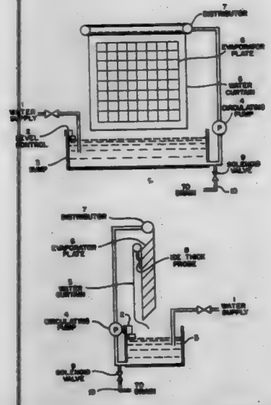
a plurality of heat exchange conduits exposed in said chamber for directing heat exchange fluid therethrough, substantially all of said conduits having said solid absorbent secured thereon whereby said chemical may be adsorbed along substantially all of said conduits, and fluid inlet and outlet means communicating exteriorly of said vessel for directing said heat exchange fluid to and from substantially all said conduits during said adsorption, and for directing a heat exchange fluid to and from substantially all said conduits during said desorption.

5,289,691

SELF-CLEANING SELF-STERILIZING ICE MAKING MACHINE

Charles E. Schlosser, Manitowoc; Lee G. Mueller, Kewaunee, and Gregory McDougal, Manitowoc, all of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Dec. 11, 1992, Ser. No. 989,791
Int. Cl.[5] F28G *13/00*
U.S. Cl. 62—78 29 Claims



13. An automatic microprocessor controlled self-cleaning self-sterilizing ice making machine comprising:

a) a coolant/refrigerant system comprising at least one compressor, at least one condenser, at least one evaporator, at least one expansion device, at least one hot gas solenoid value interconnecting hot gases from the compressor to the evaporator, and interconnecting lines therefor;

b) a water/ice system comprising at least one fresh water inlet, at least one water reservoir, at least one water circulation mechanism, at least one water distribution mechanism, at least one ice forming evaporator plate, and at least one ice collector reservoir, and interconnecting lines thereof;

c) a self cleaning, self sterilizing system in communication with said water-ice system comprising at least one cleaning/sterilizing solution reservoir, at least one cleaning/sterilizing solution injection mechanism and interconnecting lines in communication with the solution reservoir, the injection mechanism, and the water-ice system; and

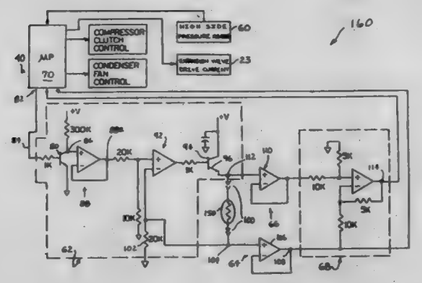
d) a control/monitoring system comprising at least one electronic microprocessor capable of activating and monitoring the operation of at least one each of sequence timers, electronic counters, relays and/or switches, solenoid valves, pumps, injection mechanisms, level controllers, ice release mechanisms, flow controllers, and ice thickness probes, said microprocessor programmed to initiate, control, and stop cleaning/sterilizing solution injection times, volumes, rates and circulation times, to initiate, control and stop rinse cycles and rinse times, and to initiate, control, count, and stop freeze-harvest cycles of the ice machine.

5,289,692

APPARATUS AND METHOD FOR MASS FLOW CONTROL OF A WORKING FLUID

Chester D. Campbell, Rancho Santa Margarita; Sandra L. Harper, Dana Point; Jain Virender, Lake Forest; Richard L. Kenyon, Irvine, all of Calif.; Alan Matthies, Milwaukee, Wis., and Roy M. Yabuki, Los Angeles, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 19, 1993, Ser. No. 5,606
Int. Cl.[5] F25B *39/04, 41/04*
U.S. Cl. 62—181 14 Claims



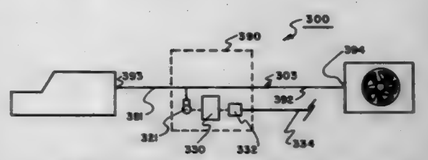
1. In combination with a heat transfer system of the type having a fluid circuit comprising a compressor for pressurizing a working fluid received from an evaporator, a condenser and condenser fan for cooling working fluid received from the compressor, and an electrically controlled expansion valve for controlling flow of the working fluid between the condenser and the evaporator: a quality sensor operative in response to a control signal and disposed in the fluid circuit on the outlet side of the evaporator, a high pressure sensor disposed in the fluid circuit on the high pressure side of the expansion valve, and control means for providing said control signal to said quality sensor; said quality sensor detecting quality of the working fluid in the heat transfer system; said control means producing output signals for activating and deactivating the compressor and condenser fan and regulating flow of the working fluid through the expansion valve in response to said high pressure sensor output and said quality sensor output as a function of control setpoints; said control means operating said valve in a flow reduction mode to reduce high side pressure before deactivating the compressor.

5,289,693

REFRIGERANT RECOVERY AND PURIFICATION APPARATUS WITH TELECOMMUNICATION MONITORING FACILITATION DEVICE

Thomas O. Major, 4105 Gray, Denver, Colo. 80212, and Jack E. Major, Jr., 1590 Harlan, Lakewood, Colo. 80214

Filed Jan. 22, 1993, Ser. No. 7,211
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—149 19 Claims



1. A refrigerant recovery apparatus for recovering refrigerant from a refrigeration unit comprising: means for controlling said recovery of refrigerant including:

parameter sensing means for sensing a value of a parameter indicative of operation of the apparatus and generating a signal indicative of the parameter value;

telephone dialer means for dialing a telephone number and establishing a telephone connection with a telephone communication device responding to the number dialed;

telephone signaling means for transmitting a signal over a telephone line to a telephone communication device; and,

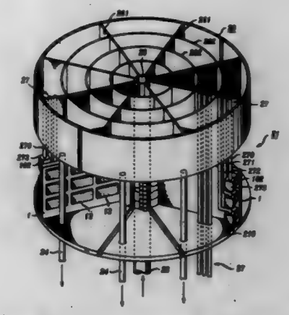
controller means for receiving said parameter value indicative signal and, when said signal is indicative of a parameter value in a predetermined range, causing said telephone dialer to dial a telephone number and establish telephone communication with a telephone communication device and, upon establishment of such communication, causing said telephone signaling device to transmit a signal to the telephone communication device.

5,289,694

CIRCUIT CARD MOUNTING ASSEMBLY

Ronald A. Nordin, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 26, 1993, Ser. No. 23,306
Int. Cl.[5] F28D *15/00*; H05H *7/20*
U.S. Cl. 62—259.2 10 Claims



1. An assembly for mounting a plurality of circuit cards wherein the assembly comprises

shelf apparatus mounting the circuit cards and interconnecting the mounted circuit cards,

radiation and heat exchanger apparatus coupled with and separated by the shelf apparatus for dissipating heat generated by the mounted circuit cards, and

means interconnecting the radiation and heat exchanger

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apparatus and engaging the circuit cards upon insertion and mounting of the circuit cards into the shelf apparatus for transferring heat generated by the engaged circuit cards to the radiation and heat exchanger apparatus for dissipation,

said radiation and heat exchanger apparatus comprising a generally circular configured heat exchanger unit formed of a plurality of circular radiator fins separated by vanes extended outward from a hub of the unit and interconnected by a plurality of return pipes extending through the circuit card mounting shelves with a similarly configured refrigeration unit separated from the heat exchanger unit by the circuit card mounting shelves.

5,289,695

ADSORPTION COOLING DEVICE AND METHOD FOR HAZARDOUS MATERIALS SUITS

Clyde F. Parrish, Melbourne, and Robert P. Scaringe, Rockledge, both of Fla., assignors to Mainstream Engineering Corp., Rockledge, Fla.

Division of Ser. No. 660,996, Feb. 26, 1991, Pat. No. 5,111,668, which is a continuation-in-part of Ser. No. 593,044, Oct. 5, 1990, Pat. No. 5,113,666. This application Nov. 5, 1991, Ser. No. 787,880

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—259.3 **14 Claims**

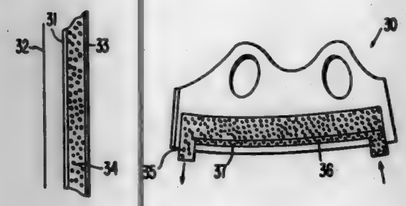
1. A cooling device comprising

means for permitting transfer of water vapor from a first surface;

means for adsorbing the water vapor and transferring heat of adsorption toward a second surface; and

means for resisting flow of the heat of adsorption toward the first surface;

wherein the adsorbing means is a desiccant layer and the transfer permitting means is an open cell material.



5,289,696

MODULAR EVAPORATIVE HUMIDIFICATION DEVICE

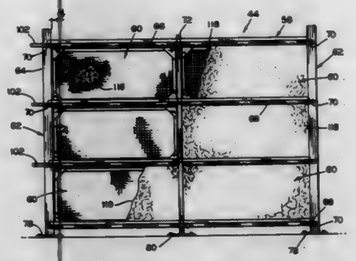
Thomas E. Kiser, Fremont; Norman R. Mowery, II, Tiffin, and Thomas J. Yallstrom, Fremont, all of Ohio, assignors to Professional Supply, Inc., Fremont, Ohio

Filed Nov. 6, 1992, Ser. No. 972,572

Int. Cl.[5] F28D *5/00*

U.S. Cl. 62—305 **13 Claims**

1. A modular evaporative humidification unit for airhouses, comprising a structural framework defining at least one compartment adapted to receive and support a container, said framework comprising a spaced pair of end stanchions and spaced pairs of transversely aligned longitudinally extending support members interconnecting said end stanchions and defining with said end stanchions said at least one compartment, said container having perforate front and rear walls and floor, a mass of randomly oriented liquid flow dispersing units within said container, spray means disposed above said container for depositing a liquid onto said mass of flow dispersing units, and means beneath said container for collecting and carrying away liquid flowing downwardly through and out of said container, said means beneath said container comprising a collection pan supported upon said framework, said collection pan including a floor plate surrounded by upstanding side and end walls, a drain outlet in said floor plate, and retainer means on the bottom of said floor plate for engaging a said pair of



longitudinally extending support members, whereby air drawn laterally through said mass absorbs evaporated liquid.

5,289,697

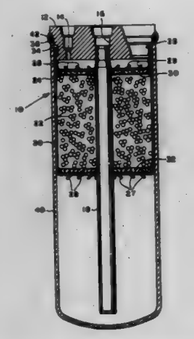
REFRIGERANT RECEIVER/DRIER

Wayne K. Hutchison, Ingersoll, Canada, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 28, 1992, Ser. No. 967,587

Int. Cl.[5] F25B *43/00*

U.S. Cl. 62—474 **16 Claims**



1. A receiver drier for refrigerant comprising:

(a) a generally cup-shaped outer shell;

(b) a generally cup-shaped inner shell having formed in the closed end therein a plurality of spaced openings, said inner shell disposed within said outer shell;

(c) a closure header attached to the open end of said outer shell, said header having an inlet port therein and an outlet port with a standpipe attached thereover;

(d) desiccant material disposed in said inner shell; and,

(e) a closure plate secured to said inner shell at the open end thereof, said closure plate having formed therein a plurality of space openings, wherein said standpipe extends through said closure plate, said desiccant and said closed end of said inner shell for communicating said outlet port with the interior region of said outer shell between the closed end thereof and the closed end of said inner shell.

5,289,698

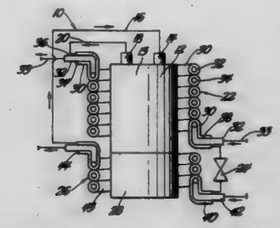
MODULAR NESTED VAPOR COMPRESSION HEAT PUMP FOR AUTOMOTIVE APPLICATIONS

Srinivas Garimella, Williamsville, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 14, 1992, Ser. No. 944,372

Int. Cl.[5] F25B *1/00*; B60H *1/32*

U.S. Cl. 62—498 **2 Claims**



1. A heat pump apparatus hydronically coupled for use in a vehicle, said apparatus comprising:

a compressor for compressing refrigerant and having a suction pipe for receiving evaporated refrigerant and a discharge pipe for supplying compressed refrigerant;

condenser means comprising a first pair of concentric tubes helically wound about said compressor for receiving and condensing said compressed refrigerant and producing condensed refrigerant from a first of said first pair of concentric tubes, and for receiving and allowing flow through of a heat exchange liquid in a second of said first pair of concentric tubes;

evaporator means comprising a second pair of concentric tubes helically wound about said compressor and spaced therefrom for receiving and evaporating refrigerant from said condenser means and for producing said evaporated refrigerant at a first of said second pair of concentric tubes, and for receiving and allowing flow through of a heat exchange liquid in a second of said second pair of concentric tubes.

5,289,699

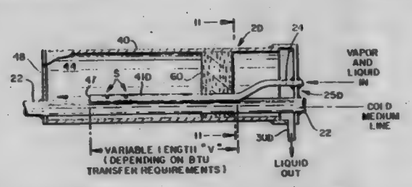
THERMAL INTER-COOLER

Jerry W. Nivens, Truth or Consequences, N. Mex., assignor to Mayer Holdings S.A., St. Helier, Channel Islands

Filed Sep. 19, 1991, Ser. No. 762,627

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—513 **28 Claims**



1. A thermal inter-cooler for use in a refrigeration system to increase efficiency of the system, comprising;

a substantially hollow leakproof housing defining an open interior area with a cold medium line passing therethrough;

a hot refrigerant line extending into said open interior area of the housing and at least partially surrounding the cold medium line, for receiving warmer than ambient refrigerant from said system, for cooling the refrigerant, and for discharging the refrigerant into a first unrestricted portion of the open interior area of said housing as a turbulent part liquid, part vapor refrigerant mixture;

a discharge opening located in a second unrestricted portion of the open interior of said housing for removing cooled, condensed and calmed liquid refrigerant from the interior of said housing; and

vapor buffer means occupying a portion of the open interior area of said housing for dividing the open interior area into the first unrestricted portion and the second unrestricted portion, and for reducing the turbulence of the discharged liquid and vapor refrigerant mixture as the refrigerant passes from the first unrestricted portion of the second unrestricted portion.

5,289,700

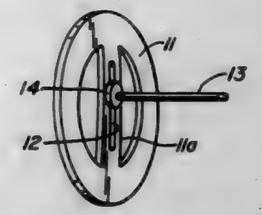
SLIDABLY ADJUSTABLE EARRING POST

Mark Cheng, San Francisco, Calif., assignor to Peony Fine Jewelry, Inc., San Francisco, Calif.

Filed Apr. 15, 1993, Ser. No. 48,156

Int. Cl.[5] A44C *7/00*

U.S. Cl. 63—12 **4 Claims**



1. An adjustable earring comprising:

a perimeter frame having an inner side and an outer display side;

a post of preselected diameter having a base end an a free end to penetrate through a pierced ear of a user;

an elongate slot formed completely through said perimeter frame extending in a substantially up and down vertical direction when said earring is mounted to a wearer's pierced ear;

said slot having a constant width slightly larger then the pre-selected diameter of said post;

the base end of said post projecting slidably through said slot to permit said post to be slidably and adjustably moved up or down to any pre-selected vertical position in said slot;

and adjustable mechanical clamping means including two complementary coacting clamping elements of larger dimension than the width of said slot mounted adjacent the base end of said post on opposite sides of said slot operable to permit releasable clamping of said two clamping elements against opposite sides of said frame, whereby said post can be clamped in any pre-selected position within said slot.

5,289,701

METHOD OF DETERMINING SLEEVE AND BODY PATTERNS

Shigenobu Mitsumoto, and Masao Okuno, both of Wakayama, Japan, assignors to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Aug. 19, 1992, Ser. No. 932,152

Claims priority, application Japan, Aug. 19, 1991, 3-206878

Int. Cl.[5] D04B *7/24*; A41B *9/06*

U.S. Cl. 66—76 **2 Claims**

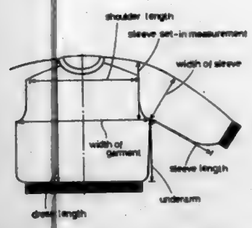
1. A method for determining a pattern for a sleeve and body of a knit product in which the sleeve and body are joined together during a knitting operation of a knitting machine, comprising:

determining a first reference point (P0) at an underarm connection of said body, extending a horizontal line through said reference point perpendicular to a vertical center line of said body,

determining an underarm point (P9) of said sleeve on said horizontal line spaced from said reference point (P0) a distance away from said reference point (P0) and said body, determining the number of knitting stitches along said horizontal line from reference point (P9) to reference point (B) required for a width (P9-B) of said sleeve,

determining a sleeve set-in distance (B-P4) on a first vertical line from reference point (B) to reference point (P4) and determining the number of courses along said first vertical line from reference point (B) to reference point (P4),

determining an extension of said armhole of the sleeve by measuring a distance between the sleeve set-in reference point (P4) and the underarm reference point (P9) to determine a number of stitches to be dropped as the courses are knitted between reference point (B) and reference point (P4) and to determine an angle θ formed by said horizontal line and a line form reference point (P4) through the underarm reference point (P9), to form a sleeve armhole end (21),



determining a matching sleeve pattern on said knit body related to said first reference point (P0),

determining a length of a gusset along said horizontal line from said first reference point (P0) to a reference point (P1) to determine a shoulder-end line by extending a second vertical line from reference point (P3) corresponding to a sleeve set-in measurement,

extending a line from point (P1) to said second vertical line at point (P3) and determining an angle θ with said horizontal line by extending a line from point (P1) to intersect line (P3-A) at (P2) to establish a point (P2), thereby forming an armhole end (31) of said body portion which extends from reference point (P3) to reference point (P2), from reference point (P2) to reference point (P1) and from reference point (P1) to reference point (P0) whereby the sleeve pattern and the body pattern have the same height and same number of courses.

5,289,702

LOAD BALANCE INDICATOR FOR TOP LOADING AUTOMATIC CLOTHES WASHING MACHINES

Joseph A. Murray, 116 Smoke Rise Dr., Warren, N.J. 07059-6821

Filed Jan. 6, 1993, Ser. No. 1,560
Int. Cl.[5] D06F *39/00*
U.S. Cl. 68—23 R **9 Claims**

1. A clothes washer including

a frame,

a tub inside the frame,

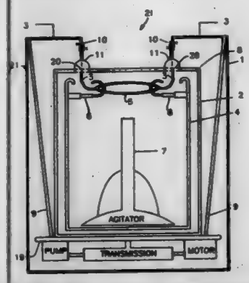
a clothes basket inside the tub,

means for rotating said basket including means for permitting the basket to tilt in case of an imbalance in the location of the clothes in said basket, and

means in operative relation with said basket and in contact with said basket for providing a visual indication to an operator when said basket deviates from the perpendicular as it rotates in operation of said washer,

whereby an operator visually inspects said means for providing a visual indication means and can determine the location of an imbalance in the clothes in the basket and correct the clothes distribution to eliminate the imbalance,

said means for providing a visual indication comrpises a ring fixed in position adjacent to said basket and



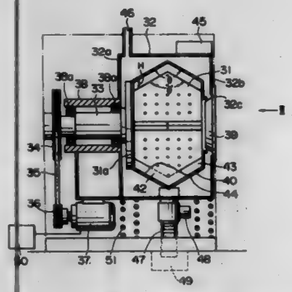
a plurality of slideable members secured to said basket and engaging said ring whereby if the clothes basket deviates from the vertical in a spin operation, one of said slideable members slides to a position which indicates that there is an imbalance whereby an operator can visually detect the imbalance indication and can correct the imbalance.

5,289,703

DRUM TYPE WASHING MACHINE

Shoichi Hiyama, and Hidetoshi Ishihara, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 535,514, Jun. 8, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 911,370
Claims priority, application Japan, Jun. 16, 1989, 1-153696
Int. Cl.[5] D06F *37/06*
U.S. Cl. 68—24 **4 Claims**



1. In a drum type washing machine which has a rotary drum with a plurality of water-passing holes in its peripheral wall installed within an outer tank, and executes washing, dehydration and drying of laundry within the drum individually or consecutively while driving the drum to be rotated, the drum type washing machine characterized in that said drum is formed by said peripheral wall with the form obtained by interfacing the edges of the large-diameter parts of two truncated cones of substantially the same form, having a rotary shaft that is held substantially horizontally at the center of one of its end walls, and said drum is equipped with a plurality of platelike beaters that are arranged on the inner surface of said peripheral wall with a predetermined spacing in the circumferential direction of said drum to extend centripetally over the entire length of the drum from said peripheral wall in the direction of the axis of rotation of said rotary shaft, wherein said peripheral wall of said drum and each of said beaters have a V shape in cross-section containing the axis of rotation of said rotary shaft with each of said beaters having a radially inner side formed with an inner angle of V shape,

wherein said drum is supported in cantilever style by said rotary shaft that is provided on one of the end walls of the drum, and has in the other end wall an opening for inserting and removing the laundry,

wherein the magnitude of said inner angle of V shape of each of said beaters is set to equal the magnitude of said inner angle of V shape of said peripheral wall, said inner angle of V shape for said peripheral wall being set in the range of 90 to 160° , and

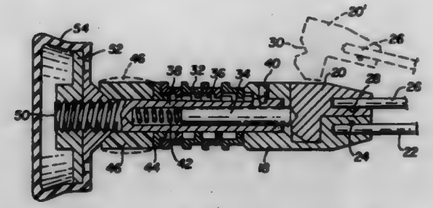
wherein the height of each of said beaters is in the range of 8 to 14% of the maximum diameter of said drum.

5,289,704

CABLE LOCK WITH CONCEALED STORAGE

Lawrence L. Johnson, 1163 Englewild Dr., Glendora, Calif. 91740

Filed Sep. 16, 1992, Ser. No. 946,935
Int. Cl.[5] E05B *67/06*
U.S. Cl. 70—30 **8 Claims**



1. A cable lock of the kind formed of a lock housing and a flexible shackle, wherein:

the lock housing has the approximate configuration of a cylinder, elongated on its axis from front to rear, and comprises:

a longitudinally elongated latch housing having a generally cylindrical side surface, defining through the side surface a longitudinally elongated latch reception slot;

a generally L-shaped latch body receivable in said latch reception slot and having first and second arms, the first arm of the latch body being disposed generally longitudinally to the latch housing, extending forwardly from the second arm, and having an outer face defining a segment of said cylindrical side surface when the latch body is received in said slot, and the second arm of the latch body being disposed generally radially to the cylindrical housing and having a plunger recess in its rear face, wherein the latch body is rockable with respect to the latch housing by pressure applied laterally to the first arm;

a lock means having differing open and closed configurations, operatively connected to said latch housing and having a plunger shaft selectively secured in said plunger recess and locking the latch body in place when the lock is in closed configuration, but resiliently biasing said plunger shaft into the latch body when the lock is in open position, whereby the latch body is releasable from the latch housing in response to relative rocking of the latch body;

a resilient ring carried on said front to rear axis rearwardly of said latch housing, having an annular surface exposed along the cylindrical side of the lock housing; and

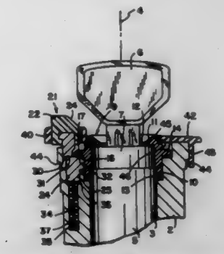
friction locking means for selectively compressing and decompressing said ring, in which compressing causes the ring to expand radially, and in which decompressing allows the ring to retract radially.

5,289,705

CAP RETAINED PUSH BUTTON ASSEMBLY

Larry R. Grimmer, Sussex, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 735,883, Jul. 25, 1991, abandoned. This application May 5, 1993, Ser. No. 57,449
Int. Cl.[5] B60R *25/04*
U.S. Cl. 70—252 **9 Claims**



1. A lock assembly for a vehicle ignition switch, comprising:

a stationary elongated hollow sleeve member having a bore therein defining an axis of rotation;

a cylinder having an inner end disposed in said bore and an opposite outer end, said cylinder rotatable about said axis between at least lock, off and run positions, and including a key-receiving aperture formed therein opening to said outer end;

a cap member mounted on the outer end of said cylinder for rotation therewith, said cap member including a key-receiving slot formed therein in axial alignment with said aperture forming a keyway therewith;

a push button mounted on said sleeve member and slidably movable in an axial direction between a blocking position and a non-blocking position;

spring means on said sleeve member for biasing said push button into said blocking position;

stop means on said cap member projecting radially therefrom, said stop means abuts against said push button when said cylinder is in said off position to permit movement to said run position but to prevent movement to said lock position so that said push button must be moved to its nonblocking position to permit movement to said lock position from said off position; and

retaining means on said cap member for retaining said push button when said cylinder is in said lock, off and run positions.

5,289,706

BEZEL RETAINED PUSH BUTTON ASSEMBLY

Ronald R. Krebs, Fond du Lac, and Kevin J. Elinski, Milwaukee, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 736,010, Jul. 25, 1991, abandoned. This application May 4, 1993, Ser. No. 58,681
Int. Cl.[5] B60R *25/04*
U.S. Cl. 70—252 **10 Claims**

1. A lock assembly for a vehicle ignition switch, comprising:

a stationary elongated hollow sleeve member having a bore therein defining an axis of rotation;

a cylinder having an inner end disposed in said bore and an opposite outer end, said cylinder rotatable about said axis between at least lock, off and run positions, and including a key-receiving aperture formed therein opening to said outer end;

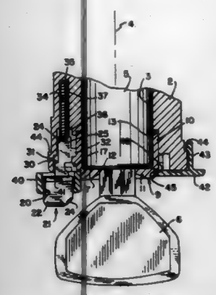
a cap member mounted on the outer end of said cylinder for rotation therewith, said cap member including a key-receiving slot formed therein in axial alignment with said aperture forming a keyway therewith;

a push buttom mounted on said sleeve member and slidably

movable in an axial direction between a blocking position and a non-blocking position;

spring means on said sleeve member for biasing said push button into said blocking position; and

stop means on said cap member projecting radially therefrom, said stop means abuts against said push button when said cylinder is in said off position to permit movement to said run position but to prevent movement to said lock position so that said push button must be moved to its non-blocking position to permit movement to said lock position from said off position.



5,289,707

STEERING WHEEL LOCK DEVICE

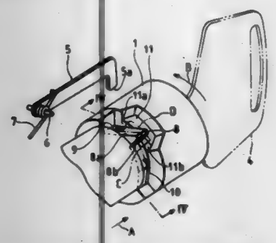
Noriyaki Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation of Ser. No. 800,031, Nov. 29, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 87,353

Claims priority, application Japan, Nov. 30, 1990, 2-129196

Int. Cl.[5] B60R *25/02*

U.S. Cl. 70—252 **7 Claims**



1. A steering wheel lock device comprising:

a rotor case;

a key rotor slidably mounted in said rotor case for angular movement in a circumferential direction and also for axial movement, and adapted to be turned between a lock position and an operative position by a key inserted into said key rotor, said key rotor being movable in its axial direction by pressing of the key;

a regulating member having a distal end portion in contact with an outer peripheral surface of said key rotor, said distal end portion sliding relative to the outer peripheral surface of said key rotor in association with the rotation of said key rotor;

a regulating projection formed on the outer peripheral surface of said key rotor and projecting radially outward from the outer peripheral surface of said key rotor in such a manner that when said key rotor is turned from the lock position to the operative position with said key rotor kept in a non-pressed condition, said distal end portion of said regulating member slides along the upper surface of said regulating projection, thereby allowing rotation of said key rotor toward the operative position without axial movement of said key rotor, and when said key rotor is turned from the operative position to the lock position with said key rotor kept in a non-pressed condition, said regulating projection is engaged with the distal end portion of said regulating member, thereby preventing said key rotor from turning to the lock position; and

a bypass passage provided in the outer peripheral surface of said key rotor so as to bypass said regulating projection in such a manner that, when said key rotor is pressed in the operative position, said distal end portion of said regulating member is introduced into said bypass passage, so that the engagement of said distal end portion with said regulating projection is released, thereby allowing said key rotor to be turned toward the lock position.

5,289,708

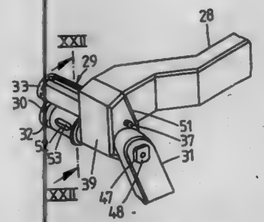
CUTTING TOOL FOR A LOCK CYLINDER

Giselher Sieg, Erftstadt, and Peter Wollweber, Wesseling, both of Fed. Rep. of Germany, assignors to Emhart Inc., Newark, Del.

Division of Ser. No. 687,794, Apr. 19, 1991, Pat. No. 5,193,372. This application Jul. 27, 1992, Ser. No. 919,327

Int. Cl.[5] E05B *9/08*

U.S. Cl. 70—370 **8 Claims**



1. Tool for cutting a coupling pin within a lock cylinder having a hollow enclosure and an opening of a prescribed shape at a first end of the enclosure and at least one coupling pin extending into the enclosure from an inner wall thereof at a second end of the enclosure opposite and spaced from the first end thereof, the tool designed as a gripper with two shearing jaws which are located axially in series and rest laterally adjacently to a carrying mandrel such that a first of said shearing jaws is arranged rigidly on said carrying mandrel resting on a first gripper arm and a second of said shearing jaws connected to a second gripper arm is rotatably mounted adjacent said first shearing jaw in said carrying mandrel, the carrying mandrel being shaped externally to pass through the opening and into the enclosure toward the inner wall to facilitate positioning of the shearing jaws about the coupling pin for cutting thereof.

5,289,709

PIN TUMBLERS AND CORRESPONDING KEYS FOR CYLINDER LOCKS

Peter H. Field, Salem, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Filed Oct. 24, 1991, Ser. No. 959,018

Int. Cl.[5] E05B *27/04*

U.S. Cl. 70—494 **14 Claims**

1. A method of rotating tumbler pins in tumbler pin bores of a cylinder lock by means of a configured key, the method comprising; providing a surface on a tip portion of a tumbler pin to slope generally from one side edge to the other side edge of the tumbler pin to provide a single slanted contact surface, forming a surface on the key which is generally complementary to the single slanted contact surface on the tip of the tumbler portion, contacting the surfaces by inserting the key in the lock and biasing one of the surfaces against the other so that the tumbler pin rotates until the complementary single slanted contact surfaces are in full contact with each other.



5,289,710

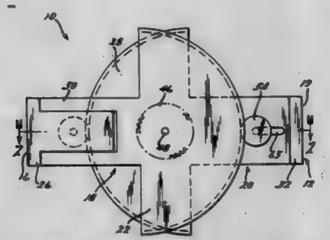
APPARATUS FOR BENDING A FLEXIBLE CONDUIT

James Chung-Kei Lau, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 12, 1992, Ser. No. 929,254

Int. Cl.[5] B21D *7/00*; H01P *1/02, 11/00*

U.S. Cl. 72—298 **18 Claims**



1. An apparatus for the controlled bending of a flexible conduit, said conduit having first and second ends, said apparatus comprising:

a first assembly adapted for attachment to said first end of said flexible conduit, said first assembly including a first cam surface and a first extendable portion;

a second assembly adapted for attachment to said second end of said flexible conduit, said second assembly being pivotally attached to said first assembly for rotation therewith about an axis of rotation passing through said first and second assemblies, said second assembly including a second extendable portion adapted to cooperate with said first cam surface of said first assembly; and

a first, variable distance between said axis of rotation and said first end of said conduit;

whereby said first cam surface of said first assembly cooperates with said second extendable portion to vary said first distance as said second assembly is rotated with respect to said first assembly.

5,289,711

APPARATUS FOR SPREADING STEEL STRUCTURES

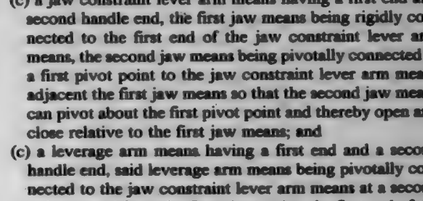
Leo J. Spiegel, 61 Princeton St., Williston Park, N.Y. 11596

Continuation of Ser. No. 700,591, May 15, 1991, abandoned. This application Jun. 3, 1992, Ser. No. 893,603

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—392 **9 Claims**

1. Apparatus for spreading opposing steel structures comprising a portable base support, a power ram, and means for slideably mounting said ram on said base support, said base support having an elongated outer tube and an elongated inner slide coaxially and slideably nested within said tube and being telescopically extendible therefrom to provide said base support with a longitudinally variable dimension for abuttment against one of said opposing structures, said means for mounting said power ram comprising a carriage disposed about the outer tube, said carriage being slideable on said outer tube along the longitudinal axis of said tube for abuttment against another of said opposing structures, said carriage having means for hingedly connecting said power ram to pivot in a plane transverse to said base support.



5,289,712

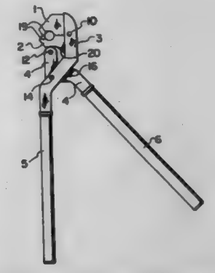
QUICK-ACTION CRIMPING TOOL

Daniel J. Haughian, Mission, Canada, assignor to Haughian Sales Ltd., Mission, Canada

Filed Jan. 25, 1993, Ser. No. 8,711

Int. Cl.[5] B21D *39/04*

U.S. Cl. 72—410 **12 Claims**



1. A quick-action crimping tool for crimping a crimp ring on a pipe comprising:

(a) a first jaw means with a first portion of a crimp opening in a side thereof adjacent a second jaw means;

(b) a second jaw means with a second portion of a crimp opening in a side thereof adjacent the first jaw means, said second jaw means having a concave surface on a side thereof opposite the second crimp portion;

(c) a jaw constraint lever arm means having a first end and second handle end, the first jaw means being rigidly connected to the first end of the jaw constraint lever arm means, the second jaw means being pivotally connected at a first pivot point to the jaw constraint lever arm means adjacent the first jaw means so that the second jaw means can pivot about the first pivot point and thereby open and close relative to the first jaw means; and

(c) a leverage arm means having a first end and a second handle end, said leverage arm means being pivotally connected to the jaw constraint lever arm means at a second point spaced from the first pivot point, the first end of the leverage arm means bearing in slidable engagement with the concave surface of the second jaw means, the concave surface being oriented so that during pivotal movement of the leverage arm means about the second pivot point relative to the jaw constraint lever arm means reciprocally moves the second jaw means into a closed position rela-

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tive to the first jaw means when the leverage arm means is spaced furthest apart from said jaw constraint lever arm means.

5,289,713

DEVICE FOR CONNECTING A WIRE TO A PLUG, CONTACT ELEMENT OR THE LIKE WITH CRIMP HEIGHT ADJUSTMENT

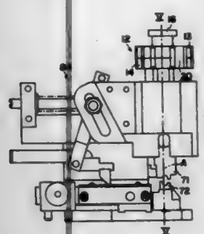
Bernhard Schäfer, Mühlhausen-Rettigheim, Fed. Rep. of Germany, assignor to Bernhard Schafer Werkzeug-U. Sondermaschinenbau GmbH, Schoenborn-Langenbrucken, Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,616

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137163

Int. Cl.[5] B21J *13/00*; H01R *43/04*

U.S. Cl. 72—446 **15 Claims**



1. A device for connecting a wire to a contact element or the like by deformation of clamping members by means of pressure elements of a crimping tool arranged interchangeably in a press, which comprises: an adjustment disk including an upper adjustment disk and lower adjustment disks, wherein the two adjustment disks lie one upon the other in coaxial relationship, and wherein the upper and lower adjustment disks are coaxially rotatably associated with each other with the upper adjustment disk having a support surface which faces the lower adjustment disk, with the support surface having a plane thereof; a holding member for holding the upper disk, wherein said upper and lower disks are rotatable about the axis of the holding member; a pressure plate surrounded by the lower adjustment disk and having an upper surface engagable with the supporting surface of the upper disk; and wherein both disks are provided with at least one annular surface which rises spiral-like relative to the supporting surface.

5,289,714

DEVICE FOR DEFORMING A SMOOTH SURFACED PIPE

Daniel P. Corcoran, Grandville, Mich., assignor to Corcoran Industries, Inc., Grandville, Mich.

Division of Ser. No. 881,262, May 11, 1992. This application Apr. 5, 1993, Ser. No. 43,029

Int. Cl.[5] B21P *7/06*

U.S. Cl. 72—453.16 **1 Claim**

1. A method of preparing deformed smooth pipe, the method comprising providing a deforming device which comprises in combination,

a power source, and connected thereto, a deforming head, said deforming head comprising:

a hydraulic block containing a hydraulically operated piston; said hydraulic block having a front wall, a back wall, a top, and a bottom,

said hydraulic block having through its back at least one entry port and connected to each said entry port, a hydraulic fluid line, the combination of each entry port and hydraulic line being for the transfer of hydraulic fluid into and out of the hydraulic block;

a connector block, said connector block having a top, a bottom, a back, and a front, said connector block being detachedly rigidly mounted with its top to the bottom of the hydraulic block;

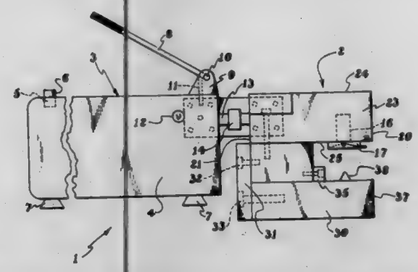
a platform block, said platform block having a top and a back, said platform block being detachedly rigidly mounted by its top to the bottom of the connector block;

said platform block having rigidly mounted on its top, a deforming pin;

a supporting plate, said supporting plate having a front, said supporting plate being detachedly rigidly mounted at its front to the back of the connector block and the back of the platform block;

said connector block having detachedly rigidly mounted on its front, a pipe stop;

said hydraulic block having rigidly mounted on its bottom near the front wall, a die holder, said die holder being situated such that any die located therein will be in vertical alignment with said deforming pin;



the pipe stop, connector block, platform block, and supporting plate forming a subcombination which subcombination is adjustable in a vertical line, and removable from the hydraulic block, said subcombination being held by at least one adjustable threaded fastener which adjustable threaded fastener is insertably mounted through a vertical hole which accommodates the adjustable threaded fastener in the top of the hydraulic block;

said hydraulic block being rigidly attached to the power source by a mounting bracket; and

(I) applying said deforming device onto the end of a smooth pipe;

(II) deforming the smooth pipe;

(III) removing said deforming device, whereby a deformed smooth pipe is obtained.

5,289,715

VAPOR DETECTION APPARATUS AND METHOD USING AN ACOUSTIC INTERFEROMETER

Edward J. Staples, Thousand Oaks, and Gary W. Watson, Newbury Park, both of Calif., assignors to Amerasia Technology Inc., Westlake Village, Calif.

Filed Nov. 12, 1991, Ser. No. 791,786

Int. Cl.[5] G01N *29/02*

U.S. Cl. 73—24.01 **8 Claims**

1. Apparatus for rapidly detecting and identifying a chemical vapors, comprising:

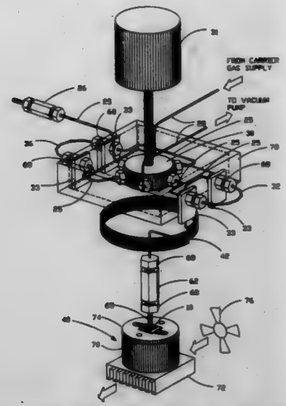
(a) a sensor having a surface exposed to the chemical vapors,

(b) a coated tubular section containing an inner coating of absorbant material whereby said tubular section separates individual vapor species according to their velocity in passing through said tubular section,

(c) a nozzle for directing a flow of chemical vapors onto said surface whereby said vapors are concentrated onto a specific region of said surface,

(c) monitoring means, coupled to the sensor, for monitoring the change in the physical parameter associated with said surface due to adsorption of the chemical substance, producing an electrical signal indicative of said change,

(d) analysis means, connected to the monitoring means, for determining a predicted time constant for adsorption of the chemical substance as a function of the electrical signal well before the chemical substance is completely adsorbed onto said surface,



(e) identification means for identifying the chemical substance from said group of chemical substances based upon its predicted time of arrival at said sensor and its rate of adsorption at a specific sensor temperature both of which are generally characteristic of individual chemical substances.

5,289,716

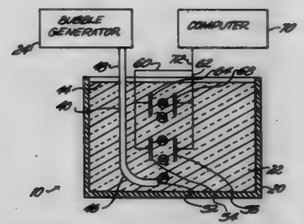
MONITORING AND ANALYZING WASTE GLASS COMPOSITIONS

Ray F. Schumacher, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1992, Ser. No. 933,153

Int. Cl.[5] G01N *11/00*

U.S. Cl. 73—54.19 **17 Claims**



8. Apparatus for determining the viscosity of a first fluid, said first fluid having a temperature, said apparatus comprising: a container having a first fluid therein;

means for generating bubbles of a second fluid and releasing said bubbles into said first fluid;

a first pair of electrodes in said first fluid, said first pair of electrodes spaced apart and positioned at a first two points, said first electrode pair measuring electrical conductivity of said first fluid between said first two points, said first two points located above said generating means so that when said generating means generates and releases a bubble, said bubble travels between said first two points thereby causing a first change in electrical conductivity of said first fluid between said first two points, said first measuring means producing a first output responsive to said first change; and

a second pair of electrodes in said first fluid, said second pair of electrodes spaced apart and positioned at a second two points, said second electrode pair measuring electrical conductivity of said first fluid between said second two points, said second two points located above said generating means so that when said generating means generates and releases a bubble, said bubble travels between said second two points thereby causing a second change in electrical conductivity of said second fluid between said second two points, said second measuring means producing a second output responsive to said second change, said second pair of electrodes spaced apart from said first pair of electrodes by a distance so that the time between said first change and said second change can be used to calculate viscosity of said first fluid.

5,289,717

AIR-FUEL RATIO DETECTING DEVICE

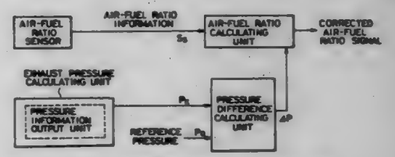
Tetsurou Ishida, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 731,006

Claims priority, application Japan, Jul. 20, 1990, 2-193583

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **30 Claims**



1. An air-fuel ratio detecting device, comprising:

an air-fuel ratio sensor for producing air-fuel ratio information indicative of the concentration of oxygen in an exhaust gas produced by a burned air-fuel mixture in an internal combustion engine, said air-fuel ratio sensor being disposed in an exhaust pipe;

operating status data detecting means for detecting engine operating parameters indicative of or corresponding to a pressure in the exhaust gas;

pressure difference calculating means for calculating the pressure difference between a first pressure which acts on said air-fuel ratio sensor to cause the air-fuel ratio sensor to have reference output characteristics when the air-fuel ratio sensor is placed in a reference atmosphere and a second pressure which is indicative of or corresponding to said pressure in the exhaust gas detected by said operating status detecting means; and

air-fuel ratio calculating means for correcting an air-fuel ratio based on said air-fuel ratio information from said air-fuel ratio sensor with the pressure difference calculated by said pressure difference calculating means, for thereby producing a pressure-corrected air-fuel ratio.

5,289,718

APPARATUS AND METHOD FOR MEASURING TIRE FORCE

Cedric W. Mousseau, Lake Orion, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 10, 1992, Ser. No. 988,581

Int. Cl.[5] G01M *17/02*

U.S. Cl. 73—146 **6 Claims**

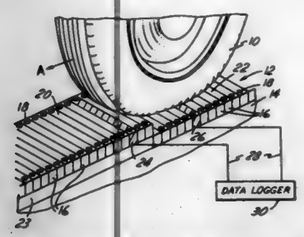
5. An apparatus for measuring a force produced by a tire assembly at a predetermined location over an irregular surface, comprising:

a test block comprising a plurality of removable blanks, each blank of said plurality having a longitudinal axis disposed

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generally perpendicular to the direction of travel of said tire assembly, said plurality being axially aligned adjacent one another along respective longitudinal axes, said Plurality of blanks defining first and second surfaces over which said tire assembly to be tested is rolled, said first surface being stepped relative to said second surface;

a first transducer being disposed across said first surface and a second transducer being disposed across said second surface of said test block, said first and second transducers each having a longitudinal axis disposed generally perpendicularly to the direction of travel of said tire assembly



and being operative to generate an electrical signal representative of a force produced by said tire assembly at that predetermined location; and

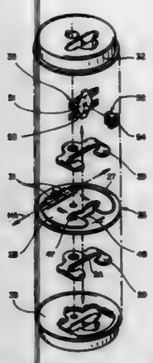
signal receiving means for receiving said electrical signals from said transducers and for storing said signals representing the force produced by said tire assembly at that predetermined location, whereby said transducers are interchanged with said removable blanks at a plurality of predetermined locations so that a force distribution plot over said test block surfaces can be generated by said signal receiving means.

5,289,719

ACCELEROMETER WITH TEMPERATURE COMPENSATION AND MATCHED FORCE TRANSDUCERS

Bert D. Egley, Tacoma, Wash., and Scott D. Orlosky, San Anselmo, Calif., assignors to New SD, Inc., San Francisco, Calif.

Filed Nov. 13, 1991, Ser. No. 791,940
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—497 **4 Claims**



1. In an accelerometer for measuring acceleration along a sensitive axis:

(a) a support frame;

(b) a proofmass movable relative to the support frame with a component of motion along the sensitive axis;

(c) a pair of force sensing transducers fabricated as a generally planar unit from a single piece of crystalline quartz material with elongated tines adapted to vibrate at a frequency corresponding to tensive/compressive forces applied thereto, the transducers having quadrilateral frames with the tines extending between opposing corners thereof and force receiving pads at the intermediate corners, the two quadrilateral frames being joined together back-to-back with the tines in the two transducers parallel to each other and the proofmass connected to one of the pads at the junction of the two quadrilateral frames; and

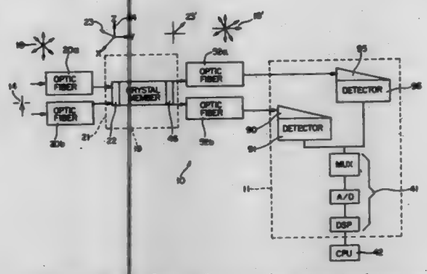
(d) means comprising a strut connected to the support frame and to the remaining pads for applying tensive/compressive forces to the tines in accordance with movement of the proofmass along the sensitive axis.

5,289,720

OPTIC SENSOR FOR DETERMINING ENVIRONMENTAL CONDITIONS

Devlin Gualtieri, Ledgewood; Herman VandeVaart, Califon, both of N.J.; Stephen M. Emo, Elkhart, Ind., and Janpu Hou, Bridgewater, N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Jul. 17, 1992, Ser. No. 915,443
Int. Cl.[5] G01L *9/00*
U.S. Cl. 73—705 **4 Claims**



1. A sensor system for use in an optic system to detect current conditions of an environment, said sensor system being characterized by:

a crystal member having a substrate with a top surface and a bottom surface, a first waveguide extending from said top surface having a first entrance face and a first exit face and a second waveguide extending from said bottom surface having a second entrance face and a second exit face;

support means for engaging said crystal member to define a first chamber in communication with said top surface and a second chamber in communication with said bottom surface; means for communicating polarized light waves from source to said first and second entrance faces of said first and second waveguides, respectively;

first means for communicating a first pressure to said first chamber; and

second means for communicating an unknown pressure corresponding to the pressure of the environment to said second chamber to develop a pressure differential with said first pressure in said first chamber, said pressure differential acting on said top and bottom surfaces of said crystal member to produce a force which deforms said first and second waveguides, said polarized light waves being correspondingly modified by the deformation of said first and second waveguides to create first output waves in said first waveguide and second output waves in said second waveguide, said first and second output waves having first and second fringe patterns; and

means for communicating said first output waves from said first exit face and said second output waves from said second exit face to an optical interface;

an array of linear photodetector for converting said first and second fringe patterns into corresponding first and second serial voltage streams;

processor means for determining first and second fundamental frequencies and relative phases and the mean frequency and phase said first and second serial voltage streams, said processor means determining differences between the fundamental frequencies and phase of said first and second fringe patterns; and

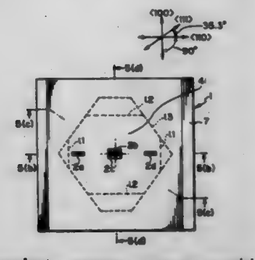
comparator means for comparing said differences in said first and second serial voltage streams, said differences corresponding to said unknown pressure in said environment, said comparator comparing said mean frequency and phase with a reference to obtain said current temperature of said environment.

5,289,721

SEMICONDUCTOR PRESSURE SENSOR

Yukihiko Tanizawa, Chiryu; Hiroshi Okada, Hekinan; Kazuhisa Ikeda, Chiryu, and Tsuyoshi Fukuda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 9, 1991, Ser. No. 756,223
Claims priority, application Japan, Sep. 10, 1990, 2-240343; Apr. 19, 1991, 3-088614
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—727 **16 Claims**



12. A semiconductor pressure sensor comprising a silicon substrate having a surface orientation of substantially (100), a diaphragm formed from the substrate, strain gauges disposed on the diaphragm, and a base joined with the substrate, wherein the diaphragm has an octagonal recessed shape whose sides are orthogonal to axes <100>, <110>, and <111>, respectively, said octagonal recessed shape of the diaphragm including a pair of first sides each having a length of l and a pair of parallel second sides spaced apart from each other by a distance L and extending orthogonally to the first sides, wherein l/L is in a range of 0 to 0.5.

5,289,722

PREASSEMBLED, EASILY MOUNTABLE STRAIN GAGE

Hugh S. Walker, Manhattan, and Robert J. Dorgan, St. George, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Apr. 27, 1992, Ser. No. 873,756
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—775 **32 Claims**



1. Prefabricated strain gage apparatus comprising:

an elongated, flexible substrate presenting first and second opposed ends and laterally spaced apart side margins joining said ends, said substrate having adhesive applied to one surface thereof;

an electrical strain gage presenting spaced forward and rearward margins defining the length thereof and releasably adhered to said one surface of said substrate intermediate the ends of said substrate,

said adhesive being present on said substrate for respective forwardly and rearwardly extending axial lengths from the corresponding forward and rearward margins of said strain gage to define forward and rearward hold-down regions; and

a selectively removable, protective film applied over at least a portion of said one surface of said substrate and covering said strain gage and hold-down regions, in protective relationship to the strain gage and hold-down regions,

both of said regions having a length greater than the length of said strain gage and being sufficient for permitting initial positioning and temporary hold-down of said assembly on a test surface by removal of a portion of said film to reveal adhesive covering said one region, and pressing of said revealed adhesive against said test surface,

said region lengths also being sufficient for partial detachment of said apparatus for said test surface after said initial positioning to expose said gage, with one of the hold down regions remaining adhered to the test surface and the other region separated from the test surface, and for repositioning and securement of the gage in the same location as said initial position after adhesive application to one of said exposed gage and test surface,

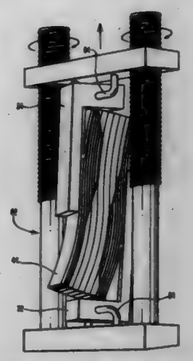
said substrate being strippable from said repositioned and secured gate.

5,289,723

ANTISYMMETRIC GRAIN SUPPORT TEST DEVICE AND METHODS

James R. Thompson, Boaz, Ala., John M. Nelson, Tomio Sato, and Toby T. Norris, all of Huntsville, Ala., assignors to Thiokol Corporation, Ogden, Utah

Filed Jun. 5, 1992, Ser. No. 893,721
Int. Cl.[5] G01N *3/24*
U.S. Cl. 73—842 **19 Claims**



1. An apparatus for evaluating the effects of uniaxial tension to the midline of a test specimen, comprising:

an antisymmetric test specimen having first and second opposing sides and first and second opposing ends;

a first L-shaped test fixture including an end segment and a side segment, the side segment attached to the first side of the test specimen, said attachment of the first test fixture to the test specimen being the sole means of transferring a load from the first test fixture to the test specimen, the end segment of the first test fixture further including a first

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rotatable mounting mechanism for mounting the first test fixture in a tensile testing machine, the rotatable mounting mechanism configured to permit rotation of the first text fixture as a load is applied to the test specimen; and

a second L-shaped test fixture including an end segment and a side segment, the side segment attached to the second side of the test specimen, said attachment of the second test fixture to the test specimen being the sole means of transferring a load from the second test fixture to the test specimen, the end segment of the second test fixture further including a rotatable mounting mechanism for mounting the second test fixture in a tensile testing machine, the rotatable mounting mechanism configured to permit rotation of the second test fixture as a load is applied to the test specimen.

5,289,724

GRAVIMETRIC METERING APPARATUS FOR POURABLE MATERIALS

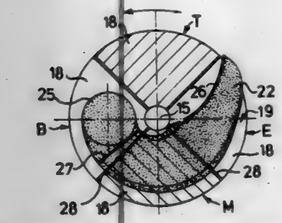
Hans W. Hafner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 937,049

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129618

Int. Cl.[5] G01F *1/00*

U.S. Cl. 73—861 **19 Claims**



1. A gravimetric metering apparatus for pourable materials comprising:

base means;

flat rotor means divided into at least three sectors slightly movable independent from one another in a vertical direction;

driving means mounted on said base means and coupled to said rotor means for rotating thereof about an essentially vertical axis;

charging means for loading pourable material onto said rotor means arranged above said rotor means on one side of said vertical axis forming a charging station for said rotor means;

discharging means arranged above said rotor means at a location angularly off-set from said charging means such that a free angular space is left, for removing pourable material from said rotor means and forming a discharging station;

force measuring means arranged below said rotor means for being momentarily loaded by a sector carrying pourable material placed thereon at said charging station when passing through said free angular space forming a measuring region; and

evaluation means for receiving mass measurement signals from said force measuring means and indicating quantities of pourable material conveyed through said rotor means.

5,289,725

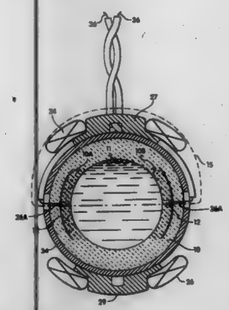
MONOLITHIC FLOW TUBE WITH IMPROVED DIELECTRIC PROPERTIES FOR USE WITH A MAGNETIC FLOWMETER

Christopher R. Brown, Wrentham, Mass., assignor to The Foxboro Company, Foxborough, Mass.

Filed Jul. 31, 1991, Ser. No. 738,595

Int. Cl.[5] G01F *1/58*

U.S. Cl. 73—861.12 **20 Claims**



1. A flowtube comprising:

a tubular inner flow conduit adapted to pass a fluid therethrough, the inner conduit comprising a dielectric material having a relaxation conductivity, σ_r, of less than 10^{-12} per ohm cm at 200° C. 50 milliseconds after a polarizing voltage is applied to or removed from the dielectric material;

electrode means adjacent the exterior surface of the inner flow conduit and capacitively coupled to the inner flow conduit;

an outer layer of ceramic material adjacent the exterior surface of the inner conduit and the electrode means; and

said tubular inner flow conduit, said electrode means, and said outer ceramic layer fired together to form a sintered monolithic flowtube body.

5,289,726

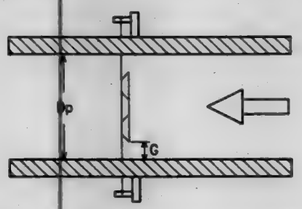
RING TYPE VORTEX FLOWMETER AND METHOD FOR MEASURING FLOW SPEED AND FLOW RATE USING SAID RING TYPE VORTEX FLOWMETER

Jiun-Jih Miau; En-Gie Chiu, both of Tainan; Jung-Hua Chou, Shinchu, and Tsa-Liang Chen, Tainan, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 22, 1992, Ser. No. 949,108

Int. Cl.[5] G01F *1/32*

U.S. Cl. 73—861.22 **18 Claims**



1. A method for measuring flow speed and flow rate in a pipe, comprising the following steps of:

(a) providing an axisymmetric bluff body disposed within the pipe, having a ring facing incoming flow for inducing a vortex shedding frequency, said ring being bevelled at an acute angle at the inner and outer edges of said ring;

(b) recording a wall pressure signal induced by said vortex shedding frequency;

(c) obtaining said vortex shedding frequency from said wall pressure signal; and

(d) obtaining a flow speed and flow rate from said vortex shedding frequency.

5,289,727

BULK MATERIAL SAMPLING DEVICE

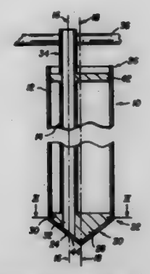
Anthony Earle, Harrow Weald, and David J. Young, Chorleywood, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 16, 1991, Ser. No. 760,431

Claims priority, application United Kingdom, Nov. 16, 1990, 9024993

Int. Cl.[5] G01N *1/08*

U.S. Cl. 73—864.45 **7 Claims**



1. A sampling device comprising:

an outer tube including, at one end thereof, a nose portion for penetrating material to be sampled, said nose portion having at least one aperture therein; and

at least one inner tube mounted within said outer tube for receiving the material to be sampled, each said at least one inner tube having at least one further aperture positioned eccentrically to said outer tube, the mounting being such that, except for the nose portion, in any cross sectional plane normal to central longitudinal axes of each tube and containing cross sections of each tube, the cross section of the at least one inner tube is completely within the cross-section of the outer tube;

each of said at least one inner tube being movable relative to said outer tube between a first position, wherein said at least one further aperture of each of said at least one inner tube is aligned with a respective one of said at least one aperture, and a second position, wherein said at least one further aperture of each of said at least one inner tube is closed by said nose portion.

5,289,728

FLOW-NO-FLOW TESTER

Jerry R. Johanson, San Luis Obispo; Kerry D. Johanson, Atascadero, and Brian D. Cox, San Luis Obispo, all of Calif., assignors to JR Johanson, Inc., San Luis Obispo, Calif.

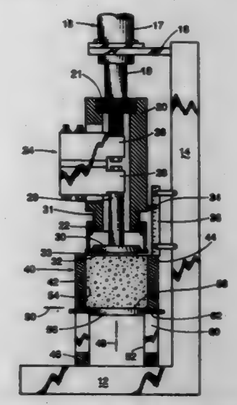
Continuation-in-part of Ser. No. 610,530, Nov. 8, 1990, Pat. No. 5,117,699. This application Oct. 16, 1991, Ser. No. 781,018

Int. Cl.[5] G01N *11/00*

U.S. Cl. 73—866 **6 Claims**

1. A flow-no-flow tester comprising in combination: a test cell including a hollow body having an upper end and a lower end, having an upper bore extending downwardly along a vertical axis from the upper end to an imaginary horizontal plane located above the lower end, said hollow body further including surfaces defining an undercut ledge having an upper surface lying in the imaginary horizontal plane and projecting radially inwardly from the upper bore, to a failure outlet, and having a lower surface extending from the failure outlet downwardly and radially outwardly to the lower end of said hollow body;

a failure piston having a diameter less than the diameter of said failure outlet; and,



guide means associated with said failure piston for restraining its motion to a vertical direction and for maintaining the center of said failure piston on the axis of said bore.

5,289,729

DISPLACEMENT DETECTOR

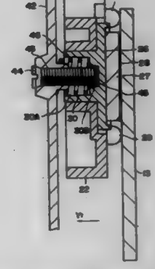
Mitsuru Tsunoda, and Shigeru Ohtani, both of Kawasaki, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,827

Claims priority, application Japan, Oct. 22, 1990, 2-285646

Int. Cl.[5] G01B *3/22, 3/18;* G01D *11/18, 3/08*

U.S. Cl. 73—866.1 **7 Claims**



1. A displacement detector having a main scale and grid opposing each other and movable in an axial movement direction with respect to each other and detecting a value of the relative movement as an electrical signal, comprising:

housing means;

support means on said housing means for supporting at least one of the main scale and grid for movement in a direction perpendicularly intersecting the relative axial movement direction;

urging means for pushing one of the main scale and grid toward the other;

means for maintaining a predetermined clearance dimension between the urged one of the main scale and grid and the other thereof; and

clearance limiting means for adjustably limiting a separating

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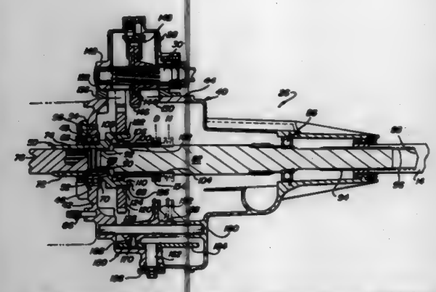
displacement of the urged one of the main scale and grid from the other to a limited clearance distance to prevent a loss of measuring continuity.

5,289,730

POWER TAKE-OFF ADAPTOR

Robert J. Wilson, Warners, N.Y., and Richard J. Newer, Livonia, Mich., assignors to New Venture Gear, Inc., Troy and Chrysler Corporation, Highland Park, both of Mich.

Filed Jun. 5, 1992, Ser. No. 895,539
Int. Cl.[5] F16H *37/06*; B60K *17/34*; F16D *11/10*
U.S. Cl. 74—15.88 4 Claims



1. An adapter unit for a two-wheel drive motor vehicle of the type having a source of driving torque and a conventional four-wheel drive transmission including a transmission output shaft, the adapter unit comprising:

a first housing adapted at a first end to receive the transmission output shaft;

a drive shaft journally supported within the housing for delivering the driving torque from the source of power to ground engaging wheels;

an input shaft journally supported within the housing and coupled between the transmission output shaft and the drive shaft;

a power take-off output gear fixed directly to the input shaft;

an aperture formed in the first housing adjacent the power take-off gear;

a power take-off unit contained within a second housing, the second housing being completely independent from the first housing and detachable therefrom, the power take-off unit including a power take-off output shaft journally supported therein, and an input gear fixed to the power take-off output shaft, the input gear being in meshing engagement with the power take-off output gear for delivering driving torque to the power take-off output shaft; and

means for detachably securing the first housing to the second housing;

whereby the adapter unit converts the conventional four-wheel drive transmission for use in the two-wheel drive vehicle and further equips the vehicle with a power take-off provision.

5,289,731

HAND POWERED MOTOR FOR ROTATIONAL TOOLS AND SIMILAR ARTICLES

Terry R. Womack, Rte. 1, Box 575 Z, Forest City, N.C. 28043

Filed Nov. 2, 1992, Ser. No. 970,105
Int. Cl.[5] F16H *29/02*; B01F *7/22*
U.S. Cl. 74—133 1 Claim

1. A hand powered motor for a rotational paint mixing tool and similar articles which comprises:

a) a gun shaped housing having an enlarged barrel portion and a hand grip portion a rear end thereof;

b) a trigger assembly mounted to the hand grip portion of said gun shaped housing and including;

i) a trigger having a curved rack on a top end, a curved transverse slot generally in the middle thereof and an aperture through a bottom end;

ii) a post formed within the hand grip portion of said gun shaped housing, so that the slot in said trigger can slide on said post;

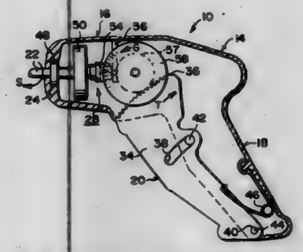
iii) a pivot pin within the hand grip portion of said gun shaped housing, so that the aperture can fit onto said pivot pin to allow said trigger to pivot thereon; and

iv) a spring between the side of said trigger and an inner wall of the hand grip portion of said gun shaped housing to bias said trigger outwardly therefrom;

c) a shaft extending forward and outwardly from an opposite end of the enlarged barrel portion of said gun shaped housing;

d) means for coupling said shaft with said rotational tool and including;

i) a cylindrical collar having a central bore and a pair of spaced apart transverse threaded holes extending to the central bore, whereby each opposite side of the central bore of said cylindrical collar can receive a distal end of said shaft and a distal end of one of the rotational tools; and



ii) a pair of set screws each of which threads into the threaded holes in said cylindrical collar, so as to retain the distal end of said shaft and the distal end of one of the rotational tools within said cylindrical collar;

e) a driving means within the enlarged barrel portion of said gun shaped housing, comprising;

i) a bearing on said shaft in the end of the enlarged barrel portion of said gun shaped housing;

ii) a flywheel mounted on said shaft;

iii) a one way clutch connected at an inner end of said shaft;

iv) a first bevel gear connected to a distal end of said one way clutch; and

v) a combination pinion gear and mating second bevel gear rotatively and transversely positioned therein, in which said first bevel gear will engage with said mating second bevel gear, while the curved rack on said trigger will engage with said pinion gear whereby manually squeezing said trigger will cause said shaft to rotate in a single direction;

f) means within the enlarged barrel portion of said gun shaped housing, for storing rotative kinetic energy imparted to said shaft.

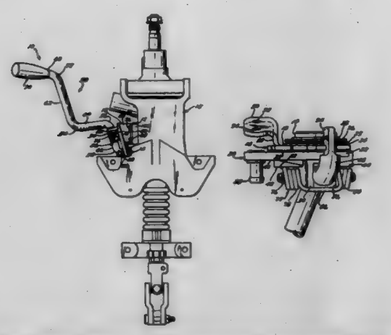
5,289,732

COLUMN-MOUNTED SHIFT CONTROL ASSEMBLY

William M. Snell, Grand Blanc, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 24, 1992, Ser. No. 996,470
Int. Cl.[5] F16H *59/02*, *1/06*; G05G *5/18*
U.S. Cl. 74—473 SW 4 Claims

1. A transmission shift control assembly mounted on a vehicle steering column, said assembly comprising a bracket including planar gate and off-set mounting portions, said off-set mounting portion adapted to being secured by suitable fasteners to said steering column, an opening formed through said planar gate portion, a plurality of detents formed along an edge of said planar gate portions, a shift lever unit rotatably mounted through said opening, a shift handle pivotally mounted on said shift lever unit, a terminal end formed on said shift handle adapted to selectively engage said plurality of detents, and resilient means for urging said terminal end into engagement with a selected detent after said terminal end is manually pivoted out of engagement with a detent and said



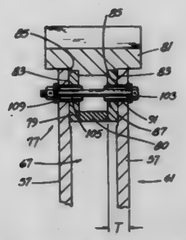
shift lever unit is manually rotated in said opening to a different relative position, wherein said shift lever unit includes a body portion, a hub extended from said body portion through said opening, and a pair of spaced-apart mounting flanges formed on said body portion opposite said hub, said shift handle being pivotally mounted via a pivot pin having opposite ends extended through said flanges, and said resilient means including first and second coil spring portions mounted around said extended ends and having an intermediate portion abutted against said shift handle to urge said terminal end into engagement with a selected detent.

5,289,733

APPARATUS FOR MOUNTING GEAR SEGMENTS

Harvey J. Kallenberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Dec. 3, 1992, Ser. No. 985,264
Int. Cl.[5] F16H *55/12*
U.S. Cl. 74—447 7 Claims



1. In a machine assembly having a gear segment attached to a spider, the improvement comprising:

a pair of spaced spider webs;

a segment-attached mounting member received between the webs, the mounting member including spaced plates;

a segment coupling member extending between a web, the mounting member and a plate; and,

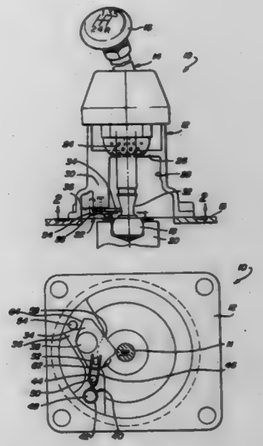
a retaining member extending through a web and the coupling member with at least slight clearance.

5,289,734

MANUAL TRANSMISSION SHIFTER ASSEMBLY WITH REVERSE INHIBITOR

George A. Parsons, Grosse Pointe, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Sep. 30, 1992, Ser. No. 954,328
Int. Cl.[5] F16H *61/18*
U.S. Cl. 74—476 11 Claims



1. A shifter assembly of the type operably coupled to a gearshift mechanism for permitting a vehicle operator to selectively shift between a plurality of ratio gear positions of a multi-speed manual transmission, comprising:

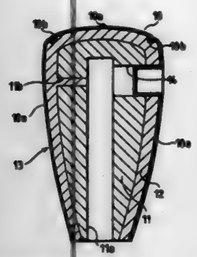
a housing secured to the transmission, said housing having a planar surface radially extending internal therefrom;

a shift lever supported for movement from said housing and having a first end coupled to the gearshift mechanism and a second end under the control of the vehicle operator for causing movement of the gearshift mechanism among various ratio gear positions, said shift lever having a predetermined portion adjacent to said planar surface of said housing but said planar surface not totally surrounding said predetermined portion of said shift lever; and

shift inhibitor means for inhibiting movement of said shift lever from a first ratio gear position to a second ratio gear position along a shift plane defined by said first and second ratio gear positions, said shift inhibitor means including a cam member supported from said planar surface of said housing for pivotable movement with respect to a home position, said cam member having first cam surface means for causing movement of said cam member in a first direction from said home position in response to engagement with said shift lever for permitting movement of said shift lever to either of said first and second ratio gear positions, and second cam surface means for causing movement of said cam member in a second direction from said home position in response to movement of said shift lever from said first gear ratio position toward said second ratio gear position, said shift inhibitor means further including stop means engageable with said cam member in response to movement thereof in said second direction for preventing movement of said shift lever into said second ratio gear position; and

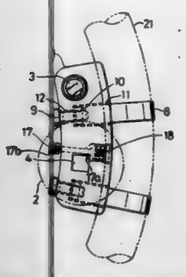
biasing means for urging said cam member to return to said home position when said shift lever is in any of the ratio gear positions.

5,289,735
SHIFT KNOB
Hiroyuki Kato, and Tokuhiro Amano, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Jul. 3, 1991, Ser. No. 725,523
Claims priority, application Japan, Jul. 5, 1990, 2-71611[U]
Int. Cl.[5] G05G *1/06*
U.S. Cl. 74—543 7 Claims



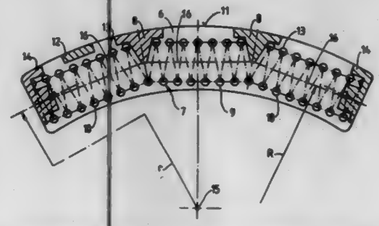
1. A shift know comprising:
a hollow covering body including at least two pieces of material joined together by stitches, the hollow section of the covering body defined by an inner stitched surface;
a first resin-formed body disposed within said covering body having an outer surface spaced from said inner stitched surface;
a second resin-formed body disposed in engagement with the entire stitched inner surface, the second resin-formed body disposed to completely fill the space between said outer surface of said first resin-formed body and said stitched inner surface of said covering body, said stitches extending into and being embedded within said second resin-formed body, said second resin-formed body comprising an elastic resin; and
wherein said first resin-formed body defines at least one means for allowing said elastic resin to be injected through a passage into said space between said inner stitched surface of said covering body and said outer surface of said first resin-formed body.

5,289,736
STEERING WHEEL ROTATING APPARATUS FOR PHYSICALLY HANDICAPPED PERSONS
Yoshio Fujimori, 6-31, Kajino-cho 2 chome, Koganei-shi, Tokyo, Japan
Filed Jan. 15, 1992, Ser. No. 820,816
Claims priority, application Japan, Jan. 31, 1991, 3-009408[U]
Int. Cl.[5] G05G *1/10*; B62D *1/06*
U.S. Cl. 74—557 10 Claims



1. A steering wheel rotating apparatus for physically handicapped persons comprising:
a grip holder having a grip hole formed thereih and means for attaching the grip holder to a steering wheel of an automobile;
a rotary grip having a shaft with an engaging portion and a grip body part rotatably mounted on the shaft, the shaft being detachably received in the grip hole; and
an engaging member supported by the grip holder and having a movable portion supported for movement between a first position in which the movable portion projects into the grip hole and engages with the engaging portion of the shaft and prevents the shaft from being removed from the grip hole and a second position in which the movable portion is disengaged from the engaging portion, biasing means biasing the movable portion of the engaging member toward the first position, and an operating portion connected to the movable portion and projecting from the grip holder for moving the movable portion between its first and second positions.

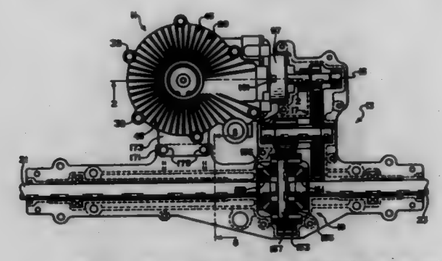
5,289,737
ELASTIC CLUTCH
Viktor Kuhne, Bopfingen, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany
Continuation of Ser. No. 748,827, Aug. 22, 1991, abandoned.
This application Jan. 5, 1993, Ser. No. 795
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1990, 4026996
Int. Cl.[5] F16D *3/12, 3/80*
U.S. Cl. 74—574 18 Claims



1. A coupling for an elastic disk-type clutch with two halves, for two masses of a split flywheel for an internal combustion engine, which masses are allowed a limited mutual rotation against the force of elastic coupling elements, said elastic coupling elements arranged in several cutouts distributed across the circumference, each said elastic coupling element comprising a single, integral oblong helical spring subdivided in axial direction into partial sections by means of at least one wedge-shaped spring cup forming a bend in said spring separating said partial sections, the wedge-shaped spring cup being disposed between two adjacent windings of the spring in the outer winding area thereof, each said partial section defining a straight-line longitudinal axis having a radius of curvature that is substantially infinite, the wedge-shaped spring cup forming a side guide of the spring within the two halves, the cutout supporting spring plates adapted to support ends of the spring.

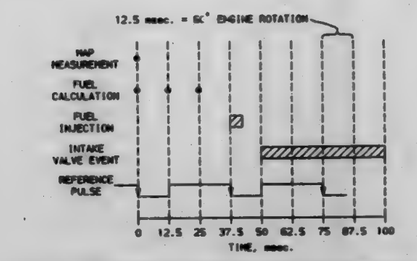
5,289,738
HYDROSTATIC TRANSAXLE ASSEMBLY AND IMPROVED COUPLING ARRANGEMENT THEREFOR
Dennis E. Szulczewski, Eden Prairie, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Continuation of Ser. No. 895,536, Jun. 8, 1992, abandoned. This application Nov. 23, 1992, Ser. No. 980,136
Int. Cl.[5] F16H *57/02*
U.S. Cl. 74—606 R 18 Claims

1. A hydrostatic transaxle of the type including a hydrostatic transmission having an input means, a hydrostatic pump driven by said input means, a hydrostatic motor, and an output means driven by said motor; and an axle assembly having a differential gear means including an input gear and first and second output gears, first and second axle shafts driven by said first and second output gears, respectively, and an output gear train operable to transmit torque from said output means of said hydrostatic transmission to said input gear of said differential gear means, said axle assembly further having an axle housing comprising an upper casing half and a lower casing half, said casing halves being joined together on a first plane containing an axis of rotation of said first and second axle shafts and being operable to journal said axle shafts therebetween; characterized by:
(a) said hydrostatic transmission further including a transmission case comprising a first case portion and a second case portion, said case portions being joined together on a



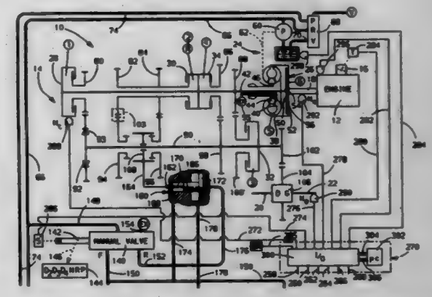
second plane oriented generally perpendicular to an axis of rotation defined by said output means;
(b) said second case portion including an output hub portion surrounding said output means;
(c) said axle housing casing halves including an input portion in cooperative engagement about said output hub portion of said second case portion;
(d) another portion of said transmission case cooperating with a portion of at least one of said axle casing halves to define a secondary mounting means and a torque reaction means; and
(e) said output hub portion, said secondary mounting means, and said torque reaction means comprising the only portions of said transmission case fixedly secured with said axle housing.

5,289,739
ENGINE IDLE FUEL CONTROL DURING TRANSMISSION RANGE SHIFTING
David C. Muscaro; Larry T. Nitz, both of Troy, and Michael R. Witkowski, Sterling Heights, all of Mich., assignors to Saturn Corporation, Troy, Mich. and Delco Electronics Corporation, Kokomo, Ind.
Filed Oct. 14, 1992, Ser. No. 960,639
Int. Cl.[5] B60K *41/10*
U.S. Cl. 74—844 5 Claims



1. In a motor vehicle including a fuel-injected engine and an automatic shift transmission having a fluid-operated torque transmitting device which is filled in preparation for engagement and then engaged to establish a vehicle drive condition in response to movement of a driver-operated range selector, a method of operation which avoids engine speed disturbances associated with the establishment of said vehicle drive condition, comprising the steps of:
injecting a calculated amount of fuel into said engine in accordance with a measured engine load parameter;
generating a first signal when said torque transmitting device is expected to be completely filled;
increasing said calculated amount of injected fuel to an increased amount in response to the generation of said first signal;
generating a second signal upon engagement of said torque-transmitting device; and
reducing the amount of injected fuel from said increased amount to said calculated amount in response to the generation of said second signal.

5,289,740
INFERENCE-BASED MANUAL PULLDOWN CONTROL OF AN AUTOMATIC TRANSMISSION
Rimas S. Milunas, Royal Oak; Larry T. Nitz, Troy; Susan L. Rees, Clawson, and Nader Motamedi, Rochester Hills, all of Mich., assignors to Saturn Corporation, Troy, Mich.
Filed Mar. 2, 1992, Ser. No. 844,055
Int. Cl.[5] F16H *61/02*
U.S. Cl. 74—866 16 Claims



1. In a motor vehicle having an automatic transmission providing a plurality of engageable speed ratios ranging from a lowest speed ratio to a highest speed ratio, and a control which normally operates to select a speed ratio to be engaged based on vehicle speed and load, a method of operation comprising the steps of:
forming a plurality of inference signals which are indicative of the need to engage a speed ratio lower than said highest speed ratio, based on diverse measured operating parameters of said vehicle;
selecting a maximum speed ratio based on an aggregate of said plurality of inference signals; and
engaging a speed ratio in accordance with the lower of said maximum speed ratio and the speed ratio selected by said control.

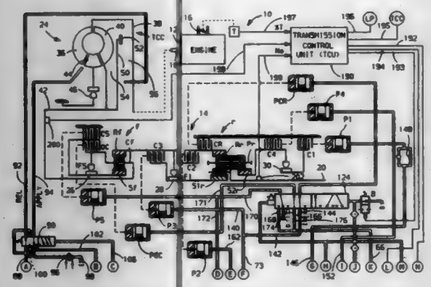
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5,289,741

ADAPTIVE TRANSMISSION PRESSURE CONTROL WITH RUN-THROUGH DETECTION

William E. Deba, Plymouth, and Robert L. Moses, Ypsilanti, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 8, 1992, Ser. No. 894,982
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **6 Claims**



1. In a motor vehicle multiple speed ratio automatic transmission including a fluid operated torque transmitting device to be engaged for shifting the transmission from a current speed ratio to a target speed ratio, a source of fluid pressure, regulator means for regulating said fluid pressure in accordance with a predetermined pressure command to form a regulated line preasure, a shift valve operative when activated to direct said line pressure to said torque transmitting device for engaging such device, and fluid accumulator means for absorbing a portion of the fluid directed to said torque transmitting device by said shift valve during a stroke interval of said shift, control apparatus comprising:

means effective during a sampling period defined by a progression of said speed ratio from said current speed ratio to said target speed ratio for periodically sampling said speed ratio;

means effective upon conclusion of said sampling period to determine an average ratio signal corresponding to the average of said periodically sampled speed ratios;

detection means for comparing the determined average ratio signal to a desired average ratio to detect an abnormal shift condition in which the change in speed ratio is completed after said stroke interval; and

means for adjusting said predetermined pressure command in a direction to increase said regulated line pressure in subsequent shifting to said target speed ratio in response to a detection of said abnormal shift condition, thereby to prevent a recurrence of said abnormal shift condition.

5,289,742

VIBRATION DAMPING DEVICE FOR HAMMERS

Howard A. Vaughan, Jr., Lake Geneva, Wis., assignor to Vaughan & Bushnell Manufacturing Co., Hebron, Ill.

Filed Dec. 22, 1992, Ser. No. 995,586
Int. Cl.[5] B25D *1/12*
U.S. Cl. 81—22 **13 Claims**

1. A shock-absorbing device for a claw hammer or the like comprising:

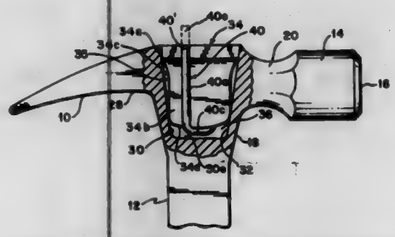
an integral steel head and shank forming a handle,

said steel head being formed with a medial body portion from which said shank extends outwardly, the medial body portion being formed with an elongated socket having an axis substantially in alignment with a longitudinal axis of said shank and wall surfaces defining said socket;

a vibration damping unit comprising a plug base member formed with a plurality of walls and having a hardness less than the hardness of said steel head, and

an elongate resilient element having at least end portions, and having a hardness less than the hardness of said plug base member;

said plug base member being configurated and dimensioned to be receivable within said elongated socket in a press-fit relationship therewith and defining at least one clearance or space between said plug base member and said wall surfaces of said elongated socket, said resilient element being positioned in such a manner that in the assembled condition of said claw hammer when said plug base member is positioned within said elongated socket, at least said end portions of said resilient element are fixed relative to said steel head and base member; and



said plug base member includes grooves formed within said plurality of walls for receiving at least a part of said resilient element, said portions of the resilient element extending at least about a part of an outside periphery of said plug base member;

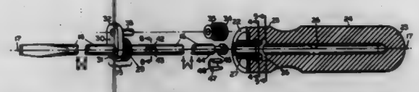
whereby in use any harmonic vibrations set up at said steel head and transferred to said plug base member are interrupted and/or dampened by vibrations of said resilient element.

5,289,743

TWO-SPEED REDUCTION GEARED SCREWDRIVER

Salvatore Cirami, 12-21 35th Ave., Apt. 4F, Long Island City, N.Y. 11106

Filed Apr. 26, 1993, Ser. No. 52,506
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.3 **10 Claims**



1. A two-speed reduction geared screwdriver, comprising:

a single drive shaft having a forward portion, an intermediate portion and a rearward portion having a common longitudinal axis;

said forward portion of said drive shaft having a free end adapted to engage the head of a screw for turning same;

a single handle member having opposed forward and rearward ends, said handle member provided with a bore open at the forward end of said handle member and extending inwardly therefrom toward the rearward end of said handle member;

a tubular externally-toothed pinion gear fixed to and projecting from the forward end of said handle member coaxial with said bore;

said handle member and pinion gear being rotatably mounted on the rearward portion of said drive shaft for rotation about said longitudinal axis with the forward and intermediate portions of said drive shaft projecting from said pinion gear;

means rotatably securing the rearward portion of said drive shaft in said handle member;

an externally-toothed driven gear fixed coaxially to the intermediate portion of said drive shaft adjacent said pinion gear;

a support member fixed to and extending laterally from the intermediate portion of said drive shaft adjacent said driven gear;

a pivot member fixed to said support member and extending therefrom toward the forward end of said handle member parallel to said drive shaft and spaced apart from said pinion gear and driven gear;

externally-toothed first and second transfer gears connected for rotation together about a common axis, rotatably mounted on said pivot member with said first transfer gear permanently meshed with said pinion gear and said second transfer gear permanently meshed with said driven gear;

said pinion gear, first and second transfer gears and driven gear having respective pitch diameters defining reduction gearing arranged such that for each 360-degree rotation of said handle member said drive shaft is rotated less than 360 degrees;

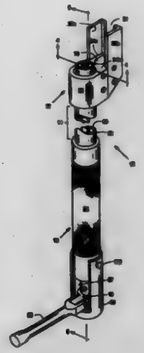
lock means secured to said handle member operable between an engaged position that prevents rotation of said handle member relative to said drive shaft and as a result said reduction gearing is bypassed and said drive shaft turns the same number of degrees as said handle member with equal torque, and a disengaged position that permits rotation of said handle member relative to said drive shaft and as a result said reduction gearing is operative and said drive shaft turns a lesser number of degrees than said handle member with correspondingly increased torque.

5,289,744

APPARATUS AND METHOD FOR INSTALLING TOP BEAM "C" CLAMPS OR THE LIKE

Ronald O. Roberge, 1521 Shenandoah Dr., Cedar Park, Tex. 78613

Continuation-in-part of Ser. No. 532,437, Jun. 4, 1990, Pat. No. 5,063,652. This application Nov. 8, 1991, Ser. No. 790,213
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—124.5 **9 Claims**



1. An apparatus for installing, retrieving, or operating a clamp having a bolt and locking nut assembly in which a clamp bolt and a clamp locking nut are threaded by socket means, the apparatus comprising:

clamp supporting means for receiving and holding the clamp in a clamp operating position;

socket means rotatably connected to the clamp supporting means, said socket means having a bolt driving position and a nut driving position, the socket means for drivingly engaging the bolt of the bolt and locking nut assembly when in the bolt driving position and for drivingly engaging the nut of the bolt and locking nut assembly when in the nut driving position; and

driving means connected to the socket means for rotating the socket means when in the bolt driving position to rotate the clamp bolt, and for rotating the socket means when in the nut driving position to rotate the clamp locking nut threaded on the clamp bolt.

5,289,745

SOCKET WRENCH EXTENSION WITH LOCK

Gilbert D. Beardsley, Rte. #3 Box 1, Wickliffe, Ky. 42087

Filed Apr. 6, 1993, Ser. No. 44,574
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—177.2 **8 Claims**



1. A socket wrench extension element comprising:

an elongated shank having a wrench drive section at one end and a socket drive stud at an opposite end,

said socket drive stud having a plurality of side walls adapted to be engaged by a cavity of a tool socket,

a latch ball projecting from an opening in one of said plurality of side walls and adapted to engage retention means in the cavity of a tool socket,

a longitudinal bore in said extension element extending from said wrench drive section to said socket drive stud and containing a shiftable lock pin therein,

said longitudinal bore and said lock pin aligned within said elongated shank asymmetrically of its center axis,

an elongated passageway communicating between said bore and said latch ball and containing bearing means engageable with said lock pin,

compression spring means in said passageway intermediate said latch ball and bearing means,

deflection means on said lock pin engageable with said bearing means upon axial displacement of said lock pin to positions alternately compressing and partially relaxing said compression spring means to immobilize or permit displacement respectively of said latch ball, and

means on said lock pin engageable upon attachment and removal of a wrench stud to said wrench drive section, to produce said axial displacement of said lock pin to said alternate positions to respectively lock or allow removal of a tool socket from said extension drive stud.

5,289,746

PARALLEL JAW TOGGLE WRENCH

Donald J. Fina, Rte. 1, Box 1200, Jackson, S.C. 29831

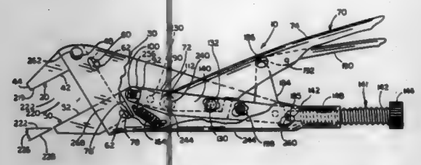
Continuation-in-part of Ser. No. 687,474, Apr. 18, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,663
Int. Cl.[5] B25B *7/12*
U.S. Cl. 81—356 **10 Claims**

1. A toggle wrench comprising:

a fixed jaw;

an elongated handle extending rearwardly from said fixed jaw and attached thereto, said handle having spaced right and left connected sidewalls;

said handle having a lower closed side and an opposite upper side adjacent said fixed jaw;
a sliding jaw below said fixed jaw, said jaws having forwardly extending pressure surfaces;
a track system mounted on said handle and having right and left tracks mounted on said right and left sidewalls respectively and elongated transversely of said pressure surfaces, said sliding jaw being guided by said tracks;
an elongated rearwardly extending hand lever having a forward portion movable between said sidewalls and a rearward portion protruding from said sidewalls on the upper side of said handle;
a link having a forward end pivotally attached to a rearward portion of said sliding jaw in a manner for the pivoting of said link about a forward axis, the forward end of said lever being pivotally secured to the rearward end of said link for rotation about an intermediate axis, said link being free of any direct pivotal connection to said handle;
a carrier elongated in parallelism with said handle and disposed between its said sidewalls;
means pivotally attaching said lever to said carrier for pivoting about a rearward axis rearwardly of said intermediate axis, said axes being parallel to each other and also being normal to the elongation of said handle;



coacting pin and slot connection means on said carrier and said forward end of the link whereby said forward end of the link is movable fore and aft relative to said carrier; and
a threaded assembly mounted on the rearward end of said handle and having a manually rotatable adjustment portion movable fore and aft of said handle in response to threaded rotation thereof, said adjustment portion and carrier having coacting engagement surfaces such that forward threading movement of said adjustment portion forces said carrier to move forward toward said sliding jaw, said sliding jaw, link, lever, and carrier together defining an interconnected assembly, resilient means operably correlated with said interconnected assembly and said handle for urging said sliding jaw away from said fixed jaw, the forward end of said hand lever moving upwardly in response to downward pivotal movement of a rearward end of said lever about said rearward axis, thereby moving said intermediate axis toward a line between said forward and rearward axes and moving said forward end of said link forwardly relative to said carrier and thereby forcing said movable jaw toward said fixed jaw against the urging of said resilient means.

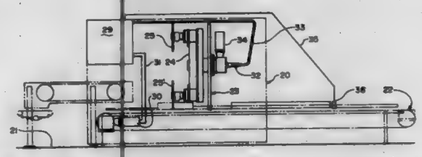
5,289,747

VARIABLE VELOCITY CONVEYING METHOD AND APPARATUS FOR CONTINUOUS MOTION SAWS

Gary R. Wunderlich, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Feb. 4, 1993, Ser. No. 13,636
Int. Cl.[5] B26D *1/60, 5/20*
U.S. Cl. 83—38 **4 Claims**

1. In the method of operating a skewed orbiting saw for transversely cutting continuously advancing elongated lengths of multi-ply web material into shorter lengths, said saw having a substantially constant speed component parallel to said elongated lengths during cutting: advancing said elongated lengths at a speed substantially equal to said saw speed component during cutting and varying the speed of advance of said elongated lengths between consecutive cuttings from said substantially equal speed by accelerating/decelerating said elongated



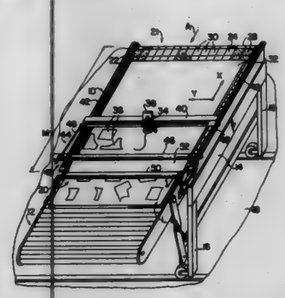
lengths while maintaining said saw at said substantially constant speed.

5,289,748

CUTTER RE-SEALER USING TENSIONED OVERLAY AND RELATED METHOD

Richard Kuchta, Tolland; Vladimir Evenzon, Vernon; Larry Billings, Manchester, all of Conn., and Philip W. Cenedella, East Douglas, Mass., assignors to Gerber Garment Technologies, Inc., Tolland, Conn.

Filed Apr. 23, 1992, Ser. No. 872,508
Int. Cl.[5] B26D *7/02*
U.S. Cl. 83—56 **22 Claims**



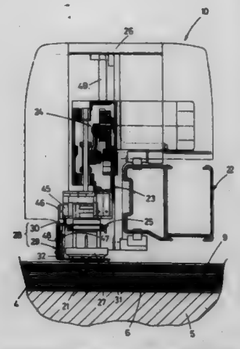
13. A method for sealing cuts made in a layout of sheet material in an automatic cutting machine comprising the steps of:
providing a moveable support surface having a vacuum hold down conveyor type advancement system capable of moving sheet material in a first coordinate direction;
providing a tool carriage moveable along said first coordinate direction between a first end of said frame and the second end of said frame;
providing a first roller means associated with said tool carriage and coupling it for movement with said tool carriage for movement between said first and second ends of said frame;
providing a second roller means disposed at said frame second end and rotatably mounting it to said frame;
providing a first resilient means comprising a first member fastened at one end to said first roller means and fastened at its opposite end to said tool carriage for causing said first roller means to be rotatably mounted to said tool carriage against the bias of said first resilient means and providing a second resilient means comprising a second member fastened at one end to said second roller means and fastened at its opposite end to said frame for causing said second roller means to be rotatably mounted to said frame against the bias of said second resilient means;
providing an air impermeable sheet and winding the opposite ends thereof about each of said first and second roller means to allow the portion of said air impermeable sheet extending therebetween to spread over the sheet material supported on the support surface when said carriage is moved from said second end of said frame to said first end; and
applying a preload to each of said first and second roller means in opposite directions using said first and second resilient members respectively associated with each of said first and second roller means and maintaining the sum of said preloads in at least one of said first and second roller means during cutting and advancement operations to automatically rewind a length of said air impermeable material onto the one of said first and second roller means from which it was dispensed to effect an equilibrium state between each of the first and second rollers.

5,289,749

APPARATUS FOR DETECTING ABNORMAL CONDITION OF CUTTABLE OBJECTIVE MATERIAL FOR USE IN A CUTTING MACHINE

Taichi Imai, and Toshiro Ochi, both of Wakayama, Japan, assignors to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Aug. 26, 1992, Ser. No. 935,180
Claims priority, application Japan, Aug. 26, 1991, 3-213833; Jun. 30, 1992, 4-172324
Int. Cl.[5] B26D *5/00*
U.S. Cl. 83—67 **2 Claims**



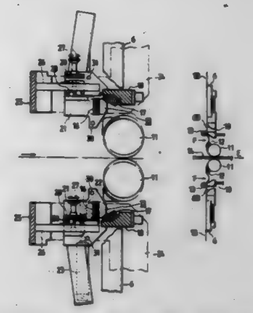
1. An apparatus for detecting an abnormal condition of a cuttable material (6) previous to cutting with a cutting machine (1) which comprises a material-mounting table (9) capable of stationarily holding the cuttable material (6) on a top surface and a cutter blade (21) which is freely movable in any desired direction and disposed above said material-mounting table(9), said cutting machine (1) movable from one direction to another direction in a longitudinal direction of the material-mounting table (9), said cutting machine (1) further comprising; a blade-supporting member (27) which vertically and slidably supports said cutter blade (21), said blade-supporting member (27) is supported by a slidable block (50) which is supported by a casing (26), said blade supporting member (27) is pivotably controlled by a blade-tip direction controller (25) to control a cutting direction of the cutter blade (21), said blade-supporting member (27) includes a bottom surface which comes into contact with a top surface of the cuttable material (6), and an abnormal-condition detector (28) which comprises an annular member (31) in a horizontal plane which is vertically and slidably disposed to the casing (26), said annular member (31) is energized downwardly by tensile force of a spring (36) in the neighborhood of an external periphery of said blade-supporting member (27), said annular member (31) or said casing (26) comprises a contact member (33) which completes an electrical circuit when the annular member (31) is lifted in resistance against a tensile force of the spring (36), whereby a rise of said cuttable material (6) in a direction of a movement of said cutter blade (21) is detected.

5,289,750

APPARATUS FOR BONDING CONTINUOUS THIN FILM TO DISCRETE BASE PLATES AND FILM CUTTING APPARATUS THEREFOR

Yasuhiro Nagafuchi, Chiba; Mitsuhiro Seki, Tokyo; Shigeo Sumi, Saitama, and Fumio Hamamura, Kanagawa, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 706,667, May 29, 1991, abandoned, which is a division of Ser. No. 500,984, Mar. 29, 1990, Pat. No. 5,110,400. This application Nov. 5, 1992, Ser. No. 972,091
Claims priority, application Japan, Mar. 29, 1989, 1-77886; Apr. 29, 1989, 1-109831
Int. Cl.[5] B26D *1/38*
U.S. Cl. 83—203 **2 Claims**



1. A rotary cutter for cutting a film, comprising:
a base;
a fixed cutting member supported by said base;
support plates fixedly attached to said base;
a slide bed in slidable contact with said support plates so as to be capable of being moved back and forth along said support plates and relative to the film, said slide bed being fixed in a prescribed position relative to said support plates by an engagement device in a first mode of operation where said engagement device, which is mounted is engaged on said slide bed, with at least one of said support plates and said slide bed being freely slidable relative to said support plates and away from said fixed cutting member in a second mode of operation where said engagement device is released from said at least one of said support plates, said engagement device comprising a pin, which slidably extends from said slide bed, and, in said first mode of operation, engages in a recess formed in said at least one of said support plates; and
a rotating cutting member rotatably supported at opposite ends thereof by said slide bed such that in said prescribed position, said rotary cutting member is operably positioned adjacent said fixed cutting member to cooperate therewith for cutting said film.

5,289,751

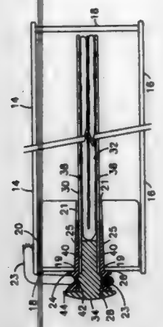
HUMIDIFIER FOR WOODEN MUSICAL INSTRUMENTS

Herbert M. Light, 200 Philellena Rd., Cherry Hill, N.J. 08034

Filed Jan. 27, 1992, Ser. No. 825,942
Int. Cl.[5] G10D *1/02*
U.S. Cl. 84—275 **18 Claims**

1. An improved humidifier of the type that is mounted through an aperture into a wooden musical instrument's sound box, the sound box having a side wall aperture used for a string anchor insert, the improvement comprising:

a self-supporting, vapor-permeable, liquid retaining tubular member; and



an attachment means for supporting the tubular member within the sound box from said side wall aperture without the tubular member contacting the sound box.

5,289,752

DEVICE FOR FASTENING THE REED ON THE MOUTHPIECE OF WIND INSTRUMENTS

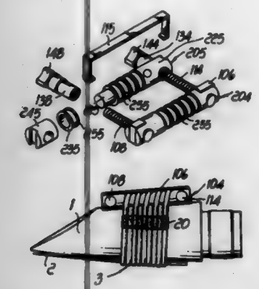
Emilio Barbaglia, Via Misericordia 10, Abbiategrasso 20081 (Milano), Italy

Filed Jan. 22, 1992, Ser. No. 823,718

Claims priority, application Italy, Feb. 15, 1991, MI91A000396

Int. Cl.[5] G10D *9/02*

U.S. Cl. 84—383 R **8 Claims**



1. Device for fastening a reed on a mouthpiece of wind instruments, in particular of single-reed instruments, comprising two rod members adapted to guide a traction member, said rod members being connected together by means of adjustment means adapted to adjust a distance between said rod members, said traction member being adapted to embrace said reed and said mouthpiece at least partially, said traction member having two ends, each one of said ends being fastened to a respective one of said rod members, said traction member being wound on said rod members so as to define arcs of incomplete turns having alternated directions in succession, said adjustment means being adapted to vary said distance between said rod members in order to vary a winding tension of said traction member, each of said rod members being provided with a plurality of annular grooves to allow said traction member to slide along an axis of said traction member, said traction member being wound about said rod members in said grooves, each of said rod members comprising a plurality of rings adapted to rotate on said rod members, each of said rings being provided with a groove, said traction member being adapted to be arranged in said groove.

5,289,753

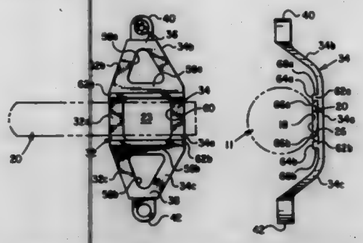
LIGATURE FOR REED INSTRUMENT

Gustav J. Rieckhoff, 620 N. 28th St., Quincy, Ill. 62301

Filed Dec. 8, 1992, Ser. No. 986,703

Int. Cl.[5] G10D *9/02*

U.S. Cl. 84—383 R **8 Claims**



1. A split ring ligature for a woodwind instrument comprising:

a pair of pliable straps each of which comprises a medial span and arm portions which are attached to said span and which extend therefrom;

tightening means operable to draw said straps radially inwardly to embrace compressively the underlying surfaces of a mouthpiece and a reed;

a pair of transversly spaced apart bridge members extending longitudinally between and joining said medial spans of said straps;

pad means projecting radially inwardly from the surface of each bridge member; and

said pad means extending in spaced relation to the opposite sides of said reed into compressive engagement with said mouthpiece.

5,289,754

REDUNDANT AMMUNITION FLOW DEVICE

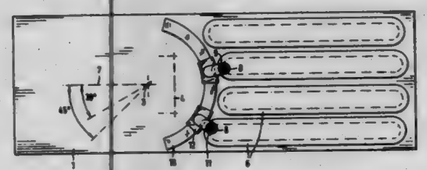
Marold Elspass, Kaarst, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 872,095

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115283

Int. Cl.[5] F41A *9/16*

U.S. Cl. 89—46 **11 Claims**



1. A redundant ammunition flow device for supplying divided, large caliber ammunition, composed of a projectile and a propelling charge column including a plurality of propelling charge modules, to a loading tray of a gun that is mounted on a turret of a vehicle for adjustment in elevation about a trunnion, the vehicle having a chassis, comprising:

at least two magazines disposed in the chassis of the vehicle, each said magazine having a form of a closed loop and including a plurality of first identical holders each of which is adapted to accommodate in an upright position either the projectile or the propelling charge column and which can be placed in a transfer position;

a lower guide having a form of a ring segment and fixed to the chassis so that said lower guide is concentric with an axis of rotation of the turret;

an upper guide having a form of a ring segment and fixed to a race ring flange of the turret so that said upper guide is concentric with the axis of rotation of the turret;

two ammunition transporters mounted for displacement on said upper and lower guides each transporter for receiving at a respective transfer position either the projectile or the propelling charge column from a respective one of the first holders, each said ammunition transporter including a first rotary arm and a feed arm held by said first rotary arm and including second holders for holding the projectile or the propelling charge column;

two ammunition transfer arms operatively arranged for receiving either the projectile or the propelling charge column from a respective one of said ammunition transporters, one said ammunition transfer arm disposed on each side of the gun and each said ammunition transfer arm being pivotal about the trunnion and including a lifting arm having third holders for picking up and lifting the projectile or propelling charge column; and

two readiness trays operatively arranged for receiving either the projectile or the propelling charge column from a respective one of said ammunition transfer arms, with one of said readiness trays being disposed on each side of the loading tray.

5,289,755

RAM HEAD

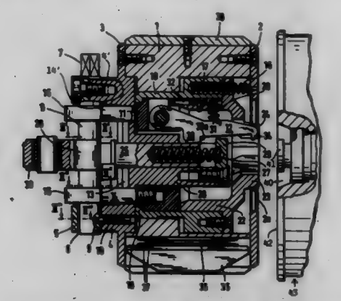
Erich Zielinski, Dusseldorf; Adolf Nordmann, Erkrath, and Jochen Hoff, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Oct. 22, 1992, Ser. No. 964,907

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135273

Int. Cl.[5] F41A *9/39*

U.S. Cl. 89—47 **11 Claims**



1. A ram head for permitting extraction of an ammunition unit which in its bottom is provided with a central, rotationally symmetrical form locking zone, said ram head comprising: a cylindrical housing having a front end plate and a rear end plate; a ring disposed in said housing for axial displacement; a plurality of extraction levers symmetrically disposed about a longitudinal axis of said housing, radially pivotally articulated to said ring and extending toward said front end plate; first spring bias means disposed in said housing for normally biasing said levers in a direction toward the longitudinal axis of said housing; a plunger mounted for axial movement within said housing independently of axial movement of said ring, said plunger engaging said levers and spreading same when said plunger and said ring are in first axial positions; second spring bias means disposed in said housing for biasing said plunger and said ring toward said rear end plate and into said first axial positions; a slide sleeve coupled to said ring for axial movement therewith, said slide sleeve being provided with a centering ring into which a front portion of said levers extend, said centering ring having a shape to matingly engage in the form locking zone in the bottom of the ammunition unit and extending out of said housing via an opening in said front end plate when said ring is in a second axial position; and, an eccentric shaft rotatably mounted on said housing in a direction transverse to said longitudinal axis for controlling the axial movements of said ring and of said plunger.

5,289,756

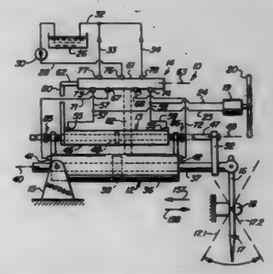
MARINE STEERING APPARATUS

Jacob Kobelt, Surrey, Canada, assignor to Kobelt Manufacturing Co. Ltd., Richmond, Canada

Continuation of Ser. No. 818,689, Jan. 3, 1992, abandoned. This application May 4, 1993, Ser. No. 56,847

Int. Cl.[5] F15B *9/10*; B63H *25/08*

U.S. Cl. 91—368 **20 Claims**



1. A fluid power apparatus comprising:

(a) an actuator apparatus having an actuator body and an actuator piston rod, the piston rod having an actuator piston mounted thereon, the actuator body having first and second actuator ports located on opposite sides of the piston, the actuator body and piston rod being mutually extensible and retractable along a longitudinal actuator axis,

(b) a servo apparatus having a servo body and a servo piston rod, the servo piston rod having a servo piston mounted thereon, the servo body having first and second servo ports located on opposite sides of the servo piston and being communicable with a helm pump, the servo body and the servo piston rod being mutually extensible and retractable along a longitudinal servo axis, the servo axis being parallel to the actuator axis,

(c) a main valve having a valve body portion and a valve spool portion, the valve body portion having: first and second signal ports communicating with the first and second actuator ports respectively of the actuator body to transmit fluid therebetween; first and second helm ports communicable with the helm pump to transmit fluid therebetween; a supply port to receive supply fluid at supply pressure when available; and at least one sump port communicable with a sump; the valve portions being movable relative to each other to control fluid flow through the ports of the valve body, portions of the main valve, the actuator apparatus and the servo apparatus being mechanically rigidly connected together for concurrent simultaneous movement, and

(d) valve shifting means for shifting the main valve apparatus between first and second positions thereof to change supply fluid flow through the valve, the valve shifting means comprising lost motion means for providing pre-determined lost motion in at least one mechanical connection between two portions of either the main valve, the actuator apparatus or the servo apparatus, the lost motion

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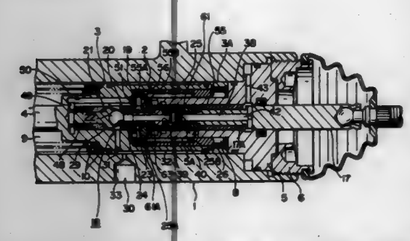
means providing sufficient axial movement between the valve spool portion and the valve body portion to permit shifting of the valve portions relative to each other to change fluid flow through the main valve in response to a change in fluid signal direction from the helm pump applied to the servo apparatus.

5,289,757

REACTION ASSEMBLY FOR LIQUID PRESSURE BOOSTER

Kuraji Yamashita, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,903
Claims priority, application Japan, Apr. 21, 1992, 4-33402[U]
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—373 **7 Claims**



1. A reaction assembly for a liquid pressure booster including a power piston slidably disposed in a housing and having a cylindrical section at its rear portion, a power chamber defined in the rear side of the power piston within the housing, an input shaft slidably extending into the housing through the rear side of the power piston, a control valve disposed across the cylindrical section of the power piston and the free end of the input shaft inside for supplying a liquid pressure to the power chamber which depends on an input applied to the input shaft, a reaction piston slidably disposed around the input shaft and responsive to a liquid pressure within the power chamber by being retracted relative to the input shaft for abutment against a stop formed on the input shaft, and a spring disposed between the power piston and the reaction piston for maintaining the reaction piston at an advanced position spaced from the stop with a given magnitude of resilience; characterized by

a guide extending from the housing and projecting into the cylindrical section of the power piston, the reaction piston being slidably fitted in the guide which thus slidably supports the reaction piston, the reaction piston including a shank portion in which the input shaft is slidably fitted, thus allowing the input shaft to be slidably supported by the reaction piston;

a first engaging portion formed on the reaction piston at a position forward of the guide and projecting radially outward within the cylindrical section of the power piston and reciprocable with respect to the power piston;

a first stop formed on the cylindrical section of the power piston for restricting a rearward movement of the first engaging portion beyond a given stroke, the spring being disposed in a clearance formed between the outer periphery of the guide and the inner periphery of the cylindrical section of the power piston to act between the first engaging portion and the power piston;

a second engaging portion formed on the input shaft to project radially outward within the reaction piston and reciprocable with respect to the reaction piston;

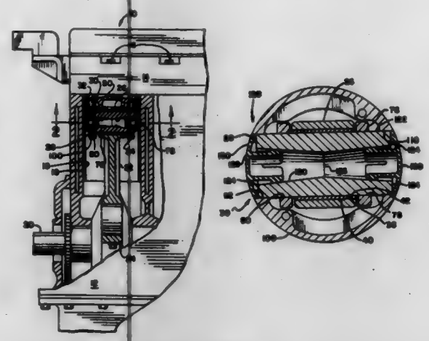
and a second stop formed on the reaction piston for restricting a rearward movement of the second engaging portion beyond a given stroke.

5,289,758

PIN PLUGS FOR USE IN A PISTON ASSEMBLY

Willibald G. Berlinger, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 5, 1992, Ser. No. 878,591
Int. Cl.[5] F16J *1/14*
U.S. Cl. 92—190 **13 Claims**



1. A piston assembly comprising:

a generally cylindrical main body having a pair of radially inset leg members extending from the main body and being spaced one from the other a preestablished distance, each of said leg members having a bore positioned therein forming a surface;

a generally cylindrical wrist pin positioned within the bores including an outer surface defining a preestablished diameter, an inner surface defining a preestablished diameter and a pair of ends defining a preestablished length;

a pair of wrist pin plugs one of each being positioned at least partially within the inner surface at each end of the wrist pin forming a wrist pin assembly;

said wrist pin plugs including a head portion having a preestablished diameter being less than the preestablished diameter of the outer surface and a preestablished length and said head portion further includes a generally convex spherical outer surface and during operation of said piston assembly within an engine, said outer surface may come in contact with a cylinder bore in which said piston assembly is positioned within;

said wrist pin plugs further including a shank portion blendingly extending from the head portion, said shank portion defining a wall having a stepped outer surface having an inner portion being defined by a preestablished length and an outer portion being defined by a preestablished length thereon, said outer portion being the only portion in contacting relationship to the inner surface and said wrist pin plugs further including a generally concave spherical inner surface and the shank portion blendingly extends from the concave spherical inner surface; and

said wrist pin assembly being free to move axially within the bores.

8. A wrist pin assembly, comprising;

a generally cylindrical wrist pin including an outer surface having a preestablished diameter, an inner surface having a preestablished diameter and a pair of ends;

a pair of wrist pin plugs one of each being positioned at least partially within the inner surface at each end;

said wrist pin plugs including a head portion having a preestablished diameter being less than the preestablished diameter of the outer surface and a preestablished length and said head portion further includes a generally convex spherical outer surface and during operation of said piston assembly within an engine, said outer surface may come in contact with a cylinder bore in which said piston assembly is positioned within; and

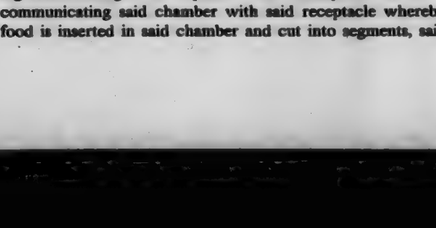
said wrist pin plugs further including a generally concave spherical inner surface and a shank portion blendingly extending from the concave spherical inner surface, said shank portion defining a wall having a stepped outer surface having an inner portion being defined by a preestablished length and an outer portion being defined by a preestablished length thereon, said outer portion being the only portion in contacting relationship to the inner surface.

5,289,759

FORCED STEAM BULK FOOD COOKER/BLANCHER

David W. Hufford, Walla Walla, Wash., assignor to Key Technology, Inc., Walla Walla, Wash.

Filed Mar. 3, 1992, Ser. No. 845,383
Int. Cl.[5] A47J *27/16, 27/58;* A23L *31/00*
U.S. Cl. 99—330 **21 Claims**



1. An improved continuous-process cooker and blancher for cooking and blanching a depth of bulk food particles, comprising:

a belt conveyor running longitudinally within the cooker and blancher to support and move a continuous flow of bulk food particles therein, the belt conveyor being perforated to allow fluid to pass through the belt conveyor;

opposed sidewalls extending longitudinally along the belt conveyor above its lateral edges to maintain a depth of bulk food particles on the belt conveyor between the sidewalls;

a hood over said depth of bulk food particles, the hood sealing against said depth of bulk food particles on the belt conveyor to form a steam plenum over said depth of bulk food particles; and

fluid pressure means for pressurizing the steam plenum and for forcing steam through said depth of bulk food particles contained between the longitudinal sidewalls on the belt conveyor, and through the perforated belt conveyor.

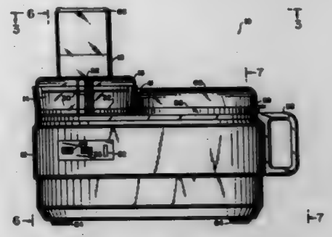
5,289,760

COMBINATION FOOD PROCESSOR AND FRYER

George Barradas, 15 River View Ct., Greenwich, Conn. 06830

Filed Aug. 24, 1992, Ser. No. 933,688
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—331 **15 Claims**

1. A motor-driven solid food processor and fryer comprising: a housing, a chamber in said housing having a cutting blade, a pusher paddle in said chamber spaced from said cutting blade, a receptacle for cooking oil in said housing, a removable perforated basket in said receptacle, means for heating said cooking oil to a predetermined temperature, means communicating said chamber with said receptacle whereby food is inserted in said chamber and cut into segments, said food segments being engaged by said paddle which pushes said cut segments through said communicating means into the



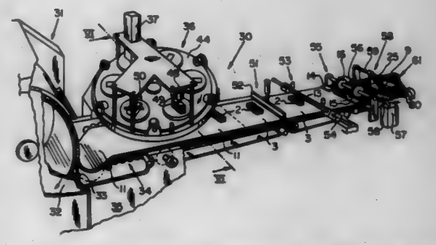
basket within the receptacle wherein said receptacle and basket have hot oil therein in order to fry said food segments.

5,289,761

DEVICE FOR MAKING A SNACK

Leon Marie F. Spierts; Gerard Matheus H. Lemmerling; Sibbelina Marijke Berg, all of Maastricht, and René Louis De Fiellettaz-Goethart, Berg en Terblijt, all of Netherlands, assignors to Mora B.V., Maastricht, Netherlands

Filed Apr. 20, 1992, Ser. No. 870,885
Claims priority, application Netherlands, Apr. 24, 1991, 9100712
Int. Cl.[5] A21C *9/00, 11/00;* A21D *13/00;* A23L *1/00*
U.S. Cl. 99—450.006 **18 Claims**



1. A device for making a snack having a substantially block shape with a filling packed in a pancake, comprising:

i) a pancake station including a rotary heated drum for delivering a pancake having a plurality of edges including at least one free wrapping edge, and a leading edge;

ii) a filling station for placing a filling on a portion of the pancake such that said free wrapping edge and said leading edge extend adjacent to the filling;

iii) a wrapping station for wrapping the pancake by wrapping the leading edge about the filling whereby a portion of the wrapped pancake creates a pancake wrapping about the filling and a portion of the pancake extends beyond the filling to form a pancake flap;

iv) a closing station for fusing said free wrapping edge formed from the wrapped pancake edge, whereby the filling is enclosed in said pancake wrapping; and

v) a folding station for folding the pancake flap around said pancake wrapping.

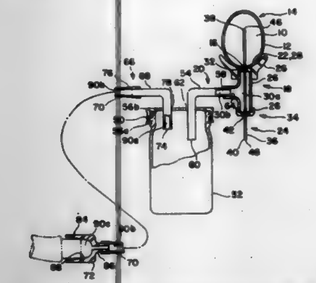
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5,289,762

EGG EVACUATION APPARATUS

Bert Phillips, R.D. 1, Box 107G, Spring Mills, Pa. 16875

Filed Jun. 10, 1991, Ser. No. 712,665
Int. Cl.[5] A23B *5/00*
U.S. Cl. 99—495 5 Claims



1. An apparatus for removal of the interior content of an egg from the egg shell of an egg having only one hole preformed in the egg shell comprising

closure means for sealably mounting to a container,

means for removing the interior content of the egg through only one hole in the egg shell to said closure means, said means for removing the interior content of an egg including

an egg seal having an egg collection opening therein connecting with said only one hole in said egg shell,

air fill hollow tube means positioned through said egg seal and inserted into said interior content of said egg through said only one hole in the egg shell for supplying an atmospheric pressure therethrough into said egg shell,

egg collection passageway means for collecting said interior content of said egg connecting between said egg collection opening in said egg seal and said closure means, and

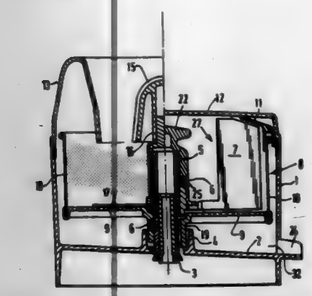
supply passageway means for providing a source of air pressure below atmospheric pressure connecting with said closure means.

5,289,763

DEVICE FOR THE EXTRACTION OF JUICE AND PULP FROM FRUIT AND VEGETABLES

Claude Le Rouzic, Monteeau Les Mines; André Gateaud, Perrecy Les Forges, and Michel Fleche, Blanzy, all of France, assignors to Robot Coupe (S.A.), Monteeau Les Mines, France

Filed Aug. 31, 1989, Ser. No. 401,313
Int. Cl.[5] A23N *1/00, 1/02*
U.S. Cl. 99—503 6 Claims



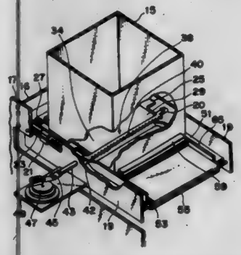
1. A device for the extraction of juice and pulp from vegetable and fruit products comprising a supporting base enclosing an electric motor, a bowl having a cylindrical wall, said bowl being adapted to be removable from the supporting base, said motor having a drive shaft which projects into the interior of the bowl and is adapted to receive a fruit squeezer cone or a grater, said rotor blades, fruit squeezer cone and grater each of which having a central hub, said drive shaft being surrounded by a central tube, said device further comprising a lid capable of being fastened to said bowl, and a cylindrical strainer having a vertical wall surface parallel to the cylindrical wall of said bowl, said strainer being equipped with a skirt which fits inside the central tube surrounding drive shaft but without coming into contact with said drive shaft, said strainer having a spindle which is fitted to the drive shaft in two orientations, one in which the strainer remains static during operation and the other in which the strainer is driven rotationally when the drive shaft is itself turning, said spindle being fastened to said drive shaft by spring catches, said spindle having pins intended to operate in conjunction with grooves present in the central hub.

5,289,764

APPARATUS FOR DIVIDING BREAD DOUGH OR THE LIKE

Michio Morikawa; Koichi Hirabayashi, and Susumu Kominato, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tochigi, Japan

Filed May 19, 1993, Ser. No. 64,543
Claims priority, application Japan, May 25, 1992, 4-157538; Nov. 17, 1992, 4-330955; Nov. 17, 1992, 4-330956
Int. Cl.[5] A21C *5/00, 7/01, 15/04*
U.S. Cl. 99—537 9 Claims



1. An apparatus for dividing plastic dough material comprising:

a hopper for dough material, the bottom of which is constituted by a first dough-supporting member, a second dough-supporting member, a dough-cutting member, and a dough material outlet,

said first dough-supporting member being movable back and forth, and comprising a flat upper surface, a bottom surface, a horizontal forward edge, and a rearward edge, said forward edge extending perpendicular to the direction of movement of said member,

said dough-cutting member comprising a saw blade means, and positioned at said forward edge of said first dough-supporting member,

a first drive means for reciprocating said saw blade means in its longitudinal direction while said first dough-supporting member is moved in its advancing direction,

said second dough-supporting member being movable in the same direction and in synchronization with said first dough-supporting member, being provided with a flat upper surface positioned at a level below the upper surface of said first dough-supporting member, thereby forming said dough material outlet, having a preset distance between said second dough-supporting member and said cutting member, and

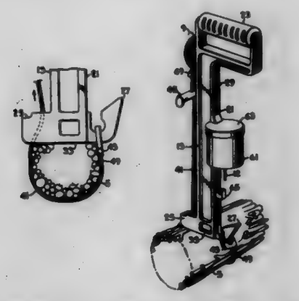
a second drive means for moving said first and second dough-supporting members back and forth, characterized by a discharge means, arranged adjacent and below said dough-cutting member, for regulating the thickness of a piece of dough material cut so as to have a thickness corresponding to said preset distance.

5,289,765

DEVICE WITH FLEXIBLE ELONGATE MEMBER FOR BINDING AND TOTING TREE TRIMMINGS AND THE LIKE

Ronald D. Gray, 3249-37th Ave., Rock Island, Ill. 61201

Filed Dec. 9, 1992, Ser. No. 988,199
Int. Cl.[5] B65B *13/18, 27/10*
U.S. Cl. 100—34 2 Claims



1. A device for compacting and bundling tree trimmings, comprising:

(a) compacting means for compacting the tree trimmings from an uncompacted configuration to a compacted configuration; said compacting means includes an elongate member, guide means for slidably receiving said elongate member therethrough, a handle and a connector; said handle connected to one end of said elongate member and said connector connected to the other end of said elongate member;

(b) securing means for releasably securing the tree trimmings in said compacted configuration;

(c) binding means for binding said tree trimmings in said compacted configuration; and

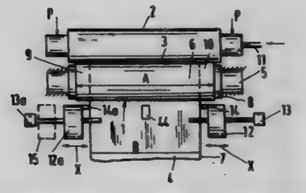
(d) a frame having a body member adapted to combine said compacting means and said securing means into a portable hand tool; said guide means disposed near a distal end of said body member.

5,289,766

APPARATUS FOR COOLING CALENDER ROLLS AND THE LIKE

Hans-Rolf Conrad, Dormagen, and Jürgen Baumeister, Mönchengladbach, both of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 12,262
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202917
Int. Cl.[5] B30B *15/34, 3/04;* D21G *1/00*
U.S. Cl. 100—930 RP 17 Claims



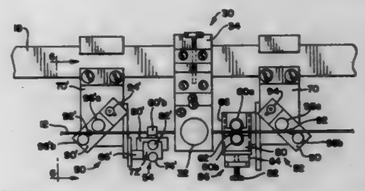
1. In a machine wherein running webs having pairs of longitudinally extending marginal portions and different widths at least partially overlap a peripheral surface extending between two ends of a roll which is rotatable about a predetermined axis and the width of the non-overlapped portion of the peripheral surface at least at one end of the roll varies when a web having a first width is followed by a web having a different second width, apparatus for thermally influencing the roll at the non-overlapped portion of the peripheral surface comprising guide means defining a path extending in substantial parallelism with the axis of the roll; means for cooling the roll at the non-overlapped portion of the peripheral surface, said cooling means being movable along said path; means for monitoring those marginal portions of running webs which are adjacent the non-overlapped portion of the peripheral surface of the roll, said monitoring means being movable with said cooling means and including means for generating signals denoting the position of said monitoring means relative to that marginal portion of a running web which is adjacent the non-overlapped portion of the peripheral surface of the roll; and means for moving said cooling means and said monitoring means along said path in response to said signals until the monitoring means assumes a predetermined position relative to that marginal portion of the monitored web which is adjacent the non-overlapped portion of the peripheral surface of the roll.

5,289,767

METHOD AND APPARATUS FOR GUIDING AN ELONGATED GENERALLY CYLINDRICAL MEMBER PAST A NON-CONTACT PRINTING STATION

Joseph S. Montalto, Whitewater, Wis.; John R. Forster; Randy A. Hoch, both of Spring Grove, Ill., and Jack D. Corses, Twin Lakes, Wis., assignors to VideoJet Systems International, Inc., Wood Dale, Ill.

Filed Aug. 21, 1992, Ser. No. 933,288
Int. Cl.[5] B41F *17/00*
U.S. Cl. 101—35 27 Claims



1. In a system for printing indicia on a substantially continuous length elongated member having a three-dimensional external surface, said system including means for advancing the member along its longitudinal axis past a printing station having non-contact printing means selectively operable to apply indicia to the external surface of the member; the combination therewith comprising guide means cooperative with the elongated member to guide it past the printing means, said guide means including a first pair of guide rollers defining a nip cooperative with the elongated member downstream from the printing means, means cooperative with said first pair of guide rollers for substantially preventing rotation of the elongated member about its longitudinal axis without contacting indicia applied to the member by said printing means, a second pair of guide rollers defining a nip cooperative with said elongated member upstream from the printing means and being cooperative with the first pair of rollers to guide the elongated member along a straight path past the printing means, at least one roller of each of said first and second pairs of rollers having unidirectional means enabling free rotation of the roller in a direction to allow advance of the elongated member while preventing rearward longitudinal movement of the elongated member.

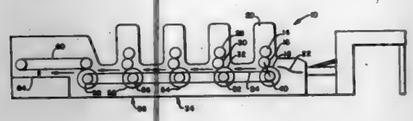
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5,289,768

GRIPPER BAR CONVEYOR FOR MULTIPLE COLOR OFFSET ROTARY PRINTING PRESS

James J. Keller, 4023 Glenridge Rd., Dallas, Tex. 75220

Continuation-in-part of Ser. No. 902,875, Jun. 23, 1992, Pat. No. 5,193,458. This application Mar. 15, 1993, Ser. No. 33,313
Int. Cl.[5] B41F *31/06*
U.S. Cl. 101—137 10 Claims



1. A gripper bar conveyor mechanism for transferring sheets to be printed from one rotating impression cylinder to another in an offset printer of the type having a plurality of sets of impression cylinders and corresponding blanket cylinders for rolling contact with the sheets to be printed therebetween, said gripper bar conveyor mechanism comprising:

a) a transferrable gripper bar activatable for releasably securing sheets to be printed in a fixed orientation with respect to said transferrable gripper bar;

b) a registration projection affixed to said transferrable gripper bar;

c) a registration pocket affixed to each of said impression cylinders for temporarily receiving said registration projection and holding said affixed gripper bar in a desired position with respect to each of said impression cylinders while rolling contact of the sheet to be printed is initiated between each of said impression cylinders and said corresponding blanket cylinders;

d) a guide roller attached to said transferable gripper bar adjacent said registration projection;

e) a guide surface attached to said offset printer adjacent said impression cylinder positioned for contacting said guide roller and holding said projection into said registration pocket while rolling contact of the sheet to be printed is initiated; and

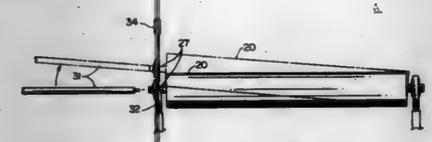
f) a conveyor band attached to said gripper bar and operably connected to said rotary offset press for transferring said transferrable gripper bar from one impression cylinder to said another impression cylinder so that said registration projection is engaged in said registration pocket at each impression cylinder during a portion of the impression cylinder rotation sufficient to initialize rolling contact of said sheet to be printed in proper registration between each of said impression cylinders and said corresponding blanket cylinders.

5,289,769

METHOD AND APPARATUS FOR CHANGING A PRINTING SLEEVE

Robert J. Lewis, Carlisle, Pa., assignor to W. O. Hickok Mfg., Co., Harrisburg, Pa.

Filed Aug. 17, 1992, Ser. No. 930,774
Int. Cl.[5] B41F *27/00*
U.S. Cl. 101—218 12 Claims



6. A printing machine of the type having a demountable printing roller having a removable printing sleeve thereon, comprising:

a printing roller, having a bearing assembly disposed on a coaxial shaft thereof, and having a radius, and a longitudinal axis;

block means for mounting said roller, said block means holding said bearing assembly therein and being openable to permit said shaft to be pivotally released therefrom;

an extension, attachable to said shaft for pivoting therewith, said printing sleeve being transferable over said attached extension and being in non-contacting relationship therewith;

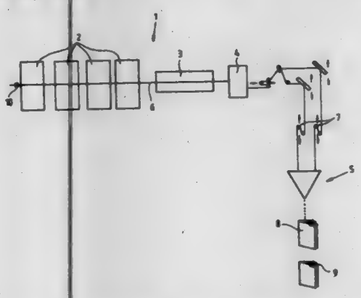
support means disposed outside said machine in non-contacting relationship with said printing sleeve for supporting said extension and said pivoted shaft, said pivoted shaft being supported in said machine at only one pivotal point; and whereby said printing sleeve can be exchanged with another printing sleeve.

5,289,770

DEVICE FOR PRESETTING A CUT-OFF REGISTER IN A FOLDER OF A WEB-FED PRINTING PRESS

Joel C. Hern, Rollinsford, N.H., assignor to Heidelberg Harris GmbH, Heidelberg, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,765
Int. Cl.[5] B41F *13/26*
U.S. Cl. 101—226 8 Claims



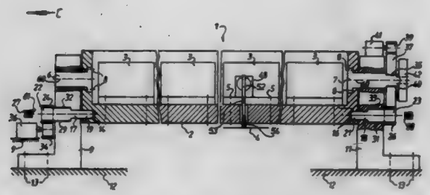
1. Device for presetting a cut-off register in a folder of a web-fed printing press, comprising a marking device for applying at least one mark in an image-free region between two printed images of a web, detector means for detecting the image-free region on the web, said detector means being connected to said marking device for signalling said marking device when the image-free region is detected thereby, said marking device being disposed a defined distance in front of a nip located between cylinders of at least one printing unit, and means for activating the marking device to apply a mark to the image-free region of the web when a respective output signal of said detector indicates the presence of the image-free region on the web, at least one of the cylinders being a blanket cylinder having a gap formed therein, and said detector means having a reflecting detector for scanning the surface of the blanket cylinder, said defined distance at which said marking device is disposed in front of said nip corresponding to a circumferential distance extending from a measuring location of said reflection detector to said nip, said marking device being actuated when the gap formed in the blanket cylinder is detected by said reflection detector.

5,289,771

SHIFTABLE INK KNIFE HOLDER

Walter Richter, Grossrinderfeld, and Kurt J. Weschenfelder, Zell a. Main, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,284
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1992, 4203933
Int. Cl.[5] B41F *31/04, 31/08*
U.S. Cl. 101—350 13 Claims



1. A shiftable ink knife holder for a rotary printing press having an ink fountain roller, said shiftable ink knife holder comprising:

an elongated ink knife support housing;

a plurality of ink knife blades adjustably supported along said support housing;

first and second axle trunnions secured to spaced, opposing first and second end faces of said support housing and supporting said housing for rotation about a center line extending through said axle trunnions;

spaced first and second bearing brackets receiving said first and second axle trunnions and rotatably supporting said housing;

means for rotating said support housing between a thrown-on and a thrown-off position with respect to an ink fountain roller; and

means for locking said support housing in said thrown-on position, said means for locking said support housing in said thrown-on position including first and second locking bolts secured to said spaced first and second bearing brackets, said first and second locking bolts each having a first end receivable in a locking bore in said first and second end faces of said support housing.

5,289,772

INK FOUNTAIN APPARATUS FOR PRINTING PRESS

Kazutaka Kohara, and Shuntaro Sugawara, both of Chiba, Japan, assignors to Komori Corporation, Japan

Filed Sep. 18, 1992, Ser. No. 947,402
Claims priority, application Japan, Sep. 19, 1991, 3-83720
Int. Cl.[5] B41F *31/04, 31/06, 27/08*
U.S. Cl. 101—351 3 Claims

1. An ink fountain apparatus for a printing press, comprising:

an ink fountain roller for supplying a printing ink to a plate cylinder;

an ink fountain which has an ink blade disposed to have a predetermined gap with a circumferential surface of said ink fountain roller and is linearly shifted from said circumferential surface of said ink fountain roller;

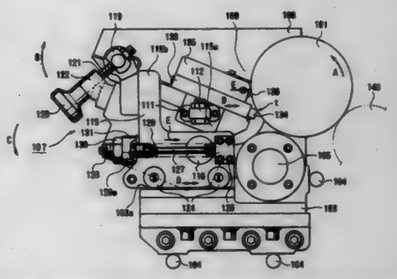
follow-up means fixed to said ink fountain and contacting said circumferential surface of said ink fountain roller so as to linearly shift said ink fountain with respect to a change in shape of said circumferential surface of said ink fountain roller;

wherein said ink fountain is provided on an ink fountain body movable forward and backward to approach to and separate from said circumferential surface of said ink fountain roller, and said ink blade and said follow-up means are fixed to said ink fountain body such that said ink blade has the gap with said ink fountain roller while said follow-up means contacts said ink fountain roller;

biasing means for biasing said ink fountain toward said circumferential surface of said ink fountain roller;

a pair of side frames, biased toward said circumferential surface of said ink fountain roller by said biasing means, for holding said ink fountain body from two sides;

guide means for guiding at least one of said pair of side frames to be movable forward and backward to approach to and separate from said circumferential surface of said ink fountain roller; and



fixing means for fixing said side frames and said ink fountain body;

wherein said ink fountain body is biased by said biasing means through said side frames while being integrally fixed with said side frames by said fixing means;

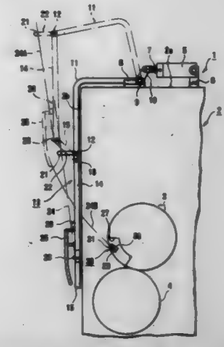
wherein said ink fountain body is pivotally axially supported between said side frames by shafts so as to be pivoted in a direction to separate from said circumferential surface of said ink fountain roller when said fixing means is released.

5,289,773

APPARATUS FOR MOUNTING PLATE ON PLATE CYLINDER

Nobuaki Saito, and Masaaki Ishida, both of Ibaraki, Japan, assignors to Komori Corporation, Japan

Continuation of Ser. No. 851,986, Mar. 13, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 48,571
Claims priority, application Japan, Mar. 14, 1991, 3-103702
Int. Cl.[5] B41F *27/06, 27/12*
U.S. Cl. 101—415.1 8 Claims



1. An apparatus for mounting a plate on a plate cylinder of a printing press, the plate having a leading-side end portion, and a trailing-side end portion, the plate cylinder comprising a plate fixing means having a leading-side plate fixing means, said

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leading-side end portions having reference notches, said leading-side plate fixing means including reference pins for corresponding engagement of the reference notches of the leading-side end portion of the plate, the apparatus comprising:

a support member coupled to the printing press;

a safety cover supported from the support member to suspend the safety cover from the support member for vertical opening and closing of the safety cover; and

a plate holding member mounted on the safety cover partially contacting the plate, the portion of the plate holding member that contacts the plate being lower than the trailing-side end portion of the plate when the safety cover is in an open state and when the leading-side end portion of the plate is inserted into the leading-side plate fixing means, the plate holding member having means for urging the trailing-side end portion of the plate downward when the leading-side end portion of the plate is inserted into the leading-side plate fixing means, the plate being biased so as to be bent and to urge the reference notches of the leading-side end portion of the plate against the reference pins of the leading-side plate fixing means during opening of the leading-side plate fixing means.

5,289,774

SHEET-CLEANING APPARATUS

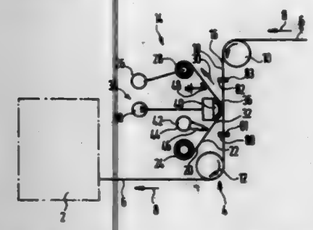
Herbert Stanka, Friedberg, Fed. Rep. of Germany, assignor to Baldwin-Gegenheimer GmbH, Friedberg, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 926,748

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126888

Int. Cl.[5] B41F *35/00*; B41L *41/00*

U.S. Cl. 101—423 **12 Claims**



1. A cleaning apparatus for cleaning a sheet prior to being printed by a printing press, comprising:

(a) sheet transport means for transporting the sheet from an input of the sheet transport means through the cleaning apparatus to an output of the sheet transport means leading to the printing press;

(b) a backing cloth disposed on at least one side of the sheet between the sheet transport means input and output;

(c) positioning means for selectively contacting a section of the backing cloth located between sheet transport means input and output and causing at least a part of said backing cloth section to come into contact with a portion of the sheet in a contact area;

(d) cloth transport means for transporting the backing cloth such that there is at least a small relative motion between the respective sheet portion and backing cloth section when they are brought into contact with each other by the positioning means;

(e) moistening means for moistening the backing cloth section with an electrically conducting liquid at a location just prior to the contact area; and

(f) grounding means for contacting the backing cloth section at a location just after the contact area and for substantially eliminating static electricity from the contact area due to conduction of electrical charges by the elctrically conducting liquid.

5,289,775

DEVICE FOR POSITIONING A MAGAZINE FOR AUTOMATICALLY CHANGING PRINTING PLATES

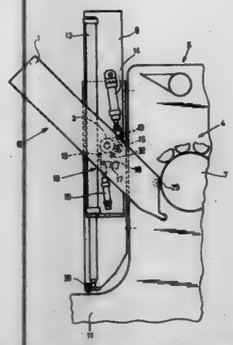
Nikolaus Spiegel, Walldorf; Hans-Georg Jahn, Wiesenbach; Hermann Beisel, Walldorf; Helmut F. Jäger, Königsbach-Stein; Wolfgang Pfizenmaier, Neckargemünd; Peter T. Blaser, Dielheim; Andreas Gelder, St. Leon-Rot, and Walter Hofbeinz, Heidelberg, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 938,900

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1991, 4129021; Jul. 28, 1992, 4224832

Int. Cl.[5] B41F *27/12*; B41L *29/14*

U.S. Cl. 101—477 **19 Claims**



1. Device for movably positioning in a plurality of positions a magazine for automatically changing printing plates mounted on a plate cylinder in a printing machine for changing the printing plate of the plate cylinder, replacing the printing plates of the magazine, servicing the printing machine and normal operation, comprising means for mounting the magazine, including a vertical guide wherein the magazine is displaceable, and a horizontal shaft about which the magazine is swivelable, and drive means for displacing and swiveling the magazine, the magazine being mounted in a printing unit of the printing machine having an inking unit and, in a normal-operation position, covering as a protective guard a delivery side of the printing unit while leaving an upper side of the inking unit accessible.

5,289,776

METHOD AND APPARATUS FOR PRODUCING LARGE-CALIBER AMMUNITION

Stefan Thiesen, Erkrath; Georg Klein, Meerbusch, and Eckhard Rahsenführer, Dormagen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Division of Ser. No. 618,565, Nov. 27, 1990, Pat. No. 5,133,240. This application Apr. 30, 1992, Ser. No. 875,812

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1989, 3939295

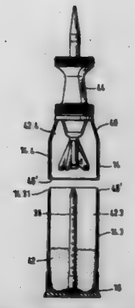
Int. Cl.[5] F42B *5/18*

U.S. Cl. 102—431 **8 Claims**

1. A large caliber one piece ammunition unit including a projectile inserted into and mounted on the front end of a propelling charge casing containing at least partially compacted propelling charge powder and wherein:

said propelling charge casing for the ammunition unit is composed of first and second parts including a first rear part and a second front part, with said first rear part being open at one end and having a base at its other end and which, in significant longitudinal regions, is composed of a thin-walled, combustible material having a comparatively low strength, with said second front part being formed of said thin walled combustible material and having a rear cylindrical portion of the same diameter as said first rear part and a front portion for connection to a tail section of a projectile, and with the open end of said first part of said casing being fastened to an open end of said rear portion of said second part of said casing to form a one piece propelling charge casing;

an ignition tube which is fastened to said base and which extends along a longitudinal axis of said base and said first rear part of said propelling charge casing over a substantial portion of the length of said first rear part of said propelling charge casing;



said projectile has a tail section inserted into and connected to said front portion of said front part of said casing so that said tail section of the projectile extends into said cylindrical portion of said front part of said casing; and

approximately 35% to approximately 80% of the propelling charge powder of the entire propelling charge for the ammunition unit is disposed in said first rear part of said casing and is compacted, and the remainder of the propelling charge powder of the entire propelling charge is disposed within said casing on said compacted portion extends to and surrounds said tail section of the projectile and has a density in the vicinity of said tail section which at most is only slightly higher than that of loosely poured propelling charge powder.

5,289,777

SUBCALIBER KINETIC ENERGY PROJECTILE

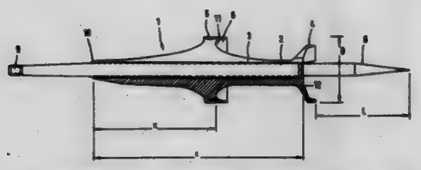
Achim Sippel; Heinz-Josef Kruse, both of Ratingen; Walter Klumpp, Duisburg; Jürgen Böcker, Oberhausen; Jürgen Meyer, Cologne; Michael Geis, Witten, and Rolf Holl, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Feb. 26, 1993, Ser. No. 25,400

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206217

Int. Cl.[5] F42B *14/06*

U.S. Cl. 102—521 **9 Claims**



1. In a subcaliber kinetic energy projectile comprising a penetrator and a segmented sabot mounted on and surrounding a portion of the length of said penetrator, with said sabot having a first full-caliber support at its front and a second full-caliber support disposed at an axial distance behind said first support, with said second support including a rotationally symmetrical air pocket formed in its end surface facing said first support, and with said first support being provided with air passage openings; the improvement wherein:

(a) L/D≧1.2 where L is the length of the penetrator tip ahead of the first support and D the full caliber;

(b) x≧0.45 • ι, where x is the distance between a trailing edge of said sabot and a base surface of said air pocket in said second support, and ι is the distance between said trailing edge of said sabot and a leading edge of said sabot on the outer surface of said penetrator; and

(c) said first support is composed of at least three laterally extending web-like components whose shape and dimensions are such that said web-like components form three separate air pockets which are separated by said air passage openings.

5,289,778

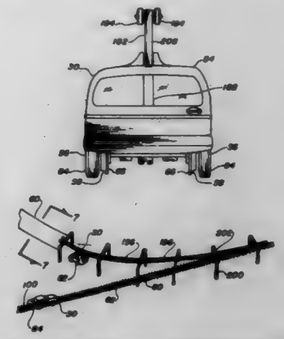
AUTOMATED ELECTRIC TRANSPORTATION SYSTEM

Richard A. Romine, 13251 Cherry St., Westminster, Calif. 92683

Filed Jul. 6, 1992, Ser. No. 909,215

Int. Cl.[5] B61B *15/00*

U.S. Cl. 104—130 **23 Claims**



1. An automated electric transportation system comprising, in combination,

a) a self propelled electrically driven vehicle having an electric propulsion motor, for carrying objects and people therein including a driver,

b) onboard electrical energy storage means contained within said vehicle to provide electrical energy for propelling and controlling the vehicle when electrical energy is unavailable from a fixed source,

c) combined road wheels and rail wheels integral with said vehicle for supporting and driving the vehicle on a road and alternatively on rails,

d) a road network providing a smooth continuous support for the vehicle when driven by said road wheels,

e) manual control means incorporated into said vehicle permitting the driver to regulate direction and propulsion of the vehicle,

f) a rail network disposed on a railroad bed to support and guide the vehicle riding on said rail wheels,

g) rail power transmission and replenishing means incorporated into said rail network for supplying electrical energy to the vehicle while driven thereon and replenishing onboard storage means,

h) automatic control and indicating means integrated into said vehicle for self directing and identifying the vehicle while driven on the rail network,

i) extendable overhead lifting means integral with said vehi-

cle having propulsion means therein for lifting the vehicle on and off of the rail network and for propelling the vehicle to the road network,

j) ingress means adjacent to and above said rail and road network permitting the vehicle to enter the rail network using the overhead lifting means to lift the vehicle from a road and deposit it on the rail network, and

k) egress means adjacent to and above said rail and road network permitting the vehicle to leave the rail network using the overhead lifting means by lifting the vehicle from the rail network and deposit it on the road network.

5,289,779

LINEAR MOTION ROLLING CONTACT GUIDE UNIT HAVING AN ENHANCED SEAL CHARACTERISTIC

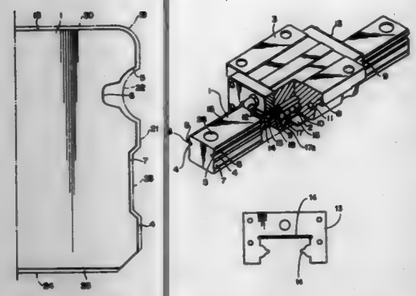
Yasumasa Ohya, Gifu, and Koji Kano, Mino, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,355

Claims priority, application Japan, Jun. 19, 1991, 3-174319

Int. Cl.[5] F16C *29/06*

U.S. Cl. 104—134 **3 Claims**



1. A linear motion rolling contact guide unit, comprising:

a rail extending over a desired length, said rail having a top surface, a pair of ground side surfaces and a bottom surface and each of said side surfaces being formed with a ground first guide groove extending in parallel with a longitudinal axis of said rail and also a ground tapered relief trench at the bottom of said first guide groove also extending in parallel with the longitudinal axis of said rail, said trench having straight-line tapered inwardly-converging side walls;

a slider slidably mounted on said rail, said slider being formed with a pair of second guide grooves each located opposite to an associated one of said first guide grooves to thereby define a guide channel, said slider being provided with an end seal having a first lip in sliding contact with said relief trench straight-line tapered side walls and a discrete bottom seal having a second lip in sliding contact with a selected portion of said side surfaces of said rail wherein said selected portion is a flat-bottomed side recess below and of less depth than said first guide groove of said rail having a ground surface;

a plurality of rolling members interposed between said rail and said slider in said guide channel; and

wherein said first lip further is in sliding contact with the top surface of said rail, and a side surface portion between said rail top surface and said tapered relief trench.

5,289,780

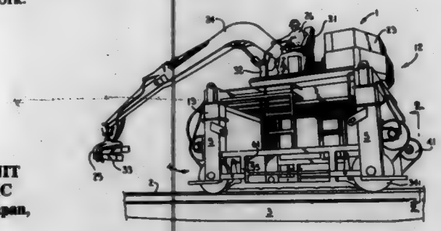
MATERIAL HANDLING RAILROAD FREIGHTCAR-MOUNTED GANTRY AND CRANE WITH TOPPLING PREVENTION AND SUPPLEMENTAL SUPPORT UPON DERAILMENT

Ivan E. Bounds, St. Joseph, Mo., assignor to Herzog Contracting Corp., St. Joseph, Mo.

Filed Dec. 3, 1992, Ser. No. 985,022

Int. Cl.[5] B61F *9/00*

U.S. Cl. 104—242 **14 Claims**



1. A gantry apparatus adapted for movement along a pair of rails, comprising:

(a) a pair of wheels on each side of the gantry, each pair of said wheels being sized and spaced to operate on a respective one of said rails; and

(b) a pair of base support means positioned between respective wheels on each side of the gantry and suspended above the corresponding rail, each said base support means being positioned to drop into contact with said corresponding rail to support the gantry should the wheels on either end be driven off of the end of the rails.

5,289,781

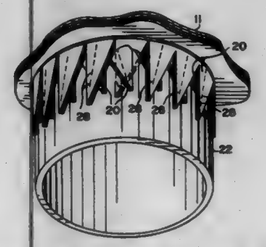
CORRUGATED PALLET LEG AND METHOD

Bruce C. Beckway, River Forest, Ill., assignor to Packing Materials Corporation, Chicago, Ill.

Filed Dec. 23, 1992, Ser. No. 995,681

Int. Cl.[5] B65D *19/00*

U.S. Cl. 108—51.3 **8 Claims**



1. In a pallet of the type formed by a pallet deck having a plurality of tubular legs attached thereto, wherein each of the tubular legs is formed from an inner leg and an outer leg element, and wherein the pallet deck is formed of at least two pallet deck members of corrugated cardboard stacked together atop one another and each of the pallet deck members at each leg attachment point having a plurality of finger elements formed of die-cut lines radiating outwardly from a central circle and terminating on a circular score line of substantially the same diameter as the inner diameter of an outer leg element, the finger elements being die cut in the respective ones of the pallet deck members, the inner and outer leg members being proportioned to nest within one another and to retain the finger elements die cut in both pallet deck members within the annulus formed between the nested inner and outer leg elements, and wherein the tubular legs are secured to the pallet deck and the pallet deck members are secured together one atop the other by placing an outer leg element under the stack pallet deck members and aligned with the circular score line, the inner leg element atop the stack deck members and aligned with the circular score line, applying an adhesive on the finger elements and pressing the inner leg element through the pallet deck members into the outer leg element with the finger elements being captured in overlapping relationship between the outer and inner leg elements, and spreading the adhesive therebetween,

the improvement comprising,

each of said finger elements die cut in each of said pallet deck members being provided with a series of linearly aligned perforations die cut therein and extending from a point spaced slightly inwardly from said circular score line having substantially the same diameter as the inner leg element, and terminating at a point spaced inwardly from the central circle,

said perforations allowing the adhesive applied to said finger elements to permeate said finger elements thereby to increase the surface area of the adhesive relative to the finger elements, which secures said leg elements to said fingers,

whereby the resulting strength of said leg elements relative to said pallet deck is increased by a factor of between ten (10%) percent and forty (40%) percent.

5,289,782

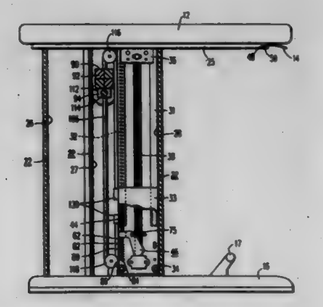
ADJUSTABLE HEIGHT TABLE

John J. Rizzi, Weston, Conn.; Joseph J. Smith, II, Hereford Township, Berks County, and Howard P. Greene, Jr., Schwenksville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1991, Ser. No. 801,981

Int. Cl.[5] A47B *9/00*

U.S. Cl. 108—147 **16 Claims**



1. An adjustable height table comprising:

a table top;

a pair of telescoping legs connected to said table top; and

a counterbalance mechanism comprising weight means, said weight means including a rectangular weight box and a plurality of removable weights, wherein said weight box is disposed between and attached to said pair of telescoping legs, one end of said weight box attached to one of said legs, and the other end of said weight box attached to the other of said legs.

5,289,783

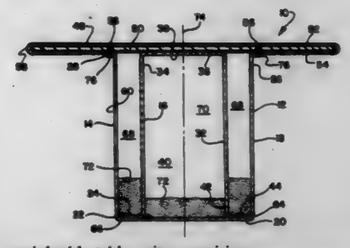
WEIGHTABLE TABLE UNIT

Richard B. Karl, 1825 Persimmon Dr., St. Charles, Ill. 60174

Filed Sep. 28, 1992, Ser. No. 951,778

Int. Cl.[5] A47B *13/02*

U.S. Cl. 108—150 **6 Claims**



1. A weightable table unit comprising:

a base including a hollow outer shell member having a circular sidewall, said sidewall having a lower end connecting with a bottom wall and an upper end connecting with an outward extending peripheral top flange, and further including a hollow inner core member having a circular sidewall, said inner core member sidewall forming an outward extending bottom peripheral flange and an upper end connecting with an inward extending top wall formed with an enlarged opening to an inner space of said inner core member,

said inner core member fitting into an inner space of said outer shell member with an outer edge of said inner core member bottom flange seating against said outer shell member bottom wall and sidewall to positively position said inner core member in said outer shell member inner space and form a first ballast holding space between said outer shell member sidewall and said inner core member sidewall, said first ballast holding space providing for uniform distribution of ready field-filling of ballast means about and spaced substantially away from a vertical axis of said table unit,

ballast means carried in said base first ballast holding space to weight said table unit and add strength to said outer shell member sidewall with a weight of said ballast means providing considerable resistance to any unauthorized movement of said table unit and said spacing of said ballast means weight providing considerable resistance to upsetting of said table, and

table top means particularly adapted to resist physical abusive treatment, said table top means attached to said outer shell member sidewall top flange,

wherein said table unit may have an extended useful life in a correctional-type environment.

5,289,784

TABLE BASE

Walter Waibel, Birkenstr. 19, 8312 Dingolfing, Fed. Rep. of Germany

Filed Feb. 25, 1992, Ser. No. 840,066

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106611

Int. Cl.[5] A47B *3/06*

U.S. Cl. 108—157 **21 Claims**

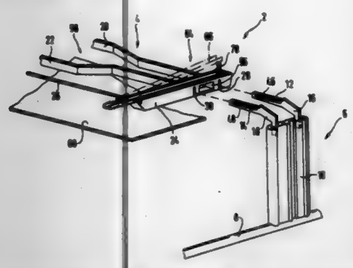
1. A table base for a generally rectilinear table comprising:

at least two cross-arms arranged in a longitudinal direction of the table for supporting a table top from below the top;

pedestals for supporting the table top relative to the floor and located at opposite ends of the table, each of said pedestals having generally horizontal arranged supporting parts extending in the longitudinal direction of the table; and

rails disposed horizontally and generally parallel to the ends

of the table base underlying the table top and having spaced plug-in holes;



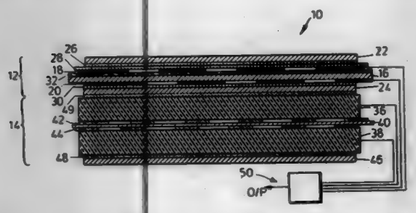
the horizontally arranged supporting parts of the pedestal having an elongated sword-like shape for reception in the holes of the rails.

5,289,785

SECURITY ENCLOSURES

Hugh MacPherson, Fife; Eileen Greenshields, South Queensferry, and John MacSween, Glasgow, all of Scotland, assignors to W. L. Gore & Associates (UK) Ltd., London, United Kingdom

Filed Jun. 18, 1992, Ser. No. 900,866
Claims priority, application United Kingdom, Jun. 21, 1991, 9113437
Int. Cl.[5] G08B *13/00*
U.S. Cl. 109—42 **14 Claims**



1. A security enclosure comprising a first layer of an insulating material extending over the whole of the area of the enclosure and carrying a linear electrically responsive element on at least one surface thereof, a low tensile strength layer having lower cohesion than adhesion located between the first layer of insulating material and the electrically responsive element and a second layer of insulating material adhered to and covering the electrically responsive element, the element being arranged in a configuration on the surface of the first layer so dividing the surface that attempted penetration of the enclosure changes an electrical characteristic of the element, and detection means being provided for detecting said change, an attempt to remove the second layer of insulating material to gain access to the element resulting in breakup of the low tensile strength layer and thus damaging the element to produce a detectable change in said electrical characteristic of the element.

5,289,786

TRI-GENERATION GARBAGE INCINERATOR

Haile S. Clay, P.O. Box 326, LaHonda, Calif. 94020

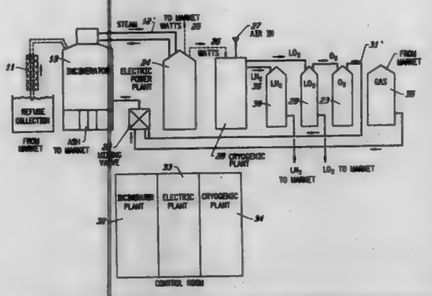
Continuation-in-part of Ser. No. 829,421, Feb. 3, 1992, Pat. No. 5,191,846. This application Jan. 26, 1993, Ser. No. 9,176
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—233 **11 Claims**

1. A tri-generation garbage incinerator, comprising:

an incinerator apparatus for burning refuse wherein said incinerator apparatus uses oxygen and a fuel to support the burning of refuse and wherein the burning of refuse in said incinerator apparatus generates heat;

fuel means for supplying fuel to said incarcerator apparatus wherein said fuel includes oxygen;

steam generation means in communication with said incinerator apparatus and including a liquid supply for generating steam from using heat generated in said incinerator apparatus by the burning of refuse;



power means for generating electricity, such using the steam generated by said steam generation means;

liquid oxygen generation means, powered by the electricity generated by said power means, for generating liquid oxygen; and

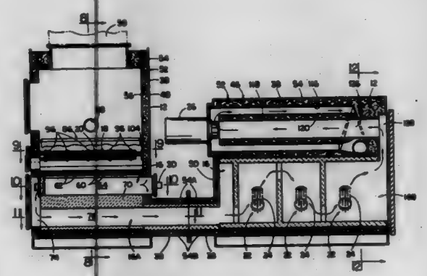
transferring means for transferring liquid oxygen generated by said liquid oxygen generation means to said fuel means for use in said incinerator apparatus.

5,289,787

MULTIPLE UNIT MATERIAL PROCESSING APPARATUS

Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268

Filed Dec. 9, 1992, Ser. No. 987,929
Int. Cl.[5] F23G *5/00*; B09B *3/00*
U.S. Cl. 110—235 **10 Claims**



1. A material processing apparatus, comprising:

(a) a casing having outer and inner spaced walls forming an airtight vessel inside of said inner walls and a channel between said outer and inner walls surrounding said vessel for containing a flow of coolant fluid;

(b) said vessel containing a first chamber having an inlet and a second chamber connected in communication with said first chamber and having an outlet, said first chamber for receiving and pyrolyzing materials therein, said second chamber for oxidizing pyrolyzed materials therein and discharging pyrolyzed and oxidized materials therefrom;

(c) said casing being defined by separate first and second units spaced from one another and means extending between and interconnecting said spaced first and second units for defining a flow communicating passage between said first and second units;

(d) said first chamber of said vessel for receiving and pyrolyzing materials being disposed in said first unit, said second chamber of said vessel having primary and secondary sections for oxidizing materials in two successive stages, said primary section of said first chamber being disposed in said first unit between said first chamber and said flow communicating passage defining means, said secondary section of said second chamber being disposed in said second unit;

(e) means mounted to said vessel and communicating with said first and second chambers for producing primary and secondary one-way flows of air into and through said first and second chambers and from said first unit through said flow communicating passage defining means and into said second unit; and

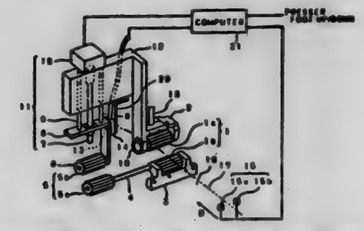
(f) means coupled to said primary and secondary one-way air flow producing means for controlling the operation thereof to proportion the respective amounts of primary and secondary one-way air flows into and through said first and second chambers and from said first unit to said second unit through said flow communication passage defining means.

5,289,788

METHOD OF CONTROLLING FABRIC EDGE POSITION AND APPARATUS THEREOF

Ryosuke Fukumoto, Toyonaka, Japan, assignor to Yamato Mishin Seizo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 926,180
Claims priority, application Japan, Sep. 11, 1991, 3-261121
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**



1. An apparatus for controlling an edge position of a fabric fed to a needle location of a sewing machine to form a seam at a constant distance from the fabric edge comprising:

a first feeding mechanism for feeding said fabric in a feeding direction;

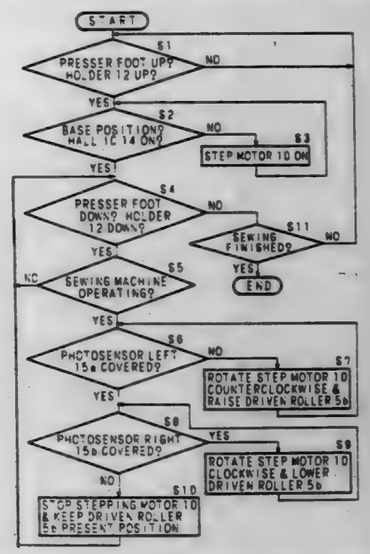
a second feeding mechanism for feeding said fabric in said feeding direction, said second feeding mechanism being disposed at a position inward of the fabric, said first feeding mechanism and said second feeding mechanism extending lengthwise in a direction substantially perpendicular to the fabric feeding direction;

a detecting mechanism for detecting the fabric edge position in the vicinity of the needle location;

means for varying a feeding velocity of said fabric by said second feeding mechanism with respect to a feeding velocity of said first feeding mechanism, said means for varying a feeding velocity being in accordance with the detected fabric edge position;

said second feeding mechanism comprising a pair of toothed rollers, engaging depth adjusting means for adjusting a depth of tooth engagement between respective teeth on said pair of toothed rollers, and the fabric feeding velocity of said second feeding mechanism with respect to said first feeding mechanism is varied by adjusting the engaging depth of said toothed rollers; and

the fabric edge position, in the vicinity of the needle position, being shifted in a direction substantially perpendicular to the fabric feeding direction whereby a seam is formed at a substantially constant distance from the fabric edge.

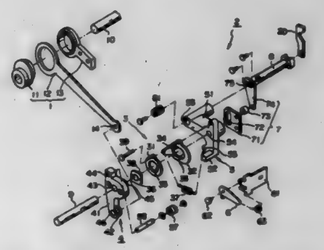


5,289,789

KNIFE DRIVE MECHANISM OF SEWING MACHINE

Kouichi Sakuma, Yamagata, Japan, assignor to Suzuki Manufacturing Co., Ltd., Japan

Filed Jun. 30, 1992, Ser. No. 906,857
Claims priority, application Japan, Jul. 15, 1991, 3-174008
Int. Cl.[5] D05B *37/06, 69/02*
U.S. Cl. 112—122 **7 Claims**



1. A knife drive mechanism for a sewing machine comprising: a first drive means for converting rotation of a drive shaft into a swinging motion; upper and lower cooperating knives for cutting a cloth with a scissoring action; and upper knife second drive means for converting said swinging motion into an up-and-down driving motion for said upper knife, said upper knife second drive means comprising:

a shaft pivotally mounted on a main frame of the sewing machine;

first and second swing members, said first swing member being provided with a horizontally swingable arm which is horizontally swung by said first drive means, said second swing member being provided with a vertically swingable arm which is connected to said upper knife and

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which converts the horizontal swing of said horizontally swingable arm to up-and-down driving motion; and

clutch means interposed between said first and second swing members for selectively transmitting said horizontal swing to said second swing member.

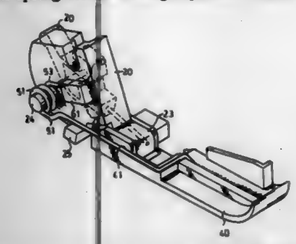
5,289,790

SEWING MACHINE PRESSER FOOT HAVING MEANS OR POSITIONING SPRING ELEMENT

Hsien-Chang Tseng, P.O. Box 63-151, Taichung, Taiwan

Filed Jun. 1, 1993, Ser. No. 69,823
Int. Cl.[5] D05B *29/06*
U.S. Cl. 112—235 **5 Claims**

1. A sewing machine presser foot comprising a body including a lateral portion, a casing secured to said lateral portion of said body and including a hollow interior, a release handle pivotally coupled to said body, a presser pivotally coupled to said body, a spring element including a middle portion pivotally coupled to said body, a first end engaged with said presser in order to depress said presser, and a second end engaged in said hollow interior of said casing, said body including a projection extended laterally therefrom for supporting said first end of said spring element in place, said casing and said second end of said spring element being separated from said release



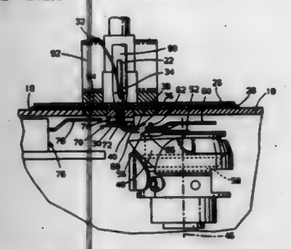
handle such that users will not be hurt by said spring element when the users actuate said release handle.

5,289,791

SEWING MACHINE WITH THREAD WIPER AND AUXILIARY CUTTER

Michael S. Sanders, Grand Rapids, and Leon L. Reister, Ionia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1993, Ser. No. 40,541
Int. Cl.[5] D05B *65/02*
U.S. Cl. 112—262.1 **11 Claims**



1. A double-stitch sewing machine comprising:

plate means for supporting a material to be sewn, the plate means having a needle opening;

a reciprocating needle to penetrate the material, the needle having a generally transverse aperture for insertion of a needle thread, the needle being able to penetrate through the sewn material and carry the needle thread through the needle opening;

a rotating hook for pulling on the needle thread after insertion of the needle thread through the needle opening, forming a loop in the needle thread with a first leg of the loop being joined with the sewn material and the needle and a second leg of the loop being joined only with the sewn material;

a bobbin carrier mounted within the rotating hook having an adjacent clearance with the rotating hook, allowing the rotating hook to cause the needle thread to be brought underneath the bobbin carrier, the bobbin carrier also having a bobbin spool means with bobbin thread and having bobbin thread dispensing means which dispenses bobbin thread in cooperation with the rotating hook pulling of the needle thread;

first cutter means for cutting the needle thread, separating the needle thread first and second legs and cutting the bobbin thread, forming a first leg of the bobbin thread connecting with the bobbin and a second leg of the bobbin thread connecting with the sewn material, the first cutter means insuring a predetermined length of the needle thread first leg;

thread wiper means for pulling on the first leg of the needle thread, insuring a minimum length of the first leg of the needle thread on a side of the plate means adjacent the sewn material; and

second cutter means generally adjacent the needle opening to sever the second leg of the needle thread and the second leg of the bobbin thread more adjacent to the material.

5,289,792

SPINNAKER SAIL FOR KAYAKS, CANOES OR OTHER SMALL WATERCRAFT

Sara M. Forrest, 139 Tuscaloosa Ave., Atherton, Calif. 94025, and James L. Vermillion, HC78 Box 2425, Chugiak, Ak. 99567-9609

Continuation of Ser. No. 55,943, Jun. 1, 1987, Pat. No. 4,958,582. This application Mar. 28, 1990, Ser. No. 500,744
Int. Cl.[5] B63H *9/04*
U.S. Cl. 114—102 **5 Claims**



5. A system for use with a sail and backstay on a small watercraft comprising:

a mast;

anchor means to removably secure said mast to the watercraft; and

clip means for slidably fastening the backstay to said mast.

5,289,793

HELICONIC THRUSTER SYSTEM FOR A MARINE VESSEL

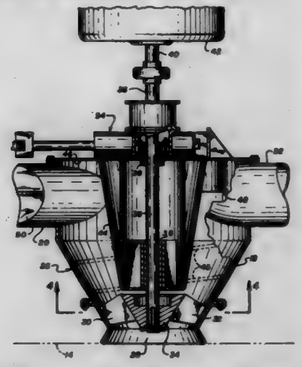
Charles M. Aker, Lake Forest, Calif., assignor to Omnithruster Inc., Santa Fe Spring, Calif.

Filed Apr. 17, 1992, Ser. No. 870,667
Int. Cl.[5] B63H *25/46*
U.S. Cl. 114—151 **20 Claims**

1. A thruster system for a marine vessel, comprising:

housing means including a generally annular outer wall having a lower conical segment expanding in an upward direction from a lower apex end and joined to an upper cylindrical segment, a top wall closing the upper end of said housing means, and a flow forming wall disposed centrally within said housing means and cooperating with said outer wall to define a heliconic flow chamber of generally annular cross sectional shape having a lower conical chamber segment and an upper cylindrical chamber segment;

pump means for drawing water through an intake formed in a hull of a marine vessel, and for delivering the water with a substantial swirling action to said heliconic flow chamber, said pump means including a mixed centrifugal and axial flow impeller disposed generally at said apex end whereby a substantial portion of said lower conical chamber segment and whereby said upper cylindrical chamber segment are unoccupied by said impeller;



at least one discharge conduit having an upstream end connected to said upper cylindrical segment of said housing means and extending substantially tangentially from said heliconic flow chamber for substantially tangential discharge flow of water from said flow chamber; and

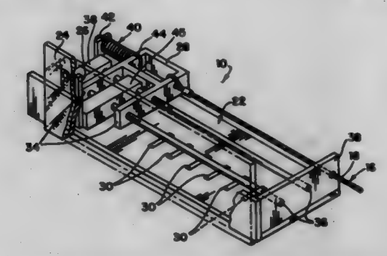
nozzle means at a downstream end of said at least one discharge conduit for discharging water in the form of a high velocity water jet directed outwardly from the hull of the vessel, thereby producing a reaction force for vessel maneuvering.

5,289,794

MAGNETICALLY ALIGNED TRANSMISSION SHIFT INDICATOR

Harlan D. Jerro, Colfax, La.; James L. Kohler; Steven G. Skiver, both of Kokomo, Ind.; Timothy J. Candy, Williamston; Donald F. Wildfong, Flint, both of Mich., and Morgan D. Murphy, Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Sep. 23, 1992, Ser. No. 948,567
Int. Cl.[5] G09F *9/40*
U.S. Cl. 116—28.1 **13 Claims**



1. A gear range indicator for an automatic transmission in a vehicle with an operator controlled shift mechanism for shifting the transmission between gear ranges, the gear range indicator comprising:

a base;

a display, having a symbol for each transmission gear range, being fixed relative to the base;

positioning means for slidably displacing a pointer relative to the base, being mechanically connected to the shift mechanism, translating when the transmission is shifted, providing a predetermined amount of lash between the pointer and the positioning means, the lash generally bracketing the symbol for a selected gear range connecting means for mechanically connecting the positioning means to the shift mechanism

the pointer, being slidably disposed relative to the base and positioning means; means for maintaining tension on said connecting means; and

magnetic means for magnetically biasing the pointer toward the symbol corresponding to the selected gear range.

5,289,795

EDIBLE RODENT HABITAT

David M. Mohilef, Chatsworth, Calif., assignor to Pet Center, Inc., Los Angeles, Calif.

Filed Apr. 6, 1992, Ser. No. 863,841
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—51.01 **23 Claims**

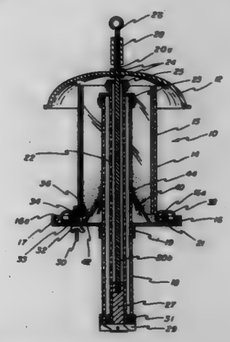
1. An edible rodent habitat comprising a housing having a substantially tunnel-like cavity therein, wherein said cavity extends substantially about a given length, said length being at least the length of a rodent so said rodent can completely burrow into said cavity, wherein said cavity has at least one opening thereto which is accessible from outside said housing, and wherein said cavity is at least partially filled with solid, gnawable rodent food.

5,289,796

BIRD FEEDER

George W. Armstrong, P.O. Box 507, Fairborn, Ohio 45324

Filed Apr. 8, 1993, Ser. No. 44,056
Int. Cl.[5] A01K *39/01*
U.S. Cl. 119—52.3 **15 Claims**



1. A bird feeder comprising;

a tray having a radially flat marginal lip portion extending radially outward defining a feeding portion thereon;

feeding means adjustably attached to said tray for holding and supplying bird seed onto said tray, said feeding means being adjustable with respect to said tray to hold different kinds of bird seed having various sizes for dispensing an appropriate amount of bird seed onto said feeding portion of said tray;

a slide member cooperating with said tray;

an elongated support member slidably disposed through said slide member, and for maintaining said tray in an elevated position and for sliding said slide member and said tray down along said elongated support member to a lowered position;

a rod cooperating in telescoping relation with said elongated support member, said rod having a top and bottom ends, said top end of said rod extending through said support member; and

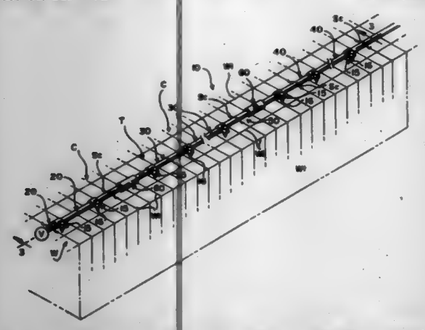
a latch mounted to the bottom end of said rod for latching said tray in an elevated position, said latch being moveable to an unlatched position for permitting said elongated support member to slide down along said rod and said slide member to slide down along said elongated support member to move said tray to a lowered position.

5,289,797

INSULATED WATERING SYSTEM FOR FOWL AND/OR ANIMALS

Frederick W. Steudler, Jr., Providence, Pa., assignor to Val Products Inc., Bird-in-Hand, Pa.

Filed Jun. 18, 1993, Ser. No. 78,095
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—72 29 Claims



1. A watering system for fowl, animals or the like comprising a plurality of lengths of tubular watering pipes, means for connecting said watering pipes to form a relatively long watering line through which water is adapted to flow in a predetermined direction, a plurality of drinker means along said watering line for delivering water from said watering line to fowl, animals or the like, said tubular watering pipes being of generally the same exterior diameter, said tubular watering pipes being of at least two different interior diameters to thereby define a first group of watering pipes of a first relatively small wall thickness and a second group of watering pipes of a second relatively large wall thickness, and said second group of watering pipes being disposed downstream relative to said first group of watering pipes in the predetermined direction of water flow whereby the relatively large wall thickness effectively insulates the lesser volume of water flowing through the water lines along downstream portions thereof.

5,289,798

LIVESTOCK HANDLING/FEEDING APPARATUS AND METHOD

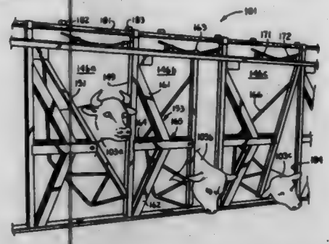
Stanley L. Lock, Rte. 1, Box 116A, Republic, Mo. 65738

Continuation-in-part of Ser. No. 833,481, Feb. 10, 1992, Pat. No. 5,178,096. This application Jan. 19, 1993, Ser. No. 4,831
Int. Cl.[5] A01K *1/06*
U.S. Cl. 119—58 15 Claims

1. An apparatus for handling at least one farm animal, comprising:

(a) immobilizing means for immobilizing the farm animal; said immobilizing means having a first configuration adapted to allow the farm animal to pass its head through an upper portion of the apparatus, a second configuration adapted to prevent the farm animal from passing its head therethrough, and a third configuration adapted to allow the farm animal to pass its head through a lower portion of the apparatus, said immobilizing means including a pivotable sidebar which is mounted to pivot about a pivot support such that, when said immobilizing means is in said second configuration said pivotable sidebar is in a center position, when said immobilizing means is in said first configuration said pivotable sidebar is moved from said center position in a first direction and when said immobilizing means is in said third configuration said pivotable sidebar is moved from said center position in a second direction opposite from said first direction;

(b) locking means for automatically locking said immobilizing means as said immobilizing means assumes said second configuration;



(c) deactivating means for selectively deactivating said locking means; and

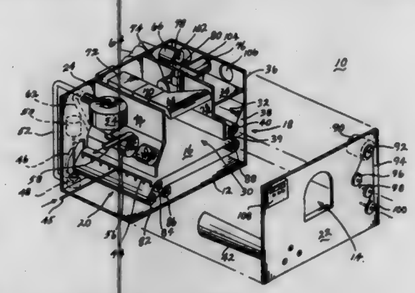
(d) said pivotable sidebar includes weighting means which is attached to said pivotable sidebar and which extends above and below said pivot point, said weighting means causing said pivotable sidebar to continue to pivot in said first direction when it is initially moved off of said center position in said first direction and which also causes said pivotable sidebar to continue to pivot in said second direction when it is initially moved off of said center position in said second direction.

5,289,799

AUTOMATIC PET RELIEF STATION

John T. Wilson, 191 Centennial Avenue, Beaconsfield, Quebec, Canada H9W 2J6

Filed Nov. 25, 1992, Ser. No. 981,335
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—164 25 Claims



1. A pet relief station comprising:

(a) a housing with an opening to permit a pet to enter and exit said housing;

(b) support means within said housing for supporting a pet entering said housing;

(c) a dispenser positioned within said housing for distributing litter on said support means; and

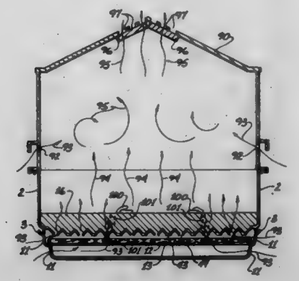
(d) recycler means positioned for collecting soiled litter from said support means, said recycler means including means for cleansing said soiled litter and for reusing the cleansed litter.

5,289,800

WASTE ODOR ELIMINATOR COVER FOR A CAT WASTE BOX

Robert W. Walton, 4 Chapel Street South, Thorold, Ontario, Canada L2V 3Y7

Continuation-in-part of Ser. No. 793,126, Nov. 18, 1991, Pat. No. 5,193,488. This application Mar. 15, 1993, Ser. No. 31,274
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—166 9 Claims



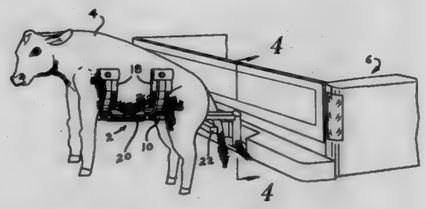
1. A waste odor eliminator cover for a cat waste box, said cover being approximate]y fourteen inches high, twenty inches long and fifteen inches wide and having a substantially flat bottom surface so as to be supported across the top of a cat litter box or a cat waste elimination system, said cover having a top, walls at its sides and at its rear and an entryway at its front for the cat to enter the litter box or elimination system, said sides and rear of the cover having a totality of air slots in same which permit the entry of outside air into the cover near its bottom so as to mix with the odor-laden warm air arising from the cat's excretory functions and to force by convection currents the warm air to rise toward the top of the cover, said top of the cover having charcoal filters and air outlets therein, whereby the odor-laden air is purified as it passes into the room in which the litter box or waste elimination system is placed.

5,289,801

CALF CARRIER

Geoffrey R. Burks, P.O. Box 215, Stratton, Nebr. 69043-0215

Filed Jul. 6, 1993, Ser. No. 88,923
Int. Cl.[5] A61D *3/00*
U.S. Cl. 119—728 6 Claims



1. An animal support comprising;

a cantilevered beam having inner and outer ends,

a pair of spaced apart generally "U" shaped body cradle members rigidly attached to the said beam,

a mounting post angularly attached to the inner end of the beam and wherein said mounting post comprises a hollow tubular member having an aperture in a side wall thereof,

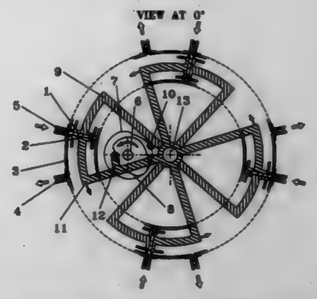
locking plier means having a shortened upper jaw and a lower jaw wherein said shortened upper jaw is attached to the side wall of the tubular member adjacent the said aperture and the lower jaw thereof is disposed within the said aperture.

5,289,802

INTERNAL COMBUSTION ENGINE HAVING OPPOSED PISTONS

Maxime Paquette, and Hubert Paquette, both of 1056 Aubin St., St-Jovite, Québec, Canada J0T 2H0

Continuation-in-part of Ser. No. 758,615, Sep. 12, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,553
Int. Cl.[5] F02B *75/28*
U.S. Cl. 123—18 A 23 Claims



1. An operating cycle for an internal combustion engine having opposed pistons slidable in a cylinder having an intake port at one end and an exhaust port at another end, comprising five portions; (i) intake, at a beginning of which said pistons are in an initial position in which one of said pistons uncovers said intake port and another of said pistons is near said one piston, and at an end of which said one piston covers said intake port an said other piston is near a midpoint between said intake and said exhaust ports, (ii) compression, during which said one piston moves toward said other piston, said pistons being near said midpoint, (iii) expansion, during which said pistons move towards said ends of said cylinder, (iv) exhaust, at a beginning of which said other piston uncovers said exhaust port and at an end of which said one piston has moved towards said other piston to expel gases in said cylinder, said expansion portion including burn and work subportions, and (v) a fifth return portion, during which the opposed portions travel towards said initial position.

5,289,803

COOLING SYSTEM FOR A WATER COOLED INTERNAL COMBUSTION ENGINE

Ryuichi Matsushiro; Toru Kosuda, both of Okazaki; Sigeo Sasao; Hiroyuki Fukunaga, both of Nishio, and Yasumasa Ikumi, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 17, 1992, Ser. No. 977,751
Claims priority, application Japan, Nov. 19, 1991, 3-303634
Int. Cl.[5] F01P *7/14*
U.S. Cl. 123—41.1 6 Claims

1. A cooling system for a water cooled internal combustion engine for a vehicle, the engine including an engine body with a water jacket therein, said system comprising:

a radiator;

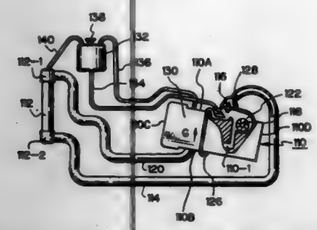
a pump chamber disposed at a top portion of the engine body, the pump chamber being in fluid communication with the water jacket;

a water pump disposed in the pump chamber for creating a forced flow of water into the water jacket;

a first main conduit having an end connected to the water jacket at an outlet of the engine for receiving the forced flow of water from the engine water jacket and another

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end connected to the radiator for introducing the water into the radiator;
a second main conduit having an end connected to the radiator for receiving the water therefrom and another end connected to the pump chamber for introducing the flow of water into the engine water jacket;
a reservoir tank disposed at a position more elevated than the radiator;
a supplementation conduit for connecting a bottom portion of the reservoir tank with an upper part of the pump chamber;
a thermostat valve arranged between the second main conduit and the pump chamber at a position upstream from a location at which the supplementation conduit is connected to the pump chamber, the thermostat valve controlling the flow of water in the radiator in response to a temperature of the water; and



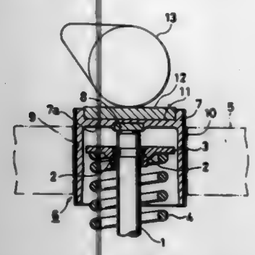
a check valve arranged in parallel with the thermostat valve for allowing an introduction of air from the pump chamber to the second main conduit while preventing a flow of the air from the second main conduit to the pump chamber, said check valve comprising a fixed plate member extending transverse to the flow of the water from the second main conduit to the pump chamber and a resilient read valve member disposed on a side of the plate member remote from the pump chamber, said plate member having an edge defining a vent hole, said reed valve member being resiliently biased against said edge for maintaining said check valve in a normally closed position and being operable in response to a predetermined amount of air pressure in said pump chamber to open the check valve against the resiliency of the reed valve member.

5,289,804

TAPPET IN AN INTERNAL COMBUSTION ENGINE

Akiyoshi Mori, Fujisawa, Japan, assignor to Fuji Oozx Inc., Japan

Filed Mar. 25, 1993, Ser. No. 36,916
Int. Cl.[5] F01L *1/14, 3/04*
U.S. Cl. 123—90.51 **4 Claims**



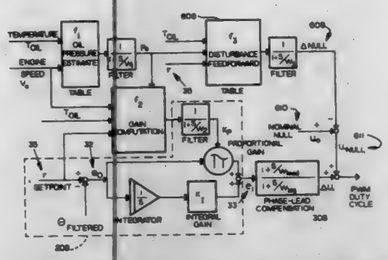
1. A tappet for use in an internal combustion engine, comprising light alloy base material made of Al-alloy; and a sprayed layer on an outer surface slidable with a cylinder head, the sprayed layer being made of Fe-alloy which comprises not more than 0.1% by weight of C; 0.6–2.0% by weight of Mn; and the balance of Fe.

5,289,805

SELF-CALIBRATING VARIABLE CAMSHAFT TIMING SYSTEM

Stanley B. Quinn, Jr., and Earl W. Ekdahl, both of Ithaca, N.Y., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Continuation-in-part of Ser. No. 847,577, Mar. 5, 1992, Pat. No. 5,184,578. This application Dec. 16, 1992, Ser. No. 995,661
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **20 Claims**



1. In an internal combustion engine having a rotatable crankshaft and a rotatable camshaft (26), said camshaft (26) being position variable relative to said crankshaft, being subject to torque reversals during the rotation thereof, having a vane (60) with at least one lobe (60*a*, 60*b*) secured to said camshaft (26) for rotation therewith, and having a housing (32) mounted on said camshaft (26) for rotation with said camshaft (26) and for oscillation with respect to said camshaft (26), said housing (32) having at least one recess (32*a*, 32*b*) receiving the at least one lobe (60*a*, 60*b*) of said vane (60) and permitting oscillation of the at least one lobe (60*a*, 60*b*) within the at least one recess (32*a*, 32*b*) as the housing (32) oscillates with respect to said camshaft (26), a device comprising:
means for transmitting rotational movement from said crankshaft to said housing (26);
means for varying the position of said housing (32) relative to said camshaft (26) in reaction to torque reversals in said camshaft (26), said means delivering hydraulic fluid to said vane (60);
check valve means (84, 86) functionally positioned between said housing (32) and said means for varying the position of said housing (32) to eliminate the need for blocking a backflow of hydraulic fluid by the operation of said means for varying the position of said housing (32);
actuating means (106) for supplying hydraulic fluid to said means for varying the position of said housing (32);
means for initial calibration (105) of said means for varying the position of said housing (32), said means for initial calibration (105) automatically calculating a phase offset;
means for generating pulses (27, 28) in accordance with the rotational movement of said crankshaft and said camshaft (26);
means for sensing (27*a*, 28*a*) said pulses, said sensing means (27*a*, 27*b*) transmitting said pulses to be further processed;
means for determining (107) a raw phase angle between said crankshaft and said camshaft (26), said determining means (107) receiving said pulses from said sensing means (27*a*, 27*b*), said determining means (107) utilizing said pulses for computing said raw phase angle;
means for compensating (107) said signal corresponding to said raw phase angle for problems encountered during the generation of said pulses; said compensating means (107) transmitting said compensated signal (20) to be further processed; and,

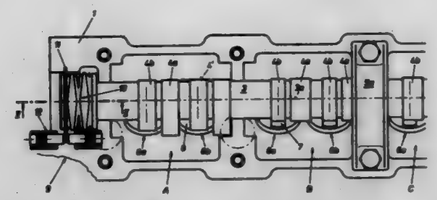
means for controlling (108) said actuating means (106), said controlling means (108) receiving said compensated signal (20), comparing said compensated signal (20) to a predetermined setpoint (35), generating a PWM duty cycle in response to said comparison, and issuing said duty cycle to said actuating means (106).

5,289,806

COMBUSTION ENGINE WITH AT LEAST ONE CAMSHAFT WHICH CAN BE SHIFTED AXIALLY

William J. Hurr, Graz, Austria, assignor to Avl Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik mbH. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

Filed Jul. 9, 1993, Ser. No. 88,551
Claims priority, application Australia, Jul. 13, 1992, 1437/92
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **10 Claims**



1. An internal combustion engine comprising:
a cylinder head,
at least one camshaft having a camshaft axis, said at least one camshaft being rotatable around said camshaft axis within said cylinder head and including several switchable cams for each of several valves, enabling a flow connection between a combustion chamber and one of two flow routes, whereby a first of said flow routes is a suction line and a second of said flow routes is an exhaust gas line, said cams being in different axial positions relative to each other,
a shifting device to shift said at least one camshaft axially, said shifting device comprising a shifting profile consisting of at least two guide grooves which are configured as oppositely oriented helixes and which end in ring-shaped idling grooves, each of said idling grooves defining different operating positions of said camshaft,
an engaging element running in one of said idling grooves and being introducible into said guide grooves, and
an activating element to introduce said engaging element into one of said guide grooves.

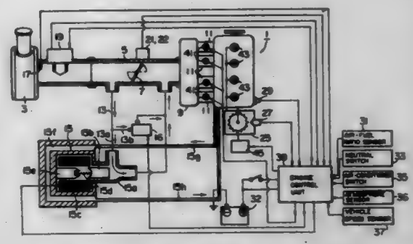
5,289,807

BYPASS AIR-FLOW CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Masao Yonekawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 3, 1993, Ser. No. 55,324
Claims priority, application Japan, May 6, 1992, 4-113678
Int. Cl.[5] F02D *41/16*
U.S. Cl. 123—325 **17 Claims**

1. A bypass air flow rate control apparatus for an internal combustion engine, comprising:
a plurality of bypass passages bypassing a throttle valve of the internal combustion engine;
a plurality of control valves for respectively controlling the air flow rates passing through said bypass passages;
switch over judging means for judging whether it is the time when the number of the control valves operated should be switched over;
engine operation judging means for judging at least one of whether said internal combustion engine is in a state where a torque equal to or greater than a predetermined torque value is being generated and whether said internal combustion engine is in a state where no torque is being generated; and
switch over means for changing over the number of the control valves operated when said switch over judging means has judged that the number of the control valves should be switched over and said engine operation judging means has judged that said internal combustion engine is in said state where a torque equal to or greater than a predetermined torque value is being generated or said state where no torque is being generated.

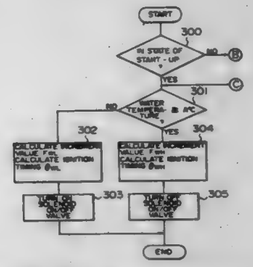


5,289,808

FUEL INJECTION DEVICE

Takanori Takahashi, and Hisashi Kadowaki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 21, 1992, Ser. No. 947,440
Claims priority, application Japan, Sep. 24, 1991, 3-273158
Int. Cl.[5] F02D *43/04*
U.S. Cl. 123—421 **11 Claims**



7. A fuel injection device for injecting liquid fuel through a fuel injection valve provided on an intake pipe of an engine, said device comprising:
fuel atomizing means for jetting out air to the liquid fuel injected through said fuel injection valve to atomize the liquid fuel,
air supply means provided with an on/off control valve for cutting off air supplied to said fuel atomizing means,
control means for receiving various detection signals indicative of an engine cooling water temperature, an engine rotational speed, an amount of intake air, etc., controlling a valve-opening time of said fuel injection valve in accordance with a predetermined control program, and also controlling said on/off control valve, and
fuel incrementing means for increasing an amount of the liquid fuel injected through said fuel injection valve, when said on/off control valve is operated from an open state to a closed state to cut off the air supplied to said fuel atomizing means.

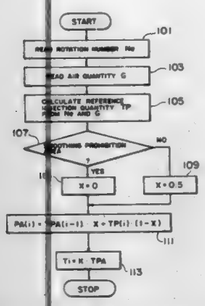
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5,289,809

INTERNAL COMBUSTION ENGINE CONTROL APPARATUS

Naoyuki Kamiya; Toshifumi Hayami, and Tatsuya Oka, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 16, 1993, Ser. No. 32,356
Claims priority, application Japan, Mar. 17, 1992, 4-060653; Jul. 13, 1992, 4-185482
Int. Cl.[5] F02D *41/06, 41/18*
U.S. Cl. 123—491 **9 Claims**



1. An apparatus for controlling an internal combustion engine which admits an intake air from an intake air passage comprising;
a hot wire air flow meter provided in said air intake passage for detecting the quantity of said intake air;
means for calculating a controlled quantity of the internal combustion engine based upon the quantity of said intake air detected by the hot wire air flow meter;
means for smoothing the controlled quantities calculated by said controlled quantity calculating means;
control means for controlling the internal combustion engine based upon the controlled quantities which are smoothed by said smoothing means;
a key switch for starting the operation of said hot wire air flow meter;
means for controlling the starting of the internal combustion engine based upon the controlled quantities on starting in lieu of the controlled quantities which are smoothed by said smoothing means until the starting of said internal combustion engine is completed; and
means for substantially starting the smoothing processing of the controlled quantities by said smoothing means at the time (E) from the time (C) at which said hot wire air flow meter is activated after turning on of said key switch before the time (D) at which starting of said internal combustion engine is completed.

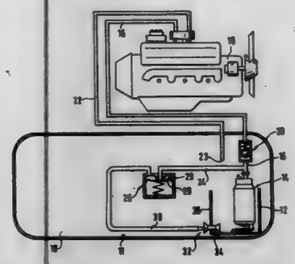
5,289,810

ARRANGEMENT FOR SUPPLYING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

Otto Bauer, and Gerhard Geyer, both of Munich, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 19, 1993, Ser. No. 63,992
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1992, 4224981
Int. Cl.[5] F02M *37/10*
U.S. Cl. 123—510 **9 Claims**

1. An arrangement for supplying fuel from a supply container to an internal combustion engine of a motor vehicle, comprising a supply tank having an interior with a separate chamber; a supply aggregate having a suction side connected with said supply tank and a pressure side connectable with the internal combustion engine, said supply aggregate receiving fuel from said separate chamber of said supply tank; a branching conduit connected with said pressure side of said supply aggregate and having a portion extending near a bottom of said supply tank; an ejector arranged in said portion of said branching conduit and having a pressure pipe opening in said chamber of said supply tank; and a check valve provided in said branching conduit upstream of said ejector as considered in a flow direction of fuel, said check valve opening in said branching conduit after a predetermined limiting pressure has been exceeded.

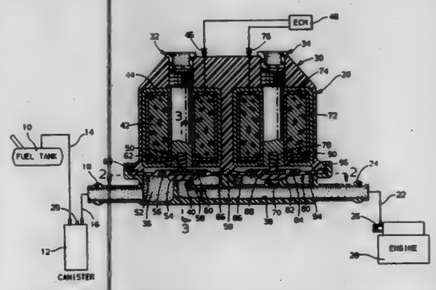


5,289,811

PURGE CONTROL DEVICE

Charles H. Covert, Manchester; Joseph Fornuto, Rochester; William E. Gifford, Hemlock; Otto Muller-Girard, Jr., and Gordon R. Paddock, both of Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1993, Ser. No. 58,851
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **3 Claims**



1. A purge control device for use in an evaporative control system having a canister for adsorbing fuel vapor evaporated from a fuel tank and a purge line connecting the canister to an engine vacuum source, the purge control device comprising:
a housing adapted to be connected in the purge line between the canister and the vacuum source and including
an inlet chamber for receiving the purge flow from the canister,
an exit flow path for directing purge flow to the vacuum source,
a first solenoid valve for regulating purge flow from the inlet chamber to the exit flow path,
a second solenoid valve parallel to the first solenoid valve for regulating purge flow from the inlet chamber to the exit flow path,
said first solenoid valve having a first orifice opening from the chamber to the exit flow path, a first valve seat surrounding the first orifice, and a first valve member biased against the first valve seat to inhibit flow from the chamber to the exit flow path through the first orifice, and
said second solenoid valve having a second orifice opening from the chamber to the exit flow path, a second valve seat surrounding the second orifice, and a second valve member biased against the second valve seat to inhibit flow from the chamber to the exit flow path through the second orifice, and wherein the second orifice is smaller than the first orifice, whereby the first solenoid valve member opens in response to an electronic signal to permit purge flow from the chamber through the first orifice to the exit flow path and the second solenoid valve member opens in response to another electronic signal to permit purge flow from the chamber through the second orifice to the exit flow path.

5,289,812

INTERNAL COMBUSTION ENGINE AIR/FUEL RATIO COMPENSATION

Douglas E. Trombley, Grosse Pointe; Kenneth J. Buslepp, Shelby Township, Macomb County, and William C. Albertson, Sterling Height, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1993, Ser. No. 69,464
Int. Cl.[5] F02M *67/02*
U.S. Cl. 123—533 **6 Claims**

1. A method for compensating a ratio of fuel to air admitted to an internal combustion engine having pneumatic fuel injection, wherein a quantity of air from a pressurized air supply is provided to inject a quantity of fuel from a fuel supply into the engine, comprising the steps of:
sensing pressure of fuel from the fuel supply;
sensing pressure of air from the air supply;
determining a difference between the sensed fuel pressure and the sensed air pressure;
generating a compensation value as a predetermined function of the determined difference; and
adjusting a predetermined one of the group consisting of the fuel quantity and the air quantity by the generated compensation value.

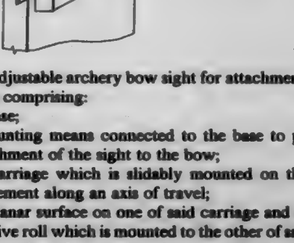
5,289,813

TWO SPEED MECHANICAL SUPERCHARGER

Kazunari Adachi, Toyoake, and Noriyoshi Shibata, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 26, 1992, Ser. No. 935,171
Claims priority, application Japan, Aug. 28, 1991, 3-217400; Aug. 28, 1991, 3-217401
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—559.3 **4 Claims**

1. A mechanical supercharger comprising:
a housing;
a pair of rotors rotatably arranged in the housing and engaged with each other;
a first shaft supporting one of the rotors and rotatably supported by the housing;
a second shaft supporting the other of rotors and rotatably supported by the housing, the second shaft being in parallel with the first shaft at one side thereof;
a first timing gear secured to the first shaft;
a second timing gear secured to the second shaft and meshed with the first timing gear;
a third shaft rotatably supported by the housing and located at one side of the second shaft so as to be in parallel therewith;
transmission means for transmitting an engine rotation to the first shaft and the third shaft, the transmission means having two separate pulleys, both of which rotate in a same direction;
clutch means disposed on the first shaft for establishing an optional connection between one of the pulleys and the first shaft;
a reduction gear secured on the third shaft and meshed with the second timing gear; and
a one-way clutch disposed on the third shaft and disconnecting the other of the pulleys from the third shaft when the clutch means is in engagement.

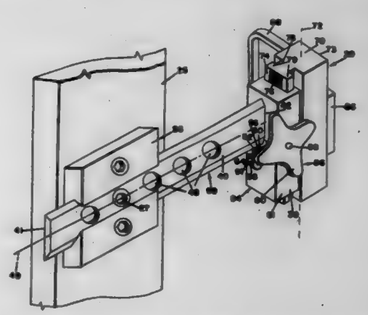


5,289,814

ADJUSTABLE ARCHERY BOW SIGHT

Joseph A. Maiorano, 38 Hickory Dr., Dudley, Mass. 01571

Filed Dec. 4, 1992, Ser. No. 985,947
Int. Cl.[5] F41G *1/467*
U.S. Cl. 124—87 **18 Claims**



1. An adjustable archery bow sight for attachment to a bow, said sight comprising:
(a) a base;
(b) mounting means connected to the base to provide for attachment of the sight to the bow;
(c) a carriage which is slidably mounted on the base for movement along an axis of travel;
(d) a planar surface on one of said carriage and said base;
(e) a drive roll which is mounted to the other of said base and said carriage for rotation about an axis of rotation, said drive roll having an outer circumferential surface which engages said planar surface, a first one of said circumfer-

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ential surface and said planar surface being knurled and non-conformable and a second one of said circumferential surface and said planar surface being softer than said first surface and conformable in a complementary driving manner to said first surface so that rotation of said drive roll about said axis of rotation causes said carriage to slide relative to the base along said axis of travel;

(f) rotating means for rotating said drive roll about said axis of rotation; and

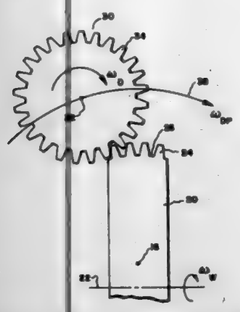
(g) a sight pin assembly which is mounted on the carriage.

5,289,815

METHOD OF DRESSING A THREADED GRINDING WHEEL

Theodore J. Krenzer, West Rush, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Jun. 21, 1993, Ser. No. 80,607
Int. Cl.[5] B24B *53/075*
U.S. Cl. 125—11.03 **20 Claims**



1. A method of dressing a threaded grinding wheel for grinding crown gears, said threaded grinding wheel having an axis of rotation, a width, and including at least one thread-like grinding surface generally helically arranged in at least one revolution about said grinding wheel and extending along said width, said at least one thread-like grinding surface, when viewed in an axial section of said grinding wheel, having the tooth form of a mating pinion member to said crown gear, said method comprising:

providing a dressing tool in the form of a pinion member, said dressing tool having the same pitch as said mating pinion member,

rotating said dressing tool and said grinding wheel at respective velocities whereby said dressing tool and grinding wheel may run in mesh with one another,

contacting said rotating dressing tool and said rotating grinding wheel at one end of said grinding wheel width,

moving said rotating dressing tool relatively across said width of said rotating grinding wheel simultaneously with said dressing tool and grinding wheel rotating in mesh, said dressing tool moving completely along said grinding wheel width,

wherein said moving is along an arcuate path about a point on said grinding wheel corresponding to a center point of said mating pinion.

5,289,816

HYDRAULIC RAM RETRACTION PILE CUTTER

Frederick M. Rakowski, Box 17, Group 503, RR 5, Winnipeg, Manitoba, Canada R2C 2Z2

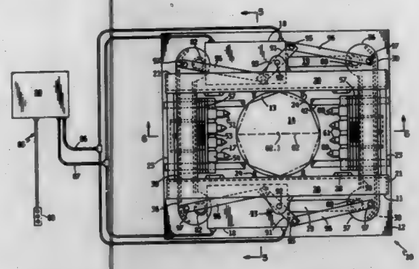
Filed Oct. 23, 1992, Ser. No. 965,807
Int. Cl.[5] B28D *1/32*
U.S. Cl. 125—23.01 **6 Claims**

1. A compact pile cutter for breaking up concrete piles, comprising:

a) a frame having an opening for receiving a pile therein;

b) a pair of breaking means with opposite ends, the breaking means being movably mounted on the frame for engaging opposite sides of the pile for breaking up the pile;

c) a pair of parallel ram and cylinder mechanisms connected to and disposed between the pair of breaking means wherein the drawing in of the rams into the cylinders draws the breaking means toward each other to engage and break up the pile when the rams are drawn in; and



d) a pair of parallel mechanical equalizing means on the frame, wherein the equalizing means each comprises a pivot mechanism disposed on the frame on either side of the opening and between the breaking means, each of the pivot mechanisms comprising a pivot arm pivotally connected to the frame and having pivot arm opposite ends and a pair of extension arms, each of the extension arms pivotally connected between one of the pivot arm opposite ends and one of the breaking means opposite ends.

5,289,817

ENDOSCOPIC SURGICAL RETRACTOR

Donald B. Williams, Deerfield, and Peter L. Visconti, Chicago, both of Ill., assignors to Linvatec Corporation, Largo, Fla.

Filed Aug. 20, 1991, Ser. No. 747,574
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **4 Claims**



1. An endoscopic tissue retractor comprising:

an outer tube having a proximal end, a distal end and a first gripping means at the proximal end thereof;

an inner rod having a proximal end and a distal end, said inner rod extending through said tube and having a second gripping means at the proximal end thereof, said first and second gripping means adapted for enabling movement of said outer tube and said inner rod relative to each other, said inner rod further comprising a pair of spaced longitudinally extending arms secured to the distal end of said inner rod;

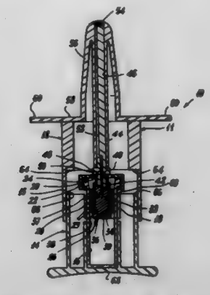
a single bar pivotably mounted at its midpoint at the distal end of said spaced arms of said rod and rotatable in an axial plane whereby said bar may be alternatively axially aligned within said outer tube or rotated about its pivot point when said inner rod is extended from said tube a predetermined distance.

5,289,818

SINGLE-DOSE SPRAY-DISPENSER FOR ENDONASAL ADMINISTRATION OF LIQUID MEDICAMENTS

Gianfranco Citterio, and Maurizio Rusconi, both of Merate, Italy, assignors to Promo Pack S.A., Italy

Filed Nov. 18, 1991, Ser. No. 793,795
Claims priority, application Italy, Nov. 21, 1990, 22137 A/90
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **11 Claims**



1. A spray dispenser device (10) for dispensing a dose of liquid medicament contained in a cylindrical vial by the action of a piston to be pushed to the bottom of said vial, said device comprising a body (11) for receiving a cylindrical vial (18) containing the dose of liquid medicament, a piston (26), a rod (44) operable from the outside to push said piston (26) to the bottom of the vial (18) and to thereby form an emission channel (37, 50, 52) between a spray nozzle (54) and the interior of the vial (18) in order to deliver the medicament dose contained in the vial through the spray nozzle, said piston (26) being separated from said rod and contained as an independent piece with the vial (18), which when empty can be replaced by another full vial; a connection between the rod (44) and piston (26) being made automatically following the insertion of the vial (18) into said body (11), said piston (26) having an outer annular part (28) which sealedly receives an inner cylindrical part (30), the two parts (28, 30) being movable relative to each other between a position in which the emission channel (37, 50, 52) is closed and a position in which it is open following the operation of the rod (44).

5,289,819

DEVICE FOR OPERATING AND TESTING GAS MASKS AND BREATHING EQUIPMENT

Rainer Kröger, Krummesse, and Ralf Dramenski, Elmshorn, both of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Aug. 26, 1992, Ser. No. 936,088
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1991, 4129848
Int. Cl.[5] G01N *19/00*
U.S. Cl. 128—200.24 **8 Claims**

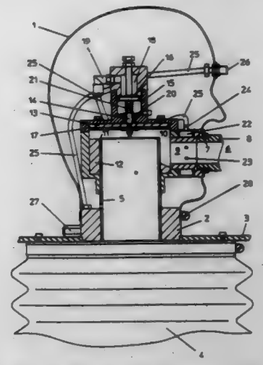
1. A device for operating and testing compressed air-operated respiratory devices connectable to the head of a human, the device comprising:

a dummy human head part including means including a respiration connection for simulating the respiratory openings of an equipment use said dummy human having a surface providing a sealing connection between said dummy human head and a gas mask;

a test connection tube at least partially extending into said dummy human head, in flow connection with said respiratory opening;

a testing unit for supplying fluid, said testing unit being in fluid connection with said test connection tube, said testing unit being actively controlled and passively adjusted in terms of pressure generation and change in volume; and

valve means for interrupting fluid flow from said test connection to said respiratory opening, said valve means being positioned in flow communication between said respiratory opening of said dummy human head part and said test connection tube.

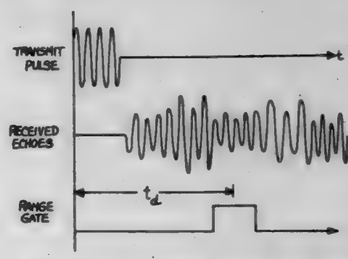


5,289,820

ULTRASONIC PLETHYSMOGRAPH

Kirk W. Beach; David J. Phillips, both of Seattle, Wash., and John Kansky, Indianapolis, Ind., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 792,584, Nov. 15, 1991, Pat. No. 5,183,046, which is a continuation of Ser. No. 644,477, Jan. 18, 1991, Pat. No. 5,088,498, which is a continuation of Ser. No. 258,534, Oct. 17, 1988, abandoned. This application Nov. 24, 1992, Ser. No. 980,633
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] A61B *8/02*
U.S. Cl. 128—661.07 **13 Claims**



6. An instrument for quantifying expansion and contraction of internal body tissue in a region below the skin to evaluate blood supply to the tissue comprising means for transmitting a first burst of ultrasound into the body from the skin, means for measuring the phase of ultrasound of the first burst reflected from internal body matter a first predetermined period after transmission of the first burst, means for measuring the phase of ultrasound reflected by internal body matter a second predetermined period after transmission of said first burst, means for subsequently transmitting a second burst of ultrasound into the body, means for measuring the phase of ultrasound of the second burst reflected from internal body matter a predetermined period of the same duration as the first predetermined

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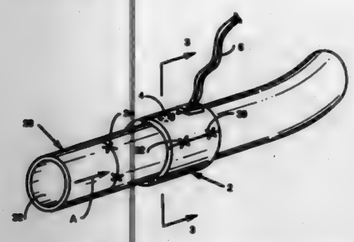
period after transmission of the second burst, means for measuring the phase of the ultrasound of the second burst reflected from internal body matter a predetermined period of the same duration as the second predetermined period after transmission of the second burst, and means for comparing the change in measured phases of the reflected ultrasound to determine the expansion and contraction of body tissue in the region at a depth corresponding to the length of time required for ultrasound to travel to and return from body matter during the first and second predetermined periods.

5,289,821

METHOD OF ULTRASONIC DOPPLER MONITORING OF BLOOD FLOW IN A BLOOD VESSEL

William M. Swartz, 5030 Castleman St., Pittsburgh, Pa. 15232

Filed Jun. 30, 1993, Ser. No. 83,572
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—661.09 **17 Claims**



1. A method of ultrasonic Doppler monitoring of blood flow in a patient's blood vessel comprising

providing an ultrasonic transducer operatively associated with ultrasonic processor means by an electrically conductive wire,

securing the ultrasonic transducer to a strip of biologically inert or absorbable material,

wrapping said strip in contacting surrounding relationship with the exterior surface of said blood vessel to establish a cuff,

securing said cuff in said surrounding relationship,

employing said ultrasonic transducer-wire assembly in a Doppler mode to monitor blood flow within said blood vessel, and

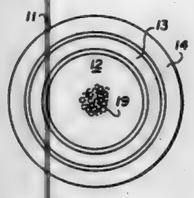
after completion of said monitoring removing said ultrasonic transducer and said wire but not said cuff.

5,289,822

ELECTRODE FOR REDUCING THE SURFACE RESISTIVITY OF SKIN AND METHOD

Albert J. Highe, Redwood City, and Mir A. Imran, Palo Alto, both of Calif., assignors to Physiometrix, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1992, Ser. No. 983,823
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—640 **28 Claims**



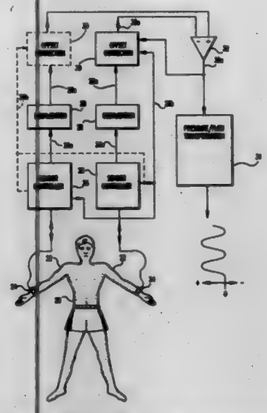
1. An electrode adapted to be placed in contact with the skin of a patient for reducing the surface resistivity of the skin of the patient, the electrode comprising a member formed of a dry-conductive material and having an outer surface adapted to be placed in contact with the skin of the patient, a composition disposed in at least a portion of the surface of the member, said composition including a plurality of water-containing vesicles.

5,289,823

NON-INVASIVE AORTIC BLOOD FLOW SENSOR AND METHOD FOR NON-INVASIVELY MEASURING AORTIC BLOOD FLOW

Joseph S. Eckerle, Redwood City, Calif., assignor to Colin Electronics Co., Ltd., Aichi, Japan

Filed May 12, 1992, Ser. No. 881,756
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—679 **30 Claims**



1. A method for measuring blood flow in an aorta of a patient, comprising the steps of:

determining a first blood pressure in a first subclavian artery of the patient;

generating a first pressure signal indicative of the first blood pressure;

determining a second blood pressure in a second subclavian artery of the patient;

generating a second pressure signal indicative of the second blood pressure;

removing a DC offset within at least one of the signals,

generating a difference signal indicative of a difference between the first pressure signal and the second pressure signal; and

generating a flow signal indicative of the blood flow in the aorta from the difference signal.

5,289,824

WRIST-WORN ECG MONITOR

Gary N. Mills, Gladstone, and Habib Homayoun, Aloha, both of Oreg., assignors to Instromedix, Inc., Hillsboro, Oreg.

Filed Dec. 26, 1991, Ser. No. 816,389
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—696 **10 Claims**

1. A wrist-worn monitor comprising:

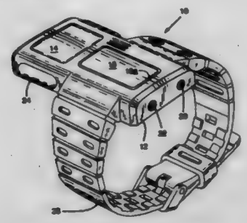
a housing suitable for attachment to a user's wrist;

plural electrodes integral with said housing for contacting a patient's skin;

signal detecting means integral with said housing and operatively connected with said electrodes for detecting cardiac activity represented by variations in the resistance of the patient's skin and for producing an ECG signal;

an analog-to-digital signal converter integral with said housing and operatively connected with said signal detecting means and responsive to said ECG signal for producing ECG data;

event detecting means integral with said housing and coupled with said converter for determining that a cardiac event has occurred, said event detecting means producing a trigger signal;



recording means integral with said housing and coupled with said converter and said event detecting means and responsive to said trigger signal for recording selected EDG data proximate in time to such cardiac event; and

transmitting means coupled with said recording means and integral with said housing for wirelessly communicating said recorder ECG data by producing a modulated ECG data carrier for telephonic transmission to a remote site.

5,289,825

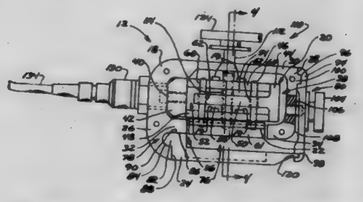
Patent Not Issued For This Number

5,289,826

TENSION SENSOR

Nebojsa Kovacevic, Minneapolis, Minn., assignor to N. K. Biotechnical Engineering Co., Minneapolis, Minn.

Filed Mar. 5, 1992, Ser. No. 847,590
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **27 Claims**



1. An apparatus to measure forces in a portion of tissue comprising:

a frame;

a flexure member cantilevered from the frame, the flexure member comprising parallel flexure plates and a connector wall, the flexure plates having first ends thereof attached to the frame and second ends thereof joined with the connector wall;

a load plate mounted to the flexure member;

support means mounted to said frame and opposite said load plate for supporting a tissue portion to be measured;

means for adjusting the load plate to clamp the tissue portion between said load plate and said support means; and

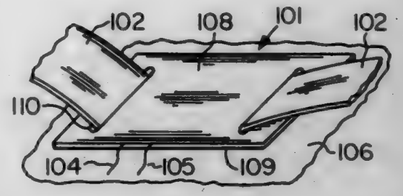
sensing means connected to said flexure member for providing an output signal representative of flexure forces on said flexure member, said flexure member being responsive to loading exerted between the load plate and the support means.

5,289,827

UTERINE CONTRACTION SENSING METHOD

Fredrick L. Orkin, 672 Mallard La., Deerfield, Ill. 60015, and Robert Czaruck, 616 Fairview Ave., Blacksburg, Va. 24060

Filed Mar. 17, 1992, Ser. No. 852,557
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—775 **1 Claim**



1. An extra-uterine method of sensing uterine contractions of a wearer having a uterus utilizing a non-mechanical sensor which directly converts a change in pressure to a change in electrical signal, the method comprising:

A. attaching a sensor to the abdomen in the area of the wearer's uterus, said sensor including:

a rigid outer member, an inner member, and a sensing unit, said sensing unit positioned between said inner member and said rigid outer member, said sensing unit including:

i. a variable resistor having an outer surface and formed of a pressure sensitive ink; and

ii. a first electrically conductive member interfacing with said ink,

wherein said inner member rests on the abdomen;

B. creating a mechanical pre-load on the sensing unit and forcing the first electrically conductive member against the variable resistor outer surface, thereby creating a reference level electrical resistance;

C. creating a reference level non-decaying electrical signal corresponding to said reference level electrical resistance;

D. changing the force applied to the first electrically conductive member against the variable resistor outer surface in response to uterine contractions and instantaneously and non-mechanically changing the electrical resistance of the variable resistor, thereby non-mechanically and directly converting a change in pressure to a change in electrical resistance;

E. creating a non-decaying electrical signal corresponding to said changing electrical resistance; and

F. monitoring uterine contractions by monitoring the electrical signal corresponding to said changing force.

5,289,828

ABDUCTION PILLOW FOR ORTHOPEDIC SUPPORT

Julie O. Toth, 6601 Rosedale 988-7912, Amherst, Ohio 44001

Filed Jul. 13, 1992, Ser. No. 912,270
Int. Cl.[5] A61G *15/00*; A61F *5/00*; A47B *7/00*
U.S. Cl. 128—845 **6 Claims**

1. An abduction pillow for supporting the lower extremities of an orthopedic patient comprising:

a top fluid-impervious flexible layer having opposite ends and opposing divergent sides;

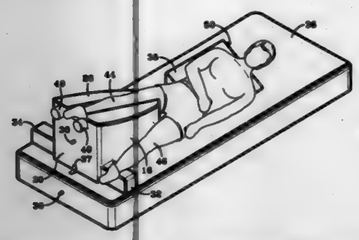
(b) a bottom fluid-impervious flexible layer having opposite ends and opposing divergent sides;

(c) first and second divergent sides which are joined in fluid-impervious sealed relationship to said sides of said top layer and said bottom layer;

(d) first and second ends defined by said first and second divergent sides which are joined in fluid-impervious relationship to said ends of said top and bottom layers such that a fluid-impervious body is created by said top, bottom, sides, and ends;

(e) a longitudinal recess extending along said top surface for

accepting one of the patient's legs, wherever the distance from the plane in which the patient's other leg lies to the bottom of said longitudinal recess is equal to the width of said body within any transverse plane taken through said body;



(f) at least one inflatable fluid-impervious heel support extending laterally from one of said sides of a sufficient height to raise said patient's heel out of contact with an underlying support on which the body is supported; and

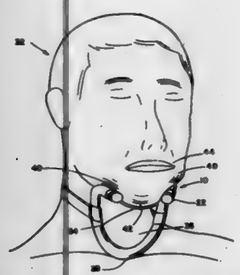
(g) fluid inlet/outlet port means on said body for communicating with a hollow interior of said body.

5,289,829

LIP-CLOSING ANTI-SNORING DEVICE

John A. Roehrig, 252 Pebble Beach Cir., Apt. 101, Naples, Fla. 33962

Filed Jun. 24, 1992, Ser. No. 903,287
Int. Cl.[5] A61F *5/56*
U.S. Cl. 128—848 **10 Claims**



1. An anti-snoring device for elevating the side flesh and under chin flesh of the chin of a user to maintain the lips in a closed position comprising:

a flexible U-shaped body means having a vertical planar arcuate shaped base member sufficiently structured to fit vertically aligned within the clavicle of the user's collar bone with vertical dual inverted J-shaped members extending upwardly on either side of the vertical arcuate member to the sides of the user's chin, each J-shaped member has a first portion extending in continuous relation with the arcuate shaped base member at an angle less than 30 degrees with respect to the plane containing the arcuate shaped base member, and a second portion extending from and generally perpendicular to the first portion and terminating in a free end, and body securing means extending from each of said J-shaped members,

said J-shaped members disposed in adjacent spaced location to one another of sufficient lateral distance to provide each J-shaped member upwardly tensioned contact with the flesh on the side of the chin,

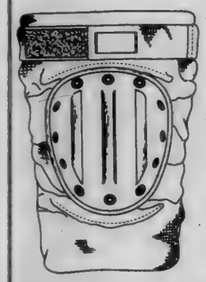
said J-shaped members extending upwardly and curving outwardly to form adjustable flexible, upwardly tensioned flesh support means joined together by resilient securing means for said contact with the flesh of each side of the chin.

5,289,830

RAISED RIDGE KNEE PAD

Norman D. Levine, P.O. Box 1867, Pompano Beach, Fla. 33061

Filed Dec. 19, 1991, Ser. No. 810,671
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—882 **10 Claims**



1. An improved knee pad for protecting the knee area of a wearer, comprising:

a rigid shell member having a convex outer surface of compound curvature, said convex outer surface defining a plurality of integrally molded raised ridges, said raised ridges protruding from, and extending outwardly from, said convex outer surface and which blend smoothly therewith, said raised ridges having coplanar upper surfaces for providing a uniform confronting surface for engagement with a riding surface;

a body portion having first and second sides bounded by a plurality of elongated side edges, said first side having means for firmly attaching said shell member thereto; and

means for releasably securing said body portion to said wearer's leg, said means for releasably securing connected to said body portion whereby said body portion second side is maintained in contact with said leg such that said shell member and body portion shield said knee area from possible injury and said raised ridge areas of said rigid shell member permit sliding contact with a riding surface to facilitate said wearer's control of a riding device such as a skateboard.

5,289,831

SURFACE-TREATED STENT, CATHETER, CANNULA, AND THE LIKE

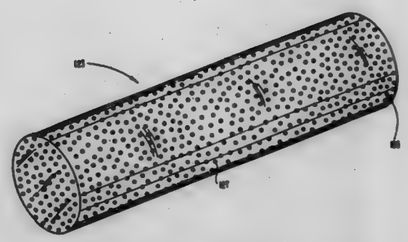
Rodney W. Bosley, Bloomington, Ind., assignor to Vance Products Incorporated, Spencer, Ind.

Continuation-in-part of Ser. No. 823,323, Jan. 21, 1992, Pat. No. 5,201,314, which is a continuation-in-part of Ser. No. 383,174, Jul. 20, 1989, Pat. No. 5,081,997, which is a continuation-in-part of Ser. No. 320,967, Mar. 9, 1989, abandoned. This application Apr. 21, 1992, Ser. No. 871,644
Int. Cl.[5] A61E *2/04*
U.S. Cl. 128—899 **19 Claims**

1. A treated surface catheter, stent, or cannulae, comprising:

an elongated member including a first predetermined material having a first surface energy; and

an outer surface of said member including said first material and having a second surface energy different from said first surface energy and in a range of 20 to 30 dynes per centimeter.

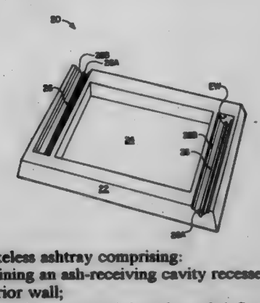


5,289,832

SMOKELESS ASHTRAY FOR TEMPORARY RETENTION AND/OR EXTINGUISHMENT OF CIGARETTES

Stanley D. Funcell, and Doris C. Trogdon, both of 310 Bolin Forest Rd., Carrboro, N.C. 27510

Continuation-in-part of Ser. No. 848,714, Mar. 9, 1992. This application Mar. 5, 1993, Ser. No. 27,033
Int. Cl.[5] A24F *19/00, 19/14*
U.S. Cl. 131—241 **4 Claims**



1. A smokeless ashtray comprising:

a base defining an ash-receiving cavity recessed therein and an exterior wall;

at least one cigarette-receiving channel defined within said base wherein a first end of said channel is closed and a second end communicates with said exterior wall of said base, said channel having a depth which decreases along the length thereof from said first closed end to said second open end;

said cigarette-receiving channel having a rib extending along at least a portion of the length of the bottom surface thereof and an outwardly extending ledge or shoulder adjacent the top of each side of said channel, said shoulders extending generally below and parallel to the top of said exterior wall of said base and said shoulders defining a depth relative to said channel which decreases along the length of said channel from said first end to said second end thereof;

whereby a lit cigarette positioned in said channel will have an increasingly greater surface area exposed along the length thereof extending from said lowermost lit end to the unlit end thereof to facilitate continuous smokeless burning as the ash portion of the cigarette increases in length.

5,289,833

MULTI-TOOTHED DISPENSER, COMB APPLICATOR AND BOTTLE

Charles E. McDonald, 6359 S. Rhodes, Chicago, Ill. 60637

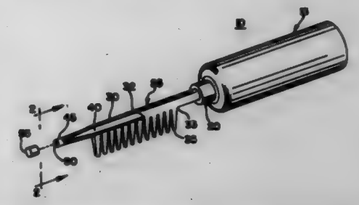
Filed Mar. 19, 1992, Ser. No. 853,783
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—112 **18 Claims**

1. A device for dispensing and applying chemicals into hair comprising:

means for combing chemicals through hair, having first and second ends, said coming means having an internal flow cavity extending from said first to said second end;

means for containing the chemicals, said containing means disposed on and in fluid communication with said internal flow cavity at said first end of said combing means;

means for separating hair, said means for separating hair having a free distal end, said separating hair means being disposed on said second end of said combing means; and



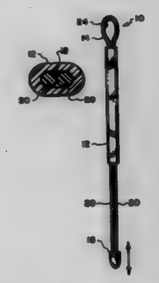
means for dispensing the chemicals onto the hair, said dispensing means being at said distal end of said hair separating means, said dispensing means being in fluid communication with said internal flow cavity; said means for combing, said means for containing, said means for separating hair and said means for dispensing all being in axial alignment.

5,289,834

PONYTAIL TOOL

Lloyd D. Lawrence, 23667 Via Avant, Valencia, Calif. 91350

Filed Jan. 29, 1993, Ser. No. 10,854
Int. Cl.[5] A45D *7/02*
U.S. Cl. 132—212 **3 Claims**



1. A ponytail tool comprising:

an elongated body having a through interior open-ended opening, said body adapted to be manually grasped by the user, said body terminating at an upper end and a lower end;

a cord being conducted through said opening, said cord extending exteriorly of said upper end and said lower end, said cord being formed into a loop at said upper end; and

a lever attached to a lower end of said cord, said lever being located adjacent said lower end of said body, said lever having a generally pointed tip to facilitate insertion into the hair and said lever being manually movable between an inner position and an outer position, said inner position being when said lever is located directly adjacent said body, said lever and said body combining at said inner position to form a smoothly contoured continuous structure, said outer position being when said lever is spaced from said body, with said lever in said inner position said loop enclosing the largest area, with said lever in said outer position said loop enclosing an area smaller than said largest area, said lever and said body are to be conducted

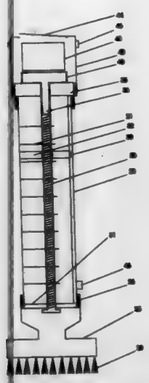
through a hair ponytail with enlargement between the hair and said cord being prevented by said lever and said body assuming said smoothly contoured configuration and then the ponytail can be threaded through itself by locating the outer portion of the ponytail through said loop within said largest area and said lever then being moved to said outer position tightening said loop on said ponytail which is then pulled through the inner portion of the ponytail.

5,289,835

TOOL SET FOR COLORING HAIR

Thomas A. Harlan, 6 Leafdale Pt., Austin, Tex. 78738; Marc L. Bridges, Rte. 1, Box 167A, Dale, Tex. 78616, and Joseph F. Long, 1335 Lost Creek Blvd., Austin, Tex. 78746

Filed Jul. 1, 1991, Ser. No. 723,857
Int. Cl.[5] A45D *44/18*
U.S. Cl. 132—313 **4 Claims**



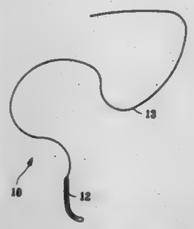
1. Improved hair coloring tool set comprising:
a) a plurality of hair weaving combs with a portion of teeth on each of said combs having hooked ends and with spacing of said teeth with hooked ends being varied to pick up from one eighth to all of hair as said hooked ends are moved to selectively lift hair to be colored;
b) a mixing tube comprising:
1) a calibrated tube;
2) a discharge nozzle threadably attached to a first end of said calibrated tube;
3) a plug cock valve in said discharge nozzle;
4) a filling nozzle with central circular opening threadably attached to a second end of said calibrated tube;
5) a mixing and dispensing means in said calibrated tube to mix components of a hair coloring composition and dispense said mixed composition;
c) a coloring brush comprising:
1) a brush head and a nozzle on said brush head; said brush head having openings leading from said nozzle to bristles in said brush head;
2) a calibrated dispensing handle means releasably attached to said nozzle;
3) a motor and a dispensing switch in said dispensing handle means, said switch being adjacent to said brush head to activate said motor cooperating with said calibrated dispensing handle means to dispense contents of said handle means when said dispensing switch is held in a closed position.

5,289,836

DENTAL FLOSS DEVICE WITH A GUIDE POST

Chien-Lun Peng, 7F, No. 4, Alley 7, Lane 53, Sec. 4, Nanking E. Road, Taipei, Taiwan

Continuation-in-part of Ser. No. 772,544, Oct. 7, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,710
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—329 **3 Claims**



1. A method for producing a dental floss device comprising the steps of:
a) providing a mould having a cavity defining two guide posts, with each guide post having a tail end portion, a curvilinear front end portion terminating in a semi-spherical tip and a substantially constant diameter from the front end portion to the tail end portion, the two guide posts being tangential to each other at curvatures of the front end portions and on a parting plane of the mould, and the tail end portions extending longitudinally along a straight line;
b) disposing a floss in the cavity; and
c) injecting an encapsulating material into the cavity to encapsulate the floss and produce two dental floss devices, with each device including a guide post and a floss having a first end securely fixed to the tail end portion so that the entire guide post may be threaded through a gap formed between an orthodontic appliance and teeth to which the appliance is fixed to position the floss for flossing between the teeth.

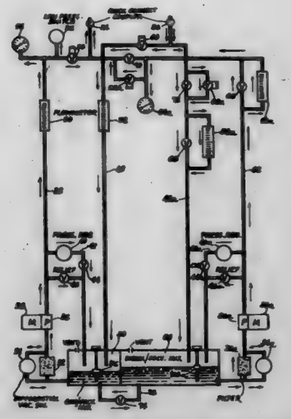
5,289,837

ENGINE CLEANING SYSTEM

Eduardo Betancourt, 1354 N. Ferndale St., Anaheim, Calif. 92108

Filed Dec. 9, 1992, Ser. No. 987,597
Int. Cl.[5] B08B *3/04, 9/00*
U.S. Cl. 134—57 R **13 Claims**

1. A purging system for purging internal combustion engines by temporarily replacing the engine's fuel supply system with an external source of fuel and solvent mixture, comprising:
(a) first and second fuel and solvent mixture tanks
(b) a main supply line for delivering fuel to said engine;
(c) a main return line for returning unused fuel from said engine;
(d) a tank selector valve system interposed in said supply and return line for selectively connecting either said first or second tank to both of said lies; and,
(e) pump means for delivering mixture from a selected one of said tanks through said supply line to power and clean an engine connected thereto; and,
(d) said tanks are designated as a gas tank and a diesel tank, respectively, and said main supply line includes a gas and a diesel supply line specific to the respective mixture tank, and said main return line includes a gas and a diesel return line specific to the respective mixture tank and having control and indicator systems specific to the different flow



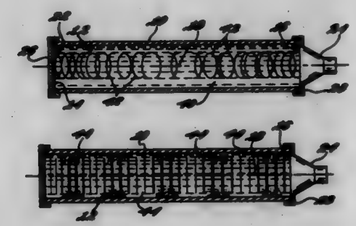
and pressure requirements installed in the respective gas and diesel line.

5,289,838

ULTRASONIC CLEANING OF INTERIOR SURFACES

D. MacKenzie C. Odell, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 27, 1991, Ser. No. 813,729
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—166 R **15 Claims**



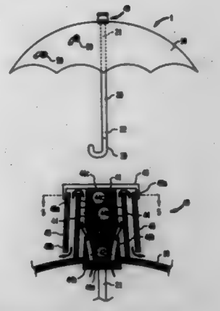
8. An apparatus for cleaning an interior surface of a tube, said tube having a first end, an opposing second end, and a long axis, said apparatus comprising:
means for generating ultrasonic sound waves having a frequency;
first means for coupling said generating means to said first end of said tube;
means for reflecting ultrasonic sound waves;
second means for coupling said reflecting means to said second end of said tube, whereby said reflecting means and said generating means are positioned at opposing ends of said tube, aligned with said long axis and separated by a distance;
a solvent filling said tube between said generating means and said reflecting means; and
means for moving said generating means along said axis with respect to said tube.

5,289,839

WIND-RESISTANT UMBRELLA

John L. Lombardo, 1426 Nottingham Way, Trenton, N.J. 08609

Filed Jul. 2, 1992, Ser. No. 907,590
Int. Cl.[5] A45B *25/22*
U.S. Cl. 135—33.7 **10 Claims**



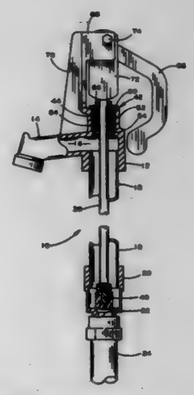
1. A wind-resistant umbrella comprising
a selectively collapsible fabric body;
a central rod attached to a central portion of said fabric body;
a handle attached to a lower end of said central rod; and
central air venting means comprising a rigid cup member attached to an upper end of said central rod, said air venting means including substantially vertically oriented air channeling means to upwardly vertically direct wind gusts from an interior of the fabric body downwardly and laterally adjacent an exterior of the fabric body.

5,289,840

YARD HYDRANT

Stephen J. Anderson, Storm Lake, Iowa, assignor to Merrill Manufacturing Company, Inc., Storm Lake, Iowa

Filed Feb. 25, 1993, Ser. No. 22,442
Int. Cl.[5] E03B *9/04, 9/14*; F16K *43/00*
U.S. Cl. 137—15 **12 Claims**



1. A yard hydrant, comprising:
a valve housing with valve means located below ground level for connection to a source of water supply under pressure,
a head section with an integral discharge nozzle positioned above ground level,

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a thin wall standpipe free of any threads and irremovably secured at one end to said valve housing and irremovably secured at the other end of said head section to provide an integral unit that cannot be disassembled,

said head section provided with an opening in axial alignment with said standpipe and said valve housing,

an operating rod disposed in said standpipe for reciprocation therein so that one end thereof extends upwardly through said opening and the other end thereof extends into said valve housing and has valve means adapted for valve association with said housing for opening and closing water flow therethrough,

said opening being concentrically wider than said operating rod and any valve means associated therewith,

operating means to reciprocate said operating rod,

removable packing means in said opening to stabilize said operating rod and to serve as a sealing closure for said opening, and

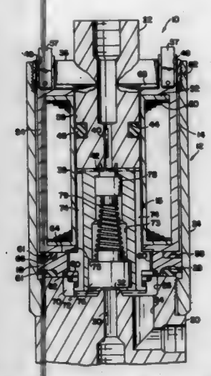
upon removal of said packing means from said opening said operating rod and said valve means being attached to said packing means for direct removal through said opening solely by reciprocation of said operating rod for servicing means without disassembling said valve housing, said standpipe and said head section.

5,289,841

SOLENOID VALVE AND VALVE CALIBRATING METHOD

Miguel F. Maranzano, Bristol, Conn., assignor to Kip Corporation, Farmington, Conn.

Division of Ser. No. 738,804, Jul. 31, 1991, Pat. No. 5,207,245.
This application Jan. 13, 1993, Ser. No. 3,743
Int. Cl.[5] F16K *31/06*
U.S. Cl. 137—1 **4 Claims**



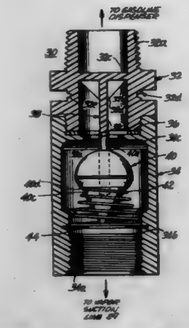
1. A method for calibrating a solenoid-actuated fluid control valve having a housing defining a valve chamber and a fluid passageway terminating at a valve seat within the valve chamber, and a solenoid plunger supported for movement relative to the valve seat between seated and unseated positions and normally biased to its seated position, the plunger in its seated position preventing fluid flow through the fluid passageway and in its unseated position permitting fluid flow through the passageway, the solenoid plunger being moveable from its seated to its unseated position in response to energization of a solenoid coil, said method comprising the steps of providing said fluid control valve with adjusting means for regulating the clearance between the valve seat and the solenoid plunger when the solenoid plunger is in its unseated position and including one part of the housing and another part of the housing adjustable relative to the one part, connecting the fluid valve to a source of fluid under pressure, supplying fluid under pressure at a predetermined pressure from said supply source to the fluid control valve, energizing the solenoid coil with the minimum electrical power required to move the solenoid plunger to and maintain it in its unseated position, monitoring the flow of fluid through the fluid control valve, manipulating the adjusting means to attain the minimum clearance between the solenoid plunger and valve seat permitting maximum fluid flow through the fluid control valve at the predetermined fluid pressure, and disabling the adjusting means by staking the one part of the housing in fixed position relative to the other part of the housing after the step of manipulating the adjusting means has been performed.

5,289,842

VIBRATION-RESISTANT IMPACT VALVE FOR VAPOR RECOVERY LINE

Sergio M. Bravo, 2872 Tigertail Dr., Los Alamitos, Calif. 90720

Filed Feb. 12, 1993, Ser. No. 17,654
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **16 Claims**



1. In an apparatus for recovering flammable vapors, the apparatus including a conduit having a vapor inlet and means for sucking the vapor through the conduit, the improvement comprising a valve disposed along the conduit, the valve comprising a valve body, a valve housing threaded to the valve body, a valve plug disposed in the housing, means for biasing the valve plug towards a first position for closing the valve to vapors, and plunger means disposed in the valve body for normally holding the valve plug in a second position in which the valve in open to vapors, the valve body having means for defining a weakened portion for breaking in response to stress more readily than the valve housing and other portions of the valve body, wherein the plunger means and valve plug have mating surfaces which comprise means for securely seating the plunger in the valve plug so that the plunger will only be dislodged from the valve plug in response to breakage of the valve body, wherein the plunger means is formed unitarily with the valve body.

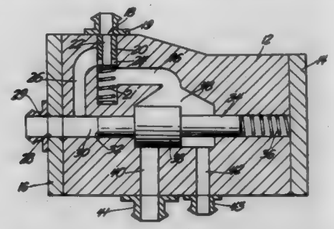
5,289,843

HYDRAULIC SAFETY VALVE

Roger R. Smith, 7261 Lyons Rd., Imlay City, Mich. 48444

Filed Jun. 7, 1993, Ser. No. 703,844
Int. Cl.[5] F16K *17/00*
U.S. Cl. 137—115 **2 Claims**

1. A hydraulic safety valve for inclusion in a hydraulic system having a source of pressurized fluid transmitted to a hydraulically operated device by means of hydraulic line, the valve being adapted to cut or divert the flow of pressurized fluid when a sudden rupture occurs in the hydraulic system, the safety valve comprising: a valve body having an inlet port, first and second outlet ports and a sump port, the first outlet port being fluidly connected to the inlet port by a first passageway and the second outlet port and the sump port being fluidly connected to the inlet port by a second passageway the sump port and second outlet port being joined to a common chamber, a first valve member disposed at the inlet port and being adapted to direct fluid flow from the inlet port to either the first or the second passageway and a second valve member disposed within the common chamber; biasing means associated with the second valve member to bias the second valve member into a position which blocks the second outlet port when the valve is in the start-up mode and blocking the sump port when the valve is in the normal operating position the first valve directing the flow of pressurized fluid into the first passageway upon start-up to force the second valve member to the open position for operation.

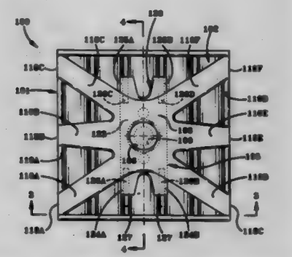


5,289,844

CLAMPING ASSEMBLY FOR VEHICULAR TRANSMISSION OPERATING CONTROL VALVES

Paul D. Stevenson, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1993, Ser. No. 37,213
Int. Cl.[5] F16B *1/00*
U.S. Cl. 137—343 **9 Claims**



1. A clamping assembly for securing a valve body to a transmission case, said clamping assembly comprising:

at least one biasing member having a hub portion;

said hub portion having a generally centrally disposed aperture;

a plurality of spring arms extending radially outwardly from said hub portion;

said spring arms having distal ends adapted to engage the valve body;

a spacer means interposed between said hub portion and the valve body; and

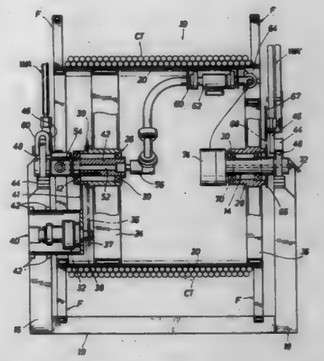
a fastener receivable through said aperture and through the valve body to be anchored in the transmission case, thereby securing the valve body in position.

5,289,845

OILFIELD TUBING REEL AND REEL ASSEMBLY

David L. Sipos, Friendswood, and Duane M. Kuske, The Woodlands, both of Tex., assignors to Bowen Tools, Houston, Tex.

Filed Nov. 12, 1992, Ser. No. 974,698
Int. Cl.[5] A62C *5/00*
U.S. Cl. 137—355.27 **12 Claims**



1. A coiled tubing reel and associated support structure apparatus comprising:

a reel for mounting and retaining coiled tubing, said reel including

an outer hub for mounting coiled tubing, said outer hub having an opening therethrough for passing fluid and electrical connections to the interior of coiled tubing mounted thereon;

a pair of opposing flanges mounted about the outer hub for retaining coiled tubing on said outer hub;

a pair of spaced apart, axially aligned, inner hubs secured within said outer hub in spaced, coaxial relation to said outer hub, each inner hub sized to contain a middle portion of a spindle stub;

a spindle stub mounted within each of said inner hubs, each stub having an outer end, middle and inner end portion;

bearings mounted within each of said inner hubs for rotation of each of said inner hubs about said middle portion of each spindle stub;

a support structure for rotatably supporting said coiled tubing reel including

a base;

a first support pedestal supported by said base;

a first spindle stub clamp for releasably securing the outer end portion of the first one of said spindle stubs in a fixed position atop said first pedestal;

a second support pedestal supported by said base, in spaced relation to said first support pedestal;

a second spindle stub clamp for releasably securing the outer end portion of the second one of said spindle stubs atop said second pedestal such that, when secured to their respective pedestals by way of their respective spindle stub clamps, the first and second spindle stubs are axially aligned with one another; wherein

said first spindle stub includes a fluid passageway therethrough and the outer end of said first stub is adapted to connect said passageway with a fluid source and the inner end of said first stub is adapted for attachment of a rotary fluid connector within the space between said inner and outer hubs to provide a rotatable fluid connecting passageway between said stationary fluid passageway and said outer hub opening.

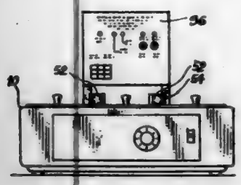
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,846

AUTOMATIC LIQUID REPLENISHING SYSTEM

Tariq J. Elias, 7358 Margerum Ave., San Diego, Calif. 92120, and Hani E. Chika, 4521 Park Blvd., San Diego, Calif. 92116

Filed Dec. 26, 1991, Ser. No. 813,481
Int. Cl.[5] F16K *21/18, 37/00;* B67D *5/12*
U.S. Cl. 137—392 15 Claims



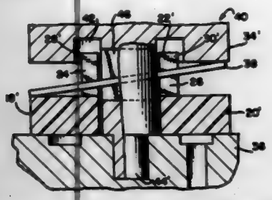
1. An automatic liquid replenishing system for distributing liquid on demand to any one reservoir of an array of reservoirs as needed such that the liquid level in each of said reservoirs is maintained despite evaporation and spillage, comprising:
(a) a source of liquid;
(b) a supply valve and a liquid distributor connected to said source through said supply valve, said distributor including a common filler pipe which is physically movable to selectively communicate with any one of said reservoirs to selectively deliver liquid to same;
(c) frame means maintaining said reservoirs and liquid distributor in a substantially stable and fixed predetermined configuration such that at least a portion of each reservoir is disposed in a common predetermined path and said filler pipe is movable along said path to selectively introduce liquid into selected ones of said reservoirs;
(d) motive means for moving said distributor with said filler pipe along said path into said selective communication with any one of said reservoirs; and
(e) a liquid level sensor system operative to sense the individual liquid level in each of said reservoirs, said sensor system being operatively connected to said motive means to cause said motive means to move said distributor and said filler pipe along said part into fluid communication with a selective one of said at least a portion of of said reservoirs for introducing liquid therein when said liquid level has fallen below a predetermined level.

5,289,847

PLATE-TYPE VALVE FOR A PRESSURED-FLUID MACHINE, AND A VALVING PLATE ASSEMBLY THEREFOR

Thomas D. O'Leary, and Terry J. Ott, both of Painted Post, N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Nov. 23, 1992, Ser. No. 980,031
Int. Cl.[5] F16K *15/12*
U.S. Cl. 137—543.15 9 Claims



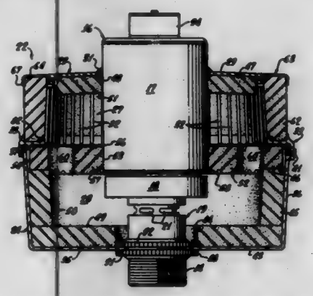
1. A plate-type valve for a pressured-fluid machine such as a gas compressor, comprising:
a valve seat;
a valve guard;
a valving plate interposed between said guard and said seat for movement therebetween;
a spring interposed between said plate and said guard for biasing said plate into engagement with said seat; and
bushing means, integral with said plate, said bushing having a pair of grooves formed therein for (a) guiding said spring, (b) nesting said spring within said grooves and across said valving plate, (c) preventing relative rotation between said plate and said spring, and between said bushing means and said spring for preventing undue wear therebetween and said valve guard having means for engaging and guiding said valving plate and said bushing for properly aligning said valving plate relative to said valve seat.

5,289,848

COMBINATION NOISE SUPPRESSOR AND AIR FILTER AND MILKING MACHINE PRESSURE REGULATOR

William Jenisch, Jr., Fullerton, Calif., assignor to L. J. Engineering, Inc., Huntington Beach, Calif.

Filed Dec. 28, 1992, Ser. No. 997,225
Int. Cl.[5] A01J *5/04*
U.S. Cl. 137—543 18 Claims



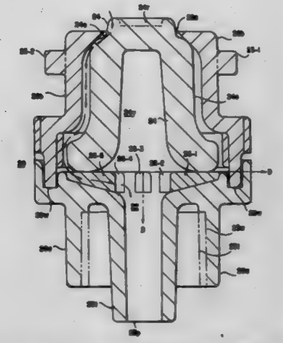
1. A combination noise suppressor, air filter, and pressure regulator for milking machine systems, which comprises:
a pressure regulator for milking machine systems,
said pressure regulator comprising an air dome, a body connected to said air dome, and valve and port means in said body to admit air into said pressure regulator in order to maintain substantially constant the pressure in the associated milking machine,
a combination air filter and noise suppressor,
said combination air filter and noise suppressor comprising a housing mounted around at least a large portion of said air dome and communicating with said valve and port means,
said housing having an opening therein that receives said air dome, said opening being defined by an edge near said air dome,
said combination air filter and noise suppressor further comprising inlet-opening means into said housing and an air filter to filter ambient air that enters said housing through said inlet-opening means and thereafter enters said pressure regulator through said valve and port means,
said combination air filter and noise suppressor further comprises noise absorbing and deadening means mounted in said housing to suppress noise generated at said valve and port means as said air enters therethrough into said pressure regulator.

5,289,849

CONTROL OF FLUID FLOW

Joseph R. Paradis, 17 Hickory Forest Dr., Hilton Head Island, S.C. 29926

Continuation-in-part of Ser. No. 530,097, May 29, 1990, Pat. No. 5,070,905, and a continuation-in-part of Ser. No. 804,811, Dec. 9, 1991, Pat. No. 5,190,067. This application Apr. 20, 1992, Ser. No. 871,190
Int. Cl.[5] A61M *5/14;* F16K *15/14*
U.S. Cl. 137—606 18 Claims



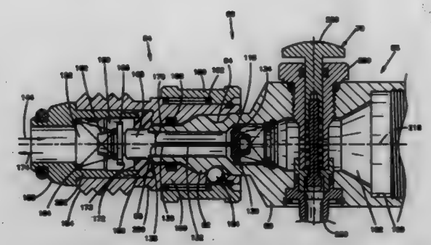
1. A flow control device for the infusion of fluids comprising an inlet for the flow of fluid;
an outlet for said inlet and disposed with respect thereto to serve as a conduit for flow from said inlet; and
movable flow controlling means sealing said inlet and having a pierceable central portion for controlling flow by the extent to which the central portion of said movable means is moved away from said inlet; wherein
a first channel for the flow of fluid extends between said inlet and said outlet;
a branch channel is connected to said first channel beyond said moveable means to serve as a conduit for at least a portion of the flow into said first channel; and
a member is positioned at the convergence of the branch and first channels for controlling the flow from said branch channel.

5,289,850

FLUID COUPLING HAVING VENT VALVE ASSEMBLY

Charles R. Sarson, Novelty; Thomas D. Karcher, Rocky River, and John M. Westos, Columbia Station, all of Ohio, assignors to Tuthill Corporation, Berea, Ohio

Filed Jun. 8, 1992, Ser. No. 894,268
Int. Cl.[5] F16L *55/07*
U.S. Cl. 137—614 48 Claims



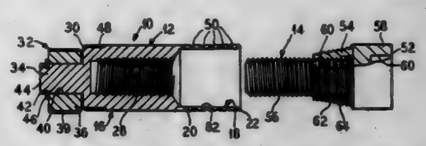
1. A coupling for use in connecting a pair of conduits in fluid communication, said coupling comprising a plug assembly having a fluid flow passage therethrough and being adapted to be connected with one of the conduits and a socket assembly having a fluid flow passage therethrough and being adapted to be connected with another of the conduits, a first one of said plug and socket assemblies including vent valve means for venting of fluid pressure in said first one of said assemblies, said vent valve means including a valve member movable between an open position enabling fluid to flow through a vent valve outlet and a closed position blocking fluid flow through the vent valve outlet, and manually actuatable means for moving said valve member from the closed position to the open position to enable fluid to flow through the vent valve outlet, said first one of said assemblies including a second valve member disposed in the fluid flow passage in said first one of said assemblies, biasing means for urging said second valve member toward a first position blocking fluid flow through the fluid flow passage in said first one of said assemblies, said second valve member being movable from the first position to a second position enabling fluid to flow through the fluid flow passage in said first one of said assemblies, and means connected with said second valve member for engaging a second one of said plug and socket assemblies to move said second valve member from the first position to the second position against the influence of said biasing means to enable fluid to flow through the fluid flow passage in said first one of said assemblies.

5,289,851

PLUG FOR HEAT EXCHANGER TUBES

Glenn F. Jorgensen, Ridgewood, N.J., assignor to JNT Technical Services Inc., Little Ferry, N.J.

Filed Apr. 8, 1993, Ser. No. 44,160
Int. Cl.[5] F16L *55/12*
U.S. Cl. 138—89 20 Claims



1. A tube plug for sealing the end of a tube, comprising:
a cylindrical housing member sized for insertion within the end portion of said tube,
said housing member having a longitudinal blind bore comprising a smooth portion communicating with a threaded portion,
locking means mounted on said housing member for locking said inserted housing member against rotation relative to said tube, and
an insert member having a threaded end portion received within the threaded portion of said bore, an enlarged portion positioned to be drawn within said smooth portion of said bore in response to rotation of said insert member threaded end portion in said bore threaded portion, and a tapered portion between said threaded end portion and said enlarged portion,
said enlarged portion having a recess therein for receiving a driving tool and for transmitting torque at levels greater than 450 inch pounds, and
said tapered portion and said enlarged portion being sized to cause said smooth portion of said bore to expand, thereby providing a seal between said housing member and said tube.

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5,289,852

REED FOR TEXTILE MACHINES

Lorenzo P. Migliorini, Bracciolini; Pier C. Molta, Prato, and Giorgio Torelli, Pisa, all of Italy, assignors to Tecnotessile Centro di Richerche S.r.l., Florence, Italy

Filed Oct. 6, 1992, Ser. No. 957,523
Int. Cl.[5] D03D *49/62*
U.S. Cl. 139—192 16 Claims



1. A reed for textile machines, comprising: a base crosspiece, a plurality of vertical teeth with a lower end fastened to said base crosspiece, said teeth having an upper free end adapted for engagement with a mechanical selection means and having a profile with one or more transversely extending recesses located near said free end, said profile being staggered heightwise between adjacent teeth, said one or more recesses having a depth for contact with an adjacent tooth over the extension of said recess equal to a spacing between adjacent teeth.

5,289,853

APPARATUS FOR PRODUCING ALL METAL SPRING CUSHIONS

Lothar Schaefer, Bierenbach, Fed. Rep. of Germany, assignor to Stop-choc Schwingungstechnik GmbH & Co KG, Renningen, Fed. Rep. of Germany

PCT No. PCT/EP92/00564, § 371 Date Sep. 23, 1992, § 102(e) Date Sep. 23, 1992, PCT Pub. No. WO92/16321, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 14, 1992, Ser. No. 927,286
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 4109738
Int. Cl.[5] B21F *33/00*
U.S. Cl. 140—71 C 15 Claims

1. Apparatus for producing all-metal spring cushions from knitted pieces produced from metal wire, characterised by

a) a winding station (12), which comprises:

aa) a winding mandrel (26) provided with entrainment means (32) and connected to a winding drive (24),

ab) at least one open winding sleeve (14), which is located coaxially with respect to the winding mandrel (26) and in the peripheral wall of which there is provided a supply window (36) for the knitted piece (40) to be wound,

ac) a fixing device (64) for fixing the end of the knitted piece to the knitted roll (76), and

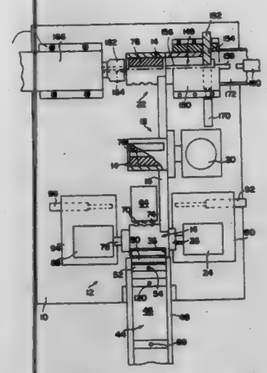
ad) stripping means (90, 92) for stripping a finished knitted roll (76) from the winding mandrel (26);

b) a pressing station (22), which comprises:

ba) a pressing sleeve (148) with a peripheral wall free from interruptions, whereof the inner diameter corresponds substantially to the inner diameter of the winding sleeve (14) and with which a sleeve bottom member (152) is associated,

bb) a central pressing mandrel (156), whereof the diameter corresponds essentially to the diameter of the winding mandrel (26),

bc) a press die (162) with a central bore (164) able to move over the pressing mandrel (156) and



bd) ejection means (162) for ejecting a spring cushion (168) obtained by compressing a knitted roll (76), from the pressing sleeve (148); and by

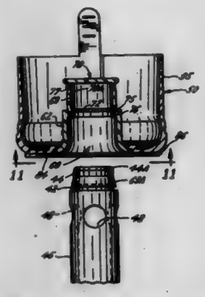
c) means (18, 174) for axially aligning the winding sleeve (14) and pressing sleeve (148).

5,289,854

TWO-PIECE HYGIENIC CAP AND OPENING PROBE OR FEED TUBE

Henry E. Baker; John B. Baker; David H. Baker, all of Litchfield; Peter K. Baker, Bethlehem, all of Conn.; Edward H. Donselman, Freeport, and Ronald C. Katz, Willowbrook, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Continuation of Ser. No. 684,597, Apr. 21, 1991, Pat. No. 5,222,530, which is a continuation-in-part of Ser. No. 257,627, Oct. 14, 1988, abandoned. This application Mar. 6, 1993, Ser. No. 58,638
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—18 22 Claims



1. A hygienic liquid dispensing system comprising, in combination, a cap adapted to close the discharge opening in the neck of a substantially rigid drinking water or other potable liquid container, said cap having a lid portion adapted to overlie and sealingly close said discharge opening and an annular skirt portion extending axially away from said lid portion and adapted to surround and engage an outer axial portion of said container neck, said lid portion having an axially inwardly extending recess formed therein, said recess including a first annular sleeve portion located generally centrally in said lid portion and integrally connected thereto and a second annular plug and recess sealing portion connected to the inner end of said sleeve portion and extending axially inwardly therefrom, said plug and recess sealing portion having a substantially centrally disposed internal cavity with a closed inner end for normally closing said recess,

an upstanding feed tube dimensioned for forcible insertion into said recess for separating said plug and recess sealing portion from said sleeve portion to permit the discharge of liquid from and admission of replacement air into said substantially rigid liquid dispensing container when inverted,

said centrally disposed cavity of said plug and recess sealing portion being formed with internal gripping means therein for temporarily securing said plug and recess sealing portion on said upstanding feed tube when said feed tube is inserted in said recess and said plug and recess sealing portion is separated from said sleeve portion by said upstanding feed tube,

said plug and recess sealing portion being formed with an annular surface including sealing means dimensioned for engaging complementary sleeve sealing means formed on an annular surface of said sleeve portion for resealing said recess when said plug and recess sealing portion is drawn into interfitting engagement with said sleeve portion as said upstanding feed tube is withdrawn from said recess,

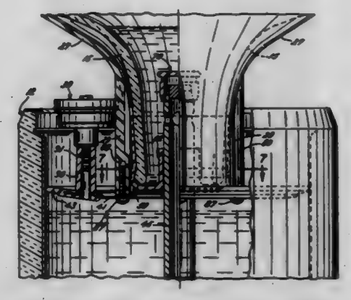
and including a protective seal disposed to cover said recess to prevent contaminants from entering therein and also serving to indicate if said cap has been tampered with prior to insertion of said feed tube into said recess.

5,289,855

LIQUID CONTAINER SUPPORT AND PROBE-TYPE HYGIENIC LIQUID DISPENSING SYSTEM

Henry E. Baker; John B. Baker; David H. Baker, all of Litchfield; Peter K. Baker, Bethlehem, all of Conn.; Edward H. Donselman, Freeport, and Ronald C. Katz, Willowbrook, both of Ill., assignors to Elkay Manufacturing Co., Oak Brook, Ill.

Continuation of Ser. No. 898,570, Jun. 15, 1992, Pat. No. 5,222,531, which is a continuation of Ser. No. 684,642, Apr. 12, 1991, Pat. No. 5,121,778, which is a continuation-in-part of Ser. No. 257,627, Oct. 14, 1988, abandoned. This application May 6, 1993, Ser. No. 58,639
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—18 3 Claims



1. A liquid container support and hygienic delivery system for dispensing drinking water or other potable liquid to a predetermined maximum liquid level in a dischargeable reservoir open at its upper end and housed within a cabinet from an inverted unpressurized container having an internal liquid confining surface defined by a substantially rigid, generally cylindrical body with a radially inwardly directed downwardly sloping shoulder portion merging into a generally cylindrical depending neck defining an opening closed by a coaxial cap circumferentially surrounding at least an outer axial portion of said neck and having an internal recess therein including a hollow tubular sleeve portion and a plug and recess sealing portion connected thereto and defining a closed end with a central cavity having internal gripping means therein comprising, in combination,

removable mounting means adapted to fit on the upper portion of said cabinet and defining an annular ring for supporting said sloping shoulder portion of said inverted container thereon, said removable mounting means also defining a tapered entry portion having a substantially closed inner wall extending downwardly and inwardly from said annular ring for receiving said depending container neck and said coaxial cap therein, said entry portion having a substantially closed bottom end and a length greater than that of said depending container neck and said coaxial cap when said inverted container shoulder portion is supported on said annular ring,

sealing means carried by said removable mounting means for sealingly closing said open upper end of said reservoir,

an upstanding feed probe dimensioned to penetrate into said hollow tubular sleeve portion of said coaxial cap and said container neck to provide a hygienic flow path for delivering liquid from said inverted unpressurized container into said reservoir to said predetermined maximum liquid level and for admitting air from said reservoir above said liquid level into said container to displace the liquid delivered therefrom, said feed probe having upper and lower end portions,

means carried by said removable mounting means for rigidly supporting said upstanding feed probe with said upper end projecting upwardly from said bottom end of said entry portion and means depending downwardly from said bottom end of said entry portion of said removable mounting means into said reservoir to define said predetermined maximum liquid level,

said upper end of said feed probe having a length greater than said recess in said coaxial cap and a tip portion disposed and dimensioned for entry into said recess to axially separate said cap plug and recess sealing portion from said hollow tubular sleeve portion when said container is inverted and lowered onto said mounting means with said sloping shoulder portion of said inverted container supported by said annular ring in order to permit the discharge of liquid from said container into said reservoir to said predetermined maximum liquid level and admission of air from said reservoir above said liquid and into said container,

said tip portion of said upstanding feed probe being formed with complementary external gripping means disposed and dimensioned for securing said plug and recess sealing portion on said feed probe and for holding said plug and recess sealing portion free of contact with said internal liquid confining surface of said inverted container when said feed probe is inserted in said recess of said coaxial cap to axially separate said plug and recess sealing portion from said hollow tubular sleeve portion when said sloping shoulder portion of said inverted container is supported on said annular ring of said mounting means,

and said upstanding feed probe being dimensioned and disposed to draw said plug and recess sealing portion into interfitting sealing relation with said hollow tubular sleeve portion when said inverted container is lifted off said support ring and said feed probe is withdrawn from said recess of said coaxial cap.

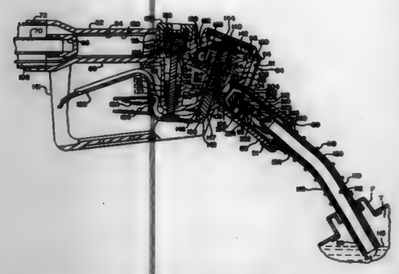
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,856

MULTI-PURPOSE NOZZLE WITH LIQUID PICKUP

Dennis J. Strock, Woodbridge, and Harry B. Hartman, Sugar Grove, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 4, 1991, Ser. No. 664,327
Int. Cl.[5] B67D *5/04*
U.S. Cl. 141—59 3 Claims



1. A vapor recovery nozzle, comprising:

a housing providing a body and having a tubular handle containing an inlet conduit with a fuel inlet connected to and communicating with a fuel hose, said body having a spout-receiving socket, a venturi sleeve-receiving chamber, a flow control valve-receiving compartment positioned adjacent said handle, an automatic shutoff valve-receiving compartment providing a vacuum chamber positioned between said venturi sleeve-receiving chamber and said automatic shutoff valve-receiving compartment, and said venturi-sleeve receiving chamber defining orifices providing a condensate venturi port and an overfill sensing venturi port communicating with said vacuum chamber;

an elongated condensate liquid pickup tube connected to, communicating with and extending from said condensate venturi port of said venturi-sleeve receiving chamber through said inlet conduit into a vapor return hose for substantially removing condensed gasoline vapors forming condensate collecting in the vapor return hose;

an elongated inner spout providing a fuel conduit and having an outer tip defining a fuel outlet for discharging gasoline into a filler pipe of a motor vehicle tank during fueling;

an outer spout assembly extending into and engaging said spout-receiving socket, said outer spout assembly comprising an outer spout providing a vapor return conduit and defining apertures providing a vapor inlet spaced from said fuel outlet for withdrawing, removing, and returning a substantial amount of gasoline vapors emitted during said fueling, said vapor return conduit angularly surrounding said fuel conduit and having coaxial portions coaxially positioned about said vapor return conduit, said vapor return conduit being shorter than said fuel conduit and being spaced outwardly from and cooperating with said fuel conduit to define an annular vapor return passageway in communication with said vapor return hose;

an elongated liquid sensing tube positioned in said annular vapor return passageway and extending from adjacent said vapor inlet into said spout-receiving socket, said liquid sensing tube communicating with said overfill sensing venturi port in said ventufi-sleeve receiving chamber for sensing the presence of a full condition of liquid gasoline in the filler pipe of the motor vehicle tank;

a manually operable lever positioned below said handle for manually controlling the flow of gasoline being discharged through said fuel conduit, said lever being moveable from a downward closed position to an upward position, and a lever guard positioned partially about said lever and connected to said handle and body of said housing;

a flow control valve assembly disposed in said flow control valve-receiving compartment and being actuated by said lever for regulating the flow of gasoline into said fuel conduit, said flow control valve assembly having a flow control poppet valve, an elongated valve stem engaging said lever, and a flow control valve-compression spring for urging said lever and poppet valve in a normally closed position blocking the flow of gasoline;

an automatic shutoff valve assembly disposed in said automatic shutoff valve-receiving compartment, said automatic shutoff valve assembly having a diaphragm positioned adjacent said vacuum chamber and communicating with said overfill sensing venturi port for automatically shutting off the flow of gasoline to said fuel conduit in said full condition, a compression diaphragm-spring positioned above said diaphragm for exerting a spring force against said diaphragm, a plunger positioned below said diaphragm and having a lower end pivotally connected to said lever, a reciprocatable latch pin slidably positioned in said plunger, a tapered head connected to and positioned above said pin, balls seated in said plunger for engaging said head, and a plunger spring for urging said plunger upwardly; and

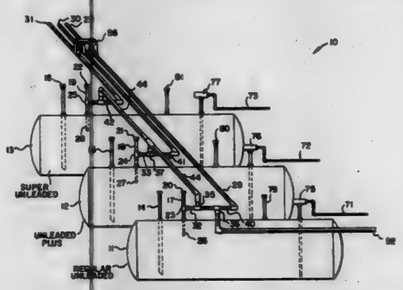
a venturi sleeve assembly positioned in said venturi sleeve-receiving chamber, said venturi sleeve assembly comprising an annular venturi sleeve having a valve seat disposed adjacent said venturi ports, a venturi check valve with a frustroconical throat plug and a plug stem, a venturi check valve coil spring disposed about said plug stem for urging said throat plug in a normally closed seated position against said valve seat for blocking the flow of gasoline into said fuel conduit during said full condition and when said latch is in a closed position, said throat plug being movable to an open forward position to permit the discharge of gasoline and condensate from said condensate pickup tube into said fuel conduit during fueling and being spaced from and cooperating with said venturi sleeve to form a venturi throat communicating with said vapor passageway for return passage of gasoline vapors to said vapor return hose.

5,289,857

VAPOR RECOVERY SYSTEM

Charles E. Pyles, 1317 Wilson Rd., Waldorf, Md. 20602

Filed Nov. 27, 1991, Ser. No. 798,817
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—59 15 Claims



1. A vapor recovery system for a service station for recovering volatile hydrocarbon vapors comprising:

a) a plurality of underground hydrocarbon storage tanks, each tank having:

i) first means for filling the hydrocarbon storage tank with a volatile hydrocarbon fluid,

ii) second means for recovering hydrocarbon vapor displaced and generated during the filling of the hydrocarbon storage tank, and

iii) third means for venting hydrocarbon vapor to the atmosphere which means is connected directly, by a fitting, to and in fluid communication with the second means; and

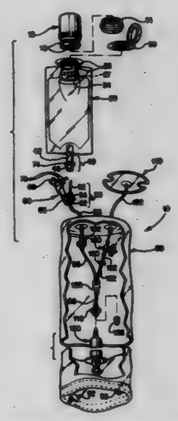
b) an underground primary manifold connected to and in fluid communication with each said third means.

5,289,858

SYSTEM FOR ACCOMMODATING WITHDRAWAL OF LIQUID FROM A BULK SUPPLY

Richard W. Grabenkort, Barrington, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 18, 1991, Ser. No. 809,592
Int. Cl.[5] A61M *5/00*; B65D *3/04*
U.S. Cl. 141—97 12 Claims



1. A protection system adopted for use with a container from which a hazardous liquid can be removed, said system comprising:

conduit means for being connected to, and extending from, said container to define a flow path for said liquid from said container to a discharge location exterior of the container; and

a flexible barrier that is impervious to said liquid and that is penetrated by, and sealed to, said conduit means for accommodating (1) an initial arrangement in a retracted orientation permitting access to, and manipulation of, at least a portion of said conduit means and container, and (2) a subsequent arrangement, in an extended orientation enveloping said portion of said conduit means and the connected container.

5,289,859

VARIABLE WIDTH STUMP GRINDER

Jacob W. Minton, Jr., Rte. 6, Box 119C, Mountain Home, Ark. 72653, and J. T. Barr, 1800 McArthur, Jonesboro, Ark. 72401

Filed May 11, 1993, Ser. No. 59,302
Int. Cl.[5] A01G *23/06*
U.S. Cl. 144—2 N 20 Claims

7. A narrow profile stump grinder comprising:

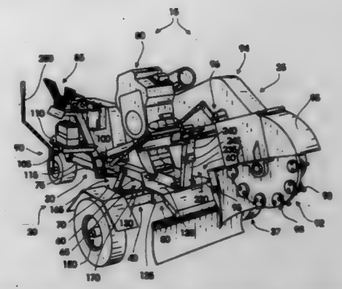
a stump treatment tool adapted to forcibly grind a stump;

a rigid elongated frame comprising a terminal header supporting said tool, a front tongue adapted to be coupled to a tow vehicle, a pair of sides, and a longitudinal axis extending between said header and said tongue;

a wheel associated with each side of said frame for supporting said stump grinder;

retractable struts oriented generally perpendicularly to said axis extending between each wheel and said header;

a housing receiving said struts;



a linkage system that deploys or retracts said struts to widen or narrow the stump grinder; and,

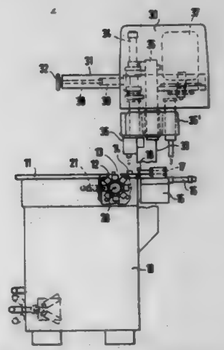
a cylinder system secured to said frame for selectively actuating said linkage system.

5,289,860

BORING MACHINE, PARTICULARLY FOR WOODWORKING

Siegfried Keusch, Plochingen, Fed. Rep. of Germany, assignor to REICH Spezialmaschinen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 940,100
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129743.1
Int. Cl.[5] B27C *3/00*
U.S. Cl. 144—92 6 Claims



1. A boring machine, adapted for boring rows of holes and structural bores in flat workpieces such as cabinet sidewalls, cabinet doors, and the like, comprising:

(a) a machine frame;

(b) a workpiece holder carried by the machine frame;

(c) an adjustable multi-spindle boring assembly carried by the machine frame and positioned over the workpiece holder;

(d) a fixed, longitudinally oriented workpiece stop mounted on the back of the workpiece holder, and including a stop fixture comprising a plurality of stop rails aligned parallel to and projecting laterally at the longitudinal sides of the workpiece holder;

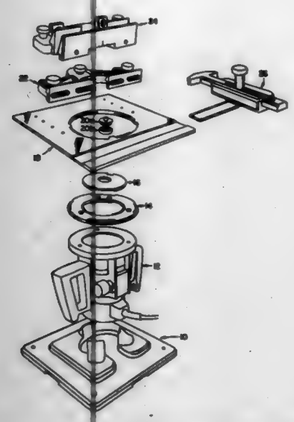
(e) a plurality adjustable and lockable stop receivers for being positioned on the stop rails, the stop receivers including spring-loaded stop plates which project at the surface of the workpiece holder and are moveable between workpiece holding and workpiece release positions,
(f) a plurality of stop strips with receiving fixtures for said stop receivers being combined into a stop roller with a like plurality of angles in cross-section whereby the stop roller can be brought under the workpiece holder in a like plurality of angular positions; and
(g) said stop plates of the stop rail facing an opening in the workpiece holder and projecting through said opening and protruding at the surface of the workpiece holder and assuming a defined position relative to the workpiece holder in the axial direction.

5,289,861

MULTI-PURPOSE QUICK-CHANGE WORK SURFACE PLATFORM FOR USE WITH POWER TOOLS

David G. Hedrick, 3636 Penn Ave., N., Minneapolis, Minn. 55412

Filed Mar. 23, 1992, Ser. No. 855,233
Int. Cl.[5] B27C *5/02*
U.S. Cl. 144—134 A **15 Claims**



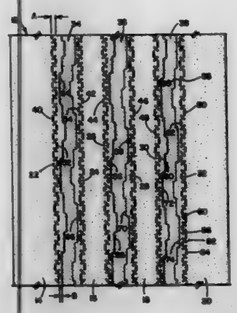
1. A multi-purpose quick-change work surface platform for use with a power tool comprising:
a substantially flat planar table platform having an opening through a work surface which opening has projecting from a peripheral edge a plurality of tabs, wherein each tab includes a raised end stop, wherein each tab protrudes into said opening on a plane parallel to but recessed below the work surface, and wherein adjacent tabs are separated by spaces; and
a substantially flat planar tool base plate which attaches to a power tool and mounts within said table platform opening, wherein said tool base plate includes an opening for a tool member which protrudes from the power tool, wherein said tool base plate includes a plurality of circumferential recepticle slots recessed into a peripheral edge of said tool base plate, wherein a work surface of said tool base plate includes a plurality of cutout openings which communicate with said recepticle slots and are such that each of said tabs mounts within one of said cutout openings and is received into one of said recepticle slots upon inserting said tool base plate into the table platform opening and rotating the tool base plate, whereby said work surfaces are made coplanar and the power tool is secured to said table platform.

5,289,862

TREAD FOR A RIBBED PNEUMATIC TIRE HAVING HIGH DENSITY SIPING ZONES LOCATED IN THE RIB REGIONS

Daniel E. Schuster, North Royalton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 672,244, Mar. 20, 1991. This application Jul. 29, 1992, Ser. No. 922,368
Int. Cl.[5] B60C *11/12*
U.S. Cl. 152—209 R **12 Claims**



1. A tread for a ribbed pneumatic tire, the tire tread when on the tire casing comprising at least two circumferentially extending shoulder ribs and at least one center rib wherein each center rib contains two high density siping zones, wherein
(a) each high density siping zone is circumferentially extending;
(b) each high density siping zone has an inside edge and an outside edge with a total width between said inside edge and outside edge ranging from about 1.4% to about 4.5% of the overall tread width and said inside edge and outside edge are straight edged and parallel to each other;
(c) said outside edge of each high intensity siping zone is located from the nearest rib edge by a distance ranging from about 0.2% to about 1.9% of the overall tread width;
(d) from about 50% to about 80% of the surface area in each high density siping zone is ground contacting with the remaining percent of area being siping;
(e) no more than 50% of the siping within each high density siping zone is arranged in the circumferential direction; and
(f) at least 75% of all sipes within the high density siping zone is arranged so that their end portions are laterally aligned with, or overlap in the circumferential direction with, an end portion of another sipe with the high density siping zone.

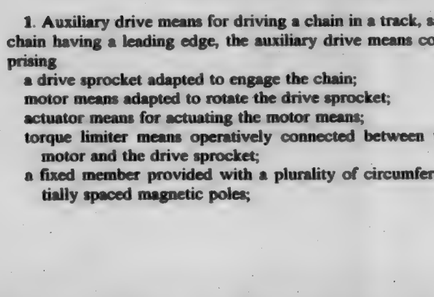
5,289,863

APPARATUS FOR SUSPENDING LAMELLAR SUN-BLINDS OR THE LIKE

Siegfried Joachim Schön, Meer, Belgium, assignor to Schon B.V., Breda, Netherlands

Continuation of Ser. No. 768,922, Oct. 9, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,539
Claims priority, application Netherlands, Dec. 13, 1989, 8903061
Int. Cl.[5] E06B *9/36*
U.S. Cl. 160—168.1 **12 Claims**

1. Apparatus for suspending lamellar sun-blinds or the like, which apparatus comprises:
a rail having a rectangular profile, comprising a top wall, two opposing side walls and a bottom wall provided with a longitudinal slit, said rail further comprising means defining a guideway, said guideway defining means extending longitudinally along one of said side walls and extending toward the opposing sidewall such that a chamber is formed between said guideway defining means, said bottom wall and said one of said side walls;
a number of carriers each having a gear transmission, said carriers being movable along the rail by means of a control means;
a rotatable control rod arranged in and parallel to the rail, said control rod extending through a gear member of the transmission of each carrier;



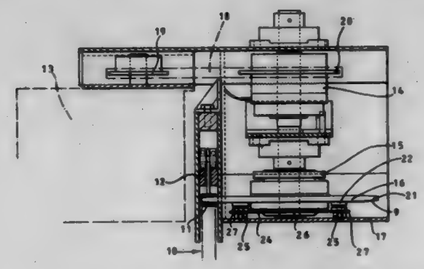
a vertically rotatable spindle supported by each of the carriers and connected to another member of said gear transmission, each said spindle comprising a depending member for receiving said lamellar sun-blind or the like; and
a spacer connected to each of the carriers, wherein each of said spacers is fixed to the side of a respective one of the carriers and the spacers are received in the chamber of the rail when the carriers are pulled against each other.

5,289,864

SHUTTER DRIVE

Raymond Bouchier, Wibsey, United Kingdom, assignor to Bolton Brady Ltd., Bolton, United Kingdom

Filed Jan. 29, 1993, Ser. No. 11,379
Claims priority, application United Kingdom, Jan. 30, 1992, 9202001
Int. Cl.[5] E05F *15/00*
U.S. Cl. 160—188 **5 Claims**



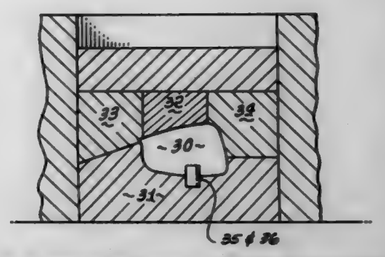
1. Auxiliary drive means for driving a chain in a track, said chain having a leading edge, the auxiliary drive means comprising
a drive sprocket adapted to engage the chain;
motor means adapted to rotate the drive sprocket;
actuator means for actuating the motor means;
torque limiter means operatively connected between the motor and the drive sprocket;
a fixed member provided with a plurality of circumferentially spaced magnetic poles;
a corresponding plurality of similarly spaced magnetic poles being provided on the drive sprocket;
the magnetic poles on the fixed member and on the drive sprocket being opposed in polarity when the drive sprocket is in a correct position to engage the leading edge of the chain.

5,289,865

ONE-BODY PRECISION CAST METAL WOOD

Donald J. C. Sun, 4521 Ocean Valley La., San Diego, Calif. 92130

Continuation of Ser. No. 844,757, Mar. 2, 1992, Pat. No. 5,219,408. This application May 17, 1993, Ser. No. 62,791
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] B22C *9/10*
U.S. Cl. 164—76.1 **7 Claims**



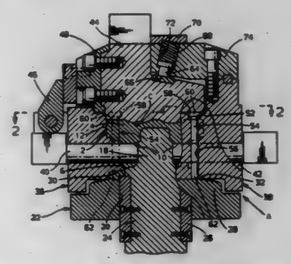
1. In the method of making a golf club head comprising a shell having a ball striking face, a top wall, a bottom wall, a rear wall, and toe and heel walls, the steps that include
a) forming a head core consisting of particles of sand or the like in a binder,
b) and casting molten lightweight metal about said core to form the shell walls,
c) forming multiple ports in said bottom wall by supporting rods to project into the core and by casting said metal about said rods, and removing the rods,
d) removing at last part of the core via one of said ports, and then connecting metal inserts into said shell at said ports.

5,289,866

PISTON MOLD

Clovis L. Parsley, Bedford, and Roland M. Preiser, Bloomington, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1992, Ser. No. 997,046
Int. Cl.[5] B22D *15/02, 33/04*
U.S. Cl. 164—340 **13 Claims**



1. A permanent mold for sequentially casting a series of IC-engine pistons with little weight variation from one piston to the next in said series, said pistons each having a top wall

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and a sidewall depending from said top wall, said mold comprising:

(1) a stationary base;

(2) a first core moveable to and from within said base from a first mold-closed position for shaping the interior of a piston and a second mold-open position for releasing said piston from said mold;

(3) a set of mold segments moveable with respect to said first core so as to converge upon said first core and engage said base in the mold-closed position to define a mold cavity for shaping said sidewall and to diverge from said first core to release said piston from said cavity in the mold-open position; and

(4) a second core moveable into axial alignment with, and opposing relation to, said first core when said mold is in the mold-closed position for closing off said cavity and shaping a firing face on said top wall of said piston; and

(5) spacer means extending between said base and said second core in the position to space said second core a fixed distance from said base so as to consistently cast pistons having substantially the same top wall thickness from one piston to the next.

5,289,867

METHOD OF AND APPARATUS FOR COOLING WITH IMPROVED CONTROL SYSTEM

George W. Barker; Michael G. Crumpler; James M. Rickett, Jr., all of Carroll County, Ga.; James W. Peters, Cannelton, Ind., and Delmas R. Hughey, Davies County, Ky., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 150,216, Jan. 29, 1988, Pat. No. 4,955,216. This application Sep. 14, 1990, Ser. No. 582,291

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] B21B *37/00*; B22D *11/16*

U.S. Cl. 164—455 35 Claims

1. In an apparatus for casting an elongated metal bar in a continuously advancing casting mold, a cast bar cooling control system comprising:

means for supplying a flow of coolant to the casting machine;

a plurality of coolant supply manifolds disposed about the longitudinal axis of the casting mold;

a plurality of nozzles for spraying the coolant onto said casting mold, each of said nozzles being attached to one of said manifolds;

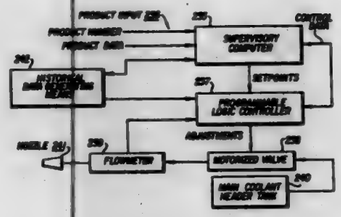
valve means connected between said supplying means and said nozzles for regulating the flow rate of coolant sprayed onto said casting mold;

positioning means coupled to said valve means to positionally control the adjustment of said valve means;

at least one historical data base having stored therein cast bar product specifications and historical process parameters associated with the cast bar product specifications;

computing means i) for communicating control parameters to said positioning means, ii) for receiving cast bar property values, iii) for maintaining said historical data base, and iv) for performing off-line simulations to determine whether process and control parameter changes will bring the cast bar within said cast bar product specifications; and

historical data generating means communicating with said computing means for providing said computing means with information reflecting a value of at least one cast bar property so that said computer means can correctly position said valve means to obtain a desired predetermined value of said cast bar property.



5,289,868

ABSORPTION CHILLER HEATER AND UNIT-TYPE AIR CONDITIONING SYSTEM

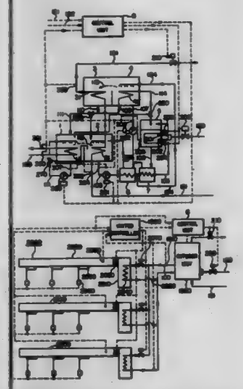
Yasuo Koseki, Hitachiota; Ryuichi Kaji, Kitaibaraki; Hiroaki Yoda, Tsuchiura; Takashi Nakao, Ibaraki; Tomihisa Ohuchi, Tsukuba; Akira Nishiguchi, Ushiku; Daisuke Hisajima, Ibaraki, and Katsuya Ebara, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,431

Claims priority, application Japan, Apr. 10, 1991, 3-104661

Int. Cl.[5] F25B *29/00*, *15/00*

U.S. Cl. 165—14 9 Claims



1. An absorption chiller heater comprising:

a high temperature generator for heating a refrigerant absorbed by a solution to generate refrigerant vapor;

a low temperature generator for concentrating a solution by use of said refrigerant vapor serving as a heat source so as to generate refrigerant vapor;

a condenser for condensing the refrigerant vapor generated in said low temperature generator by use of cooling water;

an evaporator including a conduit for introducing the refrigerant condensed in said condenser and the refrigerant condensed when used as the heat source in said low temperature generator, and a conduit for introducing the high-temperature refrigerant from said high temperature generator, said evaporator effecting heat exchanges of these refrigerants with chilled water and hot water;

an absorber in which the refrigerants evaporated in said evaporator are absorbed by the solution supplied from said high temperature generator so as to dilute the solution and to return said solution to said high temperature generator;

means for supplying said chilled water and hot water toward a load; and

load responsive control means for effecting cooling and heating operation control by predicting a load change in dependence upon signals supplied from the load with respect to a room temperature, an air capacity of a fan, and an opening degree of a valve for regulating a flow rate of the chilled water and hot water.

5,289,869

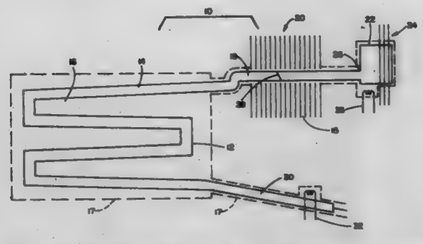
CLOSED LOOP FEEDBACK CONTROL VARIABLE CONDUCTANCE HEAT PIPE

John F. Klein, 51 Madison Park Gardens, Port Washington, N.Y. 11050; Robert L. Kosson, 19 Cambridge Dr., Massapequa, N.Y. 11758, and John A. Quadrini, 37 Woodfield Ave., Northport, N.Y. 11768

Filed Dec. 17, 1992, Ser. No. 993,233

Int. Cl.[5] H01L *23/427*; F28D *15/02*

U.S. Cl. 165—32 2 Claims



1. A temperature adjustable variable conductance heat pipe having a condenser and an evaporator including

(a) a metallic heat sink body onto which electronic components are mounted; and

(b) an internal passage communicating with the condenser, and extending through the heat sink body to an external low point;

a sump connected to the low point, where working fluid collects after being gravity fed from the condenser;

means associated with the sump for causing constant circulation of liquid from the sump through the heat pipe to avoid drying of the passage during transients of externally generated input heat;

a reservoir communicating with the passage in the condenser and containing an inert gas which variably blocks penetration of working fluid in the condenser thereby adjusting the conductance of heat therefrom;

means for thermally sensing temperature variations in the heat sink body due to variations of the input heat; and

means connected between the thermal sensing means and the inert gas reservoir for varying expansion of the gas into the condenser, in inverse relation to the rise in temperature of the evaporator, thereby maintaining a constant and uniform temperature distribution therein.

5,289,870

MOUNTING ASSEMBLY FOR A MODULAR HEAT EXCHANGER

Robert F. Dierbeck, 2707 Hall Rd., Hartford, Wis. 53027

Filed Jan. 21, 1993, Ser. No. 6,785

Int. Cl.[5] F28F *9/04*

U.S. Cl. 165—76 7 Claims

1. A mounting assembly for a replaceable heat exchanger module of the type providing generally axial through-flow of a heat exchanging fluid between opposite inlet and outlet openings, said mounting assembly comprising:

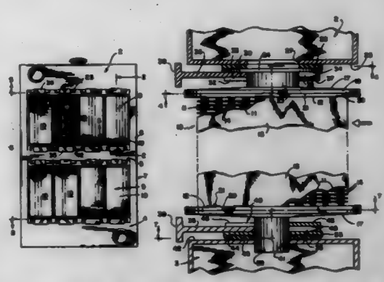
an inlet header and an outlet header having, respectively, a header outlet opening and a header inlet opening;

said module including opposite end chambers for said outlet openings;

one of the inlet and outlet openings on one of said module end chambers defined by an end flange larger than the corresponding one of said header inlet and outlet openings, and the other of said module inlet and outlet openings defined by an axially extending end sleeve adapted to fit into the other of said header inlet and outlet openings;

a first mounting bracket attached to said one header surrounding the header opening therein and defining a slot for receipt of the end flange for attaching the module to said one header, and a first compressible seal positioned between the end flange and the peripheral edge of said one header opening;

a second compressible seal surrounding said end sleeve and



positioned to engage the peripheral edge of said other header opening when said end sleeve is disposed therein;

a second mounting bracket attached to said other header surrounding the header opening therein and defining a slot for receipt of the end sleeve and second compressible seal; and,

a first wedge insertable into the slot between the first mounting bracket and the end flange, and a second wedge insertable into the slot between the second mounting bracket and the second compressible seal for compressing said first and second seals to seal the interface and provide a demountable connection between the module and the headers.

5,289,871

EVAPORATION HEAT EXCHANGER, ESPECIALLY FOR A SPACECRAFT

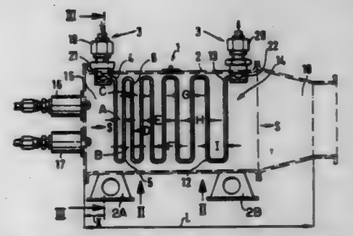
Bernhard Leidinger, Weyhe-Leeste, Fed. Rep. of Germany, assignor to Erno Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,803

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136969

Int. Cl.[5] B64G *1/50*; F28B *1/02*

U.S. Cl. 165—110 13 Claims



1. A heat exchanger for cooling a coolant in a cooling circuit in a spacecraft under gravity-free operating conditions and under different acceleration conditions, comprising a housing enclosing an evaporation space, a plurality of tube panels in

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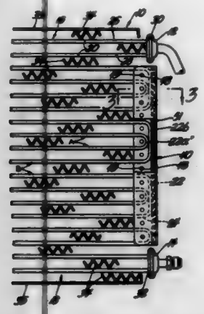
said evaporation space, inlet valve means for introducing an evaporating medium into said evaporation space, vapor outlet means for discharging vapor from said housing, a plurality of cooling tubes forming said tube panels in said housing, short tube legs interconnecting said cooling tubes to form meandering tube loops forming part of said cooling circuit, said cooling tubes having long legs extending in parallel to one another and substantially perpendicularly to a main flow direction of said evaporating medium from said inlet valve means to said vapor outlet means, and wherein spacings (A, B, C, . . .) between neighboring long tube legs differ from one another in said flow direction from said inlet valve means to said vapor outlet means for establishing a substantially constant flow speed of said evaporating medium, whereby contact between tubes is effectively increased while still permitting a substantially free flow of said evaporating medium through flow paths between neighboring tube panels for an efficient evaporation.

5,289,872

SACRIFICIAL BRACKETS FOR ALUMINUM HEAT EXCHANGER

Scott E. Kent, Albion, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1993, Ser. No. 64,474
Int. Cl.[5] F28F *19/02*
U.S. Cl. 165—133 **5 Claims**



1. A heat exchanger apparatus of the type for directing fluid through a core thereof for heat transfer with air flowing across the core, said apparatus comprising:
an inlet and an outlet;
a flow passage following a serpentine path having a plurality of passes across the core between tube bends at the ends of each pass lying in a single plane, said flow passage connecting said inlet to said outlet for communicating fluid therebetween;
a header channel extending over and contacting the bends at the ends of said passes for supporting said passage;
said header channel comprising an interior surface coated with a layer of sacrificial corrosion material in contact with said bends for allowing corrosion thereof while prolonging corrosion of said bend.

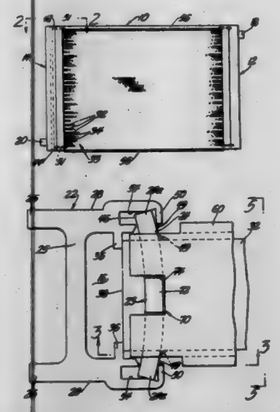
5,289,873

HEAT EXCHANGER SIDEPLATE INTERLOCKED WITH HEADER

Richard P. Ryan, East Amherst; Gary A. Halstead, Lockport, both of N.Y.; Glenn W. Shaffer, Tuscaloosa, Ala., and Shrikant M. Joshi, Cambridge, Mass., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1992, Ser. No. 902,158
Int. Cl.[5] F28F *9/26*
U.S. Cl. 165—149 **1 Claim**

1. A heat exchanger apparatus for a vehicle, said apparatus having a pair of tank and header units for providing a coolant space, a plurality of parallel tube passes including flow tubes forming a coolant passage connected between said tank and header units, air center means connected to each of said aligned flow tubes for conductively transferring heat from said coolant forming a core with said tube passes, said tank and header units each including a tank extrusion and header for forming said coolant space with said flow tube segments and air center means connected between said headers characterized by:
a pair of sideplates extending between said headers about said core and parallel with said flow tubes for supporting said core between said headers and sideplates;
interlocking means operatively connected between said headers and said sideplates for locking said sideplates to said headers to support said core;



said interlocking means includes a tab extending from said first and second ends of said headers and a notch extending into said sideplates for receiving said tabs to align said sideplates parallel with said tube passes and said air center means;
each of said sideplates comprising a longitudinally extending U-shaped extrusion having a base and a pair of parallel arms extending from said base wherein said notch is formed within said base;
said parallel arms including an inside surface and an exterior surface, said exterior surfaces being substantially parallel to one another, said interior surfaces being tapered toward said exterior surfaces for receiving said tube passes; and
said pair of side plates comprised of a longitudinal extending U-shaped extrusion having arms for extending over said core to support said core on a processing conveyor in spaced relationship thereto.

5,289,874

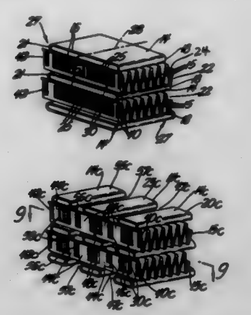
HEAT EXCHANGER WITH LATERALLY DISPLACED LOUVERED FIN SECTIONS

Prasad S. Kadle, Getzville, and James N. Athens, Tonawanda, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1993, Ser. No. 82,572
Int. Cl.[5] F28D *1/02*
U.S. Cl. 165—152 **14 Claims**

8. A heat exchanger characterized by:
at least one layer of tubes having a plurality of tubes being spaced from each other;
a folded strip forming a plurality fins arranged between adjacent pairs of tubes within said at least one layer of tubes;

said fins having at least one louvered section laterally aligned with the tubes of at least one layer;
said fins having at least one louvered section being laterally



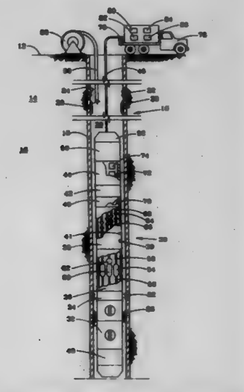
misaligned with each layer of tubes and being spaced from said laterally aligned louvered section to form a plain non-louvered section interposed between said aligned and misaligned louvered sections.

5,289,875

APPARATUS FOR OBTAINING SUBTERRANEAN FLUID SAMPLES

Charles O. Stokley, and Lawrence Sanford, both of Houston, Tex., assignors to Tam International, Houston, Tex.

Continuation of Ser. No. 748,671, Aug. 22, 1992, Pat. No. 5,137,086. This application Aug. 7, 1992, Ser. No. 926,930
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—264 **28 Claims**



1. A method of passing fluid into or from a subterranean formation of interest wherein a casing is provided within a wellbore within the formation, an outer surface of the casing being exposed to fluids within the formation, and the casing preventing the wellbore from caving in, the method comprising:
providing a flow port through the casing;
providing an axially slidable sleeve for normally covering the port to seal the interior of the casing from the formation and for uncovering the port for establishing fluid communication between the formation and the interior of the casing;
lowering a test tool assembly within the casing to a location adjacent the sliding sleeve, the test tool assembly including an actuating tool with an axially movable member for engaging the sliding sleeve;
securing the test tool assembly to the casing;
interconnecting the movable member of the actuating tool and the sliding sleeve;
sealing the interior of the casing below the sliding sleeve;
axially moving the movable member to move the sliding sleeve to an uncovered position and permit a fluid sample to pass through the uncovered port and into a test chamber, and
returning the sliding sleeve to a covered position;
disconnecting the movable member and the sliding sleeve;
disengaging the test tool assembly and the casing; and
retrieving the test tool assembly and the fluid sample in the test chamber to the surface.

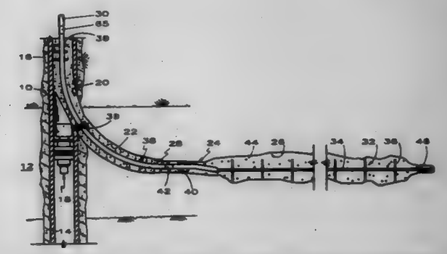
15. A downhole actuating tool for passing fluid into or form a subterranean formation of interest wherein a casing is permanently positioned within a well bore within the formation and prevents the wellbore from caving in, a flow port is provided through the casing, and a sliding sleeve covers the flow port to seal the interior of the casing from the formation, the actuating tool comprising:
a tool body, a first dog movable radially outward with respect to the tool body for securing the actuating tool to the casing, a member axially movable with respect to the tool body, a second dog for interconnecting the axially movable member and the sliding sleeve to axially move the sliding sleeve in response to fluid pressure applied to the axially movable member, a first flow path within the actuating tool for applying fluid pressure to axially move the movable member and the sliding sleeve in a first direction to uncover the port, and a second flow path within the actuating tool for applying fluid pressure to axially move the movable member and the sliding sleeve in opposing second direction to cover the port.

5,289,876

COMPLETING WELLS IN INCOMPETENT FORMATIONS

Stephen A. Graham, Bellaire, Tex., assignor to Natural Reserves Group, Inc., Houston, Tex.

Filed Jul. 28, 1992, Ser. No. 920,804
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—276 **16 Claims**



1. A method of completing a well in an incompetent subterranean formation, comprising
drilling a bore hole into the subterranean formation;
running a pipe string into the bore hole;
filling up an annulus between the pipe string and the bore hole with a hardenable permeable material; and then
drilling up a substantial extent of the pipe string leaving a section of hardenable permeable material in the bore hole, the section of hardenable permeable material having a passage therethrough parallel to the bore hole; and then
delivering a formation fluid through the hardenable permeable material and through an in contact with the passage.

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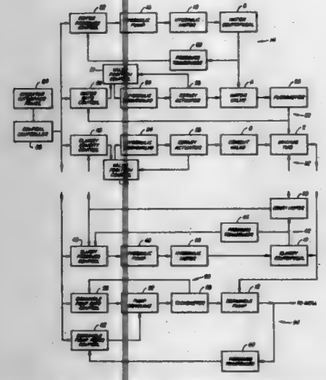
15. A well having a vertical section, a curved section communicating with the vertical section and a generally horizontal section extending into an incompetent subterranean formation comprising an oil bearing section and a contiguous vertically spaced non-oil bearing section, the horizontal section comprises a horizontal well bore extending through the oil bearing section, extending in a zone through the non-oil bearing section and providing a formation fluid production axis and a generally annular sheath of permeable hardenable material in the horizontal well bore providing an outer surface in contact with the incompetent formation and an inner surface exposed to the axis providing a flow path away from the horizontal section, the well further comprising an imperforate conduit inside the passage in the zone in the non-oil bearing section.

5,289,877

CEMENT MIXING AND PUMPING SYSTEM AND METHOD FOR OIL/GAS WELL

Phillip N. Naegele; Ronald E. Dant; Kent J. Diebali; Stanley V. Stephenson, and Paul O. Padgett, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 10, 1992, Ser. No. 974,391
Int. Cl.[5] E21B *33/00*; G06F *15/46*
U.S. Cl. 166—285 **19 Claims**



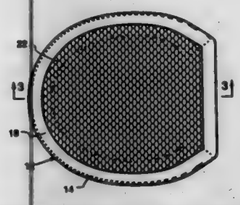
1. A system for mixing and pumping a cement slurry into an oil or gas well, comprising:
- a mixing tub;
- a first pump for pumping cement slurry from the tub into the well;
- a base fluid flow controller for conducting a base fluid into the tub;
- a master controller for controlling said first pump and said flow controller so that the mixing of the cement slurry responsive to said base fluid flow controller is related to the pumping of cement slurry by said first pump into the well, said master controller including:
  - means for defining a plurality of desired operating characteristics; and
  - means for generating related control signals in response to said desired operating characteristics;
- means for operating said first pump in response to at least one of said control signals; and
- means for operating said base fluid flow controller in response to at least one of said control signals.

5,289,878

HORSESHOE IMPACT PAD

Curtis L. Landi, and Susan L. Wilson, both of Sunnyvale, Calif., assignors to Supracor Systems, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 3,791, Jan. 13, 1993, Pat. No.
Int. Cl.[5] A01L *1/00*
U.S. Cl. 168—14 **15 Claims**



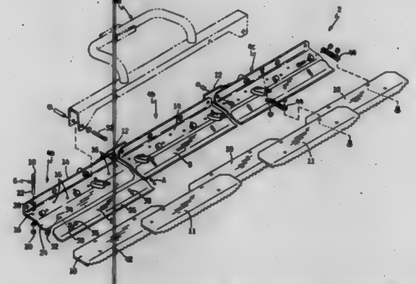
12. A shock-absorbing impact pad for horses comprising:
a generally oval shaped resilient honeycomb panel truncated on one side to have an outer perimeter configured to correspond to the hoofprint of a horse, said honeycomb panel being comprised of a honeycomb-configured core having a first sheet of resilient material bonded to one face of said core and a second sheet of resilient material bonded to the opposite side of said core to form a plurality of hermetically sealed cells, whereby when placed between a horseshoe and horse's hoof the pad tends to absorb a substantial part of the shock energy that would otherwise be transmitted to the hoof.

5,289,879

SANDTRAP MAINTENANCE MACHINE RAKE ASSEMBLY

Malachy Fay, and Helmut J. Ullrich, both of Eden Prairie, Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Oct. 15, 1992, Ser. No. 961,765
Int. Cl.[5] A01B *13/00, 49/02*
U.S. Cl. 172—197 **8 Claims**



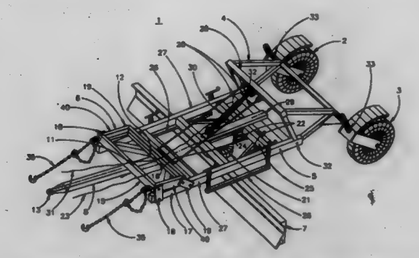
1. An improved rake assembly for connection to a powered traction unit to allow the rake assembly to be towed or pulled over a granular surface which is to be groomed by the rake assembly, which comprises:
- (a) a rake frame having means for connecting the rake frame to the traction unit, wherein the connecting means is configured to allow the rake frame to rest on the ground by virtue of its own weight as the traction unit is driven forwardly, wherein the rake frame includes a substantially planar trailing rear face which is inclined at an angle relative to the horizontal;
- (b) at least one scarifying tooth carried on the rake frame in advance of the trailing rear face thereof, wherein each scarifying tooth includes a lower end extending downwardly from the rake frame and adapted to contact the granular surface to disturb the granular surface;
- (c) a trowel plate fixed to the rake frame and extending downwardly to be located behind the scarifying teeth, the trowel plate being fixed to the rake frame during operation of the rake assembly so as to be non-moveable relative thereto and having a lower edge suited for engaging the surface to be groomed for smoothing the surface, and wherein the trowel plate has a mating face-to-face relationship with the planar trailing rear face of the rake frame over substantially the entire width of the trowel plate such that the trowel plate is firmly supported on the planar trailing rear face of the rake frame during operation of the rake assembly; and
- (d) means for connecting the trowel plate to the trailing rear face of the rake frame for adjustment in a vertical direction up and down relative to the trailing rear face of the rake frame to allow the height of the scarifying teeth relative to the surface to groomed to be adjusted by adjusting the position of the trowel plate on the trailing rear face of the rake frame.

5,289,880

TOWABLE ROAD TENDER

Rollin V. Barto, 22A Montgomery Rd., Windham, Me. 04062

Filed Jun. 3, 1992, Ser. No. 892,569
Int. Cl.[5] E02F *3/76*
U.S. Cl. 172—799.5 **10 Claims**



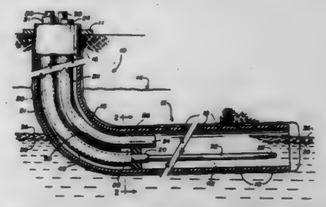
1. A road tender device for tending a roadway surface, wherein said road tender device is towable behind a vehicle, said road tender device comprising:
- a. an attachment frame connected to an attachment arm having means to connect said attachment arm to a hitching device of said vehicle;
- b. a support frame having a front end and a rear end, said front end of said support frame connected to said attachment frame, said support frame having means to couple a tending tool to said support frame;
- c. a wheel frame having an upper wheel frame member, said wheel frame connected to said rear end of said support frame, said wheel frame comprising laterally-spaced rear wheels supporting said rear end of said support frame; and
- d. pivot means connecting said upper wheel frame member to said support frame and connecting said upper wheel frame member to said attachment frame, wherein said pivot means simultaneously pivots said attachment frame on said front end of said support frame and said wheel frame on said rear end of said support frame such that when said upper wheel frame member pivots away from said vehicle said attachment frame also pivots away from said vehicle, said pivot means further allowing said rear wheels to be drawn toward said support frame as said tending tool is raised from said roadway surface.

5,289,881

HORIZONTAL WELL COMPLETION

Frank J. Schuh, 5808 Wavertree, Plano, Tex. 75075

Filed Apr. 1, 1991, Ser. No. 678,725
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—303 **9 Claims**



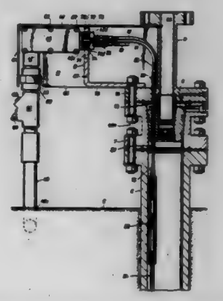
1. A system of completion for simultaneous and continuous steam injection and production of heavy oil from a single well comprising:
- a well casing disposed in a well bore, the well bore and well casing having a substantially horizontal portion disposed in an earth formation containing heavy oil, and the well casing having perforations in the horizontal portion,
- a well head at the top end of the well casing,
- a packer sealing the casing between the perforations and the well head,
- a production tubing string extending from the well head, sealing with and communicating through the packer,
- an injection tubing string extending from the well head, sealing with and extending through the packer and extending through at least a portion of the perforations, such that a continuous, unobstructed, open annulus is formed between the outlet of the injection tubing string and the inlet of the injection string, inside the casing throughout the entire length of the portion of the injection tubing string below the packer,
- means for injecting steam into the injection string, and
- means for controlling the pressure of the steam and therefore the temperature of steam in the formation.

5,289,882

SEALED ELECTRICAL CONDUCTOR METHOD AND ARRANGEMENT FOR USE WITH A WELL BORE IN HAZARDOUS AREAS

Boyd B. Moore, 427 Mignon, Houston, Tex. 77024, assignor to Boyd B. Moore, Houston, Tex.

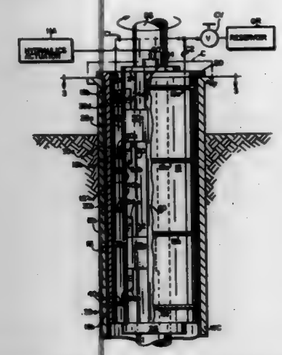
Filed Feb. 6, 1991, Ser. No. 651,633
Int. Cl.[5] E21B *33/03*
U.S. Cl. 166—379 **17 Claims**



1. An arrangement to conduct electrical power from a non-hazardous area through power source electrical conductor means to downhole electrical conductor means wherein the

downhole electrical conductor means extends through a barrier in a wellhead in a hazardous area comprising:
rigid tube means enclosing the downhole electrical conductor means extending through the barrier;
a splice fitting adjacent the wellhead for providing an enclosure to receive the power source electrical conductor means and downhole electrical conductor means therein;
a conduit portion extending from the barrier to said splice fitting and enclosing the downhole electrical conductor means; and
rigid seal means sealably engaging said conduit portion with the barrier and with said splice fitting.

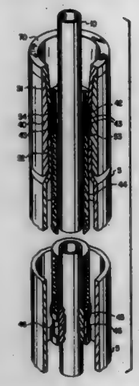
5,289,883
WELL CASING-CONTAINED BLOWOUT PREVENTER
Jerry H. Robinson, Mobile, Ala., assignor to Wellcutter Inc., Brewton, Ala.
Filed Oct. 21, 1992, Ser. No. 963,487
Int. Cl.[5] E21B *33/06*
U.S. Cl. 166—386 **22 Claims**



20. A method of reducing pressure of subterranean gas rising within a well casing without removing a drill stem therefrom comprising the steps of:
(a) establishing at least one longitudinally oriented channel passageway within the well casing laterally of the drill stem which has a number of longitudinally separated static pressure reducing orificed baffles transversely disposed therein;
(b) sealing the well casing between the drill stem and said at least one longitudinally oriented channel to cause said rising gas to flow through said channel; and
(c) reducing the pressure of the subterranean gas in a stepwise manner by allowing the gas to flow sequentially through orifices of the pressure reducing orificed baffles.

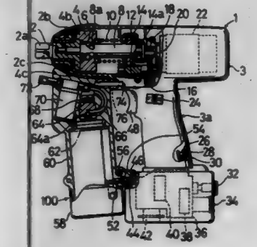
5,289,884
WELL PUMPING
James E. Johnstone, Huntington Beach, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Mar. 22, 1993, Ser. No. 34,957
Int. Cl.[5] E21B *33/03*
U.S. Cl. 166—387 **9 Claims**

1. In a well pumping method in which a sucker rod string is reciprocated from the earth's surface inside a pipe string that has an inner surface and extends downwardly into a wellbore, the improvement comprising providing an upper seal which surrounds said sucker rod string and seals against said inner surface in a vapor tight manner, said upper seal carrying a length of longitudinally compressible hose therebelow, said compressible hose carrying a lower seal that is fixed to said sucker rod string in a vapor tight manner, and reciprocating said sucker rod string while expanding and contracting said compressible hose within said pipe string, to produce well



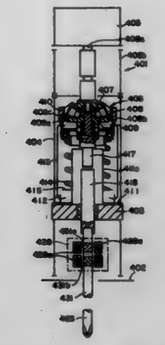
fluids from the interior of said pipe string to the earth's surface below said upper seal."

5,289,885
TIGHTENING TOOL
Masahiko Sakoh, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Division of Ser. No. 7,860, Jan. 22, 1993. This application Sep. 8, 1993, Ser. No. 117,940
Claims priority, application Japan, Jan. 23, 1992, 4-34147
Int. Cl.[5] B25B *23/147*
U.S. Cl. 173—2 **3 Claims**



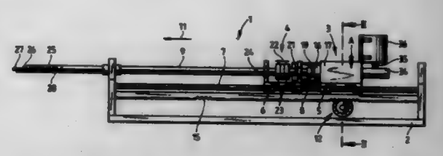
1. A tightening tool, comprising:
a hammer rotatably driven by drive means;
an anvil driven by said hammer in such a manner that said hammer is rotated idly when the torque transmitted from said hammer to said anvil exceeds a predetermined value and that said hammer impacts on said anvil so as to rotate said anvil when said hammer is rotated by a predetermined angle after said hammer has been rotated idly;
a microphone for converting impact sounds of said hammer on said anvil into an electric signal;
comparing means for comparing the level of the electric signal with a reference level;
detecting means for detecting timing when the level of the electric signal exceeds the reference level;
period calculating means for calculating a period of the timing based on at least two numbers of the detected timing;
counting means for counting the number of impact from the number of timing when the level of the electric signal exceeds the reference level, said counting means being operable to compensate the counted number of impact based on the period calculated by said period calculating means;
setting means for setting a set number of impact to be obtained; and
switch means for comparing the number counted by said counting means with the set number set by said setting means and for stopping said drive means when the counted number coincides with the set number.

5,289,886
AUTOMATIC SCREW FASTENING MACHINE
Osamu Shikata; Hirotada Sugiura; Masatomo Adachi, and Kazunori Isono, all of Kyoto, Japan, assignors to Nitto Seiko Co., Ltd., Kyoto, Japan
Division of Ser. No. 881,145, May 11, 1992, Pat. No. 5,170,852. This application Sep. 16, 1992, Ser. No. 945,852
Int. Cl.[5] B23Q *17/09*
U.S. Cl. 173—181 **1 Claim**



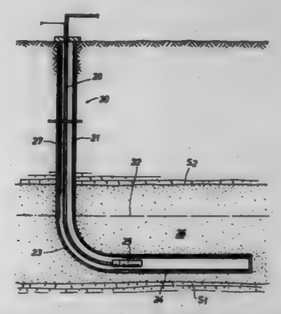
1. A screw fastening machine comprising:
a driver bit which is connected to a rotational drive source via an input disc rotated by said drive source, a plurality of planetary cones each having a circumferential groove at a neck portion thereof which frictionally engages with an external circumference of said input disc, and a cam disc frictionally engaged with a plain surface on a back of each of said plurality of said planetary cones;
a variable-speed ring which is disposed around the external circumference of said planetary cones and is frictionally engaged with a conical surface of each of said plurality of said planetary cones;
a resilient supporting member composed of a plurality of arms which support the variable-speed ring forced to rotate around said planetary cones by reaction force caused by the load torque applied to said driver bit during a fastening operation and a spring which biases the variable-speed ring upwardly;
a torque detection unit including a torque detection shaft which is disposed between said cam disc and said driver bit and is provided with short bands of magnetic material slightly declined in one direction in a zebra like pattern and short bands of magnetic materials slightly declined in a reverse direction in a zebra like pattern on its periphery and a magnetic strain detection coil which can detect magnetic strain inherent in the detection shaft as a current caused by deformation of the bands of magnetic material in order to detect the load torque applied to said driver bit during a fastening operation; and
a fastening completion detecting unit which is electrically connected to said torque detection unit and outputs a fastening completion signal simultaneously with arrival of a signal outputted by said torque detection unit when a current detected by the magnetic strain detection coil reaches a specified value corresponding to a predetermined fastening torque value during a fastening operation.

5,289,887
METHOD OF OPERATING AN EARTH BORING MACHINE
Franz-Josef Püttmann, Lennestadt-Saalhausen, Fed. Rep. of Germany, assignor to Tracto-Technik Paul Schmidt Spezialmaschinen KG, Lennestadt, Fed. Rep. of Germany
Filed Apr. 3, 1992, Ser. No. 866,767
Int. Cl.[5] E21B *6/00*
U.S. Cl. 175—61 **20 Claims**



1. An earth boring machine, comprising:
a rotary-thrust rod said having a front end located in a drilled bore and a rear end outside of the drilled bore;
a rotary-thrust unit for imparting a rotary-thrust movement to said drill rod;
a striking tool for applying an impact force to the rear end of said drill rod, said striking tool and said rotary-thrust forming together a thrust percussion aggregate; and
a head with an oblique face provided at the front end of said drill rod for controlling the progress of the drilled bore.

5,289,888
WATER WELL COMPLETION METHOD
Robert R. Talley, Katy, Tex., assignor to RRKT Company, Katy, Tex.
Filed May 26, 1992, Ser. No. 888,007
Int. Cl.[5] E21B *7/04*
U.S. Cl. 175—61 **6 Claims**



1. A method of completing a high flow rate water well for irrigation, commercial or municipal utility district use, comprising the steps of: drilling a vertical portion of the well bore into an aquifer and to approximately the air-water interface level thereon; forming the next portion of the well bore in said aquifer on a curve such that its lower end extends substantially horizontal; extending an outer portion of the well bore substantially horizontally along said aquifer a predetermined distance that is a function of a selected flow rate and the water saturated thickness of the aquifer; casing the well bore in a manner such that said outer portion is provided with water entry ports substantially throughout its length; and installing a pump at a

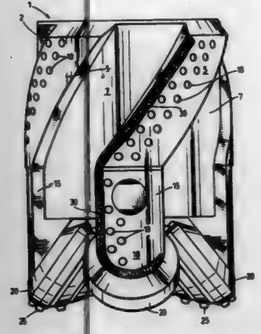
level below said air-water interface by which the water entering said ports can be produced to the surface.

5,289,889

ROLLER CONE CORE BIT WITH SPIRAL STABILIZERS

Marvin Gearhart, 4001 Hildring Ct., Forth Worth, Tex. 76109; Johnny N. Castle, 812 Sterling La., Crowley, Tex. 76036, and Paul G. Parys, 6708 Watermill Dr., Fort Worth, Tex. 76132

Filed Jan. 21, 1993, Ser. No. 7,257
Int. Cl.[5] E21B *17/10*
U.S. Cl. 175—325.5 5 Claims



1. An improved roller cone core bit comprising:
a cylindrical bit body having a means for connecting the core bit to a drillstring on one end and a plurality of journal segment arms on the other end;
a plurality of core cutters, the cone cutters being rotatably mounted on journals which extend downward from the journal segment arms; and
a plurality of stabilizer blades fixedly attached to the circumference of the bit body, each stabilizer blade oriented spirally about the longitudinal axis of the bit body.

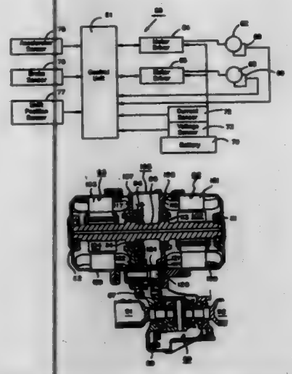
5,289,890

DRIVE UNIT FOR ELECTRIC MOTOR VEHICLE

Minoru Toyoda; Shuzo Moroto, and Mutsumi Kawamoto, all of Nagoya, Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Nov. 25, 1992, Ser. No. 982,100
Claims priority, application Japan, Dec. 10, 1991, 3-325876
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.8 6 Claims

5. A drive unit for an electric motor vehicle comprising:
a first motor;
a second motor;
a single motor shaft for receiving output torque from both of said first and second motors;
a planetary gear unit for transmitting torque between said first motor and said motor shaft;
means for transmitting said output torques from said motor shaft to at least one drive wheel;
first sensing means for sensing at least one travelling condition of the vehicle and for generating a travelling condition signal;
second sensing means for sensing rotational speeds of said first and second motors and for generating rotational speed signals;
request torque determining means for determining a request torque required for travel of said vehicle in accordance with said signals from said first and second sensing means; and
output torque distribution determining means for distributing said request torque between said first and second



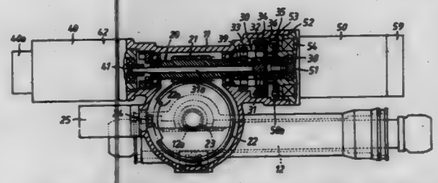
motors, in accordance with said rotational speed signals to control the output torques of said first and second motors.

5,289,891

REAR-WHEEL STEERING APPARATUS FOR WHEELED VEHICLE

Mizuho Sugiyama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 9, 1992, Ser. No. 910,872
Claims priority, application Japan, Jul. 10, 1991, 3-195992
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 5 Claims



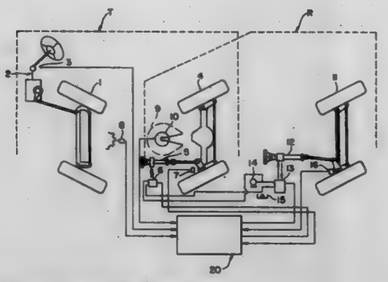
1. A rear-wheel steering apparatus for a wheeled vehicle having a linkage mechanism for effecting steerage of a set of dirigible rear road wheels, comprising:
a planetary gear unit the carrier of which is adapted as an output element drivingly connected to an input member of said linkage mechanism;
a first electric motor the output shaft of which is drivingly connected to a sun gear of said planetary gear unit;
a first electrically operated brake mechanism connected to and operatively engaging said sun gear for restricting rotation of said sun gear only when the vehicle is travelling at a higher speed than a predetermined speed;
a second electric motor the output shaft of which is drivingly connected a ring gear of said planetary gear unit; and
a second electrically operated brake mechanism connected to and operatively engaging said ring gear for restricting rotation of said ring gear only when the vehicle is travelling at a lower speed than the predetermined speed.

5,289,892

STEERABLE TRAILER AND STEERING APPARATUS OF COMBINATION VEHICLE

Ikurou Notsu, Saitama, Japan, assignor to Nissan Diesel Motor Co., Ltd., Saitama, Japan

Filed Sep. 24, 1991, Ser. No. 764,304
Claims priority, application Japan, Sep. 26, 1990, 2-99741[U]; Oct. 17, 1990, 2-107914[U]
Int. Cl.[5] B62D *5/08*
U.S. Cl. 180—132 19 Claims



1. A steerable trailer, comprising:
coupling angle detecting means for detecting a coupling angle;
trailer wheel steering angle detecting means for detecting a trailer wheel steering angle;
actuators for steering trailer wheels; and
control means for calculating and memorizing a travel direction of a coupling point at a location in response to signals transmitted from each of said detecting means, said control transmitting output signals to said actuators so as to align a travel direction of a rear end of the trailer with the memorized direction of the coupling point when the rear end of the trailer reaches said location.

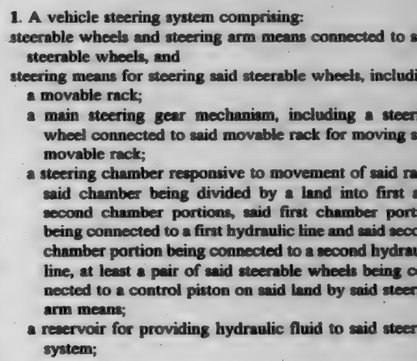
5,289,893

STEERING CONTROL APPARATUS

Junji Yamamoto, Toyoake; Yoshinobu Suzuki, Kariya; Atsushi Takumi, Nagoya, all of Japan; Takashi Onitsu, Ann Arbor, Mich.; Noriaki Hattori, Anjo, and Hideki Kusunoki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Sep. 9, 1992, Ser. No. 942,198
Claims priority, application Japan, Sep. 10, 1991, 3-229926
Int. Cl.[5] B62D *6/00*
U.S. Cl. 180—132 19 Claims

1. A vehicle steering apparatus for providing automatic steering control to steerable wheels of a vehicle, said apparatus comprising:
a first steering member mounted on the vehicle for lateral movement with respect to the vehicle;
a second steering member disposed for lateral movement with and with respect to said first steering member, said second steering member being linked at opposite ends to the steerable wheels of the vehicle for causing steering rotation of the steerable wheels;
steering input means linked to said first steering member for steering the steerable wheels;
adjusting means for adjusting the relative positions of said first steering member and said second steering member; and



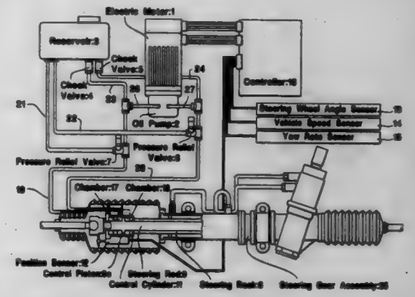
restraining means for restraining movement of at least one of said steering input means and said first steering member in relation to the vehicle.

5,289,894

STEERING SYSTEM FOR A VEHICLE

Yoshiyuki Yasui, Davis, Calif., assignor to Isuzu America, Inc., Ann Arbor, Mich.

Filed Mar. 31, 1992, Ser. No. 861,103
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] B62D *5/08*
U.S. Cl. 180—141 28 Claims



1. A vehicle steering system comprising:
steerable wheels and steering arm means connected to said steerable wheels, and
steering means for steering said steerable wheels, including
a movable rack;
a main steering gear mechanism, including a steering wheel connected to said movable rack for moving said movable rack;
a steering chamber responsive to movement of said rack, said chamber being divided by a land into first and second chamber portions, said first chamber portion being connected to a first hydraulic line and said second chamber portion being connected to a second hydraulic line, at least a pair of said steerable wheels being connected to a control piston on said land by said steering arm means;
a reservoir for providing hydraulic fluid to said steering system;

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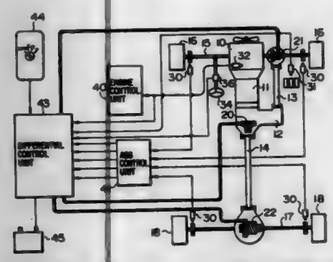
sensor means for sensing an actual value for an operating condition of a vehicle;
control means for generating an output signal in response to said sensor means;
an oil pump;
motor means for driving said oil pump to pump hydraulic fluid to the steering chamber to directly cause movement of said control piston;
a first check valve positioned in said first hydraulic line;
a second check valve positioned in said second hydraulic line;
an oil pump outlet conduit connected from said oil pump to said first and second hydraulic lines at a location downstream of said first and second check valves;
said control means being operably connected to said motor means to control said motor means such that said motor means is actuated in response to said output signal to drive said oil pump to provide hydraulic fluid to said steering chamber so that movement of said control piston directly results from hydraulic fluid pumped into said steering chamber by said oil pump.

5,289,895

CONTROL SYSTEM FOR VEHICLE WITH DIFFERENTIAL RESTRICTING DEVICE

Minoru Takata; Hideshi Hiruta; Nobuyuki Nakamura, all of Hiroshima; Masaru Shiraishi, Hatsukaichi; Yoshitaka Kimura, and Naotsugu Masuda, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 24, 1992, Ser. No. 904,007
Claims priority, application Japan, Jun. 27, 1991, 3-156957; Jun. 27, 1991, 3-156961; Jul. 31, 1991, 3-213033
Int. Cl.[5] B60K *17/348*
U.S. Cl. 180—248 **12 Claims**



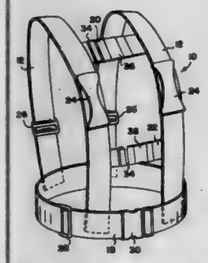
1. A control system for a four-wheel drive vehicle including a center differential provided between a front shaft and a rear shaft, said system comprising:
differential restricting means for restricting a differential between the front shaft and the rear shaft by operating the center differential to be between a locking condition and an unlocking condition, and
means for controlling a restricting force of the differential restricting means based on a difference in rotation between the front shaft and the rear shaft so that the greater the difference is, the more restricted the restricting force is when vehicle body speed is greater than a predetermined value, and controlling the restricting force of the differential restricting means based on engine output so that the greater the engine output is, the more restricted the restricting force is when the vehicle body speed is equal to or less than the predetermined value.

5,289,896

HARNESS FOR A MOTORCYCLIST AND THE LIKE

Salvatore J. Giglio, 4801 Ave. I, Brooklyn, N.Y. 11234

Filed Sep. 10, 1992, Ser. No. 942,786
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—3 **5 Claims**



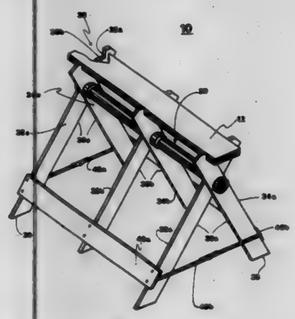
1. A harness for a motorcyclist and the like which comprises:
a) a pair of shoulder straps to be worn by a driver of a motorcycle;
b) a waist strap attached to said shoulder straps;
c) an upper back strap attached between said shoulder straps;
d) a lower back strap attached between said shoulder straps; and
e) a pair of grip handles, each attached to one of said shoulder strap between said upper back strap and said lower back strap, so that a passenger sitting behind the driver on the motorcycle can hold onto said grip handles for anchorage and safety while the driver wears said harness in comfort.

5,289,897

SAWBUCK INCLUDING VIERENDEEL TRUSS CONSTRUCTION

William H. Wiebe, Jr., 4404 Manor Hall La., Fairfax, Va. 22033

Filed Oct. 22, 1992, Ser. No. 964,902
Int. Cl.[5] B27B *21/00*
U.S. Cl. 182—154 **24 Claims**


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number corresponding to the number of output air impulses from the delay valve which correspond to the conveyor speed, the counter being adapted to send a termination air impulse to the delay valve when the preset number has been reached; and,

g) a normally closed fluid valve actuated by the delay valve and adapted to open and admit lubricant to the nozzles for lubrication of the conveyor upon receiving an impulse from the delay valve which corresponds to the termination air impulse from the counter to the delay valve, the fluid valve being adapted to close when the impulse from the delay valve is turned off, the fluid valve being actuated by a valve actuator, and the delay valve being operated in conjunction with an accumulator.

7. A method for lubricating a conveyor, adapted to move at various speeds, comprising: supplying lubricant to at least one nozzle for feeding pulses of lubricant to the conveyor; rotating a cam follower drive means from the conveyor, the drive means providing air actuating output pulses depending on the speed of the conveyor; feeding the air actuating output pulses to a normally closed, air actuable, on-off valve actuator, which opens when an actuating output pulse from the cam actuated drive means is present, and closes when the actuating output pulse is not present;

the cam follower being connected to a sequencer which actuates the on-off valve actuator; feeding corresponding air-actuating pulses from the on-off valve actuator to a delay valve; feeding air-actuating pulses from the delay valve corresponding to the output air impulses from the on-off valve actuator to an air-actuated counter having a pre-set number corresponding to the speed of the conveyor; decrementing the counter from the pre-set number to a decremented number corresponding to the interval between application of lubricant from the nozzle to the conveyor, and providing an air-actuated decremented pulse signal to the delay valve when the decremented number has been reached; and, resetting the counter and sending an air-actuating pulse to a normally closed fluid valve to open the fluid valve and supply lubricant to the nozzle for application to the conveyor, the open time of the fluid valve being pre-determined by the amount of lubricant to be supplied to the conveyor, and the interval between each application being determined by the interval between the pre-set number and the decremented number of the counter; the fluid valve being adapted to close when the air impulse from the delay valve is turned off, the fluid valve being actuated by a valve actuator, and the delay valve being operated in conjunction with an accumulator.

5,289,900

MULTI-FUNCTIONAL SERVICE FOR LUBRICATION TANK

Wilbo V. Aho, Jr., West Palm Beach, and Terry H. Strout, Palm City, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1992, Ser. No. 998,091
Int. Cl.[5] F01M *11/04*
U.S. Cl. 184—105.1 **7 Claims**

1. Means for servicing an oil lubrication system for aircraft engines, said means including:

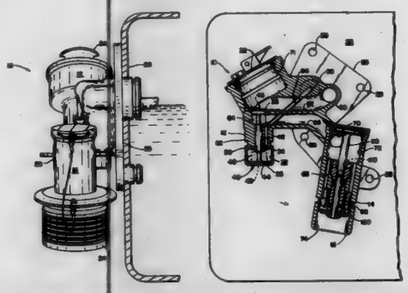
an oil tank,

pressure filling means including a first housing having an inlet port and an outlet port connected to said oil tank for pressure filling said oil tank with oil,

overfill means including a second housing having an inlet port means connected to said tank for accommodating oil overfill and sample collecting means in said second housing having a separate inlet means for sampling of the oil in the tank and an outlet port for receiving oil from said inlet port means and said separate inlet means,

a valve having a pair of opposing valve elements cooperating with a pair of valve seats formed in a longitudinal passageway in said first housing interconnecting said tank through a second passageway and a third passageway formed in said first housing,

whereby said valve elements are deployed to unseat said valve seats so that oil from a pressurized source is admitted into said tank by said third passageway and overfill of the oil in said tank is released from said second housing through one of said valve seats, through a fourth passage and through a discharge outlet port formed in said second housing.

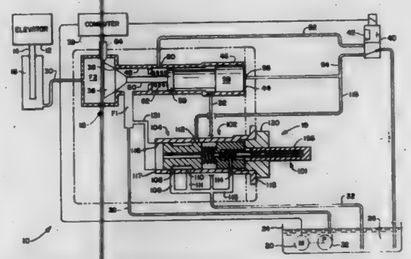


5,289,901

HYDRAULIC ELEVATOR PRESSURE RELIEF VALVE

Richard N. Fargo, Plainville, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 3, 1992, Ser. No. 926,630
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—17 **6 Claims**



1. A hydraulic elevator system comprising:

a cab,

a plunger attaching to said cab,

a cylinder for translatingly receiving said plunger,

a pump means for communicating a variable fluid pressure to said cylinder,

a variable speed motor for providing power to said pump, and

a valve for communicating said variable fluid pressure between said pump and said cylinder, said valve comprising;

a check valve for preventing a flow of said variable fluid pressure between said cylinder and said pump,

a first circuit means for directing said variable fluid pressure force upon said check valve to urge said check valve to open against a cylinder fluid pressure force if said pump fluid pressure force is approximately equal to said cylinder fluid pressure force, and

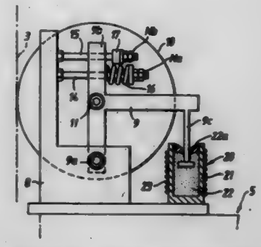
a second circuit means for closing said check valve by diverting said fluid pressure from said first circuit means to drain pressure when said second circuit means senses that said pump fluid pressure exceeds a preset fluid pressure limit prescribed therein, thereby preventing said elevator cab from further movement, and for reducing said fluid pressure force within said hydraulic elevator system when said second circuit means senses that said pump fluid pressure force exceeds a preset fluid pressure limit prescribed therein, thereby preserving the integrity of said hydraulic elevator system.

5,289,902

ELEVATOR

Yoshiaki Fujita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 26, 1992, Ser. No. 966,394
Claims priority, application Japan, Oct. 29, 1991, 3-282876; Oct. 31, 1991, 3-286374; Mar. 9, 1992, 4-050084
Int. Cl.[5] B66B *7/04*
U.S. Cl. 187—95 **13 Claims**



1. An elevator having a vertically movable cage along guide rails comprising:

supporting units disposed on said cage;

an operating lever pivotally mounted to said supporting units;

guide rollers connected to said supporting units and disposed to touch said guide rails;

damping means operatively connected to said operating level, having a variable coefficient of viscous damping, for damping vibrations of said cage;

detecting means for detecting the vibration of said cage; and

control means for controlling the coefficient of viscous damping of said damping means in response to the vibration detected by said detecting means.

5,289,903

MID-RADIUS DISC BRAKE SHOE CONTACT PADS

Steve S. Nagai, Huron; Wolfgang Melinat, Dayton, and Daniel E. Denlinger, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 938,571, Aug. 28, 1992, Pat. No. 5,236,068, which is a continuation of Ser. No. 575,538, Aug. 30, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 93,110
Int. Cl.[5] F16D *55/02, 69/04*
U.S. Cl. 188—71.7 **5 Claims**

1. A disc brake for a motor vehicle, the disc brake in combination comprising:

a rotor with a center of rotation (C);

inner and outer brake pads disposed on opposite sides of the rotor and movable into braking engagement therewith;

a piston for urging the inner brake pad against the rotor;

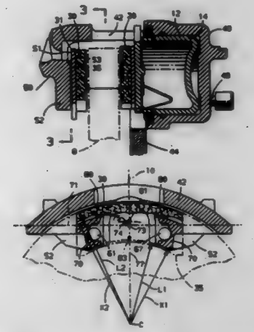
a support member securable to the motor vehicle;

a caliper housing slidably mounted with respect to the support member, the caliper housing having a cylinder positioned on one side of the rotor and containing the piston, and an arm member on the other side of the rotor for urging the outer brake pad into engagement with the rotor when the piston acts on the inner brake pad;

the outer brake pad having a surface for engagement with the brake rotor, the inner radius of the engagement surface from the center of rotation (C) being defined by a function L1 along an angle A, and outer radius of the engagement surface being defined by a function L2 along an angle A; and

a contact surface for transmittal of compressive forces between the caliper arm and the outer brake pad allowing a substantial portion of the brake pad to be unsupported, where the inner radius of the contact surface has an inner radius from (C) defined by a function X1 along an angle A and wherein an outer radius X2 of the contact area from the center (C) is defined to be equal to

$$\int_0^A \frac{(((3/4)*(L1+L2)-X1/2)A)}{A}.$$

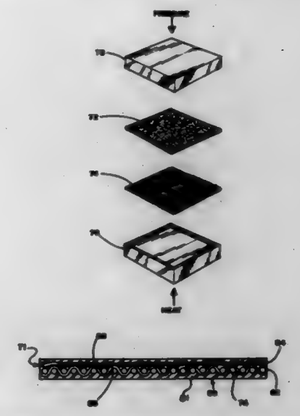


5,289,904

SOUND DAMPENER FOR DISK BRAKES

Everett W. Harrison, 508 N. Shore Dr., South Haven, Mich. 49090

Filed Aug. 28, 1992, Ser. No. 937,546
Int. Cl.[5] F16D *65/092, 69/00*
U.S. Cl. 188—73.1 **18 Claims**



1. In a disk brake assembly having a friction pad mounted on one side of a backing plate and a sound dampening element disposed on another side of the backing plate in a position to be engaged by a piston to urge the friction pad against a rotating disk, the improvement wherein the dampening element comprises:

VOL 1160 ISS 1 MR 1 1994 UMI

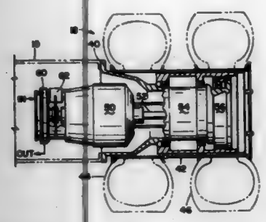
a thermally stable, nonmetallic composition surrounding a zone of random glass fibers and a layer of woven glass.

5,289,905

HYDRODYNAMIC RETARDER FOR LARGE OFF-ROAD ELECTRIC WHEEL DRIVEN VEHICLES

Steve A. Braschler, Coffeyville, Kans., assignor to Parmac, Inc., Coffeyville, Kans.

Filed Sep. 13, 1990, Ser. No. 581,661
Int. Cl.[5] F16D *57/02*
U.S. Cl. 188—296 **3 Claims**



1. A wheel assembly for large, off-road vehicles comprising:
a driving wheel rim and tire assembly rotatably attached to a vehicle chassis;
a non-rotatable housing section attached to said chassis and co-axially positioned contiguously to said assembly;
an electric motor mounted in said non-rotatable housing having a rotor driven output shaft connected to a transmission means to drivingly drivenly rotate said wheel rim and tire assembly;
a hydrodynamic stator/rotor type retarder, said retarder comprising:
a hydrodynamic housing co-axially connected to said non-rotatable housing, a hydrodynamic stator affixed within said hydrodynamic housing, a hydrodynamic rotor rotatably supported contiguously to said stator, and means to controllably supply fluid to said retarder;
means to directly connect said electric motor rotor driven shaft to said hydrodynamic rotor; and
means to controllably retard rotational speed of said wheel rim and tire assembly by said electric motor and/or said retarder.

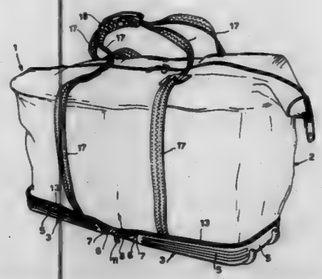
5,289,906

FOLDING BAG, PARTICULARLY TRAVELLING BAG

Pierino Guidi, Schieti di Urbino, Italy, assignor to Piero Guidi di Pierino Giuseppe Guidi & C. s.n.c., Pesaro, Italy

Filed Aug. 3, 1992, Ser. No. 923,597
Claims priority, application Italy, Sep. 3, 1991, MI91 U 000753
Int. Cl.[5] A45C *7/00, 13/30, 13/36*
U.S. Cl. 190—107 **10 Claims**

1. A travelling bag comprising:
a junction plate formed of a semi-rigid material;
two half-shell members formed of a semi-rigid material;
flexible hinges for connecting the two half-shell members to the junction plate whereby, when the travelling bag is in a closed position, the two half-shell members are pivoted toward one another about the flexible hinges and a case is thereby formed having a case interior cavity defined by the two half-shell members, the flexible hinges being parallel to one another;
closure means provided on the two half-shell members for closing the case formed when the travelling bag is in the closed position, the closure means comprising a zipper which engages peripheral portions of the two half-shell members;
a flexible sack attached to the two half-shell members whereby, when the travelling bag is in an open position, the junction plate together with two half-shell members opened about the flexible hinges form a reinforced base for the opened bag, and the flexible sack together with the reinforced base form a bag interior cavity, the flexible sack being fit in the case when the travelling bag is in the closed position;



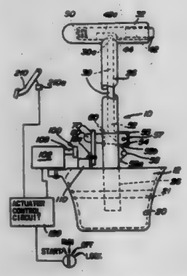
at least one tongue attached to an extremity of the zipper, the tongue being slidably disposed in a slot provided in the junction plate, the tongue having a tab provided thereon, the tongue being narrower than the slot, the tab being dimensioned so that the tab cannot fit through the slot provided in the junction plate.

5,289,907

SHIFT LEVER INTERLOCK SYSTEM

Greg R. Pattock, Spring Lake, Mich., assignor to Sparton Corporation, Jackson, Mich.

Continuation of Ser. No. 535,754, Jun. 11, 1990, Pat. No. 5,181,592. This application Jan. 25, 1993, Ser. No. 8,527
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] B60K *41/28*
U.S. Cl. 192—4 A **10 Claims**



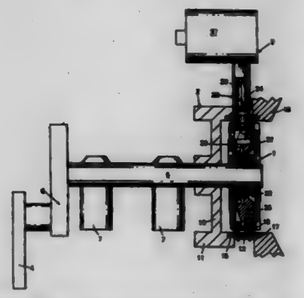
1. A shift lever interlock system for a vehicle having a transmission with a shift lever, comprising:
a shift lever means movable between a non-drive position and a drive position,
detent means for releasably retaining the shift lever means in a selected position,
an electrical actuator for moving a locking member to a locking position relative to the detent means when the shift lever is retained in the non-drive position by the detent means to prevent movement of the shift lever by the vehicle operator,
an ignition switch mechanism for providing an ignition switch input signal indicative of whether the ignition switch is in a lock or non-lock position,
a service brake system switch means for providing a brake system input signal indicative of whether the service brake system is in a brake applied or brake release mode,
an under-voltage sensor associated with a battery of said vehicle for providing a battery level input signal indicative of whether the battery is in a low voltage or non-low voltage condition and,
means for providing a shift lever position input signal indicative of whether said shift lever is or is not retained in the non-drive position by the detent means,
a control circuit for controlling the actuator in response to said input signals to lock the shift lever in position if the shift lever is retained in the non-drive position by said detent means and the ignition switch is in the lock condition and to unlock the shift lever when the ignition switch is in the unlock condition and the brake system is in the brake release mode or when the ignition switch is in the unlock condition and the battery is in the low voltage condition.

5,289,908

COMBINED CLUTCH AND BRAKE UNITS

Ian N. Hakon, Bedford, England, assignor to TI Interlock Limited, Bedford, England

Filed Sep. 14, 1992, Ser. No. 944,677
Claims priority, application United Kingdom, May 22, 1992, 9211030
Int. Cl.[5] F16D *67/04*
U.S. Cl. 192—18 R **14 Claims**



1. A cutting or bending machine comprising:
a machine frame,
an output drive shaft journaled on said machine frame,
a flywheel,
drive means for rotating said flywheel, and
a combined clutch and brake mechanism selectively operable to couple said flywheel to said drive shaft and to effect braking of said drive shaft,
an electrically powered centrifugal blower operable to provide an airflow, and
guide duct means directing said airflow through substantially all of said combined clutch and brake mechanism.

5,289,909

CHUTE FOR BULK MATERIALS

Arthur S. Maxwell, Whitby, and Ian R. Barnard, Guisborough, both of England, assignors to Cleveland Potash Ltd., Cleveland, England

Filed Jul. 9, 1992, Ser. No. 911,196
Claims priority, application United Kingdom, Jul. 12, 1991, 9115046
Int. Cl.[5] B65G *11/08*
U.S. Cl. 193—6 **17 Claims**

1. An chute for conveying bulk materials from a higher location to a lower location, which chute comprises a multiplicity of frustoconical hoppers, said hoppers being supported, at their outer circumferential edge, upon bands extending parallel to a generally vertical axis of the chute so as to space said hoppers along said generally vertical axis with the axes of adjacent hoppers being inclined to said generally vertical axis in different directions, each hopper having a generally downwardly directed narrower end and a generally upwardly directed wider end, the plane of said lower end of each said hopper intersecting the axis of said hopper at an acute angle.

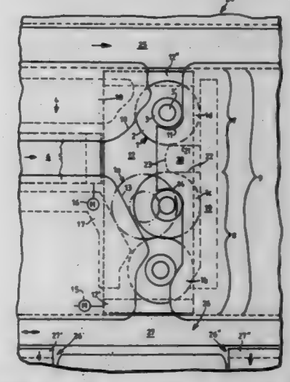


5,289,910

TRANSPORT APPARATUS

Helmut Kohlen, Erkelenz; Paul Surkamp, Kempen, and Helmuth Hensen, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

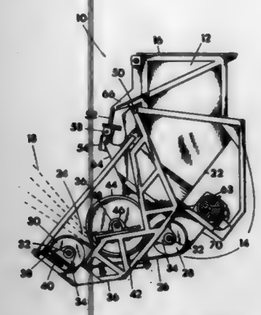
Filed Sep. 21, 1992, Ser. No. 948,112
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131518
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—371 **11 Claims**



1. A textile machine transport apparatus for transporting tube support members of the type on which yarn packages are supported comprising:
means for advancing tube support members, the advancing means being drivable in a forward direction to advance tube support members in a downstream direction along a delivery path and reversibly drivable in a reverse direction substantially opposite to the forward direction; and
means extending laterally from one lateral side of the delivery path toward the other lateral side of the delivery path for engaging a tube support member to prevent upstream movement of the engaged tube support member along the

delivery path, said laterally extending means including a contoured surface formed therein and configured to interrupt travel of tube support members traveling in one direction while allowing tube support members traveling in the opposite direction to pass therepast.

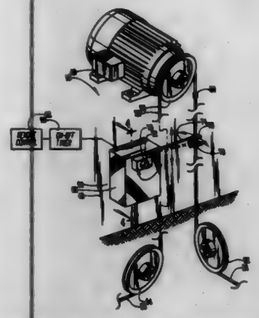
5,289,911
MATERIAL SLINGER
Ira Compton, 2434 Dayton Rd., Chico, Calif. 95928
Filed Jan. 15, 1993, Ser. No. 5,094
Int. Cl.[5] B65G *31/00*
U.S. Cl. 198—641 **3 Claims**



1. An apparatus for throwing bulk material comprising an upper section having a feed hopper for receiving bulk material, a main body pivotally attached to said upper section, said main body including frame means and a funnel hopper supported by said frame means so as to receive bulk material from said feed hopper, belt support means rotatably supported on said frame means, an endless throwing belt trained over said belt support means and positioned at least in part to receive bulk material from said funnel hopper, rotatable idler wheel means supported on said frame means, said idler wheel means engaging an upper surface of said belt to form said belt into a material receiving depression beneath said funnel hopper, first powered means connected to said belt support means having means to rotate said belt, second powered means connected between said upper section and said main body with said second powered means positioned adjacent the pivotal attachment of said main body to said upper section, said second powered means having means to cause pivoting and thus angular change between said upper section and said main body for rendoring a trajectory change in bulk material throwing, an opening positioned between said upper section and said main body with said opening providing means for relieving air pressures and vacuums within a material flow path.

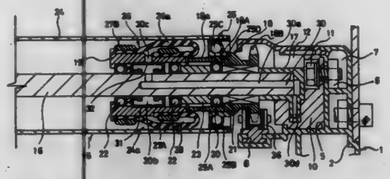
5,289,912
ANIMAL CONFINEMENT BUILDING CLEANING SYSTEM
Eugene W. Faulstich, P.O. Box 248, Ruthven, Iowa 51358
Filed Sep. 9, 1992, Ser. No. 942,581
Int. Cl.[5] B65G *19/00*
U.S. Cl. 198—718 **20 Claims**

1. An animal confinement building cleaning system comprising,
a building having an upper animal floor and a lower waste pit floor, and means for dropping animal waste from the upper floor to the lower floor,
a cleaning system including a cable on which a scraper blade is connected extending the length of said lower floor, said scraper blade being movable between a first position at one end of said lower floor and a second position at the opposite end thereof,
a control system having controls positioned remotely of said lower floor out of said waste pit,
a motor power means connected to said cable out of said pit for moving said scraper between said first and second positions,
said cable being continuous and extending over first and second sheave means at opposite ends of said lower floor and a third sheave means adjacent said controls, said cable having connected thereto first and second spaced apart stops,
said controls including first and second spaced apart limit switches positioned adjacent said cable out of said pit,



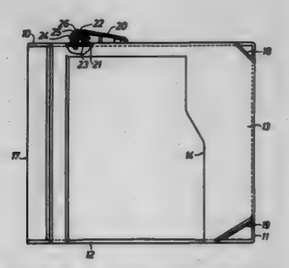
a first arm pivotable between first and second positions for alternately engaging and actuating said first and second limit switches, a second arm connected to said first arm and having an outer free end which embraces said cable, and
said first and second stops being positioned on said cable for said first stop to engage said outer free end of said second arm when said cable is moving in a first direction and said scraper has reached said first position and said second stop to engage said outer free end of said second arm when said cable is moving in a second opposite direction and said scraper has reached said second position.

5,289,913
ROLLER CONVEYOR HAVING AN EXPANDABLE AND CONTRACTIBLE FLEXIBLE BODY DRIVE CORRECTION
Yoshihiko Fujio, Komaki, and Shigetsugu Nakase, Shiga, both of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed Feb. 11, 1993, Ser. No. 16,518
Claims priority, application Japan, Feb. 24, 1992, 4-035482; Jul. 14, 1992, 4-185596; Jul. 14, 1992, 4-185597
Int. Cl.[5] B65G *13/06*
U.S. Cl. 198—780 **2 Claims**



1. A roller for a roller conveyor comprising a driven section freely rotatably fitted on one end of a roller shaft supported in a frame, a sleeve member freely rotatably supported on said one end through a seal device, a roller body freely rotatably supported between said driven section and the other end of said roller shaft, an expandable and contractible flexible body mounted on said sleeve member and adapted to contact the inner surface of the roller body when contracted and when expanded to press against both the inner surface of the roller body and the driven section, and a fluid feed and delivery passage which opens to the interior of said flexible body for supplying fluid to said flexible body for expanding and contacting said flexible body, said fluid feed and delivery passage extending from said roller shaft to the sleeve member.

5,289,914
SAFETY DEVICE FOR CASSETTES
Bertil Holmgren, Vellinge, Sweden, assignor to M W Trading APS, Glyngore, Denmark
PCT No. PCT/SE89/00733, § 371 Date Jul. 11, 1991, § 102(e) Date Jul. 11, 1991, PCT Pub. No. WO90/07183, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 15, 1989, Ser. No. 720,817
Claims priority, application Sweden, Dec. 22, 1988, 8804622-2
Int. Cl.[5] G11B *33/04*; B65D *85/57*
U.S. Cl. 206—1.5 **8 Claims**



1. Safety device for a cassette for a compact disc, or a cassette tape, which cassette comprises two hingedly interconnected rectangular cassette halves, said safety device being intended for mounting on the outside of a said cassette encircling said cassette to prevent opening thereof and being provided with a lock member for locking engagement with said cassette, said safety device having magnetically operated latch means, wherein said lock member comprises a rotary bolt enclosed in a lock housing to be adjusted between an engaged position and a disengaged position from the outside of the lock housing, and that a spring blade of magnet material is provided as a latch member for the rotary bolt, said spring blade being arranged to prevent rotation of the rotary bolt from the engaged latching position and being operable against spring bias from said latching position by magnetic attraction from the outside of the lock housing thereby unlatching the rotary bolt to allow rotation of the rotary bolt to the disengaged position.

8. Lock mechanism comprising a lock member and a magnetically operated latch means for latching said lock member in an engaged position, wherein the lock member comprises a rotary bolt (22) enclosed in a lock housing, said rotary bolt to be rotated between the engaged position and a disengaged position from the outside of the lock housing, and a spring blade of magnet material is provided as a latch member for the rotary bolt, said spring blade being arranged to prevent, in a latching position, rotation of the rotary bolt from the engaged position and being operable against spring bias by magnetic attraction from the outside of the lock housing from said latching position unlatching the rotary bolt to allow rotation thereof to the disengaged position.

5,289,915
KEEPSAKE CAPSULE
William L. Queen, 2209 Lynette Dr., Greensboro, N.C. 27403
Filed Dec. 4, 1992, Ser. No. 986,080
Int. Cl.[5] A45C *11/00*
U.S. Cl. 206—38 **4 Claims**



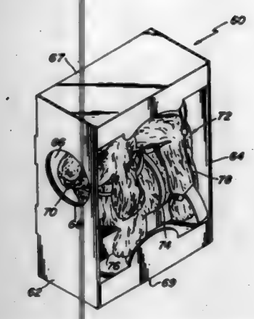
1. A transparent keepsake capsule for displaying a two dimensional item and a three dimensional item including;
a hollow transparent external tube circular in cross section;
said tube having an open top end and a closed bottom end; a piston member of circular cross section releasably inserted within said external tube having a closed bottom end, an elongated tube portion and an upper and lower spaced rib projecting from said piston member, said ribs engage the interior of said external tube, and said elongated tube portion is of a lessor length than said external tube and a stop above said upper rib is provided to stop said piston member within said external tube;
a first compartment created between said exterior tube and said elongated tube portion to receive a two dimensional keepsake item and extending around said elongated tube portion of said piston member;
a second compartment created at the bottom of said exterior tube between the closed bottom of said external tube and the closed bottom end of said piston member to receive a three dimensional keepsake item; and
snap lock means on said capsule for releasably locking together said tube and said piston member, said means comprising a groove that has a circular cross section formed around the interior of said external tube and a rib is formed on said elongated tube portion of said piston member which rib will seat in said groove and releasably lock said tube and said piston member together.

5,289,916
ANIMATED TOY IN PACKAGE
Stephen R. Mickelberg, Longport, N.J., assignor to S. R. Mickelberg Company, Inc., Jenkintown, Pa.
Continuation-in-part of Ser. No. 956,526, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 792,328, Nov. 8, 1991, Pat. No. 5,172,806. This application Apr. 21, 1993, Ser. No. 50,921
Int. Cl.[5] B65D *25/00*
U.S. Cl. 206—45.34 **14 Claims**

1. A package for an animated toy, said animated toy comprising at least one articulated movable part, means for activating said one articulated part and said package comprising a front wall, a rear wall, a top wall, a bottom wall, one side wall

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and one open side, means for securing said toy to said one side wall, means for operating said activating means through said



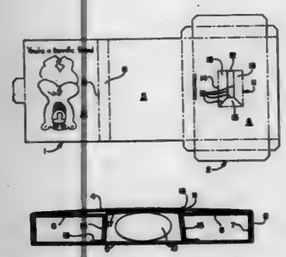
one open side while said toy is secured to said one side wall by said securing means.

5,289,917

COMBINED GREETING CARD AND FLASHLIGHT GIFT PACKAGE

Paul R. Chabria, Wayne, Ill., assignor to Press-A-Lite, West Chicago, Ill.

Filed Apr. 5, 1993, Ser. No. 43,035
Int. Cl.[5] B65D *69/00*
U.S. Cl. 206—232 **7 Claims**



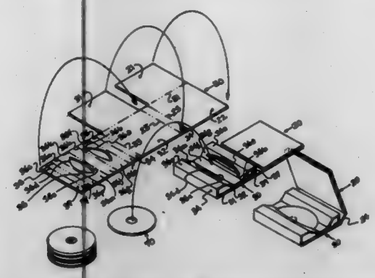
1. In a combined greeting card and gift package formed from a single blank of paper and comprising two parts connected together at a center fold, the first of said parts being adapted to carry a message of greeting, the second of said parts comprising a package having a front and rear panels and adapted to contain a flashlight having a front side, the flashlight being activated by pressure applied to the front side; the improvements therein comprising a first window in said front panel of said package, said first window having a rectangular opening having first flanges depending from fold lines along the sides and bottom of said first window opening and extending to said rear panel of said package to form a frame for the flashlight, and a gift holder comprising a plastic bubble arranged within said frame and a second flange extending from said plastic bubble in engagement with said rear panel of said package, said bubble protruding through said first window, said second flange being located between said first flanges and said rear panel of said package.

5,289,918

CONTAINER FOR COMPACT DISCS

Scott Dobias, 115 Park Dr., Sterling, Ill. 61081, and William Dobias, 929 S. Stone Ave., La Grange, Ill. 60525

Filed May 10, 1993, Ser. No. 59,251
Int. Cl.[5] B65D *85/57*; G11B *23/03*
U.S. Cl. 206—312 **16 Claims**



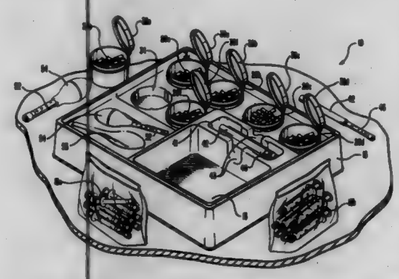
1. A container for holding, displaying and storing a compact disc which comprises:
a sheet scored, folded and glued to form panels;
a Disc Holder Panel having the means of holding a disc by pinching at four points of its outer periphery;
a Cover Panel which is hingeably attached to the Disc Holder Panel to permit folding of the panels on themselves.

5,289,919

ENDODONTIC DENTAL KIT WITH COLOR-CODING MEANS

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Feb. 16, 1993, Ser. No. 18,096
Int. Cl.[5] B65D *83/02, 71/00*
U.S. Cl. 206—571 **25 Claims**



1. A kit for assembling a variety of dental devices using a plurality of delivery tips that differ from one another as to either size or type, said kit comprising:
(a) a plurality of syringes of different sizes, each differently sized syringe being adapted for a different use, and each syringe having an end with a connector means for attaching said syringe to any of a plurality of delivery tips;
(b) a plurality of delivery tips each comprising a hub means for providing releasable attachment of one of said delivery tips to said connector means of any syringe, and each of said delivery tips having a delivery end, wherein the delivery end of at least some of the delivery tips differ from one another as to either size or type, some of said delivery ends comprising a non-tapered, deformable cannula with at least some of the deformable cannulae differing in size, and some of said delivery ends comprising a tapered flexible cannula, and wherein the hub means of each said delivery tip is comprised of a color-coded means for identifying the size or type of delivery cannula;
(c) organizing means for holding each of said pluralities of syringes and delivery tips in a manner such that the color-coded means of each delivery tip is readily distinguishable to permit the different delivery tips to be quickly and easily differentiated and selected based on the size or type of cannula desired; and
(d) wherein the organizing means comprises a plurality of canisters for holding the plurality of differently sized delivery tips, each canister holding therein delivery tips of a size different from delivery tips held within other canisters, and all of the delivery tips within each single canister being of the same size, and each canister being comprised of a color which matches the color-coded means on the hub means of the delivery tips contained within the canister, thereby assuring color coordinated identification of the size and type of the delivery tips contained within each canister.

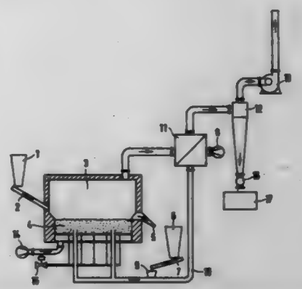
14. A kit for assembling a variety of dental devices using a plurality of delivery tips that differ from one another as to either size or type, said kit comprising:
(a) a plurality of syringes of different sizes, each differently sized syringe being adapted for a different use, and each syringe having an end with a connector means for attaching the syringe to any of a plurality of delivery tips;
(b) a plurality of delivery tips each comprising a hub means for providing releasable attachment of one of the delivery tips to said connector means of any syringe, and each of said delivery tips having a delivery end, and wherein the delivery ends of at least some of the delivery tips differ from one another as to either size or type, some of said delivery ends comprising a non-tapered, deformable cannula with at least some of the deformable cannulae differing in size, and some of said delivery ends comprising a tapered flexible cannula, and wherein the hub means of each said delivery tip is comprised of a color-coded means for identifying the size or type of delivery cannula;
(c) first adaptor means for connecting any one of the plurality of different delivery tips to a vacuum source so as to provide suction through any one of the delivery tips so connected;
(d) second adaptor means for connecting any one of the plurality of different delivery tips to an air bulb so as to provide aeration for purposes of drying through any one of the delivery tips so connected; and
(e) organizing means for holding each of said pluralities of syringes, delivery tips, first adaptor means, and second adaptor means in a manner such that the color-coded means of each delivery tip is readily distinguishable to permit the different delivery tips to be quickly and easily differentiated and selected based on the size or type of cannula desired;
(f) wherein the organization means further comprises a plurality of wells positioned adjacent each other for holding the delivery tips of different sizes and types, such that the color coded means provides ready identification when a plurality of said delivery tips are in separate wells;
(g) wherein the organizing means is further comprised of a tray having a plurality of integrally formed receptacles for receiving therein the pluralities of syringes and delivery tips;
(h) wherein each of said differently sized pluralities of syringes and delivery tips is received within a separate integrally formed receptacle; and
(i) wherein said kit further comprises a plurality of canisters, each canister holding therein a plurality of said delivery tips, all of the delivery tips within each canister being the same size, and each canister being comprised of a color which matches the color of the color-coded means of the delivery tips contained therein, thereby assuring color coordinated identification of the size and type of the delivery tips contained therein.

5,289,920

PROCESS FOR THERMICALLY RECOVERING OLD SANDS OBTAINED IN CASTING PLANTS AND FOR TREATING THE DUSTS OBTAINED DURING CIRCULATION OF THE SAND

Volker Godderidge, Altirdning, Austria, and Walter Stuzmann, Meerbusch, Fed. Rep. of Germany, assignors to KGT Giesereitechnik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed May 10, 1991, Ser. No. 698,402
Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4015031
Int. Cl.[5] B03B *9/04*; F27B *15/00*
U.S. Cl. 209—2 **4 Claims**



1. A process for thermically recovering old sand obtained in casting plants and for treating dust containing combustible organic components and incombustible inorganic components, the dust being obtained by mechanical preparation of the old sand, the process comprising the steps of
forming a fluid bed from the old sand in a fluid-bed kiln having a post-combustion space and an outlet for releasing combustion gases,
introducing dust containing combustible organic components and incombustible inorganic components into the fluid bed, the combustion of the organic components being used to maintain reaction temperature in the fluid bed,
deactivating inorganic components of the dust in the post combustion space,
transporting the deactivated inorganic components of the dust with the released combustion gases to separate the inorganic components of the dust from the thermically recovered old sand, and
separating the deactivated inorganic components of the dust from the released combustion gases.

5,289,921

ELUTRIATION APPARATUS AND METHOD FOR CLEANING GRANULES

Richard D. Rodrigo, Line Lexington, and Timothy A. Good, Royersford, both of Pa., assignors to Illinois Tool Works Inc., Glenview, Ill.

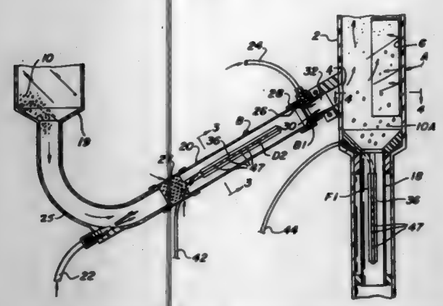
Filed Aug. 17, 1992, Ser. No. 308,110
Int. Cl.[5] B03B *1/00*; B03D *3/00*
U.S. Cl. 209—3 **13 Claims**

10. Method for cleaning granules having lighter weight particulate material entrained therewith comprising the steps of:
(a) feeding dirty granules on a stream of bipolar ionized air into a vertically disposed elutriation column to effect neutralization of the granules and the entrained materials so as to produce multi-level fluidization thereof as a floating suspension within the elutriation column,
(b) drawing off the lighter weight particulate material at the upper portion of the floating suspension by suction,
(c) allowing the heavier weight cleaned granules to separate

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from the floating suspension by falling by gravity to the bottom of the elutriation column, and

(d) collecting the cleaned granules at the bottom of the elutriation column for re-use,



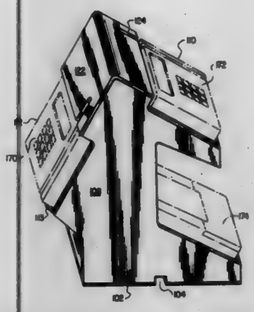
the stream of bipolar ionized air being produced by exposing the dirty granules to dual phase emission from pairs of facing static bars coupled to opposite sides of a high voltage A.C. transformer so that the emission from one static bar is 180° out of phase with that of the other.

5,289,922
ELECTROSTATIC SEPARATION OF MIXED PLASTIC WASTE
Ion I. Inculet; G. S. P. Castle, and James D. Brown, all of London, Canada, assignors to The University of Western Ontario, London, Canada
Filed Sep. 28, 1992, Ser. No. 952,096
Int. Cl.[5] B03C 7/00
U.S. Cl. 209—127.1 **8 Claims**



1. An apparatus for tribocharging particles of electrically insulating materials, the apparatus comprising a tube rotatable about its longitudinal axis and inclined at an angle to the horizontal, the particles being adapted to be gradually and progressively moved longitudinally through the tube from an entry point to an exit point, movement of the particles through the tube resulting in the particles making contact with the tube and with each other, the tube being formed from a material with an electrostatic work function that is different from that of the particles, the difference in the electrostatic work function between the tube and the particles resulting in the particles becoming increasingly tribocharged as they move from the entry point to the exit point on the tube.

5,289,923
STACKER FOR ELECTRONIC PAYMENT SYSTEM KEY PAD AND PRINTER
Fred C. Coblentz, Lake Forest, and William D. Watt, Walnut, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Nov. 23, 1992, Ser. No. 979,990
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 **5 Claims**



1. A terminal stacker having a base comprising:

(a) a first holder having a first face connected to and forming a first acute angle between the base and the first face and having portions defining both a first recess and a first slot opening into the first recess;

(b) a second holder having a second face connected to and forming a second acute angle between the base and second face, connected to said first face and having portions defining a second recess facing in a substantially opposite direction from the first holder having portions defining a second slot opening into the second recess;

(c) a third holder having a third face connected to and forming a third acute angle between the base and third face, connected to said first face and having portions defining a third recess facing in a substantially opposite direction from the first holder; and

(d) a front plate connected to and forming a fourth acute angle with the first face and protruding above the plane of said first face.

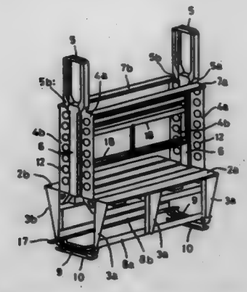
5,289,924
UNIT SUPPORT STRUCTURE FOR GAME MACHINE ISLAND
Takatoshi Takemoto; Toshikazu Chida, both of Tokyo, and Yoshihide Kurihara, Hanamaki, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,201
Claims priority, application Japan, Dec. 18, 1991, 3-335146; Dec. 24, 1991, 3-340984
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—13 **8 Claims**

1. A unit support frame structure for a game machine island comprised of a pair of rows of game machines, which comprises:

(a) a pair of parallel horizontal shelf plates adapted to be attached to said pair of rows of game machines in the island, respectively;

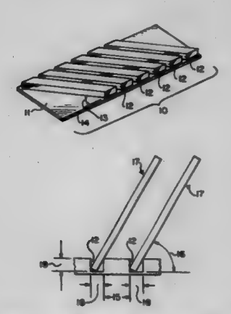
(b) a plurality of vertical partition frame plates disposed under said shelf plates;

(c) two pairs of parallel vertical posts mounted on opposite inner ends of the respective shelf plates and each having an upper end; and



(d) a pair of gate-shape upper support frames having opposite lower portions which are connected to the adjacent upper end portions of the pair of said posts.

5,289,925
ORGANIZATIONAL DISPLAY FOR COMPACT DISC JEWEL BOXES
Martin Newmark, P.O. Box 1338, Boulder, Colo. 80306
Filed Mar. 16, 1992, Ser. No. 851,854
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—40 **15 Claims**



1. An organizational display for compact disc jewel boxes comprising:

a) a base;

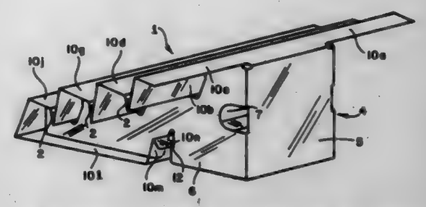
b) a plurality of slots organized on said base such that the front faces of the jewel boxes inserted in the display are visible to a user of said display and capable of being inserted and removed by said user from said slots easily without disturbing adjacent jewel boxes;

c) said slots have a cross sectional area such that when a jewel box is placed in one of the slots, said jewel box's face will be almost entirely outside of said slot and said jewel box will remain in a stable position;

d) and said slots having a length;

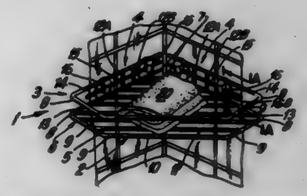
e) said length of said slots is at a nonorthogonal angle from the front of said base towards the back of said base when looking down on said display.

5,289,926
DISPLAY RACK
Timothy D. Lewis, 437 Betsy Bell Rd., and Paul A. Braginetz, 214 Oak Ridge Cir., both of Staunton, Va. 24401
Filed Sep. 15, 1992, Ser. No. 944,950
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—45 **12 Claims**



1. A display rack comprising a one-piece die cut blank having a plurality of folded and interconnected panels forming a plurality of stepped slots, a plurality of items to be displayed inserted into said slots to thereby provide a terraced display of said items, and support structure integral with at least one of the plurality of panels and connectable to the remaining plurality of panels for holding the display rack in an erected position.

5,289,927
RELEASABLY MOUNTABLE CADDY DEVICES
William W. Emery, Berkeley Heights, N.J., assignor to Better Sleep Manufacturing Co., Berkeley Heights, N.J.
Continuation-in-part of Ser. No. 388,236, Aug. 1, 1989, Pat. No. 5,014,860. This application Apr. 5, 1991, Ser. No. 681,153
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—106 **22 Claims**



10. A caddy device for releasable and repositionable attachment to a mounting surface which comprises:

a frame having a planar region, an attachment side and a caddy side;

caddy means attached to said frame for supporting an object;

support means attached to said frame, including a bar element extending substantially within the planar region and having a free end; and

a suction cup attachment means for releasable engagement to said mounting surface, said suction cup attachment means having a mounting portion operably associated with a wall engagement portion, said mounting portion including a bore disposed in a plane substantially parallel to the plane of said wall engagement portion, and being adapted for slidable engagement with said free end of said bar element.

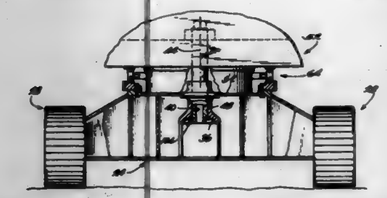
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5,289,928

MINING SHOVEL WITH IMPROVED CENTER GUDGEON BOTTOM RETAINER

Charles H. Maier, Milwaukee, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Oct. 27, 1992, Ser. No. 967,169
Int. Cl.[5] B65G 7/00
U.S. Cl. 212—253 20 Claims



1. Apparatus such as a mining shovel said apparatus comprising

a carbody supported for movement over the ground, said carbody including an upwardly facing carbody upper surface, a downwardly facing carbody lower surface, and a cylindrical bore which extends between said upper and lower surfaces and which is centered on a vertical axis,

a cylindrical center gudgeon which is housed in said cylindrical bore and which includes lower portion extending below said carbody lower surface, a generally cylindrical outer surface having therein a groove defining a generally horizontal plane, and a flat defined by a vertical, planar surface forming a chord of said outer surface, and

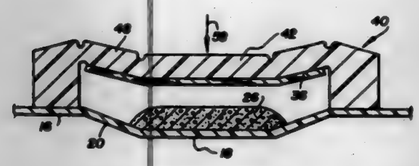
a retainer including a plurality of ring segments housed in said groove, said segments including respective horizontal segment upper surfaces, and said retainer also including a key having a vertical, planar key inner surface engaging said center gudgeon flat, and a horizontal key upper surface coplanar with said segment upper surfaces, and said key being welded to said carbody so that said key is stationary relative to said carbody and prevents rotation of said center gudgeon relative to said carbody.

5,289,929

TAMPER INDICATING MEANS FOR VACUUM CLOSURES

Robert J. Heilman, Orland Park, Ill.; Daniel M. Carson, New York, N.Y.; Robert E. Sparks, and Norbert S. Mason, both of St. Louis, Mo., assignors to Continental White Cap, Inc., Downers Grove, Ill.

Filed May 22, 1992, Ser. No. 887,339
Int. Cl.[5] B65D 55/02
U.S. Cl. 215—230 22 Claims



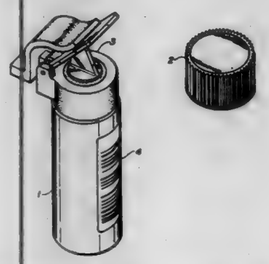
1. A tamper indicating closure comprising a closure member having an end panel including an axially deformable vacuum actuated button said button movable between an up position and a down position, a cover having a generally central portion formed in a upwardly extending configuration, said central portion being axially deformable into a downwardly extending configuration, said cover being carried by said end panel in overlying relation to said button, a layer of absorbent material overlying said button, said layer of absorbent material having non-absorbent areas defining message indicia, a sponge like member below said layer of absorbent material, said sponge-like member having a liquid dye therein, said cover and said button operatively associated to clamp said sponge like member and said absorbent material therebetween when said button is in the up position and said central portion of said cover is in said downwardly extending configuration, thereby allowing the liquid dye to color all of said layer of absorbent material except for said non-absorbent areas to make said non-absorbent areas readily visible, and said generally central portion of said cover permitting light to pass through for the purpose of viewing any coloring of said layer of absorbent material.

5,289,930

EVAPORATION CLOSURE

Kenneth K. Inouye, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 19, 1991, Ser. No. 794,751
Int. Cl.[5] B65D 51/04, 71/00
U.S. Cl. 215—235 12 Claims



1. A closure comprising:

a cap made of pliable material comprising (a) a top wall having an opening, (b) a skirt, downwardly depending from said top wall, said skirt made of pliable material and having a threadless internal wall to slip on and sealingly engage a container, and (c) a discrete first hinge portion integral with said top wall;

an elongated arm comprising sealing means for sealing said opening and a discrete second hinge portion integral with said elongated arm, said discrete second hinge portion pivotally mated with said discrete first hinge portion and rotatable relative thereto for movement of said elongated arm between a first position, wherein said sealing means seal said opening and a second position, wherein said sealing means does not seal said opening

biasing means having a width and integral with said skirt for biasing said arm toward said first position; and

a vial locating tab separate from said hinge portions and disposed between and integral with said biasing means and said skirt, said vial locating tab having a width less than an outside diameter of said skirt and less than the width of said biasing means.

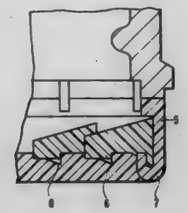
5,289,931

PILFER-PROOF SYNTHETIC RESIN CAP

Kouichi Doi, deceased, late of Kanagawa, Japan by Eiko Doi and Kenichi Doi Legal Representatives , assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 865,121, Apr. 8, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 101,267
Claims priority, application Japan, Apr. 8, 1991, 3-075192
Int. Cl.[5] B65D 41/34
U.S. Cl. 215—252 2 Claims

1. A pilfer-proof synthetic resin cap comprising a tap panel, a cylindrical skirt portion hung from the peripheral edge of the top panel, a circumferential band provided at the lower end of said cylindrical skirt portion via a weakened line, and inwardly projecting flap pieces provided on an inner surface of said circumferential band portion to engage a jaw portion formed at



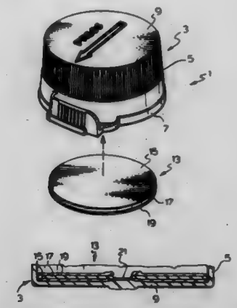
the mouth of a container, wherein at a lower end of said circumferential band, a circumferential curled portion that is inwardly curled is formed by a curling process after the formation of the flap pieces.

5,289,932

CLOSURE CAP WITH PLASTIC LINER

Emidio Dimeo, Toronto, and Kevin E. Greenhead, Beaverton, both of Canada, assignors to Canada Plastic Containers Limited, Scarborough, Canada

Continuation of Ser. No. 868,649, Apr. 15, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 91,411
Int. Cl.[5] B65D 53/04
U.S. Cl. 215—349 2 Claims



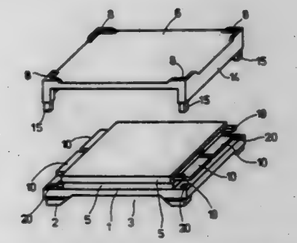
1. A plastic closure cap for a container having a flat imperforate plastic interior liner, said liner having a mating surface with said cap and said mating surface and said cap being made from plastic materials having at least substantially similar melting temperatures, said cap having a top cap portion and a skirt depending from said top cap portion, said mating surface of said liner being of a corresponding shape and size to said top cap portion and said liner having a peripheral sealing area internal of and adjacent to said cap of said skirt, said cap and said mating surface of said liner being secured at a means defining a break resistant weld formed by melting to one another without penetration through said cap at a location generally centrally of said liner away from said sealing area, such that said means defining a break resistant weld maintains said liner secured to said cap upon removal of said cap from the container.

5,289,933

COLLAPSIBLE CARGO CONTAINER

Roland Streich, Hailanderstrasse 25A, D-7460 Balingen-Zillhausen, Fed. Rep. of Germany, and Falk Kühn, Rottenburg, Fed. Rep. of Germany, assignors to Roland Streich, Balingen-Zillhausen, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,311
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113438
Int. Cl.[5] B65D 7/24
U.S. Cl. 220—1.5 27 Claims



1. A collapsible cargo container, in particular of rectangular or square cross section, having

a bottom element (1);

a plurality of side wall elements (5); and

a top element (6),

said bottom side wall and top element being rigidly joined together when said container is in an erected condition;

at least one selectively openable and closable door;

a door hinge (11) pivotably supporting the door about a vertical hinge axis when the container is in erected condition; and

releasable plug-in connectors located in the corner regions of the bottom and top elements for connecting the bottom and top elements to the side wall elements,

wherein the plug-in connectors (15, 16; 19, 20), when the container is in a collapsed or empty shipping condition, directly connect the top element (6) to the bottom element (1) with the side walls elements (5) located between the top and bottom elements; and

wherein the door hinge (11) is coupled to one side wall element (5) and is hingedly operative to fold the door (10) flat against said one side wall element for resting against said one side wall element flat thereagainst to be accomodated between the top element (6) and the bottom element (1) when the container is collapsed for empty-shipment.

5,289,934

ADJUSTABLE MOUNTING ASSEMBLY FOR ELECTRICAL OUTLET BOX

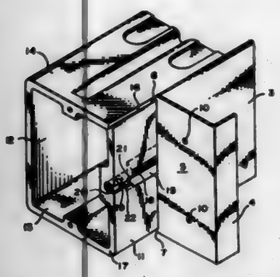
Benjamin H. Smith, Bingen, and Scott P. Pinsley, Lyle, both of Wash.

Filed Sep. 2, 1993, Ser. No. 114,937
Int. Cl.[5] H02G 3/12
U.S. Cl. 220—3.7 7 Claims

1. An adjustable mounting assembly for an electrical outlet comprising, a bracket, said bracket having one portion fastened to a wall stud, said bracket having a second portion, a tongue secured to said second portion, a threaded bore provided in said tongue, a rectangular electrical outlet box having side walls, a bottom wall and a top wall, a groove provided in one of the side walls of said box, said bracket tongue being slidably mounted in said groove, and said bracket tongue being completely enclosed within said groove, wherein the electrical box slides relative to said wall stud, and a bolt carried on said one side wall of said box, said bolt extending into said threaded

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bore in said tongue, whereby the position of the electrical outlet box is adjusted relative to the wall stud to thereby position a front of the box flush with a surface of a wall in which the box is mounted.

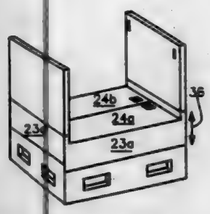


5,289,935

CONTAINER WITH SIDEWALL EXTENSION AND METHOD FOR MAKING

Mark Hillis, and Dixon Freeman, both of Tacoma, Wash., assignors to Perstorp Xytec, Inc.

Continuation of Ser. No. 701,602, May 14, 1991. This application Mar. 3, 1992, Ser. No. 845,121
Int. Cl.[5] B65D *7/24*
U.S. Cl. 220—4.03 **9 Claims**



1. A collapsible container, comprising;

a base, said base having a surface defining a base plane, said base having a coupling means with a first configuration;

a sidewall extension structure, removably coupled to said base, extending in a direction perpendicular to said base plane;

at least four sidewalls, each sidewall being pivotally attached to said sidewall extension to permit movement of each of said sidewalls between a first collapsed configuration substantially parallel to said base plane and an uncollapsed configuration;

said sidewall being non-integral with said extension structure and pivotally attached to said sidewall extension;

said sidewall extension structure having means for attaching to said base, substantially without modification of said base and second means for pivotally attaching to a sidewall, substantially without modification to said sidewall, said second means including the upper edge configuration of said sidewall extension structure, said sidewall pivotal between a first collapsed configuration and a second uncollapsed configuration, said upper edge configuration of said sidewall extension structure being identical to said first configuration of said base coupling means; and

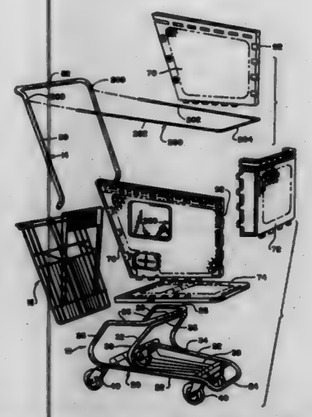
means for releasably latching said sidewalls in said uncollapsed configuration wherein said sidewall extension structure includes four sides, each side having a substantially planar surface.

5,289,936

PLASTIC BASKET

Ronald J. Jones, Muskogee, and Lonnie W. Wright, Broken Arrow, both of Okla., assignors to UNR Industires, Inc., Chicago, Ill.

Continuation of Ser. No. 848,755, Mar. 10, 1992, Pat. No. 5,255,930. This application Mar. 16, 1993, Ser. No. 33,235
Int. Cl.[5] B65D *6/02, 6/26*
U.S. Cl. 220—4.28 **7 Claims**



1. A basket comprising separate panel members molded from plastic material, said panel members consisting of two side panel members, a front panel member, and a bottom panel member, said front panel member being generally U-shaped so as to define a planar portion and two side portions, each of said side portions being generally parallel with one of said side panel members, certain of the side, front and bottom panel members having spaced tabs thereon and certain of the side, front, and bottom panel members having spaced slots therein, the spacing between the tabs corresponding to the spacing between the slots and the tabs being received by the slots to rigidly assemble and interlock the side panel members to the front panel member and to rigidly assemble and interlock the front panel member to the bottom panel member, said front and side panel members having a top edge, member-receiving formations extending along the top edge of said side panel members, a U-shaped member being received by the member-receiving formations, the U-shaped member having a bight portion and connecting the side portion and side panel members and bearing against a top edge portion of the front panel member.

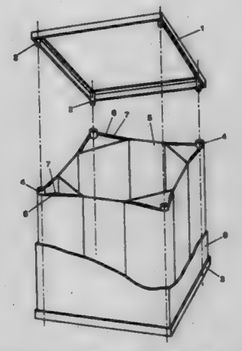
5,289,937

CONTAINER COMPRISING A RELATIVELY STIFF, FORM-RETAINING SUPPORTING FRAME AND A FLEXIBLE SHELL MEMBER ARRANGED THEREIN

Gerardus A. M. Boots, J. Kruyverstraat 26, 1507 WH Zaandam, Netherlands

Filed Jan. 19, 1993, Ser. No. 6,039
Claims priority, application Netherlands, Jan. 23, 1992, 9200130
Int. Cl.[5] B65D *19/36, 90/04*
U.S. Cl. 220—4.1 **12 Claims**

1. A container comprising a relatively stiff, form-retaining supporting frame and a flexible shell member arranged therein, said shell member forming a receiving space for material to be packaged, said supporting frame comprising a polygonal bottom member and a correspondingly shaped polygonal cover member, both having corners, each corner of the bottom member being connected with a corner of the cover member by a rod-shaped element, the flexible shell member having a circumferential sidewall and being connected with each rod-shaped element by a respective flexible loop member, each loop member, starting from a first point of attachment to the shell member, said first point of attachment being on an exterior of the sidewall, passes around said rod-shaped element and extends further to a second point of attachment to the shell member on the exterior of the sidewall, spaced from the first point of attachment, each loop member having a length greater than a multiple of the circumference of the respective rod-shaped element, the loop members keep the shell member



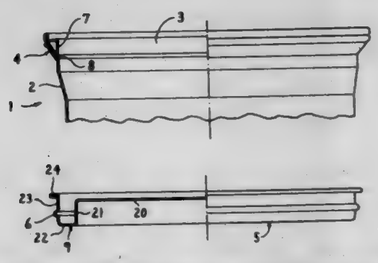
within outer boundaries of the supporting frame when the shell member contains material to be packaged, wherein a strip-shaped member made from a flexible material is connected with the shell member on the exterior of the sidewall and at a location proximate the points where the loop member is attached to the shell member, said strip-shaped member having a length at least equal to that of said rod-shaped element and a width greater than that of the shell member as measured between said two points of attachment, with the associated rod-shaped element extending between the loop member and the strip-shaped member.

5,289,938

RIM STRUCTURE FOR METAL CONTAINER

Purificación A. Sanchez, Plaza Josep Rigol, 8, 08760 Martorell Province of Barcelona, Spain

Filed Jan. 26, 1993, Ser. No. 9,051
Int. Cl.[5] B65D *39/00*
U.S. Cl. 220—307 **5 Claims**



1. In a metal container having a generally cylindrical sidewall terminating at its upper end in an annular rim structure which surrounds and defines an opening into the container and a removable lid, the rim structure of said cylindrical sidewall being adapted to sealingly engage said removable lid, the rim structure in its entirety being formed integrally with said cylindrical sidewall by being formed from the same thin material used for forming the cylindrical sidewall, comprising the improvement wherein:

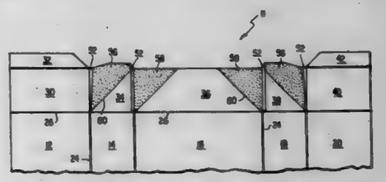
the cylindrical sidewall of the container in the vicinity of the upper end thereof has an integral outer wall part which diverges radially outwardly as it projects axially upwardly, said outer wall part at its upper end being folded radially inwardly over onto itself to define an annular outer flange having a rounded cross section, said outer flange at its radially inner end having an intermediate inclined flange extending axially downwardly while converging radially inwardly from said upper end, said intermediate inclined flange being generally straight as it inclines downwardly so as to terminate at its lower end in a generally V-shaped fold which opens axially upwardly and defines an annular vertical flange which in turn defines said opening, the diameter of said opening as defined by said annular vertical flange being substantially equal to the inside diameter of said cylindrical sidewall at the upper end thereof where said sidewall joins to said outer wall part, said annular vertical flange projecting axially upwardly in straight and generally parallel relationship with the longitudinal axis of the container, said vertical flange at its upper end being bent radially outwardly to define a radially outwardly projecting annular top flange which projects radially outwardly and is provided with a rolled outer flange adjacent a radially outer free edge thereof, said top flange and said rolled outer flange being positioned axially above said annular outer flange, said V-shaped fold and the upper end of the cylindrical sidewall being slightly axially spaced apart and defining a shallow radially-outwardly projecting annular groove therebetween, said annular groove opening inwardly into said opening, and said lid removably engaged with said rim structure for closing off said opening, said lid including an annular flange which projects into the opening for disposition inside said vertical annular wall, said annular flange on said lid having a radially outwardly projecting surrounding annular projection which creates a resilient snap-fit within said groove.

5,289,939

GAS BARRIER FOLDING CARTON CONSTRUCTION

Robert L. Gordou, Monroe, and David E. Stier, Middletown, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,551
Int. Cl.[5] B65D *5/56*
U.S. Cl. 220—462 **9 Claims**



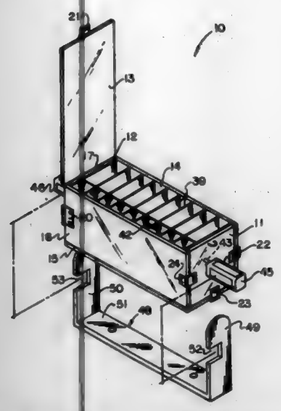
1. A unitary blank of paperboard having a plurality of wall panels and end closure panels defined by vertically and horizontally extending fold lines, at least four of said wall panels arranged in serial, side by side relation and coupled through said vertical fold lines, said end closure panels pivotally connected by said horizontal fold lines to respective upper and lower edges of respective of said wall panels, a gas impermeable, barrier layer extruded or laminated on one surface of said paperboard blank, gaps between said end closure panels, portions of some of said end closure panels being coated with an abhesive on that surface of said paperboard blank carrying said barrier layer, said abhesive located between said blank and said barrier layer.

5,289,940

ROTARY FISHING LURE CONTAINER

David H. Wisenbaugh, 3821 N-M-52, Owosso, Mich. 48867

Filed Aug. 24, 1992, Ser. No. 933,767
Int. Cl.[5] A01K 97/06
U.S. Cl. 220—507 7 Claims



1. A fishing lure container, comprising,

a front wall spaced from a rear wall in a parallel and coextensive relationship relative to one another, the front wall and rear wall are each of a generally square configuration, and including a front wall first side edge, a front wall second side edge, a front wall third side edge, and a front wall fourth side edge, with the rear wall including a rear wall first side edge, a rear wall second side edge, a rear wall third side edge, and a rear wall fourth side edge, and

a first lid having a first hinge hingedly mounting adjacent to the rear wall first side edge, a second lid having a second hinge hingedly mounted to the rear wall second side edge, a third lid having a third hinge hingedly mounted to the rear wall third side edge, and a fourth lid having a fourth hinge hingedly mounted to the rear wall fourth side edge, the first lid having a first latch means for securement adjacent to the front wall first side edge, the second lid having a second latch means for securement to the front wall second side edge, the third lid having a third latch means for securement to the front wall third side edge, and the fourth lid having a fourth latch means for securement to the front wall fourth side edge, and

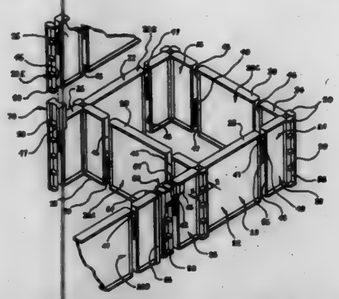
a core support extending coextensively between the front wall and rear wall medially of the front wall and rear wall and orthogonally oriented relative to the front wall and rear wall, wherein the core support includes a central rigid spine, wherein the central rigid spine is oriented medially of the front wall and rear wall and orthogonally oriented relative to the front wall and rear wall, and the central rigid spine includes first radial vane, a second radial vane, a third radial vane, and a fourth radial vane, each vane is spaced ninety degrees relative to one another, wherein the first radial vane is orthogonally oriented relative to the first lid, the second radial vane is orthogonally oriented relative to the second lid, the third radial vane is orthogonally oriented relative to the third lid, and the fourth radial vane is orthogonally oriented relative to the fourth lid, and a first floor plate orthogonally and integrally mounted to the first radial vane, a second floor plate integrally and orthogonally mounted to the second radial vane, a third floor plate integrally and orthogonally mounted to the third radial vane, and a fourth plate integrally and orthogonally mounted to the fourth radial vane.

5,289,941

RECONFIGURABLE ARTICLE STORAGE CONTAINER

Karl Blankenburg, Warren, and Mitchell M. Marchi, Bloomfield Hills, both of Mich., assignors to The American Team, Mt. Clemens, Mich.

Filed Nov. 10, 1992, Ser. No. 974,206
Int. Cl.[5] B65D 21/02
U.S. Cl. 220—592 16 Claims



1. A reconfigurable article storage container comprising:

a plurality of identical panels interconnectible into a container of variably arrangeable size, shape and number of panels and containing at least one individual article storage area adjacent at least one of the panels therein, each panel including:

a plurality of panel sections of identical height, each panel section having first and second spaced edges thereof colinearly arranged with the first and second edges of adjacent panel section, each panel section having first and second side ends, the side ends of each panel section have a polygonal shape to form flat side end faces planarly engageable with identical flat side end faces of an identical panel when two panels are interconnected in a perpendicular, inverted arrangement;

a connector web integrally formed with and disposed between the side ends of two adjacent panel sections, each connector web being of a predetermined length and having one end spaced a predetermined distance from one of the first and second edges of the adjacent panel sections; and

a first connector slot formed between two adjacent panel sections and extending from said one of the first and second edges of the adjacent panel sections to the one end of the connector web;

the first connector slot of one panel releasably receiving the first connector slot of another panel therein, the another panel being inverted 180° and oriented perpendicular to the one panel.

5,289,942

REINFORCED STORAGE TANKS

Norman C. Fawley, 5701 Seaside Walk, Long Beach, Calif. 90803

Division of Ser. No. 708,012, Jun. 3, 1991, Pat. No. 5,194,110, which is a continuation-in-part of Ser. No. 274,278, Nov. 21, 1988, abandoned. This application Dec. 11, 1992, Ser. No. 989,589
Int. Cl.[5] B65D 90/00
U.S. Cl. 220—565 6 Claims

1. A reinforced tank for storing fluid under loading conditions comprising:

a cylindrical shell strong enough to withstand stresses imposed on the shell by the fluid stored in the tank, said shell comprising a plurality of metal plates welded together, said shell having a vertical axis, an exterior surface, a top end and a bottom end, said shell being supported at its bottom end and being subject to bursting under load due to a rapidly propagating fracture from increased stresses in the shell above the stresses imposed by the fluid; and

a reinforcing jacket of composite material extending around said shell and in contact with the exterior surface of said shell, said composite material defined by a plurality of continuous, high tensile strength, nonmetallic filaments wound around said shell and a resinous matrix for said filaments, wherein said composite material defines a plurality of spaced circumferential bands.

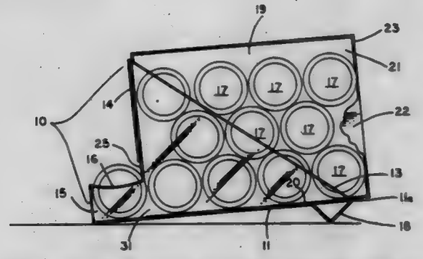


5,289,943

HOLDER FOR DISPENSING CANS FROM A MULTI-CAN CARTON

Philip M. Powell, 7508 N. 50 East, Fortville, Ind. 56040

Filed Apr. 20, 1992, Ser. No. 870,954
Int. Cl.[5] B65G 59/00
U.S. Cl. 221—67 5 Claims



1. A re-usable gravity-feed holder adapted to fit around and support a multi-pack carton of cylindrical containers for dispensing individual cylindrical containers directly from an open end of the carton comprising:

an open top frame having a partial front wall, two parallel partial side walls, and a bottom wall, but having no top or back wall, said frame adapted to be disposed on a supporting surface and further adapted to receive and support the carton of cylindrical containers so that an open end of the carton is tilted downwardly toward the supporting surface and the cylindrical containers are disposed horizontally and are free to roll towards the open end of the carton; and

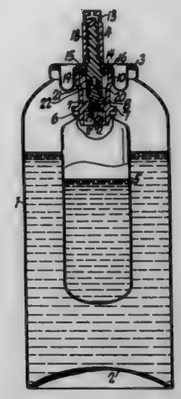
a dispenser pocket extending outwardly from the frame at the end closest to the supporting surface, the dispenser pocket having an opening on top communicating with the open end of the carton to receive successive cylindrical containers from the carton as prior containers are removed from the opening on top of the dispenser pocket.

5,289,944

METHOD OF CO-DISPENSING A HAIR DYE COMPOSITION

Thomas F. Wiegner, 351 Shelton Rd., Trumbull, Conn. 06611, and Gregory C. Peinchl, 21 Quaker Ridge Rd., Bethel, Conn. 06801

Division of Ser. No. 688,221, Apr. 22, 1991, Pat. No. 5,167,347. This application Sep. 9, 1992, Ser. No. 942,559
Int. Cl.[5] B67B 7/00
U.S. Cl. 222—1 13 Claims



1. A method of co-dispensing a hair dye composition under pressure comprising providing a first container containing a hair dye and propellant material, disposing within said first container a second container containing a hair dye developer material, defining a discharge passageway via a nozzle structure, controlling passage of said materials through said nozzle via a valve structure, providing a first valve within said valve structure, controlling with said second valve the flow of material between a first orifice communicating with said first container, a second orifice communicating with said second container and said discharge passageway, providing a second valve, controlling with said second valve the flow of material through said second orifice only, connecting said first and second valves for concurrent operation thereof, moving said nozzle structure to operate said first and second valves, simultaneously dispensing said materials through said passageway at an overall flow rate not greater than about 1.8 gm/sec., and further dispensing the hair dye and propellant material through the first orifice and the dye developer material through the second orifice at a flow ratio of about 1.9 to 2.5:1.

5,289,945

SEALING AND DISPENSING CAP

Robert H. Stradder, 165 W. End Ave., Apt. 10 A, New York, N.Y. 10023

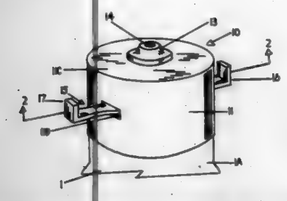
Filed Feb. 27, 1992, Ser. No. 846,255
Int. Cl.[5] B67D 5/06
U.S. Cl. 222—23 4 Claims

1. A sealing and dispensing cap for a container comprising

a cap body having a cap sealing plate extending laterally across substantially a mid-portion of said cap body thereby dividing said cap body into an upper cap body portion and a lower cap body portion, said upper cap body portion including dispensing means and said lower cap body portion including container attachment means, said cap sealing plate having a sealing plate aperture formed therein communicating with an inside portion of said container, said upper cap body portion being formed

having a top wall that includes a nipple integrally formed with the top wall of said upper cap body portion,

said dispensing means including a lever arm extending laterally through a slot formed in said upper cap body portion between the lower end of said dispensing means and said cap sealing plate, said lever arm projecting to opposing sides of said upper cap body portion, said lever arm having a lever arm opening formed therein, said lever arm being slidably moveable laterally for selective vertical alignment and misalignment of said lever arm opening and said sealing plate aperture,



said lever arm comprising a substantially flat extended member having a first push/pull tab orthogonally and integrally formed at a first end of said lever arm and a second push/pull tab orthogonally and integrally formed at a second end of said lever arm, said lever arm opening being disposed between the respective first and second ends of said lever arm,

the respective first and second push/pull tabs being marked distinctively, one to the other.

5,289,946

DISPENSER FOR MEDIA

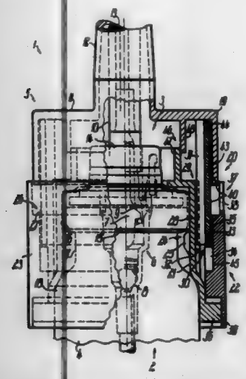
Karl-Heinz Fuchs, Radolfzell, Fed. Rep. of Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. KG, Radolfzell

Filed Aug. 29, 1991, Ser. No. 752,047

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027670

Int. Cl.[5] B67D *5/26*

U.S. Cl. 222—38 **23 Claims**



1. A dispenser for discharging media comprising:

at least one discharge actuating means;

at least one determination device having an unoperated initial position; and

at least one actuator for controlling said at least one determination device,

wherein catch means are provided for positionally locking said at least one actuator in said initial position and for releasing said at least one actuator to a further position when unlocked by a manual locking stress overcoming a locking stress of said catch means.

5,289,947

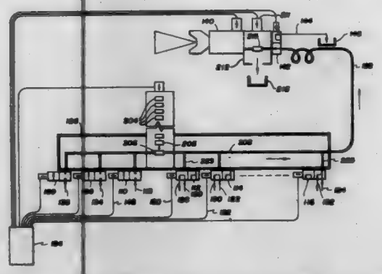
SYSTEM FOR THE PRODUCTIVE UTILIZATION OF PAINT IN A PAINT SUPPLY LINE, CHANGING PAINT COLORS AND CLEANING THE PAINT LINES IN PRODUCTION PAINT OPERATIONS

Hadi A. Akeel, Rochester Hills, and Alexander H. Joyce, Livonia, both of Mich., assignors to FANUC Robotics North America, Inc., Auburn Hills, Mich.

Division of Ser. No. 744,360, Aug. 13, 1991, Pat. No. 5,192,595. This application Feb. 26, 1993, Ser. No. 23,885

Int. Cl.[5] B05B *15/02*; B08B *9/02*

U.S. Cl. 222—108 **4 Claims**



1. A system for changing paint colors, cleaning and productively utilizing paint in a paint supply line in a paint system, the paint system having applicator means being fed with paint by the supply line, a first source of pressurized paint of a first color, a second source of pressurized paint of a second color, a source of pressurized air and a source of cleaning fluid adapted to be selectively connected to the supply line, interior walls of the supply line having a substantially constant inside diameter, the system comprising:

means for connecting the supply line to the first source of pressurized paint to fill the supply line with the first color paint to allow the applicator means to paint an article;

means for disconnecting the supply line from the first source of pressurized paint when the remaining paint in the supply line is sufficient to complete the painting of the article;

a termination piston having an exterior surface with an outside diameter which forms a close sliding fit within the supply line;

means for inserting the termination piston into the supply line after the supply line is disconnected from the first source of pressurized paint;

means for propelling the termination piston through the supply line so as to cause the termination piston to wipe paint off the interior walls of the supply line by virtue of the termination piston being propelled through the supply line, thus feeding the paint in the supply line to the applicator means until essentially no paint of the first color remains in the supply line;

means for removing the termination piston from the supply line after the termination piston is propelled through the supply line;

means for alternating the connection of the supply line between the source of pressurized air and the source of cleaning fluid to cause charges of cleaning fluid to be propelled through the supply line at a speed sufficient to cause the walls of the supply line to be washed clean of substantially all traces of paint of the first color; and

means for connecting the supply line to the second source of paint so as to fill the supply line with the second color paint to allow said applicator means to again paint an article.

5,289,948

SQUEEZE BOTTLE APPARATUS WITH FORCE MULTIPLYING PISTONS

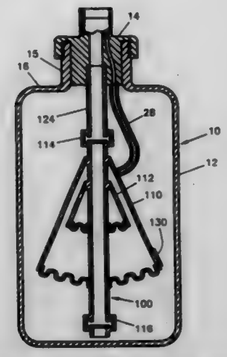
Owen R. Moss, Cary, N.C.; Norman R. Gordon; Henry S. DeFord, both of Kennewick, Wash., and Eugene A. Eschbach, Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 596,848, Oct. 12, 1990, Pat. No. 5,129,550, which is a continuation-in-part of Ser. No. 300,601, Jan. 23, 1989, Pat. No. 4,972,977. This application Apr. 3, 1992, Ser. No. 862,908

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] B65D *37/00*

U.S. Cl. 222—135 **9 Claims**



1. A spray bottle adapted for holding at least one fluid and producing a media of this fluid upon being squeezed, said spray bottle comprising:

(a) a fluid spray discharge member including a spray nozzle;

(b) a container for holding said at least one fluid within its interior, said container having a stiff portion and a resilient portion proportioned and arranged to permit deformation of said resilient portion while preserving an orientation of said fluid spray discharge member;

(c) a housing constructed and arranged for being mounted on said container, said housing including;

at least one high pressure chamber in controlled communication with said spray nozzle and a fluid within said container, and

at least one low pressure chamber in communication with the atmosphere outside said container;

(d) at least one dispensing pump constructed and arranged to drive said fluid out through said nozzle at high pressure including:

a first fluid displacer which is mounted in said high pressure chamber for applying pressure to any fluid within this chamber, and

a second fluid displacer of greater diameter than said first fluid displacer, which is mounted in said low pressure chamber so as to partition this chamber off from the interior of said container and which is rigidly connected to said first fluid displacer so as to be movable therewith, said hydraulic assembly being operative for being displaced within said low pressure chamber when said bottle is squeezed; and

(e) valve means for controlling the transfer of fluid into and out of said at least one high pressure chamber so that fluid will flow out of said high pressure chamber through said nozzle when said bottle is squeezed and flow into said chamber from the interior of said container as said bottle recovers from being squeezed.

5,289,949

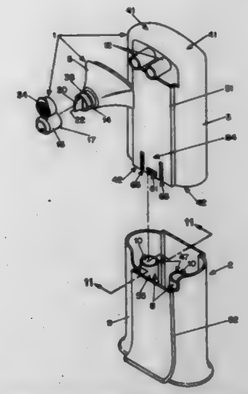
MULTI-CAVITY DISPENSING REFILL CARTRIDGE

James L. Gentile, Orange, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 22, 1992, Ser. No. 901,670

Int. Cl.[5] B67D *5/52*

U.S. Cl. 222—137 **13 Claims**



1. A multi-cavity dispensing refill cartridge, for use with a reusable base unit, for the coextrusion of at least two flowable materials, comprising:

a dispensing cartridge comprising at least two hollow and separate parallel cylinders, each cylinder for containing one of said flowable materials, said cylinders having a first generally closed end and a second open end telescopically and slidingly accommodating at least two parallel piston heads which conform to ride sealingly along the interior walls of said cylinders so as to force said flowable materials to flow toward said first end of said cylinders upon relative compression of said cylinders and piston heads, said piston heads each having a hollow interior containing a cylindrical central portion and interior ribs connecting said cylindrical central portion to the outer wall of said piston head, wherein said cylindrical central portion extends beyond said ribs toward said open end of said cylinder whereby a hollow cylindrical piston rod in a reusable base unit can be received around said cylindrical central portion and bear axially against said ribs to push said piston head toward said closed end, said cylinders having outlet channels at said closed end, said refill cartridge further comprising means for selectively engaging a reusable base unit; and

an outlet means in fluid communication with said outlet channels, said outlet means including adjacent outlet openings unconnected to each other and having means for causing said flowable material to flow toward each other at said outlet openings to form a single banded, unmixed stream of said materials outside of said outlet means.

5,289,950

MULTIPLE CHAMBER DISPENSING PACKAGE WITH CLOSURE SYSTEM

James L. Gentile, Orange, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Sep. 30, 1992, Ser. No. 954,847

Int. Cl.[5] B65D *5/72*

U.S. Cl. 222—142.3 **13 Claims**

1. Package for dispensing at least two liquid components simultaneously, said package comprising:

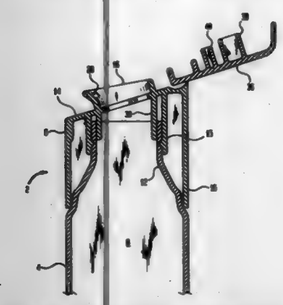
a container for the components, said container having at

least two discrete compartments each with an upper outlet end; and

a closure system for closing the container over the outlet end of the compartments; said closure comprising:

an inclined crown portion having an upper surface defined by an outer edge that includes a lower and upper edge, the crown portion also having a peripheral skirt portion depending downwardly from the outer edge of the crown, said skirt portion being of sufficient size to engage a surface of the container in a fluid tight manner;

at least two pouring spouts extending upwardly from the upper surface of the crown toward the lower edge



thereof, the spouts being substantially oval in shape and positioned on the crown with long axes parallel and extending between but not as far as the lower and upper edges of the crown;

each pouring spout being provided with a through opening which extends from the upper end of the spout, through the crown and into a compartment; and

a flat cover for securement to the crown portion toward an upper edge thereof, said cover being provided with at least two depending plugs receivable in corresponding through openings of the crown so as to close the container.

5,289,951

BOTTLED WATER STATION WITH REMOVABLE RESERVOIR

Bruce D. Burrows, Valencia, Calif., assignor to Ebtech, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 955,330, Oct. 1, 1992, Pat. No. 5,246,141, which is a continuation-in-part of Ser. No. 688,861, Apr. 22, 1991, Pat. No. 5,192,004. This application May 24, 1993, Ser. No. 64,921

Int. Cl.[5] B67D *5/62*

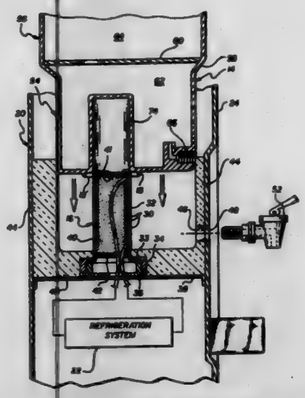
U.S. Cl. 222—146.6 **12 Claims**

1. A water station, comprising:

a reservoir having a hollow interior for receiving and storing a supply of water, said reservoir having a bottom wall with an inverted receiver cup formed therein;

a station housing having support means for receiving and supporting said reservoir;

a chiller probe mounted within said station housing and projecting upwardly from said support means for slide-fit reception into said receiver cup when said reservoir is mounted within said station housing, said chiller probe defining a chilled surface for contacting said reservoir to chill water within said reservoir;



vapor seal means for preventing air circulation between said receiver cup and said chiller probe when said reservoir is mounted within said station housing; and

faucet means for dispensing water from said reservoir.

5,289,952

DEVICE FOR DISPENSING FOAM, AND PUSH-BUTTON FOR A DEVICE OF THIS KIND

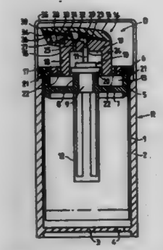
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 27, 1992, Ser. No. 881,755

Claims priority, application France, Apr. 30, 1991, 91 05290

Int. Cl.[5] B67D *5/58*

U.S. Cl. 222—189 **24 Claims**



1. A device for dispensing foam from a container containing a liquid with a foaming agent and capable of mixing the liquid emerging from the container with air, comprising:

pump means disposed at one end of the container for delivering the liquid from the container,

a rigid push button mounted on the one end of the container for movement toward and away from the one end of the container

said push button having a discharge channel including an outlet and a porous component disposed in said discharge channel upstream of said outlet,

an expansion chamber located downstream of said porous component

said push button including air compression means and duct means for delivering compressed air to said discharge channel,

said push button including valve means for controlling delivery of air from said duct means to said discharge channel upon actuation of said push button,

said air compression means including an annular chamber in said push button and surrounding said pump means, the volume of said annular chamber being variable upon movement of said push button from a deactuated to an actuated position corresponding to movement thereof toward the one end of the container, said push button including a one way valve allowing introduction of air into said annular chamber upon movement of said push button away from the one end of the container,

said push button being operatively connected to said pump means so that, upon movement of said push button toward the one end of the container,

said pump means delivers liquid to said discharge channel while air in said annular chamber is compressed and delivered through said valve means to said discharge channel and then to said porous component,

said annular chamber including a head closing the one end of the container and having a sleeve carrying said pump means, said push button including a collar defining a portion of said annular chamber, said collar surrounding a cavity in said push button receiving said pump means and said sleeve when said push button is moved toward the one end of the container, said cavity being in communication with said annular chamber.

5,289,953

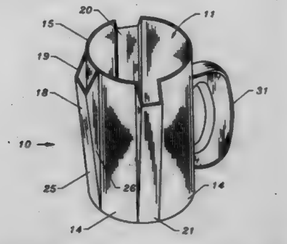
BEVERAGE SERVICE PITCHER

Joseph P. McMillan, III, 15 Arlington St., Asheville, N.C. 28801, and Lawrence W. Owen, Jr., 1995 N. Hwy. 25, Travelers Rest, S.C. 29690

Continuation-in-part of Ser. No. 914,882, Jul. 16, 1992, abandoned. This application Apr. 15, 1993, Ser. No. 48,363

Int. Cl.[5] A47G *19/14*

U.S. Cl. 222—189 **12 Claims**



1. A pitcher for holding a liquid having ice cubes immersed therein comprising,

a bottom wall,

a sidewall extending from said bottom wall and having a lip located distally from said bottom wall,

a handle outwardly extending from a handle portion of said sidewall,

a first elongated chute extending outwardly from a first chute portion of said sidewall located opposite to and forward of said handle portion of said sidewall,

a second elongated chute extending outwardly from a second chute portion of said sidewall located between and sideways of said handle portion and said first chute portion, said second chute having a size and shape for aligning and accommodating a succession of ice cubes as the pitcher is tilted for dispensing liquid and ice cubes together from said second chute,

said first and second chutes each extending from adjacent said bottom wall to adjacent said sidewall lip, and

strainer means for preventing ice cubes of a selected minimum size in the pitcher from entering one of said chutes, whereby a stream of liquid without ice cubes may be poured from one of the chutes tilting the pitcher held by the handle in one direction and a stream of liquid with ice cubes may be poured from another of the chutes by tilting the pitcher in another direction.

5,289,954

DEVICE FOR METERED REMOVAL OF FLOWABLE SOLID MATERIAL

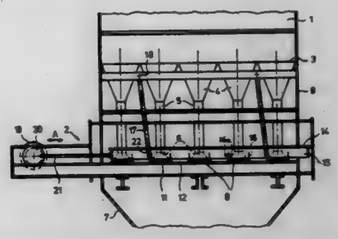
Hermann Brüggendick, Hünxe, and Karl Klinginger, Essen, both of Fed. Rep. of Germany, assignors to STEAG Aktiengesellschaft, Essen, Fed. Rep. of Germany

PCT No. PCT/EP90/02056, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/09801, PCT Pub. Date Jul. 11, 1991

PCT Filed Nov. 30, 1990, Ser. No. 906,219

Int. Cl.[5] G01F *11/00*

U.S. Cl. 222—409 **14 Claims**



1. A device for metered removal of flowable solid material, said device comprising:

at least one delivery opening for the flowable solid material;

an essentially horizontal intermediate storage floor for receiving the flowable solid material, said intermediate storage floor arranged below said delivery opening;

a collecting space for the flowable solid material defined between said intermediate storage floor and said delivery opening;

a lateral opening in said intermediate storage floor adjacent to said delivery opening;

at least one removal rake with at least one blade, said removal rake inserted into said collecting space and movable relative to said intermediate storage floor transverse to a delivery direction of said delivery opening for pushing the flowable solid material collected under said delivery opening into said lateral opening; and

a pivoting parallelogram-shaped rod arrangement having upper pivoting axes that are arranged in a common horizontal plane, with said removal rake being pivotably connected to said parallelogram-shaped rod arrangement.

5,289,955

TRI-LEVEL HIGHLIGHT COLOR REPLENISHER

Timothy J. Salenski, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 9, 1992, Ser. No. 942,547

Int. Cl.[5] G01F *11/20*

U.S. Cl. 222—413 **7 Claims**

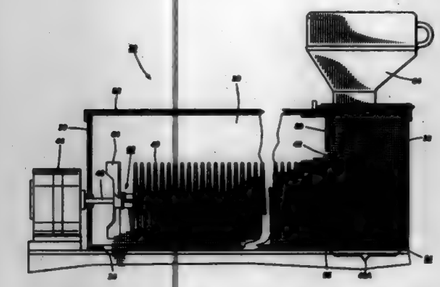
1. A developer dispensing apparatus including an elongated dispenser containing a quantity of developer material including toner and carrier beads, said apparatus comprising:

a coiled spring in said dispenser for transporting developer material between opposed walls of said dispenser, said dispenser having an opening in the bottom thereof adjacent one of said opposed walls, said opening providing communication between said dispenser and a developer housing supply;

means including a shaft, said shaft having a diameter which is small compared to the opening delineated by said spring;

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said coiled spring having an elongated attachment leg for drivingly interconnecting said shaft and said transport means, said attachment leg extending across said opening; and



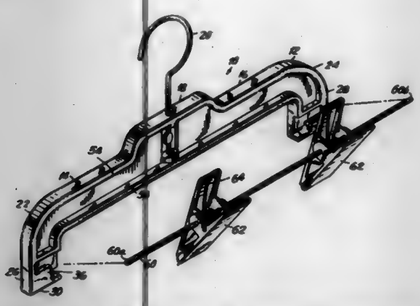
means for maintaining the position of said attachment leg fixed relative to the axis of rotation of said shaft whereby relative displacement therebetween is minimized to prevent the coiled spring from bowing and for maintaining uniform rotation of the coiled spring about the axis of the shaft.

5,289,956

ROD COUPLING CONSTRUCTION FOR GARMENT HANGERS

Nicolean Petrou, 1531 W. Tadmar Ave., Anaheim, Calif. 92802

Filed Feb. 3, 1993, Ser. No. 12,868
Int. Cl.[5] A47G *25/48, 25/18*
U.S. Cl. 223—85 **5 Claims**



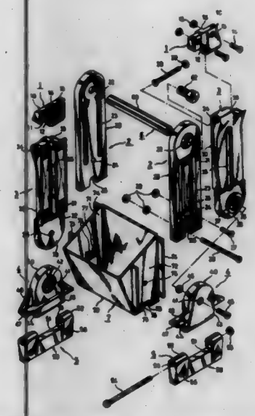
1. A garment hanger adapted to support an elongated rod comprising an elongated body having two ends and a supporting portion therebetween, said ends of said body extending downwardly to form a pair of spaced legs each having a rod receiving portion, each said rod receiving portion being defined by a bottom wall, a back wall joined to said bottom wall and forming part of said body, a side wall and a front wall joined to said bottom wall and side wall and spaced a predetermined distance from said back wall to define an initial rod receiving pocket, a secondary rod receiving pocket below said initial rod receiving pocket and offset therefrom, the width of said initial and secondary rod receiving pockets being essentially the same as the diameter of said rod to permit said rod to be locked in said secondary rod receiving pocket, opposing corners being formed intermediate said initial rod receiving pocket and said secondary rod receiving pocket, said opposing corners being spaced a distance essentially equal to the diameter of said rod.

5,289,957

CONTAINER FIXING SUPPORT

Tsu-ping Huang, 4th Floor, 12-1 Alley 15, Lane 214, Chunghsin Road, Sec. 4, Sanchung City, Taipei Hsien, Taiwan

Filed Mar. 19, 1992, Ser. No. 854,819
Int. Cl.[5] B60R *7/02*
U.S. Cl. 224—42.42 **2 Claims**



1. A container fixing support which comprises two holders, two inner fixing supports, two outer fixing supports, two connecting bases, two fixing plates, a connecting rod and a connecting container, wherein:

each of the holders is a reverse L-shaped holder body, of which the inner side is provided with a plurality of evenly-distributed equidistant convex concave stripes, to be fixed onto the outer side of the inner fixing supports,

each of the inner fixing supports is a strip support body, of which the outer side is provided with a plurality of evenly-distributed equidistant convex-concave stripes to correspond to those convex-concave stripes on one of the holders, and the lower side of the inner fixing strip support bodies is designed to engage the two inner fixing supports and the two outer fixing supports together with the connecting container;

each of the outer fixing supports is a strip support body, of which the inner side is provided with a plurality of evenly-distributed equidistant convex-concave stripes to correspond to those convex-concave stripes on one of the inner fixing supports, a protuberance on one side of each of the outer fixing strip support bodies and is designed to pivotally engage with a holder which holder then engages an inner fixing support, and the center of the outer fixing strip support body is designed to engage with the connecting container and to adjust the width between the two outer fixing support bodies, and the lower end of the inner fixing strip support body is designed to engage with one of the connecting bases;

each of the connecting bases is a plate body whereon an upper end of one side is provided with a gear-shaped recess to correspond to and engage the gear-shaped protuberance which is provided at the lower end of each of the outer fixing strip support bodies, the locking position of the engaged gear-shaped recesses and protuberances can be optionally adjusted to and fro, and a protuberance at the lower end of the connecting base plate body is designed to pivotally engage with a fixing plate;

each of the fixing plates is a short U-shaped plate body, and the protuberance of the connecting base is inserted in a notch at the center on the fixing plate body for mutual engagement which is capable of swinging left and right;

the connecting rod is a pipe with a suitable length to be inserted in the rear lower side of a container and engaged with the two inner fixing supports so that a container is installed thereon;

the connecting container is a container body with and two positioning tracks protruded from the outer sides of its two side walls to fix each of inner fixing supports between the two positioning tracks, the central lower end on the two outer side walls of the container body are adjustably fixed to the two outer fixing supports; and

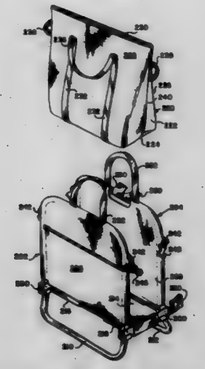
for assembly, the two inner fixing supports are installed at the two ends of connecting rod, and when to install the container together, firstly to dispose the connecting rod between the two fixing supports and the two fixing plates on the rear side of the container and then to lock the two inner fixing supports onto the two ends of the connecting rod, and then to lock the container in a position adjacent the lower side between the two inner fixing supports; secondly to engage the upper and lower ends of each outer fixing support with a holder and a connecting base respectively, then to lock the two holders in a suitable position on the two inner fixing supports respectively and to lock the two outer fixing supports onto a lower edge of the connecting container; and finally to lock each fixing plate onto each connecting base, then the container fixing support as a whole is well assembled to be installed on the main frame of a car between the two front seats in the car.

5,289,958

BACKPACK CONVERTIBLE CHAIR

John C. Jay, 18 Sea St., Manchester, Mass. 01944

Continuation-in-part of Ser. No. 702,233, May 17, 1991, Pat. No. 5,209,381, which is a continuation-in-part of Ser. No. 482,637, Feb. 21, 1990, Pat. No. 5,016,792. This application Feb. 24, 1993, Ser. No. 22,350
Int. Cl.[5] A45F *4/02*
U.S. Cl. 224—155 **19 Claims**



1. A backpack assembly which is convertible to a multiposition chair comprising:

generally parallel front and back panels having tops and bottoms, said front panel intended to lie against the back of a person carrying the assembly as a backpack,

said front panel having a rigid frame including a top cross bar and vertical side bars lying in a common plane and being free of rigid cross bars in said plane adjacent the lower end thereof,

a bottom panel having opposite sides and opposite ends and connected along said sides to the bottoms of the front and back respectively,

said bottom panel having a depth from one side to the other substantially half the length of the front and back panels measured from top to bottom,

a container having opposite side, front, back and bottom walls disposed between the front and back panels when the assembly is in the backpack configuration,

means releasably securing the container in position between the front and back panels with the bottom wall on the bottom panel, the front and back walls against the front and back panels respectively and the side walls extending between the front and back panels, the container and panels forming a carrying chamber in the backpack,

means pivotally connecting the bottoms of the front and back panels to the sides of the bottom panel enabling the front and back panels to be pivoted to an obtuse angle with the bottom panel about axes defined by the sides of the bottom panel when the container is detached and the assembly is to be placed in a chair configuration,

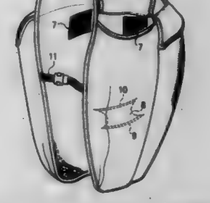
and backpack straps connected at one end to a central portion of the top cross bar, and at the other ends to the ends of the vertical side bars.

5,289,959

INFANT RESCUE VEST

Robert A. Beeley; Brenda K. Oswalt, and James Oswalt, all of P.O. Box 55549, Houston, Tex. 77255

Filed Dec. 18, 1991, Ser. No. 808,919
Int. Cl.[5] A61G *1/00*
U.S. Cl. 224—160 **2 Claims**



1. A rescue vest garment to be worn on the body of a person for rescuing infants comprising:

a front panel and a back panel having an aperture therethrough for the person's head;

a plurality of pockets attached to an exterior of the front panel, with one side of the pocket being formed by the front panel and with each of said pockets having an opening and each of said pockets being large enough to contain an infant passed through the opening of each of the pockets;

a flap attached above the opening of each of the pockets for covering the opening wherein when the flap is lifted away from the pocket, the pocket is accessible;

a ventilation insert for each of said pockets mounted in a side of the pocket formed by the front panel;

straddle means for each of said pockets comprising a straddle seat attached to an interior of the pocket below the ventilation insert wherein the infant's legs straddle said straddle seat thereby confining the infant in one position facing the ventilation insert; and

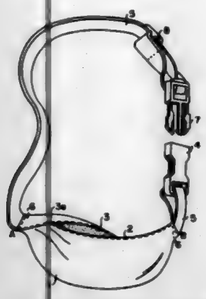
a belt having opposing ends with one end attached to a side of the front panel and the other end attached to a side of the back panel.

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5,289,960
BALL BELT

Nancy A. Kelly, 24435 Copper Cliff Ct., Lake Forest, Calif. 92630, and Claulech J. Khan, 18442 Birch St., Fountain Valley, Calif. 92708

Filed Sep. 4, 1992, Ser. No. 942,026
Int. Cl.[5] B65D *30/00*
U.S. Cl. 224—226 5 Claims



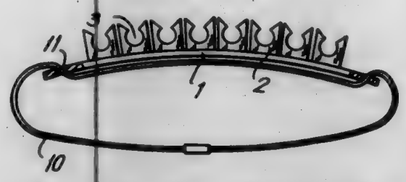
1. A sporting accessory for holding a plurality of tennis balls around a waist of a user, said sporting accessory comprising:
a pouch formed from an elastic material wherein said pouch is adapted to receive said plurality of tennis balls;
and an adjustable belt assembly connected to opposite ends of said pouch and being adapted to surround the waist of a user,
wherein said pouch includes a front panel and a rear panel, each of said panels having a top portion, a bottom, a first end and a second end, said front panel and said rear panel being connected to each other along said bottom and said ends, the top portions of said panels forming an elastic opening sized to permit entry and removal of tennis balls from said pouch,
said opening being formed at a first end by folding and securing a portion of said top portion of said front panel and a portion of said first end of said front panel adjacent said top portion over a corresponding portion of said top portion of said rear panel and a portion of said first end of said back panel adjacent said top portion of said rear panel,
said opening being formed at a second end by folding and securing a portion of said top portion of said rear panel and a portion of said second end of said rear panel adjacent said top portion over a corresponding portion of said top portion of said front panel and a portion of said second end of said back panel adjacent said top portion of said front panel, such that said top portion of said front panel is positioned above said top of said rear panel adjacent said first end and said top portion of said rear panel is positioned above said top portion of said front panel adjacent said second end and said top portions criss-cross at a point intermediate said first and second ends.

5,289,961
DEVICE FOR HOLDING WRITING INSTRUMENTS

Michael Levitt, 34-05 Woodward St., and Grigory Gelman, 33-29 Poplar St., both of Oceanside, N.Y. 11572

Filed Feb. 20, 1992, Ser. No. 838,025
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—247 10 Claims

1. A device for holding writing instruments, comprising
an elongated supporting member having a predetermined direction of elongation;
and a plurality of holding members arranged on said supporting member substantially side by side along the direction of elongation of said supporting member and each having at least one receptacle for receiving at least one writing instrument, each of said receptacles having an inner part which substantially receives a writing instrument and an outer outwardly open part for introducing the writing instrument into said inner part, said holding members being spaced from one another by a distance which is smaller than said outer part of each of said receptacles as considered in direction of elongation of said supporting member so that a writing instrument can be inserted into said receptacles but cannot be inserted into a space between said holding members, each of said holding members having two straight sides which extend from

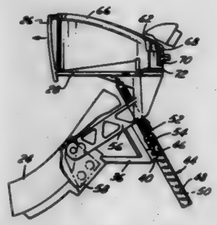


said supporting member perpendicularly to said supporting member and have free ends, two inclined surfaces extending from said free ends of said straight sides inwardly and toward one another and having inner ends, and a partially circular surface which has ends connected with said inner ends of said inclined surfaces, so that in a region where said ends of said partially circular surface are connected with said inner ends of said inclined surfaces thickened walls are formed in each of said holding members so as to form two inner shoulders; and
means for retaining said supporting member on at least one of a part of user's body and a part of user's clothes.

5,289,962
CUP HOLDER

Douglas P. Tull, Canton; John Vitkay, Livonia; Michael F. Wallis, Rochester Hills, and Stephen E. Maxwell, Ferndale, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1993, Ser. No. 55,333
Int. Cl.[5] B60R *7/06*; B65D *85/00*
U.S. Cl. 224—273 4 Claims

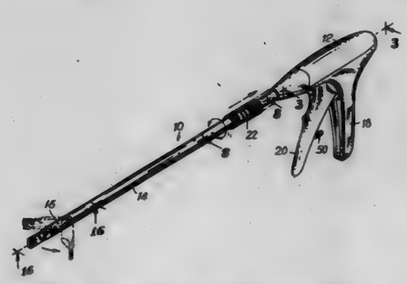


1. A cup holder for use with a vehicle, the cup holder mounted within a vehicle console for movement between a closed position within the vehicle console and an open position wherein the cup holder extends out of the vehicle console comprising:
a bracket attached to the vehicle console;
a platform pivotally attached to the vehicle console, said platform including a rear wall portion, and a front wall portion;
a housing having a rod member outwardly biased and disposed within said housing, said housing connected to said bracket and said rod member connected to said platform;
a retaining member forming an upper horizontal surface connected to said front wall and rear wall portions, said retaining member having a semi-circular recess in an edge thereof;
an arcuate vertical side wall pivotally connected to said platform, said side wall and said retaining member forming a cavity for receipt of a beverage container; and
a plurality of resilient members positioned adjacent the cavity such that various size beverage containers may be supported by said cup holder.

5,289,963
APPARATUS AND METHOD FOR APPLYING SURGICAL STAPLES TO ATTACH AN OBJECT TO BODY TISSUE

Richard A. McGarry, Norwalk; David T. Green, Westport; Henry Bolanos, East Norwalk, all of Conn.; Wayne P. Young, Brewster, N.Y.; Lisa W. Heaton, Norwalk, Conn., and Salvatore Castro, Waterbury, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 18, 1991, Ser. No. 782,290
Int. Cl.[5] A61B *17/00*
U.S. Cl. 227—175 62 Claims



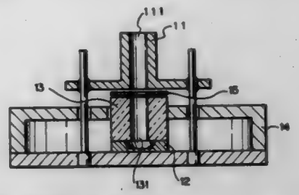
1. Apparatus for endoscopic application of a surgical staple adapted to attach an object to body tissue, which comprises:
a) a frame;
b) a generally elongated endoscopic tubular portion connected to said frame and extending distally therefrom, said endoscopic generally tubular portion having a generally longitudinal axis, a proximal end portion, and a distal end portion;
c) means for storing at least one surgical staple at said distal end portion, said staple storing means movable at least between a first position generally in line with said longitudinal axis and a second position at an angle relative to said longitudinal axis;
d) means for individually advancing said at least one staple distally for positioning adjacent the body tissue, said staple advancing means operable when said staple storing means is in said first or second positions; and
e) anvil means for closing said staple in a manner to encompass at least a portion of the object and to penetrate the body tissue to attach the portion of the object to the body tissue.

5,289,964
FLUXLESS SOLDERING PROCESS

Takao Yoneyama, Gifu, and Katsuhiro Izuchi, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 21, 1992, Ser. No. 915,623
Claims priority, application Japan, Jan. 23, 1990, 2-11837
Int. Cl.[5] B23K *1/008*
U.S. Cl. 228—122.1 9 Claims

1. A fluxless soldering process comprising the steps of:
preparing first and second members to be bonded by soldering, the first member having a bonding surface with a higher solder-wettability and the second member having a bonding surface with a lower solder-wettability and having a cross-sectional area smaller than that of the bonding surface of the first member;
placing the second member with the bonding surface thereof facing upward, a solder foil on the bonding surface of the

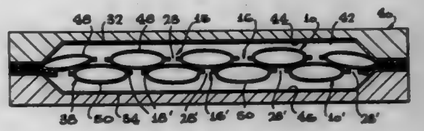


second member, and the first member on the solder foil with the bonding surface thereof facing downward, to form an assembly;
heating the assembly in a reducing atmosphere to fuse the solder foil, thereby bonding the first and second members.

5,289,965
METHOD OF SUPERPLASTICALLY FORMING AND BRAZE BONDING A STRUCTURE

Ken K. Yasui, Huntington Beach, and Richard G. Pettit, La Habra, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 30, 1993, Ser. No. 54,227
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—157 22 Claims



1. A process for forming a structure, comprising:
providing a plurality of worksheets made from a metal alloy having superplastic characteristics, a brazing alloy capable of brazing said worksheets being associated therewith;
joining at least two of said worksheets in facing contact with each other by welding in a preselected pattern to form at least one set of joined worksheets;
sealing the perimeter of said joined worksheets while providing means for the admission of pressurized gas therebetween, thereby producing at least one worksheet assembly;
providing a forming die having at least one wall and defining a cavity therein;
positioning said at least one assembly in said cavity;
heating said worksheet assembly to a temperature suitable for superplastic forming and applying gas pressure at said means for admission of pressurized gas, causing superplastic forming and expansion of at least one of said sheets into contact with said at least one cavity wall;
continuing to apply said pressurized gas to cause further expansion of said sheets until the desired geometry of said structure has been attained; and
braze bonding said formed structure by ensuring that the die temperature is at or above the minimum brazing temperature of said brazing alloy for a specified period of time, thereby bonding at least some of the contacting surfaces of said structure together.

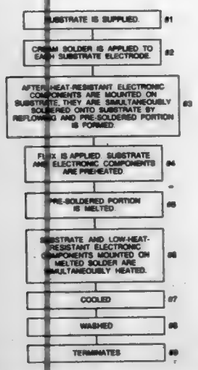
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,966

METHOD FOR CONNECTING ELECTRONIC COMPONENT WITH SUBSTRATE

Yasuo Izumi, Ikoma; Syoji Sato, Neyagawa; Hiroshi Yamauchi, Kadoma, and Ryoji Imatsuka, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1992, Ser. No. 942,167
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—180.21 **20 Claims**



1. A method for electrically connecting to a substrate a first electronic component which is resistant to a reflowing temperature and a second electronic component which is not resistant to a reflowing temperature, comprising:

applying cream solder to a first predetermined portion of the substrate at a position at which said first electronic component is to be mounted, and to a second predetermined portion of the substrate at a position at which said second electronic component is to be mounted;

mounting the first electronic component to said first predetermined portion of the substrate;

reflowing by heating said solder applied to said first predetermined portion of the substrate to thereby solder said first electronic component onto the substrate;

forming a pre-soldered portion of cream solder at said second predetermined portion of the substrate;

applying flux to one of said second electronic component and said pre-soldered portion;

operating a suction nozzle to hold said second electronic component and place it on the substrate at said second predetermined portion; and

soldering said second electronic component to the substrate by directing an irradiating beam toward a predetermined local portion of the substrate at which an electrode of said second electronic component is located to irradiate and locally melt the cream solder of said pre-soldered portion, to thereby avoid heating said second electronic component to the reflowing temperature.

5,289,967

SYNTHESIS OF METAL MATRIX COMPOSITES BY TRANSIENT LIQUID CONSOLIDATION

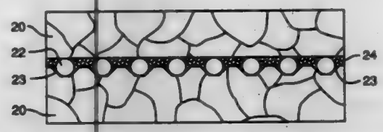
Clifford C. Bampton, and Michael A. Cunningham, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 666,154, Mar. 7, 1991, abandoned. This application Aug. 26, 1992, Ser. No. 935,760
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—190 **17 Claims**

1. A method of forming a metal matrix composite, comprising the steps of:

providing fibers for consolidation within a matrix of metallic material selected from the group of materials consisting of titanium aluminide alloys, superalloys, iron-aluminide and nickel-aluminide alloys, and aluminum alloys;

selecting a transient liquid diffusion bonding agent from the group of materials consisting of Ag, Cu, Al, Ag-Al, Cu-Al, and Ti-Cu-Ni for titanium aluminide matrix materials; B, Si, P, and alloys thereof for superalloy, iron-aluminide, and nickel-aluminide matrix materials; and Zn, Mg, Zn-Al, Si-Al, and Mg-Al for aluminum alloy matrix materials;



disposing said fibers and said bonding agent between layers of said matrix material to form a layered structure;

heating said layered structure to liquefy said bonding agent;

wetting said fibers with said liquefied bonding agent; and

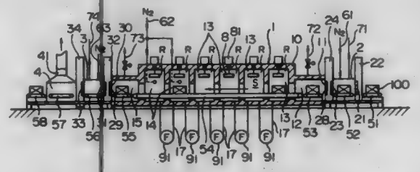
isothermally solidifying said bonding agent upon interdiffusion with elements of said matrix material to consolidate said fibers in said metal matrix.

5,289,968

ALUMINUM BRAZING METHOD AND FURNACE THEREFOR

Toshiaki Maeda, Aichi, and Shinji Kurano, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 15, 1992, Ser. No. 961,392
Claims priority, application Japan, Oct. 18, 1991, 3-270875
Int. Cl.[5] B23K *1/20*
U.S. Cl. 228—223 **6 Claims**



1. An aluminum brazing method comprising:

a preheating step in which aluminum or aluminum alloy members in the form of work-pieces coated, at least in sections to be brazed, with flux of potassium aluminum fluoride and brazing material of Al-Si-alloy system are preheated in an anti-oxidizing atmosphere up to a starting temperature of activating said flux;

a brazing step in which the preheated work-pieces are further heated within a surrounding means inhibiting radiation heat to the work-pieces mainly by forced convection in said anti-oxidizing atmosphere from said starting temperature up to a determined temperature at a rate of 5° C. to 25° C. per minute to gradually activate the flux and melt the brazing material; and

a gradual cooling step in which the brazed work-pieces are gradually cooled in said anti-oxidizing atmosphere.

5,289,969

CARTON AND PACKAGING ASSEMBLY THEREFOR

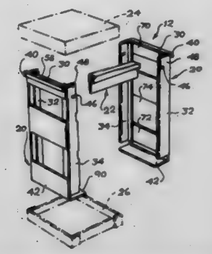
Jon M. Schwaner, Greenwood, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Jul. 14, 1992, Ser. No. 913,119
Int. Cl.[5] B65D *25/22*
U.S. Cl. 229—23 R **24 Claims**

1. Container for holding an article having opposed sides, comprising:

a pair of channel members for engaging opposed sides of the article, each channel member formed from a single integral paperboard sheet and each having a middle body portion between a pair of channel sides extending from the middle body portion so as to form corner posts and an intermediate channel therewith for receiving the article;

at least one cross member extending between and engaging said channel members;



securement means for securing said channel members about the article;

said channel members including a lifting flange for lifting the container and article with a lifting blade; and

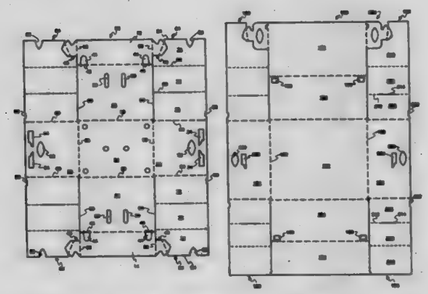
at least one of said channel members and said cross member defining socket means for interlocking engagement with the other.

5,289,970

PAPERBOARD CONTAINER HAVING REINFORCED CORNERS

Jack A. McClure, Garden City, Kans., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Oct. 2, 1992, Ser. No. 955,697
Int. Cl.[5] B65D *5/66*
U.S. Cl. 229—143 **11 Claims**



1. A carton having reinforced corners of multiple thickness, formed from a one-piece blank, comprising:

a floor panel having two pairs of opposed sides;

a pair of opposed endwall panels hingedly connected to one pair of said opposed sides of said floor panel, the endwall panels each having opposed sides;

lid panels in serial succession with each of said endwall panels and hingedly connected to respective ones of said endwall panels along respective hinge lines;

a pair of sidewall panels hingedly connected to the remaining pair of said opposed sides of said floor panel, said sidewall panels each having a pair of opposed sides;

a reinforcing panel subassembly coupled to each side of said sidewall panels, with pairs of said reinforcing panel subassemblies overlain by a respective one of said sidewall panels, each of said reinforcing panel subassemblies comprising first, second and third hingedly connected reinforcing panels;

the first, second and third reinforcing panels arranged end-to-end in a series within each of the reinforcing panel subassemblies, with the first panel of each of said subassemblies hingedly connected to one of said sides of a respective one of said sidewall panels, the first and second panels of each of said reinforcing panel subassemblies folded over one another so as to overlap one of said endwall panels and so as to position the third panel of respective ones of said reinforcing panel subassemblies to overlap one of said sidewall panels; and

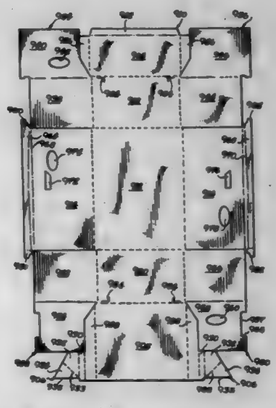
locking tabs extending from the endwall panels and folded between the first and second reinforcing panels to maintain the first, second and third reinforcing panels in position during assembly of the carton.

5,289,971

ONE PIECE CARTON BLANK

Jack A. McClure, Garden City, Kans., assignor to Inland Container Corporation, Indianapolis, Ind.

Continuation of Ser. No. 615,703, Nov. 20, 1990. This application Mar. 23, 1992, Ser. No. 855,231
Int. Cl.[5] B65D *5/46*
U.S. Cl. 229—149 **3 Claims**



1. A one-piece blank apparatus foldable to produce a carton having triple layer sidewalls, comprising:

a floor panel having two pairs of opposed sides;

a pair of outer sidewall panels having hand hole portions defining hand holes;

means for hingedly connecting the outer sidewall panels to opposed sides of said floor panel;

endwall panels hingedly connected to a second pair of opposed sides of said floor panel;

inner side wall panels extending from opposed sides of each said endwall panel;

intermediate side wall panels coupled to said inner side wall panels, with said intermediate sidewall panels located between said inner sidewall and said outer side wall panels;

hinge walls coupling said intermediate side and inner side panels together;

lid panels in serial succession with said end wall panels and said floor panel; and

a dust flap hingedly connected in series with one said lid panel, with said one lid panel located between said dust flap and one said end wall.

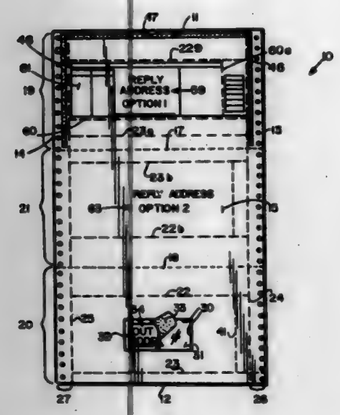
VOL 1160 ISS 1 MR 1 1994 UMI

5,289,972

SINGLE SHEET Z-FOLD MAILER

Dean N. Sauerwine, Zionsville, and William K. Wetherhold, Jr., Quakertown, both of Pa., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 3, 1992, Ser. No. 940,365
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—303 22 Claims



1. An intermediate for a mailer type business form, comprising:

a sheet of paper having a rectangular configuration with first and second, end, parallel edges; and third and fourth, side, parallel edges; a first dimension, between the end edges being greater than a second dimension, between the side edges; and having a first face and a second face;

first and second fold lines parallel to said first and second edges, dividing said sheet into three approximately equal-length panels, including a first panel adjacent said first edge, a second panel adjacent said second edge, and a third panel between said first and second panels;

means defining first and second lines of weakness in each of said first, second, and third panels, the lines of weakness parallel to said first and second edges, and spaced from said first and second edges and said first and second fold lines so that when said sheet is Z-folded about said fold lines the first lines of weakness in all three panels align with each other, and the second lines of weakness in all three panels align with each other;

means providing outgoing addressee indicia on said first face of the second panel;

a generally U-shaped adhesive pattern disposed on at least one of said second face of said second panel and said second face of said third panel, between said first and second lines of weakness in each, for forming a return envelope;

a return envelope flap, having first and second faces, defined in one of said second and third panels outside the area encompassed by said U-shaped adhesive pattern, and flap sealing adhesive disposed on said second face of said flap;

means defining third and fourth lines of weakness adjacent and parallel to, but spaced from, said third and fourth edges to define removable side strips; and

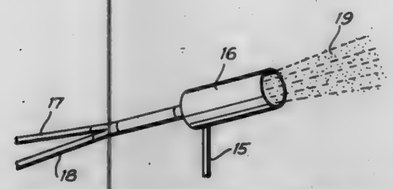
permanent adhesive patterns disposed in said removable side strips on said first face on one panel, and on said second face on another panel, for holding said panels together when Z-folded about said fold lines.

5,289,973

SNOWMAKING METHOD AND DEVICE

Andrew B. French, 94A Reserve Road, Artarmon, Sydney, New South Wales, 2064, Australia

PCT No. PCT/AU90/00083, § 371 Date Nov. 8, 1990, § 102(e) Date Nov. 8, 1990, PCT Pub. No. WO90/10183, PCT Pub. Date Sep. 7, 1990
Continuation of Ser. No. 613,774, Nov. 8, 1990, abandoned. This PCT application Mar. 1, 1990, Ser. No. 20,264
Claims priority, application Australia, Mar. 1, 1989, PJ3019; Mar. 9, 1989, PJ3133
Int. Cl.[5] A01G *15/00*
U.S. Cl. 239—14.2 10 Claims



1. A device for the production of snow adjacent the downstream end of the device, comprising:

(A) a first outlet to supply water therethrough under pressure; and

(B) a second outlet to supply cryogenic gas therethrough provided substantially adjacent to or downstream in said device from said first outlet;

whereby, as water is emitted from said first outlet and subsequently passes through the cryogenic gas, the temperature of the water is lowered to form snow adjacent the downstream end of said device;

said device being characterized by causing the formation of the snow in the absence of propeller means.

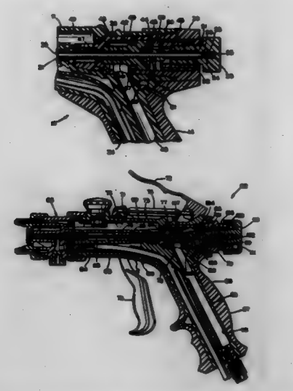
5,289,974

SPRAY GUN HAVING TRIGGER OVERTRAVEL PROTECTION AND MAXIMUM FLOW ADJUSTMENT KNOB WARNING

Thomas E. Grime, Temperance, Mich.; Roger T. Cedoz, Curtice, Ohio; Roger D. Wheeler, Holland, Ohio, and John F. Schaupp, Toledo, Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 894,730, May 27, 1992, Pat. No. 5,236,129. This application Apr. 14, 1993, Ser. No. 48,268
Int. Cl.[5] B05B *7/02*
U.S. Cl. 239—72 10 Claims

1. In a hand held spray gun having a fluid valve including a trigger moveable between a released position and a set maximum fluid flow position, a valve needle, means for moving said valve needle from a closed position to an open position when said trigger is moved from the released position to the set maximum fluid flow position, a return spring urging said valve needle to said closed position, and adjustable stop means for adjusting the open position of said valve needle to set the maximum fluid flow from said spray gun, said return spring compressing when said valve needle is moved to the open position, the improvement comprising an over travel compression spring having a compressive force greater than the compressive force of said return spring, and means positioning said over travel spring in said spray gun to be compressed when an excessive force is applied to said trigger to move said trigger from the released position past the set maximum fluid flow position whereby said over travel spring prevents damage to said spray gun.

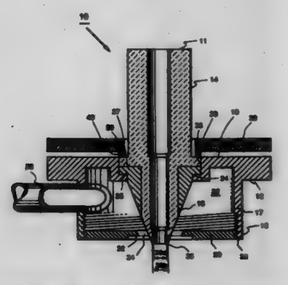


5,289,975

METHOD AND APPARATUS FOR ATOMIZING MOLTEN METAL

Steven A. Miller, Amsterdam, N.Y., and Russell S. Miller, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,369
Int. Cl.[5] B05B *7/00*
U.S. Cl. 239—79 3 Claims



1. A non aspirating nozzle for atomizing molten metal comprising:

a plenum means comprised of a cylindrical housing having a plenum top and a plenum bottom defining a cylindrical channel therein,

a melt delivery tube extending axially through the plenum top and the plenum bottom to an exit end section having an exit orifice, the exit orifice having an inside diameter and an outside diameter, the plenum top having an axial bore defined by a rim support means for supporting the melt delivery tube,

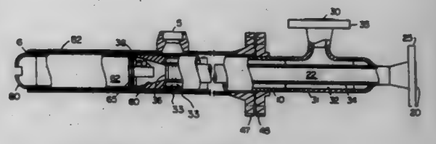
an annular inner wall means extending from the plenum top to the exit orifice coaxial with the melt delivery tube, the inner wall means having a frustum shaped outer surface narrowing toward the exit orifice dividing the cylindrical channel into a first annular channel, the exit end section of the melt delivery tube having an outer surface forming a first frustum section of the inner wall means, the plenum bottom having an atomizing gas orifice axial to and spaced from the inner wall means defining a second annular channel therebetween, and the cylindrical housing having a gas supply tube extending therethrough, the exit orifice of the melt guide tube having an inside diameter of about 3 to 26 millimeters and having a ratio of the inside diameter to the outside diameter of at least about 65 percent to provide a reduction in the flow rate of liquid through the melt tube during atomization.

5,289,976

HEAVY HYDROCARBON FEED ATOMIZATION

Suisheng M. Dou, Lawrenceville; Allen R. Hansen, Glassboro, both of N.J.; Steven C. Heidenreich, Houston, Tex.; William J. Hillier, Houston, Tex.; Phillip K. Niccum, Houston, Tex., and Maury I. Schlossman, Katy, Tex., assignors to Mobil Oil Corporation, Fairfax, Va. and The M.W. Kellogg Co., Houston, Tex.

Continuation of Ser. No. 808,266, Dec. 13, 1991, abandoned. This application May 25, 1993, Ser. No. 66,595
Int. Cl.[5] B05B *7/00*
U.S. Cl. 239—431 15 Claims



1. An atomizing nozzle comprising:

an initial atomizer having a generally cylindrical inner surface having an axis, a diameter and a cross sectional area, a first end, a second end, a borehole extending from the first end to the second end, a liquid feed inlet connected with the first end, a plurality of radially distributed atomizing gas inlets drilled through said initial atomizer and within one diameter of the second end;

an impingement atomizer having an axis which is axially aligned with the axis of said initial atomizer, a first end, a second end, a generally cylindrical plug having a diameter, a plug first end near said second end of said initial atomizer and a plug second end, said plug in axial alignment with said initial atomizer and wherein said plug first end is in open fluid communication with said second end of said initial atomizer;

an annular expansion region consisting of a truncated cone having an angle of less than 20°, a first end near the apex of said cone connected with said second end of said initial atomizer and a second end connected with a cylindrical nozzle barrel, said second end of said annular expansion region enveloping said impingement atomizer;

said cylindrical nozzle barrel having an axis and axially aligned with said initial atomizer, said nozzle barrel having a cross sectional area at least twice as large as the cross sectional area of said initial atomizer, a first end connected with the second end of said annular expansion region, and a second end connected with an orifice outlet.

5,289,977

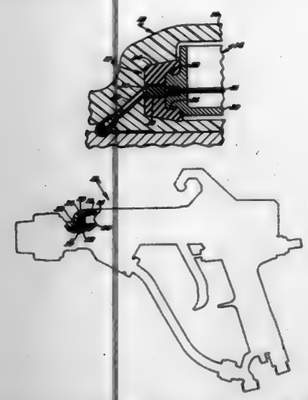
ELECTROSTATIC SPRAY GUN POWER SUPPLY CONNECTION

Robert J. Lind, Robbinsdale; Lawrence J. Lasser, St. Louis Park, and Stanley G. Karwoski, Oakdale, all of Minn., assignors to Grace Inc., Minneapolis, Minn.

Filed Jan. 6, 1993, Ser. No. 988
Int. Cl.[5] B05B *5/02*
U.S. Cl. 239—690 3 Claims

1. In an electrostatic spray gun comprising a high voltage power supply having an output contact and a barrel cavity containing an elastomeric boot covering said contact, said boot

having a generally cylindrical passage therethrough, the improvement comprising a conductive elastomeric flexible member located in and compressed so as to substantially fill said passage and said boot being compressed in said cavity to eliminate air and reduce capacitance.

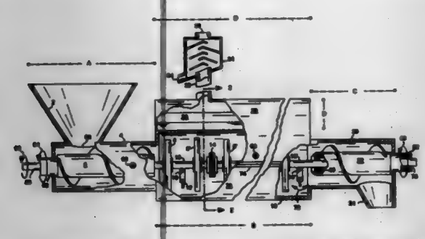


5,289,978

APPARATUS FOR CONTINUOUS CONTAINER LABEL REMOVAL

Lynn C. Lundquist, 10833 NE. Russell, Portland, Oreg. 97220

Filed Jul. 8, 1991, Ser. No. 728,759
Int. Cl.[5] B02C *13/10*
U.S. Cl. 241—57 10 Claims



1. A substantially continuous granulated material processing apparatus in which adhesive and affixed product labels are removed from granulated plastic container material wherein continuous defines an apparatus whereby said apparatus progressively effects the processing action in the absence of holding or batching stages, said continuous granulated material processing apparatus comprising:

a) a rotating central shaft with substantially a horizontal orientation;

b) at least two rotating members axially attached to said rotating shaft;

c) each of said rotating members cooperating with at least two stationary members mounted on the same plane relative to each other when perpendicular to said rotating central shaft, and in a same axial plane with said rotating members whereby an impacting force is imparted to said granulated material unto which is affixed said product label;

d) an air classification means employing an air injection mechanism consisting of a mechanical air supply, and at least one air injector cooperating with a labyrinth exit path and an air exit opening, said labyrinth exit path substantially distinct from the exit path of said granulated material, all of which is incorporated into the processing section wherein at least two of said rotating members and at least four of said stationary members are located; and,

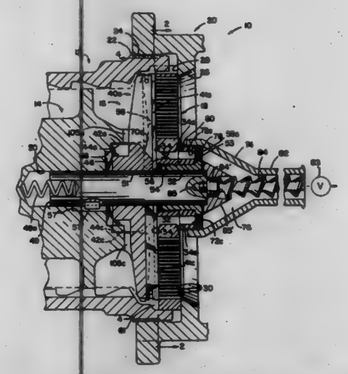
e) wherein the rate of movement of said granulated container material being processed is controlled within the process area while maintaining said rotating central shaft at a constant rate of rotational speed so as to determine the length of time said granulated container material is subject to the forces of at least two of said rotating members in cooperation with at least four of said stationary members.

5,289,979

HARD MATERIAL COLLECTING SYSTEM FOR A MEAT GRINDER

Nick J. Lesar, Palmyra, Wis., assignor to Weiler and Company, Inc., Whitewater, Wis.

Continuation-in-part of Ser. No. 654,942, Feb. 13, 1991, Pat. No. 5,251,829. This application Oct. 17, 1991, Ser. No. 778,010
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] B02C *18/30, 18/36*
U.S. Cl. 241—82.6 8 Claims



1. A hard material discharge system for use with a grinder for grinding material which comprises a mixture of soft material and hard material, the grinder including a housing having an inlet and an outlet; an orifice plate located at the housing outlet; an advancing arrangement for moving material through the housing toward the orifice plate; a rotating knife assembly located adjacent a surface of the orifice plate; and a hard material collection arrangement for collecting hard material and for discharging the hard material to the exterior of the orifice plate, the hard material discharge system comprising:

a collection structure located downstream of the orifice plate and including at least one internal wall defining an internal collection cavity having an upstream portion and a downstream portion, wherein hard material is discharged through the orifice plate into the upstream portion of the collection cavity;

a discharge conduit mounted to the collection structure and including at least one internal wall defining an internal discharge passage in communication with the downstream portion of the collection cavity; and

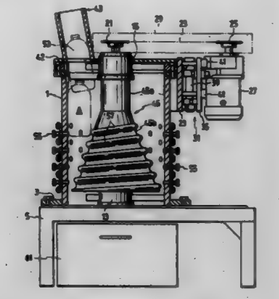
a rotatable flighted discharge auger extending through the collection cavity and into the discharge passage of the discharge conduit, wherein the at least one internal wall defining the collection cavity is spaced outwardly from the discharge auger in the upstream portion of the collection cavity and tapers inwardly toward the discharge auger in the downstream portion of the collection cavity, and wherein the outermost extent of the discharge auger flighting is in close proximity to the at least one internal wall of the discharge conduit defining the discharge passage, to define a rotating flow path for discharging hard material therethrough.

5,289,980

GLASS VESSEL CRUSHER

Toshio Shinpo, Fujisawa; Sadao Ueda, Kawasaki; Shuji Kitao, Yokohama, and Yoshifumi Ito, Tokyo, all of Japan, assignors to Toyo Glass Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,871
Claims priority, application Japan, Nov. 21, 1991, 3-332454
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—99 6 Claims



1. A glass vessel crusher, comprising:

an external body of revolution (1); and

an internal body of revolution (45) disposed in the external body of revolution, an annular glass vessel crushing space (A) being defined by an inner wall of said external body of revolution and an outer wall of said internal body of revolution, wherein at least one of said external body of revolution and said internal body of revolution is rotatable and is so designed that the glass vessel crushing space is gradually narrowed along a direction from a glass vessel introduction end toward a fragment discharge end, at least one of the inner wall of said external body of revolution and the outer wall of said internal body of revolution is provided with a projection extending into the annular glass vessel crushing space for conveying glass vessels towards the discharge end, and at least one of said external body of revolution and said internal body of revolution, not provided with said projection, is provided with a plurality of spaced post members (55) individually projecting from a side wall thereof into the glass vessel crushing space.

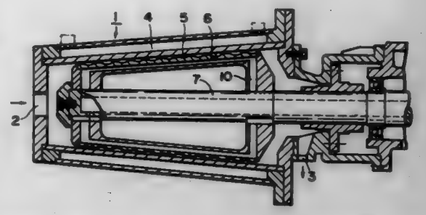
5,289,981

CONTINUOUS DISPERSING APPARATUS

Mitsuo Kamiwano, Yokohama, and Yoshitaka Inoue, Tokyo, both of Japan, assignors to Inoue Mfg. Inc., Japan

Continuation of Ser. No. 705,301, May 24, 1991, abandoned. This application May 7, 1993, Ser. No. 60,473
Int. Cl.[5] B02C *7/04*
U.S. Cl. 241—261.1 17 Claims

1. A continuous dispersing apparatus comprising: a vessel having an inlet for admitting a material to be processed at an upstream end and an outlet for discharging the processed material at a downstream other end; and a rotor rotatably disposed within the vessel and spaced from the inner wall of the vessel to define therebetween a path for the material, the surface of the rotor having along the length thereof a repeating pattern of a compressing section formed in such a manner that a space between the compressing section and the inner wall of the vessel becomes narrower gradually so that the material may be compressed when the material flows from the inlet to the outlet through the path between the rotor and the vessel, a shearing section downstream of the compressing section and opposite to the inner wall with a narrow space therebetween so that shearing forces may be applied to the material between the shearing section and the inner wall, and an expanding section downstream of the shearing section and formed in such a manner that a space between the expanding section and the inner wall becomes wider gradually so that the compression to the material may be released downstream of the shearing section.

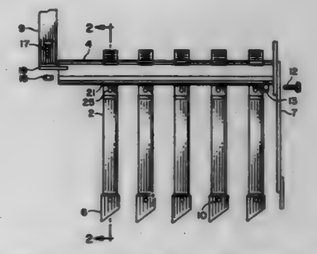


5,289,982

DISK RECLAIMER FOR USE WITH COHESIVE BULK MATERIALS

Ronald L. Andersen, Chubbuck, Id., assignor to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 819,728, Jan. 13, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 29,741
Int. Cl.[5] B02C *19/12, 23/00*
U.S. Cl. 241—296 4 Claims



1. In a disk reclaimer, a tooth and mounting rack for improved reclaiming of cohesive bulk materials comprising:

a. harrow and carrier teeth of flat spring steel formed into a "J" shape,

b. a horizontal tubular support member having upper and lower open slots along its length, said slots adopted for insertion of a short limb of the "J" shaped harrow and carrier teeth wherein a long limb of the teeth is disposed downwardly from the tubular support member parallel to the short limb and substantially perpendicular to the plane of the reclaimer disk, a flat side of the spring "J" teeth facing in the direction of rotation of the reclaimer disk,

c. means for removably attaching the "J" teeth to tubular support member, it being provided that the spring rate of the "J" teeth is high enough to permit normal reclaiming action but sufficiently resilient whereby on encountering zones of high resistance in the cohesive bulk material the "J" teeth deflect opposite in direction to the imposed force and returns to their original position after traversing the zone of high resistance.

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5,289,983

PRODUCTION CONTROL SYSTEM IN SPINNING MILL

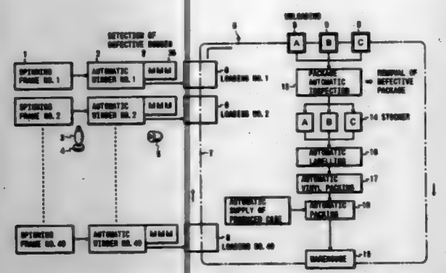
Yutaka Ueda, Nara; Keizo Ohori, Kyoto, and Tetsuji Masai, Kusatsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 681,875, Apr. 5, 1991, abandoned. This application Jul. 22, 1992, Ser. No. 924,593

Claims priority, application Japan, Apr. 12, 1990, 2-95201; Jul. 31, 1990, 2-80559[U]

Int. Cl.[5] B65H *54/02;* B65G *47/10*

U.S. Cl. 242—35.5 A 12 Claims



1. In a spinning mill in which a bobbin from a spinning frame is mounted on a bobbin tray and sent to a winder, a package doffed from the winder is loaded on a hanger and carried, after which it is unloaded and then mounted on a package tray, which is supplied to an inspection station, a production control system comprising:

recording media provided on the bobbin tray, the hanger and the package tray,

write means for recording information on the hanger at the time of loading, the information including spinning frame numbers, spinning spindle numbers, winding frame numbers and winding spindle numbers,

read/write means for transferring the information recorded by the write means to the package tray at the time of unloading,

read means for reading the information transferred to the package tray, and

display means for applying a visible display of the transferred information to the package.

5,289,984

PAPER ROLL DRIVING APPARATUS

Isao Sohma, Yokohama, Japan, assignor to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Continuation of Ser. No. 718,178, Jun. 20, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,351

Claims priority, application Japan, Aug. 17, 1990, 2-215768

Int. Cl.[5] B65H *19/16*

U.S. Cl. 242—58.3 5 Claims

1. A paper roll driving apparatus, comprising:

a rotatable holding member for holding a core of a paper roll;

a timing belt pulley fitted to said rotatable holding member for rotation with said holding member and a core of a paper roll held thereon;

an arm having a plurality of belt pulleys supported thereon;

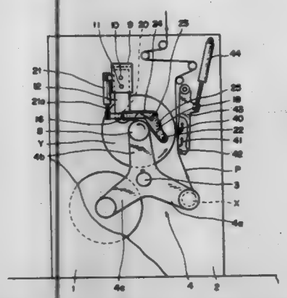
said arm being pivotally connected at a pivot point to a support portion of the apparatus;

a timing belt supported on said plurality of belt pulleys so as to be pivotally mounted for selective displacement into and out of engagement with said timing belt pulley;

means for driving said timing belt;

means for pivoting said arm around said pivot point for pivotally moving said timing belt into and out of engagement with said timing pulley for driving and interrupting driving of said rotatable holding member and said paper roll, said means for pivoting said arm around said pivot point for pivotally moving said timing belt having a piston rod connected to said arm and a means for extending and retracting said piston rod for moving said timing belt into and out of engagement with said timing pulley;

wherein said support portion of the apparatus includes a sub-frame having a means for movably supporting a second arm thereon, said arm being pivotally connected at said pivot point to said second arm, and a means for moving said second arm along said sub-frame such that said timing belt is moved toward and away from the timing belt pulley; and



wherein said means for movably supporting said second arm on said sub-frame includes at least one guide bar and said means for moving said second arm includes a piston and piston rod which are supported proximate said sub-frame, said piston rod being connected to a portion of said second arm so as to move said second arm along said at least one guide bar.

5,289,985

DEVICE FOR CHANGING REELS OF STRIP MATERIAL ON A PRODUCTION MACHINE

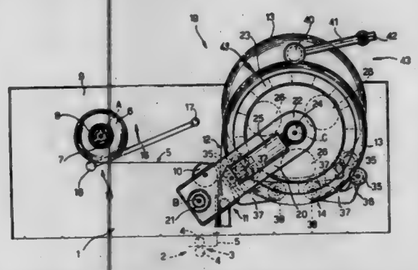
Lorenzo Cocchi, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D. Societa' Per Azioni, Bologna, Italy

Filed Oct. 8, 1992, Ser. No. 957,807

Claims priority, application Italy, Oct. 10, 1991, BO91 A 000362

Int. Cl.[5] B65H *19/12*

U.S. Cl. 242—58.6 7 Claims



1. A device for changing reels of strip material on a production machine, said device comprising, in a first operating position, a spindle for supporting a runout reel off which a traction device unwinds and feeds a first strip to the production machine along a given path; means for supporting a standby reel in a second operating position; means for unwinding a second strip, identical to the first strip, off said standby reel and through a guide device located along said given path of said first strip and designed to feed the second strip on to the traction device when the first strip runs out; and a swing arm supporting means for gripping and supporting the standby reel; characterized by the fact that said means for unwinding the standby reel and said means for gripping and supporting the standby reel consist of a powered element fitted to said arm so as to rotate about an axis parallel to the axis of said supporting spindle, and having gripping means for gripping and rendering the standby reel integral with the powered element, and a locating spindle coaxial with the rotation axis of the powered element and so designed as to only cooperate with an input portion of the core of said standby reel; said swing arm being designed to transfer said standby reel from said second operating position on to said spindle supporting the runout reel, when said first strip runs out.

5,289,986

ACCELERATION SENSOR

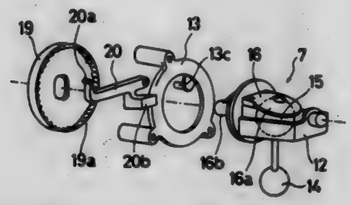
Naoaki Hoshihara, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1991, Ser. No. 673,664

Claims priority, application Japan, Mar. 23, 1990, 2-30421[U]

Int. Cl.[5] B60R *22/40*

U.S. Cl. 242—107.4 A 7 Claims



1. An acceleration sensor, comprising:

a casing;

a sensor body disposed in the casing rotatably mounted to pivot about an axis, the sensor body including a receiving portion;

balancing means secured to the sensor body for continuously orienting the receiving portion in a horizontal position;

sensing means mounted in the receiving portion for detecting acceleration, the sensing means being co-axial with the sensor body;

a sensor level having opposite end portions, said sensor lever being pivotally mounted intermediate the opposite end portions on the sensor body, including a sensing portion at one of the opposite end portions in communication with the sensing means and another of the opposite end portions disposed in the vicinity of the axis of rotation; and

a trigger lever rotatably mounted on a base plate disposed in the casing to pivot about an axis that extends in a plane substantially parallel to and in a direction parallel to the axis of rotation of the sensor body, the trigger lever having opposite ends, one of the opposite ends being in communication with the end portion of the sensor lever, and the other of the opposite ends having a pawl for restricting rotation of a ratchet upon rotation of the sensor lever.

5,289,987

COMFORT MECHANISM FOR SAFETY BELT RETRACTOR ASSEMBLY

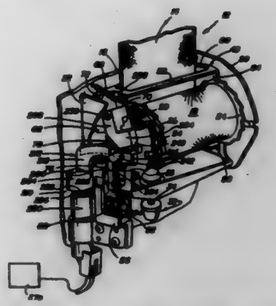
Cecil A. Collins, Shelby Township, Utica County, and Timothy J. Schmidt, Troy, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Continuation-in-part of Ser. No. 584,065, Sep. 18, 1990, Pat. No. 5,121,887. This application May 6, 1992, Ser. No. 880,165

The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] B60R *22/34*

U.S. Cl. 242—107.6 20 Claims



20. A method for automatically cancelling a comfort mechanism of a safety belt retractor following deliberate actuation thereof, said method comprising the steps of:

providing a safety belt retractor having a rotatable spool for storing safety belt webbing, rewind spring means for exerting a retraction force on said belt webbing, a comfort mechanism having a non-actuated mode provided for normally permitting said rewind spring means to exert said retraction force and an actuated mode provided for selectively releasing tension exerted on said belt webbing by said rewind spring means, actuation means for intentionally shifting said comfort mechanism from said non-actuated mode to said actuated mode, and release means for automatically shifting said comfort mechanism from said actuated mode to said non-actuated mode in response to occurrence of a predetermined condition;

withdrawing said belt webbing from said spool for fastening to a buckling device with said comfort mechanism in said non-actuated mode;

withdrawing said belt webbing until it is substantially withdrawn from said spool;

imparting a deliberate and intentional force on said belt webbing for causing said webbing to act on said actuation means for deliberately shifting said comfort mechanism from said non-actuated mode to said actuated mode;

detecting an occurrence of said predetermined condition and generating a signal in response thereto; and

actuating said release means in response to said signal for shifting said comfort mechanism into said non-actuated mode.

5,289,988

DATA CARTRIDGE WITH SECONDARY TAPE GUIDES

David D. Madsen, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 9, 1991, Ser. No. 773,453

Int. Cl.[5] G11B *15/26*

U.S. Cl. 242—192 4 Claims

1. A belt driven reel-to-reel tape cartridge having a belt which is mounted around a drive roller and rotatable guide rollers, the belt contacting the tape reels to drive the tape reels on respective tape reel pins wherein the tape is convolutely

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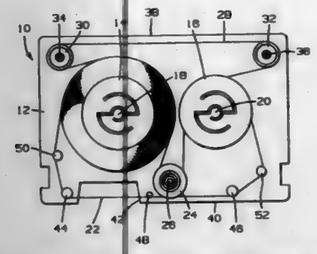
wound on the tape reels in opposite directions, the tape cartridge comprising:

a front edge wall which provides access to the tape by a recording head; and

a tape guide system comprising:

first and second primary tape guides mounted along the front edge wall for guiding the tape to and from respective tape reels;

a guide pin disposed intermediate the first and second primary tape guides and along the front edge wall for guiding the tape; and



a first secondary tape guide mounted between the first primary tape guide and its respective tape reel, wherein the tape guides and guide pin define a tape guide path between the reels and wherein the tape guide path extends around the outside of both primary tape guides, the secondary tape guide, and the guide pin, and wherein the distance between the first secondary tape guide and the first primary tape guide is half the distance between the first primary tape guide and the guide pin to help minimize tape tracking variations.

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TAPE HUB DRIVING SYSTEM WITH MECHANISM TO PREVENT TAPE SLACKENING DURING MODE CHANGE

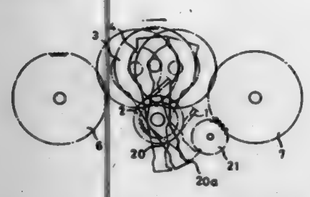
Il M. Park, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 10, 1991, Ser. No. 732,465

Claims priority, application Rep. of Korea, Jul. 30, 1990, 11213/1990

Int. Cl.[5] G11B *15/24*; B65H *16/10*

U.S. Cl. 242—201 **2 Claims**



1. In a reel driving apparatus for a video camera for use in advancing and reversing a tape, an apparatus comprising:

an idle gear drivable by the power transmitted from a motor thereto,

a support plate on which the idle gear is mounted,

a feed reel gear to transmit power to a feed reel,

a take-up gear reel gear to transmit power to a take-up reel,

the support plate being pivotally mounted to be movable between the feed reel and take-up reel gears so that the idle gear selectively engages and transmits power directly to these gears,

a direction rotating gear mounted in intermeshing engagement with the take-up reel gear,

a stopper integral with and protruding from the support plate and positioned so as to be engaged directly with the direction rotating gear when the idle gear directly engages the feed reel gear for reversing the tape such that, in this position, the stopper prevents the rotation of the direction rotating gear and the take-up reel gear.

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SPINNING REEL

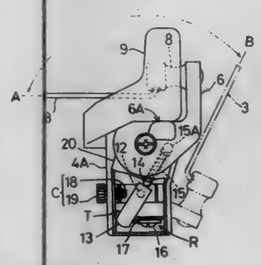
Yuzo Kawabe, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Jul. 11, 1991, Ser. No. 728,524

Claims priority, application Japan, Jul. 26, 1990, 2-80108[U]

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—233 **7 Claims**



2. A spinning reel comprising:

a reel body;

a rotor rotatably supported to the reel body;

a bail arm extending between a pair of arm portions of the rotor and pivotably switchable between an open position and a line-takeup position;

a toggle mechanism disposed inside the arm portions for retaining the bail arm either to the open position or to the line-takeup position;

a return mechanism for returning the bail arm from the open position to the line-takeup position when the rotor is rotated in a line-takeup direction; and

a returning force adjustment mechanism for variably setting at a desired value a reaction force needed for returning the bail arm from the open position to the line-takeup position; and

wherein said toggle mechanism includes:

a pivot member pivotable about a support shaft extending in parallel with a pivot support shaft of an arm member pivotably supported to one of said arm portions; and

a projecting member urged by a compression spring in a direction projecting relative to said pivot member, said projecting member being engaged with said arm member; and

wherein said return mechanism includes:

a projecting portion formed on said reel body; and

a pivot element pivotably supported to said arm portion through a shaft member so that said pivot element comes into contact with said pivot member to pivot said pivot member towards said line-takeup position when said rotor is rotated in the line-takeup direction; and

wherein said returning force adjustment mechanism includes:

a slide plate having the shaft member for supporting said pivot element; and

a fixing member for adjusting the position of said slide plate.

5,289,991

SPINNING REEL

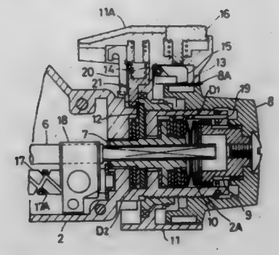
Kenichi Sugawara, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Continuation of Ser. No. 724,137, Jul. 1, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,367

Claims priority, application Japan, Jul. 4, 1990, 2-71852[U]

Int. Cl.[5] A01K *89/027*

U.S. Cl. 242—245 **7 Claims**



1. A spinning reel comprising:

a reel body;

a spool mounted forwardly of the reel body;

a drag mechanism mounted on a rear end portion of the reel body for applying a braking force to rotation of a spool shaft connected to the spool, said drag mechanism including a first group of discs and a second group of discs;

means for adjusting the braking force of the drag mechanism, said adjusting means having a first control element for determining a reference braking force by adjusting an urging force provided by an urging means to said first group of discs and a second control element for varying the braking force by adjusting said urging force to said second group of discs, said first and second control element being disposed adjacent each other at a rear end of said reel body;

said first control element fixed to a first pressure element of said drag mechanism to be rotatable therewith, such that rotation of said first control element causes said first pressure element to adjust said urging force thereby to adjust said braking force, said first control element including a sleeve portion defining a connected portion at an outer periphery thereof, said connected portion having peripheral serially arranged projections and recesses;

said second control element having a lever portion pivotable to vary a position of a second pressure element of said drag mechanism thereby to adjust the braking force, said second control element further having a connecting element switchable between a position engageable with said connected portion and a position disengaged from said connected portion; and

said connecting element, when engaged with said connected portion, causing said first control element and said second control element to be united and rotatable together for adjusting said reference braking force.

5,289,992

FISHING REEL CONTROLLER

Jacobus C. Du Plessis, Silverpine Singel 10, Zwartkop, Ex. 4, and Carl P. Du Plessis, Wentzel St 217, Wierdepark, Verwoerdburg, both of South Africa

Filed Mar. 10, 1992, Ser. No. 848,870

Claims priority, application South Africa, Apr. 23, 1991, 91/3013; Aug. 22, 1991, 91/6635

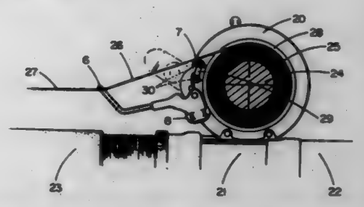
Int. Cl.[5] A01K *89/033*

U.S. Cl. 242—287 **6 Claims**

1. A mechanism for automatic control of a fishing line on a rotating spool fishing reel having a first side which faces the direction in which the line extends away from the spool during casting and at least one cross member located on the first side, the spool having rims,

said mechanism incorporating a spring action clip removably clipped non-rotationally onto the cross member,

two cranks each incorporating a longer and a shorter distal end and a common middle, said cranks being pivotally connected at their middles to said clip and joined at their longer distal ends by a yoke for the line,



at least one of the shorter distal ends carrying a brake shoe, said cranks being adapted to apply the brake shoe to the corresponding rim of the spool, and spring means biasing said cranks in a direction relative to said clip to swing the shoe towards said corresponding rim,

the line extending away from the spool being deflected by and passing underneath the yoke and adapted to displace the yoke upward against the biasing action of said spring means and hence displace said brake shoe off said corresponding rim when the line becomes taut.

5,289,993

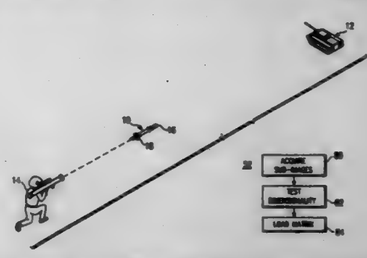
METHOD AND APPARATUS FOR TRACKING AN AIMPOINT WITH ARBITRARY SUBIMAGES

Joel K. McWilliams, 2525 Rosedale, Highland Village, and Don R. Van Rheeden, 357 E. Corporate Dr., #1824, Lewisville, both of Tex. 75067

Continuation-in-part of Ser. No. 793,151, Aug. 30, 1991, Pat. No. 5,213,281, Division of Ser. No. 753,294, Aug. 30, 1991, Pat. No. 5,211,356. This application Sep. 30, 1992, Ser. No. 954,643

Int. Cl.[5] F41G *7/30*

U.S. Cl. 244—3.15 **18 Claims**



1. A method for tracking an aimpoint, comprising the steps of:

acquiring an aimpoint on a target and a set of subimages arbitrarily associated with the aimpoint by a sensor in a field of view;

for a first time, for each subimage, determining whether the subimage is one-dimensional or two-dimensional;

for the first time, calculating a normalized distance from each subimage to the aimpoint;

for the first time, for each one-dimensional subimage, determining a maximum eigenvector for the subimage;

for the first time, for each one-dimensional subimage, calculating a component of the normalized distance associated therewith which is along the maximum eigenvector therefor;

for a second time, reacquiring at least one subimage; and

estimating a subsequent location of the aimpoint based on the

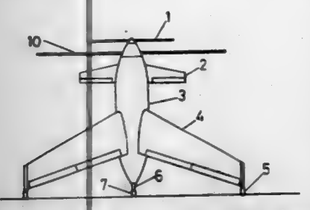
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subsequent location of the subimage and on the normalized distance therefor and, if said reacquired subimage is one-dimensional, further based upon the maximum eigenvector and normalized distance component therefor.

5,289,994
EQUIPMENT CARRYING REMOTE CONTROLLED AIRCRAFT

Juan Del Campo Aguilera, Avenida de Baviera 4., 28028 Madrid, Spain

Continuation-in-part of Ser. No. 593,690, Oct. 5, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 855,254
Claims priority, application Spain, Oct. 10, 1989, 8903414
Int. Cl.[5] B64C *29/00*
U.S. Cl. 244—7 B **1 Claim**



1. An equipment carrying, remote controlled aircraft designed to operate like a helicopter in vertical flight and like an airplane in horizontal flight, and which can also land accurately on a small area;

said aircraft including a fuselage:

a variable pitch propeller and a helicopter type, counter-rotating rotor fitted with hinged blades mounted near the front of said fuselage, said rotor acting as a thruster propeller during horizontal flight;

engine means for driving said propeller and said rotor including throttle means for controlling the same;

a set of sweptback wings spaced further back on said fuselage from said propeller and rotor extending laterally outwardly of said fuselage and forming a large dihedral angle therewith and with a horizontal plane while the airplane is in horizontal flight;

ailerons on said wings and other control surfaces which can be actuated differentially for controlling the direction of flight of said aircraft;

wheels to support said aircraft upon a landing area mounted at the end of said wings;

a vertical stabilizer of large span similar to that of said wings having a third wheel cooperating with said wheels on said wings and set in such a way that all three of said wheels are positioned at the corners of an imaginary equilateral triangle, whose apothem is equal to or larger than the height of a center of gravity of said aircraft over a landing surface, while landing, said wheels being placed on a plane normal to the longitudinal axis of the aircraft and centered in relation to said axis;

elevators between said wings and said rotor that can be actuated simultaneously or differentially;

a ventral cupola for housing observation and detection instruments;

an electric motor powered winch inside said fuselage for releasing and rewinding a cable adapted to be fastened to a point on the ground to improve the precision of a landing, said cable protruding through a guide cone and a hole at the back of said fuselage;

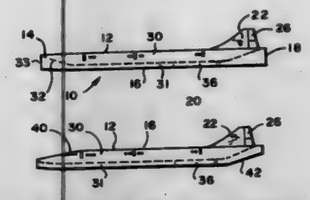
variable power means for driving said winch to release and rewind said cable without the necessity of actuating said combination of said propeller and rotor or said throttle means of said engine;

a generator driven by said engine means actuating said electrical motor of said winch so that an increment of power administered to said winch will be subtracted from engine power destined to provide lift for said aircraft in a vertical position during landing for obtaining a greater and more rapid control effect on the variation of sinking speed when the generator is only connected to said electric motor of said winch during landing.

5,289,995
SUPERSONIC AIRCRAFT

Leonard M. Greene, Scarsdale, N.Y., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 14, 1992, Ser. No. 990,034
Int. Cl.[5] B64C *15/00*
U.S. Cl. 244—15 **10 Claims**



1. An aircraft designed for flight at supersonic speeds comprising a longitudinally extending fuselage and a wing attached thereto, said fuselage having forward, intermediate and rear portions with a space for carrying a payload disposed in said intermediate portion and with a separate passageway extending longitudinally through said fuselage, propulsion means disposed in said passageway and an exhaust exit structure disposed in said rear portion of said fuselage and connected to said propulsion means by said passageway, a variable air intake structure disposed in said forward portion of said fuselage for directing a flow of air into and through said separate passageway and into said propulsion means for exhaust thereby through said exhaust exit structure, said variable intake structure defining a first cross-sectional area in a first position for supersonic flight and a smaller cross-sectional area in a second position for subsonic flight and in which said passageway includes articulated means for reducing the cross-section thereof forwardly of said propulsion means to thereby compress the air passing through said passageway and into said propulsion means and in which said rear portion of said fuselage includes an articulated member rearwardly of said propulsion means which is positionable to increase the cross-sectional area of said exhaust exit structure in the direction of flow to an area which is essentially equal to the cross sectional area of said fuselage so that diffusion of the exhaust flow occurs therein during supersonic flight.

5,289,996
AIRCRAFT WINDSHIELD SYSTEM WITH FRANGIBLE PANEL FOR AIRCREW EMERGENCY ESCAPE

Ralph J. Speelman, III, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 7, 1993, Ser. No. 43,705
Int. Cl.[5] B64C *1/32*
U.S. Cl. 244—122 AF **2 Claims**

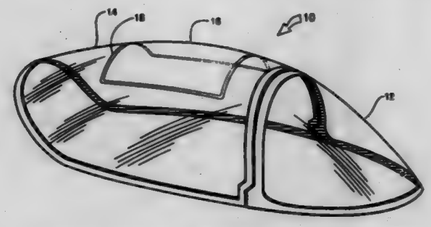
1. An aircraft cockpit canopy for allowing thru-the-canopy ejection of an ejection seat, comprising:

(a) a first transparent panel for covering part of the area above the cockpit;

(b) attached to the first transparent panel, a second transparent panel for covering the part of the area above the cockpit not covered by the first transparent panel, wherein the area above the cockpit covered by the second transparent panel is the are through which would pass an ejecting ejection seat; and,

(c) means for attaching the second transparent panel to the first transparent panel, wherein the attaching means is

flexible so that if the second transparent panel were struck by an ejecting ejection seat, the flexible attaching means

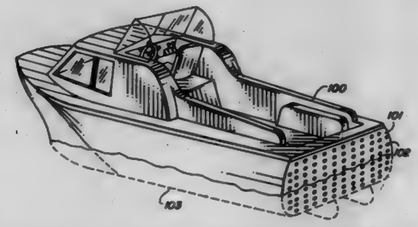


would flex and release the second transparent panel from its attachment to the first transparent panel.

5,289,997
APPARATUS AND METHOD FOR REDUCING DRAG ON BODIES MOVING THROUGH FLUID

B. Waylon Harris, 826 E. Harmont Dr., Phoenix, Ariz. 85020

Continuation-in-part of Ser. No. 873,398, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,172, Apr. 18, 1991, Pat. No. 5,108,145. This application Mar. 12, 1993, Ser. No. 30,649
Int. Cl.[5] B64C *1/38*
U.S. Cl. 244—130 **22 Claims**



1. A method for reducing drag for a body moving through a fluid, said body having a front end, a relatively flat rear panel substantially orthogonal to the direction of movement of said body, and a relatively stable front to rear attitude as it moves through said fluid, said method comprising the steps of distributing structure elements on said rear panel, said structure elements having a dimension perpendicular to said rear panel of about 10–14% of the average cross-sectional dimension of said structure at the surface of said panel.

5,289,998
SOLAR ARRAY OUTPUT REGULATOR USING VARIABLE LIGHT TRANSMISSION

John D. Bingley, and Patrick J. Callen, both of Yardley, Pa., assignors to General Electric Co., East Windsor, N.J.

Filed Oct. 15, 1991, Ser. No. 776,028
Int. Cl.[5] B64G *1/44*
U.S. Cl. 244—173 **8 Claims**

1. A spacecraft comprising:

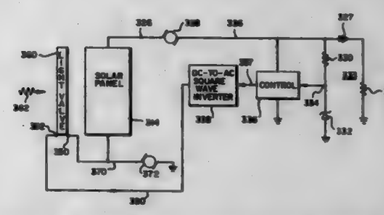
light activated voltage generating means including a light admitting aperture, and also including terminals at which a direct voltage is generated when light enters said aperture;

electrical utilization means coupled to said terminals;

a source of reference voltage;

amplifier means coupled to said terminals and to said source of reference voltage for generating an error signal representing the difference between said direct voltage and a desired voltage;

controllable light transmitting means located before said light admitting aperture, said controllable light transmitting means including electrical energization terminals, and being adapted, in a first electrical energization state, for allowing light to enter said light admitting aperture, and, in a second electrical energization state for preventing light from entering said light admitting aperture; and

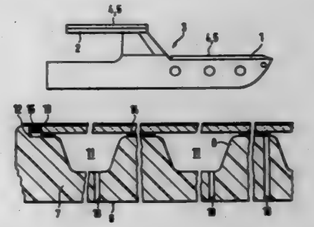


feedback coupling means coupled to said amplifier means and to said electrical energization terminals of said controllable light transmitting means, for translating said error signal to said variable light transmitting means in a degenerative manner, to form a closed feedback loop which tends to maintain said direct voltage near said desired voltage.

5,289,999
APPARATUS FOR MOUNTING SOLAR CELLS

Andreas Naujeck, Neuenkirchen-Seelscheid, and Stephan Schneider, Spay, both of Fed. Rep. of Germany, assignors to Schottel Werft Joseph Becker GmbH & Co. KG, Spay, Fed. Rep. of Germany

Continuation of Ser. No. 724,978, Jun. 28, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,258
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1990, 4021339
Int. Cl.[5] B64G *1/44*
U.S. Cl. 244—173 **11 Claims**



1. Apparatus for mounting solar panels comprising solar cell element means including a plurality of solar panel means in adjacent coplanar disposition, each solar panel means having a top solar energy receiving surface and a bottom surface, first lamination means covering said bottom surfaces of said solar panel means, and second lamination means overlaying said top surfaces of said solar panel means, said second lamination means being translucent, and

support means having an upper generally planar surface with a recess having parallel flanges along its edges on which said solar cell element means is supported with said second lamination means substantially coplanar with said upper surface, said solar element means being firmly connected to said support means by said second lamination means,

said support means comprising first and second mats with a rigid foam profile means inserted therebetween, said sup-

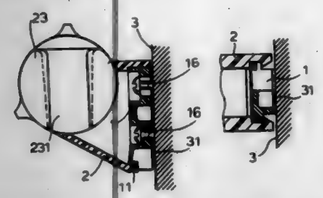
port means further having connecting ducts that run perpendicularly to the planes of said mats,
said profile means being connected to said mats by a synthetic resin applied in the flowable state to the outside of said first mat and aspirated by a vacuum through said first mat, through the connecting ducts, and through said second mat to impart smooth surfaces to the mats and, hence, the support means.

5,290,000

WALL-MOUNT BRACKET FOR HAND SHOWER OR THE LIKE

Detlef Hochstein, Hemer, and Christian Frankholz, Schwerte, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed Jul. 7, 1992, Ser. No. 909,615
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124354
Int. Cl.[5] E03C *1/06*
U.S. Cl. 248—221.003 **4 Claims**



1. A bracket assembly for securing a fitting to a wall, the assembly comprising:
a generally T-section plate having a pair of parallel T-flanges;
fasteners securing the plate to the wall with the flanges substantially parallel to the wall;
a holder adapted to carry the fitting and formed with a T-section slot open at one end, substantially complementary to the flanges of the plate, and normally receiving the plate;
an elastically deformable rib on each of the flanges of the plate resiliently engaged between the plate and the holder for retaining the plate and the holder snugly together; and
an elastically deflectable latching tongue formed on the holder at the one end and retaining the holder and plate together.

4. A bracket assembly for securing a hand-shower clip to a wall, the assembly comprising:
a generally T-section plate having a pair of parallel T-flanges each having a thick relatively stiff rib portion and a thin elastically deformable rib portion;
fasteners securing the plate to the wall with the flanges substantially parallel to the wall;
a holder adapted to carry the clip and formed with a T-section slot open at one end, substantially complementary to the flanges of the plate, and normally receiving the plate with some elastic deformation of the thin rib portions; and
an elastically deflectable latching tongue formed on the holder at the one end and retaining the holder and plate together.

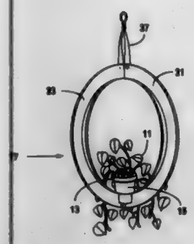
5,290,001

INTERLOCKING PLANT MOBILE

Spaulding E. Jones, 5565 Spring Valley Rd. #1037, Dallas, Tex. 75240

Filed May 15, 1992, Ser. No. 883,480
Int. Cl.[5] A01G *9/02*
U.S. Cl. 248—318 **11 Claims**

1. A plant holder, comprising:
first and second links;
the first link having an outer perimeter and an inner perimeter, each perimeter having a slot, the first link further including a split to allow interlocking of the first and second links;
the second link having an outer perimeter and an inner



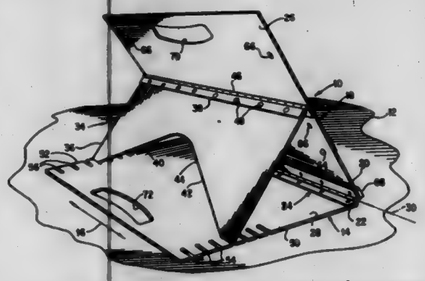
perimeter, each perimeter having a slot, the slots of the first and second links cooperating to allow the second link to be interlocked with the first link; and
a pot holder, attached to the second link, for holding a pot in which a plant can be placed.

5,290,002

ADJUSTABLE READING AND WRITING AID SYSTEM

Dell P. Cohen, 3003 Seven Mile La., Terrace Apt, Baltimore, Md. 21208

Filed Sep. 30, 1992, Ser. No. 953,214
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—456 **19 Claims**



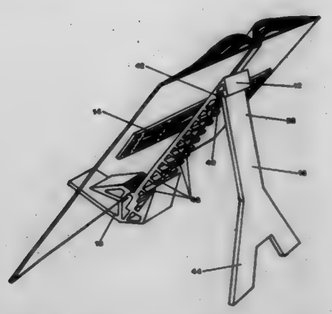
1. An adjustable reading and writing aid system comprising:
(a) a first planar member for mounting on a base surface, said first planar member defining a first planar member edge section;
(b) a second planar member having a second planar member edge section, said first and second planar members being fixedly and rotatably coupled each to the other, said first and second planar members being rotatably coupled to each other at respective edge sections thereof;
(c) means for angularly adjusting said first and second planar members in a selective and releasably coupled position each to the other, said means for angular adjustment being rotatably secured to a rear surface of said second planar member for inclining said first and second planar members at a predetermined angle each with respect to the other when said writing aid is in use and for rotation to a position where said means for angular adjustment is sandwiched between said first and second planar members defining a substantially planar and compact housing for storage of said reading and writing aid system; and,
(d) means for selectively positioning a workpiece to a frontal surface of said second planar member at a predetermined distance measured substantially normal said transverse direction, said means for selectively positioning said workpiece including a positioning bar removably securable to said second planar member and extending substantially linearly in said transverse direction.

5,290,003

FOLDING BOOK SUPPORT

Christopher Reyes, 14920 Farwell Ct., Saratoga, Calif. 95070

Filed Dec. 23, 1992, Ser. No. 997,297
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—461 **3 Claims**



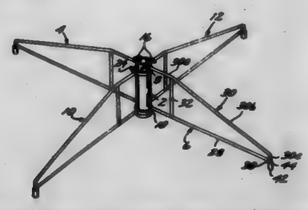
1. A device to support a book comprising:
a main support member and a cross-member pivotally attached to the main support member; wherein
the cross-member pivots to a position parallel to the main support member for storage when the support is not in use, and pivots to a position perpendicular to the main support member when supporting a book in a position of convenience for a reader; and
the support member includes an integral flexible jaw structure enabling the device to be attached to a desk or table; and
the support member further includes a base upon which the book rests; and wherein
the relative positions of the main support member and the cross-member are maintained by tensioning means at the point of attachment of the main support member and the cross-member; and wherein
an additional support leg is provided which includes a raised edge that fits securely into a receiving notch in the main support member, thus locking the support leg in position.

5,290,004

COLLAPSIBLE CHRISTMAS TREE STAND

David Frost, and Matthew Leung, both of Long Beach, Calif., assignors to Lincoln Imports Ltd., Inc., Placentia, Calif.

Continuation of Ser. No. 015542, Feb. 9, 1993, abandoned. This application Jun. 3, 1993, Ser. No. 71,927
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—528 **19 Claims**



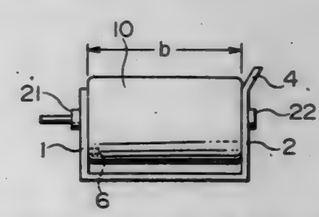
1. A stand for vertically supporting an object comprising;
a cylindrical tube, one end of said tube adapted for receiving an object;
a first pair of support legs connected to the exterior surface of said tube, said first pair of support legs extending radially outward from the longitudinal axis of said tube;
upper and lower annular collars rotatably coupled about said tube;
a second pair of support legs connected to said upper and lower collars, said second pair of support legs extending radially outward from the longitudinal axis of said tube;
means for retaining an object within said tube, said retaining means projecting radially through the cylinder toward said longitudinal axis;
a locking means adjustably positioned through the upper collar, said locking means projecting radially toward the longitudinal axis of the cylinder and selectively positioned in contact with the cylinder;
wherein said second pair of legs is rotatable with respect to said first pair of legs between a first position to a plurality of second positions.

5,290,005

SUPPORTING DEVICE FOR MINIATURE MOTORS

Takeshi Akiyama, and Shinichi Nakayama, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Sep. 29, 1992, Ser. No. 953,927
Claims priority, application Japan, Oct. 21, 1991, 3-085602[U]
Int. Cl.[5] F16M *1/08*
U.S. Cl. 248—671 **5 Claims**



1. A miniature motor and supporting device, comprising:
a miniature motor including a housing made of a metallic material, said housing being formed into a bottomed hollow cylindrical shape including an end with a hole and having permanent magnets fixedly fitted to an inner circumferential surface of said housing, a rotor positioned in said housing and including an armature facing said permanent magnets and including a commutator, and a motor case fitted to an opened end opposite said end of said housing and having brushes making sliding contact with said commutator and input terminals electrically connected to said brushes, said rotor being rotatably supported by bearings provided in bearing convex parts of said housing which include a first convex part formed in said end of said housing and a second convex part formed in said motor case; and
supporting means for supporting said motor including;
a first member having a notch portion for supporting said first convex part and a protruded portion, said protruded portion being inserted into said hole provided on said end of said housing;
a second member having a second member hole receiving said second convex part, said second member hole being of a partially cut circular shape, said second convex part having an outer surface being of a partially cut circular shape complimentary to the partially cut circular shape of said second member hole;
a connecting member connecting said first member and said second member such that said first member and said second member are in opposing relationship and having a distance therebetween; and

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a handle member connected to one of said first and second members whereby said first member, said second member, said connecting member, and said handle member being formed integrally; and

whereby the first member and the second member having resiliency such that when said miniature motor is inserted between the opposing first and second members, said first and second members are flexed about the connecting member to accommodate the miniature motor.

5,290,006

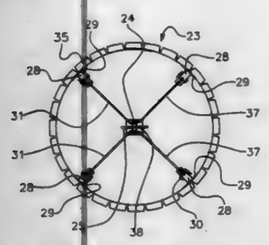
EXPANDING FORM FOR POURING MIXED CEMENT TO REPOSITION MANHOLE CASTINGS

Clifford Gouker, 101 Buena Vista Dr., Freedom, Calif. 95019

Continuation-in-part of Ser. No. 563,781, Aug. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 401,760, Sep. 1, 1989, abandoned. This application May 20, 1992, Ser. No. 887,581

Int. Cl.[5] B28B *7/30*

U.S. Cl. 249—63 **4 Claims**



1. A manhole forming assembly comprising

an annular metal wall 1/16 inch in thickness having two ends that slideably overlap;

four radial, elongated, flat, metal connecting arms equiangularly disposed within the interior of the metal wall, wherein two of said arms which positioned adjacent to each other are identical, each having a length of 10½ inches and wherein the other two arms are identical, each having a length of 10 inches, each of said four connecting arms further including a first end and a second end;

a plurality of curved spring receptacles secured to the annular wall, each having a recess;

first linking means for linking each of said first ends to each of said spring receptacles;

a lifting handle located off center within the interior of annular wall;

second linking means for pivotally linking said second ends to said lifting handle and

a plurality of springs, each located in each of said recesses of the receptacles to resiliently bias against each of said first ends of said connecting arms wherein each of said receptacles includes a slot allowing a respective connecting arm to pivot within the recess, wherein a locked position is created when the handle is depressed downwardly to move the annular wall into an expanded position, and wherein when the handle is pulled upward the annular wall is unlocked and moved to a retracted position.

5,290,007

CONTROL DEVICE FOR VOLUME STREAM OF HYDRAULIC WORKING MEDIUM

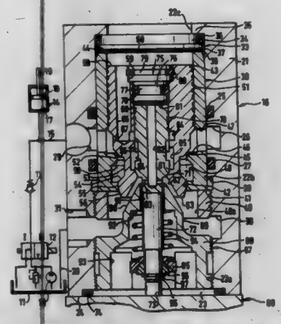
Holger Lueues, Vaihingen/Enz, and Hartmut Saadau, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1992, Ser. No. 954,916

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140604

Int. Cl.[5] F16K *31/363, 31/40*

U.S. Cl. 251—30.04 **8 Claims**



1. A control device for a volume stream of a hydraulic working medium, comprising a blocking valve having a seat valve member cooperating with a stationary main valve seat; a pre-control valve member arranged in said seat valve member and cooperating with a valve seat provided in said seat valve member; an actuating device with which said pre-control valve member is in an operative cooperation; a spring providing a force with which said pre-control valve member cooperates with said valve seat and controls a pressure in a pressure chamber formed in said seat valve member and a valve housing, said seat valve member being pressed against said main valve seat under the action of said pressure; means forming a pressure chamber for working means; a throttle point with a constant cross-section through which said pressure chamber between said seat valve body and said valve housing constantly communicates with said pressure chamber of said working means; a variable throttle point through which said pressure chamber between said seat valve body and said valve housing is connectable with a container, said variable throttle point being spaced from said valve seat of said pre-control valve member and having a cross-section which is changeable of said pre-control valve member, said actuating means which cooperate with said pre-control valve member being formed as a proportional magnet mounted on said blocking valve, said seat valve member having a fine control slider, said main valve seat having an effective diameter which is equal to a diameter of said fine control slider.

5,290,008

DISCHARGE CONTROLLING DEVICE FOR FAUCETS

Andy Y. Young, 1598 Loch Lomond Land, San Jose, Calif. 95129-3737

Filed Jun. 1, 1993, Ser. No. 69,523

Int. Cl.[5] F16K *31/44*

U.S. Cl. 251—90 **4 Claims**

1. A discharge controlling device for faucet comprising:

a housing in which the upper end thereof being threaded to form the threaded edge, the intermediate portion thereof being embossed to form the embossed portion, the internal portion thereof having a space open at one end in which the upper end thereof being defined by a partition having a central aperture, a pair of locking slots being provided at the lower edge of the housing at two locations opposite to each other;

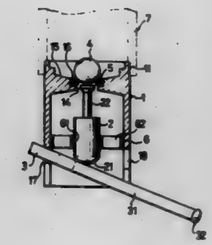
a throttle pin having a spherical surface at the lower end thereof, and an rod tip located at the upper end;

a control lever shaped to be a forked double spring plate;

a steel ball;

a seal ring, and

a diffusion ring having a central opening and a plurality of peripheral diffusion holes;



the seal ring being secured at the periphery of the housing aperture, the steel ball being positioned atop the aperture, the diffusion ring being placed within the interior space of the housing such that the lower edge thereof is above the upper edges of the locking slots located at the lower edges of the housing; the throttle pin being penetrated through the central opening of the diffusion ring, the control lever being locked with one end thereof secured within one of the locking slots, and the other end thereof secured within the other locking slot such that the throttle pin is carried by the control lever and positioned in place.

5,290,009

SELF-VENTING, RAPID CONNECTION-RELEASE COUPLING FOR COMPRESSED GAS LINES, FOR EXAMPLE COMPRESSED AIR LINES

Roland Hellmann, Wiernsheim, Fed. Rep. of Germany, assignor to RECTUS-Apparatebau, Walker Klein GmbH, Eberdingen-Nussdorf, Fed. Rep. of Germany

Filed Oct. 5, 1992, Ser. No. 956,607

Claims priority, application European Pat. Off., Oct. 8, 1991, 91117101.5

Int. Cl.[5] F16L *37/28*

U.S. Cl. 251—149.6 **12 Claims**

1. Self-venting rapid coupling for compressed gas lines having

a coupling plug (2), adapted for connection to a first gas line;

a coupling socket (1) receiving said coupling plug (2), and adapted for connection to a second gas line subject to pneumatic pressure;

a valve (10) located in the coupling socket (1) engageable by the coupling plug, said coupling plug holding the valve in OPEN condition when the coupling plug is inserted in the coupling socket;

a first locking device (22) having at least oe first locking element (24) secured to the coupling socket to lock the plug to the socket, when inserted therein;

a second locking device (23) having at least one second locking element (39) secured to the coupling socket for locking the plug to the socket;

a slider sleeve (30) located on the coupling socket (1) and axially slidable thereon;

spring bias means (14) acting on the slider sleeve (30),

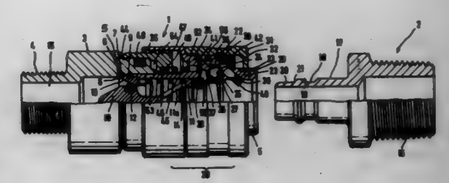
the slider sleeve (30) being operatively coupled to the first and second locking devices (22, 23) and movable counter to the spring force of the spring bias means (14) from

a) a start position, in which the coupling plug (2) is retained by the first locking device (22) in locked position in the coupling socket (1) with the valve (10) in open condition, to

b) an intermediate position, wherein

the coupling plug (2) is retained by the second locking device (23) in locked position while still at least partly inserted in the socket (1), and

in which the valve (10) is in closed condition,



the first locking means (22) and the first locking element (24) are released from locked position; and to

c) a second or released position in which the coupling plug (2) can be removed from the coupling socket (1),

comprising, in accordance with the invention,

a venting means (51, 55, 56);

a movable further locking element (47) located on the coupling socket (1) and forming an axial abutment for the slider sleeve (30) when the slider sleeve (30) is in the intermediate position,

said movable further locking element (47) being subject to pneumatic pressure in the first line coupled to said coupling plug (2) when the valve is open, said movable further locking element (47) being retained in abutting condition with respect to the slider sleeve (30) to arrest the sliding movement of the slider sleeve (30);

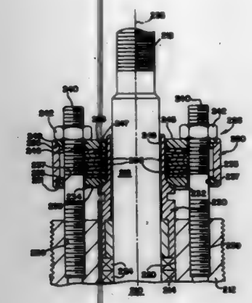
and wherein, upon closing of the valve (10), said movable further locking element (47) is released from pneumatic pressure, the second line is vented through said venting means (51, 55) and the movable further locking element (47) moved to release position to permit movement of the slider sleeve (30) to the second or plug release position.

5,290,010

MULTIPLE THRUST RANGE LIVE LOADE PACKING SYSTEM FOR STEMS, SHAFTS, ETC.

William A. Ridge, Inman, Kans., assignor to Cashco, Inc., Ellsworth, Kans.

Continuation-in-part of Ser. No. 897,864, Jun. 12, 1992, Pat. No. 5,192,049. This application Mar. 4, 1993, Ser. No. 26,532
The portion of the term of this patent subsequent to Mar. 8, 2010, has been disclaimed.
Int. Cl.[5] F16K *41/02*; B65D *53/00*
U.S. Cl. 251—214 18 Claims



1. A multiple thrust range, live loaded packing system for stems and shafts extending into a packing chamber containing a packing ring, and a packing gland engaging said ring and having an outer end portion projecting outwardly of said chamber, comprising:
a first thrust member engaging said outer end portion of said gland;
a second thrust member spaced from and facing said first thrust member;
spring means between said thrust members for normally biasing said thrust members apart;
spacer means between said thrust members around said spring means for establishing a minimum spacing distance between said thrust members;
tension means extending between said thrust members for securing said second thrust member in a selected position relative to said chamber for exerting a selected live load on said packing gland via said spacer means, said spring means and said first thrust means; and
at least one of said first and second thrust members having opposite stop surfaces selectively engageable with said spacer means to provide different thrust range values of live loading depending on which stop surface is engaged with said spacer means.

5,290,011

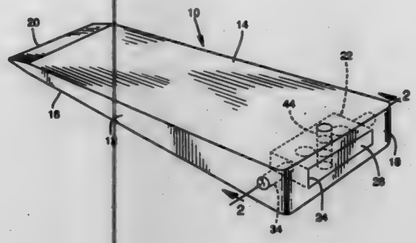
Patent Not Issued For This Number

5,290,012

WEDGE FOR TREE HARVESTING HAVING AN IMPROVED DRIVE HEAD

Robert S. Cottriel, 13937 Tucker Ave., Sylmar, Calif. 91342; Belt J. Shepherd, P.O. Box 3868, Wofford Heights, Calif. 93285, and Larry M. Shepherd, P.O. Box 2320, Lake Isabella, Calif. 93240

Continuation of Ser. No. 650,006, Feb. 4, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 867,064
Int. Cl.[5] B66F *13/00*
U.S. Cl. 254—104 3 Claims



1. A wedge for use in felling trees whereby the wedge is driven into a kerf behind a cutting chain of a chain saw to old the kerf open and to assist in directing the fall of the trees, said wedge comprising;
a body of plastic material continuously tapering from wide to narrow from an extreme head end to a thin edge at the opposite end, and having a cavity with an opening at the head end of the body,
a solid insert of hard metal material fixedly mounted in said cavity of said body and dimensioned to tightly fit the cavity with a surface of said insert closing the opening of the cavity and flush with a surface of said head end of said body, said surface of said solid insert receiving the impacting blows of a driving tool and transmitting the force of the blows to said body.

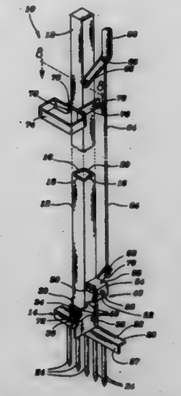
5,290,013

SPADING FORK

Timothy C. Dearman, 13015 Stone Rd., Pearland, Tex. 77581

Filed Feb. 5, 1993, Ser. No. 14,316
Int. Cl.[5] B66F *3/00*
U.S. Cl. 254—132 12 Claims

1. A manual tool for uprooting plants from the ground and working soil, comprising:
a spade member adapted to be imbedded in the ground;
an elongate main handle having a longitudinal axis;
hinge means interconnecting said spade member and said handle for enabling said spade member to pivot about an axis relative to said handle from an initial position in which the spade member extends in prolongation of said handle generally along said longitudinal axis to a selected one of a plurality of adjusted positions relative to said handle;
ratchet means for advancing said spade member from said initial position to a selected one of said adjusted positions in response to back and forth rocking movements of said handle;
latch means for releasably locking said spade member in said selected position of adjustment;
release means for disabling said latch means; and
return mans constantly biasing said spade member toward said initial position for automatically returning said spade member to said initial position in response to disabling said latch means; said ratchet means including a ratchet plate having a plurality of directional ratchet teeth arranged along an arc having said pivot axis of said hinge means as its center, said latch means including a pawl engageable with successive ones of said ratchet teeth for enabling pivotal movement of said spade member in one direction and locking said spade member against reverse pivotal movement; and
a spring acting on said pawl for continuously and forcibly urging said pawl toward engagement with said ratchet teeth, said latch means including a pivot pin defining a pivot axis and wherein said spring comprises a torsion spring supported on said pivot pin and reacting between said pawl and said extension arm for continuously urging said pawl toward rotation about said pivot axis into engagement with said ratchet teeth.



5,290,014

COMPACT TIRE LIFT UNIT

George A. Ferguson, Jr., Dayton, Ohio, assignor to Dener Manufacturing INc., Daytoa, Ohio

Filed Apr. 1, 1991, Ser. No. 678,605
Int. Cl.[5] B66D *1/00*
U.S. Cl. 254—342 4 Claims

1. A tire lift unit comprising a drive shaft having opposite end portions, a housing having spaced walls supporting said end portions of said drive shaft for rotation, an annular spool supported by said drive shaft within said housing for rotation relative to said shaft, an elongated flexible cable having opposite end portions, means mounted on one of said end portions of said cable for supporting a tire, means connecting the opposite of said end portions of said cable to said spool, drive means having a high mechanical advantage for rotating said spool through one revolution relative to said drive shaft in response to multiple revolutions of said drive shaft, said opposite end portions of said drive shaft projecting from corresponding said walls of said housing, means for connecting a hand crank to one of said projecting end portions of said drive shaft, and a one-way coupling connected to the opposite said projecting end portion of said drive shaft and having means for rotating said drive shaft with a power tool in only one direction for wrapping said cable onto said spool independent of the hand crank.

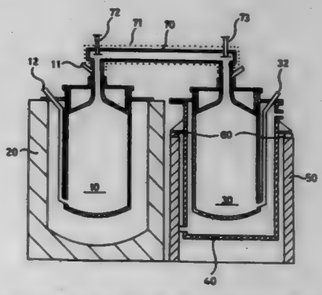


5,290,015

METHOD OF PRODUCING HIGH-MELTING-POINT AND HIGH-TOUGHNESS METAL AND APPARATUS FOR THE SAME

Tatsuo Naritomi, Hyogo; Yoshinobu Toshida, Osaka; Toshiyuki Ohta, Hyogo; Masaji Katsumaru, Osaka; Hiroyuki Wada, Hyogo; Takashi Banno, Osaka, and Tadayuki Chushi, Kyoto, all of Japan, assignors to Sumitomo Sitix Co., Ltd., Hyogo and Chugai Ro Co., Ltd., Osaka, both of Japan

Filed Feb. 28, 1992, Ser. No. 842,961
Claims priority, application Japan, Feb. 28, 1991, 3-47929; Jun. 14, 1991, 3-140424
Int. Cl.[5] C22B *34/00*
U.S. Cl. 266—44 7 Claims



1. An apparatus for producing a high-melting-point and high-toughness metal comprising a reducing vessel for reducing chlorides of said high-melting-point and high-toughness metal to be produced with an activated metal to form a high-melting-point and high-toughness sponge metal and a condensing vessel for recovering a nonreacted activated metal and its chlorides remaining in said sponge metal formed in said reducing vessel by a vacuum separation, wherein said condensing vessel is arranged sideways relative to the reducing vessel, the condensing vessel being contained in a cooling jacket and integrally connected with the reducing vessel through a conduit, and at least one of the reducing vessel and/or the condensing vessel being supported so as to move with thermal expansion of said conduit.

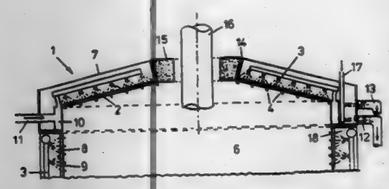
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5,290,016

ARRANGEMENT FOR COOLING VESSEL PORTIONS OF A FURNACE, IN PARTICULAR A METALLURGICAL FURNACE

Emil Elsner, Kieferweg 10, Sinzham W-7573, Fed. Rep. of Germany

PCT No. PCT/EP92/00177, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/14108, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 28, 1992, Ser. No. 934,749
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1991, 4103508
Int. Cl.[5] F27D *1/12*
U.S. Cl. 266—193 11 Claims



1. An arrangement for cooling vessel portions of a furnace comprising

a cooling box which is fitted into a wall or cover region to be cooled or which forms a wall or cover region and which, towards the interior of the furnace, has a heat exchange plate and, in opposite relationship thereto and spatially distributed, a plurality of spray nozzles for spraying a cooling fluid onto the heat exchange plate, and also an outlet for the cooling fluid, wherein

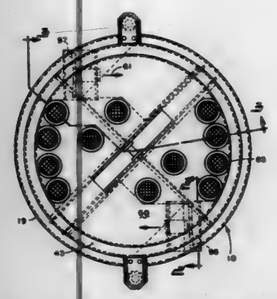
the heat exchange plate is in the form of a composite plate, with a steel plate on the side which is towards the furnace interior and, on the side towards the spray nozzles, a layer of metal which has substantially higher level of thermal conductivity than steel.

5,290,017

COOLING COVER FOR BATCH COIL ANNEALING FURNACE

Klaus H. Hemsath, Toledo, and James E. Lyon, Perrysburg, both of Ohio, assignors to Indugas, Inc., Toledo, Ohio

Filed Mar. 1, 1993, Ser. No. 24,447
Int. Cl.[5] C21D *1/00*
U.S. Cl. 266—263 24 Claims



1. An outer cover for use as a staple component of a bell shaped furnace in which said outer cover surrounds an inner cover within which work to be heat treated is placed, said outer cover comprising:

i) an outer cylindrical casing having a longitudinally-extending body section, a closed top end and an open, flanged bottom end;

ii) an inner cylindrical casing having a longitudinally-extending, distributor section, a closed top end and a bottom end; a plurality of jet nozzle means associated with said distributor section for directing jets of a gaseous medium into heat transfer impingement with said inner cover;

iii) said inner casing disposed within said outer casing to define a longitudinally extending heat transfer annulus between the inside of said outer casing's body section and the outside of said inner casing's distribution section, said heat transfer annulus closed at its bottom axial end and open at its top axial end;

iv) said top end of said inner casing spaced a distance from said top end of said outer casing to define therebetween a plenum chamber, said top end of said heat transfer annulus in fluid communication with said plenum chamber; and

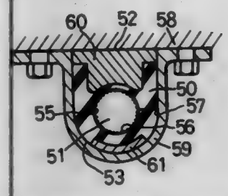
v) at least one draw opening at a position within said top end of said inner and said outer casings and jet pump means associated with said draw opening for creating jet pump aspiration from said opening for positively drawing gases within said outer cover out of said outer cover whereby pressure within said outer cover adjacent said inner and said outer casing's bottom end is anywhere from neutral to slightly negative while said jet nozzle means impingement pattern on said inner cover is enhanced for heat transfer with work within said inner cover.

5,290,018

CYLINDRICAL DAMPING BUSHING

Satomi Watanabe, and Katsuya Hadano, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 26, 1992, Ser. No. 857,997
Claims priority, application Japan, Apr. 15, 1991, 3-109877
Int. Cl.[5] F16F *1/36*
U.S. Cl. 267—293 8 Claims



1. A cylindrical damping body for securing a rod-shaped vibrating bushing to a base, comprising:

a cylindrical vibration-damping rubber body having an inner bore through which the rod-shaped vibrating body is inserted, one portion of an outer periphery of said rubber body coming into contact with the base, a remaining portion of said outer periphery of said rubber body coming into contact with a bracket which is secured to the base;

a first insert member having a rigidity greater than that of rubber, said first insert member being embedded in an axially central portion of said rubber body, except for both axial end portions of said rubber body, said first insert member having a surface which is flush with said one portion of said outer periphery of said rubber body, and an arc-shaped surface which is close to said inner bore of said vibration damping rubber body within a predetermined interval; and

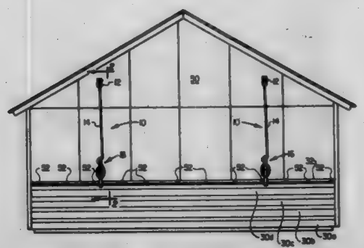
a second insert member having a rigidity greater than that of rubber, said second insert member being embedded in said axially central portion of said rubber body, except for both axial end portions of said rubber body in symmetric relations with said first insert member, said second insert member having a surface which is flush with said remaining portion of said outer periphery of said rubber body, and an arc-shaped surface which is close to said inner bore of said vibration-damping rubber body within a predetermined interval.

5,290,019

ADJUSTABLE SIDING INSTALLATION HANGER ASSEMBLY

Gerald W. Beyers, 2865 Lilac Ln., Fargo, N. Dak. 58102

Filed Jun. 23, 1992, Ser. No. 903,092
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 269—43 23 Claims



1. An easily adjustable hanger assembly for installing successive horizontal siding strips to form siding on a wall surface, comprising:

a lengthy elastic rope extensible for stretching, having one free end for securing said rope elevated above and along a wall surface to be sided, the rope being long enough to reach the lowest siding strip to be installed;

a manually manipulatable hanger strap connected to the other end of said rope having:

a rope shortening mid-section for receiving wrapped short sections of the rope to selectively adjust the length of the rope,

oppositely extending upper and lower end sections extending from the mid-section, the end sections having respective upper and lower end portions, at least the lower end portion being adapted for temporary support of individual horizontally oriented siding strips by engagement in response to tension in the rope, with a projecting lip formed along said strips;

wherein said hanger assembly is operable for holding sequential ones of horizontally oriented siding strips in position for nailing on a wall surface, upon securing said one free end of the rope in said elevated position, winding slack portions of the extensible rope around the mid-section of the hanger strap, so that the lower end portion of the hanger strap engages a projecting lip on sequential ones of said strips while the extensible rope is tensioned by stretching.

5,290,020

SHEET FINISHING DEVICE WITH CALCULATING MEANS FOR EFFICIENT OPERATION

Toshikazu Matsui, Kishiwada; Takatoshi Nishimura, Hirakata; Kenichi Honda, Kawasaki; Shoichiro Tajima, Sagamihara; Keiichi Asano, Tokyo; Nobukazu Ootsuka, Kashiba; Hiroyuki Nagai, Toyonaka; Yoichiro Irie, Suita; Tooru Himegi, and Yoshio Sugishima, both of Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

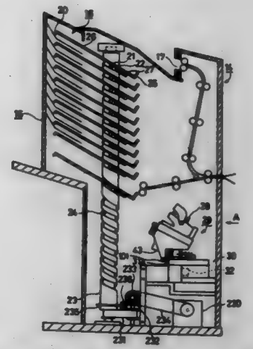
Filed Jul. 13, 1992, Ser. No. 912,452
Claims priority, application Japan, Jul. 16, 1991, 3-175276; Nov. 20, 1991, 3-304920; Nov. 25, 1991, 3-309193; Nov. 26, 1991, 3-311054; Mar. 12, 1992, 4-053832
Int. Cl.[5] B42B *2/00*; B27F *7/00*
U.S. Cl. 270—53 21 Claims

1. An automatic sheet finishing device comprising:

a single base member for supporting a plurality of sheet finishers, the plurality of sheet finishers being operable to apply sheet finishings to a sheet having a length and a width, at specified portions along a widthwise direction of the sheet respectively, the plurality of sheet finishers being arranged in the widthwise direction of the sheet;

main moving means for moving the single base member in the widthwise direction of the sheet, said main moving means being connected with the single base member;

storage means for storing sheet finishing data;



calculator means for calculating from the sheet finishing data stored in the storage means a sequence of finishing positions for the plurality of sheet finishers at which the plurality of sheet finishers are to be temporarily stopped to carry out the sheet finishings along the widthwise direction of the sheet; and

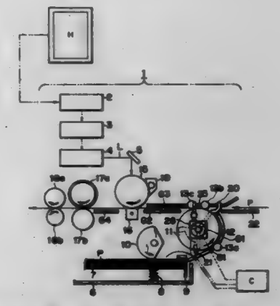
control means for controlling the main moving means so as to move the plurality of sheet finishers to the respective calculated finishing positions along the widthwise direction of the sheet.

5,290,021

SHEET FEEDING APPARATUS

Ken Murooka, and Noriyoshi Ishikawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,479, Jul. 14, 1992, abandoned. This application Apr. 28, 1993, Ser. No. 53,337
Claims priority, application Japan, Jul. 15, 1991, 3-173950
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—9 30 Claims



1. A sheet feeding apparatus, comprising:

automatic sheet supply means for automatically supplying a sheet in an automatic mode;

manual sheet insertion means for supplying a manually inserted sheet in a manual mode;

first detection means capable of detecting the sheet supplied by said automatic sheet supply means and the sheet supplied by said manual sheet insertion means;

second detection means disposed at a downstream side of said first detection means and capable of detecting the sheet; and

control means for controlling the supply of the sheet to effect the switching between said automatic mode and said manual mode on a basis of the detection by said first detection means and to effect the pre-feed of the sheet on the basis of the detection by said second detection means.

5,290,022

DEVICE FOR FEEDING PIECES OF MAIL, ESPECIALLY UNSEALED PIECES, FROM A STACK AND A METHOD OF OPERATING THE DEVICE

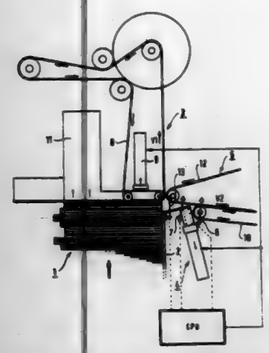
Louis Sabattier, Montelier; Olivier Roch, Valence, and Jean-Luc Astier, Tain, all of France, assignors to Compagnie Generale D'Automatisme CGA-HBS, Bretigny sur Orge, France

Filed Jul. 24, 1992, Ser. No. 918,037

Claims priority, application France, Jul. 25, 1991, 91 09431

Int. Cl.[5] B65H *5/08*

U.S. Cl. 271—12 **8 Claims**



1. A device for feeding flat pieces of mail, said device comprising: means for supporting a stack of mail pieces in edgewise abutment with a registration wall; means for feeding said pieces of mail sequentially off the stack, said feeding means being located in the path of the first mail piece on the stack and effecting translation of said piece of mail at a speed V_1 perpendicular to the stack; transfer means for transferring the mail piece fed off the stack at a speed V_2; an anti double feed device disposed between said feeding means and said transfer means; said anti double feed device being a retention device acting on a face of a mail piece as soon as said mail piece is taken hold of by said transfer means and having a retention force lower than a translation force of the transfer means, and wherein the speed V_1 of the feeding means effecting translation is lower than the speed V_2 of the transfer means; wherein said detectors are located in the path of a mail piece fed off the stack and comprise:

a first detector located upstream of the registration wall and the retention device;

a second detector located proximate to the retention device; and

a third detector located at the point of engagement of the piece of mail with the transfer means, and said feeding device further comprising a control unit operatively coupled to said detectors and to said feeding means and said retention device for controlling the feeding means and said retention device in response to signals received from said detectors.

5,290,023

SHEET FEEDER FOR SHEET-FED PRESS

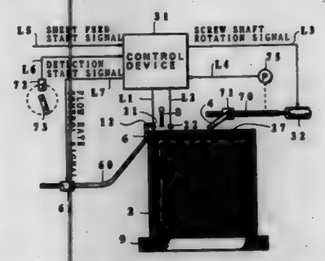
Masamichi Sasaki, and Yoshinori Honkawa, both of Fuchu, Japan, assignors to Ryobi Limited, Hiroshima, Japan

Filed Jul. 31, 1992, Ser. No. 923,363

Claims priority, application Japan, Aug. 23, 1991, 3-212000

Int. Cl.[5] B65H *3/30*

U.S. Cl. 271—20 **12 Claims**



1. A sheet feeder for a sheet-fed press, comprising:

a loading base for loading a bundle of printing sheets made up of a plurality of printing sheets piled up;

an air injection unit which injects air to thereby make an upper part of the bundle of printing sheets float up and separate;

a conveyance unit which conveys a top sheet of separate printing sheets to a printing process by holding the top sheet using a contact surface;

at least two separation state detectors which emit light beams onto at least two areas of a thick side face to sense respective reflected light beams therefrom and output corresponding separation state sensed signals, the thick side face being a side face of separate printing sheets separated by air injection and said thick side face is situated substantially in parallel with said contact surface of the conveyance unit;

an optimum separation state value storage means for storing a preset optimum separation state value of printing sheets;

an adjust means which is given said at least two separation state sensed signals and said optimum separation state value and outputs an injection air quantity adjusting signal in order that separation state sensed signals become substantially the same as the optimum separation state value; and

an air injection air quantity controller which is given said injection air quantity adjusting signal and adjusts the injection air quantity from the air injection unit.

5,290,024

AUTOMATIC SHEET FEEDING APPARATUS

Koji Takahashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 903,923

Claims priority, application Japan, Jun. 28, 1991, 3-183451; Jul. 19, 1991, 3-203632; Sep. 26, 1991, 3-273579; May 13, 1992, 4-120707; May 13, 1992, 4-120710

Int. Cl.[5] B65H *3/52*

U.S. Cl. 271—122 **23 Claims**

1. An automatic sheet feeding apparatus, comprising:

a separation roller rotated in a sheet feeding direction;

a reversible roller abutted against said separation roller and rotated in a direction opposite to the sheet feeding direction;

a feed roller disposed at a downstream side of said separation roller and rotated in the sheet feeding direction;

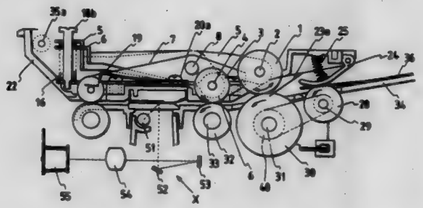
a pinch roller;

supporting means for shifting said pinch roller in a direction toward and away from said feed roller, said pinch roller abutted against said feed roller and rotated in the sheet feeding direction;

driving force transmitting means for transmitting a driving force to said pinch roller and then to said reversible roller; and

a torque limiter provided on said driving force transmitting means for interrupting the transmission of the driving torque from said pinch roller to said reversible roller when transmitting torque goes over a predetermined torque value;

wherein the pressure of said pinch roller against said feed roller is adjusted in conformity with a variation in said predetermined torque value in said torque limiter.



5,290,025

DEVICE FOR DISCHARGING AND STACKING FLAT OBJECTS ON EDGE, ESPECIALLY PIECES OF MAIL AT THE OUTPUT OF A SORTING MACHINE

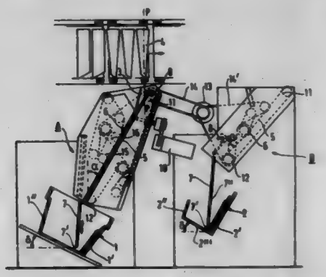
Christian Plent, Bourg les Valence; Bernard Constant, Beaumont les Valence; Michel Divoux, Chateauneuf Sur Isere, and Jacky Gregoire, Valence, all of France, assignors to Compagnie Generale D'Automatisme CGA-HBS, Bretigny Sur Orge, France

Filed Jul. 21, 1992, Ser. No. 915,670

Claims priority, application France, Jul. 22, 1991, 91 09234

Int. Cl.[5] B65H *29/44*

U.S. Cl. 271—181 **10 Claims**



1. A device for discharging and stacking flat objects into a receptacle, especially pieces at mail or letters at an output of a sorting machine, said device comprising routing means for routing each said flat object to a passage with said flat object disposed substantially vertically on edge for movement through said passage, and guiding means disposed under said passage and above said receptacle for guiding each flat object from the passage to the receptacle and for stacking each flat object on edge on a bottom of said receptacle in order to form a stack of said flat objects on edge in the receptacle, and wherein said guiding means comprise:

a first ramp disposed under the passage and having an upwards facing first guiding surface on which each of said flat objects is moved from said passage to a lower end of said first ramp; and

a second ramp disposed between said first ramp and said receptacle and having a downwards facing second guiding surface on which said flat object is moved to said receptacle after leaving a lower end of said first ramp, said first and second guiding surfaces being engageable with opposite sides of said flat object and defining further a space between said first and second ramps in which said each said flat object is deviated.

5,290,026

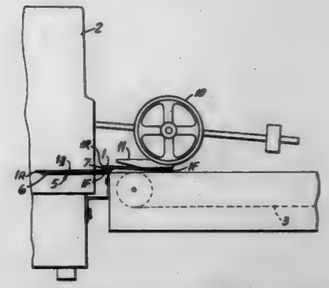
UNDER STACKING MECHANISM AND METHOD

Maximillian Helmstaedter, Villingen, Fed. Rep. of Germany, assignor to GBR Systems Corp., Naples, Fla.

Filed Nov. 20, 1992, Ser. No. 979,240

Int. Cl.[5] B65H *31/08*

U.S. Cl. 271—212 **3 Claims**



1. A mechanism for handling packages including package moving means (3), means (2) for depositing a package on said moving means, means (4) for removing a package from said moving means, said moving means adapted to move a package from the depositing means to the removing means, said packages comprising a preceding package and a subsequent package, said depositing means adapted to deposit the preceding package on said moving means, said subsequent package being deposited on said moving means, means for depositing said subsequent package on the moving means under said preceding package, means are provided to maintain a portion of said preceding package in an uplifted position to permit the subsequent package to be placed under the uplifted portion of the preceding package, each of said packages have a rear end and a front end and wherein said maintaining means comprises means for tilting the rear end of the preceding package upwardly in order to permit the front end of the subsequent package to be placed under the said rear end of the preceding package, the tilting means tilts the rear end of said preceding package to permit the front end of the preceding package to rest on the moving means while the said rear end of the preceding package is tilted upwardly, said tilting means comprises a glide strip having a body portion and a forward upwardly directed tilting portion, and where the body portion of the glide strip is planar with the moving means and the upwardly directed tilting portion is above the plane of the body portion.

5,290,027

ARTICLE POSITIONING APPARATUS AND METHOD FOR POSITIONING AN ARTICLE

Joel D. Clanton, Shelbyville, and Ray F. Beatty, III, Nashville, both of Tenn., assignors to ARK, Inc., Shelbyville, Tenn.

Filed Feb. 19, 1992, Ser. No. 838,526

Int. Cl.[5] B65H *7/02*

U.S. Cl. 271—227 **15 Claims**

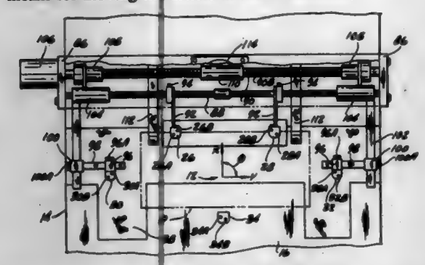
1. Article positioning apparatus comprising:

a positioning surface;

means for sensing the location of an article on the positioning surface with reference to an X direction, with refer-

ence to a Y direction perpendicular thereto, and with reference to an angular orientation in the plane of the positioning surface about an axis generally perpendicular to the X direction and the Y direction, said sensing means comprising at least one Y sensor and at least two X-theta sensors, the Y sensor including a pair of photoelectric eyes offset from one another in the Y direction, the X-theta sensors each including a pair of photoelectric eyes offset from one another in the X direction;

means for moving the article in the X direction;



means for moving the article in the Y direction;

means for rotating the article generally about the axis; and

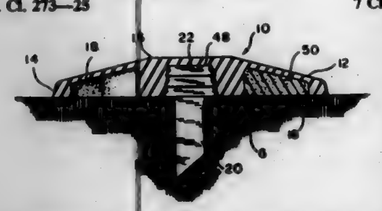
control means responsive to said sensing means for selectively activating said X moving means, said Y moving means, and said rotating means, said control means operating said X moving means, said Y moving means and said rotating means until the work piece is positioned so that one electric eye of each sensor is blocked by the work piece and the other eye of each sensor is unblocked.

5,290,028

IMPACT ABSORBING BASE

Ronald W. Bartoli, 660 Green Acre Dr., Fullerton, Calif. 92635

Filed Apr. 9, 1992, Ser. No. 865,467
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—25 7 Claims



1. A low profile impact absorbing base, comprising:

(a) downwardly and outwardly tapering resiliently deformable top and peripheral walls defining an above ground portion of the base and also defining a hollow interior above the ground;

(b) resiliently deformable ribs arranged within the hollow interior, said ribs being spaced from each other and having a vertical dimension such that the bottoms of said ribs and said peripheral wall define the bottom of the base which engages the ground;

(c) a central hub integrally formed within said top and the adjacently disposed ribs and having an inner surface defining a central opening, the bottom of said central hub being coterminous with the bottoms of said ribs so as to provide a central support area for the base,

(d) a central post separate from said base, and a mounting sleeve around and connected to said post,

(e) interengagable means formed on said inner surface of said hub and on an outer surface of said mounting sleeve for detachable interengagement when said mounting sleeve is extended into said central opening of said hub, said interengagable means being of deformable rubber whereby said mounting sleeve is frictionally retained in said hub but can be disengaged therefrom when a lateral force of predetermined magnitude is applied to said base,

(f) said central post consisting of first and second legs connected at adjoining edges to form a substantially L-shaped transverse configuration, and a top wall attached to said legs at the top thereof and extending therebetween, said legs tapering downwardly at the bottoms thereof to provide a generally pointed leading surface for ground penetration, with the transverse configuration of said legs also adapting the post for mounting in an embedded retaining sleeve, and wherein

said ribs are first laterally inwardly deformed as a result of sliding impact forces, and thereafter said mounting sleeve is disengaged from said hub and base when said sliding impact forces reach said predetermined magnitude.

5,290,029

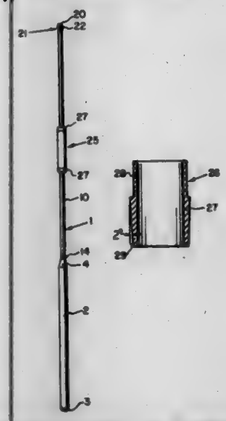
Patent Not Issued For This Number

5,290,030

CUE STICK

Seward J. Medbury, West Bloomfield, Mich., assignor to MGX, Inc., Zelienople, Pa.

Filed Jun. 5, 1992, Ser. No. 893,746
Int. Cl.[5] A63D *15/08*
U.S. Cl. 473—47 16 Claims



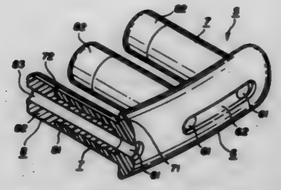
1. A cue for playing pocket pool or billiards comprising a hollow elongated handle having a first end and a second end and a hollow elongated shaft having a first end and a second end, said handle and said elongated shaft being substantially cylindrical in cross section and said elongated shaft having a substantially constant external diameter, a tip member fixed to said first end of said elongated shaft and a connector fixed to said second end of said elongated shaft, a butt member fixed to said first end of said handle and a connecting member fixed to said second end of said handle, weight means located within said hollow handle, means for adjustably locating said weight means along the longitudinal axis of said hollow handle according to the desire of a player and bridge means including a cylindrical sleeve and a bushing at each end of said cylindrical sleeve surrounding said elongated shaft and having an inner diameter slightly in excess of the outer diameter of said elongated shaft, each of said bushings having an elongated outer portion with a reduced diameter located within an end of said sleeve and a collar portion having an outer diameter greater than said reduced diameter of said elongated outer portion forming a shoulder contacting an end of said sleeve, whereby a player holds said bridge means stationary while sliding said elongated shaft through said bridge means to cause a steady and accurate movement of said tip member.

5,290,031

STRING PROTECTOR FOR A RACKET FRAME

Yoshihiro Natsume, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 28, 1992, Ser. No. 977,211
Claims priority, application Japan, Dec. 28, 1991, 3-113203
Int. Cl.[5] A63B *49/14*
U.S. Cl. 273—73 D 10 Claims



1. A string protector for a racket frame comprising

a base strap made of synthetic resin and adapted in shape for attachment to an outer peripheral surface of a head of a racket frame,

a plurality of sleeves projecting from a planar face of said base strap and aligned along the length of said base strap at positions corresponding to the positions of string holes in a racket head, and

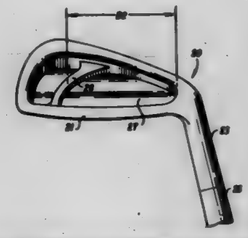
a corresponding number of tubular vibration absorbers made of synthetic resin and each inserted into each said sleeve almost over the entire length of said sleeve.

5,290,032

IRON WITH PROGESSIVE BACK CAVITY SUPPORT BAR

Frank Fenton, South Hadley, and Thomas M. Greene, Monson, both of Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Apr. 2, 1990, Ser. No. 505,114
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—77 A 5 Claims



1. A set of golf club irons including at least a first and second iron, each of said irons comprising

a shaft;

a head having a toe end and a heel end, said head being attached to one end of said shaft, said head comprising

a substantially planar striking face and a back portion opposite said striking face;

a cavity in said back portion of said head, said cavity extending substantially between said toe end and said heel end of said head and having upper and lower edges;

a vibration dampening support bar within said cavity intermediate the toe end and heel end of said cavity and extending between said upper and lower edges of said cavity;

the center of said support bar in said cavity in said head of said first iron being a greater distance from the end of the cavity nearest the heel end than the distance between the center of the support bar in the cavity in the head of said second iron and the end of the cavity nearest the heel end;

the planar striking face of said head of said second iron having a greater degree of loft than the planar striking face of said head of said first iron; and

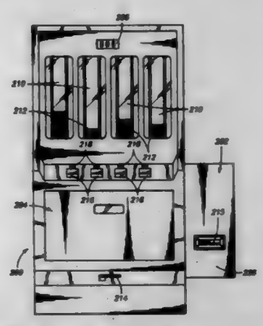
the center of gravity of both of said first and second heads being substantially in the middle of said planar striking face of said first and second heads.

5,290,033

GAMING MACHINE AND COUPONS

Harold G. Bittner, 2812 Bancroft, Missoula, Mont. 59801; Patrick J. Greene, 88 Kendall Rd., Boxboro, Mass. 01719, and Verne S. Kayser, 2140 Nashoba Rd., W. Acton, Mass. 01720

Filed Dec. 2, 1992, Ser. No. 985,171
Int. Cl.[5] G07F *7/08*; A63F *9/00*
U.S. Cl. 273—138 A 24 Claims



1. A gaming machine for vending game coupons in return for game credits, said game coupons being coded with a number of game credits and being redeemable for said number of game credits, the gaming machine comprising:

a coupon vendor which selectively dispenses individual game coupons to a player; and

a coupon acceptor which accepts said individual game coupons from the player after said individual game coupons have been dispensed by the coupon vendor, the coupon acceptor being operably connected to signal the gaming machine to issue game credits in response to the number of game credits coded on said individual game coupons.

5,290,034

GAME CHAIR APPARATUS

Derral Hineman, 4015 N. 78th St., Scottsdale, Ariz. 85251

Filed Jan. 15, 1993, Ser. No. 9,921
Int. Cl.[5] H63B *71/04*; A63F *9/22*; G09B *9/02*
U.S. Cl. 273—148 B 14 Claims

1. Game chair apparatus for use with electronic games, comprising in combination:

base means for supporting a seat;

a seat supported by the base means; and

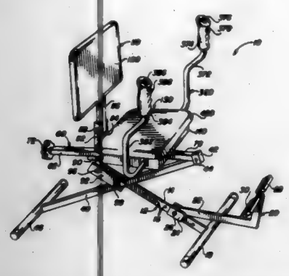
control box means secured to the base means for supporting switch elements for the electronic games, including

a movable plate,

means for supporting the movable plate relative to the seat,

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joy stick means secured to the movable plate for moving the plate in response to a user seated on the seat, and



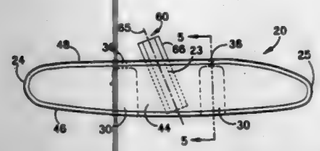
switch elements actuable in response to movement of the plate for providing output signals for the electronic games.

5,290,035

BALANCED GOLF PUTTER

Richard H. Hannon, 2794 Loker Ave. #105, Carlsbad, Calif. 92008, and Jacob H. Schmidt, 119A Kilkenny St., Cardiff, Calif. 92007

Continuation-in-part of Ser. No. 697,397, May 9, 1991, abandoned. This application Apr. 23, 1992, Ser. No. 872,510
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 F **6 Claims**



1. A neutrally balanced golf putter which comprises:
an elongated head having heel and toe ends, a sole and opposite tope surface and opposed striking and aft faces;
a substantially straight shaft secured to said head at an angle to a line between said heel and toe ends and at substantially the geometric centers between said heel and toe and between said faces;
a gripping means on said shaft at the shaft end opposite said head;
two spaced, non communicating chambers in said head on opposite sides of said shaft, said chambers located so that the center of mass of the entire club lies on the longitudinal axis of said shaft; and
wherein the size and spacing of said chambers is selected so that when said club is rotatably supported at two spaced points along said shaft said putter will rotate to balanced position with said head substantially horizontal.

5,290,036

CAVITY BACK IRON WITH VIBRATION DAMPENING MATERIAL IN REAR CAVITY

Frank Fenton, 14 Magnolia Ter., South Hadley, Mass. 01075, and Michael J. Sullivan, 58 Marlborough St., Chicopee, Mass. 01020

Filed Apr. 12, 1993, Ser. No. 45,358
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 R **9 Claims**

1. An iron-type golf club having a shaft and a head, said head comprising
a striking face;
a cavity having an inner surface and defining a rear of said head opposite said striking face;
a polyurethane substantially filling said cavity;
said polyurethane having the following properties:



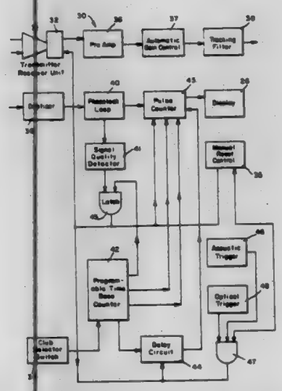
a hardness of substantially 20–50 Shore D;
a flexural modulus of substantially 1,000–50,000 p.s.i.;
a percent elongation of substantially 100–600; and
a tensile strength of substantially 2,000–8,000 p.s.i.

5,290,037

GOLFING APPARATUS

James L. Witler, 403 Pine St., Mintura, Colo. 81645; Douglas L. Spike, 799 Deer Blvd., and Douglas C. Talbot, 625 Stone Creek Dr., both of Eagle-Vail, Colo. 81620

Continuation-in-part of Ser. No. 617,573, Nov. 26, 1990, Pat. No. 5,092,602. This application Sep. 11, 1991, Ser. No. 758,847
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 R **2 Claims**



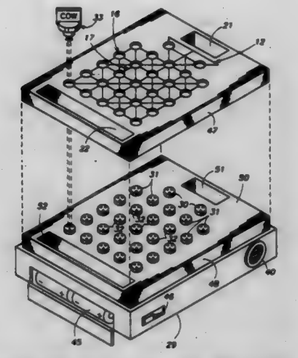
1. A golfing apparatus for determining the carry distance of a golf ball which has a golfer has struck, said golfing apparatus comprising:
a. a speed measuring mechanism having a boresight disposed at angle in the range of zero degrees to twenty five degrees with respect to level ground so that it can be aimed at the struck golf ball while in flight wherein said speed measuring mechanism measures the component of the speed of the golf ball which is parallel to said boresight;
b. a correlator electrically coupled to said speed measuring mechanism, said correlator correlates said measured component of the speed of the golf ball for each club with an empirically derived multiplier for use in determining the carry distance of the golf ball;
c. a display electrically coupled to said correlating means whereby said display displays the carry distance of the golf ball so that the golfer can determine how far the golf ball which he has hit will carry in flight; and
d. an acoustic trigger coupled to said speed measuring mechanism, said acoustic trigger turns on said speed measuring mechanism in response to the sound of the struck golf ball.

5,290,038

PREDATOR SIMULATION BOARD GAME APPARATUS

Houn S. Khin, P.O. Box 690160, Stockton, Calif. 95269

Filed Oct. 13, 1992, Ser. No. 959,643
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—263 **2 Claims**



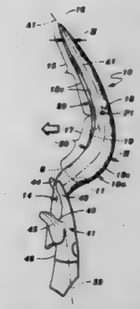
1. A predator simulation board game apparatus, comprising,
a game board having a game board top wall, with a first path of triangular configuration directed along the game board top wall and having a triangular path apex bore,
and
a second path configured as an outer rectilinear path directed along the game board top wall, and an inner rectilinear path positioned medially within the outer rectilinear path directed along the game board top wall, wherein the triangular path intersects the outer rectilinear path at the apex bore, with the outer rectilinear path having outer path bores directed into the game board through the outer path, and the inner path including inner path bores directed through the inner rectilinear path through the game board top wall,
and
the outer rectilinear path and the inner rectilinear path including intersecting paths directed between the outer path and the inner path intersecting the outer path bores and the inner path bores,
and
first tokens mounted on the first path and second tokens mounted on the second path for interaction on the game board,
and
a first predetermined number of first tokens are provided, and a further predetermined number of second tokens are provided, with the further first predetermined number equal to a multiple of four to ten times the predetermined number,
and
the first tokens include a token base having a base diameter and a projecting boss coaxially aligned with the token base having a second diameter, wherein the second diameter is less than the first diameter, and a base indicator plate fixedly mounted to the token base extending from the token base,
and
a support member, the support member having a support member boss, and the support member boss having a support boss top wall, and the support boss arranged for complementarily receiving the game board thereon for contiguous communication of the support boss top wall with the game board top wall, and the support boss top wall includes a matrix of boss plugs, wherein each of the boss plugs is directed through one of said triangular path bores, apex bore, inner path bores, and outer path bores, and each of the first and second tokens includes a respective first, second, and third contact projection extending from each projecting boss and directed downwardly therefrom, and each boss plug includes respective first, second, and third contact receptacle bores for reception of the respective first, second, and third contact projections to effect registration of each projecting boss with one of said boss plugs.

5,290,039

BALL THROWING AND CATCHING SCOOP

Julius B. Cornelio, 143 Hilltop Dr., Vallejo, Calif. 94591

Filed Aug. 21, 1992, Ser. No. 933,349
Int. Cl.[5] A63B *59/02*
U.S. Cl. 273—326 **11 Claims**



1. A ball tossing and catching scoop comprising a longitudinally extending receptacle member and a handle member connected to said receptacle member, said receptacle member including a remotely positioned sloped section and a pocket section integrally connected to said sloped section, said receptacle member resembling a crescent in side elevation but wherein ball tossing and catching functions are confined to said sloped and pocket sections of said receptacle member only, said sloped and pocket sections being U-shaped in transverse cross section to define a cavity and entryway thereto to catch and throw a ball,
said handle member including a wall means having an outer surface of angulated cross section defining a longitudinally extending apex oriented with respect to said entryway of said sloped and pocket sections of said receptacle member such that said apex and said entryway face in opposite directions with respect to each other whereby increased flexibility in usage of said scoop is achieved,
said sloped and pocket sections of said receptacle member also including a floor and side walls connected to said floor, said side walls extending transversely to terminating upper edges coincident with said entryway, said floor being curved and including a nadir region at its interior and an apex region at its exterior, both said nadir and apex regions being concave with respect to said entryway, said upper edges of side walls defining a series of width values W measured transversely across said entryway wherein a maximum value is provided at said pocket section,
said pocket section also including a reverse-slope segment, a bowl segment and an initializing segment joined integrally end-to-end longitudinally together, said sloped section also including a transition segment and an entry segment joined integrally end-to-end longitudinally together, said

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transition segment of said sloped section integrally connected to said initializing segment of said pocket section wherein said series of width values W defined across said entryway of said receptacle member relate in accordance with

W2>W1>W4>W3

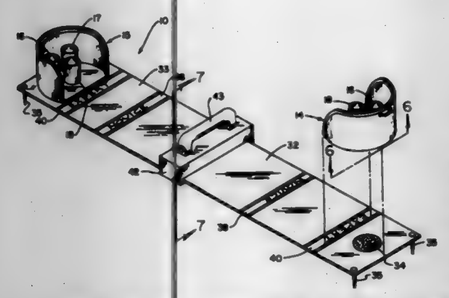
where
W2 is the width of said bowl segment,
W4 is the width of said entry segment,
W3 is the width of said transition segment,
W1 is the width of said reverse sloped segment.

5,290,040

APPARATUS FOR A BALL TOSSING GAME

Stanley J. Boroski, RD #2 Valley View Box 92, Rayland, Ohio 43943

Filed Dec. 14, 1992, Ser. No. 990,037
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—346 **6 Claims**



1. A new and improved apparatus for an object tossing game, comprising:
an object for tossing to a target assembly;
a target assembly for receiving a tossed object, said target assembly including a number of target elements and a base unit for supporting said target elements,
further including:
support surface means for supporting said target assembly,
a housing, means contained within said housing for rolling up and storing within said housing said support surface means,
wherein:
two target assemblies are provided;
said target assembly support surface means includes two flexible sheets, each of said respective flexible sheets for placement thereon of one of said respective two target assemblies; and
said support surface rolling up means includes two rolling up assemblies, each of said respective rolling up assemblies adapted for rolling up one of said respective two flexible sheets and storing same within said housing after said respective target assemblies have been removed from said flexible sheets through an opposite side of said housing.

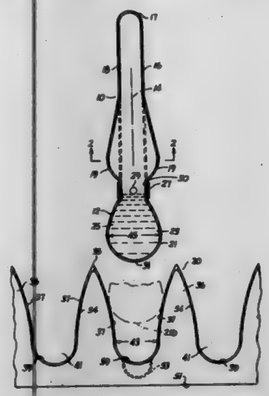
5,290,041

LAWN GAME USING HAND-THROWN PROJECTILES

Russell W. Kettelson, Waterford, Mich., assignor to Paradigm International, Inc., Union Lake, Mich.

Filed Feb. 1, 1993, Ser. No. 11,738
Int. Cl.[5] A63B *63/00, 65/00, 67/00*
U.S. Cl. 273—400 **20 Claims**

1. A hand-thrown projectile comprising an elongated hollow projectile body having a central axis; said hollow projectile body having a relatively long hollow tubular handle portion symmetrical about the central axis, and a relatively short hollow nose portion extending forwardly from said tubular handle portion, said hollow nose portion being symmetrical around said central axis; said hollow nose portion having a diameter that is appreciably greater than the diameter of said handle portion; and a quantity of high density filler material located within the hollow nose portion whereby the relatively short nose portion is significantly heavier than the relatively long handle portion; the handle portion of said projectile being adapted to be grasped by a person's hand, whereby the projectile can be thrown with an underhand swinging motion, such that the projectile flies out into space, with the nose portion constituting the leading end of the projectile; said hollow nose portion having a blunt front end surface, such that if the nose portion strikes a person's body the blunt end surface is incapable of penetrating the person's skin.

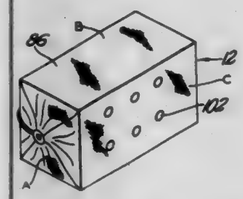


5,290,042

ARCHERY TARGET AND A METHOD OF MAKING AN ARCHERY TARGET

Kirk C. Worley, 1134 W. Anderson, Linwood, Mich. 48634, and Kris R. Worley, 10470 Busch Rd., Birch Run, Mich. 48415

Filed Nov. 12, 1992, Ser. No. 974,483
Int. Cl.[5] F41J *1/00*
U.S. Cl. 273—408 **17 Claims**



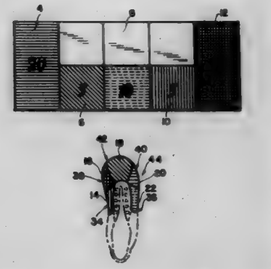
1. An archery target including a rectangular bale of compressed organic material, a multi-layer wrap of film covering target surfaces of the bale that retains organic material in the rectangular bale when arrows are withdrawn, a cover of woven material covering the rectangular bale and the multi-layer wrap of film, and target indicia on the woven material.

5,290,043

GAME FOR PRACTICING SOCCER SKILLS

Blagoje Vidinic, 1B Rene Hirschler, 67000 Strasbourg, France

Filed May 14, 1993, Ser. No. 62,967
Int. Cl.[5] A63B *63/00, 69/00*
U.S. Cl. 273—411 **18 Claims**



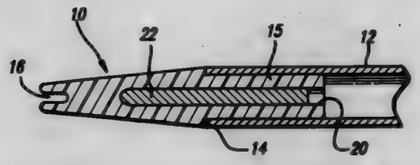
1. A game for practicing soccer skills by kicking a ball towards a target, the game comprising:
a target divided into sections, the target having means for differentiating each section from the others, and
means for differentiating portions of a shoe worn by a player of the game so that each portion of the shoe corresponds to a section of the target,
whereby a player is awarded points by kicking a ball at a set distance from the target with a chosen one of said portions of the shoe to hit the section of the target corresponding to said chosen portion of the shoe, each section having a given point value.

5,290,044

STIFFENED ARROW NOCK

James L. Easton, and Don S. Rabeka, both of Los Angeles, Calif., assignors to Easton Aluminum, Inc., Van Nuys, Calif.

Filed Feb. 23, 1993, Ser. No. 21,309
Int. Cl.[5] F42B *6/06*
U.S. Cl. 273—416 **9 Claims**



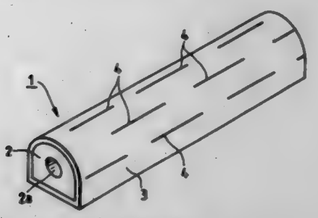
1. A stiffened arrow nock comprising: a nock body having a central axis which is to be aligned with the centerline of an arrow shaft, an arrow shaft connecting end which is substantially centered on said axis, a bowstring receiving groove opening away from said arrow shaft connecting end, said nock body having an elongated generally cylindrical cavity therein aligned on said axis; and an elongated stiffener of stronger material than the material of said nock body, said stiffener being tightly received in said elongated cavity and having a portion which is adapted to extend into said arrow shaft to stiffen the connection to the arrow and the region of said nock body which surrounds said stiffener, said nock body having a shoulder which abuts the end of said arrow shaft, said nock including an elongated member adapted to receive the end of said arrow shaft and wherein said elongated member is a plug having a cylindrical exterior surface, said cavity extending through said plug, said shoulder and said exterior cylindrical surface of said plug comprising the sole areas of contact of said nock with said arrow shaft.

5,290,045

SEAL FOR JOINT, AND METHOD OF INSTALLING SAME SEAL

Michiyoshi Terauchi; Masanori Shimogaichi; Takahide Kameda, all of Tokyo, Japan, and Svein Jonsson, Oslo, Norway, assignors to C.I. Kasei Co., Ltd., Tokyo, Japan and Paus & Paus A/S, Oslo, Norway

Continuation of Ser. No. 842,977, Feb. 28, 1992, abandoned. This application May 24, 1993, Ser. No. 65,024
Claims priority, application Japan, Mar. 1, 1991, 3-119583
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—1 **14 Claims**



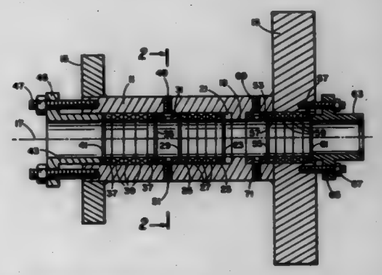
1. A seal for a joint, comprising:
an inner core layer made of a water-unexpansible flexible material and having an internal opening; and
an outer coating layer which is formed of a water-expansible rubber and which coats the inner core layer and has first penetrating openings alternately positioned in a circumferential direction of said outer coating layer and having a length less than that of a longitudinal length of the outer coating layer, said inner core layer having second penetrating openings formed therein,
wherein said first penetrating openings extend to said second penetrating openings in the inner core layer and communicate with the internal opening through the second penetrating openings of the inner core layer.

5,290,046

INTERNAL LIVE LOADING PACKING GLAND

James L. Houston, 3534 E. 109th St., Tulsa, Okla. 74137

Filed Jul. 8, 1992, Ser. No. 910,669
Int. Cl.[5] F16J *15/18*
U.S. Cl. 277—9 **17 Claims**



1. A packing gland comprising:
a casing having a circular bore therethrough and an annular stop on an interior surface of said bore;
a first annular primary biasing means seated on said stop;
an annular primary packing means seated on said first primary biasing means;
a second annular primary biasing means seated on said primary packing means;
an annular locking means seated on said second primary biasing means;

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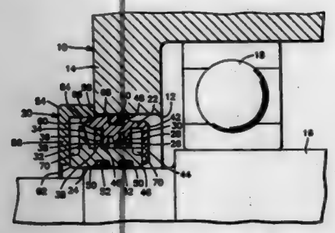
a first annular secondary biasing means seated on said locking means;
an annular secondary packing means seated on said first secondary biasing means;
a second annular secondary biasing means seated on said secondary packing means;
an annular follower means seated on said second secondary biasing means;
means for securing said locking means to said casing with said primary packing and biasing means compressed between said stop and said locking means to a preselected compressive load condition; and
means for securing said follower means to said casing with said secondary packing and biasing means compressed between said locking means and said follower means to a preselected compressive load condition,
said locking means securing means having means accessible externally of said casing for releasing said locking means to slide within said casing after said follower means securing means is secured.

5,290,047

BEARING PROTECTION DEVICE

Henry S. K. Duffee, Florence, and Denise M. Ard, Latta, both of S.C., assignors to Five Star Seal Corporation, Florence, S.C.

Filed Jul. 24, 1992, Ser. No. 917,715
Int. Cl.[5] F16J *15/18*
U.S. Cl. 277—53 **8 Claims**



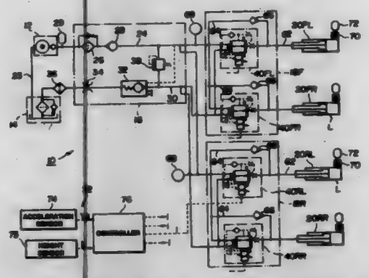
1. In combination with a housing including a wall portion having a shaft opening formed therethrough and a shaft journaled from said housing including one end loosely extending through said opening, a bearing protector, said protector including relatively rotatable inner and outer annular stator and rotor components, said stator and rotor components including radially overlapped and axially spaced radially inwardly and radially outwardly directed, respectively, circumferential fins defining a gap seal therebetween, said stator component including an outer periphery press fit in said opening and further including first outer circumferential seal means adapted to establish a fluid tight seal with said opening, said rotor component including an inner periphery adapted for at least snug fit on said shaft and further including second inner circumferential seal means adapted to establish a fluid tight seal with said shaft, said first and second seal means both being disposed between the opposite axial ends of said opening and said stator and said stator and rotor having major portions of the axial length thereof disposed between the opposite axial ends of said opening, said stator and rotor components including inner and outer ends, said radially inwardly directed fin being disposed inwardly of said radially inwardly directed fin, said inner end of said stator component including an inwardly directed annular flange radially inwardly lapped over the inner end of said rotor component, said stator component outer periphery, adjacent the outer end of said stator component, projecting outwardly of said opening and defining an outer cylindrical seat surface, a shroud including an annular outer wall, the outer peripheral portion of said outer wall including a cylindrical axial extension, said cylindrical extension including an inner cylindrical seat surface pressed fit axially over said cylindrical seat surface with said outer end wall at least substantially abutted against said outer axial end of said rotor component, said stator component including at least one additional radially inwardly projecting circumferential fin spaced axially inwardly of the first mentioned radially inwardly projecting fin of said stator component and defining a radially outwardly tapering V-shaped void between said radially inwardly projecting fins, and said additional fin including a passageway therethrough extending axially of said stator component and disposed in said radial plane.

5,290,048

WORKING FLUID CIRCUIT FOR ACTIVE SUSPENSION CONTROL SYSTEM OF VEHICLE

Kenro Takahashi, and Tadashi Yamashita, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 787,868, Nov. 5, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 46,882
Claims priority, application Japan, Nov. 9, 1990, 2-305702
Int. Cl.[5] B60G *21/06, 17.015*
U.S. Cl. 280—6.12 **5 Claims**



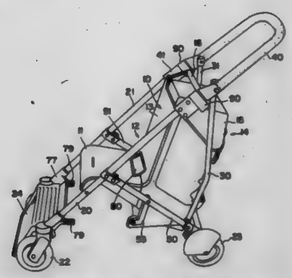
1. A working fluid circuit for an active suspension control system for a wheeled vehicle at least three wheels, comprising:
a plurality of actuators cooperating with respective wheels of the vehicle for suppressing an attitude change of the vehicle body;
a pressure source for providing a pressurized working fluid to said actuators;
a plurality of pressure control valves for respectively controlling a pressure of the working fluid supplied by said pressure source to each of said actuators, each pressure control valve having a supply port and an output port;
a plurality of supply lines connecting said pressure source and respective supply ports of said pressure control valves for supplying pressurized working fluid from said pressure source to corresponding pressure control valves, said supply lines being in fluid unrestricted communication with each other;
a plurality of output lines connecting between respective output ports of said pressure control valves and corresponding actuators for adjusting the working fluid in each of said actuators at preselected controlled levels; and
valve means comprising respective single check valves connecting each of said supply lines and said output lines, each of said single check valves being provided in parallel to a respective one of said pressure control valves, said single check valves each acting when a pressure of the working fluid in the output line connected to said respective pressure control valve exceeds a pressure in the supply line connected to said respective pressure control valve to feed back working fluid from the output line connected to said respective pressure control valve to the supply line connected to said respective pressure control valve to thereby supplement the supply pressure of the working fluid provided via said unrestrictedly communicating supply lines to all of said pressure control valves.

5,290,049

PUSH CHAIR/SHOPPING TROLLEY

David J. Crisp, and David C. Cocks, both of London, United Kingdom, assignors to Crisp and Wilson Limited, London, United Kingdom

PCT No. PCT/GB90/00362, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO90/10567, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 9, 1990, Ser. No. 761,368
Claims priority, application United Kingdom, Mar. 10, 1989, 8905496
Int. Cl.[5] B62B *7/08*
U.S. Cl. 280—30 **10 Claims**



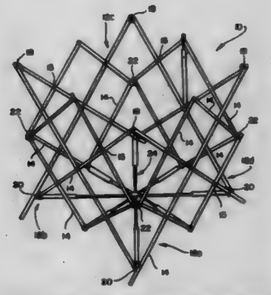
1. A foldable push chair which incorporates a shopping trolley comprising: a frame having a pair of front legs and a pair of rear legs, a seat for a child, a wheel attached to the lower end of each of said legs, a handle, a back support member pivotally attached to said pair of front legs, said back support member serving as a backrest, an article carrying container attached to the rear of said support member, and an auxiliary handle attached to the upper end of said support member, said front pair of legs being pivotally attached to said rear pair of legs and said handle, such that said handle is usable for pushing the push chair when the front and rear pairs of legs are in an extended condition of the push chair and said handle being folded against the rear of the container when the front and rear pairs of legs are brought together in a folded condition of the push chair, and said auxiliary handle being usable for controlling the push chair as a shopping trolley when the push chair is in the folded condition.

5,290,050

COLLAPSIBLE BASKET STRUCTURE

Jeong Ki Kim, 66 Baker Rd., Livingston, N.J. 07039

Filed Aug. 31, 1992, Ser. No. 938,424
Int. Cl.[5] B62B *3/02*; E04H *15/18*
U.S. Cl. 280—42 **19 Claims**



1. A structure erectable from a folded condition thereof to an erected condition wherein the structure presents an upright enclosure having a plurality of planar sides, and a floor supported from a lower part of the enclosure, the structure comprising
a corresponding plurality of lazytongs frames connected each at both of opposite frame sides to another one of said lazytongs frames so that extension of any one lazytongs frame from a retracted to extended position causes extension of the other lazytongs frames, the extended lazytongs frames defining the enclosure, the floor comprising
a plurality of support bars, the bar plurality including longer support bars and shorter support bars, a first end of each longer support bar being connected to the enclosure lower part at the location where a lazytongs frame side is connected to an adjacent lazytongs frame side, a first end of each shorter support bar being connected to the enclosure lower part at a location intermediate the opposite sides of a lazytongs frame, a second opposite end of each longer support bar and a second opposite end of each shorter support bar being connected to a hub fitting about which all of the support bars radially array with the enclosure in erect condition, the shorter support bars being telescopic members which telescopically adjust in length during folding and erection of the enclosure, the plan expanse of the enclosure in erect condition being set by a predetermined length of the longer support bars.

5,290,051

LOAD-UNLOADING SHOE FOR WHEELED HANDTRUCKS

Harlan F. Olson, 4885 S. Jason, Englewood, Colo. 80110

Continuation of Ser. No. 583,570, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 302,804, Jan. 30, 1989, abandoned. This application Feb. 4, 1993, Ser. No. 28,665
Int. Cl.[5] B62B *1/06*
U.S. Cl. 280—47.27 **3 Claims**



1. The combination of a handtruck and a load reacting subassembly, said handtruck having a frame which includes a pair of transversely spaced uprights supporting at the lower end thereof a load-carrying platform and having a pair of wheels connected by an axle and attached to the frame, said load reacting subassembly comprising:
a pair of sideframe elements, each sideframe element having upper and lower ends and handle means interconnecting the upper ends of each element;
elongated straight track means carried by the uprights of the handtruck frame;
track follower means slidably carried by the track means;
means pivotally interconnecting the sideframe elements to the track follower means, at a point intermediate the upper and lower ends of the sideframe elements;
a shoe carried by and interconnecting the lower ends of the sideframe elements;
a pair of rigid straps each having first and second ends;
a pivotal interconnection between each of the said first strap ends and the respective uprights where the point of interconnection is in longitudinal alignment with the track

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means and intermediate the position of the track follower means and the plane of the load-carrying platform;

a pivotal interconnection between each of the said second strap ends and the respective sideframe elements where the point of interconnection is intermediate the point of interconnection between the sideframe elements and the track follower means and the point of interconnection between the sideframe elements and the shoe.

5,290,052

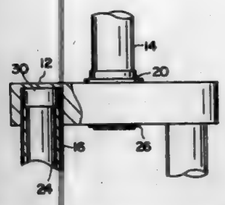
MECHANICALLY JOINED STEERING ASSEMBLY

Keith D. Boutrager, 342 Morrissey Blvd., Santa Cruz, Calif. 95062

Division of Ser. No. 445,083, Nov. 30, 1989, Pat. No. 5,060,961, which is a continuation of Ser. No. 122,033, Nov. 18, 1987, abandoned. This application Sep. 26, 1991, Ser. No. 765,846

Int. Cl.[5] B62K *19/32*

U.S. Cl. 280—279 1 Claim



1. A steering assembly for the front wheel of a bicycle comprising:

a crown;

a steerer, including a tubular portion adapted for engagement to said crown; p1 a first blade, including a tubular portion adapted for engagement to said crown;

a second blade, including a tubular portion adapted for engagement to said crown;

said crown including a single unitary piece of material having an upper surface and a lower surface, said crown having a thickness of said material disposed between said upper surface and said lower surface;

a steerer bore being formed through said material from said upper surface to said lower surface, said steerer bore being adapted to releasably engage said steerer therewithin;

first and second blade bores being formed within said material from said lower surface into said material, each said blade bore being adapted to releasably, frictionally engage one of said blades therewithin;

said frictional engagement of said first blade and said second blade within said first blade bore and second blade bore, respectively, being created only by a physical contact of each said first blade bore and second blade bore, with each of a length of said first blade and a length of said second blade, respectively;

said crown comprising the sole mechanical connection between said first blade and said second blade; and

wherein a first cylindrical reinforcement member is disposed within said length of said first blade that is in frictional engagement within said first blade bore, said first cylindrical reinforcement member having an outer diameter that is slightly less than an inner diameter of said first blade, such that said first reinforcement member provides added strength to said engagement of said first blade within said first blade bore; and

wherein a second cylindrical reinforcement member is disposed within said length of said second blade that is in frictional engagement within said second blade bore, said second cylindrical reinforcement member having an outer diameter that is slightly less than an inner diameter of said second blade, such that said second reinforcement member provides added strength to said engagement of said second blade within said second blade bore.

5,290,053

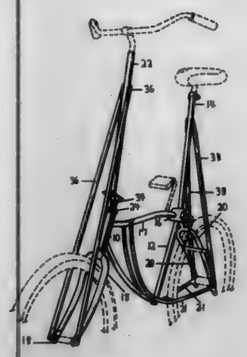
HIGH-BICYCLE FRAME

Danny L. Barts, 915 S. Fifth St., and James H. Altman, 405 N. Third St., both of Mebane, N.C. 27302

Filed Mar. 6, 1992, Ser. No. 847,953

Int. Cl.[5] B62K *3/02, 19/00*

U.S. Cl. 280—281.1 1 Claim



1. A bicycle frame comprising:

a frame composed of tubular metal having a front member in a primarily vertical position for receiving a steering shaft;

a rear member in a primarily vertical position for mounting an elevated pedal assembly housing;

a connection member for coupling the front member to the rear member;

an elevated pedal assembly housing mounted on the top portion of the rear member for receiving an elevated seat shaft tube;

the elevated seat shaft tube for mounting on the top portion of the elevated pedal assembly housing and extending upwardly in a primarily vertical position;

a swing arm with swing movement having a pair of front end arms for mounting a front wheel and pivoting through means of a steering shaft;

a pair or rear end arms extending outwardly from the upper portion of the rear member; and connected at one end to the pedal assembly housing and mounting a rear wheel at the other end;

a pair of lower end arms connected to and extending primarily horizontally from the lower portion of the rear member to the lower portion of the rear end arms;

a pair of rear support tubes connected to the lower portion of the rear end arms and extending upwardly to the upper portion of the elevated seat shaft tube;

means at the upper portion of the elevated seat shaft tube for mounting the rear support tubes;

the distance between the axis of pivot movement at the swing arm and the upper portion of the rear member being equal to the distance between the axis of pivot movement at the swing arm and the lower portion of the rear member;

an elevated handlebar tube connected to the swing arm and extending upwardly;

a steering shaft protruding into the front member from the upper portion of the front end arms for pivoting said front wheel;

means at the top of the swing arm for mounting said elevated handlebar tube and extending upwardly from the swing arm;

a pair of front support tubes mounted on the lower portion of the front end arms extending upwardly to the upper portion of the elevated handlebar tube; and

means at the upper portion of the front support tubes for mounting the front support tubes to the upper portion of the elevated handlebar tube.

5,290,054

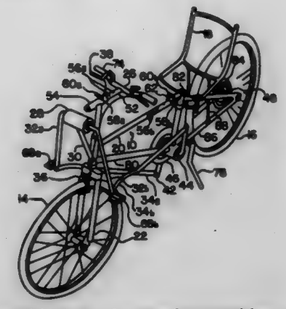
LINEAR DRIVE RECUMBENT CYCLE

Chungchiao J. Po, 1740 Summerwood Dr., Fullerton, Calif. 92633

Filed Oct. 14, 1992, Ser. No. 960,858

Int. Cl.[5] B62M *1/04*

U.S. Cl. 280—288.1 13 Claims



1. A linear drive recumbent cycle comprising:

a front wheel;

a rear wheel;

a frame extending between said front and rear wheel to enable said frame to roll along a surface, said frame also comprising a steering head; said front wheel being journalled in said steering head for oscillation about a generally vertically extending axis so as to allow steering of said cycle;

a plurality of generally straight pedal-slider means being journalled in said frame for pendulum type oscillation about a generally horizontal axis, said pedal-slider means being attached to said frame so as to support said pedal-slider means;

a crank being journalled in said frame for rotation about a generally horizontally extending axis;

a plurality of pedals attached to said pedal-slider means, said pedals travel along a linear motion axis; said pedal-slider means journaled in said frame at an upper end which is shifted a distance away from said crank so that said linear motion axis of said pedals crosses above the axis of said crank;

a plurality of generally curved link means for linking said pedals with said crank to enable the transmission of power from said pedals to said crank.

5,290,055

WHEELCHAIR PUSH BAR AND METHOD

Merritt W. Treat, Jr., P.O. Box 781, Chatham, Mass. 02633

Filed Oct. 7, 1992, Ser. No. 958,643

Int. Cl.[5] B62J *27/00*

U.S. Cl. 280—304.1 12 Claims

1. A quick disconnect push bar apparatus adapted to centrally connecting handles of a collapsible wheel chair for application of propelling force and controlled steering comprising;

a) a collapsible wheelchair, foldable between an open user position and a folded transport position, comprising;

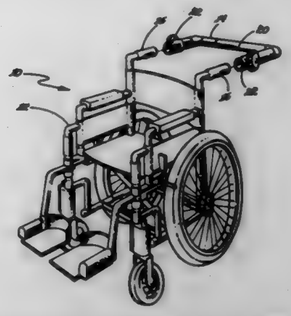
i) a pair of side supports

ii) handle frames connected to the side supports each handle frame having a distal end extending rearwardly from each side support positioned normally in spaced-apart relationship when in the open user position for controlling movement of said collapsible wheel chair;

iii) handle grips mounted on said handle frames, each handle grip extending inwardly from said distal end to an forward edge and associated y secure attachment to each handle frame;

b) an elongated push bar, of substantially U-shaped configuration, for lateral, in-line connection of handle grips mounted on said handle frames attached to the wheelchair, adapted to be grasped by a single hand of a user comprising;

i) a central tubular portion having an OD greater than 1 and ⅛" and having opposite ends;



ii) sleeve means for quick engagement and disengagement with the pair of handle grips and associated handle frames, outwardly cantilevered at the opposite ends of said central tubular portion in spaced apart relationship for laterally connecting the hand grips of the wheelchair;

iii) locking means providing a positive locking engagement with the handle grips attached to the handle frames for preventing accidental disengagement of the push bar apparatus from the wheelchair resulting in loss of control thereof;

iv) said sleeve means configured to position the central tubular portion extending between and in orthogonal relationship with the pair of handle grips; and

v) said sleeve means terminating in hollow ends.

5,290,056

TRAILER HITCH GUIDE

Albert F. Fath, IV, 8257 Claus Rd., Amherst, Ohio 44001

Filed Mar. 17, 1993, Ser. No. 32,644

Int. Cl.[5] B60D *1/36;* G01C *5/00*

U.S. Cl. 280—477 11 Claims

1. A trailer hitch guide for emulating the relative position of a tractor hitch ball and a trailer drawbar in such a manner that a tractor operator can known the relative position of the tractor ball and the trailer drawbar, said hitch guide comprising:

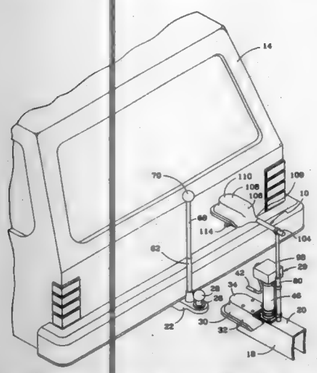
a first portion adapted to be permanently mounted to a tractor vehicle;

a second portion adapted to be permanently mounted to a trailer drawbar;

said first portion having an elevated guidance means extending upwardly for viewing by an operator of a tractor vehicle;

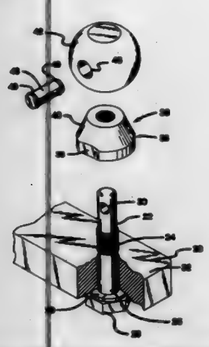
said second portion having a contact plate for at least partially receiving the guidance means such that the relative spacial relation between the guidance means and the contact plate emulates the relative distance between the tractor hitch ball and the trailer drawbar with the vertical distance between the guidance means and the contact plate emulating the relative height between the tractor hitch ball and the trailer drawbar;

said second portion also having a vertical support sleeve adapted to be mounted on the trailer, with the contact plate mounted on said support sleeve at a height corresponding to that of the guidance means; and



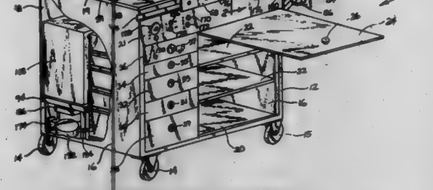
slide means mounted on top of said support sleeve for providing horizontal adjustment between the contact plate and the support sleeve such that the contact plate remains positioned the same vertical distance above the trailer drawbar during horizontal adjustment.

5,290,057
TRAILOR HITCH
Alexander M. Pellerito, 1975 SW. 116th Ave., Davie, Fla. 33325
Filed Dec. 10, 1990, Ser. No. 626,681
Int. Cl.[5] B60D *1/06, 1/28*
U.S. Cl. 280—507 **9 Claims**



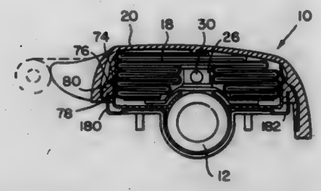
1. An improved ball and socket coupling adapted to provide a tamperproof coupling between a towed vehicle and a towing vehicle, the coupling comprising:
- a support member said support member having a bore extending therethrough;
- a ball;
- a bolt means connecting said ball to said support member, said bolt means having an upper non-threaded shank and a lower non-threaded shank and an intermediate threaded portion, said bolt means having a bolt head non-removably connected to said lower shank remote from said intermediate threaded portion, said upper shank having an aperture extending therethrough transverse to a longitudinal axis of said bolt means;
- a nut means separate from said ball, said nut means having threads corresponding with said intermediate threaded portion of said bolt means for meshing with said intermediate threaded portion so as to sandwich said support member between said bolt head and said nut means, said ball having a partially hollow interior opening on a surface facing said support member, said ball further defining a transverse aperture therethrough intersecting said hollow interior at a right angle, said transverse aperture of said ball aligned coaxially with said aperture of said upper shank so as to form a keyway; and
- pin means extending through said keyway to prevent movement of said ball relative to said upper shank.

5,290,058
MOBILE PEDIATRICS CART
Lorna D. Adams, and Mark D. Adams, both of 15530 E. Oxford Ave., Aurora, Colo. 80013
Filed Mar. 10, 1993, Ser. No. 29,414
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—651 **14 Claims**



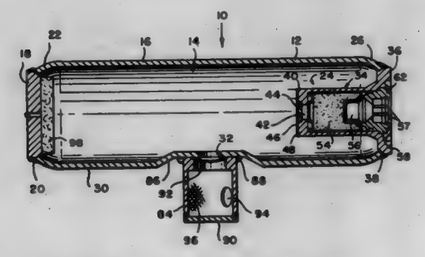
1. A mobile pediatrics cart comprising:
- a housing having a substantially horizontal upper wall, wherein said upper wall has a pair of opposed side edges and an access opening therethrough;
- wheel means secured to said housing for enabling rolling movement of said housing;
- bathing means positioned within said housing at a location below said horizontal upper wall in alignment with said access opening;
- handle means attached to said housing for moving and maneuvering said cart, said handle means extending laterally outwardly from one of said opposed side edges in alignment with said upper wall;
- an infant-receiving examining and treating table; and,
- first mounting means for slidably mounting said examining and treating table on said upper wall and said handle means, said first mounting means being constructed and arranged to enable movement of said examining and treating table between a closed position in overlying and coextensive relationship with said upper wall and said access opening for covering said bathing means, and an open position wherein said examining and treating table is completely removed from said upper wall and is supported solely on said handle for exposing said bathing means through said access opening.

5,290,059
AIR BAG MODULE WITH A CENTER MOUNTED TUBULAR INFLATOR
Bradley W. Smith, South Ogden; Gary V. Adams, Brigham City, and Kirk Rasmussen, West Point, all of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Apr. 28, 1993, Ser. No. 53,285
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—728 A **12 Claims**



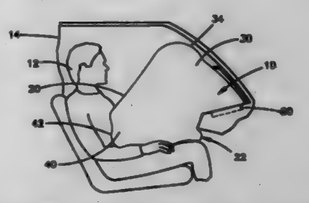
1. A vehicle air bag module comprising,
- a module housing including a flat base member having a slotted section with a curved wall running the width thereof and having an inflator diffuser opening formed in a raised portion of said slotted section at a position intermediate the ends thereof,
- a folded inflatable cushion having a gas inlet rectangularly shaped opening with an inner periphery,
- a retaining ring extending around the inner periphery of said gas inlet opening of said cushion, said retaining ring having slotted sections with curved walls that match and are disposed adjacent said slotted section of said base member of said module housing,
- a tubular inflator comprising a cylindrical housing and a diffuser extending at an angle of substantially 90° from said inflator at a position intermediate the ends thereof, said inflator being disposed in said slotted section of said main body of said module housing with said diffuser extending through said diffuser opening, and
- a retaining bracket having a slotted section that matches and is disposed adjacent to and extends around the back side of said tubular inflator to hold said inflator in place thereagainst.

5,290,060
HYBRID GAS GENERATOR FOR AIR BAG INFLATABLE RESTRAINT SYSTEMS
Bradley W. Smith, Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.
Filed Dec. 14, 1992, Ser. No. 989,854
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—737 **14 Claims**



1. A hybrid inflator for an air bag comprising,
- a storage chamber for storing inflation gas under high pressure, said storage chamber being formed by a hollow cylindrical sleeve that is closed at one end and open at an opposite end,
- a pyrotechnic heater closing said opposite end of said sleeve, said pyrotechnic heater being recessed into said sleeve and including a combustion chamber having a pyrotechnic charge therein, a nozzle orifice, a solid plug means abutting a shoulder adjacent said nozzle orifice, and a first diaphragm,
- a diffuser having a plurality of orifices for dispensing inflation gas from said storage chamber uniformly into an air bag, and
- a second diaphragm,
- said storage chamber being sealed from said diffuser by said second diaphragm and being further sealed from said combustion chamber by said first diaphragm backed up by said solid plug means against the high pressure of the inflation gas stored in said storage chamber,
- whereby as the pressure in the combustion chamber rises and exceeds the pressure of the stored inflation gas in said storage chamber upon ignition of said pyrotechnic charge, said solid plug is unseated with said first diaphragm subsequently rupturing since it is unsupported when the pressure in said combustion chamber exceeds the pressure in the storage chamber, and hot gas from the burning pyrotechnic charge heats the stored inflation gas in said storage chamber causing a rapid pressure rise therein so that when the pressure in said storage chamber exceeds the structural capability of said second diaphragm rupture of the latter occurs allowing the heated gas to vent through said diffuser orifices into an air bag.

5,290,061
FOLDED AIR BAG
Matthew C. Bolisaert, Capac, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 14, 1992, Ser. No. 960,916
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 R **6 Claims**



1. An inflatable air bag for, when inflated, restraining an occupant of a vehicle,
- said air bag having a deflated, folded condition and an inflated, unfolded condition,
- said air bag when in the inflated, unfolded condition having upper and lower sections,
- said air bag when in the deflated, folded condition having a first portion which is turned inside out and received inside a second portion of said air bag, said first portion of said air bag forming said lower section of said air bag when said air bag is in the inflated, unfolded condition, said first portion of said air bag being the final portion of said air bag to unfold when said air bag is inflated,
- said air bag comprising a plurality of layers including a back panel disposed furthest from the vehicle occupant when the air bag is inflated and a front panel disposed closest to the vehicle occupant when the air bag is inflated,
- each of said back panel and said front panel having respective upper and lower portions, said upper portions of said back panel and of said front panel forming said upper section of said air bag when said air bag is inflated, said lower portions of said back panel and of said front panel

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forming said lower section of said air bag when said air bag is inflated,

said first portion of said air bag including said lower portions of said back panel and of said front panel.

5,290,062

PRETENSIONER IN A SAFETY BELT SYSTEM FOR VEHICLES

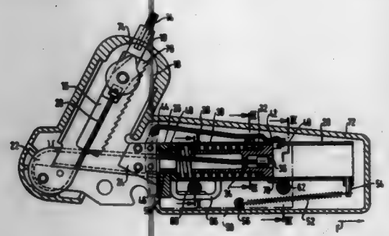
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 19, 1992, Ser. No. 838,372

Claims priority, application European Pat. Off., Feb. 20, 1991, 91102404

Int. Cl.[5] B60R *21/00*

U.S. Cl. 280—801 R 19 Claims



1. A pretensioner in a safety belt system for a vehicle, comprising a support structure adapted to be fixed to the body work of said vehicle, a mechanical drive having a helical spring and a trigger mechanism adapted to maintain said spring in a compressed state and to release said spring in response to vehicle deceleration to initiate a pretensioning operation, said spring being accommodated in a guide tube which is mounted to be translationally displaceable in a first axial direction of said guide tube with respect to said support structure, and spring biasing means being provided for biasing said guide tube in a second direction opposite said first direction towards a rest position.

5,290,063

HAND GRIP CONSTRUCTION FOR A SKI POLE OR THE LIKE

Klaus Lenhart, Jesinger Strasse 84, D-7312 Kirchheim (Teck), Fed. Rep. of Germany

PCT No. PCT/DE91/00865, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/10250, PCT Pub. Date Jun. 25, 1992

PCT Filed Nov. 2, 1991, Ser. No. 862,575

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1990, 4038598

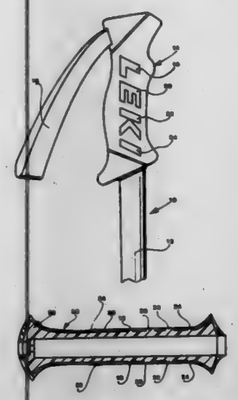
Int. Cl.[5] A63C *11/22*

U.S. Cl. 280—821 6 Claims

1. A hand grip for a ski pole shaft, comprising:

a tubular inner part having an inner surface adapted to face and directly engage a portion of said shaft, having an outer surface, and having a plurality of projection means extending away from said inner part outer surface and terminating in distal end surfaces;

a tubular outer part adapted to surround said inner part, said outer part having an inner surface adapted to face toward and engage said inner part outer surface, having an outer surface including projections adapted to be grasped by a user, and having a plurality of through openings extending between said outer part inner and outer surfaces, said openings being adapted to receive said projection means;



whereby said distal end surfaces are visible from the outside of said hand grip for information display purposes.

5,290,064

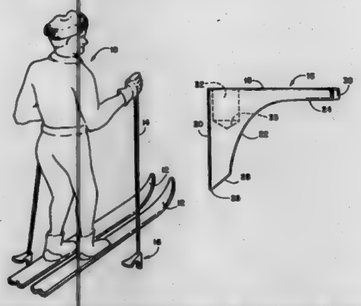
COMBINATION BAIL AND TIP FOR A SKI POLE

Raul Leon, 1500 Country Vistas La., Bonita, Calif. 91902, and Timothy J. Miranda, 49 E. Flower St. #259, Chula Vista, Calif. 91910

Filed Apr. 12, 1993, Ser. No. 44,770

Int. Cl.[5] A63C *11/24*

U.S. Cl. 280—824 12 Claims



1. An improved combination bail and tip for a ski pole having a distal end comprising:

a first rectilinear surface having a distal end and an aperture for receiving the distal end of a ski pole therein, and first surface being normal to said aperture for receiving said pole therein;

a second rectilinear surface normal to said first rectilinear surface opposite to said distal end of said first rectilinear surface, said second rectilinear surface having a distal end with a knife edge at said distal end of said second rectilinear surface; and

an inner surface extending from said knife edge to the distal end of said first rectilinear surface formed firstly in a rectilinear form, secondly in a curvilinear form and lastly in a rectilinear form.

5,290,065

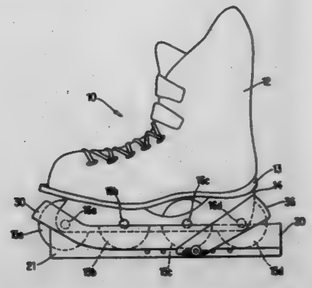
ROLLER BLADE SKATE WHEELS COVER

Randy E. Kassal, 2519 N. Ocean Blvd., Boca Raton, Fla. 33431

Filed Oct. 23, 1992, Ser. No. 965,432

Int. Cl.[5] A63C *3/00*

U.S. Cl. 280—825 13 Claims



9. A cover for covering each wheel of a plurality of wheels of a roller skate with tandem aligned wheels and for immobilizing a front wheel and a rear wheel of said plurality of wheels, said cover comprising:

a) an elongated channel having a base, a first wall and a second wall coupled for forming said channel, said channel adapted to receive each wheel of said plurality of wheels;

b) a first bridle defined by said first wall and said second wall separated from said base at common end portions of said walls extending beyond said base and jointly coupled at common ends of said common end portions said first bridle extending from said elongated channel for capturing said front wheel on an upper front quadrant of said front wheel; and,

c) a second bridle coupled to said elongated channel by a coupling means and extending from said elongated channel for capturing said rear wheel on an upper rear quadrant of said rear wheel.

5,290,066

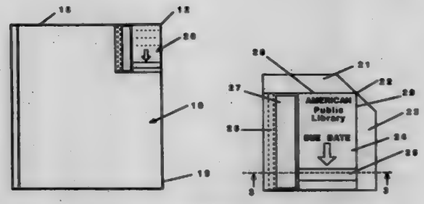
MAGNETIC LABEL AND USE THEREOF

Hemant K. Mody, 200 White Rabbit Trail, Rochester, N.Y. 14612

Continuation-in-part of Ser. No. 623,672, Dec. 6, 1990, abandoned. This application May 18, 1992, Ser. No. 885,000

Int. Cl.[5] B42D *1/00, 15/00*

U.S. Cl. 281—15.1 20 Claims



1. A lending institution lendable object comprising:

(a) said lendable object bearing a humanly readable magnetic medium;

(b) said humanly readable magnetic medium being adapted to bear information that is changeable and related to said lendable object; and

(c) said humanly readable magnetic medium being magnetically erasable and imagewise recordable by machine.

14. A method for displaying in human readable form updateable information on an object issued by a lending establishment, said method comprising the steps of:

(a) attaching to said object an imagewise recordable magnetic media; and

(b) imagewise exposing said media to a magnetic field source capable of producing visible changes in said media.

5,290,067

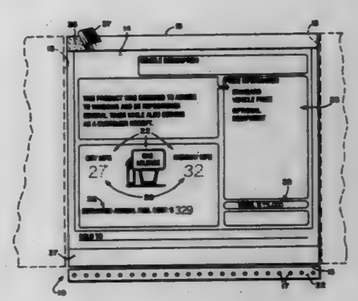
REPOSITIONAL WINDOW PRICING LABEL

Joseph W. Langen, Cheektowaga, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jan. 14, 1992, Ser. No. 820,375

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—60.1 18 Claims



1. A window sticker comprising:

a sheet of printable material having first and second faces, and opposite first and second edges, and opposite third and forth edges;

indicia printed on said first face including fixed word indicia relating to fuel economy of a motor vehicle, and price information for that motor vehicle;

repositional adhesive patterns disposed on said first face adjacent said first and second edges, said repositional adhesive patterns comprise repositional adhesive strips disposed on top of tape strips, the tape strips adhesively adhered to a sheet of opaque material with permanent adhesive; and

release strips covering said repositional adhesive patterns, and removable to expose said repositional adhesive.

5,290,068

DOCUMENT SECURITY METHOD AND SYSTEM

Arshevir Gundjian, Montreal, Canada, assignor to Nocopi International Ltd., Montreal, Canada

PCT No. PCT/CA90/00203, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO91/00390, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 29, 1990, Ser. No. 778,808

Claims priority, application United Kingdom, Jul. 5, 1989, 8915400

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—67 45 Claims

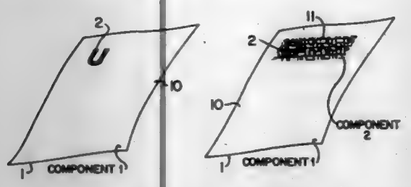
1. A method of securing a substrate such as paper against facsimile transmission and photocopying, comprising the steps of:

a) providing a substrate having a background color on one surface thereof;

b) covering at least one selected area of the one surface with Chemical A_1 comprising one of a pair of colorless color developer and a colorless color former dye, wherein the color developer and color former dye react when mixed to produce a first given color which is different from the background color and has a spectral response consisting of

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one of the following: 1) a reflection spectral response A with a minimum of about 5% at lower visible wavelengths, rising to about 10% at a wavelength of about 580 nanometers, and then rising to a maximum of about 20% at about 700 nanometers; 2) a reflection spectral response B with a minimum of about 4% at lower visible wavelengths, rising to about 6% at a wavelength of about 580 nanometers, and then rising to a maximum of about 12% at about 700 nanometers; 3) a reflection spectral response C with a maximum of about 20% at lower visible wavelengths, falling to about 10% at a wavelength of about 480 nanometers, and falling to a minimum of about 8% at higher wavelengths; or 4) a reflection spectral response D with a maximum of about 12% at lower visible wavelengths, falling to about 6% at about 480 nanometers, and



falling to a minimum of about 5% at higher wavelengths; and

c) printing information in the at least one selected area having a substantially black color with is different from the color of said first spectral response over the wavelengths for the human eye but the same color over the wavelengths of a photocopier and facsimile machine;

d) later applying Chemical B_1 comprising the other of the pair of colorless color developer and the colorless color former dye to at least one portion of the at least one selected area to change the background color to said first spectral response when required, whereby information printed in the at least one portion will be readable by a human but be indistinguishable from the background by a photocopier and facsimile machine.

5,290,069

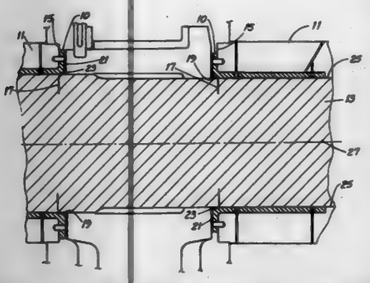
JOURNAL BEARING WITH BEARING-SHAFT CLEARANCE ZONE

Harvey J. Kallenberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Continuation of Ser. No. 921,860, Jul. 29, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 84,443

Int. Cl.[5] F16C *17/02*

U.S. Cl. 384—129 **6 Claims**



1. In a mechanical drive train for transmitting power from a prime mover to an end-use function and having (a) first and second bushing-type plain journal metal bearings, each having a bearing outer end, (b) a housing radially supporting the bearings and having a housing end substantially coincident with a reference plane, and (c) a cylindrical shaft supported by the bearings and extending through at least the first bearing beyond the reference plane at least to the end of the first bearing, the improvement comprising:

a contoured surface formed on the interior surface of the first bearing and being substantially bounded by the outer end of the first bearing and the reference plane, the contoured surface being spaced from the shaft to define a clearance zone,

wherein the shaft is substantially prevented from contacting the bearing along the contoured surface and fatigue breaking of the bearing is substantially reduced.

5,290,070

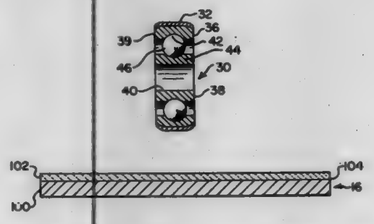
CARRIAGE GUIDES FOR HEAD DISK ACTUATOR ASSEMBLIES

Scott H. Deits, Littleton; Gary T. Krech, Thornton; Robert D. Turner, Denver, and Ronald B. Warner, Englewood, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jan. 14, 1992, Ser. No. 820,275

Int. Cl.[5] F16C *33/02, 33/62*

U.S. Cl. 384—625 **12 Claims**



1. A head disk actuator assembly for a magnetic disk drive, said head disk actuator assembly comprising:

at least one bearing for guiding and supporting an actuator of said magnetic disk drive;

said at least one bearing including:

an inner surface portion;

two opposing side surface portions;

an outer surface portion having, when in use, a rolling contact surface for engaging a guide rail to guide and support said actuator; and

wherein said contact surface has a hardness significantly greater than said inner surface portion and said opposing side surface portions to provide improved wear characteristics of said contact surface while facilitating machining of said inner surface portion and said opposing side surface portions.

5,290,071

COAXIAL CONDUIT BULKHEAD MOUNTING ASSEMBLY

Brian G. Rider, Northampton, and Terry D. Gerber, Tamaqua, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 910,947, Jul. 9, 1992, Pat. No. 5,230,536. This application Mar. 17, 1993, Ser. No. 32,368

Int. Cl.[5] F16L *25/00, 5/00*

U.S. Cl. 285—39 **20 Claims**

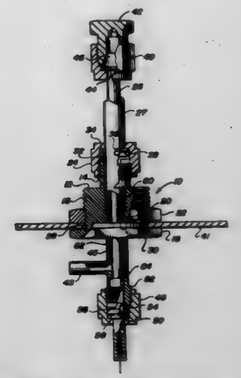
1. A bulkhead mounting assembly for securing at least two coaxial conduits passing into a bulkhead, comprising;

(a) an integral body having a large diameter externally threaded portion and a small diameter externally threaded portion on a single side of said body from where said body is affixed to a bulkhead, a bulkhead-securing flange on the opposite side of said body from where said body is affixed to a bulkhead, and an axial passage through said body to

accept coaxially aligned conduits, wherein said large diameter portion is at least greater in diameter than an outer conduit-securing nut engaging said smaller diameter portion;

(b) a bulkhead-securing nut that engages said large diameter threaded portion, and

(c) an outer conduit-securing nut that engages the small diameter threaded portion, said outer conduit-securing nut having a compression seal engaging flange to compress a seal on an outer conduit of coaxial conduits passing into said bulkhead mounting assembly;



(d) a third externally threaded portion on said integral body on the same side of said body as said bulkhead securing flange;

(e) an inner conduit-securing nut that engages the third threaded portion, said inner conduit-securing nut having a compression seal engaging flange to compress a seal on an inner conduit of coaxial conduits passing into said bulkhead mounting assembly.

5,290,072

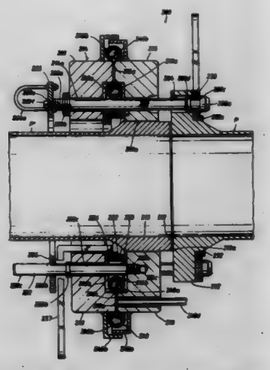
QUICK-ACTING PIPE CONNECTOR ASSEMBLY

Raymond E. Pechacek, 1846 Latexo, Houston, Tex. 77018

Continuation-in-part of Ser. No. 788,824, Nov. 7, 1991, Pat. No. 5,221,019. This application Nov. 6, 1992, Ser. No. 972,797

Int. Cl.[5] F16L *17/10, 23/02*

U.S. Cl. 285—97 **13 Claims**



1. A quick-acting pipe connector assembly for, connecting two pipe ends, comprising:

a pipe flange connected to a first pipe end, said pipe flange having a plurality of openings around its periphery;

a pipe end fitting having an end face sized to fit against said pipe flange;

force ring attached to said pipe end fitting and having a plurality of openings around its periphery;

a plurality of connector bolts attached to and extending through said openings in said force ring, each of said connector bolts extending through one of said openings in said pipe flange;

a lock ring rotatably attached to said pipe flange, said pipe flange being located between said lock ring and said force ring, said lock ring rotating relative to said connector bolts to lock said connector bolts to said pipe flange;

a force actuator disposed in said force ring, said force actuator expanding under fluid pressure to react against said force ring and place said locked connector bolts in a prestressed condition and seal said pipe end fitting against said pipe flange; and

a ramp ring assembly rotatably supported by said force ring, said ramp ring is rotated to lock said pipe end fitting against said pipe flange.

5,290,073

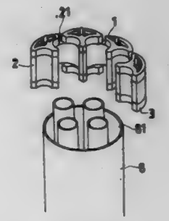
EXPANSION SEAL FOR CABLE PIPE

Chung F. Chen, 26272 Tarrasa La., Mission Viejo, Calif. 92691

Filed Apr. 2, 1992, Ser. No. 862,133

Int. Cl.[5] F16L *39/00;* **F16J** *15/10*

U.S. Cl. 285—137.1 **8 Claims**



1. An expansion seal for cable pipe sleeve comprising a plurality of upper and lower clamping plates having frusto conical surfaces thereon, an elastic ring, having a central axis, upper and lower surfaces and inner and outer circumferential surfaces, said ring located between the upper and lower clamping plates and having a slit formed therein at an angle relative the central axis of said ring, a plurality of symmetrical through holes located parallel to the said axis, said ring having bevelled faces on the upper surface and the lower surface thereof, the faces disposed at acute angles to the inner circumferential and the outer circumferential surfaces of said ring; and a plurality of connecting elements arranged to interconnect the upper and lower clamping plates with said ring compressed therebetween.

5,290,074

SWIVEL FITTING

Earle F. Chapman, P.O. Box 35, Douglas, Isle of Man

Filed Oct. 13, 1992, Ser. No. 960,010

Int. Cl.[5] F16L *27/08*

U.S. Cl. 285—184 **9 Claims**

1. A multi-adjustable joint assembly comprising:

a first and a second oppositely disposed mating housing member,

each of said housing members having

an inner face confronting the inner face of the other of said first and second members,

an oppositely facing outer face, and

an outer annular surface between said inner and outer faces,

said inner faces, in assembly, being in close adjacent mating relation,

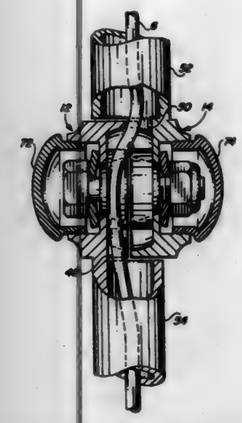
said outer face of each member having a central recess extending toward said inner face,

said central recess in the outer face of each member defining a recessed shoulder surface in the central recess in each housing member,

said inner face of each member having a frusto-conical central bore coaxial with said central recess and converging from said inner face to said central recess, the diameter of said central bore at said outer face being less than the diameter of said central recess, an enlarged mouth at the inner face,

said inner face having an annular recess radially outwardly of said central bore and coaxial therewith defining an inner wall about said bore and an outer wall about said annular recess and comprising an annular path between the inner and outer walls in each of the inner faces of the assembly,

each of said housing members having an opening in the outer wall into the annular path to receive a flexible cylindrical member passed therethrough,



a first and second tubular portion extending away from each member and said first tubular portion being in communication with the opening in the outer wall into the annular path of said first member, and said second tubular portion being in communication with the opening in the outer wall into the annular path of said second housing member,

a tubular hub having a frustoconical first end zone with a distal end and a frustoconical opposite second end zone with a distal end, said hub having a through bore and said hub being sized for receipt in the central bore of the members when in assembly,

adjustable fastener means including a portion extending through said bore of said hub, and

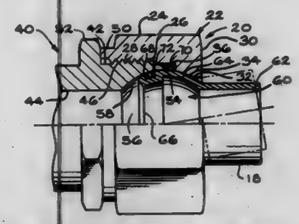
means to apply a selected degree of frictional force between said hub and said assembly members when in captivating relation when a flexible cylindrical member is passed through the annular path so that the selected force will maintain the tubular portions in a selected angular adjustment of one relative to the other and the force may be relieved or tightened to permit adjustment of the force required to effect swinging movement of adjustment of the tubular portions relative to one another.

5,290,075

CONNECTOR AND BALL JOINT ASSEMBLY

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed Jun. 15, 1992, Ser. No. 898,524
Int. Cl.[5] F16L *27/047*
U.S. Cl. 285—261 **16 Claims**



1. A connector and ball joint assembly for an automotive conduit system comprising, in combination:

a connector, said connector having a flange means, said flange means being radial inwardly extending terminating at an end, said end including a surface contoured with a spherical shape, said connector having a cylindrical inner surface, a portion of said inner surface includes attachment means;

a receiving means, said receiving means having an exterior surface and an interior surface, a portion of said exterior surface includes attachment means for receiving said attachment means on said inner surface of said connector, said interior surface of said receiving means defining an open end;

a ball means, said ball means having a wall, said wall having a spherically-shaped outer surface defining an open end, said wall engaging said flange means of said connector and said interior surface of said receiving means, said spherically-shaped outer surface further defining an integral, U-shaped channel receiving one annular gasket means, said annular gasket means sealingly engaged to said interior surface of said receiving means and said outer surface of said ball means; and

bearing means positioned on said end of said flange adjacent said outer surface of said ball means, said bearing means acting as a bearing for movement of said ball means.

5,290,076

QUICK ACTIVATING PRESSURE VESSEL CLOSURE

John D. Smith, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Mar. 23, 1992, Ser. No. 856,108
Int. Cl.[5] E05C *7/00*
U.S. Cl. 292—25 **11 Claims**

1. A closure device for an opening of a pressure member, the pressure member having an annular flange encircling the opening, comprising in combination:

an annular movable support encircling the pressure member;

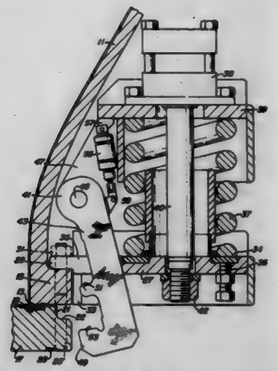
retractor means connected to the movable support for moving the movable support axially relative to a longitudinal axis of the pressure member between an engaging position and a releasing position;

a plurality of coil springs evenly spaced around the pressure member, each of the coil springs having one end in engagement with the movable support for axial movement therewith;

stationary support means on the flange for stationarily supporting an opposite end of each of the springs, each of the springs biasing the movable support away from the stationary support means and being further compressed when the retractor means moves the movable support to the releasing position;

a head having a mating surface on one side for abutment with the flange for closing the opening, the head having an opposite side opposite the side having the mating surface;

a plurality of hooks evenly spaced around and carried by the movable support for axial movement therewith, each having a shank pivotally mounted to the movable support and a retaining projection protruding radially inward for engagement with the opposite side of the head, with the



bias of the springs urging the head into abutment with the flange for closing the opening when the movable support is in the engaging position; and

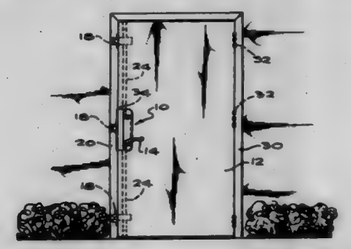
pivotal means for pivoting each of the hooks selectively radially inward to an engaged position and radially outward to a released position while the movable support is in the releasing position, to allow removal and also installation of the head.

5,290,077

MULTIPOINT DOOR LOCK ASSEMBLY

Paul D. Fleming, Glendale, Calif., assignor to W&F Manufacturing, Inc., Glendale, Calif.

Filed Jan. 14, 1992, Ser. No. 822,053
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—35 **36 Claims**



1. A door lock assembly for use in locking a door, said lock assembly comprising:

a main lock cartridge for installation into a side edge of a door, said main lock cartridge including a cartridge housing, an actuator drive bar mounted within said housing for vertical reciprocatory movement, actuator means movably mounted on said housing at a manually accessible position on at least one side of the door, and cam means connected between said actuator means and said drive bar for vertically reciprocating said drive bar in response to manual movement of said actuator means;

at least one secondary lock cartridge for installation into the door side edge at a position remote from said main lock cartridge, said at least one secondary lock cartridge including a lock member adapted to protrude outwardly from the door side edge; and

an extension rod for installation slidably within a channel formed in the door side edge and for connection to said actuator drive bar for vertical reciprocation therewith in response to manual movement of said actuator means, said secondary lock cartridge including cam means connected between said extension rod and said lock member for respectively extending and retracting said lock member relative to the door side edge in response to vertical reciprocation of said extension rod;

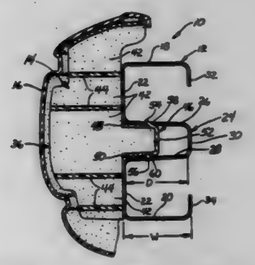
said lock member of said at least one secondary lock cartridge comprising a latch bolt and spring means for urging said latch bolt from a position retracted within said secondary lock cartridge to a normal latched position protruding from the door side edge, and wherein said actuator means comprises indoor and outdoor handles rotatably mounted on said main lock cartridge, drive links connected between said handles and said drive bar for displacing said latch bolt between the retracted and latched positions in response to handle rotation, said actuator means further including a rotatable member mounted accessibly at an indoor side of the door, said cam means of said main lock cartridge including a cam plate mounted within said cartridge housing and movable in response to rotation of said rotatable member between a first position permitting drive bar movement in response to handle rotation to displace said latch bolt between said retracted and latched positions, and a second position displacing said latch bolt to a further extended, deadbolt position.

5,290,078

INTEGRAL FASTENERS FOR AN ENERGY ABSORBER OF A VEHICULAR BUMPER ASSEMBLY

Dean M. Bayer, Anderson; Timothy L. Gernand, Lapel, and Virgil L. Woolman, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 1, 1992, Ser. No. 891,072
Int. Cl.[5] B60R *11/22*
U.S. Cl. 293—120 **7 Claims**



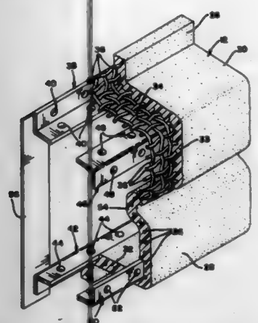
1. A vehicular bumper assembly comprising:

(a) impact beam means having first and second horizontal walls joined by a front vertical wall, the vertical wall including an inwardly projecting channel having a depth substantially equal to a width of at least one of the first and second horizontal walls, the channel including at least one opening; and

(b) energy absorber means having a latticework of intersecting vertical and horizontal walls forming a plurality of resilient cells adapted to buckle when impacted to dissipate energy and at least one mounting tower, integrally formed on the latticework, having a resilient tab received in the channel opening to removably attach the energy absorber means to the impact beam means.

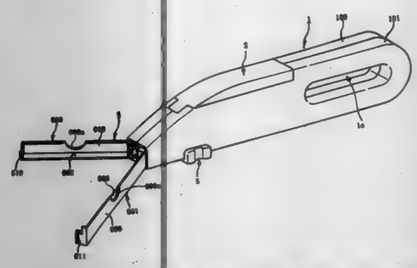
VOL 1160 ISS 1 MR 1994 UMI

5,290,079
REINFORCED COMPOSITE IMPACT BEAM FOR A BUMPER ASSEMBLY AND METHOD
Pradip K. Syamal, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1992, Ser. No. 994,151
Int. Cl.[5] B60R *19/03*
U.S. Cl. 293—120 16 Claims



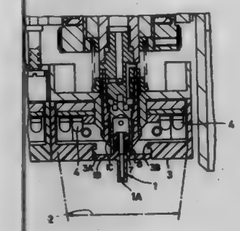
1. An automotive impact beam comprising:
(a) an elongated body having glass fibers encapsulated by a resin to form a laminate; and
(b) elongated ductile reinforcing means retained by the laminate in a region of the body which incurs predominantly tension loads during impact.

5,290,080
POOPER SCOOPER
Mashayuki Yoshioka, Kanagawa, Japan, assignor to Olive Corporation, Tokyo, Japan
Filed Jul. 22, 1993, Ser. No. 96,542
Claims priority, application Japan, Jul. 30, 1992, 4-223300
Int. Cl.[5] A01K *29/00*; E01H *1/12*
U.S. Cl. 294—1.5 17 Claims



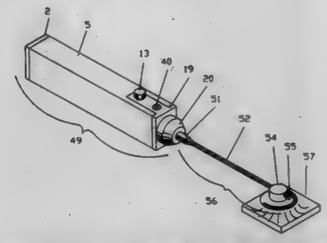
1. A pooper scooper for disposing of solid wastes from a pet animal, comprising:
a relatively short body having hollow means provided in its interior in a manner to extend along a bottom portion of said body, said hollow means having an opening formed at one end thereof as a continuation of said hollow means to communicate with the exterior of said body, linear slit means formed in the bottom portion of said body in a manner to extend along the bottom portion of said body and communicating between said hollow means and the exterior of said body, and housing means for carrying vertically stacked cartridges therein, said housing means being provided in the interior of said body, situated on said hollow means and communicating with said hollow means;
each of said cartridges including a pair of casing members hingedly connected at one ends thereof to each other and sack means having an opening for receiving solid wastes from said pet animal, said sack means supported and contained between said casing members in a manner to be folded up;
cartridge receiving means movably inserted in said hollow means of said body for receiving a lowermost one of said cartridges within said housing means when said lowermost cartridge drops down from said housing means toward said hollow means by gravity;
pusher means movably inserted within said hollow means of said body for pushing out from said opening of said hollow means said cartridge received by said cartridge receiving means;
said cartridge receiving means including a pair of cartridge receiving members pivotally connected at one ends thereof to said pusher means, and spring means provided between said cartridge receiving members to always urge said cartridge receiving members to be opened away from each other;
first cooperating means on said cartridge receiving members and said casing members of each of said cartridges for causing one of said casing members to be held on one of said cartridge receiving members and causing the other of said casing members to be held on the other of said cartridge receiving members when each of said cartridges is received by said cartridge receiving means; and
slidable button means arranged on an outer surface of the bottom portion of said body and supported through said slit means to said pusher means, so that when a user causes said button means to be slid along said slit means while pushing said button means, said pusher means can be moved along said hollow means while pushing said cartridge receiving means.

5,290,081
CHIP MOUNTER
Naoyuki Ogura, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan
Filed Jun. 30, 1992, Ser. No. 906,796
Claims priority, application Japan, Jul. 1, 1991, 3-160268
Int. Cl.[5] B25J *15/06*
U.S. Cl. 294—64.1 3 Claims



1. A chip mounter, comprising:
a suction bit having a vacuum suction opening;
a background member provided in a periphery of said suction bit; and
an illumination lamp arranged on the back side of said suction bit and background member,
said suction bit and background member being made of the same material through which light emitted from said illumination lamp passes and by which incident light is reflected,
said suction bit and background member being formed as separate bodies, said suction bit having a flange inserted into an opening of said background member, and said opening of said background member having annular eaves extending toward an inside of said opening of said background member to be overlapped with an outer periphery of said flange of said suction bit in order to cover interspace between said outer periphery of said flange of said suction bit and an inner wall surface of said opening of said background member.

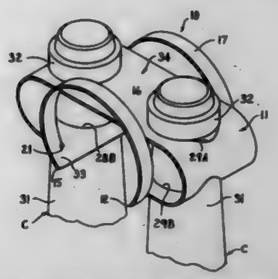
5,290,082
BATTERY OPERATED HAND HELD VACUUM HANDLING DEVICE
Harold D. Palmer, 970 Pulpit Rock Cir. North, Colorado Springs, Colo. 80918; Daren D. Palmer, 8630 Candleflower Cir., and Thomas P. Mealey, 8160 Eagleton Ct., both of Colorado Springs, Colo. 80920
Filed Jul. 6, 1992, Ser. No. 908,373
Int. Cl.[5] B25J *15/06*
U.S. Cl. 294—64.1 7 Claims



1. A hand held tool for picking up small objects comprising:
(a.) an elongated rectangular hollow tube having a control side and three other sides, a distal end and a proximal end into which a proximal end cap is fitted, said proximal end cap comprising a top plate and a control plate arranged perpendicular to said top plate, said top plate covering said proximal end of said hollow tube and said control plate covering a hole formed in said control side, with each of said plates having at least one hole formed therein,
(b.) a nozzle rotatably fitted into said hole formed in said top plate so that said nozzle extends from the exterior to the interior of said hollow tube,
(c.) a suction creating means located inside said hollow tube, said suction creating means further comprising an electrically operated air pump,
(d.) an actuator member extending from the exterior to the interior of said hollow tube through said hole formed in said control plate,
(e.) an electrical battery located inside said hollow tube,
(f.) an electric circuit and electronic valve located inside said hollow tube, which electronic valve is closed to complete said circuit by moving said actuator member into said interior of said hollow tube, which circuit activates said electrically operated air pump, and
(g.) a valving system and pneumatic valve located inside of said hollow tube, which pneumatic valve is closed by moving said actuator into said interior of said hollow tube, which circuit draws air through said nozzle from the exterior of said hollow tube when said electrically operated air pump is activated.

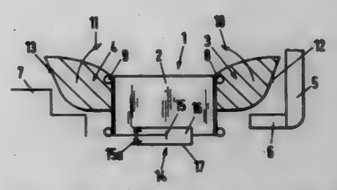
5,290,083
DOUBLE BOTTLE CARRIER
Stewart R. Risley, Bangor, Mich., assignor to Do-It Corporation, South Haven, Mich.
Filed Nov. 3, 1992, Ser. No. 970,711
Int. Cl.[5] B65D *71/00*
U.S. Cl. 294—87.2 8 Claims

1. A one-piece container carrier, comprising a flat, generally rectangular, sheet of resilient, elastically deformable, material, means defining at least two sets of two sockets in said body member and aligned in a single row for receiving therethrough and gripping therebeneath an enlargement on a reduced diameter neck portion on each of at least a pair of containers, and means defining at least one elongated integrally joined at opposite ends thereof to said body member at two spaced corner portions of said body member and initially lying within a plane of said body member and extending along one lateral side of said sockets parallel to said single row of said at least two sets of two sockets, said body member being formable to bring said



two sockets of each set into axial alignment with one another, the reduced diameter neck portion on each container being adapted to be received in and extend through said axially aligned sockets of each set, the elasticity of the material forming said handle causing said handle to automatically adopt a shape between the respective opposite ends thereof that is substantially resiliently displaced out of the plane of a remaining portion of said body member while remaining on said one lateral side of said sockets.

5,290,084
MOTOR VEHICLE SEAT ARRANGEMENT HAVING A SIDE CHEEK MOVABLE BETWEEN A REST POSITION AND AN OPERATING POSITION
Ruprecht Sinnhuber, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany
Filed Feb. 26, 1993, Ser. No. 23,936
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206722
Int. Cl.[5] B60R *21/02*
U.S. Cl. 296—68.1 7 Claims



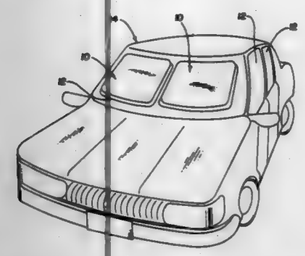
1. A motor vehicle having a side wall comprising a seat mounted adjacent to the side wall of the vehicle and including a side cheek member movable between a rest position permitting an occupant of the seat to move out of the seat easily and an operative position in which the cheek is disposed at least partially between an occupant of the seat and a side wall, wherein the cheek member has an outer surface facing the side wall of the vehicle which is inclined with respect to the side wall of the vehicle so that the side wall, when forced against the cheek member during a side collision, exerts a moment on the cheek member to force it in the direction toward its operative position.

5,290,085

VEHICLE WINDSHIELD COVER WITH PERIMETER SKIRT

Hideaki Takagi, No. 13-9, 1-chome, Ai-Gein, Minoo, Osaka, 562, Japan

Filed Apr. 15, 1993, Ser. No. 48,836
Int. Cl.[5] B60J 11/00
U.S. Cl. 296—95.1 11 Claims



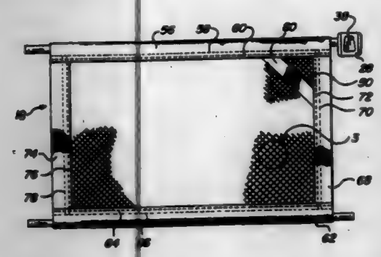
1. A protective cover for a windshield or window of a vehicle, the cover comprising:
- a sheet of material for at least partially overlaying a surface of the windshield, said sheet having a surface area and a perimeter;
- a raised skirt extending from adjacent the perimeter of said sheet; and
- a plurality of suction cups for removably mounting said sheet and said raised skirt to the windshield such that said sheet of material is spaced-apart from the surface of the windshield and such that said raised skirt closes the perimeter, whereby a chamber is formed by the surface of the windshield, said sheet of material, and said raised skirt.

5,290,086

WINDOW NET FOR RACING AND OFF-ROAD VEHICLES

Curt L. Tucker, 1365 Midland Rd., Saginaw, Mich. 48603

Filed Nov. 10, 1992, Ser. No. 972,988
Int. Cl.[5] B60R 21/00
U.S. Cl. 296—152 22 Claims



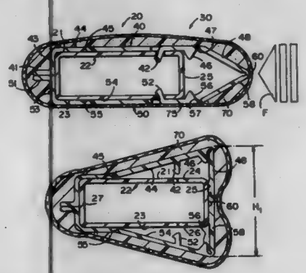
1. A window net adapted for racing and off-road vehicles including a woven mesh, with multiple apertures configured for load dispersion, said mesh having a forward edge, a rear edge, an upper edge and a lower edge; a front webbing member stitched to the forward edge of the woven mesh; a rear webbing member stitched to the rear edge of the woven mesh; a top webbing member folded over to form an upper bight with upper and lower portions and wherein the lower portions of the upper bight receive the upper edge of the woven mesh; stitching passing through the lower portions of the top webbing member and the upper edge of the woven mesh and through the top webbing member and the front webbing member and the rear webbing member to secure the top webbing member to the upper edge of the woven mesh, to the front webbing member and to the rear webbing member and with the upper portion of said upper bight spaced from the upper edge of the woven mesh to form an upper sleeve adapted to receive a window net mounting bar; a bottom webbing member folded over to form a lower bight with upper and lower portions and wherein the upper portions of the lower bight receive the lower edge of the woven mesh; and stitching passing through the upper portions of the bottom webbing member and the lower edge of the woven mesh and through the bottom webbing member and the front webbing member and the rear webbing member to secure the bottom webbing member to the lower edge of the woven mesh, to the front webbing member and to the rear webbing member and with the lower portion of said lower bight spaced from the lower edge of said woven mesh to form a lower sleeve adapted to receive a window net mounting bar.

5,290,087

ARMREST WITH IMPACT DEPENDENT DIMENSION

David J. Spykerman, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 19, 1992, Ser. No. 963,131
Int. Cl.[5] B60J 9/00; B60R 21/02
U.S. Cl. 296—153 29 Claims



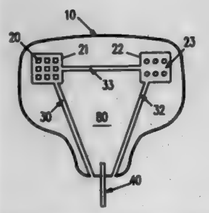
1. An armrest for a vehicle comprising:
- a core member defining an armrest having a first predetermined height; and
- arm means movably coupled to said core member and including cam means engaging said core member in response to an impact force thereby moving said arms means for increasing the first predetermined height of said armrest in response to an impact force.

5,290,088

SEAT-BACK DASHBOARD FOR VEHICLES HAVING TANDEM SEATING

Michael W. Hannigan, 3027 Twin Palms Dr., Aptos, Calif. 95003, and John Lazzeroni, P.O. Box 26236, Tucson, Ariz. 85726

Filed Nov. 12, 1991, Ser. No. 792,506
Int. Cl.[5] A47C 7/40
U.S. Cl. 297—191 13 Claims



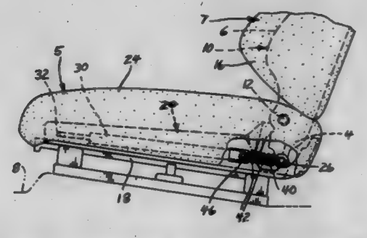
1. A seat back for a motorcycle having a tandem seat assembly, the tandem seat assembly having a forward driver's seat and at least one rearward passenger's seat on the motorcycle, said seat back having a perimeter, said seat back disposed between the forward driver's seat and the rearward passenger's seat, said seat back comprising:
- a front surface of said seat back;
- a rear surface of said seat back opposite the front surface, said rear surface having a cavity formed therein, said rear surface including an electrical control panel, said cavity for receiving the electrical control panel, said control panel including duplicate controls for a two-way intercommunication system; and
- a channel connecting said cavity to the perimeter of said seat back, said channel appropriately sized for conducting electrical wiring from said control panel.

5,290,089

SEAT BELLOWS ENERGY ABSORBER

Mark A. Oleszko, Warren; Kenneth A. Gassman, Waterford, and Minden Hunser, East Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1992, Ser. No. 997,696
Int. Cl.[5] B60N 2/42
U.S. Cl. 297—216.14 7 Claims



1. A recliner arrangement for a vehicle seat comprising:
- a seat cushion unit;
- a seat backrest unit;
- means for pivotally connecting the backrest unit to the cushion unit for rotational motion between an upright and reclined position;
- linear recliner means for selectively adjusting the pivotal location of the backrest unit about the pivot means; and
- plastically deformable energy-absorbing means aligned with the linear recliner means and interposed between the linear recliner means and the seat backrest unit, the energy-absorbing means being operative upon a predetermined magnitude of force exerted thereon.

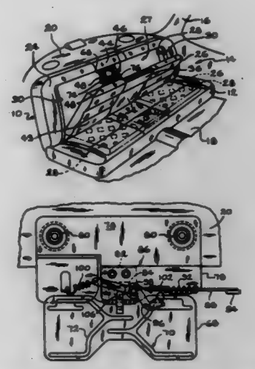
5,290,090

FOLDING SEAT BACK WITH INTEGRAL CHILD SEAT

Timothy D. Bell, Ann Arbor, and Earl R. Austin, III, Milan, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Aug. 17, 1992, Ser. No. 930,274
Int. Cl.[5] A47C 15/00
U.S. Cl. 297—238 16 Claims

1. A seat back for use in a motor vehicle comprising:
- a back panel having upper and lower ends and a first upwardly extending use position in said vehicle in which the upper end of said seat back panel is positioned adjacent to structure of said vehicle;
- means forming a child seat assembly integrally formed in said back panel;
- restraint means for restraining a child seat occupant, said restraint means including at least one belt extending over the shoulder of a child seat occupant;
- means for anchoring said at least one belt into the structure of said vehicle at the upper end of said back panel;
- means for rotating said back panel forward about an axis adjacent said lower end thereof from said upwardly extending use position to gain access to the space behind said seat back panel;
- means for selectively releasing said anchor means when said back panel is rotated forward to detach said at least one belt from said vehicle structure; and



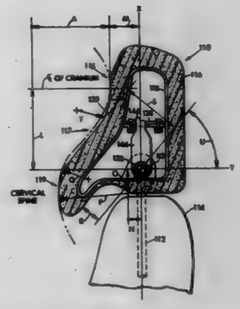
- lock-out means to prevent said seat back panel from being returned to said upwardly extending use position when said anchor means is selectively released and said at least one belt is detached from said vehicle structure.

5,290,091

APPARATUS FOR PREVENTING WHIPLASH

Ronald P. Dellanno, 40 Fox Run, North Caldwell, N.J. 07006, and Quentin E. Gualtier, 16 Winding Way, North Caldwell, N.J. 07006

Continuation-in-part of Ser. No. 771,827, Oct. 7, 1991, Pat. No. 5,181,763, which is a continuation of Ser. No. 585,392, Sep. 20, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,209
Int. Cl.[5] A47C 7/36
U.S. Cl. 297—391 11 Claims



1. Apparatus for preventing whiplash-related injuries to a passenger in a vehicle, comprising:
- a frame supported on a seat of the vehicle and located behind the cranium and cervical spine of a passenger on the seat; and
- a layer of resilient material supported on the frame and conforming to the shape of the frame in the location behind the cranium and cervical spine of the said passenger, the layer of resilient material and underlying frame thereby defining a supporting means located behind the cranium and cervical spine of the passenger and defining

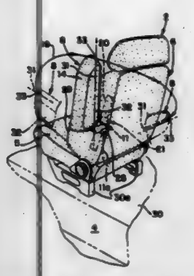
at least one contour that interfits with the posterior contour of the passenger's cranium and cervical spine, and including a first surface located behind a passenger's cranium and projecting upwardly above the approximate center of mass of the passenger's cranium and including a substantially flat portion including a cranium contact zone for contacting and supporting the approximate central posterior area of the passenger's cranium, and a second surface located below the first surface and defining in vertical cross-section a substantially convex smooth curve, the maximum horizontal protrusion point of which projects anteriorly relative to the flat portion of said first surface a distance of 1½ to 4 inches, the said maximum protrusion point being about 3 to 8 inches below said cranium contact zone, said second surface thereby contacting and supporting the posterior portion of the passenger's cervical spine substantially simultaneously with the said contact of the passenger's cranium with said first surface, thereby substantially simultaneously decelerating the cranium and cervical spine during a vehicle collision to prevent whiplash-related injuries to the passenger.

5,290,092

STOWAWAY ARMREST

Eliot H. Geer, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1992, Ser. No. 965,815
Int. Cl.[5] B60N *2/46*; A47C *7/54*
U.S. Cl. 297—411.32 **6 Claims**



1. A seat assembly for a vehicle comprising:
a seat cushion unit;
a seat backrest unit;
an armrest unit having a longitudinal axis laterally disposed above and substantially parallel tot he seat cushion unit when in a first use position, and having a longitudinal axis generally horizontal and adjacent to the rear of the seat backrest unit when in a second stowage position;
a single pivot means for cooperatively securing the armrest unit to the seat assembly, said pivot means being oriented such that the armrest unit, when rotated about the pivot axis, follows a predetermined arcuate path between the first use position and the second stowage position, said predetermined arcuate path defined by the movement of a point at an end of the armrest remote from the pivot axis, said path, when originating from the first use position, is initially simultaneously upward and laterally away from the seat cushion unit and ending in a downward direction and toward the rear of the seat backrest unit, said armrest and pivot means being located substantially within the rear profile of the seat backrest unit and substantially behind the front surface of the seat backrest unit in the stowed position; and
first and second stop means such that the armrest unit is precluded from any pivotal rotation extending beyond the corresponding first use position and the second stowage position.

5,290,093

METHOD OF SEAM LOCATION USING VACUUM

Richard J. Crayne, Saline, and Gregory E. DeView, Ypsilanti, both of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jun. 15, 1992, Ser. No. 898,417
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.61 **8 Claims**



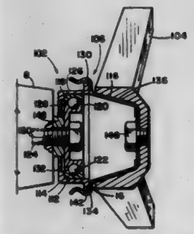
8. An upholstery cover for a seat comprising:
a foam pad having first and second surface sections;
a first cover section having an inside surface and an outside surface and being of a size to lie flat against said first surface section of said foam pad with said inside surface contacting said foam pad and, said first cover section having a first edge;
a second cover section having an inside surface and an outside surface and being of a size to lie flat against said second surface section of said foam pad with said inside surface contacting said foam pad and, said second cover section having a second edge;
a seam for joining said first and second cover sections together along said edges with said outside surfaces of said cover sections engaging one another thereby forming a cover;
a flexible nonpermeable binding cover and engaging said inside surfaces of said first and second cover sections along said edges at said seam and being secured to said first and second cover sections by said seam; and
said cover member being bonded to said foam pad to cover said first and second surface sections.

5,290,094

AUTOMOTIVE WHEEL ENHANCERS

James D. Gragg, 6122 E. Admiral Pl., Tulsa, Okla. 74115

Filed Oct. 28, 1992, Ser. No. 967,756
Int. Cl.[5] B60B *7/20*
U.S. Cl. 301—37.25 **16 Claims**



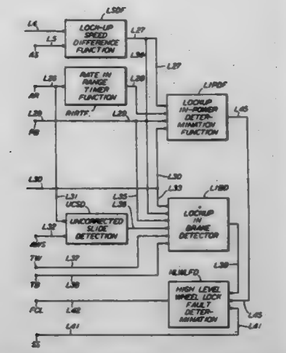
1. An apparatus for enhancing a wheel comprising:
a first mounting member including a bearing housing and an externally threaded portion of said first mounting member adjacent said bearing housing;
a second mounting member including a first portion and an externally threaded portion of said second mounting member adjacent said first portion, said threaded portion of said second mounting member having a longitudinal axis; and
a bearing means for allowing said second mounting member to rotate with respect to said first mounting member
wherein said bearing means is held in said bearing housing and said first portion of said second mounting member is held in said bearing means such that said second mounting member will rotate with respect to said first mounting member about said longitudinal axis.

5,290,095

WHEEL LOCK DETECTION ARRANGEMENT FOR MULTIPLE-AXLE RAILWAY VEHICLES

James A. Wood, Spartanburg, S.C.; John W. Drake, Cincinnati, Ohio, and David J. Pesolar, Greer, S.C., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation of Ser. No. 715,075, Jun. 13, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,168
Int. Cl.[5] B60T *8/88*
U.S. Cl. 303—92 **17 Claims**



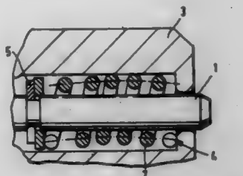
1. A wheel lock detection arrangement for a multiple-axle railway vehicle comprising, first means connected to a highest speed terminal for determining that the speed of the vehicle is below a first given value, second means connected to the highest speed terminal for sensing that the speed of the vehicle is higher than a second given value, third means connected to a pair of speed sensor terminals for determining the operation of brake cylinder pressure sensors on the vehicle, fourth means connected to a plurality of speed sensor terminals for determining the operation of the speed sensors on the vehicle, fifth means connected to the plurality of speed sensor terminals for indicating when the speed sensors are improperly gapped, sixth means connected to a plurality of velocity fault log terminals for checking the integrity of axle speed and rate signals, seventh means connected to each of the above six means for sensing the operational integrity of each of the above six means, eighth means connected to the highest speed terminal and another speed terminal for comparing the highest axle speed with the speed of an axle being tested, ninth means connected to an axle rate terminal for determining if a decelerating axle is about to go into a wheel slide condition, tenth means connected to the eighth means, the ninth means, as in power/in brake terminal and the seventh means for determining if an accelerating axle is about to go into a wheel slide condition, eleventh means connected to the axle rate terminal and an axle wheel slide indication terminal for detecting an inability to correct a wheel slide condition within a set time limit, twelfth means connected to the seventh means, the eighth means, the in power/in brake terminal, the eleventh means, a truck wheel slide valve feedback terminal, and a truck brake cylinder pressure sensor terminal for indicating a wheel lockup has occurred in a brake operating mode, and thirteenth means connected to the tenth means, the twelfth means and a station stop test routine indication terminal for determining and logging the presence of a wheel lockup condition when a hand brake is left on or when a drive motor is seized by producing a wheel lock alert signal to inform operating personnel of a potential equipment damaging situation.

5,290,096

PRESSURE CONTROL VALVE SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS

Erhard Beck, Weilburg; Anton David, Goetzenhain; Helmut Weisbrod, Bad Nauheim, and Horst Kornemann, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 856,072
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1990, 4028606
Int. Cl.[5] B60T *8/32*; F16K *17/06*
U.S. Cl. 303—113.1 **2 Claims**



1. In a slip controlled hydraulic brake system, a pressure control valve, controlling the pressure of hydraulic fluid in said slip-controlled hydraulic brake system, said pressure control valve comprising a valve housing, an elongated valve tappet movably guided in said valve housing, a compression spring received over said valve tappet and in engagement therewith to act on said valve tappet, a valve closure member on one end of said valve tappet, a corresponding valve seat in said valve housing configured to mate with said valve closure member, a pressure supply port in said valve housing adapted to be connected to a pressure fluid source and a pressure return channel, in said valve housing, said valve seat defining a fluid connection between said pressure supply port and said pressure return channel, longitudinal axial movement of said valve tappet causing movement of said valve closure member off said valve seat once pressure has reached a specific pre-set desired value to allow fluid communication between said supply port and return channel, an axial stop on said valve tappet, said valve housing including a bore having an inside wall, and wherein said compression spring comprises a helical coil spring, and means compressing said coil spring between said valve housing and said axial stop so as to be unevenly axially compressed, causing lateral buckling of said helical coil spring, said bore in said housing and said helical spring dimensioned so that said lateral buckling causes at least one coil of said helical spring to be brought into frictional contact with said inside wall of said bore in said valve housing to be scrubbed thereagainst by movement of said valve tappet;
said means compressing said helical coil spring to create an uneven axial compression thereof so as to be buckled and cause frictional contacting of at least one coil thereof with said inside wall comprises said helical coil spring having an integral number of spring coils with end contact points on the same side of said coil spring to create said uneven axial compression.

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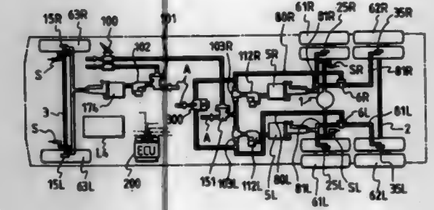
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5,290,097

TRACTION CONTROLLING APPARATUS FOR A MULTI-AXLE VEHICLE

Shigeki Tsuchiya, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,561
Claims priority, application Japan, Mar. 3, 1992, 4-010396[U]
Int. Cl.[5] B60T *8/38*
U.S. Cl. 303—113.2 5 Claims



1. A traction controlling apparatus for a multi-axle vehicle having two sides, a front section and a rear section, a front axle connected to the front section of the vehicle, a pair of front wheels connected with the front axle, a driving axle connected with the rear section of the vehicle, a pair of driving wheels connected with the rear axles, a follower axle connected with the rear section of the vehicle and located adjacent and behind the driving axle, a pair of follower wheels connected with the follower axle, a plurality of wheel cylinders, wherein one each of the plurality of wheel cylinders being in correspondence with each wheel and being connected with the axle associated with the corresponding wheel, a plurality of brakes, wherein one each of the plurality of brakes being in correspondence with each wheel cylinder, the traction controlling apparatus further comprising:

a first air master cylinder commonly connected with a first pair of hydraulic lines, wherein a first hydraulic line of the first pair supplies a hydraulic braking pressure to the wheel cylinder corresponding to the driving wheel on one side of the vehicle and a second hydraulic line of the first pair for supplying a hydraulic braking pressure to the wheel cylinder corresponding with the follower wheel on the one side of the vehicle;

a second air master cylinder commonly connected with a second pair of hydraulic lines, wherein a first hydraulic line of the second pair supplies a hydraulic braking pressure to the wheel cylinder of the driving wheel on the other side opposite the one side of the vehicle and a second hydraulic line of the second pair supplies a hydraulic braking pressure to the wheel cylinder of the follower wheel on the other side of the vehicle;

a traction control valve connected with an air pressure supply source for jointly supplying an air pressure to each of the air master cylinders, wherein each air master cylinder transforms the supplied air pressure into the hydraulic braking pressure of the first pair and second pair of hydraulic lines;

a pair of air pressure control type cut valves, one each being disposed in each of the second hydraulic lines, for opening and closing the second hydraulic lines; and

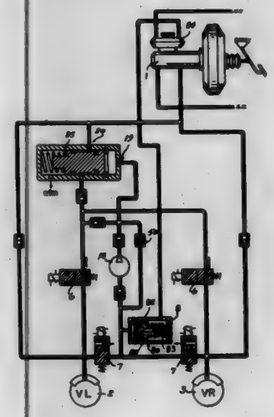
a third pair of hydraulic lines, one each of the third pair of hydraulic lines connecting the traction control valve to one each of the air pressure control type cut valves, wherein the air pressure supplied to the pair of air master cylinders is jointly supplied to the air pressure control type cut valves.

5,290,098

HYDRAULIC ANTI-LOCKING BRAKE UNIT

Jochen Burgdorf, Offenbach-Rumpenheim; Hans-Dieter Reinartz, Frankfurt am Main; Helmut Steffes, Hattersheim; Joachim Maas, Bad Vilbel, and Dieter Dinkel, Eppstein/Ts., all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 700,231, May 14, 1991, Pat. No. 5,215,359.
This application Feb. 1, 1993, Ser. No. 11,878
Claims priority, application Fed. Rep. of Germany, May 16, 1990, 4015664
Int. Cl.[5] B60T *8/32, 8/48*
U.S. Cl. 303—115.4 9 Claims



1. A hydraulic anti-locking brake unit comprising:

a master brake cylinder;

at least one wheel brake;

a brake line connecting said wheel brake to said master brake cylinder;

a pump having an inlet and an outlet, said outlet connected to said brake line and wheel brake;

a low-pressure accumulator and a high pressure accumulator;

a return line connecting said wheel brake to said low pressure accumulator and said inlet of said pump;

an inlet valve in said brake line;

an outlet valve in said return line; control means operating said inlet valve and outlet valve to control pressure at said wheel brake to prevent wheel locking;

an isolating valve for shutting off communication of said master brake cylinder with said wheel brake;

said pump conveying fluid from said low-pressure accumulator into said high-pressure accumulator, said high-pressure accumulator connected through a non-return valve to said brake line between said isolating valve and said inlet valve,

relief valve means causing said high-pressure accumulator to be connected to a low pressure region when the pressure in said high pressure accumulator exceeds by a predetermined level that in said wheel brake; and

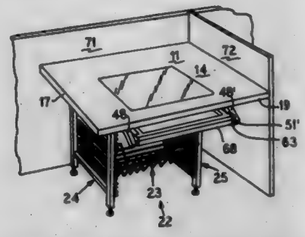
wherein said brake unit has a supply tank for supplying hydraulic fluid to said master brake cylinder, said low pressure accumulator comprising said lower pressure region, and further including valve means connecting said lower pressure accumulator to said supply tank upon a predetermined filling of said low pressure accumulator to direct further inflow into said low pressure accumulator to said supply tank.

5,290,099

ADJUSTABLE MONITOR SUPPORT

John N. Lechman, Effingham, Ill., assignor to Nova Manufacturing & Assembly, Inc., Effingham, Ill.

Continuation-in-part of Ser. No. 907,193, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 693,392, Apr. 30, 1991, Pat. No. 5,125,727, which is a continuation-in-part of Ser. No. 595,864, Oct. 11, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 24,196
Int. Cl.[5] A47B *21/00*
U.S. Cl. 312—208.1 12 Claims



1. An adjustable monitor support assembly for positioning and supporting a monitor under a transparent portion in a working platform comprising:

(a) a shelf member having a bottom support portion, a back support portion angularly extending from a rear region of said bottom support portion, lateral side edge portions, and a plurality of support members engaged with said lateral side edge portions;

(b) a pair of side supports, each one being substantially vertically oriented, disposed in longitudinally spaced, parallel relationship relative to the other, and located along a different respective one of said side edge portions;

(c) each one of said side supports having

(1) a forward leg member and a rearward leg member which together comprise a pair of transversely spaced leg members which extend vertically from a floor surface to said working platform; and

(2) a plurality of vertically spaced, transversely extending, load bearing members, each said load bearing member having opposite end portions that include fastening means for mounting each of said opposite end portions to a different one of said leg members of said pair;

(d) cross brace means including joining means for longitudinally joining said rearward leg members together; and

(e) adjustable connector means for connecting individual ones of said support members selectively to at least one of said load bearing members of each said side support so that said shelf member is vertically positionable, transversely translatable and tiltably adjustable relative to said side supports.

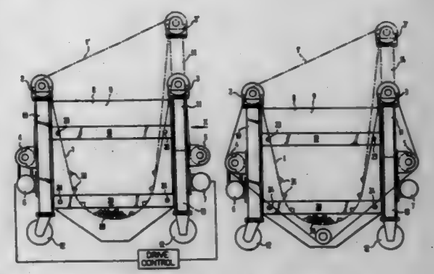
5,290,100

METHOD OF MIXING PROPELLANT CHARGE POWDER RODS

Helmut Kleinhans, Heldenstein/Harting, Fed. Rep. of Germany, assignor to WNC-Nitrochemie GmbH, Aschau, Fed. Rep. of Germany

Filed Apr. 26, 1991, Ser. No. 690,947
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3930014; Apr. 19, 1990, 4012523
Int. Cl.[5] B01F *13/00, 15/02*
U.S. Cl. 366—141 10 Claims

1. A method of mixing propellant charge powder rods comprising the steps of placing a plurality of propellant charge powder rods in an upwardly open, freely suspended loop of a flexible band, with the powder rods disposed parallel to the plane of the band and transverse to the lengthwise direction of the band, and periodically moving the band such that the band



in the loop is moved back and forth in its lengthwise direction and so as to cause the powder rods to be intensely mixed.

5,290,101

LIQUID THERMAL CYCLING METHODS AND APPARATUS

Paul J. Englert, Morris Plains, and Michael A. Olen, Chatham Township, Morris County, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 3, 1992, Ser. No. 984,807
Int. Cl.[5] G01N *25/72, 25/00*
U.S. Cl. 374—57 17 Claims

1. Apparatus for testing articles comprising, means providing first and second chambers for containing separate bodies of fluid and for receiving said articles, first and second sources outside said chambers of liquid in hot form and cold form, respectively, liquid handling means comprising piping coupling each of said sources with each of said chambers, pumps disposed in said piping and responsive to control signals to be activated to thereupon produce flows of said liquid through said piping between said sources and chambers, valves in said piping responsive to control signals to be set to select different paths within said piping for said liquid flows, a controller unit for supplying coordinated control signals to said pumps and valves to produce intermittent flows from said first source of hot liquid into said chambers at times which are different, for, respectively, said first and second chambers, and to produce, also, intermittent flows from said second source of cold liquid into said chambers at times which are different for, respectively, said first and second chambers, and which are also different at each of said chambers than the times thereat of such hot liquid flows so as to environmentally stress articles in said chambers by alternately heating and chilling them by said liquid during test periods respective to said first and second chambers, and means to detect responses of said articles to such stressing.

11. An article testing method comprising, loading a plurality of articles into first and second chambers for containing sepa-

rate fluid bodies, intermittently contacting said articles in said chambers with hot liquid provided by a source therefor outside said chambers and common to both chambers at times for such hot contacts which are different for, respectively, said first and said second chamber and intermittently contacting said articles in said chambers with cold liquid provided by a source therefor outside said chambers and common to both outside said chambers and at times which are different for, respectively, said first and said second chambers, and which are also different at each chamber than the times thereat of said intermittent contacting of articles therein by said hot liquid so as, thereby, to environmentally stress aid articles by alternately heating and chilling each of them by said liquid during respective test periods for said two chambers, and detecting during said periods responses of said articles to said stressing.

5,290,102

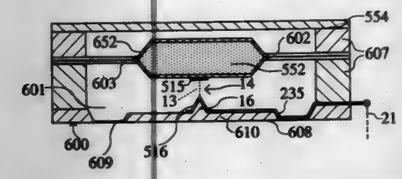
TUNNEL EFFECT MEASURING SYSTEMS AND PARTICLE DETECTORS

William J. Kaiser, West Covina, Calif.; Steven B. Waltman, Boulder, Colo., and Thomas W. Kenny, Glendale, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 685,553, Apr. 15, 1991, which is a continuation-in-part of Ser. No. 118,733, Nov. 9, 1987, abandoned. This application Dec. 24, 1992, Ser. No. 996,682

Int. Cl.[5] G01K *1/16*; G01L *9/00*

U.S. Cl. 324—120 **10 Claims**



6. Apparatus for detecting radiation capable of varying a fluid volume;

comprising in combination:

an entrapped fluid volume;

a first electrode in force-transfer relationship with said entrapped fluid volume;

a second electrode spaced from said first electrode;

a tunneling tip on one of said first and second electrodes spaced by a tunneling gap from the other of said first and second electrodes;

means for providing an electric tunneling current through said tunneling gap;

means for impacting said radiation on said fluid volume for varying said entrapped fluid volume with said radiation to displace said first electrode and sensing a corresponding variation in an electrical property of said gap relating to said tunneling current; and

means for determining a parameter of said radiation from said variation in said electrical property.

5,290,103

OPTICAL FIBER TEMPERATURE SENSOR

Hervé Fevrier, Massy; Jean-Francois Marcerou, Courcouronnes; Jean Hervo, Draveil, and Serge Artigaud, Grigny, all of France, assignors to GEC Alsthom SA, Paris, France

Filed Nov. 13, 1992, Ser. No. 976,317

Claims priority, application France, Nov. 15, 1991, 91 14092

Int. Cl.[5] G01J *5/08*; G01K *11/00*

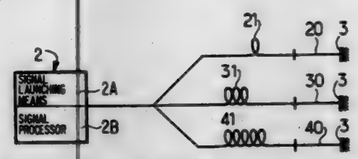
U.S. Cl. 374—131 **5 Claims**

1. An optical fiber temperature sensor comprising;

a light pump source for launching an optical signal, an optical fiber coupled to said light pump source and conveying said signal from said light pump and a retro back scattered signal to a signal processor,

a section of optical fiber doped with erbium bonded to said optical fiber for amplifying said signal,

a mirror bonded to said section of doped optical fiber for reflecting said optical signal back through said section, and said signal processor being bonded to said optical fiber and to said light pump source for comparing the powers of



the launched optical signal and the retrobackscattered signal, previously amplified and previously not amplified respectively, by said section, and wherein the wave length of said optical signal lies in the range of 1.5 μm to 1.6 μm, and the wave length of the pumping signal line lies in the range of 1.48 μm to 0.98 μm.

5,290,104

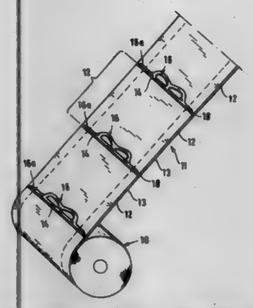
FOIL BAG

Karl-Heinz Sengewald, Halle/Westf., Fed. Rep. of Germany, assignor to Karl-H. Sengewald GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 748,620, Aug. 22, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,616

Int. Cl.[5] B65D *33/06*

U.S. Cl. 383—2 **8 Claims**



1. A bag line comprising a generally tubular body having opposite sides and opposite ends and a medial portion between said opposite ends; said tubular body further being defined by a side gusset at each of said opposite sides, a front panel and a rear panel; each side gusset being defined by a pair of gusset panels joined to each other along a first line and joined to said front and rear panels at respective second and third lines; said tubular body being of a generally flattened configuration with said pairs of gusset panels being sandwiched between said front and rear panels; said first lines of said opposite side gussets being closer to each other than said second and third lines of said opposite side gussets whereby said side gussets each open in a generally outward direction during opening of said tubular body from its generally flattened configuration; a handle transversing said medial portion generally between said opposite ends; means for transversely welding said handle to one of said front and rear panels at said medial portion and for transversely welding each pair of gusset panels to each other and one each to said front and rear panels at said medial portion and portions of said front and rear panels between said gusset panels to each other, and an end of each tubular body adjacent a handle of an adjacent tubular body defining a filling opening of each adjacent tubular body.

5,290,105

CONTAINER MADE OF FLEXIBLE LAMINATED SHEET WITH INSERT FOR OPENING AND RECLOSING

Adriano Tencati, Milan, Italy, assignor to Safta S.P.A., Piacenza, Italy

Filed Dec. 18, 1991, Ser. No. 809,964

Claims priority, application Italy, Dec. 28, 1990, 22563 A/90

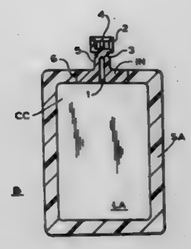
Int. Cl.[5] B65D *33/16*, *41/58*

U.S. Cl. 383—203 **10 Claims**

1. A reclosable envelope container, comprising:

(a) a body formed of two thermosealable, substantially flexible composite films, said films having edges heat sealed together, said body having a bottom, two sides and a top; and

(b) a substantially rigid insert heat sealed between said two films along the top of said body at a location substantially central to and spaced from the two sides of said body, said insert comprising:



(i) a base having a longitudinal axis parallel to the top of said body, a central bulge extending laterally with respect to said longitudinal axis of the base and an aperture extending centrally through said central bulge in a direction perpendicular to said longitudinal axis of the base and parallel to said two sides of said body;

(ii) a neck extending upward from said base in said perpendicular direction, said neck having a central aperture aligned with the aperture of said base;

(iii) a portion of reduced diameter above said neck adapted to fracture upon the application of torsional force; and

(iv) a hollow cap having a knurled outer surface and a pin which extends centrally upward within the hollow of said cap, said pin having a length substantially equal to a height of said neck and being of a diameter so as to snugly fit within the aperture of said base and seal said envelope after said portion of reduced diameter has been fractured and said cap has been removed, flipped over 180°, and placed back over said neck.

5,290,106

ROLLING GUIDE UNIT

Tomohiro Ichida, Tokyo, Japan, assignor to Nippon Thompson Co., Ltd., Minato, Japan

Filed Apr. 1, 1993, Ser. No. 40,197

Claims priority, application Japan, Apr. 2, 1992, 108383

Int. Cl.[5] F16C *29/06*, *31/00*, *19/00*

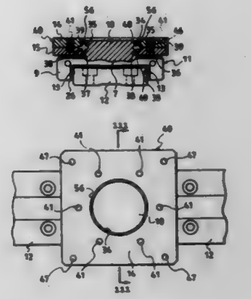
U.S. Cl. 384—45 **5 Claims**

1. A rolling guide unit comprising:

a track rail provided with first raceway grooves in the longitudinally extending both side surfaces thereof,

a slider saddled on said track rail, capable of being linearly moved, and consisting of a casing having second raceway grooves in the portions thereof which are opposed to said first raceway grooves, end caps fixed to both of longitudinal end portions of said casing, and first rolling elements circulatingly rollable between said opposed first and second raceway grooves,

a cross-sectionally circular shaft portion formed integrally with said casing so as to project from the upper surface



thereof and provided on the circumferential side thereof with an inner upper raceway surface and an inner lower raceway surface adjacent to said inner upper raceway surface,

a lower rotary body fitted rotatably around said cross-sectionally circular shaft portion and provided with an outer lower raceway surface opposed with respect to the circumference thereof to said inner lower raceway surface,

an upper rotary body placed fixedly on said lower rotary body, fitted rotatably around said cross-sectionally circular shaft portion and provided with an outer upper raceway surface opposed with respect to the circumference thereof to said inner upper raceway surface, and

second rolling elements adapted to roll between said inner upper and lower raceway surfaces and said outer lower and upper raceway surfaces.

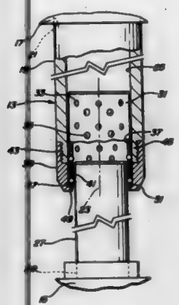
5,290,107

GUIDE POST, GUIDE SLEEVE AND IMPROVED AIR IMPULSE ROTARY BALL CAGE ASSEMBLY

Ronald L. Hanaway, Farmington Hills, Mich.

Filed Sep. 24, 1992, Ser. No. 950,284
Int. Cl.[5] F16C *29/04*
U.S. Cl. 384—49 19 Claims

1. In combination, a first support;
a guide post having a longitudinal axis mounted upon said support;
a cylindrical ball bearing cage having a coaxial bore adjustably receiving said guide post;
said cage mounting a plurality of longitudinally spaced circularly arranged ball bearings extending substantially the length of said cage and projecting inwardly and outwardly thereof, for engagement with said post and a guide sleeve respectively;
a second support spaced from said first support;



a guide sleeve having a coaxial bore mounted upon said second support and depending therefrom; and
a cage mount means upon and depending from said sleeve and extending radially inward of said sleeve bore rotatably supporting said cage and against movement in one direction along said axis;
said cage and guide post being projected into said sleeve for relative longitudinal movements and for rotary movements of said cage relative to said guide post and sleeve.

5,290,108

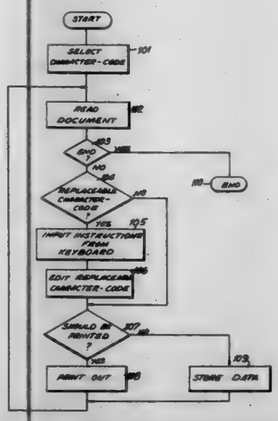
Patent Not Issued For This Number

5,290,109

ELECTRONIC TYPEWRITER FOR PRINTING OF DOCUMENTS HAVING A FIXED FORMAT

Hiroshi Midorikawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 483,974, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 135,423, Dec. 21, 1987, abandoned. This application Jun. 4, 1992, Ser. No. 896,454
Claims priority, application Japan, Dec. 26, 1986, 61-314933
Int. Cl.[5] B41J *5/30*
U.S. Cl. 400—63 19 Claims



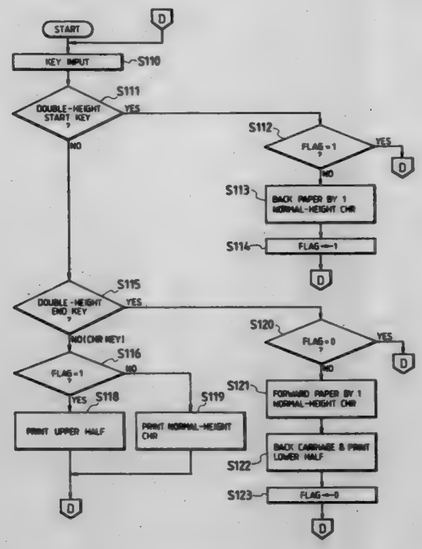
1. An electronic document producing apparatus comprising:
input means for supplying information to the apparatus;
a first storage device for storing documentation having a fixed format and containing multiple replaceable character codes;
reading means for reading the documentation stored in said first storage device;
display means for displaying documentation read by said reading means and information supplied to said input means;
control means for halting the reading of said documentation by said reading means upon detection of each replaceable character code;
prompting means for prompting a user to input the information according to said detection;
first deleting means for deleting said replaceable character code;
second deleting means for examining whether unnecessary codes including space exist or not and deleting the unnecessary codes including space after the deletion of the replaceable character code;
a second storage device for storing the information supplied to said input means by the user;
inserting means for inserting the information stored in said second storage device into the documentation as a substitution of said replaceable character code;
means for examining the document surrounding a position in the document where the replaceable character code existed and deleting unnecessary codes if a code indicating that there is no input of information is input;
printing means for producing an edited document based on said documentation and said information;
wherein said display means is operable for displaying said documentation read by said reading means and said information supplied by said input means prior to production of said edited document by said printing means.

5,290,110

DOCUMENT PROCESSING APPARATUS CAPABLE OF PRINTING MULTISIZED CHARACTERS

Tsutomu Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 643,085, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 318,337, Mar. 3, 1989, abandoned. This application Aug. 28, 1992, Ser. No. 935,347
Claims priority, application Japan, Mar. 7, 1988, 63-051783
Int. Cl.[5] B41J *2/495*
U.S. Cl. 400—121 16 Claims



1. A document processing apparatus comprising;
means for inputting character data representing a character having a normal character height and character data representing a character having a character height extending over a plurality of lines;
means for storing the character data input by said inputting means;
means for outputting a character pattern corresponding to the character data stored in said storing means; and
control means for causing said outputting means to output a character pattern character by character each time the character data of one character is input by said inputting means,
wherein said control means controls said outputting means, for a character pattern corresponding to the character data representing a character having a normal character height, to output that character pattern corresponding to the character data representing a character having a normal character height in its entirety and, for a character pattern corresponding to character data representing a character having a character height extending over the plurality of lines, to output in one line a part of that character pattern corresponding to the character data representing a character having a character height extending over a plurality of lines and to output the rest of that character pattern in another line, said another line also containing respective character patterns corresponding to the character data representing a character having a normal character height to be output in its entirety.

5,290,111

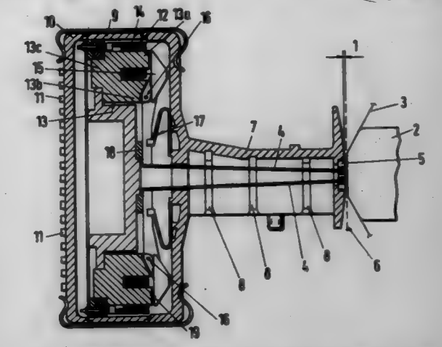
Patent Not Issued For This Number

5,290,112

MATRIX PRINT HEAD, IN PARTICULAR SERIAL MATRIX PIN PRINT HEAD

Johann Stempfle, Pfaffenhofen, and Bernd Gugel, Ulm Einsingen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Dec. 17, 1990, Ser. No. 628,715
Claims priority, application European Pat. Off., Dec. 18, 1989, 89250118.0
Int. Cl.[5] B41J *2/275*
U.S. Cl. 400—124 36 Claims



1. A matrix print head, in particular a serial matrix pin print head, comprising
a print pin drive casing frame having a middle area;
a magnet yoke having a first magnet yoke arm and having a second magnet yoke arm and attached to the print pin drive casing and including a recess disposed in the center relative to a magnet yoke thickness located perpendicular to a U-configuration of the magnet yoke;
an electromagetic coil disposed on the first magnet yoke arm of the magnet yoke;
a hinge pin having a hinge pin axis disposed near a corner of the U-configuration of the magnet yoke, wherein the hinge pin axis is disposed on an outer side of the second magnet yoke arm at a level below an end face of the first magnet yoke arm as seen when the magnet yoke arms are directed upwardly, and wherein said hinge pin is held by the magnet yoke and passes through the recess;
an armature associated with the magnet yoke and including a pin driving arm, wherein the pin driving arm of the armature is pivotably hinged around the hinge pin and submerged in the recess around the hinge pin;
a stop for providing a rest position for the armature in a rearward position;
a spring pressing the armature against the stop based on an elastic force of the spring such that an operating air gap is present between the armature and a front face of one of the magnet yoke arms;
an impact pin attached with a first end to the armature and disposed with a second end at a print pin stroke distance opposite to a position for a substrate such that an ink ribbon is disposed between the impact pin and the position of the substrate;
a print pin guide casing attached to the print pin drive casing frame for guiding the impact pin.

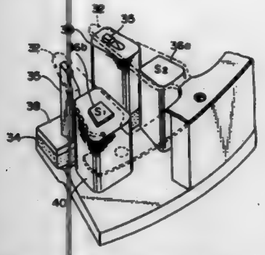
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5,290,113

WIRE DOT PRINTING HEAD

Hirokazu Andoo; Yoichi Umezawa; Mitsuru Kishimoto, and Noboru Ooishi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/00820, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO91/00182, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 25, 1990, Ser. No. 781,204
Claims priority, application Japan, Jun. 26, 1989, 1-73604; Nov. 1, 1989, 1-127180; Nov. 6, 1989, 1-129158
Int. Cl.[5] B41J 2/235
U.S. Cl. 400—124 6 Claims



1. A wire dot printing head, comprising:
a base plate made from magnetic material, the base plate having a periphery;
a plurality of core pairs, each core pair including a front core and a rear core, the rear cores being disposed along an outer circle adjacent the periphery of the base plate and the front cores being disposed along an inner circle inside the outer circle, each core having a respective sectional area;
a permanent magnet disposed between the base plate and one of the cores of each pair;
a plurality of coils, one of the coils being wound around one of the cores of each pair, the coils being distributed among the front and rear cores in such a manner that alternate front cores have coils and alternate rear cores have coils;
a plurality of printing wires; and
means for movably mounting the printing wires, the means for movably mounting the printing wires including a plurality of spring portions, each spring portion being disposed over a respective one of the core pairs,
wherein the sectional areas of the front cores that have coils are larger than the sectional areas of the front cores that do not have coils.

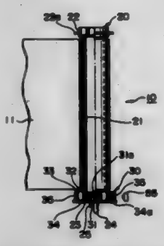
5,290,114

INK RIBBON UNIT AND INK RIBBON CASSETTE

Shoziro Asami, and Yasuji Yui, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Feb. 3, 1993, Ser. No. 12,927
Claims priority, application Japan, Feb. 14, 1992, 4-027643
Int. Cl.[5] B41J 35/28
U.S. Cl. 400—208 19 Claims

1. An ink ribbon unit comprising:
an ink film;
a spool around which said ink film is wound, said spool having a coaxial shaft portion;
a ring disposed about the coaxial shaft portion of said spool so as to be relatively rotatable with respect to the coaxial shaft portion;
a mark representing information pertaining to said ink film, said mark being applied to said ring to rotate therewith; and



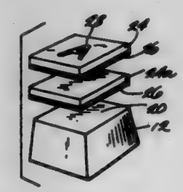
drive means associated with said ring for enabling said ring to be driven to rotate with respect to coaxial shaft portion while said coaxial shaft portion is stationary.

5,290,115

CUSHIONING MEANS FOR KEYBOARD KEYS

Karen K. Little, 933 N. Marshall St. - Apt. 207, Milwaukee, Wis. 53202

Continuation-in-part of Ser. No. 356,767, May 25, 1989, abandoned. This application Sep. 17, 1990, Ser. No. 583,519
Int. Cl.[5] B41J 5/12
U.S. Cl. 400—491 11 Claims



1. Cushioning means for adapting a keyboard, having a plurality of keytops, so as to cushion the impact of the fingertips of a typist on said keytops, said cushioning means comprising:
a plurality of separate pads, each shaped and sized to fit onto a predetermined key, each of said pads being substantially softer than said keytops, each of said pads being substantially flat, of substantially homogeneous material and of a substantially uniform thickness after installation, and having substantially flat top and bottom surfaces after installation, said flat top surface of each said pad being substantially exposed for direct contact with the fingertips of the typist;
adhesive means for holding each said pad on a respective keytop surface, said adhesive means comprising adhesive material applied to each said flat bottom surface for attaching said pad to said predetermined key;
designation means for designating the key to which each pad is to be and has been applied and
a second pad having an identical shape and size as said pads and installable on top of each of one or more of said pads so as to provide extra cushioning to chosen keys.

5,290,116

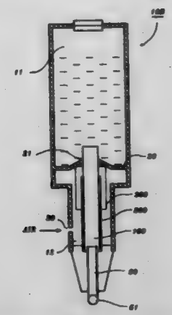
FLOW CONTROL FOR WRITING INSTRUMENTS

Shin-Ju D. Chang, P.O. Box 1383, South Pasadena, Calif. 91301

Filed Jun. 23, 1992, Ser. No. 903,132
Int. Cl.[5] B43K 5/18, 7/10, 8/06
U.S. Cl. 401—199 19 Claims

1. A writing instrument, comprising:
(a) an ink reservoir;
(b) a writing tip;

(c) a capillary member for delivering ink from the ink reservoir to the writing tip by means of capillary actions; and
(d) a layer of hydrophobic property material covering said capillary member, said hydrophobic layer having first and second ends and a first porosity density allowing transmission of air from the atmosphere through said hydrophobic



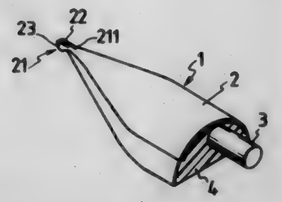
layer intermediate said first and second ends and into said capillary member while retarding ink contained within said capillary member form passing therethrough, said first porosity density being selected with a predetermined value so as to control ink flow through said capillary member with a preselected rate.

5,290,117

PENPOINT ASSEMBLY AND WRITING INSTRUMENT EMPLOYING THE SAME

Takehiko Yokosuka, and Osami Yamauchi, both of Aichi, Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Continuation of Ser. No. 553,832, Jul. 18, 1990, abandoned, which is a division of Ser. No. 209,815, Jun. 22, 1988, Pat. No. 4,968,169. This application Aug. 7, 1991, Ser. No. 742,078
Claims priority, application Japan, Jun. 26, 1987, 62-98839[U]; Aug. 6, 1987, 62-120894[U]
Int. Cl.[5] B43K 1/02, 5/18
U.S. Cl. 401—224 15 Claims



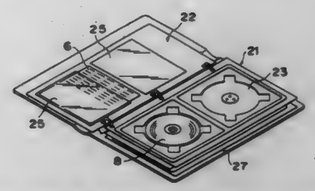
1. A penpoint assembly comprising:
a metal penpoint made of a bent metal plate having a bent portion at one end thereof thereby forming a writing tip, said metal penpoint being tapered toward the rear end of said writing tip and provided with a slit extending in said writing tip from said rear end of said writing tip along the center line in the longitudinal direction of said penpoint to a front end of said writing tip, said bent portion being formed of small projections of said metal plate at both sides of said slit, wherein said projections are bent opposite to and substantially parallel to one another, a small space being formed inside said bent portion.
an ink guide core extending under said slit in the axial direction of said assembly into said small space and communicating at the tip of said core with said slit, and
a support member for supporting said metal penpoint and said ink guide core, wherein said slit extends only from the front end of said bent portion to the rear end of said bent portion, wherein said ink guide core is made of fibers fixed to each other by fuse-bonding.

5,290,118

FILING DEVICE FOR STORING RECORDING DISCS

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 826,313
Claims priority, application Japan, Jan. 30, 1991, 10236
Int. Cl.[5] B42D 13/00; B42F 5/04
U.S. Cl. 402—79 7 Claims



1. A recording disc filing device which comprises:
at least one recording disc filing sheet having a plurality of circularly recessed portions each defining a recording disc storing section for engagingly receiving recording discs, respectively, said recording disc storing sections being arranged in at least one row;
said sheet further including a projection at the center of each of the said circularly recessed portions for engagement with a central aperture formed in said recording discs for securing said recording discs within said recording disc storage sections;
at least one leaflet filing sheet of a substantially planar configuration made of a transparent material and having leaflet storing sections for receiving leaflets carrying information on recorded contents in the recording discs stored in said recording disc storing sections, said leaflet storing sections being corresponding in number and arranged to correspond to the arrangement of said recording disc storing sections;
said recording disc filing sheet and said leaflet filing sheet being laid over said recording disc filing sheet so that said leaflet storing sections in said leaflet filing sheet are located at positions corresponding to said recording disc storing sections in said recording disc filing sheet, said leaflet filing sheet associated with said recording disc filing sheet so that said leaflet filing sheet can be turned over to expose said recording disc filing sheet.

5,290,119

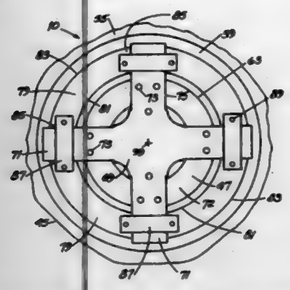
APPARATUS AND METHOD FOR RETAINING A PIN

Harvey J. Kallenberger, Wind Lake, and Emeric G. Tossenberger, Nashotah, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.

Filed Jul. 29, 1992, Ser. No. 921,846
Int. Cl.[5] B25G 3/38
U.S. Cl. 403—405.1 15 Claims

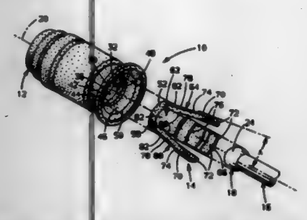
1. In a machine having a housing and a generally cylindrical pin received in the housing, the improvement comprising:
a retainer attached to the pin and including a plurality of retaining arms extending radially outward beyond the diameter of the pin and in overlapping relationship with the housing;
a plurality of abutment members exterior of the housing,

each abutment member being in contact with a retaining arm and preventing pin rotation;
and wherein:



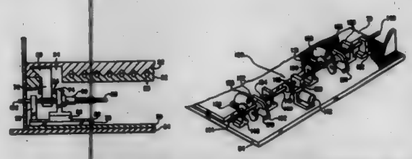
the housing prevents axial movement of the retaining arms and axial movement of the pin is thereby prevented.

5,290,120
SELF-LOCKING BALL-AND-SOCKET MECHANISM
Douglas L. Osterfeld; Craig A. Osterday; Omer C. Denney; James D. Keaton, all of Dayton; David E. Staeuble, Kettering; Larry C. A. Studebaker, Englewood, and William L. Van Doren, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 712,029, Jul. 7, 1991, Pat. No. 5,163,773. This application Oct. 29, 1999, Ser. No. 969,732
Int. Cl.[5] F16C *11/06*
U.S. Cl. 403—133 6 Claims



1. A self-locking ball-and-socket mechanism comprising:
a polymeric member with a longitudinal axis, said member having a stiffness of a first value, said member having an axially extending recess formed therein, said polymeric member having an end wall with a substantial portion perpendicular to said axis, said polymeric member having a push rod operatively pivotally attached thereto in said recess;
said push rod having an enlarged ball end operatively secured in said recess to provide said operative pivotal attachment of said push rod to said polymeric member; and
a polymeric insert, said insert having a stiffness of a second value less than said first value, said insert having a socket formed therein receiving said push rod enlarged ball end therein in pivotal relation and having first means thereon cooperating with said push rod enlarged ball end to receive said ball end in said insert socket in ball-and-socket relation and hold said push rod in said insert so that it is limited to pivotal movement relation only relative to said insert, said insert includes a base end substantially parallel to the end wall, and said insert base end includes a plurality of circumferentially-spaced arms extending axially and radially outward from said base end, said first means being spherical segment surfaces on said base end and the inner surfaces of said arms cooperatively forming a socket for said push rod ball end, said insert and said member further having second means cooperatively acting to cause said insert socket to engage said ball end in such limited pivotal movement relation and said insert to be so locked in said member recess as to retain said insert and said push rod ball end in said member recess with said push rod being in operative pivotal movement relation to said member and being restricted against axial movements in relation to said member, and
a metallic member generally disc shaped juxtaposed and abutting between said polymeric member extending recess end wall and said polymeric insert base end for transmittal of force between said push rod and said polymeric member.

5,290,121
SYSTEM FOR THE INSTALLATION AND REPLACEMENT OF COMPONENTS IN HOSTILE ENVIRONMENTS
James L. Dolce, Lakewood, and Andrew L. Gordan, Cleveland, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed May 28, 1992, Ser. No. 889,572
Int. Cl.[5] B25B *5/00, 5/10*; F16H *27/06*
U.S. Cl. 403—322 16 Claims



1. A clamp assembly for removable securement of units in a modular assembly comprising:
at least one Geneva cam driver having a spline, an engagement roller and a disengagement roller;
at least one Geneva cam having an engagement formation for receiving said engagement roller of said at least one Geneva cam driver, a disengagement formation for receiving said disengagement roller of said at least one Geneva cam driver and a clamp face;
a drive shaft coupled to said spline of said at least one Geneva cam driver; and
an operating mechanism for rotating said drive shaft in a first direction to cause said engagement roller to engage said engagement formation and cause said clamp face to clamp a unit to the modular assembly, and for rotating said drive shaft in a second direction to cause said disengagement roller to engage said disengagement formation and cause said clamp face to unclamp the unit from the modular assembly.

9. A clamping apparatus for manual or robotic replacement of a detachable service unit from a stationary unit in hostile environments comprising:
a base plate;
a pair of opposing clamp units coupled to said base plate;
a drive shaft operably mounted on said base plate and secured to said pair of opposing clamp units;
a drive mechanism mounted on said base plate for rotating said drive shaft to cause linear displacement of said pair of opposing clamp units and thus move said pair of opposing clamp units between a clamped position and an unclamped position to clamp and unclamp the detachable service unit to and from said base plate;
a plurality of Geneva cam drivers mounted on said stationary unit, each of said Geneva cam drivers having an engagement roller and a disengagement roller;
a plurality of Geneva cams mounted on said stationary unit adjacent to said Geneva cam drivers, each of said Geneva cams having an engagement formation for receiving the engagement roller of an adjacent Geneva cam driver, a disengagement formation for receiving the disengagement roller of said adjacent cam driver and a clamp face for contacting said base plate, and
operating means for rotating said Geneva cam drivers in a first direction to cause the engagement rollers to engage the engagement formations and cause the clamp faces to contact the base plate thereby attaching the same to the stationary unit and in a second direction to cause the disengagement rollers to engage the disengagement formation and cause the clamp faces to release the base plate.

5,290,122
PRINTED CIRCUIT BOARD RETAINER
Conrad Hulme, Arcadia, Calif., assignor to EG&G Birtcher, Inc., El Monte, Calif.
Filed Nov. 30, 1992, Ser. No. 983,146
Int. Cl.[5] H05K *7/00*
U.S. Cl. 403—374 11 Claims

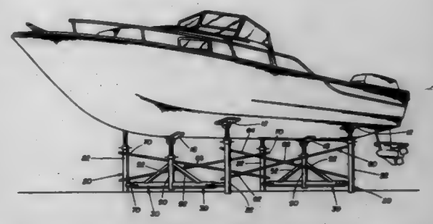


1. A retainer for holding a circuit card between spaced surfaces comprising:
a rod formed of an alkaline metal alloy tempered to have a tensile strength of at least about 600 psi;
a plurality of members slideably mounted end-to-end on said rod, at least one of said members having an internal longitudinal channel having a transverse dimension greater than the corresponding outside dimension of said rod to permit movement of said one member along a transverse path relative to said rod, said one member and members adjacent said one member each having end portions engagable to one another and shaped to force said one member to move in a first direction along said transverse path relative to said adjacent members upon forcing of said adjacent members toward said one member; and
first means for forcing said adjacent members towards said one member.

5,290,123
METHOD FOR PROCESSING AND APPLYING PAVEMENT MATERIAL
James L. Barnes, 727 S. Orange Grove Blvd., Apt. 7, Pasadena, Calif. 91105, and Dennis S. Barnes, 1867 W. Gordon Creek Rd., Price, Utah 84501
Continuation-in-part of Ser. No. 690,746, Apr. 24, 1991, Pat. No. 5,169,261. This application Dec. 8, 1992, Ser. No. 988,294
Int. Cl.[5] E01C *7/20*
U.S. Cl. 404—75 11 Claims

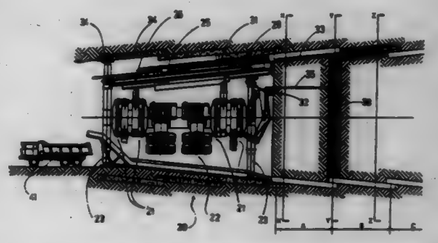
1. A method for processing naturally-occurring bituminous sandstone for use as a pavement material, comprising:
forming naturally occurring bituminous sandstone into a plurality of discrete bodies of solidified material;
subsequently milling said bodies to form particles which pass through a one-quarter inch minus screen and mixing said particles with sufficient water to form a water content of from about 3% to about 20%, based on the weight of the mixture, where said mixture is formed at ambient temperature.

5,290,124
BOAT STAND
James J. Pavlecak, Middleberg Heights, Ohio, assignor to Waco International Corporation, Cleveland, Ohio
Filed Jul. 6, 1992, Ser. No. 908,395
Int. Cl.[5] B63C *1/08, 15/00*
U.S. Cl. 405—3 21 Claims



1. A boat stand assembly comprising:
front and back rectangular, rigid, unitary frame portions, each portion consisting of
a pair of vertical struts for providing the sole vertical support, each vertical strut mounting a pad, and each vertical strut being unsupported by any oblique bracking, and
a pair of horizontal struts welded at right angles to the vertical struts for providing the sole lateral support to the vertical struts and for rigidly connecting the vertical struts in fixed spaced relationship to one another such that the vertical struts and the horizontal struts provide a rigid, unitary frame portion; and
a pair of cross braces for connecting the front and back frame portions in fixed, spaced relationship to one another to form a complete, self-supporting boat stand.

5,290,125
TUNNEL LINING METHOD AND APPARATUS SUITABLE FOR THE PURPOSE
Davide Trevisani, Cesena, Italy, assignor to Trevi S.p.A., Cesena, Italy
Filed Oct. 8, 1992, Ser. No. 958,511
Claims priority, application Italy, Oct. 25, 1991, TO91A000805
Int. Cl.[5] E21D *11/10*
U.S. Cl. 405—140 5 Claims



1. A method for forming a tunnel lining in which an apparatus, comprising at least one excavation tool of the chain, belt type, is positioned to be concentric to the longitudinal axis of the tunnel at a point on its extrados; the tool is made to advance to a predetermined depth in a direction diverging from the tunnel axis so as to create a substantially rectangular cavity from which the tool is withdrawn; said cavity is then filled with concrete to form a cast segment; the aforesaid stages are repeated until a frusto-conical section formed from adjacent

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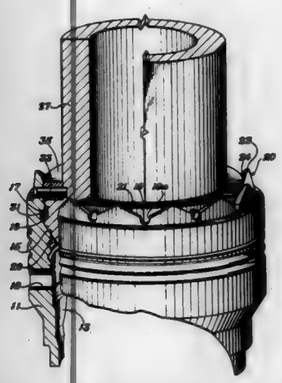
cast segments is completed, after which the material enclosed by the formed section is excavated to a depth less than the axial length of the section, and the apparatus is advanced through a distance substantially equal to the axial length of the cast segments, the stages being repeated to form each successive section in order to form a lining in which the wider final portion of one section is superposed on the narrower initial portion of the next section, the method being characterized in that during the execution of one section of cast segments a second tool associated with said first tool executes consolidation/tamping injections with concrete into the region which is to constitute said next section.

5,290,126

ANTIROTATION DEVICE FOR SUBSEA WELLHEADS

James A. Garlepy, Cypress; Rodolfo Z. Lugo, and B. Lee Danner, both of Houston, all of Tex., assignors to ABB VectoGray Inc., Houston, Tex.

Filed Dec. 13, 1991, Ser. No. 807,543
Int. Cl.[5] E02D *5/74*
U.S. Cl. 405—169 **16 Claims**



1. In a subsea well assembly having an outer wellhead housing located at a sea floor, the subsea well assembly having an inner wellhead housing which lands in the outer wellhead housing, the inner wellhead housing having a lower end secured to a string of casing and an upper end secured to a spring of conduit, the inner wellhead housing being lowered on the string of conduit from a drilling vessel into the outer wellhead housing, an improved antirotation means for preventing rotation of the inner wellhead housing in the outer wellhead hosing due to swinging movement of the drilling vessel, comprising in combination:

at least one slot formed in the outer wellhead housing, the slot having opposed sidewalls which are circumferentially spaced apart from each other; and

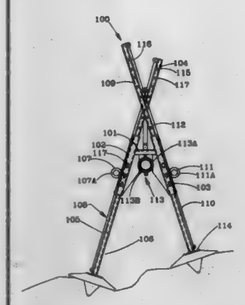
at least one pin secured to the inner wellhead housing, the pin being received in the slot when the inner wellhead housing lands in the outer wellhead housing at the sea floor, the sidewalls of the slot engaging the pin to prevent all rotation of the inner wellhead housing in the outer wellhead housing once the inner wellhead housing lands in the outer wellhead housing.

5,290,127

SUBSEA CONDUIT SUPPORT APPARATUS AND METHOD

William S. Foster, The Woodlands; Craig W. Fitzgerald, Spring, both of Tex., and Peter W. Bryce, Delta, Canada, assignors to Intec Engineering, Inc., Houston, Tex.

Filed Feb. 5, 1992, Ser. No. 831,863
Int. Cl.[5] F16L *1/12*
U.S. Cl. 405—172 **4 Claims**



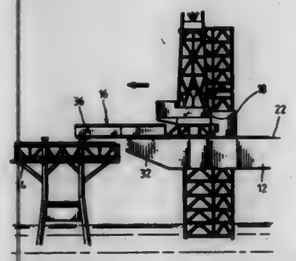
2. A subsea conduit support apparatus, comprising: a frame member; a plurality of legs extending to the seabed for supporting said frame member and having leg members selectively moveable to complementarily position said frame member relative to the contour of the seabed; and means carried by said frame member for holding said conduit within said apparatus, wherein the leg members comprise first and second selectively expanded and retractable telescopically housed elements, wherein said leg members include screw jack means responsive to hydraulic activation, whereby upon application of hydraulic pressure within said screw jack means, said screw jack means are rotated to correspondingly move said first and second leg member elements.

5,290,128

METHOD AND APPARATUS FOR TRANSFERRING A DRILLING APPARATUS FROM A MOVABLE VESSEL TO A FIXED STRUCTURE

Charles W. Yeargain, Houston; Daniel F. McNease, Tomball, both of Tex., and Michael D. Moody, New Iberia, La., assignors to Rowan Companies, Inc., Houston, Tex.

Continuation of Ser. No. 769,336, Oct. 1, 1991, abandoned, Continuation of Ser. No. 609,927, Nov. 6, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,487
Int. Cl.[5] E02D *25/00*
U.S. Cl. 405—209 **27 Claims**



23. A skidbase locking apparatus for locking a skidbase to a structure, comprising:

a skidbase having a pair of skid rails mounted on an upper surface thereof and a rear surface positioned adjacent said structure; and

a lock comprising,

a blade member attached to said skidbase rear surface, said blade member having a substantially front face, an upper section having a first width, and a lower section having a second width, said first width being greater than said second width; and

a guide assembly attached to said structure and cooperative with said blade member, said guide assembly having a first guide member having a base and a pair of spaced apart lateral movement limiting shoulders connected to said base and defining a width therebetween;

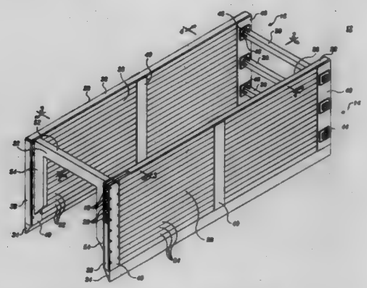
said lock being operable in response to relative movement between said blade member and said guide assembly with said upper section of said blade member being positioned in contact with said first guide member to lock said skidbase to said structure.

5,290,129

TRENCH SHIELD ASSEMBLY

Kenneth G. Rody, 8616 - 57th Ave. Ct. E.; Richard D. Rody, 11703 - 138th Ave. Ct. E., and Bradley W. Rody, 8701 - 61st St. Ave. E., all of Puyallup, Wash. 98371

Filed Aug. 15, 1991, Ser. No. 745,316
Int. Cl.[5] E02D *17/00*
U.S. Cl. 405—282 **15 Claims**



1. A trench shield assembly, comprising:

first and second shield walls each constructed from a plurality of horizontally disposed elongate members stacked adjacent and on top of each other in a continuous stack extending from the bottom to the top of the shield wall, each elongate member defining a longitudinal axis extending lengthwise of the beam, wherein at least some of the elongate members comprise beams, each beam including a central web and first and second parallel face flanges, the first face flanges of the stacked beams defining a first integral exterior skin of the shield wall and the second face flanges of the stacked beams defining a second integral exterior skin of the shield wall, with the central webs of the beams spanning between the first and second exterior skins, wherein each elongate member defines an elongate interior surface that extends the length of the member and that is oriented parallel to the longitudinal axis of the member, whereby the elongate interior surface defines at least a portion of an elongate inner channel extending the length of the member;

means for immovably and rigidly securing together elongate edges of adjacent stacked elongate members; and

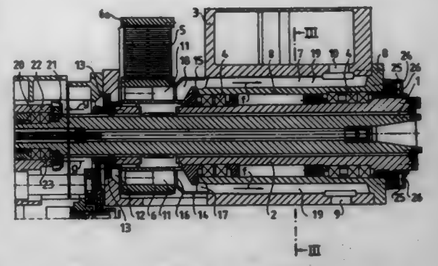
means mounted between the first and second shield walls for maintaining the first and second shield walls spaced apart, with the first exterior skins of the first and second shield walls opposing each other.

5,290,130

MACHINE TOOL AND METHOD OF COOLING ROTARY PARTS THEREOF

Giovanni Beretta, Milan, Italy, assignor to San Rocco Donzelli Industriale S.p.A., Solaro, Italy

Filed Aug. 27, 1992, Ser. No. 937,359
Int. Cl.[5] B23Q *11/12*
U.S. Cl. 409—131 **20 Claims**



1. A method of cooling a spindle which is rotatable in a plurality of bearings in a housing of a machine, comprising the steps of:

rotating the spindle at a plurality of speeds;

providing a plurality of turbine wheels, each said turbine wheel being adjacent a respective bearing;

inducing the flow of at least one cooling air stream by rotating said turbine wheels, said turbine wheels drawing air from the surrounding atmosphere;

causing the at least one air stream to exchange heat with the spindle and with at least one bearing; and

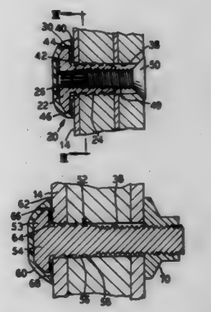
coupling said turbine wheels to said spindle to vary the quantity of air in the at least one stream as a function of the speed of the spindle.

5,290,131

BARBED SHANK FASTENER

Arne Henriksen, 3695 Winston Dr., Hoffman Estates, Ill. 60195

Continuation of Ser. No. 673,471, Mar. 22, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 989,996
Int. Cl.[5] F16B *37/04*
U.S. Cl. 411—180 **4 Claims**



1. A fastener assembly comprising:

a first fastener having a head engageable with a fastening surface and a shank with a threaded portion on said shank at an end opposite said head, and an unthreaded portion of said shank, between said head and said threaded portion, having a generally cylindrical outer peripheral surface;

a mating second fastener;

a plurality of spaced-apart axial rows of projecting barbs

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spaced radially on said peripheral surface of said unthreaded portion of said shank, each of said barbs having a ramp surface thereon facing away from said head, said barbs being disposed on said shank with portions of said peripheral surface of said unthreaded portion of said shank intervening between adjacent axial rows of barbs;

a domed-shaped encapsulating plastic seal completely covering said head of said first fastener;

said seal extending under and covering the bottom surface of said head;

the underside of said seal having two sealing areas, an outer lip and an inner lip each of said lips angularly extending away from a planar surface of said seal;

said outer lip being formed to extend radially outwardly when said fastener assembly is secured in place; and

said inner lip being formed to extend radially inwardly when said fastener assembly is secured in place;

said planar surface extending uninterrupted between said outer lip and said liner lip to form a single annular space between said inner and outer lips bounded by said planar surface and said fastening surface;

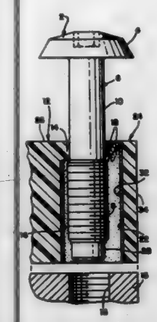
whereby said first and second fastener members are applied to components to be secured together from opposite sides thereof.

5,290,132

PLASTIC FLASH SCREW CLIP ARRANGEMENT

Douglas R. Gnage, Hilton; Robert R. Mura, Rochester, and Gary J. De Angelis, Spencerport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1993, Ser. No. 16,443
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—512 **9 Claims**



1. A fastening arrangement for connecting a first member to a second member which has a threaded bore, the arrangement comprising:

a bolt having a head on one end and an attached shank with a threaded portion;

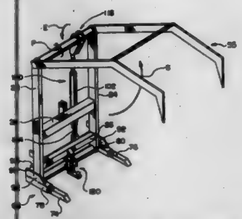
a flange connected with the first member, the flange having a support surface for supporting the bolt head, and a bore intersecting the support surface allowing for penetration of the bolt shank, the bore also having at least two radially inward protruding guide means for centering the bolt shank within the bore on a first side of the bore from the support surface, and at least one compliant finger integrally formed and connected with the flange on the first side of the bore from the support surface which by insertion of the bolt is deformed to a position to compliantly bias the bolt shank against at least one of the guides and to also retain the bolt shank within the bore.

5,290,133

BALE HANDLING APPARATUS AND CARRIAGE

Brent W. Riley, R.R. 1, Box 203, Spearfish, S. Dak. 57783

Filed Feb. 22, 1993, Ser. No. 20,569
Int. Cl.[5] B60P *3/00*
U.S. Cl. 414—24.5 **15 Claims**



1. A vehicle mounted apparatus for moving bales, said apparatus comprising:

a frame;

lower bale engaging means for engaging and partially supporting one of said bales, said lower bale engaging means movably connected to said frame and movable from a storage position to a deployed position;

upper bale engaging means for engaging an upper region of said bales, said upper bale engaging means movably connected to said frame and movable from a storage position to open and closed positions;

means for moving said lower and upper bale engaging means, said means for moving operably connected to said lower and upper bale engaging means; and

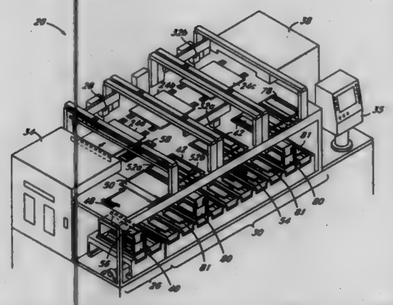
carriage means for receiving and transporting said bales, said frame carrying a hitch means for releasably connecting said carriage means to said frame.

5,290,134

PICK AND PLACE FOR AUTOMATIC TEST HANDLER

Minoru Baba, Saitama, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 801,875
Int. Cl.[5] B65G *65/02*
U.S. Cl. 414—404 **6 Claims**



1. A pick and place for use in an automatic test handler in connection with an electronic device test system for removing electronic devices from one tray and transferring said electronic devices in a horizontal plane and placing them in another tray, comprising:

a plurality of suction inlets for picking up said electronic devices from said one tray with a suction power and transferring them in a horizontal plane and placing said electronic devices on said other tray;

a guide frame for slidably mounting said plurality of suction inlets in a horizontal direction;

up and down means for providing up-and-down movement to said suction inlets for picking said electronic devices from said one tray and placing said devices in said other tray;

space adjusting means for adjusting a difference in device spacing between said one tray and the other tray during a picking and placing operation, said space adjusting means including:

a pantograph means which amplifies movement of a drive mechanism for providing a proportional space variation to said suction inlets;

an air cylinder for driving said pantograph mechanism by force of compressed air; and

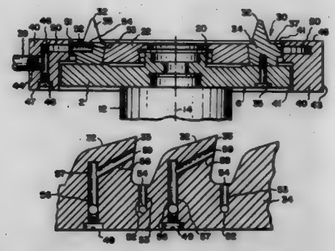
a variable stopper for adjusting said device spacing difference between said trays.

5,290,135

ROTARY RING CUTTER HAVING COOLANT DISTRIBUTION AND DISCHARGE MEANS

Robert J. Ball, Plymouth, England, and Richard C. Blakesley, Holcomb, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Oct. 28, 1992, Ser. No. 967,362
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—11 **39 Claims**



1. A cutter ring for a rotary ring cutter, said cutter ring adapted to be centered on and secured to a cutter head whereby said cutter ring will rotate true about an axis of rotation during a machining operation, said cutter ring comprising:

at least one cutting blade integral with a circular base portion, said circular base portion having a base surface, a tapered inside ring surface and an outside ring surface,

at least one coolant passage extending from said base surface to one or more outlet ports, said one or more outlet ports being at least one of (a) between at least a portion of said at least one cutting blade and (b) in an outer surface of at least a portion of said at least one cutting blade.

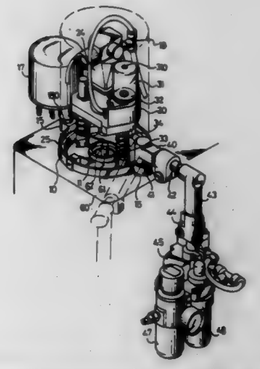
5,290,136

DRIVING DEVICE FOR A MILLING MACHINE

Daniel Wang, No. 9, Naomi Court, Cherrybrook NSW 2126, Australia

Filed Jan. 19, 1993, Ser. No. 5,754
Int. Cl.[5] B23C *5/26*
U.S. Cl. 409—233 **3 Claims**

1. A driving device for driving a head of a rod in a milling machine comprising a column disposed on said milling machine, a bolt threaded to said milling machine, a board slidably engaged on said column and said bolt, a driving mechanism disposed on said board and including a lower end extended downward through said board, a socket secured to said lower end of said driving mechanism and located above said head of said rod, a cylinder fixed to said board and disposed on said bolt, a piston fixed on top of said bolt and in fluid tight engagement with said cylinder, means for biasing said board upward along said column and said bolt and means for admitting fluid power to said cylinder, whereby said socket is caused to engage with said head of said rod when said board and said



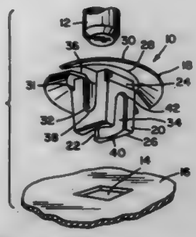
driving mechanism are moved downward by said cylinder and when said cylinder moves downward relative to said piston.

5,290,137

PIN BUSHING

William J. Duffy, Jr., Midlothian, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 26, 1993, Ser. No. 51,976
Int. Cl.[5] F16B *13/06, 19/00*
U.S. Cl. 411—60 **19 Claims**



1. A pin bushing to be disposed within an aperture defined within a support panel, comprising:

a body portion having a head member for engaging a first surface of said support pane, a shank member, and an axial bore extending through said head member and said shank member, said shank member having a first proximal end integrally formed with a back side of said head member, a second distal end, and means formed upon exterior surface portions of said shank member for snap-engaging a second surface of said support panel after said shank member has been inserted through said aperture of said support panel;

a retaining pin for insertion within said axial bore of said body portion;

first slot means, defined through said head member and said proximal end of said shank member connected to said head member, and within a first plane, for permitting said head member and said proximal end of said shank member to flex inwardly relative to said first plane so as to facilitate insertion of said shank member within said aperture of said support panel and to permit said head member and said proximal end of said shank member to thereafter flex outwardly relative to said first plane such that said exterior surface portion means of said shank member can engage said second surface of said support panel so as to

initially retain said shank member therein with a predetermined retaining force; and

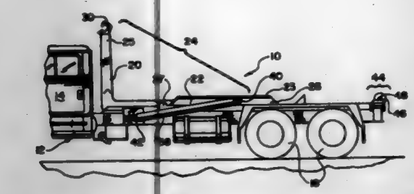
second slot means defined through said distal end portion of said shank member within a second plane disposed perpendicular to said first plane for permitting said distal end portion of said shank member to flex outwardly relative to said second plane as said retaining pin is inserted within said axial bore of said body portion and thereby lock said bushing within said aperture of said support panel with a predetermined retaining force which is greater than said predetermined retaining force of said first slot means.

5,290,138

LOADING AND RECOVERY APPARATUS WITH SELF-LOCKING L-ARM

Leslie Smart, and Gary MacQueen, both of New Albany, Miss., assignors to American Hook Lift, Inc., New Albany, Miss.

Filed Aug. 13, 1992, Ser. No. 929,664
Int. Cl.[5] B60P *1/64*
U.S. Cl. 414—491 **11 Claims**



1. An improved loading and recovery apparatus for loading and unloading containers, the apparatus being operable from a rearward end of a recovery vehicle having a chassis and front and rear wheels, comprising:

a tilt frame pivotally mounted on the chassis;

an extendable and retractable generally L-shaped arm having a first boom and a second boom, and a free end and a pivot end; said L arm being pivotally connected at said pivot end to said tilt frame; said first boom being generally L-shaped and having first and second members substantially perpendicular to one another;

a stabilizing frame extending laterally from each side of said L-shaped arm;

a pair of power actuators for pivoting said L-shaped arm, each power actuator being mounted outboard of the vehicle chassis and connected to opposing lateral sides of said stabilizing frame; and

a self-locking member for self-locking said L-shaped arm to said tilt frame, whereby said L-shaped arm and said tilt frame can be maintained together in a fixed position through a range of movement.

5,290,139

PORTABLE HOPPER WITH INTERNAL BRACING

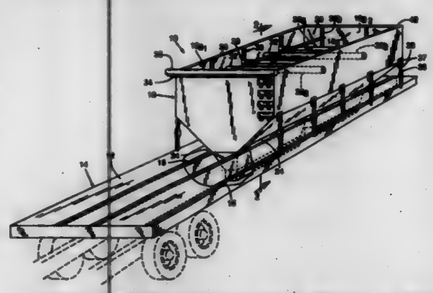
Thomas W. Hedrick, Sikeston, Mo., assignor to Hedrick Concrete Products Corp., Sikeston, Mo.

Filed May 29, 1992, Ser. No. 890,684
Int. Cl.[5] B60P *1/64*
U.S. Cl. 414—498 **7 Claims**

7. A portable hopper for storing/dispensing bulk materials, with the hopper being removably mountable on a tractor trailer with a trailer bed that is formed with a central opening, comprising:

an upright body with an inner surface that includes plural regions defining a bulk-material storage space, and including a generally downwardly converging section that is positionable on such trailer bed with a subsection of the downwardly converging section extending through the central opening, and with the subsection terminating with a dispensing port; and

support structure associated with the body wherein the support structure takes the form of dual, laterally spaced hollow braces extend through the body above said downwardly converging section to receive lifters of a lifting device that are positionable in the hollow braces for removably mounting the hopper on such trailer bed.

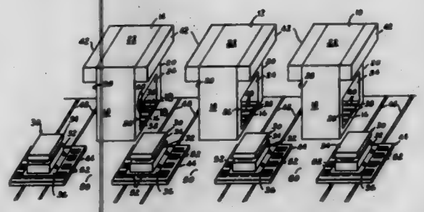


5,290,140

CART FOR DIES WITH PNEUMATIC AND HYDRAULIC POWERED DEVICES

Robert E. Henderson, East Detroit, and Richard L. Sanders, Mt. Clemens, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 606,391, Oct. 31, 1990. This application Jul. 20, 1992, Ser. No. 915,211
Int. Cl.[5] B60P *1/00, 3/22, 1/64*
U.S. Cl. 414—509 **4 Claims**



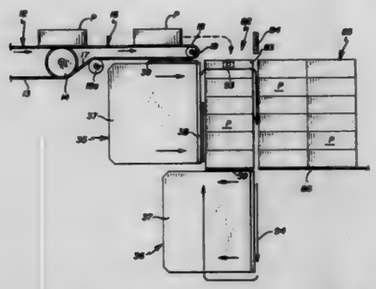
3. A movable die set cart with a power apparatus and system effecting selective cart movements and die movements on the cart by the application of a pressurized hydraulic fluid system, the power apparatus and system being self-contained on the cart and hydraulic fluid pressure being generated by application of pressurized air, comprising: a die cart which includes a wheeled frame the wheeled cart frame constructed to form a hydraulic reservoir for the power apparatus and system; the wheeled frame supporting a hydraulic fluid pump in fluid communication with the reservoir for pressurizing hydraulic fluid; the wheeled frame also supporting a first hydraulic motor in selective fluid communication with the hydraulic fluid pump and being operative to selectively effect cart movement when pressurized hydraulic fluid is applied thereto; the wheeled frame further supporting a second hydraulic motor in selective fluid communication with the hydraulic fluid pump and being operative to selectively effect die movements relative to the wheeled frame when pressurized hydraulic fluid is applied thereto; the wheeled frame supporting an air powered motor connected to the hydraulic pump for powering the pump and generating pressurized hydraulic fluid when pressurized air is supplied to the air powered motor; a remotely controlled valve responsive to a pressurized air signal; the remotely controlled valve having alternate off and on modes, the off mode blocking flow of pressurized air to the air powered motor and the one mode passing pressurized air to the air powered motor whereby in the on mode the air powered motor is operative to drive the hydraulic pump and generate pressurized hydraulic fluid; manually activated control means for selectively directing an air pressure signal to the remotely controlled valve to place it in either the on or the off mode; valve means responsive to pressurized air signal to selectively place the first and second hydraulic motors in fluid communication with the hydraulic fluid pump.

5,290,141

CONTINUOUS DOWN STACKER APPARATUS

Michael R. Grinager, Miltona, Minn., assignor to Brenton Engineering Inc., Minn.

Continuation of Ser. No. 973,303, Nov. 6, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 92,958
Int. Cl.[5] B65G *57/02*
U.S. Cl. 414—790.3 **10 Claims**



1. A downstacker apparatus for continuously stacking dimensionally stable product comprising;

a support frame;

means on said support frame defining a stacking chamber, a stack accumulation area for receiving and supporting stacked product from the stacking chamber,

conveyor means on said frame for continuously delivering product in a downstream direction and discharging the product into the stacking chamber,

a pair of substantially identical lowerating-pushing heads each having an upper product support element for supporting product to be stacked thereon; and each head having a vertical pushing element,

means mounting said lowerating-pushing heads on said frame for continuous vertical shifting movement of said heads between an elevated position and a lower position;

means mounting said lowerating-pushing heads on said frame for shifting movement of said heads between an upstream retracted position adjacent the stacking chamber and a downstream position in said stacking chamber,

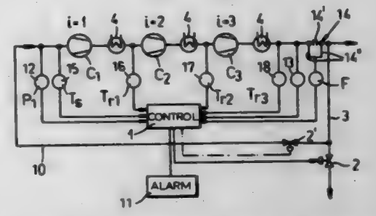
drive means operatively connected with said lowerating-pushing heads for continuously shifting the heads through a vertical elliptical path of travel, one of said heads during said travel moving downwardly from a fully elevated position while in the downstream position to a fully lowered position, simultaneously during upward movement of the other head from a fully lowered position while the other head is in the upstream retracted position, said one head supporting product in stacked relation on the product support element thereof until said one head reaches the fully lowered position, said other head then moving to the downstream position while in the fully elevated position to move the stacked product on said one head to the stack accumulation area.

5,290,142

METHOD OF MONITORING A PUMPING LIMIT OF A MULTISTAGE TURBOCOMPRESSOR WITH INTERMEDIATE COOLING

Ioan Ispas, Kön; Ulrich Grundmann, Voerde, and Yvan Van Hoof, Köln, all of Fed. Rep. of Germany, assignors to Atlas Copco Energas GmbH, Cologne, Fed. Rep. of Germany

Filed Sep. 29, 1992, Ser. No. 952,964
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132735; Jan. 28, 1992, 4202226
Int. Cl.[5] F04D *27/02*
U.S. Cl. 415—1 **5 Claims**



1. A method of operating a multistage turbocompressor system in which at an intake temperature T_s and pressure p_1 a gas is drawn into a first turbocompressor, gas compressed in the first turbocompressor is subject to intermediate cooling, cooled gas is compressed in subsequent turbocompressors in cascade with subsequent cooling to temperatures T_{ri} where i is a number which represents the number of the cooling stage in succession at which said cooling occurs, and the gas after a last turbocompressor and cooling stage of the cascade has a discharge pressure p_2 for a volume rate of flow F through the cascade, said method comprising the steps of:

(a) driving said cascade and measuring said intake temperature T_s, each temperature T_{ri}, temperature differences dTs and dT_{ri} of the temperatures T_s and T_{ri} and a predetermined reference temperatures Tref, the pressures p_1 and p_2 and the volume rate of flow F;

(b) describing a pump limit function $Y=m.F+b$ relating said pressures p_1 and p_2 and said rate of flow F in a stored compressor performance graph, where Y is selected from one of a pressure difference and a ratio of the discharge pressure p_2 and the intake pressure p_1, and m and b are coefficients which are linear functions of the intake temperature T_s and temperatures T_{ri} and the temperature differences dTs, dT_{ri} where:

$$m=m_0+m_1.dT_s+\Sigma m_{2i}.dT_{ri} \text{ and}$$

$$b=b_0+b_1.dT_s+\Sigma b_{2i}.dT_{ri}$$

where

m_0 and, b_0 are empirically determined constants and temperature coefficients m_1, b1, m2i, $b2_i$ are determined by thermodynamic calculations with variations of the intake and cooling temperatures and are stored in a control unit;

(c) operating the turbocompressor cascade at its pumping limit for the purpose of calibrating the pump limit function to yield pressure, temperature and volume values from which the coefficients m_0, b_0 for the pump limit function are determined and providing the coefficients m_0, b_0 as inputs to the control unit;

(d) storing said pump limit function;

(e) comparing measured values of the volume rate of flow F and the pressures p_1 and p_2 of step (a) during driving of said cascade with corresponding values in said compressor storage graph; and

(f) generating a control signal upon operation of said cascade with said measured values falling below a predetermined

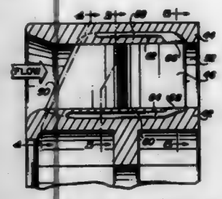
minimum value of a distance from said stored pump limit function.

5,290,143

BICAST VANE AND SHROUD RINGS

Harry L. Kington, Scottsdale, and Steven J. Pringuitz, Gilbert, both of Ariz., assignors to Allied Signal, Morris Township, N.J.

Filed Nov. 2, 1992, Ser. No. 970,198
Int. Cl.[5] F04D *29/54*
U.S. Cl. 415—191 11 Claims



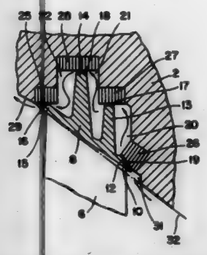
1. In a gas turbine engine, a component comprising:
a first ring;
a second ring circumscribing said first ring and spaced therefrom to define a portion of a flow path in said engine; and
a member disposed in said flow path portion and defined by a leading edge, a trailing edge, an outer edge adjacent said second ring and an inner edge adjacent said first ring, said outer and inner edges each having a flange portion about which said first and second rings are respectively cast, said flange portions extending from the mid-chord between said leading and trailing edges part way towards said leading and trailing edges.

5,290,144

SHROUD RING FOR AN AXIAL FLOW TURBINE

Franz Kreitmeier, Baden, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Sep. 28, 1992, Ser. No. 951,839
Claims priority, application Switzerland, Oct. 8, 1991, 2965/91
Int. Cl.[5] F01D *11/02*
U.S. Cl. 415—173.1 9 Claims



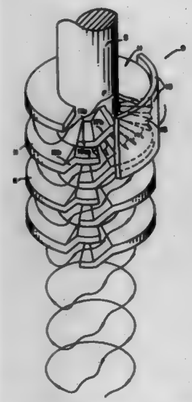
1. A device for sealing the gap between the rotor blades and the casing of a turbomachine, configured with a conical profile, in which the rotor blades are provided with circumferential shroud plates, which seal by means of serrations against the casing with the formation of radial gaps, wherein the shroud plate, which is arranged at the end of the blade, has four throttle locations relative to the casing, the inlet end throttle location forming a diagonal gap in the steady-state operating condition.

5,290,145

MULTIPLE STAGE DRAG AND DYNAMIC PUMP

Eduardo Barsetcho-Gonzalez, Rio Grijalva, No. 11, Col. Vista hermosa, Cuernavaca, Morelos, Mexico

Continuation-in-part of Ser. No. 832,456, Feb. 7, 1992, abandoned, which is a division of Ser. No. 654,423, Jan. 25, 1991, Pat. No. 5,112,188. This application Nov. 30, 1992, Ser. No. 983,165
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] F01D *9/00*; F03B *13/00*
U.S. Cl. 415—198.1 11 Claims



1. A pump for pumping a fluid comprising:
(a) a housing;
(b) a shaft positioned in said housing, said shaft rotating about the longitudinal axis thereof;
(c) a rotor assembly having a plurality of pump stages mounted on said shaft for rotation therewith, each pump stage including a plurality of blades fixed to said shaft; and
(d) a stator assembly having a plurality of flow directing stator means, each of said stator means being positioned between adjacent pump stages, each of said stator means having a wall means and diverter means, wherein said wall means are perpendicular to the axis of said shaft and said diverter means are at an angle of less than 90° with respect to the axis of said shaft, wherein at least one of said blades and said diverter means form a seal for preventing the fluid from passing therebetween, such that flow through a pump stage is perpendicular to the axis of said shaft in the space between adjacent wall means and wherein said diverter means are positioned with respect to said wall means for diverting flow from the pump stage to an adjacent pump stage.

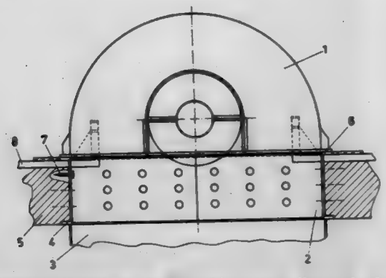
5,290,146

OUTER CASING OF A LOW-PRESSURE PART OF A STEAM TURBINE

Rainer Erber, Waldshut-Gurtwell, Fed. Rep. of Germany, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Jun. 4, 1993, Ser. No. 70,934
Claims priority, application European Pat. Off., Jun. 20, 1992, 92110432.9
Int. Cl.[5] F01D *25/24, 25/28*
U.S. Cl. 415—213.1 2 Claims

1. An outer casing of a low-pressure part of a steam turbine, this outer casing consisting of an upper part and a lower part, with a condenser on the lower part which is connected to the foundation in such a way that expansion of the casing is possible, wherein the casing lower part consists of foundation shuttering, wherein the split plane between the upper part and the lower part of the outer casing extends parallel to and below the



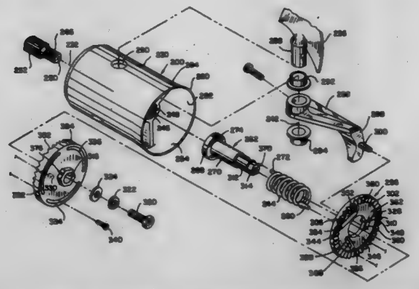
horizontal plane through the turbine center line and wherein this split plane and the condenser connection are component parts of the foundation.

5,290,147

VARIABLE PITCH MARINE PROPELLER WITH SHIFT BIASING AND SYNCHRONIZING MECHANISM

Michael A. Karls, Hilbert; Roger E. Koepsel, and Ronald M. Steiner, both of Oshkosh, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 2, 1991, Ser. No. 801,713
Int. Cl.[5] B63H *3/00*
U.S. Cl. 416—34 17 Claims



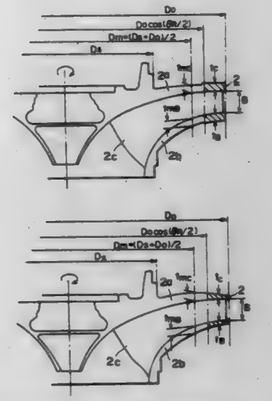
1. A marine propeller comprising a hub rotatable about a longitudinal axis and having a plurality of blades extending radially outwardly therefrom and pivotable about respective radial pivot axes between a low pitch position and a high pitch position, and a biasing spring coaxial with said longitudinal axis of rotation of said hub and biasing said blades to said low pitch position, wherein said hub has a forward portion mountable to a propeller driveshaft, and a rearward portion, and comprising a preload mechanism at said rearward portion and connected to said blades by a plurality of respective lever arms, wherein said spring is rearward of said radial pivot axes and has a rearward end mounted to said preload mechanism and fixed relative thereto and biasing said blades to said low pitch position, said lever arms having rearward ends slidable along said preload mechanism along a radial direction perpendicular to said longitudinal axis.

5,290,148

HIGH HEAD PUMP-TURBINES

Sachio Tsunoda; Hiroshi Tanaka; Ichiro Yamagata, all of Yokohama; Shigeto Fujiki, Fujimi; Yoshikazu Kobayashi, Ichikawa, and Akira Terasaki, Utsunomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasakishi, Japan

Filed Mar. 12, 1992, Ser. No. 847,494
Claims priority, application Japan, Mar. 13, 1991, 3-048398
Int. Cl.[5] F01D *5/10*; F04D *29/22*
U.S. Cl. 416—186 R 2 Claims



1. A high head pump-turbine comprising:
a flat pump-turbine runner wherein a height B of flow paths defined at an outermost peripheral portion thereof between a runner crown and a band is smaller than a diameter D_o of an outermost periphery, wherein, when a minimum integer of an absolute value of a difference obtained by subtracting a positive variable m times a number Z_R of runner vanes from a number Z_G of guide vanes is denoted by $n=Z_G-mZ_R$; a center angle of the spacing of a runner vane cascade is denoted by θ_R; a phase lag between hydraulic exciting forces acting upon two adjoining runner vanes is denoted by θ_{Rn}; a trigonometric function of the phase lag between the hydraulic exciting forces of two adjoining runner vanes varying in accordance with the combination of the number of runner vanes and the number of guide vanes is denoted by $\cos(\theta_{Rn})$; a crown thickness along a circle of a mean diameter at a point midway between an outermost peripheral diameter of the runner and a maximum diameter of an outlet sealing portion of an inner periphery side of the runner is denoted by t_{MC}; a thickness of the band at the means diameter is denoted by t_{MB}; a mean thickness of the crown at a portion on the outside of a circle inscribing the chord of a sector having a center angle θ_R on a circle having the outermost peripheral diameter of the runner is denoted by t_C; a mean thickness of the band is denoted by t_B; and a rigidity ratio of the crown and the band to the runner vanes is denoted by K_R by taking a rigidity of the runner vanes as a reference, the rigidity ratio K_R is so determined that a moment coefficient C_{MO}, which is a function of $\cos(\theta_{Rn})$ and the rigidity ratio K_R, becomes less than 0.5 in accordance with the value of $\cos(\theta_{Rn})$ which varies according to the combination of the number of runner vanes and the number of guide vanes, and at the same time in the case where the value of $\cos(\theta_{Rn})$ is positive, the relations $t_C/t_{MC} \geqq 1$ and $t_B/t_{MB} \geqq 1$ are obtained, whereas when the value of $\cos(\theta_{Rn})$ is negative, the relations $t_C/t_{MC} \leqq 1$ and $t_B/t_{MB} \leqq 1$ are obtained.

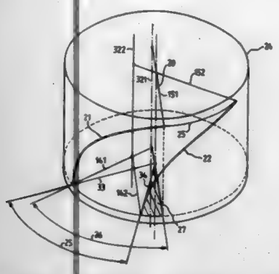
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,149

IMPELLER FOR AN AXIAL-FLOW TYPE FAN

Alfred Vieth, Bad Nauheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/DE90/00604, § 371 Date Feb. 25, 1991, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/03648, PCT Pub. Date Mar. 21, 1991
PCT Filed Aug. 6, 1990, Ser. No. 835,461
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1989, 3929738
Int. Cl.[5] F04D *29/38*
U.S. Cl. 416—188 7 Claims



1. An impeller of an axial-flow type fan, for appliances for drying and dressing hair comprising hub structure having a cylindrical outer surface and an axis of rotation, a plurality of blades integrally formed with said circumferential outer surface of said hub structure and arranged on said hub structure in a rotationally symmetrical manner, each said blade having an inner edge at said outer surface of said hub structure, a leading edge, a trailing edge and an outer edge, each said blade being offset relative to an outer edge, each said blade being offset relative to an adjacent blade by an offset angle of rotation, in which adjacent blades completely overlap each other in the area of said leading edge of each blade and said trailing edge of the adjacent blade over the radial extent of said blades, in which an opening angle formed by a projection of said leading edge and said trailing edge of each blade on a plane normal to said axis of rotation satisfies the condition that said opening angle is smaller than or equal to said offset angle of rotation, the profile formed by said outer edge of each said blade has a curvature of constant sign, and all cross-sections of said blades normal to said axis of rotation form straight lines whose extensions intersect a respective imaginary line associated with a respective one of said blades.

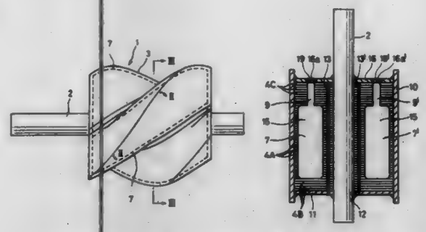
5,290,150

SCREW ROTOR COMPRISING A PLURALITY OF THIN PLATES

Tsutomu Takahashi, and Shubei Nakahama, both of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,524
Claims priority, application Japan, Oct. 17, 1991, 3-298373
Int. Cl.[5] F04C *2/08*
U.S. Cl. 416—229 R 4 Claims

1. A screw rotor for use in a hydraulic machine, comprising:
a shaft;
a screw body supported by said shaft, said screw body comprising a plurality of first stacked solid thin plates provided at one end of said screw body for forming an enclosed wall, a plurality of second stacked thin plates each having at least one opening and provided adjacent to said first stacked solid thin plates, and a plurality of third stacked thin plates each having a forming hole formed therein and provided adjacent to said second stacked thin plates, each of said first, second and third stacked thin plates having the same outer profile and being bonded to one another; and



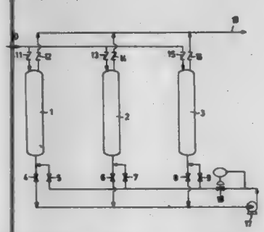
a cavity provided in said screw body which is defined by said opening of said second stacked thin plates.

5,290,151

PROCESS FOR PUMPING A MULTI-PHASE GAS-LIQUID MIXTURE BY MEANS OF THE USE OF A PUMP

Giovanni Orlando, Milan, Italy, assignor to Snamprogetti S.p.A. and Agip S.p.A., both of Milan, Italy

Continuation-in-part of Ser. No. 704,849, May 20, 1991, abandoned, which is a continuation of Ser. No. 426,776, Oct. 26, 1989, abandoned. This application Apr. 20, 1992, Ser. No. 870,766
Claims priority, application Italy, Oct. 28, 1988, 22450A/88
Int. Cl.[5] F04F *1/06*
U.S. Cl. 417—54 9 Claims



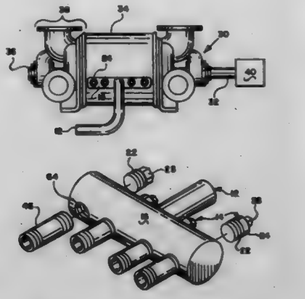
1. A process for pumping a multi-phase gas-liquid mixture through a delivery line at a delivery line pressure comprising
a) feeding said multi-phase mixture from a pressurized intake line, under the pressure of said intake line, to a first vessel full of liquid, separating the multi-phase mixture in said first vessel into a gaseous phase and a liquid phase;
b) simultaneously with the gas-liquid separation sending the liquid present in said first vessel and the liquid separated inside the first vessel to a pump, by means of which the liquid is pumped into a second vessel, full of gas under the intake line pressure, causing said gas contained inside said second vessel to be compressed by said liquid initially present in said first vessel, until said gas reaches a pressure equal to that of said delivery line; and
c) causing the compressed gas and compressing liquid to leave the second vessel and enter said delivery line by introducing more liquid from said first vessel into said second vessel through said pump, the amount of liquid leaving said second vessel being the same as that of the liquid entering the first vessel.

5,290,152

MANIFOLD FOR A LIQUID RING VACUUM PUMP-COMPRESSOR

T. Michael Wallace, and Charles H. Wunner, both of Charlotte, N.C., assignors to Vooner Vacuum Pumps, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 882,820, May 14, 1992, Pat. No. 5,246,348. This application Jul. 9, 1992, Ser. No. 911,197
Int. Cl.[5] F04C *19/00*
U.S. Cl. 417—68 23 Claims



1. A liquid ring vacuum pump or compressor apparatus having sequentially an inlet segment, a compression segment, a discharge segment, and a seal segment, a generally annular housing having a longitudinal axis; a rotor mounted for rotation within said housing, and having vanes extending generally radially therefrom, forming a plurality of working chambers; a port-containing member through which a pumped medium is admitted to and discharged from said working chambers; means for introducing water to the face of said port containing member between said member and the end of said vanes adjacent said member; and means for introducing water to the interior of said chamber through said annular housing, the improvement comprising:
at least two orifices in the wall of said housing;
said means for introducing water to the interior of said chamber being a manifold having an elongated water distribution tube, at least one inlet pipe connected to a source of water and to said tube, and at least two outlets communicating with said tube and the interior of said pump through said at least two orifices in the wall of said housing; and
removable caps positioned on said manifold in axial alignment with and opposite each said orifice in said housing.

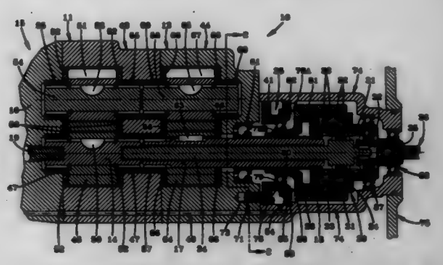
5,290,153

TWO STAGE PUMP ASSEMBLY

Michael R. Schmidt, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1993, Ser. No. 28,509
Int. Cl.[5] F04B *49/08*
U.S. Cl. 417—216 4 Claims

1. A two stage pump comprising:
a first pump assembly continuously drivingly connected to a rotary member of a transmission;
a second pump assembly;
a selectively operable clutch assembly having an input member, an output member, a plurality of alternately spaced friction disk means for selectively drivingly connecting the input and output members, piston means for controlling the engagement of the friction disk means, spring means for enforcing said piston means into an engaged condition, and pressure chamber means selectively pressurizable for urging said piston means to a disengaged condition;
first one-way drive means for selectively connecting said clutch input member to said rotary member; and,



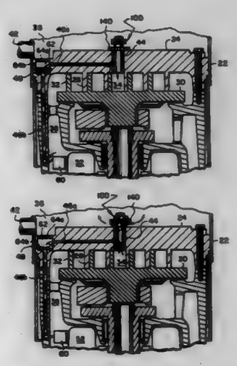
second one-way drive means for selectively connecting said clutch input member to a vehicle rotary output member.

5,290,154

SCROLL COMPRESSOR REVERSE PHASE AND HIGH DISCHARGE TEMPERATURE PROTECTION

Peter A. Kotlarek; Jerry A. Rood, both of Onalaska, and Bill P. Simmons, La Crosse, all of Wis., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,728
Int. Cl.[5] F04B *47/08*
U.S. Cl. 417—272 12 Claims



1. A scroll compressor comprising:
a shell through which a gas flows when said compressor is in operation, said shell defining a suction pressure portion and a discharge pressure portion;
a first scroll member disposed in said shell, said first scroll member having an involute wrap and defining a discharge aperture in flow communication with said discharge pressure portion of said shell;
a second scroll member disposed in said shell, said second scroll member having an involute wrap in interleaving engagement with the involute wrap of said first scroll member and cooperating therewith to define a plurality of compression pockets, one of said pockets being a discharge pocket which is in flow communication with said discharge aperture and out of which compressed gas flows when said compressor is in normal operation;
means for defining a passage internal of said shell between said suction pressure portion and said discharge pocket; and
means for permitting selective bi-directional gas flow between said discharge pocket and said suction pressure portion of said shell through said passage, said means for permitting selective bi-directional flow comprising a

valve assembly, said valve assembly including a thermally responsive portion and a portion other than said thermally responsive portion, both said thermally responsive portion of said assembly and said portion of said valve assembly other than said thermally responsive portion defining at least one aperture, said assembly being operable to permit the flow of gas in a first direction and at a first rate when gas pressure in said discharge pocket is less than gas pressure in said suction pressure portion of said shell and in a direction opposite said first direction and at a second rate which is less than said first rate when discharge gas temperature exceeds a predetermined temperature.

5,290,155

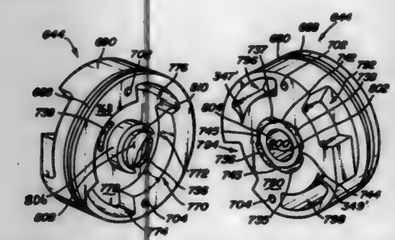
POWER STEERING PUMP WITH BALANCED PORTING

Douglas G. Snow, Walled Lake, and Jerry L. Wilson, Farmington, both of Mich., assignors to Deco-Grand, Inc., Royal Oak, Mich.

Continuation-in-part of Ser. No. 753,755, Sep. 3, 1991. This application Jul. 24, 1992, Ser. No. 919,201

Int. Cl.[5] F01C *21/00*

U.S. Cl. 418—82 **21 Claims**



1. A balanced vane hydraulic pump for use in an automotive power steering system, comprising:

a pump housing including a substantially symmetrical wishbone-shaped gallery for balanced delivery of low pressure fluid to inlet window regions of the pump;

a pump drive shaft extending into the pump housing;

a cam ring, located within the pump housing, having a precision-machined inner surface of generally oval shape and an outer surface defining part of the wishbone-shaped gallery;

a rotor, centrally located within the oval shape of the cam ring and mechanically driven by the drive shaft, having a plurality of substantially radially arranged slots in which vanes may reciprocate while rotating with the rotor and a corresponding plurality of undervane holes;

a plurality of vanes, each vane being slidably arranged in a respective one of the slots of the rotor so as to be able to bear against the inner surface of the cam ring during operation of the balanced vane hydraulic pump; and

a pressure plate, having a first side and a second side, the first side having a recessed region which forms part of the symmetrical wishbone-shaped gallery for delivery of low pressure fluid and which assist in providing smooth velocity transition of low pressure fluid to the inlet window regions, a plurality of high pressure passages for transporting high pressure fluid from high pressure discharge windows, and a plurality of holes forming part of an undervane porting system for delivering fluid to the undervane holes within the rotor.

5,290,156

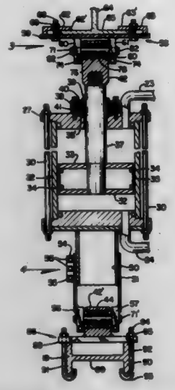
WALKING BEAM COMPRESSOR ASSEMBLY

Harold E. Mayland, 7811 S. Ventura Ct., Aurora, Colo. 80016

Filed Jul. 29, 1991, Ser. No. 737,059

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—415 **10 Claims**



1. In pumping unit having a walking beam and base, each of said walking beam and base including a generally I-shaped beam member, each said beam member having a web and flanges normal to said web at opposite ends thereof, and wherein a compressor includes a cylinder and a piston with a piston rod extending from one end of said cylinder and terminating in one connection end portion, and an opposite end of said cylinder terminates in an opposite connection end portion with a bearing assembly in each of said connecting end portions, the improvement comprising:

means for clampingly securing each of said connecting end portions to a respective one of said walking beam and said base including first coupling means for securing said one connecting end portion to said walking beam including end support members at opposite ends of said shaft, said shaft journaled to said end support members, an end plate engageable with a flat external surface of said walking beam; and clamping means for releasably clamping said end plate to said walking beam; and

second coupling means for securing said opposite connecting end portion to said stationary part including end support brackets at opposite ends of said shaft, said shaft journaled to said end support members, a mounting plate engageable with said stationary part, and clamping means for releasably clamping said mounting plate to said stationary part including J-shaped ends adjustably connected to said mounting plate, said J-shaped ends each receiving one of said flanges of said stationary part whereby to retain said flanges secured against said mounting plate.

5,290,157

CLAMP FOR ATTACHING AN AQUARIUM POWER HEAD

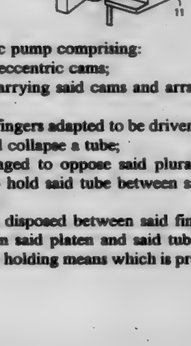
Allan H. Willinger, Franklin Lakes; Robert Ellis, Wyckoff, both of N.J.; Gene S. Fleischer, Spring Valley, N.Y., and Mark Agresta, Nutley, N.J., assignors to Willinger Bros., Inc., Oakland, N.J.

Division of Ser. No. 927,570, Aug. 10, 1992, which is a division of Ser. No. 531,917, May 29, 1990, Pat. No. 5,137,433. This application Mar. 11, 1993, Ser. No. 29,473

Int. Cl.[5] F04B *17/00, 35/04*

U.S. Cl. 417—423.15 **5 Claims**

1. A clamp for attaching an aquarium power head to a wall of an aquarium tank, the power head including a water conduit and a pump for pumping water of the tank through the conduit, the power head having a housing enclosing the conduit and the pump, the housing being provided with inlet and outlet ports for the conduit, the inlet port being formed as a tubular section, the clamp engaging with said tubular section for affixing said housing to said wall of the aquarium tank, said clamp comprising:



a ring which mates with said tubular section;

attachment means for engagement with said wall; and positioning means extending through said ring and engaging with said attachment means, there being space between said ring and said positioning means for a flow of water.

5,290,158

PERISTALTIC PUMP

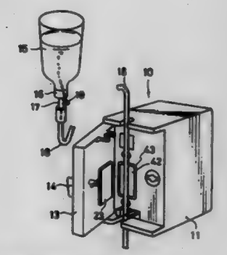
Shigeru Okada, Fujinomoya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 867,061, Apr. 10, 1992, Pat. No. 5,211,548, which is a continuation of Ser. No. 558,051, Jul. 25, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,385

Claims priority, application Japan, Jul. 31, 1989, 1-196515; Jul. 31, 1989, 1-196516

Int. Cl.[5] F04B *43/12*

U.S. Cl. 417—474 **6 Claims**



1. A peristaltic pump comprising:

a plurality of eccentric cams;

a cam shaft carrying said cams and arranged to drive said cams;

a plurality of fingers adapted to be driven by said cams so as to press and collapse a tube;

a platen arranged to oppose said plurality of fingers and arranged to hold said tube between said platen and said fingers; and

a tube holder disposed between said fingers and said tube and between said platen and said tube, said tube holder having tube holding means which is provided on a surface of said tube holder contactable with said tube and arranged to hold said tube in a predetermined position;

said tube holder comprising an elastic sheet member having a recess formed in a surface of said elastic sheet member which is contactable with said tube, said recess compriaing a tube holding means for holding a tube; and

said tube holder further comprising at least a pair of tube clamping portions projecting into said recess.

5,290,159

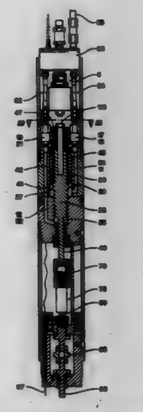
DOWNHOLE PUMP OF CONSTANT DIFFERENTIAL HYDRAULIC PRESSURE

Mark A. Miller, Houston, and James D. Fox, Stafford, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Mar. 4, 1993, Ser. No. 3,073

Int. Cl.[5] F04B *23/04*

U.S. Cl. 417—521 **7 Claims**



1. A combination low pressure and high pressure hydraulic pump comprising:

(a) a housing defining a longitudinal bore, which bore has a first chamber larger in diameter than a second chamber, and which first chamber and second chamber each contains an inlet and an outlet;

(b) a cylindrical first piston sealingly mounted in said housing and adapted for reciprocating movement within the first chamber, which first piston defines a second longitudinal bore with essentially the same diameter as the second chamber;

(c) a second piston sealingly mounted in said second longitudinal bore and adapted for reciprocating movement within said second longitudinal bore and said second chamber;

(d) a spring to couple the first piston and the second piston at lower pressures, which lower pressures depend upon the spring constant of the spring;

(e) means for reciprocating said pistons in said chambers; and

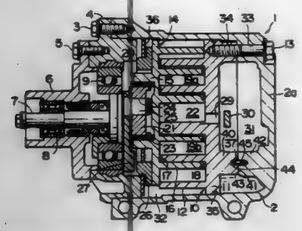
(f) a connecting rod connecting said second piston to said reciprocating means.

5,290,160

SCROLL TYPE FLUID MACHINERY AND ASSEMBLING METHOD OF THE SAME

Yoshiyasu Ito; Hideki Yamahira, both of Nishikasugai, and Takahisa Hirano, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 707,792, May 30, 1991, abandoned.
This application Mar. 22, 1993, Ser. No. 35,499
Claims priority, application Japan, Sep. 3, 1990, 2-92615[U]; Sep. 4, 1990, 2-234047
Int. Cl.[5] F25B *1/04*
U.S. Cl. 418—55.1 13 Claims



1. A scroll type fluid machinery comprising:

a housing having a cup-shaped casing with an opening at one end thereof, the housing further having a front casing, the front casing closing the opening and the cup-shaped casing having a flange and bolt hole defined therein;

a stationary scroll and a revolving scroll each having spiral wraps set up at inner surfaces of end plates thereof, the scrolls being arranged in the housing in engagement with each other at a predetermined angle, said stationary scroll being fixed to said casing;

a revolution drive mechanism for moving said revolving scroll in a solar motion and a mechanism for checking rotation of the revolving scroll, the revolution drive mechanism and the mechanism for checking being located in the housing;

the inner surface of the end plate of the stationary scroll at a circumferential edge thereof having at least one opening defined therein and the flange of the cup-shaped casing having another at least one opening defined therein, the at least one opening defined in the flange being on a side facing the opening of the cup-shaped casing, both of the at least one openings allowing the stationary scroll and the cup-shaped casing to assume the predetermined angle therebetween and a position between said stationary scroll and said cup-shaped casing being determined at a relative angle by means of a positioning jig provided with positioning pins, at least one of the pins engaging the at least one opening defined in the stationary scroll and at least one of the pins engaging the at least one opening defined in the flange, the stationary scroll having a bolt hole, the bolt holes of the stationary scroll and cup-shaped casing being aligned when both of the at least one openings are engaged by the pin of the positioning jig;

a bolt positionable in the bolt holes of the stationary scroll and the cup-shaped casing for holding the stationary scroll fixed to the cup-shaped housing; and

the front casing having a positioning hole defined therein, said positioning hole matching a position of the at least one opening defined in the cup-shaped casing to thereby determine positioning of the front casing and the cup-shaped casing at the relative angle.

11. A process for assembling a scroll type fluid machinery comprising the steps of:

providing a housing having a cup-shaped casing with an opening at one end thereof the housing further having a front casing, the front casing closing the opening and the cup-shaped casing having a flange and a bolt hole defined therein;

providing a stationary scroll and a revolving scroll each having spiral wraps set up at inner surfaces of end plates thereof, the stationary scroll having a bolt hole defined therein;

positioning the scrolls in the housing in engagement with each other at a predetermined angle;

providing at least one opening on both of the stationary scroll and the cup-shaped casing, an inner edge of the inner surface of the end plate of the stationary scroll at a circumferential edge thereof having the at least one opening defined therein and the flange of the cup-shaped casing having the at least one opening defined therein, the at least one opening defined in the flange being on a side facing the opening of the cup-shaped casing;

fixing the predetermined angle relationship between the stationary scroll and the cup-shaped casing by the at least one of the openings in the end plate of the stationary scroll and the flange of the cup-shaped casing;

inserting pins formed on a positioning jig in the at least one of the openings in the end plate of the stationary scroll and in the at least one of the openings in the flange of the cup-shaped casing during the step of fixing, the pins on the positioning jig aligning the stationary scroll and the cup-shaped casing, the bolt hole in the stationary scroll being aligned with the bolt hole in the cup-shaped casing;

inserting a bolt into the aligned bolt holes of the stationary scroll and cup-shaped casing to fix the stationary scroll to the cup-shaped casing;

providing a revolution drive mechanism for moving said revolving scroll in a solar motion and a mechanism for checking rotation of the revolving scroll;

locating the revolution drive mechanism and the mechanism for checking in the housing;

providing at least one positioning hole in the front casing and at least one positioning hole in the cup-shaped casing;

aligning the at least one positioning holes in the front casing and the cup-shaped casing; and

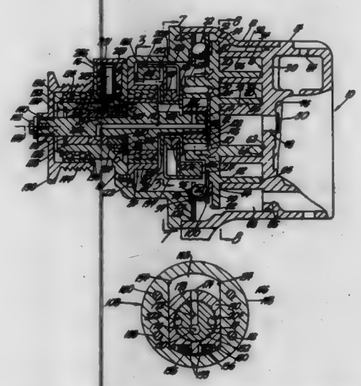
fixing the front casing to the cup-shaped casing using said positioning hole with a relative angle being formed therebetween.

5,290,161

CONTROL SYSTEM FOR A CLUTCHLESS SCROLL TYPE FLUID MATERIAL HANDLING MACHINE

James C. Swain, Columbus, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 2, 1993, Ser. No. 71,161
Int. Cl.[5] F01C *1/02*
U.S. Cl. 418—55.1 3 Claims



1. A control system for a clutchless scroll type fluid material handling machine with a housing that has a fluid inlet, a fluid outlet, a fluid inlet chamber and a fluid outlet chamber; a stationary scroll with an end plate and a wrap having inside and outside flanks and an axial tip mounted in the housing; an orbital scroll with an end plate and a wrap having inside and outside flanks and an axial tip mounted in the housing; a drive assembly for driving the orbital scroll in a generally circular orbit including a crankshaft rotatably mounted in the housing for rotation about an axis and a drive member connected to the crankshaft outside the housing; and wherein the control system includes a fluid actuator for moving the stationary scroll and the orbital scroll relative to each other into a fluid displacement mode, a control system compressor driven by the crankshaft for supplying compressed fluid to the fluid actuator, and a control valve connected to the control system compressor, the fluid actuator and one of the chambers in the housing, operable to direct compressed fluid from the control system compressor to the fluid actuator or to direct fluid from the fluid actuator to one of the chambers in the housing.

5,290,162

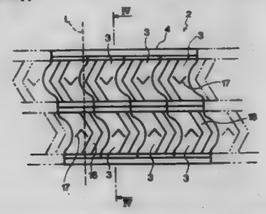
Patent Not Issued For This Number

5,290,163

METAL MOLD FOR VULCANIZING A TIRE

Shiro Katsumata, and Takehiro Kata, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,490
Claims priority, application Japan, May 17, 1991, 3-140749
Int. Cl.[5] B29C *33/42, 35/02;* B29D *30/04*
U.S. Cl. 425—47 5 Claims



1. A metal mold for vulcanizing a tire comprising; an annular metal mold proton for forming a tread of a tire, said mold portion having a plurality of sector metal molds each severed along a mold circumferential direction, said metal mold having al or some of said sector metal molds constructed of a plurality of smaller parts severed along a mold axial direction as well as along the mold circumferential direction; and joining surfaces between adjacent sector metal molds consisting of said plurality of smaller parts formed on a contour surface of said smaller parts, wherein said contour surfaces are curved surfaces, and said curved surfaces are formed such that at every point on said curved surfaces a radius of curvature is 5 mm or larger and an inclination angle of a tangential plane contacting said point with respect to a tire axis is 80 degrees or less.

5,290,164

APPARATUS FOR THE MANUFACTURE OF A PRESS JACKET

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 889,678
Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117561
Int. Cl.[5] B29C *65/00*
U.S. Cl. 425—111 13 Claims

1. An apparatus for manufacturing an endless loop press jacket, the jacket being formed of pourable elastomeric material having reinforcement threads embedded therein, the threads including a radially inner layer of longitudinal threads which extend essentially in the axial direction of the press jacket and a radially outer layer of circumferential threads which extend in the circumferential direction around the press jacket;

the apparatus comprising:

a cylindrical rotatably mounted pouring body having a length which corresponds to the width of the press jacket to be manufactured and having an outer jacket surface with a circumference which corresponds to the length of the press jacket to be manufactured;

a tensioning device at the pouring body for tensioning the longitudinal thread sand supporting the longitudinal threads extending in the axial direction of the press jacket and at a distance from the jacket surface of the pouring body;

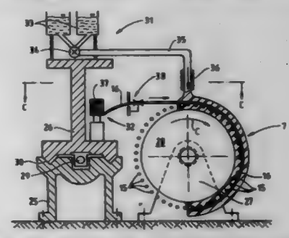
a feed device for feeding the circumferential threads to the pouring body surface;

first means for moving the feed device parallel to the axis of the pouring body;

a pouring nozzle for application of the elastomeric material;

second means for moving the nozzle parallel to the axis of the pouring body, the second means comprising a support for the pouring nozzle;

third means for maintaining a constant distance between the



longitudinal thread and the jacket surface of the pouring body and including a spacing device for maintaining a constant distance apart between two adjacent longitudinal threads, the spacing device comprising at least one segment, said at least one segment surrounding the circumference of the pouring body, the at least one segment being elastic and having such flexibility that the spacing device may flex along its length around the pouring body;

said at least one segment having a cross section with one arm extending parallel to the longitudinal axis of the pouring body and resting against the pouring body and another radial arm extending substantially perpendicular to and projecting from the jacket surface of the pouring body, the radial arm having means for guiding the passage of the longitudinal threads and for separating the threads; and

a slide rigidly connected to the support and movable along the axis of the pouring body with the support, the slide being in contact with the at least one segment at various locations along the segment, as the segment rotates with the pouring body, in order for the slide to displace the at least one segment parallel to the axis of the pouring body, corresponding to the advance of the support along that axis.

5,290,165

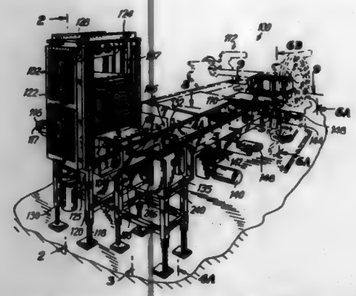
INDEPENDENT PALLET DELIVERY SYSTEM

Jay R. Pitha, Bethlehem, Pa., assignor to Bergen Machine & Tool Co., Inc., Hacketstown, N.J.

Filed May 5, 1992, Ser. No. 878,594
Int. Cl.[5] B28B *15/00, 5/00*
U.S. Cl. 425—150 31 Claims

1. An independent pallet delivery system for transporting pallets through a block forming machine that forms concrete blocks on a pallet, comprising: conveyor means for transporting pallets to a block forming machine; storage means for storing a plurality of pallets therein; delivery means associated with both the conveyor means and the storage means for

delivering pallets from the storage means to a holding position above the conveyor means; and displacement means associated with the conveyor means for displacing the conveyor means between at least a first elevational position and a second elevational position, the displacement means being displaceable between the first elevational position and the second elevational position to elevate the conveyor means into engagement with the pallet at the holding position so that the pallet is carried away by the conveyor means, the conveyor means being adapted to deliver the pallet to a waiting position adja-



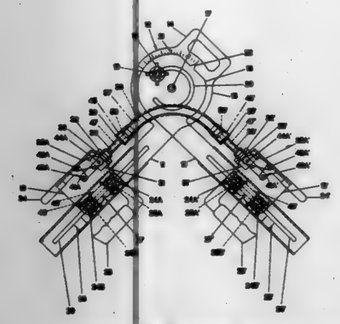
cent a block forming machine so that the pallet can be transferred from the conveyor means to the block forming machine, said conveyor means being further adapted to transfer the pallet from the waiting position to the block forming machine so that at least one molded concrete block is placed on the pallet prior to the molded block being released from the block forming machine, the block forming machine lowering the pallet, said displacement means being adapted to displace the conveyor means from the second elevational position to the first elevational position to cushion the return of the pallet to the conveyor means and a take away conveyor means.

5,290,166

PLASTIC PIPE BENDER AND END SOCKET FORMER

Galen K. Heatherly, 2426 E. Westcott Ave., Visalia, Calif. 93292

Filed Nov. 12, 1992, Ser. No. 974,796
Int. Cl.[5] B29C *53/08*
U.S. Cl. 425—173 15 Claims



1. A pipe bender for bending plastic pipes of various diameters and lengths, comprising:

two arms hingeably connected together for pivoting,

a protractor scale attached between said arms for indicating the angle between said arms,

a pair of clamps slidably attached to said arms, said clamps being spaced apart and being adjustable in spacing so that a range of lengths of said plastic pipe may be axially clamped therebetween, and so that when said plastic pipe is heated and clamped between said clamps, said arms may be pivoted to a desired angle to bend said plastic pipe to any desired angle, and

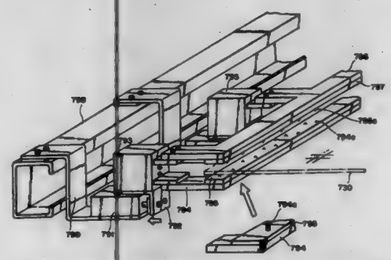
a pair of socket formers attached to said pair of clamps, respectively, for forming integral pipe-connecting sockets at the ends of said plastic pipe.

5,290,167

METHOD OF MANUFACTURING THREE-DIMENSIONAL PARTS USING SHEETS OF THERMOPLASTIC RESIN HIGH-PERFORMANCE FIBER-REINFORCED COMPOSITE MATERIAL AND APPARATUS THEREFOR

Toshihiro Tanaka; Yuji Chiba, and Yuji Ashibe, all of Niihama, Japan, assignors to Sumitomo Heavy Industries, Ltd., Japan

Filed Oct. 3, 1991, Ser. No. 770,463
Claims priority, application Japan, Oct. 8, 1990, 2-268302; Nov. 10, 1990, 2-305584; Nov. 10, 1990, 2-305585; May 16, 1991, 3-111883
Int. Cl.[5] B29C *51/00*
U.S. Cl. 425—397 29 Claims



1. An apparatus for manufacturing three-dimensional parts from sheets of a thermoplastic resin fiber-reinforced composite material, said apparatus comprising:

(a) supply means for positioning the sheet of the fiber-reinforced composite material;

(b) sheet clamping means for clamping an end portion of the sheet;

(c) conveying means for conveying the clamped sheet into a heating and forming zone;

(d) heating means for heating the sheet to a predetermined temperature;

(e) upper and lower slides and power driving means for pressing said slides together and pulling said slides apart;

(f) power driven upper and lower frames, mounted respectively on said upper and lower slides, for clamping the sheet around its periphery;

(g) an elongated guide body pivotally secured at one end to one of said slides;

(h) a fiber positioning pin, slidably mounted in said guide body, for piercing the sheet clamped between said frames to position the reinforcing fibers;

(i) forming means including a male mold member for deep drawing the clamped sheet to the extent of a stroke of the male mold member; and

(j) retaining force applying means for moving said fiber positioning pin, in the plane of said clamped sheet, toward the periphery of said sheet so that the deformation angle caused by a trellis effect remains within a predetermined angle range during forming, and returning means for retracting said fiber positioning pin to its original position; and

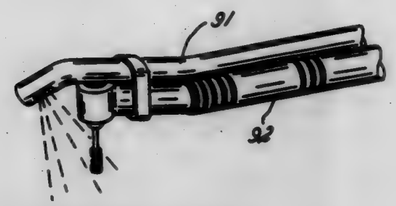
(k) ejecting means for extracting the three-dimensional part.

5,290,168

ELECTRONIC VIDEO DENTAL CAMERA

David H. Cooper, Saratoga, and Charles S. Bush, Los Gatos, both of Calif., assignors to Optical Systems, Inc., Los Gatos, Calif.

Division of Ser. No. 388,666, Aug. 19, 1989, Pat. No. 5,115,307, which is a continuation-in-part of Ser. No. 22,171, Mar. 5, 1987, Pat. No. 4,727,416. This application Feb. 19, 1992, Ser. No. 817,923
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—29 23 Claims



1. A dental instrument comprising:

an elongated body having a distal end;

a reciprocating dental tool located at said distal end of said body for performing a task at a location within a patient's mouth;

means within said body for illuminating said location within said patient's mouth;

an optical port within said body for receiving an image of said location within said patient's mouth;

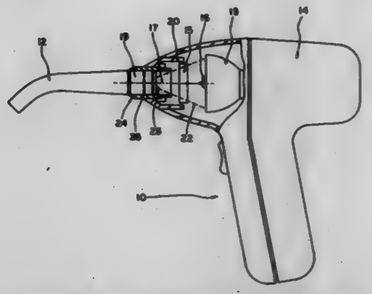
means for communicating said image, via the interior of said body, to an external monitor for displaying said image.

5,290,169

OPTICAL LIGHT GUIDE FOR DENTAL LIGHT-CURING LAMPS

Joshua Friedman, 11 Boulevard Dr. Unit 2, Danbury, Conn. 06810, and Brian Dell, P.O. Box 2635, Waterbury, Conn. 06702

Filed Nov. 2, 1992, Ser. No. 970,038
Int. Cl.[5] A61C *1/00, 3/00*
U.S. Cl. 433—29 11 Claims



1. An optical light guide for transmitting light from a light source to a dental restorative site to cure a photocurable material, comprising a solid, unitary rod composed of a rigid, transparent material, optically coupled at the proximal end thereof to said light source through an optical surface of hemispherical geometry, with said rod including a tapered section, a curved section extending from said tapered section, and a tapered section, a curved section extenting thereof.

5,290,170

ABLATOR FOR USE IN DENTISTRY

Beat V. Weissenfluh, Gentilino; Bernhard Guggenheim; Ulrich Saxer, both of Zürich, and Gianni Baffelli, Tenserete, all of Switzerland, assignors to Hawe-Neos Dental Dr. von Weissenfluh S.A., Gentilino, Switzerland

Filed Jan. 23, 1992, Ser. No. 824,362
Claims priority, application Switzerland, Jan. 23, 1991, 184/91
Int. Cl.[5] A61C *3/06, 3/00, 17/00*
U.S. Cl. 433—142 5 Claims



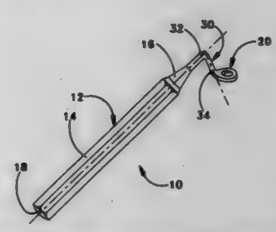
1. An ablator for use in dentistry, having a generally longitudinal axis and a handle at one end and an ablator tip at the other end, and made of synthetic resin reinforced by fibers to resist mechanical stresses, said synthetic resin belonging to the group of polyamides, said fibers consisting of carbon fibers and being totally incorporated within the polyamide resin and being arranged substantially parallel to the longitudinal axis of the ablator.

5,290,171

UNIVERSAL CARRIER FOR CARRYING VARIOUS ANATOMICAL DENTAL RESTORATIVE COMPONENTS

Fereidoun Daftary, 50 N. La Cienega Blvd., No. 206, Beverly Hills, Calif. 90211, and Adriano Bracchetti, St. Gall Passarella 1, 20122 Milano, Italy

Filed Dec. 17, 1992, Ser. No. 991,969
Int. Cl.[5] A61C *3/00*; B25B *13/00*
U.S. Cl. 433—163 16 Claims



1. A universal carrier comprising an elongated handle, a ring-shaped holder for press-fitting a generally cylindrical shaped portion of an anatomical dental restorative component, and a double-angled portion interconnecting the elongated handle and the ring-shaped holder for having the ring-shaped holder situated below and extended away from the elongated handle, wherein said ring-shaped holder incorporates an anti-frictionally supported rotatable inner ring for press-fitting said generally cylindrical shaped portion of said anatomical dental restorative component.

5,290,172

METHOD FOR PREPARING A TOOTH SURFACE FOR BONDING

Tetsuro Sakuma, Tokorozawa, and Yohji Imai, Chiba, both of Japan, assignors to GC Corporation, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,399
Claims priority, application Japan, Nov. 6, 1991, 3-317379
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 7 Claims

1. A method for treating a tooth surface to make it bondable well enough for dental purposes, involving treating enamel and dentin with a primer comprising a) an organic acid, b) an iron, copper or cobalt salt and c) water, and then curing the tooth surface with a bonding material comprising d) a methacrylate or acrylate having at least one unsaturated double bond, e) a (thio)barbituric acid derivative and f) a polymerization initiator.

5,290,173

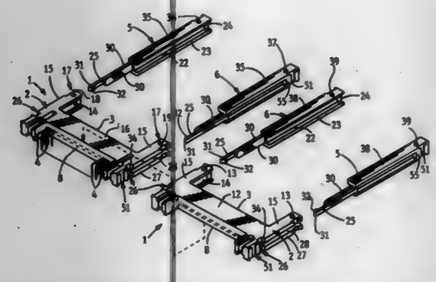
Patent Not Issued For This Number

5,290,174

ELECTRICAL CONNECTOR FOR A CARD READER

John A. Woratyla, Camp Hill; John W. Kaufman, Hershey, and John L. Broschard, III, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 926,628, Aug. 10, 1992. This application Nov. 13, 1992, Ser. No. 976,038
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—59 10 Claims



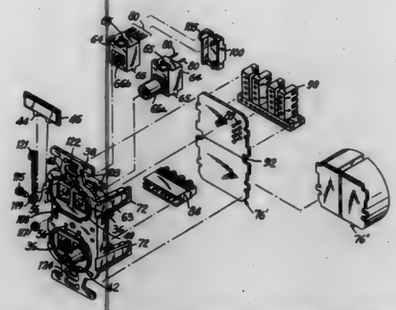
1. An electrical connector comprising: a housing, a card receiving mouth in the housing, electrical contacts carried by the housing in the mouth, prong receiving sockets on the housing, guide arms on opposite sides of the mouth, a card receiving groove on each of the guide arms, a prong on each of the guide arms being constructed for locking engagement with any one of the sockets, and each of the sockets lockingly engage one of the guide arms only with the card receiving groove of the one guide arm being oriented to face toward another guide arm, allowing assembly of the guide arms to the housing whether or not the guide arms are inverted with respect to the housing, the guide arms comprising multiple pairs of guide arms stacked one pair on another pair, and first locking structures on respective first guide arms of said pairs interlocking with second locking structures on respective second guide arms of said pairs.

5,290,175

MODULAR HIGHER DENSITY COMMUNICATIONS COUPLING SYSTEM

Scott T. Robinson, Redmond; William K. Deaning, Everett; John M. Redfield, Brier, and John H. Garthwaite, Coupeville, all of Wash., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 719,053, Jun. 21, 1991, Pat. No. 5,106,325, which is a continuation of Ser. No. 647,378, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 463,328, Jan. 19, 1990, Pat. No. 5,007,860. This application Dec. 30, 1991, Ser. No. 815,648
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—540 4 Claims



1. A telecommunications coupling device for mounting a pair of connectors through a single hole of an outlet plate comprising:

telecommunication apparatus capable of voice or data transmission;

a main body member;

a registration ridge extending forward from said main body member, at least a portion of said ridge being adapted to extend into said single hole of said outlet plate;

an aperture enclosure extending through said maint body member and generally surrounded by said registration ridge;

a pair of connectors extending through said aperture means and through said hole in said outlet plate for providing a connection to said telecommunication equipment;

a retaining member means for said apertured enclosure, said retaining member extending rearwardly from said main body member on at least one side of said apertured enclosure for retaining a pair of connectors in alignment with said apertured enclosure; and

a support member means for supporting a termination plate above said retaining member means and spanning said apertured portion, said support member means extending rearwardly from said main body member, adjacent said apertured enclosure.

5,290,176

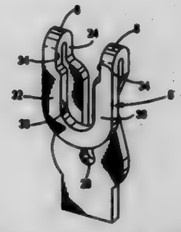
INSULATION DISPLACEMENT CONTACT HAVING BACK UP SPRING

Lucas Soes, BB Rosmalen, and Franciscus M. Wouters, ZE Hasselt, both of Netherlands, assignors to The Whitaker Company, Wilmington, Del.

Filed Dec. 9, 1992, Ser. No. 987,942
Claims priority, application United Kingdom, Dec. 20, 1991, 9127053
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—398 8 Claims

1. An electrical terminal comprising an insulation displace-

ment contact having upstanding beams with a slot therebetween formed by sheared edges along a length thereof, said slot having an open upper wire receiving end, and a lower root portion defined by an end of sad slot, said slot defining an upper insulation cutting position profiled to cut through the insulation of an insulated wire upon transverse movement into said slot, and a contact position located medially of said root



and said open upper end, the contact being characterized in that:

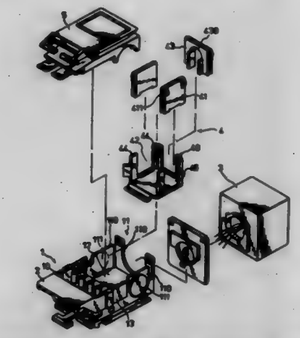
said upstanding beams are rigidifed at said cutting position by a backup spring interconnected to said beams via a reversely bent bight portion, said back-up spring comprising spring beams interconnects at ends thereof, said spring beams being spaced apart a distance greater than said slot, to receive an insulated wire therein.

5,290,177

SHIELDING UNIT OF A NETWORK CONNECTOR

Ming-Kuang Chai, 3F-8, No.255, Sec.2, Chung-Shan Rd., Chung-Ho City, Taiwan

Filed May 26, 1993, Ser. No. 67,775
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—610 2 Claims



1. A shielding unit of a network connector, said connector including an elongated hollow casing having a top cover, a bottom, a side wall connected between said top cover and said bottom so as to define said elongated casing, and a connecting end, said hollow casing further having at least two first inlet holes formed through said side wall adjacent to said connecting end, said shielding unit including a main shielding member mounted in said hollow casing adjacent to said connecting end, said main shielding member having a plate member fixed to said bottom of said hollow casing and at least three spaced upright posts which extend from said plate member toward said top cover of said hollow casing so as to define at least two gaps, said gaps being respectively communicated with said first inlet holes;

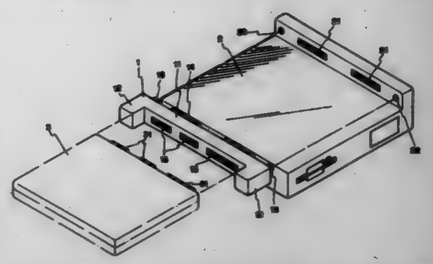
the improvement comprising: said shielding unit further including at least two auxiliary shielding plates connected detachably to said upright posts of said main shielding member, said auxiliary shielding plates cooperatively forming a wall body so as to close said gaps, one of said auxiliary shielding plates having a second inlet hole.

5,290,178

DOCKING STATION APPARATUS FOR PORTABLE COMPUTER

Hsi K. Ma, 4F., No. 48, Sec. 2 Chung Cheng Rd., Taipei, Taiwan

Continuation of Ser. No. 848,197, Mar. 10, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 77,492
Int. Cl.[5] H01R *25/00*
U.S. Cl. 439—652 1 Claim



1. A docking apparatus for electrically connecting a plurality of output terminals of a portable computer to a plurality of input terminals of an expansion device, said docking apparatus comprising:

an elongated flat bar having first and second ends, a front face and a rear face;

first and second stop bars each having an associated back face, said stop bars being integrally formed with said flat bar and extending substantially perpendicular to said first and second ends of said flat bar respectively;

a dowel member extending from each of said stop bars substantially perpendicular to said back faces;

a pair of spaced, discrete plug units projecting from one of said front and rear faces of said flat bar for electrically connecting the docking apparatus to an expansion device; and

a plurality spaced, discrete socket units recessed within the other of said front and rear faces of said flat bar for electrically connecting a portable computer to the docking apparatus.

5,290,179

JACK PLUG

Bernhard Weingartner, Feldkirch, Austria, assignor to Neutrik Aktiengesellschaft, Schaan, Liechtenstein

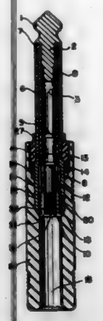
Filed Aug. 14, 1992, Ser. No. 930,850
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4128034; Aug. 24, 1991, 4128098
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—669 20 Claims

1. In a jack plug having a contact bulb, the contact bulb being supported by a shaft having a cylindrical external contact, a cylindrical insulating member being positioned within the external contact and coaxial to the external contact and a cylindrical internal conductive member positioned within the insulating member and electrically connected to the bulb, the external contact having a first diameter, a cylindrical portion connected to the external contact having a diameter larger than the first diameter, and a gripping sleeve for receiving the cylindrical portion, the improvement comprising:

a shoulder formed at the connection of said external contact and said cylindrical portion;

first threads provided on said cylindrical portion adjacent to said shoulder;

second threads positioned within said gripping sleeve for engaging said first threads when said gripping sleeve receives said cylindrical portion, and



tabs being formed in said cylindrical portion by axially parallel notches extending substantially along the axial length of said cylindrical portion, said tabs contacting an inner surface of said gripping sleeve and being compressed when said second threads engage said first threads.

5,290,180

SERIAL LINE CONNECTOR

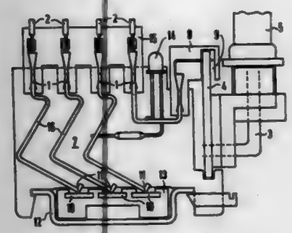
Johann Herrmann, Mallersdorf-Pfaffenberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 9, 1992, Ser. No. 959,186

Claims priority, application European Pat. Off., Oct. 11, 1991, 91117417.5

Int. Cl.[5] H01R *9/26*

U.S. Cl. 439—716 **13 Claims**



1. A serial line connector, comprising:

a circuit board;

a plurality of first connectors coupled to a series of lines;

at least one second connector coupled to at least one of said plurality of first connectors via said circuit board;

at least one connecting lead coupled to at least one of said plurality of first connectors;

a cross-connector coupled between said at least one connecting lead and at least one additional serial line connector; and

such that said at least one connecting lead is coupled to one of said plurality of first connectors that is not coupled to said at least one second connector.

5,290,181

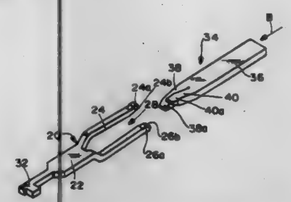
LOW INSERTION FORCE MATING ELECTRICAL CONTACT STRUCTURE

Craig A. Bixler, Elmhurst; Frank A. Harwath, Downers Grove; Richard A. Nelson, Glen Ellyn, and Michael O'Sullivan, Willowbrook, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 29, 1993, Ser. No. 10,951

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—856 **8 Claims**



1. In an electrical connector assembly having a low insertion force, high normal force mating contact structure defined by a male terminal and female terminal, said structure including

said male terminal being an elongate conductor having an upper surface and a lower surface, each of said surfaces including a final contact area joining a forwardly extending lead-in portion,

said female terminal including spaced-apart dual cantilever spring arms with mutually opposing contact portions defining a conductor-receiving mouth therebetween through which the conductor is slidably received, one contact portion engaging the upper surface and the other contact portion engaging the lower surface between an initial position and a final position wherein the opposing female contact portions are in engagement with the final contact area of the male terminal,

whereby, when the contact structure is moved from the initial position to the final position, each of the forwardly extending lead-in portions of the male terminal is effective to gradually and uniformly deflect a respective one of the contact portions of the spring arms, causing the normal force between the contact portions of the spring arm and the upper and lower surfaces of the male terminal to gradually increase,

wherein the improvement in said contact structure comprises:

said lead-in portion of said male terminal having a pair of diverging, non-parallel generally non-deflecting split beams, including

inwardly facing, laterally offset, opposing camming portions adapted to initially engage and gradually deflect said contact portions as the contact structure is moved toward its final position

whereby the gradual and uniform deflection of the contact portions of the spring arms results in a minimal insertion force mating contact structure, and the gradual increase in normal force results in a high contact normal force between the male and female terminals, and whereby greater wiping action over a greater length of the conductor is achieved.

5,290,182

BOAT PROPELLING ASSEMBLY

J. Luis A. Mondelop, R. Carvalho Mendonca, 275 CEP 11070, Brazil

Filed Sep. 3, 1992, Ser. No. 940,288

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—57 **23 Claims**

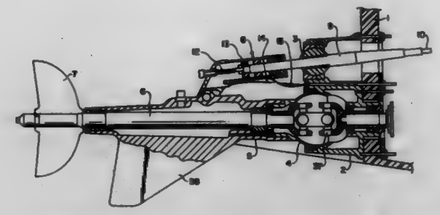
1. A boat propelling assembly comprising:

a propelling member having a thrust ball at an end thereof,

a shaft and a propeller, said shaft being adapted to be coupled to an engine,

a control arm having first and second coaxially disposed ends, a movable ball member being disposed between said first and second ends, said first end being movably coupled to said propelling member; and

a support unit adapted to be coupled to an external lower side of a boat stern for housing said thrust ball of said propelling member and said movable ball member of said



control arm so as to integrate articulation of said control arm and said propelling member to permit horizontal and vertical movement of said propelling member,

said second end of said control arm being adapted to extend within an interior of a boat, movement of said second end of said control arm provides horizontal control of said propelling member so as to adjust steering, said control arm providing vertical control of said propelling member upon axial extension of said first end of said control arm so a to adjust propeller submersion.

5,290,183

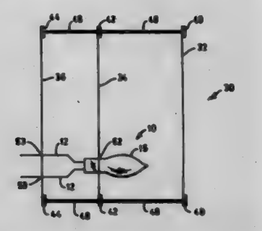
LAMP HOLDING FIXTURE FOR CHEMICAL VAPOR DEPOSITION

Charles E. Mellor, Peabody, and Robert M. Morin, Salem, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 30, 1991, Ser. No. 814,858

Int. Cl.[5] H01J *9/20*

U.S. Cl. 445—58 **19 Claims**



1. A holding fixture for holding at least one electric lamp for coating in a deposition chamber during chemical vapor deposition, said electric lamp comprising a light-transmissive envelope having an outside surface on which said coating will be deposited, at least one end having means for sealing said lamp, and two lead-in wires protruding from said lamp envelope, said holding fixture comprising:

(a) first and second spaced-apart sufficiently rigid wire-mesh screens, said first screen being adapted to receive a first portion of said lamp, said second screen being adapted to receive a second portion of said lamp, such that when properly spaced apart both of said screens retain said lamp in a fixed position with respect to said holding fixture;

(b) means for spacing apart said first and second wire-mesh screens such that said first screen is substantially parallel to said second screen, said first screen may receive said first portion of said lamp, said second screen may receive said second portion of said lamp, and said spacing-apart means do not substantially restrict the free flow of chemical vapor within said deposition chamber parallel to said screens; and

(c) said first and second screens and said means for spacing apart said first and second screens are fabricated from materials which are capable of withstanding the high ambient temperatures occurring during said chemical vapor deposition, which will not react with the chemicals of said chemical vapor deposition, and which will not contaminate said chemical vapor deposition.

5,290,184

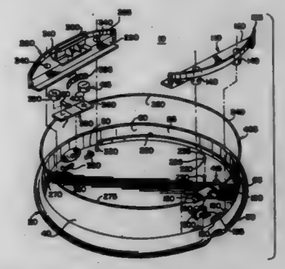
ILLUMINATED FLYING DISK HAVING BALANCED HOUSING FOR SPLIT CIRCUITRY

John M. Balogh, Morton Grove; Donald V. Kress, Orland Park, and Michael Toler, Chicago, all of Ill., assignors to Imagination Factory, Inc., Orland Park, Ill.

Filed Nov. 12, 1992, Ser. No. 974,984

Int. Cl.[5] A63H *27/00, 1/24, 33/26*

U.S. Cl. 446—47 **20 Claims**



1. An illuminated flying disk, comprising:

a disk having a perimeter, said disk further having a top and a bottom;

a lip disposed on said perimeter, said lip having an inside and outside;

an electronic housing and a switch housing symmetrically opposed on said disk at said lip, said electronic housing in electrical communication with said switch housing;

at least one light emitter mounted on said disk; and

said light emitter illuminated by control circuitry having at least one battery disposed in said electronic housing and a switch disposed in said switch housing, said control circuitry further including a capacitor, at least one transistor and at least one resistor, said switch manipulated to cause illumination of said light emitter;

said battery with said electronic housing and said switch with said switch housing constructed to provide approximately equal mass to enable balanced spinning of said illuminated flying disk during spinning flight.

5,290,185

HOOK THROWING BOXING REMOTE CONTROL TOY ROBOT

Seiji Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai, Japan

Filed Dec. 30, 1992, Ser. No. 998,794

Claims priority, application Japan, Sep. 3, 1992, 4-068048[U]

Int. Cl.[5] A63H *13/06, 13/36, 3/20*

U.S. Cl. 446—334 **3 Claims**

1. A toy robot, comprising:

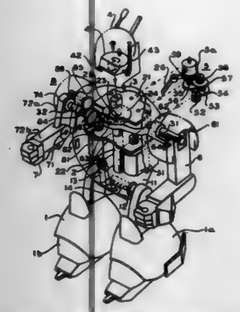
a trunk mounted rotatably about a generally vertical shaft, said trunk provided with a shoulder portion;

a generally horizontal pivot mounted on said shoulder generally orthogonal to and displaced from said vertical shaft;

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an arm mounted pivotally on said pivot and normally extending generally vertically downwardly; and

electric means for rotating said trunk about said shaft and



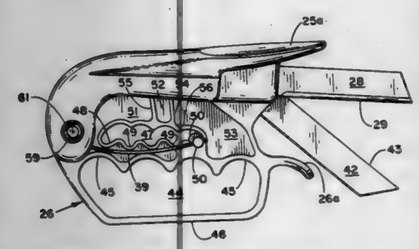
elevating means for elevating said arm about said pivot attached to said shaft to cause said arm to reside generally horizontally and to cause said arm to resemble a boxing hook being performed as said trunk is rotated.

5,290,186

POULTRY PROCESSING TOOL

John Juranitch, P.O. Box 150, Ely, Minn. 55731

Filed Jan. 4, 1993, Ser. No. 102
Int. Cl.[5] B26B *13/04*
U.S. Cl. 452—149 20 Claims



1. A poultry processing device comprising:

(a) a pair of upper and lower elongated cutting blades movable past each other between open and closed positions, each of said blades having a cutting edge extending in crossed cooperative cutting relation when in open position;

(b) a pair of blade-mounting members extending in side-by-side relation and having forward and rearward end portions and each mounting one of said blades upon its forward end portion so as to extend forwardly therefrom in crossed cutting relation to each other;

(c) a pivot member pivotally connecting said blade-mounting members at their rearward end portions in said side-by-side relation at a point below the said cutting edge of said upper blade to enable the same to pivot relative to each other and thereby move said blades with a slicing action relative to each other between said open and closed positions; and

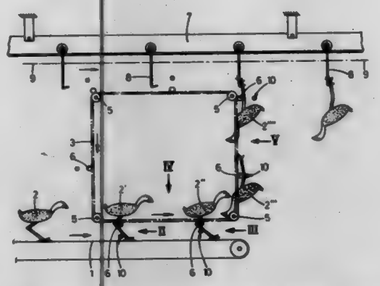
(d) spring means extending between said blade-mounting members and urging them to move said blades toward said open position.

5,290,187

APPARATUS FOR SUSPENDING POULTRY FROM ITS LEGS

Cornelis Meyn, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands

Filed Feb. 22, 1993, Ser. No. 20,558
Claims priority, application Netherlands, Feb. 26, 1992, 9200342
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—178 9 Claims



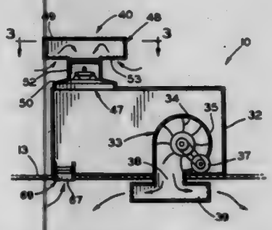
1. Apparatus for suspending poultry from its legs, said poultry being supplied by a conveyor with its head facing in the direction of motion, characterized by at least one lifting bar extending transversely to the conveyor and applicable against the ankle joint of a bird from the forward side, said bar comprising clamping parts cooperating therewith, which are movable between a position releasing the legs and a position clamping the legs between these clamping parts and the lifting bar, wherein the lifting bar follows a first track section extending in parallel to the conveyor and next a second track section moving away from the conveyor.

5,290,188

INLET AND DAMPER SYSTEM FOR AIRHOUSES

Thomas E. Kiser, Fremont; Norman R. Mowery, II, Tiffin, and Thomas G. Schubach, Clyde, all of Ohio, assignors to Professional Supply, Inc., Fremont, Ohio

Continuation-in-part of Ser. No. 732,592, Jul. 19, 1991, Pat. No. 5,146,977. This application Sep. 1, 1992, Ser. No. 938,759
Int. Cl.[5] F24F *3/06*
U.S. Cl. 454—234 17 Claims



1. In apparatus for supplying air to the interior of a building, an enclosure, a first inlet to the enclosure in communication with the outside atmosphere for admitting outside air to the enclosure, a second inlet to the enclosure in communication with the interior of the building for admitting building return air to the enclosure, fan means operable to draw air into said enclosure through said first and second inlets and direct the air drawn into the enclosure into the interior of the building, and shear damper means adjustably coordinating the flow of air through said first and second inlets to admit a substantially

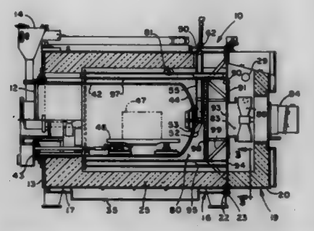
constant volume of combined outside air and building return air to said enclosure in selected proportions.

5,290,189

HIGH TEMPERATURE INDUSTRIAL HEAT TREAT FURNACE

Klaus H. Hemsath, Toledo, and James E. Lyon, Perrysburg, both of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Aug. 26, 1993, Ser. No. 112,145
Int. Cl.[5] F27D *1/18*
U.S. Cl. 432—242 29 Claims



21. A cylindrical high temperature industrial heat treat furnace comprising

a cylindrical heat treat section having a forward and rearward end and defining therein a heat treat chamber;

a cylindrical plenum section sealingly secured to said heat treat casing and defining a cylindrical plenum chamber therein;

a cylindrical closed end, imperforate muffle within said heat treat chamber having a work receiving open end adjacent said heat treat section forward end;

a circular bulkhead in-between said heat treat and said plenum sections having a central under-pressure opening and a plurality of distributor tube pressure exit openings spaced radially outwardly from said return opening,

a plurality of distributor tubes secured to said exit openings and longitudinally extending within said heat treat chamber, each distributor tube having a plurality of jet openings facing said muffle;

fan means and burner means within said plenum chamber for developing a source of wind mass at high pressure and temperatures in excess of about 1700° F. within said plenum chamber, said wind mass exiting said plenum chamber through said exit openings and returning through said central opening, and

a plurality of circumferentially spaced, radially-extending slits formed in said bulkhead extending from a position radially outwardly of said exit openings to the outer edge of said bulkhead; and

slip joint means between said plenum and heat treat sections allowing said bulkhead to expand and contract during operation of the furnace while retaining said bulkhead.

5,290,190

TALKING BOOK

Susan D. McClanahan, 1088 Park Ave. South, New York, N.Y. 10016

Filed Sep. 30, 1992, Ser. No. 953,231
Int. Cl.[5] G09B *5/00*
U.S. Cl. 434—317 10 Claims

1. A talking book comprising:

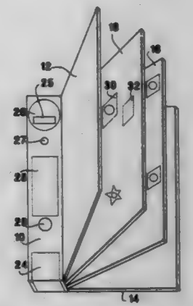
a book with a plurality of pages of printed material, front and back covers and a binding for said pages and said covers, each of said pages comprising a single-ply core overlain with the printed material;

speaker means located in said binding;

a plurality of electronic voice chips located in said binding, each of said chips being operatively connected to said speaker means within said binding;

a source of electrical power located in the binding of the book for supplying electrical power to said chips and to said speaker means internally of said binding; and

two or more pressure sensitive switches carried by each of said pages in a location consistent with the material printed on such page, each of said pressure sensitive



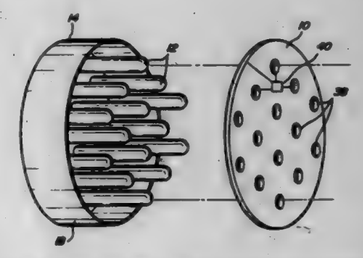
switches being contained within the thickness of said single-ply core and each said single-ply core being sufficiently thick to prevent inadvertent activation of one of said pressure sensitive switches on an underlying page by the actuation of a switch on an overlying page, one of said two or more switches being operated from the front of said page and another being operated from the back of said page.

5,290,191

INTERFACE CONDITIONING INSERT WAFER

Kevin G. Foreman, 13 Tejano Canyon Rd., Sandia Park, N. Mex. 87047; Willie C. Kiser, 4572 Rockaway Loop, Rio Rancho, N. Mex. 87124; Karin J. Lovett, 2815 Tramway Cir., Albuquerque, N. Mex. 87122, and Paul J. Miller, 1909 Newton Pl., NE., Albuquerque, N. Mex. 87106

Continuation-in-part of Ser. No. 895,148, Jun. 5, 1992, Pat. No. 5,181,859, which is a continuation-in-part of Ser. No. 694,262, Apr. 29, 1991, abandoned. This application Aug. 31, 1992, Ser. No. 938,111
Int. Cl.[5] H01R *13/02, 13/68*
U.S. Cl. 439—225 26 Claims

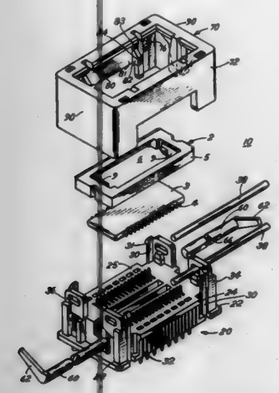


1. A device for use with a wide variety of unmodified off-the-shelf electrical connectors, said device being removably insertable within the confines of a shell of a male connector having a plurality of pins which mate with sockets in a female connector, said device comprising:

a wafer having upper and lower major surfaces, the wafer being sufficiently thin so as to fit between the male and female connectors while permitting mating engagement therebetween, with the perimeter of the wafer being sub-

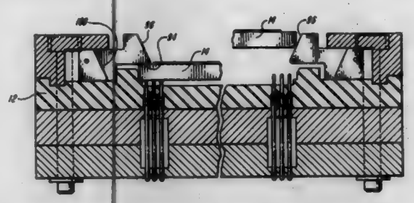
stantially entirely located within the perimeter of the shells of the connectors;
said wafer having a series of holes therein aligned with the pins in the male connector, said wafer being insertable into the male connector so that the pins extend through the holes;
contact means for making electrical contact with at least one of the pins as they extend through the holes in the wafer;
electrically conductive means on at least one surface of the wafer for providing an electrical conductive path between the contact means and other pins or the periphery of the wafer, for providing an electrical connection between at least one of the pins of the male connector and other pins therein or the shell of the male connector; and
whereby the wafer is inserted into the shell of the male connector to provide conditioning of signals on the pins thereof when mated with the female receptacle.

5,290,192
CHIP CARRIER SOCKET
Leonard K. Espenshade, Harrisburg; Richard L. Marks, Mechanicsburg; Donald W. Milbrand, Jr., Mechanicsburg, and Mark J. Zitto, Mechanicsburg, all of Pa., assignors to Wells Electronics, Inc., South Bend, Ind.
Filed Sep. 28, 1992, Ser. No. 951,795
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 **4 Claims**



1. A socket for housing an integrated circuit having a body and a plurality of outwardly extending leads said socket comprising
a base,
a plurality of resilient electrically conductive contacts for retractable engagement with said leads, each contact retained in said base,
a top movably connected to said base and having a central opening therein for insertion of said integrated circuit,
a pair of elongated rollers for shiftably securing a carrier to said socket,
said top coacting with said rollers for shifting said rollers between a normally secured position wherein said rollers overlie said body to secure said integrated circuit in place and an unsecured position to allow said integrated circuit to be removed or inserted,
actuator means engaging said contacts, said top coacting with said actuator means for causing the actuator means to shift said contacts between a first position contacting said leads and a second position spaced from said leads.

5,290,193
HIGH DENSITY GRID ARRAY TEST SOCKET
Jay Goff, Warwick, R.I., and Mark E. Lewis, Mansfield, Mass., assignors to Augat Inc., Mansfield, Mass.
Division of Ser. No. 804,127, Dec. 6, 1991, Pat. No. 5,205,742, which is a continuation-in-part of Ser. No. 748,505, Aug. 22, 1991, Pat. No. 5,213,472. This application Jan. 5, 1993, Ser. No. 622
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—331 **4 Claims**



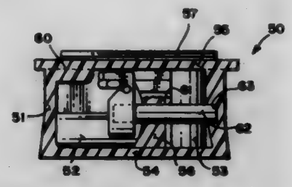
1. A high density contact test socket comprising:
a contact socket assembly having an insulative portion, said insulative portion having a plurality of holes disposed therein;
a plurality of resilient contacts disposed in at least some of said plurality of holes, said plurality of resilient contacts each comprising a contact tip and a separable contact base; and
an automatically actuatable cover adapted to be disposed on said contact socket assembly and adapted for applying sufficient pressure on a component installed in said contact socket assembly said cover comprising a plurality of linearly actuatable snap latches disposed in opposed pairs, each of said plurality of linearly actuatable snap latches including a first inclined surface, a second inclined surface and a bottom surface, said first inclined surface contacting at least a portion of a device being installed in said test socket which linearly actuates and separates an opposed pair of snap latches, said bottom surface contacting at least a portion of said device to maintain said device in contact with each said contact tip of said plurality of resilient contacts and said second inclined surface being accessible to linearly actuate and separate said opposed pair of snap latches to permit removal of said device from said contact socket assembly.

5,290,194
SWIM FIN WITH DIFFERENTIAL STIFFNESS CHARACTERISTICS
Thomas M. Sneddon, Panorama City, and Antoine J. Bordier, Studio City, both of Calif., assignors to Kransco, San Francisco, Calif.
Filed Apr. 16, 1993, Ser. No. 48,473
Int. Cl.[5] A63B *31/10*
U.S. Cl. 441—64 **7 Claims**



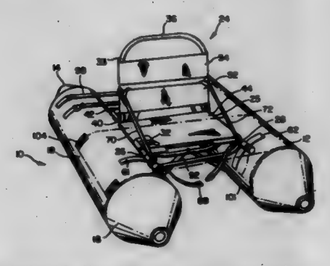
1. A swim fin suited for attachment to a user's foot, said fin comprising:
a shoe portion including a foot-receiving pocket, said pocket including a sole portion which underlies the forepart of the user's foot and that extends forwardly to a joinder zone located forwardly of the user's toes, and said pocket further including an overlying expanse which overlies the forepart of the user's foot, said expanse having a resilient toe region which joins with said sole portion at said joinder zone and which extends rearwardly from said joinder zone and which covers the user's toes and a less resilient instep region which covers the instep of the user's foot, said sole portion and overlying expanse being molded as a unitary body from elastomeric material; and
a blade portion extending from said shoe portion, said blade portion being integrally joined to said instep region to provide for instep-directed blade portion control.

5,290,195
RELEASABLE ANCHOR PLUG FOR WATERSPORT BOARDS
Timothy B. Prickett, c/o 58-304 Kam Hwy., Sunset Beach, Haleiwa, Hi. 96712
Continuation-in-part of Ser. No. 779,064, Oct. 17, 1991, Pat. No. 5,199,916. This application Apr. 5, 1993, Ser. No. 41,574
Int. Cl.[5] B63B *35/79*
U.S. Cl. 441—75 **25 Claims**



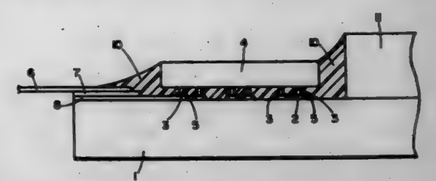
1. An anchor plug comprising:
a substantially cylindrical body element having a closed top, bottom, and sidewall;
first and second cavities within said body, separated by an interior wall;
a leash pin mounted for slidable movement in and with respect to said cavities, through an opening in said interior wall;
an actuator mounted within said first cavity for effecting slidable movement of said leash pin;
a recess in said second cavity for receiving said leash pin in a leash holding position; and
an opening to each of said first and second cavities just below said closed top of said body element, allowing access to said actuator and to said leash pin within said second cavity.

5,290,196
INFLATABLE FLOAT DEVICE
Brian V. Steel, 2604 Deidra Circle North, Tacoma, Wash. 98407
Filed Nov. 25, 1992, Ser. No. 981,804
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—130 **14 Claims**



1. An inflatable flotation apparatus, comprising:
inflatable flotation means having an open center area;
a frame assembly having a first, relatively flat, backpack configuration position and a second, seat configuration position, the frame assembly being movable between said first and second positions when the flotation means is inflated;
means attachable to the apparatus which permits the apparatus to be carried on the back of a user when the frame assembly is in its backpack configuration position and the flotation means is inflated; and
elements carried on the frame assembly to support a user when the frame assembly is in its seat configuration position.

5,290,197
METHOD FOR MOUNTING A WIRING BOARD ON A LIQUID CRYSTAL DISPLAY SUBSTRATE
Yoshinao Ohnuma, Nara, and Yasunobu Tagusa, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 12, 1992, Ser. No. 974,902
Claims priority, application Japan, Nov. 18, 1991, 3-301808
Int. Cl.[5] H01L *23/28*
U.S. Cl. 445—24 **8 Claims**



1. A method for mounting a semiconductor chip and a wire board on a liquid crystal display substrate having a first connecting terminal for the semiconductor chip and a second connecting terminal for the wire board and the semiconductor chip, the method comprising the steps of:
electrically connecting electrodes of the semiconductor chip to the first connecting terminal and to a first end of the second connecting terminal;
bonding the wire board to a second end of the second connecting terminal through a thermo-setting layer of anisotropic conductivity; then
filling gaps present between the liquid crystal display substrate and the semiconductor chip with a first application of a thermo-setting epoxy resin so as to seal the first connecting terminal therein;
filling the connecting part of the wire board to the second connecting terminal with a second application of a thermo-setting epoxy resin so as to cover the connecting part therein, the first and second applications of the resins resulting in a substantially continuous flow of the resins between the semiconductor chip and the wire board; and
hardening the first and second applications of the thermo-setting epoxy resins by heat.

5,290,198
NURSING DOLL WITH SOUND MEANS
Toshiaki Nakayama, Tokyo, Japan, assignor to Yugen Kaisha Nakashou Giken, Tokyo, Japan
Filed Aug. 17, 1990, Ser. No. 569,413
Claims priority, application Japan, Aug. 19, 1989, 1-96868[U]
Int. Cl.[5] A63H *3/28*
U.S. Cl. 446—297 **5 Claims**

1. A doll having a body of a desired shape and a mouth and having a sensor for determining the insertion of a top portion of a nursing bottle and which causes said doll to emit a bottle drinking sound upon insertion of the bottle in the mouth of said doll, a crying sound if the bottle is removed too soon, a satisfaction sound if the bottle remains in the mouth of said doll for

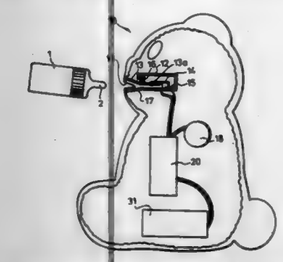
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a preset period of time, and a fourth sound which can be hand activated, said doll comprising:

a nursing body sensor having a movable portion positioned within the mouth, said movable portion pivoting in response to insertion of a top portion of said nursing bottle into the mouth;

a contact point secured to one end of said movable portion, said contact point pivoting with said movable portion;

a stationary contact member engaged by said contact point when said movable portion is pivoted by said top portion of said nursing bottle when it is inserted into the mouth to generate a first signal to initiate the bottle drinking sound;



a time decision circuit activated by said first signal to generate a first decision signal for the preset period of time after which said first decision signal is terminated and said time decision circuit generates a second decision signal;

first and second timer circuits, said first timer circuit responsive to said first decision signal generated by said time decision circuit to generate a second signal to initiate the crying sound; and said second timer circuit responsive to said second decision signal to generate a third signal to initiate the satisfaction sound;

an addressing circuit for generating an address in response to said first, second, and third signals; and

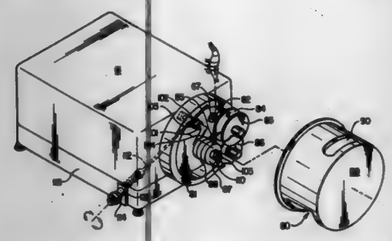
a sound emitting apparatus placed within said doll for emitting the various sounds.

5,290,199

APPARATUS FOR DEVEINING SHRIMP

Donald R. Morris, Greenville, Tex., assignor to Prawnto Shrimp Machine Co., Caddo Mills, Tex.

Filed Apr. 26, 1993, Ser. No. 53,904
Int. Cl.[5] A22C *29/02*
U.S. Cl. 452—3 **10 Claims**



1. In an apparatus for deveining shrimp of the type having a housing, a motor within said housing, means external to said housing for gripping and propelling said shrimp, means external to said housing and adjacent said gripping and propelling means for cutting the sand vein from said shrimp, and means for adjusting the position of said cutting means in relation to said shrimp, the improvement wherein:

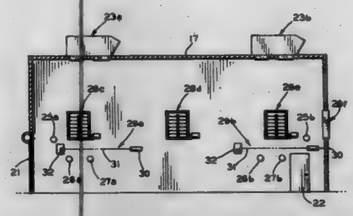
said a rotating shaft and a sealed journal supporting shaft for adjusting said cutting means in relation to said shrimp includes means for preventing debris from said shrimp from entering said housing.

5,290,200

DETECTION AND EVACUATION OF ATMOSPHERIC POLLUTANTS FROM A CONFINED WORK PLACE

Thomas E. Kiser, Fremont, Ohio, assignor to Professional Supply, Inc., Fremont, Ohio

Filed Mar. 6, 1991, Ser. No. 665,352
Int. Cl.[5] F24F *7/007*
U.S. Cl. 454—229 **8 Claims**



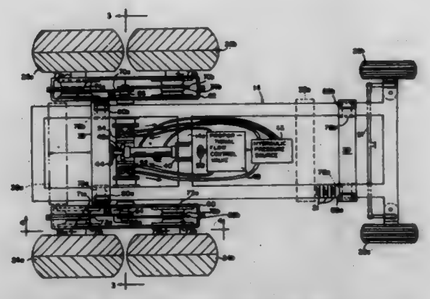
1. A method of maintaining atmospheric conditions within desired parameters throughout an enclosed building having a localized area in which airborne contaminants are periodically generated, comprising admitting outside air to the building interior at a plurality of first locations, at least one of said first locations being adjacent said localized area, controlling the admission of outside air at said first locations to maintain the atmospheric pressure throughout the interior of said enclosed building above the atmospheric pressure outside said building, periodically determining a selected atmospheric condition within said localized area, the step of periodically determining a selected atmospheric condition including detecting the level of visible airborne pollutants by emitting a high frequency radio signal within said localized area and utilizing the portion of said signal reflected by the airborne pollutants for determining the level of visible airborne pollutants, comparing the determined atmospheric condition with a predetermined desired condition for said localized area, discontinuing admission of conditioned air and exhausting atmosphere from the building interior at said one of said first locations in response to a noted deviation of said atmospheric condition from said desired condition, and increasing the admission of outside air to the building interior at at least one other of said first locations to maintain the atmospheric pressure in said localized area above the atmospheric pressure outside said building, an air handling unit being positioned at each said first location, said air handling unit at said at least one of said first locations comprising a dump mode unit, each said air handling unit including a first inlet port for controllably admitting outside air, a second inlet port for controllably admitting return air from the building interior, and a third outlet port through which air is selectively and controllably admitted to the interior of the building, said dump mode air handling unit further including a fourth outlet port through which air withdrawn from the building interior through said second port is selectively discharged from the building interior, including, in response to the noted deviation, the sequential steps of closing said first inlet port of said dump mode air handling unit, opening said second inlet port, opening said fourth outlet port, and closing said third outlet port whereby airborne contaminants are withdrawn from said localized area through said second port and discharged from said enclosed building through said fourth port.

5,290,201

COMBINE WITH MMOVEABLE BODY AND TANDEM DRIVE WHEELS

Henry L. Tesker, 2640 Shady Lane Rd., Sankville, Wis. 53080

Filed Jun. 11, 1992, Ser. No. 897,047
Int. Cl.[5] A01D *41/02, 67/00, 69/03*; B62D *61/10*
U.S. Cl. 460—116 **30 Claims**



1. A combine for harvesting grain comprising:

a lower support frame having a plurality of wheels including first and second pairs of forward tandem wheels and an aft pair of steerable wheels;

drive means coupled to said forward tandem wheels for displacing the combine;

an upper body including a forward header assembly for receiving grain-bearing crops, an intermediate crop threshing arrangement for separating the grain from crop residue, and a bin for storing the thus separated grain;

coupling means for connecting said upper body to said lower support frame in a sliding manner; and

displacement means coupled to said lower support frame and to said upper body for displacing said upper body between a forward position on said lower support frame wherein said upper body is disposed primarily over said forward tandem drive wheels for improved traction and stability and an aft position on said lower support frame wherein an increased portion of said upper body is disposed over said aft steerable wheels for improved maneuverability of the combine.

5,290,202

TELESCOPIC UNIVERSAL TRANSMISSION JOINT EMPLOYING INTERMEDIATE BLOCK ELEMENTS HAVING CYLINDRICAL AND SPHERICAL BEARING SURFACES

Michel Orain, Conflans-Ste-Honorine, France, assignor to Glaenzer Spicer, Poissy, France

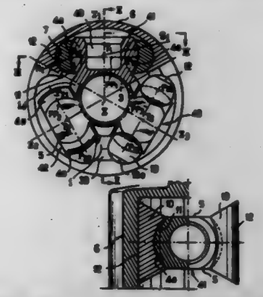
Filed Oct. 26, 1990, Ser. No. 602,972
Claims priority, application France, Nov. 17, 1989, 89 15105
Int. Cl.[5] F16D *3/205*
U.S. Cl. 464—111 **16 Claims**

1. A telescopic universal tranamission joint, comprising:

a first element having an axis and six complementary and substantially spherical bearing regions having centers distributed about said axis of said first element;

a second element having an axis and six substantially cylindrical longitudinal tracks of complementary profile having axes thereof distributed about said axis of said second element; and

six intermediate elements connecting said first element to said second element in an articulated and telescopic manner, each said intermediate element comprising a substantially spherical surface bearing slidably on a respective one of said six complementary and substantially spherical bearing regions of said first element and a surface of substantially circular cross-section, comprising a cylindrical surface, which bears on a respective one of said six substantially cylindrical longitudinal tracks of complementary profile of said second element, wherein each said



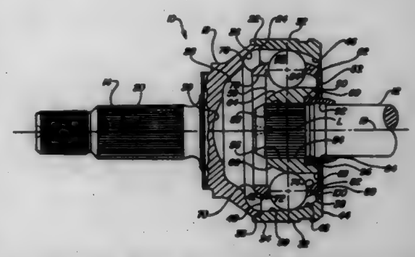
intermediate element is a block and said cylindrical surface of said block bears permanently and slidably on the respective said substantially cylindrical longitudinal track of said second element.

5,290,203

CONSTANT VELOCITY UNIVERSAL JOINT HAVING HIGH STRESS RESISTANCE

Werner Krude, Oxford, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Continuation of Ser. No. 677,358, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 384,836, Jul. 25, 1989, abandoned. This application May 14, 1992, Ser. No. 884,040
Int. Cl.[5] F16D *3/223*
U.S. Cl. 464—145 **22 Claims**



1. A constant velocity universal joint for use between a driven shaft and driving shaft for transmission of power from said driving shaft to said driven shaft, said constant velocity universal joint comprising:

an inner joint member having a first planar end, a second planar end spaced from said first planar end and an exterior spherical surface between said first and second planar ends, said inner joint member further having an axis of symmetry normally disposed to said first and second planar ends, and an aperture located about said axis of symmetry;

a drive means integral with one of said driven and driving shaft and said aperture to rotate said inner joint member;

a first plurality of longitudinally extending circumferentially spaced ball races formed in said spherical surface of said inner joint member;

an annular outer joint member surrounding said inner joint member, said annular outer joint member having one end, an opposite end, a hub abutment face, an outer cylindrical surface, an interior spherical surface, a first chamfered surface at the junction of said one end and said interior spherical surface, said interior spherical surface exteading

completely between said first chamfered surface and said hub abutment face and a central aperture defined by said interior spherical surface and said first chamfered surface, said outer joint member further having a centrally positioned axis therethrough;

a second plurality of longitudinally extending circumferentially spaced ball races formed in said interior spherical surface of said annular outer joint member, each ball race of said second plurality of longitudinally extending circumferentially spaced ball races of said annular outer joint member being aligned with an associated one of said first plurality of longitudinally extending circumferentially spaced ball races of said inner joint member;

a plurality of spherical balls disposed in said first plurality of longitudinally extending circumferentially spaced ball races of said inner joint member, each one of said plurality of spherical balls further extending into a respective one of said second plurality of longitudinal extending circumferentially spaced ball races of said annular outer joint member to provide a driving engagement between said inner and said annular joint members;

cage means interposed said inner joint member and said annular outer joint member, said cage means having an outer spherical surface in intimate contact with said interior spherical surface of said annular outer joint member; an inner spherical surface in intimate contact with said exterior spherical surface of said inner joint member; and a plurality of apertures, equal in number to said first and second plurality of longitudinally extending circumferentially spaced ball races, interposed between said outer spherical surface and said inner spherical surface for receiving each of said plurality of spherical balls;

said second plurality of longitudinally extending circumferentially spaced ball races of said annular outer joint member defining a converging contoured part-spherical part-cylindrical surface, said part-cylindrical surface being adjacent said hub abutment face of said annular outer joint member and said part-spherical surface being at said one end of said annular outer joint member such that the wall thickness between said second plurality of longitudinally extending circumferentially spaced ball races and said cylindrical surface is greater at said one end of said annular outer joint member than at said hub abutment face and such that as each of said plurality of spherical balls move along said second plurality of longitudinally extending circumferentially spaced ball races from said opposite end of said annular outer joint member towards said one end of said annular outer joint member, said plurality of spherical balls traverse along said part-cylindrical surface of said second plurality of longitudinally extending circumferentially spaced ball races to said converging part-spherical surface of said second plurality of longitudinally extending circumferentially spaced ball races; and

a hub abutting said hub abutment face and attached to said opposite end of said annular outer joint member, said hub having a centrally positioned cavity mating with said part-cylindrical surface of said second plurality of longitudinally extending circumferentially spaced ball races of said annular outer joint member.

5,290,204

COMPACT PEDALING SPORTING APPARATUS

Michael Lee, 7F, No. 168, Nanking East Road, Section 4, Taipei, Taiwan

Filed Nov. 30, 1992, Ser. No. 983,311
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—53 **5 Claims**

1. A compact pedal exercise apparatus comprising:

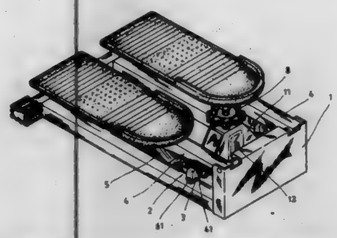
a) a stand;

b) a swing mechanism attached to the stand, the swing mechanism comprising:

i) a generally "U" shaped height adjustment plate movably attached to the stand;

ii) a lever pivotally attached to the height adjustment plate, the lever having opposite ends and a rod extending from each opposite end; and,

iii) means to adjust the position of the height adjustment plate and lever with respect to the stand; the means including a first screw secured to the height adjustment plate and a height adjusting knob operatively associated with the screw;



c) a pair of pedal swing rods attached to the stand for user support; and,

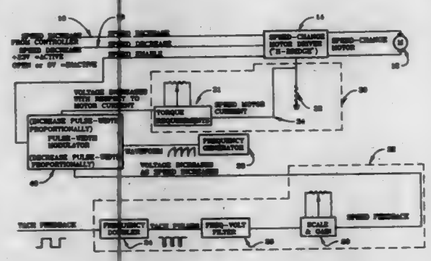
d) a pair of cross-motion link members each pivotally connected to a respective one of the pedal swing rods and to the rod extending from an end of the lever.

5,290,205

D.C. TREADMILL SPEED CHANGE MOTOR CONTROLLER SYSTEM

Bruce D. Densmore, Seattle; Lester A. Hass, Duvall; John T. Rotunda, Renton, and Gregory W. Fissel, Seattle, all of Wash., assignors to Quinton Instrument Company, Seattle, Wash.

Filed Nov. 8, 1991, Ser. No. 790,750
Int. Cl.[5] A63B *22/02, 24/00*
U.S. Cl. 482—54 **29 Claims**



1. A treadmill comprising:

a) an A.C. drive motor having a rotating member;

b) a treadmill belt;

c) means for connecting said rotating member to said treadmill belt so that rotation of said rotating member causes said treadmill belt to move, said means for connecting including means for varying the speed of said treadmill belt when said rotating member is rotating at a constant speed;

d) a D.C. speed change motor connected to said means for varying so that said D.C. speed change motor causes said means for varying to vary the speed of said treadmill belt; and,

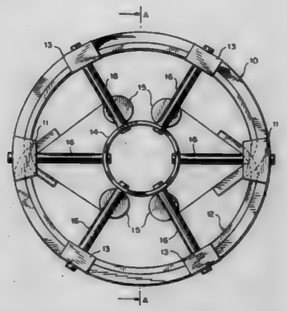
e) means for controlling said D.C. speed change motor including means for sending a varying voltage signal to said D.C. speed change motor for varying the rate of rotation of said D.C. speed change motor so that said D.C. speed change motor operates in response to said means for sending to cause a constant rate of change of speed of said treadmill belt.

5,290,206

BAR-BAND VARIABLE CIRCUMFERENCE ADJUSTABLE-DRIVE PULLEY MECHANISM

James A. Graham, 3712 N. Broadway, Chicago, Ill. 60613

Continuation-in-part of Ser. No. 760,188, Sep. 16, 1991, Pat. No. 5,116,282, which is a continuation-in-part of Ser. No. 597,318, Mar. 22, 1990, Pat. No. 5,049,113. This application Feb. 20, 1992, Ser. No. 837,920
Int. Cl.[5] F16H *55/00*
U.S. Cl. 474—49 **5 Claims**



1. A surface system for a variable circumference mechanism, comprising:

a splined, rotatably supported, hollow, axle member having at least one longitudinally extending opening;

a variable diameter traction element carried by said axle member, wherein said traction element includes a pair of outwardly biased frusto-conical pulley members capable of relative axial movement along said axle member;

at least one flexible engaging element for positively contacting power transfer means riding upon said traction assembly; and tensioning means operatively connected to said engaging element, whereby stress exerted upon said tensioning means causes said engaging element to retract into said axle member through said longitudinal opening, so that said flexible engaging element is tightly carried by said traction element through every degree of variation, said frusto-conical pulley halves having at least one slot to allow storage of unused portions of said engaging element;

and wherein said variable circumference mechanism consist of one or more surfaces, wherein part of the surfaces are used as needed to for the circumference, and unused parts of the surface are stored opposite a contact surface of the circumference.

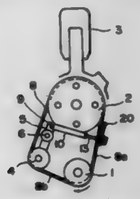
5,290,207

AUTOMATIC TENSION ADJUSTER FOR FAN BELT

Yukio Yamamoto, Oyama; Chukichi Nihei, Yuuki, and Katsuya Fujimoto, Shimotsuga, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/01477, § 371 Date May 19, 1992, § 102(e) Date May 19, 1992, PCT Pub. No. WO91/07611, PCT Pub. Date May 30, 1991
PCT Filed Nov. 14, 1990, Ser. No. 849,445
Claims priority, application Japan, Nov. 22, 1989, 1-135761
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—109 **20 Claims**

1. A fan belt apparatus having an automatic tension adjuster for automatically adjusting the tension of a fan belt during changes in the speed of said fan belt; said fan belt apparatus having a fan belt stretched between a crank pulley, a fan pulley and a tension pulley, and a swingable lever which has a coil spring and which rotatably supports said tension pulley at one end, said coil spring biasing said lever during operation of said fan belt to swing in a first direction to push said tension pulley against said fan belt, wherein said automatic tension adjuster is equipped with an adjusting means which automatically limits the extent to which said lever is permitted to swing, in the



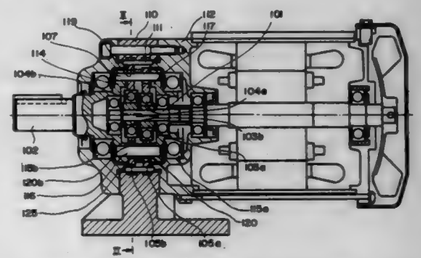
direction opposite to that direction in which said lever is biased by said coil spring to push said tension pulley, when the rotational speed of said crank pulley suddenly lowers.

5,290,208

SERIES OF SPEED INCREASING AND REDUCTION GEAR EMPLOYING AN INSCRIBED MESHING TYPE PLANETARY GEAR CONSTRUCTION

Kiyoji Minegishi, Aichi, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,645
Claims priority, application Japan, Feb. 18, 1992, 4-069218
Int. Cl.[5] F16H *1/28*
U.S. Cl. 475—178 **1 Claim**



1. A series of speed increasing and reduction gear devices employing an inscribed meshing type planetary gear construction comprising a first shaft, an eccentric body provided on the first shaft, an eccentric bearing mounted in an outer periphery of said eccentric body, an external-tooth gear mounted in an outer periphery of said eccentric bearing in a state where said external-tooth gear can be rotated eccentrically ground said first shaft, an internal-tooth gear with which said external-tooth gear is inscribed and meshed, and a second shaft connected to said external-tooth gear through means for transmitting only the rotation component of said external-tooth gear, characterized in that

said series of devices is constituted by an assembly of sub-series of devices in which a speed change ratio of the devices of the sub-series differ from a low speed change ratio to a high speed change ratio but a tie-in dimension of the devices in the sub-series for installation thereof to a mating machine is the same, and

in the same sub-series, a diameter of said first shaft is set to be the same for each one of devices and an outside diameter of said eccentric bearing is set to be the same for each one, each low speed change ratio device comprising a combination of said eccentric bearing having a large inside diameter and said eccentric body having a large diameter whereas each high speed change ratio device comprising a combination of said eccentric bearing having a small inside diameter and said eccentric body having a small outside diameter.

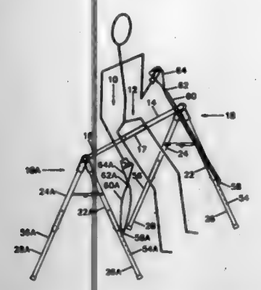
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,209

PUSH AND PULL EXERCISE DEVICE

William T. Wilkinson, P.O. Box 378, Chesapeak City, Md. 21915

Continuation of Ser. No. 771,176, Oct. 4, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,775
Int. Cl.[5] A63B *1/00*
U.S. Cl. 482—38 16 Claims



1. An exercise device comprising two sets of spaced vertical support structures defining an open space therebetween, a horizontal bar adapted for being selectively gripped by the hands of a user or for supporting the user's legs, said horizontal bar being mounted to and spanning said support structures to maintain said support structures spaced from each other, said horizontal bar comprising a plurality of bars slidably mounted against each other to comprise a sliding horizontal bar unit which is adjustable in length for controlling the extent of said space between said support structures, each of said support structures comprising two sets of tubes slidably mounted against each other to adjust the overall height of each of said sets of tubes, each said sets of tubes comprising an upper tube and a lower tube, wherein the space between said supports is unconstrained, a movable lockable stabilizing structure connected to a respective tube of each of said sets of tubes to selectively maintain said sets of tubes in a fixed relation to each other, said stabilizing structure being connected to said upper tubes whereby said stabilizing structure may remain locked when said height of said sets of tubes is adjusted, each of said sets of tubes having an upper end and a lower end, said lower end being adapted to rest on the ground, and said upper end of each of said sets of tubes being pivotally mounted to said horizontal bar to permit said sets of tubes in each of said support structures to be pivoted toward each other in a side by side relationship with all of said tubes being aligned after said stabilizing structure has been unlocked and moved to from a compact unit for storage and transportation when said sets of tubes have been adjusted to their fully contracted shortest height and said sliding horizontal bar unit has been fully contracted to its shortest length and said device has an attachment means which would be allow other exercising attachments to be attached to said device for engaging of exercises.

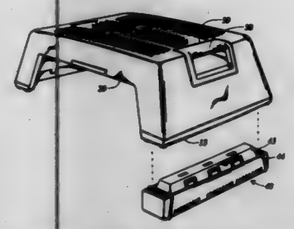
5,290,210

AQUATIC STEP EXERCISE APPARATUS

Peter H. Hand, Atlanta; William J. Saunders, Lithonia; Eric Goldstein, Marietta; James B. Watson, Conyers; J. Charles Lockwood, Atlanta, and J. Douglas Alsup, Conyers, all of Ga., assignors to The Aqua Step Corporation, Atlanta, Ga.

Filed May 15, 1992, Ser. No. 884,424
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—51 17 Claims

1. Step exercise apparatus comprising:
a body having base means to contact a foundation surface so as to provide stable support thereon for the apparatus;
a level step platform associated with the body in elevated relation to the base means and in generally parallel relation to a foundation surface on which the means rests, so that a person can alternately step on and off the step platform from the foundation surface;
sides extending downwardly from the step platform to form a skirt extending below the underside of the platform;
the apparatus having a specific gravity greater than 1.0 so as to sink when immersed in water; and



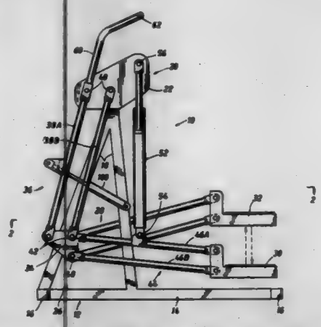
apertures in the step platform to permit a substantial flow of water through the platform when the apparatus undergoes movement within a body of water in a direction normal to the platform, thereby reducing the resistance of the apparatus to such movement.

5,290,211

EXERCISE DEVICE

Kenneth W. Stearns, Houston, Tex., assignor to Stearns Technologies, Inc., Houston, Tex.

Filed Oct. 29, 1992, Ser. No. 968,196
Int. Cl.[5] A63B *22/00*
U.S. Cl. 482—53 30 Claims



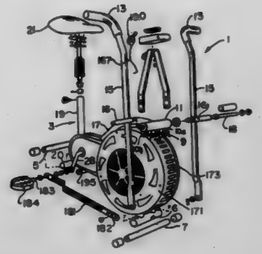
1. An exercise device for simultaneously permitting a combined stair stepping exercise in a generally vertical direction and a cross country skiing exercise in a generally horizontal direction, said exercise device comprising:
support means including a base support;
a pair of spaced foot supports for supporting the feet of a user in a generally upright position;
linkage means connected between said foot supports and said support means for mounting said foot supports for movement in either a generally vertical movement simulating a stair stepping exercise or a generally horizontal movement simulating a horizontal skiing exercise or simultaneously in a stair stepping exercise and a horizontal skiing exercise; and
force resisting means for resisting movement of said foot supports.

5,290,212

EXERCISE CYCLE

Jeffrey D. Metcalf, Albion, Ill., assignor to Roadmaster Corporation, Olney, Ill.

Filed Sep. 3, 1991, Ser. No. 754,063
Int. Cl.[5] A63B *22/12, 69/16*
U.S. Cl. 482—62 15 Claims



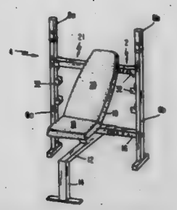
1. An exercise cycle comprising:
a stand;
a wheel assembly mounted on said stand, said wheel assembly including a fan wheel acting as a centrifugal blower, drawing air, intermediate its radial reach and expelling it toward its periphery;
means operated by an operator for revolving said wheel;
damper means for varying the amount of air drawn by said wheel, hence varying the air resistance of said wheel at a given rotational speed; and
a solid disc secured to one side of said fan wheel, said damper means being attached to a fixed element of said stand opposite said solid plate; said fan wheel being rotatably mounted on said axle between said disc and said damper means; said damper means comprising a cowling defining at least one intake opening, and means for varying the size of said opening.

5,290,213

WEIGHT BENCH INCLINE SEAT SUPPORT DEVICE

Jeff Sheikowitz, Florida, N.Y., assignor to Legacy International, Inc., Florida, N.Y.

Filed Mar. 8, 1993, Ser. No. 28,908
Int. Cl.[5] A63B *21/078*
U.S. Cl. 482—104 6 Claims



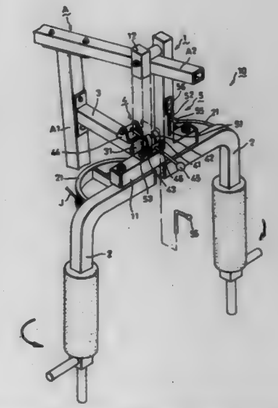
1. Weight bench apparatus, comprising:
a) a pair of spaced substantially vertically extending barbell support arms,
b) a bench seat positioned between said support arms having a back portion which is constructed to move between a plurality of incline positions,
c) a substantially horizontally extending seat back support bar which is constructed to extend between and releasably connect with said support arms in a plurality of vertically spaced positions to selectively support said back portion in a plurality of desired incline positions, said support bar having vertically extending pins at each end thereof,
d) at least one U-shaped support bar receiving member attached to each of said vertically extending barbell support arms in a generally horizontal relationship, each U-shaped support bar receiving member having an aperture on a bottom face thereof for receiving one of said pins of said support bar; and
e) means for selectively varying the horizontal distance uniformly between said support arms and for varying the length of said support bar.

5,290,214

EXERCISER

Tsung-Yu Chen, No. 1-9, Ting-Liao, San Ho Tsuen, Shui-Shang Hsiang, Chiayi Hsien, Taiwan

Filed Apr. 30, 1993, Ser. No. 54,205
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—137 4 Claims



1. An exerciser including a generally horizontal top frame having a front end, a column supporting said top frame, a movable frame mounted on said top frame and movable between said front end of said top frame and said column, said movable frame having two spaced vertical hollow frame sections and a cross frame section interconnecting lowermost ends of said vertical hollow frame sections, two push arms connected pivotally to said movable frame and capable of being pivoted toward each other, and a stop rod extending frontward from said column below said top frame so as to limit movement of said movable frame toward said column, wherein the improvement comprises:
a first locking unit including a curved positioning plate that extends upward from said cross frame section and that is located between said vertical hollow frame sections of said movable frame, said curved positioning plate curving toward said column and having a guide slit extending from an upper end to a lower end thereof and two aligned grooves which are transverse to said guide slit and which are located adjacent to said lower end of said positioning plate, said first locking unit further including a pivot rod having one end mounted pivotally on said stop rod and two opposed horizontal locating projections extending radially outward therefrom, said locating projections engaging respectively said aligned grooves in said positioning plate when said pivot rod is pivoted and inserted selectively into said guide slit to prevent movement of said movable frame relative to said top frame;
each of said vertical hollow frame sections having a longitudinal slot formed therein and a notch extending from one side of said longitudinal slot and being spaced from a lowermost end of said slot;
said movable frame further having two positioning holes

which extend through said lowermost end of a corresponding said vertical hollow frame section and said cross frame section;

each of said push arms having a locking hole which is formed therethrough and which is vertically aligned with a corresponding said positioning hole;

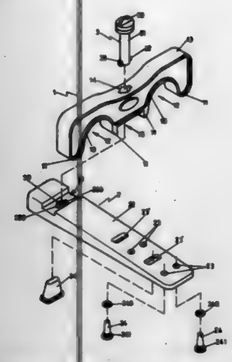
a second locking unit including two generally L-shaped locking rods, each of said locking rods having a vertical end portion disposed inside a respective one of said vertical hollow frame sections and a horizontal end portion which extends out of said respective one of said vertical hollow frame sections through said slot, said locking rods being movable selectively along said slots between a first position, wherein said horizontal end portions of said locking rods are disposed adjacent to said lowermost ends of said slots and said vertical end portions of said locking rods extend through said positioning holes and into said locking holes in order to prevent pivoting movement of said push arms relative to said movable frame, and a second position, wherein said horizontal end portions engage said notches and said vertical end portions cease to extend into said locking holes to permit pivoting movement of said push arms relative to said movable frame.

5,290,215

ABDOMINAL EXERCISE BENCH

Sheng H. Lin, No. 15, Lane 142, Chorng Shyue Road, Tainan, Taiwan

Filed Feb. 26, 1993, Ser. No. 23,085
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—140 3 Claims



1. An abdominal exercise bench comprising:

an upper frame having at least two arched downwardly facing surfaces spaced apart, two openings defined by the arched surfaces, an upper flat elongate surface, a vertical pin hole in a central portion and a square opening in a lower central portion between said two semi-round openings;

an auxiliary base shaped as an elongated rectangular plate, having an upper surface that slopes downwardly from an upper end to a lower end, a rectangular recess in an upper portion, a pin hole in the center of said rectangular recess, and a plurality of retainer holes in a lower portion for a plurality of retainers to pass through, a flat bottom surface and a plurality of square recesses in the bottom surface;

a combining pin having a grip projection on top and a column extending downward and having an elastic gasket fitting around an upper portion and two opposite projections extending outward from a bottom end to conform to the pin hole in the upper frame; and

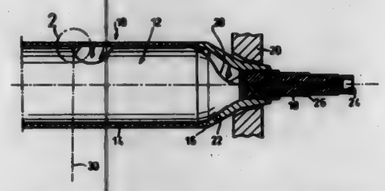
said two semi-round openings of the upper frame capable of being passed through by two feet of a user, who can hook his two feet on said frame, said auxiliary base being temporarily adapted to be kept immovable by something such as a door, said user hooking his feet on said frame, sitting on the floor for making abdominal exercise.

5,290,216

ROLLER FOR SUPPORTING AND/OR DRIVING FLAT PRODUCTS, COMPRISING A SENSOR

Robert Burlion, Thionville; Christian Deutsch, Metz, and Jean-Paul Schmit, Hagondange, all of France, assignors to Sollac, Puteaux, France

Filed Jul. 9, 1992, Ser. No. 910,404
Claims priority, application France, Jul. 10, 1991, 91 08698
Int. Cl.[5] B05C *1/08*
U.S. Cl. 492—11 5 Claims



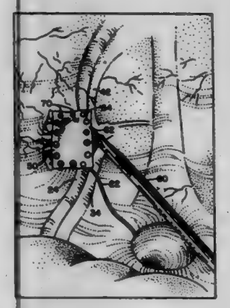
1. A roller for supporting and/or driving flat products or sheets comprising at least one thermocouple, and converting means carried by the roller, comprising, for said at least one thermocouple, a converter converting a voltage signal delivered by said at least one thermocouple into a stabilized current whose magnitude is independent of the resistance of a circuit in which said current flows, and a set of slip rings and fixed collectors, the rings of said set being connected to outputs of said converter so that the stabilized current flows in said set of slip rings and fixed collectors.

5,290,217

METHOD AND APPARATUS FOR HERNIA REPAIR

Luis I. Campos, Allentown, Pa., assignor to Earl K. Sipes, Allentown, Pa.

Filed Oct. 10, 1991, Ser. No. 775,692
Int. Cl.[5] A61F *2/00, 13/00*
U.S. Cl. 600—37 17 Claims



1. A surgical patch, comprising:

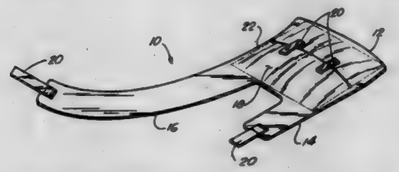
a panel of substantially continuous prosthetic material, dimensioned for introduction into a patient, wherein the panel is provided with a plurality of preformed holes at a peripheral edge, whereby the panel can be engaged and manipulated within the patient via the pre-formed holes, prior to attachment to the patient.

5,290,218

SHOULDER RESTRAINT

Bryan Kilbey, DeFuniak Springs, Fla., assignor to Professional Products, Inc., DeFuniak Springs, Fla.

Filed Nov. 19, 1992, Ser. No. 978,993
Int. Cl.[5] A61F *5/00, 5/37;* A61B *19/00*
U.S. Cl. 602—4 9 Claims



1. A shoulder restraint comprising:

(a) an one-piece main body portion for covering the shoulder area of the user, having a plurality of pockets therein, each of said pockets being sized and configured to accept a hot or cold pack therein, said main body portion being generally planar in configuration and having openings therein to permit insertion and removal of said packs;

(b) a first extension extending linearly from one side of said main body portion, said first extension being of the same material as said main body portion;

(c) a second extension, longer than said first extension, spaced apart from said first extension and extending linearly from the same said side of said main body portion, said second extension being of the same material as said main body portion;

(d) detachable closure means for securing the ends of said first and second extensions to said main body portion; and,

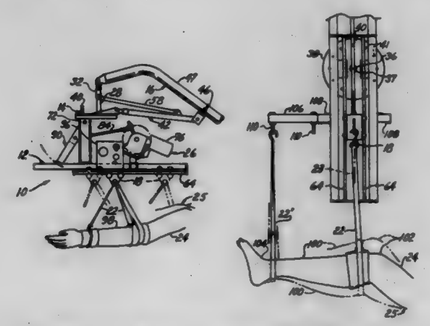
(e) detachable closure means for securing the closure of each of said pockets at said openings in said main body portion.

5,290,219

THERAPY MACHINE

Beryl W. Hetrick, 160 Fisher Ct., Calimesa, Calif. 92320

Filed Nov. 30, 1992, Ser. No. 983,397
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—32 14 Claims



14. Apparatus for exercising a bed-ridden patient, comprising:

(a) a frame;

(b) a load member movably supported by the frame and having a load attachment point for movably carrying a limb portion of the patient, the load member comprising a wheeled carriage, the frame including track means for rollably guiding the carriage;

(c) drive means for repetitively cycling the load member in a carriage path relative to the frame, the drive means comprising:

(i) a first crank member and motor means for driving the first crank member; and

(ii) a first rigid connecting rod pivotally connected to the first crank member for reciprocating the carriage along the track means;

(d) base means for supportively anchoring the apparatus, comprising a clamp member for clamping to an external hoist arm, and a lift attachment member for supportively connecting an extremity of the hoist arm;

(e) pivot means for adjustably orienting the frame in a fixed position relative to the base means, the pivot means having a first position for horizontally orienting the track means for lateral movement of the limb portion and a second position for vertically orienting the track means for raising and lowering the limb portion;

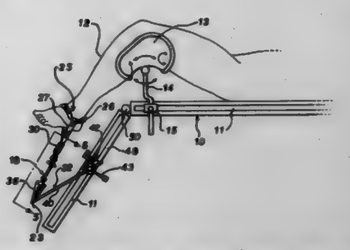
(f) a platform member, the frame being supported by the platform member, the lift attachment member being fixably located relative to the platform member, a clamp arm pivotally connected between the clamp member and the platform member, and clamp lock means for fixably locating the clamp arm in a plurality of angular orientations relative to the platform member.

5,290,220

NON-INVASIVE DISTRACTION SYSTEM FOR ANKLE ARTHROSCOPY

James F. Guhl, 13455 Elmhurst Drive Pkwy., Elm Grove, Wis. 53122

Filed Mar. 16, 1992, Ser. No. 851,750
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—33 5 Claims



1. A non-invasive distraction system for ankle joint arthroscopy comprising in combination:

an operating table for supporting a patient in a generally supine position;

a leg holder adapted to adjustably support the leg of the patient posteriorly of the knee joint to maintain the leg in a selected position between slightly flexed and acutely flexed, said leg holder attached directly to one edge of the operating table below the knee and including means of adjusting the height of the knee joint above the table and for pivoting the leg holder in each of three mutually perpendicular planes;

distraction means including an elongate body having an axially adjustable length and having first and second ends, said first end adapted to be attached to the foot of the patient;

a manually operable lever arm having one end attached to the table and an opposite end attached to the second end of said elongate body;

an adjustable clamp attached to one edge of said table, said clamp including first clamping means for selective positioning of said clamp along said table edge and second clamping means for attaching the opposite end of said lever arm to the table to permit the lever to be rotated manually about said one end in a generally vertical plane and clamped in a selected position imposing a tensile load

on said elongate body to provide an initial level of ankle joint distraction; and,

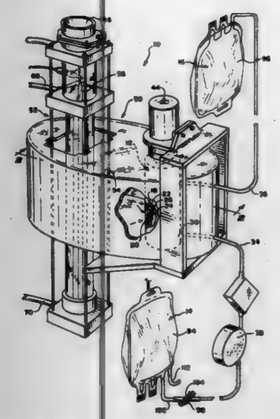
means for adjusting the length of said elongate body to vary said initial level of ankle joint distraction.

5,290,221

SYSTEMS FOR ERADICATING CONTAMINANTS USING PHOTOACTIVE MATERIALS IN FLUIDS LIKE BLOOD

Ludwig Wolf, Jr., Inverness; John T. Foley, Wheeling, and William R. Bratten, Lake Villa, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 630,863, Dec. 20, 1990, abandoned.
This application Dec. 17, 1992, Ser. No. 994,094
Int. Cl.[5] C12N 7/00
U.S. Cl. 604—4 15 Claims



1. A device for treating a fluid carrying a contaminant to which a photoactive material has been bound, the material being activated by exposure to radiation within a prescribed wavelength range to eradicate the contaminant, the device comprising a treatment chamber shaped as an arcuate gap that extends between an outer cylindrical wall and an inner cylindrical wall spaced from the outer wall, the outer wall being essentially transparent to radiation within the prescribed wavelength to pass the radiation into the gap, the outer wall comprising a exterior wall of a generally flexible container and the inner wall comprising the opposite exterior wall of the flexible container and a generally cylindrical preformed interior platen about which the flexible container has been attached with the exterior container wall exposed.

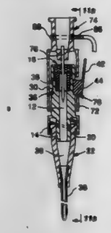
5,290,222

INJECTION PORT CONNECTOR WITH ROTATABLE LOCKING LUG

Jiyu Feng, and Esther C. Feng, both of 201 S. 3rd Ave., #4, Arcadia, Calif. 91006

Filed Oct. 15, 1991, Ser. No. 776,440
Int. Cl.[5] A61M 37/00
U.S. Cl. 604—86 13 Claims

1. An injection port connector comprising: a tubular body having a coaxial fluid passage therethrough from a distal port to a proximal port, said proximal port being closed by a fluid-tight self-sealing means to form an injection port, said injection port being in fluid connection with said distal port through said fluid passage; an annular recess around the outside of said tubular body adjacent said injection port, a lug-shaped locking means being integrally formed with a band, said band being deformable to fit into said recess on the outside of said tubular



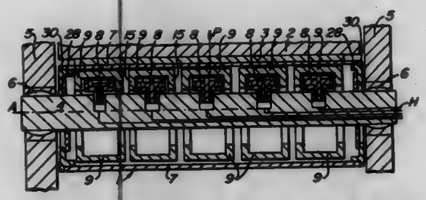
body; whereby said lug-shaped locking means is rotatable relative to but not removable from said tubular body.

5,290,223

DEFLECTION CONTROLLED ROLL

Rolf Lehmann, Rudolfstetten, Switzerland, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Apr. 15, 1993, Ser. No. 48,443
Claims priority, application Switzerland, Sep. 4, 1992, 02778/92
Int. Cl.[5] B21B 27/00
U.S. Cl. 492—7 10 Claims



1. Deflection controlled roll (1) having a roll jacket (7) which is rotatable about a non-rotatable carrier (4), said roll jacket (7) being supported against said carrier (4) by at least one hydraulic supporting element (8), which is mounted by means of at least one hydrostatic bearing pocket (11, 18, 20) on a bearing race (9) corotating loosely in said roll jacket (7) and exerting a pressing force on said roll jacket (7) via said bearing race (9), characterized in that said supporting element (8) has at least one hydraulic bearing surface (19, 21, 26) which forms an angle with the axial direction (A) of said roll jacket (7) and in that said bearing race (9) has a similarly oriented running surface (25, 29, 31) cooperating with the bearing surface which, together with the bearing surface of said supporting element (8), forms an axial guideway for said bearing race (9).

5,290,224

CARDBOARD BOX ASSEMBLY MACHINES

Jose Boix Jaen, Elche, Spain, assignor to Boix Maquinaria, S.A., Elche, Spain

Filed Apr. 30, 1992, Ser. No. 876,773
Claims priority, application Spain, Jul. 5, 1991, 9101580; Jul. 10, 1991, 9102194
Int. Cl.[5] B31B 1/52; B65H 3/08
U.S. Cl. 493—183 4 Claims

1. An improvement in machines for assembling cardboard boxes from cardboard sheets having flaps, comprising:

means for feeding the cardboard sheets;

means for lifting the flaps of the sheets when forming the boxes, said feeding means comprising at least two vacuum suction pads for moving each sheet from a stack of sheets to a folding area,

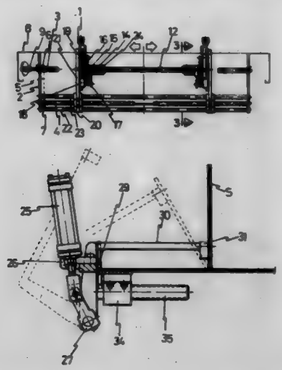
means for adjusting the distance between said suction pads, said adjusting means comprising a pair of parallel threaded spindles;

means for rotating said spindles;

a chain connecting said spindles, such that said spindles rotate simultaneously;

said adjusting means further comprising:

a rotatable striated shaft generally parallel to said spindles and connected to a first of said spindles by at least a first connecting means, said first connecting means being connected to said shaft and to said first spindle such that



when said spindles are rotated said first connecting means travels along said first of said spindles and slides on said shaft;

at least one arm slidably engaged to said shaft and fixed to said first connecting means such that when said spindles are rotated, said first connecting means moves along said first spindle and said shaft and such that when said shaft rotates, said arm is caused to tilt simultaneously;

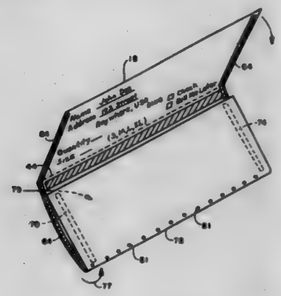
means for supporting said suction cups connected to said arm such that when said arm tilts, said support means moves in a generally vertical direction.

5,290,225

METHOD OF MAKING A SELF MAILER WITH RETURN ENVELOPE FORMED FROM A SINGLE CUT SHEET

Zo Younger, Barrington, Ill., assignor to Uarco Incorporated, Barrington, Ill.

Filed Apr. 29, 1992, Ser. No. 875,434
Int. Cl.[5] B31B 1/88
U.S. Cl. 493—188 9 Claims



1. A method of making a single sheet business form construction printable in an impact or a non-impact printer comprising the steps of:

a) providing a rectangular base sheet of face stock having a front, a back, a top, a bottom, and first and second sides;

b) placing a first line of weakening adjacent and parallel to the first side of the rectangular base sheet to define a first tear strip on the front of the rectangular base sheet between said first line of weakening and said first side;

c) placing a second line of weakening adjacent and parallel to said second side to define a second tear strip on the front of the rectangular base sheet between said second line of weakening and said second side;

d) placing a first transverse line of weakening extending between the first and second line of weakening;

e) locating a lateral strip of adhesive between the first transverse line of weakening and the bottom;

f) applying adhesive to the first and second tear strips, and applying first and second thin strips of adhesive just inwardly of the first and second lines of weakening, respectively, between the first transverse line of weakening and the bottom;

g) folding the rectangular base sheet along a base fold line to enclose said front side and define an envelope pocket, said base fold line being located between the first transverse line of weakening and the bottom; and

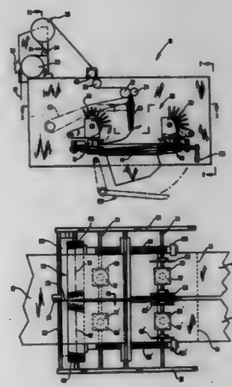
h) printing information on a portion of the front side between the top and the first transverse line of weakening.

5,290,226

METHOD OF AND APPARATUS FOR CUTTING A WEB AND FOLDING THE RESULTING RIBBONS

Robert L. Green, Jr., Hillsboro, Ohio, assignor to G. Fordyce Company, Inc., Hillsboro, Ohio

Filed Dec. 23, 1992, Ser. No. 995,697
Int. Cl.[5] B65H 21/00, 45/101, 20/28
U.S. Cl. 493—357 25 Claims



1. Apparatus for zig-zag folding a web of paper having longitudinally spaced, transverse perforations, comprising:

cutter means for cutting the web of paper longitudinally to form at least two side-by-side, longitudinally extending sections of paper;

spreader means, located downstream from said cutter means, for moving said paper sections apart to form a longitudinally extending gap therebetween;

folding means for folding each of said paper sections into a separate stack of zig-zag folded sheets.

25. A method of zig-zag folding a web of paper having longitudinally spaced, transverse perforations, comprising:

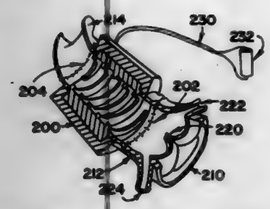
cutting the web of paper to form at least two side-by-side, longitudinally extending sections of paper;
separating the sections of paper to form a longitudinally extending space therebetween;
supporting the side edges of each of the sections of paper; and
folding each of said sections of paper to form at least two stacks of zig-zag folded sheets.

5,290,227

METHOD OF IMPLANTING BLOOD PUMP IN ASCENDING AORTA OR MAIN PULMONARY ARTERY

Michael K. Pasque, 13218 Hawkshead Ct., Town and Country, Mo. 63131

Continuation-in-part of Ser. No. 926,779, Aug. 6, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 35,788
Int. Cl.[5] A61M *1/03*
U.S. Cl. 600—16 **14 Claims**



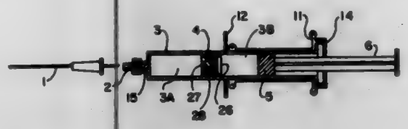
1. A method for assisting blood flow in a patient in need thereof, comprising the step of surgically inserting an electric pump into a ventricular outflow artery, wherein the pump is positioned in a manner which causes blood being ejected by a ventricle to flow into and through the pump, wherein the pump comprises:
(1) a pump housing with a central axial flow path passing therethrough, with an opening at each end of the housing for inflow and outflow of blood;
(2) an electric motor enclosed within the housing, wherein all components of the motor are arrayed within the housing in a manner that does not block blood flow through the central axial flow path, wherein the motor comprise:
(a) a stator which is affixedly mounted within said housing and which contains a first set of electromagnetically interactive torque-generating components;
(b) a rotor which is rotatably mountie in said hosing, wherein the rotor contains a second set of electromagnetically integrative torque-generation components which interact with the stator to cause rotation of the rotor when electrical current is passed through the motor, wherein aid second set of torque-generating components affixed in the rotor are mourned on an outside surface of an open cylindrical rotor shaft having a central flow path passing therethrough, said flow path being bounded by a circumferential inner surface of the rotor shaft; and,
(c) rotor vanes mourned on the inner surface of the rotor shaft, said vanes having a configuration, height, and angled orientation which impart pumping force to a liquid within the central flow path of the rotor shaft when said rotor shaft is rotated.

5,290,228

TWO-COMPARTMENT SYRINGE

Osamu Uemura, Saita, and Yukio Kusu, Ibaraki, both of Japan, assignors to Santen Seiyaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/01575, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO92/08504, PCT Pub. Date May 29, 1992
PCT Filed Nov. 18, 1991, Ser. No. 910,281
Claims priority, application Japan, Nov. 17, 1990, 2-120389[U]; Nov. 19, 1990, 2-121461[U]; Jan. 31, 1991, 3-10399
Int. Cl.[5] A61M *5/19*
U.S. Cl. 604—90 **10 Claims**



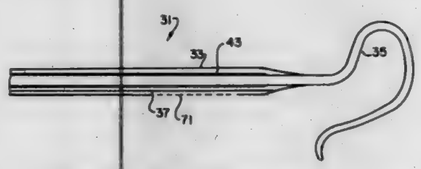
1. A two-compartment syringe comprising:
a. a barrel having a needle connecting side and an opening side;
b. a means for attaching a needle at said needle connecting side;
c. a first elastic gasket and a second elastic gasket, said gaskets being spaced apart and slidably contained within said barrel between said needle connecting side and said opening side, with said first gasket positioned between said second gasket and said needle connecting side and with said second gasket positioned between said first gasket and said opening side;
d. a plunger rod attached to said second gasket;
e. a first chamber within said barrel and between said needle attaching means and said first gasket;
f. a second chamber within said barrel and between said first gasket and second gasket;
g. a bypass passage in said barrel for transfer of a fluid between said second chamber and said first chamber;
h. a first coating including a first silicone oil solution formed on an inner wall of said barrel, said first silicone oil solution having a concentration no more than 0.3% (W/V) which is contacted by a solution of medicine to be freeze-dried; and
i. a second coating substantially out of contact with said solution of medicine, said second coating including a second silicone oil solution having a concentration of at least 1% (W/V) and formed on an inner wall of said barrel.

5,290,229

TRANSFORMABLE CATHETER AND METHOD

Larry D. Paskar, 14337 Stablestone Ct., Chesterfield, Mo. 63017

Filed Jul. 15, 1991, Ser. No. 730,120
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **23 Claims**



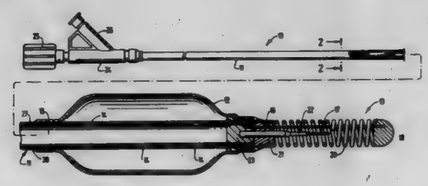
1. A transformable catheter comprising:
a sheath having a straight relaxed shape and having a diameter sufficiently small so that the sheath may be inserted into the human body, said sheath having a length which is a substantial fraction of the entire length of the transformable catheter, and having a bore therethrough running substantially from the proximal end of the sheath to the distal end of the sheath;
a preformed inner catheter having a complex curve formed into the distal end thereof, said preformed catheter being sized to fit in the sheath bore and being axially movable with respect to the sheath in the bore, said sheath being sufficiently rigid and the inner catheter being sufficiently pliable so that withdrawal of the inner catheter into the sheath substantially irons out the curve of that portion of the distal tip which is disposed in the sheath, said distal tip resuming its complex curve shape upon movement thereof completely out of the sheath bore, said inner catheter having a length substantially corresponding to the length of the transformable catheter, said complex curve having at least three curve portions having different radii of curvature, at least one of said curve portions having a direction of curvature retrograde to that of at least two of the other curve portions;
at least one wire running from the proximal end of the sheath to the vicinity of the distal end of the sheath, said wire being connected to the sheath adjacent the distal end so as to allow the distal tip of the sheath to be deflected from the straight relaxed shape upon movement of said wire;
whereby by suitable manipulation of the wire and of the inner catheter with respect to the sheath the shape of the exposed portion of the distal end of the inner catheter may be reformed and transformed to any of a variety of shapes as desired by the user.

5,290,230

INTRALUMINAL CATHETER WITH A COMPOSITE SHAFT

Robert D. Ainsworth, Scotts Valley; Bruce H. Wand, and David T. Jacobson, both of San Jose, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed May 11, 1992, Ser. No. 881,463
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **20 Claims**



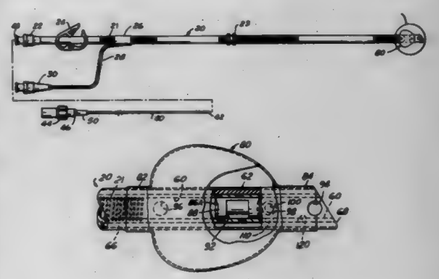
1. A fixed-wire dilatation catheter for performing angioplasty procedures within a patient's arterial system comprising:
a) a catheter shaft of braided composite construction having an inflation port in a distal portion thereof which has be formed by:
braiding into a tubular structure a plurality of the compressible, multifilament strands which have dispersed therein a relatively low melting point polymeric matrix material,
subjecting the braided tubular structure to sufficient heat to form a molten polymer matrix from the low melting point polymeric matrix material dispersed within the multifilament strands, and
cooling the molten polymer matrix to a temperature below the melting point thereof;
b) a shapeable guide member which is secured to the distal end of the catheter shaft; and
c) an inflatable member having proximal and distal ends with the proximal end being bonded to the catheter shaft at a location proximal to the inflation port and the distal end sealed about the shapeable guide member which extends therethrough.

5,290,231

AUTO-INFLATING CATHETER CUFF

Stuart J. Marcadis, Portage, Ind., and James H. DeVries, Grand Rapids, Mich., assignors to DLP, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 537,566, Jun. 13, 1990, Pat. No. 5,197,952. This application Sep. 4, 1992, Ser. No. 940,633
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **4 Claims**



1. A perfusion catheter which is to be used for introduction into a body cavity comprising:
(a) a proximal end for introduction of fluid,
(b) a distal end for introduction into a body cavity,
(c) a connecting tube between said proximal and distal ends comprised of a flexible material having a central lumen connecting said ends,
(d) an inflatable cuff enclosing part of said tube adjacent the distal end of the catheter and sealed at each end on said tube,
(e) a lumen plug in said central lumen positioned within that part of said tube enclosed by said cuff,
(f) one or more openings in said lumen within said cuff to admit lumen fluid into said cuff, and means restricting the flow of lumen fluid distally of said plug to create an inflating pressure in said cuff,
said central lumen having a first opening at the distal end of said central lumen in the tip end of said catheter,
(g) a pressure monitoring lumen associated with said connecting tube open to the distal end of said tube, and
(h) a second opening in the form of a cross-port between said central lumen and said monitoring lumen distal of said cuff and proximal to the end of said tube to monitor pressure in said central lumen in the event of occlusion of the first opening at the distal end of said central lumen.

5,290,232

REPLACEABLE DILATATION CATHETER

Kirk L. Johnson, Miami Lakes, and Mark N. Inderbitzen, Miramar, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 713,430, Jun. 10, 1991, Pat. No. 5,205,822. This application Feb. 17, 1993, Ser. No. 18,420
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **6 Claims**

1. A method of emplacing a catheter into a patient where the route of advancement of said catheter into the patient is defined by a guidewire having a segment protruding from the patient, said guidewire segment being shorter than the catheter, which method comprises: advancing gripping tool means

through the proximal end of a lumen of said catheter while causing a laterally projecting handle of said gripping tool means to project laterally outwardly through a longitudinally extending slit defined in said catheter; bringing the proximal end of said guidewire and said gripping tool into engagement whereby said guidewire proximal end is gripped by the tool;



and grasping the laterally outwardly projecting handle of said tool while advancing said catheter around and along said guidewire into the patient toward said implanted catheter site, to prevent advancement of said guidewire, said tool sliding relatively proximally along the slit of said catheter as the catheter is advanced.

5,290,234

Patent Not Issued For This Number

5,290,233

HYPODERMIC INJECTION DEVICE

William P. Campbell, 3310 Rowland Pl., N.W., Washington, D.C. 20008

Filed Dec. 13, 1991, Ser. No. 806,333
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **17 Claims**



1. A hypodermic injection device comprising:
a reservoir chamber having two ends, the reservoir chamber being adapted to hold material to be injected;
a needle structure extending out from a first end of the reservoir chamber, the needle structure including a first end within the reservoir chamber and a second end outside the reservoir chamber, said needle structure extending through a hole in the first end of the reservoir chamber; and
a plunger extending into the reservoir chamber from a second end of the reservoir chamber and slidably mounted into the reservoir chamber so as to cause the reservoir chamber to be emptied of injectable material through the needle structure when the plunger is moved in the reservoir chamber toward the needle structure;
wherein the plunger includes a needle-retention chamber in an end portion thereof, the needle-retention chamber comprising at least a first cavity, separated from the reservoir chamber by a rupturable member, the needle-retaining chamber being so positioned relative to the needle structure such that, at an end of movement of the plunger toward the needle structure, an end portion of the needle structure can enter the first cavity through the rupturable member so as to be retained in the needle-retention chamber.

5,290,235

NON-REUSABLE SYRINGE

Alan H. Polyblank, 1/401 New South Head Road, Double Bay, NWS 2028, Australia, and Alexander S. Richardson, West Ryde, Australia, assignors to Alan H. Polyblank, Double Bay, Australia

Filed Aug. 5, 1992, Ser. No. 924,947
Claims priority, application Australia, Feb. 15, 1990, PJ8666; Dec. 10, 1990, PK3819; Aug. 5, 1991, PK7588
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **11 Claims**



1. A syringe device comprising:
a generally elongate hollow body slidably containing a plunger end of a plunger in fluid sealing relationship therewith, the hollow body having a first end with a fluid inlet/outlet, and a second end opposite to the first end;
the plunger further comprising an elongate plunger rod attached at one end thereof to the plunger end and with the other end thereof projecting out form the second end of the hollow body for slidably moving the plunger end along and within the hollow body;
a guide means formed in, and being integral with, the plunger rod and which extends along the plunger rod; and
a locking member which is received in and guided by the guide means, which has at least one snag projection facing in a direction away from the first end of the body and towards the inside surface of the body, and which is in frictional sliding engagement with the inside surface of the body so as to provide for relative movement of the locking member with respect to the guide means; and
wherein, in use, the guide means functions to maintain the locking member in an unengaged position wherein the snag projection is spaced from an inside surface of the body when the plunger is moved in a first intake stroke away from the first end of the body, and also during a first delivery stroke towards the first end of the body, and the guide means functions to allow relative sliding movement and cause relative pivoting movement of the locking member with respect to the longitudinal axis of the plunger rod such that, upon commencement of a second intake stroke, the locking member snaggingly engages the inside surface of the body to resist further movement of the plunger in the intake stroke direction for preventing reuse of the syringe device.

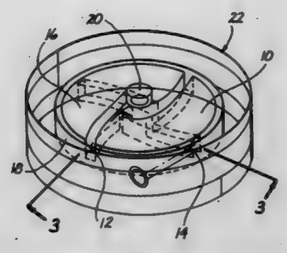
5,290,236

LOW PRIMING VOLUME CENTRIFUGAL BLOOD PUMP

Wilfred F. Mathewson, Bonsall, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 765,307, Sep. 25, 1991, Pat. No. 5,242,383. This application Jul. 21, 1992, Ser. No. 918,721
Int. Cl.[5] A61M *5/142*
U.S. Cl. 604—131 **47 Claims**

1. A low priming volume centrifugal blood pump comprising:
a housing having an inlet;
a disc shaped impeller enclosed within said housing, said impeller having first and second opposing faces and an inlet hole centrally disposed therein in fluid communication with said housing inlet;
a gap between each of said impeller faces and the corresponding housing surface opposing said impeller face; and
a plurality of flow channels, at least one of said flow channels disposed on and open to said first face and at least one of said flow channels disposed on and open to said second face, each of said flow channels radiating outwardly from



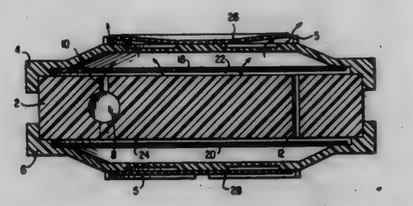
and fluidly communicating with said inlet hole to a flow channel outlet, wherein the volume of said flow channels is small relative to the total impeller envelope volume.

5,290,237

ORIENTATION-INDEPENDENT DEVICE FOR REMOVAL OF GAS FROM A CELLULAR FLUID

Wesley H. Verkaart, 160 Weymouth St., Rockland, Mass. 02370

Filed Jan. 17, 1992, Ser. No. 822,010
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—126 **9 Claims**



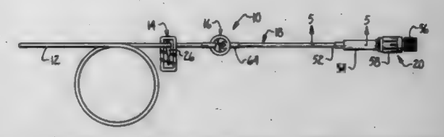
1. Orientation independent apparatus for reducing the amount of a gas contained in a cellular fluid comprising:
a central core having inlet means for receiving said fluid having said gas therein,
first chamber means on a first side of said core for receiving said fluid from said inlet means and allowing said gas to form bubbles and to separate from said fluid by rising with respect to said fluid,
first gas elimination means including a gas permeable membrane on said first side of said core for allowing gas separated from said fluid in said first chamber means to escape into the atmosphere,
second chamber means on a second side of said core for receiving said fluid from said first chamber means and allowing said gas to form bubbles and to separate from said fluid by rising with respect to said fluid,
second gas elimination means including a gas permeable membrane on said second side of said core for allowing gas separated from said fluid in said second chamber means to escape into the atmosphere, and
outlet means for receiving said fluid from said second chamber means and discharging said fluid.

5,290,238

SELF PRIMING TUBING SET FOR AN INFUSION DEVICE

Richard E. Crass, San Diego, and John S. Thompson, San Clemente, both of Calif., assignors to Imed Corporation, San Diego, Calif.

Filed Jun. 10, 1992, Ser. No. 896,235
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—123 **1 Claim**



1. A self priming tubing set for use with an elastomeric infusion device for infusing medical solutions from the infusing device to a patient comprising;
a supply tube connectable for fluid communication with said infusion device, wherein said supply tube has an I.D. of about 0.038 to about 0.042 inches, and a length of about 32 inches to about 38 inches, and further wherein a total pressure drop form the infusion device to said patient interface is about 6 PSIG;
an air/particle filter in fluid communication with said supply tube for removing air from said supply tube and particles from the medical solution, said filter including an inlet section connected to said supply tube, an air filter element connected to an air vent in fluid contact with the medical solution, a particle filter element in fluid contact with the medical solution, and an outlet section;
a restrictor tube in fluid communication with the outlet section of the air/particle filter for providing a constant pressure drop at a constant flow of the medical solution, wherein the length of said restrictor tube is between 8.43 inches and 16.44 inches, and further wherein the inside diameter of said restrictor tube is between 0.011 inches and 0.013 inches; and
a connector connected to a distal end of said restrictor tube and adaptable for connection to a patient interface.

5,290,239

INTRAVENOUS TUBE SAFETY APPARATUS

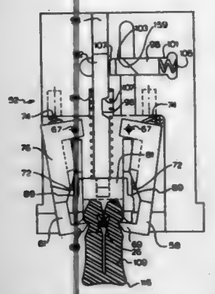
Donald J. Clausey, Waukegan; Theresa Graje, Round Lake Beach; Kenneth Lynn, McHenry; John McVey, Lake Zurich; Eric Myrea, Barrington, and Gabriel Velovsky, McHenry, all of Ill., assignors to Baxter International, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 826,273, Jan. 17, 1992, which is a continuation of Ser. No. 765,755, Sep. 26, 1991, abandoned. This application May 15, 1992, Ser. No. 884,498
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—131 **9 Claims**

1. For use with an intravenous administration pump, a safety apparatus comprising:
a slide clamp receiving area for receiving a slide clamp contained on I.V. tubing:
a sliding member located within the slide clamp receiving area and being capable of sliding from an unloaded to a loaded position, the sliding member being in the loaded position when the slide clamp is in the slide clamp receiving area in an occluding position and in the unloaded position when the slide clamp is in the slide clamp receiving area in a non-occluding position;
retainer arms contained around the slide clamp receiving area, the retainer arms being capable of retaining the slide clamp in the slide clamp receiving area; and
a release pin cooperatively associated with the sliding member and the retainer arms such that upon activation of the release pin, the retaining arms act to retain the slide clamp

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in the slide clamp receiving area while the sliding mechanism unloads, thereby urging the slide clamp into a non-



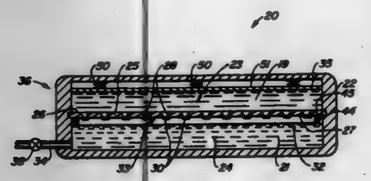
occluding position on the I.V. tubing while the slide clamp is retained partially within the slide clamp receiving area.

5,290,240

ELECTROCHEMICAL CONTROLLED DISPENSING ASSEMBLY AND METHOD FOR SELECTIVE AND CONTROLLED DELIVERY OF A DISPENSING FLUID

Charles R. Horres, Jr., Del Mar, Calif., assignor to Pharmetrix Corporation, Menlo Park, Calif.

Filed Feb. 3, 1993, Ser. No. 12,876
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—131 **53 Claims**



1. An infusion pump assembly for controlled infusion of a dispensing fluid comprising:

a partition having a front surface and an opposite facing back surface, and defining an aperture extending from said front surface to said back surface;

a driving reservoir formed for storing a driving fluid therein and in communication with said aperture for flow of said driving fluid through said partition;

plug means disposed in said aperture in a manner preventing flow of said driving fluid through said partition;

electric control means operably coupled to said plug means for controlling passage of said driving fluid through said aperture;

barrier means defining a receiving reservoir and positioned relative to said aperture for receipt and containment of said driving fluid in said receiving reservoir as said driving fluid flows from said driving reservoir through said aperture, said barrier means separating said dispensing fluid and said driving fluid, and further formed to expand from a first volume toward an increased second volume in response to receipt of said driving fluid in said receiving reservoir; and

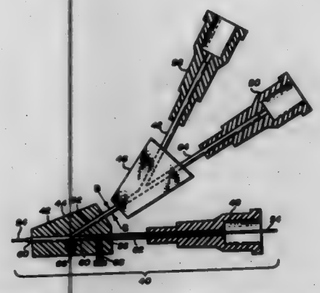
a dispensing reservoir for holding said dispensing fluid therein, said dispensing reservoir defining an orifice for release of said dispensing fluid therethrough, said barrier means being mounted for movement in said dispensing reservoir in a manner communicating with said dispensing fluid to urge said dispensing fluid through said orifice as said barrier means moves toward said increased second volume.

5,290,241

RAPID REMOVAL OVER-THE-WIRE CATHETER

Jeffrey L. Kraus, San Jose; Joseph R. Shields, Sunnyvale, and Nitin P. Matani, San Jose, all of Calif., assignors to Danforth Biomedical, Incorporated, Menlo Park, Calif.

Filed Oct. 16, 1992, Ser. No. 962,150
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—161 **16 Claims**



1. An over-the wire catheter system adapted for rapid removal, comprising:

(a) catheter tubing having a plurality of lumens that extend from near the distal end of the catheter tubing to near the proximal end of the catheter tubing, the lumens being longitudinally closed from near their distal ends to near their proximal ends, at least one of said plurality of lumens being a guidewire lumen;

(b) a guidewire inserted in the guidewire lumen; and

(c) opening means for opening the guidewire lumen situated near the proximal end of the guidewire lumen, thereby permitting the catheter tubing to be separated from the guidewire while retaining the guidewire in place.

5,290,242

BLOOD VESSEL Y-SITE CONNECTOR

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Filed Oct. 14, 1992, Ser. No. 960,729
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—163 **6 Claims**



1. A blood vessel Y-site connector assembly comprising

a Y-site connector having a first arm having a first passage, a second arm having a second passage, a third arm connected with said first and second arms and having a third passage communicating with said first and second passages, and a hollow needle mounted in and extending from said third arm, said needle being in communication with said third passage,

a flexible sheath fixed to and extending from said second arm in seal-tight relation to define a closed chamber; and

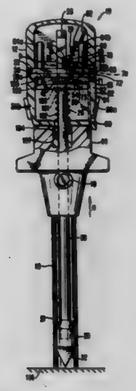
a guide wire slidably mounted at one end in said second passage of said second arm and extending within said closed chamber of said sheath.

5,290,243

TROCAR SYSTEM

Ingram S. Chodorow, Upper Saddle River, and M. Zubair Mirza, Wyckoff, both of N.J., assignors to Technalytics, Inc., Montvale, N.J.

Filed Jul. 16, 1992, Ser. No. 915,337
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—165 **46 Claims**



1. A trocar comprising:

a trocar housing;

an obturator shaft slidably mounted within said housing, said obturator shaft having a stylet at an end thereof terminating at a sharp tip, said obturator shaft moveable in a direction of movement between a retracted position and an extended position;

arming lever means for moving said shaft between its said retracted and extended positions, wherein said arming lever means includes trigger means for pivotally moving said arming lever means such that said arming lever means permits said shaft to move the same between its said retracted and extended positions;

biasing means provided within said trocar housing for biasing said shaft; and

latching and release means provided within said trocar housing for latching said shaft in its said extended position and for releasing said shaft to allow retraction thereof to said retracted position.

5,290,244

SYRINGE AND NEEDLE WITH GUIDE WIRE FOR CANNULATION OF CENTRAL VEINS

Dilip Mooaka, 12 Euaden Dr., Aston, Pa. 19014

Filed Jun. 8, 1992, Ser. No. 895,308
Int. Cl.[5] A61M *5/32, 25/01, 5/178*
U.S. Cl. 604—164 **5 Claims**

1. A combined syringe and needle for introducing a guide wire into a human blood vessel comprising:

a needle having a sharpened point at one end thereof and having a hollow bore extending from said sharpened end and through said needle to a hub end thereof;

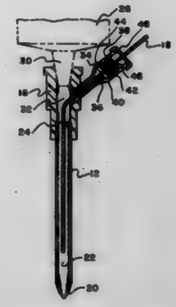
a syringe including a syringe barrel and a plunger, said barrel having a forward end adapted to be secured to a hub member;

a hub member located between said syringe barrel and said needle and interconnecting said barrel and needle, said hub member including an axially extending bore therein in communication with said needle bore;

said hub member further including a side port means intermediate said needle and said barrel, said side port means including an auxiliary bore therein which opens to the outside of said hub member, extends through said side port means and which intersects with said axially extending bore at an acute angle;

an elongated guide wire, said guide wire extending from outside said hub member and into said auxiliary bore, and

sealing means preventing air from entering said needle bore from outside said side port means when said guide wire is



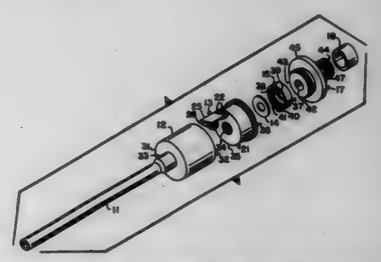
at rest within said auxiliary bore, said sealing means being comprised of said side port means having an enlarged portion therein and an elastomeric O-ring held in place within said enlarged portion, said guide wire passing through the center of said O-ring and being movable relative to said O-ring.

5,290,245

VALVED CANNULA ASSEMBLY

George W. Dennis, Tequesta, Fla., assignor to Core Dynamics, Inc., Jacksonville, Fla.

Filed Apr. 16, 1992, Ser. No. 870,514
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **8 Claims**



1. In a valved cannula assembly for use with inserted instruments, the valved cannula assembly including a cannula sleeve, a valve housing having an internal open area, a flapper valve assembly having a plugging member adapted to be moved by said inserted instruments, a seating gasket and an axial bore for insertion and removal of said instruments, where the seating gasket in combination with the plugging member of the flapper valve assembly or an inserted instrument creates a seal in the axial bore, the improvement comprising the combination of:

an annular seating gasket having a relatively thin cross-section and a central opening sized slightly smaller than said axial bore;

a gasket receiving member positioned within said valve housing, said gasket receiving member having a relatively planar distal end with a central aperture positioned thereon, said gasket receiving member having said flapper valve assembly mounted on said distal end within said internal open area of said valve housing, whereby said

plugging member extends through said central aperture to contact said central opening of said seating gasket;
an annular gasket retaining collar having a recess adapted to receive said seating gasket and retain said seating gasket in fixed position against said distal end of said gasket receiving member whereby said distal end is between said seating gasket and said flapper valve assembly; and
a plugging member abutting said gasket retaining collar and connected to said gasket receiving member whereby said gasket retaining collar is retained in a fixed position against said distal end of said gasket receiving member.

5,290,246

PIERCING NEEDLE

Masanobu Yamamoto, and Kouhei Hayashi, both of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 821,426, Jan. 15, 1992, Pat. No. 5,242,411. This application Oct. 13, 1992, Ser. No. 960,538
Claims priority, application Japan, Jan. 18, 1991, 3-001181[U]; Oct. 15, 1991, 3-092600[U]
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 **5 Claims**



1. A piercing needle comprising:
a cylindrical outer needle;
an outer needle hub fixed to a proximal end of said outer needle, said outer needle hub having an internal cavity which communicates with said outer needle;
an inner needle freely insertable into and removable from said outer needle through said outer needle hub such that when said inner needle is inserted in the outer needle a needle tip of said inner needle projects from a distal end of said outer needle and a gap is formed between said outer and inner needles; and
an inner needle hub fixed to a proximal end of said inner needle, said inner needle hub fitting in said outer needle hub;
said outer needle hub comprising:
a cylindrical first outer needle hub body coupled to a proximal end of said outer needle;
a cylindrical second outer needle hub body fixed to a rear end of said first outer needle hub body;
an elastic valve disc located between said first and second outer needle hub bodies and permitting a rod member to be inserted thereto, said elastic valve disc sealing said internal cavity of said outer needle hub;
a ring shaped vent filter located between said elastic valve disc and said first outer needle hub body; and
a communication path means for communicating the inside of said outer needle hub with the outside thereof by means of said ring shaped vent filter.

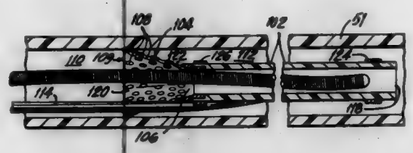
5,290,247

INTRACORONARY EXCHANGE APPARATUS AND METHOD

James F. Crittenden, Hollis, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 21, 1991, Ser. No. 703,603
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—171 **28 Claims**

1. An improved guidewire exchange apparatus for use in facilitating the substitution of a second guidewire for a first guidewire positioned within a monorail catheter, the monorail catheter having a guidewire lumen passage therethrough and a proximally-facing opening in the lumen passage adapted to receive a guidewire, the improvement comprising means associated with the proximally-facing opening for guiding the second guidewire into the lumen of the catheter while the proximally-facing opening is within a body lumen.

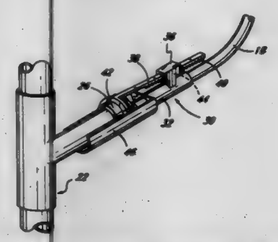


5,290,248

SIDEPORT CONNECTOR FOR CATHERIZATION SYSTEM

Steven F. Bierman, 143 Eighth St., Del Mar, Calif. 92014, and David C. Howson, Denver, Colo., assignors to Steven F. Bierman, Del Mar, Calif.

Continuation of Ser. No. 695,554, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,964, May 4, 1990, Pat. No. 5,192,273, which is a continuation-in-part of Ser. No. 384,326, Jul. 24, 1989. This application May 28, 1992, Ser. No. 892,593
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—174 **19 Claims**



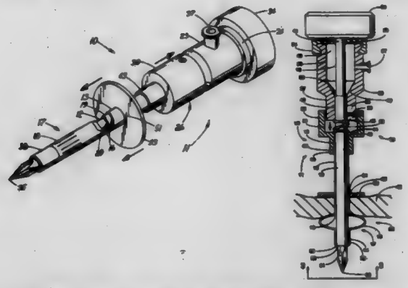
1. A sideport connector for removably connecting a first fluid supply tube to a second fluid supply tube, wherein said second fluid supply tube terminates in an end connector having a hub, said sideport connector comprising:
a sideport body defining at least a first and a second influent port, and at least one effluent port, said influent ports and said effluent port being in fluidic communication with one another, said first influent port being adapted to couple with the first fluid supply line and said second influent port being configured to engage the end connector of said second fluid supply line;
a housing connected to said sideport body;
a clip comprising a forward latch configured to engage the end connector hub of the second fluid supply tube, the clip being slidably connected to said housing to move in a direction generally parallel to the second fluid supply tube; and
an interengaging element preventing said latch of said clip from moving away from said second effluent port.

5,290,249

SURGICAL ACCESS SHEATH

Thomas L. Foster, Poland; John S. Lyttle, Spencer; Edward D. Pingleton, and Paul G. Thomson, both of Fillmore, all of Ind., assignors to Vance Products Incorporated, Spencer, Ind.

Continuation of Ser. No. 594,319, Oct. 9, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 947,095
Int. Cl.[5] A61B *17/34*
U.S. Cl. 604—174 **20 Claims**



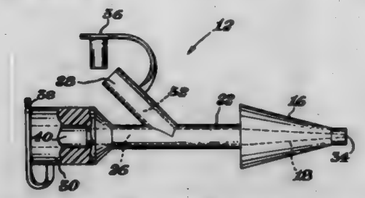
1. A surgical access sheath comprising:
a first elongated member having a slick outer surface, a first distal end, a first proximal end, a first passageway extending longitudinally between said first ends, and a retention mechanism positioned about said first distal end and having a predetermined state;
a second elongated member positioned within said first passageway and having a second distal end attached about said first distal end, a second proximal end, and a second passageway extending longitudinally between said second ends, said retention mechanism assuming said predetermined state when said first and second proximal ends are urged longitudinally apart;
a proximal hub attached about said second proximal end of said second elongated member and having a longitudinal slot therein; and
a distal hub separate from said proximal hub, attached about said first proximal end of said first member, and having a projection extending therefrom and into said longitudinal slot of said proximal hub; and
spring means positioned between and contacting said proximal hub and said distal hub for urging said distal and proximal hubs longitudinally apart.

5,290,250

FEEDING TUBE ADAPTER

Alexander A. Bommarito, 12555 W. Freeland Rd., Freeland, Mich. 48623

Continuation-in-part of Ser. No. 844,247, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 688,838, Apr. 22, 1991, Pat. No. 5,102,396. This application Nov. 16, 1992, Ser. No. 976,573
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 **3 Claims**



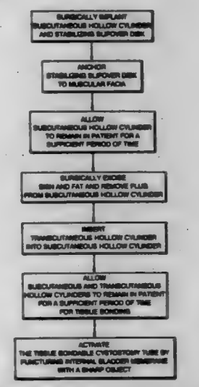
1. An adapter for enteral feeding lubes, said adapter having an input, end and a discharge end, said discharge end being adapted to securely and releasably engage a feeding tube input port with a friction fit having anadhesive force of at least 2 pounds and said adapter comprising a central passageway leading from said input end to said discharge end said central passageway having an inside diameter of from about 2–6 Fr. at said discharge end thereby inhibiting blockages of said enteral feeding tube by undissolved matter and being constructed to provide a Venturi effect on material passing through said passageway thereby inhibiting blockage when soluble feeding formulas and medications are infused therein, said input end of said adapter being constructed of a material selected from the group consisting of soft and semi-rigid medical grade materials and said discharge end of said adapter being constructed of a material selected from the group consisting of hard and semi-rigid medical grade materials thereby inhibiting the passage of undissolved portions of feeding formulas and medications and wherein said friction fit permits easy removal of said adapter from said feeding tube input port by direct pressure.

5,290,251

METHOD OF CYSTOSTOMY TUBE IMPLANTATION

Donald P. Griffith, Houston, Tex., assignor to URO Research, Inc., Houston, Tex.

Division of Ser. No. 615,896, Nov. 20, 1990, Pat. No. 5,234,408. This application Jun. 21, 1993, Ser. No. 80,559
Int. Cl.[5] A61M *3/32*
U.S. Cl. 604—175 **11 Claims**



1. A method for implanting a tissue bondable cystostomy tube in a patient comprising:
a. surgically implanting a subcutaneous hollow cylinder coated on its exterior surface with a material suitable for bonding with biological tissue in the region of the bladder membrane, said subcutaneous hollow cylinder containing a plug;
b. allowing the subcutaneous hollow cylinder to remain in the patient for a sufficient period of time for tissue bonding to occur;
c. surgically excising a circular portion of skin and subcutaneous fat located above said subcutaneous hollow cylinder and removing the plug from said subcutaneous hollow cylinder;
d. surgically implanting a transcutaneous hollow cylinder having an upper end and a lower end and coated on its exterior surface with a material suitable for bonding with biological tissue by passing the transcutaneous hollow cylinder through the opening created by the excision of skin and subcutaneous fat and slidably inserting the lower end of the transcutaneous hollow cylinder into the subcutaneous hollow cylinder; and

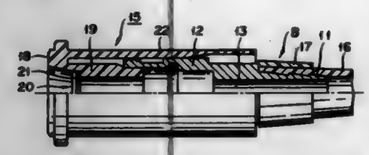
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5,290,252

Patent Not Issued For This Number

e. allowing the subcutaneous and transcutaneous hollow cylinders to remain in the patient for a sufficient period of time for tissue bonding to occur.

5,290,253
CAP FOR MEDICAL TOOL CONNECTION AND MEDICAL TOOL
Norisuke Kira, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 545,723, Jun. 11, 1990, abandoned.
This application Nov. 2, 1992, Ser. No. 970,987
Claims priority, application Japan, Jun. 9, 1989, 1-145225
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—190 17 Claims



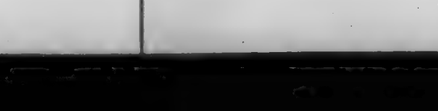
1. A cap for a connector in a medical tool to be sterilized in an autoclave, one end of said connector being connected to one end of a tube, and another end of said tube being closed, said cap comprising:
a connector in a medical tool;
an outer cylinder;
an inner cylinder concentrically positioned within said outer cylinder;
an annular cap portion securing said inner cylinder within said outer cylinder with a predetermined clearance between said inner and outer cylinders, said clearance allowing said outer and inner cylinders to be in tight engagement with an inner peripheral portion of said connector, while also allowing said outer cylinder to be in loose engagement with an outer peripheral portion of said connector, said loose engagement of said outer cylinder with the outer peripheral portion of said connector enabling shrinkage to occur therebetween during an autoclave sterilization; and
a gas permeable filter member mounted in an open substantially central space of said annular cap portion for closing an end of said concentrically positioned cylinders secured by said annular cap portion, said gas permeable filter member preventing said tube from being deformed due to a condensation of steam remaining in said tube after said autoclave sterilization is completed.

5,290,254
SHIELDED CANNULA ASSEMBLY
Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039
Filed Nov. 16, 1992, Ser. No. 976,464
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 19 Claims



1. A shielded cannula assembly comprising
a housing;
a hollow cannula mounted in and extending from said housing, said cannula having a lumen for passage of a fluid therethrough; and
one-piece tubular shield extending from said housing in an exposed manner relative to the surrounding environment, said shield consisting of a resilient longitudinally collapsible tubular portion concentrically about said cannula and a transverse wall at a distal end to form a sealed chamber with said tubular portion to contain said cannula therein in a sterile condition, said tubular portion being collapsible from an extended position about said cannula under a longitudinally applied force into a collapsed condition and being resiliently expandable into said extended position upon release of said force, said wall having an uninterrupted end face and being made of a material to permit penetration of said cannula therethrough in response to longitudinal collapsing of said tubular portion and resealing of said wall in response to expansion of said tubular portion and withdrawal of said cannula therefrom.

5,290,255
APPARATUS FOR SHIELDING A SYRINGE NEEDLE
Anthony J. Vallelunga, 289 Schoolhouse Rd., Albany, N.Y. 12203-5956; Paul V. Cacciotti, and Vincent E. Cacciotti, both of 9 Morgan Way, Latham, N.Y. 12110
Filed Feb. 2, 1993, Ser. No. 12,309
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—197 9 Claims



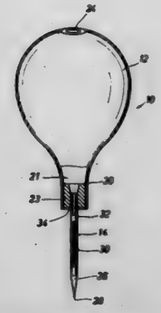
1. A syringe assembly comprising:
a hollow cylindrical syringe housing having an interior and an exterior thereof;
a hollow needle mounted to said housing in fluid communication with said interior of said housing;
plunger means movably positioned within said housing for drawing fluid into said housing and for ejecting fluid from said housing;
a hollow sleeve having an outer wall of substantially constant diameter, said hollow sleeve mounted to the exterior of said housing;
needle shielding means having an inner wall, said needle shielding means movably positioned on said hollow sleeve and surrounding said housing with said needle shielding means being movable between an extended position surrounding and shielding said needle and a retracted position in which said needle is exposed for use; and
a flexible snap ring, wherein said hollow sleeve has one or more projections radially extending from said outer wall and a first groove means in said outer wall for containing said snap ring within the diameter of said inner wall of said needle shielding means, and wherein said needle shielding means has one or more longitudinally extending slots and a second groove means in said inner wall for containing said snap ring as said snap ring extends beyond the diameter of said inner wall of said needle shielding means to occupy said first groove means and said second groove means concurrently, each of said one or more radially extending projections slidably disposed within a corresponding one of said one or more longitudinally extending slots, wherein as said needle shielding means is extended to surround and shield said needle, each of said one or more radially extending projections slides within said corresponding one of said one or more longitudinally extending slots, and wherein said snap ring is positioned in said first groove means with said needle shielding means in said retracted position and wherein said snap ring extends into said second groove means when said needle shielding means is extended to surround and shield said needle, said needle shielding means thereby being permanently locked into said extended position.

5,290,256
SHIELDED SYRINGE
Cheryl A. Weatherford, Oceanside, and E. Craig Wilhelm, Laguna Niguel, both of Calif., assignors to Safety 1st, Laguna Niguel, Calif.
Filed May 18, 1993, Ser. No. 63,246
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—198 17 Claims



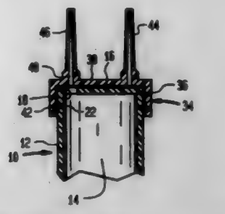
1. A shielded syringe comprising:
a cylindrical syringe barrel having an interior chamber;
a needle secured at one end of said barrel;
a plunger slidably received within the interior chamber;
sheath means for preventing contact with said needle, said sheath means being slidably disposed on said cylindrical syringe barrel and movable therealong from a closed position surrounding said needle to an open position exposing said needle;
locking means for releasably locking said sheath means in both the open and closed positions, said locking means comprising a tab disposed on an inside surface of said sheath means and an elongate strip member having one end thereof secured to said cylindrical syringe barrel and a pair of berms thereon for engaging said tab; and
spring means for urging said tab against one of said pair of berms when the sheath means is in the open position and in the closed position.

5,290,257
METHOD AND APPARATUS FOR DE-AIRING THE HEART
Being-Tang Zhong, 5126 Calhoun Apt. 10, Houston, Tex. 77021
Filed Jan. 2, 1992, Ser. No. 816,115
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—212 9 Claims



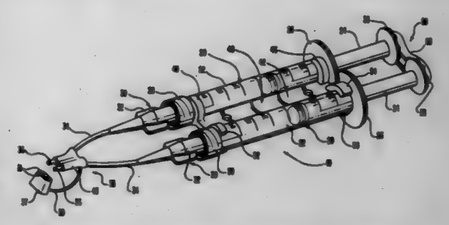
1. An apparatus for de-airing a heart, comprising;
(a) a resilient, transparent bulb;
(b) an aspirating needle having a threaded end fixedly secured to said bulb, said aspirating needle defining an axially hollow body open to the interior of said bulb at the threaded end thereof and terminating at a solid distal end defining a sharp point; and
(c) wherein said body of said aspirating needle includes a longitudinal slot extending substantially the entire length between said solid distal end and said threaded end of said needle body for aspirating air and blood from the heart.

5,290,258
SYRINGE FOR ADMINISTERING SEQUENTIALLY MULTIPLE DOSES OF A MEDICAMENT
James F. Ennis, III, Preston, Conn., and Mark Anderson, Hudson, Wis., assignors to Genesis Industries, Inc., Elmwood, Wis.
Filed Jul. 27, 1992, Ser. No. 918,705
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—215 10 Claims



1. A syringe for dispensing multiple doses of a liquid medicament one at a time sequentially comprising:
a cylindrical barrel for containing said medicament, said barrel having a closed circular wall at one end thereof, with a single outlet opening for said medicament in said end wall;
ejection means in said barrel for ejecting said medicament therefrom;
a syringe cap rotatably mounted on said end of said barrel;
guide means restraining said cap against axial movement on said barrel while permitting rotation of said cap, said cap having a circular top;
ratchet means on said cap and barrel permitting only unidirectional rotation of said cap on said barrel and sequentially retaining said cap in a plurality of detent positions on said barrel; and
a plurality of nozzles on said top of said cap, each of said nozzles having a discharge orifice and an axial passage for ejection of said medicament from each of said nozzles, each of said passages terminating in a nozzle hole in said circular top so that one of said nozzle holes is aligned with said opening in said end wall of said barrel in each of said detent positions of said cap on said barrel, whereby said medicament can be discharged from each nozzle in turn only when said cap is located in a corresponding detent position of said cap.

5,290,259
DOUBLE SYRINGE DELIVERY SYSTEM
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah
Filed Feb. 18, 1993, Ser. No. 20,326
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—218 28 Claims



1. In a double syringe system wherein each syringe is comprised of a syringe barrel, a plunger and a delivery tip having an elongated, flexible delivery tube, a syringe delivery system for holding the syringes in a manner so as to accommodate

simultaneous activation of the plunger of each syringe in order to effect simultaneous delivery of the contents of each syringe barrel, the delivery system comprising:

first locking means for locking the syringe barrels together in a parallel relationship wherein the barrels are as close together as possible, but are still parallel, and wherein the barrels are also locked in a manner so that they are slightly longitudinally offset from one another; and

second locking means for locking the plungers together in a parallel relationship and wherein the plungers are also locked in a manner so that they are longitudinally offset by an amount that is the same as the longitudinal offset of the syringe barrels.

5,290,260

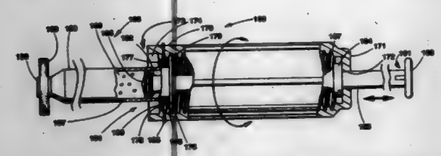
ROTATIONAL PRESSURE DRIVE FOR A MEDICAL SYRINGE

Joseph R. Stines, Poland, Ind., assignor to Vance Products Incorporated, Spencer, Ind.

Continuation-in-part of Ser. No. 708,673, May 31, 1991, Pat. No. 5,160,327. This application Oct. 13, 1992, Ser. No. 960,022

Int. Cl.[5] A61M *5/315*

U.S. Cl. 604—224 **20 Claims**



1. A rotational pressure drive f or a syringe having a barrel, a plunger positioned through a proximal end of said barrel, and first and second flanges extending radially and laterally from said proximal end of said barrel, comprising:

an elongated member having a partially closed end including an opening therein, an open end for reception of said plunger, and a passageway extending longitudinally between said open and partially closed ends for passage of said plunger therethrough;

axial extension means moveable through said opening of said partially closed end for pulling said plunger through said passageway toward said partially closed end; and

first and second pluralities of internal threads extending radially into and longitudinally along said passageway forming means for engaging said first and second flanges, respectively.

5,290,261

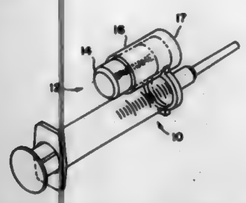
SYRINGE AMPULE HOLDING DEVICE

George F. Smith, Jr., 1 White Oak Mountain Rd., Columbus, N.C. 28722, and Ann M. Rowe, 608 Spencer Cir., Spartanburg, S.C. 29302

Filed Oct. 30, 1992, Ser. No. 969,470

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—234 **12 Claims**



1. An ampule holder supporting an ampule on the periphery of a syringe, said ampule holder comprising:

a) a hollow body having an inner portion for supporting said ampule; and

b) a ring attached to said hollow body, said ring having an inner circumference engaging the periphery of said syringe and supporting said hollow body on said syringe.

5,290,262

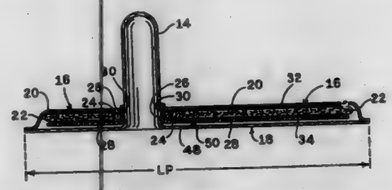
FEMININE HYGIENE ARTICLE AND METHOD

John P. Vukos, and Billie D. Mateiski, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 15, 1992, Ser. No. 962,513

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.1 **22 Claims**



1. An absorbent feminine hygiene article, comprising:

(a) an absorbent external pad having

(i) a first layer of absorbent material adapted to receive and absorb body fluid, said first layer having first and second opposing major surfaces, and edges extending therebetween, said edges, in combination corresponding to an outer perimeter of said first layer; and

(ii) a second layer of baffle material effectively overlying said second major surface, said second layer being impervious to body fluid; and

(b) an intercepting element including a nonabsorbent, flexible sheath extending from said external pad, said sheath adapted to extend outwardly from said external pad a distance sufficient to permit insertion of at least a portion of said sheath into a user's vagina when said external pad is placed against the user's labia majora.

5,290,263

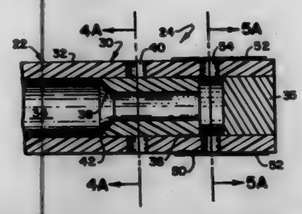
BIDIRECTIONAL CHECK VALVE CATHETER

Bruce D. Wigness, and Frank D. Dorman, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 616,737, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 305,971, Feb. 2, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,984

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—247 **12 Claims**



1. A bidirectional check valve catheter tip for intravascular placement in a living body, comprising:

(a) an elongated bio-compatible, tubular member having a distal end and a proximal end;

(b) at least one lumen being defined by the tubular member, first port means for transferring fluid into the lumen, and second port means for transferring fluid from the lumen,

the first port means being located proximally of the second port means; and

(c) first check valve means for controlling fluid flow through the first port means and second check valve means for controlling fluid flow through the second port means, the first check valve means normally closing the first port means and being responsive to changes in fluid pressure for allowing fluid to flow into the lumen through the first port means upon establishment of a negative pressure differential having a magnitude greater than a first value and being defined by the pressure in a region of the lumen adjacent to the first port means being low relative to the pressure in a region exterior to the lumen adjacent to the first port means, and the second check valve means normally closing the second port means so there is substantially no cavity formed in the catheter tip on a distal side of where the second check valve means normally closes the second port means, the second check valve means being responsive to changes in fluid pressure for allowing fluid to flow from the lumen through the second port means upon establishment of a positive pressure differential having a magnitude greater than a second value and being defined by the pressure in a region of the lumen adjacent to the second port means being high relative to the pressure in a region exterior to the lumen adjacent to the second port means.

5,290,264

GRIPPABLE GUARD FOR NEEDLE ASSEMBLY

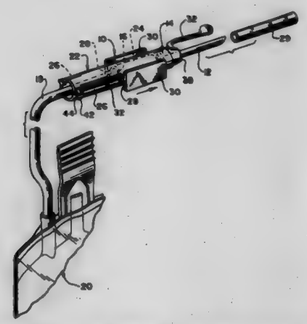
David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Filed Sep. 3, 1991, Ser. No. 753,955

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—263 **12 Claims**



1. A hollow needle carried in a hub, said needle and hub being carried on the end of tubing in flow-communicating relation between said needle and tubing, said hub defining a pair of wings extending transversely outwardly from said hub in opposite directions, said wings each carrying plate members extending transversely of said wings, to facilitate manual gripping of said needle hub; a slidable, tubular guard defining a bore positioned to receive said needle and hub, said tubular guard defining a pair of opposed, longitudinal slots through which said wings extend with the plate numbers positioned outside of said tubular guard, said slots permitting movement of said needle and hub in the guard from a needle-exposed position to a needle-enclosed position, said guard defining a distal end; and an elongated anchor member carried by said guard adjacent to and extending distally from said distal end on one side of and spaced from said needle, to be manually held as the needle and hub are withdrawn from penetration of the vein of a patient, to cause sliding of said needle and hub relative to said guard from the needle-exposed to the needle-enclosed position.

5,290,265

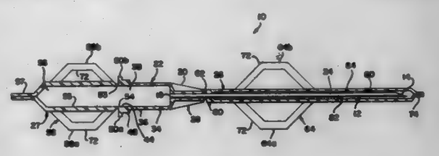
NEEDLE COVER ASSEMBLY

Richard L. Davis, Wheaton, and DhuAine Davis, Jr., Batavia, both of Ill., assignors to Davis Manufacturing Systems, Inc., Wheaton, Ill.

Filed May 27, 1992, Ser. No. 889,510

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—263 **11 Claims**



1. A needle assembly comprising:

a needle cannula including a rearward end portion and an exposed portion forward of said rearward end portion, said exposed portion having a pointed forward end; and

a longitudinally extending holder including, an integral carrying portion fixedly retaining said rearward end portion of said needle cannula and a hollow barrel portion extending rearward of said carrying portion and having a rearward end,

an integral needle protection portion forward of said carrying portion, said protection portion circumscribing and extending forward about an outer surface of said exposed portion of said needle cannula including said forward end of said needle cannula, said protection portion having a forward end,

a first thin frangible annular portion intermediate said carrying portion and said protection portion,

first means attached to said protection portion for sealing said forward end of said protector portion, and

second means attached to said barrel portion for sealing said rearward end of said barrel portion whereby said holder encases said needle cannula.

5,290,266

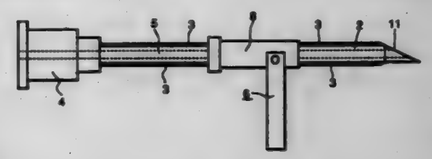
FLEXIBLE COATING FOR MAGNETIC RESONANCE IMAGING COMPATIBLE INVASIVE DEVICES

Kenneth W. Rohling, Burnt Hills, and Lionel M. Levinson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 14, 1992, Ser. No. 929,350

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—272 **14 Claims**



1. A medical invasive device intended for insertion into a subject immersed in a magnetic field during magnetic resonance imaging comprising a substantially rigid non-metallic material capable of shattering exhibiting a magnetic susceptibility in the magnetic field substantially equal to that of the subject being imaged, so as to cause minimal distortion in a magnetic resonance image, said device having an outer coating of a flexible material having a tensile strength capable of containing pieces of the device in the event of a fracture and

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allowing removal of all pieces of the invasive device from the subject when the device is withdrawn from the subject.

5,290,267

HYPODERMIC NEEDLE

Michael Zimmermann, St. Wendel, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Continuation of Ser. No. 822,498, Jan. 17, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,887

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1991, 4101231

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—272 **9 Claims**



1. A cannula comprising:

a cannula tube having a lumen therethrough, said cannula tube having an upper section at least a portion of which lies on a longitudinal axis of the cannula tube, an end section connected with the upper section and laterally disposed at an acute angle to the longitudinal axis of the cannula tube, and a hook-shaped curved section connected with the end section, the curved section terminating in a piercing part with a lumen opening therein, the lumen opening being tangentially ground into a concave side of the curved section and having, near the end section, a rear edge directed inwardly into the curved section.

5,290,268

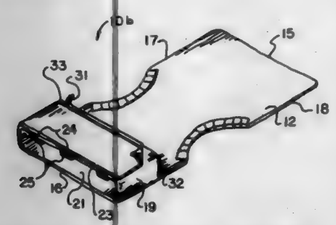
DIAPER AND POUCH CONSTRUCTION

Charlotte J. Oliver, and Carl R. Oliver, Jr., both of 1051 4th Ave., Apt. 66, Chula Vista, Calif. 91911

Filed Nov. 16, 1992, Ser. No. 977,196

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—359 **2 Claims**



1. A diaper and pouch construction, comprising,

a flexible diaper web, the diaper web having an exterior first side coextensive with an interior second side, and a fibrous absorbing component mounted to the interior second side, with the web having a first end spaced from a second end, and a first side spaced from a second side, with the first side including a first side recess and the second side having a second side recess, and

a pocket web having a pocket cavity formed of a fluid impermeable material directed and extending from the first side to the second side between the first side recess and the second side recess and the second end, with the pocket web having a pocket web free edge, and an entrance opening directed between the free edge and the exterior first side for access to said pocket cavity, and

the free edge is positioned adjacent to the second end, and

a plurality of tubular pockets mounted fixedly to the pocket web, wherein the tubular pockets extend from the free edge in a parallel relationship to each other, and each tubular pocket includes a pocket floor, and each tubular pocket including a porous pocket web, and each porous pocket web having a perforated window adjacent the pocket floor, and each tubular pocket further including a frangible capsule, with each frangible capsule including a deodorizing fluid therewithin permitting crushing of each capsule directing each deodorizing fluid through a respective perforated window.

5,290,269

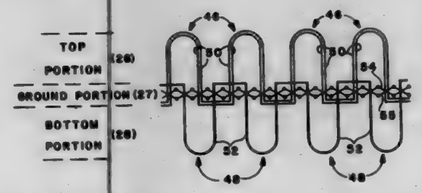
HYGIENIC PRODUCTS AND FABRICS THEREFOR

Mark J. Heiman, Maineville, Ohio, assignor to Standard Textile Co., Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 424,538, Oct. 20, 1989, abandoned. This application Jan. 25, 1991, Ser. No. 646,661

Int. Cl.[5] A61F *13/46, 13/54, 13/56*

U.S. Cl. 604—378 **99 Claims**



2. An absorbent textile fabric adapted to provide a dry feel on one surface thereof,

said fabric having separate hydrophobic and hydrophilic properties, and comprising

a top portion of finite thickness, an outer portion of which defines the upper surface of the fabric,

a bottom portion of finite thickness, an outer portion of which defines the lower surface of the fabric, and

a central portion in which inner end portions of the top and bottom portions and ground yarn means interconnected therewith and providing dimensional stability for the fabric,

said top portion being characterized that it comprises a piling formed by hydrophobic yarns, inner end portions of which extend into the central portion,

said top portion being further characterized in that said hydrophobic yarn piling wicks liquid from the upper surface of the fabric into the central portion and in incapable of retaining any substantial amount of liquid therein,

said bottom portion being characterized in that it comprises a piling formed by hydrophilic yarns, inner end portions of which extend into the central portion,

said bottom portion being further characterized in that said hydrophilic yarn piling wicks liquid from the central portion into the remainder of the yarn piling and provides a reservoir function in retaining the liquid,

further characterized in that

the hydrophobic yarn of the top portion essentially consists of texturized yarn comprised of continuous filaments of a polymeric material, and

the ground yarn means has a relatively high strength,

whereby, the upper surface of the fabric has a dry feel shortly after liquid is discharged thereon.

5,290,270

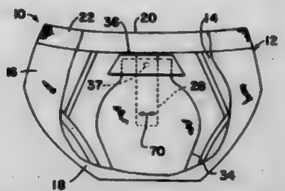
MEN'S UNDERGARMENT AND DISPOSABLE LINER FOR SAME

Warren G. Fisher, 3660 San Carlos Dr., St. James City, Fla. 33956

Continuation of Ser. No. 847,576, Mar. 5, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,749

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—387 **12 Claims**



1. A men's undergarment for managing urinary leakage, said undergarment comprising:

a men's brief having front and rear sections, a crotch section interconnecting said front and rear sections and a pair of leg openings on respective sides of said crotch section, said crotch section being further defined in its entirety by a part of said brief disposed between the wearer's thighs; said front section including an elastic fabric and a non-elastic region defined by an elongate, generally straight, non-elastic element that is secured to an inside surface of said elastic fabric and is located in said front section of said brief exclusively, entirely outside of said crotch section;

means for releasably holding an absorbent liner in temporary engagement with said non-elastic element, said means comprising;

a pocket element attached to an inside surface of said front section of said brief above said leg openings and being disposed across said non-elastic region; said pocket element having an opening that generally faces said crotch section;

said absorbent liner element directly and temporarily engaging said non-elastic region and having a portion that is removably received by said pocket elements for holding said liner generally in place when said front section is raised and lowered.

5,290,271

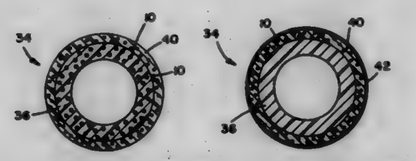
SURGICAL IMPLANT AND METHOD FOR CONTROLLED RELEASE OF CHEMOTHERAPEUTIC AGENTS

Gary R. Jernberg, 99 Navaho Ave. Suite 102, Mankato, Minn. 56001

Continuation of Ser. No. 899,096, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 599,699, Oct. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,067, May 14, 1990, abandoned. This application Jul. 29, 1993, Ser. No. 99,265

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—891.1 **6 Claims**



1. A surgical implant comprising a porous matrix, said matrix further containing time-release microshapes encapsulating at least one chemotherapeutic agent incorporated into said porous matrix, wherein said time-release microshapes will begin to release said at least one chemotherapeutic agent at a localized treatment site upon surgical implantation of said implant, said implant further containing means for improving the cellular uptake of said at least one chemotherapeutic agent at the localized treatment site upon surgical implantation of said implant, said means comprising at least one carrier agent incorporated into the matrix of said implant, said implant selected from the group consisting of a vascular graft, heart valve leaflet, ligament prosthesis, tendon prosthesis and urethral prosthesis.

5,290,272

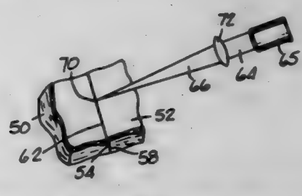
METHOD FOR THE JOINING OF OCULAR TISSUES USING LASER LIGHT

Neal I. Burstein, Longmont, Colo.; John M. Williams, Sr., Marshfield, Wis.; Michael J. Nowicki, Longmont, and William Q. Jeffers, Boulder, both of Colo., assignors to Helios Inc., Longmont, Colo.

Filed Mar. 16, 1992, Ser. No. 851,822

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—4 **24 Claims**



1. A method for the welding of ocular tissues to each other, said method comprising the steps of:

providing a first portion of ocular tissue selected from the group consisting of corneal tissue and scleral tissue, and a second portion of ocular tissue selected from the group consisting of corneal tissue and scleral tissue, said first portion of ocular tissue having a leading edge and said second portion of ocular tissue having a leading edge;

positioning said leading edge of said first portion of ocular tissue directly adjacent to and against said leading edge of said second portion of ocular tissue; and

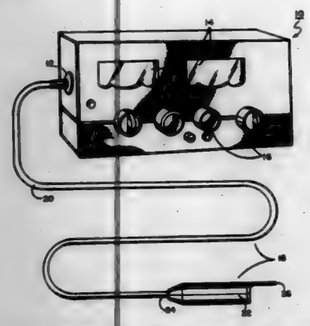
applying infrared laser light from a source thereof to both said leading edge of said first portion of ocular tissue and said leading edge of said second portion of ocular tissue simultaneously, said laser light having a wavelength sufficient to enable said laser light to penetrate said first portion of ocular tissue and said second portion of ocular tissue to a depth of about 0.2–2.0 mm so that said leading edge of said first portion of ocular tissue may be securely welded to said leading edge of said second portion of ocular tissue, said wavelength being within a wavelength range selected from the group consisting of about 1400–1900 nm and about 2100–2400 nm, said laser light having a power output level sufficient to maintain said first portion of ocular tissue and said second portion of ocular tissue at a temperature of about 45°–60° C. during said applying of said laser light.

5,290,273

LASER TREATMENT METHOD FOR REMOVING PIGEMENT CONTAINING LESIONS FROM THE SKIN OF A LIVING HUMAN

Oon T. Tan, 1 Marlborough St., Boston, Mass. 02116

Continuation-in-part of Ser. No. 743,797, Aug. 12, 1991, Pat. No. 5,217,455. This application May 25, 1993, Ser. No. 66,875
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—9 7 Claims



1. A laser treatment method for removing pigment containing lesions from the skin of a living human, said method comprising the steps of:

irradiating on a first occasion a chosen treatment site on the skin of a living subject of about 1–100 millimeters in diameter with a beam of pulsed light from a laser delivery system, said pulsed light having a wavelength from about 700–1,100 nanometers, fluences of about 1–50 Joules per square centimeter, and a pulse duration of about 1–300 nanoseconds;

maintaining said irradiation to disrupt at least one pigment containing lesion on the chosen treatment site on the skin of the living human until a color change endpoint on the skin surface is achieved by said laser light treatment while largely avoiding the destruction of normal skin structures and cells;

allowing the skin at said irradiated treatment site to heal for a time period not less than about 7 days and not more than about 70 days; and then

irradiating on at least one subsequent occasion the chosen treatment site on the skin of the living human with another pulsed beam of laser light having a wavelength from about 700–1,100 nanometers, fluences of about 1–50 Joules per square centimeter, and a pulse duration of about 1–300 nanoseconds, said subsequent irradiation occasion being repeated as necessary to achieve substantial clearance of the chosen treatment site on the skin.

5,290,274

LASER APPARATUS FOR MEDICAL AND DENTAL TREATMENTS

Guy Levy, Tustin; Philippe Levy, San Clemente, and James H. Tillotson, Rancho Mirage, all of Calif., assignors to Laser Medical Technology, Inc., San Clemente, Calif.

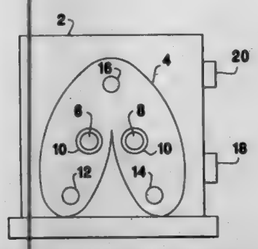
Filed Jun. 16, 1992, Ser. No. 899,288
Int. Cl.[5] A61B *17/38*
U.S. Cl. 606—13 14 Claims

1. Medical treatment apparatus comprising:

laser means comprising

first and second laser radiation sources each for producing laser radiation at a respectively different wavelength and power level capable of cutting a given organic tissue, each of said radiation sources comprising a respective laser radiation emitting body having a laser medium which determines the respective laser radiation wavelength, and

optical pumping means disposed for supplying pumping energy to said bodies for causing said bodies to produce laser radiation, said optical pumping means comprising a first lamp optically coupled exclusively to one of said bodies, a second lamp optically coupled exclusively to the other of said bodies, and a third lamp optically coupled to both of said bodies;



laser radiation applying means for directing laser radiation at body tissue to be treated;

radiation conducting means including at least one optical fiber connected for conducting laser radiation from said sources to said applying means; and

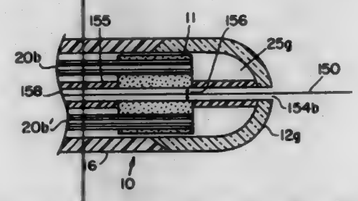
cooling fluid delivery means for directing a cooling fluid containing water at the body tissue at which the laser radiation is directed.

5,290,275

CATHETER FOR LASER ANGIOSURGERY

Carter Kittrell, Houston, Tex.; Robert M. Cothren, Jr., Cleveland, Ohio; Michael S. Feld, Waban, and Barry Sachs, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 411,326, Sep. 22, 1989, Pat. No. 5,034,010, which is a division of Ser. No. 58,675, May 26, 1987, Pat. No. 4,913,142, which is a continuation of Ser. No. 715,239, Mar. 22, 1985, abandoned. This application Jul. 16, 1991, Ser. No. 731,010
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—15 24 Claims



1. A medical laser catheter for removing tissue from a site comprising;

a catheter having an optical waveguide extending from a proximal end of the catheter to a distal region at a distal end of the catheter;

a lumen extending within the catheter and defining a central opening at the distal end of the catheter through such that the distal end of the catheter comprises a rigid output surface surrounding the central opening; and

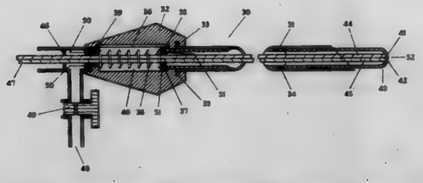
a laser coupled to the optical waveguide such that laser radiation can be transmitted from the proximal end of the catheter to the distal end of the catheter, the waveguide emitting a diverging output beam of radiation through the output surface of the catheter such that the diverging output beam substantially overlies the output surface surrounding the central opening at the distal end of the catheter.

5,290,276

ROTATABLE LAPAROSCOPIC PUNCTURING INSTRUMENT

Frank Sewell, Jr., 1413 N. Elm, Henderson, Ky. 42420

Filed Feb. 6, 1992, Ser. No. 832,058
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—15 8 Claims



1. A laparoscopic insufflation needle having a longitudinal axis, a distal end an operative end, comprising:

a rotatable body tissue puncturing means, the puncturing means having a distal end, an operative end and a longitudinal axis, such that the puncturing means rotates about its longitudinal axis, the puncturing means being adapted to be rotated by a motor;

a safety shield movable between an extended position in which the shield prevents the puncturing means from puncturing body tissue and a retracted position in which the shield allows the puncturing means to puncture body tissue, and the safety shield being biased toward its extended position;

a light emitting viewport positioned within the puncturing means and positioned at the distal end of the needle;

a light receiving viewport positioned within the puncturing means and positioned at the distal end of the needle;

a light emitting optic fiber having opposing ends, disposed within the needle, and operatively connected to the emitting viewport at one of its ends and extending to the operative end of the needle at its opposing end;

a receiving optic fiber having opposing ends, disposed within the needle, and operatively connected to the receiving viewport at one of its ends and extending to the operative end of the needle at its opposing end;

a means for introducing gas or fluid into the needle; and

a means for allowing gas or fluid to flow outward from the distal end of the needle.

5,290,277

MULTI-FIBER LINEAR ARRAY LASER CATHETER CONNECTOR

Charmaine Vercimak, Coon Rapids; Steven D. Savage, Brooklyn Center, and Gregory G. Brucker, Minneapolis, all of Minn., assignors to Angeion Corporation, Minneapolis, Minn.

Filed Apr. 3, 1992, Ser. No. 863,098
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 15 Claims

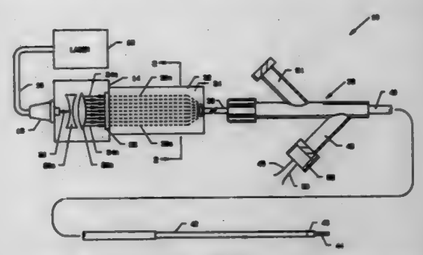
1. An apparatus comprising:

a. means for generating a beam of laser energy;

b. means coupled to said generating means for transferring said beam of laser energy;

c. means coupled to said transferring means for transforming said beam of laser energy into a line of laser energy having a first width and a first length.

d. linear array means coupled to said transforming means for coupling said line of laser energy to a plurality of optical fibers; said linear array means comprising a connector housing comprising a plurality of outer metal plates and filler material comprising index matching epoxy located between said metal plates and positioned around the optical fibers, the metal plates having a high thermal conductivity suitable for rapid external dissipation of heat from



within the connector housing to prevent optical misalignment and degradation of optical fibers; and,

e. a medical catheter located about said plurality of optical fibers for housing said plurality of optical fibers.

5,290,278

METHOD AND APPARATUS FOR APPLYING THERMAL ENERGY TO LUMINAL TISSUE

Dallas W. Anderson, The Woodlands, Tex., assignor to Proclosure Inc., Winter Park, Fla.

Continuation-in-part of Ser. No. 963,585, Oct. 20, 1992, abandoned. This application Nov. 6, 1992, Ser. No. 972,532
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 11 Claims



1. An apparatus for sealing tubular organs, the apparatus comprising:

a rigid main portion coupled to a rigid tubular portion;

said main portion and tubular portion having an inner surface and a generally arcuate shaped outer surface;

means for expanding the tubular portion radially to engage the lumen;

a source of energy sufficient to heat tissue to form a denatured proteinaceous substance; and

means for delivering the energy from the source to the inner surface of the tubular portion;

and means for directing the energy through the inner surface and out the outer surface, when the tubular portion expands to engage the organ, to heat the organ to a temperature within a nondestructive range bounded by a minimum temperature at which tissue forms a denatured proteinaceous substance and a maximum temperature at which water in the tissue would boil.

5,290,279

ARTHROSCOPIC TOOL COMBINING FIVE FUNCTIONS IN ONE

Alfred O. Bonati, New Port Richey, and Philip J. Ware, Spring Hill, both of Fla., assignors to Meditron Devices, Inc., Hackensack, N.J.

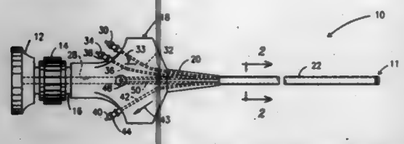
Continuation-in-part of Ser. No. 810,622, Dec. 19, 1991, abandoned. This application May 17, 1993, Ser. No. 62,586
Int. Cl.[5] A61B *1/06*
U.S. Cl. 606—15 25 Claims

1. An arthroscope, comprising:

a tubular casing having a proximal end and a distal free end;

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a laser channel means having a distal end disposed within said tubular casing, said laser channel means being disposed in light transmitting relation to a source of laser radiation external to said arthroscope;
an irrigation tube having a distal end disposed within said tubular casing, said irrigation tube being disposed in fluid communication with a source of liquid fluid under positive pressure external to said arthroscope;
a suction tube having a distal end disposed within said tubular casing, said suction tube having a proximal and disposed in fluid communication with a source of negative pressure external to said tool;
a lens for facilitating viewing of an operation site disposed at the proximal end of the tubular casing;
a rod lens means disposed within said tubular casing, said rod lens means being disposed in alignment with said lens;
a plurality of optical fibers disposed within said tubular casing, said optical fibers occupying interstitial space in said tubular casing between said laser channel, said irrigation tube, said suction tube, and said rod lens, said optical fibers being in light transmitting relation with a source of light external to said tool;



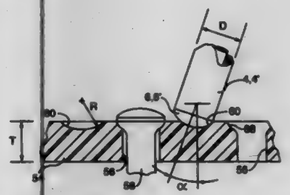
said irrigation tube distal end disposed, by a predetermined distance, in leading relation to said rod lens distal end so that irrigation fluid from said irrigation tube cleans said rod lens;
said laser channel disposed, by a predetermined distance, in leading relation to the distal end of said rod lens so that smoke produced by said laser channel does not impair the physician's view through said rod lens;
said suction channel disposed, by a predetermined distance, in leading relation to the distal end of said laser channel so that irrigation fluid is vacuumed by said suction tube and thus does not interfere with operation of said laser channel;
whereby said arthroscope has utility in arthroscopic surgery when a physician views the operation site through said lens and said rod lens, illuminates the site through said optical fibers, performs a surgical operation with laser radiation transmitted to the site through said laser channel, irrigates the site with liquid fluid transmitted to the site through said irrigation tube, and vacuums the site through said suction tube.

5,290,280
LASER LIGHT IRRADIATION APPARATUS
Norio Daikuzono, Chiba, Japan, assignor to S.L.T. Japan Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 575,766, Aug. 31, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,549
Claims priority, application Japan, Sep. 8, 1989, 1-233363
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—16 **21 Claims**



1. A laser light irradiation apparatus comprising:
a plurality of optical fibers for transmitting laser light from a laser light generator to a fore end portion of said optical fibers, each optical fiber comprising a core and a clad material around the core, each optical fiber having a base portion which receives and transmits the laser light from the generator and a fore end portion which discharges laser light, wherein
(i) the base portions of the optical fibers are twisted together in a bundle and along the base portions of the optical fibers the clad materials of all of the optical fibers are bonded together, and
(ii) the fore end portions of the optical fibers are untwisted and parallel to each other and along the fore end portions of the optical fibers the clad material around each fiber is separate from that of the other optical fibers; and
a laser light emitter contacting the fore end portions of the optical fibers to receive the laser light from the fore end portions of the optical fibers for emitting the laser light from all of the fibers.

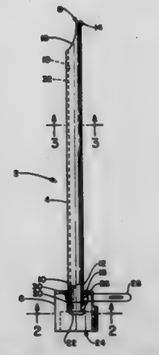
5,290,281
SURGICAL SYSTEM
Alexander Tschakaloff, Hamburg, Fed. Rep. of Germany, assignor to Medicon eG, Tuttlingen, Fed. Rep. of Germany
Filed Jun. 15, 1992, Ser. No. 898,453
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—28 **18 Claims**



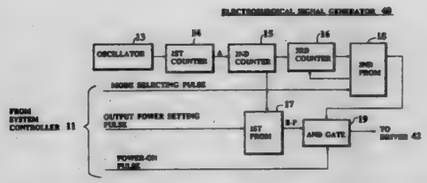
1. A surgical system comprising:
a thermoplastic, body absorbable, bodily tissue fixation plate having at least one depression thereon;
body absorbable means for fastening said plate to bodily tissue; and
heating apparatus including a wand having a heating tip of a truncated, substantially convex spherical shape adapted to substantially matingly cooperate with said at least one depression.

5,290,282
COAGULATING CANNULA
Christopher D. Casscells, 100 Buck Rd., Greenville, Del. 19807, assignor to Christopher D. Casscells, Greenville, Del.
Filed Jun. 26, 1992, Ser. No. 905,907
Int. Cl.[5] A61M *5/00*
U.S. Cl. 606—29 **5 Claims**

1. A coagulating cannula which comprises:
(a) a nonconductive cylindrical hollow shaft having a proximal and a distal end, the distal end terminating in a tapered tip, the tapered tip having one straight side along a longitudinal axis of the shaft and an opposed shortened side with a tapered region extending from the shortened side to the straight side, the shaft being dimensioned to receive shaving or deburring instruments;
(b) a nonconductive hub portion securely attached to the proximal end of the shaft at a receiving base having a first opening of a diameter which is similar to a diameter of the hollow shaft and communicates with the hollow shaft, the hub portion additionally having a larger second opening on an opposed exiting hub surface to the shaft, the second opening continuously communicating with the first opening; and
(c) an electrocautery which is manually operable by selectively activating an electrocautery circuit which enters the cannula at an electrical contact which protrudes from an outer surface of the hub portion and continuously runs within the hub and into a wall of the shaft terminating at the distal end of the shaft in a prominence at a tip of the straight side of the tapered tip of the shaft, the prominance having a small surface area on the tapered tip, such that the prominance provides a small electrical contact area with a surrounding saline environment, thereby providing a high resistance arcing to the surrounding tissue that needs to be coagulated.

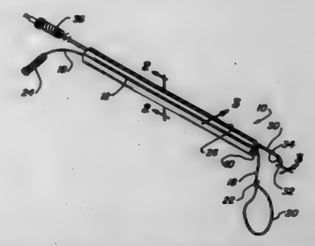


5,290,283
POWER SUPPLY APPARATUS FOR ELECTROSURGICAL UNIT INCLUDING ELECTROSURGICAL-CURRENT WAVEFORM DATA STORAGE
Masao Suda, Yaita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 3, 1991, Ser. No. 637,196
Claims priority, application Japan, Jan. 31, 1990, 2-20792; Mar. 5, 1990, 2-51893
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—37 **3 Claims**



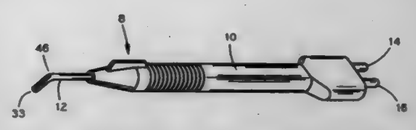
1. An electrosurgical power supply apparatus comprising:
an electrosurgical signal generator for generating an electrosurgical signal used to perform an electrosurgical operation, said electrosurgical signal generator including at least:
first storage means for previously storing first electrosurgical signal data and for selectively outputting a first gate pulse signal whose duty ratio is variable in response to a power setting pulse;
second storage means for previously storing second electrosurgical signal data and for selectively outputting a second gate pulse signal upon receipt of a clock signal; and
AND gate means for AND-gating said first gate pulse signal and said second gate pulse signal, thereby producing an electrosurgical high-frequency signal having a waveform suitable to a selected electrosurgical operation mode.

5,290,284
LAPAROSCOPIC SURGICAL LIGATION AND ELECTROSURGICAL COAGULATION AND CUTTING DEVICE
Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104
Continuation of Ser. No. 877,076, May 1, 1992, abandoned. This application Feb. 19, 1993, Ser. No. 20,161
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—37 **12 Claims**



1. A laparoscopic surgical ligation and electrosurgical coagulation device comprising:
an elongated handle having a distal end, a proximal end and a central passageway and a first channel extending along said handle on one side of said passageway from said distal end to said proximal end thereof, generally parallel thereto;
a suture extending through said central passageway and having a loop with a slip knot on the distal end thereof said slip knot having a diameter larger than said central passageway, and a pull on the proximate end thereof so that by pulling on said pull, said slip knot is held by said distal end of said handle so that said loop can be drawn tightly around the tissue to be ligated; and
an elongated wire slidably received through said first channel and having a hook formed on the distal end for grasping the tissue to be ligated and pulling it through said loop in said suture before the loop is pulled tight.

5,290,285
ELECTROCAUTERY DEVICE HAVING TWO ELECTRICALLY ACTIVE AREAS OF THE TERMINAL END SPACED FROM EACH OTHER
Lawrence T. Kirwan, Jr., Kingston, Mass., assignor to Kirwan Surgical Products, Inc., Rockland, Mass.
Filed Apr. 23, 1992, Ser. No. 872,333
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—50 **2 Claims**



1. An electrocautery device including an outer housing, a coaxial conductor, and first and second conductor pins, the coaxial conductor having an outer conductor, an inner conductor, a first terminal end, and a second terminal end, the inner conductor and the outer conductor separated for substantially their full length by an insulator, the insulator removed from the inner conductor at the first terminal end, the

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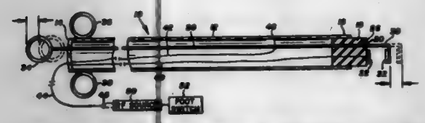
outer conductor electrically connected to the first conductor pin at the second terminal end, the inner conductor electrically connected to the second conductor pin at the second terminal end, the first terminal end having an electrically active tip and an electrically active portion of the first terminal end spaced from the tip, the outer conductor, the inner conductor and the first and second conductor pins, forming a sub-assembly, the outer housing formed in one unitary section over the sub-assembly having opposite ends with the first and second conductor pins and the first terminal end extending from the opposite ends of the housing, first and second bends formed in the outer conductor in opposed direction to each other, in close proximity to the second terminal end with the first bend positioned further away from the second terminal end than the second bend.

5,290,286

BIPOLAR INSTRUMENT UTILIZING ONE STATIONARY ELECTRODE AND ONE MOVABLE ELECTRODE

David J. Parins, Columbia Heights, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Division of Ser. No. 790,490, Nov. 12, 1991, Pat. No. 5,197,964.
This application Dec. 9, 1992, Ser. No. 987,924
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—50 4 Claims



1. An electrosurgical instrument for the removal of tissue polyps and for steming the flow of blood following such removal, comprising:

(a) a tubular member having a distal end, a proximal end, and a lumen extending therebetween, and having a longitudinal axis extending between said distal and proximal ends;

(b) an insulating plug affixed to said tubular member at said distal end and having a distal surface generally perpendicular to said longitudinal axis;

(c) a rigid support member extending from said distal surface of said insulating plug, and projecting parallel to said longitudinal axis and having a distal end;

(d) a first electrode mounted on said distal surface of said insulating plug;

(e) a second, generally U-shaped metal wire electrode extending from said distal end of said rigid support member dimensioned to lie proximal of said first electrode, with said first electrode disposed coaxially with said second electrode, and positioned to enable electrical coaction with said first electrode;

(f) a pair of flexible conductive wires extending through said lumen of said tubular member and conductively joined, individually, to said first and second electrodes for allowing electrical energizing of said electrode;

(g) an actuator means for affecting translational movement of one of said first and second electrodes in a direction parallel to said longitudinal axis, for bringing said first and second electrode within a predetermined distance of one another; and

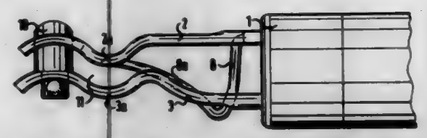
(h) a hand switch in electrical communication with one of said first and second electrodes.

5,290,287

ENDOSCOPIC COAGULATION FORCEPS

Manfred Boebel, Oetisheim, and Siegfried Hiltebrandt, Knittlingen, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,955
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1991, 4130064
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—51 5 Claims



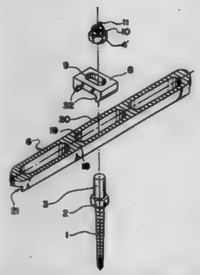
1. Bipolar forceps for grasping and coagulating tissue, the forceps having a proximal end and a distal end and comprising first and second jaws having at said distal end electrodes for gripping and holding tissue to be coagulated, the jaws being relatively movable between an open position and a closed tissue gripping position, the second jaw having a recess, the first jaw having an engaging bar extending toward and aligning with the recess of the second jaw, the recess permitting the engaging bar to engage the second jaw when the jaws are in their closed position, the first jaw having a distal recess and the second jaw having a mandrel extending toward and aligning with the distal recess of the first jaw, said distal recess permitting the mandrel to protrude therethrough and to engage the first jaw when the jaws are in their closed position, the jaws cooperating to define a region for receiving the tissue to be coagulated, said region being delimited distally by said mandrel and proximally by said bar.

5,290,288

MULTI-FUNCTION DEVICE FOR THE OSTEOSYNTHESIS OF RACHIS

Jean-Louis Vignaud, 10 impasse Francois Audouin, F-33400 Talence, France, and Patrick Henry, 19 avenue de la République, F-92400 Courbevoie, France

PCT No. PCT/FR91/00099, § 371 Date Oct. 4, 1991, § 102(e) Date Oct. 4, 1991, PCT Pub. No. WO91/11967, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 8, 1991, Ser. No. 768,529
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 8 Claims



1. A device for osteosynthesis of rachis, comprising:

a first pedicular screw having a threaded, ogival-shaped point and a threaded head separated by a hexagonal body;

a connection member linking said first screw to other screws, said connection member being an elongated plate with elongated openings spaced along said plate for receiving said threaded head, transversal striae being provided on an upper surface of said plate;

a single, one piece fixing part provided with at least one passage hole for receiving said threaded head, said fixing part being a U-shaped part overlying the upper face of said plate and being flanked by two parallel lateral protrusions, striae being provided on a lower surface of said fixing part opposing said plate; and

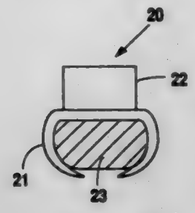
a nut threaded on said threaded head for locking said fixing part and said connection member on said threaded head, said plate having a lower surface shaped to provide a lower groove for receiving and locking said hexagonal body.

5,290,289

NITINOL SPINAL INSTRUMENTATION AND METHOD FOR SURGICALLY TREATING SCOLIOSIS

Albert E. Sanders, 7107 Brookside La., San Antonio, Tex. 78209; James O. Sanders, 530 Grandview Pl., Terrell Hills, Tex. 78209, and Robert B. More, 1811 Running Brook, Austin, Tex. 78723

Continuation-in-part of Ser. No. 526,601, May 22, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 956,673
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 7 Claims



1. A method for surgically correcting a scoliotic spine comprising the steps of:

contouring a rod constructed of a shape-memory alloy to the ideal spinal shape desired for the correction of said scoliotic spine while the crystal structure of said alloy is in the parent phase;

cooling said rod and a plurality of clamps constructed of said shape memory alloy sufficiently so that the crystal structure shifts to the martensite configuration;

deforming said rod to accommodate the existing curvature of said scoliotic spine while maintaining said rod at a temperature below the transition temperature range;

deforming said plurality of clamps while maintaining said clamps at a temperature below the transition temperature range to facilitate their fastening about a plurality of vertebra and their holding of said rod;

segmentally fixing said rod to said scoliotic spine by fastening said rod to said plurality of clamps; and

heating said plurality of clamps to impart grasping forces to said plurality of clamps in order to secure said plurality of clamps about said plurality of vertebra and to hold said rod slidably within said clamps;

heating said rod post-operatively so as to impart corrective forces to said scoliotic spine it points where said rod is fastened to said vertebra by said clamps.

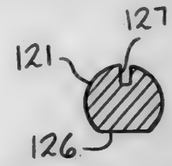
5,290,290

METHOD FOR PERFORMING KNEE SURGERY AND RETRACTORS FOR USE THEREIN

W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623

Division of Ser. No. 508,090, Apr. 11, 1990, Pat. No. 5,217,463.
This application Apr. 20, 1992, Ser. No. 871,036
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—88 8 Claims

1. A femoral distractor for use in performing knee surgery comprising a unitary rod and a handle, said rod having first, second and third sections lying in the same plane, said first section having a cross-sectional size permitting its insertion in the medullary canal of a human femur and extending in a straight line path from a convexly rounded free end to an area of juncture with said second section, said second section being



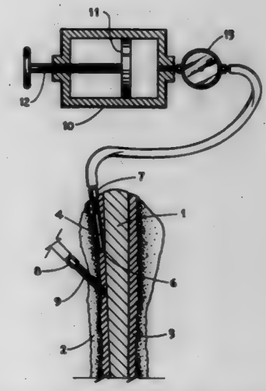
disposed at right angles to said first section and extending along a straight line path from said area of juncture to a corner, said third section extending from said corner along a straight line path generally parallel to said first section and a handle extending from said third section in the same direction.

5,290,291

METHOD FOR IMPLANT REMOVAL

Harry A. Linden, Santa Barbara, Calif., assignor to Hall Surgical, Division of Zimmer, Inc., Santa Barbara, Calif.

Filed Mar. 16, 1992, Ser. No. 851,597
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—99 2 Claims



1. A method for separating an implant secured to a bone with a fixing material from the fixing material, said fixing material forming an interface between the bone and said implant, comprising the steps of:

utilizing a fluid;

supplying the fluid to the interface;

providing means cooperating with the interface for increasing pressure of the fluid at the interface; and

increasing the pressure in the fluid at the interface.

5,290,292

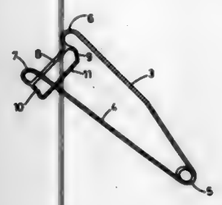
SUTURELESS HUMAN EYE GLOBE ROTATION INSTRUMENT

John A. Householder, 1382 Hanover La., Ventura, Calif. 93001

Filed May 29, 1992, Ser. No. 866,860
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—107 6 Claims

1. An instrument for rotating the globe of a human eye downward during eye surgery comprising a pair of arms which are joined at one end forming a joint, and a rubber band at-

tached to said joint, wherein each of said arms includes a first portion which cooperatively extends away from said joint along a horizontal axis, a second portion in which the arms cooperatively curl downward from the horizontal axis forming a first set of curls, and a third portion in which opposite ends



of the arms each extend further to a terminating cross bar, said terminating cross bar connecting said opposite ends together transverse to a longitudinal axis of each of the arms, whereby when the instrument is placed in the inferior cul-de-sac and tension is applied to the rubber band the eye globe rotates.

5,290,293

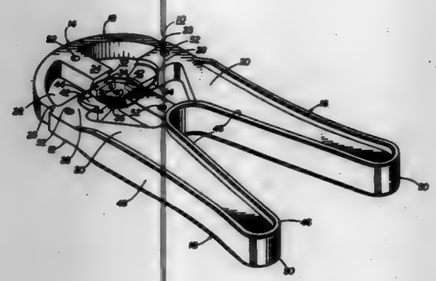
INTRAOCULAR LENS FOLDER

Stephen J. Van Noy, Fort Worth; Robert Hambleton, Plano, and Barry Stevens, Arlington, all of Tex., assignors to Alcon Surgical, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 4,357, Feb. 2, 1993. This application Jan. 21, 1993, Ser. No. 80,903

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—107 **13 Claims**



1. An intraocular lens folder, comprising:

a) a first handle and a second handle, both handles having upper portions and terminal ends opposite the upper portions;

b) a hinge connecting the first handle to the second handle between the upper portions and the terminal ends;

c) a deformable rim generally arcuate in shape extending between the upper portion of the first handle and the upper portion of the second handle thereby defining a half ring-like head with a hollow center;

d) a first jaw projecting into the hollow center from the rim; and

e) a second jaw projecting into the hollow center from the hinge generally opposite the first jaw.

5,290,294

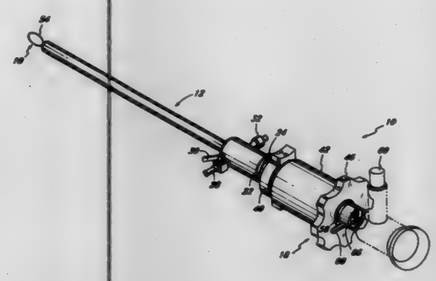
METHOD AND APPARATUS FOR REMOVAL OF A FOREIGN BODY CAVITY

Brian Cox, 21792 Northwood La., Lake Forest, Calif. 92630; Jay A. Lenker, 996 Coast View Dr., Laguna Beach, Calif. 92651, and Daniel C. Merrill, 2127 Danville Blvd., Walnut Creek, Calif. 94596

Continuation of Ser. No. 510,136, Apr. 17, 1990. This application Feb. 14, 1992, Ser. No. 839,011

Int. Cl.[5] A61B *17/22, 19/00, 1/30*

U.S. Cl. 606—108 **16 Claims**



1. A kit for the non-surgical removal of foreign bodies from the urethra or bladder comprising:

an introduction sheath having a substantially rigid tube forming an axially elongate hollow shaft throughout most of its length which is inserted transurethrally to allow passage of a removal tool or other objects through the urethra without causing trauma to the urethral lining, said sheath having a distal end and a proximal end located opposite said distal end;

an obturator having a radius smaller than that of the introduction sheath throughout most of its length so that it fits through the sheath, having a means for locking to the sheath and an atraumatic tip which is biologically inactive and compatible with the lining of the urethra, so as to provide for a smooth connection with the sheath when attached thereto, thereby allowing for the atraumatic introduction of the sheath when the obturator is locked to the sheath;

a transurethral snaring tool for encircling and ensnaring a foreign body within the urethral lumen or bladder, the snaring tool fitting through and locking to the transurethral sheath after introduction of the sheath and after removal of the obturator, the snaring tool having a sturdy, yet flexible, loop which extends beyond the distal end of the sheath when the snaring tool is attached to the sheath and is in its fully extended position; and

a means for controllably retracting the snaring tool into the sheath without rotating the loop when the snaring tool is attached to the sheath in order to pull the foreign body snared by the snaring tool into the sheath, wherein said means for controllably retracting the snaring tool provides sufficient mechanical advantage to crush the foreign body as the foreign body is pulled into the sheath, and wherein said means for controllably retracting the snaring tool retracts the snaring tool without applying a distally directed force on the snaring tool,

said distal end of said sheath having sufficient cross-sectional area so as to allow the retraction of a foreign body along with the snaring tool into said sheath.

5,290,295

INSERTION TOOL FOR AN INTRALUMINAL GRAFT PROCEDURE

Luis A. Querals, Baltimore, Md., and Michael J. Fine, Coral Springs, Fla., assignors to Querals & Fine, Inc., Coral Springs, Fla.

Filed Jul. 15, 1992, Ser. No. 913,208

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—108 **20 Claims**



14. Apparatus for providing a clear passageway within a blood vessel through angioplasty, and for the intraluminal insertion and deployment of a medical graft within said blood vessel, said apparatus comprising:

a shaft with a tapered distal tip, a first cylindrical portion extending proximally from said tapered distal tip, a tapered intermediate section extending proximally from said first cylindrical portion, and a second cylindrical portion extending proximally from said intermediate tapered section to a proximal shaft end; and surrounding said first cylindrical portion;

fluid supply means including a fluid port at a proximal end of said shaft and a conduit through said shaft between said fluid port and said first cylindrical portion;

a deployment slider slideably mounted on a proximal portion of said second cylindrical portion;

a medical graft slideably mounted on a distal end of said second cylindrical portion, adjacent said deployment slider, said medical graft having an axial bole large enough to slide over said inflatable membrane with said inflatable membrane in a deflated state; and

a sheath having a proximal portion slideably mounted on said deployment slider and on said medical graft, and a tapered distal section removably engaging a distal portion of said second, cylindrical surface, wherein movement of said sheath proximally over said proximal shaft end uncovers said medical graft.

5,290,296

SURGICAL FASTENER SYSTEM

Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210

Division of Ser. No. 681,685, Apr. 5, 1991, Pat. No. 5,203,864. This application Apr. 2, 1993, Ser. No. 41,548

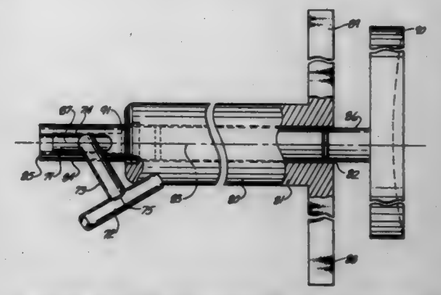
Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—144 **3 Claims**

1. A setting tool for laparoscopically inserting a fastener into body tissue comprising:

a) a housing having a longitudinal axis and a proximate and distal end;

b) a needle member having a central axis carried by said housing adjacent said distal end of said housing so as to form the distal tip of said setting tool, said needle member having a conduit extending, axially therethrough and an axial open slot extending partially through the periphery of said needle member, and communicating with said conduit where said slot is axially bounded in a direction proximate of said distal tip and so proportioned and dimentioned to captively hold said fastener; and



c) setting means slideably carried by said housing and responsive to external force for applying a thrust force axially within said needle member to said fastener so as to eject said fastener from said slot and into said body tissue.

5,290,297

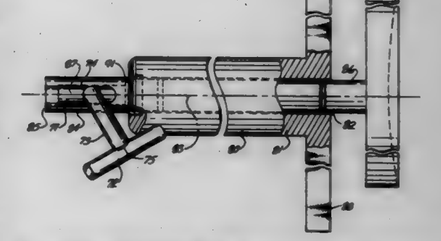
SURGICAL FASTENER SYSTEM

Edward H. Phillips, 712 N. Roxbury Dr., Beverly Hills, Calif. 90210

Division of Ser. No. 681,685, Apr. 5, 1991, Pat. No. 5,203,864. This application Apr. 2, 1993, Ser. No. 41,552

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—144 **4 Claims**



1. A fastener system for attaching a mesh prosthesis or tissue to body tissue comprising in combination:

a) a fastener comprising an H-shaped member made of a material having the property of a sufficient modulus of resilience to absorb the elastic energy produced by a deformation of said H-shape to restore said member to said H-shape, said H-shaped member comprising a pair of oppositely spaced shaft members, a bridge shaft interconnecting said shaft members forming a resiliently flexible joint with each said shaft member, and where said shaft members are so dimensioned and proportioned that each of said shaft members has sufficient columnar resistence to bending to permit insertion of said shaft member into said body tissue; and

b) a setting tool comprising, a housing having a longitudinal axis and a proximate and distal end, a needle member having a central axis carried by said housing adjacent said distal end of said housing so as to form the distal tip of said

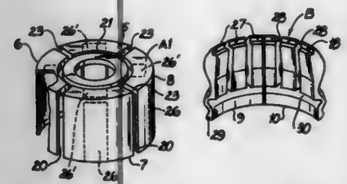
setting tool, said needle member having a conduit extending axially therethrough and an axial open slot extending through the periphery of said needle member, said slot communicating with said conduit where said slot is axially bounded in a direction proximate of said distal tip and so proportioned and dimensioned to captively hold said fastener, and setting means slideably carried by said housing and responsive to external force for applying a thrust force axially within said needle member to said fastener so as to eject said fastener from said slot and into said body tissue.

5,290,298

FRAGMENTABLE ANASTOMOTIC DEVICE

Carlo Rebuffat, and Riccardo Rosati, both of Milan, Italy, assignors to United States Surgical Corporation, Norwalk, Conn.

Filed May 2, 1991, Ser. No. 694,741
Claims priority, application Italy, May 7, 1990, 20225 A/90
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—153 **9 Claims**



1. A fragmentable compression device for the anastomosis of hollow organs of the human body, comprising:

a first member and a second member, both having a hollow cylindrical shape, said first member receives the second member in such a way that between said two members the edges of two hollow organs to be anastomosed can be inserted, and a third member having a hollow cylindrical shape which is suited to press the second member against the first member, thereby compressing the edges of the hollow organs, each of the three members comprising sectors, said sectors being solidly connected to one another when the edges are present between the first and second members, and breaking-off to fragments when the edges are necrotized,

the first member being composed of first and second hollow cylindrical sub-members having both an upper surface and a lower edge,

locking means for engagingly connecting the two sub-members to one another with said second sub-member being within the first sub-member, said locking means consisting of teeth projecting from one of said sub-members into notches of the other sub-member, said notches being in the thickness of said other sub-member, said notches having a depth less than the thickness of said other sub-member; and

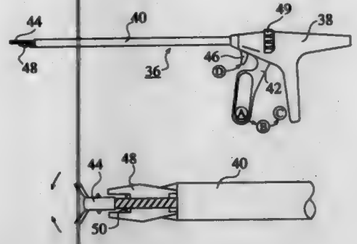
radial slots delimiting said sectors whereby, with the use of means for positioning said compression device, the means for positioning including a circular blade, the circular blade dissects the two sub-members, thereby fragmenting them in sectors.

5,290,299

DOUBLE JAW APPARATUS FOR ATTACHING IMPLANTED MATERIALS TO BODY TISSUE

Eric S. Fain, Menlo Park, and Mary E. Bush, Fremont, both of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 804,934, Dec. 11, 1991, abandoned.
This application Feb. 9, 1993, Ser. No. 16,484
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—142 **2 Claims**



1. A tool which comprises:

a first pair of jaws for grasping membranous tissue and drawing said tissue away from other tissue and towards said tool; and

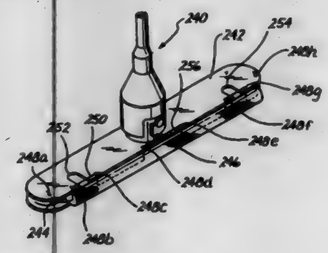
a second pair of jaws arranged in longitudinal sliding relation with said first pair of jaws and releasably carrying a fastener member for delivering and emplacing said fastener member to and in said membranous tissue, said fastener member having an open position and a closed position, in which said fastener member has in its open position a sharp end and an opposite end that is open to receive said sharp end, said sharp end being buried within said opposite end in its closed position, said fastener member being moved from said open position to the closed position by bending caused by said second pair of jaws.

5,290,300

FLEXIBLE SUTURE GUIDE AND HOLDER

Delos M. Cosgrove, Hunting Valley, Ohio, and Than Nguyen, Huntington Beach, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 739,925, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 387,909, Jul. 31, 1989, abandoned, and a continuation-in-part of Ser. No. 444,189, Nov. 19, 1989, Pat. No. 5,041,130. This application Jan. 13, 1993, Ser. No. 4,214
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—148 **21 Claims**



1. A combination comprising:

a biocompatible freely flexible surgical suture guide of predetermined length;

a rigid holder for holding the suture guide in a taut fashion along the length, said holder having guide mounting means defining a surface against which the suture guide is tautly positioned by the releasable retaining means and a handle coupled to the mounting means and formed to be gripped during placement of sutures through the suture guide, the guide mounting means having a shape selected to hold the length of suture guide in a substantially linear configuration with a predetermined dimension;

said releasable retaining means being associated with the holder for releasably holding the freely flexible suture guide in the taut fashion, wherein upon release of the suture guide from the holder by the releasable retaining means, the suture guide resumes flexibility

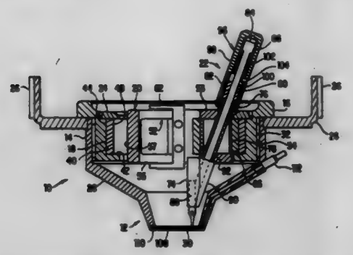
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5,290,301

CAM GUIDED CORNEAL TREPHINE

David M. Lieberman, 300 E. 51st St., Apt. 18B, New York, N.Y. 10022

Filed Oct. 9, 1991, Ser. No. 773,839
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—166 **18 Claims**



1. An ophthalmic device having a cutting blade for cutting a selected portion of an eye, said ophthalmic device comprising:

a base;

a means to conform and secure said ophthalmic device to said eye, said means to conform and secure being mounted on said base;

an adjustment ring movably disposed on said base, said adjustment ring providing a predetermined gross position adjustment of said cutting blade relative to said eye;

an interchangeable cam mounted on said adjustment ring, said interchangeable cam defining an interior cam surface having a predetermined shape;

a roller cage having at least two support rollers positioned about and extending beyond a periphery of said roller cage, said roller cage being positioned within said interchangeable cam, said support rollers being spring-biased radially outwardly relative to said roller cage, said roller cage further comprising a blade roller positioned at and extending beyond said periphery of said roller cage, whereby said support rollers and said blade roller contact and follow said interior cam surface upon rotation of said roller cage relative to said cam; and

a blade mounting means mounted axially on said blade roller, said cutting blade being mounted on said blade mounting means, and said blade mounting means comprising a differential thread mechanism, whereby said differential thread mechanism causes said cutting blade to move a predetermined distance relative to said eye upon each revolution of said roller cage about said interior cam surface, and whereby said cutting blade is moved in a path determined by said predetermined shape of said interior cam surface.

5,290,302

SURGICAL INSTRUMENT

Ljubomir Pericic, Alphington, Australia, assignor to The University of Melbourne, Australia

PCT No. PCT/AU90/00135, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO90/11723, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 6, 1990, Ser. No. 768,293
Claims priority, application Australia, Apr. 7, 1989, PJ3578
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—167 **3 Claims**



1. A surgical instrument, comprising:

a tapered, generally cylindrical elongated handpiece (**10**) having a longitidinal axis, and having a narrower first end and a wider second end, said handpiece being split along the direction of elongation to form two elongated parts (**12, 13**), said handpiece parts being of hollow, generally semi-cylindrical configuration and being connected at said narrower first end for relative symmetrical pivotal movement toward each other under pressure from a user of the instrument and away from each other responsive to a bias spring provided in said handpiece;

a functional tip comprising a pair of jaw members each of which is symmetrically moveable toward and away from the other jaw member;

a spindle extending from said second end of said handpiece to said functional tip and having a longitudinal axis that is coaxial with said handpiece longitudinal axis, said spindle comprising rotatable coaxial shafts (**16, 17**) each of which is connected to a respective jaw member;

a longitudinally extending support member (**14**) extending centrally along the length of said handpiece, wherein said handpiece parts are each pivotally connected to said support member adjacent said first end, and wherein said coaxial shafts are rotationally mounted on said support member at said second end of said handpiece; and

means connecting each of said handpiece parts to one of said coaxial shafts for converting the relative, symmetrical movement of the handpiece parts toward and away from each other to rotation of each of said shafts in opposite directions relative to each other for causing said symmetrical movement of said jaw members, said connecting means including

first (**23**) and second (**24**) levers coupled between said handpiece parts and said coaxial shafts, each lever cooperating with respective ones of said handpiece parts and shafts to cause rotational movement of the respective shaft upon movement of the handpiece part.

5,290,303

SURGICAL CUTTING INSTRUMENT

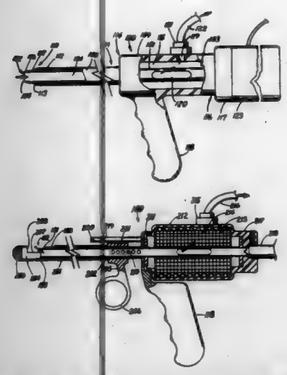
Edward D. Pingleton, and Paul G. Thomson, both of Fillmore, Ind., assignors to Vance Products Incorporated D/B/A Cook Urological Incorporated, Spencer, Ind.

Continuation of Ser. No. 543,679, Jun. 22, 1990, abandoned.
This application Sep. 8, 1992, Ser. No. 942,134
Int. Cl.[5] A61B *17/20*
U.S. Cl. 606—170 **17 Claims**

1. A surgical cutting instrument comprising:

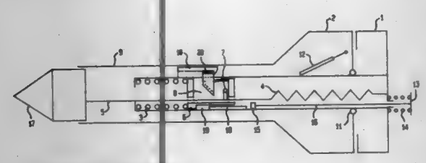
an elongated sheath having a distal end, a proximal end, and a hollow passageway positioned longitudinally therebetween, said sheath also having an outer surface including a bevel extending longitudinally from said distal end of said sheath; and

a rigid inner elongated member rotatably positioned within and extending through said hollow passageway of said sheath, said member having an open distal end extending beyond said distal end of said sheath, a proximal end connectable to a rotary drive mechanism, and a hollow passageway extending longitudinally therethrough from said open distal end thereof for removing tissue, said member being in rotational contact with said elongated



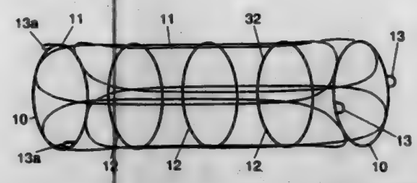
sheath about said distal and proximal ends thereof, said open distal end of said inner elongated member including a rotary cutting edge positioned circumferentially around said hollow passageway and said open distal end of said inner member for cutting through tissue when said member is rotated, said inner member having an outer surface including a predetermined radius extending longitudinally from said cutting edge and said open distal end.

5,290,304
TROCAR SYSTEM
Anthony Storace, Norwalk, Conn., assignor to Ingram S. Chodorow, Saddle River, N.J. and Myron S. Blatt, Chappaqua, N.Y., a part interest to each
Filed May 19, 1991, Ser. No. 699,722
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—184 **19 Claims**



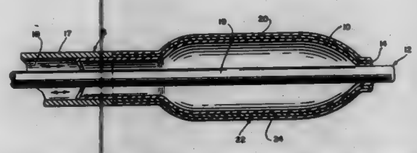
1. A trocar comprising:
a trocar housing, said trocar housing having a proximal end and a distal end;
a piston slideably mounted in the housing and reciprocable therein;
a stylet having a distal end and a sharp tip at said distal end;
cooperating means on said piston and said stylet for restraining said stylet for limited movement with respect to said piston;
means operatively connected to said trocar housing for biasing the piston in a direction toward the proximal end of the trocar housing;
latching means disposed in the trocar housing for latching the piston against movement in the proximal direction; and
de-latching means operatively connected to the piston and responsive to movement of the stylet relative to the piston to allow movement of the piston in the proximal direction.

5,290,305
APPLIANCE COLLAPSIBLE FOR INSERTION INTO HUMAN ORGANS AND CAPABLE OF RESILIENT RESTORATION
Kanji Inoue, 98-13, Miyazaki-cho Simogamo, Sakyo-ku, Kyoto-shi, Kyoto 606, Japan
Continuation-in-part of Ser. No. 768,195, Oct. 11, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 920,915
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—191 **4 Claims**



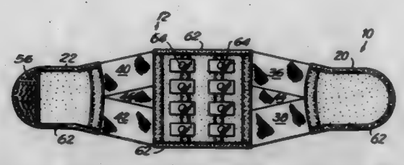
1. A collapsible surgical appliance formed of biocompatible material and configured to be inserted in to a human organ and capable of resilient restoration, comprising:
two discrete wire loops comprising a pair of foldable elastic end wire rings, provided at opposite ends of the appliance;
at least two discrete wire loops comprising at least two foldable, elastic connecting wire rings, having a generally circular shape when no external force is applied thereto, fixed to the pair of foldable elastic end wire rings so as to bridge the pair of foldable elastic end wire rings; and
at least two intermediate wire rings provided between the pair of foldable elastic end wire rings, said two intermediate wire rings being connected to said connecting wire rings so as to keep said at least two foldable elastic connecting wire rings resiliently transformed in a generally elliptical shape.

5,290,306
PUNCTURE RESISTANT BALLOON CATHETER
Thomas Trotta, Miami, Fla., and Jeffrey A. Johnson, Bartlesville, Okla., assignors to Cordis Corporation, Miami Lakes, Fla.
Filed Nov. 29, 1989, Ser. No. 442,568
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 **2 Claims**



1. A balloon catheter, which comprises a flexible, elongated member, an inflatable balloon carried on the elongated member to define an inflation chamber within said balloon, and an inflation conduit extending along said member and communicating with the inflation chamber, said inflatable balloon being surrounded by an elastomeric sleeve to provide pinhole and abrasion resistance to said balloon, said balloon and sleeve being together defined by a coextruded tube, said balloon being made of a flexible, relatively inelastic, biaxially oriented material selected from the group consisting of PET and nylon.

5,290,307
SPINAL ACUPRESSURE DEVICE
Daniel S. J. Choy, 892 River Bank Rd., Stamford, Conn. 06903
Filed Mar. 28, 1991, Ser. No. 676,745
Int. Cl.[5] A61H *15/00*
U.S. Cl. 606—204 **1 Claim**



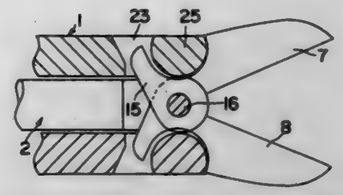
1. A spinal acupressure device, comprising a belt defined by a central panel adapted to be positionable against the lower back of the wearer overlying the L1–L4 spinous processes; elastic band elements affixed at their first ends to the opposed vertical margins of said central panel and terminating at their second ends in a pair of mutually-engageable end panels and a pair of elastic cinch elements having their first ends affixed to the opposed vertical margins of said central panel and having engagement means at their second ends thereof for retaining said cinch elements in a stretched and extended configuration when the belt is about the wearer, and a plurality of eight pressure-point generating means removably mounted to said central panels for applying acupressure to the L1 through L4 acupressure points of the wearer.

5,290,308
ENDOSCOPIC INSTRUMENT
David A. Knight, and Bahram B. Rahimzadeh, both of Durham, N.C., assignors to Edward Weck Incorporated, Research Triangle Park, N.C.
Filed Jul. 15, 1992, Ser. No. 913,852
Int. Cl.[5] A61B *17/10*
U.S. Cl. 606—205 **14 Claims**



1. An endoscopic apparatus, comprising:
a stem having a proximal end, a distal end, and an interior surface;
a handle mounted to said proximal end of said stem;
an instrument mounted to said distal end of said stem;
operating means extending in said stem and defining an annulus therein to operably connect said handle to said instrument;
seal means mounted internally of said stem in said annulus in contact with said interior surface thereof and circumscribing while sealing against said operating means, said seal means disposed adjacent said proximal end of said stem;
access means in said stem for unidirectional introduction of pressurized fluid into said annulus, said seal means preventing exit of the pressurized fluid at said proximal end while forcing the fluid down said annulus toward the distal end of said stem for clean-out thereof, said access means preventing fluid flow out of said stem during an endoscopic procedure;
said handle rotationally movable with respect to said seal means;
said instrument, said stem, said operating means, and said access means selectively rotationally movable in tandem with respect to said handle.

5,290,309
SURGICAL INSTRUMENT
Lutz Kothe, Bodmaner Str. 17, 7760 Radolfzell 14, Fed. Rep. of Germany
Filed Feb. 3, 1992, Ser. No. 829,481
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112818; Jul. 24, 1991, 9109113[U]
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—207 **27 Claims**



1. A surgical instrument having closable jaws, comprising: a pull element having a pivot on one end thereof and at least one limb member at the opposite end; jaw pats fixed on the pull element, at least one jaw part forming an axis of rotation with the pull element and being arranged rotatably about this axis of rotation; a shank tube, with the pull element passing through the shank tube; a first recess formed in at least one movable jaw part, the center point of which rotates about the pivot on the pull element; an annular piece provided in the shank tube at least partly surrounded by the first recess in the use position; wherein at least one jaw part rotates about the annular piece during its closing or opening movement; and wherein, the pull element protrudes form the shank tube at the other end thereof and is fixed releasably on a neck of a limb member.

5,290,310
HEMOSTATIC IMPLANT INTRODUCER
Joshua Makower, Nanuet, N.Y.; Claude A. Vidal, Santa Barbara, Calif.; Steven R. LeMott; Rodney E. Wells, both of East Lyme, Conn., and Thomas F. Banks, Santa Barbara, Calif., assignors to Howmedica, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 784,920, Oct. 30, 1991. This application Jul. 13, 1992, Ser. No. 912,921
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—213 **33 Claims**



1. A surgical delivery instrument for delivering a hemostatic substance subcutaneously against a penetration site in a wall of a blood vessel in the course of a surgical procedure in which an incision is made through the blood vessel and a tubular body with an exterior wall is passed through said incision into said blood vessel, comprising:
(a) an outer tubular sheath member having a proximal end, a distal end and a lumen extending therebetween, the diameter of said lumen being of a predetermined size greater than that of said tubular body and adapted to allow said tubular body to pass coaxially therethrough;
(b) a housing affixed to said proximal end of said outer sheath member;

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(c) an annular mass of a hemostatic material, said mass having a proximal and a distal edge surface and initially being contained within said outer tubular sheath member proximate said distal end thereof so as to be isolated from exposure to body fluids and adapted to coaxially surround and slide longitudinally relative to the exterior wall of said tubular body upon insertion of said tubular sheath into said incision;

(d) an inner tubular member reciprocally movable relative to said outer tubular sheath member and within said lumen of said outer tubular sheath member, said inner tubular member being concentrically disposed relative to said outer tubular sheath member and having a wall thickness for engaging said proximal edge surface of said mass as said inner tubular member is moved relative to said outer tubular sheath; and

(e) a reciprocally movable slide mounted in said housing and operatively coupled to said inner tubular member for imparting relative movement in the longitudinal direction of said inner tubular member and said outer tubular sheath for exposing said mass to body fluids exterior of said lumen with said distal edge surface of said annular mass against the exterior wall of said blood vessel at said penetration site and with no portion of said hemostatic mass or said surgical delivery instrument entering into said blood vessel.

5,290,311

FEMORAL HEAD SHAFT PROSTHESIS

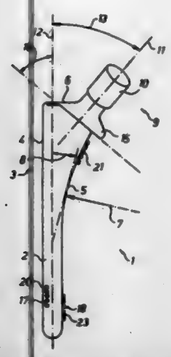
Friedrich Baumann, Am Kirchberg 2, 8858 Neuberg/Donau, Fed. Rep. of Germany

Continuation of Ser. No. 816,114, Jan. 2, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,903

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1990, 4101587

Int. Cl.[5] A61F *1/24*

U.S. Cl. 623—23 **18 Claims**



1. A femoral head shaft prosthesis which includes a longitudinal shaft portion having a length for implantation in a marrow cavity of a femoral neck stump and secured by means of a cement layer surrounding the shaft portion, a femoral head portion integral with said shaft portion projecting laterally in relation to a longitudinal axis of the shaft portion, and said shaft having a generally smooth outer surface with a plurality of discrete raised areas having small surface areas relative to a circumference of said shaft portion raised areas comprising:

a plurality of circumferentially spaced lower spacers connected directly with said outer surface and projecting outwardly from a lower portion of said shaft portion for spacing and centering said shaft portion in a receiving cavity formed in said marrow cavity of the femoral neck stump;

said lower shaft portion and said lower spacers having a total outer diameter generally equal to an inner diameter of said receiving cavity;

an upper shaft portion formed on one side as a straight projection of said lower shaft portion having a medial side which widens conically to define a concave surface in a medial area of said upper shaft portion;

a plurality of upper spacers connecting directly with said outer surface and projecting outwardly from aid concave surface for contact against a corticalis medial in said marrow cavity; and

said lower spacers providing a uniform gap for uniform cement layer thickness about said lower shaft with only minimal interruptions between said receiving cavity and shaft portion to ensure primary and long-term stability.

5,290,312

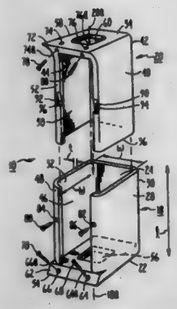
ARTIFICIAL VERTEBRAL BODY

Haruo Kojimoto, Tokyo, and Natsuo Yasui, Osaka, both of Japan, assignors to Alphatec, Palm Desert, Calif.

Filed Sep. 3, 1991, Ser. No. 753,786

Int. Cl.[5] A61F *2/44*

U.S. Cl. 623—17 **15 Claims**



1. An implantable artificial vertebra which is biocompatible and sized for replacing a metastatic vertebra, comprising:

a first hollow component having an abutting end for abutting a vertebra of a living being and an anchoring window formed in said abutting end, an open first side establishing an access window, and an open end formed opposite said abutting end;

a second hollow component having a second abutting end for abutting a vertebra of a living being and a second anchoring window formed in said second abutting end, an open first side establishing a second access window, and a second open end formed opposite said second abutting end, the second component being slidably receivable through the open end of said first component; and

motion preventing means engageable with both of said components for substantially preventing slidable motion between said components.

5,290,313

OFFSET PROSTHETIC STEM EXTENSION

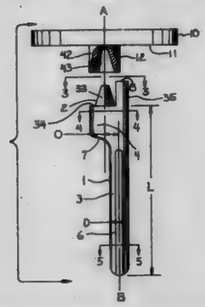
Mark A. Heldreth, Mentone, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Nov. 23, 1992, Ser. No. 979,978

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 **17 Claims**

1. A modular prosthesis system comprising a prosthetic base portion having a surface for positioning adjacent to a corresponding bone, the base portion having a base mounting means thereon, and a stem extension for insertion into a cavity in a bone, the stem extension having a stem mounting means for mounting the stem extension to the base mounting means, and the stem extension further having an elongated stem portion connected to the stem mounting means by a connection portion, and wherein the stem mounting means has a first central



longitudinal axis and the elongated stem portion has a second central longitudinal axis substantially parallel to the first axis, but which is spaced apart therefrom to provide an offset therebetween.

5,290,314

FINGER JOINT PROSTHESIS MADE OF METAL

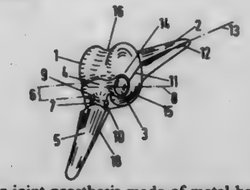
Rudolf Koch, Frauenfeld, and Yvan Sandoz, Winterthur, both of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterhur, Switzerland

Filed Nov. 30, 1992, Ser. No. 983,176

Claims priority, application Switzerland, Jan. 31, 1992, 00286/92

Int. Cl.[5] A61F *2/42*

U.S. Cl. 623—21 **16 Claims**



1. A finger joint prosthesis made of metal having a bearing shell (1) which is attached to a first shaft (2) adapted to be located in a metacarpal, said bearing shell guiding a bearing journal (3) which is attached to a second shaft (5) adapted to be located in a phalange, the bearing journal (3) having a central axis and at right angles to said central axis comprises a connecting piece (7) to said second shaft (5), characterized in that the bearing shell (1) is C-shaped, engages the bearing journal, restricts a lateral excursion of the bearing shell relative to the bearing journal and limits relative angular flexion between the bearing shell and the bearing journal, and in that the bearing shell (1) can be forced open when moving the journal bearing in a radial direction into the bearing shell by means of a slit-shaped notch extending from the bearing shell (1) and said first shaft (2) and dividing them in a longitudinal direction (13) into two halves (14, 15).

5,290,315

OBLONG ACETABULAR CUP

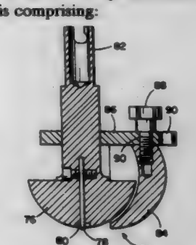
Alfred F. DeCarlo, Jr., Stamford, Conn., assignor to Joint Medical Products Corporation, Stamford, Conn.

Division of Ser. No. 665,952, Mar. 7, 1991, Pat. No. 5,192,329. This application Dec. 14, 1992, Ser. No. 989,834

Int. Cl.[5] A61F *2/34, 5/04*

U.S. Cl. 623—22 **3 Claims**

1. Apparatus for cutting a second spherical cavity in a patient's pelvis adjacent to and displaced from a first spherical cavity in the pelvis comprising:



(a) guide means for engaging the surface of the first spherical cavity;

(b) cutting means having an axis for cutting the second spherical cavity; and

(c) means for holding the guide means and the cutting means in a predetermined spatial relationship with respect to one another so that the axis of the cutting means is displaced from a parallel axis through the center of the first spherical cavity.

5,290,316

Patent Not Issued For This Number

5,290,317

Patent Not Issued For This Number

5,290,318

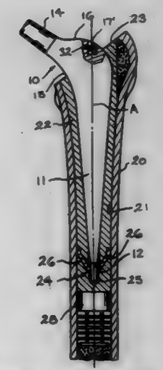
FEMORAL STEM PROSTHESIS

Robin S. M. Ling, 2 The Quadrant, Wonford Road, Exeter, England; W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623, and James J. Elting, 18 Brigham Rd., Oneonta, N.Y. 13820

Division of Ser. No. 804,623, Dec. 6, 1991, Pat. No. 5,171,275, which is a continuation of Ser. No. 527,298, May 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 480,229, Feb. 15, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 915,276

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—23 **14 Claims**



1. A femoral hip joint prosthesis adapted to be cemented into

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an intramedullary canal with cement, said prosthesis in combination with a centralizer having an open upper end and a closed lower end forming a pocket comprising an elongated stem extending from a proximal end to a distal end and defining a first axis, said proximal end having a neck region which joins the stem at a juncture, said stem having anterior, posterior, medial and lateral surfaces and said surfaces tapering downwardly from said juncture to said distal end;

said neck region defining a second axis disposed at an obtuse angle with the first axis, and

said medial surface defining a smooth arcuate path from the stem across the juncture to the neck region and said lateral surface defining an enlarged shoulder proximal said juncture; and,

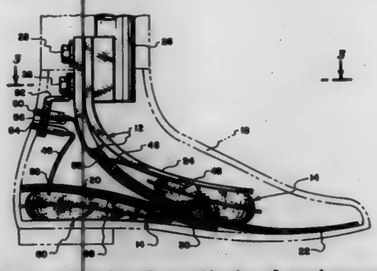
said stem being formed of a cobalt chrome molybdenum alloy and said surfaces having a polished finish throughout to a target surface roughness no greater than about four (4) microinches such that substantially no interfacial bonding will occur between said surfaces and said cement, said stem having said distal end engaged in said centralizer open upper end and spaced from said closed lower end, said stem being engaged to said cement in an interfacial relationship which permits (1) subsidence of said stem within said cement without disrupting said cement and (2) movement of said distal end deeper into said centralizer pocket.

5,290,319

PROSTHETIC FOOT INCORPORATING ADJUSTABLE BLADDERS

Van L. Phillips, 5499 Avenida Maravillas, Rancho Sante Fe, Calif. 92067

Filed Feb. 28, 1991, Ser. No. 662,783
Int. Cl.[5] A61F *2/66*
U.S. Cl. 623—56 9 Claims



1. In a prosthetic foot, the combination of: attachment means to facilitate operative engagement of the foot with a wearer's stump; a plurality of elongated, non-inflatable, curvilinear structural members operatively attached to said attachment means and/or to each other, said structural members providing substantial energy storage and return during ambulation; and bladder means adjacent said structural members, whereby said bladder means cooperate with said structural members in determining the energy-storage characteristics of said foot, said foot constituting means for substantially operable ambulation without regard to the presence or pressure of said bladder means.

5,290,320

FIBER TREATMENT AGENT

Ryuzo Mikami, and Isao Ona, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 871,242
Claims priority, application Japan, Apr. 24, 1991, 3-122232
Int. Cl.[5] D06M *15/00, 23/00*
U.S. Cl. 8—115.6 9 Claims

1. A method of treating fibrous material comprising depositing on the fibrous material 0.01 to 5.0 percent by weight based on the weight of the fibrous material of a fiber treating agent comprising a silicone modified polyester in which a polyester has a polyorganosiloxane grafted thereto, the grafted polyester being the reaction product of an allyl ether containing polyester and a polyorganosiloxane wherein at least one of the silicon atoms of the polyorganosiloxane has a hydrogen atom attached thereto; the allyl ether containing polyester being formed by combining a polycarboxylic acid and a polyhydric alcohol; the polycarboxylic acid being selected from the group consisting of adipic acid, phthalic anhydride, isophthalic acid, and terephthalic acid; the polyhydric alcohol being selected from the group consisting of ethylene glycol, neopentyl glycol, trimethylolpropane, trimethylolethane, trimethylolpropane monoallyl ether, trimethylolethane monoallyl ether, glycerol, glycerol monoallyl ether, pentaerythritol, pentaerythritol monoallyl ether, and pentaerythritol diallyl ether.

5,290,321

PROCESS FOR PREPARATION OF GRANULAR μ-SULFUR HAVING IMPROVED FLOWABILITY, AS A VULCANIZING AGENT OF RUBBER COMPOSITION

Yukihiro Koga, Tadotsu; Tadahiko Matsuoka, Yoshino, and Masatoshi Sase, Marugame, all of Japan, assignors to Shikoku Chemicals Corporation, Marugame, Japan

Continuation-in-part of Ser. No. 750,633, Aug. 27, 1991, abandoned. This application Nov. 3, 1992, Ser. No. 970,878
Claims priority, application Japan, Aug. 28, 1990, 2-227429; Mar. 30, 1991, 3-92836
Int. Cl.[5] C01B *17/00*
U.S. Cl. 23—293 S 6 Claims

1. A process for the preparation of granular μ-sulfur, comprising the steps of:

adding a liquid organic compound having a boiling point lower than 120° C. as a binding agent to a powder of μ-sulfur in an amount of 0.3 to 0.7 liter of the liquid organic compound per kg of the powder of μ-sulfur, mixing the powder with the binding agent, granulating the mixture and drying the granulated mixture by heating at a temperature lower than 120° C. to form the granular μ-sulfur.

5,290,322

PROCESS FOR THE CRYSTALLIZATION OF SODIUM BICARBONATE

Claude Breton, and Léon Ninane, both of Dombasle-sur-Meurthe, France, assignors to Solvay & Cie (Société Anonyme), Brussels, Belgium

Filed Apr. 24, 1990, Ser. No. 522,605
Claims priority, application France, Apr. 24, 1989, 89 05513
Int. Cl.[5] C01D *7/24*
U.S. Cl. 23—302 T 8 Claims

1. Process for the manufacture of sodium bicarbonate particles having one of an ovoid shape and a spherical shape, the process comprising:

a. preparing an aqueous solution of sodium bicarbonate, which is supersaturated;

b. circulating the aqueous solution supersaturated in sodium bicarbonate through a bed of crystals in order to cause the bed to be a mobile bed in which the crystals are in continuous motion and to cause crystallization of the sodium bicarbonate particles and at least partial desupersaturation of the aqueous solution supersaturated in sodium bicarbonate to provide a mother liquor and,

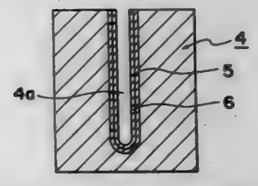
c. withdrawing the sodium bicarbonate particles from the bed.

5,290,323

MANUFACTURING METHOD FOR SOLID-ELECTROLYTE FUEL CELL

Ryoichi Okuyama, and Eiichi Nomura, both of Takatsuki, Japan, assignors to Yuasa Corporation, Osaka, Japan

PCT No. PCT/JP91/01701, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO92/10862, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 9, 1991, Ser. No. 915,699
Claims priority, application Japan, Dec. 10, 1990, 2-409997; Dec. 14, 1990, 2-410959; Dec. 17, 1990, 2-411402; Dec. 18, 1990, 2-412014; Jan. 29, 1991, 3-29539; Jan. 29, 1991, 3-29540; Feb. 15, 1991, 3-44367; Feb. 28, 1991, 3-59368; Feb. 28, 1991, 3-59369; Mar. 11, 1991, 3-72352; Mar. 23, 1991, 3-83260; Mar. 23, 1991, 3-83261; Jul. 24, 1991, 3-208684; Jul. 24, 1991, 3-208685; Aug. 26, 1991, 3-240466; Sep. 20, 1991, 3-270055; Oct. 3, 1991, 3-284031; Oct. 7, 1991, 3-289148
Int. Cl.[5] H07M *8/10*
U.S. Cl. 29—623.5 27 Claims



1. A method for manufacturing a solid-electrolyte fuel cell equipped with a fuel-electrode and an air-electrode for its electrodes with a solid-electrolyte sandwiched between said electrodes;

said method comprising the steps of pouring a first slurry into a concave portion of a mold composed of a material having a property for sucking a specified liquid and forming an electrolyte green body, said first slurry being a mixture of a solid-electrolyte powder and said specified liquid,

pouring a second slurry into said concave portion and forming an electrode green body on said electrolyte green body and forming a multi-layer green body integrated with said electrolyte green body, said second slurry being a mixture of an electrode powder and said specified liquid,

and removing said multi-layer green body from said mold and sintering said removed multi-layer green body;

said electrode green body formed in said concave portion being one or both of a fuel-electrode green body and an air-electrode green body.

5,290,324

COAL-WATER MIXTURE USING UPGRADED LOW-RANK COAL AND PROCESS FOR PRODUCING SAID MIXTURE

Chikao Yokokawa, Kyoto, and Sadao Wasaka, Hatogaya, both of Japan, assignors to Mitsui Mining Company, Limited, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,453
Int. Cl.[5] C10L *1/32*
U.S. Cl. 44—280 4 Claims

1. A process for producing a coal-water mixture usable as a fuel as is, using upgraded low-rank coal having an equilibrium moisture content of less than 11 percent of less at 100 percent relative humidity, said coal-water mixture having a particle size of the coal such that the proportion of the coal portion passing through a 200-mesh filter is 80 percent by weight or more, which process comprises:

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heat-treating a low-rank coal having a carbon content of 75 percent or less on dry ash-free basis and an inherent moisture content of 10 percent or more, or an equilibrium moisture water content of 15 percent or more at room temperature and 98 percent relative humidity, in the presence of water and carbon monoxide at the critical temperature of water, 641.3° K., below in a pressure vessel, wherein the weight ratio of the water and low-rank coal used in the heat treatment of low-rank coal is 0.3 to 3.0 and the amount of carbon monoxide present in the reaction system is 1 to 5 MPa in terms of the partial pressure of carbon monoxide during the reaction, said heat treatment being conducted until the coal, after heat treatment, has an equilibrium moisture content of less than 11 percent at 100 percent relative humidity, and

recovering the reaction mixture comprising coal and water, from the pressure container, using humic acid as a surfactant as is in the water which has been produced by the heat treatment whereby addition of another surfactant added thereto is eliminated or minimized, and adding the required amount of water to obtain a slurry.

5,290,325

HYDROCARBON FUEL COMPOSITION CONTAINING ALPHA-KETOCARBOXYLATE ADDITIVE

Diane D. Kanne, Yorba Linda, and William M. Fruscella, Corona, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 28, 1990, Ser. No. 486,074
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—400 **40 Claims**

1. A composition comprising:
a hydrocarbon fuel; and
a sufficient amount of an alpha-ketocarboxylate ester additive to reduce particulate emissions from the combustion of the fuel.

17. A method for reducing the particulate emissions from combustion of hydrocarbon fuel comprising combusting a composition as defined in claim **1**.

28. A composition comprising:
a liquid hydrocarbon fuel;
an alpha-ketocarboxylate ester; and
a dissolved alcohol in a proportion greater than that soluble in the fuel in the absence of the alpha-ketocarboxylate.

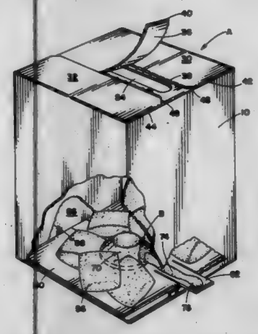
5,290,326

FUEL PACKAGE

Patsie C. Campana, Lorain, Ohio, assignor to Caldo International, Inc., Lorain, Ohio

Filed Jan. 15, 1992, Ser. No. 821,077
Int. Cl.[5] C01L *11/06*
U.S. Cl. 44—519 **11 Claims**

1. An ignition device for igniting an associated fuel, said ignition device comprising:
a base, said base being generally planar and having a top surface and a bottom surface, said base being made of a combustible material;
an ignitor, said ignitor being attached to said top surface of said base and being a thermite type material containing aluminum and iron oxide; and,
a wick, said wick being attached to said top surface of said base, said wick having first and second ends, said first end



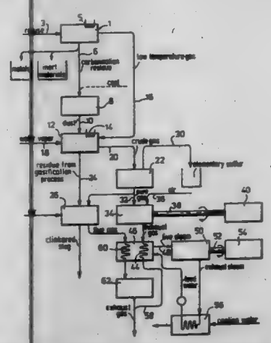
of said wick attached to said ignitor, said wick being ignitable with a match.

5,290,327

DEVICE AND ALLOTHERMIC PROCESS FOR PRODUCING A BURNABLE GAS FROM REFUSE OR FROM REFUSE TOGETHER WITH COAL

Gottfried Rossle, Geisnangstrasse 3, D-7140 Ludwigsburg, Fed. Rep. of Germany

PCT No. PCT/DE89/00545, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991, PCT Pub. No. WO90/02162, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 19, 1989, Ser. No. 654,633
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828534
Int. Cl.[5] C10J *3/00*
U.S. Cl. 48—111 **20 Claims**



1. A method for producing from refuse a fuel gas suitable for public utility purposes, said method comprising the steps of:
producing a carbonization gas and a carbonization residue from refuse in an externally heated low-temperature gas generator in the absence of oxygen and without any carbonization media;
grinding the carbonization residue to a fine-grained dust;
producing a crude gas and a gasification residue from both the carbonization gas and the dust in an externally heated crude gas generator, in the absence of air, with water, in the form of process steam, as a gasification medium, the sensible heat of the crude gas being used for heating the low-temperature gas generator and for superheating the process steam produced from the water;

producing a fuel gas from the crude gas by purification; and
producing a flue gas from the gasification residue in a gasification residue combustion chamber, wherein the sensible heat of the flue gas is used for superheating the process team.

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Patent Not Issued For This Number

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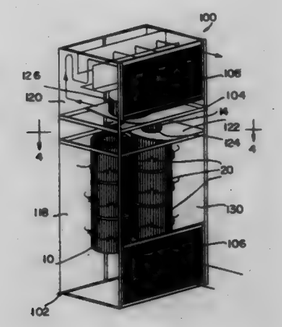
5,290,330

HEPA FILTRATION SYSTEM

Byron S. Tepper, Baltimore, Md., and Robert S. Suchomski, Albuquerque, N. Mex., assignors to The Johns Hopkins University, Baltimore, Md. and Envirco Corp., Albuquerque, N. Mex.

Filed Jun. 10, 1993, Ser. No. 74,334
Int. Cl.[5] B01D *46/52*
U.S. Cl. 55—276 **13 Claims**

1. A device for filtering air comprising:
a filter housing having an air inlet for directing flow of air drawn into the housing from atmosphere and an air outlet for directing flow of air exhausted from the housing to



atmosphere, the air drawn into the housing carrying air contaminants therewith;
a plurality of cylindrical filter stacks having substantially parallel longitudinal axes disposed in the housing, the filter stacks having outer cylindrical filter walls and inner passages extending therethrough along the longitudinal axes, the filter stacks capable of filtering the air drawn into the housing by trapping the air contaminants in the filter walls when air is drawn through the filter walls into the inner passages; and
blower means disposed within the filter housing for (1) drawing the air from atmosphere into the filter housing through the air inlet, (2) drawing the air through the filter walls into the inner passages to trap the air contaminants in the filter walls to thereby produce filtered air within the inner passages, and (3) exhausting the filtered air through the air outlet into the atmosphere.

5,290,331

LOCALIZED CLEAN AIR SYSTEM

Anthony W. Miles, Bath; Norman J. Wood, Sutton Benger; Guy A. Wilson, Lymington, and Stephen C. Wilcox, Harrow, all of England, assignors to University of Bath, Bath, England

Filed Nov. 5, 1991, Ser. No. 788,092
Int. Cl.[5] B01D *50/00*
U.S. Cl. 55—321 **23 Claims**

1. A localized clean air system comprising:
means for generating an air flow from an air inlet to an external localized region;



a delivery head provided with an air outlet having an exhaust aperture directed towards said localized region, said delivery head being in communication with said means for generating the air flow;
a streamlined body having a head and a tail of diminishing cross-sectional area extending downstream along a longitudinal axis, said body being positioned in said air outlet so that the air flow passes around said streamlined body and is modified thereby to form downstream thereof, an inner region of low velocity air and an outer region of higher velocity air with the overall air flow being substantially turbulence free.

5,290,332

CERAMIC ARTICLES AND METHODS FOR PREPARING CERAMIC ARTICLES AND FOR SINTERING

Dilip K. Chatterjee; Debasis Majumdar; Syamal K. Ghosh, and Jose M. Mir, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

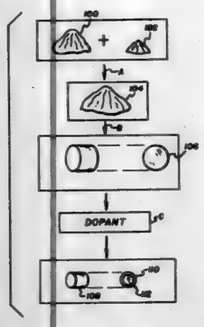
Filed Mar. 5, 1992, Ser. No. 846,646
Int. Cl.[5] C04B *35/48*
U.S. Cl. 65—18.1 **14 Claims**

1. A method for preparing a net shape ceramic article having a tetragonal crystal structure core and a cubic crystal structure case, said method comprising the steps of
compacting a particulate alloy of ZrO_2 and a secondary oxide selected from the group consisting of MgO, CaO, Y_2O_3, Sc_2O_3, rare earth oxides and combinations thereof, to form a blank, said particulate alloy having a molar ratio of secondary oxide to ZrO_2 of from about 2:98 to

about 5:95, a grain size from about 0.1 to about 0.6 micrometers, an agglomerate size of from about 30 to about 60 micrometers, said blank having a density of from about 40 to about 65 percent of the density of said tetragonal crystal structure core of said ceramic article;

heating said blank from room temperature to a sintering temperature from about 1400° C. to about 1600° C.;

maintaining said blank at said sintering temperature from about 1 hour to about 3 hours;



contacting said blank with oxide selected from the group consisting of MgO, CaO, Y_2O_3, Sc_2O_3, rare earth oxides and combinations thereof during said maintaining step; and

cooling said blank from said sintering temperature to room temperature;

said heating and cooling steps having temperature ramps of less than 2° C./minute and

wherein dimensional shrinkage of said blank, during said heating, maintaining and cooling steps is uniform to within 0.001 percent.

5,290,333

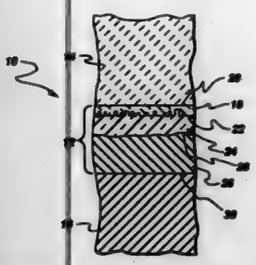
METAL-CERAMIC STRUCTURE WITH INTERMEDIATE HIGH TEMPERATURE REACTION BARRIER LAYER

Herman F. Nied, Clifton Park, and Richard L. Mehan, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 353,580, May 18, 1989, Pat. No. 5,200,241. This application Dec. 2, 1992, Ser. No. 984,613

Int. Cl.[5] C03C *27/00*

U.S. Cl. 65—31 **8 Claims**



1. A method of making a ceramic-metal structure comprising the steps of:

etching a surface of a silicon based ceramic substrate to effect removal of surface silicon therefrom, thereby producing a porous surface;

bonding a layer of glass to said porous surface; and

bonding a refractory metal member to said layer of glass.

5,290,334

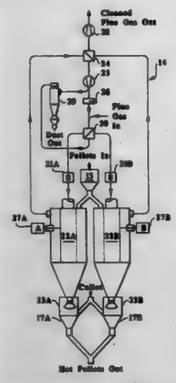
APPARATUS FOR BATCH PREHEATING AND POLLUTION ABATEMENT IN GLASS MANUFACTURE

Jeffery C. Alexander, Newbury, Mass., assignor to Edmeston AB, Vastra Frolunda, Sweden

Filed Sep. 21, 1992, Ser. No. 945,722

Int. Cl.[5] C03B *3/02*; B01D *50/00*; F27D *13/00*

U.S. Cl. 65—335 **12 Claims**



1. An apparatus for preheating pelletized glass batch and for reducing emissions in exhaust gases from a glass melting furnace, comprising:

(a) a preheater for heating pelletized glass batch, said preheater including a first bed of pelletized glass batch and means for moving said first bed through a preheating section;

(b) means for conveying a stream of hot exhaust gases from the melting furnace over said first bed, thereby heating the pelletized glass batch of said first bed, said exhaust gases containing particulate material;

(c) means for feeding said heated pelletized glass batch to the melting furnace;

(d) means for electrostatically ionizing the exhaust gases exiting said preheater;

(e) a filter for removing said particulate material from said ionized exhaust gases, including a static second bed of pelletized glass batch and means for electrically polarizing the pelletized glass batch in said second bed;

(f) means for passing the ionized exhaust gas over said static second bed, thereby substantially reducing the amount of said particulate material in said ionized exhaust gas; and

(g) means for periodically converting said preheater to a filter and said filter to a preheater, thereby reversing the functions of said first and second beds in said apparatus.

5,290,335

PLUNGER ASSEMBLY FOR FORMING GLASS CONTAINERS

William H. Stewart, 2341 Wilbur Ave., San Diego, Calif. 92109

Continuation-in-part of Ser. No. 711,335, Jun. 6, 1991, abandoned, Ser. No. 610,371, Nov. 6, 1990, abandoned, and Ser. No. 468,158, Jan. 22, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,927

Int. Cl.[5] C03B *11/06*

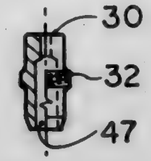
U.S. Cl. 65—362 **7 Claims**

1. In a glass-container-making apparatus wherein a generally bottle shaped form is used to penetrate molten glass ingot, is removably attached on a vertical plunger shaft by a collar capturing the base of the form and the head of said shaft, the improvement which comprises:

a collar secured to head of said shaft and having a portion extending the above head of said shaft to form a cavity or recess;

the cavity in the lower end of said collar having at least two spaced apart lugs extending radially and inwardly from the said lower cavity of said collar;

said head of shaft having at least two bayonet-type grooves shaped and dimensioned to mesh with and radially engage said lugs of said collar,



a pin movable within an axially oriented channel of said collar, said pin being shaped and dimensioned to, in a first position to engage a notch or recess in a side of the head of said shaft, and in a second position, withdraw out of said notch of said shaft as said form is disengaged from said recess in said collar;

one or more spring biased locking members vertically oriented in said collar, said locking member is sized and shaped to engage notches in the flange of said form.

5,290,336

IRON-BASED POWDER COMPOSITIONS CONTAINING NOVEL BINDER/LUBRICANTS

Sydney Luk, Lafayette Hill, Pa., assignor to Hoeganaes Corporation, Riverton, N.J.

Filed May 4, 1992, Ser. No. 878,032

Int. Cl.[5] C22C *29/00*

U.S. Cl. 75—231 **32 Claims**

1. A metallurgical powder composition comprising iron-based powder admixed with about 0.3 to about 10 weight percent, based on the total composition weight, of a blend that comprises dibasic organic acid and polyether.

32. A shaped article prepared by compacting the composition of claim 1 in a die and sintering the resultant compact.

5,290,337

PYROCHEMICAL PROCESSES FOR PRODUCING PU, TH AND U METALS WITH RECYCLABLE BYPRODUCT SALTS

Ram A. Sharma, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1992, Ser. No. 941,959

Int. Cl.[5] C22B *60/02*

U.S. Cl. 75—393 **3 Claims**

1. In the process of the chemical reduction of actinide metal oxide by reaction with magnesium metal to form the corresponding actinide metal and magnesium oxide, said process comprising suspending the actinide oxide in a molten salt flux, reacting the actinide oxide with magnesium metal to form actinide metal and magnesium oxide, collecting the actinide metal into a separate and separable liquid metal phase, and suspending the byproduct magnesium oxide in the molten salt flux, such reaction being continued until the actinide metal oxide is reduced, whereupon the liquid metal phase is separated from the salt flux for recovery of the actinide metal,

the improvement to said process facilitating the recycling of the byproduct salts and oxide to recover magnesium metal comprising

employing as said reduction reaction medium flux a mixture consisting essentially of magnesium chloride and a rare earth element trichloride, whereby the byproduct magnesium oxide reacts as it is formed with said rare earth trichloride to form a salt mixture comprising magnesium chloride and rare earth oxychloride,

separating the magnesium chloride-rare earth oxychloride-containing salt mixture from the actinide metal product and thereafter

subjecting the magnesium chloride-rare earth oxychloride-containing salt mixture to electrolysis to produce magnesium metal and convert the rare earth oxychloride to rare earth trichloride.

5,290,338

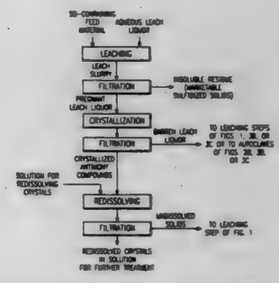
ANTIMONY SEPARATION PROCESS

Corby G. Anderson, Silverton; Suzzann M. Nordwick, Wallace, and Leo E. Krys, Kellogg, all of Id., assignors to Sunshine Mining Company, Kellogg, Id.

Filed Oct. 16, 1992, Ser. No. 962,899

Int. Cl.[5] C01B *27/00*

U.S. Cl. 75—703 **22 Claims**



1. An antimony separation process comprising the steps of:

providing material containing antimony;

leaching said material with a solvent for preferentially dissolving said antimony to form a pregnant leach liquor and an insoluble residue;

separating said leach liquor from said insoluble residue;

treating said separated leach liquor to crystallize compounds containing antimony;

separating said crystallized antimony compounds from said separated leach liquor;

redissolving said crystallized antimony compounds; and

treating said redissolved antimony compounds to form a product selected from the group consisting of antimony metal, sodium thioantimonate, sodium hydroxy antimonate, sodium antimonate, antimony pentoxide, and antimony pentasulfide.

5,290,339

PLATINUM RECOVERY

Darrell L. Gallup, and G. Todd Ririe, both of Chino Hills, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 17, 1992, Ser. No. 991,949

Int. Cl.[5] C22B *11/08*

U.S. Cl. 75—712 **22 Claims**

1. A method for removing platinum from a platinum-containing brine comprising the step of contacting the brine with carbon.

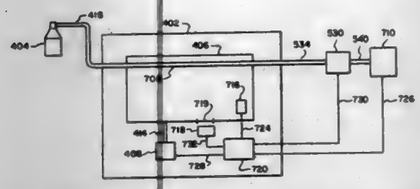
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,340

METHODS AND APPARATUS FOR DEGASSING A LIQUID

Ronald A. Gattea, Pleasanton; Leslie A. Miller, Milpitas; Thomas J. McCall, Jr., Fremont, and Vance J. Nau, Cupertino, all of Calif., assignors to Thermo Separation Products (California) Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 622,999, Dec. 4, 1990, Pat. No. 5,183,486. This application Dec. 14, 1992, Ser. No. 990,656
Int. Cl.[5] B01D *19/00, 15/08*
U.S. Cl. 95—46 9 Claims



1. A method for providing a mixed mobile phase to a liquid chromatography analytical system, comprising the steps of:
providing at least two components of a mobile phase, mixing the components of said mobile phase and obtaining the mixed mobile phase;
placing said mixed mobile phase into a chamber;
creating a vacuum in said chamber so as to degas said mixed mobile phase; and
conducting the degased mixed mobile phase to said analytical system.

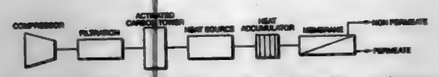
2. A module for conditioning a liquid, comprising:
means for degassing said liquid;
a container having said liquid therein;
means for conducting said liquid from said container to said degassing means comprising tubing connected to said container and a pump; and
a holder mounted on top of said degassing means, for holding said container and liquid to provide stability thereto and to contain any liquid which may spill from said container.

5,290,341

FAST RESPONSE MEMBRANE GENERATOR USING HEAT ACCUMULATION

Christian Barbe, Fontenay aux Roses, France, assignor to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Aug. 26, 1992, Ser. No. 935,165
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—54 17 Claims



1. A method of rapidly restarting a membrane nitrogen generator which is operated non-continuously, thereby reaching operating temperature in a reduced amount of time, said generator comprising feed stream compressing means having feed stream input means; heat source means downstream of said feed stream compressing means, and in fluid connection therewith; heat accumulator means downstream of said heat source means, and in fluid connection therewith; and at least one membrane with a permeate side and a non-permeate side downstream of said heat accumulator means; said method, comprising:
a) storing a portion of heat provided by said heat source means during operation of the generator in said heat accumulator, and
b) restoring heat to the generator from said heat accumulator means after said generator has been down and upon restarting said generator.

5,290,342

SILANE COMPOSITIONS AND PROCESS

Andrew O. Wilkman; Won S. Park, and Charles R. Everly, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 622,771, Dec. 5, 1990, abandoned. This application Apr. 24, 1992, Ser. No. 873,461
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—143 3 Claims

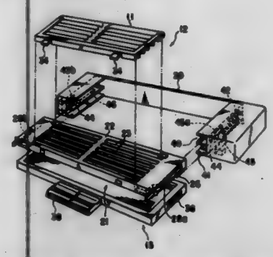
1. A process for selectively absorbing ethylsilane from a gaseous composition predominant in silane comprising the steps of:
(a) heating a carbon bed at a temperature of from about 150° C. to about 300° C. and at a pressure of from about 0.1 atmosphere to about 10 atmospheres for a time period of from about 1 hour to about 4 hours to effectively treat said carbon bed so as to significantly enhance said carbon bed's capability of absorbing said ethylsilane, and
(b) flowing said gaseous composition through the carbon bed treated in step (a) at a temperature and a pressure effective to produce the absorption of said ethylsilane from said composition.

5,290,343

ELECTROSTATIC PRECIPITATOR MACHINE FOR CHARGING DUST PARTICLES CONTAINED IN AIR AND CAPTURING DUST PARTICLES WITH COULOMB FORCE

Keiichi Morita, Fujinomiya, and Takeshi Sakai, Fuji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 10, 1992, Ser. No. 911,615
Claims priority, application Japan, Jul. 19, 1991, 3-179924
Int. Cl.[5] B03C *3/12*
U.S. Cl. 96—39 13 Claims



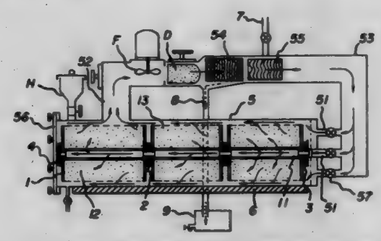
1. An electrostatic precipitator apparatus, comprising:
a body having a suction portion for guiding intake of air, having dust particles therein, and a discharge portion for guiding discharge of said air from said body;
an ionizer for charging said dust particles, including:
an ionizing wire unit having an ionizing wire;
a counterelectrode plate detachably mounted to said ionizing wire unit and comprising electrode portions; and
a first terminal disposed thereon and electrically coupled to said ionizing wire;
a dust collector for generating a Coulomb force to collect said charged dust particles;
first mounting means, proximate to said suction portion, for removably mounting said ionizer to said body, comprising a second terminal electrically coupled to said body, said second terminal automatically electrically coupling to said first terminal when said ionizer is mounted to said body; and
second mounting means, proximate to said discharge portion, for removably mounting said dust collector to said body.

5,290,344

WASTE FILTER REFRESHING APPARATUS FOR DRY CLEANING MACHINE

Masaji Onodera, Theruoka, Japan, assignor to Onodera Doraikuriningu Kojo Co., Ltd., Yamagata, Japan

PCT No. PCT/JP91/01241, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO92/05307, PCT Pub. Date Feb. 4, 1992
PCT Filed Sep. 19, 1991, Ser. No. 30,023
Claims priority, application Japan, Sep. 25, 1990, 2-256458
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—127 1 Claim



1. A waste filter refreshing apparatus for the dry cleaning machine, comprising several joint packagings each between adjacent core pipes for connecting a plurality of waste filters in series in the apparatus so as to connect respective core pipes of the waste filters straightly from a hot air intaking side to an end of the serial filters, a reheating heater installed around the outer periphery of the pressure tank, a circulation duct connecting the hot air intaking side ad an outlet of hot air containing solvent gas, a cooling mans for recovering solvent, and a heating means placed in a downstream of the cooling means, wherein hot air is supplied from the hot air intaking port of the pressure tank to serially-connected core pipes and outer peripheries of respective waster filters in order that the remaining solvent within the waste filters is isolated by the hot air current from the center of the waste filters to the periphery thereof and is conveyed to the circulation duct outside of the pressure tank to evaporate remaining solvent in the waster or dirty filters and recover it from the dirty filters thereby cleaning the waste filters themselves.

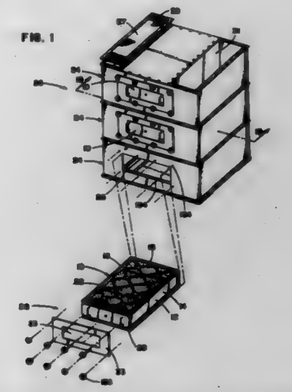
5,290,345

REFILLABLE GAS ADSORPTION BED ASSEMBLY AND COUNTERFLOW ADSORBER MODULE

Richard J. Oscendorf, West St. Paul; Paul C. Peterson, New Prague, and Donald R. Monson, West St. Paul, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jan. 13, 1993, Ser. No. 3,804
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—129 14 Claims

1. A refillable adsorption bed assembly, comprising:
a rigid, box-like, generally rectangular extruded metal frame having a pair of oppositely disposed side members and a pair of oppositely disposed end members, said members each having opposite ends;
said ends of said side and end members being connected at corners of said frame by fastening means and gasket means to prevent air flow therebetween;
first and second rectangular fine mesh screens mounted within said frame on opposite sides of a filler opening through one of said members, each said side screen having a peripheral edge;
first and second prefilters mounted within said frame, said first prefilter being disposed to one side of both said screens and said second prefilter being disposed on the opposite side of both said screens, each prefilter having a peripheral edge;
said members having a plurality of coplanar channels formed therein constructed and arranged to hold said screens and said prefilters;



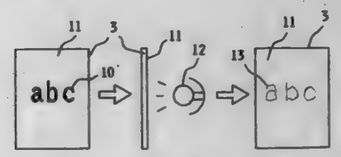
means for sealably connecting said edges of said prefilters to said frame at a pair of spaced channels;
means including sealant means encapsulating said edges of said screens within a pair of spaced channels;
removable cover means for sealably covering said opening; and
a bed of gas adsorption medium disposed in and filling the space between said screens and said members.

5,290,346

INK FOR PRINTER

Masaya Fujioka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 31, 1992, Ser. No. 922,248
Claims priority, application Japan, Aug. 28, 1991, 3-217390
Int. Cl.[5] C09D *11/02, 11/12*
U.S. Cl. 106—21 A 14 Claims



1. An ink for a printer, comprising:
a coloring composition comprising an organoboron salt of a cationic dye and an ammonium salt of organoboron that is capable of being one of decolored and changed in concentration of color by addition of external energy; and
a vehicle for retaining the coloring composition.

5,290,347

SALT-FORMING TYPE DYE, AND ITS CONCENTRATED SOLUTION COMPOSITION AND INK COMPOSITION

Takashi Ono, Takatsuki, Tatsuya Yagyu, Neyagawa, and Katsumi Fukuda, Osaka, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1992, Ser. No. 866,217
Claims priority, application Japan, Apr. 10, 1991, 3-77636
Int. Cl.[5] C09D *11/02*; C09B *69/04*
U.S. Cl. 106—22 K 17 Claims

1. A salt-forming dye having excellent solubility to hydrophilic organic solvent represented by the formula:



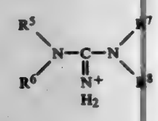
(I)

wherein D is a residue of a monoazo or disazo dye, m is an integer of 1 to 3, n is an integer of 1 to 4, and M^+ is a cation selected from the group consisting of cations represented by formulas (II), (III), (IV) and mixtures thereof:



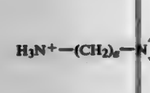
(II)

wherein R^1, R^2, R^3 and R^4 are the same or different and represent hydrogen, an alkyl group, an alkoxyalkyl group, a cyclohexy group, an aralkyl group or a hydroxyalkyl group, and at least one of R^1 to R^4 is a branched or non-branched alkyl, alkoxyalkyl, cycloalkyl, aralkyl or polyoxyalkylene group having not less than 4 carbon atoms,



(III)

wherein R^5, R^6, R^7 and R^8 are the same or different and represent hydrogen, an alkyl group, or a substituted or non-substituted phenyl group, and at least one of R^5 to R^8 is a substituted or non-substituted phenyl group, and



(IV)

wherein R^9 and R^{10} are the same or different and represent hydrogen or an alkyl group, a is an integer of not less than 3, and both R^9 and R^{10} are not hydrogen.

5,290,348

NON AQUEOUS FLUORESCENT DISPERSION INK WITH IMPROVED SHELF LIFE, TACK AND FLOW

Judith D. Auslander, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 5, 1992, Ser. No. 956,202
Int. Cl.[5] C09D *11/08*
U.S. Cl. 106—23 R 22 Claims

1. A non aqueous fluorescent dispersion ink composition, comprising:
a) 40 to 90% by weight of an non aqueous continuous phase of emollient solvent,
b) 1–10% by weight non fluorescent organic pigment having a size of 0.1 to 0.5 microns dispersed in rosin ester, and
c) 5–30% by weight organic fluorescent pigment having an average particle size of 0.1 to 0.5 microns made of solid solution of fluorescent dye in triazine toluene sulfonamide/formaldehyde resin dispersed in an alkyd resin varnish of linseed oil alkyd resin.

5,290,349

HIGH STRENGTH CELLULOSE FIBER OR FILM

Li Fu Chen, West Lafayette, Ind., assignor to Purdue Research Foundation, Division of Sponsored Programs, West Lafayette

Continuation-in-part of Ser. No. 496,585, Mar. 21, 1990, abandoned, which is a division of Ser. No. 261,000, Oct. 21, 1988, Pat. No. 4,999,149. This application Jul. 22, 1991, Ser. No. 733,967
Int. Cl.[5] C08L *1/02*
U.S. Cl. 106—168 9 Claims

1. A high tensile strength, solvent-spun cellulose fiber having a dry tensile strength of from about 11 to about 17 g/den which is stable in alkaline solutions, produced by:
a) forming an aqueous cellulose/zinc chloride ($ZnCl_3$) mixture, said mixture having a final cellulose concentration in the range of from about 5% to about 45% by weight to volume (w/v), and a final $ZnCl_3$ concentration in the range of from about 55% to about 80% weight to weight (w/w);
b) stirring and heating said cellulose/$ZnCl_2$ mixture at a temperature ranging from about 40° C. to about 120° C., thereby forming a cellulose/$ZnCl_2$ solution;
c) extruding said cellulose/$ZnCl_2$ solution into a coagulation medium wherein the cellulose in said cellulose/$ZnCl_2$ solution coagulates to form fiber, said fiber not being fully crystallized,
said coagulation medium comprising one or more alcohols or ketones;
d) removing said fiber from said coagulation medium and treating said fiber to remove residual solvent and coagulation medium therefrom;
e) applying tension to said fiber sufficient to stretch said fiber and orient the molecules therein;
f) submerging said fiber in a bath containing water to fully crystallize said fiber;
g) removing said fiber from said bath for drying or further treatment.

5,290,350

INSULATING SHAPED ARTICLES COMPRISING INORGANIC FIBROUS MATRICES AND XANTHAN GUM/CATIONIC STARCH BINDERS

Marie-Madeleine Besnard, Anthony; Fabrice Brenner, Wissembourg, and Magali Knipper, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Nov. 20, 1991, Ser. No. 794,902
Claims priority, application France, Nov. 28, 1990, 90 14852
Int. Cl.[5] C09D *4/00*
U.S. Cl. 106—214 23 Claims

1. An insulating shaped article comprising an inorganic fiber matrix, said inorganic fiber matrix containing at least one inorganic filler material and a consolidating amount of a binder therefor which comprises admixture of a xanthan gum and a cationic starch.

5,290,351

COMPOSITION FOR RENDERING WASTE SUBSTANCES HARMLESS

Robert A. Ritter, 1705 Nelson Street, No. 108, Vancouver, British Columbia, Canada V6G 1M6

Filed Dec. 9, 1991, Ser. No. 804,310
Int. Cl.[5] C08L *91/00*
U.S. Cl. 106—244 13 Claims

1. A hydrophobizing agent comprising a blend which is a liquid at room temperature and is readily-atomizable, said blend comprising:
a) a mixture of liquid fatty acids having from 6 to 12 carbon atoms; and
b) a mixture of glycerides of fatty acids having from 8 to 18 carbon atoms.

5,290,352

PROCESS FOR THE PREPARATION OF A PIGMENT SUSPENSION

Bernd Kröckert, Wesel, and Günter Linde, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

PCT No. PCT/EP91/00850, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO91/17866, PCT Pub. Date Nov. 28, 1991
PCT Filed May 6, 1991, Ser. No. 969,333
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136964
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—436 9 Claims

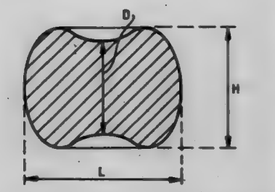
1. A process for the preparation of a pigment suspension from one or more inorganic pigments and water, comprising first compacting and grinding unground pigment on a roller compactor, followed by processing the compacted pigment powder in a wet grinding mill with the addition of water to produce the finished pigment suspension.

5,290,353

VATERITE AND PRODUCTION METHOD

Robert Goffin, Trooz, Belgium, and Henri-René Langelin, Caffiers, France, assignors to Lhoist Recherche et Developpement S.A., Belgium

PCT No. PCT/BE91/00051, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/01629, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 23, 1991, Ser. No. 969,295
Claims priority, application Belgium, Jul. 24, 1990, 09000743
Int. Cl.[5] C09C *1/02*
U.S. Cl. 106—464 21 Claims



1. Process for the preparation of vaterite in which a mixture of particles containing a compound selected from the group consisting of calcium oxide and calcium hydroxide is treated in a reaction medium containing an acid salt of an organic amine so as to convert the calcium into soluble salt and so as to obtain a medium, the pH of which -called pH of treatment- has a value higher than 10, while the calcium content of which is between 0.35 and 0.65 mole/litre; CO_2 is introduced into the medium subjected to a stirring so that the pH of the medium reaches a pH—called pH of saturation—, the value of which is about 0.83×pH of treatment, and CO_2 is introduced in the medium at a rate lower to 50 g CO_2/hour/litre so as to form substantially spherical vaterite.

5,290,354

COATINGS FOR MICROELECTRONIC DEVICES AND SUBSTRATES

Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 480,399, Feb. 15, 1990, Pat. No. 4,973,526. This application Aug. 7, 1990, Ser. No. 563,778
Int. Cl.[5] C08K *5/54*
U.S. Cl. 106—479 3 Claims

1. A homogenous liquid composition comprising a solvent, hydrogen silsesquioxane resin and a modifying ceramic oxide precursor selected from the group consisting of tantalum oxide precursors, niobium oxide precursors, vanadium oxide precursors, phosphorous oxide precursors and boron oxide precursors, wherein said solution contains between about 0.1 and about 35 weight percent solids of hydrogen silsesquioxane and modifying ceramic oxide precursor and said modifying ceramic oxide precursor is present in an amount such that upon heating to a temperature in the range of between about 40° and about 1000° C., the final ceramic coating contains between about 0.1 and about 30 weight percent modifying ceramic oxide.

5,290,355

ROOFING SHINGLE COMPOSITION, METHOD OF FORMULATION, AND STRUCTURE

Karl W. Jakel, 3924 Park Pl., No. 4, Montrose, Calif. 91020

Filed Apr. 16, 1992, Ser. No. 868,846
Int. Cl.[5] C04B *7/02*
U.S. Cl. 106—675 11 Claims

1. An aqueous admixture extrudible to produce lightweight cementitious roofing shingles, that consists essentially of the components:
a) expanded perlite in particulate form,
b) an ingredient or ingredients selected from the group consisting of pumice expanded shale and clay, said ingredient or ingredients being in particulate form, and initially completely water saturated, using 0.2 to 0.3 parts by weight of water,
c) Portland cement in particulate form,
d) said components being present in relative weight amounts:
0.8 to 1.2 part Portland cement
0.3 to 0.4 part expanded perlite,
e) said b) ingredient or ingredients having sieve analysis expressed as percent by weight retained on a succession of screens as follows:

Screen	% by weight
4 mesh	0–5
8 mesh	10–20
16 mesh	20–30
30 mesh	30–50
50 mesh	5–15
Pan	5 max.

and wherein the b) ingredient particulate has a specific weight of 0.80 to 0.90 and a density of 40 to 60 pounds per cubic foot,
f) the final admixture containing additionally added 0.4 to 0.6 parts by weight of water.

5,290,356

RUBBER CRUMB-REINFORCED CEMENT CONCRETE

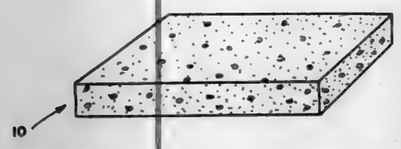
Richard Frankowski, Mobile, Ala., assignor to Tiremix Corporation, Mobile, Ala.

Filed Apr. 23, 1992, Ser. No. 872,494
Int. Cl.[5] E01C *5/22*
U.S. Cl. 106—726 7 Claims

1. A concrete/rubber product made from a mixture comprising:

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(a) 100 parts by weight of portland cement;
(b) 1–30 parts by weight of rubber crumb;
(c) 40–70 parts by weight of water; and



(d) 100–200 parts by weight of material from the group consisting of sand, aggregate, and light aggregate.

5,290,357

ACETONE/FORMALDEHYDE/CYANIDE RESINS

Larry Eoff, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 22, 1992, Ser. No. 996,343
Int. Cl.[5] C04B *24/12, 24/16*
U.S. Cl. 106—808 **20 Claims**

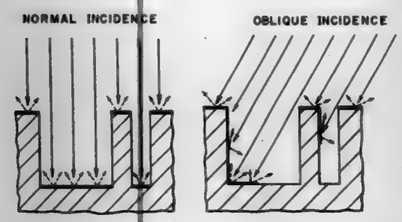
1. A composition useful to disperse particles of hydraulic cement in water wherein said composition is made by the reaction of at least three different compounds said compounds being selected from a ketone, as a first compound, an aldehyde, as a second compound, and an alkali or alkaline earth metal cyanide as a third compound, to thereby produce a first reaction product: wherein the mole fraction of said ketone present in said reaction is an amount in the range of from about 0.1 to about 0.6; the mole fraction of said aldehyde present in said reaction is an amount in the range of from about 0.2 to about 0.7; and the mole fraction of said cyanide present in said reaction is an amount in the range of from about 0.05 to about 0.4.

5,290,358

APPARATUS FOR DIRECTIONAL LOW PRESSURE CHEMICAL VAPOR DEPOSITION (DLPCVD)

Gary W. Rubloff, Waccabuc, and Julian J. Hsieh, Bronx, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,633
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 **15 Claims**



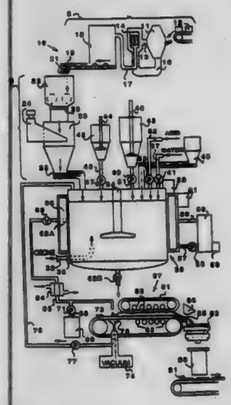
1. A system for controlling the thickness profile of deposited thin film layers over three-dimensional topography, comprising:
means for providing a gaseous reactant beam to product material deposition on a surface;
means for collimating said beam, such that the beam flux is directional rather than isotropic;
means for arranging a specific angle of incidence of said beam onto the surface;
means for providing a beam species such that the reaction probability of said beam with the surface is less than 100%;
means for producing a low pressure environment for said beam and said surface, such that beam directionality is maintained on a length scale up to and including the dimension between said collimating means and said surface where deposition is to take place.

5,290,359

APPARATUS FOR PRODUCTION OF A BATTERY PASTE

Matthew A. Coopen, Pewaukee; Ralph A. Petersen, West Allis, and Conrad E. Weinlein, Mequon, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 357,007, May 25, 1989, Pat. No. 5,096,611. This application Dec. 6, 1991, Ser. No. 804,845
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—712 **12 Claims**



1. An apparatus for producing a battery paste material, comprising:
a tank having a discharge outlet;
a feeder disposed to feed a particulate solid into the tank;
an inlet disposed to introduce water into the tank to form a mixture with the particulate solid;
a conveyor having a porous conveyor belt disposed to receive the mixture from the discharge outlet of the tank on a surface of the porous conveyor belt;
a filtration device capable of drawing a portion of the water from the mixture through the porous conveyor belt to form a paste material; and
a paster disposed to receive paste from the filtration device and apply the paste to a series of grids.

5,290,360

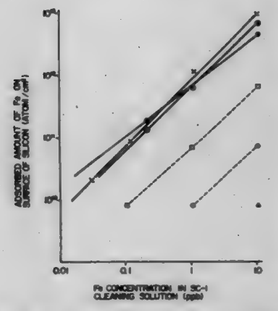
Patent Not Issued For This Number

5,290,361

SURFACE TREATING CLEANING METHOD

Ichiro Hayashida; Masahiko Kakizawa; Kenichi Umekita; Hiroyoshi Nawa, all of Kawagoe, and Hisashi Muraoka, Yokohama, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka and Purex Co., Ltd., Yokohama, both of Japan

Filed Jan. 23, 1992, Ser. No. 824,955
Claims priority, application Japan, Jan. 24, 1991, 3-024094
Int. Cl.[5] B08B *3/00, 3/05;* C23G *1/00*
U.S. Cl. 134—2 **8 Claims**



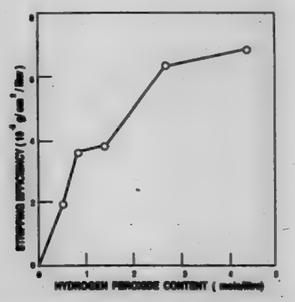
1. A process for treating semiconductor surfaces, which comprises a step of treating surfaces of semiconductors contaminated with metallic impurities including at least one of Fe, Al, Zn, Ca and Mg with a surface treating solution comprising an inorganic or organic alkali, hydrogen peroxide and water as major components, and a step of treating the resulting surface with ultra-pure water, at least one of the surface treating solution and the ultra-pure water containing as a complexing agent a compound having one or more phosphonic acid groups or a salt thereof and showing chelating ability or an oxidized form thereof, or a polyphosphoric acid or a salt thereof.

5,290,362

STRIPPING PROCESS FOR STRIPPING COMPOUNDS OF TITANIUM FROM BASE METALS

Jiinjen A. Sue, Carmel, Ind., assignor to Praxair S.T. Technology, Inc., Danbury, Conn.

Division of Ser. No. 888,450, May 28, 1992, Pat. No. 5,232,619, which is a continuation-in-part of Ser. No. 743,093, Aug. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 599,833, Oct. 19, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 997,467
Int. Cl.[5] C11D *7/08;* C23G *1/02, 1/14*
U.S. Cl. 134—2 **9 Claims**



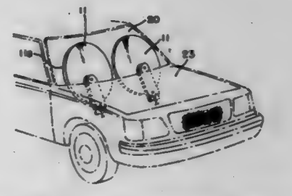
1. A process for stripping a coating of a titanium compound selected from the group consisting of titanium nitride compounds and titanium boride compounds from a base metal of a super alloy, stainless steel or alloy steel without suffering chemical attack to the base metal comprising the steps of:
immersing the base metal and coating into an aqueous solution containing hydrogen peroxide or a compound which dissociated into hydrogen peroxide in water, an alkali source of hydroxyl ions, and an acid, maintaining the solution temperature between about 25° C. and 85° C. and maintaining the pH of the aqueous solution at a pH of above at least 8.

5,290,363

METHOD FOR WIPING A WINDSHIELD

Kwang M. Kim, 387-13 Acheon-Dong, Koori, Kyunggi-Do, Rep. of Korea

Filed Apr. 22, 1991, Ser. No. 688,245
Claims priority, application Rep. of Korea, Apr. 20, 1990, 90-5570
Int. Cl.[5] B60S *1/02, 1/04;* B08B *1/00;* A47L *1/00*
U.S. Cl. 134—6 **7 Claims**



1. A method for wiping a windshield of a vehicle, which comprises the steps of:
actuating a motor;
rotating a pair of circular windshield portions within a remainder of said windshield in response to actuating the motor; and
wiping said rotating circular windshield portions with a brush on both surfaces of said rotating circular windshield portions at a location removed from a driver's field of view.

5,290,364

PROCESS FOR BLAST CLEANING FIXTURES HAVING INTERNAL PASSAGEWAYS

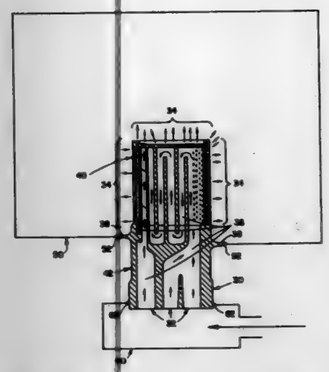
John Stein, Ada, and Philip M. Whitney, Whitehall, both of Mich., assignors to Grand Northern Products, Ltd., Grand Rapids, Mich.

Filed Jul. 22, 1992, Ser. No. 919,602
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—7 **17 Claims**

13. A process for blast cleaning a article with internal passageways including the steps of:
seating said article within a blasting apparatus, said blasting apparatus including a manifold and a vacuum chamber, said manifold forming a housing that encloses the inlet holes of said internal passageways, said vacuum chamber forming a second housing that encloses the outlet holes of said internal passageways;
reducing the pressure within said vacuum chamber and increasing the pressure within said manifold, whereby a gas stream is caused to flow through said internal passageways of said article;
introducing a soluble blast media within said manifold, whereby said soluble blast media is driven through said internal passageways of said article by said gas stream;
subsequently flushing said internal passageways of said article with a solvent in which the blast media is soluble; and

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subsequently directing a second gas stream through said internal passageways of said article, whereby said liquid



solvent is removed from said internal passageways of said article.

5,290,365

METHOD FOR REMOVING COATINGS FROM METAL SUBSTRATES PRONE TO CORROSION OR DETERIORATION

Colin A. Whitton, Buckinghamshire, England, assignor to Brent Chemicals International PLC, Buckinghamshire, England

Filed Jul. 24, 1992, Ser. No. 918,654

Claims priority, application United Kingdom, Jul. 24, 1991, 9116004.4

Int. Cl.[5] C09D *9/00*

U.S. Cl. 134—38 **22 Claims**

1. A method for removing a coating from a substrate of aluminium, zinc or their alloys comprising contacting the coated substrate comprising zinc, aluminum and/or their alloys with a stripping composition comprising at a temperature no greater than 60° C., the stripping composition comprising a strong alkali; a monohydric or polyhydric alcohol or ether derivative thereof; and, a 2-pyrrolidone and/or a butyrolactone.

5,290,366

LAMINATED SOLAR MODULE

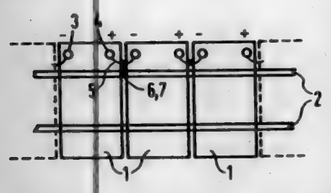
Manfred Riermeier, Oberneuching, and Klaus Bednorz, Munich, both of Fed. Rep. of Germany, assignors to Siemens Solar GmH, Bergisch-Gladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 908,904, Jul. 2, 1992, abandoned, which is a continuation of Ser. No. 658,014, Feb. 20, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,470

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1990, 4007376

Int. Cl.[5] H01L *31/048, 31/05*

U.S. Cl. 136—244 **4 Claims**



4. A solar module arrangement comprising: a plurality of glass plates which have a front side and a rear side; a plurality of solar modules with each one mounted on one of said plurality of glass plates and having first and second opposed edges, said modules and glass plates aligned such that a first edge of a module and a glass plate is mounted adjacent a second edge of an adjacent module and glass plate, first and second electrical terminals for each module located adjacent a respective edge and spaced from each other, a plurality of solar cells connected in series between said first and second electrical terminals and attached to the rear side of said glass plate by hot melt adhesive foil, and which form a layer structure, said first and second electrical terminals located at respective end ones of said plurality of said series-connected solar cells and extending from said rear side of said glass plate; at least one protective diode in said first terminal, flexible electrical conductors extending from a first to a second electrical terminal, and a strain relief device holding said flexible conductors, a plurality of hollow housings covering each of said first and second electrical terminals and a portion of said flexible conductor, said protective diode and said strain relief device; and a casting compound which fills said hollow housings and bonds said electrical connections to said rear side of said glass plate, whereby the first edge of a module is arranged next to the second edge of a neighboring module; whereby the electrical connections respectively connect an electrical terminal of one solar module to the closest terminal of the neighboring solar module; and whereby each of the electrical connections comprises at least one flexible conductor and a strain-relief means.

5,290,367

PHOTOELECTRIC ELEMENT

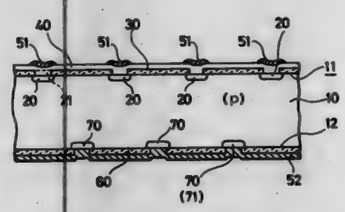
Yutaka Hayashi, and Hidetaka Takato, both of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,395

Claims priority, application Japan, Oct. 1, 1991, 3-280832

Int. Cl.[5] H01L *31/06*

U.S. Cl. 136—255 **8 Claims**



1. A photoelectric element comprising:

a first region of a semiconductor of a first conductivity type having front and rear major surfaces, one of which constitutes a light-receiving surface;

at least one second region provided on at least one portion of the light-receiving side of the first region to form a photovoltaic mechanism in conjunction with the first region, said second region having a shorter side, in plan view, whose length is not more than twice the minority carrier diffusion length of the first region;

a barrier layer covering at least those portions of the light-receiving surface of the first region at which the second region is not provided; and

a transparent conductive film in electrical contact with the at least one second region and also in contact with the barrier layer, for enabling a voltage generated by light incident on the light-receiving surface to be applied to the light-receiving surface under the barrier layer as a bias voltage of a polarity inducing majority carriers of the semiconductor constituting the first region.

5,290,368

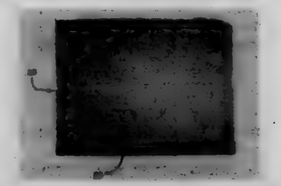
PROCESS FOR PRODUCING CRACK-FREE NITRIDE-HARDENED SURFACE ON TITANIUM BY LASER BEAMS

William J. Gavigan, Nazareth, Pa.; Craig L. Snyder, Glen Gardner; Frank J. Tufano, Skillman, both of N.J., and Ronald S. Miller, Tatamy, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 28, 1992, Ser. No. 843,691

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—212 **14 Claims**



1. A process for nitride-hardening a surface of a titanium alloy substrate, without cracking of the substrate, comprising:

(a) providing a commercially pure substrate of titanium;

(b) preheating said substrate to a range of between 1000 F. and 1200 degrees F.;

(c) applying a high-density energy source to the surface of said substrate to cause localized areas of melted substrate surface;

(d) scanning said energy source along the surface of said substrate to cause said localized melting to move over an area to be hardened;

(e) simultaneously shrouding said melted substrate surface in a gaseous atmosphere containing, by volume, at least 70% but not more than 85% nitrogen, and the balance one or more gases that do not react with molten titanium, to cause absorption of nitrogen into said melted substrate;

(f) solidifying said melted substrate to form a hardened surface layer on said substrate comprising a matrix of titanium, with TiN particles dispersed therein said surface layer characterized by a minimum hardness of 50 Rockwell C and being free from cracking; and

(g) slow cooling said substrate.

5,290,369

METHOD OF GAS SULPHONITRIDING

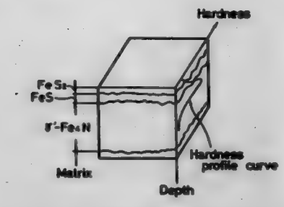
Kazuyoshi Hatano; Ken Ichiryu, both of Ibaraki; Morio Tamura, Tsuchiura; Eiji Kometani, Abiko; Yasuharu Gotoh, Tsuchiura, and Nobuyoshi Hidao, Kashiwa, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Division of Ser. No. 722,182, Jun. 27, 1991, Pat. No. 5,187,017. This application Sep. 30, 1992, Ser. No. 953,803

Claims priority, application Japan, Jul. 5, 1990, 2-178437; Mar. 26, 1991, 3-86125

Int. Cl.[5] C21D *1/00*

U.S. Cl. 148—230 **22 Claims**



1. In a gas sulphonitriding method which comprises sulphonitriding a steel member with a sulphurizing gas and a nitriding gas, the improvement which comprises supplying a predetermined concentration of the sulphurizing gas together with a predetermined concentration of the nitriding gas and the carrier gas into a reaction furnace containing the steel member to be treated, performing a primary heat treatment at a temperature in the range of 450°–540° C., then ceasing the supply of the nitriding gas, slowly reducing the temperature in the reaction furnace to a level in the range of 200°–350° C., and performing a secondary heat treatment at that temperature.

5,290,370

COLD-ROLLED HIGH-TENSION STEEL SHEET HAVING SUPERIOR DEEP DRAWABILITY AND METHOD THEREOF

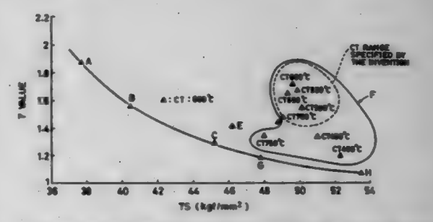
Susumu Okada; Susumu Masui; Susumu Satoh; Kei Sakata; Masahiko Morita, and Toshiyuki Kato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 17, 1992, Ser. No. 931,066

Claims priority, application Japan, Aug. 19, 1991, 3-230809; Dec. 27, 1991, 3-346200

Int. Cl.[5] C21D *8/04*; C22C *38/12*

U.S. Cl. 148—330 **4 Claims**



1. A high-tension steel sheet having a tensile strength not lower than 40 kgf/mm^2, suitable for deep drawing and having superior surface treatment characteristics, said steel sheet being made of a steel consisting essentially of, by weight: 0.001 to 0.05% of C; not more than 1.0% of Si; not more than 2.5% of Mn; 0.05 to 1.0% of Mo; one or both of 0.001 to 0.2% of Nb and not more than 0.3% of Ti, wherein $Ti^*\% + (48/93)Nb\% \geq (48/12)C\%$ in which $Ti^*\% = Ti\% - (48/32)S\% - (48/14)N\%$, wherein, when $Ti^*\% < 0$, $Ti^*\%$ is regarded as being 0; 0.005 to 0.01% of B; 0.01 to 0.10% of Al; not more than 0.15% of P; not more than 0.010% of S; not more than 0.006% of N; Si, Mn and P meeting the condition of $0.2 < (Si\% + 10P\%)/Mn\% < 3.3$; and the balance substantially Fe and incidental impurities.

5,290,371

DENTAL ALLOY AND RESTORATION MADE THEREWITH

Thomas B. Cameron, Windsor, and Edward F. Smith, III, Madison, both of Conn., assignors to The J. M. Ney Company, Bloomfield, Conn.

Filed Oct. 28, 1992, Ser. No. 967,655

Int. Cl.[5] C22C *5/00*

U.S. Cl. 148—442 **10 Claims**

1. A noble metal dental casting alloy for use in making dental restorations comprising:

(a) 35–70 percent by weight palladium;

(b) 25–50 percent by weight silver;

(c) 0.5–10 percent by weight manganese; and

(d) 1–30 percent by weight of at least one modifier element selected from one or both of the groups consisting of:

(i) gold, platinum, copper, tin, gallium, zinc, indium and cobalt in amounts of up to 15 percent by weight each; and

(ii) the group consisting of ruthenium, rhenium, aluminum, germanium, lithium, silicon, iridium, boron, tanta-

lum and niobium in amounts of up to 5 percent by weight each,

said alloy having a solidus temperature of at least 1100° C., a liquidus temperature of not more than 1400° C., tensile elongation of at least 2 percent, thermal expansion coefficient of at least 14.0×10^{-6} per °C., Vickers hardness of at least 150, and offset yield strength at 0.2 percent of at least 250 MPa.

5,290,372

FE-MN GROUP VIBRATION DAMPING ALLOY MANUFACTURING METHOD THEREOF

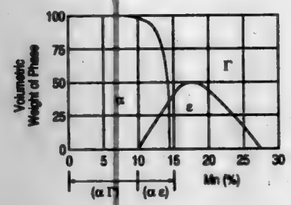
Jong-Sai Choi; Seung-Han Baek, and Jun-Dong Kim, all of Seoul, Rep. of Korea, assignors to Woojin Oak Corporation, Kyungki, Rep. of Korea

Continuation of Ser. No. 750,150, Aug. 26, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,931

Claims priority, application Rep. of Korea, Aug. 27, 1990, 13216/1990

Int. Cl.[5] C21D *8/00*

U.S. Cl. 148—540 3 Claims



1. An Fe-Mn vibration damping alloy having a mixed structure of martensite and austenite, said alloy consisting essentially of Fe and Mn, wherein said alloy is iron-based, is 14–22% by weight manganese, and is produced by:

a. melting and mixing electrolytic iron and electrolytic manganese so that the resulting mixture contains 14–22% manganese by weight;

b. subsequently casting the mixture into a mold to produce a molten metal ingot;

c. subsequently heating the molten metal ingot at a temperature from about 1000° C. to about 1300° C. for 20–40 hours to produce a homogenized metal ingot;

d. subsequently hot-rolling the homogenized metal ingot at a temperature from about 900° C. to about 1100° C. for a total of 20–90 minutes to produce a rolled metal; and

e. subsequently cooling the rolled metal by air or water cooling at room temperature.

5,290,373

EVAPORABLE FOAM CASTING SYSTEM UTILIZING AN ALUMINUM-SILICON ALLOY CONTAINING A HIGH MAGNESIUM CONTENT

Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton, and William G. Hesterberg, Rosendale, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Apr. 20, 1993, Ser. No. 52,170

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—549 10 Claims



3. A method of casting an article, comprising the steps of positioning a polymeric foam pattern having a configuration proportionally identical to an article to be cast in an outer mold, disposing a flowable finely divided inert material around the pattern in the mold, forming a hypereutectic aluminum-silicon alloy containing from 16% to 19.5% by weight of silicon and containing magnesium in an amount in excess of its solid solubility limit in said alloy, introducing the molten alloy into the mold and forming a magnesium oxide film on the leading edge of said molten alloy, contacting said leading edge with the pattern to vaporize the pattern with the vapor being entrapped within the finely divided material and the molten alloy occupying the void created by vaporization of the pattern to produce a cast article and solidifying the alloy to produce a cast article containing precipitated primary silicon particles disposed in an eutectic, said eutectic being partially modified by the addition of said excess magnesium to produce an Mg_2Si phase.

5,290,374

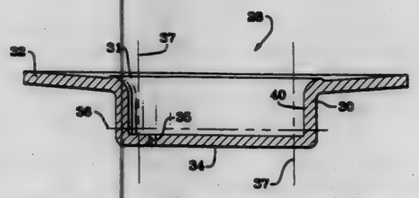
METHOD OF MAKING A PIN TYPE BEARING RETAINER

James R. Holtz, Bristol, and Stephen M. Mondak, Watertown, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Division of Ser. No. 740,119, Aug. 5, 1991, Pat. No. 5,269,609. This application Oct. 27, 1992, Ser. No. 966,930

Int. Cl.[5] C21D *8/00*

U.S. Cl. 148—559 4 Claims



1. A method of making a pin type retainer, comprising the steps of:

forming a cup having a shape substantially as shown in FIG. 2 from a unitary piece of material;

removing regular portions of a rim of said cup to form a regular plurality of pins integral with a remainder of said cup; and

removing a closed end of said cup to form a ring.

5,290,375

PROCESS FOR MANUFACTURING CERAMIC MULTILAYER SUBSTRATE

Takashi Nagasaka, and Hideki Nakagawara, both of Anjyo, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 562,590, Aug. 3, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 7,020

Claims priority, application Japan, Aug. 5, 1989, 1-203642

Int. Cl.[5] B32B *18/00*

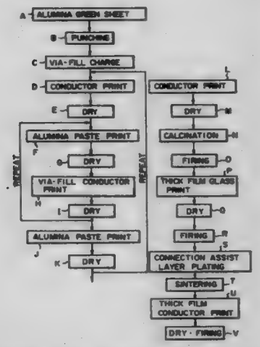
U.S. Cl. 156—89 11 Claims

1. A process for manufacturing a ceramic multi-layer substrate, comprising the steps of:

forming and firing a laminate of alternate ceramic and inner conductor layers at a first firing temperature lower than a melting point of the inner conductor layers by a thick film-forming method, the laminate having a top ceramic layer;

then forming and firing a glass-containing insulating layer on the top ceramic layer at a second firing temperature lower than said first firing temperature by a thick film-forming method, and

forming and firing a conductor layer on the insulating layer by a thick film-forming method; wherein said conductor layer is electrically connected to one of the inner conductor layers, wherein said glass-containing layer is positioned between said conductor layer and one of said inner conductor layers.



5,290,376

PROCESS FOR MANUFACTURING AN OUTER TREAD ASSEMBLY

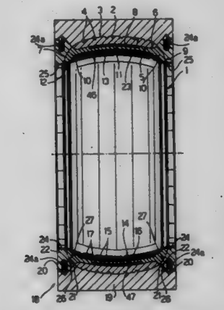
Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 966,986

Claims priority, application Italy, Oct. 31, 1991, TO91 A000821

Int. Cl.[5] B29D *30/52*

U.S. Cl. 156—129 8 Claims



1. A process for manufacturing a second stage tread assembly of a road vehicle tire, comprising the steps of feeding a green annular tread cap onto a first annular surface consisting of an inner annular surface of an annular body, said first annular surface negatively reproducing a second surface consisting of a final outer annular surface of said tread cap; internally stitching said tread cap against said first annular surface by passing a stitching roller over a third surface substantially coaxial with said first and second surfaces, so as to form an outer surface of said tread cap similar to said second surface and simultaneously cutting the tread cap to width; and successively inserting into said annular body, and onto the third surface constituting an inner annular surface of said tread cap, a number of further annular components comprising a reinforced annular tread belt.

5,290,377

METHOD FOR PRODUCING RETICULAR NONWOVEN FABRIC

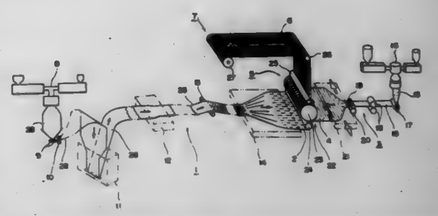
Kintaro Aihara, Chiba; Tadashi Houda, Tokyo; Masashi Kobayashi, Kisarazu; Hideyo Rokyama; Kazuhiko Kurihara, both of Tokyo; Hiroshi Yazawa, Kunitachi, and Toshikazu Ohishi, Kawaguchi, all of Japan, assignors to Nippon Petrochemicals Company, Ltd. and Polymer Processing Research Inst. Ltd., both of Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,532

Claims priority, application Japan, Jul. 17, 1990, 2-187298

Int. Cl.[5] B29C *31/00*

U.S. Cl. 156—229 43 Claims



1. A method of producing a reticular nonwoven fabric comprising the steps of:

forming a first film material made of a thermoplastic resin;

longitudinally stretching said first film material in a direction parallel to its length;

splitting said stretched first film material in the direction of its length to form a split film having a plurality of slits;

laterally spreading said split film in a direction crosswise to its length;

forming a second film material made of a thermoplastic resin;

longitudinally orienting said second film material in the direction of its length;

transversely slitting said oriented second film material in a direction crosswise to its length;

transversely stretching said slit second film material in a direction crosswise to its length; and

a laminating said laterally spread first film material with said transversely stretched second film material.

5,290,378

METHOD FOR PREPARING A RUBBER-BASED COMPOSITE MATERIAL

Yukihiro Kusano, Tokorozawa; Masato Yoshikawa, Kodaira; Kazuo Naito, Kawasaki; Satiko Okazaki, No. 20-11, Takaido Higashi 2-chome, Suginami-ku, Tokyo, and Masahiro Kogoma, No. 843-15, Shimoniikura, Wakou-shi, Saitama-ken, all of Japan, assignors to Bridgestone Corporation, Tokyo; Satiko Okazaki, Tokyo and Masahiro Kogoma, Saitama, all of Japan

Filed Feb. 21, 1991, Ser. No. 658,665

Claims priority, application Japan, Mar. 14, 1990, 2-63531

Int. Cl.[5] B32B *31/00;* B05D *3/06*

U.S. Cl. 156—272.6 20 Claims

1. A method for preparing a rubber-based composite material, comprising:

polymerizing a hydrocarbon monomer composition by an atmospheric-pressure glow discharge plasma polymerization technique so as to form a polymerized film containing unsaturated bonds therein on the surface of a base material; and

bonding a rubber composition to said polymerized film by heat pressure bonding so as to join said base material and said rubber together and thereby form said rubber-based composite material;

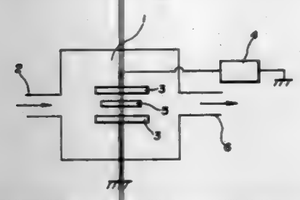
wherein said monomer composition is diluted with a gas

selected from the group consisting of He, Ar, Ne, N_2, H_2 and O_2 and said plasma is generated by a high-frequency plasma discharge device having external electrodes that are coated with an insulator.

2. A method of making a rubber-based composite material, which comprises:

forming a polymerized film having unsaturated bonds therein on the surface of a base material by polymerizing at least one monomer selected from the group consisting of saturated hydrocarbons, unsaturated hydrocarbons, and halogen-substituted derivatives thereof, by an atmospheric-pressure glow discharge plasma polymerization technique; and

bonding a rubber composition directly to said polymerized film without the use of an adhesive by heat pressure bonding such that said rubber composition is internally cross-linked and cross-linking exists between said rubber composition and said unsaturated bonds contained in said



polymerized film to thereby form said rubber-based composite material;

wherein said base material is selected from the group consisting of plastics, rubbers, metals and ceramics.

5. A method of making a rubber-based composite material, which comprises:

forming a polymerized film having unsaturated bonds therein on the surface of a base material by polymerizing at least one monomer by an atmospheric-pressure glow discharge plasma polymerization technique; and

bonding a rubber composition directly to said polymerized film without the use of an adhesive by heat pressure bonding such that said rubber composition is internally cross-linked and cross-linking exists between said rubber composition and said unsaturated bonds contained in said polymerized film to thereby form said rubber-based composite material;

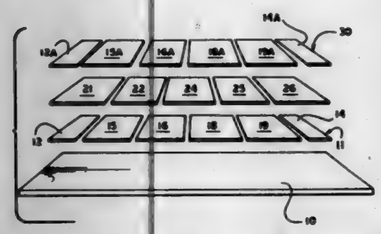
wherein said base material is selected from the group consisting of plastics, rubbers, metals and ceramics.

5,290,379

METHOD OF MAKING A TEMPORARY SIGN PANEL

Joseph M. Higgins, Ga Regional Hospital at Atlanta, 3073 Panthersville Rd., Decatur, Ga. 30032

Filed May 8, 1992, Ser. No. 880,040
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—280 **6 Claims**



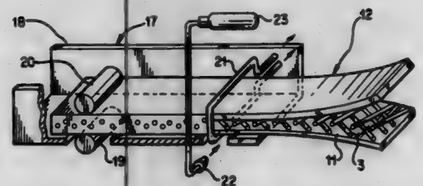
1. A method for making a generally flat temporary sign panel, said method comprising the steps of placing a first layer of paper on a base member, said first layer consisting of a plurality of sheets of paper laid side by side, fixing two adjacent edges of said first layer of paper to said base member, coating said first layer of paper with a quantity of adhesive, placing a second layer of paper on said first layer of paper, said second layer consisting of a plurality of sheets of paper laid side by side, and fixing two adjacent edges of said second layer to said base member, said two adjacent edges of said second layer being opposite said two adjacent edges of said first layer, coating said second layer of paper with a second quantity of adhesive, placing a third layer of paper on said second layer of paper, said third layer consisting of a plurality of sheets of paper laid side by side, and including the step of sizing the sheets of paper in said first, second and third layers so that the lines between adjacent sheets in one layer will not be aligned with the lines between sheets in an adjacent layer, and allowing said adhesive to dry.

5,290,380

METHOD FOR RECOVERING BREAKER METAL CORD THREADS FROM TIRES

Alexandr I. Gitelman; Valery V. Kalinchak, and Svetlana G. Orlovskaya, all of Odessa, U.S.S.R., assignors to Alexandr Isaakovich Gitelman, Odessa, U.S.S.R.

Filed Jan. 22, 1992, Ser. No. 824,101
Int. Cl.[5] B32B *35/00*
U.S. Cl. 136—344 **4 Claims**



1. A method for recovering breaker metal cord threads from rubber tires, comprising heating breaker metal cord threads in a high-frequency electromagnetic field and separating said metal cord threads from rubber of said rubber tires, wherein a tire is completely cut through the breaker before heating in a plane drawn perpendicularly with respect to the tire's axis of rotation in such a manner as to expose ends of all metal cord threads, and heating the cords to a temperature of complete thermooxidation destruction of rubber material contacting the metal cord threads.

5,290,381

PLASMA ETCHING APPARATUS

Toshihisa Nozawa, Kobe; Junichi Arami, Tokyo; Keiji Horioka, Kawasaki, and Ichiro Hasegawa, Zushi, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Nov. 27, 1991, Ser. No. 799,056
Claims priority, application Japan, Nov. 28, 1990, 2-331317
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **16 Claims**

1. A plasma etching apparatus comprising:

a susceptor for holding an object to be etched;

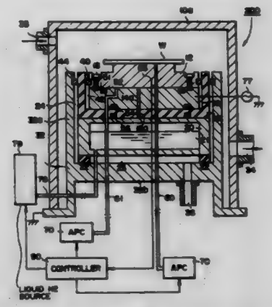
a cooling section for cooling said susceptor;

a process chamber enclosing the susceptor and the cooling section;

exhausting means for exhausting a gas in the process chamber;

gas supply means for supplying a heat transfer gas at a interface region between the susceptor and the cooling section;

heating means for heating the susceptor; and



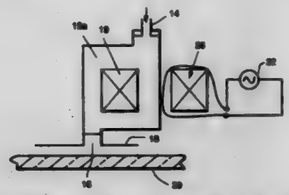
temperature detecting means for detecting a temperature of the susceptor, to thereby control heating of said heating means based on the detected temperature.

5,290,382

METHODS AND APPARATUS FOR GENERATING A PLASMA FOR "DOWNSTREAM" RAPID SHAPING OF SURFACES OF SUBSTRATES AND FILMS

Charles B. Zarowin, Rowayton, and L. David Bollinger, Ridgefield, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 13, 1991, Ser. No. 807,536
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **8 Claims**



1. An apparatus for performing localized plasma assisted chemical etching reactions on the surface of an etchable substrate comprising:

a plasma chamber for containing a reactive gas and plasma having an inlet for introducing said reactive gas to said chamber means and an outlet for exhausting said plasma from the plasma chamber;

means for applying excitation to said plasma to convert said reactive gas into said plasma wherein the plasma chamber has a toroidal shape and includes a toroidal core and wherein the means for applying excitation to said reactive gas includes a ferromagnetic toroidal coil located proximate said toroidally shaped plasma chamber such that an inductively coupled plasma within said chamber acts as a secondary loop around the toroidal core; and

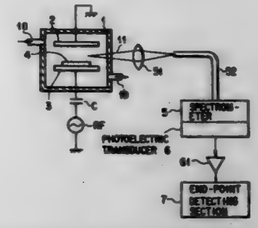
means for local application of said plasma to the surface of said substrate so as to define an etching footprint having a shape substantially defined by the shape of the plasma chamber outlet.

5,290,383

PLASMA-PROCESS SYSTEM WITH IMPROVED END-POINT DETECTING SCHEME

Chishio Koshimizu, Nirasaki, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Division of Ser. No. 857,642, Mar. 24, 1992. This application Apr. 19, 1993, Ser. No. 48,711
Claims priority, application Japan, Mar. 24, 1991, 3-83519; May 15, 1991, 3-139570; Jul. 23, 1991, 3-206300; Oct. 9, 1991, 3-262404; Oct. 9, 1991, 3-262405; Oct. 9, 1991, 3-292117; Jan. 29, 1992, 4-38504; Jan. 29, 1992, 4-38507
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—345 **9 Claims**



1. A plasma-process apparatus comprising:

processing means having a reaction chamber which is capable of containing an object, in which plasma can be generated to process the object, and which has an observation window;

removing means provided with said observation window, for removing a substance from said observation window;

photoelectric means optically coupled to said observation window, for generating an electric signal corresponding to luminous intensity of a light beam emitted from the plasma and having a predetermined wavelength; and

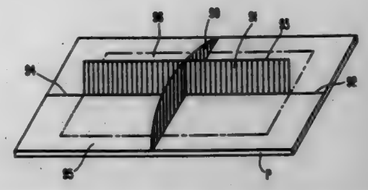
detecting means connected to said photoelectric means, for detecting the end point of plasma process being performed in said reaction chamber, in accordance with the electric signal generated by said photoelectric means.

5,290,384

APPARATUS FOR CONTROLLED SPRAY ETCHING

Karl F. G. Ketelbohn, and Donald F. Ball, both of State College, Pa., assignors to Chemcut Corporation, State College, Pa.

Division of Ser. No. 788,929, Nov. 7, 1991, Pat. No. 5,228,949. This application May 12, 1993, Ser. No. 60,759
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **9 Claims**



1. Apparatus for spray etching panels and the like, comprising:

(a) chamber means providing a generally confined spray etch chamber with at least one bank of spray nozzles disposed therein and with panel inlet and outlet openings therein;

(b) panel delivery means for delivering the panels longitudinally through the chamber between an inlet and an outlet openings thereof, in generally horizontal orientation, along a generally horizontal path of travel through the

chamber, vertically spaced from at least one bank of nozzles;

(c) etchant spray means for spraying at least one of an upper and lower surface of the panels with an etchant spray spaced vertically relative to the path of travel, from a bank of nozzles; and

(d) control means for controlling the amount of etchant spray provided along perimeter portions of at least one of an upper and lower surface of the panels by:

(i) delivering a reduced amount of etchant to side surface portions of at least one of an upper and lower surface of the panels relative to the amount of etchant delivered to center surface portions of panels and

(ii) delivering a reduced amount of etchant to leading and trailing surface portions of at least one of an upper and lower surface of the panels relative to the amount of etchant delivered to center surface portion of panels,

while the panels pass through the etch chamber between the inlet and outlet thereof.

5,290,385

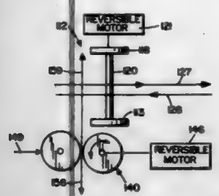
MULTIPLE SET PRESSURE SEALER ROLLERS

Richard S. Downing, Grand Island, and Daniel F. Pustelnik, West Seneca, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 25, 1992, Ser. No. 857,277

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—350 **13 Claims**



1. A pressure applying apparatus for applying pressure to business forms to activate pressure sensitive adhesive associated with the forms to seal one part of a form to another, comprising:

a first set of rollers rotatable about parallel first and second axes and biased together to form a first nip;

first reversible drive means for driving at least one of said rollers alternately clockwise and counterclockwise;

first sensor means for sensing the position of a business form with respect to said first and second rollers;

a second set of rollers rotatable about parallel third and fourth axes, and biased together to form a second nip;

second reversible drive means for driving at least said second set of rollers alternately clockwise and counterclockwise;

second sensor means for sensing the position of a business form with respect to said second set of rollers;

said third and fourth axes being disposed substantially perpendicular to said first and second axes, said first and second axes being substantially horizontal, and said third and fourth axes being substantially vertical; and

control means connected to said first and second sensor means and said first and second reversible drive means for driving a business form sensed by said sensor means through said first nip in a first direction so that compression sealing force is applied thereto, and after the business form has passed almost completely through the first nip, in a second direction, reversing said first drive means to drive the business form through said first nip again in a second direction, opposite the first direction; then for driving a business form sensed by said second sensor and through said second nip in a third direction, so that compression sealing force is applied thereto, and after the business form has passed almost completely through said second nip in a third direction, reversing said second drive means to drive the business form through said second nip again in a fourth direction, opposite the third direction.

5,290,386

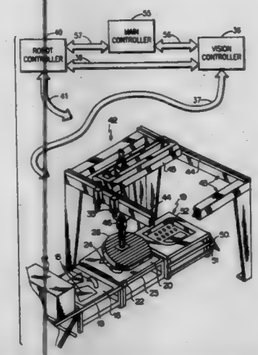
PARALLEL PROCESSOR CONTROL OF COMPOSITE MATERIAL HANDLING

Allen E. Trudeau, Ansonia, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 693,748, Apr. 30, 1991, Pat. No. 5,209,804. This application Feb. 5, 1993, Ser. No. 13,850

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—350 **3 Claims**



1. A system for manufacturing composite articles from a plurality of plies, comprising:

a source of plies to be laid up;

a mold on which the plies are to be laid up in order to form a composite article;

a vision subsystem including

at least one video camera for providing image signals of an area of said source containing a ply to be laid up into said mold to form the composite article being made, and

first signal processing means interconnected with said at least one video camera and responsive to coordinate signals provided thereto indicative of the expected position of the ply to be laid up for initiating a subroutine to process said image signals to provide alignment signals indicative of the actual position of the ply to be laid up; a robot subsystem including

a robot movable in a plurality of axes and operable to pickup and release the ply to be laid up in response to command signals provided thereto, and

second signal processing means interconnected with said first signal processing means and said robot and responsive to robot go signals provided thereto to order said robot to move to selected positions, and to provide robot waiting signals indicating that said robot has reached one of said selected positions; and

third signal processing means interconnected with said first signal processing means and with said second signal processing means for providing a run vision signal to cause said first signal processing means to respond to said coordinate signals and said image signals from said at least one video camera to generate said alignment signals indicative of the actual position of the ply to be laid up and to alternatively provide a success signal indicating that the actual position of the ply to be laid up has been determined and to provide a done signal without providing said success signal if said first signal processing means is unable to determine the actual position of the ply to be laid up;

said third signal processing means being further operative in response to said success signal to provide signals causing said robot subsystem to request said alignment signals and to move to the ply to be laid up, to pick up the ply to be laid up and to move the ply to be laid up to said mold and release the ply;

said third signal processing means being further operative in response to said done signal in the absence of said success signal to provide said run vision signal and a second try signal to reinitiate said vision subsystem subroutine to determine the actual location of the ply to be laid up;

said third signal processing means being further operative in response to said done signal in the absence of said success signal and in the presence of said second try signal to provide signals to cause said vision subsystem to shut down and assume a quiescent state.

5,290,387

DEVICE FOR WELDING TUBULAR COMPONENTS OF PLASTICS MATERIAL

Herbert Kramer, Singen, Fed. Rep. of Germany, and Bruno Hilpert, Diessenhofen, Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland

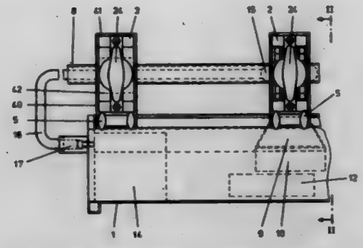
PCT No. PCT/CH89/00124, § 371 Date Apr. 20, 1990, § 102(e) Date Apr. 20, 1990, PCT Pub. No. WO90/00112, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 27, 1989, Ser. No. 499,365

Claims priority, application Switzerland, Jul. 4, 1988, 2532/88

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—359 **5 Claims**



1. A device for manufacturing a welded connection of tubular components of plastics material, the tubular components having ends, wherein the ends of the components to be connected are axially aligned and held to abut with end surfaces thereof, and wherein the ends of the tubular components can be heated by means of a foldable heating device which surrounds the tubular components, the device comprising a support device arranged in the interior of the tubular components, a heating device (2) which can be fastened on frame (1) in a determined position being provided for each pipe diameter dimension to be welded, electrical contacts (53, 55, 11) being provided for each heating device (2) means for selecting a welding program of a program control (12) predetermined for each dimension by means of the contacts (53, 55, 11) when the heating device (1) is placed on the frame, a changeable heat energy supply which is adjustable over time being provided for each welding program, the heating device (2) including electrically heatable jaws (28, 62) and electric heating cartridges (33) for heating the heating jaws (28), the heating jaws (28) having thermal sensors (37) which are operatively connected to the program control (12), wherein the electrical contacts (53, 55) are arranged in a first plug component (54) arranged on the frame (1) and on a second plug component (52) arranged in the heating devices (2), wherein the electrically heatable jaws (28, 62) are surrounded by a common duct (34) which is operatively connected to a ventilator (9) which produces cooling air, the ventilator (9) being arranged in the frame (1) directly underneath the heating device (2), and wherein the heating jaws (62) have in a middle portion (63) thereof a thin wall thickness compared to adjacent portions (66) thereof located on both sides of the middle portion.

5,290,388

LABELLING MACHINE

Georg Zepf, Hagelstadt, Fed. Rep. of Germany, assignor to Kronos AG Hermann Kronseder Maschinenfabrik, Neutrambling, Fed. Rep. of Germany

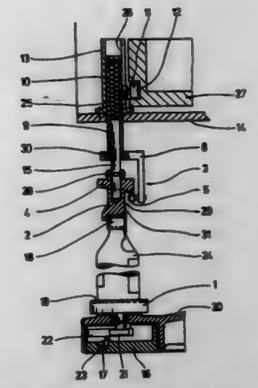
PCT No. PCT/EP91/01522, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO92/02419, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 938,221

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1990, 4025410

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—447 **7 Claims**



1. A labelling machine comprising at least one plate (1) adapted to carry out controlled rotations and receiving thereon an object to be labelled and further comprising a plunger (2), which is adapted to carry out controlled upward and downward movements and which fixes the object to be labelled on said plate, said plunger having associated therewith a separate rotating means (3), characterized in that said rotating means (3) moves the plunger (2) to at least one predetermined angular position and holds it in said position if said plunger is not in contact with an object to be labelled, and releases the plunger (2) for rotation together with the object to be labelled, if said plunger is in contact with said object.

5,290,389

FIBER PLACEMENT DELIVERY SYSTEM WITH MODULAR CUT/ADD ACTUATORS

Keith G. Shupe, Bountiful, and Boyd L. Hatch, Salt Lake City, both of Utah, assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 630,083, Dec. 19, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 948,626

Int. Cl.[5] B65H *81/00*

U.S. Cl. 156—425 **29 Claims**

1. A cut/add delivery head adapted for use in a fiber placement system for winding a plurality of resin impregnated tows, forming a winding band, onto a mandrel to form an irregularly shaped object, said cut/add delivery head comprising:

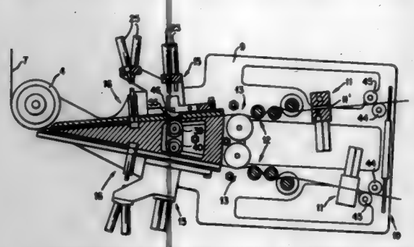
(a) a plurality of pathways for guiding a respective plurality of resin impregnated tows from an inlet to an outlet of said delivery head;

(b) means for selectively cutting each of said plurality of tows;

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(c) means for advancing said plurality of tows toward said mandrel; and

(d) a cut/add actuation module comprising (i) means for selectively actuating said means for selectively cutting each of said plurality of tows and (ii) means, in conjunction with said means for advancing, for effecting selective adding each of said plurality of tows, wherein the cut/add actuation module is adapted to be moved away form the twos without requiring movement of the tows, means for cutting, and means for advancing.



5,290,390

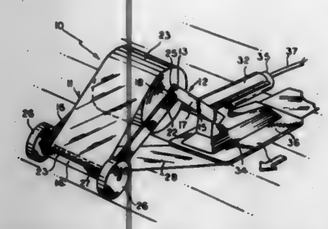
CARPET SEAM TAPE APPLICATOR

Ronald J. Roman, 1828 N. Cleveland, Chicago, Ill. 60614, and Rey E. Blanco, 4303 S. Keating, Chicago, Ill. 60632

Continuation-in-part of Ser. No. 835,608, Feb. 13, 1992, abandoned. This application Sep. 23, 1992, Ser. No. 949,584

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—523 20 Claims



1. An apparatus for the joining of two pieces of carpet abutting along a juncture line to form a seam, comprising an applicator formed of two generally U-shaped bracket portions pivoted together to intersect at an approximate right angle, a removable spindle mounted in one bracket portion adjacent the pivot for holding and feeding a roll of carpet tape having a solid heat-activated adhesive on one surface, a pair of rollers adjacent an end of one bracket portion adapted to contact the floor surface and allow the applicator to move along the surface, and a central arm secured to the end of the opposite bracket portion and extending away from the tape roll, and a heat bonding iron cooperating with said arm to be gripped by the installer and adapted to contact said tape fed from the roll to activate the glue thereon.

5,290,391

APPARATUS AND METHOD FOR ATTACHING ARTICLES TO A PLASTIC BAG WALL

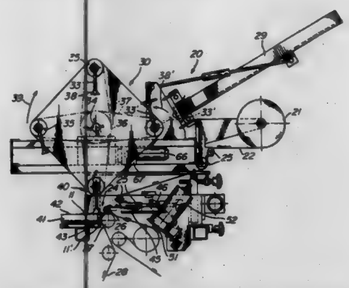
Norberto Czech, and Robert Lauzon, both of Montreal, Canada, assignors to Glopak Inc., Montreal, Canada

Filed Oct. 30, 1992, Ser. No. 969,371

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—566 15 Claims

1. An apparatus for attaching flat articles, such as coupons, cards, packets, etc., to a plastic bag wall, said apparatus comprising a plurality of guide rolls and a nip roll for guiding and displacing a bag-forming film sheet of plastic material to an article insertion station, an article transfer mechanism having two or more article grasping means to grasp articles from a discharge end of a supply means and transfer same to two or more article holding means at said article insertion station, said article holding means being aligned with distinct sections of said bag-forming film sheet, a further plurality of guide rolls for guiding an attaching film sheet over a support roll positioned in frictional rotational contact with said nip roll at said insertion station with said attaching film sheet aligned with said distinct sections of said bag-forming film sheet, displaceable means for causing relative displacement between said support roll and said nip roll in a direction towards said article holding means to grasp a leading edge of an article positioned



on each holding means and position same between said bag-forming film sheet and said attaching film sheet along one of said distinct sections, and sealing means to seal said bag-forming film sheet and said attaching film sheet together with said articles captive therebetween, said article holding means being a perforated support surface aligned side by side with each said distinct section of said bag-forming film sheet, said distinct sections being disposed longitudinally of said bag-forming film sheet one adjacent the other, a vacuum under said perforated surface, said articles being positioned on said surface with a leading edge portion thereof extending beyond said surface and over a portion of said support roll, said suction having a retention force inferior to the grasping force of said nip roll when displaced on said grasping segment to grasp said leading edge of said article.

5,290,392

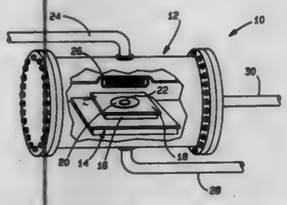
SINGLE CRYSTAL DIAMOND WAFER FABRICATION

James C. Lau, Torrance; Kenneth Lui, Fountain Valley, and Richard P. Maimgren, Rancho Dominguez, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 5, 1992, Ser. No. 894,685

Int. Cl.[5] C30B *29/04*

U.S. Cl. 156—610 20 Claims



1. A method of fabricating diamond semiconductor devices comprising the steps of:

providing a single crystal diamond seed;

depositing a first impurity layer on the diamond seed crystal; and

depositing a first layer of single crystal diamond on the impurity layer, said impurity layer being configured on the seed crystal such that the impurity layer enables the single crystal diamond layer to maintain a single crystal orientation with respect to the seed crystal, but in which the impurity layer reduces the crystalline bond between the seed crystal and the single crystal diamond layer.

5,290,393

CRYSTAL GROWTH METHOD FOR GALLIUM NITRIDE-BASED COMPOUND SEMICONDUCTOR

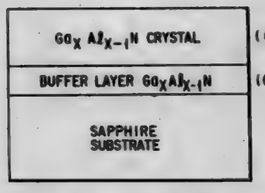
Shuji Nakamura, Anan, Japan, assignor to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Filed Jan. 28, 1992, Ser. No. 826,997

Claims priority, application Japan, Jan. 31, 1991, 3-032259; Mar. 27, 1991, 3-089840; Mar. 27, 1991, 3-089841

Int. Cl.[5] C30B *25/22*

U.S. Cl. 156—613 16 Claims



1. A crystal growth method for a gallium nitride-based compound semiconductor, comprising the steps of:

vapor-growing a buffer layer represented by the formula $Ga_XAl_{1-x}N$ $(0 > X \leqq 1)$ having a thickness of 0.001–0.5 μm on a substrate at a first temperature of 200° C. to 900° C.; and

vapor-growing a semiconductor layer represented by the same formula on said formed buffer layer at a second temperature ranging from 900° to 1150° C.

5,290,394

METHOD OF MANUFACTURING A THIN $HG_{1-x}CD_xTE$ FILM

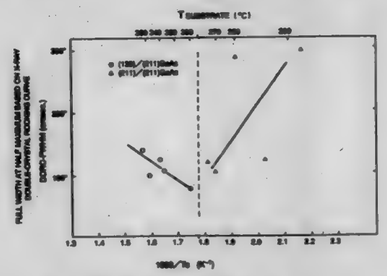
Tokuhito Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 947,172

Claims priority, application Japan, Sep. 19, 1991, 3-238465

Int. Cl.[5] H01L *21/203, 21/20*

U.S. Cl. 156—613 15 Claims



1. A method of manufacturing a thin $Hg_{1-x}Cd_xTe$ ($x=0$ to 1) film on a GaAs(211)B substrate through a CdTe buffer layer by molecular beam epitaxy, which comprises the steps of:

heat treating said GaAs(211)B substrate at approximately 550° C. while exposing the surface thereof to a Te flux; and

forming said CdTe buffer layer at a prescribed substrate temperature to control the plane orientation to result in a prescribed orientation.

5,290,395

METHOD OF AND APPARATUS FOR PREPARING SINGLE CRYSTAL

Kazuhisa Matsumoto, Hyogo; Masami Tatsumi, and Tomohiro Kawase, both of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

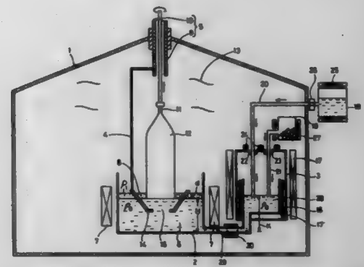
PCT No. PCT/JP91/00987, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO92/01826, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 838,776

Claims priority, application Japan, Jul. 26, 1990, 2-198133; Sep. 28, 1990, 2-260708; Oct. 18, 1990, 2-281032

Int. Cl.[5] C30B *15/12*

U.S. Cl. 156—617.1 20 Claims



1. A method of manufacturing a compound single crystal made of at least two initially separate starting material elements comprising the following steps:

(a) supplying said starting material elements from respective separate containers into a synthesizing chamber forming a first crucible,

(b) maintaining in said synthesizing chamber a controlled environment at a temperature for producing a melt,

(c) continuously reacting and synthesizing said at least two starting material elements in said synthesizing chamber thereby producing a compound melt,

(d) communicating a second crucible inside said first crucible with said first crucible to maintain a pool of said compound melt in said second crucible, said communicating taking place isolated from said reacting and synthesizing, whereby said second crucible isolates said pool of compound melt from any vibrations and non-uniform temperature distributions in said first crucible, and

(e) pulling said compound single crystal from said compound melt in said pool, whereby synthesizing and pulling take place simultaneously.

5,290,396

TRENCH PLANARIZATION TECHNIQUES

Philippe Schoenborn, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 6, 1991, Ser. No. 711,624

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—636 9 Claims

1. A method of planarizing over-filled trenches in a semiconductor device, consisting essentially of:

forming a trench in a substrate by applying a patterned mask layer of nitride on a surface of the substrate and etching the trench through openings in the mask layer, said trench having a relatively large width dimension;

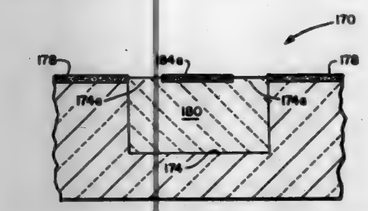
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over-filling the trench and mask layer with low-temperature-oxide (LTO) trench-fill material, said trench-fill material exhibiting a trough above the trench, the trough being narrower than the trench and generally centered above the trench;

applying a cap layer of nitride over the LTO trench-fill material at least in the trough;

said cap layer and said mask layer being substantially harder than the trench-fill material, vis-a-vis chemical-mechanical polishing;

a portion of said cap layer material in the trough being



substantially coplanar with the mask layer and generally centered above the trench;

chemical-mechanical polishing the trench-fill material and the cap layer material until the nitride mask layer and the coplanar portion of the cap layer are exposed; and

subsequently stripping away the mask layer and the portion of the cap layer;

whereby the portion of the cap layer overlying the trench fill material in the trench and substantially at the level of the mask layer causes the relatively wide trench to behave effectively as two smaller (narrower) trenches during the polishing process.

5,290,397

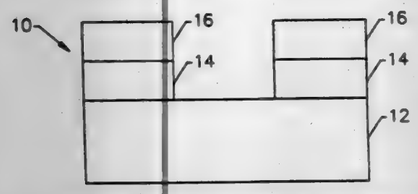
BILAYER RESIST AND PROCESS FOR PREPARING SAME

Christopher K. Ober; Allen H. Gabor, both of Ithaca; Eric A. Lehner, Poughkeepsie; Guoping Mao, and Lizabeth A. Schneggenburger, both of Ithaca, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 21, 1992, Ser. No. 934,088

Int. Cl.[5] B44C *1/22*; B29C *37/00*

U.S. Cl. 156—643 **9 Claims**



1. A process for forming a resist pattern on a substrate that provides good resolution, dimensional stability and etching protection during processing, the process comprising:

applying an imageable resist layer to the surface of a substrate, the imageable resist layer comprising a silicon-incorporated polystyrene-diene block copolymer having silicon present in the block copolymer in an amount sufficient to form silicon oxides in the presence of a gas plasma in an amount sufficient to resist etching of the block copolymer upon exposure to the gas plasma;

forming a mask pattern on at least a portion of the resist layer through which portions of the substrate surface are exposed; and

etching the mask pattern and the exposed portions of the substrate with a gas plasma.

5,290,398

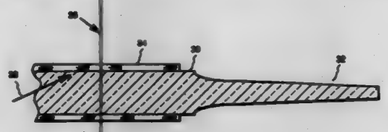
SYNTHESIS OF TAPERS FOR FIBER OPTIC SENSORS

Sandra F. Feldman; Emily Y. Shu, and John Y. Gui, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,751

Int. Cl.[5] B05D *1/00*; C03C *25/00*

U.S. Cl. 156—651 **16 Claims**



1. A method for tapering the end of a fiber, comprising the steps of:

suspending said fiber in a container; and

providing etchant in said container at a controlled rate in order to etch a taper into said fiber.

5,290,399

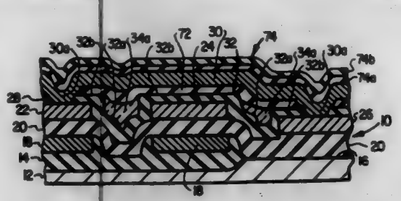
SURFACE PLANARIZING METHODS FOR INTEGRATED CIRCUIT DEVICES

Karen Reinhardt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 5, 1991, Ser. No. 650,625

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—655 **7 Claims**



1. In a method of planarizing a side surface of a partially completed integrated circuit device including the steps of coating the side surface with a spin-on glass material, subjecting the glass coating to a final curing process, and back etching the glass coating, the improvement wherein said step of back etching the glass coating is performed prior to said step of subjecting the glass coating to a final curing process.

5,290,400

FABRICATION METHOD FOR MICROELECTROMECHANICAL TRANSDUCER

Stephen M. Bobbio, Wake Forest, N.C., assignor to MCNC, Research Triangle Park, N.C.

Division of Ser. No. 619,183, Nov. 27, 1990, Pat. No. 5,206,557.

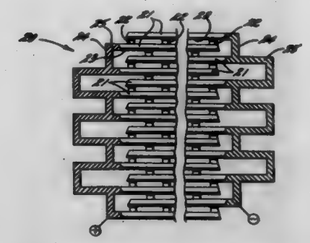
This application Dec. 17, 1992, Ser. No. 992,528

Int. Cl.[5] H02N *1/00*

U.S. Cl. 156—655 **9 Claims**

1. A method for making an electromechanical transducer comprising the steps of:

forming on a substrate a dielectric layer having a plurality of strips maintained in a closely spaced relation by a plurality of spacers;



applying a conductive layer to predetermined portions of the strips and spacers; and

separating the dielectric layer from the substrate.

5,290,401

METHOD AND A DEVICE FOR SEPARATING PLASTIC PARTICLES FROM SUPENSIONS

Hannu Savisalo, Mikkeli; Martti Pullisinen, Anttola, both of Finland; Markku Ainali, Västerås, Sweden; Timo Laurila; Pentti Järvelä, both of Tampere, Finland, and Esko Pääkkönen, Nokia, Finland, assignors to Savcor-Consulting Oy, Finland

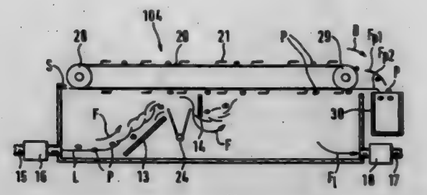
PCT No. PCT/FI91/00146, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/17304, PCT Pub. Date Nov. 14, 1991

PCT Filed May 9, 1991, Ser. No. 807,844

Claims priority, application Finland, May 10, 1990, 902345; May 10, 1990, 902346

Int. Cl.[5] D21B *1/32*

U.S. Cl. 162—4 **17 Claims**



1. A method for separating plastic particles from a cellulosic pulp suspension, comprising

flowing a suspension into a container containing plastic particles within a decomposable fiber network whereby turbulent flows are produced such that the particles are separated from the suspension as the fiber network decomposes,

manipulating the flow of the suspension after the particles have been separated therefrom such that the fiber network is prevented from reforming and thereby the separated plastic particles are prevented from binding thereto, and

directing the suspension and separated plastic particles to a removal point, where the plastic particles are mechanically and electrically separated and removed from the suspension.

5,290,402

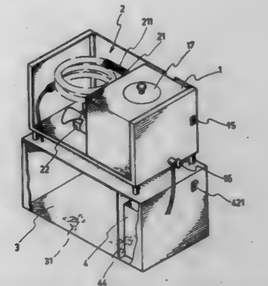
AUTOMATIC COLD/HOT DISTILLED WATER FOUNTAIN

Yao K. Tsai, 4F-2, No. 12, Sec. 2, Jun-Shan S. Rd., Taipei, Taiwan

Filed May 10, 1993, Ser. No. 58,129

Int. Cl.[5] B01D *3/42*

U.S. Cl. 202—181 **1 Claim**



1. An automatic cold and hot distilled water fountain comprising a distilling chamber, a condensing mechanism, a water reservoir and a heating box;

said distilling chamber including an upper cover and lateral draining switch to facilitate the draining and cleaning of said distilling chamber, a water incoming tube which communicates said distilling chamber with an external water source, a solenoid disposed on the incoming water tube for controlling the water coming therefrom, a manually operated switch disposed said water fountain for manually controlling said incoming water tube. A first ceramic heater and a water level controlling float disposed in said distilling chamber; said water level controlling float being formed by a post and a limit float mounted thereon, whereby said limit float will ascend or descend with the change of water level, so that when the water level drops down to a lower limit, an inner magnet of said limit float contacts with a lower limit electrode to produce an electrical signal which activates said solenoid, and reversely, when the water level ascends to an upper limit, said magnet contacts with an upper limit electrode to shut off said solenoid;

said condensing mechanism including a condensing tube surrounded by multiple radiators, and a cooling fan disposed under said condensing tube for enhancing the cooling effect and speeding the condensing process of steam;

said water reservoir being communicated by said condensing tube with said distilling chamber so as to collect distilled water formed by the condensed steam coming from said condensing tube; a cold water faucet mounted on the front side of the water reservoir for direct serve, an upper and a lower float wheels disposed on a lateral wall of the water reservoir, whereby when the water level of said water reservoir drops down to said lower float wheel, said first heater in said distilling chamber is activated to heat the water flowing into said distilling chamber and when the water level of said water reservoir ascends to said upper float wheel, said first heater in said distilling chamber is shut off to stop the heating process; and

said heating box being disposed beside said reservoir and communicated therewith by a non-return tube which is located at a rear bottom portion of said heating box, allowing water in said reservoir to flow only in one direction from said reservoir through said non-return tube into said heating box, and, due to the atmospheric pressure, the Water level in said reservoir can be as high as that in said heating box; a second heater in said heating box and thermal sensor disposed in said heating box, wherein said

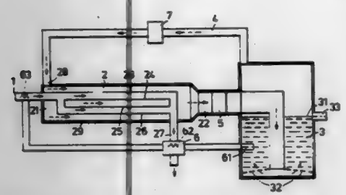
second heater is controlled via a manually operated switch or automatically controlled in such a manner that said thermal sensor detects the temperature of the water in said heating box and produces a signal to control the turning on and off of said second heater so as to maintain the temperature of the water in said heating box at a preset value, an external hot water faucet disposed on a front side thereof for discharging hot water therein to serve a user, and an additonal connecting tube disposed on a top portion of said heating box for communicating the same with said water reservoir, whereby the steam produced in said heating box during the heating process can be fed back into said water reservoir through said connecting tube.

5,290,403

LIQUID EVAPORATING APPARATUS

Aapo Sillak, Veckovägen 4, S-175 41 Järfälla, Sweden

Continuation of Ser. No. 625,701, Dec. 11, 1990, abandoned, which is a continuation of Ser. No. 401,457, Sep. 15, 1989, abandoned. This application May 27, 1993, Ser. No. 67,978
Claims priority, application Sweden, Mar. 17, 1987, 8701106-0
Int. Cl.[5] B01D *1/00, 3/00*
U.S. Cl. 202—182 10 Claims



1. A liquid evaporating apparatus, comprising:
a) an elongate gas flow chamber (2) having a gas inlet (28) at one end and a gas outlet (22) at another, opposite end,
b) an elongate liquid chamber disposed within the gas chamber and having a liquid inlet (1) at said one end and a liquid outlet (27) at said opposite end,
c) the liquid chamber being defined by a plurality of parallel liquid flow channels branching out from the liquid inlet and converging together at the liquid outlet, said flow channels being formed by a vapor-permeable, liquid-restraining material serving as a common diverting wall (23, 24, 25, 26) separating gas in the gas chamber from a liquid in the liquid chamber, wherein the liquid fills the liquid chamber to establish contact with the wall material throughout the liquid chamber, and
d) heating means (63, 64, 65), disposed in the liquid flow channels, for heating said liquid and causing evaporation thereof within the liquid chamber,
e) wherein said vapor-permeable, liquid-restraining material comprises a hydrophobic material such that purified vapors of said liquid pass through the wall material for entrainment by gas flowing through the gas chamber.

5,290,404

ELECTRO-SYNTHESIS OF ALCOHOLS AND CARBOXYLIC ACIDS FROM CORRESPONDING METAL SALTS

Joseph E. Toomey, Indianapolis, Ind., assignor to Reilly Industries, Inc., Indianapolis, Ind.

Filed Oct. 31, 1990, Ser. No. 606,591
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—72 11 Claims

1. A process for producing an alcohol from a corresponding metal salt while also recovering metal cation residues, the process being performed in a two-compartment cell having an anolyte and catholyte separated by a cation-exchange membrane and comprising the steps of: (a) electrolyzing an aqueous medium containing said salt in the anolyte to therein yield said alcohol and pass said metal cation into the catholyte, wherein said electrolyzing is at a current density of between about 15mA/cm^2 and about 75 mA/cm^2; and (b) recovering said alcohol in a yield of at least about 80% based on the amount of the corresponding metal salt starting material.

5,290,405

NAOH PRODUCTION FROM CERAMIC ELECTROLYTIC CELL

Ashok V. Joshi; Meilin Liu, both of Salt Lake City, Utah; Alf Bjorseth, Oslo, Norway, and Lars Renberg, Stockholm, Sweden, assignors to Ceramatec, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 705,364, May 24, 1991, abandoned. This application Feb. 28, 1992, Ser. No. 843,509
Int. Cl.[5] C25B *1/16, 9/00*
U.S. Cl. 204—98 34 Claims



1. An electrolyte cell for producing sodium hydroxide from a sodium salt derived from a strong acid comprising:
an anode chamber;
a cathode chamber;
an acid resistant, electronically conductive anode positioned in said anode chamber;
a caustic resistant, electronically conductive cathode positioned in said cathode chamber; and
a solid, impervious sodium ion conducting, electronically insulating, homogeneous inorganic, membrane separating the anode chamber from the cathode chamber, said membrane being resistant to acid and caustic.

16. An electrolytic process for producing concentrated sodium hydroxide solution from an aqueous sodium salt solution having anions derived from a strong acid comprising:
introducing electrons into an aqueous catholyte solution containing sodium hydroxide;
removing electrons from an aqueous anolyte solution containing sodium cations and anions from an acid;
conducting sodium ions through a solid integral, monolithic separator isolating said anolyte solution from said catholyte solution, said monolithic separator containing mobile sodium ions contained in the lattice of said separator to produce a concentrated solution of sodium hydroxide in said catholyte solution;
producing oxygen gas in said anolyte;
producing hydrogen gas in said catholyte;
producing an acid from the anions in said anolyte.

5,290,406

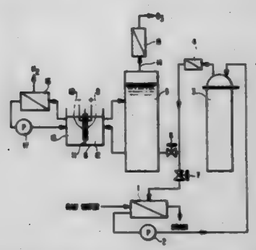
METHOD FOR PRODUCING OZONE

Isao Sawamoto, Kanagawa; Takayuki Shimamune, Tokyo, and Yoshinori Nishiki, Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Jun. 16, 1992, Ser. No. 899,306
Claims priority, application Japan, Jun. 17, 1991, 3-171768
Int. Cl.[5] C25B *1/00*
U.S. Cl. 204—101 2 Claims

1. A method for producing ozone which comprises electrolyzing water using a fluororesin ion-exchange membrane as a solid electrolyte thereby to generate an ozone-containing gas,

and cooling the gas thereby to remove a fluorine-containing substance present in the gas generated to a concentration of at



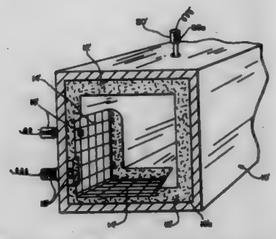
most 0.8 μg/l of gas, wherein said cooling is conducted at a temperature of 25° C. or less.

5,290,407

SYSTEM FOR CONTROLLING CORROSION IN AN ENVIRONMENT IN WHICH THIN LAYERS OF LOW-PH CORROSIVE FLUIDS ARE FORMED

Barry C. Syrett, Palo Alto, Calif.; Gerhardus H. Koch, and Neil G. Thompson, both of Columbus, Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 222,356, Jul. 20, 1988, abandoned, which is a continuation of Ser. No. 863,736, May 16, 1986, abandoned. This application Dec. 29, 1988, Ser. No. 291,567
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—147 7 Claims



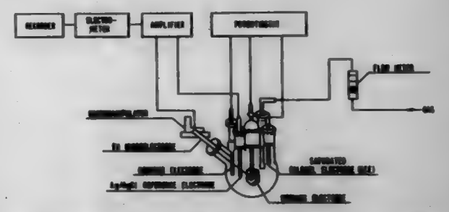
1. A method for cathodic protection of a metallic surface comprising:
applying to the side of the metallic surface facing a flue gas and on which a corrosive condensate with a pH of less than about 3 would occur on the metallic surface in the absence of the method, a layer of an acid resistant concrete that has a chemical resistance to a low pH and that chemically affects the corrosive condensate by increasing its pH to a value where cathodic protection is feasible;
absorbing the corrosive condensate in said layer of acid resistant concrete; and
inducing an electrochemical potential between said metallic surface and the absorbed condensate in said layer sufficient to effect cathodic protection of the metallic surface.

5,290,408

PROBE FOR MEASURING LIQUID BUFFERING CAPACITY

Zbigniew Lewandowski, Bozeman, and William G. Characklis, deceased, late of Bozeman, both of Mont. by Nancy C. Characklis, legal representative , assignors to The Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Continuation-in-part of Ser. No. 629,169, Dec. 19, 1990, Pat. No. 5,139,640, which is a continuation of Ser. No. 397,685, Aug. 23, 1989, abandoned. This application Aug. 13, 1992, Ser. No. 928,486
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] G01N *27/02*
U.S. Cl. 204—153.21 11 Claims



1. A method for measuring the buffering capacity of a liquid containing dissolved oxygen which comprises:
(a) providing a liquid containing dissolved oxygen;
(b) providing a cathodically or anodically polarized, conductive surface immersed in said liquid;
(c) connecting electrical circuits to apply a constant cathodic potential between (1) a working electrode and a reference electrode and (2) to provide means for measuring the difference in potential between a pH microelectrode and a reference electrode;
(d) applying a known potential to said conductive surface;
(e) treating said liquid to create a constant bulk dissolved oxygen concentration;
(f) measuring the differences in pH at said conductive surface; and
(g) determining the buffering capacity of said liquid from said pH measurement and said known potential.

5,290,409

METHODS AND APPARATUS FOR REGULATING TRANSMEMBRANE ION MOVEMENT UTILIZING SELECTIVE HARMONIC FREQUENCIES AND SIMULTANEOUS MULTIPLE ION REGULATION

Abraham R. Liboff, Birmingham, Mich.; Stephen D. Smith, Lexington, Ky., and Bruce R. McLeod, Bozeman, Mont., assignors to Life Resonances, Inc., Bozeman, Mont.

Continuation of Ser. No. 764,666, Oct. 25, 1991, Pat. No. 5,160,591, which is a continuation of Ser. No. 343,017, Apr. 25, 1989, Pat. No. 5,087,336, which is a continuation-in-part of Ser. No. 280,848, Dec. 7, 1988, which is a continuation of Ser. No. 923,760, Oct. 27, 1986, Pat. No. 4,818,697, Ser. No. 172,268, Mar. 23, 1988, Pat. No. 4,932,951, Ser. No. 265,265, Oct. 31, 1988, Pat. No. 5,067,940, Ser. No. 254,438, Oct. 6, 1988, Pat. No. 5,106,361, and Ser. No. 295,164, Jan. 9, 1989, Pat. No. 5,100,373. This application Aug. 20, 1992, Ser. No. 932,615
The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.
Int. Cl.[5] A61N *1/40*
U.S. Cl. 204—155 2 Claims

1. A method for the therapeutic treatment of a region of tissue in vivo in the presence of at least two distinct ionic species, comprising the steps of:
providing a magnetic field generator having means to generate an applied fluctuating magnetic field along an axis;

VOL 1160 ISS 1 MR 1 1994 UMI

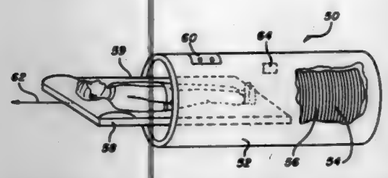
providing a magnetic field sensor and a signal feedback system having a microprocessor which permits adjustment of the parameters of said applied magnetic field along said axis;

providing in the path of said axis a region of living tissue in vivo in the presence of at least two distinct ionic species in an ambient static magnetic field;

placing said magnetic field generator adjacent said tissue;

generating a fluctuating magnetic field along said axis and through said tissue;

creating and maintaining a ratio between the frequency of said fluctuating applied magnetic field and the combined



strength of said applied magnetic field and said ambient field along said axis, wherein said frequency is within 5% of preselected harmonic frequencies of said at least two distinct ionic species;

wherein said harmonic frequencies are odd integer multiples of a fundamental frequency of each ionic species, said fundamental frequency of each of said ionic species being a function of the charge-to-mass ratio of the ionic species and the combined field strength along said axis; and

automatically adjusting with said microprocessor said applied magnetic field to maintain said ratio despite changes in said ambient static field due to changes in the direction of said axis.

5,290,410

ELECTRODE AND ITS USE IN CHLOR-ALKALI ELECTROLYSIS

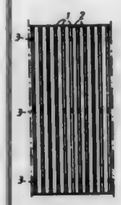
Mikael Tenfält, and Anders Ullman, both of Ljungaverk, Sweden, assignors to Permascand AB, Ljungaverk, Sweden

Filed Sep. 15, 1992, Ser. No. 944,954

Claims priority, application Sweden, Sep. 19, 1991, 9102712

Int. Cl.[5] C25B *11/02*

U.S. Cl. 204—98 **13 Claims**



9. A method for performing electrolysis, including the steps of applying electric current to an electrode having a front side having an electrically active portion and with a plurality of substantially parallel channels structure.

5,290,411

ACRYLIC POLYMER ELECTROPHORESIS SUPPORT MEDIA

Thomas Zewert, Pasadena, and Michael G. Harrington, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 913,234, Jul. 14, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,266

Int. Cl.[5] C25B *1/00*; C08F *18/00*

U.S. Cl. 204—128.8 **14 Claims**

1. An electrophoresis support media comprising a polymer gel which is made from monomers selected from the group consisting of poly(alkylene glycol) esters of methacrylic acid and poly(alkylene glycol) esters of acrylic acid, said polymer gel being in the shape of a slab or column said polymer gel slab or column comprising at least one will into which samples are loaded.

5,290,412

APPARATUS FOR SEPARATING ELECTRODEPOSITED METAL IN ELECTROLYTIC REFINING

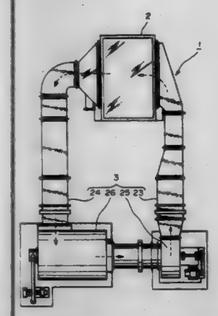
Hideomi Saito; Saburo Tanaka, both of Hyogo; Hiroyuki Morozumi, Tokyo; Akiyoshi Tatsui, Kagawa, and Akira Yoshioka, Tokyo, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,227

Claims priority, application Japan, Jul. 23, 1992, 4-197266

Int. Cl.[5] C25D *17/00*; C25C *7/08*; C22B *7/00*

U.S. Cl. 204—227 **7 Claims**



1. An apparatus for separating an electrodeposited metal from a cathode plate in electrolytic refining, comprising:

a separating furnace;

holding means attached to said separating furnace for holding in said furnace said cathode plate on which said metal is electrodeposited; and

means for introducing heated air into said separating furnace to blow the heated air toward said cathode plate and said electrodeposited metal thereon, whereby the electrodeposited metal is separated from the cathode plate.

5,290,413

ANODIC ELECTRODE FOR ELECTROCHEMICAL FLUORINE CELL

Gerald L. Bauer, Hudson, Wis.; William V. Childs, Stillwater, Minn.; Charles F. Kolpin, River Falls, Wis., and Dean T. Rutten, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 736,227, Jul. 26, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 990,368

Int. Cl.[5] C25B *11/02*

U.S. Cl. 204—243 R **8 Claims**

6. An electrochemical cell for the electrolytic production of fluorine gas from molten KF -2HF electrolyte comprising:

(1) a cell housing;

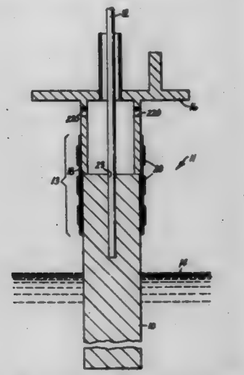
(2) a current collector, said current collector having a hollow portion;

(3) a first electrode used as a hydrogen generating cathode;

(4) a second electrode used as a fluorine generating anode, wherein said anode of said electrode is comprised of a continuously vertical nongraphitic low-permeability carbon, wherein the surface of the anode consists of a plurality of parallel, substantially vertical channels disposed around the circumference of said anode, and;

(5) an anode current carrier comprising:

(a) a metal sleeve overlaying a portion of said anode and said hollow portion of said current collector, where the upper end of the anode and the lower end of the collector are axially aligned and abutted; and



(b) a means for uniformly applying circumferential compression to said metal sleeve overlaying the contiguous and axially aligned and abutted portions of said anode and said current collector of the electrochemical cell to provide mechanical support for said anode and to provide electrical continuity between said anode and said current collector with the proviso that said portions of said anode and said current collector have approximately the same outer diameter, said current carrier and said portions of said anode and said current collector overlaid by said current carrier are wholly contained within said cell housing.

5,290,414

SEPARATOR/ELECTROLYTE COMBINATION FOR A NONAQUEOUS CELL

Jack W. Marple, Elyria, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed May 15, 1992, Ser. No. 883,444

Int. Cl.[5] C25B *9/00, 13/02*; H01M *6/14, 2/16*

U.S. Cl. 204—252 **20 Claims**

1. An electrochemical cell comprising an anode, a cathode, a separator between said anode and said cathode, and an electrolyte wherein said electrolyte comprises a solute dissolved in a mixture of a dioxolane and an acyclic ether-based solvent and said separator has a pore size between 0.005 and 5 microns, a porosity between 30% and 70%, a resistance between 2 and 15 ohm-cm^2 and a tortuosity of less than 2.5.

5,290,415

ELECTROLYTIC ELECTRODE

Takayuki Shimamune, and Yasuo Nakajima, both of Tokyo, Japan, assignors to Permelec Electrode Ltd., Fujisawa, Japan

Filed Aug. 25, 1992, Ser. No. 934,229

Claims priority, application Japan, Aug. 30, 1991, 3-246597

Int. Cl.[5] C25B *11/08*

U.S. Cl. 204—290 F **8 Claims**

1. An electrolytic electrode comprising a substrate made of a valve metal, an intermediate layer formed on a surface of the substrate containing an oxide of at least one metal selected from the group consisting of niobium, tantalum, titanium, and zirconium, and a coating layer formed on the intermediate layer containing an iridium-tantalum mixed oxide and platinum, wherein the contents of iridium, tantalum, and platinum in the coating layer are from 50 to 70 mol %, from 20 to 49.5 mol %, and from 0.5 to 10 mol %, respectively.

5,290,416

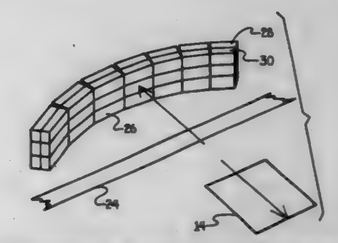
UNIDIRECTIONAL FIELD GENERATOR

Hua-Chiag Tong; John J. Newman, both of San Jose, and Hon-Stan J. Wu, Fremont, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Jul. 10, 1992, Ser. No. 911,457

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.16 **12 Claims**



1. An apparatus for depositing magnetic material on a substrate, comprising:

a sputter chamber enclosed by a housing wall;

a support positioned within said chamber on which said substrate is adapted to be seated;

a permanent magnet assembly formed as a single integrated structure located external to and spaced from said housing wall, said assembly comprising a multiplicity of permanent magnet pieces disposed in rows and columns, said single structure being formed of a continuous array of said permanent magnetic pieces, all of said pieces being joined to form said continuous array, said magnet assembly providing a uniaxial magnetic field across the area of said substrate and being formed without a flux return element, so that the magnetic moments of said magnetic material are aligned during the deposition process.

5,290,417

APPARATUS WITH AXIAL GAS DISTRIBUTION FOR VACUUM COATING SUBSTRATES ON A CAROUSEL

Jaroslav Zejda, Rodenbach, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 862,224

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1991, 4143177

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.25 **14 Claims**

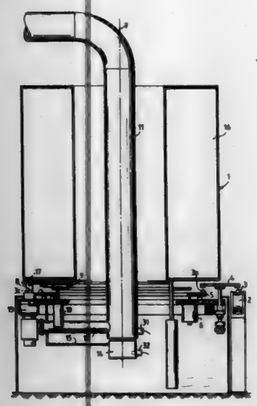
1. Apparatus for coating substrates, comprising

a plurality of individually evacuable process chambers located about a central axis,

a carousel for transporting substrates circular path about

said central axis for coating at said process chambers, said carousel having a plurality of substrate location seats,

a central evacuation conduit located coaxially with said central axis,



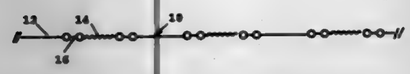
a plurality of radial evacuation conduits connecting said central evacuation conduit to said process chambers.

5,290,418

VISCOUS ELECTROPHORESIS POLYMER MEDIUM AND METHOD

Steven M. Menchen, Fremont, Calif., and Michell Winnik, Toronto, Canada, assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Sep. 24, 1992, Ser. No. 950,863
Int. Cl.[5] B01D *39/00*
U.S. Cl. 204—299 R **15 Claims**



1. An electrophoresis separation medium comprising

a matrix of aggregated, regular-repeating copolymers in an aqueous medium, said copolymers being composed of hydrophilic polymer segments having selected, substantially uniform segment lengths, and a plurality of hydrophobic polymer segments carried on and spaced from one another, at regular repeating intervals, by the hydrophilic polymer segments,

said medium being characterized by:

(i) the ability of the medium to effect a high-resolution electrophoretic separation of biopolymer molecules in a defined molecular size range, and

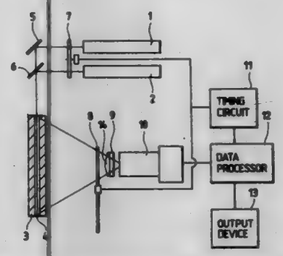
(ii) a concentration of the copolymer which is above the interpolymeric-aggregation transition concentration, defined by the concentration of copolymer sufficient to produce a marked rise in viscosity of an aqueous dispersion of the copolymer.

5,290,419

FLUORESCENCE DETECTION TYPE ELECTROPHORESIS APPARATUS

Hideki Kambara, Hachiouji; Takashi Anazawa, Kokubunji; Keiichi Nagai, Higashiyamato; Hiroaki Machida, Kodama, and Hisanori Nasu, Yokohama, all of Japan, assignors to Hitachi, Ltd.; Hitachi Electronics Engineering Co., Ltd., both of Tokyo and Hitachi Software-Engineering Co., Kanagawa, all of Japan

Filed Apr. 12, 1993, Ser. No. 45,135
Claims priority, application Japan, Apr. 14, 1992, 4-094568
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—299 R **9 Claims**



1. In the electrophoresis apparatus comprising

i) means for electrophoretically separating a group of samples composed of the samples labeled by a plurality types of fluorophores,

ii) excitation means for exciting the fluorophores labeling said samples and emitting fluorescence,

iii) means for selecting wavelength of said fluorescence, and

iv) means for detecting said fluorescence subjected to wavelength selection;

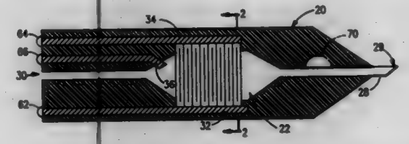
a fluorescence detection type electrophoresis apparatus characterized in that said excitation means provides time-shared irradiation of the samples by a plurality of excitation lights, and said means for selecting wavelength has scattered light cut off filters synchronous with the time-shared irradiation of said plurality of excitation lights.

5,290,420

SAMPLING SYSTEM AND ANALYSIS CELL FOR STRIPPING VOLTAMMETRY

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Filed Aug. 12, 1992, Ser. No. 929,702
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 **29 Claims**



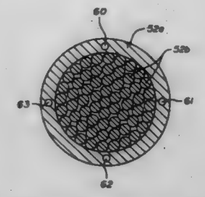
1. A disposable combination capillary sampling/electrochemical analysis cell comprising an enclosure having a hollow therein, at least one capillary inlet leading to said hollow wherein said inlet permits uptake of the material being sampled, a vent leading from said hollow, at least one testing electrode, at least one counter electrode, and at least one reference electrode, all disposed in part in said hollow, said hollow further including a testing reagent.

5,290,421

OXYGEN SENSOR LEAD WIRE

Kim A. Reynolds, Berwyn, Pa., and Joseph A. Williams, III, Chagrin Fall, Ohio, assignors to Markel Corporation, Norristown, Pa.

Filed Sep. 11, 1991, Ser. No. 757,833
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—424 **15 Claims**



1. A lead wire for use in connection with a heated solid electrolyte oxygen sensor having a substantially hermetically closed container, the lead wire comprising:

(a) an elongate, electrically conductive substantially cylindrical wire core; and

(b) an electrically insulating tubular cover for said core, said tubular cover comprising fluorocarbon resin and a substantially cylindrical bore in the wall thereof for providing passage of air from the exterior of the container to the interior of the container, the longitudinal axis of said bore being substantially parallel to the longitudinal axis of said core.

5,290,422

PROCESS FOR APPLYING SILVER-GRAPHITE DISPERSION ELECTRODEPOSITS

Ursula Michelsen-Mohammadein, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/DE91/00241, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO91/14808, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 18, 1991, Ser. No. 927,476
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 4010346
Int. Cl.[5] C25D *15/00*
U.S. Cl. 205—109 **17 Claims**

1. A process for applying silver-graphite dispersion electrodeposits using an electrolyte containing alkali-metal silver cyanide, a conducting salt, graphite, a wetting agent, and a brightener, wherein the silver-graphite dispersion electrodeposits are applied using an electrolyte with a conducting salt that is free of free cyanide.

5,290,423

ELECTROCHEMICAL INTERCONNECTION

Carlyle L. Helber, Jr., Fountain Valley, and Frank A. Ludwig, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

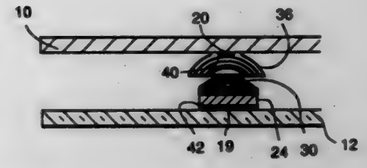
Filed Apr. 27, 1992, Ser. No. 873,848
Int. Cl.[5] C25D *5/02*
U.S. Cl. 205—114 **14 Claims**

1. A process for interconnecting pads on semiconductor chips with pads on a substrate, said process comprising the steps of:

electrically shorting said pads on said substrate by providing a shorting layer;

creating conductive bumps on said shorting layer above said pad on said substrate;

aligning said pads on said substrate with said pads on said semiconductor chips; and



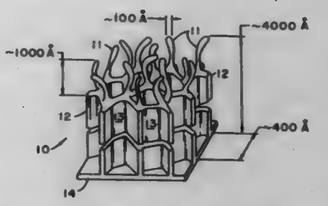
depositing metal to said bumps to form an electrical interconnection between said pads on said semiconductor chip and said pads on said substrate.

5,290,424

METHOD OF MAKING A SHAPED REFLECTIVE ALUMINUM STRIP, DOUBLY-PROTECTED WITH OXIDE AND FLUOROPOLYMER COATINGS

Frank A. Mozelewski, Lower Burrell; Daniel L. Serafin, Wexford; Robert E. Bombalski, Brackenridge; Romeo C. Pascasio, Lower Burrell, and Donald L. Nock, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 31, 1992, Ser. No. 830,021
Int. Cl.[5] C25D *7/08, 11/08*
U.S. Cl. 205—116 **12 Claims**



1. A process for converting a sheet of aluminum alloy in the range from about 0.010 inch (0.25 mm) to about 0.050 inch (1.25 mm) thick, into a decorative reflective sheet, doubly-protected with a combination of an oxide coating formed by phosphoric acid anodizing, and, a sequentially applied cured fluoropolymer coating, said doubly-protected sheet having a surface substantially free of degradation due to environmental exposure, said process comprising,

(a) cleaning said surface of said sheet of aluminum alloy to remove superficial contaminants and leave a clean surface;

(b) brightening said clean surface until said clean surface is a bright surface having substantially mirror-like characteristics with a distinctness of reflected image (D/I) of at least 80%;

(c) generating on said bright surface a porous aluminum oxide coating in the range from 100 nanometers (0.1 μm) to 0.2 mil (5 μm) thick, in a bath containing from about 5% to 20% by weight of phosphoric acid, at a temperature in the range from about 25° C. to 75° C., under direct current (DC) applied to said sheet at from about 5 to 50 amps/ft^2 at constant voltage in the range from about 10 to 50 volts, said oxide coating being deposited within less than 3 min, without first etching said surface, so as to produce a phosphoric acid anodized reflective surface having at least 80% D/I;

(d) rinsing said phosphoric acid anodized surface and drying, to leave a dry reflective surface;

(e) contacting said dry reflective surface with a fluoropolymer in an amount such that, upon curing, a cured fluoro-

polymer is interstitially mechanically bonded to said oxide coating, so as to form said reflective sheet doubly-coated on at least one side which maintains at least 80% D/I; and,

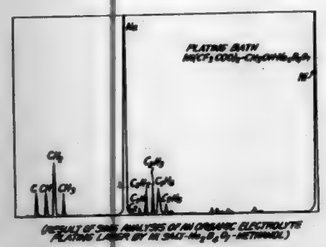
(f) shaping said doubly-coated sheet to conform to a profile having at least one radius which is less than 10 mm without debonding said cured matrix fluoropolymer from said oxide coating at the interface thereof.

5,290,425

ORGANIC SOLVENT ELECTROLYTE FOR PLATING FILM OF $R_2T_{14}B$ INTERMETALLIC COMPOUND PERMANENT MAGNET

Hiroshi Momotani, and Tsutomu Otsuka, both of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan

Filed Apr. 24, 1992, Ser. No. 873,243
Int. Cl.[5] C25D *3/00*
U.S. Cl. 205—234 **29 Claims**



(RESULT OF GAS CHROMATOGRAPHIC ANALYSIS OF AN ORGANIC ELECTROLYTE FOR PLATING USED BY THE SALT-$M_nB_2O_5$-METHANOL)

1. An organic solvent electrolyte for forming a plating film on the surface of a $R_2R_{14}B$ intermetallic compound permanent magnet which is used in a plating process based on a plating method using organic solvent electrolyte comprising a metallic salt including at least one metallic element, a supporting electrolyte and the balance of an organic solvent for forming a plating film on the surface of a $R_2T_{14}B$ intermetallic compound permanent magnet (herein, R denotes a rare earth element including Y and T denotes a transition metal) including R, Fe and B as main components, characterized in that said supporting electrolyte includes at least one selected from a group consisting of:

(1) a boric acid compound including at least one of R'_3BO_3 (R' denotes H or methyl, ethyl, propyl group), MBO_2 (m denotes H or alkaline metal), $M'BO_3$ (M' denotes H or an alkaline metal selected from the group Na, K and Li), $M'_2B_2O_{(3x+2)/2}$ (x is an even number of more than 2),

(2) a ClO_4 salt of an alkaline metal or tetraalkylammonium including at least one of $M'ClO_4$ or R'_4NClO_4,

(3) a BF_4^- salt of an alkali metal or tetraalkylammonium including at least one of $M'BF_4$ or $R'NBF_4$

(4) a PF_6 salt of an alkali metal or tetraalkylammonium including at least one of $M'PF_6$ or $R'NPF_6$,

(5) a $CF_3SO_3^-$ salt of an alkali metal or tetraalkylammonium including at least one of $M'CF_3SO_3$ or $R'_4NCF_3SO_3$,

(6) a $R'COO^-$ salt of an alkali metal including R'COOM.

5,290,426

HIGH POROSITY, HIGH SURFACE AREA ISOMERIZATION CATALYST AND ITS USE

Ian A. Cody, Clearwater; David H. Dumfries, Sarnia - Clearwater, both of Canada; Arthur H. Neal, and Kenneth L. Riley, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 699,101, May 10, 1991, Pat. No. 5,182,248. This application Aug. 20, 1992, Ser. No. 932,529
Int. Cl.[5] C10G *25/00, 73/02*
U.S. Cl. 208—27 **14 Claims**

1. A process for the catalytic isomerization of wax into liquid products of high viscosity index and low pour point in high yield comprising passing wax over a high porosity, high surface area catalyst comprising a catalytically active metal component on a fluorided refractory metal oxide support wherein the catalyst in its finished form has a porosity, expressed in terms of pore volume, of at least about 0.50 cc/gram, and a surface area in m^2/gm, such that the product of the porosity and the surface area is at least about 107, said contacting of the wax with the catalyst being conducted in the presence of hydrogen and under isomerization conditions of elevated temperature and pressure.

5,290,427

GASOLINE UPGRADING PROCESS

David L. Fletcher, Turnersville; Timothy L. Hilbert, Sewell; Michael S. Serli, Haddonfield, and Stuart S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Aug. 5, 1992, Ser. No. 925,007
Int. Cl.[5] C10G *45/00*
U.S. Cl. 208—89 **30 Claims**

1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range which comprises:

fractionating the feed into a plurality of fractions of differing boiling range,

hydrodesulfurizing the fractions by introducing them into a fixed bed hydrodesulfurization reactor at spaced locations along the length of the hydrodesulfurization reactor in which the introduced fractions are contacted with a hydrodesulfurization catalyst under conditions of elevated temperature, elevated pressure and in an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst of acidic functionality to convert it to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,290,428

SUPERACID CATALYZED HYDROCRACKING OF HEAVY OILS AND BITUMENS

Otto P. Strausz; Thomas W. Mojelsky; John D. Payzant, all of Edmonton, Canada; George A. Olah, Beverly Hills, and Surya G. K. Prakash, Hacienda Heights, both of Calif., assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Mar. 12, 1992, Ser. No. 850,271
Int. Cl.[5] C10G *23/02*
U.S. Cl. 208—107 **20 Claims**

1. A process for hydrocracking a heavy oil or bitumen which comprises reacting said feedstock with a gaseous superacid in the presence of a hydrogen transfer agent and hydrogen to thereby yield lower boiling point distillates in the absence of a solid catalyst.

5,290,429

CATALYTIC AROMATIC SATURATION IN THE PRESENCE OF HALIDE

Dennis D. Delaney, Wilton, Conn., and John W. Ward, Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 660,335, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,877, May 25, 1990, Pat. No. 5,135,902. This application Nov. 25, 1992, Ser. No. 981,611
Int. Cl.[5] C10G *45/00, 45/06, 45/08, 45/12*
U.S. Cl. 208—145 **44 Claims**

1. A process for saturating aromatic compounds contained in a hydrocarbon-containing feedstock comprising at least 10 volume percent of compounds and at least about 90 volume percent of feedstock components boiling at less than about 371° C., said process comprising contacting in a reactor said feedstock under aromatic saturation conditions including an elevated temperature and a pressure at the inlet of said reactor less than 700 p.s.i.g. and the presence of hydrogen with a particulate catalyst comprising at least one hydrogenation component and at least one fluoride component supported on a porous refractory oxide, to produce a product containing more saturated forms of said aromatic compounds contained in said feedstock.

5,290,430

RISER DISENGAGER WITH SUSPENDED CATALYST SEPARATION ZONE

Ismail B. Cetinkaya, Palatine, Ill., assignor to UOP, Des Plaines, Ill.

Filed Nov. 13, 1991, Ser. No. 790,924
Int. Cl.[5] C10G *35/00*
U.S. Cl. 208—161 **16 Claims**

1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

(a) passing said FCC feedstock and regenerated catalyst particles to a lower section of a reactor riser and transporting said catalyst and feedstock upwardly through a first portion of said riser thereby converting said feedstock to gaseous products and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles to yield a first mixture of spent catalyst and gaseous products below a riser outlet having a first density;

(b) withdrawing a second mixture of spent catalyst and gaseous products from said riser through said riser outlet;

(c) passing at least a portion of said first mixture of spent catalyst particles and gaseous products upwardly from said first portion of said riser into a suspension of catalyst particles at a downstream end of said riser without substantial discharge of catalyst out of said riser said suspension being located in a second portion of said riser comprising a disengaging zone, said disengaging zone having a majority of its length extending above said riser outlet and providing a region above said riser outlet having a second catalyst density, said second catalyst density having a density of at least five times said first catalyst density;

(d) passing a stripping vapor stream into said disengaging zone;

(e) passing said second mixture of catalyst particles and gaseous products to a particle separator;

(f) recovering a gaseous product stream from said separator;

(g) passing catalyst particles from said separator to a stripping zone and passing a stripping gas upwardly through said stripping zone and producing said gaseous stripping vapor stream; and,

(h) passing spent catalyst from said stripping zone into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser.

5,290,431

FCC PROCESS WITH CONCENTRATORS ON CYCLONE INLETS

Brian A. Cunningham, Doylestown, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 8, 1993, Ser. No. 1,882
Int. Cl.[5] C10G *11/18*; B01J *38/72, 38/30*; F27B *15/08*
U.S. Cl. 208—164 **7 Claims**

1. A fluidized catalytic cracking (FCC) process for catalytic cracking of a feed comprising hydrocarbons having a boiling point above about 650° F. comprising:

a. catalytically cracking said feed in a catalytic cracking zone at catalytic cracking conditions by contacting said feed with a source of hot regenerated cracking catalyst to produce a reactor effluent mixture comprising cracked products and spent cracking catalyst containing coke and strippable hydrocarbons;

b. separating said mixture into a cracked product vapor phase which is charged to a fractionation means for product recovery and a spent catalyst phase;

c. stripping said spent catalyst phase in a stripping means at stripping conditions to produce stripped catalyst;

d. regenerating said stripped catalyst in a bubbling bed catalyst regeneration means comprising a vessel having an inlet for spent catalyst, an inlet in a lower portion of said vessel for regeneration gas, an outlet in a lower portion of said vessel for regenerated catalyst, and a plurality of primary cyclone separators in an upper portion of said vessel receiving flue gas and entrained catalyst, and wherein said primary cyclone separators have operatively associated with the inlet to said primary cyclone separa-

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tors a low efficiency solids concentrator (SC) device comprising:

i. an SC inlet tube for admission of flue gas and entrained catalyst flowing in a downward direction;

ii. an SC inertial separation means having sidewalls, an inlet for flue gas and entrained catalyst, an outlet for catalyst, and an outlet for flue gas with a reduced catalyst content, said separation means receiving said flue gas and entrained catalyst and forcing same to make at least about a ¼ turn, and permitting no more than about ¾ turn to a different direction, and causing a separation of catalyst from flue gas due to inertial forces with consequent collection of a catalyst rich stream which is discharged down from said SC separation means via a catalyst outlet back into a lower portion of said regenerator vessel and a reduced catalyst content flue gas vapor phase which is discharged via said SC outlet into said inlet of said primary separator; and

e. withdrawing from a lower portion of said regenerator vessel regenerated catalyst and recycling said regenerated catalyst to said cracking reactor to crack heavy feed.

5,290,432

METHOD OF TREATING TOXIC AROMATIC HALOGEN-CONTAINING COMPOUNDS BY ELECTROPHILIC AROMATIC SUBSTITUTION

Arthur J. Friedman, Deerfield, and Yuval Halpern, Skokie, both of Ill., assignors to Chemical Waste Management, Inc., Oak Brook, Ill.

Continuation-in-part of Ser. No. 520,732, May 9, 1990, Pat. No. 5,043,054. This application Jul. 26, 1991, Ser. No. 736,474

Int. Cl.[5] C10G *17/02*

U.S. Cl. 208—262.5 **9 Claims**

1. A method for treating a waste material comprising a halogenated aromatic compound, the method comprising the step of incubating a reaction mixture at a temperature and for a period of time sufficient to form an electrophilically substituted halogenated aromatic compound, the reaction mixture comprising the waste material and an electrophilic aromatic substitution reagent selected from the group consisting of mixtures of $POCl_3$ and trifluoromethanesulfonic acid; mixtures of HNO_3 and H_2SO_4; mixtures of dimethylformamide and $POCl_3$; H_2SO_4; mixtures of $ClSO_3H$; mixtures of H_2SO_4 SO_3; mixtures of H_2SO_3; mixtures of RX and a member selected from the group consisting of $AlCl_3$, $FeCl_3$ and BF_3, wherein R is a straight or branched chain alkyl group between C_1 and C_{20} and X is a halogen; and mixtures of R_1COCl and a member selected from the group consisting of $AlCl_3$, $FeCl_3$ and BF_3, wherein R_1 is a straight or branched chain alkyl group between C_1 and C_{20} or an aryl group, the reagent being present in an amount sufficient to electrophilically substitute the halogenated compound, wherein a halogen atom of the halogenated aromatic compound is electrophilically substituted by a non-halogen group of the electrophilic aromatic substitution reagent, and wherein the halogenated compound is dehalogenated thereby.

5,290,433

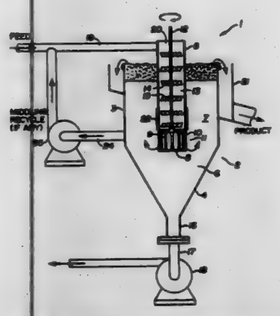
FROTH WASHER

Edward Wing-Kee Chan, Edmonton, and Robert B. Stovall, Fort McMurray, both of Canada, assignors to Alberta Energy Company Ltd.; Canadian Occidental Petroleum Ltd.; Esso Resources Canada Limited, all of Calgary; Gulf Canada Resources Limited, Toronto; Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources, Edmonton; HBOG-Oil Sands Limited Partnership, Calgary; PanCanadian Petroleum Limited, Calgary and Petro-Canada Inc., Calgary, all of Canada

Filed Aug. 22, 1991, Ser. No. 748,616

Int. Cl.[5] C10G *1/04*

U.S. Cl. 208—391 **4 Claims**



1. Apparatus for cleaning post-primary froth feed containing bitumen, water and solids, comprising:

an open-topped vessel having a tubular upper section and a conical bottom section communicating at its base with means for underflow removal, said vessel forming a chamber and having means at its upper end for receiving and removing froth overflowing the vessel's rim;

an upstanding open-topped tube forming a bore and being positioned in the upper section of the vessel in spaced relation with the vessel side wall to cooperate therewith to form an annular passage, said tube being associated with means for introducing forth feed in to the upper end of the tube bore, said tube having a slot-free upper portion extending the major part of the tube's length in which shearing and aeration of the froth takes place, and a lower outlet portion extending the balance of the tube's length and having a transverse wall closing its lower end, the side wall of the lower outlet portion forming a plurality of slots extending up from the transverse wall, said slots providing outlet means through which sheared froth may leave the tube bore, and

a driven rotatable shaft extending down into the bore of the upper portion of the tube, said shaft carrying one or more pairs of opposed throw propellers in vertically spaced arrangement, each pair consisting of a downthrow propeller positioned above an up throw propeller.

5,290,434

EFFLUENT DOSING SEPTIC SYSTEM

James G. Richard, 20 Woodland Dr., Canton, Conn. 06019-2004

Filed Feb. 10, 1993, Ser. No. 16,127

Int. Cl.[5] E03F *7/00*

U.S. Cl. 210—109 **16 Claims**

1. A septic system for dosing effluent into a disposal field, comprising:

a) a relatively water-tight walled structure capable of accumulating a volume of said effluent;

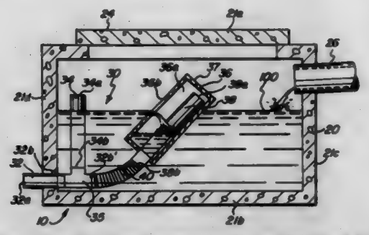
b) means for feeding said effluent to said structure;

c) a disposal field dosing system which comprises

i) at least one outlet conduit having an outlet end and an inlet end, said conduit extending through a wall of said structure such that the outlet end of said conduit extends to a disposal field and the inlet end of said conduit is disposed within said structure, wherein said conduit is located within said structure near the bottom thereof;

ii) a stand pipe which extends from each of said outlet conduits toward the top of said structure such that an opening of said stand pipe is located at a level in said structure which defines a maximum high point of said effluent in said structure;

iii) a float comprising a chamber having an opening on an upper surface thereof;



iv) at least one feed conduit having an inlet end located within said float chamber and an outlet end in operative connection with the inlet end of said outlet conduit; and

v) a jointed coupler which forms the operative connection between said at least one feed conduit and at least one outlet conduit,

said float moving upwardly as the level of said effluent in said structure increases in response to said feeding means, the upward movement of said float being limited by said feed conduit to provide for filling of said float chamber and sinking of said float to permit drainage of said effluent from said structure.

5,290,435

AEROBIC PURIFICATION INSTALLATION

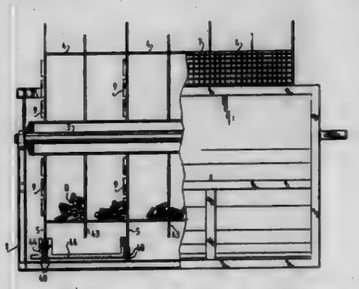
Pieter A. Stilkenboom, Bergeyk, Netherlands, assignor to Arie Cornelis de Vries, Waalre, Netherlands

Filed Oct. 22, 1992, Ser. No. 964,614

Claims priority, application Netherlands, Oct. 23, 1991, 9101776

Int. Cl.[5] C02F *3/08*

U.S. Cl. 210—151 **15 Claims**



1. A device for aerobic purification of industrial and/or household waste water, comprising:

a trough-like container for receiving waste water for treating;

at least two contactors mounted for rotation within the trough-like container;

filler elements arranged loosely within the contactors;

feed means for feeding the waste water in doses into the trough-like container;

a peripheral seal positioned to prevent direct flow of waste water from the exterior of one contactor to another, said seal comprising a U-shaped channel which fits between the trough-like container and at least one of the two contactors, the U-shaped channel providing for biomass growth therein to seal between the trough-like container and said at least one of the two contactors; and

means for transporting waste water between contactors.

5,290,436

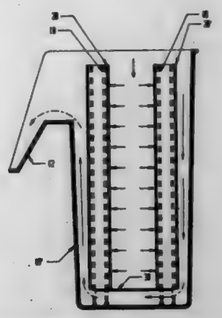
AQUARIUM FILTER

Eugene Danner, 39 Glenrich Dr., St. James, N.Y. 11780

Filed Dec. 9, 1992, Ser. No. 987,719

Int. Cl.[5] A01K *63/04*

U.S. Cl. 210—169 **3 Claims**



1. An externally-mounted aquarium filter assembly comprising:

a tank having means to support said tank on a wall of an aquarium;

partition means disposed in said tank for dividing the interior of said tank into a pre-filter chamber and a post-filter chamber, said partition means comprising a raised partition base plate and a first and second pair of generally upstanding, spaced-apart track means, each pair of which define an opening therebetween for the receipt of a filter cartridge, which openings further establish communication between said chambers, said pre-filter chamber occupying the tank space defined between said track means and said post-filter chamber occupying the remaining tank space outwardly of said track means with said partition plate defining a passageway therebelow for establishing communication between said remaining tank space disposed outwardly of said track means;

a pair of filter cartridges, each of which is independently removably mounted within said openings of said track means so that water passing from said pre-filter chamber to said post-filter chamber passes through said filter cartridges for trapping particulate matter in said water;

inlet means mounted on said tank for introducing water from the aquarium to said pre-filter chamber; and

outlet means mounted on said tank for returning water from said post filter chamber to the aquarium.

5,290,437

AUTO-FLUSHING DRAINAGE FILTER SYSTEM

Chiu-Chan Lin, 11, Wen-Te La., Yu-Wei Road, Miao-Li City, Miao-Li Hsien, Taiwan

Filed Jun. 21, 1993, Ser. No. 79,037

Int. Cl.[5] A01K *63/04*

U.S. Cl. 210—169 **1 Claim**

1. Auto-flushing drainage filter system comprising:

a drum filter having a top opening connected to a fishpond at the lowest bottom thereof;

a flow guide fastened to said drum filter by adjusting tie

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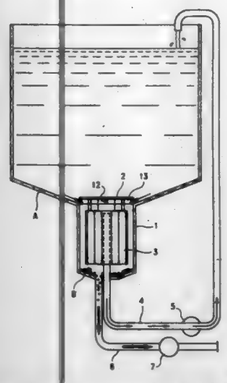
screws and spaced above the top opening of said drum filter;

cylindrical brushes suspended from said flow guide and vertically arranged within said drum filter around a circle;

a clean water recycling pipe having one end disposed within said cylindrical brushes and an opposite end extended out of said drum filter and turned to the outside above said fishpond for circulation of water through said fishpond;

a first water pump connected to said clean water recycling pipe;

a drain pipe connected to said drum filter for drawing water away from said fishpond; and



a second water pump connected to said drain pipe, said second water pump producing a higher horsepower than said first water pump;

whereby turning on said first water pump causes a circulation of water through said fishpond, said drum filter and said clean water recycling pipe for permitting debris and impurities to be removed from the water and settled to said drain pipe; turning on said second water pump causes a sudden rush of water to be induced from said fishpond to said drain pipe through said drum filter and said cylindrical brushes to carry debris and impurities away from said fishpond.

5,290,438

SEWAGE INCINERATION SYSTEM

Wilfred J. Wilkins, 108 Forest St., Plaistow, N.H. 03865

Filed Dec. 28, 1992, Ser. No. 997,323

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—177 **5 Claims**

1. An apparatus for separating sewage into a solid component and a liquid component, comprising:

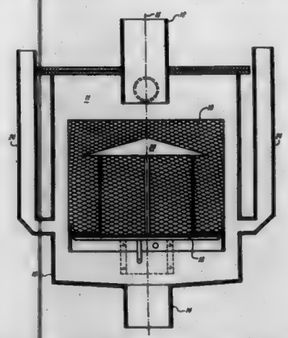
A. a housing having a top end and a bottom end and defining a chamber disposed along a vertical axis, and having an inlet port disposed about said vertical axis at said top end of said housing and defining an input sewage flow path into said chamber;

B. an incinerator plate disposed near said bottom end of said housing and transverse to said vertical axis,

C. a tubular screen filter having liquid permeable lateral walls extending from said incinerator plate about said vertical axis toward said top end of said housing,

D. a diffuser having a substantially solid lateral surface having a monotonically increasing radius extending from an apex point about a central diffuser axis, and

E. means for positioning said diffuser within said filter with said apex point uppermost with said diffuser axis substantially coaxial with said vertical axis wherein said diffuser lateral surface has a shape and position wherein gravity fed sewage incident thereon from said inlet port is deflected by said diffuser lateral surface to be incident on said lateral walls of said filter so that said liquid component of said sewage passes through said lateral surfaces to a region of said chamber outside filter and said solid com-



partment of said sewage is retained within a region of said chamber within said filter and substantially on said incinerator plate.

5,290,439

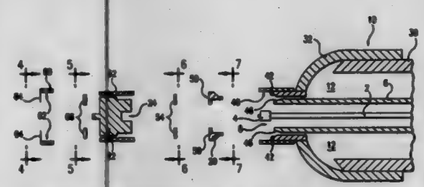
DEVICE FOR PURIFYING A FLOW OF LIQUID BY MEANS OF ULTRAVIOLET RADIATION

Claus Buchwald, 6596 de la Riviére, Val Morin, (Québec) J0T 2R0, Canada

Filed Jun. 12, 1992, Ser. No. 897,392

Int. Cl.[5] C02F *1/32*

U.S. Cl. 210—198.1 **6 Claims**



1. A device for purifying a flow of liquid by means of ultraviolet radiation, comprising:

an elongated ultraviolet lamp having electrical terminals at each end thereof;

a generally tubular inner casing surrounding substantially said lamp, said casing being made of a material that allows transmission of ultraviolet radiation, said casing having an aperture at each end thereof from which said electrical terminals protrude;

a generally tubular outer casing surrounding said inner casing and forming with said inner casing a flow passage of generally annular cross-section for accommodating said flow of liquid, said outer casing being made of opaque material and wherein said outer casing comprises an elongated tubular central portion and two end portions disposed respectively at both sides of said central portion, each of said end portions having a first aperture for receiving the corresponding end of said central portion, each of said end portions being provided with a lateral aperture receiving a male barbed hose fitting forming an inlet or outlet, one of said end portions being provided with a drain valve, the other of said end portions being provided with a breather valve, each of said end portions being provided with a second aperture opposite to said first aperture to receive a corresponding connector, said second aperture being provided on its inner portion with threads and with a bevelled edge for receiving a corresponding annular seal;

two connectors disposed respectively at both ends of said device for securing said lamp and said inner casing with respect to said outer casing, each of said connectors comprising:

an opaque electrical socket having a central cavity for receiving the corresponding terminal of the lamp; and

a fixing means for securing the corresponding socket and seal with respect to said casings and lamp; said casings, said seals and said sockets being made of material resistant to degradation by ultraviolet radiation.

5,290,440

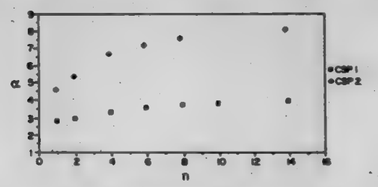
HIGH PERFORMANCE CHIRAL SELECTOR

William H. Pirkle, Champaign; Christopher J. Welch, Northbrook; William E. Bowen, Urbana, and Qing Yang, Champaign, all of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Jun. 23, 1992, Ser. No. 902,616

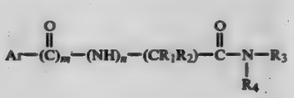
Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **29 Claims**



NORMAL PHASE SEPARATION OF THE ENANTIOMERS OF LEUCINE 3,5 DIMETHYLANILIDE ALKYL CARBAMEATE SERIES ON CSP-1 AND CSP-2. CONDITIONS: FLOW RATE = 2.0 mL/min.; MOBILE PHASE = 5% 2-PROPANOL IN HEXANE. THE CHROMATOGRAPHIC SEPARATION FACTOR FOR THE ENANTIOMERS IS DESIGNATED α.

1. A chiral selector having immobilized on a support or forming part of a mobile phase a compound having the formula:



wherein

Ar is a monocyclic or ortho-fused polycyclic aromatic moiety having up to 10 ring carbon atoms, either of which may be unsubstituted or substituted with one or more C_1 to C_6 alkyl, C_1 to C_6 alkoxy, NO_2, $N(R_5)_3^+$, CN, $COOR_6$, SO_3H and COR_7 groups wherein R_5, R_6 and R_7, are each independently hydrogen or C_1 to C_6 alkyl

R_1 and R_2 are each independently hydrogen, C_1 to C_6 alkyl or phenyl;

R_3 and R_4 are each independently C_1 to C_{12} alkyl or C_2 to C_{12} alkenyl; and

m and n are each independently 1 or 0, said compound being an R or an S enantiomer or a mixture of R and S enantiomers.

5,290,441

INTEGRATED COLLAR, FILTER BAG, CAGE AND LOCKING RING ASSEMBLY FOR BAGHOUSES

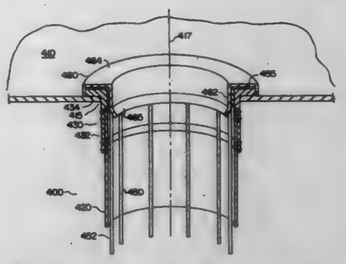
James W. Griffin, Graniteville; Billy A. Bunn, Aiken; Darrell Dunning, Edgefield, and Larry E. Patterson, Aiken, all of S.C., assignors to Hosokawa Micron International Inc., New York, N.Y.

Continuation of Ser. No. 749,607, Aug. 26, 1991, Pat. No. 5,202,021. This application Jan. 15, 1993, Ser. No. 5,031

The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.

Int. Cl.[5] B01D *29/13*

U.S. Cl. 210—232 **22 Claims**



1. A filter assembly for use in a baghouse having a cell plate provided with openings, said filter assembly comprising:

a filter bag for filtering particulate material carried in gas or liquid passing through the baghouse, said filter bag extending below the cell plate;

a collar for supporting said filter bag, said collar having a longitudinally extended portion and a flange portion, the longitudinally extended portion being affixed to said filter bag below the cell plate and the flange portion extending along the cell plate as a rim around a respective opening;

a tubular supporting cage having a longitudinally extended portion for structurally supporting said filter bag; and

a locking ring including an annular rim for locking an arrangement of said filter bag, collar and cage in place in a respective opening in the cell plate and an annular channel collar for protecting said arrangement above the cell plate.

5,290,442

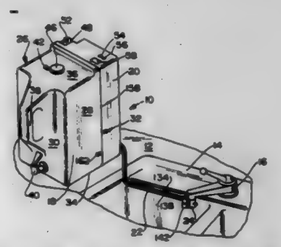
SELF-CONTAINED, PURIFIED DRINKING WATER REFRIGERATOR STORAGE APPARATUS

Robert A. Clack, Madison, Wis., assignor to Clack Corporation, Windsor, Wis.

Filed Sep. 24, 1991, Ser. No. 764,890

Int. Cl.[5] B01D *27/14*

U.S. Cl. 210—257.1 **14 Claims**



1. An apparatus for providing a refillable supply of treated tap water for self-contained storage in a refrigerator, said apparatus comprising:

a storage jug assembly, said assembly including a storage jug

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having means for dispensing treated drinking water stored therein for drinking and a water treatment subassembly mounted to an exterior portion of said storage jug having at least one water treatment module and having an input side for receiving a stream of untreated tap water and an output side for discharging a stream of treated product water and a stream of waste water and means for mounting said water treatment subassembly to said storage jug, said apparatus further including means for connecting the treated product water stream of the output side of the subassembly to the storage jug, means for selectively connecting the input side of the subassembly to a source of untreated tap water at line pressure, and means for selectively connecting the waste water stream from the output side of the subassembly to a drain, said apparatus being dimensioned and configured for placement on a refrigerator shelf whereby said apparatus, when in a filled and unconnected condition, may be placed in a refrigerator to provide a supply of chilled, treated drinking water and when in a relatively unfilled condition may be placed on a countertop adjacent a sink and connected to said sink for refilling temporarily and as necessary to replenish the treated drinking water supply for return of the apparatus to its refrigerator storage location.

5,290,443

FAUCET WITH MICROBIAL FILTER

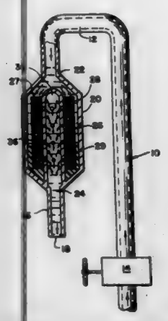
William W. Norton, Buffalo Grove, Ill., assignor to Culligan International Co., Northbrook, Ill.

Filed Oct. 24, 1991, Ser. No. 782,068

The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.

Int. Cl.[5] B01D *61/08*

U.S. Cl. 210—321.87 **24 Claims**



1. A faucet-mounted filter for water passing therethrough, in combination with a faucet defining a water flow line, which comprises: a housing positioned in said faucet in flow transmitting relation with said water flow line; microporous filter means positioned in said housing to sealingly occlude water flow through said housing, said filter means defining an inner and an outer end, the outer end of said filter means being at the outermost end of the water flow line in said faucet, whereby all water flow through said faucet must pass through porous walls of the filter means, the pores of said walls being no larger than 0.22 micron, whereby said filter is capable of microbial filtering.

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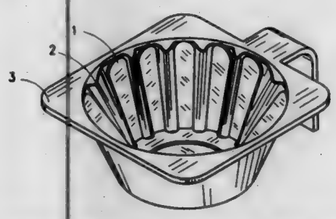
COFFEE FILTER RETAINER

Alton Campbell, 156 Woodcliff Cir., Pineville, La. 71360

Filed May 13, 1993, Ser. No. 62,245

Int. Cl.[5] B01D *29/085*

U.S. Cl. 210—473 **3 Claims**



1. A coffee filter element for supporting the side walls of disposable coffee filters, said element comprising:

a) an essentially flat, thin, flexible, circular, stamped sheet of thermo-plastic material having an open central core surrounded by an apron; and

b) a plurality of rhomboid shaped fingers, culminating in a radius at the distal end of each finger, spaced symmetrically around the periphery, projecting outwardly from said apron.

5,290,445

FILTERING APPARATUS

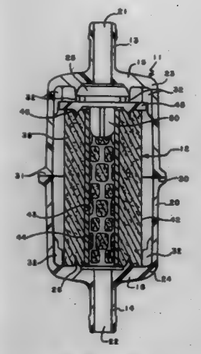
Roger A. Buttery, Hampshire, England, assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 895,239, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 357,258, May 26, 1989, abandoned. This application Jun. 1, 1993, Ser. No. 69,668

Claims priority, application United Kingdom, May 27, 1988, 8812672

Int. Cl.[5] B01D *27/04*

U.S. Cl. 210—445 **23 Claims**



1. An apparatus for filtering a fluid comprising:

a housing having first and second openings and defining a fluid flow path between the first and second openings, the housing further having first and second identical body portions joined to one another and a plurality of ribs provided within each body portion, and

a filter arrangement disposed within the housing in the fluid flow path and including a filter element having a first surface communicating with the first opening and a second surface communicating with the second opening, the filter arrangement being secured within the housing solely by mechanical compression between the first and second body portions and the ribs of at least one body portion engaging the filter arrangement to position the filter arrangement within the housing.

5,290,446

HELICAL WRAPPED FILTER ELEMENT

Peter J. Degen, Huntington; Colin F. Harwood, Glen Cove; Clemens C. von Reitzenstein, Baldwin; Stephen A. Geibel, Cortland, and Raymond T. Friel, East Meadow, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,171

Int. Cl.[5] B01D *27/06*

U.S. Cl. 210—489 **30 Claims**

1. An element for treating a fluid flowing through the element, which fluid treatment element comprises at least one filter medium sheet comprising a fibrous mass of nonwoven microfibers capable of removing particulates from a fluid helically wrapped around a pervious, hollow tube to form an overlap of about 0% to about 95% of the width of said filter medium sheet and at least one diffusion layer which allows for lateral flow of said fluid within said fluid treatment element.

5,290,447

BLOCK-SHAPED PLEATED FILTER INSERT

Hans-Joachim Lippold, Wredeweg 8, W-1000 Berlin 22, Fed. Rep. of Germany

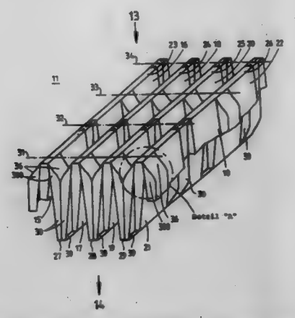
PCT No. PCT/DE91/00111, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO91/12068, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 8, 1991, Ser. No. 917,130

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1990, 4004079

Int. Cl.[5] B01D *27/06*

U.S. Cl. 210—493.1 **14 Claims**



1. A filter insert having a block-shaped configuration, comprising:

a planar material which is permeable to a medium and is arranged as a plurality of pleats having pleat walls, each said pleat wall defining a plane and having opposing first and second edges, said pleat walls being arranged in a zigzag pattern presenting first and second edge sections wherein a medium to be filtered passes through the filter insert in a direction from the first edge section toward the second edge section, said pleat walls having embossed projections which are parallel to one another and project with a height with respect to the plane of the pleat wall and in a direction toward an adjacent pleat wall, said projections having a length in a direction from one edge to the opposite edge of a respective pleat wall and a width perpendicular to the length, the width being essentially constant over the entire length, and the length exceeding the width, wherein adjacent projections of adjacent pleat walls contact one another for securing, spacing and stiffening the pleats and the filter insert, and said planar material is further arranged so the first edges of every other pair of adjacent pleat walls and the second edges of a different every other pair of adjacent pleat walls are connected to one another by respective planar intermediate regions of said filter material at least in areas of said pleat walls exterior of the projections, and the heights of the adjacent projections of said pairs of adjacent pleat walls connected at the first edge section increase in a direction toward the second edge section and the heights of the adjacent projections of said pairs of adjacent pleat walls connected at the second edge section increase in a direction toward the first edge section.

5,290,448

POLYACRYLONITRILE MEMBRANE

Heinz-Dieter Sluma, Groessostheim; Jürgen Pasulack, Eanepetal; Harald Schmitt, Laudenbach; Walter Löffelmann, Erlenbach, and Karl Henke, Wuppertal, all of Fed. Rep. of Germany, assignors to Akzo NV, Arahem, Netherlands

Filed Dec. 9, 1992, Ser. No. 988,285

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141267

Int. Cl.[5] B01D *61/24, 69/08, 71/42*

U.S. Cl. 210—500.23 **21 Claims**



1. An asymmetric semipermeable membrane for dialysis or ultrafiltration comprised of:

a copolymer of acrylonitrile and acrylic ester and an ionic or ionizable monomer in the form of a hollow fiber defining a cavity, said copolymer having properties for enabling substantial avoidance of bradykinin generation and being comprised of 90.50 to 95.00 wt. % acrylonitrile, 4.99 to 8.60 wt. % acrylic ester, and 0.01 to 0.90 wt. % of ionic or ionizable monomer.

5,290,449

BLOOD FILTER MATERIAL

David G. Heagle, Troutman, and John J. Hiers, Elkin, both of N.C., assignors to Lydall, Inc., Manchester, Conn.

Continuation-in-part of Ser. No. 733,613, Jul. 22, 1991, Pat. No. 5,190,657. This application Feb. 25, 1993, Ser. No. 22,642

Int. Cl.[5] B01D *39/02, 39/04, 39/06, 39/08*

U.S. Cl. 210—503 **26 Claims**



1. A filter material for filtering leucocytes from a fraction of or whole blood, comprising:

a shape-sustaining laid textile web having a thickness of at least about 1 millimeter and a bulk density of between about 0.05 and 0.4 g/cm^3, said web having:

(i) a plurality of interlocked, textile fibers with average

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deniers between about 0.05 and 0.75 and average lengths between about 3 millimeters and 15 millimeters, said textile fibers being substantially uniformly distributed in said web so as to form a matrix of the textile fibers with spaces between adjacent interstices of interlocked fibers;

(ii) a plurality of fibrillated particles of polymeric material having a surface area of at least about 5 square meters per gram substantially disposed within said spaces of the matrix, wherein the weight ratio of the fibrillated particles to the textile fibers is between about 1:99 and 40:60;

(iii) a plurality of glass fibers having an average diameter of between about 0.1 and 5 microns, the amount of glass fibers being about 2% to 85% by weight of said web and the glass fibers forming a part of the matrix; and

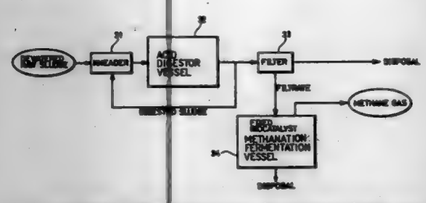
(iv) a thermoplastic binder disposed at least at cross-over positions of said textile fibers and glass fibers, the amount of the binder being about 0.1% to 10% by weight of the web.

5,290,450

ANAEROBIC DIGESTION PROCESS FOR SEWAGE SLUDGE

Yoshio Kobayashi, 543-19 Shichiyama, Kumatori-cho, Sennan-gun, Osaka, Japan

Continuation-in-part of Ser. No. 330,256, Mar. 29, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 596,917
Claims priority, application Japan, Mar. 30, 1988, 63-74606
Int. Cl.[5] C02F *11/04*
U.S. Cl. 210—603 **8 Claims**



1. An anaerobic digestion process for sewage sludge, comprising an acid formation step causing acid formation fermentation and a methanation step, said process comprising the steps of:

dewatering raw sewage sludge to provide a solids content therein of at least 10 weight %;

recirculating a portion of digested sludge resulting from acid formation fermentation;

adding said dewatered raw sludge to said recirculated portion of digested sludge resulting from acid formation fermentation, the weight ratio of digested sludge to dewatered raw sludge being at least 1:1;

homogeneously kneading the resulting mixture;

subjecting the kneaded sludge mixture to acid formation fermentation; and

subjecting products of the acid formation fermentation to methanation fermentation to generate methane;

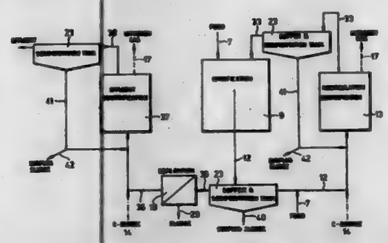
at least one of (a) said dewatered raw sludge prior to addition to said recirculated portion of digested sludge and (b) said kneaded sludge mixture in said acid formation fermentation step being subjected to thermal treatment at a temperature not less than about 50° C.

5,290,451

METHOD AND APPARATUS FOR PROCESSING MANURE

Iman W. Koster, and Abraham Klapwijk, both of Beunekom, Netherlands, assignors to Ecotechniek B.V., Utrecht, Netherlands

Filed Apr. 3, 1992, Ser. No. 863,161
Claims priority, application European Pat. Off., Apr. 17, 1991, 91200922.2
Int. Cl.[5] C02F *3/30*
U.S. Cl. 210—605 **38 Claims**



1. Method for processing manure, liquid manure and/or Kjeldahl-N containing waste water being subjected to a nitrification in an aerated nitrification reactor (9) which contains active sludge rich in nitrifying bacteria being used in the nitirification reactor (9) if necessary and to a denitrification in a high rate recirculation denitrification reactor (13) which contains a very compact biomass which is capable of converting nitrate to nitrogen gas and to which an organic substrate is supplied obtained from the denitrification step in the nitrification reactor (9), characterized in that the loading of the nitrification reactor (9) is controlled to obtain an optimal nitrification and denitrification on the basis of one or more of the following data;

the incoming nitrogen load;

the information from a WAZU respiration meter (not shown);

the oxygen concentration in the nitrification reactor (9);

the pH value in the nitrification reactor (9), the criterion for which is that the pH value is in the range limited by 6 and 8.5;

the amount of air required

the residence time

the temperature in both the nitrification reactor (9) and the recirculation denitrification reactor (13) is kept below 40° C.;

the concentration of oxidized nitrogen in the influent for the recirculation denitrification reactor (13), the criterion for which is that the concentration is between 0 and 4 g N/1;

the concentration of oxidized nitrogen in the nitrification reactor (9), the criterion for which in the sludge/liquid mixture in the nitrification reactor is that the concentration is between 0 and 4 g N/1;

the concentration of the carbon source in the effluent from the recirculation denitrification reactor (13);

the gas production in the recirculation denitrification reactor (13)

the effluent from the nitrification reactor (9) partially being passed to the recirculation dentrification reactor (13), adding a source of carbon to the effluent to be passed to the recirculation denitrification reactor (13) and passing another portion of the effluent stream from the nitrification reactor (9) to a separation step (19) to separate a sludge, mixture in the nitrification reactor is that the concentration is between 0 and 4 g N/1;

the concentration of the carbon source in the effluent from the recirculation denitrification reactor (13);

the gas production in the recirculation denitrification reactor (13)

the effluent from the nitrification reactor (9) partially being passed to the recirculation denitrification reactor (13), adding a source of carbon to the effluent to be passed to the recirculation denitrification reactor (13) and passing another portion of the effluent stream from the nitrification reactor (9) to a separation step (19) to separate a sludge, the effluent from separation step (19) being passed to a discharge line denitrification reactor (37) under the addition of a carbon source if desired, the discharge line denitrification reactor (37) being provided with means for an effluent discharge (38) and a nitrogen discharge (17).

5,290,452

CROSSLINKED POLYESTER AMIDE MEMBRANES AND THEIR USE FOR ORGANIC SEPARATIONS

Robert C. Schucker, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 5, 1991, Ser. No. 803,243
Int. Cl.[5] B01D *61/36, 71/06*
U.S. Cl. 210—640 **3 Claims**

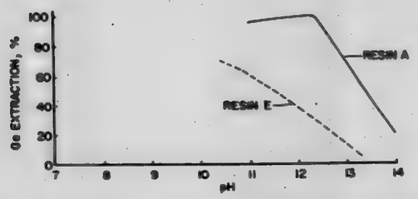
1. A method for separating mixtures of organic liquids into their components said separation process comprising contacting the organic liquid mixture to be separated into its components with one side of a crosslinked polyester amide interfacially polymerized membrane made by the process comprising reacting a dianhydride or its corresponding tetra-acid or diacid-diester with a polyester diol in a 2:1 to 1.05:1 mole ratio of anhydride or carboxylic acid groups to polyester hydroxyl groups, to produce an endcapped prepolymer, reacting the endcapped prepolymer with excess thionyl chloride to convert all unreacted anhydride or carboxylic acid groups into acid chloride groups, dissolving the resulting acid chloride derivative in an organic solvent that is substantially immiscible with water, dissolving a diamine in water to produce an aqueous diamine solution contacting the aqueous diamine solution with the acid-chloride derivative organic solvent solution so that the organic and aqueous solutions float one upon the other with an interface between them whereby the membrane forms at said interface due to the reaction between the diamine and acid chloride capped prepolymer in the respective solutions drying the membrane at between 50° to 150° C. for from 1 to 120 minutes, said separation process being conducted under pervaporation or perstraction conditions.

5,290,453

PROCESS FOR PREPARING CHELATING ION EXCHANGER RESINS AND THE USE THEREOF FOR THE EXTRACTION OF METALS

Michael Richter, Unna, and Oliver Schumacher, Werne, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

PCT No. PCT/EP91/00467, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO91/16972, PCT Pub. Date Nov. 14, 1991
PCT Filed Mar. 13, 1991, Ser. No. 916,095
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4014015
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—688 **10 Claims**



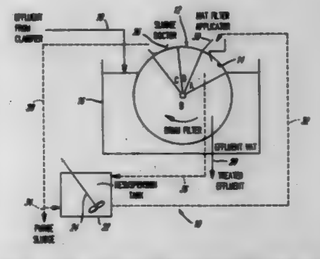
1. A process for the extraction of metals comprising extracting metal ions from an aqueous solution by passing said solution through an ion exchange resin, said ion exchange resin prepared by a process which includes the steps of (a) preparing a carrier material by amidoalkylation or imidoalkylation of a crosslinked styrene copolymer with an ester or an ether of an N-hydroxyalkylimide followed by subsequent hydrolysis of the amido- or imido-alkylation product; (b) reacting said carrier material with an aldehyde and 8-hydroxyquinoline and/or an 8-hydroxy-quinoline derivative and, optionally, a swelling agent and/or a solvent, said reaction occurring at a temperature of between 20° C. and 100° C.; and (c) washing the reaction product of step (b) with water and, optionally, an acid or a base and/or a solvent.

5,290,454

PROCESS FOR REMOVAL OF SUSPENDED SOLIDS FROM PULP AND PAPER MILL EFFLUENTS

Joseph Dorica, Pointe Claire; Steven Prahacs, Beaconsfield, and Pritham Ramamurthy, Montreal, all of Canada, assignors to Pump and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Nov. 12, 1992, Ser. No. 974,604
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—710 **19 Claims**



1. A process for removal of suspended solids containing colloidal particles of resin and fatty acids from a pulp mill effluent comprising:

i) forming a mat of non-biological sludge on a porous support, said sludge being selected from the group consisting of pulp mill primary sludge, woodroom sludge, and a mixture of primary and secondary pulp mill sludges, and

ii) passing pulp mill effluent comprising an aqueous vehicle containing suspended solids containing colloidal particles of resin and fatty acids through said mat whereby the suspended solids containing colloidal particles of resin and fatty acids are retained in said mat and the aqueous vehicle passes through said mat and said porous support.

5,290,455

REMOVAL OF CYANIDE FROM AQUEOUS STREAMS

John Rakszawski, Basking Ridge, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Jul. 14, 1992, Ser. No. 913,257
Int. Cl.[5] C02F *1/72*
U.S. Cl. 210—763 **20 Claims**

1. A method of reducing the concentration of cyanide in a cyanide-containing aqueous stream comprising contacting the aqueous stream in a reaction zone with an oxygen-containing gas and carbon dioxide in the presence of a water-soluble catalyst comprising ferrous ions, nickelous ions, cobaltous ions or mixtures of these.

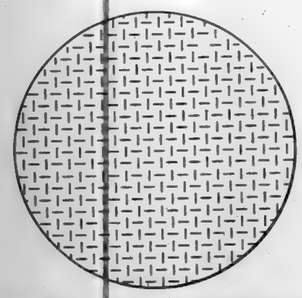
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,456

FILTER PLATE FOR REMOVING HYDROCARBONS AND OTHER CONTAMINANTS FROM SOLUTIONS AND GASES

Billy J. Loseck, Hondo, Tex., assignor to Tuboscope Vetco International, Inc., Houston, Tex.

Filed Aug. 20, 1992, Ser. No. 934,110
Int. Cl.[5] B01D *37/00, 29/07*
U.S. Cl. 210—767 6 Claims



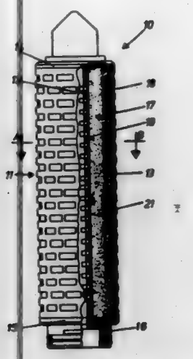
5. A method for removing solid contaminants from a contaminated fluid comprising passing said contaminated fluid through a filtering material supported on a filter plate having rows of substantially linear openings with at least every other of said rows being of alternating parallel and perpendicular orientation.

5,290,457

FILTER ELEMENT WITH REGENERABLE BULK MATERIAL FILLING AND METHOD FOR MAKING SAME

Masoud Karbachsch, Kreuznach; Peter P. Breitbach, Bretzenheim, and Helmut Roger, Pfaffen-Schwabenheim, all of Fed. Rep. of Germany, assignors to Seitz-Filter-Werke GmbH & Co., Bad Kreuznach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 632,394, Dec. 20, 1990, Pat. No. 5,169,528. This application Nov. 19, 1992, Ser. No. 978,906
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1989, 3943249
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] B01D *27/02*
U.S. Cl. 210—792 29 Claims



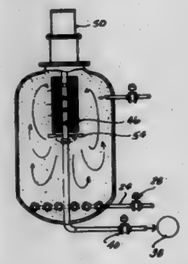
1. A filter element for filtering a fluid medium, said element having an inner space comprising a tubular chamber (17) with an inner peripheral wall and an outer peripheral wall through which walls the medium to be filtered can pass, said chamber having sealing closure elements (14, 15) at its ends and said filter element having an annular filter member (21) through which said fluid medium can flow in an essentially radial manner, said filter member (21) comprising a bulk-material filling of regenerable, filtration-active substances in the form of a particulate and/or fibrous structure, said peripheral walls having a degree of porosity which enables the said fluid medium to pass through them and with a predetermined direction of flow, said peripheral walls holding captive the said bulk material filling, at least one of said peripheral walls being constituted as a wet-resistant support layer for said filter member, and said bulk material filling consisting of auxiliary filter agents capable of being carried to and deposited at said one peripheral wall by said fluid medium, said deposited auxiliary filter agents forming on said one wall, as the medium is being filtered, a deep bed filter (21) characterized by decreasing porosity in said predetermined direction of flow.

5,290,458

GRANULAR MEDIA REGENERATION PROCESS

Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48322

Division of Ser. No. 718,988, Jun. 21, 1991, Pat. No. 5,171,443. This application Nov. 30, 1992, Ser. No. 936,290
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—796 12 Claims



9. A process for regenerating a liquid treatment granular media disposed in a tank by removing accumulated contaminants from a mass of granular media, said granular media being of a size on the order of 0.005 inches in diameter or larger, said process including the step of separating said granular media from the treated liquid in said tank, said separating step comprising the steps of:

dispersing said mass of granular media in said tank in which said liquid treatment is carried out into said treated liquid to form a slurry disposed in said tank;

drawing said liquid out of said tank through a separator element against which said slurry is circulated, said separator element framed with flow openings of a smaller size than the granules making up said mass of granular media to prevent escape of said granular media; and

continuously rotating said separator element through said slurry while drawing off said liquid from said liquid treatment tank, said continuous rotating of said separator element is carried out so as to dislodge any granular media granules drawn to said openings to said separator element by impacting granules drawn to said openings with other granules in said slurry by rotating movement of said separator element therein, whereby said mass of granular media is regenerated by carrying off contaminants smaller sized than said granular media with said drawing off of said treated liquid from said liquid treatment tank.

5,290,459

BIODEGRADABLE FABRIC SOFTENING COMPOSITIONS BASED ON PENTAERYTHRITOL ESTERS AND FREE OF QUATERNARY AMMONIUM COMPOUNDS

Eduardo Puentes-Bravo, Alleur; Anita Hermosilla, Othee; Jean-Paul Grandmaire, Andrimont, and Viviane Tack, Ayeneux, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 638,945, Jan. 9, 1991, Pat. No. 5,126,060. This application Mar. 12, 1992, Ser. No. 849,858
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] D06M *13/16, 13/20, 13/26*
U.S. Cl. 252—8.6 12 Claims

1. A biodegradable fabric softening composition or article for application to laundry so that a fabric softening component thereof is deposited on the laundry and softens it, which fabric softening composition or article is non-toxic to aquatic organisms in waters into which waste waters containing such fabric softening component are discharged, which fabric softening composition or article comprises, by weight, 1% to 25% of the composition or article of a fabric softening component selected from the group consisting of a higher aliphatic C12–C22 ester of pentaerythritol, an oligomer of pentaerythritol, a C2–C3 alkylene oxide derivative of pentaerythritol or a C2–C3 alkylene oxide derivative of an oligomer of pentaerythritol, and mixtures thereof in or on a clay carrier for the softening compound and an adsorbent or cellular material, said carrier being 75% to 99% by weight of the composition or article and said composition or article being essentially free of quaternary ammonium compound fabric softener.

5,290,460

LUBRICANT COMPOSITION CONTAINING COMPLEXES OF ALKOXYLATED AMINE, TRITHIOCYANURIC ACID, AND ADENINE

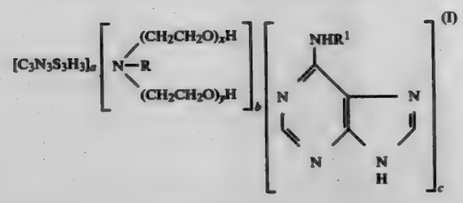
Jacob J. Habeeb, and Morton Beltzer, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 22, 1993, Ser. No. 21,288
Int. Cl.[5] C10M *159/12, 135/00;* C07F *3/10*
U.S. Cl. 252—47.5 10 Claims

5. A lubricant oil composition comprising

(a) a major amount of a lubricating oil basestock, and

(b) a minor amount of a complex comprising the reaction product of alkoxylated amine, trithiocyanuric acid and adenine, said complex having the formula



where R is a hydrocarbyl group of 2 to 22 carbon atoms, R^1 is hydrogen or a hydrocarbyl group of 1 to 20 carbon atoms, x and y are each independently integers of from 1 to 15 with the proviso that the sum of x+y is from 2 to 20, and a, b and c are independent numbers from 1.0 to 3.0 wherein the ratios between a:b, a:c and b:c range from 1.0:3.0 to 3.0:1.0.

5,290,461

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM AMIDO-AMINE AND DEGRADED ETHYLENE COPOLYMER EXHIBITING IMPROVED LOW TEMPERATURE VISCOMETRIC PROPERTIES (PT-768)

David Y. Chung, Edison; Antonio Gutierrez, Mercerville, and Mark J. Struglinski, Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

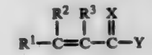
Division of Ser. No. 420,184, Oct. 12, 1989, Pat. No. 5,118,433. This application Mar. 10, 1992, Ser. No. 848,817
Int. Cl.[5] C10M *149/06*
U.S. Cl. 252—51.5 A 7 Claims

1. A composition of matter comprising reaction product of:

(i) (a) molecular weight degraded ethylene-alpha-olefin copolymer obtained by degrading copolymer of ethylene and at least one other alpha-olefin monomer, said copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene; said degraded copolymer grafted with (b) ethylenically monounsaturated carboxylic acid material having 1 to 2 carboxylic acid groups or anhydride group to form grafted ethylene copolymer;

(ii) about C_{50} to about C_{400} hydrocarbyl substituted carboxylic acid component containing 1 to 2 carboxylic acid groups or anhydride group;

(iii) amido-amine comprising reaction product of (a) polyalkylene polyamine, and (b) alpha, beta-unsaturated compound represented by the formula



wherein X is oxygen, Y is $-OR^4$, and R^1, R^2, R^3, and R^4 are independently selected from hydrogen, hydrocarbyl and substituted hydrocarbyl; and

(iv) C_{12} to about C_{18} hydrocarbyl substituted dicarboxylic anhydride.

5,290,462

LUBRICANT COMPOSITION CONTAINING COMPLEXES OF ALKOXYLATED AMINE, HYDROCARBYLSULFONIC ACID AND ADENINE

Jacob J. Habeeb, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

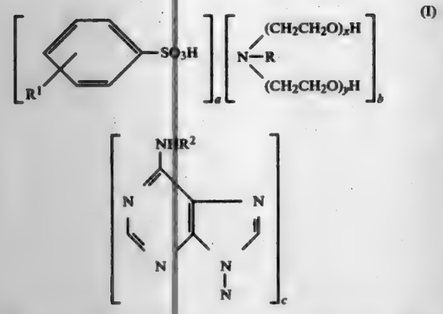
Filed Feb. 22, 1993, Ser. No. 21,503
Int. Cl.[5] C10M *159/12, 135/10;* C07F *3/10*
U.S. Cl. 252—47.5 12 Claims

6. A lubricant oil composition which comprises:

(a) a major amount of a lubricant oil basestock, and

(b) a minor amount of a complex which is a reaction product of an alkoxylated amine, hydrocarbylsalicylic acid and adenine, said complex having the formula:

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(I)

where R is a hydrocarbyl group of from 2 to 22 carbon atoms, R^1 is a hydrocarbyl group of from 2 to 30 carbon atoms, R^2 is hydrogen or a hydrocarbyl group of from 1 to 20 carbon atoms, x and y are each independently integers of from 1 to 15 with the proviso that the sum of x + y is from 2 to 20, and a, b and c are independent numbers from 1.0 to 3.0 wherein the ratios between a:b, a:c and b:c range from 1.0:3.0 to 3.0:1.0.

5,290,463

LUBRICANT COMPOSITION CONTAINING COMPLEXES OF ALKOXYLATED AMINE, HYDROCARBYLSALICYLIC ACID AND ADENINE

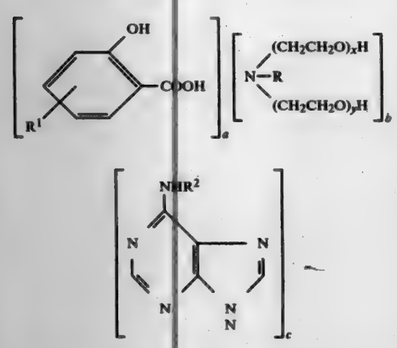
Jacob J. Habeeb, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 22, 1993, Ser. No. 21,291
Int. Cl.[5] C10M *159/12, 133/40;* C07F *3/10*
U.S. Cl. 252—51.5 A **12 Claims**

6. A lubricant oil composition which comprises:

(a) a major amount of a lubricant oil basestock, and

(b) a minor amount of a complex which is the reaction product of an alkoxylated amine, hydrocarbylsalicylic acid and adenine, said complex having the formula:



(I)

where R is a hydrocarbyl group of from 2 to 22 carbon atoms, R^1 is hydrocarbyl group of from 2 to 30 carbon atoms, R^2 is hydrogen or a hydrocarbyl group of 1 to 20 carbon atoms, x and y are each independently integers of from 1to 15 with the proviso that the sum of x+y is from 2 to 20, and a, b and c are independent numbers from 1.0 to 3.0 wherein the ratios between a:b, a:c and b:c range from 1.0:3.0 to 3.0:1.0.

5,290,464

LUBRICANT COMPOSITIONS FOR AUTOTRACTION

Giuseppe Fisicaro, Rome, and Giampaolo Gerbaz, Milan, both of Italy, assignors to Agip Petroli S.p.A., Rome, Italy

Continuation of Ser. No. 778,520, Oct. 18, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,682
Claims priority, application Italy, Oct. 19, 1990, 21812 A/90
Int. Cl.[5] C10M *129/84*
U.S. Cl. 252—52 R **19 Claims**

1. A lubricant comprising:

a) from 0 to 90% by weight of a mineral base oil;

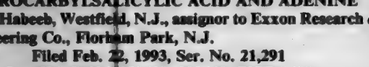
b) from 0 to 90% by weight of a synthetic base oil;

c) from 5 to 50% by weight of a long-chain dialkyl carbonate;

d) from 6 to 12% by weight of usual additives; and

e) from 0 to 15% by weight of additives which raise the viscosity index and lower the pour point of the lubricant;

wherein the long-chain dialkyl carbonate is the transesterification product of a lower dialkyl carbonate with an alcoholic mixture consisting of at least 98% by weight of branched aliphatic alcohols having the formula:



(I)

where m is a whole number and n is zero or a whole number and where the total number of carbon atoms in the alcohol is 13 to 16.

5,290,465

NEOPOLYOL DERIVATIVES AND REFRIGERANT COMPOSITIONS COMPRISING THEM

Mahmood Sabahi, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 663,620, Mar. 4, 1991, abandoned. This application May 22, 1992, Ser. No. 887,988
Int. Cl.[5] C10M *105/02;* C09K *5/00;* C07C *69/66*
U.S. Cl. 252—56 R **12 Claims**

5. A refrigeration composition which comprises 3–20 parts by weight of a halohydrocarbon refrigerant and one part by weight of a substituted neopolyol lubricant in which at least one of the hydroxyl groups is replaced with a substitutent that corresponds to the formula —O—R—C(O)—OR′ wherein R is an alkylene group containing 2–5 carbons and R′ is a hydrocarbyl or predominantly hydrocarbyl group containing 1–30 carbons.

5,290,466

COMPOSITIONS OF DIFLUOROMETHANE AND TETRAFLUOROETHANE

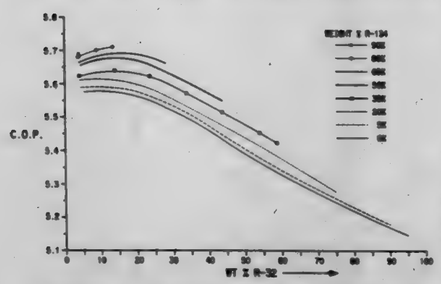
Mark B. Shiflett, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 787,872, Oct. 31, 1991, abandoned, which is a continuation of Ser. No. 871,673, Apr. 21, 1992, abandoned. This application Oct. 16, 1992, Ser. No. 963,310
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 **1 Claim**

1. A process for improving the coefficient of performance of a refrigerant composition of difluoromethane and 1,1,1,2-tetrafluoroethane, comprising the steps of

providing a composition of difluoromethane and 1,1,1,2-tetrafluoroethane,

adding an amount of 1,1,2,2-tetrafluoroethane to the composition of difluoromethane and 1,1,1,2-tetrafluoroethane such that the resulting composition consists essentially of 5–90 weight percent 1,1,2,2-tetrafluoroethane, 5–90 weight percent difluoromethane, and 5–90 weight percent 1,1,1,2-tetrafluoroethane wherein the coefficient of performance of the resulting composition is higher than the



coefficient of performance of the composition of difluoromethane and 1,1,1,2-tetrafluoroethane.

5,290,467

POLYCARBOXYLATE-CONTAINING ANTIFREEZE/COOLANT ADDITIVE FOR RESISTING CAVITATION EROSION-CORROSION ON ALUMINUM

David E. Turcotte, Woodhaven; James T. Lyon, Novi; John J. Conville, Canton; Shrikant V. DeSai, Grosse Ile, and Stanley T. Hirozawa, Birmingham, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 23, 1991, Ser. No. 734,719
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—76 **8 Claims**

1. A glycol-based automotive antifreeze/coolant solution which resists the cavitation errosion-corrosion of aluminum or aluminum alloys including a cavitation errosion-corrosion rate reducing effective amount of a polycarboxylate additive which is at least one of (i) a sodium salt of a copolymer of acrylic acid and maleic acid, and (ii) a secondary alcohol modified polyacrylic acid.

5,290,468

POLYCARBOXYLATE-CONTAINING ANTIFREEZE/COOLANT ADDITIVE FOR USE IN HARD WATER APPLICATIONS

David E. Turcotte, Woodhaven; John J. Conville, Canton; James T. Lyon, Novi; Richard J. Holland, Grosse Ile, and Stanley T. Hirozawa, Birmingham, all of Mich., assignors to BASF Corporation, Parsippany, N.Y.

Filed Jul. 23, 1991, Ser. No. 734,720
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—76 **8 Claims**

1. A glycol-based automotive antifreeze/coolant solution for use in hard water including a glycol-soluble polycarboxylate additive which is at least one of (i) a sodium salt of a copolymer of acrylic acid and maleic acid, and (ii) a secondary alcohol modified polyacrylic acid.

5,290,469

GLYCOL-BASED POLYCARBOXYLATE-CONTAINING ANTIFREEZE/COOLANT FORMULATIONS FOR RESISTING CAVITATION EROSION-CORROSION ON ALUMINUM

David E. Turcotte, Woodhaven; John J. Conville, Canton; James T. Lyon, Novi; Stanley T. Hirozawa, Birmingham, and Shrikant V. DeSai, Grosse Ile, all of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 23, 1991, Ser. No. 734,722
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—76 **8 Claims**

1. A glycol-based automotive antifreeze/coolant solution which reduces the corrosion rate of heat rejecting aluminum or aluminum alloy including a corrosion rate reducing effective amount of a polycarboxylate additive which is at least one of (i) a sodium salt of a copolymer of acrylic acid and maleic acid, and (ii) a secondary alcohol modified polyacrylic acid.

5,290,470

AQUEOUS CLEANING COMPOSITION CONTAINING A CHLORINATED BLEACH, AN ALCOHOL AND A SURFACTANT

Timothy B. Dutcher, Kill Devil Hills, N.C., assignor to Agri-Products Special Markets, Inc., Tallahassee, Fla.

Filed Nov. 25, 1992, Ser. No. 982,378
Int. Cl.[5] C11D *1/90, 3/02, 3/395, 3/43*
U.S. Cl. 252—102 **3 Claims**

1. An aqueous biodegradable cleaning composition suitable for cleaning outdoor wood surfaces consisting essentially of:

about 1.0 percent by volume lauryl betaine;

about 0.5 percent by volume isopropyl alcohol; and

the balance being a 3% sodium hypochlorite aqueous bleach solution with a caustic override in an amount of about 0.35% by volume to maintain chlorine stability in the composition and prevent deterioration of the outdoor wood surfaces.

5,290,471

AQUEOUS BASED PERSONAL WASHING CLEANSER

Alan P. Greene, Flemington; Barbara Y. McFarquhar, Teaneck; Rosa M. Paredes, North Bergen; Marianne E. Fenske, Westwood, and Frederick S. Osmer, Parsippany, all of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Division of Ser. No. 686,902, Apr. 17, 1991, Pat. No. 5,234,619. This application Jan. 4, 1993, Ser. No. 155
Claims priority, application Canada, May 1, 1990, 2015868; South Africa, May 4, 1990, 90/3408
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] C11D *9/00, 9/32, 1/12, 1/755*
U.S. Cl. 252—108 **11 Claims**

1. A liquid aqueous based skin cleansing composition consisting essentially of:

i) 3% to 20% acyl esters of isethionic acid salts, said esters being predominantly C_8–C_{22} acyl isethionates;

ii) 2% to 15% of at least one long chain fatty acid of 8 to 22 carbon atoms wherein the weight ratio of said acyl esters to fatty acid ranges from about 1:0.1 to about 1:10.

iii) 2% to 20% of co-surfactant selected from the group consisting of alkyl ether sulfates, alkyl ether sulfonates, sarcosinates, sulfosuccinates, taurates, alkylbetaines, amidopropylbetaines, amidopropyl sultaines, alkylsulfonates, alkyl benzene sulfonates and mixtures thereof; and

iv) 2% to 15% of a moisturizer component; and soap is present in an amount from 0 to 5% by weight of the composition said composition having a viscosity of about 100 to 100,000 cps.

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5,290,472

HARD SURFACE DETERGENT COMPOSITIONS

Daniel W. Michael, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 21, 1992, Ser. No. 839,649
Int. Cl.[5] C11D *7/22, 7/26*
U.S. Cl. 252—170 14 Claims

1. A hard surface detergent composition having good filming/streaking properties comprising: (a) detergent surfactant consisting essentially of from about 1% to about 15% of low sudsing nonionic detergent surfactant wherein said nonionic detergent surfactant is a fatty alcohol containing from about 8 to about 14 carbon atoms ethoxylated with from about 2 to about 10 moles of ethylene oxide per mole of fatty alcohol; (b) from about 0.5% to about 15% of hydrophobic solvent that provides a cleaning function selected from the group consisting of tripropylene glycol monomethyl ether, tripropylene glycol monobutyl ether, and mixtures thereof; and (c) from about 50% to about 97% water, the pH of said composition being from about 6 to about 12.5 and said composition containing less than about 1% inorganic crystallizable detergent builder material and less than about 1% anionic detergent surfactant.

5,290,473

AZEOTROPE-LIKE COMPOSITONS OF 1,1,1,3,3,5,5,5-OCTAFLUOROPENTANE, C1-C5 ALKANOL AND OPTIONALLY NITROMETHANE

Rajat S. Basu, and Ellen L. Swan, both of Erie, N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 15, 1993, Ser. No. 31,768
Int. Cl.[5] C11D *7/30, 7/50;* C23G *5/028*
U.S. Cl. 252—171 25 Claims

1. Azeotrope-like compositions consisting essentially of from about 90 to about 59 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 10 to about 40 weight percent ethanol and from about 0 to about 1 weight percent nitromethane which boil at about 64° C. at 760 mm Hg; from about 92 to about 69 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 8 to about 30 weight percent isopropanol and from about 0 to about 1 weight percent nitromethane which boil at about 66° C. at 760 mm Hg; from about 99 to about 84 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 1 to about 15 weight percent n-propanol and from about 0 to about 1 weight percent nitromethane which boil at about 69° C. at 760 mm Hg; from about 99 to about 89 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 1 to about 10 weight percent n-butanol and from about 0 to about 1 weight percent nitromethane which boil at about 70° C. at 760 mm Hg; from about 90 to about 71 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 10 to about 28 weight percent isobutanol and from about 0 to about 1 weight percent nitromethane which boil at about 70° C. at 760 mm Hg; from about 91 to about 71 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 9 to about 28 weight percent t-butanol and from about 0 to about 1 weight percent nitromethane which boil at about 68° C. at 760 mm Hg; and from about 99 to about 89 weight percent 1,1,1,3,3,5,5,5-octafluoropentane, from about 1 to about 10 weight percent t-amyl alcohol and from about 0 to about 1 weight percent nitromethane which boil at about 71.0° C. at 760 mm Hg.

5,290,474

DETERGENT COMPOSITION FOR TREATING COTTON-CONTAINING FABRICS CONTAINING A SURFACTANT AND A CELLULASE COMPOSITION CONTAINING ENDOLUCANASE III FROM TRICHODERMA SSP

Katheen A. Clarkson, San Francisco; Edmund Larenas, San Carlos, and Geoffrey L. Weiss, San Francisco, all of Calif., assignors to Genencor International, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 668,640, Mar. 13, 1991, which is a continuation-in-part of Ser. No. 593,919, Oct. 5, 1990, abandoned. This application May 30, 1991, Ser. No. 707,647
Int. Cl.[5] C11D *17/00;* C12N *9/42;* D06M *16/00*
U.S. Cl. 252—174.12 7 Claims

1. A detergent composition suitable for use with cotton-containing fabrics which comprises;

a cleaning effective amount of a surfactant or a mixture of surfactants suitable for preparing an alkaline wash medium having a pH of from above 7 to about 9; and from about 0.01 to about 5 weight percent of a cellulase composition comprising at least 40 weight percent of endoglucanase III based on the total weight of exo-cellobiohydrolase, endoglucanase and β-glucosidase proteins in the cellulase compositionwherein said endoglucanse III is an endoglucanase component derived from any strain of *Trichoderma* ssp. which produces endoglucanase III and having a pH optimum of about 5.5 to 6.0, an isoelectric point of from about 7.2 to 8.0, and a molecular weight of about 23 to 28 Kdaltons.

5,290,475

LIQUID SOFTENING AND ANTI-STATIC NONIONIC DETERGENT COMPOSITION WITH SOIL RELEASE PROMOTING PET-POET COPOLYMER

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive, New York, N.Y.

Continuation of Ser. No. 744,633, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 520,421, May 8, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 935,133
Int. Cl.[5] C11D *3/37, 1/12*
U.S. Cl. 252—174.23 17 Claims

1. A physically stable aqueous laundry detergent composition useful for washing and softening soiled fabrics comprising 10 to 50% by weight of a nonionic detergent, 1 to 30% by weight of an anionic detergent, 1 to 20% by weight of a cationic fabric softener-anti-static agent and a 0.5 to 20% by weight of a water-soluble polyethylene terephthalate-polyoxyethylene terephthalate component, which component consists essentially of a water soluble fraction of a polyethylene terephtalate-polyoxyethylene terephthalate soil release promoting polymer dispersion wherein said water-soluble fraction of a polyethylene terephthalate-polyoxyethylene terephthalate soil release promoting polymer is produced by forming a first 5–10% by weight aqueous dispersion of a polyethylene terephthalate-polyoxyethylene terephthalate copolymer having a weight average molecular weight of from about 8,000 to 60,000, wherein the polyoxyethylene has a molecular weight in the range of about 500 to 10,000, the molar ratio of polyethylene terephthalate units to polyoxyethylene terephthalate units is in the range of 2:1 to 6:1 and the proportion of ethylene oxide to phthalate moiety is at least 10:1, chilling said dispersion to produce a precipitate; removing said precipitate from said first aqueous dispersion to form second aqueous dispersion, and recovering said water-soluble fraction from said second aqueous dispersion.

5,290,476

PROCESS FOR PREPARING MICROCRYSTALLINE PERBORATE PRODUCTS

Richard Roesler, Rheinbrohl; Werner Doetsch, Bad Hoenningen; Werner Zeiss, Groebenzell, and Rudolf Siegel, Neuwied, all of Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Hoellriegelskreuth, Fed. Rep. of Germany

Filed Jun. 3, 1991, Ser. No. 709,307
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1990, 4018039
Int. Cl.[5] C11D *3/39*
U.S. Cl. 252—186.3 40 Claims

1. A process for preparing microcrystalline perborate products, comprising the steps of:

a) reacting a liquid aqueous composition A, which contains an inorganic boron-oxygen compound, hydrogen peroxide and a quantity of an alkali metal hydroxide such that the molar ratio of alkali metal to boron is at most 0.75:1, with a basic inorganic alkali metal compound to form a solution B, wherein said basic inorganic alkali metal compound and said composition A are used in such quantities that the molar ratio of alkali metal to boron in said solution B is at least 0.80:1 and the boron concentration in said solution B is 1 to 4.5% by wt. based on the weight of the solution, and

b) cooling the resulting solution B and crystallizing a perborate product.

31. A storage stable, aqueous solution containing quantities of inorganic boron-oxygen compound, hydrogen peroxide and sodium hydroxide such that the boron content of said solution is 3 to 8% by wt based on the total weight of the solution, the molar ratio of sodium to boron is from 0.55:1 to 0.70:1, and the molar ratio of active oxygen to boron is at least 0.9:1.

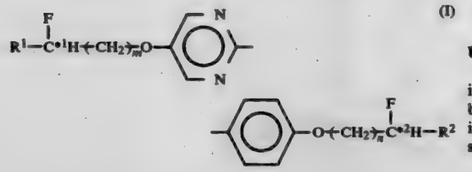
5,290,477

OPTICALLY ACTIVE COMPOUND AND LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

Hitoshi Kondo; Mika Tadokoro; Hiroshi Sugiyama; Toshimitsu Hagiwara; Takashi Imai; Mamoru Yamada, and Keisuke Itakura, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,937
Claims priority, application Japan, Jul. 30, 1992, 4-222296; Jun. 1, 1993, 5-152583
Int. Cl.[5] C09K *19/34, 19/52;* C07C *43/02;* C07D *239/02*
U.S. Cl. 252—299.61 2 Claims

1. An optically active compound represented by formula (I):



(I)

wherein R^1 represents an alkyl group having from 3 to 9 carbon atoms; R^2 represents an alkyl group having from 3 to 7 carbon atoms; m and n each represent 1 or 2 provided that they do not simultaneously represent 1; and C^{*1} and C^{*2} both represent an optically active carbon atom.

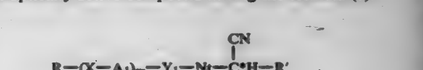
5,290,478

OPTICALLY ACTIVE COMPOUNDS

Masahiro Satoh; Tetsuya Watanabe, both of Kyoto; Kunikiyo Yoshio, Ohmihachiman, and Hiroshi Kishiki, Takatsuki, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Division of Ser. No. 486,008, Feb. 27, 1990, Pat. No. 5,160,662. This application Apr. 29, 1992, Ser. No. 875,654
Claims priority, application Japan, Feb. 27, 1989, 1-47948; Feb. 27, 1989, 1-47949; Mar. 1, 1989, 1-49468; Mar. 1, 1989, 1-49469; Mar. 1, 1989, 1-49470; Jul. 25, 1989, 1-192061; Nov. 17, 1989, 1-299928; Nov. 22, 1989, 1-303851
Int. Cl.[5] C09K *19/32, 19/34;* C07D *211/72;* C07C *69/76*
U.S. Cl. 252—299.62 14 Claims

1. An optically active compound having the formula (1):



wherein R and R′ are the same or different alkyl groups containing 1 to 20 carbon atoms, which are each unsubstituted or are each substituted with at least one substituent selected from the group consisting of F, Cl and alkoxy groups; X is a direct bond, O, S, COO, OCO, OCOO or C≡C; Y_1 is COO, O, CH_2O or C≡C; A_1 is 1,4-phenylene (ph), fluoro-substituted 1,4-phenylene, or 2,5-pyridylene (pyr) and m is 1 Nt represents 2,6-naphthylene.

5,290,479

SURFACTANT SYSTEM OF POLYETHOXYLATED COMPOUNDS AND GLYCERIDE COMPOUNDS

Earl Clark, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 251,425, Sep. 30, 1988, Pat. No. 4,906,701, which is a continuation-in-part of Ser. No. 224,596, Jul. 26, 1988, abandoned, which is a division of Ser. No. 939,641, Dec. 9, 1986, Pat. No. 4,764,574. This application Jan. 17, 1990, Ser. No. 466,569
Int. Cl.[5] B01F *17/42*
U.S. Cl. 252—351 6 Claims

1. A surfactant composition consisting essentially of

(a) at least one glyceride,

(b) at least one polyethoxylated sorbitol fatty acid ester, and

(c) at least one polyethoxylated fatty alcohol, wherein said composition has an HLB number within the range of about 7 to about 9.

5,290,480

PROCESS FOR PRODUCING FURNACE ATMOSPHERES BY DEOXYGENATING NON-CRYOGENICALLY GENERATED NITROGEN WITH DISSOCIATED AMMONIA

Diwakar Garg, Macungie; Paul T. Kilhefner, Wescoeville; Donald P. Eichelberger, Macungie, and Brian B. Boaner, Nesquehoning, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1992, Ser. No. 995,618
Int. Cl.[5] C06D *7/00*
U.S. Cl. 252—375 12 Claims

1. A process for generating atmospheres suitable for annealing and heat treating ferrous and non-ferrous metals and alloys, brazing metals and ceramics, sealing glass to metals and sintering non-ferrous metal and ceramic powders comprising the steps of:

combining non-cryogenically produced nitrogen containing up to five percent by volume residual oxygen with a low-pressure dissociated ammonia to form a mixture wherein the amount of hydrogen present is at least 1.05 times the stoichiometric amount required to convert residual oxygen in said mixture to moisture; and

passing said mixture through a low pressure drop catalytic

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reactor containing a platinum group metal catalyst supported on a metallic or ceramic honeycomb structure, under conditions such that the effluent leaving said reactor contains less than about 10 ppm oxygen; and

introducing said effluent into a heat treating furnace.

5,290,481

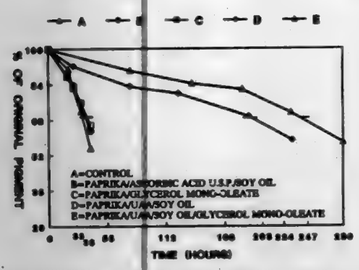
LOW MICRON-SIZED ASCORBIC ACID PARTICLES, ESPECIALLY A SUSPENSION THEREOF IN A MEDIUM IN WHICH THEY ARE INSOLUBLE, AND THE USE THEREOF AS AN ANTIOXIDANT FOR MEDIUMS IN WHICH THE PARTICLES REMAIN INSOLUBLE

Paul H. Todd, Jr., Kalamazoo, Mich., assignor to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Division of Ser. No. 717,926, Jun. 20, 1991, Pat. No. 5,230,836. This application Oct. 14, 1992, Ser. No. 960,721

Int. Cl.[5] A61K *35/78, 31/355*

U.S. Cl. 252—407 **24 Claims**



5. A fat or oil composition, optionally containing a carotenoid, which is protected from oxidative degradation by a suspension of 0.001% or more by weight of an antioxidant composition consisting essentially of a suspension of solid ascorbic acid particles, having a size less than about 38 microns on their largest dimension, in a medium in which they are insoluble.

16. A stabilized product of any one of claims 5–9, wherein the antioxidant composition comprises an orally-ingestible nonionic surface-active agent.

5,290,482

SURFACTANT COMPOSITIONS COMPRISING BETAINE/COCOAMIDE COMPLEXES AND METHOD OF MAKING THE SAME

Frank W. Marschner, Whitehouse Station, and Eugene E. Hardy, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,519

Int. Cl.[5] C11D *1/90, 1/94, 3/32*

U.S. Cl. 252—544 **11 Claims**

1. A conditioning agent comprising a betaine/cocoamide complex formed from an emulsification of a betaine and a cocoamide, having a melting point at or about 90° C., selected from the group consisting of cocomonoethanolamides which contain chain length distributions of C8 to C18 or cocoisopropanolamides which contain chain length distributions of C12 to C18; wherein an emulsion is formed by heating to temperatures at or above the melting point of said cocoamide and said emulsion is then cooled below the melting point of said cocoamide to set the betaine/cocoamide complex.

5,290,483

ELECTRICALLY CONDUCTIVE BLENDS OF INTRINSICALLY CONDUCTIVE POLYMERS AND THERMOPLASTIC POLYMERS AND A PROCESS FOR THEIR PREPARATION

Vaman G. Kulkarni, Charlotte, N.C., and Bernhard Wessling, Bargteheide, Fed. Rep. of Germany, assignors to Americhem, Inc., Cuyahoga Falls, Ohio

Continuation of Ser. No. 773,149, Oct. 8, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,005

Int. Cl.[5] H01B *1/00, 1/04*

U.S. Cl. 252—500 **11 Claims**

1. A process for preparing a conductive polymer article comprising the steps of:

preparing a dispersible neutral intrinsically conductive polymer by neutralizing a doped intrinsically conductive polymer with a base solution to form a wet filter cake; and washing said wet filter cake of said neutralized intrinsically conductive polymer with a dispersing aid;

said dispersing aid being a solution of polyethylene glycol in water;

dispersing said neutral, intrinsically conductive polymer in a thermoplastic polymer to form a blend;

processing said blend into the shape of the desired article; and,

contacting said processed blend with a dopant solution, whereby said dopant solution swells said thermoplastic polymer, and dopes said neutralized intrinsically conductive polymer.

5,290,484

PROCESS FOR THE PREPARATION OF SECONDARY ALKYL SULFATE-CONTAINING SURFACTANT COMPOSITIONS

Eugene F. Latz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 12, 1992, Ser. No. 974,658

Int. Cl.[5] C11D *1/14, 11/04*; C07D *303/24, 305/04*

U.S. Cl. 252—549 **30 Claims**

1. A process for preparing secondary alkyl sulfate-containing surface active compositions which comprises: a) preparing a detergent range alkyl sulfuric acid-containing solution, b) contacting said detergent range alkyl sulfuric acid-containing solution with a base in aqueous solution, c) heating the product of step b) to saponify dialkyl sulfate and to remove substantially all of the water from the reaction- mixture, d) cooling the product of step c) in the presence of a nonionic organic liquid diluent to crystallize a solid secondary alkyl sulfate-containing surface active composition from the reaction mixture and recovering therefrom a crystallized solid secondary alkyl sulfate-containing surface active composition, e) contacting and mixing the uncrystallized portion of the product of step d) with a glycol, and f) phase separating the mixture of step e) into an upper phase product and a lower phase product which contains a non-solid secondary alkyl sulfate-containing surface active composition.

5,290,485

THIRD-ORDER NONLINEAR OPTICAL ELEMENT

Tetsuya Gotoh; Toshiyuki Kondoh; Keiichi Egawa, all of Otsu, and Ken-ichi Kubodera, Isehara, all of Japan, assignors to Toray Industries, Inc. and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 225,758, Jul. 29, 1988, abandoned. This application Apr. 2, 1992, Ser. No. 863,483

Claims priority, application Japan, Jul. 29, 1987, 62-189830; Feb. 18, 1988, 63-36294

Int. Cl.[5] F21V *9/04, 9/00*; G02B *6/00*

U.S. Cl. 252—589 **17 Claims**

1. A third order nonlinear optical device comprising a third order nonlinear optical element formed of a single crystal having at least two optically smooth surfaces, having transparency to the input light at least one wavelength in the range from 0.65 μm to 2.0 μm, said single crystal comprising a charge-transfer complex consisting essentially of:

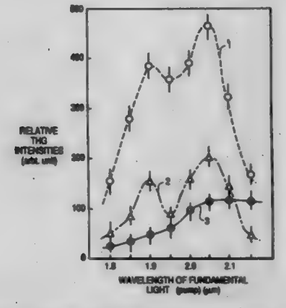
at least one electron-accepting component selected from the group consisting of cyano compounds, quinones, nitro compounds, acid anhydride, halogens, and halogenated carbons;

said cyano compounds being selected from the group consisting of tetracyanotheylene, tricyanoethylene, methyltricyanoethylene carboxylate, hexacyanobutadiene, tetracyanobenzene, 7,7,8,8-tetracyanoquinodimethane, 11,11,12,12-tetracyanonaphthoquinodimethane, 2,5-bis(-dicyanomethylene)-2,5-dihydrothiophene, 2,5-bis(-dicyanomethylene)-2,5-selenophene, hexacyanotrimethylenecyclopropane, 2,4-bis(dicyanomethylene)-1,3-dithioethane, tetracyanoquinoquinazolinoquinozoline and derivatives thereof;

said quinones being selected from the group consisting of p-benzoquinone, naphthoquinone, 9,10-phenanthrenequinone, chloranil, 2,3-dichloro-5,6-dicyano-1,4-benzoquinone, 11,11,12,12-tetracyano-1,4-naphthoquinodimethane and derivatives thereof;

said nitro compounds being selected from the group consisting of trinitrobenzene, picric acid, 4,7-trinitrofluorenone and derivatives thereof;

said acid anhydride being selected from the group consisting of maleic anhydride, pyromellitic acid anhydride and derivatives thereof,



said halogens being selected from the group consisting of bromine and iodine;

said halogenated carbons being selected from the group consisting of tetrabromemethane and bromotrichloromethane, and at least one electron-donating component selected from the group consisting of unsaturated cyclic hydrocarbon compounds, unsaturated heterocyclic compounds, chalcogen-containing compounds, quaternary unsaturated heterocyclic compounds and metals;

said unsaturated cyclic hydrocarbon compounds being selected from the group consisting of naphthalene, anthracene, phenanthrene, pyrene, N,N,N',N'-tetramethyl-p-phenylenediamine, hydroquinone, durene, N,N-dimethyl-α-naphthylamine, diaminonaphthalene, diaminopyrene, stilbene, diaminostilbene and derivatives thereof;

said unsaturated heterocyclic compounds being selected from the group consisting of pyridine, qunoline, phenothiazine, indole, skatole, thymine, furan, benzofuran, thiophene, selenophene and derivatives thereof;

said chalcogen-containing compounds being selected from the group consisting of tetrathiafulvalene, tetraselenafulvalene, tetrathiatetracene, tetraselenatetracene, bithiapyrane, tetraphenylbithiapyrane and derivatives thereof;

said quaternary unsaturated heterocyclic compounds being selected from the group consisting of N-methylphenadium, 1,2-di(N-ethyl-4-pyridinium) ethylene, quinolinium, N-methylacridinium and derivatives thereof;

said metals being selected from the group consisting of copper, silver, lead, nickel, lithium, sodium, potassium, barium, chromium, molybdenum, tungsten, cobalt, iron, antimony, cesium and magnesium;

said charge-transfer complex being formed of said electron-accepting component and said electron-donating component being selected so that the difference (Ip−Ea) of the electron affinity (Ea) and the ionization potential (Ip) is large enough for the formation of charge-transfer complex in the ground state;

at least one of said components being an organic compound having a π-conjugated system.

5,290,486

DESUPERHEATER FOR CONTROLLABLE INJECTION OF COOLING WATER IN A STEAM OR GAS LINE

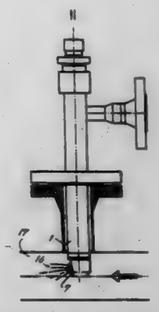
Knut Enarson, Säffle, Sweden, assignor to BTG Kalle Inveating AG, Säffle, Sweden

Filed Oct. 29, 1992, Ser. No. 940,954

Claims priority, application Sweden, May 8, 1990, 9001643-7

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—66 **8 Claims**



1. A desuperheater device for the controllable injection of cooling water into a steam or gas line, comprising:

an insertion tube extending into the line;

a conical outlet nozzle having a valve body movably mounted within the hole in the insertion tube so as to form a regulating port; and

a groove extending along the valve body, wherein the groove is positioned in the hole such that the groove opens along the tangent of a curved surface of the rotation chamber, and wherein the rotation chamber has a centerline which is disposed relative to the centerline of the hole to form an angle which deviates from 90° by an angle α, angle α being within the range of 0° to 30°.

5,290,487

DEVICE FOR AERATION OF A LIQUID VESSEL

Scheibinger Ludwig, Alfonsstr.7a, D8000 München, Fed. Rep. of Germany D 8000

PCT No. PCT/CS92/00024, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/04770, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 20, 1992, Ser. No. 39,469

Claims priority, application Czechoslovakia, Aug. 30, 1991, 2688-91

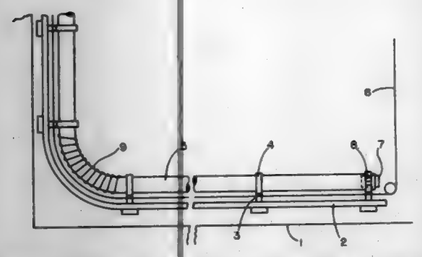
Int. Cl.[5] B01F *3/04*; C02F *3/20*

U.S. Cl. 261—122.1 **13 Claims**

1. A device for aeration of a liquid vessel comprising at least one guide rail and a plurality of sliders arranged thereon and the sliders include holders carrying at least one hose of which at least a portion is perforated and the device further comprises

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pulling means for the hose characterized in that the hose /5/ is movable along its axis with respect to said holders /4/ wherein



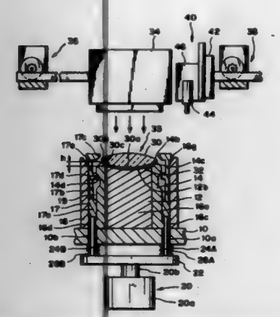
the holders /4/ have a closed circular shape and their sliders /3/ are connected to pulling means /6/.

5,290,488

METHOD FOR MOLDING OPTICAL ELEMENTS

Takashi Arai, Tokyo; Yukihisa Baba, Yokohama, and Sachio Umetsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,099
Claims priority, application Japan, Apr. 30, 1991, 3-099185; Jun. 24, 1991, 3-151267; Apr. 20, 1992, 4-099334
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.7 **6 Claims**



1. A glass member positioning method in an optical-element molding method for forming an optical element in which a glass material and a resin material are integrated, said molding method including the steps of supplying the resin material, which is a type cured by an activating energy beam, to a molding member having a molding surface, which functions to transfer an optical surface onto a surface of the resin material, and forming a resin layer made of the resin material on the surface of the glass member, said glass member positioning method comprising:

a first step of placing the glass member upon a support portion for supporting said glass member in a state in which a lower surface of said glass member is spaced away from a molding surface by a distance which determines the thickness of the resin layer;

a second step of positioning the glass member, relative to said molding member, at a predetermined position in a direction along a surface approximately parallel to the molding surface when the resin material, which has been charged into a space defined by said molding surface and the lower surface of said glass member, exhibits a viscosity within a predetermined range;

a third step of holding the glass member at said predetermined position until the resin material cures to a predetermined degree of polymerization; and

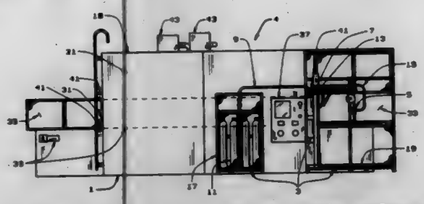
a fourth step of releasing said glass member from a first state where said glass member is held at said predetermined position after said resin material has cured to said predetermined degree of polymerization.

5,290,489

APPARATUS AND METHOD FOR TREATING THE INTERIOR SURFACES OF HOLLOW PLASTIC OBJECTS FOR IMPROVING ADHESIVE PROPERTIES

R. Lee Williams, 2349 C Menard St., St. Louis, Mo. 63104, and Christine A. Mueller, St. Louis, Mo., assignors to R. Lee Williams, St. Louis, Mo.

Filed Jun. 25, 1992, Ser. No. 904,202
Int. Cl.[5] B29C *71/04*
U.S. Cl. 264—22 **12 Claims**



1. Apparatus for surface treating the interior surfaces of hollow plastic objects to improve the surface tension for increasing the adhesive properties of these surfaces comprising means for creating a partial vacuum in the object, means for drawing a conductive gas inside the object and maintaining a positive or negative pressure therein, a pair of electrodes spaced apart from each other, means including a source of electricity of sufficient intensity to produce ionization of the gas inside the hollow plastic object when the hollow plastic object is placed between the electrodes, means for positioning said electrodes in proper position with regards to the object, electrical conducting means connecting said electrodes and said source, and means for positioning the objects in the gap between said electrodes, said electrodes being apart from each other a sufficient distance to permit passage of the objects between them for ionization of the gas inside the object whereby the interior surfaces of the object are surface treated.

8. The method for treating the interior surface of hollow plastic objects to improve their adherency to and compatibility with another substance comprising the steps of:

creating a vacuum in the object;

drawing a conductive gas inside the object;

maintaining a positive or negative pressure in the object;

positioning the object between a pair of electrodes spaced apart from each other;

means including a source of electric current of sufficient intensity to produce an electrical discharge across the gap between said electrodes as said means is energized;

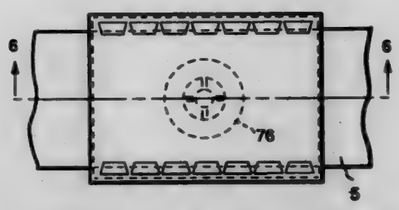
the conductive gas inside the object is ionized thereby increasing the adherency to and compatibility of the inner walls with another substance.

5,290,490

METHOD AND APPARATUS FOR DIFFERENTIALLY HEATING AND THERMOFORMING A POLYMER SHEET

Herman F. Nied, Clifton Park, and Alexander T. Chen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 545,799, Jun. 29, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 911,249
Int. Cl.[5] B29C *35/14, 51/42*
U.S. Cl. 264—26 **21 Claims**



1. A method for dielectrically heating a sheet of polar polymer material, comprising the steps of:

placing said sheet between first and second spaced electrodes, wherein at least said first electrode comprises a plurality of discrete electrode segments proximately positioned to each other, and

dielectrically heating said sheet by applying RF energy to said first and second electrodes;

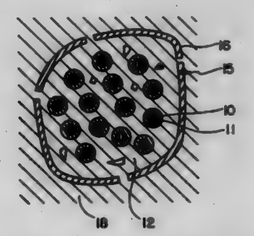
varying the RF energy applied to respective ones of said plurality of discrete electrode segments so that different segments can have different applications of RF energy to impress a selected thermal pattern on said sheet.

5,290,491

PROCESS FOR THE MANUFACTURE OF A THERMOSTRUCTURAL COMPOSITE MATERIAL HAVING A CARBON INTERPHASE BETWEEN ITS REINFORCEMENT FIBERS AND ITS MATRIX

Louis Heraud, Bordeaux, and Jean-Philippe Rocher, Saint Medard en Jalles, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Continuation of Ser. No. 675,645, Mar. 27, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,206
Claims priority, application France, Apr. 2, 1990, 90 04198
Int. Cl.[5] C23C *16/02*
U.S. Cl. 264—29.4 **14 Claims**



1. A process for the manufacture of a thermostructural composite material having a fibrous preform densified by a refractory matrix with a carbon interphase being provided between the fibers of the preform and the matrix, said process comprising the steps of:

providing elementary refractory fibers substantially coated with a sizing agent, said sizing agent being a material capable of leaving a carbon residue to form an interphase layer upon thermal decomposition;

forming a fibrous preform from said coated elementary refractory fibers formed into threads;

providing the carbon interphase layer as a substantially continuous coating on the elementary refractory fibers in the preform by thermal decomposition of the sizing agent upon heating of the fibrous preform; and

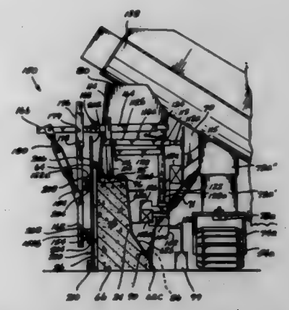
subsequently densifying said fibrous preform with a refractory matrix material.

5,290,492

METHOD FOR FORMING CONCRETE BARRIERS

John F. Belarde, 6327 114th Ave. SE., Renton, Wash. 98056

Division of Ser. No. 571,458, Aug. 21, 1990, Pat. No. 5,178,309. This application Jun. 17, 1992, Ser. No. 900,704
Int. Cl.[5] E04B *1/16*
U.S. Cl. 264—33 **8 Claims**



1. A method of slip-forming a concrete barrier that extends along a substantially horizontal path so that one substantially vertically extending surface of the barrier includes a three-dimensional, nonhorizontally extending texture, the method comprising the steps of:

mounting a form, having a substantially vertical inner surface including a pattern consisting of a reverse image of the nonhorizontally extending texture to be included on the one substantially vertically extending surface of the concrete barrier being slip-formed, such that the form extends along the substantially horizontal path and is fixed with respect to the path during the slip-forming of the concrete barrier;

positioning an automated slip-former comprising: (i) a frame and support means coupled to the frame; (ii) drive means coupled to the frame for moving the frame and support means along the substantially horizontal path; (iii) a mule attached to the frame; and (iv) a hopper coupled to the mule, such that the mule engages the form so that the mule and the form together enclose a space in which the concrete barrier is slip-formed; and

supplying concrete to the hopper and operating the hopper so that the concrete is delivered to the enclosed space while: (i) operating the drive means so as to cause the mule to move along successive portions of the form and, thus, along the substantially horizontal path; (ii) maintaining the mule in engagement with each successive portion of the form positioned opposite the mule; and (iii) preventing each successive portion of the form positioned opposite the mule from moving away from the mule by supporting each successive portion of the form with the support means, to thus slip-form the concrete barrier with the three-dimensional, nonhorizontally extending texture being formed on the one substantially vertically extending surface in contact with the substantially vertical inner surface of the form.

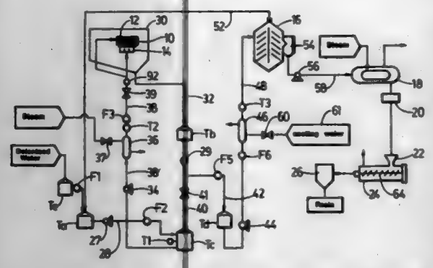
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,493

PROCESS FOR CONTINUOUSLY RECYCLING WATER SOLUABLE RESIN

James J. Mauro, Chatham, N.J., assignor to Han Yang Chemical Corporation, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 654,811, Feb. 13, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 960,914
Int. Cl.[5] B29C *33/76*
U.S. Cl. 264—37 9 Claims



1. A process for continuously recycling water soluble resin, comprising the steps of:
preparing a resin solution comprising about 6–12 percent by weight of polyacrylic acid;
heating the resin solution to a temperature of about 88° C. to 99° C.;
spraying the heated resin solution at a pressure of about 2.8 to 4.9 kg/cm^2 onto a core made of resin comprising polyacrylic acid to dissolve said core to form a polymer suspension;
directing a first portion of the polymer suspension to a separator to remove water therefrom to from a resin product concentrate; and
recirculating a second portion of the polymer suspension for reuse in preparing the resin solution.

5,290,495

PROCESS FOR GRANULATING 2,2,6,6-TETRAMETHYLPIPERIDINE-CONTAINING LIGHT STABILIZER

Norimitsu Numadate, Misawa; Isao Nakamae, Hirakata; Hiroki Yamamoto, Niihama, and Manji Sasaki, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 12, 1991, Ser. No. 757,926
Claims priority, application Japan, Sep. 13, 1990, 2-244786
Int. Cl.[5] B01J *2/20*; C07D *211/00*
U.S. Cl. 264—141 7 Claims

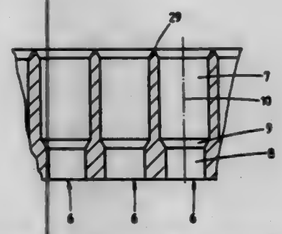
1. A process for producing granules of a light stabilizer selected from the group consisting of bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate, 2-methyl-2-(2,2,6,6-tetramethyl-4-piperidyl)amino-N-(2,2,6,6-tetramethyl-4-piperidyl)propionamide and Bis(1,2,2,6,6-pentamethyl-4-piperidyl)-2-(3,5-di-tert-butyl-4-hydroxybenzyl)-2-n-butylmalonate, which comprises mixing the light stabilizer with a lubricant selected from the group consisting of an aqueous solution of methanol and an aqueous solution of isopropyl alcohol, and granulating the resultant mixture while pressure is applied thereto, wherein said light stabilizer has a melting point of not less than 60° C.

5,290,496

PROCESS FOR THE PRODUCTION OF GRANULES OF A DETERGENT

Franz-Josef Carduck, Haan; Hubert Pawelczyk; Wilfried Rahse, both of Duesseldorf, and Jochen Jacobs, Wuppertal, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00371, § 371 Date Nov. 9, 1992, § 102(e) Date Nov. 9, 1992, PCT Pub. No. WO91/13678, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 28, 1991, Ser. No. 927,677
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1990, 4007601.6
Int. Cl.[5] B29C *47/12*
U.S. Cl. 264—142 30 Claims



1. A process for the production of a granulated detergent product from a mixture of at least partly solid fine particles which comprises: adding at least one additive selected from the group consisting of plasticizers and lubricants to the mixture to form a particulate free flowing premix, extruding the premix containing the additive in an extruder under a pressure of at least 25 bar through a plurality of bores (6) which have an inlet-end zone (7) of a relatively large diameter and an outlet-end zone (8) of a smaller diameter, a length-to-diameter ratio in the inlet-end zone (7) being between 1.5 :1 and 6:1 and, a length-to-diameter ratio in the outlet-end zone (8), being between 0.3:1 and 2:1 and cutting the issuing strands transversely to a predetermined length immediately after leaving the bores.

5,290,494

PROCESS OF MAKING A RESORBABLE IMPLANTATION DEVICE

Allan G. A. Coombes; James D. Heckman, and Barbara D. Boyan, all of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 528,968, May 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 489,078, Mar. 5, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 914,992
Int. Cl.[5] B29C *67/20*
U.S. Cl. 264—41 32 Claims

1. A method for making a resorbable implantation device, comprising the steps of:
dissolving an independently-gelling single polylactide enantiomer in a solvent to form a polymer solution;
casting the polymer solution in a mold;
allowing the polymer solution to cool to form a gel capable of substantially retaining the shape of the mold upon removal therefrom and handling thereof; and
drying the gel to form a resorbable implantation device.

5,290,497

PROCESS FOR PRODUCING MOLDED ARTICLES OF POLYIMIDE PRECURSOR

Mitsuo Kurita, Chiba; Kazutsune Kikuta, Ichihara, and Keizo Oka, Chiba, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Nov. 2, 1992, Ser. No. 969,976
Claims priority, application Japan, Nov. 8, 1991, 3-319585; Nov. 13, 1991, 3-324003
Int. Cl.[5] B29C *47/78*
U.S. Cl. 264—176.1 14 Claims

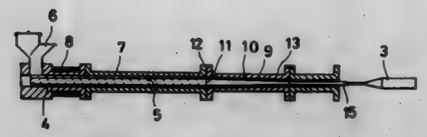
1. A process for producing molded articles of a polyimide precursor comprising drying a solid obtained by pouring a dilute solution of a polyimide precursor derived from an aromatic tetracarboxylic acid component and an aromatic diamine component in a liquid in which said polyimide precursor is only poorly soluble to obtain a dry solid having a polyamide precursor concentration of 50 to 70% by weight, and then extruding this dry solid at 80° to 130° C.

5,290,498

ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE THIN-WALL PIPE, AND METHOD OF AND APPARATUS FOR MANUFACTURING THE SAME

Takeshi Shiraki; Iwatoni Suzuki, and Kunio Hiroshige, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 862,958
Claims priority, application Japan, Apr. 3, 1991, 3-71055; Apr. 12, 1991, 3-79683; Jun. 4, 1991, 3-132624
Int. Cl.[5] B29C *47/24*
U.S. Cl. 264—209.2 4 Claims



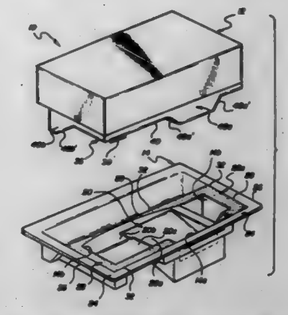
1. A method of manufacturing an ultra-high molecular weight polyethylene thin-wall pipe, comprising the steps of:
supplying ultra-high molecular weight polyethylene having an intrinsic viscosity (η) of 5.0 dl/g or more into a screw extruder, and melting and kneading the ultra-high molecular weight polyethylene;
continuously extruding the molten substance of the ultra-high molecular weight polyethylene from a die having an L/D ratio at least 10, which includes an outer die, and an inner die connected to and rotated together with a screw of said screw extruder and disposed therein, to form a cylindrical extruder article; and
diametrically expanding the cylindrical extruded article by means of a tapered core connected to said inner ride through a shaft and not to rotate with a shaft rotating together with the inner die, which includes a tapered portion and a cylindrical portion provided continuously to said tapered portion, and causing the ultra-high molecular weight polyethylene to start to be cooled to solidify at the tapered portion or the cylindrical portion of the tapered core.

5,290,499

APPARATUS AND METHOD FOR SEALING A MOLD BOX

Robert Tischler, Northwood, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed May 21, 1992, Ser. No. 886,683
Int. Cl.[5] B29C *33/02, 41/04, 41/18, 41/46*
U.S. Cl. 264—301 4 Claims



4. A process for manufacturing a thin-walled plastic shell (21) using a mold assembly (10) including a mold box (14) provided with a deeply recessed mold surface (20) surrounded by a plurality of vertical waste surfaces and a horizontal runoff surface and including a powder box (12) containing powder resin and having an opening (18) surrounded by a contoured selective charge application panel (36) provided with a variable height gasket (30) and vertical side portions (40a, 40b, 40c) offset from said gasket (30), said method including the steps of: heating said mold box (14) so as to provide said mold surface (20) with a uniform temperature; combining said mold box and said powder box by positioning said mold surface (20) relative to said opening (18) so that said opening (18) and said mold surface are in proximity to each other and said vertical side portions of said panel are located within said mold box (14) and cooperate with said gasket (30) to mask said plurality of vertical waste surfaces of said mold box (14) while simultaneously causing said gasket (30) to engage said horizontal runoff surface of said mold box (14) at variable heights to form a variable height narrow width band portion (28) along said horizontal runoff surface of said mold box (14) that allows said powder resin to be deposited adjacent said mold surface (20) to form a peripheral flange (22) on said plastic shell (21) for assisting in removal of said plastic shell from said mold box (14); and positioning said combined powder box (12) and mold box (14) so that said powder resin is deposited onto said variable height narrow width band portion and on said mold surface (20) of said mold box to form said thin-walled plastic shell (21) with said peripheral flange thereon while preventing deposition of said powder resin as waste on said masked vertical waste surfaces of said mold box.

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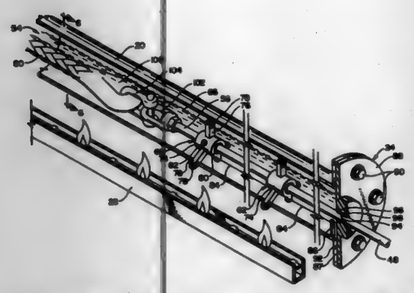
METHOD FOR HEAT STRETCHING SYNTHETIC FIBER ROPE

Richard J. Ryan, Anacortes, Wash., assignor to Puget Sound Rope Corporation, Anacortes, Wash.

Filed Jul. 29, 1992, Ser. No. 922,552
Int. Cl.[5] D02J *1/22*
U.S. Cl. 264—291 14 Claims

1. A method for heat stretching a synthetic fiber rope, said method comprising the steps of:
attaching tensioning members to first and second ends of a segment of said rope;
suspending said segment in a liquid medium having a specific gravity selected to be approximately equal to that of said

rope at a predetermined stretching temperature, so that said segment is rendered substantially neutrally buoyant by said medium so as to minimize loading on said attached ends of said segment caused by weight or flotation of said segment;



heating said liquid medium so that said segment of rope which is suspended therein is uniformly heated to said stretching temperature; and

applying tension between said tensioning members so as to stretch said heated segment of rope to a predetermined increase in length of said segment.

5,290,501

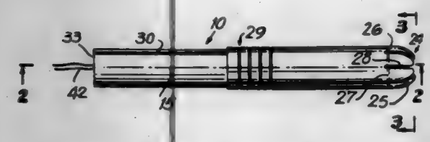
METHOD OF FORMING CARDBOARD TAMPON APPLICATORS HAVING A DOME-SHAPED FORWARD TIP

Allan W. Klesius, Wyncwood, Pa., assignor to Playtex Family Products Corporation, Samford, Conn.

Filed May 20, 1992, Ser. No. 886,119

Int. Cl.[5] B29C *53/08*

U.S. Cl. 264—322 **11 Claims**



1. A method of forming a cardboard tampon applicator including a barrel member adapted to contain a tampon pledget therein, and having a dome-shaped tip forward end formed of a plurality of curved petals through which the tampon pledget is ejected, comprising the steps of:

forming a cardboard cylinder having an initially fully opened forward end, with a plurality of petals at the terminus of the forward end,

spraying moisture over at least the forward end and a major portion of one or more surfaces of each of the petals, and

curving the sprayed portions of the petals radially inward while heating to collectively form and maintain the generally dome-shaped forward end.

5,290,502

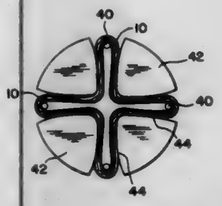
METHOD OF MAKING A RIGIDIZED FIBER FILTER ELEMENT

Andrew B. Jeffery, North Quincy; George Bakis, West Roxbury, and John Skelton, Sharon, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,170

Int. Cl.[5] B01D *39/16*

U.S. Cl. 264—324 **9 Claims**



1. A method for producing a rigidized and densified fiber filter element for filtering fluid streams comprising the steps of:

providing a precursor fiber web, said precursor fiber web including heat-shrinkable fibers and binder fibers;

placing said precursor fiber web on a forming device;

exposing said precursor fiber web and said forming device to a temperature sufficiently elevated to cause said heat-shrinkable fibers to shrink and said binder fibers to soften and to melt;

cooling said fiber web and aid forming device to ambient temperature; and

removing said fiber web from said forming device, said fiber web having become the rigidized and densified fiber filter element.

5,290,503

METHOD AND APPARATUS FOR INSERTING A GREEN TIRE IN A VULCANIZING MACHINE

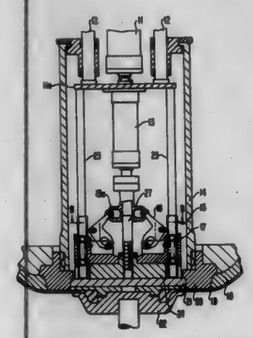
Hideaki Katayama; Toshifumi Murakami; Akira Hasegawa; Katsuyoshi Sakaguchi, all of Nagasaki; Koji Soeda, Kobe; Yoshiya Kubota, Toyota; Akinori Kubota, Kobe, and Masaaki Ijiri, Aichi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Sumitomo Rubber Industries Ltd., Hyogo, both of Japan

Filed Dec. 8, 1989, Ser. No. 445,952

Claims priority, application Japan, Jan. 31, 1989, 1-19869

Int. Cl.[5] B29C *35/00*

U.S. Cl. 264—325 **4 Claims**



1. A method of inserting a green tire in a vulcanizing machine having an upper mold portion including an upper bead ring and a lower mold portion including a lower bead ring, said method comprising:

positioning a plurality of radially extendable and retractable and vertically movable chucks, each having a sector mounted thereto, at a location at which the sectors are disposed radially inwardly of an upper bead portion of a green tire and below the upper bead ring;

extending the chucks radially outwardly such that the sectors mounted thereto are moved into engagement with the upper bead portion and until the upper bead portion is centered relative to the upper bead ring;

raising said vertically movable chucks, once in engagement with the upper bead portion, toward the upper bead ring while the upper bead portion is centered by the sectors relative to the upper bead ring and until the chucks push the upper bead portion into the upper bead ring; and

subsequently positioning said plurality of radially extendable and retractable chucks at a location at which the sectors are disposed radially inwardly of a lower bead portion of the green tire and above the lower bead ring, extending the chucks radially outwardly such that the sectors mounted thereto are moved into engagement with the lower bead portion and until the lower bead portion is centered relative to the lower bead ring, and lowering said vertically movable chucks, once in engagement with the lower bead portion, toward the lower bead ring while the lower bead portion is centered relative to the lower bead ring and until the chucks push the lower bead portion into the lower bead ring.

2. In a vulcanizing machine having an upper mold portion including an upper bead ring and a lower mold portion including a lower bead ring, apparatus for inserting a green tire in the machine, said apparatus comprising:

a plurality of radially extendable and retractable and vertically movable chucks each having a sector mounted thereto, said chucks being positionable in the apparatus at first locations at which the sectors mounted thereto are disposed radially inwardly of an upper bead portion of a green tire supported in the machine, and said chucks also being positionable at second locations at which the sectors mounted thereto are disposed radially inwardly of a lower bead portion of a green tire supported in the machine;

extending/retracting means connected to said chucks for selectively radially extending or retracting said chucks, said sectors being extendable radially outwardly from said first or said second locations by said extending/retracting means such that the sectors mounted thereto are moved into engagement with a respective bead portion of the green tire and to positions at which the sectors center the respective bead portion relative to a respective one of the bead rings; and

cylinder means connected to said chucks for vertically moving said chucks in the apparatus between said first and said second locations,

said cylinder means being operable to selectively position said chucks in engagement with either of the bead portions of the green tire, to move said chucks toward the upper bead ring while the upper bead portion of the green tire is centered relative to the upper bead ring by said sectors and until the chucks push the upper bead portion into the upper bead ring, and to move said chucks toward the lower bead ring while the lower bead portion is centered relative to the lower bead ring by said sectors and until the chucks push the lower bead portion into the lower bead ring.

5,290,504

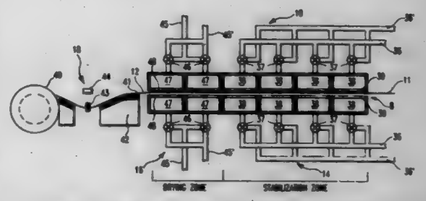
CONTINUOUS AIR BEARING VAPOR STABILIZATION SYSTEM AND METHOD

Stephen A. Milkovich, Beacon, and Robert W. Nufer, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,914

Int. Cl.[5] C04B *33/30*; B29B *17/00*

U.S. Cl. 264—342 RE **12 Claims**



1. A process for solvent vapor stabilizing to achieve stress relaxation, a cast, substantially completely dried ceramic green sheet tape comprising remaining casting solvent, a particulate ceramic and a thermoplastic polymeric binder, said process comprising

passing said green sheet tape through an air bearing stabilization system provided with dual sided air bearings which float said green sheet tape upon a cushion of air containing solvent vapor whose solvent vapor is maintained by passing air for said air bearing through a bubbler, said solvent vapor being adapted for solvent plasticizing said polymer binder.

5,290,505

METHOD OF RECYCLING ADHESIVE-COATED PLASTIC SHEET MATERIAL

Gerhard Huber, Waldkraiburg, and Karl Pichl, Aschau, both of Fed. Rep. of Germany, assignors to WNC-Nitrochemie GmbH, Aschau, Fed. Rep. of Germany

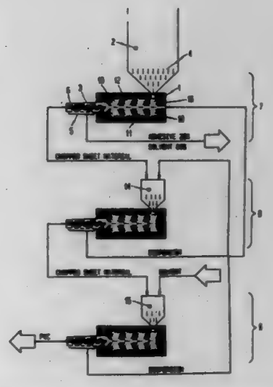
PCT No. PCT/EP91/02238, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO92/09413, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 26, 1991, Ser. No. 910,354

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1990, 4037562

Int. Cl.[5] B29B *17/02*

U.S. Cl. 264—344 **11 Claims**



2. A method, of recycling plastic sheet material coated with

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adhesive and available in chopped form by separating the plastic from the adhesive, comprising the following steps:

a) moving the chopped sheet material for a predetermined period of time in a solvent for the adhesive under the impact of a mechanical force in a first processing stage, so that the adhesive will become dispersed in the solvent;

b) separating the adhesive dispersed in the solvent from the chopped sheet material by mechanical force in such first processing stage;

c) feeding the separated chopped sheet material from the first processing stage to a second processing stage;

d) feeding fresh solvent to the separated chopped sheet material in the second processing stage;

e) moving the chopped sheet material for a predetermined period of time in the solvent for the adhesive under the impact of mechanical force in the second processing stage, so that the remaining adhesive will become dispersed in the solvent;

f) separating the solvent-adhesive dispersion from the chopped sheet material by mechanical force in the second processing stage; and

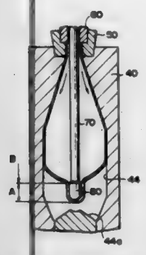
g) feeding the separated solvent-adhesive dispersion from the second processing stage to the first processing stage.

5,290,506

PROCESS OF INJECTION STRETCH BLOW MOLDING HOLLOW ARTICLE HAVING THICK-WALLED BOTTOM

Kazuyuki Yokobayashi, Ueda, Japan, assignor to Nissei ASB Machine Co., Ltd., Nagano, Japan

Filed Apr. 23, 1992, Ser. No. 872,321
Claims priority, application Japan, Apr. 30, 1991, 3-126782
Int. Cl.[5] B29C *49/12, 49/64*
U.S. Cl. 264—520 **21 Claims**



1. A process of injection stretch blow molding a hollow article having a thick-walled bottom region, comprising the steps of:

injection molding a preform in the form of a closed-end cylinder in an injection molding station;

moving said preform to a blow molding station wherein said preform is placed within a blow cavity mold while said preform still retains heat provided thereto by the injection molding step;

thereafter, inserting a stretching rod into said preform and moving said stretching rod so that a distal bulged end portion of said rod reaches and contacts the inner bottom wall and side wall portions of said preform corresponding to the thick walled bottom region of said hollow article;

regulating the temperature of the distal bulged end portion of the stretching rod inserted into said preform and, prior to initiation of blow molding, maintaining said distal bulged end portion in contact with said inner bottom wall and side wall portions of said preform corresponding to the thick-walled bottom region of said hollow article thereby regulating the temperature at the inner bottom and side wall portions of the preform contacting with said distal bulged end portion to a temperature which is lower than the temperature of another portion of said preform; and

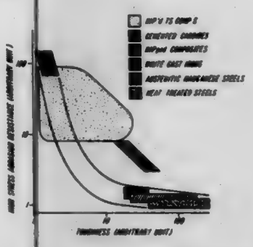
biaxially stretch blow molding said preform into said hollow article by blowing a pressurized fluid into said preform and also by driving said stretching rod.

5,290,507

METHOD FOR MAKING TOOL STEEL WITH HIGH THERMAL FATIGUE RESISTANCE

Joseph C. Runkle, 30 Ancient County Way Ext., Manchester-By-The-Sea, Mass. 01944

Filed Feb. 19, 1991, Ser. No. 657,642
Int. Cl.[5] B22F *3/14*
U.S. Cl. 419—14 **25 Claims**



1. A process for forming a macrocomposite having improved thermal fatigue resistance comprising the steps of

(a) mixing a tool steel microcomposite alloy powder and a carbide microcomposite powder to form a powder mass in a manner that said powders are generally well distributed in said mass, said carbide microcomposite powder being formed of particles from about 25–100 micrometers in diameter, and

(b) hermetically sealing and heating said mass isostatically to a temperature of at least 1100 C, at at least 2–3000 psi, until said mass is diffusion bonded into a macrocomposite having (i) a tool steel matrix, formed from said tool steel microcomposite powder, and (ii) carbide islands, formed from said carbide microcomposite powder dispersed in said matrix.

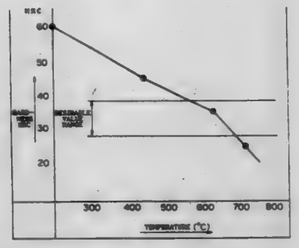
5,290,508

MANUFACTURING PROCESS FOR RING-SHAPED PARTS

Kazuya Kobayashi; Shigeyoshi Nagahara, and Hikaru Hosono, all of Niigata, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

PCT No. PCT/JP91/01058, § 371 Date Apr. 7, 1992, § 102(e) Date Apr. 7, 1992, PCT Pub. No. WO92/02326, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 7, 1991, Ser. No. 847,992
Claims priority, application Japan, Aug. 7, 1990, 2-209007
Int. Cl.[5] B22F *7/00*
U.S. Cl. 419—54 **7 Claims**

1. A manufacturing method for ring-shaped parts, characterized in that a raw material powder composition comprising C at 0.4–0.9% by weight, Ni at 1.5–4.0% by weight, Mo at 0.2–0.6% by weight, and a remainder consisting of Fe and unavoidable impurities, is compacted; thereafter sintered and forged; then, after obtained sintered body is heated at a temperature within a range of 800°–950° C., high temperature tempering is carried out for 20–60 minutes at a temperature within a range of 570°–700° C., then the surface layers of the inner periphery and/or the outer periphery of said sintered body is subjected to hardening treatment.



5,290,509

MULTIPHASE HYDROGEN-ABSORBING ALLOY ELECTRODE FOR AN ALKALINE STORAGE CELL

Nobuhiro Furukawa, Osaka; Kazuro Moriwaki, Kyoto; Mitsuzo Nogami; Seiji Kameoka, both of Osaka, and Motoo Tadokoro, Ashiya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 644,154, Jan. 22, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,340
Claims priority, application Japan, Jan. 22, 1990, 2-12932; Mar. 28, 1990, 2-80116
Int. Cl.[5] H01M *4/38*
U.S. Cl. 420—435 **7 Claims**

1. In a hydrogen-absorbing alloy electrode for an alkaline storage cell comprising a hydrogen-absorbing negative electrode, a positive electrode and an electrolyte, the improvement comprising:

a hydrogen-absorbing alloy consisting essentially of RBxMy present as a main metal phase and a subordinate metal phase, the main metal phase being represented by a composition formula R-My and the subordinate metal phase of the alloy includes at least boron, R being at least one element selected from a group consisting of rare earth elements and alkali earth elements, and M being at least one element selected from a group consisting of Ni, Co, Mn, Al, Cr, Fe, Cu, Sn, Sb, Mo, V, Nb, Ta, Zn, Zr and Ti, x being greater than 0.015 and less than 0.1 and y being greater than 3.5 and less than 6.0, said alloy having a hydrogen absorption pressure of 0.05 to 5 air pressure at a temperature of 40° C.

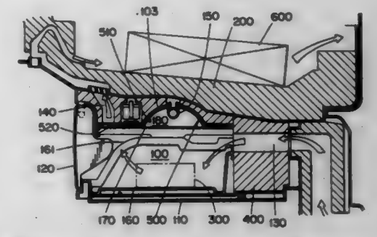
5,290,510

DEDORIZING DEVICE AND METHOD FOR THE THAWING COMPARTMENT OF A REFRIGERATOR

Cha J. Lee, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 21, 1993, Ser. No. 6,537
Claims priority, application Rep. of Korea, Feb. 1, 1992, 92-1644
Int. Cl.[5] A61L *9/00*
U.S. Cl. 422—5 **10 Claims**

1. A food thawing compartment in a refrigerator, comprising means defining a compartment, an air inlet and an air outlet communicating with the compartment, said compartment including a ceiling overlying a food containing portion of said compartment, an odor absorbing member disposed on the ceiling, a food-thawing heater disposed beneath a portion of said odor absorbing member and above said food containing portion of said compartment, a heat reflecting plate disposed above said odor absorbing member for reflecting heat downwardly toward said food containing portion through openings in said odor absorbing member, said openings defining straight paths through said odor absorbing member, and a protective net disposed beneath said heater and extending across a lower face of said odor absorbing member.

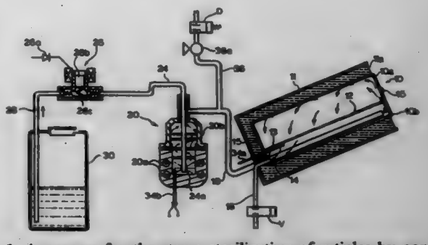


5,290,511

METHOD FOR STEAM STERILIZATION OF ARTICLES

Duncan Newman, 314 Kenilworth Avenue, Toronto, Ontario, Canada M4L 3S8

Division of Ser. No. 762,797, Sep. 20, 1991, Pat. No. 5,271,893, which is a continuation of Ser. No. 440,689, Nov. 24, 1989, abandoned. This application Sep. 4, 1992, Ser. No. 911,731
Int. Cl.[5] A61L *2/20*
U.S. Cl. 422—26 **13 Claims**



1. A process for the steam sterilization of articles by controlled delivery of steam from an electrically heated boiler in free communication with a pressure chamber through a delivery conduit, said boiler having means for detecting dryness of said boiler and said pressure chamber having a venting conduit and a valve for opening or closing said venting conduit comprising:

(a) generating a flow of saturated steam through said steam delivery conduit by the pulsed injection of a controlled quantity of water into said heated boiler only when dryness of the boiler is detected, said boiler and said pressure chamber being in free communication with each other always and jointly sealed from the atmosphere when said valve is in the closed position such that the pressure in the chamber becomes substantially the same as the pressure in the boiler;

(b) permitting steam from the boiler to pass into the chamber at substantially atmospheric pressure with said valve open to expel the air initially in said chamber through said venting conduit and determining when substantially all air in the chamber has been expelled by measuring only the temperature of an effluent stream vented from the chamber; then

(c) closing the valve after expulsion of the air so that steam generated in the boiler raises the temperature and the pressure in the chamber and monitoring the temperature in the chamber until a desired sterilization temperature is attained; then

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(d) controlling the temperature in the chamber to remain substantially constant at said sterilization temperature for a desired sterilization period by modulating the electric power supply to the boiler; and

(e) at predetermined intervals during pressurization of the chamber in step (c) and during maintenance of the sterilization temperature within the chamber in step (d), opening said valve to cause condensed liquid water from the chamber to be purged therethrough, then closing said valve; and

(f) upon completion of sterilization exposure of the articles in the chamber, turning off the boiler and opening said valve to exhaust the chamber and return it to atmospheric pressure.

5,290,512

METHOD OF DISINFECTING A CONTACT LENS AND PRESERVING A CONTACT LENS CARE SOLUTION

Shan F. Yen, Atlanta, and Paul C. Nicolson, Dunwoody, both of Ga., assignors to Ciba-Geigy Corportion, Ardsley, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,770

Int. Cl.[5] A01N *25/02, 43/72, 43/80*; C11D *3/48*

U.S. Cl. 422—37 **21 Claims**

1. A method for disinfecting a contact lens comprising contacting a hydrophilic contact lens with a composition having an effective disinfecting amount of an agent having 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one.

5,290,513

RADIATION MEASURING DEVICE, PARTICULARLY FOR LUMINESCENCE MEASUREMENTS

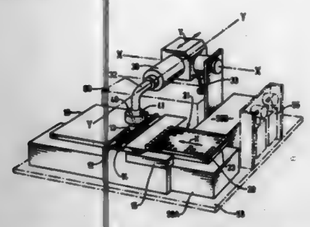
Fritz Berthold, Pforzheim, and Willy Lohr, Wildbad, both of Fed. Rep. of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co. KG, Wildbad, Fed. Rep. of Germany

Filed Jul. 20, 1992, Ser. No. 914,742

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1991, 4123817

Int. Cl.[5] G01N *21/76*

U.S. Cl. 422—52 **21 Claims**



1. In a radiation measuring device for performing measurements on samples contained in a plurality of sample containers, the apparatus including a radiation detector having an entrance window, sample container holding means defining a sample container holding region for holding a plurality of sample containers in a matrix pattern, and displacement devices for displacing the sample container holding means in order to align successive sample containers with the entrance window of the radiation detector for automatic measurement of samples in the sample containers, the radiation detector and the sample container holding means being movable relative to one another in such a way that the sample container being measured and the entrance window of the detector are disposed coaxially with each other, the improvement wherein said device further comprises:

a diaphragm plate (10) provided with at least one aperture, said diaphragm plate being fixedly disposed between said aperture, said diaphragm plate being fixedly disposed between said entrance window (31) of said detector (30) and said sample container holding region;

means for forming a light-tight coupling between a sample container (21) placed underneath said entrance window and said entrance window; and

means disposed for pressing the sample containers against said diaphragm plate (10) with a constant pressure while permitting the sample containers to be displaced parallel to said diaphragm plate by said displacement devices.

5,290,514

DRY ANALYSIS ELEMENT HAVING A CONSTANT BLANK VALUE AND PROCESS FOR PREPARING THE SAME

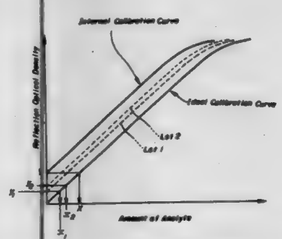
Mitsutoshi Tanaka; Takaki Arai; Takeshi Igarashi, and Kenichi Sawada, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 486,057, Feb. 27, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,169

Claims priority, application Japan, Feb. 27, 1989, 1-45730

Int. Cl.[5] G01N *21/01, 31/22*

U.S. Cl. 422—56 **22 Claims**



1. An analysis element comprising a water-permeable layer which contains:

a reagent composition capable of producing an optically detectable substance in the presence of a predetermined analyte in an aqueous sample; and

a fogging agent which is detectable by the same method and at the same wavelength as that for detecting said optically detectable substance, said fogging agent being capable of raising the blank level at said wavelength of the element to a predetermined constant level,

wherein said fogging agent and said optically detectable substance are identical.

5,290,515

METHOD FOR THE MANUFACTURE OF A SELF-SUPPORTING TEST FIELD MATERIAL

Winfried Pleach, Dossenheim; Dan Mosoiu, Limburgerhof, and Hans Götschel, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

PCT No. PCT/DE92/00160, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO92/15880, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 27, 1992, Ser. No. 937,877

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106293; Jun. 24, 1991, 4120823

Int. Cl.[5] G01N *31/22*; B05D *1/26, 3/00*

U.S. Cl. 422—57 **19 Claims**

1. A method for manufacturing a self-supporting test field material, said method comprising the steps of:

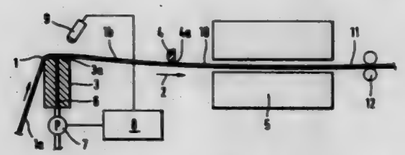
providing a reagent film mass, said reagent film mass including at least one reagent for performing an analysis of a liquid sample;

providing a carrier material comprising an open-pored fibre structure, and having a thickness of less than 0.1 mm;

pressing said reagent film mass into a first side of said carrier material wherein said reagent film mass substantially penetrates into pores of the open-pored fibre structure of the carrier material and wherein a portion of said reagent film mass penetrates through from the first side of the carrier material to a second side of the carrier material;

smoothing the reagent film mass on the second side of the carrier material by a relative motion of the carrier material and a smoothing tool wherein said pores are substantially filled by the reagent film mass wherein a resulting thickness of the test field material is less than 0.1 mm, and wherein the reagent film mass is distributed essentially symmetrically through the test field material; and

drying the carrier material in a non-contact manner.



13. A self-supporting test field material for a test carrier for the determination of an analyte in a body fluid, said test field material comprising:

a reagent film mass embedded in an open-pored fibre structure (19) wherein said reagent film mass spans and thus closes pores of said open-pored fibre structure, the reagent film mass including at least one reagent of an analysis reagent system and a polymer film former, said reagent film mass being pressed into the composite fibre structure and smoothed on first and second sides thereof, such that said test field material has substantially smooth first and second sides, and wherein a mean thickness of said test field material is less than 0.1 mm.

5,290,516

MOISTURE INDICATOR

Mariano Greco, Pittsburgh; Brenda Lesperance, Blawnox, and Grace L. Shine, Gibsonia, all of Pa., assignors to Bacharach, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 488,239, Mar. 5, 1990, abandoned. This application Oct. 22, 1992, Ser. No. 965,058

Int. Cl.[5] G01N *31/22, 33/18*

U.S. Cl. 422—57 **13 Claims**

1. A process for preparing a moisture indicator material, comprising the steps of dehydrating a carrier material comprising 10–100 mesh sand, dehydrating a quantity of a cobaltous indicator composition which changes color upon exposure to moisture, dissolving said cobaltous indicator composition in an absolute alcohol solvent, contacting said carrier material with said dissolved cobaltous indicator composition and removing said absolute alcohol solvent, wherein spalling of said cobaltous indicator composition from said carrier material is drastically reduced compared to moisture indicator materials in which the carrier is not preliminarily dehydrated and in which the solvent is not absolute.

5,290,517

OPTICAL AGGLUTINATION ASSAY DEVICE

Brian C. Samuels, Pasadina; Jeffry A. Reidler, Frederick, both of Md., and David B. Silcott, Kansas, Utah, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 4, 1990, Ser. No. 503,623

Int. Cl.[5] G01N *21/59*

U.S. Cl. 422—58 **17 Claims**

1. An optical agglutination assay device comprising:

a housing;

a first separate, discrete hollow reaction cell mounted on said housing, said first cell defining a generally planar liquid receiving first reaction chamber having a thickness which facilitates the use of small quantities of reactants, does not interfere with the agglutination process, and is insufficient to substantially interfere with the passage of light through an aqueous reaction system in said first chamber along a first path of travel extending transversely of the plane of the first chamber;

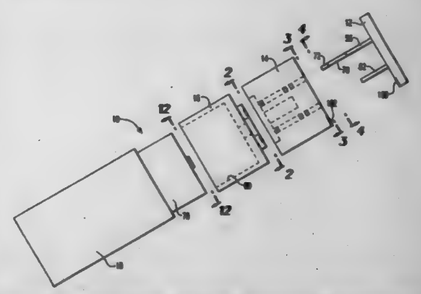
a second separate, discrete hollow reaction cell mounted on said housing, said second cell defining a generally planar liquid receiving second reaction chamber having a thickness which facilitates the use of small quantities of reactants, does not interfere with the agglutination process, and is insufficient to substantially interfere with the passage of light through an aqueous reaction system in said second chamber along a second path of travel extending transversely of the plane of the second chamber;

first means for delivering an aqueous agglutination reaction system and an unknown substance suspected of containing a target analyte into said first chamber, said agglutination system being such that agglutination therein is promoted or inhibited in the presence of said analyte;

second means for delivering an aqueous agglutination reaction system into said second chamber;

means for transmitting light into said first chamber along said first path of travel;

means for detecting the intensity of light reflected form said first chamber;



means for transmitting light into said second chamber along said second path of travel;

means for detecting the intensity of light reflected from said second chamber; and

means for comparing the intensity of the light reflected from said first chamber with the intensity of the light reflected from said second chamber as a measure of the occurrence of agglutination in said first chamber, wherein said first delivering means comprises at least one first elongated passageway extending through said housing and arranged in liquid communication with said first chamber, and an elongated first plunger receivable in each said at least one first passageway for pushing components of a reaction system along said at least one first passageway and into said first chamber; said second delivering means comprising at least one second elongated passageway extending through said housing and arranged in liquid communication with said second chamber, and an elongated second plunger receivable in each said at least one second passageway for pushing components of a reaction system along said at least one second passageway and into said second chamber; said first delivering means further comprising an elongated sample duct extending through said housing and arranged in liquid communication with said first chamber, and an elongated sample collector receivable in said duct and configured to extend therethrough for positioning a sample in proximity to said first chamber.

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5,290,518

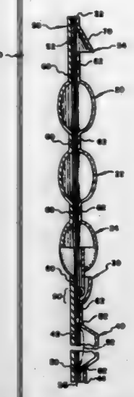
FLEXIBLE EXTRACTION DEVICE WITH BURSTABLE SIDEWALL

Randall S. Johnson, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 931,231, Aug. 17, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 5,686

Int. Cl.[5] G01N *31/22, 33/50*

U.S. Cl. 422—58 14 Claims



1. A generally flexible extraction device containing a predisposed reactant, comprising

first and second plastic sheets superimposed and sealed together by first seal means to comprise a spaced compartment, a reagent in said compartment, said second sheet being thinner and more burstable than said first sheet so as to allow rupturing of said compartment through said second sheet at a predictable force, a third plastic sheet attached by second seal means to said first two sheets with said second sheet being between, and generally parallel to, said first and third sheets, said second sheet being unsupported at said compartment other than at said first and said second seal means, so as to expand and burst upon an applied external pressure, said third sheet being formed so as to be spaced away from said first and second sheets adjacent to said compartment and to comprise a reaction chamber and inlet means for introducing a specimen between said third and second sheets to said reaction chamber, an exit aperture, and a flow path for liquid extending between said second and third sheets and between said inlet means and said exit aperture,

each of said seal means being stronger than the burst strength of said second sheet.

5,290,519

TEST FOR THE RAPID EVALUATION OF ISCHEMIC STATES AND KIT

David Bar-Or, Englewood, and Clive Solomons, Denver, both of Colo., assignors to Diagnostic Markers, Inc., Englewood, Colo.

Division of Ser. No. 736,583, Jul. 26, 1991, Pat. No. 5,227,307. This application Feb. 12, 1993, Ser. No. 16,971

Int. Cl.[5] G01N *21/78, 33/68*

U.S. Cl. 422—61 18 Claims

1. A kit for detecting the occurrence of non-occurrence of an ischemic event in a patient, said kit consisting essentially of a metal salt, wherein said salt contains a metal ion selected from the group consisting of V, As, Co, Sb, Cr, Mo, Mn, Ba, Zn, Ni, Hg, Cd, Fe, Pb, Au and Ag, and a color forming compound capable of forming a colored compound with said metal salt, wherein said color forming compound is a C_{2-6} alkyl thioalcohol, C_{2-6} alkyl thioamine, C_{2-10} alkyl thiomonocarboxylic acid, C_{2-10} alkyl thiodicarboxylic acid, C_{2-10} alkyl dithio-dicarboxylic acid, di-C_{1-6} alkyl dithiocarbamic acid, thiol-containing amino acid, thiol-containing peptide, thiol-containing enzyme, metal hydroxide, ammonium hydroxide, metal cyanide or ammonium thiocyanate.

5,290,520

ANALYTIC SEPARATION ARRANGEMENT AND METHOD FOR THE ANALYSIS OF CHEMICAL SAMPLES

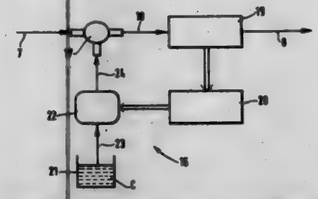
Francois Maystre, Reinach, and Alfredo E. Bruno, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,213

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 91810991

Int. Cl.[5] G01N *21/01, 30/74*

U.S. Cl. 422—82.05 9 Claims



1. An analytic separation arrangement comprising:

a) a first reservoir containing a carrier having a nominal refractive index;

b) a second reservoir containing a chemical sample;

c) separating means for separating a sample into components;

d) refractive index equalizing means for controlling the refractive index of the carrier by detecting the refractive index of the carrier and adding a compensating agent to the carrier in response to the detected refractive index;

e) an optical detector for monitoring the absorption, fluorescence or optical activity of the carrier;

f) a waste container; and

g) transporting means for transporting the carrier from the first reservoir to the separating means, introducing the sample into the carrier between the first reservoir and the separating means, and transporting the carrier in series, via connecting tubes, through the separation means, the refractive index equalizing means, the optical detector, and into the waste container.

5,290,521

LAB-TOP WORK STATION

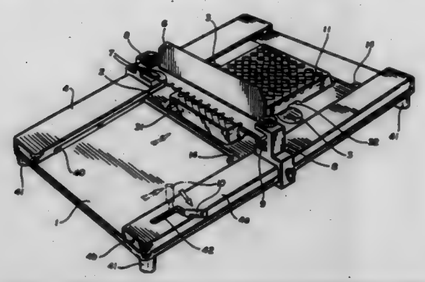
Albert M. DeStefano, Jr., 75 First Ave. & Tillman St., Raritan, N.J. 08869

Filed Sep. 4, 1992, Ser. No. 940,508

Int. Cl.[5] B01L *3/00, 9/00*

U.S. Cl. 422—99 8 Claims

1. A manual lab-top work station comprised of a fat base means, a slide or plate holding means supported on said flat base means between guide means, a bridge means adapted to support a manual liquid dispensing pipette means having a plurality of manual liquid dispensing pipette tip means at a predetermined location with respect to said slide or plate holding means and to guide the pipette means to a precise plate or slide location, bridge support means horizontally fixed to said flat base means for supporting the bridge means above said flat base means for incrementally manually moving said slide or plate holding means a predetermined distance on said flat base means and wherein said guide means guides the slide or plate



means in a fixed orientation past said horizontally fixed bridge support means.

5,290,522

CATALYTIC CONVERTER MOUNTING MAT

John J. Rogers, St. Paul; John L. Erickson, White Bear Lake, and Stephen M. Sanocki, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 7, 1993, Ser. No. 1,178

Int. Cl.[5] B01D *53/36*

U.S. Cl. 422—179 13 Claims

1. A catalytic converter comprising a metallic casing, a unitary, solid catalytic element disposed within said casing, and a nonwoven mat positioned between said catalytic element and said metallic casing, said nonwoven mat comprising at least 60 percent by weight shot-free, high strength magnesium aluminosilicate glass fibers, based on the total weight of said mat, said glass fibers having a diameter greater than 5 micrometers, a length greater than about 0.5 cm, and comprising in the range from about 4 to about 20 percent by weight magnesium oxide, about 12.6 to about 32 percent by weight aluminum oxide, and about 79.9 to about 55 percent by weight silicon oxide, based on the total weight of said glass fibers, wherein said weight percent of magnesium oxide, aluminum oxide, and silicon oxide is calculated on a theoretical oxide basis as MgO, Al_2O_3, and SiO_2, respectively.

5,290,523

METHOD AND APPARATUS FOR UPGRADING CARBONACEOUS FUEL

Edward Koppelman, 4424 Gergano Dr., Encino, Calif. 91316

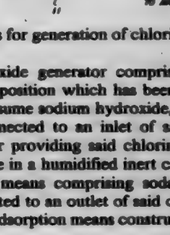
Continuation-in-part of Ser. No. 850,562, Mar. 13, 1992, abandoned. This application Sep. 28, 1992, Ser. No. 952,330

Int. Cl.[5] F28D *7/16*

U.S. Cl. 422—201 56 Claims

1. Apparatus for increasing the BTU value of solid granular carbonaceous material, comprising:

heat exchange means having an outer casing, an inlet for a charge of solid granular carbonaceous material at a first end of said outer casing and an outlet at a second end of said outer casing, said second end being spaced apart from the first end, at least one tube member contained within said casing for receiving a charge of solid granular carbonaceous material, valve means located along said first end for distributing the charge into said at least one tube member and outlet means located along said second end for removing the charge from said outlet, said at least one tube member being disposed between the inlet and outlet;



means coupled to the heat exchange means for introducing pressurized gas into said at least one tube member;

means for circulating a heat exchange medium throughout said outer casing and in contact with said at least one tube, wherein said heat exchange medium is heated to a temperature of between about 250° F. and about 1200° F.; and

means for conveying the solid granular carbonaceous material extending away from said heat exchange means at the second end.

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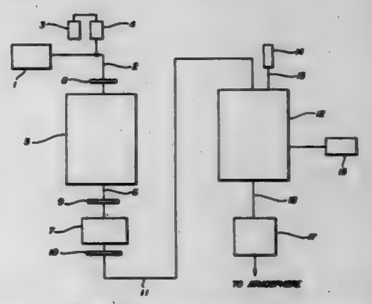
METHOD AND APPARATUS FOR CHLORINE DIOXIDE MANUFACTURE

Aaron Rosenblatt, New York, N.Y.; David H. Rosenblatt, Baltimore, Md.; David Feldman, New York, N.Y.; Joseph E. Knapp, Pittsburgh, Pa.; Diane Battisti, Greensburg, Pa., and Badie Morsi, Pittsburgh, Pa., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 408,153, Sep. 14, 1989, Pat. No. 5,110,580. This application Apr. 29, 1992, Ser. No. 875,884

Int. Cl.[5] B01J *7/00*

U.S. Cl. 422—305 5 Claims



1. An apparatus for generation of chlorine dioxide, comprising

a chlorine dioxide generator comprising a solid sodium chlorite composition which has been pretreated with an agent to consume sodium hydroxide,

a gas line connected to an inlet of said chlorine dioxide generator for providing said chlorine dioxide generator with chlorine in a humidified inert carrier gas, and

an adsorption means comprising soda-lime in particulate form connected to an outlet of said chlorine dioxide generator, said adsorption means constructed and arranged to

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selectively remove chlorine from the gas mixture comprising chlorine dioxide and chlorine obtained from said chlorine dioxide generator.

5,290,525

REMOVAL OF BASE METALS AND CYANIDE FROM GOLD-BARREN CIP SOLUTIONS

Vaikuntam I. Lakshmanan, Mississauga, Canada, assignor to Ortech Corporation, Mississauga, Canada

Continuation of Ser. No. 674,677, Mar. 25, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 945,018

Claims priority, application United Kingdom, Mar. 30, 1990, 9007122

Int. Cl.[5] C01G *49/00, 9/00, 3/00*

U.S. Cl. 423—24 **5 Claims**

1. A process for substantially removing base metals from gold-barren cyanide leachate comprising contacting said leachate with a strong base anion exchange resin conditioned by treatment with a solution with a cyanide salt for a sufficient time to remove said base metals followed by separation of said leachate from said resin.

5,290,526

PROCESSES TO RECOVER AND RECONCENTRATE GOLD FROM ITS ORES

Dennis G. Kleid, Foster; William J. Kohr, San Mateo, and Francis R. Thibodeau, Oakland, all of Calif., assignors to Geobiotics, Inc., Hayward, Calif.

Continuation of Ser. No. 677,592, Mar. 26, 1991, Pat. No. 5,152,969, which is a continuation of Ser. No. 441,836, Nov. 27, 1989, abandoned. This application Jul. 1, 1992, Ser. No. 907,919

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] C22B *11/00, 3/00;* **B01D** *11/00;* **C01G** *7/00*

U.S. Cl. 423—29 **16 Claims**

6. A process for recovering gold from gold ore bodies comprising the steps of:

a. culturing at least one fungal species capable of producing cyanide ion in a shallow pond or vessel under conditions wherein said species produces cyanide ion, and wherein said species is at an approximate concentration of 10 mg/l to 10 g/l, thus forming a cyanide ion containing and producing culture;

b. pumping said culture into or upon a fractured milled or crushed ore body, said ore body containing gold in an amount of at least 0.02 oz/ton;

c. contacting said cyanide ion containing and producing culture with gold ore, thereby causing production of gold ion-cyanide ion complexes and dissolution of gold from the gold ore;

d. removing, by biosorption, gold ion-cyanide ion complexes from solution to said culture thereby driving the gold dissolution reaction forward;

e. removing said culture from said ore body;

f. separating gold containing fungi from said culture to form a sludge layer comprising said fungi and an aqueous solution;

g. recycling said aqueous solution to said pond of step (a);

h. reclaiming gold from said sludge layer by further refining.

5,290,527

MOLYBDENUM RECOVERY

Edward T. Marquis; Howard F. Payton, both of Austin, Tex., and Robert A. Meyer, Ballwin, Mo., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 5, 1992, Ser. No. 971,741

Int. Cl.[5] C01G *39/00*

U.S. Cl. 423—54 **5 Claims**

1. In a method for recovering molybdenum values from the liquid portion of an ammonia-treated, non-distillate residual fraction from a process for epoxidation of olefin with organic hydroperoxide in the presence of a molybdenum catalyst, wherein the ammonia-treated liquid residual fraction is heated to a temperature in the range of about 100° to 300° C. at a pressure in the range of about 1 to 100 mmHg, absolute, in an evaporation zone for forming an evaporator overhead vapor fraction essentially free of molybdenum and comprising about 80 to 95 wt % of the residual fraction, and an evaporator concentrate containing essentially all the molybdenum in the ammonia-treated liquid residual fraction, the improvement which comprises:

(a) maintaining 1 to 3 wt % water in the evaporator overhead vapor fraction sufficient to prevent deposition of solid ammonium salts therefrom; and

(b) rapidly cooling the evaporator concentrate fraction from evaporation temperatures to about room temperature at a rate of at least about 2° C. per minute, sufficient to convert the evaporator concentrate into a brittle, non-tacky solid at room temperature.

5,290,528

PROCESS FOR REMOVING ARSENIC FROM SOIL

Mark A. O'Connor, and Rodney J. O'Connor, both of College Station, Tex., assignors to Texas Romec, Inc., College Station, Tex.

Filed Feb. 12, 1992, Ser. No. 836,057

Int. Cl.[5] C01G *28/00*

U.S. Cl. 423—87 **17 Claims**

1. A method for treating soil contaminated with arsenic which comprises the steps of

a. contacting the contaminated soil with a carbonated aqueous solution for a time sufficient to leach arsenic from the soil into the aqueous solution;

b. separating the leached soil from the aqueous solution containing the leached arsenic.

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METHOD OF TREATING SILICA FUMES FOR WHITENING PURPOSES

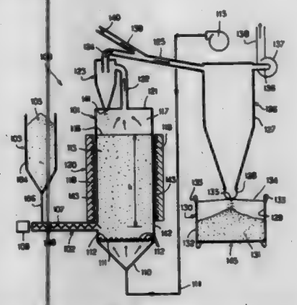
Francois Baudequin, Eaubonne, France, assignor to Electricite De France (Service National), France

Filed Dec. 17, 1991, Ser. No. 809,440

Claims priority, application France, Dec. 17, 1990, 90 15765

Int. Cl.[5] C01B *33/12*

U.S. Cl. 423—337 **13 Claims**



1. A method for treating blackened silica fumes for whitening purposes, where said blackened silica fumes comprise a plurality of silica particles coated with carbon, said method comprising the steps of:

injecting said blackened silica fumes having a diameter less than one micrometer into a heated dense fluidized bed including a plurality of sand particles, said dense bed having a depth determines by a means grain size of said plurality of silica particles;

oxidizing the carbon with fluidization air while the silica fumes pass through the dense fluidized bed; and

recovering said plurality of silica particles having said diameter less than one micrometer which have passed through said dense fluidized bed.

5,290,530

METHOD OF CLEANING EXHAUST GAS

Gyo Muramatsu; Akira Abe; Kiyohide Yoshida; Satoshi Sumiya; Nobuyuki Matsumura, and Yoshikazu Takahashi, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Kumagaya, Japan

Filed May 29, 1992, Ser. No. 891,180

Claims priority, application Japan, May 31, 1991, 3-155206; May 31, 1991, 3-155212; Jun. 6, 1991, 3-162004; Oct. 28, 1991, 3-308439

Int. Cl.[5] B01J *8/00, 8/02;* **C01B** *21/00, 23/00*

U.S. Cl. 423—239.1 **3 Claims**

1. A method of cleaning an exhaust gas containing nitrogen oxides and particulate matter, which comprises using an exhaust gas cleaner comprising a heat-resistant porous filter; a porous ceramic powder layer formed on said filter, in the amount of 3–15 parts by weight per 100 parts by weight of the filter; and a catalyst in the amount of 1–40 weight % based on the ceramic powder layer and supported by said ceramic powder layer, said catalyst consisting essentially of (a) at least one alkali metal element in the amount of 10–50 weight % based on the total weight of the catalyst on a metal basis, (b) cobalt, manganese, or a combination of cobalt and manganese, in the amount of 15–65 weight % based on the total weight of the catalyst on a metal basis, (c) vanadium in the amount of 15–65 weight % based on the total weight of the catalyst on a metal basis, with the total amount of components (b) and (c) being 30–80 weight %, and (d) at least one rare earth element in the amount of 10–50 weight % based on the total weight of the catalyst on a metal basis, whereby said nitrogen oxides are reduced by said particulate matter in said exhaust gas serving as a reducing agent.

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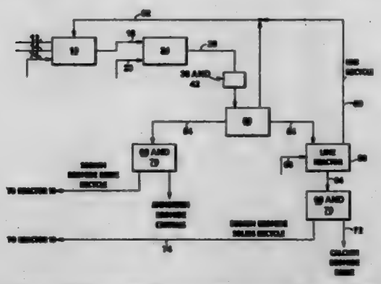
METHOD OF MAKING AMMONIUM BROMIDE AND CALCIUM BROMIDE

Russell A. Fisher; Surendra K. Mishra, both of The Woodlands, and Ross T. Swartwout, Houston, all of Tex., assignors to Tetra Technologies, Inc., The Woodlands, Tex.

Filed Mar. 18, 1992, Ser. No. 853,392

Int. Cl.[5] C01C *1/16;* **C01F** *11/34*

U.S. Cl. 423—470 **23 Claims**



5. A method of making ammonium bromide, comprising the steps of:

(a) introducing ammonia and carbon dioxide or a reaction product of ammonia and carbon dioxide into a reactant solution comprising sodium bromide brine to provide a product solution comprising ammonium bromide, ammonium bicarbonate, and a sodium bicarbonate precipitate;

(b) removing from the product solution the sodium bicarbonate precipitate; and

(c) recovering solid ammonium bromide from the product solution by evaporative crystallization.

5,290,532

PREPARATION OF HYDRIDOMAGNESIUM CHLORIDE

Won S. Park, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 880,897, May 8, 1992, abandoned, which is a continuation of Ser. No. 562,224, Aug. 3, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 19,506

Int. Cl.[5] C01B *6/00*

U.S. Cl. 423—472 **15 Claims**

1. A process which comprises reacting magnesium hydride and magnesium chloride in a hydrocarbon solvent and in the presence of a catalytically-effective amount of trialkylaluminum to form hydridomagnesium chloride.

5,290,533

METHOD FOR PRODUCTION OF A COATED SUBSTRATE WITH CONTROLLED SURFACE CHARACTERISTICS

Giuseppe Bellussi, Piacenza; Mario G. Clerici, San Donato Milanese; Aldo Giusti, Lucca, and Franco Buonomo, San Donato Milanese, all of Italy, assignors to Eniricerche S.p.A., Milan; Enichem Synthesis S.p.A., Palermo and Snamprogetti S.p.A., Milan, Italy

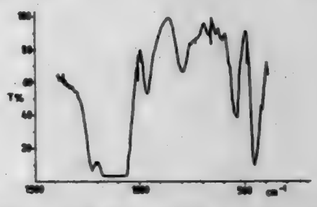
Continuation of Ser. No. 548,196, Jul. 5, 1990, abandoned, which is a continuation of Ser. No. 434,558, Nov. 8, 1989, abandoned, which is a continuation of Ser. No. 943,544, Dec. 17, 1986, abandoned. This application Aug. 16, 1991, Ser. No. 750,240

Claims priority, application Italy, Dec. 19, 1985, 23292 A/85

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—704 **17 Claims**



1. Process for preparing a synthetic crystalline and porous material having a zeolite nature, containing oxides of silicon, titanium and iron, having, in its calcined and anhydrous state the empirical formula:

$$pHFeO_2 \cdot qTiO_2 \cdot SiO_2$$

wherein p has a value greater than zero and smaller than or equal to 0.050, and q has a value greater than zero and smaller than or equal to 0.025, the hydrogen of $HFeO_2$ being at least partially substitutable by cations, said process comprising: reacting under hydrothermal conditions a source of silicon, a source of titanium, a source of iron and a nitrogenous organic base, with a SiO_2/Fe_2O_3 molar ratio in the reaction mixture greater than 50, with a SiO_2/TiO_2 molar ratio in the reaction mixture greater than 5, and with a H_2O/SiO_2 molar ratio from 10 to 100, at a temperature from 120° C. to 200° C., at a pH from 9 to 14 and for a time from 1 hour to 5 days.

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METHOD FOR REMOVING ORGANIC RESIDUE FROM AS-SYNTHESIZED ZSM-18

Ying-Yea P. Tsao, Lahaska, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 9, 1992, Ser. No. 973,510

Int. Cl.[5] C01B *33/34;* **B01J** *29/32*

U.S. Cl. 423—704 **19 Claims**

7. A method for preparing ZSM-18 which is essentially free

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of residual organic ... agent, said method comprising the steps of:

(i) forming an aqueous reaction mixture capable of forming ZSM-18, said reaction mixture comprising a directing agent which is 1,3,4,6,7,9-hexahydro 2,2,5,5,8,8-hexamethyl-2H-benzo (1,2-C:3,4-C':5,6-C'') tripyrolium trihydroxide, a source of sodium cations, a source of silica and a source of alumina, said reaction mixture having a composition, expressed in terms of mole ratios of T and oxides, as follows:

SiO_2/Al_2O_3 =	5–30
Na_2O/Al_2O_3 =	0.2–5
H_2O/Al_2O_3 =	200–1500
T/Al_2O_3 =	1–10

where T is said directing agent;

(ii) placing within said reaction mixture a noble metal-containing precursor in an amount sufficient to occlude the noble metal on said ZSM-18 when reduced with hydrogen;

(iii) maintaining said reaction mixture of step (i) under conditions sufficient to form crystals of ZSM-18;

(iv) separating said ZSM-18 crystals from step (iii) from mother liquor of said reaction mixture by filtering and washing said crystals with water, whereby an as-synthesized form of ZSM-18 is obtained, said as-synthesized ZSM-18 having a residue of said organic directing agent in pores of said ZSM-18 and a noble metal-containing precursor occluded thereon;

(v) contacting said ZSM-18 from step (iv) with hydrogen under conditions sufficient to reduce noble metal contained in said precursor to a free metal;

(vi) calcining in air the ZSM-18 from step (v) with the noble metal thereon under conditions sufficient to substantially remove said residue; and

(vii) calcining in air said ZSM-18 from step (vi) under conditions sufficient to remove any remaining residue from said ZSM-18 without suffering crystallinity loss.

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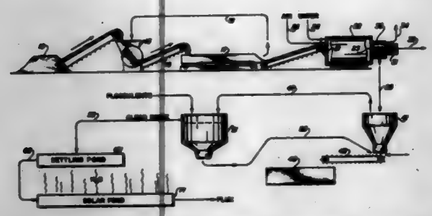
PROCESS FOR RECYCLING SALTCAKE

Dale A. Zack; Gene J. Kulik, both of Phoenix, and Henry C. Johns, Peoria, all of Ariz., assignors to IMSALCO, Goodyear, Ariz.

Filed Apr. 9, 1993, Ser. No. 45,677

Int. Cl.[5] C01F *7/02*

U.S. Cl. 423—627 **13 Claims**



1. A process for recycling saltcake, wherein said saltcake is in chunks larger than four inches in diameter and includes insoluble and soluble components, wherein the insoluble components include aluminum metal and aluminum oxide and the soluble components include chloride salts of sodium and potassium, said process comprising the steps of:

breaking the saltcake into chunks having a diameter of four inches or less;

feeding said chunks to a mill having a rotatable cylinder;

feeding unheated water to said cylinder;

rotating said cylinder to form a slurry of insoluble components in a brine of soluble components and to liberate entrained aluminum metal;

withdrawing said slurry from said cylinder; and

separating the aluminum metal from the aluminum oxides and brine.

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PHENYL SUBSTITUTED 2-THIAZOLYL TETRAZOLIUM SALT INDICATORS

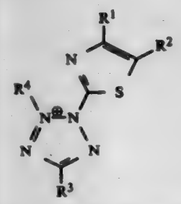
Jürgen Köcher, Langenfeld, and Klaus Wehling, Wuppertal, both of Fed. Rep. of Germany, assignors to Miles Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 853,352, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 585,725, Sep. 19, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,174

Int. Cl.[5] C07D *417/04*; G01N *33/487*; C12Q *1/26*

U.S. Cl. 424—7.1 **17 Claims**

1. Phenyl substituted 2-thiazolyl tetrazolium salt indicators characterized by the formula:



wherein R^1 and R^2 are such that the 2-thiazolyl group is 4,5-bis(4-methoxyphenyl)thiozol-2-yl; 4,5-diphenylthiazol-2-yl; 4-phenylthiazol-2-yl; 4-phenyl-5-methylthiazol-2-yl or 4-naphthyl-5-phenylthiazol-2-yl; wherein R^4 is 4-carboxyphenyl; phenyl; 3-pyridyl; 4-nitrophenyl; 3,5-dicarboxyphenyl; 4-nitrophenyl; 8-quinolyl; or 3,4,5-trimethoxyphenyl; wherein R^3 is 3,4-methylenedioxyphenyl; 4-methoxyphenyl; 2-thienyl, 4-fluorophenyl; or 3-thienyl and $X^{\ominus}$ is a counteranion and wherein the compounds are further characterized in that the reflectance spectra exhibited by each of said compounds when reduced to its colored formazan state varies by less than about 17% over a wavelength range of 50 nm when the midpoint of the 50 nm range is 640 nm or greater.

5,290,537

COMPOSITIONS FOR MAGNETIC RESONANCE IMAGING

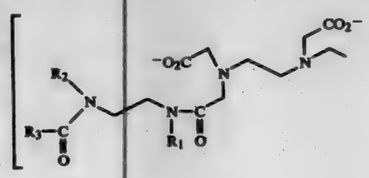
Dennis A. Moore, Ferguson, and Rebecca A. Wallace, Manchester, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 875,503, Apr. 29, 1992, Pat. No. 5,208,375, which is a division of Ser. No. 724,653, Jul. 2, 1991, Pat. No. 5,138,040. This application Feb. 12, 1993, Ser. No. 16,630

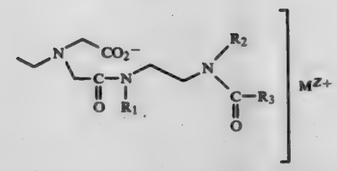
Int. Cl.[5] A61K *49/00*

U.S. Cl. 424—9 **6 Claims**

1. A diagnostic composition suitable for enteral or parenteral administration to a warm-blooded animal, which comprises an MRI-effective amount of a complex of a paramagnetic ion comprising the following formula:



-continued



wherein the R_1, R_2 and R_3 groups may be the same or different selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} monohydroxyalkyl, C_{1-6} polyhydroxyalkyl, C_{1-6} alkylalkoxy and C_{1-6} alkoxyalkyl and M^{2+} is a paramagnetic ion selected from a group of elements having atomic numbers of 21–25, 27–29, 42–44, and 58–70 and a valence, z, of 2+ or 3+; and a pharmaceutically acceptable carrier.

5,290,538

NEPHRO PROTECTIVE INFUSION SOLUTIONS

Hagen Bertermann, Flensburger Strasse 83, D-2300 Kiel, Fed. Rep. of Germany

Continuation of Ser. No. 566,365, Oct. 15, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 873,579

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843241

Int. Cl.[5] A61K *49/00, 31/40, 31/195*

U.S. Cl. 424—10 **8 Claims**

1. Method of protecting a patient from renal damage caused by nephrotoxic effects of a cancer chemotherapeutic or immunosuppressant agent comprising administering intravenously to the patient in association with the cancer chemotherapeutic agent or immunosuppressant agent selected from the group consisting of carboplatin, cyclosporine A and cisplatin a pharmaceutically acceptable solution containing a nephroprotective amount of the following mixture of amino acids consisting of

9 to 11 grams/liter of glycine,

12 to 17 grams/liter of L-alanine,

10 to 18 grams/liter of L-serine,

2 to 5 grams/liter of L-threonine,

5 to 10 grams/liter of L-valine,

6 to 10 grams/liter of L-valine,

2 to 4 grams/liter of L-isoleucine, and

6 to 12 grams/liter of L-proline.

5,290,539

DEVICE FOR DELIVERING AN AEROSOL

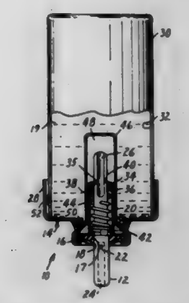
Paul E. Marecki, May Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 632,133, Dec. 21, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 809,796

Int. Cl.[5] B65D *83/14*; C08F *10/14*; A61K *9/12*

U.S. Cl. 424—45 **26 Claims**

1. A device for delivering an aerosol, comprising: a valve stem, a diaphragm having walls defining a diaphragm aperture, and a casing member having walls defining a casing aperture, wherein the valve stem passes through the diaphragm aperture and the casing aperture and is in slidable sealing engagement with the diaphragm aperture, and wherein the diaphragm is in sealing engagement with the casing member, the diaphragm material comprising: a thermoplastic elastomer comprising a copolymer of about 80 to about 95 mole percent ethylene and a total of about 5 to about 20 mole percent of one or more



comonomers selected from the group consisting of 1-butene, 1-hexene, and 1-octene.

5,290,540

METHOD FOR TREATING INFECTIOUS RESPIRATORY DISEASES

Gregory A. Prince, Potomac, and Val G. Hemming, Gaithersburg, both of Md., assignors to Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, Md.

Continuation-in-part of Ser. No. 694,079, May 1, 1991, abandoned. This application May 1, 1992, Ser. No. 877,095

Int. Cl.[5] A61K *9/12*

U.S. Cl. 424—45 **22 Claims**

1. A method of treating pneumonia in a host, susceptible to or suffering from pneumonia caused by a microorganism selected from a virus, a bacterium, a fungus, and *Pneumocystis carinii*, comprising administering directly into the lower respiratory tract of the host an anti-inflammatory agent selected from a corticosteroid, indomethacin, ibuprofen, and acetylsalicylic acid at a dosage of from 0.1 μg to 1000 mg/kg body weight of the host to reduce inflammation and an anti-infectious agent with activity against said microorganism at a dosage of from 0.1 μg to 1000 mg/kg body weight of the host to reduce the concentration of said microorganism; the anti-inflammatory agent and the anti-infectious agent being administered in the form of a small particle aerosol having a size less than 10 microns.

5,290,541

METHODS FOR MAKING ORAL COMPOSITIONS

Nong Liang, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 18, 1992, Ser. No. 900,640

Int. Cl.[5] A61K *7/16, 7/26, 9/10*

U.S. Cl. 424—49 **6 Claims**

1. Aqueous dentifrice compositions triclosan, anabrasive, a fluoride ion source, a polyethylene glycol, a flavor oil, a surfactant and water wherein triclosan is mixed with polyethylene glycol nd flavor oil to form a triclosan microemulsion premix wherein the particle size of the triclosan, flavor and surfactant aggregate are less than about 12 nanometers in diameter by quasi elastic light scattering analysis when said microemulsion premix, consisting of the flavor, polyethylene glycol, and tuclosan is mixed with surfactant, water, and fluoride, and wherein the ratio of surfactant to triclosan plus flavor oil is equal to or greater than the critical point where the microemulsion of the triclosan will form.

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5,290,542
ORAL COMPOSITIONS FOR TREATING PLAQUE AND GINGIVITIS

Nong Liang, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 9, 1993, Ser. No. 45,743
Int. Cl.[5] A61K 7/16, 7/18, 7/20
U.S. Cl. 424—52 17 Claims

1. Aqueous oral antibecterial bicarbonate dentifrice compositions comprising a non-cationic water insoluble antiplaque agent, in a flavor oil and surfactant micro-emulsion consisting essentially of a solvent for said agent, a surfactant, a bicarbonate salt and water and wherein said composition has a neat pH of from about 8.5 to about 9.5 and said composition contains from about 10% to about 50% of bicarbonate, from about 1% to about 10% of a flavor oil, from about 0.2% to about 7% of a surfactant from about 0.01% to about 5% of an antibecterial, and at least about 10% water and is substantially free of potassium ions.

5,290,543
LONG WEARING NAIL ENAMEL TOPCOAT AND RELATED METHODS

Hovig Ounanian, Princeton Junction; Joseph DiSomma, Ramsey; Debra Coleman, Piscataway; Robert W. Sandewicz, Spotswood, and Anthony Castrogiovanni, Belford, all of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation of Ser. No. 690,472, Apr. 24, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,130
Int. Cl.[5] A61K 7/043
U.S. Cl. 424—61 7 Claims

1. A nail enamel topcoat composition consisting of:

	w/w %
Toluene	30–40
Ethyl acetate	10–20
N-butyl acetate	10–20
½ sec. nitrocellulose	5–15
Santolite MHP (toluene sulfonamide formaldehyde resin)	5–15
Isopropyl alcohol	5–15
Dibutyl phthalate	1–10
N-butyl alcohol	1–5
Camphor	0.5–5
Polyvinyl butyral resin	0.5–5
¼ sec. nitrocellulose	0.5–5
30–40 sec. nitrocellulose	0.5–1.5

5,290,544
COSMETIC PRODUCTS CONTAINING A SOLUBLE GLASS

Fujio Shimono, Chita; Koichi Yamamoto, Nagoya; Toshiyuki Ouishi, Ichinomiya, and Ryota Miyoshi, Yono, all of Japan, assignors to Ishizuka Garasu Kabushiki Kaisha, Aichi, Japan

Filed Feb. 21, 1992, Ser. No. 838,692
Claims priority, application Japan, Feb. 22, 1991, 3-114188
Int. Cl.[5] A61K 7/027, 7/035
U.S. Cl. 424—63 6 Claims

1. Cosmetic products comprising a cosmetic base and particles of a soluble glass having an average particle size of 20 μm or less, said soluble glass comprising Ag+, and having a rate of eluting of said Ag+ in water of from about 0.00001–50 mg per hour per gram of glass on the condition that the soluble glass has a particle size of 420–600 μm and the water has a temperature of 20° C., wherein said cosmetic base comprises a solid material free from water, which is selected from the group consisting of powder foundation, eye shadow, lipstick, body powder and baby powder, and said soluble glass comprises a moisture absorbing substance.

5,290,545
HAIR TREATMENT WITH BLENDED SILICONES

Daniel J. Halloran, and Scott A. Dambalmer, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 12, 1992, Ser. No. 897,639
Int. Cl.[5] A61K 7/06, 7/09
U.S. Cl. 424—70 4 Claims

1. A shampoo composition comprising 10–80 percent by weight of a carrier; 0.5–5.0 percent by weight of a mixture of a polydiorganosiloxane gum and an amine functional siloxane polymer; and 7–35 percent by weight of a water soluble anionic surfactant; the polydiorganosiloxane gum having the average unit formula $R_aSiO_{4-a/2}$ in which each R substituent is a monovalent radical selected from the group consisting of a methyl radical, a vinyl radical, a phenyl radical, and a 3,3,3-trifluoropropyl radical, a has an average value of 1.95–2.005 inclusive, at least ninety percent of the total number of R substituents being methyl radicals, the molecules of the polydiorganosiloxane gum being terminated by a substituent selected from the group consisting of silanols, alkoxys, and $R_3SiO_{0.5}$, in which R is the same as defined above; the amine functional siloxane polymer having the formula:

$$R_{3-z'}Q_zSiO[R_2'SiO]_x[R'QSiO]_ySiQ_zR_{3-z'}$$

wherein R' denotes an alkyl group of 1 to 4 carbons or a phenyl group with the proviso that at least 50 percent of the total number of R' groups are methyl; Q denotes an amine functional substituent of the formula —R''Z wherein R'' is a divalent alkylene radical of 3 to 6 carbon atoms and Z is a monovalent radical selected from the group consisting of $—NR_2'''$, and $—NR'''(CH_2)_nNR_2'''$; wherein R''' denotes hydrogen or an alkyl group of 1 to 4 carbons, R'''' denotes an alkyl group of 1 to 4 carbons, and n is a positive integer having a value of from 2 to 6; z has a value of 0 or 1; x has an average value of 25 to 3000; y has an average value of 0 to 100 when z is 1, y has an average value of 1 to 100 when z is 0; with the proviso that in all cases y has an average value that is not greater than one tenth the average value of x said composition having improved shelf stability and hair conditioning properties as compared to the same composition not containing amine-functional siloxane polymer.

5,290,546
METHOD FOR THERMAL VAPORIZATION OF CHEMICAL

Takahiro Hasegawa; Takanobu Kashihara; Junichiro Mesaki, and Akira Nishimura, all of Ako, Japan, assignors to Earth Chemical Co., Ltd., Ako, Japan

Division of Ser. No. 710,482, Jun. 5, 1991, abandoned, which is a division of Ser. No. 425,211, Oct. 6, 1989, Pat. No. 5,038,394. This application Sep. 9, 1992, Ser. No. 942,360
Claims priority, application Japan, Feb. 10, 1988, 63-16533; Jun. 1, 1988, 63-72878; Aug. 23, 1988, 63-110371; Nov. 17, 1988, 63-150437
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] A61L 9/01, 9/02, 9/03; A01N 57/00
U.S. Cl. 424—76.2 1 Claim

1. A method of releasing a chemical into a gas atmosphere, comprising the step of thermally vaporizing a solution of said chemical in a solvent in a thermal vaporizer provided with an integral plug for insertion into an electrical outlet, said thermal vaporizer comprising:
- a vaporizer body;
- a ring heater mounted within said vaporizer body;
- a wick having a cross sectional area, for drawing up a chemical solution from a bottle which wick is insertable into the ring heater concentrically therewith;
- a socket disposed under said heater with spacing therebetween;
- a bottle fittable in the form of a removable cap to said socket such that when the bottle is in place, one or more openings are provided for said wick;
- at least one air outlet formed in the top portion of said vaporizer body, said air outlets having a total opening area that is 2 to 40 times the cross sectional area of said wick;
- at least one air intake formed in the bottom portion of the body and having a total opening area that is 1.5 to 20 times the cross sectional area of said wick; and
- a plug electrically connected to said ring heater,

wherein said chemical has a vapor pressure of at least 3.5×10^{-8} mm/20° C. and said solvent has a boiling point of not more than 350° C., the concentration of the chemical being in the range of about 1% by weight to about 80% by weight.

5,290,547
MACROEMULSION HAVING AN ODOR-COUNTERACTING DISCONTINUOUS PHASE

James M. Bilbrey, Dayton, Ohio, assignor to Ronald T. Dodge Co., Dayton, Ohio

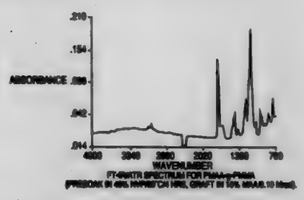
Continuation of Ser. No. 606,559, Oct. 31, 1990, abandoned. This application Apr. 16, 1992, Ser. No. 870,791
Int. Cl.[5] A61L 11/00
U.S. Cl. 424—76.6 27 Claims

1. A macroemulsion that is to be applied to a substrate to solidify thereon and that comprises:
- (a) from about 4% to about 25% by weight discrete droplets of odor counteractant oil immiscible with water and having a diameter between about 2 μ and 300 μ;
- (b) a continuous liquid phase enveloping the discrete droplets and comprising an aqueous solution of water-soluble polymer binder, the binder having a weight between about 15% and 45% of the weight of the macroemulsion, and the water having a weight between about 40% and 75% of the weight of the macroemulsion, the droplets being suspended in the water-soluble polymer without any intervening shell; and
- (c) optionally, a surfactant.

5,290,548
SURFACE MODIFIED OCULAR IMPLANTS, SURGICAL INSTRUMENTS, DEVICES, PROSTHESES, CONTACT LENSES AND THE LIKE

Eugene P. Goldberg; Ali Yahiaoui, and Khalid Mentak, all of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 555,377, Jul. 19, 1990, Pat. No. 5,080,893, Ser. No. 592,478, Oct. 5, 1990, Pat. No. 5,108,776, Ser. No. 592,482, Oct. 5, 1990, Pat. No. 5,100,689, and Ser. No. 592,483, Oct. 5, 1990, Pat. No. 5,130,160, which is a continuation-in-part of Ser. No. 304,479, Feb. 1, 1989, Pat. No. 4,961,954, which is a continuation-in-part of Ser. No. 37,153, Apr. 10, 1987, Pat. No. 4,806,382. This application Mar. 30, 1992, Ser. No. 859,016
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] C08J 7/06, 7/18; C08F 291/18, 220/26, 226/08; A61F 2/00; A61L 27/00; G02C 7/04
U.S. Cl. 424—78.18 17 Claims



1. A method for modifying a plastic surface of an article, said surface adapted for contact with living tissue of a human or non-human animal, by the gamma irradiation induced polymerized chemically grafted coating thereon of:
- (1) a neutral or ionic water-soluble, hydrophilic, vinylic monomer or salt thereof;
- (2) a mixture of at least two of said monomers, or
- (3) a mixture of (1) or (2) with up to about 50%, by weight, based on the total monomer weight, of a member selected from the group consisting of N-vinylpyrrolidone, 2-hydroxyethyl-methacrylate, and mixtures thereof; so as to form a hydrophilic graft polymer coating on said surface comprising:

conducting said gamma irradiation induced graft polymerization in an aqueous solution under the following conditions:
- a) total monomer concentration in the range of from about 0.1% to about 50%, by weight;
- b) total gamma dose in the range of from about 0.001 to less than about 0.50 Mrad; and
- c) gamma dose rate in the range of from about 10 to about 2,500 rads/min.

5,290,549
METHOD FOR REDUCING ATHEROSCLEROTIC LESIONS IN A MAMMAL

Marc B. Garnick, Brookline, Mass., assignor to Genetics Institute, Inc.-Legal Affairs, Cambridge, Mass.

Continuation-in-part of Ser. No. 709,451, Jun. 9, 1991, abandoned, which is a continuation of Ser. No. 281,432, Dec. 8, 1988, Pat. No. 5,021,239, which is a continuation-in-part of Ser. No. 170,478, Mar. 21, 1988, Pat. No. 5,019,381. This application Oct. 16, 1992, Ser. No. 961,993
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] A61K 37/02
U.S. Cl. 424—85.1 1 Claim

1. A method for reducing atherosclerotic lesions in a mammal afflicted with such lesions comprising administering to said mammal afflicted with such lesions a therapeutically effective amount of an M-CSF protein in admixture with a pharmaceutically acceptable carrier.

5,290,550
METHOD OF TREATING ASTHMA USING IL-8

Robert H. Fisher, and W. James Metzger, both of Greenville, N.C., assignors to East Carolina University, Greenville, N.C.

Continuation of Ser. No. 732,210, Jul. 19, 1991. This application Jun. 7, 1993, Ser. No. 73,655
Int. Cl.[5] A61K 37/02
U.S. Cl. 424—85.2 12 Claims

1. A method of treating asthma in a subject in need of such treatment, comprising contacting an active agent selected from the group consisting of Interleukin-8 and active fragments thereof to the respiratory epithelium of said subject, said active agent being administered in an effective asthma-combatting amount.

5,290,551
TREATMENT OF MELANOMA WITH A VACCINE COMPRISING IRRADIATED AUTOLOGOUS MELANOMA TUMOR CELLS CONJUGATED TO A HAPTEN

David Berd, Wyncote, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 520,649, May 8, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 985,334
Int. Cl.[5] A61K 39/00, 37/66
U.S. Cl. 424—88 2 Claims

1. A vaccine useful for the treatment of melanoma comprising irradiated autologous melanoma cells conjugated to a hapten, said hapten selected from the group consisting of dinitrophenyl, trinitrophenyl, and N-iodoacetyl-N'-5 sulfonic

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1-naphtyl ethylene diamine; and mixed with an immunological adjuvant, wherein said immunological adjuvant is *Bacille Calmette-Guerin.*

5,290,552

SURGICAL ADHESIVE MATERIAL

David H. Sierra, San Jose; Edward E. Luck, and Dennis M. Brown, both of Menlo Park, all of Calif., assignors to Matrix Pharmaceutical, Inc./Project Hear, Menlo Park, Calif.

Continuation-in-part of Ser. No. 627,561, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 512,098, Apr. 10, 1990, abandoned, and a continuation of Ser. No. 189,187, May 2, 1988, abandoned. This application Mar. 23, 1992, Ser. No. 855,921

Int. Cl.[5] A61K *35/16, 37/547*

U.S. Cl. 424—94.64 **21 Claims**

1. A surgical adhesive useful in treating a patient in need thereof comprising in an aqueous composition:

(a) fibrinogen and Factor XIII (FXIII);

(b) collagen in an amount sufficient to enhance the rate of gelatin of the adhesive, said collagen being characterized by being fibrillar, insoluble at a pH greater than about 5, flowable, having substantially the native helical structure of collagen fibrils and capable of causing gelation of the subject adhesive; and

(c) thrombin and Ca^{++} in an amount sufficient to catalyze polymerization of said fibrinogen to produce a clot.

5,290,553

ALKALOIDS OF PICRALIMA NITIDA USED FOR TREATMENT OF PROTOZOAL DISEASES

Maurice M. Iwu, Silver Spring; Daniel L. Klayman, Chevy Chase; Joan E. Jackson, Rockville, all of Md.; John D. Tally, Washington, D.C., and Steven L. Andersen, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 22, 1991, Ser. No. 733,021

Int. Cl.[5] A61K *35/78, 31/44*

U.S. Cl. 424—195.1 **25 Claims**

1. Water, methanol and dichloromethane alkaloid extracts from seeds, fruit-rind and stem-bark of plants selected from the group consisting of *Picralima nitida, Gongronema latifolia, Rothmania withfieldii* and *Desmodium gangeticum.*

5,290,554

PROCESS FOR THE EXTRACTION OF PEAT AND APPARATUS FOR CARRYING OUT THE PROCESS

Stanislaw Tolpa; Tadeusz Gersz; Stanislawa Ritter; Ryszard Kukla; Malgorzata Skrzyszewska, and Stanislaw Tomkow, all of Wroclaw, Poland, assignors to Torf Establishment, Liechtenstein

Filed Mar. 16, 1992, Ser. No. 851,670

Claims priority, application European Pat. Off., Mar. 16, 1991, 91104099

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. Process for the extraction of peat in which the extracting agent is caused to flow through a bed of peat particles from the bottom to the top at such a rate that the flow remains laminar and the extract obtained remains essentially free of entrained particles of the peat to be extracted.

5,290,555

COSMETIC COMPOSITIONS WITH STRUCTURAL COLOR

Bernadette Guthauser, North Bergen, and William J. Radice, North Brunswick, both of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation of Ser. No. 756,724, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 675,390, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 407,347, Sep. 14, 1989, abandoned. This application Oct. 1, 1992, Ser. No. 955,378

Int. Cl.[5] A61K *6/00*

U.S. Cl. 424—401 **9 Claims**

1. A cosmetic composition exhibiting structural color, comprising a mixture of at least two immiscible substantially translucent colorless fluid phases having essentially the same refractive index and substantially different dispersive power, Phase A and phase B, wherein phase A is comprised of water, alcohol, or mixtures thereof; and phase B is an oil phase comprising an ingredient selected from the group consisting of vegetable oil, a fatty alcohol, a fatty acid ester, a silicone polymer of viscosity 0.1–10^9 centipoise at 25° C., or mixtures thereof; wherein one phase is dispersed into the other phase and the dispersed phase is 10–80% of the composition.

5,290,556

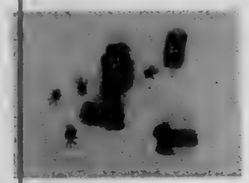
PLASTIC BAIT COMPOSITION FOR ATTRACTING AND KILLING CROP PESTS

Gerald H. McKibben; Joseph C. Dickens, and James W. Smith, all of Starkville, Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 2, 1990, Ser. No. 473,757

Int. Cl.[5] A01N *25/08, 25/28*

U.S. Cl. 424—405 **7 Claims**



1. A plastisol composition comprising:

a) a polymer

b) one or more synthetic or natural insect pheromones

c) one or more insect feeding stimulants, and

d) an insect toxicant.

5,290,557

SAPONIN CONTAINING ANTI-FEEDANT AND MOLLUSCICIDE FOR TERRESTRIAL MOLLUSC CONTROL

Wenda M. A. Mason; George S. Puritch, both of Saanichton, and David S. Almond, Victoria, all of Canada, assignors to W. Neudorff GmbH KG, Emmerthal, Fed. Rep. of Germany

Filed Jul. 16, 1992, Ser. No. 915,066

Int. Cl.[5] A01N *25/12, 65/00*

U.S. Cl. 424—410 **5 Claims**

1. A composition suitable for application to living plants to protect living plants from feeding by terrestrial molluscs, consisting essentially of:

a saponin-containing extract of *Yucca schidigera* or *Hedera helix*, in naturally occurring form, effective to prevent terrestrial molluscs from feeding on the plant and present at a concentration range of about 0.03 to 20% by weight of the composition;

a gum or gum-like material selected from the group consisting of acacia gum, xanthan gum, gelatin, and hydroxypropyl methyl cellulose, present at a concentration range of about 0.01% to 1.0% by wt.;

an antifreezing component selected from the group consisting of glycerol, propylene glycol, ethylene glycol, and isopropyl alcohol, present at a concentration range of about 1 to 25% by wt.; and

a liquid carrier selected from the group consisting of water, mineral oil and vegetable oil.

5,290,558

FLOWABLE DEMINERALIZED BONE POWDER COMPOSITION AND ITS USE IN BONE REPAIR

Robert K. O'Leary, Spring Lake, N.J., and Patrick A. McBrayer, Yardley, Pa., assignors to Osteotech, Inc., Shrewsbury, N.J.

Continuation-in-part of Ser. No. 410,596, Sep. 21, 1989, Pat. No. 5,073,373. This application Aug. 27, 1990, Ser. No. 573,458

Int. Cl.[5] A61K *35/32, 47/06, 47.26, 47/36*

U.S. Cl. 424—422 **21 Claims**

1. A flowable composition for application to a bone defect site to promote new bone growth at the site which comprises a new bone growth-inducing amount of dimineralized osteogenic bone powder in a biocompatible carrier, the carrier being selected from a member of the group consisting of liquid polyhydroxy compound, liquid polyhydroxy compound ester, liquid solution of solid polyhydroxy compound, liquid solution of solid polyhydroxy compound ester and mixtures thereof,

wherein the carrier is on of the following components (i)--(iv);

(i) the carrier is selected from the group consisting of glycerol, glycerol monoester and glycerol diester;

(ii) the carrier is selected from the group consisting of monosaccharide, monosaccharide ester, disaccharide, disaccharide ester, oligosaccharide, oligosaccharide ester and mixture thereof;

(iii) the carrier is a fatty acid monoester dissolved in a solvent which is a different liquid polyhydroxy compound and/or ester thereof; and

(iv) the carrier is glycerol monolaurate dissolved in a solvent.

5,290,559

DEVICE AND METHOD FOR TREATMENT OF INFECTIONS

Michael J. Groves, Lake Forest, Ill., assignor to Board of Trustees of the University of Illinois, Chicago, Ill.

Division of Ser. No. 563,394, Aug. 6, 1990, Pat. No. 5,186,936. This application Nov. 12, 1992, Ser. No. 975,423

Int. Cl.[5] A01N *25/08, 25/24;* **A61K** *9/70, 47/36*

U.S. Cl. 424—435 **12 Claims**

1. A controlled release unit which comprises a biocompatible polymeric carrier material having carried therein a controlled release agent, said controlled release agent comprising a metronidazole ester, said biocompatible polymeric carrier material comprising a hydrogel which defines ionic polymer units of one charge, said polymeric carrier material being coated with an outer coating which comprises a hydrogel which defines ionic polymer units of the opposite charge to that of the hydrogel of the polymeric carrier, said outer coating acting as a controlled release barrier to limit generation of material for controlled release, and wherein said metronidazole ester is in an initial concentration sufficient to allow the controlled release of a bacterial growth inhibitory concentration of free metronidazole.

5,290,560

EXTRUSION OF AN ADMIXTURE OF A MELTABLE BINDER AND A FOOD OR DRUG

Pierre Autant, Commentry; Jacques Ruel, Saint-Gratien, both of France; Stephen Weinhold; Charles A. McCombs, both of Kingsport, Tenn.; Ernest P. Smith, Blountville, Tenn.; Stephen H. Wu, and Louis P. Hoskins, both of Kingsport, Tenn., assignors to Rhone-Poulenc Nutrition Animale, Commentry, France

Filed Jun. 21, 1991, Ser. No. 719,039

Claims priority, application France, Jun. 29, 1990, 90 08280

Int. Cl.[5] A23K *1/00*

U.S. Cl. 424—438 **9 Claims**

1. A process for making a coated granule having a minimum density of about 1.2 g/ml which contains an active principle selected from the group consisting of medicaments and amino acids intended for feeding ruminants comprising;

extruding a dry mass of the active principle in the presence of a meltable binder in a molten state in an amount of less than 25% by weight, but in an amount sufficient to permit passage of the mixture of at least the active principle and meltable binder through a die; and coating the extruded core with a protective agent.

5,290,561

SINGLE LAYER TRANSDERMAL DRUG ADMINISTRATION SYSTEM

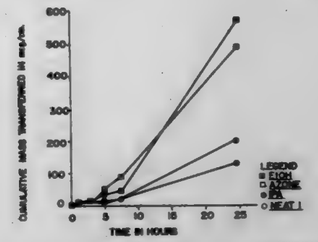
Bahram Farhadieh, Libertyville, and Rajeev D. Gokhale, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 667,992, Mar. 11, 1991, Pat. No. 5,164,189, which is a continuation-in-part of Ser. No. 425,766, Dec. 4, 1989, abandoned. This application Apr. 10, 1992, Ser. No. 866,617

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **24 Claims**



1. A monolayer patch for the transdermal administration of albuterol comprising:

a. room temperature vulcanizable organopolysiloxane rubber Silastomer X7-3058 in an amount ranging from about 25 to about 95 per cent, weight to weight;

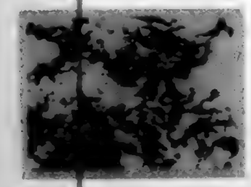
b. albuterol in an amount ranging from about 2 to about 30 per cent, weight to weight; and

c. a diffusion enhancer, said diffusion enhancer being a normal hydrocarbon alcohol having from about 1 to about 20 carbon atoms, and said diffusion enhancer being present in an amount ranging from about 3 to about 30 per cent, weight to weight.

5,290,562
COMPOSITIONS AND METHODS EMPLOYING LIPOSOMES INCLUDING TYROSINE OR A TYROSINE DERIVATIVE

Alain Meybeck, and Marc Dumas, both of Colombes, France, assignors to L V M H Recherche, Cedex, France

Continuation of Ser. No. 302,235, Dec. 30, 1988, abandoned. This application Nov. 7, 1991, Ser. No. 789,397
Claims priority, application France, Nov. 27, 1987, 87 16524
Int. Cl.[5] A61K 9/127
U.S. Cl. 424—450 17 Claims



1. A composition comprising liposomes including between 0.001 and 10 weight percent, with respect to the total weight of the composition, of tyrosine or a tyrosine derivative selected from the group consisting of an alkali metal salt of L-tyrosine, an alkaline earth metal salt of L-tyrosine, methyl L-tyrosinate, ethyl L-tyrosinate, and stearyl L-tyrosinate.

5,290,563
METHOD FOR COMBINING A MIXTURE OF HETEROGENEOUS SUBSTANCES WITH LIPOSOMES

Isabelle Millet-Genin, Plaisir; Francis Puisieux, Maisons Alfort; Tran X. Thao, Chatenay Malabry, and Liliane Roblot-Treupel, Thiais, all of France, assignors to Laboratoire Des Stallergenes, France

Continuation of Ser. No. 556,727, Jul. 25, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 797,151
Claims priority, application France, Jul. 27, 1989, 8910129
Int. Cl.[5] A61K 37/22
U.S. Cl. 424—450 15 Claims

1. A method of combining protidic allergens and/or allergenic extracts selected from the group consisting of natural allergens from animal or vegetable origin, allergenic proteins and peptides, with a negatively or positively charged liposome comprised of cholesterol, a phospholipid and/or at least one ionic lipid which gives the liposome a positive or negative charge, comprising

a) determining the isoelectric point ip of one or more of the allergenic substances to be mixed and

b) mixing said allergenic substance or substances with said liposome at a pH lower than said isoelectric point when the liposome is negatively charged or at a pH higher than said isoelectric point when said liposome is positively charged.

5,290,564
METHOD AND DEVICE FOR DELIVERING A BIOACTIVE AGENT

Randall P. Sweet, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 923,847, Jul. 31, 1992, Pat. No. 5,246,997. This application Jun. 8, 1993, Ser. No. 72,382
Int. Cl.[5] A61F 13/02
U.S. Cl. 424—448 1 Claim

1. A device for delivering a bioactive agent to a bioactive-agent accepting substrate, comprising:

(a) a reservoir,

(b) a bioactive agent contained within the reservoir, and

(c) a hot-melt silicone pressure sensitive adhesive composition on the reservoir for providing a means for adhering the reservoir to the bioactive-agent accepting substrate, said composition comprising a mixture of

(i) a trimethylsilyl-endblocked benzene-soluble resinous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{\frac{1}{2}}$ and tetrafunctional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetrafunctional siloxy unit present in the copolymer, wherein R is a monovalent organic radical independently selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, and

(ii) a silanol-endstopped polydimethylsiloxane fluid, which mixture exhibits tackiness and adhesiveness, said mixture being blended with

(iii) from about 0.5 to about 10 weight percent, based on the total weight of said resinous copolymer and said polydimethylsiloxane fluid, of a hydrocarbon having a flashpoint equal to or above 100 F. and having a weight-average molecular weight of from about 300 to about 1500 as measured by gel permeation chromatography calibrated with narrow distribution polydimethylsiloxane standards.

5,290,565
COMPOSITION FOR PROMOTING HEALING

Alexandre Zyssman; Henri Sebag, both of Paris; Guy Vanlerberghe, Montjay-La-Tour; Rose-Marie Handjani, and Alain Ribier, both of Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 684,697, Apr. 12, 1991, abandoned, which is a division of Ser. No. 497,696, Mar. 23, 1990, abandoned. This application May 13, 1992, Ser. No. 882,423
Claims priority, application France, Apr. 6, 1989, 89 04526
Int. Cl.[5] A61K 9/127
U.S. Cl. 424—450 2 Claims

1. A process for promoting and accelerating the healing of a wound of living animal tissue reaching the dermis comprising topically applying on the portion of the skin on which the wound appears a healing amount of a composition comprising a dispersion, in an aqueous phase, of vesicles having accelerating wound healing properties, the amphiphilic lipid material of said vesicles consisting of an amphiphilic nonionic lipid consisting of a lipid having the formula

$$RO\leftarrow CH_2CHOH-CH_2O\rightarrow_Z H \qquad (I)$$

wherein

R represents (1) a C_{16}–C_{18} alkyl radical or a mixture thereof or (2) an R'CO radical, wherein R' is at least one C_{15}–C_{17} alkyl radical or a mixture thereof,

said amphiphilic nonionic lipid being combined with cholesterol, the total vesicular lipid concentration in said composition ranging from 5 to 25 percent by weight based on the total weight of said composition.

5,290,566
TOOTH WHITENING FORMULATION AND METHOD

Robert S. Schow, 2227 Highgate Rd., West Lake, Calif. 91631, and Robert M. Drooman, 4767 Nomad, Woodland Hills, Calif. 91364

Filed Dec. 18, 1990, Ser. No. 629,146
Int. Cl.[5] A61K 33/40, 9/10, 47/38, 6/00
U.S. Cl. 424—488 6 Claims

1. In a tooth whitener employing urea peroxide as the whitening agent, the improvement comprising:

said tooth whitener being formulated as a gel comprising urea peroxide in a concentration of about 32% based on the total weight of the formulation, in combination with a gelling agent.

5,290,567
PULVERULENT PRODUCTS COMPOSED OF A WATER-INSOLUBLE CORE SUBSTANCE AND OF A PROTECTIVE COVERING

Joachim U. Schneider, Weisenheim; Gerhard Schwarz, Harthausen; Paul Grafen, Weisenheim; Wolfgang Bewert, Frankenthal, and Horst Schumacher, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 894,126
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1991, 4120918
Int. Cl.[5] A61K 9/14
U.S. Cl. 424—489 6 Claims

1. A pulverulent product having an average particle size of from 100 to 600 μm and which particles are insoluble in hot water, said particles being composed of a water-insoluble core substance and a protective covering, obtained by

dispersing the core substance in an aqueous solution of amylose or a starch with an amylose content of more than 40% by weight as film-forming polymer for the protective covering,

spraying this dispersion using hydrophobic silica as auxiliary and

subsequently drying the sprayed particles.

5,290,568
PRODUCTION OF β-FORM THIAMINE HYDROCHLORIDE CRYSTALS

Tatsuo Asogawa, Kishiwada; Yoshitomi Kakiguchi, Kawanishi, and Seiji Izuhara, Tondabayashi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 15, 1992, Ser. No. 945,728
Claims priority, application Japan, Sep. 19, 1991, 3-239765
Int. Cl.[5] A61K 9/14, 31/51
U.S. Cl. 424—489 6 Claims

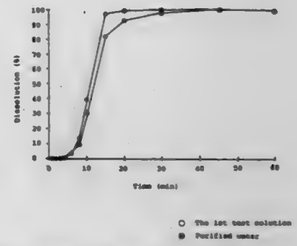
1. A method of producing β-form thiamine hydrochloride crystals which comprises moistening α-form thiamine hydrochloride crystals with water in the presence of about 1 to 30 weight percent, based on the weight of the α-form thiamine hydrochloride, β-form thiamine hydrochloride crystals as seed crystals and agitating the resulting moistened mixture.

5,290,569
COATED COMPOSITION AND ITS PREPARATION PROCESS

Noboru Nagafuzi, Sakai; Takayuki Tsukada, Itami; Kazuhiro Shima, Toyonaka; Yasushi Takagishi, Ashiya; Yusuke Suzuki, Izumi; Yoshitaka Tomoda, and Takashi Hayashi, both of Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 684,388, Apr. 12, 1991, abandoned. This application Jun. 8, 1992, Ser. No. 895,466
Claims priority, application Japan, Apr. 12, 1990, 2-096663
Int. Cl.[5] A61K 9/16
U.S. Cl. 424—490 8 Claims

1. Orally administrable coated granules of a pharmaceutically active substance stable to heat and sensitive to a solvent, which granules do not substantially release said pharmaceutically active substance during their stay in an oral cavity and, after passing through the oral cavity, dissolve or disintegrate quickly to release said pharmaceutically active substance and each granule being in a discrete form and comprising fine particles of said pharmaceutically active substance bound to each other by a first thermomelting polyethylene glycol material melting at a temperature of about 50° to 150° C. as a binder in an amount of from about 0.05 to 0.4 parts by weight to one part by weight of said pharmaceutically active substance and coated with a second thermomelting material which is a mixture of polyethylene glycol and a hydrophobic thermomelting



material in a ratio of 1:2 by weight, said mixture having a melting point of about 50° to 150° C. but which is lower than the melting point of the first thermomelting polyethylene glycol material in an amount of from about 0.1 to 2 parts by weight to one part by weight of said granule, the coated granules being prepared from a mixture comprising fine particles of said pharmaceutically active substance and said first polyethylene glycol thermomelting material by a centrifuged force granulation procedure without using any solvent to form non-coated granules and subsequently coated the non-coated granules with said second thermomelting material by a centrifuged force coating procedure without using any solvent.

5,290,570
LOTIONS CONTAINING LIQUID-LOADED POWDER

Larry D. Nichols, Arlington, Mass., assignor to Purepac, Inc., Elizabeth, N.J.

Continuation of Ser. No. 619,728, Nov. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 358,690, May 30, 1989, Pat. No. 5,000,947. This application Dec. 30, 1992, Ser. No. 998,633
Int. Cl.[5] A61K 9/14, 7/42
U.S. Cl. 424—499 13 Claims

1. An emollient lotion composition comprising a liquid-containing microporous cellulosic powder material having an entrapped liquid agent content varying from about 50% to about 95% by weight, the cellulosic powder material formed by spray evaporation of a solution of a cellulosic polymer and a pore-forming solvent as powder particles having an average diameter varying from about one to 500 microns, said particles being frangible and being further characterized as microporous with interconnecting pores ranging in size from about one to about 500 nanometers, said liquid agent being loaded within said pores, said particles being sufficiently frangible so as to release the liquid agent upon application of frictional force, and a base liquid for the powder material, wherein the particles are suspended in the base liquid to provide a stable, emollient lotion composition and the base liquid constitutes about 30 percent to about 60 percent of the composition by volume.

VOL 1160 ISS 1 MR 1 1994 UMI

5,290,571

BIOLOGICALLY ACTIVE WHEY PROTEIN CONCENTRATE

Gustavo Bounous, Montreal; Phil Gold, Westmount, and Patricia A. L. Kongshavn, St. Lambert, all of Canada, assignors to Immunotec Research Corporation, Ltd., Quebec, Canada

Continuation-in-part of Ser. No. 289,971, Dec. 23, 1988, abandoned, and a continuation of Ser. No. 188,271, Apr. 28, 1988, abandoned. This application Oct. 4, 1989, Ser. No. 417,246
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] A61K *35/20*
U.S. Cl. 424—535 13 Claims

1. A whey protein composition comprising an undenatured whey protein concentrate obtained from raw bovine, goat or sheep milk which contains substantially all the heat labile whey protein present in the raw milk, the whey protein being present in an amount sufficient to provide an amount of from about 18 to about 28 grams of whey protein per 100 grams of composition, Vitamin B_1 in an amount of at least 1.5 mg per 100 grams of composition and Vitamin B_2 in an amount of at least 1.5 mg per 100 grams of composition.

5,290,572

OPTHALMIC COMPOSITION FOR TREATING DRY EYE

Donald L. MacKeen, Bethesda, Md., assignor to DEO Corporation, Bethesda, Md.

Filed Aug. 6, 1992, Ser. No. 926,244
Int. Cl.[5] A01N *59/26, 59/06*
U.S. Cl. 424—602 7 Claims

1. A method for treating a patient afflicted with dry eye comprising the steps of:

a) providing a calcium-based ophthalmic composition comprising a finely divided, minimally water-soluble, ophthalmologically acceptable calcium salt suspended in an ophthalmologically acceptable carrier; and

b) applying said calcium-based ophthalmic composition adjacent to lateral or inferior lid margins exterior to an ocular surface in a sufficient amount and for sufficient time to alleviate dry eye, wherein blinking action of the lid margins cuts off and carries into the eye small amounts of the composition thereby effecting treatment of the dry eye condition.

5,290,573

ANIMAL FEED SUPPLEMENT

Bruce J. Holub, 19 Maplewood Dr., Guelph, Ontario N1G 1L9, Canada

Continuation of Ser. No. 234,175, Aug. 19, 1988, Pat. No. 4,911,944. This application Feb. 2, 1990, Ser. No. 474,510
Claims priority, application Canada, Aug. 19, 1987, 545565
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—2 11 Claims

7. A method of feeding a ruminant, the method comprising the steps of:

providing a feed additive for the ruminant consisting essentially of fish meal containing an omega-3 unsaturated fatty acid selected from the group consisting of eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and a mixture thereof, said feed additive having an EPA content of about 10.6% and a DHA content of about 11.0%, each percentage being a percentage of the total fatty acids in the fish meal;

adding said feed additive to a feed for the ruminant, until said feed additive constitutes about 5% to 15% by weight of the total feed; and

feeding the ruminant said feed for a period of about 20 weeks.

5,290,574

CARBONATED BEVERAGE CONTAINER

James G. Jamieson, Maulden, and Mark P. Radford, Silsoe, both of England, assignors to Whitbread PLC, London, England and Heineken Technical Services B.V., Amsterdam, Netherlands

PCT No. PCT/GB90/01985, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/09781, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 859,524
Claims priority, application United Kingdom, Dec. 21, 1989, 8928893
Int. Cl.[5] B65B *31/00*; B65D *17/00, 25/00*
U.S. Cl. 426—112 11 Claims



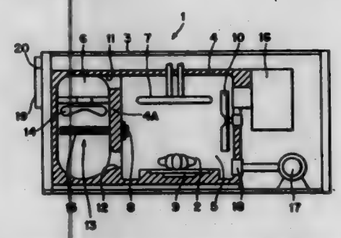
1. A can (1) containing a pressurized carbonated beverage (8) including a lid (2) having a non-resealable closure (3); the can being characterised by a secondary compartment (4) formed on the lid (2) below the closure (3), by at least one orifice (5) extending between the secondary compartment (4) and the inside of the can (1), and by a liquid (8) held in the secondary compartment (4), the arrangement being such that on opening of the closure (3) the pressure in the secondary compartment (4) is reduced to atmospheric with the result that gas or liquid from the main body of the can (1) is jetted through the at least one orifice (5) into the liquid (8) in the secondary compartment (4) to generate a foam in the secondary compartment (4): complete opening or removal of the closure (3) enabling the contents of both the secondary compartment (4) and the remainder of the can (1) to be mixed and dispensed together so that the foam produced in the secondary compartment acts to seed the generation of small bubbles throughout the beverage (8) in the can (1).

5,290,575

APPARATUS AND METHOD FOR BAKING BREAD

Yasuo Terikata, Imaichi, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Mar. 12, 1993, Ser. No. 31,134
Claims priority, application Japan, Aug. 28, 1992, 4-253693
Int. Cl.[5] A21D *8/00*; H05B *6/00*
U.S. Cl. 426—233 25 Claims



16. A method of baking food comprising the steps of:

placing a dough of the food in a baking chamber;

heating an outer surface of the dough by a dough-surface heating means for providing the dough with baking color at the surface thereof, and heating an interior of the dough by microwaves for internally heating the dough and for removing a moisture content therefrom; and

subjecting the dough to a reduced pressure environment in the baking chamber for facilitating reduction of the moisture content within the dough.

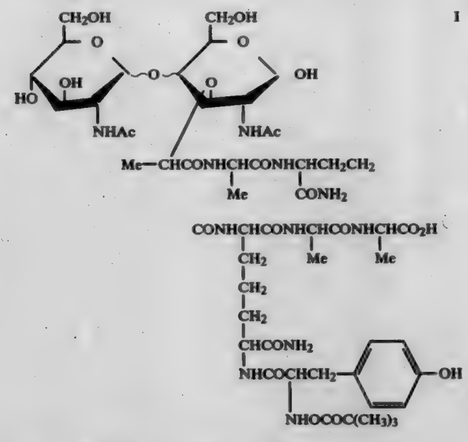
5,290,576

TERT-BUTYLOXYCARBONYL-L-TYROSYL-PEPTIDOGLYCAN MONOMER AND ^{125}I-LABELED DERIVATIVE THEREOF, THEIR PREPARATION AND USE

Djurdjica Ljevakovic; Branka Vrancsic; Jelka Tomasic; Ivo Hrsak, and Branko Ladesic, all of Zagreb, Croatia, assignors to Pliva Farmaceutska and Kemijska Prehrambena, Croatia

Filed Dec. 20, 1991, Ser. No. 810,010
Claims priority, application Yugoslavia, Dec. 21, 1990, 2424/90
Int. Cl.[5] A61K *37/10*; C07H *15/00, 17/00*
U.S. Cl. 526—238.2 8 Claims

1. tert-Butyloxycarbonyl-L-tyrosyl-peptidoglycan monomer of the formula



and its ^{125}I-labelled derivative (Boc-[^{125}I]-Tyr-PGM).

5,290,577

METHOD AND APPARATUS FOR CONTINUOUSLY MANUFACTURING FILLED BUNS

Yasunori Tashiro, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Filed Jan. 26, 1993, Ser. No. 9,500
Claims priority, application Japan, Feb. 6, 1992, 4-056411; Mar. 30, 1992, 4-105497
Int. Cl.[5] A21C *11/00*; A21D *8/00*
U.S. Cl. 426—297 6 Claims

1. A method for manufacturing filled dough products, comprising the steps of

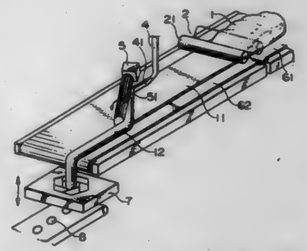
supplying a dough mass on a horizontal conveyor,

stretching the dough mass into a dough sheet having a uniform width and thickness,

depositing a filling on the dough sheet,

rolling the dough sheet in a widthwise direction to form a bar such that the filling is surrounded by the rolled dough sheet,

causing a leading end of the bar to hang from the conveyor such that the leading end moves in a downward direction in response to movement of the conveyor, and



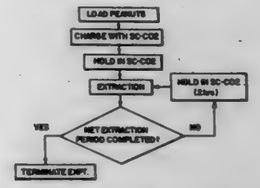
dividing the hanging bar by squeezing it with a divider having flat pressing surfaces, such that the bar is divided into separate pieces with no filling exposed.

5,290,578

PROCESS FOR PREPARING LOW-CALORIE NUTS

Chand A. Passey, 1583 Sabrevois, Beloeil, Quebec, Canada J3G 6A6 , and Narayan D. Patil, 95 Baseline Road, Apt. 307, London, Ontario, Canada N6J 4X3

Filed Mar. 30, 1992, Ser. No. 856,149
Claims priority, application Canada, Sep. 29, 1989, 615387
Int. Cl.[5] A23L *1/36*
U.S. Cl. 426—417 17 Claims



1. A process capable of preparing unbroken nut kernels of significantly reduced calorific value suitable for use as a snack food, comprising the steps of:

a) humidifying shelled non-roasted nut kernels by contact with water vapor, in a manner substantially avoiding the presence of free moisture on the kernels, to bring the moisture content to a level sufficient to prevent the kernels from breaking during subsequent extraction;

b) placing the humidified kernels in an extraction vessel and exposing the kernels to carbon dioxide under supercritical fluid conditions of temperature and pressure to extract oils from the kernels, said extraction being performed in one or more hold and extract stages with removal and replenishment of carbon dioxide occurring during the extract stage or stages; and

c) removing the calorie reduced kernels.

5,290,579

PROCESS FOR PRODUCING RICE BRAN OIL

Hisashi Hitotsumatsu, and Yasuhiko Takeshita, both of Tokyo, Japan, assignors to Tokyo Oil Mills, Inc., Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 870,912
Claims priority, application Japan, Apr. 19, 1991, 3-115575
Int. Cl.[5] A23D *9/02*
U.S. Cl. 426—489 3 Claims

1. A process for producing an unsaponifiable matter-enriched rice bran oil, comprising the steps of:

a) refining rice bran oil, to obtain edible rice bran oil and residue,

b) recovering and concentrating unsaponifiable matter and ferulates from said residue,

c) adding said unsaponifiable matter and ferulates to said edible rice bran oil,

so as to produce an unsaponifiable matter-enriched rice bran oil.

5,290,580

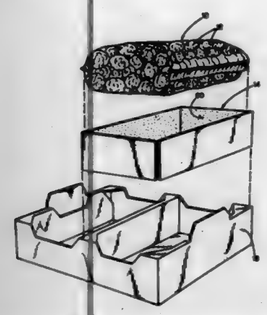
COOLING PROCESS FOR PERISHABLE FOOD AND HORTICULTURAL PRODUCTS

Stan L. Floyd, Enumclaw; Herbert D. Muise, Tumwater, and Mark A. Stanish, Seattle, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 577,990, Sep. 5, 1990. This application Feb. 27, 1992, Ser. No. 843,471

Int. Cl.[5] A23B *4/100*

U.S. Cl. 426—524 **12 Claims**



1. A method of vacuum cooling horticultural products comprising:

placing the product in close proximity to a cooling element to which a volatile liquid is then or has been added; and

subjecting the product and liquid containing cooling element to a vacuum in a defined space to evaporate liquid from the cooling element and cool the product.

5,290,581

WHIPPABLE, NON-DAIRY CREAM BASED ON LIQUID OIL (II)

Iain J. Campbell, Wellingborough; Alexander Lips, Pavenham, and Wayne G. Morley, Wellingborough, all of Great Britain, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Apr. 17, 1992, Ser. No. 869,939

Claims priority, application European Pat. Off., Apr. 17, 1990, 91303439.3

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—570 **21 Claims**

1. Whippable non-dairy cream (NDC) comprising an emulsion of a water-continuous phase, and a fat phase, comprising fat wherein the NDC contains 15–60 wt.% of a substantially globular vegetable fat of which at least 85 wt.% consists of a liquid oil and the rest of a hard fat, while the NDC contains 0.005–3.0 wt.% of a food-acceptable salt derived from a divalent, trivalent or quadrivalent metal or alkali earth metal ion and is whippable within 6 minutes when using a domestic, electrical whipper.

5,290,582

HOMOGENOUS, STABLE FLAVORED MILK AND PROCESS

Phillip F. Dressel, St. Louis County, Mo.; Robert D. Bowen, Jr., Loudon County, Tenn.; Larry D. Ellis, St. Louis County, Mo.; Milford D. Bonner, St. Louis County, Mo., and Phillip C. Dressel, St. Louis County, Mo., assignors to Consolidated Flavor Corporation, Bridgeton, Mo.

Continuation-in-part of Ser. No. 733,349, Jul. 22, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 990,754

Int. Cl.[5] A23C *9/156*

U.S. Cl. 426—584 **30 Claims**

1. A liquid, flavored, stabilization system to be added to standardized raw milk prior to pasteurization to make a flavored milk comprising by weight based on the total weight of the system:

(a) about 5 to about 10% flavoring material;

(b) about 1.35 to about 6% milk proteins selected from the group consisting of lactalbumin, and mixtures of casein and lactalbumin;

(c) about 3 to about 8% lactose;

(d) about 0.01 to about 0.08% stabilizer, selected from the group consisting of kappa carrageenan and mixtures of kappa carrageenan and iota carrageenan;

(e) about 40 to about 90% water.

5,290,583

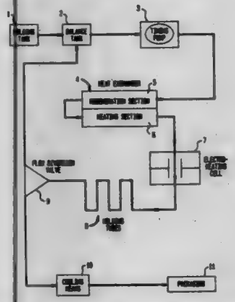
METHOD OF ELECTROHEATING LIQUID EGG AND PRODUCT THEREOF

David Reznik, 2151 Barbara Dr., Palo Alto, Calif. 94303, and Aloysius Knipper, 227 Cupshaw Dr., Ringwood, N.J. 07456

Filed Apr. 2, 1992, Ser. No. 862,198

Int. Cl.[5] A231 *1/025*

U.S. Cl. 426—614 **33 Claims**



1. A method of continuously pasteurizing liquid egg comprising the steps of:

providing liquid egg;

electroheating said liquid egg with AC electric current having a frequency effective to heat said liquid egg without electrolysis at a rate to avoid detrimental coagulation;

holding said electroheated liquid egg for a period of time at a temperature which is sufficient to achieve pasteurization; and cooling said electroheated liquid egg, wherein said liquid egg has been electroheated under conditions sufficient to impart an extended refrigerated shelf life of at lesat 4 weeks.

5,290,584

METHOD OF PREPARING A SNACK FOOD JERKY PRODUCT

Earl E. Ray, Las Cruces, Mexico, assignor to New Mexico State University Technology Transfer Corp., Las Cruces, N. Mex.

Continuation-in-part of Ser. No. 918,893, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 761,401, Sep. 17, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 946,875

The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.

Int. Cl.[5] A23L *1/314, 1/317, 1/2165*

U.S. Cl. 426—637 **15 Claims**

1. A method of preparing a jerky-like food product, comprising the steps of:

(a) freezing proteinaceous material;

(b) finely comminuting the proteinaceous material;

(c) blending the comminuted frozen proteinaceous material with pregelatinized farinaceous material to create a mixture; and

(d) extruding while heating and pressurizing the mixture through a screw extruder having a compression ratio in the range between 2.5:1 and 3.5:1, thereby fully cooking the mixture.

5,290,585

LUBRICIOUS HYDROGEL COATINGS

Richard K. Elton, Glens Falls, N.Y., assignor to C. R. Bard, Inc., Glens Falls, N.Y.

Division of Ser. No. 607,550, Nov. 1, 1990, Pat. No. 5,160,790. This application Jun. 10, 1992, Ser. No. 896,284

Int. Cl.[5] A61M *25/00*; B05D *5/08*

U.S. Cl. 427—2 **4 Claims**

2. A method of preparing hydrophilic, lubricious organic coating comprising,

forming a reaction mixture containing an isocyanate, a polyol and a polyvinylpyrrolidone having a molecular weight in the range of from 50,000 to 2.5 million and a water content of less than 1% (w/w), said isocyanate containing at least two NCO groups per molecule and the polyol having at least two hydroxy groups per molecule, the sum of the average NCO functionality and the average hydroxy functionality exceeding 4,

dissolving said mixture in a solvent to form a solution thereof

applying said solution to an organic substrate to form a coating,

removing said solvent,

and curing said coating to allow said polyol and isocyanate to react to form a coating of a crosslinked polyurethane matrix and a polyvinylpyrrolidone the ratio by weight of the polyurethane to polyvinylpyrrolidone being from about 0.05 to 3.0.

5,290,586

METHOD TO MONITOR META-PAETE CURE ON METALLIZED SUBSTRATES

Lorraine P. McDonnell Bushnell, Carmel; Judith A. Coffin, Pleasant Valley, and Guillermo Prada-Silva, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 10, 1992, Ser. No. 942,861

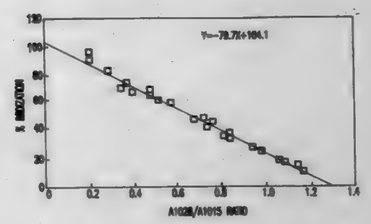
Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—8 **8 Claims**

1. A method to non-destructively monitor the cure of meta-paete films, comprising the steps of:

exposing a substrate having a meta-paete polyimide film that is one micron or greater in thickness to infrared radiation;

monitoring the 1015 cm^{-1} and 1028 cm^{-1} bands reflected from a reflective surface positioned under said meta-paete polyimide film; and



determining a degree of cure or percent imidization of said meta-paete polyimide film from a ratio of the intensity of said 1028 cm^{-1} band to said 1015 cm^{-1} band.

5,290,587

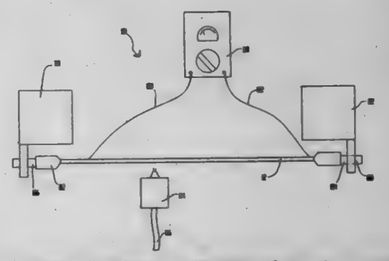
METHOD OF MAKING AN ELECTROPHORETIC CAPILLARY TUBE

James E. Young, La Honda; Mark Bateman, Mt. View, both of Calif., and Jurgen A. Lux, Niederkirchen, Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 14, 1992, Ser. No. 914,153

Int. Cl.[5] C23C *4/00*; B05D *1/00*

U.S. Cl. 427—122 **18 Claims**



1. A method of making a capillary tube for use in separating sample constituents by electroosmotic flow and electrophoretic migration comprising:

providing a capillary action tube having an inlet end and an outlet end and having an axial bore to provide a longitudinal migration path for the flow of sample constituents from the inlet end to the outlet end,

forming a resistive coating solution so that a coating having a high electrical resistivity may be achieved, including homogeneously mixing an electrically conductive material with a polymer such that the content by weight of the electrically conductive material is less than twenty percent relative to the content by weight of the polymer, and

applying the resistive coating solution to an exterior surface of the capillary action tube, including coating the exterior surface to a thickness to achieve a desired resistance across the coated exterior surface,

thereby forming a capillary tube in which electroosmotic flow along the migration path may be influenced by creating a potential gradient along the coated exterior surface in a direction parallel to the migration path.

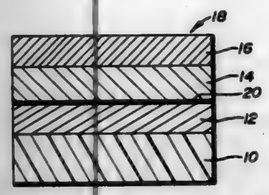
VOL 1160 ISS 1 MR 1994 UMI

5,290,588

TIW BARRIER METAL PROCESS

Jeremias D. Romero, San Jose; Homi Fatemi, Los Altos Hills; Eugene A. Delenia, Gilroy, and Muhib M. Khan, San Jose, all of Calif., assignors to Advanced Micro Devices, Incorporated, Sunnyvale, Calif.

Filed Dec. 19, 1991, Ser. No. 812,244
Int. Cl.[5] B05D 5/12, 3/02
U.S. Cl. 427—123 14 Claims



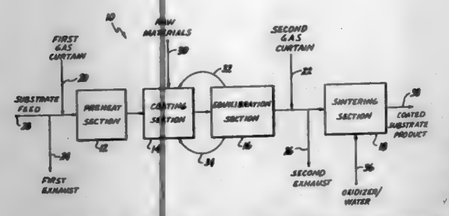
1. A process for forming a multi-layer structure, wherein a first layer of aluminum is formed on a substrate and a second layer consisting essentially of a TiW alloy is formed on said first layer of aluminum to form a layered structure, the improvement comprising (a) annealing said layered structure in an inert atmosphere at a temperature ranging from about 400° to 500° C. for a period of time sufficient to form a film of an Al—TiW phase at the interface between said first layer of aluminum and said second layer of said TiW alloy, said film of said Al—TiW phase having a thickness of at least about 300 Å, and (b) forming a gold layer on said TiW layer following said annealing of said layered structure.

5,290,589

PROCESS FOR COATING A SUBSTRATE WITH IRON OXIDE AND USES FOR COATED SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Naum Pinsky, Thousand Oaks, all of Calif., assignors to Ensci, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, each is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Aug. 12, 1991, Ser. No. 743,827
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—126.3 27 Claims



1. A process for coating an inorganic three dimensional substrate with iron oxide comprising:

contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising an iron oxide-forming compound other than iron oxide at conditions effective to form an iron oxide-forming compound containing coating on at least a portion of said substrate;

forming a liquidus iron oxide forming compound containing coating on at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate.

contacting said substrate with at least one additional magnetic or conductivity interacting component at conditions effective to form an additional component-containing coating on at least a portion of said substrate including at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate; said contacting being initiated at least prior to the substantially complete oxidation of said iron oxide forming component to iron oxide; and

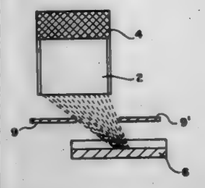
contacting said substrate having said iron oxide containing coating and said additional component-containing coating thereon with an oxidizing agent at conditions effective to convert said iron oxide forming compound to iron oxide and form a iron oxide coating with the additional magnetic or conductivity interacting component on at least a portion of said three dimensions of said substrate including the shielded surfaces of said substrate.

5,290,590

PRODUCTION OF MAGNETIC RECORDING MEDIUM

Hans J. Richter, St. Martin; Hartmut Hibst, Schriesheim, and Gerd Fischer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,259
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1991, 4101195
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—128 1 Claim



1. In a process for the production of a magnetic recording medium, consisting essentially of a polymeric substrate and a coherent thin layer of a ferromagnetic material, in a reduced-pressure chamber by producing a vapor jet of the ferromagnetic material from an evaporator unit provided with such material, and depositing the vapor jet on the substrate which is fed over a cylindrical drum, the vapor jet striking the substrate at angles which differ from 90°, the improvement comprising the center of the evaporator unit is laterally displaced in the axial direction of the drum, with respect to the center of the substrate surface to be coated by vapor deposition.

5,290,591

DECORATIVE INLAID TYPES OF SHEET MATERIALS FOR COMMERCIAL USE

Eduard F. Lussi, Roaneby, Sweden, and Thomas G. Smith, Easton, Pa., assignors to Tarkett Inc., Whitehall, Pa.

Division of Ser. No. 676,848, Mar. 28, 1991, Pat. No. 5,246,765, which is a continuation-in-part of Ser. No. 333,763, Apr. 3, 1989, Pat. No. 5,015,516, which is a continuation of Ser. No. 773,984, Sep. 9, 1985, abandoned. This application Jun. 21, 1993, Ser. No. 78,355
Int. Cl.[5] B32B 9/00
U.S. Cl. 427—202 7 Claims

1. A process for making a decorative inlaid floor covering which comprises the sequential steps of:

a) over the surface of a substrate, printing in the form of a pattern with one or more inks to make a printed layer;

b) coating the printed layer with a layer of ungelled vinyl plastisol adhesive;

c) depositing a substantially uniform layer of particles consisting essentially of spheroidal particles having an aspect ratio no greater than about 2:1 in a dense loading to prevent the underlying pattern from showing through interstices between said particles; and

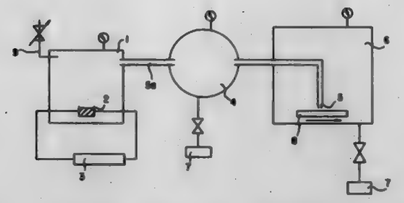
d) heating at a sufficient temperature for a sufficient time to embed said spheroidal particles in said ungelled vinyl plastisol adhesive and to gel the vinyl plastisol adhesive, thereby forming an adhesive matrix layer, wherein said pattern is visible through said adhesive matrix layer.

5,290,592

MANUFACTURING METHOD FOR ELECTRODE

Syuichi Izuchi; Tomohiko Noda; Youetsu Yoshihisa; Shiro Kato; Kenichi Takeuchi, and Hiromistu Mishima, all of Takatsuki, Japan, assignors to Yuasa Battery Co., Ltd., Osaka, Japan

Filed Feb. 11, 1991, Ser. No. 653,328
Claims priority, application Japan, Feb. 13, 1990, 2-33104; Jun. 8, 1990, 2-151191; Aug. 22, 1990, 2-221686
Int. Cl.[5] B05D 1/36
U.S. Cl. 427—203 35 Claims



1. In a method for manufacturing an electrode comprising a film on a substrate, the improvement comprising:

forming ultra fine particles of active material, selected from the group consisting of lithium and lithium alloy, in an inert gas by an evaporation method;

carrying said particles in an inert gas flow to be flown onto a surface of a substrate; and

blowing the particles carried by the inert gas flow onto the surface of the substrate, thereby depositing said particles carried in the inert gas flow onto the surface of the substrate, thereby forming an electrode comprising a thin film of said active material on the surface of said substrate. .

5,290,593

PROCESS FOR CONVERTING COMPOSITE IMITATION LEATHER INTO SHEET MATERIAL SIMILAR IN APPEARANCE TO NATURAL LEATHER

Giorgio Poletto, Cirie', Italy, assignor to Lorica S.p.A., Milan, Italy

Filed Mar. 16, 1992, Ser. No. 851,907
Claims priority, application Italy, Mar. 19, 1991, T091A000198
Int. Cl.[5] B05D 3/12, 1/36
U.S. Cl. 427—242 4 Claims

1. A process for producing sheet material of the same appearance and feel as natural leather when applied as a surface cover, said process comprising the steps of:

subjecting a simulated leather sheet material selected from the group consisting of essentially non-microporous composite sheet materials comprising a polymeric nonporous matrix coated or coagulated on or inside a nonwoven fabric or a fabric woven from natural or synthetic fibers to a series of finishing operations of the type to which tanned natural leather is subjected while not damaging the composite sheet material used, said finishing operations comprising at least (a) spraying the exposed surfaces of the composite sheet material with heat-curing plastic dye resins, each spraying followed by a respective drying stage, and (b) heat-calendaring said exposed surfaces sprayed with the heat-curing resins using engraved or smooth cylinders or plates.

5,290,594

METHOD FOR PRODUCTION OF THERMOADHESIVE FABRIC COVERINGS, THERMOADHESIVE FABRIC COVERING

Pierre Groshens, Flamicourt, and Demoulin Bernard, Barleux, both, France, assignors to Lainiere De Picardie, Peronne, France

Filed Jan. 17, 1992, Ser. No. 822,536
Claims priority, application France, Feb. 5, 1991, 91 01287
Int. Cl.[5] B05D 5/00
U.S. Cl. 427—244 18 Claims

1. A method for the production of thermoadhesive fabric coverings, in which a textile support receives a coating of thermoadhesive polymers distributed in spots upon the textile support, comprising the steps of:

bonding the the textile support onto a conveyor belt;

depositing a first layer of thermoadhesive polymers in spots upon the textile support by a first perforated rotary frame;

depositing a second layer of thermoadhesive polymers in spots identical to that of the first layer and upon the first layer of thermoadhesive polymers by a second perforated rotary frame;

separating the coated textile support from the conveyor belt;

passing the coated textile support through a continuous drying furnace and;

cooling said coated textile support.

13. A thermoadhesive fabric covering which comprises a textile support having a first and second surface and a thermoadhesive coating distributed in spots on said first and second surfaces wherein each spot of the coating comprises a first layer formed from polymers and a second layer formed from thermoadhesive polymers dissimilar to the polymers of the first layer, the first layer being arranged under the second layer.

5,290,595

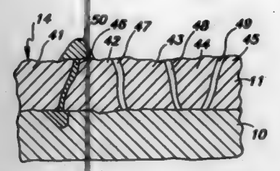
METHOD OF FORMING A COATED SHEET WHICH WICKS AWAY OIL

John J. Fitch, Natick, Mass., assignor to Van Leer Metallized Products (USA) Limited, Mid-Glamorgan, United Kingdom

Division of Ser. No. 608,049, Nov. 1, 1990, Pat. No. 5,173,363. This application Jul. 23, 1992, Ser. No. 917,277

Int. Cl.[5] B05D 5/00

U.S. Cl. 427—244 6 Claims



1. A method of forming a decorative sheeting which comprises the steps of:

A. providing a substrate, said substrate having a first surface adapted to absorb oil,

B. providing a coating of a pre-membrane composition on the first surface,

C. heating the coating to convert the coating to a porous membrane having a first side spaced from the substrate and a second side adjacent the substrate, the membrane having an internal surface adapted to wicking away oil from the first side of the membrane to the second side of the membrane.

5,290,596

METHOD OF MAKING COMPOSITE LAMINATE FOR SLIDING ELEMENS

Karl H. Wegner, Bad Schwalbach, Fed. Rep. of Germany, assignor to Glyco-Metall-Werke Glyco B.V. & Co, KG, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 912,088, Jul. 9, 1992, abandoned, which is a division of Ser. No. 622,236, Dec. 3, 1990, Pat. No. 5,171,622. This application May 25, 1993, Ser. No. 66,616

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939704

Int. Cl.[5] B05D 5/08

U.S. Cl. 427—287 4 Claims



1. A method of making a multilayer composite sliding element, comprising the steps of:

(a) degreasing a sliding surface of a metal sliding layer;

(b) applying to the degreased surface without roughening thereof a uniform thickness coating of a dispersion of sliding-promoting solids in the form of fine particles in a film-forming polymer solution to a thickness up to 50% greater than a thickness of said solids;

(c) forming in said coating a multiplicity of flecks in a generally leopard-spot pattern by reducing the thickness of said coating and precrosslinking and drying said coating of said dispersion to form a film having over a major part of said sliding surface a basic thickness of <10 μm having nonuniformly distributed islets of said solids projecting from said film and constituting said flecks, said islets having a greater thickness then said basic thickness and said particles being located in said islets; and

(d) baking said film into said surface and fixing said islets therein at a temperature between 100° C. and 250° C.

5,290,597

METHOD OF TREATING HALOGENATED POLYIMIDE SUBSTRATES FOR INCREASING ADHESION OF METAL LAYER THEREON

Charles E. Baumgartner, Schenectady, N.Y., and Lisa R. Scott, Chicago, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,448

Int. Cl.[5] B05D 1/00

U.S. Cl. 427—306 20 Claims

1. A method of metallizing a halogenated polyimide layer comprising:

applying a coating of a halogenated polyamic acid over the surface of a substrate;

partially curing said coating at a temperature in the range of 205°–250° C. into a partially cured halogenated polyimide layer;

treating the surface of said partially cured halogenated polyimide layer with a degreasing agent;

treating said degreased surface with an oxidizing agent;

applying a primary electroless copper or nickel layer on said oxidized surface;

curing said partially cured halogenated polyimide layer into said halogenated polyimide layer in a final curing step after application of said electroless layer; and

applying a secondary metal layer on said primary metal layer after said final curing step.

5,290,598

PROCESS FOR APPLYING A HIGH SOLIDS COATING COMPOSITION USING A HIGH PRESSURE AIRLESS SPRAY

W. Dan Myers, Lexington, and Steven M. Sumney, Trinity, both of N.C., assignors to Azko Coatings, Inc., High Point, N.C.

Filed Sep. 23, 1992, Ser. No. 950,438

Int. Cl.[5] B05D 3/02

U.S. Cl. 427—384 9 Claims

1. A process for applying a high quality, leveling finish coat to a substrate which comprises:

(a) forming a nitrocellulose coating in a liquid organic solvent wherein said coating has a solids content in excess of about 35 percent non-volatile by weight wherein said nitrocellulose coating is prepared from a plasticized nitrocellulose;

(b) without further addition of solvents, introducing the coating into a reservoir of a high pressure airless spray unit having a compression ratio of at least about 30 to 1 and providing a minimum fluid pressure in the range of at least about 2,750 psi, said airless spray unit being provided with a pump and a means for controlling the temperature of the coating within the range of about 65° F. to about 150° F. wherein the viscosity of the coating is maintained in the range of about 250 to 1,000 cps at the operating temperature range of the pump;

(c) without further addition of solvents, applying the coating to the substrate to be coated; and

(d) removing substantially all of the solvent from the coating.

5,290,599

POLYURETHANE SELF-PRIMING TOPCOATS

Charles R. Hegedus, Warrington, Pa.; Donald J. Hirst, Mt. Laurel, N.J., and Anthony T. Eng, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 936,983, Aug. 25, 1992, which is a division of Ser. No. 953,413, Sep. 29, 1992, and a continuation-in-part of Ser. No. 812,174, Dec. 20, 1991, Pat. No. 5,236,983. This application Apr. 16, 1993, Ser. No. 54,497

Int. Cl.[5] B05D 1/36

U.S. Cl. 427—407.1 4 Claims

1. A process of preparing a corrosion-resistant self-priming urethane coating on a substrate which comprises forming the polyurethane coating by applying onto the substrate at ambient temperatures an organic coating of 0.5 to 10 mils; said coating comprising from about 25 to 55 parts by weight of a polyurethane binder, 1 to 30 parts by weight of an alkaline-earth metal phosphate, 0.1 to 5.0 parts by weight of a zinc benzoate, 5 to 35 parts by weight of an alkaline earth metal metaborate, 5 to 40 parts by weight of titanium dioxide pigment, 0 to 3.0 parts by weight of an oil soluble dispersing agent and 0 to 50 percent by weight of at least one organic solvent.

5,290,600

APPARATUS AND PROCESS FOR PRODUCING SHEETS OF MATERIAL

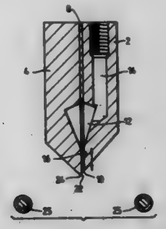
Stuart C. Ord, Chester, and Timothy J. Noakes, Clwyd, both of Great Britain, assignors to Imperial Chemical Industries PLC, London, England

Filed Nov. 5, 1991, Ser. No. 787,958

Claims priority, application United Kingdom, Nov. 12, 1990, 9024548.1

Int. Cl.[5] B05D 1/04, 1/30

U.S. Cl. 427—472 10 Claims



1. Apparatus for producing a sheet of material, comprising:

a nozzle having a path for feeding a liquid via a liquid contacting, conducting or semiconducting, surface to an edge, said path including a passage terminating at a slot at the edge or spaced therefrom by a delivery surface and the slot having a width of at least 250 microns;

means for charging the conducting or semiconducting surface to a high voltage; and

means for supplying liquid to the slot at a flow rate such that the liquid is formed as, and is maintained in the form of, a sheet by preponderantly electrostatic forces and is projected as a sheet from the nozzle.

5,290,601

COATING COMPOSITION

Rodney R. Brooks, Tyne and Wear, and Michael J. Winter, Newcastle-Upon-Tyne, both of United Kingdom, assignors to Courtaulds Coatings (Holdings) Limited, United Kingdom

PCT No. PCT/GB91/00454, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/14747, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 26, 1991, Ser. No. 927,437

Claims priority, application United Kingdom, Mar. 27, 1990, 9006840

Int. Cl.[5] B29D 9/00; B32B 27/30

U.S. Cl. 427—412.4 19 Claims

17. A process for coating a substrate with a room-temperature-vulcanisable silicone rubber composition, wherein the substrate is coated with a primer composition which comprises:

(A) an amino-substituted silicon compound which is selected from the group consisting of

(i) primary amine-functional silanes of the formula:

$$(RO)_xR_{(3-x)}SiR^1NHR^2 \quad (I)$$

where the radicals R, which can be the same or different, are monovalent hydrocarbon radicals having 1 to 12 carbon atoms and optionally containing an ether linkage; R^1 is an alkylene radical having 2 to 4 carbon atoms or a divalent aliphatic ether radical having 3 to 8 carbon atoms; R^2 is hydrogen or a (primary amino)-alkyl group having 2 to 4 carbon atoms; and x is 2 or 3;

(ii) reaction products of a primary amine-functional silane of the formula (I) with an epoxy-functional silane of the formula:

$$A\text{—}Si(B)_a(OB)_{(3-a)} \quad (II)$$

where A is an epoxide-substituted monovalent hydrocarbon radical having 4 to 12 carbon atoms; the radicals B, which can be the same or different, are alkyl radicals having 1 to 4 carbon atoms; and a is 0 or 1; and

(iii) reaction products of a primary amine-functional silane of the formula (I) with an alpha, omega-dihydroxypolydimethylsiloxane oil of formula:

$$HO(Si(CH_3)_2O)_yH \quad (III)$$

in which y is 2 to 60;

(B) a chlorinated polyolefin; and

(C) a polydiorganosiloxane composition which is self-curable or moisture-curable at ambient temperature; and

the room-temperature-vulcanisable silicone rubber composition is applied over the said primer composition.

5,290,602

HINDERED-HYDROXYL FUNCTIONAL (METH) ACRYLATE-CONTAINING COPOLYMERS PARTICULARLY SUITABLE FOR USE IN COATING COMPOSITIONS WHICH ARE SPRAYED WITH COMPRESSED FLUIDS AS VISCOSITY REDUCING DILUENTS

John N. Argyropoulos, Scott Depot, and Brian L. Hilker, Winfield, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Oct. 19, 1992, Ser. No. 963,213

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] B05D 1/02; C08J 3/00; C08L 33/00

U.S. Cl. 427—421 20 Claims

1. A process for reducing the viscosity of a composition containing one or more copolymers comprising forming a liquid mixture in a closed system comprising:

a) a composition containing at least one or more copolymers comprising the reaction product of (a) one or more hindered-hydroxyl functional (meth)acrylate monomers and

(b) at least one other monomer copolymerizable therewith, said copolymer having (i) a number average molecular weight of less than about 12,000, (ii) a glass transition temperature of from −50° C. to about 100° C., and (iii) a styrene concentration of from 0 to less than about 20 weight percent, and said hindered-hydroxyl functional (meth)acrylate monomer having a diacrylate content of less than about 5 weight percent; and

b) at least one compressed fluid in at least an amount which when added to (a) is sufficient to render the viscosity of said mixture to a point suitable for being transportable, wherein the compressed fluid is a gas at standard conditions of 0° C. and one atmosphere (STP).

5,290,603

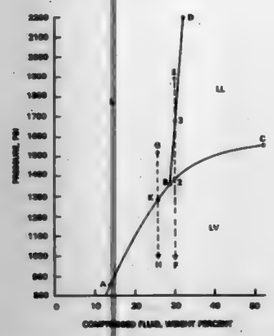
METHOD FOR SPRAYING POLYMERIC COMPOSITIONS WITH REDUCED SOLVENT EMISSION AND ENHANCED ATOMIZATION

Kenneth A. Nielsen, Charleston; David C. Busby, both of Charleston, W. Va.; Marc D. Donohue, Ellicott City, Md., and Charles W. Glancy, South Charleston, W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 18, 1992, Ser. No. 993,319

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—421 **20 Claims**



1. A process for spraying a polymeric composition to form a spray of finely atomized liquid droplets, which comprises:

(1) forming a liquid mixture at temperature T^0 in a closed system, said mixture comprising:

(a) a nonvolatile materials fraction containing at least one polymeric compound and which is capable of being sprayed; and

(b) a solvent fraction which is at least partially miscible wit the nonvolatile materials fraction and contains at least one compressed fluid in an amount which when added to (a) is sufficient:

(i) to render the viscosity of said mixture to a point suitable for being sprayed; and

(ii) to enable said liquid mixture to form a liquid compressed fluid phase at temperature T^0; wherein the compressed fluid is a gas at standard conditions of 0° C. and one atmosphere pressure (STP); and

(2) spraying said liquid mixture by passing the mixture at temperature T^0 and spray pressure P_1 into an orifice through which said mixture flows to form a liquid spray, wherein spray pressure P_1 is above the minimum pressure p_2 at which said liquid mixture forms a liquid compressed fluid phase at temperature T^0, thereby passing the liquid mixture through the liquid-liquid region of the polymeric composition and compressed fluid during depressurization.

5,290,604

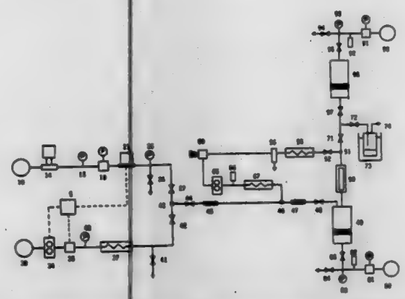
METHODS AND APPARATUS FOR SPRAYING SOLVENT-BORNE COMPOSITIONS WITH REDUCED SOLVENT EMISSION USING COMPRESSED FLUIDS AND SEPARATING SOLVENT

Kenneth A. Nielsen, Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 18, 1992, Ser. No. 993,355

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—421 **19 Claims**



1. A method for spraying a solvent-borne composition with reduced emission of organic solvent while maintaining low viscosity, said solvent-borne composition comprising:

(i) a nonvolatile materials fraction capable of being sprayed as a liquid solution or dispersion; and

(ii) a solvent fraction containing at least one organic solvent in which said nonvolatile materials fraction is at least partially soluble or dispersible and at least in an amount which is sufficient to render the viscosity of said solvent-borne composition having a viscosity of less than about 200 centipoise,

(a) forming a precursor liquid spray mixture in a closed system, said precursor liquid spray mixture comprising said solvent-borne composition and, in addition,

(iii) at least one compressed fluid under sufficient pressure and at least in an amount which when added to said solvent-borne composition is sufficient to maintain said precursor liquid spray mixture transportable after at least a portion of said solvent fraction is separated in step (b), said compressed fluid being a gas at standard conditions of 0° Celsius temperature and one atmosphere pressure (STP);

(b) separating at least a portion of solvent fraction (ii) from said precursor liquid spray mixture to form a liquid spray mixture having less organic solvent than said precursor liquid spray mixture, and then

(c) passing the thusly formed liquid spray mixture under pressure through an orifice to form a spray.

5,290,605

SUN-EXPOSURE NUTRITIONAL SUPPORTING COMPOSITION

Niva Shapira, 5 K Zitomir, Tel-Aviv, Israel

Continuation of Ser. No. 545,071, Jun. 28, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,058

Claims priority, application Israel, Jun. 29, 1989, 090794

Int. Cl.[5] A61K *47/00*

U.S. Cl. 424—439 **13 Claims**

1. A synergistic food-stuff composition concentrate consisting essentially of

(A) one or more edible carotenoids selected from the group consisting of α, β and γ carotenes, zeaxanthin, lycopen, lutein, crocetin, capsanthin, β-zeacarotene, cryptoxanthin, β-apo-8′-carotenal and β-apo-12′-carotenal;

(B) water;

(C)(1) at least one physiologically-acceptable antioxidant selected from the group consisting of ascorbic acid and salts thereof, and tocopherols; or

(2) at least one physiologically-acceptable free-radical scavenger selected from the group consisting of reduced glutathione and coenzyme Q10; or

(3) at least one physiologically-acceptable antioxidant selected from the group consisting of ascorbic acid and salts thereof, and tocopherols, and at least one physiologically-acceptable free-radical scavenger selected from the group consisting of reduced glutathione and coenzyme Q10.

5,290,606

METHOD FOR MANUFACTURING A SUBSTRATE FOR A PRINTED CIRCUIT BOARD

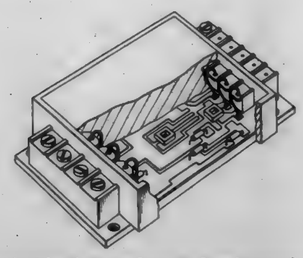
Svein Hestevik, Bilterudbråten, N-1550 Hølen, and Tore Storfossene, N-3640 Skollenborg, both of Norway

Continuation of Ser. No. 721,648, Jul. 29, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,597

Claims priority, application Norway, Jan. 30, 1989, 89 0377

Int. Cl.[5] B05D *1/08*

U.S. Cl. 427—453 **13 Claims**



1. A method for the manufacture of a substrate for electrical components, the substrate comprising a metal base, a dielectric layer and an electrical conducting layer having a conducting pattern, said method comprising the following successive steps:

a) sandblasting the surface of the metal base with grains of alumina;

b) within two hours after step a), coating the sandblasted surface of the base with a bonding layer by a thermal spray coating process;

c) coating the bonding layer with a dielectric layer of a ceramic material by a thermal spray coating process;

d) impregnating the dielectric layer of ceramic material with silicone oil by applying the silicone oil on the surface of the dielectric layer so that there is formed thereon a visible film of said oil and immediately thereafter removing the oil from the surface so that the visible film of silicone oil is no longer present;

e) heating the dielectric layer to about 50° C.;

f) coating the dielectric layer with an electrical conducting layer by a thermal spray coating process, said conducting layer having an electrical conducting pattern; and

g) cleaning the exposed surfaces of the dielectric layer and the electrical conducting layer by blasting them with glass spheres.

5,290,607

METHOD AND SYSTEM FOR SIGNIFICANTLY INCREASING THE DENSITY OF PARTICULATES ON A SUBSTRATE

Costa G. Chitouras, 10 Packard Ave., Somerville, Mass. 02144

Filed Mar. 2, 1992, Ser. No. 844,108

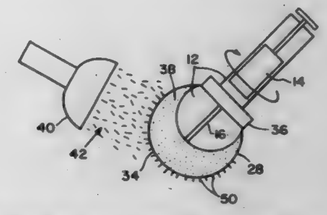
Int. Cl.[5] B05D *1/06*; B05B *5/00*

U.S. Cl. 427—462 **16 Claims**

1. A method for increasing the density of a particulate substance adhering to a substrate, wherein the substrate is sufficiently resilient to distension to cause the substrate to thereafter relax and thereby cause a surface of the substrate to diminish, comprising the steps of:

a) disposing the substrate on a support;

b) directing a material between the substrate and the support to thereby distend the substrate in an amount sufficient to allow the surface area on which an adhesive is disposed to diminish following release of the substrate by discharging the material from between the substrate and the support;



c) disposing the particulate substance onto the substrate surface; and

d) discharging the material from between the substrate and the support, whereby the substrate relaxes, thereby diminishing the substrate surface area and consequently increasing the density of the particulate substance on the substrate.

5,290,608

METHOD FOR FORMING A PATTERNED MASK

John Grunwald, Ramat Gal, Israel, and Gary Larson, Cheshire, Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Jul. 26, 1993, Ser. No. 97,138

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—493 **15 Claims**

1. A method for forming a patterned mask on a surface, comprising:

(a) providing a thermally-curable mask composition in the form of a liquid 100% solids composition;

(b) applying said composition as a film to said surface;

(c) thereafter, in a predetermined pattern and without use of an interposed patterned mask, directing to selected areas of said film, corresponding to the positive image of the desired mask pattern, a focused beam of heat energy effective to there bring about thermal cure of said composition to an extent sufficient to render such areas differentially less soluble in a developer than film areas to which said focused beam was not directed; and

(d) thereafter contacting said film with a developer effective to remove from the surface those film areas to which said focused beam was not directed.

5,290,609

METHOD OF FORMING DIELECTRIC FILM FOR SEMICONDUCTOR DEVICES

Yasuhiro Horiike, Hiroshima, and Kohei Kawamura, Tokyo, both of Japan, assignors to Tokyo Electron Limited, Tokyo and Yasuhiro Horiike, Hiroshima, both of Japan

Filed Mar. 9, 1992, Ser. No. 848,019

Claims priority, application Japan, Mar. 25, 1991, 3-82985

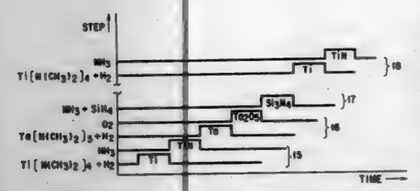
Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—576 **12 Claims**

1. A method of forming a dielectric film of a semiconductor device on a substrate in a plasma CVD apparatus, comprising the steps of:

keeping a process chamber, in which the substrate is housed, at a greatly reduced pressure while exhausting the chamber, supplying a source gas of organic tantalum compound

and hydrogen radicals into the process chamber through different inlets, and thermally reacting the organic titanium compound and hydrogen in the process chamber, thereby uniformly depositing a tantalum layer containing organic substances derived from the source gas of the organic tantalum compound on the substrate; and



keeping the process chamber at greatly reduced pressure while exhausting it and supplying oxygen radicals into the process chamber to oxidize the tantalum layer to form a Ta_2O_5 layer as well as to oxidize and remove the organic substances therefrom;

wherein the deposition of the tantalum layer and its oxidation are repeated thereby enabling the preparation of a dielectric film having plural Ta_2O_5 layers.

5,290,610

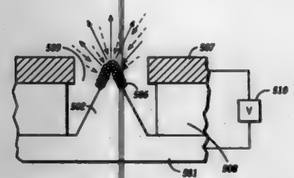
FORMING A DIAMOND MATERIAL LAYER ON AN ELECTRON EMITTER USING HYDROCARBON REACTANT GASES IONIZED BY EMITTED ELECTRONS

Robert C. Kane, and James E. Jaskie, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 13, 1992, Ser. No. 834,749

Int. Cl.[5] B05D *3/06*, *3/12*; C23C *16/00*; B01J *3/06*

U.S. Cl. 427—577 **20 Claims**



17. A method for forming a diamond material layer on a plurality of electron emitters including the steps of:

providing a reaction vessel;

disposing an electron emitting structure within the reaction vessel, the electron emitting structure including a supporting substrate having a surface, a conductive layer disposed on the surface of the supporting substrate, an insulating layer having a plurality of apertures formed therethrough and disposed on the surface of the supporting substrate, an extraction electrode disposed on the insulating layer and about the periphery of the plurality of apertures, and a plurality of electron emitting tips one each disposed in an aperture of the plurality of apertures and on the conductive layer;

coupling a voltage source between the extraction electrode and the conductive layer for inducing the emission of electrons from the electron emitting tips;

providing a hydrocarbon reactant within the reaction vessel such that some emitted electrons at least partially disassociate some of the hydrocarbon reactant to positively ionized radicals, which radicals are subsequently accelerated toward the electron emitting tip and are deposited thereon; and

providing an etching reactant within the reaction vessel, such that the etching reactant preferentially reacts with the deposited radicals to remove non-diamond formations of the deposited radicals at a rate higher than the removal of diamond form.

5,290,611

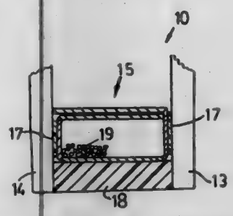
INSULATIVE SPACER/SEAL SYSTEM

Donald M. Taylor, R.R. #1, Orangeville, Ontario, Canada L9W 2Y8

Continuation-in-part of Ser. No. 366,069, Jun. 14, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 609,336

Int. Cl.[5] E06B *3/24*

U.S. Cl. 428—34 **20 Claims**



1. In combination, a multi-pane glazing unit having at least two glazing panes in mutually spaced relation and a composite insulative spacer for the precision separation of said glazing panels in substantially mutually parallel, hermetic sealed relation, comprising a low cost substantially porous, homogeneous resilient web substrate having a coefficient of thermal expansion substantially equal to or less than that of said glazing panels, said web substrate serving, in use, to hold said glazing panels apart, being subject to gas percolation therethrough and being faced with at least one overcladding layer of gas impermeable barrier material selected from the group consisting of polyvinyl alcohol, polyvinylidene chloride, thermoplastic polyesters, ethylene vinyl alcohol copolymers, a thermally isolated thin metallic coating, and combinations thereof, applied in sealing relation to a selected surface of the substrate, said spacer being edge sealed to said panels to enclose and hermetically seal a gas retaining space between said glazing panels.

5,290,612

BRACKET FOR A SUSPENSION SYSTEM FOR CONTROL UNITS, CONTROL PANELS AND THE LIKE

Matthias Schuler, Dietzhölztal; Udo Munch, Sinn, and Wolfgang Reuter, Burbach, all of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed May 21, 1992, Ser. No. 887,022

Claims priority, application Fed. Rep. of Germany, May 21, 1991, 4116464

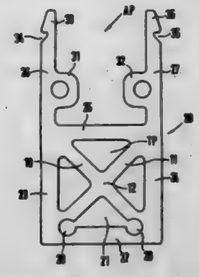
Int. Cl.[5] E04G *13/00*

U.S. Cl. 428—34.1 **4 Claims**

1. In a bracket for a suspension system for control units or control panels, having a support body with a substantially U-shaped base profile section that is subdivided by a separation rib extending parallel to a rib of the base profile section into a closed supporting part and an open U-shaped receiving part remote from the rib, in which continuous, longitudinally oriented screw receptacles are formed on the support part and the receiving part, the improvement comprising:

the support part (TP) stiffened in a longitudinal direction of the support body (20) by two continuous diagonal ribs (10, 11) which are joined together in the middle,

the screw receptacles (28, 29) of the support part (TP) each positioned in a corner region where said diagonal ribs (10, 11) join with the base profile portion (21), and



the screw receptacles (31, 32) of the receiving part (AP) being closed.

5,290,613

DEODORIZED MULTILAYER FILM WITH VINYLIDENE CHLORIDE COPOLYMER BARRIER

Jeffrey M. Shuetz, Woodridge, and Stephen J. Vicik, Darien, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Continuation of Ser. No. 547,703, Jul. 3, 1990, abandoned. This application Jul. 29, 1992, Ser. No. 919,399

Int. Cl.[5] B65D *30/08*

U.S. Cl. 428—35.4 **18 Claims**

1. In a irradiated, deodorized multilayer thermoplastic film having a vinylidene chloride copolymer barrier layer and at least a polyolefin second layer laminated to the barrier layer wherein at least the barrier layer is irradiated, the improvement comprising hydrotalcite blended with said polyolefin in quantity of at least about 0.1 wt. % hydrotalcite.

5,290,614

ADHESIVE TAPES FOR TAPE AUTOMATED BONDING

Hitoshi Narushima; Yoshikazu Tsukamoto; Tadahiro Oishi, and Atsushi Koshimura, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

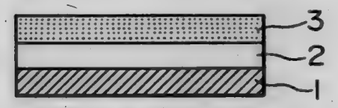
PCT No. PCT/JP91/00066, § 371 Date Sep. 20, 1991, § 102(e) Date Sep. 20, 1991, PCT Pub. No. WO91/11821, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 23, 1991, Ser. No. 761,939

Claims priority, application Japan, Jan. 23, 1990, 2-11744; Jan. 31, 1990, 2-19265

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—40 **3 Claims**



1. An adhesive tape for tape automated bonding (TAB), comprising a protective film and an adhesive layer laminated on an organic-insulating film, wherein said adhesive layer comprises a resol-type phenol resin and a polyamide resin, and further wherein said resol-type phenol resin is from 2 to 35% by weight of said adhesive layer.

5,290,615

ORGANOPOLYSILOXANE-POLYUREA BLOCK COPOLYMER RELEASE AGENTS

Leonard A. Tushaus, White Bear Lake, and Gary T. Widerholt, West St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 616,753, Nov. 16, 1990, Pat. No. 5,214,119, and a continuation of Ser. No. 273,977, Nov. 21, 1988, abandoned, and a continuation-in-part of Ser. No. 57,570, Jun. 15, 1987, abandoned, and a continuation-in-part of Ser. No. 876,918, Jun. 20, 1986, abandoned. This application Aug. 31, 1992, Ser. No. 938,873

Int. Cl.[5] A61F *13/02*

U.S. Cl. 428—40 **27 Claims**

1. A pressure-sensitive adhesive tape comprising a backing member having a first front side and a second back side, a layer of pressure-sensitive adhesive on said first side and a low adhesion backsize coating on said second side, said backsize coating comprising an organopolysiloxane-polyurea block copolymer comprising the condensation reaction product of an organopolysiloxane diamine reacted with at least one diisocyanate, and up to 95 weight percent of a diamine or dihydroxy chain extender wherein the organopolysiloxane has little contamination from monofunctional or non-functional silicone as determined by the ability of the tape to functionally adhere (PSTC-1) to a glass plate after being removed from said backsize coating.

5,290,616

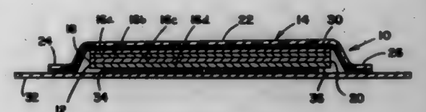
RESEALABLE OVERLAMINATED LEAFLET LABEL

Randy G. Cowan, and Donovan D. Nelson, both of Sioux Falls, S. Dak., assignors to CCL Label, Inc., Grand Rapids, Mich.

Filed Nov. 27, 1992, Ser. No. 982,520

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—40 **6 Claims**



1. A leaflet label assembly comprising:

a release liner;

a leaflet having a plurality of panels disposed in overlying relationship including a topmost panel and a bottommost panel, and further having a pair of opposed, spaced apart edges, said bottommost panel engaging said release liner; and

a cover sheet having opposed front and rear major surfaces, said rear major surface coated with an adhesive material, said rear major surface having a central portion overlyingly adhered to said topmost panel of said leaflet and further having opposed marginal portions extending from opposed sides of said central portion beyond said leaflet edges, said marginal portions adhered directly to said release liner.

5,290,617

SLIDING STRUCTURE FOR A HIGH LOAD

Zenichi Mochizuki, Fuji; Akihiko Tsuda, Atsugi, and Masaki Shimada, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,366

Claims priority, application Japan, Apr. 12, 1991, 3-108825

Int. Cl.[5] F16N *1/00*

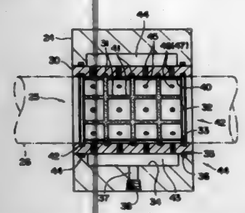
U.S. Cl. 428—67 **17 Claims**

1. A sliding structure for a high load, comprising:

a solid lubricating material buried in any one of a pair of surfaces sliding on each other under high load;

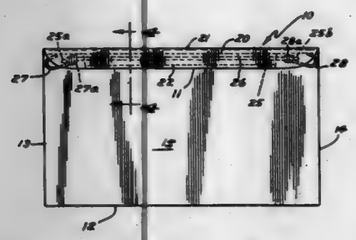
VOL 1160 ISS 1 MR 1 1994 UMI

an oil reservoir of a predetermined capacity formed at the reverse surface of any one of said sliding surfaces;
an oil supplying pore extending from said oil reservoir to said sliding surface concerned; and
a pore holding member having minute continuous pores and



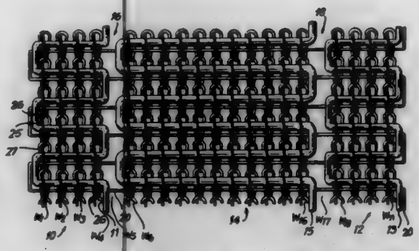
being substantially coextensive with said oil supplying pore, said pore holding member being inserted into said oil supplying pore such that when a lubricating oil is supplied to said oil supplying pore said pore holding member provides a limited supply of oil to said sliding surface concerned.

5,290,618
AUTOMOBILE FENDER PROTECTOR
Richard R. Olson, 1721 Center St., Centerville, Minn. 55038, and Brian J. Regaier, 3827-97th La. NE., Circle Pines, Minn. 55014
Filed Oct. 30, 1992, Ser. No. 969,372
Int. Cl.[5] B60R *27/00*; B32B *3/06*
U.S. Cl. 428—100 **4 Claims**



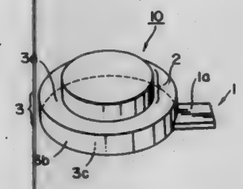
1. A protective fender cover, comprising
a single layer of a flexible leather-like material cover of an extent to overlie an adequate length of the outer surface of an automotive vehicle fender,
a flange formed along one side edge portion of said cover by doubling over said edge portion,
a liner underlying said doubled over edge portion formed of a leather-like material having an inner edge extending between said doubled over edge portion and an outer free edge and being short of the ends of said flange,
a seam stitched across and adjacent the top of said doubled over portion engaging the edge of said doubled over portion and engaging the adjacent inner free edge of said liner,
a seam stitched across the free edge of both said liner and of said doubled over flange portion,
a sleeve formed by said stitched liner between said seams,
a resilient cable disposed through said sleeve, and
a hook member at each end of said cable.

5,290,619
KNITTED MATTRESS TAPE
Edmond H. Siegel, New York, and Alfred Reisfeld, New Hyde Park, both of N.Y., assignors to CT-Nassau Corporation, Alamance, N.C.
Filed Jul. 5, 1991, Ser. No. 726,439
Int. Cl.[5] B32B *3/06*; D03D *23/00*
U.S. Cl. 428—102 **51 Claims**



1. A mattress tape for securing the end of the mattress comprising: a knitted tape structure formed from yarns; said tape structure having a first section, a second section, and a third section disposed between said first and second section; said third section being formed with greater shape holding capability than said first and second sections; said yarns including a first inlay extending in the width direction of said tape structure for providing continuity between and essentially across said first, second and third sections of said structure, second third and fourth inlays each respectively extending essentially across one of said first, second and third sections in said width direction, and a loop structure extending substantially longitudinally of said tape and intersecting said inlays at essentially right angles.

5,290,620
STRUCTURE OF ATTACHING A MEMBER ADAPTED TO BE ADHERED TO A SUBJECT MEMBER
Tetsuji Shono, Kawagoe, Japan, assignor to Asahi Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 10, 1992, Ser. No. 942,781
Claims priority, application Japan, Sep. 12, 1991, 3-081767[U]
Int. Cl.[5] B32B *7/00, 31/00*
U.S. Cl. 428—120 **13 Claims**



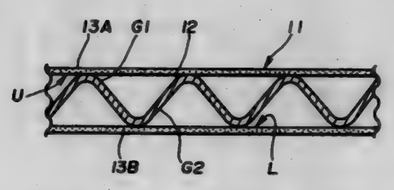
1. A structure for attaching a member to be adhered to a subject member, comprising:
a body having an optically transparent portion having an outer peripheral surface, and a flange portion integrally formed with said outer peripheral surface, a bonding surface which is formed on the end surface of said flange portion and is adapted to be adhered to a subject member, and a non-bonding surface; and
a grip portion integrally formed to said body on said non-bonding surface thereof;
said body including a small portion formed in a cylindrical shape to be inserted into a hole which is formed in the subject member, and said flange portion including a large portion formed of a cylindrical shape which is adjacent the subject member, and
said bonding surface is defined by a peripheral surface portion of said large portion of said flange portion on which said small portion is formed and which is positioned around said small portion.

5,290,621
FLAT-TOPPED WAVE-BOARD PANEL
Lars Bach, and Eduard Stark, both of Edmonton, Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of Forestry, Hull, Canada
Continuation-in-part of Ser. No. 592,252, Oct. 3, 1990, abandoned. This application Dec. 3, 1992, Ser. No. 984,971
Int. Cl.[5] B32B *21/04*
U.S. Cl. 428—176 **8 Claims**



1. A wave-board panel which comprises a panel formed of a mat of thermosetting resin and wax admixed with wafers having a length ranging from about 1" to 12", a thickness ranging from 0.02" to 0.06", width ranging from 0.2" to 2", and a resin content ranging from about 1% to about 6% wherein said mat has been converted from a planar to a wave configuration and subjected to binder curing and compression, said board having a flat-peaked and a flat-troughed profile, a panel depth of 2" to 6", a panel thickness of 0.25" to 0.75", said panel further having an essentially uniform density throughout, and a significantly improved Unit E1 bending stiffness over a sinusoidal or flat wafer board panel.

5,290,622
BOARD STRUCTURE
Kazuo Tanabe, Gifu, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Nov. 12, 1991, Ser. No. 789,898
Claims priority, application Japan, Nov. 30, 1990, 2-129095[U]
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—182 **9 Claims**



1. A board structure for a base material of a molded ceiling member of an automotive vehicle, said board structure comprising:
a corrugated core board formed of a material selected from the group consisting of cardboard and cork sheet; and
a first surface board fixedly attached to a first surface of said corrugated core board, said first surface board being formed of cork sheet.

5,290,623
THERMAL TRANSFER RECORDING MEDIUM
Shiro Kawahito, and Koichi Sakai, both of Tochigi, Japan, assignors to KAO Corporation, Tokyo, Japan
Filed Dec. 2, 1991, Ser. No. 801,469
Claims priority, application Japan, Dec. 14, 1990, 402299
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] B41M *5/38*
U.S. Cl. 428—195 **41 Claims**

1. A thermal transfer recording medium, consisting essentially of a substrate, a hot-melt ink layer, and a release layer between said substrate and said hot-melt ink layer, provided on one surface of said substrate, and a back-coated layer, provided on the other surface of said substrate, said hot-melt ink layer comprising a polyether resin having a bisphenol skeleton and hydroxyl groups at the terminal ends thereof as a binder, and a colorant, said release layer comprising a member selected from the group consisting of a silicone resin, a higher fatty acid, a metal salt of a higher fatty acid, a fatty acid derivative, a higher alcohol, and a wax, and said back-coated layer comprising a reaction product of a polyisocyanate and at least one amino-modified silicone oil.

5,290,624
HEAT-CONDUCTIVE ADHESIVE FILMS, LAMINATES WITH HEAT-CONDUCTIVE ADHESIVE LAYERS AND THE USE THEREOF
Patrice Bujard, Courtepin, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Apr. 22, 1992, Ser. No. 872,745
Claims priority, application Switzerland, Apr. 24, 1991, 1226/91; Jul. 10, 1991, 2056/91
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **16 Claims**



1. A laminate comprising (a) a substrate having a heat conductivity of at least 10 W/mK and a thickness of 10 to 100 μm, and (b) a dielectric adhesive layer which is applied to at least one surface of said substrate and which contains a heat-conductive, finely particulate filler selected from the group consisting of aluminum nitride, boron nitride, silicon nitride and silicon carbide, said dielectric adhesive layer having a thickness of 5 to 500 μm and a heat conductivity of 1 W/mK.

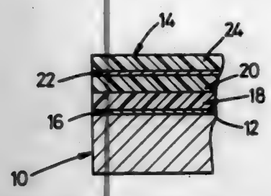
5,290,625
SYSTEM FOR MAKING BRIGHT ALUMINUM PARTS
Richard C. Eisfeller, Greenland, and John Clark, Strafham, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.
Filed May 22, 1992, Ser. No. 886,496
Int. Cl.[5] B32B *7/10*
U.S. Cl. 428—216 **1 Claim**

1. A bright trim aluminum part comprising a conductive base layer of aluminum; a chromate conversion coating layer on said base layer formed as a compound of the aluminum base material; a prime coat of dielectric urethane resinous material, being 0.1 to 2.0 mils thick, covering said conversion coat layer;
a basecoat of dielectric urethane resinous material, being 0.1 to 2.0 mils thick, covering said prime coat;
a layer of vacuum deposited corrosion prone metal material selected from the group consisting of indium and indium alloys covering said basecoat and comprising a plurality of discrete rounded islands having thicknesses of 25–2,000

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angstroms, the corrosion prone metal islands appearing macroscopically as a continuous film of such metal and having a plurality of macroscopically unobservable chemically etched channels between the islands to maintain the film electrically non-conductive over the basecoat layer; and

a clear resinous protective dielectric topcoat, being 0.1 to 2.0



mils thick, completely covering said layer of vacuum deposited corrosion prone metal material and filling said etched channels, said topcoat bonding said corrosion prone metal material to said basecoat throughout the base of said etched channels by a bond force greater than two orders of magnitude in strength as compared to the bond force between the topcoat and a continuous layer of said corrosion prone metal material.

5,290,626

MICROFIBERS-GENERATING FIBERS AND A WOVEN OR NON-WOVEN FABRIC OF MICROFIBERS

Hiroaki Nishio; Satoshi Ogata, and Yoshimi Tsujiyama, all of Moriyama, Japan, assignors to Chisso Corporation, Ohsaka, Japan

Filed Feb. 7, 1992, Ser. No. 832,743
Claims priority, application Japan, Feb. 7, 1991, 3-38156
Int. Cl.[5] D02G *3/02*
U.S. Cl. 428—224 7 Claims

1. Microfibers-generating fibers consisting essentially of island-in-sea type conjugate fibers spun according to a melt blown process, the sea part of said conjugate fibers being composed of a thermoplastic polymer capable of being removed with a solvent and the island part thereof being composed of a thermoplastic polymer insoluble in said solvent and forming microfibers having a fineness of a single fiber of 0.01 denier or less.

5,290,627

FRICTION MATERIAL FOR OPERATING IN OIL

Yukio Ikuta, Haayu, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,534
Claims priority, application Japan, Apr. 18, 1991, 3-114010
Int. Cl.[5] B32B *7/00, 25/06;* D02G *3/00*
U.S. Cl. 428—251 1 Claim

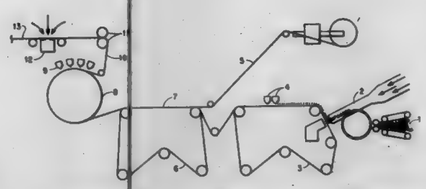
1. A friction material for operating in oil consisting essentially of the following components: 5–70 wt. % of fibrillated ramie fibers, 0–65 wt. % of cotton pulp, 3–10 wt. % of friction dust, 1–10 wt. % of rouge, 1–10 wt. % of graphite, 1–10 wt. % of rubber latex, 10–30 wt. % of diatomaceous earth, and 0–30 wt. % of aramide fibers.

5,290,628

HYDROENTANGLED FLASH SPUN WEBS HAVING CONTROLLABLE BULK AND PERMEABILITY

Hyun S. Lim, Chesterfield, Va.; Robert H. Peterson, Hendersonville, Tenn.; Roger K. Siemionko, Hockessin, Del., and James R. Vincent, Old Hickory, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 973,876, Nov. 10, 1992, abandoned.
This application Apr. 21, 1993, Ser. No. 49,641
Int. Cl.[5] B32B *5/06*
U.S. Cl. 428—299 16 Claims



1. A process for making a spunlaced nonwoven fabric comprising the steps of:

(a) positioning a web of staple fibers against an unbonded flash spun web on a supporting screen to form a composite web structure; and

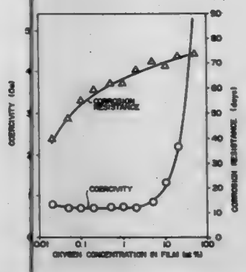
(b) hydraulically needling the staple fiber side of the supported composite web structure such that the staple fibers penetrate the flash spun web and are embedded into and entangled with the unbonded flash spun web.

5,290,629

MAGNETIC FILM HAVING A MAGNETIC PHASE WITH CRYSTALLITES OF 200 A OR LESS AND AN OXIDE PHASE PRESENT AT THE GRAIN BOUNDARIES

Toshio Kobayashi, Tokyo; Ryoichi Nakatani, Akigawa; Hitoshi Nakamura, Hachioji, and Nagatugu Koiso, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1991, Ser. No. 638,774
Claims priority, application Japan, Jan. 8, 1990, 2-000670
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—332 18 Claims



1. A magnetic film comprising a magnetic metal including a magnetic metal crystal comprised of crystallites having an average crystallite size of 200 Å or less in which an oxide phase containing oxides of at least one element selected from elements of groups IVa, Va and VIa of the Periodic Table is present at the grain boundary portion of said crystallites, oxygen being present in the range of 0.1–15 atomic% in said oxide phase.

5,290,630

CHROMOPHORE-CONTAINING COMPOUNDS FOR OPTO-ELECTRONIC APPLICATIONS

David P. Devonald, Oldham; Ian Ferguson, Walsden; Michael G. Hutchings, Holcombe, and Timothy G. Ryan, Great Ayton, all of England, assignors to Imperial Chemical Industries plc, London, United Kingdom

Filed Sep. 3, 1991, Ser. No. 754,014
Claims priority, application United Kingdom, Sep. 5, 1990, 9019347
Int. Cl.[5] G02F *1/35*
U.S. Cl. 428—333 10 Claims

1. An optical element having non-linear optical properties comprising a multi-functional, chromophore containing, polymerizable compound wherein the multi-functional chromophore is a compound capable of being polymerized into a cross-linked network and of being poled under the influence of an electric field while being polymerized into the cross-linked network, the compound having the generalized formula

(D) (C) (A) (F)

D, C, A, and F representing covalently linked moieties where C represents at least one conjugated system of π-electron donor groups linked at opposite ends of the conjugated system C; F represents at lest two polymerizable functional groups, which may be the same or different, attached to the π-conjugated system C, group A or group D via substituent groups R^1 and R^2; and R^1 and R^2 are independently selected from such groups as alkyl, cycloalkyl, aryl heteroalkyl, alkenyl, cycloalkenyl, and alkynyl groups, substituted variants of such groups and heteroatom-containing variants of such groups wherein at least one carbon atom has been replaced by a heteroatom, the groups F being linked to the compound so that after the compound has been polymerized to give a cross-linked network the interpolymerized functional groups prevent significant realignment of the chromophore groups when the optical element is subject to temperature changes such that after annealing the optical element at 60° C. for 1 hour the normalized second harmonic generation intensity (SHG) fall by less than 10% if the optical element is held at 60° C. for 1000 hours.

5,290,631

HYDROSOLUBLE/HYDRODISPERSIBLE POLYESTERS AND SIZING OF TEXTILE THREADS THEREWITH

Etienne Fleury, Lyons, and Yvette Girardeau, Fontaines-Sur-Saone, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 29, 1992, Ser. No. 968,306
Claims priority, application France, Oct. 29, 1991, 91 13595
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—364 24 Claims

1. A hydrosoluble/hydrodispersible polyester copolycondensate comprising terephthalate, isophthalate, sulfoaryl dicarboxylate, ethylene glycol and polyoxyethylene glycol recurring structural units, having a glass transition temperature ranging from 15° to 40° C. at 85% relative humidity, and the turbidity of an aqueous formulation thereof being storage-stable over time.

5,290,632

LIQUID COATINGS FOR CAST IRON

Jalandar Y. Jadhav, Ellicott City, and Cung Vu, Columbia, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 1, 1992, Ser. No. 877,319
Int. Cl.[5] C09G *18/10;* C08L *91/00, 75/00;* C08F *8/00*
U.S. Cl. 428—423.1 30 Claims

1. Composition consisting essentially of two separate components, A and B;

Component A consisting essentially of, in parts by weight, (i) about 100–130 parts of castor oil; (ii) a low molecular weight polyol having at least 2 hydroxyl groups and a molecular weight between 76 and about 450, 12–90 parts; and (ii) an elastomer, about 20–50 parts;

Component B, about 50–110 parts; being a polymeric polyisocyanate having an average molecular weight of about 340–380 and a functionality of about 2.6–2.7.

5,290,633

COATING COMPOSITIONS BASED ON GRAFT POLYMERS

Brian P. Devlin, Audubon, Pa.; Joseph A. Antonelli, Riverton, N.J., and Christopher Scopazzi, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 738,678, Jul. 31, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,366
Int. Cl.[5] C08L *51/00, 75/00*
U.S. Cl. 428—423.1 10 Claims

1. A coating composition comprising 30–90% by weight of binder and 10–70% by weight of a liquid organic carrier, useful for coating a substrate, wherein the binder comprises:

(a) 5 to 90% based on the weight of the binder, of a graft copolymer having a molecular weight of 1500 to 50,000 consisting essentially of:

(i) a polymeric backbone comprising from about 5 to 7%, based on the weight of the backbone, of polymerized ethylenically unsaturated monomers containing a hydroxy functionally; and

(ii) 1 to 80%, by weight of the graft polymer, of macromonomers attached to said polymeric backbone at a single terminal point of said macromonomer; and

(b) 10 to 60%, by weight of the binder, of a polyisocyanate crosslinking agent.

5,290,634

ANTISTATIC FILM

Akira Furukawa, and Hidetsugu Oda, both of Tsukuba, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Feb. 4, 1991, Ser. No. 649,963
Claims priority, application Japan, Feb. 5, 1990, 2-026442; Aug. 3, 1990, 2-206324; Aug. 3, 1990, 2-206325; Aug. 3, 1990, 2-206326; Aug. 3, 1990, 2-206327
Int. Cl.[5] B32B *27/36;* C08F *12/36*
U.S. Cl. 428—475.2 13 Claims

1. An antistatic layer comprising:

a support;

a layer containing a curable antistatic polymer dispersion; and

a layer containing gelatin,

said layers being provided on the support in this order or in the reverse order and said layers being contiguous to each other,

wherein said curable antistatic polymer is obtained by the method comprising the steps of polymerizing a mixture of polymerizable monomer components comprising;

40 to 90 percent by weight, relative to the total weight of the polymerizable monomer components, of a polymerizable vinyl monomer (I) having a sulfonic acid group or a salt thereof as a substituent; and

10 to 60 percent by weight, relative to the total weight of the polymerizable monomer components, of a monomer (II) represented by the following formula (II)



(II)

wherein R^1 and R^2 each represents a hydrogen atom or a methyl group and R^3 represents a hydrogen atom or an alkyl group of 1 to 8 carbon atoms; or

a mixture of 40 to 90 percent by weight, relative to the total weight of the polymerizable momomer components, of monomer (I) and 10 to 60 percent by weight, relative to

the total weight of the polymerizable monomer components, of monomer (II) and 1 to 30 percent by weight, relative to the total weight of the polymerizable monomer components, of an additional polymerizable monomer component which is copolymerizable with monomer (I) and monomer (II);

wherein said polymerization takes place in a solvent system selected from a water-miscible organic solvent and a mixed solvent comprising a water-miscible organic solvent and water.

5,290,635

COLD-STRETCHED PRODUCTS COMPRISING A PROPYLENE-BASED RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Daisuke Matsumura, and Mitsuyoshi Itada, both of Suzuka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 21, 1991, Ser. No. 658,594
Int. Cl.[5] B32B *27/28, 27/32;* C08L *23/10, 23/20*
U.S. Cl. 428—516 3 Claims

1. A laminated oriented film comprising a crosslinked outer resin layer and a resin layer having sealing properties being used as an inner layer; said resin layer having sealing properties being a non-crosslinked and cold-stretched resin composed of a mixture of (A), (B) and (C) as defined below:

(A) a polymer consisting primarily of propylene units, in a proportion of not more than 92% by weight and not less than 50% by weight,

(B) a polymer consisting mainly of butene-1 units, in a proportion of not more than 47% by weight and not less than 5% weight, and

(C) a hydrogenated petroleum resin or a hydrogenated terpene resin in a proportion of not more than 35% by weight and not less than 3% by weight,

the sum of the proportions being 100% by weight.

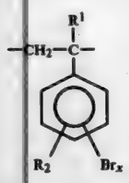
5,290,636

FLAME RETARDANT BROMINATED STYRENE-BASED COATINGS

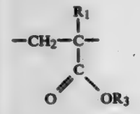
Richard S. Rose, West Lafayette; Jin-liang Wang; Nicolai A. Favstritsky, both of Lafayette; David E. May, Williamsport, and David J. Honkomp, Lafayette, all of Ind., assignors to Great Lakes Chemical Corp., W. Lafayette, Ind.

Continuation-in-part of Ser. No. 578,583, Sep. 6, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 875,359
Int. Cl.[5] B32B *27/32*
U.S. Cl. 428—521 24 Claims

1. In a composite material comprising a substrate and a latex coating adhered thereto, the improvement comprising the coating being a flame retardant latex material comprising ring-brominated aromatic monomer units of the formula (I)



and alkyl (meth)acrylate monomer units of the formula (II)



in which X=1 to 4, R_1 is —H or —CH_3, R_2 is —H or an alkyl group having from 1 to 4 carbon atoms, and R_3 is an alkyl group having from 1 to 20 carbon atoms, and in which the ring-brominated aromatic monomer units are present in an amount to provide from 7 to 20 percent bromine by weight of the overall coating, said coating having a Tg from about −30° C. to about 30° C.

5,290,637

COMPOSITE METALLIC ARMOR

Joseph L. Sliney, Watertown, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1965, Ser. No. 510,158
Int. Cl.[5] B22F *7/04*
U.S. Cl. 428—548 3 Claims

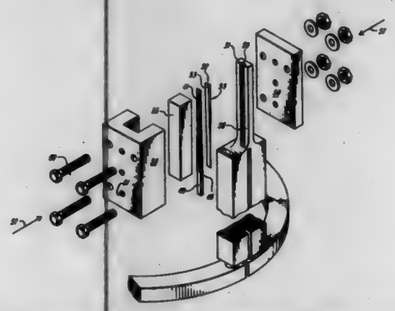
1. A composite metallic armor comprising three layers of different alloys roll-bonded together to form a composite armor having a front face of 0.70 carbon, 1 nickel steel to shatter a projectile, an intermediate layer of 9 nickel - 4 cobalt - 0.45 carbon to reinforce the front face and a back layer of 9 nickel - 4 cobalt - 0.30 carbon to prevent cracking of front face, said composite armor being approximately 40% lighter when affording equal ballister protection as standard steel armor and providing 40–45% greater protection when the area density is the same as standard steel armor.

5,290,638

SUPERCONDUCTING JOINT WITH NIOBIUM-TIN

John E. C. Williams, Wayland; Alexander Zhukovsky, Brighton, and Ronald DeRocher, Gloucester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 24, 1992, Ser. No. 920,114
Int. Cl.[5] H01R *4/68*
U.S. Cl. 428—662 18 Claims



1. A superconducting joint for joining a pair of superconductor wires, comprising:

a niobium-tin superconducting composite member;

a niobium-tin superconducting wire diffusion bonded to the composite member;

a spacer diffusion bonded to the superconducting wire;

a support plate diffusion bonded to the spacer; and

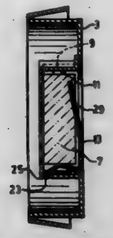
a superconducting member in electrical contact with the niobium-tin composite member.

5,290,639

BATTERY SOCKET FOR SMOKE DETECTOR

John Mallory, Mississauga, Canada, assignor to Disys Corporation, Toronto, Canada

Filed Jun. 4, 1992, Ser. No. 893,539
Claims priority, application Canada, Jan. 28, 1992, 2060131-1
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—1 13 Claims



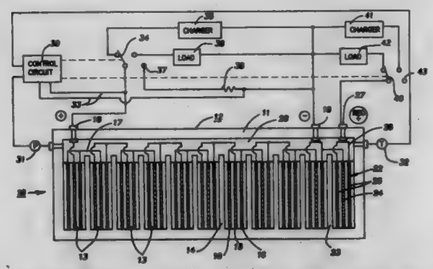
1. A battery housing, comprising a main body portion, a socket in said main body portion shaped to receive a battery, contacts disposed at one end of said socket for connection to correspondingly disposed electrodes on said battery, and a lid positioned to open and close over said socket, said lid including means for urging said battery electrodes into connection with said contacts, said means for urging comprising a latch for insertion into said socket at an end thereof opposite said contacts, said latch having an inward bend for forcing said battery toward said opposite end upon closing said lid, whereby said electrodes are urged into close connection with said contacts, and further including a resilient tab projecting from said lid at an acute angle thereto for forcing said battery into said socket upon closing said lid.

5,290,640

SEALED RECHARGEABLE BATTERY

Boris Tsenter, Jerusalem, Israel, and Menahem Anderman, Phoenix, Ariz., assignors to Acme Electric Corporation, East Aurora, N.Y.

Filed Mar. 10, 1993, Ser. No. 29,136
Int. Cl.[5] H01M *10/52*
U.S. Cl. 429—9 19 Claims



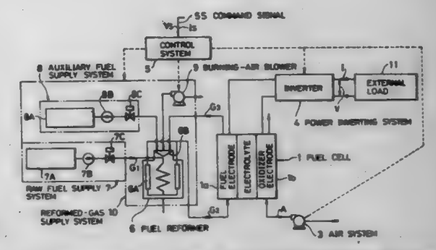
1. In a sealed rechargeable storage battery containing one or more rechargeable working cells capable of generating gas in a gas space within said sealed battery during charging of said rechargeable working cells, the improvement comprising at least one regulator cell provided within said battery and in gaseous communication with said gas space, said regulator cell being chargeable and dischargeable by a control circuit to regulate the amount of said gas.

5,290,641

METHOD OF CONTROLLING OPERATION OF FUEL CELL POWER SUPPLY

Kouichi Harashima, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 579,601, Sep. 7, 1990, abandoned. This application May 21, 1992, Ser. No. 886,607
Claims priority, application Japan, Oct. 6, 1989, 1-261352
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—17 2 Claims



1. A method of controlling the operation of a fuel cell power supply having a fuel cell, a reformed gas supply system for supplying the fuel cell with reformed gas at a flow rate Q, an air system for supplying the fuel cell with reactant air at a flow rate Q', a power inverting system for inverting the output of the fuel cell and supplying the inverted output power to an external load, and a control system for controlling these systems in response to a command externally applied to increase or decrease the output power of said fuel cell, said method comprising the steps of:

calculating a reference current and a reference voltage in accordance with a reference power designated by said command to increase the output power on the basis of I-V characteristic curves of said fuel cell store in said control system;

calculating a first reference flow rate Q_2 of said reformed gas and a first reference flow rate Q_2' of said reactant air to be supplied to said fuel cell in accordance with said reference current;

adding to said first reference flow rates Q_2 and Q_2' a predetermined amount q of said reformed gas and a predetermined amount g' of said reactant air, respectively, to obtain a second reference flow rate Q_3 of said reformed gas and a second reference flow rate Q_3' of said reactant air to be supplied to said fuel cell;

increasing said flow rates Q and Q' of said reformed gas and said reactant air by controlling said reformed gas supply system and said air system in accordance with said second reference flow rates Q_3 and Q_3';

detecting the flow rates Q and Q' of said reformed gas and said reactant air respectively to find a first timing when said detected flow rates reach said second reference flow rates Q_3 and Q_3' respectively;

detecting an output current, an output voltage and a temperature of said fuel cell;

controlling said fuel cell, said reformed gas supply system, said air system, and said power inverting system in accordance with said second reference flow rates Q_3 and Q_3' and said reference power provided by said command from said first timing to a second timing when the temperature of said fuel cell reaches a predetermined steady state operation temperature corresponding to said reference current; and

controlling said fuel cell, said reformed gas supply system, said air system, and said power inverting system in accordance with said first reference flow rates Q_2 and Q_2', said reference current, and the output current of said fuel cell after said second timing.

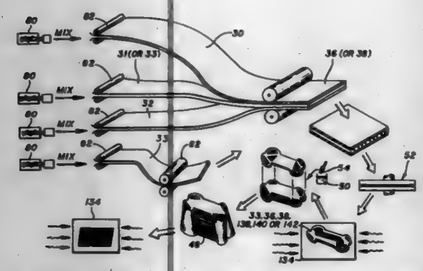
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5,290,642

METHOD OF FABRICATING A MONOLITHIC SOLID OXIDE FUEL CELL

Nguyen Q. Minh, Fountain Valley, and Craig R. Horne, Redondo Beach, both of Calif., assignors to AlliedSignal Aerospace, Morris Township, Morris County, N.J.

Filed Sep. 11, 1990, Ser. No. 580,722
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—33 19 Claims



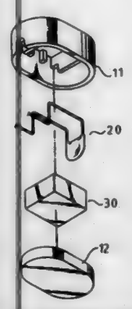
1. A method of fabricating a monolithic oxide fuel cell, comprising the steps of:
(a) forming a plurality of multilayer tapes;
(b) heating said plurality of multilayer tapes until partially densified;
(c) stacking said partially densified tapes into a monolithic core; and
(d) heating said core until fully densified.

5,290,643

BATTERY TEMPERATURE DETECTING DEVICE FOR A CHARGER

Stephen Chen, Changhua City, Taiwan, assignor to E Lead Electronic Co., Ltd., Changhua, Taiwan

Filed Apr. 29, 1993, Ser. No. 54,014
Int. Cl.[5] H01M *10/48, 10/46*
U.S. Cl. 429—61 5 Claims



1. A battery temperature detecting device for use on a charger, comprising:
a case having an upper shell and a bottom lid;
said bottom lid in abutment against said battery being made of material having good thermal conductivity;
said upper shell being made of material having low thermal conductivity;
a heat sensitive sensor disposed in said case being connected by wire to an inner circuit of said charger so as to transmit detected temperature to said inner circuit of said charger;
a fixing means being associated with said case or fixed to said charger for securing said case to said battery with said bottom lid having good thermal conductivity in abutment against the surface of said battery whereby said heat sensitive sensor can detect the temperature of said battery which is then transmitted to said inner circuit of said charger so as to cause said charger to continue or stop the charge operation according to the charging state detected by the temperature of said battery.

5,290,644

ELECTROCHEMICAL SECONDARY CELL USING LITHIUM AND A LIQUID ORGANIC ELECTROLYTE

Xavier Andrieu, Bretigny sur Orge, France, assignor to Alcatel Asthom Compagnie Generale d'Electricite, Paris, France

Filed Mar. 27, 1992, Ser. No. 858,871
Claims priority, application France, Mar. 29, 1991, 91 03877
Int. Cl.[5] H01M *2/16*
U.S. Cl. 429—129 10 Claims

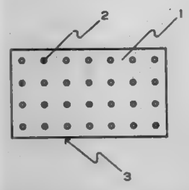
1. An electrochemical secondary cell having a liquid organic electrolyte, the cell being of the prismatic or cylindrical type, including at least one lithium electrode, a microporous film of polyolefin, and a positive electrode, the cell including a film of cross-linked polymer situated adjacent to said positive electrode, said polymer film being molded and cross-linked before assembly of the cell components, said cross-linked polymer being selected from the group consisting of cross-linked ion-conducting polymers, and said cross-linked polymer being capable of swelling in said electrolyte so as to exert pressure on the at least one lithium electrode.

5,290,645

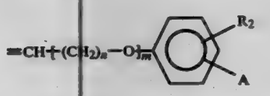
BATTERY SEPARATOR AND A BATTERY

Masanao Tanaka; Nobutoshi Tokutake; Yoshihiko Kondo; Hiroaki Yamazaki; Masaki Hirooka, and Koji Kimura, all of Ibaraki, Japan, assignors to Japan Vilene Co., Ltd., Tokyo, Japan

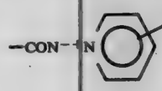
Filed Mar. 25, 1993, Ser. No. 36,811
Claims priority, application Japan, Mar. 26, 1992, 4-100459; May 20, 1992, 4-152673; Sep. 21, 1992, 4-276634; Nov. 27, 1992, 4-341114; Jan. 26, 1993, 5-29874
Int. Cl.[5] H01M *2/16*
U.S. Cl. 429—144 11 Claims



1. A battery separator comprising a sheet material containing a polyvinyl alcohol cross-linked by a cross-linking group of the general formula (I):



wherein A represents a group of —CH=CH—R_1 or



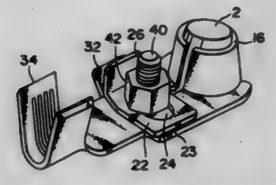
R_1 represents an optionally substituted quaternary nitrogen-containing aromatic heterocyclic group, R_2 and R_3 independently represent a hydrogen atom or alkoxy group having 1 to 4 carbon atoms, m is o or 1, and n is an integer of 1 to 6.

5,290,646

BATTERY TERMINAL

Tadayoshi Asao; Nori Inoue, and Kazumoto Kondo, all of Yokkaichi, all of Japan, assignors to Sumito Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jun. 14, 1993, Ser. No. 75,891
Claims priority, application Japan, Jun. 17, 1992, 4-041571[U]
Int. Cl.[5] H01M *2/02, 2/30*
U.S. Cl. 429—178 4 Claims



1. In a battery terminal including first and second tightening plates continuous with an open free end of an annular electrode-engaging portion into which a battery post is inserted; and an electric wire-connecting portion continuous with the first tightening plate or the second tightening plate or the electrode-engaging portion, in which the first tightening plate is moved toward the second tightening plate to close the free end of the electrode-engaging portion so that the battery terminal is fixed to the battery post, the battery terminal comprising:
a tightening strip disposed above the second tightening plate formed on the first tightening plate integrally or continuously therewith;
an elongated groove formed on the tightening strip in the direction in which the first tightening plate is moved toward the second tightening plate;
a sliding contact portion formed at an end of the tightening strip in the longitudinal direction of the elongated groove;
a tightening substrate formed integrally with the second tightening plate;
a bolt installed upward on the tightening substrate through the elongated groove; and
an inclined portion along which the sliding contact portion slides formed integrally with the tightening substrate,
whereby a nut is tightened downward on the bolt to move the sliding contact portion downward along the inclined portion so that the first tightening plate is moved toward the second tightening plate.

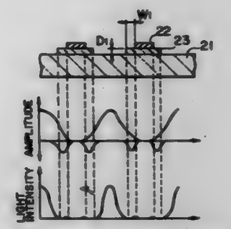
5,290,647

PHOTOMASK AND METHOD OF MANUFACTURING A PHOTOMASK

Junji Miyazaki, and Hitoshi Nagata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 597,373
Claims priority, application Japan, Dec. 1, 1989, 1-310693; Dec. 1, 1989, 1-310694; Dec. 1, 1989, 1-310695; Mar. 13, 1990, 2-59930
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 9 Claims

1. A photomask comprising:
a transparent substrate;
a phase shifting member having peripheral edges and disposed on said transparent substrate in a predetermined pattern for shifting the phase of light passing through said phase shifting member; and
a light blocking member disposed on said phase shifting member and having peripheral edges, the peripheral edges of said phase shifting member projecting by a predetermined width beyond the peripheral edges of said light blocking member.



5,290,648

METHOD FOR MANUFACTURING A SCREEN FOR A CATHODE RAY TUBE

Min-ho Kim, and Ik-cheol Lim, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 29, 1992, Ser. No. 921,222
Claims priority, application Rep. of Korea, Oct. 17, 1991, 91-18313
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—28 10 Claims



1. A method for manufacturing a screen for a cathode ray tube comprising the steps of:
forming a first phosphor layer through coating a phosphor slurry containing a first phosphor, polyvinyl alcohol having a polymerization degree of 1,500 to 2,000 and distilled water on he inner surface of a panel, drying, exposing and developing the first phosphor layer, and then forming a second phosphor layer through coating a phosphor slurry containing a second phosphor, polyvinyl alcohol having a polymerization degree of 1,500 to 2,000 and distilled water on the surface of said first phosphor layer, drying, exposing and developing the second phosphor layer;
wetting the surface of said first and second phosphor layers with distilled water; and
forming a third phosphor layer through coating a phosphor slurry containing the third phosphor, polyvinyl alcohol having a polymerization degree of 500 to 600 and distilled water on the surface of said first and second phosphor layers, drying, exposing and developing the third phosphor layer.

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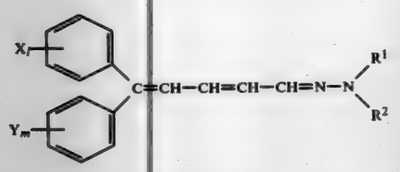
5,290,649

ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING A PHOTOSENSITIVE LAYER CONTAINING A NAPHTHYLHYDRAZONE COMPOUND

Tetsumi Suzuki, Isehara; Hitoshi Ono, Yokohama, and Osamu Ando, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 10,329, Feb. 3, 1987, abandoned. This application Sep. 16, 1988, Ser. No. 246,916
Claims priority, application Japan, Feb. 7, 1986, 61-25093
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—59 8 Claims

1. An electrophotographic photoreceptor comprising a photosensitive layer which contains one or more naphthylhydrazone compounds represented by the formula:



wherein X and Y independently represent a hydrogen atom, a lower alkyl group, a lower alkoxyl group, a phenoxy group or an arylalkoxyl group; R^1 represents a naphthyl group; R^2 represents a hydrogen atom, a lower alkyl group, an allyl group, a substituted or unsubstituted phenyl group, or an aralkyl group; and l and m are an integer of 1 or 2.

5,290,650

ELECTROSTATIC IMAGE-DEVELOPING POSITIVELY CHARGEABLE TONER AND DEVELOPER

Takashi Shintaku, Machida; Mikio Uno, Odawara, and Yoshihiro Kigami, Fujisawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,538
Claims priority, application Japan, May 13, 1991, 3-107562
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—106 17 Claims

1. An electrostatic image-developing positively chargeable toner comprising at least toner particles containing a resin and a colorant, and conductive fine particles having their surface treated with a styrene-acrylic resin having amino groups.

5,290,651

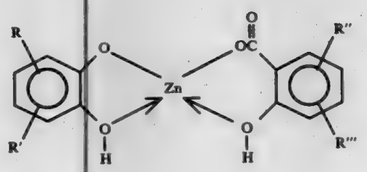
TONER COMPOSITIONS WITH ZINC COMPLEX CHARGE ENHANCING ADDITIVES

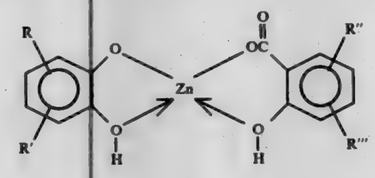
Beng S. Ong, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 21, 1992, Ser. No. 964,541
Int. Cl.[5] G03G *9/083*
U.S. Cl. 430—106.6 24 Claims

1. A negatively charged toner composition comprised of a polymer resin or polymer resins, colorants comprised of pigment particles and/or dyes, optional surface additives, and a nonionic zinc complex charge enhancing additive containing two different ligands derived from an ortho-hydroxyphenol and an ortho-hydroxybenzoic acid.

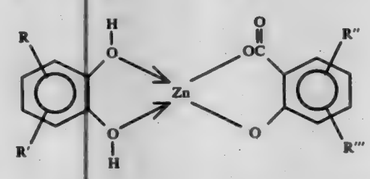
6. A negatively charged toner composition comprised of polymer, pigment, optional surface additives, and a zinc complex charge enhancing additive represented by either of the two following formulas





wherein R, R', R'', and R''' are independently selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, halogen, amino, and hydroxy.

22. A developer composition comprised of a negatively charged toner composition comprised of polymer, pigment, optional surface additives, and a zinc complex charge enhancing additive represented by either of the two following formulas



wherein R, R', R'', and R''' are independently selected from the group consisting of hydrogen, alkyl, aryl, alkoxy, aryloxy, halogen, amino, and hydroxy; and carrier particles.

23. A developer composition in accordance with claim 22 wherein the carrier particles are selected from the group consisting of ferrites, steel, and an iron powder with a polymer or mixture of polymers coating thereover.

5,290,652

DEVELOPING COMPOSITIONS FOR ELECTROPHOTOGRAPHY

Koji Harakawa; Takayuki Sano; Makoto Miura, and Akira Fujiwara, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,068
Claims priority, application Japan, Nov. 13, 1991, 3-323982
Int. Cl.[5] G03G *9/107, 9/10*
U.S. Cl. 430—106.6 2 Claims

1. A developing composition for use in electrophotography comprising toner which contains a binding resin and colorant as main components, and a ferrite carrier consisting essentially of 5 to 40 mol % of ZnO and 60 to 95 mol % of Fe_2O_3, said ferrite carrier possessing a saturated magnetization value of 70 to 100 emu/g in an applied magnetic field of 3,000 oersteds, an

electrical resistance rate ranging from 10^2 to 10^{12} ohm.cm and a particle size distribution ranging from 30 to 150 μm.

5,290,653

BLOCK COPOLYMER AMINE SALTS AS CHARGE DIRECTORS FOR NEGATIVE ELECTROSTATIC LIQUID DEVELOPER

Kathryn A. Pearistine, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1992, Ser. No. 886,312
Int. Cl.[5] G03G *9/12*
U.S. Cl. 430—114 16 Claims

1. An improved negative electrostatic liquid developer consisting essentially of

(A) a nonpolar liquid having a Kauri-butanol value of less than 30,

(B) thermoplastic resin particles having an average by area particle size of less than 10 μm, and

(C) a salt of an AB diblock copolymer charge director substantially soluble in component (A), wherein the B block is a polymer substantially soluble in component (A) having a number average molecular weight range of 2,000 to 50,000, and the A block is a trialkyl amino polymer having a number average molecular weight range of 200 to 10,000, the number average degree of polymerization (DP) ratio of the B block to the A block being in the range of 10:2 to 100:20, and wherein the salt is formed by neutralizing the AB diblock copolymer with an acid.

5,290,654

MICROSUSPENSION PROCESSES FOR TONER COMPOSITIONS

Guerino G. Sacripante, Oakville; James M. Duff, Mississauga; Grazyna Kmiecik-Lawrynowicz, Burlington, and Raj D. Patel, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 29, 1992, Ser. No. 921,165
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—137 19 Claims

1. A process for the preparation of toner compositions consisting essentially of dissolving a polymer, and a pigment in an organic solvent; dispersing the resulting solution in an aqueous media containing a surfactant, or mixture of surfactants; stirring the mixture with optional heating to remove the organic solvent thereby obtaining suspended particles of about 0.05 micron to about 2 microns in volume diameter; subsequently homogenizing the resulting suspension with pigment in water and surfactant; followed by aggregating the resulting suspension by heating thereby providing toner particles with an average particle volume diameter of from between about 3 to about 21 microns.

16. A process for the preparation of toner compositions consisting essentially of dissolving a polymer, in an organic solvent; dispersing the resulting solution in an aqueous media containing nonionic surfactant; stirring the mixture with heating to remove the organic solvent thereby obtaining suspended particles of about 0.05 micron to about 2 microns in volume diameter; subsequently homogenizing the resulting suspension with a pigment in water and nonionic surfactant; followed by aggregating the suspension by heating thereby providing toner particles with an average particle volume diameter of from between about 3 to about 21 microns.

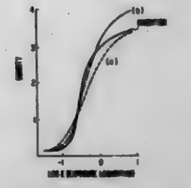
18. A process for the preparation of toner compositions which comprises dissolving a polymer and a pigment in an organic solvent; dispersing the resulting solution in an aqueous media containing nonionic surfactant; stirring the mixture with heating to remove the organic solvent and obtaining suspended particles of about 0.05 micron to about 2 microns in volume diameter; subsequently homogenizing the resulting suspension with a nonionic surfactant; followed by aggregating the suspension by heating thereby providing toner particles with an average particle volume diameter of from between about 3 to about 21 microns.

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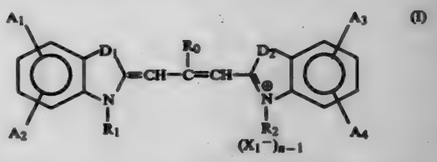
METHOD FOR FORMING AN X-RAY IMAGE

Nobuyuki Iwasaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1992, Ser. No. 929,024
Claims priority, application Japan, Aug. 19, 1991, 3-230798
Int. Cl.[5] G03C *5/16*
U.S. Cl. 430—139 8 Claims



1. A method for forming an X-ray image by subjecting a light-sensitive material comprising a support having provided thereon a light-sensitive silver halide emulsion layer containing a silver halide emulsion sensitized with a sensitizing dye represented by the following Formula (I) on only one side of the support, to photographing via a green color emission fluorescent screen with an X-ray emitted from an X-ray generating device with a tube voltage of 25[kv] or more and 40[kv] or less, wherein in the characteristic curve represented by a rectangular coordinate constituted by optical density and logarithmic exposure, an average gradation shown by a gradient of a line drawn by connecting the point at which 0.25 is added to the minimum density (hereinafter referred to as Dmin) to the point at which 2.0 is added to Dmin is set at 2.8 to 3.6; an average gradation shown by a gradient of a line drawn by connecting the point at which 0.25 is added to Dmin to the point at which 0.5 is added to Dmin is set at 1.9 or more; and the maximum density is set at 2.8 to 3.3:



(I)

wherein A_1, A_2, A_3 and A_4 each represents a hydrogen atom, a lower alkyl group, an alkoxy group, a halogen atom, a hydroxyl group, an aryl group, a carboxyl group, an alkoxycarbonyl group, a cyano group, a trifluoromethyl group, an amino group, an acylamide group, an acyl group, an acyloxyl group, an alkoxycarbonylamino group, or a carboalkoxy group; A_1 and A_2, and A_3 and A_4 may combine with each other to form a naphthoxazole group; R_0 represents a hydrogen atom, a lower alkyl group or an aryl group; D_1 and D_2 each represents an oxygen atom or a sulfur atom; R_1 and R_2 each represents an alkyl group, provided that at least one of R_1 and R_2 is an alkyl group having a sulfo radical; X_1 represents an anion; and n represents 1 or 2, provided that when n is 1, the dye forms an intermolecular salt; and then subjecting the material to developing.

5,290,656

RESIST COMPOSITION, NOVEL PHENOL COMPOUND AND QUINONE DIAZIDE SULFONIC ACID ESTER OF NOVEL PHENOL COMPOUND

Yasunori Uetani, Misoo; Makoto Hanabata, Hyogo; Hirotoshi Nakanishi, Osaka; Koji Kuwana, Fujiidera; Yukio Hanamoto, Toyonaka; Fumio Oi, Ashiya, and Jun Tomioka, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

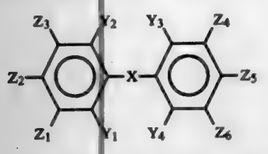
Continuation of Ser. No. 347,065, May 4, 1989, abandoned. This application Jan. 19, 1993, Ser. No. 5,429

Claims priority, application Japan, May 7, 1988, 63-111179; Aug. 4, 1988, 63-195572; Oct. 13, 1988, 63-258936; Dec. 26, 1988, 63-330503; Dec. 26, 1988, 63-330504

Int. Cl.[5] G03C *1/52*; C07C *309/76*

U.S. Cl. 430—165 10 Claims

1. A positive resist composition which comprises an alkali-soluble resin and a quinonediazide sulfonic acid ester of a phenol compound of the general formula (I):



(I)

where Y_1, Y_2, Y_3 and Y_4 are the same or different and each a hydrogen atom, a C_1–C_4 alkyl group or a hydroxyl group, provided that one or two of Y_1, Y_2, Y_3 and Y_4 is or are a hydroxyl group; Z_1, Z_2, Z_3, Z_4, Z_5 and Z_6 are the same or different and each a hydrogen atom, a C_1–C_4 alkyl or a hydroxyl group, provided that at least one of Z_1, Z_2, and Z_3, and at least one of Z_4, Z_5 and Z_6 is a hydroxyl group; X is



in which R_1 is a hydrogen atom, a C_1–C_4 alkyl group or a C_1–C_4 alkoxy group, provided that a C_1–C_4 alkly group is present at the ortho position to a hydroxyl group which is present at the ortho position to X.

5,290,657

POSITIVE WORKING QUINONE DIAZIDE AND ALKALI SOLUBLE RESIN RESIST COMPOSITION WITH SELECT POLYHYDROXY ADDITIVE COMPOUND

Yasunori Uetani, and Hirotoshi Nakanishi, both of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP90/01659, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO91/09346, PCT Pub. Date Jun. 27, 1991

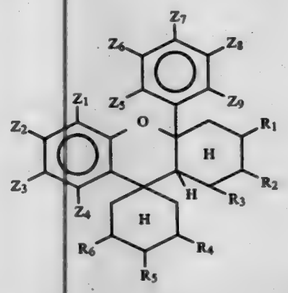
PCT Filed Dec. 20, 1990, Ser. No. 743,299

Claims priority, application Japan, Dec. 20, 1989, 1-331995

Int. Cl.[5] G03F *7/023*; G03C *1/61*

U.S. Cl. 430—191 5 Claims

1. A positive resist composition comprising in admixture an alkali-soluble resin, a quinone diazide compound as a radiation-sensitive component and a compound of the formula:



(I)

wherein Z_1 to Z_9 are independently a hydrogen atom, an alkyl group, a halogen atom or a hydroxyl group, provided that at least one of Z_1 to Z_9 is a hydroxyl group, and R_1 to R_6 are independently a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group or an aryl group;

wherein the amount of compound (I) is from 5 to 20% by weight based on the total weight of solid components in the resist composition, and the weight ratio of the alkali-soluble resin to the quinone diazide compound is from 1:1 to 6:1.

5,290,658

POSITIVE TYPE PHOTORESIST COMPOSITION COMPRISING POLYAROMATIC HYDROXY QUINONE DIAZIDE ESTERS AS THE PHOTOSENSITIVE INGREDIENT

Kazuya Uenishi; Yasumasa Kawabe, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa

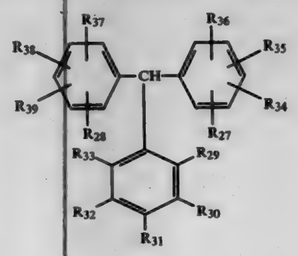
Filed Apr. 24, 1992, Ser. No. 873,158

Claims priority, application Japan, Apr. 26, 1991, 3-122851

Int. Cl.[5] G03F *7/023, 7/031*

U.S. Cl. 430—192 3 Claims

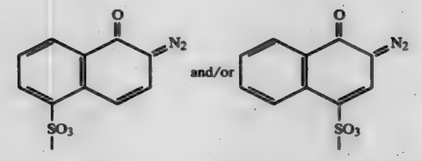
1. A positive photoresist composition, which comprises, in admixture: an alkali-soluble novolak resin and at least one light-sensitive material represented by formula:



(III)

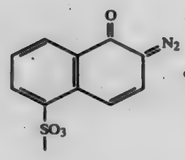
wherein

R_{27} and R_{28} may be the same or different and each represents —OH,

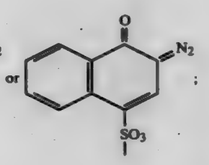


and/or

R_{29} to R_{33} may be the same or different and each represents —H, —OH, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted aralkyloxy group, a substituted or unsubstituted acyl group, a substituted or unsubstituted acyloxy group, a halogen, a nitro group, a cyano group,

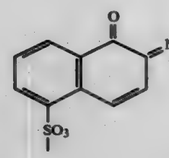


or

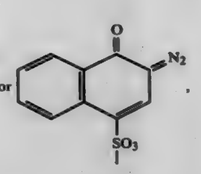


;

R_{34} to R_{39} may be the same or different and each represents —H, —OH; a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted acyloxy group,

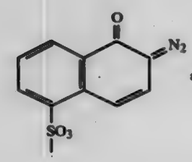


or

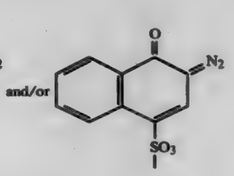


.

with the proviso that the number of



and/or



substituent groups is at least 2 and not more than 7, and at least five of R_{34} to R_{39} are a substituent selected from the group consisting of an alkyl group, an alkoxy group, an aryl group, an aralkyl group, and an acyloxy group.

5,290,659

LIGHT-SENSITIVE MATERIAL COMPRISING LIGHT-SENSITIVE LAYER, POLYMERIZABLE LAYER AND IMAGE FORMATION ACCELERATING LAYER PROVIDED ON SUPPORT

Keiji Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

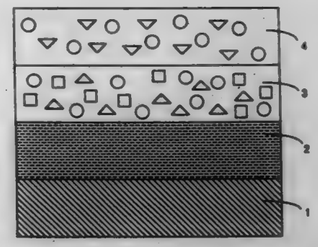
Filed Jul. 10, 1991, Ser. No. 727,676

Claims priority, application Japan, Nov. 27, 1990, 2-326260

The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—203 19 Claims



1. A light-sensitive material which contains silver halide, a reducing agent and at least one of an ethylenically unsaturated polymerizable compound and a cross-linkable polymer,

wherein the light-sensitive material comprises a support and at least three image forming functional layers including a light-sensitive layer, a polymerizable layer and an image formation accelerating layer, said light-sensitive layer containing silver halide, said polymerizable layer containing at least one of said ethylenically unsaturated polymerizable compound and said cross-linkable polymer, said image formation accelerating layer containing a base precursor, and said image formation accelerating layer being the uppermost layer among the three image forming functional layers, and

wherein the reducing agent forms at least one of an oxidation product or radical thereof when the silver halide is developed, and said at least one oxidation product or radical thereof initiates a hardening reaction of said at least one of the polymerizable compound and the cross-linkable polymer.

5,290,660

DYE PERMEABLE POLYMER INTERLAYERS

Gilbert L. Elan, Mahtomedi; Takuzo Ishida, Woodbury, and Alan M. Miller, Cottage Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 23, 1993, Ser. No. 52,947

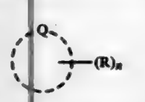
Int. Cl.[5] G03C *5/54, 1/72, 7/20*

U.S. Cl. 430—203 25 Claims

1. An imageable article comprising: (a) an image-forming layer comprising a source of imaging dye; and (b) an image-receiving layer, wherein a polymeric interlayer is interposed between said image-forming layer and said image-receiving layer and wherein said polymeric interlayer comprises a blend of poly(vinyl chloride) and poly(caprolactone), said blend having a T_g of at least about 10° C.

5,290,661
METHOD FOR FORMING IMAGES BY SILVER SALT DIFFUSION TRANSFER
Yoshio Idota; Makoto Ishihara, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 29, 1992, Ser. No. 921,134
Claims priority, application Japan, Jul. 31, 1991, 3-213015
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—248 17 Claims

1. A method for forming images by silver salt diffusion transfer comprising
imagewise exposing a light-sensitive element comprising a light-sensitive silver halide emulsion layer,
developing the light-sensitive element in the presence of a silver halide solvent using an alkaline processing composition to turn at least a part of unexposed silver halide of the light-sensitive silver halide emulsion layer into a transfer silver halide complex salt, and
transferring at least a part of the silver halide complex salt to an image receiving layer comprising a silver precipitating agent to form images on the image receiving layer,
wherein at least one compound represented by formula (I) is added to at least one of the light-sensitive element, an image receiving element comprising the image receiving layer, and the processing composition in an amount of at least 3×10^{-6} and less than 2×10^{-3} mol based on one mol of silver applied per unit area (m^2):


(I)

wherein Q represents benzoquinone; R represents an alkyl or alkoxy group of 1 to 6 carbon atoms; and n is an integer of 2 to 4.

5,290,662
PHOTOSENSITIVE ELASTOMER POLYMER COMPOSITIONS FOR FLEXOGRAPHIC PRINTING PLATES
Arthur L. Berrier, and Rustom S. Kanga, both of Ellicott City, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation-in-part of Ser. No. 729,976, Jul. 15, 1991, Pat. No. 5,223,375. This application Apr. 13, 1992, Ser. No. 868,062
Int. Cl.[5] G03C *1/68*
U.S. Cl. 430—281 2 Claims

1. A photosensitive flexographic printing plate comprising a backing and thereon a layer of a mixture comprising a quaternized triblock copolymer of the structure.

5,290,663
PHOTOCURABLE POLYURETHANE-ACRYLATE IONOMER COMPOSITIONS FOR AQUEOUS DEVELOPABLE PRINTING PLATES
Trac-Chi T. Huynh-Tran, Bartonsville, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Mar. 1, 1991, Ser. No. 662,699
Int. Cl.[5] G03C *1/73;* G03F *7/027;* C08G *18/34*
U.S. Cl. 430—284 13 Claims

1. Composition comprising compounds of the structure



where
R is independently ethylene, propylene, isopropylene, butylene, isobutylene, or mixtures thereof;
n is such that the molecular weight of the (—R—O—) chain varies from 300 to about 10,000;
A is a mixture of H and R^1
R^1 is $—CH_2CH_2COOH$, $—CH_2CH(CH_3)COOH$, or —CH(COOH)—CH_2COOH, the average number of R^1 units being such that they constitute 1–30 weight percent of the total molecular weight of the (—R—O—) chain;
Z comprises chain extending segments of (-II-IV-) and (-II-IV'-) and terminating segments of (-II-VI), (-II-IV), or (-II-IV'); the segments being the reaction products of a diisocyanate and a diol or a hydroxyalkyl(meth)acrylate wherein an isocyanate group and a hydroxyl group form a carbamate group, whereby the components of the segments are joined by urethane linkages, —NH—C(=O)—O—; where
II is a diisocyanate;
IV is a diol containing —COOH and having a molecular weight less than 500;
IV' is a (meth)acrylate(s)-containing diol or a mixture of a (meth)acrylate(s) containing diol and a carboxyl-free diol having a molecular weight less than 500; and
VI is hydroxyalkyl(meth)acrylate.

5,290,664
METHOD FOR PREPARING ELECTRODE FOR SEMICONDUCTOR DEVICE
Nobuyuki Matsumoto, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 675,619, Mar. 27, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,646
Claims priority, application Japan, Mar. 29, 1990, 2-84552
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—256 15 Claims

1. A method for preparing an electrode for semiconductor device comprising the steps of:
(a) forming two resist layers sensitive to an electron beam over a silicon nitride film formed on a substrate, said two resist layers being composed of a low sensitive resist layer over the silicon nitride film and a high sensitive resist layer placed over the low sensitive resist layer,
(b) irradiating said two resist layers in a predetermined pattern with an electron beam and developing the irradiated resist layers to form a resist pattern having an opening, the opening in the high sensitive resist layer being larger than the opening in the low sensitive resist layer,
(c) etching said silicon nitride film through the resist pattern to form in the film an opening corresponding in size to that of the low sensitive resist layer,
(d) etching said substrate through the opening in the silicon nitride film to form in the substrate a cavity for the electrode,
(e) depositing a metal over said opening in the resist layers to form a metal member having a projected shape on the substrate in said cavity, and
(f) removing the resist layers of the resist pattern to lift off the metal layer on the resist layers to leave the metal member having a projected shape as the electrode.

5,290,665
PROCESS FOR DEVELOPING PS PLATE REQUIRING NO DAMPENING WATER WHEREIN THE DEVELOPER COMPRISES, WATER, A SOLUBILIZER AND AN ETHYLENE GLYCOL MONOALKYL (C_5-C_8) ETHER DERIVATIVE
Mashafumi Kii; Susumu Yoshida; Yoshihiko Uraba, and Hiroshi Takahashi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Continuation of Ser. No. 529,601, May 29, 1990, abandoned. This application Apr. 20, 1992, Ser. No. 870,236
Claims priority, application Japan, Jun. 1, 1989, 1-39558
Int. Cl.[5] G03F *7/30, 7/32, 7/035*
U.S. Cl. 430—303 18 Claims

1. A process of preparing a lithographic printing plate requiring no dampening water which comprises imagewise exposing to light, a presensitized plate comprising a substrate having thereon, in order, a photopolymerizable adhesive layer and a silicone rubber layer and developing the imagewise exposed presensitized plate with a developer to remove only the silicone rubber layer in the light unexposed areas at the imagewise exposure thereby revealing the photopolymerizable adhesive layer in said areas, wherein said developer comprises:
(i) water,
(ii) at least one ethylene glycol derivative represented by the following general formula (I):

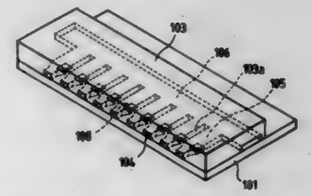
$$C_mH_{2m+1}—(OCH_2CH_2)_n—OH \quad (I)$$

(wherein m is an integer of 6 to 8 and n is 1 or 2), and
(iii) a solubilizer for solubilizing the ethylene glycol derivative in water.

5,290,666
METHOD OF FORMING A POSITIVE PHOTORESIST PATTERN UTILIZING CONTRAST ENHANCEMENT OVERLAYER CONTAINING TRIFLUOROMETHANESULFONIC, METHANESULFONIC OR TRIFLUOROMETHANEACETIC AROMATIC DIAZONIUM SALT
Michiaki Hashimoto, Sayama, and Shouichi Uchino, Hachioji, both of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan
Continuation of Ser. No. 381,876, Jul. 19, 1989, abandoned. This application Jun. 17, 1991, Ser. No. 715,694
Claims priority, application Japan, Aug. 1, 1988, 63-190641
Int. Cl.[5] G03F *7/30, 7/021*
U.S. Cl. 430—326 10 Claims

1. A method of forming a pattern in contrast enhancement lithography comprising the steps of:
coating a positive-type photoresist on a substrate to form a positive-type photoresist film;
forming a photosensitive film, which has a different composition than said photoresist film, over said photoresist film, said photosensitive film consisting essentially of an admixture of a water-soluble organic polymer compound and an aromatic diazonium salt which is selected from the group consisting of trifluromethanesulfonic acid salt, methanesulfonic acid salts, and trifluromethaneacetic salts, said photosensitive film having bleaching property with radiation on said photoresist film to form a stacked film, mixing ratio of said aromatic diazonium salt to said water-soluble organic polymer compound being 0.5–4:1 by weight;
irradiating the stacked film with radiation of desired pattern;
removing said photosensitive film with a solvent prior to development of said photoresist film or with a developing solution during said development;
developing said photoresist film with the developing solution to form a pattern of said photoresist film by removing the irradiated portion of said photoresist film.

5,290,667
METHOD FOR PRODUCING INK JET RECORDING HEAD
Shoji Shiba, Sagamihara; Masashi Miyagawa, Yokohama; Isao Imamura, Yokohama, and Akio Kashiwazaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 983,753
Claims priority, application Japan, Dec. 3, 1991, 3-319290; May 28, 1992, 4-137131; Jun. 24, 1992, 4-166401
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—328 5 Claims



1. A method for producing an ink jet recording head by forming a photosensitive layer consisting of positive photoresist containing a naphthoquinone diazide derivative on a substrate bearing thereon elements for generating energy for liquid discharge, patterning said photoresist by exposure and development thereof, coating a photocurable material for forming liquid paths on said patterned photoresist, applying flush exposure for curing said liquid path forming material and dissolving said patterned photoresist thereby forming liquid paths, comprising steps of applying, after the patterning of positive photoresist, flush exposure to said photoresist and discharging bubbles from the patterned photoresist, prior to the coating of the photocurable material for forming liquid paths.

5,290,668
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL
Shigeaki Ohtani, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 648,806, Jan. 31, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,542
Claims priority, application Japan, Feb. 2, 1990, 2-24234
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—496 25 Claims

1. A silver halide color photographic material comprising a support comprising a base material and a water resistant resin layer containing titanium dioxide particles in an amount of at least 14% by weight of the water resistant resin layer, said support having thereon at least one blue-sensitive silver halide emulsion layer comprising a silver halide emulsion having a silver chloride content of at least 95 mol %, at least one green-sensitive silver halide emulsion layer comprising a silver halide emulsion having a silver chloride content of at least 95 mol %, and at least one red-sensitive silver halide emulsion layer comprising a silver halide emulsion having a silver chloride content of at least 95 mol % on the same side of the support as the water resistant resin layer, said photographic material having an optical reflection density of at least 0.70 but not greater than 2.0 at 680 nm, said photographic material containing at least one compound represented by formula (I) or (II) and at least one compound represented by formula (III), the total layer thickness of the constituent photographic layers provided on the support after immersing in a color developing solution for at least 60 seconds is at least 1.4 times that of the dry thickness before processing, and the total silver coverage of all of the silver halide emulsions contained in the silver halide color photographic material is not more than 0.78 g/m^2 in terms of the coating weight of silver:



(I)

(II)

wherein R_{21} and R_{22} each represents an aliphatic group, an aromatic group or a heterocyclic group; X represents a group which is eliminated by reaction with an aromatic amide developing agent and when X is a halogen atom, n=0; A represents a group which forms a chemical bond by reaction with an aromatic amine developing agent; n represents 0 or 1; B represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group or a sulfonyl group; Y_1 represents a group which accelerates the addition of an aromatic amine developing agent to the compound represented by formula (II); and R_{21} and X, or Y_1 and R_{22} or B may be combined together to form a ring structure:



(III)

wherein R_{30} represents an aliphatic group, an aromatic group or a heterocyclic group; and Z represents a nucleophilic group or a group which releases a nucleophilic group upon decomposition in the photographic material.

5,290,669

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeto Hirabayashi; Yasushi Usagawa, both of Tokyo; Nobuaki Kagawa, and Yasuhiko Kawashima, both of Iruma, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 907,135

Claims priority, application Japan, Jul. 4, 1991, 3-189488

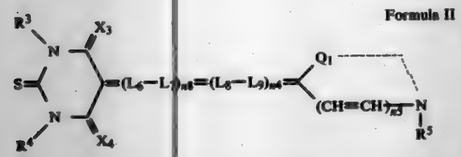
Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—507 **13 Claims**

1. A silver halide color photographic light-sensitive material comprising:

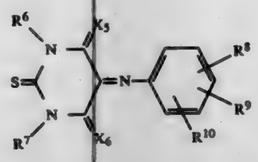
a support having thereon photographic component layers having a blue sensitive silver halide emulsion layer, a green sensitive silver halide emulsion layer and a red sensitive silver halide emulsion layer; wherein at least one of said photographic component layers contains a silver salt of a dye represented by the following formulae II to V;

Formula II



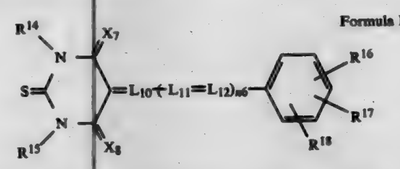
wherein R^3 and R^4 each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group or a heterocyclic group; X_3 and X_4 each represents an oxygen atom or a sulfur atom; L_4 to L_9 represent methine groups; n_3 to n_5 represent 0 to 2 integers; R^5 represents an alkyl group or an alkenyl group; Q_1 represents a nonmetallic atom group necessary for forming 5-membered or 6-membered heterocyclic group;

Formula III

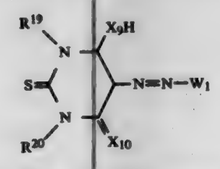


wherein R^6 and R^7 represent R^3 and R^4 in formula II; X_5 and X_6 represent X_3 and X_4 in formula II; R^8 to R^{10} represent a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, a heterocyclic group, a halogen atom, a cyano group, a sulfo group, —COR^{11}, —$CON(R^{11})$ (R^{12}), —$N(R^{11})$ (R^{12}), —OR^{11}, —SOR^{11}, —SO_2R^{11}, —$SO_2N(R^{11})$ (R^{12}), —$N(R_{11})$ (COR_{12}), —$N(R^{11})SO_2R^{12}$, —$N(R^{11})CON(R^{12})$ (R^{13}), —SR^{11} or —$COOR^{11}$; R^{11} to R^{13} represent a hydrogen atom, an alkyl group, an alkenyl group, an aryl group or a heterocyclic group, respectively;

Formula IV



wherein R^{14} and R^{15} are the same as R^3 and R^4 in formula II; X_7 and X_8 are the same as X_3 and X_4 in formula II; L_{10} to L_{12} represent methine groups; n_6 represents 0 to 2 integers; R^{16} to R^{18} are the same as R^8 to R^{10} in Formula III;



wherein R^{19} and R^{20} are the same as R^3 and R^4 in formula II X_9 and X_{10} are the same as X_3 and X_4; W_1 represents an aryl group or a heterocyclic group.

5,290,670

SILVER HALIDE PHOTOGRAPHIC ELEMENTS

Ivano Delprato, Rocchetta Di Cairo Montenotte; Stefano Mana, Fossano, and Antonio Luzzi, Savona, all of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

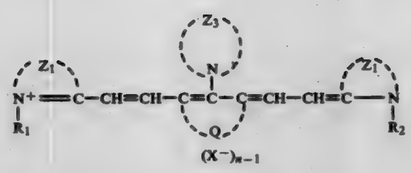
Filed Jul. 9, 1992, Ser. No. 911,017

Claims priority, application Italy, Jul. 19, 1991, MI91 A 002005

Int. Cl.[5] G03C *1/84*

U.S. Cl. 430—510 **10 Claims**

1. A silver halide photographic element comprising a support, at least one infrared sensitive silver halide emulsion photosensitive layer and at least one hydrophilic colloid non photosensitive layer wherein at least one of said layers contains an infrared absorbing amount of a dye represented by the following formula



wherein

R_1 and R_2 each independently represents a sulfoalkyl or a sulfatoalkyl group having 2 to 4 carbon atoms,

Q represents the atoms necessary to complete a 5- to 7-membered substituted or unsubstituted carbocyclic ring,

Z_3 represents the atoms necessary to complete a substituted or unsubstituted 5-membered N-containing aromatic ring selected from the group consisting of pyrazole, triazole, imidazole, and pyrrole groups,

X^- represents an anion,

n is an integer of 1 or 2, provided that n is 1 when the dye forms an intramolecular salt, and

Z_1 and Z_2 each independently represents the atoms necessary to complete a substituted or unsubstituted indole nucleus.

5,290,671

COLOR PHOTOGRAPHIC ELEMENT PROVIDING IMPROVED DYE STABILITY

Brian Thomas, Pittsford; David J. Lacz, Honeoye Falls; William A. Mruk, and Todd R. Skochdopole, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1992, Ser. No. 887,532

Int. Cl.[5] G03C *1/815*

U.S. Cl. 430—512 **17 Claims**

1. A silver halide color photographic print element comprising:

a paper support impregnated or coated with a substance that lowers its oxygen transmission rate and its oxygen leak rate;

at least one color-forming silver halide emulsion layer; and

one or more polyolefin layers having a total polyolefin content of at least 70 g/m^2, at least one of said polyolefin layers being between said emulsion layer and said support and containing at least 50 g/m^2 of polyolefin.

5,290,672

BASE PAPER FOR PHOTOGRAPHIC PRINTS

Paul Dunk, Slough, Berkshire, United Kingdom, assignor to The Wiggins Teape Group Limited, Basingstoke, Hampshire, United Kingdom

Continuation of Ser. No. 796,885, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 248,263, Sep. 20, 1988, abandoned, which is a continuation of Ser. No. 147,084, Jan. 20, 1988, abandoned, which is a continuation of Ser. No. 800,780, Nov. 22, 1985, abandoned. This application Jul. 31, 1992, Ser. No. 921,440

Claims priority, application United Kingdom, Nov. 24, 1984, 8429729

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—538 **17 Claims**

1. Resin coated photographic base paper comprising a substrate of paper and a composite coating comprising (1) from 10 to 50 g.m^{-2} of an extruded first coating layer consisting essentially of a low density polyethylene (having a density of 0.910–0.940 g/cm^3) or a blend of low density and high density polyethylenes (the high density polyethylenes having a density greater than or equal to 0.941 g/cm^3) containing at least 50% by weight of low density polyethylene, the first coating layer containing at least 5% by weight of opacifying pigment and, (2) overlying the first coating layer and firmly bonded thereto, from 0.1 to 18 gm^{-2} of an extruded second coating layer of a polymer having a stiffness modulus of at least 2.0 GPa.

5,290,673

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshihiro Nishikawa, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 453,836, Dec. 20, 1989, abandoned. This application Oct. 15, 1991, Ser. No. 774,650

Claims priority, application Japan, Dec. 22, 1988, 63-324598

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] G03C *1/005, 1/08*

U.S. Cl. 430—567 **21 Claims**

1. A silver halide photographic light-sensitive material comprising, on a support thereof, an emulsion layer containing silver halide grains reduction-sensitized by an ascorbic acid or at least one derivative thereof and containing a nitrogen-containing heterocyclic compound having a mercapto group, wherein the ascorbic acid or at least one derivative thereof for use in reduction-sensitization is added in an amount of 5×10^{-5} mol to 1×10^{-1} mol per mol of silver halide.

5,290,674

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Katsumi Hirano, and Katsumi Makino, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 282,162, Dec. 9, 1988, abandoned. This application Dec. 16, 1992, Ser. No. 996,860

Claims priority, application Japan, Dec. 9, 1987, 62-311420; Jun. 22, 1988, 63-153721

The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—567 **13 Claims**

1. A silver halide photographic material comprising a support having provided thereon at least one silver halide emulsion layer, wherein said emulsion layer contains silver halide tabular grains having a diameter of not less than 0.15 μm in an amount of not less than 70% of the total projected area of the total silver halide grains, wherein at least 50% of the total number of all tabular grains have a ratio of grain thickness (b) to the longest distance between two or more parallel twinning planes (a) of not less than 5, and wherein said emulsion layer or other hydrophilic colloidal layer contains a compound represented by formula (I):



(I)

wherein Z represents a heterocyclic ring to which at least one group selected from —SO_3M, COOM, —OH, and —NHR_2 is bonded either directly or indirectly; M represents a hydrogen atom, an alkali metal atom, or —NH_4; R_2 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, —COR3, —$COOR_3$, or —SO_2R_3; and R_3 represents an aliphatic group or an aromatic group.

5,290,675

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takanori Hioki; Takashi Kato; Tadashi Ikeda, and Naoto Ohshima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1991, Ser. No. 772,746

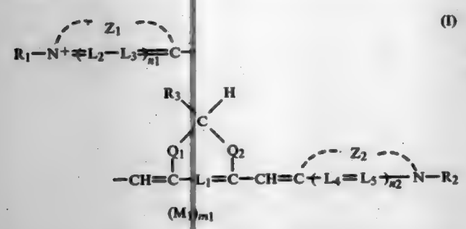
Claims priority, application Japan, Oct. 8, 1990, 2-270161

Int. Cl.[5] G03C *1/20, 1/28*

U.S. Cl. 430—576 **15 Claims**

1. A silver halide photographic material comprising on a

support at least one silver halide emulsion layer having a silver chloride content of not lower than 90 mol %, wherein a silver halide emulsion in at least one of said silver halide emulsion layers having a silver chloride content of not lower than 90 mol % contains at least one compound represented by formula (I):



(I)

wherein Z_1 and Z_2 each represents an atomic group required for forming a nitrogen-containing five-membered or six-membered heterocyclic ring; Q_1 and Q_2 each represents a methylene group; R_1 and R_2 each represents an alkyl group; R_3 represents an aryl group; L_1, L_2, L_3, L_4 and L_5 each represents a methine group; n_1 and n_2 each represents 0 or 1; M_1 represents a counter ion for neutralizing electric charge; and m_1 represents a number not less than 0 required for neutralizing electric charge in the molecule.

5,290,676

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Katsurou Nagaoka; Akihiko Ikegawa, and Masayuki Kuramitsu, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1992, Ser. No. 944,314

Claims priority, application Japan, Sep. 24, 1991, 3-243128; Oct. 30, 1991, 3-310220; Oct. 31, 1991, 3-311382; Nov. 6, 1991, 3-318507

Int. Cl.[5] G03C *1/14*

U.S. Cl. 430—583 **5 Claims**

1. A silver halide photographic light-sensitive material having at least one silver halide emulsion layer formed on a support, said light-sensitive material having at least one layer which contains a regular silver halide emulsion spectrally sensitized with a methine compound represented by the following formula (I):



Formula (I)

where R^1 is $-(CH_2)_r-CONHSO_2-R^3$ or $-(CH_2)_s-(-SO_2NHCO-R^4$, where R^3 and R^4 are an alkyl group, r and s are an integer ranging from 1 to 5; R^2 is a sulfoalkyl group; Z^1 and Z^2 are non-metal sulfur containing nuclei selected from the group consisting of thiazole, benzothiazole, napthothiazole and thiadiazole nuclei; p and q are 0 or 1; L_1, L_2 and L_3 are methine groups; and m is 0, 1 or 2.

5,290,677

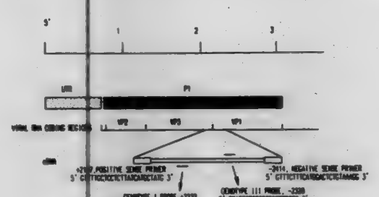
RAPID AND SENSITIVE TEST FOR DETECTING HEPATITIS A VIRUS

Betty H. Robertson, Chamblee; Omana V. Nainan, Decatur; Vicki K. Brown, Dunwoody; Harold S. Margolis, Lilburn, and Bhawna Khanna, Lawrenceville, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 469,143, Jan. 24, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 828,444

Int. Cl.[5] C12Q *1/70*; C12P *19/34*; C07H *21/04*

U.S. Cl. 435—5 **7 Claims**



1. A method for detecting hepatitis A virus comprising the steps of:

(i) capturing whole hepatitis A virus with antibodies specific to hepatitis A virus;

(ii) generating a cDNA copy of the viral RNA by reverse transcription in the presence of a negative strand primer consisting of the nucleotides defined by SEQ ID NO:1;

(iii) amplifying the cDNA of step (ii) by polymerase chain reaction with both said negative strand primer and a positive strand primer consisting of the nucleotides defined by SEQ ID NO: 2, said positive strand primer being labeled at the 5' end and wherein the amplification product can be used to distinguish hepatitis A genotypes I and III; and

(iv) detecting the amplified cDNA of step (iii), wherein the presence of detectable amplification indicates the presence of hepatitis A virus.

5,290,678

DIAGNOSTIC KIT FOR DIAGNOSING AND DISTINGUISHING CHEST PAIN IN EARLY ONSET THEREOF

George Jackowski, Halton Hills, Canada, assignor to Spectral Diagnostics Inc., Etobicoke, Canada

Filed May 3, 1991, Ser. No. 695,381

Claims priority, application Canada, Oct. 12, 1990, 2027434

Int. Cl.[5] G01N *33/573*, *33/558*

U.S. Cl. 435—7.4 **2 Claims**

2. A method for rapidly diagnosing the cause of chest pain of a patient in the early onset thereof, said method comprising the steps of

drawing a sample of serum or plasma from a patient,

depositing the sample in a sample window of a diagnostic test kit, said test kit comprising

a front panel comprising a sample window and a display window;

a back panel; and

a dry chemistry membrane affixed between the front and back panels positioned for display in at least the display window, wherein said membrane comprises:

a sample region, and a control region, said sample region positioned to receive the sample from the sample window; and

at least three antibody pairs located at discrete locations along said membrane between the sample region and the control region, each of said antibody pairs comprising an antibody reagent member and an immobilized capture antibody member, each capture antibody member being located on said membrane closer to the control region than the corresponding antibody reagent member, each antibody pair having a measurable or observable moiety labelled or chemically bonded to the antibody reagent member of each said antibody pairs,

the antibody pairs being monoclonal or polyclonal and comprising:

a first antibody pair that specifically binds to myoglobin,

a second antibody pair that specifically binds to myosin light chains, and

a third antibody pair that specifically binds to one protein selected from the group consisting of CK-MB, troponin I, and troponin T,

such that upon adding sample to the sample window, analytes present in the sample and complementary to the antibody pairs will migrate toward the control region, binding to the antibody pair each of said analytes, producing a color change proportional to each concentration of analyte present,

visualizing or measuring the moiety and diagnosing the cause of chest pain of a patient.

5,290,679

METHOD OF PREDICTING THREATENED PREMATURE DELIVERY IN A PREGNANT WOMAN

Toshihiko Terao, Nagoya; Naohiro Kanayama, Hamamatsu; Akihiro Morioka, Nagoya; Yoshika Yasuda, Nagoya; Masami Kamiya, Nagoya; Juichi Awaya, Nagoya; Masayasu Kurono, Nagoya, and Kiichi Sawai, Nagoya, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

Filed Jun. 15, 1992, Ser. No. 898,681

Claims priority, application Japan, Jun. 18, 1991, 3-146221

Int. Cl.[5] C12Q *1/00, 1/37*

U.S. Cl. 435—7.4 **1 Claim**

1. An immunoassay method for predicting premature delivery in a pregnant woman which comprises a) obtaining mucus from the cervical canal of the pregnant woman, said mucus containing free granulocyte elastase and granulocyte elastase complexed with an inhibitor; b) adding an inhibitor to convert the free granulocyte elastase to inhibited granulocyte elastase; and c) measuring the total amount of granulocyte elastase complexed with an inhibitor contained in said mucus and the inhibited granulocyte elastase formed by addition of the inhibitor to the free elastase in said mucus, an elevated level of said total amount being indicative of threatened premature delivery.

5,290,680

MONOCLONAL ANTIBODY, METHOD OF PRODUCTION THEREOF AND USE THEREOF

Koichi Kondo, Kizu; Takahisa Kobayashi, and Makoto Katsuno, both of Matsumoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 25, 1992, Ser. No. 904,145

Claims priority, application Japan, Jun. 28, 1991, 3-158216

Int. Cl.[5] C12Q *1/00*; G01N *33/535*

U.S. Cl. 435—7.9 **25 Claims**

1. A monoclonal antibody reacting specifically to 6,15-diketo-13,14-dihydro-prostaglandin $F_1\alpha$, wherein said antibody does not significantly react with 6-keto-$PGF_1\alpha$, 2,3-dinor-6-keto-$PGF_1\alpha$, 6-keto-PGE_1, PGB_2, PGD_2, PGE_1, PGE_2, $PGF_1\alpha$, $PGF_2\alpha$, TXB_2, 11-dehydro-TXB_2, 15-keto-$PGF_2\alpha$, 13,14-dihydro-15-keto-PGE_1 or 13,14-dihydro-15-keto-$PGF_2\alpha$.

2. A cloned hybridoma capable of producing the antibody according to claim 1 which is derived from fusing a spleen cell of a mammal immunized with 6,15-diketo-13,14-dihydro-prostaglandin $F_1\alpha$ with a homogenic or heterogenic lymphoid cell.

5,290,681

METHOD OF ASSAYING IMMUNIZATION STIMULATING ACTIVITY

Kazuhiko Kuroda, Yokohama; Hiroki Murakami, Fukuoka, and Shuichi Hashizume, Yokohama, all of Japan, assignors to Morinaga & Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,262

Claims priority, application Japan, Mar. 8, 1991, 3-069273

Int. Cl.[5] G01N *33/574, 33/53, 33/567*

U.S. Cl. 435—7.23 **5 Claims**

1. A method of assaying immunization stimulating activity comprising

(a) immunizing a lymphocyte in vitro by culturing the lymphocyte in contact with immobilized cancer cells in a medium containing an adjuvant, a lymphokine and a test substance in the absence of a polyclonal actinator, said test substance not being said adjuvant or said lymphokine,

(b) adding labeled anti-immunoglobulin antibody and

(c) detecting an immunoglobulin, which is produced and secreted into the medium by the immunized lymphocyte and bound to the immobilized cancer cell, by counting immunostained spots deposited in situ on the surface of the immobilized cancer cell.

5,290,682

ENZYME CONTROLLED PROCESSES AND PRODUCTS

Frank A. Meneghini, San Carlos, Calif., and Paul S. Palumbo, West Newton, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

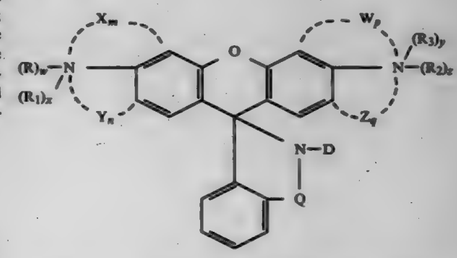
Filed May 31, 1991, Ser. No. 708,472

Int. Cl.[5] C12Q *1/26*; G01N *33/566*

U.S. Cl. 435—25 **6 Claims**

1. A process for converting an initially substantially colorless compound to a colored species comprising

reacting a substantially colorless compound represented by the formula



wherein W, X, Y and Z are the same or different and each is represented by $-(CH_2)_a(CHR_4)(CH_2-)_b$;

D is a moiety which can be oxidized by an enzyme to a more electron deficient species; R, R_1, R_2, R_3, R_4 each independently is hydrogen, alkyl or aryl;

Q is —CO or $-SO_2$;

a and b each independently is an integer of from 0 to 4, provided that the sum of a+b is an integer of from 1 to 4; and

m, n, p, q, w, x, y and z each independently is 0 or 1, provided that the sum of m+n+w+x is 2 and the sum of p+q+y+z is 2;

with an enzyme or an enzyme labeled antigen or antibody in the presence of hydrogen peroxide to form a colored species, wherein said enzyme or said enzyme labeled antigen or antibody oxidizes said oxidizable moiety D to a more electron deficient species.

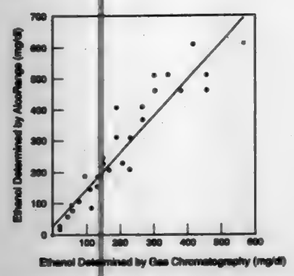
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,683

RAPID ANALYSIS OF ETHANOL IN BODY FLUIDS

Yedy Israel, 30 Greenfield Avenue #806, Willowdale, Ontario, Canada M2N 3C8 ; Bhushan Kapur, 2374 Canso Road, Oakville, Ontario, Canada L6J 5W6 , and Guang-chou Tu, 34 Lount Street, Toronto, Ontario, Canada M4J 5A2

Filed Nov. 19, 1992, Ser. No. 978,534
Int. Cl.[5] C12Q *1/32;* C12N *11/14, 9/96, 31/22*
U.S. Cl. 435—26 11 Claims



1. A composition for directly and rapidly determining the alcohol concentration of a lower alcohol in a biological fluid without dilution, comprising a solid carrier impregnated with a solution having the following constituents mixed in effective amounts,

a cross-linked and stabilized alcohol dehydrogenase for oxidizing said alcohol in the presence of nicotinamide adenine dinucleotide to produce a corresponding aldehyde and a reduction product, wherein said alcohol dehydrogenase is stabilized and cross-linked using bovine serum albumin and glutaraldehyde;

a competitive inhibitor of alcohol dehydrogenase;

a cross-linked and stabilized diaphorase for converting said chromogen to said coloured compound, wherein said diaphorase is stabilized and cross-linked with bovine serum albumin and glutaraldehyde;

a chromogen which reacts with said reduction product in the presence of diaphorase to produce a coloured compound indicative of alcohol presence in said biological fluid;

a buffer to maintain said solution at a predetermined acidic pH.

5,290,684

PERMANENT HUMAN HEPATOCYTE CELL LINE AND ITS USE IN A LIVER ASSIST DEVICE (LAD)

James H. Kelly, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 524,075, May 16, 1990. This application Oct. 23, 1992, Ser. No. 965,448
Int. Cl.[5] C12Q *1/02;* C12N *5/00*
U.S. Cl. 435—29 24 Claims

1. A permanent human hepatocyte cell line constitutively having liver-specific biological activity at a level effective to support a subject suffering from hepatic failure or insufficiency, wherein said cell line is capable of growing in glucose-free media, and wherein at confluence, said cell line exhibits a rate of expression of albumin of at least about 20 μg/ml total cell protein/24 hours, and wherein said cell line produces albumin and alphafetoprotein such that the albumin to alphafetoprotein ratio is at least about 15.

5,290,685

METHOD FOR SEPARATION AND CONCENTRATION OF PHOSPHOPEPTIDES

Kaoru Koide; Takashi Fukushima, both of Tokyo; Tamotsu Kuwata, Saitama; Koki Itoyama, Shizuoka, and Fumio Miyazawa, Kanagawa, all of Japan, assignors to Meiji Milk Products Company Limited, Tokyo, Japan

Continuation of Ser. No. 651,153, Feb. 6, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,808
Claims priority, application Japan, Feb. 22, 1990, 2-39721
Int. Cl.[5] C12P *21/00;* C07K *3/12;* A61K *37/16*
U.S. Cl. 435—68.1 12 Claims

1. A method for separating phosphopeptides from an aqueous solution containing casein peptides, wherein said aqueous solution was prepared by treating casein with an enzyme selected from the group consisting of trypsin, pepsin, chyrotrypsin and papain, comprising:

(a) adjusting the pH of the aqueous solution of casein peptides to a pH value of from 1.5 to 5.0;

(b) contacting the aqueous solution of casein peptides with a crosslinked chitosan molding and adsorbing said casein peptides onto said crosslinked chitosan molding;

(c) desorbing phosphopeptides from said crosslinked chitosan molding under pH conditions of less than 1.5 or more than 5.0 to obtain a solution containing phosphopeptides; and

(d) concentrating the solution containing phosphopeptides obtained in step (c) to give a concentrated solution of phosphopeptides and optionally spray-drying further said concentrated solution to form powdered phosphopeptides.

5,290,686

EXPRESSION OF INFLUENZA A M2 PROTEIN IN BACULOVIRUS

Alan P. Kendal; Renee Black, both of Atlanta, and Paul A. Rota, Decatur, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 31, 1991, Ser. No. 738,032
Int. Cl.[5] C12N *5/10;* C12P *21/02*
U.S. Cl. 435—69.1 12 Claims

7. A method of expressing high levels of an influenza A M2 protein in an insect cell, said method comprising:

i) infecting insect cells in the presence of amantadine or an amantadine-like drug with a recombinant *Autographa californica* nuclear polyhedrosis virus or a related nuclear polyhedrosis virus, said recombinant virus containing the gene for an M2 protein of influenza A virus, and

ii) culturing said infected insect cells in the presence of amantadine or amantadine-like drug so as to express said M2 protein of influenza A virus.

5,290,687

CHITINASE-PRODUCING BACTERIA AND PLANTS

Trevor Suslow, El Cerrito, Calif., and Jonathan D. G. Jones, Norwich, United Kingdom, assignors to DNA Plant Technology Corporation, Mt. Kisco, N.Y.

Continuation of Ser. No. 550,253, Jul. 9, 1990, which is a continuation-in-part of Ser. No. 888,033, Jul. 18, 1986, Pat. No. 4,940,840, which is a continuation-in-part of Ser. No. 593,691, Mar. 26, 1984, Pat. No. 4,751,081. This application Aug. 14, 1992, Ser. No. 930,970
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] C12P *21/00, 21/04;* C12N *15/00;* A01H *1/04*
U.S. Cl. 435—69.1 12 Claims

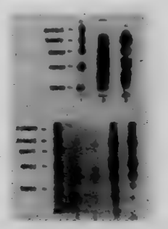
1. A method of inhibiting chitinous fungal plant pathogens comprising introducing into a plant a DNA sequence encoding for chitinase activity to create a transformed plant under conditions whereby the transformed plant expresses chitinase in active form.

5,290,688

METHOD FOR INTENSIVE, IN VITRO CULTURE OF *BABESIA DIVERGENS* STRAINS

Joseph Schrevel, Lussac-les-Chateaux; André Gorenflot, Gif-sur-Yvette; Eric Precigout, Poitiers; Alain Marchand, Carquefou; Philippe Brasseur, Rouen; Monique L'Hostis, Nantes; Daniel Rigomier; Alexis Valentin, both of Poitiers; Emmanuel Vidor, Lyons, and Guy Bissuel, Le Bois-d'Oingt Chanrion, all of France, assignors to Rhone Merieux, Lyons, France

PCT No. PCT/FR90/00934, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO91/08771, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 20, 1990, Ser. No. 752,625
Claims priority, application France, Dec. 20, 1989, 89 16890
Int. Cl.[5] C12N *1/10, 1/28;* C12P *21/00;* A61K *39/00*
U.S. Cl. 435—7.1 11 Claims



1. Process for the culture of Babesia, characterised in that the Babesia strain is maintained in culture on a culture medium free from serum protein but containing lipoproteins as well as red cells.

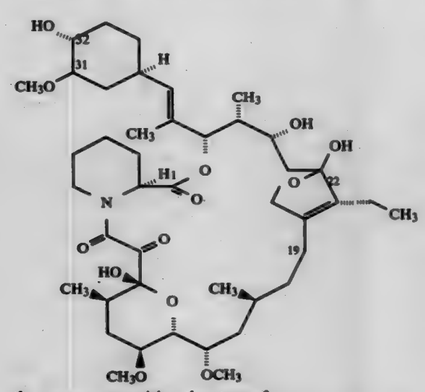
5,290,689

NEW CYCLIC FR-900520 MICROBIAL BIOTRANSFORMATION AGENT

George M. Garrity, Westfield; Magda M. Gagliardi, Somerset, and Shieh-Shung T. Chen, Morganville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 28, 1992, Ser. No. 951,973
Int. Cl.[5] C12P *17/18, 1/04*
U.S. Cl. 435—119 4 Claims

1. A process for the production of an immunosuppressant compound having the structural formula I:



I

the process comprising the steps of

(a) culturing a microorganism Streptomyces sp. MA 6969 (ATCC No. 55280) in the presence of compound FR-900520 in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under aerobic conditions until the compound is produced, and

(b) recovering the compound.

5,290,690

METHODS AND MEANS FOR CONTROLLING THE STABILITY OF PROTEINS

Nadir Mrabet, Kockelberg; Ignace Lasters, Perk; Patrick Stanssens, St.-Denijs-Westrem; Gaston Matthyssens, St.-Genesius-Rhode; Shoshana Wodak, Brussels, all of Belgium, and Wilhelmus J. Quax, Voorschoten, Netherlands, assignors to Plant Genetic Systems, Brussels, Belgium and Glasbrecades, Delft, Netherlands

Filed Aug. 25, 1989, Ser. No. 398,706
Claims priority, application European Pat. Off., Jul. 15, 1988, 88201539.9; Nov. 4, 1988, 88402789.7; PCT Int'l Appl., Jul. 17, 1989, PCT/EP89/00839
Int. Cl.[5] C07H *21/04;* C12N *9/06, 9/08, 15/53*
U.S. Cl. 435—172.3 12 Claims

3. A method to enhance the thermal stability of an enzyme, without destroying the catalytic activity of said enzyme which is selected from the group consisting of superoxide dismutase and glyceraldehyde phosphate dehydrogenase, which method comprises

1) replacing in superoxide dismutase at least one lysine residue in the primary structure of said enzyme with an arginine residue,

wherein said lysine residue has been identified as not associated with the catalytic activity of the enzyme;

wherein said lysine residue has been identified as located at a site that can sterically accommodate the substitution of an arginine residue;

wherein said lysine residue has been identified as participating in electrostatic interactions at an interface between subunits or domains; and

wherein said lysine residue has been identified as at a site of low accessible surface area; or

2) replacing in glyceraldehyde phosphate dehydrogenase at least one glycine residue with a lysine or arginine residue;

wherein said glycine residue has been identified as not associated with the catalytic activity of said enzyme;

wherein said glycine residue occurs within an interface between domains or subunits; and

wherein said glycine residue is located at a site of high accessible surface area.

5,290,691

SAFE AND VERSATILE CLONING VECTOR

Susumu Mitsuhashi, Tokyo; Matsuhisa Inoue, Gunma, and Masao Nagashima, Saitama, all of Japan, assignors to Banyu Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 628,924, Dec. 11, 1990, abandoned, which is a continuation of Ser. No. 914,149, Oct. 1, 1986, abandoned. This application Dec. 26, 1991, Ser. No. 814,203
Claims priority, application Japan, Oct. 1, 1985, 60-216209
Int. Cl.[5] C12N *15/00, 15/11, 15/70, 15/74*
U.S. Cl. 435—252.31 8 Claims

1. Versatile recombinant DNA cloning vector having a first replication origin functional in *Escherichia coli* and *Pseudomonas aeruginosa*, and a second replication origin functional in *Bacillus subtilus*, said versatile recombinant DNA cloning vector also having genes expressing resistance to two types of antibiotic in each of said three species of microorganisms, after introduction into transformable host cells of said microorganisms which are sensitive to antibiotics, said vector being non-mobilizable in *E. coli* cells with coexisting transferable plasmids or together with other non-transferable plasmids.

5,290,692

BIOADAPTABLE POROUS CRYSTALLINE GLASS CONTAINING AN IMMOBILIZED FIBRINOLYTIC ENZYME FOR DISSOLVING BLOOD CLOTS

Takahiro Suzuki, Nagoya; Sukeno Kawamura, Izuyama; Motohiro Teriyama, Kasugai; Yoshiyuki Yokogawa, and Yukari Kawamoto, both of Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,539
Claims priority, application Japan, Mar. 26, 1991, 3-133673
The portion of the term of this patent subsequent to Jan. 12, 2020, has been disclaimed.
Int. Cl.[5] C12N *11/14;* A61K *37/54*
U.S. Cl. 435—176 1 Claim

1. A thrombolytic bioadaptable material comprising:

a bioadaptable porous crystalline glass produced by combining 40–50 mol% calcium oxide, 20–30 mol% titanium dioxide, and 25–35 mol% diphosphorous pentoxide to form a mixture, and combining said mixture with 0.5 to 4.0 mol%, based on said mixture, of disodium oxide; and

at least one fibrinolytic enzyme capable of converting plasminogen into plasmin selected from the group consisting of urokinase, tissue plasminogen activator, and streptokinase covalently bonded to said porous crystalline glass, whereby said at least tone fibrinolytic enzyme is immobilized on said porous crystalline glass.

5,290,693

IMMOBILIZATION OF MICROORGANISMS OR ENZYMES IN POLYVINYL ALCOHOL BEADS

Kuo-Cheng Chen, and Ying-Feng Lin, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jul. 8, 1992, Ser. No. 910,788
Int. Cl.[5] C12N *11/04, 11/08*
U.S. Cl. 435—182 16 Claims

1. A process for preparing polyvinyl alcohol-immobilized microbial or enzymatic beads, said process comprising the steps of:

reacting about a 10 to about a 20 wt % aqueous solution of polyvinyl alcohol and a microorganism or an enzyme with about 3 wt % to saturated boric acid aqueous solution for a period of about 10 minutes to about two hours to form gelled spherical beads, wherein said polyvinyl alcohol has a degree of polymerization from about 1000 to about 3000 and a degree of saponification from about 70 to about 99 mol %;

removing said gelled spherical beads from said reaction mixture; and

hardening said gelled spherical beads by treating said gelled spherical beads with about a 3 to about a 20 wt % phosphoric acid or phosphate aqueous solution for at least 30 minutes.

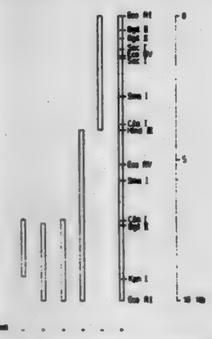
5,290,694

RECOMBINANT DNA, BACTERIUM OF THE GENUS PSEUDOMONAS CONTAINING IT, AND PROCESS FOR PREPARING LIPASE BY USING IT

Yuji Nakanishi; Yoshiaki Kurono; Yoshinao Koide, all of Aichi, and Terahiko Beppe, Tokyo, all of Japan, assignors to Amano Pharmaceutical Co., Ltd., Aichi, Japan

Filed Feb. 28, 1989, Ser. No. 317,827
Claims priority, application Japan, Feb. 28, 1988, 63-045557; Nov. 28, 1988, 63-300386
Int. Cl.[5] C12N *15/31, 15/55, 15/78, 15/67*
U.S. Cl. 435—198 17 Claims

1. A recombinant DNA capable of being replicated in a bacterium of the genus Pseudomonas, comprising a wide host range plasmid vector containing a DNA fragment originating from the genus Pseudomonas comprising a structural gene of



lipase and a gene encoding a protein participating in the production of lipase.

5,290,695

HEPARITINASE, PROCESS FOR PRODUCING THE SAME AND BACTERIA PRODUCING THE SAME

Kiyoshi Morikawa, Hinode; Hirofumi Miyazono, Higashiyamato; Hiroshi Maruyama, Higashiyamato, and Keiichi Yoshida, Higashimurayama, all of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Japan

Filed Feb. 28, 1992, Ser. No. 843,812
Claims priority, application Japan, Mar. 6, 1991, 3-63707
Int. Cl.[5] C12N *9/88, 1/00;* C12Q *1/56;* C12P *21/04*
U.S. Cl. 435—232 1 Claim

1. Enzymes consisting of heparitinase T-I, heparitinase T-II, heparitinase T-III and heparitinase T-IV, having the following properties:

(A) action:

each enzyme is a lyase which degrades glucosaminide linkages of heparin or heparin sulfate, and cleaves them to form double bonds between 4-position and 5-position carbon atoms of uronic acids,

(B) substrate specificity:

heparitinase T-I and heparitinase T-II do not degrade heparin and degrade heparin sulfate, and unsaturated disaccharides formed as degraded products are non-sulfate compound (ΔDiHS-OS) and a small amount of uronic acid-glucosamine-N-sulfate (ΔDiHS-NS); heparitinase T-III does not degrade heparin and degrades heparin sulfate, and unsaturated disaccharides formed as degraded products are non-sulfate compound (ΔdiHS-OS) and uronic acid-glucosamine-N-sulfate (ΔdiHS-NS); heparitinase T-IV degrades heparin and heparin sulfate, and unsaturated disaccharides formed as degraded products are uronic acid-glucosamine-N-sulfate (ΔDIHS-OS), uronic acid-glucosamine-N,6-disulfate (ΔDiHS-diN, 6S), uronic acid-2-sulfate-glucosamine-N-sulfate (ΔDiHS-diU,NS) and uronic acid-2-sulfate-glucosamine-N,6-disulfate (ΔDiHS-Tris),

(C) optimum pH:

heparitinase T-I	5.5 to 6.5
heparitinase T-II	5.5 to 6.5
heparitinase T-III	7.0 to 8.0
heparitinase T-IV	7.5 to 8.0,

(D) pH stability

heparitinase T-I	4.5 to 9.5
heparitinase T-II	5.0 to 9.5
heparitinase T-III	5.0 to 9.5
heparitinase T-IV	5.0 to 10.0,

(E) optimum temperatures at which the enzyme has the highest degradation rate:

heparitinase T-I	55° C.
heparitinase T-II	55° C.
heparitinase T-III	50° C.
heparitinase T-IV	40° C.

(F) heat stability temperature at which or lower than which the enzyme is stable and at higher than which the enzyme is degenerated due to heat and deactivated:

heparitinase T-I	50° C. or lower
heparitinase T-II	50° C. or lower
heparitinase T-III	45° C. or lower
heparitinase T-IV	40° C. or lower,

(G) inhibition and activation at ion concentration of 5 mM:

heparitinase T-I	activated by Ca^{2+}, Co^{2+}, Mg^{2+} and Mn^{2+}, and inhibited by Zn^{2+}
heparitinase T-II	activated by Ba^{2+}, Ca^{2+}, Co^{2+}, Mg^{2+} and Mn^{2+}, and inhibited by Zn^{2+}
heparitinase T-III	inhibited by Zn^{2+}
heparitinase T-IV	activated by Ba^{2+}, Ca^{2+} and Mg^{2+}, and inhibited by Co^{2+} and Zn^{2+}.

5,290,696

METHOD FOR IMPARTING CYCLOHEXANEDIONE AND/OR ARYLOXYPHENOXYPROPANIOC ACID HERBICIDE TOLERANCE TO MAIZE PLANTS

David A. Somers; William B. Parker, both of Roseville; Donald L. Wyse, Wyoming; John W. Gronwald, Shoreview, and Burle G. Gengenbach, St. Paul, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 538,674, Jun. 18, 1990, Pat. No. 5,162,602, which is a continuation of Ser. No. 269,684, Nov. 10, 1988, abandoned. This application Jul. 21, 1992, Ser. No. 917,462
Int. Cl.[5] A01H *4/00, 1/04*
U.S. Cl. 436—240.5 5 Claims

1. A method of imparting herbicide tolerance to maize plants comprising forming a maize callus tissue culture of plant cells; subjecting said maize callus tissue culture to a cyclohexanedione herbicide, an aryloxyphenoxypropanoic acid herbicide, or mixtures thereof; selecting for plant cells from said maize callus tissue culture which comprise a gene encoding for an acetyl coenzyme A carboxylase (ACCase) which is tolerant of inhibition by a cyclohexanedione herbicide, an aryloxyphenoxypropanoic acid herbicide, or mixtures thereof, at levels which normally inhibit the activity of ACCase; and generating maize plants from said selected maize callus tissue culture of plant cells, wherein said cells comprise said gene encoding an acetyl coenzyme A carboxylase (ACCase) which is tolerant of inhibition by a cyclohexanedione herbicide, an aryloxyphenoxypropanoic acid herbicide, or mixtures thereof, at levels which normally inhibit the activity of ACCase.

5,290,697

SPECIES OF A MICROORGANISM OF THE GENUS RHODOCOCCUS

Joseph Shabtai, Ramat Hasharon; Gideon Flesinger, Rehovot, and Joseph Fleming, Nes Ziona, all of Israel, assignors to The Israel Electric Corporation Ltd., Haifa, Israel

Division of Ser. No. 790,582, Nov. 8, 1991, Pat. No. 5,231,018. This application Apr. 29, 1992, Ser. No. 876,063
Claims priority, application Israel, Oct. 12, 1990, 96611
Int. Cl.[5] C12N *1/20;* C12R *1/01*
U.S. Cl. 435—252.1 1 Claim

1. A pure culture of a Gram-positive bacterial strain designated GIN-1 being a member of the genus Rhodococcus and deposited under No. 40340 at the National Collections of Industrial and Marine Bacteria Ltd. (NCIMB) at Aberdeen, Scotland, said strain having an ability to grow in an aqueous saline solution and to adsorb to metal oxides in an aqueous environment.

5,290,698

STREPTOVERTICILLIUM FERM P-10489 WHICH PRODUCES ANTITUMOR AGENT BE-13793C

Hiroyuki Sada; Katuhisa Kojiri; Akira Okura, all of Tokyo; Kenji Kawamura, Aichi, and Masanori Okanishi, Tokyo, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 823,664, Jan. 21, 1992, Pat. No. 5,217,885, which is a division of Ser. No. 496,701, Mar. 21, 1990, Pat. No. 5,106,864. This application Dec. 4, 1992, Ser. No. 985,955
Claims priority, application Japan, Mar. 23, 1989, 1-71149
Int. Cl.[5] C12P *17/18, 17/16, 17/10*
U.S. Cl. 435—252.1 1 Claim

1. A biologically pure culture of the microorganism Stetptoverticillium sp. FERM P-10489 or mutants thereof capable of producing the antitumor substance BE-13793C.

5,290,699

DOUBLE MUTANTS OF BACTERIORHODOPSIN

Dieter Oesterhelt; Susanne Meessen; Jorg Tittor, all of Munich; Anja Matuszak, Singen, and Klaus May, Munich, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Nov. 14, 1991, Ser. No. 791,858
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037342
Int. Cl.[5] C12N *1/21, 15/74;* C07K *13/00*
U.S. Cl. 435—252.3 8 Claims

1. A bacteriorhodopsin protein comprising:

bacteriorhodopsin having aspartic acid mutated to asparagine in amino acid positions 85 and 96 of the opsin of a wild-type strain of Halobacteria.

5,290,700

CELL CULTURE DEVICE

Patrick Binot, Bussy St. Georges; Dominique Cognard, Guyancourt; Frédéric Dufau, La Celle-Saint-Cloud, and Jean Hache, Trappes, all of France, assignors to Bertin & Cie., Plaisir, Cedex

PCT No. PCT/FR91/00246, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/15570, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 773,609
Claims priority, application France, Mar. 30, 1990, 90/04092
Int. Cl.[5] C12M *3/00, 3/04, 1/00, 1/12*
U.S. Cl. 435—284 18 Claims

1. A cell culture device for the production of metabolites, comprising:

(i) a housing (D),

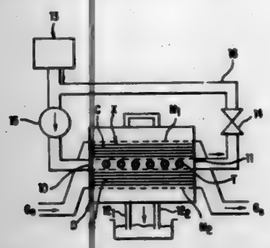
(ii) a cell culture space (X), within said housing,

(iii) fresh nutrient medium inlet and outlet means, connected,

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in parallel, to a sheet of tubes (T) forming a wall of said culture space (X) and in fluid communication with said culture space,

(iv) at least a subset of open-ended permeable capillaries (C) arranged in a layer within said culture space, whereby the open ends of said capillaries lead to external inlet and outlet gas means and in gaseous communication with the interior of said capillaries, said capillaries being arranged at approximately equal intervals so as to form, on one side of said sheet of tubes (T), one subset allowing an homogeneous distribution for the gas exchanges wit the cells,



(v) a spent medium outlet means connected to a micron sieve (M) forming each downstream wall of the cell culture space, in order to ensure that the cells are confined while allowing the spent medium to leave,

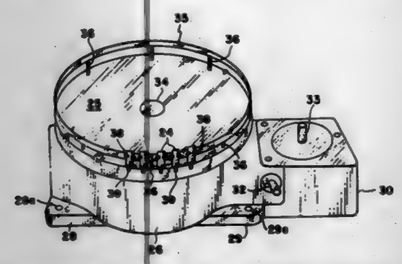
wherein said sheet of tubes (T), in connection with fresh nutrient medium inlet and outlet means, which are structured in a closed-loop circuit, are constructed so as to provide when fresh nutrient medium is passing through said circuit, simultaneously a first flow of fresh medium through each of said tubes, from nd to end and a second flow of fresh medium perpendicular to said first flow, from said tubes to said cell culture space (X), through their permeable walls.

5,290,701

MICROBIAL DETECTION SYSTEM AND PROCESS

Judd R. Wilkins, 281 Littletown Quarter, Williamsburg, Va. 23185

Filed Aug. 28, 1991, Ser. No. 751,182
Int. Cl.[5] C12M *1/10*; C12Q *1/02*; G06F *15/00*; G06K *7/00*
U.S. Cl. 435—312 10 Claims



1. Apparatus for detecting the presence and an indication of the quantity of a specific microorganism in an agar culture, comprising:

a plurality of culture cells each containing a quantity of nutrient broth containing an agar concentration in the range of 0.10% to 0.40% agar and inoculated with, a culture from a known or suspected microorganism source;

retention means for retaining said plurality of culture cells in a spaced vertical arrangement;

an incubator for housing said retention means and said plurality of culture cells;

camera means in optical alignment with said retention means for photographing the culture growth in each of said plurality of culture cells at selected time intervals,

means for interpreting photos of the culture growth pattern taken by said camera means which relates culture growth patterns to organism types and quantifies cell numbers in the original inoculum;

each of said plurality of culture cells being provided with a substantially rectangular configured housing;

each said rectangular configured housing having a vertical partition disposed substantially intermediate the width thereof and serving to divide said housing into first and second vertically disposed chambers;

a separate cover for each of said first and said second vertically disposed chambers to permit sealing of each chamber and to provide access to each chamber for supplying nutrient agar to, and for removing microbial growth from, each said chamber; and

hinge means securing each of said separate covers to a side of a said rectangular configured housing.

5,290,702

METHOD OF DETECTING AND MAPPING ORGANIC SOLVENT-CONTAINING MATERIALS ON A SURFACE

On-Kok Chang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 19, 1993, Ser. No. 35,336
Int. Cl.[5] G01N *31/22*, *33/98*
U.S. Cl. 436—2 19 Claims

1. A method for detecting and mapping organic solvent-containing material on a surface using a chromogenic solvent detector which comprises:

a substrate;

a binder means which is substantially soluble to said solvent;

an electron donating chromogenic composition dispersed on said substrate in connection with said binder means; and

an electron accepting composition, which forms a color with said chromogenic composition, dispersed on said substrate in connection with said binder means,

said method comprising the steps of contacting said surface with said detector, dissolving said binder means of said detector in a region of contact with said organic solvent-containing material, and detecting a visual discoloration of said detector caused by the contact of said organic solvent-containing material with said detector.

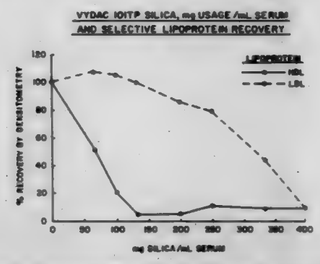
5,290,703

METHOD FOR THE SEPARATION OF HIGH DENSITY LIPOPROTEIN FROM BLOOD SAMPLES

Chen-Jung Hsu, Chappaqua, N.Y.; Robert C. Payne, South Bend, and James A. Profitt, Goshen, both of Ind., assignors to Miles, Inc., Elkhart, Ind.

Filed Dec. 14, 1992, Ser. No. 990,592
Int. Cl.[5] G01N *33/92*, *33/49*, *1/18*
U.S. Cl. 436—71 15 Claims

1. A method of selectively separating high density lipoprotein (HDL) from a blood sample containing HDL, LDL, VLDL and chylomicrons which method comprises contacting said sample with finely divided, particulate, porous silica or silicate having a particle size of from about 1 μ to 1000 μ in the longest dimension and surface pores of from about 80 Å to 1000 Å in size as absorbant particles to form a complex between the silica or silicate and the HDL and separating said complex from the blood sample by solid/liquid separatory techniques to thereby provide a blood sample substantially free of HDL.



5,290,704

METHOD OF DETECTING ORGANIC SOLVENT VAPORS

On-Kok Chang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 19, 1993, Ser. No. 34,933
Int. Cl.[5] G01N *33/00*, *21/77*
U.S. Cl. 436—128 9 Claims

1. A method of detecting organic solvent vapor comprises the steps of:

(a) exposing a solvent vapor detector to solvent vapor; and

(b) photometrically measuring the optical density of said detector; wherein said detector comprises:

a substrate;

a binder means which is substantially soluble to said solvent vapor;

an electron donating chromogenic composition dispersed on said substrate in connection with said binder means; and

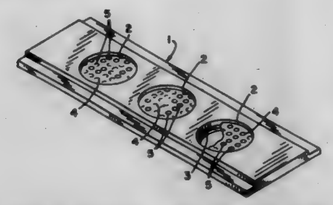
an electron accepting composition, which forms a color with said chromogenic composition, dispersed on said substrate in connection with said binder means.

5,290,705

SPECIMAN SUPPORT FOR OPTICAL ANALYSIS

Robert E. Davis, Hinsdale, Ill., assignor to R. E. Davis Chemical Corporation, Oak Brook, Ill.

Filed Jan. 13, 1992, Ser. No. 820,302
Int. Cl.[5] G01N *21/00*
U.S. Cl. 436—164 6 Claims



1. A method of analyzing a liquid specimen, comprising the steps of forming a specimen support of a rigid material that is non-reactive to water and acidic substances and having a pair of opposed surfaces and having a plurality of unobstructed holes extending between said surfaces, a first of said holes having a different cross sectional area than a second of said holes, positioning said support so that said surfaces are horizontal and the axes of the holes are vertical, enclosing each hole with an unsupported film of a liquid specimen to be analyzed, directed a beam of infrared light through the hole and through the liquid film enclosing the hole, and generating a wavelength spectrum of said beam passing through said film.

5,290,706

VISUALIZATION SYSTEM FOR RETRIEVAL, IDENTIFICATION, AND POSITIONING OF BIOLOGICAL SAMPLES FOR SUBSEQUENT MICROSCOPIC EXAMINATION

Gerald W. Camiener, 26700 Hurlingham Rd., Beachwood, Ohio 44122

Filed Nov. 10, 1992, Ser. No. 974,071
Int. Cl.[5] G01N *1/30*, *33/48*
U.S. Cl. 436—174 19 Claims

1. A method for preparing a biological sample for examination, compriasing adding a gross biological sample containing biological material selected from the group consisting of a tissue and an organ to a preservative medium which contains a visualization-effective amount of a dye that colors said gross sample in a manner in which said gross sample is visually identifiable for retrieval from among other contents of said medium and does not interfere with subsequent sectioning and staining of said gross sample for microscopic examination;

identifying and retrieving the gross sample from the medium based on the resulting color differentiation;

sectioning the gross sample to obtain an examination sample; and

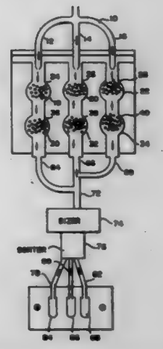
staining the examination sample.

5,290,707

METHOD FOR DETECTION OF MICROORGANISMS

Sheila J. Wood, Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 25, 1991, Ser. No. 797,754
Int. Cl.[5] G01N *33/544*, *33/545*, *33/546*
U.S. Cl. 436—523 5 Claims



1. A method for detecting one or more unknown antigens comprising the steps of:

a. providing multiple screening bodies, each comprising an antibody specific for each of said unknown antigens attached to a different size microsphere,

b. providing multiple agglutinating bodies each comprising an antigen, which can bind with an antibody on one of said screening bodies attached to a second size microsphere which is larger than the microspheres of said screening bodies;

c. mixing at least one type of unknown antigen with said agglutinating bodies to form multiple fluid mixtures;

d. mixing each of said screening bodies with the fluid mixtures of step c to form multiple second fluid mixtures wherein in each second fluid mixtures (i) each unknown

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antigen binds to an antibody on one of said screening bodies to form an unknown antigen-antibody-microsphere complex when said unknown antigen is present, or (ii) said agglutinating bodies bind with said screening bodies to form an agglutinating body-antigen-antibody-microsphere complex when said unknown antigen is not present

e. filtering said second fluid mixtures through a filter having a pore size that prevents the agglutinating bodies from passing through the filter resulting in the separation of any agglutinating body antigen-antibody-microsphere complexes present therein from said second fluid mixtures;

f. passing the filtered second fluid mixtures which contain the unknown antigen-antibody-microsphere complexes through a volume sizer to measure the quantity and particle size of the microsphere complexes, and continuing the flow of the unknown antigen-antibody-microsphere complexes into a sorter which sorts and routes the unknown antigen-antibody-microsphere complexes by the size of each screening body to separate vessels each containing a second antibody bound to fluorescent microspheres, wherein each of said second antibodies is specific for one of the unknown antigens in each of the vessels;

g. exposing any unknown antigen-antibody-microsphere complexes to the fluorescent microspheres contained in said vessels, wherein said second antibodies on said fluorescent microspheres specifically bind with the unknown antigen-antibody-microsphere complexes; and

h. measuring a fluorescent signal from said fluorescent microspheres in each of the vessels to determine the presence of each of the unknown antigens.

5,290,708

METHOD OF IMMUNOASSAY MEASUREMENT

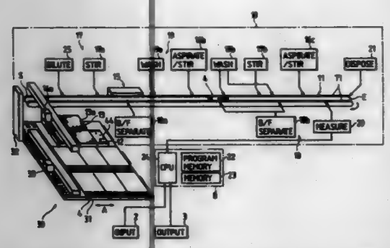
Yoshihiro Ashihara; Isao Nishizono, both of Tokyo; Hidetaka Minakawa, Kanagawa; Masahisa Okada, Tokyo; Yasusuke Sakurabayashi, Tokyo; Fumio Watanabe, Tokyo, and Shin-ichi Wakana, Tokyo, all of Japan, assignors to Fujirebio Inc., Tokyo, Japan

Division of Ser. No. 677,686, Mar. 29, 1991, Pat. No. 5,158,895. This application Jul. 17, 1992, Ser. No. 915,124

Claims priority, application Japan, Mar. 30, 1990, 2-80993; May 9, 1990, 2-119010; Jun. 27, 1990, 2-166756; Sep. 3, 1990, 2-91567

Int. Cl.[5] C12Q *1/00*; G01N *35/02*

U.S. Cl. 436—526 **24 Claims**



1. A method of immunoassay measurement comprising the steps of:

preparing a cartridge having a plurality of wells, at least a first well of said plurality of wells being deeper than the other wells and containing solid phase material carrying antigen or antibody and at least one of said the other wells being filled with labeled antigen or antibody solution;

aspirating a portion of the labeled antigen or antibody solution in said one of the other wells and pouring said portion and a sample into at least a first one of said plurality of wells;

stirring a mixture of the solid phase material carrying antigen or antibody, the labeled antigen or antibody and the sample in said at least a first one of said plurality of wells and then allowing an antigen-antibody reaction to occur therein;

performing a bind/free separation in a portion of said at least a first one of said plurality of wells protruding downwardly from said the other wells;

washing out free substance containing non-reacted labeled antigen or antibody;

adding a substrate to said at least a first one of said plurality of wells and stirring a mixture of the solid phase material and the substrate therein; and

measuring a signal obtained by reaction of label bound on solid phase material with the substrate through said portion of said at least a first one of said plurality of wells.

5,290,709

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

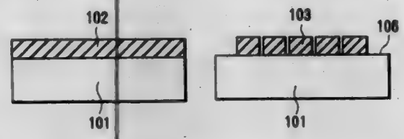
Akira Sato, Yamagata, Japan, assignor to NEC Corporation, Japan

Filed Apr. 9, 1992, Ser. No. 865,961

Claims priority, application Japan, Apr. 16, 1991, 3-082781

Int. Cl.[5] H01L *21/426*

U.S. Cl. 437—20 **2 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

coating an entire surface of a semiconductor wafer with an insulating resist;

exposing and developing said coated insulating resist to form a resist pattern at an inner peripheral portion of said semiconductor wafer and to remove said insulating resist from an outer peripheral portion of said semiconductor wafer;

the outer peripheral portion of said semiconductor wafer from which said insulating resist is removed being placed in surface contact with a fixing portion of an ion implantation unit, so that charges accumulated in said semiconductor wafer during an ion implantation step escape through said fixing portion; and

performing ion implantation to said semiconductor wafer through said insulating resist pattern.

5,290,710

METHOD FOR TESTING INTEGRATED CIRCUITS ON A CARRIER SUBSTRATE

Javad Haj-Ali-Ahmadi, Austin; Jerome A. Frankeny, Taylor; Richard F. Frankeny, Austin; Adolph B. Habich, Georgetown; Karl Hermann, Austin, and Ronald E. Hunt, Georgetown, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 619,369, Nov. 28, 1990, Pat. No. 5,148,003. This application May 22, 1992, Ser. No. 887,995

Int. Cl.[5] H01L *21/52, 21/58, 21/66*

U.S. Cl. 437—8 **2 Claims**

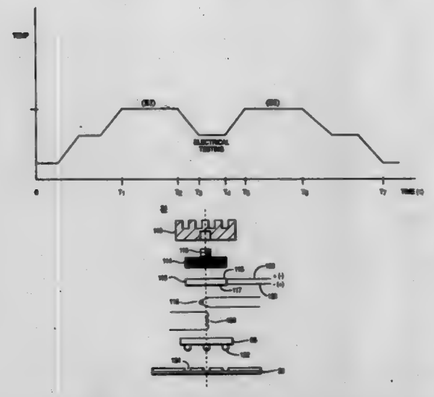
1. A method of testing integrated circuits and affixing said integrated circuits to a carrier substrate, said method comprising the steps of:

aligning and applying pressure between said integrated circuits and said carrier substrate to provide an electrical connection therebetween;

elevating the temperature of said integrated circuits to a level for testing said integrated circuits;

performing electrical testing upon said integrated circuits at said test level temperature; and

permanently affixing said integrated circuits to said carrier substrate when said testing is satisfactory by elevating the



temperature beyond said test level to reflow solder disposed between said integrated circuits and said carrier substrate.

5,290,711

METHOD FOR FABRICATING SEMICONDUCTOR DEVICES WHICH LESSENS THE EFFECT OF ELECTROSTATIC DISCHARGE

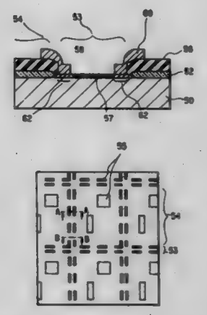
Masayuki Yanagisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,366

Claims priority, application Japan, Apr. 28, 1992, 4-109410

Int. Cl.[5] H01L *21/265, 23/60*

U.S. Cl. 437—20 **8 Claims**



1. A method for fabricating semiconductor devices, comprising the steps of:

defining device regions and scribe line regions on a semiconductor substrate, each of said device regions being surrounded by said scribe line regions;

providing a photoresist layer on selected areas of said scribe line regions;

implanting ions into remaining areas of said semiconductor substrate, said remaining areas being not covered with said photoresist layer;

removing said photoresist layer from said semiconductor substrate; and

providing an interconnection layer on said scribe line regions, said interconnection layer being in contact via said selected areas with said semiconductor substrate.

5,290,712

PROCESS FOR FORMING CRYSTALLINE SEMICONDUCTOR FILM

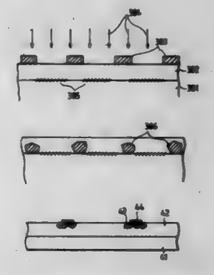
Nobuhiko Sato; Takao Yonehara, both of Atsugi, and Hideya Kumomi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 501,485, Mar. 30, 1990, abandoned. This application Nov. 13, 1991, Ser. No. 790,083

Claims priority, application Japan, Mar. 31, 1989, 1-81103; Apr. 28, 1989, 1-110386

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—24 **10 Claims**



1. A process for forming a polycrystalline semiconductor film by crystallization through solid phase growth of an amorphous semiconductor film on a base material, which comprises:

(i) selectively implanting ions of an element constituting the amorphous semiconductor film into the amorphous semiconductor film except at a fine region having a mask provided thereon and corresponding to an area not more than 5 μm in diameter therein,

(ii) heat-treating the amorphous semiconductor film at a temperature not higher than the melting point of the amorphous semiconductor film, thereby generating a crystal nucleus in the fine region, and

(iii) making a crystal grow at the crystal nucleus as a growth point.

2. A process for forming a polycrystalline semiconductor film by crystallization through solid phase growth of an amorphous semiconductor film on a base material, which comprises:

(i) selectively implanting ions of an element constituting the amorphous semiconductor film into the amorphous semiconductor film such that a fine region having a mask provided thereon, having an area not more than 5 μm in

diameter and having a lower degree of implantation damage than that of the other remaining regions is created at the boundary between the amorphous semiconductor film and the base material,

(ii) heat-treating the amorphous semiconductor film at a temperature not higher than the melting point of the amorphous semiconductor film, thereby generating only a single crystal-nucleus from the fine region, and

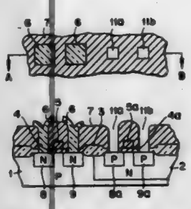
(iii) making a crystal grow at the crystal nucleus as a growth point.

5,290,713

PROCESS OF MANUFACTURING A SEMICONDUCTOR DEVICE BY USING A PHOTORESIST MASK WHICH DOES NOT ENCIRCLE AN AREA OF IMPLANTED IONS

Shigeharu Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,554
Claims priority, application Japan, May 15, 1991, 110062
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—27 **3 Claims**



1. A process of manufacturing a semiconductor device, comprising the steps of:

forming a photoresist mask on a main surface of a semiconductor substrate in such a manner that photoresist does not encircle an area in which ions are to be implanted; and

implanting ions into said area.

5,290,714

METHOD OF FORMING SEMICONDUCTOR DEVICE INCLUDING A CMOS STRUCTURE HAVING DOUBLE-DOPED CHANNEL REGIONS

Kazunori Onozawa, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 637,240, Jan. 3, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,825
Claims priority, application Japan, Jan. 12, 1990, 2-3443
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—27 **23 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:

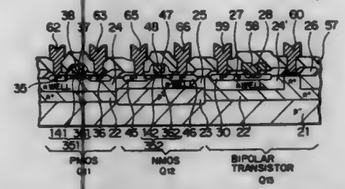
forming a first buried layer of a first conductivity type, a second buried layer of a second conductivity type and a third buried layer of said first conductivity type on a surface of a semiconductor substrate, said first to third buried layers being formed in different regions of said surface of said semiconductor substrate from one another, said second conductivity type being opposite to said first conductivity type;

forming an epitaxial layer on said first to third buried layers;

forming a first well region of said first conductivity type, a second well region of said second conductivity type and a third well region of said first conductivity type in said epitaxial layer respectively, said first to third well regions being formed on said first to third buried layers respectively, said first to third well regions having surface portions which correspond to an upper surface of said epitaxial layer respectively, wherein each of said first, second and third well regions has an impurity concentration decreasing uniformly from said surface portions to said first, second and third buried layers, respectively;

introducing first impurities of said second conductivity type into entire said first and second well regions, to form a first doped layer of said second conductivity type and a second doped layer of said second conductivity type in said surface portions of said first and second well regions respectively;

introducing second impurities of said first conductivity type into entire said first and second well regions so as to increase an effective impurity concentration of said first well region of said first conductivity type at the bottom of



said first doped layer and decrease an effective impurity concentration of said second well region of said second conductivity type at the bottom of said second doped layer;

forming, after the steps of introducing said first and second impurities, an insulated gate electrode of a first MISFET of said second conductivity type over said first doped layer in said first well region;

forming, after the steps of introducing said first and second impurities, an insulated gate electrode of a second MISFET of said first conductivity type over said second doped layer in said second well region;

forming source and drain regions of said first conductivity type of said second MISFET in said second well region at the both sides of said insulated gate electrode of said second MISFET;

forming source and drain regions of said second conductivity type of said first MISFET in said first well region at the both sides of said insulated gate electrode of said first MISFET;

forming a base region of said second conductivity type of a bipolar transistor in said third well region; and

forming an emitter region of said first conductivity type of said bipolar transistor in said base region.

5,290,715

METHOD OF MAKING DIELECTRICALLY ISOLATED METAL BASE TRANSISTORS AND PERMEABLE BASE TRANSISTORS

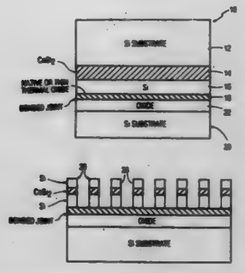
Ranjana Pandya, New Paltz, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,689
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—29 **6 Claims**

1. A method for manufacturing a dielectrically isolated metal silicide transistor comprising the steps of:

a) producing a silicon/metal silicide/silicon heterostructure;

b) bonding the silicon/metal silicide/silicon heterostructure to an insulating substrate;



c) masking the heterostructure; and

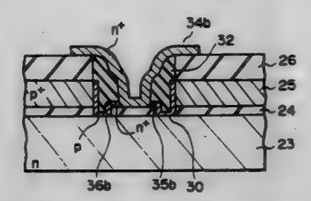
d) etching through selected portions of the heterostructure to provide free standing transistors which are separated from each other and disposed on said substrate.

5,290,716

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Shunji Nakamura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 911,746, Jul. 10, 1992. This application Jul. 8, 1993, Ser. No. 87,352
Claims priority, application Japan, Jul. 12, 1991, 3-172697
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **4 Claims**



1. A method of manufacturing a semiconductor device, comprising the following steps:

on a semiconductor substrate surface at the bottom of a hole that goes through three layers of a first insulating film formed on the substrate, a first conductor film formed on the first insulating film, and a second insulating film formed on the first conductor film, and reaches the substrate surface, forming a third insulating film separated from the inside walls of the hole;

forming a semiconductor film covering the bottom of the hole and the first insulating and the first conductor films in the walls of the hole;

forming a fourth insulating film covering the inside walls of the hole in such a way that a part of the semiconductor film on the third insulating film is exposed; and

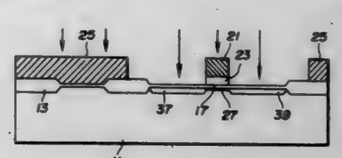
forming a second conductor film being connected to the exposed semiconductor film.

5,290,717

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING A RESIST PATERN COINCIDENT WITH GATE ELECTRODE

Katsuhiro Shimazu, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jun. 10, 1992, Ser. No. 896,571
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **2 Claims**



1. A method of manufacturing a CMOS semiconductor device having a source region, a gate region, a drain region, and a substrate connecting region with a channel length of at most 0.5 μm, comprising the steps of:

forming a gate oxide film having a film thickness of at most 120 Å over a substrate;

forming a gate material film over the gate oxide film;

forming a first resist pattern coincident with a shape of a gate over the gate material film;

hardening the first resist pattern by irradiating with ultraviolet rays;

forming the gate region by etching the gate material film by using the first resist pattern as a mask;

forming a second resist pattern to cover the substrate connecting region, the second resist pattern having openings respectively defining the gate region, the source region, and the drain region prior to removal of the first resist pattern;

implanting impurities into portions of the substrate corresponding to the source region and the drain region by using the first resist pattern and the second resist pattern as a mask, the first resist pattern inhibiting the impurities from penetrating the gate region;

removing the first and the second resist patterns; and

performing an annealing heat treatment to activate the impurities.

5,290,718

SIMPLIFIED HIGH RELIABILITY GATE OXIDE PROCESS

Paul A. Fearon, Gorham, and Todd P. Thibeault, Westbrook, both of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 29, 1992, Ser. No. 905,772
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **21 Claims**

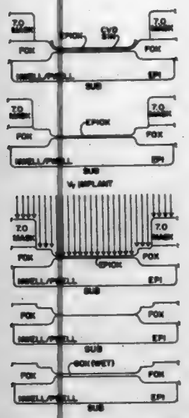
1. A wafer fabrication process comprising CMOS fabrication steps for fabricating CMOS transistors in a substrate of semiconductor material including an NWELL definition mask, etch, and N type dopant material introduction sequence forming an NWELL in the substrate, a PWELL definition mask etch and P type dopant material introduction sequence forming a PWELL in the substrate, growing an epitaxial layer (EPI) of semiconductor material over the substrate, growing an epitaxial oxide layer (EPIOX) over the EPI layer, depositing by chemical vapor deposition (CVD) a nitride layer CVDSIN over the EPIOX layer, and a CMOS transistor active area definition mask, etch, and field oxide (FOX) grow sequence for framing CMOS transistor active areas of the EPI layer in FOX, an improved CMOS active strip mask, etch, V_T adjust and gate oxide grow sequence comprising:

forming a photoresist CMOS active strip mask exposing CMOS transistor active areas, etching and removing the

CVD nitride layer over the CMOS transistor active areas, and leaving the EPIOX layer;

introducing P type dopant material through the EPIOX layer into the CMOS transistor active areas with the photoresist active strip mask in place for adjusting the threshold voltage (V_T) of the CMOS transistors;

stripping the EPIOX layer over the CMOS transistor active areas without growing a sacrificial oxide SACOX layer and then removing the photoresist CMOS active strip mask;



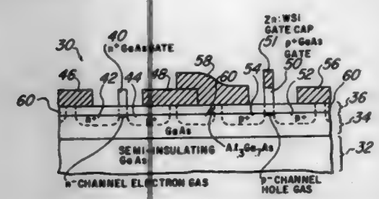
and growing a gate oxide (GOX) layer over the CMOS transistor active areas using a wet oxide grow process at relatively lower temperature than a dry oxide grow process, said wet oxide grow process being at a temperature no greater than approximately 850° C. followed by anneal ramping of temperature to a relatively high temperature and return to a relatively low temperature in a rapid thermal cycle.

5,290,719

METHOD OF MAKING COMPLEMENTARY HETEROSTRUCTURE FIELD EFFECT TRANSISTORS

Han-Tzong Yuan, Dallas; Hisashi Shichijo, Garland, and Hung-Dah Shih, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 582,818, Sep. 14, 1990, Pat. No. 5,214,298, which is a continuation of Ser. No. 913,872, Sep. 30, 1986, abandoned. This application Oct. 2, 1992, Ser. No. 956,132
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **16 Claims**



1. A method for fabricating complementary heterostructure field effect transistors, comprising the steps of:

(a) providing a layered semiconductor structure with a first channel layer of a first semiconductor material, a second insulating layer of a second semiconductor material having a bandgap larger than the bandgap of said first material on said first layer, and a third layer of a third semiconductor material on said second layer; said first and second layers forming a heterojunction, and said third layer doped a first conductivity type;

(b) forming first and second gates in said third layer, said first gate being an n-channel gate and said second gate being a p-channel gate which is p+ doped by outdiffusion, said p+ doping characterized by a doping profile of diffusion of p dopants through said p-channel gate which was previously n+ uniformly doped, said diffusion being of sufficient dopant concentration to convert said n+ uniform doping to p+ doping in all but a residual layer adjacent said insulator layer with a supply of p+ dopants;

(c) forming n-type source and drain regions in said first and second layers adjacent said first gate;

(d) forming p-type source and drain regions in said first and second layers adjacent said second gate; and

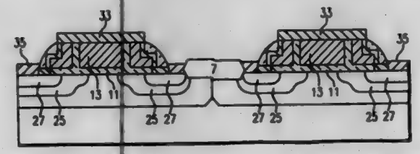
(e) forming contacts to said source regions, drain regions, and gates.

5,290,720

TRANSISTOR WITH INVERSE SILICIDE T-GATE STRUCTURE

Min-Liang Chen, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 824,756, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 624,785, Dec. 7, 1990, abandoned. This application Jul. 26, 1993, Ser. No. 97,932
Int. Cl.[5] H01L *21/265, 29/04*
U.S. Cl. 437—41 **10 Claims**



1. A method of making a semiconductor device comprising the steps of forming a gate structure comprising a thin oxide and polysilicon layer, said thin oxide being between said substrate and said polysilicon and on the surfaces of polysilicon;

forming source/drain regions on opposed sides of said gate structure, said forming being by ion implantation to form lightly and heavily doped regions, said implantation being a single implant through L-shaped silicon spacers and forming said lightly doped regions under said spacers;

said gate structure being an inverse T-gate being made by the further steps of forming said L-shaped silicon spacers on opposed sides of said gate structure by depositing a silicon layer and then a sacrificial layer over said thin oxide and polysilicon layers, and selectively removing said silicon layer and said sacrificial layer to form said L-shaped silicon spacer.

5,290,721

METHOD OF MAKING A STACKED SEMICONDUCTOR NONVOLATILE MEMORY DEVICE

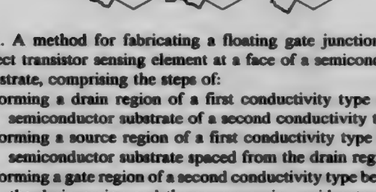
Masanori Yoshimi, Nara; Yoshimitsu Yamauchi, Yamatokooriyama, and Kiyoshige Omori, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 874,808
Claims priority, application Japan, Jun. 28, 1991, 3-159040
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—43 **11 Claims**

1. A process for the fabrication of a semiconductor nonvolatile memory device, which comprises the steps of:

(1) depositing, on a surface of a semiconductor substrate having a gate oxide film, a first electric conductive layer intended to be a floating gate and patterning said first electric conductive layer with a resist pattern to form a floating gate pattern having a restricted width;

(ii) forming an interlayer insulating film by a partially accelerated oxidation such that the thickness thereof on an active region of said semiconductor substrate is larger than that on said floating gate pattern, said partially accelerated oxidation comprising implanting impurity ions into said active region using said floating gate pattern and said gate oxide film thereunder as a mask and subjecting the thus treated substrate to a thermal oxidation;



(iii) sequentially forming on the surface of said interlayer insulating film a second electric conductive layer intended to be a control gate and a photoresist film and patterning said photoresist film to form a mask for the control gate; and

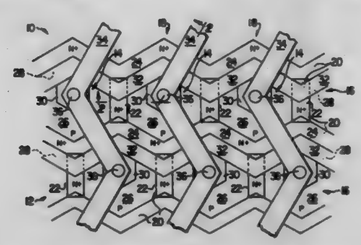
(iv) etching said second electric conductive layer, said interlayer insulating film and said floating gate pattern successively with use of said mask to form the control gate as well as to define a longitudinal length of the floating gate in self-alignment with said control gate.

5,290,722

METHOD OF MAKING FLOATING GATE JUNCTION FIELD EFFECT TRANSISTOR IMAGE SENSOR ELEMENTS

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 318,456, Mar. 1, 1989, Pat. No. 5,142,346, and a continuation of Ser. No. 34,306, Apr. 3, 1987, abandoned. This application May 29, 1992, Ser. No. 891,331
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **13 Claims**



1. A method for fabricating a floating gate junction field effect transistor sensing element at a face of a semiconductor substrate, comprising the steps of:

forming a drain region of a first conductivity type in the semiconductor substrate of a second conductivity type;

forming a source region of a first conductivity type in the semiconductor substrate spaced from the drain region;

forming a gate region of a second conductivity type between the drain region and the source region, said gate region operable to form a potential barrier in the gate region at a substantial depth from the face for collecting carriers of the second conductivity type formed responsive to incident light, said barrier acting as a probing current well for a current of a first conductivity type;

forming a capacitor for coupling to the gate region, the capacitor operable to apply a pulse to the gate region for sweeping out the carriers; and

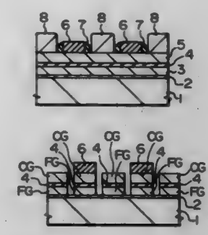
coupling the source region to a sense node operable to sense a change in the bias voltage of the gate region responsive to the collection of the carriers.

5,290,723

METHOD OF MANUFACTURING A NONVOLATILE SEMICONDUCTOR MEMORY

Tomofune Tani, and Kenji Anzai, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 951,011
Claims priority, application Japan, Sep. 26, 1991, 3-274683
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—43 **6 Claims**



1. A method of manufacturing a nonvolatile semiconductor memory, comprising the steps of:

(a) forming a first insulating film, a first semiconductor film for forming floating gates, a second insulating film, and a second semiconductor film for forming control gates in that order on a semiconductor substrate;

(b) forming etching masks, each having a configuration corresponding to that of the floating gate, at every other one of ares on said second semiconductor film where the floating gates are to be formed;

(c) forming side wall spacers on both side walls of each of said etching masks;

(d) growing selectively a third semiconductor film formed of the same material as that of said second semiconductor film on parts of said second semiconductor film which are not covered by any of said etching masks and said side wall spacers;

(e) removing said side wall spacers; and

(f) etching selectively said second semiconductor film, under said side wall spacers, said second insulating film and said first semiconductor film, together with said third semiconductor film in a direction substantially perpendicular to a surface of said semiconductor substrate by using said etching masks.

5,290,724

METHOD OF FORMING AN ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

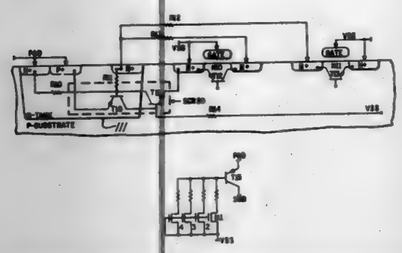
Continuation of Ser. No. 677,028, Mar. 28, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,074
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—51 **18 Claims**

1. A process of making an electrostatic discharge protection circuit, comprising the steps of:

forming a semiconductive tank in a semiconductor substrate of opposite conductivity type;

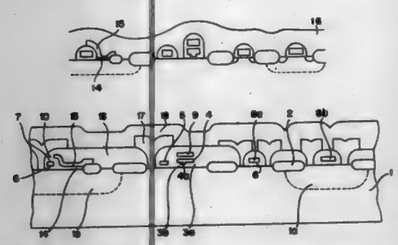
VOL 1160 ISS 1 MR 1 1994 UMI

establishing distinct semiconductive regions in the tank and in the substrate outside the well;
forming bipolar transistors partially located in the tank with at least one of the bipolar transistors connected to a first source/drain region of a field effect transistor that includes at least one of ht semiconductive regions in the substrate outside the tank;



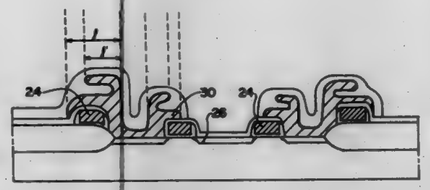
depositing a connection between at least two of the distinct semiconductive region sin the tank to cascade the bipolar transistors in the tank; and
resistivity coupling a second source/drain region of said field effect transistor to one of said distinct semiconductor regions in the tank.

5,290,725
SEMICONDUCTOR MEMORY DEVICE AND A METHOD FOR PRODUCING THE SAME
Kenichi Tanaka, Nara, and Keizo Sakiyama, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 28, 1991, Ser. No. 723,301
Claims priority, application Japan, Jun. 29, 1990, 2-173802
Int. Cl.[5] H01L *27/108*
U.S. Cl. 437—52 **3 Claims**



1. A method for producing a semiconductor memory device comprising the steps of
forming a first insulating film on a conductive silicon substrate in which a plurality of reverse conductive wells and a plurality of element separation regions are formed;
forming a first polysilicon layer on the first insulating film;
patterning the first polysilicon layer to form a floating gate electrode layer of a non-volatile memory element and a transistor gate electrode layer with a breakdown-voltage of 20 V or less;
forming a second insulating film on the silicon substrate;
forming a second polysilicon layer on the second insulating film;
patterning the second polysilicon layer to form a logic electrode layer, a transfer gate electrode layer of a volatile memory element, a driver electrode layer, and a control gate electrode layer of a non-volatile memory element;
forming a third insulating film on the silicon substrate;
forming a third polysilicon layer on the third insulating film; and
patterning the third polysilicon layer to form a charge storage electrode layer of a volatile memory element so that the charge storage electrode layer is partly disposed on the transfer gate electrode layer with the third insulating film sandwiched there-between.

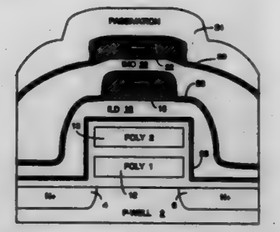
5,290,726
DRAM CELLS HAVING STACKED CAPACITORS OF FIN STRUCTURES AND METHOD OF MAKING THEREOF
Hong S. Kim, Daejun-si, Rep. of Korea, assignor to GoldStar Electron Co., Ltd., Seoul, Rep. of Korea
Filed Feb. 18, 1992, Ser. No. 836,690
Claims priority, application Rep. of Korea, Feb. 18, 1991, 2580/1991
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **14 Claims**



1. A method of making a DRAM cell having stacked capacitors of fin structures, comprising the steps of:
(a) defining field regions and active regions on a semiconductor substrate, and forming gates on the field regions and the active regions;
(b) forming side wall oxide layers on the sides of the gates, and forming source and drain regions on the substrate;
(c) depositing first, second and third insulation layers in turn on the semiconductor substrate;
(d) etching the third insulation layer at portions thereof corresponding to buried contact regions of certain of the source and drain regions to form a buried contact hole mask;
(e) wet etching portions of the second and first insulation layers using the remaining portions of the third insulation layer as a mask, wherein portions of the second insulation layer disposed beneath the third insulation layer are removed to form an open volume beneath portions of the third insulation layer;
(f) depositing a polysilicon layer, wherein the polysilicon layer is deposited in the open volume beneath portions of the third insulation layer, and removing portions of the polysilicon layer to form storage nodes; and
(g) forming a dielectric layer and a plate electrode layer.

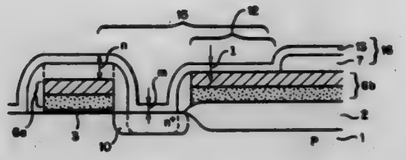
5,290,727
METHOD FOR SUPPRESSING CHARGE LOSS IN EEPROMS/EPROMS AND INSTABILITIES IN SRAM LOAD RESISTORS
Vivek Jain, Milpitas; Dipankar Prasanik, Cupertino, and Subhash Nariani, San Jose, all of Calif., assigaors to VLSI Technology, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 794,922, Nov. 20, 1991, which is a continuation-in-part of Ser. No. 775,085, Oct. 11, 1991, which is a continuation-in-part of Ser. No. 476,089, Mar. 5, 1990, Pat. No. 5,057,897. This application Mar. 30, 1992, Ser. No. 860,370
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **17 Claims**

1. A method of making an integrated circuit MOS device having improved reliability, the method comprising:
(a) forming on a substrate a plurality of MOS active devices, each including at least one gate;
(b) forming a first layer of silicon-enriched oxide generally above a level of said substrate defined by said MOS active devices, said silicon-enriched oxide having a refractive index of at least 1.50 and having a layer thickness less than about 5,000 Å;



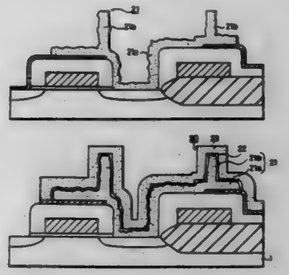
wherein said first layer of silicon-enriched oxide improves operation of said MOS devices.

5,290,728
METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE
Shin-ichi Sato, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 19, 1992, Ser. No. 964,146
Claims priority, application Japan, Oct. 21, 1991, 3-272880
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **6 Claims**



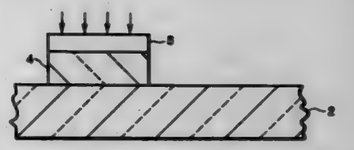
1. A method for fabricating a semiconductor device comprising the steps of:
forming at least first and second electrodes having an insulating film thereon on a semiconductor substrate, a thickness of the insulating film on a contact region of the first electrode being smaller than that on the second electrode;
forming an impurity diffusion region in the semiconductor substrate between the first and second electrodes;
forming insulating side walls on the electrodes;
forming an insulation layer over the electrodes and the impurity diffusion region to form a multiple level insulator on at least a portion of the electrodes;
etching the insulation layer covering a portion of the impurity diffusion region until a surface of the impurity diffusion region is exposed;
at substantially the same time the insulating layer is etched, etching a part of the multiple level insulator on the contact region of the first electrode until a surface of the first electrode is exposed; and
forming an interconnecting conductive layer over the electrodes and the impurity diffusion region to interconnect the exposed surfaces of the impurity diffusion region with the contact region of the first electrode.

5,290,729
STACKED TYPE CAPACITOR HAVING A DIELECTRIC FILM FORMED ON A ROUGH SURFACE OF AN ELECTRODE AND METHOD OF MANUFACTURING THEREOF
Yoshio Hayashide, and Wataru Wakamiya, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 654,100, Feb. 12, 1991, abandoned. This application Apr. 30, 1992, Ser. No. 876,808
Claims priority, application Japan, Feb. 16, 1990, 2-36928; Sep. 25, 1990, 2-256653
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—60 **24 Claims**



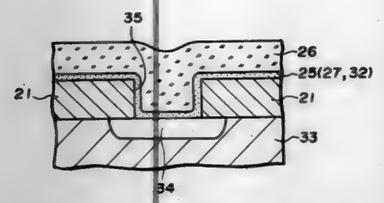
1. A method of manufacturing on a semiconductor substrate a stacked capacitor, comprising the steps of:
forming on said substrate a first electrode layer including transitional silicon in a transitional state between poly crystal and amorphous;
forming a dielectric layer on a surface of said first electrode layer; and
forming a second electrode layer on a surface of said dielectric layer.

5,290,730
WAVELENGTH CONVERSION WAVEGUIDE AND FABRICATION METHOD
Ross A. McFarlane, and Mark Lai, both of Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 10, 1992, Ser. No. 942,868
Int. Cl.[5] H01L *21/20*; H01S *3/16*
U.S. Cl. 437—129 **7 Claims**



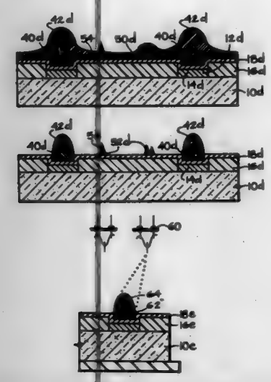
1. A method of fabricating a light source that responds to a pump beam at one wavelength by emitting radiation at another wavelength, comprising:
growing a planar halide-based active layer upon a single crystal halide-based cladding layer by molecular beam epitaxy (MBE), said active layer being approximately lattice matched with said cladding layer, and
using said MBE step to simultaneously dope said active layer with a rare earth dopant, said doped active layer being grown to have a higher refractive index than, and form a waveguide with, said cladding layer.

5,290,731
ALUMINUM METALLIZATION METHOD
Yukiyasu Sugano; Shinji Minegishi; Kazuhide Koyama, and Hirofumi Sumi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 9, 1992, Ser. No. 848,123
Claims priority, application Japan, Mar. 7, 1991, 3-067997
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—174 7 Claims



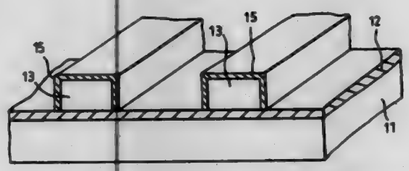
1. A metallization method comprising the steps of coating at least the bottom and the sidewall of a connecting hole opened in an insulating film on a substrate with a barrier metal layer system including a Ti-based material layer, and then forming an Al-based material layer for filling at least said connecting hole,
the improvement comprising performing an operation of increasing the crystal grain size of a surface layer of said barrier metal layer system during said step of coating with said barrier metal layer system.

5,290,732
PROCESS FOR MAKING SEMICONDUCTOR ELECTRODE BUMPS BY METAL CLUSTER ION DEPOSITION AND ETCHING
Nalin Kumar, Austin; Chenggang Xie, Cedar Park; Rama R. Goruganthu, Austin, all of Tex., and Mohammed K. Ghazi, Newport Beach, Calif., assignors to Microelectronics And Computer Technology Corporation, Austin, Tex. and Hughes Aircraft Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 653,609, Feb. 11, 1991, Pat. No. 5,156,997. This application Jun. 9, 1992, Ser. No. 896,126
Int. Cl.[5] H01L *21/285*
U.S. Cl. 437—183 29 Claims



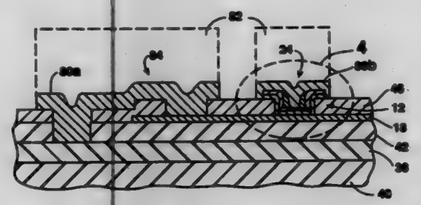
1. A method of depositing electrical connection bumps on spaced pad areas of an electrical substrate and removing deposits between the bumps, said method comprising the steps of:
depositing a metal on the pad areas by ionized metal cluster beam deposition so that metallic bumps are formed on the pad areas; and
etching enough metal from the substrate to prevent any metal deposited outside the bumps from connecting the bumps while only partially removing the bumps.

5,290,733
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES INCLUDING DEPOSITING ALUMINUM ON ALUMINUM LEADS
Nobuo Hayasaka, Kanagawa; Ayako Shimazaki, and Haruo Okano, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 764,964, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 370,801, Jun. 23, 1989, abandoned. This application Aug. 6, 1992, Ser. No. 925,287
Claims priority, application Japan, Jun. 23, 1988, 63-153512; Sep. 30, 1988, 63-246454
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—194 6 Claims



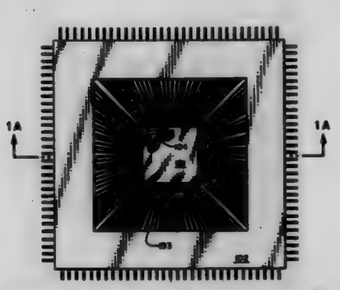
1. A method of manufacturing semiconductor devices, comprising the steps of:
forming aluminum or aluminum alloy leads on the surface of a semiconductor substrate, including a step of dry etching; and
immersing the semiconductor substrate in a solution containing aluminum, for depositing aluminum on the exposed surfaces of the leads and for eliminating at least one of F and Cl adhering to the leads due to said dry etching, thereby suppressing electromigration and corrosion of the leads.

5,290,734
METHOD FOR MAKING ANTI-FUSE STRUCTURES
William J. Boardman, San Jose; David P. Chan, San Ramon; Kuang-Yeh Chang, Los Gatos; Calvin T. Gabriel, Pacifica; Vivek Jain, Milpitas, and Subhash R. Nariani, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 710,220, Jun. 4, 1991, Pat. No. 5,120,679. This application Jul. 26, 1991, Ser. No. 736,162
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/283, 21/311*
U.S. Cl. 437—195 15 Claims



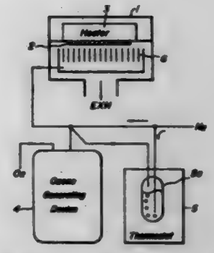
1. A method for making an anti-fuse structure comprising:
providing a substrate surface;
forming an insulating layer over said substrate surface;
forming an opening in said insulating layer which extends down to said substrate surface;
depositing an anti-fuse material into said opening such that it generally conforms to the contours of said opening to form a anti-fuse material recess;
depositing a conductive, protective material over said anti-fuse material such that it generally conforms to the contours of said anti-fuse material to form a protective material recess having sidewall portions and a base portion which meet at an interface; and
forming spacers comprising an insulating material within said recess of said protective material to substantially cover said interface between said sidewall portion and said base portion.

5,290,735
THIN, HIGH LEADCOUNT PACKAGE
Kevin J. Haley, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 972,754, Nov. 6, 1992. This application Feb. 1, 1993, Ser. No. 11,944
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—217 23 Claims



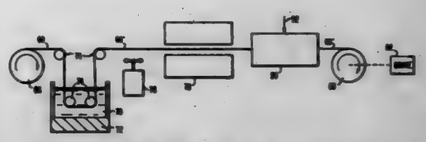
1. A method for making a high leadcount surface mount integrated circuit package comprising the steps of:
providing a leadframe comprised of a plurality of leads, wherein each of the plurality of leads includes a first end, a second end and an intermediate portion between the first end and the second end;
attaching a permanent support structure to said leadframe, wherein the support structure is attached to the intermediate portion of each of the plurality of leads, such that each of said plurality of leads are held permanently in a predetermined position with respect to the other of said plurality of leads;
attaching the leadframe to an integrated circuit (IC) die, wherein the first end of each of said plurality of leads is coupled to the die in an interconnect area; and
molding a plastic compound around the die, wherein the plastic compound is localized over the die, such that the plastic compound covers the interconnect area and does not extend beyond the die and the interconnect area, such that the plastic compound is spaced apart from the support structure.

5,290,736
METHOD OF FORMING INTERLAYER-INSULATING FILM USING OZONE AND ORGANIC SILANES AT A PRESSURE ABOVE ATMOSPHERIC
Nobuyoshi Sato; Kyoji Tekunaga; Tomoharu Katagiri; Tsuyoshi Hashimoto, and Tomohiro Obta, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Sep. 24, 1991, Ser. No. 764,901
Claims priority, application Japan, Sep. 25, 1990, 2-251801; Sep. 11, 1991, 3-231840
Int. Cl.[5] H01L *21/316*
U.S. Cl. 437—238 8 Claims



1. A method of producing an interlayer-insulating film to be provided between a semiconductor substrate and a metal layer or between metal layers of a semiconductor device comprised of placing the semiconductor substrate in a reaction vessel, heating said semiconductor substrate in the reaction vessel, and introducing a mixture of an organic silane gas and an ozone gas into the reaction vessel, wherein said reaction vessel is kept at a pressure of 1.5 to 5 atm.

5,290,737
FIBER-REINFORCED METAL OR CERAMIC MATRICES
Clarence A. Anderson, Pittsburgh; Deborah P. Partlow, Edgewood Borough; Bulent E. Yoldas, Churchill Borough, and Raymond J. Bratton, Delmont, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 22, 1985, Ser. No. 757,718
Int. Cl.[5] B22F *9/16*; C03C *13/00*
U.S. Cl. 501—35 15 Claims



1. A composite structure with embedded coated fibers made by the process of:
A) immersing a fiber system into a polymerized solution of an oxide precursor, prepared by reaction of a metal alkoxide with a predetermined controlled amount of water in a mutual solvent so as to coat said fiber system with said oxide precursor;
B) removing said coated fiber system from said solution after a predetermined time period;
C) drying said removed fiber system;
D) heating said dried fiber system to drive off any organic components and to convert the coating on said fiber system to a pure oxide state;
E) introducing said oxide coated fiber system into a host matrix material; and
F) processing said host matrix material, with said introduced fiber system, to form a dense solid composite material.

VOL 1160 ISS 1 MR 1 1994 UMI

5,290,738

MATERIAL FOR NONMAGNETIC OXIDE SUBSTRATE AND MAGNETIC HEAD

Hiroshi Tomishima; Toshikazu Nishiyama, both of Fukaya; Nobuyuki Yamada, Hanyu; Noriyuki Kumasaka, Oume, and Mitsuo Abe, Odawara, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,688
Claims priority, application Japan, Nov. 16, 1990, 2-311128
Int. Cl.[5] C04B *35/46, 35/49*
U.S. Cl. 501—104 3 Claims

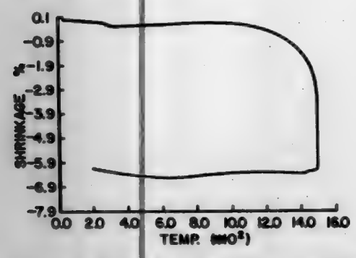
1. A nonmagnetic oxide substrate material comprising:
15 to 60 mol % of NiO, 10 to 70 mol % of CoO, 10 to 40 mol % of TiO_2, and 0.5 to 25 mol % of CaO.

5,290,739

HIGH TEMPERATURE STABILIZED MULLITE-ALUMINUM TITANATE

David L. Hickman, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Sep. 22, 1992, Ser. No. 949,454
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—128 9 Claims



1. A method of producing a high temperature stabilized mullite-aluminum-titanate article, the article consisting essentially, expressed in weight percent based on the oxides, of 1.5–20%, SiO_2, 5–25% Fe_2O_3, 35–75% Al_2O_3, and 10–40% TiO_2, said method comprising the steps of:
forming doped mullite by a process selected from: (1) doping mullite with dopant selected from titania, titania precursors, hematite, and hematite precursors to form doped mullite; and (2) pre-reacting mullite precursors with dopant selected from titania, titania precursors, hematite, and hematite precursors to form doped mullite precursors;
calcining and milling the doped mullite;
calcining and milling aluminum-titanate;
mixing the mullite and the aluminum-titanate with a binder to form a ceramic batch;
shaping the ceramic batch to form a green ceramic article; and
firing the green ceramic article at a temperature and for a duration of time sufficient to form the sintered ceramic article.

5,290,740

DIELECTRIC CERAMIC COMPOSITION USED FOR PRODUCING DIELECTRIC RESONATOR OR FILTER FOR MICROWAVE APPLICATION

Masahiro Abe; Tatsumi Sugiura; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 3, 1992, Ser. No. 971,179
Claims priority, application Japan, Nov. 6, 1991, 3-319786; Mar. 18, 1992, 4-92184; Mar. 23, 1992, 4-97184; Oct. 27, 1992, 4-312970
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—139 9 Claims

1. A dielectric ceramic composition used for producing a dielectric resonator or filter for microwave application, which consists essentially of: a main ceramic composition comprising as major components barium oxide and titanium oxide, or barium oxide, titanium oxide and at least one of strontium oxide, calcium oxide, zirconia and zinc oxide, which composition is represented by $(1-a-b)BaO.aSrO.\ bCaO.x[(1-c)TiO_2.cZrO_2].yZnO$, where $3.1 \leqq x \leqq 5.4$, $0 \leqq y \leqq 2.9$, $0 \leqq a+b \leqq 0.4$, $0 \leqq c \leqq 0.2$; and a secondary component at least a part of which consists of a B_2O_3 material or a glass material containing B_2O_3 as one of glass components, said secondary component being added to said main ceramic composition, in an amount of 0.1–7.5 parts by weight of B_2O_3 per 100 parts by weight of said main ceramic composition.

5,290,741

METHODS OF PRESERVING, STORING, AND USING HYDROXYLAMINE PRODUCTION CATALYST

Thomas P. Losier, Lake Jackson, Tex., assignor to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 423,318, Oct. 18, 1989, abandoned. This application Sep. 4, 1990, Ser. No. 581,168
Int. Cl.[5] B01J *20/20*
U.S. Cl. 502—20 14 Claims

1. A method of inhibiting the diminution of the selectivity of a carbon supported platinum catalyst for producing hydroxylamine after manufacture or regeneration of said catalyst which comprises continuously maintaining said catalyst during preservation and storage in a substantially oxygen-free environment.

5,290,742

METHODS OF PRESERVING, STORING, AND USING CERTAIN CARBON SUPPORTED PLATINUM CATALYSTS

Thomas P. Losier, Lake Jackson, Tex., assignor to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 581,168, Sep. 4, 1990, which is a continuation of Ser. No. 423,318, Oct. 18, 1989, abandoned. This application Apr. 29, 1992, Ser. No. 875,849
Int. Cl.[5] B01J *20/20*
U.S. Cl. 502—20 10 Claims

1. A method of charging catalyst to a hydroxylamine production cascade which comprises: preserving a carbon supported platinum catalyst after manufacture or regeneration in an environment that is substantially free of oxygen in the form of free O_2, and thereafter adding said catalyst to said cascade.

5,290,743

PROCESS FOR REGENERATING A DEACTIVATED RHODIUM HYDROFORMYLATION CATALYST SYSTEM

Te Chang, West Chester, Pa., assignor to Arco Chemical Technology L.P., Wilmington, Del.

Filed Mar. 22, 1993, Ser. No. 34,321
Int. Cl.[5] B01J *31/40, 38/58;* C07C *45/50*
U.S. Cl. 502—30 13 Claims

1. A process for regenerating a deactivated rhodium hydroformylation catalyst system that includes a rhodium hydridocarbonyl tris(trisubstituted phosphine) complex, a trisubstituted phosphine, and a diphosphinoalkane, said process comprising:
(a) isolating an organic solution containing the deactivated catalyst system from an olefin hydroformylation process by separating the organic solution from an aqueous extract of aldehyde reaction products;
(b) reacting the organic solution with an oxygen-containing gas at a temperature and for a time effective to produce a solution of oxidized catalyst system that contains less than about 5 parts per million of residual diphosphinoalkane and less than about 100 parts per million of diphosphinoalkane mono-oxidation products;

(c) removing phosphine oxidation products from the organic solution by allowing solids to precipitate and separating the solids from the organic solution; and
(d) exposing the organic solution to syngas, extracting it with water, and adding trisubstituted phosphine and diphosphinoalkane ligands in a manner and in amounts effective to form a regenerated catalyst system that has enhanced catalytic activity for hydroformylation of olefins to aldehydes compared with the deactivated catalyst system.

5,290,744

HYDROCRACKING PROCESS USING ULTRA-LARGE PORE SIZE CATALYSTS

Thomas F. Degnan Jr., Moorestown; Kathleen M. Keville, West Deptford; Michael E. Landis, Woodbury; David O. Marler, Deptford, and Dominick N. Mazzone, Wenonah, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 734,983, Jul. 24, 1991, Pat. No. 5,183,557. This application Oct. 5, 1992, Ser. No. 956,196
Int. Cl.[5] B01J *29/04*
U.S. Cl. 502—67 32 Claims

1. A hydrocracking catalyst which having acidic functionality and hydrogenation-dehydrogenation functionality, and comprising a metal component, a zeolite component and an inorganic, porous crystalline phase material having pores with diameters of at least about 13 Angstrom Units and exhibiting, after calcination, an X-ray diffraction pattern least one peak at a d-spacing greater than about 18 Å.

5. A hydrocracking catalyst according to claim 1 in which the crystalline phase material has a composition expressed as follows:

$$M_{n/q}(W_aX_bY_cZ_dO_h)$$

wherein M is one or more ions; n is the charge of the composition excluding M expressed as oxides; q is the weighted molar average valence of M; n/q is the number of moles or mole fraction of M; W is one or more divalent elements; X is one or more trivalent elements; Y is one or more tetravalent elements; Z is one or more pentavalent elements; a, b, c, and d are mole fractions of W, X, Y, and Z, respectively; h is a number of from 1 to 2.5; and $(a+b+c+d)=1$.

5,290,745

PROCESS FOR PRODUCING ETHYLENE POLYMERS HAVING REDUCED HEXANE EXTRACTABLE CONTENT

Robert J. Jorgensen, Belle Mead, N.J.; Elton D. Fowler, Victoria, Tex., and George L. Goeke, Belle Mead, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Aug. 10, 1992, Ser. No. 926,633
Int. Cl.[5] C08F *4/654*
U.S. Cl. 502—109 26 Claims

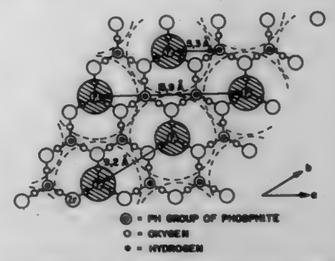
26. A process for producing a titanium trichloride composition suitable for use as a component of a Ziegler-Natta catalyst system which comprises (i) reducing titanium tetrachloride to titanium trichloride by treating titanium tetrachloride in an electron donor solvent with a stoichiometric amount of magnesium metal required to reduce said titanium tetrachloride to titanium trichloride and produce magnesium dichloride; (ii) adding additional magnesium dichloride to the resulting solution to increase the Mg/Ti ratio to a range of from 1:1 to 56:1; and then (iii) impregnating said solution in a suitable support or, alternatively, spray drying the solution with or without a suitable filler, to obtain discrete particles of catalyst.

5,290,746

TETRAVALENT METAL DIPHOSPHONATE-PHOSPHITE COMPOSITION IN MICROPOROUS SOLID CRYSTALLINE FORM, WITH A NARROW MICROPORE DISTRIBUTION

Giulio Alberti; Umberto Costantino, both of Perugia; Riccardo Vivani, Della Pieve-Perugia; Piergiorgio Zappelli, and Antonio Rossodivita, both of Monterotondo-Rome, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

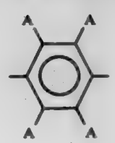
Filed Dec. 17, 1991, Ser. No. 809,587
Claims priority, application Italy, Dec. 21, 1990, 22484 A/90
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] C07F *7/00*
U.S. Cl. 502—162 16 Claims



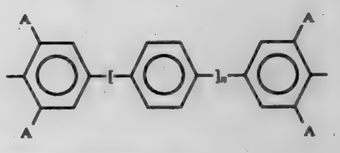
1. A tetravalent metal diphosphonate-phosphite composition definable by the following general formula:

$$M(O_3P-R-PO_3)_{1-x}(HPO_3)_{2x} \quad \text{(I)}$$

where:
M is a tetravalent metal;
x varies from 0.5 to 0.66;
R is an organic radical of bivalent aromatic type chosen from those definable by the following general formulas:



(II)



(III)

where: n varies from 0 to 2;
A is hydrogen or a group of medium steric hindrance chosen from $—CH_3$, $—C_2H_5$, —OH, $—CH_2OH$ or another group of similar hindrance, with the condition that at least one A is other than hydrogen;
the composition also being in the form of a crystalline solid having the following characteristics:
type α layered structure with the diphosphonic groups positioned to join said layers together by a covalent bond (pillared compounds);
B.E.T. surface area from 300 to 500 m^2/g depending on the nature of R in formula (I); and
porosity in the micropore radius range of less than 20 Å (Angstrom), such micropores contributing to the extent of more than 95% of the total area for the most crystalline materials.

VOL 1160 ISS 1 MR 1 1994 UMI

5,290,747

NYLON 6 CATALYST SYSTEM

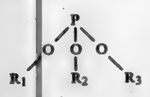
Wu-Bin Yuo; Jeng-Yue Wu, and Mao-Song Lee, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 18, 1992, Ser. No. 949,796
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—162 11 Claims

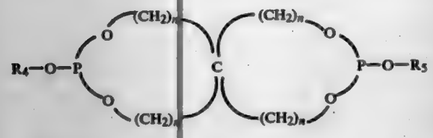
1. A catalyst composition for the preparation of Nylon 6 from caprolactam, said catalyst composition comprising:

(a) a primary catalyst selected from the group consisting of alkali metal hypophosphites and alkali earth metal hypophosphites;

(b) an organic phosphite cocatalyst selected from either compound I or compound II wherein compound I is represented by the following structure:



wherein R_1, R_2, and R_3 are selected, independently, from the group consisting of aliphatic and aromatic radicals, and compound II is represented by the following structure:



wherein n is an integer from 1 to 10, and R_4, and R_5 are selected, independently, from the group consisting of aliphatic and aromatic radicals;

(c) the ratio between said organic phosphite cocatalyst and said primary catalyst is between 0.002 and 500.

5,290,748

POLYMERIZATION CATALYST FOR OLEFINES

Hilkka Knuuttila, Porvoo, and Eeva-Liisa Lakomaa, Espoo, both of Finland, assignors to Neste Oy, Espoo, Finland

Continuation-in-part of Ser. No. 641,901, Jan. 16, 1991, abandoned. This application Jul. 16, 1992, Ser. No. 912,211
Claims priority, application Finland, Jan. 16, 1990, 900255; Jul. 16, 1991, 913438
Int. Cl.[5] C08F *4/22*
U.S. Cl. 502—228 20 Claims

1. A polymerization catalyst for olefins, comprising: at least one catalytically active chromium compound adsorbed on an inorganic support, wherein said catalyst is prepared by a process comprising:

optionally subjecting the support material to a pretreatment in order to modify the number of binding sites available on the support;

vapourizing a chromium compound used as the precursor of chromium oxide;

routing the obtained vapour into a reaction chamber and reacting said vapour with the support material at a temperature within the range of the minimum temperature necessary to provide the activation energy for establishing chemisorption of the chromium compound onto the surface of the support up to the temperature at which the rate of desorption exceeds the rate of chemisorption of the chromium compound;

maintaining the vapour pressure of the chromium compound sufficiently high and the duration of interaction sufficiently long so as to provide at least an equal amount of the chromium compound as there are available binding sites on the support material;

removing the chromium compound not bound with the support material from said reaction chamber; and

optionally, posttreating the heterogeneous chromium containing catalyst in order to increase its catalytic activity.

5,290,749

PREEMERGENCE WEED CONTROL USING PLANT PORTEIN HYDROLYSATE

Nick E. Christians, Ames; John T. Garbutt, Muscatine, and Dianna Liu, Ames, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames and Grain Processing Corporation, Muscatine, both of Iowa

Filed Aug. 3, 1993, Ser. No. 101,431
Int. Cl.[5] A01N *65/00*
U.S. Cl. 504—189 23 Claims

1. A method for inhibiting growth of undesirable plants in a plot of soil comprising applying an amount of a plant protein hydrolysate to the plot of soil, prior to emergence of the unwanted plants, wherein said amount inhibits the growth of the undesirable plants by inhibiting their root development.

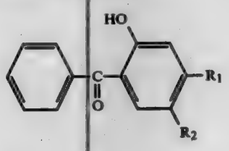
5,290,750

RECORDING MEDIA FOR A SUBLIMATION-TYPE HEAT-SENSITIVE RECORDING PROCESS

Kenji Kushi; Takayuki Iseki; Tadayuki Fujiwara, and Kazuhiko Jufuku, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

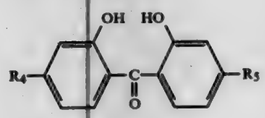
Filed Jul. 27, 1992, Ser. No. 919,645
Claims priority, application Japan, Jul. 26, 1991, 3-187832; Jul. 26, 1991, 3-187833; Jul. 26, 1991, 3-187834
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 6 Claims

1. A recording medium for a sublimation heat-sensitive transfer recording process comprising an image receiving layer comprising a dyeable resin which is able to be colored by a sublimable dye; a crosslinking agent; at least one anthraquinone based bluing agent selected from the group consisting of Solvent Violet-33, Solvent Blue-94, Solvent Blue-78 and Solvent Blue-95; and a benzophenone based ultraviolet absorber selected from the group consisting of at least one compound of the formulae (1) and (2):



(1)

R_1: —OH, —OR_3
R_2: —H, —SO_3H
R_3: C_1–C_9 alkyl group



(2)

R_4: —OR_6
R_5: —OR_7
R_6: C_1–C_{10} alkyl group
R_7: C_1–C_{10} alkyl group

5,290,751

PLANT-PROTECTION SUSPENSIONS COMPRISING SUCROGLYCERIDES

Jean-Francois Fiard, and Marie-Luce Prevotat, both of Paris, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Dec. 9, 1991, Ser. No. 804,322
Int. Cl.[5] A01N *25/30*
U.S. Cl. 504—116 29 Claims

1. A concentrated aqueous suspension of a solid active substance, comprising:

a solid active substance, sucroglycerides, at least one compound selected from the group consisting of an alkoxylated triglyceride, an alkoxylated fatty acid, a sorbitan ester, and an alkoxylated sorbitan ester, and water,

wherein said solid active substance has a melting point greater than or equal to 45° C. and is substantially insoluble in water.

5,290,752

METHOD FOR PREPARATION OF A SHAPED CHITIN BODY CONTAINING A PHYSIOLOGICALLY ACTIVE SUBSTANCE

Koji Kifune, Nara; Kenzo Motosugi, and Hiroyuki Tanae, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 526,942, May 21, 1990, which is a continuation of Ser. No. 712,489, Mar. 18, 1985, abandoned.
This application Oct. 19, 1992, Ser. No. 963,256
Claims priority, application Japan, Mar. 16, 1984, 59-51880
Int. Cl.[5] A01N *25/10*
U.S. Cl. 504—116 12 Claims

1. A method for preparation of a shaped chitin body containing a physiologically active substance, comprising incorporating a physiologically active substance without deactivation of said active substance and without the occurrence of chemical reaction in a dope comprising the following components (a) to (c): (a) a water-insoluble chitin, (b) lithium chloride and (c) N-methylpyrrolidone or dimethylacetamide or a mixture thereof, with the amount of lithium chloride being 7 to 8 wt. % based on the total weight of components (b) and (c), and the amount of said physiologically active substance incorporated being 0.5 wt. % or more with respect to the amount of the chitin contained in said dope, and thereafter coagulating the resulting mixture with a coagulant without deactivation of said active substance and without the occurrence of chemical reaction to obtain a shaped body.

5,290,753

METHOD FOR THE PREVENTION OF CROP INJURY IN THE PRESENCE OF SYNERGISTIC PESTICIDE COMBINATIONS

Keith E. Newhouse, Bensalem; Thomas J. Schaefer, Levittown, both of Pa., and Gail E. Cary, Lawrenceville, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 521,213, May 9, 1990, abandoned. This application May 12, 1992, Ser. No. 881,904
Int. Cl.[5] A01H *4/00*; A01N *43/48, 57/00*
U.S. Cl. 504—214 10 Claims

1. A method for protecting a maize plant from injury or preventing injury of a maize plant due to the application of a combination of compounds consisting of an acetohydroxy acid synthase inhibiting herbicide and an organophosphate insecticide which comprises altering the susceptibility of the maize plant to the combination by incorporating a resistance gene encoding an altered acetohydroxy acid synthase into the genome of the maize plant and applying to the maize plant a combination of an acetohydroxy acid synthase inhibiting herbicide and an organophosphate insecticide.

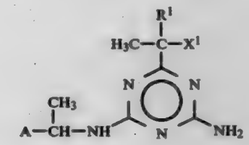
5,290,754

TRIAZINE DERIVATIVE AND A HERBICIDE COMPRISING THE SAME AS AN EFFECTIVE INGREDIENT

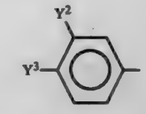
Masahiro Nishii, Sodegauramachi; Izumi Kobayashi, Tokyo; Masatoshi Uemura, Sodegauramachi, and Tetsuo Takematsu, Utsunomiya, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

PCT No. PCT/JP90/00194, § 371 Date Oct. 5, 1990, § 102(e) Date Oct. 5, 1990, PCT Pub. No. WO90/09378, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 19, 1990, Ser. No. 582,835
Claims priority, application Japan, Feb. 20, 1989, 1-38178; Jun. 19, 1989, 1-154465
Int. Cl.[5] C07D *251/18;* A01N *43/68*
U.S. Cl. 504—232 20 Claims

1. A triazine compound of the formula

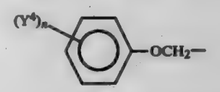


wherein A is



(i)

in which Y^2 and Y^3 are the same or different and each is a methyl group or a methoxy group or



(ii)

in which Y^4 is a methyl group, a trifluoromethyl group, a methoxy group or a fluorine atom and n is an integer of 0 to 2,

X^1 is a halogen atom and

R^1 is hydrogen, a methyl group or an ethyl group.

5,290,755

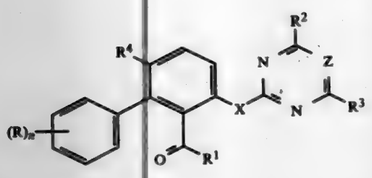
SALICYLIC ACID DERIVATIVES AS SELECTIVE HERBICIDES

Uwe J. Vogelbacher; Joachim Rheinheimer, both of Ludwigshafen; Thomas Saupe, Sandhausen; Norbert Meyer, Ladenburg; Matthias Gerber, Mutterstadt; Karl-Otto Westphalen, Speyer, and Helmut Walter, Obrigheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 4, 1992, Ser. No. 924,491
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1991, 4126936
Int. Cl.[5] C07D *239/52, 239/60, 239/34;* A01N *43/54*
U.S. Cl. 504—242 10 Claims

1. A salicylic acid derivative or a sulfur analog thereof of the formula I

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(I)

where
R is halogen,
n is 1, 2 or 3 or, in the case of halogen as substituents, 1, 2, 3, 4 or 5;
R^1 is a radical



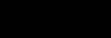
where m is 0 or 1 and R^6 and R^7 have the following meanings:
hydrogen;
C_1–C_6-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these radicals may each carry from one to five halogen atoms or one or two of the following groups: C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_3–C_6-alkynylthio, C_1–C_6-haloalkoxy, cyano, C_1–C_4-alkylcarbonyl, C_3–C_6-alkenylcarbonyl, C_3–C_6-alkynylcarbonyl, C_1–C_6-alkoxycarbonyl, C_3–C_6-alkenyloxycarbonyl, C_3–C_6-alkynyloxycarbonyl, bis-C_1–C_6-dialkylamino, C_3–C_6-cycloalkyl or unsubstituted or substituted phenyl;
unsubstituted or substituted C_3–C_6-cycloalkyl;
unsubstituted or substituted phenyl; or
R^6 together with R^7 forms a morpholino, piperidino or 2,6-dimethylmorpholino group; or
R^1 is a group



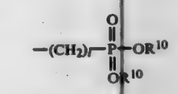
where R^8 and R^9 are each hydrogen, C_1–C_6-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl and l is 1, 2, 3 or 4; or
R^1 is a group



where R^{10} is a C_1–C_6-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl, l is 1, 2, 3 or 4 and k is o, 1 or 2; or
R^1 is a radical



where R^{11} is a C_1–C_6-alkyl or phenyl which in turn may carry from one to four of the following substituents: halogen, nitro, cyano or C_1–C_6-alkyl; or
R^1 is a radical OR^5, where R^5 is an unsubstituted or substituted 5-membered aromatic heterocyclic structure selected from the group consisting of 1-pyrazolyl, 3-methyl-1-pyrazolyl, 4-methyl-1-pyrazolyl, 3,5-dimethyl-1-pyrazolyl, 3-phenyl-1-pyrazolyl, 4-phenyl-1-pyrazolyl, 4-chloro-1-pyrazolyl, 4-bromo-1-pyrazolyl, 4-iodo-1-pyrazolyl, 1-imidazolyl, 1-benzimidazolyl, 1,2,4-triazol-1-yl, 3-methyl-1,2,4-triazol-1-yl, 5-methyl-1,2,4-triazol-1-yl or 1-benzotriazolyl; or
R^1 is a radical



where R^{10} and l have the abovementioned meanings, the expression unsubstituted or substituted in the above definitions meaning that the group designated in this manner can be either unsubstituted or carry one or more of the following substituents: halogen, nitro, cyano, C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy or C_1–C_6-alkylthio;
R^2 and R^3 are each C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;
R^4 is hydrogen, halogen, nitro, C_1–C_4-alkyl, cyano or C_1–C_4-haloalkyl;
X is oxygen or sulfur, and
Z is the methine group.

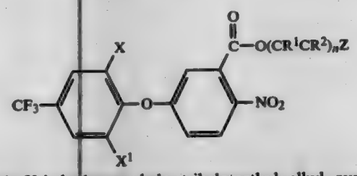
5,290,756

4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS

Colin Swithenbank, Perkasie, and Ted Fujimoto, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 149,618, May 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 47,654, Jun. 11, 1979. This application Jun. 8, 1982, Ser. No. 386,455
Int. Cl.[5] C07C *205/00*
U.S. Cl. 504—316 **17 Claims**

1. A compound of the formula:



wherein X is hydrogen, halo, trihalomethyl, alkyl, cyano, or nitro; X^1 is hydrogen, halo or trifluoromethyl; R^1 and R^2 are the same or different radicals selected from hydrogen, C_1–C_6 alkyl, phenyl or benzyl; n is an integer of from 1 to 5; and Z is methylsulfinyl, methylsulfonyl, acetyl, or a heterocycle of from 4 to 6 nuclear atoms containing from 1 to 4 hetero atoms selected from nitrogen, oxygen or sulfur.

5,290,757

PREEMERGENCE WEED CONTROL USING DIPEPTIDES FROM CORN GLUTEN HYDROLYSATE

Nick E. Christians, Ames; John T. Garbutt, Muscatine, and Dianne Liu, Ames, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames and Grain Processing Corporation, Muscatine, both of Iowa

Filed Aug. 3, 1993, Ser. No. 101,577
Int. Cl.[5] A01N *37/30*
U.S. Cl. 504—335 **19 Claims**

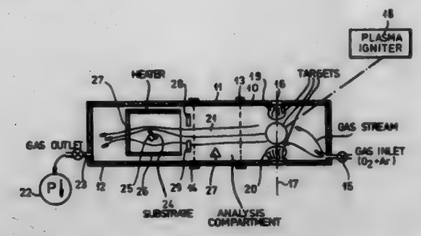
1. A method for selectively inhibiting the growth of undesirable plants in a plot of soil comprising applying an amount of a dipeptide selected from the group consisting of Gln-Gln, Ala-Asn, Ala-Gln, Gly-Ala, Ala-Ala and mixtures thereof, to the plot of soil prior to the emergence of the undesirable plants, wherein said amount is effective to inhibit the growth of the undesirable plants by inhibiting their root development.

5,290,758

PLASMA-ASSISTED DEPOSITION PROCESS FOR PRODUCING A THIN LAYER ON A SUBSTRATE

Roger Wördenweber, Niederzier, Fed. Rep. of Germany, assignor to Forschungszentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Mar. 10, 1992, Ser. No. 848,828
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108001
Int. Cl.[5] C23C *14/34*; B05D *5/12*
U.S. Cl. 505—1 **10 Claims**



1. A method of producing a thin layer of a material, comprising the steps of:
pressing a stream of a reactive gas along a path in a gas tight chamber;
providing said material as a cathodic target material in at least one target in said path of said stream;
positioning a substrate to be coated eith said thin layer in said stream and spaced from said target;
pumping said reactive gas from said path at a location downstream of said substrate;
generating a plasma from said reactive gas at said target thereby cathodically ablating particles of said target material into said plasma;
entraining said particles in the stream of the reactive gas at a preasure of 0.1 to 20 mbar from a region of said target to said substrate which is at a location outside the range of said plasma; and
thereafter passing a flow of said stream of the reactive gas over and across said substrate, thereby depositing said particles from said stream of the reactive gas on said substrate as said particles are entrained to said substrate from the region exclusively by said stream of the reactive gas to form said thin layer.

5,290,759

PROCESS FOR MAKING HIGH TEMPERATURE SUPERCONDUCTING POWDERS

J. T. Richardson; Dan Luss; D. Morgan, and M. Maric, all of Houston, Tex., assignors to University of Houston-University Park, Houston, Tex.

Continuation of Ser. No. 588,284, Sep. 26, 1990, abandoned. This application Apr. 3, 1992, Ser. No. 864,168
Int. Cl.[5] C01F *17/00, 11/04*; C01G *3/02*; H01L *39/12*
U.S. Cl. 505—1 **29 Claims**

1. A process for making a precursor useful in the making a superconductor of the general formula $LM_7Cu_3O_y$, where L is Sc, Y or a rare earth metal selected from the group consisting of rare earth metals with an atomic number from 57 to 71, and M is an alkali metal, comprising:
(a) adding a first solution to a second solution to form a combined solution and to induce the formation of a precipitate, the first solution including soluble salts of the L, M and Cu moieties which are to be contained in the superconductor precursor and the second solution including a hydroxy base and a carbonate or bicarbonate compound;
(b) separating the precipitate from the combined solution;
(c) thereafter, adding carbon dioxide while washing the precipitate, the amount of carbon dioxide being sufficient to maintain a pH of about 7 to 9.

5,290,760

METHOD OF MANUFACTURING AN ELECTRICAL CONTACT FOR A SUPERCONDUCTIVE CERAMIC

Fernand Grivon, Saint Michel sur Orge, and Jacques Boutigoud, Samois, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Jun. 3, 1992, Ser. No. 893,036
Claims priority, application France, Jun. 4, 1991, 91 06417
Int. Cl.[5] B05D *5/12*
U.S. Cl. 505—1 **4 Claims**

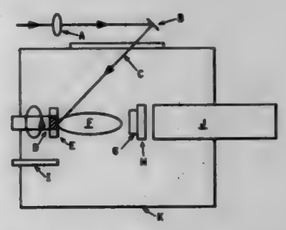
1. In a method of manufacturing an electrical contact between a current lead and a part made of a superconductive $RBa_2Cu_3O_y$ ceramic where R designates a lanthanide selected from the group consisting of Y, La, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu, and where y lies in the range 6.9 to 7, in which method a layer of a material based on a silver-containing resin is deposited on said part, the part is dried, and is then heat treated in oxygen by being heated to a temperature greater than 900° C., and then cooled, with the temperature dwelling at 450° C. for a length of time corresponding to a phase during which said ceramic is reoxygenated, the improvement wherein:
prior to depositing said layer, the surface of the part is polished to roughness of less than 10 μm, and any grease is then removed therefrom;
said layer is deposed to a thickness lying in the range of 2 μm to 10 μm and is made of a material based on a cross-linkable resin diluted with a solvent in a concentration lying in the range 40% to 50% by weight, which solvent does not react with the ingredients of said resin, said material containing silver in a concentration lying in the range 30% to 45% by weight of a mixture formed by said resin and said solvent; and
between the drying and the heat treatment, said resin is cross-linked by said part being put in an oven at about 100° C. for about 1 hour.

5,290,761

PROCESS FOR MAKING OXIDE SUPERCONDUCTING FILMS BY PULSED EXCIMER LASER ABLATION

Kenneth B. Keating, Wilmington, and Stephens S. The', Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1992, Ser. No. 963,156
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 505—1 **9 Claims**



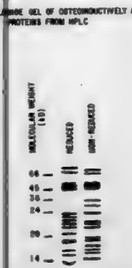
1. A process for the deposition of an oxide superconducting film onto a substrate by pulsed excimer laser ablation of a target material wherein the improvement comprises heating the target material to within about 500° C. below its melting point prior to an during ablation.

VOL 1160 ISS 1 MR 1 1994 UMI

5,290,762
TREATMENT OF INFLAMMATION
John Lenley, 976 Kingston Dr., Cherry Hill, N.J. 08034, and Allan Wachter, 9822 S. Grandview, Tempe, Ariz. 85284
Continuation-in-part of Ser. No. 781,003, Oct. 18, 1991, Pat. No. 5,217,951, which is a continuation-in-part of Ser. No. 643,727, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 598,241, Oct. 16, 1990, abandoned, and a continuation-in-part of Ser. No. 591,630, Oct. 2, 1990, Pat. No. 5,008,242, which is a continuation-in-part of Ser. No. 445,005, Dec. 4, 1989, which is a continuation-in-part of Ser. No. 242,735, Sep. 9, 1988, abandoned, and a continuation-in-part of Ser. No. 181,707, Sep. 8, 1988, Pat. No. 4,916,117, which is a continuation-in-part of Ser. No. 946,445, Dec. 24, 1986, abandoned. This application Feb. 17, 1993, Ser. No. 18,888
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61K *37/64*
U.S. Cl. 514—8 16 Claims

1. A method for the treatment of inflammatory diseases or injury in mammals which comprises administering to the site of the disease or injury an effective amount of at least one natural or recombinant serine protease inhibitor selected from the group consisting of secretory leucocyte protease inhibitor, C-reactive protein, serum amyloid A protein, alpha 2-macroglobulin, alpha 2-antiplasmin, its analog, salt or derivative which has an affinity to a mast cell mediator, plasma kinins or a T-cell mediator.

5,290,763
OSTEOINDUCTIVE PROTEIN MIXTURES AND PURIFICATION PROCESSES
James W. Poser, Lakewood, and James J. Benedict, Golden, both of Colo., assignors to Intermedics Orthopedics/Denver, Inc., Wheat Ridge, Colo.
Filed Apr. 22, 1991, Ser. No. 689,459
Int. Cl.[5] A61K *37/02, 37/36;* C07K *3/02, 15/06*
U.S. Cl. 514—21 10 Claims



1. An osteinductive mixture of proteins that is soluble in water at a concentration of 10 milligrams of said protein mixture per milliliter of water at room temperature comprising an amino acid composition of from about 20.7 to about 26.1 mole percent acidic amino acids, about 11.3 to about 15.7 mole percent hydroxy amino acids, about 37.6 to about 42.4 mole percent aliphatic amino acids, about 5.8 to about 7.9 mole percent aromatic amino acids and about 13.3 to about 19.9 mole percent basic amino acids, wherein said mixture of proteins achieves a histological grade of at least about 3 when subcutaneously implanted for 21 days at a protein:substrate weight ratio of about 1:600.

5,290,764
STABILIZATION OF ACTIVE PLASMINOGEN ACTIVATOR INHIBITOR-1
Jodie L. Duke, Jr., Newark; Harry L. Walton, Jr., and Thomas M. Reilly, both of Wilmington, all of Del., assignors to The Dupont Merck Pharmaceutical Company, Wilmington, Del.
Filed Jan. 14, 1992, Ser. No. 820,523
Int. Cl.[5] A61K *37/00, 35/14*
U.S. Cl. 514—21 12 Claims

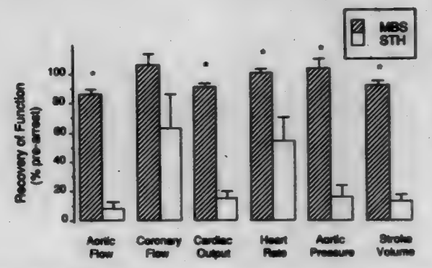
1. A process for stabilizing active plasminogen activator inhibitor type-1 protein comprising combining said active plasminogen activator inhibitor type-1 protein with a buffer having an ionic strength of at least 5 millisiemens and a sugar selected form the group consisting of monosaccharides and disaccharides.

5,290,765
METHOD OF PROTECTING BIOLOGICAL MATERIALS FROM DESTRUCTIVE REACTIONS IN THE DRY STATE
Scott H. Wettlaufer, Newfield, and Aldo C. Leopold, Ithaca, both of N.Y., assignors to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.
Continuation-in-part of Ser. No. 678,065, Apr. 1, 1991, Pat. No. 5,200,399, which is a continuation-in-part of Ser. No. 583,858, Sep. 14, 1990, abandoned. This application Feb. 11, 1992, Ser. No. 833,735
The portion of the term of this patent subsequent to Apr. 1, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/70, 31/715, 35/78*
U.S. Cl. 514—23 27 Claims

1. A method of protecting biological materials selected from the group consisting of tissues, cells, organelles, and biologically active compounds from drying and from destructive reactions which take place during storage, comprising the steps of:
(a) selecting a mixture including cells such as living rhizobia cells;
(b) combining said mixture with sufficient quantity of one or more vitrifying solutes to protect said mixture during drying and to inhibit said destructive reactions,
(c) drying said combination, by exposing said combination to a desiccant, at a temperature above that at which said combination will freeze and below that at which said vitrifying solutes achieve the vitrified state, at approximately normal atmospheric pressure, until said combination is substantially dry, and
(d) storing said combination in a dry state.

5,290,766
CARDIOPLEGIC COMPOSITIONS
Yee S. Choong, Auckland, New Zealand, assignor to The National Heart Foundation of New Zealand, Auckland, New Zealand
Filed Feb. 18, 1992, Ser. No. 836,541
Claims priority, application New Zealand, Feb. 18, 1991, 237139
Int. Cl.[5] A61K *31/70, 31/715, 33/14*
U.S. Cl. 514—23 3 Claims

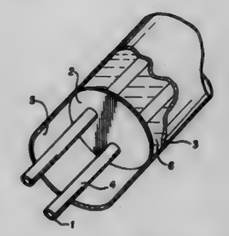
1. A sterile aqueous cardioplegic solution comprising NaCl in the range of 70–110 mM; KCl in the range of 10–16 mM; $CaCl_2$ in the range of 0.5–1.0 mM; $MgCl_2$ in the range of 8–16 mM; $NaHCO_3$ in the range of 10–20 mM; D-Glucose in the range of 5–15 mM; L-Aspartic acid in the range of 5–20 mM; and Lactobionic acid in the range of 0–15 mM.



5,290,767
METHOD FOR TREATING LAMINITIS IN EQUINE LIVESTOCK
James B. Rowe, 16 Moak Street, Kensington, Australia
Division of Ser. No. 331,581, Mar. 30, 1989, Pat. No. 5,204,361.
This application Sep. 30, 1992, Ser. No. 954,748
Claims priority, application Australia, Mar. 30, 1988, PI7526; Nov. 1, 1988, PJ 1239; Jan. 9, 1989, PJ 2218
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—30 12 Claims

1. A method of treating laminitis in equine livestock which comprises dosing said equine with a pharmaceutically effective quantity of an agent comprising tylosin.

5,290,768
WELAN GUM–ETHYLENE GLYCOL INSULATING COMPOSITIONS
A. Michael Ramsay, Escondido; Gail Trimble, San Diego, both of Calif.; James M. Schoult, Houston, Tex., and Michael S. O'Brien, Elcajon, Calif., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 18, 1991, Ser. No. 643,872
Int. Cl.[5] C07G *17/00;* C08B *37/00;* A01N *43/04;* A61K *31/715*
U.S. Cl. 514—54 7 Claims



1. A thixotropic composition consisting essentially of ethylene glycol, a chelating agent, and glycol-compatible welan gum, wherein the glycol-compatible welan gum, in a 0.25% mixture with ethylene glycol, measured at 6 rpm with a Brookfield LVT, at room temperature and cylindrical spindle #4, has a viscosity greater than about 2,500 cP.

5,290,769
USE OF HEXADECYLPHOSPHOCHOLINE FOR THE TREATMENT OF PSORIASIS
Hansjörg Eibl, Bovenden; Clemens Unger, Göttingen, and Jürgen Engel, Aitzonn, all of Fed. Rep. of Germany, assignors to Asta Pharma Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 588,909, Sep. 26, 1990, abandoned. This application Dec. 22, 1992, Ser. No. 995,535
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1989, 3932183
Int. Cl.[5] A61K *31/685*
U.S. Cl. 514—77 2 Claims

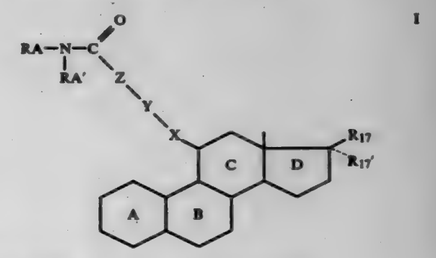
1. A method for the treatment of a psoriasis disorder which comprises administering to a host suffering from a psoriasis disorder an effective amount of hexadecylphosphocholine.

5,290,770
SYNERGISTIC COMPOSITIONS
Michael D. Matthewson, Berkhamsted, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Continuation of Ser. No. 796,707, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 672,734, Mar. 21, 1991, Pat. No. 5,096,895, which is a continuation of Ser. No. 432,989, Nov. 6, 1989, abandoned, which is a division of Ser. No. 575,486, Jan. 31, 1984, Pat. No. 4,897,386, which is a division of Ser. No. 391,453, Jun. 23, 1982, abandoned, which is a continuation of Ser. No. 863,738, Dec. 23, 1977, abandoned. This application Aug. 17, 1993, Ser. No. 108,045
Claims priority, application United Kingdom, Dec. 24, 1976, 7654049
Int. Cl.[5] A01N *53/00, 57/00*
U.S. Cl. 514—86 2 Claims

1. An acaricidal composition comprising an amount of a first pyrethroid compound permetherin and a second compound diazinon, the first and second compounds being present in an amount to provide a synergistic combination.

5,290,771
19-NOR-STEROIDS
André Clausener, Villemomble; Lucien Nedelec, Le Raincy; Daniel Philibert, La Varenne Saint Hilaire, and Patrick Van de Velde, Paris, all of France, assignors to Roussel Uclaf, France
Division of Ser. No. 484,424, Feb. 23, 1990, Pat. No. 5,149,696.
This application Apr. 29, 1992, Ser. No. 875,460
Claims priority, application France, Feb. 24, 1989, 89 02384
Int. Cl.[5] C07J *43/00;* A61K *31/58*
U.S. Cl. 514—172 11 Claims

1. Novel 19-nor-steroids of the formula



I

wherein the A and B rings have a structure of



R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and acyl of an organic carboxylic acid of 1 to 7 carbon atoms, R_{17} and R'_{17} together form =O or R_{17} is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and alkenyl and alkynyl of 2 to 8 carbon atoms, all optionally substituted with at least one member of the group consisting of halogen, alkoxy, alkylthio, —NH_2, and dialkylamino optionally oxidized, aminoalkyl, dialkylaminoalkyl, dialkylaminoalkoxy, —OH, acyloxy of an organic carboxylic acid, free or esterified carboxy, —CN, —CF_3, phenyl, furyl, thienyl, benzyl, X is selected from the group consisting of —CH_2—, —CH_2—O, phenylene and phenylenoxy linked to the C ring through a carbon atom, Y selected from the group consisting of a simple bond and saturated and unsaturated aliphatic of 1 to 18 carbon atoms optionally interrupted with at least one member of the group consisting of phenylene, —O— and optionally oxidized —S— and optionally terminated with phenylene, Z is a simple bond or —CH_2O— linked to Y by a carbon atom, R_4 and R'_4 taken together with the nitrogen to which they are attached form a heterocycle selected from the group consisting of optionally substituted by alkyl of 1 to 8 carbon atoms pyrrolidine or piperidine, pyrrole or pyridine optionally substituted by alkyl of 1 to 4 carbon atoms morpholine, piperazine or pyrimidine optionally substituted by alkyl of 1 to 4 carbon atoms with the proviso that when Z and Y are both simple bonds, X is not —CH_2— or —CH_2O—.

5,290,772

IMMUNOSUPPRESSANT AGENT

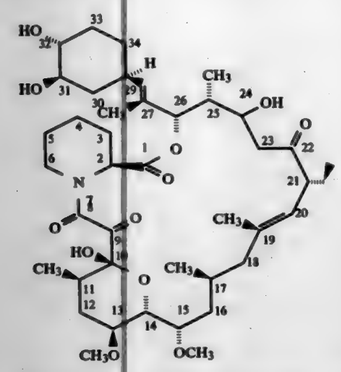
Edward S. Inamine, Rahway; Shieh-Shung T. Chen, Morganville; Byron H. Arison, Watchung, and Linda S. Wicker, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 423,481, Oct. 10, 1989, abandoned, which is a continuation of Ser. No. 213,025, Jun. 29, 1988, abandoned. This application Jun. 16, 1992, Ser. No. 899,235

Int. Cl.[5] A61K *31/33*

U.S. Cl. 514—291 **2 Claims**

1. An immunosuppressant, "demethimmunomycin", having the molecular structure



2. A pharmaceutical composition containing a therapeutically effective amount of "demethimmunomycin" of claim 1, in combination with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

5,290,773

SULFONYL DERIVATIVES

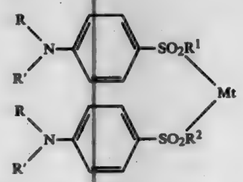
Takeo Takayanagi, 41 Ellsworth Ave., Yonkers, N.Y. 10705

Filed Mar. 21, 1990, Ser. No. 497,508

Int. Cl.[5] A01N *55/02*; C07F *3/06, 1/08*

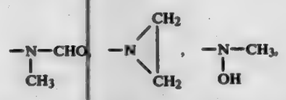
U.S. Cl. 514—184 **12 Claims**

1. A complex or sulfonyl compound of the formula



I

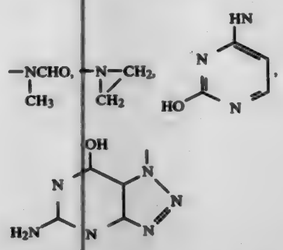
wherein R and R' are individually selected from the group consisting of hydrogen, —$COCHR_4$, —$COC(R_4)_3$, —SO_2CH_3, —$COOCH_2CH_3$, —CH_2CH_2—R_4, —CH_2—CH_2OH, —CONH—$CH_2CH_2R_4$, —$CONHCH_2COOCH_2CH_3$, —$CH_2CH_2OCONH_2$, R_4 is a member selected from the group consisting of Cl,



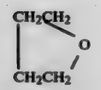
—$NHCOCH_2CH_2OH$, Mt is magnesium wherein



can be changeable to an alkyl, halogen or an aminomethyl, R^1 and R^2 are selected from the group consisting of



6-mercaptopurinyl, 5-fluorouracilyl, prednisolyl, salicylhydrazidyl, 1-allyl-2-thioracilyl, hydroxylamine, isamidyl or R_1 and R_2 are selected from the group consisting of —O—CH_3, —O—CH_2CH_3, —O—CH_2—$CH{:}CH_2$, —O—C_6H_5 or Benzhydrol, or R^1 and R^2 is an ether selected from the ether group consisting of $ClCH_2OCH_2Cl$ $CH_3OCH_2CH_2OCH_3$ $CH_2ClCH_2OCH_2CH_2Cl$ $C_4H_9OCH_3$ $(C_6H_5)_2O$ CH_3—O—$CHCl_2$, $(CH_2{=}CHCH_2)_2O$ $CH_2{=}CHOCH{=}CH_2$ $C_4H_9OC_4H_9$ $C_6H_5OCH_3$ $ClCH_2$—OC_2H_5, $OHCH_2CH_2$—O—CH_2CH_2Cl, $ClCH_2CHCl$—OC_2H_5



or R^1 and R^2 are an inorganic group selected from the group consisting of —(Na)SH, —(K)F, —(K)I, —C—Cl_3 with a condensing agent.

5,290,774

PHOTOSTABILIZING METHOD FOR OPHTHALMIC SOLUTIONS AND THE RESULTING OPHTHALMIC SOLUTIONS THEREFROM

Takakazu Morita, Toyonaka; Shiro Mita, Ashiya, and Yoichi Kawashima, Kyoto, all of Japan, assignors to Eisai Co., Ltd., Tokyo and Santen Pharmaceutical Co., Ltd., Osaka, both of Japan

PCT No. PCT/JP90/00950, § 371 Date Mar. 8, 1991, § 102(e) Date Mar. 8, 1991, PCT Pub. No. WO91/01718, PCT Pub. Date Feb. 21, 1991

Continuation of Ser. No. 651,388, Mar. 8, 1991, abandoned. This PCT application Jul. 26, 1990, Ser. No. 924,437

Claims priority, application Japan, Aug. 3, 1989, 1-201872

Int. Cl.[5] A61K *31/55, 31/27, 31/225*

U.S. Cl. 514—218 **19 Claims**

1. A photostabilizing method which comprises adding 0.1 to 2 g/100 ml of glycerol and 0.5 to 2.5 g/100 ml of boric acid, to an ophthalmic solution containing a drug substance which is unstable against light, the total amount of the glycerol and the boric acid compound being 1.5 to 3 g/100 ml.

5,290,775

EUTHANASIA COMPOSITIONS

Donald C. Sawyer, Okemos; Marlee A. Langham, DeWitt, and Theodore M. Brody, East Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 631,090, Dec. 19, 1990. This application Jun. 3, 1991, Ser. No. 709,193

Int. Cl.[5] A61K *31/54, 31/44, 31/47, 31/16*

U.S. Cl. 514—224.8 **29 Claims**

1. A method for providing euthanasia in a mammal in need thereof which comprises:

(a) premedicating by intravenous administration to tranquilize the mammal with a tranquilizer immediately prior to euthanasia; and

(b) introducing by injection into the mammal an aqueous euthanasia solution comprising an effective amount for producing euthanasia of a cardiotoxic compound selected from the group consisting of a quinacrine compound and a chloroquine compound and a water solubilized gamma-hydroxybutramide in an anesthetic amount, wherein euthanasia occurs in the mammal.

5,290,776

AZOLE DERIVATIVES

Peter W. R. Caulkett; Geraint Jones, both of Macclesfield; Michael G. Collis, Barham, and Simon M. Poucher, Wilmslow, all of England, assignors to Imperial Chemical Industries, PLC, London, England

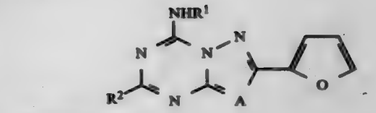
Filed May 21, 1992, Ser. No. 886,798

Claims priority, application United Kingdom, Jun. 23, 1991, 9111130

Int. Cl.[5] C07D *405/14*; A51K *31/53*

U.S. Cl. 514—246 **8 Claims**

1. A compound of the formula I:



(I)

wherein

R^1 is hydrogen, (1–6C)alkyl, or (1–4C)alkanoyl;

R^2 is phenyl, a C-linked aromatic 5- or 6-membered heterocyclic ring which is selected from the group consisting of thienyl, furyl, pyridyl, and thiazolyl, or (1–8C)alkyl, alkenyl or alkynyl unsubstituted or substituted by a phenyl or C-linked aromatic 5- or 6-membered heterocyclic ring which is selected from the group consisting of thienyl, furyl, pyridyl, and thiazolyl, any phenyl being unsubstituted or substituted by one, two or three of (1–4C)alkyl, (1–4C)alkoxy, halogen, trifluoromethyl, hydroxy, benzyloxy and (1–5C)alkanoyloxy;

A is N or CT in which T is hydrogen or (1–4C)alkyl;

or a pharmaceutically acceptable salt thereof.

5,290,777

USE FOR TOPSENTIN COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Oliver J. McConnell, Vero Beach, Fla.; Gabriel Sancy, Essex Fells, N.J., and Robert Jacobs, Santa Barbara, Calif., assignors to Regents of the Univ. of California, Oakland, Calif. and Harbor Branch Oceanographic Inst. Inc., Fort Pierce, Fla.

Filed Feb. 24, 1993, Ser. No. 21,929

Int. Cl.[5] A61K *31/31, 31/495*

U.S. Cl. 514—254 **20 Claims**

1. A method for inhibiting or controlling inflammation, said method comprising administering to a patient in need of inhibition or control of inflammation an effective amount of a bis-indole compound, wherein said bis-indole compound is selected from the group consisting of topsentin, nortopsentin, dragmacidin, and an analog, salt or derivative thereof.

5,290,778

Patent Not Issued For This Number

5,290,779

NITRO-SUBSTITUTED HETEROCYCLIC COMPOUNDS USEFUL AS INSECTICIDES

Kozo Shiokawa, Kanagawa; Shinichi Tsuboi, Tokyo; Shoko Sasaki, Tokyo; Koichi Moriya, Tokyo; Yumi Hattori, Tokyo, and Katsuhiko Shibuya, Tokyo, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

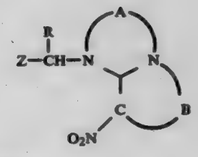
Division of Ser. No. 823,240, Jan. 21, 1992, Pat. No. 5,231,098, which is a division of Ser. No. 699,068, May 13, 1991, Pat. No. 5,122,527, which is a division of Ser. No. 510,509, Apr. 18, 1990, Pat. No. 5,036,082, which is a division of Ser. No. 353,370, May 17, 1989, Pat. No. 4,960,780, which is a division of Ser. No. 208,421, Jun. 17, 1988, Pat. No. 4,876,263. This application Dec. 30, 1992, Ser. No. 998,337

Claims priority, application Japan, Jun. 26, 1987, 62-157528

Int. Cl.[5] A61K *31/505*; C07D *487/04*

U.S. Cl. 514—258 **4 Claims**

1. A nitro-substituted heterocyclic compound of the formula (I):



(I)

wherein

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R represents hydrogen or C_{1-4}-alkyl;
Z represents C_{6-10}-aryl, or a 5- to 6-membered heterocyclic group containing 1 to 2 hetero atoms selected from the group consisting of O, S and N, at least one of which is a nitrogen atom, and said aryl and heterocyclic group is unsubstituted or substituted by a member selected from the group consisting of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-haloalkyl, C_{1-4}-alkylthio, C_{1-4}-haloalkoxy, C_{1-4}-haloalkylthio, nitro and cyano;
A represents unsubstituted propylene or propylene substituted by methyl; and
B represents 2 carbon atoms of a heterocyclic ring which is formed, together with the adjacent C-atom and N-atom and is unsubstituted or substituted by at least one substituent selected from the group consisting of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part, unsubstituted or substituted C_{6-10}-aryl, keto, imino, phenoxy, C_{1-4}-alkylthio, alkoxycarbonylimino having 1 to 4 carbon atoms in the alkoxy part, phenoxycarbonylimino, benzoylimino, benzyl, cyano, thioketo, hydroxy and C_{1-2}-alkylidene.

5,290,780

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

Arunapakam Venkateson, Elmhurst, and Jeremy I. Levin, Spring Valley, both of N.Y., assignors to American Cyanamid Co., N.J.

Continuation-in-part of Ser. No. 648,492, Jan. 30, 1991, abandoned. This application Jan. 14, 1992, Ser. No. 818,721
Int. Cl.[5] A61K *31/505*; C07D *403/10, 239/91*
U.S. Cl. 514—259 **5 Claims**

1. The compound 2-butyl-6-(1-methoxy-1-methylethyl)-3-[[2'-(1H-tetrazol-5-yl)[1,1'-biphenyl]-4-yl]methyl]-4(3H)-quinazolinone, sodium salt.

2. The compound 2-butyl-6-(1-methoxy-1-methylethyl)-3-[[2'-(1H-tetrazol-5-yl)[1,1'-biphenyl]-4-yl]methyl]-4(3H)-quinazolinone.

5,290,781

KETANESERINOL AS AN AGENT TO REDUCE INTRAOCULAR PRESSURE

Ramon L. Espino, Riverside; Donald G. Musson, Upland, and Orest Olejnik, Trabuco Canyon, all of Calif., assignors to Iolab Corporation, Claremont, Calif.

Filed Jan. 5, 1993, Ser. No. 954
Int. Cl.[5] A61K *31/505*
U.S. Cl. 514—259 **6 Claims**

1. A method of reducing intraocular eye pressure in a patient comprising the step of topically administering a pressure reducing effective amount of ketanserinol to the eye of a patient.

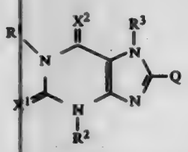
5,290,782

XANTHINE DERIVATIVES

Fumio Suzuki, Mishima; Junichi Shimada; Akio Ishii, both of Shizuoka; Tetsuji Ohno, Shizuoka, all of Japan; Akira Karasawa, Huntingdon Valley, Pa.; Kazuhiro Kubo, and Hiromi Nonaka, both of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

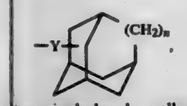
Continuation-in-part of Ser. No. 574,447, Aug. 29, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 839,690
Claims priority, application Japan, Sep. 1, 1989, 1-226642; Feb. 25, 1991, 3-029796
Int. Cl.[5] C07D *473/02*; A61K *31/52*
U.S. Cl. 514—263 **11 Claims**

1. Xanthine compounds represented by the following formula (I):

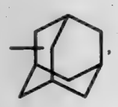


(I)

wherein each of X^1 and X^2 independently represents oxygen or sulfur; and Q represents:



where Y represents a single bond or alkylene having 1 to 4 carbon atoms, n represents 0 or 1,
each of R^1 and R^2 independently represents hydrogen, lower alkyl, allyl or propargyl, and R^3 represents hydrogen or lower alkyl, provided that when Q is



then

R^1, R^2 and R^3 are not simultaneously methyl; or a pharmaceutically acceptable salt thereof.

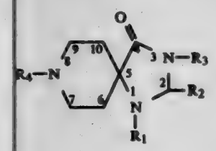
5,290,783

USE OF SPIPERONE DERIVATIVES AS IMMUNOSUPPRESSANT AGENTS

Richard J. Sharpe, Gloucester; Kenneth A. Arndt, Newton Centre, and Stephen J. Galli, Winchester, all of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.

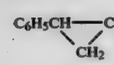
Continuation-in-part of Ser. No. 494,740, Mar. 16, 1990, abandoned. This application Dec. 27, 1991, Ser. No. 815,283
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—278 **8 Claims**

1. A method for treating a mammal in need of immunosuppression, comprising administering to the mammal an effective amount of a spiperone derivative of the formula:

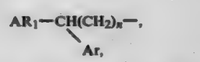


wherein
R_1=H, CH_3—, C_6H_5—, cyclohexyl, 4-$(OCH_3)C_6H_4$—, 3-$(CH_3)C_6H_4$—, 4-$(CH_3)C_6H_4$—, 4-X—C_6H_4—, $(CH_3)_2CH$—, $CH_3(CH_2)_3$—, $(CH_3)_2CHCH_2$—, $CH_3CH_2CH(CH_3)$—, $(CH_3)_3C$—; or Y—$CH_2(CH_2)_m$—.
R_2H or CH_3;
R_3=H, CH_3, CH_3CH_2—, $CH_3CH_2CH_2$—, $(CH_3)_2CH$—, $CN(CH_2)_2$—, or $CH_3(CH_2)_5$—;
R_4=H, $C_6H_5CH(CH_2CH_3)CH_2$—, $C_6H_5CH(CH_3)(CH_2)_2$—, $C_6H_5CH_2CH(CH_3)CH_2$—, $C_6H_5CH_2CH_2CH(CH_3)$—, $C_6H_5CH(CH_3)(CH_2)_3$—, 4-$CH_3C_6H_4CH(CH_3)(CH_2)_3$—, 4-$(CH_3O)C_6H_4CH(CH_3)(CH_2)_3$, 4-X—$C_6H_4CH(CH_3)C$-

H_2—, 4-X—$C_6H_4CH(CH_2CH_3)CH_2$—, 4-X—$C_6H_4CH(CH_3)(CH_2)_2$—, 4-X—C_6H_4—$CH(CH_3)(CH_2)_3$—, $C_6H_5CH(OCH_3)(CH_2)_2$—,



$C_6H_5CO(CH_2)_3$—, $C_6H_5CO(CH_2)_4$—, 4-$(CH_3)C_6H_4CO(CH_2)_3$—, 4-$(CH_3O)C_6H_4CO(CH_2)_3$—, 4-X—$C_6H_4CO(CH_2)_3$—, 4-X—$C_6H_4CO(CH_2)_3$—, 2-thienyl—$CO(CH_2)_3$—,



4-$XC_6H_4C(CH_3)CH(CH_2)^-{}_2$, where the conformation about the double bond is cis or trans,
4-$XC_6H_4C(CH_3)CHCH_2^-$, where the conformation about the double bond is cis or trans,
4-X—C_6H_4COCH=$CHCH_2$, or
—Y—$CH_2(CH_2)_s$.
wherein n=3 or 4; m is between 1 to 4; s is between 1 to 6; X=is a heteroatom or a substituted heteroatom such as F, Cl, Br, I, OCH_3, SO_3^-, or NH_2; Y=H or a heteroatom such as F, Cl, Br, I, SO_3, $PO_4^=$, OH, SH, SCH_3, $CH_3SO_2^-$, NH_2, $—CO_2^-$; and each of Ar and Ar_1 is, independently, H, C_6H_5—, 4-$(CH_3)C_6H_4$—, 4-$(CH_3O)C_6H_4$—, 4-X—C_6H_4—, 3-$(CX_3)C_6H_4$—, 2-thienyl, or 4-X—$C_6H_4CH_2$—
in a carrier selected from the group suitable for systemic pharmaceutical administration to immunosuppress the mammal.

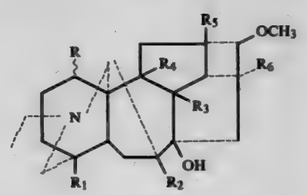
5,290,784

ACONITANE DERIVATIVES USED AS A MEDICATION TO TREAT ADDICTION

Yueqian Qu, and Peng Qu, both of Lanzhou, China, assignors to Yueqian Qu, Lanzhou, China

Filed Jul. 13, 1992, Ser. No. 912,791
Claims priority, application China, Jul. 18, 1991, 91104811.1
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—279 **18 Claims**

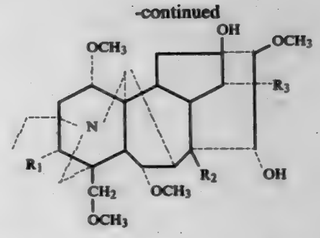
1. A method to treat the withdrawal symptoms of narcotic addiction which comprises administering a withdrawal symptom effective amount of an aconitane derivative having the structures of formula I and II, inorganic acid salts therefore, or a mixture of two of the foregoing



I

or

-continued



II

In formula I, R=α—OCH_3, α—OH or β—OCH_3; R_1=OAcABz, OH, OABz or H; R_2=H or OH; R_3=H or OH; R_4=H or OH; R_5=H or OH_3; R_6=OCH_3, OBz, OAC or OH;
In formula II, R_1=R_2=R_3=OH
and a pharmaceutically acceptable carrier to a patient.

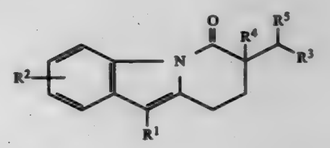
5,290,785

THERAPEUTIC AGENT FOR ISCHEMIC DISEASES

Masayuki Kato, Kyoto; Kiyotaka Ito, Ikeda, and Hisashi Takasugi, Saksi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 660,945, Feb. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 495,119, Mar. 19, 1990, Pat. No. 5,173,493, which is a continuation-in-part of Ser. No. 409,744, Sep. 20, 1989, Pat. No. 5,141,945. This application Jul. 20, 1992, Ser. No. 915,877
Claims priority, application United Kingdom, Sep. 27, 1988, 8822646; Feb. 10, 1989, 8903044
Int. Cl.[5] C07D *221/06*; A61K *31/44*
U.S. Cl. 514—294 **3 Claims**

1. A method for treating cardiac ischemic diseases which comprises administering an effective amount of a compound of the formula:



wherein
R^1 is hydrogen, lower alkyl, lower alkenyl or N,N-di(lower-)alkylaminomethyl,
R^2 is hydrogen, lower alkyl or halogen,
R^3 is imidazolyl or pyridyl, each of which may have substituent(s) selected from lower alkyl and imino-protective group which is selected from mono-, di- or triphenyl(lower)alkyl, N,N-di(lower)alkylsulfamoyl, lower alkanesulfonyl and tosyl, and
R^4 is hydrogen, lower alkyl, lower alkenyl or hydroxy(lower)alkyl and R^5 is hydrogen, hydroxy or lower alkanoyloxy, or
R^4 and R^5 are linked together to form an additional bond,
or a pharmaceutically acceptable salt thereof to a human or animal.

5,290,786

Patent Not Issued For This Number

VOL 1160 ISS 1 MR 1 1994 UMI

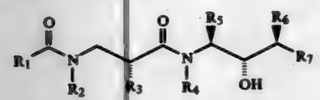
5,290,787

AZACHROMONYL/AZACHROMONYLALKYL-N-TERMINAL CYCLOALKOXY-C-TERMINAL AMINO HYDROXY β-AMINO ACID DERIVATIVES

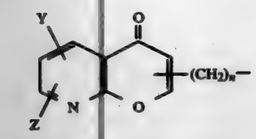
Gunnar J. Hansen, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 736,870, Jul. 29, 1991, Pat. No. 5,175,170. This application Jul. 16, 1992, Ser. No. 914,718
Int. Cl.[5] A61K *31/35*; C07D *471/04*
U.S. Cl. 514—302 12 Claims

1. Compound of the formula



wherein R_1 is selected from heteroaryl and heteroaralkyl groups represented by



wherein each of Y and Z is independently selected from hydrido, lower alkyl, hydroxy, halo, alkoxy, carboxy, amino, alkylamino, dialkylamino, aryl, sulfhydryl and thioalkyl; wherein n is a number selected from zero through five, inclusive; wherein each of R_2 and R_4 is independently selected from hydride and lower alkyl; wherein R_3 is selected from hydrido, alkyl, benzyl, cycloalkyl, cycloalkylalkyl, alkoxyalkyl and alkylthioalkyl; wherein R_5 is selected from cycloalkyl, phenyl, lower alkyl, cycloalkylalkyl and phenylalkyl; wherein R_6 and R_7 are taken together to form a partially saturated heterocyclic ring containing five to eight ring members with one or two ring members being oxygen atoms and the remaining ring members being carbon atoms; and wherein any of the foregoing R_1 through R_7 substituents having a substitutable position may be substituted with one or more groups selected from alkyl, alkoxy, halo, haloalkyl, alkenyl, alkynyl and cyano; or a pharmaceutically-acceptable salt thereof.

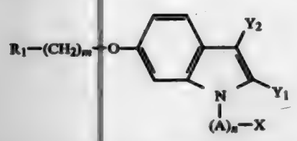
5,290,788

INDOLE DERIVATIVES AS ANTIALLERGY AND ANTIINFLAMMATORY AGENTS

Rodney W. Stevens, Hands; Hiromasa Morita, Chita, and Masami Nakane, Nagoya, all of Japan, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US91/07045, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992
PCT Filed Oct. 1, 1991, Ser. No. 848,941
Claims priority, application Japan, Oct. 3, 1990, 2-265687
Int. Cl.[5] C07D *403/06, 403/12*; A61K *31/475, 31/47*
U.S. Cl. 514—314 15 Claims

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein R_1 is quinoylyl or pyridyl; m is an integer of 1 to 2; Y_1 is hydrogen, or alkyl having one to four carbon atoms; Y_2 is hydrogen, alkyl having one to four carbon atoms, pyridylvinylene, benzoyl or substituted benzoyl where said substituent is methyl, methoxy, chloro, fluoro or trifluoromethyl, benzyl or substituted benzyl wherein said substituent is methyl, methoxy, chloro, fluoro or trifluoromethyl; A is $—CH_2—$ or —C(O)—; n is an integer of 0 to 3; and X is hydrogen, alkyl having one to three carbon atoms, pyridyl, hydroxy, thienyl, carboxy, alkoxycarbonyl of two to four carbon atoms, amino, benzyloxycarbonylamino, phenyl or substituted phenyl wherein aid substituent is methyl, carboxy, alkoxycarbonyl of two to four carbon atoms, methoxy, fluoro, chloro or trifluoromethyl with the proviso that when A is —C(O)—, n is 1 and when n is 0, X is hydrogen.

5,290,789

PENTA AND TETRASUBSTITUTED PIPERIDINES AND COMPOSITIONS AND METHOD OF TREATING PSYCHOSIS

Diane L. DeHaven-Hudkins, Chester Springs, Pa.; John P. Mallamo, Kinderhook; William F. Michne, Poestenkill, both of N.Y., and Martha R. Heimann, Durham, N.C., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,027
Int. Cl.[5] A61K *31/445*; C07D *211/22*
U.S. Cl. 514—317 15 Claims

1. A compound of the formula:



wherein:
R^1 is hydrogen, lower-alkyl or phenyl-lower-alkyl;
R^2 and R^4 are the same or different lower-alkyl;
R^3 is hydrogen or lower-alkyl;
m is two or three;
n is an integer from zero to three; and
R^5 is hydrogen, lower-alkyl, C_3–C_7-monocyclic-cycloalkyl, allyl, or propargyl;
or a pharmaceutically acceptable acid-addition salt thereof.

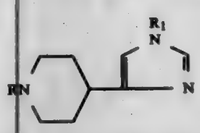
5,290,790

4-(4-IMIDAZOLYL) PIPERIDINES SUBSTITUTED AT POSITION 1, THEIR PREPARATION AND ALSO THEIR THERAPEUTIC APPLICATIONS

Jean-Michel Arrang, Gif/Yvette; Monique Garborg, Paris; Jean-Charles M. Lancelot, Tour en Bessin; Jeanne-Marie Lecomte, Paris; Max-Fernand Robba, Caen, and Jean-Charles Schwartz, Paris, all of France, assignors to National De La Sante et De La Recherche Medicale; Societe Civile Bioprojet, both of Paris and Universite De Caen - Esplanade De La Faix, Caen Cedex, all of France

Filed Dec. 30, 1991, Ser. No. 814,450
Claims priority, application France, Dec. 31, 1990, 90 16540
Int. Cl.[5] A61K *31/445*; C07D *401/04, 405/14*
U.S. Cl. 514—326 3 Claims

1. Compounds corresponding to the general formula



I

in which R_1 represents a hydrogen atom or a group $—COR_2$, in which R_2 represents a phenyl group, cyclopentylmethyl, cyclohexylmethyl, cyclopentylethyl or cyclohexylethyl groups or cyclopentylamino, cyclohexylamino, or phenylamino, chlorophenylamino or dichlorophenylamino groups; R represents a hydrogen atom or a group COR_3, in which R_3 represents

(a) a linear or branched aliphatic group containing 1 to 11 carbon atoms,

(b) a cyclane ring-system selected from the group consisting of cyclopropane, phenylcyclopropane, cyclobutane, cyclopentane, cyclohexane, cycloheptane, norbornane, adamantane, noradamantane, chlorooxonorbornane, chloroethylenedioxynorbornane, bromoethylenedioxynorbornane and the anhydride group of hydroxycarboxy-1,2,2-trimethylcyclopentanecarboxylic acid,

(c) a phenyl group, unsubstituted or substituted at the para-position with a linear or branched aliphatic group containing 3 to 5 carbon atoms, or with a halogen,

(d) a group $(CH_2)_mR_4$, in which m is a number between 1 and 10, and R_4 represents a cyclane ring system selected from the group consisting of cyclopropane, cyclobutane, cyclopentane, cyclohexane, cycloheptane, norbornane, noradamantane, adamantane and 6,6-dimethylbicyclo-heptene; a phenyl group unsubstituted or monosubstituted with a fluorine atom, a chlorine atom, a methyl group or a methoxy group; a 2-thienyl or 3-thienyl group; a carboxylic acid ester group $COOR_5$ in which R_5 is a cyclane ring-system selected from the group consisting of cyclopropane, cyclobutane, cyclopentane, cyclohexane or norbornane; a carboxylic acid amide group of structure $CONHR_6$, in which R_6 represents a cyclane ring-system selected from the group consisting of cyclopropane, cyclobtuane, cyclopentane, cyclohexane or norbornane; a carboxylic acid amide group of structure



in which the group

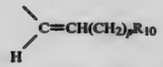


represents pyrrolidine, piperidine or 2,6-dimethyl-morpholine; or an ether group —O—R_7, it being possible for R_7 to be a phenyl group, unsubstituted or monosubstituted with a chlorine or fluorine atom or disubstituted with a chlorine atom and with a methyl group;

(e) a group $—CH═CHR_8$, in which R_8 represents a cyclane ring-system selected from the group consisting of cyclopropane, cyclobutane, cyclopentane, cyclohexane, norbornane or norbornene;

(f) a secondary amine group $—NH(CH_2)_nR_9$, in which n is a number between 1 and 5 and R_9 constitutes a cyclane ring-system selected from the group consisting of cyclopropane, cyclobutane, cyclopentane, cyclohexane or norbornane, or a phenyl group, unsubstituted, monosubstituted with a fluorine or chlorine atom or with a methoxy group or trisubstituted with methoxy groups;

R also represents a hydroxyalkenyl group



in which p is a number between 2 and 9 and R_{10} represents a phenyl group or a phenoxy group; as well as a group $CSNH(CH_2)_nR_9$ in which n is a number between 1 and 5 and R_9 has the meaning stated above, provided that when R_1 represents a hydrogen atom or R_2 a phenyl group a cyclopentylamino, cyclohexylamino or phenylamino group, R cannot represent a hydrogen atom, R_3 cannot represents a phenyl group unsubstituted or substituted at the para-position by a methyl group or a halogen, a secondary amine group $—NH—(CH_2)_{1-4}—R_9$ in which R_9 represents a cycloalkyl (3 to 6 C), a phenyl group unsubstituted or monosubstituted with a fluorine or chlorine atom and provided that when R_1 represents a hydrogen atom or R_2 a phenyl group, a cyclopentylamino, cyclohexylamino or phenylamino group, R cannot represent a group $CSHN(CH_2)_{1-3}—R_9$ in which R_9 has the meaning given above.

5,290,791

FUNGICIDAL COMPOSITION FOR SEED DRESSING

Alfred Greiner, St Cyr au Mont d'Or; Jean Hutt, Lyons; Jacques Mugnier, la Balme, de Sillingy, and Regis Pepin, Rilleux la Pape, all of France, assignors to Rhone-Poulenc Secteur Agrochimie, Lyons, France

Filed Jun. 13, 1991, Ser. No. 714,726
Claims priority, application France, Jun. 13, 1990, 90 07607
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] A01N *37/52, 43/36, 43/64, 57/00*
U.S. Cl. 514—383 18 Claims

1. A fungicidal composition comprising a component (a)2-(4-chlorobenzylidene)-5,5-dimethyl-1-(1H-1,2,4-trizol-1-ylmethyl)-1-cyclopentanol, a component (b) at least one fungicide suitable for the protection of multiplication products of cultivated plants selected from the group consisting of anti-Helminthosporium, anti-caries, anti-smut and anti-aeptorioses fungicides, and an agriculturally acceptable inert vehicle, wherein the weight ratio of component (a) to component (b) is from 1:400 to 400:1.

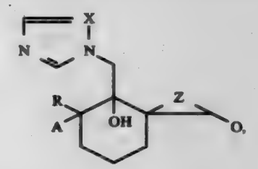
5,290,792

AZOLYLMETHYLSPIRO(2.5)OCTANOLS AND FUNGICIDES CONTAINING THESE

Rainer Seele, Fussgoenheim; Norbert Goetz, Worms; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 4, 1991, Ser. No. 771,095
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1990, 4034337
Int. Cl.[5] A01N *43/653*; C07D *249/08*
U.S. Cl. 514—383 5 Claims

1. An azolylmethylspiro[2.5]octanol of the formula I



where
A and R are each hydrogen or C_1–C_4-alkyl;
D is C_1–C_8-alkyl, C_3–C_6-cycloalkyl, C_5–C_8-cycloalkenyl, biphenylyl, naphthyl, or phenyl, each of these radicals optionally substituted with one to three halogen, nitro, phenoxy, amino, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-haloalkyl;
Z is CH_2 or O, and
X is N, or the plant-compatible acid addition salts or metal complexes thereof.

VOL 1160 ISS 1 MR 1 1994 UMI

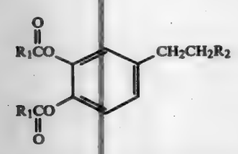
5,290,793

DIHYDROCAFFEIC ACID DERIVATIVES AND PHARMACEUTICAL PREPARATION CONTAINING SAME

Nobuyuki Fukazawa, Mobara; Hajime Iizuka; Osamu Yano, all of Mobara, and Yukio Miyama, Chosei, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

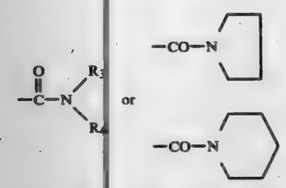
Continuation of Ser. No. 845,160, Mar. 3, 1992, abandoned, which is a division of Ser. No. 578,494, Sep. 6, 1990, Pat. No. 5,116,979. This application Oct. 29, 1992, Ser. No. 968,455
Claims priority, application Japan, Sep. 12, 1989, 1-234646
Int. Cl.[5] C07D *207/16, 211/60;* A61K *31/16, 31/19*
U.S. Cl. 514—332 10 Claims

1. A dihydrocaffeic acid derivative represented by the formula (I)



(I)

wherein R_1 is an alkyl group having 2 or more carbon atoms, an aryl group, cycloalkyl group, or an adamantyl group, provided that R_3 and R_4 are not simultaneously hydrogen atoms or alkyl groups having 3 or less carbon atoms, or a salt thereof.



wherein each of R_3 and R_4 is independently a hydrogen atom, alkyl group, cycloalkyl group, or an adamantyl group, provided that R_3 and R_4 are not simultaneously hydrogen atoms or alkyl groups having 3 or less carbon atoms, or a salt thereof.

5,290,794

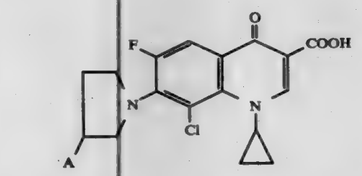
SOLUBLE CALCIUM LACTATE ANTIBACTERIAL COMPLEXES AS NON-IRRITATING PARENTERAL FORMS

Surendra C. Mehta, Randolph; Hua-Pin Huang, Succasunna; Galen W. Radebaugh, Chester, and Mahdi B. Fawzi, Flanders, all of N.J., assignors to Warner Lambert Co., Morris Plains, N.J.

Filed Oct. 27, 1992, Ser. No. 966,998
Int. Cl.[5] A61K *31/44, 31/47*
U.S. Cl. 514—300 21 Claims

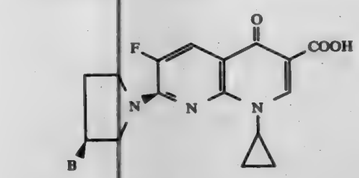
1. A storage stable soluble calcium lactate antibacterial complex in parenteral dosage form, comprising in solution a) a lactic acid salt of a carboxylic acid antibacterial compound corresponding to 1 to 3 moles of lactic acid per mole of the antibacterial compound, the antibacterial compound being selected from

1) a quinolone of formula



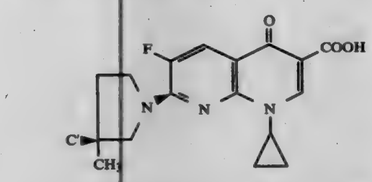
wherein A is aminomethyl, ethylaminomethyl or amino;

2) a naphthyridine of formula



or an optical isomer thereof, wherein B is 2-amino-1-oxopropylamino, amnioacetylamino, (2-amino-1-oxo-3-phenylpropyl)amino, (2,5-diamino-1,5-dioxopentyl)amine, (2-amino-4-carboxy-1-oxobutyl)amino, (2,6-diamino-1-oxohexyl)amino, or (aminophenylacetyl)amino, or

3) a naphthyridine of formula



or an optical isomer thereof, wherein C′ is [(2-amino-1-oxo-3-phenylpropyl)amino]methyl, [(2-amino-1-oxopropyl)amino]methyl, [(aminoacetyl)amino]methyl, [(aminophenylacetyl)amino]methyl, [(2-amino-4-carboxy-1-oxobutyl)amino]methyl, [(2,6-diamino-1-oxohexyl-)amino]methyl, or [(2,5-diamino-1,5-dioxopentyl)amino]-methyl;

and b) calcium hydroxide in a quantity that is selected so that the pH of the solution is between about 4.0 to about 5.5, precipitation of the antibacterial compound from the solution is avoided and yet on injection irritation by the solution is absent or minimized.

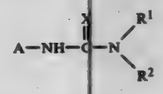
5,290,795

SUBSTITUTED UREA COMPOUND AND USE

John B. Hansen, Jyderup, Denmark, assignor to Novo Nordisk N/A, Bagsvaerd, Denmark

Division of Ser. No. 650,143, Feb. 4, 1991, Pat. No. 5,187,164.
This application Aug. 17, 1992, Ser. No. 931,229
Claims priority, application Denmark, Feb. 16, 1990, 0408/90
Int. Cl.[5] C07D *85/54;* A61K *31/46*
U.S. Cl. 514—305 10 Claims

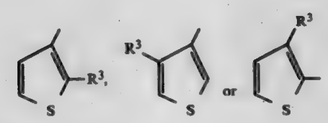
1. A compound of formula I:



(I)

wherein

A is



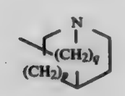
wherein

R^3 is a 1,2,4-oxadiazole substituted with C_{1-8}-alkyl, C_{2-8}-alkenyl, C_{2-8}-alkynyl, C_{3-7}-cycloalkyl, benzyl, phenyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio or amino;

R^2 is H or lower alkyl;

X is O or S; and

R^1 is a group of formula III



(III)

wherein

p is 1 and q is 2; or

an N-methylated ammonium derivative thereof.

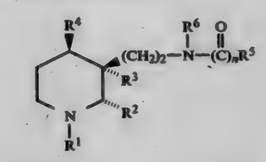
5,290,796

SUBSTITUTED 3-PIPERIDINEALKANAMINES AND ALKANAMIDES AND COMPOSITIONS AND METHOD OF USE THEREOF

Diane L. DeHaven-Hudkins, Chester Springs, Pa.; John P. Mallamo, Kinderhook; William F. Michne, Poesteakill, both of N.Y., and Martha R. Heimann, Durham, N.C., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,714
Int. Cl.[5] A61K *31/445;* C07D *211/32*
U.S. Cl. 514—326 16 Claims

1. A compound of the formula:



wherein:

R^1 is lower-alkyl, or phenyl-lower-alkyl;

R^2, R^3 and R^4 are the same or different lower-alkyl;

N is zero or ore;

R^5 is hydrogen, lower-alkyl, C_3–C_7-monocyclic cycloalkyl, lower-alkoxy, phenyl, phenyl-lower-alkyl, phenyl-lower-alkyl in which the phenyl ring is substituted in the 2, 3, or 4-position by one to two, the same or different, halogen substituents, or R^5 is a 5-membered aromatic monocyclic heterocycle selected from the group consisting of thienyl, furanyl and isoxazolyl; and

R^6 is hydrogen or lower-alkyl; or when n is zero, R^5 and R^6 together are $-(CH_2)_m-$ wherein m is an integer from four to six; or a pharmaceutically acceptable acid-addition salt thereof; with the proviso that when R^1, R^2, R^3 and R^4 are methyl, n is zero and R^6 is hydrogen or methyl, R^5 cannot be hydrogen; further provided that when n is zero, R^5 cannot be lower-alkoxy, phenyl, or a 5-membered aromatic monocyclic heterocycle.

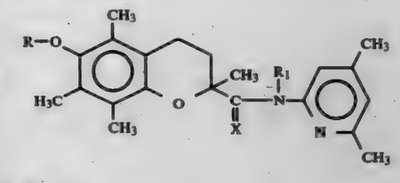
5,290,797

BENZOPYRAN COMPOUNDS

Guillaume Le Baut, Saint Sebastien sur Loire; Jean-Paul Babingui; Jean-Michel Robert, both of Nantes; Pierre Renard, Versailles; Jean-Francois Renaud de la Faverie, Le Chesnay, and Gérard Adam, Le Mesnil le Roi, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Mar. 4, 1992, Ser. No. 846,218
Claims priority, application France, Mar. 8, 1991, 91 02799
Int. Cl.[5] C07D *405/12;* A61K *31/44*
U.S. Cl. 514—337 9 Claims

1. A compound selected from the group consisting of those of the formula I



I

in which:

R_1 represents hydrogen or alkyl having 1 to 3 inclusive carbon atoms,

R represents hydrogen, alkyl having 1 to 4 inclusive carbon atoms, or acyl —CO—R′ in which R′ represents alkyl having 1 to 4 inclusive carbon atoms,

X represents O, an isomer thereof, and, when R represents hydrogen, an addition salt thereof with a pharmaceutically-acceptable base.

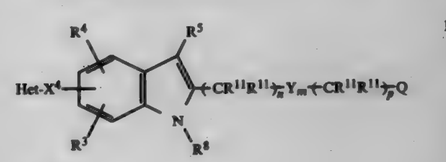
5,290,798

(HETERO-ARYLMETHOXY)INDOLES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

John W. Gillard, Baie d'Urfe; John H. Hutchinson, Montreal, and Michel Therien, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 768,128, Sep. 30, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,637
Int. Cl.[5] C07D *417/12;* A61K *31/425, 31/41*
U.S. Cl. 514—361 14 Claims

1. A compound of the formula I:



I

wherein:

Het is ArR^1R^2;

Ar is a monocyclic aromatic 5-membered ring containing one O or S atom and 0 to 2N atoms;

R^1, R^2, R^3, R^4 and R^{10} are independently hydrogen, halogen, perhalo lower alkenyl, lower alkyl, lower alkenyl, lower alkynyl, $-CF_3$, —CN, $-NO_2$, $-N_3$, $-C(OH)R^{11}R^{11}$, $-CO_2R^{12}$, $-SR^{14}$, $-S(O)R^{14}$, $-S(O)_2R^{14}$, $-S(O)_2NR^{15}R^{15}$, $-OR^{15}$, $-NR^{15}R^{15}$, $-NR^{1-2}CONR^{15}R^{15}$, $-COR^{16}$, $CONR^{15}R^{15}$, or $-(CH_2)_rR^{21}$;

R^5 is hydrogen, $-CH_3$, CF_3, $-C(O)H$, X^1-R^6 or X^2-R^7;

R^6 and R^9 are independently alkyl, alkenyl, $-(CH_2)_nPh(R^{10})_2$ or $-(CH_2)_nTh(R^{10})_2$, wherein Ph is phenyl and Th is 2- or 3-thienyl;

R^7 is $-CF_3$ or R^6;

R^8 is hydrogen or X^3-R^9;

each R^{11} is independently hydrogen or lower alkyl, or two

R^{11}'s on same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;
R^{12} is hydrogen, lower alkyl or $—CH_2R^{21}$;
R^{13} is lower alkyl or $—(CH_2)_rR^{21}$;
R^{14} is $—CF_3$ or R^{13};
R^{15} is hydrogen, $—COR^{16}$, R^{13}, or two R^{15}'s on the same nitrogen may be joined to form a monocyclic heterocyclic ring of 4 to 6 atoms containing up to 2 heteroatoms chosen from O, S, or N;
R^{16} is hydrogen, $—CF_3$, lower alkyl, lower alkenyl, lower alkynyl or $(CH_2)_rR^{21}$;
R^{17} is $—(CH_2)_s—C(R^{18}R^{18})—(CH_2)_r—R^{19}$ or $—CH_2CONR^{15}R^{15}$;
R^{18} is hydrogen or lower alkyl;
R^{19} is
a) 2,5-dioxy-1-pyrrolidinyl, (3-pyridinylcarbonyl)amino, 1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl, 1,3-dihydro-2H-isoindol-2-yl, 2,4-imidazolinedion-1-yl, 2,6-piperidinedion-1-yl, 2-imidazolyl, 2-oxo-1,3-dioxolen-4-yl, piperidin-1-yl, morpholin-1-yl, or piperazin-1-yl, or
b) the radical W-R^{20};
R^{20} is alkyl or $—COR^{23}$;
R^{21} is phenyl substituted with 1 or 2 R^{22} groups;
R^{22} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylcarbonyl, $—CF_3$, —CN, $—NO_2$ or $—N_3$;
R^{23} is alkyl, cycloalkyl, or monocyclic monoheterocyclic ring of 5 to 7 members containing only 1 heteroatom selected from N, S, or O;
R^{24} is the residual structure of a standard amino acid, or R^{18} and R^{24} attached to the same N can cyclize to form a proline residue;
m is 0 or 1;
n is 0 to 3;
p is 1 to 3 when m is 1;
p is 0 to 3 when m is 0;
r is 0 to 2;
s is 0 to 3;
t is 0 to 2;
u is 0 to 3;
W is 0, S or NR^{15};
X^1 is O or NR^{15};
X^2 is CO, $CR^{11}R^{11}$, S, S(O), or $S(0)_2$;
X^3 is CO, $CR^{11}R^{11}$, $S(0)_2$, or a bond;
X^4 is CH=CH, $CH_2—Y^1$, or $Y^1—CH_2$;
Y is X^1 or X^2;
Y^1 is O, S, $S(0)_2$, or CH_2;
Q is $—CO_2R^{12}$, $—CONHS(O)_2R^{14}$, $—NHS(O)_2R^{14}$, $—S(O)_2NHR^{15}$, $—CONR^{15}R^{15}$, $—CO_2R^{17}$, $—CONR^{18}R^{24}$, $—CR^{11}R^{11}OH$, or 1H- or 2H-tetrazol-5-yl;
or a pharmaceutically acceptable salt thereof.

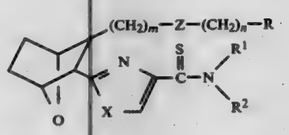
5,290,799

7-OXABICYCLOHEPTYL SUBSTITUTED HETEROCYCLIC THIOAMIDE PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOTIC AND VASOSPASTIC DISEASE

Raj N. Misra, Hopewell; Philip M. Sher, Plainsboro; Philip D. Stein, Princeton; Steven E. Hall, Trenton; David Floyd, Pennington, all of N.J., and Joel C. Barrish, Holland, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 19, 1990, Ser. No. 584,969
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] C07D *403/04, 413/04, 417/04;* A61K *31/425*
U.S. Cl. 514—365 **25 Claims**

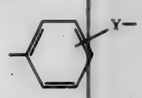
1. A compound having the formula



including all stereoisomers thereof, wherein
m is 1, 2 or 3;
n is 0, 1, 2, 3 or 4;
Z is



wherein Y is O, a single bond or vinyl (—CH=CH—), with the provisos that when n is 0, if Z is



then Y cannot be O; and when Y=vinyl, n=0;
R is CO_2H, CO_2alkali metal, CO_2lower alkyl, CH_2OH, $CONHSO_2R^3$, $CONHR^{3a}$ or $—CH_2$-5-tetrazolyl, with the proviso that when R is $—CH_2$-5-tetrazolyl, and Z is other than $—(CH_2)_2—$, n is 1, 2, 3 or 4;
X is O, S is NH;
R^1 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, heteroaryl or heteroarylalkyl, each of R^1 being unsubstituted or optionally substituted with a lower alkyl, aryl, cycloalkyl or cycloalkylalkyl group;
R^2 is hydrogen, lower alkyl, aryl, or aralkyl, or
R^1 and R^2 together with the N to which they are linked form a 5- to 8-membered ring which contains only the single N heteroatom; and
R^3 is lower alkyl, aryl or aralkyl; and
R^{3a} is hydrogen, lower alkyl, aryl or aralkyl, wherein the term "aryl" by itself or as part of another group refers to a monocyclic or bicyclic aromatic group containing from 6 to 10 carbons in the ring portions, which is unsubstituted or substituted with 1 or 2 substituents which are lower alkyl, trifluoromethyl, halogen, lower alkoxy, arylalkoxy, hydroxy, alkylthio, alkylsulfinyl, alkylsulfonyl, arylthio, arylsulfinyl and/or arylsulfonyl;
the term "cycloalkyl" by itself or as part of another group refers to a saturated cyclic hydrocarbon group containing 3 to 12 carbons, which is unsubstituted or substituted with halogen, lower alkyl, alkoxy and/or hydroxy;
the term "cycloheteroalkyl" by itself or as part of another group refers to a 5-, 6- or 7-membered saturated ring which includes 1 or 2 heteroatoms which are nitrogen, oxygen and/or sulfur;
the term "heteroaryl" by itself or as part of another group refers to 5- or 6-membered aromatic ring which includes 1 or 2 heteroatoms which are nitrogen, oxygen or sulfur;
the term "lower alkyl" or "alkyl" by itself or as part of another group refers to a straight or branched chain radical of up to 18 carbons which is unsubstituted or substituted with 1, 2 or 3 halogen, aryl, alkyl-aryl, haloaryl, cycloalkyl, alkylcycloalkyl, hydroxy or carboxy substituents;
The term "lower alkenyl" or "alkenyl" by itself or as part of another group refers to a carbon chain of up to 16 carbons containing one double bond and which is unsubstituted or substituted with a halogen substituent; and
the term "lower alkynyl" or "alkynyl" by itself or as part of another group refers to a carbon chain of up to 16 carbons containing one triple bond.

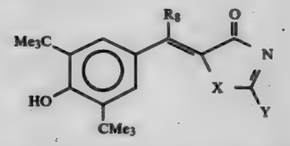
5,290,800

3,5-DI-TERTIARYBUTYL-4-HYDROXYPHENYLMETHYLENE DERIVATIVES OF 2-SUBSTITUTED THIAZOLIDINONES, OXAZOLIDINONES, AND IMIDAZOLIDINONES AS ANTIINFLAMMATORY AGENTS

Wiaczeslaw A. Cetenko; David T. Connor; Jagadish C. Sircar; Roderick J. Sorenson, and Paul C. Unangst, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 640,711, Jan. 18, 1991, Pat. No. 5,143,928, which is a continuation-in-part of Ser. No. 499,937, Mar. 19, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,299
Int. Cl.[5] C07D *203/40;* A61K *31/42*
U.S. Cl. 514—376 **11 Claims**

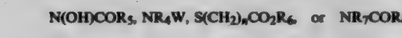
1. A compound of the formula I

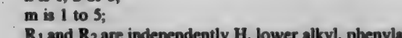


and a pharmaceutically acceptable base or acid addition salt thereof, wherein
Me is methyl;
X is O;
R_8 is hydrogen or methyl;
Y is

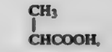








hydroxymethyl, NR_6R_7, nitro or halogen;
R_4 is H or lower alkyl;
R_5 is lower alkyl, phenyl or phenyl substituted as defined above, or CF_3;
R_6 is H or lower alkyl;
R_7 is lower alkyl;
Z is O, S, NH, NCN; and
W is CO_2R_7 wherein R_7 is as defined above, $(CH_2)_mCOOH$,



$(CH_2)_mOH$, or $C(CH_2OH)_3$.

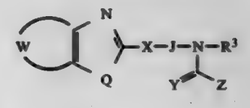
5,290,801

BENZIMIDAZOLES FOR THE TREATMENT OF ATHEROSCLEROSIS

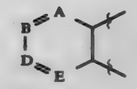
C. Anne Higley, Newark; Thomas P. Muduskaie, Jr.; Ruth R. Wexler, both of Wilmington, and Richard G. Wilde, New Castle, all of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 29, 1992, Ser. No. 889,909
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—395 **8 Claims**

1. A method of treating hypercholesterolemia or atherosclerosis in a mammal in need of such treatement comprising administering to the mammal a therapeutically effective amount of a compound of the formula (I):



wherein
W is:



A, B, D, and E are each CR^1;
Q is NH, NCH_3;
X is $S(O)_n$, O, NR^5 or CH_2;
J is C_2–C_{10} alkyl, C_3–C_{10} branched alkyl, C_3–C_{10} alkenyl or C_3–C_{10} alkynyl;
Y is O, S, or NH;
Z is NHR^4, OR^4 or R^4;
R^3 is C_1–C_8 alkyl, C_3–C_8 branched alkyl, C_3–C_7 cycloalkyl, C_3–C_8 alkenyl or alkynyl, C_7–C_{14} aralkyl where the aryl group is optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, F, Br, Cl, OH, CN, CO_2H, CF_3, Carbo(C_1–$_4$)alkoxy, NR^6R^7 or NR^6COR^7; phenyl optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, F, BR, Cl, OH, CN, CO_2H, CF_3, Carbo(C_1–C_4)alkoxy, NR^6R^7 or NR^6COR^7; benzyl optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, F, Br, Cl, OH, CN, CO_2H, CF_3, C_1–C_4 carboalkoxy, NR^6R^7 or NR^6COR^7; 2-, 3-, or 4-pyridinyl, pyrimidinyl; or biphenyl;
R^4 is C_1–C_8 branched alkyl, C_3–C_7 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_3–C_6 alkenyl or alkynyl, C_1–C_3 perfluoroalkyl,
C_7–C_{14} aralkyl where the aryl group is optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, C_3–C_8 branched alkyl, F, Br, Cl, OH, CN, CO_2H, CF_3, Carbo(C_1–C_4)alkoxy, NR^6R^7 or NR^6COR^7; phenyl optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, C_3–C_8 branched alkyl, F, Br, Cl, OH, CN, CO_2H, CF_3, Carbo(C_1–C_4)alkoxy, NR^6R^7 or NR^6COR^7; benzyl optionally substituted with 1 to 3 groups selected from C_1–C_4 alkyl or alkoxy, C_3–C_8 branched alkyl, F, Br, Cl, OH, CN, CO_2H, CF_3, C_1–C_4 carboalkoxy, NR^6R^7 or NR^6COR^7; 2-, 3-, or 4-pyridinyl, pyrimidinyl; or biphenyl;
R^5 is H, C_1–C_6 alkyl or benzyl;

R^6 and R^7 are selected independently from H or C_1–C_4 alkyl;
r is 0 or 2;
or a pharmaceutically acceptable salt thereof.

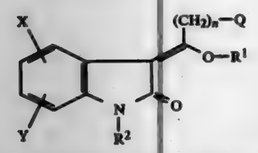
5,290,802

3-SUBSTITUTED-2-OXINDOLE DERIVATIVES

Frederick J. Ehrgott, Killingworth; Carl J. Goddard, Groton, and Gary R. Schulte, Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 473,248, Jan. 31, 1990, Pat. No. 5,047,554, which is a continuation-in-part of Ser. No. 340,113, Apr. 18, 1989, abandoned. This application Jun. 5, 1991, Ser. No. 712,169
Int. Cl.[5] A61K *31/405, 31/415, 31/42, 31/425*
U.S. Cl. 514—414 94 Claims

1. A compound of the formula



(I)

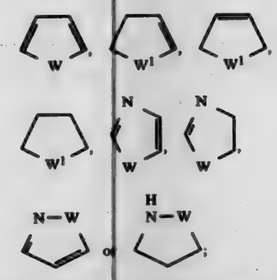
and the pharmaceutically acceptable salts thereof, wherein
X is H, F, Cl, Br, $(C_1$–$C_6)$alkyl, $(C_3$–$C_8)$cycloalkyl, NO_2, CF_3, CN, SH, $S(O)_mR^3$, OR^4, COR^4 or $CONR^4R^5$;
Y is H, F, Cl, Br, $(C_1$–$C_6)$alkyl, $(C_3$–$C_8)$cycloalkyl, NO_2, CF_3, CN, SH, $S(O)_tR^{17}$, OR^{18}, COR^{18} or $CONR^{18}R^{19}$;
R^1 is H, alkanoyl of two to ten carbon atoms, cycloalkylcarbonyl of five to seven carbon atoms, phenylalkanoyl of seven to ten carbon atoms, chlorobenzoyl, methoxybenzoyl, thenoyl, omega-alkoxycarbonylalkanoyl, said alkoxy having one to three carbon atoms and said alkanoyl having three to five carbon atoms, alkoxy carbonyl of two to ten carbon atoms, phenoxycarbonyl, 1-(acyloxy)alkyl wherein acyl has one to four carbon atoms and said alkyl has two to four carbon atoms, 1-(alkoxycarbonyloxy)alkyl wherein said alkoxy has two to five carbon atoms and said alkyl has one to four carbon atoms, alkyl of one to three carbon atoms, alkylsalfonyl of one to three carbon atoms, methylphenylsulfonyl or dialkylphosphonate wherein each of said alkyl is one to three carbon atoms;
R^2 is COR^6, $CONR^7R^8$, $(C_1$–$C_6)$ alkyl, $(C_3$–$C_8)$ cycloalkyl, phenyl or mono- or disubstituted phenyl wherein the substituent or substituents are each Cl, F, Br, $(C_1$–$C_6)$ alkyl, $(C_1$–$C_6)$ alkoxy or CF_3;
Q is



A is H, F, Cl, Br, I, CF_3, OR^9, $S(O)_pR^{10}$, $COOR^{11}$, $CONR^9R^{11}$, CN, NO_2, COR^{10}, CH_2OR^{11}, NR^9R^{11}, $N(R^9)COR^{11}$, $SO_2NR^9R^{11}$ or



B is H, F, CL, Br, I, CF_3, OR^{13}, $S(O)_rR^{14}$, $COOR^{15}$, $CONR^{13}R^{15}$, CN, NO_2, COR^{14}, CH_2OR^{15}, $OCOR^{14}$, $NR^{13}R^{15}$, $N(R^{13})COR^{15}$ or $SO_2NR^{13}R^{15}$;
provided that A and B cannot both be H, or A and B are taken together, bonded to the same ring carbon of Q^1 and equal oxo, or when A is not H, B is defined as above or $(C_1$–$C_4)$ alkyl;
Q^1 is



m, n, p, q and t are each zero, one or two;
W is O, S or NR^{11};
W^1 is O,S or NR^{10};
R^3, R^6, R^{10}, R^{14} and R^{17} are each $(C_1$–$C_6)$ alkyl or phenyl; R^5, R^8, R^{11}, R^{15} and R^{19} are each H, $(C_1$–$C_6)$ alkyl or phenyl; R^4, R^7, R^9, R^{13} and R^{18} are each H or $(C_1$–$C_6)$ alkyl; and R^{12} is H, F, Cl, Br, CF_3 or $(C_1$–$C_6)$ alkyl.

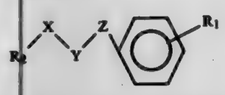
5,290,803

USING ALLOSTERIC HEMOGLOBIN MODIFIERS TO DECREASE OXYGEN AFFINITY IN BLOOD

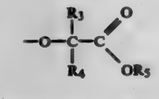
Donald J. Abraham, Midlothian, Va.; Mona Mahran, Alexandria, Egypt; Ahmed Mehanna, Winchester, Mass., and Ramnarayan Randad, Richmond, Va., assignors to The Center of Innovative Technology, Herndon, Va.

Continuation of Ser. No. 885,721, May 18, 1992, Pat. No. 5,248,785, which is a continuation-in-part of Ser. No. 702,947, May 20, 1991, Pat. No. 5,122,539, which is a continuation-in-part of Ser. No. 478,848, Feb. 12, 1990, Pat. No. 5,049,695. This application Jan. 19, 1993, Ser. No. 6,246
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/40, 31/325;* C07C *45/00*
U.S. Cl. 514—421 8 Claims

1. A method for allosterically modifying hemoglobin comprising the step of exposing hemoglobin to a compound of the general structural formula:



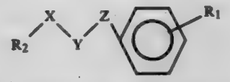
where R_2 is a substituted or unsubstituted aromatic compound, or a substituted or unsubstituted alkyl ring compound, or a substituted or unsubstituted phthalimide compound where X is a carboxyl, Y is a nitrogen and R_2 completes the phthalimide compound by being bonded to both X and Y,
and where X, Y, and Z are CH_2, NH, CO, O or N with the caveat that the X, Y, and Z moieties are each different from one another,
and where R_1 has the formula[.



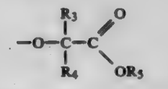
where R_1 can be connected to any position on the phenyl ring, and
where R_3 and R_4 are hydrogen, halogen, methyl, or ethyl groups and these moieties may be the same or different, or

alkyl moieties as part of an aliphatic ring connecting R_3 and R_4, and
where R_5 is a hydrogen, halogen, C_{1-3} loweralkyl, or a salt cation.

3. A method for treating blood such that hemoglobin in said blood is allosterically modified towards a low oxygen affinity state, comprising the step of exposing said blood to a compound of the general structural formula:

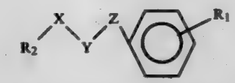


where R_2 is a substituted or unsubstituted aromatic compound, or a substituted or unsubstituted alkyl ring compound, or a substituted or unsubstituted phthalimide compound where X is a carboxyl, Y is a nitrogen and R_2 completes the phthalimide compound by being bonded to both X and Y,
and where X, Y, and Z are CH_2, NH, CO, O or N with the caveat that the X, Y, and Z moieties are each different from one another.
and where R_1 has the formula:

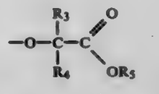


where R_1 can be connected to any position on the phenyl ring, and
where R_3 and R_4 are hydrogen, halogen, methyl, or ethyl groups and these moieties may be the same or different, or alkyl moieties as part of an aliphatic ring connecting R_3 and R_4, and
where R_5 is a hydrogen, halogen, C_{1-3} loweralkyl, or a salt cation.

5. A method of storing blood, comprising the steps of exposing blood to be stored to a compound of the general structure formula:



where R_2 is a substituted or unsubstituted aromatic compound, or a substituted or unsubstituted alkyl ring compound, or a substituted or unsubstituted phthalimide compound where X is a carboxyl, Y is a nitrogen and R_2 completes the phthalimide compound by being bonded to both X and Y,
and where X, Y, and Z are CH_2, NH, CO, O or N with the caveat that the X, Y, and Z moieties are each different from one another,
and where R_1 has the formula:



where R_1 can be connected -o any position on the phenyl ring, and
where R_3 and R_4 are hydrogen, halogen, methyl, or ethyl groups and these moieties may be the same or different, or alkyl moieties as part of an aliphatic ring connecting R_3 and R_4, and
where R_5 is a hydrogen halogen, C_{1-3} loweralkyl, or a salt cation.

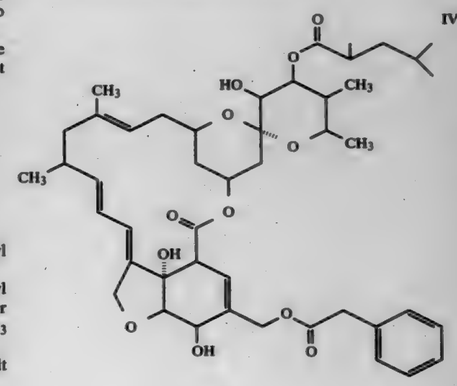
5,290,804

ANTHELMINTIC MILBEMYCIN ANALOGS OF NOVEL MICROORGANISMS

Robert T. Goegelman, Linden, N.J.; Elvira Munguira; Maria T. Diez Matas, both of Madrid, Spain; Ruth S. Sykes; Yu L. Kong, both of Edison, N.J.; Jerrold M. Licsch, Princeton Junction, N.J.; Gregory L. Helms, Fanwood, N.J., and E. Tracy Turner Jones, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

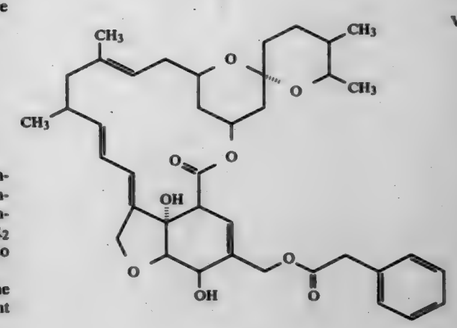
Continuation-in-part of Ser. No. 694,165, May 1, 1991, abandoned. This application Apr. 13, 1992, Ser. No. 867,573
Int. Cl.[5] A61K *31/365;* C07D *315/00*
U.S. Cl. 514—450 5 Claims

1. Compounds having the formulae



IV

or



V

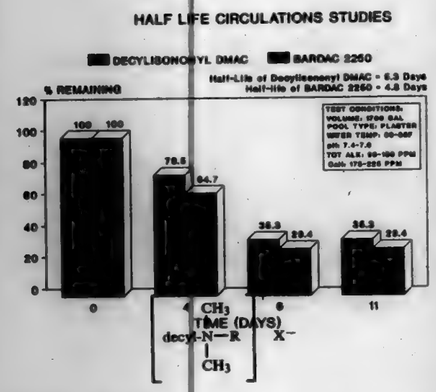
5,290,805

BIOCIDAL DECYLNONYL- AND DECYLISONONYL DIMETHYLAMMONIUM COMPOUNDS

David W. Eastman, Riverdale; Kenneth J. Izadoil, Hawthorne, and Chuen-Ing J. Tseng, Edison; all of N.J., assignors to Lonza Inc., Fair Lawn, N.J.

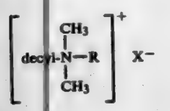
Filed Nov. 12, 1991, Ser. No. 790,775
Int. Cl.[5] A01N *33/12;* C02F *1/50*
U.S. Cl. 514—642 7 Claims

1. A biocidal quaternary ammonium compound for use in water treatment having the structural formula:



wherein X is chloride, bromide, iodide, or alkyl carboxylate anion having a C_1–C_{18} alkyl radical, and R is n-nonyl or isononyl.

5. An aqueous solution comprising a biocidal quaternary ammonium compound of the structural formula:



wherein X is chloride, bromide, iodide, or alkyl carboxylate anion having a C_1–C_{18} alkyl radical, and R is n-nonyl or isononyl, the ammonium compound being present in the solution in an amount ranging between about 5 and 90 wt %.

5,290,806

4-(4-TERT-BUTYLPHENYL) CYCLOHEXYLAMINES, AND FUNGICIDES CONTAINING SAME

Bernhard Zipperer, Dirmstein; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 860,290, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 662,625, Feb. 28, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 85,255

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1990, 4006937

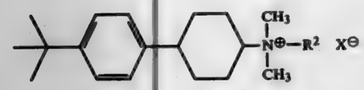
Int. Cl.[5] A01N *33/12*; C07C *255/00, 211/00*

U.S. Cl. 514—643 **7 Claims**

1. A 4-(4-tert-butylphenyl-cyclohexylamine and quaternary ammonium salts thereof of the formulae



and



where

R^1 is hydrogen, C_1–C_6-alkyl or C_3–C_6-alkenyl,

R^2 is C_1–C_{12}-alkyl C_1–C_{12}-haloalkyl, C_1–C_{12}-hydroxyalkyl, C_3–C_{12}cycloalkyl, C_4–C_{12}-alkylcycloalkyl, C_7–C_{12}-bicycloalkyl, C_3–C_{12}-alkenyl, unsubstituted, monosubstituted, disubstituted or trisubstituted phenyl, or unsubstituted, monosubstituted, disubstituted or trisubstituted phenyl-(C_1–C_3)alkyl, the substituents in each case being identical or different and being C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, halogen, cyano, hydroxyl or nitro groups, with the proviso that R^1 and R^2 are not simultaneously C_1–C_4-alkyl,

$X^{\ominus}$ is a plant-tolerated acid anion,

and plant-tolerated acid addition salts thereof.

5,290,807

METHOD FOR REGRESSING ANGIOGENESIS USING O-SUBSTITUTED FUMAGILLOL DERIVATIVES

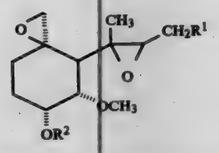
Moses J. Folkman, Brookline, and Donald Ingber, Boston, both of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Continuation of Ser. No. 811,800, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 391,980, Aug. 10, 1989, abandoned. This application Jul. 21, 1992, Ser. No. 917,827

Int. Cl.[5] A61K *31/335*

U.S. Cl. 514—475 **7 Claims**

1. A method for regressing angiogenesis in a mammal, which comprises administering an effective amount of an O-substituted fumagillol derivative or a pharmaceutically acceptable salt thereof to the mammal, wherein the O-substituted fumagillol derivative is a compound of the formula:



wherein R^1 is a 2-methyl-1-propenyl or isobutyl group which may be substituted with a substituent selected from the group consisting of hydroxyl, amino, C_{1-3} alkylamino, or di-C_{1-3} alkylamino, and R^2 is (1) (i) a carbamoyl group, which may optionally be substituted with from one to two substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkanoyl, chloroacetyl, dichloroacetyl, trichloroacetyl, C_{1-6} alkoxycarbonylmethyl, carboxymethyl, amino, phenyl, wherein the phenyl substituent may be substituted with from one to five substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkoxy, halogen, halo-C_{1-6} alkyl or nitro, naphthyl, benzoyl, halogenated C_{1-6} alkyl, di-C_{1-6} alkylamino-C_{1-6} alkyl, C_{1-6} alkanoyloxy-C_{1-6} alkanoyl, C_{1-6} alkanoylthio-C_{1-6} alkanoyl, C_{1-6} alkylthio-C_{1-6} alkanoyl, arylthio-C_{1-6} alkanoyl, di-C_{1-6} alkylamino-C_{1-6} alkanoyl, ammonio-C_{1-6} alkanoyl.halide, C_{1-6} alkoxycarbonyl, phenoxycarbonyl, chloroacetylcarbamoyl, benzoylcarbamoyl, phenylsulfonyl, wherein the phenylsulfonyl substituent may be substituted with from one to five substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkoxy, halogen, halo-C_{1-6} alkyl or nitro, or di-C_{1-6} alkylsulfonio-C_{1-6} alkanoyl.halide, or (ii) a cyclic amino-carbonyl group selected from the group consisting of pyrrolidin-1-yl-carbonyl, piperidino-carbonyl, morpholino-carbonyl, piperazin-1-yl-carbonyl, 4-methylpiperazin-1-yl-carbonyl, 4-ethylpiperazin-1-yl-carbonyl, 4-phenylpiperazin-1-yl-carbonyl or imidazol-1-yl-carbonyl; (2) an alkyl group, which may optionally be (i) substituted with from one to three substituents selected from the group consisting of amino, C_{1-6} alkylamino, di-C_{1-6} alkylamino, nitro, halogen, hydroxyl, C_{1-6} alkoxy, cyano, carbamoyl, carboxyl, C_{1-6} alkoxycarbonyl, carboxy-C_{1-6} alkoxy, or phenyl, wherein the phenyl substituent may be substituted with from one to five substituents selected from the

group consisting of C_{1-6} alkyl, C_{1-6} alkoxy, halogen, halo-C_{1-6} alkyl or nitro, or (ii) epoxidized; (3) a benzenesulfonyl group, which may be optionally substituted with from one to three substituents selected from the group consisting of C_{1-6} alkyl and halogen; (4) an alkylsulfonyl group, which may be optionally substituted with from one to three substituents selected from the group consisting of amino, C_{1-6} alkylamino, di-C_{1-6} alkylamino, nitro, halogen, hydroxyl, C_{1-6} alkoxy, cyano, carbamoyl, C_{1-6} alkoxycarbonyl, carboxy-C_{1-6} alkoxy, and phenyl, wherein the phenyl substituent may be substituted with from one to five substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkoxy, halogen, halo-C_{1-6} alkyl or nitro; (5) a sulfamoyl group, which may optionally be substituted with from one or two substituents selected from the group consisting of C_{1-6} alkyl, or phenyl, wherein the phenyl substituent may be substituted with one to five substituents selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkoxy, halogen, halo-C_{1-6} alkyl and nitro; (6) an alkoxycarbonyl group, which may optionally be substituted with halogen; or (7) a phenoxycarbonyl group, which may optionally be substituted with from one to three substituents selected from the group consisting of C_{1-6} alkyl and halogen; or a pharmaceutically acceptable salt thereof.

5,290,808

METHOD TO CONTROL THE INTAKE OF FOOD

Robert D. Sofia, Willingboro, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Nov. 6, 1992, Ser. No. 973,114

Int. Cl.[5] A61K *31/27*

U.S. Cl. 514—483 **4 Claims**

1. A method for the suppression of appetite and the desire for food intake which comprises administering to a human or other warm-blooded animal in need of such treatment effective amounts of the compound 2-phenyl-1,3-propanediol dicarbamate in a suitable pharmaceutical carrier.

5,290,809

METHODS FOR THE TREATMENT OF SEBORRHEIC DERMATITIS

Ferdinando Ippolito, and Siro Passi, both of Rome, Italy, assignors to Istituto Fisioterapici Ospitalieri, Italy

Filed Jun. 2, 1992, Ser. No. 892,190

Claims priority, application Italy, Jun. 18, 1991, RM91A000435

Int. Cl.[5] A61K *31/355*

U.S. Cl. 514—458 **2 Claims**

1. A method for the treatment of seborrheic dermatitis in a subject, including HIV positive subjects, with a pharmaceutical preparation comprising, seborrheic dermatitis reducing amounts of methionine, vitamin E and selenium and a pharmaceutically-acceptable excipient, wherein the selenium is present in an amount ranging between 0.015 and 0.025% by weight of the methionine, characterized in that the daily administration to said subject of said active principles ranges between 600 and 1200 mg of L-methionine, 300–600 mg of vitamin E and 0.120–0.240 mg of selenium.

5,290,810

COMPOUND, USE AND PREPARATION

Peter W. Austin, Bury, England, assignor to Imperial Chemical Industries PLC, London, England

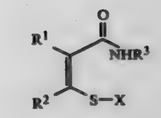
Filed Sep. 24, 1991, Ser. No. 764,643

Claims priority, application United Kingdom, Sep. 26, 1990, 9020924

Int. Cl.[5] C07C *331/08*

U.S. Cl. 514—516 **23 Claims**

1. A compound of the general formula I



I

wherein

R^1 and R^2 taken together represent a polymethylene chain having 3 or 4 carbon atoms or a polymethylene chain having 3 or 4 carbon atoms substituted by at least one lower alkyl radical having from 1 to 4 carbon atoms;

R^3 is hydrogen, hydrocarbyl or hydrocarbyl substituted with at least one atom selected from the group consisting of oxygen, nitrogen, sulphur and halogen;

X represents cyano, a group $—SO_3M$ or a group —S—R^4;

M represents a cation having a valency and being in an amount to give a neutral compound; and

R^4 represents hydrocarbyl or hydrocarbyl substituted with at least one atom selected from the group consisting of oxygen, nitrogen, sulphur and halogen.

5,290,811

USE OF 15-KETO-PROSTAGLANDIN COMPOUND FOR IMPROVEMENT OF ENCEPHALIC FUNCTION

Ryuji Ueno; Hiroyoshi Ozawa, and Tomio Oda, all of Hyogo, Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

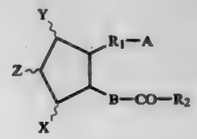
Division of Ser. No. 616,960, Nov. 21, 1990, Pat. No. 5,117,042. This application Oct. 16, 1991, Ser. No. 777,595

Claims priority, application Japan, Nov. 22, 1989, 1-303839; Jan. 17, 1990, 2-7611; Mar. 30, 1990, 2-85439

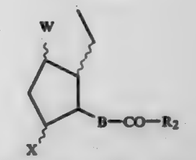
Int. Cl.[5] A61K *31/557*

U.S. Cl. 514—530 **30 Claims**

1. A method of treatment for improving a deterioration of encephalic function caused by a condition comprising or associated with ischemic lesion, hemorrhagic lesion, local or propagated pressure lesion due to edema or hydrocephalia or a disorder of cerebral metabolism secondarily induced by a disorder of cerebral circulation kinetics which comprises administering, to a subject in need of such treatment, a 15-keto-prostaglandin compound of the formulae (I) or (II)



(I)



(II)

wherein X and Y are hydrogen, hydroxy, halo, lower alkyl, hydroxy(lower)alkyl, or oxo with a proviso that in formula (I) at least one of X and Y is other than hydrogen and the five-membered ring may have at least one double bond, Z is hydrogen or halo, A is $—CH_2OH$, $—COCH_2OH$, —COOH or a salt, an ester or an amide of —COOH, B is $—CH_2—CH_2—$, —CH=CH— or —C≡C—, W is oxygen atom or carbon atom, R_1' is a bivalent saturated or unsaturated, lower or medium aliphatic hydrocarbon residue, which is unsubstituted or

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substituted with halogen, oxo, phenyl, tolyl, xylyl or thienyl, R_2 is saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, hydroxy, oxo, lower alkoxy, lower alkanoyloxy, cyclo(-lower)-alkyl, aryl or aryloxy and wherein in R_2 aryl and aryl of aryloxy are independently phenyl, tolyl, xylyl or thienyl, in an amount effective for improvement of encephalic function.

5,290,812

PHENOXYALKYLCARBOXYLIC ACID DERIVATIVES AND PROCESS OF PREPARING THE SAME

Mitsuo Ohashi, Omiya; Toshio Tanaka, Nogi; Norihisa Ishikawa, Oyama, and Tetsuya Kishi, Konosu, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

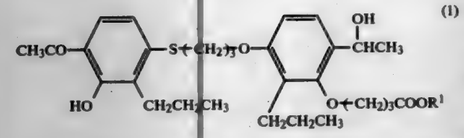
Filed Dec. 30, 1991, Ser. No. 814,477

Claims priority, application Japan, Jan. 18, 1991, 3-054207; Dec. 26, 1991, 3-359460

Int. Cl.[5] A61K *31/19, 31/235;* C07C *323/22, 69/612*

U.S. Cl. 514—545 5 Claims

1. A phenoxyalkylcarboxylic acid derivative or alkali salt thereof represented by a formula (1)



(1)

wherein R^1 denotes a hydrogen atom, methyl group or ethyl group.

5,290,813

CHEMICAL PREVENTION OR REVERSAL OF CATARACT BY PHASE SEPARATION INHIBITORS

John I. Clark, Seattle, Wash.; Geroge B. Benedek, Belmont, Mass.; Roelant J. Siezen, Ede, Netherlands; John A. Thomson, Laramie, Wyo., and Simon H. Friedman, San Francisco, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 942,326, Sep. 9, 1992, which is a continuation of Ser. No. 451,955, Dec. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 198,850, May 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,140, Jun. 4, 1987, abandoned. This application Aug. 9, 1993, Ser. No. 104,334

Int. Cl.[5] A61K *31/195, 31/045*

U.S. Cl. 514—563 2 Claims

1. A method for inhibiting cataractogenesis in an animal in need thereof, comprising administering to the animal a therapeutically or prophylactically effective amount of pantothenic acid.

5,290,814

ANTI-ATHEROSCLEROTIC DIARYL COMPOUNDS

William P. Jackson; Clifford J. Harris; Richard J. Arrowsmith; John G. Dann; Kevin J. O'Connor, and Robert F. G. Booth, all of Beckenham, United Kingdom, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 439,552, Nov. 20, 1989, abandoned. This application Nov. 5, 1992, Ser. No. 971,252

Claims priority, application United Kingdom, Nov. 21, 1988, 8827152

Int. Cl.[5] C07C *275/28, 279/18;* A61K *31/17, 31/155*

U.S. Cl. 514—596 4 Claims

1. The compound N-heptyl-N'-(2,4-difluoro-6-{2-[4-(2,2-dimethylpropyl)phenyl]ethyl}phenylurea.

5,290,815

TREATMENT OF INFLAMMATION AND ALLERGY

Malcolm Johnson, Orwell, and Clifford J. Whelan, Buntingford, both of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 578,353, Sep. 6, 1990, abandoned. This application Nov. 25, 1991, Ser. No. 799,001

Claims priority, application United Kingdom, Sep. 7, 1989, 8920235; May 29, 1990, 9011940

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—651 3 Claims

1. A method of treatment of a mammal, including man, suffering from the late asthmatic reaction which comprises administering an effective amount of 4-hydroxy-α^1-[[[6-(4-phenylbutoxy)hexyl]amino]methyl]-1,3-benzenedimethanol or a physiologically acceptable salt or solvate thereof.

5,290,816

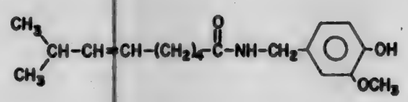
COMPOSITION OF RESINIFERATOXIN AND ANALOGUES THEREOF TO CAUSE SENSORY AFFERENT C-FIBER AND THERMOREGULATORY DESENSITIZATION

Peter M. Blumberg, Frederick, Md., assignor to The U.S. Government as represented by the Secretary of the Department Health and Human Services, Washington, D.C.

Division of Ser. No. 261,627, Oct. 24, 1988, Pat. No. 4,939,141. This application Jun. 21, 1990, Ser. No. 515,721

Int. Cl.[5] A61K *31/12*

U.S. Cl. 514—691 1 Claim



1. A topical composition in the form of a cream which comprises:

a therapeutically effective desensitizing amount of resiniferatoxin for desensitizing a subject to neurogenic inflammation, to chemically and thermally induced pain, to responses involving sensory afferent pathways sensitive to capsaicin or to responses involving the hypothalamic temperature control region, and

a pharmaceutically acceptable medical carrier or diluent therefor, with the proviso that said medical carrier or diluent is not dimethyl sulfoxide.

5,290,817

SUBSTITUTED 1-BENZYLINDANES AND THEIR USE AS INHIBITORS OF PHOSPHOLIPASE A_2

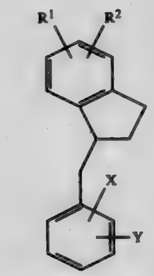
Joseph J. Petraitis, Glenmoore, Pa., assignor to The Du Pont Merck Pharmaceutical Co., Wilmington, Del.

Filed Jun. 9, 1992, Ser. No. 895,688

Int. Cl.[5] A61K *31/11;* C07C *47/52*

U.S. Cl. 514—700 27 Claims

1. A compound of formula I



I

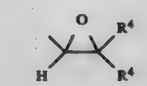
or a pharmaceutically acceptable salt thereof,

wherein:

R^1 is H, halo, alkyl of 1–4 carbon atoms, OR^3 or CO_2R^4;

R^2 is H or when R^1 is 6—OR^3, then R^2 may be 5—CO_2R^4;

X is COR^3, CO_2R^4, CN, NHR^4, $COCH_2R^5$, CHO, CH_2CHO, CH_2NH_2, CF_2CHO, $COCF_3$, C_1–C_4 alkyl, halo,



(II)

Y is H, or when X is —CHO, then Y may be ortho —OH relative to —CHO;

R^3 is alkyl of 1–4 carbon atoms;

R^4 is H or alkyl of 1–4 carbon atoms; and

R^5 is Cl, Br, or N_3; provided that:

(a) when X is $COCH_2R^5$, then neither R^1 nor R^2 is CO_2H;

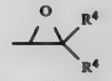
(b) when R^1 is OR^3, then X is not OR^3;

(c) when X is CHO and Y is OH, then R^1 is not OR^3;

(d) neither R^1 nor R^2, except when H, resides at the 7-position;

(e) when X is CF_2CHO then neither R^1 nor R^2 is CO_2R^4;

(f) when R^1 is 6—OR^3 and R^2 is 5—CO_2R^4, then X is CH_2CHO, or



(g) when R^1 or R^2 is CO_2R^4 and X is CO_2R^4, then R^4 is the same in R^1 or R^2 and in X.

5,290,818

FLEXIBLE POLYURETHANE REBOND FOAM HAVING IMPROVED TEAR RESISTANCE AND METHOD FOR THE PREPARATION THEREOF

John L. Nafziger, Lake Jackson; Steven B. Loweakron, Houston; Charles E. Koehler, Baytown, and Bruce N. Stevens, Longview, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 11, 1992, Ser. No. 989,256

Int. Cl.[5] C08J *9/224, 9/236*

U.S. Cl. 521—54 14 Claims

1. A method for preparing a flexible polyurethane rebond foam comprising a first step of applying a binder prepared from a formulation including:

(A) methylene diphenyldiisocyanate or polymethylene polyphenyl polyisocyanate;

(B) toluene diisocyanate distillation bottoms; and

(C) an active hydrogen containing material; to a shredded flexible polyurethane foam as a coating, and a second step of compressing the coated foam in the presence of steam for a period sufficient to bind the shredded foam.

5,290,819

PREPARATION OF BEAD-FORM EXPANDABLE STYRENE POLYMERS

Michael Witt, Ludwigshafen, and Manfred Walter, Speyer, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 17, 1993, Ser. No. 77,432

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1992, 4220225

Int. Cl.[5] C08J *9/20*

U.S. Cl. 521—56 7 Claims

1. A process for the preparation of bead-form, expandable styrene polymers by polymerizing styrene, in the presence or absence of further comonomers, in aqueous suspension in the presence of suspension stabilizers and conventional styrene-soluble polymerization catalysts and with addition of from 1 to 10% by weight of a C_3- to C_7-hydrocarbon and/or carbon dioxide as blowing agent and, optionally, conventional additives in effective amounts, which comprises using, as suspension stabilizer, a mixture of magnesium pyrophosphate, a sulfonate group-containing extender and an alkali metal or alkaline earth metal carboxylate, the magnesium pyrophosphate being prepared immediately before the polymerization by combining an aqueous solution of an alkali metal pyrophosphate with at least the stoichiometrically necessary amount of a magnesium salt.

5,290,820

PROCESS FOR PREPARING LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Thomas F. Brownscombe; Ronald M. Bass, and Larry S. Corley, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 29, 1993, Ser. No. 99,018

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—64 43 Claims

1. A process for the production of a porous crosslinked polymeric material comprising:

(a) providing an aqueous mixture comprising water an electorlyte;

(b) advancing one or more vinyl monomers in the presence of an effective amount of an advancement initiator or by a free-radical-producing radiation source to produce an advanced monomer component having a viscosity ratio of advanced monomer component to the non-advanced monomer of greater than 1.00;

(c) adding one or more multifunctional unsaturated crosslinking monomers (i) to the one or more vinyl monomers prior to advancing in step (b), (ii) to the advanced monomer component prior to emulsion forming step (e), or to both (i) and (ii) to form an advanced monomer mixture;

(d) providing a surfactant to the aqueous mixture, the vinyl monomer, the advanced monomer component, the advanced monomer mixture, or any combinations of the aqueous mixture, vinyl monomer, advanced monomer component and advanced monomer mixture;

(e) combining and mixing said aqueous mixture and said advanced monomer mixture in a mixing vessel under conditions effective to produce a water-in-oil emulsion having at least 90 weight percent, based on the emulsion, of water as the internal phase;

(f) heating the emulsion at a temperature of at least about 25° C. to polymerize and crosslink the advanced monomers; and

(g) removing at least a portion of water from said crosslinked emulsion thereby producing a porous cross-linked polymeric material.

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5,290,821

ELECTRO-RESPONSIVE ELASTOMERIC MATERIAL

Ryo Sakurai, Kodaira; Yasuo Kurachi, Tokyo; Yoshiki Fukuyama; Takayuki Maruyama, both of Kodaira, and Tasuku Saito, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,734
Claims priority, application Japan, Oct. 28, 1991, 3-308437
Int. Cl.[5] C08K *13/02*
U.S. Cl. 521—82 16 Claims

1. An electro-responsive elastomeric material comprising

(A) an electrically insulating polymer having a modulus of elasticity of 10^5 to 10^9 dyne/cm^2, and

(B) a fine powder dispersed in said polymer, which fine powder electrically polarizes under an electric field independent of water and has a mean particle size of 0.5 to 500 μm, said powder being at least one member selected from the group consisting of

(1) a fine carbonaceous powder having a carbon-to-hydrogen atomic ratio of from 1.2 to 5,

(2) minute particulate-dispersing composite particles having minute particulates of an insulating material of about 1 nm to about 1 μm dispersed in a matrix phase of a carbonaceous or carbide material,

(3) minute particulate-dispersing composite particles having minute particulates of a carbonaceous or carbide material of about 1 nm to about 1 μm dispersed in a matrix phase of an insulating material, and

(4) a fine composite powder of a stratum clay mineral having a two dimensional stratum structure with a carbonaceous or carbide material incorporated between the strata.

9. An electro-responsive elastomeric material according to claim 1 wherein insulating polymer (A) is comprised of a crosslinked rubber having an unsaturated carbon-to-carbon bond in its backbone or an inorganic crosslinked rubber.

10. An electro-responsive elastomeric material according to claim 9 wherein said rubber is expanded.

5,290,822

ULTRA LOW DENSITY POLYOLEFIN FOAM, FOAMABLE POLYOLEFIN COMPOSITIONS AND PROCESS FOR MAKING SAME

John E. Rogers, Saratoga Springs, and Ronnie D. Kisner, Queensbury, both of N.Y., assignors to Astro-Valcour, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 935,783, Aug. 27, 1992, Pat. No. 5,225,451. This application Jun. 21, 1993, Ser. No. 79,383
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—94 7 Claims

1. A polyolefin foam having a density of about 0.6 to about 1.5 pounds per cubic foot and improved thermal stability comprising (1) a non-elastomeric olefin polymer resin selected from the group consisting of ethylene homopolymers, non-elastomeric copolymers of ethylene and a copolymerizable monomer, and propylene homopolymers; (2) an elastomer in an amount of about 3 to about 30 wt. parts per 100 wt. parts of said non-elastomeric olefin polymer resin; (3) polystyrene in an amount of about 1 to about 15 wt. parts per 100 wt. parts of said olefin polymer resin; and (4) a stability control agent selected from the group consisting of partial esters of long chain fatty acids with polyols, higher alkyl amines, fatty acid amides, and olefinically unsaturated carboxylic acid copolymers, foamed by (5) a hydrocarbon blowing agent having from 1 to 6 carbon atoms and a boiling point between −175° C. and 50° C.

5,290,823

PRODUCTION OF RIGID POLYURETHANE FOAMS, AND A BLOWING AGENT MIXTURE FOR THIS PURPOSE

Otto Volkert, Weisenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 11, 1993, Ser. No. 3,088
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1992, 4200558
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—131 13 Claims

1. A process for the production of rigid polyurethane foams by reacting

a) organic and/or modified organic polyisocyanates with

b) at least one relatively high-molecular-weight compound containing at least two reactive hydrogen atoms, and, if desired,

c) low-molecular-weight chain extenders and/or crosslinking agents, in the presence of

d) blowing agents,

e) catalysts and, if desired,

f) assistants and/or additives,

which comprises using, as blowing agent (d), a mixture of

(d1) from 5 to 40% by weight of at least one highly fluorinated and/or perfluorinated organic compound, said highly fluorinated organic compound being at least 85% fluorinated,

(d2) from 30 to 95% by weight of cyclopentane and

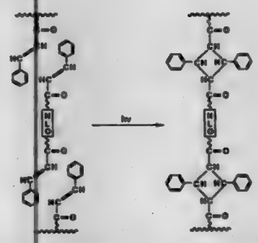
(d3) from 0 to 45% by weight of at least one aliphatic and/or cycloaliphatic hydrocarbon having 4 to 8 carbon atoms.

5,290,824

PHOTOCROSSLINKED SECOND ORDER NONLINEAR OPTICAL POLYMERS

Braja K. Mandal, Lowell; Sukant K. Tripathy, Acton; Jan-Chuan Huang, and Jayant Kumar, both of Lowell, all of Mass., assignors to University of Lowell, Lowell, Mass.

Division of Ser. No. 573,253, Aug. 24, 1990, Pat. No. 5,112,881. This application May 12, 1992, Ser. No. 881,609
Int. Cl.[5] C08F *2/46*
U.S. Cl. 522—75 14 Claims



1. A method of forming a crosslinked nonlinear optical polymer, comprising the steps of:

a) forming a solution of,

i) a nonlinear optical component which includes at least two photosensitive functional groups, and

ii) a host polymer component which includes a plurality of photosensitive functional groups;

b) exposing the solution to an electric field which causes poling of the nonlinear optical component; and

c) exposing the solution to sufficient electromagnetic radiation to cause the photosensitive functional groups of the host polymer component to react with the photosensitive functional groups of the nonlinear optical component to cause the nonlinear optical component to crosslink the host polymer component, thereby forming a photocrosslinked nonlinear optical polymer.

5,290,825

COMPOSITION AND METHOD FOR INHIBITING THE CURE OF CYANOACRYLATE ADHESIVES AND CURE INHIBITED CYANOACRYLATE ADHESIVE COMPOSITIONS

Warren G. Lazar, 8401 N. Rancho Catalina Dr., Tucson, Ariz. 85704

Continuation of Ser. No. 925,226, Aug. 3, 1992, abandoned, which is a continuation of Ser. No. 719,063, Jun. 19, 1991, abandoned, which is a division of Ser. No. 511,850, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 287,568, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 96,816, Sep. 10, 1987, abandoned, which is a continuation of Ser. No. 883,274, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 735,440, May 17, 1985, abandoned. This application Apr. 2, 1993, Ser. No. 41,879
Int. Cl.[5] C09J *4/04*
U.S. Cl. 523—176 8 Claims

1. A method for inhibiting the activation of polymerization of monomeric cyanoacrylate compositions in the presence of a substance that acts as an activator for said polymerization, the method comprising:

adding to said cyanoacrylate composition as activator a member of the group consisting of powders of palladium, silver, copper, tin, gold, platinum, iron, aluminum, metal oxides, calcium sulfide, cadmium selenide, cadmium sulfoselenide, wool and paper fiber,

adding to the cyanoacrylate composition prior to or simultaneously with the addition of said activator an inhibitor composition in an amount effective to at least delay activation of the polymerization by said activator, said inhibitor composition comprising

0.002 to about 55% of at least one organic acid; and

0.002 to about 50% of at least one hydrated or anhydrous base metal halide; and

0 to about 75% of a polar solvent; wherein said percentages are by weight based on the weight of said inhibitor.

5,290,826

TWO-PART, ULTRA LOW MODULUS SILICONE SEALANT

Richard A. Palmer, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 15, 1990, Ser. No. 523,512
Int. Cl.[5] C08K *9/00*
U.S. Cl. 523—200 10 Claims

1. A two-part composition which is stable on storage as two parts and curable at room temperature, upon mixing of an equal weight of the two parts, to yield a silicone elastomer, the composition consisting essentially of

Part 1, consisting essentially of the product obtained by mixing under anhydrous conditions

(A) 100 parts by weight of a hydroxyl radical endblocked polydiorganosiloxane having a viscosity at 25° C. of from 5 to 100 Pa.s and in which the organic groups are selected from the group consisting of methyl, ethyl, vinyl, phenyl, and 3,3,3-trifluoropropyl radicals, in said polydiorganosiloxane no more than 50 percent of the organic groups being phenyl or 3,3,3-trifluoropropyl radicals and no more than 10 percent of the organic groups being vinyl radicals,

(B) from 25 to 150 parts by weight of non-acidic, non reinforcing filler having an average particle size of from 1 to 8 micrometers,

(C) from 2.5 to 10 parts by weight of a silane of the general formula



$$(CH_2{=}CH)(CH_3)Si(N{-}CCH_3)_2$$

in which R′ is an organic radical selected from the group consisting of methyl, ethyl, and phenyl, said silane being present in an amount sufficient to provide at least one silane molecule per hydroxyl radical of the polydiorganosiloxane,

(D) from 1 to 6 parts by weight of an aminoxysilicone compound having from 1 to 100 silicon atoms per molecule and from 3 to 10 aminoxy groups per molecule, said aminoxy group having a general formula —OX in which X is a monovalent amine radical selected from the group consisting of —NR_2 and a heterocyclic amine, R is a monovalent hydrocarbon radical, the —OX group being bonded to silicon through the SiO bond, the remaining valences of the silicon atoms in the aminoxysilicone compound being satisfied by divalent oxygen atoms which link the silicon atoms of the aminoxysilicone compounds having two or more silicon atoms per molecule through silicon-oxygen-silicon bonds and by monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals bonded to the silicon atoms through silicon-carbon bonds, there being an average of at least one monovalent hydrocarbon radical or halogenated monovalent hydrocarbon radical per silicon atom,

(E) from 0 to 20 percent by weight of the combination of part 1 and part 2 of a diluent consisting of non-reactive silicone fluid having a viscosity of from 1 to 100 Pa.s at 20° C., and Part 2, consisting essentially of the product obtained by mixing

(F) 100 parts by weight of (A),

(G) from 25 to 150 parts by weight of (B),

(H) from 0 to 20 percent of the weight of the combination of part 1 and part 2 of (E), and

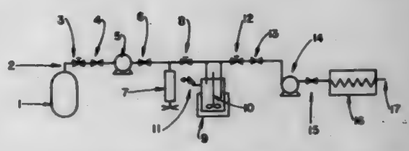
(I) from 0.2 to 4 parts by weight of water, and when equal weights of part 1 and part 2 are combined said silane (C) and said aminoxysilicone compound (D) being present in amounts sufficient to provide a combined weight of at least 5 parts by weight per 100 parts by weight of (A), and said aminoxysilicone compound (D) being present in an amount which is not greater than the weight of silane (C), said composition curing to a non-flowing gel in less than 3 hours at a temperature of 25° C.

5,290,827

PRECIPITATION OF HOMOGENEOUS POLYMER MIXTURES FROM SUPERCRITICAL FLUID SOLUTIONS

Annette D. Shine, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Mar. 27, 1991, Ser. No. 675,789
Int. Cl.[5] C08K *5/01, 5/02*
U.S. Cl. 523—340 8 Claims



1. A process for preparing a homogeneous blend of otherwise thermodynamically immiscible polymers, comprising:

a) preparing a solution of said polymers in a supercritical fluid solvent to form a single-phase solution blend;,

b) rapidly expanding the solution from step (a) across a small diameter nozzle; and

c) removing said supercritical fluid solvent to precipitate the solid polymer blend at a final temperature which is no more than about 30° C. above the glass transition temperature of the polymer blend, whereby, the non-equilibrium homogeneous morphology of the blend is maintained.

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5,290,828

AQUEOUS DISPERSED ACRYLIC GRAFTED EPOXY POLYESTER PROTECTIVE COATINGS

Gary P. Craun, Berea; Daniel Bode, and Denise E. Yancey, both of Cleveland, all of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed Jun. 11, 1993, Ser. No. 75,398
Int. Cl.[5] C08G *59/16, 63/76;* C08K *3/20*
U.S. Cl. 523—423 11 Claims

1. An aqueous dispersed, low VOC coating composition containing a polymeric binder dispersed in water comprising:
an addition copolymer grafted epoxy-polyester terpolymer comprising by weight between about,
(a) 1% and 70% unsaturated polyester having a number average molecular weight between about 200 and 20,000 and produced by esterifying dicarboxylic acid and diol where said dicarboxylic acid comprises 1% to 5% unsaturated dicarboxylic acid;
(b) 5% and 80% epoxy resin;
(c) 5% and 70% addition copolymer grafted to said polyester and said epoxy resin, said addition copolymer comprising copolymerized ethylenically unsaturated monomers where said monomers comprise between 20% and 100% carboxyl functional ethylenic monomers with the balance being other ethylenic monomers, where said monomers are copolymerized in the presence of the unsaturated polyester and the epoxy resin to produce the addition copolymer grafted epoxy-polyester having an Acid Number above about 30.

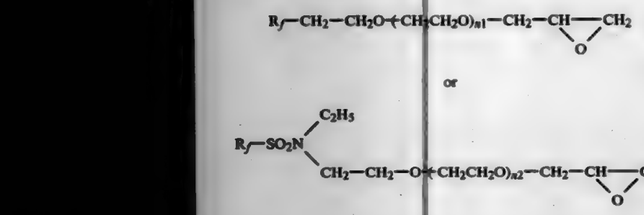
5,290,829

PERFLUORINATED ALKYL HYDROPHOBE HYDROXYALKYLCELLULOSE ASSOCIATIVE THICKENERS

John D. Angerer, Hockessin, Del.; Thomas G. Majewicz, Kennett Square, Pa., and Makram H. Meshreki, Wilmington, Del., assignors to Aqualon Company, Wilmington, Del.

Filed Apr. 2, 1992, Ser. No. 862,416
Int. Cl.[5] C08B *11/08, 11/08, 11/14;* C08J *3/05*
U.S. Cl. 524—31 13 Claims

1. An aqueous phase associative thickener, characterized in that the associative thickener is a hydroxyethylcellulose or hydroxypropylcellulose hydrophobically modified with a perfluorinated alkyl hydrophobe glycidyl ether having the following structure



where
n_1 is selected from the group consisting of 0, 5-6 or 9-10,
n_2 is selected from the group consisting of 0 or 12-13 and
R_f is selected from the group consisting of $F(CF_2)_y$ where y is 7-8.

5,290,830

RETICULATED BACTERIAL CELLULOSE REINFORCEMENT FOR ELASTOMERS

William C. Tung; Deborah A. Tung, both of Tallmadge; Douglas D. Callander, Akron, and Richard G. Bauer, Kent, all of Ohio, assignors to The Goodyear Tire and Rubber Company, Akron, Ohio

Filed Nov. 6, 1991, Ser. No. 788,663
Int. Cl.[5] C08L *1/00, 1/02*
U.S. Cl. 524—35 5 Claims



1. A reinforced elastomeric article which has tensile properties and elongation properties substantially equivalent to the elastomer without fiber reinforcement, and a tensile modulus 25% to 400% greater than said elastomer wherein the elastomeric article comprises an elastomeric matrix having distributed therein a reinforcing amount of reticulated bacterial cellulose fiber wherein said fiber has an average diameter of about 0.1 micron.

5,290,831

MULTICOMPONENT ADHESIVE COMPOSITION

Vittorio Di Ruocco, and Fabio Garbassi, both of Novara, Italy, assignors to Ministero Dell'Universita e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Filed Apr. 23, 1992, Ser. No. 872,408
Claims priority, application Italy, Apr. 30, 1991, MI 91 A 001188
Int. Cl.[5] C09J *105/16*
U.S. Cl. 524—48 16 Claims

1. A multicomponent adhesive composition comprising:
(A) an elastomer dissolved in a polyumerizable acrylic monomer;
(B) a polymerization starter selected from the group consisting of peroxides, peracids, peresters, and oxaziridines;
(C) a starter activating agent; and
(D) a cyclodextrin, said polymerization starter being housed within said cyclodextrin.

5,290,832

MOLDINGS

Thomas Schwerzel, Meckenheim; Kurt Wendel, Ludwigshafen; Thomas Anselmann, Landau, and Ruediger Fuenal, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 957,167
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133190
Int. Cl.[5] C08K *5/15;* C08L *5/00*
U.S. Cl. 524—56 12 Claims

1. A molding comprising finely divided organic material, inorganic material or mixtures thereof, and as a binder, the solid component of an aqueous polymer dispersion obtained by free-radical aqueous emulsion polymerization of unsaturated monomers in the presence of at least 20% by weight, based on the unsaturated monomer, of a saccharide selected from the group consisting of a monosaccharide, oligosaccharide, polysaccharide, oxidatively degraded polysaccharide, hydrolytically degraded polysaccharide, enzymatically degraded polysaccharide, chemically modified monosaccharide, chemically modified oligosaccharide, chemically modified polysaccharide and a mixture of said saccharides.

5,290,833

AGGREGATE OF ASPHALT AND FILLER

Donald W. Schmanski, Carson City, Nev., assignor to Carsonite International Corporation, Carson City, Nev.

Filed Jul. 1, 1992, Ser. No. 908,220
Int. Cl.[5] C08F *45/02;* C08L *7/00, 95/00*
U.S. Cl. 524—71 4 Claims

1. A method for preparing an asphalt paving material from asphalt, gravel and sand, said method comprising the steps of:
a) reducing recycled rubber to rubber particles having a size within the range of −16 to +6 mesh;
b) combining the rubber particles with flowable polymer binder to form an uncured composite having from 30% to 50% (w) rubber content with 70% to 50% (w) binder;
c) extruding the composite to form pellets having a size suitable for at least partially filling interstitial voids between gravel particles within the pavement material; and
d) mixing sufficient pellets with asphalt, gravel particles and sand to form a substantially uniform aggregate suspension wherein the pellets migrate with smaller sand particles into the interstitial voids between the gravel particles to form a compactable pavement material which is stable in heat and weatherable in cold environments.

5,290,834

METHOD FOR CONTROLLING ELUTION RATE OF AGENT

Osamu Kadota, Toyonaka, and Koichiro Tsurumi, Osaka, both of Japan, assignors to Rohm & Haas Company, Philadelphia, Pa.

Filed Dec. 4, 1991, Ser. No. 802,163
Int. Cl.[5] C08K *5/47;* C08L *33/14*
U.S. Cl. 524—83 4 Claims

1. A method for controlling an elution rate of a stainproofing agent being eluted from fibriform or corded materials immersed in seawater, which comprises treating said fibriform or corded materials, prior to said immersion, with a non-aqueous composition comprising:
A: 4,5-dichloro-2-n-octylisothiazoline-3-one;
B: a polymer selected from the group consisting of monopolymers of unsaturated monomers having the following formula (1), and hydrophilic copolymers of other unsaturated monomers copolymerizable with the above monopolymers,



(1)

(wherein X is hydrogen or methyl group, n_1 is an integer of 1–50, and R is an alkyl group or an acyl group having 1–18 carbon atoms);
C: one or more compounds selected from the following components of C1–C4;
C1: one or more members selected from dialkylpolysulfide derivatives having the following formula (2)



(2)

(wherein R^2, R^3 are respectively alkyl groups having 1–20 carbon atoms, and n_2 is an integer of 1–5),
C2; a polybutene having a degree of polymerization 2–100,
C3: a xylene/formaldehyde polycondensation products having an average molecular weight of 300–1000, and
C4: a C_9 aromatic hydrocarbon/formaldehyde polycondensation products having an average molecular weight of 350–700;
D: organic solvent for A, B, and C.

5,290,835

ELECTRICAL AND ELECTRONIC PARTS FORMED OF POLYBUTYLENE NAPHTHALENEDICARBOXYLATE

Toshio Hatayama; Mie Sasaki; Takeshi Kojima; Yoshinari Ogawa, all of Sagamihara; Sakae Shimotsuma, Atsugi, and Kouichi Sakai, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 21, 1992, Ser. No. 964,251
Claims priority, application Japan, Oct. 1, 1991, 3-313104; Oct. 28, 1991, 3-307187; Jan. 29, 1992, 4-014084
Int. Cl.[5] C08K *5/15, 3/10, 3/40*
U.S. Cl. 524—109 17 Claims

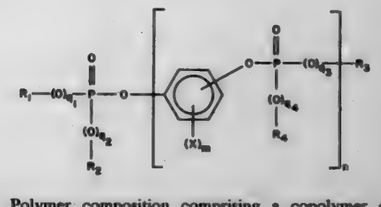
1. An electrical or electronic part formed from a polybutyiene naphthalenedicarboxylate resin as a raw material.

5,290,836

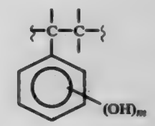
FLAME-RETARDANT POLYMER COMPOSITION

Jan H. Truyen, Heerlen, Netherlands, assignor to DSM N.V., Netherlands

Filed Oct. 23, 1992, Ser. No. 965,020
Claims priority, application Netherlands, Oct. 25, 1991, 9101794; Feb. 14, 1992, 9200269
Int. Cl.[5] C08K *5/52, 5/521*
U.S. Cl. 524—123 19 Claims



1. Polymer composition comprising a copolymer of a vinylaromatic compound, a vinyl cyanide and, optionally, a third monomer which copolymer is grafted on a rubber, a flame-retardant phosphorus compound and a charforming component, characterised in that the polymer composition also comprises a polymer P which comprises 1–100wt. % monomeric units with the following structure, the monomeric unit wt. % being relative to the amount of said polymer P



where m=1–5.

5,290,837

THERMOPLASTIC COMPOSITIONS BASED ON A POLYOLEFINE AND A VINYL AROMATICPOLYMER

Dario Ghidoni; Gian C. Fasulo; Aldo Longo, all of Mantova, and Italo Borghi, Ferrara, all of Italy, assignors to ECP Enichem Polimeri S.r.L., Milan, Italy

Filed Nov. 12, 1991, Ser. No. 789,925
Claims priority, application Italy, Nov. 12, 1990, 22022 A/90
Int. Cl.[5] C08L *25/02, 23/02, 53/02*
U.S. Cl. 524—126 21 Claims

1. A thermoplastic composition based on a polyolefin and a vinylaromatic polymer, having an improved combination of physical, mechanical and thermal properties, comprising:
from 40 to 80% by weight of a vinyl aromatic polymer (A) containing, as an elastomeric component, from 0.5 to 5%

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by weight of a vinyl aromatic monomer-conjugated diene linear block polymer and from 5 to 15% of a diene rubber; from 5 to 50% by weight of a polyolefin (B); and
from 10 to 50% by weight of an olefinic elastomer (C) containing, grafted thereon, a vinyl aromatic polymer, wherein the molar ratio between the vinyl aromatic polymer and the olefinic elastomer in the grafted phase is greater than 0.8; the sum of components (A), (B) and (C) being equal to 100%.

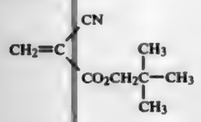
5,290,838

α-CYANOACRYLATE CONTAINING ADHESIVE COMPOSITION

Hiroyuki Mikuni, Sagamihara, and Toshiyuki Chikusa, Hachioji, both of Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Division of Ser. No. 732,457, Jul. 18, 1991, Pat. No. 5,175,337. This application Sep. 11, 1992, Ser. No. 943,507
Claims priority, application Japan, Aug. 7, 1990, 2-207679
Int. Cl.[5] C08K *5/42;* **C08F** *220/10*
U.S. Cl. 524—157 **7 Claims**

1. An adhesive composition comprising neopentyl α-cyanoacrylate having the formula



and a second α-cyanoacrylate.

5,290,839

POLYURETHANE SELF-PRIMING TOPCOATS

Charles R. Hegedus, Warrington, Pa.; Donald J. Hirst, Mt. Laurel, N.J., and Anthony T. Eng, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 812,174, Dec. 20, 1991, abandoned. This application Aug. 25, 1992, Ser. No. 936,983
Int. Cl.[5] C08L *75/04*
U.S. Cl. 124—204 **15 Claims**

1. A corrosion-resistant self-priming coating comprising from about 20 to 60 parts by weight of a polyurethane resin binder, 5 to 35 parts by weight of an alkaline earth metal phosphate, 0.5 to 5 parts by weight of a zinc benzoate, 5 to 30 parts weight of a metal molybdate-modified zinc phosphate, 5.0 to 35 parts by weight of titanium dioxide, 0 to 3.0 parts by weight of an oil soluble dispersing agent and 0 to 50 parts by weight of at least one organic solvent.

5,290,840

POLYURETHANE SELF-PRIMING TOPCOATS

Charles R. Hegedus, Warrington, Pa.; Donald J. Hirst, Mt. Laurel, N.J., and Anthony T. Eng, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 936,983, Aug. 25, 1992, which is a continuation-in-part of Ser. No. 812,174, Dec. 20, 1991. This application Sep. 29, 1992, Ser. No. 953,413
Int. Cl.[5] C08L *75/04*
U.S. Cl. 124—204 **13 Claims**

1. A corrosion-resistant self-priming coating comprising from about 25 to 55 parts by weight of a polyurethane resin binder, 1 to 30 parts by weight of an alkaline earth metal phosphate, 0.1 to 5 parts by weight of a zinc benzoate, 5 to 35 parts by weight of an alkaline earth metal metaborate, 5.0 to 40 parts by weight of titanium dioxide, 0 to 3.0 parts by weight of an oil soluble dispersing agent and 0 to 50 parts by weight of at least one organic solvent.

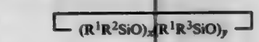
5,290,841

ORGANOCYCLOSILOXANE AND METHOD FOR ITS PREPARATION

Hiroji Enami, and Shoji Akamatsu, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 842,292, Feb. 26, 1992, Pat. No. 5,239,085. This application Feb. 16, 1993, Ser. No. 17,886
Int. Cl.[5] C08K *5/24*
U.S. Cl. 524—265 **7 Claims**

1. In a method for improving the mechanical properties of a plastic comprising adding a coupling agent thereto, the improvement comprising using a cyclosiloxane coupling agent having the general formula



wherein R^1 is independently selected from monovalent hydrocarbon groups having 1 to 8 carbons, R^2 is selected from the group consisting of an alkoxy group and an alkoxysilylalkyl group, R^3 is an organofunctional group selected from the group consisting of glycidoxyalkyl, methacryloxyalkyl, N-(trialkylsilyl)aminoalkyl, (hydroxyphenyl)alkyl and haloalkyl, x is 1 to 6 and y is 1 to 6, with the proviso that x+y is an integer having a value of 3 to 8.

5,290,842

PRESSURE-SENSITIVE ADHESIVES BASED ON PREFERENTIALLY TACKIFIED IMMISCIBLE ELASTOMERS

Yukihiko Sasaki, Claremont, and Jesse Ercillo, Covina, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 755,585, Sep. 3, 1991, abandoned, which is a continuation of 493,365, Mar. 14, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 921,444
Int. Cl.[5] C09J *11/08, 153/02*
U.S. Cl. 524—271 **20 Claims**

1. A pressure-sensitive adhesive comprising:
a) a first elastomer selected from the group consisting of a styrene-butadiene block copolymer, a styrene-butadiene-styrene block copolymer and mixtures thereof, said first elastomer exhibiting a first glass transition temperature and a first value of tangent delta measured as a function of temperature;
b) a second elastomer selected from the group consisting of styrene-isoprene-styrene block copolymers, styrene-isoprene block copolymers, multiarmed styrene-isoprene block copolymers and mixtures thereof, said second elastomer exhibiting a second glass transition temperature greater than the first glass transition temperature and a second value of tangent delta measured as a function of temperature, the second elastomer being immiscible in the first elastomer, said first and second elastomers provided in proportions 0.5:1 to 5:1 and in which a dynamic mechanical spectrum plot of tangent delta as a function of temperature exhibits a polybutadiene-attributable first glass transition temperature peak determinable separate from and lower than a polyisoprene-attributable second glass transition temperature peak;
c) a first tackifier comprising a normally solid tackifying component having a softening point of about 95° C. and obtained by polymerization of a stream solely composed of aliphatic petroleum derivatives in the form of dienes and monoolefins containing 5 or 6 carbon atoms, said tackifying component being preferentially miscible with the polyisoprene blocks of the second elastomer and present in an amount sufficient to cause an increase in second glass transition temperature and an increase in the temperature difference between the polybutadiene-attributable glass transition temperature peak and the polyisoprene-attributable glass transition temperature peak and an increase in the tangent delta value attributed to the polyisoprene-attributable peak; and
d) a second tackifier selected from the group consisting of rosins, rosin esters, and polyterpenes, wherein the total amount of the first and second tackifiers ranges from about 50 percent to about 70 percent by weight of the elastomers and tackifiers.

5,290,843

PHENOLIC RESINS FOR REINFORCED COMPOSITES

Roderick A. McDonald, Bothell, and Mark J. Knudsen, Seattle, both of Wash., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Apr. 29, 1993, Ser. No. 53,137
Int. Cl.[5] C08K *7/14, 3/38*
U.S. Cl. 524—405 **23 Claims**

1. A phenolic resin composition comprising an aqueous mixture of:
(a) a resole formed by reacting phenol with formaldehyde in the presence of an ortho directing catalyst at a mole ratio of formaldehyde to phenol ranging from about 0.7:1 to about 3:1, and
(b) a water-soluble borate,
wherein said composition contains at least about 0.02 equivalent of the ortho directing catalyst per mole of phenol, has a pH at least about 7 and contains from about 0.02 to about 0.5 mole borate per mole of phenol,
with the proviso that when said ortho directing catalyst has a cation that forms an insoluble material with a borate anion, said cation is removed after said resole is formed and prior to adding said water-soluble borate.

5,290,844

WATER-SWELLABLE ADHESIVE WATER STOP

Eiichi Otsuka, Konosu, Japan, assignor to C. I. Kasei Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 555,084, Jul. 19, 1990, abandoned. This application Sep. 3, 1991, Ser. No. 753,784
Claims priority, application Japan, Jul. 28, 1989, 1-196039; Apr. 9, 1990, 2-93682
Int. Cl.[5] C08K *3/26*
U.S. Cl. 524—426 **7 Claims**

1. A water-swellable adhesive water water stop which is a shaped and vulcanized body of a vulcanizable rubber composition comprising, as a blend:
(A) 100 parts by weight of a butyl rubber;
(B) from 1 to 50 parts by weight of a highly water-absorptive polymeric electrolyte;
(C) from 30 to 200 parts by parts by weight of an inorganic water-absorbent;
(D) from 10 to 50 parts by weight of a tackifier;
(E) from 30 to 200 parts by weight of a plasticizer;
(F) from 1 to 10 parts by weight of a vulcanizing agent or a combination of a vulcanizing agent and a vulcanization accelerator, and has a tensile strength in the range from 1 to 30 kgf/cm^2, 100% elastic modulus in the range from 1 to 4 kgf/cm^2, ultimate elongation at break of at least 300% and degree of swelling in water in the range from 150 to 500% after immersion in water for 21 days at 23° C., and
(G) up to 300 parts by weight of a basic filler.

5,290,845

AQUEOUS SHEET SILICATE DISPERSIONS, USE OF THESE DISPERSIONS AS COATING ASSISTANTS AND WATER-DILUTABLE COATING COMPOSITIONS CONTAINING SHEET SILICATES

Ralf Berg, Munster, and Muller Bodo, Wurzburg, both of Fed. Rep. of Germany, assignors to BASF Lacke & Farben AG, Munster, Fed. Rep. of Germany

Continuation of Ser. No. 399,482, Oct. 16, 1989, Pat. No. 5,198,490. This application Dec. 1, 1992, Ser. No. 984,151
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707388
Int. Cl.[5] C08J *5/12;* **C08K** *3/34*
U.S. Cl. 524—443 **12 Claims**

1. A method of coating a substrate comprising:
preparing a dispersion of a sheet silicate, an aqueous dispersant and a protective colloid which comprises a poly(propylene oxide) polymer having a mean molecular weight of about 500 to about 8,000 and up to about 40% by weight $—CH_2—CH_2—O$ units and containing no hydrophobic terminal groups, and on average at least one hydroxyl group per molecule;
incorporating said dispersion into a water-dilutable coating composition; and
applying said water-dilutable composition to a substrate.

5,290,846

SOLVENTS FOR FLUORINATED POLYMERS

William H. Tuminello, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1992, Ser. No. 935,352
Int. Cl.[5] C08K *5/17, 5/02*
U.S. Cl. 524—463 **5 Claims**

1. A composition comprising a solution of a carboxylic fluorinated polymer having an equivalent weight of more than about 900 and containing tetrafluoroethylene units dissolved in a solvent which is selected from the group consisting of (i) a perfluorinated cycloalkane, (ii) perfluorinated aromatic compounds, or (iii) perfluorotrialkylamines; said solvent having a critical temperature of greater than about 150° C.

5,290,847

CURABLE COMPOSITION

Sadao Yukimoto, and Fumio Kawakubo, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 382,044, Jul. 18, 1989, abandoned, which is a continuation of Ser. No. 106,300, Oct. 9, 1987, abandoned. This application Oct. 15, 1991, Ser. No. 774,134
Claims priority, application Japan, Oct. 9, 1986, 61-240975
Int. Cl.[5] C08L *71/02*
U.S. Cl. 524—506 **5 Claims**

1. A curable composition comprising,
(A) an organic polymer having in its molecule at least one cross-linkable group containing a silicon atom to which a hydrolyzable group is bonded, said cross-linkable group being cross-linkable to produce an elastomer by the formation of a siloxane bond,
(B) 50 to 300 parts by weight of particles of a vinyl chloride paste resin per 100 parts by weight of said organic polymer (A), said vinyl chloride paste resin particles being present in said composition as a filler, and
(C) a plasticizer for vinyl chloride paste resin; said vinyl chloride paste resin being partially gelatinized with said plasticizer.

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5,290,848

COATING COMPOSITION OF A GLYCIDYL ACRYLIC POLYMER, AN AMINOESTER ACRYLIC POLYMER AND A POLYESTER OR A POLYESTERURETHANE

George T. Palmer, Troy, and Ruth A. Theobald, Birmingham, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

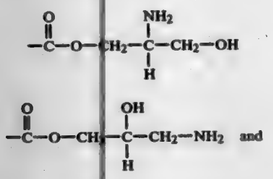
Division of Ser. No. 629,477, Dec. 18, 1990, Pat. No. 5,221,581.
This application Dec. 22, 1992, Ser. No. 993,474
Int. Cl.[5] C08L 33/12, 33/14
U.S. Cl. 524—517 7 Claims

1. A coating composition comprising 20–80% by weight of a binder and 80–20% by weight of a solvent for the binder, wherein the binder consists essentially of about:

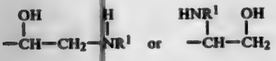
A. 50–70% by weight, based on the weight of the binder, of an acrylic polymer A consisting essentially of polymerized monomers of methyl methacrylate and monomers selected from the group consisting of styrene, alkyl methacrylate and alkyl acrylate each having 2–12 carbon atoms in the alkyl group and said polymer having pending from the carbon-carbon atoms of the polymer backbone reactive groups selected from the group consisting of aminoester groups of the formula



where R is an alkylene group having 2–3 carbon atoms, hydroxyamino ester groups of the formula



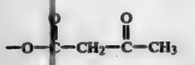
groups of the formula



where R^1 is an alkyl group of 1–8 carbon atoms; and

B. 20–30% by weight, based on the weight of the binder, of an acrylic crosslinking polymer B comprising polymerized monomers of at least 3% by weight, based on the weight of the crosslinking polymer of a glycidyl constituent selected from the group consisting of glycidyl methacrylate and glycidyl acrylate, and the remainder of the monomers being selected from the group consisting of alkyl methacrylate and alkyl acrylate or mixtures thereof each having 1–12 carbon atoms in the alkyl groups;

C. 5–48% by weight, based on the weight of the binder, of a hydrocarbon polyol having at least 2 pendant groups of the formula



wherein said polymers A and B each have average molecular weight of about 5,000–40,000 and polymer C has a weight average molecular weight of about 300–10,000 each determined by gel permeation chromatography using polymethyl methacrylate as a standard.

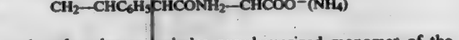
5,290,849

POLYMER SOLUTION FOR SIZING PAPER

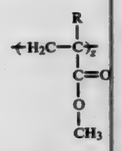
Kang I. Lee, Longmeadow, Mass., assignor to Monsanto Company, St Louis, Mo.

Filed Nov. 6, 1992, Ser. No. 972,338
Int. Cl.[5] C08F 8/30, 220/14
U.S. Cl. 524—555 5 Claims

1. An aqueous solution of polymer for sizing paper wherein the polymer consists essentially of copolymerized units represented by the formula:



and such polymer includes copolymerized monomer of the formula:



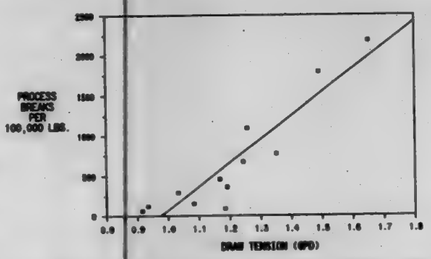
wherein x, y and z are weight fractions within the following ranges: x from 0.45 to 0.83; y from 0.15 to 0.35; z from 0.02 to 0.20 R and is C_1–C_3 alkyl.

5,290,850

PROCESSING OF PIGMENTED NYLON FIBERS USING MODIFIED POLYMERS

Ketan G. Shridharani, Camden; Peter R. Witt, Lugoff, both of S.C.; Perry H. C. Lin, and Sundar M. Rao, both of Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 616,126, Nov. 20, 1990, Pat. No. 5,223,196.
This application Mar. 5, 1993, Ser. No. 27,571
Int. Cl.[5] C08J 3/00; C08K 3/04; C08L 77/00; C08G 69/26
U.S. Cl. 524—607 9 Claims



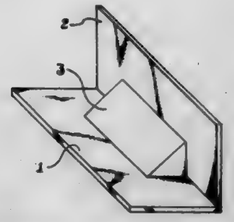
1. A pigmented hexamethylene adipamide polymer fiber having a tenacity of at least 7.5 grams per denier, the fiber being comprised of a polyamide and a colored pigment wherein the polyamide is a random interpolyamide or a block polyamide having at least 80 percent by weight hexamethylene adipamide units and at least two different recurring difunctional amide-forming moieties other than those which form hexamethylene adipamide, each of said different recurring amide-forming moieties being present in an amount of 0.25 to 10 weight percent of the polyamide and wherein the different amide-forming moieties constituting part of a block are selected from the group consisting of isophthalic, terephthalic, dodecanedioic, 2-methyl pentamethylenediamino, and N,N'-dibutylhexamethylenediamino.

5,290,851

ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITION

Tadao Ishida; Miyoji Fukayama, and Noriyuki Sagamura, all of Chiba, Japan, assignors to Dow Corning Toray Silicone, Ltd., Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,273
Claims priority, application Japan, Jan. 30, 1991, 3-056216
Int. Cl.[5] C08K 5/24, 3/36
U.S. Cl. 524—731 20 Claims



1. A room temperature-curable organopolysiloxane composition comprising

(A) 100 parts by weight a hydroxyl-terminated polydiorganosiloxane with a viscosity=0.5 to 500 Pa.s at 25° C.;

(B) 5 to 50 parts by weight hydrophobic silica whose silanol titer does not exceed 2.0 mL wherein said silanol titer is determined as follows: 2.0 g sample is dispersed in a mixture of 25 mL ethanol and 75 mL 20 weight % aqueous NaCl, and the quantity of 0.1N aqueous sodium hydroxide solution required to change the pH of this dispersion from 4.0 to 9.0 is designated as the silanol titer;

(C) 2 to 10 parts by weight dry-method silica whose silanol titer is at least 5.0 mL wherein said silanol titer is defined in (B); and

(D) 0.5 to 25 parts by weight silane or siloxane which contains at least 3 oxime groups in each molecule.

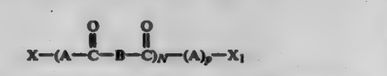
5,290,852

GLUTARIC ACID BASED POLYESTER INTERNALLY PLASTICIZED PVC

Josef C. Vyvoda, Avon Lake, Ohio, assignor to The Geon Company, Independence, Ohio

Division of Ser. No. 447,940, Dec. 8, 1989, Pat. No. 5,247,012.
This application Jun. 1, 1993, Ser. No. 69,901
Int. Cl.[5] C08K 5/05
U.S. Cl. 524—766 7 Claims

1. A process for producing internally plasticized polyvinyl halide particles containing a polyester polymeric plasticizer wherein said polyester polymeric plasticizer is substantially derived from the polyesterification of glutaric acid and a diol or polyol said plasticizer having the formula:



wherein A is a linear or branched polyol residue having from about 2 to 10 carbon atoms and at least 2 oxy groups at its molecular ends; P is 0 or 1 with the proviso that when P is 0, x_1 is hydrogen; B is a linear alkylene of 3 carbon atoms or is predominantly present as a linear alkylene of 3 atoms along with minor amounts of linear alkylenes of 2 or 4–10 carbon atoms or a combination thereof; X and X_1 independently are hydrogen, or acyl groups derived from monocarboxylic acids having from about 3 to 18 carbon atoms, a linear or branched alcohol or mixture of alcohols having from about 2 to 10 carbon atoms, or a hydroxy-alkyl ester of a saturated hydrocarbon; n is an integer of from 1 to about 25 and the average range of molecular weight of said polyester plasticizer is no more than about 5000 said polymerization process comprises

(A) polymerizing vinyl halide monomer in the presence of said polyester polymeric plasticizer to a vinyl monomer conversion level of at least 50% to form internally plasticized polyvinyl halide particles containing said polyester polymeric plasticizer;

(B) removing substantially all of the residual vinyl halide monomer from said internally plasticized polyvinyl halide particles; and

(C) drying said internally plasticized polyvinyl halide particles to yield a free flowing dry powder.

5,290,853

AMBIENT MOISTURE-CURING POLYURETHANE ADHESIVE

John F. Regan, deceased, late of St. Paul by Mary B. Regan, legal representative , and Benjamin E. Burrows, St. Louis Park, both of Minn., assignors to ChemRex Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 538,788, Jun. 15, 1990, abandoned. This application Sep. 11, 1991, Ser. No. 757,834
Int. Cl.[5] C08G 10/10, 10/24
U.S. Cl. 524—779 33 Claims

1. A process for making a one part, ambient moisture-curable polyurethane adhesive which is dispensed for use from a substantially hermetically sealed container, said process including the steps of

reacting about 30 to about 50 weight %, based on the total weight of the adhesive, of a polyol selected from the group consisting of polyether diols, triols and tetrols based on propylene glycol or ethylene oxide-capped propylene glycol and mixtures thereof and having an average molecular weight of about 1000 to about 10,000, with an organic polyisocyanate having a functionality greater than 2, at a ratio of isocyanates equivalents to polyol equivalents of about 3:1 to about 15:1, for a sufficient time to form a polyurethane reaction product including an isocyanate-terminated prepolymer and unreacted isocyanate (polyol-isocyanate reaction);

admixing with said reaction product at least one additive selected from the group consisting of thixotropic agents, fillers, antioxidants, plasticizers, solvents, pigments, adhesive promoters, UV stabilizers and defoaming agents, said additive containing a sufficient amount of total free water to provide a ratio of water equivalents to polyol equivalents of about 0.2:1 to about 2:1, whereby said free water reacts with unreacted isocyanate in said reaction product to extend the molecular chain of said polyurethane and provide hard segments therein (water-isocyanate reaction);

allowing said water-isocyanate reaction to proceed until a predetermined amount of unreacted isocyanate remains to produce an isocyanate-terminated polymer adhesive containing unreacted isocyanate; and

introducing the resulting adhesive into a substantially hermetically sealed container.

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5,290,854

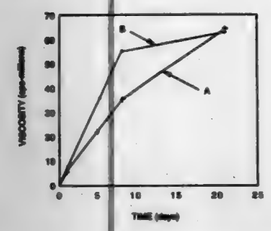
THERMOPLASTIC LOW-PROFILE ADDITIVES AND USE THEREOF IN UNSATURATED POLYESTER RESIN COMPOSITIONS

Louis R. Ross, Newark, Ohio; Robert J. Schiavone, Geneva, Ill., and Timothy W. Ramey, Chillicothe, Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Jul. 23, 1990, Ser. No. 555,884

Int. Cl.[5] C08G *63/48, 63/91;* C08L *67/00, 67/02*

U.S. Cl. 525—33 15 Claims



1. A saturated low-profile additive thermoplastic polymer for use in a sheet molding composition, the thermoplastic polymer comprising ethylene glycol, at least one nonpolar diol, adipic acid and trimellitic anhydride.

5,290,855

THERMOPLASTIC RESIN COMPOSITION

Mikio Kodama, Hirakata; Motoichi Yano, Settsu; Satoshi Umeyama, Takatsuki; Takayoshi Fujiwara, Osaka, and Katsuji Abe, Ibaraki, all of Japan, assignors to Sumitomo Dow Limited, Osaka, Japan

PCT No. PCT/JP91/00852, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO92/00351, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 25, 1991, Ser. No. 834,233

Claims priority, application Japan, Jun. 25, 1990, 2-168081; Jun. 25, 1990, 2-168082

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—64 1 Claim

1. A thermoplastic resin composition comprising 100 parts by weight of a mixture of

(A) 20 to 70% by weight of a rubber-reinforced styrene resin which is obtained by graft polymerizing styrene and acrylonitrile in the presence of a rubbery polymer selected from the group consisting of polybutadiene, ethylene-propylene-diene monomer rubber and acrylate copolymers,

(B) 10 to 40% by weight of polybutylene terephthalate,

(C) 20 to 50% by weight of maleimide copolymer comprising (i) 5 to 60% by weight of N-phenylmaleimide, (ii) 30 to 80% by weight of styrene and (iii) 10 to 50% by weight of acrylonitrile or of acrylonitrile and methyl methacrylate, and

1 to 20 parts by weight of (D) an epoxy group-containing olefinic copolymer prepared from components consisting of 99 to 50% by weight of ethylene, 1 to 50% by weight of glycidyl methacrylate and of 0 to 30% by weight of vinyl acetate wherein the content of said rubbery polymer is from 10 to 20% by weight based on the total weight of the composition (A+B+C+D).

5,290,856

ENGINEERING RESIN-PROPYLENE POLYMER GRAFT COMPOSITION

Kelvin T. Okamoto, Wilmington; Kyle D. Eastenson, Newark, and Suhas C. Gunamiyogi, Bear, all of Del., assignors to HIMONT Incorporated, Wilmington, Del.

Filed Apr. 16, 1992, Ser. No. 869,982

Int. Cl.[5] C08L *51/06, 71/02, 53/02*

U.S. Cl. 525—64 9 Claims

1. A composition comprising, by weight (a) from about 10 to about 90% of a resin material selected from the group consisting of (i) a polyphenylene ether resin, (ii) a polyamide resin and (iii) a polyester resin; (b) from about 10 to about 90% of a propylene polymer material grafted with styrenic polymer and a glycidyl moiety and further comprising from about 35 to about 95 weight percent of the total grafting monomer of styrenic polymer copolymerized with said glycidyl moiety as a discrete component wherein the total concentration of styrenic and glycidyl moiety monomers added during the grafting of said propylene polymer material is from about 50 to about 200 parts by weight per hundred of said propylene polymer material and said glycidyl moiety monomer is present during said grafting at a concentration of from about 0.1 to about 20.0 weight percent of said total monomer concentration; optionally (c) from about 1 to about 25% of at least one rubber polymer component comprising (1) from about 0 to 100% of at least one of (i) monoalkenyl aromatic hydrocarbon-conjugated diene block copolymers, (ii) hydrogenated products of (i), or (iii) mixtures of (i) and (ii); and (2) from about 100 to 0% of an olefin copolymer rubber; wherein the total amount of (a)+(b) is 100%.

5,290,857

EPOXY RESIN ADHESIVE COMPOSITION

Tadashi Ashida, Yokohama; Masahiko Ohnishi, Yokosuka; Toshio Nagase, Ibaragi, and Akira Nakayama, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo and Nissan Motor Co., Ltd., Yokohama, both of Japan

Filed Sep. 3, 1992, Ser. No. 939,912

Claims priority, application Japan, Sep. 4, 1991, 3-253029; Jan. 31, 1992, 4-042301; Aug. 7, 1992, 4-232808

Int. Cl.[5] C08L *63/00, 51/04;* C09J *163/00;* C08G *59/18*

U.S. Cl. 525—65 10 Claims

1. An epoxy resin adhesive composition comprising:

(A) an epoxy resin,

(B) 10 to 100 weight parts based on 100 weight parts of (A) of a powder core/shell polymer comprising particles having,

a core comprising an acrylate polymer or a methacrylate polymer having a glass transition temperature of −30° C. or lower and 0.01 to 5 weight %, based on the total amount of the monomers, of a crosslinking monomer having two or more double bonds of substantially the same reactivity in the molecule and

a shell comprising a copolymer having a glass transition temperature of 70° C. or higher which is made from (a) an acrylate monomer or a methacrylate monomer, (b) a radical polymerizable unsaturated carboxylic acid monomer having 3 to 8 carbon atoms and carboxyl groups, the amount of the monomer having carboxyl groups being 0.01 to 20 weight parts based on 100 weight parts of the shell copolymer, and (c) 0.01 to 5 weight %, based on the total weight of monomers in the shell, of a crosslinking monomer having two or more double bonds of substantially the same reactivity in the molecule,

wherein the powder core/shell polymer comprises powder polymer particles ion-crosslinked by addition of a monovalent or divalent metal cation in a mole ratio of metal cation to the carboxyl groups in the copolymer of 0.1:1 to 3:1, and wherein the weight ratio of the core to the shell is from 10:1 to 1:4 and the weight average diameter

of the core comprising a single particle or an aggregate of the particles is from 0.1 to 3.0 μm; and

(C) 3 to 30 weight parts based on 100 weight parts of (A) of a heat activation type hardener for epoxy resins.

5,290,858

CORE-SHELL POLYMER, PRODUCTION AND USE THEREOF

Ichiro Sasaki, Suita; Junji Oshima, Toyonaka, and Minoru Yamada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 810,439, Dec. 19, 1991, Pat. No. 5,183,858, which is a continuation of Ser. No. 501,761, Mar. 30, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 957,793

Claims priority, application Japan, Mar. 31, 1989, 1-81826

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—64 6 Claims

1. A polyoxymethylene resin composition which comprises:

(A) a core-shell polymer comprising (1) a rubbery polymer core consisting essentially of (a) a conjugated diene, (b) a C_{2-8} alkyl acrylate, (c) a mixture of C_{2-8} alkyl acrylates, (d) a mixture of a conjugated diene and a C_{2-8} alkyl acrylate or (e) a mixture of (a) or (b) and at least one monomer copolymerizable therewith selected from the group consisting of an aromatic vinyl monomer, an aromatic vinylidene monomer, a vinyl cyanide, a vinylidene cyanide and an alkyl methacrylate and (2) a glassy polymer shell which is formed from methyl methacrylate or a mixture of methyl methacrylate and at least one monomer copolymerizable therewith selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, an aromatic vinyl monomer, an aromatic vinylidene monomer, a vinyl cyanide and a vinylidene cyanide, the transition temperature of the glassy polymer being not less than 60° C. and the core-shell polymer having substantially no detectable anion, and

(B) a polyoxymethylene resin.

5,290,859

THERMOPLASTIC MOLDING MATERIALS BASED ON POLYCARBONATES, STYRENE/ACRYLONITRILE POLYMERS AND POLYOLEFINS

Norbert Niessner, Friedelsheim, and Klaus Muehlbach, Gruenstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 30, 1992, Ser. No. 906,722

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1991, 4121975

Int. Cl.[5] C08L *51/00, 69/00*

U.S. Cl. 525—67 7 Claims

1. A thermoplastic molding material containing, as essential components,

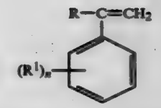
A) from 10 to 88.9% by weight of at least one polycarbonate,

B) from 30 to 70% by weight of a coarse-particled graft copolymer which has a median particle size of from 200 to 700 nm (d_{50} value of the integral mass distribution) and from 70 to 30% by weight of a finely divided graft copolymer which has a median particle size of from 50 to 180 nm (d_{50} value of the integral mass distribution) consisting of

b_1) from 40 to 80% by weight of a grafting base of an elastomeric polymer based on alkyl acrylates where the alkyl radical is of 1 to 8 carbon atoms and having a glass transition temperature below 10° C. and

b_2) from 20 to 60% by weight of a graft of

b_{21}) from 50 to 95% by weight of styrene or a substituted styrene of the formula I



I

where R is alkyl of 1 to 8 carbon atoms or hydrogen, R^1 is alkyl of 1 to 8 carbon atoms and n is 0, 1, 2 or 3, or a C_1–C_8-alkyl (meth)acrylate or a mixture thereof and

b_{22}) from 5 to 50% by weight of acrylonitrile, methacrylonitrile, C_1–C_8-alkyl (meth)acrylates, maleic anhydride or maleimides N-substituted by C_1–C_8-alkyl or C_6–C_{20}-aryl groups or a mixture thereof,

C) from 1 to 79.9% by weight of a thermoplastic copolymer of

c_1) from 50 to 95% by weight of a styrene or substituted styrene of the formula I or a C_1–C_8-alkyl (meth)acrylate or a mixture thereof and

c_2) from 5 to 50% by weight of acrylonitrile, methacrylonitrile, C_1–C_8-alkyl (meth)acrylates, maleic anhydride or maleimides N-substituted by C_1–C_8-alkyl or C_6–C_{20}-aryl groups or a mixture thereof,

D) from 0.1 to 40% by weight of at least one polyolefin and

E) from 0 to 50% by weight of a fibrous or particulate filler or a mixture thereof.

5,290,860

POLYMER ALLOYS OF RUBBER MODIFIED ACRYLIC MULTIPOLYMERS, AND POLYCARBONATES; AND METHODS OF MAKING THE SAME

Daniel D. Zimmerman, Stratford; Gary Vieiro, Milford, and Dennis S. Pavlick, Meriden, all of Conn., assignors to Cyro Industries, Mt. Arlington, N.J.

Continuation of Ser. No. 627,673, Dec. 14, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 975,160

Int. Cl.[5] C08L *69/00, 33/12, 51/04*

U.S. Cl. 525—67 11 Claims

1. A polymer alloy of a rubber modified acrylic multipolymer and a polycarbonate in a weight ratio of from about 20:80 to about 80:20, wherein the rubber modified acrylic multipolymer comprises:

A. a graft rubber grafted with graft monomers comprising methyl methacrylate and styrene, the weight ratio of rubber to graft monomers ranging from about 1:2 to about 6:1; and

B. an acrylic multipolymer terpolymer of at least about 60 parts by weight of methylmethacrylate, styrene, and ethylacrylate in an amount up to about 15 parts by weight, the weight ratio of the graft rubber and the terpolymer ranging from 5:95 to 25:75, the rubber modified acrylic multipolymer being substantially free of α-methylstyrene, acrylonitrile, methacrylonitile, maleic anhydride and N-substituted maleimide.

5,290,861

THERMOPLASTIC RESIN COMPOSITION

Masahiko Nore; Munehiro Mitsui; Kazuyoshi Nakazawa, and Tateki Furuyama, all of Tokyo, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 753,965, Sep. 3, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,095

Claims priority, application Japan, Sep. 3, 1990, 2-232661

Int. Cl.[5] C08L *55/02, 51/04, 67/02*

U.S. Cl. 525—67 1 Claim

1. A thermoplastic resin composition comprising:

(A) 93 to 99% by weight of an aromatic vinyl compound grafted to a rubber selected from the group consisting of polybutadiene, styrene-butadiene copolymer, acryl-con-

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taining copolymer, ethylene-propylene copolymer, chlorinated polyethylene, and polyurethane,

(B) 0.5 to 5% by weight of an aromatic polyester selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate and bisphenol A isophthalate, and

(C) 0.5 to 2% by weight of an aromatic polycarbonate, the composition containing no α-methylstyrene of less than 10% by weight of α-methylstyrene based on the amount of said rubber-modified styrene thermoplastic resin.

5,290,862

TRANSPARENT HIGH IMPACT ALLOY

William G. Biasius, Charlton, Mass., assignor to Novacor Chemicals (International) S.A., Fribourg, Switzerland

PCT No. PCT/US91/08309, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/13917, PCT Pub. Date Aug. 20, 1992

Continuation-in-part of Ser. No. 654,058, Feb. 12, 1991, abandoned. This PCT application Nov. 14, 1991, Ser. No. 941,036

Int. Cl.[5] C08L *53/02, 25/14*

U.S. Cl. 525—89 19 Claims

1. A polymer alloy consisting of:

(a) from 70 to 30 weight % of a brittle polymer comprising:

(i) from 80 to 40 weight % of one or more C_{8-12} vinyl aromatic monomers;

(ii) from 20 to 60 weight % of one or more C_{1-4} alkyl acrylates or C_{1-4} methacrylates; and

(iii) from 0 to 3 weight % of one or more C_{3-6} ethylenically unsaturated carboxylic acids;

(b) from 5 to 30 weight % of a tapered, linear or radial di- or tri- block rubbery polymer comprising:

(i) from 40 to 45 weight % of one or more C_{8-12} vinyl aromatic monomers; and

(ii) from 60 to 55 weight % of one or more C_{4-6} conjugated diolefins; and

(c) from 65 to 25 weight % of a tapered, linear or radial di- or tri-block ductile polymer comprising

(i) from 70 to 80 weight % of one or more C_{8-12} vinyl aromatic monomers; and

(ii) from 30 to 20 weight % of one or more C_{4-6} conjugated diolefins.

5,290,863

COMPATIBILIZATION OF POLYPHENYLENE ETHER WITH POLYESTER USING POLYSTYRENE-POLYCARBONATE COPOLYMER

Sterling B. Brown, Schenectady, N.Y., and Edward J. Fewkes, Belpre, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 636,232, Dec. 31, 1990, Pat. No. 5,189,114. This application Jan. 21, 1993, Ser. No. 7,292

Int. Cl.[5] C08F *283/02;* C08L *67/03, 69/00, 71/12*

U.S. Cl. 525—92 22 Claims

1. A compatibilized polyphenylene ether-polyester composition comprising:

(a) polyphenylene ether resin;

(b) polyester resin; and

(c) a compatibilizer for (a) and (b) comprised of a block copolymer comprised of one or more polycarbonate blocks and one or more polystyrene blocks, which further comprises at least one impact modifier.

5,290,864

THERMOPLASTIC POLYBUTYLENE TEREPHTHALATE RESIN COMPOSITIONS AND MOLDED ARTICLES FORMED THEREOF

Mitsukiro Mochizuki, and Mitsuo Wada, both of Fuji, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Continuation of Ser. No. 734,117, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 314,109, Feb. 23, 1989, abandoned. This application Jun. 11, 1992, Ser. No. 896,903

Claims priority, application Japan, Mar. 16, 1988, 63-62945

Int. Cl.[5] C08L *67/02*

U.S. Cl. 525—166 2 Claims

1. A thermoplastic polybutylene terephthalate resin composition comprising a blend of:

(A) 100 parts by weight of a thermoplastic polybutylene terephthalate resin;

(B) 3 to 80 parts by weight of a polymer selected from the group consisting of methylmethacrylate homopolymer, styrene homopolymer or a copolymer consisting of acrylonitrile and styrene; and

(C) 1 to 50 parts by weight of an ethylene-glycidyl methacrylate copolymer.

5,290,865

PROCESS FOR PRODUCING A LACTAM COMPOUND GRAFT COPOLYMER OF ETHYLENE COPOLYMER

Tadayuki Ohmae; Yoshiki Toyoshima, both of Chiba, and Toshio Kawakita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 422,277, Oct. 16, 1989, abandoned. This application Dec. 1, 1992, Ser. No. 984,236

Claims priority, application Japan, Oct. 15, 1988, 63-260298

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—183 7 Claims

1. A process for producing a graft copolymer comprising melt-blending:

(A) 5 to 80 parts by weight of an ethylene copolymer, based on the weight of the graft copolymer, comprising (a) 40 to 96.5% by weight of ethylene units, (b) at least 2% by weight of α,β-unsaturated carboxylic acid alkyl ester units, and (c) 0.1 to 10% by weight of maleic anhydride units;

(B) 0.1 to 10 moles of a lactam metal salt compound per mole of the maleic anhydride units (c) of the ethylene copolymer (A); and

(C) 20 to 85 parts by weight of a lactam compound, based on the weight of the graft copolymer,

conducting the melt-blending with an extruder for plastics molding provided with a side feed device,

wherein, during melt-blending, (C) is fed into the extruder to graft it to a part or all of the maleic anhydride units of (A).

5,290,866

FILMS OF BLENDS OF LINEAR ETHYLENE POLYMERS AND ACRYLIC POLYMERS

David V. Dobreski, Fairport, N.Y., and Jack J. Donaldson, Galesburg, Ill., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 107,125, Oct. 9, 1987, abandoned. This application Apr. 16, 1992, Ser. No. 868,972

Int. Cl.[5] C08L *23/20, 23/08, 33/12*

U.S. Cl. 525—227 6 Claims

1. A blown film made from a blend comprising:

(i) from about 90 to 99 weight percent of a linear low density ethylene copolymer of ethylene and a higher olefin having 4 to 8 carbon atoms (LLDPE), said LLDPE copolymer prepared by low pressure techniques and said copolymer having a density less than about 0.94 g/cc; and

(ii) from about 1 to about 10 percent by weight, of the total composition, of poly(methyl methacrylate) polymer.

5,290,867

PROCESS FOR PRODUCING AN EMULSION GRAFT COPOLYMER

Bernard Gilg, St. Louis-La-Chausee, France, and Kurt Stinsky, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,230

Claims priority, application European Pat. Off., Nov. 1, 1991, 91810844.0

Int. Cl.[5] C08F *4/40, 279/02*

U.S. Cl. 525—245 12 Claims

1. A process for producing an emulsion graft copolymer, which comprises grafting a vinyl aromatic monomer and a comonomer onto a rubber latex in the presence of an iron (II) redox system as polymerization catalyst and coagulating the graft copolymer latex as a slurry with an alkaline earth metal compound, characterized in that the pH of the coagulated slurry is adjusted to a value ranging from 8 to 12.

a) by addition of an alkali metal hydroxide to the obtained slurry after coagulation, or

b) by addition of an alkali metal hydroxide to the graft copolymer latex before coagulation, or

c) by coagulating the graft copolymer latex with an alkaline earth metal hydroxide,

with the proviso that the solidified product of the slurry obtained according to a), b) or c) is not washed with acidified water in a subsequent processing step.

5,290,868

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER DERIVED FROM POLYAMINE CONTAINING ONE PRIMARY AMINE GROUP AND AT LEAST ONE SECONDARY AMINE GROUP AND DEGRADED ETHYLENE COPOLYMER

David Y. Chung, Edison; Antonio Gutierrez, Mercerville, and Mark J. Struglinski, Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 420,793, Oct. 12, 1989, abandoned. This application Sep. 16, 1992, Ser. No. 945,825

Int. Cl.[5] C08F *255/04;* C10M *143/02, 145/00*

U.S. Cl. 525—285 61 Claims

1. Composition of matter comprising reaction product of:

(i) (a) degraded ethylene-alpha-olefin copolymer obtained by degrading undegraded copolymer of ethylene and at least one other alpha-olefin monomer, said undegraded copolymer comprising intramolecularly heterogeneous copolymer chains containing at least one crystallizable segment of methylene units having a number average molecular weight of at least 700 and at least one low crystallinity ethylene-alpha-olefin copolymer segment, wherein said at least one crystallizable segment comprises at least about 10 weight percent of said copolymer chain and contains at least about 57 weight percent ethylene, wherein said low crystallinity segment contains not greater than about 53 weight percent ethylene, and wherein said copolymer has a molecular weight distribution characterized by at least one of a ratio of $\overline{M}_w/\overline{M}_n$ of less than 2 and a ratio of $\overline{M}_z/\overline{M}_w$ of less than 1.8, and wherein at least two portions of an individual intramolecularly heterogeneous chain, each portion comprising at least 5 weight percent of said chain, differ in composition from one another by at least 7 weight percent ethylene; said degraded copolymer grafted with (b) at least one ethylenically monounsaturated carboxylic acid material selected from the group consisting of carboxylic acids having 1 to 2 carboxylic acid groups, anhydride derivatives of said carboxylic acids and ester derivatives of said carboxylic acids to form grated ethylene copolymer; and

(ii) at least on polyamine containing one primary amino group and at least one secondary amino group.

5,290,869

CEMENT DISPERSION AGENTS

Mitsuo Kinoshita; Yoshimasa Miura, and Tsuneo Yamamoto, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Dec. 16, 1992, Ser. No. 991,283

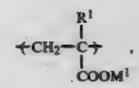
Claims priority, application Japan, Dec. 21, 1991, 3-355903

Int. Cl.[5] C08F *265/04;* C04B *16/04*

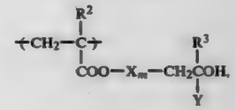
U.S. Cl. 525—291 6 Claims

1. A cement dispersion agent containing a graft copolymer comprising first constituent unit shown by Formula (1) given below, second constituent unit shown by Formula (2) given below, third constituent unit shown by Formula (3) given below and fourth constituent unit shown by Formula (4) given below:

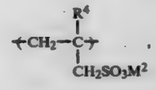
(Formula (1))



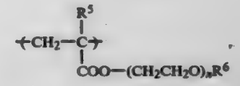
(Formula (2))



(Formula (3))



(Formula (4))



where R^1-R^5 are each H or CH_3; R^6 is an alkyl group with 1–5 carbon atoms; M^1 and M^2 are each alkali metal, alkali earth metal or organic amine; X is CH_2CH_2O, $CH_2CH(CH_3)O$ or CH_2; Y is a polymer block obtained by radical polymerization of α, β-ethylenically unsaturated monomers having an amide group in the molecule; m is 0 or an integer 1–10; and n is 0 or an integer 1–50.

5,290,870

GRAFTED COPOLYMERS HIGHLY ABSORBENT TO AQUEOUS ELECTROLYTE SOLUTIONS

Iqbal Ahmed, Bartlesville, Okla., and Henry L. Hsieh, Pittboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 919,073, Jul. 23, 1992, Pat. No. 5,219,970, which is a continuation of Ser. No. 653,581, Feb. 11, 1991, abandoned. This application May 21, 1993, Ser. No. 65,721

Int. Cl.[5] C08F *255/00, 265/00, 267/00, 273/00*

U.S. Cl. 525—291 22 Claims

1. A graft copolymer formed by:

(A) graft polymerizing onto a first polymer of polypropylene; at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacrylamidopropyldimethylamine, 2-acrylamido-2-methylpropane sulfonic acid, alkali salts, 2-acrylamido-2-methylpropane sulfonic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof; and

(B) graft copolymerizing therewith an ampholytic ion pair monomer having an ammonium cation and a sulfonate anion wherein

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(i) the ammonium cation is 3-methacrylamidopropyldimethylammonium

(ii) the sulfonate anion is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and any combination of two or more thereof;

wherein the comonomers and ion pair monomers are provided in amounts which are effective to produce a highly absorbent graft copolymer; and

(C) partially saponifying neutralization of said graft copolymer formed in step (B).

5,290,871

GRAFTED COPOLYMERS HIGHLY ABSORBENT TO AQUEOUS ELECTROLYTE SOLUTIONS

Iqbal Ahmed, Bartlesville, Okla., and Henry L. Hsieh, Pittboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 919,015, Jul. 23, 1992, Pat. No. 5,214,117, which is a continuation of Ser. No. 632,226, Dec. 20, 1990, abandoned. This application May 21, 1993, Ser. No. 65,829

Int. Cl.[5] C08F *255/00, 265/00, 267/00, 273/00*

U.S. Cl. 525—291 **22 Claims**

1. A graft copolymer formed by:

(A) graft polymerizing onto a first polymer of polypropylene; at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethyldimethylamine, 2-acrylamido-2-methylpropane sulfonic acid, alkali salts of 2-acrylamido-2-methylpropane sulfonic acid, 2-methacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof; and

(B) graft copolymerizing therewith an ampholytic ion pair monomer having an ammonium cation and a sulfonate anion wherein

(i) the ammonium cation is 2-methacryloyloxyethyldimethylammonium; and

(ii) the sulfonate anion is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and any combination of two or more thereof;

wherein the comonomers and ion pair monomers are provided in amounts which are effective to produce a highly absorbent graft copolymer; and

(C) partially saponifying neutralization of said graft copolymer formed in step (B).

5,290,872

BRANCHED AND HYDROGENATED BLOCK COPOLYMER, PROCEDURES FOR ITS PREPARATION AND USE

Sergio Castro, and Gian T. Viola, both of Ravenna, Italy, assignors to Enichem Elastomeri s.r.l., Milan, Italy

Filed Jul. 23, 1991, Ser. No. 734,774

Claims priority, application Italy, Jul. 25, 1990, 21042 A/90

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **12 Claims**

1. Branched and hydrogenated block copolymer of the formula:

$$[(EB)_1\text{—HT—A—}(EB)_2]_nX$$

where:

$(EB)_1$ and $(EB)_2$ are hydrogenated polydiene blocks,

A is a polyvinylaromatic block,

HT is a random copolymer segment made up of hydrogenated dienic monomeric and vinylaromatic units,

X is a coupling radical having a valence equal to n, and n is a whole number ranging from 3 to 20,

the above copolymer having a weight average molecular weight of between 60,000 and 500,000; an A block content from 20 to 80% by weight; a $(EB)_1+(EB)_2$ block content from 20 to 80% by weight; a weight ratio between blocks $(EB)_1$ and $(EB)_2$ from 0.1 to 1.0; and a HT segment content from 5 to 40% by weight.

5,290,873

ISOBUTYLENE POLYMER HAVING UNSATURATED GROUP AND PREPARATION THEREOF

Koji Noda; Hiroshi Fujisawa, and Kazuya Yonezawa, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Japan

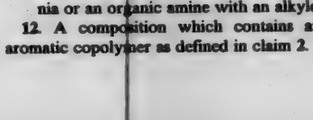
Filed Apr. 15, 1991, Ser. No. 685,066

Claims priority, application Japan, Apr. 16, 1990, 2-101029; Nov. 29, 1990, 2-336364

Int. Cl.[5] C08F *4/52, 210/10, 236/20*

U.S. Cl. 525—313 **5 Claims**

1. An isobutylene polymer having an unsaturated group at a polymer chain end and comprising 1.1 to 5 units per molecule on the average of the formula:



(I)

wherein Q is a C_1-C_{30} divalent organic group.

5,290,874

ALKADIENE/VINYLAROMATIC COPOLYMERS CONTAINING SIDE GROUPS, AND THEIR USE

Dietmar Bender, Schifferstadt; Klaus Bronstert, Carlsberg, and Helmut Mach, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,386

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109635

Int. Cl.[5] C08F *287/00, 293/00*

U.S. Cl. 525—314 **12 Claims**

1. An alkadiene/vinylaromatic copolymer which has a random, block-like or star-like structure and whose polymerized alkadiene comonomer units are partially or completely selectively hydrogenated, wherein said copolymer contains one or more side groups having one or more radicals which have been prepared by a Diels-Alder (4+2) cycloaddition reaction of a diene radical with a dienophile which contains polar functional groups.

2. All alkadiene/vinylaromatic copolymer which has a random, block-like or star-like structure and whose polymerized alkadiene comonomer units are partially or completely selectively hydrogenated, wherein said copolymer contains one or more side groups having one or more radicals which have been prepared by

(a) a Diels-Alder (4+2) cycloaddition reaction of a diene radical with a dienophile which contains polar functional groups and

(b) reaction of the resulting (4+2) cycloadduct or Diels-Alder adduct with ammonia, an organic amine, an alkylene oxide, a polyalkylene oxide or a condensate of ammonia or an organic amine with an alkylene oxide.

12. A composition which contains an alkadiene/vinylaromatic copolymer as defined in claim 2.

5,290,875

CONJUGATED DIENE/MONOVINYLARENE BLOCK COPOLYMERS WITH MULTIPLE TAPERED BLOCKS

George A. Moczygemba; Nathan E. Stacy, both of Bartlesville, and Nancy R. Knight, Ochelata, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 30, 1992, Ser. No. 982,938

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **18 Claims**

1. A method of preparing a polymer comprising:

(a) charging into a polymerization zone an initiator and a monovinylaromatic monomer in the presence of a randomizer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(b) charging into said polymerization zone a monovinylaromatic monomer and an initiator and allowing polymerization to occur until essentially no free monomer is present; thereafter

(c) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(d) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(e) charging into said polymerization zone a monovinylaromatic monomer and an initiator and allowing polymerization to occur until essentially no free monomer is present; thereafter

(f) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(g) charging into said polymerization zone a mixture of monovinylaromatic monomer and conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; thereafter

(h) charging into said polymerization zone a conjugated diene monomer and allowing polymerization to occur until essentially no free monomer is present; and thereafter

(i) charging the reaction mixture with a coupling agent.

5,290,876

LOW GLOSS AGENTS, PROCESS FOR PRODUCTION THEREOF, LOW GLOSS THERMOPLASTIC RESIN COMPOSITIONS, AND MOLDED ARTICLES

Seizou Mishima; Kiyotaka Mashita, both of Ichihara; Kazuyoshi Shike, Hitachi; Jun Matsuzawa, Tsukuba; Masashi Shitara, Chiba, and Izumu Hattori, Ichihara, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 775,849, Oct. 15, 1991, which is a division of Ser. No. 468,000, Jan. 22, 1990, Pat. No. 5,081,193. This application Jan. 22, 1993, Ser. No. 7,779

Claims priority, application Japan, Jan. 23, 1989, 1-013368; May 18, 1989, 1-124975; Jul. 3, 1989, 1-171624; Jul. 3, 1989, 1-171626; Oct. 24, 1989, 1-276281

Int. Cl.[5] C08F *279/04; C08L 51/04*

U.S. Cl. 525—316 **7 Claims**

1. A low gloss agent comprising a grated copolymer containing a graft component derived from aromatic vinyl and vinyl cyanide in a weight ratio of 50/50 to 90/10 and a low-cis polybutadiene having a Mooney viscosity of 30 to 40 measured at 100° C. as a rubber component, 30% by volume or more of particles of the rubber component being non-spherical rubber particles when the low gloss agent is made into a molded article.

5. A molded article obtained by molding a low gloss thermoplastic resin composition comprising the low gloss agent of claim 1, and at least one other polymer.

5,290,877

INFORMATION RECORDING MEDIUM AND ADHESIVE COMPOSITION THEREFOR

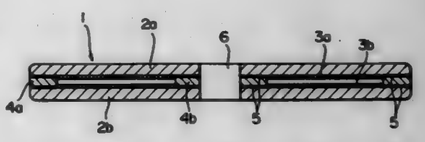
Hideo Yamaoka; Mitsuyuki Kuroiwa; Hiroei Naabe, and Akira Todo, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 571,874, Aug. 24, 1990, Pat. No. 5,188,875. This application Oct. 22, 1992, Ser. No. 964,821

Claims priority, application Japan, Aug. 25, 1989, 1-219277; Sep. 5, 1989, 1-229695

Int. Cl.[5] C08L *33/06*

U.S. Cl. 525—329.5 **8 Claims**



1. A hot-melt adhesive composition comprising the following components (A) to (D):

(A) 1 to 68% by weight of an α-olefin polymer, said α-olefin polymer being a mixture which contains 1 to 60% by weight of an ethylene/propylene copolymer, 1 to 60% by weight of a propylene polymer and 1 to 30% by weight of an isobutylene polymer;

(B) 1 to 30% by weight of an ethylene/(meth)acrylate copolymer,

(C) 1 to 30% by weight of a styrene polymer, and

(D) 30 to 95% by weight of a tackifier,

provided that at least one of the components (A) to (D) is modified with an unsaturated carboxylic acid or a derivative thereof, said derivative being selected from the group consisting of an acid halide, amide, imide, anhydride and ester.

5,290,878

BUTADIENE COPOLYMER AND PROCESS FOR PREPARING SAME

Keisaku Yamamoto; Kizuku Wakatsuki; Mitsuji Tsuji, all of Ichihara, and Yuichi Saito, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 7, 1993, Ser. No. 72,488

Claims priority, application Japan, Jun. 10, 1992, 4-150432

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—332.2 **23 Claims**

1. A butadiene copolymer prepared by a process which comprises copolymerizing a mixture of butadiene and a polyvinyl aromatic compound or a mixture of butadiene, styrene and a polyvinyl aromatic compound in a hydrocarbon solvent in the presence of an organolithium compound as a polymerization initiator and subjecting the resulting copolymer having lithium at the polymer end to a coupling reaction with a trifunctional or tetrafunctional coupling agent, said butadiene copolymer satisfying the following conditions (a) to (d):

(a) the content of styrene is at most 50% by weight,

(b) the content of vinyl bonds in the butadiene portion is from 10 to 90% by weight,

(c) the molecular weight distribution curve obtained by a high performance liquid chromatography has at least three peaks, and 5 to 60% by weight of all the polymer chains have a molecular weight which is at least 5 times the molecular weight in terms of standard polystyrene corresponding to the peak appearing on the lowest molecular weight side of the high performance liquid chromatogram, and

(d) the Mooney viscosity (ML_{1+4}, 100° C.) is from 30 to 200.

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5,290,879
PROCESS FOR PRODUCING CHLORINATED POLYOLEFIN

Yoshiaki Ishida, and Katsushige Okayama, both of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Division of Ser. No. 686,385, Apr. 17, 1991, Pat. No. 5,212,254.
This application Dec. 30, 1992, Ser. No. 998,727
Claims priority, application Japan, Apr. 19, 1990, 2-101802; Apr. 20, 1990, 2-102847
Int. Cl.[5] C08F 8/22
U.S. Cl. 525—356 5 Claims

1. A process for producing chlorinated polyolefin, which comprises dissolving or suspending a polyolefin in a solvent and conducting a chlorination reaction of the dissolved or suspended polyolefin, said solvent being a chloroform-based solvent comprising a mixture of 100 parts by weight of chloroform containing no alcohol and from 0.0008 to 10 parts by weight of a compound having from 4 to 10 carbon atoms and containing one double bond per molecule.

5,290,880
PREPARATION OF FINELY DIVIDED, WATER-SOLUBLE POLYMERS CONTAINING VINYLAMINE UNITS

Dietmar Moench, Weinheim; Michael Kroener, Mannheim; Enrique Freudenberg, Schifferstadt; Heinrich Hartmann, Limbergerhof, and Norbert Sendhoff, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 27, 1991, Ser. No. 661,180
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1990, 4007312
Int. Cl.[5] C08F 8/12
U.S. Cl. 525—369 11 Claims

1. A process for preparation of a finely divided, water-soluble polymer containing vinylamine units wherein not less 30% strength by weight aqueous monomer solutions comprising
(a) N-vinylformamide or without
(b) other water-soluble monoethylenically unsaturated monomers and with/or without
(c) water-insoluble monoethylenically unsaturated monomers are polymerized in a first step in kneader in the presence of a polymerization initiator to such an extent that the initially formed water-containing polymer gel disintegrates into fine particles and in a second step the finely divided polymer obtained in this manner is hydrolyzed in a kneader by the addition of an acid or a base to such an extent that not less than 0.1 mol % of the N-vinylformamide units present in the polymer hydrolyze to give vinylamine units.

5,290,881
POLYMER MIXTURE COMPRISING A POLYPHENYLENE ETHER AND A POLYARYLENE SULPHIDE

Marinus E. J. Dekkers, Guilderland, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed May 3, 1989, Ser. No. 347,292
Claims priority, application Netherlands, May 9, 1988, 8801199
Int. Cl.[5] C08G 65/48; C08L 67/02
U.S. Cl. 525—397 7 Claims

1. A polymer mixture comprising:
(A) a polyphenylene ether;
(B) a polyarylene sulphide; and
(C) polycarboxylic acid compounds or derivative-compounds thereof, as agents to improve the homogeneity of components (A) and (B), said compounds or derivatives having the general formula:

$$(R_1O)_mR(COOR_2)_n(CONR_3R_4)_s$$

wherein R is a saturated hydrocarbon group having 2 to 20 carbon atoms with a linear or branched chain; R_1 is a hydrogen atom or an alkyl group, aryl group, acyl group or carbonyldioxy group, each having 1 to 10 carbon atoms; each R_2 independently of each other is a hydrogen atom or an alkyl group or aryl group, each having 1 to 20 carbon atoms; each R_3 and R_4 independently of each other represents a hydrogen atom or an alkyl group or aryl group, each having 1 to 10 carbon atoms; m is equal to 1 and (n+s) is larger than or equal to 2, and n and s each are larger than or equal to zero; and wherein (OR_1) is in an alpha position or beta position with respect to a carbonyl group, and in which at least two carbonyl groups are separated by 2 to 6 carbon atoms.

5,290,882
THERMOSETTING RESIN COMPOSITIONS

Toshio Shiobara; Hisashi Shimizu, and Manabu Narumi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 928,064
Claims priority, application Japan, Aug. 13, 1991, 3-228266; Aug. 13, 1991, 3-228267
Int. Cl.[5] C08L 63/04, 63/10
U.S. Cl. 525—422 10 Claims

1. A thermosetting resin composition comprising:
(A) an imide compound having a maleimide group of the general formula (I):



(B) a resin having at least two epoxy groups in a molecule, and
(C) a resin having a phenolic hydroxyl group in a molecule, wherein at least one of the resins of components (B) and (C) further comprises a naphthalene ring substituted with an allyl group in the molecule of the resin.

5,290,883
EPOXY RESIN COMPOSITION, CURED PRODUCT OBTAINED THEREFROM, CURING METHOD THEREFOR, AND BONDING METHOD USING THE COMPOSITION

Toshitsugu Hosokawa; Takeshi Yamanaka; Hiraku Yamamoto; Koichi Hashimoto; Akihisa Murata, and Katsuhito Kamiya, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Oct. 7, 1992, Ser. No. 957,392
Claims priority, application Japan, Mar. 5, 1992, 4-84431
Int. Cl.[5] C08F 283/00
U.S. Cl. 525—423 14 Claims

1. An epoxy resin composition comprising (A) 100 parts by weight of an epoxy resin, (B) from 1 to 80 parts by weight of a heat activatable hardener, and (C) from 10 to 100 parts by weight of an aromatic thermoplastic resin powder having a glass transition temperature of 120° C. or more and an average particle diameter of 200 μm or less which dissolves in said epoxy resin (A) upon heating at a temperature effective to compatibilize epoxy resin (A) and aromatic thermoplastic resin (C) at below the curing temperature of said epoxy resin (A), and said epoxy resin (A) and said aromatic thermoplastic resin (C) being present in a phase separation state after curing said epoxy resin composition, wherein said epoxy resin (A) reverses from a continuous phase before heat-curing to a discontinous phase after heat-curing, and said aromatic thermoplastic resin (C) reverses from a discontinuous phase before heat-curing to a continous phase after heat-curing.

5,290,884
BLENDS OF POLYBENZIMIDAZOLES AND AROMATIC POLYAMIDES, AROMATIC POLYAMIDE-HYDRAZIDES OR AROMATIC POLYAMIDES CONTAINING HETEROCYCLIC LINKAGES

Gordon W. Calundann, N. Plainfield, N.J.; Friedrich Herold, Frankfurt; Edward C. Chenevey, N. Plainfield, and Tai-Shung Chung, Randolph, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 27, 1991, Ser. No. 675,782
Int. Cl.[5] C08L 79/06, 77/06; C08G 73/08
U.S. Cl. 525—432 15 Claims

1. A blend of component polymers consisting essentially of from about 5 weight percent to about 95 weight percent of a polybenzimidazole and from about 95 weight percent to about 5 weight percent of an aromatic polyamide, aromatic polyamide-hydrazide or aromatic polyamide containing heterocyclic linkages.

5,290,885
UNSATURATED ORGANIC ADDUCT OF AN ORGANOHYDROGENPOLYSILOXANE AS AN IMPROVED CROSSLINKING AGENT FOR SILICONE PRESSURE-SENSITIVE ADHESIVES

Gary A. Vincent, Midland, and William P. Brady, Seaford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 30, 1992, Ser. No. 998,492
Int. Cl.[5] C09J 183/07
U.S. Cl. 525—478 28 Claims

1. In a silicone pressure-sensitive adhesive comprising a siloxane polymer having at least two olefinically unsaturated groups in its molecule, a siloxane resin, an SiH-functional crosslinking agent and a catalytic amount of a platinum group metal-containing catalyst, the improvement comprising using as said crosslinking agent a hydrosilation reaction product of
(I) an organohydrogenpolysiloxane selected from the group consisting of a cyclic siloxane having the formula

$$(SiO)_x$$
$$H$$

a linear siloxane having the formula

$$R_3^3SiO(SiO)_y(SiO)_zSiR_3^3,$$
$$H \quad R^3$$

and a linear siloxane having the formula

$$R_3^3SiO(SiO)_y(SiO)_zSiR_3^3$$
$$H \quad R^3$$

wherein R^3 is independently selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, a phenyl radical, a trifluoropropyl radical and a chloropropyl group, x has an average value of 4 to 8, y has an average value of 5 to 25 and z has an average value of 1 to 20, with the proviso that $y+z \leq 25$; and
(II) an unsaturated organic compound selected from the group consisting of an alpha-alkene having 6 to 28 carbon atoms and an aromatic compound having the formula $Ph\text{-}R^4$, wherein Ph represents a phenyl radical and R^3 is a terminally unsaturated monovalent hydrocarbon group having 2 to 6 carbon atoms.

5,290,886
THERMOPLASTIC ELASTOMERS HAVING IMPROVED LOW TEMPERATURE PROPERTIES

Maria D. Eliel, Silver Lake Village, Ohio, assignor to Advanced Elastomer Systems, L.P., St. Louis, Mo.

Filed Apr. 20, 1993, Ser. No. 49,896
Int. Cl.[5] C08L 23/12, 23/16
U.S. Cl. 524—515 15 Claims

1. A composition comprising
(a) from about 10 to about 90 wt % thermoplastic, crystalline polyolefin homopolymer or copolymer,
(b) from about 90 to about 10 wt % olefinic rubber, and
(c) from about 1 to about 250 parts per hundred parts of rubber of a low molecular weight ester plasticizer which is compatible with both the polyolefin and rubber,
wherein said rubber is at least partially crosslinked.

5,290,887
EPOXY RESINS CONTAINING THIADIAZOLE AND/OR OXADIAZOLE MOIETIES

Robert E. Hefner, Jr., Lake Jackson, Tex.; Joseph A. Schomaker, Midland, Mich., and Jimmy D. Earls, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 30, 1993, Ser. No. 56,699
Int. Cl.[5] C08G 59/00, 65/08, 65/14
U.S. Cl. 525—523 8 Claims

1. An advanced epoxy resin comprising the product of the advancement reaction of
(A) at least one epoxy resin containing an average of more than one vicinal epoxide group per molecule and at least one thiadiazole, oxadiazole or both at least one thiadiazole and at least one oxadiazole moiety per molecule, said moieties comprising at least one —Ar—$(X^1)_n$—N—$(X^1)_n$—Ar— group, where Ar is a divalent aromatic group, X^1 is a divalent linking group selected from the group consisting of —O—, —S—, —SO—, —SO_2—, —CO—, —O—CO—, —CO—O—, —S—CO—, —CO—S—, —NH—CO—, —CO—NH—, —NR—CO—, —CO—NR—, —NH—CO—NH—, —NR—CO—NH—, —NH—CO—NR—, —NH—CO—O— and —O—CO—NH—, N is thiadiazole or oxadiazole, each R is independently a hydrocarbyl group having from one to about 10 carbon atoms and n is 0 or 1; with
(B) at least one compound containing an average of more than one hydrogen atom per molecule reactive with a vicinal epoxide group, wherein component (A) and component (B) are present in an amount which provides a mole ratio of epoxide reactive hydrogen atoms in component (B) to epoxide groups in component (A) of from about 0.01:1 to about 0.94:1.

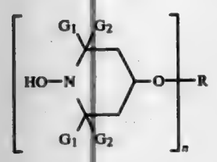
5,290,888
PROCESS FOR STABILIZING ETHYLENICALLY UNSATURATED COMPOUNDS AND STABILIZED MONOMER COMPOSITIONS

Leslie R. Gatechair, Katonah, N.Y.; James L. Hyun, Danbury, and Peter J. Schirmann, Fairfield, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

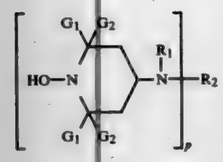
Continuation of Ser. No. 809,218, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 556,240, Jul. 20, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 956,437
Int. Cl.[5] C08F 2/40; C07D 251/42, 211/94
U.S. Cl. 526—83 12 Claims

1. A process for preventing the premature polymerization of (a) an ethylenically unsaturated monomer or mixture of monomers, polymerizable by free radical initiation, which comprises adding to said monomer (a) an effective amount, sufficient to inhibit the premature polymerization of monomer (a), of (b) a compound or mixture of compounds selected from the group consisting of the compounds of formulas I, II,

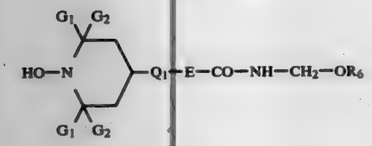
V, VI, VIII and X, and N-(1-hydroxy-2,2,6,6-tetramethylpiperidin-4-yl)caprolactam and salts thereof,



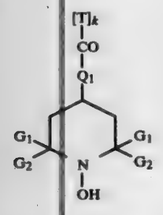
(I)



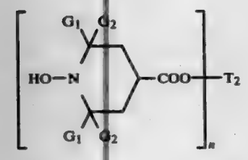
(II)



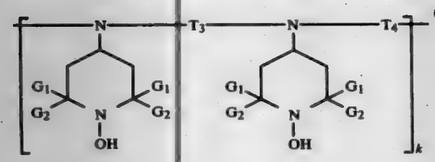
(V)



(VI)



(VIII)



(X)

wherein

G_1 and G_2 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together are pentamethylene;

n is 1 or 2,

when n is 1,

R is C_1–C_{18}-alkyl optionally interrupted by one or more oxygen atoms, cyanoethyl, benzyl, glycidyl, a monovalent acyl radical of an aliphatic, cycloaliphatic, araliphatic or aromatic acid, or of carbamic acid or of a phosphorus-containing acid, or a monovalent silyl radical; or

when n is 2,

R is C_1–C_{12}-alkylene, C_4–C_{12}-alkenylene, xylylene, a divalent acyl radical of an aliphatic, cycloaliphatic, araliphatic or aromatic dicarboxylic acid, or of a dicarbamic acid or of a phosphorus-containing acid, or a bivalent silyl radical;

p is 1, 2 or 3,

R_1 is hydrogen, C_1–C_{12}-alkyl, C_5–C_7-cycloalkyl, C_7–C_8-aralkyl, C_2–C_{18}-alkanoyl, C_3–C_5-alkenoyl or benzoyl;

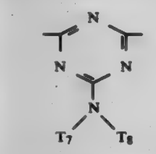
when p is 1,

R_2 is hydrogen, C_1–C_{18}-alkyl, C_5–C_7-cycloalkyl, C_2–C_8-alkenyl unsubstituted or substituted by a cyano, carbonyl or carbamide group, or is glycidyl, a group of the formula $—CH_2CH(OH)—Z$ or of the formula —CONH—Z wherein Z is hydrogen, methyl or phenyl; or

when p is 2,

R_2 is C_2–C_{12}-alkylene, C_6–C_{12}-arylene, xylylene, a $—CH_2CH(OH)CH_2—O—X—O—CH_2CH(OH)CH_2—$ wherein X is C_2–C_{10}-alkylene, C_6–C_{15}-arylene or C_6–C_{12}-cycloalkylene; or, provided that R_1 is not alkanoyl, alkenoyl or benzoyl, R_2 can also be a divalent acyl radical of an aliphatic, cycloaliphatic or aromatic dicarboxylic acid or dicarbamic acid, or can be the group —CO—; or R_1 and R_2 together when p is 1 can be the cyclic acyl radical of an aliphatic or aromatic 1,2- or 1,3-dicarboxylic acid; or

R_2 is



where T_7 and T_8 are independently hydrogen, alkyl of 1 to 18 carbon atoms, or T_7 and T_8 together are alkylene of 4 to 6 carbon atoms or 3-oxapentamethylene, preferably T_7 and T_8 are 3-oxapentamethylene;

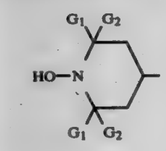
when p is 3,

R_2 is 2,4,6-triazinyl;

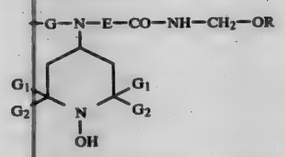
Q_1 is $—N(R_7)—$ or —O—;

E is C_1–C_3-alkylene, the group $—CH_2CH(R_8)—O—$ wherein R_8 is hydrogen, methyl or phenyl, the group $—(CH_2)_3—NH—$ or a direct bond;

R_7 is hydrogen, C_1–C_{18}-alkyl, C_5–C_7-cycloalkyl, C_7–C_{12}-aralkyl, cyanoethyl, C_6–C_{10}-aryl, the group $—CH_2CH(R_8)—OH$; or a group of the formula



or a group of the formula



wherein G is C_2–C_6-alkylene or C_6–C_{12}-arylene; or

R_7 is a group —E—CO—NH—CH_2—OR_6;

R_6 is hydrogen or C_1–C_{18}-alkyl;

formula VI denotes a recurring structural unit of a polymer where T is ethylene or 1,2-propylene, or is a repeating structural unit derived from an α-olefin copolymer with an alkyl acrylate or methacrylate;

k is 2 to 100;

when n is 1,

T_2 is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_7–C_9-aralkyl, C_5–C_7-cycloalkyl, C_2–C_4-hydroxyalkyl, C_2–C_6-alkoxyalkyl, C_6–C_{10}-aryl, glycidyl, a group of formula $—(CH_2)_m—COO—Q$ or of the formula $—(CH_2)_m—O—CO—Q$ wherein m is 1 or 2 and Q is C_1–C_4-alkyl or phenyl; or

when n is 2,

T_2 is C_2–C_{12}-alkylene, C_6–C_{12}-arylene, a group $—CH_2CH(OH)CH_2—O—X—O—CH_2CH(OH)CH_2—$ wherein X is C_2–C_{10}-alkylene, C_6–C_{15}-arylene or C_6–C_{12}-cycloalkylene, or a group $—CH_2CH(OZ_1)CH_2—(OCH_2CH(OZ_1)CH_2)_2—$ wherein Z_1 is hydrogen, C_1–C_{18}-alkyl, allyl, benzyl, C_2–C_{12}-alkanoyl or benzoyl;

T_3 and T_4 are independently alkylene of 2 to 12 carbon atoms, of T_4 is



5,290,889

Patent Not Issued For This Number

5,290,890

PROCESS FOR MAKING PVC RESIN HAVING IMPROVED INITIAL COLOR AND CLARITY

Jongshun S. Kim, Avon Lake, and Glenn A. Gall, Oberlin, both of Ohio, assignors to The Geon Company, Independence, Ohio

Filed Dec. 23, 1992, Ser. No. 995,722

Int. Cl.[5] C08F 2/16

U.S. Cl. 526—225 12 Claims

1. An aqueous process for preparing a dispersion PVC resin having a mean particle size diameter of from 0.05 microns to about 10 microns at from 30° to 70° C. using the micro-suspension process, consisting essentially of the independent steps of:

(a) adding to a pressure vessel at least one of the group consisting of water, monomer, and surfactant comprising ammonium sulfate or ammonium sulfonate salts having from 8 to 18 carbons.

(b) removal of substantially all of the air within said vessel and thereafter introducing an inert gas,

(c) removal of substantially all of the air within said vessel after said inert gas is introduced,

(d) adding from 0.01 to 0.5 weight parts per 100 weight parts of monomer of a metabisulfite reducing agent,

(e) adding at least one oil soluble initiator,

(f) commencing polymerization, and

(g) recovering said resin.

5,290,891

PROCESS FOR THE PREPARATION OF POLYINDOLES, ELECTROCONDUCTIVE COMPOSITIONS AND DEVICES CONTAINING THEM AND APPLICATIONS OF THE POLYINDOLES

Denis Billaud, Nancy, France; Etienne Hannecart, Tervuren, and Claude Franquinet, Brussels, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Apr. 16, 1992, Ser. No. 868,796

Claims priority, application Belgium, Apr. 16, 1991, 09100350

Int. Cl.[5] C08F 134/00

U.S. Cl. 526—259 5 Claims

1. A process for the preparation of polyindole, comprising: chemically polymerizing indole at a temperature between about 10° C. and 25° C. in an acidic reaction mixture comprising one organic solvent and further consisting of one oxidizing agent to prepare polyindole, and separating said polyindole from said reaction mixture.

5,290,892

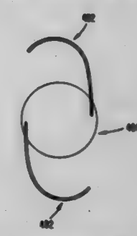
FLEXIBLE INTRAOCULAR LENSES MADE FROM HIGH REFRACTIVE INDEX POLYMERS

Farhad H. Namdaran, Bellevue, Wash., and Albert R. LeBoeuf, Fort Worth, Tex., assignors to Nestle S.A., Vevey, Switzerland

Continuation of Ser. No. 837,796, Feb. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 609,863, Nov. 7, 1990, abandoned. This application Jun. 14, 1993, Ser. No. 76,378

Int. Cl.[5] C08F 226/06, 220/20; A61F 2/16

U.S. Cl. 526—259 8 Claims



1. An intraocular lens comprising a copolymer with an elongation of at least 150% wherein said copolymer is comprised of two monomers, the first of which is 1-phenylethyl acrylate and the second of which is 2-phenylethyl methacrylate, and a copolymerizable cross-linking monomer having a plurality of polymerizable ethylenically unsaturated groups.

5,290,893

METHARCYLATE PREPOLYMER CONTAINING TRIAZINE RING STRUCTURE, ITS PREPARATION, AND SETTING COMPOSITION AND RESIN

Yutaka Hori, Yokkaichi; Takashi Kamiya, Chita; Takayuki Mano, Gifu, and Ryuzo Asami, Nagoya, all of Japan, assignors to Aica Kogyo Co., Ltd., Japan

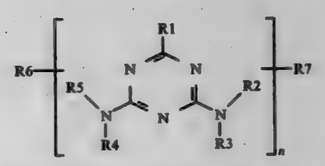
Filed May 18, 1992, Ser. No. 884,401

Claims priority, application Japan, May 20, 1991, 3-114894

Int. Cl.[5] C08F 226/06, 220/10; C07D 251/54

U.S. Cl. 526—261 8 Claims

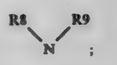
1. A method for preparing a methacrylate prepolymer containing triazine ring structure expressed as the formula:



(I)

where, the value of n is one the average from 1 to 10;

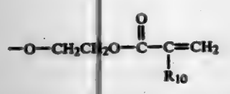
R1 is



R2, R3, R4, R5, R8, and $9 are radicals selected from hydrogen radicals and divalent functional radicals such as $—CH_2—$ and $—CH_2OCH_2—$; where the radical $—CH_2OCH_2—$ links triazine rings;

R6 and R7 are monovalent functional radicals selected from hydroxyl radicals and functional radicals with ethylene unsaturation as denoted by the formula:

(III)



and where R6 and R7 are bonded as terminal groups to the —CH_2— radical of R2 through R5, R8 and R9 which are unbound to a triazine ring; at least one functional group expressed as formula (III) exists in the prepolymer; and R10 is either a hydrogen radical or CH_3;

synthesized from an aminotriazine compound, a p-formaldehyde, and a 2-hydroxyethyl methacrylate, with the aminotriazine compound having an average molecular weight to 200 to 8,000;

said method comprising the step of:

mixing the aminotriazine compound and the p-formaldehyde with the 2-hydroxyethyl methacrylate to form a mixture consisting of the three constituents with each other as one system at a temperature in the range of about 70° C. to 150° C. while blowing one of oxygen and air into the mixture for dissolution.

5,290,894

BIOSTATIC AND BIOCIDAL COMPOSITIONS

Graham J. H. Melrose, Ilalkeith; Concetta M. Kleppe, Bentley; Jeffrey W. Langley, Willetton; Jeffrey M. Stewart, Alfred Cove, and Jacobus Van Dyk, Armadale, all of Australia, assignors to Biopolymers Limited, Australia

PCT No. PCT/AU87/00435, § 371 Date Jul. 31, 1989, § 102(e) Date Jul. 31, 1989, PCT Pub. No. WO88/04671, PCT Pub. Date Jun. 30, 1988

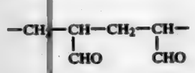
PCT Filed Dec. 21, 1987, Ser. No. 381,404

Claims priority, application Australia, Dec. 23, 1986, PH9657

Int. Cl.[5] C08F *16/34;* A61K *31/765*

U.S. Cl. 526—315 27 Claims

1. A biocidal or biostatic article comprising a substrate to which is chemically bound, a biocidally or biostatically effective amount of a polymer or copolymer having the repeating polymeric unit



or the hydrated diol form thereof, the hemiacetal or acetal form thereof from condensation of the diol form with the aldehyde form, the tetrahydropyran or fused tetrahydropyran form thereof from self-condensation of the diol form, the aldol-Michael self-condensation form thereof or mixtures thereof, the article of manufacture being capable of killing or inhibiting the growth of microbes that contaminate the article.

5,290,895

POLYMERIZED DIENES PREPARED BY STEP PROPAGATION, CONDENSATION TYPE POLYMERIZATION OF ACYCLIC DIENES

Kenneth B. Wagener; James M. Boncella, both of Gainesville, Fla.; Robert P. Duttweiler, Somerville, N.J.; Marc A. Hillmyer, Pasadena, Calif., and Jan G. Nel, Sanderland, Mass., assignors to University of Florida, Gainesville, Fla.

Continuation of Ser. No. 647,799, Jan. 30, 1991, abandoned, which is a division of Ser. No. 462,532, Jan. 3, 1990, Pat. No. 5,110,885. This application Nov. 25, 1992, Ser. No. 982,059

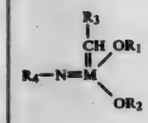
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.

Int. Cl.[5] C08G *61/04*

U.S. Cl. 526—336 1 Claim

1. A polymerized diene prepared by the step propagation, condensation type polymerization of an acyclic non-conjugated diene which comprises contacting said diene with a catalyst having the formula:

[I]



wherein R_1, R_2 and R_4 may be the same or different and are alkyl, aryl, aralkyl, haloalkyl, haloaryl, haloaralkyl or a silicon-containing analog thereof;

R_3 is alkyl, aryl, aralkyl or a substituent resulting from the reaction of the M=CH—R_3 moiety of said catalyst with the acyclic non-conjugated diene being polymerized; and

M is W or Mo

at a temperature and for a time sufficient to effect said polymerization of said diene and recovering said polymerized diene.

5,290,896

ETHYLENE/PENTENE-1 COPOLYMER, AND ETHYLENE/PENTENE-1 COPOLYMER COMPOSITION

Mamoru Kioka; Tsuneo Yashiki; Takashi Ueda, all of Yamaguchi; Masaki Kohyama; Masaya Yamada, both of Ichihara; Seiichi Ikeyama, Yamaguchi; Yoshinori Akana, Yamaguchi; Kenji Iwata, Yamaguchi; Satoshi Matsumoto, Yamaguchi, and Hideki Sakai, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 27, 1991, Ser. No. 661,256

Claims priority, application Japan, Feb. 27, 1990, 2-46610; Feb. 27, 1990, 2-46611; Apr. 23, 1990, 2-106816; Apr. 23, 1990, 2-106817; Apr. 23, 1990, 2-106818; Apr. 23, 1990, 2-106819; Apr. 23, 1990, 2-106820

Int. Cl.[5] C08F *210/14*

U.S. Cl. 526—348 27 Claims

1. An ethylene/pentene-1 copolymer which is obtained by copolymerization of ethylene and pentene-1 and fulfills the following requisites (A) to (E):

(A) a melt flow rate of said copolymer as measured according to ASTM D 1238E is in the range of 0.01 to 100 g/10 min;

(B) a density of said copolymer as measured according to ASTM D 1505 is in the range of 0.87 to 0.94 g/cm^3;

(C) said copolymer contains constitution units derived from pentene-1 in an amount of 1 to 25 % by weight;

(D) in the case that said copolymer is subjected to cast molding to prepare a film having a thickness of 40 μm, a ratio (RS) of impact strength of the film to tearing strength of the film in the take-off direction of the film satisfies the following formula:

$$RS \geq -20 \log MFR - 1000d + 968$$

wherein MFR represents a melt flow rate of said copolymer, and d represents a density of said copolymer; and

(E) in the case that said copolymer is melted at 200° C., then slowly cooled to 50° C. at a cooling rate of 0.31° C./min and crystallized to prepare a sheet sample having a thickness of 0.5 mm, a DSC melt-peak pattern of the sample obtained when the sample is heated from 10° to 200° C. at a heating rate of 10° C./min using DSC has two melt peaks, and a ratio (Hh/Hl) of a height of the peak (Hh) on the higher temperature side to a height of the peak (Hl) on the lower temperature side and the density of said copolymer satisfy the following formula:

$$0 < Hh/Hl < 60d - 52.0$$

wherein Hh represents a peak height on the higher temperature side, Hl represents a peak height on the lower temperature side, and d represents a density of said copolymer.

5,290,897

LOW TEMPERATURE VULCANIZING CARBORANE SILOXANE ADHESIVE

Thomas K. Dougherty, Playa Del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 895,061, Jun. 8, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 112,272

Int. Cl.[5] C08G *77/22*

U.S. Cl. 528—5 16 Claims

1. A low temperature vulcanizing carborane siloxane adhesive composition comprising (a) a polycarborane siloxane polymer having a number average molecular weight in excess of 120,000 and having vinyl groups attached to the backbone thereof, the concentration of vinyl groups per carborane group ranging from about 3 to 30%, (b) a curing agent comprising two terminal —SiH groups, and (c) a hydrosilation catalyst comprising a transition metal complex.

5,290,898

CONDENSED RESIN DISPERSION AND PROCESS FOR ITS PRODUCTION

Takao Doi, Yokohama; Noriko Itaya, Tokyo, and Masami Yamashita, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 814,032, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 518,427, May 3, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 961,059

Claims priority, application Japan, May 10, 1989, 1-114978; Mar. 26, 1990, 2-73269; Mar. 26, 1990, 2-73270

Int. Cl.[5] C08J *9/30;* C08K *5/06;* C08G *12/32;* C08L *61/28*

U.S. Cl. 528—76 5 Claims

1. A condensed resin dispersion having fine particles of a particle size ranging from 0.01 to 5 μm of a condensed resin dispersion stably in a polyether polyol (c), said condensed resin being the reaction product of an aldehyde and a compound condensable with the aldehyde, or a precondensate of these reactants, wherein the fine particles of the condensed resin are fine condensed resin particles formed by said reaction and precipitation conducted in an isocyanate-modified liquid polyether (b) which is (i) an isocyanate-modified polyether obtained by reacting, with a mixture of a polyether (a) and a low molecular weight polyamine, less than the equivalent amount of an organic polyisocyanate or a partially blocked organic polyisocyanate, (ii) an isocyanate-modified polyether obtained by reacting, with a mixture of a polyether (a) and a low molecular weight polyamine and a blocking agent, less than the equivalent amount, based on the total equivalent amount thereof, of an organic polyisocyanate, or (iii) an isocyanate-modified polyether obtained by reacting, with a mixture of a polyether (a) and a low molecular weight polyamine, more than the equivalent amount of an organic polyisocyanate, followed by reaction of the reactive material with a blocking agent.

5,290,899

PHOTOSENSITIVE MATERIAL HAVING A SILICON-CONTAINING POLYMER

Akinobu Tanaka, Atsugi, and Masazumi Hasegawa, Shin Nanyo, both of Japan, assignors to Tosoh Corporation, Yamaguchi and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan

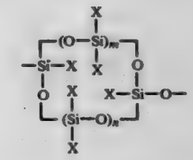
Continuation of Ser. No. 714,420, Jun. 12, 1991, abandoned, which is a division of Ser. No. 410,573, Sep. 21, 1989, Pat. No. 5,057,396. This application Sep. 28, 1992, Ser. No. 952,140

Claims priority, application Japan, Sep. 22, 1988, 63-236299

Int. Cl.[5] C08G *77/12*

U.S. Cl. 528—15 1 Claim

1. A silicon-containing polymer comprising repeating units of silicon-containing cyclic compound, represented by general formula (I)



wherein each of m and n is zero or a positive integer however $m+n>0$, and X is selected from the group consisting of an alkyl group, alkoxy group, phenyl group, naphthyl group, substituted phenyl group and substituted naphthyl group, wherein the substituent of said substituted phenyl group or substituted naphthyl group is selected from the group consisting of a halogen atom, halogenated alkyl group, amino group, aminoalkyl group and nitro group, wherein the X groups may be the same or different, and wherein said silicon-containing polymer comprises at least two kinds of repeating units having different values of (m+n) within the range of (m+n) being 1 to 4 in one polymer.

5,290,900

CURABLE FLUOROSILICONE RESIN COMPOSITION

Hideki Kobayashi, Ichihara, Japan, assignor to Dow Corning Toray Silicone, Ltd., Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 44,847

Claims priority, application Japan, Apr. 27, 1992, 4-134214; May 27, 1992, 4-160411

Int. Cl.[5] C08G *77/14, 77/34, 77/26*

U.S. Cl. 528—26 9 Claims

1. A curable fluorosilicone resin composition comprising:

(A) 100 parts by weight of a fluorosilicone resin obtained by cohydrolyzing a mixture of

(a) 50 to 95 mole percent of a perfluoroalkyl-containing organosilane having the formula R—$CH_2CH_2SiX_3$,

(b) 5 to 50 mole percent of an epoxy-containing organosilane having the formula Z_nSiX_{4-n}, and, optionally,

(c) up to 50 mole percent of an organosilane having the formula $R^1_nSiX_{4-n}$,

wherein R is a perfluoroalkyl group containing 4 to 15 carbon atoms, X is a hydrolyzable group, Z is an epoxy-containing monovalent organic group, R^1 is hydrogen or a monovalent hydrocabon group containing 1 to 15 carbon atoms, w is 1, 2 or 3 and n is 0, 1, 2 or 3; and

(B) 1 to 50 parts by weight of a crosslinking agent selected from the group consisting of

(i) an amino group-containing organosilicon compound that contains at least 2 nitrogen-bonded active hydrogens in each molecule and

(ii) a fluorine compound that contains at least 2 carboxyl groups and at least 2 fluorine atoms in each molecule.

5,290,901

METHOD FOR PREPARATION OF CARBINOL-FUNCTIONAL SILOXANES

Gary T. Burns; Gary T. Decker, and Aroop K. Roy, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 14, 1993, Ser. No. 74,512

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—34 25 Claims

1. A method for preparation of carbinol-functional organosiloxanes described by formula

$$HO(CR^1_2)_bSiR_2O(SiR_2O)_nSiR_2(CR^1_2)_bOH,$$

the method comprising:

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contacting a cyclic silyl ether described by formula



with an organosiloxane described by formula

$HO(R_2SiO)_nH$

at a temperature within a range of about 25° C. to 150° C.: where each R is independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, cycloalkyls comprising three to 20 carbon atoms, alkenyls comprising two to 20 carbon atoms, aralkyls, and aryls; each R^1 is independently selected from a group consisting of hydrogen, R, and substituted hydrocarbyls comprising one to 20 carbon atoms; b=3, 4, or 5; and n=1 to 15,000.

5,290,902

POLYISOCYANATES CONTAINING ALLOPHANATE AND ISOCYANURATE GROUPS, A PROCESS FOR THEIR PRODUCTION FROM CYCLIC DIISOCYANATES AND THEIR USE IN TWO-COMPONENT COATING COMPOSITIONS

Patricia B. Jacobs, Pittsburgh, and Douglas A. Wicks, Mt. Lebanon, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jun. 22, 1993, Ser. No. 81,923

Int. Cl.[5] C08G *18/32*

U.S. Cl. 528—49 **13 Claims**

1. A process for the production of a polyisocyanate mixture having an NCO content of 5 to 47% by weight and containing isocyanurate and allophanate groups in a molar ratio of monoisocyanurates to monoallophanates of 10:1 to 1:10 which comprises

a) catalytically trimerizing a portion of the isocyanate groups of an isocyanate component substantially containing one or more cyclic organic diisocyanates having (cyclo)aliphatically bound isocyanate groups

b) adding 0.01 to 0.5 moles, per mole of organic diisocyanate, of a monoalcohol containing at least one carbon atom and having a molecular weight of up to 2500 to the organic diisocyanate prior to or during the trimerization reaction of step a) and

c) terminating the trimerization reaction at the desired degree of trimerization by adding a catalyst poison and/or by thermally deactivating the catalyst.

5,290,903

COMPOSITE ABRASIVE WHEELS

Shyiguei Hsu, Watervliet, and Michael P. Brock, Petersburg, both of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Nov. 9, 1992, Ser. No. 973,498

Int. Cl.[5] C08G *18/16*

U.S. Cl. 528—53 **9 Claims**

1. A polyurethane having a softening temperature above 65° C. formed by the reaction, in the presence of a curing agent, of an isocyanate-terminated polymer with an hydroxyl-containing organic compound in proportions to provide an —NCO/—OH ratio of at least 1.5 to yield a crosslinked polyurethane comprising isocyanurate and/or oxazolidone structures.

5,290,904

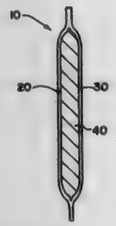
HEAT SHIELD

David P. Colvin, Apex; Yvonne G. Bryant, and James C. Mulligan, both of Raleigh, all of N.C., assignors to Triangle Research and Development Corporation, Raleigh, N.C.

Filed Jul. 31, 1991, Ser. No. 738,848

Int. Cl.[5] B32B *3/02*; C09K *5/00*

U.S. Cl. 428—68 **9 Claims**



1. A heat shield characterized by its ability to insulate from heat or cold and comprising:

a first covering layer;

a second covering layer overlying said first covering layer, said first covering layer and said second covering layer being flat and non-flammable;

a base means positioned between said first covering layer and said second covering layer;

a plurality of microcapsules integral with and dispersed throughout said base means and being held in place thereby, said microcapsules having a diameter of less than about 10 microns and containing paraffinic hydrocarbon as a thermal energy absorbing means and wherein said microcapsules are adapted to withstand repeated latent heat of fusion thermocycling;

whereby the shield exhibits enhanced thermal shielding properties and repeatability of thermal response over extended time periods when subjected to thermal energy.

5,290,905

POLYURETHANE, ELASTIC POLYURETHANE FIBER AND POLYESTERPOLYCARBONATEDIOL USED FOR THE SAME

Yukiatsu Komiya, Setuo Yamashita, and Koji Hirai, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 8, 1991, Ser. No. 666,644

Claims priority, application Japan, Mar. 13, 1990, 2-63374; Mar. 13, 1990, 2-63375; Mar. 13, 1990, 2-211137

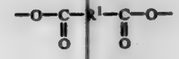
Int. Cl.[5] C08G *18/42, 18/44*

U.S. Cl. 528—80 **13 Claims**

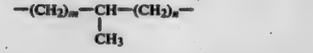
1. A polyurethane obtained by copolymerizing a polymer diol, an organic diisocyanate and a chain extender, said polyurethane having an inherent viscosity of 0.2 to 1.6 dl/g and being derived from a polyesterpolycarbonate diol α, a mixed polymer diol δ comprising a polyester diol β and a polycarbonate diol γ in a weight ratio between β and γ, β/γ, of 10/90 to 80/20, or a mixture comprising the polyesterpolycarbonate diol α and the mixed polymer diol δ; where:

α is a polyesterpolycarbonate diol comprising the following structural units (I), (II) and (III) with a molar ratio of (I)/(II) of 90/10 to 20/80 and having a number average molecular weight of 1,000 to 3,500


(I)

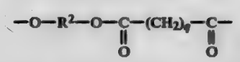

(II)

wherein R^1 represents a divalent organic group,

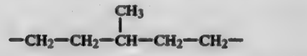

(III)

wherein m and n are each 0 or an integer of 1 to 8 and the sum of m and n is an integer of 4 to 8;

β is a polyester diol comprising repeating units represented by



wherein R^2 represents one member selected from divalent organic groups, at least 50 mol % of which is



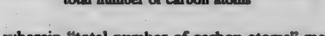
and q represents an integer of 4 to 10, satisfying the following conditions (s) and (t)

$$4 \leq \frac{\text{total number of carbon atoms}}{\text{number of ester groups}} \leq 11 \quad (s)$$

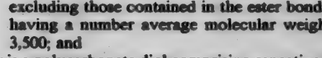
$$0.03 \leq \frac{\text{number of methyne groups}}{\text{total number of carbon atoms}} \leq 0.2 \quad (t)$$

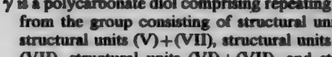
wherein "total number of carbon atoms" means the total number of carbon atoms contained in the polymer diol and excluding those contained in the ester bonds thereof, and having a number average molecular weight of 1,000 to 3,500; and

γ is a polycarbonate diol comprising repeating units selected from the group consisting of structural units (V)+(VI), structural units (V)+(VII), structural units (V)+(VI)+(VII), structural units (VI)+(VII), and structural units (VI), said repeating units being linked with each other via carbonate bond,


(V)

wherein r represents an integer of 6 to 10,


(VI)


(VII)

the molar ratio of [(VI)+(VII)]/[(V)+(VI)+(VIII)] being 0.1 to 1.0, and that of [(V)+(VI)]/[(V)+(VI)+(VII)] being also 0.1 to 1.0,

and having a number average molecular weight of 1,000 to 3,000.

5,290,906

POLY(ARYLENE ETHER KETONE), PROCESS FOR PRODUCING SAME AND ITS USE

Shunichi Matsumura; Seiji Itoh; Hiroo Inata, and Jiro Sadanobe, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

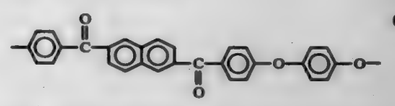
Filed Jan. 23, 1991, Ser. No. 644,978

Claims priority, application Japan, May 23, 1989, 1-127742; Dec. 22, 1989, 1-331138; Dec. 22, 1989, 1-331139

Int. Cl.[5] C08G *8/02, 14/00, 61/12*; B32B *9/00*

U.S. Cl. 528—125 **6 Claims**

1. A film of a crystalline poly(arylene ether ketone) in which the Young's modulus is at least 400 kg/mm^2, the crystalline poly(arylene ether ketone) principally comprising recurring units represented by formula (4)


(4)

and having inherent viscosity of at least 0.3 measured at 30° C. in conc. sulfuric acid,

wherein main crystal lattice planes oriented parallel to the film surface are crystal lattice planes having spacings of 3.9±0.2 Å and 4.7±0.3 Å, and an x-ray diffraction peak intensity ratio [I(4.7 Å)/I(3.9 Å)] of both crystal lattice planes measured by symmetrical-reflection technique is at most 0.4.

5,290,907

AUTOMATIC COPOLYAMIDE

Georg-Emerich Miess, Königstein/Taunus; Peter Klein, Wiesbaden, and Karl Heinrich, Gronsaltingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 834,584

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1991, 4104394

Int. Cl.[5] C08G *69/32*

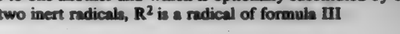
U.S. Cl. 528—183 **12 Claims**

1. An aromatic copolyamide which is soluble in an organic polyamide solvent and consists essentially of at least 95 mol% of recurring structural units of the formulae Ia, Ib and Ic without or with up to 5 mol% of recurring structural units of the formula Id

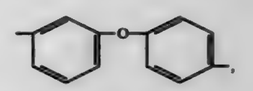
$$[—OC—R^1—CO—NH—R^2—NH—] \text{ (Ia)},$$
$$[—OC—R^1—CO—NH—R^3—NH—] \quad \text{(Ib)},$$

$$[—OC—R^1—CO—NH—R^4—NH—] \text{ (Ic)},$$
$$[—OC—R^1—CO—NH—R^5—NH—] \quad \text{(Id)},$$

where at least 95 mol% of all radicals R^1 have a structure of the formula IIa and up to 5 mol% of all the radicals R^1 have the structure of the formula IIb


(IIa), —Ar^2— (IIb),

where Ar^1 is a divalent aromatic radical having valence bonds in the para or a comparable coaxial or parallel position relative to one another and which is optionally substituted by one or two inert radicals, and Ar^2 is a divalent aromatic radical having valence bonds in the meta or a comparable kink position relative to one another and which is optionally substituted by one or two inert radicals, R^2 is a radical of formula III


(III)

R^3 is a radical of the formula IV


(IV)

where each R^6 is independently of the other hydrogen or an inert radical and Z is selected from the group consisting of

—O—, —S—, —CO—, —SO_2—, —C_nH_{2n}— and is as defined above, R^4 is a radical which differs from R^3 and is selected from one of the structures defined for R^3, R^5 is a radical selected from one of the structures defined for Ar^2, and with the proviso that the mole fractions of the radicals R^2, R^3 and R^4, based on the sum total of these radicals, lie within the following limits:

Radical R^2: from 5 to 70 mol%,
Radical R^3: from 5 to 70 mol%, and
Radical R^4: from 5 to 70 mol%.

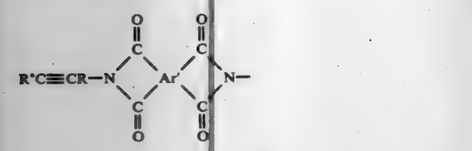
5,290,908

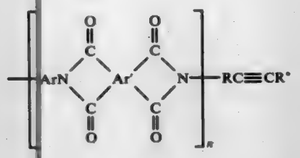
ACETYLENIC END-CAPPED POLYIMIDES

Gaetano F. D'Alelio, South Bend, Ind., assignor to The University of Notre Dame du Lac, Notre Dame, Ind.

Continuation-in-part of Ser. No. 363,800, May 25, 1973, Pat. No. 3,998,786, and a continuation-in-part of Ser. No. 363,801, May 25, 1973, Pat. No. 3,897,395. This application Jan. 24, 1975, Ser. No. 543,923
Int. Cl.[5] C08G *69/26, 73/10*
U.S. Cl. 528—353 **40 Claims**

1. A polyimide of the formula:





wherein

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent or peri carbon atoms in the Ar′ radical,

Ar is a divalent aromatic organic radical,

R is a divalent hydrocarbon radical of 1 to 14 carbon atoms, and

R* is H or a monovalent hydrocarbon radical of 1 to 12 carbon atoms and

n is 0 or a positive integer of at least one.

5,290,909

POLYIMIDE COMPOSITION FOR POLYIMIDE/COPPER FOIL LAMINATE

Han L. Chen, Nantou Hsien; Syh-Ming Ho, Hsinchu; Tsung H. Wang, Taichung Hsien, and Jing-Pin Pan, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Filed May 28, 1993, Ser. No. 70,537
Int. Cl.[5] C08G *69/26, 73/10*
U.S. Cl. 528—353 **8 Claims**

1. A polyimide composition prepared from a monomer composition, said monomer composition comprising:

(a) a dianhydride;

(b) an imidazole-containing or benzimidazole-containing compound, or mixture thereof; and

(c) and oxydianiline.

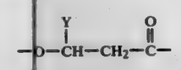
5,290,910

POLYMER AND METHOD FOR PRODUCTION THEREOF

Takeshi Shiotani, Kokogawa, and Genta Kobayashi, Takasago, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,137
Claims priority, application Japan, Aug. 3, 1991, 3-217948
Int. Cl.[5] C08G *63/06;* C12P *7/62*
U.S. Cl. 528—361 **21 Claims**

1. A polymer comprising a group of repeating units represented by Formula (1):



(1)

wherein Y represents a hydrocarbon residue having 12 to 13 carbon atoms which may have 1 to 4 double bonds, and wherein said group is a member selected from the group consisting of a unit having a carbon number of 4, a unit having a carbon number of 6, a unit having a carbon number of 8, a unit having a carbon number of 10, a unit having a carbon number of 12, a unit having a carbon number of 14, and a unit having a carbon number of 16.

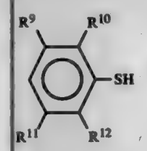
5,290,911

PROCESS FOR PREPARING POLYARYLENE THIOETHER FROM THIOPHENOL

Eishun Tsuchida; Hiroyuki Nishide; Kimihisa Yamamoto, all of Tokyo, and Mitsutoshi Jikei, Kawagoe, all of Japan, assignors to Research Institute for Production Development, Kyoto and Idemitsu Petrochemmical Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 543,834, Jul. 11, 1990, Pat. No. 5,153,305. This application Aug. 7, 1992, Ser. No. 916,873
Claims priority, application Japan, Dec. 22, 1988, 88-324033
Int. Cl.[5] C08G *75/04*
U.S. Cl. 528—374 **18 Claims**

1. A process for preparing a polyarylene thioether, which comprises oxidation coupling polymerizing, with oxygen, at least one compound selected from the group consisting of thiophenols represented by the formula (II):



(II)

wherein R^9 to R^{12} are identical or different from each other and each is a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a halogen atom or an alkoxyl group having 1 to 10 carbon atoms, with a catalyst, in the presence of an acid, said catalyst being a salt of a VB metal of the Periodic Table or a VIB metal of the Periodic Table.

5,290,912

PROCESS FOR PRODUCING A POLYOXYALKYLENE COMPOUND

Takashi Watabe, Yokohama; Hiromitsu Takeyasu, Tokyo, and Shigeyuki Kozawa, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

PCT No. PCT/JP91/00624, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO91/18038, PCT Pub. Date Nov. 28, 1991
PCT Filed May 10, 1991, Ser. No. 778,953
Claims priority, application Japan, May 11, 1990, 2-120112
Int. Cl.[5] C08G *65/00, 65/26;* C07C *41/02, 41/03*
U.S. Cl. 528—405 **7 Claims**

1. A process for producing a polyoxyalkylene compound, comprising ring-opening polymerizing an alkylene oxide, in the presence of a plural metal cyanide complex catalyst, with an initiator selected from the group consisting of an organopolysiloxane compound, wherein said organopolysiloxane compound is a polymer of a siloxane having at least one organic group bonded thereto and wherein at least one of said organic groups is an organic group having an active hydrogen-containing functional group, and a fluorine-containing compound selected from the group consisting of a compound of one of the following chemical formulae (4) to (8):

$$R_f^1—R^{11}—X^2 \quad (4),$$

$$R_f^1—COOX^3 \quad (5),$$

$$R_f^1—CON(R^{14})—X^3 \quad (6),$$

$$X^2—R^{12}—R_f^2—R^{13}—X^2 \quad (7) \text{ and}$$

$$(R_f^1)_t—C_6—F_{5-t}—X^2 \quad (8)$$

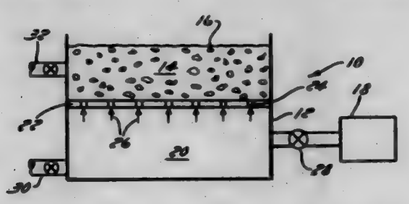
wherein X^2 is an active hydrogen-containing functional group selected from the group consisting of —OH, —SH, —NH_2, —NHR^{14} and —CO_2H, or a hydrocarbon group having at least one such functional group, X^3 is a hydrogen atom or a hydrocarbon group having at least one of the above active hydrogen-containing functional groups, R^{14} is a hydrogen atom or a C_{1-6} hydrocarbon group, R_f^1 is a perfluoroalkyl group of at least one carbon atom, R_f^2 is a perfluoroalkylene group of at least 2 carbon atoms, R^{11} is an alkylene group containing no fluorine atom, each of R^{12} and R^{13} which are independent from each other, is an alkylene group containing no fluorine atom, and t is 0 or an integer of from 1 to 3.

5,290,913

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF MATERIAL

Mark L. McAllister, and Steven J. French, both of Louisville, Ky., assignors to Carrier Vibrating Equipment, Inc., Louisville, Ky.

Filed Oct. 8, 1992, Ser. No. 958,280
Int. Cl.[5] C08F *6/24, 6/18*
U.S. Cl. 528—483 **12 Claims**



1. Method for crystallizing plastic particles comprising the steps of

(a) placing plastic particles to be crystallized in suspension in a liquid bath;

(b) agitating the liquid bath and suspended plastic particles by injecting a plurality of jets of hot gas into the liquid bath containing the suspended particles;

(c) raising the temperature of the particles by the hot gas jets while suspended in the in agitated liquid bath to a level sufficient to cause the particles to begin to crystallize and maintaining said temperature level of said particles while suspended in the agitated liquid bath for a time sufficient for said particles to reach a predetermined level of crystallinity;

(d) separating said crystallized particles from said liquid; and

(e) drying said crystallized particles.

5,290,914

HYBRID DIPHTHERIA-B.T. PESTICIDAL TOXINS

Edward Wilcox, Escondido; David L. Edwards, Del Mar; George E. Schwab, La Jolla; Mark Thompson, Del Mar, and Paul Culver, Encinitas, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Filed Apr. 28, 1988, Ser. No. 187,167
Int. Cl.[5] C07K *13/00;* C12P *21/06;* C12N *15/00*
U.S. Cl. 530—350 **2 Claims**

1. Toxin active against lepidopteran insects having the amino acid sequence shown in FIG. 10 and mutations thereof in which the protein secondary structure is maintained.

5,290,915

PLACENTA-DERIVED COAGULATION INHIBITOR

Hiroshi Nakao, Ibaraki; Takao Nagoya, Tokorozawa; Yushi Saino, Tokyo; Masahiro Maki, Akita, and Hideo Tani, Kodaira, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 116,908, Nov. 5, 1987, Pat. No. 5,192,694. This application Jan. 13, 1992, Ser. No. 820,004
Claims priority, application Japan, Nov. 14, 1986, 61-269588
The portion of the term of this patent subsequent to Mar. 2, 2005, has been disclaimed.
Int. Cl.[5] C07K *15/06;* A61K *37/24*
U.S. Cl. 530—350 **1 Claim**

1. A substantially pure, glucose-free polypeptide consisting of the following amino acid sequence:

Ala—Gln—Val—Leu—Arg—Gly—
—Thr—Val—Thr—Asp—Phe—Pro
Gly—Phe—Asp—Glu—Arg—Ala—
—Asp—Ala—Glu—Thr—Leu—Arg
Lys—Ala—Met—Lys—Gly—Leu—
—Gly—Thr—Asp—Glu—Glu—Ser
Ile—Leu—Thr—Leu—Leu—Thr—
Ser—Arg—Ser—Asn—Ala—Gln
Arg—Gln—Glu—Ile—Ser—Ala—
—Ala—Phe—Lys—Thr—Leu—Phe
Gly—Arg—Asp—Leu—Leu—Asp—
—Asp—Leu—Lys—Ser—Glu—Leu
Thr—Gly—Lys—Phe—Glu—Lys—
—Leu—Ile—Val—Ala—Leu—Met
Lys—Pro—Ser—Arg—Leu—Tyr—
—Asp—Ala—Tyr—Glu—Leu—Lys
His—Ala—Leu—Lys—Gly—Ala—
—Gly—Thr—Asn—Glu—Lys—Val

VOL 1160 ISS 1 MR 1 1994 UMI

-continued

Leu—Thr—Glu—Ile—Ile—Ala—
—Ser—Arg—Thr—Pro—Glu—Glu
Leu—Arg—Ala—Ile—Lys—Gln—
—Val—Tyr—Glu—Glu—Glu—Tyr
Gly—Ser—Ser—Leu—Glu—Asp—
—Asp—Val—Val—Gly—Asp—Thr
Ser—Gly—Tyr—Tyr—Gln—Arg—
—Met—Leu—Val—Val—Leu—Leu
Gln—Ala—Asn—Arg—Asp—Pro—
—Asp—Ala—Gly—Ile—Asp—Glu
Ala—Gln—Val—Glu—Gln—Asp—
—Ala—Gln—Ala—Leu—Phe—Gln
Ala—Gly—Glu—Leu—Lys—Trp—
—Gly—Thr—Asp—Glu—Glu—Lys
Phe—Ile—Thr—Ile—Phe—Gly—
—Thr—Arg—Ser—Val—Ser—His
Leu—Arg—Lys—Val—Phe—Asp—
—Lys—Tyr—Met—Thr—Ile—Ser
Gly—Phe—Gln—Ile—Glu—Glu—
—Thr—Ile—Asp—Arg—Glu—Thr
Ser—Gly—Asn—Leu—Glu—Gln—
—Leu—Leu—Leu—Ala—Val—Val
Lys—Ser—Ile—Arg—Ser—Ile—
—Pro—Ala—Tyr—Leu—Ala—Glu
Thr—Leu—Tyr—Tyr—Ala—Met—
—Lys—Gly—Ala—Gly—Thr—Asp
Asp—His—Thr—Leu—Ile—Arg—
—Val—Met—Val—Ser—Arg—Ser
Glu—Ile—Asp—Leu—Phe—Asn—
—Ile—Arg—Lys—Glu—Phe—Arg
Lys—Asn—Phe—Ala—Thr—Ser—
—Leu—Tyr—Ser—Met—Ile—Lys
Gly—Asp—Thr—Ser—Gly—Asp—
—Tyr—Lys—Lys—Ala—Leu—Leu
Leu—Leu—Cys—Gly—Glu—Asp—Asp.

5,290,916

PURIFIED GLUCANASE ENZYMES

Aino Matsushiro, 4-15-2, Suite 565, Aoyamadai, Japan

Division of Ser. No. 454,159, Dec. 21, 1989, abandoned, and a continuation-in-part of Ser. No. 840,940, Mar. 18, 1986, abandoned. This application Apr. 20, 1992, Ser. No. 871,192
Claims priority, application Japan, Jun. 16, 1988, 60-57443
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—350 7 Claims

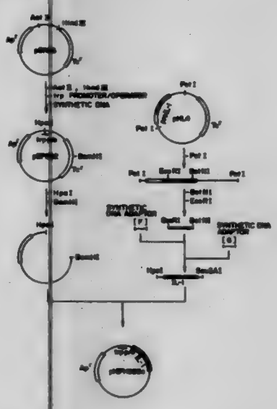
1. A purified and isolated polypeptide product of the expression in a genetically transformed host cell of a DNA sequence encoding the α-1,3-glucan-3-glucanohydrolase enzyme of *Bacillus circulans* BC-3 (FERM BP-733).

5,290,917

MODIFIED POLYPEPTIDES OF IL-1α

Michiko Yamayoshi, Toyonaka; Hitoshi Kawashima, Osaka; Junichi Yamagishi, Nara; Hirotada Kotani, Sakai; Ryuji Furuta, Otsu, and Toshikazu Fukui, Settsu, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 305,461, Feb. 1, 1989, abandoned. This application Apr. 5, 1991, Ser. No. 681,077
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—351 3 Claims



1. A modified human interleukin 1α polypeptide having an amino acid sequence of the following formula [I]:

Formula [I]

Ser	W	Pro	Phe	Ser	Phe	Leu	Ser	Asn	Val
Lys	Tyr	Asn	Phe	Met	Arg	Ile	Ile	Lys	Tyr
Glu	Phe	Ile	Leu	Asn	Asp	Ala	Leu	Asn	Gln
Ser	Ile	Ile	Arg	Ala	X	Asp	Gln	Tyr	Leu
Thr	Ala	Ala	Ala	Leu	His	Asn	Leu	Asp	Glu
Ala	Val	Lys	Phe	Asp	Met	Gly	Ala	Tyr	Lys
Ser	Ser	Lys	Asp	Asp	Ala	Lys	Ile	Thr	Val
Ile	Leu	Arg	Ile	Ser	Lys	Thr	Gln	Leu	Tyr
Val	Thr	Ala	Gln	Asp	Glu	Asp	Gln	Pro	Val
Leu	Leu	Lys	Glu	Met	Pro	Glu	Ile	Pro	Lys
Thr	Ile	Thr	Gly	Ser	Glu	Thr	Asn	Leu	Leu
Phe	Phe	Trp	Glu	Thr	His	Gly	Thr	Lys	Asn
Tyr	Phe	Thr	Ser	Val	Ala	His	Pro	Asn	Leu
Phe	Ile	Ala	Thr	Lys	Gln	Asp	Tyr	Trp	Val
Cys	Leu	Ala	Gly	Gly	Pro	Pro	Ser	Ile	Thr
Y	Phe	Gln	Ile	Leu	Glu	Asn	Gln	Ala	

in which W means Ser, X means Asn, and Y means Tyr, Phe, Lys, or Arg.

5,290,918

PROCESS FOR THE OBTENTION OF A BIOLOGICAL ADHESIVE MADE OF CONCENTRATED COAGULATION FACTORS BY ACIDIC PRECIPITATION

Trung Bui-Khac, Montreal, Canada, assignor to Haemacure Biotech Inc., Quebec, Canada

Filed Feb. 23, 1993, Ser. No. 21,212
Int. Cl.[5] A61K *35/14, 35/16;* A61L *25/00;* C07K *3/24*
U.S. Cl. 530—381 15 Claims

1. A method for the preparation of a protein concentrate coagulable by thrombin, and containing mostly fibrinogen, endogenous Factor XIII and fibronectin, characterized in that it comprises the following steps:

a) a first precipitation of whole plasma proteins by the addition of a salt achieving a concentration sufficient to bring the pH at a value comprised between 4.5 and 5.5, in presence of a minimal concentration of 50 mM of amino-6 hexanoic acid;
b) a first solubilization of the precipitated proteins in presence of L-Histidine to a final concentration of 0.2 to 0.3 g per gram of proteins;
c) a viral deactivation step in a solvent-detergent solution;
d) a second precipitation by the same salt as in step a) in presence of same concentration of amino-6 hexanoic acid;
e) washing the precipitate with slightly basic pure water;
f) a second solubilization of the precipitate in presence of L-Histidine as in step (b);
g) an addition of 50% saccharose with respect to the quantity of proteins;
h) a sterile filtration;
i) an aliquoting of the sterile filtrated concentrate in sterile bottles; and
j) a lyophilisation.

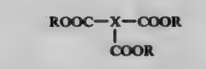
5,290,919

HEMOGLOBIN INTRAMOLECULARLY CROSS-LINKED WITH TRIVALENT REAGENTS

Enrico Bucci, and Clara Fronticelli, both of Baltimore, Md., assignors to The University of Maryland Baltimore, Baltimore, Md.

Filed Aug. 28, 1992, Ser. No. 936,652
Int. Cl.[5] A61K *35/14*
U.S. Cl. 530—385 30 Claims

1. Stroma-free hemoglobin intramolecularly cross-linked with a compound of the following formula (I):



(I)

wherein R is a leaving atom or group capable of activating the carboxyl moiety to which it is attached and X is a member selected from the group consisting of a trivalent C_{1-12} aliphatic group, a trivalent C_6 aromatic group, a trivalent C_{5-6} heterocyclic group and a fused ring group.

5,290,920

METHOD OF PURIFYING HUMAN EPIDERMAL GROWTH FACTOR

Dennis R. Sindrey, Etobicoke, and Chandra M. Dwivedi, Mississauga, both of Canada, assignors to Allelix Biopharmaceuticals Inc., Ontario, Canada

Filed Apr. 16, 1992, Ser. No. 869,176
Int. Cl.[5] C07K *3/00, 13/00*
U.S. Cl. 530—412 12 Claims

7. A method for obtaining essentially pure human epidermal growth factor, comprising the steps of

i) obtaining a human epidermal growth factor preparation;
ii) fractionating said preparation by reversed phase high performance liquid chromatography in the presence of triethylamine or a salt thereof; and
iii) collecting, following the chromatographic step, essentially pure human epidermal growth factor.

5,290,921

INTERMEDIATES AND COLORANTS HAVING PRIMARY HYDROXYL ENRICHED POLY (OXYALKYLENE) MOIETIES AND THEIR PREPARATION

David J. Moody, Spartanburg; Edward W. Kluger, Pauline, and John W. Rekers, Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 8, 1990, Ser. No. 461,852
Int. Cl.[5] C09B *29/033, 29/09;* D06P *3/24*
U.S. Cl. 534—607 12 Claims

1. A primary hydroxyl enhanced colorant of the formula:

C—$(Z)_{1-4}$

wherein C is an azo chromogen, and Z is a poly(oxyalkylene) moiety comprising the residue of at least two moles of glycidol reacted with an amino group of said chromogen, the residue of at least one mole of a secondary hydroxyl forming alkylene oxide selected from propylene oxide and butylene oxide reacted with each primary hydroxyl site of said glycidol residues, and at least one mole of ethylene oxide reacted with each secondary hydroxyl site present on said glycidol residues and said secondary hydroxyl forming alkylene oxide, provided that the total number of residues of said secondary hydroxyl forming alkylene oxides and said ethylene oxide does not exceed 200.

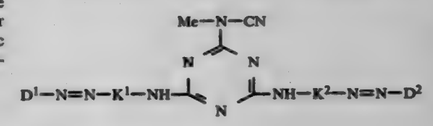
5,290,922

DISAZO COMPOUNDS CONTAINING A CYANOAMIDOTRIAZINYL RADICAL AS A BRIDGING MEMBER (MIDDLE COMPONENT) AND FIBER-REACTIVE GROUPS OF THE VINYLSULFONE SERIES, SUITABLE AS DYESTUFFS

Hartmut Springer, Königstein/Taunus, and Rolf Gleibner, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

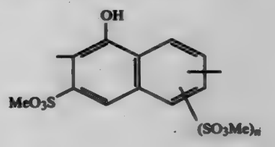
PCT No. PCT/EP91/01208, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/01021, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 27, 1991, Ser. No. 958,368
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021067
Int. Cl.[5] C09B *62/513;* D06P *1/384*
U.S. Cl. 534—642 12 Claims

1. A disazo compound conforming to the formula (1)



(1)

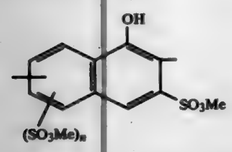
where
Me is hydrogen or an alkali metal;
K^1 is a radical of the formula (2a)



(2a)

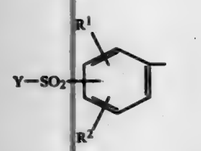
where

Me has one of the abovementioned meanings and
n is zero or 1 (if zero, this group being hydrogen);
K^2 is a radical of the formula (2b)

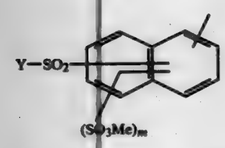


(2b)

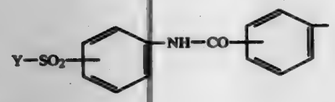
where Me and n are each as defined above;
D^1 and D^2 are each independently of the other a group of the formula (3a), (3b) or (3c)



(3a)



(3b)



(3c)

where
Me has one of the abovementioned meanings,
R^1 is hydrogen, alkyl of from 1 to 4 carbon atoms, which maybe sulfo-, carboxyl- or sulfato-substituted, alkoxy of from 1 to 4 carbon atoms, which may by sulfo-, carboxyl- or sulfato-substituted, chlorine, bromine, hydroxyl, cyano, carboxyl or sulfo,
R^2 is hydrogen, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms,
Y is vinyl, or ethyl which contains in the β-position a substituent which is eliminable by alkali to form a vinyl group, and
m is zero, 1 or 2 (if zero, this group being hydrogen).

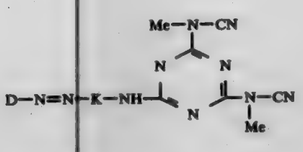
5,290,923

MONOAZO REACTIVE DYE WHICH CONTAINS A DICYANOAMINOTRIAZINYL GROUP AND A GROUP OF THE VINYLSULFONE SERIES

Hartmut Springer, Königstein/Taunus, and Rolf Gleissner, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

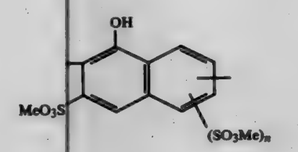
PCT No. PCT/EP91/01285, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/01755, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 10, 1991, Ser. No. 969,811
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1990, 4023475
Int. Cl.[5] C09B *62/51;* D06P *1/384*
U.S. Cl. 534—642 **10 Claims**

1. A monoazo compound conforming to the formula (b 1)



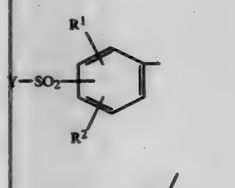
(1)

where
Me is hydrogen or an alkali metal;
K is a radical of the formula (2)

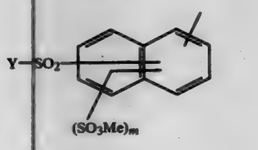


(2)

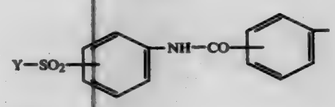
where
Me has one of the abovementioned meanings and
n is zero or 1 (if zero, this group being hydrogen);
D is a group of the formula (3*a*), 3*b*) or (3*c*)



(3a)



(3b)



(3c)

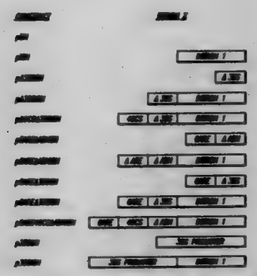
where
Me has one of the abovementioned meanings,
R^1 is hydrogen, alkyl of from 1 to 4 carbon atoms, which may be sulfo-, carboxyl- or sulfato-substituted, alkoxy of from 1 to 4 carbon atoms, which may be sulfo-, carboxyl-, or sulfato-substituted, chlorine, bromine, hydroxyl, cyano, carboxyl or sulfo,
R^2 is hydrogen, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms,
Y is vinyl or ethyl which contains in the β-position a substituent which is eliminable by alkali to form a vinyl group, and
m is zero, 1 to 2 (if zero, this group being hydrogen).

5,290,924

RECOMBINANT PROMOTER FOR GENE EXPRESSION IN MONOCOTYLEDONOUS PLANTS

David I. Last, 19 Lindrum Crescent, Holt, ACT; Richard I. S. Brettell, 37 Cutbush Street, Kambah, ACT; Douglas A. Chamberlain, 210 Beasley Street, Farrer, ACT; Philip J. Larkin, 82 MacInnes Street, Weston, ACT; Ellen L. Marsh, 32 Ijong Street, Braddon, ACT; James W. Peacock, 16 Brassey Street, Deakin, ACT; Elizabeth S. Dennis, 100 Hopetoun Circuit, Yarralumla, ACT; Mark R. Olive, 138 Dexter Street, Cook, ACT, and Jeffrey G. Ellis, 19 Roberts Street, Macquarie, ACT all of Australia

Continuation of Ser. No. 525,866, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 63,338, Jun. 15, 1987, Pat. No. 5,001,060, which is a continuation-in-part of Ser. No. 11,904, Feb. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 11,614, Feb. 6, 1987, abandoned. This application Apr. 21, 1993, Ser. No. 51,006
Int. Cl.[5] C07H *21/04;* C12N *15/00, 5/00;* A01H *1/04;* C12R *1/41*
U.S. Cl. 536—24.1 **18 Claims**



1. A recombinant promoter molecule, useful for enhancing expression of a plant-expressible structural gene in a monocot plant cell, said promoter molecule comprising:
(a) a plurality of enhancer elements selected from the group consisting of only ARE elements, only OCS elements, and combinations of ARE and OCS elements;
(b) a truncated, plant expressible promoter, providing a TATA box region and a transcription start site, said promoter selected from the group consisting of Δ35S and ΔADH positioned 3′ to said plurality of enhancer elements wherein said truncated promoter excludes the presence of enhancer sequences and wherein said truncated promoter is recombined with said plurality of enhancer elements positioned 5′ to said truncated promoter; and
(c) a maize Adh1 intron positioned 3′ to said transcription start site whereby a plant-expressible structural gene, placed 3′ to said recombinant promoter molecule, is expressed in said monocot plant cell under regulatory control of said recombinant promoter molecule.

5,290,925

METHODS, KITS, AND REACTIVE SUPPORTS FOR 3′ LABELING OF OLIGONUCLEOTIDES

James R. Fino, Antioch, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 20, 1990, Ser. No. 630,908
Int. Cl.[5] C12Q *1/68;* C03C *12/00;* C07H *17/00*
U.S. Cl. 536—25.32 **27 Claims**

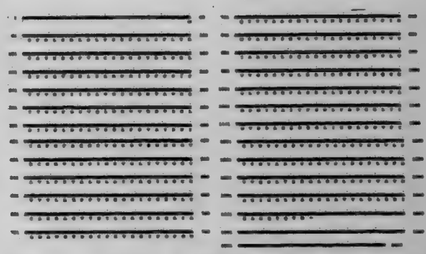
1. A reactive support having a free or protected hydroxyl group useful for synthesis of an oligonucleotide, said support comprising a label moiety covalently bonded via a stable bond to a trifunctional spacer containing the hydroxyl group to form a labeled linker complex, the labeled linker complex being covalently bonded to a solid support via a cleavable bond.

5,290,926

ISOLATED DNA ENCODING PLANT HISTIDINOL DEHYDROGENASE

Alfred Scheidegger, Nishinomiya, Japan; Eric R. Ward; John A. Ryals, both of Durham, N.C., and Atsuko Nagai-Hayashi, Amagasaki, Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 14, 1990, Ser. No. 583,892
Int. Cl.[5] C12N *15/29, 15/53*
U.S. Cl. 536—23.2 **8 Claims**



1. An isolated and purified DNA molecule consisting essentially of a DNA sequence encoding a higher plant histidinol dehydrogenase.

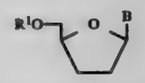
5,290,927

PROCESS FOR PREPARING 2′,3′-DIDEOXYADENOSINE

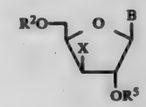
Yutaka Honda; Hiroshi Shiragami; Hisao Iwagami, and Masayuki Arai, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 317,567
Claims priority, application Japan, Mar. 1, 1988, 63-48425; Jul. 11, 1988, 63-170963; Dec. 9, 1988, 63-310131; Dec. 19, 1988, 63-320046
Int. Cl.[5] C07H *19/173, 19/073*
U.S. Cl. 536—27.6 **12 Claims**

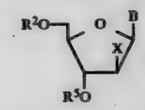
1. A process for producing a 2′,3′-dideoxynucleoside of the formula



wherein B is adenine, R^1 is hydrogen, $C_{1\text{-}12}$ acyl, $C_{1\text{-}12}$ alkyl, $C_{7\text{-}8}$ aralkyl or silyl, said process comprising:
reducing a nucleoside of the formula IIIa or IIIb



(IIIa)



(IIIb)

wherein R^2 is hydrogen, $C_{1\text{-}12}$ acyl, $C_{1\text{-}12}$ alkyl, $C_{7\text{-}8}$ aralkyl or silyl, X is Cl, Br or I, R^5 is $C_{1\text{-}12}$ acyl and B is adenine, with hydrogen in an aqueous solvent comprising an aqueous solvent mixture of acetonitrile or ethyl acetate and water, said aqueous solvent containing a base selected from the group consisting of sodium hydroxide/sodium acetate and sodium carbonate/sodium acetate, wherein

said solvent has a pH of 9–11 in the presence of a palladium catalyst.

5,290,928

PROCESS FOR PREPARING OXYTITANIUM PHTHALOCYANINE HYDRATE CRYSTAL

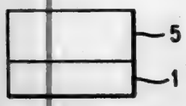
Katsumi Nukada; Masakazu Iijima; Akira Imai, and Katsumi Daimon, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 757,218, Sep. 10, 1991. This application Aug. 12, 1992, Ser. No. 928,416

Claims priority, application Japan, Nov. 22, 1990, 2-316072; Aug. 16, 1991, 3-229689

Int. Cl.[5] C09B *67/50*

U.S. Cl. 540—141 **10 Claims**



1. A process for preparing an oxytitanium phthalocyanine hydrate crystal which, when dried at 100° C. and 0.1 mmHg for 8 hours and then allowed to stand in air at room temperature for 12 hours, has a structural formula of $TiOPc\cdot(H_2O)_n$, wherein Pc represents a phthalocyanine nucleus, and n represents a number of from 0.15 to 1, and elemental analysis values of C: 65.0 to 66.3%, H: 2.5 to 3.1%, and N: 18.5 to 19.3%,

said process comprising the steps of: mechanically grinding a mixture of oxytitanium phthalocyanine and an inorganic salt to convert the crystal form of the oxytitanium phthalocyanine to a crystal form showing a distinct peak in its X-ray diffraction pattern at a Bragg angle ($2\theta\pm0.2°$) of 27.3°; and treating the resulting oxytitanium phthalocyanine crystal with a mixed solvent of water and a water-insoluble organic solvent.

5,290,929

HETEROARYL DERIVATIVES OF MONOCYCLIC BETA-LACTAM ANTIBIOTICS

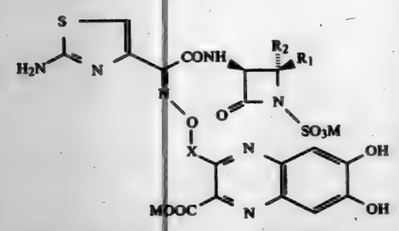
William H. Koster, Pennington, N.J.; Joseph E. Sundeen, Yardley, Pa.; Henner Straub, Regensburg, Fed. Rep. of Germany; Peter Ermann, Donaustauf; Uwe D. Treuner, Etterzhausen, Fed. Rep. of Germany; Kent Amsberry; Michael Fakes, both both of Fed. Rep. of Germany; Kent Amsberry; Michael Fakes, both of East Windsor, N.J., and Sailesh A. Varia, Plainsboro, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

abandoned. This application Sep. 8, 1992, Ser. No. 941,600

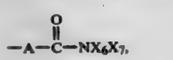
Int. Cl.[5] C07D *417/14, 241/44*; A61K *31/495*

U.S. Cl. 540—355 **19 Claims**

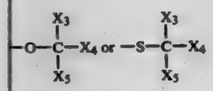
1. Compounds having the formula



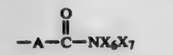
wherein R_1 and R_2 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle, or one of R_1 and R_2 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, phenylethyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl, $—CH_2X_1$; wherein X_1 is azido, amino, hydroxy, carboxyl, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano,



—S—X_2, or —O—X_2 wherein A, X_2, X_6 and X_7 are as hereinafter defined; —S—X_2 or —O—X_2; wherein X_2 is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, formyl, alkanoyl, substituted alkanoyl, phenylalkanoyl, substituted phenylalkanoyl, phenylcarbonyl, substituted phenylcarbonyl, heteroaryl, heteroarylalkyl, heteroarylalkanoyl or heteroarylcarbonyl, and in the case of when X_1 is —O—X_2 then X_2 can also be alkylideneamino, alkanoylamino, carboxyalkylideneamino, alkylsulphinylamino, alkoxycarbonyl or alkylsulphonylamino; and R_1 and R_2 can also be



wherein one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group; and X_5 is formyl, alkanoyl, phenylcarbonyl, substituted phenylcarbonyl, phenylalkylcarbonyl, substituted phenylalkylcarbonyl, carboxyl, alkoxycarbonyl, aminocarbonyl, substituted aminocarbonyl, or cyano; or



wherein A is —CH=CH—, $—(CH_2)_m—$, $—(CH_2)_m—O—$, $—(CH_2)_m—NH—$, or $—CH_2—S—CH_2—$, where m is 0, 1 or 2, and X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen an X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, 6 or 7-membered heterocycle;

X is $—(CH_2)_n—$ wherein n is 0, 1, 2, 3 or 4 or CR_3R_4 wherein R_3 and R_4 are the same or different and each is hydrogen, $—CH_3$ or $—C_2H_5$ or R_3 and R_4 taken together with the carbon atom to which they are attached form a 3, 4, 5, 6 or 7-membered cycloalkyl ring; M is hydrogen or a cation capable of forming a pharmaceutically acceptable salt;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl (of 1 to 4 carbon atoms), alkoxy (of 1 to 4 carbon atoms), alkanoyloxy, aminocarbonyl, or carboxy groups;

the term "a 4, 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl wherein the alkyl group has 1 to 4 carbon atoms;

the term "substituted amino" refers to a group having the formula $—NX_8X_9$ wherein X_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, and X_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino.

5,290,930

TRIPHENAZINOXAZINES

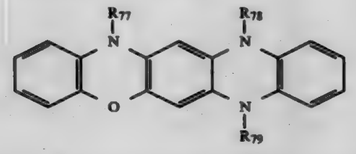
Harlan J. Byker, Holland, Mich., assignor to Gentex Corporation, Zeeland, Mich.

Continuation of Ser. No. 760,587, Sep. 16, 1991, abandoned, which is a division of Ser. No. 422,601, Oct. 17, 1989, abandoned, which is a division of Ser. No. 846,354, Mar. 31, 1986, Pat. No. 4,902,108. This application Feb. 1, 1993, Ser. No. 13,162

Int. Cl.[5] C07D *265/34*

U.S. Cl. 544—99 **2 Claims**

1. A compound of the formula



wherein R_{77}, R_{78} and R_{79} are the same or different and are each selected from the group consisting of alkyl of 1–6 carbon atoms.

5,290,931

WATER-INSOLUBLE NAPHTHALIC ACID IMIDE DYESTUFFS

Kiyoshi Himeno, Munakata, and Toshio Hihara, Kitakyushu, all of Japan, assignors to Hoechst Mitsubishi Kasei Co., Ltd., Tokyo, Japan

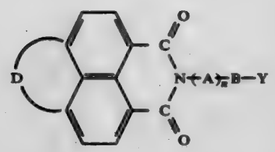
Continuation of Ser. No. 658,677, Feb. 21, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 940,789

Claims priority, application Japan, Feb. 21, 1990, 2-40302; Mar. 7, 1990, 2-56212

Int. Cl.[5] C07D *401/14, 403/14, 413/14, 471/22*

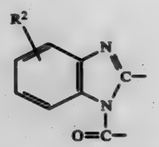
U.S. Cl. 544—112 **17 Claims**

1. Water insoluble naphthalic acid imide dyestuffs for dyeing a fiber mixture comprising(i) polyamide or polyurethane fibers and (ii) polyester or triacetate fibers of the following formula:

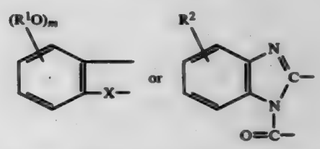


(I)

wherein D is



wherein R^2 is hydrogen, halogen, lower alkyl, lower alkoxy or cyano, A is phenylene, alkylene, aralkylene or $—C_2H_4OC_2H_4—$; B is oxygen, sulfur or



wherein R^3 is hydrogen or lower alkyl; Y is a 6-membered nitrogen-containing heterocyclic ring having at least one active halogen atom; and n is 0 or 1.

5,290,932

PREPARATION OF AMINES BY REDUCTIVE AMINATION USING ZEOLITE CATALYST

Uwe Dingerdissen, Seeheim-Jugenheim 1, and Wolfgang Hoelderich, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

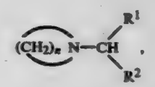
Filed Oct. 30, 1992, Ser. No. 969,730

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4137013

Int. Cl.[5] C07D *295/02, 205/04*

U.S. Cl. 544—178 **13 Claims**

1. A process for the preparation of an amine of the formula



I

wherein:

n is an integer of from 3 to 7 and the alkylene chain $—(CH_2)_n—$ is optionally substituted once or twice by methyl, or when n is 4, said alkylene chain is optionally interrupted by an oxygen atom to form a morpholine ring, and

R^1 and R^2 are each C_1–C_{20}-alkyl, C_3–C_{20}-cycloalkyl, C_4–C_{20}-alkylcycloalkyl, C_4–C_{20}-cycloalkylalkyl, aryl, C_7–C_{20}-alkylaryl, C_7–C_{20}-aralkyl or a heterocyclic radical which has an aromatic or nonaromatic heterocyclic structure with one to three nitrogen, oxygen or sulfur atoms,

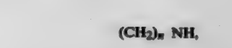
which process comprises:

reacting a ketone of the formula



(II)

with a cyclic amine of the formula



III

wherein n and the alkylene chain $—(CH_2)_n—$ have the above meanings, in the presence of a zeolite of SiO_2 having a zeolite structure or a phosphate or a phosphate having a zeolite structure as a catalyst, at a temperature of from 50° to 500° C. and under a pressure of from 0.01 to 50 bar.

5,290,933

PHENYLPYRIMIDONE DERIVATIVES

William J. Coates, Welwyn Garden City, England, assignor to SmithKline & French Laboratories Limited, Welwyn Garden City, United Kingdom

Continuation of Ser. No. 514,385, Apr. 25, 1990, abandoned. This application Nov. 14, 1991, Ser. No. 794,311

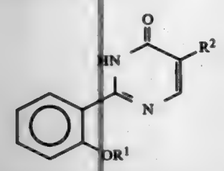
Claims priority, application United Kingdom, Apr. 26, 1989, 8909558

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] C07D *239/22*

U.S. Cl. 544—319 6 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein

R^1 is C_{1-6}alkyl, C_{2-6}alkenyl, C_{3-5}cycloalkylC_{1-6}alkyl, phenylC_{1-6}alkyl or C_{1-6}alkyl substituted by 1 to 6 fluoro groups; and

R^2 is hydrogen, —NHCOR[3], or —CONR[4]R[5], wherein R^3 is C_{1-6}alkyl, R^4 is

C_{1-6}alkyl and R^5 is hydrogen or C_{1-6}alkyl.

5,290,934

BENZOHETEROCYCLIC COMPOUNDS

Hiraki Ueda, Mishima; Hisashi Miyamoto, Tokushima; Hiroshi Yamashita, Tokushima, and Hitoshi Tone, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Company, Limited, Tokyo, Japan

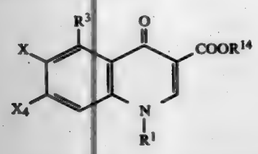
Continuation of Ser. No. 535,344, Jun. 8, 1990, abandoned, which is a division of Ser. No. 179,239, Apr. 8, 1988. This application Jun. 4, 1991, Ser. No. 711,273

Claims priority, application Japan, Apr. 16, 1987, 62-94198; Apr. 24, 1987, 62-102351; Apr. 30, 1987, 62-108361; May 22, 1987, 62-126598; Jun. 16, 1987, 62-149544; Jul. 14, 1987, 62-176126; Nov. 9, 1987, 62-283776; Nov. 12, 1987, 62-287108

Int. Cl.[5] C07D *215/283*

U.S. Cl. 546—13 24 Claims

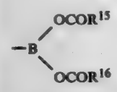
1. A compound of the formula:



wherein R^1 is a cyclopropyl which is optionally substituted by 1 to 3 substituents selected from the group consisting of a (lower) alkyl and a halogen atom, provided that when R^1 is unsubstituted cyclopropyl R^3 is methyl; a phenyl which is optionally substituted by 1 to 3 substituents selected from the group consisting of a (lower) alkoxy, a halogen atom and hydroxy; a (lower) alkyl which is optionally substituted by a halogen atom, a (lower) alkanoyloxy or hydroxy; a (lower) alkenyl; or thienyl,

R^3 is a (lower) alkyl group,

R^{14} is hydrogen atom, a lower alkyl group, or a group of the formula:



wherein R^{15} and R^{16} are each a (lower) alkyl group,

X is a halogen atom, and

X^4 is a halogen atom, or a pharmaceutically acceptable salt thereof.

5,290,935

PREPARATION OF 2-(PYRIDYL)ETHYL BIS-(TRIALKYL SILYL) PHOSPHONATE DERIVATIVES

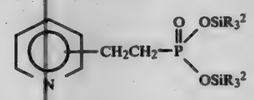
David L. Thorn, West Chester, Pa.; Owen W. Webster, and Robert C. Wheland, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 957,151, Oct. 7, 1992, Pat. No. 5,258,469. This application Jul. 29, 1993, Ser. No. 99,680

Int. Cl.[5] C07F *7/02*

U.S. Cl. 546—14 7 Claims

1. A compound of the formula



wherein each R^2 is independently hydrocarbyl or substituted hydrocarbyl.

5,290,936

NITRO SUBSTITUTED CHEMILUMINESCENT LABELS AND THEIR CONJUGATES, AND ASSAYS THEREFROM

Iraj Behesht, Edina, Minn., and Harlen Koelling, Waverly, Iowa, assignors to London Diagnostics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 140,040, Dec. 31, 1987, abandoned, and a continuation-in-part of Ser. No. 291,843, Dec. 29, 1988, abandoned, and a continuation-in-part of Ser. No. 418,956, Oct. 10, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 859,955

Int. Cl.[5] C07D *219/04*

U.S. Cl. 546—104 18 Claims

1. A novel chemiluminescent aryl ester, thiolester or amide of a carboxylic acid substituted heterocyclic ring that is susceptible to chemical attack to dissociate the heterocyclic ring to a transient compound, wherein the heterocyclic ring is ring carbon-bonded to the carbonyl of the ester, thiolester or amide moiety and possesses a heteroatom in an oxidation state that allows chemiluminescence by dissociating a compound at the carbon bonded to the carbonyl that decays to produce chemiluminescence, the aryl is a ring or ring system that is ring carbon-bonded to the oxygen, nitrogen or sulfur of the ester or thiolester, as the case may be, and contains at least three substituents thereon directly bonded thereto acting in concert to sterically and electronically hinder hydrolysis of the ester or thiolester linkage, one of which is $—NO_2$ in a meta or para position.

5,290,937

RADIOLABELING OF PROTEINS USING ALKOXYPHENOL DERIVATIVES

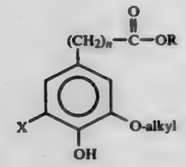
Frank P. Tomaselli, Englishtown, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 12, 1992, Ser. No. 975,455

Int. Cl.[5] C07D *207/40*; C07C *69/76*; A61K *43/00*; A61M *36/14*

U.S. Cl. 548—547 5 Claims

1. A compound of the formula

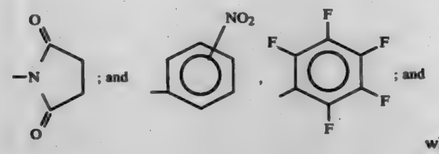


I

wherein

X is a radionuclide,

R is



n=0 or 1 to 8.

5,290,938

PREPARATION OF S-(−)- AND R-(+)-N-(QUINUCLIDINYL-3)-AMIDE

Gisle L. Johansen, Sarpsborg, Norway, assignor to Chiron Laboratories A.S., Norway

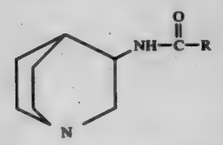
Division of Ser. No. 838,459, Apr. 15, 1992. This application Oct. 26, 1992, Ser. No. 966,268

Claims priority, application Norway, Sep. 15, 1989, 8393692

Int. Cl.[5] C07D *453/02*

U.S. Cl. 546—133 7 Claims

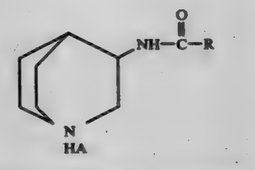
1. Process of preparing optically active stereo-isomeric forms of a racemic carboxylic acid amide of 3-aminoquinuclidine of the formula (I):



(I)

wherein R means a straight or branched hydrocarbon chain of the general formula $C_nH_{(2n+1)}$ wherein n is an integer 1 to 6, comprising the steps of

preparing a racemic aminoamidechiral acid salt of the formula (II):



(II)

wherein R is as defined above and HA is S-(+)-camphor-10-sulphonic acid or R-(−)-camphor-10-sulphonic acid by mixing a solution of said acid with a solution of the amide of formula (I);

resolving the diastereomer salt in its optically active forms; and

releasing the amide of formula (I) in the optically active form from the separated salt.

5,290,939

PROCESS FOR THE MANUFACTURE OF BROFAROMINE AND ANALOGS THEREOF

Gottfried Sedelmeier, Schallstadt, and Gerhard Fischer, Bad Krozingen, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

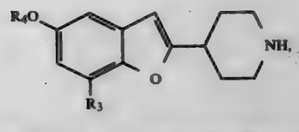
Filed Oct. 14, 1992, Ser. No. 961,001

Claims priority, application Switzerland, Oct. 17, 1991, 3042/91

Int. Cl.[5] C07D *401/04*

U.S. Cl. 546—196 1 Claim

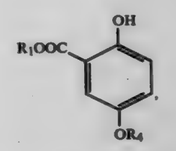
1. A process for the preparation of a compound of the formula



(XII)

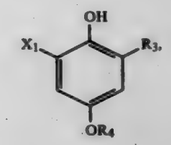
wherein R_3 is halogen and R_4 is lower alkyl, or a pharmaceutically acceptable salt thereof, wherein

1) a compound of the formula



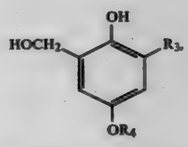
(II)

wherein R_1 is hydrogen or lower alkyl and R_4 is lower alkyl, or a salt thereof, is halogenated in the m-position with respect to the lower alkoxycarbonyl group by treatment with elementary halogen in a lower alkanol, and in the case where R_1 is hydrogen, the free carboxy group $R_1—O—C(=O)—$ is esterified in situ to form lower alkoxycarbonyl, and in the resulting compound of the formula



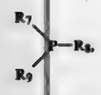
(IV)

wherein X_1 is lower alkoxycarbonyl, R_3 is halogen and R_4 is lower alkyl, or in a salt thereof, the group X_1 is reduced to hydroxymethyl, to result in the compound of the formula



(V)

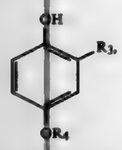
wherein R_3 is halogen and R_4 is lower alkyl, which is reacted in the presence of a hydrohalic acid of the formula HX_2 with a compound of formula VIIc



(VIIc)

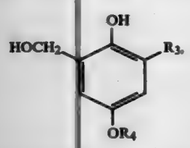
wherein each of R_7, R_8 and R_9, independently of the others, is lower alkyl or unsubstituted or mono- or di-substituted phenyl or heteroaryl, wherein the substituents of the phenyl ring may be selected in each case from the group consisting of lower alkyl, lower alkoxy, nitro and halogen, or with the acid addition salt of a compound of formula VIIc and a hydrohalic acid of the formula HX_2 to yield a compound of formula XIV, or

2) a compound of the formula



(III)

wherein R_3 is halogen and R_4 is lower alkyl, or a salt thereof, is reacted with paraformaldehyde or trioxane and the resulting compound of the formula



(V)

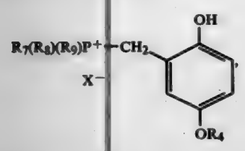
wherein R_3 is halogen and R_4 is lower alkyl, is reacted in the presence of a hydrohalic acid of the formula HX_2 with a compound of formula VIIc



(VIIc)

wherein each of R_7, R_8 and R_9, independently of the others, is lower alkyl or unsubstituted or mono- or di-substituted phenyl or heteroaryl, wherein the substituents of the phenyl ring may be selected in each case from the group consisting of lower alkyl, lower alkoxy, nitro and halogen, or with the acid addition salt of a compound of formula VIIc and a hydrohalic acid of the formula HX_2, to yield a compound of formula XIV, or

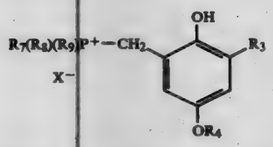
3) a compound of the formula



(XIII)

wherein R_4 is lower alkyl and wherein each of R_7, R_8 and R_9, independently of the others, is lower alkyl or unsubstituted or mono- or di-substituted phenyl or heteroaryl, wherein the substituents of the phenyl ring may be selected in each case from the group consisting of lower alkyl, lower alkoxy, nitro and halogen, is halogenated in the m-position with respect to the group of the formula $R_7(R_8)(R_9)P^+CH_2$— by treatment with elementary halogen in a lower alkanol to yield a compound of formula XIV, and in each case

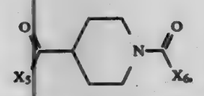
the resulting compound of formula XIV



(XIV)

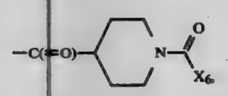
is reacted with a compound of the formula

is reacted with a compound of the formula



(XV)

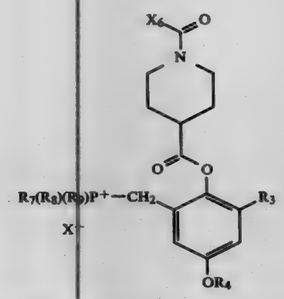
wherein X_5 is halogen or a group of the formula X_7—O—, wherein X_7 denotes lower alkanesulfonyl, lower alkoxycarbonyloxy, lower alkanoyl or a group of the formula



(XVa)

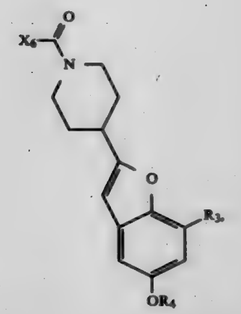
in which X_6 is a lower alkoxy, lower alkenyloxy or phenyl-lower alkoxy which is unsubstituted or substituted by at least one member selected from the group consisting of lower alkyl, lower alkoxy, nitro and halogen, or with a salt thereof, wherein X_5 is halogen, lower alkanesulfonyloxy or lower alkoxycarbonyloxy and X_6 is lower alkoxy,

the resulting compound of the formula



(XVI)

is cyclised to form the corresponding compound of the formula



(XVII)

and

the group of the formula —C(=O)—X_6 is removed from the compound of formula XVII and, if desired, a resulting free compound is converted into an acid addition salt or a resulting acid addition salt is converted into the free compound or into a different acid addition salt.

5,290,940

2,6-DIARYLPIPERIDIN-1-YL SUBSTITUTED 2-BUTENE STABILIZERS

Glen T. Cunkle, Stamford, Conn., and Joseph E. Babiarz, Amawalk, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 709,688, Jun. 3, 1991, Pat. No. 5,204,474. This application Dec. 14, 1992, Ser. No. 990,215
Int. Cl.[5] C07D *401/06, 498/10, 513/10, 515/10*
U.S. Cl. 546—229 7 Claims

1. A compound of formula II

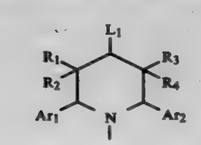


(II)

wherein

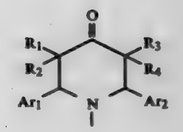
E_1 and E_2 are independently (a) alkyl of 1 to 30 carbon atoms, said alkyl terminated with cycloalkyl of 5 to 12 carbon atoms, said alkyl terminated with —CN, —OR_{16}, —$NR_{17}R_{18}$, —SR_{19}, —$COOR_{20}$ or —$CONR_{21}R_{22}$, where R_{16}, R_{17}, R_{18}, R_{19} and R_{20} are independently alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{21} and R_{22} are independently hydrogen or the same meaning as R_{16}; (b) alkyl of 1 to 30 carbon atoms interrupted by one or two —O—, —S—, —SO—, —SO_2—, —CO—, —COO—, —OCO—, —$CONR_{23}$—, —NR_{24}CO— or —NR_{24}— where R_{23} and R_{24} have the same meaning as R_{21}; (c) alkenyl of 3 to 20 carbon atoms; (d) aralkyl of 7 to 15 carbon atoms or said aralkyl substituted on the carbocyclic ring by one to three groups selected from alkyl of 1 to 12 carbon atoms, —CN, —NO_2, halogen, —OR_{16}, —$NR_{17}R_{18}$, —SR_{19}, —$COOR_{20}$ or —$CONR_{21}R_{22}$, or (e) aryl of 6 to 10 carbon atoms or said aryl substituted by one to three substituents selected from the group consisting of alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms and aralkyl of 7 to 15 carbon atoms;

T is a group of formula III, IV, V or VI

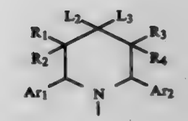


(III)

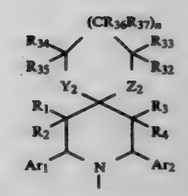
-continued



(IV)



(V)



(VI)

where Ar_1 and Ar_2 are independently carbocylic aryl of 6 to 10 carbon atoms; or said aryl substituted by one to three substituents selected from the group consisting of alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, —$COOG_1$ where G_1 is hydrogen or alkyl of 1 to 20 carbon atoms, —COG_2 where G_2 is alkyl of 1 to 20 carbon atoms, —NR_5R_6 where R_5 and R_6 are independently hydrogen or alkyl of 1 to 20 carbon atoms, —SG_3 where G_3 is carbocylic aryl of 6 to 10 carbon atoms or alkyl of 1 to 20 carbon atoms, —OH, —OCH_3, —CN, —CF_3, —NO_2, —F, —Cl, —Br or —I;

R_1, R_2, R_3 and R_4 are independently hydrogen, a linear or branched alkyl of 1 to 30 carbon atoms; said alkyl terminated with —OR_7, —NR_8R_9, —SR_{10}, —$COOR_{11}$ or —$CONR_{12}R_{13}$, where R_7, R_8, R_9, R_{10} and R_{11} are independently hydrogen, alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{12} and R_{13} are independently hydrogen or the same meaning as R_{11}; or said alkyl interrupted by one or two —O—, —S—, —SO—, —SO_2—, —CO—, —COO—, —OCO—, —$CONR_{14}$—, —NR_{14}CO— or —NR_{15}— where R_{14} and R_{15} have the same meaning as R_{12}; alkenyl of 3 to 20 carbon atoms; or carbocylic aryl of 6 to 10 carbon atoms;

L_1 is hydrogen, —OR_{25} where R_{25} is hydrogen or alkyl of 1 to 30 carbon atoms, —$NR_{26}R_{27}$, —$OCOR_{28}$, —$NCOR_{29}$ where R_{26}, R_{27}, R_{28} and R_{29} have the same meaning as R_{25};

L_2 and L_3 are independently —Y_1—R_{30} or —Z_1—R_{31} where Y_1 and Z_1 are independently —O—, —S— or —NR_{26}—, and R_{30} and R_{31} are hydrogen or alkyl of 1 to 30 carbon atoms; and

n is 0 or 1, Y_2 and Z_2 are independently —O—, —S— or —NR_{26}—, and R_{32}, R_{33}, R_{34}, R_{35}, R_{36} and R_{37} are independently hydrogen or alkyl of 1 to 30 carbon atoms.

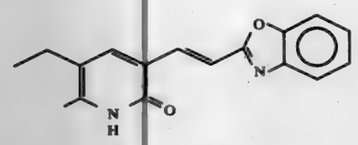
5,290,941

FACILE CONDENSATION OF METHYLBENZOXAZOLES WITH AROMATIC ALDEHYDES

Ralph P. Volante, Cranbury; Joseph E. Lynch, Plainfield; Ioannis Houpis, Edison, and Audrey Molina, Elizabeth, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1992, Ser. No. 960,623
Int. Cl.[5] C07D *413/06, 211/86*
U.S. Cl. 546—270 2 Claims

1. The process of synthesizing the product compound 3-[2-(benzoxazol-2-yl)ethenyl]-5-ethyl-6-methyl-2-benzoxy-pyridine of the structure



comprising the step of

(a) mixing about four equivalents of 2-methylbenzoxazole with about one equivalent of 2-benzoxy-5-ethyl-6-methyl-nicotinaldehyde, yielding a mixture;

(b) mixing, at a temperature of about −50° C., said mixture with about 1.2 equivalents of potassium tert-butoxide;

(c) warming the reaction mixture to give the product compound

said process having a yield of 95% or greater.

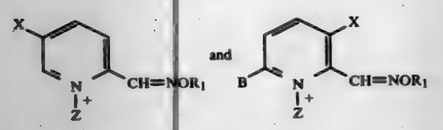
5,290,942

QUATERNARY PYRIDINIUM COMPOUNDS AND USES THEREFOR

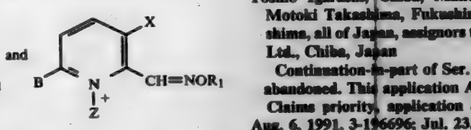
James C. Powers; Sheldon W. May, both of Atlanta; Maria A. Hernandez, Norcross, all of Ga.; Steve Thornton, Raleigh, N.C., and Jan Glinski, New Fairfield, Conn., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Division of Ser. No. 565,520, Aug. 10, 1990, Pat. No. 5,180,831, Division of Ser. No. 892,222, Jun. 2, 1992, Pat. No. 5,206,371. This application Jan. 19, 1993, Ser. No. 6,367
Int. Cl.[5] C07D *213/53*
U.S. Cl. 546—300 3 Claims

1. A compound of the group consisting of the formulas:



and



with any counterion to make pharmaceutically acceptable salts, wherein

Z is selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkyl with an attached phenyl group, C_{1-6} alkyl with an attached naphthyl group, C_{1-6} alkyl with two attached phenyl groups, C_{1-6} alkyl with an attached phenyl group mono, di, or trisubstituted with J, C_{1-6} alkyl with two attached phenyl groups mono, di, or trisubstituted with J, C_{1-6} alkyl with an attached naphthyl group mono, di, or trisubstituted with J,

wherein J is selected from the group consisting of halogen, COOH, OH, CN, NO_2, NH_2, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamine, C_{1-6} alkyl—O—CO—, C_{1-6} alkyl—O—CO—NH—, C_{1-6} alkyl—NH—CO—NH—, C_{1-6} alkyl—NH—CO—O—, C_{1-6} alkyl NH—CO—, $(C_{1-6}$ alkyl$)_2$N—CO—,

wherein X is selected from the group consisting of OH, C_{1-6} alkyl—NH—CO—O—, $(C_{1-6}$ alkyl$)_2$—N—CO—O—, C_{1-6} fluoroalkyl—NH—CO—O—, $(C_{1-6}$ fluoroalkyl$)_2$—NH—CO—O—,

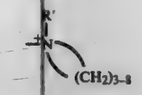
wherein R_1 is selected from the group consisting of C_{1-6} alkyl, C_{1-6} alkyl with an attached phenyl group, C_{1-6} alkyl with two attached phenyl groups, C_{1-6} alkyl with an attached phenyl group mono, di, or trisubstituted with K, C_{1-6} alkyl with two attached phenyl groups mono, di, or trisubstituted with K, C_{1-6} alkyl with an attached naphthyl group, C_{1-6} alkyl with an attached naphthyl group mono, di, or trisubstituted with K, C_{1-6} alkyl-T,

wherein T is selected from the group consisting of formula (I) and formula (II),

Formula I



Formula II



wherein R′, R″, and R‴ are selected from the group consisting of H, C_{1-6} alkyl, C_{1-6} fluoroalkyl, C_{1-6} alkyl with an attached phenyl group, C_{1-6} alkyl with an attached phenyl group mono, di, or trisubstituted with K, C_{1-6} fluoroalkyl with an attached phenyl group mono, di, or trisubstituted with K,

wherein K is selected from the group consisting of halogen, COOH, OH, CN, NO_2, NH_2, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylamine, C_{1-6} alkyl—O—CO—, C_{1-6} alkyl—O—CO—NH—, C_{1-6} alkyl—NH—CO—NH—, C_{1-6} alkyl—NH—CO—O—, C_{1-6} alkyl NH—CO—, $(C_{1-6}$ alkyl$)_2$N—CO—,

wherein B is selected from the group consisting of H, C_{1-6} alkyl.

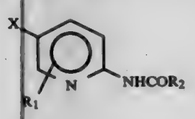
5,290,943

METHOD OF PRODUCING 2-ACYL AMINO 5-HALOGENOPYRIDINE COMPOUNDS

Yoshio Igarashi, Chiba; Makoto Shimoyamada, Fukushima; Motoki Takashima, Fukushima, and Tetsuya Suzuki, Fukushima, all of Japan, assignors to Ichikawa Gosei Chemical Co., Ltd., Chiba, Japan

Continuation-in-part of Ser. No. 836,968, Feb. 19, 1992, abandoned. This application Aug. 5, 1992, Ser. No. 924,556
Claims priority, application Japan, Feb. 21, 1991, 3-27563; Aug. 6, 1991, 3-196696; Jul. 23, 1992, 4-196829
Int. Cl.[5] C07D *213/75*
U.S. Cl. 546—309 3 Claims

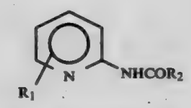
1. A method of producing a 2-acylamino-5-halogenopyridine expressed by formula (II)



(II)

wherein R_1 is hydrogen or at least one lower alkyl group connected to a 4-position and/or 6-position, R_2 is an alkyl group or an unsubstituted or substituted phenyl group, and X is a halogen, said method comprising the steps of

halogenating a 2-acylaminopyridine expressed by formula (I),



(I)

wherein R_1 and R_2 are defined in the same manner as in formula (II), in the presence of a buffer which maintains the pH at about neutral during the halogenation reaction by dissolving the 2-acylaminopyridine of formula (I) in at least one selected solvent system and adding a molecular halogen and a buffer which maintains the pH of the mixture at about neutral during the halogenation reaction to the dissolved 2-acylaminopyridine.

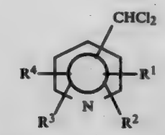
5,290,944

METHOD FOR PRODUCING DICHLOROMETHYLPYRIDINES

Rikuo Nasu; Taku Shimura, and Isamu Katsuyama, all of Yokkaichi, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

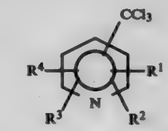
Filed Dec. 14, 1992, Ser. No. 990,276
Claims priority, application Japan, Dec. 20, 1991, 3-361133; Dec. 26, 1991, 3-361411
Int. Cl.[5] C07D *213/26*
U.S. Cl. 546—346 8 Claims

1. A method for producing a dichloromethylpyridine of the formula (II):



(II)

wherein each of R^1, R^2, R^3 and R^4 which are independent of one another, is a hydrogen atom, a halogen atom, an alkoxy group or a phenoxy group which may be substituted, provided that R^1, R^2, R^3 and R^4 are not simultaneously hydrogen atoms, which comprises reacting a trichloromethylpyridine of the formula (I):



(I)

wherein R^1, R^2, R^3 and R^4 are as defined above, with a reducing agent, wherein

a dialkyl phosphite or a trialkyl phosphite is used as the reducing agent, and the reaction is conducted in the presence of a basic substance and an alcohol solvent.

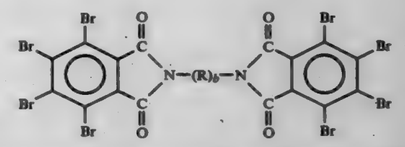
5,290,945

PROCESS FOR PREPARING BISIMIDE PRODUCTS

Ranjit K. Roy; Ali M. Dadgar; Donald O. Hutchinson, and Keith G. Anderson, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 832,947, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 497,668, Mar. 23, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 925,446
Int. Cl.[5] C07D *403/06*
U.S. Cl. 548—462 8 Claims

1. A process for preparing a bisimide product which principally contains a bisimide of the formula,



wherein R is an alkylene radical containing 1 to 6 carbon atoms and b is 1 or 0, said process comprising:

(a) providing, in a reaction vessel, a solution containing tetrabromophthalic anhydride and a solvent, which solvent contains at least about 15 weight percent of a mono-, di- or tri- carboxylic acid having a dissociation constant not higher than 1.0×10^{-3} at 25° C.,

(b) forming, at a temperature within the range of from about 140° C. to about 200° C., a reaction mass by adding to said solution a diamine of the formula,

$H_2N—(R)_b—NH_2$,

a diamine salt formed by the partial or total diamine neutralization of a mono-, di- or tri- carboxylic acid having a dissociation constant not higher than 1.0×10^{-3} at 25° C. or a mixture of said diamine and said diamine salt, said formation of said reaction mass resulting in the production of a bisimide precipitate which becomes a constituent of the reaction mass;

(c) during the formation of the reaction mass;

(i) maintaining a substantial constant pressure in the reaction vessel, and

(ii) removing, from the reaction mass, that amount of water formed during the formation which is necessary to keep the reaction temperature from falling to a temperature below about 140° C.,

(d) terminating said addition of said diamine or diamine salt when the molar ratio of said tetrabromphthalic anhydride initially present in said solution to said diamine or diamine salt added is within the range of from about 1.9:1 to 2.1:1;

(e) recovering, as said bisimide product, the produced bisimide precipitate.

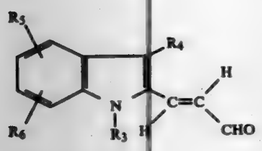
5,290,946

PROCESSES FOR THE SYNTHESIS OF 3-(SUBSTITUTED INDOLYL-2-YL)PROPENALDEHYDES

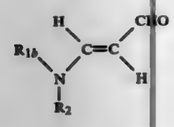
George T. Lee, Bloomfield; Prasad K. Kapa, Parsippany, and Oljan Repic, Randolph, all of N.J., assignors to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 890,492, May 28, 1992, abandoned, which is a division of Ser. No. 661,286, Feb. 26, 1991, Pat. No. 5,118,853, which is a continuation-in-part of Ser. No. 631,576, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 402,947, Sep. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 348,548, May 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 257,475, Oct. 13, 1988, abandoned. This application Nov. 23, 1992, Ser. No. 980,055
Int. Cl.[5] C07D *209/12*
U.S. Cl. 548—502 8 Claims

1. A process for synthesizing a compound of the formula



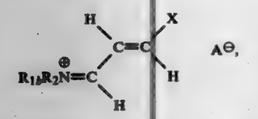
comprising the steps of
(i) reacting a compound of the formula



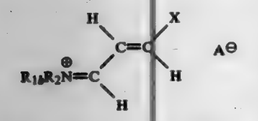
with a compound of the formula

POX_3, $X—CO—CO—X$, $X—CO—X$ or $R_{11}—SO_2—X$

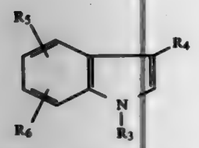
in an inert anhydrous organic medium to form the corresponding compound of the formula



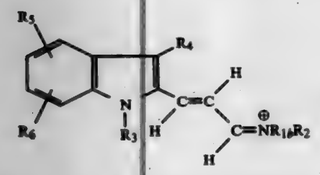
(ii) reacting said compound of the formula



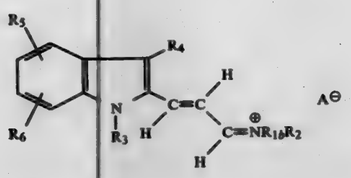
with a compound of the formula



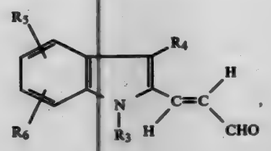
in an inert anhydrous organic medium to form the corresponding compound of the formula



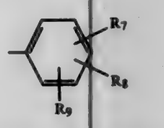
(iii) hydrolyzing said compound of the formula



to obtain the corresponding compound of the formula



wherein
R_{1b} is phenyl or phenyl substituted by 1 to 3 substituents each of which is independently C_{1-3}alkyl, C_{1-3}alkoxy, fluoro, chloro, bromo or nitro (maximum of two nitro groups),
R_2 is C_{1-3}alkyl,
one of R_3 and R_4 is



and the other is primary or secondary C_{1-6}alkyl not containing an asymmetric carbon atom, C_{3-6}cycloalkyl or phenyl-$(CH_2)_m$—,
wherein R_7 is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{1-3}alkoxy, n-butoxy, t-butyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy,
R_8 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy,
R_9 is hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, fluoro or chloro, and
m is 1, 2 or 3, with the provisos that not more than one of R_7 and R_8 is trifluoromethyl, not more than one of R_7 and R_8 is phenoxy, and not more than one of R_7 and R_8 is benzyloxy,
R_5 is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{3-6}-cycloalkyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy, and
R_6 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy, with the provisos that not more than one of R_5 and R_6 is trifluoromethyl, not more than one of R_5 and R_6 is phenoxy, and not more than one of R_5 and R_6 is benzyloxy,
R_{11} is C_{1-6}alkyl, phenyl or 4-methylphenyl, each X is chloro or bromo, and
$A^{\ominus}$ is [63] PO_2X_2 when a compound of the formula POX_3 is utilized in Step (i), $X^{\ominus}$ when a compound of the formula X—CO—CO—X or X—CO—X is utilized in Step (i) and $R_{11}—SO_3^{\ominus}$ when a compound of the formula R_{11}–SO-2—X is utilized in Step (i), wherein $X^{\ominus}$ is chloride or bromide.

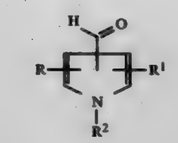
5,290,947

PROCESS FOR THE PREPARATION OF PYRROLE DERIVATES

Gerhard Zoller, Schöneck; Eckard Kujath, Maintal; Klaus Delpy, Dietzenbach, and Manfred Schrod, Weiterstadt, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

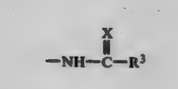
Filed Mar. 16, 1993, Ser. No. 33,232
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1992, 4211531
Int. Cl.[5] C07D *207/323, 207/325, 207/327*
U.S. Cl. 548—530 8 Claims

1. Process for the preparation of a pyrrole compound of the formula I



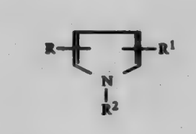
(I)

in which
R and R^1, independently of each other, denote hydrogen or $(C_1–C_4)$-alkyl;
R^2 denotes $(C_1–C_3)$-alkyl which is substituted by a radical selected from the group consisting of $—NH_2$, acylamino of the general formula II



(II)

formyl, mono- or di- $(C_1–C_4)$-alkoxymethyl, $(C_1–C_4)$-alkoxycarbonyl and cyano;
X denotes oxygen or sulphur; and
R^3 denotes a radical selected from the group consisting of hydrogen, $(C_1–C_5)$-alkyl, $(C_5–C_7)$-cycloalkyl, phenyl or phenylamino, amino and $(C_1–C_5)$-alkylamino, by the Vilsmeier formylation reaction of a compound of the general formula III



(III)

in which R, R^1 and R^2 are defined as specified above, with a disubstituted formamide and a catalyst in a degradable organic solvent, hydrolysing the reaction product to produce an organic solvent phase and an aqueous phase, both phases containing amounts of the desired formylated pyrrole derivative, separating the phases, extracting the formylated pyrrole derivative from the aqueous phase by means of a water-miscible organic extractant and adding it to the organic solvent phase, and purifying the formylated pyrrole derivative by high vacuum distillation of the organic solvent phase in a short path evaporator.

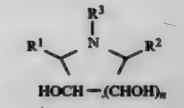
5,290,948

PROCESS FOR PRODUCING POLYHYDROXYLATED PIPERIDINES AND PYRROLIDINES AND COMPOUNDS THEREOF

Allen B. Reitz; Ellen W. Baxter, both of Lansdale, and Bruce E. Maryanoff, Solebury Township, Bucks County, all of Pa., assignors to McNeilab, Inc., Spring House, Pa.

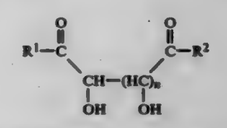
Filed Sep. 17, 1990, Ser. No. 583,615
Int. Cl.[5] C07D *233/54*
U.S. Cl. 548—541 13 Claims

1. A method for the synthesis of a compound of the formula I and stereoisomers thereof;



I

wherein n=1 and R^1 and R^2 are the same or different and are selected from the group consisting of CH_2OH, CH_3H, and CH_2F; wherein R^3 is selected from the group consisting of H, straight and branched $C_1–C_{20}$ alkyl, substituted straight and branched $C_1–C_{20}$ alkyl, aralkyl, phenyl, substituted phenyl, heteroaryl, alkyl amino, aryl amino, amino, alkyl oxy and aralkyl oxy, with the proviso that R^3 cannot be a group such that a carbon atom attached to the ring nitrogen is a quaternary carbon atom, which comprises reacting a compound of the formula II:



II

wherein n=1 or 2; with an amine of the formula R^3NH_2; said reaction being carried out in the presence of an acid and a source of hydride.

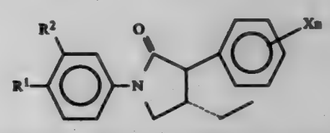
5,290,949

METHOD FOR PREPARING PYRROLIDINE DERIVATIVES

Kanji Tomiya; Koichi Moriyasu; Haramichi Aoki, all of Mobara, and Kengo Oda, Hiratsuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 997,369
Claims priority, application Japan, Dec. 25, 1991, 3-342890
Int. Cl.[5] C07D *207/26*
U.S. Cl. 548—543 7 Claims

1. A method for preparing 3,4-trans-4-ethyl-1,3-disubstituted (substituted phenyl) pyrrolidine-2-one represented by the formula (1)

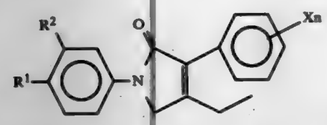


(I)

wherein R^1 is a hydrogen atom, halogen atom or methyl group; R^2 is a hydrogen atom, alkyl group having 1 to 3 carbon atoms, alkoxy group having 1 to 4 carbon atoms, nitro group, cyano group, phenoxy group, hydroxyl group or halogen atom; X is a hydrogen atom, halogen atom, trifluoromethyl group, alkyl group having 1 to 3 carbon atoms, cyano group or nitro group; and n is 1 or 2 and denotes the number of substituents represented by X, and in the case of N=2, the substituents of X may be identical or different, but R^1,R^2 and Xn are not simulta-

VOL 1160 ISS 1 1994 MR 1 UMI

neously hydrogen atoms, which comprises: reducing 4-ethyl-1,3-disubstituted (substituted phenyl)-3-pyrroline-2-one represented by the formula (2)



(2)

wherein R^1,R^2, X and n are as defined above, with sodium boron hydride in the presence of methanol in an inert solvent.

5,290,950

TETRA SUBSTITUTED CYCLOHEXANE COMPOSITION

Morton Raban, West Bloomfield, and David T. Durocher, Garden City, both of Mich., assignors to Wayne State University, Detroit, Mich.

Division of Ser. No. 562,463, Aug. 3, 1990, Pat. No. 5,096,832. This application Nov. 27, 1991, Ser. No. 799,566

Int. Cl.[5] C07D *341/00, 323/00, 215/20*

U.S. Cl. 549—11 **12 Claims**

1. A tetra substituted cyclohexane having an ionophore in the 1,2 positions wherein the ionophore may be the same or different and is selected from the group consisting of a crown and a podand wherein the ionophore is capable of complexing with a metal or ammonium ion; and

wherein positions 4,5 are substituted by an electron donor group and an electron acceptor group.

5,290,951

INTERMEDIATES USEFUL IN PREPARING PROPENONE OXIME ETHERS

Christian Congy, Saint-Gely-du-Fesc; Patrick Gueule, Teyran; Bernard Labeeuw, Montpellier, and Murielle Rinaldi, St Georges d'Orques, all of France, assignors to Elf Sanofi, Paris, France

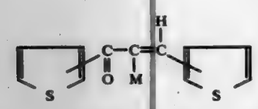
Division of Ser. No. 444,823, Dec. 1, 1989, Pat. No. 5,166,416. This application Jul. 10, 1992, Ser. No. 911,736

Claims priority, application France, Dec. 2, 1988, 88 15860

Int. Cl.[5] C07D *333/22*

U.S. Cl. 549—59 **1 Claim**

1. An intermediate compound useful in preparing propenone oxime ethers, said intermediate compound having the formula:



in which M is selected from the group consisting of H, Cl, Br and a straight or branched C_1–C_6 alkyl; excluding the compound di-1,3-(2-thienyl)2-propen-1-one.

5,290,952

PHENYLTHIOPHENYL KETONES

David G. Leppard, Marly, and Kurt Burdeska, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

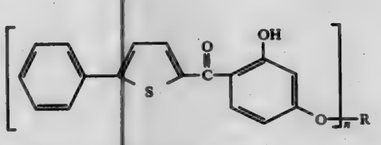
Filed Jun. 30, 1992, Ser. No. 906,607

Claims priority, application Switzerland, Jul. 3, 1991, 1963/91-2

Int. Cl.[5] C07D *333/22, 409/02*; G03C *1/815*

U.S. Cl. 549—72 **5 Claims**

1. A compound of the formula



(1)

wherein n is 1, 2, 3 or 4, and

R, if n is 1, is alkyl of 1 to 18 carbon atoms which is substituted by $—CO_2R_2$, or

R is $—CH_2CH(OH)CH_2OR_1$, and R_1 is hydrogen, alkyl of 1 to 18 carbon atoms, cyclohexyl, benzyl, phenyl, tolyl, —CO-alkenyl containing 2 to 4 carbon atoms in the alkenyl moiety or glycidyloxyalkyl containing 3 to 14 carbon atoms in the alkyl moiety,

R_2 is alkyl of 1 to 18 carbon atoms, alkyl or hydroxyalkyl, each of 3 to 14 carbon atoms and interrupted by oxygen, hydroxyalkyl of 2 to 18 carbon atoms, alkyl of 1 to 4 carbon atoms which is substituted by glycidyl, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 3 to 18 carbon atoms, benzyl, phenyl, alkylphenyl containing 1 to 12 carbon atoms in the alkyl moiety, furfuryl or a radical of formula $—CH_2CH(OH)CH_2OR_1$,

or R, if n is 2, is a radical of formula $—CH_2CH(OH)CH_2—O—R_{12}—O—CH_2CH(OH)CH_2—$ or $—(CH_2)_mCO—O—R_{14}—O—CO(CH_2)_m—$, wherein m is 1, 2 or 3, and R_{12} is alkylene of 2 to 10 carbon atoms, alkylene of 3 to 14 carbon atoms which is interrupted by oxygen, phenylene or a radical of formula



, wherein L is —O—,

—S—, $—SO_2—$, $—CH_2—$ or $—C(CH_3)_2—$,

R_{14} is alkylene of 2 to 10 carbon atoms or alkylene of 4 to 30 carbon atoms which is interrupted by oxygen, or

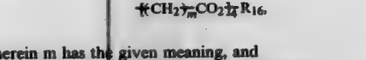
R, if n is 3, is a radical of formula



wherein m has the given meaning, and

R_{15} is alkanetriyl of 3 to 12 carbon atoms, or

R, if n is 4, is a radical of formula



wherein m has the given meaning, and

R_{16} is alkanetetrayl of 4 to 12 carbon atoms.

5,290,953

PROCESS FOR PRODUCING SULFOLANE COMPOUNDS

Earl Clark, Jr., and Jimmie J. Straw, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1993, Ser. No. 46,708

Int. Cl.[5] C07D *333/48*

U.S. Cl. 549—87 **16 Claims**

1. A process for preparing a sulfolane compound comprising: (1) reacting a conjugated diene with sulfur dioxide under conditions sufficient to synthesize a sulfolene compound whereby a mixture of said sulfolene compound and impurities comprising unreacted sulfur dioxide is produced; (2) transferring said mixture at a temperature in the range of about 55° C. to about 85° C. to an impurities removal reactor wherein said removal reactor already contains a solvent; (3) removing said impurities from said mixture to produce an impurities-reduced sulfolene compound; (4) transferring said impurities-reduced sulfolene compound to a hydrogenation reactor; (5) contacting said impurities-reduced sulfolene compound with hydrogen, in the presence of a hydrogenation catalyst, under sufficient hydrogenation conditions to produce said sulfolane compound.

5,290,954

HIGH CLARITY EMULSIONS CONTAINING HIGH MELT VISCOSITY MALEATED POLYPROPYLENE WAX

Thomas D. Roberts; Thomas W. Smith, both of Longview, Tex., and Charlene A. Galvin, Piney Flats, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1992, Ser. No. 929,934

Int. Cl.[5] C07D *307/60*

U.S. Cl. 549—233 **7 Claims**

1. A process for the preparation of an emulsifiable polypropylene wax comprising reacting at a temperature below 190° C. up to 10 wt % maleic anhydride and a thermally degraded polypropylene wax having a melt viscosity below 1,000 cP (at 190° C.) in the presence of a free radical source for a sufficient time to produce a maleated polypropylene wax having a significantly increased melt viscosity that is at least 1000 cP (at 190° C.) wherein the reaction temperature is also at or above the melting point of said thermally degraded polypropylene wax.

5,290,955

PROCESS FOR PRODUCING L-AMBROX

Goro Asanuma, Kurashiki, and Yoshin Tamai, Shibata, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Dec. 23, 1992, Ser. No. 995,978

Claims priority, application Japan, Dec. 29, 1991, 3-358777; Dec. 29, 1991, 3-358778

Int. Cl.[5] C07C *53/136*; C07D *307/92*

U.S. Cl. 549—458 **4 Claims**

1. A process for producing (−)-3a,6,6,9a-tetramethyldodecahydronaphtho[2,1-b]furan, comprising the steps of:

allowing (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin to react with an optically resolving agent comprising an optically active 1-(aryl)ethylamine to form two kinds of diastereomer salts, and optically resolving from said diastereomer salts a salt comprised of (−)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin and the optically active 1-(aryl)ethylamine, followed by hydrolysis to give (−)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin;

subjecting said (−)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin to lactonization by dehydration to form decahydro-3a,6,6,9a-tetramethyl-(3aα,5aβ,9aα,9bβ)-(+)-naphtho[2,1-b]furan-2(1H)-one;

reducing the lactonized compound to convert it into (−)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin; and

subjecting the reduced compound to dehydrative cyclization to give (−)-3a,6,6,9a-tetramethyl-dodecahydronaphtho[2,1-b]furan.

3. A process for optically resolving (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin into optically active (−)-form and (+)-form thereof, wherein said (±)-2,5,5,8a-tetramethyl-1-(carboxymethyl)-2-hydroxydecalin is allowed to react with an optically resolving agent comprising an optically active 1-(aryl)ethylamine, to form a diastereomer.

5,290,956

LATENT THIOL MONOMERS

William D. Emmons, Huntington Valley, and Andrew W. Gross, Hatboro, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 4, 1991, Ser. No. 787,272

Int. Cl.[5] C07D *307/02*; C07C *327/20*

U.S. Cl. 549—478 **1 Claim**

1. A latent thiol monomer selected from the group consisting of allyl 3-mercaptopropionate thioacetate, (S-benzoyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-2,2-dimethylpropanoyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-acetylpropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-hydroxypropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-acetoacetylpropyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-tetrahydropyranyl)-2-methyl-2-propenoate, (S-acetyl-3-mercapto-2-(2-methoxy-2-propoxy))-2-methyl-2-propenoate, (S-acetyl-2-mercapto-3-acetylpropyl)-2-methyl-2-propenoate, S-acetyl-(1-allyloxy-3-mercapto-2-hydroxypropane), S-benzoyl-(1-allyloxy-3-mercapto-2-hydroxypropane) and S-2,2-dimethylpropanoyl-(1-allyloxy-3-mercapto-2-hydroxypropane).

5,290,957

PROCESS FOR THE STEREOSELECTIVE PREPARATION OF PHENYLISOSERINE DERIVATIVES USED IN MAKING TAXOLS

Ariene Correa, Sao Carlos, Brazil; Jean-Noel Denis, and Andrew-Elliot Greene, both of Uriage, France, assignors to Rhone Poulenc Rorer S.A., France

PCT No. PCT/FR91/00406, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/17977, PCT Pub. Date Nov. 28, 1991

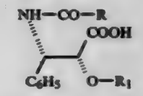
PCT Filed May 21, 1991, Ser. No. 949,548

Claims priority, application France, May 22, 1990, 90 06368

Int. Cl.[5] C07D *305/14*; C07C *229/36, 271/22*

U.S. Cl. 549—510 **10 Claims**

1. Process for the stereoselective preparation of phenylisoserine derivatives of formula

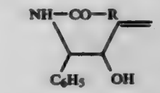


(I)

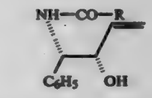
in which R is a phenyl or tert-butoxy radical and R_1 is a protecting group for the hydroxyl group, comprising treating benzylamine with an agent for introducing a benzoyl or t-butoxycarbonyl group to give the product of formula



which, after double anionization, is reacted with acrolein to give the alcohol of formula



in the form of a syn and anti mixture, from which the syn form:



is separated, the hydroxyl group of said syn form is protected and the alcohol protected in this way is then oxidized to give the phenylisoserine derivative of formula (I) in the syn form, which is optionally separated into enantiomers.

VOL 1160 ISS 1 MR 1 1994 UMI

5,290,958

PHASE TRANSFER CATALYTIC PROCESS FOR PREPARING INTERMEDIATES OF ATENOLOL, PROPRANOLOL, AND THEIR DERIVATIVES

Shyue-Ming Jang, and Tien-Shy Shieh, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Aug. 18, 1993, Ser. No. 33,047
Int. Cl.[5] C07D *301/28, 303/23;* C07C *41/03, 43/205*
U.S. Cl. 549—517 4 Claims

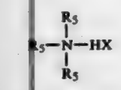
1. A method for the preparation of intermediates in the synthesis of beta-adrenergic antagonists such as atenolol, propranolol, and their derivatives, said method comprises the steps of:

(a) preparing a reaction mixture containing:

(i) an aromatic alcohol;

(ii) epichlorohydrin; and

(iii) a phase transfer catalyst which is a tertiary ammonium salt of lower alkyl groups represented by the following formula:



wherein R_5 is a C_1 to C_{20} alkyl group, H is hydrogen, and X is a halide group; and

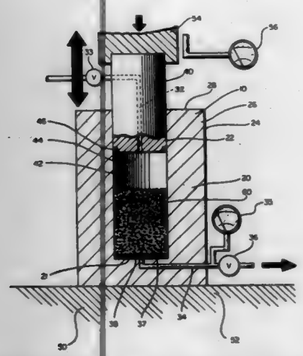
(b) effectuating an oxygenated alkylation of said reaction mixture to produce epoxide and halohydrin intermediates, which can be further reacted to produce said beta-adrenergic antagonists such as atenolol, propranolol and their derivatives.

5,290,959

MASS SEPARATION OF MATERIALS

Wayne K. Rice, Wanatah, Ind., assignor to Vitamins, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 18,404, Feb. 25, 1987, Pat. No. 4,744,926, and a continuation-in-part of Ser. No. 111,351, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 774,332, Sep. 10, 1985, abandoned. This application Feb. 21, 1992, Ser. No. 839,906
The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.
Int. Cl.[5] C07C *1/00*
U.S. Cl. 554—11 10 Claims



1. A method of extracting soluble materials from a material to be extracted which comprises:

contacting the material to be extracted with an extracting fluid at an elevated pressure within a defined space;

forming a fluid mixture of said extracting fluid and extract from said material to be extracted in said defined space;

separating said fluid mixture from the residue of said material to be extracted; and

discharging said fluid mixture as a mass from said defined space; and

simultaneously reducing the volume of said defined space at a rate sufficient to maintain said elevated pressure as said fluid mixture is discharged from said defined space.

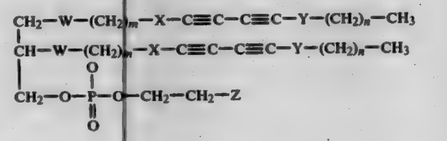
5,290,960

DIACETYLENIC PHOSPHOLIPIDS CONTAINING HETEROATOM NEAR DIACETYLENIC FUNCTIONALITY FOR MODULATION OF MICROSTRUCTURE MORPHOLOGY

Alok Singh, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1993, Ser. No. 22,228
Int. Cl.[5] C07F *7/00, 9/00*
U.S. Cl. 554—79 15 Claims

1. A lipid with the chemical formula



wherein m is 7, 8, 9, 10, 11, 12, or 13, wherein n is 8, 9, 10, 11, 12, or 13, wherein W is —O(CO)— or —OCH_2—, wherein X is —CH_2—, —OCH_2—, —SCH_2—, —$NHCH_2$—, or —$SiMe_2CH_2$—, wherein Y is —CH_2—, —CH_2O—, —CH_2S—, —CH_2NH—, or —CH_2SiMe_2—, wherein Z is —$N(CH_3)_3$, saccharide, or —ROH wherein R is —$(CH_2)_p$— and p is 0, 1, 2 or 3, and wherein X and Y are not both —CH_2—.

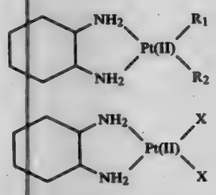
5,290,961

PLATINUM COMPOUND AND PROCESS OF PREPARING SAME

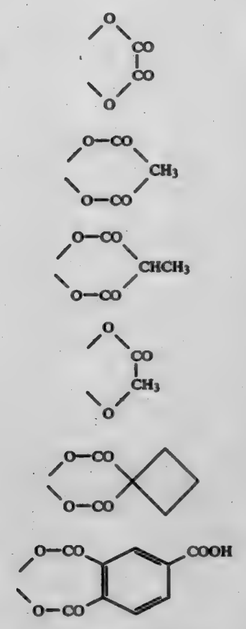
Koji Okamoto; Yuko Hoshi, and Chihiro Nakanishi, all of Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan

Filed Jan. 12, 1993, Ser. No. 3,306
Claims priority, application Japan, Jan. 13, 1992, 4-23219
Int. Cl.[5] C07F *15/00*
U.S. Cl. 556—137 2 Claims

1. A process of preparing a cis-platinum (II) complex of a 1,2-cyclohexanediamine isomer designated by a general formula (I)

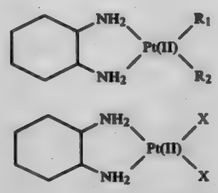


(in the formula, the conformation of 1,2-cyclohexanediamine is cis, trans-d or trans-1-isomer, and R_1 and R_2 form with each other a circular group selected from the group consisting of the formulae (V), (VI), (VII), (VIII), (IX) and (X))

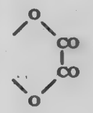


which comprises adding to a dihalogen compound of a cis-platinum (II) complex of a 1,2-cyclohexanediamine isomer designated by a general formula (II), wherein X is a halogen, a silver ion solution containing not less than two equivalents of silver in respect to the compound (II), removing silver chloride and/or silver bromide, adding to the solution sodium iodide and/or potassium iodide to convert the unreacted compound (II), the by-products of the compound (II) and an unreacted silver ion to their iodine compounds followed by the removal thereof and thereafter adding the corresponding organic dibasic acid of the formulae (V), (VI), (VII), (VIII), (IX) and (X) to the remaining platinum complex.

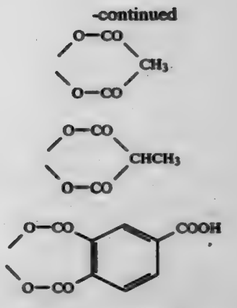
2. A platinum compound (I)



(in the formula, the conformation of 1,2-cyclohexanediamine is cis, trans-d or trans-1-isomer, and R_1 and R_2 form with each other a circular group selected from the group consisting of the formulae (V), (VI), (VII), and (X))



-continued



substantially free from impurities prepared by reacting a dihalogen compound of a cis-platinum (II) complex of a 1,2-cyclohexanediamine isomer (II) with a silver compound to form silver iodide and/or silver bromide which is then removed, converting the unreacted compound (II), the by-products of the compound the corresponding organic dibasic acid of the formulae (V), (VI), (VII), and (X) and an unreacted silver to their corresponding iodine compounds by adding sodium iodide and/or potassium iodide which are then removed, and reacting the remaining platinum complex with an organic dibasic acid.

5,290,962

METHOD FOR PREPARATION OF ANTI-CALKING COATING WITH PIGMENT THEREIN

Dale M. Ozoba, Edmonton, Canada, and Reynaldo G. Arago, Long Beach, Calif., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Sep. 6, 1989, Ser. No. 403,539
Int. Cl.[5] C07C *51/00*
U.S. Cl. 554—156 19 Claims

1. A process for preparing a composition comprising a carboxylate compound of a metal and oxide of said metal and a pigment entrapped in matrix comprising:

forming a slurry comprising said oxide, a catalyst, a carboxylic acid and water;

admixing additional carboxylic acid selected from the group consisting of stearic acid and oleic acid with said slurry;

adding a pigment to said slurry to form a reaction mixture; and

digesting said reaction mixture at a sufficient temperature for a sufficient retention time to react substantially all carboxylic acid to form a slurry containing a reaction product composition comprising a carboxylate compound of a metal and an oxide of said metal present in an amount within the range of about 10–15% by weight of said composition, and said pigment whereby transfer of color from said pigment to an object is substantially minimized or prevented.

5,290,963

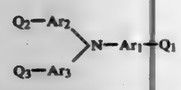
ORGANIC SILICON COMPOUND, METHOD OF ITS PRODUCTION, AND PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY INCORPORATING IT

Masayuki Mishima; Harumasa Yamasaki; Takashi Matsuo; Tadashi Sakuma, and Hiroyasu Togashi, all of Wakayama, Japan, assignors to Kao Corporation, Nihonbashi, Japan

Filed May 6, 1991, Ser. No. 696,201
Claims priority, application Japan, May 12, 1990, 2-122541; May 12, 1990, 2-122542; May 12, 1990, 2-122543; May 12, 1990, 2-122544
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—413 22 Claims

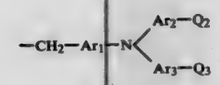
1. A compound represented by the formula (1):

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wherein Q_2 and Q_3 independently represent a hydrogen atom or $—CH_2SiR_1R_2R_3$ group (R_1, R_2 and R_3, which may be identical or not, independently represent an alkyl group, cycloalkyl group, aralkyl group or aryl group which may be substituted); Ar_1, Ar_2 and Ar_3 independently represent an arylene group which may be substituted; Q_1 represents a $—CH_2SiR_1R_2R_3$ group, $—CH_2SiR_1R_2R_4$ group (R_4 represents the following:

(1)



wherein Q_2 and Q_3 independently represent a hydrogen atom) or $—CH_2SiR_1R_4R_4$ group.

5,290,964

MUSICAL TONE CONTROL APPARATUS USING A DETECTOR

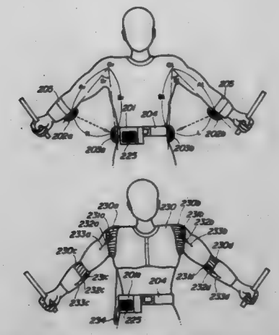
Teruo Hiyoshi; Kinpara Mamoru; Suzuki Hideo; Akira Nakada; Eiichiro Aoki, and Masao Sakama, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 489,777, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 108,205, Oct. 13, 1987, abandoned. This application Sep. 10, 1992, Ser. No. 943,128

Claims priority, application Japan, Oct. 14, 1986, 61-243348; Oct. 31, 1986, 61-259805; Nov. 7, 1986, 61-265167; Nov. 18, 1986, 61-274345; Nov. 22, 1986, 61-279028; Nov. 22, 1986, 61-279030; Nov. 25, 1986, 61-280426; Dec. 2, 1986, 61-287392; Feb. 20, 1987, 62-37295

Int. Cl.[5] G10H *7/00, 5/00*

U.S. Cl. 84—600 **82 Claims**



1. A manual musical tone control apparatus comprising:
(a) detecting means for detecting a swing motion of an object to be detected, wherein said detecting means detects one or more movement parameters;
(b) means for outputting musical tone control data which control a musical tone signal based on a detecting result of said detecting means wherein said musical tone control data represent a start signal indicating a start timing for generating a particular musical tone;
(c) sensor means for detecting a movement parameter other than that of said detecting means, a tone pitch or a tone color of said musical tone signal being controlled based on a detecting result of said sensor means; and
(d) start timing means for generating a musical tone or an envelope of said musical tone based on the musical tone control data.

5,290,965

ASYNCHRONOUS WAVEFORM GENERATING DEVICE FOR USE IN AN ELECTRONIC MUSICAL INSTRUMENT

Kiyoshi Yoshida, and Kiyoshi Hagino, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

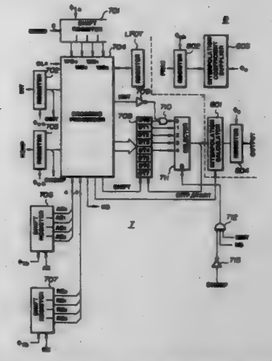
Filed Mar. 20, 1991, Ser. No. 673,765

Claims priority, application Japan, Mar. 20, 1990, 2-70261

Int. Cl.[5] G10H *7/04*

U.S. Cl. 84—605 **18 Claims**

1. A waveform generating device, comprising:
storing means for storing sampled waveform data, said data comprising samples of a waveform obtained at a predetermined fundamental sampling rate,
pitch designation means for outputting a pitch signal indicating the pitch of a musical tone to be generated,
readout means for reading selected samples of said waveform data at a first speed, said readout means including address generating means for generating addresses for the storing means that are determined based on the pitch signal,
interpolation means for calculating intermediate data between two sample data consecutively read out by said readout means and for outputting said intermediate data at a predetermined sampling cycle, said intermediate data corresponding to hypothetical sample values of said waveform corresponding to a regeneration sampling rate different from the predetermined sampling rate,
beginning readout designation means for designating the beginning of readout by said readout means, and



readout speed control means for setting the speed of said readout means to a second speed for a predetermined period following the designation of the beginning of readout by said beginning readout designation means, to quickly obtain sample data necessary for the interpolation calculation and thereby reduce a time lag between the designation of the beginning of readout and the outputting of said intermediate data.

5,290,966

CONTROL APPARATUS AND ELECTRONIC MUSICAL INSTRUMENT USING THE SAME

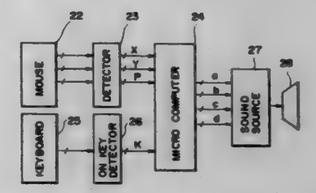
Eiichiro Aoki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 20, 1990, Ser. No. 616,258

Claims priority, application Japan, Nov. 24, 1989, 1-303060; Nov. 24, 1989, 1-303061

Int. Cl.[5] G10H *1/32*

U.S. Cl. 84—626 **11 Claims**



1. A control apparatus for controlling a control object comprising:
a main body constituting an operation gripping section;
a rotary member held in said main body to freely roll on an X-Y plane;
moving amount detection means for detecting moving amounts of said rotary member in X- and Y-directions upon rolling of said rotary member;
pressure detection means for detecting a pressure with respect to the X-Y plane; and
control means for calculating a moving velocity based on either or both of the detected moving amounts of said

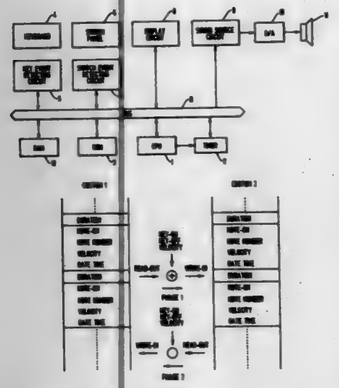
rotary member in X- and Y-directions to control and the control object on the basis of the calculated moving velocity.

5,290,967

AUTOMATIC PERFORMANCE DATA PROGRAMING INSTRUMENT WITH SELECTIVE VOLUME EMPHASIS OF NEW PERFORMANCE

Hideaki Shimaya, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 9, 1992, Ser. No. 911,673
Claims priority, application Japan, Jul. 9, 1991, 3-168506
Int. Cl.[5] G10H *7/00, 1/46;* H03G *3/00*
U.S. Cl. 84—633 19 Claims



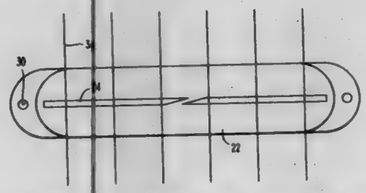
1. An automatic performance data programing instrument comprising:
- performance data memory means for memorizing a plurality of automatic performance data which correspond to a plurality of parts and which contain at least a given data effective to determine a tone volume;
- reading means for reading out the plurality of automatic performance data from the performance data memory means;
- part designating means for designating an object part among the plurality of parts;
- performance data input means for inputting a new automatic performance data containing a given data effective to determine a tone volume for the object part;
- tone volume controlling means for varying the given date so as to boost a tone volume of the object part relative to those of the remaining parts;
- musical tone generating means for generating musical tones during the course of inputting of the new automatic performance data based on the plurality of the automatic performance data inputted for the object part and read out from the remaining parts so as to emphasize the object part according to the varied given data effective to determine the tone volume; and
- recording means for recording the inputted new automatic performance data containing the given data effective to determine a tone volume, into the object part of the performance data memory means.

5,290,968

MAGNETIC PICKUP FOR MUSICAL INSTRUMENTS

Frank Mirigliano, 1336 Ashland St., and Richard Struzzi, 346 Concord Ave., both of Greensburg, Pa. 15601

Filed Apr. 17, 1992, Ser. No. 870,596
Int. Cl.[5] G10H *3/18*
U.S. Cl. 84—726 21 Claims



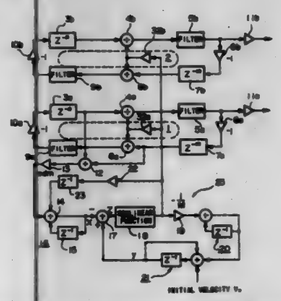
1. A magnetic pickup for use with electrically amplified stringed musical instruments, said magnetic pickup having at least one pickup coil, said at least one pickup coil comprising:
- a bobbin;
- said bobbin comprising a magnetic pole piece and a winding of wire wound thereabout, said bobbin having an exterior surface;
- a cylinder comprising a magnetic material;
- said bobbin being disposed in said cylinder with the magnetic material of said cylinder disposed adjacent the exterior surface of said bobbin; and
- at least one of said cylinder and said pole piece comprising a permanent magnetic material.

5,290,969

MUSICAL TONE SYNTHESIZING APPARATUS FOR SYNTHESIZING A MUSCIAL TONE OF AN ACOUSTIC MUSICAL INSTRUMENT HAVING A PLURALITY OF SIMULTANEOUSLY EXCITED TONE GENERATING ELEMENTS

Kaoru Kobayashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 28, 1990, Ser. No. 619,202
Claims priority, application Japan, Nov. 29, 1989, 1-309870
Int. Cl.[5] G10H *1/12*
U.S. Cl. 84—622 10 Claims



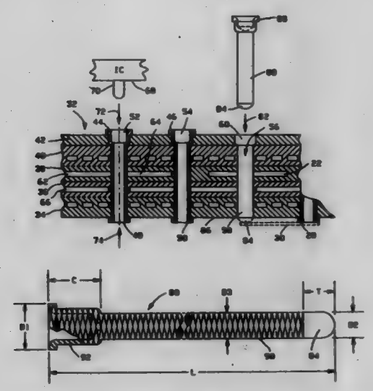
1. A musical tone synthesizing apparatus for synthesizing the musical tone of an acoustic musical instrument, of a type having a plurality of tone generating elements and tone generating operators for simultaneously exciting said tone generating elements to thereby create reciprocally propagating vibrations within said tone generating elements, said musical tone synthesizing apparatus comprising:
- (a) a plurality of closed loop circuits, each closed loop circuit comprising delay means having a delay interval corresponding to the period of reciprocal propagation vibrations in one of the tone generating elements of said acoustic musical instrument, wherein said delay interval is capable of being set to have a discrepancy from the delay intervals of others of said plurality of closed loop circuits;
- (b) feedback means for supplying feedback data from at least one of the plurality of closed loop circuits; and
- (c) excitation means for creating excitation signals, wherein said excitation signals are generated in accordance with operational data and said feedback data and are simultaneously supplied to said plurality of closed loop circuits, such that said operational data correspond to operational data supplied to said tone generating operators in said musical instrument being simulated, and said excitation signals correspond to the excitation of said tone generating elements by said tone generating operators in said acoustic musical instrument.

5,290,970

MULTILAYER PRINTED CIRCUIT BOARD REWORK METHOD AND REWORK PIN

Thomas P. Currie, St. Paul, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 18, 1992, Ser. No. 947,227
Int. Cl.[5] H05M *1/00*
U.S. Cl. 174—250 1 Claim



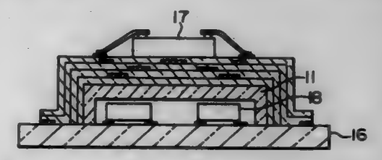
1. A method for reworking multilayer printed circuit board assemblies having component leads electrically connected to associated solder-cups on one surface of the printed circuit board assembly, where the solder-cups are integrately formed with plated-through holes extending through the thickness of the multilayer printed circuit board, said rework method comprising the steps of:
- A. locating a plated-through hole that requires rework;
- B. drilling out the plating in the located plated-through hole and associated solder-cup;
- C. providing, a rework pin having an elongated body with a solder-cup portion at one end thereof and an electrically conductive tip extending beyond the backside of the printed circuit board at the other end thereof;
- D. installing said rework pin in the drilled out through hole;
- E. selecting a rework wire connection from the rework pin to another plated-through hole;
- F. locating the required rework wire connection point on the back of the printed circuit board;
- G. electrically installing the rework wire from said tip of said rework pin to the selected connection point; and
- H. repeating steps A through G unit rework is completed.

5,290,971

PRINTED CIRCUIT BOARD PROVIDED WITH A HIGHER DENSITY OF TERMINALS FOR HYBRID INTEGRATED CIRCUIT AND METHOD OF FABRICATING THE SAME

Tsuneo Hamaguchi, and Masanobu Kohara, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,384
Claims priority, application Japan, Dec. 4, 1990, 2-400353; May 9, 1991, 3-104327
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—267 13 Claims



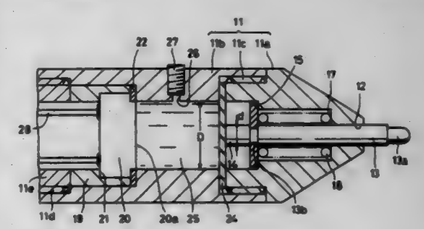
1. A printed circuit board comprising:
- a substrate;
- a wiring layer on top of said substrate wherein said wiring layer includes conductors and insulators and is arranged on said substrate, at least part of said wiring layer having a periphery which is larger than a periphery of said substrate such that peripheral sections of said wiring layer protrude beyond said substrate, and wherein conductors in the protruding peripheral sections of said wiring layer are exposed and comprise input/output terminals of said printed circuit board with the input/output terminals located at the protruding peripheral sections.

5,290,972

STYLUS PEN

Hisao Someya; Mitsunori Hoshi, both of Saitama; Takashi Ejiri, Tokyo; Takashi Takizawa, Tokyo, and Ryoji Nagano, Tokyo, all of Japan, assignors to Fujikura Rubber Ltd., Tokyo, Japan

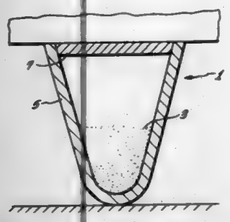
Filed Jan. 26, 1993, Ser. No. 9,236
Claims priority, application Japan, Jul. 13, 1992, 4-185074
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 17 Claims



1. A stylus pen comprising:
- a pen holder with an associated tip;
- a chamber contained in the pen holder and filled with a non-compressible fluid;
- a pressure sensor having a pressure receiving surface that detects pressure in the chamber; and,
- a means for converting a mechanical force, applied to the tip, to a change in pressure of the non-compressible fluid enclosed in the chamber.

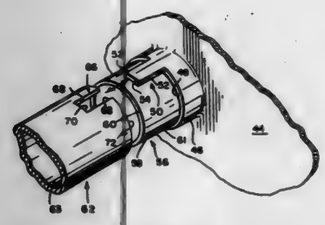
VOL 1160 ISS 1 MR 1 1994 UMI

5,290,973
ACOUSTIC DAMPING DEVICE
Frederick Y. S. Kwok, 1/F, Unit 1, Shui Hing Centre, 13, Sheung Yuet Road, Kowloon Bay, Kowloon, Hong Kong
Filed Aug. 24, 1992, Ser. No. 934,564
Int. Cl.[5] A47B *41/06*
U.S. Cl. 181—199 23 Claims



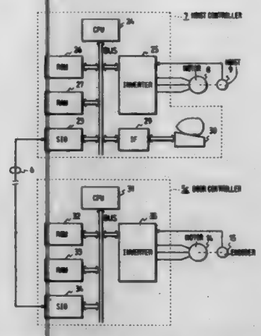
1. An acoustic damping device for supporting a speaker cabinet above a platform, comprising
a shell of solid material having a generally flat top surface for contacting the speaker cabinet and a rounded bottom surface for contacting the platform; and
an acoustic damping medium at least partially filling said shell.

5,290,974
TAB AND NOTCH LOCATOR FOR EXHAUST SYSTEMS
Arthur D. Douglas, Taylorsville; Freddie A. Baldwin, Columbus, and Alan L. Brittingham, Seymour, all of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Mar. 12, 1993, Ser. No. 30,633
Int. Cl.[5] F01N *7/08*
U.S. Cl. 181—228 20 Claims



1. An exhaust system comprising:
a muffler having a muffler head formed to include an outwardly extending projection and a tab formed on the projection;
a nipple configured to be inserted through the projection of the muffler head; and
an exhaust conduit for conducting combustion product from the muffler to the atmosphere, the exhaust conduit being sized for insertion over the nipple to couple the exhaust conduit to the muffler head, the exhaust conduit being formed to include a notched section for engaging the tab formed on the projection of the muffler head to align the exhaust conduit relative to the muffler head and to prevent rotation of the exhaust conduit relative to the muffler head.

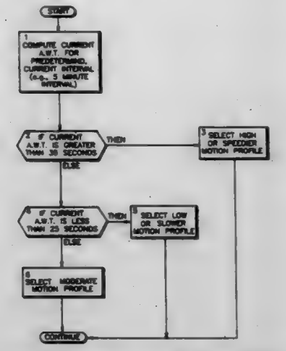
5,290,975
DOOR CONTROL AND DATA DISPLAY SYSTEM
Masamoto Mizuno; Masanori Tawada; Terumi Hirabayashi, and Toshiyuki Kodera, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 29, 1991, Ser. No. 737,253
Int. Cl.[5] B66B *1/14*
U.S. Cl. 187—103 1 Claim



1. An elevator controlling device, comprising:
door controlling means for controlling opening and closing of an elevator door comprising a CPU interconnected with an inverter, a first ROM, a first RAM and a serial transmission interface via a first system bus, the inverter including a CPU interconnected with a second ROM, a second RAM, a reversible counter and a two port RAM via a second system bus, the two port RAM being electrically connected to the first system bus and said door controlling means being secured to an elevator cage;
hoist controlling means for controlling a hoist disposed in a mechanical room;
means for setting data for said door controlling means connected to said hoist controlling means;
means for transmitting the data for said door controlling means through said hoist controlling means said door controlling means; and
display means for displaying contents of the data set by the means for setting data, said display means being connected to said hoist controlling means.

5,290,976
AUTOMATIC SELECTION OF DIFFERENT MOTION PROFILE PARAMETERS BASED ON AVERAGE WAITING TIME
Zuhair S. Bahjat, Farmington, and Gerald B. Fried, Burlington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Apr. 12, 1990, Ser. No. 508,322
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] B66B *1/24*
U.S. Cl. 187—115 11 Claims

1. A method of operating an elevator system to provide faster than normal car travel to service higher intensity traffic in a building, comprising:
providing a plurality of different sets of car motion profile factors, one set defining a normal motion profile in response to which a car travels at normal speed and one set defining a speedier motion profile in response to which a car travels at faster than normal speed;
determining, in each one of a plurality of successive relatively short time intervals, the average amount of time per hall call that registered hall cells remain unserviced;
providing a predetermined criterion for determining a characteristic of traffic intensity in response to said determined average amount of time;
providing said set defining a speedier motion profile in response to the relationship between said criterion and said

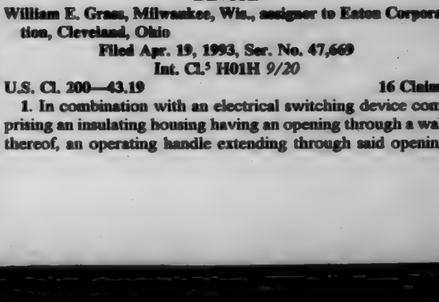


determined average amount of time indicating a high traffic intensity and otherwise providing another one of said sets; and
dispatching an elevator car to service a call utilizing the provided one of said sets to control the motion of said car.

5,290,977
DATA TRANSFER SWITCH
Hobbes Huang, 7F, No. 4, Lane 31, Chung-Hsing Rd., Hsi-Chih Chen, Taipei Hsien, Taiwan
Filed Oct. 16, 1992, Ser. No. 961,747
Int. Cl.[5] H01H *19/58, 21/78*
U.S. Cl. 200—14 10 Claims

1. A data transfer switch, comprising:
a casing including a front casing part, a rear casing part and a side wall interconnecting the front and rear casing parts;
a linking unit rotatably provided inside said casing and including a plurality of interconnected linking pieces, each of said linking pieces being a relatively thin cylindrical insulator and having one side provided with an axial tubular projection which extends toward an adjacent one of said linking pieces so as to form an annular groove between each of said linking pieces and the adjacent one of said linking pieces;
a plurality of connector pin sets mounted on said side wall of said casing, each of said connector pin sets having a plurality of connector pins which respectively extend into a corresponding said annular groove of said linking unit; and
a conductive pattern provided on each of said linking pieces at each said annular groove, rotation of said linking unit from a first angular position to a second angular position causing said conductive pattern to break electrical connection between a first one of said connector pins sets and a second one of said connector pin sets and make electrical connection between the first one of said connector pin sets and a third one of said connector pin sets.

5,290,978
PROGRAMMER/TIMER WITH RAPID ADVANCE
George Georgacakis, Skokie, and Richard Bogda, Elmhurst, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 25, 1992, Ser. No. 951,644
Int. Cl.[5] H01H *43/10*
U.S. Cl. 200—38 R 10 Claims



1. A programmer/timer for an electrically operated appliance comprising:
(a) housing means;
(b) a plurality of appliance load function switches associated with said housing means;
(c) first cam means rotatable on said housing means operable upon rotary advancement for sequentially actuating and de-actuating said function switches in accordance with a predetermined program, said first cam means including gear means rotatable therewith;
(d) primary advance means associated with said housing means, including a primary motor and ratchet and pawl means, operable for effecting said advancement, said first cam means including override means operable to permit user manual advancement;
(e) rapid advance means associated with said housing means, including a second motor, operable to engage said gear means cause said ratchet to overrun said pawl means and advance said cam means at a rate substantially greater than said primary advance means;
(f) line switch means associated with said housing means and operable to switch power to said motors and said load switches; and,
(g) second cam means disposed concentrically with said first cam means, said second cam means user-movable in a direction generally axially with respect to said first cam means, said second cam means operable for actuating and de-actuating said line switch means.

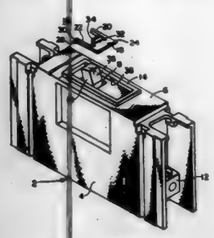
5,290,979
HANDLE BLOCK FOR ELECTRICAL SWITCHING DEVICE
William E. Grass, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 19, 1993, Ser. No. 47,669
Int. Cl.[5] H01H *9/20*
U.S. Cl. 200—43.19 16 Claims

1. In combination with an electrical switching device comprising an insulating housing having an opening through a wall thereof, an operating handle extending through said opening

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reciprocally movable between opposite ends of said opening for operating said switching device between ON and OFF circuit conditions, raised portions on said wall disposed substantially parallel to and spaced from sides of said opening, and transversely aligned recesses in mutually facing surfaces of said raised portions proximate said opposite ends of said opening;

a handle block comprising a U-shaped member having a base and a pair of legs extending from opposite ends of said base substantially parallel to each other and to said mutually facing surfaces of said raised portions, a pair of lateral projections on one of said pair of legs and a single lateral



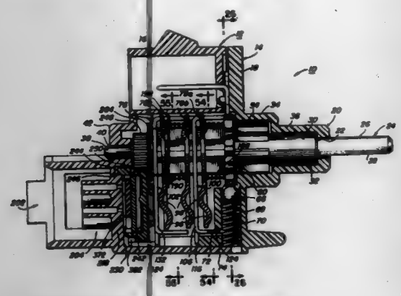
projection on a distal end of the other of said pair of legs, said handle block being removably installed between said raised portions wherein said pair of lateral projections on said one leg are inserted in respective said recesses in said raised portions at one side of said opening, said other leg being resiliently deflectable to permit said single lateral projection to align with one of said recesses in said raised portions at the other side of said opening and to bias said single lateral projection into said one of said recesses to attach said handle block to said housing, and a portion of said base abutting said handle preventing said handle from reciprocally moving within said opening.

5,290,980

ROTARY VACUUM-ELECTRIC SWITCH

John G. Cummings, Cary, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed Jul. 8, 1992, Ser. No. 910,783
Int. Cl.[5] H01H *19/58*
U.S. Cl. 200—61.86 **21 Claims**



1. A rotary electrical switch, comprising

a housing,

a rotatable driver mounted for rotation in said housing,

at least first and second electrically conductive sheet metal contact plates fixedly mounted in said housing and extending in a plane substantially perpendicular to said rotatable driver,

first and second electrical terminals connected to said contact plates,

an electrically conductive sheet metal contactor mounted on said rotatable driver for rotation therewith and for switching engagement with said first and second contact plates,

spring means for resiliently pressing said contactor against said contact plates,

a narrow temporary connecting web formed initially in one piece with said first and second contact plates to facilitate assembly of the electrical switch,

said web being easily removable in the final stages of assembly,

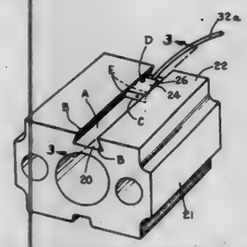
and first and second interlocking hook means bent rectangularly from said respective first and second contact plates for strictly limiting relative movement of said first and second contact plates to avoid bending of said web during the assembly of the switch.

5,290,981

SWITCH POSITIONING APPARATUS AND METHOD

Lawrence F. Yuda, P.O. Box 499, Westminster, S.C. 29693

Filed Oct. 21, 1992, Ser. No. 964,059
Int. Cl.[5] H01H *9/08*
U.S. Cl. 200—296 **5 Claims**



1. Apparatus for positioning a switch on a base member comprising:

an elongated groove on said base member forming a track;

sides forming said elongated groove;

aligned opposed inward projections forming first stop members at said sides;

a switch slidably carried in said groove having a transverse contact edge at one end thereof;

a post carried adjacent the other end of said switch projecting below said switch engaging the switch and a lower portion of said groove positioning said other end of said switch by urging said other end outwardly away from said lower portion of said groove; and

second stop members carried by said switch intermediate said contact edge and said post engaging said first stop members;

whereby said contact edge is wedged into engagement with a lower surface of said groove by reason of said switch being tilted upwardly at said other end by means of the post so as to extend downwardly toward said one end.

5,290,982

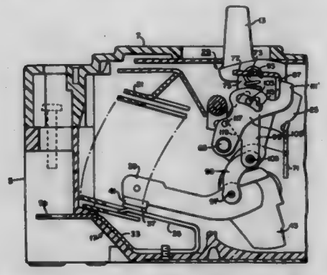
CIRCUIT BREAKER WITH POSITIVE ON/OFF INTERLOCK

Henry R. Beck, Moon Township, Allegheny County, and Charles W. Pipich, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 706,713, May 29, 1991, Pat. No. 5,213,206. This application Mar. 22, 1993, Ser. No. 34,965
Int. Cl.[5] H01H *5/04*
U.S. Cl. 200—401 **6 Claims**

1. An electrical circuit breaker comprising:

a fixed contact, a movable contact, a movable contact arm structure carrying said movable contact and movable between open and closed positions to open and close said contacts, a latchable cradle, a trip device latching said latchable cradle in a latched position and unlatching said latchable cradle in response to predetermined current overload conditions, a toggle device comprising toggle arm members pivotally joined by a toggle spring pin, said toggle device being connected to said latchable cradle and said movable contact arm structure and movable between an erected position which moves said movable contact arm structure to the closed position and a collapsed position which moves said movable contact arm structure to the open position, said toggle device remaining in the erected position when said contacts are welded closed, an operating member comprising a pivoted yoke and a handle carried by said yoke, spring means connected between said toggle spring pin and said yoke of the operating member, said spring means biasing said toggle device to the erected position to hold said contact arm structure in the closed position with said latchable cradle latched and said handle in an on position, said spring means biasing



said toggle device to a collapsed position to move said contact arm structure to the open position when said handle is moved to an off position and when said latchable cradle is unlatched by said trip device, said spring means biasing said handle to a trip position intermediate said on and off positions when said latchable cradle is unlatched by said trip device and said movable contact arm structure is moved to the open position, said latchable cradle being relatched by movement of said handle beyond said off position, and including a pair of pivoted lock links movable around a pivot and straddling said cradle with camming surfaces separate from said pivot bearing against and following said toggle spring pin and having projections which are held by the toggle spring pin in the path of said yoke to prevent movement of said handle to the off position when said electrical contacts are welded closed and said toggle device remains erected.

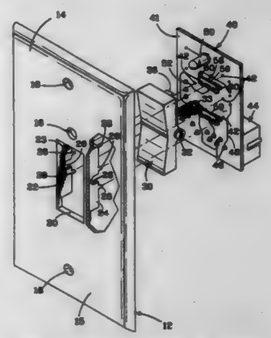
5,290,983

WALL SWITCH

Lincoln E. Roberts, Decatur, and Dale E. Thomas, Stone Mountain, both of Ga., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 739,564, Aug. 2, 1991, abandoned. This application May 10, 1993, Ser. No. 60,113
Int. Cl.[5] H01H *21/24*
U.S. Cl. 200—557 **11 Claims**

1. A wall switch including a face plate having a planar body with a decorative face facing outwardly of a wall and of an area adapted to cover over a hole in the wall in which the wall switch is mounted, said face plate including an aperture having peripheral edges, the body including walls integrally joined to said peripheral edges of said aperture and extending to free ends thereof, said walls extending in a direction substantially perpendicular to said face plate, an actuator rocker fitted in said aperture, a board having a switch with normally open contacts thereon, said board being mounted on said free ends of said walls and engaging said actuator to hold said actuator in position within said aperture, said contacts being operable by depression of said actuator to effect a momentary switch action, circuit means carried on said board to generate switching



signals from said switch responsive to switch closure and means on said face plate to anchor said face plate to a wall.

5,290,984

DEVICE FOR POSITIONING CABLE AND CONNECTOR DURING SOLDERING

George H. Gerhard, Jr., Laureldale, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 6, 1992, Ser. No. 973,115
Int. Cl.[5] H05B *6/10*; H01R *43/02*
U.S. Cl. 219—616 **12 Claims**

1. A device for positioning a cable end and an associated connector to be terminated thereto during inductive heat soldering of the connector to the cable, the connector including a cable receiving end face, a bore extending through the end face, and a solder preform disposed at a selected axial location along the bore to define a solder joint with the cable upon solder reflow, the end of the cable residing within the bore, the device comprising:

a housing including a pair of terminals connectable to a source of radio frequency alternating current;

a connector positioning section adapted to position the connector so that a heating portion of the connector at said axial location is disposed in a heating region;

an electrical conductor assembly operable to electrically connect the pair of terminals so as to complete an electrical circuit when the pair of terminals are connected to the source of radio frequency alternating current, the electrical conductor assembly including a first electrically conductive contact bar immovably connected to one of the pair of terminals, and a second electrically conductive contact bar which is slidable between a first position

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wherein the first contact bar is electrically disconnected from the other of the pair of terminals, and a second position wherein the first contact bar is electrically connected to the other of the pair of terminals, the first and second contact bars cooperating to define the heating region when the second contact bar is in the second position; and,

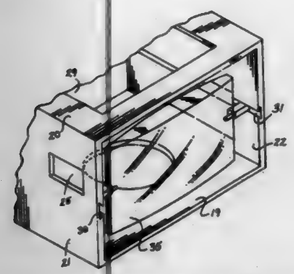
a clamp attached to the housing and operable for releasably holding the cable when the heating portion of the connector is disposed in the heating region.

5,290,985

MICROWAVE OVEN INSERT

Betsy L. Jascic, and Dale A. Jascic, both of 17 Harvard La., Bedford, N.H. 03110

Filed Mar. 1, 1993, Ser. No. 24,279
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—725 **2 Claims**



1. A microwave oven insert arranged for reception within a microwave oven, wherein the insert comprises,

a floor and a roof plate spaced from and parallel relative to the floor, a first side wall spaced from and parallel a second side wall, and a rear wall, and

an entrance opening directed into the insert container between the roof plate, the floor, the first side wall, the second side wall, and wherein the insert is formed of a polymeric microwave transmissible material, and

the first side wall having a first side wall opening arranged to permit alignment with illumination within a microwave oven, and

the roof plate having a roof plate opening arranged to receive microwave therethrough, and

the floor having a floor opening arranged to accommodate a turn table through the floor, and

the roof plate includes a continuous frangible junction extending in surrounding relationship relative to the roof plate opening, wherein rupture of the frangible junction permits removal of a roof plate insert oriented within the frangible junction to accommodate venting from the insert through the microwave oven, and

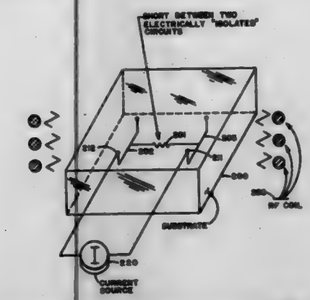
a first dovetail slot directed coextensively along the first side wall spaced a predetermined spacing relative to the floor, and a second dovetail slot directed into the second side wall in facing relationship relative to the first dovetail slot, wherein the second dovetail slot is spaced said predetermined spacing relative to the floor, and the first dovetail slot and the second dovetail slot are arranged in a parallel coextensive relationship, and a transparent shelf plate, the transparent shelf plate including a first dovetail side wall and a second dovetail side wall, wherein the first dovetail side wall is arranged for reception within the first dovetail slot and the second dovetail side wall is arranged for simultaneous reception within the second dovetail slot.

5,290,986

THERMALLY ASSISTED SHORTS REMOVAL PROCESS FOR GLASS CERAMIC PRODUCT USING AN RF FIELD

Jose L. Colon, Mayaguez, P.R.; Leonard A. Horchos, deceased, late of Clinton Corners, N.Y. by Columbe L. Horchos, executrix , and Gary P. Suback, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1991, Ser. No. 781,705
Int. Cl.[5] H05B *6/10*
U.S. Cl. 219—770 **11 Claims**



1. A method of repairing shorts between metallic conductors located within a glass ceramic product, comprising the steps of:

(a) pre-conditioning the glass ceramic product to resist cracking from the generation of heat during any follow on shorts removal activity wherein said step of pre-conditioning is performed by applying energy to the metallic conductors located within the glass ceramic product to raise the temperature of the conductors to approximately the melt point of their metallic constituents, so long as the conductors do not actually melt and wherein said step of applying energy is performed by placing the glass ceramic product in a radio frequency (RF) field; and

(b) subsequently applying heat to melt a given short between the metallic conductors located within the glass ceramic product.

5,290,987

ELECTRICAL DISCHARGE MACHINING APPARATUS

Paul J. Davis, Lyndon Township, Washtenaw County, and Myron C. Johnson, Freeland, both of Mich., assignors to Charmilles Technologies Manufacturing Corporation, Owosso, Mich.

Filed Dec. 14, 1992, Ser. No. 990,675
Int. Cl.[5] B23H *11/00*
U.S. Cl. 219—69.11 **7 Claims**

1. An apparatus for electrical discharge machining comprising:

a housing having a workpiece support area and a rear wall extending upwardly from a rear edge of said workpiece support area;

workpiece support means secured to said housing within said workpiece support area for holding a workpiece;

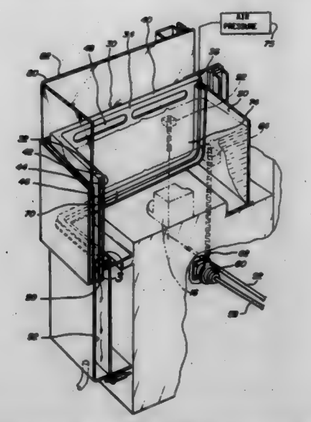
means attached to said housing for performing an electrical discharge machining operation on the workpiece secured to said workpiece support means;

a tank assembly, said tank assembly including a front wall and two spaced apart side walls, said side walls each having a front edge secured to opposite edges of said front wall, said side walls each having a rear edge adjacent to said housing rear wall when said tank assembly is in a machining position, said workpiece support means being positioned between said side walls;

means for moving said tank assembly between said machining position and a retracted position;

means for sealing said tank assembly in said machining position to enable said tank assembly to hold a dielectric fluid;

a channel attached to said housing for supporting and positioning said sealing means against said tank assembly, said channel extending along said housing rear wall and side walls and front wall of the tank, said sealing means comprising an inflatable bladder which, upon inflation, sealing



engages said tank assembly along said front wall, said side walls and along said upwardly extending wall;

wherein in said machining position said tank assembly encompasses said workpiece secured to said workpiece support means; and

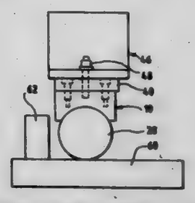
wherein in said retracted position said tank assembly is spaced away from a workpiece secured to said workpiece support means to facilitate access to a workpiece secured to said workpiece support means.

5,290,988

METHOD FOR MACHINING A PRECISION CONFORMED HOLD-DOWN PRESSURE SHOE

Clinton L. Young, East Peoria, Ill., assignor to Precision Pattern, Template & Shoe, Inc., East Peoria, Ill.

Filed Feb. 22, 1991, Ser. No. 659,493
Int. Cl.[5] B23H *9/00*
U.S. Cl. 219—69.17 **8 Claims**



1. A method for preparing a hold-down pressure shoe that uniformly engages and precisely conforms to an external contour of a workpiece surface so that the workpiece surface may be moved adjacent a rotating cutterhead blade of a machine without elevating it from the surface of the machine, comprising the steps of:

selecting a pattern for the workpiece surface;

programming a computer to control a cutting means for shaping the selected pattern on the workpiece surface; and

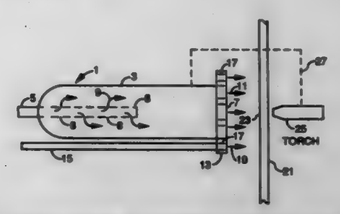
operating the cutting means to cut the hold-down pressure shoe into a shape that is the negative profile of the selected pattern on the workpiece surface.

5,290,989

WELD ROOT SHIELD DEVICE AND METHOD

Raymond A. Zibilich, Littleton, and Robert A. Golla, Castle Rock, both of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 21,147
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—74 **7 Claims**



1. A method of weld root shielding by directing inert gas at a reactive metal weld root without contacting the weld root and without the need to position the weld root in a gas chamber comprising the steps of:

(a) providing a weld root shield device comprising a first inert gas supply means having an open end portion together with a second inert gas supply means surrounding the open end portion of the first inert gas supply means for replacing air that could be aspirated by inert gas emerging from the open end portion of the first gas supply means with inert gas emerging from the second gas supply means;

(b) positioning a welding torch adjacent a first side of a weldment and positioning said weld root shield device adjacent a second side of the weldment opposite the first side in noncontacting relation thereto;

(c) operating the welding torch to produce a reactive metal weld root on the second side of the weldment; and

(d) directing an inert gas through the first and second inert gas supply means of the weld root shield device and over the weld root being produced by operation of the welding torch, thereby to protect the weld root from oxidation by the atmosphere.

5,290,990

SEAM WELDING MACHINE FOR JOINING SHEET BLANKS TOGETHER

Walter Bischofberger, Niederweningen, and Karl Weeger, Uster, both of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Jul. 21, 1992, Ser. No. 917,752
Claims priority, application Switzerland, Aug. 15, 1991, 02 410/91-0; Jun. 19, 1992, 01 948/92-2
Int. Cl.[5] B23K *1/08*
U.S. Cl. 219—82 **11 Claims**

1. Seam welding machine for joining together with a seam weld sheet blanks clamped side by side, comprising

a welding head defining a weld axis (Z),

two clamping blocks arranged on either side of the weld axis (Z) for the sheet blanks each with upper and lower pressure beams and upper and lower clamping devices defining a receiving gap (S) for the sheet blanks and

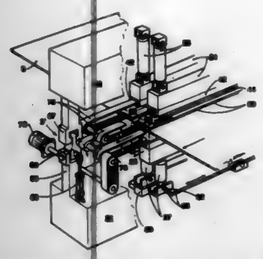
a longitudinal transport system for advancing the clamped sheet blanks in the direction of the weld axis (Z),

characterized in that

the two upper pressure beams are carried by an upper longitudinal girder and the two lower pressure beams are carried by a lower longitudinal girder, said girders being

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fixed and rigid and rigidly connected to one another, and at least the upper pressure beams can be raised and lowered with respect to the upper longitudinal girder by jacks,



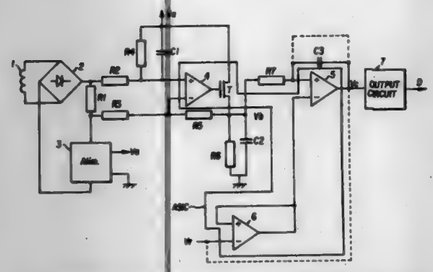
and each pressure beam has a feed unit, each unit comprising longitudinal guides (43) extending in the direction of the welding axis (Z), a slide running on the guides and carrying the clamping devices and a reversible linear drive connected to the slide.

5,290,991

ADJUSTMENT PROCESS OF AN ELECTRONIC TRIP DEVICE

Marc Levain, 3, Allée de la Pelouse, F 38100 Grenoble, and Didier Fraisse, 5, Allée du Doulan, F 38400 St. Martin D'Heres, both of France

Filed Jul. 15, 1992, Ser. No. 913,391
Claims priority, application France, Jul. 23, 1991, 91 09406
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 **7 Claims**



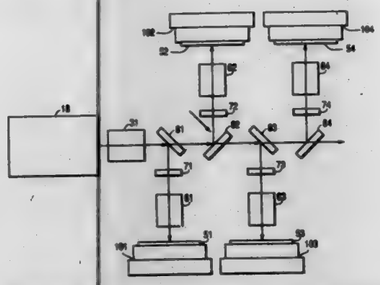
1. An adjustment process of an electronic trip device comprising an analog channel whose input is connected to means for measuring current, the channel comprising at least a measuring resistance connected to the means for measuring current and at least a first operational amplifier connected to the terminals of the measuring resistance, a process comprising a stage producing, by serigraphy on a hybrid circuit, the measuring resistance and an offset voltage compensating resistance, having preset minimum values, and an offset voltage compensating stage consisting in injecting successively first and second currents of preset values to the input of the channel, of measuring corresponding first and second output voltages of the channel, of injecting a third current of preset value, and of adjusting, by laser, the value of the offset voltage compensating resistance so as to obtain an output voltage equal to the product of the third current and of the ratio between the difference between the first and second output voltages and the difference between the first and second input currents.

5,290,992

APPARATUS FOR MAXIMIZING LIGHT BEAM UTILIZATION

How T. Lin, Vestal, and Mark V. Pierson, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,969
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.74 **21 Claims**



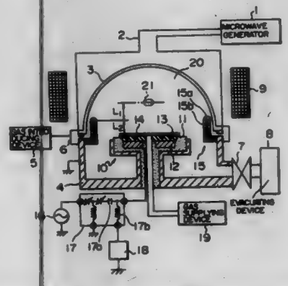
1. An apparatus for exposing a plurality of work pieces to patterned light, comprising:
a) a light source for generating a light beam;
b) a plurality of mask mirrors, each mask mirror having at least one reflective region and at least one transparent region, each mask mirror is positioned so that a portion of said light beam is transmitted thereby and another portion of said light beam is reflected thereby, and
c) a plurality of pattern defining masks, each pattern defining mask associated with a respective mask mirror, for receiving light from said associated mask mirror to form patterned light on a respective work piece.

5,290,993

MICROWAVE PLASMA PROCESSING DEVICE

Tetsunori Kaji, Tokuyama; Takashi Fujii; Motohiko Yoshigai, both of Kudamatsu; Yoshinao Kawasaki, Yamaguchi, and Masaharu Nishiumi, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,184
Claims priority, application Japan, May 31, 1991, 3-129064
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 **27 Claims**



1. A microwave plasma processing device comprising:
a vacuum chamber which is evacuated to a predetermined pressure and into which processing gas is introduced;
a sample table disposed in said vacuum chamber, to which an AC voltage is applied;
microwave generating means for generating microwaves and introducing the microwaves towards a surface to be processed of a sample located on said sample table;
magnetic field generating means for generating a magnetic field in said vacuum chamber;
an insulator disposed on a part of said vacuum chamber exposed to plasma produced in said vacuum chamber; and
a ground electrode disposed at a place which is on a microwave introduction side with respect to the surface of said sample table on which said sample is placed, a surface of said ground electrode being covered by an insulating thin film.

5,290,994

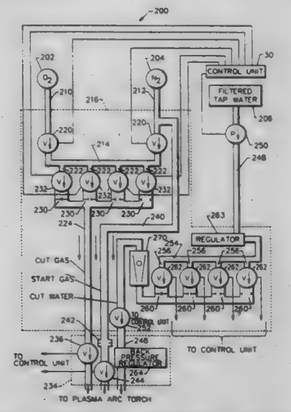
Patent Not Issued For This Number

5,290,995

PLASMA ARC CUTTING SYSTEM HAVING FLUID METERING AND POWER CONTROL SYSTEMS

Philip K. Higgins, Society Hill; Peter Budai, and Wayne S. Severance, Jr., both of Florence, all of S.C., assignors to ESAB Welding Products, Inc., Florence, S.C.

Filed Dec. 20, 1991, Ser. No. 811,837
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.44 **46 Claims**



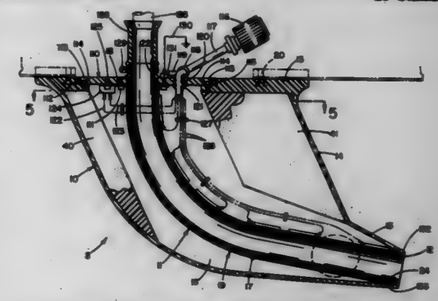
1. A cutting and welding system having at least one plasma arc cutting and welding torch, and a metering system for controlling at a location remote from the plasma arc torch the amount of gas fed to the plasma arc torch comprising
a plasma arc torch which includes an electrode having an arc discharge end, a nozzle assembly positioned adjacent the discharge end of the electrode and a bore extending through the nozzle assembly, means for creating an electrical arc extending from the electrode through the bore to a workpiece located adjacent the nozzle assembly, and means for generating a flow of gas between the electrode and the nozzle assembly to create a plasma flow through the bore to a workpiece positioned beneath the nozzle assembly,
gas flow means communicating with a source of gas and the plasma arc torch for supplying gas to the torch,
a plurality of metering orifices positioned within the gas flow means in a parallel bank to each other so that the gas may flow through each of the metering orifices, each metering orifice having a predetermined diameter opening, with at least two of the metering orifices being sized differently from each other so as to have different flow capacities, and a gas control valve mounted adjacent each of the metering orifices, and wherein each gas control valve has open and closed positions for allowing gas flow through the associated metering orifice upon actuation of the gas control valve into an open position, and
control means operatively connected to the gas control valves for actuating selected gas control valves to control gas flow through selected metering orifices to allow a predetermined amount of gas to flow into the plasma arc torch, wherein the amount of gas flowing to the torch may be accurately controlled by actuating selected gas control valves to allow gas flow only through selected metering orifices of a desired size.

5,290,996

MODULAR DRAINMAST FOR AIRCRAFT

Michael J. Gianuzi, Akron, and Tommy M. Wilson, Stow, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 21, 1992, Ser. No. 839,866
Int. Cl.[5] H05B *1/00*; B64D *1/00*; B64C *1/00*
U.S. Cl. 219—201 **23 Claims**



12. A heated drainmast assembly for an aircraft comprising:
a) a hollow fairing comprising a mounting base adapted to be affixed to an aircraft, the base being joined to an aerodynamically shaped mast configured such that the mast protrudes into the surrounding airflow when the mounting base is attached to an aircraft, the mast having at its end distal the mounting base at least one exit hole at the tip,
b) at least one drain tube assembly including a drain tube including an electrothermal heating element, the drain tube supportively affixed to the fairing proximal to the mounting base and extending through the hollow fairing without contact and terminating at the exit hole, and
c) an elastomeric fitting which receives and resiliently supports the end of the heated drain tube within the mast at the exit hole.

5,290,997

ROTARY ELECTRIC STOVE FOR HEATING AND WARMING FOOD AT A TABLE

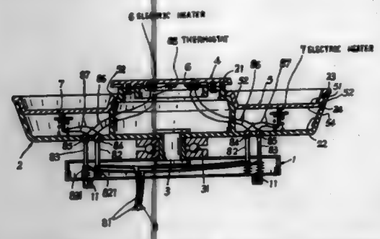
Yu-Jen Lai, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), and Shih-Wen Li, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), both of Taiwan

Filed Nov. 23, 1992, Ser. No. 980,584
Int. Cl.[5] H05B *1/00*
U.S. Cl. 219—218 **5 Claims**

1. A rotary electric stove comprising: a base, and a rotatable tray having a central hot plate and a plurality of peripheral vessels disposed around the central hot plate and detachably seated in the rotatable tray which is rotatably mounted on the base for rotation about a vertical axis, said tray having a plurality of first and second heaters electrically connected with a power source, with each said first heater contacting said central hot plate for heating the central hot plate and each said second heater contacting each said peripheral vessel for heating the peripheral vessel, so that foods, soup, and beverage

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filled in the plural vessels and filled in a pot placed on the central hot plate will be heated and be rotatably chosen by an



eater by rotating the tray on the base for a convenient and comfortable table service.

5,290,998

CORDLESS IRON AND ELECTRICALLY HEATED IRONING BOARD COMBINATION

Kenneth J. Couch, Devon, and David K. Thompson, London, both of United Kingdom, assignors to Gemini Clothescare Limited of the Rookery, United Kingdom

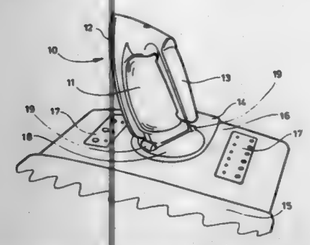
PCT No. PCT/GB89/00765, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO90/00642, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 6, 1989, Ser. No. 663,895

Claims priority, application United Kingdom, Jul. 6, 1988, 8816089

Int. Cl.[5] H05B *1/02*; D06F *71/29, 79/02, 81/08*

U.S. Cl. 219—247 14 Claims



1. Pressing apparatus comprising a cordless iron having an electrically-energised heater element, and a control module including a support for the iron, cooperable electrical connection means on said iron and said support whereby the iron is in electrical connection with a source of electrical power when the iron is located on the support, the iron having a temperature sensor in thermal contact with the sole plate thereof and the control module having control circuitry including temperature selection means for controlling the supply of electrical power to the heater element according to the perceived temperature of the sole plate as sensed by said temperature sensor in relation to the selected temperature, in which the iron and the support include cooperative interengagement means whereby the iron is locatable on or removable from its position of electrical connection via a disconnection position, the iron describing a forward pivotal movement with respect to the support between the said disconnection position and a connection position wherein said cooperable electrical connection means on said iron and support are in electrical engagement.

5,290,999

CONTINUOUS FURNACE FOR HEATING GLASS PANES TO BENDING AND/OR TOUGHENING TEMPERATURE

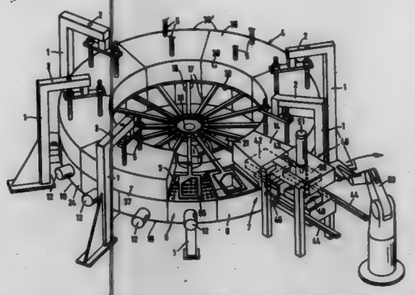
Hans-Werner Kuster; Jean-Pierre Lacoste, both of Aachen, Fed. Rep. of Germany, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed May 8, 1992, Ser. No. 879,987

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115235

Int. Cl.[5] C03B *35/24, 23/035, 25/093*

U.S. Cl. 219—388 9 Claims



1. A continuous furnace for heating glass panes to a curving and/or toughening temperature, comprising:

a horizontal, annular hot gas support bed having a feed station and a discharge station, and further having means for supporting a glass pane for arcuate movement on a layer of hot gas; and

an entraining apparatus comprising a plurality of entraining elements, each of said entraining elements being driven through said annular support bed from said feed station to said discharge station, each of said entraining elements comprising means for engaging at least two non-parallel sides of a glass sheet and driving the glass sheet from said feed station to said discharge station, the two non-parallel sides each extending substantially parallel to an axis of said arcuate movement.

5,291,000

SNOW MELTING HEATER MAT APPARATUS

Ralph E. Hornberger, K-13 2304 Brownsville Rd., Langhorne, Pa. 19053

Filed Feb. 24, 1992, Ser. No. 840,047

Int. Cl.[5] H05B *3/02*

U.S. Cl. 219—539 3 Claims

1. A snow melting heater mat apparatus, comprising,

a plurality of rigid heating mats,

and

an electrical power supply directed to a first of the rigid heating mats, the rigid heating mats arranged in a serial aligned orientation relative to one another to define an integral surrounding side wall, with each heating mat including a plurality of serpentine resistance heating members secured to each heating mat within the side wall of each heating mat,

and

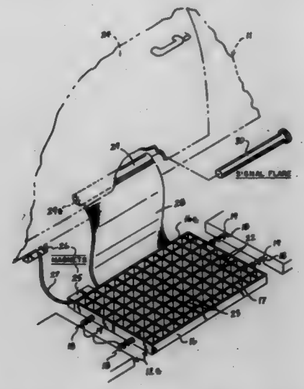
a flexible connector cable directed between adjacent heating mats, with the flexible connector cable in electrical communication between the serpentine heating members of the adjacent heating mats,

and

each flexible connector cable includes a coil spring arranged in surrounding relationship relative to each connector cable, with each coil spring mounted at each distal end to the adjacent heating mats,

and

each heating mat includes a plurality of parallel first wall members orthogonally intersecting a plurality of second wall members defining cellular openings directed in a parallel relationship within the surrounding side wall, with the serpentine heating members mounted to upper distal ends of at least one of the first wall members and to at least one of the second wall members,



and

a first magnetic mounting block and the surrounding side wall is formed of a ferrous rigid material, and a tether cable secured to the first magnetic mounting block, and a second magnetic mounting block secured to said tether cable spaced from the first magnetic mounting block for securement to an associated vehicle to effect spacing of the heating mat relative to the vehicle.

5,291,001

PROCESS AND DEVICE FOR OPERATING AN AUTOMATIC DATA CARRIER ARCHIVE

Werner F. Krayer, Durlangen, Fed. Rep. of Germany, and Rolf Baur, deceased, late of Heubach-Lautern, Fed. Rep. of Germany by Helga Baur, executor , assignors to Grau GmbH & Co., Schwabish Gmund, Fed. Rep. of Germany

Continuation of Ser. No. 573,186, Aug. 16, 1990, abandoned.

This application Oct. 17, 1991, Ser. No. 776,886

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843218

Int. Cl.[5] G06F *15/20*

U.S. Cl. 235—375 42 Claims

1. Method for operating an automatic data carrier library which is associated with a computer as a data storing facility,

said library comprising various stations, a plurality of said stations being data carrier stores and at least another of said stations being a read/write station for said data carriers,

said library further comprising means for carrying out transportation procedures of said data carriers between one and another of said stations and a control device for controlling said transportation procedures, wherein

said method comprises:

using transportation procedures for transporting one of said data carriers between a first one and a second one of said stations, each of said transportation procedures comprising at least one transportation function having a priority associated therewith;

separating said transportation procedures into internal transportation procedures for rearranging said data carriers within said plurality of data carrier stores and into direct request transportation procedures for transporting a data carrier from its data carrier store directly into said read/-write station;

providing said transportation functions of said internal transportation procedures with priorities which are lower than the priorities of said transportation functions of said direct request transportation procedures;



arranging called-up transportation functions in a sequence within said control device; and

executing a transportation function with a higher priority with precedence over a transportation function with a lower priority.

5,291,002

SYSTEM FOR GENERATING MACHINE READABLE CODES TO FACILITATE ROUTING OF CORRESPONDENCE USING AUTOMATIC MAIL SORTING APPARATUS

Edward G. K. Agnew, Campbellville; Udo H. Mohaupt, Cambridge, and Oscar G. Nespoli, Guelph, all of Canada, assignors to Z Mark International Inc., Markham, Canada

Continuation of Ser. No. 544,783, Jun. 27, 1990, abandoned.

This application May 17, 1993, Ser. No. 62,648

Claims priority, application United Kingdom, Jun. 28, 1989, 8914838

Int. Cl.[5] G06K *1/12, 7/10*

U.S. Cl. 235—375 23 Claims

1. A method of encoding correspondence bearing a human readable postal code to facilitate routing of the correspondence to a destination address by automatic mail sorting apparatus adapted to use a particular location and format for the destination address, said method comprising the steps:

(a) marking a letter with an easily machine readable first code, said first code being generated from and corresponding to the human readable postal code of the destination address;

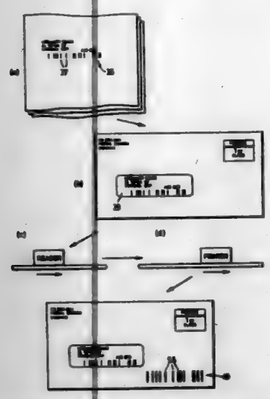
(b) stuffing the letter into a window envelope such that the first code is positioned within the window;

(c) machine reading the first code within the window;

(d) printing a machine readable second code corresponding

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to the first code in the human readable postal code of the destination address is the location and format utilized by



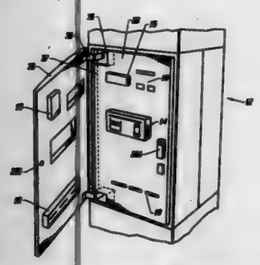
the particular automatic mail sorting apparatus such that the envelope is suitable for processing by the apparatus.

5,291,003

MODULAR CASH CARD SYSTEM DESIGN

Allan Avnet, Orange County, and Brian R. Drugge, Santa Clara County, both of Calif., assignors to VeriFone, Inc., Redwood City, Calif.

Filed Oct. 11, 1991, Ser. No. 777,764
Int. Cl.[5] G07F 7/02
U.S. Cl. 235—381 **15 Claims**



1. A secure modular cash card dispensing and revaluation apparatus, comprising:

a security upgradable anti-forced-entry anti-theft security enclosure comprising fixed wall panels defining the boundary of said security enclosure; and loosely fitted panels mounted within and movable relative to said fixed wall panels; and

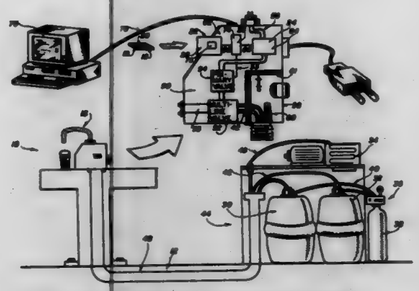
a cash card dispenser apparatus for dispensing and providing value to a cash card, said dispenser apparatus contained substantially within said security enclosure as defined by said loosely fitted panels.

5,291,004

CARD-CONTROLLED BEVERAGE DISTRIBUTION SYSTEM

Michael S. Frank, 414 S. Craig St., Suite 283, Pittsburgh, Pa. 15213, and R. Patrick Garrett, Pittsburgh, Pa., assignors to Michael S. Frank, Pittsburgh, Pa.

Continuation of Ser. No. 646,158, Jan. 25, 1991, abandoned. This application Jun. 18, 1992, Ser. No. 900,548
Int. Cl.[5] G07F 15/02, 7/08
U.S. Cl. 235—381 **2 Claims**



1. A beverage distribution apparatus comprising:

a piping network for transporting a beverage from at least one source at a first location to at least one output at a second location, said second location remote from said first location;

means for actuating the flow of beverage from a source at the first location to an output at the second location, said actuating means comprising a valve system for fluidically connecting an output to a desired source, said actuating means in communication with the piping network;

means for controlling the actuating means, said controlling means comprising at least one card having information thereon, said information comprising a first portion serving to identify the card, a second portion representing a predetermined quantity of beverage, and a third portion for specifying which sources the user can have access to, said controlling means comprising a card reader for reading the information from the card and generating a first signal corresponding to the information, a flow meter for measuring the flow of the beverage from the output and generating a second signal indicative of the flow, and an element for generating a third signal depending on said first and second signals, said third signal controlling said actuating means, said element in communication with the card reader and the flow meter, said means for controlling the actuating means in communication with the actuating means; and

means for controlling the temperature of the piping network, said temperature controlling means disposed in thermal communication with and positioned about said piping network along a majority of its length.

5,291,005

APPARATUS FOR READING A MAGNETIC STRIPE ON A BOARDING PASS REGARDLESS OF THE ORIENTATION OF THE BOARDING PASS

Hiromoto Ishii, Mishima, and Tsuyoshi Matsushita, Shizuoka, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1990, Ser. No. 577,460
Claims priority, application Japan, Sep. 7, 1989, 1-232423
Int. Cl.[5] G06K 7/08
U.S. Cl. 235—449 **8 Claims**

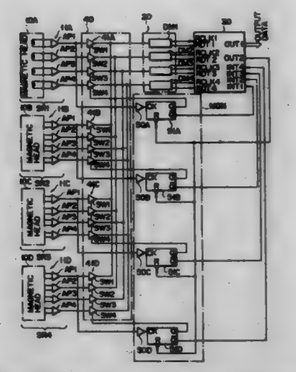
1. A reading device for reading an information signal recorded on a card regardless of the orientation of the card relative to the reading device, the reading device comprising:

feeding path means for receiving a card to be inserted in one of various orientations;

means for advancing the card along the feeding path means;

a plurality of sensor unit means for sensing a signal recorded on said card, said plurality of sensor unit means being arranged on said feeding path means, such that each of said sensor unit means will sense said signal recorded on the card when said card is inserted in a particular respective orientation;

monitoring means for monitoring all of said sensor unit means to determine which one of said sensor unit means has sensed the signal;



a single demodulating means for demodulating the signal sensed by said sensor unit means;

connecting means for electrically connecting said single demodulating means to the one sensor unit means which said monitoring means determines has sensed the signal, to demodulate the signal sensed by said one sensor unit means; and

reading means for reading information of interest by extracting a series of digital data from the signal output by said demodulating means and for converting the series of digital data into parallel form in accordance with the particular orientation of the card assigned to the one sensor unit means which said monitoring means determines has sensed the recorded signal.

5,291,006

AUTHENTICITY IDENTIFYING SYSTEM FOR INFORMATION STORAGE CARDS

Hiroaki Nishiguma; Hidekazu Hosino, and Yoshiaki Seki, all of Kanagawa, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

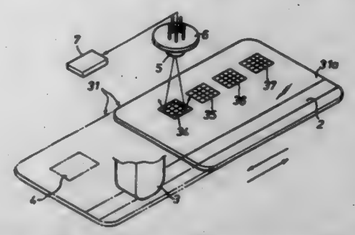
Filed Nov. 6, 1991, Ser. No. 788,569
Claims priority, application Japan, Aug. 11, 1989, 1-209065; Aug. 11, 1989, 1-209066; Aug. 11, 1989, 1-209067; Aug. 11, 1989, 1-209068; Nov. 30, 1989, 1-311422; Apr. 16, 1991, 3-111158; Sep. 16, 1991, 3-262764
Int. Cl.[5] G06K 7/10, 19/00
U.S. Cl. 235—454 **12 Claims**

1. A system for determining authenticity of an information storage card in which:

said card comprises an information storage region for storing information in coded form so as to be accessed by a card reader/writer, and an identification region having a unique optical property thereon; and

said card reader/writer comprises means for accessing said coded information, light emitting mean for projecting incident light upon said identification region carried by said card, light receiving means for detecting light reflected by or transmitted through said identification region, and identification circuit for evaluating said light received by said light receiving means and producing a signal for indicating authenticity of said card, wherein:

said identification region comprises a plurality of groups of segments, each group having a different reflective or transmissive directivity, said segments in each group being



distributed substantially uniformly over an entire area of said identification region; and

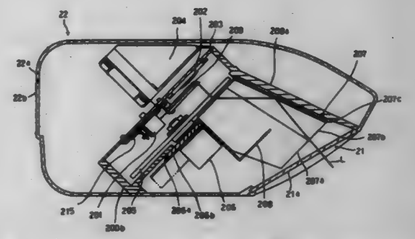
said light receiving means is provided with a plurality of parts each capable of individually detecting light reflected by or transmitted through said identification region, said identification circuit determining authenticity of said card according to a combination of said parts which detected light from said identification region.

5,291,007

BAR CODE SCANNER USING A HOLOGRAM DISK AND HAVING DETACHABLE AND ADJUSTABLE OPTICAL ELEMENTS

Yasuyuki Sakai, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 12, 1991, Ser. No. 714,029
Claims priority, application Japan, Jun. 15, 1990, 2-158390; Mar. 5, 1991, 3-38779
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—457 **28 Claims**



13. An information reader for reading information on an article comprising:

a light source for emitting a light beam;

means for detecting said light beam after it is reflected from said article;

a rotatable circular hologram disk for scanning said light beam in two dimensions and guiding said reflected light beam to said detecting means;

means for deflecting said light beam emitted from said light source toward said hologram disk; and

a housing for receiving said light source, said detecting means, said hologram disk and said deflecting means therein,

wherein said light source and said deflecting means are integrally detachable from said housing,

wherein said circular hologram disk has a first hologram and

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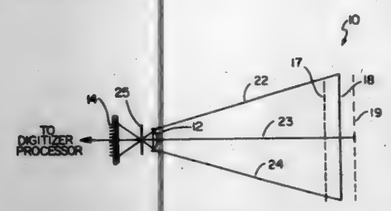
a second hologram which have differemt focal lengths and different diffraction angles, each of said first and second holograms circumferentially extending along half of a full circumference of said circular hologram disk.

5,291,008

OPTICAL ASSEMBLY AND APPARATUS EMPLOYING SAME USING AN ASPHERICAL LENS AND AN APERTURE STOP

William H. Havens, Skaneateles, N.Y.; Harry R. McKinley, Southampton, Mass.; Charles M. Hammond, Jr., Skaneateles, N.Y.; Joseph J. Morabito, Auburn, N.Y., and Jeffrey B. Powers, Syracuse, N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 10, 1992, Ser. No. 819,480
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **33 Claims**



1. An optical apparatus, comprising:
light sensing means for detecting indicia, said light sensing means having an active viewing surface;
a single element field corrected lens means, disposed between said light sensing means and said indicia, having an optical axis and a radial dimension that is orthogonal with said optical axis; and
an aperture stop means spaced apart form said lens means for constraining light beams originating from respective first and second regions of the indicia and reaching first and second regions of said active viewing surface to traverse first and second exclusive portions of said lens means;
whereby light beams originating from all points on said indicia focus onto said active viewing surface.

5,291,009

OPTICAL SCANNING HEAD

Alexander R. Roustaei, 1696 Via Inspirar, Lake San Marcos, Calif. 92069

Filed Feb. 27, 1992, Ser. No. 843,266
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **9 Claims**



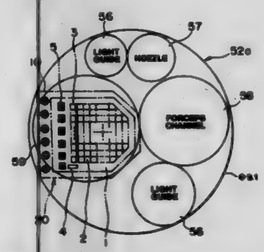
1. A device for scanning and decoding information encoded in an optical code, said device comprising:
a printed circuit board having a front, a center, and a rear with a longitudinal centerline bisecting said printed circuit board into a left side and a right side;
a plurality of LEDs disposed on said printed circuit board near said front for projecting light outward from said front, a first portion of said plurality of LEDs disposed on said left side, each LED of said first portion being directed to emit light at a non-zero angle so that its light intersects said longitudinal centerline at an angle different from other LEDs of said first portion, and a second portion disposed on said right side, each LED of said second portion being directed to emit light at a non-zero angle, so that its light intersects said centerline at an angle different from other LEDs of said second portion so that a fan of light is emitted which becomes increasingly broader at greater distances from said plurality of LEDs;
an optic module disposed at said center of said printed circuit board for filtering reflected light which is reflected from the optical code and for focusing said reflected light at a focal plane;
a CCD detector disposed at said rear of said printed circuit board substantially at said focal plane, for receiving said reflected light and generating an electrical signal in response thereto;
a conversion means for converting said electrical signal into a digital signal corresponding to said bar code; and
a voltage source for providing a driving voltage to said plurality of LEDs, said CCD detector and said conversion means.

5,291,010

SOLID STATE IMAGING DEVICE HAVING A CHAMBERED IMAGING CHIP CORNER

Kiyoshi Tsuji, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,274
Claims priority, application Japan, Oct. 4, 1990, 2-268138
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **25 Claims**



1. A solid state imaging device, comprising:
an imaging chip having an imaging area for imaging an image and a package for enclosing said imaging chip, wherein at least one corner at a corresponding position in said imaging chip, and said package is chamfered.

5,291,011

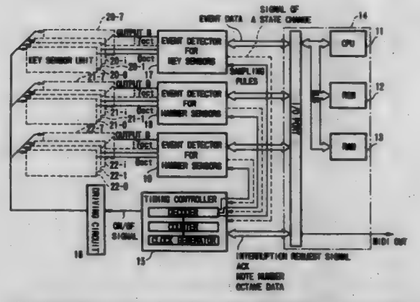
PHOTOSENSOR CONTROLLER FOR MUSICAL INSTRUMENT HAVING A DRIVING MEANS FOR DRIVING A SUBSEQUENT PAIR OF LUMINESCING MEANS AND DETECTING MEANS IN SEQUENCE

Rokurota Mantani, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 7, 1992, Ser. No. 957,670
Claims priority, application Japan, Oct. 7, 1991, 3-259451
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.3 **7 Claims**

1. A photosensor controller for use in a musical instrument equipped with a plurality of elements for operation, comprising:
a) a plurality of lumineacing means for emitting light;
b) a plurality of detecting means for detecting light emitted

by said luminescing means, wherein each of said detecting means forms a pair with a respective one of said luminescing means for each of said elements, detecting the light emitted therefrom, and thereby detecting operations in said elements;
c) a driving means for driving said pairs of luminescing means and detecting means in sequence wherein, said



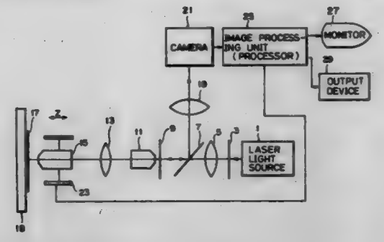
luminescing means is driven by said driving means for a first period of time and said detecting means scans said luminescing means during a portion of said first period of time, and, following elapse of said first time period, said luminescing means is extinguished, and after a second period of time said driving means drives a subsequent pair of said luminescing means and said detecting means in sequence.

5,291,012

HIGH RESOLUTION OPTICAL MICROSCOPE AND IRRADIATION SPOT BEAM-FORMING MASK

Isao Shimizu, 2990-3, Nakane, Katsuta-shi, Ibaraki, and Seiji Aotani, Yokohama, both of Japan, assignors to Isao Shimizu, Ibaraki and Japan Synthetic Rubber Co., Ltd., Tokyo, both of Japan

Filed Apr. 23, 1992, Ser. No. 872,525
Claims priority, application Japan, Apr. 30, 1991, 3-098897
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **7 Claims**



1. A high resolution optical microscope comprising:
means for forming an irradiation spot beam in such a way that a phase arrangement is regularly arranged in the two-dimensional direction so that each of neighboring portions of a plurality of coherent irradiation spot beams for irradiating onto an object to be measured is optically phase-shifted from one another at 180°; and
means for converging said plurality of coherent irradiation spot beams so that a diameter of each of said plurality of coherent irradiation spot beams is made smaller than a size of said object and for illuminating said object by said plurality of converged irradiation spot beams.

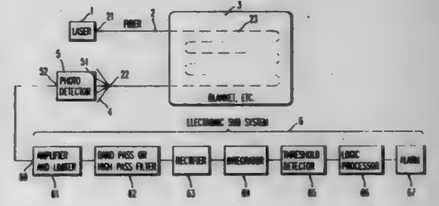
5,291,013

FIBER OPTICAL MONITOR FOR DETECTING NORMAL BREATHING AND HEARTBEAT MOTION BASED ON CHANGES IN SPECKLE PATTERNS

Antonio B. Nafarrate, San Jose, and Eric G. Rawson, Saratoga, both of Calif., assignors to Alamed Corporation, Portola Valley, Calif.

Continuation-in-part of Ser. No. 802,868, Dec. 6, 1991, Pat. No. 5,212,379. This application Nov. 13, 1992, Ser. No. 975,853
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—227.14 **61 Claims**

1. A fiber optic body motion monitor comprising:
a light source;
an optical fiber waveguide including an input end, an output end, and a sensing section intermediate said input and output ends, said optical fiber being positioned to receive light from said light source at said input end;
movable means for transmitting motion of a body being monitored, said sensing section being coupled to said movable means so as to move therewith;
photodetector means positioned proximate to said output end for receiving a speckle pattern of light therefrom, which pattern changes in response to movement of said sensing section, said photodetector means generating electrical signals representative of changes in said speckle pattern; and



means for identifying electrical signals indicative of normal breathing and heartbeat motion and for differentiating them from electrical signals indicative of deviations from normal breathing and heartbeat motion, comprising,
power determination means for producing a power signal indicative of an amount of power in a frequency band relevant to breathing and heartbeat in the signals generated by said photodetector means,
breathing extraction means coupled to said power determination means for extracting from said power signal signals indicative of breathing of said body and outputting a signal indicative of the breathing of said body,
heartbeat extraction means coupled to said power determination means for extracting from said power signal signals indicative of heartbeat of said body and outputting a signal indicative of the heartbeat of said body, and
indicating means for producing at least one of a display indicative of at least one of the extracted breathing signals and the extracted heartbeat signals and an alarm when at least one of the extracted breathing signals and extracted heartbeat signals is indicative of a deviation from normal breathing and heartbeat motion, respectively.

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5,291,014

PASSIVE SAFETY DEVICE USING OPTICAL SIGNALS FOR CONTROLLING AN AIRBAG SYSTEM OF A VEHICLE, METHOD FOR OPTICALLY TRIGGERING THE PASSIVE SAFETY DEVICE, AND OPTOMECHANICAL ACCELERATION SENSOR

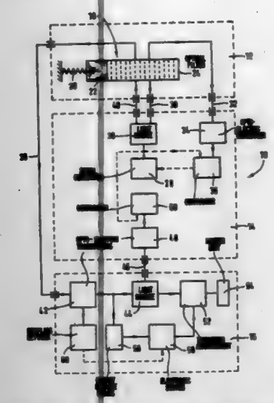
Uwe Brede, Fürth; Gerhard Kordel, Nürnberg; Wolfram Seebeck, Veitsbronn, and Horst Wellner, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,861

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125495; Feb. 1, 1992, 4202919

Int. Cl.[5] H01J *5/16*; G01D *5/34*; B60R *21/32*

U.S. Cl. 250—227.21 47 Claims



28. An optomechanical acceleration sensor in a vehicle for activating an airbag system for protecting the occupants of the vehicle from injuries during accidents which comprises an optical input lightguide, an optical output lightguide, and a light transmission device for transmitting an incident light of the input lightguide to the output lightguide, wherein the light transmission device comprises a spring-mass system that is movable upon the occurrence of accelerations of the vehicle and, with no acceleration being effective, is in a starting position or is converted into the latter, the light transmission properties of the light transmission device varying in dependence on its movement or extent of movement in such a way that light fed into the output lightguide is a measure of the effective acceleration of the vehicle.

5,291,015

OPTICAL FIBRE SENSOR SYSTEM WHERE VARIATIONS IN TEMPERATURE OF OPTICAL SOURCE IS MINIMIZED OR EQUAL

John M. Senior, 31 High Grove Road, Cheadle, Cheshire, SK8 1NS, and Ghulam Murtaza, 74 Barnes Meadows, Littleborough, Lancashire, OL15 9QD, both of United Kingdom

PCT No. PCT/GB90/00656, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO90/13004, PCT Pub. Date Nov. 1, 1990

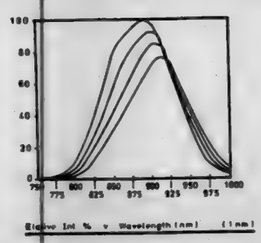
PCT Filed Apr. 24, 1990, Ser. No. 773,924

Claims priority, application United Kingdom, Apr. 26, 1989, 8909593

Int. Cl.[5] G02B *5/14*

U.S. Cl. 250—227.23 6 Claims

1. An optical fibre sensor system comprising a transmitter, a receiver and a sensor interconnected by an optical link, wherein the transmitter comprises an optical source arranged to transmit to the sensor via the optical link two optical signals at different wavelengths, the sensor is arranged to transmit to the receiver via the optical link measurement and reference signals, the measurement signal being derived by modulating the intensity of one of the two optical signals in dependence upon a parameter monitored by the sensor and the reference signal having an intensity which has a predetermined relationship with the intensity of the other optical signal, and the receiver is arranged to compare the intensities of the measurement and reference signals to derive a measure of the monitored parameter, characterised in that the two wavelengths are selected such that changes in the intensities of the optical signals resulting from variations in the temperature of the optical source are minimised or are of substantially equal magnitude for both the optical signals.



5,291,016

ELECTROSTATIC LENS ARRANGEMENT OF MULTI-STAGES OF MULTI-POLE ELECTRODES AND MASS SPECTROMETER USING THE SAME

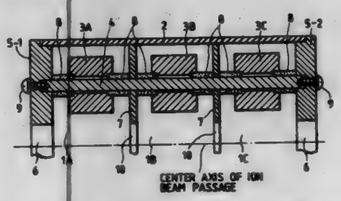
Shunroku Taya, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,006

Claims priority, application Japan, Jan. 28, 1992, 4-012921

Int. Cl.[5] H01J *49/42*

U.S. Cl. 250—292 8 Claims



1. An electrostatic lens arrangement of multi-stages of multi-pole electrodes comprising:

a first electrostatic lens unit including a first, second, third and fourth electrode arranged around a circle surrounding a center axis of an ion beam passage with a same interval;

a second electrostatic lens unit including a first, second, third and fourth electrode arranged around the same circle surrounding the center axis of the ion beam passage with the same interval;

a cylindrical casing accommodating said first and second electrostatic lens unit in series;

a shielding disk having an ion beam passage hole at the center thereof interposed between said first and second electrostatic lens unit;

pair of end disks having an ion beam passage hole at the center thereof disposed at both ends of said cylindrical casing;

a first common supporting rod supporting said respective first electrodes for said first and second electrostatic lens unit along a first straight line while electrically insulating each other;

a second common supporting rod supporting said respective second electrodes for said first and second electrostatic lens unit along a second straight line while electrically insulating each other;

a third common supporting rod supporting said respective third electrodes for said first and second electrostatic lens unit along a third straight line while electrically insulating each other; and

a fourth common supporting rod supporting said respective fourth electrodes for said first and second electrostatic lens unit along a fourth straight line while electrically insulating each other; said first, second, third and fourth common supporting rod are supported by said pair of end disks.

5,291,017

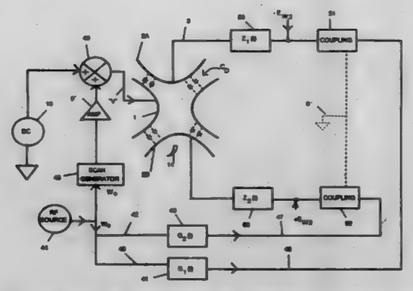
ION TRAP MASS SPECTROMETER METHOD AND APPARATUS FOR IMPROVED SENSITIVITY

Mingda Wang, Walnut Creek, and Edward G. Marquette, Oakland, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jan. 27, 1993, Ser. No. 9,604

Int. Cl.[5] H01V *49/42*

U.S. Cl. 250—292 25 Claims



1. In a method for improving the sensitivity of a quadrupole ion trap (QIT) spectrometer, said QIT having a ring electrode, a pair of end caps, an RF trapping voltage source having an RF trapping frequency W_0 and an amplitude V, and means for changing the trapping RF amplitude V as a function of time, including the steps of:

(a) applying said RF trapping voltage V to said ring electrode at RF frequency W_0;

(b) providing ions of a sample in said QIT;

(c) modifying the field within said QIT so that said field is not a pure quadrupole field;

(d) scanning the amplitude of the trapping voltage;

(e) detecting ions being ejected from said QIT;

(f) creating a mass spectrum of said sample by correlating the instantaneous amplitude of said trapping voltage with the number of ions detected,

the improved method comprising,

wherein said step (c) of modifying the field within said QIT so that said field is not a pure quadrupole field includes superimposing an AC field on said quadrupole field which is a lower order than a quadrupole field.

5,291,018

ROBIGON AND SINUGON; DETECTOR GEOMETRIES

Robert Charpentier, Lac St-Charles, Canada, assignor to Her Majesty the Queen as represented by the Minister of Defence of Her Majesty's Canadian Government, Ontario, Canada

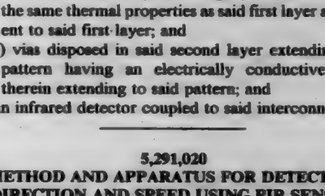
Filed Feb. 1, 1993, Ser. No. 12,128

Claims priority, application Canada, Feb. 3, 1992, 2062231

Int. Cl.[5] H01L *31/02, 26/02*

U.S. Cl. 250—332 7 Claims

1. An image sensor comprising a mosaic of radiation detector elements with each element having a similar shaped geometry and a center, the elements having closely interfitted outer edges are located on a straight line, the straight lines being parallel to adjacent straight lines interconnecting centers of other elements and to a straight line on which outermost points



of the mosaic are located and wherein all the outer edges of each element are generally inclined at an angle to said straight lines.

5,291,019

THIN FILM FLEXIBLE INTERCONNECT FOR INFRARED DETECTORS

Donald A. Powell, Richardson, and Susan V. Bagen, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 723,343, Jun. 28, 1991, abandoned.

This application Dec. 8, 1992, Ser. No. 988,391

Int. Cl.[5] G01J *5/06*; H01L *27/14, 31/00*

U.S. Cl. 250—338.4 11 Claims

1. An infrared detector system comprising:

(1) a freestanding interconnect including:

(a) a first electrically insulating layer;

(b) an electrically conductive pattern on said first electrically insulating layer, wherein said pattern is a layer of chromium on said first layer, a layer of copper thereon and a layer of chromium over said copper;

(c) a second electrically insulating layer of material having the same thermal properties as said first layer and adherent to said first layer; and

(d) vias disposed in said second layer extending to said pattern having an electrically conductive material therein extending to said pattern; and

(2) an infrared detector coupled to said interconnect.

5,291,020

METHOD AND APPARATUS FOR DETECTING DIRECTION AND SPEED USING PIR SENSOR

Wade Lee, Alamo, Calif., assignor to Intelectron Products Company, Hayward, Calif.

Filed Jan. 7, 1992, Ser. No. 817,876

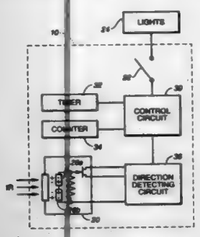
Int. Cl.[5] G08B *13/191*

U.S. Cl. 250—342 7 Claims

1. A motion detecting apparatus comprising:

a PIR sensor having at least two sensing elements contained within a housing having an aperture providing a field of view including said sensing elements, said at least two sensing elements each having a polarization and being electrically coupled with their polarizations in opposition to one another; and said at least two sensing elements

being disposed and arranged to provide a composite signal having a positive primary peak in response to a source of IR radiation moving in a first direction in said field of view and having a negative primary peak in response to the source of IR radiation moving in an opposite direction to said first direction in said field of view; and



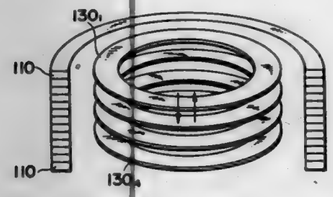
direction determining means, coupled to said electrically coupled sensing elements and responsive to said composite signal, for determining the direction of movement of the source.

5,291,021

POSITRON COMPUTED TOMOGRAPHY SCANNER

Eiichi Tanaka; Nakahiro Satoh, and Keiji Shimizu, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jun. 30, 1992, Ser. No. 906,858
Claims priority, application Japan, Jul. 1, 1991, 3-160647
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.03 **53 Claims**



7. A positron CT scanner comprising:

a plurality of detectors arranged in multi-layer rings about a predetermined central axis, each detector having at least one detecting cell;

slice septa comprising a plurality of septa for restricting the detection fields of the detectors so that the detection fields intersect the predetermined axis by an interval in the direction of the predetermined axis corresponding to a selected number of the detecting cells; and

means for driving the slice septa in a first direction along the predetermined axis and the opposite direction along the predetermined axis during a detection operation to cause the septa to move relative to the detecting cells.

5,291,022

HIGH EFFICIENCY INFRARED SOURCE

David M. Drake, Cottage Grove; Charles D. Woodward, Stoughton, and John M. Coffin, Blue Mounds, all of Wis., assignors to Nicolet Instrument Corporation, Madison, Wis.

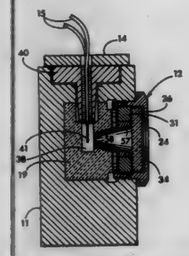
Filed Jul. 1, 1992, Ser. No. 907,127
Int. Cl.[5] H01K *1/02*
U.S. Cl. 250—504 R **28 Claims**

1. An infrared source, comprising:

(a) a housing having a central cavity therein and an outlet opening extending from the exterior of the housing to the central cavity, the housing formed of a metal which is a good heat conductor;

(b) an insulator core mounted in the central cavity of the housing, the insulator core formed of a fiber ceramic material having high resistance to heat and very low thermal conductivity, the insulator core having a containment cavity therein and an outlet port communicating with the containment cavity and extending to the exterior of the insulator core, the insulator core mounted in the housing with the outlet opening in the housing opening onto the outlet port of the insulator core;

(c) an electrically heatable infrared element which provides infrared radiation at desired wavelengths when supplied with electrical power mounted within the containment cavity of the insulator core, the infrared element having electrical supply lines attached thereto extending out from the insulator core and through the housing body to the exterior of the housing; and



(d) window means for covering and sealing the outlet opening in the housing while allowing infrared from the outlet port to be passed therethrough, wherein the window means includes a window assembly comprising an infrared transmissive window, a window frame having- an interior surface for supporting the window, a first sealing ring between the window frame and the window, and a holding plug threaded into the interior of the window frame to press against the window and press the window against the sealing ring to provide a gas tight seal between the window and the window frame, wherein the window frame has external threads which mate with internal threads formed in the outlet opening of the housing so that the window frame can be threaded into the outlet opening to hold the window assembly tightly in place in the housing, and further including a second sealing ring mounted between the housing and the window frame to inhibit gases from entering the interior of the housing between the window frame and the housing.

5,291,023

POSITION DETECTING SYSTEM UTILIZING A WEIGHT COEFFICIENT TO DETERMINE A GRAVITY CENTER OF LIGHT

Masanobu Hasegawa, Fujisawa; Minoru Yoshii, Tokyo, and Naoto Abe, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 21,480
Claims priority, application Japan, Feb. 21, 1992, 4-072235
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—548 **6 Claims**

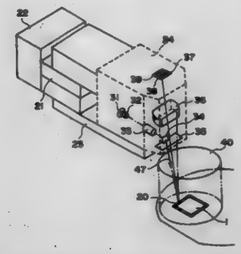
1. A method of detecting the relative position of two objects, comprising the steps of:

projecting light to the two objects so that the light from the two objects is received by a position detector,

applying to an output signal from the detector a weight coefficient corresponding to the position to determine a gravity center of the light incident;

setting a region of the position detector on the basis of said determination;

determining again the gravity center of the light incident, on the basis of the set region; and



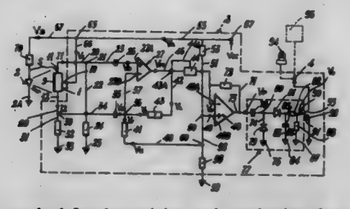
determining the relative position of the two objects on the basis of said second determination.

5,291,024

METHOD FOR DETERMINING THE POSITION AND SHAPE OF A YARN FED TO A TEXTILE MACHINE

Tiziano Barea, Varese, Italy, assignor to International Trading S.r.l., Italy

Filed Jun. 17, 1992, Ser. No. 900,153
Claims priority, application Italy, Jun. 17, 1991, MI91A 001658
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **20 Claims**



1. A method for determining and monitoring the state of movement or stoppage of a yarn fed to a textile machine, comprising

arranging an optical sensor having a sensitive region in which said sensor detects movement,

feeding a yarn to a textile machine through said sensitive region such that the yarn is freely movable through said sensitive region,

determining a variation in at least one of the shape and position of the moving yarn relative to said optical sensor,

generating a first electrical signal and a second electrical signal on the basis of the variation in at least one of the position and shape of the yarn, and

operating an operating member of the textile machine on the basis of a relative variation of said first and second electrical signals, said operating member of the textile machine being selected from a group consisting of an indicator for indicating the state of movement or stoppage of the yarn and a machine control circuit.

5,291,025

IN-LINE NON-CONTACT WAFER BOAT INSPECTION APPARATUS

Michael D. Smith, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 30, 1992, Ser. No. 982,791
Int. Cl.[5] G01N *21/86*; H01J *3/14*
U.S. Cl. 250—561 **12 Claims**

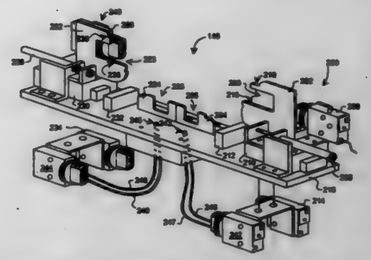
1. An apparatus for automatic optical inspection of a wafer boat having a plurality of parallel slotted side rods and bottom rods, comprising:

a frame;

a cradle attached to the frame for supporting a wafer boat in a stationary position aligned to the frame;

a carriage movably mounted upon the frame to permit linear motion of the carriage;

a plurality of optical sensors mounted upon the carriage;



a linear positioner mounted upon the frame and coupled to the carriage for moving the carriage in a direction parallel to the cradle so that when the carriage is moved with a wafer boat in the cradle, the optical sensors are moved along the side rods and bottom rods of the wafer boat so as to permit non-contact detection of the slot edges within each of the side rods and bottom rods; and

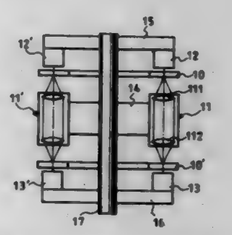
means coupled to the linear positioner for controlling the position of the carriage.

5,291,026

METHOD FOR MEASURING ECCENTRICITY

Tadashi Morokuma, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,986
Claims priority, application Japan, Jan. 29, 1992, 4-14358
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—237 G **4 Claims**



1. A method for measuring eccentricity in an apparatus provided with a first radial grating having elementary patterns at substantially equal intervals on a circumference and a second radial grating having elementary patterns identical with those of said first radial grating,

said first radial grating and said second radial grating being maintained in mutually fixed relation at a position where said second radial grating is rotated by 180° with respect to said first radial grating,

said first radial grating and said second radial grating being arranged so that the elementary patterns of said first and second radial gratings are substantially concentric with respect to a rotary axis having two reference lines intersecting with each other,

wherein a position of an intersection of the reference lines is measured with respect to a coordinate system which includes a bisector of an angle made by one of the elemen-

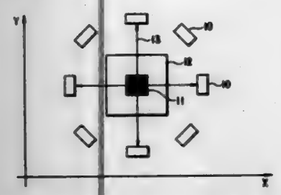
tary patterns of said first radial grating with that of said second radial grating opposite thereto and which is formed by two lines parallel to the reference lines provided on said rotary axis, and thereby eccentricity of said rotary axis is measured with respect to an origin of said coordinate system.

5,291,027

OPTICAL IDENTIFICATION MULTIPLE DIFFRACTION GRATING MARK MEMBER AND CARD USING THE SAME

Takehide Kita, Sugito; Akihiko Kobayashi, Shiki; Susumu Takahashi, Matsudo, and Toshiki Toda, Sette, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,506
Int. Cl.[5] G06K *7/10*
U.S. Cl. 250—566 **22 Claims**



1. An identification mark member having an identification mark optically readable by irradiating the mark with a light beam, and detecting diffracted light therefrom, comprising:
at least one mark element included in said identification mark; and
a pattern formed in said at least one mark element, wherein said pattern has at least two types of diffraction gratings, and wherein an arrangement of said at least two types of diffraction gratings is within a diameter of said light beam radiated on said mark element for optical read.

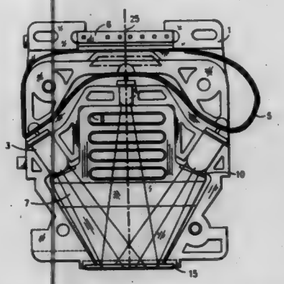
5,291,028

OPTICAL DEVICE FOR SENSING MARKS ON A SURFACE USING GREEN LIGHT IMPINGING AT LEAST SIXTY-FIVE DEGREES TO THE NORMAL

David A. Droge, Charlotte, N.C.; Ralf Fischer, Sindelfingen, and Marcus Spieth, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 21, 1992, Ser. No. 918,341
Claims priority, application European Pat. Off., Jul. 25, 1991, 91112467.5
Int. Cl.[5] G06K *7/10*
U.S. Cl. 250—568 **15 Claims**

1. An optical device for detecting marks on an area of a medium, comprising:
at least a first light source which is capable of emitting green light;
a photoreceptor which is capable of receiving green light reflected from said area; and
light guide means, positioned so as to be capable of optical communication with said at least first light source, said area and said photoreceptor, for guiding at least a portion of the green light emitted by said at least first light source to said area at an angle of incidence, relative to the plane of said area, less than 35 degrees and for guiding at least a



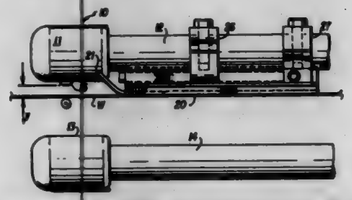
portion of the green light reflected by said area to said photoreceptor.

5,291,029

APPARATUS FOR MEASURING PAPER WEB PROPERTIES WHILE IN SITU OF THE PAPER MACHINE WITH AIR JET STABILIZATION

Willem A. Nikkel, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed May 13, 1993, Ser. No. 59,961
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—571 **2 Claims**



1. An apparatus for stabilizing a position of a traveling paper web relative to a web formation monitoring means, said monitoring means have a photon emission means for transmitting a light beam through said traveling web, a sole plate means for establishing a reference plane at a predetermined displacement distance from said emission means and a boundary layer air jet means for directing a flow of air against said web in a zone between said web and said sole plate means to stabilize said web at a position of close, parallel proximity with said reference plane.

5,291,030

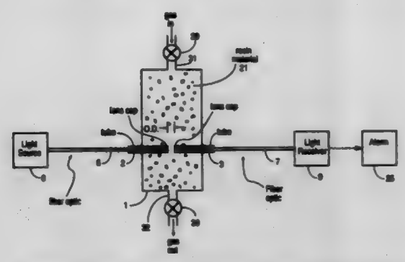
OPTOELECTRONIC DETECTOR FOR CHEMICAL REACTIONS

Daniel L. Brors, Byron, Calif., assignor to Torrex Equipment Corporation, Livermore, Calif.

Filed Jun. 4, 1992, Ser. No. 894,315
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—573 **10 Claims**

1. A device for detecting the chemical depletion of a solid chemical reactant capable of purifying gases, comprising:
a container for holding said solid chemical reactant;
an inlet tube and an outlet tube connected to said container, said inlet tube and said outlet tube and said container forming a flow channel for a gas to be passed through said solid chemical reactant;
means for directing a beam of light through said solid chemical reactant;

means for detecting the intensity of said beam of light after it passes through said solid chemical reactant, wherein the



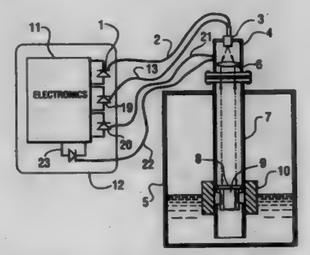
intensity of said beam of light provides an indication of the chemical depletion of said solid chemical reactant.

5,291,031

OPTICAL PHASE DIFFERENCE RANGE DETERMINATION IN LIQUID LEVEL SENSOR

Robert I. MacDonald, and George D. Fraser, both of Alberta, Canada, assignors to Telecommunications Research Laboratories, Edmonton, Canada

Filed Apr. 6, 1992, Ser. No. 863,739
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 **3 Claims**



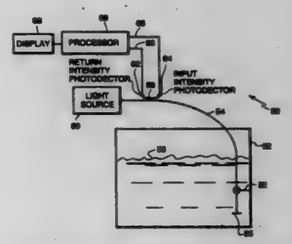
1. A system for measuring fluid level of a liquid surface in a container within a predetermined range of levels comprising:
a) a transmitter for alternately generating a first optical signal and a second optical signal;
b) a fitting connected to said container;
c) a first optical guide connected to said transmitter and said fitting for receiving said first optical signal and transmitting said first optical signal to said fitting;
d) a second optical guide connected to said transmitter and said fitting for receiving said second optical signal and transmitting said second optical signal to said fitting;
e) means within said fitting for directing said first optical signal toward said liquid surface, said means for directing being disposed at a distance from said liquid surface to be detected;
f) a tube arranged vertically within said container and connected to said fitting for confining said first optical signal and said reflected ranging signal therewithin;
g) a reflector disposed in said container at a distance from said means for directing which is linearly related to said distance from said liquid surface to be determined, for reflecting said first optical signal so as to form a reflected ranging signal, wherein said reflector comprises an annular float surrounding said tube, a magnetic follower within said tube and magnetically coupled to said float for maintaining a predetermined orientation of said float relative to said tube, and wherein said reflector is mounted to said float;
h) a receiver associated with said transmitter;
i) a third optical guide connected to said fitting and said receiver;
j) means within said fitting for directing said reflected ranging signal into said third optical guide;
k) a fourth optical guide connected to said fitting and said receiver;
l) means within said fitting for directing said second optical signal into said fourth optical guide; and
m) signal processing means connected to said receiver for comparing said second optical signal and said reflected ranging signal and in response generating a signal representing phase shift therebetween, wherein said phase shift is directly proportional to said distance from said liquid surface to be detected.

5,291,032

FIBER OPTIC EVANESCENT WAVE FUEL GAUGE AND LEAK DETECTOR USING ECCENTRIC CORE FIBERS

Victor Vali, Laguna Hills; David B. Chang, Tustin; I-Fu Shih, Los Alamitos, and Albert F. Lawrence, San Diego, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 752,244, Aug. 21, 1991, abandoned. This application May 11, 1993, Ser. No. 59,714
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 **13 Claims**



1. A fiber optic evanescent wave sensor system for measuring the level of a particular liquid in a container, comprising:
a light source for generating light at a wavelength band at which said liquid is highly absorptive;
an optical fiber having a first end into which the light from said source is injected, said fiber further comprises a sensing length of fiber and a second end from which said injected light is reflected disposed in said liquid, said sensing length of fiber characterized in that it comprises an eccentric core clad by a cladding layer of a material said eccentric core cladding layer being of a thickness selected to provide significant evanescent wave loss of said light when immersed in said liquid; and
means responsive to the intensity of the light injected into said fiber and to the intensity of said reflected light for determining the light loss from the sensing fiber due to evanescent wave loss and for processing said light loss to determine the level of said liquid in said container.

5,291,033

SEMICONDUCTOR LIGHT-EMITTING DEVICE HAVING SUBSTANTIALLY PLANAR SURFACES

Mitsukata Morishima, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1992, Ser. No. 855,828
Claims priority, application Japan, May 29, 1991, 3-125738
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—13 **17 Claims**

1. A semiconductor light-emitting device having substantially planar surfaces, comprising:
a substrate of a crystalline semiconductor material of a first

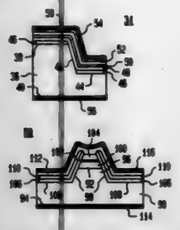
VOL 1160 ISS 1 MR 1 1994 UMI

conductivity type having a back surface and first and second front surfaces and at least one stepped front surface extending at an angle between said first and second front surfaces;

at least one current blocking layer of a semiconductor material of a second conductivity type extending over each of the front surfaces except such front surfaces having a (111)B crystalline orientation;

a first cladding layer of a semiconductor material of the first conductivity type extending at least across front surfaces having said (111)B crystalline orientation;

an active layer of a semiconductor material of the second conductivity type extending at least across front surfaces having said (111)B crystalline orientation;



a second cladding layer of a semiconductor material of the second conductivity type extending at least across front surfaces having said (111)B crystalline orientation;

a cap layer of a semiconductor material of the second conductivity type extending over the uppermost layer on each of the front surfaces;

a first conductive electrode layer on the cap layer;

a second conductive electrode layer on the back surface of the substrate; and

the first and second electrodes being arranged so that in response to a bias voltage between them the device produces a light emission.

5,291,034

NON-LINEAR QUANTUM DOT OPTICAL DEVICE

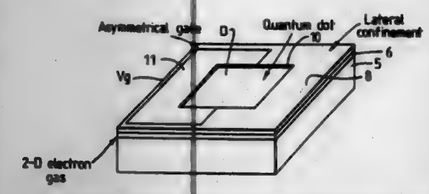
Jeremy Allam, and Mathias Wagner, both of Cambridge, United Kingdom, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1992, Ser. No. 983,906

Claims priority, application United Kingdom, Dec. 3, 1991, 9125727

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—17 **21 Claims**



1. A non-linear optical device comprising at least one quantum dot structure including,

means for defining a potential well configuration for a charge carrier in a quantized energy state, the well configuration including at least one well having a given depth and lateral extent, and

means for applying an electrical bias to the well configuration to alter the lateral extent thereof and thereby control an asymmetry therein that manifests a non-linear optical characteristic in response to incident radiation.

5,291,035

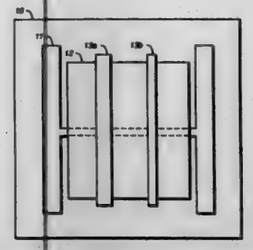
MICROELECTRONIC SUPERCONDUCTING CROSSOVER AND COIL

Frederick C. Wellstood, Berkeley; John J. Kingston, Oakland, and John Clarke, Berkeley, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 543,462, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 491,703, Mar. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 491,228, Mar. 9, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 33,059

Int. Cl.[5] H01L *39/22, 49/02*

U.S. Cl. 257—33 **13 Claims**



1. A microelectronic device comprising a substrate; a first superconductor thin film layer of high T_c superconductor metal oxide material capable of maintaining superconductivity at the boiling point of liquid nitrogen; a second insulating thin film layer covering at least a portion of said first superconductor thin film layer; said second insulating thin film layer being comprised of a material having high resistivity at temperatures below the T_c of said first thin film, said second insulating thin film layer having a microstructure which is epitaxial or highly oriented sufficient to support epitaxial growth thereon of a third layer within a range of deposition temperatures, the third layer comprising a high T_c superconductive material capable of maintaining superconductivity at the boiling point of liquid nitrogen, said second insulating thin film layer further having interdiffusion and chemical reactivity characteristics in relation to the material of said first superconductor thin film layer sufficient to maintain its insulating characteristics and not to degrade said first superconductor thin film layer when heated to a temperature within the range of deposition temperatures of the third layer, said second insulating thin film layer further having substantial coverage of and adhesion to said first superconductor thin film layer, and said second insulating thin film layer further having a high diffusion rate for oxygen in the range of deposition temperatures of the third layer.

5,291,036

AMORPHOUS SILICON SENSOR

Nang T. Tran, Cottage Grove; William C. Tait, Oak Park Heights, both of Minn., and Franco A. Mori, Celle Ligure, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 458,288, Dec. 28, 1989, abandoned. This application Nov. 16, 1992, Ser. No. 976,656

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—53 **21 Claims**

1. A sensor device comprising:

a first luminescent layer formed columnar phosphor;

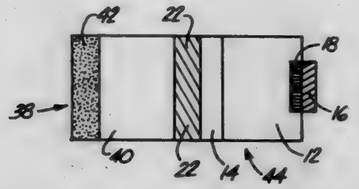
a transparent conducting oxide layer adjacent said first luminescent layer;

a doped hydrogenated amorphous silicon layer;

an undoped hydrogenated layer of amorphous silicon or an amorphous silicon alloy adjacent the doped hydrogenated amorphous silicon layer;

a metal layer including metal silicide annealed in hydrogen plasma at a temperature of at least 150° C.

wherein the doped and undoped hydrogenated amorphous silicon layers are disposed between the metal layer and the conductive oxide layer; and



wherein the device exhibits dark currents of not more than approximately 10^{-10} A/cm^2 in a temperature range of approximately 10° C. to 30° C. at approximately −1 V.

5,291,037

LIGHT-EMITTING DEVICE

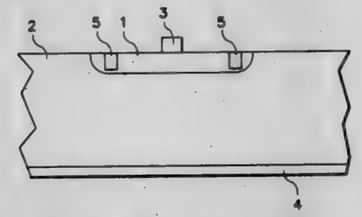
Yukio Tanaka, Yokohama, and Ryoichi Tohmon, Tokyo, both of Japan, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1992, Ser. No. 923,764

Claims priority, application Japan, Mar. 4, 1992, 4-047201; Apr. 6, 1992, 4-083856

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—79 **2 Claims**



1. In a light-emitting device including a p-n junction in which light emission is produced by applying a forwardly-biased voltage to the junction via a first electrode formed on a first surface of the device and a second electrode formed on a second surface of the device, and in which a portion of the p-n junction is exposed on the first surface of the device, the improvement comprising:

a high-resistance region provided between the first electrode arranged on the first surface of the device and the portion of the p-n junction that is exposed on the first surface.

5,291,038

REFLECTIVE TYPE PHOTOINTERRUPTER

Tetsuya Hanamoto, Nishinomiya; Masumi Nakamichi, Tenri; Masahiko Kimoto, Nara; Shohichi Kato, Yamatokoriyama, and Shoichi Kondo, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Fed. Rep. of Germany

Filed Dec. 18, 1991, Ser. No. 808,857

Claims priority, application Japan, Dec. 19, 1990, 2-400965[U]; May 23, 1991, 3-118555; Jul. 22, 1991, 3-180902

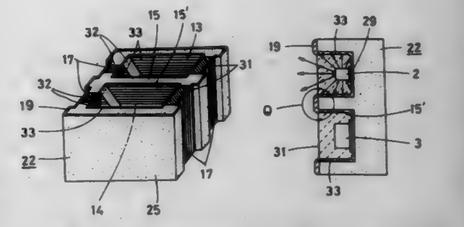
Int. Cl.[5] H01L *31/12, 31/16*

U.S. Cl. 257—82 **13 Claims**

1. A reflective type photointerrupter including a light emitting chip and a light receiving chip for emitting light to hit an object and for receiving reflected light, said photointerrupter comprising:

a leadless resin case formed with an emitting chip recess for mounting the light emitting chip and a receiving chip recess for mounting the light receiving chip, the case having an intermediate wall which separates the two recesses, the two recesses being formed whereby the two chips are positioned side-by-side across the intermediate wall;

metallic deposit wirings formed to cover a partial area of



each recess and extended to run over a top face, side face, and bottom face of the resin case, wherein the emitting chip and the receiving chip are each placed in the respective recesses to rest on the metallic deposit wirings, and sealed with a transparent resin.

5,291,039

LED HEAD HAVING HEAT RADIATING MOUNT

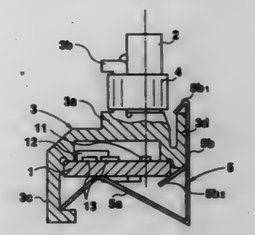
Hiromi Ogata; Seiji Koshikawa, and Hideharu Hamada, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 29, 1992, Ser. No. 953,114

Claims priority, application Japan, Sep. 30, 1991, 3-250039

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—99 **5 Claims**



1. An LED head comprising:

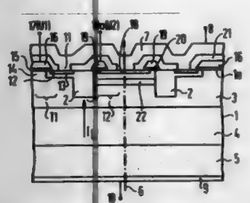
(a) a circuit substrate on which a light emitting element and drive IC are mounted;

(b) an array of lenses for condensing light emitted from the light emitting element;

(c) a metallic head cover which holds the array of lenses spaced a predetermined distance away from the light emitting element, said metallic head cover communicating with the circuit substrate to radiate heat from said circuit substrate; and

(d) mounting means for firmly holding said circuit substrate and said metallic head cover together.

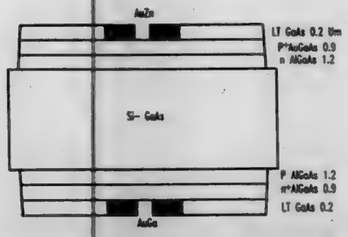
5,291,040
DEACTIVATABLE THYRISTOR WITH TURN-OFF CURRENT PATH
Klaus-Guenter Oppermann, Holzkirchen; York Gerstenmaier, Munich, and Michael Stoisiek, Ottobrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich
Filed Sep. 13, 1991, Ser. No. 759,668
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1990, 4030299
Int. Cl.[5] H01L *29/00, 29/74*
U.S. Cl. 257—133 15 Claims



1. A gate turn-off thyristor, comprising:
an emitter of a first conductivity type and comprising a plurality of emitter regions, each of which is connected by a resistor element to a first main terminal;
a base of a second conductivity type adjacent to the plurality of emitter regions;
a base of a first conductivity type adjacent to the base of second conductivity type;
an emitter of second conductivity type adjacent to the base of the first conductivity type and having a second main terminal connected thereto;
a turn-off current path from the second conductivity type base to the first main terminal being provided at each emitter region by an electrode which is connected to said first main terminal, and a first field effect transistor connected between said electrode and second conductivity type base for activating the turn-off current path upon deactivation of the thyristor at each emitter region, gates associated with each of the first field effect transistors connecting to a shared first gate terminal; and
each of said resistor elements comprising a second field effect transistor comprised of the respective emitter region, a semiconductor region of first conductivity type inserted int he second conductivity base at a spacing from said first conductivity semiconductor region, and a portion of the second conductivity base lying between the first conductivity semiconductor region and the respective emitter region, and a gate electrode overlying said portion of said second conductivity type base and insulated therefrom by an insulating layer.

5,291,041
ALGAAS/GAAS THYRISTOR
Terence Burke; Maurice Weiner, both of Ocean, and Jian H. Zhao, North Brunswick, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 1, 1993, Ser. No. 24,699
Int. Cl.[5] H01L *27/14, 31/00, 29/74*
U.S. Cl. 257—184 3 Claims

1. A photoconductive thyristor comprising:
a semi-insulating substrate made of a III–V semiconducting material, the substrate having a top and bottom surface;
a layer of n doped semiconductor material grown on the top surface of the substrate;
a layer of p+ doped semiconductor material grown on the n doped layer;
a first layer of semiconductor grown at a low temperature on the p+ doped layer for passivation;
a layer of p doped semiconductor material grown on the bottom surface of the substrate;
a layer of n+ doped semiconductor material grown on the p doped layer;
a second layer of semiconductor grown at a low temperature on the n+ doped layer for passivation; and
at least a first ohmic contact etched within the first layer of semiconductor grown at low temperature; and



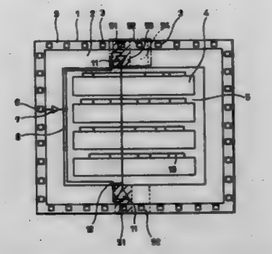
at least a second ohmic contact etched within the second layer of semiconductor grown at low temperature;
wherein the n, p+, p and n+ layers all have a wider energy band gap than the substrate and wherein the low temperature semiconductor layers have approximately the same energy band gap as the substrate.

5,291,042
MULTI-STAGE AMPLIFIER DEVICE AND METHOD FOR PRODUCING THE SAME
Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan
Filed Apr. 24, 1992, Ser. No. 873,025
Claims priority, application Japan, Apr. 26, 1991, 3-96872; Apr. 26, 1991, 3-96877
Int. Cl.[5] H01L *29/80, 29/48*
U.S. Cl. 257—282 4 Claims



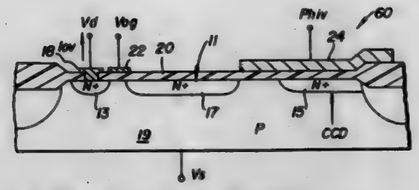
1. A multistage amplifier device, comprising:
a plurality of cascade-connected amplifiers formed on a same semiconductor substrate, said plurality including a first stage amplifier and a last stage amplifier, said first stage amplifier having an active element with a first MESFET while said last stage amplifier has an active element with a second MESFET, said first MESFET including a gate structure formed in self-alignment with a source and a drain thereof, and said second MESFET having a gate electrode on a semiconductor layer located between a source high impurity density region and a drain high impurity density region, said gate electrode having a source side edge portion which is located on an insulating film and which overlaps said source high impurity density region and a drain side edge portion which does not extend to said drain high impurity density region.

5,291,043
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING GATE ARRAY
Takahiko Arakawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 648,484, Jan. 31, 1991, abandoned. This application May 4, 1992, Ser. No. 879,103
Claims priority, application Japan, Feb. 7, 1990, 2-29125
Int. Cl.[5] H01L *27/02, 27/10*
U.S. Cl. 257—208 23 Claims



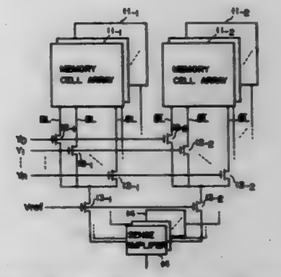
1. A semiconductor integrated circuit device comprising:
a semiconductor substrate having a main surface, said main surface being divided into a central region in the central portion, a peripheral region along the outer periphery of said semiconductor substrate, and an intermediate region between said central region and said peripheral region;
a basic cell array including a plurality of basic cells formed on said main surface in said central region,
each said basic cell including a plurality of active elements and for forming a logic circuit;
a plurality of bonding pads provided in said peripheral region and having a power supply pad and an input/output pad; and
a clock signal driving means for providing a clock signal to said logic circuit, said clock driving means being formed in said intermediate region between said power supply pad and an outer edge of said central region, and positioned immediately adjacent said power supply pad.

5,291,044
IMAGE SENSOR WITH CONTINUOUS TIME PHOTODIODE
Michael J. Gaboury, Spencerport; Teh-Hsuang Lee; Webster, and Eric G. Stevens, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 12, 1990, Ser. No. 626,155
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—230 6 Claims



3. A solid state image sensor comprising:
a plurality of photosensitive elements formed into a number of zones for providing a charge flow as a function of the instantaneous illumination impinging on each of the zones and for also providing the charges generated by each photosensitive element individually to enable the detection of an image;
a number of overflow channel means corresponding in number to the number of zones for receiving the charge flow from a respective zone; and
amplifier means connected to said overflow channel means for receiving the charge flow from said overflow channel means and for providing an output indicative of the instantaneous illumination on each of the number of zones.

5,291,045
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE USING A DIFFERENTIAL CELL IN A MEMORY CELL
Shigeru Atsumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Saiwai, Japan
Filed Mar. 29, 1991, Ser. No. 677,564
Int. Cl.[5] H01L *27/10, 27/108*; G11C *5/02*
U.S. Cl. 257—296 4 Claims



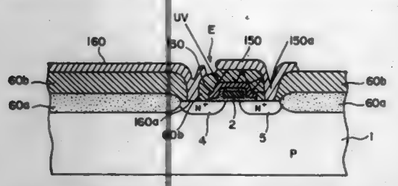
1. A non-volatile semiconductor memory device in which each memory cell for storing 1-bit data consists of two non-volatile transistors, comprising:
a first memory cell array in which first transistors constituting said memory cells each having a source common pattern layout are staggered with respect to a common source region, and a second memory cell array in which second transistors constituting said memory cells are staggered with respect to a common source region;
word lines in which every two word lines connected to said first and second memory cell arrays and sandwiching said common source region are connected to the same potential;
first bit lines connected to said first memory cell array;
second bit lines connected to said second memory cell array;
bit line selecting means for selecting said first and second bit lines; and
a data sense circuit for comparing signal levels of said first and second bit line selected by said bit line selecting means so as to detect data.

5,291,046
SEMICONDUCTOR MEMORY DEVICE
Sinsuke Kunakura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 6, 1992, Ser. No. 831,963
Claims priority, application Japan, Feb. 8, 1991, 3-039352
Int. Cl.[5] H01L *29/68*
U.S. Cl. 257—316 10 Claims

1. A semiconductor memory device whose memory cell is a transistor element, comprising:
a source area and a drain area formed on the surface of a semiconductor substrate;
a floating gate provided on top of a first insulation layer over the area between said source area and said drain area;
a control gate provided on top of a second insulation layer over the top and sides of the floating gate such that said control gate prevents intrusion of a ray of light into said floating gate;
a first wiring layer forming an electrode wiring of one of said source area or said drain area by contacting said one of

said source area or said drain area, said first wiring layer being arranged to define a blind coating by extending over a third insulation layer covering said control gate; and

a second wiring layer provided on top of said third insulation layer and electrically isolated from said first wiring layer, a part of said second wiring layer contacting the other of said drain area or said source area, wherein a gap



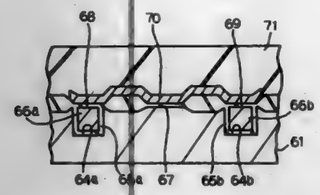
between said first wiring layer and said second wiring layer is positioned above either said source area or said drain area, and said control gate is positioned between said gap and said floating gate and extends over the top and sides of said floating gate such that said control gate prevents a ray of light passing through said gap from striking said floating gate.

5,291,047

FLOATING GATE TYPE ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY CELL WITH VARIABLE THRESHOLD LEVEL IN ERASED STATE

Shoichi Iwasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 776,017
Claims priority, application Japan, Oct. 12, 1990, 2-274787
Int. Cl.[5] H01L *29/68, 29/34, 29/06*
U.S. Cl. 257—318 **9 Claims**



1. An electrically programmable read only memory cell comprising

a) source and drain regions spaced apart from each other by a channel forming region,

b) a floating gate electrode capacitively coupled with said channel forming region through a first gate insulating film,

c) a first control gate electrode electrically isolated from said source and drain regions and said channel forming region, and capacitively coupled with said floating gate electrode through a second composite gate insulating film structure implemented by a silicon nitride film sandwiched between silicon oxide films, said first control gate electrode being biased in a write-in operation and a read-out operation, and

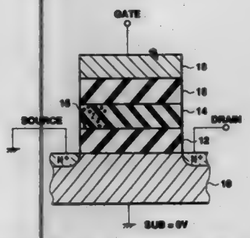
d) a second control gate electrode electrically isolated from said source and drain regions, said channel forming region and said first control gate electrode, and capacitively coupled with said floating gate electrode through a third composite gate insulating film structure implemented by a silicon nitride film sandwiched between silicon oxide films, said second control gate electrode being arranged to be biased in response to exposure of said floating gate electrode to optical radiation in an erase operation that changes a threshold voltage at said first control gate electrode with respect to said channel forming region.

5,291,048

NON-VOLATILE STORAGE DEVICE WITH IMPURITIES IN NITRIDE TOWARD SOURCE SIDE

Hironobu Nakao, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed May 19, 1992, Ser. No. 885,684
Claims priority, application Japan, Sep. 9, 1991, 3-227575
Int. Cl.[5] H01L *29/78, 29/34*
U.S. Cl. 257—325 **6 Claims**



1. A non-volatile storage device comprising:

a semiconductor substrate having a source region and a drain region;

a first oxide film formed on a gate region between said source region and said drain region of said semiconductor substrate;

a nitride film formed on said oxide film and containing a predetermined higher concentration of impurity mixed with said nitride film at a side toward said source region than at a side toward said drain region; and

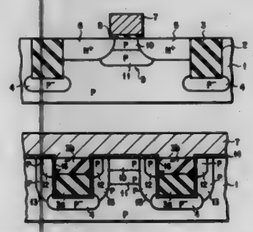
a second oxide film formed on said nitride film.

5,291,049

MOSFET WITH BURIED ELEMENT ISOLATION REGIONS

Shigeru Morita, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 985,162
Claims priority, application Japan, Nov. 29, 1991, 3-315835
Int. Cl.[5] H01L *29/784, 29/360*
U.S. Cl. 257—335 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a groove formed in said semiconductor substrate;

a buried element isolation region formed in said groove;

an inversion preventing impurity diffusion region of the first conductivity type formed in a bottom surface of said buried element isolation region;

a shallow channel impurity diffusion region of the first conductivity type formed in a shallow depth from the surface of said semiconductor substrate at a center portion of a channel region to have an impurity concentration higher than that of said semiconductor substrate;

a deep channel impurity diffusion region of the first conductivity type formed below said shallow channel impurity diffusion region to have an impurity concentration higher than that of said shallow channel impurity diffusion region;

source and drain diffusion regions of a second conductivity type formed inside said buried element isolation region;

an electrode wiring layer connected to said buried element isolation region and extending across said source and drain diffusion regions;

a first side-wall impurity diffusion region of the first conductivity type which is formed along a side wall of said buried element isolation region, is connected to said source and drain diffusion regions and is formed at a position corresponding to at least said electrode wiring layer, said first side-wall impurity diffusion region having an impurity concentration higher than that of said shallow channel impurity diffusion region to control a threshold value of said channel region; and

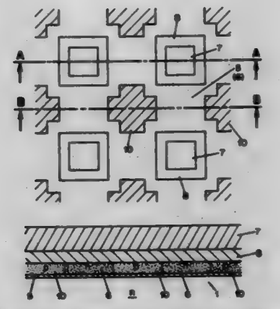
a second side-wall impurity diffusion region of the first conductivity type formed below said first side-wall impurity diffusion region and having an impurity concentration which is different from that of said deep channel impurity diffusion region and is also different from each of impurity concentrations of said inversion preventing impurity diffusion region and said first side-wall impurity diffusion region.

5,291,050

MOS DEVICE HAVING REDUCED GATE-TO-DRAIN CAPACITANCE

Takeyoshi Nishimura, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Tanabeshinden, Japan

Filed Oct. 22, 1991, Ser. No. 780,222
Claims priority, application Japan, Oct. 31, 1990, 2-294525
Int. Cl.[5] H01L *29/76, 29/94, 31/062, 31/113*
U.S. Cl. 257—340 **6 Claims**



1. A metal-oxide-semiconductor device comprising:

a first semiconductor region of a first conductive type having a first surface and a second surface;

a plurality of second regions of a second conductive type at said first surface of said first semiconductor region;

a third region of said first conductive type in each of said second regions;

whereby a plurality of channel regions are formed between said third region and said first surface of said first semiconductor region; and

a gate-electrode layer disposed on an insulation film over said channel regions and said first surface of said first semiconductor region;

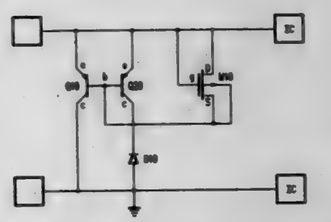
wherein said gate-electrode layer comprises first and second portions of opposite conductivity type, each one of the first portions extending across a first surface portion of said first semiconductor region, between a first region over a first channel region and a second region over a neighboring second channel region.

5,291,051

ESD PROTECTION FOR INPUTS REQUIRING OPERATION BEYOND SUPPLY VOLTAGES

Tuong H. Hoang, Sunnyvale, and Mansour Izadinia, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 11, 1992, Ser. No. 943,913
Int. Cl.[5] H01L *27/02, 29/06, 29/78*
U.S. Cl. 257—360 **5 Claims**



1. A circuit utilizable for protecting an integrated circuit from damage due to a power spike, comprising:

a first bipolar transistor having its emitter connected to the integrated circuit and its collector connected to ground;

a second bipolar transistor having its emitter connected to the integrated circuit and its collector connected to its base and to a base of the first bipolar transistor;

a field effect transistor having its gate and drain connected to the integrated circuit and its substrate connected to its source and to the collector and base of the second bipolar transistor and to the base of the first bipolar transistor; and

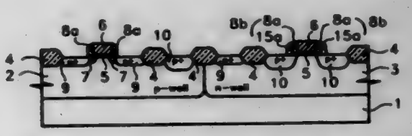
a diode having its cathode connected to the substrate and the source of the field effect transistor and to the collector and base of the second bipolar transistor and to the base of the first bipolar transistor.

5,291,052

CMOS SEMICONDUCTOR DEVICE WITH (LDD) NMOS AND SINGLE DRAIN PMOS

Kyeong-tae Kim, and Do-chan Choi, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd.

Filed Aug. 30, 1991, Ser. No. 753,058
Claims priority, application Rep. of Korea, Jul. 9, 1991, 91-11609
Int. Cl.[5] H01L *29/94, 31/062, 31/113, 27/088*
U.S. Cl. 257—369 **3 Claims**



1. A MOS semiconductor device having groups of transistors, each group comprising:

an NMOS transistor on a first silicon wafer section including

a first gate electrode,

a first group of side wall spacers, each spacer of said first group of side wall spacers being adjacent to a side wall of said first gate electrode, and

a first impurity region self-aligned to each side wall spacer of said first group of said side wall spacers; and

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a PMOS transistor on a second silicon wafer section including

a second gate electrode,

a second group of side wall spacers, each of the second group of side wall spacers being adjacent to a side wall of said second gate electrode, said second group of side wall spacers having a thickness greater than that of said first group of side wall spacers, and

a second impurity region self-aligned to each of said second group of side wall spacers.

5,291,053

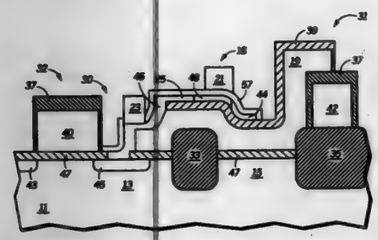
SEMICONDUCTOR DEVICE HAVING AN OVERLAPPING MEMORY CELL

James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1992, Ser. No. 909,512

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—393 **14 Claims**



1. A semiconductor device having an overlapping memory cell comprising:

a semiconductor substrate having a first and second active region therein;

a driver transistor having a unitary gate electrode, the gate electrode having a first portion overlying the first active region, a second portion extending beyond the first active region, and a third portion contacting the second active region;

a unitary wordline having a first portion overlying the first active region; and

an access transistor having a gate electrode formed by the first portion of the wordline wherein a second portion of the wordline intersects the second portion of the gate electrode of the driver transistor.

5,291,054

LIGHT RECEIVING MODULE FOR CONVERTING LIGHT SIGNAL TO ELECTRIC SIGNAL

Masao Tanaka; Kentaro Tanaka; Kunihiko Hakata; Susumu Nishimura; Mikihito Yamane, and Susumu Maeta, all of Tottori, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of Japan

Filed Jun. 23, 1992, Ser. No. 902,625

Claims priority, application Japan, Jun. 24, 1991, 3-47667[U]; Mar. 6, 1992, 4-49656; May 11, 1992, 4-117430

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—433 **10 Claims**

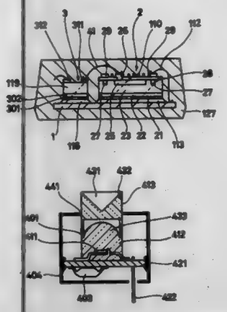
1. A light receiving module comprising:

a frame including a lead portion which is connected to a power source potential;

a light receiving device provided on said frame so that one end of the light receiving device is connected to the frame through an electrode;

a circuit device provided on said frame so that one end of the circuit device is connected to the frame through an electrode, said circuit device including an amplifier for amplifying an output signal from said light receiving device and said circuit device being directly connected to said light receiving device so as to receive said output signal of said light receiving device,

wherein said light receiving device and said circuit device



respectively have semiconductor substrates of a same conductive type on said electrodes through which said light receiving device and said circuit device are connected to said frame.

5,291,055

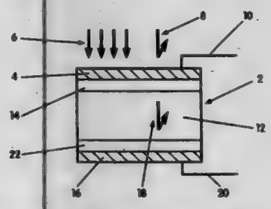
RESONANT INFRARED DETECTOR WITH SUBSTANTIALLY UNIT QUANTUM EFFICIENCY

Jam Farhoomand, Palo Alto, and Robert E. McMurray, Jr., Alameda, both of Calif., assignors to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 28, 1992, Ser. No. 827,177

Int. Cl.[5] H01L *27/14, 31/00*

U.S. Cl. 257—437 **21 Claims**



1. A resonant infrared detector comprising:

an infrared-active layer for absorbing radiation of a given wavelength and including first and second parallel faces;

a first reflective layer, disposed opposite said first parallel face of said infrared-active layer and having a reflectivity tuned to the absorptivity of said infrared-active layer, for reflecting a specific portion of radiation incident on said first reflective layer during each pass of said radiation through said detector and for allowing a specific portion of said incident radiation at said given wavelength to reach said infrared-active layer; and

a second reflective layer, disposed opposite said second parallel face of said infrared-active layer, for reflecting back into said infrared-active layer substantially all of the radiation at said given wavelength that passes through said infrared-active layer, whereby said first and second reflective layers increase the quantum, efficiency of said infrared detector relative to the quantum efficiency of said infrared-active layer alone,

wherein said first reflective layer has a reflectivity R and said infrared-active layer has an absorptivity (1-A) per single pass of radiation through said infrared-active layer, and R and A substantially satisfy the following equation:

$R=A^2$.

5,291,056

ELECTRONIC SWITCH COMPRISING A PHOTOSENSITIVE SEMICONDUCTOR

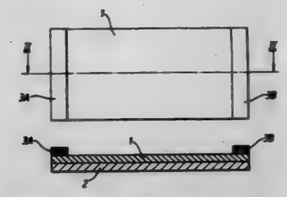
Peter A. Howson, Brighton, Great Britain, assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 752,110, Aug. 29, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 7,949

Claims priority, application United Kingdom, Aug. 31, 1990, 9018957.2

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—442 **12 Claims**



1. An electronic switch comprising a photosensitive semiconductor layer and a light source switch, when actuated, illuminates the photosensitive semiconductor layer and causes said photosensitive semiconductor layer to become conductive through a photoconductive effect in which the photosensitive semiconductor layer is sintered mixture comprising, by weight, 58 to 72% of cadmium, 4.8 to 21% of selenium, 7 to 15% of tellurium, 7 to 12% of sulphur, 0.1 to 1% of chlorine, and 0.005 to 0.1% of copper.

5,291,057

RECTANGULAR SHAPED LASER DIODE AND SYMMETRICALLY INVERTED TRIANGULAR SHAPED EMITTING AND RECEIVING PHOTODIODES ON THE SAME SUBSTRATE

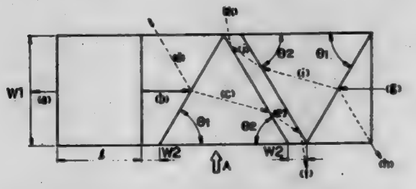
Seung H. Moon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Nov. 6, 1991, Ser. No. 788,617

Claims priority, application Rep. of Korea, Jul. 20, 1991, 91-12537

Int. Cl.[5] H01L *27/14, 31/00, 29/161; H01S 3/19*

U.S. Cl. 257—466 **11 Claims**



1. A compound semiconductor device comprising:

a substrate,

a laser diode on said substrate,

a detecting photodiode on said substrate, said laser diode having a light emitting face disposed in a plane perpendicular to said substrate, said detecting photodiode having a light receiving face facing said light emitting face of said laser diode with clearance space therebetween, said light receiving face of said detecting photodiode being disposed in a plane perpendicular to said substrate and at an angle relative to the plane containing the light emitting face of the laser diode, and a receiving photodiode on said substrate adjacent to said detecting photodiode on a side thereof opposite said laser diode,

said laser diode being of a rectangular shape on said substrate, said detecting photodiode and said receiving photodiode each being of triangular shape on said substrate and symmetrically inverted with respect to one another.

5,291,058

SEMICONDUCTOR DEVICE SILICON VIA FILL FORMED IN MULTIPLE DIELECTRIC LAYERS

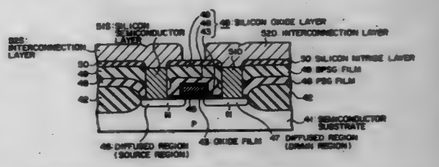
Shuichi Samata, Yokohama; Yuuichi Mikata, Kawasaki, and Toshiro Usami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 680,781, Apr. 3, 1991, which is a continuation of Ser. No. 509,736, Apr. 17, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 921,685

Claims priority, application Japan, Apr. 19, 1989, 1-99265

Int. Cl.[5] H01L *29/34, 23/48, 29/46, 21/225*

U.S. Cl. 257—641 **4 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of one conductivity type having at least one semiconductor region of an opposite conductivity type therein, and having a surface;

a silicon dioxide layer provided over the surface of the semiconductor substrate;

an interlevel insulator provided over the silicon dioxide layer;

prevention means for preventing unwanted evaporation of an impurity contained in the interlevel insulator and for protecting the interlevel insulator from unwanted contamination;

a through-hole formed in the prevention means, the interlevel insulator, and the silicon dioxide layer down to the at least one semiconductor region;

a doped silicon material filled in the through-hole; and

an interconnection layer provided on the prevention means to be electrically connected to the at least one semiconductor region through the doped silicon material.

5,291,059

RESIN-MOLDED SEMICONDUCTOR DEVICE AND LEAD FRAME EMPLOYED FOR FABRICATING THE SAME

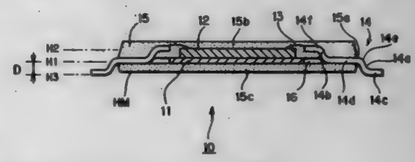
Masahiro Ishitsuka, and Kazuyuki Hayashi, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,574

Claims priority, application Japan, Nov. 18, 1991, 3-301749

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 **5 Claims**



1. A semiconductor device comprising:

(a) a die pad;

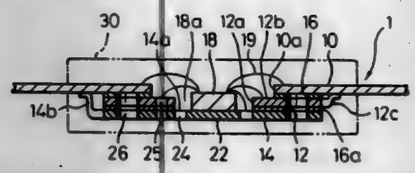
VOL 1160 ISS 1 MR 1 1994 UMI

(b) a semiconductor chip having upper and lower major surfaces, said lower major surface being fixed onto said die pad;
(c) a connection lead having:
(c-1) an inner lead being arranged in a side space of said semiconductor chip and having a first part being located on a first level being lower than said upper major surface of said semiconductor chip and a second part extending from an end of said first part to be upwardly bent and being located on a second level being higher than said first level, said second chip being electrically connected to said semiconductor chip, and
(c-2) an outer lead extending from the other end of said first part of said inner lead to be downwardly bent; and
(d) a resin block sealing said die pad, said semiconductor chip and said inner lead with resin;
wherein:
said second level is substantially equal to the level of said upper major surface of said semiconductor chip;
said outer lead has:
(c-2-1) a part which is bent on a third level being lower than said first level as well as the level of the lower surface of said resin block; and
said first level is substantially equal to the level of said die pad.

5,291,060
LEAD FRAME AND SEMICONDUCTOR DEVICE USING SAME

Mitsuharu Shimizu, Nagano; Yoshiki Takeda, Iiyama, and Hirofumi Fujii, Nagano, all of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan and Intel Corp., Santa Clara, Calif.

Continuation of Ser. No. 803,724, Dec. 9, 1991, Pat. No. 5,237,202. This application Dec. 3, 1992, Ser. No. 984,841
Claims priority, application Japan, Oct. 16, 1989, 1-268649; Feb. 6, 1990, 02-26786
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—667 **20 Claims**

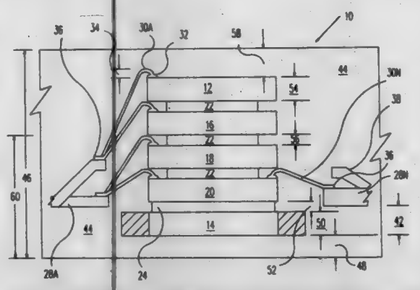


1. A multi-layer lead frame for at least one semiconductor chip comprising:
a lead frame body made of a metal strip and having an opening and a plurality of inner leads, said inner leads having respective tips which define at least a part of said opening;
a metal plane which is independent from said lead frame body, has top and bottom planar surfaces and is electrically connected to one of said inner leads at a connecting point, said metal plane having wire bonding areas for connection to the semiconductor chip and inner holes formed int he metal plane and located beside said wire bonding areas within said opening; and
an insulative adhesive layer adhering said top planar surface to said inner leads.

5,291,061
MULTI-CHIP STACKED DEVICES

Michael B. Ball, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 6, 1993, Ser. No. 43,503
Int. Cl.[5] H01L *23/48, 29/40, 23/02, 23/32*
U.S. Cl. 257—686 **2 Claims**

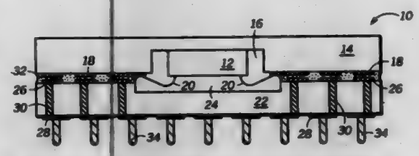


1. A multiple-die low-profile semiconductor device comprising:
a. a lead-frame paddle supported by a lead frame;
b. a controlled, first, thin-adhesive layer of about 0.001 inches affixing a first die above the paddle;
c. a plurality of thin wires having a first low-loop wire bond to a plurality of first diebonding pads, said wire bond having a wire height above the bonding pad of about 0.006 inches, and a second wire bond to a plurality of adjacent lead-frame lead fingers;
d. a second thin-adhesive layer of about 0.008 inches affixing a second die above the first die;
e. a second plurality of thin wires having low-loop wire bonds to a plurality of second die-bonding pads and second wire bonds to the plurality of lead fingers;
f. two additional dies affixed above the second die by additional subsequent layers of adhesive of about 0.008 inches and having additional thin wires bonded to additional bonding pads and lead fingers; and
g. an encapsulated layer surrounding all dies, adhesive layers, and thin wires wherein a total encapsulated-package height is about 0.110 inches.

5,291,062
AREA ARRAY SEMICONDUCTOR DEVICE HAVING A LID WITH FUNCTIONAL CONTACTS

Leo M. Higgins, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,124
Int. Cl.[5] A01L *23/02, 23/12*
U.S. Cl. 257—698 **21 Claims**

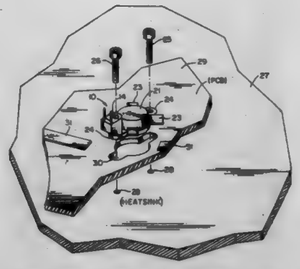


1. An area array semiconductor device comprising:
a polymeric substrate having a first plurality of conductive traces and a die cavity;
a semiconductor die having an active surface and an inactive surface, wherein the inactive surface is bonded to the substrate in the die cavity;
a plurality of electrical connections connecting the active surface of the semiconductor die to the first plurality of conductive traces; and
a polymeric lid covering the semiconductor die and a portion of the substrate, wherein the lid has a second plurality of conductive traces on a first surface which is electrically interconnected to an area array of contact pads on a second surface, wherein the area array of contact pads substantially populates the second surface; and
an anisotropic z-axis conductive adhesive which seals the lid to the substrate and electrically connects the second plurality of conductive traces to the first plurality of conductive traces.

5,291,063
HIGH-POWER RF DEVICE WITH HEAT SPREADER BUSHING

Gary C. Adishian, Scottsville, N.Y., assignor to ENI Div. of Astec America, Inc., Rochester, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,694
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—712 **9 Claims**



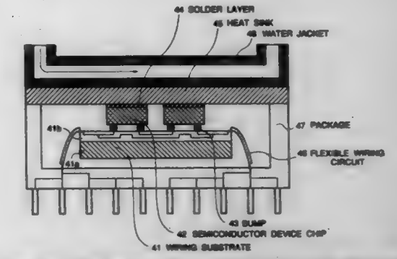
1. High-power RF device for mounting onto a horizontal heat-conducting flange of a high-power RF transistor which flange is fastened by a threaded screw onto a heat sink plate to draw off waste heat from the transistor, comprising a vertically elongated bushing formed of a metal having high thermal conductivity and having a vertical bolt hole therethrough to receive said threaded screw, a flat horizontal lower surface that mates with an upper surface of said transistor flange, and a flat vertical surface; and a flat power electrical element affixed onto the vertical surface of said bushing and bonded in thermal communication therewith so that waste heat generated by said power electrical element in operation passes into said bushing and thence is conducted through said transistor flange into said heat sink plate.

5,291,064
PACKAGE STRUCTURE FOR SEMICONDUCTOR DEVICE HAVING A FLEXIBLE WIRING CIRCUIT MEMBER SPACED FROM THE PACKAGE CASING

Yasuhiro Kurokawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 870,033
Claims priority, application Japan, Apr. 16, 1991, 3-111055; May 31, 1991, 3-155285
Int. Cl.[5] H01L *23/02, 25/04, 23/12, 39/02*
U.S. Cl. 257—714 **8 Claims**

8. A packaged semiconductor device comprising:
a package casing formed of a heat conductive and electrically insulative plate and a metal cap mounted on said plate so as to form a chamber defined by a cooperation between said plate and said cap;
a plurality of semiconductor device chips each having a first surface electrically and mechanically connected to an inner surface of said plate through a high heat conductive bonding layer;
a heat radiating fin block for air cooling, bonded to an outer surface of said plate;
a plurality of metallized patterns formed on an inner surface of said plate so as to extend from the inside of said cap to the outside of said cap;
a plurality of connection pins fixed to said plate so as to extend upright from said plate, each of said pins being connected to a corresponding one of said metallized patterns; and

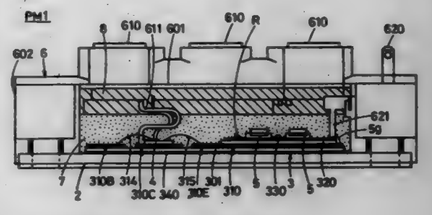


a flexible wiring circuit member formed of a flexible insulator film and patterned metal conductors formed on said flexible insulator film, each of said patterned metal conductors being connected at one of its ends to a second surface of a selected one of said semiconductor device chips by use of a bump and at its other end to a corresponding one of said metallized patterns.

5,291,065
SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Kiyoshi Arai, and Hirofumi Omachi, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,199
Claims priority, application Japan, Dec. 16, 1991, 3-331829
Int. Cl.[5] H01L *23/16, 39/02*
U.S. Cl. 257—723 **20 Claims**



1. A semiconductor device comprising:
(a) a metal base plate,
(b) a composite substrate mounted on said metal base plate, said composite substrate including:
(b-1) a first ceramic substrate joined onto said metal base plate,
(b-2) a first metal plate joined to an upper surface of said first ceramic substrate and formed into a predetermined pattern, said first metal plate having first and second regions arranged parallel to the upper surface of said first ceramic substrate,
(b-3) a second ceramic substrate joined to an upper surface of said first region of said first metal plate, and
(b-4) a second metal plate joined to an upper surface of said second ceramic substrate and formed into a predetermined pattern,

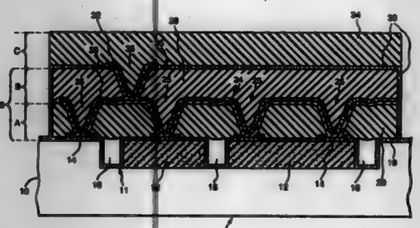
said semiconductor device further comprising:
(c) a power semiconductor device mounted on an upper surface of said second region of said first metal plate, and
(d) a control semiconductor device mounted on an upper surface of said second metal plate for controlling said power semiconductor device,
at least said second region of said first metal plate including:
(b-3-1) a first metal layer joined to the upper surface of said first ceramic substrate,
(b-3-2) a second metal layer bonded onto said first metal layer, and
(b-3-3) a third metal layer bonded onto said second metal layer,
said second metal layer being lower in coefficient of thermal expansion than said first and third metal layers,
said first region of said first metal plate being an electrode layer to be held at a constant potential.

5,291,066

MOISTURE-PROOF ELECTRICAL CIRCUIT HIGH DENSITY INTERCONNECT MODULE AND METHOD FOR MAKING SAME

Constantine A. Neugebauer, Schenectady; Herbert S. Cole, Burnt Hills; Eugene L. Bartels, Elnora, and Raymond A. Fillion, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1991, Ser. No. 791,690
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—750 **15 Claims**



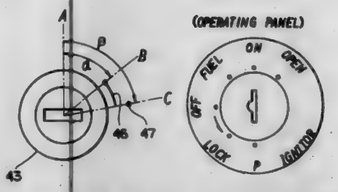
1. A moisture-proof, electrical circuit module comprising:
a substrate;
at least one electrical circuit component situated free standing on said substrate; and
an electrical interconnection structure comprising a plurality of multiple ply sequences successively stacked over said at least one component and said substrate, each of said sequences including at least a dielectric polymer film and a metal layer overlying said polymer film;
at least one of said plurality of sequences further including an inorganic oxide moisture barrier film underlying said polymer film;
said inorganic oxide moisture barrier film being other than immediately adjacent said at least one component;
each of said films including a plurality of via holes extending therethrough, each of said holes exposing a metal surface, at least one of said metal surfaces being electrically connected to said circuit component, the interior surface of each of said holes being lined by the metal layer of the corresponding sequence to establish a conductive link between the metal layer of the corresponding sequence and the underlying exposed metal surface;
whereby electrical connections to said at least one circuit component are established through said via holes and moisture is prevented from penetrating to said circuit component.

5,291,067

ELECTRIC CIRCUIT SYSTEM FOR MOTORCYCLE

Shinji Nakajima; Masao Takasaka, and Tetsuo Yamashita, all of Shizuoka, Japan, assignors to Suzuki Kabushiki Kaisha, Shizuoka, Japan

Filed Jan. 31, 1991, Ser. No. 648,760
Claims priority, application Japan, Jan. 31, 1990, 2-18953; Mar. 30, 1990, 2-87033; May 18, 1990, 2-128643
Int. Cl.[5] B62H *5/00*; E05B *65/12*
U.S. Cl. 307—9.1 **6 Claims**



1. An electric circuit system for a motorcycle having a body frame and a storage box disposed substantially at a central upper portion of the body frame, the storage box including a lid member for opening and closing the storage box and a lock mechanism including a solenoid means and an electromagnetic unlocking means for locking and unlocking the lid member, said electric circuit system having an ignition power circuit and a solenoid power circuit, said electromagnetic unlocking means having a key switch means comprising:
a cylinder lock unit including a rotor; and
a switch unit having a first switch and a second switch, each capable of being opened and closed in association with a rotation of said rotor, said first switch controlling an activation of said ignition power circuit and said second switch controlling an activation of said solenoid power circuit, said first switch being closed at a first point of action taken by the rotation of said rotor from a locked position by a predetermined rotation angle, said second switch being closed at a second point of action taken by further rotation of said rotor from the first point of action, said first switch maintaining a closed position during the rotation of said rotor between the first and second points of action, said rotor including a retention mechanism for retaining the rotor at the first point of action and a spring means for restoring the rotor to the first point of action against a further rotation of the rotor, wherein said lid member can be unlocked while the ignition power circuit is activated.

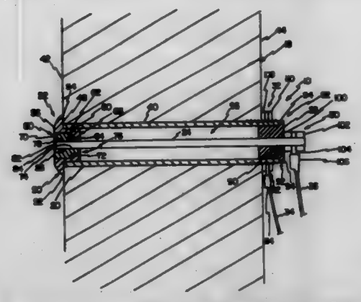
5,291,068

TOUCH SENSITIVE SWITCHING APPARATUS

Thomas W. Ramsael, Cokato, and Terrence R. Arbouw, Howard Lake, both of Minn., assignors to Sterner Lighting Systems Incorporated, Wiasted, Minn.

Filed Sep. 1, 1992, Ser. No. 938,955
Int. Cl.[5] H01H *35/00*
U.S. Cl. 307—116 **21 Claims**

1. A touch responsive apparatus for use in controlling an electrical load, the apparatus comprising:
conductive housing means having a first housing end and a second housing end, wherein the first housing end includes a first touch contact surface and stop means;
a conductive longitudinal member having a longitudinal axis disposed within the conductive housing means and a first member end having a second touch contact surface and a stop surface;
insulation means for substantially electrically insulating the conductive longitudinal member from the conductive housing means, the insulation means interposed between and engaging the stop surface and the stop means;
fastening means connected to the conductive longitudinal member to secure the first member end against the insulation means; and
circuit means electrically connected to the conductive housing means and the conductive longitudinal member, the



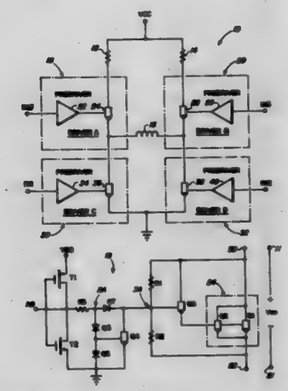
circuit means responsive to substantially non-infinite resistance connected between the first contact surface and the second contact surface to selectively control operation of the electrical load.

5,291,069

BIPOLAR H WRITE DRIVER

Gary F. Gooding, and Larry L. Tretter, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1992, Ser. No. 991,864
Int. Cl.[5] H03K *17/60, 3/01*
U.S. Cl. 307—254 **9 Claims**



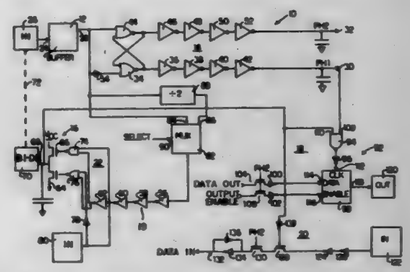
1. A driver circuit comprising:
first and second parallel paths connected between a first node and a second node;
a third node in said first path and a fourth node in said second path for connecting a load therebetween;
a first bipolar drive transistor in said first path connected between said first node and said third node;
a second bipolar drive transistor in said second path connected between said first node and said fourth node;
a third bipolar drive transistor in said first path connected between said third node and said second node;
a fourth bipolar drive transistor in said fourth path between said fourth node and said second node;
a bipolar turnon transistor having a collector terminal connected to said first node and an emitter terminal connected to an input to said one of said drive transistors; and
means for stabilizing the output of said one of said drive transistors, said stabilizing means including feedback means connected between the output of said one of said drive transistors and an input of said turnon transistor.

5,291,070

MICROPROCESSOR SYNCHRONOUS TIMING SYSTEM

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 28, 1991, Ser. No. 647,491
Int. Cl.[5] H03K *5/13*
U.S. Cl. 307—269 **42 Claims**



1. A timing system for use in a microprocessor for synchronizing the supply of output data from said microprocessor to an external bus with a bus timing clock on said external bus, said timing system comprising:
buffer means including an input for generating an intermediate clock in response to an external clock source;
first generating means coupled to said buffer means for generating first and second internal microprocessor timing clocks responsive to said intermediate clock, said first and second timing clocks being of inverse phase relation;
second generating means coupled to said buffer means for providing said external bus with said bus timing clock responsive to said intermediate clock, said second and first generating means being arranged such that the rising edges of said bus timing clock substantially coincide with the rising edges of said first timing clock and the falling edges of said second timing clock; and
output means coupled to said first and second generating means for initiating said supply of output data from said microprocessor to said external bus upon the common assertion of said bus timing clock and said first timing clock.

5,291,071

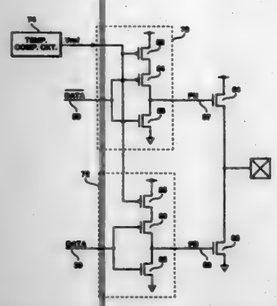
HIGH SPEED, LOW POWER OUTPUT CIRCUIT WITH TEMPERATURE COMPENSATED NOISE CONTROL

Michael J. Allen, Roseville, and Terry L. Bancom, Folsom, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 752,780, Aug. 30, 1991, Pat. No. 5,168,178. This application May 12, 1992, Ser. No. 881,843
Int. Cl.[5] H03K *3/01, 3/26*
U.S. Cl. 307—270 **18 Claims**

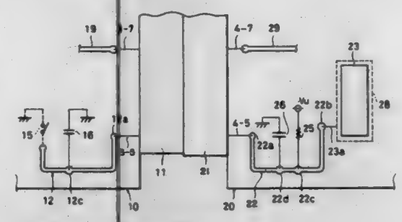
1. A semiconductor circuit comprising:
an output, a first transistor means for driving said output, a second transistor means for driving said first transistor means, a generator for generating a reference voltage electrically connected to said second transistor means, an input for receiving electrical signals and for driving said second transistor means;
said first transistor means including a first driver transistor for driving said output to the supply voltage, and a second driver transistor for driving said output to ground;

said transistor means including a first pre-driver circuit for driving said first driver transistor, and a second pre-driver circuit for driving said second driver transistor;
said first pre-driver circuit including a first current control transistor and a first inverter, said first current control transistor being connected in series between said first inverter and the supply voltage;
said input driving said first inverter;
said reference voltage driving said first current control transistor so as to vary the resistivity of said first current control transistor in response to variations in said reference voltage, so as to cause said first current control transistor to vary the switching time of said first inverter in response to variations in said reference voltage;
said second pre-driver circuit including a second current control transistor and a second inverter, said second current control transistor being connected in series between said second inverter and the supply voltage;
said input driving said second inverter;
said reference voltage driving said second current control transistor so as to vary the resistivity of said second current control transistor in response to variations in said reference voltage so as to cause said second current control transistor to vary the switching time of said second inverter in response to variations in said reference voltage;
said generator generating said reference voltage by means of a temperature compensation circuit, said temperature



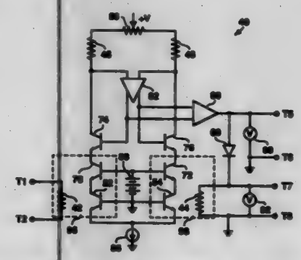
compensation circuit causing said reference voltage to vary in response to variations of the ambient temperature;
said temperature compensation circuit includes a reference current generation branch and a reference voltage generation branch;
said reference current generation branch includes a resistor connecting the supply voltage and the drain of a first pull-down transistor, said first pull-down transistor having its source connected to ground, the gate of said first pull-down transistor being connected to a voltage above the threshold voltage of said first pull-down transistor,
said reference voltage generation branch includes a second pull-down transistor, said gate of said second pull-down transistor being driven by said drain of said first pull-down transistor, said source of said pull-down transistor being connected to ground, said drain of said second pull-down transistor being connected to the drain of a pull-up transistor, the source of said pull-up transistor being connected to the supply voltage, the gate of said pull-up transistor being connected to said drain of said pull-up transistor;
said drain of said pull-up transistor generating said reference voltage; and
said output varying in response to corresponding variations of said input, and said output switching time varying in response to variations in said switching time of said first and said second inverters of said first and second respective pre-drivers.

5,291,072
CROSSTALK-REDUCED TRANSMISSION DEVICE
Naoki Hihara, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1992, Ser. No. 818,269
Claims priority, application Japan, Jan. 17, 1991, 3-015714
Int. Cl.[5] H03K 5/08
U.S. Cl. 307—303.1 **17 Claims**



1. A transmission device comprising:
a printed circuit board;
a connector for respectively transmitting and receiving signals from and to the printed circuit board;
a transmission path provided on the printed circuit board over which a signal which does not vary with time is transmitted;
a resistor connected to couple the transmission path with a power supply of the printed circuit board; and
a capacitor connected to couple the transmission path with ground for reducing crosstalk interference on said transmission path.

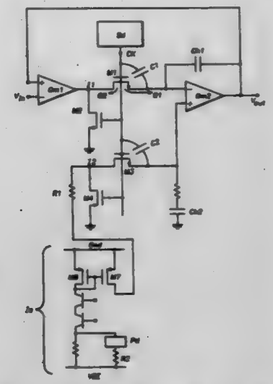
5,291,073
THERMAL POWER SENSOR
Robert J. Lewandowski, King County, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Oct. 7, 1992, Ser. No. 957,935
Int. Cl.[5] H03K 3/26, 5/22
U.S. Cl. 307—310 **23 Claims**



1. An apparatus for deriving an output signal that is related to the magnitude of a signal derived from a source, comprising:
first and second matched circuit devices thermally isolated from each other and substantially isolated from ambient thermal energy, said circuit devices each having a variable characteristic controlled by an amount of thermal energy incident thereon;
means for thermally coupling the first circuit device to said source so that thermal energy from said source is incident on the first device;
means responsive to a control signal for applying additional thermal energy differentially to said first and second circuit devices and for raising the thermal energy of said first and second circuit devices to a quiescent value of thermal energy greater than that due to ambient thermal energy;

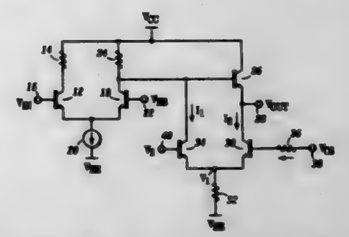
means for sensing said variable characteristics of said first and second circuit devices;
means responsive to said variable characteristics for generating said control signal to control said means for applying additional thermal energy so that the first and second circuit devices have a tendency to be thermally balanced; and
means responsive to said control signal for determining the magnitude of said applied additional thermal energy, said magnitude of said applied additional thermal energy corresponding to the magnitude of the signal from said source.

5,291,074
BICMOS TRACK AND HOLD AMPLIFIER
Mehrdad Nayebi, Palo Alto, Calif., assignor to Vanguard Semiconductor, a division of CA Micro Devices, Milpitas, Calif.
Filed Apr. 5, 1990, Ser. No. 506,033
Int. Cl.[5] H03K 5/159, 17/687, 5/00
U.S. Cl. 307—353 **13 Claims**



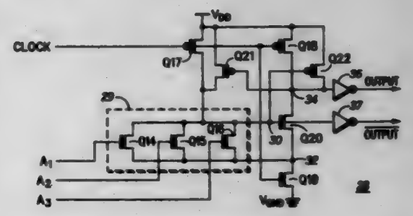
1. A track and hold apparatus having a track mode and a hold mode, said track and hold apparatus comprising:
an input stage having an input terminal for receiving an input signal;
an output stage having an input terminal and an output terminal;
a holding capacitor coupled to said input terminal of said output stage;
an NMOS transistor coupled between said output terminal of said input stage and said input terminal of said output stage, said NMOS transistor turned on during said track mode and turned off during said hold mode;
a PMOS transistor coupled between said output terminal of said input stage and ground, said PMOS transistor turned on during said hold mode and turned off during said track mode; and
a switch driver for turning said NMOS and PMOS transistors on and off, said switch driver generating a single clock signal received by both said NMOS and PMOS transistors, said single clock signal turning said NMOS transistor off before turning said PMOS transistor on during transition from said track mode to said hold mode.

5,291,075
FAULT DETECTION CIRCUIT
Roger L. Hollstein, Phoenix; Steven M. Domer, and Frederic B. Shapiro, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1990, Ser. No. 590,997
Int. Cl.[5] H03K 19/02, 5/153
U.S. Cl. 307—443 **10 Claims**



1. A circuit having an input and an output, comprising:
an input stage responsive to a logic signal supplied to the input of the circuit for providing an output logic signal at an output thereof;
an output stage, responsive to said output logic signal of said input stage, for providing an output logic signal at the output of the circuit;
a pulldown circuit coupled to said output stage for providing proper voltage logic levels at the output of the circuit; and
detection means coupled to said output of said input stage and to said pull down circuit for forcing the output of the circuit to a predetermined logic state responsive to a fault condition occurring in said pull down circuit.

5,291,076
DECODER/COMPARATOR AND METHOD OF OPERATION
Jeffrey T. Bridges; Jeffrey E. Maguire, and Paul C. Rossbach, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 31, 1992, Ser. No. 937,018
Int. Cl.[5] H03K 19/0948, 19/096
U.S. Cl. 307—449 **15 Claims**



1. A precharge device comprising:
a first and a second node;
a transistor tree operable to electrically short-circuit the first and second nodes together responsive to input signals;
a screening transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to a third node, the second current electrode coupled to the second node and the control electrode coupled to the first node; and
clocking circuitry for precharging the first and third nodes to a first known voltage level during a first phase of a periodic clocking signal and for coupling the second node to a second known voltage level and evaluating the volt-

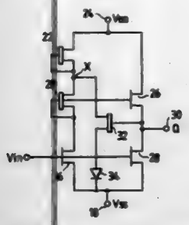
age on the first node to provide an output logic level during a second phase of the periodic clocking signal.

5,291,077

SEMICONDUCTOR LOGICAL FET DEVICE

Noriyuki Hirakata, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 1, 1992, Ser. No. 955,159
Claims priority, application Japan, Oct. 2, 1991, 3-255373
Int. Cl.[5] H03K *19/017*
U.S. Cl. 307—450 **6 Claims**



1. A semiconductor logical device providing:
at least one first field effect transistor for performing a switching operation according to an input signal input to a gate contact thereof;
a first element which is formed by a field effect transistor whose gate and source contacts are subjected to short-circuit and acts as a load of said first field effect transistor;
a second element which is formed by a field effect transistor whose gate and source contacts are subjected to short-circuit, said second element being connected in series to said first element to act as a load of said field effect transistor;
a source follower circuit for power-amplifying a signal which is generated in said gate-source contact of said first element;
a diode for generating a desired voltage; and
a second field effect transistor whose drain contact is connected to said gate and source contacts of said second element, whose source contact is connected to an anode contact of said diode, and to whose gate contact an output signal of said source follower circuit is applied.

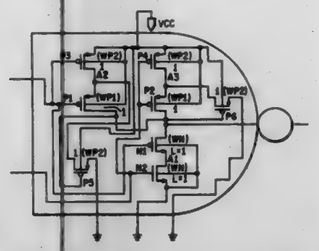
5,291,078

GATE CIRCUITS IN TRANSITION DETECTION INPUT BUFFERS

Chai-Chin Chao, Plano, and Edison H. Chiu, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 994,190, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 676,996, Mar. 28, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 83,397
Int. Cl.[5] H03K *19/20*
U.S. Cl. 307—451 **3 Claims**

1. A one way hysteresis two input NAND gate comprising: in combination:
a first pair of series connected P-channel transistors, each said transistor in said first pair having a gate, a source and a drain, the source of one transistor in said first pair being connected to the drain of the other transistor in said first pair at a first series connection point;
a second pair of series connected P-channel transistors, each said transistor in said second pair having a gate, a source and a drain, the source of one transistor in said second pair being connected to the drain of the other transistor in said second pair at a second series connection point;
a third pair of series connected N-channel transistors, each said transistor in said third pair having a gate, a source and a drain, the source of one transistor in said third pair being connected to the drain of the other transistor in said third pair;
said first and second pair of series connected transistors each having a previously unconnected drain connected to a previously unconnected drain of said third pair;
a first and second and third terminal, said firs terminal being connected to the gates of said first pair and to the gate of one transistor in said third pair, said second terminal being connected to the gates of the transistors in said second pair and to the previously unconnected gate in said third pair;
said third terminal comprising the connection point of a



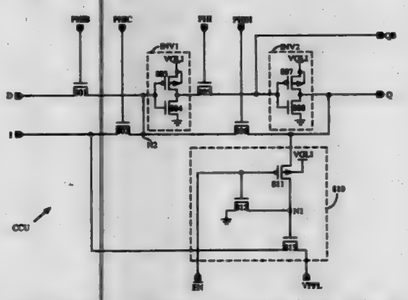
drain of said first pair, a drain of second pair and a drain of said third pair, said third terminal comprising the output of said NAND gate;
a fourth pair of P-channel transistors each having a gate, a source and a drain, each said gate of said fourth pair is coupled to said third terminal, said source of each transistor is said fourth pair being coupled together, the drain of one transistor of said fourth pair is coupled to the connection point between the transistors of said first pair and the drain of the other of said forth pair is coupled to the connection point between the transistor in said second pair.

5,291,079

CONFIGURATION CONTROL UNIT FOR PROGRAMMING A FIELD PROGRAMMABLE GATE ARRAY AND READING ARRAY STATUS

F. Erich Goetting, Cupertino, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Jul. 23, 1992, Ser. No. 919,407
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **15 Claims**



6. In an FPGA comprising configurable logic cells and a configurable interconnect structure, a configuration control unit comprising:
memory means (INV1, INV2) which may be loaded and read, said memory means providing a stored value (Q); and
means (810) for controlling application of a programming

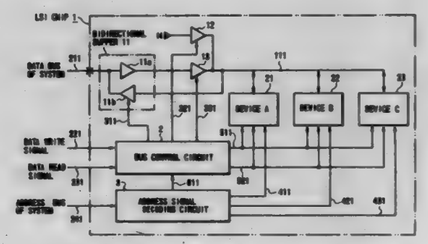
voltage to said corresponding interconnect line (I), comprising
means (813) for supplying a programming voltage (VP) to said corresponding interconnect line (I);
means (EN-bar, 812, 811) for controlling said means for supplying;
whereby when said stored value (Q) is a selected voltage (high), and said means for controlling (EN-bar, 811,812) selects said stored value, said means (813) for supplying a programming voltage supplies said programming voltage (VP) to said corresponding interconnect line (I).

5,291,080

INTEGRATED CIRCUIT DEVICE HAVING TRISTATE INPUT BUFFER FOR REDUCING INTERNAL POWER USE

Seiichi Amagasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 994,310
Claims priority, application Japan, Dec. 27, 1991, 3-360200
Int. Cl.[5] H03K *17/00*
U.S. Cl. 307—475 **3 Claims**



1. A large scale integrated circuit device comprising:
a plurality of internal devices, connected to an internal data bus, for selectively performing data input/output operations;
an address decoding circuit for decoding an address signal from an address bus of a system to deliver an internal device select signal to one of said internal devices and an internal device select indication signal indicating that one of said internal devices is selected;
a bus control circuit for delivering an output control signal and an input control signal upon receiving the internal device select indication signal and one of a data write signal and a data read signal;
a first tristate buffer for controlling data input to said internal data bus in accordance with the input control signal; and
an output buffer for controlling data output from said internal data bus in accordance with the output control signal.

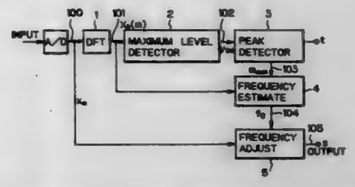
5,291,081

APPARATUS FOR DETECTION OF NON-MODULATED SIGNAL AND FREQUENCY ACQUISITION

Yoshio Takeuchi, and Hideo Kobayashi, both of Saitama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,134
Claims priority, application Japan, Nov. 13, 1991, 3-323997
Int. Cl.[5] H03D *13/00*; H03K *9/06*
U.S. Cl. 307—522 **9 Claims**

1. An apparatus for detecting non-modulated signal and frequency acquisition comprising;
first means for converting an input signal in analog form to digital form,
second means for providing frequency spectrum of the latest N samples through Fourier transform method every time an output is provided by said first means,
third means for providing the maximum level of frequency component in output of said second means,
fourth means for providing a peak timing signal when peak value of the output of said third means is obtained on time axis,



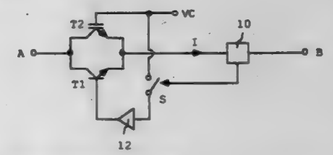
fifth means for estimating frequency of a non-modulated signal by using frequency spectrum at said peak timing, and
sixth means for adjusting frequency of output of said first means by using said estimated frequency obtained in said fifth means.

5,291,082

LOW LOSS POWER SWITCH

Georges Revillet, Barcelonne, and Philippe Berge, Colomiers, both of France, assignors to Crouzet Automatismes, Valence, France

Filed Aug. 26, 1992, Ser. No. 935,098
Claims priority, application France, Aug. 27, 1991, 91 10896
Int. Cl.[5] H03K *17/60*
U.S. Cl. 307—570 **6 Claims**



1. A power switch comprising:
at least one bipolar transistor (T1), the collector and emitter of which define two ends of a power switch, the base of which is controlled through an amplifier (12) and an inhibiting means (S) by a control signal (VC); and a sensor (10) connected to one end of the switch for sensing current (I) flowing through the switch; and
at least one insulated gate bipolar transistor (IGBT) (T2) connected in parallel to said at least one bipolar transistor (T1), the gate of which is controlled by said control signal (VC);
wherein said inhibiting means (S) is controlled by said sensor for inhibiting the base control of said at least one bipolar transistor (T1) when the current flowing through the switch is lower than a predetermined value (I0) of the sensor.

5,291,083

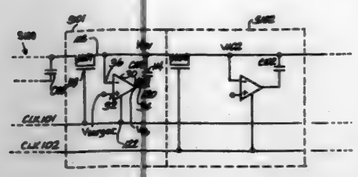
BUCKET BRIGADE ANALOG DELAY LINE WITH VOLTAGE LIMITING FEEDBACK

Travis N. Blalock, Santa Clara, and Thomas Hornak, Portola Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 12, 1993, Ser. No. 3,344
Int. Cl.[5] H03K *5/13*; G11C *19/28*
U.S. Cl. 307—607 **22 Claims**

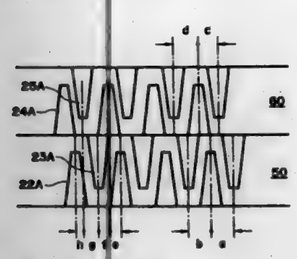
1. A clocked bucket brigade analog delay line having an input stage for receiving a signal and a plurality of delay stages

coupled to the input stage for propagating the signal through the line, each delay stage comprising:
a charge transfer device having gate, drain, and source electrodes;
a storage capacitor having upper and lower plates;



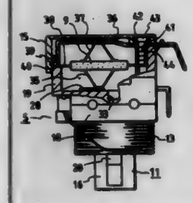
a tap node connected to the drain of the charge transfer device and the upper plate of the storage capacitor; and
a negative feedback amplifier having an input connected to the tap node and an output connected to the lower plate of the storage capacitor for introducing negative feedback into the delay line stage.

5,291,084
STEPPING MOTOR HAVING AT LEAST ONE SET OF ASYMMETRIC STATOR POLE TEETH
Seiki Shiotsuki; Shingo Sanbe, both of Yokohama; Shinichi Kanaya; Masamichi Furukawa, both of Tokyo, and Shigeru Tanaichi, Yokohama, all of Japan, assignors to Canon Seiki Kabushiki Kaisha and Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 23, 1991, Ser. No. 749,539
Claims priority, application Japan, Aug. 27, 1990, 2-224852; Aug. 27, 1990, 2-224853
Int. Cl.[5] H02K *37/00*
U.S. Cl. 310—49 R **4 Claims**



1. A stepping motor comprising:
a rotor having magnetic poles;
an inner yoke having a plurality of pole teeth circumferentially formed at a predetermined pitch around said rotor;
an outer yoke having a plurality of pole teeth circumferentially formed at a predetermined pitch around said rotor;
the pole teeth of said outer yoke being located in a center position between the pole teeth of said inner yoke, respectively;
a coil mounted between said inner yoke and said outer yoke;
a first stator unit including said inner yoke, said outer yoke and said coil;
a second stator unit including inner and outer yokes each having a plurality of pole teeth circumferentially formed at a predetermined pitch around said rotor and a coil mounted between said inner and outer yokes axially arranged with said first stator unit, the pole teeth of said outer yoke of said second stator unit are, respectively, in a shifted position from a center position between the pole teeth of said inner yoke of said second stator unit in a specific direction;
the pole teeth of said inner yoke of said second stator unit being located in a middle position between the pole teeth of said outer yoke of said first stator unit and the pole teeth of said inner yoke of said first stator unit; and
the pole teeth of said outer yoke of said second stator unit being located in a shifted position from a middle position between the pole teeth of said inner yoke of said first stator unit and the pole teeth of said outer yoke of said first stator unit.

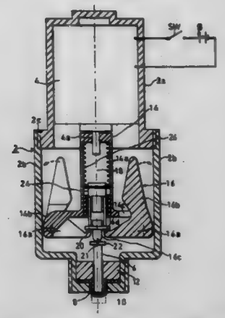
5,291,085
SPLIT-PHASE STARTER FOR AN ELECTRIC MOTOR
Uchito Kawashima, Tochigi; Masahide Kobayashi, Saitama; Hiroshi Kaise, and Yutaka Hirano, both of Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Nov. 24, 1992, Ser. No. 980,749
Claims priority, application Japan, Nov. 26, 1991, 3-310959
Int. Cl.[5] H02K *11/00, 7/08*
U.S. Cl. 310—68 C **7 Claims**



1. A split-phase starter for an electric motor having a main winding and an auxiliary winding, the split-phase starter comprising:
a starting relay including a relay coil and an associated relay contact means, the relay coil electrically connected with the main winding, and the relay contact means electrically connected with the auxiliary winding;
a positive temperature coefficient thermistor connected in series with the relay contact means to form a series circuit;
a casing body including a first casing and a second casing, the relay contact means being positioned in the casing body, and the positive temperature coefficient thermistor being positioned in the second casing;
a lid secured to the casing body;
the lid having a recess and a protrusion, the protrusion having a hole located in the center of the protrusion;
a terminal board having a first end portion and a second end portion having a hole, the first end portion being secured to the second casing and fitted into the recess in the lid, the second end portion being secured between the second casing and the lid, the protrusion of the lid extending through the hole in the second portion of the terminal board; and
a screw engaging the hole in the protrusion of the lid to secure the lid to the casing body.

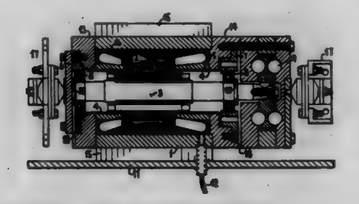
5,291,086
ELECTRICAL ACTUATOR FOR VALVE OR OTHER DEVICE
Avraham Shekalim, Nesher, Israel, assignor to Eureka Technologies Ltd., Haifa, Israel
Filed May 29, 1992, Ser. No. 889,891
Claims priority, application Israel, Jun. 4, 1991, 98358
Int. Cl.[5] H02K *7/06*; G05D *13/10*
U.S. Cl. 310—80 **15 Claims**

1. An electrical actuator for actuating a valve or other device, comprising:
an electrical motor having a rotary shaft;
a rotary member coupled to said rotary shaft so as to be rotated thereby;
a centrifugal body movably mounted to said rotary member and biassed so as normally to assume an inner position with respect to the rotary axis of the rotary member, and to move to an outer position by centrifugal force when the rotary member rotates;
an actuator pin normally biassed by a non-actuating position but movable to an actuating position;
a housing enclosing said rotary member and centrifugal body and open at one end;
a diaphragm seal closing said open end of the housing and



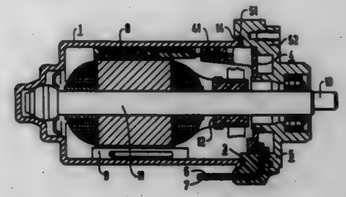
displaceable outwardly with respect to said housing when the actuator pin is moved to its actuating position;
and coupling means between said centrifugal body and said actuator pin for actuating said actuator pin to its actuating position, and thereby for displacing said diaphragm outwardly with respect to said housing, when the centrifugal body is moved to its outer position by centrifugal force upon the rotation of said rotary member by said electric motor.

5,291,087
SEALED ELECTRIC MOTOR ASSEMBLY
Richard D. Pollick, Sarver, and Dale R. Farruggia, Pitcairn, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 3, 1993, Ser. No. 34,799
Int. Cl.[5] H02K *5/10*
U.S. Cl. 310—86 **4 Claims**



1. An electric motor assembly comprising:
(A) a cylindrical metal housing adapted to receive and hold stator windings,
(B) a bottom closure member at one end of said housing,
(C) a top closure member at the other end of said housing,
(D) a bottom bearing retainer secured to said bottom closure member,
(E) a top bearing retainer secured to said top closure member,
(F) a bottom bearing mounted in said bottom bearing retainer,
(G) a top bearing mounted in said top bearing retainer,
(H) a rotor shaft extending within said housing and supported within said bottom bearing and said top bearing,
(I) a cylindrical metal canister concentric within said housing positioned between said stator windings and said rotor shaft and welded to said bottom closure member and said top closure member thereby hermetically sealing the stator windings between said metal canister and said metal housing,
(J) a plurality of open ports in said bottom bearing retainer and said top bearing retainer adapted to allow gas to be drawn into the interior of said motor assembly around said rotor shaft and within said cylindrical metal canister and discharged therefrom.

5,291,088
ELECTRIC MOTOR WITH WATERTIGHT CONSTRUCTION
Peter Adam, Höchberg; Werner Seuffert, Bergrheinfeld; Manfred Hofmann, Hettstadt, and Hans-Joachim Müller, Burkardroth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
PCT No. PCT/EP90/01408, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/03095, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 23, 1990, Ser. No. 828,888
Claims priority, application European Pat. Off., Aug. 25, 1989, 89115738.0; Fed. Rep. of Germany, Aug. 25, 1989, 8910214; European Pat. Off., Aug. 17, 1990, 90115826.1; Fed. Rep. of Germany, Aug. 17, 1990, 9011962
Int. Cl.[5] H02K *5/10*
U.S. Cl. 310—88 **14 Claims**



1. An electric motor having a watertight construction, comprising:
a motor housing, having an open end face with an axially protruding edge;
a bearing plate having a brush plate and a circumferential groove;
an insulated lead-insert made of an insulating material and capable of holding a plurality of electrical leads coupled to the electric motor disposed within said motor housing, said insulated leadinsert arranged between the axially protruding edge of said motor housing and said bearing plate;
a circumferential sealing ring molded on said insulated lead-insert, said circumferential sealing ring is molded onto the brush plate of said bearing plate as a preassembled unit, the groove of said bearing plate is capable of receiving and position in said sealing ring; and
a plurality of securing bars coupling said sealing ring to the brush plate of said bearing plate, such that when the axially protruding edge of said motor housing is joined to said bearing plate, said sealing ring is pressed against the axially protruding edge of said motor housing by said bearing plate forming a watertight seal.

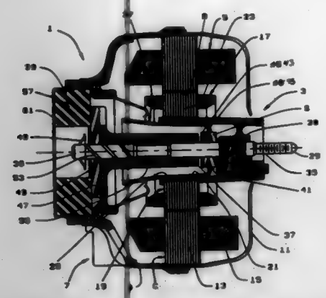
VOL 1160 ISS 1 MR 1994 UMI

5,291,089

LOW DRAG/HIGH FEED RATE BEARING WICK FOR A UNIT BEARING MOTOR

S. Duke Saider, St. Louis County, and Stephen J. Burton, Jefferson County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 19, 1993, Ser. No. 5,293
Int. Cl.[5] H02K 5/16
U.S. Cl. 310—90 18 Claims



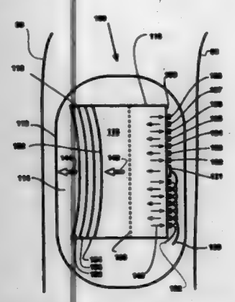
1. In a dynamoelectric machine comprising a rotor body having a longitudinal central axis, a longitudinal central opening substantially coaxial with said central axis, a journal bearing which is received in said central opening, a rotor shaft rotatably journaled in said bearing, and a wicking element through which said rotor shaft is journaled, said wicking element being in wicking contact with a source of lubricant and said rotor shaft to deliver lubricant to said rotor shaft; the improvement comprising said wicking element defining an opening having a periphery, said periphery positively contacting said rotor shaft at at least one point, and being spaced from said shaft throughout substantially the remainder of said periphery, the positive point of contact being substantially less than the circumference of said shaft.

5,291,090

CURVILINEAR INTERLEAVED LONGITUDINAL-MODE ULTRASOUND TRANSDUCERS

J. Fleming Dias, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 17, 1992, Ser. No. 991,774
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—334 12 Claims



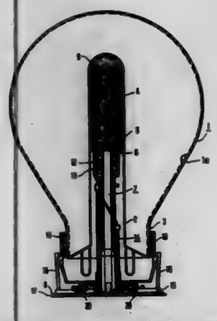
1. An ultrasound transducer for acoustically examining a body, said transducer comprising:
a substrate of piezoelectric material, said substrate having a front surface and a back surface, said substrate being alternately poled in a thickness dimension extending from said back surface toward said front surface;
first and second radially extending series of substantially parallel curvilinear electrode segments, said first series being electrically isolated from said second series, each of said electrode segments subtending an angle of at least 270° about a central point, said electrode segments being disposed on said back surface; and
interface means for acoustically coupling said substrate with said body, said interface means being in contact with said front surface.

5,291,091

ELECTRODELESS LOW-PRESSURE DISCHARGE

Hendrik J. Eggink, Winand H. A. M. Friederichs, and Nicasius C. T. Van Gennip, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1992, Ser. No. 818,003
Claims priority, application Netherlands, Jan. 25, 1991, 9100124
Int. Cl.[5] H01J 61/52, 1/50
U.S. Cl. 313—161 14 Claims



1. An electrodeless low-pressure discharge lamp comprising
a lamp vessel which is sealed in a vacuum-tight manner, contains ionizable metal vapor and rare gas, and has a cavity at an end portion of said vessel,
a sleeve of synthetic material within the cavity of the lamp vessel,
a core of soft magnetic material within the sleeve,
an electric coil around the sleeve,
a tube containing a liquid in the core of soft magnetic material, which tube projects to, and has a flange, outside the cavity characterized in that: the sleeve is at least substantially filled with an elastic polymer.

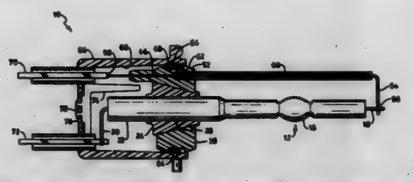
5,291,092

HID VEHICLE HEADLAMP CAPSULE ASSEMBLY

Charles M. Coushaine, Rindge, N.H., assignor to GTE Products Corporation, Danvers, Mass.

Filed Apr. 24, 1992, Ser. No. 874,284
Int. Cl.[5] H01J 5/58
U.S. Cl. 313—318 13 Claims

1. An arc discharge headlamp capsule comprising:
a) an arc discharge tube having a forward end with a forward lead, and a rear end with a rear lead,
b) a wedge having an axis, an interior wall defining an interior passage formed to be conformal with the rear end of the arc tube, and a sloped exterior wall, positioned around the rear end of the arc discharge tube,
c) a retainer, having an axis, a sloped interior wall defining a central passage and an interior cavity substantially conformal with the exterior wall of the wedge, positioned around and mated to the wedge to substantially butt the exterior wall of the wedge to the interior wall of the retainer,
d) a base supporting the retainer,



e) a first electrical connection electrically connecting the forward lead, and
f) a second electrical connection electrically connecting the rear lead.

5,291,093

INLINE TYPE ELECTRON GUN FOR COLOR CATHODE RAY TUBES

Sungwoo Lee, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Feb. 12, 1992, Ser. No. 834,473
Claims priority, application Rep. of Korea, Feb. 12, 1991, 91-2338
Int. Cl.[5] H01J 29/56
U.S. Cl. 313—414 4 Claims

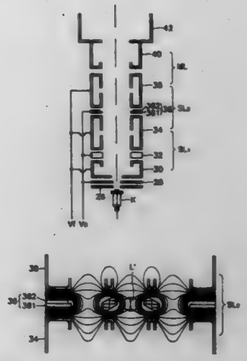
1. In an inline type electron gun having an electrode assembly for focusing electron beams on a screen of a cathode ray tube, the assembly comprising first through eighth electrodes in order starting from a cathode, which cathode emits the electron beams, the third, fourth, and fifth electrodes forming a first unipotential lens, the fifth, sixth, and seventh electrodes forming a second unipotential lens, and the seventh and eighth electrodes forming a bipotential focusing lens, wherein the fifth, sixth, and seventh electrodes each have a central aperture and two lateral apertures formed therein, the central aperture of each of the fifth, sixth, and seventh electrodes being aligned and respective lateral apertures of each of the fifth, sixth, and seventh electrodes being aligned, the improvement wherein the seventh electrode comprises electric field biasing means for forming an anisotropic electric field at the two lateral apertures thereof to deflect the electron beams passing therethrough toward the central electron beam passing through the central aperture thereof, before the electron beams enter the bipotential focusing lens, and wherein the central aperture and the two lateral apertures in the seventh electrode are formed at a face which opposes the sixth electrode.

5,291,094

MULTI-FOCUSING TYPE ELECTRON GUN FOR COLOR CATHODE RAY TUBES

Sungwoo Lee, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Feb. 12, 1992, Ser. No. 836,053
Claims priority, application Rep. of Korea, Feb. 12, 1991, 91-2337
Int. Cl.[5] H01J 29/56
U.S. Cl. 313—414 4 Claims



3. In a multi-focusing type electron gun having an electrode assembly for focusing electron beams, the assembly comprising first through eighth electrodes in order starting from a cathode and having a shield cup, wherein the third, fourth, and fifth electrodes form a first unipotential lens, the fifth, six, and seventh electrodes form a second unipotential lens, and the seventh and eighth electrodes form a bipotential lens, the improvement wherein the sixth electrode comprises a primary electrode on a side facing the fifth electrode and a secondary electrode on a side facing the seventh electrode, the primary and secondary electrodes each having three apertures formed therein, the three apertures of the primary electrode being aligned with the three apertures of the secondary electrode, and the three apertures comprise a central aperture and two lateral apertures, the central aperture of the primary electrode having a larger diameter than a diameter of the lateral apertures thereof, and equal to a diameter of the lateral apertures of the secondary electrode, and the central aperture of the secondary electrode having a comparatively smaller diameter than the diameter of the lateral apertures thereof and equal to the diameter of the lateral apertures of the primary electrode, such that a voltage difference of the second unipotential lens becomes uniform to thereby obtain an expanded focus lens.

5,291,095

CATHODE RAY TUBE COMPRISING AN ELECTRON GUN HAVING A PLANE-PARALLEL OPTICAL SYSTEM

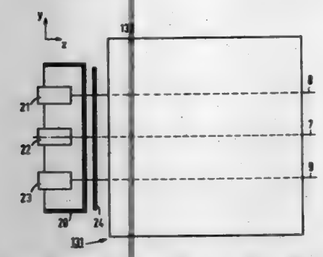
Johannes H. Bohlander, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1992, Ser. No. 839,138
Claims priority, application Netherlands, Mar. 1, 1991, 9100380
Int. Cl.[5] H01J 29/62
U.S. Cl. 313—417 14 Claims

1. In a cathode ray tube comprising an electron gun for generating plural electron beams extending in one plane and having means for forming electric fields for acting on the electron beams, the improvement comprising said means for forming electric fields for acting on the electron beams comprising:
(a) conductive patterns comprising spaced conductor por-

tions provided on two surfaces oppositely arranged with respect to the plane of the electron beams and approximately parallel to said plane,

(b) means for applying potentials to the conductor portions,



and the conductor portions being arranged, such that electric fields are formed that vary in the direction of travel of the electron beams and in a direction approximately parallel to said plane and approximately transversely to the direction of travel of the electron beams.

5,291,096

CATHODE STRUCTURE FOR A CATHODE-RAY TUBE

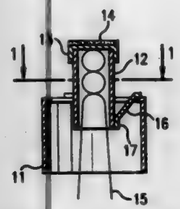
Gyeong S. Lee, Kyungsangbook, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Dec. 23, 1991, Ser. No. 812,468

Claims priority, application Rep. of Korea, Dec. 29, 1990, 90-21699

Int. Cl.[5] H01J *29/48*

U.S. Cl. 313—446 2 Claims



1. A cathode structure for a cathode-ray tube comprising:

a) a cathode cap coated with an electron-emissive substance for emitting electrons when heated;

b) a cylindrical cathode sleeve having first lower and upper ends, and attached to the bottom of said cathode cap;

c) a heater inserted in said cathode sleeve for heating said cathode cap;

d) a cathode sleeve holder having second lower and upper ends, and for holding said cathode sleeve;

e) a cylindrical member affixed to the first lower end of said cathode sleeve substantially preventing electric field concentration; and

f) a plurality of connecting arms having third lower and upper ends and the third lower end connected to said cylindrical member, and each of said plurality of connecting arms extending upwardly from said cylindrical member and connected to said second upper end of said cathode sleeve holder via said third upper end, and each of said plurality of connecting arms positioned above said first lower end of said cathode sleeve.

5,291,097

CATHODE-RAY TUBE

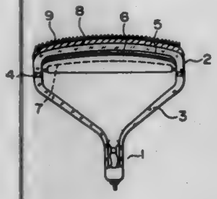
Hiromitsu Kawamura; Katsumi Kobara, both of Mobara; Takao Kawamura, Chiba, and Kiyoshi Miura, Mobara; all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan.

Filed May 1, 1991, Ser. No. 694,367

Claims priority, application Japan, May 14, 1990, 2-121115; May 25, 1990, 2-133806; Aug. 13, 1990, 2-211720

Int. Cl.[5] H01J *31/08*

U.S. Cl. 313—478 9 Claims



1. A cathode-ray tube having a layer on at least one portion of a faceplate outer surface, the layer comprising:

at least one colored transparent electroconductive domain consisting of at least one organic dye, at least one electroconductive metal oxide selected from the group consisting of tin oxide, indium oxide, and antimony oxide, and silica mainly composed of silica gel, and

at least one non-glare and protective domain consisting of silica mainly composed of silica gel.

5,291,098

LIGHT EMITTING DEVICE

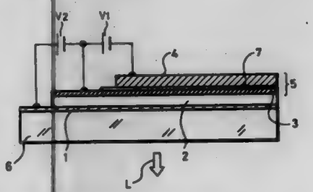
Masami Okita, and Katsuhiro Akimoto, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,124

Claims priority, application Japan, Mar. 7, 1991, 3-041809

Int. Cl.[5] H01J *1/54;* F21K *2/00*

U.S. Cl. 313—506 5 Claims



1. A light emitting device comprising:

(a) a transparent substrate;

(b) a substantially transparent first electrode layer formed on said transparent substrate;

(c) a phosphor layer formed on said first electrode layer;

(d) a second electrode layer formed on said phosphor layer;

(e) an insulating layer formed on said second electrode layer; and

(f) a third electrode layer formed on said insulating layer, wherein a hot electron is generated by the application of a voltage to said second and third electrode layers and said light emitting device is energized to become luminuous by injecting said hot electron thus generated into said phosphor layer.

5,291,099

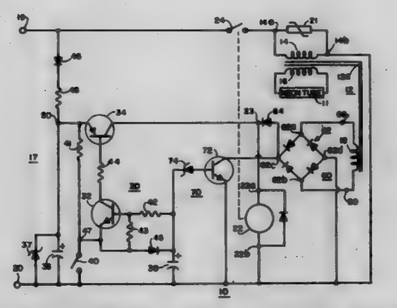
NEON SIGN POWER SUPPLY CIRCUIT WITH AUTOMATIC POWER INTERRUPTION

John M. Gill, Twin Lakes, Wis., and Robert H. Clausing, Lindenhurst, Ill., assignors to Actown-Electrocoil, Inc., Spring Grove, Ill.

Filed Jun. 18, 1992, Ser. No. 900,955

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—119 18 Claims



1. A power supply circuit for producing an operating voltage for a load comprising:

a step-up transformer having a primary winding, a secondary winding, and an auxiliary winding, said auxiliary winding being electrically independent of said secondary winding so that no current flows in common through said secondary winding and said auxiliary winding;

switching means operable when enabled to connect said primary winding to a source of alternating current, said primary winding being disconnected from said source when said switching means is disabled;

the load being connectable to said secondary winding;

enabling means for enabling said switching means to operate to connect said primary winding to said source of alternating current whereby an operating voltage is produced on said secondary winding for energizing the load when the load is connected to said secondary winding;

and load condition sensing means including said auxiliary winding for producing a control voltage for maintaining said switching means enabled only when the load is connected to said secondary winding,

said enabling means disabling said switching means to thereby disconnect said primary winding from said source in the absence of said control voltage.

5,291,100

LOW WATT METAL HALIDE LAMP APPARATUS

Robert J. Wood, Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation of Ser. No. 639,816, Jan. 9, 1991, Pat. No. 5,138,228. This application Nov. 3, 1992, Ser. No. 972,865

Int. Cl.[5] G05F *1/00;* H05B *37/02*

U.S. Cl. 315—136 19 Claims

1. A high efficacy low watt metal halide arc discharge apparatus having a lamp and a ballast control circuit comprising in combination:

a metal halide arc discharge lamp having a low power output;

a dc power source sufficient to operate said arc discharge lamp at a desired power level;

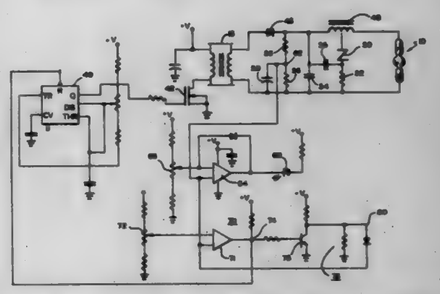
means for regulating the output voltage of said DC power source to a predetermined value;

a transformer having a primary and a secondary winding; said transformer being wound to have the characteristics that the output voltage of the transformer is inversely proportional to the output current of the transformer, and the lower output of the transformer is substantially constant when the secondary is connected to a varying resistive load;

an oscillator circuit switchably connected to said transformer primary winding to provide lamp operating power to said transformer;

switching means connecting and disconnecting said oscillating circuit to said transformer primary winding to limit the power input to said transformer;

said transformer secondary winding being connected to said arc discharge lamp;



a rectifier connected in series with said arc discharge lamp and the transformer secondary to convert the oscillator output to a pulsed DC lamp operating power; and

a starting and filtering inductive/capacitive network connected to said transformer secondary and said discharge lamp for both generating a high starting voltage and smoothing said pulsed DC operating power, said network being coupled to said lamp and supplying smooth DC operating power thereto;

so that said lamp can be started and operated at rated light output while automatically compensating for changing lamp resistance.

5,291,101

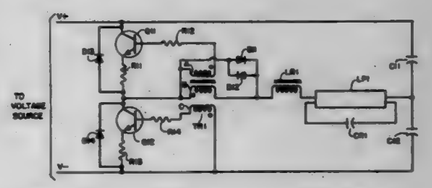
ELECTRONIC BALLAST FOR A DISCHARGE LAMP WITH CURRENT SENSING

T. Chandrasekaran, Bangalore, India, assignor to Micro Technology, Inc., Menomonee Falls, Wis.

Filed Jul. 28, 1992, Ser. No. 920,670

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—219 7 Claims



1. A ballast circuit for a fluorescent lamp comprising:

said inverter circuit connected to a source of direct current;

an inverter circuit including first and second switching transistors;

a transformer including a primary winding, first and second secondary windings;

said first secondary winding, 180 degrees out of phase with said second secondary winding;

said first and second secondary windings each including a circuit connection to said first and second switching transistors respectively;

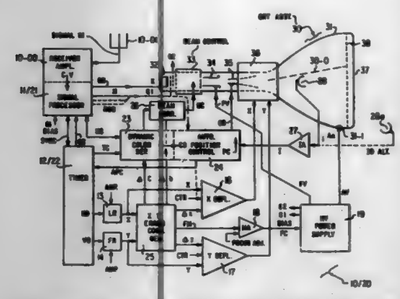
a resonant element connected between said lamp and said inverter circuit;
a pair of oppositely poled diodes connected in parallel;
a pair of diodes connected in parallel with said transformer;
said diodes operated to convert current into voltage for said transformer, causing positive, or in the alternative negative voltage to be applied across said transformer causing said transformer to detect a zero crossing of current in said primary winding;
said zero crossing of current sensing in said primary winding operated to cause voltages in said secondaries to change, said current in said transistors is zero, whereby stresses on said switching transistors are minimized.

5,291,102

DYNAMIC COLOR SEPARATION DISPLAY

Clayton A. Washburn, 24 Andrea La., Thornwood, N.Y. 10594

Continuation-in-part of Ser. No. 596,353, Oct. 12, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 836,380
Int. Cl.[5] H01J *29/52*
U.S. Cl. 315—383 **46 Claims**



1. A dynamic color separation color display system having input control signals including a color signal comprising
means for displaying a color output selectively activated by means for generating at least one energy beam and for directing the impingement of said energy beam onto successively selected pixels of a format of repetitive pixels in response to said input control signal, said format comprising a pattern of triads of color controlling stripes, each of said pixels having an elemental color selective area of a said triad located in prescribed relation to a reference position of said pixel.
color position control means for precisely controlling the position of said directed energy beam with respect to the reference position of successive pixels, and
dynamic color separation means responsive to the chromaticity of said color signal for selectively adjusting the position of said energy beam on said color selective area in relation to said reference position and for controlling size and energy distribution parameters of said energy beam thereby to control the area of impingement about said position on said color selective area to produce a color output corresponding to said chromaticity.

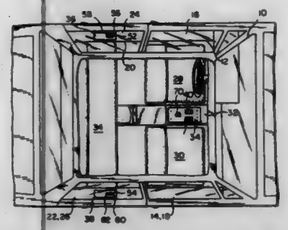
5,291,103

SYSTEM FOR CONTROLLING POWER WINDOWS OF VEHICLES

Moin Ahmed, Holly, and Arthur W. Fornell, Livonia, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 21, 1992, Ser. No. 994,155
Int. Cl.[5] H02K *7/14*
U.S. Cl. 318—3 **15 Claims**

1. A power window system for a vehicle having left and right front electrically operated windows and left and right rear electrically operated windows; wherein each window is raised and lowered by an electric motor operated by an operating switch; wherein each operating switch is controlled by a motor switch; and wherein the vehicle has a driver's seat proximate one of the front windows and a rear passenger seat proximate the rear windows, the power window system comprising:
a power supply line;
a main module located proximate the driver's seat and having thereon the operating switches for the front windows and a mode selection switch connected to the power supply line and movable between first, second and third positions;
means for mounting the operating switches for the left and right rear windows proximate the rear seat;



means for connecting all motor switches to the power line when the mode selection switch is in the first position whereby each window is operable by one of the operating switches specifically associated therewith;
means for disabling operation of the rear windows by means of the motor switches when the mode selection switch is in the second position while maintaining connection of the front window switches to the power line, whereby only the front windows are operable; and
means for connecting motors which operate the rear windows to the operating switches for the front windows, while disconnecting the front motors from the front operating switches, when the mode selection switch is in the third position, whereby operation of the front operating switches operates the rear windows and not the front windows.

5,291,104

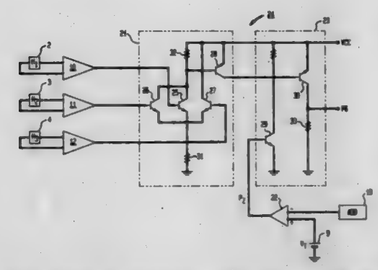
DC COMMUTATORLESS MOTOR

Yasuhiro Okada, Tadashi Itami, both of Yonago, and Yasutaka Tsukiyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 475,771, Feb. 6, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 865,703
Claims priority, application Japan, Feb. 8, 1989, 1-29117
Int. Cl.[5] H02P *5/06*
U.S. Cl. 318—254 **14 Claims**

1. A DC commutatorless motor comprising:
three-phase stator windings;
a rotor having magnetic poles, the number of said magnetic poles being 2n (where n is a natural number of 2 or more), one of said magnetic poles comprising a first region of one magnetic polarization and a second region within said first region, wherein said second region is oppositely magnetically polarized to said first region;
three detection devices disposed in the vicinity of said rotor, said detection devices being responsive to a magnetic field generated by said magnetic poles and said portion;
first to third amplifying means for amplifying respectively the outputs of said three detection devices;
first to third subtracting means for obtaining respectively the difference of the outputs of two of said first to third amplifying means;

an adding means for adding the outputs of said first to third subtracting means; and



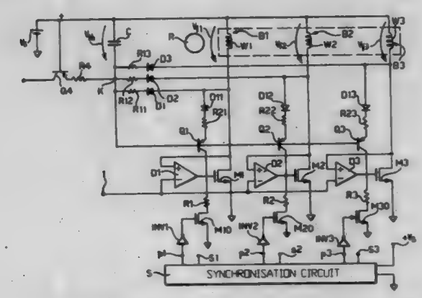
a signal means for generating a pulse per one revolution of said rotor on the basis of the output of said adding means.

5,291,105

CONTROL CIRCUIT FOR A HALF-WAVE BRUSHLESS MOTOR WITH A SURGE LIMITER

Franco Salerno, Alpignano, and Pietro De Filippis, Milan, both of Italy, assignors to Industrie Magneti Marelli, Milan, Italy

Filed Oct. 1, 1992, Ser. No. 955,352
Claims priority, application Italy, Oct. 15, 1991, T091A000783
Int. Cl.[5] H02K *23/00*
U.S. Cl. 318—254 **4 Claims**



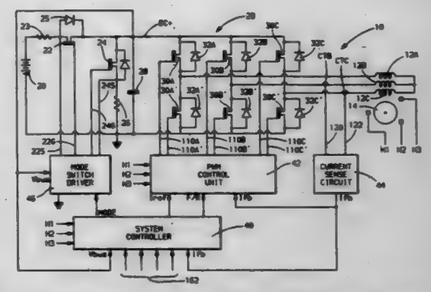
1. A control circuit for half wave brushless motor, comprising:
an assembly of n circuit branches, each of which includes an electronic power switch connected in series with a respective winding or phase of the motor, between the terminals of a DC voltage source, and in parallel with the other n-1 circuit branches;
pilot circuit means for providing an enabling signal that renders said electronic switches selectively and cyclicly conductive in a predetermined manner;
current recirculation means connected to the phases of the motor to drain transient current that circulates in each phase of the motor whenever the associated electronic power switch is turned off; and
voltage limiter means for limiting to a predetermined threshold voltage the voltage surge developed in each phase of the motor by said transient current;
said threshold voltage varies proportionally with the average of the superimposition envelope of the back electromotive forces developed in each phase of the motor.

5,291,106

SINGLE CURRENT REGULATOR FOR CONTROLLED MOTORING AND BRAKING OF A DC-FED ELECTRIC MOTOR

Balarama V. Murty, West Bloomfield, and Chandra S. Namuduri, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1992, Ser. No. 980,052
Int. Cl.[5] H02S *3/00*
U.S. Cl. 318—375 **10 Claims**



1. Control apparatus for a DC-fed motor control system, comprising:
an electric machine having an armature winding;
a rechargeable source of DC normally connected to a DC bus;
DC bus switching means connecting the armature winding to the DC bus, including transistor means for supplying current to the armature winding from the DC bus, and rectifier means for returning current from the armature winding to the DC bus;
current control means for modulating the transistor means (1) during a motoring mode of operation to control the current supplied to the armature winding, and (2) during a braking mode of operation to control the current returned to the DC bus;
an energy exchange capacitor connected across the DC bus;
a load resistor;
mode switching means effective when activated to interrupt the connection of the source to the DC bus, and to connect the load resistor across the DC bus in parallel with the capacitor;
sensing means effective during the braking mode of operation for detecting an operating condition for which the modulation of the transistor means is ineffective to control the current returned to the DC bus; and
means for activating the mode switching means in response to the detection of said operating condition by the sensing means, whereafter the capacitor takes the place of the source, the current returned to the DC bus is supplied to the load resistor, and the modulation of said transistor means become effective to control such returned current.

5,291,107

CIRCUIT FOR DRIVING REEL MOTOR OF VIDEOTAPE RECORDER

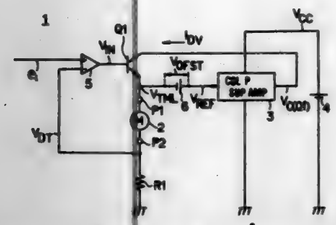
Masao Nagashima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 645,818, Jan. 25, 1991, abandoned. This application May 18, 1992, Ser. No. 887,556
Claims priority, application Japan, Jan. 31, 1990, 2-20918
Int. Cl.[5] A02P *7/00*
U.S. Cl. 318—432 **2 Claims**

1. A load driving circuit comprising a drive transistor having a predetermined saturation voltage, said drive transistor being connected to a load in series for supplying output power to said

load through said drive transistor, wherein said load comprises a reel motor of a video tape recorder and said circuit comprises:

a collector power supplying circuit connected between a voltage source and a collector of said drive transistor for supplying to said drive transistor said output power; and



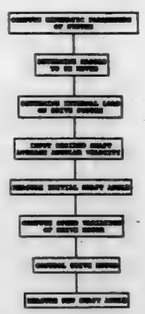
an offset power supplying circuit connected to said voltage source and to said collector power supplying circuit and producing an offset voltage connected to an emitter of said drive transistor for adding a predetermined constant offset voltage greater than said saturation voltage to a voltage generated at a connection point between said load and said drive transistor.

5,291,108

METHOD OF EQUALIZING THE TORQUE ON A DRIVE OF A PILGER ROLLING MILL

Josef Gerretz, Viersen; Michael Boensch, and Klaus Rehag, both of Mönchengladbach, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 883,089
Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4116307
Int. Cl.[5] B21B *21/00, 37/00*
U.S. Cl. 318—433 9 Claims



1. A method of equalizing the torque on a crank drive of a roll stand having a crank shaft operating under an external load, having reciprocating components moved linearly back and forth by the action of the crank drive of a Pilger rolling mill, the components having kinematic parameters and masses, comprising the steps of:

inputting a speed of mill operation;

mathematically calculating a variation in a speed of rotation of the crank drive from the input speed of operation, the kinematic parameters, the masses moved, and the external load; and

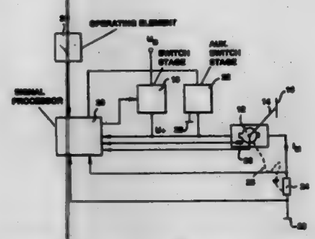
outputting the calculated value as a desired course of the angular velocity of the crank drive.

5,291,109

WINDSHIELD WIPER SYSTEM

Cornelius Peter, Otterswelher, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00388, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/19631, PCT Pub. Date Dec. 26, 1991
PCT Filed Mar. 11, 1991, Ser. No. 950,509
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1990, 4018713
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—443 6 Claims



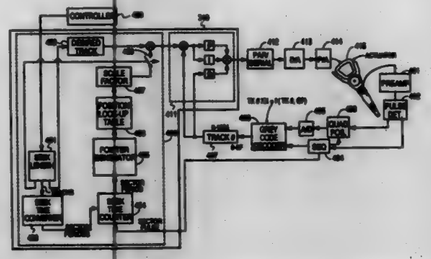
1. A windshield wiper system comprising at least one electrical drive motor that makes available a driving moment for at least one windshield wiper performing a back and forth movement on a pane to be cleaned, and a signal processing arrangement which by way of an electrical switching stage controls the rotation rate of the motor to a constant value, said switching stage determining the operating voltage of the motor as a function of the current flowing through the motor.

5,291,110

LOW ACOUSTIC NOISE SEEKING METHOD AND APPARATUS

Thomas L. Andrews, Jr., Ward, and Gary E. Counts, Arvada, both of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Filed Oct. 31, 1991, Ser. No. 786,333
Int. Cl.[5] G11B *21/02*
U.S. Cl. 318—560 19 Claims



1. In a miniature disk drive, a silent seek servo system comprising:

a microprocessor; and

a seek controller, operating in said microprocessor and responsive to a seek command from a disk controller, for generating a positioning signal for an actuator of said miniature disk drive wherein said positioning signal upon application to said actuator moves said actuator with a smooth, continuous, and completely symmetric acceleration trajectory thereby minimizing acoustic noise generated by acceleration and deceleration of said actuator, said seek controller further comprising:

means, responsive to each sector pulse generated during a seek, for counting each sector pulse generated during said seek wherein each sector pulse represents one sector period; and

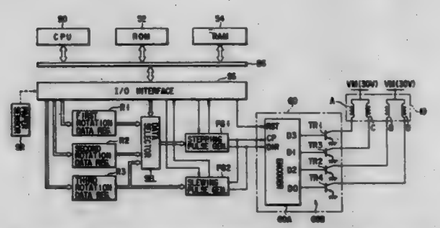
look-up table means, operatively coupled to said counting means, having a plurality of values wherein each value represents an actuator position for an elapsed time of the seek and further wherein said elapsed time is measured in terms of sector periods.

5,291,111

DRIVE CONTROLLER AND DRIVE CONTROL METHOD FOR A STEPPING MOTOR WITHOUT A STEP OUT ERROR

Takahisa Hirano, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,716
Claims priority, application Japan, May 28, 1991, 3-123456
Int. Cl.[5] G05B *11/26*
U.S. Cl. 318—563 10 Claims



1. A drive controller for a stepping motor having a plurality of excitation phases which designate corresponding stepping positions, said drive controller comprising:

driving means for sequentially exciting the excitation phases of said stepping motor to rotate said stepping motor in increments of one step between corresponding stepping positions thereof; and

control means for controlling said driving means to set an excitation interval at which the excitation phases are sequentially excited, said stepping motor being driven in a stepping mode, in which rotation of said stepping motor temporarily stops at each stepping position after each incremental rotation of one step, when said excitation interval is set in a stepping range, and said stepping motor being driven in a slewing mode, in which rotation of said stepping motor is continued without stopping at each stepping position after each incremental rotation of one step, when said excitation interval is set shorter than the stepping range;

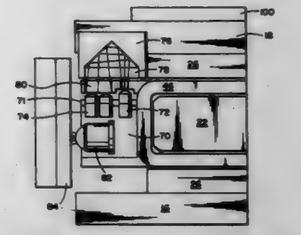
wherein said control means includes position correcting means for controlling said driving means, prior to a driving of said stepping motor in said slewing mode, to sequentially excite a predetermined number of excitation phases to drive said stepping motor in said stepping mode, with a final excitation phase being set as an excitation phase corresponding to a stepping position from which rotation of said stepping motor starts in said slewing mode.

5,291,112

POSITIONING APPARATUS AND MOVEMENT SENSOR

John P. Karidis, Ossining; Gerard McVicker, Wappingers Falls, and Joseph P. Pawletko, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 596,111, Oct. 11, 1990, Pat. No. 5,180,955.
This application Dec. 7, 1992, Ser. No. 986,269
Int. Cl.[5] B25J *9/14*
U.S. Cl. 318—568.1 17 Claims



1. A high speed multi-bar positioner comprising:

a positioning linkage with a changeable parallelogram structure and a relatively stationary base structure;

means for moving said parallelogram structure relative to said base structure to position an end-effector, connected to said parallelogram structure, to a desired position; and

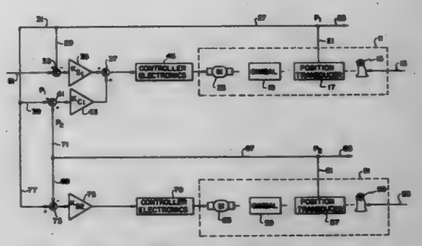
means for sensing movement of said parallelogram structure comprising an optical encoder including two infrared LEDs and four miniature photodetectors facing a first direction and being mounted to an arm of said parallelogram structure and, a corner reflector mounted to said base structure such that light from said LEDs can be directed to said corner reflector and redirected to said photodetectors.

5,291,113

SERVO COUPLED HAND CONTROLLERS

Jeffrey W. Hegg, North Redington Beach, and Wayne E. Lance, Largo, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1992, Ser. No. 957,216
Int. Cl.[5] B64C *13/18;* G05D *1/08*
U.S. Cl. 318—584 7 Claims



1. A servo coupled hand control system comprising:

coupled first manual control means and second manual control means for generating control signals in response to respective manual inputs, said first manual control means being a leading control means and said second manual control means being a following control means;

first position detecting means for detecting the position of said first manual control means and for generating a first position signal in response thereto;

first torque detecting means for detecting torque exerted on said first manual control means and for generating a first

torque signal representative of said torque exerted on said first manual control means in response thereto;

first summing means for summing said first position signal and said first torque signal for generating a first torque error signal;

first controller electronics means for processing said first torque error signal to generate a command signal for said first manual control means to produce a predetermined force versus displacement characteristic for said first manual control means; and

second controller electronics means for receiving and processing said first torque signal from said first torque detecting means for generating a command signal for causing said second manual control means to track in position said first manual control means.

5,291,114

METHOD OF AND APPARATUS FOR CONTROLLING A SHEET FEEDING MOTOR USED IN A PRINTER

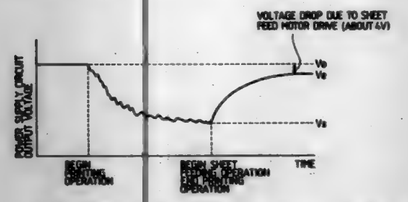
Hiroshi Shirotori, and Katsuhiko Nishizawa, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 20,122

Claims priority, application Japan, Apr. 17, 1992, 4-98134

Int. Cl.[5] G06K *15/00*

U.S. Cl. 318—685 **6 Claims**



1. A sheet feeding motor controller for use in a printer, the controller for controlling a driving signal used to drive a motor in accordance with the level of a printer power supply voltage within the printer, the controller comprising:

means for detecting a power supply voltage;

a first memory device for storing information representing a characteristic voltage restoration curve of the printer power supply;

a second memory device for storing information representing the relationship between a rotational speed of the motor and a plurality of voltages making up the characteristic printer power supply restoration curve;

means for estimating a current power supply voltage on the characteristic restoration curve from the information stored in said first memory device;

means for reading a rotational speed from said second memory device corresponding to the current power supply voltage estimated by said estimating means; and

means for changing the speed of the motor in accordance with the read rotational speed.

5,291,115

METHOD AND APPARATUS FOR SENSING THE ROTOR POSITION OF A SWITCHED RELUCTANCE MOTOR WITHOUT A SHAFT POSITION SENSOR

Mehrdad Ehsani, Bryan, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Sep. 25, 1992, Ser. No. 951,590

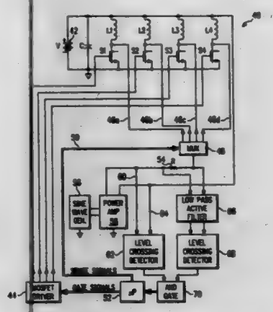
Int. Cl.[5] G05B *11/00*

U.S. Cl. 318—701 **28 Claims**

1. A method of detecting rotor position in a switched reluctance motor having multiple stator phases which are energized in synchronism with rotor position by a commutating signal comprising:

applying a sinusoidal signal to a non-excited stator phase of the motor, the frequency of said sinusoidal signal being different than the frequency of the commutating signal;

detecting variances in a predetermined characteristic of said sinusoidal signal and;



generating an indication of the position of said rotor in dependence upon said detected predetermined characteristic of said sinusoidal signal.

5,291,116

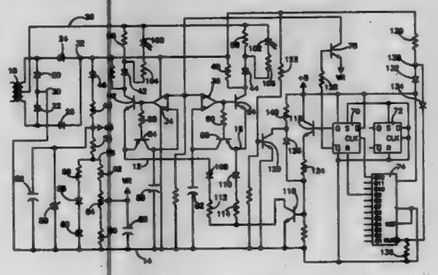
APPARATUS FOR CHARGING ALKALINE ZINC-MANGANESE DIOXIDE CELLS

Robert S. Feldstein, Pelham Manor, N.Y., assignor to Batonex, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 826,002, Jan. 27, 1992. This application Sep. 23, 1992, Ser. No. 950,066

Int. Cl.[5] H01J *7/00*

U.S. Cl. 320—4 **20 Claims**



1. A battery charger for charging primary alkaline zinc-/manganese dioxide cells and for applying current to said cells, wherein said battery charger comprises:

(a) means for producing a direct current voltage of from about 1.6 to about 1.7 volts when said charger is at a temperature of 25 degrees centigrade;

(b) means for individually and independently limiting the voltage delivered by said battery charger to each of said cells to a cell voltage of from about 1.6 to about 1.7 volts when each of said cells is measured at a temperature of 25 degrees centigrade;

(c) means for individually and independently limiting said current applied to each of said cells by said battery charger;

(d) means for individually and continuously varying said current applied to each of said cells by said battery charger, wherein, during a portion of the time each of said cells has said current applied to it, the current supplied to any one of said cells differs from the current supplied to any other of said cells; and

(e) means for reducing the current applied to any of said cells when said cells have reached a cell voltage which is substantially equal to said direct current voltage.

5,291,117

METHOD AND AN APPARATUS FOR CHARGING A BATTERY

Sten Å. O. Rydborn, Klöxhultsvägen 21, S-343 00 Älmhult, Swedes

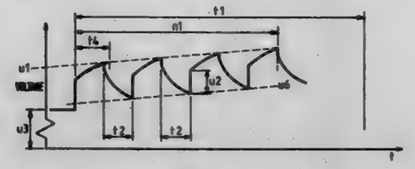
PCT No. PCT/SE90/00239, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/12441, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 6, 1990, Ser. No. 768,656

Claims priority, application Sweden, Apr. 12, 1989, 8901317.1

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—21 **7 Claims**



1. A method of controlling the charging of a battery, the battery having a critical voltage at which gas formation occurs in the battery, having an open-circuit rest voltage, and being coupled to a battery charger for applying a charging circuit to input conductors of the battery, said method comprising the steps of:

(a) applying a charging current from the battery charger to the battery input conductors during a first time interval (t4) to cause a pole voltage across the battery input conductors to increase, the pole voltage including at least the most recent rest voltage of the battery plus the amount of a voltage drop, across the battery input conductors and an internal resistance of the battery, due to the charging current;

(b) if the pole voltage reaches a preset level substantially equal to the battery critical voltage, terminating the charging current for a second time interval (t2) to cause the voltage across the battery input conductors to drop to a new rest voltage;

(c) if the first time interval elapses without the pole voltage reaching the preset level, terminating the charging current for the second time interval (t2) to cause the voltage across the battery input conductors to drop to a new rest voltage;

(d) repeating steps (a) through (c) during a third time interval (t1) for a maximum of a first predetermined number (n1) of repetitions;

(e) terminating the repetition of steps (a) through (c) for a fourth time interval (M1);

(f) measuring a new rest voltage across the battery input conductors;

(g) repeating steps (a) through (f) for so long as the new rest voltage is higher than the most recent previous rest voltage.

5,291,118

DEVICE FOR DETECTING CONNECTION OR DISCONNECTION OF A BATTERY TO AN ELECTRIC CHARGER

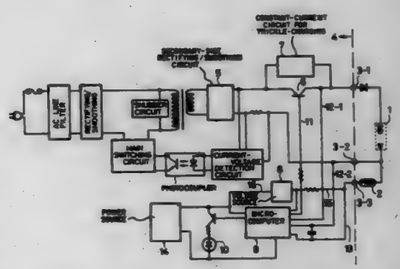
Makio Kojima, Yokohama, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Jun. 12, 1992, Ser. No. 897,775

Claims priority, application Japan, Jun. 14, 1991, 3-240120

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—35 **2 Claims**



1. A device for detecting connection or disconnection of a battery to or from an electric charger, said device comprising:

a circuit means for continuously monitoring from a start of charging of said battery and for protecting said battery from rapid charging thereof, said circuit means including a heat element, a temperature detecting line and a data processor, wherein one end of said heat element is connected to said battery, and wherein said temperature detecting line connects another end of said heat element to said data processor; and

a reference voltage source connected to another end of said heat element, wherein when said data processor detects a voltage at said temperature detecting line in a case where said electric charger is in a no-load condition, then said data processor has detected said battery to be disconnected from said electric charger, and wherein said data processor having a timer which is set therein in advance for rapid charging is reset.

5,291,119

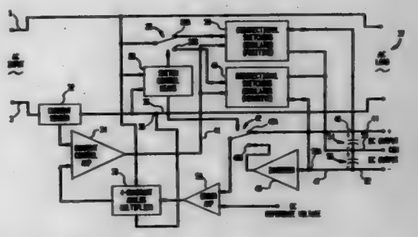
LOW DISTORTION ALTERNATING CURRENT OUTPUT ACTIVE POWER FACTOR CORRECTION CIRCUIT USING TWO BI-DIRECTIONAL SWITCHING REGULATIONS

Philip M. Cowett, Jr., Baltimore, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 5, 1993, Ser. No. 864

Int. Cl.[5] H02M *1/12*

U.S. Cl. 323—207 **10 Claims**



1. A low distortion alternating current output active power factor correction circuit, comprising:

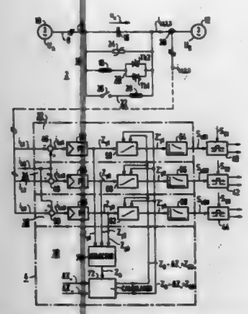
VOL 1160 ISS 1 MR 1 1994 UMI

a pair of alternating current input lines;
switching means connected to one of the pair of alternating current input lines;
bi-directional switching regulator means connected to the switching means and operative in one polarity and in an opposite polarity;
a current sensor connected to the other of the pair of alternating current input lines, with said current sensor providing an output at an output conductor;
control means connected to the one of the pair of input lines, the current sensor output conductor and the switching means and effective for controlling the switching means to render the bi-directional switching regulator inactive in one of the one and the opposite polarities;
the bi-directional switching regulator means connected to an output conductor in the one polarity, to an output conductor in the opposite polarity and to a common output conductor;
a first bulk energy storage capacitor connected across the output conductor in one polarity and the common output conductor, with a direct current output being provided across said first capacitor;
a second bulk energy storage capacitor connected across the output conductor in the opposite polarity and the common output conductor, with a direct current output being provided across said second capacitor; and
a power factor corrected alternating current output being provided across the one alternating current input line and the output conductor of the current sensor for being connected to an alternating current load.

5,291,120
METHOD AND APPARATUS FOR SYMMETRICALLY MODULATING A CONTROLLED SERIES COMPENSATION SYSTEM

Karl-Friedrich Leowald, Uttenreuth-Weiher, and Stephan Weiss, Mergentheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 18, 1993, Ser. No. 63,283
Claims priority, application European Pat. Off., May 18, 1992, 92108335.8
Int. Cl.[5] G05F *1/70, 3/00, 5/00*
U.S. Cl. 323—209 **5 Claims**

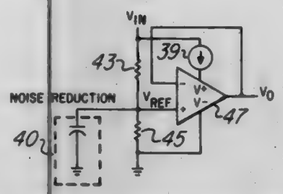


1. A method for symmetrically modulating a controlled series compensation system in electrical networks, comprising steps of:
generating impedance manipulated variables in response to conduction currents of said controlled series compensation system and in response to a setpoint value for conduction current;
selecting a reference manipulated variable for impedance from said generated impedance manipulated variables, wherein the selected reference manipulated variable for impedance is greater than or equal to a smallest of said impedance manipulated variables and is less than or equal to a largest of said impedance manipulated variables;
determining a minimum limiting value and a maximum limiting value by respectively adding and subtracting a positive and negative deviation from said selected reference manipulated variable for impedance;
limiting each generated impedance manipulated variable to a value in response to said maximum and minimum limiting value; and
providing said limited impedance manipulated variables as firing-angle signals to a firing-circuit subassembly.
3. An apparatus for symmetrically modulating a controlled series compensation system in electrical networks, comprising:
a current controller generating impedance manipulated variables in response to conduction currents of said controlled series compensation system and in response to a setpoint value for conduction current;
a selector selecting a reference manipulated variable for impedance from said impedance manipulated variables generated by said current controller, wherein the selected reference manipulated variable for impedance is greater than or equal to a smallest of said impedance manipulated variables and is less than or equal to a largest of said impedance manipulated variables;
a calculator determining a minimum limiting value and a maximum limiting value by respectively adding and subtracting a positive and negative deviation from said reference manipulated variable for impedance selected by said selector;
a limiter limiting each impedance manipulated variable generated by said current controller to a value in response to said maximum and minimum limiting value determined by said calculator; and
a characteristic generator providing said limited impedance manipulated variables as firing-angle signals to a firing-circuit subassembly.

5,291,121
RAIL SPLITTING VIRTUAL GROUND GENERATOR FOR SINGLE SUPPLY SYSTEMS

Todd M. Neale, Carrollton; Brad P. Whitney, Garland, and Mark E. Granahan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 758,039, Sep. 12, 1991, abandoned. This application Mar. 24, 1992, Ser. No. 856,856
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 **30 Claims**

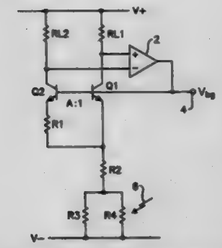


1. A rail splitting virtual ground generator circuit, comprising:
first and second resistors, coupled to an voltage reference node and further coupled between first and second supply voltages, operable such that a predetermined reference voltage is available at the voltage reference node;
a bias current source coupled to said first supply voltage;
an operational amplifier coupled to said reference voltage in a unity gain configuration, having an output coupled to an output terminal, and powered by said bias current source and said second supply voltage;
a noise reduction input coupled to said reference voltage; and
operable to provide a stable voltage at the output terminal which is equal to half the difference between said first and second supply voltages over a wide range of supply voltage and temperature conditions.

5,291,122
BANDGAP VOLTAGE REFERENCE CIRCUIT AND METHOD WITH LOW TCR RESISTOR IN PARALLEL WITH HIGH TCR AND IN SERIES WITH LOW TCR PORTIONS OF TAIL RESISTOR

Jonathan M. Audy, Campbell, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 11, 1992, Ser. No. 897,312
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 **19 Claims**



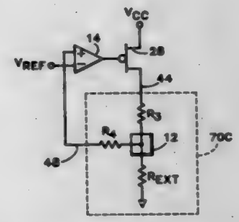
9. A bandgap voltage reference circuit, comprising:
a pair of transistors having respective bases, collectors and emitters,
an output voltage terminal connected to the bases of said transistors,
means for establishing unequal emitter current densities in said transistors,
a first resistor having a relatively low temperature coefficient of resistance (TCR) connected between the emitters of said transistors,
second and third resistors having respective relatively low and relatively high TCRs connected in series between the emitter of one of said transistors and a voltage reference, and
a fourth resistor having a relatively low TCR connected in parallel with said third resistor, the TCRs of said third and fourth resistors and the ratio between their resistance values being selected to substantially compensate for a Tln(T) deviation from linearity in the voltage at said output terminal that is present in the absence of said third and fourth resistors, where T is absolute temperature.

5,291,123
PRECISION REFERENCE CURRENT GENERATOR

Charles A. Brown, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 9, 1992, Ser. No. 944,852
Int. Cl.[5] H03H *11/00*
U.S. Cl. 323—369 **7 Claims**

1. A resistance circuit block for use in an integrated circuit reference current generator comprising:
a current node through which a current from a voltage-controlled current source is supplied;
a voltage sensing node for supplying voltage feedback to the voltage-controlled current source;
an external bonding pad for coupling to an external current-setting resistor;
a first electrostatic protection resistor coupled between the current node and the external bonding pad; and

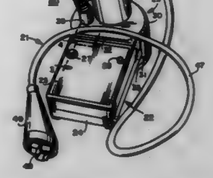


a second electrostatic protection resistor coupled between the voltage sensing node and the external bonding pad.

5,291,124
TESTER FOR HIGH VOLTAGE MEASURING APPARATUS

Mark R. Hoffman, Lake Forest, Ill., and Niels C. Pedersen, Jr., Hillsboro, Wis., assignors to HD Electric Company, Deerfield, Ill.

Filed Jun. 30, 1992, Ser. No. 906,694
Int. Cl.[5] G01R *31/02, 1/04*
U.S. Cl. 324—72.5 **19 Claims**



1. A portable tester for a high-voltage measuring apparatus which includes two electrically conductive probes for electrical coupling respectively to points in a high-voltage circuit between which the potential is to be measured, with at least one of the probes being disposed at a probe end of an elongated electrically insulating pole, and a voltmeter connected across the probes, said tester comprising: housing means including an elongated tubular socket formed of electrically insulating material and having an open outer end and a closed inner end and dimensioned to receive the probe end of the pole, generating means disposed in said housing means and having a pair of output terminals and generating a high-voltage test signal across said output terminals, and two contact terminals respectively connected to said output terminals and respectively disposed for electrical connection to the probes, one of said contact terminals being disposed at the inner end of said tubular socket for electrical contact with the probe end of the pole when it is inserted in the socket.

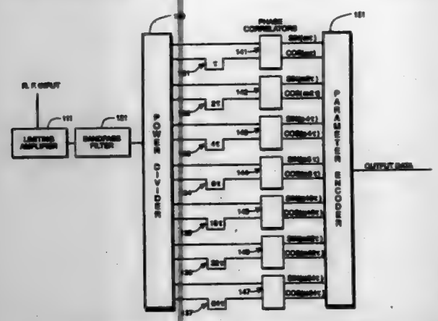
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,125

INSTANTANEOUS FREQUENCY MEASUREMENT (IFM) RECEIVER WITH TWO SIGNAL CAPABILITY

James B. Y. Tsui, Dayton, and James N. Hedge, Medway, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1992, Ser. No. 947,682
Int. Cl.[5] G05F 15/31; G01R 23/00
U.S. Cl. 324—76.22 2 Claims



1. An instantaneous frequency measurement (IFM) system comprising first, second and third IFM receivers, cooperating in a given frequency range from a given lower frequency to a given upper frequency, each IFM receiver having the capability to detect simultaneous signals, a first filter coupled to an input of the first IFM receiver, a second filter coupled to an input of the second IFM receiver, a third filter coupled to an input of the third IFM receiver, the first filter being a bandpass filter for the given frequency range, the second filter being a low pass filter with a band edge at said given lower frequency and having a skirt including said given frequency range with a high response at the given lower frequency and a low response at the given upper frequency, the third filter being a high pass filter with a band edge at the given upper frequency and having a skirt including said given frequency range with a low response at the given lower frequency and a high response at the given upper frequency, whereby the pass band of the first filter is used, and said skirts of the second and third filters are used, input means coupling an RF input line to inputs of the first, second and third filters, processor means coupled to outputs of the first, second and third IFM receivers;

wherein each of said first, second and third IFM receivers includes correlator means and simultaneous signal detection means which will produce an error signal in response to there being erroneous data due to the presence of simultaneous signals;

wherein in response to simultaneous signals S1 and S2 having amplitudes A_1 and A_2 respectively and frequencies f_1 and f_2 respectively at said RF input line, due to the sloped of the second and third filters, one of said signals will have a greater amplitude than the other at the input of at least one of the IFM receivers to correctly report the frequency thereof, and each of the IFM receivers will either report a correct frequency or generate said error signal, depending on the relative amplitude and frequency values;

wherein the processor means includes means responsive to output signals from the correlator means and simultaneous signal detection means of one of the IFM receivers, and the correctly reported one of the frequencies for determining the value of the other frequency;

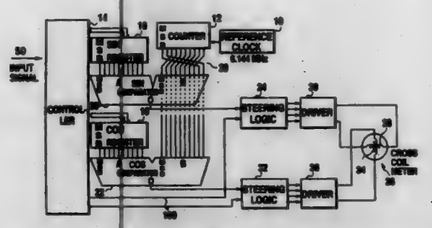
whereby the IFM system is able to determine and report the frequencies of both the first and second signals within a dynamic range substantially greater than a dynamic-range simultaneous-signals reporting capability of the first, second and third IFM receivers individually.

5,291,126

PULSE WIDTH MODULATION DRIVING CIRCUIT FOR A CROSS COIL METER

Hiroshi Murase, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 13, 1992, Ser. No. 867,449
Claims priority, application Japan, Apr. 17, 1991, 3-085415
Int. Cl.[5] G01R 11/36, 11/30
U.S. Cl. 324—144 18 Claims



1. A meter drive apparatus equipped with means for generating first parallel data indicating a directive value of a meter, said apparatus comprising:

(a) a counter for counting reference clocks to generate second parallel data;

(b) means for cyclically bit-shifting the second parallel data to generate third parallel data;

(c) a comparator for comparing the first parallel data with the third parallel to output a binary output according to the result of comparison; and

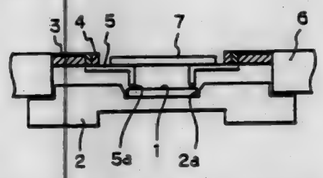
(d) means for controlling the directive of the meter based on the output of said comparator.

5,291,127

CHIP-LIFETIME TESTING INSTRUMENT FOR SEMICONDUCTOR DEVICES

Khee Park; Jin H. Yoon; Oh S. Kwon, all of Seoul, and Gi Y. Jeon, Kyungki, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Oct. 17, 1991, Ser. No. 778,568
Claims priority, application Rep. of Korea, May 3, 1991, 91-7163
Int. Cl.[5] G01R 31/28, 31/02
U.S. Cl. 324—158 F 7 Claims



1. An instrument for testing chips of semiconductor devices, comprising:

a tray having a slot to hold a chip to be tested, said chip having an arrangement of electrodes thereon;

a plurality of probes for contacting the electrodes on said chip;

a substrate to which said probes are connected, said substrate having circuit patterns connected to said probes for electrical testing of said chip;

said substrate being substantially flat and said probes projecting from said substrate substantially in the plane of said substrate, said probes having ends for contacting the electrodes;

said substrate being selectively mountable on said tray for bringing said ends of the probes into contact with said electrodes;

marking means on the chip and the substrate for indicating angular corresponding of the substrate and the chip and consequent correspondence of the probes and the electrodes; and

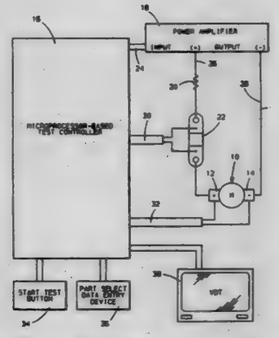
means on said substrate for engaging said tray to align and fix the ends of said probes and said electrodes when the substrate is mounted on said tray.

5,291,128

MOTOR TESTING APPARATUS UTILIZING INERTIAL LOADING

Manoj M. Shekar, Rochester; Charles R. Eimers, Holley, and Daniel P. Welker, Rochester, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 19, 1992, Ser. No. 885,936
Int. Cl.[5] G01R 33/00
U.S. Cl. 324—158 MG 2 Claims



2. Apparatus for dynamically testing a motor under load, comprising

excitation means including a power supply for applying a test voltage to the motor, the test voltage having an amplitude which sinusoidally oscillates at a frequency which produces oscillatory forward and reverse displacement of an armature of said motor;

sensor means for measuring specified motor operating parameters during the application of said test voltage to said motor;

analyzing means for comparing said measured operating parameters with predetermined limit values to detect a defect in said motor; and

output means for indicating a rejection of said motor in response to the detection of a defect by said analyzing means.

5,291,129

CONTACT PROBE

Toshio Kazama, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 652,088, Feb. 7, 1991, abandoned, which is a division of Ser. No. 424,511, Oct. 20, 1989, Pat. No. 5,004,977. This application Sep. 2, 1992, Ser. No. 939,852
Claims priority, application Japan, Oct. 24, 1988, 63-138376; Mar. 3, 1989, 1-24651; May 1, 1989, 1-112691
Int. Cl.[5] G01R 1/073, 31/02
U.S. Cl. 324—158 P 12 Claims

1. A contact probe for connection to an external circuit, comprising:

an electroconductive needle member;

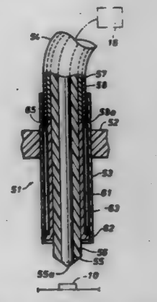
an insulator assembly radially covering said needle member;

a tubular holder slidably receiving said insulator assembly and said needle member;

spring means for biasing said needle member so as to project an exposed forward end of said needle member from one end of said tubular holder;

said insulator assembly comprising a reduced-diameter portion disposed inside said tubular holder and adjacent to said one end of said tubular holder, and a larger diameter portion disposed radially outward from and partially covering said reduced-diameter portion, said larger-diameter portion defining an annular shoulder portion at the forward end thereof which faces said exposed forward end of said needle member;

said tubular holder including an annular shoulder remote from said one end of said tubular holder, said annular shoulder extending radially inwardly of said tubular holder for engaging said annular shoulder of said insulator



assembly, thereby restricting an extent to which said forward end of said needle member projects from said one end of said tubular holder;

a sleeve member securely fitted on said reduced diameter portion of said insulator assembly adjacent to said exposed forward end of said needle member and provided with an annular shoulder opposing said annular shoulder of said tubular holder; and

lead means comprising a continuous and integral extension of said needle member for electrically connecting said needle member to a said external circuit;

said spring means comprising a compression coil spring circumferentially surrounding said reduced-diameter portion of said insulator assembly and disposed in said tubular holder, said spring means engaged with said annular shoulder of said tubular holder at its one end and with said annular shoulder of said sleeve member at its other end.

5,291,130

VEHICLE WHEEL SPEED SENSOR EMPLOYING AN ADAPTABLE ROTOR CAP

James M. Kendzior, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 25, 1993, Ser. No. 8,028
Int. Cl.[5] G01P 3/488; H02K 11/00; B60B 27/00
U.S. Cl. 324—174 5 Claims

1. A vehicle wheel speed sensor comprising:

a wheel hub having an axis of rotation rotationally mounted to a vehicle axle spindle having an axial passageway therethrough, said wheel hub having a hub cavity therein where said hub cavity has an inner annular surface;

a hub cap secured to said wheel hub forming a cavity having a flange extending from said hub cap and piloting on said inner annular surface of said hub cavity, said flange having a plurality of flange teeth extending in an axial direction and axially extending into said hub cavity;

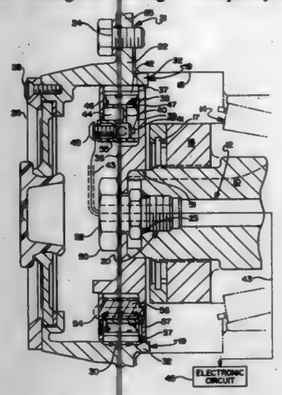
a stator disc having a plurality of stator teeth formed on a

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circular peripheral edge, said stator disc nonrotatably attached to said axle spindle, said circular peripheral edge having an outer diameter slightly smaller than an inner diameter of said flange and in substantial alignment with said flange, said flange teeth being in relatively close proximity to said stator teeth for magnetic interaction therewith;

a plurality of magnets having a curved inner and a parallel curved outer radial surface mounted on said stator disc, said magnets oriented having matching magnetic poles facing axially inward to create a magnetic field which travels through said stator teeth and said flange teeth;

an annular sensing coil having a multiplicity of turns of



electrical wire surrounding said axis of rotation of said wheel hub and interposed between said magnets and inner annular surface and attached to said stator disc;

electronic circuit means for processing an electrical signal;

a lead wire connected to said sensing coil and extending into said spindle axial passageway and connected to said electronic circuit means;

securing means holding said stator disc to said axle spindle; and

a locating plate nonrotatably attached to said stator disc, said locating plate having a circular peripheral edge in close proximity to said inner annular surface of said hub cap, said annular sensing coil interposed between said locating plate and said stator disc.

5,291,131

APPARATUS FOR MEASURING ELONGATION OF A CIRCULATING CHAIN

Kenshi Suzuki, Takatsuki; Takerou Nakagawa, Osaka, and Sachihiko Maeda, Hirakata, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 30,833
Claims priority, application Japan, Mar. 31, 1992, 4-026547
Int. Cl.[5] G01B *7/04*
U.S. Cl. 324—206 **3 Claims**

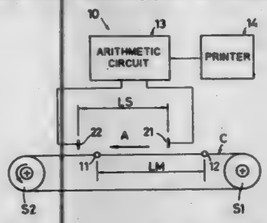
1. In an apparatus comprising a chain, configured in a closed loop and arranged to move in a circulating path, a device for measuring the elongation of the chain comprising:

means providing a pair of indices on the chain, said indices being spaced from each other in the direction of circulating movement of the chain in said circulating path;

means, comprising a pair of sensors, disposed at predetermined positions along said circulating path and spaced from each other in the direction of said path, for detecting said indices and producing signals as the indices pass said predetermined positions; and

calculating means, responsive to said signals produced by the sensors, for arithmetically determining elongation of said chain on the basis of the distance between said sensors and the time required for each of said indices to pass both of said sensors;

wherein said chain comprises link plates extending in the direction of said circulating path and means, comprising



pins extending transverse to the direction of said circulating path, for connecting said link plates together; and

wherein said indices are constituted by elements from the group consisting of tongues formed on two selected link plates of the chain, and projecting portions, provided on two selected ones of said pins.

5,291,132

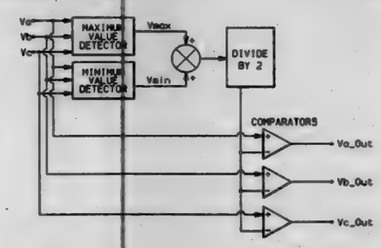
Patent Not Issued For This Number

5,291,133

MULTI-BIT ENCODER SIGNAL CONDITIONING CIRCUIT HAVING COMMON MODE DISTURBANCE COMPENSATION

Kalyan P. Gokhale, Shelby Township, Macomb County, and Thaddeus Schroeder, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1992, Ser. No. 933,536
Int. Cl.[5] G01B *7/30*; H03M *1/22*; G01R *19/30*
U.S. Cl. 324—207.25 **6 Claims**



1. An angular position sensor for a rotary shaft, comprising:

means for sensing position of the rotary shaft and generating a plurality of analog signals, each analog signal having a maximum level over a respective predetermined angle of the shaft and a minimum level over a remaining angle of the shaft, the respective predetermined angles of the analog signals being offset from one-another so that at least one of the analog signals is at a maximum level and at least one of the analog signals is at a minimum level;

means for continuously determining a midpoint value of the maximum and minimum levels of the analog signals; and

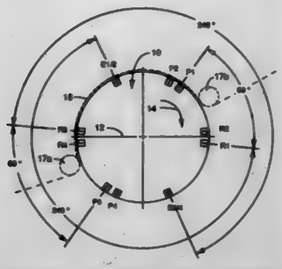
means for comparing the analog signals with the midpoint value and generating a multi-bit digital signal, each bit of the multi-bit digital signal corresponding to a respective one of the analog signals and having a first logic level when the respective analog signal is greater than the midpoint value and having a second logic level when the respective analog signal is less than the midpoint value, wherein the multi-bit digital signal changes with different positions of the rotary shaft in response to the analog signals changing between the maximum and minimum levels to provide and indication of the angular position of the rotary shaft.

5,291,134

ERASE HEAD POSITIONING METHOD

Steven L. Magnusson, Redwood City, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.

Filed Nov. 13, 1992, Ser. No. 975,914
Int. Cl.[5] G01R *32/12*
U.S. Cl. 324—212 **5 Claims**



1. In a video tape recording and reproducing apparatus utilizing a rotary scanner having record head assemblies, playback head assemblies, and at least first and second generally opposed erase heads, a method for determining the alignment of the erase heads relative to the record head, said method comprising:

inserting into said apparatus a magnetic tape prerecorded on said apparatus and having a plurality of adjacent tracks recorded thereon;

scanning said tape;

energizing said at least first and second erase heads momentarily, successively and periodically for erasing portions of information from said tracks while leaving portions of recorded information therebetween;

playing back a channel of the thus erased tracks, said channel including one track followed by the next non-adjacent track; and

analyzing the playback waveform envelope to determine the relative alignment of the record heads to the erase heads based on the shape of the resulting envelope.

5,291,135

WEAK MAGNETIC FIELD MEASURING SYSTEM USING DC-SQUID MAGNETOMETER WITH BIAS CURRENT ADJUSTMENT AND/OR DETECTING FUNCTION OF ABNORMAL OPERATION

Masao Hotta, Hanno; Hisashi Kado, Kashiwa, and Keiko Makie, Tokyo, all of Japan, assignors to Hitachi Ltd. and Director-General of the Agency of Industrial Science and Technology, both of Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,667
Claims priority, application Japan, Sep. 28, 1990, 2-256970; Sep. 28, 1990, 2-256974
Int. Cl.[5] G01R *33/035*
U.S. Cl. 324—248 **14 Claims**

1. A SQUID magnetometer including:

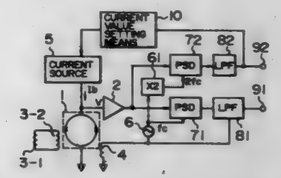
a SQUID ring, including a plurality of more than two Josephson junctions, which is applied with a magnetic flux being measured;

modulating means for applying a modulation magnetic flux of a predetermined frequency to said SQUID ring to modulate the SQUID ring;

a bias current source for supplying a DC bias current to said SQUID ring;

feedback means for detecting the level of a fundamental wave component of a modulated voltage across the terminals of said SQUID ring as a magnetic flux detected output and feeding a feedback flux corresponding to said level back to said SQUID ring;

means for detecting an even harmonic component of the modulated voltage across the terminals of said SQUID ring; and



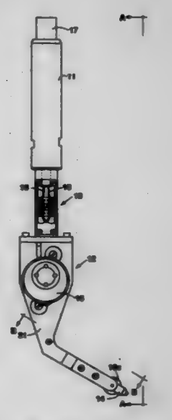
current setting means for adjusting the value of the current from said bias current source so that a peak level or a root-mean square of said even harmonic component of a voltage generated between terminals of the SQUID ring becomes the maximum value or a preset reference value.

5,291,136

VARIABLE ANGLE EDDY CURRENT PROBE

William R. Van der Veer, and Glenn M. Light, both of San Antonio, Tex., assignors to Systems Research Laboratories, Inc., Dayton, Ohio

Continuation of Ser. No. 803,746, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 570,895, Aug. 22, 1990, abandoned. This application Mar. 11, 1993, Ser. No. 31,013
Int. Cl.[5] G01R *33/12*; G01N *27/82*
U.S. Cl. 324—262 **13 Claims**



1. A probe for use with eddy current test equipment, comprising:

a connector assembly for attaching said probe to an arm of said eddy current test equipment;

a body attached to said connector assembly, said body having an outer fork and an inner fork, wherein said both said outer fork and said inner fork have an upper leg and a lower leg, and wherein said lower legs are spaced apart at their lowermost ends;

a shoe support frame rotatably attached between the lowermost ends of said lower legs;

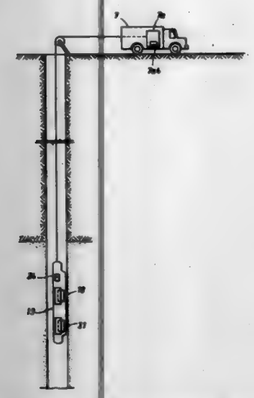
an eddy current coil;

a shoe for holding said eddy current coil, said shoe having a front surface for engaging a surface to be tested, and a rear surface;

a pair of spaced apart, thin flexible springs attached between said shoe and said shoe support frame for maintaining said front surface of said shoe parallel to the surface to be tested;
a motor attached to said body, said motor providing rotational motion to a motor shaft;
a pulley system imposed between said outer fork and said inner fork, for translating said rotational motion to said shoe support frame, for modifying the position of said eddy current coil; and
an encoder carried by said body for sensing the position of said eddy current coil.

5,291,137
PROCESSING METHOD AND APPARATUS FOR PROCESSING SPIN ECHO IN-PHASE AND QUADRATURE AMPLITUDES FROM A PULSED NUCLEAR MAGNETISM TOOL AND PRODUCING NEW OUTPUT DATA TO BE RECORDED ON AN OUTPUT RECORD

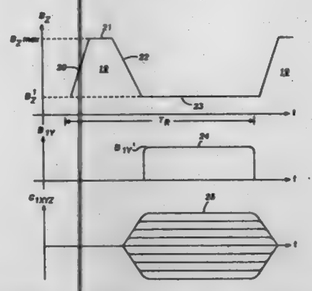
Robert Freedman, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.
Filed Nov. 2, 1992, Ser. No. 970,332
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—303 30 Claims



1. A signal processing system adapted for extracting specific formation evaluation information from a set of measured spin echo data acquired from a logging tool disposed in a borehole, comprising:
first means adapted to be disposed within said logging tool in said borehole for compressing and eliminating redundant information from said set of measured spin echo data and generating a plurality of window sums, where the number of said plurality of window sums is less than the number of said set of measured spin echo data, said plurality of window sums adapted to be transmitted uphole from said logging tool;
second means adapted to be disposed on a surface of said borehole, connected to said logging tool and responsive to the plurality of window sums transmitted uphole from said logging tool for generating said specific formation evaluation information; and
means for recording said specific formation evaluation information on an output record medium.

5,291,138
ROTATING FRAME IMAGING SYSTEM

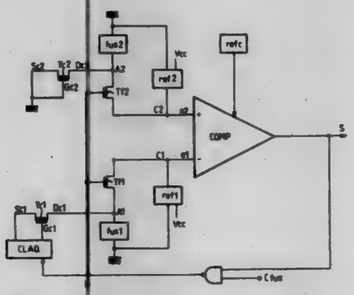
Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025
Filed May 18, 1992, Ser. No. 884,757
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 26 Claims



1. In a method for imaging the magnetic moment density in an object the steps of:
polarizing the magnetic moments with a pulsed magnetic field;
spatially selectively rotating the magnetic moments using radio frequency gradient fields pointing normal to the pulsed magnetic field;
receiving signals from the rotating magnetic moments; and
processing the received signals to form an image of the object.

5,291,139
CIRCUIT FOR DETECTION OF THE STATE OF AN INTEGRATED CIRCUIT FUSE IN A BALANCED FUSE CONFIGURATION

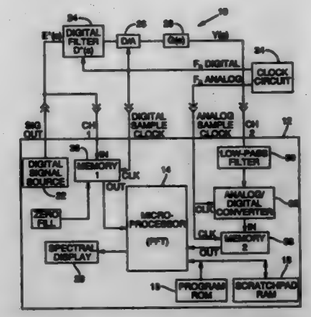
Serge Fruhauf, Peynier, and Francois Tailliet, Epinay sur Seine, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France
Filed Apr. 10, 1991, Ser. No. 683,245
Claims priority, application France, Apr. 10, 1990, 90 04584
Int. Cl.[5] G01R *31/02, 17/00, 31/28;* H01H *85/30*
U.S. Cl. 324—550 27 Claims



1. A detection circuit for the detection of the state of a first fuse of the type with vertical oxide fusing and which has two possible states, said detection circuit comprising: said first fuse, a second fuse of the type with vertical oxide fusing and having only one possible state, a differential comparator having first and second input nodes and an output node, a first voltage reference circuit, and a second voltage reference circuit, said first fuse being connected between a voltage reference ground and said first input node of said differential comparator, said second fuse being connected between said voltage reference ground and said second input node of said differential comparator, said first voltage reference ground and said first input node of said voltage reference ground and said first input node of said differential comparator, said second voltage reference circuit being connected between said voltage reference ground and said second input node of said differential comparator; wherein said first and second voltage reference circuits provide equal reference voltages.

5,291,140
MIXED DOMAIN SPECTRUM MEASUREMENT METHOD

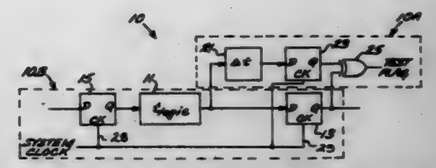
Douglas R. Wagner, Monroe, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 935,143, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 710,994, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,539, Jul. 13, 1990, Pat. No. 5,121,065. This application Aug. 19, 1993, Ser. No. 109,844
Int. Cl.[5] G06F *11/00;* H03K *13/02*
U.S. Cl. 324—615 17 Claims



1. A method of characterizing a response of a mixed domain system to an input signal by using a single measurement instrument, the mixed domain system having both an analog signal and a digital signal, the measurement instrument characterizing the spectral composition of a signal by a Fourier transform method that generates spectral coefficients accumulated in a plurality of data bins, each of said bins corresponding to a particular frequency in a spectrum, the method comprising:
stimulating the mixed mode system with an input signal;
sampling the analog signal in the mixed mode system at a first sampling frequency F_1 using a first sampling clock signal;
processing the sampled analog signal in the measurement instrument to obtain a spectral representation thereof, said spectral representation comprising a first set of coefficient data accumulated in data bins;
sampling the digital signal at a second sampling frequency F_2 using a second sampling clock signal;
processing the sampled digital signal in the measurement instrument to obtain a spectral representation thereof, said spectral representation comprising a second set of coefficient data accumulated in data bins; and
comparing the first set of coefficient data with the second set of coefficient data to determine a transfer function of the mixed domain system;
wherein the first and second sampling clock signals are phase locked but do not have coincident zero crossings.

5,291,141
METHOD FOR CONTINUOUSLY MEASURING DELAY MARGINS IN DIGITAL SYSTEMS

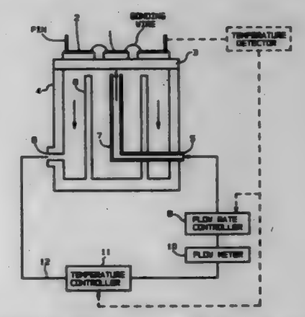
William D. Farwell, Thousand Oaks, and Alida G. Mascitelli, Northridge, both of Calif., assignors to Hughes Aircraft Company, Los Angeles
Filed Sep. 30, 1991, Ser. No. 767,734
Int. Cl.[5] H03K *5/26*
U.S. Cl. 324—617 3 Claims



1. A set up time margin monitoring circuit for monitoring the set up margin of a monitored circuit that includes a sending flip-flop (15) that is clocked by a send clock signal (28) and a receiving flip-flop (13) that is clocked by a receive clock signal (29), and a combinatorial delay path (11) between the output of the sending flip-flop (28) and the input of the receiving flip-flop (29), the set up time margin monitoring circuit comprising:
test flip-flop (23) clocked by a test clock for receiving the same data as provided to the receiving flip-flop (13);
margin defining means for providing a set up margin for the test flip-flop (23) that is less than the set up margin for the receiving flip-flop (29) of the monitored circuit; and
comparison means for comparing the output of the receiving flip-flop (13) and said test flip-flop (29) to provide an output indicative of whether set up failure has occurred at said test flip-flop (23).

5,291,142
METHOD AND APPARATUS FOR MEASURING THE RESISTANCE OF CONDUCTIVE MATERIALS DUE TO ELECTROMIGRATION

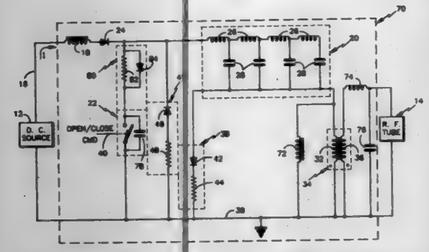
Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, Japan
Filed May 8, 1992, Ser. No. 880,219
Int. Cl.[5] G01R *27/14*
U.S. Cl. 324—719 13 Claims



4. An apparatus for measuring the resistance of a conductive material to electromigration, comprising:
a substrate support for supporting a substrate;
an interconnector pattern comprising a conductive material formed on said substrate;
said substrate support being mounted on a cooling means for cooling said substrate support and said substrate;

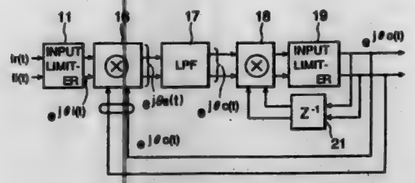
first current supply means in electrical communication with said interconnector pattern for applying a first current to said interconnector pattern;
second current supply means in electrical communication with said interconnector pattern for applying a second electric current larger than said first electric current to said interconnector pattern, said second current being applied after said first current supply means is first applied;
resistance measuring means in electrical communication with said interconnector pattern for measuring the resistance of said interconnector pattern while said first current is being applied to said interconnector pattern; and
a controller for controlling at least said first current supply means, said second current supply means, and said resistance measuring means so that the measurement of the resistance of said interconnector pattern and the application of said second electric current to cause electromigration are repeatedly carried out.

5,291,143
MODULATOR WITH IMPROVED DAMPING
Edward A. Cronauer, Massapequa Park, N.Y., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 9, 1992, Ser. No. 849,112
Int. Cl.[5] H03K *17/16*
U.S. Cl. 328—65 **12 Claims**



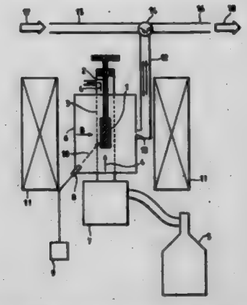
1. An improved line-type modulator which receives electrical power from a source, and provides a pulse of electrical energy to an R.F. power tube, comprising:
a charging circuit comprising an inductor having a first lead through which said electrical current from the source is received and a second lead tied to an anode of a hold-off diode through which current flows at a limited rate;
a pulse forming network having a high side and low side, receives electrical current and charges to a predetermined level of energy with electrical current from said charging circuit received through said high side;
a pulse transformer having a primary winding coupled to said pulse forming network low side and a secondary winding coupled to the R.F. tube;
switching means for triggering the discharge of energy stored in said pulse forming network to said transformer when the energy in said pulse forming network reaches the predetermined level;
an inverse damping circuit having a second resistor and second diode in series, with the cathode of said second diode connected to said high side of said pulse forming network, and a lead of said resistor connected to a return line;
a backswing damping circuit having a third diode and a third resistor connected in series, with the anode of said third diode connected to said low side of said pulse forming network, and a lead of said third resistor connected to said return line; and
wherein the improvement comprises,
a damping network comprising a first diode and a first resistor connected electrically in parallel, and each connected in series with said switching means, such that said damping network reduces the magnitude of the post pulse voltage oscillations in the modulator.

5,291,144
PHASE-LOCKED CIRCUIT CAPABLE OF BEING QUICKLY PUT IN A PHASE-LOCKED STATE
Osamu Ichiyoshi, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Sep. 30, 1992, Ser. No. 954,656
Claims priority, application Japan, Sep. 30, 1991, 3-250731; Sep. 30, 1991, 3-250738
Int. Cl.[5] H03K *5/13, 5/22*
U.S. Cl. 328—155 **3 Claims**



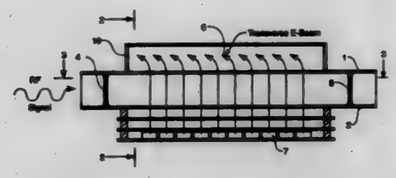
1. A phase-locked circuit for use in responding to a sequence of input complex sample signals to produce a sequence of output complex sample signals phase-locked with said input complex sample signals, each of said input and said output complex sample signal sequences being produced at every sample period and being carried by a complex carrier wave divisible into a real component and an imaginary component orthogonal to said real component, said phase-locked circuit comprising:
a first complex multiplication circuit which has a pair of first input terminals, a pair of second input terminals, and a pair of output terminals and which are supplied with said input complex sample signals and a sequence of local complex sample signals through said first and said second input terminal pairs, respectively, for carrying out a first complex multiplication between said input and said local complex sample signals to produce, through said output terminal pair, first complex multiplication result signals representative of results of said first complex multiplication;
extracting means supplied with said first complex multiplication result signals for extracting phase differences between said input and said local complex sample signals from said first complex multiplication result signals to produce complex difference signals representative of complex phase differences between said input and said local complex sample signals;
a delay circuit supplied with said local complex sample signals for delaying said output complex sample signals by a single sample period to produce delayed complex sample signals;
a second complex multiplication circuit supplied with said complex difference signals and said delayed complex sample signals for carrying out a second complex multiplication between said complex difference signals and said delayed complex sample signals to produce second complex multiplication result signals representative of results of said second complex multiplication;
an output limiter supplied with said second complex multiplication result signals for limiting amplitudes of said second complex multiplication result signals to produce amplitude limited signals each of which has an invariable amplitude;
means for producing said amplitude limited signals as said output complex sample signals; and
means for supplying said output complex sample signals to said delay circuit and said first complex multiplication circuit as said local complex sample signals.

5,291,145
MICROWAVE PROCESSING EQUIPMENT
Yusuke Yajima, and Ken'etsu Yokogawa, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 16, 1992, Ser. No. 851,628
Claims priority, application Japan, Mar. 14, 1991, 3-49341
Int. Cl.[5] H01S *1/02*
U.S. Cl. 330—4 **14 Claims**



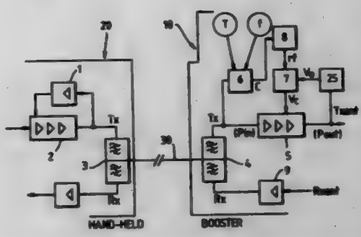
1. An electromagnetic wave processing system, comprising:
a solid state electromagnetic wave amplification material having a state being composed of three or more spin sublevels;
a cooling means for holding said solid state material to a temperature of 20K or less;
a pumping means for changing a population distribution of the spin sublevels of said solid state material in a range from a thermal equilibrium state to a state deviating from thermal equilibrium;
a magnetic field applying means for applying a static magnetic field to said solid state material;
an electromagnetic wave inputting means for supplying an input electromagnetic wave to said solid state material; and
an electromagnetic wave outputting means for extracting an output electromagnetic wave from said solid state material;
wherein said solid state material is a silicon single crystal containing neutral {110} planar four vacancies.

5,291,146
TRANSVERSE TRAVELING WAVE AMPLIFIER
Walter Friz, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation-in-part of Ser. No. 853,553, Mar. 18, 1992, abandoned. This application Oct. 7, 1992, Ser. No. 958,434
Int. Cl.[5] H03F *3/58*
U.S. Cl. 330—43 **7 Claims**



1. An RF amplifier for electromagnetic signals comprising:
a RF source of electromagnetic waves;
a single waveguiding structure extending longitudinally in a direction of propagation of said electromagnetic waves, the waveguiding structure being part of an evacuated enclosure;
means for introducing electromagnetic waves from said RF source into said waveguiding structure;
current injection means providing an electron flow which is injected into the waveguiding structure, the electron flow having a current flow vector orientation transverse to the direction of propagation of said electromagnetic waves, wherein density of current flow is not RF modulated;
wherein a transverse E-field component vector of the electromagnetic waves interacts with said electron flow to produce an increase in the energy level of said electromagnetic waves by transit time effects;
and means for collecting said electron flow after interaction with said electromagnetic waves.

5,291,147
POWER BOOSTER FOR A RADIO TELEPHONE
Jari Muurinen, Pernio, Finland, assignor to Nokia Mobile Phones, Ltd., Finland
Filed Sep. 17, 1992, Ser. No. 946,926
Claims priority, application Finland, Sep. 24, 1991, 914484
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—136 **5 Claims**



1. A power booster for a portable radiotelephone, the portable radiotelephone being operable to transmit a radio frequency (RF) signal at one of a predetermined set of power levels, the booster including:
means for coupling the booster to the portable radiotelephone to receive the RF signal transmitted thereby,
first detector means for detecting the power of the RF signal received from the portable radiotelephone and for generating a first signal indicative thereof,
means responsive to said first signal for generating reference signals indicative of the respective power levels,
gain controlled power amplifying means for amplifying the received RF signal,
second detector means for detecting the power of the amplified RF signal output by the amplifying means and for generating a second signal indicative thereof,
gain control means responsive to the difference between the second signal and the reference signal for controlling the gain of the amplifying means to maintain the power output thereof substantially constant at the required power level,
means for disabling the amplifying means responsive to a predetermined value of the first signal,
means for enabling the amplifying means responsive to the first signal exceeding a predetermined threshold value.
characterized in that the reference signal generating means comprises memory means for storing a set of values corresponding to the respective reference signals, and means for selecting a value from said memory means depending on the first signal.

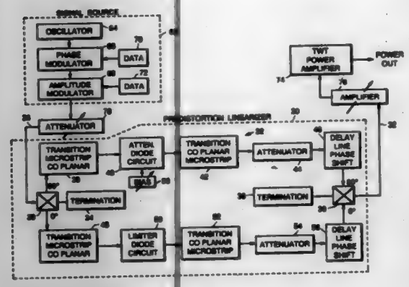
VOL 1160 ISS 1 MR 1 1994 UMI

VOL 1160 ISS 1 MR 1994 UMI

5,291,148
GAIN LINEARIZATION WITH COPLANAR WAVEGUIDE

Russ A. Reisner, Redondo Beach; Wilbert Copeland; Arnold Berman, both of Los Angeles, and Charles C. Curello, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,833
Int. Cl.[5] H03F 1/26, 3/60
U.S. Cl. 330—149 9 Claims



1. A linearizer comprising:

a first signal channel and a second signal channel, a power divider and a power combiner, said power divider receiving an input signal and dividing power of the input signal between said first and said second channels, said power combiner combining a signal of said first channel with a signal of said second channel to produce an output signal;

a first diode circuit disposed in said first channel and being operative in a linear fashion, and a second diode circuit disposed in said second channel and being operative in a nonlinear fashion, each of said diode circuits comprising coplanar waveguide and a set of four diodes mounted upon said coplanar waveguide, in each of said diode circuits there being a first and a second of said diodes connected electrically between a center conductor of said coplanar waveguide and a first side conductor of said coplanar waveguide and a third and a fourth of said diodes connected electrically between said center conductor of said coplanar waveguide and a second side conductor of said coplanar waveguide, an arrangement of said diodes of said first diode circuit being the same as an arrangement of said diodes of said second diode circuit; and

wherein the diodes of said first diode circuit have different electrical characteristics than the diodes of said second diode circuit to provide for a larger linear range encompassing a larger range of signal amplitude to the signal of said first channel than to the signal of said second channel, the linear range being greater by at least a factor of three.

5,291,149
OPERATIONAL AMPLIFIER

Takeshi Nunoshima, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 30, 1992, Ser. No. 859,929
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—255 10 Claims

1. An operational amplifier including a non-inverting input terminal and an inverting input terminal, comprising:

differential amplification means including a first differential amplification circuit having a non-inverting input end connected to said non-inverting input terminal and an inverting input end connected to said inverting input terminal, and a second differential amplification circuit having a non-inverting input end connected to said non-inverting input terminal and an inverting input end connected to said inverting input terminal;

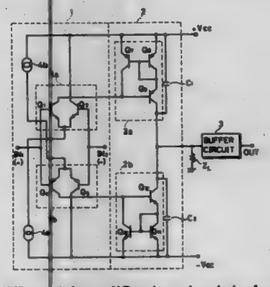
current mirror means including;

a first current mirror circuit, an output end of the first differential amplification circuit associated with the non-inverting inverting input end of said first differential amplification circuit being connected to an input end of the first current mirror circuit; and

a second current mirror circuit, an output end of the second differential amplification circuit associated with the non-inverting input end of said second differential amplification circuit being connected to an input end of the second current mirror circuit; and

a load impedance element connected together to output ends of said first and second current mirror circuits;

the differential amplification means and current mirror means being adapted to connect to a first power supply for supplying a first reference potential to an output end associated with the inverting input end of said first differential amplification circuit, and a second power supply for supplying a second reference potential to an output end associated with the inverting input end of said second differential amplification circuit;



said first differential amplification circuit including:

a first transistor of NPN type having its base connected to said non-inverting input terminal, and its collector connected to the input end of said first current mirror circuit, and

a second transistor of NPN type having its base connected to said inverting input terminal and its collector adapted to be connected to said first power supply; and

said second differential amplification circuit including:

a third transistor of PNP type having its base connected to said non-inverting input terminal and its collector connected to the input end of said second current mirror circuit, and

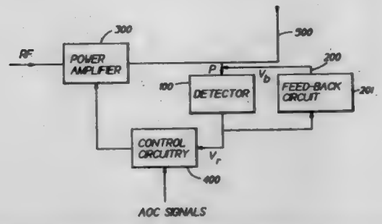
a fourth transistor of PNP type having its base connected to said inverting input terminal and its collector adapted to be connected to said second power supply; and further comprising a first phase compensation capacitance coupled to the output end of the first current mirror circuit and adapted to be connected to the first power supply; and a second phase compensation capacitance coupled to the output end of the second current mirror circuit and adapted to be connected to the second power supply.

5,291,150
CONTROL CIRCUITRY FOR AN RF SIGNAL AMPLIFIER

Timo Saarnimo, and Mika Niemiö, both of Salo, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jul. 22, 1992, Ser. No. 918,546
Claims priority, application Finland, Jul. 23, 1991, 913529
Int. Cl.[5] H03G 3/30
U.S. Cl. 330—279 4 Claims

1. Control circuitry for maintaining the magnitude of an output radio frequency signal, from an output terminal of a radio frequency signal amplifier, at a predetermined level, the control circuitry comprising a power level detector including an input terminal for receiving an input signal indicative of the power level of the said output radio frequency signal from the said amplifier output terminal and an output terminal for delivering an output signal dependent upon the said input signal to

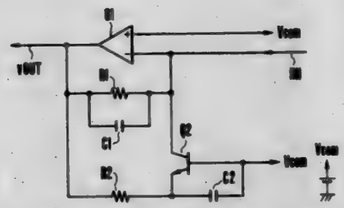


said detector wherein the said output signal from said detector is used to control the gain of the said amplifier, characterized by a feedback loop connected between the said input and output terminals of said detector for modifying the said input signal to the said detector depending upon the said output signal therefrom.

5,291,151
SENSOR AMPLIFIER

Akihiro Fujiwara; Takashi Amikura; Toru Ohara, and Yasuhiro Tamekuni, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,973, Jan. 15, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 74,017
Claims priority, application Japan, Jan. 19, 1991, 03-004766
Int. Cl.[5] H03G 3/00
U.S. Cl. 330—282 4 Claims



1. An amplifying circuit for amplifying an input signal, comprising:

(a) an operational amplifier having a first input terminal to which the input signal is input, a second input terminal to which a constant voltage is applied, and an output terminal;

(b) a series arrangement composes of a resistor and a transistor, with one terminal of the resistor being connected to the output terminal of the operational amplifier, the other terminal of the resistor being connected to an emitter of the transistor, and a collector of the transistor being connected to the first input terminal of the operational amplifier, and a constant voltage being added to a base of the transistor; and

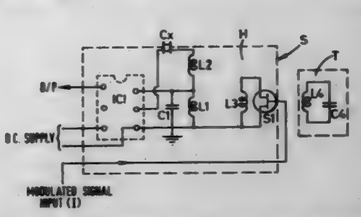
(c) a capacitor connected between the emitter and base of the transistor,

whereby said operational amplifier operates to maintain a constant feed-back amount for a high-frequency component of the input signal and operates to increase a feed back amount for a low frequency component of the input signal, resulting in improved signal-to-noise ratio of the amplifying circuit.

5,291,152
PROXIMITY SWITCH HAVING OSCILLATOR INDUCTIVELY COUPLED THROUGH PULSED FARADAY SHIELD TO RESONANT TARGET

Allen Seale, Surrey, United Kingdom, assignor to Vaseal Electronics Limited, Christchurch, United Kingdom

Filed Feb. 16, 1993, Ser. No. 969,312
Claims priority, application United Kingdom, Aug. 15, 1990, 9017910
Int. Cl.[5] H03K 17/95; G06K 7/08
U.S. Cl. 331—65 16 Claims

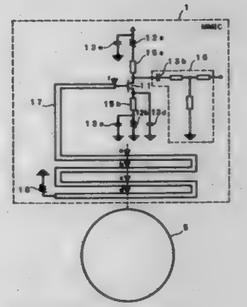


1. A combination comprising an inductive type proximity switch which comprises a main LC oscillator circuit, and a target which comprises inductance means, there being means provided which are adapted to be operated by a pulsed input, characterised in that one of the proximity switch and the target includes an open ended loop and said means adapted to be operated by a pulsed input comprise bistate switching means which are connected between the ends of the loop, the bistate switching means being adapted to be operated by the pulsed input to sequentially make and break a connection between the ends of the loop whereby the loop functions as a shield to inhibit mutual inductive linking of the inductance means of the target with inductance means of the main LC oscillator when the target is in proximity with the proximity switch and said connection is made.

5,291,153
OSCILLATING MMIC CIRCUIT WITH DIELECTRIC RESONATOR

Nobuo Shiga, Yokoyama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,702
Claims priority, application Japan, Apr. 26, 1991, 3-096888
Int. Cl.[5] H03B 5/18
U.S. Cl. 331—99 5 Claims



1. An oscillating circuit comprising:

a substrate;

a FET formed on said substrate;

a series feedback capacitor connected to a source of said FET and formed on said substrate;

a microstrip line being connected to a gate of said FET on

said substrate and being formed so as to reciprocally wind several times near an edge of said substrate to provide plural portions which extend along the edge; and

a dielectric resonator electromagnetically coupled to said microstrip line and located near said microstrip line.

5,291,154

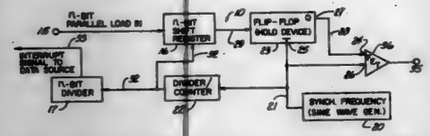
SYNCHRONOUS SINGLE CYCLE SAMPLE AND CONTROL AMPLITUDE MODULATOR

Freddie O. Sconce, 5317 S. 300th Pl., Auburn, Wash. 98001

Continuation-in-part of Ser. No. 858,824, Mar. 27, 1992, abandoned. This application Aug. 7, 1992, Ser. No. 927,206

Int. Cl.[5] H03C *1/36*

U.S. Cl. 332—149 **14 Claims**



1. A synchronous single cycle sample and control amplitude modulator comprising:

data input means for receiving data;

sine wave generator means for generating a sine wave at a specified frequency;

sample and hold means for synchronizing said data from said data input means with said sine wave from said sine wave generator means;

modulator means electrically connected to said sample and hold means and said sine wave generator means for modulating said sine wave from said sine wave generator wherein the amplitude of said sine wave is modulated with respect to the output of said sample and hold means;

output means electrically connected to said modulator means for transmitting said modulated signal; and

wherein said data input means includes a shift register means for serially supplying data to said sample and hold means when said data supplied to said data input means is supplied in parallel form.

5,291,155

MICROWAVE BUFFER

Timothy G. Waterman, Eldersburg, and Patrick J. Knowles, Laurel, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 7, 1992, Ser. No. 925,829

Int. Cl.[5] H01P *5/12*

U.S. Cl. 333—1 **5 Claims**



1. A microwave buffer for transferring electromagnetic signals from a series of input ports connected to a corresponding number of transmitter modules to a series of output ports of an impedance combiner, said buffer comprising:

a flat lower conductor plate;

a flat upper conductor plate, said upper conductor plate being parallel and spaced at some distance from said lower conductor plate; and

a center conductor plate being disposed between and being parallel to said upper conductor plate and said lower conductor plate, said center conductor plate having a plurality of input segments connected to said input ports, and a plurality of output segments connected to said output ports, in which at least one conductive bridge connects pairs of adjacent input segments.

5,291,156

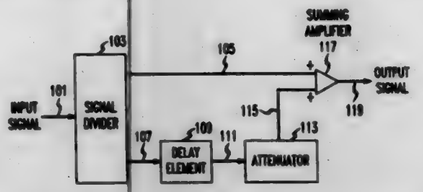
METHOD AND APPARATUS FOR IMPARTING POSITIVE PHASE SLOPE TO A NARROWBAND SIGNAL

Bernard J. Arntz, Morris, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 10, 1993, Ser. No. 15,732

Int. Cl.[5] H04B *3/04*

U.S. Cl. 333—20 **5 Claims**



1. An apparatus for processing an input signal comprising an input amplitude and a sinusoidal component at ω_0 radians per second, said apparatus comprising:

a signal divider for creating a first signal, comprising a first amplitude, based on said input signal and for inputting said first signal onto a first signal path, and for creating a second signal, comprising a second amplitude, based on said input signal and for inputting said second signal onto a second signal path, wherein said first signal and said second signal are each analog representations of said input signal;

a signal combiner for receiving said first signal from said first signal path, and for receiving said second signal from said second signal path, and for creating an output signal, comprising an output amplitude, based on the sum of said first signal and said second signal;

a delay element in said second signal path for making said second signal path substantially close to

$$\frac{\pi N}{\omega_0}$$

seconds longer than said first signal path, where N is a positive odd integer; and

attenuator means in said second signal path for attenuating said second signal relative to said first signal.

5,291,157

LOW PARASITIC CAPACITANCE SUPERCONDUCTOR CIRCUIT NODE

Leon Riebman, Rydal, Pa., assignor to AEL Defense Corp., Lansdale, Pa.

Filed Nov. 20, 1992, Ser. No. 980,939

Int. Cl.[5] H01P *5/02*

U.S. Cl. 333—33 **11 Claims**

1. An electronic circuit comprising

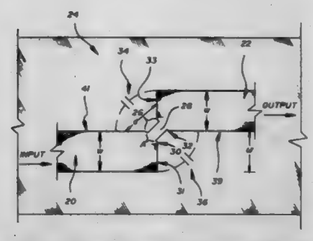
first and second signal conductor means arranged on a substrate with a circuit element having a preselected length and width,

said first and second conductor means each having a substantially elongated portion of constant width w along a respective longitudinal axis,

the elongated portions of each signal conductor means terminating in a respective end portion having first and second angled edges,

the respective longitudinal axes of the first and second signal conductor means being further arranged substantially parallel to each other and separated by a distance substantially equal to the width w of the elongated portion of the first and second conductor means;

the end portions of the first and second conductor means being further arranged to define a gap between the respective first angled edges of the end portions of the respective conductor means,



said gap having a dimension substantially equal to the length of the circuit element,

said circuit element being electrically connected across the gap between the first angled edges of the end portions of the first and second conductor means.

5,291,158

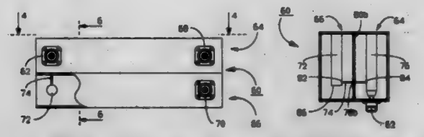
HIGH FREQUENCY FILTER HAVING COMMON COUPLING RODS FIXEDLY MOUNTED AND COUPLED THROUGH A COMMON WALL

William D. Blair, Lanoka Harbor, and Salvatore Bentivenga, Parlin, both of N.J., assignors to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Dec. 26, 1991, Ser. No. 814,375

Int. Cl.[5] H01P *5/12, 1/205*

U.S. Cl. 333—126 **4 Claims**



1. A high frequency filter assembly having a plurality of input/output ports (62, 68, 70), comprising:

a housing assembly (24) having a common wall (80*b*) with an aperture (78*b*);

a plurality of resonator rods (38) fixedly mounted within said housing assembly (24);

one of the plurality of input/output ports (62, 68, 70) being a common port (62) mounted to said housing assembly (24);

a plurality of common coupling rods (72, 76) fixedly mounted within said housing assembly (24); and

means for directly coupling said common port (62) to said plurality of common coupling rods (72, 76) through the aperture (78*b*) of said common wall (80*b*), by directly connecting a first one of the plurality of coupling rods (76) to the common port (62), and electrically connecting each remaining one of the plurality of coupling rods (72) to the first one of the plurality of common coupling rods (76) with a copper wire (74) through said aperture.

5,291,159

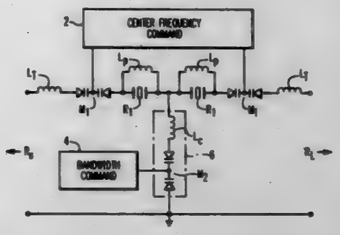
ACOUSTIC RESONATOR FILTER WITH ELECTRICALLY VARIABLE CENTER FREQUENCY AND BANDWIDTH

Christopher R. Vale, Elk Ridge, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 20, 1992, Ser. No. 916,238

Int. Cl.[5] H03H *9/00*

U.S. Cl. 333—188 **10 Claims**



1. An acoustic resonator filter having at least one of electronically variable center frequency and electronically variable bandwidth comprising

a) a shunt coupling network consisting of

i) a first inductor and

ii) a voltage variable capacitor matrix having a bandwidth command input voltage, the matrix connected to the first inductor and to ground;

b) a pair of acoustic resonators each having a parallel inductor the resonators being connected to each other and to the shunt coupling network inductor;

c) a pair of voltage variable capacitor matrixes each having a center frequency command input voltage, one such matrix being connected to each acoustic resonator;

d) a second inductor connected to one variable capacitor matrix; and

e) a third inductor connected to the other variable capacitor matrix.

5,291,160

FILTER ARRANGEMENT INCLUDING A NON-REVERSIBLE CIRCUIT ELEMENT, A BAND-PASS FILTER, AND AN ACTIVE CIRCUIT

Youhei Ishikawa; Jun Hattori, and Toshio Nishikawa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 536,175, Jun. 11, 1990, Pat. No. 5,132,651. This application Mar. 6, 1992, Ser. No. 846,822

Claims priority, application Japan, Jun. 13, 1989, 1-150998; Aug. 25, 1989, 1-219882

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] H01P *1/20, 1/205*

U.S. Cl. 333—202 **20 Claims**

1. A filter apparatus wherein a predetermined frequency band is located in an attenuation band of said filter apparatus, comprising:

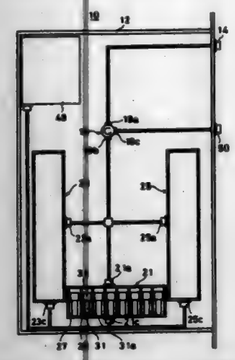
an input terminal,

a non-reversible circuit element, a first terminal of which is connected to said input terminal,

a band-pass filter which has a resonator, said band-pass filter being connected to a second terminal of said non-reversible circuit element, wherein said second terminal operates as an output with respect to signals received at said first terminal, and wherein a pass band of said band-pass filter is located in said attenuation band,

an output terminal which is connected to a third terminal of said non-reversible circuit element, wherein said third

terminal operates as an output with respect to signals received at said second terminal, and
an active circuit which is coupled to said resonator of said band-pass filter, and becomes a negative resistance in an operation band of said band-pass filter;



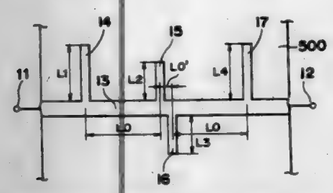
wherein said band-pass filter further includes a plurality of additional resonators said resonator with said active circuit coupled thereto being a last-stage resonator of said band-pass filter.

5,291,161

MICROWAVE BAND-PASS FILTER HAVING FREQUENCY CHARACTERISTIC OF INSERTION LOSS STEEPLY INCREASING ON ONE OUTSIDE OF PASS-BAND

Hiroshi Saka, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1992, Ser. No. 916,252
Claims priority, application Japan, Jul. 22, 1991, 3-180868; Jul. 22, 1991, 3-180869
Int. Cl.[5] H01P *1/20*
U.S. Cl. 333—204 22 Claims



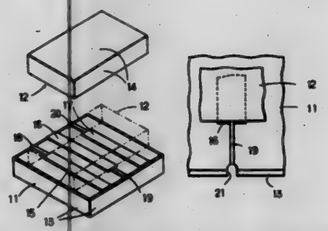
1. A microwave band-pass filter comprising:
a main line having an input terminal and an output terminal on both ends thereof; and
first, second, third and fourth open-ended stubs having lengths L1, L2, L3 and L4, respectively, said first to fourth open-ended stubs connected electrically in parallel to said main line at intervals L0, L0' and L0'', respectively,
wherein (a) the lengths L1 and L4 of said first and fourth open-ended stubs are selected to be substantially equal to a quarter of the wavelength of the first stop-band frequency signal on the band lower than the pass-band in such a manner that attenuation poles thereof are placed substantially within the band of the first stop-band frequency signal;
(b) the lengths L2 and L3 of said second and third open-ended stubs are selected to be substantially equal to a quarter of the wavelength of the second stop-band frequency signal on the band higher than the pass-band in such a manner that attenuation poles thereof are placed substantially within the band of the second stop-band frequency signal;
(c) the intervals L0, L0' and L0'', and the lengths L1, L2, L3 and L4 are selected so as to satisfy either one of first conditions of $2L0' < L2 \approx L3 < L1 \approx L4 < L0 < 2L1$; and second conditions of $2L0' < L2 = L3 < L1 = L4 < L0 < 2L1$ and so that $L0'' = L0$ or $L0'' \approx L0$.

5,291,162

METHOD OF ADJUSTING FREQUENCY RESPONSE IN A MICROWAVE STRIP-LINE FILTER DEVICE

Kenji Ito; Hiroyuki Shimizu, and Hotaka Oguchi, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Japan

Filed May 13, 1992, Ser. No. 882,007
Claims priority, application Japan, May 15, 1991, 3-110381; May 15, 1991, 3-110454
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—205 10 Claims



1. A method of adjusting a frequency response of a microwave filter device of a stripline type including a pair of dielectric substrates each including an inner surface and each having peripheral and outer surfaces provided with an external ground conducting layer thereon, and a plurality of resonator electrodes arranged at least on the inner surface of one of the dielectric substrates, the resonator electrodes being sandwiched between the dielectric substrates, each resonator electrode having a short circuit end connected to the ground conductor on each substrate and an open circuit end spaced from the ground conductor on each substrate, said method comprising the steps of:
connecting the open circuit end of each of the resonator electrodes with the ground conductor on the outer surface of one of the dielectric substrates by means of a filamentary conductor;
positioning the filamentary conductor for each of said resonator electrodes so that the filamentary conductor is exposed with respect to one of the dielectric substrates; and
removing each of the exposed filamentary conductors so as to thereby tune the filter device to a desired frequency response.

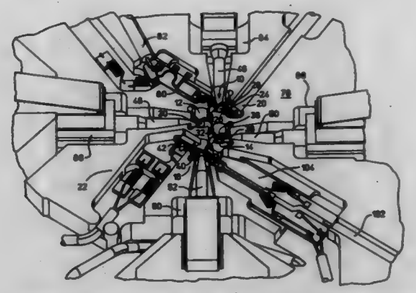
5,291,163

YIG SPHERE POSITIONING APPARATUS

Thomas W. Fiske, and Terry A. Jones, both of Santa Rosa, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 29, 1992, Ser. No. 921,823
Int. Cl.[5] H01P *7/00*
U.S. Cl. 333—219.2 13 Claims

1. A tunable ferrimagnetic resonator circuit comprising:
means for producing a magnetic field;
a plurality of ferrimagnetic resonators connected in series and located in said magnetic field, each of said resonators including a ferrimagnetic sphere and associated input and output coupling loops; and
means associated with each of said resonators for adjusting the location of said ferrimagnetic sphere with respect to its associated input and output coupling loops and said magnetic field, said adjusting means comprising:
an elongated support member having a distal end and a proximal end, said ferrimagnetic sphere being disposed on said distal end of said support member, said support member having an axis of rotation generally parallel to its direction of elongation, said support member being non-magnetic and non-electrically conductive;
means for supporting said support member at a location intermediate said distal and proximal ends thereof, said support means permitting selective rotation of said support member about said axis of rotation and movement of said support member in a first direction generally parallel to said axis of rotation thereof upon the selective application of a respective rotational force and an axial force to said proximal end of said support member;
first means for producing movement of said support means for translating said sphere in a second direction generally perpendicular to said first direction; and
second means for producing movement of said support means for translating said sphere in a third direction generally perpendicular to said first direction and to said second direction.

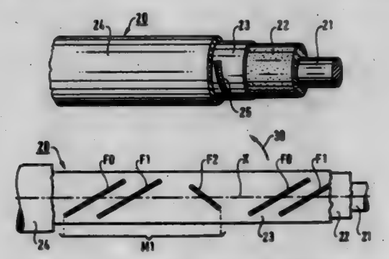


5,291,164

RADIATING HIGH FREQUENCY LINE

André Leviase, Paris, France, assignor to Societe Anonyme Dite Alcatel Cable, Clichy Cedex, France

Filed Dec. 18, 1992, Ser. No. 992,739
Claims priority, application France, Dec. 19, 1991, 91 15803
Int. Cl.[5] H01Q *13/22*
U.S. Cl. 333—237 10 Claims



1. A high frequency radiating line for radiating electromagnetic energy in a frequency band and comprising at least one tubular conductor (23) surrounding a longitudinal axis (X) and having a plurality of apertures formed into a series of identical patterns (M1) repeated periodically with a period P along said line, characterized in that, for a frequency band of the type, where f_r is a given frequency and N is a positive integer greater than 1, each of said patterns (M1) comprises N apertures numbered 0 to N−1 and satisfying the following equations:

$$z_k = \frac{P \cdot p_k}{N+2}$$

$$a_k = \frac{\sin\left(\frac{(p'-p_k)\pi}{N+2}\right)\sin\left(\frac{(p''-p_k)\pi}{N+2}\right)}{\sin\left(\frac{p'\pi}{N+2}\right)\sin\left(\frac{p''\pi}{N+2}\right)} a_o$$

where:
the index k is an integer such that $1 \leq k \leq N-1$ and refers to the k'th aperture of one of said patterns (M1),
z_k is the distance between said k'th aperture and first aperture (F0) of said pattern, said distance being calculated between the projection of a point of an axis of symmetry of said first aperture (F0) on to said longitudinal axis (X) and that of a point of a corresponding axis of symmetry of said k'th aperture on to said longitudinal axis (X),
a_k is the polarizability of said k'th aperture,
a_o is the polarizability of said first aperture,

$$-p' = E\left(\frac{N+2}{4}\right) \text{ or } p' = E\left(\frac{N+2}{4}\right)+1$$

$$-p'' = E\left(\frac{3(N+2)}{4}\right) \text{ or } p'' = E\left(\frac{3(N+2)}{4}\right)+1$$

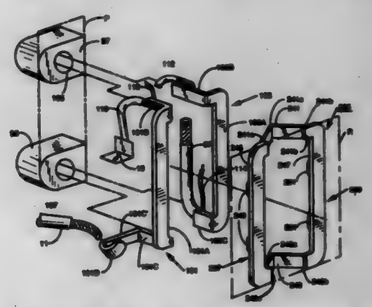
where E(x) designates the integer part of x,
p_k is an integer such that $1 \leq p_k \leq N+1$, said integers p_k being pairwise distinct, such that $p_k < p_{k+1}$, and different from p' and p''.

5,291,165

INSULATING BARRIERS FOR CIRCUIT BREAKER BUS BARS AND A GROUND FAULT CIRCUIT BREAKER INCORPORATING SAME

Michael J. Whipple, New Sewickley, and Joseph P. Fello, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 11, 1992, Ser. No. 943,796
Int. Cl.[5] H01H *73/00*
U.S. Cl. 335—18 12 Claims

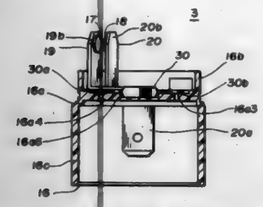


1. An insulating barrier for a pair of confronting flat C-shaped bus bars with facing, depending end portions extending substantially perpendicularly to the bus bar said insulating barrier comprising:
a pair of confronting C-shaped insulating members conforming to the shape of said flat C-shaped bus bars and joined

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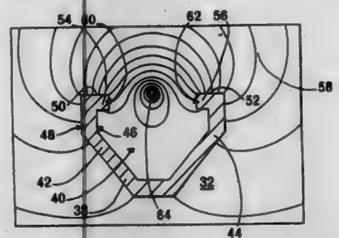
by a pair of projections which extend between and electrically insulate said facing, depending end portions.

5,291,166
ELECTROMAGNETIC RELAY WITH RESISTOR AND METHOD FOR MANUFACTURING THE SAME
Toru Chikira, Yokohama, Japan, assignor to Jidosha Denki Kogyo Kabushiki Kaisha, Kanagawa, Japan
Filed Dec. 14, 1992, Ser. No. 990,094
Claims priority, application Japan, Dec. 16, 1991, 3-332144
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 **5 Claims**



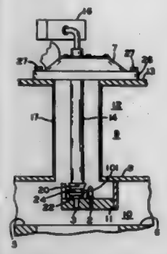
1. An electromagnetic relay with a resistor comprising:
a coil assembly including a coil bobbin having a first flange provided with a first base block, a second flange provided with a second base block, a cylindrical portion supporting the first and second flanges, a coil wound around the cylindrical portion, a first coil terminal connected with a first end portion of the coil and supported on the first base block of the first flange, a second coil terminal connected with a second end portion of the coil and supported on the second based block of the second flange, and a resistor having oppositely extending lead wires connected with the first and second coil terminals;
an electromagnetic assembly including an L-shaped armature frame made of magnetic substance with electric conductivity having first and second press-fitting projections, an iron core disposed through the cylindrical portion of the coil bobbin and supported on the armature frame with the coil bobbin, an L-shaped resilient member with electric conductivity fixed on the armature frame and provided with a movable contact thereon, an armature supported on the resilient member and disposed opposite the iron core, and a terminal for the movable contact fixed on the armature frame;
a base having a base plate provided with slots receiving the first and second coil terminals and the movable contact terminal, and having a fixed contact terminal with a fixed contact thereon; and
a box-shaped case coupled with the base for enclosing the coil bobbin assembly and the electromagnetic assembly;
said base being provided with a resistor groove crossing orthogonally with the slots for the first and second coil terminals;
each of said first and second coil terminals being provided with a first short projection defining a slit in which each lead wire of the resistor is secured and a second long projection being connected with each end portion of the coil; and
each of said first and second base blocks of said first and second flanges of said coil bobbin being provided with a coil terminal bobbin groove receiving each of said first and second coil terminals and an aperture through which the second long projection of each of said first and second coil terminals projects.

5,291,167
ARC EXTINGUISHING DEVICE HAVING A FOCUSED FIELD
David N. Richter, Mexico, Mo., assignor to Square D Company, Palatine, Ill.
Filed Dec. 4, 1992, Ser. No. 985,410
Int. Cl.[5] H01H *9/30*
U.S. Cl. 335—201 **22 Claims**



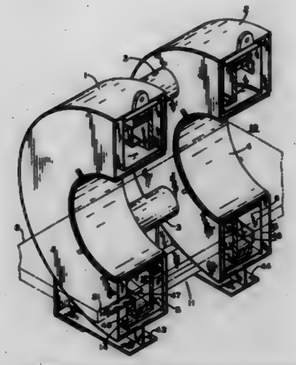
1. An arc extinguishing device for disposition along a predetermined path of movement between two electrical contacts in an electrical distribution device, the device comprising:
a generally U-shaped member having a bight portion defined by a bottom wall with two upstanding side walls, the bight portion having sufficient width to allow the movement of the electrical contacts between the two side walls;
a pair of magnetic poles having a magnetic field therebetween, one of the poles being formed with and located near the top edge of each wall; and
means for focusing the magnetic field along the longitudinal center axis through the length of the U-shaped member and in the plane overlapping the path of movement of the electrical contacts so as to increase the magnetic flux density encountered by the arc created by interrupting the electrical contacts, the focusing means having a focusing member integrally formed with each side wall near the top edge and extending perpendicularly inward therefrom.

5,291,168
CONNECTOR COOLING AND PROTECTION FOR POWER COUPLING ASSEMBLY FOR SUPERCONDUCTING MAGNETS
Daniel C. Woods; William S. Stogner, and David R. Turner, all of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.
Filed May 11, 1992, Ser. No. 880,847
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—216 **18 Claims**



1. In a superconducting magnet assembly located in a pressurized chamber cryostat containing a liquid cryogen with an outer shell spaced from the pressurized chamber, and in which cryogen boil-off is vented out of the pressurized chamber, a multi-conductor lead assembly extending between the shell and the chamber to connect electrical power to a plurality of electrically separated shim magnet coils positioned within said chamber through a first multi-conductor connector secured to and passing through the wall of the chamber to maintain a gas-tight connection, a conductor assembly extending axially from outside said shell to said first connector for connection to and detachment from said first multi-conductor connector with multiple substantially slender connector pins by manipulation of said conductor assembly from outside said shell without removing said first connector, comprising:
a second multi-conductor connector on the end of said assembly outside said shell adapted for connection to an external power source;
a third multi-conductor adapter connector on the remote end of said assembly configured to mate with said first connector to complete the power circuit from outside said shell to said magnet coils; and
a multi-conductor adapter connector configured for attachment and detachment from outside said shell and for protection of said first connector interposed between said first connector and said third connector;
said adapter connector comprising an integral housing having multiple connector pins on one side electrically connected to multiple connector sockets on the opposite side configured to mate with, and interconnect, said first connector and said third connector; and
securing means to detachably affix said housing of said adapter connector to said chamber while electrically connected to said first connector and to selectively remain affixed to said first connector upon removal and disconnection of the remainder of said conductor assembly from electrical contact with said first multi-conductor connector;
whereby said tubular conductor assembly may be detachably connected to said adapter connector and said adapter assembly can be secured to said first multi-conductor connector and replaced from outside said shell without removal of said first multi-conductor connector and without opening said pressurized chamber; and
the multi-connections of said first connector are not subject to pressures which could damage the multi-connections upon connection and removal of said second multi-conductor connector from said adapter.

5,291,169
OPEN ARCHITECTURE MAGNETIC RESONANCE IMAGING SUPERCONDUCTING MAGNET ASSEMBLY
Oluwasegun O. Ige, and Bu-Xin Xu, both of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.
Filed Nov. 2, 1992, Ser. No. 970,511
Int. Cl.[5] H01F *7/22*
U.S. Cl. 335—216 **7 Claims**



1. An open architecture Magnetic Resonance Imaging Magnet utilizing a bore about an axis to receive patients, and providing open radial space to minimize confinement of patients within the bore, comprising:
a first annular magnet assembly housing positioned about said axis;
a second annular magnet assembly housing positioned about said axis, and spaced from and substantially parallel to said first magnet assembly;
said bore formed by the central regions of said first and second magnet assembly housings about said axis;
a plurality of spacers extending between said first magnet assembly housing and said second magnet assembly housing substantially parallel to said axis;
each of the magnet assembly housings including:
an annular chamber;
a magnet coil assembly within said annular chamber of the housing and including a main magnet coil and a correction magnet coil;
said magnet assembly including a coil support structure secured within said annular chamber with a first axially extending ring portion adjacent to said bore and including a first annular groove, a second axially extending ring portion remote from the bore of said annular chamber and including a second annular groove, and a radially extending support spacer extending between said first ring and said second ring;
said first and said second axially extending ring portions supported on opposite sides of said radially extending support spacer;
said first annular groove being significantly smaller than said second annular groove;
a main superconducting magnet coil positioned within said second annular groove;
a correction superconducting magnet coil positioned within said first annular groove;
said correction superconducting magnet coil being significantly smaller in diameter about said axis and in axial length than said main superconducting magnet coil;
means to energize said main and correction superconducting coils;
conduction cooling means to cool the interior of each said magnet assembly to superconducting temperatures;
said first ring and said second ring being secured to said radially extending support spacer and forming a coil support annular structure with a substantially Z-shaped cross section providing support for said coils which minimizes deflections and stresses in said coils due to thermally-induced and magnetic forces; and
a patient support member within and extending axially through said bore parallel to said spacers providing open space about the patient in the radial direction between said magnet coil assemblies and in the bore at the remote ends of said magnet assembly housings to minimize confinement and effects of claustrophobia of the patient within said bore.

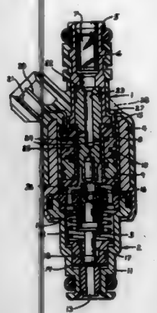
5,291,170
ELECTROMAGNETIC ACTUATOR WITH RESPONSE TIME CALIBRATION
Brent J. Wahbe, Honeoye Falls, N.Y., and Paul B. Riesi, Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 5, 1992, Ser. No. 956,190
Int. Cl.[5] H01F *7/10*
U.S. Cl. 335—246 **6 Claims**

1. A calibratable direct current electromagnetic actuator, comprising:
a first coil, energized to produce a first magnetic field;
a second coil, energized to produce a second magnetic field directionally opposing said first magnetic field and lesser in magnitude than said first magnetic field, energization of said first and said second coils producing a resultant magnetic field with a magnitude equal to the difference be-

tween the magnitudes of said first and said second magnetic fields and directionally identical to said first magnetic field;

a variable resistance element, connected with said second coil, the resistance being adjustable to variably affect current flow through said second coil, thereby affecting the magnitude of said second and said resultant magnetic fields; and

an armature electromagnetically biased to a first position by said resultant magnetic field in response to energization of said first and said second coils and mechanically biased to



a second position in response to deenergization of said first and said second coils, the armature being moved from the second position to the first position in a first armature response time in response to said energization of said first and second coils and moved from the first position to the second position in a second armature response time in response to said deenergization of said first and second coils;

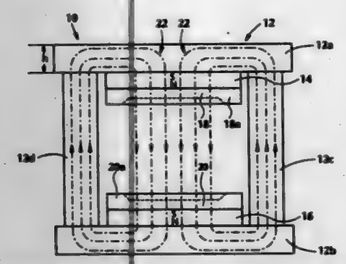
said variable resistance element having a value establishing the magnitude of the resultant magnetic field at a value whereby said first and said second armature response times are at predetermined values.

5,291,171

MAGNET APPARATUS SUITABLE FOR MAGNETIC RESONANCE IMAGING

Nobutaka Kobayashi; Ken Ohashi, and Koji Miyata, all of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,225
Claims priority, application Japan, Dec. 17, 1991, 3-353211
Int. Cl.[5] H01F *7/02, 3/00*
U.S. Cl. 335—306 **4 Claims**



1. A magnet apparatus suitable for magnetic resonance imaging, the apparatus having a pair of permanent magnet discs each of which is magnetized in the direction of thickness, a yoke which connects said pair of permanent magnet discs and holds the permanent magnet discs parallel and opposite to each other such that a pole face of one of the permanent magnet discs faces the opposite pole face of the other and a pair of disc-like pole pieces which are placed on the opposite pole faces of said pair of permanent magnet discs, respectively, so as to produce a uniform magnetic field in a cylindrical space between the two permanent magnetic discs,

characterized in that in said yoke the cross-sectional area of the whole magnetic path, A_y, is regulated such that the following equation holds:

$$A_y = 1/\alpha \times A_m B_m / B_{ys}$$

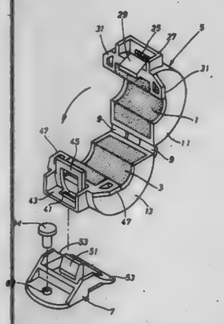
where A_m is the cross-sectional area of magnetic path in each of said pair of permanent magnet discs, B_m is the magnetic flux density in each of said permanent magnet discs at normal temperature, B_{ys} is the saturation magnetic flux density of said yoke at normal temperature, and a is a coefficient the value of which is not larger than 1 and not smaller than 0.6.

5,291,172

NOISE ABSORBER

Fuminori Ito, Nagoya, and Hiroyuki Ikeda, Musashino, both of Japan, assignors to Kitagawa Industries Co., Ltd., Japan

Filed Apr. 21, 1992, Ser. No. 871,892
Claims priority, application Japan, Jul. 18, 1991, 3-56196[U]
Int. Cl.[5] H01F *27/26*
U.S. Cl. 336—65 **18 Claims**



1. A noise absorber for absorbing electric noise in a wire, said noise absorber comprising:

a coupling member molded of magnetic material and being in the shape of a cylinder, said coupling member being divided in half along a longitudinal axis thereof to form a pair of substantially identical mating coupling members which, when combined with one another, enclose the wire;

a container comprising first and second cases each containing one of said pair of coupling members therein, said first and second cases being hinged to one another by hinge means located adjacent a second end thereof to facilitate pivotable opening and closing of said container, and said second case having a first engaging portion; and

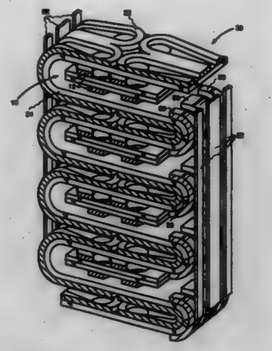
a support member, for securing said container to a desired surface, comprising a bottom surface for engaging the desired surface, means for securing said support member to the desired surface, a second engaging portion positioned remote from said bottom surface located to engage said first engaging portion and secure said container to the support member, and flank support means for supporting an exterior flank portion of said container, wherein said first and second engaging portions and said flank support means are positioned such that at least a portion of said container substantially lies in a plane defined by said bottom surface of said support member when said first and second engaging portions engage one another.

5,291,173

Z-FOLDABLE SECONDARY WINDING FOR A LOW-PROFILE, MULTI-POLE TRANSFORMER

Alexander J. Yerman, Scotia, and Waseem A. Roshen, Clifton Park, both of N.Y., assignors to General Electric Co., East Windsor, N.J.

Filed Feb. 21, 1992, Ser. No. 838,958
Int. Cl.[5] H01F *27/28*
U.S. Cl. 336—183 **8 Claims**



1. A transformer, comprising:

a primary winding comprising a continuous primary conductive film having a generally serpentine configuration and being disposed on a primary dielectric membrane, said primary conductive film being z-folded to form a multilayer primary winding having at least one turn about each of at least one pair of magnetic poles; and

a secondary winding comprising a continuous conductive film constructed from a plurality of secondary conductive film portions disposed on a secondary dielectric membrane, said secondary winding being z-folded to form a multi-layer secondary winding interleaved with said multi-layer primary winding, each of said secondary conductive film portions being configured to form a single continuous path enclosing each of said magnetic poles in such manner that each said path encloses one pole of each pair of said poles of each adjacent layer of said secondary winding, each said path thereby continuing along a respective fold of the multi-layer stack of windings, said secondary winding further comprising connecting means for electrically connecting said secondary conductive films together.

5,291,174

CERAMIC SUBSTRATE BLOWER MOTOR RESISTOR ARRAY

Richard A. Zirnheld, and Ronald J. Goubeaux, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

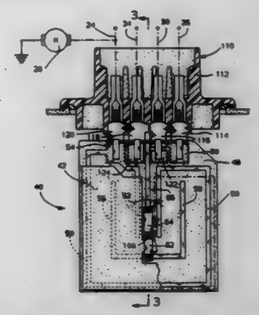
Filed Feb. 4, 1993, Ser. No. 13,526
Int. Cl.[5] H01C *7/10, 13/00, 1/012*
U.S. Cl. 338—24 **4 Claims**

1. A speed control resistor for a vehicle blower motor control in which said resistor is electrically connected in a current path of said motor and disposed in an air duct so that airflow produced by rotation of the blower motor dissipates heat generated in said resistor due to conduction of blower motor current therethrough, said resistor comprising:

a flat ceramic substrate having first and second sides, each side having a resistor region;

a first resistor adapted for connection in the motor current path to provide a first blower motor speed, said first resistor being defined by a first patch of resistive material disposed on substantially the entire resistor region of the first side of said substrate;

a second resistor adapted for connection in the motor current path with said first resistor to provide a second blower motor speed, said second resistor being defined by



a second patch of resistive material disposed on a first portion of the resistive region of the second side of said substrate; and

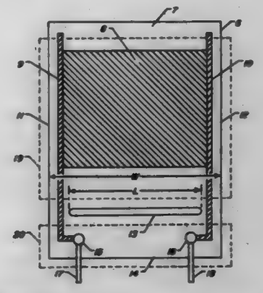
a third resistor adapted for connection in the motor current path with said first and second resistors to provide a third blower motor speed, said third resistor being defined by a third patch of resistive material disposed on a second portion of the resistor region of the second side of said substrate, the second and third portions comprising substantially the entire resistor region of the second side of said substrate.

5,291,175

LIMITING HEAT FLOW IN PLANAR, HIGH-DENSITY POWER RESISTORS

Donald W. Ertner, Carpentersville; Lawrence D. Gleason, Hoffman Estates, and Louis E. Roberts, Glenview, all of Ill., assignors to Ohmite Manufacturing Co., Skokie, Ill.

Filed Sep. 28, 1992, Ser. No. 952,809
Int. Cl.[5] H01C *1/08*
U.S. Cl. 338—59 **13 Claims**



4. A resistor comprising:

a. a thin planar body of generally rectangular shape with four edges and an upper and a lower surface, at least one of which is a non-conductive surface;

b. a first and a second conductive strip on a non-conductive

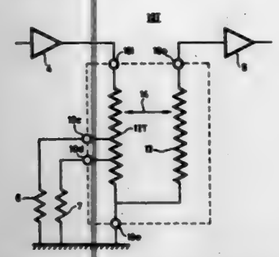
surface of the planar body partially enclosing a resistive region and providing partial boundaries thereto;
c. a resistance element with a power density of at least about 20 watts per square inch of a film of resistance material deposited within a portion of said resistive region and in electrical contact with each of said conductive strips;
d. first and second terminals of electrically conducting material securely attached to at least one edge of the planar body and projecting laterally therefrom,
e. a first electrical contact junction between the first terminal and the first conductive strip, and a second electrical contact junction between the second terminal and the second conductive strip;
f. an air gap to reduce heat flow from the resistive region to the electrical contact junctions located between the resistance element and the electrical contact junctions and having a length in the direction approximately perpendicular to the heat flow at least 70% of the width of the planar body, where the width of the planar body is the distance between opposing edges proximate to said air gap.

5,291,176

SLIDE TYPE VARIABLE RESISTOR

Masahiro Fujita, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jun. 15, 1992, Ser. No. 899,614
Claims priority, application Japan, Jun. 24, 1991, 3-151908
Int. Cl.[5] H01C *10/16, 10/38*
U.S. Cl. 338—125 12 Claims



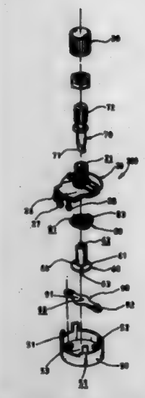
1. A variable resistor having a non-linear resistance or attenuation characteristic suitable for use as a volume control, comprising:
an input terminal and an output terminal;
a first resistor having a linear resistance or attenuation characteristic, and including a first end, a second end connected to said input terminal, and having a predetermined first resistance value between said first and said second ends;
a second resistor disposed alongside said first resistor and having a linear resistance or attenuation characteristic, said second resistor including a first end, a second end connected to said output terminal, and having a predetermined second resistance value, lower than said first resistance value, between said first and said second ends;
a slider for bridging said first and second resistors at locations intermediate said first and said second ends of said first and second resistors, said first end of each of said first and second resistors being connected, said first and second resistance values being selected whereby said variable resistor has an overall impedance characteristic suitable for volume control.

5,291,177

VARIABLE RESISTOR

Kun-Low Chiu, Taipei, Taiwan, assignor to Yung Chang Industrial Co., Ltd., Taiwan

Filed Nov. 4, 1992, Ser. No. 971,457
Int. Cl.[5] H01C *10/32*
U.S. Cl. 338—160 9 Claims



1. A variable resistor comprising a case inside which a rotatable member having a resistive element mounted thereon is disposed and a stationary member which overlaps the rotatable member and has three leads extending therefrom, said stationary member being secured on said case by a securing means, said leads respectively in connection with said resistive element at different locations thereof and extending out of said case to serve as external terminals, said case having a stopper mounted therein in such a position that when the rotatable member is rotated to a pre-determined limit thereof, a projection formed on said rotatable member encounters said stopper and stopped thereby to limit the rotation of said rotatable member, wherein the improvements comprise:
said variable resistor further comprises a rotation shaft which has a first end disposed between said case and said rotatable member and a second end running through a central hole formed on said rotatable member and a central bore formed on said stationary member and protruding out of said central bore to be engaged by a turning knob for providing rotation thereto, said rotation shaft having an annual radial flange formed on the first end thereof and being rotatably disposed in such a way to have the annual flange thereof disengageably engage said rotatable member with a retaining means so that when said rotation shaft is rotated to have said projection of the rotatable member encounter said stopper and a further rotation is applied on said rotation shaft, said rotatable member disengages from said shaft.

5,291,178

FILM-TYPE RESISTOR ASSEMBLY WITH FULL ENCAPSULATION EXCEPT AT THE BOTTOM SURFACE

Milton J. Strief, Fullerton, and David L. Martin, La Habra, both of Calif., assignors to Caddock Electronics, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 683,302, Apr. 10, 1991, abandoned. This application Mar. 17, 1992, Ser. No. 852,580
Int. Cl.[5] H01C *1/034*
U.S. Cl. 338—226 32 Claims

1. A film-type power resistor combination, which comprises:
(a) an elongate flat metal heatsink having substantially parallel upper and lower surfaces,
(b) a flat ceramic substrate having substantially parallel upper and lower surfaces, said substrate having a size and shape so related to those of said heatsink that when said substrate is in a predetermined position with its lower surface parallel to and adjacent both one end portion and an intermediate portion of said upper heatsink surface, and with said lower substrate surface overlapping said upper heatsink surface, the following relationship exist:
(1) the outer end portion of said upper heatsink surface is outwardly spaced from said lower substrate surface, and
(2) a substantial portion of said upper heatsink surface, and which is adjacent said other end portion of said upper heatsink surface, extends outwardly from beneath said lower substrate surface,
(c) means to effect a high thermal-conductivity bond between said lower substrate surface and said upper heatsink surface when said substrate is in said predetermined position, to thereby hold said substrate in said predetermined



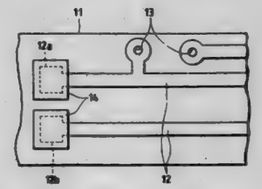
position and in high thermal-conductivity relationship to said heatsink,
(d) an electrically resistive film provided on said upper surface of said substrate,
(e) termination pins or leads connected physically and electrically to spaced-apart portions of said film and extending away from said substrate for connection into an electric circuit, and
(f) a molded body of synthetic resin encapsulating said substrate, the inner portions of said pins, and at least substantially the entire upper surface of said heatsink,
said lower heatsink surface being exposed so as to be mountable in flatwise engagement with the upper surface of a chassis, said molded body being thick to thereby provided structural strength to the combination, as well as environmental protection for said resistive film, said heatsink being a separate metal element that is not integral with any of said termination pins.

5,291,179

PRINTED CIRCUIT BOARD

Isao Ooe, Osaka, and Hisashi Ogura, Nara, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed May 20, 1992, Ser. No. 885,938
Claims priority, application Japan, May 23, 1991, 3-118309
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—307 6 Claims



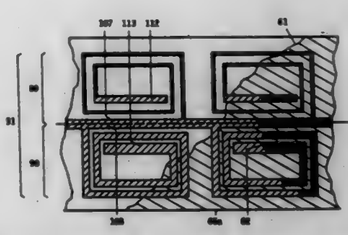
1. A printed circuit board comprising:
an insulating board;
a wiring pattern formed on said insulating board according to a predetermined electric circuit, said wiring pattern including a plurality of terminal holes for receiving therein terminals of various electric components to be attached by dip soldering to said printed circuit board, said wiring pattern further including a contact of a switch assembly at a portion thereof; and
an electrically conductive and non-solderable covering member covering said portion of said wiring pattern, said covering member ensuring that said portion covered thereby can readily be used as said contact of said switch assembly upon completion of the dip soldering which is effected to mount the various electric components on said printed circuit board.

5,291,180

LC STRUCTURE USEFUL IN RADIO FREQUENCY SECURITY SYSTEMS

Max-E. Reeb, Mozartstr. 29, D-7320 Göppingen, Fed. Rep. of Germany

Continuation of Ser. No. 586,694, Sep. 24, 1990, abandoned, which is a division of Ser. No. 135,547, Dec. 18, 1987, Pat. No. 4,990,891, which is a continuation of Ser. No. 28,893, Mar. 23, 1987, abandoned, which is a division of Ser. No. 513,970, Jun. 29, 1983, Pat. No. 4,694,283. This application May 7, 1992, Ser. No. 883,248
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143208
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—572 29 Claims



1. An LC structure for use in radio frequency security systems and resonant at at least one radio frequency, said LC structure comprising:
flexible insulative layer comprised at least of a dielectric layer (88) folded back on itself about a predetermined fold line (92; 111) with its inner surface either face to face or indirectly joined via at least one additional layer (62; 93) therebetween, said insulative layer having on one surface an electrically conductive layer (87) configured to form
(a) first and second alike planar multi-turn spirals (89, 90; 109, 110), which, in cooperation, form an inductive element,
(b) at least two substantially two-dimensionally shaped portions (107, 108; 114, 115), each electrically connected to a respective spiral (89, 90; 109, 110), symmetrically positioned on opposite sides of said fold line (92; 111), thereby being juxtaposed and having sandwiched therebetween at least said dielectric layer (88) to form a capacitive element, each of said portions (107, 108; 114, 115) having a substantially straight boarder parallel to and spaced a short distance from the respective substantially straight boarder of the other portion (107, 108; 114, 115), respectively, thus leaving therebetween an elongated region in which said conductive layer is at least predominantly absent, the two-dimensional shape of each of said two portions (107, 108; 114, 115) serving to thereby stiffen said insulative layer and to thereby cooperatively oppose any tendency of said (combined) insulative and conductive layers to fold along any line other than said predetermined fold line (92; 111) and thus precisely localize the fold such that
said two symmetrically positioned portions (107 and 108; 114, 115) and spirals (89, 90; 109, 110) are precisely juxtaposed opposite each other so that each

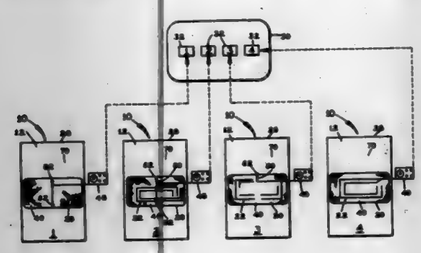
turn of said first spiral (89; 109) is aligned with a respective turn of said second sprial (90; 110) in a counter-turn relationship with respect to each other when both are viewed from the same side, to thereby form a series of stripline loops each having distributed inductive and distributed capacitive components, so that—by virtue of said precisely localized fold—a predictable capacitance for said capacitive element results which, in combination with said inductive element, causes said LC structure to resonate at said radio frequency.

5,291,181

WET BED ALARM AND TEMPERATURE MONITORING SYSTEM

Dominic A. DePonte, 8822 Hornaday Cir., South #413, Fort Worth, Tex. 76112

Filed Mar. 30, 1992, Ser. No. 860,324
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—604 **12 Claims**



1. A monitoring system for detecting urine and monitoring body temperature, comprising:
an electric circuit for activating indicator means, having a pair of electrodes having a break in continuity,
a lead member extending from each said electrode, said lead members being in a spaced apart relationship from each other,
a sheet of material extending over and resting against said lead members for absorbing and retaining urine to permit said urine to provide a conductive path between said lead members to complete said circuit and activate said indicator means,
a flexible sheet of waterproof material to which said lead members are joined,
heat sensor means for monitoring the temperature of a person resting against said sheet of material,
said heat sensor means being of the washer variety, and being secured to said flexible sheet with button members,
said heat sensor means comprising two independent and spaced apart heat sensors serving to also measure the temperature differential at two different points on said flexible sheet to indicate by the magnitude of said differential whether the sheet is wet.

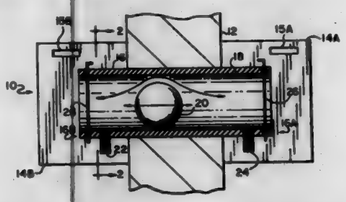
5,291,182

FLUID FLOW DIRECTION DETECTOR

Brian Wiesman, 95 Fairmount Ave., Saugus, Mass. 01906

Filed Sep. 24, 1991, Ser. No. 764,808
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—610 **15 Claims**

1. An apparatus for detecting the flow direction of a fluid comprising:
a conduit extending along a horizontal plane having an inlet/outlet openings at each end and adapted to receive a fluid moving in either direction of said conduit;
a detecting element disposed within the conduit and movable in the direction of a fluid flow, the detecting element being in direct contact with the fluid;
sensing means, coupled to the conduit, for determining when



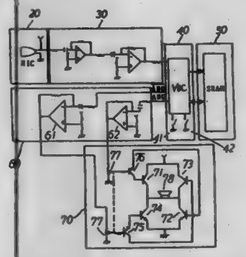
the detecting element reaches a predetermined position within the conduit; and
circuit means, coupled to the sensing means, for indicating the direction of fluid flow through the conduit.

5,291,183

MULTI-FUNCTIONAL ALARMING SYSTEM

Alan Chiang, Chung Hwa, Taiwan, assignor to Ultrafashion Textile Co., Ltd., Chung Hwa, Taiwan

Filed Mar. 9, 1993, Ser. No. 28,266
Int. Cl.[5] G08B *25/08*; H04R *29/00*
U.S. Cl. 340—691 **5 Claims**



1. A multi-functional alarm system comprising
a capacitive-type microphone for sensing ambient sound and providing an output responsive thereto;
a microphone amplifier for receiving the output from said microphone and for outputting analog signals representative of said ambient sound;
a vocoder for receiving said analog signals and having a memory, a recording switch and a playing switch, whereby the vocoder digitalizes said analog signals and stores the digitalized signals in said memory when said recording switch is in an ON position, and whereby the vocoder retrieves any digitalized signals stored in said memory and outputs converted analog signals having positive and negative phase components when said playing switch is in an ON position;
an audio preamplifier for receiving said converted analog signals and having two calculation amplifiers for respectively amplifying the positive and negative phase components of the converted analog signals and respectively outputting amplified positive and negative phase signals;
a power amplifier formed as a bridge circuit for receiving said amplified phase signals, further amplifying the amplified positive phase signal by means of first and second transistors and further amplifying the amplified negative phase signal by means of third and fourth transistors, the bases of the first and second transistors each being driven by a fifth transistor, the bases of the third and fourth transistors each being driven by a sixth transistor;
a speaker for providing audible sound when said playing switch is in said ON position; and

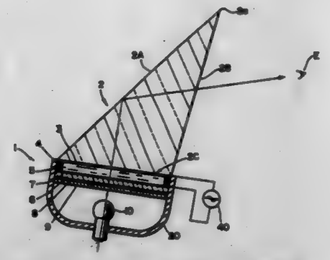
twin variable resistors for adjusting the output power applied to the speaker.

5,291,184

HEAD UP DISPLAY FOR A VEHICLE HAVING A LIQUID CRYSTAL INDICATOR AND A REFLECTING PRISM

Tadashi Iino, Shizuoka, Japan, assignor to Yazaki Corp., Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 834,179
Claims priority, application Japan, Feb. 8, 1991, 3-011132[U]
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—7 **5 Claims**



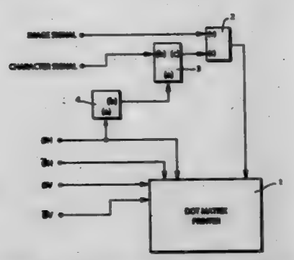
1. A display apparatus for a vehicle comprising:
a liquid crystal indicator with a backlight;
a prism having a first surface and a second surface joining at an apex of said prism, and a third surface, said prism being disposed near a dashboard within a viewing field of a windshield, a display image of said liquid crystal indicator being reflected on the first surface of said prism so as to be recognized by a driver, said liquid crystal indicator being in contact with said third surface of said prism.

5,291,185

IMAGE DISPLAY DEVICE

Masahiro Yoshimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 547,377, Jul. 3, 1990, abandoned, which is a continuation of Ser. No. 307,181, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 119,308, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 756,030, Jul. 17, 1985, abandoned. This application Aug. 9, 1991, Ser. No. 745,954
Claims priority, application Japan, Jul. 30, 1984, 59-162460
Int. Cl.[5] G09G *5/18*
U.S. Cl. 345—116 **8 Claims**



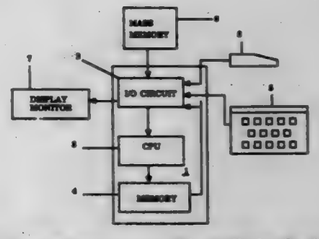
1. An image display device including a dot matrix display device having a plurality of unit image elements arranged in a matrix formation adapted to receive an image signal, a character signal and a pulse signal and to selectively display one of said unit image elements between successive leading edges of said pulse signal in response to receiving said image signal and said character signal, comprising:
signal generating means receiving said pulse signal and generating a sample-and-hold signal indicative of a leading edge of said pulse signal;
sample-and-hold means for sampling and holding said character signal in response to said sample-and-hold signal and outputting a sampled character signal; and
signal synthesizing means generating a display signal on the basis of said image signal and said sampled character signal and transmitting said display signal to said dot matrix display device.

5,291,186

METHOD AND APPARATUS FOR MINIMIZING THE VISUAL DEGRADATION OF DIGITAL TYPEFACES-DIAGONAL ADJUSTMENT

Eduardo Martinez, Palo Alto, and May Kao, Cupertino, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 263,043, Oct. 26, 1988, abandoned. This application Mar. 5, 1992, Ser. No. 846,584
Int. Cl.[5] G09G *5/26*
U.S. Cl. 345—128 **14 Claims**



1. In a computer system comprising a display for displaying characters of a digital typeface, a method for enhancing the legibility of the characters of the digital typeface, said process comprising the steps of:
ordering all diagonal segments by their slopes, said diagonal segments formed by frames points of frames representing the characters, said frame points having X-Y coordinate pairs, each of said characters being defined by a plurality of control points having X-Y coordinate pairs, said frame points of each character forming a polygon and having determinable geometric relationships with said control points of the character based on their coordinates;
forming groups of diagonal segments which are relatively close in angle;
rotating each group of diagonal segments by the complement of the average slope of the group such that the diagonal segments are approximately vertical;
identifying certain pairs of diagonal master segments as diagonal strokes if the two segments oppose one another in direction and, vertically overlap one another and the ratio of the length of vertical overlap and the distance between segments is greater than a predetermined amount indicative of the visual recognition of a stroke;
adjusting the thickness of the diagonal strokes according to the adjusted thicknesses of horizontal or vertical strokes which were the same or approximately the same thickness prior to adjustment;
adjusting the frame points of the diagonal strokes to correspond to the adjusted thickness of the diagonal stroke, wherein the thicknesses of adjacent strokes are preserved by displacing the frame points along the segments of the adjacent strokes.

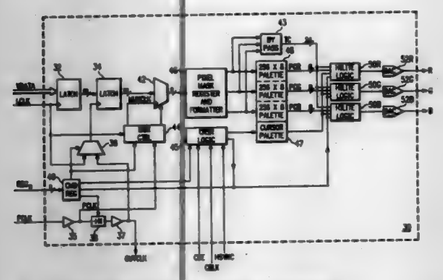
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,187

HIGH-SPEED VIDEO DISPLAY SYSTEM

Paul B. Wood, Spring, and Brian F. Bounds, Cypress, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed May 6, 1991, Ser. No. 695,963
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—185 20 Claims



1. A video display driver circuit, comprising:
a first clock terminal for receiving a pixel clock signal;
a second clock terminal for receiving a latch clock signal;
an output clock terminal;
a frequency divider circuit, for receiving the pixel clock signal from said first clock terminal, and for presenting, at said output clock terminal, an output clock signal having a period which is a multiple of the period of said pixel clock signal;
a plurality of data terminals for receiving pixel data;
a latch, coupled to said data terminals and to said second clock terminal, for storing pixel data received at said data terminals responsive to said latch clock signal;
a multiplexer, having a data input coupled to said latch for receiving said pixel data, having a clock input coupled to receive said pixel clock signal, and having an output, said multiplexer for applying a selected portion of said pixel data to its output responsive to said pixel clock signal; and
output circuitry coupled to the output of said multiplexer, for presenting said pixel data to a display device.

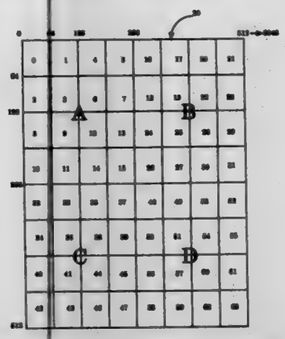
5,291,188

METHOD AND APPARATUS FOR ALLOCATING OFF-SCREEN DISPLAY MEMORY

Bruce McIntyre, Cupertino; Curtis Priem, Fremont, and Robert Recchetti, Cupertino, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 17, 1991, Ser. No. 716,671
Int. Cl.[5] G09G *1/16*
U.S. Cl. 345—189 8 Claims

1. In a computer system comprising a frame buffer memory, a method for allocating space in a selected portion of a frame buffer memory to store off-screen information, said method comprising the steps of:
dividing said selected portion of frame buffer memory into a matrix of blocks, each block having equal width and equal height, said block width and block height being equal to a power of two;
adjusting a requested memory size comprising a requested width and a requested height, rounding said requested width and requested height to the next power of two larger than the larger of said requested width and height;
searching said selected portion of said frame buffer memory for a free area to allocate, said free area being equal to said adjusted requested size comprising an integral multiple of said frame buffer memory blocks, said search being systematically conducted in an initial corner area and a series of three adjacent area sets until said free area is found, said initial corner area and each of the three adjacent areas of the first three adjacent area set being equal in size to said free area being sought, each of the three adjacent areas of the nth three adjacent area set being four times in size of each of the three adjacent areas of the $n-1^{th}$ three adjacent area set and two of the three adjacent areas of the nth three adjacent area set being adjacent to two of the three



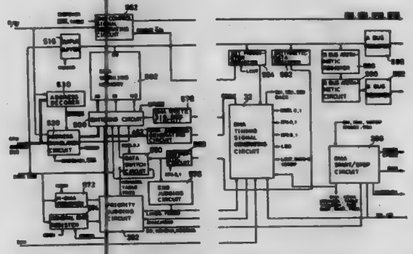
adjacent areas of the $n-1^{th}$ three adjacent area set, each of the three adjacent areas of the nth three adjacent area set being searched in the same manner as said initial corner area and n−1 three adjacent area sets were searched;
allocating said memory blocks within said free area found by said search.

5,291,189

DIRECT MEMORY ACCESS APPARATUS IN IMAGE PROCESSING SYSTEM AND EXTERNAL STORAGE DEVICE USED THEREIN

Masahiro Otake, Kyoto; Toyofumi Takahashi, Tokyo; Satoshi Nishiumi, Kyoto, and Hitoshi Yamamoto, Tokyo, all of Japan, assignors to Nintendo Co., Ltd., Kyoto and Ricoh Co., Ltd., Tokyo, both of Japan

Filed Aug. 26, 1991, Ser. No. 749,530
Claims priority, application Japan, Aug. 27, 1990, 2-225671
Int. Cl.[5] G09G *5/36*
U.S. Cl. 340—799 12 Claims



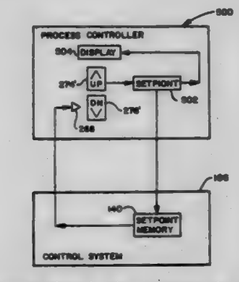
1. A direct memory access apparatus for use in an image processing system that displays an image on a raster scan monitor, said apparatus comprising:
a data storing means for storing a data to be transferred;
a data receiving means for receiving a transferred data;
an address value generating means for generating a first address value and a second address value necessary for direct memory access;
a horizontal blanking period detecting means for detecting a horizontal blanking signal which is synchronous with a horizontal blanking period of said raster scan monitor;
a vertical blanking period detecting means for detecting a vertical blanking signal which is synchronous with a vertical blanking period of said raster scan monitor;
a data transfer request means for generating a data transfer request signal when said horizontal blanking detecting means detects the horizontal blanking signal and said vertical blanking detecting means does not detect the vertical blanking signal; and
a first data transfer means for reading, in response to said data transfer request signal from said data transfer request signal from said data transfer request means, said data to be transferred from said data storing means in accordance with said first address value, said first data transfer means transferring the read data to said data receiving means in accordance with said second address value.

5,291,190

OPERATOR INTERFACE FOR PLANT COMPONENT CONTROL SYSTEM

Kenneth Scarola, Windsor, and Robert L. Rescori, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 28, 1991, Ser. No. 676,795
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.06 26 Claims



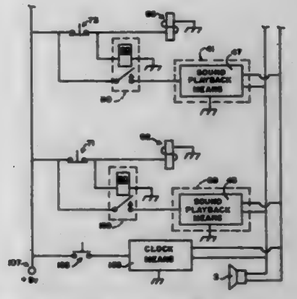
1. In a process plant having a system in which a process operating parameter varies in response to the state of at least two system components each of which can adjust a different system variable, and a process controller including a computer driven interactive graphics display device coupled to the system such that for a setpoint value of the process operating parameter the components can automatically adjust at least one variable to achieve the process operating parameter setpoint, wherein the improved process controller comprises:
a first region on the display device, for generating images of a first meter, said process operating parameter setpoint, and the value of the process operating parameter;
a second region on the display device, for generating images of a second meter and the value of a first one of said system variables;
a third region on the display device, for generating images of a third meter and the value of a second one of said system variables;
means on the display device, for generating an image of an interactive mode control target which can activate either of at least two system master control modes including,
automatic, such that for a non-operator specified setpoint value of the process operating parameter, any one or more of the components can automatically adjust at least one of said first and second variables to achieve the process operating parameter setpoint, and
semiautomatic, such that for a non-operator specified setpoint value of the process operating parameter, any one or more but less than of all the components can automatically adjust a respective at least one of said first and second variables to achieve the process parameter setpoint;
a fourth region on the display device, for selectively generating either of two distinct, interactive component control target images, wherein,
one of the component control target images includes means for manually adjusting said first variable, and
the other of the component control target images includes mans for manually adjusting said second variable,
whereby the process controller can be operated in said semiautomatic mode.

5,291,191

MEDICINE DISPENSER

Don L. Moore, P.O. Box 1022, 15 Carte Sq., West Plains, Mo. 65775

Filed Mar. 20, 1992, Ser. No. 855,101
Int. Cl.[5] G07F *9/02*; H04Q *1/00*
U.S. Cl. 340—825.35 12 Claims



1. A medicine dispenser for allowing first and second medicine doses to be safely dispensed, the medicine dispenser comprising:
a) a housing for containing the medicine doses; the housing including first compartment means for holding the first medicine dose and for movement between a closed position in which access to the first medicine dose is prevented and an opened position in which access to the first medicine dose is allowed; the housing including second compartment means for holding the second medicine dose and for movement between a closed position in which access to the second medicine dose is prevented and an opened position in which access to the second medicine dose is allowed;
b) sound means for selectively broadcasting audible descriptions of the first and second medicine doses;
c) first compartment switch means for causing the sound means to broadcast the audible description of the first medicine dose and for allowing the first compartment means to move from the closed position to the opened position; and
d) second compartment switch means for causing the sound means to broadcast the audible description of the second medicine dose and for allowing the second compartment means to move from the closed position to the opened position.

5,291,192

PAGING SYSTEM AND ITS OPERATING METHOD WITH REPEATED TRANSMISSION

Yoshio Ichikawa, and Derek Dawkins, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jan. 21, 1992, Ser. No. 823,285
Claims priority, application Japan, Jan. 24, 1991, 3-023964
Int. Cl.[5] H04Q *7/02*
U.S. Cl. 340—825.44 2 Claims

1. A method of operating a paging system, which is composed of a paging control unit, a transmitter and a plurality of

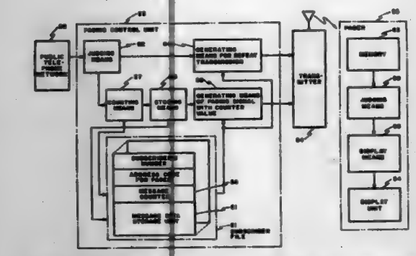
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pagers, each having a storage unit, said method comprising the steps:

at said paging control unit:

converting and storing an incoming call requesting a paging service into a converted paging signal, said call being received through a public telephone network, said call requesting said paging service including a called subscriber's number and message data, said paging signal including an address code of a called subscriber's pager and a message signal in order to transmit said converted paging signal;

giving each incoming call requesting said paging service a message counter value which is individually associated with each subscriber; and



transferring said paging signal including its message signal to said transmitter; and

at each pager having a message display function:

storing said message signal including said message counter value in its storage unit,

at said paging control unit the further steps of:

determining whether an incoming call received through a public telephone network is a normal call requesting paging service or a call from a suer of a pager who is requesting a repeated transmission, and

transferring the retrieved paging signal with caller's address code, requested message counter value, and its message data to the transmitter when said incoming call is determined to be a call requesting a repeated transmission.

5,291,193

IDENTIFICATION REGISTRATION FOR A WIRELESS TRANSMISSION-RECEPTION CONTROL SYSTEM

Yoichi Isobe; Hiroshi Chujo; Kouichi Okumura, and Hisashi Kamagai, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 581,192, Sep. 11, 1990, abandoned, which is a division of Ser. No. 299,532, Jan. 18, 1989, abandoned.

This application Dec. 20, 1991, Ser. No. 810,877

Claims priority, application Japan, Jan. 21, 1988, 63-11786

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.69 **1 Claim**

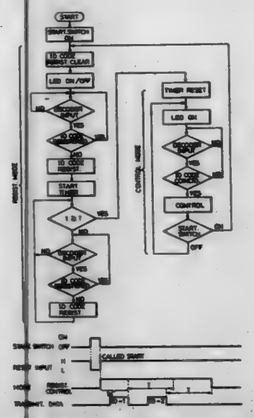
1. A wireless transmission-reception control system comprising:

a plurality of wireless transmitters respectively transmitting radio waves including transmission data including, for each transmitter, a unique ID code; and

a wireless receiver for receiving of radio waves, the wireless receiver including mode switching means for automatically switching an operating state of the wireless receiver between a registering mode for registering the ID codes in received radio waves and a normal mode for processing the transmission data, the mode switching means including:

start switch means for switching the wireless receiver into the registering mode in response to reception of radio waves from one of the plurality of wireless transmitters, and

a retriggerable timer circuit activated by the start switch means for maintaining the wireless receiver in the registering mode for a predetermined time period and for automatically switching the wireless receiver to the normal



mode after the predetermined time period elapses wherein the predetermined time period is restarted upon the registering of each unique ID.

5,291,194

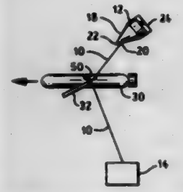
APPARATUS FOR INTERCONNECTING AN UNDERWATER VEHICLE AND A FREE-FLOATING POD

Gregory H. Ames, Gales Ferry, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 12, 1993, Ser. No. 45,156

Int. Cl.[5] H04B *13/02*

U.S. Cl. 340—850 **18 Claims**



1. Apparatus for interconnecting an unmanned underwater vehicle and a free-floating communications pod, said apparatus comprising:

a communications cable depending from said pod and extending to a buoy of less buoyancy than said pod, such that said cable carries communication signals between said pod and said buoy and extends generally vertically in a column of water between said pod and said buoy, said buoy being in communication with a distal station;

a mobile unmanned underwater vehicle having therein guidance means for directing said vehicle to said cable, said vehicle being in communication with a control vessel;

connector means mounted on said vehicle and adapted to intercept said cable, said connector means being further adapted to permit said cable to slide therethrough as said vehicle continues movement after said intercept of said cable;

complementary alignment means on said vehicle and said pod in a preselected orientation and azimuth; and

whereby said control vessel is placed in communication with said distal station.

5,291,195

TARGET LIGHT FOR DOCKING

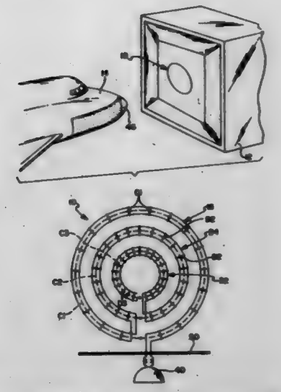
H. Gerald Gross, Santa Ana, Calif., assignor to H. Koch & Sons Co., Anaheim, Calif.

Continuation of Ser. No. 481,175, Feb. 20, 1990, abandoned.

This application Jan. 10, 1992, Ser. No. 821,241

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—958 **22 Claims**



1. A docking target mounted on a station for providing visual information enabling determination of attitude and distance of an approaching vehicle relative to the station over a range of distances to assist in the docking of the vehicle with the station, said target comprising:

a support (50),

first position indicating means (16) mounted on support (50) for continuously emitting light of a first predetermined luminous intensity visible to the approaching vehicle (14) to enable determination of a first subrange of distances between approaching vehicle (14) and said target, characterized by including

second position indicating means (24) mounted on support (50) adjacent said first indicating means (16) for continuously emitting light of a second and lesser predetermined luminous intensity visible to approaching vehicle (14) to enable determination of a second subrange of distances less than said first range between approaching vehicle (14) and said target (10) in conjunction with said first indicating means, wherein only said first position indicating means (16) is visible at said first subrange and both said first and said second position indicating means (16, 24) are visible at said second subrange, and further characterized by

said first position indicating means (16) and said second position indicating means (24) having geometric shapes, and being arranged with said second position indicating means (24) concentric about a common center with said first position indicating means (16).

5,291,196

COLLISION-AVOIDANCE METHOD FOR COOPERATING CARRIERS AND ONBOARD OPTICAL ASSEMBLY DESIGNED FOR ITS IMPLEMENTATION

Martin Defour, Croissy sur Seine, France, assignor to Thomson-CSF, Puteaux, France

Filed Aug. 20, 1992, Ser. No. 933,190

Claims priority, application France, Sep. 3, 1991, 91 10864

Int. Cl.[5] G08G *5/04*

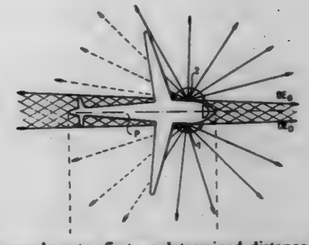
U.S. Cl. 340—961 **3 Claims**

1. A collision-avoidance method for cooperating carriers, said method comprising the steps of:

transmitting, from each carrier monochromatic pulsed lightwaves, coming from four wide-field optical transmission devices to cover the entire zone surrounding each of said carrier simultaneously to define a zone of proximity with the power of the optical transmission defining, under given weather conditions, the range of the transmission and thus the zone covered;

receiving, at each carrier, monochromatic, pulsed lightwaves radiated into the space by other cooperating carriers, on four wide-field optical reception devices covering into the proximity zone of another carrier prompting the detection of light radiation and the triggering of an alarm of either carrier;

placing a first two of said four optical transmission devices on a respective side of each of said carriers on either side of the vertical plane of symmetry of said carriers wherein the optical axes of said first two carriers are slightly offset from a parallel relationship in such a way that the spaces covered by each of the transmissions of the said first two transmission devices, in the horizontal plane of said carrier, overlap at a first predetermined distance from said carrier in one of a front and rear of said carrier and wherein the spaces covered by each of the transmissions of said first two transmission devices in the horizontal plane of said carrier, do not overlap in the other one of said front and rear of said planes;



placing a second two of said four optical transmission devices on the top and bottom of said carrier symmetrical about a horizontal plane of said carrier in such a manner that the optical axes of said second two carriers are slightly offset from being parallel in order to provide that spaces covered by each of the transmissions of said second two transmission devices, in a vertical plane of said carrier, do not overlap in said one of the front and rear of said carrier and wherein the spaces covered by each of the transmissions of said second two devices, in said vertical plane of said carrier, overlap at a second predetermined distance from said carrier to thereby provide substantially full volume coverage of the area surrounding each of said carriers.

5,291,197

ONE-CHIP DATA PROCESSOR WITH BUILT-IN A/D CONVERTER FOR AUTOMATICALLY REPEATING A/D CONVERSIONS WITHOUT INSTRUCTIONS FROM A CPU

Hideo Abe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 852,908, Mar. 18, 1992, which is a continuation of Ser. No. 378,967, Jun. 12, 1989, abandoned. This application May 7, 1993, Ser. No. 57,866

Claims priority, application Japan, Jul. 13, 1988, 63-175806

Int. Cl.[5] G06F *3/00*; H03M *1/12*

U.S. Cl. 341—141 **11 Claims**

1. A data processor comprising:

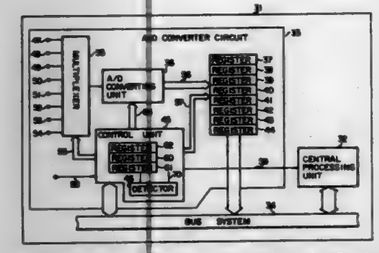
a central processing unit;

a plurality of analog input nodes;

analog input selecting means coupled, respectively, with

VOL 1160 ISS 1 MR 1 1994 UMI

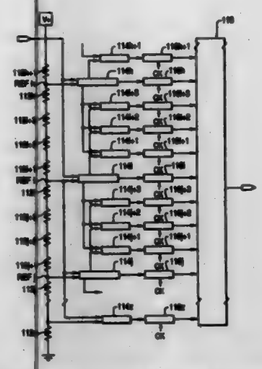
said plurality of analog input nodes, and operative to select one of said analog input nodes;
an analog-to-digital converting unit coupled with said analog input selecting means, and operative to convert an analog signal at the analog input node selected by said analog input selecting means into a digital code;
a plurality of registers coupled with said analog-to-digital converting unit, each register operative to store said digital code;
a function register coupled to the central processing unit for storing function codes needed to operate in a selected mode;
analog-to-digital mode conversion activating means coupled with said function register, said analog input selecting means and said analog-to-digital converting unit, and responsive to said function code to allow automatic entry



into a scanning mode upon completion of a fixed mode, and operative by producing selecting signals for sequentially indicating said plurality of analog input nodes to cause said analog-to-digital converting unit to carry out analog-to-digital converting operations in said scanning mode operation on analog signals received at each of said analog input nodes without rewriting said function code from said central processing unit upon completion of the analog-to-digital converting operation in said fixed mode operation on the analog signal at one of said input nodes specified by said analog input selecting means, and
a shared bus coupled between said central processing unit, said plurality of registers and said analog-to-digital conversion activating means for allowing said central processing unit to communicate with said plurality of registers and with said analog-to-digital conversion activating means.

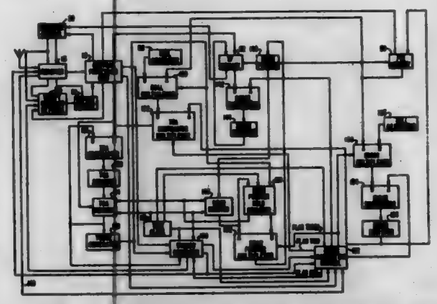
5,291,198
AVERAGING FLASH ANALOG-TO-DIGITAL CONVERTER
Andrew G. F. Dingwall, Princeton, and Fu-Lung Hsueh, Plainsboro, both of N.J., assignors to David Sarnoff Research Center Inc., Princeton, N.J.; Industrial Technology Research Institute and Electronics Research & Service Org., China
Filed May 29, 1992, Ser. No. 887,761
Claims priority, application United Kingdom, Mar. 16, 1992, 9205727
Int. Cl.[5] H03M *1/36*
U.S. Cl. 341—139 **17 Claims**

1. An analog-to-digital converter comprising:
refereace means for generating first and second predetermined reference values;
first actual comparator means, coupled to the input terminal and to the reference means, for generating a first difference signal representing the difference between an analog input signal and only the first reference value;
second actual comparator means, coupled to the input terminal and to the reference means, for generating a second difference signal representing the difference between the input signal and only the second reference value;
dividing means for dividing the first and second difference signals in a predetermined proportion to produce first and second proportioned difference signals;
pseudocomparator means, coupled to the dividing means, for combining the first and second proportioned difference signals to generate a comparison signal, said pseudocomparator means including a complementary metal



oxide semiconductor (CMOS) latch for storing the comparison signal; and
decoder means, coupled to receive the first and second difference signals and the stored comparison signal, for generating a digital output signal representing the input signal.

5,291,199
THREAT SIGNAL DETECTION SYSTEM
Kelly C. Overman, Millers; Donald B. Klein; Sabra R. Crosby, both of Columbia, all of Md., and Emil Hensel, Rego Park, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 6, 1977, Ser. No. 757,404
Int. Cl.[5] G01S *7/36, 7/42*
U.S. Cl. 342—13 **6 Claims**



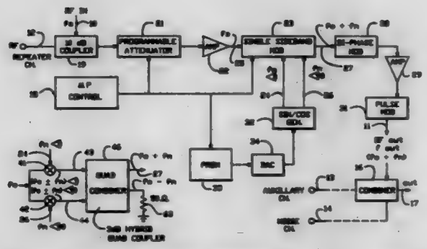
4. A threat signal radar detection system including a radar receiver for receiving radar beams constituting a plurality of threat signals, said system comprising a controller for condensing from said received radar beams at least one group of pulses which have substantially equivalent carrier frequency content and harmonically related pulse repetition intervals to detect at least one threat signal, having a plurality of pulse stagger levels with at least one pulse repetition interval being nonidentical to the others, from the plurality of received threat signals.

5,291,200
METHOD FOR MEASURING FREQUENCY MODULATION RATE CHARACTERISTICS FOR A SWEPT FREQUENCY SIGNAL
Pei-hwa Lo, Ramsey, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Aug. 20, 1992, Ser. No. 932,822
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—13 **7 Claims**



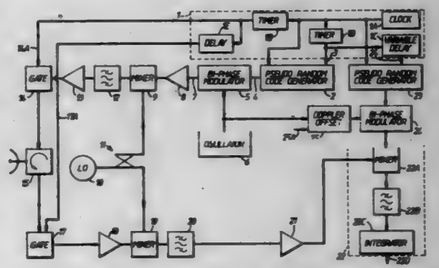
1. A method for measuring frequency modulation rate characteristics for a swept frequency signal, comprising:
sampling the zero crossings of a frequency modulation rate signal;
using the sampled zero crossings for initially estimating the sweeping characteristics of the frequency modulation rate signal;
tracking the error of the estimate;
updating the estimate if the error is beyond a predetermined threshold; and
using the updated estimate for measuring the frequency modulation rate characteristics.

5,291,201
MICROWAVE INTEGRATED CIRCUIT FREQUENCY TRANSLATING APPARATUS
Harvey Endler, Van Nuys, and Farid Meghali, Culver City, both of Calif., assignors to Systron Donner Corporation, Sylmar, Calif.
Filed Feb. 23, 1993, Ser. No. 21,203
Int. Cl.[5] G01S *7/38*
U.S. Cl. 342—14 **8 Claims**



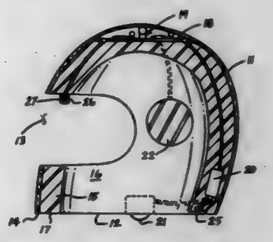
1. Frequency translating apparatus for receiving radar or other microwave signals of frequency, f_o, and frequency translating them to a signal of frequency f_o+f_m, comprising:
a single sideband (SSB) modulator formed as a thin-film planar hybrid type microwave integrated circuit on a high "g" force insulating substrate with microstrip conductors both on the top and bottom sides of said substrate,
said SSB modulator including a pair of mixer means for receiving fo and mixing fo with two quadrature phase modulating signals f_m to produce two quadrature output signals $f_o \pm f_m$ at 0° and $f_o \pm f_m$ at 90° and including quadrature coupler means responsive to said quadrature output signals to combine them for providing said frequency translated signal, f_o+f_m, and to suppress the other output signals of frequency f_o and f_o-f_m,
each of said mixer means including a beam lead diode quad chip in a ring configuration bonded to said microstrip conductors of said substrate to provide said planar circuit tolerant of said high "g" force,
said quadrature coupler means being formed as microstrip on said substrate and conductively connected to said diode quad chips.

5,291,202
NOISE RADARS
William J. McClintock, Witham, England, assignor to GEC Avionics Limited, Rochester, England
Filed May 13, 1986, Ser. No. 892,447
Claims priority, application United Kingdom, May 20, 1985, 8512730
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—16 **20 Claims**



1. A noise radar comprising: means for repeatedly generating a code comprising a sequence of digits; means for transmitting, during each sequence, pulses of energy occupying periods each of which spans at least one digit of the code, with the pulses having a regular pulse repetition frequency which is not an integral multiple of the repetition frequency of said code; means for changing said pulse repetition frequency; and means for modulating the transmitted energy in accordance with the prevailing output of the generator.

5,291,203
RADAR DETECTION HELMET
Eric H. Schneck, 211 High St., Wareham, Mass. 02571
Filed Mar. 8, 1993, Ser. No. 27,433
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—20 **2 Claims**



1. A radar detection helmet, comprising,
a rigid shell, having a shell entrance opening, with the shell entrance opening including a first continuous end wall, with the shell including a shell cavity within the shell, and

the shell cavity including a resilient liner coextensively directed throughout the shell within the shell cavity, and the resilient liner including a second end wall positioned in adjacency to the first end wall at the shell entrance opening, and the shell further including a visor opening directed through the rigid shell, with the visor opening including a visor opening continuous entrance wall, with the visor opening continuous entrance wall including a roof wall spaced from a floor wall,

and

a radar circuit cavity floor positioned within the shell between the resilient liner and the shell, with a radar circuit mounted upon the cavity floor,

and

a battery mounted within the liner in electrical communication with the radar circuit, and an on/off switch mounted to the second end wall in electrical communication with the battery and the radar circuit to effect selective actuation of the radar circuit,

and

an audio speaker directed into the shell cavity through the resilient liner,

and

a visual indicator light housing mounted within the roof wall, and the visual indicator light housing including a visual indicator light contained therewithin directed into the shell cavity for visual observation of an individual mounting the shell, and

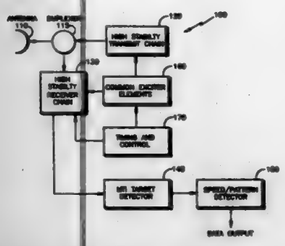
the roof wall includes an elongate roof wall slot, and the roof wall slot includes respective first and second facing arcuate contacts that are arranged orthogonally relative to the roof wall directed into the shell liner, and the housing is slidably mounted within the roof wall slot along the roof wall, with the housing including respective first and second housing contact plates arranged in sliding and electrical communication relative to the respective first and second arcuate contacts within the roof wall slot.

5,291,204

RADAR RESPONSE SYSTEM

Paul M. Denzer, Norwalk, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 9, 1990, Ser. No. 549,835
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—44 **8 Claims**



1. A radar system comprising an antenna;

a transmit chain of elements connected to said antenna;

a receiver chain of elements connected to said antenna for detecting a radar return signal having a return amplitude, return phase and return frequency;

timing and control means for directing power to said antenna and for receiving signals collected by said antenna;

an MTI target detector connected to said receiver chain for detecting frequency and/or phase shifts in a return signal returned by a target; and

a speed/pattern indicator connected to said MTI target indicator for processing signals therefrom to extract information representing the speed of said target, characterized in that:

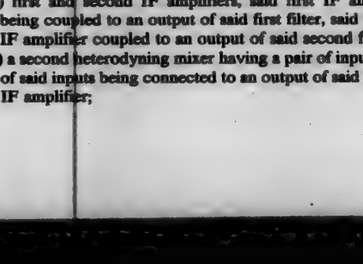
said speed/pattern indicator includes means for recognizing a predetermined speed/pattern signal representing a message sent from said target, whereby said target may communicate with said radar system by means of modulation of the phase or frequency of a radar target return to impress thereon a predetermined pattern representing a message, without substantially patterning said amplitude of said radar target return.

5,291,205

RADIO FREQUENCY AUTOMATIC IDENTIFICATION SYSTEM

Morton Greene, Arlington, Va., assignor to Gordian Holding Corporation, Dover, Del.

Division of Ser. No. 765,925, Sep. 24, 1991, Pat. No. 5,204,681. This application Nov. 19, 1992, Ser. No. 978,825
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—44 **19 Claims**



1. Apparatus for detecting or identifying radio frequency responsive targets in a target field, said targets being resonant at a plurality of radio frequencies and producing response signals at the frequencies at which they are resonant in response to radio frequency interrogating signals, comprising a transmitter for transmitting radio frequency interrogating signals to a target field and a receiver for receiving radio frequency response signals from said target field, said transmitter transmitting a periodic interrogating signal which during each period continuously varies in frequency over a target frequency range in a predetermined manner, and said receiver continuously receiving radio frequency signals form the target field during each period and producing an output attributing predetermined information to response signals from the target field in accordance with the times during each period at which changes in the response signal occur.

5,291,206

MULTIPLE TARGET DISCRIMINATION SYSTEM

Richard M. Troetler, Claremont, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Sep. 14, 1967, Ser. No. 669,356
Int. Cl.[5] G01S *13/60*
U.S. Cl. 342—42 **6 Claims**

1. A multiple target discrimination system for processing target Doppler signals in a guided homing missile comprising:

(a) a first heterodyning mixer having a pair of inputs, one of said inputs being adapted to receive target Doppler signals;

(b) a voltage controlled oscillator coupled to the other of said inputs of said first heterodyning mixer;

(c) first and second filters connected to an output of said first mixer, each of said filters having a response characteristic and selecting a mixer frequency product;

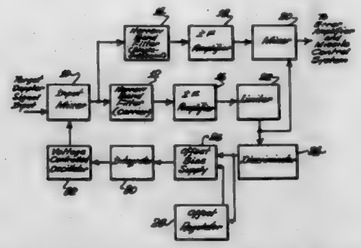
(d) first and second IF amplifiers, said first IF amplifier being coupled to an output of said first filter, said second IF amplifier coupled to an output of said second filter;

(e) a second heterodyning mixer having a pair of inputs, one of said inputs being connected to an output of said second IF amplifier;

(f) a limiter coupled to an output of said first IF amplifier, said limiter having an output connected to the other of said inputs of said second heterodyning mixer;

(g) a discriminator connected to said output of said limiter;

(h) offset circuit means operably coupled to an output of said discriminator for producing an offset of signals received



from the output of said discriminator to the respective edges of each of said response characteristics of said first and second filters; and

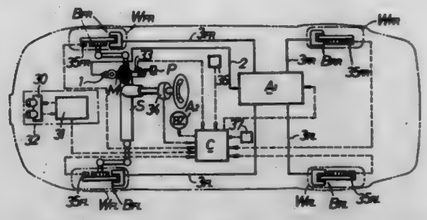
(i) an integrator circuit connected to an output of said offset circuit means, said voltage controlled oscillation being coupled to an output of said integrator circuit.

5,291,207

METHOD FOR ESTIMATING POSITION OF OBJECTIVE OBSTACLE FOR VEHICLE

Hayato Kikuchi; Yasuhiko Fujita; Toshiaki Arai; Yoshikazu Tsuchiya; Makoto Sato, and Kunio Nanno, all of Wako, Japan, assignors to Honda Gikea Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,970
Claims priority, application Japan, Dec. 27, 1991, 3-347495
Int. Cl.[5] G01S *13/60, 13/08*
U.S. Cl. 342—70 **3 Claims**



1. A method for estimating a position of an objective obstacle, in a vehicle equipped with a distance measuring unit which comprises a transmitting and receiving section capable of transmitting a signal toward the objective obstacle and receiving a reflected signal from the objective obstacle, and a calculating section for calculating a distance between the subject vehicle and the objective obstacle on the basis of a time between the transmission and the reception of the signals, said method comprising the steps of:

detecting the objective obstacle along a widthwise direction of the subject vehicle by the distance measuring unit;

developing detection data, detected by said distance measuring unit, on X and Y coordinates in which the widthwise direction of the subject vehicle is represented by an X axis; the longitudinal direction of the subject vehicle is represented by a Y axis, and the position of the subject vehicle is defined as an origin;

labeling each of obstacle data in such manner that the same labels are affixed to obstacle data which are in proximity to one another on said coordinates;

calculating the amount and direction of movement for every label on the basis of the last data and current data;

calculating a relative speed for every label relative to the subject vehicle by dividing the amount of movement by a sampling time; and

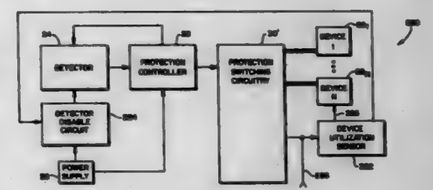
estimating the position of the objective obstacle after a lapse of a predetermined time on the basis of a relative speed vector determined from said relative speed and said direction of movement.

5,291,208

INCIPIENT LIGHTNING DETECTION AND DEVICE PROTECTION

Danny J. Young, Clayton, Ga., assignor to Raburn Labs, Inc., Orlando, Fla.

Filed Apr. 30, 1992, Ser. No. 876,332
Int. Cl.[5] G01S *7/285*
U.S. Cl. 342—198 **47 Claims**



1. An apparatus for protecting an electrical device from potentially damaging electrical field levels, the apparatus comprising:

means for detecting changes in an electrical field indicating the incipient presence of a potentially damaging electrical field level; and,

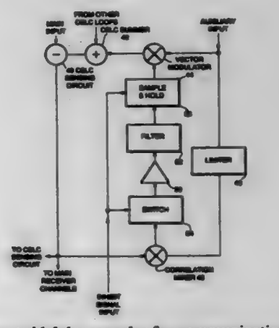
means responsive to the signal of the detecting means for electrically grounding a normally ungrounded circuit of the electrical device, and wherein the grounding means also disables and electrically grounds the detecting means in response to its own signal.

5,291,209

COHERENT SIDE LOBE CANCELER

Norol T. Evans, San Pedro, and Richard F. Hyneman, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 2, 1973, Ser. No. 413,402
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—381 **16 Claims**



1. A coherent sidelobe canceler for communications systems

providing effective continued operation within environments of large clutter and high pulse interference comprising:

A plurality of CSLC loops, each having;

CSLC correlation filter means responsive inclusively to a CSLC residue output signal and a CSLC INHIBIT signal,

CSLC limiter means responsive to an auxiliary input signal and providing a limited output signal to said correlation filter means,

CSLC vector modulator means inclusively responsive to said auxiliary input signal and a signal provided as output from said CSLC correlation filter means;

CSLC summing means responsive to the signal outputs from said vector modulator means and furnishing an output signal;

CSLC subtractor means responsive to a main input signal and the output signal furnished by said CSLC summing means;

CSLC sensing circuit means responsive to said CSLC residue and generating said CSLC INHIBIT signals.

5,291,210

FLAT-PLATE ANTENNA WITH STRIP LINE RESONATOR HAVING CAPACITANCE FOR IMPEDANCE MATCHING THE FEEDER

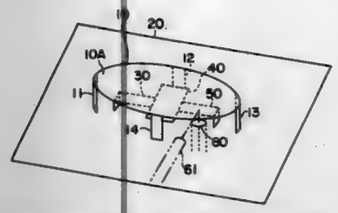
Kazuhiko Naksse, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 438,345, Nov. 16, 1989, abandoned. This application Jun. 23, 1992, Ser. No. 902,487

Claims priority, application Japan, Dec. 27, 1988, 63-330589

Int. Cl.[5] H01Q *1/32*

U.S. Cl. 343—700 MS **8 Claims**



1. A flat-plate antenna for use in mobile telephone communications, said antenna comprising:

a ground plate;

a table type antenna element comprising an elongated conductive flat-plate part spaced apart from said ground plate and a plurality of connecting parts which electrically connect said flat-plate part to said ground plate;

an elongated strip line resonator resonant in the lowest order mode ($\lambda/2$) of said flat-plate antenna provided under a central portion of said conductive plate part of said table type antenna element and spaced apart from both said elongated conductive flat-plate part and said ground plate, said strip line resonator having two ends with each end grounded to said ground plate, wherein λ equals the wavelength of the operating frequency of the flat plate antenna;

a capacitor electrode comprising a conductive flat plate coupled to a center portion of said strip line resonator and provided separate from and directly under a central portion of said table type antenna element; and

a feeder line being led out from beneath said ground plate and directly connected to an antenna feed point on said strip line resonator spaced apart from said capacitor electrode such that an antenna feed point impedance matches an impedance of said feeder line.

5,291,211

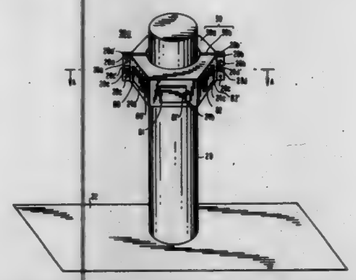
A RADAR ANTENNA SYSTEM WITH VARIABLE VERTICAL MOUNTING DIAMETER

Matthew B. Tropper, 168 Island Pkwy. W., Island Park, N.Y. 11558

Filed Nov. 20, 1992, Ser. No. 979,333

Int. Cl.[5] H01Q *1/12*

U.S. Cl. 343—890 **3 Claims**



1. A radar antenna apparatus for mounting around a vertical structure comprising:

a plurality of mount sections;

means for attaching said plurality of mount sections to each other around said vertical structure;

said means for attaching said plurality of mount sections to each other around said vertical structure including at least one fastener tab on each end of said plurality of mount sections and at least one fastener for securing together opposing pairs of said fastener tabs, whereby said mount sections are connected to form a central hole therethrough and said radar antenna apparatus is held to said vertical structure by friction between an exterior surface of said vertical structure and interior surfaces of said connected plurality of mount sections;

a plurality of radiating elements;

means for securing said radiating elements to an outer surface of said plurality of mount sections; and

means for varying a diameter of said central hole formed in said connected plurality of mount sections, whereby said radar antenna can be mounted upon vertical structures of different cross-sectional sizes;

wherein said means for varying a diameter of said central hole includes a plurality of variable support structures adapted to be mounted upon an inner surface of said plurality of mount sections; and

a plurality of arcuate members adapted to be mounted on said plurality of variable support structures, whereby a distance between oppositely facing ones of said plurality of arcuate members is varied and thereby the diameter of said central hole is varied.

5,291,212

GRID-TYPE PARABOLOIDAL MICROWAVE ANTENNA

Gary A. Cox, Victoria, Australia, assignor to Andrew Corporation, Orland Park, Ill.

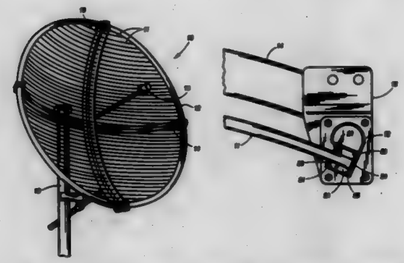
Filed Sep. 1, 1992, Ser. No. 938,822

Int. Cl.[5] H01Q *15/16*

U.S. Cl. 343—840 **11 Claims**

1. A grid-type microwave antenna comprising

a multiplicity of conductive rods, positioned parallel to each other in spaced apart relationship to each other, each of which is curved along its length to form a section of a paraboloid so that when all the rods are positioned parallel to each other in spaced apart relationship to each other, they form a paraboloidal reflector, and



a rim including insulating strips for receiving and holding the ends of said rods to position the rods in spaced apart and parallel relationship to each other.

5,291,213

PEN-TYPE COMPUTER INPUT DEVICE WITH MULTIPLE SPHERES

Kenneth W. Krause, 19308 N.E. 25 Avenue #193, Aventura, Fla. 33180

Filed Dec. 23, 1992, Ser. No. 995,087

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—179 **18 Claims**

1. A data input device comprising:

an elongate housing having a narrow lower tip end, an intermediate portion and an upper end portion, said intermediate portion arranged for grasping by the hand of a user;

three or more spheres rotatably mounted within said housing with each sphere contiguous with at least one other sphere, with a lowermost of said spheres partially extending below said lower tip for providing a rolling contact with a surface, said spheres arranged for serially driving one another, whereby motion imparted by rolling the lowermost sphere on said surface is transmitted serially through said spheres to an uppermost of said spheres.

5,291,214

METHOD AND APPARATUS FOR SCANNING A RECEIVING MEDIUM

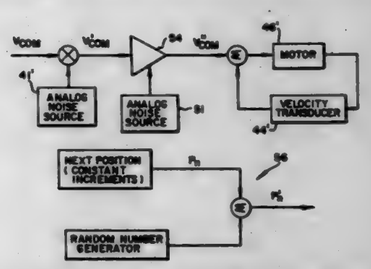
Seung H. Baek, Pittsford; Thomas A. Mackin, Hamlin, both of N.Y., and Ephraim Pinsky, Kiryat Tiv'on, Israel, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 1, 1991, Ser. No. 724,059

Int. Cl.[5] B41J *25/00*

U.S. Cl. 346—1.1 **13 Claims**

1. A method of scanning a receiving medium to write an image on said medium in an apparatus comprising means for supporting said medium, a scan head movable relative to said medium, means for moving said scan head relative to said medium including a lead screw having a pitch error which adversely affects the image written on said medium, and a motor arranged to drive said lead screw in response to a command signal supplied thereto, said method comprising the step of injecting an error signal into said command signal to variably drive said lead screw whereby adverse image effects are minimized.



5,291,215

INK JET RECORDING APPARATUS WITH A THERMALLY STABLE INK JET RECORDING HEAD

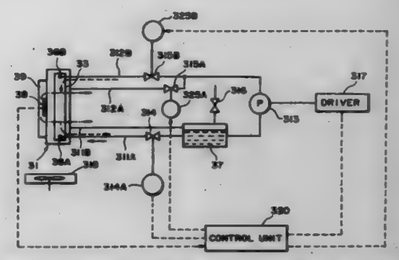
Minoru Nozawa, Machida; Yutaka Koizumi, Tokyo; Toshihiro Mori, Kawasaki, and Atsushi Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 410,514, Sep. 21, 1989, abandoned, which is a continuation of Ser. No. 271,645, Nov. 16, 1988, Pat. No. 4,896,172. This application Sep. 26, 1991, Ser. No. 765,468

Claims priority, application Japan, Nov. 20, 1987, 62-291963; Nov. 20, 1987, 62-291967

Int. Cl.[5] B41J *2/18, 2/05*

U.S. Cl. 346—1.1 **16 Claims**



11. A method for controlling the temperature of a recording head which utilizes heat for recording, said method comprising the steps of:

recording using said recording head;

supplying recording liquid stored in a common liquid chamber to discharge ports of said recording head by way of a liquid path, said common liquid chamber and liquid path disposed on one side of a substrate;

detecting a temperature change of said recording head during said recording;

selectively circulating a moving liquid within a secondary chamber on a back side of the substrate without interrupting recording by said recording head and circulating said moving liquid within said secondary chamber and said recording liquid within said common liquid chamber while interrupting recording by said recording head, in order to cool said recording head when the temperature rises above a predetermined range; and

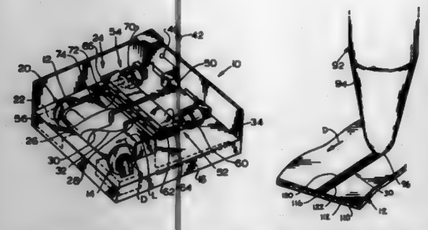
supplying air to remove heat from said moving liquid when said moving liquid is circulated.

5,291,216

MULTI-TRACE CHART RECORDER

Thomas Gill, Anaheim, Calif., assignor to Transit Services, Inc., Long Beach, Calif.

Filed Nov. 5, 1991, Ser. No. 788,132
Int. Cl.[5] G01D 9/00
U.S. Cl. 346—1.1 8 Claims



1. A method for recording a trace on a strip of pressure-markable chart paper, comprising the step of:

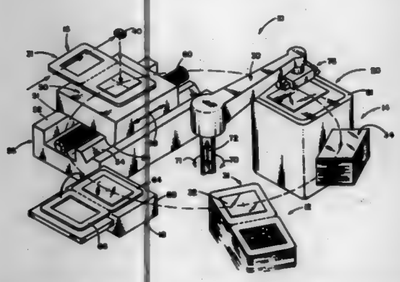
pressing a point of a piece of colored marking material against said chart paper with sufficient force to make a pressure-marked trace on said chart paper, while depositing some of said marking material on said chart paper adjacent to said pressure-marked trace, where the color of said colored marking material is different from a color of said pressure-marked trace.

5,291,217

METHOD AND APPARATUS FOR PRODUCING THERMAL SLIDE TRANSPARENCIES

Douglass L. Blanding, Rochester; Steven F. Entz, Hilton, and Hugh S. A. Gilmour, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1990, Ser. No. 529,849
Int. Cl.[5] B41J 2/48
U.S. Cl. 346—76 L 3 Claims



1. Apparatus for producing thermal slide transparencies, said apparatus comprising:

a rotatably-mounted transfer arm having means for releasably holding a donor element and means for releasably holding a receiver sheet;

said transfer arm having first means to first move said receiver element from a first supply station into an exposure position at an exposure station;

said transfer arm having second means to move a set of donor elements from a second supply station one element at a time into register with said receiver element at said exposure station;

means at said exposure station for holding said donor element and said receiver element in register, means for supporting said registered receiver element and donor element in said exposure station, means for moving said supporting means and said registered donor element and said receiver element in a cross-scan direction during an exposure of said donor element and said receiver element;

said second means of said transfer arm further moving each of said donor elements away from said exposure station to a disposal station after the exposure thereof; and

means for applying heat to said receiver element after the exposure thereof.

5,291,218

SPACER RAILS FOR LASER DYE TRANSFER TRANSPARENCIES

Charles D. DeBoer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 799,471, Nov. 26, 1991. This application Oct. 5, 1992, Ser. No. 956,712
Int. Cl.[5] B41M 5/26
U.S. Cl. 346—76 PH 16 Claims

1. In a thermal dye transfer assemblage comprising:

a) a dye-donor element comprising a support having thereon a dye layer and an infrared absorbing material associated therewith,

b) a dye-receiving element comprising a support having thereon a dye image-receiving layer having a given image area, said dye-receiving element being in a superposed relationship with said dye-donor element so that said dye layer is adjacent to said dye image-receiving layer,

the improvement wherein spacer rails having a height of about 3 to about 50 μm are located between said dye-donor element and said dye-receiving element, said spacer rails being located just outside said given image area of said dye image-receiving layer in such a location so as to separate said dye-donor element from said dye-receiving element; and

c) said dye-donor element support and/or said dye-receiving element support being rigid and flat in said assemblage so that there is no more than an insignificant sag at an area midway between said rails.

5,291,219

THERMAL TRANSFER RECORDING APPARATUS HAVING PREHEATING

Takeshi Ono, Yokohama; Satoshi Wada, Kawasaki; Makoto Kobayashi, Tama; Takehiro Yoshida, Tokyo; Tomoyuki Takeda, Yokohama; Yasushi Ishida, Tokyo; Minoru Yokoyama, Yokohama; Akihiro Tomoda, Yokohama; Masakatsu Yamada, Yokohama, and Takashi Awai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

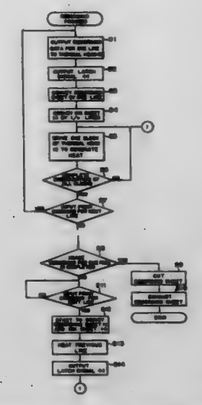
Division of Ser. No. 553,419, Jul. 17, 1990, Pat. No. 5,187,494.
This application Oct. 27, 1992, Ser. No. 967,237
Claims priority, application Japan, Jul. 19, 1989, 1-184413
Int. Cl.[5] B41J 2/38, 2/325
U.S. Cl. 346—76 PH 4 Claims

1. A recording apparatus for recording an image on a recording medium by transferring an ink from a member for containing ink therein, said apparatus comprising:

moving means for moving said member and said recording medium relatively;

heat generator for effecting said member thereby recording an image on said recording medium; and

control means adapted, prior to a start of a next recording operation by said heat generator, to instruct said moving means to start movement and said heat generator to effect said member with an energy smaller than in an ordinary recording operation, and thereafter causing said heat generator to start the next recording operation, said smaller energy being effected while said recording medium and said member are moved,



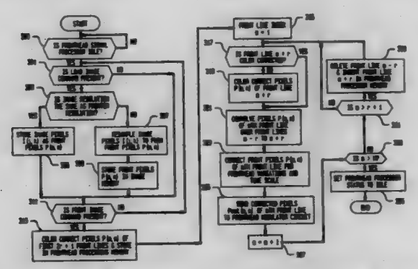
wherein the next recording operation is performed after a relative speed between the member for containing ink and the recording medium exceeds a predetermined value.

5,291,220

THERMAL PRINTER WITH IMAGE SIGNAL PROCESSING

Kevin J. Klees, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 539,257, Jun. 18, 1990, abandoned.
This application Feb. 3, 1993, Ser. No. 13,137
Int. Cl.[5] B41J 2/36
U.S. Cl. 346—76 PH 1 Claim



1. Apparatus for printing a continuous tone image of fixed spatial resolution, comprising:

(a) an image signal source for generating a set of successive lines of image signals representing image pixels corresponding to said continuous tone image;

(b) converting means coupled to said image signal source for converting said successive lines of image signals into print signals representing print pixels, and each of said print signals having a value, said converting means including,

(1) means for receiving said successive lines of image signals from said signal source,

(2) first storage means for storing said set of successive lines of image signals from the signal source,

(3) second storage means for storing a subset of said set of successive lines of said image signals from said first storage means, said subset including,

(i) a selected line of image signals to be converted to said print signals,

(ii) a first plurality of lines of image signals that precede said selected line, and

(iii) a second plurality of lines of image signals that succeed said selected line;

(4) means for storing a set of coefficient signals including convolution coefficient signals, color correction signals, print head heat element correction coefficient signals, and values representing the print head and the image signal;

(5) signals processing means responsive to said subset of said image signals for converting said image signals into said print signals, including,

(i) means for convolving said subset of said image signals with said convolution coefficient signals to enhance edge data in said image,

(ii) means responsive to said subset of said image signals and said color correction coefficient signals to correct color in said image,

(iii) means responsive to said subset of said image signals and said print head heat element correction coefficient signals to correct element to element variations in said print head, and

(iv) means for detecting a difference between said partial resolution of said print head and said continuous tone image means responsive to said detected difference for resampling said subset of said image signals to form said print signals at said spatial resolution of said print head where said value of each print pixel is a prescribed weighted average of said subset of image signals; and

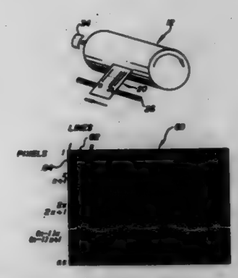
(c) a print head comprising a line of heating elements at a fixed spatial resolution coupled to said converting means responsive to said print signals for printing said print signals.

5,291,221

METHOD AND APPARATUS FOR THE CALIBRATION OF A MULTICHANNEL PRINTER

Kurt M. Sanger, Rochester; Thomas A. Mackin, Mackin, and Michael E. Schultz, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,056
Int. Cl.[5] G01D 15/10
U.S. Cl. 346—76 L 10 Claims



1. A method of printing test patterns with a multichannel printer, said printer having a plurality of "n" of light sources which are projected onto a receiving medium responsive to radiation wherein "n" is an integer, said receiving medium being supported on a rotatable drum and said light sources being mounted on a translator which is driven axially of the drum, said method comprising the steps of:

sequentially directing radiation from each of said light sources onto said receiving medium to form a test pattern thereon, said test pattern including a plurality of test patches, each of said test patches being formed by radiation from a set of said light sources produced by a known input, said set of light sources including one or more "a" adjacent light sources and wherein "a" is a whole integer; and

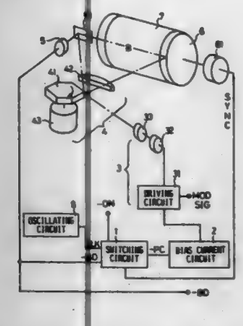
driving said translator at a speed of a/n of the speed which would form successive sets of "n" scan lines.

5,291,222

IMAGE EXPOSURE APPARATUS

Tsuyoshi Ohashi, Hashima, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 27, 1992, Ser. No. 858,854
Claims priority, application Japan, May 13, 1991, 3-107325
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 17 Claims



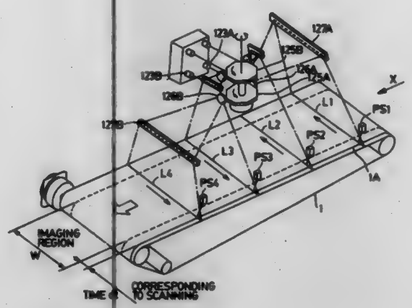
1. An image exposure apparatus comprising:
beam generating means for generating a beam, the beam having an intensity which is raised gradually from a low level to a predetermined level higher than said low level;
scanning means for causing the beam generated by said beam generating means to scan a photosensitive body;
beam detecting means for detecting the arrival of the beam caused to scan by said scanning means at a predetermined position, said beam detecting means further generating a beam detection signal upon detecting the arrival of the beam at the predetermined position;
photosensitive body moving means responsive to a reference signal for moving the photosensitive body at a predetermined speed, said reference signal comprising one of a clock signal and the beam detection signal;
clock generating means for generating the clock signal; and
switching means for switching said reference signal from said clock signal generated by said clock generating means to said beam detection signal generated by said beam detecting means, said switching means performing said switching at a predetermined period of time after operation of said beam generating means begins;
wherein said photosensitive body moving means is driven in accordance with the clock signal generated by said clock generating means, during the predetermined period of time after operation of said beam generating means begins; said photosensitive body moving means being further driven in accordance with the beam detection signal generated by said beam detecting means, after a lapse of the predetermined period of time after the operation of said beam generating means begins.

5,291,223

EXPOSURE UNIT FOR A MULTICOLOR IMAGE FORMING APPARATUS CAPABLE OF BETTER REGISTRATION OF THE MULTICOLOR IMAGES

Atsushi Ogane; Yozo Fujii; Tadashi Miwa; Isao Matsuoka, and Hideo Satoh, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Sep. 9, 1992, Ser. No. 942,726
Claims priority, application Japan, Sep. 19, 1991, 3-239671; Oct. 8, 1991, 3-260699
Int. Cl.[5] G03G *15/04, 15/01*
U.S. Cl. 346—108 9 Claims



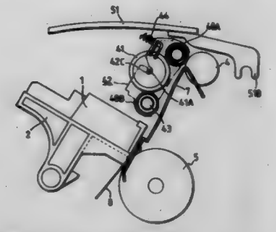
1. An apparatus for forming a color image by irradiating a rotatable photoreceptor with a plurality of laser beams to write plural color component latent images and by developing the latent images with a plurality of developing devices to form plural color component toner images, comprising
said rotatable photoreceptor having a given width in a direction perpendicular to the rotating direction thereof and provided with a reference position mark at the first side of the width;
exposure means for scanning said photoreceptors with a plurality of laser beams to write plural color component latent images, including
a laser generator to generate the plurality of laser beams,
a rotatable polygon mirror having a mirror at each edge sides thereof to reflect a laser beam so as to scan the photoreceptor in the width direction, wherein the polygon mirror receives two laser beams at two mirrors thereof which are arranged diagonal to each other and reflects the two laser beams in the opposite directions to each other so that a first laser beam of the two laser beams scans from the first side of the photoreceptor to the second side opposite to the first side and a second laser beam scans from the second side to the first side;
signal means for outputting first and second position signals independently when the first and second laser beams pass respectively the reference position mark provided at the first side on the photoreceptor; and
control means for controlling exposure means in accordance with the position signals so that the start timing of the first laser beam to write a latent image is determined on the basis of the first position signal which is obtained in the current scanning line of the first laser beam and the start timing of the second laser beam to write a latent image is determined on the basis of the second position signal which has been obtained in the previous scanning line of the second laser beam.

5,291,224

SHEET FEEDING APPARATUS USING PAIRS OF SPUR ROLLERS

Junichi Asano, Kawasaki; Kenichiro Hashimoto; Soichi Hiramatsu, both of Yokohama; Hiroyuki Inoue, Chiba; Takashi Nojima, Tokyo; Shinya Matsui, and Tetsuo Suzuki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1990, Ser. No. 603,946
Claims priority, application Japan, Oct. 27, 1989, 1-281181; Dec. 25, 1989, 1-336144; Dec. 25, 1989, 1-336145; Dec. 25, 1989, 1-336146; Dec. 25, 1989, 1-336147; Dec. 25, 1989, 1-336148
Int. Cl.[5] B41J *13/00, 2/01*
U.S. Cl. 346—134 32 Claims



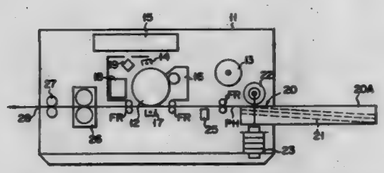
1. A recording system comprising:
a recording means for performing recording on a sheet;
a first rotary member disposed downstream of said recording means for contacting an unrecorded surface of the sheet on which the recording is performed by said recording means, and adapted to apply a feeding force to the sheet;
a second rotary member provided with a plurality of teeth at a peripheral surface thereof for contacting a recorded surface of the sheet with tips of said plurality of teeth of said second rotary member, said second rotary member cooperating with said first rotary member to feed the sheet;
a third rotary member provided with another plurality of teeth at a peripheral surface thereof for contacting a recorded surface of the sheet with tips of said teeth of said third rotary member; and
a cleaning means for cleaning said plurality of teeth of said second rotary member and said another plurality of teeth of said third rotary member by contacting said plurality of teeth of said second and third rotary members, said cleaning means transmitting a rotation of said second rotary member to said third rotary member.

5,291,225

DEVICE FOR DETERMINING PAPER SIZE BASED ON TIME DATA

Akihiro Saito, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,673
Claims priority, application Japan, Jun. 13, 1990, 2-152671
Int. Cl.[5] G01D *15/24, 15/26, 15/34*
U.S. Cl. 346—134 13 Claims



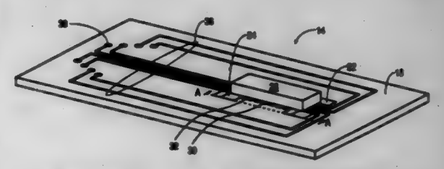
1. A paper size determination apparatus for an electrophotographic printer having a data processing section which controls printing of an image on paper fed along a feeding path, said paper size determination apparatus comprising:
paper sensing means for sensing an absence of paper condition and a presence of paper condition at a present position on the feeding path;
measuring means for measuring a period of time during which the presence of paper condition is sensed by said paper sensing means;
mode setting means for sequentially setting first, second, and third modes, and first mode being set at an operation start condition, said second mode being set when the presence of paper condition is sensed by said paper sensing means as the mode setting means is in said first mode, and said third mode being set when said absence of paper condition is sensed by said paper sensing means as the mode setting means is in said second mode; and
data processor means for determining, when said third mode is set during control of printing by the data processing section, a paper size according to the period of time measured by said measuring means.

5,291,226

NOZZLE MEMBER INCLUDING INK FLOW CHANNELS

Christopher A. Schantz, Foster City; Eric G. Hanson, Burlingame; Si-Ty Lam, Pleasanton, all of Calif.; Paul H. McClelland, Monmouth, Oreg.; William J. Lloyd, Pigeon, Mich.; Laurie S. Mittelstadt, Belmont, Calif., and Alfred I. Pan, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

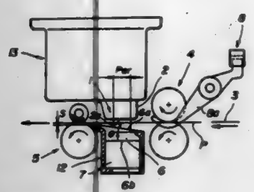
Continuation-in-part of Ser. No. 849,650, Mar. 9, 1992, which is a continuation of Ser. No. 568,000, Aug. 16, 1990, abandoned.
This application Apr. 2, 1992, Ser. No. 862,669
Int. Cl.[5] B41J *2/05, 2/14, 2/16*
U.S. Cl. 346—140 R 9 Claims



1. An apparatus for use in an ink printer comprising:
a unitary piece of insulating, flexible polymer material having a nozzle section and a conductor section,
said nozzle section having a top surface for facing a recording medium for printing, said nozzle section having a plurality of ink orifices formed in said polymer material by laser ablation, a bottom surface of said nozzle section having formed in said polymer material a plurality of vaporization chambers and ink channels for providing fluid communication between said ink orifices and an ink reservoir,
said conductor section including a plurality of separate conductors formed on said polymer material and having first ends leading to said nozzle section for conducting electrical signals for selectively energizing ink ejection elements proximate to each ink orifice,
said conductors having remote second ends for connection to power supply electrodes in an ink printer.

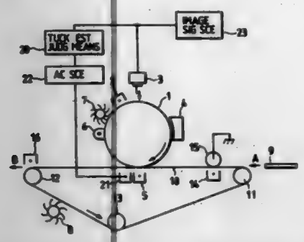
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5,291,227
INK JET PRINTER HAVING IMPROVED PAPER TRANSPORT MECHANISM
Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed May 11, 1992, Ser. No. 881,460
Claims priority, application Japan, May 17, 1991, 3-141342
Int. Cl.[5] B41J *11/02, 2/01*
U.S. Cl. 346—140 R 17 Claims



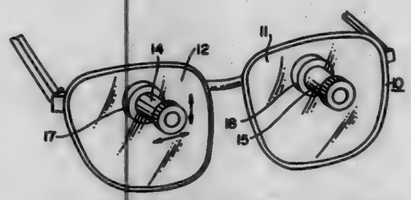
1. An ink jet printer comprising:
first roller means for supplying a paper;
second roller means for ejecting the paper supplied from said first roller means, said paper being transported along a paper transport direction in an approximately plane paper supply path between said first and second roller means;
a nozzle for ejecting ink on the paper in a printing region between said first and second roller means; and
guide means for guiding the paper between said first and second roller means, said guide means and said nozzle being located on mutually opposite sides relative to the paper,
a gap being formed between said guide means and the paper which is simultaneously transported by both said first and second roller means at least within the printing region,
said gap decreasing in the paper transport direction towards said second roller means.

5,291,228
IMAGE FORMATION APPARATUS HAVING TUCK PREVENTION CONTROL MEANS
Nagata Tetsuya, Hitachi; Umeda Takao, Mito; Takuma Yasuo, Hitachi; Igawa Tatsuo, Kitaibaraki, and Yamada Masato, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan
Filed Mar. 3, 1992, Ser. No. 845,328
Claims priority, application Japan, Mar. 7, 1991, 3-065226
Int. Cl.[5] G01D *15/06*; G03G *21/00*
U.S. Cl. 346—153.1 28 Claims



27. A network comprising a centralized control center, an image formation apparatus and a communication interface wherein said image formation apparatus includes a drum tuck prevention control element, wherein the image formation apparatus receives information relating to a drum tuck prevention from said centralized control center and modifies suitably a condition for preventing the drum tuck of a transfer material along a longitudinal direction of said transfer material in response to said received information.

5,291,229
ADJUSTABLE TELESCOPE ALIGNMENT APPARATUS FOR USE WITH A CARRIER LENS
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.
Continuation of Ser. No. 649,234, Jan. 29, 1991, Pat. No. 5,129,717, which is a continuation of Ser. No. 469,776, Jan. 16, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 810,717
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] G02C *7/08*
U.S. Cl. 351—57 10 Claims

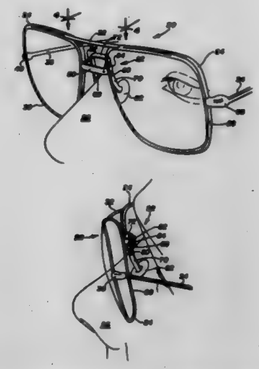


1. Apparatus for providing adjustability to an optical telescope of a cylindrical body configuration mounted on a carrier lens via an aperture in said lens, comprising: a collet member located in said aperture and secured to said carrier lens, said collet member being a tubular member having an opened top and bottom and having a concave groove located about an inner surface closest to said opened top, a pivot ring having a central aperture for encircling the body of said telescope and having an outer convex surface for positioning said ring and telescope within said concave groove of said collet member to form a ball and socket joint with a pivot point located at the center of said pivot ring to enable said telescope to be adjusted with respect to said carrier lens within a given cone of rotation with a first cone of rotation at the ocular input of the telescope about said pivot point and a second cone of rotation at the other end of the telescope about said pivot point and means coupled to said collet member for locking said ball and socket joint when said telescope is adjusted to a desired position.

5,291,230
OPHTHALMIC DEVICE INCLUDES A DETACHABLE NOSEPIECE
James B. Bradley, 4805 Inverness Dr., Tyler, Tex. 75703
Filed Nov. 17, 1992, Ser. No. 977,717
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—88 8 Claims

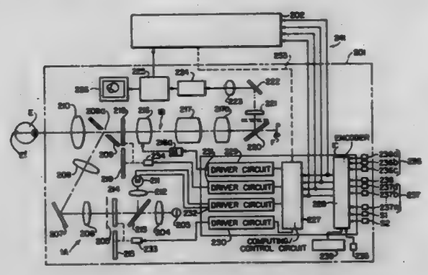
1. An ophthalmic device for use with an ophthalmic eyeglass frame having a detachable nosepiece designed to permit vertical and angular adjustment to fit the bridge of a user's nose and to permit the adjustment of the level of the eyeglass lens in relationship of the plane of the user's eye, the device comprising:
first and second mounting tabs disposed on the eyeglass frame;
a generally U-shaped nosepiece having first and second legs terminating in first and second ends, respectively;
said first leg including a plurality of spaced apart apertures, said second leg including a plurality of spaced apart apertures, each aperture being aligned with one of said plurality of spaced apart apertures of said first leg;
said nosepiece disposed between said first and second mounting tabs, such that said first leg is disposed adjacent to said first mounting tab and said second leg is disposed adjacent to said second mounting tab;

means disposed on said mounting tabs for selectively and frictionally engaging said apertures on said legs to thereby retain said nosepiece on the eyeglass frame and to permit angular rotation and vertical positioning of said nosepiece with respect to the eyeglass frame; and



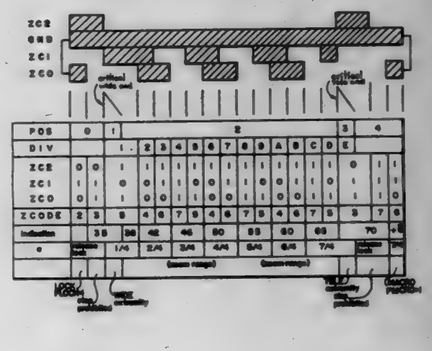
first and second pads disposed on said first and second ends of said first and second legs, respectively, of said nosepiece for contacting the user's nose.

5,291,231
OPTHALMOLOGICAL IMAGE PROCESSING SYSTEM
Masayuki Hideshima; Toru Suzuki; Akio Sekurai; Yoshio Okazaki, and Akio Morimoto, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan
Filed Nov. 27, 1991, Ser. No. 800,619
Claims priority, application Japan, Nov. 29, 1990, 2-331279
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—208 8 Claims



1. An ophthalmological image processing system comprising:
an ophthalmological camera for electronically obtaining a fundus image of a subject's eye;
data inputting means for inputting photographic condition data; and
data processing means for linking said fundus image obtained by said ophthalmological camera to the photographic condition data input by said inputting means and processing it,
characterized in that said data processing means is a recording means which attaches identical identification data to said fundus image and said photographic condition data, and records the fundus image and photographic condition data on different recording supports.

5,291,232
DEVICE FOR CONTROLLING AN OPERATION OF A MOVABLE MEMBER
Takeo Kobayashi, Tokyo; Yasushi Tabata, Chiba; Norio Numako, Tochigi; Katsutoshi Nagai, and Takao Nishida, both of Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 626,794, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 477,522, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 374,346, Jun. 30, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 825,779
Claims priority, application Japan, Jun. 30, 1988, 63-87118; Jun. 30, 1988, 63-87119; Jun. 30, 1988, 63-87120; Jun. 30, 1988, 63-163895; Jun. 30, 1988, 63-163896; Jun. 30, 1988, 63-163897; Jun. 30, 1988, 63-163898; Jun. 30, 1988, 63-163899; Feb. 10, 1989, 1-31315
Int. Cl.[5] G03B *5/00*
U.S. Cl. 354—195.1 41 Claims



1. A device for controlling movement of a lens in a camera, the lens being movable with respect to the body of the camera in accordance with movement of a movable member, the lens being prohibited from stopping at least in a predetermined area, said device comprising:
a plate member having conductive and non-conductive portions, said plate member being provided on either one of the camera body and the movable member;
a contact member provided on the other one of the camera body and the movable member, for relatively slidably contacting said plate member to detect the state of conductivity of said plate member at a predetermined position corresponding to a predetermined positional relationship between the lens and the body of the camera; and
means for driving the lens while monitoring said detected state of conductivity, wherein a certain portion of said plate member corresponding to said predetermined area is made to be non-conductive;
said device further comprising means, operable when the lens is moved through and past said predetermined area, for stopping the lens with respect to the body of the camera in any of a plurality of predetermined stopping positions, two of said plurality of predetermined stopping positions being respectively positioned near each side of said predetermined area, the lens being stopped by said stopping means only after detection of at least one conductive portion after passing said predetermined area.

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5,291,233

CAMERA HAVING AN AUTO ZOOM FUNCTION

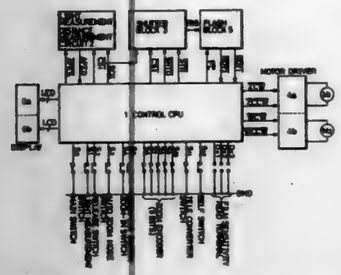
Takeshi Hashimoto; Masayuki Ikemura; Kazuo Kimura; Yoshiaki Hata; Kohtaro Hayashi; Hiroshi Ootsuka, and Motohiro Nakanishi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 29, 1990, Ser. No. 471,522

Claims priority, application Japan, Jan. 30, 1989, 1-21351; Jan. 30, 1989, 1-21352; Jan. 30, 1989, 1-21353; Jan. 30, 1989, 1-21354; Jan. 30, 1989, 1-21355; Jan. 30, 1989, 1-21356; Jan. 30, 1989, 1-21357; Jan. 30, 1989, 1-21358; Jan. 30, 1989, 1-21359; Jan. 30, 1989, 1-21360; Jan. 30, 1989, 1-21361; Jan. 30, 1989, 1-21362; Jan. 30, 1989, 1-21363

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—400 22 Claims



1. A camera comprising:
a taking lens for zooming including a plurality of lens elements,
an operable member,
distance measuring means for detecting a distance to an object in response to operation of said operable member,
focal length determining means for determining a prescribed focal length corresponding to a desired photographing range, according to the distance obtained by said distance measuring means,
drive means for driving at least a part of said lens elements to set the prescribed focal length determined by said focal length determining means,
detecting means for detecting operation or non-operation of said operable member, and
control means for stopping the drive of said drive means when the non-operation of said operable member is detected by said detecting means during the drive of said drive means, even if a focal length of said taking lens does not attain said prescribed focal length.

5,291,234

AUTO OPTICAL FOCUS DETECTING DEVICE AND EYE DIRECTION DETECTING OPTICAL SYSTEM

Osamu Shindo, and Shigeo Toji, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

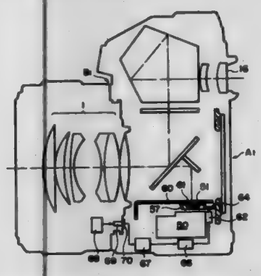
Continuation of Ser. No. 575,636, Aug. 31, 1990, abandoned, which is a division of Ser. No. 520,970, May 9, 1990, abandoned, which is a continuation of Ser. No. 374,564, Jul. 5, 1989, abandoned, which is a continuation of Ser. No. 152,359, Feb. 4, 1988, abandoned. This application Aug. 7, 1992, Ser. No. 926,367

Claims priority, application Japan, Feb. 4, 1987, 62-22561; Jun. 11, 1987, 62-146067; Nov. 20, 1987, 62-293751; Dec. 3, 1987, 62-306746; Dec. 17, 1987, 62-319337

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—402 64 Claims

1. An optical focus detecting device, comprising:
focus detecting optical systems that detects light beams passing through a taking lens of a camera to detect a focus status of said taking lens at independent zones in a viewing field, wherein at least one focus detecting optical system of said focus detecting optical systems changes a direction of an optical path of said light beam according to a change in a characteristic of said taking lens so as to direct an



optical axis of said at least one focus detecting optical system towards a center of an exit pupil of said taking lens.

5,291,235

AUTOMATIC FOCUSING DEVICE

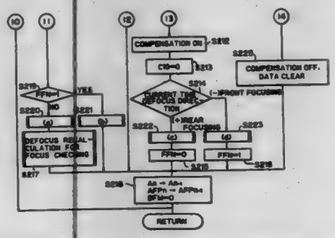
Yukio Uenaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,463, Nov. 29, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 76,693

Claims priority, application Japan, Nov. 29, 1990, 2-332865; Feb. 8, 1991, 3-103988; Feb. 8, 1991, 3-103989; Feb. 8, 1991, 3-103990; Feb. 13, 1991, 3-104057; Feb. 13, 1991, 3-104058; Feb. 13, 1991, 3-104059; Feb. 13, 1991, 3-104060

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—402 32 Claims



1. An automatic focusing device, comprising:
a focus lens that is movable along an optical axis thereof;
drive means for driving said focus lens;
distance measuring means for obtaining a defocus amount of said lens;
detecting means for determining the relative direction of movement of an object with respect to said focus lens from at least two relative directions, along said optical axis, based upon defocus amounts obtained by said distance measuring means; and
drive control means for controlling said drive means to drive said focus lens, based upon the relative direction determined by said detecting means, to a position where an in-focus condition is obtained with respect to said object after elapse of a predetermined time,
wherein said drive control means comprises means for determining a drive amount of said focus lens using different algorithms selected in accordance with said relative direction of movement of said object determined by said detecting means, wherein only one of said algorithms uses a factor related to release time lag.

5,291,236

CAMERA

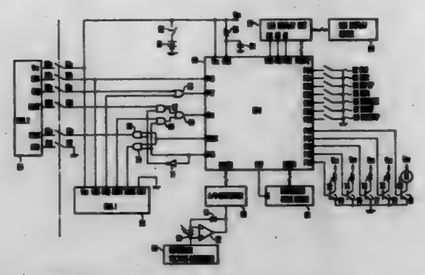
Toshifumi Ohsawa, Tokyo; Ryuichi Kobayashi, Kanagawa; Masayoshi Kiuchi, Kanagawa; Tatsuo Konno, Kanagawa; Toshio Matsumoto, Kanagawa, and Jun Terashima, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 759,629, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 475,862, Feb. 6, 1990, abandoned. This application Aug. 7, 1992, Ser. No. 925,892

Claims priority, application Japan, Feb. 10, 1989, 1-031410; Feb. 10, 1989, 1-031414; Feb. 10, 1989, 1-031417; Feb. 10, 1989, 1-032361

Int. Cl.[5] G03B *7/00*

U.S. Cl. 354—412 43 Claims



1. A camera comprising:
first signal input means mounted in a camera body;
second signal input means mounted in a back cover;
a processing circuit receptive of signals from said first and second signal input means for processing camera information;
a selecting circuit for selecting one of a plurity of exposure modes; and
a changeover circuit for automatically changing over kinds of camera information which can be set by said second signal input means in accordance with a mode selected by said selecting circuit.

5,291,237

FLASH SYNCHRONIZING DEVICE

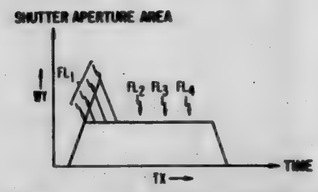
Shigeru Tagami; Toshihiko Aoyama; Teruyo Hayakawa; Hiroshi Yamazaki; Yuji Nakajima, and Seiichi Imano, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 874,285

Claims priority, application Japan, Apr. 25, 1991, 3-029142[U]

Int. Cl.[5] G03B *15/03, 7/08*

U.S. Cl. 354—413 15 Claims



1. A flash synchronizing device comprising a shutter serving as a diaphragm, a multi-flash means for effecting a plurality of flashes during a period from a start of a single exposure by said shutter to the end thereof, means for setting said diaphragm to a series of different diaphragm values during said period, including a maximum diaphragm value, and a maximum diaphragm value synchronizing flash means for synchronizing one of the flashes of said multi-flash means with the time of occurrence of said maximum diaphragm value of said series during said period, at least one other of said plurality of flashes occurring at a time other than the time of occurrence of said maximum diaphragm value.

5,291,238

PHOTOMETERING CIRCUIT

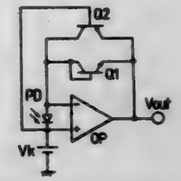
Seiichi Yasukawa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 15, 1992, Ser. No. 898,323

Claims priority, application Japan, Jun. 24, 1991, 3-177812

Int. Cl.[5] G03B *7/08*

U.S. Cl. 354—425 4 Claims



1. A photometering circuit comprising:
a photo-diode;
an operational amplifier;
a feedback diode; and
a latch releasing PNP transistor;
a cathode of said photo-diode being connected to a non-inverting input terminal of said operational amplifier and a reference potential, an anode of said photo-diode being connected to an inverting input terminal of said operational amplifier and an anode of said feedback diode, a cathode of said feedback diode being connected to an output terminal of said operational amplifier, an emitter of said PNP transistor being connected to the output terminal of said operational amplifier, a base of said PNP transistor being connected to said reference potential and a collector of said PNP transistor being connected to the inverting input terminal of said operational amplifier.

5,291,239

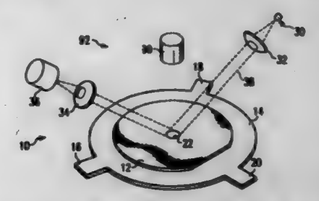
SYSTEM AND METHOD FOR LEVELING SEMICONDUCTOR WAFERS

Ricky A. Jackson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 954,516

Int. Cl.[5] G03B *27/42*

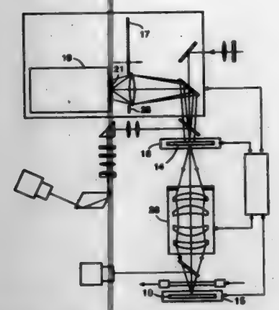
U.S. Cl. 355—53 20 Claims



1. A system for leveling a semiconductor wafer during fabrication of integrated circuits on the wafer using photolithography techniques comprising:
a light source for projecting a beam of light onto an exposure field on the wafer;
a detector to receive the beam reflected from the exposure field and determine the location of the exposure field relative to a first lens; and

means for adjusting the light beam for the desired exposure field.

5,291,240
NONLINEARITY-COMPENSATED LARGE-AREA PATTERNING SYSTEM
Kanti Jain, Briarcliff Manor, N.Y., assignor to Anvik Corporation, Elmsford, N.Y.
Filed Oct. 27, 1992, Ser. No. 967,189
Int. Cl.[5] G03B 27/42
U.S. Cl. 355—53 26 Claims



1. A large-area, high-throughput, high-resolution, scan-and-repeat patterning system for uniformly imaging a mask onto a substrate having nonlinear response characteristics, characterized by

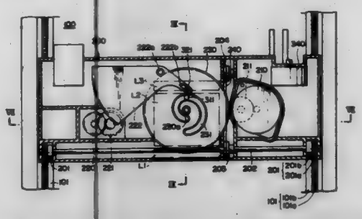
(a) a stage system (12/(15,16)) capable of synchronously moving a mask (14) and a substrate (10) at speeds in a certain ratio 1:R; said movements being scanning in one dimension, and when not scanning in that dimension, shifting laterally in a direction perpendicular to the scan direction so as to position said mask and substrate for another scan partially overlapping with the preceding scan; said stage system thus being capable of exposing the full substrate by breaking up the substrate area into a certain number of parallel strips and exposing each strip by scanning the length of the strip across a fixed illumination region;

(b) an illumination system (18) having the wavelength and intensity distribution characteristics suited for exposure of said substrate (10); having an effective source plane of a predetermined multisided shape (56/67/75); capable of illuminating a region of said shape on said mask (14); said predetermined multisided shape having at least one of its sides curved, and the curvatures of said curved sides being so determined that adjacent scanning exposures ((65,66)/(73,74)/(84,85)) are compensated in their overlap regions for the nonlinear response characteristics of said substrate (10) so as to provide uniform cumulative response;

(c) a projection assembly (26) for imaging said illuminated region of said predetermined multisided shape on the mask onto the substrate; having a mask-to-substrate imaging ratio of I:R; having the desired imaging resolution; and having an image field of an area smaller than the substrate area; and

(d) control means to operatively interrelate said stage system (12/(15,16)), said illumination system (18) and said projection system (26) to determine the width of said overlap regions of adjacent scans and to provide additive illumination in said overlap regions such that the effect of the exposure dose delivered in said overlap regions is seamless and the effect of the exposure dose delivered across the entire substrate is uniform.

5,291,241
OPTICAL DEVICE
Hiroyuki Hirano, Yokohama; Nobutaka Minefuji, Hokkai; Yasunori Arai, Saitama, and Minoru Suzuki, Omiya, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 16, 1991, Ser. No. 777,576
Claims priority, application Japan, Oct. 16, 1990, 2-278547; May 28, 1991, 3-225639
Int. Cl.[5] G03B 27/52
U.S. Cl. 355—55 20 Claims



1. An optical device employed in an imaging apparatus in which an image of an object is formed on a predetermined plane through a plurality of lens groups, said plurality of lens groups being coaxially arranged and used for changing the magnification of said object image formed on said predetermined plane, a plurality of filters for respectively allowing predetermined colors of light to pass therethrough being selectively inserted into the light path between said object and said predetermined plane, said optical device comprising:

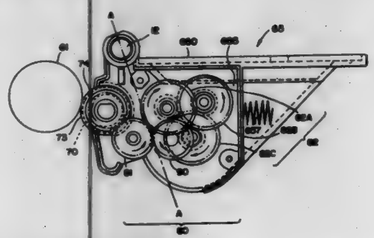
first drive means for driving said plurality of lens groups as a unit along the optical axis thereof while correspondingly changing the positional relation among the respective lens groups;

second drive means for independently driving at least one of said plurality of lens groups along said optical axis;

first control means for controlling said first and second drive means to drive said plurality of lens groups in accordance with a desired image magnification; and

second control means for controlling said second drive means to drive said at-least-one of said plurality of lens groups, depending upon the selected filter, so as to place the object image on said predetermined plane.

5,291,242
GEAR ARRANGEMENT FOR DEVELOPMENT UNIT OF IMAGING DEVICE
Masatoshi Takano, Akikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 24, 1992, Ser. No. 918,042
Claims priority, application Japan, Jul. 25, 1991, 3-274422
Int. Cl.[5] G03G 15/06, 21/00
U.S. Cl. 355—200 2 Claims



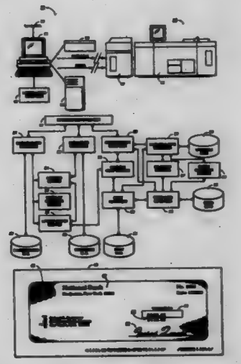
1. An arrangement comprising:

a mounting member provided with a movable member swingably supported by a main body of an imaging device and mounted to a predetermined position of said main body; and

a drive force transmission means coupled with said movable member and connected to a drive system provided with said main body so that a drive force provided by said drive system is transmitted to said drive force transmission means to drive said movable member,

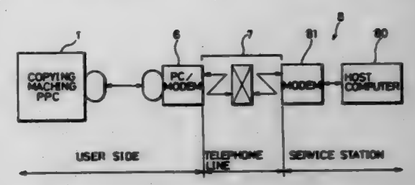
said drive force transmission means and said drive system being disposed such that a direction of action of a force transmitted from said drive system to said drive force transmission means is directed to a swinging fulcrum point at which said mounting member is swingably supported by said main body.

5,291,243
SYSTEM FOR ELECTRONICALLY PRINTING PLURAL-COLOR TAMPER-RESISTANT DOCUMENTS
Dean A. Heckman, Palmyra; Steven R. Tuttle, Rochester, and Irshad H. Qureshi, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 5, 1993, Ser. No. 14,474
Int. Cl.[5] G03G 21/00; G09C 5/00
U.S. Cl. 355—201 18 Claims



1. A plural-color printing system for printing plural color security documents with a printed image resistant to reproduction or alteration with an electronic printer printing an integrated image of the security document in a single pass, said single-pass electronic printer being controlled for said forming of said integrated security document image by an image generation system which electronically generates a safety background image pattern with at least a first color pattern and a second color pattern, said first color pattern being interposed with said second color pattern to form an interposed plural color pattern, and said image generation system further providing and electronically merging alphanumeric information interposed with said safety background image pattern for said printer to print said integrated image security document in a single pass.

5,291,244
IMAGE FORMING APPARATUS COMMUNICATION SYSTEM
Junichi Kajiwara, Nara, and Shigeharu Maehara, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 7, 1993, Ser. No. 58,646
Claims priority, application Japan, May 15, 1992, 4-123523
Int. Cl.[5] G03G 21/00
U.S. Cl. 355—202 12 Claims



1. An image forming apparatus communication system comprising:

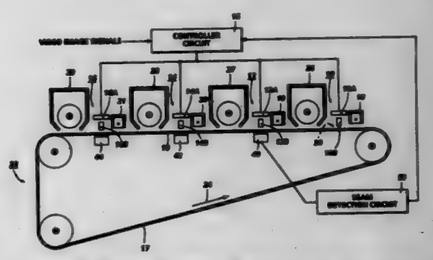
an image forming apparatus including control means for controlling operations of said image forming apparatus based on a program stored therein;

a host device which includes input means and display means, for giving said image forming apparatus an instruction corresponding to an input from the input means, and for displaying on the display means an information based on an information signal received from said image forming apparatus; and

communication means for communicating between said image forming apparatus and said host device, and

wherein said image forming apparatus includes means for transmitting an information signal indicating a program version of the control means to said host device through said communication means based on the instruction from said host device received through said communication means.

5,291,245
PHOTORECEPTOR BELT SEAM DETECTION AND PROCESS CONTROL
George A. Charaitski, Fairport, and Steven C. Hart, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 23, 1993, Ser. No. 35,869
Int. Cl.[5] G03G 21/00
U.S. Cl. 355—208 4 Claims



1. An improved reproduction machine of the type having a light transmissive photoreceptor belt mounted for movement substantially in a predetermined reference direction, said belt having a seam extending across the width thereof, wherein the improvement comprises:

an imager opposed from one surface of the belt for sequentially exposing portions of the belt surface to form a image thereof, and

at least one light sensitive sensor opposed from the other

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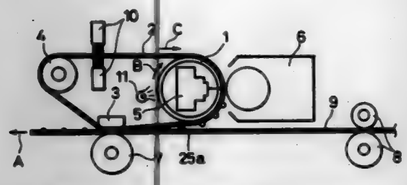
surface of the belt for sensing passage of the seam between the imager and the sensor, and for generating an output signal representative of said seam detection.

5,291,246

ELECTROPHOTOGRAPHIC PRINTING MACHINE

Kimihide Tsukamoto, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1992, Ser. No. 911,918
Claims priority, application Japan, Jul. 15, 1991, 3-174094
Int. Cl.[5] G03G *15/00, 13/00*
U.S. Cl. 355—210 **33 Claims**



1. An electrophotographic printing machine comprising:
photoreceptor means including a cylindrical base having an electrically conductive layer and a photoconductive layer laminated in this order on a periphery surface thereof;
dielectric moving means wound around a surface of said photoreceptor means and firmly adhering thereto for integrally moving therewith;
electrically conductive toner hold means for applying an electrically conductive toner on a surface of said moving means, said electrically conductive toner hold means being provided in a vicinity of the surface of said moving means in a contact area between said moving means and said photoreceptor means;
voltage application means for applying voltage across said toner hold means and the electrically conductive layer; and
exposure means for exposing the photoconductive layer in the contact area to form a latent image on the surface of the photoconductive layer with no discharging of the photoconductive layer occurring during exposure,
wherein said exposure means exposes the photoconductive layer in the contact area while applying voltage across said toner hold means and the electrically conductive layer so as to polarize the photoconductive layer, thereby forming a toner image on the surface of said moving means,
thereby providing an image without a charge device for charging the photoconductive layer of said photoreceptor means.

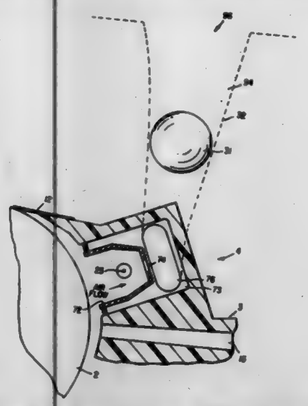
5,291,247

IMAGE FORMING APPARATUS HAVING A CORONA VENTILATING MEANS

Michael L. DeCecca, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

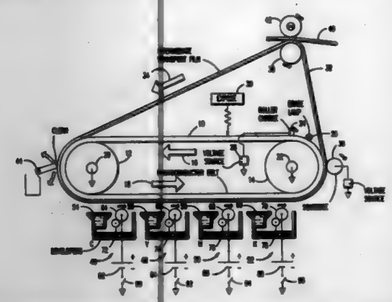
Filed Sep. 2, 1992, Ser. No. 939,338
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 **7 Claims**

1. Image forming apparatus including a corona generating source, means partially enclosing said corona generating source and means for ventilating said corona generating source, characterized in that said ventilating means includes:
means defining an opening in said enclosing means,
means defining an air channel from said opening to an exit location, said channel being shaped to define a path for air from said opening to said exit, said exit being higher than said opening, and
means for heating air in said channel to cause movement of air from said opening to said exit to ventilate said corona source, said heating means being located in said channel and including a thermal storage medium having a high specific heat and means for heating said thermal storage



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print receiving media and utilizing a plurality of color toner development and distribution stations for supplying liquid color tones of cyan, yellow, magenta, and black onto a developed latent image, characterized in that: an intermediate transfer film or belt is operatively positioned between a surface area of said photoconductive drum or belt and said stations for supplying liquid color toners and comprises a first main layer



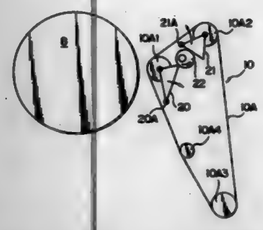
comprising a polyester material for location adjacent to said photoconductive drum or belt and a second outer release layer comprising either a fluorosilicon material or a cross-lined liloxane material disposed on an outer surface of said first main layer, whereby a composite color image is developed on said outer release layer from where it is transferred onto print receiving media.

5,291,252

MULTICOLOR IMAGE FORMING APPARATUS WITH TENSION CONTROLLED IMAGE TRANSFER BELT

Yasunori Kawaishi, Narashino, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 932,575
Claims priority, application Japan, Aug. 26, 1991, 3-213934
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—272 **13 Claims**



1. An image transfer structure for a multicolor image forming apparatus for sequentially transferring developed images of different colors formed one after another on a photoconductive element to an intermediate image transfer belt one above another, wherein a non-transfer period exists between periods of the transferring of the images of different colors to the intermediate image transfer belt, and then transferring said developed images from said intermediate image transfer belt to a recording medium at the same time to thereby form a full-color image, wherein said images are brought into register by either of a skip forward system which during the non-transfer period shifts said intermediate transfer belt away from said photoconductive element and moves said intermediate image transfer belt at a speed different from a previous speed and a quick return system which during the non-transfer period shifts said intermediate transfer belt away from said photoconductive element and moves said intermediate image transfer belt in a direction opposite to a previous direction, said image transfer structure comprising:

belt support means comprising a backup roller supporting the intermediate image transfer belt at a position where said backup roller faces the photoconductive element, and a tension roller applying tension to said intermediate image transfer belt; and

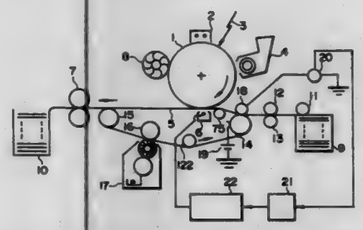
roller drive means for shifting said backup roller and said tension roller to move said intermediate image transfer belt toward and away from the photoconductive element such that said intermediate image transfer belt has the same tension when shifted into contact with said photoconductive element and when shifted out of contact with said photoconductive element during the non-transfer period.

5,291,253

CORONA DETERIORATION AND MOISTURE COMPENSATION FOR TRANSFER UNIT IN AN ELECTROPHOTOGRAPHIC APPARATUS

Takao Kumasaka; Yuzuru Simazaki; Yasuo Takuma, all of Hitachi; Masato Yamada, and Nobuyoshi Hoshi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Dec. 18, 1990, Ser. No. 629,419
Claims priority, application Japan, Dec. 20, 1989, 1-328500; Feb. 21, 1990, 2-038236; Mar. 13, 1990, 2-060017
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—275 **22 Claims**



1. In an electrophotographic device including an image holding member, from which an image is transferred to a target member, a transfer apparatus comprising:

a) a charged member, said charged member

i) adapted to hold said target member between itself and said image holding member, and

ii) having an electrical resistance;

b) a charger adapted to charge said charged member by providing a current;

c) a measuring device adapted to measure said electrical resistance of said charged member; and

d) a controller adapted to control said current provided by said charger based on said electrical resistance of said charged member measured by said measuring device.

5,291,254

ELECTROPHOTOGRAPHIC RECORDING APPARATUS

Akira Shimada; Isamu Terashima, both of Hitachi; Tomoji Kitagishi, Ibaraki; Kazuhiro Wakamatsu, Hitachi, and Masahiko Saito, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

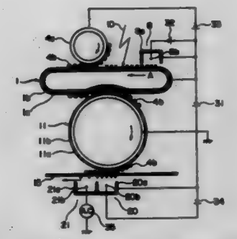
Filed Apr. 16, 1992, Ser. No. 868,871
Claims priority, application Japan, Apr. 18, 1991, 3-086533; May 10, 1991, 3-105524; Aug. 30, 1991, 3-219598
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—271 **10 Claims**

1. An electrophotographic recording apparatus including a photosensitive belt having an electrically conductive layer and a photoconductive layer formed on the surface thereof and

applied rotatably, means for sequentially forming a plurality of kinds of electrostatic latent images for different colors on said photosensitive belt, developing means for forming a plurality of toner images by depositing charged toner of colors corresponding to the electrostatic latent images, an intermediate transfer drum to which said plurality of toner images are transferred in overlapping fashion to complete a color toner image as it rotates synchronously with said photosensitive belt while making contact thereto, and means for transferring the color toner image formed on said intermediate transfer drum to a secondary recording medium, said apparatus comprising:

said intermediate transfer drum including a dielectric layer connected to earth;

first transfer means for transferring the toner images from said photosensitive belt to said intermediate transfer drum including a first bias power supply for applying a first transfer bias voltage which biases said electrically conductive layer of said photosensitive belt to potential having the same polarity as charging polarity of the toner relative to earth potential;



second transfer means for transferring the toner image formed on said intermediate transfer drum to said secondary recording medium including a second bias power supply for applying a second transfer bias which biases the back of said secondary recording medium to potential having opposite polarity to charging polarity of the toner relative to earth potential;

said means for formation of the electrostatic latent images including means for forming on the surface of said photosensitive belt electrostatic latent images by using the second transfer bias potential as reference potential; and

said developing means including means for developing the electrostatic latent images by using the second transfer bias potential as reference potential.

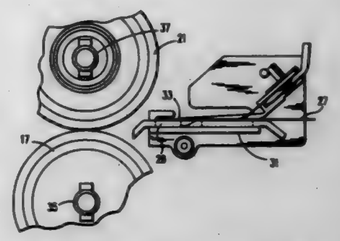
5,291,255

IMAGING APPARATUS WITH STRAIGHT PATH FIXING

Ignatius L. Britto; Alexander D. Meade; Ashok Murthy; Iraj D. Shakib, and William F. Volt, Jr., all of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Sep. 15, 1992, Ser. No. 945,195
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **4 Claims**

1. An electrophotographic imaging apparatus comprising a photoconductive surface, means for charging said photoconductive surface, means for exposing said charged surface to an optical image to at least partially discharge said charged surface in the pattern of said image, means to develop said image on said surface by applying toner to said image, an endless transfer member positioned to receive said toned image after said toned image is transferred from said toned photoconductive surface, an endless fixing member positioned to press paper or other image receiving substrate between said transfer member and said fixing member, means internal to said transfer member to heat said transfer member where said transfer member and said fixing member form said press location, means internal to said fixing member to heat said fixing member where said transfer member and said fixing member form said press location, a plate, means to heat said plate, said plate having a flat surface located so that the plane constituting an extension of said flat surface facing said fixing member substantially contains the tangent of said press location of said fixing member and said transfer member, a flat spring having surface coextensive with said flat surface positioned to urge by the resilience of said spring said paper against said flat surface, and



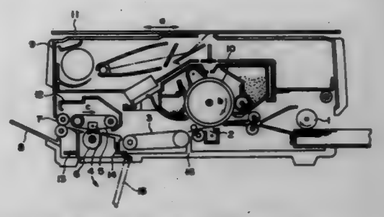
substrate feeding means to move said paper or other substrate in a straight path across said flat surface of said plate to preheat for fixing the image-receiving side of said paper or other substrate and then between said fixing member and said transfer member while said image is transferred to said paper or other substrate and fixed by heat.

5,291,256

IMAGE FORMING APPARATUS HAVING OPENING MECHANISM FOR JAM CLEARANCE

Kazushi Kitajima, and Tamotsu Okada, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,252
Claims priority, application Japan, Nov. 2, 1990, 2-298413; Nov. 30, 1990, 2-333809; Apr. 9, 1991, 2-076276
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 **23 Claims**



1. An image forming apparatus, comprising:

image forming means for forming an unfixed image on a recording material;

fixing means for fixing the unfixed image on the recording material, said fixing means including a heater, an endless film having a surface parting layer and a pressing member cooperative with said film to form a nip for receiving the recording material;

means for driving said endless film;

an opening portion for opening said apparatus for permitting a jam clearance operation of a jammed recording material in said fixing means;

wherein lateral movement of said film is inhibited when the film is not driven, and said pressing member and said film are separated from each other in association with opening of said opening portion.

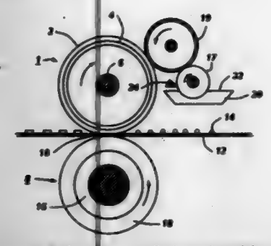
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5,291,257

COMPOSITE PRESSURE ROLL

Kenneth M. Carrah, Webster; Jerome P. Chasko, Williamson; Stacey R. Moss, Webster, and Raymond J. McQuade, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1993, Ser. No. 100,781
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—290 17 Claims



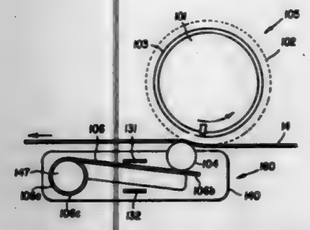
1. A pressure roll that forms a fusing nip with a fuser roll in a fusing system, said pressure roll comprising a core and a surface coating having been heat cured from a composition comprising a liquid fluorocarbon polymer and an irregularly shaped, nonplanar, inert filler having a hardness greater than 8 Mohs, said filler having a nominal particle size of from about 10 to 30 microns and being present in said cured surface coating in an amount of from about 10% to 40% by weight of the total solids weight of the coating.

5,291,258

SUPPORT SKI FOR FILM CLEANING DEVICE

James H. Cain, Brockport; Michael W. Moschauer, Rochester; Andrew J. Maner, Warsaw, and Richard C. Hutchings, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1992, Ser. No. 971,106
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—296 6 Claims



1. Apparatus for cleaning a recording medium in the form of an endless belt movable in an in-track direction and extending between at least a pair of rollers, said recording medium having a recording surface on which a developed image comprised of particles is formed and a back surface opposite said recording surface, the cleaning apparatus comprising:

means for removing residual particles from the recording surface, said means for removing being disposed on the recording surface side of said recording medium;

supporting means for supporting the back surface of the recording medium and for biasing the recording surface toward said means for removing residual particles, said supporting means including:

a support ski having a supporting surface which faces the back surface of said recording medium and is curved in the in-track direction,

a flexible member on which a first end of the support ski is securely mounted, and

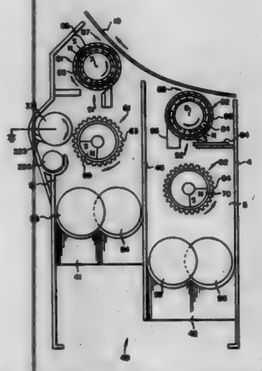
a biasing means for urging the support ski, by itself and with the flexible member, toward the means for removing to urge the supporting surface against the back surface of the recording medium.

5,291,259

IMAGE FORMING APPARATUS HAVING TONER CLEANING DEVICE

Richard A. Weitzel, Hilton; Thomas K. Hilbert, Spencerport, and Bruce J. Rubin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,449
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—306 5 Claims



1. Image forming apparatus having a device for cleaning toner off a surface, which device comprises:

a sump containing particulate cleaning material,

means for moving particulate cleaning material along a first path from the sump through a cleaning position where it passes through cleaning relation with the surface to be cleaned and then back to the sump,

means for moving particulate material along a second path from the sump to a position away from the sump and back to the sump without passing through the cleaning position, and

detoning means positioned in detoning relation with the particulate cleaning material in the second path.

5,291,260

IMAGE FORMING APPARATUS HAVING A TRANSFER DRUM WITH A VACUUM SHEET HOLDING MECHANISM

Kevin M. Johnson, Rochester, and Dwight J. Petruchik, Rush, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 3, 1992, Ser. No. 984,803
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—312 15 Claims

1. Image forming apparatus comprising:

an endless image member movable through a path,

means for forming a toner image on the image member,

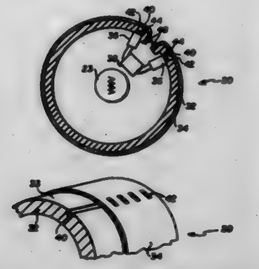
a rotatable transfer drum having an axis of rotation and a receiving sheet holding surface positioned to form a pressure nip with said image member,

vacuum means for holding a receiving sheet to said image sheet holding surface,

means for heating said transfer drum sufficiently to transfer said toner image to said receiving sheet in said transfer nip, characterized in that said transfer drum includes,

a metallic core having an outside cylindrical core surface and a core slot in said core surface running generally parallel to said axis of rotation,

a thin heat conductive metallic sheet fastened to said core surface and having a series of sheet slots perpendicular



to and in vacuum communication with said core slot and less than 0.25 mm across, the surface of said conductive sheet facing away from said core defining the receiving sheet holding surface of said drum, and

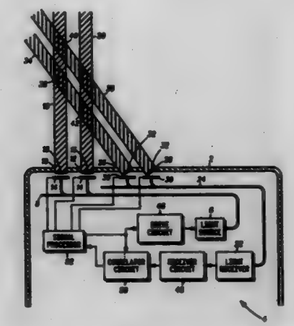
means connecting said vacuum means to said core slot to apply a vacuum through said sheet slots to hold a receiving sheet to said receiving sheet holding surface.

5,291,261

OPTICAL OBJECT DETECTION SYSTEM INCORPORATING FIBER OPTIC COUPLING

Randy Dahl, Mesa, Ariz., and Sanjar Ghaem, Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 6, 1990, Ser. No. 475,543
The portion of the term of this patent subsequent to Apr. 6, 2009, has been disclaimed.
Int. Cl.[5] G01C *3/00*; B60Q *1/00*; H01J *40/14*
U.S. Cl. 356—1 25 Claims



25. A system for use in a vehicle to detect objects in the vicinity of the vehicle, the system comprising:

a source of optical energy;

a plurality of spaced transmitter ports for respectively transmitting optical energy to a plurality of fields of illumination;

transmission fiber optic coupling means coupling the source of optical energy to the plurality of transmitter ports;

a plurality of receiver ports embracing respectively a plurality of fields of reception each having an area of overlap in the vicinity of the vehicle with each of the plurality of fields of illumination so as to receive optical energy transmitted from one of the plurality of transmitter ports and reflected by an object present in an area of overlap;

a receiver for receiving optical energy and for producing a signal representative thereof;

reception fiber optic coupling means coupling the plurality of receiver ports to the receiver;

means for sequentially activating each of the plurality of transmitter ports with each of the plurality of receiver ports during each cycle of activation of the system; and

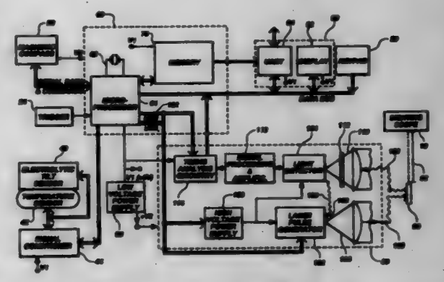
processing means for processing the signal produced by the receiver in response to each activation to sequentially detect the presence of an object in each of the areas of overlap in the vicinity of the vehicle.

5,291,262

LASER SURVEYING INSTRUMENT

Jeremy G. Dunne, 2686 E. Otero Pl. #11, Littleton, Colo. 80122

Continuation-in-part of Ser. No. 489,720, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 329,303, Mar. 27, 1989, abandoned. This application Jul. 15, 1992, Ser. No. 914,764
Int. Cl.[5] G01C *3/08*; G01P *3/36*
U.S. Cl. 356—5 22 Claims



1. A laser surveying device, comprising:

a housing having dimensions suitable for being hand-held during operation;

a power source positioned within said housing and providing a high voltage output and a low voltage output as required to other components;

a laser rangefinder system disposed within said housing and constructed to fire a laser pulse of short duration at a selected target, to detect an RX (return) pulse of laser light reflected from said selected target, and to produce count data reflective of an elapsed time-of-flight between firing of said laser pulse and receipt of said return pulse;

a vertical angle sensor for sensing a vertical angle between said target and said housing and constructed to output an electrically readable vertical angle signal reflective thereof;

a magnetic compass constructed to output a direction reading in electronically readable form;

a sighting scope attached to said housing, having apparent width measuring means for measuring the apparent width of a target, and operably associated with said laser rangefinder, said vertical angle sensor and said magnetic compass such that when a user sights on a target with said sighting scope, said laser rangefinder, light detector, and magnetic compass are simultaneously aimed at said target, and said vertical angle sensor outputs a signal reflective of the vertical angle to said target;

trigger means mounted to said housing for manipulation by a user to trigger operation of said survey device when said survey device is aimed at the target; and

control means including a microcontroller having memory means for storing instructions and data, said microcontroller being communicatively interconnected to said power source, said laser rangefinder, said vertical angle

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sensor, and to read said horizontal direction signal from said magnetic compass, said control means being configured to:

calculate the time-of-flight of said laser pulse from said count data;

calculate a distance to said target from said time-of-flight and the speed of light,

calculate a vertical height from a pair of vertical angle signals each corresponding to a different target or different points on said selected target,

operate said magnetic compass to produce a compass reading indicative of the direction from said survey device to said selected target, and

receive said apparent width reading and to compute from said apparent width reading and said distance, an actual width of said target.

5,291,263

LASER RANGE FINDER USING A NONLINEAR CRYSTAL

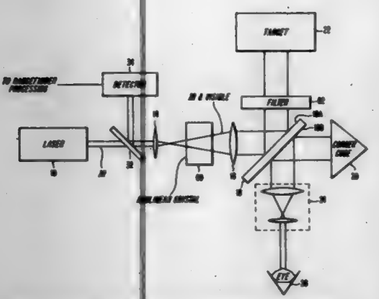
Hong J. Kong, Taejon, Rep. of Korea, assignor to Korea Advanced Institute of Science and Technology, Taejon, Rep. of Korea

Filed Dec. 7, 1992, Ser. No. 986,572

Claims priority, application Rep. of Korea, Mar. 18, 1992, 4413/92

Int. Cl.[5] G01C *3/08*; G01B *11/26*

U.S. Cl. 356—5 **3 Claims**



1. In a laser range finder, an apparatus comprising:

an infrared ray laser source for emitting a ray of infrared light along a first direction of an optical axis, the optical axis having opposing first and second directions;

a beam expander having opposing first and second sides, and disposed along the optical axis to receive, at the first side, a beam of light travelling in the first direction along the optical axis and at least partially including the ray of infrared light emanating from the infrared ray laser source, the beam expander emitting, from the second side, an expanded beam of light in the first direction along the optical axis, the beam expander comprising a first lens disposed at the first side, and a second lens disposed at a second side, wherein the first and second lenses are disposed along the optical axis and oriented with respect to one another so as to expand the beam of light travelling successively through the first and second lenses;

a first beam splitter, having opposing front and rear surfaces, the front surface being coated with a material that fully reflects infrared light and only partially reflects visible light, the rear surface not reflecting visible light, the first beam splitter being disposed along the optical axis to receive, at the front surface, the expanded beam of light travelling in the first direction, the first beam splitter being oriented at an angle with respect to the optical axis such that an infrared light beam contained within the expanded beam of light will be reflected toward a potential target;

a retro-reflector disposed along the optical axis and oriented so as to receive a visible ray of light travelling in the first direction along the optical axis and partially passing successively through the front and rear surfaces of the first beam splitter, the retro-reflector then reflecting the visible ray of light back toward the rear surface of the first beam splitter in the second direction along the optical axis;

a telescope disposed to receive the visible ray of light after the visible ray of light has successively been first reflected by the retro-reflector and then at least partially reflected by the first beam splitter;

a second beam splitter having a front surface coated with a material that only partially reflects infrared light, the second beam splitter being disposed along the optical axis between the infrared ray laser source and the beam expander to receive a returning ray of infrared light travelling in the second direction along the optical axis, the second beam splitter being oriented at an angle with respect to the optical axis such that the second beam splitter will at least partially reflect the returning ray of infrared light toward a detector; and

a nonlinear crystal disposed along the optical axis between the infrared ray laser source and the first beam splitter for intercepting the ray of infrared light travelling in the first direction, and converting a portion thereof into visible light also travelling in the first direction along the optical axis, whereby the expanded beam of light comprises both infrared and visible light by the time it reaches the first beam splitter

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5,291,264

METHOD AND APPARATUS FOR THE OPTICAL MEASUREMENT OF AN ANGLE BETWEEN POSITIONS OF COMPONENTS RELATIVE TO EACH OTHER

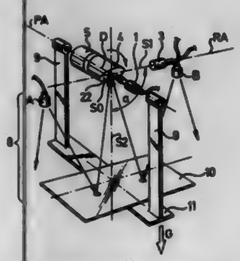
Simone Longa, Arcisate, and Marco Castelnuovo, Milano, both of Italy, assignor to Hofmann Werkstat-Technik GmbH, Pfungstadt, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 822,014

Claims priority, application Italy, Jan. 16, 1991, 4101047

Int. Cl.[5] G01B *11/26*

U.S. Cl. 356—152 **27 Claims**



1. A method of optically determining an angle between positions of components relative to each other, comprising the steps of:

emitting at least one light beam along each of first and second legs of the angle to be measured;

maintaining the direction of said at least one beam emitted by said first leg;

bringing said at least one beam being emitted along said second leg into conformity with the gravitational vector by moving a source of said at least one beam by the force of gravity, said light beams thereby being directed to the apex of said angle;

monitoring the light beams at time intervals; and

determining said angle from said monitored light beams.

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OFF-AXIS CAVITY ABSORPTION CELL

Paul L. Kebabian, Acton, Mass., assignor to Aerodyne Research, Inc., Billerica, Mass.

Filed Jun. 3, 1992, Ser. No. 893,120

Int. Cl.[5] G01N *21/05, 21/35*

U.S. Cl. 356—246 **11 Claims**



5. An absorption cell forming a coupling aperture and comprising opposed astigmatic mirrors forming a twist angle of more than 1.0 degree with respect to each other and defining, for light entering the coupling aperture at a predetermined angle, a closed multiple-reflection path from the inlet aperture and back to it.

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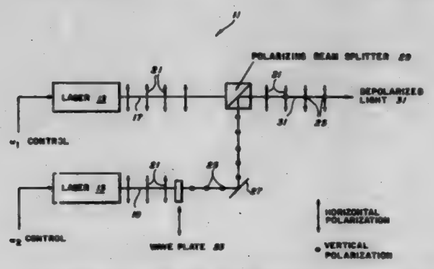
DEPOLARIZED LIGHT SOURCE FOR FIBER OPTIC SENSORS

William K. Burns, Alexandria, Va.; Robert P. Moeller, Ft. Washington, and Marta M. Howerton, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1991, Ser. No. 806,384

Int. Cl.[5] G01B *9/02*; G02B *5/30*

U.S. Cl. 356—345 **20 Claims**



1. An apparatus comprising a depolarized light source, said depolarized light source comprising:

a first laser for generating a first beam at a first frequency, said first beam having a linear polarization state;

a second laser for generating a second beam at a second frequency, different from said first frequency said second beam having a linear polarization state;

means for rotating the polarization state of said second beam so that said first and second beams have orthogonal linear polarization states with respect to each other; and

means for combining the first beam with the polarization-rotated second beam to obtain a composite beam which is depolarized.

5,291,267

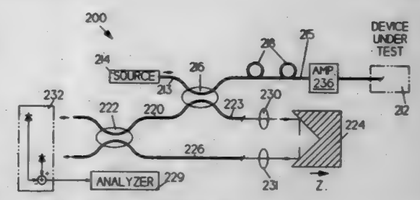
OPTICAL LOW-COHERENCE REFLECTOMETRY USING OPTICAL AMPLIFICATION

Wayne V. Sorin, Mountain View, and Douglas M. Baney, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 22, 1992, Ser. No. 823,936

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—345 **6 Claims**



1. An optical interferometer for measuring the optical properties of a device, said interferometer comprising:

source means for providing a low-coherence light signal;

splitting means for dividing said low-coherence light signal into first and second light signals;

means for applying a portion said first light signal to said device;

adding means for combining light signals on first and second ports thereof to generate a combined light signal;

detection means for measuring the amplitude of said combined light signal;

means for collecting a portion of the backscattered light generated by the application of said first light signal to said device and for inputting a portion of said collected backscattered light to said first port of said adding means;

means for inputting a portion of said second light signal to said second port of said adding means;

means for varying the difference in the optical path lengths traveled by said backscattered light and said second light signal before entering said adding means; and

optical amplification means for amplifying said portion of said collected backscattered light prior to said portion of said backscattered light entering said adding means such that the intensity of said backscattered light entering said adding means is increased relative to said second light signal.

5,291,268

METHOD AND APPARATUS FOR DETERMINING A PATH DIFFERENCE IN A MICHELSON INTERFEROMETER

Volker Tank, Eching; Helmut Dietl, Munich; Peter Haechberger, Ganting; Erwin Lindermeir, Augsburg, and Oliver Mayer, Neubiberg, all of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt Fur Luft- und Raumfahrt, Cologne, Fed. Rep. of Germany

Filed Apr. 27, 1992, Ser. No. 874,167

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113842.2

Int. Cl.[5] G01B *9/02*

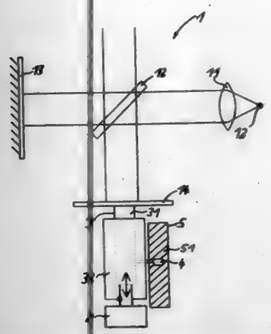
U.S. Cl. 356—346 **8 Claims**

1. Method for determining a path difference in a Michelson interferometer provided for electromagnetic spectrum determination and which includes a reciprocatively moving mirror element, a detector and an analog to digital converter, said method comprising the method steps of:

providing a clock track having a clock sequence on a storage medium so as to store on the surface of said storage medium a stored pulse sequence which is identical to a pulse measurement sequence obtained in a path measurement along the entire travel path of the reciprocatively moving mirror element while using a laser associated with the

interferometer from the interferences of the laser radiation,

arranging said storage medium parallelly to the travel path of the reciprocatively moving mirror element in such a manner that said stored pulse sequence is stored in a movement direction of the reciprocatively moving mirror element,



moving the reciprocatively moving mirror element and reading said stored pulse sequence on said storage medium by using a read head fixedly connected to the reciprocatively moving mirror element, and using a readout pulse sequence to control a drive and to trigger the analog to digital converter.

5,291,269

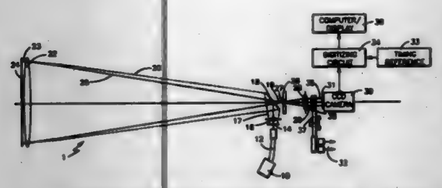
APPARATUS AND METHOD FOR PERFORMING THIN FILM LAYER THICKNESS METROLOGY ON A THIN FILM LAYER HAVING SHAPE DEFORMATIONS AND LOCAL SLOPE VARIATIONS

Anthony M. Ledger, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 804,872, Dec. 6, 1991. This application Jun. 29, 1992, Ser. No. 906,079

Int. Cl.[5] G01B 9/02

U.S. Cl. 356—355 **48 Claims**



1. An apparatus for measuring the thickness of a layer of material having a front and a rear surface, wherein said material of said layer has a property that allows radiation to be transmitted therethrough, said apparatus comprising:

means for irradiating said front surface of said layer of material with polychromatic radiation, wherein said polychromatic radiation is reflected from said front and rear surfaces of said layer of material having characteristics that correspond to the thickness of said layer of material;

means for filtering said reflected polychromatic radiation so as to produce monochromatic radiation having characteristics that correspond to the thickness of said layer of material;

means for receiving said filtered monochromatic radiation and for detecting said characteristics; and

means for comparing said detected characteristics of said received filtered monochromatic radiation with a set of reference characteristics that correspond to known thicknesses and for providing an output that corresponds to the thickness of said layer of material.

5,291,270

METHOD AND ARRANGEMENT FOR DETECTING EDGES AND BORES OF A WORKPIECE WITH AN OPTICAL PROBE HEAD

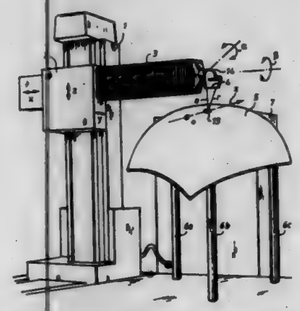
Klaus-P. Koch, and Ralf Peter, both of Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 856,127

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109483

Int. Cl.[5] G01B 11/00

U.S. Cl. 356—373 **13 Claims**



1. A method of detecting edges and bores on a workpiece with an optical probe head which emits an optical beam and includes a detector to supply a distance signal corresponding to the distance to the workpiece, the signal being derived from the position and shape of the beam spot occurring on the workpiece and the probe head being attached to a measuring arm of a coordinate measuring apparatus, the method comprising the steps of:

guiding the probe head with the aid of the measuring arm along a pregiven path (s) over the surface of the workpiece to be measured thereby obtaining measured distance values (z') of the optical probe head and path signals (x_0, y_0, z_0) of the coordinate measuring apparatus;

determining the coordinates (x, y, z) of points on the scanned workpiece surface from said measured distance values (z') and said path signals (x_0, y_0, z_0) and then storing said coordinates (x, y, z);

utilizing said detector for determining the intensity I of the radiation for the coordinates (x, y, z) and likewise storing the intensity values $I_{(x, y, z)}$, said radiation being backscattered from the workpiece and received by the probe head; and,

determining the coordinates (x_k, y_k, z_k) of said edges and bores from said intensity values $I_{(x, y, z)}$ obtained from said detector and stored in dependence upon the workpiece coordinates.

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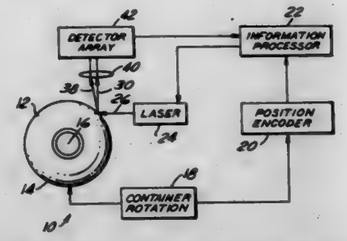
MEASUREMENT OF TRANSPARENT CONTAINER WALL THICKNESS

John W. Juvinall, Ottawa Lake, Mich.; Steven D. Kistler, Toledo, and James A. Ringlien, Maumee, both of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Aug. 19, 1992, Ser. No. 932,470

Int. Cl.[5] G01B 11/06

U.S. Cl. 356—382 **11 Claims**



1. Apparatus for measuring wall thickness of transparent containers that comprises:

means for directing a light beam onto the outer surface of a container wall at an angle such that a portion of the light is reflected from the outer surface, and a portion is refracted into the container wall and reflected from the inner wall surface,

light sensing means disposed in a plane,

means for focusing light energy reflected from said outer and inner wall surfaces onto said light sensing means, said focusing means having an image plane in which said light sensing means is disposed and an object plane co-linear with said light beam directed onto the outer surface of the container, and

means responsive to light energy incident on said sensing means for determining wall thickness of the container between the inner and outer wall surfaces.

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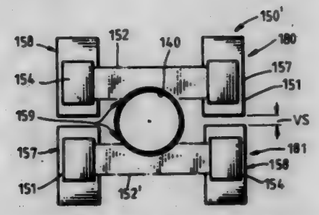
METHOD AND APPARATUS FOR MEASURING DIMENSIONAL VARIABLES OF THREADED PIPE

Errol A. Demirsu, Houston, Tex., assignor to Criterion Resources, Inc., Lafayette, La.

Filed Sep. 27, 1991, Ser. No. 766,748

Int. Cl.[5] G01B 11/02, 11/10

U.S. Cl. 356—384 **21 Claims**



1. A non-contact method for measuring dimensional variables having strict tolerances of a threaded exterior surface of a length of pipe having a longitudinal axis, comprising the steps of:

directing at least one laser generated parallel scanning light beam, having a known width, in a plane which is substantially perpendicular to the longitudinal axis of the length of pipe to scan at least one portion of the threaded exterior surface;

providing relative sequential movement between at least one light beam and the threaded exterior surface in a direction along the longitudinal axis of the length of pipe;

receiving with a photo detector receiver at least one laser generated parallel scanning light beam at a plurality of sequential locations along the longitudinal axis of the length of pipe;

measuring the amount of the scanning beam width which is blocked by the threaded exterior surface at each sequential location; and

storing the measured amounts as a function of the sequential locations to produce a profile of the threaded exterior surface and determining from the profile the desired dimensional variable of the threaded exterior surface.

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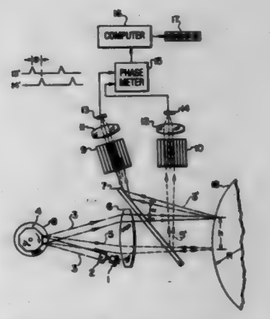
NON-CONTACT DIAMETER MEASURING METHOD AND APPARATUS

Daniel Gelbart, Vancouver, Canada, assignor to Creo Products Inc., Burnaby, Canada

Filed Apr. 19, 1993, Ser. No. 47,537

Int. Cl.[5] G01B 11/02, 11/10; G01N 21/86

U.S. Cl. 356—384 **4 Claims**



1. A method for non-contact measurement of the diameter of a cylindrical object comprising of the following steps:

Scanning the surface of said object with a light beam in a direction orthogonal to the axis of said object;

Intercepting the reflection of said light beam from said object using at least two highly directional light detectors set at a fixed angle relative to each other;

Calculating the diameter of said object based on the relationship between the diameter and the amount said light beam has to scan across said object to change the direction of said reflection by said fixed angle.

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ELECTRON DEVICE HAVING A CURRENT CHANNEL OF DIELECTRIC MATERIAL

Hirotaka Tamura, Atsugi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/00372, § 371 Date Nov. 20, 1991, § 102(e) Date Nov. 20, 1991, PCT Pub. No. WO91/15033, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 20, 1991, Ser. No. 779,004

Claims priority, application Japan, Mar. 20, 1990, 2-72354; Mar. 20, 1990, 2-72355; Mar. 20, 1990, 2-72356; Jul. 20, 1990, 2-190722; Oct. 25, 1990, 2-285862; Nov. 9, 1990, 2-305572

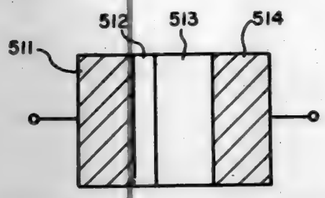
Int. Cl.[5] H01L 29/06, 39/22

U.S. Cl. 257—30 **40 Claims**

1. An electron device, comprising:

a first dielectric layer having an upper major surface and an opposing lower major surface, said first dielectric layer having a first thickness determined to allow the tunneling of carriers therethrough and a first dielectric constant, said first dielectric layer acting as a tunneling barrier;

a second dielectric layer having an upper major surface in direct contact with the lower major surface of the first dielectric layer and an opposing lower major surface, said second dielectric layer having a second thickness substantially larger than the first thickness and a second dielectric constant that is substantially larger than the first dielectric constant;



first electrode means provided on the upper major surface of the first dielectric layer for injecting the carriers into the first dielectric layer; and

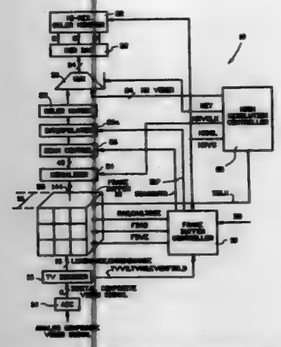
second electrode means provided in contact with the second dielectric layer, said second electrode means being applied with a control voltage for controlling a flow of the carriers through the second dielectric layer.

5,291,275

TRIPLE FIELD BUFFER FOR TELEVISION IMAGE STORAGE AND VISUALIZATION ON RASTER GRAPHICS DISPLAY

Leon Lumelsky, Stamford, Conn., assignor to International Business Machines Incorporated, Armonk, N.Y.

Filed Jun. 29, 1990, Ser. No. 541,425
Int. Cl.[5] H04N *7/01, 5/907*
U.S. Cl. 348—441 39 Claims



1. Apparatus for coupling an image signal expressive of an interlaced image to image display means for display during a display frame, the interlaced image being comprised of a plurality of sequentially provided image fields, the apparatus comprising:

means for providing the image fields in a digital form;

buffer memory means having an input coupled to the providing means and an output coupled to the image display means, the buffer memory means comprising a sufficient number of storage locations for storing at least three of the image fields, wherein the buffer memory means is organized as a plurality of memory blocks each of which stores a portion of each one of the at least three image fields; and

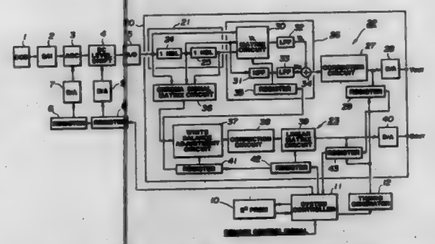
means for reading out of the buffer memory means two previously stored image fields for display by the image display means while writing into the buffer memory means an image field currently being provided by the image field providing means.

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APPARATUS FOR PROCESSING A VIDEO SIGNAL TO GENERATE VIDEO SIGNAL ADJUSTMENT DATA THAT IS SELF-CONTAINED WITH THE VIDEO EQUIPMENT

Hiroaki Matsumoto, Chiba, and Tokuya Fukuda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,253
Claims priority, application Japan, Aug. 29, 1991, 3-244524
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—708 14 Claims



1. Apparatus for generating video signal adjustment data for use by video signal processing circuits of the type that are included in video equipment, said apparatus being self-contained with video equipment and comprising:

input means for providing an input video signal to be processed by said video signal processing circuits;

luminance digital signal processing means supplied with luminance adjustment control data for subjecting said input video signal to predetermined luminance adjustment operations to produce adjusted digital luminance signals;

chroma digital signal processing means supplied with chroma adjustment control data for subjecting said input video signal to predetermined chroma adjustment operations to produce adjusted digital chroma signals;

sampling means for selectively sampling at least one of the adjusted digital luminance and chroma signals at preselected times; and

adjustment control data generating means coupled to said sampling means and responsive to the sampled digital signals for generating at least one of said luminance and chroma adjustment control data and for supplying said at least one of said luminance and chroma adjustment control data to at least one of said luminance and chroma digital signal processing means to subject said input video signal to luminance and chroma adjustment operations, respectively.

5,291,277

DIGITAL IMAGE SIGNAL PROCESSING CIRCUITS

Tokuya Fukuda; Toshitaka Senuma, and Toru Shiono, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,179
Claims priority, application Japan, Jun. 12, 1992, 4-153903
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—606 5 Claims

1. A digital image signal processing circuit for use in an image pickup and recording apparatus containing an image pickup portion and a video signal recording portion, the circuit comprising:

signal input terminal means to which an image pickup output signal obtained from the image pickup portion and a video signal supplied from the outside are selectively supplied,

analog to digital converting means for digitizing one of the

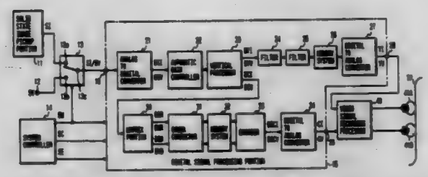
image pickup output signal and the video signal supplied to the signal input terminal means to produce one of a digital image pickup output signal and a digital video signal,

digital signal processing means including first, second and third digital signal processing circuit blocks to which one of the digital image pickup output signal and the digital video signal is supplied,

system controller means provided in common to said first, second and third digital signal processing circuit blocks for conducting selectively the change of operation, the change of circuit configuration and the change of circuit coefficient in each of said first, second and third digital signal processing circuit blocks in response to the selective supply of one of the image pickup output signal and the video signal to the signal output terminal means, and

signal output terminal means from which a recording luminance signal and a recording chrominance signal which are produced by the digital signal processing means are derived, wherein:

the first digital signal processing circuit block is operative to produce separately first digital luminance and chrominance signals based on the digital image pickup output



signal and to cause the first digital luminance signal to be subjected to vertical aperture correction when the image pickup output signal is supplied to the signal input terminal means, and to produce second digital luminance and chrominance signals based on the digital video signal and to work on the second digital chrominance signal as a comb filter when the video signal is supplied to the signal input terminal means;

the second digital signal processing circuit block is operative to function as a matrix circuit for the first digital chrominance signal when the image pickup output signal is supplied to the signal input terminal means and to function as a decoding circuit for the second digital chrominance signal when the video signal is supplied to the signal input terminal means; and

the third digital signal processing circuit block is operative to function as an encoding circuit for the first digital chrominance signal when the image pickup output signal is supplied to the signal input terminal means and to produce a digital frequency-converted carrier chrominance signal having its carrier frequency converted to a lower frequency on the basis of the second digital chrominance signal when the video signal is supplied to the signal input terminal means.

5,291,278

LUMINANCE/CHROMINANCE SEPARATOR INCLUDING CROSS-TALK REDUCING FUNCTION

Yoshihisa Nishigori, Itami, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 23, 1992, Ser. No. 824,283
Claims priority, application Japan, Jan. 29, 1991, 3-8822
Int. Cl.[5] H04N *9/78*
U.S. Cl. 348—665 28 Claims

1. A luminance/chrominance separator comprising:

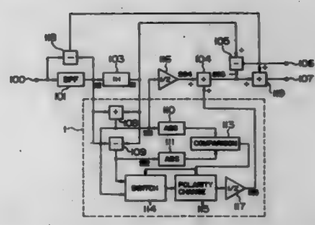
a first filter for separating a high-frequency signal from a composite video signal and outputting said high-frequency signal;

a first delay circuit, receiving said high-frequency signal, for delaying said high-frequency signal by one horizontal period and outputting a delayed high-frequency signal;

a first adder, receiving said high-frequency signal and said delayed high-frequency signal, for finding a sum signal by summing said high-frequency signal and said delayed high-frequency signal of a current processing scanning line;

a first subtracter, receiving said high-frequency signal and said delayed high-frequency signal, for finding a difference signal by calculating a difference between said high-frequency signal and said delayed high-frequency signal;

a first absolute value circuit, receiving said sum signal, for finding an absolute value of said sum signal;



a second absolute value circuit, receiving said difference signal, for finding an absolute value of said difference signal;

a correction value calculation circuit for finding a correction signal based on said sum signal and said difference signal in accordance with an absolute value magnitude relationship between said sum and difference signals;

a comb filter for separating a luminance signal and a chrominance signal from said high-frequency signal and said delayed high-frequency signal delayed by one horizontal period; and

a correction circuit for removing an unnecessary component contained in an output of said comb filter in accordance with said correction signal.

5,291,279

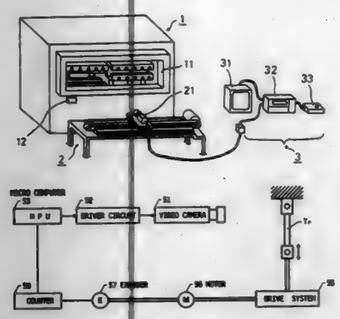
FATIGUE TESTING APPARATUS AND METHOD

Akira Inao, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 26, 1991, Ser. No. 749,676
Claims priority, application Japan, Aug. 27, 1990, 2-226011; Nov. 30, 1990, 2-339013
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—92 7 Claims

1. A fatigue testing method comprising a first step of applying stress to a sample and thereby deforming the sample and a second step of photographing and recording the degree of the

stress-deformed sample as a still image in an intermittent photographing mode, wherein the still image is photographed and



recorded at a lower frequency than the frequency that the sample is deformed.

5,291,280

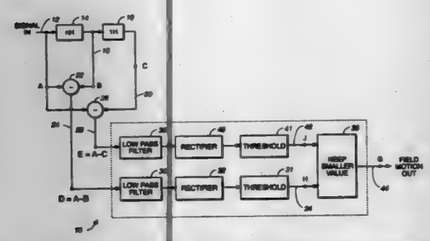
MOTION DETECTION BETWEEN EVEN AND ODD FIELDS WITHIN 2:1 INTERLACED TELEVISION STANDARD

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022; Dong Xu, 1650 Beck Dr., San Jose, Calif. 95130, and Peter Swartz, 643 Wakerobin La., San Rafael, Calif. 94903

Filed May 5, 1992, Ser. No. 878,725

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—416 **21 Claims**



1. A motion detector for generating a field motion detection signal from information contained in fields of opposite parity of a two-to-one interlaced format video signal comprising:

input means for receiving the video signal from a source,

first delay means for delaying the video signal at the input by one field period less one half of one scanning line period and for providing a first delayed output,

second delay means for delaying the video signal at the input by one field period plus one half of one scanning line period and for providing a second delayed output,

first subtraction means for subtracting the first delayed output from the video signal to provide a first difference,

second subtraction means for subtracting the second delayed output from the video signal to provide a second difference,

comparison circuitry means for comparing the magnitude of the first difference with the magnitude of the second difference, and

selection means responsive to the comparison circuitry means for selecting as a motion reference the one of the first difference and of the second difference having a lesser abeolute magnitude and for putting out a function of the motion reference as the field motion detection signal.

5,291,281

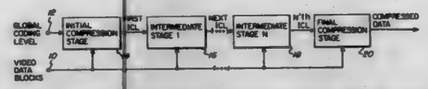
ADAPTIVE CODING LEVEL CONTROL FOR VIDEO COMPRESSION SYSTEMS

Woo H. Paik, Encinitas; Edward A. Krause, San Diego, and Vincent Liu, San Gabriel, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Jun. 18, 1992, Ser. No. 900,904

Int. Cl.[5] H04N *7/133*

U.S. Cl. 348—384 **18 Claims**



1. Apparatus for adaptively compressing data blocks representative of video image information according to a local coding level, comprising:

an initial compression stage including:

means for compressing data in at least one of said data blocks based on a global coding level to provide a compressed data block containing a number of bits, and

means responsive to said number of bits for providing said local coding level; and

a final compression stage including:

means for compressing the data in said at least one of said data blocks based on said local coding level.

5,291,282

IMAGE DATA CODING APPARATUS AND METHOD CAPABLE OF CONTROLLING AMOUNT OF CODES

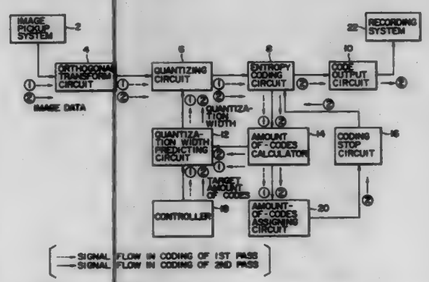
Chihiro Nakagawa, and Hidetoshi Yamada, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 680,698, Apr. 4, 1991. This application Oct. 4, 1991, Ser. No. 771,791

Claims priority, application Japan, Apr. 19, 1990, 2-101595; Apr. 25, 1990, 2-107546; Dec. 20, 1990, 2-404233

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—384 **23 Claims**



1. An image data coding apparatus comprising:

preprocessing means for executing preprocessing including compression for input image data in units of screen to generate a preprocessed output;

quantizing means for quantizing the preprocessed output generated by said preprocessing means with a predetermined quantization width to generate a quantized output;

variable-length coding means for executing variable-length for the quantized output generated by said quantizing means;

input means for inputting a desired image compression ratio information;

target-amount-of codes output means for outputting information concerning a target amount of codes corresponding to one screen, calculated on the basis of said image compression ratio information; and

quantization width predicting means for predicting a suitable quantization width on the basis of the information output from said target-amount-of-codes output means to supply information concerning the predicted quantization width to said quantizing means; and

wherein said quantizing means quantizes the preprocessed output generated by said preprocessing means with the predicted quantization width generated by said quantization width predicting means.

5,291,283

DECODING APPARATUS OF A COMPRESSED DIGITAL VIDEO SIGNAL

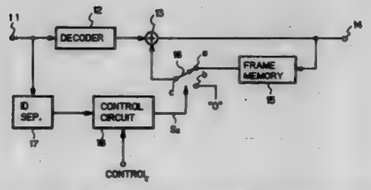
Tetsujiro Kondo; Yasuhiro Fujimori, both of Kanagawa, and Akemi Noda, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,527

Claims priority, application Japan, Jul. 24, 1991, 3-207415

Int. Cl.[5] H04N *7/130, 7/133*

U.S. Cl. 348—390 **3 Claims**



1. A decoding apparatus for decoding a compressed digital video input signal, comprising:

input terminal means selectively supplied with said compressed digital video input signal from one of a first type video signal and a second type video signal, said first type video signal comprising an intra-frame compressed digital video signal and said second type video signal comprising an interframe compressed digital video signal,

decoding means supplied with said compressed digital video input signal from said input terminal means for generating a decoded signal,

frame memory means for storing said decoded signal,

selecting means for selecting from between an output of said frame memory means and a pre-determined value, said selecting means selecting the output of said frame memory means when said second type video signal is supplied to said input terminal means and selecting the predetermined value when said first type video signal is supplied to said input terminal means, and

adder means for forming a summed output by adding an output from said decoding means to an output from said selecting means, the summed output being supplied to said frame memory means.

5,291,284

PREDICTIVE CODING AND DECODING WITH ERROR DRIFT REDUCTION

Michael D. Carr, and David G. Morrison, both of Ipswich, England, assignors to British Telecommunications, London

PCT No. PCT/GB89/01483, § 371 Date Jul. 23, 1991, § 102(e) Date Jul. 23, 1991, PCT Pub. No. WO90/07246, PCT Pub. Date Jun. 28, 1990

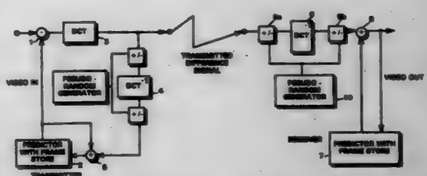
PCT Filed Dec. 12, 1989, Ser. No. 730,887

Claims priority, application United Kingdom, Dec. 13, 1988, 8829063

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—415 **22 Claims**

1. A predictive decoder comprising means for supplying a difference signal, means for supplying a prediction signal, and means for combining the said two signals to form an output signal dependent thereon, the prediction signal being derived from the output signal so as to depend upon previous portions of the difference signal, characterised in that means are provided for periodically alternating the operation of the decoder



between first and second states, in which the cumulative effect of any time-averaged bias present in the difference signal is, respectively, to increase and to deplete the prediction signal, the respective lengths of the periods spent in the first and second states being such as to reduce the tendency of such time-averaged bias error to accumulate in the prediction signal.

5,291,285

TELEVISION SIGNAL LEVEL METER

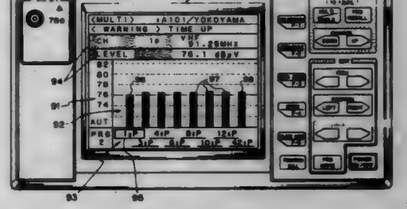
Itoshi Yokoyama, Tokyo; Masaaki Nagai, and Kakuya Saito, both of Kanagawa, all of Japan, assignors to Leader Electronics, Yokohama, Japan

Filed May 29, 1992, Ser. No. 890,135

Claims priority, application Japan, May 31, 1991, 3-129567

Int. Cl.[5] H04N *17/00*

U.S. Cl. 348—180 **8 Claims**



1. A television signal level meter comprising:

(A) channel setting means for setting a plurality of television channels, the levels of which are to be measured;

(B) level measuring means coupled to receive an input for detecting in said input the levels of signals received in each of said plurality of television channels and storing the detected signal levels; and

(C) display means responsive to said plurality of television channels from said channel setting means and a plurality of said stored levels from said level measuring means, including:

i) a plurality of level image display regions for displaying signal levels for the plurality of channels in a predetermined scale; and

ii) a plurality of channel number image display regions for displaying channel numbers associated with the plurality of channels, respectively, the positions of said plurality of channel number image display regions being correlated to the positions of said plurality of level image display regions, respectively,

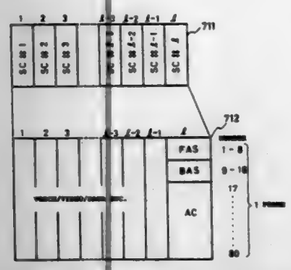
iii) display control means comprising:

(a) scale forming means responsive to said plurality of stored signal levels for detecting maximum and minimum values thereof and forming said predetermined

VOL 1160 ISS 1 MR 1 1994 UMI

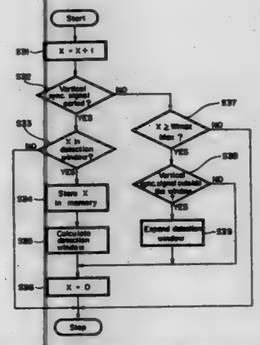
scale having a range depending on the maximum and minimum values;
(b) level image forming means responsive to said plurality of stored signal levels for forming said level images representing said signal levels; and
(c) number image forming means responsive to said plurality of channels for forming number images representing the numbers of said channels.

5,291,286
MULTIMEDIA DATA TRANSMISSION SYSTEM
Tokumichi Murakami; Kou Kaminawa; Atsushi Itoh; Yoshiaki Kato; Yuri Hasegawa; Kazuhiro Matsuzaki, and Takahiro Fukuhara, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 316,020, Feb. 27, 1989, Pat. No. 5,194,950. This application Feb. 9, 1993, Ser. No. 15,657
Claims priority, application Japan, Feb. 29, 1988, 63-46391; Mar. 14, 1988, 63-61415; Apr. 28, 1988, 63-108145; May 11, 1988, 63-112602; Jun. 6, 1988, 63-139655; Jul. 27, 1988, 63-188801; Nov. 26, 1988, 63-298724; Jan. 13, 1989, 1-6801; Jan. 13, 1989, 1-6807
Int. Cl.[5] H04J *3/02*; H04N *7/04, 7/13*
U.S. Cl. 348—469 3 Claims



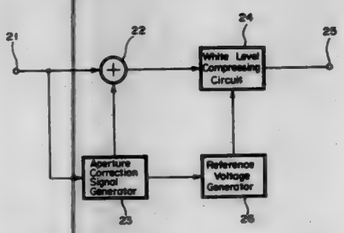
1. A multimedia data transmission system for transmitting data between a sending side and a receiving side comprising:
means for configuring transmission frames of 80×L-bit lengths having the repetition frequency of 100 Hz uniformly collecting 80 basic time slots, specified without relation to the transmission rate, of L-bit lengths having repetition frequency of 8 kHz corresponding to the transmission rate 8× L Kbps,
means for configuring a multiframe by uniformly collecting 16 transmission frames without relation to the transmission rate,
means for multiplexing a multimedia data, in every basic time slot, transmission frame or multiframe having a code transmission rate which is an integer multiple of 8 Kbps or matching said transmission frames or multiframe, and
communication control means for notifying the receiving side by arranging and transmitting a synchronous code for identifying the partition of the transmission frames and the multiframes and bit assigning information indicating the bit assignment of multimedia data to a predetermined bit in the basic time slot.

5,291,287
VERTICAL SYNCHRONIZATION PROCESSING CIRCUIT
Hiroshi Murayama; Akira Shirahama, both of Kanagawa; Takahiko Tamura; Yumiko Mito, both of Tokyo, and Shinichirou Miyazaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 27, 1992, Ser. No. 888,500
Claims priority, application Japan, May 28, 1991, 3-123867
Int. Cl.[5] H04N *5/04*
U.S. Cl. 348—536 4 Claims



1. A vertical synchronization processing circuit comprising:
a counter for counting a clock signal synchronized with a horizontal sync signal;
means for resetting said counter in response to a vertical synchronization signal within a predetermined limit so as to prohibit reset due to a non-standard signal;
means for storing the data counted at the timing of reset; and
means for changing a predetermined limit prohibiting reset due to a non-standard signal according to the data from said storing means.

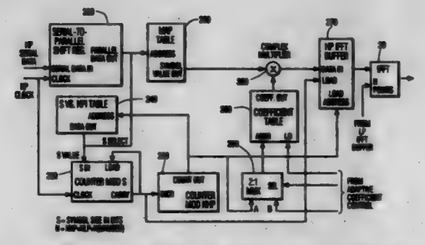
5,291,288
APERTURE CORRECTING CIRCUIT
Yukihiro Masuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1992, Ser. No. 910,401
Claims priority, application Japan, Jul. 10, 1991, 3-170093
Int. Cl.[5] H04N *5/208*
U.S. Cl. 348—252 2 Claims



1. A video camera comprising:
aperture correcting signal generating means for generating an aperture correcting signal from a video signal of a picked-up image;
means for generating a reference level representing a video signal brightness level;
means for modulating said reference level with said aperture correcting signal;

signal level compressing means for compressing said video signal when said video signal exceeds the modulated reference level; and superimposing means for superimposing said aperture correcting signal onto said video signal and means for supplying the superimposed video and aperture correcting signals to said signal level compressing means.

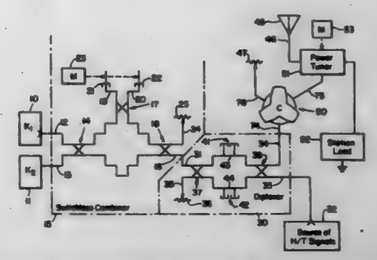
5,291,289
METHOD AND APPARATUS FOR TRANSMISSION AND RECEPTION OF A DIGITAL TELEVISION SIGNAL USING MULTICARRIER MODULATION
Samir N. Hulyalkar, Ossining, N.Y.; David A. Bryan, Danbury, Conn., and Carlo Basile, Ossining, N.Y., assignors to North American Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 614,885, Nov. 16, 1990, Pat. No. 5,214,501, and a continuation-in-part of Ser. No. 647,383, Jan. 29, 1991, Pat. No. 5,134,464, which is a continuation-in-part of Ser. No. 774,006, Oct. 8, 1991, Pat. No. 5,243,428. This application Mar. 20, 1992, Ser. No. 854,177
Int. Cl.[5] H04N *5/40, 7/06*; H04L *5/12, 23/02*
U.S. Cl. 348—723 15 Claims



1. A system for encoding a television signal comprising:
a) means for coding a first television signal into a plurality of digital symbols;
b) means coupled to said coding means, for mapping each of said digital symbols into respective complex symbols;
c) means coupled to said mapping means, for deriving a plurality of coefficients based upon a signal reference;
d) means coupled to said deriving means, for multiplying each of said complex symbols with a respective coefficient so as to form a plurality of weighted complex symbols; and
e) means coupled to said multiplying means, for modulating each of said weighted complex symbols on a respective carrier.

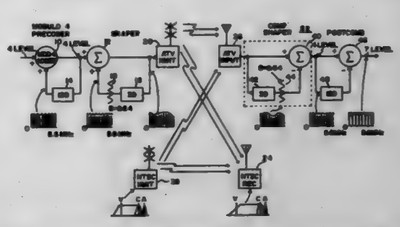
5,291,290
HIGH POWER BROADCAST TRANSMISSION SYSTEM WITH FERRITE CIRCULATOR
Thomas J. Vaughan, Rye Beach, N.H., and Erich Pivit, Allmersbach, Fed. Rep. of Germany, assignors to Pesa Micro Communications, Inc., Manchester, N.H.
Filed May 8, 1989, Ser. No. 348,603
Int. Cl.[5] H04N *5/38*
U.S. Cl. 348—723 17 Claims

1. A television broadcast transmission system including a broadcast antenna and antenna transmission line feeding television RF broadcast signals to said antenna, comprising,
(a) a source of said television RF broadcast signals and an output transmission line for said source,
(b) a ferrite circulator including a junction containing magnetized ferrite material, said junction having first, second and third RF signal ports of which: RF signal flow into said first port couples readily to said second port but not to said third port, RF signal flow into said second port couples readily to said third port but not to said first port and RF signal flow into said third port couples readily to said first port but not to said second port,
(c) said source output transmission line is coupled to said circulator first port,
(d) a non-reflecting RF load is coupled to said circulator third port,
(e) said television broadcast antenna transmission line is coupled to said circulator second port and



(f) means are provided for tuning said circulator including means for cooling and heating said circulator ferrite material,
(g) whereby said source output transmission line is isolated from reflections from said antenna transmission line.

5,291,291
ATV TELEVISION SYSTEM WITH REDUCED CO-CHANNEL NTSC INTERFERENCE
Carl G. Eilers, River Forest, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.
Filed Apr. 8, 1992, Ser. No. 865,407
Int. Cl.[5] H04N *7/04, 5/38*
U.S. Cl. 348—723 5 Claims

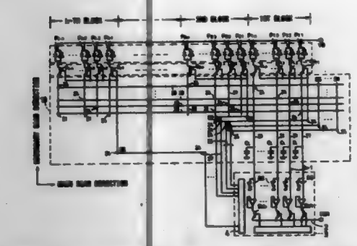


1. A method of operating an ATV television system in the service area of an NTSC television system comprising:
shaping the power spectrum of the ATV signal transmitter to complement the random noise subjective sensitivity of the NTSC television system receivers such that a higher power ATV signal is transmitted in less sensitive areas of the NTSC receiver sensitivity spectrum and a lower power ATV signal is sent in the more sensitive NTSC frequency areas; and
shaping the input response characteristic of the ATV system receivers to compensate for the shaped power spectrum of the ATV signal transmitter.

5,291,292
IMAGE SENSOR AND METHOD OF DRIVING THE SAME
Hiroyuki Hotta, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 7, 1991, Ser. No. 772,779
Claims priority, application Japan, Jan. 11, 1991, 3-012605
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—308 8 Claims

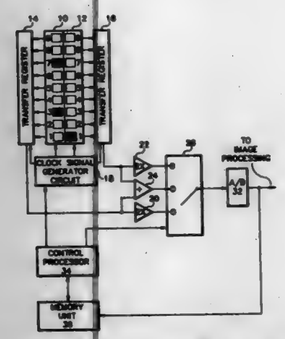
1. An image sensor comprising:

an array including a plurality of linearly arranged blocks each comprising n photodetecting elements;
switching elements respectively connected in series to the photodetecting elements;
control wires, provided respectively in connection with the blocks, for turning on the switching elements for each block;
signal transfer wires connected to a drive IC for signal detection, said signal transfer wires being laid out crossing said control wires;



an interlayer insulating film layered between said control wires and said signal transfer wires;
pulse applying means for applying gate pulses; and
at least one dummy control wire being laid out crossing said signal transfer wires, said interlayer insulating film layered between said dummy control wire and said signal transfer wires, said dummy control wire being connected to said pulse applying means.

5,291,293
ELECTRONIC IMAGING DEVICE WITH DEFECT CORRECTION
Martin C. Kapan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 1, 1992, Ser. No. 891,145
Int. Cl.[5] H04N 5/335
U.S. Cl. 348—246 **8 Claims**



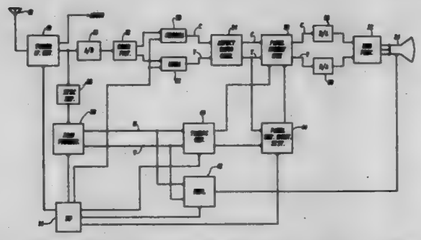
1. An electronic imaging device comprising: first and second arrays of corresponding sensor elements that generate electrical signals in response to incident radiation, wherein said first and second arrays may included some defective sensor elements, corresponding sensor elements of the first and second arrays being arranged in sensor element pairs aligned along a scanning direction, each of said pairs comprising at least one functional sensor element; first and second transfer means for carrying out the readout of the electrical signals generated respectively by the sensor elements of said pairs; defect identification means for identifying defective sensor elements in said first and second arrays; and output means for receiving the electrical signals from said first and second transfer means and for combining the electrical signals generated by corresponding sensor elements of said sensor element pairs when both sensor elements are functional and for increasing the level of the electrical signal generated by a functional sensor element of a pair to a defect compensation level when the other sensor element of said pair is not functional wherein the output means includes a defect correction amplifier coupled to an output of said first transfer means, a second defect correction amplifier coupled to an output of said second transfer means, and a summing amplifier coupled to the outputs of both the first and second transfer means, said output means providing corrected output image signals.

5,291,294
CHARGE COUPLED DEVICE IMAGER WITH HORIZONTAL CHARGE TRANSFER SECTIONS IN AN IMAGING SECTION
Isao Hirota, Kanagawa, Japan, assignor to Sony Corporation, Japan
Division of Ser. No. 583,969, Sep. 13, 1990, Pat. No. 5,182,648.
This application Feb. 3, 1992, Ser. No. 829,320
Claims priority, application Japan, Sep. 14, 1989, 1-239503; Sep. 14, 1989, 1-239504; Sep. 14, 1989, 1-239505
Int. Cl.[5] H04N 5/335
U.S. Cl. 348—310 **3 Claims**



1. A charge coupled device imager comprising:
a semiconductor substrate having a surface area,
an imaging section formed in the surface area of the substrate including:
a plurality of photoelectric converting sections for generating signal charges, each of said plurality of photoelectric converting sections being isolated from each other and being arrayed in a matrix configuration, said matrix configuration being vertically separated into a first portion and a second portion and having at least horizontal rows,
a plurality of readout gate regions, each respectively abutting a side of each of the plurality of photoelectric converting sections for transferring the generated signal charges,
a plurality of first horizontal charge transfer sections provided in the first portion of the imaging section and provided between the horizontal rows of the photoelectric converting sections, for transferring the signal charges via the readout gate regions of the first portion of the imaging section in one horizontal direction in response to a raster scanning direction of a television signal, wherein each of the charge transfer sections transfers the signal charges of each of a corresponding plurality of rows of photoelectric connection sections in the first portion of the imaging section,
a plurality of second horizontal charge transfer sections provided in the second portion of the imaging section and provided between the horizontal rows of photoelectric converting sections, for transferring the generated signal charges via the readout gate regions of the second portion of the imaging section in a second horizontal direction opposite to the horizontal direction of the first horizontal charge transfer section, wherein each of the second charge transfer sections transfers the signal charges of each of a corresponding plurality of rows of photoelectric converting sections in the second portion of the imaging section; and
output means, including readout means for reading out image signals from the signal charges generated and transferred from the imaging section.

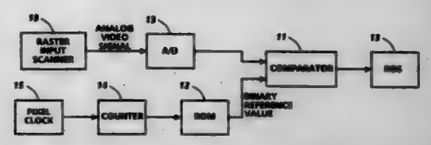
5,291,295
SYSTEM FOR EQUALIZING PHOSPHOR AGING IN CRT, SUBJECT TO DIFFERENT ASPECT RATIO DISPLAYS BY OPERATING UNUSED DISPLAY PORTIONS AT BRIGHTNESS LEVELS DETERMINED BY THE BRIGHTNESS LEVELS OF CORRESPONDING ADJACENT SIMILAR SIZED DISPLAY PORTIONS
Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.
Filed Aug. 17, 1992, Ser. No. 931,173
Int. Cl.[5] H04N 5/46
U.S. Cl. 348—805 **3 Claims**



1. A television receiver, including a cathode ray tube with a phosphor screen for displaying video signals with aspect ratios of 16:9 and 4:3, one of which results in unused portions of said phosphor screen, comprising:
video processing means coupled to said cathode ray tube;
means for supplying said video signals to said video processing means;
means for determining the brightness levels of adjacent portions of said phosphor screen close to said unused portions of said phosphor screen;
means for establishing a brightness level for said unused portions as a function of the brightness levels determined for said adjacent portions; and
means for illuminating said unused portions at said established brightness levels of said phosphor screen during reception of video signals with said ones aspect ratio, said adjacent portions comprising three sections on each side of said phosphor screen and said brightness levels of said unused portions being determined by combining the brightness levels of said three sections.

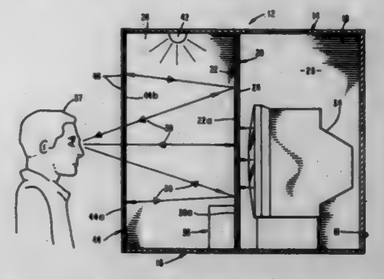
5,291,296
SPECIFIC SET OF ROTATED SCREENS FOR DIGITAL HALFTONING
Charles M. Hains, Altadena, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 29, 1992, Ser. No. 954,092
Int. Cl.[5] H04N 1/40; G03G 15/06
U.S. Cl. 358—298 **2 Claims**

1. In a printing system, apparatus for producing a toner image on a photoreceptor comprising:
means for scanning an image and producing therefrom a gray scale output,
means for generating a multi-centered halftone screen,
means for comparing said gray scale output and said multi-centered halftone screen and producing therefrom a halftone image signal,
a photoreceptor comprising a surface which is charged to a voltage,
a light beam generator for generating a scanning light beam which is turned ON and OFF in response to said halftone image signal, and for scanning said charged surface of said



photoreceptor with said beam to create discharged areas on said photoreceptor suface which are the areas scanned when said beam is ON,
toner which is charged to a voltage that will allow said toner to adhere to charged portions of said photoreceptor and not to adhere to discharged portions of said and
means for applying said toner to said photoreceptor.

5,291,297
ILLUSTION CREATING APPARATUS COMPRISING A HOUSING AND A CRT
Jim Steinmeyer, 222 N. Fairview, Burbank, Calif. 91505
Filed Feb. 13, 1992, Ser. No. 836,067
Int. Cl.[5] H04N 5/64, 13/00
U.S. Cl. 348—44 **14 Claims**



1. An apparatus for creating an illusion for viewers looking toward the apparatus, comprising:
(a) a housing having front and rear portions;
(b) a sheet of glass having front and rear faces disposed intermediate said front and rear portions of said housing, said front face of said sheet of glass being provided with a reflective coating;
(c) imaging generating means disposed within said rear portion of said housing for generating and projecting an image toward said rear face of said sheet of glass;
(d) illuminating means for illuminating said front portion of said housing;
(e) scrim means disposed between the viewers and said front portion of said housing, said scrim means normally appearing opaque to the viewers, but permitting the viewers to see into said front portion of said housing when said front portion is illuminated by said illumination means, said scrim means comprising a panel having front and rear surfaces, said rear surface being provided with depictive material whereby upon illumination of said front portion of said housing said depictive material provided on said panel is viewed by the viewers looking toward the apparatus.

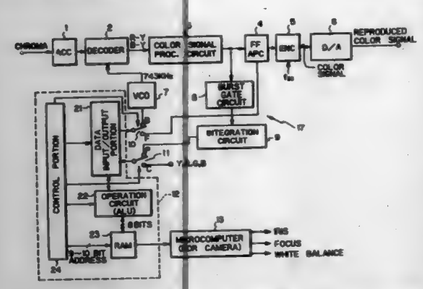
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,298

VIDEO SIGNAL PROCESSING APPARATUS FOR CONTROLLING EXPOSURE, FOCUS, AND WHITE BALANCE FOR A VTR INCORPORATED IN A VIDEO CAMERA

Toshitaka Sesumu; Kenta Tanaka, both of Tokyo, and Takashi Kobashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,774
Claims priority, application Japan, Jan. 31, 1992, 4-042397
Int. Cl.[5] H04N *9/79, 9/89*
U.S. Cl. 358—310 5 Claims



1. A video signal processing apparatus for a video camera having a video tape recording and reproducing device integrated therewith, said apparatus comprising:

means for receiving a color signal component of an input video signal;

phase controlling means for controlling phase of the received color signal component;

generating means for generating a control signal for controlling at least one of iris, focus and white balance of a video signal from said video camera; and

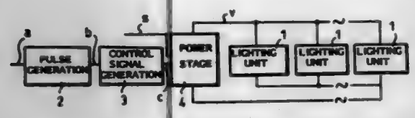
an operation circuit commonly used by said phase controlling means and said generating means and including input means for receiving an output signal from said phase controlling means and said video signal from said video camera, processing means for processing said output signal and said video signal received by said input means, means for supplying respective processed signals from said processing means to said phase controlling means and said generating means, and control means for controlling said input means, said processing means and said means for supplying.

5,291,299

POWER SUPPLY AND CONTROL UNIT FOR A LIGHT SYSTEM AND A LIGHTING UNIT FOR THE LIGHT SYSTEM

Juhani Karna, Tampere, Finland, assignor to Idman Oy, Mantsala, Finland

Filed Mar. 6, 1992, Ser. No. 846,324
Claims priority, application Finland, Mar. 7, 1991, 911154
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—323 10 Claims



1. A power supply and control apparatus for a sequenced flashing light system of predetermined frequency, not related to a system line frequency, for making a number of lights flash 'on' and 'off' as for an airport approach light system, said power supply and control apparatus comprising:

means for generating clock pulses occurring at a frequency proportional to said predetermined frequency of the progressive light front;

means for generating a control signal of recurrent sequences each comprising a first portion having a predetermined number of control pulses corresponding in frequency to the frequency of the clock pulses, and a subsequent portion comprising no control pulses but having a duration of at least one cycle which value also corresponds to the frequency of the clock pulses; and

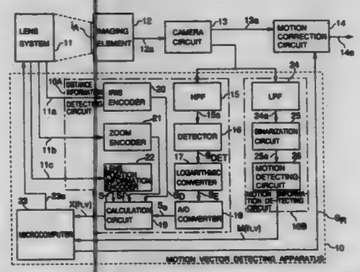
a power stage for receiving said control signal and a supply signal from a power source means coupled thereto and generating output pulses in response thereto.

5,291,300

MOTION VECTOR DETECTING APPARATUS FOR DETECTING MOTION OF IMAGE TO PREVENT DISTURBANCE THEREOF

Kazuhiko Ueda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 27, 1992, Ser. No. 826,138
Claims priority, application Japan, Jan. 25, 1991, 3-025442
Int. Cl.[5] H04N *5/76, 7/18, 5/228*
U.S. Cl. 358—335 9 Claims



1. A motion vector detecting apparatus for detecting movement of an image to prevent disturbance of the image, comprising:

imaging means for imaging objects within a picture window and forming a picture signal representative thereof;

distance information detecting means for detecting distance information from said objects to said imaging means associated with each of a plurality of respective detection windows obtained by dividing said picture window into plurality of blocks;

motion information detecting means for detecting motion information associated with objects in each of said respective detection windows; and

calculation means for determining weighting coefficients on the basis of at least said distance information, and for determining a motion vector on the basis of said weighting coefficients and said motion information.

5,291,301

RESERVED RECORDING METHOD AND APPARATUS FOR GROUPING PROGRAMS BASED ON CONTENT

Dong-gil Lee, Kyunggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jul. 8, 1992, Ser. No. 910,396
Claims priority, application Rep. of Korea, Jul. 8, 1991, 91-11514
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 11 Claims

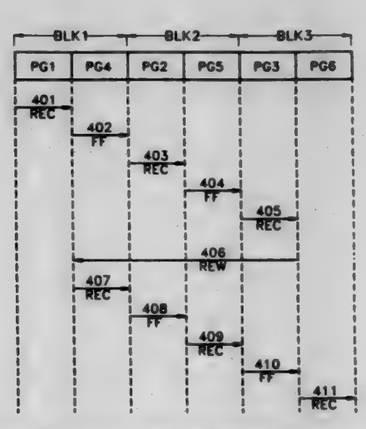
1. A reserved recording method in a recording/reproducing apparatus wherein reservation data which includes time information, relating to the times of programs to be recorded on a recording medium, and block numbers which represent the contents of said programs, are inputted for each of said programs, said reservation data being stored in an internal memory, said method compriaing the steps of:

receiving current time information, and recording a current program of said programs whose pre-programmed time is the earliest among said programs;

comparing the time information of a next program of said programs having the same block number as said current program with time information of said programs having other block numbers to determine if said next program is the earliest of said programs;

waiting until reaching time corresponding to the time information of said next program when said time information of said next program having the same block number as said current program is the earliest among those of said programs having other block numbers, recording said next program, and repeating said comparing step;

calculating a length of a reserved section of said recording medium to be reserved for recording said next program when time information of a corresponding program of said programs having another block number is earlier than



that of said next program, and shifting to the recording position of said corresponding program by advancing said recording medium through a fast forward function for a period of time corresponding to a duration of said reserved section;

recording said corresponding program in another section of said recording medium which corresponds to the block number of said corresponding program;

analyzing each pre-programmed time of said next program having the same block number as said corresponding program recording in said recording step and said programs having other block numbers to determine if said next program is the earliest of said programs;

repeating said comparing step when a program having the earliest time information as determined in said analyzing step does not have the same block number as said corresponding program recorded in said recording step; and

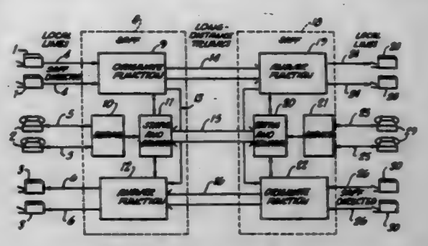
performing a rewind function for a duration corresponding to sections of said recording medium where said recording and said fast forward operations have already been carried out, when the time information of said next program is earlier than that of said programs having other block numbers, and then performing said recording step of said corresponding program.

5,291,302

FACSIMILE TELECOMMUNICATIONS SYSTEM AND METHOD

Richard J. Gordon, Los Angeles, Calif., and James R. Kennedy, Tucson, Ariz., assignors to Audiofax, Inc., Marietta, Ga.

Continuation of Ser. No. 654,181, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 248,798, Sep. 22, 1988, Pat. No. 4,994,926. This application Oct. 2, 1992, Ser. No. 955,833
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—400 39 Claims



1. A system for facilitating facsimile communications between a transmitting facsimile machine and at least one intended receiving facsimile machine, comprising

at least one store and forward facility,

means coupling the at least one store and forward facility to a switched telephone network for receiving transmissions from a transmitting facsimile machine,

said store and forward facility including

computer means for controlling its operation and including

mass storage means for storing facsimile transmissions together with information identifying the transmitting facsimile machine and the at least one intended receiving facsimile machine under control of said computer means, said store and forward facility also including

means coupling it to the switched telephone network for transmitting facsimile messages stored in the mass storage means to at least one intended receiving facsimile machine,

said computer means being programmed to provide a reply service allowing addressee associated with said at least one intended receiving facsimile machine to send back to the transmitting facsimile machine or a telephone number designated in an instruction received from a subscriber, a reply message which is selected from a reply service menu.

5,291,303

FACSIMILE APPARATUS

Yuji Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,200, Jan. 3, 1991, abandoned. This application May 19, 1993, Ser. No. 63,371
Claims priority, application Japan, Jan. 16, 1990, 2-4458
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—426 14 Claims

1. A facsimile apparatus comprising:

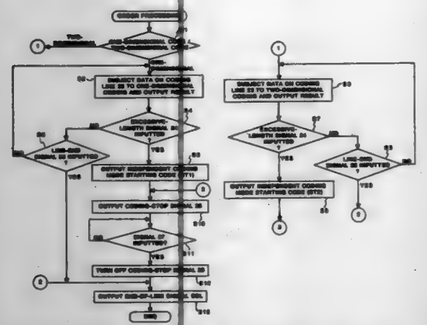
generating means for generating image data in line units;

first coding means for sequentially coding the image data by a first coding method;

second coding means for sequentially coding the image data by a second coding method different from the first coding method;

decision means for accumulatively counting the amount of code as each line of image data is coded by said first coding means and for deciding whether the amount of code of each line exceeds a predetermined amount while each line of image data is being coded; and

control means for controlling said apparatus to start coding for each line of image data by said first coding means and to change over from coding by said first coding means to coding by said second coding means in the middle of coding for a line of image data by said first coding means, based on the decision of said decision means;



wherein when the amount of code exceeds the predetermined amount while one line of image data is being coded, the line is coded by said first coding means until the amount of code exceeds the predetermined amount, and after the amount of code has exceeded the predetermined amount, the remainder of the line is coded by said second coding means.

5,291,304

FACSIMILE APPARATUS HAVING INVOICE SENTENCE PREPARATION FUNCTION

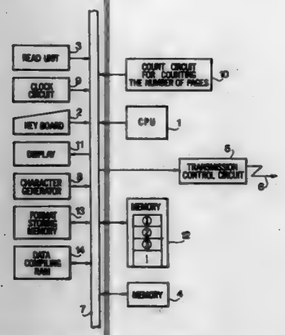
Masakuni Horii, Ootsu; Eiichi Morimoto, Kyoto, and Hiroyasu Yoshikawa, Tsuzuki, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 510,039, Apr. 17, 1990, abandoned. This application Nov. 25, 1991, Ser. No. 797,143

Claims priority, application Japan, Apr. 18, 1989, 1-45449[U]

Int. Cl.[5] H04N *1/00, 1/387*

U.S. Cl. 358—434 **6 Claims**



1. A facsimile apparatus comprising:

data registration means for registering recipient data and caller identification data to be transmitted and for establishing a correspondence between the registered recipient data and a predetermined telephone number, the predetermined telephone number comprising an abbreviated number;

a format storage unit for storing an invoice format in character code having predetermined addresses into which the registered recipient data and caller identification data are written;

means for inputting the predetermined telephone number;

means for reading out the invoice format in character code in response to the input of the predetermined telephone number; and

means for reading out the registered recipient data and caller identification data from the data registration means and for writing the registered recipient data and caller identification data into the predetermined addresses in the invoice format in response to the input of the predetermined telephone number,

a character generator for converting the invoice format and the registered recipient data and caller identification data into image signal data,

whereby the invoice format and the registered recipient data and caller identification data are combined in character code and a complete invoice is automatically prepared and transmitted as image signal data in response to the input of the predetermined telephone number.

5,291,305

FACSIMILE NETWORK SYSTEM CAPABLE OF CARRYING OUT BROADCAST COMMUNICATION

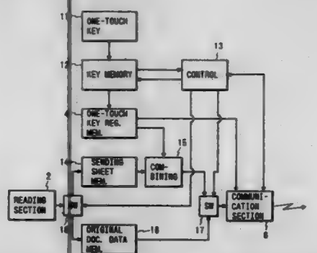
Hajime Sakashita; Yoshiaki Komachi; Takashi Kamikura; Ryuji Hosaka, and Naoharu Kido, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1991, Ser. No. 739,323

Claims priority, application Japan, Aug. 3, 1990, 2-206961; Aug. 3, 1990, 2-206962

Int. Cl.[5] H04N *1/00, 1/40*

U.S. Cl. 358—444 **10 Claims**



1. A facsimile network system capable of carrying out broadcast communication which enables documents in a memory of a key station to be sent automatically to multiple remote receiving stations comprising:

an input means for designating the remote receiving stations and for reading the documents;

a first memory means for storing at least addresses and telephone numbers of said remote receiving stations to which said documents are transmitted through the facsimile network;

a second memory means for temporarily storing data as to the documents which are read out by said input means;

a combining means for inserting at least an address read out of said first memory means into a sending sheet format which is obtained from the data stored at an address designated by said input means in said second memory means, to complete a sending sheet to be sent to each of said remote receiving stations as a front page of the documents;

a control means for controlling the broadcast communication according to the telephone numbers stored in said first memory, so that the documents are sent to each of the designated remote receiving stations together with the sending sheet;

said control means determining on the basis of the number of designated remote receiving stations that broadcast communication is required;

said input means comprising a key board for inputting numbers corresponding to the remote receiving stations to designate the stations and a reading means for reading the document including the sending sheet format to store the data thus read in said second memory means; and

a third memory means for storing at least a plurality of message samples; and

said input means further comprising: a display means for displaying said message samples; means for scrolling said message samples displayed on said display means; means for selecting a desired one out of said message samples thus displayed; and means for inserting said desired message thus selected into the sending sheet format in said combining means.

5,291,306

IMAGE REPRODUCING APPARATUS

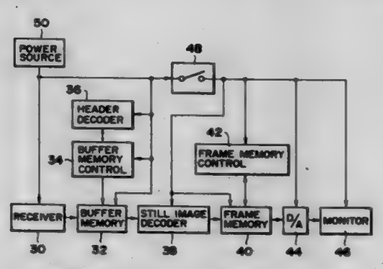
Ikuo Watanabe, Kawasaki, and Yasutomo Suzuki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 585,736, Sep. 20, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,830

Claims priority, application Japan, Sep. 25, 1989, 1-248757; Sep. 13, 1990, 2-245715

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—444 **14 Claims**



1. A reproducing apparatus comprising:

a) means for receiving compressed data, said receiving means including discriminating means for discriminating that received data is image data;

b) means for storing compressed data received by said receiving means upon discrimination by said discriminating means that received compressed data is image data;

c) means for supplying said stored data to reproducing means for reproducing said stored data as a visual image; and

d) means for causing said storing means to retain said compressed image data both when the supplying means is operative and when said supplying means is inoperative.

5,291,307

CONTROL CIRCUIT FOR AN IMAGE USED IN A DOCUMENT PROCESSING MACHINE

Graham Lockhurst, Kitchener, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 7, 1991, Ser. No. 741,275

Int. Cl.[5] H04N *1/40*; G08K *7/14*

U.S. Cl. 358—446 **3 Claims**

1. An apparatus comprising:

a document track;

first and second images positioned on opposed sides of said document track;

transport means for moving said document bidirectionally within said document track in operative relationship with said first and second imagers;

control means for controlling the operation of said apparatus;

said control means including storing means for storing data, operating software in said storing means, first offset and gain compensation data associated with said first imager stored in said storing means, second offset and gain compensation data associated with said second imager stored in said storing means, a static RAM, and a processor for executing said operating software;

said first and second imagers each having:

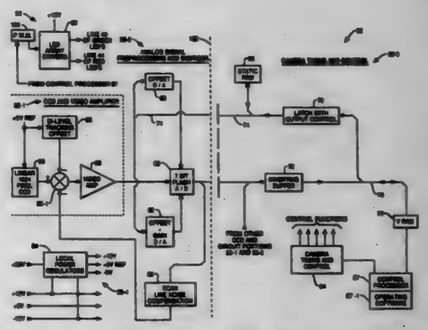
illumination means for illuminating an associated side of said document along a scan line;

a CCD; and

an optical system for directing reflected light from said scan line to said CCD to generate image data at a predetermined rate about the associated side of said document for a predetermined number of pixel positions in said scan line;

video amplifier means for amplifying said image data and for providing an output at said predetermined rate;

a flash A/D converter receiving the output from said video amplifier means, and also having a V+ reference input and a V− reference input;



a first D/A circuit having an input and an output, with said input thereof coupled to said static RAM and with said output thereof coupled to said V+ reference input; and

a second D/A circuit having an input and an output, with said input thereof coupled to said static RAM and said output thereof coupled to said V-reference input;

said control means being effective to transfer said first offset and gain compensation data to said static RAM when said first imager is operative, and to transfer said second offset and gain compensation data to said static RAM when said first imager is operative;

said control means also including timing means to transfer said first offset and gain data to said first and second D/A circuits of said first imager when said first imager is operative to provide offset and gain compensation data for each said pixel position in the associated scan line to enable offset and gain compensation to be performed by the associated flash A/D converter for each pixel position in the associated scan line; and

said timing means also being effective to transfer said second offset and gain data to said first and second D/A circuits of said second imager when said second imager is operative to provide offset and gain compensation data for each said pixel position in the associated scan line to enable offset and gain compensation to be performed by the associated flash A/D converter for each pixel position in the associated scan line.

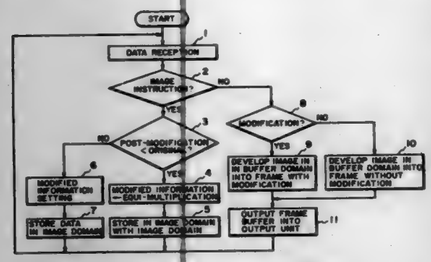
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,308

IMAGE PROCESSING APPARATUS USING TONAL DEGREE CONVERSION

Ken Onodera, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1991, Ser. No. 717,274
Claims priority, application Japan, Jun. 25, 1990, 2-164098
Int. Cl.[5] H04N *1/40, 1/00*
U.S. Cl. 358—448 **20 Claims**



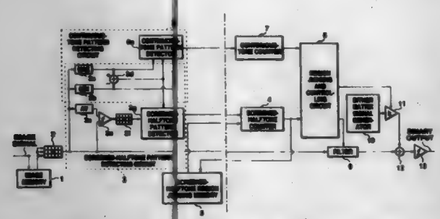
1. An image processing apparatus comprising:
input means for inputting image information as unmodified image information;
a buffer memory for storing said image information inputted by said input means;
processing means for subjecting said image information to a modification process including a tonal degree conversion process; and
a frame memory for storing modified image information,
wherein said buffer memory selectively retains one of the modified image information and the unmodified image information, and
wherein said processing means transfers the modified image information from the buffer memory to the frame memory when said buffer memory retains the modified image information, and said processing means generates the modified image information on the basis of the unmodified image information in the buffer memory and writes the modified image information in the frame memory when said buffer memory retains the unmodified image information.

5,291,309

IMAGE PROCESSING APPARATUS AND METHOD FOR MULTI-LEVEL IMAGE SIGNAL

Takayoshi Semasa, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,973
Claims priority, application Japan, Jan. 30, 1991, 3-29636
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **14 Claims**



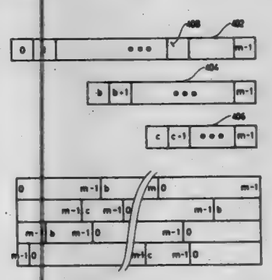
1. An image processing apparatus for inputting a multi-level image signal including a succession of pixels obtained by electrically scanning an image which contains letters, figures, photographs and screened-halftone in the form of a mixture and outputting the multi-level image signal in the form of a bi-level image signal, the image processing apparatus comprising:
A) a screened-halftone pattern detecting circuit for detecting the screened-halftone pattern by using an image signal which represents a first vicinity of the image which contains a target pixel in the succession of pixels;
B) a screened-halftone counter for counting the screened-halftone pattern detection state on each pixel in the succession of pixels;
C) a continuous-tone pattern detecting circuit for judging whether or not the target pixel is in the continuous-tone region by using an image signal which represents a second vicinity of the image which contains the target pixel;
D) a continuous-tone counter for counting the continuous-tone pattern detection state on each pixel in the succession of pixels;
E) a filter for filtering the image signal of the target pixel gradually on the basis of different characteristics in accordance with either or both of the outputs of the two counters; and
F) a means for bi-level-quantizing the output of the filter.

5,291,310

SCREEN GENERATION FOR HALFTONE SCREENING OF IMAGES

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Filed Sep. 3, 1991, Ser. No. 753,893
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **32 Claims**



1. A method for generating a halftone screened image from an original image, said method comprising:
storing a plurality of distinct strips, each of said plurality of distinct strips representing a different portion of an ideal angled screen pattern;
concatenating ones of said plurality of distinct strips in a sequence forming a generated screen pattern; and
screening said original image with said generated screen pattern to form said halftone screened image.

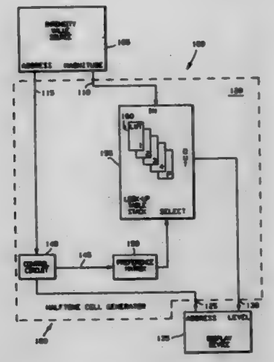
5,291,311

APPARATUS AND METHOD FOR GENERATING MULTI-LEVEL OUTPUT VALUES FOR PIXELS IN A HALFTONE CELL

Rodney L. Miller, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,142
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **9 Claims**

1. In a multi-level halftoning system (100), apparatus (120) for generating a multi-level pixel value for a halftone cell (103) from a magnitude of an intensity value (102) at a given location address, said apparatus comprising:
means (155), responsive to the magnitude of said intensity value, for producing a modulation level as said multi-level pixel value, wherein said producing means comprises a plurality of look-up tables (160) each having values representing a pre-defined transfer function (165', 170', 175' 180');
preference matrix means (150) connected to said producing means, for in response to said given location address, selecting one of said plurality of look-up tables said preference matrix means having, as its matrix elements, values



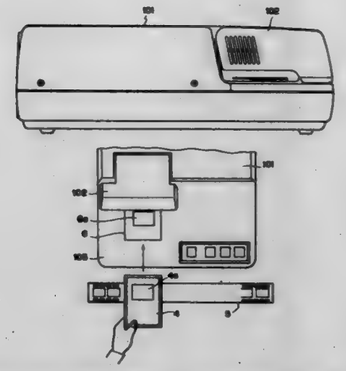
representative of the address of said plurality of look-up tables, and
means (140), connected to said selecting means, for controlling said selection such that one look-up table is selected in a pre-defined manner to produce a modulation level as said multi-level pixel value.

5,291,312

TRANSMISSIVE ILLUMINATION TYPE IMAGE INPUT APPARATUS

Toshiya Aikawa, Kawasaki; Eisaku Maeda, Sakura, and Satoru Yoshizawa, Chofu, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 23, 1991, Ser. No. 749,551
Claims priority, application Japan, Aug. 29, 1990, 2-227082
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—474 **4 Claims**



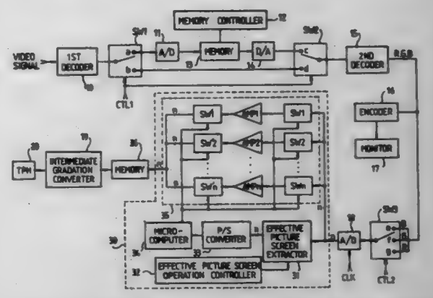
1. An image input apparatus which reads a film original to input an image of the film original, comprising:
a main body portion;
a stage provided on a substantially horizontal surface of said main body portion and adapted to detachably support the film original;
means for effecting horizontal scanning movement of said stage;
an illumination unit including light source means for effecting transmissive illumination of the film original supported on said stage, and a light-shielding cover;
a light sensor provided in said main body portion; and
an optical system provided in said main body portion for directing to said light sensor light transmitted from said light source means through the film original supported on said stage;
said illumination unit being displaceable between a first position close to said horizontal surface and in which said light source means effects the transmissive illumination of the film original in association with the scanning movement of said stage and also in which said light-shielding cover shields said stage from external light, and a second position raised from said horizontal surface to enable mounting of the film original on said stage.

5,291,313

AUTOMATIC CONTRAST CORRECTIN USEFUL IN VIDEO-TO-PRINT APPARATUS

Young G. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwan, Rep. of Korea

Filed Feb. 26, 1993, Ser. No. 26,142
Claims priority, application Rep. of Korea, Feb. 27, 1992, 92-3088
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—521 **8 Claims**



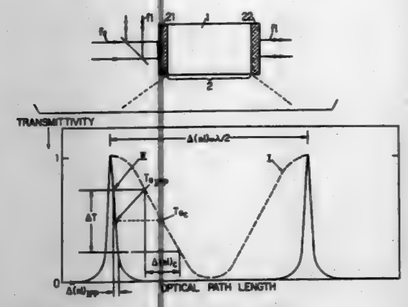
5. An automatic contrast correction method for correcting the contrast of a picture represented by color video signals comprising the steps of:
(a) sequentially receiving respective color video signals and converting the received signal into digital data;
(b) receiving the digital data and extracting the data corresponding to a previously set effective picture screen;
(c) calculating an average value of color signals with respect to the extracted data;
(d) comparing the average value with a reference value which is previously set so as to have an optimized contrast; and
(e) amplifying the digital data by a selected one of several predetermined amplification factors, selected based on the compared result.

5,291,314

SPATIAL LIGHT MODULATOR DEVICE AND A CONOSCOPIC HOLOGRAPHY SYSTEM OF LARGE DYNAMIC RANGE INCLUDING SUCH A MODULATOR DEVICE

Aharon Agranat, and Gabriel Sirat, both of Paris, France, assignors to France Telecom, Paris, France

Filed Jul. 29, 1991, Ser. No. 736,291
Claims priority, application France, Jul. 27, 1990, 90 09630
Int. Cl.[5] G02B *5/23 1/02;* **G02F** *1/35;* **G03H** *1/00*
U.S. Cl. 359—100 **17 Claims**



1. A spatial light modulator comprising:
an interferometer system having an optical cavity;
a photorefractive crystal, having a transmittivity which changes rapidly with a change in refractive index, positioned in said optical cavity;
means for directing a write beam containing analog information onto said crystal, said write beam comprising a wavelength at which said crystal absorbs, resulting in modification of the refractive index of said crystal, thus altering the optical path length of said interferometer system, resulting in a transmittivity-optical path length characteristic curve having a steep slope; and
means for directing a read beam onto said crystal, said read beam comprising a wavelength at which optical characteristics of said crystal after modification vary in accordance with said analog information, said spatial light modulator having a dynamic range of amplitude variation of said analog information due to said modification of said crystal which corresponds to said slope of said transmittivity-optical path length characteristic curve.

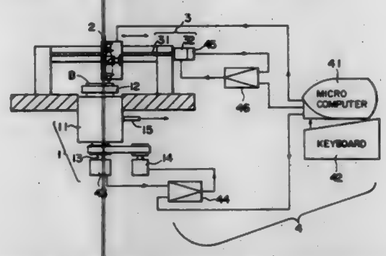
5,291,315

METHOD OF OBTAINING HOLOGRAM AND AN EXPOSURE APPARATUS

Shigeru Hosoe, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 744,817, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 381,844, Jul. 19, 1989, abandoned. This application May 21, 1993, Ser. No. 65,449
Claims priority, application Japan, Jul. 26, 1988, 63-98004
Int. Cl.[5] G03H *1/02;* **G02B** *5/32;* **G01B** *9/021*
U.S. Cl. 359—3 **12 Claims**

1. An apparatus for exposing a photoresist deposited on a substrate to form a hologram pattern for use in an in-line type interferometer, comprising:
means for generating an electrical signal corresponding to a hologram pattern;
means for rotating the substrate upon which the photoresist is deposited, the substrate being detachably mounted on the rotating means;
means for projecting a laser beam corresponding to the electrical signal onto the photoresist, wherein the projecting means includes an optical system for projecting a beam spot of the laser beam on a surface of the photoresist so as to expose the photoresist to the hologram pattern;
means for linearly moving the projecting means or the substrate rotating means relative to one another in a direction parallel to the plane of the photoresist; and



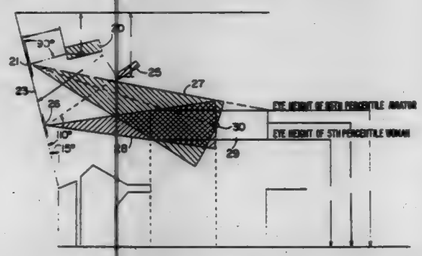
means for controlling the rotating means, projecting means, and moving means based on the electrical signal so that the beam spot projecting by the projecting means onto one photoresist is moved by the moving means to provide the hologram pattern on the photoresist.

5,291,316

INFORMATION DISPLAY SYSTEM HAVING TRANSPARENT HOLOGRAPHIC OPTICAL ELEMENT

David P. Haberman, Shorewood; Robert E. Rhoades, Waukesha, both of Wis.; Arthur Cox, Des Plaines, Ill., and Richard D. Rallison, Paradise, Utah, assignors to Astronautics Corporation of America, Milwaukee, Wis.

Filed Sep. 27, 1991, Ser. No. 766,720
Int. Cl.[5] G02B *5/32;* **G03H** *1/30*
U.S. Cl. 359—13 **11 Claims**



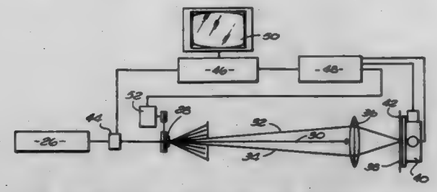
11. An information display system for use in providing information displays on windows of a building comprising:
(a) a holographic optical element including a hologram mounted on a window of the building, the holographic optical element being substantially transparent to most wavelengths of light and formed to act as a diffuse reflector of light at a selected band of wavelengths such that the viewing window of the reflected image is controlled to prevent light from the holographic optical element from shining toward regions other than a selected design eye region; and
(b) a projector mounted to a structure of the building to produce an image at the selected band of light wavelengths which the holographic optical element reflects, and which projects and focuses the image onto the holographic optical element to provide the image at the design eye region and such that observers outside of the design eye region do not see the image;
wherein the window of the building has two holographic optical elements mounted thereon, one vertically higher than the other, and two projectors, one forming an image on the upper holographic optical element and the other forming an image on the lower holographic optical element, the holographic optical elements formed to reflect the image from the two projectors to the same design eye position.

5,291,317

HOLOGRAPHIC DIFFRACTION GRATING PATTERNS AND METHODS FOR CREATING THE SAME

Craig Newswanger, Ventura, Calif., assignor to Applied Holographics Corporation, Oxnard, Calif.

Filed Jul. 12, 1990, Ser. No. 552,258
Int. Cl.[5] G02B *5/18, 5/32;* **G03H** *1/26*
U.S. Cl. 359—15 **19 Claims**



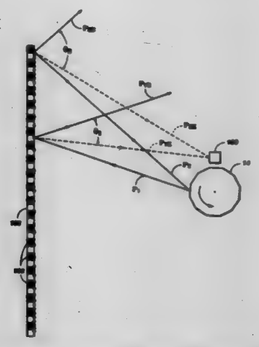
9. A method of forming holographic diffraction grating patterns, comprising the steps of:
a) directing a beam of light through a diffraction grating to create a pair of pattern beams;
b) focusing said pattern beams onto a first spot of a photosensitive member such that a holographic diffraction grating is created onto said first spot of said photosensitive member;
c) moving said photosensitive member such that a second spot can be exposed to said pattern beams;
d) rotating said diffraction grating; and
e) directing a beam of light through said diffraction grating, to create a pair of pattern beams which are focused onto said photosensitive member such that a second holographic diffraction grating is created onto said second spot.

5,291,318

HOLOGRAPHIC MEMBER FOR A REAL-TIME CLOCK IN A RASTER OUTPUT SCANNER

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,408
Int. Cl.[5] G02B *5/18, 26/10, 27/44*
U.S. Cl. 359—17 **10 Claims**



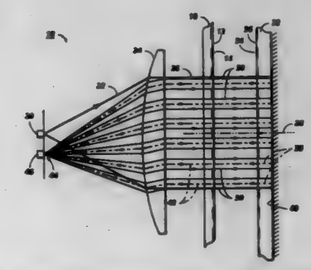
2. A raster output system of the type having a writing beam modulated in accordance with image data and reflected from a reflecting surface and caused to scan across a photosensitive surface, and a pilot beam reflected from substantially the same location of the reflecting surface as the writing beam at a given time, the improvement comprising:
encoder means having an optical pattern thereon, the optical pattern adapted to interact with the reflected pilot beam scanning across the optical pattern to create an optical signal indicative of the behavior of the writing beam relative to the photosensitive surface; and
light collection means for directing light associated with the optical signal toward a fixed point, the light collection means including diffraction means for directing an interference pattern forming a light wave toward the fixed point in response to the pilot beam interacting with the light collection means.

5,291,319

ROTATING DISC OPTICAL SYNCHRONIZATION SYSTEM USING BINARY DIFFRACTIVE OPTICAL ELEMENTS

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1992, Ser. No. 989,313
The portion of the term of this patent subsequent to Nov. 2, 2009, has been disclaimed.
Int. Cl.[5] G02B *5/18, 26/10, 27/44*
U.S. Cl. 359—18 **10 Claims**



7. An optical synchronization system for a rotating disc comprising:
a light source for emitting a coherent light beam,
means to collimate said coherent light beam,
a first stationary binary diffractive optical element to alternately scatter and transmit said collimated light beam,
a plurality of alternating second binary diffractive optical elements and transmissive elements disposed circumferentially on said rotating disc such that said transmitted light beam from said first stationary binary diffractive optical element is alternately scattered by said alternating second binary diffractive optical elements and transmitted by said alternating transmissive elements as said rotating disc rotates, and
focussing means to focus said double transmitted light beam from said plurality of alternating transmissive elements onto a photodetector to generate a synchronization signal for rotation of said rotating disc.

5,291,320

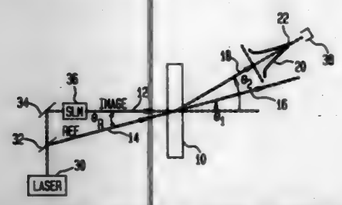
HIGHER ORDER DIFFRACTION IN HOLOGRAPHY

Eung-Gi Paek, Freehold, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 5, 1992, Ser. No. 847,596
Int. Cl.[5] G03H *1/02, 1/00*
U.S. Cl. 359—28 **10 Claims**

1. A holographic method comprising irradiating a recording

medium with a first optical beam and a second optical beam optically coherent with each other to thereby record a hologram in said recording medium, said recording medium comprising a thermoplastic plate and said hologram causing a third optical beam coincident with said first optical beam to be diffracted into at least one higher-order diffraction beam, said



first and second beams having an angular separation between them such that the angle between said first optical beam and said higher-order diffraction beam substantially coincides with a peak optimum angle for the first order diffraction of said recording medium, said irradiating causing exposure for said higher order diffraction beam to be increased over what is necessary for said first order optical beam.

5,291,321

METHOD AND APPARATUS FOR MAKING HOLOGRAM

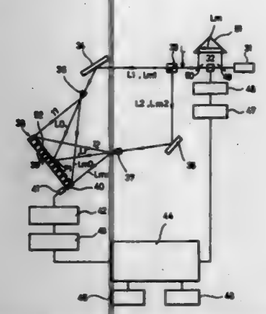
Sung W. Noh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 5, 1992, Ser. No. 971,557

Claims priority, application Rep. of Korea, Nov. 5, 1991, 19579/1991

Int. Cl.[5] G03H *1/00, 1/02*

U.S. Cl. 359—30 **16 Claims**



1. A method of making a hologram, comprising the steps of:
forming a monitoring hologram on a portion of a hologram plate;
producing a monitoring beam based on a laser beam;
splitting said laser beam and said monitoring beam into two beams, respectively;
producing an object beam and a reference beam to be incident on a whole surface of said hologram plate from said two beams into which said laser beam is split and a monitoring object beam and a monitoring reference beam to be incident on said monitoring hologram on said hologram plate from said two beams into which said monitoring beam is split;
allowing said monitoring object beam and said monitoring reference beam to be incident on said monitoring hologram on said hologram plate to form monitoring interference patterns;
sensing an intensity of said monitoring interference patterns;
comparing the sensed intensity of said monitoring interference patterns with a reference intensity and if the intensity of said monitoring interference patterns varies exceeding a tolerance limit of intensity variation, blocking said laser beam and allowing said monitoring object beam and said monitoring reference beam to be incident on said monitoring hologram on said hologram plate and if the intensity of said monitoring interference patterns varies within the tolerance limit of intensity variation, allowing said object beam and said reference beam to be incident on said hologram plate; and
performing repeatedly said sensing and comparing steps so that said object beam and said reference beam are incident on said hologram plate only for a predetermined time period to record said hologram based on an interference phenomenon thereof.

5,291,322

SUPERTWISTED, NEMATIC LIQUID CRYSTAL DISPLAY DEVICE WITH LC BIREFRINGENCE AT LEAST 0.2 AND LC RETARDATION AT LEAST 1 MICROMETER

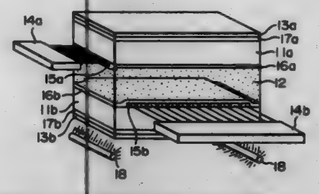
Osamu Itoh, Hitachi; Katsumi Kondo, Katsuta; Jun-ichi Hirakata, Hitachi, and Naoki Kikuchi, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,252

Claims priority, application Japan, Mar. 25, 1991, 3-059837

Int. Cl.[5] G02F *1/1343, 1/1335*

U.S. Cl. 359—55 **36 Claims**



1. A liquid crystal display device comprising:
a liquid crystal cell including a first substrate having a first electrode, a second substrate having a second electrode, which is opposite to the first substrate, and a nematic liquid crystal layer disposed between said first substrate and said second substrate;
a first polarizer disposed outside of said first substrate;
a second polarizer disposed outside of said second substrate; and
at least one optically anisotropic layer disposed at least one of between said first substrate and said first polarizer and between said second substrate and said second polarizer;
wherein a twist angle of said nematic liquid crystal layer is greater than 180°; and
the following conditions are fulfilled:

$$(\Delta n_{LC} \cdot d_{LC}) \geqq 1\ \mu m,$$

$$(\Delta n_{LC} \cdot d_{LC}) + \sum_{i=1}^{m} (\Delta n_i \cdot d_i) \geqq 0.25\ \mu m,$$

$$\Delta n_{LC} \geqq 0.2, \text{ and}$$

$$(\Delta n_{LC} \cdot d_{LC}) + \left\{ \sum_{i=1}^{m} (\Delta n_i \cdot d_i) \right\} \leqq 1.88\ \mu m,$$

where Δn_{LC} represents a birefringence of said nematic liquid crystal; d_{LC} a thickness of said nematic liquid crystal layer; Δn_i a birefringence of said optically anisotropic layer; d_i a thickness of said optically anisotropic layer; and m a number of optically anisotropic layers.

5,291,323

LIQUID CRYSTAL DISPLAY DEVICE WITH POSITIVE AND NEGATIVE COMPENSATING FILMS EACH WITH ITS OPTICAL AXIS PARALLEL TO THE SURFACE

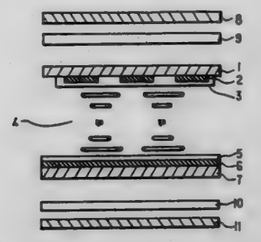
Hiroshi Ohnishi, Nara; Toshiyuki Yoshimizu, Ikoma; Yumi Yoshimura, Yamatokoriyama, and Keiko Kishimoto, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 30, 1991, Ser. No. 769,922

Claims priority, application Japan, Oct. 1, 1990, 2-264684

Int. Cl.[5] G02F *1/1335*

U.S. Cl. 359—73 **7 Claims**



1. A liquid crystal display device composed by disposing optical compensation plates on the front and back sides of a liquid crystal cell having a liquid crystal layer oriented by supertwisting, wherein one of the optical compensation plates is a phase difference plate of uniaxially drawn polymer film made of polycarbonate having an optical axis parallel to the surface thereof, and the other is a phase difference plate of uniaxially drawn polymer film made of polystyrene having an optical axis parallel to the surface thereof.

5,291,324

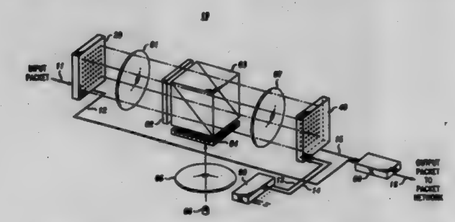
COMPARISON APPARATUS WITH FREESPACE OPTICAL INTERCONNECTIONS BETWEEN OPTOELECTRONIC INTEGRATED CIRCUITS

Stephen J. Hinterlong, Elburn, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 24, 1992, Ser. No. 982,161

Int. Cl.[5] H04J *14/08*; H04B *10/00*; G02F *1/00*

U.S. Cl. 359—135 **57 Claims**



1. Packet processing apparatus comprising
a first optoelectronic integrated circuit comprising first means for storing information and means for transmitting an array of optical beams representing said information stored by said first storing means,
free space optical means for imaging said array of optical beams onto a second opto-electronic integrated circuit,
said second circuit comprising second means for storing information and means for comparing the information represented by said array of optical beams received via said free space optical means, with said information stored by said second storing means,
means responsive to at least one input packet for transmitting a header of said at least one input packet to one of said first and second storing means for storage therein,
where the other of said first and said second storing means stores at least one possible value,
wherein said second circuit further comprises means for generating a signal in response to a predefined comparison by said comparing means of said stored header with said stored possible value.

5,291,325

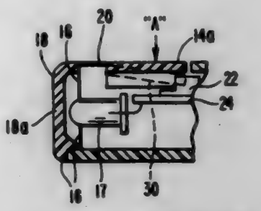
REMOTE CONTROL UNIT WITH UNITARY CRYSTAL AND BUTTON

Charles A. Elliott, Greenwood, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 13, 1991, Ser. No. 807,370

Int. Cl.[5] H04B *10/04*

U.S. Cl. 359—142 **6 Claims**



1. A remote control unit for remotely controlling an external responsive device comprising:
a housing,
a light generating means disposed within the housing for producing radiant light in the electromagnetic spectrum extending from the ultraviolet to the far infrared for communication with the external responsive device,
a plurality of buttons movable with respect to the housing for user actuation of the light generating means by external mechanical pressure applied to at least one of the buttons,
a window means disposed in the housing for passage therethrough of radiant light produced by the light generating means, and
a light transmissive means having a first portion covering the window means and disposed over the window for passing through radiant light, and having a second portion unitary with the first portion with the first and second portions being joined by a flexible portion so that the first and second portions are flexibly movable with respect to each other, said second portion comprising at least one of the plurality of buttons.

5,291,326

OPTICAL SIGNAL TRANSMISSION SYSTEM, PARTICULARLY OPTICAL CABLE TELEVISION SYSTEM, WITH MONITORING AND SERVICE-CHANNEL FACILITIES

Rolf Heidemann, Tamm, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 20, 1992, Ser. No. 855,615

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1991, 4109683

Int. Cl.[5] H04B *10/00, 10/24*

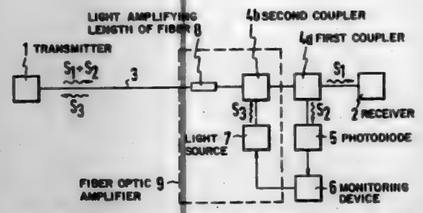
U.S. Cl. 359—160 **6 Claims**

5. System for optically transmitting a useful signal (S_1) from a transmitter (1) over a transmission link including an optical waveguide (3) or a fiber-optic network to a receiver (2), characterized in that
the transmitter (1) transmits the useful signal (S_1) and an auxiliary signal (S_2) over the transmission link toward the receiver (2) at different wavelengths;

means (4*a*, 4*b*, 5, 6, 7) are provided at a desired point in the transmission link, for receiving the auxiliary signal (S_2) and for providing a response signal (S_3) containing information for monitoring the useful signal (S_1) over the same optical waveguide (3) or the same fiber-optic network to the transmitter (1);

the transmitter (1) receives the response signal (S_3) and controls the further transmission of the useful signal (S_1) and the auxiliary signal (S_2) in accordance with the information in the response signal (S_3);

a fiber-optic amplifier (9) is coupled before the desired point in the transmission link and passes the useful signal (S_1),



the fiber-optic amplifier (9) having a pump source (7) for receiving the auxiliary signal (S_2) and transmitting the response signal (S_3);

the pump source and monitoring means (4*a*, 4*b*, 5, 6, 7) includes a laser (10) and a photodiode (5) for receiving both the backface emission of the laser (10) and the auxiliary signal (S_2); and

the wavelength at which the auxiliary signal (S_2) is transmitted and the laser (10) of the pump source (7) are assigned so that the auxiliary signal (S_2) can be passed through the laser (10) without being changed and without interfering with the operation of the laser (10).

5,291,327

IMAGING SYSTEM USING FOCAL PLANE ARRAY

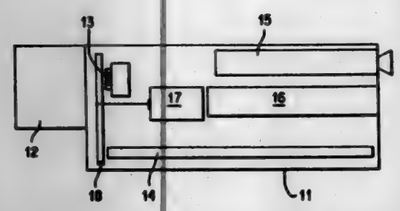
Robert K. McEwen, Essex, United Kingdom, assignor to GEC-Marconi Limited, United Kingdom

Filed Aug. 28, 1991, Ser. No. 750,598

Claims priority, application United Kingdom, Sep. 5, 1990, 9019337

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—209 31 Claims



1. An imager comprising an array of sensing elements arranged in rows and columns, a lens adapted to focus an image on said array and a member which includes at least one refractive region transmissive to radiation to which the sensing elements are responsive, wherein the member is movable such that a refractive region of the member is repeatedly interposed in a radiation path between the lens and the array whereby the image focused on the array is displaced diagonally by said member, relative to said rows and columns of the array.

5,291,328

SEMICONDUCTOR LASER AMPLIFIERS

William J. Devlin; David M. Cooper; Paul C. Spurdens; Simon Cole; Ian F. Lealman, and Joseph J. Isaac, all of Ipswich, England, assignors to British Telecommunications, London, England

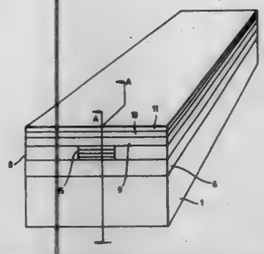
PCT No. PCT/GB90/00055, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/08411, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 15, 1990, Ser. No. 741,418

Claims priority, application United Kingdom, Jan. 13, 1989, 8900729

Int. Cl.[5] H01S *3/19*

U.S. Cl. 359—344 21 Claims



21. A semiconductor laser amplifier having no feedback grating therein and comprising:

an input facet for receiving optical signals to be amplified;

an output facet for providing amplified optical signals therefrom;

an active layer having ends thereof respectively forming parts of said input and output facets of the amplifier; and

an inactive waveguide layer having substantially flat surfaces and having ends thereof also respectively forming parts of said input and output facets of the amplifier;

said active and waveguide layers being separated but closely disposed between their respective ends sufficient to optically interact and reduce polarisation sensitivity of the amplifier less than 2 dB.

5,291,329

APPARATUS FOR RECORDING AN IMAGE

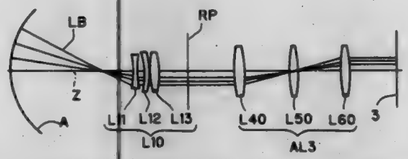
Zenji Wakimoto, and Masahide Okazaki, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 30, 1992, Ser. No. 906,539

Claims priority, application Japan, Jul. 15, 1991, 3-201406

Int. Cl.[5] G02C *26/10*

U.S. Cl. 359—362 8 Claims



1. An apparatus for recording an image on a recording surface with a plurality of laser beams, comprising:

a plurality of laser source units each for emitting a laser beam;

a holding member for holding said laser source units; and

a first lens, disposed between said laser source units and said recording surface, for directing said laser beam from each of said laser source units to said recording surface,

wherein said holding member has a spherical surface with a center point which coincides with a front focal point of said first lens on which said laser source units are each disposed in such a manner that the principal ray of said laser beam therefrom passes through said front focal point of said first lens, said laser source units are arranged at equal intervals in a direction on said spherical surface, and said first lens includes an fθ lens.

5,291,330

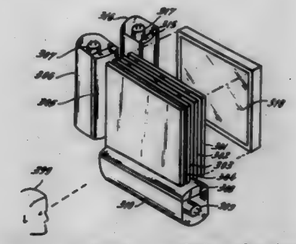
METHOD AND APPARATUS FOR ENHANCING IMAGE RESOLUTION BY MEANS OF A MULTIPLICITY OF PHASE OBJECTS AND AN OPTIONAL EXTERNAL RADIANT FLUX

Joseph Daniels, 339 Waterside Rd., Northport, N.Y. 11768

Filed Nov. 3, 1989, Ser. No. 431,549

Int. Cl.[5] G02B *27/50, 27/22*

U.S. Cl. 359—478 92 Claims



1. Apparatus for enhancing resolution of an image viewed by a viewer comprising:

a plurality of phase affecting light transmitting objects disposed in a stack in a light path of light energy defining the image, the image being externally produced and independent of said light transmitting objects, each object having a thickness and being spaced a distance apart from others of said objects, and further comprising a source of radiant energy separate from radiant energy of the image and not supplied by ambient light from the viewer's environment, for irradiating said objects, thereby creating standing waves in said objects which interfere with the light energy in the light path.

5,291,331

LIGHT CONFINING CAVITY WITH ANGULAR-SPATIAL LIMITATION OF THE ESCAPING BEAM

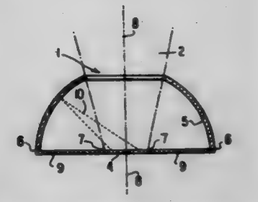
Juan C. Miano, c/ Juan Vigion 9,7, 28003 Madrid, Spain, and Antonio Luque, c/ Alejandro Rodriquez, 19, 1-C, 28039 Madrid, Spain

Filed Jul. 19, 1991, Ser. No. 733,147

Claims priority, application Spain, Jul. 23, 1990, 9001985

Int. Cl.[5] G02B *17/00*

U.S. Cl. 359—898 4 Claims



1. Apparatus for confining light comprising cavity means forming a cavity and at least one absorber in said cavity, said cavity means having an aperture through which said light enters into the cavity and a mirror curved such that the points of the mirror that can be illuminated from the aperture are normal to the lines of geometrical vector flux created by the bundle of rays issuing from one face of the entry aperture.

5,291,332

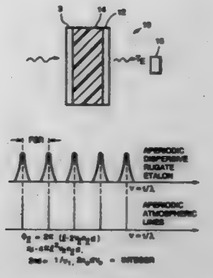
ETALONS WITH DISPERSIVE COATINGS

Edward T. Siebert, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 25, 1992, Ser. No. 857,367

Int. Cl.[5] G02B *5/28, 1/10;* G01B *9/02*

U.S. Cl. 359—589 5 Claims



1. A method of fabricating an etalon so as to provide a prescribed variation of phase with wavelength in a coating for wavelengths of interest, comprising the steps of:

providing a substrate that is substantially transparent to radiation having wavelengths of interest; and

forming a coating upon a surface of the substrate, the step of forming a coating including the step of forming the prescribed variation of phase so as to provide a phase shift for incident radiation that is a function of the wavelengths of interest, wherein said coating includes a rugate coating having a spatially varying index of refraction profile n(x) that is a summation of a plurality of sinusoidal index of refraction profiles, wherein n(x) is given by the expression:

$$n(x)=n_o+\sum n_i \sin(K_i x+\phi_i)\ H((n_i K_i(x-x_o))/(n_o \omega_i))$$

Where n_o is an average index of refraction through the rugate coating, where n_i is a peak index of refraction variation at the ith wavelength λ_i, where $K=4\pi n_o/\lambda_i$ where ϕ_i is a starting phase of the index of refraction variation, where x is the distance into the rugate coating, where H is an envelope function or apodizing function or finite extend, and where $\tanh^2 u_i/4$ is the reflectivity of the coating at the ith wavelength.

5,291,333

ALIGNMENT SYSTEM FOR A SEGMENTED TELESCOPE

James P. Mills, Brighton, Mich., and Steven M. Watson, Layton, Utah, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 907,270, Jul. 1, 1992, Pat. No. 5,249,080.

This application Jul. 9, 1993, Ser. No. 88,979

Int. Cl.[5] G02B *27/00*

U.S. Cl. 359—601 4 Claims

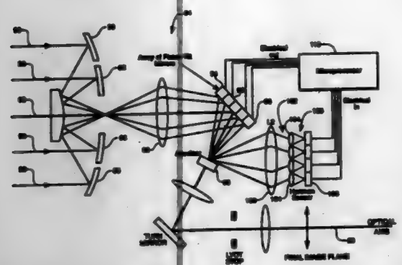
1. An alignment system for correcting alignment errors for a segmented telescope, wherein the segmented telescope includes a coronagraph, and wherein the coronagraph includes an apodizer, comprising:

(a) an array of telescope primary segments;

(b) an array of piston-tilt mirrors, wherein each piston-tilt mirror corresponds to a telescope primary segment, and

wherein each piston-tilt mirror is in a conjugate image plane of its corresponding telescope primary segment;

(c) an array of lenses, wherein each lens corresponds to a piston-tilt mirror and to that piston-tilt mirror's corresponding telescope primary segment, and wherein each lens of the array of lenses, for light rays reflected from the back of the apodizer, is in a conjugate image plane of both its corresponding telescope primary segment and of its corresponding piston-tilt mirror;



(d) position sensor means for determining the relative positions of each focal point of the light rays focused by each lens of the array of lenses; and,

(e) computer means for reading the relative focal point positions, for determining needed piston and tilt corrections to each of the piston-tilt mirrors so that, in combination, they project a light wavefront known to be the same as those of light rays impinging on the array of primary segments, and for applying those piston and tilt corrections to the array of piston-tilt mirrors to effect that correction.

5,291,334

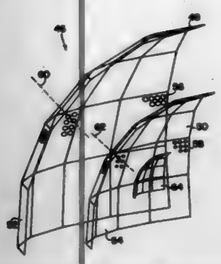
MICRO-LENS PANORAMIC IMAGER

Allan Wirth, Bedford; Andrew J. Jankevics, Acton; Franklin M. Landers, Wakefield; Theresa L. Bruno, Bedford; Dante P. D'Amato, Swampscott; Lawrence E. Schmutz, Watertown, all of Mass.; Lawrence H. Gilligan, Charlottesville, Va., and John L. Duncan, Cary, N.C., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 30, 1992, Ser. No. 827,794

Int. Cl.[5] G02B *27/10, 13/06*

U.S. Cl. 359—622 **21 Claims**



1. An imaging system for processing incident optical radiation emitted from a source comprising:

a first lenslet array of micro-lenses each having a first focal length (f_1), a first pitch, and a first lens diameter (d_1), positioned about a portion of a first spherical surface having a first radius of curvature (r_1) at a first longitudinal distance along an axis to intercept said incident optical radiation; and

a second lenslet array of micro-lenses each having a second focal length (f_2), second pitch, and a second lens diameter (d_2) positioned about a portion of a second spherical surface having a second radius of curvature (r_2) adjustably positioned at a second longitudinal distance along said axis to intercept radiation emerging from said first lenslet array,

said second lenslet array configured to be concentric with said first lenslet array and being separated along said optic axis from said first lenslet array by a predetermined amount such that said incident radiation is focused by the combined action of a plurality of pairs of corresponding lenslets from said first and second lenslet arrays to an erect overlap image in a substantially spherical focal surface transverse to said optic axis located at distance C from said second spherical surface.

5,291,335

OPTICAL EQUIPMENT HAVING A LENS POSITION DETECTOR

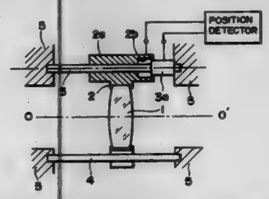
Shigeru Ogino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,459

Claims priority, application Japan, Dec. 7, 1990, 2-400823

Int. Cl.[5] G02B *15/14, 7/02*

U.S. Cl. 359—696 **10 Claims**



1. An optical equipment having a lens position detector, comprising:

a) a lens holder for holding a lens;

b) a guide member for slidably supporting the lens holder along an optical axis; and

c) electrical displacement detection means for detecting a position of said lens holder with respect to said guide member by an electrical output, said electrical displacement detection means detecting the position of said lens holder by detecting a change of an electrical capacitance of a capacitor constituted by an electrode formed on at least a part of said guide member and an electrode of conductive member formed on at least a part of said lens holder.

5,291,336

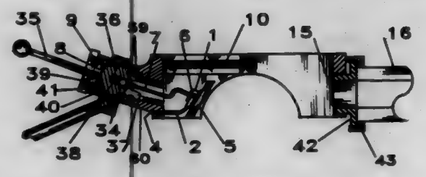
MICROBEAM HOLDER

Gregory M Miles, 1925 McKinley Ave., Ste. D, La Verne, Calif. 91750

Filed Jul. 2, 1991, Ser. No. 724,784

Int. Cl.[5] G02B *7/02, 7/182;* A61B *17/36*

U.S. Cl. 359—808 **4 Claims**



1. A microbeam holder for focusing and controlling a laser beam to a target comprising:

an annular housing with a means for attachment to a microscope;

a slip ring attached by a slip ring support retained in a support aperture defined in the annular housing;

a mirror mount having a specular mirror and an angled rod with the mirror mount mounted in the slip ring such that it rotates freely;

a joystick mechanism with a joystick retainer and a retaining ring wherein the joystick mechanism receives a ball of the angled rod;

a laser holder attached to the annular housing opposite the slip ring by means of a threaded laser holder ring attached to a laser holder retainer which laser holder retainer is mounted to the annular housing in a mounting aperture contained therein wherein the laser holder comprising:

a positive lens mount with a positive lens retained in a positive lens aperture defined therein by a positive lens retaining ring;

a negative lens mount with a negative lens retained opposite the positive lens by a negative lens retaining groove and a negative lens retainer;

a negative lens mount retaining ring with a retaining ring thread on its outside circumference mounted axially around the positive lens mount and attached to the negative lens mount by a screw which passes through the positive lens mount by a slotted aperture defined therein;

a focus ring around the positive lens mount and the negative lens mount retaining ring with a focus thread on the focus ring inside circumference to interact with the retaining ring thread wherein when the focus ring is rotated the negative lens mount retaining ring moves axially relative to the positive lens mount;

a laser mount attached to the positive lens mount at a laser mount end;

a washer and lens wave washer ring at the positive lens end and a washer at the laser mount end to stop the axially motion of the negative lens mount when moved by the focus ring;

a spot size retaining ring with a retaining screw that may be tightened against the laser mount to hold the spot size retaining ring to limit the rotational movement of the focus ring to the length of a turn groove defined in the focus ring.

5,291,337

DEVICE FOR ADJUSTING THE MAGNIFICATION OF A FLEXIBLE MIRROR AND A METHOD OF MAKING THE SAME

Jeff Greger, Lansdowne, and Charles Geltz, Drexel Hill, both of Pa., assignors to Zenith Products Corp., Aston, Pa.

Filed Oct. 21, 1992, Ser. No. 964,231

Int. Cl.[5] G02B *7/182, 5/08*

U.S. Cl. 359—846 **13 Claims**

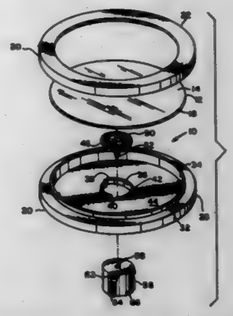
1. A device for adjusting the magnification of a flexible mirror, comprising:

a flexible mirror having a reflective obverse surface, a rear surface located generally opposite said reflective surface, and a periphery surrounding each of said reflective surface and said rear surface;

a housing having a retainer means for retaining said mirror, a base member supported on said housing, said base member having an aperture therethrough including a plurality of guide members located about the periphery of said aperture, each of said guide members having a surface angled with respect to a major plane of said base member;

a retention member connected to said rear surface of said mirror and projecting generally away from said rear surface; and

an adjustment member having an aperture for receiving and securing said retention member and permitting said adjustment member to rotate freely about said retention member, said adjustment member further comprising a plurality of retainer members for being inserted into said aperture of said base member in engagement with an angled surface of said guide members, such that said adjustment member is retained on said base member and may be rotated to displace said retainer members along said angled surfaces from a first position with respect to said guide members in which said flexible mirror is generally flat to a second position in which said flexible mirror has a generally concave shape.



5,291,338

HEAD-DOWN TYPE OPTICAL DEVICE FOR DELIVERING INFORMATION TO THE DRIVER OF A MOTOR VEHICLE

Jean-Jacques Bezard, Chatou; Alain Bonatto, Herblay, and Catherine Jury, Courbevoie, all of France, assignors to Jaeger, Levallois - Perret, France

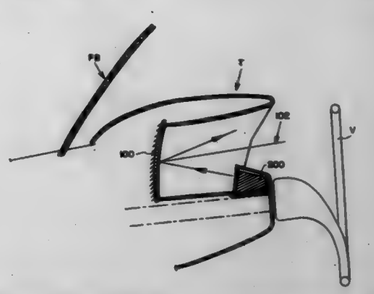
PCT No. PCT/FR90/00429, § 371 Date Feb. 11, 1992, § 102(e) Date Feb. 11, 1992, PCT Pub. No. WO90/16004, PCT Pub. Date Dec. 27, 1990

PCT Filed Dec. 13, 1991, Ser. No. 778,108

Claims priority, application France, Jun. 15, 1989, 8907950; Nov. 29, 1989, 8915712; Mar. 8, 1990, 9002961

Int. Cl.[5] G02B *5/10*

U.S. Cl. 359—859 **21 Claims**



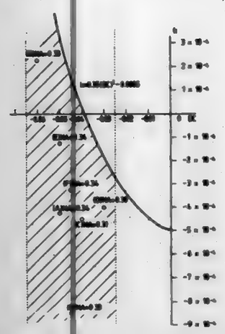
1. An optical device for delivering information to the driver of a motor vehicle, the device comprising a concave mirror (100) placed below the bottom line of view in the landscape field of view, the concave side of the mirror facing the driver, and an imaging device (200) designed to direct a light signal towards the mirror (100), characterized by the fact that the concave mirror (100) is defined by a portion of the surface of a torus, and by the fact that the device includes means for adjusting its pointing direction about a horizontal axis.

5,291,339

SCHWARZSCHILD OPTICAL SYSTEM

Shoichiro Mochimaru; Yoshiaki Horikawa, both of Hachiouji, and Mikiko Kato, Urawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,236
Claims priority, application Japan, Nov. 30, 1990, 2-334977; Nov. 30, 1990, 2-334978
Int. Cl.[5] G02B *21/04, 17/06;* G21K *7/00*
U.S. Cl. 359—859 2 Claims



1. A Schwarzschild optical system comprising a concave mirror having an opening formed at the center thereof and a convex mirror disposed opposite to the opening of said concave mirror, in which said optical system has a numerical aperture of at least 0.25 on the object side, said concave mirror is formed to have an aspherical surface and said optical system satisfies the following conditions (1) and (2):

$$-0.065 \leq DC \leq -0.025,\ DC=(W2-W1)/f \quad (1)$$

$$k \leq 0.35-(DC)^2-0.005 \quad (2)$$

wherein the reference symbol DC represents a departure between the centers of curvature of said concave mirror and said convex mirror, the reference symbol W1 denotes a distance from the object point to the center of curvature of said concave mirror, the reference symbol W2 designates a distance from the object point to the center of curvature of said convex mirror, the reference symbol f represents the focal length of said Schwarzschild optical system and the reference symbol k designates a value given by the following formula:

$k=e^2/(1-e^2)$ when k is larger than 0, or

$k=-e^2$ when k is smaller than 0.

wherein the reference symbol e represents the eccentricity of said aspherical surface.

5,291,340

REFLECTING OBJECTIVE SYSTEM

Shingo Kashima, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 553,639, Jul. 18, 1990, Pat. No. 5,144,496.
This application Aug. 31, 1992, Ser. No. 937,128
Claims priority, application Japan, Jul. 19, 1989, 1-184561; Jul. 19, 1989, 1-184562; Jul. 27, 1989, 1-192747; Jul. 27, 1989, 1-192748
Int. Cl.[5] G02B *17/06, 21/04*
U.S. Cl. 359—859 3 Claims

1. A reflecting objective system that excludes a refracting optical element and receives light from an object separate from the system with a given distance therebetween and acts to form an image of the object, comprising, in the travelling order of light incident from the object side:

a first reflecting mirror having a positive optical power,

a second reflecting mirror and a third reflecting mirror at least one of which has a positive optical power, and

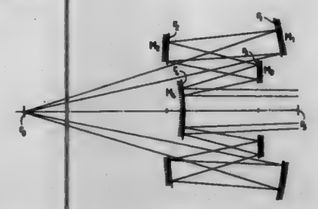
a fourth reflecting mirror having a positive optical power,

each reflecting mirror having different reflecting surfaces than the other reflecting mirrors,

a light beam from said object being reflected from the mirrors in the order of first, second, third and fourth reflecting mirrors without the beam intersecting an optical axis of the system,

wherein total optical power of said first, second and third reflecting mirrors has a positive value, and

at least one of the reflecting surfaces of said first reflecting mirror and said fourth reflecting mirror being as aspherical surface,



an absolute value of powers of said second and third reflecting mirrors being smaller than an absolute value of powers of said first and fourth reflecting mirrors,

said third reflecting mirror being disposed between said first reflecting mirror and said second reflecting mirror, and

said reflecting objective system satisfying the condition (12):

$$0.01 \leq |\Delta M_{13}| \cdot (f/L_{01}^2) \leq 0.1 \quad (12)$$

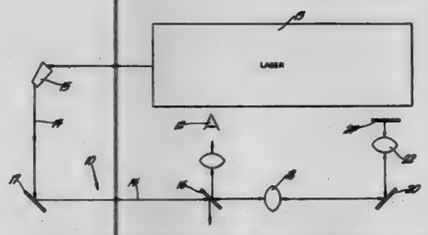
wherein the reference symbol ΔM_{13} represents a mechanical distance between said first reflecting mirror and said third reflecting mirror, f is the focal length of the reflecting objective system, and the reference symbol L_{01} represents a distance between said object and said first reflecting mirror.

5,291,341

LASER ATTENUATION DEVICE WITH SACRIFICIAL MIRROR

Douglas W. Templeton, Macomb County, Mich.; C. H. Chen, Knox County, and Ronald C. Phillips, Roane County, both of Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1993, Ser. No. 83,221
Int. Cl.[5] G02B *17/00;* G02F *1/01*
U.S. Cl. 359—884 3 Claims



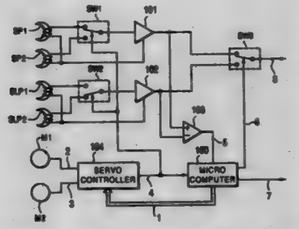
1. An eye protection device adapted to protect against a broad spectrum of incident high intensity radiation while allowing the transmission of normal radiation levels, including: a beam splitter which transmits a substantial portion of the incident radiation beam; a focusing lens placed on the side of the beam splitter opposite the source of the incident radiation beam, the lens receiving and focusing the incident radiation beam to a narrowly defined focusing area to further intensify the incident radiation beam; a first mirror placed and adapted to receive the focused incident radiation from the first lens, the surface of the mirror being sufficiently absorptive of incident radiation that a focused incident beam with an initial intensity of at least 25 millijoules will cause a heating of the mirror surface to the vaporization temperature of the reflective surface of the mirror at the point of the focused beam; a second lens placed to receive radiation reflected from the first mirror and recollimates the light onto a reflective surface of a second mirror the recollimated beam reflecting off the second mirror is then reflected back through the second lens which refocuses the beam onto the sacrificial surface of the first mirror at the area originally heated by the beam, if the initial beam was above the threshold, the reflectivity of the surface at this location will have been destroyed by the initial heating of the beam and the beam will pass through the mirror but if the beam was not sufficient to destroy the surface, the beam will be reflected off the first mirror, through the first lens and onto and the side of the beam splitter facing the first lens which passes the beam to the receiving device.

5,291,342

MULTIFUNCTIONAL CONTROL TYPE VIDEO HEAD SELECTING DEVICE AND METHOD THEREOF

Yong-jin Kim, Kyunggi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Jul. 25, 1989, Ser. No. 384,753
Claims priority, application Rep. of Korea, Dec. 31, 1988, 88-18086
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—10.3 20 Claims



1. A multifunctional control type video head selecting method for a multifunctional control type video head selecting device, said method comprising the steps of:

inputting a head channel selection signal, generated by a servo controller, through a first line to a microcomputer;

determining in the microcomputer one of a standard, still, double speed, slow, and fast reproduction function selected by a user and providing corresponding function control data to the servo controller through a second line connected only between the microcomputer and the servo controller;

checking a running speed of a tape and detecting whether a standard play mode is being run if said determining step determines that said one of the standard, still, double speed, slow and fast reproduction function has been selected;

generating, in the microcomputer, both an amplifier selection signal having a first logic level, and a phase shift direction controlling signal having a phase opposite to a phase of said head channel selection signal if said standard play mode is detected and said standard reproduction mode has been determined;

generating, in the microcomputer, both the amplifier selection signal having a second logic level, and the phase shift direction controlling signal having said phase the same as said phase of said head channel selection signal if said standard play mode has not been detected and said standard reproduction mode has been determined;

generating, in the microcomputer, both the amplifier selection signal having the same phase as said head channel selection signal and said phase shift direction controlling signal having said second logic level if said standard play mode has been detected and one of said still and said double speed reproduction function has been determined; and

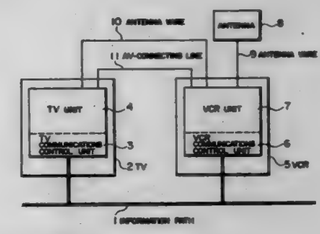
generating, in the microcomputer, both the amplifier selection signal having said phase opposite the phase of said head channel selection signal, and said phase shift direction controlling signal having said first logic if said standard play mode has not been detected and said one of said still and said double speed reproduction function has been determined.

5,291,343

AUDIO/VIDEO SYSTEM FOR TELEVISION RECEIVER, VIDEO CASSETTE RECORDER, AND SO FORTH

Takeshi Goto, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 441,536, Nov. 27, 1989, abandoned.
This application Jan. 21, 1993, Ser. No. 8,883
Claims priority, application Japan, Dec. 1, 1988, 63-304896; Sep. 11, 1989, 1-235049
Int. Cl.[5] H04N *5/78, 5/76*
U.S. Cl. 360—33.1 4 Claims



1. An audio/video system including:

an information path for data communications, a television, and a video cassette recorder connected to said television through said information path,

said television comprising:

a television communication control unit for executing data communications between said video cassette recorder and said television itself through said information path,

a television operation control unit for controlling the operation of said television based on data input from said television operation control unit to said television communication control unit or for controlling said television communication control unit so as to output data to said video cassette recorder, and

a television state storing unit for storing data indicating a connecting state between said television and said video cassette recorder, said connecting state comprising an RF-connection or an AV-connection,

said video cassette recorder comprising:

a video cassette recorder communication control unit for executing data communication between said television and said video cassette recorder through said information path, and

a video cassette recorder operation control unit for reading said data from said television state storing unit and controlling the operation of said video cassette recorder based on the read-out data or for controlling said video cassette

recorder communication control unit so as to output data to said television operation control unit,

said video cassette recorder operation control unit instructing said television operation control unit, in response to said video cassette recorder receiving a "play" operation command, to (i) turn on said television through said video cassette recorder communication control unit, said information path, and said television communication control unit, (ii) read out and evaluate data about the connecting state between said television and said video cassette recorder from said television state storing unit, and (iii) if said television operation control unit determines in operation (ii) that an RF-connection exists, switch a channel to which said television is tuned to a channel for watching a video played by said video cassette recorder, or (iv) if said television operation control unit determines in operation (ii) that an A/V-connection exists, switch a line input mode of said television into an input mode for said video cassette recorder.

5,291,344

MAGNETIC TAPE RECORDING DEVICE HAVING A RECTIFIER INSTALLED ON A ROTATING HEAD DRUM FOR RECTIFYING A SIGNAL BEING APPLIED TO THE HEAD

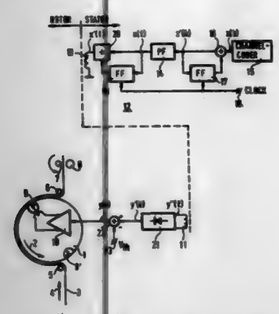
Hermann-Josef Pehl, Darmstadt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 16, 1992, Ser. No. 945,775

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132004

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—39 8 Claims



1. Magnetic tape recording device for recording digital data signals in tracks to be recorded obliquely relative to the longitudinal direction of the magnetic tape, comprising a rotary drum on which at least two recording heads are installed; and inductive transmission arrangement for transmitting to the magnetic heads the data signal to be recorded, said transmission arrangement including a stator winding and a rotor winding; an input terminal for receiving the data signal to be recorded; and a coding arrangement having an input coupled to the input terminal and an output coupled to the stator winding, said coding arrangement including a delay arrangement for delaying the data signal to be recorded for the duration of a bit period in the data signal, and a signal combining state, said signal combining state being arranged for combining the data signal delayed by a bit period and the undelayed data signal to obtain a ternary output signal, characterized in that said magnetic tape recording device further comprises a rectifier stage installed on the rotary drum, said rectifier stage having an input coupled to the rotor winding for rectifying a ternary output signal obtained from the rotor winding.

5,291,345

APPARATUS FOR APPLYING MAGNETIC FIELD AND MAGNETO-OPTICAL DISK STORAGE HAVING SUCH APPARATUS

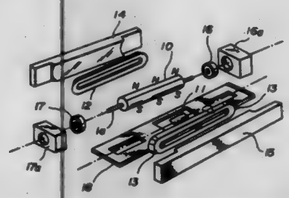
Yoshiaki Umeda; Hiroo Shimegi; Masaho Ogura, all of Amagasaki; Akira Nikaido, Tachikawa; Fumio Sakamoto, Machida, and Shigeharu Honda, Shibuya, all of Japan, assignors to Mitsubishi Electric Corp. and TEAC Corporation, Japan

Filed Jul. 19, 1991, Ser. No. 733,100

Claims priority, application Japan, Jul. 20, 1990, 2-192488

Int. Cl.[5] G11B *5/02, 5/127*

U.S. Cl. 360—59 17 Claims



1. An apparatus for providing a magnetic field of either polarity comprising:

a permanent magnet having an approximately cylindrical shape, said permanent magnet being pivotally supported along its axis, respective semicircular portions of the circular section of the permanent magnet being magnetized as north and south poles, said permanent magnet having a pair of opposing arcuate sides defined by a diameter of said circular section; and

a driving coil having a pair of spaced, loop portions positioned proximate to the exterior of said permanent magnet, each of said loop portions being positioned proximate the same side of said permanent magnet, the spacing of the loop portions being such that the arcuate distance from one loop portion to a corresponding point on the other loop portion along the circumference of said permanent magnet is less than 180°, said coil being formed such that a portion of said permanent magnet is embraced by said coil, the rotation and positioning of said permanent magnet, and hence the magnetic field provided by said apparatus, being controlled by one of the strength and direction of the current flowing in said drive coil.

5,291,346

RECORDING AND/OR PLAY-BACK SYSTEM EMPLOYING A CASSETTE WITH A MEMORY UNIT ACCOMMODATED IN THE CASSETTE

Knud E. Bæksgaard, Struer, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark

PCT No. PCT/DK90/00199, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/02355, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 7, 1990, Ser. No. 829,059

Claims priority, application Denmark, Aug. 7, 1989, 3854/89

Int. Cl.[5] G11B *15/04, 19/04*

U.S. Cl. 360—60 2 Claims

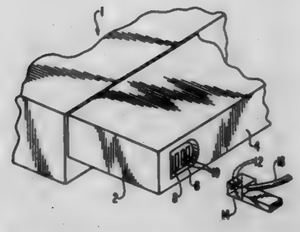
1. A recording and/or playing system the system comprising:

a recorder/player;

cassette units adapted to be inserted into said recorder/-player and having a storing medium;

memory units provided in said cassette units, aid memory units being independent of the storing medium and being operable, in response to the cassette being inserted into the recorder/player, to be electrically connected with a read/write unit therein,

wherein said memory unit is accommodated in a block member adapted to be mounted in an opening of a standard cassette adapted to accommodate an erasure protection tab, and



wherein means are provided for contacting the memory unit in such a manner that it can operate compatibly with standard cassettes both with and without memory units.

5,291,347

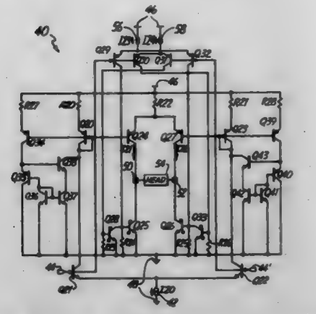
WRITE DRIVER WITH H-SWITCH SYNCHRONIZING TRANSISTORS

Tuan V. Ngo, Eden Prairie, and Douglas R. Peterson, Minnetonka, both of Minn., assignors to VTC Inc., Bloomington, Minn.

Division of Ser. No. 957,612, Oct. 6, 1992. This application May 26, 1993, Ser. No. 67,673

Int. Cl.[5] G11B *5/02, 5/03, 5/09*

U.S. Cl. 360—68 8 Claims



1. A write driver for driving a transducer in a storage system, the write driver comprising:

first and second voltage supply terminals;

an H-switch having a plurality of pull-up transistors and pull-down transistors connected across the transducer, between the first and second supply terminals, to switch current flow through the transducer between a first direction and a second direction, opposite to the first direction, wherein each pull-up and pull-down transistor has a control terminal for controlling current flow through the transistor;

at least one data input terminal for receiving data input signals;

a bias circuit connected between the data input terminal and the control terminals of the pull-up and pull-down transistors for switching the pull-up and pull-down transistors between conducting and non-conducting states as a function of the received data signals; and

wherein each pull-down transistor has a corresponding synchronizing transistor connected between the control terminal of the pull-down transistor and the second supply terminal to pull current away from the control terminal of the pull-down transistor when the pull-down transistor is switched to the non-conducting state.

5,291,348

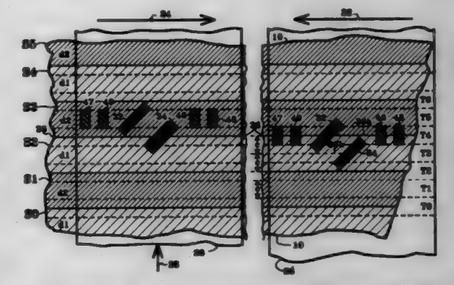
HIGH DENSITY SERVO TRACKING

Clement R. Copolillo, Oxnard, Calif., assignor to Wangtek, Inc., Simi Valley, Calif.

Filed Apr. 15, 1992, Ser. No. 870,012

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.07 11 Claims



1. A method of operating data storage media, comprising the steps of:

writing a plurality of pairs of equal width tracks of servo data in a first layer of the storage media, each track of a pair containing different servo data than the other;

moving the storage media in a first direction parallel with the plurality of said pair of tracks of servo data;

mounting an information read or write gap, a first servo data gap and a second servo data read gap in fixed positions on a read or write head, the second servo data read gap being displaced from the first servo data read gap transverse to the first direction by a distance equal to one half the width of a track of servo data;

positioning the read or write head by locating the first servo data read gap at an on-track location at which there is a predetermined relationship between the servo data read from each track of a pair;

creating a first information data track in a second layer of the storage media with the information data read or write gap; then

moving the storage media in a second direction opposite the first direction;

positioning the read or write head by locating the second servo data read gap at the on-track location; and

creating a second information data track with the information data read or write head, said second information data track being displaced from said first information data track by a distance equal to one half the width of a track of servo data.

5,291,349

TAPE RECORDER AND REPRODUCER MACHINE

Masato Yamaguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,581

Claims priority, application Japan, Jul. 3, 1991, 3-188278

Int. Cl.[5] G11B *15/00*

U.S. Cl. 360—84 2 Claims

1. A tape recorder and reproducer machine including a rotatable head drum carrying a plurality of heads for recording a signal onto a cassette-type magnetic tape and for reproducing the signal recorded on a cassette-type magnetic tape, said machine comprising:

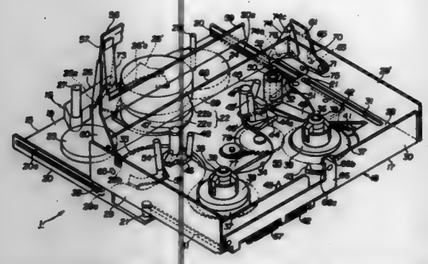
a cassette chamber for receipt of a tape cassette;

a protective member movable between first and second positions; and

drive means separate from the tape cassette for moving said protective member to the first position between said cassette chamber and said head drum to protect said head drum from damage while the tape cassette is being placed

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into or discharged from said cassette chamber and for moving said protective member from the first position to



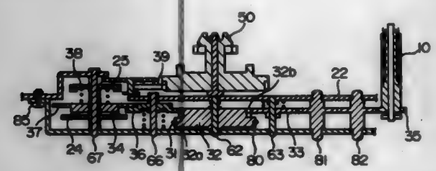
the second position allowing access to said head drum by the magnetic tape after the tape cassette is properly received in said cassette chamber.

5,291,350

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yasuhiro Hashiguchi, and Noboru Katohno, both of Mito, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 764,169
Claims priority, application Japan, Sep. 26, 1990, 2-254141
Int. Cl.[5] G11B *15/44*
U.S. Cl. 360—85 **3 Claims**



1. A magnetic recording and reproducing apparatus in which a magnetic tape held in a cassette is drawn out and extended over a rotary cylinder with a magnetic head mounted thereon, and a plurality of rotors, wherein each of said plurality of rotors is formed in such a manner that a shaft thereof is integral with a rotating body of said rotor, the magnetic recording and reproducing apparatus includes a main base plate with a plurality of openings and a sub-base plate with a plurality of openings, said rotors being respectively rotatably mounted in such a manner that one end of the shaft is inserted in one of said openings provided in said main base plate, while the other end of said shaft is inserted in one of said openings provided in the sub-base plate opposite to said main base plate, and wherein said plurality of rotors are provided in series and are engageable with one another so as to transfer power from a drive source.

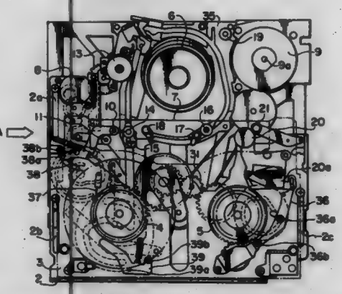
5,291,351

MAGNETIC RECORDING/REPRODUCING APPARATUS

Kouhei Takita; Yoshiyuki Tanaka; Hironori Saitoh, all of Katsuta; Kyuichiroo Nagai, Fujisawa; Tatsumi Nishijima, Katsuta; Kenji Ogiro; Nobuo Masuoka, both of Yokohama, and Kenji Fuse, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 788,317
Claims priority, application Japan, Nov. 9, 1990, 2-302369
Int. Cl.[5] G11B *5/027, 5/008*
U.S. Cl. 360—85 **2 Claims**

1. A magnetic recording/reproducing apparatus comprising:
a main chassis on which a cylinder having a rotary magnetic head attached thereto is mounted;
a subchassis which is supported on said main chassis so as to movable toward and away from said cylinder and on which reel mounts are mounted for engagement with reels of a magnetic tape cassette;
a driving motor;
tape guide members serving to form a predetermined path through which a magnetic tape moves so as to be wound around said cylinder;
a pinch roller which cooperates with a capstan to hold the magnetic tape therebetween so as to move the magnetic tape in a predetermined direction;
brake members for applying predetermined rotational loads to said reel mounts;



operation members for operating said pinch roller and/or brake members;
cam members for imparting a predetermined displacement to said operation members; and
transmission members for transmitting the driving force from said driving motor to said cam members,
wherein at least said driving motor, said brake members, as well as the transmission members, cam members and operation members which are associated with said brake members, respectively, are mounted on said subchassis, and
wherein said pinch roller and the transmission member, cam member and operation member which are associated with said pinch roller, respectively, are mounted on said subchassis.

5,291,352

MECHANISM FOR LOADING AND UNLOADING A CASSETTE TAPE

Tsuyoshi Nagasawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,723
Claims priority, application Japan, Mar. 13, 1991, 3-072160
Int. Cl.[5] G11B *15/665, 15/675*
U.S. Cl. 360—85 **7 Claims**

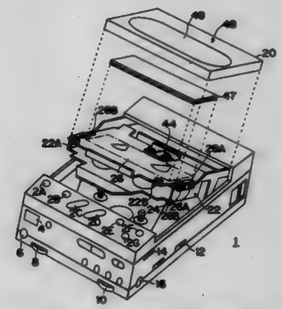
1. A tape unit for a tape cassette comprising:
a cassette mount section for detachably mounting the tape cassette therein, said cassette mount section having at least two reel bases for engagement respectively with two tape reels of the tape cassette;
a cover movably supported on a chassis, said cover being movable in first and second strokes between an open position for opening said cassette mount section and a closed position for closing said cassette mount section, respectively;
a cassette holder movably supported on said chassis, said cassette holder being movable between an ejection position for insertion and removal of the tape cassette and a cassette mounting position for mounting the tape cassette in said cassette mount section;
tape-loading means for drawing a portion of tape out of the tape cassette mounted in said cassette mount section and causing the tape portion to pass through a predetermined tape path; and
link means for linking said cassette holder and said tape-loading means to said cover such that said first stroke of said cover from the open position toward the closed position moves said cassette holder from said ejection position to said cassette mounting position to mount the tape cassette into said cassette mount section, and said second stroke of said cover subsequent to said first stroke operates said tape-loading means to perform tape loading.

5,291,353

RECODING AND/OR REPRODUCING APPARATUS

Akifumi Nonaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,267
Claims priority, application Japan, Oct. 9, 1990, 2-271590
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.5 **3 Claims**



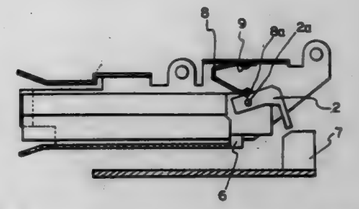
1. A recording and/or reproducing apparatus which mounts a cassette, the recording and/or reproducing apparatus comprising:
a lid formed with a window;
a holder for holding said cassette adjacent to the lid;
cassette pressing and positioning means for pressing said cassette towards a predetermined position, said cassette pressing and positioning means being disposed on a side of said holder towards said lid, in which said cassette pressing and positioning means comprises at least two portions, one of said portions being on one edge and another of said portions being on an opposite edge of said holder and in which said holder is formed with at least two openings and an edge of each of said at least two portions of said cassette pressing and positioning means contacts said cassette respectively through said at least two openings; and
a display panel mounted on said side of said holder between said at least two portions of said cassette pressing and positioning means in non-overlapping relation to said cassette pressing and positioning means and adjacent to a surface of said window, thereby enabling a reduction in thickness of the recording and/or reproducing apparatus.

5,291,354

LID OPENING MECHANISM FOR A DIGITAL AUDIO TAPE CASSETTE

Yoon B. Kim, Seongbug, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyunghi, Rep. of Korea

Filed Jul. 31, 1991, Ser. No. 738,389
Claims priority, application Rep. of Korea, Nov. 23, 1990, 90-18113
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—96.5 **21 Claims**



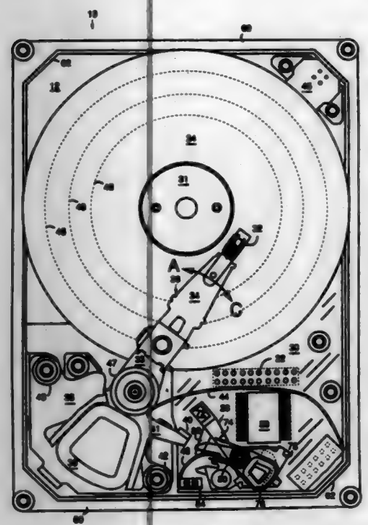
1. A lid opening mechanism in a digital tape player for opening a lid of a digital tape cassette, wherein the digital tape cassette comprises a tape housing with an opening providing access to an interior of the tape housing and a lid supported on said tape housing by a pivot and rotatable between a first position with the lid covering the opening and a second position with the lid uncovering the opening, the lid configured to have a top portion adjacent to the pivot and a frontal portion spaced from the pivot, said lid opening mechanism comprising:
a loading mechanism for stably placing the digital tape cassette onto a deck of the digital tape player, said mechanism including a cassette holder positionable to receive and transport in a longitudinal direction a digital tape cassette comprising a tape housing with an opening providing access to an interior of the tape housing and a lid supported on said tape housing by a pivot and rotatable between a first position with the lid covering the opening and a second position with the lid uncovering the opening, the lid configured to have a top portion lying in a plane substantially parallel to said direction of travel while the lid is in said first position and a frontal portion extending substantially perpendicularly to said top portion and said direction of travel while the lid is in said first position;
means for applying a force to said top portion of the lid to partially open the lid of the digital tape cassette as the tape cassette is being inserted into said cassette holder of the digital tape player; and
means for completely opening the lid after completion of insertion of the tape cassette into said holder, as the digital tape cassette is moved by said cassette holder and placed onto the deck.

5,291,355

MICRO MINIATURE HARD DISK DRIVE

Michael R. Hatch, Palo Alto; Ronald R. Moon, Los Gatos; Klaus-Peter Deyring; James A. McDonald, III, both of Scotts Valley; Thomas J. Huiler, San Jose; Gregg J. Uhlendorf, Morgan Hill; Daniel E. Barnard, San Jose; Bryan T. Silbermann, Los Gatos; Philip L. Steiner, San Jose; Robert P. Cloutier, Campbell, and Robert J. Kobliska, San Jose, all of Calif., assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 850,443
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—97.01 5 Claims



1. A head disk assembly (HDA) for magnetically recording data, comprising:

a spindle motor connected to provide rotation of a fixed hard disk media and having a back electro-motive force (EMF) output that produces a voltage when power to the spindle motor is shut off;

an actuator assembly connected to provide random access of a magnetic read/write head across a surface of said hard disk media and including a pair of read/write heads attached to an actuator with a pair of suspensions, an actuator coil attached to said actuator for repulsing and attracting a lower magnetic plate, an upper magnetic plate and a ferrous member on a latch arm attached to said actuator, wherein said actuator coil, lower magnetic plate and upper magnetic plate form a first voice coil motor (VCM) that provides for moving the actuator assembly with said voltage from said EMF output; and

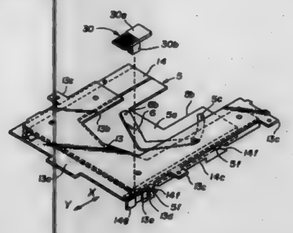
an active actuator latch assembly positioned proximate to the actuator assembly and including a magnet on an arm mounted on a pivot shaft and held in one extreme position of rotation by a spring, a second voice coil motor (VCM) connected to rotate said arm against said spring, a pair of magnetic plates within magnetic reach of said VCM, and a pair of limit arms to limit the range of rotation of said arm on said pivot, wherein the actuator assembly may be positively latched in a parked position by rotating said arm such that said magnet comes in contact with said ferrous member on the actuator assembly in a parked position after the power of said spindle motor is shut off.

5,291,356

DISK STORAGE DEVICE HAVING EJECT MEMBER

Kenji Matsumoto, Hoya; Yoshio Hirose, Urawa; Yoshiaki Sakai, Higashikurume; Hiroshi Takemoto, Fuchu; Takeshi Watanabe, Ichikawa, and Katsuhiko Noda, Higashiyamato, all of Japan, assignors to TEAC Corporation, Japan

Filed Nov. 20, 1992, Ser. No. 979,629
Claims priority, application Japan, Nov. 28, 1991, 3-098336[U]; Jan. 27, 1992, 4-002390[U]
Int. Cl.[5] G11B *21/22*
U.S. Cl. 360—99.06 8 Claims



1. A disk storage device comprising:

a head part for writing data to a storage disk inserted into the disk storage device and for reading data from the storage disk;

an eject member which is operated when the storage disk is ejected from the disk storage device;

a turntable for rotating and driving the storage disk thereon to perform data recording and reproducing in cooperation with the head part;

a holder for holding a disk cartridge accommodating the storage disk, said holder placing the storage disk at a read/write position on the turntable, when the disk cartridge is inserted, by fitting a center hole of the storage disk on a spindle of the turntable;

a slider which is disconnected from a latch lever when the disk cartridge is inserted, and is moved in a first direction substantially parallel to a direction of insertion of the disk cartridge so that the storage disk inserted in the holder is placed at the read/write position on the turntable; and

a movement mechanism for moving the holder and the disk cartridge from the read/write position of the turntable to an insertion position in response to a movement of the slider in a direction opposite to the first direction when the eject member is operated,

wherein said eject member is mounted flat on an upper portion of a frame of the disk storage device, said eject member having

an operation part which is operated by applying an external force thereto in a direction parallel to a surface of the turntable, said operation part of said eject member being formed with a planar portion extending along the surface of the upper portion of the frame substantially parallel to the surface of the turntable, said operation part being moved with a displacement from a first position to a second position different from the first position along the surface of the upper portion of the frame, and

a transfer part connected to a mounting portion at an end of the slider, said transfer part of said ejection member being formed so as to extend downward from the center of the operation part and being formed with a connecting groove having an L-shaped cross section, and said transfer part being passed through a first opening formed in the upper portion of the frame and connected to the mounting portion of the slider so that the movement of the operation part, when the eject member is operated, is transferred to the slider via the transfer part,

wherein the mounting portion of the slide is formed with a portion corresponding to said connecting groove, so that the mounting portion of the slider is fitted in the connecting groove of the transfer part, and so that the transfer part has a planar portion within the connecting groove which is at right angles to the movement of the operation part when the eject member is operated, and

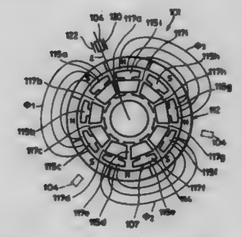
wherein said slider is moved in the direction opposite to the first direction when the operation part is operated, the movement mechanism moving the holder and the disk cartridge from the read/write position to the insertion position in response to said movement of the slider, so that the disk cartridge can be ejected from the holder at the insertion position.

5,291,357

MAGNETIC RECORDING DEVICE HAVING REDUCED ELECTROMAGNETIC INTERFERENCE

Takeshi Uda, Naka, Japan, assignor to Nippon Densan Corporation, Kyoto, Japan

Filed Jun. 25, 1991, Ser. No. 720,905
Claims priority, application Japan, Jun. 29, 1990, 2-172873; Jun. 30, 1990, 2-173158
Int. Cl.[5] G11B *17/02, 5/54*
U.S. Cl. 360—99.08 1 Claim



1. A magnetic recording device exhibiting reduced electromagnetic interference comprising:

a magnetic recording medium;

a spindle motor for rotationally driving said magnetic recording medium;

an electromagnetic means for writing and/or reading magnetic information to and/or from said magnetic recording medium; and

a shift means for shifting said electromagnetic means along a surface of said magnetic recording medium;

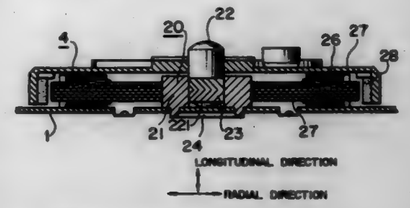
said spindle motor including a bracket, a hub relatively rotatable about said bracket and mounted with said magnetic recording medium, a stator, a rotor magnet having eight poles disposed opposite to and extending peripherally about said stator and attached to said hub, said stator including nine stator poles in combination with slots defined by spacings between adjacent stator poles and 3-phase coils wound on said nine stator poles, a first 3-phase coil being wound on first, second and third immediately adjacent stator poles so that adjacent stator poles exhibit opposite polarities, a second 3-phase coil being wound on fourth, fifth and sixth immediately adjacent stator poles so that adjacent stator poles exhibit opposite polarities, a third 3-phase coil being wound on seventh, eighth and ninth immediately adjacent stator poles so that adjacent stator poles exhibit opposite polarities, a shift route of the electromagnetic means extends outwardly virtually in the radial direction from a specific slot, said specific slot being defined as any one of said slots between said third and fourth stator poles, between said sixth and seventh stator poles, and between said ninth and first stator poles.

5,291,358

MAGNETIC RECORDING DEVICE

Keiji Takahashi, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 666,516, Mar. 11, 1991, abandoned.
This application Jan. 29, 1993, Ser. No. 11,822
Claims priority, application Japan, Mar. 16, 1990, 2-067739
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.08 8 Claims



1. A magnetic recording device comprising:

a spindle for supporting a magnetic record disk to rotate with the spindle, the spindle including a plurality of magnets which are arranged circumferentially around the spindle and which extend in a longitudinal direction of the spindle;

a stator including a plurality of winding coils to generate a magnetic force between the stator and the spindle to rotate the spindle, the magnetic force having a radial component which extends in a radial direction of the spindle;

magnetic head means for magnetizing or demagnetizing portions of the magnetic record disk so that information is output from the magnetic record disk or is input into the magnetic record disk, the magnetic head means moving on the magnetic record disk in the radial direction of the spindle so that a wide radial surface of the magnetic record disk is used for recording the information; and

bearing means for rotatably supporting the spindle, the bearing means including a radial bearing portion for supporting the spindle in the radial direction of the spindle against the radial component of the magnetic force and n axial bearing portion for supporting the spindle in the longitudinal direction of the spindle;

wherein the magnetic recording device further comprises helical lubricant grooves for holding a lubricant, the helical lubricant grooves having first and second portions provided on at least one of the spindle and the radial bearing portion, the first and second portions of the helical lubricant grooves having different helical angles to form angles therebetween, and the angles having vertices arranged within a width of the magnets in the longitudinal direction of the spindle.

5,291,359

HEAD SUSPENSION ASSEMBLY INCLUDING A FLEXURE HAVING RAILS ARRANGED FOR INTERFACING WITH A HEAD RAMP

Raymond R. Wolter, Hutchinson, Minn., assignor to Hutchinson Technology Incorporated, Hutchinson, Minn.

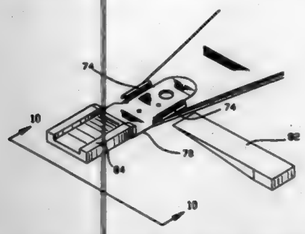
Filed Apr. 29, 1991, Ser. No. 693,858
Int. Cl.[5] G11B *5/48, 21/16, 5/54, 21/22*
U.S. Cl. 360—104 3 Claims

1. A magnetic head suspension including a spring load beam element portion joined to a distal end of a rigid arm for supporting a magnetic head at a fixed distance from the rigid arm;

a unitary flexure portion mounted on the load beam element portion at a distal end of the load beam element portion and projecting beyond a distal apex of the load beam element, the flexure portion being divided into

a central head mounting support means for receiving the magnetic head to be bonded thereto;

a plurality of slots in a surface of the flexure portion to define at least two extended flexible arms for suspending the support means from a distal end of the flexure portion for gimballed movement of the magnetic head relative to the load beam element portion, rail means comprising at least a pair of unitary rails positioned along opposite sides of the flexure portion, each of said



rails produced by bending a portion of flexure material into a well-radiused bend to form a projecting member constructed and arranged such that the projecting member projects toward a surface of the load beam element portion to which the flexure portion is attached and such that the well-radiused bend is positioned for interfacing with a ramp in a disk drive to move the magnetic head away form a surface of a disk when the ramp engages the rail means.

5,291,360

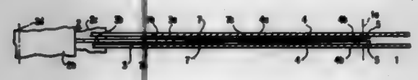
HEAD SUSPENSION ASSEMBLY FOR A DISK DRIVE

Wayne E. Foote, Eagle, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 26, 1992, Ser. No. 846,270

Int. Cl.[5] G11B *5/48*

U.S. Cl. 360—104 **5 Claims**



1. A disk drive, comprising:

a. a disk stack of at least two axially spaced, rotatably mounted disks having confronting disk surfaces;

b. an arm having opposite surfaces;

c. a pair of substantially flat elongated member, one secured to each of said opposite surfaces, said elongated members having flat distal end regions joined together forming a single flat distal end region having opposite faces;

d. a load beam secured to each face of said opposite faces, each load beam having a distal end;

e. a transducer mounted on the distal end of each load beam, and

f. means for movably supporting said arm to move said transducers to different radial locations between said at least two axially spaced disks.

5,291,361

DISK DRIVE WITH LOW ELEVATED HEAD UNLOADING MECHANISM

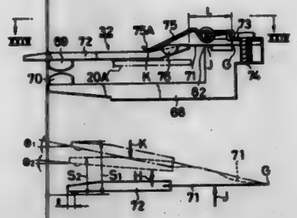
Yuji Yokota, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Filed Jul. 22, 1991, Ser. No. 734,263

Claims priority, application Japan, Jul. 23, 1990, 2-194291; Jul. 23, 1990, 2-194298; Jul. 23, 1990, 2-194299; Jul. 27, 1990, 2-200041; Jan. 8, 1991, 3-011465

Int. Cl.[5] H02H *1/00*; G11B *17/00*

U.S. Cl. 360—105 **16 Claims**



1. A disk drive for recording data to or reproducing data from a disk comprising:

a head for writing the data into or reading the data out of the disk by sliding on said disk or gliding over said disk;

an arm member for holding said head;

support means for supporting said arm member via an elastic member so that said arm member can be raised or lowered;

load means for exerting a force on a first position of said arm member so as to place said head on the disk or to make said head approach the disk; and

unload means for exerting a force on a second position of said arm member so as to separate said head from the disk, said second position being more distant from said head than said first position from said head in a longitudinal direction of said arm member.

5,291,362

A RETRACTABLE BI-DIRECTIONAL TAPE HEAD MECHANISM

Sumiyoshi Kato, Hiki, Japan, assignor to Shinwa Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,040

Claims priority, application Japan, Jul. 3, 1991, 3-162588

Int. Cl.[5] G11B *5/55*

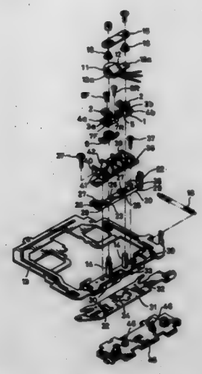
U.S. Cl. 360—106 **16 Claims**

1. A tape head mechanism for positioning a head in alignment with a forward and a reverse track of a tape in a bi-directionally operating tape machine comprising:

means for shifting said head along a first axis in a widthwise direction of a tape between one of a forward mode position and a reverse mode position so as to respectively align said head with one of said forward track and said reverse track; and

means for retracting said head from said tape during shifting

of said head from one of said forward and reverse modes to another one of said forward and reverse modes by



moving said head along a second axis generally normal to a surface of said tape.

5,291,363

MAGNETIC HEAD PROVIDED WITH A FLUX GUIDE AND A MAGNETORESISTIVE ELEMENT

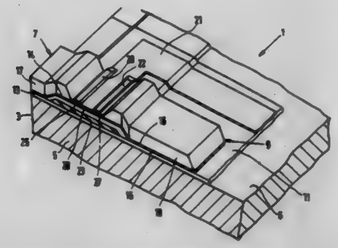
Gerardus H. J. Somers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1992, Ser. No. 827,191

Claims priority, application Netherlands, Jan. 30, 1991, 9100155

Int. Cl.[5] G11B *5/39*

U.S. Cl. 360—113 **2 Claims**



1. A magnetic head for recording and/or reproducing magnetic information in a track of a magnetic information carrier, said magnetic head including a substrate having a surface for supporting a magnetic head structure including a head face for coupling a magnetic field to said information carrier, a flux guide for coupling magnetic flux from said head face to a magnetoresistive element, said flux guide extending along said surface in the direction of said head face and comprising a main portion adjacent to said head face and a thinner end portion extending in a direction away from said head face, said main portion comprising a base layer provided on said surface and a main layer deposited on said base layer, said end portion being formed only by a portion of said base layer, which portion has a base face remote from and parallel to said surface, said magnetoresistive element extending along said surface and having a coupling part overlapping said end portion of the flux guide, said coupling part having a face opposing said base face and coupling magnetic flux from said flux guide to said magnetoresistive element.

5,291,364

MAGNETIC HEAD POSITION MEASURING DEVICE

Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

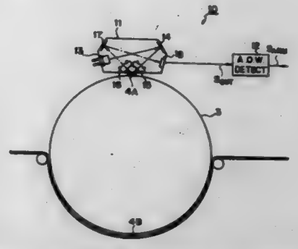
Continuation of Ser. No. 619,140, Nov. 28, 1990, Pat. No. 5,196,979. This application Feb. 11, 1993, Ser. No. 16,510

Claims priority, application Japan, Nov. 30, 1989, 1-311696

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] G11B *5/40*

U.S. Cl. 360—137 **6 Claims**



1. A magnetic head position measuring device for a recording and/or reproducing apparatus including a rotary magnetic head unit comprising a rotor having a cylindrical wall and magnetic heads arranged on said rotor, said magnetic head position measuring device comprising:

a light source operable to emit an irradiating light beam having a light source image;

means for leading said irradiating light beam to said magnetic heads;

a light receiving element operable to receive a light beam reflected from said magnetic heads and to provide an output signal having a first part corresponding to a predetermined part of said cylindrical wall of said rotor and respective second parts corresponding to respective ones of said magnetic heads;

processing means for detecting and processing the difference between said first and second signal parts so as to provide an output signal representative of the position of said magnetic heads.

5,291,365

POWER SUPPLY WITH OVERVOLTAGE PROTECTION CIRCUIT

Nobutomo Takagi, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 22, 1992, Ser. No. 964,632

Claims priority, application Japan, Oct. 22, 1991, 3-274175

Int. Cl.[5] G05F *1/569*

U.S. Cl. 361—56 **4 Claims**

1. A power supply voltage control apparatus comprising:

first, second, and third power supply lines being separate from each other;

a power supply circuit, being connected between the first power supply line and the third power supply line and receiving electric power from the first power supply line, for generating a given power supply voltage from the received electric power, and for outputting the generated power supply voltage to the third power supply line;

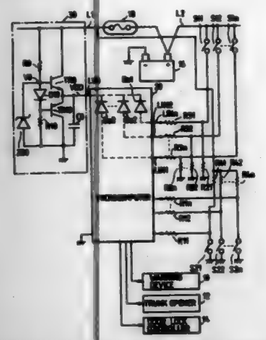
an electronic circuit being connected to the third power supply line and receiving the power supply voltage from the third power supply line to be activated by the received power supply voltage, the electronic circuit having an input section for receiving an input signal from the second power supply line, the electronic circuit operating on the input signal;

a protective circuit, being provided in the electronic circuit, for leaking a current from the input section of the elec-

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tronic circuit toward the third power supply line when a voltage of the input signal exceeds the power supply voltage;

reference voltage generating means, being connected to the first power supply line, for generating a first reference voltage in the presence of the electric power fed from the first power supply line to the power supply circuit, and for generating a second reference voltage in the absence of



the electric power fed from the first power supply line to the power supply circuit, the second reference voltage being lower than the first reference voltage; and

voltage limiting means, connected to the third power supply line and the reference voltage generating means to be responsive to the first and second reference voltages, for limiting a voltage of the third power supply line to below a level approximately equal to the first or second reference voltage.

5,291,366

SURGE VOLTAGE ARRESTER

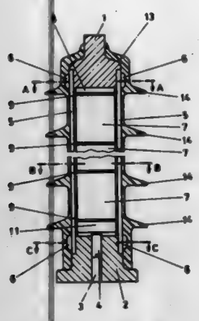
Klaus Glenz, Neuenhof; Walter Nydegger, Winterthur, and Walter Schmidt, Belliken, all of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Oct. 28, 1992, Ser. No. 966,417

Claims priority, application Switzerland, Dec. 4, 1991, 3558/91-3

Int. Cl.[5] H02H *1/00*

U.S. Cl. 361—127 7 Claims



1. A surge voltage arrester having two connecting fittings (1, 2) which are braced with respect to one another, and having at least one pellet (7) which is clamped in between the connecting fittings (1, 2) and consists of varistor material, in which at least two insulating clamping elements, which are arranged symmetrically adjacent to the at least one pellet (7), are provided for bracing the connecting fittings (1, 2), and in which the at least two clamping elements, the at least one pellet (7) and, partially, the connecting fittings (1, 2) have insulating plastic material cast around them to form a monolithic block wherein rigid plastic strips (5) which can expand somewhat in the axial direction are provided as clamping elements, and these rigid plastic strips (5) are guided such that they fit by virtue of their shape in each of the connecting fittings (1, 2), and are connected thereto.

5,291,367

STACK IGNITER

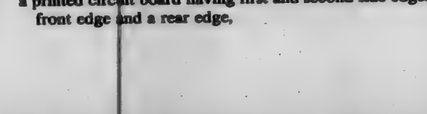
Robert K. Rajewski, R.R. #1, Donalda, Alberta, Canada T0B 1H0

Filed Jan. 9, 1992, Ser. No. 818,345

Claims priority, application Canada, Nov. 1, 1991, 2054810

Int. Cl.[5] F23Q *3/00*

U.S. Cl. 361—253 4 Claims



1. An igniter comprising:

a first probe having a first tip end forming a first linear arcing surface that may move in normal wind conditions in a substantially planar surface;

a second probe having a second tip end forming a second linear arcing surface at an angle to the first tip end;

the first tip end being disposed adjacent the second tip end;

whereby upon movement of the first tip end, a substantially constant gap is formed between the first tip end and the second tip end.

5,291,368

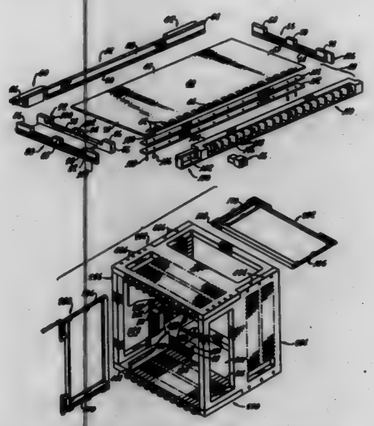
PRINTED CIRCUIT BOARD FRAME MODULE ASSEMBLY

Theodore R. Conroy-Waas, Tustin, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 923,415

Int. Cl.[5] H05K *7/14, 7/20*

U.S. Cl. 361—796 23 Claims



1. A printed circuit board assembly comprising:

a printed circuit board having first and second side edges, a front edge and a rear edge,

a first rigid guide rail fixed to said first side edge,

a rigid channel guide rail fixed to said second side edge,

an elongated rigid face plate fixed to said rear edge, each of said guide rails and said face plate having an elongated groove loosely receiving an associated edge of said printed circuit board, and

a rigid elongated connected node carrier fixed to said front edge, a portion of said elongated carrier being positioned on one side of said printed circuit board adjacent said front edge, and including a clamp bar strip positioned on the opposite side of said circuit board adjacent said front edge, and means for securing said clamp bar strip to said carrier to clamp said circuit board therebetween.

5,291,369

THREE-POLE, METAL-ENCASED, PRESSURIZED-GAS-INSULATED, HIGH-VOLTAGE SWITCHGEAR

Thomas Kelch, and Manfred Meinherz, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

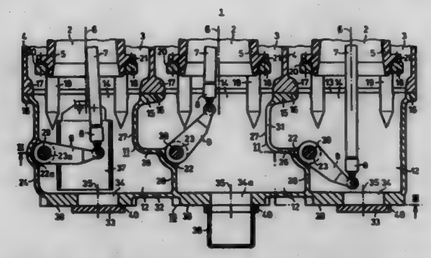
PCT No. PCT/DE90/00711, § 371 Date Jul. 2, 1992, § 102(e) Date Jul. 2, 1992, PCT Pub. No. WO91/06996, PCT Pub. Date May 16, 1991

PCT Filed Sep. 13, 1990, Ser. No. 855,022

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1989, 3936759

Int. Cl.[5] H02B *1/04*

U.S. Cl. 361—605 12 Claims



1. A three-pole, metal-encased, pressurized-gas-insulated, high voltage switchgear with a single-pole, encapsulated, high-voltage power switch, wherein breaker units of each pole are located in pressure chambers and arranged with parallel longitudinal axes, and are each attached to a bearing component which is connected with a casing of the drive and of a switching mechanism, the switchgear comprising:

a shared gear casing for the switching mechanism of the drive, an interior of which is divided by two partitions into three sections, each assigned to a breaker unit;

three apertures on a first side wall of the shared gear casing which are surrounded by flanges with sealing surfaces lying in a common plane, to which the pressure chambers of the breaker units are attached;

a bearing ring in front of each of the apertures and held at a distance by bridges of the gear casing which pass therethrough, to which the breaker units are attached; and

in each of the three sections, carriers to hold bearings of the drive shaft which each run perpendicular to a longitudinal axis of a respective breaker unit and are arranged with lateral offset relative to this axis in each section, and are passed to the outside via a second side wall of the gear casing, wherein the carriers proceed from the partitions or an outer wall.

5,291,370

COMPACT DATA PROCESSOR HAVING A TILTING AND SLIDING DISPLAY

Toshinobu Yanagisawa, Kyoto, and Shingo Takimoto, Uji, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jan. 11, 1993, Ser. No. 2,889

Claims priority, application Japan, Jan. 24, 1992, 4-010815

Int. Cl.[5] H05K *7/16;* G06F *1/16*

U.S. Cl. 361—681 12 Claims



1. A data processor comprising:

a main body including a CPU for processing data;

a keyboard as an input device of the CPU provided at a top of the main body;

a pair of sliding rails provided along both sides of the keyboard;

a pair of sliders, each one of the sliders sliding on one of the pair of sliding rails;

a lid pivotably connected to the pair of sliders; and

a display panel as an output device of the CPU attached to one face of the lid.

5,291,371

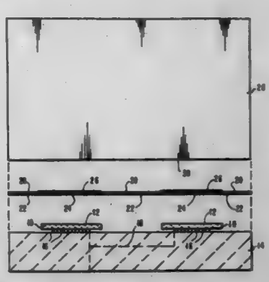
THERMAL JOINT

Peter A. Gruber, Mohegan Lake, and Arthur R. Zingher, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1990, Ser. No. 515,906

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—705 49 Claims



8. A thermal joint adapted to be disposed between a first heat emitting object and a second heat removing object for transferring heat from the first object to the second object while providing compliance for object dimensional variation and thermally induced object variations, the thermal joint comprising:

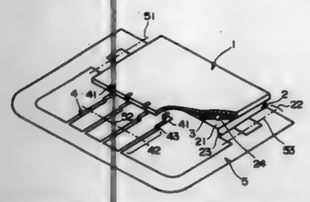
a first layer of high bulk thermal conductivity material adapted to be located in thermal contact with the heat emitting object; and

a second layer in contact with said first layer, said second layer being a lubricant having a thickness thinner than said first layer, and said second layer being adapted to be located in thermal contact with the heat removing object;

wherein said first layer is Bi/Sn solder and said second layer is poly-alyphatic oil.

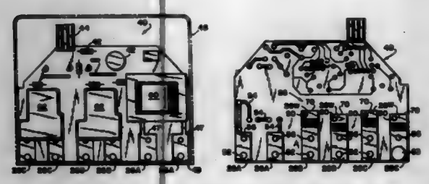
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,372
INTEGRAL HEAT SINK-TERMINAL MEMBER STRUCTURE OF HYBRID INTEGRATED CIRCUIT ASSEMBLY AND METHOD OF FABRICATING HYBRID INTEGRATED CIRCUIT ASSEMBLY USING SUCH STRUCTURE
Hideo Matsumoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 23, 1992, Ser. No. 949,144
Claims priority, application Japan, Sep. 24, 1991, 3-242990
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—710 6 Claims



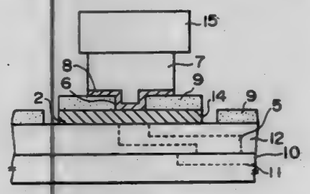
1. A unitary member for forming a heat sink and electrical terminals in a hybrid circuit assembly comprising:
a peripheral frame including a heat sink plate at a part of said peripheral frame for mounting of a hybrid circuit substrate and a plurality of terminals extending from a part of said peripheral frame opposite said heat sink plate toward said heat sink plate, each of said terminals including a terminal member for connection to an electrode of a hybrid circuit substrate wherein each of said terminal members includes a stress-relief structure so that said terminal members do not directly contact a substrate of a hybrid integrated circuit assembly bonded to said heat dissipating plate.

5,291,373
TERMINAL BLOCK ARRANGEMENT FOR A TIMER DEVICE OR THE LIKE
John Monacelli, 2596 Gregory St., Yorktown Heights, N.Y. 10598, and Buddhisagar Shah, 31 Hudson Ave., Irvington, both, N.Y. 10533
Filed May 22, 1992, Ser. No. 887,155
Int. Cl.[5] H05K 7/02; H01R 9/00
U.S. Cl. 361—760 6 Claims



1. A terminal block arrangement for a timer device or system comprising:
a circuit board having mounted thereon a low current circuit in which the current is approximately 1 to 10 amps, said circuit including a plurality of interconnected components;
a relay connected in said low current circuit, said relay having contacts for closing a separate, normally open, high-current circuit;
said relay having a housing, and leads connected internally of said housing to said contacts and extending from said housing;
a terminal block assembly having at least two spaced terminal bus bars with one end of each bus bar disposed directly below said relay;
means for directly connecting said leads to the ends of said bus bars.

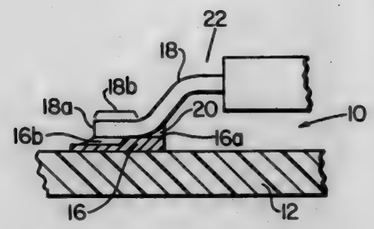
5,291,374
SEMICONDUCTOR DEVICE HAVING AN OPENING AND METHOD OF MANUFACTURING THE SAME
Selichi Hirata, Yokosuka, and Akito Yoshida, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
PCT No. PCT/JP91/01721, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992
PCT Filed Dec. 17, 1991, Ser. No. 920,304
Claims priority, application Japan, Dec. 17, 1990, 2-402804; Dec. 20, 1990, 2-404483; Dec. 9, 1991, 3-350370
Int. Cl.[5] H05K 7/02
U.S. Cl. 361—760 20 Claims



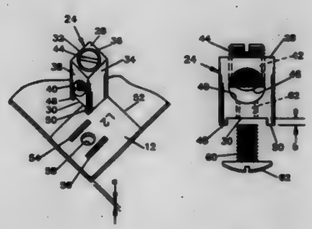
1. A semiconductor device, comprising:
a substrate on which a semiconductor element is formed;
an insulating film formed on said substrate;
an electrode pad formed on said insulating film, said electrode pad being electrically connected to said semiconductor element by a signal line;
an insulating protective film covering a part of said insulating film, said insulating protective film including an opening through which said electrode pad is connected to an external circuit and an exposing opening provided at a peripheral portion of said electrode pad through which a side of said electrode pad is exposed externally; and
external circuit connection means for connecting said electrode pad and said external circuit via said opening.

5,291,375
PRINTED CIRCUIT BOARD AND ELECTRIC DEVICE CONFIGURED TO FACILITATE BONDING
Minoru Mukai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Sep. 29, 1992, Ser. No. 953,043
Claims priority, application Japan, Sep. 30, 1991, 3-250073; Mar. 30, 1992, 4-102380
Int. Cl.[5] H05K 7/02
U.S. Cl. 361—760 27 Claims

1. A circuit board for mounting an electric device having a plurality of leads, the circuit board comprising:
an insulating substrate having a flat upper surface; and
a pad electrode formed on the flat upper surface of the insulating substrate, the pad electrode including an upper portion and a lower portion, wherein the lower portion is configured to be bonded to a lead, each of the upper and lower portions comprises an upper surface facing upward away from the insulating substrate and a flat lower surface contacting the flat upper surface of the insulating substrate, and at least one of the upper surfaces is a linearly inclined sloped surface that inclines in the direction from the lower portion toward the upper portion.

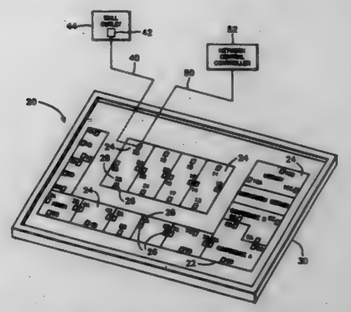


5,291,376
SYSTEM FOR COUPLING A HIGH VOLTAGE, HIGH CURRENT WIRE TO A CIRCUIT BOARD
James M. Mills, Lexington, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 15, 1993, Ser. No. 31,764
Int. Cl.[5] H01R 9/00
U.S. Cl. 361—823 8 Claims



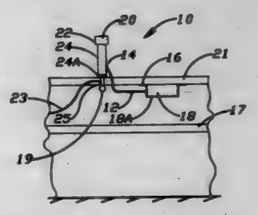
1. A circuit board system for coupling a high voltage, high current wire to a trace on the circuit board comprising a circuit board having first and second opposed faces and having a high voltage, high current circuit portion including at least one electrically conductive trace on the first face, a terminal for coupling a high voltage, high current wire to the at least one trace comprising a block of electrically conductive material, the block formed generally as a parallelepiped having upper and lower surfaces, and two pairs of opposed sidewalls, a laterally extending bore formed between two opposed sidewalls of a pair, a first threaded bore extending from a surface into communication with the laterally extending bore, a second threaded bore extending from the lower surface into the block, the block having at least one portion depending downwardly from the lower surface, a first threaded member received in the first bore and being adapted to clamp a wire received in the laterally extending bore, a second threaded member formed of electrically conductive material and being formed with a head extending radially therefrom, the circuit board having a bore extending between the first and second faces and being adapted to receive the second threaded member therethrough, the second threaded member being threadingly received in the second threaded bore to attach the block to the second face of the board, and an aperture for each downwardly extending portion extending between the first and second faces and aligned with and receiving therein each respective downwardly depending portion when the second threaded member is disposed in the second threaded bore, the head engaging the at least one electrically conductive trace on the first face of the board forming an electrical coupling from the wire through the block, the second threaded member and the head thereof to the at least one trace.

5,291,377
SCHEMATIC PATCH PANEL
Thomas H. DiGiovanni, 11 Earth Star Pl., Gaithersburg, Md. 20878
Filed Dec. 31, 1991, Ser. No. 815,156
Int. Cl.[5] H02B 1/20
U.S. Cl. 361—826 15 Claims



1. A patch panel for a local area network of an office site, said patch panel comprising:
a floor plan representative of an office site,
a plurality of indicators on said floor plan at a location representative of a location of a wall outlet which is the terminus for a cable line for a computer terminal of the local area network at the office site, and
means for retaining a connector at an opposite terminus of the cable line at each of said plurality of indicators so that while a connector is retained, a connection can be made by an extension cable between the connector and a network central controller to activate a particular cable line and thereby the computer terminal connected to the particular cable line.

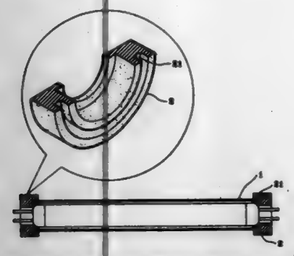
5,291,378
FIBER OPTICALLY LIGHTED FOOD DISPENSER VALVE HANDLE ASSEMBLY
David H. Stone, Delavan, Wis., assignor to Glo-Max Fiber Optic Systems, Inc., Walworth, Wis.
Filed Jun. 19, 1992, Ser. No. 901,259
Int. Cl.[5] F21V 7/04
U.S. Cl. 362—32 18 Claims



1. A fiber optically lighted food dispenser valve handle assembly, comprising:
at least one fiber optic filament with an elongate body extending between a pair of opposed ends;
means for illuminating one of the pair of opposed ends of the at least one fiber optic filament;
a handle grip with an outer surface;
means at the outer surface for holding another of the pair of opposed ends of the at least one fiber optic filament to

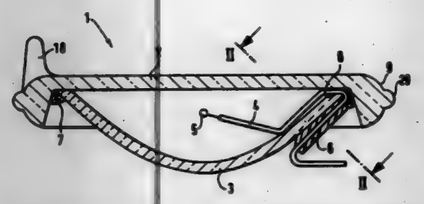
provide end point illumination at the outer surface of the handle grip;
means for holding including a handle body connectable with the handle grip at one end of the handle body and connectable to a valve at another end of the handle body opposite the one end; and
means for mounting at least a part of the elongate fiber optic body extending between the filament end holding means and the illuminating means to the handle body for movement with the handle body and handle grip.

5,291,379
PROTECTIVE LAMP-SHADE
Jom Doug Lu, No. 36, Lane 360, Chung Cheng Road., Pan Chiao City, Taipei Hsien, Taiwan
Filed Apr. 1, 1993, Ser. No. 40,206
Int. Cl.[5] F21M *3/14*
U.S. Cl. 362—255 6 Claims



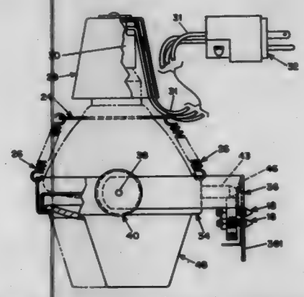
1. A protective lamp-shade comprising a cylindrical shell integrally molded from polycarbonate resin and covered around the lamp tube of a lamp assembly, and two end caps respectively made from silicone rubber and mounted on the lamp tube of said lamp assembly at two opposite ends to hold said cylindrical shell in place for permitting said cylindrical shell to be turned round relative to the lamp tube of said lamp assembly, said cylindrical shell having parallel teeth along its length for refracting the light of the lamp tube of said lamp assembly and being peripherally and partially coated with a layer of light reflecting metal coating along its length for reflecting the light of the lamp tube of said lamp assembly.

5,291,380
LAMP
Wolfgang Behr, Lippstadt, Fed. Rep. of Germany, assignor to Wilhelm Koch GmbH, Gutersloh, Fed. Rep. of Germany
Filed Aug. 14, 1992, Ser. No. 929,417
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 9110182; Jun. 12, 1992, 9207949
Int. Cl.[5] F21V *7/02*
U.S. Cl. 362—310 16 Claims



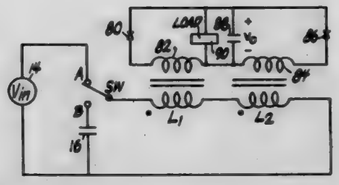
1. A lamp for use in an enclosed room, said lamp comprising:
a reflector having a peripheral rim, an interior reflector surface and an exterior reflector surface;
a glass lid having a peripheral flange extending over said reflector peripheral rim;
a filament supported by at least two supply leads;
said reflector peripheral rim and said glass lid peripheral flange being sealingly interconnected by a sealant along a fixing seam to thereby define an interior region of said lamp;
each said supply lead being guided from a position adjacent said reflector exterior surface through a peripheral connection point between said reflector rim and said glass lid flange into said lamp interior region; and
wherein said two supply leads are positioned parallel and juxtaposed to one another and secured in a clip-like formation over said reflector rim, said clip-like formation including said parallel, juxtaposed leads being held by an electrically insulated connecting element adjacent said reflector exterior surface, extending over said reflector rim, and along said reflector interior surface.

5,291,381
LIGHT FIXTURE MOUNTING ASSEMBLY
Edison Price, 112 Green St., Brooklyn, N.Y. 11222
Filed Apr. 23, 1993, Ser. No. 52,115
Int. Cl.[5] F21S *1/06*
U.S. Cl. 362—366 7 Claims



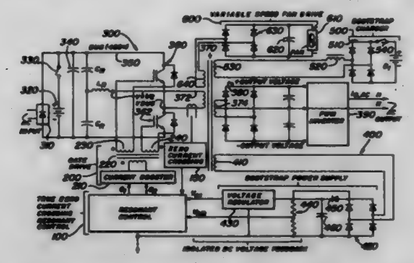
1. A light fixture mounting assembly comprising a fixture support member adapted to support the light fixture and including a base portion having a hole, a fixture mounting member including a cam plate portion having an elongated slot of uniform width, and a cam head fastener mechanism releasably joining the base portion of the fixture support member to the mounting member in a predetermined position, the fastener mechanism including a screw having a head portion, a shank portion and a lock portion between the head portion and the shank portion, the shank portion being threaded and passing through the hole in the base portion of the support member, the lock portion normally being received in the slot of the cam plate portion and being of a size and shape such that the screw cannot rotate substantially when the lock portion is received in the slot, and the head portion including opposite shoulders engageable with surface portions of the mounting member on opposite sides of the slot in one rotational position of the screw and disengageable from said portions in another rotational position of the screw so that the head can pass through the slot, and a knob threaded onto the shank portion of the screw.

5,291,382
PULSE WIDTH MODULATED DC/DC CONVERTER WITH REDUCED RIPPLE CURRENT COPONENT STRESS AND ZERO VOLTAGE SWITCHING CAPABILITY
Isaac Cohen, Dix Hills, N.Y., assignor to Lambda Electronics Inc., Melville, N.Y.
Continuation-in-part of Ser. No. 683,323, Apr. 10, 1991, abandoned. This application Jan. 6, 1992, Ser. No. 817,929
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—16 11 Claims



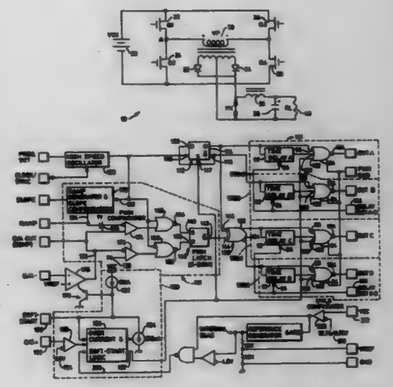
1. A DC to DC converter comprising:
an input voltage source;
a capacitance;
an output circuit;
a switching circuit for connecting said output circuit alternatively across said voltage source and said capacitance;
said output circuit further comprising:
a first inductor and a separate second inductor coupled in series to said switching circuit;
a third inductor and a separate fourth inductor coupled in series and formed by isolation windings across said first and second, inductor said third and fourth inductors coupled to a first terminal of at least one rectifier at each end for full wave rectification, a second terminal of said rectifiers coupled to a common point, and a capacitance and a load terminal connected across an intermediate point of said third and fourth inductance and said common point.

5,291,383
SIMPLIFIED UPS SYSTEM
George Oughton, Raleigh, N.C., assignor to Exide Electronics Corporation, Raleigh, N.C.
Filed Sep. 2, 1992, Ser. No. 939,318
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—17 20 Claims



1. A power supply system, comprising:
(a) resonant control means for providing gate drive signals;
(b) a gate drive circuit comprising a current booster and a first transformer, said current booster comprising an input coupled to an output of said resonant control means, said first transformer comprising a primary winding coupled to an output of said current booster and two secondary windings;
(c) a resonant converter comprising first and second transistors and a second transformer, each transistor comprising a gate coupled to a secondary winding of said first transformer, said second transformer comprising a secondary winding and a primary winding coupled to said transistors so as to be driven by said transistors; and
(d) a bootstrap power supply circuit comprising a first auxiliary winding associated with said second transformer and power supply means associated with said first auxiliary winding for supplying an isolated DC supply voltage to said resonant control means.

5,291,384
PHASE SHIFTED SWITCHING CONTROLLER
Robert A. Mammano, Costa Mesa, Calif., and Jeffrey D. Putsch, Milford, N.H., assignors to Unitrode Corporation, Billerica, Mass.
Continuation of Ser. No. 718,192, Jun. 20, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,662
Int. Cl.[5] H03K *5/04*; H02H *7/122*
U.S. Cl. 363—17 11 Claims



1. A phase shifted controller for resonantly switching a dc-to-dc converter comprising a first half-bridge comprising a first switch and a second switch and a second-half bridge comprising a third switch and a fourth switch, said first half-bridge and said second half-bridge in communication with a primary of a transformer, said phase shifted controller comprising:
(a) an oscillator having an output port wherein said oscillator provides a clock signal on the output port;
(b) a pulse width modulator circuit having a first input coupled to the output port of said oscillator, having a second input port and having an output port;
(c) an error amplifier having a first input port coupled to an input of the phase shifted controller, having a second input port coupled to a first reference potential, and having an output port coupled to the second input port of said pulse width modulator circuit, wherein said error amplifier provides an error signal to the second input port of said pulse width modulator circuit;
(d) a switching circuit having a first input port coupled to the output port of said oscillator and having first and second output ports;
(e) a first logic circuit having a first input port coupled to the first output port of said switching circuit, having a second input port coupled to the output port of said pulse width modulator circuit, and having an output port;
(f) a first plurality of output stages each of said output stages having an input port, an output port and a delay control port wherein the input port of a first one of said first plurality of output stages is coupled to the first output port

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of said first switching circuit and the input port of a second one of said first plurality of output stages is coupled to the second output port of said switching circuit and wherein the delay control port receives a control signal for delaying the switching of its respective output stage, wherein each of said first plurality of output stages comprises:

(i) a time delay circuit having a first input port coupled to the first input port of the corresponding output stage, having a second input port coupled to the corresponding delay control port and having an output port; and

(ii) an output stage logic circuit having a first input coupled to the first input port of the corresponding output stage, having a second input port coupled to the output of said corresponding time delay circuit, and having an output port coupled to a corresponding one of said first, second, third and fourth switches;

(g) a second plurality of output stages, wherein each of said second plurality of output stages comprises:

(i) a time delay circuit having a first input port coupled to a first input port of the corresponding output stage, having a second input port coupled to the corresponding delay control port and having an output port; and

(ii) an output stage logic circuit having a first input coupled to a first input port of the corresponding output stage, having a second input port coupled to the output of said time delay circuit, and having an output port coupled to a corresponding one of said first, second, third and fourth switches;

(h) a first signal path coupled between the output port of said first logic circuit and a first input port of a first one of the second plurality of output stages; and

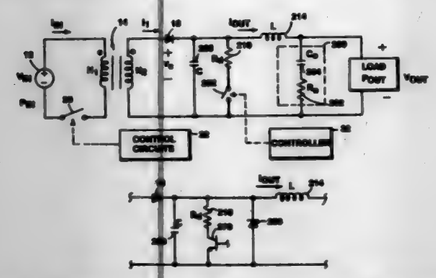
(i) a second signal path coupled between said first logic circuit and a first input port of a second one of said second plurality of output stages.

5,291,385

ZERO-CURRENT SWITCHING FORWARD POWER CONVERTER OPERATING IN DAMPED REVERSE BOOST MODE

Patrizio Vinciarelli, Boston, Mass., assignor to VLT Corporation, San Antonio, Tex.

Filed Apr. 2, 1992, Ser. No. 862,490
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **16 Claims**



1. A zero-current switching forward converter circuit for delivering power to a load, comprising:

a voltage source;

a power transformer including primary and secondary windings, said power transformer having an effective secondary leakage inductance L2e;

a first switching device connected to couple said voltage source across the primary winding of said transformer;

a first unidirectional conducting device connected in series with said secondary winding and oriented to conduct during conduction by said first switching device;

a capacitor of capacitance C connected in series with said secondary winding and said first unidirectional conducting device;

an inductor of inductance Lo connected in series between said capacitor and said load to deliver power to said load;

circuit means connected on the secondary side of said transformer for preventing charging of said capacitor when voltage across said capacitor returns essentially to zero and when current in said inductor is flowing in the direction of said load;

a second switching device connected on the secondary side of said transformer;

damping means for damping a resonant circuit formed by said inductor and said capacitor at times when said second switching device is closed and the current in said inductor is flowing in a direction away from said load, said damping means comprising a dissipative element connected on the secondary side of said transformer; and

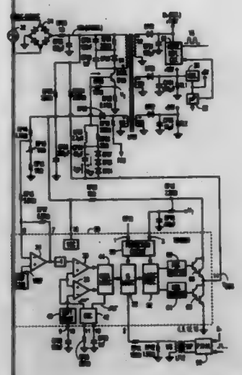
a controller having means for closing and opening said first switching device to transfer energy from said voltage source via the effective leakage inductance of said transformer to charge said capacitance during an energy transfer cycle having a characteristic time scale of pi* sqrt(L2e*C), said controller causing said first switching device to open at times when current in said secondary winding is substantially zero, said controller including a second means for opening and closing said second switching device to selectively govern the amount of energy transferred during said energy transfer cycle.

5,291,386

SWITCHED MODE POWER SUPPLY WITH PRECHARGE OF BASE-EMITTER SWEEP-OUT CAPACITOR

Chua H. Wu, Singapore, Singapore, assignor to Thomson Consumer Electronics, S.A., France

Filed Jul. 22, 1992, Ser. No. 918,533
Claims priority, application United Kingdom, Aug. 1, 1991, 9116616
Int. Cl.[5] H02M *7/5375*
U.S. Cl. 363—21 **11 Claims**



1. A switched mode power supply comprising:

a source of unregulated voltage;

a load;

a switching transistor coupling said source to said load;

a capacitor coupled to a control terminal of said transistor;

a diode coupled in parallel with said capacitor;

a source of control pulses coupled to the control terminal of said transistor through said capacitor; and

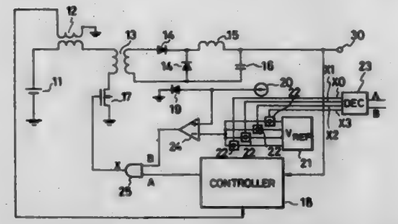
means for charging said capacitor to a value determined by the voltage drop across said diode, from said source of unregulated voltage.

5,291,387

SWITCHING VOLTAGE REGULATOR WITH PROTECTIVE DEVICE AGAINST THERMAL BREAKDOWN

Yoshinobu Ohshima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 847,623
Claims priority, application Japan, Mar. 13, 1991, 3-47162
Int. Cl.[5] H02H *7/122*
U.S. Cl. 363—56 **15 Claims**



1. A switching-type voltage regulator with a protective device, which has a voltage control section for generating a stabilized voltage by controlling a voltage supply period from an input side to an output side, said protective device comprising:

monitoring means for monitoring a temperature of a component part of said voltage control section and for outputting a signal voltage corresponding to the monitored temperature;

said monitoring means having a monitoring device which is disposed near a component part of said regulator and which detects the temperature of said component part;

a reference voltage source which generates at least one reference voltage;

comparing means for comparing a signal voltage generated by said monitoring means with at least one reference voltage generated by said reference voltage source and for outputting a resulting signal; and

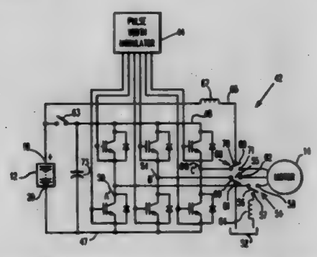
halting means for halting an output of said voltage regulator in accordance with said resulting output signal of said comparing means.

5,291,388

RECONFIGURABLE INVERTER APPARATUS FOR BATTERY-POWERED VEHICLE DRIVE

Theodore M. Heinrich, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1992, Ser. No. 870,644
Int. Cl.[5] H02M *7/5387*
U.S. Cl. 363—98 **9 Claims**



1. A reconfigurable inverter apparatus usable with a battery-powered vehicle drive and selectively operable either to invert DC from at least one storage battery to supply a polyphase AC electric motor or alternatively to charge said battery from an external energy supply source, said apparatus comprising:

alternative mode switching means for providing selective electrical interconnection to operate said apparatus in a drive mode or an alternative battery-charging mode;

at least three inverter poles, each said pole having a pair of pole switches electrically connected serially between a pair of DC rails to form a node there between defining an AC terminal, each said pole switch having a semiconductor switching element with an antiparallel diode electrically connected thereacross;

at least one capacitor electrically connected across said pair of DC rails;

a first rail of said pair of DC rails electrically connectable to a first terminal of said battery;

a second rail of said pair of DC rails selectively electrically connectable in said drive mode to a second terminal of said battery, said second rail disconnected from said second terminal in said alternative battery charging mode;

source current means responsive to said switching means for use in said alternative battery-charging mode to provide electrical connection of an AC terminal of a first pole of said at least three inverter poles of said external energy supply source;

charging current means for use in said alternative battery-charging mode to provide an electrical conducting path from an AC terminal of a second pole of said at least three inverter poles to said second terminal; and

wherein said switching means comprises the functional equivalent of: a single-pole, single-throw switch electrically connected between said second rail and a terminal connectable to said second terminal; a first single-pole, double-throw switch having a first armature contact electrically connected to said first pole, a first normal position contact electrically connectable to a first phase winding of said polyphase AC electric motor, and a first reverse position contact electrically connectable to said external energy supply source; a second single-pole, double-throw switch having a second armature contact electrically connected to said third pole, a second normal position contact electrically connectable to a second phase winding of said polyphase AC electric motor, and a second reverse position contact electrically connectable to said external energy supply source; and a third single-pole, double-throw switch having a third armature contact electrically connected to said second pole, a third normal position contact electrically connectable to a third reverse position contact electrically connectable to said terminal of said battery.

5,291,389

SEQUENTIAL FUNCTION CHART (SFC) CONTROLLER FOR CONTROLLING A MACHINE IN REVERSE OPERATION

Yasunobu Iwata, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1991, Ser. No. 695,493
Claims priority, application Japan, May 8, 1990, 2-118190
Int. Cl.[5] G05B *11/01, 19/04*
U.S. Cl. 364—140 **6 Claims**

1. A programmable controller comprising:

a first transition table for storing, in order of step number, transition conditions for checking input conditions corresponding to steps in an SFC program;

a first output table for storing output numbers corresponding to the steps, in order of step number;

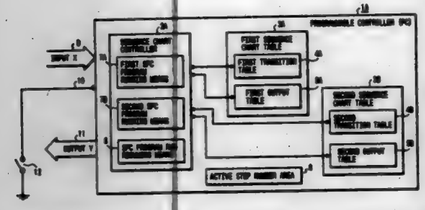
a second transition table for numbering the transition conditions in reverse order to that stored in said first transition table, and storing the results;

a second output table for sorting the output numbers stored in said first output table in reverse order, and storing the results;

first SFC program running means using the output numbers

stored in said first output table in order of step number in accordance with the transition conditions stored in said first transition table;

second SFC program running means for stopping the execution of the running of the output numbers stored in said first output table when a preset program running condition is not established or an external command is entered, and for executing the corresponding output numbers stored in said second output table in accordance with the corresponding transition information stored in said second



transition table, starting with a step number where the execution has been stopped; and

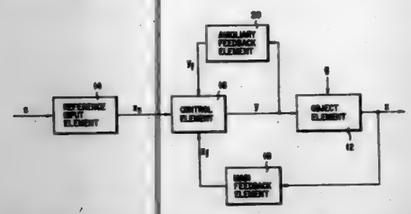
SFC program run resuming means for stopping the use of the output numbers stored in said second output table when said program running condition is re-established or a new external command is entered, and for resuming the execution of the output numbers stored in said first output table in accordance with the corresponding transition information stored in said first transition table, starting with a step number where the use of the output numbers of said second output table has been stopped.

5,291,390

CONTROL APPARATUS FOR MECHANICAL DEVICES WHICH REGULATES CONTROL SYSTEM OPERATION SPEED TO PREVENT HUNTING AND OVERSHOOTING AND THEREBY OPTIMIZES THE CONTROL SIGNAL

Nobuyasu Satou, 11-3-501, Minamifujisawa, Fujisawa-shi, Kanagawa-ken, Japan

Filed Jan. 27, 1992, Ser. No. 826,572
Claims priority, application Japan, Apr. 30, 1991, 3-124661
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—148 4 Claims



1. A control apparatus for a mechanical device, comprising:

reference input means for receiving a reference input signal;

control means connected to said reference input means and the mechanical device for controlling the mechanical device;

main feedback means for detecting a control signal output from said mechanical device and supplying said control signal to said control means as a main feedback signal; and

auxiliary feedback means for detecting an output signal from said control means and outputting said control signal to said control means as an auxiliary feedback signal, wherein said control means uses a following formula to obtain the operating signal when the mechanical device has a proportional characteristic between the operating signal and the control signal:

$$y_n=\{(x_s-x_{n-1})/(x_{n-1}+\lambda)+1\}\cdot y_{n-1}$$

where

y_n: the operating signal to be supplied to the mechanical device

y_{n-1}: the auxiliary feedback signal

x_s: the reference input signal

x_{n-1}: the main feedback signal

α: a regulation speed regulation parametric constant $(1\geqq\alpha>0)$

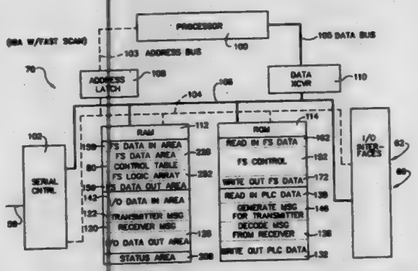
λ: a monotone convergence regulation parametric constant.

5,291,391

FAST PROGRAMMABLE SCAN LOGIC CONTROLLER METHOD AND APPARATUS

Ian D. Mead, Westchester, and Jing Liao, Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 20, 1992, Ser. No. 855,187
Int. Cl.[5] G05B *11/01, 21/02, 13/02*
U.S. Cl. 364—148 16 Claims



1. A method of controlling physical devices, comprising the steps of:

(a) periodically evaluating a set of normal equations at a first rate to produce at least one first output value for physical output interfaces providing control signals for physical devices;

(b) periodically evaluating a set of fast-scan equations at a second rate greater than the first rate to produce a second output value for at least one selected one of said physical output interfaces; and

(c) selectively controlling said at least one selected physical output interface in response to said first output value and said second output value.

5,291,392

METHOD AND APPARATUS FOR ENHANCING THE ACCURACY OF SCANNER SYSTEMS

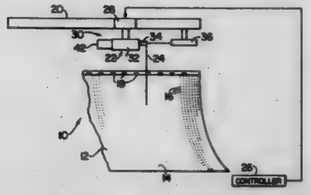
Heinz J. Gerber, West Hartford; Ronald J. Strasyer, South Windsor, and Bruce L. Davidson, East Hartford, all of Conn., assignors to Gerber Systems Corporation, South Windsor, Conn.

Filed Feb. 19, 1992, Ser. No. 838,500
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—167.01 43 Claims

1. An apparatus for providing compensation for inaccuracies in a scanning optical system that has a platen for receiving a substrate having a surface and a raster scanning means responsive to clock signals for advancing relative to said substrate an optical beam across said substrate surface in a first direction forming a scan line, said apparatus comprising:

a signal generator means for generating a plurality of clock signals, each of said clock signals being configured to control the advancement of said optical beam in said first direction, and including means for shifting the phase of said clock signals relative to each other;

a memory means for storing error signals, each error signal being indicative of deviations in a respective area of said substrate surface from preferred values thereof; and



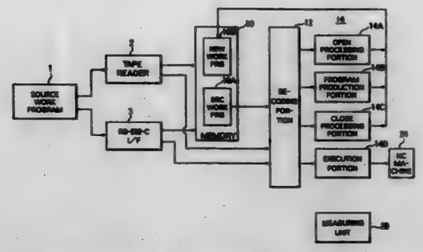
a controller for transmitting control signals in dependence on said error signals to said signal generator means, said signal generator means being responsive to each of said control signals to transmit one of said plurality of phase-shifted clock signals to said raster scanning means, said transmitted clock signal being selected based on a respective error signal to compensate for deviations in the respective area of said substrate surface and substantially avoid corresponding deviations in the scan line.

5,291,393

NC MACHINE TOOL APPARATUS HAVING MEANS FOR PRODUCING NC WORK PROGRAM AND METHOD THEREOF

Michio Matsumoto, Numazu; Tomoo Hayashi, Gotenba; Motoyuki Miyauchi, Tagata; Kenji Kato, Numazu, and Takao Adachi, Tagata, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 779,193
Claims priority, application Japan, Oct. 22, 1990, 2-284069; Oct. 15, 1991, 3-294913
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—191 19 Claims



1. An NC tool apparatus comprising:

an NC machine including at least one spindle to which a tool or a sensing device is attached, and a drive mechanism for driving said spindle; and

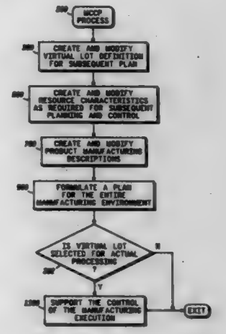
a control unit for controlling said drive mechansim, said control unit comprising an NC work program producing means for producing, in accordance with a source work program, an NC work program for machining a workpiece, said source work program specifying a pattern to be machined on said workpiece, said NC work program producing means controlling said NC machine to move said sensing device attached to said spindle in accordance with said pattern to measure said workpiece, said NC work program producing means creating an NC work program for controlling said drive mechanism, in accordance with said measurements.

5,291,394

MANUFACTURING CONTROL AND CAPACITY PLANNING SYSTEM

William Chapman, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1990, Ser. No. 531,969
Int. Cl.[5] G06F *15/22, 15/24;* G06G *7/52*
U.S. Cl. 364—401 20 Claims



1. A method of controlling the allocation of resources to lots in accordance with goals of an organization, said method comprising the steps of:

defining a process flow description for a virtual lot wherein resource capabilities are specified and are associated with one another in a specified order;

associating portions of unmortgaged future resource capabilities with one another in accordance with corresponding ones of said resource capabilities of said process flow description to generate a processing plan;

repeating said defining and associating steps if said processing plan fails to substantially satisfy said organizational goals;

selecting said virtual lot for processing within said organization as an actual lot;

mortgaging said future resource capabilities identified in said processing plan; and

continuously revising said mortgaged resource capabilities of said mortgaging step in response to actual events occurring within said organization.

5,291,395

WALLCOVERINGS STORAGE AND RETRIEVAL SYSTEM

Max Abecassis, 19020 NE. 20th Ave., Miami, Fla. 33179

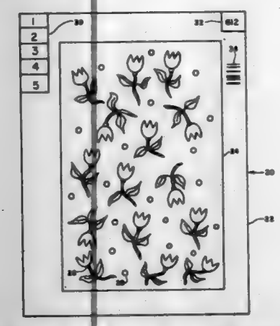
Filed Feb. 7, 1991, Ser. No. 651,810
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—401 16 Claims

1. A system for storing and retrieving one or more physically textured pattern materials, said materials each provided with at least one design characteristic, comprising:

an input device provided with a comprehensive listing of design characteristics, allowing an individual to limit the said comprehensive listing of design characteristics to a grouping of design characteristics less in number than said comprehensive listing of design characteristics;

a computer provided with a database containing said comprehensive listing of design characteristics and software for determining which of a plurality of design patterns corresponding to the physically textured pattern materials

satisfy a particular criteria based upon said grouping of design characteristics inputted to said computer, said computer generating a listing of design patterns which satisfy said particular criteria based upon said grouping of design characteristics inputted to said computer, each design pattern corresponding to a physically textured pattern material; and



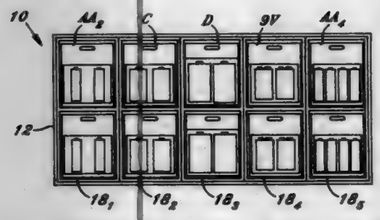
a storage location associated with said system containing said physically textured pattern materials, each of said physically textured pattern materials associated with a specific indicia and each of said physically textured pattern materials being separated from other physically textured pattern materials, said listing of design patterns and said specific indicia utilized to retrieve said physically textured pattern materials.

5,291,396

METHOD OF ORDERING, SHIPPING AND MERCHANDISING GOODS AND SHIPPING/DISPLAY ASSEMBLY THEREFOR

Victor Calcerano, Carmel, N.Y., and Joseph T. Ricci, Bethel, Conn., assignors to Duracell Inc., Bethel, Conn.

Filed Jan. 10, 1992, Ser. No. 819,034
Int. Cl.[5] G06F *15/22, 15/24;* G06G *7/52*
U.S. Cl. 364—401 **9 Claims**



2. The method of claim 1 wherein one of the modules in a tray is left unloaded to accommodate a premium item.

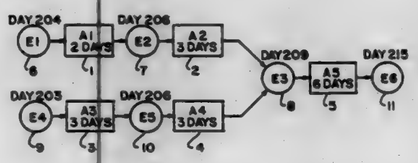
5,291,397

METHOD FOR RESOURCE ALLOCATION AND PROJECT CONTROL FOR THE PRODUCTION OF A PRODUCT

Roger A. Powell, 1740 Hollins Rd., Bensalem, Pa. 19020

Filed Dec. 20, 1991, Ser. No. 811,535
Int. Cl.[5] G06F *15/20, 7/48*
U.S. Cl. 364—402 **6 Claims**

1. A method for the manufacture of a product, comprising:
generating a network of activities required to manufacture a product,
estimating a time duration for each activity,
choosing a desired final completion date for completion of manufacturing,
calculating a baseline schedule date for the start of each activity, said baseline schedule date for the start of each prior activity being equal to the baseline schedule date for the start of the following activity in said network minus said estimated time duration of said prior activity, said desired final completion date being the last baseline schedule date in said network,
entering said baseline schedule date corresponding to each said activity into a memory bank of a digital computer,
identifying external components required to support each activity and entering external component identification and corresponding activity into said memory bank of said computer,
determining an availability date for each said component and entering said availability date into said memory bank of said computer,
calculating a external component slack value for each said component internally in said computer following programmed instructions, said component slack value being equal to the baseline schedule date for the start of the activity requiring said component minus the availability date of said component, said computer retrieving from said memory bank previously entered said baseline schedule date and said availability date for each said component, said computer storing said component slack values in said memory bank,
determining said external component slack value that is most late,



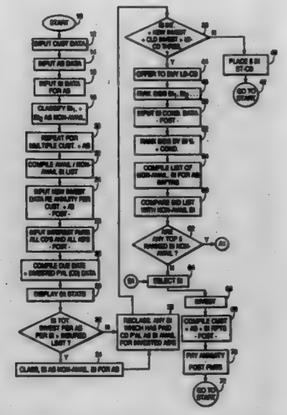
determining dates of actual start of said activities and entering said date of actual start into said memory bank of said computer,
calculating an internal slack value for each activity having an actual start date internally in said computer following programmed instructions, said internal slack value being equal to said baseline schedule date for the start of said activity minus the actual start date of said activity, said computer retrieving from said memory bank previously entered said baseline schedule date and actual start date for each said activity, said computer storing said internal slack values in said memory bank,
determining said internal slack value that is most late,
determining the project most late slack value by comparing said most late component slack value and said most late internal slack value,
determining a projected final completion date by subtracting the project most late slack value from said desired final completion date on said network,
displaying said projected final completion date on an output device of said computer,
manufacturing said product, said manufacturing applying resources to transform an article from an initial state into a different final state,
allocating said resources in said manufacturing based on said external component slack values and said internal slack values, increasing resources allocated to external components and activities having most late slack values.

5,291,398

METHOD AND SYSTEM FOR PROCESSING FEDERALLY INSURED ANNUITY AND LIFE INSURANCE INVESTMENTS

Bernard P. Hagan, 115 Commonwealth Ave., San Francisco, Calif. 94118

Filed Jul. 10, 1992, Ser. No. 911,401
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—408 **26 Claims**



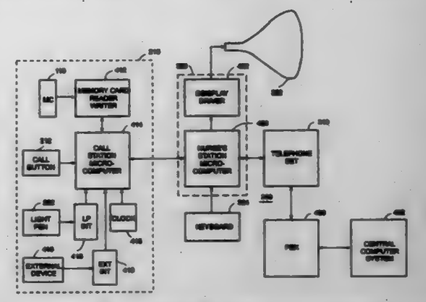
1. A computer-based method for electronically processing transactional data and monitoring funds for a plurality of annuities, purchased by a plurality of customers funding said annuities, to obtain the benefit of depositor's insurance available through a plurality of federally approved banking institutions, said depositor's insurance protecting funds less than a predetermined insured limit, said computer-based method comprising the steps of:
electronically identifying, inputting and storing annuity fund data, associated customer data, annuity beneficiary data, and banking institution data;
electronically classifying and labeling all banking institutions which hold non-annuity funds and unqualified annuity funds for each annuity beneficiary with a non-available banking institutions label for each respective annuity beneficiary after the step of identifying;
electronically determining whether the sum of all annuity funds, identified with a single annuity beneficiary and designated for certificates of deposit issued by one of said plurality of banking institutions which is not labeled as a non-available banking institution, exceeds said insured fund limit and if so, classifying and electronically labeling said one banking institution with said non-available banking institution label for said single annuity beneficiary;
electronically commanding and ordering the transfer of all annuity funds identified with said single annuity beneficiary and designated for said one banking institution in excess of said insured fund limit to a certificate of deposit issued by another one of said plurality of banking institutions which is not labeled as a non-available banking institution; and,
electronically determining the excess funds over said insured fund limit, classifying and electronically labeling the banking institution as non-available, and commanding and electronically ordering the transfer of excess funds, for all banking institutions designated to hold certificates of deposit for all annuity beneficiaries to obtain the benefit of said depositor's insurance for qualified annuity funds.

5,291,399

METHOD AND APPARATUS FOR ACCESSING A PORTABLE PERSONAL DATABASE AS FOR A HOSPITAL ENVIRONMENT

John Chaco, Seymour, Conn., assignor to Executone Information Systems, Inc., Darien, Conn.

Filed Jul. 27, 1990, Ser. No. 559,196
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.02 **18 Claims**



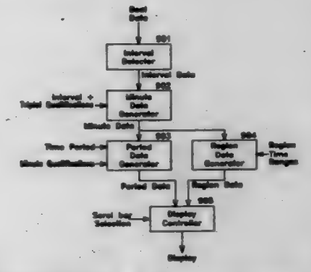
1. Apparatus for automating routine communication and location determination, comprising:
portable database means for holding entity information including identification information about an entity;
portable first communications means, removably coupled to said portable database means and said entity for retrieving the entity information including the identification information from said portable database means and for sending the retrieved information to a first remote location;
second communications means, located at said first remote location, for receiving the retrieved information sent by said first communications means and for sending a message including at least a portion of said retrieved information to a second remote location; and
central processor means, located at the second remote location, for receiving the message sent by said second communications means to maintain a central database and for determining the location of said entity.

5,291,400

SYSTEM FOR HEART RATE VARIABILITY ANALYSIS

Jeffrey J. Gilham, Seattle, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

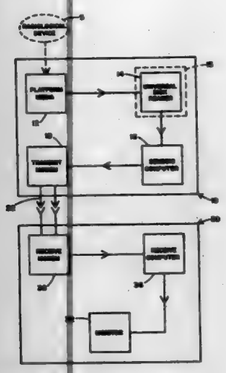
Filed Apr. 9, 1992, Ser. No. 866,806
Int. Cl.[5] G06F *15/42;* A61B *5/04*
U.S. Cl. 364—413.06 **33 Claims**



1. A computer system for heart rate variability analysis of electrocardiographic data, the system comprising:
a storage device having means for storing electrocardiographic data;

an interval detector f or determining the length of heart beat intervals in the electrocardiographic data;
a minute data generator for accumulating statistical measurements based on the heart beat intervals and user-specified qualifications;
a period data generator for accumulating statistical data measurements based on the generated minute data, a time period, and user-specified qualifications;
a region data generator for accumulating statistical measurements based on the generated minute data and a region of time; and
a display controller for displaying the period data and region data on a computer display device.

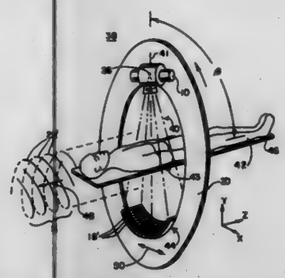
5,291,401
TELERADIOLOGY SYSTEM
Bruce T. Robinson, Telford, Pa., assignor to Telescan, Limited, Berwyn, Pa.
Filed Nov. 15, 1991, Ser. No. 792,785
Int. Cl.[5] G06F 15/00
U.S. Cl. 364—413.13 20 Claims



1. A teleradiology system comprising:
means for collecting raw digital data from a radiological device at a first location;
means for transmitting the raw digital data, as collected, to a second location;
means for receiving the transmitted digital data at the second location;
means for processing the received digital data; and
means for converting the processed digital data into analog signal to view at least one display image.

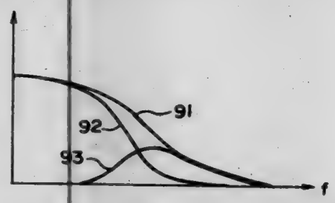
5,291,402
HELICAL SCANNING COMPUTED TOMOGRAPHY APPARATUS
Armin H. Pfoh, New Berlin, Wis., assignor to General Electric Company, Milwaukee, Wis.
Filed Aug. 7, 1992, Ser. No. 926,987
Int. Cl.[5] G06F 15/42
U.S. Cl. 364—413.14 8 Claims

1. A computed tomography apparatus producing images of an imaged object and comprising:
an x-ray source directing an x-ray beam along a beam axis with movement of the beam axis throughout a plurality of beam angles about a translation axis, the x-ray beam including a plurality of rays spaced in two dimensions with respect to the beam axis first along the translation axis with respect to the beam axis and second along a transverse axis perpendicular to the translation axis;
an array of detector elements receiving the x-ray beam after it passes through the imaged object, the detector elements arranged in columns along the translation axis and rows along the transverse axis, each detector element producing an intensity signal dependent on the intensity of the ray of x-ray associated with the detector element;
a translator for moving the imaged object along the translation axis with respect to the x-ray source throughout a plurality of translation positions during the movement of the beam axis throughout the plurality of beam angles;
a combiner receiving the intensity signals and combining the intensity signals from at least one detector element in each



column at a given beam angle, and at least one detector element in a corresponding column at a beam angle related to the given beam angle, the detector elements having a predetermined relationship with respect to a slice plane stationary with the imaged object and the combined intensity signals from the detector elements in each column producing a corresponding composite intensity signal associated with the slice plane; and
a display means receiving the composite intensity signals and displaying an image of the imaged object at the slice plane from the composite intensity signals.

5,291,403
METHOD OF AND APPARATUS FOR PROCESSING RADIATION IMAGE
Wataru Ito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 18, 1991, Ser. No. 779,311
Claims priority, application Japan, Oct. 19, 1990, 2-82806
Int. Cl.[5] G06F 15/00
U.S. Cl. 364—413.23 10 Claims



1. A method of processing a radiation image comprising the steps of
detecting a plurality of original image signals which represent a plurality of radiation images obtained by exposing recording media to radiations with different energy levels which have passed through an object constituted of a plurality of tissues exhibiting different levels of radiation absorptivity with respect to radiations with different energy levels,
obtaining an extracted image signal representing an extracted image of a predetermined tissue in the object on the basis of said plurality of original image signals,

obtaining a processed image signal representing a processed image by calculating a processed image signal component S' corresponding to a predetermined picture element in the extracted image according to formula

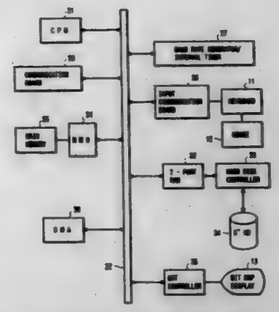
$$S' = Sorg + \beta \cdot (S - Sus)$$

wherein Sus represents an unsharp mask signal obtained by averaging the extracted image signal components corresponding to a number of picture elements which surrounds a predetermined picture element within a predetermined region, Sorg represents the original image signal component corresponding to said predetermined picture element, S represents the extracted image signal corresponding to said predetermined picture element, and β represents a coefficient, and by repeating the calculation according to said formula with all the picture elements in the extracted image being sequentially taken as said predetermined picture element, thereby obtaining processed image signal components for all the picture elements in the processed image.

5,291,404
RADIOTHERAPY TREATMENT PLANNING SYSTEM
Masaaki Kurokawa, and Masataka Nagao, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 4, 1991, Ser. No. 680,421
Claims priority, application Japan, Apr. 18, 1990, 2-102117; Aug. 9, 1990, 2-209242
Int. Cl.[5] G06F 15/42
U.S. Cl. 364—413.26 18 Claims

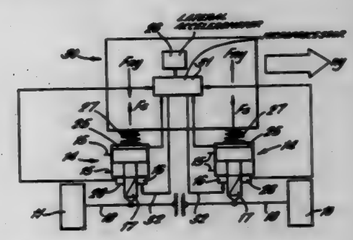
1. Radiotherapy treatment planning apparatus for calculating the absorbed dose of radiation irradiated by a radiation source at an observational point within an object to be irradiated, on the basis of the absorbed dose due to the radiation scattered at points other than said observational point and the absorbed dose due to the electron beam generated by the radiation incident to said other points, said radiotherapy treatment planning apparatus comprising:
radiation source apparatus for directing radiation to said observational point whereby electron beams are generated by the radiation incident at said observational point and at said points other than said observational point;
a distribution of contribution output unit for outputting a distribution of contribution representing the distribution, in the object to be irradiated, of the contribution rates of said radiation to said observational point, and
an arithmetic unit having means for determining the absorbed dose due to the radiation scattered at the observational point by multiplying the output contribution rates from the distribution of contribution output unit with the electron densities at individual points corresponding to these contribution rates and by summing up the multiplied contribution rates.

5,291,405
DOCUMENTATION MANAGEMENT SYSTEM
Yasushi Kobari, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Oct. 10, 1990, Ser. No. 595,880
Int. Cl.[5] G06F 15/38
U.S. Cl. 364—419.19 10 Claims



1. A documentation management system for controlling use of a document by a first group of operators having access to read the document, and a second group of operators having access to read and write on the document comprising:
first storage means for storing the document in a predetermined format;
second storage means for storing data to be entered on the document;
area designating means for designating a first area on the document in which the first and second groups of operators can read the data, and a second area on the document in which only the second group of operators can write the data; and
processor means, coupled to said first and second storage means, for inputting the document format and the data, and for displaying the document format and the data.

5,291,406
LAND VEHICLE SUSPENSION CONTROL SYSTEM
David A. Williams, Stoney Stratford, and Peter G. Wright, Wymondham, both of United Kingdom, assignors to Group Lotus PLC, Norfolk, United Kingdom
PCT No. PCT/GB90/00689, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/13447, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 777,216
Claims priority, application United Kingdom, May 4, 1989, 8910277
Int. Cl.[5] B60G 17/01
U.S. Cl. 364—424.05 7 Claims



1. A land vehicle suspension system comprising:
means for measuring forces acting between the sprung mass of the vehicle and the unsprung masses connected thereto,

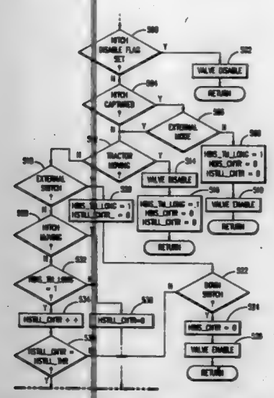
comprising first means for measuring steady state loads and second means for measuring dynamic loads;
means for generating signals proportional to the measured loads, comprising first means for generating signals proportional to the steady state loads and second means for generating signals proportional to the dynamic loads;
actuator means connected between the unsprung masses and the sprung mass of the vehicle;
processor means for processing the signals proportional to the measured loads and for generating control signals to control the actuator means to extend and contract to vary the position of the sprung mass relative to the unsprung masses; and
isolator means connected in series with the actuator means between the unsprung masses and the sprung mass which deforms to absorb a portion of the forces acting on the actuator means resulting from forces on the sprung mass and the unsprung masses, wherein
the processor means calculates from the measured load signals the deformation of the isolator means resulting from the steady state loads and modifies the control signals supplied to the actuator means to compensate for the deformation of the isolator means resulting from the steady state loads by causing the actuator means to either extend or contract in a sense opposite to the deformation of the isolator means.

5,291,407

DRAFT CONTROL SYSTEM WITH SAFETY DISCONNECT

Steven C. Young, Lancaster; Bradley A. Nielsen; David G. Sokol, both of New Holland, and Richard P. Strosser, Akron, all of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Jun. 3, 1991, Ser. No. 709,236
Int. Cl.[5] G06F *7/70, 15/48;* A01B *63/112*
U.S. Cl. 364—424.07 **11 Claims**



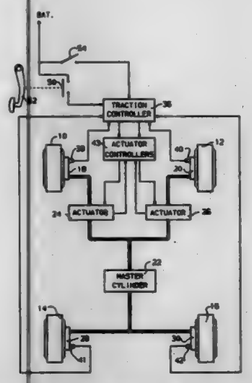
1. In a hitch control system having a valve for controlling movement of a hitch mounted on a vehicle and solenoid means connected in a series circuit with a switch means across a source of voltage, said switch means being selectively energized to energize said solenoid means by closing said series circuit, said hitch control system including circuit means operable in a closed-loop mode to control positioning of said hitch to a position specified by a position command and operable in an open-loop mode to control movement of said hitch in response to actuation of a manual switch, a method of preventing motion of said hitch in response to failure of a component in said system while said circuit means is operating in said open-loop mode, said method comprising:
providing a safety disconnect switch for selectively opening said series circuit;
determining if said hitch is captured;
determined if said circuit means is in said open-loop mode;
sensing for movement of said hitch;
sensing for actuation of a manual switch;
when hitch movement is detected and said manual switch is not actuated, controlling said safety disconnect switch to open said series circuit if said hitch is not captured; and,
when hitch movement is detected and said manual switch is not actuated, controlling said safety disconnect switch to open said series circuit if said circuit means is in the open-loop mode.

5,291,408

VEHICLE TRACTION CONTROL SYSTEM

David A. Thatcher, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1991, Ser. No. 727,729
Int. Cl.[5] G06F *7/70;* B60T *8/64*
U.S. Cl. 364—426.03 **5 Claims**



1. A method of traction control for a vehicle having an engine for applying a driving torque to a vehicle wheel, the method comprising the steps of:
measuring wheel speed;
measuring vehicle speed;
determining the spin value of the vehicle wheel in accord with a predetermined function of the wheel speed and vehicle speed;
determining vehicle turn rate of change;
reducing the driving torque applied to the vehicle wheel when the determined spin value is greater than a threshold spin value representing an excessive wheel spin condition;
decreasing the threshold spin value in an inverse relation to the determined vehicle turn rate of change.

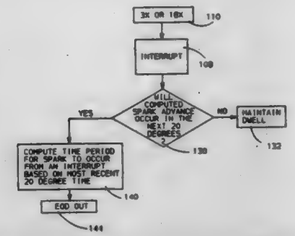
5,291,409

SPARK TIMING CONTROL SYSTEM

Daniel J. Richardson, Grand Blanc, Mich., and Charles M. Grima, Luxembourg, Luxembourg, assignors to General Motors Corp., Detroit, Mich. and Delco Electronics Corp., Kokomo, Ind.

Filed Mar. 27, 1991, Ser. No. 675,564
Int. Cl.[5] F02P *5/15*
U.S. Cl. 364—431.07 **5 Claims**

1. A method of controlling the spark timing of an ignition system for a spark ignited internal combustion engine comprising the steps of, developing in response to the rotation of the crankshaft of the engine, a plurality of consecutively occurring reference pulses corresponding to predetermined angular positions of said crankshaft, said plurality of reference pulses being developed during each revolution of said crankshaft, developing in response to rotation of said crankshaft, a plurality of consecutively occurring crankshaft position pulses that occur at predetermined crankshaft positions, the number of position pulses that occur during one revolution of said crankshaft being greater than the number of reference pulses developed during one revolution of said crankshaft whereby a predetermined number of position pulses occur between consecutively occurring reference pulses, the angular spacing between consecutively occurring position pulses being equal and having a predetermined magnitude defining an angular period, developing and storing digital signals that represents consecutively occurring position pulse time periods that occur between consecutively occurring position pulses, computing a desired



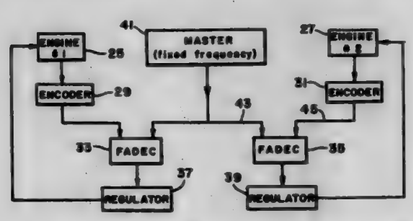
spark timing value relative to a reference pulse in response to at least one engine operating parameter, determining at the occurrence of a position pulse from said computed spark timing value and from the angular position of the pulse whether a spark should occur during the angular period immediately following the occurrence of the position pulse, repeatedly executing said last named step at the occurrence of each position pulse to identify a position pulse wherein the spark should occur within the angular period immediately following the occurrence of the identified position pulse, and then calculating a spark developing time period at which the spark is to occur after the elapse of said spark developing time period beginning with the occurrence of a position pulse as a function of the magnitude of said position pulse time period that occurred immediately before the occurrence of said identified position pulse.

5,291,410

CIRCUITRY FOR SYNCHRONIZING THE SPEED OF A PLURALITY OF ENGINES BY SEQUENTIALLY AVERAGING PHASE DIFFERENCE WITH A REFERENCE PHASE REPRESENTING A DESIRED SPEED

Joseph E. Metz, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Sep. 19, 1991, Ser. No. 762,838
Int. Cl.[5] G06F *15/48;* B63H *3/00*
U.S. Cl. 364—431.07 **7 Claims**



1. An engine control circuit for making small adjustments in the difference in speed between two or more engines based on a determination of succesive differences in phase between two engine speed indicative signals comprising:
a first engine driven encoder for providing a first pulse train having a repetition rate which is indicative of the speed of one engine;
a second engine driven encoder for providing a second pulse train having a repetition rate which is indicative of the speed of another engine,
a first counter for counting pulses in said first pulse train over a predetermined time interval;
a second counter for counting pulses in said second pulse train over said predetermined time interval;
a third counter for determining any differences in time between the last pulse of said first pulse train counted during the predetermined time interval and the end of that time interval;
a fourth counter for determining any differences in time between the last pulse of said second pulse train counted during the predetermined time interval and the end of that time interval;
means for computing first and second frequencies for said first and second pulse trains;
means utilizing said first and second computed frequencies and counts determined by the first, second, third and fourth counters to compute an average phase difference between said first and second pulse trains over said predetermined time interval, said average phase difference being computed from the following equation:

$$P = \frac{(Tvm - Tvs + Tct/Fm) * Fm * 360}{n}$$

where: said repetition rate of said first and second pulse trains each have the same integral multiple n of their respective engines' speed; Fm is the frequency of said first pulse train; Fs is the frequency of said second pulse train; Tcm is the first pulse count; Tcs is the second pulse count; Tvm is the time between last pulse of said first pulse train and the end of the time interval; Tvs is the time between the last pulse of said second pulse train and the end of the time interval; and the phase difference between said first and second pulse trains is determined by interatively maintaining a total pulse count Tct by interatively computing Tct=Tct+Tcm−Tcs with multiples of n added or subtracted to maintain it between ±n; and
means responsive to said average phase difference for controlling the flow of fuel to one of the engines to sequentially modify the speed of that engine to bring it into closer conformity with the speed of the other engine;

5,291,411

APPARATUS AND METHOD FOR REVIEWING PATH OF TRAVEL

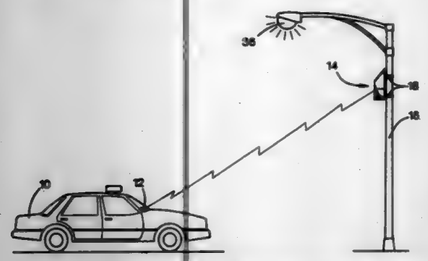
James S. Bianco, 217 Brainard Rd., Enfield, Conn. 06082

Filed Nov. 12, 1991, Ser. No. 790,811
Int. Cl.[5] G01S *3/02*
U.S. Cl. 364—449 **17 Claims**

1. A system for reviewing the travel of an object or a person, comprising:
(a) single, radio frequency transmitting means disposed at a fixed, predetermined geographical location to broadcast a signal containing first information identifying said location; and
(b) radio frequency receiving means to be carried by said object or person, having memory means and real time clock means, to receive said broadcast signal, means for detecting a broadcast range of said transmitting means based on a carrier frequency of said broadcast signal, when said object or person is within the broadcast range of said transmitting means, and to store said first information in said memory means together with the current times and dates from said real time clock means, when said

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object or person enters and leaves said broadcast range, for later readout of said first information with said times



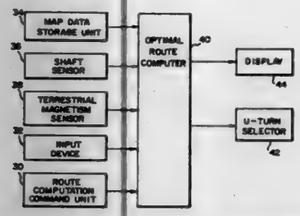
and dates to determine the interval of time said object or person was in said broadcast range.

5,291,412

NAVIGATION SYSTEM

Haruhisa Tamai, Sunnyvale, Calif., and Tatsuhiko Abe, Saitama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,716
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **15 Claims**



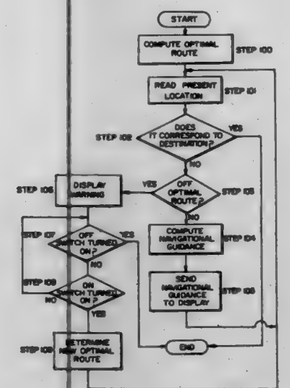
15. A navigation system for a vehicle, which comprises:
a CD ROM containing map data;
a shaft sensor mounted on said vehicle;
a magnetic compass mounted on said vehicle;
said shaft sensor and said magnetic compass sending signals that determine a present location of said vehicle with reference to said map data;
a microcomputer;
said microcomputer receiving said signals;
said microcomputer including first means for computing, in accordance with said map data, an original optimal route from a starting point to a destination;
said microcomputer further including second means for computing, in accordance with said map data, a new optimal route from said present location of said vehicle to said destination;
means for detecting, with reference to said original optimal route and said present location, whether said vehicle has deviated from said original optimal route;
means for selectively allowing and prohibiting said second computing means to use the U-turns in computing said new optical route;
means for displaying route guidance, deviation, and said U-turns generated by said microcomputer;
said second means for computing including means for permitting said new optimal route to intersect said original optimal route in the minimum amount of time when said means for selectively allowing and prohibiting is in a mode of allowing; and
said second means for computing further including means for preventing said new optimal route from intersecting said original optimal route in a minimum time when said means for selectively allowing and prohibiting is in a mode for prohibiting.

5,291,413

NAVIGATION SYSTEM FOR GUIDING A VEHICLE ALONG A PRECOMPUTED OPTIMAL ROUTE

Haruhisa Tamai, Sunnyvale, Calif., and Tatsuhiko Abe, Saitama, Japan, assignors to Zexel Corporation Daihatsu-Nissan Ikebukuro, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,411
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **25 Claims**



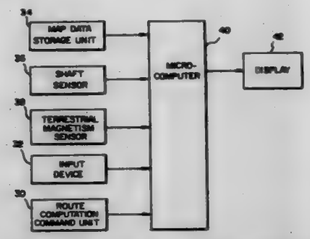
13. A vehicle navigation system, which comprises:
means for storing and retrieving map data;
first means for detecting a present location of a vehicle;
means for computing from said map data an original optimal route for said vehicle from a starting point to a destination;
second means for detecting a deviation of said vehicle from said original optimal route;
means, responsive to said second means for detecting, for displaying an indication that said vehicle is off said original optimal route;
means for sending a command signal manually;
first means, responsive to said command signal, for selecting a plurality of possible new starting points by searching said map data;
each of said new starting points being located on a different road;
each of said new starting points being located at a distance greater than a specified distance from said present location of said vehicle;
said means for computing including means for making a first computation of a plurality of new optimal routes from each of said possible new starting points to said destination;
second means for selecting a single new optimal route from among said plurality of new optimal routes; and
said second means for selecting including means for selecting said single new optimal route when said second means for detecting detects that said vehicle is off said original optimal route.

5,291,414

NAVIGATION SYSTEM FOR GUIDING A VEHICLE ALONG A PRECOMPUTED OPTIMAL ROUTE

Haruhisa Tamai, Sunnyvale, Calif., and Tatsuhiko Abe, Saitama, Japan, assignors to Zexel Corporation Daihatsu-Nissan Ikebukuro, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,483
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **11 Claims**



11. A vehicle navigation system, which comprises:
a CD ROM for storing and retrieving map data;
a manually operated touch-screen switch effective to send a signal for commanding computation of a route;
a shaft sensor;
a terrestrial magnetism sensor;
said shaft sensor and said terrestrial magnetism sensor sending signals that determine a present location of a vehicle;
a microcomputer;
said microcomputer including means for computing from said map data an optimal route for said vehicle from a starting point to a destination;
said microcomputer further including means for guiding said vehicle along said optimal route;
said microcomputer receiving said signals to detect a deviation of said vehicle from said optimal route;
said microcomputer including means for signalling said deviation;
a CRT display including means for indicating that said vehicle is off said optimal route when said microcomputer signals said deviation;
said microcomputer including means for recomputing said optimal route when said deviation is detected;
said microcomputer further including means for selecting a new starting point for said recomputed optimal route; and
said new starting point being selected to be forward of said present location of said vehicle at a distance which is sufficient to ensure that a recomputation of said optimal route is completed before said vehicle arrives at said new starting point.

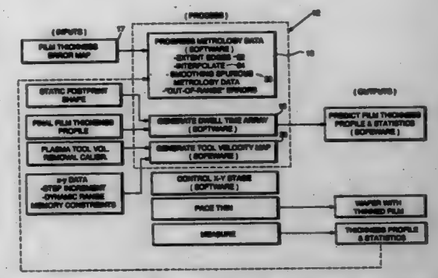
5,291,415

METHOD TO DETERMINE TOOL PATHS FOR THINNING AND CORRECTING ERRORS IN THICKNESS PROFILES OF FILMS

Charles B. Zarowin, Rowayton, and L. David Bollinger, Ridgefield, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 13, 1991, Ser. No. 807,544
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.3 **27 Claims**

1. A method for determining a path of a removal tool of a system to remove material from a surface of a substrate so as to allow precision changes to be made in a thickness profile of the substrate, said method comprising the steps of:
a) constructing a conditioned data array from a pre-removal process thickness data array, said conditioned data array comprising substrate thickness data as a function of position on a coordinate plane so as to provide a means for insuring continuous and smooth tool movement over the entire surface of the substrate;
b) constructing a dwell time array relating dwell time for the removal tool as a function of position on the coordinate plane from said conditioned data array;



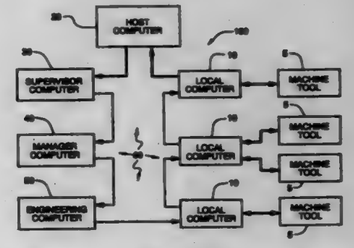
c) converting the dwell time array into a multi-directional velocity array relating multi-directional velocity for the removal tool as a function of position on the coordinate plane; and
d) communicating said multi-directional velocity array to a position controller so as to allow continuous and controlled motion of the removal tool.

5,291,416

EVENT FEEDBACK FOR NUMERICALLY CONTROLLED MACHINE TOOL AND NETWORK IMPLEMENTATION THEREOF

Charles S. Hutchins, North Palm Beach, Fla., assignor to Software Algorithms Incorporated, North Palm Beach, Fla.

Filed Mar. 8, 1991, Ser. No. 666,810
Int. Cl.[5] G05B *19/417*
U.S. Cl. 364—474.16 **12 Claims**



1. A method for controlling one or more numerically controlled machine tools, comprising the steps of:
supplying a machine tool part program to each machine tool;
detecting the occurrence of one of a predetermined set of events at each machine tool;
determining the real time upon each detection of an event;
generating an event signal indicating the identity of the detected event and the time of occurrence upon each detection of an event;
producing a user perceivable indication on a color video display of the machine tool status based upon the identity of the last detected event, the machine tool status being indicated by colors that correspond to each possible machine tool status; and
storing in a nonvolatile read/write memory corresponding to each machine tool part program an indication of the theoretical time for each machine tool to perform each of a plurality of sections of the machine tool part program;

wherein the step of producing a user perceivable indication of the machine tool status includes producing a user perceivable indication of an estimated completion time for the current part on the machine tool based upon the last program step supplied to the machine tool and the indication of the theoretical time to perform each section of the machine tool part program.

5,291,417

METHOD AND ARRANGEMENT FOR DETERMINING THE INTERNAL RESISTANCE OF A LAMBDA PROBE AND FOR THE CLOSED-LOOP HEATING CONTROL WITH THE AID OF THE INTERNAL RESISTANCE

Eberhard Schnaibel, Hemmingen; Lothar Raff, Hochberg; Michael Westerdorf, Möglingen, and Manfred Homeyer, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

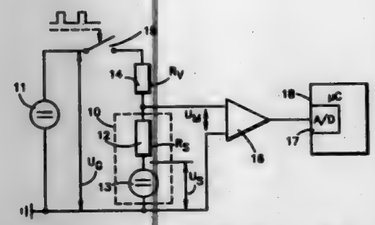
PCT No. PCT/DE89/00638, § 371 Date Apr. 22, 1991, § 102(e) Date Apr. 22, 1991, PCT Pub. No. WO90/04778, PCT Pub. Date May 3, 1990

PCT Filed Oct. 6, 1989, Ser. No. 684,896

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1988, 3836045

Int. Cl.[5] G05F *15/20*; G01R *27/00*

U.S. Cl. 364—482 **6 Claims**



1. A computer-implemented method for controlling heating of a lambda probe equipped with heater control and having a temperature dependent actual internal resistance R_S, said method including the steps of:

(a) comparing the probe voltage U_S to a predetermined threshold U_{min} below which the actual internal resistance value can no longer be reliably determined and determining said actual internal resistance value when said probe voltage U_S is higher than said threshold U_{min};

(b) forming a variable imaginary internal resistance value by incrementally increasing an initial internal resistance value in steps by a pregiven difference value ΔR_S while assuming that said initial resistance value matches said actual internal resistance value when said probe voltage U_S falls below said threshold U_{min};

(c) obtaining a control deviation value ΔR_i by forming the difference of said variable imaginary internal resistance value and a predetermined desired internal resistance value corresponding to a desired probe temperature when said probe voltage U_S is less than said threshold U_{min} or by forming the difference of the determined actual internal resistance value and said predetermined desired internal resistance value when said probe voltage U_S is higher than said threshold U_{min};

(d) forming an actuating variable from control deviation value ΔR_i for said heater control; and,

(e) applying said actuating variable to the probe to control the heating.

5,291,418

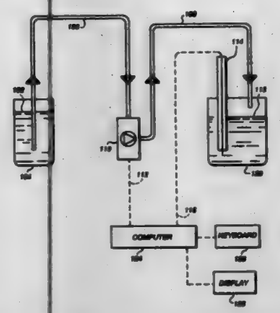
ADJUSTMENT OF ELECTRIC POTENTIAL BY AUTOMATIC TITRATION

James M. Sanders, Rochester; Ming-Jye Lin, Penfield; Michael P. Lionti, Rochester, and Michael C. Schrader, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 5, 1991, Ser. No. 731,166

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—500 **22 Claims**



1. A titration control process for adjusting an electric potential of a material to a predetermined final aim, said process comprising the following steps:

a. measuring the original electric potential of said material;

b. calculating, in accordance with a predetermined start-up strategy, an amount of titrant to be added to said material as a calculated initial dispense and adding said calculated initial dispense to said material;

c. calculating an amount of titrant to be added as a redispense of titrant to said material and, in accordance with said calculating, redispensing said titrant to said material based on (1) said calculating initial dispense of titrant to said material and (2) the electric potential of said subject material upon each redispense until said electric potential is adjusted a minimum amount;

d. making final dispenses of said titrant to said material by adding a fixed, incremental quantity of titrant of said material, wherein said fixed, incremental quantity is based upon (1) either a linear extrapolation relative to the last two data points or an extrapolation based on a mathematical expression relative to three or more data points, relative to a series of sub-aims which correspond to potentials approaching said predetermined final aim and (2) measurements of said electric potential upon each said final dispense until said electric potential is adjusted to said predetermined final aim.

5,291,419

METHOD FOR DIAGNOSING THE LIFE OF A SOLDER CONNECTION

Ryohei Satoh; Katsuhiro Arakawa, both of Yokohama; Kiyoshi Kanai, Katsuta; Tsutomu Takahashi, Sakura; Takaji Takenaka, and Haruhiko Imada, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer Engineering Ltd., Kodaira, both of Japan

Continuation of Ser. No. 505,585, Apr. 6, 1990, abandoned. This application Jan. 6, 1992, Ser. No. 938,517

Claims priority, application Japan, Apr. 10, 1989, 1-87927

Int. Cl.[5] G01M *5/00*

U.S. Cl. 364—508 **18 Claims**

1. A method for diagnosing a connection life of a solder connection between a substrate and parts loaded thereon, said method being performed by a computer, said computer having input means for inputting information and processing means

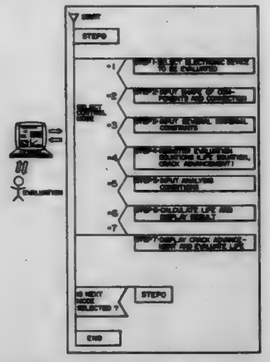
for processing said input information and outputting a result of said processing, said method comprising the steps of:

preparing a plurality of solder connections of the same connection structure with different connection parameters;

determining by said processing means shearing strains and equivalent strain amplitudes of each of said solder connections to determine an approximated shearing strain-/equivalent strain amplitude correlation model pertinent to a corresponding one of said solder connections;

applying a number of heat cycles to said solder connections to cause cracks in each of said solder connections;

measuring a total crack length after said heat cycles and a particular crack advancement caused by the very last



cycle of said heat cycles to obtain a crack length/crack advancement speed correlation model;

determining a solder connection life diagnosing model with said equivalent strain amplitude by integrating said crack length/crack advancement speed correlation model;

measuring a shearing strain of a solder connection to be diagnosed of said same connection structure with a desired parameter to obtain a corresponding equivalent strain amplitude by using said approximated shearing strain/equivalent strain amplitude correlation model; and

determining a connection life of said solder connection with said desired parameter by applying said equivalent strain amplitude of said solder connection with said desired parameter into said connection life diagnosing model.

5,291,420

REMOTE MANAGEMENT SYSTEM FOR PHOTOGRAPHIC EQUIPMENT

Fumio Matsumoto, and Tooru Mori, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 19, 1991, Ser. No. 656,654

Claims priority, application Japan, Feb. 19, 1990, 2-39133; Feb. 19, 1990, 2-39134; Feb. 19, 1990, 2-39135; Feb. 19, 1990, 2-39136

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—525 **19 Claims**

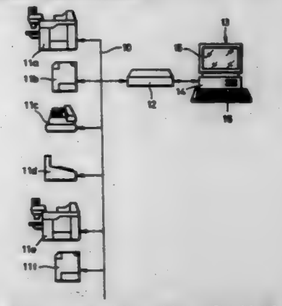
1. A management system for managing the operational condition of at least one photographic apparatus remotely, said system comprising the following steps:

connecting said at least one photographic apparatus and a separate, independent densitometer to a computer;

obtaining measured density data by measuring a check sample, made as a final product by said photographic apparatus, with said densitometer;

diagnosing the operational condition of said photographic apparatus by fetching said measured density data into said computer and by analyzing said measured density data;

if said operational condition is abnormal, determining a countermeasure by fetching associated data from said photographic apparatus; and



adjusting the operational condition of said photographic apparatus by transferring said countermeasure to said photographic apparatus, if said operational condition is abnormal.

5,291,421

Patent Not Issued For This Number

5,291,422

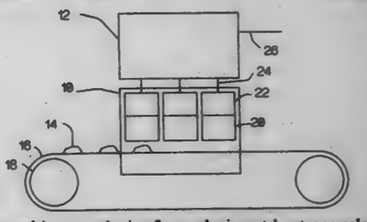
BROADBAND INSTRUMENT FOR NONDESTRUCTIVE MEASUREMENT OF MATERIAL PROPERTIES

Ernest P. Eastergar, La Jolla, Calif., assignor to SGI International, La Jolla, Calif.

Filed Jan. 28, 1992, Ser. No. 826,780

Int. Cl.[5] G01N *21/47*

U.S. Cl. 364—551.01 **38 Claims**



1. A multi-sensor device for analyzing at least one selected property of a material, the device comprising:

(a) at least one sensor for detecting electromagnetic radiation coming from the material in a first selected wavelength band, the radiation being indiative of a first set of properties of the material, and for outputting signals containing information about the detected radiation;

(b) at least one sensor for detecting electromagnetic radiation coming from the material in a second selected wavelength band, the radiation being indicative of a second set of properties of the material, and for outputting signals containing information about the detected radiation, wherein the first and second wavelength bands are sufficiently separated in wavelength that different information about the first and second sets of properties of the material is provided by such radiation;

(c) a data processor, coupled to each of the sensors, for:

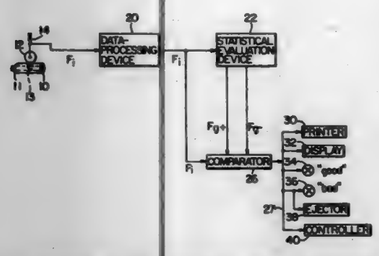
(1) receiving, as input, the output signals from each of the sensors;

(2) performing calculations on the received signals containing information from the first selected wavelength band to determine a first set of parameters relating to the first set of properties of the material;

(3) performing calculations on the received signals containing information from the second selected wave-

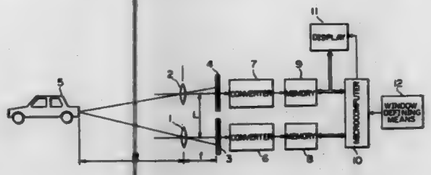
length band to determine a second set of parameters relating to the second set of properties of the material;
(4) combining the first and second set of parameters to obtain a third set of parameters relating to at least one selected property of the material; and
(5) producing, as output from the data processing device, values relating the third set of parameters to the at least one selected property of the material.

5,291,423
ARRANGEMENT FOR MONITORING THE QUALITY OF ELECTRIC WELDS
Hans Rödell, Bassersdorf, Switzerland, assignor to Elpatronic AG, Zug, Switzerland
Continuation of Ser. No. 442,902, Nov. 29, 1989, abandoned. This application Jul. 21, 1991, Ser. No. 719,644
Claims priority, application Switzerland, Dec. 16, 1988, 04655/88-9
Int. Cl.[5] G01N *3/20*; B23K *9/10*
U.S. Cl. 364—552 **18 Claims**



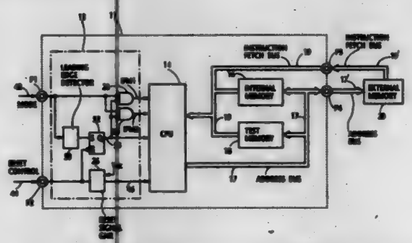
1. An apparatus for monitoring the quality of electric welds on can bodies, each can body having a weld seam formed by a plurality of welds extending continuously along the length of a can body each weld being associated with a welding parameter of a given value, said apparatus comprising:
means for receiving weld signal indicative of the value of the welding parameter as measured for each weld, with a set of said parameter values of each weld seam;
at least one means for determining from said weld signals an average welding parameter profile (F_m) computed from a group of acceptable weld seam parameter value sets measured on a plurality of acceptable welded can bodies;
store means to store the average welding parameter profile;
a comparator to compare the average welding parameter profile with welding parameter profiles measured later on subsequently welded can bodies for determining a degree of agreement between the average welding parameter profile and each of said subsequently welded can body welding parameter profiles; and
evaluation means for providing statistical evaluation of said subsequently welded can body welding parameter profiles and determining a reject limiting-value band ($F_{g\pm}$) from computed mean welding parameter values for each weld in said group of acceptable weld seam parameter value sets and from the product of a standard deviation of said welding parameter values for each weld in said group of acceptable weld seam parameter value sets assumed to be normally distributed and at least one weld quality sensitivity factor;
the comparator further generating output signals indicative of whether each welding parameter value of said subsequently welded can body welding parameter profiles lie within the reject limiting-value band ($F_{g\pm}$).

5,291,424
DISTANCE DETECTING APPARATUS
Yoshiaki Asayama, and Yasuya Kajiwara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1991, Ser. No. 751,006
Claims priority, application Japan, Sep. 4, 1990, 2-234682
Int. Cl.[5] G01B *7/04*
U.S. Cl. 364—561 **4 Claims**



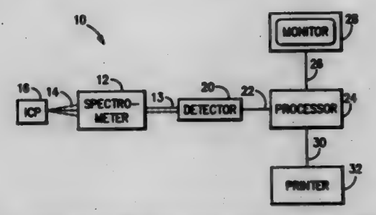
1. A distance detecting apparatus comprising:
a pair of first and second image sensors each including an optical system for optically sensing a plurality of individual objects and producing respective image pictures thereof;
a first memory for storing the image pictures of the plurality of objects sensed by said first image sensor as first image signals;
a second memory for storing the image pictures of the plurality of objects sensed by said second image sensor as second image signals;
window defining means for concurrently defining a plurality of individual, spaced windows at specific areas of the first and second memories;
an image display for simultaneously displaying the plurality of individual, spaced windows and the plurality of objects sensed by one of the first and second image sensors, and stored in a corresponding one of the first and second memories; and
a calculator device for selecting image signals within the respective windows defined by said window defining means as reference signals, said calculator device comparing the reference signals to the first or second image signals which correspond to the reference signals, to individually and simultaneously calculate the distances to the plurality of objects displayed in said windows.

5,291,425
TEST MODE SETTING ARRANGEMENT FOR USE IN MICROCOMPUTER
Hatsuhiro Nagaishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 29, 1991, Ser. No. 800,512
Claims priority, application Japan, Nov. 28, 1990, 2-327923
Int. Cl.[5] G01N *27/00*
U.S. Cl. 364—570 **13 Claims**



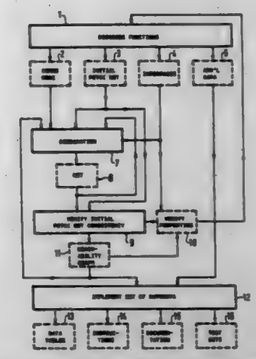
1. A test mode setting arrangement provided in a microcomputer which includes an internal memory and a central processing unit, said central processing unit accessing said internal memory or an external memory depending on a logic level of an external mode signal applied to said microcomputer, comprising:
first means for resetting said central processing unit in response to an external reset control signal applied to said first means;
second means for generating an output in response to a logic level change of said mode signal;
a flip-flop coupled to be reset by said reset control signal and coupled to receive said output of said second means, said flip-flop issuing an output which is applied to said central processing unit as a test mode initiating signal; and
logic means coupled to receive said mode signal and said output of said flip-flop, said logic means preventing said central processing unit from accessing said internal and external memories when said flip-flop issues said test mode initiating signal, said logic means producing two signals which are applied to said central processing unit to select an access by said central processing unit to one of said internal and external memories when said flip-flop does not issue said test mode initiating signal.

5,291,426
METHOD OF CORRECTING SPECTRAL DATA FOR BACKGROUND
John B. Collins, Westport, Conn., and Marc L. Salit, Washington, D.C., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Feb. 27, 1991, Ser. No. 661,756
Int. Cl.[5] G06F *15/20, 15/46*
U.S. Cl. 364—574 **28 Claims**



1. A method of producing spectra corrected for background level, with a spectrographic instrument including means for effecting a spectrum having a background level and a spectral peak at a characteristic wavelength, means receptive of the spectrum for generating and storing spectral data as discrete data points, and means for processing and displaying the spectral data, the method comprising operating the instrument so as to generate and store a set of spectral data, ascertaining background level in the spectral data, subtracting points in the background level from corresponding discrete data points to produce corrected spectral data, and displaying the corrected spectral data, wherein the step of ascertaining background level comprises:
initially masking the spectral data at the characteristic wavelength over a preselected initial masking width, thereby modifying the spectral data into a set of initially diminished data;
initially fitting a smooth curve to the initially diminished data;
processing the spectral data by selecting a statistical significance level, performing a runs test on residuals of the diminished data with respect to the smooth curve so as to detect a largest run, determining a wavelength for a largest residual of the largest run or a median wavelength for the largest run, masking the diminished data at the determined wavelength over a selected subsequent masking width, and refitting a smooth curve to the masked diminished data;
iterating, with residuals for cumulatively masked diminished data, the steps of processing until the number of runs is not significant, thereby further modifying the spectral data into a set of runs diminished data; and
employing runs diminished data in fitting a final smooth curve representing the background level for producing the corrected spectral data.

5,291,427
METHOD FOR ASSISTING THE DEVELOPMENT OF A SET OF COMMUNICATING AUTOMATA
Bernard Loyer, Pleumeur Bodou, and Catherine Colin, Begard, both of France, assignors to Alcatel N.V.
Filed Jul. 15, 1992, Ser. No. 914,115
Claims priority, application France, Jul. 16, 1991, 91 08985
Int. Cl.[5] G06G *7/48*; H04J *15/00*
U.S. Cl. 364—578 **7 Claims**



1. Method for assisting with the development of a set of communicating automata comprising a plurality of interfaces which process a plurality of interleaved messages, said automata being developed from interfaces external to the set, inter-automaton interfaces, the function that each automaton of the set must implement and the function to be implemented by the environment external to each interface external to the set, which method comprises the following stages:
supplying to a development machine a description of initial elementary Petri nets respectively modeling partial behaviors of each function by describing events which fire or are consequences of transitions in each initial Petri net and assigning a label to each transition dependent on at least one event, each event firing or being a consequence of said transition, said events representing interfaces external to the set of automata, inter-automaton interfaces and interfaces between the initial Petri nets;
verifying on said development machine that each initial Petri net has required properties;
supplying to said development machine a description of constraints between initial Petri nets representing the behavior of the environment external to the set of automata;
notifying to said development machine a plurality of Petri nets to be combined and a communication mode to cause it to combine initial Petri nets with each other or with modified Petri nets replacing initial Petri nets previously combined or to combine initial or modified Petri nets replacing initial Petri nets previously combined, each combination being effected by causing to communicate at least two initial or modified Petri nets using the labels of their transitions in the notified communication mode, which is chosen from the following modes:
a synchronous mode;
an asynchronous mode;

a pseudo-synchronous mode in which events constituting communication with the environment external to the Petri net resulting from the combination are synchronous with the environment external to the Petri nets to be combined and asynchronous within the Petri nets to be combined, each pseudo-synchronous mode combination allowing for inter net constraints;

causing said development machine to verify that the Petri net resulting from said combination has the required properties;

supplying to the development machine a description of modified initial Petri nets replacing initial Petri nets to be combined if the Petri net obtained by combining the initial Petri nets does not have the required properties; and

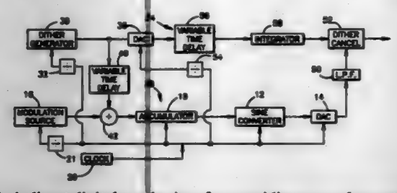
notifying again to said development machine a plurality of Petri nets to be combined and a communication mode to cause it to carry out a series of combinations and verifications until modified Petri nets are obtained having the required properties and respectively modeling each communication between two inter-automaton interfaces or between an external interface and the environment external to the set of automata and each automaton of the set.

5,291,428

APPARATUS FOR REDUCING SPURIOUS FREQUENCY COMPONENTS IN THE OUTPUT SIGNAL OF A DIRECT DIGITAL SYNTHESIZER

Edwin R. Twitchell, Quincy, Ill., and Daniel B. Talbot, Hudson, Mass., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 2, 1993, Ser. No. 25,076
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—602 **17 Claims**



1. A direct digital synthesizer for providing an analog output signal and apparatus for reducing spurious frequency components from said output signal of said direct digital synthesizer with minimum degradation of the fundamental waveform of said output signal and wherein said synthesizer has a phase accumulator for receiving digital multibit data words and providing output data words, a wave function converter for converting data words into multibit digital waveform data words and a digital-to-analog converter for converting the digital waveform data words into said output signal and which exhibits a frequency and waveform dictated by the digital modulation data words and wherein the output signal contains spurious frequency components resulting from the operation of the direct digital synthesizer, said reducing apparatus comprising:

means for generating a dither waveform representing a band limited waveform;

means for summing said dither waveform with a data word and providing a summation data word prior to application thereof to said periodic wave function converter so that said output signal becomes modulated by said dither waveform providing a dither modulated analog output signal;

means for providing a sample dither signal corresponding with said dither waveform; and

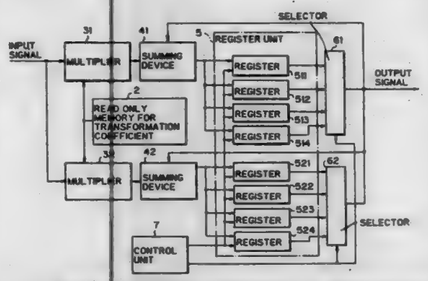
means for combining said sample dither signal and said dither modulated analog output signal in such a manner that said dither waveform is cancelled from the fundamental waveform of the analog output signal.

5,291,429

CIRCUIT FOR MATRIX CALCULATION OF DISCRETE COSINE TRANSFORMATION

Masahiro Iwasa, and Osamu Kawai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 845,934
Claims priority, application Japan, Mar. 8, 1991, 3-067703
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—725 **4 Claims**



1. A circuit for a matrix calculation of a discrete cosine transformation, comprising:

read only memory means for storing transformation coefficients of the discrete cosine transformation;

multiplier means for multiplying received data by the transformation coefficients of the discrete cosine transformation read from said read only memory means and for outputting multiplication results;

summing means for summing the multiplication results received from said multiplier means and for outputting a sum result;

registers connected to said summing means and storing the sum result received from said summing means;

selectors connected to said registers and selecting outputs of said registers; and

a control unit coupled to said registers and said selectors, controlling selection of inputs of said registers and controlling selection of outputs of said selectors,

wherein multiplication and summing calculations with regard to one input data, are successively performed by said multiplier means and summing means using the transformation coefficients of the discrete cosine transformation read from said read only memory means,

wherein row elements of a matrix of the discrete cosine transformation are obtained by performing, a first number of times equal to a row number of the row elements, processes successively updating said registers based on said multiplication and summing calculations, and

wherein all the row and column elements of the matrix of the discrete cosine transformation are obtained by performing, a second number of times equal to a column number of the column elements, said multiplication and summing calculations.

5,291,430

METHOD AND APPARATUS FOR MULTIPLYING A PLURALITY OF NUMBERS

Safdar M. Asghar, Austin, Tex., and Donald D. Mondul, Milwaukee, Wis., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 924,346, Aug. 3, 1992, Pat. No. 5,200,912, which is a continuation-in-part of Ser. No. 794,995, Nov. 19, 1991, Pat. No. 5,136,537. This application Apr. 5, 1993, Ser. No. 42,825
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—754 **26 Claims**

1. A method for determining the product of a plurality of numbers, each respective number of said plurality of numbers having a plurality of respective digits hierarchically arranged from a respective least-significant place to a respective most-significant place, the method comprising the steps of:

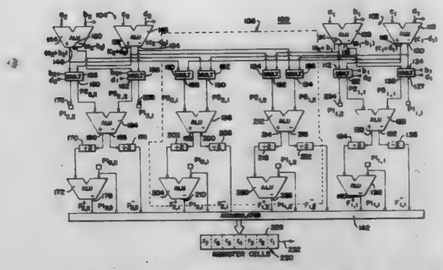
(1) providing a logic means for determining a plurality of partial products;

(2) determining said plurality of partial products by said logic means, said plurality of partial products comprising a respective partial product for each pair-combination of a first plurality of said respective digits of a first said respective number and a second plurality of said respective digits of a second said respective number, each of said respective partial products having a combinational significance, said combinational significance being established by said significance of a first digit from said first plurality of said respective digits and said significance of a second digit from said second plurality of said respective digits; said first digit and said second digit comprising said pair-combination involved in said respective partial product;

(3) providing an accumulator means for selectively accumulating selected partial products of said plurality of partial products;

(4) providing a register means for storing information, said register means comprising a plurality of register cell means for storing accumulated values, each of said plurality of register cell means having a hierarchical significance;

(5) accumulating said selected partial products by said accumulator means to produce said accumulated values for



storing in specific register cell means of said plurality of register cell means according to the following relationships:

$P_{m,n}$[accumulates in]r_x; $x=(m+n)-1$

where "$P_{m,n}$" represents said selected partial product; "m" represents said first significance, m =1, 2, . . . ; "n" represents said second significance, n =1, 2, . . . ; "r_x" represents said specified register cell means having significance "x";

(6) effecting a shifting accumulation operation comprising shifting specific digits of said accumulated value stored in a lesser-significant register cell means of said plurality of register cell means to the next-higher-significant register cell means of said plurality of register cell means containing an accumulated value, and adding said specific digits to said accumulated value stored in said next-higher-significant register cell means as least-significant digits; said specific digits being those digits of said accumulated value stored in said lesser-significant register cell means having higher significance than the least-significant digit of said accumulated value; said shifting accumulation operation being effected sequentially between significance-adjacent register cell means of said plurality of register cell means from the least-significant register cell means to the most-significant register cell means within said register means;

(7) shifting the contents of said plurality of register cell means from said plurality of register cell means to a result register means for storing said contents; said result register means including a plurality of result register cell means for storing said contents as a result number having a plurality of result digits in a hierarchical arrangement from a least-significant result place to a most-significant result place; and

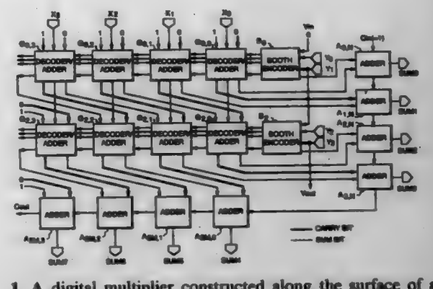
(8) repeating steps (1) through (7) employing said result number as one of said first said respective number and said second said respective number, and employing a next respective number of said plurality of numbers involved in said product as the other of said first said respective number and said second said respective number than said result number; said repeating continuing until all said respective numbers of said plurality of numbers involved in said determining said product have been employed.

5,291,431

ARRAY MULTIPLIER ADAPTED FOR TILED LAYOUT BY SILICON COMPILER

Chung-Yih Ho; Chi-Yuan Chin; Richard I. Hartley, all of Schenectady; Michael J. Hartman, Clifton Park, and Kenneth B. Welles, II, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 709,562, Jun. 3, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,141
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—760 **20 Claims**



1. A digital multiplier constructed along the surface of a monolithic integrated circuit die, said digital multiplier for multiplying N-bit multiplicands by 2M-bit multipliers, M and N being respective positive integers that may be the same or may differ from each other, M*N being the product of the integers M and N, the bits of said multiplicand being identified by respective ones of the consecutive ordinal numbers zeroeth through $(N-1)^{th}$ assigned in order of ascending significance, said digital mutiplier comprising:

means for appending a bit as least significant bit to said 2M-bit multiplier to form an extended multiplier;

a plurality M in number of Booth encoder cells arranged in a column extending in a first direction along the surface of said monolithic integrated circuit die, each Booth encoder cell responding to three bits of said extended multiplier to generate respective C0 and C1 and C2 code bits, said Booth encoder cells being identified by respective ones of the consecutive even ordinal numbers zeroeth through $2(M-1)^{th}$, each said Booth encoder cell identified by a higher ordinal number encoding bits of said extended multiplier of signifiance equal to or greater than the bits encoded by said encoder identified by next lower ordinal number;

respective zeroeth and first and second Booth-code lines extending from each said Booth encoder cell in a second direction along the surface of said monolithic integrated circuit die perpendicular to said first direction, for applying the C0 and C1 and C2 code bits from that said Booth encoder cell;

M*N Booth decoder/adder cells, a respective row of N said

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Booth decoder/adder cells associated with each said Booth encoder cell being identified by the same ordinal number as said Booth encoder cell with which it is associated, being located along said zeroeth and first and second Booth-code lines extending from said Booth encoder cell with which it is associated, and connecting from said zeroeth and first and second Booth-code lines, the N said Booth decoder/adder cells in each row being identified by respective ones of the consecutive ordinal numbers zeroeth through $(N-1)^{th}$ assigned in order of the serial locations of each n said Booth decoder/adder cells within a said row, each Booth decoder/adder circuit receiving as an input signal thereto the bit of said multiplicand identified by a corresponding ordinal number as supplied thereto from a respective multiplicand bit bus extending in said first direction, each Booth decoder/adder cell capable of receiving first and second summand bits and a carry-in bit, each Booth decoder/adder cell capable of generating a sum bit, a first carry-out bit of twice the significance of its sum bit and a second carry-out bit;

a plurality 2M in number of adder cells arranged in a column paralleling said column of M Booth encoder cells, each adder cell capable of receiving first and second summand bits and a carry-in bit, each adder cell capable of generating a sum bit and a carry-out bit of twice the significance of its sum bit, said adder cells identified within their column by consecutive ordinal numbers zeroeth through $(2M-1)^{th}$;

a plurality N in number of further adder cells arranged in a row parallelling said $2(M-1)^{th}$ row of N said Booth decoder/adder cells, said further adder cells identified within their row by consecutive ordinal numbers zeroeth through $(N-1)^{th}$, each further adder cell capable of receiving at least a first summand bit and a carry-in bit, each of said zeroeth through $(N-1)^{th}$ further adder cells capable of receiving a second summand bit, and each further adder cell capable of generating a sum bit and a carry-out bit of twice the significance of its sum bit;

means for applying the complement of the respective C0 code bit generated by each of said zeroeth through $2(M-1)^{th}$ Booth encoder cells as the first summand bit of the adder cell in said column of adder cells that is identified by the same ordinal number as the Booth encoder cell generating that C0 code bit; and

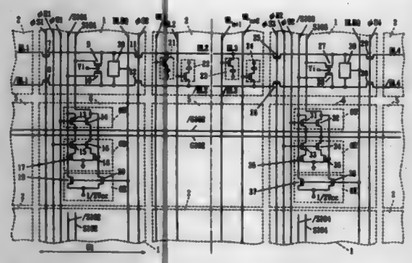
means for connecting said cells to complete said digital multiplier.

5,291,432

SEMICONDUCTOR MEMORY DEVICE

Kiyohiro Furutani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,635
Claims priority, application Japan, Dec. 26, 1991, 3-344683; Jul. 30, 1992, 4-203717
Int. Cl.[5] G11C 5/02
U.S. Cl. 365—51 10 Claims



10. A semiconductor memory device comprising:

a plurality of memory cell regions arranged in row and column directions, each including a plurality of word lines provided in the row direction, a plurality of bit lines provided in the column direction, and a plurality of memory cells provided at crossings of each word line and each bit line,

a main data input/output line pair for transferring externally generated data and internally generated data,

a plurality of sub-data input/output line pairs provided between each pair of memory cell regions of said column direction, each transmitting data with respect to an adjacent memory cell region in said column direction,

a plurality of sense amplifiers for detecting the potentials of each bit line pair of memory cell regions of said column direction,

a plurality of input/output gates provided between each pair of memory cell regions of said column direction, each being connected between each bit line pair of an adjacent memory cell region and said sub-data input/output line pair,

a plurality of impedance reducing means provided between memory cell regions of said row direction for reducing the impedance of said word line,

a plurality of read out means provided in a region surrounded by a region in which said input/output gates and said sense amplifiers are provided and by a region in which said impedance reducing means are provided for detecting and providing to said main data input/output line pair the potential difference of said sub-data input/output line pair,

write means provided in a region surrounded by the region in which said input/output gates and said sense amplifiers are provided and by the region in which said impedance reducing means are provided for transferring data of said main data input/output line pair to said sub-data input/output line pair, and

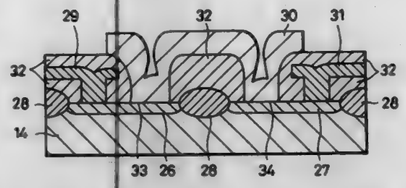
means for controlling the potential difference of said sub-data input/output line pair to a constant potential.

5,291,433

SEMICONDUCTOR MEMORY WITH LEAK-RESISTANT BIT LINES

Hideki Itoh, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,891
Claims priority, application Japan, Sep. 13, 1991, 3-234906
Int. Cl.[5] G11C 5/06
U.S. Cl. 365—63 13 Claims



8. A semiconductor memory comprising a plurality of bit lines, a plurality of word lines, an equalizer for precharging said bit lines to a fixed potential, and a semiconductor substrate having a plurality of mutually isolated lightly-doped n-type areas, wherein each of said plurality of bit lines has:

a first part crossing said word lines and making contact with a first one of said plurality of lightly-doped n-type areas;

a second part comprising an aluminum alloy, not connected to said first part, but making contact with said first one of said plurality of lightly-doped n-type areas and a second one of said plurality of said lightly-doped n-type areas; and

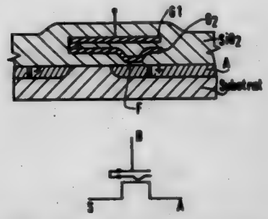
a third part, not connected to said first part or said second part, making contact with said second one of said plurality of lightly-doped n-type areas and coupled to said equalizer.

5,291,434

MOS FUSE WITH OXIDE BREAKDOWN AND APPLICATION THEREOF TO MEMORY CARDS

Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

Filed Jul. 11, 1990, Ser. No. 551,565
Claims priority, application France, Jul. 13, 1989, 89 09547
Int. Cl.[5] G11C 17/00; H01L 27/02, 27/115
U.S. Cl. 365—96 6 Claims



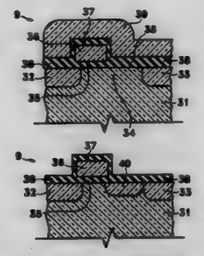
1. A MOS fuse with oxide breakdown, wherein said fuse is formed by a MOS cell comprising at least one electrode obtained by doping of a substrate, said substrate being coated with silicon oxide in which there is embedded at least one gate of polycrystalline silicon connected to a contact terminal, a thickness of oxide between the gate and the electrode being thin on all or on a part of the oxide between the gate and the electrode to form an oxide window of sufficiently small thickness to have a tunnel effect thereat, and wherein an irreversible breakdown of the oxide is obtained at the window by application of an electrical field, greater than a threshold of breakdown of said oxide of said oxide window which is between the gate and the electrode, wherein said MOS cell is a modified electrically programmable MOS cell comprising a second electrode formed by doping of the substrate, and a second gate separated from the first one by a layer of oxide, and the two gates are interconnected to speed the application of the electrical field for breakdown of the oxide in the oxide window.

5,291,435

READ-ONLY MEMORY CELL

Shih-Chiang Yu, 10451 Davison Ave., Cupertino, Calif. 95014

Filed Jan. 7, 1993, Ser. No. 1,668
Int. Cl.[5] G11C 17/10
U.S. Cl. 365—104 5 Claims



1. A Read-Only semiconductor memory cell comprising;

a semiconductor substrate of a first conductivity type;

a source and a drain diffusion regions of second conductivity type different from first conductivity type, spaced apart on the surface of said substrate;

a channel region between said source and drain regions on the surface of said substrate;

a first insulating film formed on said substrate;

a Y-control gate formed on said first insulating film and overlying a portion of said channel region and a portion of said source region;

a second insulating film covers said Y-control gate, channel region, and source and drain diffusion regions;

an X-control gate formed on said second insulating film overlying Y-control gate, a portion of the channel region, and source and drain regions;

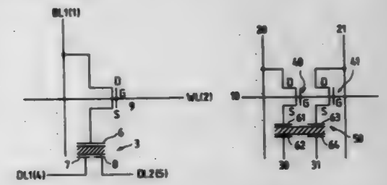
a diffusion region of first conductivity type formed on the surface of said substrate which is between said drain and said source regions but not covered by either of said X-control gate or said Y-control gate.

5,291,436

FERROELECTRIC MEMORY WITH MULTIPLE-VALUE STORAGE STATES

Akira Kamisawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 30, 1992, Ser. No. 876,186
Claims priority, application Japan, Jul. 25, 1991, 3-186195; Jul. 25, 1991, 3-186196
Int. Cl.[5] G11C 11/22, 11/24
U.S. Cl. 365—145 3 Claims



1. A ferroelectric memory comprising:

one electrode relatively large in area provided on a first side of a body of ferroelectric substance;

two electrodes relatively small in area provided on a second side of the same body of ferroelectric substance;

a first circuit for selecting one of said electrodes on said second side of said ferroelectric substance in combination with said electrode on said first side of said ferroelectric substance; and

a second circuit for applying a pulse electric field across said electrodes thus selected and said electrode on said first side of said ferroelectric substance;

whereby three values of polarization inversion states are provided by selectively combining said electrodes on said second side of said ferroelectric substance with said electrode on said first side of said ferroelectric substance.

5,291,437

SHARED DUMMY CELL

Robert N. Rountree, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

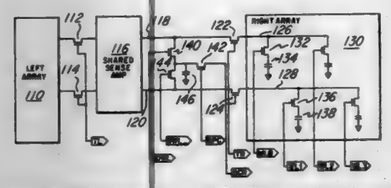
Filed Jun. 25, 1992, Ser. No. 904,359
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—149 20 Claims

1. A dummy cell circuit, comprising:

a capacitive element;

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a means for charging said capacitive element to a reference potential; and



a means for selectively connecting said capacitive element to a selected one of two or more terminals.

5,291,438

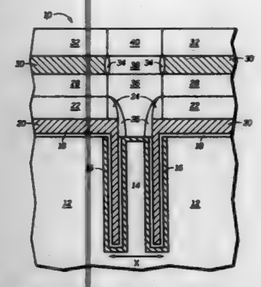
TRANSISTOR AND A CAPACITOR USED FOR FORMING A VERTICALLY STACKED DYNAMIC RANDOM ACCESS MEMORY CELL

Keith E. Witek; Carlos A. Mazaré, and Jon T. Fitch, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg

Division of Ser. No. 856,411, Mar. 23, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 88,938

Int. Cl.[5] G11C *13/00, 11/24*

U.S. Cl. 365—149 **21 Claims**



17. A dynamic memory cell comprising:

a substrate having a surface;

a trench capacitor within the substrate and having a base layer; and

a transistor overlying the surface of the substrate and substantially overlying the trench capacitor, the transistor having a first current electrode that substantially overlies a channel region wherein the channel region overlies a second current electrode of the transistor, the transistor comprising:

a first dielectric layer overlying the substrate;

a control electrode conductive layer overlying the first dielectric layer;

a second dielectric layer overlying the control electrode conductive layer;

an opening through the first dielectric layer, the control electrode conductive layer, and the second dielectric layer which exposes the base layer of the trench capacitor, the opening defining a sidewall of the control electrode conductive layer;

a sidewall dielectric laterally adjacent the sidewall of the control electrode conductive layer; and

a first conductive region within the opening, the first conductive region having a first portion which functions as a first current electrode, the first portion being laterally adjacent the first dielectric layer and electrically connected to the base layer, the first conductive region having a second portion which functions as a channel region, the second portion being laterally adjacent the sidewall dielectric and overlying the first current electrode, and the first conductive region having a third portion which functions as a second current electrode, the third portion being laterally adjacent the second dielectric layer and overlying the channel region.

5,291,439

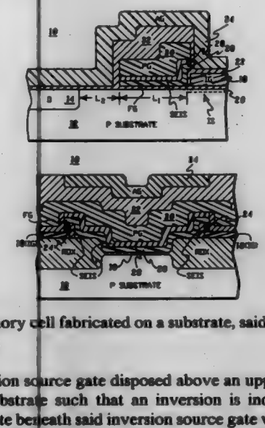
SEMICONDUCTOR MEMORY CELL AND MEMORY ARRAY WITH INVERSION LAYER

Bruce A. Kauffmann, Jericho; Chung H. Lam, Williston, and Jerome B. Lasky, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1991, Ser. No. 758,656

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—185 **24 Claims**



1. A memory cell fabricated on a substrate, said memory cell comprising:

a drain;

an inversion source gate disposed above an upper surface of said substrate such that an inversion is induced in said substrate beneath said inversion source gate when a potential is applied thereto, said inversion and said drain defining a channel region in said substrate;

an electrically isolated floating gate disposed above the upper surface of said substrate, said floating gate partially overlapping said inversion source gate and being electrically isolated therefrom, said floating gate being aligned at least partially over said channel region in said substrate;

a program gate disposed above the upper surface of said substrate and being electrically isolated from said substrate, said inversion source gate and said floating gate, said program gate overlapping at least a portion of said floating gate;

an access gate disposed above the upper surface of said substrate, and being electrically isolated therefrom and from said inversion source gate, said floating gate and said program gate, said access gate being aligned at least partially over said channel region in said substrate; and

wherein application of a potential to said inversion source gate and simultaneous application of a potential to said access gate establishes a cell read cycle to pass from said inversion to said drain, and wherein application of ground potential to said inversion source gate and simultaneous application of a potential to said program gate establishes a cell write cycle to selectively charge said floating gate positively or negatively by respectively grounding or applying a positive potential to said drain.

5,291,440

NON-VOLATILE PROGRAMMABLE READ ONLY MEMORY DEVICE HAVING A PLURALITY OF MEMORY CELLS EACH IMPLEMENTED BY A MEMORY TRANSISTOR AND A SWITCHING TRANSISTOR STACKED THEREON

Shoji Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

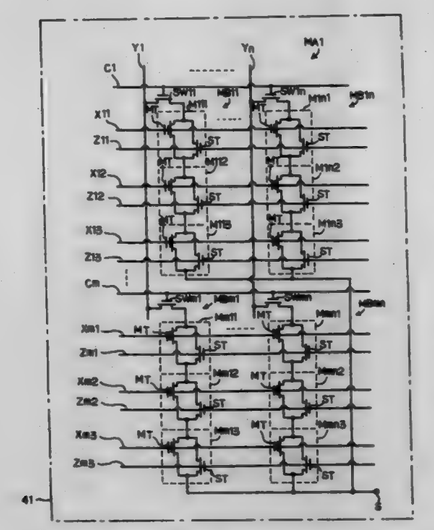
Filed Jul. 25, 1991, Ser. No. 733,896

Claims priority, application Japan, Jul. 30, 1990, 2-201754

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—185 **13 Claims**



1. A non-volatile programmable read only memory device fabricated on a semiconductor substrate comprising:

a plurality of memory cells grouped into a plurality of memory blocks and arranged in rows and columns, each of the plurality of memory blocks including a portion of the plurality of memory cells coupled in series, each of the plurality of memory cells including a parallel connection of a memory transistor disposed on a major surface of the semiconductor substrate and a switching transistor disposed over the memory transistor;

a plurality of bit lines respectively associated with the columns of the plurality of memory cells, each bit line of the plurality of bit lines being coupled to parallel connections respectively disposed at first ends of memory blocks disposed in an associated column;

a source coupled to parallel connections respectively disposed at second ends of the plurality of memory blocks;

a plurality of first word lines respectively associated with the rows of the plurality of memory cells, each of the plurality of first word lines being selectively coupled to controlling gate electrodes of each of the memory transistors; and

a plurality of second word lines respectively paired with the plurality of first word lines and respectively associated with the rows of the plurality of memory cells, each of the plurality of second word lines being selectively coupled to controlling gate electrodes of each of the switching transistors.

5,291,441

ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY DEVICE WITH TIMING DETECTOR FOR INCREASING ADDRESS DECODING SIGNAL

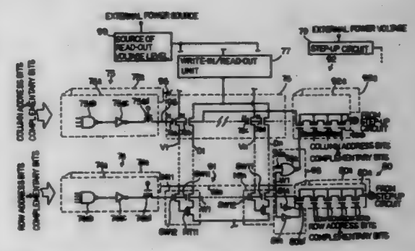
Ichiro Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,263

Claims priority, application Japan, Aug. 30, 1990, 2-229991

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **6 Claims**



1. An electrically programmable read only memory device comprising

a) a plurality of memory cells arranged in rows and columns and respectively storing data bits, each of said plurality of memory cells being implemented by a field effect transistor having a source node coupled to a ground voltage line, a floating gate electrode covered with insulating film and provided between a channel forming region, a controlling gate electrode, and a drain node,

b) a plurality of word lines respectively associated with said rows of said memory cells and coupled with controlling nodes of said memory cells in said associated rows,

c) a plurality of digit lines respectively associated with said columns of said memory cells and coupled to second nodes of said memory cells in said associated columns,

d) a row address decoding unit responsive to internal row address bits and shifting one of said plurality of word lines to a target voltage level, lower than a positive external power voltage level supplied from the outside thereof,

e) a monitoring unit for monitoring said one of said plurality of word lines to see whether or not said one of said plurality of word lines reaches said target voltage level for producing a detecting signal indicative of reaching said target voltage level, including a plurality of inverting circuits respectively coupled to said word lines, each of said plurality of inverting circuits having a threshold level as high as said target voltage level for producing said detecting signal,

f) step-up means reaponsive to said detecting signal and allowing said one of said plurality of word lines to exceed said target voltage level toward a predetermined voltage level larger in magnitude than said target voltage level, said one of said plurality of word lines allowing memory cells coupled thereto to enter a ready state, said step-up means comprising

a step-up circuit supplied with said positive external power voltage level and producing said predetermined voltage level,

a plurality of first switching transistors coupled with said word lines, respectively, and responsive to said detecting signal for producing conductive channels, and

a selecting unit having a plurality of selecting circuits respectively associated with said plurality of word lines and responsive to said internal row address bits for interconnecting said step-up circuit and one of said plurality of first switching transistors,

g) column selecting means responsive to internal column address bits and selecting one of said digit lines, and

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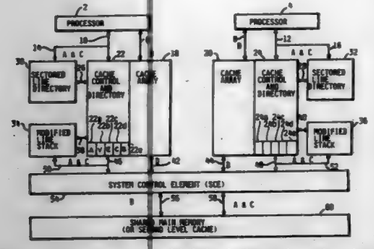
h) read-out means for discriminating a logic level of one of said data bits read out from one of said memory cells coupled to said one of said plurality of word lines and said one of said plurality of digit lines.

5,291,442

METHOD AND APPARATUS FOR DYNAMIC CACHE LINE SECTORING IN MULTIPROCESSOR SYSTEMS

Philip G. Emma, Danbury, Conn.; Joshua W. Knight, Mohegan Lake, N.Y.; Kevin P. McAuliffe, Peekskill, N.Y.; James H. Pomerene, Chappaqua, N.Y.; Rudolph N. Rechtschaffen, Scarsdale, N.Y., and Frank J. Sparacio, Sarasota, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1990, Ser. No. 606,242
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **17 Claims**



1. In a computer system which includes a shared main memory, at least two processors, each processor being coupled to a respective cache memory, and a system control element for coupling the cache memories to the shared main memory, apparatus for managing access to data in cache memories said apparatus comprising:

means for identifying, in one of said cache memories, a data line that has been referenced by at least two of the processors, said data line being identified if each data word in said data line has been referenced by at most one of the processors;

means for providing simultaneous write access to the processors which have accessed data words in the identified line, the respective processors writing to respectively different words in respective copies of said identified line, the respective copies of said identified line residing in respective cache memories; and

means for preventing more than one processor from gaining simultaneous write access to any one work in said line.

5,291,443

SIMULTANEOUS READ AND REFRESH OF DIFFERENT ROWS IN A DRAM

Hank H. Lim, Mountain View, Calif., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 26, 1991, Ser. No. 721,825
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 **12 Claims**

1. A memory array configuration of memory cells that allows simultaneous read and refresh of the memory cells comprising:

two or more rows and two or more columns of memory cells;

a write column line corresponding to each column of memory cells;

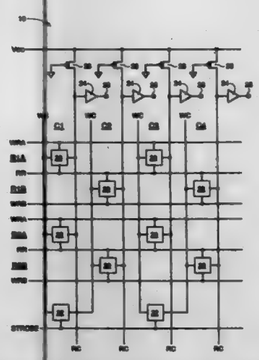
a read column line corresponding to each column of memory cells;

first and second write row lines corresponding to each row of memory cells;

a read row line corresponding to each row of memory cells;

each memory cell in the array being coupled to the respective write column line, read column line, and read a row line;

each row of memory cells being arranged into a top half-row of memory cells corresponding to each odd-numbered column of memory cells, and a bottom half-row of memory cells corresponding to each even-numbered column of memory cells;



each memory cell in the top half-row being coupled to the respective first write row line;

each memory cell in the bottom half-row being coupled to the respective second write row line;

charge sensing means coupled to each successive pair of write column lines; and

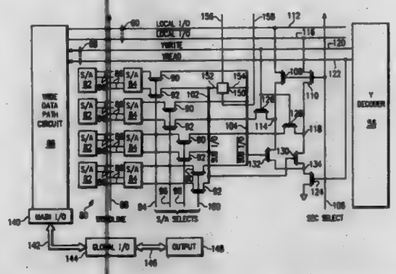
current/voltage sensing means coupled to each read column line.

5,291,444

COMBINATION DRAM AND SRAM MEMORY ARRAY

David B. Scott, Plano, and Hiep Van Tran, Carrollton, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1991, Ser. No. 812,676
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **14 Claims**



1. A combination dynamic random access memory (DRAM) and static random access memory (SRAM) array, comprising:

a plurality of DRAM sense amplifiers each coupled to at least one DRAM bit line, a plurality of DRAM memory cells selectively coupled to each said bit line;

said sense amplifiers organized into groups, each group of sense amplifiers selectively coupled to respective true and complement I/O lines, wherein said true and complement I/O lines comprise a true and a complement SUB I/O line, a respective higher-order true I/O line and higher-order complement I/O line provided for groups of said SUB I/O lines and said complementary SUB I/O lines, each group of true and complement SUB I/O lines respectively multiplexed to a true and a complement higher-order I/O line; and

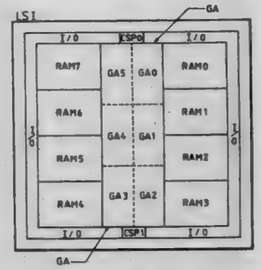
for each pair of true and complement I/O lines, an SRAM cell coupled to said pair.

5,291,445

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Shunichi Miyaoka; Kazuhisa Miyamoto, both of Ohme; Masanori Odaka, Kodaira; Hideo Sawamoto, Hadano; Michiaki Nakayama, Ohme; Mitsuya Kusunoki, Ohme; Masato Ikeda, Ohme; Takashi Ogata, Ohme; Kouji Kobayashi, Ohme; Masao Kato, and Tsutomu Sumimoto, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer System Ltd., Kodaira, both of Japan

Filed Sep. 28, 1990, Ser. No. 589,515
Claims priority, application Japan, Sep. 29, 1989, 1-251894; Oct. 23, 1989, 1-275159; Dec. 4, 1989, 1-314665; Dec. 19, 1989, 1-329192; Jan. 26, 1990, 2-14946; Jan. 29, 1990, 2-18388; Mar. 30, 1990, 2-87222
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.08 **10 Claims**



1. A semiconductor integrated circuit device formed on a semiconductor substrate comprising:

first memory means including:

a plurality of first word lines each of which extends in a first direction;

a plurality of first data lines each of which extends in a second direction perpendicular to said first direction; and

a plurality of first memory cells coupled to said first word lines and said first data lines for storing first data, each of said first memory cells comprising at least one MOS transistor;

second memory means including:

a plurality of second word lines each of which extends in said first direction;

a plurality of second data lines each of which extends in said second direction; and

a plurality of second memory cells coupled to said second word lines and said second data lines for storing second data, each of said second memory cells comprising at least one MOS transistor;

a gate array including means for outputting address signals and selection signals, said gate array comprising a plurality of bipolar-CMOS basic cells each of which comprises at least one bipolar transistor and P- and N-channel MOS transistors, wherein said at least one bipolar transistor and said P- and N-channel MOS transistor of said gate array are selectively connected,

first decoder means formed along said first direction in an area between said first memory means and said gate array, said first decoder means receiving said address signals from said gate array and selecting at least one of said first memory cells;

second decoder means formed along said first direction in an area arranged between said second memory means and said gate array, said second decoder means receiving said address signals from said gate array and selecting at least on of said second memory cells;

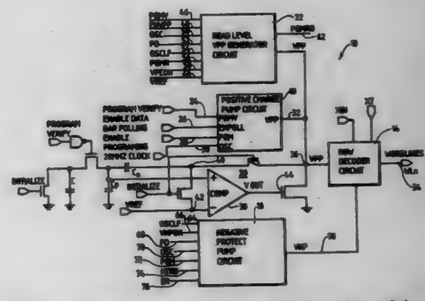
output data selecting means formed in an area arranged between said first memory means and said second memory means and receiving at least one of said first data read out from said first memory cells by said first decoder means, at least one of said second data read out from said second memory cells by said second decoder means and said selection signals from said gate array, said output data selecting means outputting output data out of at least one of said first data and at least one of said second data in predetermined bits and in predetermined combinations to said gate array.

5,291,446

VPP POWER SUPPLY HAVING A REGULATOR CIRCUIT FOR CONTROLLING A REGULATED POSITIVE POTENTIAL

Michael A. Van Buskirk, San Jose; Johnny C. Chen, Cupertino; Chung K. Chang, Sunnyvale; Lee E. Cleveland, Santa Clara, all of Calif., and Antonio Montalvo, Raleigh, N.C., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1992, Ser. No. 964,684
Int. Cl.[5] H03L *1/00*
U.S. Cl. 365—189.09 **8 Claims**



1. A positive power supply for generating and supplying a regulated positive potential to control gates of selected memory cells via word lines in an array of flash EEPROM memory cells during programming, said positive power supply comprising:

charge pump means (18c) responsive to an external power supply voltage (VCC) and to non-overlapping clock signals for generating a high positive voltage;

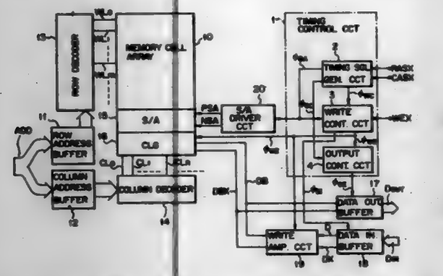
regulation means (20) responsive to said high positive voltage and a reference potential for generating a positive comparator signal which is either at a low level so as to allow said charge pump means to increase said high positive voltage or is at a high level so as to decrease said high positive voltage and for controlling said regulated positive potential to be independent of the power supply potential (VCC);

negative protect circuit means for generating a small negative protection voltage on its output terminal so as to cause the word lines coupled to control gates of non-selected memory cells to be pulled down to the ground potential; and

row decoder means coupled to the word lines and being responsive to said regulated positive potential, said small negative protection voltage, and decoded signals for selectively applying said regulated positive potential to the control gates of the selected memory cells and for selectively applying said ground potential to the control gates of the non-selected memory cells.

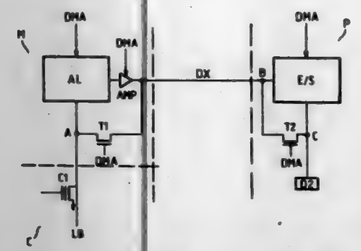
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,447
SEMICONDUCTOR MEMORY DEVICE HAVING FUNCTION OF CONTROLLING SENSE AMPLIFIERS
Yukinori Kodama, and Yasuhiro Fujii, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan
Filed Jul. 29, 1992, Ser. No. 921,155
Claims priority, application Japan, Jul. 30, 1991, 3-190100
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—190 6 Claims



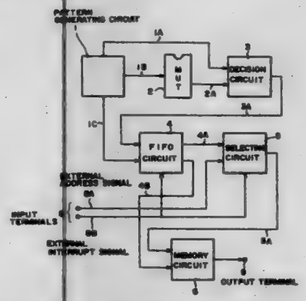
1. A semiconductor memory device comprising:
a memory cell array including a plurality of memory cells provided in the form of a matrix along a plurality Of word lines and a plurality of pairs of bit lines;
a plurality of sense amplifiers operatively connected to the plurality of pairs of bit lines; and
sense amplifier control means operatively connected to the plurality of sense amplifiers, when one of the plurality of memory cells is selected and data writing is carried out to the selected memory cell, for selectively inactivating only a sense amplifier, corresponding to the selected memory cell among the plurality of sense amplifiers.

5,291,448
ZONE-SEGREGATED CIRCUIT FOR THE TESTING OF ELECTRICALLY PROGRAMMABLE MEMORY CELLS
Bertrand Conan, Aix en Provence, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France
Filed Jun. 21, 1991, Ser. No. 718,627
Claims priority, application France, Jun. 21, 1990, 90 07792
Int. Cl.[5] G11C 29/00
U.S. Cl. 365—201 20 Claims



1. A device for the testing of electrically programmable memory cells of an integrated circuit comprising one or more memory arrays, each memory array including multiple bit lines, at a core thereof, a middle zone adjacent to said core, a peripheral portion adjacent to said middle zone but not adjacent to said core, and a plurality of
an associated input/output buffer, located in the peripheral zone of the circuit, and an associated reading amplifier in the middle zone of the circuit,
said input/output buffer having an input connected to an output of said reading amplifier, and having an output connected to said respective input/output pin,
said reading amplifier having an input operatively connected to a selectable one of the bit lines,
first means connected to short-circuit said input and output of said reading amplifier when commanded by a testing mode signal, these means being topographically located in the middle zone of the circuit, and
second means connected to short-circuit said input and output of said input/output buffer when commanded by said testing mode signal, these means being topographically located in the peripheral zone of the circuit.

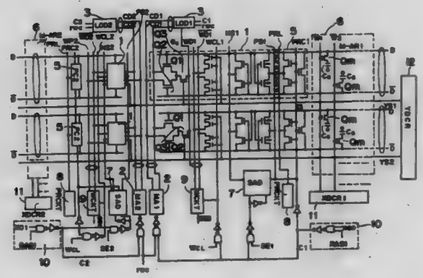
5,291,449
IC MEMORY TESTING APPARATUS
Masayoshi Dehara, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1992, Ser. No. 976,157
Claims priority, application Japan, Nov. 25, 1991, 3-335617
Int. Cl.[5] G01R 31/28
U.S. Cl. 365—201 3 Claims



1. A memory testing apparatus comprising:
a pattern generating circuit which generates a testing signal pattern to be applied to a memory to be tested, expected data and a test address signal,
a decision circuit which, upon application of said testing signal pattern to said memory to be tested, compares said expected data and output signal data from said memory to be tested and judges if a memory area designated by said test address signal is defective upon disagreement during said comparison, and outputs a defect indicating signal when a defect is detected,
a FIFO circuit, to which is applied said defect indicating signal and said test address signal, for storing said test address signal when said defect indicating signal is inputted and outputting stored contents thereof and a FIFO reading state signal when an external interrupt signal is not applied thereto and not outputting the stored contents therein nor said FIFO reading state signal when said external interrupt signal is applied thereto,
a selecting circuit, to which is applied the output data from said FIFO circuit and an eternal address signal, for selecting said external address signal when said external address signal and said external interrupt signal are applied thereto,
and a memory circuit, to which is applied the output signal of said selecting circuit and said FIFO reading state signal, for writing data "1" into a memory area at an address designated by said output signal from said selecting circuit when said FIFO reading state signal is inputted, or for outputting stored contents in said memory area designated by said output signal of said selecting circuit to an output terminal when said FIFO reading state signal is not inputted.

5,291,450
READ CIRCUIT OF DYNAMIC RANDOM ACCESS MEMORY
Atsuhi Fujiwara, Kadoma, and Hiroyuki Yamauchi, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 26, 1991, Ser. No. 798,173
Claims priority, application Japan, Nov. 28, 1990, 2-332502
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 34 Claims

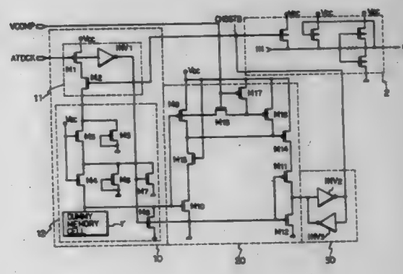
1. A read circuit for a dynamic random access memory wherein a plurality of memory cells each comprising a transistor for address selection and a capacitor for storing information are arranged as a matrix at crossings of bit lines and word lines, said memory cells being divided into a plurality of memory arrays, with a column address decoder for generating a signal for selecting a common bit line for the memory arrays, and a word line selection circuit for generating a signal to select a word line in correspondence to one of the memory arrays which includes one of the memory cells to be selected, said read circuit comprising:
a first precharger for precharging the bit lines at a first precharge potential;
a sense amplifier for amplifying the potential of the bit lines;
means for supplying a first activation potential necessary to activate the amplification of the sense amplifier;



a first switch controlled by a selection signal generated by the address decoder, the first switch being connected to a common source line, said common source line supplying a second activation potential necessary to activate the first switch;
a pair of second switches connected in series to the first switch, said pair of second switches being connected to common data lines, the on resistances of the pair of second switches being controlled according to the potential of the bit lines, said common data lines being connected so as to be always isolated electrically from the bit lines;
a second precharger for precharging the common source lines of memory arrays to a second precharge potential, and for precharging the common data lines of memory arrays to a third precharge potential during the time when the common source line and the common data lines are not selected; and
a third switch for connecting the common source line to the second activation potential in the selected memory array.

5,291,451
AUTOMATIC INSPECTING APPARATUS FOR PRECHARGE OF DATA LINE IN MEMORY DEVICE
Young W. Kim, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea
Filed Jan. 8, 1992, Ser. No. 818,053
Claims priority, application Rep. of Korea, Sep. 5, 1991, 91-15511
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—203 3 Claims

1. An automatic inspecting apparatus for the precharge of a data line in a memory device in which said data line is precharged before reading out the data stored in memory cells, said apparatus comprising:
means for detecting a change in an address applied to said memory cells for generating clock signals;
precharging means to be precharged simultaneously with said data line by said clock signals, said precharging means comprising precharge signal generating means which includes two MOS transistors respectively receiving said clock signals and a signal representing address changes of



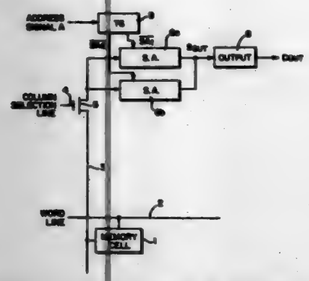
said memory cells, and an inverter connected to said MOS transistors, and memory means comprising a first group of further MOS transistors connected to one of said MOS transistors in said precharge signal generating means, a second group of further MOS transistors connected to said inverter, for precharging dummy memory cells from an output generated by said precharge signal generating means;
sending means connected to said precharging means to determine a precharged state thereof; and
storing means connected to an output of said sensing means to temporarily store output signals representative of the sensed precharge state, said output signals controlling clock signals supplied to a sense amplifier for precharging said sense amplifier.

5,291,452
SENSING AMPLIFIER CIRCUIT FOR DATA READOUT FROM A SEMICONDUCTOR MEMORY DEVICE
Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 29, 1992, Ser. No. 827,326
Claims priority, application Japan, Feb. 13, 1991, 3-020078
Int. Cl.[5] G11C 11/34
U.S. Cl. 365—208 12 Claims

1. A semiconductor memory device comprising:
a plurality of sense amplifiers provided on one output signal

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line for reading data stored in a memory cell, said sense amplifiers being connected in parallel to each other; and



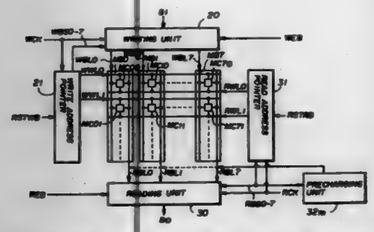
a control signal generation circuit for generating a control signal by which said sense amplifiers are selectively activated.

5,291,453

SERIAL MEMORY APPARATUS HAVING UNITS FOR PRESETTING READING BIT LINES TO A GIVEN VOLTAGE

Hideyuki Aota, Toyonaka, and Hitsu Okubo, Nishinomiya, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 17,843
Claims priority, application Japan, Feb. 19, 1992, 4-031857; Aug. 27, 1992, 4-228450
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—221 **10 Claims**



1. A memory apparatus for serially writing data to a plurality of memory cells, arranged in a matrix formation, and for serially reading the data from the memory cells, said apparatus comprising:

a memory cell array in which a plurality of memory cells are arranged in an m×n matrix formation and divided into "m" blocks each of which includes a set of "n" memory cells;

writing means for serially writing data to said memory cells of said memory cell array through a set of writing bit lines, each of said writing bit lines being connected to one of said blocks of said memory cell array;

reading means for serially reading the data from said memory cells of said memory cell array through a set of reading bit lines, each of said reading bit lines being connected to one of said blocks of said memory cell array; and

a set of precharging means each for presetting one of said reading bit lines to a prescribed voltage when data is read by said reading means from one of said blocks of said memory cell array;

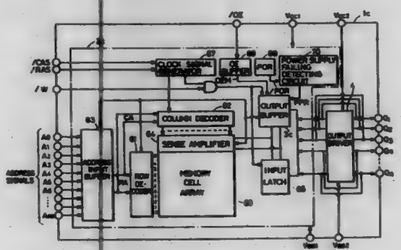
wherein when a first reading cycle is carried out to read data from one memory cell of a first block among said blocks of said memory cell array and a second reading cycle is carried out consecutively to the first reading cycle to read data from one memory cell of a second block lying consecutively to said first block in said memory cell array, one of said precharging means presets one reading bit line, connected to said second block, to the prescribed voltage during said first reading cycle before the data is read from the memory cell of the second block.

5,291,454

CIRCUIT FOR DECREASING CURRENT CONSUMPTION IN DATA OUTPUT CIRCUIT IN CASE ONE OF TWO SUPPLY VOLTAGES FAILS

Kyoji Yamasaki, and Yutaka Ikeda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,626
Claims priority, application Japan, May 20, 1991, 3-114869
Int. Cl.[5] G11C *3/00*
U.S. Cl. 365—226 **8 Claims**



1. A semiconductor memory device receiving externally applied first and second power supply voltages, said first power supply voltage may not be applied when said second power supply voltage is applied, comprising:

memory cells arranged in rows and columns;

amplifier means supplied with said first power supply voltage for amplifying a data signal read out from said memory cells and for providing an amplified signal,

said amplifier means providing an unstable output signal having an unstable potential when said first power supply voltage is not applied;

a data output terminal;

driving means supplied with said second power supply voltage for driving a load connected to said data output terminal in response to the amplified signal provided form said amplifier means,

said driving means consuming more current when said amplifier means provides said unstable output signal;

power supply failure directing means supplied with the first and second power supply voltages for detecting failure of said first power supply voltage; and

potential fixing means for fixing a potential of the amplified signal provided from said amplifier means to a predetermined potential in response to said power supply failure detecting means.

5,291,455

MEMORY HAVING DISTRIBUTED REFERENCE AND BIAS VOLTAGES

Taisheng Feng; John D. Porter, and Jennifer Y. Chiao, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1992, Ser. No. 880,381
Int. Cl.[5] G11C *5/14*
U.S. Cl. 365—226 **16 Claims**

6. A memory having distributed reference and biasing voltages, comprising:

a plurality of bonding pads located within a central portion along a first edge of the memory, for conducting positive and negative power supply voltages;

a first bonding pad of said plurality of bonding pads for receiving an external positive power supply voltage;

a positive power supply voltage conductor substantially parallel to said first edge having first and second ends and coupled to said first bonding pad;

a second bonding pad of said plurality of bonding pads for receiving an external negative power supply voltage;

a negative power supply voltage conductor substantially parallel to said first edge having first and second ends and coupled to said second bonding pad;

an input buffer circuit coupled to said first end of each of said positive and negative power supply voltage conductors, for providing an internal signal at a logic state responsive to a difference between an input signal and a reference voltage;

a first bandgap reference voltage generator, coupled to said first end of each of said positive and negative power supply voltage conductors, for providing a first bandgap reference voltage;

a bias voltage generator, coupled to said first end of each of said positive and negative power supply voltage conductors and to said amplifier, for receiving said first bandgap reference voltage and in response, providing a bias voltage to said input buffer circuit;

a second bandgap reference voltage generator, coupled to said positive and negative power supply voltage conductors within said central portion, for providing a second bandgap reference voltage; and

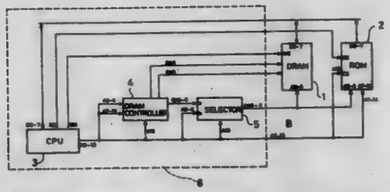
a reference voltage generator, coupled to each of said positive and negative power supply voltage conductors within said central portion, for receiving said second bandgap reference voltage and in response, providing said reference voltage.

5,291,456

DATA STORAGE CONTROL DEVICE

Koichi Sugino, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1992, Ser. No. 906,640
Claims priority, application Japan, Jul. 4, 1991, 3-164515
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.01 **10 Claims**



1. In a data storage control device including a dynamic RAM and storage means, each of which has address input terminals, and control means for addressing said dynamic RAM and storage means, the improvement wherein:

said control means is comprised of a processing means, a dynamic RAM control means and a selector means, for controlling access to said dynamic RAM and said storage means;

said processing means having data bus and address bus commonly used for said dynamic RAM and said storage means;

said address bus having N address lines, n_1 of said N address lines comprising a selection signal and n_2 of said N address lines other than said n_1 lines being directly connected to n_2 address input terminals of said storage means, wherein N, n_1 and n_2 are integers, $(N>n_1\leqq 1)$ and $(N>n_2)$;

means applying said n_1 lines to said dynamic RAM control means, whereby, when said n_1 of said N address lines has a first value, said dynamic RAM control means is activated, generates an RAS signal and a CAS signal for direct application to said dynamic RAM, and selectively generates address signals responsive to signals from said address bus;

said selector means having n_3 address lines directly connected to address input terminals of said dynamic RAM and also connected to remaining address input terminals other than said n_2 address input terminals of said storage means, said selector means comprising means for selectively supplying said address signals from said dynamic RAM control means to said n_3 address lines for the dynamic RAM in response to said first value of said n_1 of said N address lines, and means for applying a part of the address signals from said dynamic RAM control means to said n_3 address lines for said storage means in response to a second value of said n_1 of said N address line wherein n_3 is an integer and $(N=n_1+n_2+n_3)$;

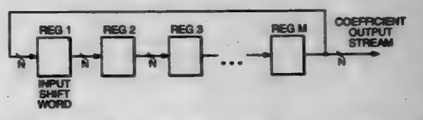
said storage means being accessed by said address signals from said n_3 address lines in conjunction with said remaining address signals from said n_2 of others of said N address lines.

5,291,457

SEQUENTIALLY ACCESSIBLE NON-VOLATILE CIRCUIT FOR STORING DATA

Creigton S. Asato; Christoph Ditzen, both of San Jose, and James A. Rowson, Fremont, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Feb. 20, 1992, Ser. No. 839,192
Int. Cl.[5] G11C *7/00, 19/00*
U.S. Cl. 365—239 **14 Claims**



1. A sequentially accessible, non-volatile data storage circuit comprising:

logic array means for non-volatile storage of a plurality of predetermined programmed data words at least some of which are non-zero and at least some of which are different from one another; and

recirculating shift means interconnected with said logic array means for causing a first one of the data words in a predetermined order of the data words to appear at a data output of the data storage circuit in response to a reset signal and to cause a next one of the data words to appear at the data output in response to a clock signal.

5,291,458

METHOD OF DETERMINING DEPTH VALUES FOR THE SURFACE PROFILE OF THE BOTTOM OF A BODY OF WATER

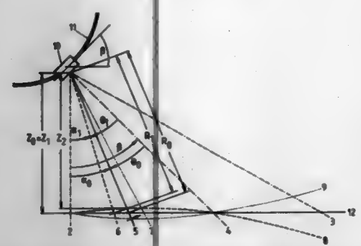
Ingo Harre, Bremen, Fed. Rep. of Germany, assignor to Atlas Elektronik GmbH, Bremen, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,350

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, 4207716

Int. Cl.[5] G01S *15/89*

U.S. Cl. 367—88 **6 Claims**



1. In a method of determining depth values for the bottom profile of a body of water from pulse transit times and sounding directions by means of a fan beam echo sounder that measures transversely to the longitudinal axis of the ship, whose transducer array is installed in each case at an angle obliquely to the vertical elevation axis of the ship and wherein the pulse transit times are measured and stored in association with the sounding directions, with the sounding directions α_{Oi} being calculated from data furnished by the transducer array and by the transducer signals as well as by means of a predeterminable sound velocity c_0 at the surface of the transducer array, the steps of: determining, for each transducer array, selected depth values are determined in the vertical sounding direction α_{Or} and in a sounding direction α_{Om} that is normal to the plane of the transducer array; determining estimated depth values for an estimated profile for all remaining sounding directions α_{Oi} by means of the selected depth values of the profile of the bottom of the body of water; comparing, for at least one of the remaining sounding directions, the estimated depth value with the depth value determined as the depth measurement value from the measured pulse transit time and determining a correction factor k for the sound velocity c_0; and determining the depth values for the bottom profile of the body of water from the stored pulse transit times and from the sounding directions calculated for the corrected sound velocity c_1.

5,291,459

SIGNAL PROCESSOR HAVING MULTIPLE DISTRIBUTED DATA BUFFERS

Victor A. Andersen, North Dartmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 7, 1993, Ser. No. 59,770

Int. Cl.[5] H04B *11/00*

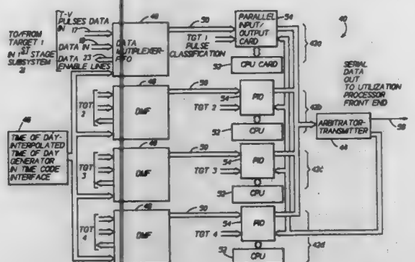
U.S. Cl. 367—134 **8 Claims**

1. A selectively acting data unit accumulator which receives data from a plurality of data sources, comprising:

timing means for establishing an operating cycle having a first period followed by a second period;

input means, operable during the first period, for receiving an alert signal from individual ones of the data sources, an assertion of an alert signal indicating that an associated data source has data available for outputting to the data unit accumulator, said input means including means for comparing, for each of the alert signals, a current state of the alert signal to a previous state for detecting an occurrence of the assertion of the alert signal; and

buffer means, responsive to the operation of said comparing means, for receiving and storing, during the first period, a unit of data from a data source having an asserted alert signal, said buffer means being responsive to the storage of



the unit of data within the buffer means, during the first period, for receiving and storing, during the second period, other information that is associated with the unit of data stored during the first period.

5,291,460

PIEZOELECTRIC SOUNDING BODY

Jun Harada; Manabu Sumita, and Shunjiro Imagawa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 15, 1992, Ser. No. 961,444

Claims priority, application Japan, Oct. 15, 1991, 3-266073

Int. Cl.[5] H01L *41/04*

U.S. Cl. 367—140 **11 Claims**



1. A piezoelectric sounding body comprising:

a piezoelectric substrate;

an electrode film provided on a surface of said piezoelectric substrate;

a vibrating plate provided on said electrode film; and

an adhesion layer provided between said electrode film and said vibrating plate for allowing electrical conduction between said electrode film and said vibrating plate,

said adhesion layer being formed of an ultraviolet setting type anaerobic adhesive containing 0.1 to 1.0 percent by weight of carbon particles of 1.0 to 20.0 μm in means particle diameter.

5,291,461

ELASTOMER STRUCTURE FOR TRANSDUCERS

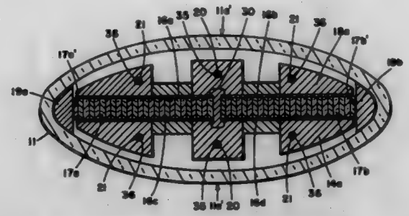
Richard W. Boeglin, N. Kingstown; Richard J. Weeden, Portsmouth, and James R. Sturges, Barrington, all of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 619,772, Nov. 28, 1990, abandoned.

This application Jun. 25, 1993, Ser. No. 82,828

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—163 **7 Claims**



1. An electroacoustic transducer comprising:

a resilient housing including a shell portion with an inner surface;

a transduction driver, disposed within said housing, having a pair of opposing end surfaces disposed adjacent the inner surface of the shell portion and further having a pair of opposing side surfaces;

a support member, disposed within said housing, having a surface adjacent to and spaced from one of the pair of opposing side surfaces of the transduction driver; and

a layer of thermally conductive and electrically insulating material, disposed between said surface of said support member and said one of the pair of opposing side surfaces of the transduction driver.

5,291,462

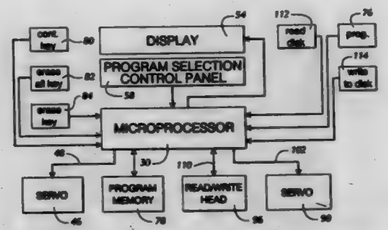
OPTICAL DISK HAVING PLAYBACK PARAMETERS RECORDED THEREON AND METHOD FOR USING SAME

Robert E. Richards, P.O. Box 56527, Atlanta, Ga. 30343-0527

Filed Oct. 31, 1990, Ser. No. 606,534

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 **20 Claims**



1. A method of playing back an optically readable disk comprising the steps of:

rotating an optically readable disk having first optically readable signals recorded on a first portion of said disk and having a second readable and writable portion on said disk;

recording second signals on said second portion of said disk, said second signals defining playback parameters for said first signals, said playback parameters being selected from the group consisting of audio equalization, audio volume, video color balance, video contrast and video brightness;

reading said second signals from said second portion of said disk;

adjusting reproduction apparatus in response to said playback parameters read from said second portion of said disk so that said first signals will be reproduced in accordance with said playback parameters; and

reading said first signals from said first portion of said disk and playing back said signals through said reproduction apparatus in accordance with said playback parameters read from said second portion of said disk.

5,291,463

OPTICAL CARD REPRODUCING APPARATUS FOR REPRODUCING INFORMATION WITH A TWO-DIMENSIONAL SOLID-STATE IMAGING DEVICE

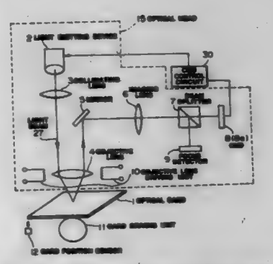
Kaori Ichikawa, Koganei, and Takumi Sugaya, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 971,066

Claims priority, application Japan, Nov. 5, 1991, 3-288899; Dec. 17, 1991, 3-333662; Dec. 17, 1991, 3-333663

Int. Cl.[5] G11B *11/00*

U.S. Cl. 369—13 **23 Claims**



14. In an apparatus for reproducing information on an optical card having a plurality of tracks on its recording surface for recording information as a sequence of pits and track guides for separating the tracks, wherein said pits are detected by means of irradiating light reflected from said tracks onto a two-dimensional solid-state image sensing means, the improvement comprising:

a binary value conversion means for converting image signals from said two-dimensional solid-state image sensing means into binary value signals;

a track guide detection means for detecting a first address of said track guide;

a first calculation means for calculating a second address of said sequence of pits from said first address of said track guide; and

a detection means for detecting said sequence of pits from said binary valued signals outputted from said binary value converting means wherein said binary valued signals are specified by said second address.

5,291,464

SPEED AND POSITION CONTROL APPARATUS FOR POSITIONING A MOVABLE OBJECT

Yutaka Onada, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 24, 1992, Ser. No. 903,399

Claims priority, application Japan, Jun. 25, 1991, 3-180150; Jun. 25, 1991, 3-180151

Int. Cl.[5] G11B *17/22, 33/02, 7/00*

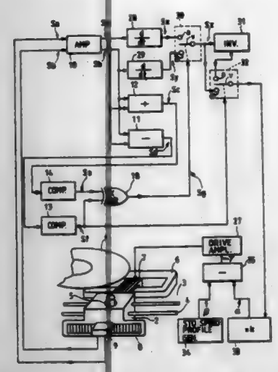
U.S. Cl. 369—32 **6 Claims**

1. A speed control apparatus for positioning a movable object comprising:

signal generating means for generating false sine-wave two-phase signals having a phase difference equal or close to

VOL 1160 ISS 1 MR 1 1994 UMI

90 degrees with each other so as to correspond to a movement of a movable member to be speed-controlled;
adding means for obtaining a sum signal of respective phase signals generated in said signal generating means;
subtracting means for obtaining a subtraction signal of respective phase signals generated in said signal generating means;
comparing means for making bi-leveled signals by comparing said sum signal with its mean value and by comparing said subtraction signal with its mean value;
exclusive OR means for obtaining an exclusive OR output



signal from said bi-leveled signals of the sum signal and the subtraction signal;
differential means for generating differential signals of respective phase signals generated in said signal generating means;
selecting means for selecting either of said differential signals of respective phase signals in response to said exclusive OR output signal; and
switching means for selectively outputting an output signal obtained from said selecting means or its inverted output signal having an opposite-polarity on the basis of the bi-leveled signal of said subtraction signal.

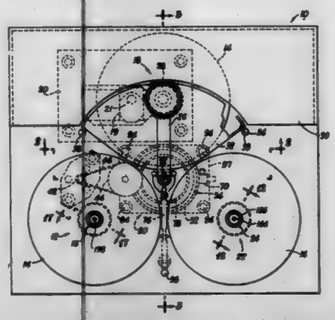
5,291,465

AUTOMATIC CHANGER FOR DIGITAL DISCS

James T. Dennis; 2312 NW, 57th St., Oklahoma City, Okla. 73112

Filed May 9, 1990, Ser. No. 518,475
Int. Cl.[5] G11B *17/028*
U.S. Cl. 369—37 54 Claims

16. A digital disc changer for sequentially playing a plurality of digital discs, comprising:
a loading station having means for receiving a plurality of digital discs in a stacked relationship to form a stack of discs to be played;
a play station having means for sequentially receiving and playing discs from said stack;
a discard station having means for receiving discs from said play station; and
means including a robot arm for lifting a disc from the top of said stack, transporting the disc to the play station and lowering it at the play station for play, lifting the disc from the play station after play, transporting the disc to the discard station and releasing the disc at the discard station and wherein each of said digital discs has a central aperture and wherein said robot arm includes means for engaging said aperture for lifting and transporting said disc,
wherein said engaging means includes one or more engaging members that frictionally engage said central aperture and are resiliently biased to exert a outwardly directed radial force against said disc;
wherein said loading station includes an elongated stacking spindle about which discs may be stacked, said spindle being mounted for movement along its longitudinal axis and resiliently biased to an extended position wherein said spindle enters the central aperture of a disc, said spindle being movable along its longitudinal axis by said pick-up head to a retracted position out of said central aperture to permit said engaging members to engage said central aperture;



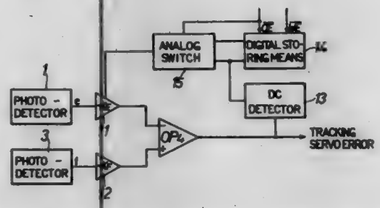
wherein said discard station includes means for urging said engaging member or members sufficiently inwardly to disengage said central aperture and release said disc; and
wherein said discard station includes a discard spindle about which discs are discarded, wherein said engaging member urging means includes a surface on said discard spindle that engages said engaging member or members to disengage said disc when said robot arm is positioned at the discard station.

5,291,466

AUTOMATIC CONTROL SYSTEM FOR A TRACKING SERVO UNBALANCE OF OPTICAL DISK PLAYER

Kook Y. Kwak, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 496,764, Mar. 21, 1990, abandoned.
This application Sep. 16, 1992, Ser. No. 945,587
Claims priority, application Rep. of Korea, Mar. 22, 1989, 3620/1989
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—44.35 3 Claims



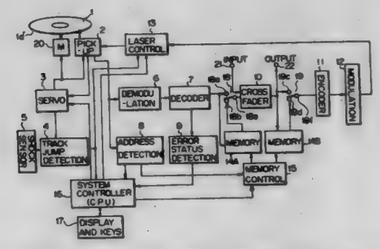
1. An automatic control system for a tracking servo unbalance of optical disc player comprising:
first and second variable gain amplifiers for converting output current of first and second photodetectors into a voltage;
a differential amplifier for differentially amplifying output voltage of said first and second variable gain amplifiers and for outputting a differential output signal as a tracking servo error;
a direct current detector for detecting a direct current of said tracking servo error outputted from said differential amplifier;
digital storing means for converting an output signal of said direct current detector into a digital signal, for storing said digital signal in response to a write enable signal, for reading the stored digital signal in response to an output enable signal, for converting the read digital signal into an analog signal, and for outputting said analog signal; and
an analog switch for selecting either said analog signal of said digital storing means or an output signal from said direct current detector in response to said output enable signal, thereby applying the selected signal as a gain control voltage to said first variable gain amplifier.

5,291,467

DISC RECORDING APPARATUS FOR RECORDING A SIGNAL WITHOUT LOSING THE SIGNAL DURING AN OCCURRENCE OF A TRACK JUMP

Koji Ishiwata; Masaru Tezuka; Teruhito Noshiro, and Satoru Tobita, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,528
Claims priority, application Japan, Jul. 16, 1991, 3-201357
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 6 Claims



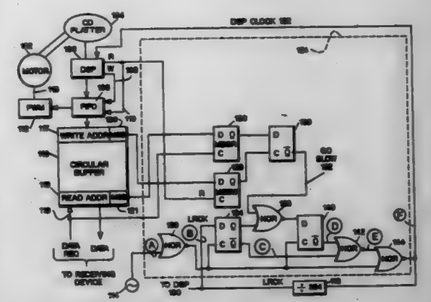
1. An apparatus for recording a signal on a disc medium comprising:
laser beam generating means including a moveable pickup head for generating a laser beam for recording a signal on a disc medium;
servo means for controlling tracking of said pickup head;
track jump detecting means for detecting a track jump of said pickup head, said track jump exhibiting a duration;
memory means for storing said signal during an occurrence of said track jump;
first control means responsive to said track jump detecting means, for controlling said laser beam generating means so that a recording operation by said laser beam is temporarily stopped during the occurrence of said track jump;
second control means responsive to said track jump detecting means, for controlling said servo means and said laser beam generating means so that the recording operation by said laser beam is resumed from a first track address which is equal to the sum of the duration of the track jump and a second track address at which the track jump has begun; and
third control means for controlling said memory means, said laser beam generating means and said servo means so that said signal stored in said memory means is recorded on an area between said first and second addresses after the completion of the resumed recording operation.

5,291,468

METHOD AND APPARATUS FOR SYNCHRONIZING THE READOUT OF A SEQUENTIAL MEDIA DEVICE WITH A SEPARATE CLOCKED DEVICE

Donald E. Carmon, Durham, and William G. Crouse, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1991, Ser. No. 760,653
Int. Cl.[5] G11B *20/10*
U.S. Cl. 369—47 7 Claims



4. Apparatus for controlling the readout rate of information from a sequential storage medium, comprising:
a buffer for loading information from the sequential device,
write and read address registers for loading and unloading information to and from the buffer in a circular fashion,
a clock for controlling the rate of loading information into the buffer,
first means activated by a write of information into the buffer for storing the most significant bit of the buffer write address,
second means activated by a read of information from the buffer for storing the most significant bit of the buffer read address,
third means responsive to the first and second storing means for storing a signal once on each pass, selected from a write or a read pass, through the buffer indicating whether the buffer is greater than half full, and
means responsive to the said stored signal for adjusting the rate of the clock to maintain the amount of free buffer space within predetermined limits.

5,291,469

DIGITAL DATA RECORDING AND/OR REPRODUCING APPARATUS

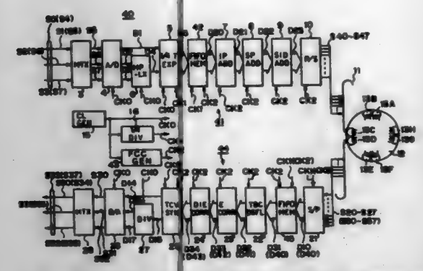
Tadashi Yoshinaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,802
Claims priority, application Japan, Oct. 23, 1990, 2-286258
Int. Cl.[5] G11B *31/00*; H04N *5/78*
U.S. Cl. 369—69 6 Claims

1. In a digital recording and reproducing apparatus including means for dividing input digital data signals into a plurality of channels so that the digital data signals within each of the channels have a first sampling frequency, means for shuffling said digital data signals, means for forming the shuffled digital data signals within each channel into data blocks which include a predetermined number of the digital data signals, means for forming said data blocks into data sectors composed of a predetermined number of said data blocks and including additional data, means for recording said data sectors in respective tracks on a recording medium by means of a plurality of heads each corresponding to a respective one of the channels, the data sectors corresponding to each channel being recorded at a predetermined timing, and the data blocks within the data

sectors being recorded with block pulses for defining borders between adjacent data blocks and means for reproducing the recorded digital data signals from said recording medium, the improvement comprising:

frequency conversion means for converting said first sam-



pling frequency of said digital data signals within said channels into a second sampling frequency before recording said digital data signals so that said block pulses have a timing in each of said channels that is continuous with said predetermined timing with which the data sectors in the respective channel are recorded.

5,291,470

OPTICAL INFORMATION RECORDING METHOD

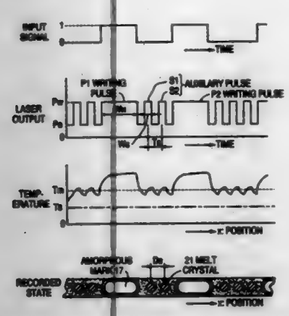
Kenichi Nishiuchi, Moriguchi, and Noboru Yamada, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 311,632, Feb. 16, 1989, abandoned. This application Feb. 6, 1990, Ser. No. 477,199

Claims priority, application Japan, Mar. 28, 1988, 63-73610; Mar. 31, 1988, 63-80839

Int. Cl.[5] G11D *7/00*

U.S. Cl. 369—100 **30 Claims**



1. A method of recording an information signal by using a single light beam on a recording medium which is reversibly changeable between first and second states which are optically distinguishable from each other, comprising the steps of:

applying the single light beam, as a recording light pulse, in response to the information signal to the recording medium for a predetermined duration to cause the recording medium to melt and become the first state thereby forming a record mark; and

modifying the single light beam before and after the recording light pulses into a train of auxiliary light pulses each having a shorter duration than the predetermined duration and applying the train of auxiliary light pulses to an area of the recording medium before and after the record mark to cause the area to melt and become a state substantially identical to the second state.

5,291,471

RECORDING/REPRODUCING SYSTEM USING PHASE ENCODING OF OPTICAL STORAGE MEDIUM

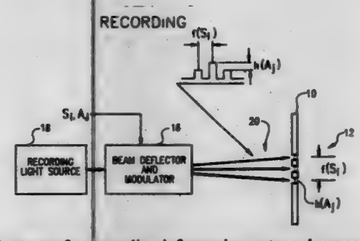
James T. Russell, 15305 SE. 48th Dr., Bellevue, Wash. 98006

Continuation-in-part of Ser. No. 410,943, Sep. 22, 1989, Pat. No. 5,056,080, and Ser. No. 614,627, Nov. 16, 1990. This application Jan. 28, 1991, Ser. No. 646,412

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—100 **28 Claims**



1. A system for recording information onto and reproducing such information from an optical storage medium comprising:

recording means for storing information on an optical storage medium having a data track formed by a plurality of sets of marks, each of said sets of marks encoding first data as variable spacing between marks of each of said sets of marks transverse to a read light beam axis and transverse to said data track, and encoding second data as variable optical phase shifting characteristics of said marks of each of said sets of marks that shift optical phase along the read light beam axis; and

reproducing means for reading information stored in said data track, including a substantially coherent light source means that is adapted to direct a read light beam at said data track for interacting with said plurality of sets of marks, said read light beam illuminating said marks of each of said sets of marks to form from each of said sets of marks interference light patterns emanating from said medium in which intervals between maxima and/or minima of said interference light patterns are caused by said variable spacing of said marks of each of said sets of marks and represent said first data, and in which relative amplitudes of said maxima and/or minima at any point along said data track are due to said variable optical phase shifting characteristics of said marks of said sets of marks and represent said second data, said reproducing means further including photosensor means for sensing said intervals and relative amplitudes of said maxima and/or minima of said interference light patterns and for converting light therefrom into electrical signals representing said first and second data.

5,291,472

INFORMATION RECORDING AND REPRODUCTION METHODS USING OSCILLATION MEDIUM OR TRANSDUCER

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation-in-part of Ser. No. 330,814, Mar. 30, 1989, Pat. No. 5,123,006, which is a continuation-in-part of Ser. No. 13,127, Feb. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 815,933, Jan. 3, 1986, Pat. No. 4,642,705, which is a continuation-in-part of Ser. No. 405,996, Aug. 6, 1982, Pat. No. 4,578,717. This application Jun. 16, 1992, Ser. No. 900,058

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—100 **29 Claims**



1. A method for recording and reproducing information comprising:

(a) recording information in the form of data bits comprised of closely spaced microcrystals on a metal recording layer that is supported by a substrate;

(b) reproducing a selected portion of the recorded information by generating a radiation beam, directing said radiation beam at a selected portion of said recording layer, and effecting controlled relative movement between said beam and said selected portion to cause the microcrystals that are irradiated by said beam to act as microscopic antennas broadcasting radiant energy; and

(c) photoelectrically detecting the radiant energy that is broadcasted by said selected microcrystals.

5,291,473

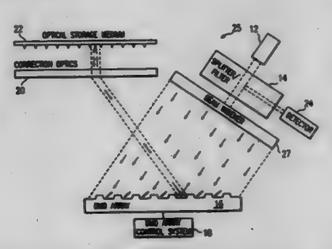
OPTICAL STORAGE MEDIA LIGHT BEAM POSITIONING SYSTEM

Giles A. Pauli, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 6, 1990, Ser. No. 534,103

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—112 **9 Claims**



8. An optical tracking system for directing a beam of light used to access an optical storage medium, comprising:

a light beam source for generating the beam;

an array comprising a linear array of deformable mirror devices formed on a substrate, each of said deformable mirror devices comprising a torsion beam having a mirrored outer surface, a torsion rod coupling said torsion beam to said substrate, and an address electrode disposed inwardly from said mirrored outer surface, said address electrode for receiving a deflection signal;

an array control system operable for selectively transmitting said deflection signal to said address electrode;

a beam widener disposed in the path of the beam between said light beam source and said array and operable to widen the beam generated by said source such that said widened beam impinges on each of said elements in said array; and

said optical storage medium operable to reflect the beam, a detector disposed in the path of said reflected beam and operable to discern the data stored in the selected portion of the optical storage medium responsive to the receipt of said reflected beam.

5,291,474

PROCEDURE FOR FORMING FREQUENCIES OF A DIGITAL RADIO TELEPHONE

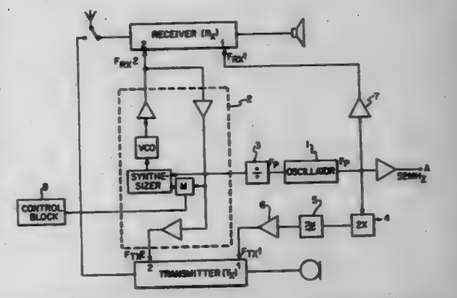
Raimo Ikonen, Pertteli; Pekka Louka, and Pekka Mikkola, both of Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 512,789, Apr. 20, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 875,545

Claims priority, application Finland, May 18, 1989, 892405

Int. Cl.[5] H04B *1/50*

U.S. Cl. 370—30 **8 Claims**



1. The method of operating a transmitter and a receiver of a time division multiplex radio telephone having a logic control, said radio telephone being operated in a time division multiplex radio telephone system for transmitting and receiving radio frequency signals, using a single common basic oscillator having a basic oscillator frequency and a single common synthesizer comprising the steps of:

deriving a first receiver mixer frequency from said basic oscillator frequency,

applying to said transmitter a first transmitter mixer frequency derived from said basic oscillator frequency, for mixing with a modulating signal for producing an intermediate transmitter frequency signal, said first transmitter mixer frequency being different from said first receiver mixer frequency,

applying a third frequency derived from said basic oscillator frequency, to said common synthesizer,

applying the output from said synthesizer as a second receiver mixer frequency to said receiver, for mixing with a received radio frequency signal for producing an intermediate receiver frequency signal, the second receiver mixer frequency being present at the receiver during a reception time slot of the time division multiplex system,

applying the first receiver mixer frequency to the receiver, for mixing with the intermediate receiver frequency to produce a demodulated output signal, and

applying the output from said synthesizer, as a second transmitter mixer frequency, to said transmitter, for mixing with the intermediate transmitter frequency for producing

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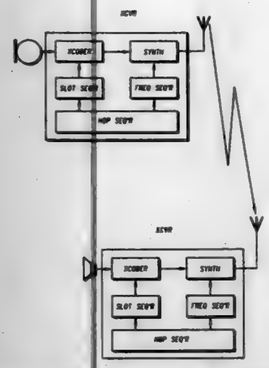
a transmitter radio frequency signal, the second transmitter mixer frequency being present at a transmitter during a transmission time slot of the time division multiplex system, and said second transmitter mixer frequency being different from said second receiver mixer frequency.

5,291,475

SLOT HOPPED FD/TD/CDMA

Eugene J. Bruckert, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1992, Ser. No. 859,175
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.1 **6 Claims**



1. In a wireless frequency and time division multiple access, FD/TDMA, communications system for transmitting communication signals, said FD/TDMA system having communication channels defined by a plurality of slots within a frame, a hopped wireless communications device comprising, operatively coupled in series:

means for assigning, sequentially by frame, one of said communication signals to at least one slot at a time of said plurality of slots such that each of said plurality of slots is assigned to said communication signal according to a predetermined slot sequence;

and means for assigning, sequentially, said one of said communication signals to at least one frequency at a time of a plurality of frequencies such that each of said plurality of frequencies is assigned to said communication signal according to a predetermined frequency sequence,

wherein said means for assigning said one of said communication signals to said slot is prime with respect to said means for assigning said one of said communication signals to said frequency.

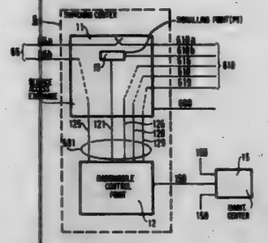
5,291,476

SWITCHING CENTER FOR RADIOMOBILE APPLICATION

Edouard Isoumaana, Le Chesnay, and Maurice Martin, Paris, both of France, assignors to Alcatel CIT, Paris, France

Filed Oct. 17, 1989, Ser. No. 422,478
Claims priority, application France, Oct. 21, 1988, 88 13826
Int. Cl.[5] H04Q *11/00*
U.S. Cl. 370—53 **8 Claims**

1. A switching center for radiomobile application, for connecting mobile subscribers to a public switched telephone network, said switching center being connected via first multiplex links to controllers which are themselves connected to a base stations in radio communication with mobile subscribers, and via second multiplex links to the public switched telephone network, said first multiplex links conveying speech signals, data, and associated signalling, said second multiplex links transferring the speech signals, data, and signalling including signalling relating to switching operations and signalling relating to a permanent file of mobile subscribers, relating to a temporary file of mobile subscribers present in a geographical zone, and relating to other switching centers in the geographical zone, the signalling of the first and second multiplex inks being conveyed using the CCITT No. 7 signalling system, and said switching center providing switching functions and signalling functions related to the radiomobile application, wherein said switching center comprises a service access exchange and a radiomobile control point interconnected by an interconnecting multiplex link, and wherein said service access exchange



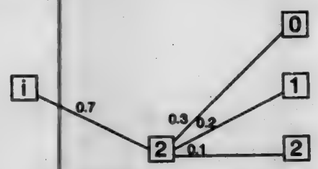
establishes semipermanent links between the interconnecting multiplex link and the first multiplex link for interchanging signalling, semipermanent links between the interconnecting multiplex link and the second multiplex links for interchanging signalling relating to the files and to the other switching centers, and a permanent link between the interconnecting multiplex link and signalling point of said service access exchange, said signalling point being also connected via permanent links to the second multiplex links for interchanging signalling relating to switching operations, said service access exchange providing switching functions only, and said radiomobile control point providing signalling functions for the radiomobile application only.

5,291,477

METHOD AND SYSTEM FOR MULTICAST ROUTING IN AN ATM NETWORK

Soung C. Liew, Somerset, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Aug. 10, 1992, Ser. No. 927,761
Int. Cl.[5] H04L *12/48*; H04Q *11/04*
U.S. Cl. 370—54 **14 Claims**



multicast tree after trim-and-graft operation

1. In a network including a multicast tree having a plurality of nodes interconnected by links, the plurality of nodes including a source node, multiple end nodes and multiple intermediate nodes, a method for determining optimal routes from the source node to the plurality of end nodes, the method comprising the steps of:

assigning a weight to each link of tree, each weight representing a traffic congestion level on the link; and,

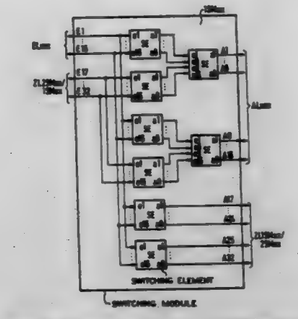
minimizing the combined total of link weights from the source node to the multiple end nodes to determine the optimal routes.

5,291,478

SWITCHING NETWORK WHEREIN SHORT-PATH CONNECTIONS CAN BE SWITCHED

Karl-Heinz Grabowski, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 29, 1993, Ser. No. 82,955
Claims priority, application European Pat. Off., Aug. 6, 1992, 92113450.8
Int. Cl.[5] H04Q *3/68*
U.S. Cl. 370—58.1 **5 Claims**



1. A circuit arrangement for a switching network, the switching network being connected to a plurality of duplex trunks, each of the duplex trunks having a simplex input line and a simplex output line, comprising:

the switching network being formed by a plurality of switching modules arranged in stages;

every switching module of the plurality of switching modules having the same number of simplex inputs as simplex outputs;

every simplex input of a switching module being connectable to every simplex output of the same switching module;

every switching module being formed by a plurality of switching elements, each of the switching elements of the plurality of switching elements having twice as many simplex inputs as simplex outputs, the switching elements arranged in first and second rows and a respective switching element of the second row together with two switching elements of the first row whose simplex outputs are connected to simplex inputs of the respective switching element of the second row forming a switching element group;

the simplex inputs of a respective switching module of the first stage connected to the simplex inputs of the switching elements of the first row belonging to the respective switching module and available for the connection of input lines;

the simplex inputs of a respective switching module are established by simplex outputs of a further respective switching element belonging to the respective switching module;

for switching short-paths, an equal portion of the simplex inputs and the simplex outputs of a switching module of the first stage being connected to input and output lines, respectively, belonging to a respectively same trunk, a remaining portion of the simplex inputs and a remaining portion of the simplex outputs of the switching module of the first stage being connected to links that bring signals from switching modules of the second stage or, respectively, forward signals to switching modules of the second stage;

only one of output lines and links being connected to an output of a respective switching element group;

inputs of one switching element of the first row in a respective switching element group that has outputs of a respective matching element of the second row connected to output lines being only connected to input lines;

inputs of the other switching element of the first row in the respective switching element group that has outputs of a respective switching element of the second row connected to output lines being only connected to links; and

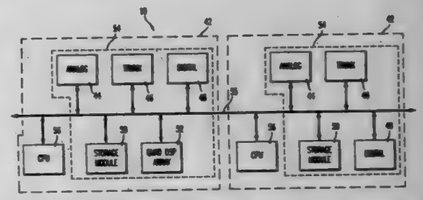
a further row of two additional switching elements, each of the two additional switching elements having its inputs connected only to input lines and having its outputs connected only to links.

5,291,479

MODULAR USER PROGRAMMABLE TELECOMMUNICATIONS SYSTEM WITH DISTRIBUTED PROCESSING

Faramarz Vaziri, Port Eves; Brian Bolon, Dunneburg; Brent E. Bryson, Highland, and John Emerick, Saugerties, all of N.Y., assignors to Digital Technics, Inc., Ellicott City, Md.

Filed Jul. 16, 1991, Ser. No. 731,043
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—58.2 **46 Claims**



1. A telecommunications system for providing a plurality of ports with switching and telecommunications services, said system comprising:

a digital communications link comprising a first line for control signals and a second line comprising a serial pulse code modulated highway for voice and data;

a subscriber interface circuit coupled to said digital communications link and too at least one subscriber telecommunications unit and having a first processor for processing output signals generated by said subscriber telecommunications unit; and

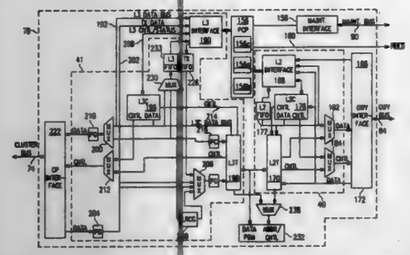
a central processing unit coupled to said digital telecommunications link and to said subscriber interface circuit via said digital telecommunications link and having a second processor, a first memory circuit, and program code stored in said memory circuit, said central processing circuit being operable to generate master control signals in accordance with said program code and to transmit said master control signals to said subscriber interface means along said first line; wherein

said master control signals are operable in accordance with said program code to command when said subscriber interface circuit can provide signals on said first line and said second line; and

said subscriber interface circuit is operable to generate command signals in response to said master control signals, to transmit said command signals to said central processing circuit along said first line and to transmit at least one of said voice and data along said second line when commanded by said master control signals.

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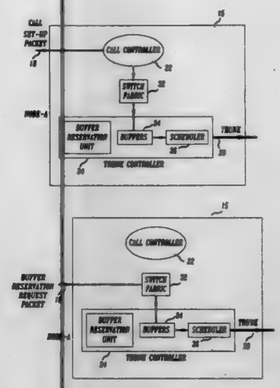
5,291,480
SYNCHRONOUS NODE CONTROLLERS FOR SWITCHING NETWORK
Kimmy F. Nimon, Arlington, Tex., assignor to DSC Communications Corporation, Plano, Tex.
Filed Jun. 18, 1991, Ser. No. 717,420
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—58.1 **33 Claims**



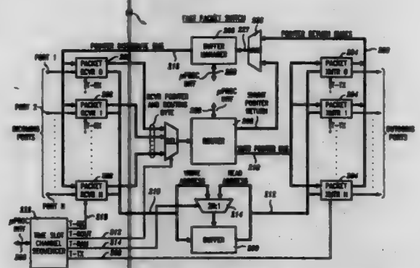
19. A method of interfacing a packet switching network to a number of user processors that handle communications of data at an origin and a destination and that are organized into groups, each group associated with a node controller, said switching network using a first level protocol for establishing and releasing connections, comprising the steps of:
using a second level protocol to handle messages between said node controllers;
using a third level protocol to handle communications between said user processors;
storing messages associated with said second level protocol in a second level memory of each of said node controllers;
storing messages associated with said third level protocol in a third level memory of each of said node controllers;
processing said second level memory;
processing said third level memory;
wherein each of said processing steps are performed in synchronization by all of said node controllers during a node control frame.

5,291,481
CONGESTION CONTROL FOR HIGH SPEED PACKET NETWORKS
Bharat T. Doshi, Holmdel; Subrahmanyam Dravida, Highland Park; David S. Einstein, Branchburg, and P. Harshavardhana, Freehold, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 4, 1991, Ser. No. 771,578
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—60 **34 Claims**

1. A packet switching system, comprising:
an input for receiving calls, some of which are bursty transmissions and some of which are non-bursty transmissions;
a plurality of outputs;
a call controller means for:
(a) routing a call received by the input to a selected one of the outputs,
(b) identifying whether the received call is a bursty transmission or a non-bursty transmission,
(c) reserving for the received call at least a first requested minimal amount of bandwidth on the selected one of the outputs needed to perform in-call buffer reservation in response to an identification that the call is a bursty transmission, and
(d) reserving a predetermined second peak amount of bandwidth on the selected one of the outputs needed to transmit the call in response to an identification that the call is a non-bursty transmission; and
a trunk controller means associated with the selected one of the outputs for:
(a) reserving a requested amount of buffer space for the call in the trunk controller means in response to a buffer reservation packet in a call which is a bursty transmission, the buffer reservation being accomplished independent of the call routing, call identifying, and bandwidth reservation of the call controller means, and
(b) placing data in a call which is a non-bursty transmission on the selected one of the outputs in accordance a first priority and placing data in a call which is a bursty transmission on the selected one of the outputs in accordance with a second priority less than the first priority.

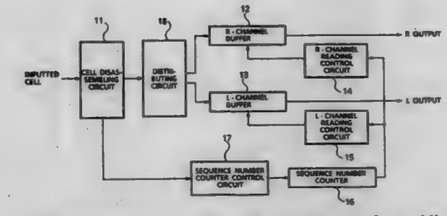


5,291,482
HIGH BANDWIDTH PACKET SWITCH
Christopher G. McHarg, Winfield; Thomas E. Newman, Wheaton; Kenneth N. Schaff, Warrenville, and Kenneth E. Wendland, St. Charles, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 24, 1992, Ser. No. 919,461
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **28 Claims**



1. A fast packet switch for routing data packets from a source to a destination, said data packets having a destination address, said switch comprising:
a plurality of input ports, a plurality of output ports, a buffer connected to said input ports and said output ports, a buffer manager connected to said input ports and said output ports, and a router connected to said input ports and said output ports;
said buffer manager selecting a location in said buffer in response to notification of receipt of a data packet at one of said input ports and producing data representing said buffer location, said input ports each having means responsive to receipt of said data representing said buffer location for delivering said incoming packet to said buffer location;
said router having means responsive to receipt of said data representing said buffer location and said destination address from said input ports for delivering said data representing said buffer location to a selected one of said plurality of output ports responsive to said destination address;
each of said output ports having means responsive to receipt of said data representing said buffer location for retrieving said data packet from said buffer location, transmitting said data packet and returning said data representing said buffer location to said buffer manager.

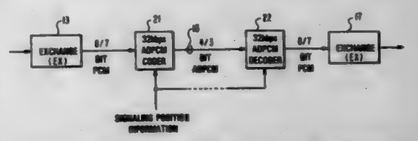
5,291,483
CELL TRANSFER METHOD AND CELL RECEIVING APPARATUS
Tetsuya Nagai, Yokohama, and Katsuyuki Yamazaki, Tsurugashima, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Kokusai Denshin Denwa Co., Ltd., Tokyo, both of Japan
Filed Jul. 2, 1993, Ser. No. 84,956
Claims priority, application Japan, Jul. 10, 1992, 4-183984
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—60 **2 Claims**



1. A cell transfer method comprising the steps of: providing a channel identifier in a cell to assign the cell to each channel exclusively; giving the same sequence number to cells having channel information to be reproduced at the same timing to transfer the cells; and causing a cell receiving side to identify the channel in accordance with the channel identifier, store the received channel information for each channel and utilize a waiting time from reception to reproduction of the cell so that the channel information of the cells having the same sequence number is reproduced at the same time.

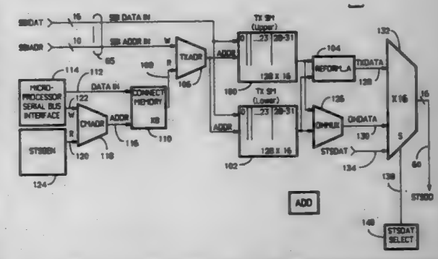
5,291,484
RELAY AND EXCHANGE SYSTEM FOR TIME DIVISION MULTIPLEX DATA
Yoshihiro Tomita, Tokyo; Tatsuo Fujiwara, Kawasaki; Hirotoshi Shimizu, Kawasaki; Masashi Matsumoto, Kawasaki, and Yasushi Fujioka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP90/01133, § 371 Date May 3, 1991, § 102(e) Date May 3, 1991, PCT Pub. No. WO91/03901, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 4, 1990, Ser. No. 678,327
Claims priority, application Japan, Sep. 4, 1989, 1-227433; Sep. 13, 1989, 1-235705; Oct. 30, 1989, 1-282798; Nov. 20, 1989, 1-299792; Dec. 13, 1989, 1-321345; Dec. 14, 1989, 1-322763
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—68.1 **23 Claims**

22. A relay and exchange system for time division multiplex data, supplied with a first ADPCM signal, comprising:
a first multiplexing apparatus for receiving the first ADPCM signal, for detecting first signaling information included within the first ADPCM signal, and for converting the first ADPCM signal of n bits or less than n bits into a first PCM signal of m (m>n) or less than m bits, respectively, the first ADPCM signal and the first PCM signal being less than n bits and less than m bits, respectively, when the first signaling information is present, and for inserting second signaling information into the first PCM signal;
an exchange coupled to said first multiplexing apparatus, for exchanging the first PCM signal based on the first signaling information to generate a second PCM signal; and



a second multiplexing apparatus coupled to said exchange, for receiving the second PCM signal, for detecting second signaling information included within the second PCM signal, and for converting the second PCM signal of m or less than m bits into a second ADPCM signal of n bits or less than n bits, respectively, the second PCM signal being less than m bits and the second ADPCM signal being less than n bits when the second signaling information is detected.

5,291,485
METHOD AND APPARATUS FOR TRANSLATING DIFFERENTLY-SIZED VIRTUAL TRIBUTARIES ORGANIZED ACCORDING TO A SYNCHRONOUS OPTICAL NETWORK (SONET) STANDARD
Manal Afify, Raleigh; Allen W. Moore, Cary, and Claude M. Hurlocker, Raleigh, all of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.
Filed Feb. 18, 1992, Ser. No. 837,472
Int. Cl.[5] H04J *3/00*
U.S. Cl. 370—77 **9 Claims**



2. A reformatter for reformatting digital data signals transported in frames having payload bytes divided in groups of bytes, the groups being subdivided into virtual tributaries (VTs) having a number of bytes selected according to a synchronous optical network (SONET) standard specifying sizes of VTs by number of bytes, the reformatter comprising:
a drop encoder, responsive to incoming address signals mapped according to a first virtual tributary (VT) size and responsive to incoming parallel data signals of a second VT size, for providing the data signals in one or more channels of a serial transport frame sized for the first VT size; and
an add decoder, responsive to outgoing data signals of the second VT size in one or more channels of the serial transport frame sized for the first VT size, for providing the outgoing data signals as parallel data signals of the

second VT size and for providing outgoing address signals mapped according to the first VT size.

5,291,486

DATA MULTIPLEXING APPARATUS AND MULTIPLEXED DATA DEMULTIPLEXING APPARATUS

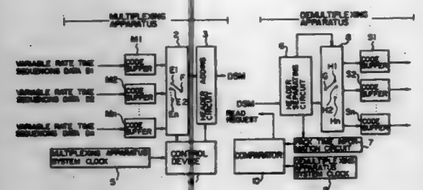
Hideki Koyanagi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,736

Claims priority, application Japan, Aug. 19, 1991, 3-230975; Aug. 19, 1991, 3-230976; Aug. 19, 1991, 3-230977

Int. Cl.[5] H04J *3/22*

U.S. Cl. 370—84 **13 Claims**



1. A data multiplexing apparatus for timeshare-multiplexing a plurality of data signals having variable rates, said apparatus comprising:

a storage medium;

a plurality of code buffers each respectively receiving one of the data signals;

switching means responsive to a switching control signal for successively retrieving each of said data signals from said code buffers and for grouping the retrieved data signals so as to form respective packets of data, each packet corresponding to a respective variable rate, and for generating one or more packs of data from the packets of data, each pack having a fixed data length;

means for determining if the data contained within the one or more packets of data to be included in a respective pack is less than that which may occupy the respective pack and, in the event of such a determination, for obtaining an amount of data necessary to be added to the included data so as to fill the respective pack from a portion of another packet of data and for adding such data to the respective pack;

header adding means responsive to a header control signal for respectively adding a packet header at a beginning portion of each of said packets and for respectively adding a pack header at a beginning portion of each pack which includes time information identifying when the respective pack of data is to be subsequently read from said storage medium, said header adding means supplying each pack of data to said storage medium so as to be stored therein; and

control means for generating said switching and header control signals and for respectively supplying the same to said switching means and said header adding means.

5,291,487

APPARATUS FOR, AND METHOD OF, PACKING AND UNPACKING INFORMATION IN TRANSMISSION LINES

Thomas C. Sheppard, Simi Valley, Calif., assignor to Micom Communications Corp., Simi Valley, Calif.

Filed Jan. 24, 1991, Ser. No. 645,211

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—84 **20 Claims**

9. In combination for providing for the transmission of symbols in a transmission line where successive groups of symbols are provided in successive character frames,

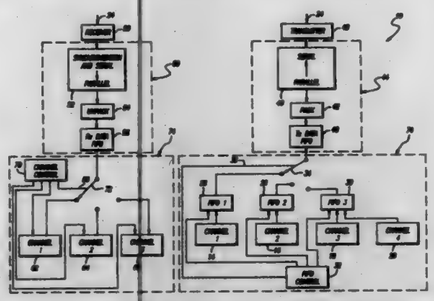
first means for providing a first plurality of channels first ones of which provide symbols periodically at individual rates and second ones of which provide signals aperiodically,

a line,

second means for introducing symbols to the line from the different channels on a priority basis primarily in accordance with the rates of occurrence of the periodic symbols in the first channels and secondarily in accordance with the aperiodicity of the symbols in the second channels,

latch means,

third means for introducing first portions of the successive symbols in each character frame to the latch means,



second portions of the symbols in each character frame having a particular number of binary bits representing a decimal number of an individual decimal significance,

fourth means responsive to the second portions of the symbols in each character frame for reducing the composite number of the binary bits in such second portions to a binary value representative of the decimal value defined by giving a different decimal significance to the decimal numbers of the individual binary significance, and

fifth means for releasing the binary indications in the latch means from the latch means for transmission through the line.

5,291,488

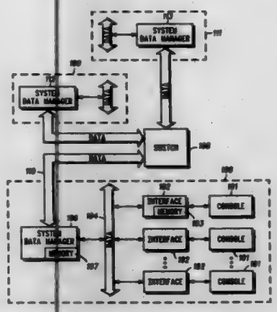
COMMUNICATION SYSTEM CONFIGURATION DATA MANAGEMENT

Calvin V. Jestice, Hoffman Estates; James M. Connor, Carol Stream; Jeffrey Lohrbach, Elgin, and Daniel B. Sommers, Clarendon Hills, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 509,915, Apr. 16, 1990, Pat. No. 5,175,727. This application Apr. 12, 1991, Ser. No. 684,620

Int. Cl.[5] H04L *12/40*

U.S. Cl. 370—85.1 **19 Claims**



1. A communication system comprising:

A) a plurality of audio source and destination consoles;

B) a data communication link;

C) a plurality of interfaces, wherein each console couples to a unique one of the interfaces, and each of the interfaces couples to the data communication link, and further wherein each of the interfaces includes memory means for storing system configuration data regarding the communication system, and data content indicator information for other communication systems;

D) system data manager means coupled to the data communication link for storing:

system configuration data regarding the communication system; and

data content indicators for other communication systems; and

for determining a data content indicator for the communication system.

5,291,489

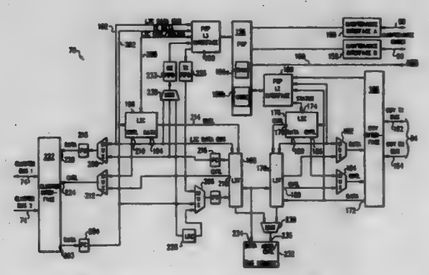
INTERPROCESSOR SWITCHING NETWORK

James D. Morgan, Garland; Allen R. Adams, Jr., Plano; Robert E. Nimon, Arlington, and Edgar L. Read, Plano, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

Continuation of Ser. No. 441,158, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 120,411, Nov. 13, 1987, Pat. No. 4,885,739. This application Feb. 12, 1992, Ser. No. 836,175

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—85.100 **35 Claims**



1. Communication circuitry for a plurality of processors, comprising:

first transfer circuitry responsive to program code and capable of transferring interprocessor communications between a predetermined first set of said plurality of processors,

second transfer circuitry responsive to program code and capable of transferring interprocessor communications between said predetermined first set of said plurality of processors and at least a second set of said plurality of processors and operable to allow simultaneous and distinct communications among said plurality of processors, and

control circuit for sensing changes in at least one of said plurality of processors and for responding to said sensed changes by dynamically modifying said program code for at least one of said first and second transfer circuitry.

5,291,490

NODE FOR A COMMUNICATION NETWORK

Giovanni Conti, Lausanne, Switzerland, and James R. Ensor, Red Bank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 18, 1992, Ser. No. 837,511

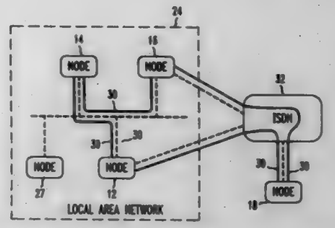
Int. Cl.[5] H04L *12/40, 12/48, 12/66*

U.S. Cl. 370—85.4 **17 Claims**

1. An arrangement for communicating among a plurality of nodes in a packet network wherein each node connects a plurality of user entities to the network, the arrangement comprising:

means for receiving a packet including a data segment and a control segment, the data segment including information selected from the group consisting of connection control information and data information, the receiving means including means for routing the data segment of a received packet to a predetermined one of the plurality of user entities in response to the control segment of the received packet;

first and second service access point means coupled to the



receiving means, the first service access point means passing the data segment between the receiving means and a first user entity of the plurality of user entities and the second service access point means passing the data segment between the receiving means and a second user entity of the plurality of user entities; and

first and second buffer means for storing the data segments of received packets routed via the respective service access point means to the first and second user entities, respectively, so that the arrangement effectively reduces the number of packets discarded by at least one of the plurality of nodes.

5,291,491

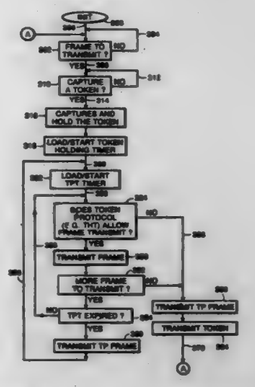
AVOIDANCE OF FALSE RE-INITIALIZATION OF A COMPUTER NETWORK

Jerry D. Hutchison, Littleton, and Henry S. Yang, Andover, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 22, 1991, Ser. No. 643,971

Int. Cl.[5] H04L *12/42*

U.S. Cl. 370—85.5 **29 Claims**



1. An apparatus for a station in a communications network, said network of the type having a plurality of stations capable

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of transmitting frames onto said network, and said stations capable of detecting transmissions on said network, and said stations capable of taking predetermined action in the absence of detecting a frame transmission for a predetermined first time interval, and a first timer for measuring said predetermined first time interval, comprising:

means for originating information frames onto said network;

timing means for measuring a second predetermined time interval, said second predetermined time interval being chosen to be less than said first predetermined time interval; and,

reset means for transmitting a reset frame onto said network by a selected station at times in response to said timing means, and said reset frames being transmitted at intervals substantially equal to said second predetermined time interval, and said reset frames being capable of causing a station to reset said first timer to a beginning value, said reset means capable of transmitting said reset frames between frames transmitted by said originating means.

5,291,492

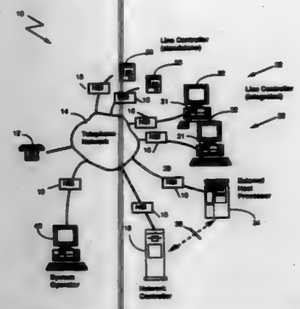
EXTERNALLY CONTROLLED CALL PROCESSING SYSTEM

G. Wayne Andrews, Nashua, N.H.; Jeffrey A. Fried, Somerville, Mass.; Jerry Gechter, Lincoln, Mass., and Robert L. Pokress, Andover, Mass., assignors to Unifi Communications Corporation, Billerica, Mass.

Filed Dec. 18, 1991, Ser. No. 809,346

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—110.1 **58 Claims**



1. A system for external control of call processing on a call connection network comprising

a network controller that is connected to receive an external party control message regarding a call connection operation to be executed by and involving one or more line controllers each connected to said call connection network by a call connection interface, said network controller being programmed to respond to said external party control message to determine what first party steps need to be taken by said line controller or controllers to execute said call connection operation, to generate first party control messages to carry out said first party steps, and to send said first party control messages over a message transfer network via message transfer interfaces to one or more said line controllers, said message transfer network being the same as or different from said call connection network, and

said one or more line controllers,

each said line controller being connected to said message transfer network via one of said message transfer interfaces to receive said first party control messages,

each said line controller being connected to said call connection network via said call connection interface permitting said line controller to participate in a call over said call connection network with another line controller or other terminal device connected to said call connection network.

each said line controller being connected to said call connection network via a call control interface permitting said line controller to request said call connection network to execute said call connection operation,

each said line controller being programmed to execute said first party control messages on behalf of itself on said call connection network in order to execute said call connection operation on said call connection network.

5,291,493

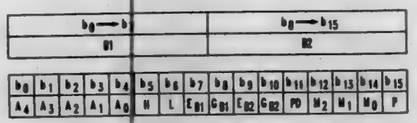
ISDN INTERFACE

James R. Brock, Bedminster, and Steven M. Gelfond, Parsippany-Troy Hills, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 2, 1992, Ser. No. 892,084

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—110.1 **17 Claims**



1. In an ISDN loop carrier transmission system which provides three channels per customer line and uses a frame pattern including a plurality of time slots, a method for transmitting data comprising the steps of:

transmitting the data from two of the channels for a single customer line in a single time slot;

transmitting information concerning the system in the first time slot in the frame; and

transmitting the data from the third channel in an otherwise unused additional time slot.

5,291,494

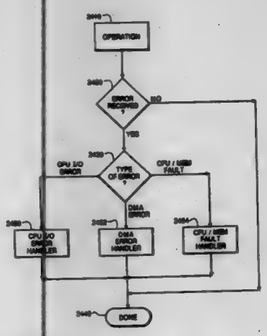
METHOD OF HANDLING ERRORS IN SOFTWARE

William F. Bruckert, Northboro, Mass.; Thomas D. Bissett, Derry, N.H., and James Melvin, Bolton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 388,324, Aug. 1, 1989, abandoned. This application Nov. 18, 1992, Ser. No. 978,053

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—11.3 **31 Claims**



1. In a data processing system containing a plurality of individually identifiable data processing modules which allow the data processing system to execute data processing operations, a method of recovery from faults occurring in the modules comprising the steps of:

detecting a presence of a fault caused by one of the data processing modules during the execution of one of the data processing operations; and

performing a fault processing routine in the data processing system including the substeps of

identifying as a faulting module the one of the data processing modules that caused the detected fault,

identifying a nature of the fault,

determining, from the nature of the fault, whether the data processing system is capable of continuing operation reliably despite the presence of the fault,

disabling the faulting module from further operation with the data processing system if the data processing system is not capable of continuing operation reliably because of the fault, and

preventing the faulting module from causing additional faults without disabling the faulting module if the data processing system is capable of continuing operation reliably despite the fault.

5,291,495

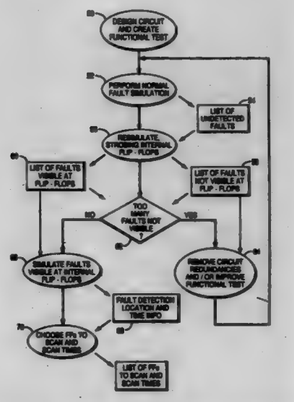
METHOD FOR DESIGNING A SCAN PATH FOR A LOGIC CIRCUIT AND TESTING OF THE SAME

Jon G. Udell, Jr., Fort Collins, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 12, 1991, Ser. No. 729,282

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **20 Claims**



1. A method for designing a scan path to connect sequential devices in a logic circuit comprising:

determining undetected faults in said circuit with the use of test patterns;

identifying sequential devices where the undetected faults are observable; and

selecting a subset of the identified sequential devices for connection in a scan path.

5,291,496

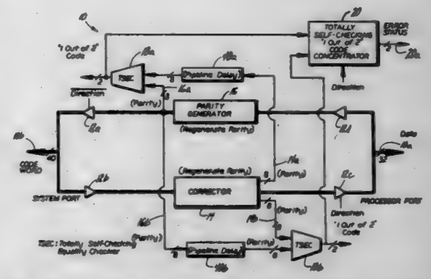
FAULT-TOLERANT CORRECTOR/DETECTOR CHIP FOR HIGH-SPEED DATA PROCESSING

David D. Andaleon, San Ramon; Leonard M. Napolitano, Jr., Danville; G. Robert Redinbo, Davis, all of Calif., and William O. Shreeve, Fayetteville, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 18, 1990, Ser. No. 599,606

Int. Cl.[5] G06F *11/10, 11/16*; H03M *13/00*

U.S. Cl. 371—3 **24 Claims**



17. A method for detecting an occurrence of an error in parallel digital information and for correcting the error, comprising the steps of:

generating, in response to a parallel multi-bit data output by a data processing means, a parallel parity signal having a value that is determined in accordance with a shortened Reed-Solomon code and as a function of a logical state of the parallel bits of the data;

associating the parallel parity signal in parallel with the data;

decoding in accordance with a dual orthogonal basis, in response to a parallel multi-bit data to be input to the parallel processing means, the parallel data and the associated parallel parity signal to determine if one or more of the bits is in error;

identifying bits, if any, that are in error;

correcting the erroneous bits; and

providing the correct parallel data to the data processing means while also providing a correct parallel parity signal

wherein all steps of said method are performed using Boolean operations.

5,291,497

METHOD FOR TESTING, DEBUGGING, AND COMPARING COMPUTER PROGRAMS USING CONCURRENT SIMULATION OF PROGRAM PATHS

Ernst G. Ulrich, Bedford; Karen P. Lentz, N. Andover, and Michael M. Gustin, Wilmington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 649,399, Feb. 1, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,187

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—19 **4 Claims**

1. A method for testing and debugging a plurality of computer programs, the method comprising the steps of:

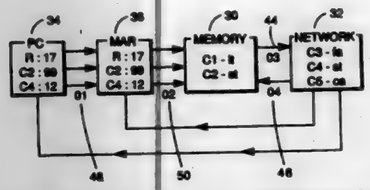
a. establishing a set of computer program paths within each one of the plurality of computer programs;

b. generating a signature from a simulation of each computer program path; and

c. comparing each signature generated from each computer

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program path to a corresponding one of a plurality of expected execution results for the computer program path



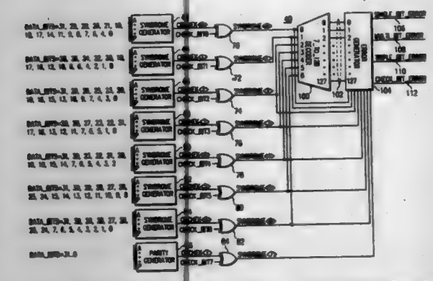
to determine an absence, a presence, and a location of any number of computer program design errors.

5,291,496

ERROR DETECTING METHOD AND APPARATUS FOR COMPUTER MEMORY HAVING MULTI-BIT OUTPUT MEMORY CIRCUITS

James A. Jackson, Richardson; Marc A. Quattromani, Allen, and Kevin M. Lowderman, Richardson, all of Tex., assignors to Convex Computer Corporation, Richardson, Tex.

Filed Jan. 29, 1991, Ser. No. 647,408
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 10 Claims



1. A method of error correction and detection for data which is stored in a computer memory, comprising the steps of:

generating a error detection and correction set of store check bits for a data word by use of a selected error correction code which detects and corrects a single bit error and detects multiple bit errors in said data word,

generating a store parity check bit for said data word,

storing said data word, said store check bits and said store parity check bit in a computer memory, which comprises a plurality of multi-bit output memory devices, wherein multiple bits of said data word are stored in each of said memory devices and no more than one of said store check bits or store parity check bit is stored in any one of said memory devices,

reading said data word, said store check bits and said store parity check bit from said computer memory, wherein there may be one or more bit errors in said data word, said store check bits and said store parity check bit read from said computer memory,

generating an error detection and correction set of verify check bits for said data word, which was read from said computer memory by use of said selected error correction code,

generating a verify parity check bit for said data word read from said computer memory,

comparing said store check bits read from said memory to said verify check bits to produce a check bit syndrome,

comparing said store parity check bit read from said computer memory with said verify parity check bit to produce a parity syndrome, and

decoding said check bit syndrome and said parity syndrome to:

(a) detect and identify single bit errors in said data word read from said computer memory, wherein a first output is produced, or

(b) detect multiple bit errors which do not all occur within a single one of said memory devices, wherein a second output is produced, or

(c) detect triple bit errors which all occur within the data bits within one of said memory devices, wherein a third output is produced, or

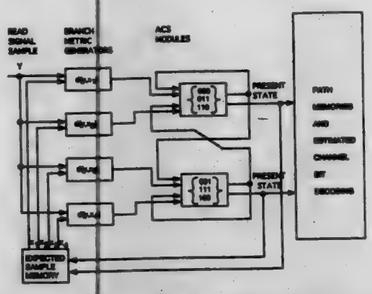
(d) detect a check bit error, wherein a fourth output is produced.

5,291,499

METHOD AND APPARATUS FOR REDUCED-COMPLEXITY VITERBI-TYPE SEQUENCE DETECTORS

Richard T. Behrens, Louisville; Kent D. Anderson, Lafayette, and Neal Glover, Broomfield, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 16, 1992, Ser. No. 852,015
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—43 29 Claims



1. A sequence detector for signals characterized by a predetermined state machine model having a first number of states, comprising a predetermined second number of add, compare, select (ACS) modules, said second number being less than said first number, at least one of said ACS modules being associated with a plurality of specific predetermined states of said predetermined state machine model so that one ACS module is associated with each state of said predetermined state machine model, each of said ACS modules associated with a plurality of states of said predetermined state machine model having memory means for storing which of the respective associated states said ACS module should represent at any particular time based upon the state associated with said ACS module having the lowest path metric thereto.

5,291,500

EIGHT-SAMPLE LOOK-AHEAD FOR CODED SIGNAL PROCESSING CHANNELS

Arvind M. Patel, and Robert A. Rutledge, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1990, Ser. No. 526,878
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—65 14 Claims

1. A method of processing, in a signal processing channel, transducer-generated analog electrical signals representative of coded binary data into digital sample values, comprising the steps of:

with a clock, generating successive clock cycles;

with a decoder, precomputing values for the following functional expressions for a baseline check in accordance with an eight sample look ahead algorithm:

$H_1 = y_0 + 2y_1 - 2y_3$

$H_2 = y_0 + 2y_1 + y_2 - y_3 - 2y_4$

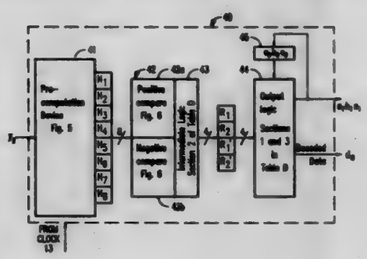
$H_3 = y_0 + 2y_1 + y_2 - y_4 - 2y_5$

$H_4 = y_0 + 2y_1 + y_2 - y_5 - 2y_6$

$H_5 = y_0 + 2y_1 + y_2 - y_6 - 2y_7$

where y_0 is a then current sample value, and y_1–y_7 are sample values in successive clock cycles following y_0; and

with the decoder, also precomputing the values of the following functional expressions for a peak-position check:



$H_6 = y_0 + y_1 - y_2 - y_3$

$H_7 = y_0 + y_1 - y_2 + 2y_4$

$H_8 = y_0 + y_1 - y_2 + y_4 - y_5$;

using the decoder, executing said algorithm during each of a series of successive clock cycles to decode one successive bit of coded binary data corresponding to said current sample value and to advance to the next clock cycle with the computed next state as the new current state;

defining each clock cycle by a clock signal that is phase locked to said analog signal; and

with an analog-to-digital converter, converting the incoming analog signal to said digital sample values at a rate of one sample value per clock cycle.

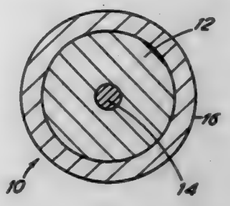
5,291,501

OPTICAL FIBRE WITH DOPED CORE AND DOPED INNER CLADDING, FOR USE IN AN OPTICAL FIBRE LASER

David C. Hanna, Southhampton, United Kingdom, assignor to University of Southhampton, Southampton, United Kingdom

PCT No. PCT/GB90/01936, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/10272, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 11, 1990, Ser. No. 920,442
Claims priority, application United Kingdom, Dec. 22, 1989, 89 28992
Int. Cl.[5] H01S *3/07*; G02B *6/22*
U.S. Cl. 372—6 12 Claims

1. An optical fibre laser, comprising an optical fibre which serves as a resonant cavity and which includes: a core; an inner cladding surrounding the core; an outer cladding surrounding the inner cladding and the core; and a light source, wherein the core is doped with a first laser active material, the inner cladding is doped with second laser active material different from the first laser active material, and the light source is a multi-mode source arranged to pump the inner cladding so as to



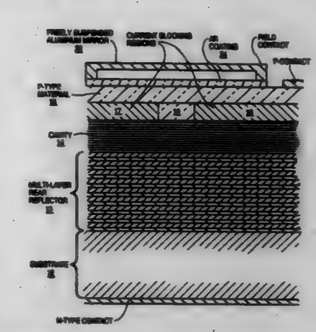
cause laser emission therein which, in turn, serves as pump radiation for the laser active dopant in the optical fibre core.

5,291,502

ELECTROSTATICALLY TUNABLE OPTICAL DEVICE AND OPTICAL INTERCONNECT FOR PROCESSORS

Bardia Pezeshki, Huntington Beach, and James S. Harris, Jr., Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif.

Filed Sep. 4, 1992, Ser. No. 939,903
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 17 Claims



1. A microlaser comprising:

a semiconductor substrate;

means formed on a surface of said substrate defining a first reflector for optical radiation;

means defining a Fabry-Perot lasing cavity for optical radiation, which lasing cavity is positioned to receive optical radiation reflected by said first reflector;

means defining a second reflector for optical radiation positioned to reflect optical radiation it receives from said lasing cavity through said lasing cavity toward said first reflector; and

means for adjusting the effective optical distance between said reflectors to tune the optical frequency at which lasing in said cavity occurs.

5,291,503

INTERNALLY STIMULATED OPTICAL PARAMETRIC OSCILLATOR/LASER

Allen R. Geiger, and Narasimha S. Prasad, both of Las Cruces, N. Mex., assignors to LaSen, Inc., Las Cruces, N. Mex.

Continuation of Ser. No. 777,705, Oct. 15, 1991, Pat. No. 5,195,104. This application Mar. 15, 1993, Ser. No. 31,530
Int. Cl.[5] H01S *3/10*; H03F *7/00*
U.S. Cl. 372—21 14 Claims

1. An optical parametric oscillator/laser comprising:

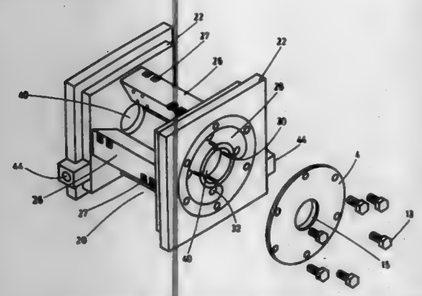
a pump source for generating pump radiation;

an optical parametric oscillator/laser crystal responsive to pump radiation to generate laser radiation and responsive to laser radiation to generate parametric optical radiation;
a first end surface located at a first end of the crystal which internally reflects laser radiation and parametric optical radiation; and



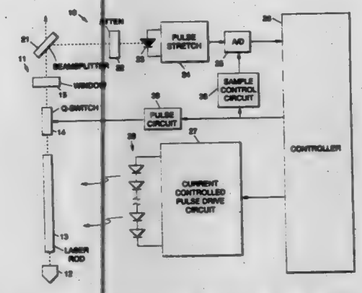
a second end surface located at a second end of the crystal which internally reflects laser radiation and parametric optical optical parametric oscillation radiation, wherein said second end surface is an output surface, and said second surface is partially reflective and partially transmissive to at least one of the optical parametric oscillation wavelengths.

5,291,504
LASER PUMP MODULE
Patrick A. Bournes, Reston, Va., assignor to Fibertek, Inc., Herndon, Va.
Filed Feb. 18, 1992, Ser. No. 835,825
Int. Cl.[5] H01S *3/04*
U.S. Cl. 372—34 **3 Claims**



1. A heat controlled monolithic housing for a laser pump module, said housing comprising:
a. two end sections having coolant passageways formed therein;
b. at least one pump means mounting section disposed between and attached to said end sections, said mounting section having at least one internal passageway formed therein wherein said end section passageways and said mounting section passageway are interconnected for continuous coolant fluid flow, said housing having a single entry port for fluid entering said housing and a single exit port for the fluid leaving said housing so that coolant enters said housing to absorb heat generated therein and exits said housing with the absorbed heat said end sections, said pump means, said mounting section, and said entry and exit ports being constructed to integrally form a monolithic housing.

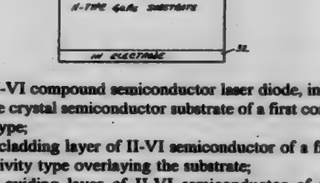
5,291,505
ACTIVE ENERGY CONTROL FOR DIODE PUMPED LASER SYSTEMS USING PULSEWIDTH MODULATION
Keith E. Nielsen, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 21, 1993, Ser. No. 6,557
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **7 Claims**



1. An active energy control circuit for use with a diode pumped laser system comprising a laser cavity, a laser rod, a Q-switch, a Q-switch firing pulse circuit, and a current controlled pulse drive circuit coupled to a plurality of pump diodes, and wherein the Q-switch generates an output energy pulse in response to a firing signal provided by the Q-switch firing pulse circuit, said control circuit comprising:
optical to electrical sampling means for sampling the output energy of the diode pumped laser system and for converting the sampled output energy into a digitized energy signal;
a controller comprising:
pulse duration logic for setting a desired initial pulse duration of the output energy pulse of the diode pumped laser system;
threshold logic coupled to the optical to electrical sampling means for comparing the digitized energy signal comprising the sampled output energy of the laser system to a predetermined energy threshold, and for providing output signals that are adapted to increase or decrease the pulse duration of the pulse provided by the current controlled pulse drive circuit depending upon whether the sampled output energy is below or above the predetermined energy threshold, respectively;
pulse duration output logic coupled to the current controlled pulse drive circuit for providing an output signal that is adapted to set the pulse duration of the output energy pulse in the pulse drive circuit;
laser firing logic coupled to the pulse duration output logic and to the Q-switch firing pulse circuit for causing the firing pulse circuit to generate the firing signal that is adapted to switch the Q-switch and generate the output energy pulse from the laser system; and
whereby the controller is adapted to maintain the output energy of the diode pumped laser system at a desired level.

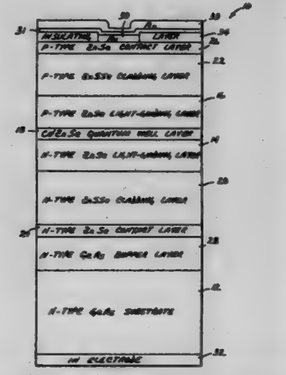
5,291,506
SEMICONDUCTOR LASER MADE OF GROUP II-VI COMPOUNDS
Do Y. Ahn, Seoul, Rep. of Korea, assignor to GoldStar Co., Ltd, Rep. of Korea
Filed Dec. 28, 1992, Ser. No. 998,072
Claims priority, application Rep. of Korea, Dec. 28, 1991, 1991-24948
Int. Cl.[5] H01S *3/18*
U.S. Cl. 372—43 **6 Claims**

1. A laser diode of a Group II-VI compound of the Periodic Table of Element semiconductor with a double-heterostructure, comprising:
a substrate doped with ions of a predetermined conductivity;
at least one lower cladding layer formed over the substrate and doped with ions of the same conductivity as the substrate, the lower cladding layer being comprised of a Group II-VI compound semiconductor;
an active region layer formed over the lower cladding layer and having a biaxial compressive strain for improving an



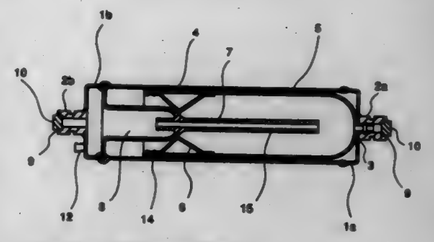
optical gain characteristic, the active region layer being comprised of a Group II-VI compound semiconductor;
at least one upper cladding layer formed over the active region layer and doped with ions of the opposite conductivity to the lower cladding layer, the upper cladding layer being comprised of a Group II-VI compound semiconductor; and
a capping layer formed over the upper cladding layer and doped with ions of the opposite conductivity to the substrate.

5,291,507
BLUE-GREEN LASER DIODE
Michael A. Haase; Hwa Cheng, both of Woodbury; James M. DePuydt, St. Paul, and Jun Qiu, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 700,601, May 15, 1991. This application Apr. 23, 1992, Ser. No. 873,647
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—44 **34 Claims**



1. A II-VI compound semiconductor laser diode, including:
a single crystal semiconductor substrate of a first conductivity type;
a first cladding layer of II-VI semiconductor of a first conductivity type overlaying the substrate;
a first guiding layer of II-VI semiconductor of the first conductivity type overlaying the first cladding layer;
an active layer of II-VI semiconductor overlaying the first guiding layer;
a second guiding layer of II-VI semiconductor of a second conductivity type overlaying the active layer; and
a second cladding layer of II-VI semiconductor of the second conductivity type overlaying the second guiding layer.

5,291,508
GAS LASER TUBE
Koji Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 2, 1992, Ser. No. 907,555
Claims priority, application Japan, Jul. 2, 1991, 3-161262
Int. Cl.[5] H01S *3/03*
U.S. Cl. 372—65 **7 Claims**



1. A gas laser tube comprising:
an enclosure having an inner wall;
a tubular cathode having opposed first and second ends and a diameter, said cathode being disposed within said enclosure and attached to said enclosure at the second end of said tubular cathode;
a discharge tube having opposed first and second ends and, at the first end, an expanded portion having a smaller diameter than the diameter of said cathode and, at the second end, a slender tube portion, said discharge tube being attached to said enclosure at the first end at said expanded portion, the second end of said discharge tube being disposed within and spaced from said tubular cathode; and
means for securing said tubular cathode at the first end to said expanded portion of said discharge tube within and to said tubular cathode, said means for securing being attached to said tubular cathode and pressing against said expanded portion of said discharge tube.

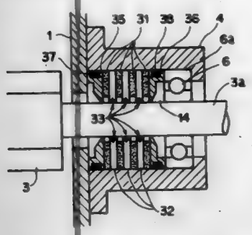
5,291,509
GAS LASER APPARATUS
Hakaru Mizoguchi, Isehara; Junichi Fujimoto, and Yoshiho Amada, both of Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jul. 9, 1992, Ser. No. 911,137
Claims priority, application Japan, Jul. 12, 1991, 3-198620
Int. Cl.[5] H01S *3/03*
U.S. Cl. 372—65 **18 Claims**

1. A gas laser apparatus comprising:
a gas medium;
a case in which the gas medium is enclosed;
a blower for circulating the gas medium within said case, said blower having a rotation shaft;
a bearing supporting said rotation shaft, said bearing containing a lubricant;
an anode and a cathode positioned in said case for generating laser light; and

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a magnetic fluid shaft seal positioned about said rotation shaft and providing a seal between the gas medium in said



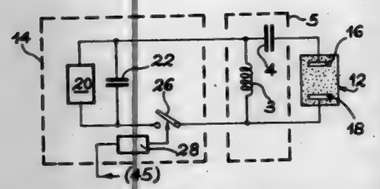
case and said lubricant in said bearing so as to isolate said lubricant from said gas medium.

5,291,510

ELECTRIC POWER SUPPLY FOR LASER

Serge Gidon, Tulette; Pierre Vulliez, La Garde Adhemar, and Bernard Hennevin, Decines, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 14, 1992, Ser. No. 820,356
Claims priority, application France, Jan. 30, 1991, 91 01049
Int. Cl.[5] H01S *3/09*
U.S. Cl. 372—69 **12 Claims**



1. An electric power supply for a laser, said laser comprising an active material, the power supply comprising an excitation module supplying electric pulses for the excitation of the active material, characterized in that said electric power supply also comprises a heating module supplying electric pulses for heating the active material and maintaining said active material at an operational temperature at which a laser effect occurs, following the excitation of the active material, as well as means for permitting the alternating, recurrent operation of the excitation and heating modules.

5,291,511

COMMUNICATION SYSTEM NETWORK HAVING SELF ADDRESS INFORMATION

John W. Maher, Woodstock; Laura Christensen, Mt. Prospect, and Ronald M. Zuckerman, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

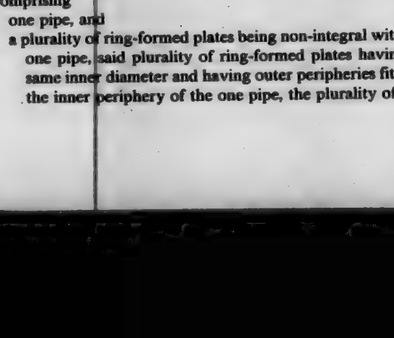
Continuation of Ser. No. 573,422, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 509,915, Apr. 16, 1990, Pat. No. 5,175,727. This application Jun. 21, 1993, Ser. No. 78,954
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.1 **6 Claims**

1. In a communication system network that comprises a plurality of communication systems and a processing multiplexer, wherein the processing multiplexer comprises at least one AEB data bus and a plurality of system database circuits, wherein each of the system database circuits includes a system data database that stores information pertaining to system data, a method for at least one system database circuit of the plurality of system database circuits to establish and maintain address information of the plurality of system database circuits, the method comprises the steps of:

a) within the at least one system database circuit, monitoring self address information, wherein the self addressing information includes, at least, a communication system identification number, an AEB identification number, an AEB signal bus address, and an address sequence number;

b) updating, within the system data database of the at least one system database circuit, the self address information when a change is detected in step (a) to produce updated self address information;

c) transmitting, by the at least one system database circuit, the updated self address information onto the at least one AEB data bus;



d) receiving, by each of the plurality of system database circuits, the updated self address information from the at least one AEB data bus to produce received updated address information;

e) comparing, by each of the plurality of system database circuits, the received updated address information with previously stored self address information of the at least one system database circuit;

f) overwriting, in the system data database of each of the plurality of system database circuits, the previously stored self address information of the at least one system database circuit with the received updated address information when the received updated address information is different than the previously stored self address information of the at least one system database circuit.

5,291,512

BRAGG REFLECTOR FOR MICROWAVE AND FAR-INFRARED WAVE, AND FREE ELECTRON LASER PROVIDED WITH THE REFLECTOR

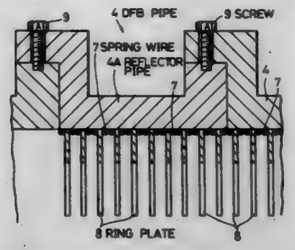
Yoshinori Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,121
Claims priority, application Japan, May 31, 1991, 3-155339
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—99 **8 Claims**

1. In an apparatus for providing Bragg reflection of microwaves and far-infrared waves, a Bragg reflector provided with a reflector part, the reflector part having at least one reflector element, each reflector element having a longitudinal axis and comprising

one pipe, and

a plurality of ring-formed plates being non-integral with said one pipe, said plurality of ring-formed plates having the same inner diameter and having outer peripheries fitted to the inner periphery of the one pipe, the plurality of ring-formed plates being adjustably spaced apart from each other so as to enable variation of a Bragg reflectivity of



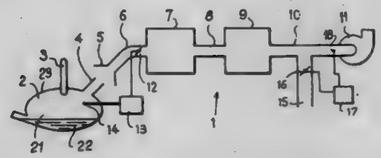
said Bragg reflector, thereby allowing selection of a desired wavelength in microwave and far-infrared regions.

5,291,513

METHOD AND DEVICE FOR EXHAUSTING GASES OR FUMES FROM A METALLURGICAL CONTAINER AND AN ELECTRIC FURNACE PROVIDED WITH SAID EXHAUST DEVICE

Daniel Pernet, Metz, and Jacques Blum, Argancy, both of France, assignors to Unimetal, Metz, France

Division of Ser. No. 886,167, May 21, 1992. This application Jul. 28, 1993, Ser. No. 97,887
Claims priority, application France, May 22, 1991, 91 06166; May 22, 1991, 91 06169
Int. Cl.[5] B08B *13/00*; C21B *13/12*; F27B *3/08*; F27D *17/00*
U.S. Cl. 373—9 **7 Claims**



1. Device for collecting gases or fumes emitted by an electric arc furnace (2) in the inside of which is effected the melting and/or the conversion of a metallurgical charge, with the production of gases or fumes, and comprising a stage (4) emitting gases or fumes out of the furnace, in communication with the inside of the furnace, the collecting device comprising a hood (5) for exhausting the gases or fumes in the emission stage (4) of the furnace, a chamber (7) for the combustion of the gases or fumes, a filter (9) and a fan (11) having an intake part, connected in series and in this order through a first duct (6) connecting the exhaust hood (5) to the combustion chamber (7), a second duct (8) connecting the combustion chamber to the filter, and a third duct (10) connecting the filter to the fan, characterized in that the device comprises:

a first element (12) for adjusting pressure drop disposed in the first duct (6) controlled by a first regulating means (13) connected, for the control thereof, to a pressure sensor (14) disposed in the inside of the furnace, in the vicinity of the emission stage (4),

an additional duct (15) connected to the third duct (10) at one of the ends thereof and opening out to the open air at the other end thereof,

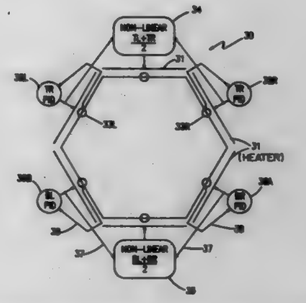
and a second element (16) for adjusting pressure drop disposed in the additional duct (15) and controlled by a second regulating means (17) connected, for the control thereof, to a pressure sensor (18) disposed in the third duct (10) in proximity to the intake part of the fan (11).

5,291,514

HEATER AUTOTONE CONTROL APPARATUS AND METHOD

Walter Heitmann, and David Waters, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1991, Ser. No. 731,112
Int. Cl.[5] H05B *3/64*
U.S. Cl. 373—135 **16 Claims**



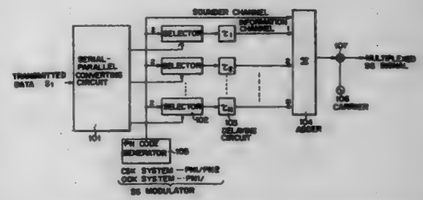
1. A method of controlling the duty cycle of a heater segment of a furnace including the step of applying power to at least one segment as a function of power applied to at least two other segments.

5,291,515

SPREAD SPECTRUM COMMUNICATION DEVICE

Yoshitaka Uchida; Mamoru Endo; Masahiro Hamatsu, and Shigeo Akazawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 713,462
Claims priority, application Japan, Jun. 14, 1990, 2-153998; Jan. 31, 1991, 3-31631
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **15 Claims**



1. A spread spectrum communication device comprising:

a transmitter having:

serial-parallel converting means for converting serial data to be transmitted into a plurality of parallel data sets;

spread spectrum modulating means for effecting spread spectrum modulation by modulating each of said data sets by a sounder spread spectrum code to generate a respective spread spectrum signal;

delaying means for delaying each of said spread spectrum signals from said spread spectrum modulating means by a respective different delay interval with reference to the phase of said sounder spread spectrum code, said sounder spread spectrum signal being independent of said plurality of parallel data sets;

adding means for adding each of the delayed spread spec-

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trum signals from said delaying means to said sounder spread spectrum code; and

an RF modulator for RF modulating an output of said adding means; and

a receiver having:

a correlator for correlating a received signal from said transmitter with a reference signal;

converting means for converting an output signal of said correlator into a signal in a base band information band;

a binary converting circuit for converting said signal in said base band information band into a digital signal; and

data demodulating means for demodulating said digital signal to restore the serial data.

5,291,516

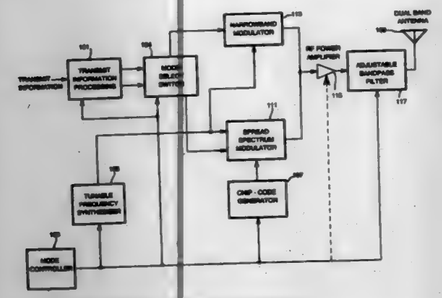
DUAL MODE TRANSMITTER AND RECEIVER

Robert C. Dixon, Palmer Lake, and Jeffrey S. Vanderpool, Colorado Springs, both of Colo., assignors to Omnipoint Data Company, Inc., Colorado Springs, Colo.

Continuation of Ser. No. 698,694, May 13, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 948,293

Int. Cl.[5] H04K *1/00*; H04L *9/00*

U.S. Cl. 375—1 **8 Claims**



1. A dual-mode transmitter comprising:

an antenna;

a mode controller for selecting narrowband modulation and spread-spectrum modulation;

information means for processing an information signal;

a tunable-frequency synthesizer for generating a carrier signal;

a chip-code generator for generating a chip-code signal;

a spread-spectrum modulator coupled to said information means, said tunable-frequency synthesizer and said chip-code generator for spread-spectrum modulating the processed information signal with the chip-code signal and the carrier signal as a spread-spectrum signal;

a narrowband modulator coupled to said information means and said tunable-frequency synthesizer for modulating the processed information signal with narrowband modulation as a narrowband modulated signal;

a power amplifier coupled to said mode controller, said spread-spectrum modulator and said narrowband modulator, responsive to a narrowband modulation setting of said mode controller for amplifying the narrowband modulated signal, and responsive to a spread-spectrum setting of said mode controller for amplifying the spread-spectrum signal;

an adjustable bandpass filter coupled to said antenna, said power amplifier and said mode controller, responsive to a narrowband modulation setting of said mode controller for adjusting a bandwidth of said adjustable bandpass filter to a narrow bandwidth for passing the narrowband modulated signal, and responsive to a spread-spectrum setting of said mode controller for adjusting the bandwidth of said adjustable bandpass filter to a wide bandwidth for passing the spread-spectrum signal.

5,291,517

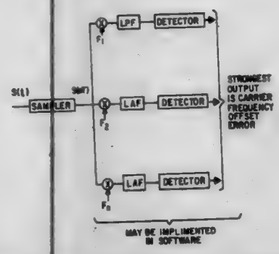
CARRIER FREQUENCY CORRECTOR FOR A DSSS COMMUNICATION SYSTEM

Seymour Stein, Newton Center; William F. DeLisle, Milford, and Karen M. Scharamm, Needham, all of Mass., assignors to GTE Goverament Systems Corporation, Waltham, Mass.

Filed Dec. 31, 1992, Ser. No. 999,625

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **1 Claim**



1. A carrier frequency corrector for a receiver for use in a direct sequence code division multiple access communication system having a carrier frequency, consisting of an expected carrier frequency and a carrier frequency error, modulated by a pseudo-noise code, comprising:

a local frequency source for providing a local frequency approximately equal to equal to the expected carrier frequency;

a demodulator for providing complex demodulated received signals stripped of the pseudo-noise code and mixed with the local frequency source, each of said demodulated signals consisting of in-phase signal components and quadrature signal components and the carrier frequency error;

a sampler coupled to said demodulator and adapted to convert said demodulated signal components to digital samples;

a digital signal processor coupled to the sampler adapted to multiply each signal component sample by stored digitized samples of a plurality of closely spaced sinusoidal tones to provide a product corresponding to each tone, for squaring each said product and for comparing the squared products to determine which tone provides the maximum value, that tone corresponding to the carrier frequency error; and

an adjuster between said digital signal processor and said local frequency source adapted to adjust the local frequency source to compensate for the carrier frequency error for providing a local frequency equal to the received carrier frequency.

5,291,518

LINK SYSTEM FOR RADIO PAGING SERVICE

Peter S. Stutman, Sudbury, Mass., assignor to Metriplex, Inc., Cambridge, Mass.

Filed Sep. 6, 1991, Ser. No. 755,659

Int. Cl.[5] H04B *3/36*; H04L *25/60*

U.S. Cl. 375—4 **6 Claims**

1. A wireless paging system for transmitting messages to paging receivers, said system comprising:

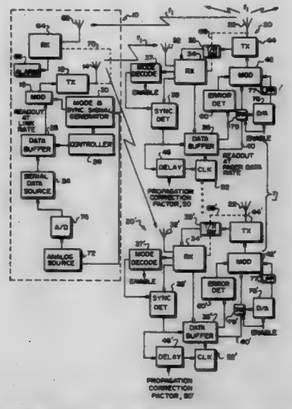
A. a central site including a central transmitter for transmitting paging messages;

B. A plurality of remote sites, each including:

1) means for receiving said paging messages from said central site,

2) means for retransmitting said paging messages to said paging receivers on the same carrier frequency as that of the transmissions from said central site,

C. means for effecting said transmissions from said central site on a time division basis with the transmissions from said remote sites, the transmissions from said central site being at a high data rate relative to the transmissions from said remote sites, whereby most of the transmission time is utilized for the transmissions to said paging receivers.



5,291,519

DIGITAL MOBILE COMMUNICATIONS TERMINAL EQUIPMENT AND RECEIVING METHOD THEREFOR

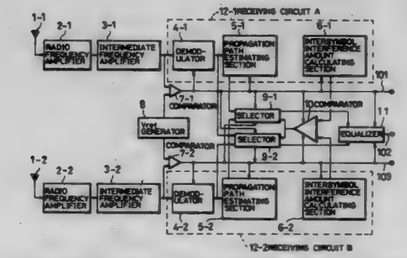
Makoto Tsurumaru, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 837,268

Claims priority, application Japan, Feb. 22, 1991, 3-028329

Int. Cl.[5] H04B *7/10*; H04L *1/02*

U.S. Cl. 375—12 **2 Claims**



1. A digital mobile communications terminal equipment having an equalizer for compensating for frequency selective fading in a received signal, said equipment comprising;

an equalizing processing controlling circuit which stops an equalizing of said equalizer to a diversity branch having a received signal level which is lower than a preset reference value; and

a diversity branch selecting circuit for adaptively selecting one of a plurality of diversity branches of a selection-after-detection diversity receiving circuit including said equalizing processing controlling circuit which selects a diversity branch having the least residual intersymbol interference when residual intersymbol interferences of said diversity branches exceed the equalizing the ability of said equalizer and selects a diversity branch having the highest S/N ratio when residual intersymbol interferences do not exceed the equalizing ability of said equalizer.

5,291,520

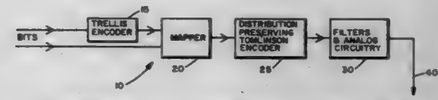
METHODS AND APPARATUS EMPLOYING DISTRIBUTION PRESERVING TOMLINSON PRECODING IN TRANSMISSION OF DIGITAL DATA SIGNALS

Paul D. Cole, Fairfield, Conn., assignor to General DataComm, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 651,563, Feb. 6, 1991. This application Jan. 13, 1992, Ser. No. 820,098

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—34 **20 Claims**



1. A transmitter for transmitting a series of telecommunications signals over a telecommunications channel, said transmitter comprising:

coding means for predistorting first telecommunications signals according to a linear function

$$x_k + \sum_{l=1} a_l x_{k-1} = r_k - s_k + b_l(r_{k-1} - s_{k-1})$$

to provide predistorted output second telecommunication signals, wherein r_k represents a first telecommunication signal which is to be predistorted by said coding means, a_l and b_l respectively represent coefficients of first and second polynomials relating to the channel impulse response of said telecommunications channel, x_k represents a predistorted output second telecommunications signal, and s_k is chosen to cause the signal power of x_k on average to approximately equal the signal power of r_k on average; and

interface means coupled to said coding means, said interface means for receiving said predistorted output second telecommunications signals and for processing said predistorted output second telecommunications signals for transmission on said telecommunications channel.

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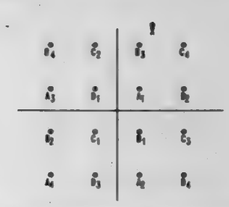
INDEX ASSIGNMENT IN REDUNDANCY-CODED DATA COMMUNICATION SYSTEMS

William L. Betts, St. Petersburg, and Stanley Bottoms, Seminole, both of Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 530,144, May 29, 1990, Pat. No. 5,105,443. This application Jan. 13, 1992, Ser. No. 820,113

Int. Cl.[5] H04L *27/04*

U.S. Cl. 375—59 **2 Claims**



1. Apparatus for generating a signal representing data

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mapped into a succession of channel symbols of a predetermined signal constellation, said constellation comprising a plurality of signal points grouped into respective subsets and the signal points of each subset having respective assigned index values, said apparatus comprising

means for identifying a sequence of said subsets in response to a first portion of said data,

means for generating in response to a second portion of said data, for each identified subset of said sequence, the index value of a particular one of the signal points of that subset, and

means for generating, as said signal, a signal representing the signal points whose index values are generated in said means for generating,

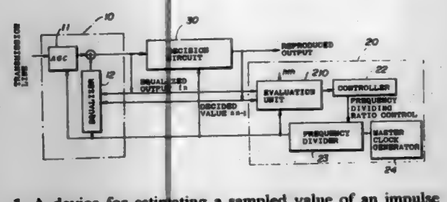
the indices assigned to the signal points of each subset being monotonically increasing with increasing power of the signal points.

5,291,522

DEVICE AND METHOD FOR ESTIMATING SAMPLED VALUE OF IMPULSE RESPONSE AND SIGNAL REPRODUCTION SYSTEM USING THE DEVICE

Norio Ueno, Yokohama, and Yutaka Awata, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 3, 1991, Ser. No. 725,610
Claims priority, application Japan, Jul. 5, 1990, 2-179152
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **14 Claims**



1. A device for estimating a sampled value of an impulse response from a input signal and an output signal of a decision circuit which performs a signal decision procedure for reproducing a digital signal, the input signal having an equalized waveform, said device comprising:

first means, operatively coupled to the decision circuit, for generating first absolute values of samples of decided values obtained from the output signal of the decision circuit;

second means, operatively coupled to the decision circuit, for generating second absolute values of samples of equalized outputs obtained from the input signal of the decision circuit; and

third means, operatively coupled to said first and second means, for generating a dividing ratio using said first absolute values and said second absolute values, and said ratio being an estimate of the sampled value of the impulse response at a sampling point shifted by a predetermined amount.

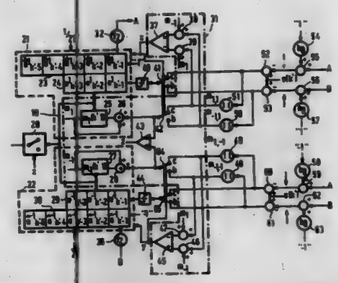
5,291,523

VITERBI RECEIVER WITH IMPROVED TIMING MEANS

Johannes W. M. Bergmans, and Ho W. Wong, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,409
Claims priority, application European Pat. Off., Apr. 24, 1991, 91200977.6
Int. Cl.[5] H03H *7/30, 7/40;* H03K *5/159;* H03D *1/06*
U.S. Cl. 375—14 **6 Claims**

1. Data receiver comprising deriving means for deriving a detection signal from an input signal, an output of the deriving means being coupled to an input of detection means, said detection means determining a most probable sequence of data symbols on the basis of the detection signal, the symbols occurring in the detection signal with a symbol interval T, by recursively updating candidate sequences (survivors) with associated path metrics derived from branch metrics, the branch metrics being an even function of a difference value e_k, present at a sampling instant kT of the detection signal, and of the detection signal expected for a respective candidate survivor, where k is an integer, characterized in that the receiver comprises timing means for delaying the sampling instants if



the sign of the difference value e_{k-n} at a sampling instant $(k-n)T$, where n is a fixed positive number, and where the difference value is associated to the most probable candidate survivor at the sampling instant kT, and the sign of an estimate $f_{(k-n-m)T}(\hat{a}_{k-n-m})$ of the contribution of a symbol $\hat{a}_{k-n-m}$ $(m=1,2,3,\ldots)$, estimated at a sampling instant $(k-n-m)T$, to the detection signal at an instant $(k-n-m)T$ are equal, the symbol $\hat{a}_{k-n-m}$ being taken from the candidate survivor which is the most probable at the sampling instant kT; and for advancing the sampling instants

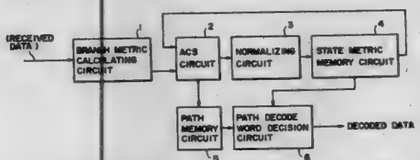
if the two signs are different.

5,291,524

VITERBI DECODING APPARATUS

Eisaburo Itakura, and Yuichi Kojima, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,531
Claims priority, application Japan, Nov. 21, 1991, 3-331565
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **8 Claims**



1. A Viterbi decoding apparatus for decoding received data by Viterbi decoding, comprising:

a state metric memory circuit for storing state metric information obtained by adder-comparator-selector (ACS) processing;

a path memory circuit for storing select information provided by said ACS processing; and

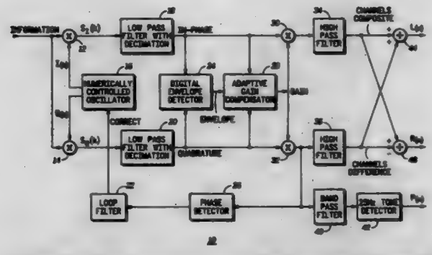
a path decode word decision circuit coupled to said path memory circuit and to said state metric memory circuit for weighting a plurality of bits of a path decode word from said path memory circuit according to its degree of likelihood based on state metric information supplied from said state metric memory circuit, cumulatively adding each weighted path decode word obtained by said weighting operation, and comparing a cumulative value obtained by said cumulative adding operation with a preset threshold value to determine a decode word.

5,291,525

SYMMETRICALLY BALANCED PHASE AND AMPLITUDE BASE BAND PROCESSOR FOR A QUADRATURE RECEIVER

Dion M. Funderburk; Sangil Park, both of Austin, Tex., and Peter J. McLane, Kingston, Canada, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1992, Ser. No. 864,278
Int. Cl.[5] H04C *27/38*
U.S. Cl. 375—98 **11 Claims**



5. A method for processing an amplitude modulated signal in a digital receiver having a symmetrically balanced phase and amplitude base band processor for a quadrature receiver, comprising the steps of:

digitally demodulating the amplitude modulated signal to provide a demodulated signal with an in-phase component and a quadrature component;

providing an envelope signal by using both the in-phase component and the quadrature component of the demodulated signal;

providing a gain coefficient by using the envelope signal and the in-phase component;

logically combining the gain coefficient and the in-phase component of the demodulated signal to provide a composite signal having a modified amplitude;

logically combining the gain coefficient and the quadrature component of the demodulated signal to provide a difference signal having the modified amplitude, the difference signal and the composite signal being concurrently provided;

adding the composite signal and the difference signal to provide a left audio information signal; and

subtracting the difference signal from the composite signal to provide a right audio information signal.

5,291,526

DIGITAL SIGNAL REPRODUCING APPARATUS FOR REDUCING INFLUENCE BY JITTER

Kaori Ichikawa; Noriyuki Ohtsuka, both of Tokyo, and Masunori Hashimoto, Nagano, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

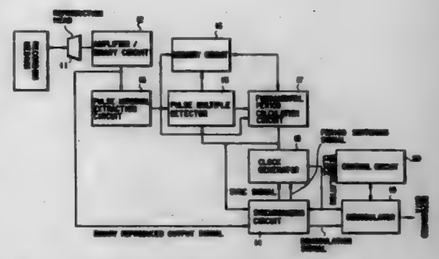
Filed Feb. 19, 1992, Ser. No. 838,558
Claims priority, application Japan, Feb. 28, 1991, 3-57953
Int. Cl.[5] H04L *7/04;* G11B *20/00*
U.S. Cl. 375—111 **17 Claims**

13. A digital signal reproducing apparatus comprising:

fundamental period calculating means for calculating a fundamental period in accordance with a plurality of pulses including reproduction target pulses included in binary reproduced output signal pulses sequentially input as digital signal pulses to be reproduced;

synchronizing means for generating a sync signal substantially representing a phase of each of the reproduction target pulses;

clock generating means for generating a demodulation clock having the fundamental period calculated by said fundamental period calculating means and synchronized with each of the reproduction target pulses with a predetermined width in response to the sync signal input from the synchronizing means; and



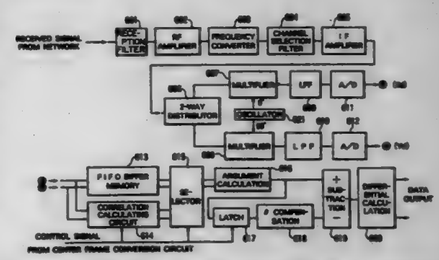
demodulating means for sequentially demodulating the binary reproduced output signal pulses in accordance with the demodulation clock form said clock generating means, the demodulation clock being synchronized with each of the reproduction target pulses with the predetermined width by said synchronizing means.

5,291,527

COMMUNICATION SYSTEM AND DEMODULATOR USED IN COMMUNICATION SYSTEM

Hideaki Haruyama, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Nov. 27, 1991, Ser. No. 798,775
Claims priority, application Japan, Nov. 29, 1990, 2-325255
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **18 Claims**



14. A demodulator for demodulating a burst modulation signal transmitted by time division multiplex in a communication system comprising:

sampling timing generating means for generating a sampling timing which is bit-synchronized with said burst modulation signal before receiving said burst modulation signal;

quasi-synchronous detecting means for quasi-synchronously detecting said burst modulation signal and for successively outputting a first vector signal on a phase plane;

sampling means for successively sampling said first vector signal obtained by said quasi-synchronous detecting means in sampling timing generated by said sampling timing generating means;

phase rotation amount estimating means for estimating a phase rotation amount of said first vector signal in accordance with a correlation among a particular number of said first vector signals sampled by said sampling means;

phase compensating means for compensating the phase of said first vector signal in accordance with the phase rotation amount estimated by said phase rotation amount estimating means; and

means for demodulating said successively sampled first vector signal according to the first vector signal compensated by said phase compensating means.

5,291,528

CIRCUIT FOR GLITCH-FREE SWITCHING OF ASYNCHRONOUS CLOCK SOURCES

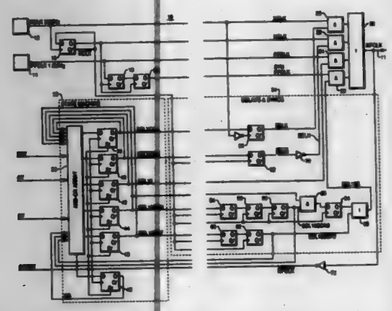
Fulpa V. Vermeer, Delft, Netherlands, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 9, 1992, Ser. No. 865,513

Claims priority, application United Kingdom, May 1, 1991, 9109445

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **8 Claims**



1. A switching circuit for selectively switching to an output line a first clock signal from a first clock source or a second clock signal from a second, lower frequency clock source, said second clock signal being asynchronous with respect to said first clock signal, comprising:

synchronizing means connected to said first and second clock sources for providing a third clock signal having the same frequency as said second clock signal and synchronized with said first clock signal at an output thereof;

gating means connected between said output line and the outputs of said first and second clock sources and said synchronous means; and

control means connected to said gating means for controlling the operation thereof such that if said second clock signal is switched to said output line in place of said first clock signal, said third clock signal is gated to said output line during an inactive period of said first clock signal and causes said second clock signal to be gated to said output line during an inactive period of said third clock signal, said first clock source being rendered non-operational following its disconnection from said output line, and if said first clock signal is switched to said output line in place of said second clock signal said first clock source is rendered operational following which said third clock signal is gated to said output line during an inactive period of said second clock signal, and then said first clock signal is gated to said output line during an inactive period of said third clock signal.

5,291,529

HANDSHAKE SYNCHRONIZATION SYSTEM

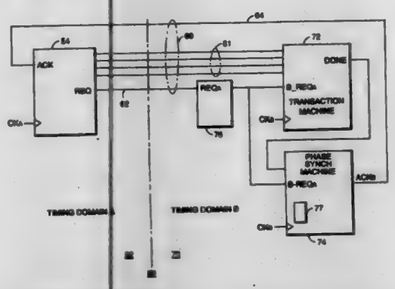
Neal A. Crook, Reading; Paul L. Bruce, Basingstoke, and Robert J. Galuszka, Reading, all of England, assignors to Digital Equipment International Limited, Fribourg, Switzerland

Filed Dec. 10, 1992, Ser. No. 988,559

Claims priority, application United Kingdom, Dec. 13, 1991, 9126513

Int. Cl.[5] H04L *7/00*; H03K *5/13, 7/00*; H03L *7/00*

U.S. Cl. 375—109 **10 Claims**



1. A system comprising:

a first logic circuit operating in a first timing domain at a first clock speed, and including a first transaction machine;

a second logic circuit operating in a second timing domain at a second clock speed, and including a second transaction machine, said second clock speed being greater than said first clock speed;

said first and second logic circuit being connected by a communication link, and

said system characterized in that it includes a phase synchronization machine within said second timing domain including:

means for receiving an input signal from said first logic circuit via a synchronizing flip-flop;

means for using said input signal to determine the phase relationship between said first timing domain and said second timing domain, and

means for using said phase relationship to generate a control signal indicating whether a communication signal transmitted from said second logic circuit as a result of a clock edge therein will be received by said first logic circuit at a time which does not violate timing conditions of said first logic circuit.

5,291,530

ENRICHED BORON-10 BORIC ACID CONTROL SYSTEM FOR A NUCLEAR REACTOR PLANT

Albert J. Impink, Jr., Murrysville; Joseph A. Battaglin, Forest Hills; John W. Fasnacht, Greensburg, and George G. Konopka, E. McKeesport, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 1, 1991, Ser. No. 678,782

Int. Cl.[5] G21C *7/06*

U.S. Cl. 376—219 **14 Claims**

1. A process for controlling the concentration of an enriched boron-10 boric acid solution in a reactor coolant system including a reactor vessel in a nuclear reactor, the coolant system containing an enriched boric acid solution having a boron-10 to boron-11 atomic isotope ratio of at least 20:80, the process comprising:

(a) diverting a quantity of boron-10 material from the coolant system to a boron-10 storing means and storing a fraction of the quantity therein to such an extent that when a plurality of fuel rods are substantially depleted, the fluid exiting the boron-10 storing means will be a depleted coolant, the depleted coolant containing a low concentration of the boron-10 material;

(b) recirculating the depleted coolant into the coolant system;

(c) shutting down the reactor vessel with natural boric acid comprising opening the reactor vessel and flooding the coolant system with a refueling water storage tank solution which is comprised of a natural boric acid solution, thereby creating a refueling fluid comprised of said refueling storage tank solution and said depleted coolant;

(d) refueling the vessel and transferring the refueling fluid solution to the refueling water storage tank;

(e) closing the vessel;

(f) draining the refueling fluid to a waste solution receiving means thereby leaving a remaining solution in the coolant system sufficient to ensure that the plurality of fuel rods are properly cooled and controlled; and

(g) displacing said remaining solution with a replacement solution, said replacement solution containing an enriched boron-10 boric acid solution which contains a boron-10 to boron-11 isotope ratio of at least 30:70.

5,291,531

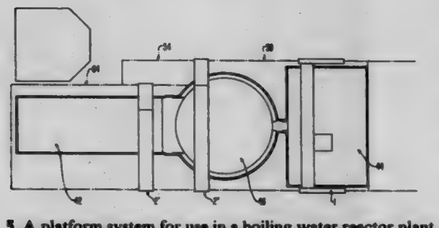
AUXILIARY PLATFORM FOR BOILING WATER REACTORS

Bengt I. Baversten, Simsbury, Conn., and Rolf Peterson, Västerås, Sweden, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 30, 1992, Ser. No. 998,585

Int. Cl.[5] G21C *19/00*

U.S. Cl. 376—268 **14 Claims**



5. A platform system for use in a boiling water reactor plant having a first area, a second area, and a third area, comprising:

a refueling platform for traveling over said second area, said third area, and at most only a portion of said first area, said refueling platform comprising:

a first platform for traversing over said second area, said third area, and said portion of said first area;

first means connected to said first platform for performing underwater operations within said second area, said third area, and said portion of said first area; and

first means for moving said first platform and said performing means over different locations within said second area, said third area, and said portion of said first area; and

an auxiliary platform for traveling over said first area and at least a portion of said second area, said auxiliary platform comprising:

a second platform for traversing said first area and said portion of said second area;

second means connected to said second platform for performing underwater operations within said first area and said portion of said second area; and

second means for moving said second platform and said second performing means over different locations within said first area and said portion of said second area;

wherein said auxiliary platform operates independently of said refueling platform; and

wherein said second platform is extendable to different widths.

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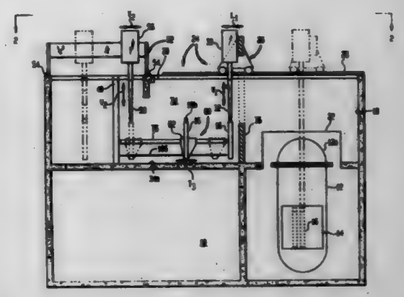
FUEL TRANSFER SYSTEM

Harold E. Townsend, Campbell, and Giancarlo Barbanti, Cupertino, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 14, 1992, Ser. No. 834,947

Int. Cl.[5] G21C *19/18*

U.S. Cl. 376—269 **18 Claims**



1. A system to transfer a nuclear fuel bundle from and to a reactor core comprising:

a transfer pool having a sidewall and a floor, and containing water having a surface level disposed above said reactor core;

a carriage disposed in said transfer pool and under said water for transporting said fuel bundle;

means for removably holding said fuel bundle vertically in said carriage; and

means for selectively moving said carriage through said water in said transfer pool;

said carriage including a vertical frame, a vertical basket for receiving said fuel bundle, and two horizontally spaced apart support wheels rotatably joined to said frame;

said holding means including a hinged dog selectively rotatable to capture said fuel bundle in said basket; and

said moving means including a track fixedly mounted to said transfer pool sidewall above said pool for supporting said two support wheels to support said carriage, and a motor operatively joined between said carriage and said track for selectively propelling said carriage along said track.

5,291,533

COOLING WATER DISTRIBUTION SYSTEM

Richard Orr, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 22, 1993, Ser. No. 34,985

Int. Cl.[5] G21C *15/18, 13/00*

U.S. Cl. 376—299 **9 Claims**

1. Apparatus for distributing cooling water on the curved surface of a containment vessel comprising:

(a) a source of cooling water,

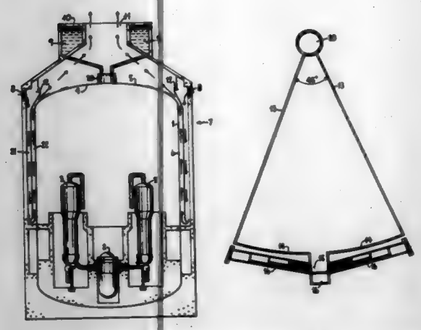
(b) a plurality of guide elements secured to said curved surface and extending radially outwardly and downwardly from said source of cooling water,

(c) a plurality of circumferential collector elements secured to said curved surface and intersecting said radial guide elements,

(d) a plurality of collector boxes, each box positioned between a pair of adjacent radial guide elements and a pair of adjacent circumferential collector elements,

(e) a plurality of distribution channels extending along and

on either side of each said collector box and secured to said curved surface.



(f) a plurality of weirs in at least one sidewall of said distribution channels to distribute cooling water contained in said distribution channels onto said curved surface.

5,291,534

CAPACITIVE SENSING DEVICE

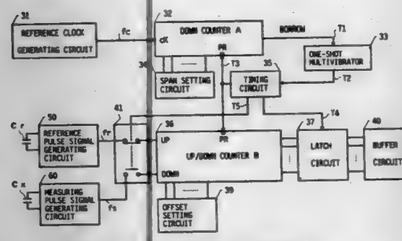
Shizuki Sakurai, Nagoya; Tomio Nagata, Chiryu; Shiro Kuwahara, Anjo; Osamu Tabata, Aichi, and Susumu Sugiyama, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, both of Japan

Filed Jun. 19, 1992, Ser. No. 903,096

Claims priority, application Japan, Jun. 22, 1991, 3-177328; May 29, 1992, 4-163748

Int. Cl.[5] G01L *19/04*

U.S. Cl. 377—20 **12 Claims**



1. A capacitive sensing device comprising:
a sensing capacitor having capacitance variable according to a variation of a force to be measured;
a measuring pulse signal generating circuit connected to said sensing capacitor for generating a measuring pulse signal with a frequency in accordance with capacitance of said sensing capacitor;
a reference capacitor having a reference capacitance that is not affected by said force;
a reference pulse signal generating circuit connected to said reference capacitor, having a construction similar to that of said measuring pulse signal generating circuit and capable of generating a reference pulse signal with a frequency in accordance with said reference capacitance; and
a signal processing circuit for calculating a value of said force from frequencies of said reference pulse signal and said measuring pulse signal,
wherein said measuring pulse signal generating circuit and said reference pulse signal generating circuit have oscillation circuits that provide said measuring pulse signal and said reference pulse signal, respectively, ratios of frequency deviations of said measuring pulse signal and said reference pulse signal to temperature deviations being controlled by varying input voltages applied to said measuring pulse signal generating circuit and said reference pulse signal generating circuit, respectively;
an input voltage applied to said measuring pulse signal generating circuit adjusted so that a detection sensitivity is nearly constant for a temperature variation; and
an input voltage applied to said reference pulse signal generating circuit adjusted so that a ratio of a deviation of a frequency difference between said measuring pulse signal and said reference pulse signal to a temperature deviation is nearly constant for a temperature variation.

5,291,535

METHOD AND APPARATUS FOR DETECTING EXCESS/INSUFFICIENT SOLDER DEFECTS

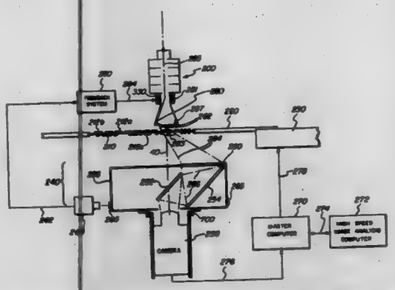
Bruce D. Baker, Olivenhain; Robert L. Corey, San Diego; John A. Adams, and Edward W. Ross, both of Escondido, all of Calif., assignors to Four Pi Systems Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 479,092, Feb. 12, 1990, Pat. No. 5,097,492, which is a continuation of Ser. No. 115,171, Oct. 19, 1987, Pat. No. 4,926,452. This application Aug. 5, 1991, Ser. No. 740,631

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 378—22 **31 Claims**



1. A method of detecting an insufficient solder defect comprising the steps of:
producing a cross-sectional image of a cutting plane of a solder joint;
analyzing said cross-sectional image to determine the thickness of a portion of said solder joint;
defining a lower solder thickness threshold value; and
comparing said thickness to said lower threshold value.

5,291,536

X-RAY MASK, METHOD FOR FABRICATING THE SAME, AND PATTERN FORMATION METHOD

Masamitsu Itoh, Yokohama; Shinji Sugihara, Tokyo, and Kenichi Murooka, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 18, 1992, Ser. No. 900,494

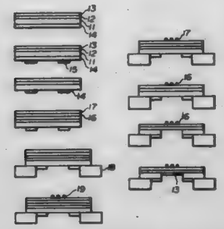
Claims priority, application Japan, Jun. 26, 1991, 3-154921; Mar. 27, 1992, 4-071379

Int. Cl.[5] G03C *5/00*

U.S. Cl. 378—35 **12 Claims**

1. An X-ray mask comprising:
an X-ray permeable film having first and second surfaces;
an aluminum oxide anti-reflective film on the first surface of the X-ray permeable film; and

an X-ray absorber film pattern on the aluminum oxide anti-reflective film,



wherein the aluminum oxide film has a reflective index n and a thickness of an odd integer multiple of $\lambda/4$ n, wherein λ is a wavelength in the range of visible light.

5,291,537

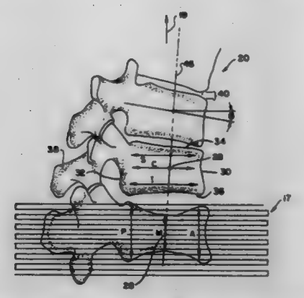
DEVICE AND METHOD FOR AUTOMATED DETERMINATION AND ANALYSIS OF BONE DENSITY AND VERTEBRAL MORPHOLOGY

Richard B. Mazess, Madison, Wis., assignor to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 944,626, Sep. 14, 1992, Pat. No. 5,228,068. This application May 26, 1993, Ser. No. 67,651

Int. Cl.[5] G01B *15/04*; G01N *23/06*

U.S. Cl. 378—54 **6 Claims**



1. A method of evaluating the integrity against fracture of a vertebra in an animal or human, the vertebra having a superior and inferior margin and anterior and posterior margin, comprising the steps of:
(a) scanning the vertebra with a beam of radiation to acquire a matrix of discrete data elements each having a value wherein each said data element corresponds to a defined location in said vertebra, and wherein the value of each data element is related to a physical property of the material of the vertebra;
(b) reviewing the values of the data elements and their defined locations to identify within the vertebra one or more pairs of fiduciary points and measuring the distance between the points to produce a morphometric measure;
(c) measuring the absorption of the beam of radiation through the vertebra to produce a value related to the bone mass of the vertebra; and
(d) displaying the combination of the morphometric measure and the value related to the bone mass of the vertebra so as to indicate the likelihood of future vertebral fractures in the vertebra.

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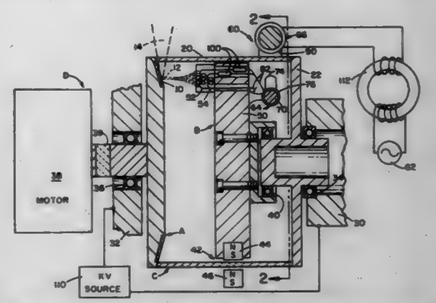
X-RAY TUBE WITH FERRITE CORE FILAMENT TRANSFORMER

James E. Burke, Villa Park; Lester Miller, Forest Park, and Salvatore G. Perno, Winfield, all of Ill., assignors to Picker International, Inc., Highland Hts., Ohio

Continuation of Ser. No. 817,296, Jan. 6, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 72,400

Int. Cl.[5] H01J *35/04*

U.S. Cl. 378—135 **20 Claims**



1. In an x-ray tube which includes an evacuated envelope, a cathode assembly and an anode surface disposed within the evacuated envelope, and a means for permitting relative rotational movement between the cathode assembly and the envelope, the improvement comprising:
a plurality of secondary windings disposed around a plurality of secondary cores disposed within the evacuated envelope, the plurality of secondary windings being connected with a plurality of thermionic cathode means for emitting electrons in response to electrical stimulation;
a primary winding with a primary core disposed exterior to the evacuated envelope, the primary core being selectively positionable across the envelope from and in a magnetic flux coupled relationship with each of the secondary cores.

5,291,539

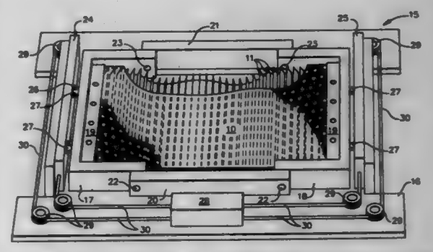
VARIABLE FOCUSSED X-RAY GRID

Gary J. Thumann, Oconomowoc; Jonathan C. Boomgaarden, Waukesha, and Daniel P. Miller, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 19, 1992, Ser. No. 963,956

Int. Cl.[5] G21K *1/00*

U.S. Cl. 378—154 **12 Claims**



1. Adjustment means for a variable focussed X-ray grid comprising in combination
(a) a pair of spaced apart grid support members supported for individual equal and opposite angular rotation,
(b) a flexible resiliently stiff grid structure attached to and suspended between said grid support members,

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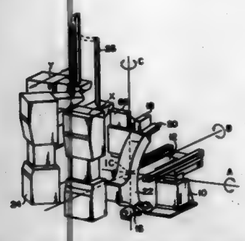
(c) adjustment means to adjustably rotate said support members in unison through equal but opposite angles to cause said resiliently stiff grid to bow therebetween to define a circular arc between said support members.

5,291,540

SERVO CONTROLLED ISOCENTER DIAGNOSTIC X-RAY EXAMINATION APPARATUS

Shinichiro Futamata, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1992, Ser. No. 880,221
Claims priority, application Japan, May 10, 1991, 3-105461
Int. Cl.[5] H05G 1/02; A61B 6/02
U.S. Cl. 378—197 4 Claims



1. A diagnostic X-ray apparatus, comprising:
a C-shaped arm member having an arc portion and for supporting an X-ray source for radiating an X-ray to an object and a detector for detecting the X-ray transmitted through the object, the X-ray source and the detector mounted at ends of the C-shaped arm member so as to face each other with the object therebetween;
an arm holder for supporting said C-shaped arm member such that said arm member can be slid along the arc portion and rotated around a horizontal axis contained in a plane of said arm member so as to change a directional relationship between the X-ray tube and the object, the X-ray apparatus having an isocenter at an intersection of a line connecting the X-ray source and the detector, and said horizontal axis;
a vertical suspension pole, offset from said isocenter such that an axis of said suspension pole is without an intersection with said isocenter, for suspending said arm holder from a ceiling;
means for moving said suspension pole within a ceiling plane in an X direction;
means for moving said suspension pole within a ceiling plane in a Y direction, parallel to said X direction;
rotating means for rotating said suspension pole and thereby rotating said arm holder and said C-shaped arm member;
means for detecting an angle θ of the suspension pole;
means for setting a velocity of the suspension pole in the X and Y directions such that as the angle θ of the suspension pole changes, the isocenter remains in substantially a same position, the means for setting a velocity including:
means for setting the velocity in the X direction such that:

$$Velocity_X = K_x * (X - X_o)$$

and the velocity in the Y direction is set such that:

$$Velocity_Y = K_y * (Y - Y_o)$$

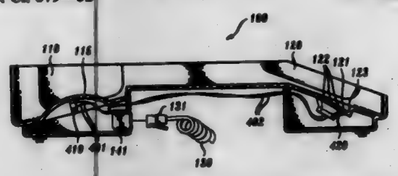
where K_x is a constant, X is a detected position in the X direction and Xo is predetermined locus data, and K_y is a constant, Y is a detected position in the Y direction and Yo is a predetermined locus position.

5,291,541

COUPLING APPARATUS FOR TELEPHONE HANDSETS

Clinton D. Gibler, Indianapolis; Larry A. Marcus, Fishers; Frederick A. Rosebrock, Greenfield, and Perry K. White, Indianapolis, all of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 21, 1992, Ser. No. 992,312
Int. Cl.[5] H04M 11/00
U.S. Cl. 379—52 20 Claims



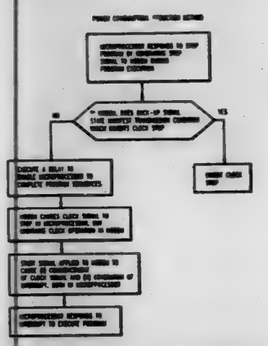
6. A telecommunications device for the deaf(TDD) comprising:
coupling apparatus including a telephone handset-coupling cradle having a convex dome in a first region thereof for positioning a receiver of a telephone handset, the convex dome including a reactive sensor mounted therein for sensing electromagnetic fields generated by the receiver and converting same into a corresponding electrical signal, said coupling apparatus including a second region having a loudspeaker mounted beneath one or more sound apertures for communicating acoustic sounds to a microphone at the other end of the telephone handset;
demodulator means for converting the corresponding electrical signal into a digital signal; and
display means, responsive to the digital signal, for providing a visual representation of same.

5,291,542

MOBILE TELEPHONE HAVING A POWER-CONSERVING SUBROUTINE

Raimo Kivari, Haukipudas; Pertti Korhonen, and Seppo Salonen, both of Oulu, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Feb. 10, 1992, Ser. No. 833,314
Claims priority, application Finland, Feb. 12, 1991, 910670
Int. Cl.[5] H04M 11/00; G06F 1/00
U.S. Cl. 379—58 6 Claims



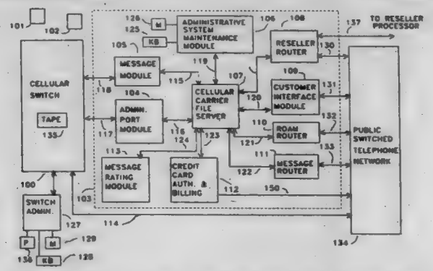
1. A method for reducing power consumption of a signaling circuit in a mobile telephone, said telephone including a microprocessor and a connected signaling circuit for generating a clock signal to said microprocessor, the method comprising:
applying a stop signal from said microprocessor to a first control input of said signaling circuit;
applying a back-up signal to said signalling circuit, for controlling operation of said signalling circuit in response to said stop signal;
ceasing generation of said clock signal from said signalling circuit to said microprocessor in response to said stop signal, but only after passage of a delay time that commences with application of said stop signal and in an absence of said back-up signal;
stopping internal functions of said microprocessor concurrently with application of said stop signal to said signalling circuit, said internal functions of said microprocessor ceasing operation within said delay time so that said internal functions have stopped when generation ceases of said clock signal;
continuing clock-controlled functions within said signalling circuit to enable a restarting of said microprocessor;
applying an interrupt signal to said microprocessor form said signalling circuit, to effect a restarting of internal functions of said microprocessor; and
commencing generation of said clock signal to said microprocessor in response to a start signal.

5,291,543

CELLULAR TELEPHONE REAL TIME ACCOUNT ADMINISTRATION SYSTEM

David E. Freese, Laguna Niguel; David A. Miller, El Toro, both of Calif., and Mark J. Nielsen, Chicago, Ill., assignors to Subscriber Computing, Inc., Laguna Hills, Calif.

Division of Ser. No. 622,506, Dec. 5, 1990, Pat. No. 5,148,472.
This application Jun. 24, 1992, Ser. No. 903,151
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] H04M 11/00
U.S. Cl. 379—59 6 Claims



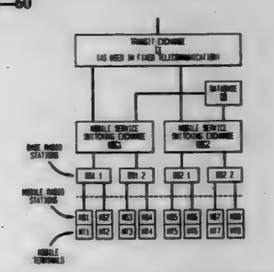
2. A cellular telephone call administration system for a cellular telephone switching system which comprises: a switch for providing communication service to a plurality of cellular sets; means for generating and transmitting detailed call records of calls processed by the switch to a data output port; and an administrative port for receiving control signals for selectively activating and deactivating service to identified cellular sets;
the call administration system comprises:
memory means comprising a plurality of service class data files assigned respectively to corresponding system service classes;
means coupled to said data output port for assigning detailed call records appearing at said data output port into a plurality of system service classes; and for storing records corresponding to each of said detailed call records in the data file of the service class assigned to the call record;
means for automatically distributing the contents of said service class data files;
means for automatically generating said control signals for selectively activating and deactivating cellular sets for service by said cellular switch;
means for rating detailed call records of selected service classes as the records are received from said data output port;
means for including call rating charge data in the records stored in the data files of said selected service classes characterized in that;
certain of said service classes, as a condition for originating and continuing service to a cellular set of the class, require that responsibility be established for payment for services rendered to a specified credit limit; and
the call administration system further comprises:
means for establishing credit authority for cellular sets included in said certain classes and for storing corresponding credit information in the records stored in said data files of said cellular sets;
means for deducting said call rating charge data for a cellular set from that set's credit balance to provide the remaining credit balance;
means for automatically intercepting originating calls from a cellular set when the credit balance for a set falls below a defined lower limit; and
means for generating control signals for deactivating a cellular set for further service if further credit is not authorized.

5,291,544

METHOD OF TRANSFERRING, BETWEEN TWO SWITCHING EXCHANGES FOR MOBILE SERVICES, THE HANDLING OF AN ACTIVE CONNECTION WITH A MOBILE TERMINAL

Hubertus P. J. Hecker, Ak Voorburg, Netherlands, assignor to Koninklijke PTT Nederland N.V., Ac Groningen, Netherlands

Continuation of Ser. No. 589,328, Sep. 27, 1990, abandoned. This application Jun. 17, 1992, Ser. No. 900,521
Claims priority, application Netherlands, Oct. 3, 1989, 8902453
Int. Cl.[5] H04M 11/00
U.S. Cl. 379—60 2 Claims



1. In a telecommunication system equipped for mobile communication and comprising at least first and second mobile service switching exchanges, wherein said first mobile service switching exchange is connected, for an active connection form a mobile terminal to a first terminal via an exchange (TX), external to said system and equipped only for fixed location telecommunication, by a first interexchange connection, said telecommunication system equipped for mobile communication further comprising a plurality of mobile radio stations (MS), every said mobile radio station being exclusively associated with a mobile terminal, a plurality of base radio stations (BS) equipped for communicating via a radio path and a said mobile radio station with a said mobile terminal associated with said last-mentioned mobile radio station, each base radio station (BS) having a working area with a limited range, and said at least first and second mobile service switching exchanges each being able to interact with a specific group assigned to it of the plurality of base radio stations, said exchange (TX) equipped only for fixed location telecommunication being able to interact with said mobile service switching exchanges of said system,
a method of transferring in said telecommunication system the handling of said active connection between said first terminal and said first-mentioned mobile terminal by transferring said handling from said first mobile service

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switching exchange and a first base radio station assigned thereto over to said second mobile service switching exchange and a second base radio station assigned thereto, said method comprising the following steps:

making, for said active connection, a second interexchange connection between said first mobile service switching exchange (MSC1) and said second mobile service switching exchange (MSC2);

making, for said active connection, an auxiliary connection between said second mobile service switching exchange (MSC2) and said second base radio station and requesting of said second base radio station the reservation of a radio channel thereof for said active connection;

reserving at said second base radio station a radio channel for the mobile radio station associated with said first-mentioned mobile terminal;

making a third interexchange connection between said exchange (TX) equipped only for fixed location telecommunication and said second mobile service switching exchange (MSC2);

thereafter routing said active connection through said second interexchange connection and said auxiliary connection while communication with said mobile radio station associated with said first-mentioned mobile terminal proceeds via said radio channel reserved by said second base radio station, whereby said second base station takes over from said first base radio station radio communication with said mobile radio station;

after said second radio base station takes over radio communication with said mobile radio station, preparing a takeover by said second mobile service switching station of the entire handling of said active connection; and

thereafter disconnecting said second and said first interexchange connections, thereby leaving with said second switching station the entire handling of said active connection.

5,291,545

APPARATUS AND METHOD FOR DETERMINING THE STATE OF A TELEPHONE LINE

Karl-Erik Stahl, Varnamo, Sweden, assignor to Intertex Data AB, Sundbyberg, Sweden

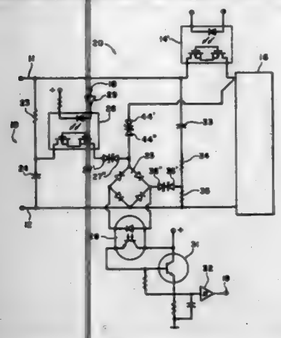
Continuation-in-part of Ser. No. 591,940, Oct. 1, 1990, Pat. No. 5,140,631. This application May 13, 1992, Ser. No. 882,004

Int. Cl.[5] H04M *11/00, 3/22*

U.S. Cl. 379—98 **11 Claims**

1. Apparatus for determining the state of a telephone line, comprising:

a resistor and a capacitor connected in series across the telephone line, said resistor having a resistance sufficiently



large to satisfy loading requirements on a telephone line in an On-Hook state;

a low impedance voltage sensing device; and

means for connecting said voltage sensing device across said capacitor in response to a polling signal.

5,291,546

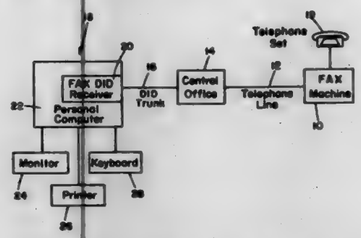
FAX MESSAGE SYSTEM

Eric R. Giler, Wellesley Hills, and David W. Duehren, Belmont, both of Mass., assignors to Brooktrout Technology, Inc., Needham, Mass.

Continuation of Ser. No. 348,592, May 8, 1989, abandoned. This application Jun. 20, 1991, Ser. No. 721,915

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—100 **16 Claims**



1. A method for causing information including at least a FAX message sent via a telephone system to be routed from a receiving station through a multinode computer network to a prespecified network location, the method comprising

initiating a telephone call via the telephone system to the receiving station by dialing a telephone number enabling the telephone call to be routed to the receiving station, said telephone number also being sufficient to indicate the network location to which the FAX message is to be routed from the receiving station,

passing said telephone number through the telephone system in the form of a telephone address signal as part of the call initiation process by which a telephone connection to the receiving station is established,

directing the telephone call being initiated to the receiving station, based on the telephone address signal,

answering the telephone call at the receiving station, and receiving at the receiving station at least part of the telephone address signal,

storing network location information which associates network locations with telephone address signals,

when the connection has been established, sending the FAX message via the telephone system to the receiving station,

receiving the sent message at the receiving station and forwarding the received FAX message to a network location based on the telephone address signal.

5,291,547

CALL-DISPOSITION ANALYZER

John T. Boatwright, Rte. 4, Box 437, Rollins Rd., Hopkinton, N.H. 03229, and Charles E. Boatwright, 120 Fisherville Rd., #61, Concord, N.H. 03303

Filed Mar. 19, 1992, Ser. No. 853,934

Int. Cl.[5] H04M *15/16, 15/28*

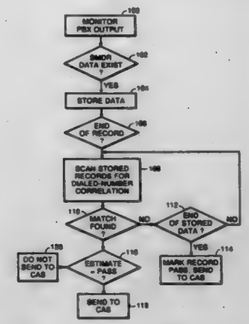
U.S. Cl. 379—113 **10 Claims**

1. A call-disposition analyzer comprising:

A) a trunk monitor, adapted for connection to a trunk line of a private branch exchange, for monitoring the signals carried by the trunk line and generating a monitor signal representative thereof;

B) an analysis circuit, connected to receive the monitor signal, for identifying therein dialed numbers associated with calls represented thereby, for making estimates of the dispositions of those calls, and for storing each estimate thus made together with a tag representing at least part of the dialed number identified for the call whose disposition it estimates; and

C) an SMDR-forwarding circuit, adapted to be interposed in a communication link between the private branch exchange and a call-accounting system, for receiving from the private branch exchange SMDRs that represent calls made over the private branch exchange and include therein the dialed numbers associated with the calls that



they represent, scanning a plurality of number sequences in each SMDR to find any such number sequence that matches a tag stored with a disposition estimate, fetching for each received SMDR the disposition estimate whose tag represents at least part of the number sequence thereby found, and selectively forwarding the SMDRs to the call-accounting system in a manner that depends on the disposition estimates respectively fetched for them.

5,291,548

DISTRIBUTED TELEPHONE CONFERENCE CONTROL DEVICE

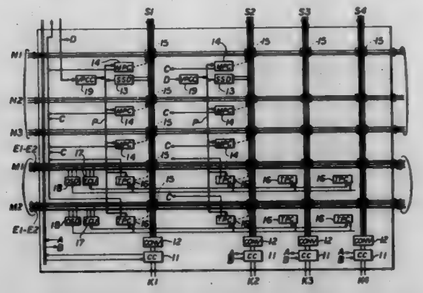
Mihoji Tsumura, and Masato Hata, both of Osaka, Japan, assignors to Ricos Co., Ltd., Japan

Filed Jun. 12, 1991, Ser. No. 714,198

Claims priority, application Japan, Dec. 21, 1990, 2-413110

Int. Cl.[5] H04M *3/42, 1/64, 3/00*

U.S. Cl. 379—204 **8 Claims**



1. A distributed telephone conference control system for selectively connecting any of a plurality of telephone lines of a telephone network, comprising:

a telephone conference control device having

a plurality of voice signal lines each of which is respectively connected to one of said plurality of telephone lines,

means for converting signals from said telephone lines to signals on said voice signal lines,

a plurality of two-party conference lines selectively connectable between any two of said voice signal lines,

a plurality of multiparty conference lines selectively connectable between any three or more of said voice signal lines,

conference line selection signal decoder means for connecting two or more of said voice signal lines to a selected one of said two-party and multi-party conference lines, in accordance with an incoming signal received from any one of said telephone lines,

a plurality of exclusion control lines, each of said exclusion control lines indicating a connection status of an associated one of said two-party conference lines,

operating status detector means for detecting logic values of said exclusion control lines to determine whether an associated one of said two-party conference lines is available for connection between said voice signal lines,

a voice processor connected to said voice signal lines for outputting message signals to an outgoing one of said voice signal lines, and

a voice processor connection controller connected to said voice processor for controlling connections between said telephone lines and said conference lines; and

means for connecting a plurality of said telephone conference control devices in parallel.

5,291,549

PRIVATE BRANCH EXCHANGE AND LINE EXCHANGE METHOD

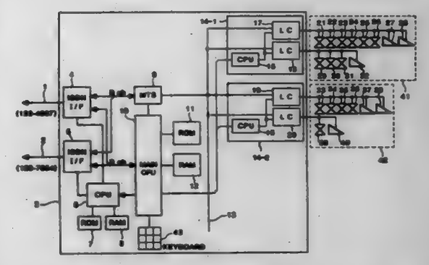
Michihiro Izumi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 533,860, Jun. 6, 1990, abandoned. This application Aug. 14, 1992, Ser. No. 928,635

Claims priority, application Japan, Jun. 7, 1989, 1-143022; Jun. 8, 1989, 1-144011

Int. Cl.[5] H04M *3/02*

U.S. Cl. 379—233 **22 Claims**



1. A private branch exchange which accommodates a plurality of extension terminals, comprising:

an integrated services digital network (ISDN) interface for connecting to an ISDN;

memory means for storing a plurality of subaddress information elements of the plurality of extension terminals;

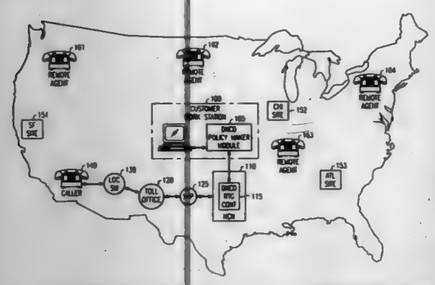
decision means for deciding whether or not a subaddress information element is contained in a call-setting message which is included in an incoming call and is received via the ISDN, and whether or not the subaddress information element in the call-setting message corresponds to one of the plurality of subaddress information elements stored in said memory means; and

refusing means for refusing the incoming call by controlling said ISDN interface to transmit a release completion message containing a reason-indicating information element instead of a response message in accordance with the decision made by said decision means.

5,291,550
DYNAMIC NETWORK CALL DISTRIBUTOR

Yonatan A. Levy, Manalapan, and Rodolfo A. Milito, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 634,255, Dec. 26, 1990, abandoned. This application Jul. 9, 1993, Ser. No. 90,363
Int. Cl.[5] H04M 3/36
U.S. Cl. 379—242 34 Claims



1. In a telecommunications network, a method of selecting one of a plurality of destinations for a call from a caller to a customer, each destination comprising apparatus for connecting a call to one of a plurality of agents, said method for connection of said call via said telecommunications network from said caller to said customer, said caller originating one of a plurality of types of calls, comprising:

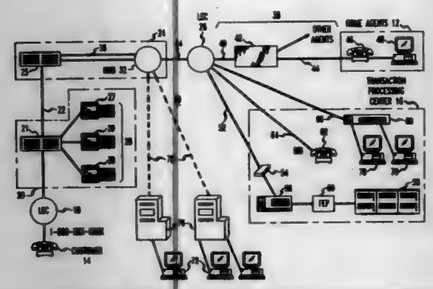
in a data base of said network, maintaining a record of a number of calls currently connected to each of said destinations, each destination comprising apparatus for connecting a call to one of a plurality of agents;

using said record, a type of said call from said caller to said customer, and routing parameters, said routing parameters based on information provided by said customer for each type of call to said customer, for selecting one of said destinations for connecting said call from said caller to one of a plurality of agents connected by said one of said destinations.

5,291,551
HOME AGENT TELECOMMUNICATION TECHNIQUE

Gerard Conn, Brooklyn, N.Y.; Margaret H. Redberg, Red Bank; Steven D. Simon, Middletown, both of N.J., and Roger K. Simonson, Riverwoods, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 23, 1991, Ser. No. 781,624
Int. Cl.[5] H04M 5/06
U.S. Cl. 379—265 14 Claims



5. A system for allowing an agent at home to communicate with a remotely situated customer and to simultaneously complete a transaction for such customer using a data base at a transaction-processing center remote from the agent, comprising:

a first Local Exchange Carrier (LEC) central office for receiving a customer-initiated call originally directed to a transaction-processing center;

a first exchange of a public switched telephone network coupled to the first LEC central office;

means located at, and associated with, the first exchange for identifying at least one of a plurality of agents at home designated to receive the customer-initiated call;

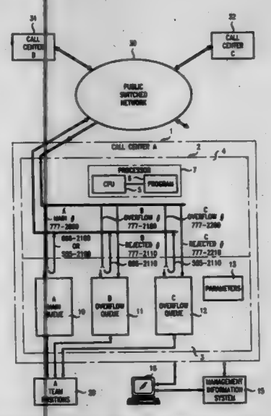
means for routing the customer-initiated call from the first LEC central office to a second LEC central office serving the agent at home; and

a combined voice and signal data path for carrying the customer-initiated call from the second LEC central office to the agent and for simultaneously carrying data from the agent to a transaction-processing center.

5,291,552
DISTRIBUTION OF CALLS AMONG AUTOMATIC CALL DISTRIBUTORS OF A SINGLE LARGE CUSTOMER

Daniel C. Kerrigan, Downers Grove, and Mary R. Otto, Lisle, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 30, 1991, Ser. No. 738,003
Int. Cl.[5] H04Q 3/64; H04M 3/42, 7/00
U.S. Cl. 379—266 18 Claims



1. A method of serving calls to a customer having a plurality of call distributor (CD) serving centers, comprising the steps of:

receiving a call in one center of said serving centers;

testing whether delay for serving said call in said one center is expected to exceed a first threshold;

responsive to determining that said first threshold is expected to be exceeded, determining whether an excessive number of calls have been rerouted to said one center, said excessive number indicating inability to handle additional calls without unacceptable delay in said alternate center; and from an alternate center; and

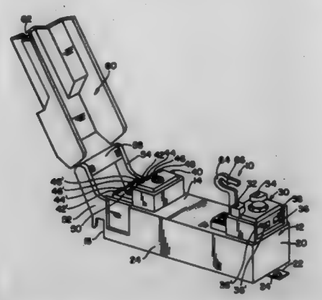
if an excessive number of calls has not been rerouted to said one center from said alternate center, rerouting said call to said alternate center;

wherein overflow calls are automatically rerouted to an alternate center which is not likely to be overloaded without requiring any call routing control messages, reflecting a level of busyness of a serving center, to be transmitted among said plurality of serving centers.

5,291,553
WEATHERPROOF TELEPHONE NETWORK INTERFACE MODULES

Thomas J. Smith, Bay Shore, N.Y., assignor to Til Industries, Inc., Copiague, N.Y.

Filed Apr. 10, 1992, Ser. No. 866,353
Int. Cl.[5] H04M 9/00
U.S. Cl. 379—399 10 Claims



1. A weatherproof telephone network interface module, suitable for use in a telephone terminal housing, for providing connections between a customer's equipment and the telephone company owned portion of a customer loop, comprising:

a) hollow housing means, said housing means being provided with a rear surface having a protruding portion thereon suitable for cooperating with a ledge provided in said telephone terminal housing, a front surface having a protruding portion for removably mounting said module to said telephone terminal housing, two side surfaces, an open bottom surface and a top surface;

b) first weatherproof terminal means, disposed on said top surface proximate said front surface of said hollow housing means, having at least a pair of line terminals adapted to receive a pair of wires connected to said telephone company owned portion of said customer's telephone loop;

c) second weatherproof terminal means disposed on said top surface proximate said rear surface of said hollow housing means, said second terminal means having at least a pair of terminal connections thereon adapted to be connected to said customer's equipment;

d) third weatherproof terminal means disposed on said rear surface of said module, said third terminal means having at least a pair of terminal connections thereon adapted to be connected to said customer's equipment;

d) overvoltage protection means disposed within said hollow housing, said protection means having three terminals, one of said terminals being connected to a ground means, said second and third terminals being connected to each of said weatherproof line terminals; and

e) circuit board means disposed within said hollow housing, said circuit board means being connected to said second and third weatherproof customer terminal connections.

5,291,554
SHARED-PRICE CUSTOM VIDEO RENTALS VIA INTERACTIVE TV

Fernando Morales, Reston, Va., assignor to TV Answer, Inc., Reston, Va.

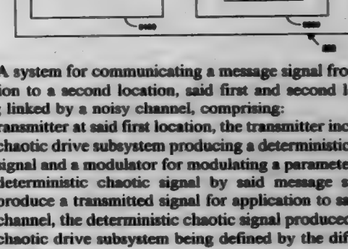
Continuation-in-part of Ser. No. 889,626, May 28, 1992. This application Aug. 19, 1992, Ser. No. 932,257
Int. Cl.[5] H04N 7/167
U.S. Cl. 380—5 15 Claims

1. An interactive wireless video data exchange network, comprising in combination

a plurality of separated subscriber stations located in different geographic areas having facilities for viewing video programs,

a video program storage and processing center for providing selected unscheduled video programs to individual ones of the subscriber stations for viewing,

distribution means for transmitting said video programs over a satellite network between said program center and said subscriber stations in a format for storage at a requesting subscriber station,



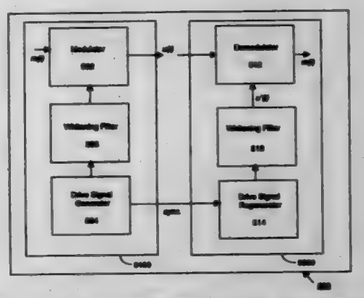
an interactive network processing center for interactively communicating with the subscriber stations and the program center, and

interactive communication facilities at the subscriber stations comprising a television viewer including means for interactively processing and implementing wireless transactions with the program center and storing selected video programs for private viewing.

5,291,555
COMMUNICATION USING SYNCHRONIZED CHAOTIC SYSTEMS

Kevin M. Cuomo, Chelmsford, and Alan V. Oppenheim, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 14, 1992, Ser. No. 989,703
Int. Cl.[5] H04K 1/02; H04L 9/28
U.S. Cl. 380—6 9 Claims



5. A system for communicating a message signal from a first location to a second location, said first and second locations being linked by a noisy channel, comprising:

a transmitter at said first location, the transmitter including a chaotic drive subsystem producing a deterministic chaotic signal and a modulator for modulating a parameter of said deterministic chaotic signal by said message signal to produce a transmitted signal for application to said noisy channel, the deterministic chaotic signal produced by said chaotic drive subsystem being defined by the differential equation:

$$u=\sigma(v-u)$$

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$$v = ru - v - 20uw$$

$$w = 5uv - bw$$

where u is said deterministic chaotic signal, v and w are additional deterministic chaotic signals, σ, r and b are preselected coefficients, and wherein said parameter is preselected coefficient b; and

a receiver at said second location, the receiver including a drive signal regenerator receiving from said noisy channel a noisy signal corresponding to a noise-corrupted version of said transmitted signal and producing therefrom a reconstructed chaotic signal, and a demodulator for comparing said noisy signal with said reconstructed chaotic signal and detecting from said comparison said message signal.

5,291,556

AUDIO SYSTEM FOR A COMPUTER DISPLAY

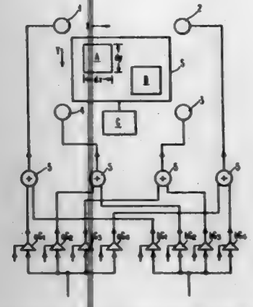
Stephen Gale, Bristol, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 24, 1990, Ser. No. 573,361

Claims priority, application United Kingdom, Oct. 28, 1989, 8924334

Int. Cl.[5] H04S *5/00*

U.S. Cl. 381—17 **12 Claims**



1. An audio system for a computer visual display unit having a screen, the system comprising:

a plurality of loudspeakers distributed around the screen of the visual display unit;

audio circuitry for driving the loudspeakers with a variably distributed sound source signal related to screen coordinates of an image displayed on the screen; and

a computer means coupled to the video display unit and the audio circuitry for processing screen coordinates of the image to provide a control input to the audio circuitry whereby sound is generated which appears to emanate from a position having a predetermined relationship with the screen coordinates of the image.

5,291,557

ADAPTIVE REMATRIXING OF MATRIXED AUDIO SIGNALS

Mark F. Davis, Pacifica, and Stephen D. Vernon, Palo Alto, both of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Oct. 13, 1992, Ser. No. 959,730

Int. Cl.[5] H04S *3/02*

U.S. Cl. 381—22 **47 Claims**

1. Apparatus for adaptively rematrixing the audio output signals of a 4:2 audio signal matrix for coding, transmission, or storage and retrieval in a system in which the noise level varies with signal amplitude level, comprising

means for determining which of the signals among the matrix output signals and the sum and difference of the matrix output signals has the smallest amplitude, and

means for applying the matrix output signals to the coding, transmission, or storage and retrieval if one of the matrix



output signals has the smallest amplitude and for applying the sum and difference of the matrix output signals to the coding, transmission, or storage and retrieval if one of the sum and difference of the matrix output signals has the smallest amplitude.

5,291,558

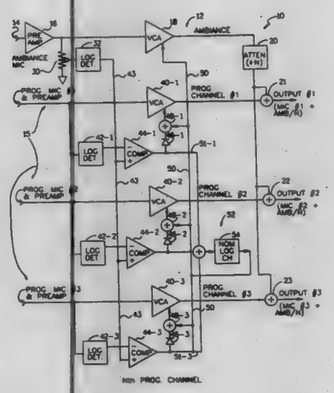
AUTOMATIC LEVEL CONTROL OF MULTIPLE AUDIO SIGNAL SOURCES

Montgomery F. Ross, Woodinville, Wash., assignor to Rane Corporation, Mukilteo, Wash.

Filed Apr. 9, 1992, Ser. No. 865,901

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—107 **20 Claims**



1. Automatic signal level controller for multiple audio program signal sources and a separate ambiance signal source, comprising:

an ungated ambiance channel means for producing an ambiance audio signal from the separate ambiance signal source;

a plurality of program channel means each for producing an audio program signal from a separate one of the program signal sources, each said program channel means having an automatic gain control means and gating means for selectively gating open those of said program channel means in which said audio program signal has a predetermined relationship to the ambiance audio signal;

said automatic gain control means and gating means of said program channel means cofunctioning for controlling the gain of each of said program channel means when the program channel means is gated open by said gating means, as a predetermined inverse function of the number of said program channel means gated open; and

output means for outputting an ambiance audio signal from said ambiance channel means and an audio program signal from each of said program channel means.

5,291,559

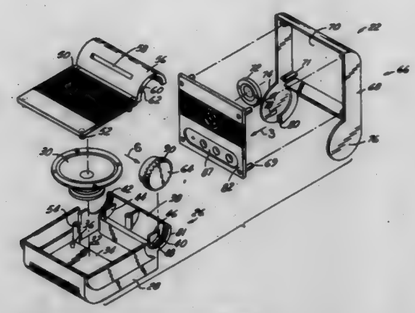
COMPUTER SPEAKER

Tommyca Freadman, Goshen, N.Y., assignor to Sparomatic, Corp., Milford, Pa.

Filed Oct. 23, 1991, Ser. No. 781,433

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—188 **5 Claims**



1. A speaker assembly comprising:

a mid-range-woofer speaker;

a first speaker housing adapted to removably receive said mid-range-woofer speaker while providing a pair of arcuate channels formed on opposite edges thereof;

a tweeter speaker;

a second speaker housing adapted to removably receive said tweeter speaker and having a pair of arcuate flanges formed on opposite sides thereof, each of said arcuate flanges being adapted to movably reside within a unique one of said arcuate channels thereby, allowing said second speaker housing to be movably coupled to said first speaker housing; and

gear means, positioned between said first and said second speaker housing, for allowing said second speaker housing to be fixed at a desired position with respect to said first speaker housing, said gear means having a passage which is adapted to receive at least one electric wire and to allow said at least one electric wire to be coupled to said mid-range-woofer and to said tweeter speakers.

5,291,560

BIOMETRIC PERSONAL IDENTIFICATION SYSTEM BASED ON IRIS ANALYSIS

John G. Daugman, Huntingdon, England, assignor to Iri Scan Incorporated, Mt. Laurel, N.J.

Filed Jul. 15, 1991, Ser. No. 729,638

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—2 **21 Claims**

1. A method for uniquely identifying a particular human being by biometric analysis of the iris of the eye, comprising the following steps:

acquiring an image of an eye of the human to be identified;

isolating and defining the iris of the eye within the image, wherein said isolating and defining step includes the steps of:

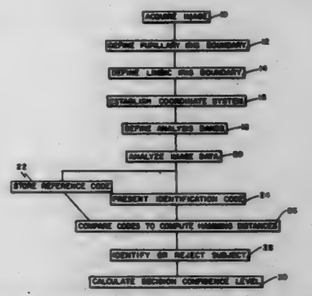
defining a circular pupillary boundary between the iris and pupil portions of the image;

defining another circular boundary between the iris and sclera portions of the image, using arcs that are not necessarily concentric with the pupillary boundary;

establishing a polar coordinate system on the isolated iris image, the origin of the coordinate system being the center of the circular pupillary boundary, wherein the radial coordinate is measured as a percentage of the distance between the said circular pupillary boundary and said circular boundary between the iris and sclera; and

defining a plurality of annular analysis bands within the iris image;

analyzing the iris to generate a presenting iris code;



comparing said presenting code with a previously generated reference iris code to generate a measure of similarity between said presenting iris code and said reference code;

converting said similarity measure into a decision that said iris codes either do or do not arise from the same iris; and

calculating a confidence level for the decision.

5,291,561

GRAPHICS PROCESSING DEVICE

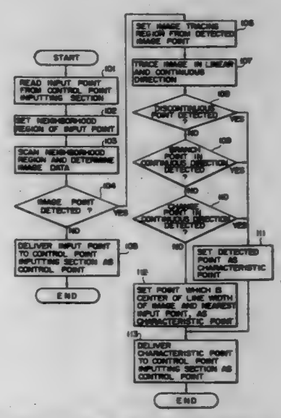
Yutaka Tanaka, and Naruto Takasaki, both of Yokohama, Japan, assignors to Hitachi Software Engineering Co., Ltd., Kanagawa, Japan

Filed Nov. 7, 1990, Ser. No. 610,104

Claims priority, application Japan, Nov. 8, 1989, 1-291749

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **9 Claims**



1. A graphics processing device, comprising:

an image data storing unit for storing image data;

a graphic data storing unit for storing graphic data;

a coordinate inputting unit for inputting coordinates;

a display unit for displaying the image data and the graphic data;

a graphic operation processing unit for processing the image data and the graphic data, the graphic data being pro-

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ceased with reference to the image data displayed on the display unit by designating a control point; and

an image characteristic point recognizing unit for setting a predetermined region in the neighborhood of an input point inputted for the graphic operation, recognizing a shape of an image in the predetermined region, deciding a characteristic point of the image corresponding to the shape of the image recognized, and outputting the characteristic point of the image as the control point.

5,291,562

IMAGE SIGNAL PROCESSING APPARATUS PRODUCING A NARROWED PULSE WIDTH MODULATED SIGNAL USING AN ASYMMETRICALLY CENTERED TRIANGLE REFERENCE WAVEFORM

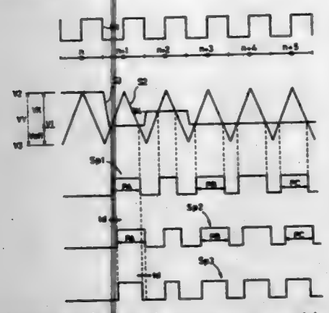
Yukitsugu Hata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 18, 1991, Ser. No. 642,987

Claims priority, application Japan, Jan. 22, 1990, 2-13024; Jan. 22, 1990, 2-13025

Int. Cl.[5] H03K *5/153, 5/04, 3/017;* G06K *9/64*

U.S. Cl. 382—41 9 Claims



4. An image signal processing apparatus comprising:

a pulse-width modulating circuit for comparing an image signal and a triangle-shaped wave signal to output a pulse-width modulated signal therefrom based on the result of its comparison, said image signal varying between a first d.c. level and a second d.c. level exceeding said first d.c. level, said triangle-shaped wave signal varying between a third d.c. level, which is less than said first d.c. level, and said second d.c. level;

a delay circuit for delaying said pulse-width modulated signal for a predetermined period of time; and

an AND circuit having a first input terminal to which a pulse-width modulated signal outputted from said pulse-width modulating circuit is inputted, and a second input terminal, such that said image signal varies asymmetrically with respect to a baseline of said triangle-shaped wave signal to which a time-delayed pulse-width modulated signal outputted from said delay circuit is inputted, said AND circuit being adapted to output a narrow pulse-width modulated signal having the pulse width narrower than that of said pulse-width modulated signal,

wherein said pulse-width modulating circuit comprises an image signal output device for outputting an image signal therefrom in synchronism with a pixel synchronizing signal, a triangle-shaped wave signal generator for outputting a triangle-shaped wave signal therefrom in synchronism with said pixel synchronizing signal, and a comparator for comparing said image signal and said triangle-shaped wave signal so as to output a pulse-width modulated signal therefrom based on the result of its comparison.

5,291,563

METHOD AND APPARATUS FOR DETECTION OF TARGET OBJECT WITH IMPROVED ROBUSTNESS

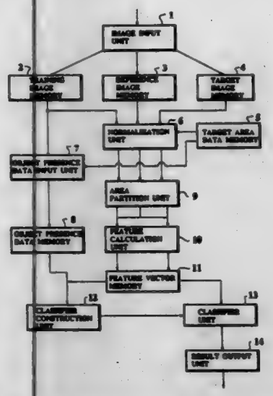
Eisaku Maeda, Kanagawa, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 805,612

Claims priority, application Japan, Dec. 17, 1990, 2-411144; Jul. 11, 1991, 3-170279

Int. Cl.[5] G06K *9/00, 9/20, 9/62, 9/76*

U.S. Cl. 382—48 24 Claims



1. An object detection apparatus for detecting a presence of a target object in prescribed target areas on a target image taken from a fixed camera position, comprising:

camera means, located at said fixed camera position, for taking the target image, a reference image in which the target object is known to be absent, and training images taken in which the target object is known to be present;

feature calculation means for calculating features for the target image taken by the camera means, the features including at least one of a quantity expressing a difference of contributions by principal axis components and secondary axis components in a distribution of brightness of corresponding points in each target area on the target image and the reference image, and a quantity expressing a difference between a direction of a principal axis with respect to a vector (1, 1) direction in the distribution of brightness of corresponding points in each target area on the target image and the reference image;

training means for training a classifier to classify the features calculated by the feature calculation means into those corresponding to a presence of the target object and those corresponding to an absence of the target object, by applying a training process using the training images taken by the camera means;

classifier means for classifying the features calculated by the feature calculation means into a first class corresponding to a presence of the target object and a second class corresponding to an absence of the target object by using the classifier trained by the training means; and

output means for outputting a detection result indicating the presence of the target object in the prescribed target areas on the target image taken by the camera means when the features for the target image calculated by the feature calculation means are classified into the first class by the classifier means, and the absence of the target object in the prescribed target areas on the target image taken by the camera means when the features for the target image calculated by the feature calculation means are classified into the second class by the classifier means.

5,291,564

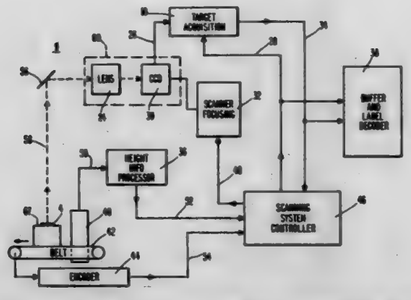
SYSTEM AND METHOD FOR ACQUIRING AN OPTICAL TARGET

Govind Shah, Princeton Junction; David G. Shaw, Middletown Township, Monmouth County, and Donald G. Chandler, Princeton, all of N.J., assignors to United Parcel Service of America, Atlanta, Ga.

Continuation of Ser. No. 728,219, Jul. 11, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,692

Int. Cl.[5] G06K *9/00, 9/20, 9/68*

U.S. Cl. 382—48 20 Claims



1. A method for detecting a package label positioned within the field of view of an optical scanning device and acquiring encoded information from said label, said label being comprised of an optical acquisition target having an associated predetermined target frequency which is detectable when said optical acquisition target is scanned by said optical scanning device, said label being further comprised of encoded data, comprising the steps of:

(a) optically scanning said field of view with said optical scanning device to determine a detector input signal;

(b) filtering said detector input signal with a band-pass filter to determine the level of energy inside a target frequency band of said detector input signal, said target frequency band having been determined in accordance with said associated predetermined target frequency;

(c) filtering said detector input signal with a band-reject filter to determine the level of energy outside said target frequency band of said detector input signal;

(d) comparing said determined level of energy inside said target frequency band with said determined level of energy outside of said target frequency band;

(e) comparing said determined level of energy within said target frequency band to a predetermined set point; and

(f) detecting a target frequency signal if said determined level of energy within said target frequency band exceeds said determined level of energy outside of said target frequency energy band and said determined level of energy within said target frequency band exceeds said predetermined set point.

5,291,565

BROAD BAND, LOW POWER ELECTRO-OPTIC MODULATOR APPARATUS AND METHOD WITH SEGMENTED ELECTRODES

James H. Schaffner, Chatsworth, and William B. Bridges, Pasadena, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 30, 1992, Ser. No. 906,788

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—3 23 Claims

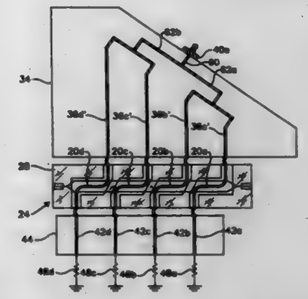
1. An electro-optic modulator, comprising:

a substrate,

an optical transmission network on said substrate,

a plurality of separate segmented electrodes distributed in a cascade arrangement on said substrate in the direction of optical transmission for modulating successive respective segments of said optical transmission network, and

a plurality of separate modulating signal transmission lines disposed lateral to said optical transmission network for transmitting modulating signals to respective ones of said segmented electrodes to modulate an optical signal transmitted through said optical network, said modulating transmission lines having respective input ends and individual lengths that are selected so that modulating signals applied to the input ends of said modulating transmission lines with a predetermined phase relationship reach their respective electrodes in synchronism with the propagation of an optical signal through said optical transmission network.



5,291,566

TOTAL INTERNAL REFLECTION ELECTRO-OPTIC MODULATOR FOR MULTIPLE AXIS AND ASYMMETRIC BEAM PROFILE MODULATION

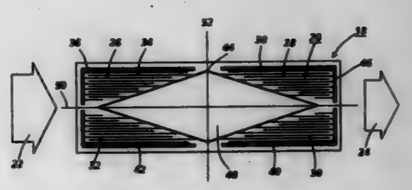
Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 3, 1992, Ser. No. 862,927

The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.

Int. Cl.[5] G02B *6/12*

U.S. Cl. 385—8 9 Claims



1. A total internal reflection electro-optical modulator comprising:

an electro-optical material having first, second and third surfaces,

an electrode pattern array proximate to said first surface of said electro-optical material, said electrode pattern array comprising multiple sets of electrodes of varying lengths interdigitated with at least one set of electrodes of corresponding varying lengths, each of the electrodes of said multiple sets being addressable at a uniform voltage level, said at least one set of electrodes being set at a reference voltage level, the voltage levels applied to said multiple sets of electrodes inducing a localized electric field adjacent said first surface of said electro-optical material, and

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a coherent light beam parallel to said first surface is deflected at said second and third surfaces to suffer total internal reflection at said first surface, the lengths of said electrodes in said electrode pattern array extending in the general direction of travel of said coherent light beam, and said localized electric field producing a spatial modulation of said coherent light beam's optical profile corresponding to the location of each electrode, the local magnitude of which is related to the length of said electrode.

5,291,567

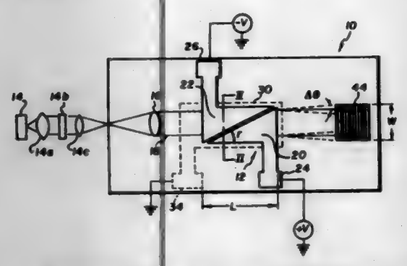
ELECTRO-OPTIC WAVEGUIDE DEFLECTOR USING A NONLINEAR OPTIC FILM OR LIQUID-CRYSTAL OVERLAY CELL FOR USE IN AN OPTICAL PICKUP HEAD

Joseph F. Revelli, Jr., Rochester; Thomas L. Penner, Fairport; Nancy J. Armstrong, Ontario; Douglas R. Robello, Webster, and Jay S. Schildkraut, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 21, 1992, Ser. No. 916,422

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—8 **19 Claims**



1. An integrated electro-optic waveguide deflector, comprising:

a planar electrode;

an optical waveguide layer for deflecting light, said waveguide layer overlying said planar electrode and having a refractive index;

a pair of spaced electrodes overlying said waveguide layer, each of said electrodes having a prism configuration defining a prism angle; and

means for selectively applying an electric field between said pair of electrodes and said planar electrode so that deflection varies with applied voltage according to a formula:

$$\Delta\Theta \approx \frac{2\Delta n}{n} \tan \Gamma,$$

where $\Delta\Theta$ is the deflection angle of a collimated beam in the waveguide layer, Δn is the electro-optically induced index change, n is the effective index of refraction of the waveguide, and Γ is the prism angle.

5,291,568

OPTICAL WAVELENGTH CONVERSION MODULE

Takafumi Uemiya, and Naota Uenishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 31, 1992, Ser. No. 994,353

Claims priority, application Japan, Dec. 20, 1991, 3-338181

Int. Cl.[5] H01S *3/10*

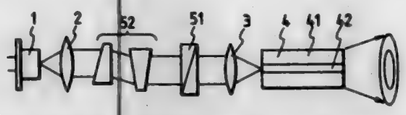
U.S. Cl. 385—31 **4 Claims**

1. An optical wavelength conversion module, comprising:

a semiconductor laser light source;

a first lens for focusing semiconductor laser light; and

a fiber-type optical wavelength converter including a core and a clad having a refractive index lower than said core, at least one of said core and clad being formed of a non-linear optical material, whereby said fiber-type optical wavelength converter produces light having converted wavelength from said semiconductor laser light incident to said core;



wherein the number of longitudinal modes of oscillation of said semiconductor laser light source is not less than three.

5,291,569

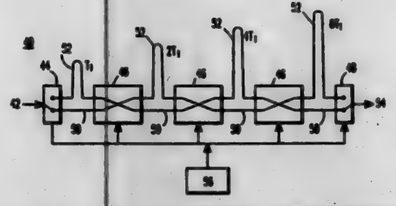
FIBEROPTIC DELAY LINE FOR GENERATING REPLICAS OF AN RF SIGNAL WITH VARIABLE REPLICA-TO REPLICA TIME RESOLUTION

Anastasios P. Goutzoulis, Pittsburgh, and David K. Davies, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 8, 1992, Ser. No. 880,448

Int. Cl.[5] G02B *6/00, 6/26;* H01J *1/16*

U.S. Cl. 385—39 **14 Claims**



1. A signal processor for generating multiple replicas of a signal having variable replica-to-replica time resolution comprising:

a. means for receiving said signal to be replicated;

b. a plurality of serially connected cascaded binary fiberoptic segment delay lines, wherein (i) the first of said plurality of cascaded binary fiberoptic segment delay lines is connected to said signal receiving means, (ii) each of said plurality of cascaded binary fiberoptic segment delay lines has a different minimum delay time, and (iii) said plurality of cascaded binary fiberoptic segment delay lines create a plurality of replicated signals; and

c. means for transmitting said plurality of replicated signals.

5,291,570

HIGH POWER LASER - OPTICAL FIBER CONNECTION SYSTEM

David M. Filgas, Walnut Creek; Gordon M. McFadden, Danville; Jeffery Broome, Livermore, all of Calif.; James F. York, Tempe, and R. Scott Wofford, Glendale, both of Ariz., assignors to Hobart Laser Products, Inc., Livermore, Calif.

Filed Sep. 9, 1992, Ser. No. 942,638

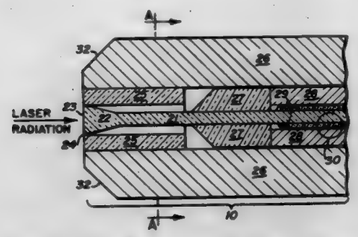
Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—78 **20 Claims**

1. An apparatus for coupling high power laser radiation into an optical fiber while dissipating heat from scattered laser and optical pump radiation comprising:

(a) an optical fiber with a face for input of laser radiation;

(b) a protective ferrule surrounding a lengthwise portion of said optical fiber extending from said input face, said ferrule substantially transparent to the scattered radiation, said ferrule welded to said fiber in the region of said input face and otherwise separated from said fiber, an air space formed between at least a portion of said ferrule and said fiber; and



(c) a holder surrounding said ferrule, said holder comprised of a material which absorbs the scattered radiation passing through said ferrule and conducts away heat generated from said absorbed scattered radiation.

5,291,571

DUPLICATED LIGHT SOURCE MODULE

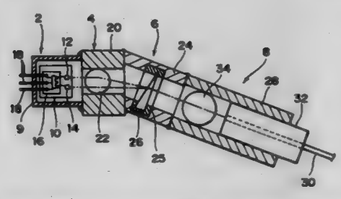
Tatsuro Kunikane, Kawasaki; Saburo Uno, Osaka, and Nobuhiro Fukushima, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1993, Ser. No. 32,313

Claims priority, application Japan, Mar. 19, 1992, 4-063967; Mar. 31, 1992, 4-077112

Int. Cl.[5] G02B *6/26, 5/30*

U.S. Cl. 385—93 **16 Claims**



1. A light source module having a first light source, a second light source and an optical fiber optically coupled with said first and second light sources, said light source module comprising:

a first assembly comprising said first and second light sources arranged so that a plane of polarization of light emitted from said first light source is perpendicular to a plane of polarization of light emitted from said second light source;

a first lens having a principal axis positioned between a first principal axis of said light emitted from said first light source and a second principal axis of said light emitted from said second light source;

a birefringent element for receiving said light emitted from said first and second light sources and passed through said first lens and for outputting light on a single optical path;

a second assembly comprising said optical fiber arranged so that said light output from said birefringent element enters an end of said optical fiber; and

holding means for holding said first lens and said birefringent element to said first assembly and said second assembly so as to maintain predetermined positional relation.

5,291,572

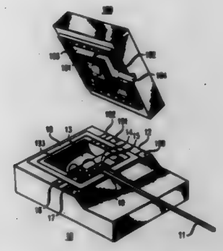
ARTICLE COMPRISING COMPRESSION BONDED PARTS

Greg E Blonder, Summit, and William M. MacDonald, Flemington, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 14, 1993, Ser. No. 4,361

Int. Cl.[5] G02B *6/42*

U.S. Cl. 385—94 **8 Claims**



1. An article that comprises a first and a second body, at least one of said bodies having a surface that comprises a textured bonding region, with one of said bodies being compression bonded to the other of said bodies in said bonding region;

CHARACTERIZED

at least one of said bodies has a surface that comprises a recessed portion that faces the other of said bodies, the textured bonding region surrounds an interior region that includes said recessed portion such that said first and second bodies are not in contact in said interior region, with one of said bodies comprising at least one raised feature in the bonding region, the raised feature to be referred to as a "ridge", with said ridge substantially enclosing said interior region and providing a barrier against entrance of gas from an ambient atmosphere into said interior region.

5,291,573

OPTICAL FIBER CABLE WOUND ABOUT OVERHEAD POWER TRANSMISSION LINE

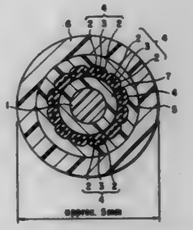
Satoru Yoshida, and Masami Obara, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 975,696

Claims priority, application Japan, Nov. 19, 1991, 3-102927[U]

Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—103 **15 Claims**



1. An optical fiber cable wound about an overhead transmission line, said optical fiber cable comprising:

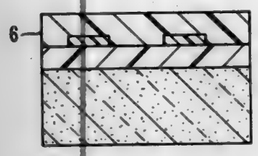
a tension member;

a plurality of plural-core type optical fiber tape-shaped strands arranged on the outside of said tension member said plural-core type optical fiber tape-shaped strands each comprising a plurality of optical fibers arranged side by

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side, and a covering layer collectively covering said plurality of optical fibers;
a buffer layer covering the outer surface of the arrangement of the plural-core type optical fiber tape-shaped strands; and
a sheath covering the outer surface of the buffer layer.

5,291,574
METHOD FOR MANUFACTURING STRIP OPTICAL WAVEGUIDES
Régine Levenson, Fontenay aux Roses; Julienne Liang, Fresnes; Alain Carenco, Bourg la Reine, and Joseph Zyss, Sceaux, all of France, assignors to France Telecom, France
Filed Nov. 25, 1992, Ser. No. 981,755
Claims priority, application France, Nov. 27, 1991, 91 14662
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—129 **22 Claims**

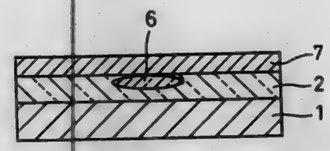


1. Method of manufacturing a strip optical waveguide entirely based on polymer materials comprising the following steps:
depositing onto a semiconductor substrate a lower layer of low refractive index buffer polymer which is thereafter stabilized and dried and then cured at a temperature close to the glass transition temperature of said polymer;
depositing a guiding polymer adapted to be formed subsequently into strips onto said lower layer followed by curing to stabilize said guiding polymer without degrading its properties;
depositing a layer of silicon nitride (Si_3N_4);
deposing a photosensitive resin and then transferring the geometry of said strips to said resin by photolithography;
selectively etching said silicon nitride layer with CF_4 plasma, said strips being protected by said photosensitive resin;
selectively etching said photosensitive resin and said guiding polymer at the locations where the latter is not protected by said silicon nitride layer;
etching said polymer until said lower buffer polymer layer is exposed;
etching said silicon nitride layer protecting said guiding polymer strips;
depositing an upper layer of low index buffer polymer onto the resulting structure which is then cured at a temperature similar to that used to stabilize said guiding polymer.

18. Use of a guide structure obtained by the method according to any one of claims 1 to 17 in which the said guiding polymer is a passive material.

5,291,575
MANUFACTURING METHOD FOR WAVEGUIDE-TYPE OPTICAL COMPONENTS
Hisaharu Yanagawa, Tokyo, and Ken Ueki, Ichihara, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Jul. 21, 1992, Ser. No. 917,838
Claims priority, application Japan, Jul. 24, 1991, 3-184658
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—132 **19 Claims**

1. A manufacturing method for waveguide-type optical components, comprising:
(a) forming a lower clad section, which is made of silica glass, on a substrate;
(b) forming an antistatic layer and a mask layer, which has a desired pattern, on the surface of said lower clad section in the order listed;
(c) forming a core of said desired pattern in said lower clad section by irradiating an electron beam from above said mask layer toward said lower clad section;



(d) removing said mask layer and said antistatic layer, after said core is formed, to expose the surface of said lower clad section; and
(e) forming an upper clad section, which has a lower refractive index than said core, on the exposed surface of said lower clad section and over said core, said upper clad section having a thickness of at least 0.1 μm to reduce scattering loss caused by minute irregularities produced on a surface of said upper clad section.

5,291,576
SINGLE MODE OPTICAL WAVEGUIDE
Masanori Nakamura, Gifu, Japan, assignor to Ibiden Co., Ltd., Gifu, Japan
Filed Jun. 17, 1993, Ser. No. 77,549
Claims priority, application Japan, Jun. 18, 1992, 4-185906
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—142 **2 Claims**



1. A single mode optical waveguide characterized by comprising a crystal of $LiNbO_3$ thin film waveguide layer including at least an Na content in a range of 0.1 to 14.3 mol % and an Mg content in a range of 0.8 to 10.8 mol %, thereby lattice matching $LiNbO_3$ thin film waveguide layer and $LiTaO_3$ single crystal substrate, and following relationship being satisfied;
in the case of TM mode,

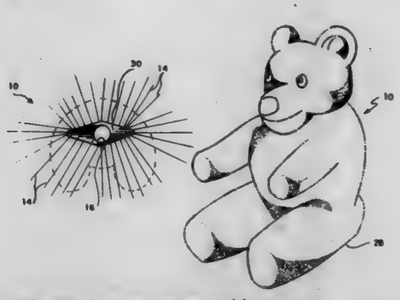
$$1.9<(T+0.7)/\lambda<5.7 \quad (T>0)$$

in the case of TE mode,

$$0.29<(T+0.04)/\lambda<1.19 \quad (T>0)$$

where T(μm) represents a thickness of the waveguide layer, and λ (μm) a wavelength of the guided wave.

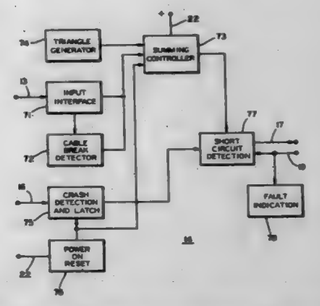
5,291,577
OPTIC FIBER ORNAMENT
Donald P. Zoscak, 7702 Appomattox Ave., Manassas, Va. 22111
Filed Dec. 4, 1992, Ser. No. 985,933
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—147 **17 Claims**



9. A fiber optic ornament, comprising:
a central body comprising a moldable material;
optic fibers each having proximal and distal ends, rigidity, and light transmissive capability, said optic fiber proximal ends being supported in said central body, said optic fibers being arranged to radiate from said central body, said optic fiber distal ends collectively demarcating an outer boundary of said ornament, thus defining an ornament specific shape, and diffusing light therefrom;
said distal ends of said optic fibers being cuttable;
said distal ends of said optic fibers being deformable by melting and molding;
said distal ends of said optic fibers forming an apparent surface of said fiber optic ornament;
said central body defining an open core and having attachment means enabling attachment of said ornament to another object, and having means engaging and supporting a light source within said open core; and
said central body attachment means comprises an external surface having a first portion supporting said optic fibers and a second portion being unencumbered by said optic fibers, whereby said central body is readily joined to another central body, thus enabling creation of selectively variable ornament configurations and said apparent surface is modified by melting, molding and cutting said distal ends of said optic fibers.

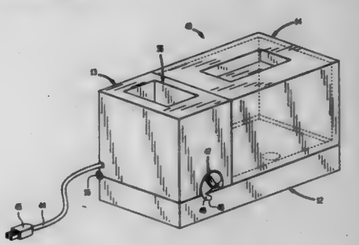
5,291,578
APPARATUS FOR CONTROLLING A VEHICLE FUEL PUMP
Hoshmand Kalami, Novi, Mich., assignor to First Switch, Inc., Grand Blanc, Mich.
Filed Jun. 15, 1992, Ser. No. 898,521
Int. Cl.[5] F02M *37/08*
U.S. Cl. 388—831 **15 Claims**

1. An apparatus for controlling a fuel pump electric motor powered from a direct current power source comprising:
a first input line for receiving a demand signal representing a fuel flow demand of a vehicle engine;
a controller having a first input connected to said first input line and an output and being responsive to said demand signal for generating a pulse width modulated control signal at said controller output;
a crash sensor for sensing a crash condition for a vehicle and having an output for generating a crash detection signal representing a crash condition and a second input line connected to said crash sensor output and wherein said controller has a second input connected to said second input line;
a driver having an input connected to said controller output and an output and being responsive to said control signal for generating a switch signal at said driver output; and
a switch having a gate input connected to said driver output, a power input and a power output whereby when said switch power input is connected to a direct current power



supply and said switch power output is connected to a direct current fuel pump electric motor, said switch controls the speed of said motor in response to said demand signal, and wherein said controller is responsive to said crash detection signal for turning off said switch when said crash sensor senses a crash.

5,291,579
ELECTRIC HUMIDIFIER HAVING ON-OFF SWITCH ACTUATED SAFETY LATCH PREVENTING UNSAFE ACCESS TO ENERGIZED ELECTRICAL PARTS THEREOF
Frank Marino, Upton, Mass., assignor to Duracraft Corporation, Whitinsville, Mass.
Division of Ser. No. 921,531, Jul. 29, 1992, Pat. No. 5,228,107.
This application Dec. 8, 1992, Ser. No. 987,496
Int. Cl.[5] H05B *1/02*; F22B *1/28*; F24F *3/14*
U.S. Cl. 392—406 **6 Claims**



1. A humidifier comprising:
base means defining a reservoir;
a humidifier unit mounted on said base means over said reservoir and movable to provide access thereto, said humidifier unit retaining an electrically energized humidification means for inducing dispersion of liquid and defining a discharge opening for discharging liquid dispersed by said humidification means;
circuit means coupled to said humidification means and comprising a switch means for inducing energization thereof in an on position and deenergization thereof in an off position; and
latching means including a latch arm on one of said base means and said switch means, and a latch receptacle on the other of said base means and said switch means, said latch arm adapted in said on position of said switch means to engage said latch receptacle and to prevent movement

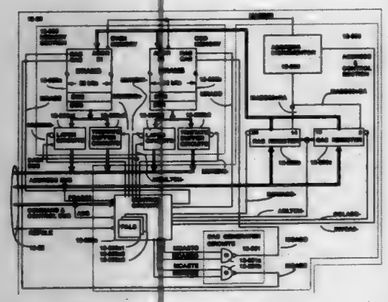
of said humifilier unit on said base means and in said off position of said switch means to be disengaged from said latch receptacle to permit said movement.

5,291,580

HIGH PERFORMANCE BURST READ DATA TRANSFER OPERATION

Raymond D. Bowden, III, Tewksbury; Richard A. Lemay, Carlisle; Chester M. Nibby, Jr., Beverly, and Jeffrey S. Somers, Lowell, all of Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 4, 1991, Ser. No. 771,703
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—425 12 Claims



1. A system comprising:

a clock generator for generating a single frequency clock reference signal for synchronizing operations within said system using predetermined transitions of said reference signal;

a unit coupled to said clock generator for generating commands for reading and writing memory, one of said commands specifying a burst operation;

a synchronous bus having address, command and data sections and operating according to a predetermined bus protocol; and,

a memory tightly coupled to said unit through said synchronous bus, said memory comprising:

a pair of dynamic random access (DRAM) memories coupled to said bus, each of said DRAMs having an identical width, the sum of the widths being no more than twice as wide as said data section of said bus; and,

control logic circuit means coupled to said DRAM memories and to said clock generator, said control logic circuit means including:

first circuit means for generating a column address timing signal in response to selected ones of said predetermined transitions of said clock reference signal which provides an interval which is sufficient in duration to perform a plurality of successive read cycles of operation in said DRAM memories;

second circuit means for generating a blipper pulse signal in response to two successive transitions other than said predetermined transitions; and,

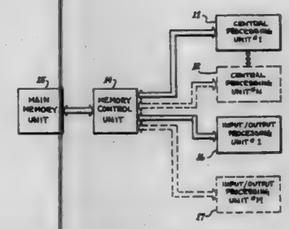
logic circuit means coupled to said first and second circuit means for combining said column address timing signal and said blipper pulse signal to produce a column address strobe (CAS) signal to be applied to said DRAM memories during said successive read cycles of operation for reading out a plurality of successive pairs of words for completing the execution of said burst operation without incurring any unit wait states.

5,291,581

APPARATUS AND METHOD FOR SYNCHRONIZATION OF ACCESS TO MAIN MEMORY SIGNAL GROUPS IN A MULTIPROCESSOR DATA PROCESSING SYSTEM

David N. Cutler, Bellevue; David A. Orbits, Redmond, both of Wash.; Dileep Bhandarkar, Shrewsbury, Mass.; Wayne Cardoza, Merrimack, N.H., and Richard T. Witek, Littleton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 463,002, Jan. 8, 1990, abandoned, which is a continuation of Ser. No. 69,380, Jul. 1, 1987, abandoned. This application Feb. 28, 1992, Ser. No. 844,968
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—425 24 Claims



1. Apparatus for modifying data elements in main memory locations of a data processing system having a plurality of central processing units, each of said memory locations being either in a locked condition or an unlocked condition, comprising:

a) means for providing to each one of said central processing units a plurality of instructions for execution, at least one of said instructions being an interlock instruction, each of said plurality of instructions causing the central processing unit that executes said instruction to transfer one of said data elements from one of said main memory locations to said central processing unit, modify said data element, and transfer said modified data element back to said main memory location;

b) interlock means responsive to execution of each one of said instructions by one of said central processing units for: (1) granting said one central processing unit interlock access to one of said main memory locations by placing at least said one main memory location in said locked condition if said executed instruction is an interlock instruction and said one main memory location is in said unlocked condition, (2) denying said one central processing unit access to one of said main memory locations if said executed instruction is an interlock instruction and said one main memory location is in said locked condition, and (3) granting said one central processing unit non-interlock access to said one main memory location without placing said one memory location in said locked condition if said executed instruction is not an interlock instruction;

c) transfer means for transferring said data element from said one main memory location to said one central processing unit that executes said instruction;

d) processing means for performing said modifying of said data element in response to said instruction executed by said one central processing unit;

e) said transfer means transferring said modified data element from said one central processing unit to said one main memory location; and

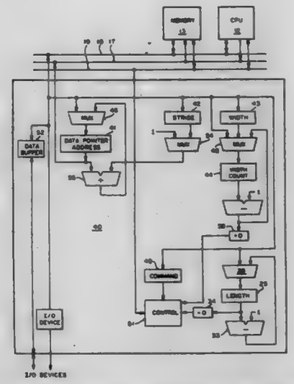
f) if said executed instruction is an interlock instruction, said interlock means placing said one main memory location in said unlocked condition after said transfer of said modified data element to said one main memory location by said central processing unit that executed the interlock instruction.

5,291,582

APPARATUS FOR PERFORMING DIRECT MEMORY ACCESS WITH STRIDE

Dean Druko, Cupertino, and Steven Roskowski, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 616,887, Nov. 21, 1990, abandoned.
This application Apr. 27, 1992, Ser. No. 874,747
Int. Cl.[5] G06F *12/00, 12/02, 12/06*
U.S. Cl. 395—425 3 Claims



1. A direct memory access controller for controlling a linearly organized memory, the memory storing information for adjacent pixels in sequential addresses, the direct memory access controller comprising:

a) means for storing an address to which information is to be written or from which information is to be read;

b) means for storing a value indicative of a width of a block of data to be transferred;

c) means for storing a value indicating a number of addresses to be bypassed during a transfer;

d) means for incrementing the address while decrementing the value indicative of the width of the block until the width of the block has been crossed, the means for incrementing including;

1) a first adder having an input coupled to an output of the means for storing an address and the first adder having an output coupled to an input of the means for storing an address;

2) a first subtractor having an input coupled to the means for storing a value indicative of a width and an output coupled to the means for storing a value indicative of a width; and

3) a comparator having an input coupled to the output of the first subtractor and the comparator having an output indicative of when the width of the block has been crossed;

e) means for changing the address by the value indicating a number of addresses to be bypassed during a transfer when the width of the block has been crossed, the means for changing the address including;

1) a multiplexor having a first input coupled to the means for storing a value indicating a number of addresses to be bypassed and a second input representing an amount by which to increment the address before the width of the block has been crossed, the multiplexor selecting the first input as the output when the width of the block has been crossed; and

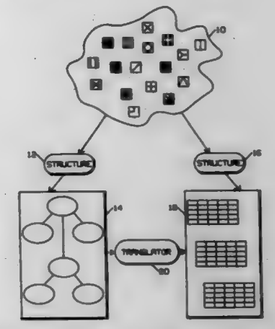
f) means for resetting the value indicative of a width of a block of data to be transferred to the original value when the width of the block has been crossed.

5,291,583

AUTOMATIC STORAGE OF PERSISTENT ASN.1 OBJECTS IN A RELATIONAL SCHEMA

Subodh Bapat, Fort Lauderdale, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.

Filed Dec. 14, 1990, Ser. No. 628,120
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—500 34 Claims



1. A method for a computer to translate an Abstract Syntax Notation object class hierarchy into a relational schema, comprising in combination the steps of:

providing said computer with a computer memory;

providing in said computer memory a first computer program having at least one Abstract Syntax Notation class hierarchy organization of object-oriented information and being in source code form, said class hierarchy organization comprising at least one parent class of objects having a first attribute and one derived class including at least one of said objects of said parent class, said derived class having a second attribute, said derived class inheriting said first attribute from said parent class;

analyzing said first computer program with a second computer program to locate automatically said class hierarchy organization;

using said second computer program to create automatically from said located class hierarchy organization a first source code routine in said computer memory for defining a first table structure, corresponding to said parent class, including a first table name, said first table structure including:

a first instance identifier field for storing a unique first instance identifier for each particular object instance of one of said objects, and

a first attribute field for storing an attribute instance of said first attribute for said each particular object instance,

said first instance identifier field and said first attribute field composing a record of said first table structure;

using said second computer program to create automatically from said located class hierarchy organization a second source code routine for defining a second table structure, corresponding to said derived class, including a second table name, said second table structure including:

a second instance identifier field for storing a second instance identifier which identifies said particular object instance of said one of said objects included in said derived class,

and a second attribute field for storing an attribute instance of said second attribute for said particular object instance of said one of said objects included in said derived class,

said second instance identifier field and said second attribute field composing a record of said second table structure; and

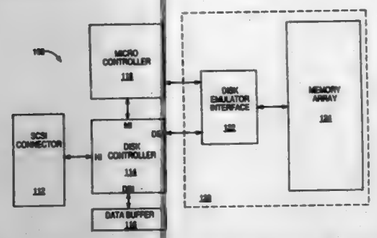
VOL 1160 ISS 1 MR 1 1994 UMI

referencing said second identifier field to said first identifier field.

5,291,584
METHODS AND APPARATUS FOR HARD DISK EMULATION

Nagesh Challa, Sunnyvale, and Michel E. Gannage, Santa Clara, both of Calif., assignors to Nexcom Technology, Inc., Sunnyvale, Calif.

Filed Jul. 23, 1991, Ser. No. 734,414
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—500 **25 Claims**



1. A solid state apparatus for emulating a hard disk having a plurality of tracks per head and a plurality of sectors per track, comprising:

a plurality of groups of solid state memory cells arranged in a plurality of banks,

each emulated sector and head being represented by a memory cell group having a predetermined sector association, a predetermined head association, and a static address corresponding to said head association;

said memory cell groups having respective group serial buses and respective group clock buses, and

memory cell groups with a common sector association being members of a common bank, said respective group serial buses being interconnected to form a common bank serial bus, and said respective group clock buses being interconnected to form a common bank clock bus; and

an interface for communicating disk control signals and data with a hard disk control system, and for communicating serial and clock signals to said memory cells over, respectively, an emulator serial bus connected to said bank serial buses, and an emulator clock bus connected to said bank clock buses;

wherein at least one of said emulator serial bus and said emulator clock bus comprises a number of lines equal to the plurality of banks for communicating with a selected memory cell group that is within a bank corresponding to a hard disk sector.

5,291,585
COMPUTER SYSTEM HAVING SYSTEM FEATURE EXTENSION SOFTWARE CONTAINING A SELF-DESCRIBING FEATURE TABLE FOR ACCESSING I/O DEVICES ACCORDING TO MACHINE-INDEPENDENT FORMAT

Albert Sato; David C. Baker, both of Austin, and Christie J. Waldron, Plano, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jul. 29, 1991, Ser. No. 737,086
Int. Cl.[5] G06F *9/445, 9/44, 9/00*
U.S. Cl. 395—500 **46 Claims**

1. A method for operating a computer system, comprising the steps of:

(a) automatically running startup software, from nonvolatile memory, on a central processing unit (CPU) whenever said computer system first initiates operation, said startup software including self-test and bootstrap software;

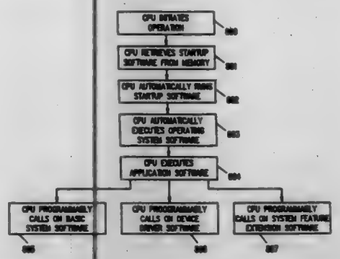
(b) launching said CPU, from execution of said startup software, into execution of operating system software; and

(c) launching said CPU, from execution of said operating system software, into execution of application software;

(d) wherein said CPU, under control of said application software, programmably calls on one of

(d1) said operating system software, for interfacing to an I/O device according to a format which is substantially independent of a hardware type of said computer system, said CPU, under control of said operating system software, programmably calling machine-specific system feature extension software to provide low-level interface to electrical operations, said system feature extension software being partly stored in said nonvolatile memory and containing a self-describing feature table and a plurality of machine-dependent routines executed by said CPU; and

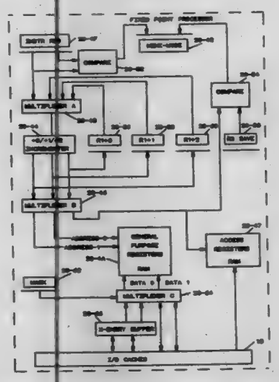
(d2) device driver software, stored in said nonvolatile memory, for interfacing to said I/O device according to a format which is substantially independent of said hardware type of said computer system.



5,291,586
HARDWARE IMPLEMENTATION OF COMPLEX DATA TRANSFER INSTRUCTIONS

Amy K. Jen, Vestal; Patricia A. Gage, and Agnes Y. Ngai, both of Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 291,510, Dec. 29, 1988, abandoned.
This application Jul. 17, 1992, Ser. No. 916,797
Int. Cl.[5] G06P *13/14, 13/28*
U.S. Cl. 395—500 **13 Claims**



1. A method for executing a software instruction which requires transfer of a first block of data using computer hardware that executes software instructions that conform to a predetermined architecture which limits transfer to blocks having predetermined, limited characteristics, said method comprising the steps of:

reading the software instruction;

determining if said first block conforms to the limited characteristics of said predetermined architecture, and

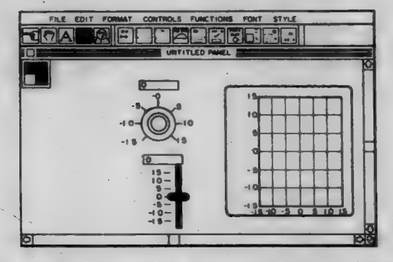
if so, executing said software instruction using said computer hardware, and

if not, generating a plurality of mini-instructions based on said software instruction, each of said mini-instructions implementing the software instruction for a respective portion of said first block in conformance with said limited characteristics of said predetermined architecture, all of said mini-instructions collectively implementing said software instruction.

5,291,587
GRAPHICAL SYSTEM FOR EXECUTING A PROCESS AND FOR PROGRAMMING A COMPUTER TO EXECUTE A PROCESS, INCLUDING GRAPHICAL VARIABLE INPUTS AND VARIABLE OUTPUTS

Jeffrey L. Kodosky; James J. Truchard, both of Austin, Tex., and John E. MacCriskea, Palo Alto, Calif., assignors to National Instruments, Inc., Austin, Tex.

Continuation of Ser. No. 376,257, Jul. 6, 1989, abandoned, which is a continuation of Ser. No. 851,569, Apr. 14, 1986, Pat. No. 4,901,221. This application Nov. 19, 1992, Ser. No. 979,416
The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.
Int. Cl.[5] G06F *15/46*
U.S. Cl. 395—500 **18 Claims**



2. A system for executing a process, said process characterized by at least one input variable and at least one output variable, said system comprising:

a first store for a first collection comprising graphical representations of variable inputs and variable outputs;

a first display, responsive to user inputs and coupled with the first store to display at least one variable input as a graphical representation selected from said first collection to show a value of said at least one input variable and to display at least one variable output as a graphical representation selected from said first collection to show a value of said at least one output variable to provide a display which substantially characterizes a panel;

a second store for a second collection comprising icons, wherein respective icons in the second collection correspond to variable inputs and variable outputs in said first collection;

a third store for a third collection comprising graphical structure representations, wherein respective structure representations correspond to respective data flow structures;

a diagram display to display at least one diagram, said diagram including an icon corresponding to said at least one variable input on said panel and an icon corresponding to said at least one variable output on said panel and at least one structure representation selected from said third collection, such that said diagram graphically displays data flow of a procedure by which said at least one input variable shown on the panel with said at least one variable input can produce said at least one output variable shown on said panel with said at least one variable output;

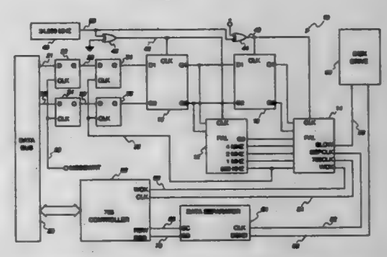
a program, coupled with the diagram display, that constructs execution instructions in response to said diagram such that said execution instructions characterize an execution procedure which substantially corresponds to said displayed procedure; and

a processor, coupled with the diagram display and the first display, and responsive to at least one value shown with said at least one variable input on said panel, to execute said execution instructions to produce at least one value shown with said at least one variable output on said panel.

5,291,588
CONTROL SYSTEM AND METHOD FOR MULTIPLE RATE DISK DRIVE DATA TRANSFER WITH A SINGLE OSCILLATOR

Robert A. Koltz, St. Joseph, and Mark D. Nicol, Stevensville, both of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 208,354, Jun. 17, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 455,818
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—550 **10 Claims**



1. In a computer system having a CPU and a disk drive, means for adapting different rates of data transfer between the CPU and the disk drive to correspond to a selected data transfer rate comprising:

means for generating a first clock signal and a second clock signal, said first clock signal and said second clock signal being derived from a single oscillator;

first logic means drive by said first clock signal for generating a first set of intermediate signals synchronous with said first clock signal;

second logic means driven by said second clock signal for generating a second set of intermediate signals synchronous with said second clock signal, said second logic means being operable in parallel with said first logic means; and

means for combining signals of said first set of intermediate signals and said second set of intermediate signals to create disk drive control signals corresponding to the selected data transfer rate.

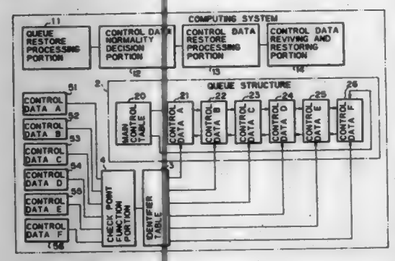
VOL 1160 ISS 1 MR 1 1994 UMI

5,291,589

SYSTEM FOR CONTROLLING RESTORATION FROM FAILURE IN QUEUE STRUCTURE OF CONTROL DATA

Hidekazu Matsuura, Yokohama, and Yukiyoshi Ohmura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1991, Ser. No. 683,041
Claims priority, application Japan, Apr. 11, 1990, 2-095370
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 5 Claims



1. A system for controlling a process of restoration from a failure in a queue structure of control data used in a computer, said system comprising:

an identifier table of the computer having identifiers for indicating the contents of the control data and individual pointers with respect to the control data;

queue restoration process means of the computer for restoring a control data queue based on queue pointers when the content of the control data is destroyed by a failure by disconnecting and connecting the queue pointers;

control data normality deciding process means of the computer for separating normal control data from abnormal control data based on the identifier table; and

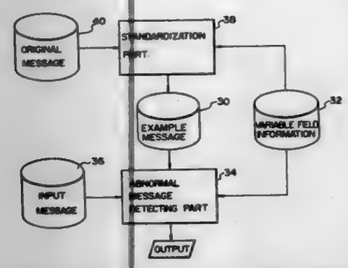
control data restoration process means of the computer for re-connecting into the queue structure normal control data disconnected from the queue structure by said queue restoration process means.

5,291,590

METHOD OF DETECTING AND PROCESSING ABNORMAL MESSAGE OUTPUT FROM COMPUTER SYSTEM AND DETECTING AND PROCESSING APPARATUS THEREFOR

Shingo Ohnishi, Nagoya; Shingo Moritomo; Tomiko Moritomo, both of Kasugai, and Yoshiko Ogawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 10, 1991, Ser. No. 727,739
Claims priority, application Japan, Jul. 13, 1990, 2-186251
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 10 Claims



6. An apparatus for detecting and processing abnormal messages from among messages output from a computer system, comprising:

first storage means for storing example messages of normal messages output during a normal operation of the computer system;

second storage means for storing information of a location of variable portions in the normal messages; and

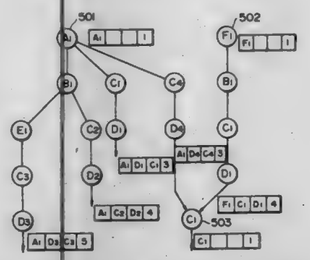
abnormal message detecting means for comparing an object message with the example messages stored in the first storage means, except for the variable portions in the object message and the example messages determined by the information stored in the second storage means, for determining that the object message is an abnormal message if none of said example messages coincide with the object message in the comparison, and for outputting the object message so that the abnormal message is distinguishable from normal messages.

5,291,591

METHOD OF MANAGING PROGRAMS FOR DISTRIBUTED PROCESSING SYSTEMS AND APPARATUS THEREFOR

Katsumi Kawano, Kawasaki; Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Masayuki Orimo, Kawasaki; Minoru Koizumi, Yokohama; Kozo Nakai, Katsuta, and Hirokazu Kasashima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1988, Ser. No. 184,391
Claims priority, application Japan, Apr. 24, 1987, 62-99753
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—600 24 Claims



1. A method for managing generation management information for programs in a distributed processing system having a plurality of processing units connected to a common transmission path, said method comprising the steps of:

a) transmitting a program and generation management information of said program from one of said processing units onto said common transmission path;

b) receiving said program and said generation management information at another one of said processing units;

c) modifying said program at said another processing unit; and

d) managing said generation management information in response to said modifying step; said managing step comprising the steps of:

i) replacing the generation management information with information indicating said program is new if a relationship between input data nd output data of said program has been altered as a result of said program modification, and

ii) adding information indicative of program modification to said generation management information if the relationship between said input data and said output data of said program has not been altered as a result of said program modification.

5,291,592

SYSTEM HAVING DOCUMENT SCANNER FOR OPTICALLY SCANNING INFORMATION WHEREBY A FIRST INFORMATION CONTAINS CONTROL INFORMATION INDICATING A NUMBER OF SHEETS TO BE SCANNED

Sumio Kita, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

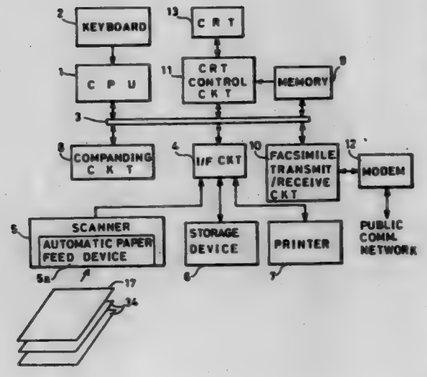
Filed May 9, 1990, Ser. No. 520,197
Claims priority, application Japan, May 15, 1989, 1-121802; May 15, 1989, 1-121803; May 15, 1989, 1-121804
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—600 9 Claims

1. An electronic filing apparatus comprising:

a document scanner for optically scanning information contained on a single document sheet, where original image information is contained in a first designated area of the document sheet and control mark information is contained in a second designated area of the document sheet;

means for receiving information scanned by the document scanner and determining whether the single sheet contains both the original image and control mark information;

means for interpreting the control mark information into interpreted control information, wherein the control mark information designates key words relevant to subject matter of the original image information for searching the memory;



means for compressing the original image information;

registering means for correlating the compressed original image information with the interpreted control information;

a memory for filing the correlated information;

means for automatically feeding a plurality of document sheets to the document scanner;

means for counting a number of document sheets fed by the means for automatically feeding;

means for comparing a counted number of document sheets counted by the means for counting and an original number of document sheets indicated by the control mark information; and

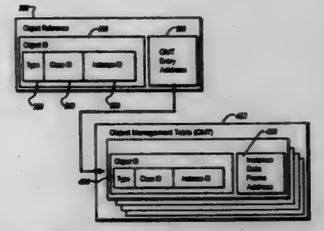
means for generating an alarm when the number of document sheets counted is not coincident with the original number of original document sheets.

5,291,593

SYSTEM FOR PERSISTENT AND DELAYED ALLOCATION OBJECT REFERENCE IN AN OBJECT ORIENTED ENVIRONMENT

Robert L. Abraham, Marietta, Ga.; Cynthia A. Ross, Boynton Beach, Fla.; Richard E. Moore, Marietta; William L. Rich, Stone Mountain; Floyd W. Shackelford, Buford; John R. Tiller, Jr., Peachtree City, all of Ga., and Richard S. Briggs, Jr., Bloomingdale, Ill., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 24, 1990, Ser. No. 602,575
Int. Cl.[5] G06F *15/40, 7/10*
U.S. Cl. 395—600 5 Claims



1. In an object oriented computing environment operating on a data processor containing a main memory and having a direct access storage device for persistently storing data objects, in which a plurality of data objects are categorized into one or more classes which define methods of the categorized classes, and in which messages containing an object reference data structure are sent by the data processor to at least one object to perform at least one action upon said object, said object reference data structure having an object type field, an object class identification field, an object instance identification field and an access address field, a method for handling uncreated objects comprising the steps of:

creating an object instance in main memory for the uncreated object and inserting an entry in an object management table identifying the location of the object instance in main memory; and

altering the contents of said object reference data structure to identify the object instance as being of created instance type, adding an object instance identifier in the object instance identification field for the newly created object instance, and modifying the access address field to refer to the entry for the newly created object in the object management table.

5,291,594

COMMIT PROCESSING SYSTEM WHICH PROVIDES A LIST OF SITES TO EACH SITE TO ALLOW FOR DIRECT COMMUNICATION BETWEEN PARTICIPATION SITES AND THE TRANSACTION GENERATION SITE

Koichi Sekiguchi; Nobuhiro Kato; Yojiro Morimoto, and Miho Murasaga, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,115
Claims priority, application Japan, May 10, 1990, 2-118554
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—600 9 Claims

1. A distributed database system, comprising:

a plurality of sites, each having a computer and a database;

communication means for interconnecting the plurality of sites to receive a received transaction and transmit a transmitted transaction between the sites, wherein the site which transmits a transmitted transaction is a transaction generation site;

wherein the databases store data for processing, and in at least one of the plurality of sites the computer includes:

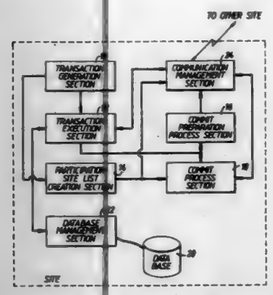
transaction generation means for generating a transaction;

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communication management means for managing communication through the communication means;

transaction execution means for executing data processing of the transaction generated by the transaction generation means and the received transaction communicated by another site through the communication management means on the data stored in the database;

list creation means for creating a list of sites, which must execute data processing in response to the transaction generated by the transaction generation means, the sites other than the transaction generation site being participation sites wherein at least one of said participation sites must forward a processing request to another one of said participation sites for the completion of the transaction and for sending the list of all participation sites through the communication management means wherein said list identifies said transaction generation site;



commit preparation process means for commit preparation processing of the transaction when the transaction execution means finishes executing data processing of the transaction, and for directly sending a commit preparation completion message to said transaction generation site based upon said list through the communication management means; and

commit process means for executing commit processing of the transaction, when the communication management means receives commit preparation completion messages, generated by each participation site when the participation site finishes its respective data processing of the transaction, from all participation sites within a predetermined period after the commit preparation process means has sent the commit preparation completion message.

5,291,595

BATCH/APPLICATION PROGRAM PROCESSING

Augusto B. Martins, 777-68 San Antonio Rd., Palo Alto, Calif. 94303

Continuation of Ser. No. 354,895, May 22, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 911,261
Int. Cl.[5] G06F *7/10, 7/32, 12/00*
U.S. Cl. 395—600 **16 Claims**

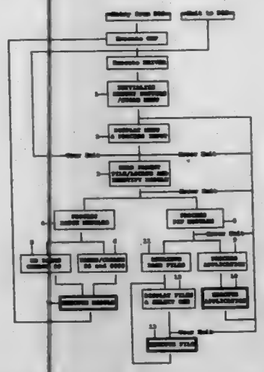
1. A method of operating a computer, said computer comprising main memory, a disk storage system and optionally a ram disk, to enable an user of said computer to execute batch files and application programs through a menu driver loaded into said main memory, wherein information about said application programs is specified in one or more types of program information files or in batch files, said program information files and batch files further setup as modules inside one or more parent files on said disk storage system, whereby a plurality of different types of modules may be stored together, to conserve disk space, and each module uniquely identified by a name or code, the user selecting a module for processing through said menu driver which displays a menu comprising, for each module, said name or code and optionally any other information descriptive of the module, the selected module then processed independently of any other according to its type, said method comprising the steps of:

(a) processing batch modules by

(i) relocating the selected module elsewhere on said disk storage system or ram disk;

(ii) executing the relocated module as an independent batch file from its new storage location, to achieve faster execution;

(b) processing path modules by



(i) displaying the application programs from the path specified in the selected module;

(ii) prompting the user to select any of the displayed application programs;

(iii) executing the selected program;

(iv) repeating steps (i) to (iii) as often as desired by the user;

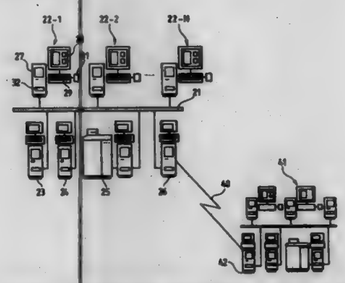
(c) processing application modules by executing the application program specified in the selected module.

5,291,596

DATA MANAGEMENT METHOD AND SYSTEM WITH MANAGEMENT TABLE INDICATING RIGHT OF USE

Makoto Mita, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 595,879, Oct. 10, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 22,419
Int. Cl.[5] G06F *12/14, 15/16*
U.S. Cl. 395—600 **2 Claims**



1. A method of managing a plurality of data in an information processing network having a plurality of information processing workstations, each having first data storage means for storing the plurality of data and first memory means, a management workstation having second memory means for storing a management table, connecting means for connecting the plurality of information processing workstations to the management workstation, wherein the management table includes for each one of the plurality of data a first value indicating a number of residual copies available for use by the plurality of information processing workstations, a second value indicating an amount of residual time that each one of the plurality of data can be used by the plurality of information processing workstations, and a third value indicating an estimated duration of use, the method comprising the steps of:

requesting, by one of the plurality of information processing workstations from the management workstation via the connecting means, a right of use for at least one of the plurality of data;

granting, by the management workstation, the right of use whenever the first and second values are greater than zero, otherwise denying the right of use;

subtracting, upon granting the request for right of use, one from a first value and subtracting a third value from a second value, all the values corresponding to the at least one of the plurality of data;

transferring the at least one of the plurality of data from the first storage means to the first memory means of the requesting one of the plurality of information processing workstations; and

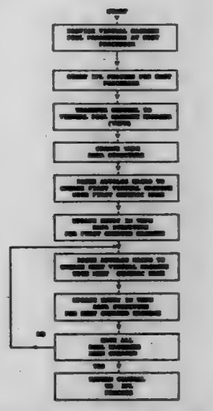
storing, by the requesting one of the plurality of information processing workstations, the transferred at least one of the plurality of data in the first memory means of the requesting one of the plurality of information processing workstations.

5,291,597

METHOD TO PROVIDE CONCURRENT EXECUTION OF DISTRIBUTED APPLICATION PROGRAMS BY A HOST COMPUTER AND AN INTELLIGENT WORK STATION ON AN SNA NETWORK

David U. Shorter, Lewisville, Tex., and John S. Kapernick, Brewester, N.Y., assignors to IBM Corp, Armouk, N.Y.

Continuation of Ser. No. 761,861, Oct. 24, 1988, Pat. No. 5,062,037. This application Aug. 19, 1991, Ser. No. 747,308
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/16, 9/46, 13/00*
U.S. Cl. 395—650 **5 Claims**



1. A method to conserve system resources during execution of a Distributed Application Program (DAP) in an SNA network having a host processor and a plurality of terminals in which information is transferred in accordance with LU 6.2 protocols between one said terminal and said host by concurrent execution of respective parts of said DAP respectively at said one terminal and at said host processor, said host processor having a virtual machine type Operating System including a programming module to automatically setup a plurality of virtual machines each with a predefined name during the starting up of said host processor, said method comprising the following steps,

A) creating with said host processor a pool of unassigned idle virtual machines at said host processor, including the further steps of;

1) providing a data structure for use by said module in the creation and management of said virtual machines in said pool, including the further step of,

(a) defining a control block having a plurality of fields, in said data structure for each said virtual machine that is automatically created including the steps of,

(i) designating one said field for storing said name assigned to said virtual machine, and

(ii) designating a second field for indicating the current status of said virtual machine.

2) storing in said data structure a plurality of names for the virtual machines to be created by said programming module, and

3) automatically creating each said virtual machine for said pool during said starting up with said programming module, including referencing said data structure for said names to be assigned to said virtual machines,

B) transmitting to said host processor an LU 6.2 "Allocate" verb from said one terminal during execution of one part of a DAP stored at said terminal requesting a conversation with another part of said DAP stored at said host processor,

C) assigning one of said idle virtual machines in said pool to process said conversation between respective said parts of said DAP, and

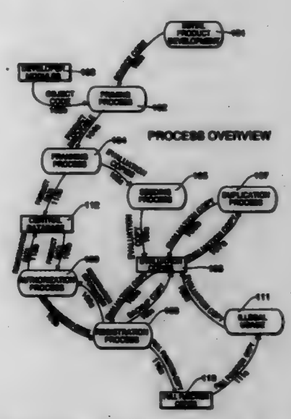
D) returning said virtual machine to said pool at the end of said conversation.

5,291,598

METHOD AND SYSTEM FOR DECENTRALIZED MANUFACTURE OF COPY-CONTROLLED SOFTWARE

Gregory Grundy, 1/21 Hewitt Street, Wilston 4051, Queensland, Australia

Filed Apr. 7, 1992, Ser. No. 864,836
Int. Cl.[5] G06F *9/00, 12/14*
U.S. Cl. 395—650 **43 Claims**



21. A programmable processor to authorize the use of an informational product stored on a storage medium, the informational product including a user record and operatable in a plurality of modes by the programmable processor, the opera-

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tional modes comprising a full-function mode and an evaluation mode, the operational modes being stored in the user record, the informational product initially operating in the evaluation mode, the programmable processor comprising:

means for examining the user record each time the informational product is activated;

means for determining the operational mode of the informational product as a function of the operational mode stored in the user record and the identity of the processor on which the informational product is executed;

means for generating a registration code for a user of the informational product when the operational mode of the informational product is determined to be the evaluation mode, the registration code being a function of the identity of the programmable processor, the identity of the user and the identity of the informational product;

means for accepting the registration code as input at a second processor;

means for generating an authorization code at the second processor;

means for accepting as input the authorization code; and

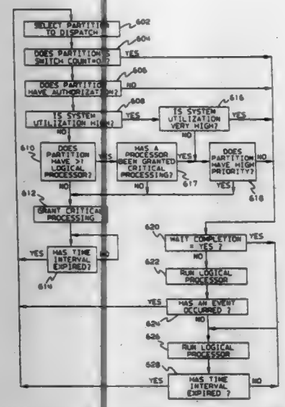
means for performing a verification function to verify the authorization code, and if the verification is successful, changing the operational mode of the informational product to full-function mode, and thereafter storing in the informational product a user record comprising the identity of the user, the identity of the programmable processor and the operational mode.

5,291,599

DISPATCHER SWITCH FOR A PARTITIONER

Edward I. Cohen, Plano, Tex., and Michael R. Sheets, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1991, Ser. No. 742,775
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—700 **2 Claims**



1. A method executed by a programmed data processing system for allowing a requesting partition, comprised of programs of instructions, of a logically partitioned data processing system, having its physical resources partitioned among a plurality of partitions by a partitioner, to change dispatch modes on a dynamic demand basis, said method comprising the steps of:

(a) signalling to the partitioner by the requesting partition, in response to a program instruction, a request to change the dispatch mode by the partitioner to perform critical processing by the requesting partition;

(b) incrementing a switch count value associated with each partition each time the associated partition executes said instruction requesting a change in the dispatch mode,

(c) examining by the partitioner of current switch count values

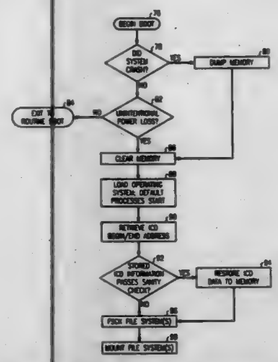
(d) changing or not the dispatch mode of said partitioner for said partition in response to said request for a change in dispatching in response to a non-zero value of the switch count value for a requesting partition.

5,291,600

RECOVERY OF IN-CORE DISK DATA

Daniel E. Lutz, Yorkville, and Jorge D. Penaranda, Woodridge, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 23, 1991, Ser. No. 780,594
Int. Cl.[5] G06F *11/00, 12/16*
U.S. Cl. 395—700 **10 Claims**



1. In a computer system having a processor, an operating system, volatile random access core memory, nonvolatile storage device, and a first portion of the core memory (ICD memory) partitioned to function as an in-core disk that controls the storing and retrieving of data, the operating system having an in-core disk driver containing a beginning and end address of the ICD memory and other conventional information for enabling data to be written to and read from the ICD memory in the same way data is written to and read from a disk drive device, a computer implemented method for recovering X data stored in said ICD memory comprising the steps of:

the operating system monitoring for a system crash;

upon a system crash determination, the operating system causing at least the X data stored in said ICD memory and driver data stored in said in-core disk driver to be written to the nonvolatile (NV) storage device which comprises a disk drive;

initializing said core memory;

reloading said operating system;

said operating system locating said in-core disk driver data in the nonvolatile storage device;

said operating system recovering the beginning and end address of the ICD memory from the driver data located in the NV storage device and restoring said in-core disk driver data;

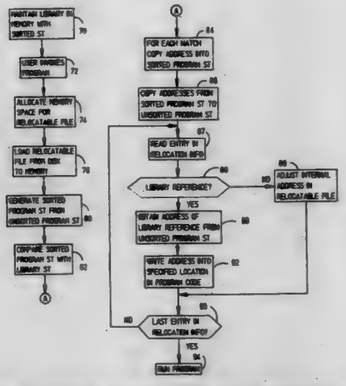
restoring said X data stored in the NV storage device in ICD memory defined by said beginning and end addresses, thereby preventing the loss of the in-core disk data in the event of a system crash.

5,291,601

SHARED LIBRARIES IMPLEMENTED WITH LINKING PROGRAM LOADER

Samuel C. Sands, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 359,829, Jun. 1, 1989, abandoned. This application Mar. 27, 1992, Ser. No. 860,309
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—700 **4 Claims**



1. In a computer system comprising an electronic digital computer including a central processing unit, a computer memory and a disk storage unit, and computer software including one or more computer programs for operating said computer, a method for utilizing a library in said one or more computer programs, comprising the steps of:

said computer system maintaining in said computer memory a library, including library items and a library symbol table, said library items including executable library routines, each entry in the library symbol table containing a symbol that represents one of the library items and an address of said one of the library items;

said computer system, in response to a computer program being invoked by a user for execution, loading from said disk storage unit into said computer memory a relocatable file representing the invoked computer program, said relocatable file including program code having one or more symbols, each of which references one of said library routines;

said computer system, after the relocatable file is loaded into said computer memory, finding in the library symbol table addresses of library routines that are referenced by symbols in the program code of the invoked computer program; and

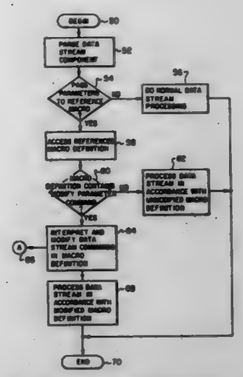
said computer system inserting the addresses of the referenced library routines into the program code of the relocatable file in said computer memory such that the invoked computer program is ready for execution and such that said executable library routines remain unmodified during execution of the invoked computer program and are available for use by other computer programs in said computer system, said relocatable file including an unsorted program symbol table containing symbols and corresponding indices that represent library routines referenced by the program code and further including relocation information containing program locations in the program code of references to library routines and indices of corresponding symbols in the unsorted program symbol table, wherein the step of finding addresses of library routines includes the steps of finding in the library symbol table symbols that appear in the unsorted program symbol table, each of said symbols having an address of a library routine listed therewith in the library symbol table, and writing the addresses of the library routines corresponding to said symbols in the unsorted program symbol table and wherein the step of inserting the addresses of referenced library routines into the program code includes the steps of accessing each program location contained in the relocation information, using the indices in the relocation information to find the corresponding address of a referenced library routine in the unsorted program symbol table and writing the corresponding address of the referenced library routine contained in the unsorted program symbol table in the accessed program location.

5,291,602

METHOD AND SYSTEM FOR DYNAMIC MODIFICATION OF DATA STREAM CONSTRUCTS BY SELECTIVELY DETERMINING WHICH PARAMETERS OF A MACRO DEFINITION STORED IN ASSOCIATION WITH THE DATA STREAM CONSTRUCT MAY BE MODIFIED

Barbara A. Barker, Round Rock; Thomas R. Edel, Austin, and Jeffrey A. Stark, Grapevine, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 395,873, Aug. 18, 1989, abandoned. This application Jun. 23, 1993, Ser. No. 81,905
Int. Cl.[5] G06F *5/01*
U.S. Cl. 395—700 **5 Claims**



1. A method in a data processing system for managing a data stream having multiple components which allows a high degree of flexibility in passing data and processing information from one data stream process to another with said data processing system, said method comprising the data processing system implemented steps of:

establishing a macro definition within said data processing system, said macro definition including a plurality of parameters which are utilized to describe and control the manner in which data is to be interpreted to modify or create a data stream component, wherein at least a selected one of said plurality of parameters is modifiable prior to utilization thereof and wherein all remaining ones of said plurality of a parameters are fixed;

storing said macro definition in association with said data stream;

periodically invoking said macro definition during processing of said data stream;

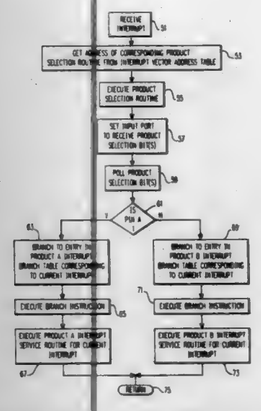
selectively altering which of said plurality of parameters within said macro definition is modifiable during each invocation thereof; and

modifying or creating a data stream component utilizing said altered macro definition in response to an invocation

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thereof wherein a single macro definition may be utilized for multiple purposes.

5,291,603
MICROPROCESSOR SYSTEM WITH MULTIPLE INTERRUPTS MASKED FOR USE IN ELECTRONIC CONTROL OR MONITORING OF VARIOUS SOLID-STATE PRODUCTS
Charles A. Morse, Asheville, and Edward C. Prather, Hendersonville, both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 14, 1991, Ser. No. 669,557
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 **9 Claims**



7. A method of masking a single ROM for use by a microprocessor accepting multiple interrupts in alternatively executing a selected one of a plurality of application programs said method comprising the steps of:

providing said plurality of application programs;

providing a separate interrupt service routine for each of said multiple interrupts for each of said plurality of application programs;

providing a program selection routine for each of said multiple interrupts including jump instructions transferring execution by the microprocessor in response to an interrupt to an interrupt service routine for a selected application program;

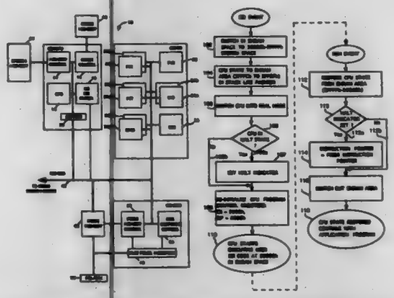
providing a common interrupt vector address table containing an address for each program selection routine to be accessed by said microprocessor in response to an active interrupt;

linking said common interrupt vector address table and said program selection routines together with one of said application programs;

linking all other application programs with the one application program linked with the common interrupt vector address table and said program selection routines; and

masking said single ROM to store said linked application programs, common interrupt vector address table and program selection routines so that said microprocessor alternatively executes said selected one of said plurality of application programs.

5,291,604
TRANSPARENT SYSTEM INTERRUPTS WITH AUTOMATED HALT STATE RESTART
James Kardach, San Jose, and Can Nguyen, Milpitas, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Aug. 30, 1991, Ser. No. 753,327
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 **14 Claims**



1. An improved microprocessor system comprising a central processing unit (CPU) coupled to at least one memory unit for executing an operating system and at least one application program comprising a plurality of said CPU's instructions, said CPU further having at least two modes of program execution, a real mode and a protected mode, and at least one interrupt for interrupting program execution, wherein the improvement to said microprocessor system comprises:

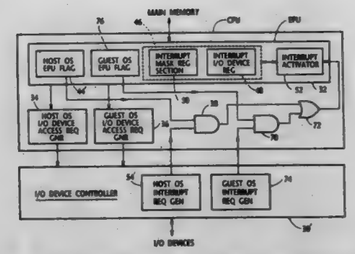
(a) said memory units having a dedicated memory area for storing an interrupt processing program, processor state data of said CPU, and a halt indicator, said dedicated memory area being not mapped as part of main memory space thereby keeping said dedicated memory area inaccessible to said operating system and application programs, said processor state data comprising an instruction pointer and a prior instruction pointer pointing to first and second instructions of said operating system and application programs respectively, said first instruction being an instruction to be executed next by said CPU and said second instruction being an instruction executed by said CPU before an interrupt, said halt indicator indicating whether said CPU is interrupted from an halt state that resulted from execution of a Halt instruction, said instructions comprising said Halt instruction;

(b) said interrupts having a System Supervisor Interrupt (SSI) for interrupting execution of said operating system and said application programs, switching in and mapping said dedicated memory area to a pre-determined segment of said main memory space, storing said processor state data of said CPU into said dedicated memory area including said instruction and prior instruction pointers, switching said CPU into said real mode of execution, determining if said CPU is being interrupted from said halt state, conditionally setting said halt indicator to so indicate if said CPU is being interrupted from said halt state, and starting execution of said interrupt processing program, said SSI being unmaskable by said operating system and said application programs, and having a higher priority than other interrupts;

(c) said instructions having a Resume instruction for restoring said saved processor state data from said dedicated memory area to said CPU including said instruction and prior instruction pointers, checking said halt indicator to determine if it is set, conditionally decrementing said restored instruction pointer to said restored prior instruction pointer if said halt indicator is set, switching out and unmapping said dedicated memory area to said main memory space, and resuming execution of said operating system and said application programs;

thereby allowing said CPU to be interrupted reliably and automated halt state restart be provided to said interrupt service program in a manner transparent to said operating system and said application programs.

5,291,605
ARRANGEMENT AND A METHOD FOR HANDLING INTERRUPT REQUESTS IN A DATA PROCESSING SYSTEM IN A VIRTUAL MACHINE MODE
Hitoshi Takagi, and Muneharu Miyazaki, both of TOkyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Feb. 7, 1992, Ser. No. 831,269
Claims priority, application Japan, Feb. 8, 1991, 3-17198
Int. Cl.[5] G06F *9/46, 12/08*
U.S. Cl. 395—725 **4 Claims**



3. A method for handling an interrupt request issued from an I/O (Input/Output) device controller in a data processing system which is operative in a virtual machine mode, said data processing system including a host OS (Operating System) which supervises a virtual machine monitor under control of which at least one guest OS runs, said I/O device controller being interposed between a plurality of I/O devices and a plurality of CPUs (Central Processing Units), said method comprising the steps of:

(a) setting first flag means to an "on" state by a first setting input in a case where a CPU is utilized as a master unit and setting said first flag means to an "off" state by said first setting input in a case where said CPU is utilized as a slave unit;

(b) setting a second flag means to an "on" state by a second setting input in a case where said CPU is utilized as said master unit for a guest OS such that said CPU is able to accept said interrupt request directed to said guest OS;

(c) issuing a logical product of an output of said first flag means and one type of interrupt request of a plurality of interrupt requests from said I/O device controller;

(d) issuing a logical product of an output of said second flag means and another type of interrupt request of a plurality of interrupt requests from said I/O device controller;

(e) issuing a logical sum of said products which have been obtained from steps (c) and (d); and

(f) responding to said logical sum and checking to see if said interrupt request issued from said I/O device controller is acceptable.

5,291,606
INTERRUPT CONTROL UNIT
Sachiko Okayama, and Tsuyoshi Katayose, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 30, 1992, Ser. No. 860,669
Claims priority, application Japan, Mar. 29, 1991, 3-066153
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 **5 Claims**

1. An interrupt control unit for use with interrupt sources, comprising:

a plurality of interrupt memory circuits each for storing data representing a state of an interrupt processing request for each interrupt source,

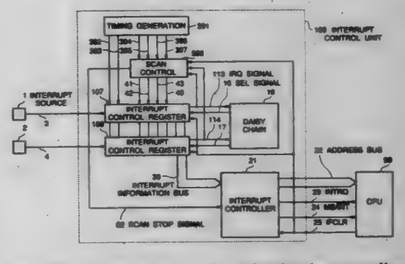
interrupt request circuits each being provided for and operatively coupled to each interrupt request memory circuit,

interrupt processing mode indication circuits each being provided for and operatively coupled to each interrupt request circuit for storing interrupt processing mode information,

priority level indication circuits each being provided for and operatively coupled to each interrupt request circuit, for storing acknowledgement order information representing priority level data,

a plurality of search information generating circuits, operatively coupled to said interrupt request circuits, each for generating search information, said search information including interrupt processing mode search information and priority order search information for each of said interrupt request circuits,

a search information comparison circuit, operatively coupled to the interrupt processing mode indication circuits, the priority level indication circuits and the search information generating circuits, for detecting a state of the interrupt request circuit provided for each interrupt request memory circuit, and for comparing the interrupt processing mode information stored in the interrupt processing mode indication circuits and the acknowledgement order information stored in the priority level indication circuits with the search information generated by the



search information generating circuits, by extending a comparison range step by step from a first range including only the interrupt processing mode information, the search information comparison circuit generating an internal interrupt request signal when a coincidence is obtained in the comparison range, and

control means, operatively coupled to said search information comparison circuit and the search information generating circuit, for updating the interrupt processing mode search information and the priority order search information in the search information generating circuit in accordance with a result of the comparison by the search information comparison circuit, an output of the search information comparison circuit being monitored by said control means, and

when data of the interrupt processing mode search information of the search information generating circuit coincides with data of one of the interrupt processing mode indication circuits, an internal interrupt receipt signal is generated by said control means in response to the interrupt request signal generated by the search information comparison circuit, and

when data of the interrupt processing mode search information of the search information generating circuit does not coincide with data of any one of the interrupt processing mode indication circuits, the interrupt processing mode search information is updated and an internal interrupt receipt signal is generated by said control means in response to the internal interrupt request signal generated by

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the search information comparison circuit when data of the priority order search information of the search information generating circuit perfectly coincides with data of the acknowledgement order information of one of the priority order indication circuits,

wherein said search information generating circuit includes means for discriminating said interrupt processing mode search information prior to the priority order search information.

5,291,607

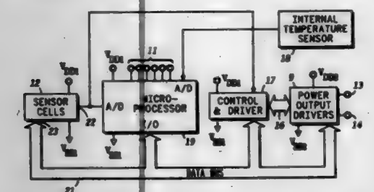
MICROPROCESSOR HAVING ENVIRONMENTAL SENSING CAPABILITY

Ljubisa Ristic, Phoenix; William C. Dunn; Bertrand F. Cambou, both of Mesa; Lewis E. Terry, Phoenix, and Raymond M. Roop, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schamburg, Ill.

Continuation of Ser. No. 578,031, Sep. 5, 1990, abandoned. This application Oct. 23, 1992, Ser. No. 965,549

Int. Cl.[5] G06F *15/20*; G01D *5/00*

U.S. Cl. 395—750 **9 Claims**



1. An integrated circuit comprising: a microprocessor core having an analog input terminal and an input/output terminal, wherein the microprocessor core produces a control output on the input/output terminal in response to a signal on the analog input terminal; and means for sensing an environmental condition external to the integrated circuit, wherein the means for sensing has an output coupled to the analog input terminal of the microprocessor core, and upon sensing an unacceptable external environmental condition, provides an analog output signal on the output coupled to the analog input terminal of the microprocessor core; and the microprocessor core and the means for sensing are isolated from each other and are formed as a monolithic integrated circuit.

5,291,608

DISPLAY ADAPTER EVENT HANDLER WITH RENDERING CONTEXT MANAGER

Gregory A. Flurry, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 819,616, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 480,182, Feb. 13, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 973,940

Int. Cl.[5] G06F *11/00*

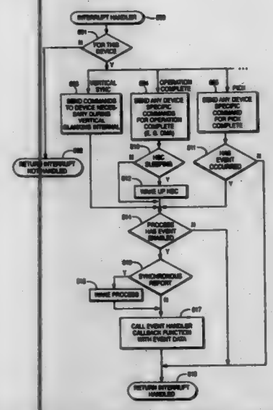
U.S. Cl. 395—725 **13 Claims**

1. In a data processing system for executing a process and providing an interrupt signal upon an occurrence of a predetermined event related to a device under the control of the process and having an interrupt manager comprising:

means for receiving the interrupt signal and extracting from the interrupt signal, interrupt data indicative of the occurrence of the interrupt signal, an interrupt identification and interrupt event data to indicate whether the interrupt signal is considered to be an event;

means for storing a predetermined criteria from the process, said criteria determining whether said event data is to be provided to the process;

means, connected to the receiving means, for interpreting the interrupt data and determining, based on the predetermined criteria, if an event signal is to be provided to the process based on such interpretation; and



interrupt handler means for sequentially servicing all of said interrupt signals in the order in which they are received, and for providing the event signal to the process only when indicated by the interpreting means.

5,291,609

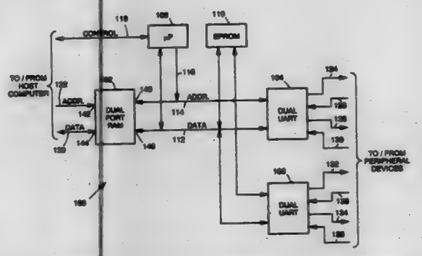
COMPUTER INTERFACE CIRCUIT

William S. Herz, Newark, Calif., assignor to Sony Electronics Inc., Park Ridge, N.J.

Continuation of Ser. No. 714,650, Jun. 13, 1991. This application Dec. 23, 1992, Ser. No. 996,836

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **12 Claims**



1. An interface circuit for providing asynchronous communication and control between a host computer and at least one peripheral device, the interface circuit comprising:

transceiver means for receiving a first internal memory address and in accordance therewith receiving peripheral device input data from and transmitting peripheral device output data to at least one peripheral device;

memory means coupled to the transceiver means for receiving a second internal memory address and in accordance therewith reading the peripheral device input data from and writing the peripheral device output data to the transceiver means and further for receiving an external memory address via an external address port and in accordance therewith reading host computer input data from and writing host computer output data to a host computer; and

computer means coupled to the transceiver means and the memory means for providing the first and second internal memory addresses thereto, respectively;

wherein the first internal memory address, the second internal memory address and the external memory address are each distinct from one another.

5,291,610

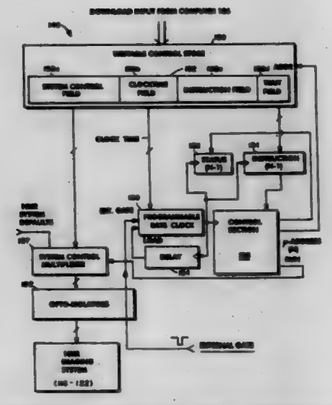
MICROCODE SEQUENCER CHANGING STATES IN RESPONSE TO AN EXTERNAL GATING INPUT LEVEL CHANGE UPON THE OCCURRENCE OF A WAIT INSTRUCTION

John C. Hoeninger, III, Oakland, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jul. 12, 1990, Ser. No. 551,798

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—800 **9 Claims**



1. A microcode sequencer in a nuclear magnetic resonance imaging system, said microcode sequencer having a changeable state, said sequencer including:

a clock generator for generating clock pulses;

a control store for storing a sequence of instructions for execution in said nuclear magnetic resonance imaging system, said instructions including a wait instruction and other instructions; and

control logic means, connected to an external gating input and connected to fetch said instructions stored by said control store, said control logic means for executing said instructions by performing the following functions:

(a) fetching said wait instruction stored by said control store;

(b) detecting a level existing on said external gating input to determine whether said external gating input is at a first level or at a second level different from said first level;

(c) if said first level is detected, waiting in response to said fetched wait instruction until said external gating input changes levels and a generated clock pulse occurs and then changing state in response to a fetched next instruction in said sequence of instructions, and

(d) if said second level is detected, changing state in response to said fetched next instruction when a generated clock pulse occurs without waiting for said external gating input level change.

5,291,611

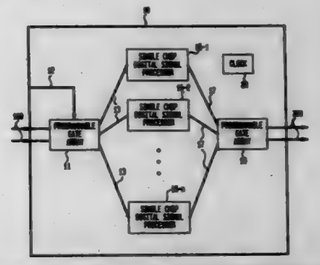
MODULAR SIGNAL PROCESSING UNIT

Alan J. Davis, Fairhaven, Mass., and Walter T. Schneider, Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1991, Ser. No. 693,106

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—800 **6 Claims**



1. A modular signal processing unit configured to reside on the Standard Electronics Module (SEM-E) circuit card specified by Military Standard MIL-STD-1389D, comprising:

a plurality of unit input signal lines for receiving input data;

an input programmable gate array connected to said unit input signal lines for distributing the input data as distributed data on a plurality of processor input signal lines;

a plurality of floating point single chip digital signal processors (DSP), each of said plurality of single chip DSPs connected to a corresponding one of said plurality of processor input signal lines, each of said plurality of single chip DSPs processing the distributed data passed on said corresponding one of said plurality of processor input signal lines and outputting processed data on a corresponding one of a plurality of processor output signal lines;

an output programmable gate array connected to said plurality of processor output signal lines for organizing and outputting the processed data;

a plurality of unit output signal lines for transmitting the processed data from said output programmable gate array, wherein said plurality of unit input signal lines is equal to said plurality of unit output signal lines; and

a clock for controlling timing of said plurality of single chip DSPs, said input programmable gate array and said output programmable gate array.

5,291,612

SYSTEM FOR EVALUATING BOOLEAN EXPRESSIONS USING TOTAL DIFFERENTIAL GENERATING TREE STRUCTURED PROCESSING ELEMENTS CONTROLLED BY PARTIAL SUBFUNCTION DIFFERENTIALS

Rok Sosic, Salt Lake City, Utah, and Jun Gu, Calgary, Canada, assignors to University Technologies International, Calgary, Canada

Filed Feb. 11, 1991, Ser. No. 653,183

Int. Cl.[5] G06F *15/20*

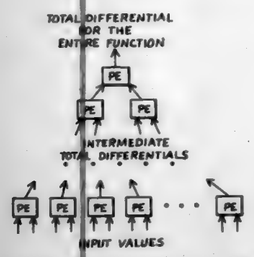
U.S. Cl. 395—900 **26 Claims**

1. An apparatus for processing a complex Boolean function comprised of a plurality of Boolean subfunctions of corresponding variables, said plurality of Boolean subfunctions being related to each other in a hierarchic order, at least one of said Boolean subfunctions being a function of two variables, a lowest level of said hierarchic order of Boolean functions having independent variables, each higher level of said hierarchic order of Boolean functions having as its corresponding variables two lower order Boolean subfunctions until said complex Boolean is obtained, said apparatus comprising:

a host computer for generating and storing for each node partial differential signals corresponding to partial derivatives of each of said Boolean subfunctions with respect to the subfunctions of the next lower level;

a tree structure means for receiving a plurality of input signals at each node corresponding to said independent variables and for generating total differential signals corresponding to total differentials of each of said Boolean subfunctions at each level and ultimately a total differential signal corresponding to said complex Boolean function, each node controlled by said partial derivatives,

wherein said host computer receives said total differential signal corresponding to said complex Boolean function and generates a signal corresponding to the value of said



complex Boolean function evaluated at said plurality of independent variables input at the lowest level of said tree structure means according to a predetermined algorithm that operates on an initial value signal and said total differential signal, said initial value signal being the value of said function at a zero input of said independent variables; and

controller means coupling said host computer and said tree structure means for communicating at least said plurality of partial derivatives signals from said host computer to said tree structure means, and for passing computation signals from said tree structure means to said host computer,

whereby said complex Boolean function is evaluated at high speed and minimal use of memory.

5,291,613

METHOD FOR EXECUTING A CONTROL INSTRUCTION IN A MULTI-COMPUTER SYSTEM

Shigeki Hirasawa, Kawasaki; Kinji Mori, Machida; Masayuki Orimo, Kawasaki; Hiroshi Fujise, Yokohama; Masuyuki Takeuchi, Fujisawa, and Hitoshi Suzuki, Owarisahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 724,802

Claims priority, application Japan, Jul. 3, 1990, 2-175636

Int. Cl.[5] G06F *11/28, 15/02*

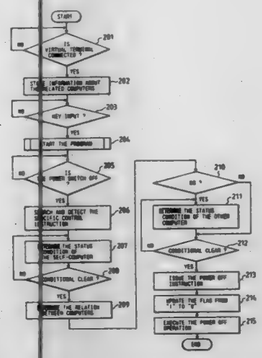
U.S. Cl. 395—800 **11 Claims**

1. In a multi-computer system in which a plurality of computers connected to each other through a transmission medium share a process to be carried out through at least two of said computers, a method for executing a computer control instruction, said method comprising the steps of:

inputting a control instruction to a first computer in said plurality of computers;

determining in said first computer whether or not said control instruction is to be executed by consulting a storage unit to determine whether an indication of said control instruction has been stored in advance, said specific control instruction having influence on normal operation of the system;

determining in said first computer the execution status of a process being performed in a second computer, when it is determined in the first determination step that said indication of the inputted control instruction is stored in said storage unit; and



executing the inputted control instruction according to the execution status of said process as determined in the second determining step.

5,291,614

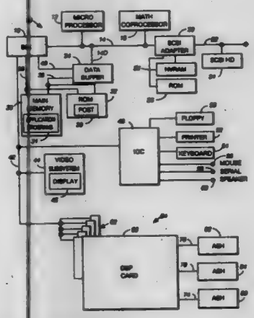
REAL-TIME, CONCURRENT, MULTIFUNCTION DIGITAL SIGNAL PROCESSOR SUBSYSTEM FOR PERSONAL COMPUTERS

Robert G. Baker, Delray Beach; Bradley J. DeBauche, Boca Raton; Chris Dombrowski, Delray Beach; Eric Jensen, Boca Raton; Lloyd H. Massman, Delray Beach; Melvin McCain, Boca Raton, and Paul R. Swingle, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1991, Ser. No. 753,505

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—800 **6 Claims**



1. A personal computer comprising:

a main memory for storing application programs:

a first processor for executing said application programs;

a plurality of application specific hardware (ASH) devices;

a general purpose digital signal processing subsystem (DSPSS) connected to said ASH devices; and

bus means interconnecting said first processor, said main memory, and said DSPSS;

said DSPSS comprising

a plurality of ports connected to said ASH devices for transmitting analog signals and digital signals between said ASH devices and said DSPSS,

converter means for converting said analog signals into digital operands,

an instruction store connected to said DSP for storing a plurality of signal processing tasks for execution by said DSP,

a data store connected to said DSP and to said bus means so that said DSP and said first processor can independently access said data store, said data store being further connected to said ports and to said converter means for storing said digital operands and said digital signals,

a digital signal processor (DSP) for processing said digital signals and said digital operands, said DSP comprising an arithmetic logic unit and a multiplication unit for executing tasks to process said digital operands and said digital signals, and

control means connected to said DSP for operating said DSP and concurrently executing a plurality of said signal processing tasks in response to execution of said application programs by said first processor;

said control means comprising

a scheduling clock for generating a plurality of scheduling interrupts at fixed time intervals;

a plurality of task control blocks (TCBs) stored in said data store, there being a different TCB associated with each task, each TCB containing a plurality of fields for storing, for the associated task, 1) a frame defining a scheduling period between successive scheduling of said associated task, 2) a scheduling count defining when the associated task is to be next scheduled, 3) DSP information for restoring said DSP when an interrupted task is next executed, and 4) an instruction address at which to begin initial execution of said associated task;

a background executor for maintaining a queue of tasks scheduled for execution;

a foreground executor that is periodically executed in response to said scheduling interrupts for scheduling said tasks, said foreground director including means for 1) saving DSP information from a task being interrupted, 2) searching said unordered list of TCBs to find a TCB whose count field has reached a predetermined value, 3) adding the task associated with such TCB, to said queue of tasks, 4) updating said count field, in said TCB of the task added to said queue, by adding said frame to said count, 5) ordering said tasks in said queue according to which tasks have the lowest counts in said TCBs associated therewith, with the task having the lowest count being at a head of said queue, and 6) passing control to said background executor;

said background executor including means, operative in response to receiving control from said foreground executor, for passing control to said task at said head of said queue for execution thereof, for removing said task from said queue upon completion of execution thereof, and for passing control to the next task in line in said queue when another task has completed execution.

5,291,615

INSTRUCTION PIPELINE MICROPROCESSOR

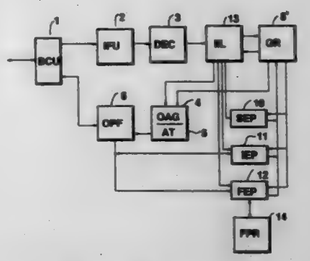
Kosei Okamoto, Kunitachi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 391,773, Aug. 10, 1989, abandoned. This application Nov. 10, 1992, Ser. No. 974,328

Claims priority, application Japan, Aug. 11, 1988, 63-198789

Int. Cl.[5] G06F *9/30, 9/38*

U.S. Cl. 395—800 **6 Claims**



1. An instruction pipeline type microprocessor, comprising:

(a) means for fetching, decoding and determining a plurality of different kinds of decoded instructions and sending said plurality of different kinds of decoded instructions in accordance with said determined different kinds;

(b) a plurality of operation execution sections for receiving said decoded instruction according to said determined different kinds and respectively executing said plurality of different kinds of decoded instructions simultaneously, wherein each of said plurality of operation execution sections includes an instruction register having at least an instruction address holding field indicative of an address of an instruction decoded in a program and a destination register designation field;

(c) first storing means for storing processed data, said data resulting from having executed in a look-forward manner, instructions capable of processing by said plurality of operation execution sections without waiting for execution results of preceding instructions, said first storing means including a plurality of tag bits;

(d) second storing means for storing processed data resulting from execution by said operation execution sections of instructions executed in predetermined program order; and

(e) compare means for comparing each datum from said operation execution sections in terms of a sequence in which the execution is completed and for sending, said datum being an address received from the address holding field of said each instruction register, based on the sequence of completion of the execution and the predetermined program order, the processed data directly to at least one of the second storing means and the first storing means, said processed data stored in said first storing means being transferred to said second storing means in the predetermined program order according to compare results and contents of said tag bits,

wherein said compare means comprises a comparator for comparing each said datum, and for producing signals indicative of the result of the comparisons and for sending said signals to said first storing means, said tag bits being determined by said signals from the comparator.

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DESIGN PATENTS

GRANTED MAR. 1, 1994

ERRATA

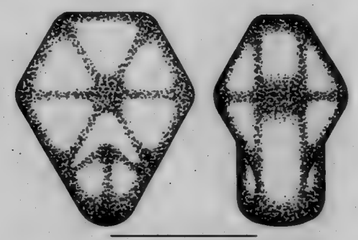
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012-416	D 344,625
014-121	D 344,700
014-135	D 344,703
014-114	D 344,710
014-135	D 344,713
003-304	D 344.838

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UMI

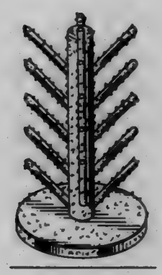
DESIGNS

MARCH 1, 1994

344,618
SNACK FOOD
Timothy J. Gluszak, Maple Grove, and Bryan D. Kokx, Minnetonka, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jan. 29, 1993, Ser. No. 4,254
Term of patent 14 years
U.S. Cl. D1—125



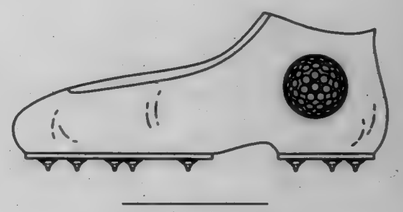
344,619
PRETZEL TREE
Milton L. Klein, 30 E. 208th St., Bronx, N.Y. 10467
Filed Jan. 2, 1992, Ser. No. 816,052
Term of patent 14 years
U.S. Cl. D1—199



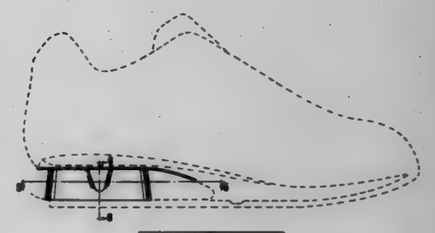
344,620
CHAPS
Timothy E. Lavell, 8909 19th St. W., Rock Island, Ill. 61201
Filed Mar. 31, 1992, Ser. No. 862,237
Term of patent 14 years
U.S. Cl. D2—742



344,621
SLIP OVER GOLFER'S SHOE
Domingos F. Pereira, Sr., 5591 E. Sammis Ave., Las Vegas, Nev. 89110
Filed Sep. 9, 1991, Ser. No. 756,379
Term of patent 14 years
U.S. Cl. D2—909



344,622
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1991, Ser. No. 786,934
Term of patent 14 years
U.S. Cl. D2—964

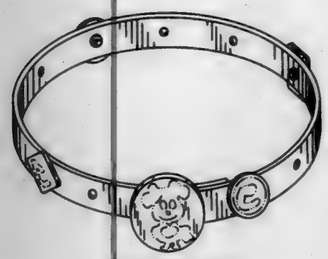


344,623
MEDICAL DRESS SOCK
Selby A. Blair, 1301 Watson Dr., Wilson, N.C. 27893
Filed Sep. 19, 1991, Ser. No. 762,229
Term of patent 14 years
U.S. Cl. D2—989

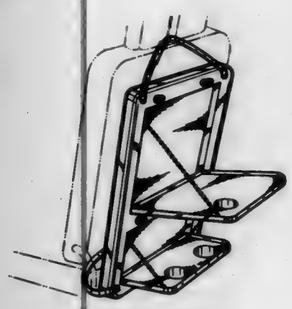


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344,624
BELT
Ronny Schnel, 4820 Blackhorse Rd., Rancho Palos Verdes, Calif. 90274, and Nancy Heimler, 310 N. Oakhurst Dr., Beverly Hills, Calif. 90210
Filed Dec. 18, 1992, Ser. No. 2,601
Term of patent 14 years
U.S. Cl. D2—629



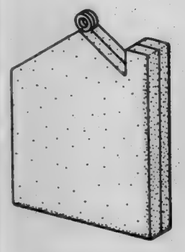
344,625
PORTABLE TRAY ATTACHMENT FOR VEHICLE
Linda G. Berry, Rte. 6, Box 168- Buffalo Creek Rd., South Point, Ohio 45680
Filed Apr. 9, 1991, Ser. No. 686,915
Term of patent 14 years
U.S. Cl. D12—416



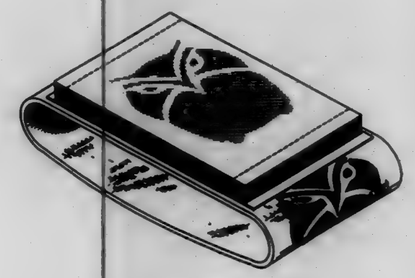
344,625
SHOE-SHAPED TOTE BAG
Jaime Landa, 13084 Del Sur St., San Fernando, Calif. 91340
Filed Mar. 9, 1992, Ser. No. 849,317
Term of patent 14 years
U.S. Cl. D3—271



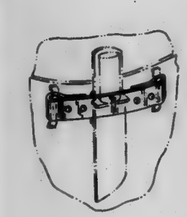
344,627
CONDOM HOLDER KEY CHAIN FOB
Sharon M. Hochman, 4215 Village Ct., Orchard Lake, Mich. 48323
Filed May 18, 1992, Ser. No. 884,988
Term of patent 14 years
U.S. Cl. D3—211



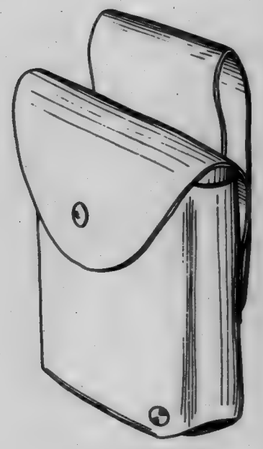
344,628
WRIST PAD
Tommy Taggart, 9653 B Whitfield Ave., Savannah, Ga. 31406
Filed Jan. 21, 1992, Ser. No. 823,450
Term of patent 14 years
U.S. Cl. D3—215



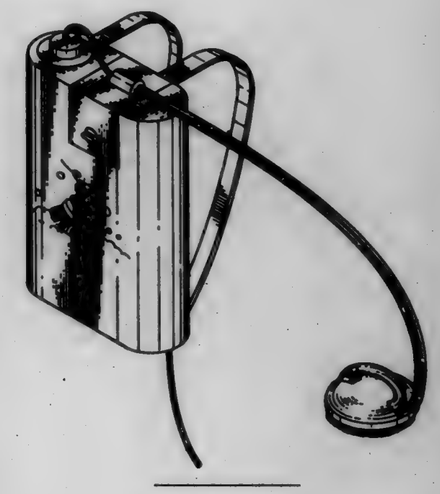
344,629
CARRIER STRAP
Tracey H. Steffek, and Stephen D. Steffek, both of 1896 County Rd. 68, Nederland, Colo. 80466
Filed Jan. 16, 1992, Ser. No. 821,465
Term of patent 14 years
U.S. Cl. D3—226



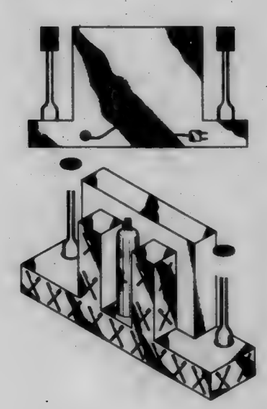
344,630
NAIL POUCH
Alvin J. Doerksen, 8412 - 186 Street, Edmonton, Alberta, Canada T5T 1H5
Filed Oct. 8, 1992, Ser. No. 168
Term of patent 14 years
U.S. Cl. D3—230



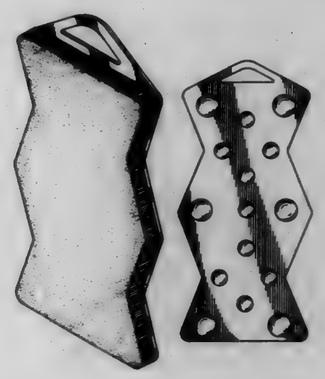
344,632
BACK SUPPORTED CARPET CLEANING UNIT
Robert J. Owens, 11 Chamblet St., Boston, Mass. 02125
Filed Jul. 15, 1991, Ser. No. 730,306
Term of patent 14 years
U.S. Cl. D4—115



344,631
COMBINED ROTARY TOOTHBRUSH SET AND RECHARGING STAND THEREFOR
Maynard E. Reedy, 13 Corey Ave. R.R. 2 Box 68, Sullivan, Ill. 61951
Filed Mar. 14, 1991, Ser. No. 669,240
Term of patent 14 years
U.S. Cl. D4—108

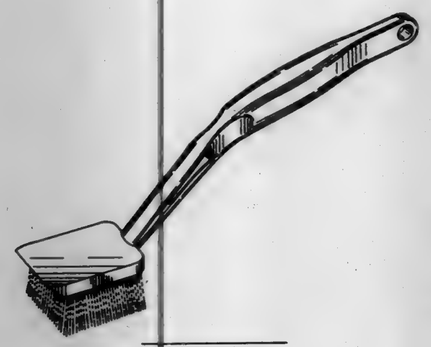


344,633
WALL MOUNTED BACK SCRUBBER
Frantz Ali, 1585 B Fir St., Ft. Dix, N.J. 08640
Filed Nov. 4, 1991, Ser. No. 786,941
Term of patent 14 years
U.S. Cl. D4—130



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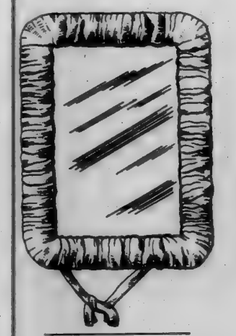
344,634
KITCHEN BRUSH HANDLE
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,711
Term of patent 14 years
U.S. Cl. D4—138



344,635
HAND SCRUB BRUSH HANDLE
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,713
Term of patent 14 years
U.S. Cl. D4—138



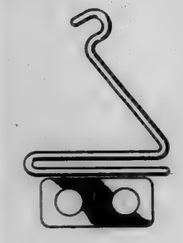
344,636
MIRROR FOR A CRIB
Ruis W. Hunter, 3616 Van Buren St., Ogden, Utah 84403
Filed May 3, 1991, Ser. No. 695,286
Term of patent 14 years
U.S. Cl. D6—303



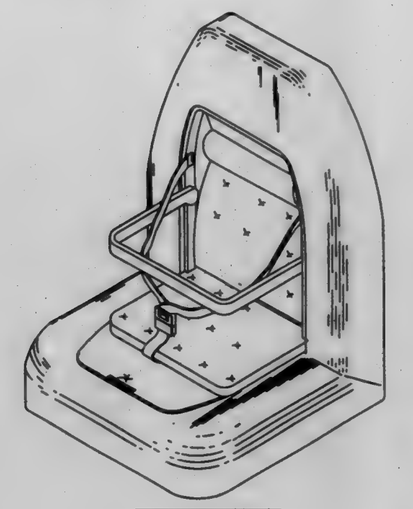
344,637
COLLAPSIBLE DISPLAY EASEL
Lindsay A. Brown, Irvine, Calif., assignor to Pierce Companies, Inc., Santa Ana, Calif.
Filed May 18, 1992, Ser. No. 884,780
Term of patent 14 years
U.S. Cl. D6—310



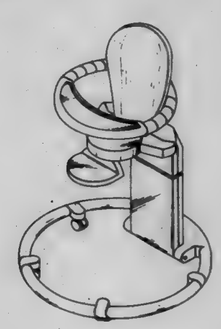
344,638
SOCK HANGER
James P. Howes, 122 St. Johns Rd., Wilton, Conn. 06897, and Michael A. Schreiber, 15 Silver Brook Rd., Westport, Conn. 06880
Filed Sep. 8, 1992, Ser. No. 939,879
Term of patent 14 years
U.S. Cl. D6—317



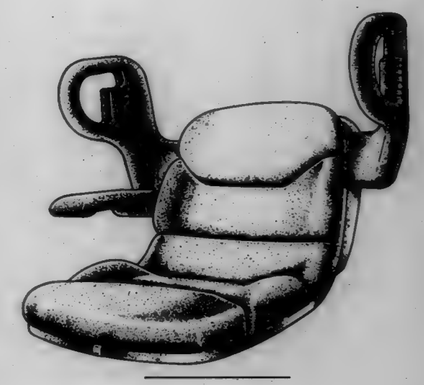
344,639
BUILT IN BABY/CHILD CAR SEAT
Leroy H. Evans, Jr., 363 E. Commerce St.-Apt. 508, Smyrna, Del. 19977
Filed Dec. 30, 1991, Ser. No. 813,409
Term of patent 14 years
U.S. Cl. D6—333



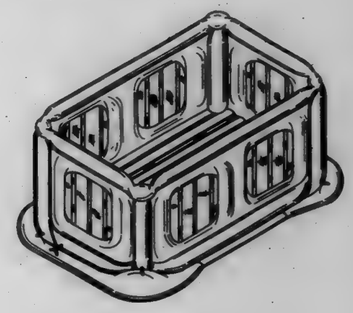
344,640
HIGH CHAIR FOR KIDS
Ruey-Chang Chuang, No. 116, San Yuan St., Ku Ting Dist., Taipei, Taiwan
Filed Jan. 2, 1992, Ser. No. 816,047
Term of patent 14 years
U.S. Cl. D6—339



344,641
WINGBACK SAFETY SEAT
Eugene G. Bruns, Maria Stein, and Gregory S. Breiding, Columbus, both of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio
Filed Sep. 10, 1990, Ser. No. 580,435
Term of patent 14 years
U.S. Cl. D6—356

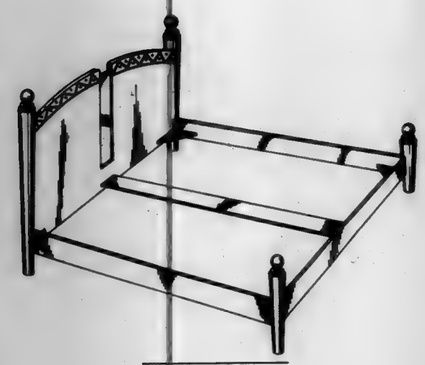


344,642
INFLATABLE CRIB
Lawrence Artz, Wilton, Conn., assignor to Babystar, Brooklyn, N.Y.
Filed Sep. 3, 1992, Ser. No. 940,173
Term of patent 14 years
U.S. Cl. D6—390



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344,643
BED FRAME
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, Long Island City, N.Y.
Filed Sep. 25, 1992, Ser. No. 951,419
Term of patent 14 years
U.S. Cl. D6—393



344,644
AUDIO CASSETTE STORAGE RACK
Jerry M. Long, Stockton; Christopher G. Palmer, Santa Clara, and Peter J. Palmer, Cupertino, all of Calif., assignors to Creative Point, Inc., Fremont, Calif.
Filed Sep. 3, 1991, Ser. No. 754,439
Term of patent 14 years
U.S. Cl. D6—407

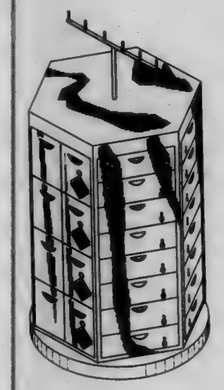


344,645
HOLDER FOR GARDEN HOZE NOZZLE
Larry W. Yarbray, 1216 June Dr., Decatur, Ga. 30035
Filed Jun. 19, 1992, Ser. No. 902,296
Term of patent 14 years
U.S. Cl. D6—417

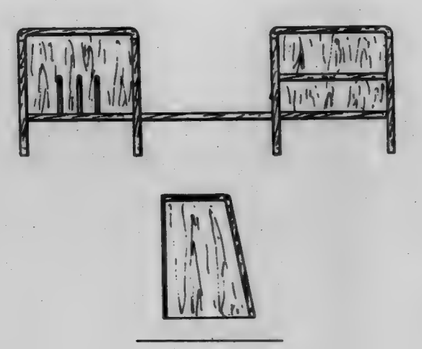


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Patent Not Issued For This Number

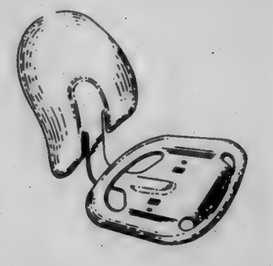
344,647
ORGANIZER FOR JEWELRY OR PERFUME
Karen J. Clough, P.O. Box 714, Hillsdale, N.Y. 12529
Filed Oct. 21, 1991, Ser. No. 779,576
Term of patent 14 years
U.S. Cl. D6—457



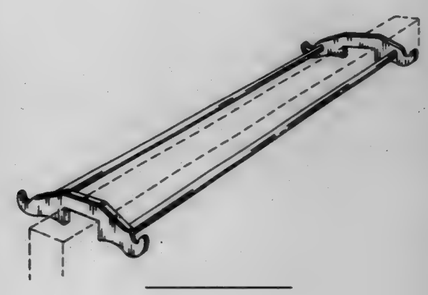
344,648
HUTCH
Carl H. Schulman, San Diego, and Charles D. Anacker, La Mesa, both of Calif., assignors to Bush Industries, Inc., Jamestown, N.Y.
Division of Ser. No. 748,912, Aug. 23, 1991. This application Jul. 26, 1993, Ser. No. 11,672
Term of patent 14 years
U.S. Cl. D6—474



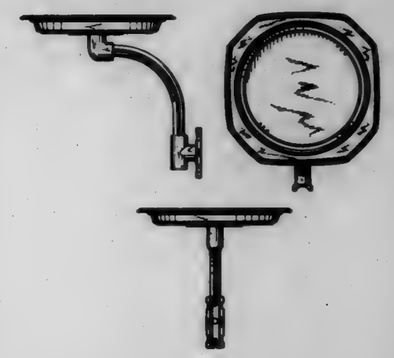
344,649
CHAIR SPINE
Jeffrey S. Wilcox, East Grand Rapids; Keith A. McDowell, Belmont, both of Mich.; Donald T. Chadwick, Los Angeles, Calif., and Peter F. Bemis, Sheboygan, Wis., assignors to American Seating Company, Grand Rapids, Mich.
Continuation-in-part of Ser. No. 734,854, Jul. 22, 1991, which is a continuation-in-part of Ser. No. 166,631, Mar. 1, 1988, Pat. No. Des. 318,577, which is a continuation of Ser. No. 165,745, Mar. 9, 1988, Pat. No. 4,899,385, Continuation-in-part of Ser. No. 785,190, Oct. 31, 1991, Continuation of Ser. No. 454,351, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 165,745, Mar. 9, 1988, Pat. No. 4,899,385. This application Mar. 17, 1992, Ser. No. 852,473
Term of patent 14 years
U.S. Cl. D6—500



344,650
TOWEL RACK
William H. Arcularius, 1691 Lone Oak Rd., Vista, Calif. 92084
Filed Aug. 13, 1992, Ser. No. 929,115
Term of patent 14 years
U.S. Cl. D6—548

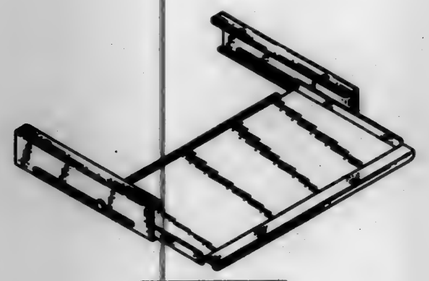


344,651
SNACK TRAY
Robert S. Reese, 107 Manor Ave., Hempstead, N.Y. 11550
Filed Apr. 17, 1992, Ser. No. 870,039
Term of patent 14 years
U.S. Cl. D6—574

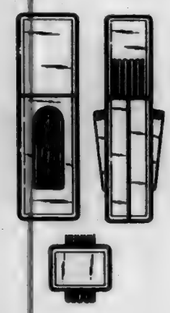


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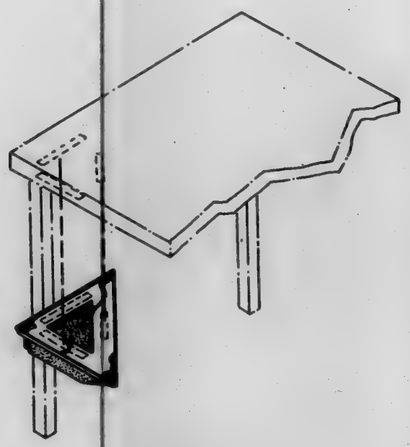
344,652
COMPUTER KEYBOARD SUPPORT MOUNTABLE TO THE UNDERSIDE OF A DESK
David M. Hatcher, Buffalo, N.Y., assignor to Posting Equipment Corporation, Buffalo, N.Y.
Filed Aug. 31, 1992, Ser. No. 934,008
Term of patent 14 years
U.S. Cl. D6—511



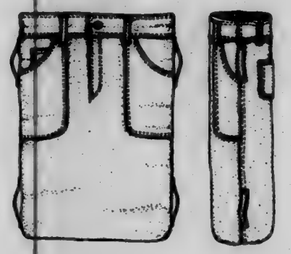
344,653
DISPENSING DEVICE FOR FLUID OR DOUGHY SUBSTANCES
Lorenzo Broglisto, Venegono Superiore, Italy, assignor to RELAX S.a.s di L. Broglisto & C., Venegono Superiore, Italy
Filed Dec. 28, 1992, Ser. No. 3,116
Claims priority, application Italy, Jun. 14, 1991, MI91 0000448
Term of patent 14 years
U.S. Cl. D6—541



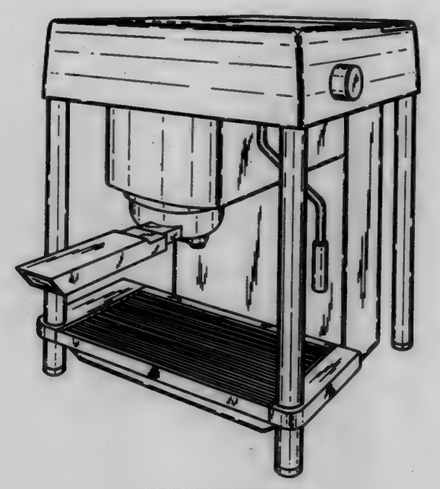
344,654
CONCEALED STORAGE CONTAINER
John P. McCracken, 188 Lookout La., Willow Grove, Pa. 19090
Filed Dec. 28, 1992, Ser. No. 3,025
Term of patent 14 years
U.S. Cl. D6—513



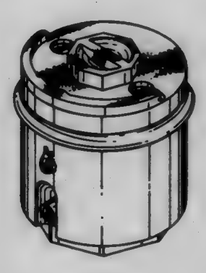
344,655
DENIM JEAN BEAN BAG SEAT CUSHION
George Alexander, 2600 Cardena Ave., Villa #9, Coral Gables, Fla. 33134
Division of Ser. No. 805,823, Dec. 11, 1991. This application Apr. 19, 1993, Ser. No. 7,161
Term of patent 14 years
U.S. Cl. D6—601



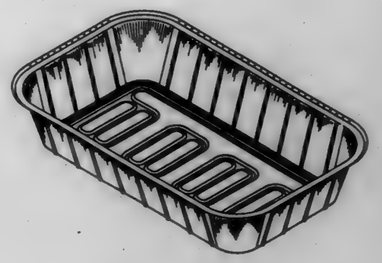
344,656
ESPRESSO COFFEE MACHINE SUPPORTED BY FOUR COLUMNS
Aldo De Felip, Milan, Italy, assignor to Brevetti Gaggia S.p.A., Milan, Italy
Filed Nov. 26, 1991, Ser. No. 798,621
Claims priority, application Italy, Jul. 3, 1991, MI91-0-000505
Term of patent 14 years
U.S. Cl. D7—309



344,657
COMBINED HOT AND COLD LIQUID CONTAINER
Ronald H. Knopp, Box 503, Ligonier, Pa. 15658
Filed Jun. 9, 1992, Ser. No. 894,237
Term of patent 14 years
U.S. Cl. D7—313



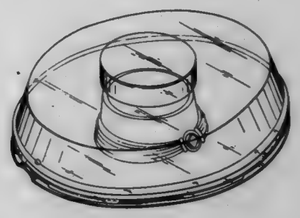
344,658
FOODS TRANSPORTING/SERVING TRAY
Fred G. Arkoosh, Jr., 10024 Fieldcrest Dr., Omaha, Nebr. 68114; Raymond C. Massey, Jr, 8753 Larimore Ave., Omaha, Nebr. 68134, and Raymond C. Massey, Sr., 6617 Vernon Ave., Omaha, Nebr. 68104
Continuation-in-part of Ser. No. 681,970, Apr. 8, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 906,135
Term of patent 14 years
U.S. Cl. D7—554



344,659
COOKIE JAR
James Hsu, 9FL.-6,415 Hsin-1-Road Section 4, Taipei, Taiwan
Filed Jun. 15, 1992, Ser. No. 897,980
Term of patent 14 years
U.S. Cl. D7—613

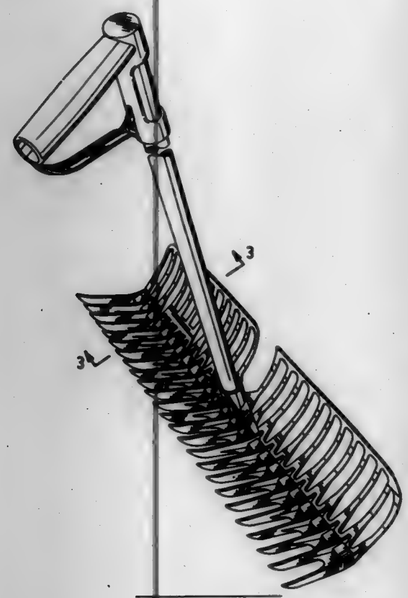


344,660
SNACK FOOD CONTAINER WITH LID
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Jul. 27, 1992, Ser. No. 919,122
Term of patent 14 years
U.S. Cl. D7—629

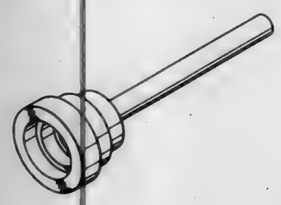


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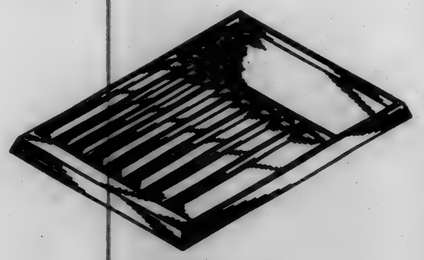
344,661
RAKE
Otto H. Schuele, Ontario, Canada, assignor to Otoco Corporation, Barrie, Canada
Filed May 11, 1992, Ser. No. 880,982
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1991, G91-14-055.2
Term of patent 14 years
U.S. Cl. D8—13



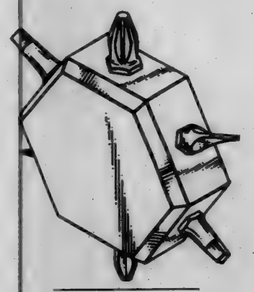
344,662
TOOL FOR GRASPING ROUND KNOBS
Sydney C. Dittman, 5838 Indian Trail, Houston, Tex. by Ralph E. Dittman, parent
Filed Apr. 14, 1992, Ser. No. 868,258
Term of patent 14 years
U.S. Cl. D8—14



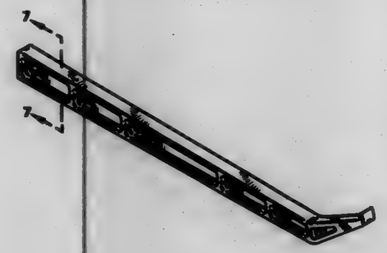
344,663
TRAY FOR SOCKET TOOLS
Robert H. Balzes, 9518 Anderson Mill Rd., Austin, Tex. 78729
Filed Jan. 25, 1993, Ser. No. 4,144
Term of patent 14 years
U.S. Cl. D8—71



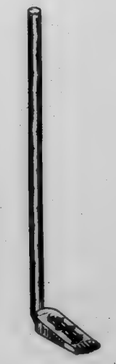
344,664
SCREW DRIVER
Paul K. Malkinson, 4648 Kensington Place, Delta, British Columbia, Canada
Filed Nov. 6, 1991, Ser. No. 788,722
Term of patent 14 years
U.S. Cl. D8—85



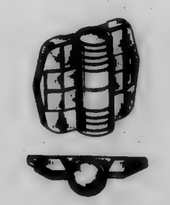
344,665
TOOL FOR OPENING FROZEN AUTOMOBILE DOORS
Bart Baker, 513 Arthur, Des Moines, Iowa 50313
Filed Jul. 13, 1992, Ser. No. 912,608
Term of patent 14 years
U.S. Cl. D8—8



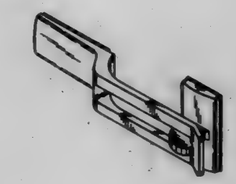
344,666
PRY BAR
Milton R. Breitrick, 111 Lange Ct., Shawano, Wis. 54166
Filed May 28, 1992, Ser. No. 889,306
Term of patent 14 years
U.S. Cl. D8—89



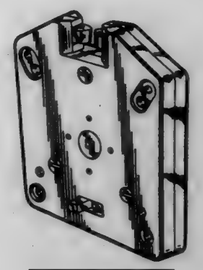
344,667
DETENT HINGE
Allen Riblett, Ardentown, Del., and Vince Juliana, Chester Springs, Pa., assignors to Southco, Inc., Concordville, Pa.
Continuation-in-part of Ser. No. 820,149, Jan. 13, 1992. This application Apr. 29, 1992, Ser. No. 876,204
Term of patent 14 years
U.S. Cl. D8—327



344,668
APPLIANCE SAFETY LATCH
Michael Nicholoulias, 2407 Manchester Ave., Cardiff, Calif. 92007
Continuation-in-part of Ser. No. 548,738, Jul. 5, 1990, Pat. No. Des. 326,402, which is a continuation-in-part of Ser. No. 632,510, Dec. 24, 1990, Pat. No. Des. 324,637. This application Jan. 31, 1992, Ser. No. 828,643
Term of patent 14 years
U.S. Cl. D8—331



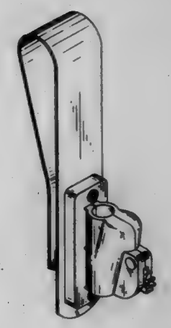
344,669
LATCH
Randall C. Hansen, Lake Forest, Ill., assignor to A. L. Hansen Mfg. Co., Waukegan, Ill.
Filed Jul. 24, 1992, Ser. No. 920,625
Term of patent 14 years
U.S. Cl. D8—331



344,670
SHOWER CURTAIN HOOK
Joseph C. Kearns, 1160 Riverside Ter., Gainesville, Ga. 30501
Filed Dec. 16, 1992, Ser. No. 2,691
Term of patent 14 years
U.S. Cl. D8—367

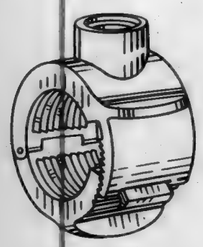


344,671
COMBINED BOAT ROPE RETAINER AND HANGER
Ernest C. Schaumburg, Stillwater, Minn., assignor to Garelick Mfg. Co., St. Paul Park, Minn.
Filed Mar. 20, 1992, Ser. No. 856,322
Term of patent 14 years
U.S. Cl. D8—373



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344,672
CLAMP FOR A SIGN HOLDER
Wayne Current, Holmdel, N.J., assignor to International Visual Corporation, Port Washington, N.Y.
Filed Jan. 10, 1992, Ser. No. 819,506
Term of patent 14 years
U.S. Cl. D8—373



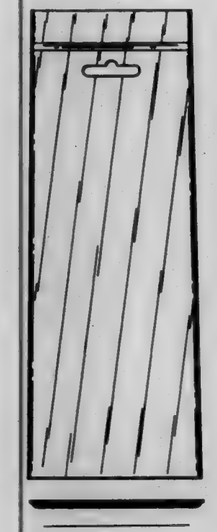
344,673
RACK FOR ELONGATED OBJECTS
Louis R. Effron, 4718 Deer Rd., Orlando, Fla. 32806
Filed Mar. 23, 1992, Ser. No. 855,863
Term of patent 14 years
U.S. Cl. D8—373



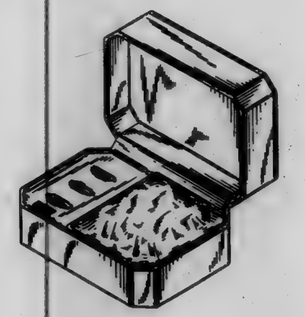
344,674
DOORSTOP
Karen W. Marks, 60 Duncan La., Centerville, Mass. 02632, assignor to Karen W. Marks and Robert J. Marks, Jr., both of Osterville, Mass.
Filed Jan. 14, 1992, Ser. No. 820,346
Term of patent 14 years
U.S. Cl. D8—402



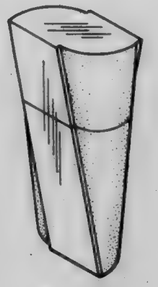
344,675
TAMPER RESISTANT POUCH
Arthur F. Jacobson, 1414 Jacobson Dr., Waukegan, Ill. 60085-7408
Filed May 2, 1991, Ser. No. 694,843
Term of patent 14 years
U.S. Cl. D9—415



344,676
WATCH BOX
Martin Newman, New Rochelle, N.Y., assignor to Gruen Marketing Corporation, Exeter, Pa.
Filed Sep. 6, 1991, Ser. No. 756,777
Term of patent 14 years
U.S. Cl. D9—430



344,677
COMBINED BOTTLE AND CAP
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,616
Term of patent 14 years
U.S. Cl. D9—529



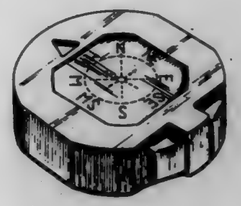
344,678
TEAM LOGO CLOCK
Theron McNeely, 1302 Buchanan Pl., Fort Washington, Md. 20744
Filed Apr. 15, 1991, Ser. No. 685,699
Term of patent 14 years
U.S. Cl. D10—6



344,679
DETACHABLE THERMOSTAT KNOB
James A. Odom, Apple Valley, and Dale A. Lindsley, Hamel, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 24, 1992, Ser. No. 2,977
Term of patent 14 years
U.S. Cl. D10—60



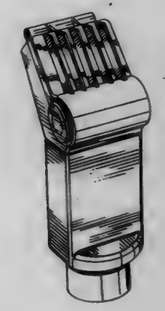
344,680
DIRECTIONAL COMPASS
Thomas G. Henning, 583 Alvarado St., San Francisco, Calif. 94114
Filed Sep. 19, 1991, Ser. No. 764,927
Term of patent 14 years
U.S. Cl. D10—68



344,681
HEAD ASSEMBLY FOR A SWITCHABLE ELECTRICAL TEST PROBE
Mark W. Nightingale, Washougal, Wash., and Jonathan E. Myers, Aloha, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Continuation-in-part of Ser. No. 538,941, Jun. 13, 1990, Pat. No. Des. 334,147. This application Apr. 7, 1992, Ser. No. 864,809
Term of patent 14 years
U.S. Cl. D10—78

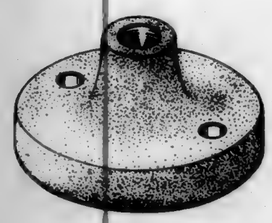


344,682
INSTRUMENT HOUSING
William J. Brown; Henry T. Viuhko, both of Peterborough, and Ian F. Norton, Toronto, all of Canada, assignors to Milltronics Ltd., Peterborough, Canada
Filed Mar. 27, 1992, Ser. No. 858,707
Claims priority, application Canada, Sep. 27, 1991, 27-09-91-7
Term of patent 14 years
U.S. Cl. D10—101

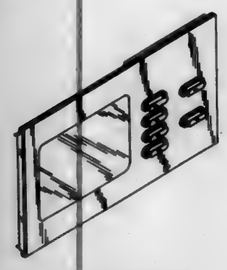


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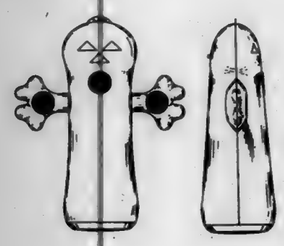
344,683
GEODETHICAL MEASURING DEVICE
Jan Strömblick, Sågvägen 4, and Hans Libom, Rönnevägen 3, both of Borås, Sweden S-502 38
Filed Mar. 27, 1990, Ser. No. 500,662
Claims priority, application Sweden, Oct. 4, 1989, 892249
Term of patent 14 years
U.S. Cl. D10—103



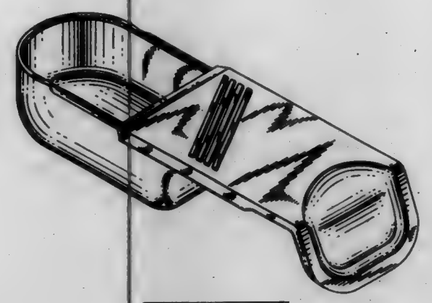
344,684
MULTI-PURPOSE USER INTERFACE PANEL
Stephen V. Metz, St. Paul, and Guy M. Shoultz, Delano, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 17, 1992, Ser. No. 931,224
Term of patent 14 years
U.S. Cl. D10—103



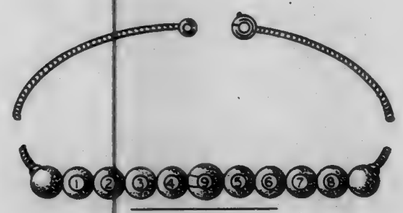
344,685
INFLATABLE EMERGENCY DISTRESS MARKER FOR VEHICLES
Eugene R. Caporale, 12471 Coronado Dr., Spring Hill, Fla. 34609
Filed Apr. 9, 1993, Ser. No. 6,907
Term of patent 14 years
U.S. Cl. D10—109



344,686
ADJUSTABLE MEASURING CONTAINER
Frans M. Weterings, Tuscumbia, Ala., assignor to Robbins Industries, Inc., Florence, Ala.
Filed Nov. 30, 1992, Ser. No. 2,222
Term of patent 14 years
U.S. Cl. D10—46.2



344,687
POOL BALL NECKLACE
Andrew J. Nikolai, 1903 E. 2nd St., Merrill, Wis. 54452
Filed Feb. 5, 1992, Ser. No. 830,285
Term of patent 14 years
U.S. Cl. D11—6



344,688
ORNAMENTAL CHAIN
David Rozenwasser, Savion, Israel, assignor to David Rozenwasser, Ltd., Petah Tikva, Israel
Filed Nov. 26, 1991, Ser. No. 798,418
Claims priority, application Israel, May 29, 1991, 17894
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—13



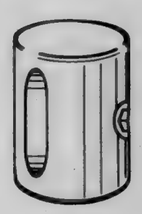
344,689
HAND MANIPULATED NOVELTY
David S. de Hilster, 6100 Edinger #121, Huntington Beach, Calif. 92647
Filed Dec. 13, 1991, Ser. No. 806,550
Term of patent 14 years
U.S. Cl. D11—131



344,690
RELIGIOUS ARTICLE
Rodney Gilliard, 1621 NW 14th St., Ft. Lauderdale, Fla. 33311
Filed May 21, 1992, Ser. No. 886,181
Term of patent 14 years
U.S. Cl. D11—160



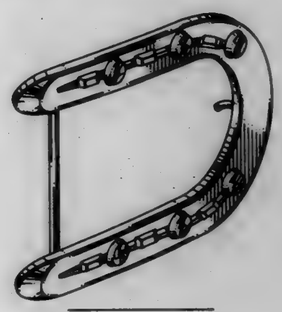
344,691
BUCKLE
Joseph Kepiro, 810 Waterfront Dr., Lancaster, Pa. 17602
Filed Oct. 31, 1991, Ser. No. 786,920
Term of patent 14 years
U.S. Cl. D11—218



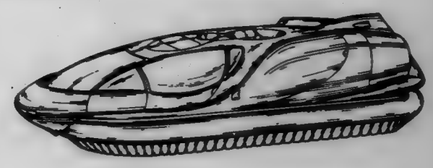
344,692
LAPEL PIN
Earl Rustoa, 876 Cedar Bay, Port Colborne, Ontario, Canada L3K 5V3
Filed Jun. 30, 1992, Ser. No. 907,202
Claims priority, application Canada, Apr. 22, 1992, 22-04-92-5
Term of patent 14 years
U.S. Cl. D11—223



344,693
HORSESHOE BELT BUCKLE
James H. Tierce, and Carolyn A. Tierce, both of 5809 W. Roma, Phoenix, Ariz. 85031
Filed Jul. 23, 1992, Ser. No. 917,432
Term of patent 14 years
U.S. Cl. D11—232

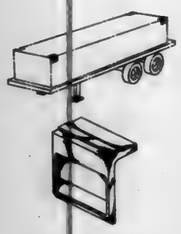


344,694
HOVERCRAFT
Hartmut K. E. Stiegler, Herborn, Fed. Rep. of Germany, assignor to ABS International, S.A., Switzerland
Filed Dec. 9, 1991, Ser. No. 805,788
Term of patent 14 years
U.S. Cl. D12—5



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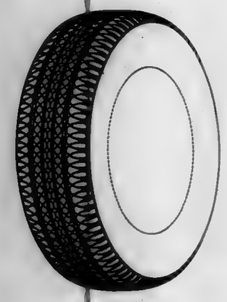
344,695
HOISTING FITTING FOR REMOVABLE TRUCK CONTAINERS
James A. Baumann, 16413 Grant Ave., Orland Park, Ill. 60462
Filed Oct. 15, 1992, Ser. No. 466
Term of patent 14 years
U.S. Cl. D12—97



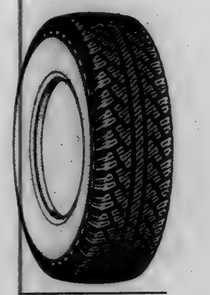
344,696
TRICYCLE FRAME
Klaus Rowedder, Tanneweg 6, D-2352 Mühbrook, Fed. Rep. of Germany
Filed Jul. 22, 1992, Ser. No. 918,492
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1992, 9200472
Term of patent 14 years
U.S. Cl. D12—112



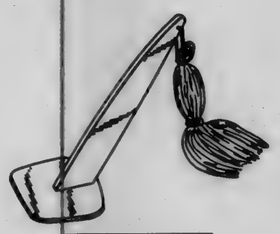
344,697
TIRE TREAD
Gary S. Christie, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 24, 1992, Ser. No. 933,505
Term of patent 14 years
U.S. Cl. D12—141



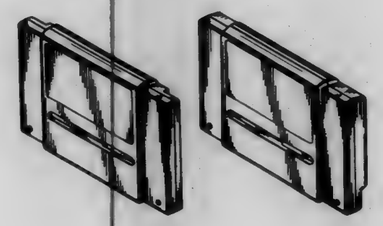
344,698
AUTOMOBILE TIRE
Kazunori Shinohara; Yasuo Himuro, and Yuji Tateo, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 3,128
Claims priority, application Japan, Jun. 30, 1992, 4-19289
Term of patent 14 years
U.S. Cl. D12—147



344,699
HOOD ORNAMENT
Robert K. Stortz, Sarasota, Fla., assignor to Intertek International Corporation, Hialeah, Fla.
Filed Apr. 9, 1992, Ser. No. 866,531
Term of patent 14 years
U.S. Cl. D12—197



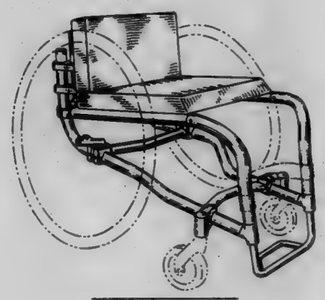
344,700
CARTRIDGE FOR VIDEO GAME MACHINE
Lance Barr, Redmond, Wash., and Mitsuru Hitomi, Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan
Division of Ser. No. 757,431, Sep. 10, 1991. This application Mar. 31, 1993, Ser. No. 6,546
Claims priority, application Japan, Mar. 26, 1991, 3-8433
Term of patent 14 years
U.S. Cl. D14—121



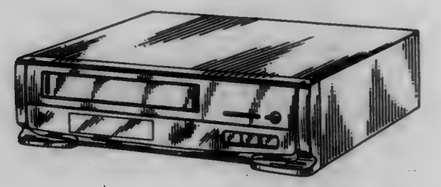
344,701
CHILD'S CARRIAGE
Graham Church, Moulton, Great Britain, assignor to Maclaren Limited, Northampton, England
Filed Oct. 1, 1992, Ser. No. 151
Term of patent 14 years
U.S. Cl. D12—129



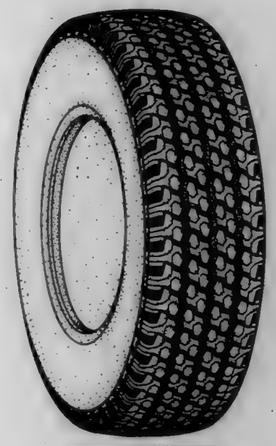
344,702
MODULAR WHEELCHAIR FRAME
A. Scott Robertson, and Richard T. Geiger, both of Santa Cruz, Calif., assignors to Medical Composite Technology, Inc., Soquel, Calif.
Filed Oct. 30, 1992, Ser. No. 976
Term of patent 14 years
U.S. Cl. D12—133



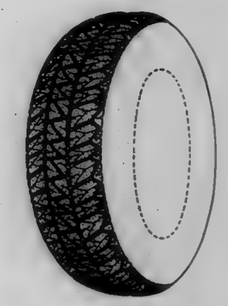
344,703
VIDEO TAPE RECORDER
Yuji Katayama, Tokyo, and Takashi Nakamura, Higashimurayama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 16, 1992, Ser. No. 2,679
Claims priority, application Japan, Jun. 16, 1992, 4-17573
Term of patent 14 years
U.S. Cl. D14—135



344,704
AUTOMOBILE TIRE
Yasuo Himuro, and Toru Fukuoka, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 713
Claims priority, application Japan, Apr. 23, 1992, 4-11912
Term of patent 14 years
U.S. Cl. D12—147



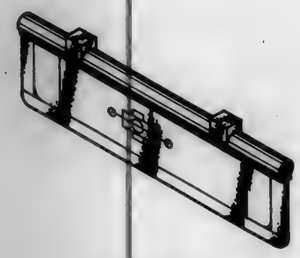
344,705
TIRE TREAD
John Kotanides, Jr., Canton; John S. Attinello, Hartville; Norman D. Anderson, Uniontown; William E. Glover, Akron, all of Ohio, and Max H. Dixon, Ridgeley, W. Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 937,191
Term of patent 14 years
U.S. Cl. D12—147



344,706
GAS CAP HOLDER
Roman Lukatsky, c/o Alfa Mechanical Company, 16016 Vose St., Van Nuys, Calif. 91405
Filed Dec. 10, 1992, Ser. No. 2,444
Term of patent 14 years
U.S. Cl. D12—400



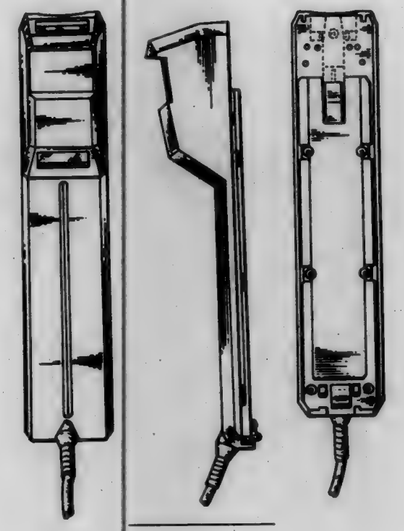
344,707
ROAD DEBRIS SHIELD
Ronald Brooks, 265 Timber Ridge Trail, Carrollton, Ga. 30117
Filed Jan. 3, 1992, Ser. No. 892,016
Term of patent 14 years
U.S. Cl. D12—185



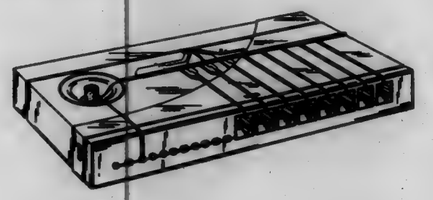
344,708
BATTERY CHARGER FOR HANDHELD ELECTRONIC GAME
Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong
Filed Jun. 24, 1992, Ser. No. 903,657
Claims priority, application United Kingdom, Jan. 6, 1992, 2020031
Term of patent 14 years
U.S. Cl. D13—108



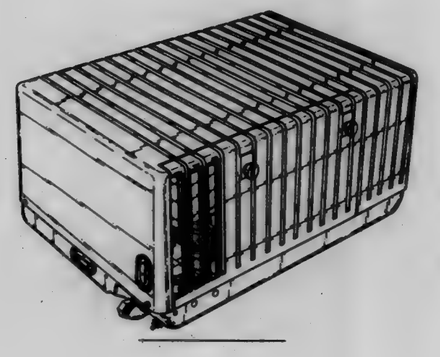
344,709
ALTERNATE POWER SUPPLY ADAPTER FOR A BATTERY-OPERATED RADIO TELEPHONE
Gershon N. Cooper, Encino, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Feb. 11, 1992, Ser. No. 834,502
Term of patent 14 years
U.S. Cl. D12—110



344,710
ELECTRONIC DEVICE MODULE
Stuart K. Morgan, Westford, and Margaret L. Hetfield, Arlington, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 8, 1991, Ser. No. 683,367
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—114



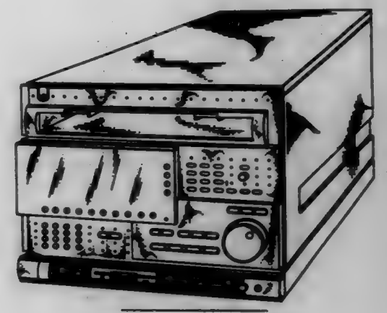
344,711
ENCLOSURE FOR AN ENGINE-DRIVEN GENERATING SET
Stephen M. Clancey, Moundsview; Dale F. Seeley, Champlin; Gary Salmonson, St. Cloud; David A. Overland, Cedar, all of Minn.; Emilio Ambasz, New York, N.Y., and Paul W. Haverly, Coon Rapids, Minn., deceased, by June E. Haverly, Coon Rapids, Minn., administrater assignors to Onan Corporation, Minneapolis, Minn.
Filed Nov. 15, 1991, Ser. No. 792,760
Term of patent 14 years
U.S. Cl. D13—114



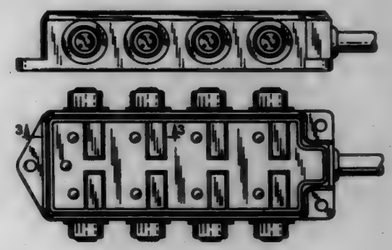
344,712
TRANSFORMER COVER
Ronald W. Allen, 2004 10th St. North West, Birmingham, Ala. 35215
Filed Sep. 3, 1991, Ser. No. 754,414
Term of patent 14 years
U.S. Cl. D13—118



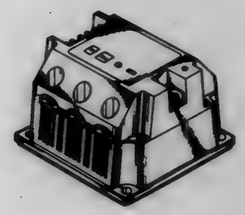
344,713
PROFESSIONAL DIGITAL VIDEO CASSETTE RECORDER
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.
Filed Dec. 19, 1991, Ser. No. 810,803
Term of patent 14 years
U.S. Cl. D14—135



344,714
MULTIPLE PORT ELECTRICAL CONNECTOR
Irwin Kulberuh, Skokie, Ill., assignor to Woodhead Industries, Inc., Buffalo Grove, Ill.
Filed Jan. 2, 1992, Ser. No. 816,060
Term of patent 14 years
U.S. Cl. D13—147

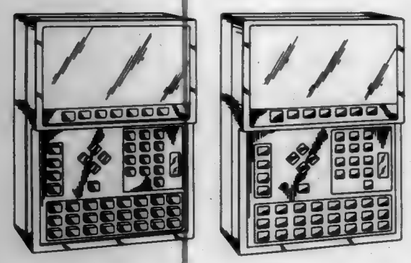


344,715
HOUSING FOR AN ELECTRONIC CONTROLLER AND SOLID STATE CONTACTOR
Kevin Haiao, Chung-Ho, and Rechard Yang, Keelung, both of Taiwan, assignors to Lei Chu Enterprises Co., Inc., Taipei, Taiwan
Filed Jul. 7, 1992, Ser. No. 909,812
Term of patent 14 years
U.S. Cl. D13—158

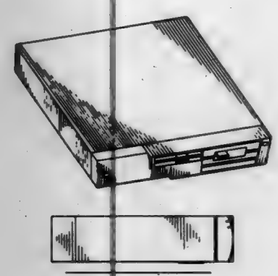


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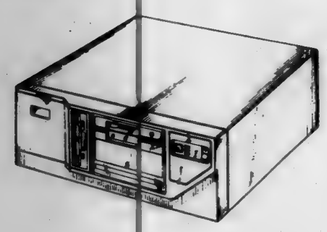
344,716
COMBINED OPERATOR DISPLAY AND INTERFACE CONTROL PANEL
Richard H. Munger, Rockford; David K. Spahr, Roscoe, both of Ill., and Stephen M. Degnen, Columbus, Ohio, assignors to Barber-Colman Company, Rockford, Ill.
Filed Oct. 29, 1991, Ser. No. 784,821
Term of patent 14 years
U.S. Cl. D14—100



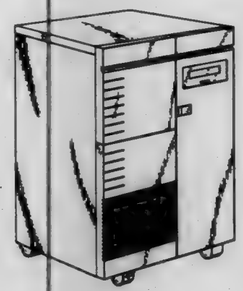
344,717
DESKTOP COMPUTER
Edward V. Cruz, Newbury Park, and Barry P. Sween, Santa Monica, both of Calif., assignors to Zeuscom Systems, Inc., Simi Valley, Calif.
Filed May 18, 1992, Ser. No. 884,834
Term of patent 14 years
U.S. Cl. D14—100



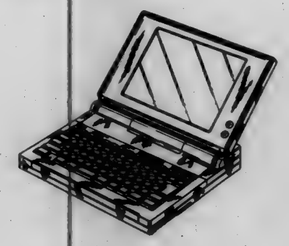
344,718
COMPUTER
Victor R. Reiter, Huntington Beach, Calif., assignor to AST Research, Inc., Irvine, Calif.
Filed Jul. 2, 1992, Ser. No. 908,031
Term of patent 14 years
U.S. Cl. D14—100



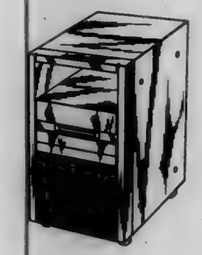
344,719
COMPUTER HOUSING
Tony C. Wang, Taipei, and Jey-Chiow Wang, Pingtung, both of Taiwan, assignors to Acer Incorporated, Taipei, Taiwan
Filed Apr. 15, 1991, Ser. No. 686,111
Term of patent 14 years
U.S. Cl. D14—102



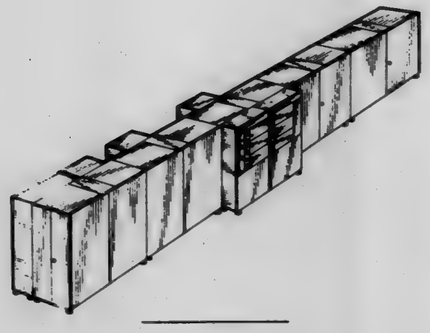
344,720
ELECTRONIC COMPUTER WITH PRINTER
Yoshinori Inukai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 17, 1992, Ser. No. 899,930
Claims priority, application Japan, Dec. 20, 1991, 3-38701
Term of patent 14 years
U.S. Cl. D14—106



344,721
IMAGE STORAGE CONVERTOR
Yoshie Katada, Yokohama, and Eiji Sakaguchi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1992, Ser. No. 866,544
Claims priority, application Japan, Oct. 23, 1991, 3-32094
Term of patent 14 years
U.S. Cl. D14—107



344,722
MAGNETIC TAPE STORAGE UNIT FOR AN ELECTRONIC COMPUTER
Yozo Sawada, and Kimio Nobeoshi, both of Tokyo, Japan, assignors to NEC Corporation, Minato, Japan
Filed Jul. 14, 1992, Ser. No. 914,681
Claims priority, application Japan, Jan. 21, 1992, 4-1078
Term of patent 14 years
U.S. Cl. D14—108



344,723
MAGNETIC TAPE STORAGE UNIT FOR AN ELECTRONIC COMPUTER
Kazutoshi Tonozuka, Tokyo; Masahiro Honda, Yamagata, and Kimio Nobeoshi, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed May 7, 1992, Ser. No. 879,366
Claims priority, application Japan, Nov. 7, 1991, 3-33456
Term of patent 14 years
U.S. Cl. D14—108



344,724
KEYBOARD
Thomas E. Pangburn, Lexington, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.
Filed Dec. 10, 1991, Ser. No. 805,269
Term of patent 14 years
U.S. Cl. D14—115

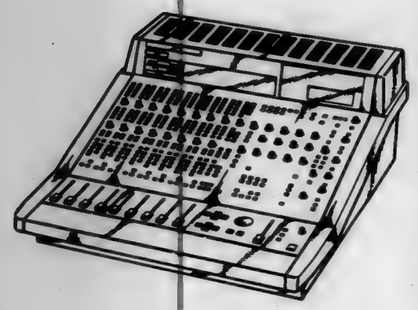


344,725
CARTRIDGE FOR VIDEO GAME MACHINE
Lance Barr, Redmond, Wash., and Mitsuru Hitomi, Kyoto, Japan, assignors to Nintendo Co., Ltd., Japan
Division of Ser. No. 757,431, Sep. 10, 1991. This application Mar. 31, 1993, Ser. No. 6,543
Claims priority, application Japan, Mar. 26, 1991, 3-8433
Term of patent 14 years
U.S. Cl. D14—121

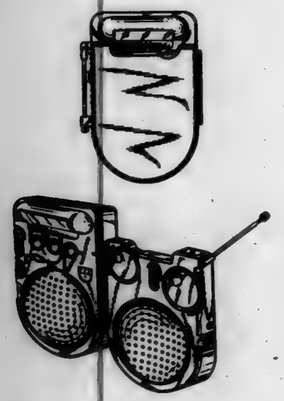


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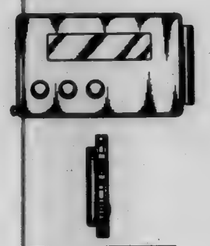
344,726
DIGITAL MIXING RECORDER
Eizo Amiya, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Sep. 4, 1991, Ser. No. 754,700
Term of patent 14 years
U.S. Cl. D14—160



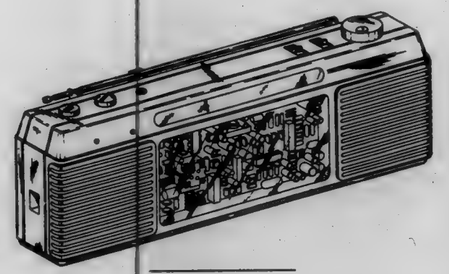
344,727
RADIO ALARM CLOCK
Noel E. Zeller, c/o Zelco Industries, Inc., 630 S. Columbus Ave., Mount Vernon, N.Y. 10551-4445
Filed Aug. 9, 1991, Ser. No. 743,040
Term of patent 14 years
U.S. Cl. D14—171



344,728
PAGER
Koji Nishimoto, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,874
Claims priority, application Japan, Sep. 13, 1991, 27580/1991
Term of patent 14 years
U.S. Cl. D14—191



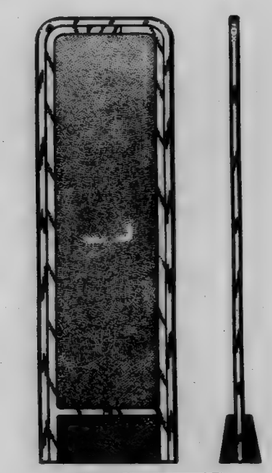
344,729
PORTABLE RADIO WITH VISIBLE CIRCUIT BOARD
Leigh Mueller, P.O. Box 1401, Fayetteville, Ark. 72702-1401
Filed Nov. 23, 1992, Ser. No. 1,727
Term of patent 14 years
U.S. Cl. D14—194



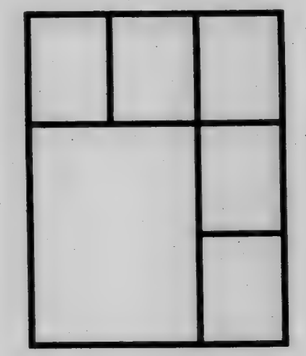
344,730
COMMUNICATIONS HEADSET
Phillip A. Gattey, Los Gatos; Christine Burris, Santa Cruz, and Wolfgang W. Jensen, Aptos, all of Calif., assignors to ACS Communications, Inc., Scotts Valley, Calif.
Filed Jul. 8, 1992, Ser. No. 910,632
Term of patent 14 years
U.S. Cl. D14—206



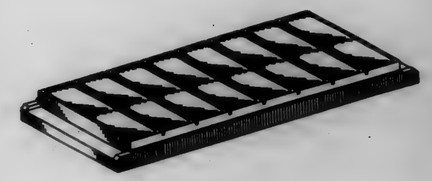
344,731
ANTENNA PEDESTAL
Hans Witzky, Pompano Beach, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Filed Oct. 7, 1992, Ser. No. 229
Term of patent 14 years
U.S. Cl. D14—230



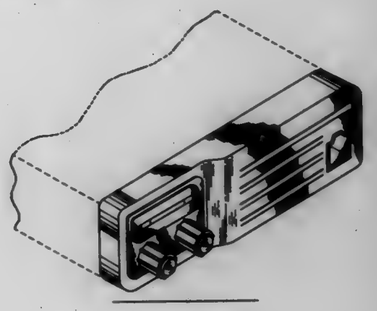
344,732
CRT DISPLAY SCREEN FOR MULTIPLE IMAGES
Deno Kaunes, 2000 Broadway, Suite 119, San Francisco, Calif. 94115
Filed May 15, 1990, Ser. No. 523,914
Term of patent 14 years
U.S. Cl. D14—239



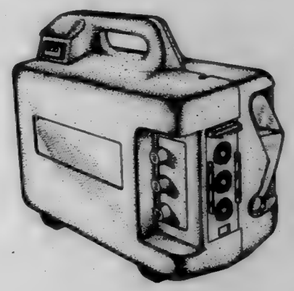
344,733
COMMUNICATION SYSTEM DISPLAY MODULE
Dwight D. Walthers, McHenry, Ill., assignor to Mototola, Inc., Schaumburg, Ill.
Filed Jun. 25, 1990, Ser. No. 544,004
Term of patent 14 years
U.S. Cl. D14—241



344,734
FRONT PANEL FOR A TWO WAY MOBILE RADIO
Mas Tokiyama, Coral Springs, Fla., and Manabu Sasaki, Kawasaki, Japan, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 27, 1991, Ser. No. 722,629
Term of patent 14 years
U.S. Cl. D14—257

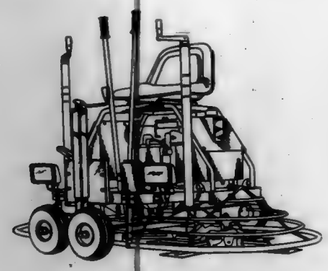


344,735
BLOWER HOUSING FOR MEDICAL EQUIPMENT
Randall L. Ohman, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.
Filed Nov. 27, 1991, Ser. No. 798,761
Term of patent 14 years
U.S. Cl. D15—7

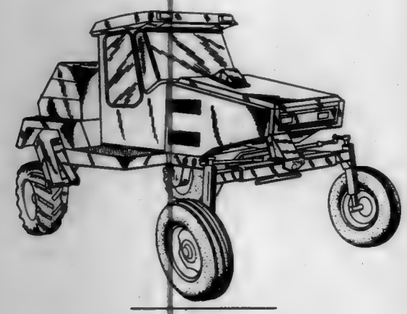


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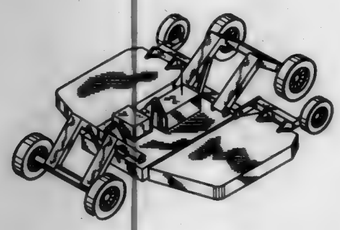
344,736
RIDING TROWEL FOR CONCRETE FINISHING
J. Dewayne Allen, Paragould, and Hugh L. Adams, Bassett, both of Ark., assignors to Allen Engineering Corporation, Paragould, Ark.
Filed Jan. 27, 1992, Ser. No. 827,925
Term of patent 14 years
U.S. Cl. D15—10



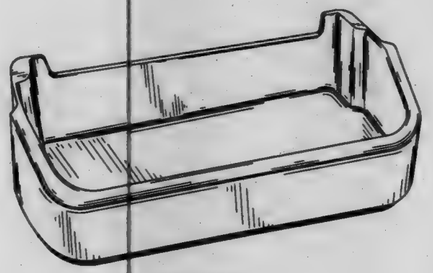
344,737
SELF PROPELLED SPRAYER VEHICLE
William D. Long; Donald K. Schmidt, and Lyle W. Mundell, all of Bismarck, N. Dak., assignors to Clark Equipment Company, Bismarck, N. Dak.
Filed Mar. 19, 1992, Ser. No. 856,084
Term of patent 14 years
U.S. Cl. D15—22



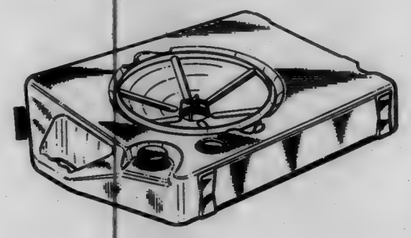
344,738
SHREDDER FOR STEEP SLOPES
Eddie J. Young, 220 Rockford Rd., Waco, Tex. 76712
Filed Sep. 3, 1991, Ser. No. 754,430
Term of patent 14 years
U.S. Cl. D15—27



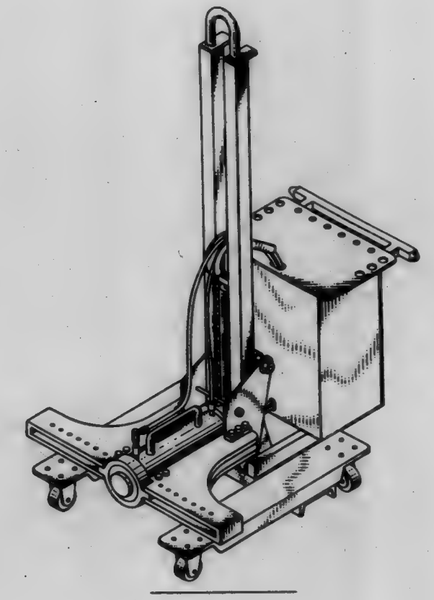
344,739
REFRIGERATOR DOOR SHELF
Robin Edman; Charles D. Baker, both of Dublin, and Douglas Ritterling, Galloway, all of Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Dec. 1, 1992, Ser. No. 2,065
Term of patent 14 years
U.S. Cl. D15—89



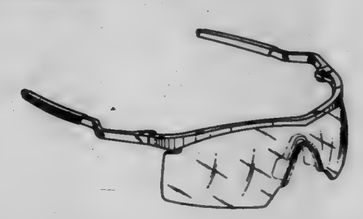
344,740
CONTAINER WITH FUNNEL
Michel Poirier, Lachenai, Canada, assignor to Union Carbide Chemicals and Plastics Canada Inc., Toronto, Canada
Continuation-in-part of Ser. No. 654,922, Feb. 13, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 1,122
Claims priority, application Canada, May 4, 1992, 0405921
Term of patent 14 years
U.S. Cl. D15—150



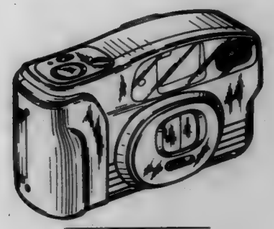
344,741
DEVICE FOR PULLING A ROTOR IMPELLER FROM A SHAFT
Frank Protz, Prince George, Canada, assignor to Zee Impeller Breaker Inc., British Columbia, Canada
Filed Aug. 25, 1992, Ser. No. 935,212
Term of patent 14 years
U.S. Cl. D15—199



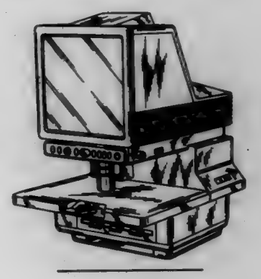
344,742
EYEGLASSES
James H. Jannard, San Juan Capistrano, Calif., assignor to Oakley, Inc., Irvine, Calif.
Filed Aug. 12, 1992, Ser. No. 929,266
Term of patent 14 years
U.S. Cl. D16—112



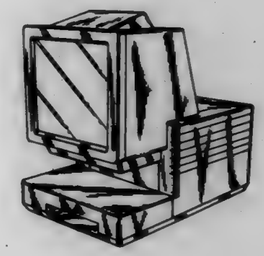
344,743
CAMERA
Hiroyuki Fukushima, Kamifukuoka, and Masakazu Taku, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 909,430
Claims priority, application Japan, Jan. 14, 1992, 4-615
Term of patent 14 years
U.S. Cl. D16—209



344,744
COMBINED MICROFILM READER AND PRINTER
Takashi Yomo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 10, 1992, Ser. No. 943,201
Claims priority, application Japan, Mar. 10, 1992, 4-6896
Term of patent 14 years
U.S. Cl. D16—223

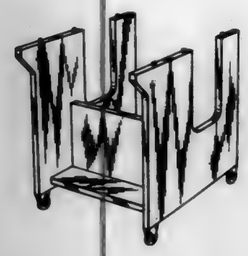


344,745
COMBINED MICROFILM READER AND PRINTER
Yoshihiro Miyazawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 2,687
Claims priority, application Japan, Jan. 19, 1992, 4-18234
Term of patent 14 years
U.S. Cl. D16—223



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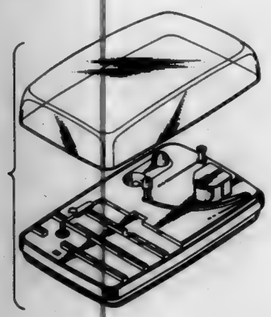
344,745
MICROFILM READER PRINTER STAND
Takashi Yono, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 10, 1992, Ser. No. 943,203
Claims priority, application Japan, Mar. 10, 1992, 4-6897
Term of patent 14 years
U.S. Cl. D16—235



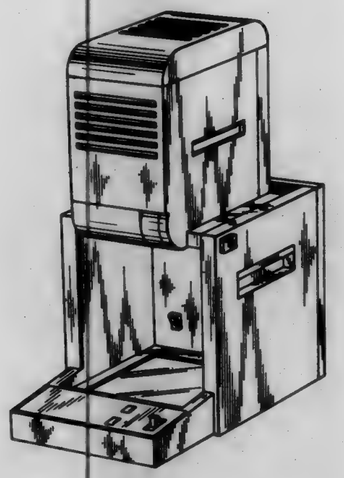
344,747
ELECTRIC GUITAR
James S. Harper, 730 Lounsborough, Windsor Ontario, Canada N9G 1E9
Filed Feb. 21, 1992, Ser. No. 838,005
Term of patent 14 years
U.S. Cl. D17—14



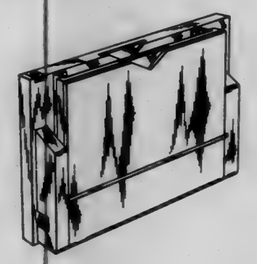
344,748
COMPUTER RIBBON REINKING SYSTEM
Keiichi Enura, Koshigaya; Hiroshi Wada, Misato, and Shigeo Oka, Tokyo, all of Japan, assignors to Pentel Kabushiki Kaisha, Japan
Filed Mar. 29, 1991, Ser. No. 677,825
Claims priority, application Japan, Oct. 2, 1990, 2-33148
Term of patent 14 years
U.S. Cl. D18—12



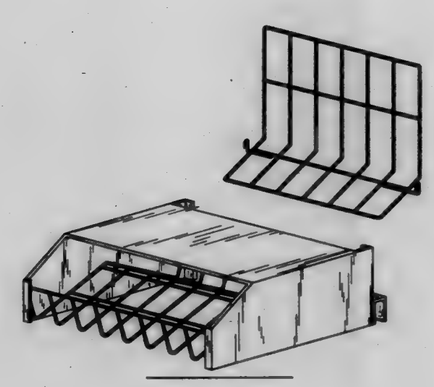
344,749
SLIDE PROJECTOR FOR COPYING MACHINE
Takeshi Komada, Yokohama, and Yosuke Ohsawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1992, Ser. No. 824,448
Claims priority, application Japan, Jul. 29, 1991, 3-22656
Term of patent 14 years
U.S. Cl. D18—40



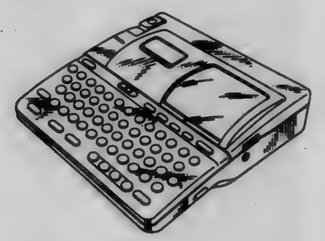
344,750
PAPER FEEDING DEVICE FOR PRINTER
Kayomi Sato, Kawasaki, and Toshio Umino, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 15, 1992, Ser. No. 820,965
Claims priority, application Japan, Jul. 25, 1991, 3-22286
Term of patent 14 years
U.S. Cl. D18—49



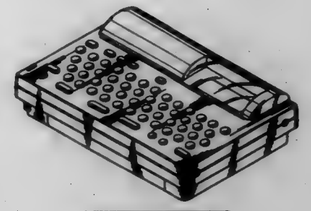
344,751
PAPER HOPPER
Yong Y. Keong, Kuala Lumpur, Malaysia, assignor to Artwright Marketing Sdn. Bhd., Malaysia
Filed Sep. 24, 1990, Ser. No. 586,734
Claims priority, application United Kingdom, Mar. 29, 1990, 2,005,770
Term of patent 14 years
U.S. Cl. D18—49



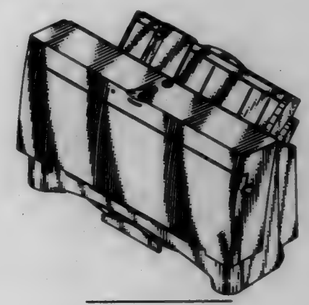
344,752
LABEL PRINTER
Kenji Watanabe; Takanobu Kaneda; Takeyasu Suzuki; Yuichiro Taniguchi; Atsuko Yamaguchi; Machiko Kano, and Chieko Aida, all of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 2,723
Claims priority, application Japan, Jul. 1, 1992, 4-19368
Term of patent 14 years
U.S. Cl. D18—52



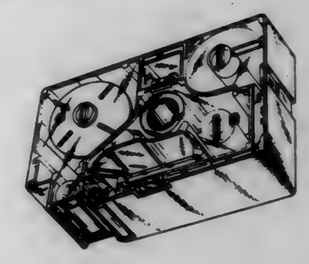
344,753
LABEL PRINTER
Kenji Watanabe; Takanobu Kaneda; Hideto Yokota; Tetsuo Yamaguchi; Takeyasu Suzuki; Yuichiro Taniguchi; Atsuko Yamaguchi, and Machiko Kano, all of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan
Filed Oct. 29, 1992, Ser. No. 936
Claims priority, application Japan, May 1, 1992, 4-12946
Term of patent 14 years
U.S. Cl. D18—52



344,754
COMPUTER PRINTER
Timothy J. L. Parsey, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Dec. 23, 1992, Ser. No. 2,921
Term of patent 14 years
U.S. Cl. D18—55

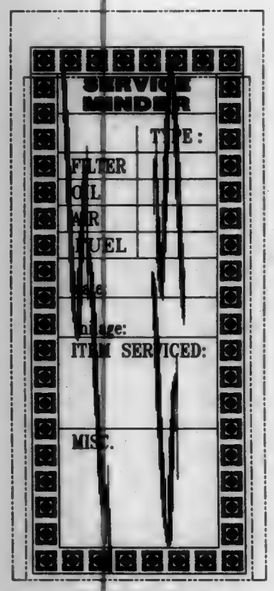


344,755
INK RIBBON AND TAPE CARTRIDGE FOR A PRINTER
Tsutomu Yamazaki, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Jan. 3, 1992, Ser. No. 817,268
Claims priority, application Japan, Jul. 4, 1991, 3-20011
Term of patent 14 years
U.S. Cl. D18—56



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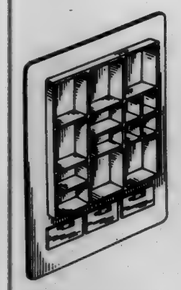
344,756
CAR SERVICE RECORD
Donald Krivoshein, 5200 52nd Ave. North, St. Petersburg, Fla. 33709
Continuation-in-part of Ser. No. 54,669, May 27, 1987, abandoned. This application Sep. 9, 1991, Ser. No. 756,369
Term of patent 14 years
U.S. Cl. D19—1



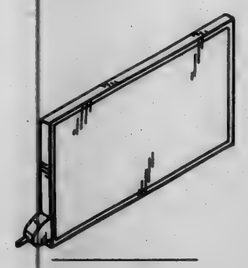
344,757
GREETING CARD
Willem Kruyt, Haarlem, Netherlands, assignor to Weka Bennebroek B.V., Haarlem, Netherlands
Filed Jun. 1, 1990, Ser. No. 532,079
Claims priority, application Netherlands, Dec. 4, 1989, DM/015.249
Term of patent 14 years
U.S. Cl. D19—1



344,758
COMBINED PERPETUAL CALENDAR AND WALL DISPLAY UNIT
Pramuan Kijmedee, 107/635 Latphrao Rd., Bangkok, Thailand
Filed Apr. 22, 1992, Ser. No. 873,090
Term of patent 14 years
U.S. Cl. D19—21



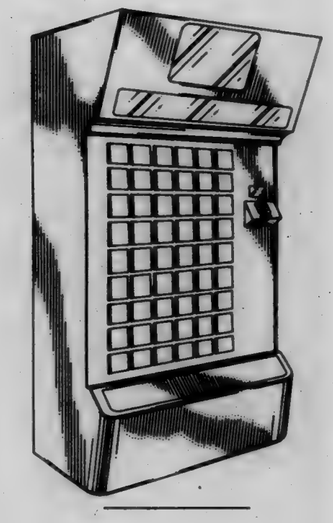
344,759
WRITING PEN
Ronald F. Mouzyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,958
Term of patent 14 years
U.S. Cl. D19—46



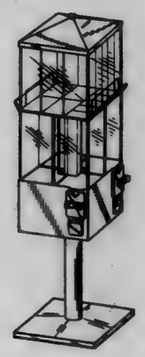
344,760
WRITING PEN
Ronald F. Mouzyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,933
Term of patent 14 years
U.S. Cl. D19—49



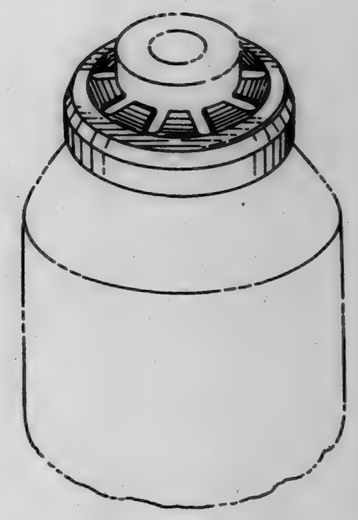
344,761
AUTOMATED VENDING MACHINE WITH VIDEO SAMPLING MONITOR
Karl H. Muehlberger, Lakeland, Fla., assignor to Keyesk Corporation, Lakeland, Fla.
Filed Apr. 29, 1992, Ser. No. 875,728
Term of patent 14 years
U.S. Cl. D20—4



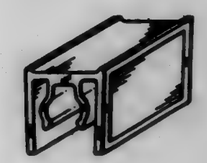
344,762
TWO-TIERED CAROUSEL VENDING MACHINE
Ray G. Peterson, P.O. Box 3111, Idaho Falls, Id. 83403
Filed Apr. 1, 1992, Ser. No. 862,253
Term of patent 14 years
U.S. Cl. D20—7



344,763
IDENTIFICATION COLLAR FOR CONTAINERS
Thomas W. Vitantonio, Chesterland; Reese C. Armstrong, Mentor on the Lake; Randall P. Serpico, Geneva, and Bobby J. Shepard, Jr., Mentor, all of Ohio, assignors to Whitey Co., Highland Heights, Ohio
Filed Jul. 27, 1992, Ser. No. 920,846
Term of patent 14 years
U.S. Cl. D20—28



344,764
IDENTIFICATION TAG HOLDER
Sai Y. Tam, Hong Kong, Hong Kong, assignor to SIC Ltd., Hong Kong
Filed Nov. 25, 1992, Ser. No. 1,960
Term of patent 14 years
U.S. Cl. D20—43

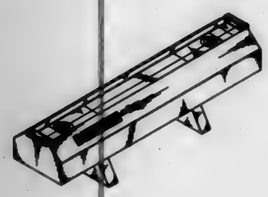


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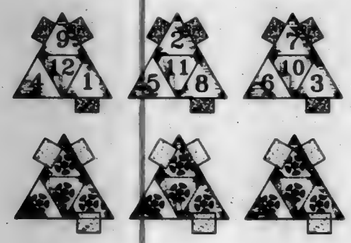
344,765
FOOTBALL TARGET
Charlie D. Miller, Jr., 8509 Abbey Ct., Rowlett, Tex. 75088
Continuation of Ser. No. 887,928, May 26, 1992, abandoned.
This application Jun. 21, 1993, Ser. No. 9,690
Term of patent 14 years
U.S. Cl. D21—5



344,766
AMUSEMENT GAME
Alan O. Carb, 218 Juniper La., Bemidji, Minn. 56601-5734
Filed Oct. 1, 1992, Ser. No. 66
Term of patent 14 years
U.S. Cl. D21—7



344,767
TRI-QUAD DICE SET
Vincent B. Wesselmann, 220 S. Plum St., Breese, Ill. 62230
Filed Dec. 2, 1992, Ser. No. 2,077
Term of patent 14 years
U.S. Cl. D21—41



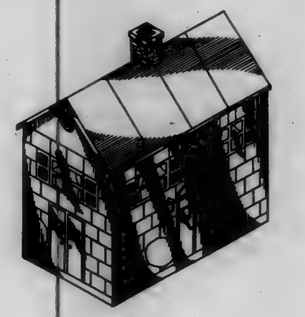
344,768
MUSICAL TOY
Joseph M. S. Chuk, Kwai Chung, Hong Kong, assignor to Roxy Plastic Factory Limited, Kowloon, Hong Kong
Filed Jul. 9, 1992, Ser. No. 910,993
Claims priority, application United Kingdom, Mar. 5, 1992, 2021442
Term of patent 14 years
U.S. Cl. D21—64



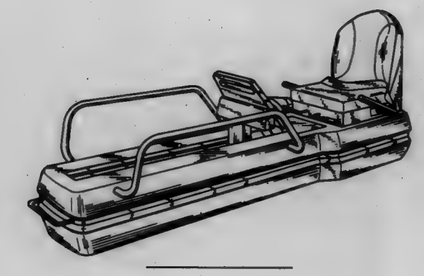
344,769
ELEMENT FOR A TOY BUILDING SET
Ole V. Poulsen, Vejle, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,897
Term of patent 14 years
U.S. Cl. D21—108



344,770
TOY HOUSE
Miroslaw Swiderski, 7014 N. Ottawa, Chicago, Ill. 60631
Filed Dec. 13, 1991, Ser. No. 806,445
Term of patent 14 years
U.S. Cl. D21—114



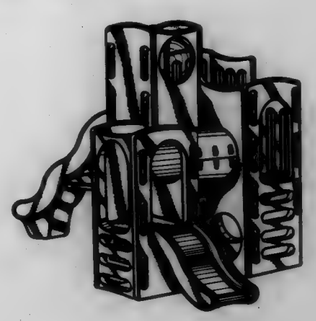
344,771
LEG STRETCHING MACHINE
Susumu Matsumoto, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan
Filed Sep. 1, 1992, Ser. No. 937,667
Claims priority, application Japan, Apr. 18, 1992, 4-11635
Term of patent 14 years
U.S. Cl. D21—191



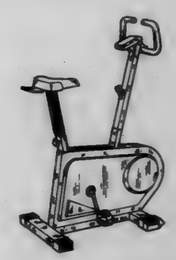
344,772
REINFORCED METAL GOLF CLUB HEAD
D. Clayton Long, and R. Mark Allen, both of Albany, Ga., assignors to MacGregor Golf Company, Albany, Ga.
Continuation of Ser. No. 824,359, Jan. 23, 1992, Pat. No. 5,213,328. This application Apr. 2, 1993, Ser. No. 6,634
Term of patent 14 years
U.S. Cl. D21—214



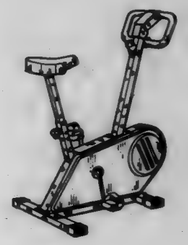
344,773
TOY ACTIVITY GYM
Kevin R. Aker, Hudson, and Thomas E. Fish, Jr., Willoughby, both of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Sep. 1, 1992, Ser. No. 937,669
Term of patent 14 years
U.S. Cl. D21—244



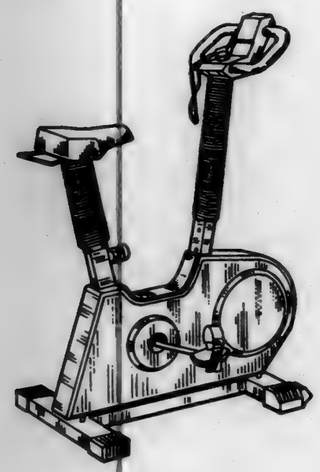
344,774
EXCERCISE CYCLING MACHINE
Prakit Lertyaovarit, Montebello, Calif., assignor to Krane Industry Corp., Taipei, Taiwan
Filed Sep. 4, 1992, Ser. No. 940,711
Term of patent 14 years
U.S. Cl. D21—194



344,775
EXERCISE CYCLING MACHINE
Prakit Lertyaovarit, Montebello, Calif., assignor to Krane Industry Corp., Taipei, Taiwan
Filed Sep. 4, 1992, Ser. No. 940,711
Term of patent 14 years
U.S. Cl. D21—194



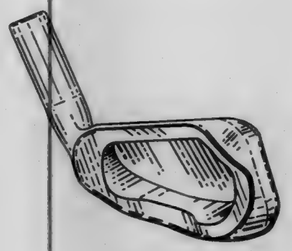
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EXERCISE CYCLING MACHINE
Prakit Lertyaovarit, Montebello, Calif., assignor to Krane Industry Corp., Taipei, Taiwan
Filed Sep. 4, 1992, Ser. No. 940,727
Term of patent 14 years
U.S. Cl. D21—194



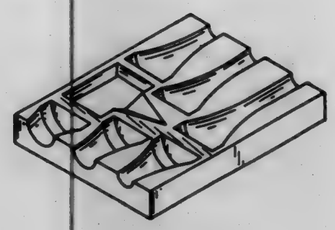
344,777
BASEBALL BAT
Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan
Filed Dec. 27, 1991, Ser. No. 816,078
Term of patent 14 years
U.S. Cl. D21—211



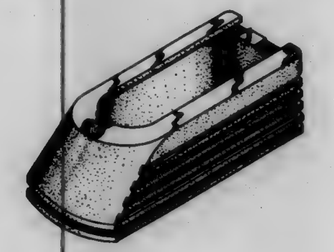
344,778
GOLF CLUB HEAD
Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Continuation-in-part of Ser. No. 784,042, Oct. 28, 1991, Pat. No. Des. 332,812. This application Jan. 12, 1993, Ser. No. 3,556
The portion of the term of this patent subsequent to Jan. 26, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—220



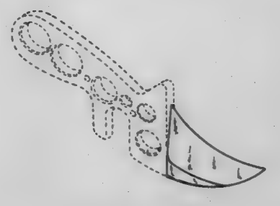
344,779
GOLF TEE SETTING GAUGE
Glenn O. Axne, 121 W. 4th St., Coal Valley, Ill. 61240
Filed Dec. 9, 1991, Ser. No. 804,164
Term of patent 14 years
U.S. Cl. D21—234



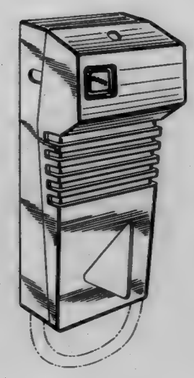
344,780
SUPPLEMENTAL AMMUNITION CONTAINER FOR GUN MAGAZINE
Joel C. Jenkins, 1050 Nash Ave., Lansdale, Pa. 19446
Filed Jun. 25, 1992, Ser. No. 903,869
Term of patent 14 years
U.S. Cl. D22—108



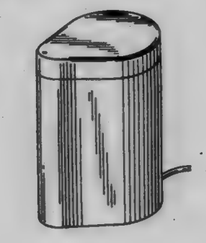
344,781
HUNTING KNIFE BLADE
Garry R. Burch, 1521 Elm Ct., Valparaiso, Ind. 46383
Filed Apr. 23, 1992, Ser. No. 872,522
Term of patent 14 years
U.S. Cl. D22—118



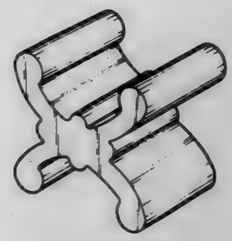
344,782
UNIT FOR LIQUID CONCENTRATE AND DILUENT COMBINATION AND DISPENSING
John M. Fritz, Milwaukee, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jan. 27, 1992, Ser. No. 825,722
Term of patent 14 years
U.S. Cl. D23—200



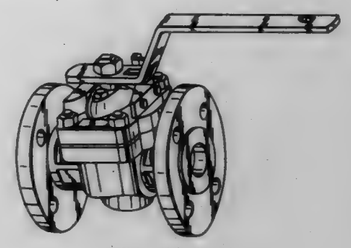
344,783
COUNTER-TOP WATER FILTER
Bernie R. Hirman, Elk River, and Bruce D. Sanski, Bloomington, both of Minn., assignors to Ecowater Systems, Inc., Woodbury, Minn.
Filed Mar. 28, 1990, Ser. No. 501,513
Term of patent 14 years
U.S. Cl. D23—209



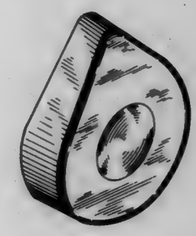
344,784
SADDLE PACKING ELEMENT
James Swingle, Crooksville, Ohio, assignor to Petro Ware, Inc., Crooksville, Ohio
Filed Jun. 8, 1992, Ser. No. 895,387
Term of patent 14 years
U.S. Cl. D23—209



344,785
VALVE
Cal R. Brown, Euclid; Lawrence A. Kohler, Willoughby Hills, and Peter C. Williams, Cleveland Heights, all of Ohio, assignors to Whitey Co., Highland Hts., Ohio
Filed Sep. 25, 1991, Ser. No. 765,107
Term of patent 14 years
U.S. Cl. D23—245



344,786
PLUMBING FITTING HANDLE
Kevin G. Short, Midlothian, and Bruce M. Sauter, Elgin, both of Ill., assignors to Sterling Plumbing Group, Inc., Schaumburg, Ill.
Filed Mar. 6, 1992, Ser. No. 847,967
Term of patent 14 years
U.S. Cl. D23—252

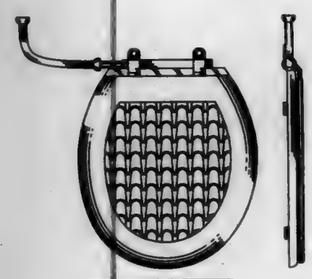


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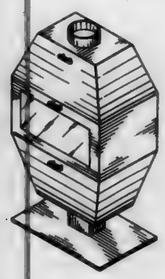
344,787
LAVATORY
Karl G. Ohaus, Chatham, Jeannette M. Long, Lawrenceville, both of N.J., and Jeff E. Walz, Toronto, Canada, assignors to American Standard Inc., New York, N.Y.
Filed Apr. 26, 1991, Ser. No. 692,026
Term of patent 14 years
U.S. Cl. D23—294



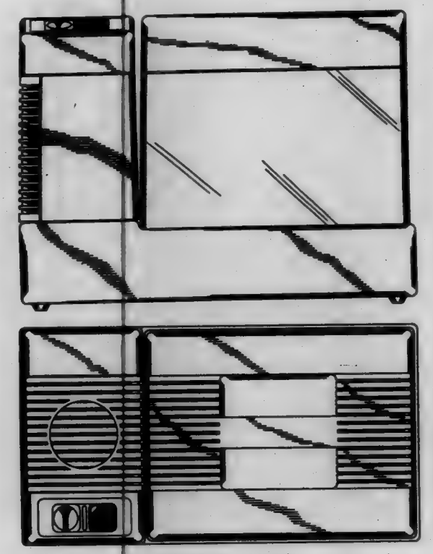
344,788
COMBINED VENTILATED TOILET SEAT AND COVER
Marco G. Castro, 7051 SW. 129th Ave. #5, Miami, Fla. 33183, and Erwin J. Castro, 15605 SW. 74th Circle Dr. Apt. 3, Miami, Fla. 33193
Filed Mar. 22, 1991, Ser. No. 673,488
Term of patent 14 years
U.S. Cl. D23—311



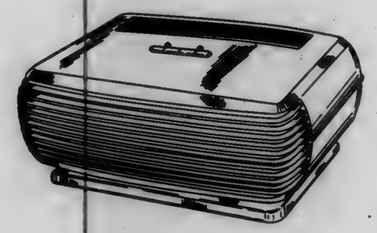
344,789
FIREPLACE
Martin P. Bennigar, 3611½ 46th St., San Diego, Calif. 92105
Filed Jan. 13, 1992, Ser. No. 819,945
Term of patent 14 years
U.S. Cl. D23—343



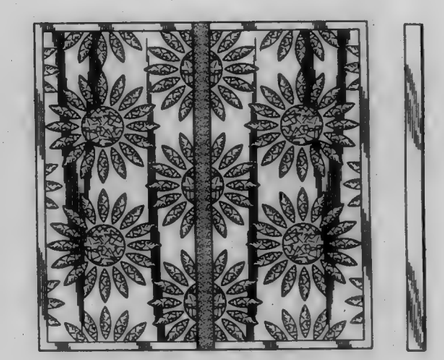
344,790
WARM AIR HUMIDIFIER
Dov Z. Glucksman, Wenham, Mass., and David Lekhtman, Quebec, Canada, assignors to Bionaire, Inc., Lachine, Canada
Filed Feb. 28, 1992, Ser. No. 843,543
Term of patent 14 years
U.S. Cl. D23—356



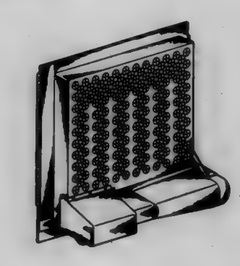
344,791
COMBINED AIR PURIFIER AND IONIZER
Joseph M. Cunning, Cohasset, Mass., assignor to Holmes Products Corp., Milford, Mass.
Filed Feb. 8, 1993, Ser. No. 4,579
Term of patent 14 years
U.S. Cl. D23—344



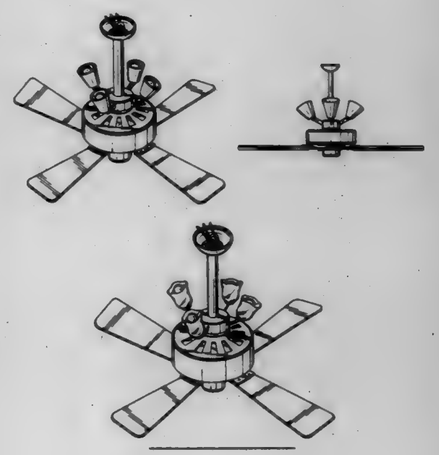
344,792
COMBINED AIR FRESHNER AND HEATING FILTER
Paul Sofia, 1406 Blackrock Rd., Swarthmore, Pa. 19081
Filed Aug. 27, 1992, Ser. No. 935,726
Term of patent 14 years
U.S. Cl. D23—365



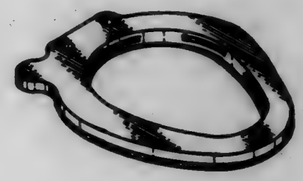
344,793
FILTER UNIT FOR INTAKE AIR OF HELICOPTER TURBINE ENGINES
Lindsay D. Rose, c/o Jayrow Helicopter Pty. Ltd., Moorabbin Airport, Moorabbin, Victoria, Australia
Filed May 1, 1992, Ser. No. 877,022
Claims priority, application Australia, Dec. 6, 1991, 3751/91
Term of patent 14 years
U.S. Cl. D23—365



344,794
COMBINED CEILING FAN AND LIGHT FIXTURE
David L. Galler, 7187 W. Utopia Rd., Glendale, Ariz. 85308
Filed Sep. 18, 1992, Ser. No. 948,914
Term of patent 14 years
U.S. Cl. D23—377

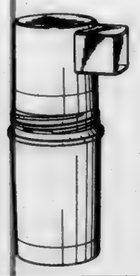


344,795
TOILET AIR REMOVAL UNIT
Jim C. Crowley, Jr., #12 Sandpiper Rd., Hilton Head Island, S.C. 29928
Filed Dec. 13, 1991, Ser. No. 806,458
Term of patent 14 years
U.S. Cl. D23—393



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344,796
COMBINED INHALER AND COVER
Henry R. Sochon, Clifton; Charles M. Huck, Pottersville, and Charles R. Ashley, Pattenberg, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 11, 1992, Ser. No. 897,503
Term of patent 14 years
U.S. Cl. D24—110



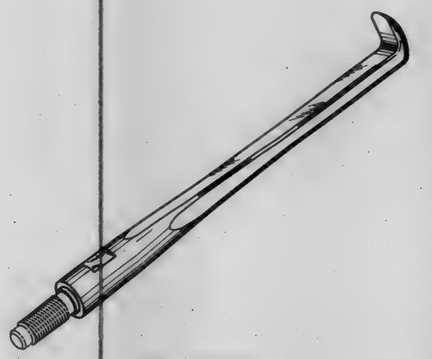
344,797
COMBINED INHALER AND COVER
Henry R. Sochon, Clifton, and Charles R. Ashley, Pattenberg, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 11, 1992, Ser. No. 897,504
Term of patent 14 years
U.S. Cl. D24—110



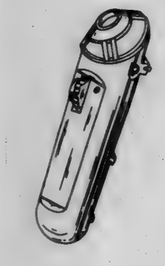
344,798
COVER FOR A HEAD OF A STETHOSCOPE
Steven I. Baskin, 1412 Cherokee La., Bel Air, Md. 21015
Filed Jun. 8, 1992, Ser. No. 895,385
Term of patent 14 years
U.S. Cl. D24—134



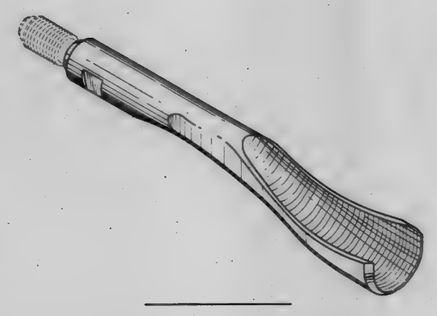
344,799
ULTRASONIC CUTTING TOOL FOR MEDICAL USE
Larry L. Hood, Laguna Hills, and Gregg Hughes, El Toro, both of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.
Filed Jun. 11, 1991, Ser. No. 714,076
Term of patent 14 years
U.S. Cl. D24—144



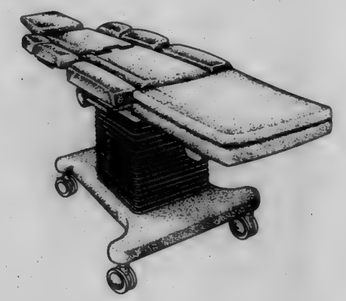
344,800
COMBINED HEARING AID AND GERIATRIC AMPLIFIER
Ulf Lamby, Stockholm, Sweden, assignor to Comento AB, Sweden
Filed Sep. 12, 1991, Ser. No. 758,813
Term of patent 14 years
U.S. Cl. D24—174



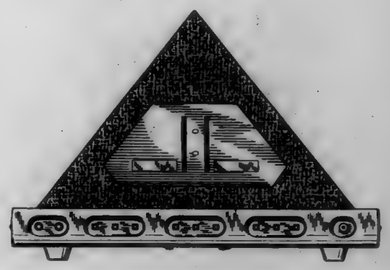
344,801
ULTRASONIC CUTTING TOOL FOR MEDICAL USE
Gregg Hughes, El Toro, and Larry L. Hood, Laguna Hills, both of Calif., assignors to Advanced Osseous Technologies, Inc., Aliso Viejo, Calif.
Filed Jun. 11, 1991, Ser. No. 714,094
Term of patent 14 years
U.S. Cl. D24—144



344,802
PLASTIC SURGERY TABLE
Jay L. Kuck, St. Marys; Keith A. Stickley, Greenville, both of Ohio; Terry J. Simpkins, Sr., and Terry J. Simpkins, Jr., both of Carlsbad, Calif., assignors to Midmark Corporation, Versailles, Ohio
Filed Sep. 20, 1991, Ser. No. 763,755
Term of patent 14 years
U.S. Cl. D24—183



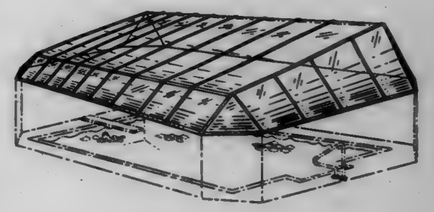
344,803
BIOFEEDBACK TRAINER FOR MONITORING AND DISPLAYING BRAIN WAVE ACTIVITY
Kazuaki Kato, 501, 26-10, Hongo 6-chome, Bunkyo-ku, Tokyo 113, Japan
Filed Nov. 27, 1990, Ser. No. 618,834
Term of patent 14 years
U.S. Cl. D24—186



344,804
VIAL FOR HOLDING AN EXPANDABLE LIQUID
Ralph Muniz, 112 2nd St., #3, Seal Beach, Calif. 90740
Filed Feb. 20, 1992, Ser. No. 839,232
Term of patent 14 years
U.S. Cl. D24—224

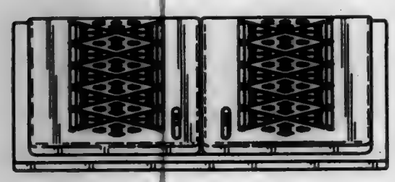


344,805
SWIMMING POOL COVER
Betty M. R. Jones, P.O. Box 90, Madison, Ga. 30650
Filed Sep. 27, 1991, Ser. No. 767,091
Term of patent 14 years
U.S. Cl. D25—2

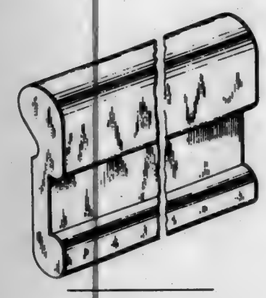


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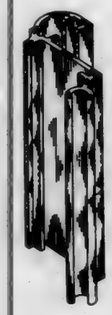
344,806
BASEMENT DOOR
Charles E. Whipkey, Rte. 1 Box 115, Waterford, Ohio 45286
Filed Jun. 14, 1991, Ser. No. 715,217
Term of patent 14 years
U.S. Cl. D25—36



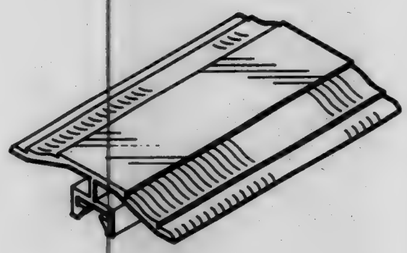
344,807
HAND RAIL
Michael T. Abbaticchio, 16017 Comus Rd., Clarksburg, Md. 20871
Filed Jun. 14, 1992, Ser. No. 899,387
Term of patent 14 years
U.S. Cl. D25—38



344,808
STRUCTURAL EXTRUSION
Robert J. Ehmke, Germantown, and Timothy J. Nolan, Grafton, both of Wis., assignors to Design Specialties, Inc., Milwaukee, Wis.
Filed Jan. 29, 1992, Ser. No. 905,857
Term of patent 14 years
U.S. Cl. D25—119



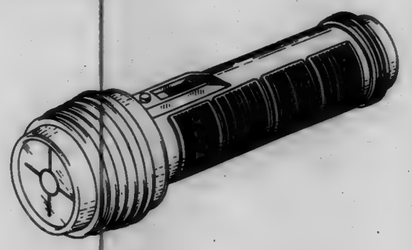
344,809
MULLION STRIP
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,828
Term of patent 14 years
U.S. Cl. D25—121



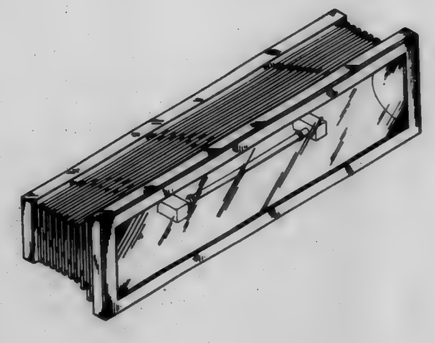
344,810
EDGING STRIP
Geneta M. Nelson, HC65 Box 136, Caddo Gap, Ark. 71935-7515
Filed Dec. 20, 1990, Ser. No. 630,936
Term of patent 14 years
U.S. Cl. D25—163



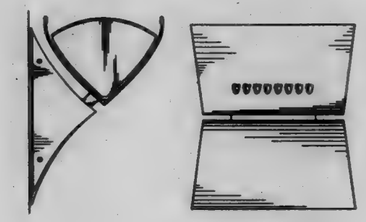
344,811
FLASHLIGHT
Kevin S. Garrity, Madison, Conn., assignor to Garrity Industries, Inc., Madison, Conn.
Continuation of Ser. No. 849,693, Mar. 10, 1992, abandoned.
This application Mar. 23, 1993, Ser. No. 6,363
Term of patent 14 years
U.S. Cl. D26—49



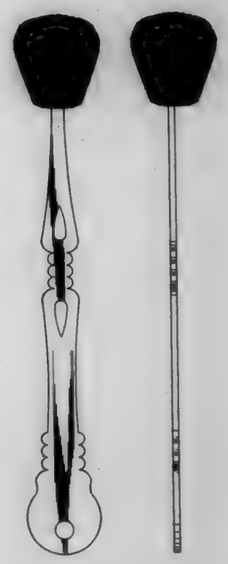
344,812
LIGHT WITH LINEAR LAMP BULB
William J. Collins, 4027 Pleasant Ridge Rd., Boulder, Colo. 80301
Filed Feb. 20, 1992, Ser. No. 839,226
Term of patent 14 years
U.S. Cl. D26—75



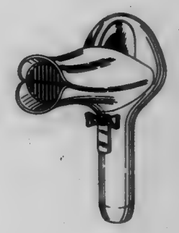
344,813
LIGHTING FIXTURE
Ferdinand A. Porsche, Flugplatzstr. 29, 5700 Zell am See, Austria
Filed Mar. 22, 1991, Ser. No. 674,720
Claims priority, application Italy, Sep. 25, 1990, 53 257-B/90
Term of patent 14 years
U.S. Cl. D26—87



344,814
BACK DUSTER
Ethel A. Fath, 3155 E. Curtis Rd., Midland, Mich. 48640-8433
Filed Feb. 18, 1992, Ser. No. 836,929
Term of patent 14 years
U.S. Cl. D28—8



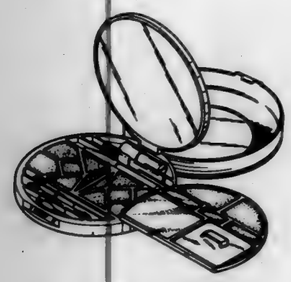
344,815
HAIR DRYER
Jurgen Assmann, Michelbach, Fed. Rep. of Germany, assignor to WIK Elektro-Hausgeraete, Michelbach, Fed. Rep. of Germany
Filed Feb. 9, 1990, Ser. No. 477,665
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1989, M89 08 320.2
Term of patent 14 years
U.S. Cl. D28—13



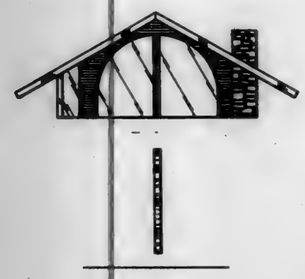
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Patent Not Issued For This Number

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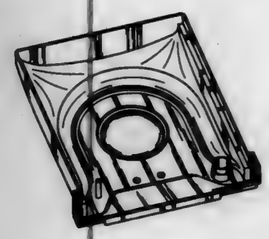
344,817
COSMETIC CASE
Tien-Tsai Chen, No. 69, Sec. 1, Chung Hua W. Rd., Tainan City, Taiwan
Filed Dec. 9, 1991, Ser. No. 804,170
Term of patent 14 years
U.S. Cl. D28—82



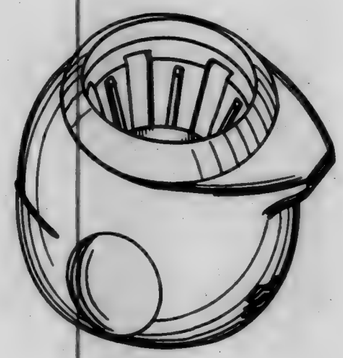
344,818
REFLECTIVE PET TOY
J. Holley Messing, 613 Egan St., Vicksburg, Miss. 39180
Division of Ser. No. 709,425, Jun. 3, 1991, Pat. No. Des. 337,867. This application May 10, 1993, Ser. No. 8,129
Term of patent 14 years
U.S. Cl. D30—160



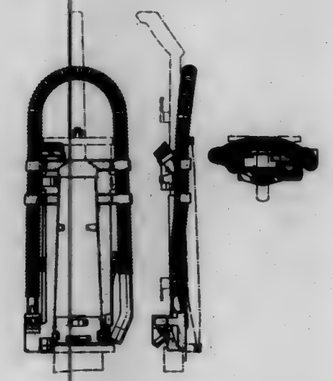
344,819
DISHWASHER TUB BOTTOM WALL
Stephen D. Schober, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa
Filed Apr. 27, 1992, Ser. No. 874,769
Term of patent 14 years
U.S. Cl. D32—3



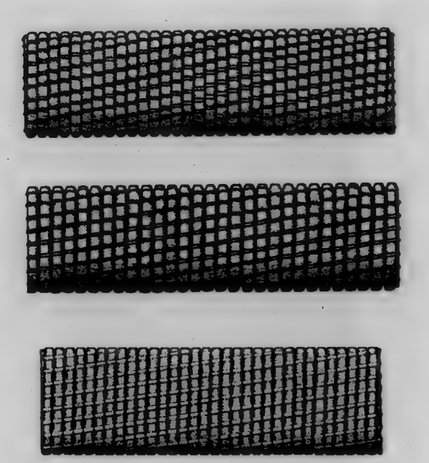
344,820
LAUNDRY DETERGENT DISPENSING DEVICE
Henri Cornette, Pontoise, and Jacky P. Duquet, Herbeville, all of France, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Filed Sep. 16, 1991, Ser. No. 763,401
Claims priority, application France, Mar. 20, 1991, 91-1734
Term of patent 14 years
U.S. Cl. D32—30



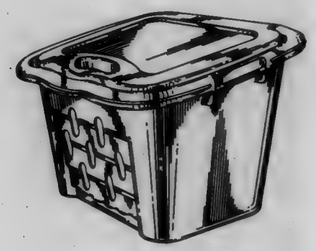
344,821
COMBINED VACUUM CLEANER HOSE AND TOOL RACK
Darwin T. McKnight, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Jan. 30, 1992, Ser. No. 828,641
Term of patent 14 years
U.S. Cl. D32—31



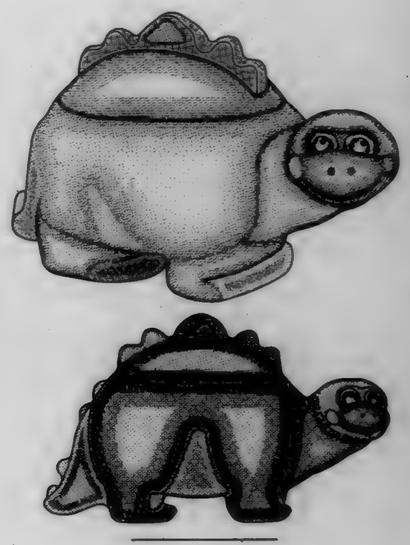
344,822
VACUUM CLEANER HOSE WITH A MULTI-FACETED APPEARANCE
Michael S. Miller, Millersburg; Lloyd E. Myers, Canton, and Daniel W. Shetler, North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Oct. 4, 1991, Ser. No. 771,249
Term of patent 14 years
U.S. Cl. D32—31



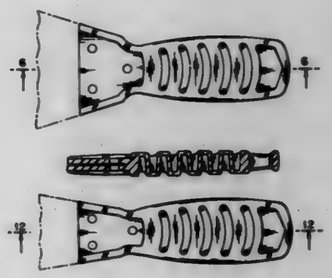
344,823
LAUNDRY HAMPER
Mitchell Wilgus, and Stacy L. Wolfe, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 21, 1992, Ser. No. 948,952
Term of patent 14 years
U.S. Cl. D32—37



344,824
LAUNDRY HAMPER
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 8, 1993, Ser. No. 9,216
Term of patent 14 years
U.S. Cl. D32—37

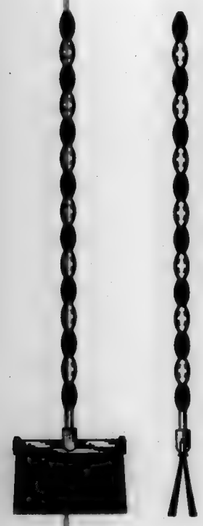


344,825
TOOL HANDLE
Donald P. Cummings, Sturbridge; Robert Howitt, Leominster, and David H. Mallalieu, Springfield, all of Mass., assignors to Hyde Manufacturing Company, Southbridge, Mass.
Continuation-in-part of Ser. No. 238,747, Aug. 31, 1988, Pat. No. Des. 319,379. This application Sep. 18, 1990, Ser. No. 584,589
The portion of the term of this patent subsequent to Aug. 27, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—49

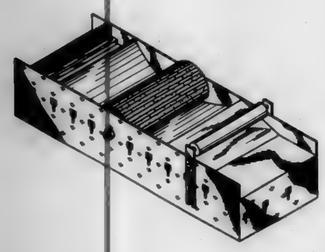


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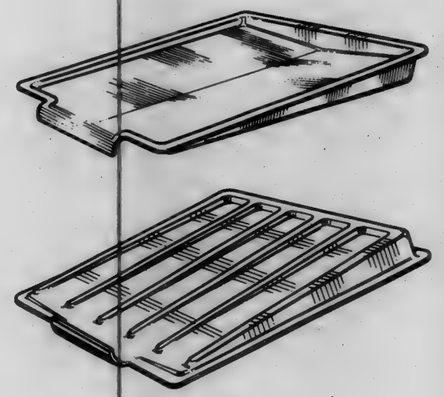
344,826
MOP
Earl W. Bryan, 1712 SE. 27th St., Amarillo, Tex. 79120
Filed Jun. 10, 1991, Ser. No. 712,644
Term of patent 14 years
U.S. Cl. D32—51



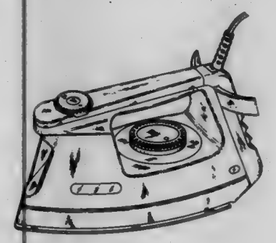
344,827
STAIN AND SEALER TRAY
James F. Berger, and Sheila L. Berger, both of 207 E. Galena, Box 13, Big Rock, Ill. 60511
Filed Apr. 22, 1991, Ser. No. 688,690
Term of patent 14 years
U.S. Cl. D32—53.1



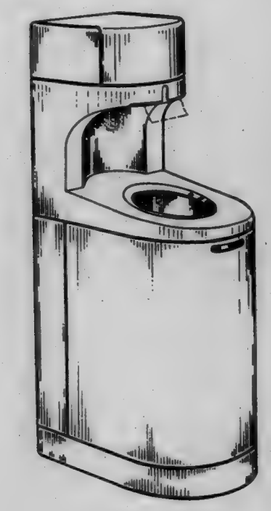
344,828
DRAIN PAD FOR DISHES
Thomas D. Adams, 7721 Golfcrest Dr., San Diego, Calif. 92119
Filed Aug. 5, 1991, Ser. No. 740,463
Term of patent 14 years
U.S. Cl. D32—56



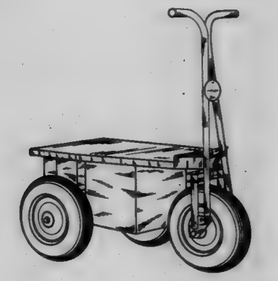
344,829
STEAM IRON
Monte Levin, New York, N.Y., assignor to The Singer Company NV, Curacao, Netherlands Antilles
Filed Jun. 1, 1992, Ser. No. 891,475
Term of patent 14 years
U.S. Cl. D32—70



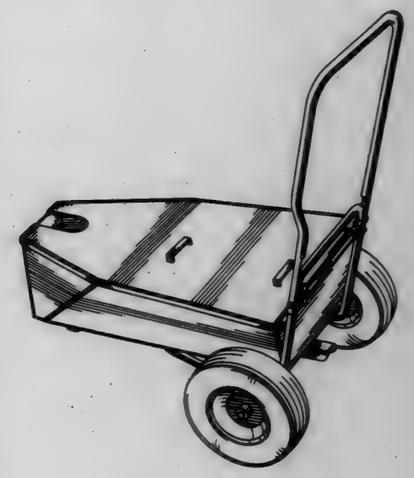
344,830
FREESTANDING MOISTENED TOWELETTE DISPENSER AND WASTE DISPOSAL DEVICE
Harold A. Carter, and Teresa G. Carter, both of Costa Mesa, Calif., assignors to Robert E. Blazier; Connie Kamalvand and Michael Kamalvand, all of Lake Placid, Fla.
Filed Jul. 20, 1992, Ser. No. 915,555
Term of patent 14 years
U.S. Cl. D34—1



344,831
THREE WHEELED CART
David W. McMuracky, 520 Wellington Street, Unit 5, London, Ontario, Canada N6A 3R2
Filed Aug. 13, 1991, Ser. No. 750,411
Term of patent 14 years
U.S. Cl. D34—18



344,832
PAINT HOPPER ASSEMBLY
Norman A. Cyphers, Rogers; Dwaine D. Straight, Mounds View, and Larry M. Berens, Blaine, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Sep. 29, 1992, Ser. No. 953,587
Term of patent 14 years
U.S. Cl. D34—25

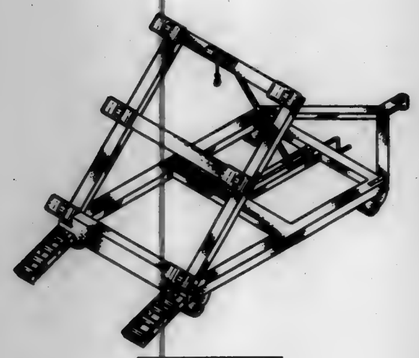


344,833
HAND TRUCK
Allen Apter; Carl Apter, both of Ambler; Lee Smeltz, Telford, and Ray Hernandez, Bethlehem, all of Pa., assignors to Wesco Manufacturing Co., Lansdale, Pa.
Division of Ser. No. 564,985, Aug. 9, 1990. This application Nov. 10, 1992, Ser. No. 1,443
Term of patent 14 years
U.S. Cl. D34—26

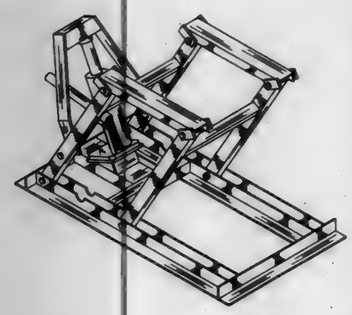


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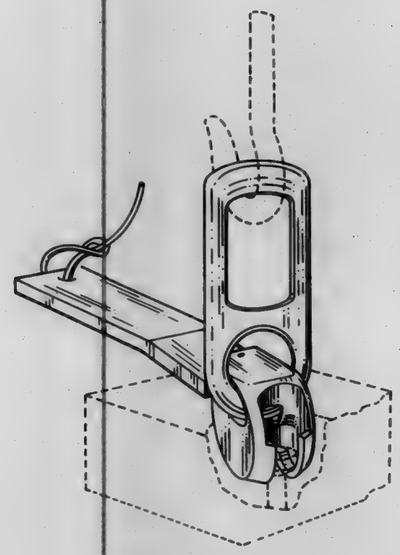
344,834
PONTOON BOAT LAUNCH
Richard Ries, 1340 South St., P.O. Box 62, Dansville, Mich. 48819
Filed Apr. 30, 1992, Ser. No. 876,023
Term of patent 14 years
U.S. Cl. D34—28



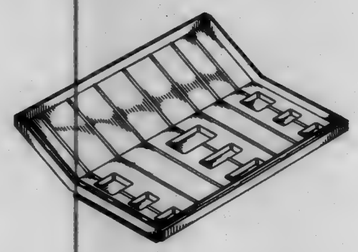
344,835
LIFTING DEVICE
Lawrence A. MacEachern, 9700 Whitefield, East Jordan, Mich. 49727
Filed Oct. 3, 1991, Ser. No. 774,057
Term of patent 14 years
U.S. Cl. D34—31



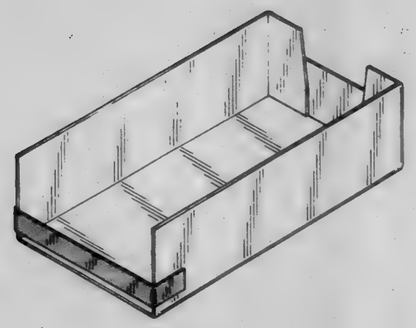
344,836
DEVICE FOR LIFTING TILT-UP CONCRETE WALLS WITH GROUND CONTROL RELEASE
Lowell C. Huffman, 955 Hurricane Shoals Rd., Lawrenceville, Ga. 30243
Filed Sep. 21, 1992, Ser. No. 948,891
Term of patent 14 years
U.S. Cl. D34—35



344,837
AIR FREIGHT PALLET
Thomas J. Perry, Box 822, Fairhaven, Mass. 02719
Filed Sep. 23, 1992, Ser. No. 949,123
Term of patent 14 years
U.S. Cl. D34—38



344,838
TRANSPORT CRATE
Jan Hakansson, Eslov, Sweden, assignor to Tetra Laval Holdings & Finance SA, Pully, Switzerland
Filed Sep. 4, 1991, Ser. No. 754,705
Claims priority, application Sweden, Mar. 4, 1991, 910480
Term of patent 14 years
U.S. Cl. D3—304



344,839
CREMATION URN
Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Sep. 22, 1992, Ser. No. 948,784
Term of patent 14 years
U.S. Cl. D99—5



344,840
CREMATION URN
Marcus N. May, Cincinnati, Ohio, and Daniel J. Parker, Connersville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.
Filed Sep. 22, 1992, Ser. No. 948,785
Term of patent 14 years
U.S. Cl. D99—5

344,841
REPOSITORY FOR DRIVE-THROUGH SERVICE WINDOWS
Peter C. Rogers, Excelsior; Michael W. Morgan, Shorewood; Samuel H. Rogers, Minnetonka, and Bradley C. Nordgren, Maple Plain, all of Minn., assignors to Peter Rogers and Associates, Minneapolis, Minn.
Filed Dec. 27, 1991, Ser. No. 814,909
Term of patent 14 years
U.S. Cl. D99—28

344,842
AUTOMATIC LEADED GLASS ADDRESS OR NAME IDENTIFICATION MAILBOX SIGN
Ricky L. Mitchell, 4551 E. 52nd St., Odessa, Tex. 79762
Filed Nov. 9, 1990, Ser. No. 611,153
Term of patent 14 years
U.S. Cl. D99—32



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF MARCH, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

ABB VectoGray Inc.: *See*—
Gariepy, James A.; Lugo, Rodolfo Z.; and Danner, B. Lee, 5,290,126, Cl. 405-169.000.

ABB Vetco Gray Inc.: *See*—
Smith, John D., 5,290,076, Cl. 292-25.000.

Abbott Laboratories: *See*—
Fino, James R., 5,290,925, Cl. 536-25.320.
Grabenkort, Richard W., 5,289,858, Cl. 141-97.000.

Abe, Akira: *See*—
Muramatsu, Gyo; Abe, Akira; Yoshida, Kiyohide; Sumiya, Satoshi; Matsumura, Nobuyuki; and Takahashi, Yoshikazu, 5,290,530, Cl. 423-239.100.

Abe, Hideo, to NEC Corporation. One-chip data processor with built-in A/D converter for automatically repeating A/D conversions without instructions from a CPU. 5,291,197, Cl. 341-141.000.

Abe, Katsuji: *See*—
Kodama, Mikio; Yano, Motoichi; Umeyama, Satoshi; Fujiwara, Takayoshi; and Abe, Katsuji, 5,290,855, Cl. 525-64.000.

Abe, Masahiro; Sugiura, Tatsumi; Nanataki, Tsutomu; and Yano, Shinsuke, to NGK Insulators, Ltd. Dielectric ceramic composition used for producing dielectric resonator or filter for microwave application. 5,290,740, Cl. 501-139.000.

Abe, Mitsuo: *See*—
Tomishima, Hiroshi; Nishiyama, Toshikazu; Yamada, Nobuyuki; Kumasaka, Noriyuki; and Abe, Mitsuo, 5,290,738, Cl. 501-104.000.

Abe, Naoto: *See*—
Hasegawa, Masanobu; Yoshii, Minoru; and Abe, Naoto, 5,291,023, Cl. 250-548.000.

Abe, Tatsuhiko: *See*—
Tamai, Haruhisa; and Abe, Tatsuhiko, 5,291,412, Cl. 364-449.000.
Tamai, Haruhisa; and Abe, Tatsuhiko, 5,291,413, Cl. 364-449.000.
Tamai, Haruhisa; and Abe, Tatsuhiko, 5,291,414, Cl. 364-449.000.

Abecassis, Max. Wallcoverings storage and retrieval system. 5,291,395, Cl. 364-401.000.

Abraham, Donald J.; Mahran, Mona; Mehanna, Ahmed; and Randad, Ramnarayan, to Center of Innovative Technology, The. Using allosteric hemoglobin modifiers to decrease oxygen affinity in blood. 5,290,803, Cl. 514-421.000.

Abraham, Robert L.; Rosa, Cynthia A.; Moore, Richard E.; Rich, William L.; Shackelford, Floyd W.; Tiller, John R., Jr.; and Briggs, Richard S., Jr., to International Business Machines Corp. System for persistent and delayed allocation object reference in an object oriented environment. 5,291,593, Cl. 395-600.000.

Acme Electric Corporation: *See*—
Tsenter, Boris; and Anderman, Menahem, 5,290,640, Cl. 429-9.000.

ActMedia, Inc.: *See*—
Kringel, George; Frichette, Robert S.; and Richardson, James E., 5,289,652, Cl. 40-642.000.

Actown-Electrocoil, Inc.: *See*—
Gill, John M.; and Clausing, Robert H., 5,291,099, Cl. 315-119.000.

Adachi, Kazunari; and Shibata, Noriyoshi, to Aisin Seiki Kabushiki Kaisha. Two speed mechanical supercharger. 5,289,813, Cl. 123-559.300.

Adachi, Masahiko: *See*—
Makino, Sueyoshi; Inagi, Tateyuki; Ishizuka, Hideo; Shimada, Tadashi; Nishikiori, Asashi; Suwa, Yoshiaki; and Adachi, Masahiko, 5,289,634, Cl. 29-890.124.

Adachi, Masatomo: *See*—
Shikata, Osamu; Sugiura, Hirotada; Adachi, Masatomo; and Isono, Kazunori, 5,289,886, Cl. 173-181.000.

Adachi, Takao: *See*—
Matsumoto, Michio; Hayashi, Tomoo; Miyauchi, Motoyuki; Kato, Kenji; and Adachi, Takao, 5,291,393, Cl. 364-191.000.

Adair, Edwin L. Laparoscopic surgical ligation and electrosurgical coagulation and cutting device. 5,290,284, Cl. 606-37.000.

Adam, Gerard: *See*—
Le Baut, Guillaume; Babingui, Jean-Paul; Robert, Jean-Michel; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,290,797, Cl. 514-337.000.

Adam, Peter; Seuffert, Werner; Hofmann, Manfred; and Muller, Hans-Joachim, to Siemens Aktiengesellschaft. Electric motor with watertight construction. 5,291,088, Cl. 310-88.000.

Adams, Allen R., Jr.: *See*—
Morgan, James D.; Adams, Allen R., Jr.; Nimon, Robert E.; and Read, Edgar L., 5,291,489, Cl. 370-85.100.

Adams, Gary V.: *See*—
Smith, Bradley W.; Adams, Gary V.; and Rasmussen, Kirk, 5,290,059, Cl. 280-728.00A.

Adams, John A.: *See*—
Baker, Bruce D.; Corey, Robert L.; Adams, John A.; and Ross, Edward W., 5,291,535, Cl. 378-22.000.

Adams, Lorna D.; and Adams, Mark D. Mobile pediatrics cart. 5,290,058, Cl. 280-651.000.

Adams, Mark D.: *See*—
Adams, Lorna D.; and Adams, Mark D., 5,290,058, Cl. 280-651.000.

Adir et Compagnie: *See*—
Le Baut, Guillaume; Babingui, Jean-Paul; Robert, Jean-Michel; Renard, Pierre; Renaud de la Faverie, Jean-Francois; and Adam, Gerard, 5,290,797, Cl. 514-337.000.

Adishian, Gary C., to ENI Div. of Astec America, Inc. High-power RF device with heat spreader bushing. 5,291,063, Cl. 257-712.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Ainsworth, Robert D.; Wand, Bruce H.; and Jacobson, David T., 5,290,230, Cl. 604-96.000.

Advanced Elastomer Systems, L.P.: *See*—
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Breton, Claude; and Ninane, Leon, to Solvay & Cie (Societe Anonyme). Process for the crystallization of sodium bicarbonate. 5,290,322, Cl. 23-302.007.

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Bridges, Jeffrey T.; Maguire, Jeffrey E.; and Rossbach, Paul C., to Motorola, Inc. Decoder/comparator and method of operation. 5,291,076, Cl. 307-449.000.

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Harian, Thomas A.; Bridges, Marg L.; and Long, Joseph F., 5,289,835, Cl. 132-313.000.

Bridges, William B.: *See*—
Schaffner, James H.; and Bridges, William B., 5,291,565, Cl. 385-3.000.

Bridgestone Corporation: *See*—
Katsumata, Shiro; and Kata, Takehiro, 5,290,163, Cl. 425-47.000.
Kusano, Yukihiro; Yoshikawa, Masato; Naito, Kazuo; Okazaki, Satiko; and Kogoma, Masahiro, 5,290,378, Cl. 156-272.600.
Sakurai, Ryo; Kurachi, Yasuo; Fukuyama, Yoshiki; Maruyama, Takayuki; and Saito, Tasuku, 5,290,821, Cl. 521-82.000.
Siegenthaler, Karl J., 5,290,376, Cl. 156-129.000.

Briggs, Richard S., Jr.: *See*—
Abraham, Robert L.; Ross, Cynthia A.; Moore, Richard E.; Rich, William L.; Shackelford, Floyd W.; Tiller, John R., Jr.; and Briggs, Richard S., Jr., 5,291,593, Cl. 395-600.000.

Briggs & Stratton Corporation: *See*—
Grimmer, Larry R., 5,289,705, Cl. 70-252.000.
Krebs, Ronald R.; and Elinski, Kevin J., 5,289,706, Cl. 70-252.000.

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Carr, Michael D.; and Morrison, David G., 5,291,284, Cl. 348-415.000.
Devlin, William J.; Cooper, David M.; Spurdens, Paul C.; Cole, Simon; Lealman, Ian F.; and Isaac, Joseph J., 5,291,328, Cl. 359-344.000.

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Douglas, Arthur D.; Baldwin, Freddie A.; and Brittingham, Alan L., 5,290,974, Cl. 181-228.000.

Britto, Ignatius L.; Meade, Alexander D.; Murthy, Ashok; Shakib, Iraj D.; and Voit, William F., Jr., to Lexmark International, Inc. Imaging apparatus with straight path fixing. 5,291,255, Cl. 355-285.000.

Brock, James R.; and Gelfond, Steven M., to AT&T Bell Laboratories. ISDN interface. 5,291,493, Cl. 370-110.100.

Brock, Michael P.: *See*—
Hau, Shyigue; and Brock, Michael P., 5,290,903, Cl. 528-53.000.

Brockmanns, Karl-Josef; Hartel, Robert; and Derichs, Josef, to W. Schlafhorst AgG & Co. Pot spinning assembly with movable pot. 5,289,675, Cl. 57-312.000.

Brody, Theodore M.: *See*—
Sawyer, Donald C.; Langham, Marlee A.; and Brody, Theodore M., 5,290,775, Cl. 514-224.800.

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Bender, Dietmar; Bronstert, Klaus; and Mach, Helmut, 5,290,874, Cl. 525-314.000.

Brooks, Rodney R.; and Winter, Michael J., to Courtaulds Coatings (Holdings) Limited. Coating composition. 5,290,601, Cl. 427-412.400.

Brooktrout Technology, Inc.: *See*—
Giler, Eric R.; and Duehren, David W., 5,291,546, Cl. 379-100.000.

Broome, Jeffery: *See*—
Filgas, David M.; McFadden, Gordon M.; Broome, Jeffery; York, James F.; and Wolford, R. Scott, 5,291,570, Cl. 385-78.000.

Brors, Daniel L., to Torrex Equipment Corporation. Optoelectronic detector for chemical reactions. 5,291,030, Cl. 250-573.000.

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Woratyla, John A.; Kaufman, John W.; and Broschard, John L., III, 5,290,174, Cl. 439-59.000.

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Fujioka, Masaya, 5,290,346, Cl. 106-21.00A.
Ohashi, Tsuyoshi, 5,291,222, Cl. 346-108.000.

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Sierra, David H.; Luck, Edward E.; and Brown, Dennis M., 5,290,552, Cl. 424-94.640.

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Wagner, Karl F., Jr; O'Neil, Kevin S.; and Brown, Doyle E., 5,289,624, Cl. 29-402.080.

Brown, James D.: *See*—
Inculet, Ion I.; Castle, G. S. P.; and Brown, James D., 5,289,922, Cl. 209-127.100.

Brown, Sterling B.; and Fewkes, Edward J., to General Electric Company. Compatibilization of polyphenylene ether with polyester using polystyrene-polycarbonate copolymer. 5,290,863, Cl. 525-92.000.

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Robertson, Betty H.; Nainan, Omana V.; Brown, Vicki K.; Margolis, Harold S.; and Khanna, Bhawna, 5,290,677, Cl. 435-5.000.

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Crook, Neal A.; Bruce, Paul L.; and Galuszka, Robert J., 5,291,529, Cl. 375-109.000.

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Deits, Scott H.; Krech, Gary T.; Turner, Robert D.; and Bruce, Ronald B., 5,290,070, Cl. 384-625.000.

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Vercimak, Charmaine; Savage, Steven D.; and Brucker, Gregory G., 5,290,277, Cl. 606-15.000.

Bruckert, Eugene J., to Motorola, Inc. Slot hopped FD/TD/CDMA. 5,291,475, Cl. 370-95.100.

Bruckert, William F.; Bissett, Thomas D.; and Melvin, James, to Digital Equipment Corporation. Method of handling errors in software. 5,291,494, Cl. 371-11.300.

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Maystre, Francois; and Bruno, Alfredo E., 5,290,520, Cl. 422-82.050.

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Wirth, Allan; Jankevics, Andrew J.; Landers, Franklin M.; Bruno, Theresa L.; D'Amato, Dante P.; Schmutz, Lawrence E.; Gilligan, Lawrence H.; and Duncan, John L., 5,291,334, Cl. 359-622.000.

Brunswick Corporation: *See*—
Donahue, Raymond J.; Cleary, Terrance M.; and Hesterberg, William G., 5,290,373, Cl. 148-549.000.
Karls, Michael A.; Koepsel, Roger E.; and Steiner, Ronald M., 5,290,147, Cl. 416-34.000.

Bryan, David A.: *See*—
Hulyalkar, Samir N.; Bryan, David A.; and Basile, Carlo, 5,291,289, Cl. 348-723.000.

Bryant, Yvonne G.: *See*—
Colvin, David P.; Bryant, Yvonne G.; and Mulligan, James C., 5,290,904, Cl. 428-68.000.

Bryce, Peter W.: *See*—
Foster, William S.; Fitzgerald, Craig W.; and Bryce, Peter W., 5,290,127, Cl. 405-172.000.

Bryson, Brent E.: *See*—
Vaziri, Faramarz; Bolon, Brian; Bryson, Brent E.; and Emerick, John, 5,291,479, Cl. 370-58.200.

BTG Kalle Inventing AG: *See*—
Enarson, Knut, 5,290,486, Cl. 261-66.000.

Bucci, Enrico; and Fronticelli, Clara, to University of Maryland Baltimore, The. Hemoglobin intramolecularly cross-linked with trivalent reagents. 5,290,919, Cl. 530-385.000.

Buchwald, Claus. Device for purifying a flow of liquid by means of ultraviolet radiation. 5,290,439, Cl. 210-198.100.

Budai, Peter: *See*—
Higgins, Philip K.; Budai, Peter; and Severance, Wayne S., Jr., 5,290,995, Cl. 219-121.440.

Bui-Khac, Trung, to Haemacure Biotech Inc. Process for the obtention of a biological adhesive made of concentrated coagulation factors by acidic precipitation. 5,290,918, Cl. 530-381.000.

Bujard, Patrice, to Ciba-Geigy Corporation. Heat-conductive adhesive films, laminates with heat-conductive adhesive layers and the use thereof. 5,290,624, Cl. 428-209.000.

Bull HN Information Systems Inc.: *See*—
Bowden, Raymond D., III; Lemay, Richard A.; Nibby, Chester M., Jr.; and Somers, Jeffrey S., 5,291,580, Cl. 395-425.000.

Bunn, Billy A.: *See*—
Griffin, James W.; Bunn, Billy A.; Dunning, Darrell; and Patterson, Larry E., 5,290,441, Cl. 210-232.000.

Buonomo, Franco: *See*—
Bellussi, Giuseppe; Clerici, Mario G.; Giusti, Aldo; and Buonomo, Franco, 5,290,533, Cl. 423-704.000.

Burdeska, Kurt: *See*—
Leppard, David G.; and Burdeska, Kurt, 5,290,952, Cl. 549-72.000.

Burgdorf, Jochen; Reinartz, Hans-Dieter; Steffes, Helmut; Maas, Joachim; and Dinkel, Dieter, to Alfred Teves GmbH. Hydraulic anti-locking brake unit. 5,290,098, Cl. 303-115.400.

Burke, James E.; Miller, Lester; and Perno, Salvatore G., to Picker International, Inc. X-ray tube with ferrite core filament transformer. 5,291,538, Cl. 378-135.000.

Burke, Terence; Weiner, Maurice; and Zhao, Jian H., to United States of America, Army. AlGaAs/GaAs thyristor. 5,291,041, Cl. 257-184.000.

Burks, Geoffrey R. Calf carrier. 5,289,801, Cl. 119-728.000.

Burtion, Robert; Deutsch, Christian; and Schmit, Jean-Paul, to Sollac. Roller for supporting and/or driving flat products, comprising a sensor. 5,290,216, Cl. 492-11.000.

Burns, Gary T.; Decker, Gary T.; and Roy, Aroop K., to Dow Corning Corporation. Method for preparation of carbinol-functional siloxanes. 5,290,901, Cl. 528-34.000.

Burns, William K.; Moeller, Robert P.; and Howerton, Marta M., to United States of America, Navy. Depolarized light source for fiber optic sensors. 5,291,266, Cl. 356-345.000.

Burroughs Wellcome Co.: *See*—
Jackson, William P.; Harris, Clifford J.; Arrowsmith, Richard J.; Dann, John G.; O'Connor, Kevin J.; and Booth, Robert F. G., 5,290,814, Cl. 514-596.000.
Matthewson, Michael D., 5,290,770, Cl. 514-86.000.

Burrows, Benjamin E.: *See*—
Regan, John F., deceased; and Burrows, Benjamin E., 5,290,853, Cl. 524-779.000.

Burrows, Bruce D., to Ebtech, Inc. Bottled water station with removable reservoir. 5,289,951, Cl. 222-146.600.

Burstein, Neal I.; Williams, John M., Sr.; Nowicki, Michael J.; and Jeffers, William Q., to Helios Inc. Method for the joining of ocular tissues using laser light. 5,290,272, Cl. 606-4.000.

Burton, Stephen J.: *See*—
Snider, S. Duke; and Burton, Stephen J., 5,291,089, Cl. 310-90.000.

Busby, David C.: *See*—
Nielsen, Kenneth A.; Busby, David C.; Donohue, Marc D.; and Glancy, Charles W., 5,290,603, Cl. 427-421.000.

Bush, Charles S.: *See*—
Cooper, David H.; and Bush, Charles S., 5,290,168, Cl. 433-29.000.

Bush, Mary E.: *See*—
Fain, Eric S.; and Bush, Mary E., 5,290,299, Cl. 606-142.000.

Buslepp, Kenneth J.: *See*—
Trombley, Douglas E.; Buslepp, Kenneth J.; and Albertson, William C., 5,289,812, Cl. 123-533.000.

Bussword, Pat: *See*—
Follett, Brian; Herron, Richard; Dayton, Wendy; Bussword, Pat; Manders, Don; and Farries, James, 5,289,650, Cl. 40-310.000.

Buttery, Roger A., to Pall Corporation. Filtering apparatus. 5,290,445, Cl. 210-445.000.

Byers, Thomas L. Photo display devices. 5,289,651, Cl. 40-533.000.

Byker, Harlan J., to Gentex Corporation. Triphenazinoxazines. 5,290,930, Cl. 544-99.000.

C. I. Kasei Co., Ltd.: *See*—
Otsuka, Eiichi, 5,290,844, Cl. 524-426.000.
Teranuchi, Michiyoshi; Shimoguchi, Masanori; Kameda, Takahide; and Jonsson, Svein, 5,290,045, Cl. 277-1.000.

C. R. Bard, Inc.: *See*—
Crittenden, James F., 5,290,247, Cl. 604-171.000.
Elton, Richard K., 5,290,585, Cl. 427-2.000.

Cacciotti, Paul V.: *See*—
Vallelunga, Anthony J.; Cacciotti, Paul V.; and Cacciotti, Vincent E., 5,290,255, Cl. 604-197.000.

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Vallelunga, Anthony J.; Cacciotti, Paul V.; and Cacciotti, Vincent E., 5,290,255, Cl. 604-197.000.

Caddock Electronics, Inc.: *See*—
Strief, Milton J.; and Martin, David L., 5,291,178, Cl. 338-226.000.

Cain, James H.; Moschauer, Michael W.; Maner, Andrew J.; and Hutchings, Richard C., to Eastman Kodak Company. Support ski for film cleaning device. 5,291,258, Cl. 355-296.000.

Calcerano, Victor; and Ricci, Joseph T., to Duracell Inc. Method of ordering, shipping and merchandising goods and shipping/display assembly therefor. 5,291,396, Cl. 364-401.000.

Caldo International, Inc.: *See*—
Campana, Patsie C., 5,290,326, Cl. 44-519.000.

Cali, Matthew F.: *See*—
Chalco, Pedro A.; Cali, Matthew F.; Economikos, Laertis; and Speidell, James L., 5,289,632, Cl. 29-846.000.

California Institute of Technology: *See*—
Kaiser, William J.; Waltman, Steven B.; and Kenny, Thomas W., 5,290,102, Cl. 324-120.000.
Zewert, Thomas; and Harrington, Michael G., 5,290,411, Cl. 204-128.800.
Callander, Douglas D.: *See*—
Tung, William C.; Tung, Deborah A.; Callander, Douglas D.; and Bauer, Richard G., 5,290,830, Cl. 524-35.000.
Callen, Patrick J.: *See*—
Bingley, John D.; and Callen, Patrick J., 5,289,998, Cl. 244-173.000.
Calundann, Gordon W.; Herold, Friedrich; Chenevey, Edward C.; and Chung, Tai-Shung, to Hoechst Celanese Corp. Blends of polybenzimidazoles and aromatic polyamides, aromatic polyamide-hydrazides or aromatic polyamides containing heterocyclic linkages. 5,290,884, Cl. 525-432.000.
Calzaturificio Tecnica SpA: *See*—
Marega, Antonello; and Gabrielli, Andrea, 5,289,645, Cl. 36-54.000.
Cambou, Bertrand F.: *See*—
Ristic, Ljubisa; Dunn, William C.; Cambou, Bertrand F.; Terry, Lewis E.; and Roop, Raymond M., 5,291,607, Cl. 395-750.000.
Cameron, Thomas B.; and Smith, Edward F., III, to J. M. Ney Company, The. Dental alloy and restoration made therewith. 5,290,371, Cl. 148-442.000.
Camiener, Gerald W. Visualization system for retrieval, identification, and positioning of biological samples for subsequent microscopic examination. 5,290,706, Cl. 436-174.000.
Camis, Thomas: *See*—
Storlie, Chris A.; Camis, Thomas; and Bearss, James G., 5,291,251, Cl. 355-271.000.
Campana, Patsie C., to Caldo International, Inc. Fuel package. 5,290,326, Cl. 44-519.000.
Campbell, Alton. Coffee filter retainer. 5,290,444, Cl. 210-473.000.
Campbell, Chester D.; Harper, Sandra L.; Jain Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., to Parker-Hannifin Corporation. Apparatus and method for mass flow control of a working fluid. 5,289,692, Cl. 62-181.000.
Campbell, Iain J.; Lips, Alexander; and Morley, Wayne G., to Unilever Patent Holdings B.V. Whippable, non-dairy cream based on liquid oil (II). 5,290,581, Cl. 426-570.000.
Campbell, William P. Hypodermic injection device. 5,290,233, Cl. 604-110.000.
Campos, Luis I., to Sipes, Earl K. Method and apparatus for hernia repair. 5,290,217, Cl. 600-37.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of Forestry: *See*—
Bach, Lars; and Stark, Edward, 5,290,621, Cl. 428-176.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources: *See*—
Chan, Edward Wing-Kee; and Stovall, Robert B., 5,290,433, Cl. 208-391.000.
Canada Plastic Containers Limited: *See*—
Dimeo, Emidio; and Greenhead, Kevin E., 5,289,932, Cl. 215-349.000.
Canadian Occidental Petroleum Ltd.: *See*—
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Candy, Timothy J.: *See*—
Jerro, Harlan D.; Kohler, James L.; Skiver, Steven G.; Candy, Timothy J.; Wildfong, Donald F.; and Murphy, Morgan D., 5,289,794, Cl. 116-28.100.
Canon Denshi Kabushiki Kaisha: *See*—
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Canon Kabushiki Kaisha: *See*—
Arai, Takashi; Baba, Yukihisa; and Umetsu, Sachio, 5,290,488, Cl. 264-1.700.
Asano, Junichi; Hashimoto, Kenichiro; Hiramatsu, Soichi; Inoue, Hiroyuki; Nojima, Takashi; Matsui, Shinya; and Suzuki, Tetsuo, 5,291,224, Cl. 346-134.000.
Fujiwara, Akihiro; Amikura, Takashi; Ohara, Toru; and Tamekuni, Yasuhiro, 5,291,151, Cl. 330-282.000.
Hasegawa, Masanobu; Yoshii, Minoru; and Abe, Naoto, 5,291,023, Cl. 250-548.000.
Ishikawa, Yuji, 5,291,303, Cl. 358-426.000.
Izumi, Michihiro, 5,291,549, Cl. 379-233.000.
Kitajima, Kazushi; and Okada, Tamotsu, 5,291,256, Cl. 355-290.000.
Murooka, Ken; and Ishikawa, Noriyoshi, 5,290,021, Cl. 271-9.000.
Nozawa, Minoru; Koizumi, Yutaka; Mori, Toshihiro; and Saito, Atsushi, 5,291,215, Cl. 346-1.100.
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Ohsawa, Toshifumi; Kobayashi, Ryuichi; Kiuchi, Masayoshi; Konno, Tatsuo; Matsumoto, Toshio; and Terashima, Jun, 5,291,236, Cl. 354-412.000.
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,291,219, Cl. 346-76.0PH.
Onodera, Ken, 5,291,308, Cl. 358-448.000.
Sato, Nobuhiko; Yonehara, Takao; and Kumomi, Hideya, 5,290,712, Cl. 437-24.000.
Shiba, Shoji; Miyagawa, Hisashi; Imamura, Isao; and Kashiwazaki, Akio, 5,290,667, Cl. 430-328.000.
Shiotsuki, Seiki; Sanbe, Shingo; Kanaya, Shinichi; Furukawa, Masamichi; and Taneichi, Shigeru, 5,291,084, Cl. 310-49.00R.
Takahashi, Koji, 5,290,024, Cl. 271-122.000.
Takahashi, Tsutomu, 5,290,110, Cl. 400-121.000.
Umetsu, Sachio; Tsuda, Toshio; Azuma, Yusaku; Miura, Toshihiko; Ishihara, Katsumi; and Ohsaka, Teiji, 5,289,625, Cl. 29-426.300.
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Canon Seiki Kabushiki Kaisha: *See*—
Shiotsuki, Seiki; Sanbe, Shingo; Kanaya, Shinichi; Furukawa, Masamichi; and Taneichi, Shigeru, 5,291,084, Cl. 310-49.00R.
Cardoza, Wayne: *See*—
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Carduck, Franz-Josef; Pawelczyk, Hubert; Raehse, Wilfried; and Jacobs, Jochen, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of granules of a detergent. 5,290,496, Cl. 264-142.000.
Carenco, Alain: *See*—
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Carl-Zeiss-Stiftung: *See*—
Koch, Klaus-P.; and Peter, Ralf, 5,291,270, Cl. 356-372.000.
Carmon, Donald E.; and Crouse, William G., to International Business Machines Corporation. Method and apparatus for synchronizing the readout of a sequential media device with a separate clocked device. 5,291,468, Cl. 369-47.000.
Carr, Michael D.; and Morrison, David G., to British Telecommunications. Predictive coding and decoding with error drift reduction. 5,291,284, Cl. 348-415.000.
Carrier Vibrating Equipment, Inc.: *See*—
McAllister, Mark L.; and French, Steven J., 5,290,913, Cl. 528-483.000.
Carson, Daniel M.: *See*—
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Carsonite International Corporation: *See*—
Schmanski, Donald W., 5,290,833, Cl. 524-71.000.
Carter-Wallace, Inc.: *See*—
Sofia, Robert D., 5,290,808, Cl. 514-483.000.
Cary, Gail E.: *See*—
Newhouse, Keith E.; Schaefer, Thomas J.; and Cary, Gail E., 5,290,753, Cl. 504-214.000.
Cashco, Inc.: *See*—
Ridge, William A., 5,290,010, Cl. 251-214.000.
Casscells, Christopher D., to Casscells, Christopher D. Coagulating cannula. 5,290,282, Cl. 606-29.000.
Cassella Aktiengesellschaft: *See*—
Zoller, Gerhard; Kujath, Eckard; Delpy, Klaus; and Schrod, Manfred, 5,290,947, Cl. 548-530.000.
Castle, G. S. P.: *See*—
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Castle, Gary M. Wall coping system. 5,289,662, Cl. 52-287.100.
Castle, Johnny N.: *See*—
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Castro, Salvatore: *See*—
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Castrogiovanni, Anthony: *See*—
Ounanian, Hovig; DiSomma, Joseph; Coleman, Debra; Sandewicz, Robert W.; and Castrogiovanni, Anthony, 5,290,543, Cl. 424-61.000.
Caterpillar Inc.: *See*—
Berlinger, Willibald G., 5,289,758, Cl. 92-190.000.
Caulkett, Peter W. R.; Jones, Geraint; Collis, Michael G.; and Poucher, Simon M., to Imperial Chemical Industries, PLC. Azole derivatives. 5,290,776, Cl. 514-246.000.
CCL Label, Inc.: *See*—
Cowan, Randy G.; and Nelson, Donovan D., 5,290,616, Cl. 428-40.000.
Cedoz, Roger T.: *See*—
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Cenedella, Philip W.: *See*—
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Center of Innovative Technology, The: *See*—
Abraham, Donald J.; Mahran, Mona; Mehanna, Ahmed; and Randad, Ramnarayan, 5,290,803, Cl. 514-421.000.
Centre d'Experimentation et de Documentation sur les Energies Renouvelables: *See*—
Roche, Jean-Louis, 5,289,595, Cl. 4-449.000.
Ceramatec, Inc.: *See*—
Joshi, Ashok V.; Liu, Meilin; Bjorseth, Alf; and Renberg, Lars, 5,290,405, Cl. 204-98.000.
Ceray, Mark S.; and Prestel, James F., to Chrysler Corporation. Fuel injector assembly and calibration method. 5,289,627, Cl. 29-602.100.
Cerrah, Kenneth M.; Chasko, Jerome P.; Moss, Stacey R.; and McQuade, Raymond J., to Xerox Corporation. Composite pressure roll. 5,291,257, Cl. 355-290.000.
Cetenko, Wiaczeslaw A.; Connor, David T.; Sircar, Jagadish C.; Sorenson, Roderick J.; and Unangst, Paul C., to Warner-Lambert Company. 3,5-di-tertiarybutyl-4-hydroxyphenylmethylene derivatives of 2-substituted thiazolidinones, oxazolidinones, and imidazolidinones as antiinflammatory agents. 5,290,800, Cl. 514-376.000.
Cetinkaya, Ismail B., to UOP. Riser disengager with suspended catalyst separation zone. 5,290,430, Cl. 208-161.000.

Chabria, Paul R., to Press-A-Lite. Combined greeting card and flashlight gift package. 5,289,917, Cl. 206-232.000.
Chaco, John, to Executone Information Systems, Inc. Method and apparatus for accessing a portable personal database as for a hospital environment. 5,291,399, Cl. 364-413.020.
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Zirnheld, Richard A.; and Goubeaux, Ronald J., 5,291,174, Cl. 338-24.000.
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Grabenkort, Richard W., to Abbott Laboratories. System for accommodating withdrawal of liquid from a bulk supply. 5,289,858, Cl. 141-97.000.
Grabowski, Karl-Heinz, to Siemens Aktiengesellschaft. Switching network wherein short-path connections can be switched. 5,291,478, Cl. 370-58.100.
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Lind, Robert J.; Lunzer, Lawrence J.; and Karwoski, Stanley G., 5,289,977, Cl. 239-690.000.
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Schneider, Joachim U.; Schwarz, Gerhard; Grafen, Paul; Bewert, Wolfgang; and Schumacher, Horst, 5,290,567, Cl. 424-489.000.
Gragg, James D. Automotive wheel enhancers. 5,290,094, Cl. 301-37.250.
Graham, James A. Bar-band variable circumference adjustable-drive pulley mechanism. 5,290,206, Cl. 474-49.000.
Graham, Stephen A., to Natural Reserves Group, Inc. Completing wells in incompetent formations. 5,289,876, Cl. 166-276.000.
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Christians, Nick E.; Garbutt, John T.; and Liu, Dianna, 5,290,749, Cl. 504-189.000.
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Classey, Donald J.; Grajo, Theresa; Lynn, Kenneth; McVey, John; Myren, Eric; and Vehovsky, Gabriel, 5,290,239, Cl. 604-131.000.
Granahan, Mark E.: *See*—
Neale, Todd M.; Whitney, Brad P.; and Granahan, Mark E., 5,291,121, Cl. 323-313.000.
Grand Northern Products, Ltd.: *See*—
Stein, John; and Whitney, Philip M., 5,290,364, Cl. 134-7.000.
Grandmaire, Jean-Paul: *See*—
Puentes-Bravo, Eduardo; Hermosilla, Anita; Grandmaire, Jean-Paul; and Tack, Viviane, 5,290,459, Cl. 252-8.600.
Grass, William E., to Eaton Corporation. Handle block for electrical switching device. 5,290,979, Cl. 200-43.190.
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Gray, Ronald D. Device with flexible elongate member for binding and toting tree trimmings and the like. 5,289,765, Cl. 100-34.000.
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Rose, Richard S.; Wang, Jin-liang; Favstritsky, Nicolai A.; May, David E.; and Honkomp, David J., 5,290,636, Cl. 428-521.000.
Greco, Mariano; Lesperance, Brenda; and Shine, Grace L., to Bacharach, Inc. Moisture indicator. 5,290,516, Cl. 422-57.000.
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Green, Robert L., Jr., to G. Fordyce Company, Inc. Method of and apparatus for cutting a web and folding the resulting ribbons. 5,290,226, Cl. 493-357.000.
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Greene, Andrew-Elliot: *See*—
Correa, Arlene; Denis, Jean-Noel; and Greene, Andrew-Elliot, 5,290,957, Cl. 549-510.000.
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Rizzi, John J.; Smith, Joseph J., II; and Greene, Howard P., Jr., 5,289,782, Cl. 108-147.000.
Greene, Leonard M., to Boeing Company, The. Supersonic aircraft. 5,289,995, Cl. 244-15.000.
Greene, Morton, to Gordian Holding Corporation. Radio frequency automatic identification system. 5,291,205, Cl. 342-44.000.
Greene, Patrick J.: *See*—
Bittner, Harold G.; Greene, Patrick J.; and Kayser, Verne S., 5,290,033, Cl. 273-138.00A.
Greene, Thomas M.: *See*—
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Greenhead, Kevin E.: *See*—
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Gregoire, Jacky: *See*—
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Greiner, Alfred; Hutt, Jean; Mugnier, Jacques; and Pepin, Regis, to Rhone-Poulenc Secteur Agrochimie. Fungicidal composition for seed dressing. 5,290,791, Cl. 514-383.000.
Griffin, James W.; Bunn, Billy A.; Dunning, Darrell; and Patterson, Larry E., to Hosokawa Micron International Inc. Integrated collar, filter bag, cage and locking ring assembly for baghouses. 5,290,441, Cl. 210-232.000.
Griffith, Donald P., to URO Research, Inc. Method of cystostomy tube implantation. 5,290,251, Cl. 604-175.000.
Grime, Thomas E.; Cedoz, Roger T.; Wheeler, Roger D.; and Schaupp, John F., to Ransburg Corporation. Spray gun having trigger overtravel protection and maximum flow adjustment knob warning. 5,289,974, Cl. 239-72.000.
Grimm, Charles M.: *See*—
Richardson, Daniel J.; and Grimm, Charles M., 5,291,409, Cl. 364-431.070.
Grimmer, Larry R., to Briggs & Stratton Corporation. Cap retained push button assembly. 5,289,705, Cl. 70-252.000.
Grinager, Michael R., to Brenton Engineering Inc. Continuous down stacker apparatus. 5,290,141, Cl. 414-790.300.
Grivon, Fernand; and Bouthegourd, Jacques, to GEC Alsthom SA. Method of manufacturing an electrical contact for a superconductive ceramic. 5,290,760, Cl. 505-1.000.
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Somers, David A.; Parker, William B.; Wyse, Donald L.; Gronwald, John W.; and Gengenbach, Burle G., 5,290,696, Cl. 436-240.500.
Grosbens, Pierre; and Bernard, Demoulin, to Lainiere De Picardie. Method for production of thermoadhesive fabric coverings, thermoadhesive fabric covering. 5,290,594, Cl. 427-244.000.
Gross, Andrew W.: *See*—
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Clough, Thomas J.; Grosvenor, Victor L.; and Pinsky, Naum, 5,290,589, Cl. 427-126.300.
Group Lotus PLC: *See*—
Williams, David A.; and Wright, Peter G., 5,291,406, Cl. 364-424.050.
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Gruber, Peter A.; and Zingher, Arthur R., to International Business Machines Corporation. Thermal joint. 5,291,371, Cl. 361-705.000.
Grundmann, Ulrich: *See*—
Ispas, Ioan; Grundmann, Ulrich; and Van Hoof, Yvan, 5,290,942, Cl. 415-1.000.
Grundy, Gregory. Method and system for decentralized manufacture of copy-controlled software. 5,291,598, Cl. 395-650.000.
Grunwald, John; and Larson, Gary, to MacDermid, Incorporated. Method for forming a patterned mask. 5,290,608, Cl. 427-493.000.
Grutter, Peter J., to Ford Motor Company. Apparatus and method of on-board catalytic converter efficiency monitoring. 5,289,678, Cl. 60-277.000.
GTE Government Systems Corporation: *See*—
Stein, Seymour; DeLisle, William F.; and Schramm, Karen M., 5,291,517, Cl. 375-1.000.
GTE Products Corporation: *See*—
Coushaine, Charles M., 5,291,092, Cl. 313-318.000.
Mellor, Charles E.; and Morin, Robert M., 5,290,183, Cl. 445-58.000.
Gu, Jun: *See*—
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Gualtier, Quentin E.: *See*—
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Gualtieri, Devlin; VandeVaart, Herman; Emo, Stephen M.; and Hou, Janpu, to Allied-Signal Inc. Optic sensor for determining environmental conditions. 5,289,720, Cl. 73-705.000.
Guardian Products, Inc.: *See*—
Rose, Eric P.; and Hodge, David, 5,289,596, Cl. 4-479.000.
Gueret, Jean-Louis H., to L'Oreal. Device for dispensing foam, and push-button for a device of this kind. 5,289,952, Cl. 222-189.000.
Gueule, Patrick: *See*—
Congy, Christian; Gueule, Patrick; Labeeuw, Bernard; and Rinaldi, Murielle, 5,290,951, Cl. 549-59.000.
Gugel, Bernd: *See*—
Stempfle, Johann; and Gugel, Bernd, 5,290,112, Cl. 400-124.000.
Guggenheim, Bernhard: *See*—
Weissenfluh, Beat V.; Guggenheim, Bernhard; Saxer, Ulrich; and Baffelli, Gianni, 5,290,170, Cl. 433-142.000.
Guhl, James F. Non-invasive distraction system for ankle arthroscopy. 5,290,220, Cl. 602-33.000.
Gui, John Y.: *See*—
Feldman, Sandra F.; Shu, Emily Y.; and Gui, John Y., 5,290,398, Cl. 156-651.000.
Guidi, Pierino, to Piero Guidi di Pierino Giuseppe Guidi & C. s.n.c. Folding bag, particularly travelling bag. 5,289,906, Cl. 190-107.000.
Gulf Canada Resources Limited: *See*—
Chan, Edward Wing-Kee; and Stovall, Robert B., 5,290,433, Cl. 208-391.000.
Gulick, Michael H.: *See*—
Gill, William R.; Wagner, Charles; and Gulick, Michael H., 5,289,682, Cl. 60-547.100.
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Gustin, Michael M.: *See*—
Ulrich, Ernst G.; Lentz, Karen P.; and Gustin, Michael M., 5,291,497, Cl. 371-19.000.
Guthauser, Bernadette; and Radice, William J., to Revlon Consumer Products Corporation. Cosmetic compositions with structural color. 5,290,555, Cl. 424-401.000.
Gutierrez, Antonio: *See*—
Chung, David Y.; Gutierrez, Antonio; and Struglinski, Mark J., 5,290,461, Cl. 252-51.50A.
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Guyaniyogi, Suhas C.: *See*—
Okamoto, Kelvin T.; Eastenson, Kyle D.; and Guyaniyogi, Suhas C., 5,290,856, Cl. 525-64.000.
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Haase, Michael A.; Cheng, Hwa; DePuydt, James M.; and Qiu, Jun, to Minnesota Mining and Manufacturing Company. Blue-green laser diode. 5,291,507, Cl. 372-46.000.
Habeeb, Jacob J.; and Beltzer, Morton, to Exxon Research & Engineering Co. Lubricant composition containing complexes of alkoxylated amine, trithiocyanuric acid, and adenine. 5,290,460, Cl. 252-47.500.
Habeeb, Jacob J., to Exxon Research & Engineering Co. Lubricant composition containing complexes of alkoxylated amine, hydrocarbylsulfonic acid and adenine. 5,290,462, Cl. 252-47.500.
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Haberman, David P.; Rhoades, Robert E.; Cox, Arthur; and Rallison, Richard D., to Astronautics Corporation of America. Information display system having transparent holographic optical element. 5,291,316, Cl. 359-13.000.
Habich, Adolph B.: *See*—
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Hache, Jean: *See*—
Binot, Patrick; Cognard, Dominique; Dufau, Frederic; and Hache, Jean, 5,290,700, Cl. 435-284.000.
Hadano, Katsuya: *See*—
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Haemacure Biotech Inc.: *See*—
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Hafner, Hans W., to Pfister GmbH. Gravimetric metering apparatus for pourable materials. 5,289,724, Cl. 73-861.000.
Hagan, Bernard P. Method and system for processing federally insured annuity and life insurance investments. 5,291,398, Cl. 364-408.000.
Hagino, Kiyoshi: *See*—
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Hagiwara, Toshimitsu: *See*—
Kondo, Hitoshi; Tadokoro, Mika; Sugiyama, Hiroshi; Hagiwara, Toshimitsu; Imai, Takashi; Yamada, Mamoru; and Itakura, Keisuke, 5,290,477, Cl. 252-299.610.
Hains, Charles M., to Xerox Corporation. Specific set of rotated screens for digital halftoning. 5,291,296, Cl. 358-298.000.
Haj-Ali-Ahmadi, Javad; Frankeny, Jerome A.; Frankeny, Richard F.; Habich, Adolph B.; Hermann, Karl; and Hunt, Ronald E., to International Business Machines Corporation. Method for testing integrated circuits on a carrier substrate. 5,290,710, Cl. 437-8.000.
Hakata, Kunihiko: *See*—
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Hakon, Ian N., to TI Interlock Limited. Combined clutch and brake units. 5,289,908, Cl. 192-18.00R.
Halcyon Waterbed Inc.: *See*—
Schermel, William, 5,289,600, Cl. 5-400.000.
Haley, Kevin J., to Intel Corporation. Thin, high leadcount package. 5,290,735, Cl. 437-217.000.
Hall, Steven E.: *See*—
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Hall Surgical, Division of Zimmer, Inc.: *See*—
Linden, Harry A., 5,290,291, Cl. 606-99.000.
Halliburton Company: *See*—
Eoff, Larry, 5,290,357, Cl. 106-808.000.
Naegele, Phillip N.; Dant, Ronald E.; Dieball, Kent J.; Stephenson, Stanley V.; and Padgett, Paul O., 5,289,877, Cl. 166-285.000.
Halloran, Daniel J.; and Daunheimer, Scott A., to Dow Corning Corporation. Hair treatment with blended silicones. 5,290,545, Cl. 424-70.000.
Halpern, Yuval: *See*—
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Halstead, Gary A.: *See*—
Ryan, Richard P.; Halstead, Gary A.; Shaffer, Glenn W.; and Joshi, Shrikant M., 5,289,873, Cl. 165-149.000.
Haluska, Loren A., to Dow Corning Corporation. Coatings for microelectronic devices and substrates. 5,290,354, Cl. 106-479.000.
Hamada, Hideharu: *See*—
Ogata, Hiromi; Koshikawa, Seiji; and Hamada, Hideharu, 5,291,039, Cl. 257-99.000.
Hamaguchi, Tsuneo; and Kohara, Masanobu, to Mitsubishi Denki Kabushiki Kaisha. Printed circuit board provided with a higher density of terminals for hybrid integrated circuit and method of fabricating the same. 5,290,971, Cl. 174-267.000.
Hamamatsu Photonics K.K.: *See*—
Tanaka, Eiichi; Satoh, Nakahiro; and Shimizu, Keiji, 5,291,021, Cl. 250-363.030.
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Hamatani, Tomio: *See*—
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Hamatsu, Masahiro: *See*—
Uchida, Yoshitaka; Endo, Mamoru; Hamatsu, Masahiro; and Akazawa, Shigeo, 5,291,515, Cl. 375-1.000.
Hambleton, Robert: *See*—
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Hamilton, Thomas W., to T. W. Hamilton Design Ltd. Apparatus for applying label tags. 5,289,666, Cl. 53-252.000.
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Han Yang Chemical Corporation: *See*—
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Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; Oi, Fumio; and Tomioka, Jun, 5,290,656, Cl. 430-165.000.
Hanagan, Michael W.; and Lazzeroni, John. Seat-back dashboard for vehicles having tandem seating. 5,290,088, Cl. 297-191.000.
Hanamoto, Tetsuya; Nakamichi, Masumi; Kimoto, Masahiko; Kato, Shohichi; and Kondo, Shoichi, to Sharp Kabushiki Kaisha. Reflective type photointerrupter. 5,291,038, Cl. 257-82.000.
Hanamoto, Yukio: *See*—
Uetani, Yasunori; Hanabata, Makoto; Nakanishi, Hirotoshi; Kuwana, Koji; Hanamoto, Yukio; Oi, Fumio; and Tomioka, Jun, 5,290,656, Cl. 430-165.000.
Hanaway, Ronald L. Guide post, guide sleeve and improved air impulse rotary ball cage assembly. 5,290,107, Cl. 384-49.000.
Hand, Peter H.; Saunders, William J.; Goldstein, Eric; Watson, James B.; Lockwood, J. Charles; and Alsup, J. Douglas, to Aqua Step Corporation, The. Aquatic step exercise apparatus. 5,290,210, Cl. 482-51.000.
Handjani, Rose-Marie: *See*—
Zysman, Alexandre; Sebag, Henri; Vanlerberghe, Guy; Handjani, Rose-Marie; and Ribier, Alain, 5,290,565, Cl. 424-450.000.
Hanna, David C., to University of Southhampton. Optical fibre with doped core and doped inner cladding, for use in an optical fibre laser. 5,291,501, Cl. 372-6.000.
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Billaud, Denis; Hannecart, Etienne; and Franquinet, Claude, 5,290,891, Cl. 526-259.000.
Hannon, Richard H.; and Schmidt, Jacob H. Balanced golf putter. 5,290,035, Cl. 273-167.00F.
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Hansen, John B., to Novo Nordisk N/A. Substituted urea compound and use. 5,290,799, Cl. 514-305.000.
Hanson, Eric G.: *See*—
Schantz, Christopher A.; Hanson, Eric G.; Lam, Si-Ty; McClelland, Paul H.; Lloyd, William J.; Mittelstadt, Laurie S.; and Pan, Alfred I., 5,291,226, Cl. 346-140.00R.

Hanson, Gunnar J., to G. D. Searle & Co. Azachromonyl/azachromonylalkyl-N-terminal cycloalkoxy-C-terminal amino hydroxy β-amino acid derivatives. 5,290,787, Cl. 514-302.000.
Harada, Jun; Sumita, Manabu; and Imagawa, Shunjiro, to Murata Manufacturing Co., Ltd. Piezoelectric sounding body. 5,291,460, Cl. 367-140.000.
Harada Kogyo Kabushiki Kaisha: *See*—
Nakase, Kazuhiko, 5,291,210, Cl. 343-700.0MS.
Harakawa, Koji; Sano, Takayuki; Miura, Makoto; and Fujiwara, Akira, to Tomoegawa Paper Co., Ltd. Developing compositions for electrophotography. 5,290,652, Cl. 430-106.600.
Harashima, Kouichi, to Fuji Electric Co., Ltd. Method of controlling operation of fuel cell power supply. 5,290,641, Cl. 429-17.000.
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McConnell, Oliver J.; Saucy, Gabriel; and Jacobs, Robert, 5,290,777, Cl. 514-254.000.
Hardy, Eugene E.: *See*—
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Harlan, Thomas A.; Bridges, Marg L.; and Long, Joseph F. Tool set for coloring hair. 5,289,835, Cl. 132-313.000.
Harnischfeger Corporation: *See*—
Kallenberger, Harvey J., 5,289,733, Cl. 74-447.000.
Kallenberger, Harvey J., 5,290,069, Cl. 384-129.000.
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Harper, Sandra L.: *See*—
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Harre, Ingo, to Atlas Elektronik GmbH. Method of determining depth values for the surface profile of the bottom of a body of water. 5,291,458, Cl. 367-88.000.
Harrington, Michael G.: *See*—
Zewert, Thomas; and Harrington, Michael G., 5,290,411, Cl. 204-128.800.
Harris, B. Waylon. Apparatus and method for reducing drag on bodies moving through fluid. 5,289,997, Cl. 244-130.000.
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Harris Corporation: *See*—
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Harris, Ellis D., to Xerox Corporation. Rotating disc optical synchronization system using binary diffractive optical elements. 5,291,319, Cl. 359-18.000.
Harris, Ellis D., to Xerox Corporation. Total internal reflection electro-optic modulator for multiple axis and asymmetric beam profile modulation. 5,291,566, Cl. 385-8.000.
Harris, James S., Jr.: *See*—
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Harrison, Everett W. Sound dampener for disk brakes. 5,289,904, Cl. 188-73.100.
Harrison, Ian, to John Carr (Press Lock) Limited. Window and door assemblies. 5,289,659, Cl. 49-501.000.
Harshavardhana, P.: *See*—
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Hart, Steven C.: *See*—
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Hartel, Robert: *See*—
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Hartley, Richard I.: *See*—
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Hartz, Leslie S., to United States of America, National Aeronautics and Space Administration. Extra-vehicular activity translation tool. 5,289,614, Cl. 16-114.00R.
Haruyama, Hideaki, to Kabushiki Kaisha Toshiba. Communication system and demodulator used in communication system. 5,291,527, Cl. 375-94.000.
Harwath, Frank A.: *See*—
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Harwood, Colin F.: *See*—
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Izumi, Yasuo; Sato, Syoji; Yamauchi, Hiroshi; and Inutsuka, Ryoji, 5,289,966, Cl. 228-180.210.
Nagai, Tetsuya; and Yamazaki, Katsuyuki, 5,291,483, Cl. 370-60.000.
Nishigori, Yoshihisa, 5,291,278, Cl. 348-665.000.
Nishiuchi, Kenichi; and Yamada, Noboru, 5,291,470, Cl. 369-100.000.
Okada, Yasuhiro; Itami, Tadashi; and Tsukiyama, Yasutaka, 5,291,104, Cl. 318-254.000.
Omata, Yuuji; and Mifune, Tatsuo, 5,289,628, Cl. 29-603.000.
Saka, Hiroshi, 5,291,161, Cl. 333-204.000.
Takahashi, Keiji, 5,291,158, Cl. 360-99.080.

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Isobe, Yoichi; Chujo, Hiroshi; Okumura, Kouichi; and Kumagai, Hisashi, 5,291,193, Cl. 340-825.690.

Matsushita, Tsuyoshi: *See*—
Ishii, Hiromoto; and Matsushita, Tsuyoshi, 5,291,005, Cl. 235-449.000.

Matsuura, Hidekazu; and Ohmura, Yukiyoshi, to Fujitsu Limited. System for controlling restoration from failure in queue structure of control data. 5,291,589, Cl. 395-575.000.

Matsuzaki, Kazuhiro: *See*—
Murakami, Tokumichi; Kamizawa, Koh; Itoh, Atsushi; Kato, Yoshiaki; Hasegawa, Yuri; Matsuzaki, Kazuhiro; and Fukuhara, Takahiro, 5,291,286, Cl. 348-469.000.

Matsuzawa, Jun: *See*—
Mishima, Seizou; Masuta, Kiyotaka; Shike, Kazuyoshi; Matsuzawa, Jun; Shitara, Masashi; and Hattori, Isamu, 5,290,876, Cl. 525-316.000.

Matthewson, Michael D., to Burroughs Wellcome Co. Synergistic compositions. 5,290,770, Cl. 514-86.000.

Matthies, Alan: *See*—
Campbell, Chester D.; Harper, Sandra L.; Jain Virender; Kenyon, Richard L.; Matthies, Alan; and Yabuki, Roy M., 5,289,692, Cl. 62-181.000.

Matthyssens, Gaston: *See*—
Mrabet, Nadir; Lasters, Ignace; Stanssens, Patrick; Matthyssens, Gaston; Wodak, Shoshana; and Quax, Wilhelmus J., 5,290,690, Cl. 435-172.300.

Matuszak, Anja: *See*—
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Mauer, Andrew J.: *See*—
Cain, James H.; Moschauer, Michael W.; Mauer, Andrew J.; and Hutchings, Richard C., 5,291,258, Cl. 355-296.000.

Mauro, James J., to Han Yang Chemical Corporation. Process for continuously recycling water soluable resin. 5,290,493, Cl. 264-37.000.

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Oesterhelt, Dieter; Meessen, Susanne; Tittor, Jorg; Matuszak, Anja; and May, Klaus, 5,290,699, Cl. 435-252.300.

Maxwell, Arthur S.; and Barnard, Ian R., to Cleveland Potash Ltd. Chute for bulk materials. 5,289,909, Cl. 193-6.000.

May, David E.: *See*—
Rose, Richard S.; Wang, Jin-liang; Favstritsky, Nicolai A.; May, David E.; and Honkomp, David J., 5,290,636, Cl. 428-521.000.

May, Klaus: *See*—
Oesterhelt, Dieter; Meessen, Susanne; Tittor, Jorg; Matuszak, Anja; and May, Klaus, 5,290,699, Cl. 435-252.300.

May, Sheldon W.: *See*—
Powers, James C.; May, Sheldon W.; Hernandez, Maria A.; Thornton, Steve; and Glinski, Jan, 5,290,942, Cl. 546-300.000.

Mayer Holdings S.A.: *See*—
Nivens, Jerry W., 5,289,699, Cl. 62-513.000.

Mayer, Oliver: *See*—
Tank, Volker; Dietl, Helmut; Haschberger, Peter; Lindermeir, Erwin; and Mayer, Oliver, 5,291,268, Cl. 356-346.000.

Mayland, Harold E. Walking beam compressor assembly. 5,290,156, Cl. 417-415.000.

Maystre, Francois; and Bruno, Alfredo E., to Ciba-Geigy Corporation. Analytic separation arrangement and method for the analysis of chemical samples. 5,290,520, Cl. 422-82.050.

Mazda Motor Corporation: *See*—
Takata, Minoru; Hiruta, Hideshi; Nakamura, Nobuyuki; Shiraishi, Masaru; Kimura, Yoshitaka; and Masuda, Naotsugu, 5,289,895, Cl. 180-248.000.

Mazess, Richard B., to Lunar Corporation. Device and method for automated determination and analysis of bone density and vertebral morphology. 5,291,537, Cl. 378-54.000.

Mazure, Carlos A.: *See*—
Witek, Keith E.; Mazure, Carlos A.; and Fitch, Jon T., 5,291,438, Cl. 365-149.000.

Mazzone, Dominick N.: *See*—
Degnan Jr., Thomas F.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,290,744, Cl. 502-67.000.

McAllister, Mark L.; and French, Steven J., to Carrier Vibrating Equipment, Inc. Method and apparatus for the heat treatment of material. 5,290,913, Cl. 528-483.000.

McAuliffe, Kevin P.: *See*—
Emma, Philip G.; Knight, Joshua W.; McAuliffe, Kevin P.; Pomerene, James H.; Rechtschaffen, Rudolph N.; and Sparacio, Frank J., 5,291,442, Cl. 395-425.000.

McBrayer, Patrick A.: *See*—
O'Leary, Robert K.; and McBrayer, Patrick A., 5,290,558, Cl. 424-422.000.

McCabe, Mark M., to RETEC/Tetra, LC. Apparatus and method for preferentially separating volatilizable components of a matrix. 5,289,640, Cl. 34-29.000.

McCain, Melvin: *See*—
Baker, Robert G.; DeBauche, Bradley J.; Dombrowski, Chris; Jensen, Eric; Massman, Lloyd H.; McCain, Melvin; and Swingle, Paul R., 5,291,614, Cl. 395-800.000.

McCall, Thomas J., Jr.: *See*—
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance L., 5,290,340, Cl. 95-46.000.

McClanahan, Susan D. Talking book. 5,290,190, Cl. 434-317.000.

McClelland, Paul H.: *See*—
Schantz, Christopher A.; Hanson, Eric G.; Lam, Si-Ty; McClelland, Paul H.; Lloyd, William J.; Mittelstadt, Laurie S.; and Pan, Alfred I., 5,291,226, Cl. 346-140.00R.

McClintock, William J., to GEC Avionics Limited. Noise radars. 5,291,202, Cl. 342-16.000.

McClure, Jack A., to Inland Container Corporation. Paperboard container having reinforced corners. 5,289,970, Cl. 229-143.000.

McClure, Jack A., to Inland Container Corporation. One piece carton blank. 5,289,971, Cl. 229-149.000.

McCombs, Charles A.: *See*—
Autant, Pierre; Ruel, Jacques; Weinhold, Stephen; McCombs, Charles A.; Smith, Ernest P.; Wu, Stephen H.; and Hoskins, Louis P., 5,290,560, Cl. 424-438.000.

McConnell, Oliver J.; Saucy, Gabriel; and Jacobs, Robert, to Univ. of California, Regents of the; and Harbor Branch Oceanographic Inst. Inc. Use for topsentin compounds and pharmaceutical compositions containing same. 5,290,777, Cl. 514-254.000.

McDonald, Charles E. Multi-toothed dispenser, comb applicator and bottle. 5,289,833, Cl. 132-112.000.

McDonald, James A., III: *See*—
Hatch, Michael R.; Moon, Ronald R.; Deyring, Klaus-Peter; McDonald, James A., III; Huber, Thomas J.; Uhlendorf, Gregg J.; Barnard, Daniel E.; Silbermann, Bryan T.; Steiner, Philip L.; Cloutier, Robert P.; and Kobliska, Robert J., 5,291,355, Cl. 360-97.010.

McDonald, Roderick A.; and Knudsen, Mark J., to Georgia-Pacific Resins, Inc. Phenolic resins for reinforced composites. 5,290,843, Cl. 524-405.000.

McDonnell Bushnell, Lorraine P.; Coffin, Judith A.; and Prada-Silva, Guillermo, to International Business Machines Corporation. Method to monitor Meta-Paete cure on metallized substrates. 5,290,586, Cl. 427-8.000.

McDonnell Douglas Corporation: *See*—
Yasui, Ken K.; and Pettit, Richard G., 5,289,965, Cl. 228-157.000.

McDougal, Gregory: *See*—
Schlosser, Charles E.; Mueller, Lee G.; and McDougal, Gregory, 5,289,691, Cl. 62-78.000.

McEwen, Robert K., to GEC-Marconi Limited. Imaging system using focal plane array. 5,291,327, Cl. 359-209.000.

McFadden, Gordon M.: *See*—
Filgas, David M.; McFadden, Gordon M.; Broome, Jeffery; York, James F.; and Wofford, R. Scott, 5,291,570, Cl. 385-78.000.

McFarlane, Ross A.; and Lui, Mark, to Hughes Aircraft Company. Wavelength conversion waveguide and fabrication method. 5,290,730, Cl. 437-129.000.

McFarquhar, Barbara Y.: *See*—
Greene, Alan P.; McFarquhar, Barbara Y.; Paredes, Rosa M.; Fenske, Marianne E.; and Osmer, Frederick S., 5,290,471, Cl. 252-108.000.

McGarry, Richard A.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Heaton, Lisa W.; and Castro, Salvatore, to United States Surgical Corporation. Apparatus and method for applying surgical staples to attach an object to body tissue. 5,289,963, Cl. 227-175.000.

McHarg, Christopher G.; Newman, Thomas E.; Schaff, Kenneth N.; and Wendland, Kenneth E., to AT&T Bell Laboratories. High bandwidth packet switch. 5,291,482, Cl. 370-60.000.

McIntyre, Bruce; Priem, Curtis; and Rocchetti, Robert, to Sun Microsystems, Inc. Method and apparatus for allocating off-screen display memory. 5,291,188, Cl. 345-189.000.

McKibben, Gerald H.; Dickens, Joseph C.; and Smith, James W., to United States of America, Agriculture. Plastic bait composition for attracting and killing crop pests. 5,290,556, Cl. 424-405.000.

McKinley, Harry L.: *See*—
Havens, William H.; McKinley, Harry R.; Hammond, Charles M., Jr.; Morabito, Joseph J.; and Powers, Jeffrey B., 5,291,008, Cl. 235-462.000.

McLane, Peter J.: *See*—
Funderburk, Dion M.; Park, Sangil; and McLane, Peter J., 5,291,525, Cl. 375-98.000.

McLeod, Bruce R.: *See*—
Liboff, Abraham R.; Smith, Stephen D.; and McLeod, Bruce R., 5,290,409, Cl. 204-155.000.

McLeroy, Jacob T.: *See*—
Razdan, Mohan K.; McLeroy, Jacob T.; and Mongia, Hukam C., 5,289,686, Cl. 60-755.000.

McMillan, Joseph P., III; and Owen, Lawrence W., Jr. Beverage service pitcher. 5,289,953, Cl. 222-189.000.

McMurray, Robert E., Jr.: *See*—
Farhoomand, Jam; and McMurray, Robert E., Jr., 5,291,055, Cl. 257-437.000.

MCNC: *See*—
Bobbio, Stephen M., 5,290,400, Cl. 156-655.000.
Koopman, Nicholas G.; Rinne, Glenn A.; Turlik, Iwona; and Yung, Edward K., 5,289,631, Cl. 29-840.000.

McNease, Daniel F.: *See*—
Yeargain, Charles W.; McNease, Daniel F.; and Moody, Michael D., 5,290,128, Cl. 405-209.000.

McNeilab, Inc.: *See*—
Reitz, Allen B.; Baxter, Ellen W.; and Maryanoff, Bruce E., 5,290,948, Cl. 548-541.000.

McQuade, Raymond J.: *See*—
Cerrah, Kenneth M.; Chasko, Jerome P.; Moss, Stacey R.; and McQuade, Raymond J., 5,291,257, Cl. 355-290.000.

McVey, John: *See*—
Classey, Donald J.; Grajo, Theresa; Lynn, Kenneth; McVey, John; Myren, Eric; and Vehovsky, Gabriel, 5,290,239, Cl. 604-131.000.

McVicker, Gerard: *See*—
Karidis, John P.; McVicker, Gerard; and Pawletko, Joseph P., 5,291,112, Cl. 318-568.100.

McWilliams, Joel K.; and Van Rheeden, Don R. Method and apparatus for tracking an aimpoint with arbitrary subimages. 5,289,993, Cl. 244-3.150.

Mead, Ian D.; and Liao, Jing, to Cincinnati Milacron Inc. Fast programmable scan logic controller method and apparatus. 5,291,391, Cl. 364-148.000.

Meade, Alexander D.: *See*—
Britto, Ignatius L.; Meade, Alexander D.; Murthy, Ashok; Shakib, Iraj D.; and Voit, William F., Jr., 5,291,255, Cl. 355-285.000.

Mealey, Thomas P.: *See*—
Palmer, Harold D.; Palmer, Daren D.; and Mealey, Thomas P., 5,290,082, Cl. 294-64.100.

Medbury, Seward J., to MGX, Inc. Cue stick. 5,290,030, Cl. 473-47.000.

Medeco Security Locks, Inc.: *See*—
Field, Peter H., 5,289,709, Cl. 70-494.000.

Medicon eG: *See*—
Tschakaloff, Alexander, 5,290,281, Cl. 606-28.000.

Meditron Devices, Inc.: *See*—
Bonati, Alfred O.; and Ware, Philip J., 5,290,279, Cl. 606-15.000.

Meessen, Susanne: *See*—
Oesterhelt, Dieter; Meessen, Susanne; Tittor, Jorg; Matuszak, Anja; and May, Klaus, 5,290,699, Cl. 435-252.300.

Mehan, Richard L.: *See*—
Nied, Herman F.; and Mehan, Richard L., 5,290,333, Cl. 65-31.000.

Mehanna, Ahmed: *See*—
Abraham, Donald J.; Mahran, Mona; Mehanna, Ahmed; and Randad, Ramnarayan, 5,290,803, Cl. 514-421.000.

Mehta, Surendra C.; Huang, Hua-Pin; Radebaugh, Galen W.; and Fawzi, Mahdi B., to Warner Lambert Co. Soluble calcium lactate antibacterial complexes as non-irritating parenteral forms. 5,290,794, Cl. 514-300.000.

Meiji Milk Products Company Limited: *See*—
Koide, Kaoru; Fukushima, Takashi; Kuwata, Tamotsu; Itoyama, Koki; and Miyazawa, Fumio, 5,290,685, Cl. 435-68.100.

Meinherz, Manfred: *See*—
Kelch, Thomas; and Meinherz, Manfred, 5,291,369, Cl. 361-605.000.

Melinat, Wolfgang: *See*—
Nagai, Steve S.; Melinat, Wolfgang; and Denlinger, Daniel E., 5,289,903, Cl. 188-71.700.

Mellor, Charles E.; and Morin, Robert M., to GTE Products Corporation. Lamp holding fixture for chemical vapor deposition. 5,290,183, Cl. 445-58.000.

Melrose, Graham J. H.; Kleppe, Concetta M.; Langley, Jeffrey W.; Stewart, Jeffrey M.; and Van Dyk, Jacobus, to Biopolymers Limited. Biostatic and biocidal compositions. 5,290,894, Cl. 526-315.000.

Melvin, James: *See*—
Bruckert, William F.; Bissett, Thomas D.; and Melvin, James, 5,291,494, Cl. 371-11.300.

Menchen, Steven M.; and Winnik, Michell, to Applied Biosystems, Inc. Viscous electrophoresis polymer medium and method. 5,290,418, Cl. 204-299.00R.

Meneghini, Frank A.; and Palumbo, Paul S., to Polaroid Corporation. Enzyme controlled processes and products. 5,290,682, Cl. 435-25.000.

Mentak, Khalid: *See*—
Goldberg, Eugene P.; Yahiaoui, Ali; and Mentak, Khalid, 5,290,548, Cl. 424-78.180.

Mercer, Donald R. Shoe with retractable spikes. 5,289,647, Cl. 36-134.000.

Merck & Co., Inc.: *See*—
Garrity, George M.; Gagliardi, Magda M.; and Chen, Shieh-Shung T., 5,290,689, Cl. 435-119.000.
Goegelman, Robert T.; Munguira, Elvira; Diez Matas, Maria T.; Sykes, Ruth S.; Kong, Yu L.; Liesch, Jerrold M.; Helms, Gregory L.; and Turner Jones, E. Tracy, 5,290,804, Cl. 514-450.000.

Inamine, Edward S.; Chen, Shieh-Shung T.; Arison, Byron H.; and Wicker, Linda S., 5,290,772, Cl. 514-291.000.
Ramsay, A. Michael; Trimble, Gail; Seheult, James M.; and O'Brien, Michael S., 5,290,768, Cl. 514-54.000.
Volante, Ralph P.; Lynch, Joseph E.; Houpis, Ioannis; and Molina, Audrey, 5,290,941, Cl. 546-270.000.

Merck Frosst Canada, Inc.: *See*—
Gillard, John W.; Hutchinson, John H.; and Therien, Michel, 5,290,798, Cl. 514-361.000.

Merrill, Daniel C.: *See*—
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Merrill Manufacturing Company, Inc.: *See*—
Anderson, Stephen J., 5,289,840, Cl. 137-15.000.

Mesaki, Junichiro: *See*—
Hasegawa, Takahiro; Kashihara, Takanobu; Mesaki, Junichiro; and Nishimura, Akira, 5,290,546, Cl. 424-76.200.

Meadan S.p.A.: *See*—
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Meaghali, Farid: *See*—
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Meshreki, Makram H.: *See*—
Angerer, John D.; Majewicz, Thomas G.; and Meshreki, Makram H., 5,290,829, Cl. 524-31.000.

Metcalf, Jeffrey D., to Roadmaster Corporation. Exercise cycle. 5,290,212, Cl. 482-62.000.

Metriplex, Inc.: *See*—
Stutman, Peter S., 5,291,518, Cl. 375-4.000.

Metz, Joseph E., to Allied-Signal Inc. Circuitry for synchronizing the speed of a plurality of engines by sequentially averaging phase difference with a reference phase representing a desired speed. 5,291,410, Cl. 364-431.070.

Metzger, W. James: *See*—
Fisher, Robert H.; and Metzger, W. James, 5,290,550, Cl. 424-85.200.

Meybeck, Alain; and Dumas, Marc, to L V M H Recherche. Compositions and methods employing liposomes including tyrosine or a tyrosine derivative. 5,290,562, Cl. 424-450.000.

Meyer, Brian T. Edge protector delivery and positioning apparatus and method. 5,289,668, Cl. 53-410.000.

Meyer, Jurgen: *See*—
Sippel, Achim; Kruse, Heinz-Josef; Klumpp, Walter; Bocker, Jurgen; Meyer, Jurgen; Geis, Michael; and Holl, Rolf, 5,289,777, Cl. 102-521.000.

Meyer, Norbert: *See*—
Vogelbacher, Uwe J.; Rheinheimer, Joachim; Saupe, Thomas; Meyer, Norbert; Gerber, Matthias; Westphalen, Karl-Otto; and Walter, Helmut, 5,290,755, Cl. 504-242.000.

Meyer, Robert A.: *See*—
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Meyn, Cornelis, to Machinefabriek Meyn B.V. Apparatus for suspending poultry from its legs. 5,290,187, Cl. 452-178.000.

MGX, Inc.: *See*—
Medbury, Seward J., 5,290,030, Cl. 473-47.000.

Miano, Juan C.; and Luque, Antonio. Light confining cavity with angular-spatial limitation of the escaping beam. 5,291,331, Cl. 359-598.000.

Miau, Jiun-Jih; Chiu, En-Gie; Chou, Jung-Hua; and Chen: Tzu-Liang, to National Science Council. Ring type vortex flowmeter and method for measuring flow speed and flow rate using said ring type vortex flowmeter. 5,289,726, Cl. 73-861.220.

Michael, Daniel W., to Procter & Gamble Company, The. Hard surface detergent compositions. 5,290,472, Cl. 252-170.000.

Michelsen-Mohammadein, Ursula, to Siemens Aktiengesellschaft. Process for applying silver-graphite dispersion electrodeposits. 5,290,422, Cl. 205-109.000.

Michne, William F.: *See*—
DeHaven-Hudkins, Diane L.; Mallamo, John P.; Michne, William F.; and Heimann, Martha R., 5,290,789, Cl. 514-317.000.
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Mickelberg, Stephen R., to S. R. Mickelberg Company, Inc. Animated toy in package. 5,289,916, Cl. 206-45.340.

Micom Communications Corp.: *See*—
Sheppard, Thomas C., 5,291,487, Cl. 370-84.000.

Micro Technology, Inc.: *See*—
Chandrasekaran, T., 5,291,101, Cl. 315-219.000.

Microelectronics And Computer Technology Corporation: *See*—
Kumar, Nalin; Xie, Chenggang; Goruganthu, Rama R.; and Ghazi, Mohammed K., 5,290,732, Cl. 437-183.000.

Micron Semiconductor, Inc.: *See*—
Ball, Michael B., 5,291,061, Cl. 257-686.000.

Micron Technology, Inc.: *See*—
Lim, Hank H., 5,291,443, Cl. 365-189.040.

Midorikawa, Hiroshi, to Seiko Epson Corporation. Electronic typewriter for printing of documents having a fixed format. 5,290,109, Cl. 400-68.000.

Miess, Georg-Emerich; Klein, Peter; and Heinrich, Karl, to Hoechst Aktiengesellschaft. Automatic copolyamide. 5,290,907, Cl. 528-183.000.

Mifune, Tatsuo: *See*—
Omata, Yuuji; and Mifune, Tatsuo, 5,289,628, Cl. 29-603.000.

Miglhorini, Lorenzo P.; Molta, Pier C.; and Torelli, Giorgio, to Tecnotessile Centro di Richerche S.r.l. Reed for textile machines. 5,289,852, Cl. 139-192.000.

Mikami, Ryuzo; and Ona, Isao, to Dow Corning Toray Silicone Co., Ltd. Fiber treatment agent. 5,290,320, Cl. 8-115.600.
Mikata, Yuuichi: *See*—
Samata, Shuichi; Mikata, Yuuichi; and Usami, Toshiro, 5,291,058, Cl. 257-641.000.
Mikel, Steven A.: *See*—
Martin, Berthold; Klotz, James R.; Mikel, Steven A.; and Bartolino, Michael A., 5,289,639, Cl. 29-893.100.
Mikhail, W. E. Michael. Method for performing knee surgery and retractors for use therein. 5,290,290, Cl. 606-88.000.
Mikhail, W. E. Michael: *See*—
Ling, Robin S. M.; Mikhail, W. E. Michael; and Elting, James J., 5,290,318, Cl. 623-23.000.
Mikkola, Pekka: *See*—
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Mikuni, Hiroyuki; and Chikusa, Toshiyuki, to Three Bond Co., Ltd. α-cyanoacrylate containing adhesive composition. 5,290,838, Cl. 524-157.000.
Milbrand, Donald W., Jr.: *See*—
Espenshade, Leonard K.; Marks, Richard L.; Milbrand, Donald W., Jr.; and Zitto, Mark J., 5,290,192, Cl. 439-266.000.
Miles, Anthony W.; Wood, Norman J.; Wilson, Guy A.; and Wilcox, Stephen C., to University of Bath. Localized clean air system. 5,290,331, Cl. 55-321.000.
Miles, Gregory M. Microbeam holder. 5,291,336, Cl. 359-808.000.
Miles, Inc.: *See*—
Hsu, Chen-Jung; Payne, Robert C.; and Profitt, James A., 5,290,703, Cl. 436-71.000.
Jacobs, Patricia B.; and Wicks, Douglas A., 5,290,902, Cl. 528-49.000.
Kocher, Jurgen; and Wehling, Klaus, 5,290,536, Cl. 424-7.100.
Milito, Rodolfo A.: *See*—
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Milkovich, Stephen A.; and Nufer, Robert W., to International Business Machines Corporation. Continuous air bearing vapor stabilization system and method. 5,290,504, Cl. 264-342.0RE.
Miller, Alan M.: *See*—
Eian, Gilbert L.; Ishida, Takuzo; and Miller, Alan M., 5,290,660, Cl. 430-203.000.
Miller, Daniel P.: *See*—
Thumann, Gary J.; Boomgaarden, Jonathan C.; and Miller, Daniel P., 5,291,539, Cl. 378-154.000.
Miller, David A.: *See*—
Freese, David E.; Miller, David A.; and Nielsen, Mark J., 5,291,543, Cl. 379-59.000.
Miller, Leslie A.: *See*—
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., 5,290,340, Cl. 95-46.000.
Miller, Lester: *See*—
Burke, James E.; Miller, Lester; and Perno, Salvatore G., 5,291,538, Cl. 378-135.000.
Miller, Mark A.; and Fox, James D., to Exxon Production Research Company. Downhole pump of constant differential hydraulic pressure. 5,290,159, Cl. 417-521.000.
Miller, Paul J.: *See*—
Foreman, Kevin G.; Kiser, Willie C.; Lovett, Karin J.; and Miller, Paul J., 5,290,191, Cl. 439-225.000.
Miller, Rodney L., to Eastman Kodak Company. Apparatus and method for generating multi-level output values for pixels in a half-tone cell. 5,291,311, Cl. 358-456.000.
Miller, Ronald S.: *See*—
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Miller, Russell S.: *See*—
Miller, Steven A.; and Miller, Russell S., 5,289,975, Cl. 239-79.000.
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Milliken Research Corporation: *See*—
Moody, David J.; Kluger, Edward W.; and Rekers, John W., 5,290,921, Cl. 534-607.000.
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Russell, James T. Recording/reproducing system using phase encoding of optical storage medium. 5,291,471, Cl. 369-100.000.

Rutledge, Robert A.: *See*—
Patel, Arvind M.; and Rutledge, Robert A., 5,291,500, Cl. 371-65.000.

Rutten, Dean T.: *See*—
Bauer, Gerald L.; Childs, William V.; Kolpin, Charles F.; and Rutten, Dean T., 5,290,413, Cl. 204-243.00R.

Ryals, John A.: *See*—
Scheidegger, Alfred; Ward, Eric R.; Ryals, John A.; and Nagai-Hayashi, Atsuko, 5,290,926, Cl. 536-23.200.

Ryan, Richard J., to Puget Sound Rope Corporation. Method for heat stretching synthetic fiber rope. 5,290,500, Cl. 264-291.000.

Ryan, Richard P.; Halstead, Gary A.; Shaffer, Glenn W.; and Joshi, Shrikant M., to General Motors Corporation. Heat exchanger side-plate interlocked with header. 5,289,873, Cl. 165-149.000.

Ryan, Timothy G.: *See*—
Devonald, David P.; Ferguson, Ian; Hutchings, Michael G.; and Ryan, Timothy G., 5,290,630, Cl. 428-333.000.

Rydborn, Sten A. O. Method and an apparatus for charging a battery. 5,291,117, Cl. 320-21.000.

Ryobi Limited: *See*—
Sasaki, Masamichi; and Honkawa, Yoshinori, 5,290,023, Cl. 271-20.000.

Ryobi Motor Products Corporation: *See*—
Glenn, William K., III, 5,289,612, Cl. 15-326.000.

S.L.T. Japan Co., Ltd.: *See*—
Daikuzono, Notio, 5,290,280, Cl. 606-16.000.

S. R. Mickelberg Company, Inc.: *See*—
Mickelberg, Stephen R., 5,289,916, Cl. 206-45.340.

Saarnimo, Timo; and Niemio, Mika, to Nokia Mobile Phones Ltd. Control circuitry for an RF signal amplifier. 5,291,150, Cl. 330-279.000.

Sassk, Aapo. Liquid evaporating apparatus. 5,290,403, Cl. 202-182.000.

Sabahi, Mahmood, to Ethyl Corporation. Neopolyol derivatives and refrigerant compositions comprising them. 5,290,465, Cl. 252-56.00R.

Sabatier, Louis; Roch, Olivier; and Astier, Jean-Luc, to Compagnie Generale D'Automatisme CGA-HBS. Device for feeding pieces of mail, especially unsealed pieces, from a stack and a method of operating the device. 5,290,022, Cl. 271-12.000.

Sachs, Barry: *See*—
Kittrell, Carter; Cothren, Robert M., Jr.; Feld, Michael S.; and Sachs, Barry, 5,290,275, Cl. 606-15.000.

Sacripante, Guerino G.; Duff, James M.; Kmiecik-Lawrynowica, Grazyna; and Patel, Raj D., to Xerox Corporation. Microsuspension processes for toner compositions. 5,290,654, Cl. 430-137.000.

Sadanobu, Jiro: *See*—
Matsumura, Shunichi; Itoh, Seiji; Inata, Hiroo; and Sadanobu, Jiro, 5,290,906, Cl. 528-125.000.

Safety 1st: *See*—
Weatherford, Cheryl A.; and Wilhelm, E. Craig, 5,290,256, Cl. 604-198.000.

Safta S.P.A.: *See*—
Tencati, Adriano, 5,290,105, Cl. 383-203.000.

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Nakao, Hiroshi; Nagoya, Takao; Saino, Yushi; Maki, Masahiro; and Tani, Hideo, 5,290,915, Cl. 530-350.000.

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Kuster, Hans-Werner; Lacoste, Jean-Pierre; and Vanaschen, Luc, 5,290,999, Cl. 219-388.000.

Saito, Akihiro, to Tokyo Electric Co., Ltd. Device for determining paper size based on time data. 5,291,225, Cl. 346-134.000.

Saito, Atsushi: *See*—
Nozawa, Minoru; Koizumi, Yutaka; Mori, Toshihiro; and Saito, Atsushi, 5,291,215, Cl. 346-1.100.

Saito, Etsuro, to Sony Corporation. Magnetic head position measuring device. 5,291,364, Cl. 360-137.000.

Saito, Hideomi; Tanaka, Saburo; Morozumi, Hiroyuki; Tatsui, Akiyoshi; and Yoshioka, Akira, to Mitsubishi Materials Corporation. Apparatus for separating electrodeposited metal in electrolytic refining. 5,290,412, Cl. 204-227.000.

Saito, Kakuya: *See*—
Yokoyama, Itoshi; Nagai, Masaaki; and Saito, Kakuya, 5,291,285, Cl. 348-180.000.

Saito, Masahiko: *See*—
Shimada, Akira; Terashima, Isamu; Kitagishi, Tomoji; Wakamatsu, Kazuhiro; and Saito, Masahiko, 5,291,254, Cl. 355-275.000.

Saito, Nobuaki; and Ishida, Masaaki, to Komori Corporation. Apparatus for mounting plate on plate cylinder. 5,289,773, Cl. 101-415.100.

Saito, Tasuku: *See*—
Sakurai, Ryo; Kurachi, Yasuo; Fukuyama, Yoshiki; Maruyama, Takayuki; and Saito, Tasuku, 5,290,821, Cl. 521-82.000.

Saito, Yuichi: *See*—
Yamamoto, Keisaku; Wakatsuki, Kizuku; Tsuji, Mitsuji; and Saito, Yuichi, 5,290,878, Cl. 525-332.200.

Saitoh, Hironori: *See*—
Takita, Koubei; Tanaka, Yoshiyuki; Saitoh, Hironori; Nagai, Kyuichirou; Nishijima, Tatsumi; Ogiro, Kenji; Masuoka, Nobuo; and Fuse, Kenji, 5,291,351, Cl. 360-85.000.

Saka, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Microwave band-pass filter having frequency characteristic of insertion loss steeply increasing on one outside of pass-band. 5,291,161, Cl. 333-204.000.

Sakaguchi, Katsuyoshi: *See*—
Katayama, Hideaki; Murakami, Toshifumi; Hasegawa, Akira; Sakaguchi, Katsuyoshi; Soeda, Koji; Kubota, Yoshiya; Kubota, Akinori; and Ijiri, Masaaki, 5,290,503, Cl. 264-326.000.

Sakai, Hideki: *See*—
Kioka, Mamoru; Yashiki, Tsuneo; Ueda, Takashi; Kohyama, Masaki; Yamada, Masaya; Ikeyama, Seiichi; Akana, Yoshinori; Iwata, Kenji; Matsumoto, Satoshi; and Sakai, Hideki, 5,290,896, Cl. 526-348.000.

Sakai, Koichi: *See*—
Kawahito, Shiro; and Sakai, Koichi, 5,290,623, Cl. 428-195.000.

Sakai, Kouichi: *See*—
Hatayama, Toshio; Sasaki, Mie; Kojima, Takeshi; Ogawa, Yoshinari; Shimotsuma, Sakae; and Sakai, Kouichi, 5,290,835, Cl. 524-109.000.

Sakai, Takeshi: *See*—
Morita, Keiichi; and Sakai, Takeshi, 5,290,343, Cl. 96-39.000.

Sakai, Yasuyuki, to Nippondenso Co., Ltd. Bar code scanner using a hologram disk and having detachable and adjustable optical elements. 5,291,007, Cl. 235-457.000.

Sakai, Yoshiaki: *See*—
Matsumoto, Kenji; Hirose, Yoshio; Sakai, Yoshiaki; Takemoto, Hiroshi; Watanabe, Takashi; and Noda, Katsuhiko, 5,291,356, Cl. 360-99.060.

Sakama, Masao: *See*—
Hiyoshi, Teruo; Mamoru, Kinpara; Hideo, Suzuki; Nakada, Akira; Aoki, Eiichiro; and Sakama, Masao, 5,290,964, Cl. 84-600.000.

Sakamoto, Fumio: *See*—
Umeda, Yoshiaki; Shimegi, Hiroo; Ogura, Manabu; Nikaido, Akira; Sakamoto, Fumio; and Honda, Shigeharu, 5,291,345, Cl. 360-59.000.

Sakashita, Hajime; Komachi, Yoshiaki; Kamikura, Takashi; Hosaka, Ryuji; and Kido, Naoharu, to Fuji Xerox Co., Ltd. Facsimile network system capable of carrying out broadcast communication. 5,291,305, Cl. 358-444.000.

Sakata, Kei: *See*—
Okada, Susumu; Masui, Susumu; Satoh, Susumu; Sakata, Kei; Morita, Masahiko; and Kato, Toshiyuki, 5,290,370, Cl. 148-330.000.

Sakiyama, Keizo: *See*—
Tanaka, Kenichi; and Sakiyama, Keizo, 5,290,725, Cl. 437-52.000.

Sakoh, Masahiko, to Makita Corporation. Tightening tool. 5,289,885, Cl. 173-2.000.

Sakuma, Kouichi, to Suzuki Manufacturing Co., Ltd. Knife drive mechanism of sewing machine. 5,289,789, Cl. 112-122.000.

Sakuma, Tadashi: *See*—
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,290,963, Cl. 556-413.000.

Sakuma, Tetsuro; and Imai, Yohji, to GC Corporation. Method for preparing a tooth surface for bonding. 5,290,172, Cl. 433-215.000.

Sakurabayashi, Yasusuke: *See*—
Ashihara, Yoshihiro; Nishizono, Isao; Minakawa, Hidetaka; Okada, Masahisa; Sakurabayashi, Yasusuke; Watanabe, Fumio; and Wakana, Shin-ichi, 5,290,708, Cl. 436-526.000.

Sakurai, Akio: *See*—
Hideshima, Masayuki; Suzuki, Toru; Sakurai, Akio; Okazaki, Yoshio; and Morimoto, Akio, 5,291,231, Cl. 351-208.000.

Sakurai, Ryo; Kurachi, Yasuo; Fukuyama, Yoshiki; Maruyama, Takayuki; and Saito, Tasuku, to Bridgestone Corporation. Electro-responsive elastomeric material. 5,290,821, Cl. 521-82.000.

Sakurai, Shizuki; Nagata, Tomio; Kuwahara, Shiro; Tabata, Osamu; and Sugiyama, Susumu, to Toyoda Koki Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Capacitive sensing device. 5,291,534, Cl. 377-20.000.

Salerno, Franco; and De Filippis, Pietro, to Industrie Magneti Marelli. Control circuit for a half-wave brushless motor with a surge limiter. 5,291,105, Cl. 318-254.000.

Salit, Marc L.: *See*—
Collins, John B.; and Salit, Marc L., 5,291,426, Cl. 364-574.000.

Salonen, Seppo: *See*—
Kivari, Raimo; Korhonen, Pertti; and Salonen, Seppo, 5,291,542, Cl. 379-58.000.

Samata, Shuichi; Mikata, Yuuichi; and Usami, Toshiro, to Kabushiki Kaisha Toshiba. Semiconductor device silicon via fill formed in multiple dielectric layers. 5,291,058, Cl. 257-641.000.

Samsung Electron Devices Co., Ltd.: *See*—
Kim, Min-ho; and Lim, Ik-cheol, 5,290,648, Cl. 430-28.000.
Lee, Sungwoo, 5,291,093, Cl. 313-414.000.
Lee, Sungwoo, 5,291,094, Cl. 313-414.000.

Samsung Electronics Co., Ltd.: *See*—
Kim, Kyeong-tae; and Choi, Do-chan, 5,291,052, Cl. 257-369.000.
Kim, Yong-jin, 5,291,342, Cl. 360-10.300.
Kim, Yoon B., 5,291,354, Cl. 360-96.500.
Kim, Young G., 5,291,313, Cl. 358-521.000.
Kim, Young W., 5,291,451, Cl. 365-203.000.
Lee, Cha J., 5,290,510, Cl. 422-5.000.
Lee, Dong-gil, 5,291,301, Cl. 358-335.000.
Lee, Dong-Ho, 5,291,249, Cl. 355-229.000.
Moon, Seung H., 5,291,057, Cl. 257-466.000.
Park, Khee; Yoon, Jin H.; Kwon, Oh S.; and Jeon, Gi Y., 5,291,127, Cl. 324-158.00F.

Samuels, Brian C.; Reidler, Jeffry A.; and Silcott, David B., to Westinghouse Electric Corp. Optical agglutination assay device. 5,290,517, Cl. 422-58.000.

San Rocco Donzelli Industriale S.p.A.: *See*—
Beretta, Giovanni, 5,290,130, Cl. 409-131.000.

Sanbe, Shingo: *See*—
Shiotsuki, Seiki; Sanbe, Shingo; Kanaya, Shinichi; Furukawa, Masamichi; and Taneichi, Shigeru, 5,291,084, Cl. 310-49.00R.

Sanchez, Purificacion A. Rim structure for metal container. 5,289,938, Cl. 220-307.000.

Sandau, Hartmut: *See*—
Lueues, Holger; and Sandau, Hartmut, 5,290,007, Cl. 251-30.040.

Sanders, Albert E.; Sanders, James O.; and More, Robert B. Nitinol spinal instrumentation and method for surgically treating scoliosis. 5,290,289, Cl. 606-61.000.

Sanders, James M.; Lin, Ming-Jye; Lionti, Michael P.; and Schrader, Michael C., to Eastman Kodak Company. Adjustment of electric potential by automatic titration. 5,291,418, Cl. 364-500.000.

Sanders, James O.: *See*—
Sanders, Albert E.; Sanders, James O.; and More, Robert B., 5,290,289, Cl. 606-61.000.

Sanders, Michael S.; and Reister, Leon L., to General Motors Corporation. Sewing machine with thread wiper and auxiliary cutter. 5,289,791, Cl. 112-262.100.

Sanders, Richard L.: *See*—
Henderson, Robert E.; and Sanders, Richard L., 5,290,140, Cl. 414-509.000.

Sandewicz, Robert W.: *See*—
Ounanian, Hovig; DiSomma, Joseph; Coleman, Debra; Sandewicz, Robert W.; and Castrogiovanni, Anthony, 5,290,543, Cl. 424-61.000.

Sandoz Ltd.: *See*—
Lee, George T.; Kapa, Prasad K.; and Repic, Oljan, 5,290,946, Cl. 548-502.000.

Sandoz, Yvan: *See*—
Koch, Rudolf; and Sandoz, Yvan, 5,290,314, Cl. 623-21.000.

Sands, Samuel C., to Hewlett-Packard Company. Shared libraries implemented with linking program loader. 5,291,601, Cl. 395-700.000.

Sanford, Lawrence: *See*—
Stokley, Charles O.; and Sanford, Lawrence, 5,289,875, Cl. 166-264.000.

Sanger, Kurt M.; Mackin, Thomas A.; and Schultz, Michael E., to Eastman Kodak Company. Method and apparatus for the calibration of a multichannel printer. 5,291,221, Cl. 346-76.00L.

Sano, Takayuki: *See*—
Harakawa, Koji; Sano, Takayuki; Miura, Makoto; and Fujiwara, Akira, 5,290,652, Cl. 430-106.600.

Sanocki, Stephen M.: *See*—
Rogers, John J.; Erickson, John L.; and Sanocki, Stephen M., 5,290,522, Cl. 422-179.000.

Santen Pharmaceutical Co., Ltd.: *See*—
Morita, Takakazu; Mita, Shiro; and Kawashima, Yoichi, 5,290,774, Cl. 514-218.000.

Santen Seiyaku Kabushiki Kaisha: *See*—
Uemura, Osamu; and Kusu, Yukio, 5,290,228, Cl. 604-90.000.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Terao, Toshihiko; Kanayama, Naohiro; Morioka, Akihiro; Yasuda, Yoshika; Kamiya, Masami; Awaya, Juichi; Kurono, Masayasu; and Sawai, Kiichi, 5,290,679, Cl. 435-7.400.

Sanyo Chemical Industries, Ltd.: *See*—
Satoh, Masahiro; Watanabe, Tetsuya; Yoshio, Kunikiyo; and Kishiki, Hiroshi, 5,290,478, Cl. 252-299.620.

Sanyo Electric Co., Ltd.: *See*—
Furukawa, Nobuhiro; Moriwaki, Kazuro; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,290,509, Cl. 420-435.000.
Kawashima, Uehito; Kobayashi, Masahide; Kaise, Hiroshi; and Hirano, Yutaka, 5,291,085, Cl. 310-68.00C.
Tanaka, Masao; Tanaka, Kentaro; Hakata, Kunihiko; Nishimura, Susumu; Yamane, Mikihito; and Maeta, Susumu, 5,291,054, Cl. 257-433.000.

Sargent, Charles L.; Hoffman, John A.; Antos, John M.; and Chlebek, Kevin B., to Thetford Corporation. Portable waste holding tank with improved inlet valve assembly. 5,290,011, Cl. 251-229.000.

Sarli, Michael S.: *See*—
Fletcher, David L.; Hilbert, Timothy L.; Sarli, Michael S.; and Shih, Stuart S., 5,290,427, Cl. 208-89.000.

Sarson, Charles R.; Karcher, Thomas D.; and Weston, John M., to Tuthill Corporation. Fluid coupling having vent valve assembly. 5,289,850, Cl. 137-614.000.

Sasa, Masatoshi: *See*—
Koga, Yukihiro; Matsuoka, Tadahiko; and Sasa, Masatoshi, 5,290,321, Cl. 23-293.00S.

Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, to Takeda Chemical Industries, Ltd. Core-shell polymer, production and use thereof. 5,290,858, Cl. 525-64.000.

Sasaki, Manji: *See*—
Numadate, Norimitsu; Nakamae, Isao; Yamamoto, Hiroki; and Sasaki, Manji, 5,290,495, Cl. 264-141.000.

Sasaki, Masamichi; and Honkawa, Yoshinori, to Ryobi Limited. Sheet feeder for sheet-fed press. 5,290,023, Cl. 271-20.000.

Sasaki, Mie: *See*—
Hatayama, Toshio; Sasaki, Mie; Kojima, Takeshi; Ogawa, Yoshinari; Shimotsuma, Sakae; and Sakai, Kouichi, 5,290,835, Cl. 524-109.000.

Sasaki, Shoko: *See*—
Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,290,779, Cl. 514-258.000.

Sasaki, Tokuhito, to NEC Corporation. Method of manufacturing a thin $Hg_{1-x}Cd_xTe$ film. 5,290,394, Cl. 156-613.000.
Sasaki, Yukihiko; and Ercillo, Jesse, to Avery Dennison Corporation. Pressure-sensitive adhesives based on preferentially tackified immiscible elastomers. 5,290,842, Cl. 524-271.000.
Sasao, Sigeo: *See*—
Matsushiro, Ryuichi; Kosuda, Toru; Sasao, Sigeo; Fukunaga, Hiroyuki; and Ikumi, Yasumasa, 5,289,803, Cl. 123-41.100.
Sato, Akira, to NEC Corporation. Method of manufacturing semiconductor device. 5,290,709, Cl. 437-20.000.
Sato, Akiyoshi: *See*—
Okafuji, Osamu; Sato, Akiyoshi; and Yamaguchi, Akio, 5,289,633, Cl. 29-850.000.
Sato, Albert; Baker, David C.; and Waldron, Christie J., to Dell USA, L.P. Computer system having system feature extension software containing a self-describing feature table for accessing I/O devices according to machine-independent format. 5,291,585, Cl. 395-500.000.
Sato, Makoto: *See*—
Kikuchi, Hayato; Fujita, Yasuhiko; Arai, Toshiaki; Tsuchiya, Yoshikazu; Sato, Makoto; and Nanno, Kunio, 5,291,207, Cl. 342-70.000.
Sato, Nobuhiko; Yonehara, Takao; and Kumomi, Hideya, to Canon Kabushiki Kaisha. Process for forming crystalline semiconductor film. 5,290,712, Cl. 437-24.000.
Sato, Nobuyoshi; Tokunaga, Kyoji; Katagiri, Tomoharu; Hashimoto, Tsuyoshi; and Ohta, Tomohiro, to Kawasaki Steel Corporation. Method of forming interlayer-insulating film using ozone and organic silanes at a pressure above atmospheric. 5,290,736, Cl. 437-238.000.
Sato, Shin-ichi, to Sharp Kabushiki Kaisha. Method for producing a semiconductor device. 5,290,728, Cl. 437-52.000.
Sato, Syoji: *See*—
Izumi, Yasuo; Sato, Syoji; Yamauchi, Hiroshi; and Inutsuka, Ryoji, 5,289,966, Cl. 228-180.210.
Satoh, Hideo: *See*—
Ogane, Atsushi; Fujii, Yozo; Miwa, Tadashi; Matsuoka, Isao; and Satoh, Hideo, 5,291,223, Cl. 346-108.000.
Satoh, Masahiro; Watanabe, Tetsuya; Yoshio, Kunikiyo; and Kishiki, Hiroshi, to Sanyo Chemical Industries, Ltd. Optically active compounds. 5,290,478, Cl. 252-299.620.
Satoh, Nakahiro: *See*—
Tanaka, Eiichi; Satoh, Nakahiro; and Shimizu, Keiji, 5,291,021, Cl. 250-363.030.
Satoh, Ryohei; Arakawa, Katsuhiro; Kanai, Kiyoshi; Takahashi, Tsutomu; Takenaka, Takaji; and Imada, Haruhiko, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Method for diagnosing the life of a solder connection. 5,291,419, Cl. 364-508.000.
Satoh, Susumu: *See*—
Okada, Susumu; Masui, Susumu; Satoh, Susumu; Sakata, Kei; Morita, Masahiko; and Kato, Toshiyuki, 5,290,370, Cl. 148-330.000.
Satou, Nobuyasu. Control apparatus for mechanical devices which regulates control system operation speed to prevent hunting and overshooting and thereby optimizes the control signal. 5,291,390, Cl. 364-148.000.
Saturn Corporation: *See*—
Milunas, Rimas S.; Nitz, Larry T.; Rees, Susan L.; and Motamedi, Nader, 5,289,740, Cl. 74-866.000.
Muscaro, David C.; Nitz, Larry T.; and Witkowski, Michael R., 5,289,739, Cl. 74-844.000.
Saucy, Gabriel: *See*—
McConnell, Oliver J.; Saucy, Gabriel; and Jacobs, Robert, 5,290,777, Cl. 514-254.000.
Sauerwine, Dean N.; and Wetherhold, William K., Jr., to Moore Business Forms, Inc. Single sheet z-fold mailer. 5,289,972, Cl. 229-303.000.
Saunders, William J.: *See*—
Hand, Peter H.; Saunders, William J.; Goldstein, Eric; Watson, James B.; Lockwood, J. Charles; and Alsup, J. Douglas, 5,290,210, Cl. 482-51.000.
Saupe, Thomas: *See*—
Vogelbacher, Uwe J.; Rheinheimer, Joachim; Saupe, Thomas; Meyer, Norbert; Gerber, Matthias; Westphalen, Karl-Otto; and Walter, Helmut, 5,290,755, Cl. 504-242.000.
Savage, Steven D.: *See*—
Vercimak, Charmaine; Savage, Steven D.; and Brucker, Gregory G., 5,290,277, Cl. 606-15.000.
Savcor-Consulting Oy: *See*—
Savisalo, Hannu; Pulliainen, Martti; Ainali, Markku; Laurila, Timo; Jarvela, Pentti; and Paakkonen, Esko, 5,290,401, Cl. 162-4.000.
Savelli, Joseph F.: *See*—
Kress, Eric J.; Savelli, Joseph F.; Parry, David W.; and Koshoffer, John M., 5,289,687, Cl. 60-747.000.
Savio: *See*—
Badiali, Roberto; Quaia, Amedeo; and Bertoli, Luciano, 5,289,674, Cl. 57-281.000.
Savisalo, Hannu; Pulliainen, Martti; Ainali, Markku; Laurila, Timo; Jarvela, Pentti; and Paakkonen, Esko, to Savcor-Consulting Oy. Method and a device for separating plastic particles from supensions. 5,290,401, Cl. 162-4.000.
Sawada, Kenichi: *See*—
Tanaka, Mitsutoshi; Arai, Takaki; Igarashi, Takeshi; and Sawada, Kenichi, 5,290,514, Cl. 422-56.000.
Sawai, Kiichi: *See*—
Terao, Toshihiko; Kanayama, Naohiro; Morioka, Akihiro; Yasuda, Yoshika; Kamiya, Masami; Awaya, Juichi; Kurono, Masayasu; and Sawai, Kiichi, 5,290,679, Cl. 435-7.400.
Sawamoto, Hideo: *See*—
Miyaoka, Shuuichi; Miyamoto, Kazuhisa; Odaka, Masanori; Sawamoto, Hideo; Nakayama, Michiaki; Kusunoki, Mitsugu; Ikeda, Masato; Ogata, Takashi; Kobayashi, Kouji; Kato, Masao; and Sumimoto, Tsutomu, 5,291,445, Cl. 365-189.080.
Sawamoto, Isao; Shimamune, Takayuki; and Nishiki, Yoshinori, to Permelec Electrode Ltd. Method for producing ozone. 5,290,406, Cl. 204-101.000.
Sawyer, Donald C.; Langham, Marlee A.; and Brody, Theodore M., to Board of Trustees operating Michigan State University. Euthanasia compositions. 5,290,775, Cl. 514-224.800.
Saxer, Ulrich: *See*—
Weissenfluh, Beat V.; Guggenheim, Bernhard; Saxer, Ulrich; and Baffelli, Gianni, 5,290,170, Cl. 433-142.000.
Scaringe, Robert P.: *See*—
Parrish, Clyde F.; and Scaringe, Robert P., 5,289,695, Cl. 62-259.300.
Scarola, Kenneth; and Rescorl, Robert L., to Combustion Engineering, Inc. Operator interface for plant component control system. 5,291,190, Cl. 340-825.060.
Schaefer, Lothar, to Stop-choc Schwingungstechnik GmbH & Co KG. Apparatus for producing all metal spring cushions. 5,289,853, Cl. 140-71.00C.
Schaefer, Thomas J.: *See*—
Newhouse, Keith E.; Schaefer, Thomas J.; and Cary, Gail E., 5,290,753, Cl. 504-214.000.
Schafer, Bernhard, to Bernhard Schafer Werkzeug-U. Sondermaschinenbau GmbH. Device for connecting a wire to a plug, contact element or the like with crimp height adjustment. 5,289,713, Cl. 72-446.000.
Schafer, Gerhard: *See*—
Eichhorn, Reinhold; Schafer, Gerhard; Oprach, Klaus; Hickel, Sigrun; and Durr, Helmut, 5,289,636, Cl. 30-43.920.
Schaff, Kenneth N.: *See*—
McHarg, Christopher G.; Newman, Thomas E.; Schaff, Kenneth N.; and Wendland, Kenneth E., 5,291,482, Cl. 370-60.000.
Schaffner, James H.; and Bridges, William B., to Hughes Aircraft Company. Broad band, low power electro-optic modulator apparatus and method with segmented electrodes. 5,291,565, Cl. 385-3.000.
Schantz, Christopher A.; Hanson, Eric G.; Lam, Si-Ty; McClelland, Paul H.; Lloyd, William J.; Mittelstadt, Laurie S.; and Pan, Alfred I., to Hewlett-Packard Company. Nozzle member including ink flow channels. 5,291,226, Cl. 346-140.00R.
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Yasui, Ken K.; and Pettit, Richard G., to McDonnell Douglas Corporation. Method of superplastically forming and braze bonding a structure. 5,289,965, Cl. 228-157.000.

Yasui, Natsuo: *See*—
Kojimoto, Haruo; and Yasui, Natsuo, 5,290,312, Cl. 623-17.000.

Yasukawa, Seiichi, to Nikon Corporation. Photometering circuit. 5,291,238, Cl. 354-425.000.

Yasuo, Takuma: *See*—
Tetsuya, Nagata; Takao, Umeda; Yasuo, Takuma; Tatsuo, Igawa; and Masato, Yamada, 5,291,228, Cl. 346-153.100.

Yazaki Corp.: *See*—
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Okafuji, Osamu; Sato, Akiyoshi; and Yamaguchi, Akio, 5,289,633, Cl. 29-850.000.

Yazawa, Hiroshi: *See*—
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Yeargain, Charles W.; McNease, Daniel F.; and Moody, Michael D., to Rowan Companies, Inc. Method and apparatus for transferring a drilling apparatus from a movable vessel to a fixed structure. 5,290,128, Cl. 405-209.000.

Yen, Shau F.; and Nicolson, Paul C., to Ciba-Geigy Corportion. Method of disinfecting a contact lens and preserving a contact lens care solution. 5,290,512, Cl. 422-37.000.

Yerman, Alexander J.; and Roshen, Waseem A., to General Electric Co. Z-foldable secondary winding for a low-profile, multi-pole transformer. 5,291,173, Cl. 336-183.000.

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Yokobayashi, Kazuyuki, to Nissei ASB Machine Co., Ltd. Process of injection stretch blow molding hollow article having thick-walled bottom. 5,290,506, Cl. 264-520.000.

Yokogawa, Ken'etsu: *See*—
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Yokogawa, Yoshiyuki: *See*—
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Yokokawa, Chikao; and Wasaka, Sadao, to Mitsui Mining Company, Limited. Coal-water mixture using upgraded low-rank coal and process for producing said mixture. 5,290,324, Cl. 44-280.000.

Yokosuka, Takehiko; and Yamauchi, Osami, to Pilot Ink Co., Ltd. Penpoint assembly and writing instrument employing the same. 5,290,117, Cl. 401-224.000.

Yokota, Yuji, to Canon Denshi Kabushiki Kaisha. Disk drive with low elevated head unloading mechanism. 5,291,361, Cl. 360-106.000.

Yokoyama, Itoshi; Nagai, Masaaki; and Saito, Kakuya, to Leader Electronics. Television signal level meter. 5,291,285, Cl. 348-180.000.

Yokoyama, Minoru: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,291,219, Cl. 346-76.0PH.

Yoldas, Bulent E.: *See*—
Andersson, Clarence A.; Partlow, Deborah P.; Yoldas, Bulent E.; and Bratton, Raymond J., 5,290,737, Cl. 501-35.000.

Yonehara, Takao: *See*—
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Yonekawa, Masao, to Nippondenso Co., Ltd. Bypass air-flow control apparatus for an internal combustion engine. 5,289,807, Cl. 123-325.000.

Yoneyama, Takao; and Izuchi, Katsuhiro, to Nippondenso Co., Ltd. Fluxless soldering process. 5,289,964, Cl. 228-122.100.

Yonezawa, Kazuya: *See*—
Noda, Koji; Fujisawa, Hiroshi; and Yonezawa, Kazuya, 5,290,873, Cl. 525-313.000.

Yonkers, Robert A.; and Norwood, Richard L., to Bissell Inc. Extractor with manual priming pump. 5,289,611, Cl. 15-321.000.

Yoon, Jin H.: *See*—
Park, Khee; Yoon, Jin H.; Kwon, Oh S.; and Jeon, Gi Y., 5,291,127, Cl. 324-158.00F.

York, James F.: *See*—
Filgas, David M.; McFadden, Gordon M.; Broome, Jeffery; York, James F.; and Wofford, R. Scott, 5,291,570, Cl. 385-78.000.

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Yoshida, Kiyoshi; and Hagino, Kiyoshi, to Yamaha Corporation. Asynchronous waveform generating device for use in an electronic musical instrument. 5,290,965, Cl. 84-605.000.

Yoshida, Satoru; and Obara, Masami, to Furukawa Electric Co., Ltd., The. Optical fiber cable wound about overhead power transmission line. 5,291,573, Cl. 385-103.000.

Yoshida, Susumu: *See*—
Kii, Mashafumi; Yoshida, Susumu; Uraba, Yoshihiko; and Takahashi, Hiroshi, 5,290,665, Cl. 430-303.000.

Yoshida, Takehiro: *See*—
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Yoshigai, Motohiko: *See*—
Kaji, Tetsunori; Fujii, Takashi; Yoshigai, Motohiko; Kawasaki, Yoshinao; and Nishiumi, Masaharu, 5,290,993, Cl. 219-121.430.

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Yoshimi, Masanori; Yamauchi, Yoshimitsu; and Omori, Kiyoshige, to Sharp Kabushiki Kaisha. Method of making a stacked semiconductor nonvolatile memory device. 5,290,721, Cl. 437-43.000.

Yoshimizu, Toshiyuki: *See*—
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Yoshimura, Masahiro, to Sharp Kabushiki Kaisha. Image display device. 5,291,185, Cl. 345-116.000.
Yoshimura, Tatsuhiro: *See*—
Terasaki, Fumitoshi; and Yoshimura, Tatsuhiro, 5,289,660, Cl. 51-165.710.
Yoshimura, Yumi: *See*—
Ohnishi, Hiroshi; Yoshinaizu, Toshiyuki; Yoshimura, Yumi; and Kishimoto, Keiko, 5,291,323, Cl. 359-73.000.
Yoshinaka, Tadaaki, to Sony Corporation. Digital data recording and/or reproducing apparatus. 5,291,469, Cl. 369-69.000.
Yoshio, Kunikiyo: *See*—
Satoh, Masahiro; Watanabe, Tetsuya; Yoshio, Kunikiyo; and Kishiki, Hiroshi, 5,290,478, Cl. 252-299.620.
Yoshioka, Akira: *See*—
Saito, Hideomi; Tanaka, Saburo; Morozumi, Hiroyuki; Tatsui, Akiyoshi; and Yoshioka, Akira, 5,290,412, Cl. 204-227.000.
Yoshioka, Manoru; Nakata, Kunihiko; and Wada, Hiroki, to Toyota Jidosha Kabushiki Kaisha. Charging pressure control apparatus for an internal combustion engine with a dual turbocharger system. 5,289,684, Cl. 60-612.000.
Yoshioka, Mashayuki, to Olive Corporation. Pooper scooper. 5,290,080, Cl. 294-1.500.
Yoshiyuki: Yasui, to Imra America, Inc. Steering system for a vehicle. 5,289,894, Cl. 180-141.000.
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Young, Andy Y. Discharge controlling device for faucets. 5,290,008, Cl. 251-99.000.
Young, Clinton L., to Precision Pattern, Template & Shoe, Inc. Method for machining a precision conformed hold-down pressure shoe. 5,290,988, Cl. 219-69.170.
Young, Danny J., to Rabun Labs, Inc. Incipient lightning detection and device protection. 5,291,208, Cl. 342-198.000.
Young, David J.: *See*—
Earle, Anthony; and Young, David J., 5,289,727, Cl. 73-864.450.
Young, James E.; Bateman, Mark; and Lux, Jurgen A., to Hewlett-Packard Company. Method of making an electrophoretic capillary tube. 5,290,587, Cl. 427-122.000.
Young, Steven C.; Nielsen, Bradley A.; Sokol, David G.; and Strosser, Richard P., to Ford New Holland, Inc. Draft control system with safety disconnect. 5,291,407, Cl. 364-424.070.
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McGarry, Richard A.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Heaton, Lisa W.; and Castro, Salvatore, 5,289,963, Cl. 227-175.000.
Younger, Zo, to Uarco Incorporated. Method of making a self mailer with return envelope formed from a single cut sheet. 5,290,225, Cl. 493-188.000.
Yu, Shih-Chiang. Read-only memory cell. 5,291,435, Cl. 365-104.000.
Yuan, Han-Tzong; Shichijo, Hisashi; and Shih, Hung-Dah, to Texas Instruments Incorporated. Method of making complementary heterostructure field effect transistors. 5,290,719, Cl. 437-40.000.
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Yuasa Corporation: *See*—
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Yuda, Lawrence F. Switch positioning apparatus and method. 5,290,981, Cl. 200-296.000.
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Yukimoto, Sadao; and Kawakubo, Fumio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 5,290,847, Cl. 524-506.000.
Yung Chang Industrial Co., Ltd.: *See*—
Chiu, Kun-Low, 5,291,177, Cl. 338-166.000.
Yung, Edward K.: *See*—
Koopman, Nicholas G.; Rinne, Glenn A.; Turlik, Iwona; and Yung, Edward K., 5,289,631, Cl. 29-840.000.
Yuo, Wu-Bin; Wu, Jeng-Yue; and Lee, Mao-Song, to Industrial Technology Research Institute. Nylon 6 catalyst system. 5,290,747, Cl. 502-162.000.
Z Mark International Inc.: *See*—
Agnew, Edward G. K.; Hohaupt, Udo H.; and Neapoli, Oscar G., 5,291,002, Cl. 235-375.000.
Zappelli, Piergiorgio: *See*—
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Zarowin, Charles B.; and Bollinger, L. David, to Hughes Aircraft Company. Method to determine tool paths for thinning and correcting errors in thickness profiles of films. 5,291,415, Cl. 364-474.300.
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Zenith Data Systems Corporation: *See*—
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Zenith Electronics Corp.: *See*—
Eilers, Carl G., 5,291,291, Cl. 348-723.000.
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Zenith Products Corp.: *See*—
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Zepf, Georg, to Krones AG Hermann Kronseder Maschinenfabrik. Labelling machine. 5,290,388, Cl. 156-447.000.
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Zexel Corporation: *See*—
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Zhukovsky, Alexander: *See*—
Williams, John E. C.; Zhukovsky, Alexander; and DeRocher, Ronald, 5,290,638, Cl. 428-662.000.
Zibilich, Raymond A.; and Golla, Robert A., to United States of America, Air Force. Weld root shield device and method. 5,290,989, Cl. 219-74.000.
Zielinski, Erich; Nordmann, Adolf; and Hoff, Jochen, to Rheinmetall GmbH. Ram head. 5,289,755, Cl. 89-47.000.
Zimmer, Inc.: *See*—
Heldreth, Mark A., 5,290,313, Cl. 623-20.000.
Zimmerman, Daniel D.; Vieiro, Gary; and Pavlick, Dennis S., to Cyro Industries. Polymer alloys of rubber modified acrylic multipolymers, and polycarbonates, and methods of making the same. 5,290,860, Cl. 525-67.000.
Zimmermann, Michael, to Fresenius AG. Hypodermic needle. 5,290,267, Cl. 604-272.000.
Zingher, Arthur R.: *See*—
Gruber, Peter A.; and Zingher, Arthur R., 5,291,371, Cl. 361-705.000.
Zipperer, Bernhard; Ammermann, Eberhard; and Lorenz, Gisela, to BASF Aktiengesellschaft. 4-(4-tert-butylphenyl) cyclohexylamines, and fungicides containing same. 5,290,806, Cl. 514-643.000.
Zirnheld, Richard A.; and Goubeaux, Ronald J., to General Motors Corporation. Ceramic substrate blower motor resistor array. 5,291,174, Cl. 338-24.000.
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Espenshade, Leonard K.; Marks, Richard L.; Milbrand, Donald W., Jr.; and Zitto, Mark J., 5,290,192, Cl. 439-266.000.
Zoller, Gerhard; Kujath, Eckard; Delpy, Klaus; and Schrod, Manfred, to Cassella Aktiengesellschaft. Process for the preparation of pyrrole derivates. 5,290,947, Cl. 548-530.000.
Zoscak, Donald P. Optic fiber ornament. 5,291,577, Cl. 385-147.000.
Zuck, Dale A.; Kulik, Gene J.; and Johns, Henry C., to IMSALCO. Process for recycling saltcake. 5,290,535, Cl. 423-627.000.
Zuckerman, Ronald M.: *See*—
Maher, John W.; Christensen, Laura; and Zuckerman, Ronald M., 5,291,511, Cl. 370-85.100.
Zuercher, Erwin: *See*—
Cottenceau, Remi; and Zuercher, Erwin, 5,289,673, Cl. 57-1.0UN.
Zusmanovich, Alex: *See*—
Gerber, H. Joseph; LeBlond, Claude; Williams, Kevin; Zusmanovich, Alex; and Plumley, A. Bruce, 5,289,669, Cl. 53-415.000.
Zysman, Alexandre; Sebag, Henri; Vanlerberghe, Guy; Handjani, Rose-Marie; and Ribier, Alain, to L'Oreal. Composition for promoting healing. 5,290,565, Cl. 424-450.000.
Zyss, Joseph: *See*—
Levenson, Regine; Liang, Julienne; Carenco, Alain; and Zyss, Joseph, 5,291,574, Cl. 385-129.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF MARCH, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ausnit, Steven, to Minigrip, Inc. Bags with reclosable plastic fastener having automatic sealing gasket means. Re. 34,554, Cl. 383-63.000.
Hanaway, Ronald L. Guide sleeve, guide post and improved ball bearing assembly. Re. 34,555, Cl. 384-49.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Konno, Tsuneo, Re. 34,553, Cl. 123-90.400.
Konno, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Vale operating apparatus for an internal combustion engine. Re. 34,553, Cl. 123-90.400.
Minigrip, Inc.: *See*—
Ausnit, Steven, Re. 34,554, Cl. 383-63.000.
Sjostrom, Douglas D.; and Zemgals, Edvin, to Smith & Nephew Dyonics Inc. Surgical system for powered instruments. Re. 34,556, Cl. 606-170.000.
Smith & Nephew Dyonics Inc.: *See*—
Sjostrom, Douglas D.; and Zemgals, Edvin, Re. 34,556, Cl. 606-170.000.
Zemgals, Edvin: *See*—
Sjostrom, Douglas D.; and Zemgals, Edvin, Re. 34,556, Cl. 606-170.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Abdulally, Iqbal F.; Touma, Alfred S.; and Bartkowiak, Peter, to Foster Wheeler Energy Corporation. Fluidized bed steam generating system including a steam cooled cyclone separator. B1 4,920,924, 3-1-94, Cl. 122-4.00D.
Asahi Yukizai Kogyo Co., Ltd.: *See*—
Yokoyama, Ikuo; and Onishi, Katsuhiro, B1 5,174,332, Cl. 137-517.000.
Bartkowiak, Peter: *See*—
Abdulally, Iqbal F.; Touma, Alfred S.; and Bartkowiak, Peter, B1 4,920,924, Cl. 122-4.00D.
Class One Orthodontics, Inc.: *See*—
Reynolds, James M., B1 4,216,583, Cl. 433-9.000.
Foster Wheeler Energy Corporation: *See*—
Abdulally, Iqbal F.; Touma, Alfred S.; and Bartkowiak, Peter, B1 4,920,924, Cl. 122-4.00D.
Giesa, Paula A.; Hilleman, Maurice R.; and Provost, Philip J., to Merck & Co., Inc. Attenuated hepatitis A virus. B1 5,021,348, 3-1-94, Cl. 435-237.000.
Girman, Richard L.; Palmer, Gary E.; Gotsis, Gust G.; and Weimer, Ralph, to Restaurant Technology, Inc. Dual mode floor scrubbing machine. B1 4,893,375, 3-1-94, Cl. 15-321.000.
Gotsis, Gust G.: *See*—
Girman, Richard L.; Palmer, Gary E.; Gotsis, Gust G.; and Weimer, Ralph, B1 4,893,375, Cl. 15-321.000.
Hilleman, Maurice R.: *See*—
Giesa, Paula A.; Hilleman, Maurice R.; and Provost, Philip J., B1 5,021,348, Cl. 435-237.000.
Merck & Co., Inc.: *See*—
Giesa, Paula A.; Hilleman, Maurice R.; and Provost, Philip J., B1 5,021,348, Cl. 435-237.000.
Onishi, Katsuhiro: *See*—
Yokoyama, Ikuo; and Onishi, Katsuhiro, B1 5,174,332, Cl. 137-517.000.
Palmer, Gary E.: *See*—
Girman, Richard L.; Palmer, Gary E.; Gotsis, Gust G.; and Weimer, Ralph, B1 4,893,375, Cl. 15-321.000.
Provost, Philip J.: *See*—
Giesa, Paula A.; Hilleman, Maurice R.; and Provost, Philip J., B1 5,021,348, Cl. 435-237.000.
Restaurant Technology, Inc.: *See*—
Girman, Richard L.; Palmer, Gary E.; Gotsis, Gust G.; and Weimer, Ralph, B1 4,893,375, Cl. 15-321.000.
Reynolds, James M., to Class One Orthodontics, Inc. Orthodontic appliance. B1 4,216,583, 3-1-94, Cl. 433-9.000.
Touma, Alfred S.: *See*—
Abdulally, Iqbal F.; Touma, Alfred S.; and Bartkowiak, Peter, B1 4,920,924, Cl. 122-4.00D.
Weimer, Ralph: *See*—
Girman, Richard L.; Palmer, Gary E.; Gotsis, Gust G.; and Weimer, Ralph, B1 4,893,375, Cl. 15-321.000.
Yokoyama, Ikuo; and Onishi, Katsuhiro, to Asahi Yukizai Kogyo Co., Ltd. Constant flow valve. B1 5,174,332, 3-1-94, Cl. 137-517.000.

LIST OF DESIGN PATENTEES

A. L. Hansen Mfg. Co.: *See*—
Hansen, Randall C., 344,669, Cl. D8-331.000.
Abbaticchio, Michael T. Hand rail. 344,807, 3-1-94, Cl. D25-38.000.
ABS International, S.A.: *See*—
Stiegler, Hartmut K. E., 344,694, Cl. D12-5.000.
Acer Incorporated: *See*—
Wang, Tony C.; and Wang, Jey-Chiow, 344,719, Cl. D14-102.000.
ACS Communications, Inc.: *See*—
Gattey, Phillip A.; Burris, Christine; and Jensen, Wolfgang W., 344,730, Cl. D14-206.000.
Adams, Hugh L.: *See*—
Allen, J. Dewayne; and Adams, Hugh L., 344,736, Cl. D15-10.000.
Adams, Thomas D. Drain pad for dishes. 344,828, 3-1-94, Cl. D32-56.000.
Advanced Osseous Technologies, Inc.: *See*—
Hood, Larry L.; and Hughes, Gregg, 344,799, Cl. D24-144.000.
Hughes, Gregg; and Hood, Larry L., 344,801, Cl. D24-144.000.
Aida, Chieko: *See*—
Watanabe, Kenji; Kameda, Takanobu; Suzuki, Takeyasu; Taniguchi, Yuichiro; Yamaguchi, Atsuko; Kano, Machiko; and Aida, Chieko, 344,752, Cl. D18-52.000.
Aker, Kevin R.; and Fish, Thomas E., Jr., to Little Tikes Company, The. Toy activity gym. 344,773, 3-1-94, Cl. D21-244.000.
Alexander, George. Denim jean bean bag seat cushion. 344,655, 3-1-94, Cl. D6-601.000.
Ali, Frantz. Wall mounted back scrubber. 344,633, 3-1-94, Cl. D4-130.000.
Allen Engineering Corporation: *See*—
Allen, J. Dewayne; and Adams, Hugh L., 344,736, Cl. D15-10.000.
Allen, J. Dewayne; and Adams, Hugh L., to Allen Engineering Corporation. Riding trowel for concrete finishing. 344,736, 3-1-94, Cl. D15-10.000.
Allen, R. Mark: *See*—
Long, D. Clayton; and Allen, R. Mark, 344,772, Cl. D21-214.000.
Allen, Ronald W. Transformer cover. 344,712, 3-1-94, Cl. D13-118.000.

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Alliance Research Corporation: *See*—
Cooper, Gershon N., 344,709, Cl. D12-110.000.

Ambasz, Emilio: *See*—
Clancey, Stephen M.; Seeley, Dale F.; Salmonson, Gary; Overland, David A.; Ambasz, Emilio; and Haverly, Paul W., 344,711, Cl. D13-114.000.

American Seating Company: *See*—
Wilcox, Jeffrey S.; McDowell, Keith A.; Chadwick, Donald T.; and Bemis, Peter F., 344,649, Cl. D6-500.000.

American Standard Inc.: *See*—
Ohaus, Karl G.; Long, Jeannette M.; and Walz, Jeff P., 344,787, Cl. D23-294.000.

Amiya, Eizo, to Yamaha Corporation. Digital mixing recorder. 344,726, 3-1-94, Cl. D14-160.000.

Ampex Systems Corporation: *See*—
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Anacker, Charles D.: *See*—
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Anderson, Norman D.: *See*—
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Apple Computer, Inc.: *See*—
Parsey, Timothy J. L., 344,754, Cl. D18-55.000.

Apter, Allen; Apter, Carl; Smeltz, Lee; and Hernandez, Ray, to Wesco Manufacturing Co. Hand truck. 344,833, 3-1-94, Cl. D34-26.000.

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298.25 5,290,417
299 R 5,290,418
5,290,419
403 5,290,420
424 5,290,421

CLASS 205

109 5,290,422
114 5,290,423
116 5,290,424
234 5,290,425

CLASS 206

1.5 5,289,914
38 5,289,915
45.34 5,289,916
232 5,289,917
312 5,289,918
571 5,289,919

CLASS 208

27 5,290,426
89 5,290,427
107 5,290,428
145 5,290,429
161 5,290,430
164 5,290,431
262.5 5,290,432
391 5,290,433

CLASS 209

2 5,289,920
3 5,289,921
127.1 5,289,922

CLASS 210

109 5,290,434
151 5,290,435
169 5,290,436
5,290,437
177 5,290,438
198.1 5,290,439
198.2 5,290,440
232 5,290,441
257.1 5,290,442
321.37 5,290,443
445 5,290,445
473 5,290,444
489 5,290,446
493.1 5,290,447
500.23 5,290,448
503 5,290,449
603 5,290,450
605 5,290,451
640 5,290,452
688 5,290,453
710 5,290,454
763 5,290,455
767 5,290,456
792 5,290,457
796 5,290,458

CLASS 211

13 5,289,923
5,289,924
40 5,289,925
45 5,289,926
106 5,289,927

CLASS 212

253 5,289,928

CLASS 215

5,289,929
230 5,289,930
239 5,289,931
252 5,289,932
349

CLASS 219

68.11 5,290,987
68.17 5,290,988
74 5,290,989
83 5,290,990
121.43 5,290,993
121.44 5,290,995
121.69 5,290,991
121.74 5,290,992
201 5,290,996
218 5,290,997
247 5,290,998
388 5,290,999
539 5,291,000
616 5,290,984
725 5,290,985
770 5,290,986

CLASS 220

1.5 5,289,933
2.7 5,289,934
3.03 5,289,935
3.28 5,289,936
9.1 5,289,937
307 5,289,938
468 5,289,939
507 5,289,940
552 5,289,941
568 5,289,942

CLASS 221

5,289,943

CLASS 222

1 5,289,944
25 5,289,945
38 5,289,946
108 5,289,947
135 5,289,948
137 5,289,949
142.3 5,289,950
146.6 5,289,951
159 5,289,952
5,289,953
409 5,289,954
418 5,289,955

CLASS 223

85 5,289,956

CLASS 224

42.42 5,289,957
125 5,289,958
160 5,289,959
226 5,289,960
247 5,289,961
273 5,289,962

CLASS 227

175 5,289,963

CLASS 228

122.1 5,289,964
157 5,289,965
180.21 5,289,966
190 5,289,967
223 5,289,968

CLASS 229

23 R 5,289,969
143 5,289,970
149 5,289,971
303 5,289,972

CLASS 235

375 5,291,001
5,291,002
381 5,291,003
5,291,004
449 5,291,005
454 5,291,006
457 5,291,007
462 5,291,008
472 5,291,009

CLASS 239

14.2 5,289,973
72 5,289,974
79 5,289,975
431 5,289,976
690 5,289,977

CLASS 241

57 5,289,978
82.6 5,289,979
99 5,289,980
261.1 5,289,981
296 5,289,982

CLASS 242

35.5 A 5,289,983
58.3 5,289,984
58.6 5,289,985
107.4 A 5,289,986
107.6 5,289,987
192 5,289,988
201 5,289,989
233 5,289,990
245 5,289,991
287 5,289,992

CLASS 244

3.15 5,289,993
7 B 5,289,994
15 5,289,995
122 AF 5,289,996
130 5,289,997
173 5,289,998
5,289,999

CLASS 248

221.003 5,290,000
318 5,290,001
456 5,290,002
461 5,290,003
528 5,290,004
671 5,290,005

CLASS 249

63 5,290,006

CLASS 250

208.1 5,291,010
208.3 5,291,011
216 5,291,012
227.14 5,291,013
227.21 5,291,014
227.23 5,291,015
237 G 5,291,026
292 5,291,016
5,291,017
332 5,291,018
338.4 5,291,019
342 5,291,020
363.03 5,291,021
504 R 5,291,022
548 5,291,023
561 5,291,024
5,291,025
566 5,291,027
568 5,291,028
571 5,291,029
573 5,291,030
577 5,291,031
5,291,032

CLASS 251

30.04 5,290,007
99 5,290,008
149.6 5,290,009
214 5,290,010
229 5,290,011

CLASS 252

8.6 5,290,459
47.5 5,290,460
51.5 A 5,290,462
5,290,461
52 R 5,290,463
56 R 5,290,464
67 5,290,466
76 5,290,467
5,290,468
5,290,469
102 5,290,470
108 5,290,471
170 5,290,472
171 5,290,473
174.12 5,290,474
174.23 5,290,475
186.3 5,290,476
299.61 5,290,477
299.62 5,290,478
351 5,290,479
375 5,290,480
407 5,290,481
500 5,290,483
544 5,290,482
549 5,290,484
589 5,290,485

CLASS 254

104 5,290,012
132 5,290,013
342 5,290,014

CLASS 257

13 5,291,033
17 5,291,034
30 5,291,274
33 5,291,035
53 5,291,036
79 5,291,037
82 5,291,038
99 5,291,039
133 5,291,040
184 5,291,041
208 5,291,043
230 5,291,044
282 5,291,042
296 5,291,045
316 5,291,046
318 5,291,047
325 5,291,048
335 5,291,049
340 5,291,050
360 5,291,051
369 5,291,052
393 5,291,053
433 5,291,054
437 5,291,055
442 5,291,056
466 5,291,057
641 5,291,058
666 5,291,059
667 5,291,060
686 5,291,061
698 5,291,062
712 5,291,063
714 5,291,064
723 5,291,065
750 5,291,066

CLASS 261

66 5,290,486
122.1 5,290,487

CLASS 264

1.7 5,290,488
22 5,290,489
26 5,290,490
29.4 5,290,491
33 5,290,492
37 5,290,493
41 5,290,494
141 5,290,495
142 5,290,496
176.1 5,290,497
209.2 5,290,498
291 5,290,500
301 5,290,499
322 5,290,501
324 5,290,502
326 5,290,503
342 R.E. 5,290,504
344 5,290,505
520 5,290,506

CLASS 266

44 5,290,015
193 5,290,016
263 5,290,017

CLASS 267

293 5,290,018

CLASS 269

43 5,290,019

CLASS 270

53 5,290,020

CLASS 271

9 5,290,021
12 5,290,022
20 5,290,023
122 5,290,024
181 5,290,025
212 5,290,026
227 5,290,027

CLASS 273

25 5,290,028
73 D 5,290,031
77 A 5,290,032
138 A 5,290,033
148 B 5,290,034
167 F 5,290,035
167 R 5,290,036
184 R 5,290,037
263 5,290,038
326 5,290,039
346 5,290,040
400 5,290,041
408 5,290,042
411 5,290,043
416 5,290,044

CLASS 277

1 5,290,045
9 5,290,046
53 5,290,047

CLASS 280

6.12 5,290,048
30 5,290,049
42 5,290,050
47.27 5,290,051
279 5,290,052
281.1 5,290,053
288.1 5,290,054
304.1 5,290,055
477 5,290,056
507 5,290,057
651 5,290,058
728 A 5,290,059
737 5,290,060
743 R 5,290,061
801 R 5,290,062
821 5,290,063
824 5,290,064
825 5,290,065

CLASS 281

15.1 5,290,066

CLASS 283

60.1 5,290,067
67 5,290,068

CLASS 285

39 5,290,071
97 5,290,072
137.1 5,290,073
184 5,290,074
261 5,290,075

CLASS 292

25 5,290,076
35 5,290,077

CLASS 293

120 5,290,078
5,290,079

CLASS 294

1.5 5,290,080
64.1 5,290,081
5,290,082
87.2 5,290,083

CLASS 296

68.1 5,290,084
95.1 5,290,085
152 5,290,086
153 5,290,087

CLASS 297

191 5,290,088
216.14 5,290,089
238 5,290,090
391 5,290,091
411.32 5,290,092
452.61 5,290,093

CLASS 301

37.25 5,290,094

CLASS 303

92 5,290,095
113.1 5,290,096
113.2 5,290,097
115.4 5,290,098

CLASS 307

9.1 5,291,067
116 5,291,068
254 5,291,069
269 5,291,070
270 5,291,071
303.1 5,291,072
310 5,291,073
353 5,291,074
443 5,291,075
449 5,291,076
450 5,291,077
451 5,291,078
465 5,291,079
475 5,291,080
522 5,291,081
570 5,291,082
607 5,291,083

CLASS 310

49 R 5,291,084
68 C 5,291,085
80 5,291,086
86 5,291,087
88 5,291,088
90 5,291,089
334 5,291,090

CLASS 312

208.1 5,290,099

CLASS 313

161 5,291,091
318 5,291,092
414 5,291,093
5,291,094
417 5,291,095
446 5,291,096
478 5,291,097
506 5,291,098

CLASS 315

119 5,291,099
136 5,291,100
219 5,291,101
323 5,291,299
383 5,291,102

CLASS 318

3 5,291,103
254 5,291,104
5,291,105
375 5,291,106
432 5,291,107
433 5,291,108
443 5,291,109
560 5,291,110
563 5,291,111
568.1 5,291,112
584 5,291,113
685 5,291,114
701 5,291,115

CLASS 320

4 5,291,116
21 5,291,117
35 5,291,118

CLASS 323

207 5,291,119
209 5,291,120
313 5,291,121
5,291,122
369 5,291,123

CLASS 324

72.5 5,291,124
76.22 5,291,125
120 5,290,102
144 5,291,126
158 F 5,291,127
158 MG 5,291,128
158 P 5,291,129
174 5,291,130
206 5,291,131
207.25 5,291,133
212 5,291,134
248 5,291,135
262 5,291,136
303 5,291,137
309 5,291,138
550 5,291,139
615 5,291,140
617 5,291,141
719 5,291,142

CLASS 328

65 5,291,143
155 5,291,144

CLASS 330

4 5,291,145
43 5,291,146
136 5,291,147
149 5,291,148
255 5,291,149
279 5,291,150
282 5,291,151

CLASS 331

65 5,291,152
99 5,291,153

CLASS 332

149 5,291,154

CLASS 333

1 5,291,155
20 5,291,156
33 5,291,157
126 5,291,158
188 5,291,159
202 5,291,160
204 5,291,161
205 5,291,162
219.2 5,291,163
237 5,291,164

CLASS 335

18 5,291,165
78 5,291,166
201 5,291,167
216 5,291,168
5,291,169
246 5,291,170
306 5,291,171

CLASS 336

65 5,291,172
183 5,291,173

CLASS 338

24 5,291,174
59 5,291,175
125 5,291,176
166 5,291,177
226 5,291,178
307 5,291,179

CLASS 340

572 5,291,180
604 5,291,181
610 5,291,182
691 5,291,183
799 5,291,189
825.06 5,291,190
825.35 5,291,191
825.44 5,291,192
825.69 5,291,193
850 5,291,194
958 5,291,195
961 5,291,196

CLASS 341

141 5,291,197
159 5,291,198

CLASS 342

13 5,291,199
5,291,200
14 5,291,201
16 5,291,202
20 5,291,203
44 5,291,204
5,291,205
62 5,291,206
70 5,291,207
198 5,291,208
381 5,291,209

CLASS 343

700 MS 5,291,210
840 5,291,212
890 5,291,211

CLASS 345

7 5,291,184
116 5,291,185
128 5,291,186
179 5,291,213
185 5,291,187
189 5,291,188

CLASS 346

1.1 5,291,214
5,291,215
5,291,216
76 L 5,291,217
5,291,221
76 PH 5,291,218
5,291,219
5,291,220
108 5,291,222
5,291,223
134 5,291,224
5,291,225
140 R 5,291,226
5,291,227
153.1 5,291,228

CLASS 348

44 5,291,297
92 5,291,279
180 5,291,285
246 5,291,293
252 5,291,288
308 5,291,292
316 5,291,294
384 5,291,281
5,291,282
390 5,291,283
415 5,291,284
416 5,291,280
441 5,291,275
469 5,291,286
536 5,291,287
606 5,291,277
665 5,291,278
708 5,291,276
723 5,291,289
5,291,290
5,291,291
805 5,291,295

CLASS 351

57 5,291,229
88 5,291,230
208 5,291,231

CLASS 354

195.1 5,291,232
400 5,291,233
402 5,291,234
5,291,235
412 5,291,236
413 5,291,237
425 5,291,238

CLASS 355

53 5,291,239
5,291,240
55 5,291,241
200 5,291,242
201 5,291,243
202 5,291,244
208 5,291,245
210 5,291,246
215 5,291,247
228 5,291,248
229 5,291,249
256 5,291,250
271 5,291,251
272 5,291,252
275 5,291,253
5,291,254
285 5,291,255
290 5,291,256
5,291,257
296 5,291,258
306 5,291,259
312 5,291,260

CLASS 356

1 5,291,261
5 5,291,262
5,291,263
152 5,291,264
246 5,291,265
345 5,291,266
5,291,267
346 5,291,268
355 5,291,269
372 5,291,270
382 5,291,271
384 5,291,272
5,291,273

CLASS 358

298 5,291,296
310 5,291,298
335 5,291,300
5,291,301
400 5,291,302
426 5,291,303
434 5,291,304
444 5,291,305
5,291,306
446 5,291,307
448 5,291,308
455 5,291,309
456 5,291,310
5,291,311
474 5,291,312
521 5,291,313

CLASS 359

3 5,291,315
13 5,291,316
15 5,291,317
17 5,291,318
18 5,291,319
28 5,291,320
30 5,291,321
55 5,291,322
73 5,291,323
100 5,291,314
135 5,291,324
142 5,291,325
160 5,291,326
209 5,291,327
344 5,291,328
362 5,291,329
478 5,291,330
589 5,291,332
598 5,291,331
601 5,291,333
622 5,291,334
696 5,291,335
808 5,291,336
846 5,291,337
859 5,291,338
5,291,339
5,291,340
884 5,291,341

CLASS 360

10.3 5,291,342
33.1 5,291,343
39 5,291,344
59 5,291,345
60 5,291,346
68 5,291,347
77.07 5,291,348
84 5,291,349
85 5,291,350
5,291,351
5,291,352
96.5 5,291,353
5,291,354
97.01 5,291,355
99.06 5,291,356
99.08 5,291,357
5,291,358
104 5,291,359
5,291,360
106 5,291,361
5,291,362
113 5,291,363
137 5,291,364

CLASS 361

56 5,291,365
127 5,291,366
253 5,291,367
605 5,291,369
681 5,291,370
705 5,291,371
710 5,291,372
760 5,291,373
5,291,374
5,291,375
796 5,291,368
823 5,291,376
826 5,291,377

CLASS 362

32 5,291,378
255 5,291,379
310 5,291,380
366 5,291,381

CLASS 363

16 5,291,382
17 5,291,383
5,291,384
20 5,291,385
21 5,291,386
56 5,291,387
98 5,291,388

CLASS 364

140 5,291,389
148 5,291,390
5,291,391
167.01 5,291,392
191 5,291,393
401 5,291,394
5,291,395
5,291,396
402 5,291,397
408 5,291,398
413.02 5,291,399
413.06 5,291,400
413.13 5,291,401
413.14 5,291,402
413.23 5,291,403
413.26 5,291,404
419.19 5,291,405
424.05 5,291,406
424.07 5,291,407
426.03 5,291,408
431.07 5,291,409
5,291,410
449 5,291,411
5,291,412
5,291,413
5,291,414
5,291,416
474.16 5,291,415
474.3 5,291,417
482 5,291,418
500 5,291,419
508 5,291,420
525 5,291,422
551.01 5,291,423
552 5,291,424
561 5,291,425
570 5,291,426
574 5,291,427
578 5,291,428
602 5,291,429
725 5,291,430
754 5,291,431
760 5,291,432

CLASS 365

51 5,251,432
63 5,291,433
96 5,291,434
104 5,291,435
145 5,291,436
149 5,291,437
5,291,438
185 5,291,439
189.01 5,291,441
189.04 5,291,443
189.05 5,291,444
189.08 5,291,445
189.09 5,291,446
190 5,291,447
201 5,291,448
5,291,449
203 5,291,450
5,291,451
208 5,291,452
221 5,291,453
226 5,291,454
5,291,455
230.01 5,291,456
239 5,291,457

CLASS 366

141 5,290,100

CLASS 367

88 5,291,458
134 5,291,459
140 5,291,460
163 5,291,461

CLASS 369

13 5,291,462
5,291,463
32 5,291,464
37 5,291,465
44.28 5,291,467
44.35 5,291,466
47 5,291,468
69 5,291,469
100 5,291,470
5,291,471
5,291,472
112 5,291,473

CLASS 370

30 5,291,474
53 5,291,476
54 5,291,477
58.1 5,291,478
5,291,480
58.2 5,291,479
60 5,291,481
5,291,482
5,291,483
68.1 5,291,484
77 5,291,485
84 5,291,486
5,291,487
85.1 5,291,488
5,291,511
85.100 5,291,489
85.4 5,291,490
85.5 5,291,491
95.1 5,291,475
110.1 5,291,492
5,291,493

CLASS 371

3 5,291,496
11.3 5,291,494
19 5,291,497
22.3 5,291,495
40.1 5,291,498
43 5,291,499
65 5,291,500

CLASS 372

6 5,291,501
20 5,291,502
21 5,291,503
34 5,291,504
38 5,291,505
43 5,291,506
44 5,291,507
65 5,291,508
5,291,509
69 5,291,510
99 5,291,512

CLASS 373

9 5,291,513
135 5,291,514

CLASS 374

57 5,290,101
131 5,290,103

CLASS 375

1 5,291,515
5,291,516
5,291,517
4 5,291,518
12 5,291,519
14 5,291,523
34 5,291,520
59 5,291,521
94 5,291,522
5,291,524
5,291,527
98 5,291,525
106 5,291,528
109 5,291,529
111 5,291,526

CLASS 376

219 5,291,530
268 5,291,531
269 5,291,532
299 5,291,533

CLASS 377

20 5,291,534

CLASS 378

22 5,291,535
35 5,291,536
54 5,291,537
135 5,291,538
154 5,291,539
197 5,291,540

CLASS 379

52 5,291,541
58 5,291,542
59 5,291,543
60 5,291,544
98 5,291,545
100 5,291,546
113 5,291,547
204 5,291,548
233 5,291,549
242 5,291,550
265 5,291,551
266 5,291,552
399 5,291,553

CLASS 380

5 5,291,554
6 5,291,555

CLASS 381

17 5,291,556
22 5,291,557
107 5,291,558
188 5,291,559

CLASS 382

2 5,291,560
8 5,291,561
41 5,291,562
48 5,291,563
5,291,564

CLASS 383

25 5,290,104
83 Re.34,554
203 5,290,105

CLASS 384

45 5,290,106
49 Re.34,555
5,290,107
107 5,290,108
129 5,290,069
625 5,290,070

CLASS 385

3 5,291,565
8 5,291,566
5,291,567
31 5,291,568
39 5,291,569
78 5,291,570
93 5,291,571
94 5,291,572
103 5,291,573
129 5,291,574
132 5,291,575
142 5,291,576
147 5,291,577

CLASS 386

831 5,291,578

CLASS 392

406 5,291,579

CLASS 395

425 5,291,442
5,291,580
5,291,581
5,291,582
5,291,583
5,291,584
5,291,585
5,291,586
5,291,587
5,291,588
575 5,291,589
600 5,291,590
5,291,591
5,291,592
5,291,593
5,291,594
5,291,595
5,291,596
650 5,291,597
5,291,598
700 5,291,599
5,291,600
5,291,601
5,291,602
725 5,291,603
5,291,604
5,291,605
5,291,606
5,291,608
5,291,609
750 5,291,607
800 5,291,610
5,291,611
5,291,612
5,291,613
5,291,614
5,291,615

CLASS 400

68 5,290,109
121 5,290,110
124 5,290,112
5,290,113
208 5,290,114
491 5,290,115

CLASS 401

199 5,290,116
224 5,290,117

CLASS 402

79 5,290,118

CLASS 403

133 5,290,120
322 5,290,121
374 5,290,122
405.1 5,290,119

CLASS 404

75 5,290,123

CLASS 405

3 5,290,124
140 5,290,125
169 5,290,126
172 5,290,127
209 5,290,128
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5,289,883	5,290,006	5,290,523	5,291,280	5,291,262	5,290,466
5,290,356	5,290,008	5,290,526	5,291,281	5,291,495	5,290,653
04 : 5,289,997	5,290,012	5,290,552	5,291,296	5,291,499	5,290,761
5,290,034	5,290,028	5,290,566	5,291,297	5,291,516	5,290,764
5,290,143	5,290,035	5,290,583	5,291,302	5,291,601	5,290,801
5,290,268	5,290,038	5,290,587	5,291,317	09 : 5,289,630	5,290,827
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5,291,607	5,290,088	5,290,727	5,291,412	5,289,854	5,289,695
05 : 5,289,859	5,290,102	5,290,730	5,291,413	5,289,855	5,289,829
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5,289,878	5,290,299	5,291,134	5,291,610	5,291,204	5,289,647
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PLANT PATENTS

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STATUTORY INVENTION REGISTRATIONS

24 : H1293
38 : H1292

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 8, 1994



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 5, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,996,720 through 4,998,295
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 3, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,646,362 through 4,648,135
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 1, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,375,107 through 4,375,701
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 26,1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,840	07/571,869	3/10/92
(4,889,169)	(07/312,941)	(12/26/89)
Re 34,188	07/564,836	3/02/93
(4,890,131)	(07/316,772)	(12/26/89)
Re 34,331	07/761,171	8/03/93
(4,889,988)	(07/215,729)	(12/26/89)
4,307,567	06/092,184	12/29/81
4,307,818	06/235,509	12/29/81
4,307,819	06/235,772	12/29/81
4,307,868	06/235,230	12/29/81
4,307,955	06/216,266	12/29/81
4,308,040	06/236,540	12/29/81
4,308,050	06/239,287	12/29/81
4,308,051	06/216,609	12/29/81
4,308,159	06/220,351	12/29/81
4,308,209	06/216,124	12/29/81
4,308,211	06/220,885	12/29/81
4,308,246	06/226,592	12/29/81
4,308,302	06/238,863	12/29/81
4,308,389	06/221,954	12/29/81
4,559,646	06/613,446	12/24/85
4,559,649	06/497,686	12/24/85
4,559,650	06/550,129	12/24/85
4,559,652	06/521,009	12/24/85
4,559,653	06/468,174	12/24/85
4,559,656	06/454,000	12/24/85
4,559,657	06/649,819	12/24/85
4,559,662	06/610,098	12/24/85
4,559,664	06/493,136	12/24/85
4,559,668	06/701,443	12/24/85
4,559,670	06/551,663	12/24/85
4,559,676	06/325,073	12/24/85
4,559,677	06/615,862	12/24/85
4,559,678	06/537,283	12/24/85
4,559,683	06/332,474	12/24/85
4,559,686	06/747,371	12/24/85
4,559,689	06/474,375	12/24/85
4,559,692	06/561,755	12/24/85
4,559,693	06/638,570	12/24/85
4,559,697	06/683,314	12/24/85
4,559,702	06/551,621	12/24/85
4,559,703	06/603,526	12/24/85
4,559,704	06/667,076	12/24/85
4,559,706	06/625,664	12/24/85
4,559,707	06/613,506	12/24/85
4,559,710	06/659,756	12/24/85
4,559,712	06/604,981	12/24/85
4,559,715	06/616,825	12/24/85
4,559,716	06/621,979	12/24/85
4,559,717	06/581,831	12/24/85
4,559,720	06/535,044	12/24/85
4,559,722	06/542,027	12/24/85
4,559,725	06/650,450	12/24/85
4,559,726	06/671,117	12/24/85
4,559,728	06/636,824	12/24/85
4,559,731	06/642,086	12/24/85
4,559,732	06/502,608	12/24/85
4,559,733	06/596,157	12/24/85
4,559,734	06/578,970	12/24/85
4,559,735	06/689,763	12/24/85
4,559,742	06/533,303	12/24/85
4,559,745	06/635,792	12/24/85
4,559,747	06/664,257	12/24/85
4,559,748	06/435,877	12/24/85
4,559,754	06/691,100	12/24/85

Patent Number	Serial Number	Issue Date
4,559,758	06/563,819	12/24/85
4,559,761	06/468,963	12/24/85
4,559,766	06/343,086	12/24/85
4,559,767	06/672,165	12/24/85
4,559,771	06/637,592	12/24/85
4,559,773	06/570,550	12/24/85
4,559,774	06/611,087	12/24/85
4,559,777	06/586,624	12/24/85
4,559,783	06/493,202	12/24/85
4,559,787	06/678,148	12/24/85
4,559,793	06/433,487	12/24/85
4,559,794	06/524,294	12/24/85
4,559,796	06/578,973	12/24/85
4,559,799	06/304,668	12/24/85
4,559,800	06/621,646	12/24/85
4,559,807	06/507,078	12/24/85
4,559,810	06/621,052	12/24/85
4,559,813	06/608,881	12/24/85
4,559,815	06/577,380	12/24/85
4,559,816	06/591,135	12/24/85
4,559,818	06/583,451	12/24/85
4,559,819	06/495,153	12/24/85
4,559,820	06/501,712	12/24/85
4,559,826	06/650,806	12/24/85
4,559,827	06/599,108	12/24/85
4,559,828	06/624,593	12/24/85
4,559,840	06/466,353	12/24/85
4,559,841	06/653,810	12/24/85
4,559,846	06/550,316	12/24/85
4,559,847	06/503,970	12/24/85
4,559,849	06/276,492	12/24/85
4,559,852	06/625,479	12/24/85
4,559,873	06/605,379	12/24/85
4,559,874	06/627,794	12/24/85
4,559,876	06/603,132	12/24/85
4,559,877	06/526,089	12/24/85
4,559,880	06/430,151	12/24/85
4,559,887	06/571,513	12/24/85
4,559,892	06/538,974	12/24/85
4,559,898	06/435,614	12/24/85
4,559,912	06/443,832	12/24/85
4,559,917	06/636,427	12/24/85
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4,560,019	06/616,980	12/24/85
4,560,020	06/560,811	12/24/85
4,560,023	06/630,180	12/24/85
4,560,026	06/562,850	12/24/85
4,560,027	06/548,569	12/24/85
4,560,030	06/634,307	12/24/85
4,560,031	06/731,267	12/24/85
4,560,045	06/487,927	12/24/85
4,560,047	06/425,192	12/24/85
4,560,049	06/425,986	12/24/85
4,560,051	06/598,882	12/24/85
4,560,052	06/385,821	12/24/85
4,560,059	06/582,309	12/24/85
4,560,060	06/593,267	12/24/85
4,560,062	06/685,455	12/24/85
4,560,063	06/613,037	12/24/85
4,560,065	06/637,845	12/24/85
4,560,066	06/601,855	12/24/85
4,560,073	06/554,892	12/24/85
4,560,074	06/624,134	12/24/85
4,560,078	06/653,076	12/24/85
4,560,081	06/698,896	12/24/85
4,560,085	06/533,347	12/24/85
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4,560,094	06/513,407	12/24/85
4,560,096	06/599,156	12/24/85
4,560,100	06/662,648	12/24/85
4,560,103	06/621,433	12/24/85
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4,560,132	06/659,768	12/24/85
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4,560,157	06/658,460	12/24/85
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4,560,160	06/621,447	12/24/85
4,560,162	06/684,108	12/24/85
4,560,164	06/620,137	12/24/85
4,560,167	06/579,076	12/24/85
4,560,179	06/423,891	12/24/85
4,560,180	06/619,575	12/24/85
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4,560,189	06/558,271	12/24/85
4,560,192	06/440,180	12/24/85
4,560,193	06/610,524	12/24/85
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4,560,195	06/509,937	12/24/85
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4,560,204	06/552,508	12/24/85
4,560,214	06/557,516	12/24/85
4,560,216	06/548,137	12/24/85
4,560,217	06/524,044	12/24/85
4,560,219	06/550,183	12/24/85
4,560,220	06/605,960	12/24/85
4,560,226	06/465,866	12/24/85
4,560,228	06/503,010	12/24/85
4,560,230	06/600,576	12/24/85
4,560,231	06/473,924	12/24/85
4,560,232	06/361,167	12/24/85
4,560,236	06/570,191	12/24/85
4,560,238	06/452,978	12/24/85
4,560,243	06/624,696	12/24/85
4,560,245	06/585,399	12/24/85
4,560,256	06/578,688	12/24/85
4,560,261	06/491,846	12/24/85
4,560,262	06/566,263	12/24/85
4,560,268	06/530,362	12/24/85
4,560,272	06/646,547	12/24/85
4,560,275	06/428,311	12/24/85
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4,560,297	06/508,655	12/24/85
4,560,302	06/681,063	12/24/85
4,560,305	06/560,552	12/24/85
4,560,307	06/683,340	12/24/85
4,560,313	06/699,245	12/24/85
4,560,317	06/545,847	12/24/85
4,560,318	06/587,054	12/24/85
4,560,322	06/573,936	12/24/85
4,560,325	06/452,874	12/24/85
4,560,327	06/561,869	12/24/85
4,560,334	06/503,008	12/24/85

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4,560,335	06/549,673	12/24/85
4,560,338	06/555,699	12/24/85
4,560,341	06/606,976	12/24/85
4,560,351	06/628,141	12/24/85
4,560,356	06/514,442	12/24/85
4,560,360	06/505,995	12/24/85
4,560,363	06/567,465	12/24/85
4,560,365	06/539,489	12/24/85
4,560,369	06/428,715	12/24/85
4,560,370	06/669,177	12/24/85
4,560,371	06/603,061	12/24/85
4,560,379	06/674,683	12/24/85
4,560,384	06/618,220	12/24/85
4,560,392	06/554,329	12/24/85
4,560,394	06/332,395	12/24/85
4,560,396	06/642,589	12/24/85
4,560,397	06/641,205	12/24/85
4,560,400	06/552,023	12/24/85
4,560,411	06/496,496	12/24/85
4,560,413	06/612,299	12/24/85
4,560,416	06/672,535	12/24/85
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4,560,420	06/620,246	12/24/85
4,560,422	06/623,073	12/24/85
4,560,424	06/627,357	12/24/85
4,560,425	06/436,059	12/24/85
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4,560,437	06/623,248	12/24/85
4,560,438	06/615,997	12/24/85
4,560,439	06/413,370	12/24/85
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4,560,441	06/435,484	12/24/85
4,560,443	06/557,810	12/24/85
4,560,445	06/685,345	12/24/85
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4,560,484	06/321,411	12/24/85
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4,560,737	06/567,177	12/24/85
4,560,742	06/434,087	12/24/85
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4,560,809	06/658,523	12/24/85
4,560,815	06/550,440	12/24/85
4,560,820	06/664,658	12/24/85
4,560,827	06/572,708	12/24/85
4,560,828	06/493,310	12/24/85
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4,560,841	06/644,078	12/24/85
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4,889,044	07/317,117	12/26/89
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4,889,053	07/272,777	12/26/89
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4,889,215	07/262,011	12/26/89
4,889,216	07/186,957	12/26/89
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4,889,225	07/133,803	12/26/89
4,889,226	07/216,322	12/26/89
4,889,227	07/076,018	12/26/89

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4,889,631	07/039,477	12/26/89
4,889,634	07/253,260	12/26/89
4,889,636	06/868,747	12/26/89
4,889,639	07/208,937	12/26/89
4,889,642	07/228,953	12/26/89
4,889,645	06/699,845	12/26/89
4,889,646	07/068,902	12/26/89
4,889,651	07/146,470	12/26/89
4,889,652	07/188,886	12/26/89
4,889,653	07/323,136	12/26/89
4,889,659	06/909,322	12/26/89
4,889,673	07/280,356	12/26/89
4,889,678	07/200,619	12/26/89
4,889,680	07/151,545	12/26/89
4,889,681	06/875,454	12/26/89
4,889,683	06/842,854	12/26/89
4,889,694	07/194,158	12/26/89
4,889,702	07/277,567	12/26/89
4,889,709	07/208,254	12/26/89
4,889,711	07/229,757	12/26/89
4,889,723	07/180,933	12/26/89
4,889,724	07/228,521	12/26/89
4,889,725	07/039,335	12/26/89
4,889,728	07/168,783	12/26/89
4,889,729	07/073,370	12/26/89
4,889,741	07/229,070	12/26/89
4,889,750	07/312,657	12/26/89
4,889,760	07/224,755	12/26/89
4,889,768	07/038,154	12/26/89
4,889,771	07/121,623	12/26/89
4,889,780	07/168,114	12/26/89
4,889,788	07/224,725	12/26/89
4,889,789	07/177,414	12/26/89
4,889,804	07/135,212	12/26/89
4,889,805	07/189,750	12/26/89
4,889,807	06/807,253	12/26/89
4,889,810	06/701,214	12/26/89
4,889,836	07/158,491	12/26/89
4,889,843	07/298,213	12/26/89
4,889,850	07/291,475	12/26/89
4,889,854	07/198,535	12/26/89
4,889,857	07/250,634	12/26/89
4,889,860	07/035,034	12/26/89
4,889,864	07/127,065	12/26/89
4,889,866	07/061,752	12/26/89
4,889,870	07/149,732	12/26/89
4,889,879	07/077,286	12/26/89
4,889,882	07/284,583	12/26/89
4,889,910	07/257,946	12/26/89
4,889,911	07/231,071	12/26/89
4,889,941	07/129,014	12/26/89
4,889,944	07/126,218	12/26/89
4,889,945	07/334,645	12/26/89
4,889,946	06/404,948	12/26/89
4,889,947	07/225,295	12/26/89
4,889,957	07/213,149	12/26/89
4,889,959	07/219,515	12/26/89
4,889,961	07/230,564	12/26/89
4,889,963	07/271,410	12/26/89

Patent Number	Serial Number	Issue Date
4,889,966	07/228,575	12/26/89
4,889,970	07/276,783	12/26/89
4,889,972	07/231,352	12/26/89
4,889,973	07/256,604	12/26/89
4,889,976	06/881,943	12/26/89
4,889,979	06/896,991	12/26/89
4,889,981	07/270,827	12/26/89
4,889,984	07/111,120	12/26/89
4,889,992	07/119,544	12/26/89
4,889,996	06/881,522	12/26/89
4,889,997	07/135,828	12/26/89
4,890,000	07/257,008	12/26/89
4,890,003	07/268,485	12/26/89
4,890,027	07/274,248	12/26/89
4,890,034	07/063,421	12/26/89
4,890,036	07/130,058	12/26/89
4,890,037	07/281,895	12/26/89
4,890,047	06/878,257	12/26/89
4,890,049	07/218,703	12/26/89
4,890,050	07/105,095	12/26/89
4,890,056	07/295,340	12/26/89
4,890,058	07/252,761	12/26/89
4,890,059	07/255,978	12/26/89
4,890,065	07/031,108	12/26/89
4,890,070	07/238,760	12/26/89
4,890,078	07/180,572	12/26/89
4,890,084	07/192,991	12/26/89
4,890,091	07/252,383	12/26/89
4,890,092	07/255,942	12/26/89
4,890,116	06/849,884	12/26/89
4,890,118	07/289,881	12/26/89
4,890,122	06/902,050	12/26/89
4,890,123	07/226,489	12/26/89
4,890,136	07/194,205	12/26/89
4,890,139	07/267,296	12/26/89
4,890,182	07/239,075	12/26/89
4,890,186	07/310,673	12/26/89
4,890,191	07/304,421	12/26/89
4,890,196	07/130,309	12/26/89
4,890,201	07/288,129	12/26/89
4,890,202	07/338,833	12/26/89
4,890,204	07/158,503	12/26/89
4,890,206	07/361,215	12/26/89
4,890,209	06/728,240	12/26/89
4,890,217	07/312,404	12/26/89
4,890,218	07/231,646	12/26/89
4,890,229	07/158,193	12/26/89
4,890,239	07/110,905	12/26/89
4,890,248	07/056,195	12/26/89
4,890,249	07/168,768	12/26/89
4,890,252	07/113,954	12/26/89
4,890,295	07/192,650	12/26/89
4,890,306	07/167,918	12/26/89
4,890,326	07/163,658	12/26/89
4,890,327	07/057,474	12/26/89
4,890,329	07/202,829	12/26/89
4,890,330	07/227,291	12/26/89

Errata

"All reference to Patent No. 5,273,299, to Jen-Shou Huang of Taiwan for `STRUCTURE OF BABY WALKER´ appearing in the *Official Gazette* of December 28, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,285,476, to Kenzo Akagiri, et. al., of Japan for `CODING APPARATUS FOR DIGITAL SIGNAL´ appearing in the *Official Gazette* of February 8, 1994 should be deleted since no patent was granted."

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

D 325,196, Re. S.N. 29/017,282, Nov. 18, 1993, Cl. D14/107, CABINET FOR OPTICAL IMAGING OF FINGERPRINTS, Bruce N. Stanger, et. al., Owner of Record: *Digital Biometrics, Inc., Minnetonka, Minn.*, Attorney or Agent: Albin J. Nelson, Ex. Gp.: 2901

Re. 33,926, Re. S.N. 08/177,183, Dec. 30, 1993, Cl. 15/320, SCRUBBER SQUEEQEES FOR SCRUBBING FORWARD AND BACKWARD, Steven J.A. Waldhauser, Owner of Record: *Tennant Company, Minneapolis, Minn.*, Attorney or Agent: Daniel C. McEachran, Ex. Gp.: 2402

4,931,130, Re. S.N. 08/174,817, Dec. 29, 1993, Cl. 156/446, APPARATUS FOR APPLYING ADHESIVE ON TUBULAR CORES FOR ROLES OF WEB MATERIAL AND FOR FEEDING SAME CORES TO A WEB WINDING MACHINE, Guglielmo Biagiotti, Owner of Record: Fabio Perini, S.P.A., Lucca, Italy, Attorney or Agent: Mary J. Breiner, Ex. Gp.: 1304

4,984,772, Re. S.N. 08/136,269, Oct. 15, 1993, Cl. 270/30, HIGH SPEED CROSLAPPER, Kenneth S. Freund, Owner of Record: *E.I. Du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: Andrew L. Schaeffer, Ex. Gp.: 3401

5,070,048, Re. S.N. 08/173,841, Dec. 27, 1993, Cl. 501/71, BLUE GLASS COMPOSITIONS, Edward N. Boulos, et. al., Owner of Record: *Ford Motor Compan, Dearborn, Mich.*, Attorney or Agent: Lorraine S. Melotik, Ex. Gp.: 1108

5,078,409, Re. S.N. 08/177,923, Jan. 6, 1994, Cl. 273/459, BOARD GAME, William J. Butler, et. al., Owner of Record: *Inventors*, Attorney or Agent: R. William Graham, Ex. Gp.: 3304

5,079,844, Re. S.N. 08/174,047, Dec. 28, 1993, Cl. 30/392, COUNTERBALANCED RECIPROCATING MECHANISM, Bernhard Palm, Owner of Record: *Milwaukee Electric Tool Corporation*, Attorney or Agent: Deepak Malhotra, Ex. Gp.: 3204

5,104,156, Re. S.N. 08/173,698, Dec. 20, 1993, Cl. 285/305, MALE END FITTING, John A. Carlson, Owner of Record: *Teleflex Incorporated, Limerick, Pa.*, Attorney or Agent: Harold W. Milton, Jr., Ex. Gp.: 3501

5,167,310, Re. S.N. 08/171,803, Dec. 22, 1993, Cl. 192/70.160, HUB PART FOR A CLUTCH DISC, Mattias Fischer, et. al., Owner of Record: *Fichtel & Sachs AG, Schwwinfurt, Federal Republic of Germany*, Attorney or Agent: David Toren, Ex. Gp.: 3502

5,199,201, Re. S.N. 08/174,876, Dec. 28, 1993, Cl. 40/156, PICTURE/POSTER ASSEMBLY AND RETAINER FOR HOLDING COMPONENTS IN THE FRAME OF THE ASSEMBLY, Daniel E. Vilims, Owner of Record: *Chuen J. Rhee, Barrington, Ill.*, Attorney or Agent: Thomas R. Vigil, Ex. Gp.: 3507

5,203,829, Re. S.N. 08/173,651, Dec. 22, 1993, Cl. 119/96, SAFETY HARNESS WITH ADJUSTABLE FRONT D-RING, Brian K. Fisk, et. al., Owner of Record: *D.B. Industries, Inc., Red Wing, Minn.*, Attorney or Agent: Chad A. Klingbeil, Ex. Gp.: 3303

5,244,482, Re. S.N. 08/177,218, Jan. 4, 1994, Cl. 55/528, POST-TREATMENT OF NONWOVEN WEBS, Charles A. Hassenboehler, Jr., et. al., Owner of Record: *University of Tennessee Research Corp., Knoxville, Tenn.*, Attorney or Agent: Gerald J. Weiser, Ex. Gp.: 1305

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be

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obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,616,495, Reexam. No. 90/003,288, Dec. 23, 1993, Cl. 425/155, MOLDING APPARATUS, Jerome H. Lemelson, Owner of Record: *Inventor Incline Village, Ind.*, Attorney or Agent: J. Kevin Parker, Highland Park Ill., Ex. Gp.: 1305, Requester: Mitchell P. Brook, Graham & James, Los Angeles, Calif.

4,874,962, Reexam. No. 90/003,308, Nov. 26, 1993, Cl. 307/116, LOW POWER, LEAKAGE CURRENT, SWITCHING CIRCUIT, Albert L. Hermans, Owner of Record: *Inventor, San Leandro, Calif.*, Attorney or Agent: Harris Zimmerman, Oakland, Calif., Ex. Gp.: 2104, Requester: Owner

4,925,161, Reexam. No. 90/003,291, Dec. 27, 1993, Cl. 264/069, PROCESS FOR MOLDING DIRECTIONALLY-ORIENTATABLE MATERIAL USING SHEAR FORCE, Peter S. Allan, et. al., Owner of Record: *British Technology Group Limited, London, England*, Attorney or Agent: Albert L. Jacobs, Jr., Rosenman & Colin, New York, N.Y., Ex. Gp.: 1307, Requester: Solomat Partners, L.P., Stamford, Conn.

5,222,967, Reexam. No. 90/003,307, Jan. 21, 1994, Cl. 606/166, KERATOREFRACTIVE DIAMOND BLADE AND SURGICAL METHOD, J. Charles Casebeer, et. al., Owner of Record: *Magnum Diamond Corp., Rapid City, South Dakota*, Attorney or Agent: Pravel, Gambrell, Hewitt, Kimball & Krieger, Houston, Tex., Ex. Gp.: 3309, Requester: John R. Duncan, Gilliam, Duncan & Harms, San Diego, Calif.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
JANUARY 17, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,082	71/067,669	4/15/1913
91,087	71/063,681	4/15/1913
91,105	71/063,416	4/15/1913
91,113	71/067,532	4/15/1913
91,127	71/066,910	4/15/1913
91,144	71/067,272	4/15/1913
302,299	71/329,680	4/11/1933
302,302	71/327,954	4/11/1933
302,328	71/332,241	4/11/1933
302,331	71/332,217	4/11/1933
302,349	71/320,990	4/11/1933
302,356	71/327,952	4/11/1933
560,287	71/578,449	6/17/1952
573,075	71/547,724	4/14/1953
573,084	71/573,385	4/14/1953
573,092	71/585,958	4/14/1953
573,093	71/587,990	4/14/1953
573,102	71/594,375	4/14/1953
573,115	71/602,317	4/14/1953
573,118	71/605,246	4/14/1953
573,119	71/605,747	4/14/1953
573,130	71/611,889	4/14/1953
573,136	71/613,730	4/14/1953
573,140	71/614,637	4/14/1953
573,142	71/614,863	4/14/1953
573,146	71/615,213	4/14/1953
573,148	71/616,948	4/14/1953
573,152	71/618,090	4/14/1953
573,157	71/619,595	4/14/1953
573,174	71/621,391	4/14/1953
573,177	71/621,563	4/14/1953
573,180	71/621,617	4/14/1953
573,183	71/622,176	4/14/1953
573,184	71/622,225	4/14/1953
573,203	71/624,654	4/14/1953
573,204	71/624,699	4/14/1953
573,205	71/624,807	4/14/1953
573,208	71/624,998	4/14/1953
573,210	71/625,164	4/14/1953
573,217	71/626,413	4/14/1953
573,218	71/626,806	4/14/1953
573,223	71/627,033	4/14/1953
573,234	71/628,588	4/14/1953
573,243	71/629,403	4/14/1953
573,246	71/629,757	4/14/1953
573,247	71/629,801	4/14/1953
573,248	71/629,884	4/14/1953
573,259	71/630,412	4/14/1953
573,264	71/630,573	4/14/1953
573,271	71/631,115	4/14/1953
573,281	71/631,910	4/14/1953
573,284	71/632,437	4/14/1953
573,288	71/632,900	4/14/1953
573,289	71/632,920	4/14/1953
573,291	71/633,503	4/14/1953
573,293	71/634,200	4/14/1953
573,295	71/635,019	4/14/1953
573,301	71/620,979	4/14/1953
573,306	71/589,553	4/14/1953
573,317	71/616,754	4/14/1953
573,318	71/619,439	4/14/1953
573,321	71/621,481	4/14/1953
573,322	71/622,317	4/14/1953
573,326	71/628,452	4/14/1953
943,069	72/365,801	9/19/1972
949,695	72/382,241	1/02/1973
956,728	72/396,434	4/10/1973
956,729	72/402,497	4/10/1973
956,732	72/415,048	4/10/1973
956,745	72/418,315	4/10/1973
956,746	72/418,723	4/10/1973
956,752	72/407,108	4/10/1973
956,754	72/411,171	4/10/1973
956,755	72/413,658	4/10/1973
956,756	72/404,316	4/10/1973
956,757	72/407,249	4/10/1973
956,761	72/413,806	4/10/1973
956,762	72/417,931	4/10/1973
956,763	72/418,224	4/10/1973
956,764	72/419,234	4/10/1973
956,766	72/419,925	4/10/1973
956,768	72/420,760	4/10/1973
956,773	72/420,762	4/10/1973
956,774	72/398,108	4/10/1973
956,776	72/400,576	4/10/1973
956,778	72/400,988	4/10/1973
956,779	72/401,920	4/10/1973
956,781	72/402,299	4/10/1973
956,787	72/381,730	4/10/1973
956,788	72/393,666	4/10/1973
956,791	72/416,711	4/10/1973
956,793	72/420,548	4/10/1973
956,797	72/418,999	4/10/1973
956,801	72/416,470	4/10/1973
956,802	72/416,910	4/10/1973
956,803	72/419,894	4/10/1973
956,804	72/426,168	4/10/1973
956,816	72/405,838	4/10/1973
956,820	72/407,551	4/10/1973
956,822	72/414,561	4/10/1973
956,823	72/414,721	4/10/1973
956,824	72/415,004	4/10/1973

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956,839	72/401,885	4/10/1973
956,840	72/419,825	4/10/1973
956,841	72/420,804	4/10/1973
956,842	72/355,296	4/10/1973
956,844	72/362,516	4/10/1973
956,845	72/370,045	4/10/1973
956,848	72/391,740	4/10/1973
956,854	72/401,431	4/10/1973
956,856	72/403,857	4/10/1973
956,857	72/411,027	4/10/1973
956,881	72/393,783	4/10/1973
956,883	72/397,325	4/10/1973
956,884	72/398,532	4/10/1973
956,885	72/404,041	4/10/1973
956,889	72/412,212	4/10/1973
956,891	72/426,334	4/10/1973
956,895	72/420,484	4/10/1973
956,896	72/421,016	4/10/1973
956,898	72/394,308	4/10/1973
956,899	72/410,289	4/10/1973
956,900	72/415,357	4/10/1973
956,902	72/350,295	4/10/1973
956,903	72/396,635	4/10/1973
956,912	72/404,971	4/10/1973
956,921	72/404,865	4/10/1973
956,926	72/405,716	4/10/1973
956,927	72/406,104	4/10/1973
956,928	72/406,314	4/10/1973
956,930	72/406,771	4/10/1973
956,938	72/387,896	4/10/1973
956,940	72/395,409	4/10/1973
956,941	72/400,295	4/10/1973
956,942	72/400,296	4/10/1973
956,946	72/407,334	4/10/1973
956,951	72/189,875	4/10/1973
956,955	72/395,209	4/10/1973
956,959	72/398,448	4/10/1973
956,961	72/406,633	4/10/1973
956,966	72/413,994	4/10/1973
956,969	72/378,711	4/10/1973
956,970	72/391,565	4/10/1973
956,972	72/403,445	4/10/1973
956,977	72/406,978	4/10/1973
956,980	72/413,653	4/10/1973
956,987	72/418,430	4/10/1973
956,989	72/386,130	4/10/1973
956,995	72/388,862	4/10/1973
956,996	72/401,000	4/10/1973
956,999	72/417,846	4/10/1973
957,003	72/418,483	4/10/1973
957,004	72/418,505	4/10/1973
957,011	72/403,023	4/10/1973
957,013	72/407,539	4/10/1973
957,019	72/348,432	4/10/1973
957,020	72/378,075	4/10/1973
957,027	72/399,597	4/10/1973
957,030	72/404,282	4/10/1973
957,036	72/413,642	4/10/1973
957,037	72/416,614	4/10/1973
957,044	72/419,851	4/10/1973
957,050	72/425,100	4/10/1973
957,053	72/342,865	4/10/1973
957,054	72/399,486	4/10/1973
957,055	72/405,806	4/10/1973
957,056	72/409,505	4/10/1973
957,058	72/402,963	4/10/1973
957,059	72/285,549	4/10/1973
957,062	72/405,445	4/10/1973
957,063	72/407,660	4/10/1973
957,064	72/408,568	4/10/1973
957,065	72/409,460	4/10/1973
957,069	72/413,139	4/10/1973
957,070	72/415,069	4/10/1973
957,071	72/415,074	4/10/1973
957,072	72/415,078	4/10/1973
957,073	72/415,085	4/10/1973
957,074	72/415,086	4/10/1973
957,075	72/415,125	4/10/1973
957,081	72/418,870	4/10/1973
957,083	72/349,760	4/10/1973
957,093	72/396,954	4/10/1973
957,096	72/406,326	4/10/1973
957,101	72/413,970	4/10/1973
957,103	72/339,840	4/10/1973
957,105	72/350,366	4/10/1973
957,106	72/352,054	4/10/1973
957,108	72/358,361	4/10/1973
957,109	72/360,743	4/10/1973
957,112	72/374,311	4/10/1973
957,114	72/383,142	4/10/1973
957,116	72/393,581	4/10/1973
957,121	72/408,367	4/10/1973
957,122	72/408,941	4/10/1973
957,126	72/329,962	4/10/1973
957,128	72/400,977	4/10/1973
957,129	72/405,777	4/10/1973
957,132	72/387,966	4/10/1973
957,134	72/402,690	4/10/1973
957,135	72/389,453	4/10/1973
957,138	72/345,999	4/10/1973
957,139	72/368,199	4/10/1973
957,142	72/413,953	4/10/1973
957,144	72/436,588	4/10/1973
957,160	72/411,543	4/10/1973
957,737	72/425,295	4/24/1973

United States Postal Service Interruption and Emergency In Los Angeles

The January 17, 1994, Los Angeles earthquake has caused a service interruption in United States Postal Service (USPS) in the greater Los Angeles area. Normal postal delivery and collection operations of the USPS were impacted by the earthquake throughout the greater Los Angeles area to varying degrees from January 17, 1994, through January 21, 1994.

The Patent and Trademark Office (PTO) is designating the interruption in the service of the greater Los Angeles area and the overall destruction caused by the earthquake as a postal service interruption and an emergancy within the meaning of 35 U.S.C. 21(a). Any request to accept a paper or fee delayed by the emergency should be directed to Jeffrey V. Nase, Director, Office of Petitions, (703) 305-9285, PK3-704, for patent-related matters, and to Lynne G. Beresford, Trademark Legal Administrator, (703) 305-9464, PK2-910, for trademark-related matters.

Feb. 9, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Suspension

Leon Gilden, of Spokane, Washington, and formerly of South Pasadena, Fla., whose registration number is 32,342, has been suspended for a period of five months commencing as of Wednesday, February 9, 1994. This action is taken under the provisions of 35 U.S.C. § 32; and 37 CFR §§ 10.130, 10.133(g), 10.156(b), and 10.159(b).

Feb. 10, 1994 CAMERON WEIFFENBACH, Director
Office of Enrollment and Discipline

Patents Available For License Or Sale

5,202,687 ANALOG TO DIGITAL CONVERTER

Contact: Harry F. Smith
Intellectual Property Development

VOL 1160 ISS 2 MR 8 1994 UMI

Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

5,157,674 SECOND HARMONIC GENERATION AND SELF FREQUENCYDOUBLING LASER MATERIALS COMPRISED OF BULK GERMANOSILICATE AND ALUMINOSILICATE GLASSES

Contact: Harry F. Smith
Intellectual Property Development
Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

5,233,621 SECOND HARMONIC GENERATION AND SELF FREQUENCY DOUBLING LASER MATERIALS COMPRISED OF BULK GERMAN OSILICATE AND ALUMINOSILICATE GLASSES

Contact: Harry F. Smith
Intellectual Property Development
Associates of Connecticut, Inc.
P.O. Box 815
Trumbull, Conn., 06611
(203) 254-7538

5,233,705 INFLATABLE RAFT WITH SHOWER

Contact: Richard V. Coleman
13939 Gardenland Avenue
Bellflower, Calif., 90706
(310) 866-2956

5,253,258 OPTICALLY ENCODED PHASE MATCHED SECOND HARMONIC GENERATION DEVICE AND SELF-FREQUENCY DOUBLING LASER MATERIALS USING SEMICONDUCTOR

Contact: Harry F. Smith
Intellectual Property Development
Associates of Connecticut, Inc.
P.O. Box 815
Trumbull Conn., 06611
(203) 254-7538

5,266,031 METHOD AND DEVICE FOR DETERMINING TENTATIVE MAXILLO-MANDIBULAR CENTRIC OCCLUSION

Contact: Rupert M. Marigza
31-41 69th Street
Woodside, N.Y., 11377
(718) 397-0021

5,286,546 POSITION MARKING AND EASY TEARING-OFF FOR SELF-STICK REMOVABLE NOTE PAD OR SIMILAR DEVICES

Contact: Ping-yao Su
152-18 Union Turnpike
Flushing, N.Y., 11367

D,315,294 COMBINED EDIBLE FLOWER AND PACKAGE THEREFORE

Contact: Maria M. Young-Zeigler
1413 New Mexico Avenue
Charlestown, S.C., 29404

Please contact Patent Counsel, General Electric Company, GE Appliances, 2-225, Louisville, Ky., 40225, for the following patents:

4,355,217 SWITCHING INHIBITOR FOR TIMERS

4,418,398 MANUAL RESET CONTROL CIRCUIT FOR A MICROPROCESSOR CONTROLLED WASHING APPLIANCE

4,811,567 METHOD FOR TESTING THE OPERABILITY OF A REFRIGERANT SYSTEM

4,816,647 POWER CONTROL FOR APPLIANCE HAVING A GLASSCERAMIC COOKING SURFACE

4,848,581 PACKING SUPPORT FOR SLIDABILITY MOUNTED ARTICLES WITHIN A CABINET

4,862,795 COOKTOP GRILL WITH IMPROVED REFLECTOR PAN

4,909,580 FABRIC DRYER HOUSING

4,926,654 CONTROL ASSEMBLY FOR ADJUSTING THERMOSTAT SETTING

5,038,748 SELF-CLEANING GAS RANGE HAVING HEAT BAFFLE ASSEMBLY

5,139,417 GAS BURNER WITH IMPROVED PRIMARY PORT ARRANGEMENT

5,161,393 ELECTRONIC WASHER CONTROL INCLUDING AUTOMATIC LOAD SIZE DETERMINATION AND ADJUSTIBLE WASHER MEANS

5,201,306 ARRANGEMENT FOR SECURING A DROP-IN DEVICE TO A FIXED SUPPORT

5,215,073 INSULATION SYSTEM FOR DOMESTIC RANGES

5,215,074 LIFT-UP COOKTOP LOCATOR WITH COMBINED FUNCTION ORSUPPORT ROD RACE

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificates of Correction Issue of March 8, 1994

D 331,486	5,130,573	5,181,590	5,209,756
4,457,030	5,131,798	5,182,568	5,210,209
4,497,340	5,133,300	5,185,147	5,210,458
4,603,608	5,133,516	5,185,233	5,210,585
4,695,550	5,134,300	5,185,403	5,211,390
4,752,222	5,134,783	5,185,468	5,212,533
4,816,586	5,136,289	5,185,820	5,212,851
4,852,018	5,136,961	5,186,739	5,213,282
4,886,766	5,137,209	5,186,888	5,213,863
4,891,420	5,137,988	5,188,181	5,214,186
4,895,142	5,141,000	5,188,261	5,214,374
4,929,982	5,141,196	5,188,291	5,214,466
4,930,358	5,142,312	5,190,838	5,214,970
4,933,195	5,142,590	5,190,920	5,215,564
4,934,292	5,144,465	5,191,967	5,215,602
4,935,462	5,145,992	5,193,466	5,215,860
4,937,447	5,148,005	5,193,560	5,216,115
4,977,266	5,149,375	5,194,177	5,216,241
4,997,431	5,149,938	5,194,561	5,216,381
5,002,466	5,150,028	5,194,732	5,216,423
5,008,517	5,152,370	5,195,400	5,216,520
5,014,763	5,152,906	5,195,584	5,216,522
5,015,552	5,153,138	5,196,311	5,216,562
5,037,758	5,154,501	5,196,396	5,216,672
5,040,646	5,155,583	5,196,462	5,216,881
5,042,539	5,157,104	5,198,812	5,217,031
5,045,115	5,158,992	5,198,880	5,217,144
5,045,807	5,161,941	5,198,898	5,217,146
5,047,101	5,162,836	5,199,528	5,217,238
5,055,843	5,164,242	5,200,847	5,217,606
5,057,104	5,165,915	5,200,982	5,217,426
5,058,100	5,166,275	5,201,050	5,217,703
5,065,215	5,168,664	5,201,151	5,217,782
5,067,602	5,170,094	5,201,237	5,218,080
5,070,691	5,172,009	5,202,117	5,218,180
5,073,491	5,173,805	5,202,213	5,218,336
5,074,530	5,173,812	5,202,334	5,218,462
5,074,973	5,174,205	5,202,980	5,219,426
5,081,743	5,174,293	5,203,269	5,219,779
5,084,490	5,174,438	5,203,300	5,219,965
5,087,214	5,174,618	5,203,784	5,220,391
5,097,289	5,175,389	5,204,223	5,220,425
5,099,421	5,175,772	5,204,777	5,220,555
5,100,891	5,176,349	5,204,929	5,220,787
5,101,090	5,177,277	5,204,948	5,221,161
5,106,578	5,177,534	5,204,880	5,221,279
5,110,261	5,178,009	5,206,904	5,221,570
5,113,407	5,179,601	5,207,161	5,222,699
5,116,792	5,179,733	5,207,220	5,222,728
5,117,117	5,180,508	5,207,249	5,223,642
5,119,230	5,180,649	5,207,873	5,224,033
5,120,782	5,181,034	5,208,213	5,225,079
5,124,815	5,181,193	5,208,319	5,225,747
5,126,683	5,181,195	5,208,739	5,226,068
5,128,064	5,181,421	5,209,264	5,226,176
5,128,434	5,181,579	5,209,410	5,226,477
5,226,888	5,231,811	5,236,401	5,238,941
5,227,736	5,231,880	5,236,476	5,238,975
5,227,751	5,232,034	5,236,492	5,239,195
5,228,108	5,232,059	5,236,497	5,239,521
5,228,703	5,232,133	5,236,545	5,239,696
5,228,743	5,232,436	5,236,563	5,240,495
5,229,151	5,233,125	5,236,566	5,240,640
5,229,691	5,233,159	5,236,729	5,240,798
5,230,225	5,233,380	5,236,843	5,240,844
5,230,239	5,233,686	5,237,038	5,241,309
5,230,580	5,233,746	5,237,055	5,241,660
5,230,738	5,233,898	5,237,127	5,241,679
5,230,847	5,234,287	5,237,163	5,242,025
5,230,854	5,234,460	5,237,261	5,243,139
5,230,882	5,234,593	5,237,267	5,245,717
5,231,155	5,234,608	5,237,487	5,245,728
5,231,318	5,234,926	5,237,530	5,246,425
5,231,333	5,235,036	5,237,585	5,246,725
5,231,383	5,235,234	5,237,694	5,246,943
5,231,436	5,235,236	5,237,802	5,248,366
5,231,466	5,235,394	5,238,462	5,255,131
5,231,768	5,235,554	5,238,711	5,257,257
5,231,798	5,236,241	5,238,889	5,279,065

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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 10-14, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
					TTAB Decision			
1-14	EX	74/109,442	Type III, Inc.	Whether matter asserted for registration has been used as a trademark for goods listed in application	Refusal Affirmed	"TYPE III" [computer programs for performing financial analysis and printing]		No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents except: trademark registrations and assignments.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PDTLs have both the patent and trademark sections of the *Official Gazette of the U. S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage: Z. J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette: Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529

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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Naprona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	2/27/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/07/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	10/30/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	10/30/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	4/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	8/04/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/17/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	3/02/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	6/17/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	5/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	7/11/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	10/07/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	1/11/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/23/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/15/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/02/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	4/01/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Feb. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,005,494 to 4,009,493 inclusive
Plant Patents ..... 4,013 to 4,018

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of February 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/27/93	12/23/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	12/23/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/25/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/21/93	11/24/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	9/29/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	11/05/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/14/93	12/20/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/01/93	11/19/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/03/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/17/93	12/13/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/28/93	12/07/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	12/15/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	11/24/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	11/15/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

MARCH 8, 1994

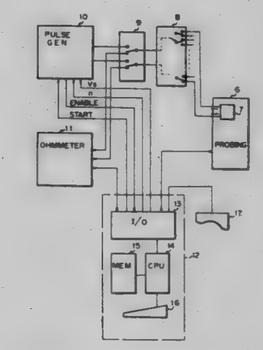
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,782,202 (2239th)

METHOD AND APPARATUS FOR RESISTANCE ADJUSTMENT OF THICK FILM THERMAL PRINT HEADS

Tetsunori Sawae; Hiromi Yamashita; Takafumi Endo; Kohei Katayama, and Yukio Murata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Reexamination Request No. 90/002,862, Oct. 9, 1992.
Reexamination Certificate for Patent No. 4,782,202, issued Dec. 29, 1986, Ser. No. 946,968, Nov. 1, 1988.
Int. Cl.[5] H01L *49/00*; B41J *3/20*
U.S. Cl. 219—68



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

Claims **4**, **6**, **8–11** are cancelled.

Claims **5**, **7**, **12** and **13** are determined to be patentable as amended.

New claims **14–29** are added and determined to be patentable.

5. A method **[**according to claim **4]** *of adjusting the resistance values of heat generating thick film resistor elements of a thermal head assembly, said method characterized by the steps of:*

A. measuring the initial resistance values of said heat generating resistor elements,

B. selecting a first peak value for a first voltage pulse to be applied to each of said head generating elements that exceeds a predetermined target value to decrease the initial resistances of said heat generating elements by a desired amount,

C. applying the first voltage pulse having the first peak voltage value to said heating generating resistor elements to decrease the initial resistance values of said heat generating resistor elements if the measured resistance values of said heating generating resistor elements are higher than the target value,

D. measuring the resistance values of said heating generating elements,

E. selecting a further peak value for a further voltage pulse to decrease measured resistance values,

F. applying the further voltage pulse having the further peak voltage value if the measured resistance values of said heating generating resistor elements are higher than said target value, and

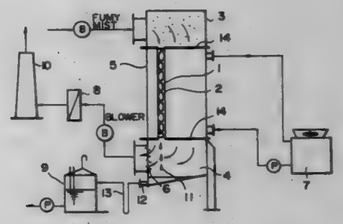
G. repeating Steps D, E, and F with a sequence of voltage pulses wherein the peak voltage value of the voltage pulses in said sequence is increased in sequence, until a desired resistance value is obtained, wherein the number of times the voltage pulses are applied is limited to a number less than a preset number.

B1 5,035,730 (2240th)

MIST RECOVERY APPARATUS WITH TWISTED STRIP INSERTED PIPES

Takayasu Kisaragi, Tokyo, and Yuichi Shirasaka, Aichi, both of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Reexamination Request No. 90/002,962, Jan. 25, 1993.
Reexamination Certificate for Patent No. 5,035,730, issued Jul. 30, 1991, Ser. No. 540,090, Jun. 19, 1990.
Claims priority, application Japan, Jun. 23, 1989, 1-73007
Int. Cl.[5] B01D *45/16*
U.S. Cl. 55—269



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1**, **2** is confirmed.

1. A mist recovery apparatus comprising a shell, an upper pipe plate and a lower pipe plate respectively arranged in said shell, and a plurality of exhaust passing pipes, each pipe having a twisted strip placed therein, wherein an exhaust gas containing the mist is passed downward through said exhaust passing pipes so as to separate and recover said mist from said exhaust gas, the inner diameter of said exhaust passing pipe being 25–60 mm, and said twisted strip having a ratio of L/P (length of said exhaust passing pipe/twisting half pitch of said twisted strip) of 8–35.

B1 5,086,273 (2241st)

A.C. ELECTROMAGNETIC SYSTEM FOR DETERMINING POSITION OF AN ENCASES MOVABLE ELECTRICALLY CONDUCTIVE ELEMENT

Robert L. Leon, Maple Glen, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Reexamination Request No. 90/002,808, Aug. 7, 1992.
Reexamination Certificate for Patent No. 5,086,273, issued Feb. 4, 1992, Ser. No. 511,657, Apr. 20, 1990.
Int. Cl.[5] G01B *7/14*; F16K *37/00*
U.S. Cl. 324—207.17

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims 1-20 is confirmed.

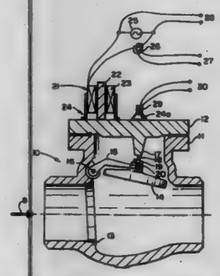
Claim 21 is determined to be patentable as amended.

Claims 22 and 23, dependent on an amended claim, are determined to be patentable.

New claims 24-27 are added and determined to be patentable.

21. A system for detecting from outside a housing the position of an electrically conductive element movably enclosed in the housing, the system comprising:

A.C. electromagnet means connected to an A.C. voltage source and positioned proximal to the housing for generating a magnetic field penetrating the housing and the element, the A.C. electromagnet means including a coil and a core means at least partially within the coil for intensifying and focusing magnetic lines of force generated by the A.C. electromagnet means so as to penetrate the housing and the electrically conductive element from outside the housing; and



magnetic field sensor means located proximal to the housing for sensing the magnetic field generated by the A.C. electromagnet *means* and varied by the movable element.

REISSUES

MARCH 8, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,557

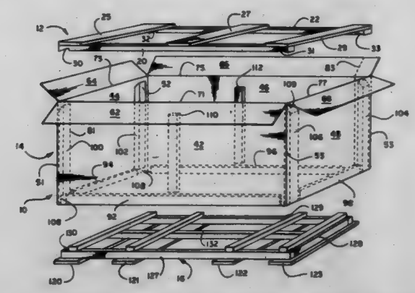
WOOD REINFORCED CORRUGATED PAPERBOARD SHIPPING CONTAINER WITH ATTACHING STRIPS

John M. Grigsby, Marietta, Ga., assignor to North American Container Corporation, Mableton, Ga.

Original No. 4,832,256, dated May 23, 1989, Ser. No. 241,499, Sep. 7, 1988. Continuation of Ser. No. 936,426, Dec. 1, 1986, abandoned. Application for reissue May 23, 1991, Ser. No. 704,345

Int. Cl.[5] B65D *8/04*

U.S. Cl. 229—23 C **18 Claims**



13. A reinforced corrugated paperboard shipping container, comprising:

a base frame for supporting an article to be packed, said base frame including at least two wood strips;

a corrugated paperboard body comprising a wall forming blank of paperboard scored to provide a series of panels foldably joined together at a plurality of corners and configured for engagement to said base frame;

a plurality of substantially vertical supports fixedly secured to said container walls adjacent said corners for reinforcing said paperboard body and sufficiently distanced therefrom to permit collapse of said paperboard body;

at least two attaching strips, each one fixedly secured to a separate one of said panels and positioned for alignment with one of said wood strips; and

means for connecting said attaching strips to said wood strips, whereby engagement of said reinforced corrugated paperboard body to said base frame by connecting said attaching strips to said wood strips ensures against component separation.

Re. 34,558

FLASH DEVICE FOR USE IN PHOTOGRAPHY

Nobuyuki Taniguchi; Keiji Yamazaki; Hiroshi Hosomizu; Makoto Kamiya, and Kenji Tsuji, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 4,851,868, dated Jul. 25, 1989, Ser. No. 170,363, Mar. 18, 1988. Division of Ser. No. 811,876, Dec. 20, 1985, Pat. No. 4,743,929. Application for reissue Jul. 25, 1991, Ser. No. 735,649

Claims priority, application Japan, Dec. 25, 1984, 59-278594; Dec. 26, 1984, 59-281761; Dec. 26, 1984, 59-281762; Dec. 26, 1984, 59-281763

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—127.1 **13 Claims**

4. A flash device for use in flash photography and provided with digital data representative of a focal length of a lens mounted on a camera, said flash device comprising:

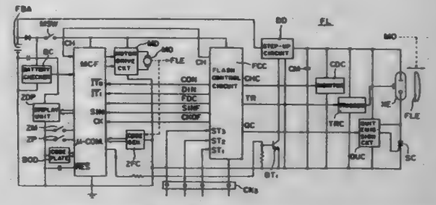
means for emitting a flash light;

means for changing an angle of cone of the flash light covering the object field to be photographed;

a manually operable member;

means, responsive to said manually operable member, for controlling said changing means to change the angle of cone to one of a variety of predetermined fixed angles of cone and one variable angle of cone, in a predetermined order, with every manual operation of said manually operable member;

means for automatically determining the variable angle of cone



in response to the digital data representative of a focal length; and

means for displaying the angle of cone irrespective of whether it is one of the predetermined fixed angles of cone or the automatically determined variable angle of cone, whereby the angle of cone displayed is changed among the variety of predetermined fixed angles of cone and the one automatically determined variable angle of cone in a predetermined order on every manual operation of said manually operable member.

Re. 34,559

DIAGNOSTIC METHOD FOR ANALYZING AND MONITORING THE PROCESS PARAMETERS IN THE OPERATION OF RECIPROCATING EQUIPMENT

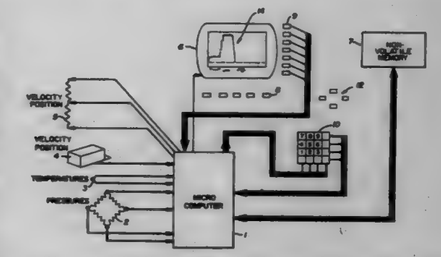
John Mickowski, 50 Walling Rd., Warwick, N.Y. 10990

Original No. 4,734,869, dated Mar. 29, 1988, Ser. No. 710,046, Mar. 11, 1985. Continuation of Ser. No. 292,168, Aug. 12, 1981, Pat. No. 4,504,920. Application for reissue Mar. 29, 1990, Ser. No. 501,741

The portion of the term of this patent subsequent to Mar. 12, 2009, has been disclaimed.

Int. Cl.[5] G05F *15/46;* **G01D** *3/08*

U.S. Cl. 364—550 **38 Claims**



1. A diagnostic method for analyzing and monitoring the process parameters of reciprocating equipment in which a linear reciprocating injection device is traversed over a fixed stroke length at high speed comprising the steps of:

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(a) dividing said stroke length into a predetermined number of incremental positions;

(b) generating analog data corresponding to at least the position of said injection device and the pressure developed by said injection device at each such incremental position;

(c) recording the time transpired in the movement of said injection device along said stroke length;

(d) deriving the velocity of said injection device at each such incremental position;

(e) graphically displaying the data corresponding to pressure and velocity on a display screen of a cathode ray tube as a function of the incremental position of said injection device along said stroke length until said velocity reaches a predetermined minimum level, with said display forming a master profile for said data;

(f) storing the data representing said master profile at a predetermined address location in a nonvolatile memory of a microcomputer;

(g) repeating the sequence of generating, [calculating] *deriving* and storing analog data corresponding to pressure and velocity as a function of stroke position for a second die casting [operating] *operation* to form a current profile of such data for such second operation, and

(h) displaying said current profile on said display screen along with said master profile for diagnostic comparison purposes.

Re. 34,560

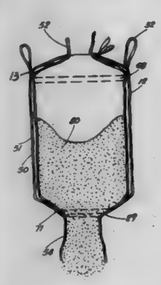
SEMI-BULK WITH LINER

Daniel R. Schnaars, Lafayette, La., assignor to Flexcon & Systems, Inc., Lafayette, La.

Original No. 4,946,291, dated Aug. 7, 1990, Ser. No. 251,020, Sep. 27, 1988. Continuation of Ser. No. 59, Jan. 2, 1987, abandoned. Application for reissue Aug. 6, 1992, Ser. No. 927,064

Int. Cl.[5] B65D *88/16, 90/04*

U.S. Cl. 383—113 **10 Claims**



6. A storage bag for transporting bulk material, the bag having an upper inlet opening, the bag comprising:

(a) an exterior fabric bag portion comprising a plurality of wall portions, a floor portion and a top portion, all defining a bulk storage space therewithin;

(b) a collapsed interior plastic-liner means contained within the bag portion and at least comprising a continuous wall portion, for storing bulk material therein;

(c) glue circumferentially placed on the wall portions of the exterior bag portion along the bulk storage space in at least a first position adjacent and surrounding the upper inlet opening, serving as a permanent adhesive contact between the wall portion of the interior liner means and the wall portions of the exterior bag portion, so that the collapsed interior liner means adheres to the wall portions of the exterior bag portion when the collapsed interior liner means expands and makes contact with the wall portions of the exterior bag portion; and

(d) means associated with the collapsed interior liner means for providing that the wall portion of the collapsed interior liner means substantially conforms to and abuts against the wall portions of the exterior bag portion when the interior liner means expands and makes contact with the exterior bag portion.

PLANT PATENTS

GRANTED MARCH 8, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,626

MINIATURE ROSE PLANT NAMED RUINERO

Gijsbert de Ruiter, Hazerswoude, Netherlands, assignor to de Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Dec. 31, 1992, Ser. No. 999,604

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,627

MINIATURE ROSE PLANT NAMED RUIHONZEV

Gijsbert de Ruiter, Voorweg, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Dec. 31, 1992, Ser. No. 999,225

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially, as shown and described.

8,628

HYBRID TEA ROSE PLANT NAMED 'JACABLE'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 991,630

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—12 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bicolored flowers on stems of consistent length, thick petals, long vase life, vigorous upright growth habit and pleasing fragrance.

8,629

HYBRID TEA ROSE PLANT NAMED 'JACMER'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 991,631

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its high production of cut-flower stems, its good vase life, its small thorns and its novel flower color.

8,630

HYBRID TEA ROSE PLANT NAMED 'JACEM'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 990,741

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its high production of long-stemmed cut-flower blooms, strong fragrance, few thorns, long vase life and its large, attractive, light pink flowers.

8,631

HYBRID TEA ROSE PLANT NAMED RUITULVI

P. C. Tulp, Kudelstaart, Netherlands, assignor to de Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Dec. 31, 1992, Ser. No. 999,224

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,632

HYBRID TEA ROSE PLANT NAMED RUISTEENKA

J. E. Steenks, Baarlo, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Dec. 31, 1992, Ser. No. 999,605

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,633

HYBRID TEA ROSE PLANT NAMED 'JACSLING'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 998,238

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its bright red stable flower color, its long, straight stems, its vigorous, upright growth, its good yield of cut flowers, its good vase life and its thick, heavy petals.

8,634

FLORIBUNDA ROSE PLANT NAMED 'JACANNE'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 990,742

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its powdery mildew resistance, few thorns, long vase life, vigorous, upright habit of growth, and its flowering in clusters of 3 to 5 flowers.

8,635

***RHAPHIOLEPIS INDICA* "HINES DARKLEAF"**

William C. Barr, Rosenberg, Tex., assignor to Hines Nurseries, Inc., Houston, Tex.

Filed Aug. 10, 1992, Ser. No. 928,267

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—67.5 **1 Claim**

1. A new and distinct variety of *Rhaphiolepis indica* plant substantially as herein shown and described, and which is particularly characterized by its dark purple winter foliage and compact, low, prostrate growth habit.

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8,636

CACTACEAE PLANT 'HEATHER'

Barnell L. Cobia, P.O. Box 771369, Winter Garden, Fla. 34777-1369

Filed Mar. 22, 1993, Ser. No. 35,328
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.5 1 Claim

1. A new and distinct plant variety of the Cactaceae family as shown and described and which is mainly distinguished from its antecedents and known related varieties by growth characteristics that are similar to those of the 'Scarlet O'Hara' variety but as modified by the combination of the following characteristics:

1. An erect growth habit,
2. Phyllocalades which, in comparison to the 'Scarlet O'Hara' variety, have midribs with generally shorter length dimensions,
3. Flowers which, in comparison to the 'Scarlet O'Hara' variety, are sterile and have (a) generally fewer tube laminating tepals with generally shorter length dimensions, (b) a tube forming series of tepals with generally shorter length dimensions, (c) tepals that are generally dominated by purplish pink and purplish red hues whereas the variety 'Scarlet O'Hara' is generally dominated by red hues, (d) an ovary with generally shorter length dimensions.

8,637

FICUS BENJAMINA PLANT NAMED MONIQUE

Hubertus T. van Diemen, RS Vrouwenakker, Netherlands, assignor to Kwekerij De Amstel, Vrouwenakker, Netherlands

Filed Dec. 1, 1992, Ser. No. 984,092
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.9 1 Claim

1. A new and distinct cultivar of *Ficus benjamina* named 'Monique', as illustrated and described, particularly characterized by a plant with ovate leaves which are undulate-crenate in form.

PATENTS

GRANTED MAR. 8, 1994

ERRATA

For CLASS	See PATENT NO.
060-262	5,291,672
060-274	5,291,673
060-413	5,291,675
060-422	5,291,676
101-093	5,291,824
188-018	5,291,852
607-074	5,291,883
607-138	5,291,902
160-177	5,291,946
173-090	5,291,953
227-179	5,292,053
473-111	5,292,121
296-065	5,292,164
366-097	5,292,186
204-298	5,292,394
428-035	5,292,606
435-018	5,292,669
549-365	5,292,748
426-549	5,292,846
514-396	5,292,887
549-273	5,292,891
549-043	5,292,894
556-173	5,292,908
556-468	5,292,909
345-161	5,293,158
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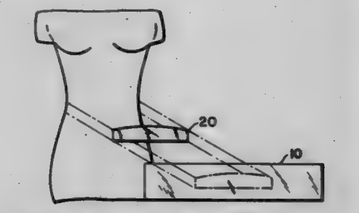
GRANTED MARCH 8, 1994

GENERAL AND MECHANICAL

5,291,616
WAISTBAND ACCESSORY DEVICE AND WRAPPING METHOD USING A SCARF AND A SCARF SHAPER FORM

Susan B. Lamons, 140 Goodall Ave., Daytona Beach, Fla. 32118, and Lisa A. Rhoades, 522 N. Sands Souci Ave., Deland, Fla. 32720

Filed Jan. 29, 1993, Ser. No. 11,441
Int. Cl.[5] A41D *27/00*
U.S. Cl. 2—311 **16 Claims**

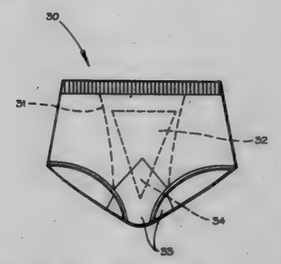


1. A waistband adapted to surround the waist of a wearer as a fashion accessory, said waistband comprising in combination:
(a) a scarf formed of a piece of cloth material having a length sufficient to wrap around a wearer's waist; and
(b) at least one semi-rigid form made of flexible sheet material; said scarf being wrapped around said form without sewing such that said scarf takes on a shape defined in part by said form; and wherein, after wearing and removal from a wearer's waist, said parts may be disassembled.

5,291,617
MOISTURE MANAGEMENT GARMENT

Herbert L. Moretz, 20205 Lola Cir., Davidson, N.C. 28036, and Daniel L. Brier, 33 angelfish Cay Dr., Key Largo, Fla. 33037

Continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Sep. 16, 1992, Ser. No. 945,677
Int. Cl.[5] A41B *9/00*
U.S. Cl. 2—400 **25 Claims**

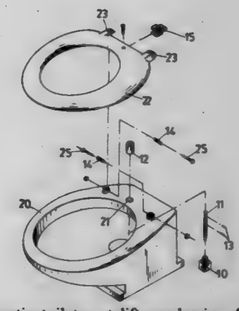


1. A moisture-management garment having a moisture management panel constructed of a moisture management fabric and extending generally between a crotch area of the garment and a waist area of the garment, said moisture management panel comprising:
(a) a first fabric having an inner moisture transport fabric layer constructed of hydrophobic yarns for residing in skin contact during garment wear, and an outer dispersal fabric layer constructed of hydrophilic yarns and positioned adjacent to said inner moisture transport layer to receive and disperse moisture transported to it by said inner moisture transport layer;
(b) a second fabric having an outer moisture vaporization fabric layer constructed of hydrophobic yarns and for comprising the outermost surface of the moisture management fabric during wear, and an inner moisture dispersal fabric layer constructed of hydrophilic yarns and positioned adjacent to said outer moisture vaporization layer; and
(c) a third fabric, comprising an intermediate wicking insert positioned between said first and second fabrics and extending along the garment from the area of the crotch to the area of the waist to wick moisture from the area of the crotch towards the area of the waist of the garment.

5,291,618
AUTOMATIC TOILET SEAT LIFT MECHANISM

Yueh-Tse Chiang, Fl. 5, No. 4, Lane 781, Sec. 2, Kuo Kuang Rd., Ta Li Hsiang, Taichung Hsien, Taiwan

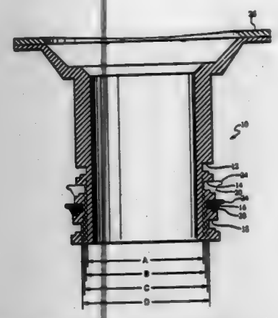
Filed Apr. 20, 1993, Ser. No. 49,296
Int. Cl.[5] A47K *13/10*
U.S. Cl. 4—241 **1 Claim**



1. An automatic toilet seat lift mechanism for use with a toilet having a toilet bowl, a flush pipe having an outlet for supplying flushing water to an interior of said toilet bowl and a toilet seat pivotally mounted to a rear upper portion of said toilet bowl to move between horizontal and vertical positions, said automatic toilet seat lift mechanism comprising:
a rubber bushing adapted to be fitted into a through hole in said rear upper portion of said toilet bowl;
a rod inserted through said rubber bushing and retained thereto by at least one locating pin, said rod having a lower end portion sized to extend into said toilet bowl;
a gate fastened to said lower end portion of said rod and adapted to be disposed adjacent said water outlet of said flush pipe;
a stop plate adapted to be fastened to said toilet seat and being selectively engaged with an upper end of said rod; and
spring means for lifting said toilet seat to said vertical position from said horizontal position;
whereby said rod engages said stop plate when said toilet seat is in said horizontal position to hold said toilet seat in said horizontal position against the bias of said spring means; flushing water into said toilet bowl causes said gate to move said rod to release said stop plate for permitting said toilet seat to be lifted to said vertical position by said spring means.

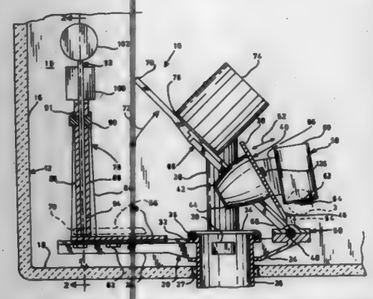
VOL 1160 ISS 2 MR 8 1994 UMI

5,291,619
WATER CLOSET SEALING ADAPTER
Charles R. Adorjan, 9423 Lippincott, Davison, Mich. 48423
Filed Apr. 2, 1992, Ser. No. 862,037
Int. Cl.[5] E03D *11/17*
U.S. Cl. 4—252.6 1 Claim



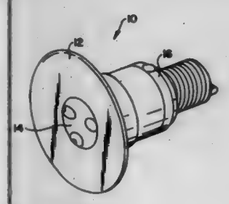
1. A water closet sealing device comprising:
an elastic gasket having a cylindrical cross section and having an inside diameter less than an outside diameter of a water closet discharge horn outlet, wherein an inner surface of said gasket seals against an outer surface of said water closet discharge horn outlet by an interference fit when said water closet outlet is seated therethrough;
an adapter having an upper portion and a lower portion with at least one recessed groove in the lower portion;
means for securing said gasket to said adapter upper portion;
means received within said at least one recessed groove for providing a seal between said lower portion and an inside surface of a drainage pipe.

5,291,620
PUSH BUTTON TOILET FLUSH MECHANISM
Lonnie W. Gilley, 110 Clearview Dr., McMinnville, Tenn. 37110
Filed Jul. 8, 1993, Ser. No. 88,983
Int. Cl.[5] E03D *5/09*
U.S. Cl. 4—410 16 Claims



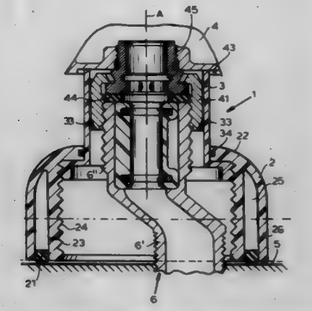
1. A push button toilet flush mechanism for installation within a water storage tank associated with a toilet bowl, said flush mechanism comprising:
a base member for being positioned proximate a bottom of the storage tank, said base member having a flapper assembly support portion and a trigger support portion;
a drain portion carried by said base member for carrying water from the storage tank into the toilet bowl, said drain portion having a top rim and an annular shoulder positioned proximate said top rim;
a gasket member surrounding said drain portion and supported on said shoulder, said gasket member extending to a level above said top rim;
a flapper assembly having a flat plate with a first surface to seal against said gasket member when water is not to be removed from the storage tank, said flapper assembly further having a bulb portion attached to said first surface of said flat plate to be received within an opening into said drain portion at said top rim, said flat plate having one end mounted on a pivot of a pivot assembly on said flapper assembly support portion of said base member whereby said flapper assembly can be selectively pivoted toward and away from said drain portion, said flat plate further having a side extension;
a lever arm having a first end and a distal end, said first end pivotally mounted on said pivot assembly on said flapper assembly support portion of said base member whereby said lever arm can be selectively pivoted in a plane substantially parallel to a plane of motion of said flapper assembly, said lever arm having a portion for engagement with said extension of said flat plate of said flapper assembly when said lever arm rises from a lower position to an upper position;
a buoyant float member carried by said lever arm, said buoyant float member moving in response to water level in the storage tank;
a trigger assembly mounted on said trigger assembly support portion of said base member and extending substantially vertically within the tank, said trigger assembly having a trigger arm pivotally mounted on a pivot within said trigger assembly, said trigger arm having a first end disposed upwardly from said pivot and a distal end extending toward said base member, said distal end of said trigger arm engaging said distal end of said lever arm when water is substantially removed from the tank thereby preventing pivoting of said lever arm by said buoyant float member when water is placed within the tank; and
a push button assembly mounted within a wall of the tank, said push button assembly having a push rod with a first end exterior the tank and a second end in contact with said first end of said trigger arm whereby movement of said push rod toward said first end of said trigger arm produces pivotal movement of said trigger arm and disengages said distal end of said trigger arm from said distal end of said lever arm whereby said buoyant float member moves said lever arm to said upper position and said flapper assembly to an open position by engaging said side extension of said plate of said flapper assembly.

5,291,621
SPA JET ASSEMBLY
Cleo D. Mathis, 16209 Santa Bianca, Hacienda Heights, Calif. 91745
Filed Jan. 15, 1992, Ser. No. 820,414
Int. Cl.[5] A61H *33/02*; B05B *1/30*
U.S. Cl. 4—541.4 12 Claims



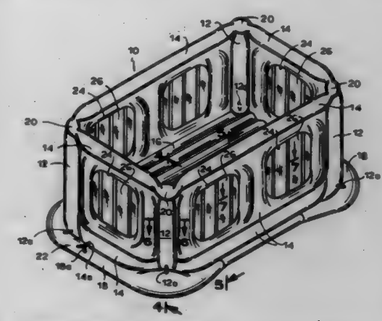
1. An apparatus comprising:
(a) an orifice;
(b) a coverhead fixed to said orifice;
(c) a rotor rotatably mounted within said orifice and said coverhead, said orifice, said coverhead and said rotor being substantially mounted along a common longitudinal axis;
(d) said orifice having a first means for allowing water to enter said apparatus, said first means including a port on the axial end of said orifice opposite to said coverhead, said orifice having a second means for allowing air to enter said apparatus, said second means includes at least two radial ports located diametrically opposite to each other;
(e) said rotor having a third means for allowing a water and air mixture to exit said apparatus, said third means having at least three conduits arranged substantially symmetrically about said longitudinal axis, said at least three conduits each having an axis being inclined with respect to said longitudinal axis to impart a rotational force on said rotor when fluid is being passed through said apparatus; and
(f) means for preventing fluid flow around an outer periphery of said rotor, wherein said fluid flow prevention means includes an O-ring.

5,291,622
ESCUTCHEON FOR WALL-MOUNT MIXING FAUCET
Jurgen Humpert, Hemer, Fed. Rep. of Germany, assignor to Friedrich Grohe Akteingesellschaft, Hemer, Fed. Rep. of Germany
Filed Sep. 23, 1992, Ser. No. 949,701
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134511
Int. Cl.[5] F16L *5/00*
U.S. Cl. 4—678 6 Claims



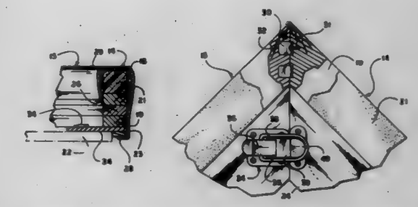
1. In combination with a faucet body adapted to be mounted on a wall and having a connecting pipe projecting from the wall and having an outer end secured via a faceted nut to the body, an escutcheon comprising:
a sleeve centered on an axis, formed with an external screwthread, and formed with at least one axially extending and radially inwardly projecting ridge engageable with facets of the faucet-assembly nut so as to rotationally couple the sleeve to the nut;
an outer ring fitting around the sleeve, having an internal screwthread meshing with the screwthread of the sleeve, and having a rear face; and
a seal set in and projecting axially rearwardly from the rear face of the ring and engageable with the wall.

5,291,623
INFLATABLE CRIB
Lawrence Artz, Wilton, Conn., assignor to Babystar, Brooklyn, N.Y.
Filed Sep. 3, 1992, Ser. No. 940,124
Int. Cl.[5] A47D *7/00*
U.S. Cl. 5—93.1 14 Claims



1. An inflatable crib comprising:
(A) a plurality of inflatable vertical support columns, and
(B) a plurality of inflatable sidewall panels, each of said sidewall panels laterally connecting an adjacent pair of said support columns,
said support columns being in gaseous communications with said sidewall panels, and hence each other, only through one-way inflation-only valves so that said support columns are each commonly inflatable, but only independently deflatable.

5,291,624
FRAME FOR WATERBED
Mark J. Strobel, 3131 Industrial Pkwy., Jeffersonville, Ind. 47130
Continuation-in-part of Ser. No. 898,683, Jun. 15, 1992, Pat. No. 5,231,715. This application Mar. 5, 1993, Ser. No. 27,195
Int. Cl.[5] A47C *19/00*
U.S. Cl. 5—400 8 Claims



1. A frame for a waterbed comprising a plurality of rails, said plurality of rails including a pair of side rails and connecting head and foot rails for containing a water mattress, each rail of said plurality of rails having a lower portion and an upper portion, said lower portion being formed of generally rigid material for counteracting the outward force of said water mattress, said upper portion being fixed to said lower portion and consisting of padding material, said padding material extending from said lower portion to the upper surface of said water mattress, and means connecting said lower portions of said side rails to said head rail and foot rail, said padding material including a foamed member, and further including a cover for each rail of said plurality of rails, said cover being fixed to said lower portion, extending over said padding material, and

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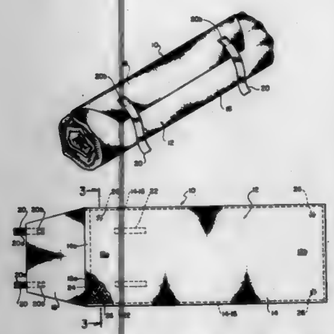
extending to the bottom of said lower portion, said lower portion comprising a plurality of wooden members fixed together, each rail of said plurality of rails further including a flange fixed to the bottom of said lower portion, said means connecting said lower portions of said side rails including clamps fixed to said flanges.

5,291,625

BODY SUPPORT PADS AND MATTRESSES

Philip L. Leslie, 5340 Calvin Ave., Tarzana, Calif. 91356

Filed Aug. 2, 1993, Ser. No. 100,386
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—420 **10 Claims**



1. In a mattress-like pad for body support, comfort and recreational use on dry land, in land vehicles, and in water craft, a light-weight, air-buoyancy improvement of said pads comprising:

a) an inner pad structure fabricated on a stacked arrangement of two or more like rectangularly sized and configured layers of two-ply laminated sheet plastic material encapsulating between the plys of each layer a multiplicity of uniformly arranged and separated air bubbles, the plys of said layers being sealed together in the areas between said air bubbles, said stacked arrangement of said like layers being maintained by inter-layer fastening means proximate each corner thereof; and

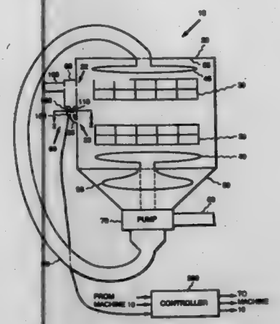
b) an outer bag-like containment cover having a closed foot end and a sealably open head end and of sufficient width and length for removably encasing said inner pad structure, said cover being fabricated from an elongated strip of polyvinylchloride-coated polyester woven open mesh fabric material including a first end portion of said material folded back over a central underside portion of said material with the mating edges of said portions sealed together whereby upon inside-out reversal of said edge-sealed portions said bag-like cover is formed with the sealed edges thereof positioned within said cover, and a second end portion of said cover material extending from said central portion at the head end of said cover and forming a closure flap, the central underside portion of said cover material and said closure flap bearing mating fastener means whereby upon rolling-up of said mattress-like pad upon itself from the foot end to the head end of said cover and over said flap said mating fastener means interact to maintain said pad in its rolled-up configuration.

5,291,626

MACHINE FOR CLEANSING ARTICLES

Barbara D. Molnar, Clifton Park; Donald T. McGrath, Scotia; Mark E. Dausch, Vivek V. Badami, both of Schenectady, and Walter Whipple, III, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 1, 1992, Ser. No. 877,303
Int. Cl.[5] D06F *33/02*; A47L *15/46*
U.S. Cl. 8—158 **28 Claims**



1. A machine for cleansing articles with a liquid comprising:

a source of electromagnetic radiation directed into said liquid;

a sensor for detecting electromagnetic radiation, regardless of polarization, scattered by propagation through said liquid;

a controller responsive to said sensor;

a frame for containing said articles during said cleansing; and

liquid-handling means integral to said frame for cleansing said articles in response to said controller.

23. A method for washing articles comprising the steps of:

(a) washing said articles with water for at least one wash cycle;

(b) during the washing step measuring at least once the turbidity of the water used to wash said articles by:

(1) propagating electromagnetic radiation through the water; and

(2) detecting electromagnetic radiation, regardless of polarization, scattered by particles suspended in the water; and

(c) controlling the duration of said at least one wash cycle in accordance with the at least one turbidity measurement.

5,291,627

WINDSHIELD WIPER ARM ASSEMBLY WITH FLUID PASSAGE THERETHOUGH

Ming-Chong Lien, No. 17, Lane 93, Niou-Pu South Road, Hsin-chu, Taiwan

Filed Apr. 6, 1993, Ser. No. 43,541
Int. Cl.[5] B60S *1/52, 1/48, 1/34*
U.S. Cl. 15—250.04 **1 Claim**

1. A windshield wiper assembly for use in an automobile, comprising:

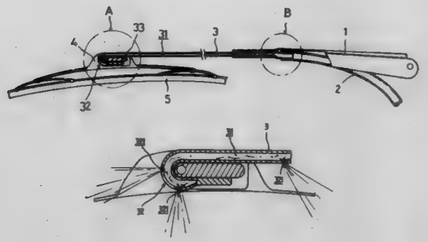
(a) a hollow elongated tubular rod forming a fluid flow passage therein along its length, said hollow elongated tubular rod having a first end connected to a fluid supply line, and a substantially U-shaped second end, said fluid flow passage extending from said first end, in fluid communication with said line, to said second end and having at said second end a U-shape as defined by the rod, said passage passing therethrough a fluid from said fluid supply line to said substantially U-shaped second end;

(b) an elongated block member having a transversely directed opening formed therethrough and a groove

adapted to contiguously receive said substantially U-shaped second end of said elongated tubular rod;

(c) a plurality of outlet ports formed through a wall of said substantially U-shaped second end in fluid communication with said fluid flow passage therein for directing said fluid onto a windshield of an automobile; and,

(d) a connecting member adapted to pivotally receive said



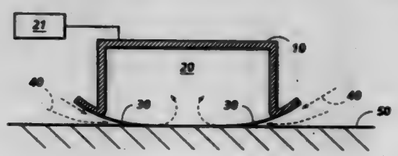
block member, said connecting member having a pair of substantially parallel spaced apart flanges having at least one pair of linearly aligned openings formed therein, such that said block member is received between said flanges and pivotally secured to said connecting member by a pin which extends through said linearly aligned at least one pair of openings in said flanges and said transverse opening in said block member.

5,291,628

HIGH VELOCITY AIR CLEANER

Bruce E. Thayer, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1991, Ser. No. 805,762
Int. Cl.[5] A47L *5/34*
U.S. Cl. 15—306.1 **5 Claims**



1. An apparatus, for cleaning particles from an imaging or a transfer surface, comprising:

a housing;

a flexible sheet, having one end attached to said housing and resiliently urging the other free end toward the surface; and

vacuum means, connected to said housing, for generating air flow between the free end of said sheet and the surface in a direction substantially tangential to the surface, said sheet being adapted to control the air flow so the air flows at a velocity sufficient to disturb a layer of particles and remove particles from the surface at a boundary located between the particles and the surface.

5,291,629

Patent Not Issued For This Number

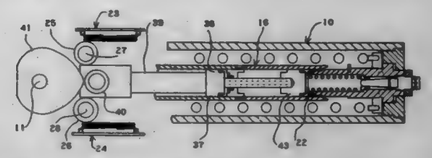
5,291,630

DAMPER AND METHOD OF CONTROLLING A DOOR

Peter E. Brown, Bridgnorth, United Kingdom, assignor to Jebron Limited, Wednesbury, United Kingdom

Filed Nov. 19, 1992, Ser. No. 978,898
Claims priority, application United Kingdom, Nov. 28, 1991, 9125321
Int. Cl.[5] E05F *3/10, 3/22*
U.S. Cl. 16—53 **18 Claims**

1. A damper comprising a housing, an operating member mounted for movement relative to the housing, a cylinder mounted in the housing for reciprocation relative thereto, first and second pistons in sliding contact with and movable in the cylinder in a direction parallel to the direction of reciprocation of the cylinder and drive means for transmitting motion between the operating member and the cylinder and transmitting motion between the operating member and the pistons to move both the cylinder and the pistons relative to the housing and



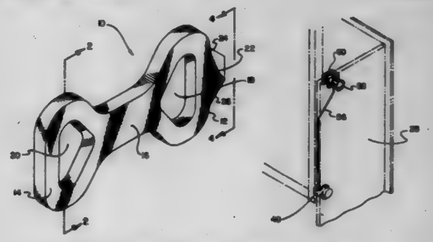
relative to each other when the operating member is moved relative to the housing and is returned to its initial position and a third piston mounted in the housing to remain stationary with respect to the housing, wherein the cylinder is a sliding fit around the third piston, an annular plug lies in the cylinder between the first and second pistons, a piston rod extends through the annular plug from the first piston to the second piston and the piston rod is a sliding fit in the annular plug.

5,291,631

DOOR STOP

Craig A. Schjoneman, 135 Foster Cir., Mather AFB, Calif. 95655

Filed Nov. 23, 1992, Ser. No. 980,342
Int. Cl.[5] E05F *5/08*
U.S. Cl. 16—86 R **6 Claims**



1. A new and improved door stop comprising:

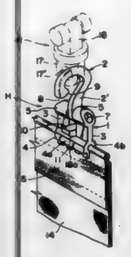
a substantially flat member having a pair of opposed end portions and a central portion extending between and connecting said pair of end portions,

each of said pair of end portions having an opening therein, said member being flexible whereby each of said end portions may be fitted in a bent manner about the edge of a door proximal to a pair of opposed door knobs on said door with each of said end portions adapted to engage a corresponding door knob through its associated opening, respectively, and

wherein said door stop further includes means for generating a signal when said door stop is fitted on said door and an attempt is made to close said door, and a signal device on said door responsive to said means for generating a signal.

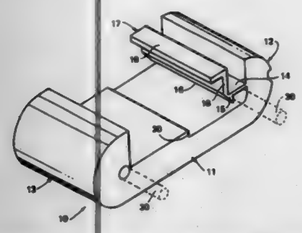
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5,291,632
HANGER DEVICE
Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 951,847
Claims priority, application Japan, Sep. 27, 1991, 3-087081[U]
Int. Cl.[5] E05D *15/00*; A47H *13/00*
U.S. Cl. 16—87.002 **3 Claims**



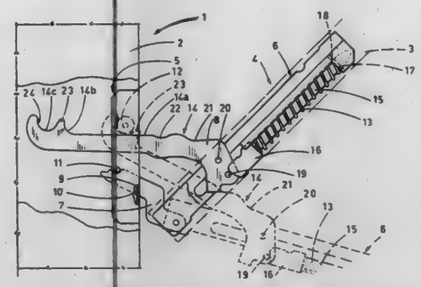
1. A hanger device for hanging a curtain to a curtain rod via a curtain runner reciprocally mounted on the curtain rod, the hanger device comprising a hanger body attached to the curtain, a hook portion having a stem pivotally mounted on an upper portion of the hanger body about a shaft perpendicular to the stem and a distal end and adapted for hooking engagement with a curtain runner in an upright extended position in use, and means for locking the hook portion to the hanger body such that said distal end is closed by the hanger body when the hook portion is angularly moved to an inclined position.

5,291,633
COUPLING DEVICE
David Morgan, Fassaroe House, Ireland, assignor to Trumark Limited, Dublin, Ireland
Filed Jul. 24, 1992, Ser. No. 918,084
Int. Cl.[5] E05D *1/00*
U.S. Cl. 16—225 **8 Claims**



1. A coupling device comprising a generally u-shaped member having a base and two-arms, and retaining means proximate each arm for accommodating and retaining a respective cylindrical pin rotatable about its own axis, at least one of the retaining means comprising an integral hook extending from the inside of the respective arm towards the other arm and having a tip which projects towards the base, the hook being sufficiently resilient to permit the tip to be manually deflected away from the base to permit a pin of greater diameter than the distance between the tip and the base in the undeflected state of the hook to be inserted under the hook, the pin being retained between the hook and the base by releasing the hook and permitting it to assume its undeflected state.

5,291,634
A HINGE FOR THE CONSTRAINING OF HATCHES OR DOORS FROM A SUPPORT STRUCTURE
Augusto Zanetti, Bologna, Italy, assignor to Nuova Star S.r.l., Bologna, Italy
Filed Jul. 30, 1992, Ser. No. 923,255
Claims priority, application Italy, Mar. 26, 1992, B092A 000110
Int. Cl.[5] E05D *11/10*
U.S. Cl. 16—333 **5 Claims**



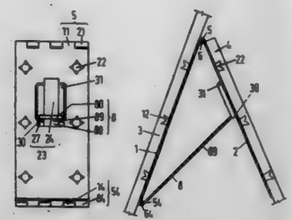
1. A hinge useful in constraining a hatch or door from a support structure, comprising a first part constrainable from the support structure, a second part constrainable from the hatch or door, a lower arm and an upper lever each with a respective end pivoted substantially coplanar to said second part about respective parallel axes that are closer to a lower edge of the hatch or door than to an upper edge of the hatch or door, said arm being rigidly and movably connectable to a lower portion of said first part, said upper lever having an upper edge slidably in contact with an idler wheel supported by an upper portion of the said first part; said arm and said lever being reciprocally movable in response to relative movement of said second part with respect to said first part between a closed and an open hatch or door position, elastic means being interpositioned between said second part and said lever for acting elastically between, said upper edge of said lever having a contour of, starting from at least a point of contact with said idler wheel corresponding to a totally closed position of the door, a first substnatially straight tract, a second curved tract equipped with at least one center of curvature arranged above said lever, and a third tract, also curved and equipped with at least one center of curvature arranged above said lever; said tracts together defining the upper edge of said lever free of gaps.

5,291,635
DEVICE FOR LIMITING THE SET-UP ANGLE BETWEEN TWO PLANAR COMPONENTS
Karl E. Schmale, Lüdenscheid, Fed. Rep. of Germany, assignor to Schmale GmbH & Co. KG, Lüdenscheid, Fed. Rep. of Germany
PCT No. PCT/DE91/00016, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO91/11585, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 10, 1991, Ser. No. 768,665
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1990, 9001206; Feb. 28, 1990, 9002325; Oct. 23, 1990, 9014646
Int. Cl.[5] E05D *11/06*; A47G *1/14*
U.S. Cl. 16—371 **13 Claims**

1. A device for limiting the set-up angle between first and second planar components, the device comprising:

first and second plates connected by a first hinge, for mounting respective first and second planar components thereon;

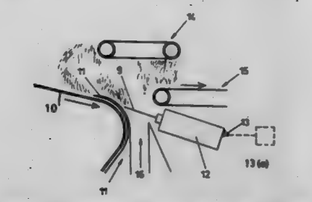
a connecting web connected at a first end to the first plate by a second hinge, the connecting web being configured at a second end as a T-shaped member for engaging a T-shaped cutout provided in the second plate, the width of the cutout in a region farthest from the first hinge being greater than the width of a transverse portion of the T-shaped member, a stop being provided at a transition from a narrow to a broad region of the cutout;



wherein at least one of the first and second plates is provided with claws for mounting a respective one of the first and second planar components thereto; and

wherein at least one of the connecting web, the second plate, and the first plate, is provided with at least one protrusion which, when the device is folded together, lies against a rear portion of at least one of the claws.

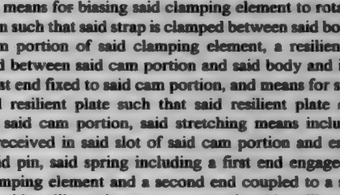
5,291,636
WOOL CUTTING OR SHEARING UNIT
Stephen J. Knight, 239 Peachy Road, Smithfield Plains, State of South Australia, Australia
PCT No. PCT/AU90/00319, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/02093, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 1, 1990, Ser. No. 809,553
Claims priority, application Australia, Aug. 2, 1989, PJ5588
Int. Cl.[5] D01C *3/00*
U.S. Cl. 19—2 **10 Claims**



1. A method of removal of wool from skin, said method including the steps of providing a cutting element comprising a plurality of wires supported on a reciprocal bar, providing a means for supplying electric current to said cutting element wires, presenting the skin to said cutting element, providing relative movement of the bar in a direction transverse to the direction of motion of the skin toward the cutting element and providing a flow of air to lift the cut wool away from the skin during the cutting step and onto a discharge conveyor.

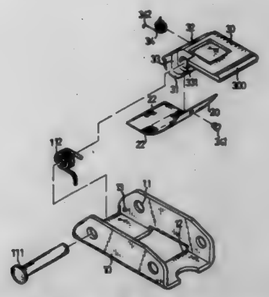
5,291,637
VIBRATION RESISTANT METALLIC TIE
Jonathan Meyers, 221 Arleigh Rd., Douglas Manor, N.Y. 11363
Filed Jun. 1, 1993, Ser. No. 68,790
Int. Cl.[5] B65D *63/00*; F16L *3/00*
U.S. Cl. 24—25 **10 Claims**

1. A tie comprising an elongated metallic band having first and second ends and a metallic locking head mounted proximate said first end of said band, said head defining a cavity for receiving said second end of said band and comprising an inclined wall and roller means situated within said cavity, said roller means being moveable between a first position, in which said second end of said band is receivable within said head, and a second position, in which said roller means cooperates with said inclined wall to retain said second end of said band in a substantially fixed position relative to said head, said head



further comprising resilient means, extending from said inclined wall, into contact with said roller means, when said roller means is in said second position, for exerting a force on said roller means having a component directed toward said second end of said band.

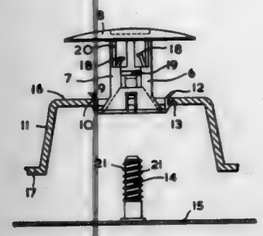
5,291,638
TIGHTENING UP DEVICE
Han-Ching Huang, No. 12, Alley 111, Lane 437, Chen Hsing Rd., Taichung, Taiwan
Filed Mar. 9, 1993, Ser. No. 28,412
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—170 **3 Claims**



1. A tightening up device for tightening a strap comprising a U-shaped body including a pin fixed therein and a bottom portion having an opening formed therein, a clamping element including a handle portion and a cam portion having a bore formed therein for rotatably engaging with the pin, said cam portion including a middle portion having a slot formed therein, means for biasing said clamping element to rotate in a direction such that said strap is clamped between said body and said cam portion of said clamping element, a resilient plate disposed between said cam portion and said body and including a first end fixed to said cam portion, and means for stretching said resilient plate such that said resilient plate closely contact said cam portion, said stretching means including a spring received in said slot of said cam portion and engaged with said pin, said spring including a first end engaged with said clamping element and a second end coupled to a second end of said resilient plate so s to stretch said resilient plate, whereby said strap is solidly clamped between said cam portion and said body when said clamping element rotates in said direction.

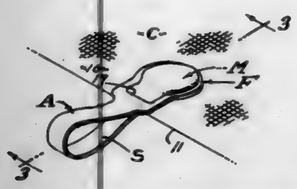
VOL 1160 ISS 2 MR 8 1994 UMI

5,291,639
PUSH BUTTON
Heinz-Otto Baum, Giesen-Allendorf, and Lothar Schliesmer, Linden, both of Fed. Rep. of Germany, assignors to Emhart Inc., Newark, Del.
Filed Apr. 1, 1993, Ser. No. 41,799
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1992, 9205186
Int. Cl.[5] F16B *21/00*; A44B *17/00*
U.S. Cl. 24—297 8 Claims



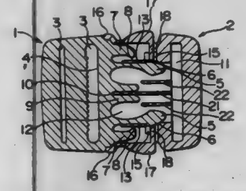
1. A plastics push button for fastening an article such as a trim strip or body panel to a motor body using weld studs attached to the surface of the motor body comprising a large circular retaining head at one end of a short hollow cylindrical stem, and a circular skirt at or near, the other end of the stem, the diameter of the skirt being substantially equal to the diameter of mounting holes provided around a panel or at intervals along the length of a trim strip and the diameter of the head being greater than that of the mounting holes, the skirt being provided with a plurality of protruding resilient fringe members which can lightly engage the rim of a mounting hole and the bore of the cylindrical stem being provided with resilient fingers which can engage the projections of a weld stud when the push button is pressed through a mounting hole so that the cylindrical head abuts the top surface of the article and the cylindrical stem passes through the mounting hole and is pressed over the weld stud so that the article is thereby retained on the surface of the surface to which the stud is welded.

5,291,640
LOOP ATTACHMENT FOR TENTS AND COVERS
Leif Rise, 7748 Westlawn Ave., Los Angeles, Calif. 90045
Filed Jul. 27, 1992, Ser. No. 919,758
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—464 8 Claims



1. A loop for disengageable attachment to a marginal portion of flexible sheeting material, and including;
a flat body of bendable and twistable material having an elongated strap portion with a male member at one end and a female member at the other end,
the female member having a first opening therethrough smaller than the male member, and
there being a second access opening through the female member and adjoiningly open to the first opening through the female member by means of a passage with parallel longitudinally extending sidewall and narrower than either the first opening or the second access opening through the female member and with clearance for acting as a means for receiving and guiding a twisted position of the male member and sheeting material,
whereby the flexible sheeting material overlying the male member can be twisted therewith and the strap portion bent upwardly and backwardly to position the female member over the underlying male member, the male member and sheeting material being passed upwardly through the first opening and the second access opening in the female member and thereafter untwisted to overlie a peripheral portion of the female member with the sheeting material secured by a bite therebetween.

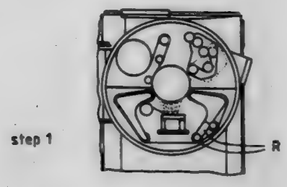
5,291,641
SNAP BUCKLE
Atsuhiko Morino, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jun. 15, 1993, Ser. No. 76,873
Claims priority, application Japan, Jun. 15, 1992, 4-040823[U]
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—625 4 Claims



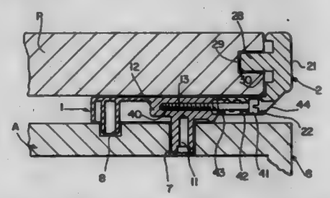
1. A snap buckle comprising a flat tube shaped socket member and a plate shaped plug member releasably insertable into said socket member, wherein said plug member has a base, a pair of resilient locking strips projecting in a common direction from said base, each locking strip having on its outer surface an engaging portion, and a pair of guide strips projecting in said common direction from said base so as to be located outwardly of said locking strips and having a length smaller than said locking strips, each guide strip having an inner edge portion substantially in alignment with the respective engaging portion, and wherein said socket member has a pair of locking walls engageable with the respective engaging portions of said locking strips when said plug member is inserted into said socket member, and a pair of inwardly bent resilient push levers extending from opposite outermost surfaces of a socket mouth edge and terminating in a pair of pushing portions resiliently contactable with said locking strips when said plug member is inserted into said socket member.

5,291,642
PROCESS TO PRODUCE AT LEAST ONE NON-METALLIZED STRIP ON METALLIZED FLEXIBLE PLASTIC FILM ROLLS AND A PROCESS TO MANUFACTURE STACKED OR WOUND CAPACITORS FROM SUCH ROLLS
Michel Pageaud, and Thierry Feral, both of Seurre, France, assignors to Compagnie Europeenne de Composants Electroniques LCC, Courbevoie, France
Filed Mar. 23, 1992, Ser. No. 856,369
Claims priority, application France, Mar. 22, 1991, 91 03503
Int. Cl.[5] H01G *4/32*
U.S. Cl. 29—25.42 8 Claims

1. A process for the preparation of at least one non-metallized strip on the surface of a completely metallized flexible plastic film roll, comprising impinging a laser beam onto a lateral face of said roll at a non-zero angle of incidence relative to said lateral face of said roll to produce at least one non-metallized strip on the surface of said metallized flexible plastic film, said angle of incidence of the laser beam relative to the lateral face of said roll determining the width of the non-metallized strip.

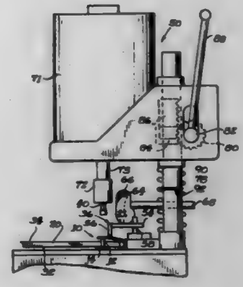


5,291,643
SYSTEM FOR POSITIONING AND MAINTAINING A PLATE UPON A SURFACE
Francis Boeglin, Erstein, France, assignor to Steelcase Strafor (S.A.), Strasbourg, France
Filed Dec. 3, 1992, Ser. No. 985,101
Claims priority, application European Pat. Off., Jul. 2, 1992, 92 440081.5
Int. Cl.[5] A47B *47/04*; B23Q *7/04*
U.S. Cl. 29—283 8 Claims



1. A fastener system for positioning and maintaining in place a horizontal plate upon a horizontal support surface, wherein the horizontal plate has top and bottom planar surfaces and a peripheral edge having a recess containing a hole, and the support surface has an upper horizontal surface containing first and second holes, said fastener comprising:
a shoe mountable on the upper horizontal surface of the support surface, said shoe having a horizontal upper bearing plate, a horizontal lower base plate, and a middle connecting portion connecting said lower base plate to said upper bearing plate, said lower base plate having a first stud extending downwardly therefrom aligned and configured to fit into the first hole of the support surface and a second stud extending downwardly therefrom aligned and configured to fit into the second hole of the support surface, said middle connecting portion having two vertical parallel sides defining with said upper bearing plate and said lower base plate a pair of grooves parallel to each other and to said horizontal surface of said support surface; and
a movable fork having horizontal arms slidably engageable with said grooves of said shoe, a rear body extending perpendicularly from said arms, said rear body having a vertical semi-cylindrical heel having a planar rear face having a height equal to the thickness of said plate, a front face slidably connectable with said recess of said peripheral plate edge, and a stud extending perpendicularly from said front face, said stud being slidably connectable with said hole in said plate edge recess.

5,291,644
PLASTIC BELT FASTENER AND APPARATUS THEREFOR
Edward C. Musil, Lyons, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.
Division of Ser. No. 722,705, Jun. 28, 1991, Pat. No. 5,157,812.
This application Jun. 5, 1992, Ser. No. 893,937
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—243.53 8 Claims



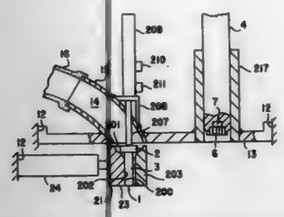
1. An apparatus for attaching belt fasteners having integral plastic rivets each having a cylindrical end wall defining a hollow end for being flared outwardly into an enlarged rivet head to fasten the belt fasteners to belts, comprising:
a frame;
a spinning head on said frame to engage ends of the rivets and to deform these ends into enlarged rivet heads;
a rotatable forming tool on the spinning head having a central alignment point to be centered in the hollow end of a rivet,
a curved wall on the forming tool extending radially outwardly from the central alignment point to engage the cylindrical end wall of the rivet end and to rotatably slide thereagainst to generate head by friction to soften the plastic end wall for flaring radially outwardly;
a belt clamp for clamping a belt with the belt fasteners thereon;
alignment means on said frame for aligning and supporting the respective belt fasteners with respect to the belt and to said spinning head;
actuator means for bringing said rotating spinning tool and its curved wall into contact with said fastener with sufficient force to generate heat and pressure to soften plastic end wall and to roll and flare it radially outwardly into the enlarged rivet head.

5,291,645
METHOD AND APPARATUS FOR FEEDING AND TIGHTENING THREADED PARTS
Yoshitaka Aoyama, 20-11, Makitsukadai 2-chome, Sakai-shi, Osaka 590-01, Japan
Continuation-in-part of Ser. No. 691,059, Jun. 24, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,610
Claims priority, application Japan, Dec. 1, 1989, 1-314058; Dec. 1, 1989, 1-314059; Dec. 23, 1989, 1-334576; Apr. 4, 1992, 4-127685; Apr. 4, 1992, 4-127864; Apr. 6, 1992, 4-131314
Int. Cl.[5] B23Q *7/08, 17/22*; B23P *19/06*
U.S. Cl. 29—407 38 Claims

33. A method of feeding and tightening threaded parts to and within a workpiece, comprising the steps of:
feeding a threaded part through a part feeding passage;
holding the threaded part with a threaded part holding member;
linearly advancing a detecting member into the holding

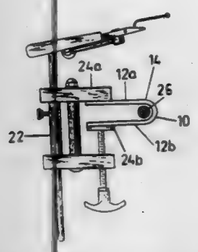
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member so as to detect and thereby verify a presence of the threaded part;
retracting the detecting member from the holding member;
positioning with threaded part where the threaded part is placed coaxial with a rotary feed rod;



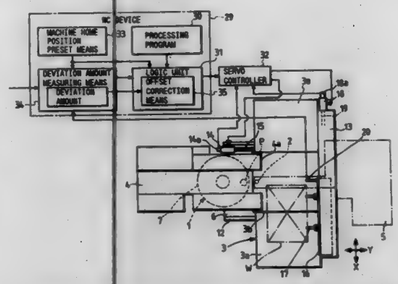
advancing and rotating the rotary feed rod to engage with the threaded part;
advancing and rotating the rotary feed rod toward a workpiece with the threaded part engaged; and
tightening the threaded part within the workpiece.

5,291,646
CLIP FOR ATTACHING A FLY TYER'S VISE TO A STEERING WHEEL OR OTHER SUITABLE STRUCTURE (THE "EZ CLIP")
Stephen J. French, P.O. Box 3637, Moscow, Id. 83843
Filed Jul. 29, 1992, Ser. No. 921,517
Int. Cl.[5] A01K *97/28*
U.S. Cl. 29—515 **4 Claims**



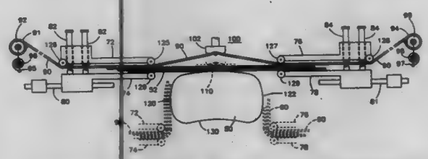
1. A method of removably attaching a fly tyer's vise to an outer circumferential surface of a substantially cylindrical support comprising:
a) providing a U-shaped mounting member; the U-shaped member being made of a relatively strong flat strip of metal and having two arms connected to each other by a connecting portion;
b) mounting the U-shaped member to a substantially cylindrical support by sliding the member over an outer surface of the support with an inner surface of the connecting portion abutting the outer surface of the support;
c) providing a fly tyer's vise having two movable clamp jaws;
d) mounting the fly tyer's vise to the support by clamping the arms of the U-shaped member with the clamp jaws to cause the U-shape member to deform and firmly grip the support to prevent relative movement therebetween and, thereby, securing the fly tyer's vise to the support.

5,291,647
COMBINED PROCESSING MACHINE
Chiji Fukasawa, Kagamihara; Shunitsu Itou, Ichinomiya, and Hiroshi Kobayashi, Aichi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Apr. 1, 1993, Ser. No. 41,816
Claims priority, application Japan, Apr. 3, 1992, 4-112121
Int. Cl.[5] B23Q *5/22*; **G05B** *13/00*
U.S. Cl. 29—564 **6 Claims**



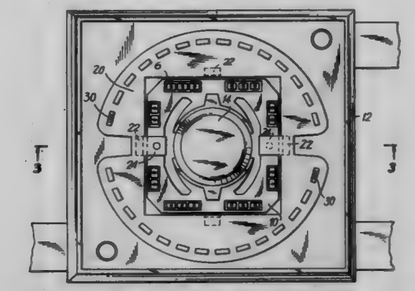
1. A combined processing machine in which a punching press mechanism and a laser head are mounted on a common work table and a workpiece holder is mounted on a cross slide which is reciprocably movable on said work table, the improvement is characterized in that a detector for measuring a deviation of a position in place adjacent to a punching position of said punching press mechanism and a deviation of said laser head is mounted on said cross slide.

5,291,648
APPARATUS FOR MAKING A TRANSFORMER CORE COMPRISING AMORPHOUS METAL STRIPS SURROUNDING THE CORE WINDOW
Donald E. Ballard, Conover, and Willi Klappert, Hickory, both of N.C., assignors to General Electric Company, Malvern, Pa.
Continuation of Ser. No. 776,802, Oct. 15, 1991, abandoned, which is a division of Ser. No. 463,697, Jan. 11, 1990, Pat. No. 5,093,981. This application Sep. 22, 1992, Ser. No. 948,177
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—564.6 **12 Claims**



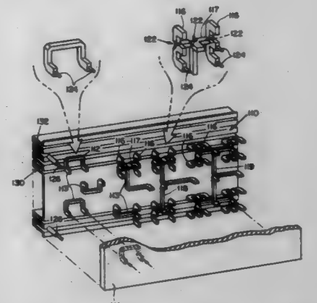
1. Apparatus for making a transformer core from strips of a amorphous metal comprising:
(a) a table that has a substantially horizontal top surface,
(b) an arbor projecting upwardly from said top surface and having a substantially vertical axis and an external surface surrounding the axis that includes a front face and a back face for the arbor,
(c) means for assembling packets of amorphous metal strips, each strip having longitudinally extending edges and opposed ends, each strip also having an intermediate zone and extended portions at opposite sides of intermediate zone,
(d) means for placing said packets upon said table top in proximity to the back face of said arbor with the longitudinally-extending edges of said strips resting on said table top and the intermediate zone of said strips aligned with the back face of said arbor,
(e) means for wrapping said packets about said arbor so that the opposed ends of the strips in each packet are located adjacent the front face of said arbor, said wrapping means comprising:
(i) a first pair of arms between which one of said extended portions of said strips is loosely postioned
(ii) a second pair of arms between which the other of said extended portions of said strips is loosely positioned,
(iii) means for moving said first pair of arms around a first portion of the external surface of the arbor to wrap one of said extended portions of said strips about said first portion of said arbor,
(iv) means for moving the other pair of said arms around a second portion of said arbor to wrap the other of said extended portions of said strips about said second portion of said arbor,
(v) a flexible belt extending between the arms of each pair and externally of the extended strip portions located between said arms, the belt acting to hold the strips in wrapped relationship with said arbor as the arms move about the arbor portions and lay the extended strip portions against the external surface of the arbor.

5,291,649
METHODS AND APPARATUS FOR PROCESSING STATORS
Massimo Lombardi, and Sabatino Luciani, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.
Continuation of Ser. No. 790,188, Nov. 7, 1991, abandoned, which is a continuation of Ser. No. 558,529, Jul. 27, 1990,. This application Feb. 25, 1993, Ser. No. 22,879
Int. Cl.[5] H02K *15/095*
U.S. Cl. 29—596 **15 Claims**



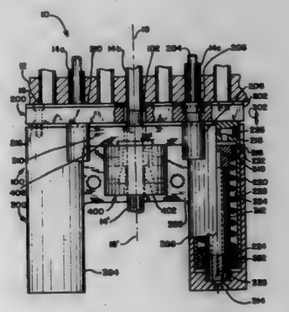
1. Apparatus for temporarily securing wire leads while processing an annular stator having at least one pole on which a coil of wire having at least a start lead and a finish lead is wound as a plurality of turns around the pole, the apparatus comprising:
an annular auxiliary member removably engageable with an axial end of an outside surface of the stator, the member extending radially from the center of the stator and annularly around the stator at an axial location between the extreme axial ends of at least some of the turns of the coil, the member having a protuberance for engaging the axial end of the stator body, all portions of the auxiliary member being radially outside of all portions of the coil other than the start lead and the finish lead after the coil has been wound on the stator so that the coil does not prevent the entire auxiliary member from being removed from the stator as an annulus; and
gripping means attached to the member for securing the wire leads during processing.

5,291,650
METHOD OF PROVIDING A INTEGRATED WAVEGUIDE COMBINER
Ronald M. Carvalho, Boxborough, and George H. Stilgoe, Franklin, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Division of Ser. No. 863,509, Mar. 31, 1992, which is a continuation of Ser. No. 629,858, Dec. 17, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 985,098
Int. Cl.[5] H01P *11/00*
U.S. Cl. 29—600 **2 Claims**



1. A method of providing a waveguide component comprises the steps of:
providing a mandrel corresponding to a positive blank of a waveguide configuration, said mandrel comprised of a dissolvable material;
casting a plate of a different material about said mandrel; and
dissolving said mandrel to provide the plate having a first surface with a plurality of apertures disposed in said first surface through a portion of said plate and with an interior portion of said plate having a plurality of passages with portions of said passages aligned over the apertures provided in the first portion of the plate and with said passages disposed to provide waveguide regions.

5,291,651
O.D. GRIPPER
Howard M. Frame, Jasper, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Continuation of Ser. No. 843,613, Feb. 28, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 95,825
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—726 **17 Claims**



1. In combination with a tube sheet containing tube ends each having an inside surface and a projecting tube having a

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tube longitudinal axis, apparatus for pulling said projecting tube from said tube sheet, along said tube longitudinal axis, comprising:

base means engaging the inside surface of said tube ends of said tube sheet;

a jacking assembly mounted on the base means and actuable by a first fluid pressure variation between extended and retracted positions away from and toward the base means, respectively;

a substantially annular gripper assembly connected to the jacking assembly for extended and retracted movement therewith and adapted to receive the tube coaxially about said tube longitudinal axis, the gripper assembly including,

a housing having a gripper piston chamber and means in fluid communication with the gripper piston chamber, whereby a second fluid pressure variation can be introduced into the gripper piston chamber,

gripper piston means for movement in the gripper piston chamber in response to the second fluid pressure in the chamber, the gripper piston means including a substantially annular body portion having a bearing surface facing said tube longitudinal axis,

gripper means supported in contact with the body portion bearing surface, for movement toward said tube longitudinal axis to engage and grip the tube in response to the movement of the gripper piston means when the second fluid pressure increases in the gripper piston chamber; and

first and second fluid pressure ports associated respectively with the jacking assembly and the gripper assembly, whereby the gripper piston can be actuated and the jacking assembly extended to grip and pull the tube.

5,291,652

APPARATUS FOR THE PRODUCTION OF A DEVICE FOR DETACHING PORTIONS OF PLATE-LIKE WORKPIECES

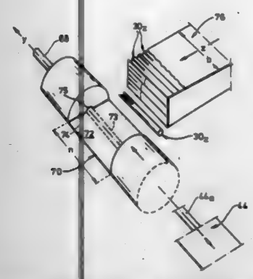
Franz Vossen, Stockach-Wahlwies, and Karl J. Gaigl, Stockach, both of Fed. Rep. of Germany, assignors to Meurer Nonfood Product GmbH, Radolfzell, Fed. Rep. of Germany

Continuation of Ser. No. 665,786, Mar. 7, 1991, Pat. No. 5,152,053, which is a continuation of Ser. No. 257,344, Oct. 13, 1988, abandoned. This application Jun. 9, 1992, Ser. No. 895,614

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1987, 3734553; Mar. 8, 1988, 3807560

Int. Cl.[5] B23D *19/00*; **B31B** *1/14*

U.S. Cl. 29—798 **29 Claims**



1. An apparatus for producing a device for detaching portions of a substantially planar workpiece having at least one blank in the form of a desired product and adjoining waste pieces and for moving said waste pieces out of a plane of said workpiece, wherein said device includes a breaking-out plate for detaching said portions of said substantially planar workpiece from said waste pieces, said apparatus comprising:

a breaking-out pin setting device;

said breaking-out pin setting device comprising a magazine device for containing a plurality of breaking-out pins and means for individually removing said breaking-out pins from said magazine device and for partially inserting said pins in a non-rotatable manner into said breaking-out plate in a desired pattern corresponding to locations of said waste pieces;

said removing and inserting means comprising a pressure member movable in a direction substantially at a right angle with respect to a surface of said breaking-out plate into which said breaking-out pins are to be inserted;

said removing and inserting means further including guide means associated with said magazine device and said pressure member for guiding individual breaking-out pins from said magazine device into a pressing path of said pressure member; and

said guide means having a recess in a feed path of said magazine device for receiving said breaking-out pins.

5,291,653

MANUFACTURING PRINTED WIRING BOARDS HAVING ELECTROMAGNETIC WAVE SHIELDING

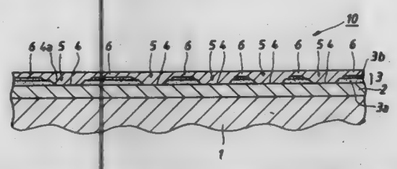
Junichi Ichikawa, Saitama, Japan, assignor to Nippon CMK Corp., Japan

Filed Apr. 16, 1992, Ser. No. 869,659

Claims priority, application Japan, Sep. 30, 1991, 3-278345

Int. Cl.[5] H05K *3/02*

U.S. Cl. 29—846 **7 Claims**



1. A method of manufacturing a printed wiring board having electromagnetic wave shielding in which a printed wiring circuit made of an electrical conductor is provided on at least one side of a substrate, an electromagnetic wave shielding layer is provided over the entire surface or a desired portion of the printed wiring circuit through an insulating layer, and the printed wiring circuit is electrically connected with the electromagnetic wave shielding layer by way of a ground circuit of the printed wiring circuit, the insulating layer consisting of a plurality of electrically insulating layers, and the insulating layers defining above the ground circuit an opening having a configuration of a cup in section, the improvement comprising:

form first and second insulating layers one atop the other each constituting part of said insulating layer so as to form said opening defined above the ground circuit having a configuration of a circle as viewed in top plan view.

5,291,654

METHOD FOR PRODUCING HOLLOW INVESTMENT CASTINGS

James A. Judd, Ellington, and Zaffar A. Razzaq, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 29, 1993, Ser. No. 38,394

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.721 **2 Claims**

1. A method for fabrication of a hollow air cooled investment cast gas turbine airfoil component comprising:

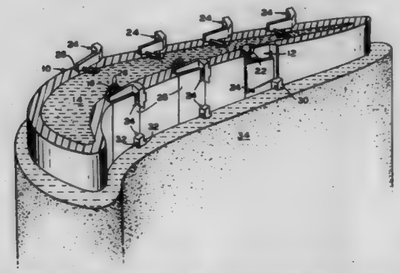
a. making a wax pattern having receptacles for mini cores including enlarged receptacle portions to accept pins on the mini cores which form passages connecting the inner surface and the outer surface of the airfoil component, the pin receptacle extending beyond the internal finish dimension of the hollow airfoil component;

b. making the mini cores which have pins longer than necessary to form the required length of the connecting passages;

c. fastening the mini cores in position in the wax pattern with no openings between the pin receptacles and the outer surface of the wax pattern;

d. forming a ceramic mold surrounding the wax pattern;

e. removing the wax pattern from the ceramic mold;



f. casting the hollow airfoil component in the ceramic mold, thus forming a casting having protrusions with excess material in the pin cavity portions;

g. removing the hollow airfoil component from the ceramic mold;

h. removing the mini cores from the hollow airfoil component; and

i. removing the excess material from the protrusions, thus exposing the ends of the connecting holes.

5,291,655

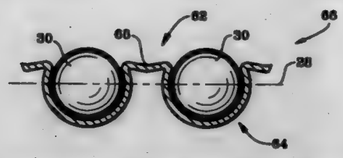
METHOD OF MAKING A ONE-PIECE BALL BEARING RETAINER

Jeffrey P. Benson, and Richard L. Alling, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Jan. 29, 1993, Ser. No. 11,432

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—898.044 **22 Claims**



1. A method of producing a ball bearing retainer or bearing cage, the method comprising the steps of:

forming material into a ring;

pressing the ring, thereby forming ball receiving pockets in the ring and leaving bridge material between adjacent pockets;

inserting a bearing ball into each ball receiving pocket;

flattening the bridge material between adjacent ball receiving pockets such that the bridge material spreads to meet the adjacent bearing balls, thereby retaining the bearing balls within reconfigured ball pockets, the reconfigured ball pockets having a depth greater than one-half the diameter of the bearing balls, the bridge material forming a substantially flat bridge between adjacent reconfigured ball pockets; and

crimping the substantially flat bridge between adjacent reconfigured ball pockets such that ends of said bridge are moved slightly toward each other and pressure of the reconfigured ball pockets against the bearing balls is reduced.

5,291,656

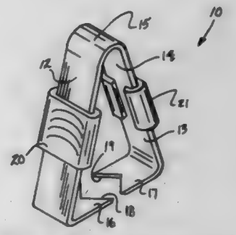
BUTTON REMOVAL TOOL

Robert L. Burns, 16389 Cutten Dr., Guerneville, Calif. 95446

Filed Feb. 22, 1993, Ser. No. 20,607

Int. Cl.[5] B26B *19/06*

U.S. Cl. 30—134 **1 Claim**



1. A button removal tool, comprising,

a resilient V-shaped body, having a first plate leg joined to a second plate leg at a leg junction, with the first plate leg and the second plate leg defining an acute leg angel between the first plate leg and the second plate leg at the junction, wherein the first plate leg and the second plate leg are arranged in a spring-biased relationship relative to one another to maintain the shaped-retentive configuration of the V-shaped body, with the first plate leg including a first leg end spaced from the junction, and the second leg having a second leg end spaced from the junction, wherein the first leg end includes a first cutter blade, and the second leg end includes a second cutter blade, wherein the first cutter blade and the second cutter blade are arranged in a parallel spaced relationship relative to one another, wherein the first cutter blade includes a first V-shaped cutting edge, and the second cutter blade includes a second V-shaped cutting edge, wherein the first V-shaped cutting edge and the second V-shaped cutting edge are arranged in a facing relationship relative to one another offset relative to one another to receive a button thread therebetween to permit severing of the button thread upon manual displacement of the first V-shaped cutting edge beyond the second V-shaped cutting edge, and

a first resilient band mounted about the first plate leg, and a second resilient band mounted about the second plate leg, wherein the first band and the second band are spaced from the junction an equal distant predetermined spacing for enhanced manual engagement of the first plate and the second plate leg, and

a first loop mounted to a first top surface of the first plate leg between the first plate leg and the junction, and a second loop mounted to the second plate leg to a second top surface of the second plate leg oriented between the second plate leg and the junction, and a first elongate blade member slidably mounted within the first loop and a second elongate blade member slidably mounted within the second loop, with the first elongate blade member and second blade member including respective first and second blade apertures, and the first top surface and the second bosses, wherein the first boss is received within the first blade aperture and the second boss is received within the second blade aperture for maintaining selective projection of the first blade member and the second blade member beyond the respective first cutting edge and the second cutting edge, and

a plunger rod reciprocatably mounted through the junction orthogonally oriented relative to the first plate leg and the second plate leg, with the plunger rod including a plunger rod handle fixedly mounted to the plunger rod exteriorly of the junction, and a plunger rod mounted to the plunger rod within the V-shaped body, and the plunger rod head includes an adhesive dome positioned an equal distance

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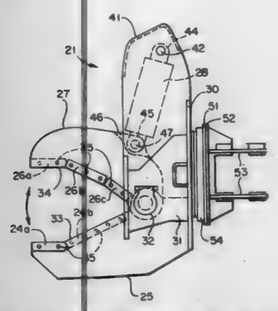
between the first cutting edge and the second cutting edge and oriented between the first plate leg, the second plate leg, and the junction, with a return spring biasing of the adhesive dome in a spaced relationship relative to the first plate leg and the second plate leg.

5,291,657

SHEARING MACHINE FOR STEEL MATERIAL

Sumio Morikawa; Toshiji Ohga, and Masahiro Kondoh, all of Osaka, Japan, assignors to Ohyodo Diesel Co., Ltd., Osaka, Japan

Continuation of Ser. No. 988,871, Dec. 10, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 115,786
Claims priority, application Japan, Oct. 12, 1992, 4-272563
Int. Cl.[5] B23F *3/00*; B26B *15/00*
U.S. Cl. 30—134 **5 Claims**



1. A shearing blade configuration for shearing machine jaws comprising: an upper shearing blade assembly including

(a) a forward blade disposed in a first vertical plane;

(b) at least one rearward blade having its cutting surface located contiguous with the cutting surface of the forward blade, and disposed in a second vertical plane parallel to the first plane, the blades positioned in laterally stepped relation;

(c) the forward and rearward blades forming an obtuse angle therebetween; a lower shearing blade assembly including

(d) a forward blade disposed in a third vertical plane, parallel to the first and second planes;

(e) at least one rearward blade having its cutting surface located contiguous with the cutting surface of the lower forward blade, and disposed in a fourth vertical plane parallel to the first, second and third planes, the lower blades positioned in laterally stepped relation;

(f) the lower forward and rearward blades forming an obtuse angle therebetween to ensure closure of the forward upper and lower blades before the rearward upper and lower blades;

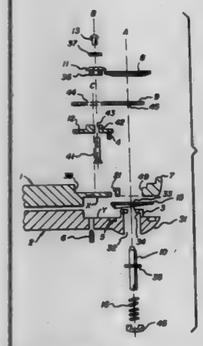
the forward blades and the rearward blades having corresponding lateral surfaces in contact with one another upon closure of the jaws for interlocking the jaws and preventing their lateral separation

5,291,658

CAN OPENER

Leslie P. S. Wilson, London; David Anderson, Sun, and David M. Raffo, Chester, all of England, assignors to Prestige Group UK PLC, Surrey, England

Filed Mar. 12, 1992, Ser. No. 849,759
Claims priority, application United Kingdom, Mar. 13, 1991, 9105347; Oct. 14, 1991, 9121762; Oct. 28, 1991, 9122804; Jan. 26, 1992, 9201646
Int. Cl.[5] B67B *7/46*
U.S. Cl. 30—418 **16 Claims**



1. A can opener comprising:

first and second handle members pivotally connected to one another at one end to be relatively rotatable about an axis between an open position in which a prescribed angle exists between them and a closed position in which a minimum angle exists between them,

a drive shaft rotatable within the first handle member,

a drive wheel having a serrate periphery secured to one end of the drive shaft,

a transmission means between the second handle member and the drive shaft for transmitting rotational movement of the second handle member relative to the first handle member about the axis to the drive shaft, the transmission means including a one-way drive mechanism such that (a) for one direction of rotation of the second handle member relative to the first handle member about the axis the drive shaft is engaged by the second handle member to rotate the drive shaft and (b) for the other direction of rotation the drive shaft is not so engaged by the second handle member,

a cutting element supported on a cutting element carrier, the cutting element carrier being supported by the first handle member and movable relative thereto between a nip position in which the cutting element and the drive wheel are disposed to embrace the rim of a can and a non-nip position in which there is a distance between these for removal or insertion of a can,

an inter-engagement mechanism between the first and second handle members including

(a) a moving means, actuated by the rotational movement of an initial closing of the handle members from the open position to the closed position, for moving the cutting element carrier from the non-nip position to the nip position so that the cutting element penetrates the can, and

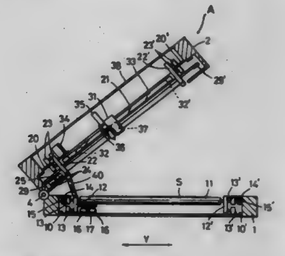
(b) a keeping means for keeping, in a following opening of the handle members from the closed position to an intermediate position and in subsequent closing and opening movements of the handle members between the intermediate and closed positions, the cutting element carrier in the nip position, whereby for closing or opening movements of the handle members the drive wheel is rotated around the can and the cutting element cuts the can.

5,291,659

PLOTTING SYSTEM

Atsuhiro Iwakawa, Shizuoka, Japan, assignor to Roland DG Corporation, Shizuoka, Japan

Filed Jul. 2, 1992, Ser. No. 907,521
Claims priority, application Japan, Jul. 3, 1991, 3-190687; Jul. 23, 1991, 3-207376; Jul. 31, 1991, 3-191922
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—18.1 **21 Claims**



21. A plotting system comprising:

gripping means for gripping a sheet;

plotting means, positioned at one side of the sheet;

travelling hold means for holding the plotting means;

travelling pressure receiving means positioned at another side of the sheet, including a pressure receiving surface that receives a pressing force of the plotting means through the sheet;

first supporting means for supporting the gripping means and the plotting means;

second supporting means for supporting the travelling pressure receiving means; and

mounting means for mounting the first supporting means to the second supporting means, so that the second supporting means is movable with respect to said first supporting means for enabling said first and second supporting means to be separable from each other,

wherein, when the first and second supporting means are separated from each other, the sheet can be removed from the system.

5,291,660

METHOD AND APPARATUS FOR DETERMINING CASTER AND STEERING AXIS INCLINATION ANGLES

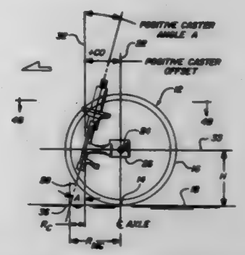
Arthur Koerner, 3901 Waterview, Shelby Township, Macomb County, Mich. 48316

Continuation-in-part of Ser. No. 769,716, Oct. 2, 1991. This application Oct. 2, 1992, Ser. No. 955,480
Int. Cl.[5] G01B *5/255, 7/315*
U.S. Cl. 33—203.12 **12 Claims**

1. A method of determining the caster angle of a steerable wheel on a vehicle, the wheel being mounted for rotation about an axle on said vehicle and having a tread for engaging a road, the vehicle having a fore-and-aft axis and a transverse axis, said method including the steps of:

turning the wheel right and left relative to the fore-and-aft axis through the same measured steering angle,

measuring the linear displacement, along one of said axes, of a point on said wheel in a plane parallel to said axes with the wheel turned rightward and leftward to said measured steering angle, respectively,



and calculating the caster angle using the measured displacement, the steering angle, the caster offset, and the axle height above said plane.

5,291,661

PEEPHOLE FOR BUILT-IN LIGHTING FIXTURE AIMING DEVICE

Yasuaki Kaizumi, Machida, and Shinichi Kojima, Isehara, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 929,173
Claims priority, application Japan, Aug. 16, 1991, 3-72479
Int. Cl.[5] G01B *11/26*
U.S. Cl. 33—288 **5 Claims**

1. A peephole for a built-in lighting fixture type aiming device comprising:

a housing having a peephole opening;

a projection surrounding said opening, said projection having an external surface provided with engaging grooves on opposite sides of said external surface;

a transparent member;

a sealing gasket having a shape substantially conforming to a shape of a free end of said projection surrounding said peephole;

said transparent member having a marginal portion substantially conforming to the shape of said gasket for receiving said gasket;

a frame-shaped hook plate having a central opening of a shape substantially conforming to said peephole opening and at least first and second integral locking legs extending downwardly from said frame and provided with a recess engaging portion for engaging said recess;

said transparent member being positioned between said hook plate and said gasket;

said frame member compressing said gasket when the recess engaging portions of said locking legs are each engaged in an associated one of said recesses; and

the frame-shaped member being formed of a springy mate-

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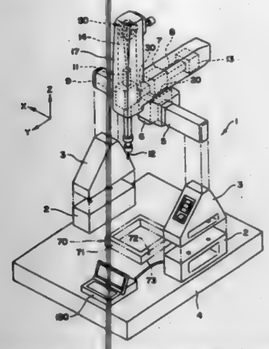
rial which serves to retain the locking legs in engagement with said recesses.

5,291,662

SIMPLE THREE-DIMENSIONAL MEASURING MACHINE

Sadayuki Matsumiya; Yukio Yoda; Masanori Arai, and Takao Kawabe, all of Kanagawa, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,054
Claims priority, application Japan, Sep. 30, 1991, 3-87438; Sep. 30, 1991, 3-278581; Mar. 30, 1992, 4-74144
Int. Cl.[5] G01B *5/03*
U.S. Cl. 33—503 **10 Claims**



1. A simple three-dimensional measuring machine, comprising:
- a X axis member;
- a X slider supported to slide freely in a horizontal X axis direction along said X axis member;
- a Y slider;
- a Y axis member supported to slide freely in a horizontal Y axis direction relative to said Y slider;
- first means for angularly adjustably connecting said X slider and said Y slider;
- a Z slider;
- a Z axis member supported to slide freely relative to said Z slider in a vertical Z axis direction and has support means for supporting a measuring element at a lower end thereof;
- second means for angularly adjustably connecting said Z slider and said Y axis member;
- a counterbalance mechanism mounted on said Z slider and having a sufficient balance power corresponding to a weight of said Z axis member, said counterbalance mechanism including means connected to said Z axis member so as to counter balance the weight of said Z axis member.

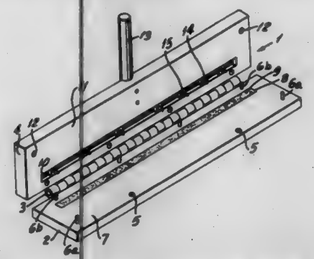
5,291,663

TRIM MARKING TOOL

Frank Briglia, 26 Sheldon St., Waterbury, Conn. 06705, and James Rioux, 310 East Rd., Bristol, Conn. 06010

Filed Sep. 24, 1992, Ser. No. 949,966
Int. Cl.[5] B25H *7/02*
U.S. Cl. 33—669 **9 Claims**

1. A marking tool for marking a sheet material comprising a base, a channel located in the base and extending along a first side thereof, an upper member attached by a hinge to the base, the hinge extending at least partially along the first side thereof, a pair of side alignment means disposed adjacent each end edge of the channel and a plurality of end alignment means disposed between the channel and the hinge, a slot located in the upper member adjacent the channel and having a length complimentary to the length of the channel, a plurality of marking pins slidably disposed in the slot, the pins having indicating means alignable with rule means disposed on a top surface of the upper member, each pin having marking means which indent the sheet material to indicate whether a cut or



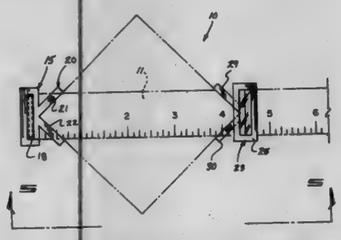
bend is required in the sheet material and handle means for closing the tool, the side alignment means located adjacent the channel to produce marks at an edge of the sheet material when placed in the tool.

5,291,664

CORNER TO CORNER TAPE MEASURE APPARATUS

Richard D. Pinney, Jr., 30 David Dr., East Haven, Conn. 06512, and Lisa L. Misbach, 133 Forest Rd., W. Haven, Conn. 06576

Filed Feb. 16, 1993, Ser. No. 17,594
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—770 **3 Claims**



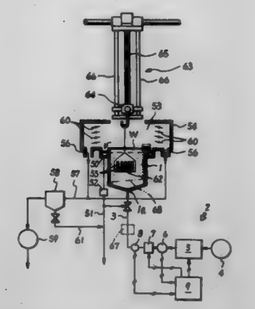
1. A corner to corner tape measure apparatus, comprising:
- a tape strip, the tape strip including a tape strip abutment, the tape strip abutment arranged for reception within a housing, and wherein the apparatus further includes
- a first sleeve arranged to receive the tape strip abutment, the first sleeve having a first sleeve first end spaced from a first sleeve second end, and a first slot directed through the first sleeve from the first end to the second end, and the first sleeve having a first sleeve forward side wall extending between the first sleeve first end and the first sleeve second end, and the first sleeve forward side wall having a first V-shaped web mounted to the first sleeve forward side wall, wherein the first V-shaped web includes a first web flange and a second web flange defining an acute angle therebetween for receiving a workpiece, and
- a second sleeve, the second sleeve having a second sleeve first end and a second sleeve second end, and a second slot directed into the second sleeve from the second sleeve second end, with the second slot spaced from the second sleeve first end, and the second sleeve having a second sleeve forward wall, and a second V-shaped web mounted to the second sleeve forward wall, with the second V-shaped web including a second web first flange and a second web second flange defining said acute angle therebetween, and a slide block, the slide block having a slide block slot receiving the tape strip therewithin, with the slide block mounted to the second sleeve first end.

5,291,665

DRYING METHOD AND APPARATUS USING HOT D.I. WATER

Haruo Yoshikawa, Kanagawa, Japan, assignor to Speedfam Clean Systems, Co., Ltd., Ayase, Japan

Filed Oct. 4, 1991, Ser. No. 771,503
Claims priority, application Japan, Nov. 29, 1990, 2-332595
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—9 **12 Claims**



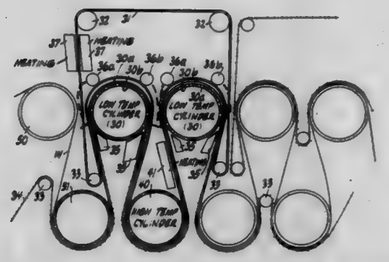
2. A method of drying a wet work with hot deionized water, comprising:
- heating deionized water to a predetermined temperature;
- supplying hot deionized water to a hot deionized water bath through a water supply duct containing a bubble trapping chamber to remove air bubbles therefrom;
- immersing a wet work in said hot deionized water bath; and
- lifting said work out of said bath to drain and dry said work.

5,291,666

APPARATUS FOR DRYING ROLL MATERIAL

Vladislva A. Babinsky, Spring Valley, and Warren G. Mumford, Cornwall-on-Hudson, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Apr. 23, 1993, Ser. No. 52,441
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—18 **20 Claims**



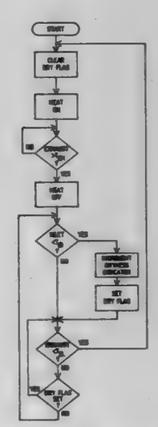
16. A method for drying a web of roll material, comprising the steps of:
- providing at least one low temperature cylinder having an external cylinder surface;
- entraining a heated belt and a porous belt to run in parallel with the web held between them with the porous belt in contact with the surface of the low temperature cylinder;
- heating the heated belt to a desired elevated temperature at a contact position of the web and the belts on an input side of the low temperature cylinder;
- applying in proximity to the contact position on the input side, as well as to a contact position on an exit side, of the low temperature cylinder a desired nip pressure to the heated belt against the web, the porous belt, and the surface of the low temperature cylinder;
- heating the surface of the low temperature cylinder to a desired intermediate temperature;
- maintaining the temperature of the heated belt at the input side of the low temperature cylinder at a difference level only 10° C. to 30° C. higher than the intermediate temperature of the surface of the low temperature cylinder; and
- simultaneously maintaining a negative air pressure at the surface of the low temperature cylinder so as to reduce vapor pressure and facilitate evaporation of water from the web through the porous belt to the surface of the low temperature cylinder.

5,291,667

ELECTRONIC CONTROL OF CLOTHES DRYER

Dan F. Joslin, and Dan J. Ryherd, both of Webster City, Iowa, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

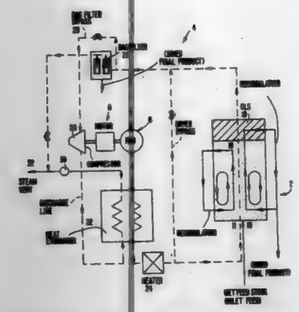
Filed Apr. 26, 1990, Ser. No. 514,700
Int. Cl.[5] F26B *13/10*
U.S. Cl. 34—44 **3 Claims**



1. A method for measuring dryness of a load in a dryer including a hater, an air inlet receiving air from said heater, a dryer drum which houses the load and receives air from said air inlet, an air inlet temperature being defined as a temperature of said air inlet between said heater and said dryer drum, and an air exhaust exhausting said air from said dryer drum and having a temperature, the method comprising the steps of:
- measuring the exhaust temperature;
- deactivating said heater when the exhaust temperature exceeds a predetermined maximum exhaust temperature;
- providing a measure of dryness by monitoring if the inlet temperature drops below a predetermined inlet temperature while the heater is deactivated;
- activating a dryness indicator in response to said dryness measure, said dryness indicator providing an indication of actual dryness of the load; and
- activating said heater when the exhaust temperature drops below a predetermined minimum exhaust temperature independently of whether said dryness indicator has been activated.

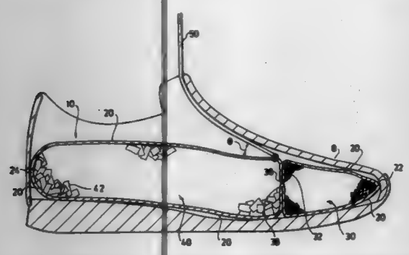
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5,291,668
STEAM ATMOSPHERE DRYING EXHAUST STEAM RECOMPRESSION SYSTEM
Frederick E. Becker, Reading; Leo A. Smolensky, Concord; Edward F. Doyle, Dedham, and Francis A. DiBella, Roslindale, all of Mass., assignors to Tecogen, Inc., Waltham, Mass.
Filed Apr. 3, 1992, Ser. No. 863,435
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—86 **22 Claims**



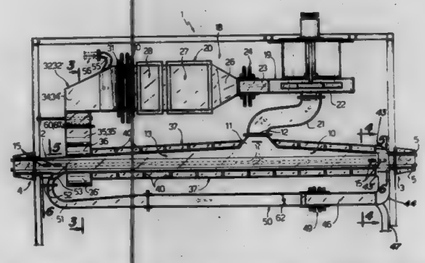
1. A heated steam atmosphere dryer system comprising;
dryer means comprising a vessel having an inlet and an outlet, for receiving and discharging, respectively, steam and particulate matter, and means for creating a pressure differential within said vessel, said means for creating a pressure differential comprising a turbulator for generating centrifugal forces within said vessel, said turbulator responsible for forming a plurality of recirculation paths therein,
separator means for separating said steam from said particulate matter,
recompression means for recirculating said steam and for effecting the recovery of heat of evaporation and heat of compression of said steam so as to provide heat to said dryer means.

5,291,669
SHOE PRESERVERS
Amin Khoury, Wellesley, Mass., and Christie Phelps, Danbury, N.H., assignors to Rochester Shoe Tree Co., Inc., Ashland, N.H.
Filed Aug. 28, 1991, Ser. No. 750,990
Int. Cl.[5] B43L *17/04*
U.S. Cl. 34—95.1 **4 Claims**



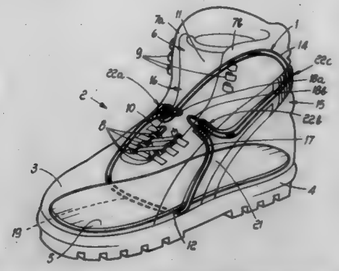
1. A pair of shoe preservers for shoes having a toe and a heel, comprising:
a) a first and a second preserver, each preserver having a toe end and a heel end; and
b) a flexible strap extending between the first and second preserver, the strap being attached to each preserver at a point intermediate of the toe end and the heel end, in which a
portion of the strap extending from the point of attachment engages the shoe to generate a force having a component directed substantially towards the heel, the force component being sufficient to preclude removal of the preserver by a longitudinal force incurred along the strap when transporting the shoe and preserver by the strap.

5,291,670
PROCESS FOR BAKING WIRE-LIKE PRODUCTS CLAD IN INSULATING PLASTICS RESIN, AND AN OVEN FOR PERFORMING THE SAID METHOD
Renato Surra, Rivoli; Bruno Bronzini, Moncalieri, and Michele Ricco, Collegno, all of Italy, assignors to S.I.C.M.E. S.p.A. Societa Industriale Costruzioni Microelettriche, Torino, Italy
Continuation of Ser. No. 454,765, Dec. 21, 1989, abandoned.
This application Aug. 29, 1991, Ser. No. 754,362
Claims priority, application Italy, Dec. 23, 1988, 68154 A/88
Int. Cl.[5] C23C *26/00*
U.S. Cl. 34—155 **5 Claims**



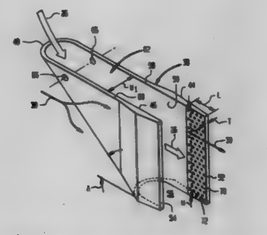
1. An oven for baking wire products coated with a plastic resin, comprising:
a principal chamber of elongate form within which said products translate axially in a longitudinal direction between an inlet opening and an outlet opening, said principal chamber defining a first heating portion in which evaporation of the solvents from said plastic resin occurs and a second heating portion in which polymerization and cross-linking of said plastic resin occurs;
principal heating means external to said principal chamber for heating said principal chamber;
an auxiliary unit comprising an aspiration opening communicating with said principal chamber;
aspiration means for aspirating a stream of air and solvent vapors from said principal chamber and means for heating said stream of air and solvent vapors to cause a stream of combusted air and solvent vapors; and
characterized by the fact that said oven includes at least one heat exchanger, said at least one heat exchanger receiving said stream of combusted air and solvent vapors from said auxiliary unit, said at least one heat exchanger extending substantially between said inlet opening and said outlet opening of said principal chamber, said aspiration opening extending through said at least one heat exchanger so as to aspirate said stream of pre-combusted air and solvent vapors from said principal chamber, said at least one heat exchanger transferring the heat energy derived from said combusted air and solvent vapors back into said first and second heating portions of said oven without causing said combusted air and solvent vapors to be introduced into said oven, said heat energy being introduced in significant quantities with respect to that provided by said principal heating means supplied externally of said oven,
whereby the heat energy transferred to said first and second heating portions assists in the evaporation of the solvents from said plastic resin and the polymerization and cross-linking of said plastic resin.

5,291,671
FOOT SECURING DEVICE PARTICULARLY FOR TREKKING BOOTS
Alberto Caberlotto, and Annamaria Furlanetto, both of Montebelluna, Italy, assignors to Arkos S.r.l., Venegazzu di Volpago del Montello, Italy
Filed Mar. 6, 1992, Ser. No. 847,388
Claims priority, application Italy, Jun. 10, 1991, TV91U000022
Int. Cl.[5] A43B *11/00, 7/18*
U.S. Cl. 36—88 **16 Claims**



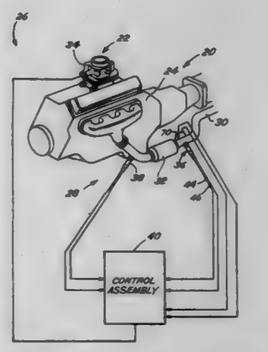
1. Foot securing device for trekking boots having an upper associated with a sole, wherein the upper includes an instep region, an upper heel region and an upper malleolar region and wherein said sole includes a median region thereof, said device comprising: a single traction element being partially slidingly accommodated in a protective sheath; and means for accommodating said protective sheath forming a seat for slidingly containing said protective sheath and said traction element accommodated therein, said means for accommodating said sheath being fixed to said upper; wherein said traction element has a first portion which embraces said upper heel region and said upper malleolar region, a second portion which is curved at said instep region so as to define grip means for laces, and a third portion so as to define grip means for laces, and third portion which passes below approximately said median region of said sole.

5,291,672
SOUND SUPPRESSION MIXER
William H. Brown, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 9, 1992, Ser. No. 987,833
Int. Cl.[5] F02K *1/38*
U.S. Cl. 60—262 **11 Claims**



1. A mixer for mixing airflow with exhaust gases generated in a gas turbine engine comprising:
at least one generally U-shaped chute having first and second longitudinally extending and transversely spaced apart sidewalls joined together at a leading edge over which are flowable said exhaust gases, and defining therebetween a first channel for channeling said airflow;
said first and second sidewalls further having first and second trailing edges defining therebetween an elongate chute outlet for discharging said airflow from said chute for mixing with said exhaust gases; and
said first trailing edge being spaced longitudinally downstream from said second trailing edge for defining a septum in said first sidewall extending downstream from said second trailing edge, said septum having a plurality of spaced apart apertures for attenuating noise generated upon mixing of said exhaust gases and said airflow.

5,291,673
OXYGEN SENSOR SYSTEM WITH SIGNAL CORRECTION
Douglas R. Hamburg, Bloomfield Hills; Jeffrey A. Cook, Dearborn; Wayne J. Johnson, Dearborn Heights, and Louis J. Sherry, Taylor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 21, 1992, Ser. No. 994,013
Int. Cl.[5] F02D *41/14*
U.S. Cl. 60—274 **9 Claims**



1. An exhaust gas sensor system for an internal combustion engine having an exhaust conduit and a catalytic converter on said conduit, said system comprising, in combination:
an exhaust gas oxygen sensor, on said exhaust conduit downstream of said converter, for providing an oxygen level signal;
a temperature sensor for sensing a temperature of said exhaust gas sensor and responsively issuing a temperature level signal; and
a signal conditioner for receiving said temperature level signal and oxygen level signal and responsively providing a conditioned output,
said signal conditioner providing a high signal upon determining that said oxygen level signal is above a set point and a low signal upon determining that said oxygen level signal is below a set point,
said signal conditioner changing said set point in a first direction as said temperature of said exhaust gas oxygen sensor decreases and changing said set point in a second direction as said temperature of said exhaust gas oxygen sensor increases,
whereby said conditioned output may be used by said engine to adjust operating parameters.

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5,291,674

RECIRCULATING SNOWFALL-TYPE DISPLAY

Arthur L. Torreace, Newtown, Conn., assignor to Mechtronics Corporation, Stamford, Conn.

Filed Feb. 25, 1993, Ser. No. 22,294
Int. Cl.[5] C09F *19/00*; A63H *3/52, 33/40, 33/26*
U.S. Cl. 40—410 10 Claims



1. A display device for displaying an object and for presenting the illusion that flakes are falling about the object, said display including

a tank having a base, a top, and transparent sides,

liquid with flakes contained within said sides

a motor-driven pump mounted on said tank and having an unencased spiral rotor comprising an elongated roof with spiral ridges thereon, said spiral rotor projecting downwardly into said tank from said top, and said spiral ridges being at such an angle that the said spiral ridges cause said liquid in said tank to move upwardly when said pump is operating.

5,291,675

FLUID PRESSURE CONTROL SYSTEM WITH AN ACCUMULATOR RESPONSIVE TO A LOSS OF SYSTEM PRESSURE

Shohei Matsuda; Kazutoshi Tashima; Yoshihiro Urai, all of Wako; Makoto Horiuchi, and Ryuji Horiuchi, both of Ueda, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nissin Kogyo Co., Ltd., Ueda, both of Japan

Filed Nov. 10, 1992, Ser. No. 973,234
Claims priority, application Japan, Nov. 12, 1991, 3-295928; Jan. 20, 1992, 4-007518
Int. Cl.[5] F16L *31/02*; B60T *13/16, 8/40*
U.S. Cl. 60—413 7 Claims

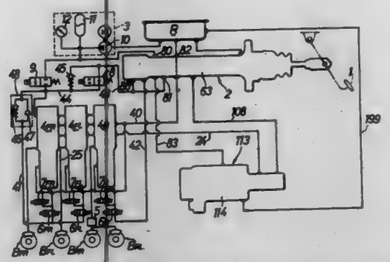
1. A fluid pressure control system, comprising:

an operational reaction force generating means for reducing a volume of a pressure chamber in response to an operation of an operating member, said operational reaction force generating means having a piston which includes a front surface facing said pressure chamber and is operatively connected to said operating member;

a fluid pressure control valve means for adjusting and outputting an output pressure from a fluid pressure supply source which outputs a constant fluid pressure in accordance with an amount in which said operating member operates; and

a stroke accumulator connected to said pressure chamber,

wherein said stroke accumulator comprises a casing, an accumulator piston slidably received in said casing so as to define an accumulating chamber leading to said pressure chamber between said accumulator piston and said casing, a back-up piston slidably received in said casing to define a pilot chamber leading to the fluid pressure supply source between said back-up piston and said casing such that a movement of the back-up piston in a direction to reduce a volume of the pilot chamber corresponds to a movement of the back-up piston toward the accumulator piston, a first biasing means for resiliently biasing the accumulator piston in a direction to reduce a volume of said accumulating chamber, and a second biasing means having a load



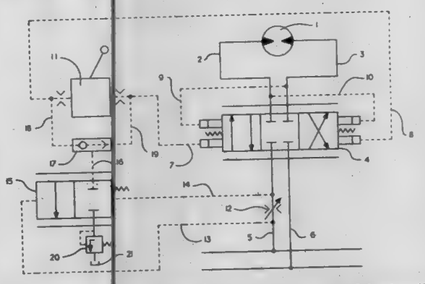
larger than a load of said first biasing means for resiliently biasing said back-up piston in a direction so as to reduce the volume of said pilot chamber, and wherein the resilient biasing force acting on said accumulator piston by the movement of said back-up piston toward said accumulator piston with the abnormal reduction in fluid pressure in said pilot chamber is increased more than the resilient biasing force acting on said accumulator piston when the fluid pressure in said pilot chamber is normal.

5,291,676

HYDRAULIC DRIVE SYSTEM

Peter Beater, Haibach; Alfred Krusche, Johannesberg, and Siegfried Schurawski, Miltenberg, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jan. 23, 1992, Ser. No. 824,367
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102203
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—422 5 Claims



1. Hydraulic drive system with a consumer of hydraulic power connected to a pressure medium source, said consumer operating at a load pressure comprising: a throttling control valve operatively connected to receive the load pressure of said consumer; and a control pressure pickoff operatively connected to provide a control signal to said throttling control valve, wherein said hydraulic drive system is actuated by means of said throttling control valve, said throttling control valve being capable of throttling in intermediate positions, and said throttling control valve having an opening width which is

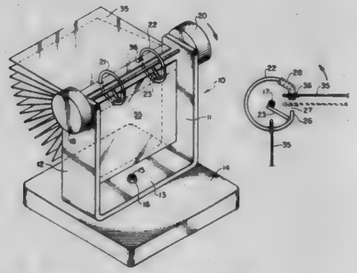
determined by a pressure difference created at the throttling control valve between the control signal from said control pressure pickoff and the load pressure of the consumer and wherein the control signal is influenced as a function of the movement speed of the consumer; said hydraulic drive system having a control pressure line which runs to a charging space of the throttling control valve that is active in the opening direction and a load pressure line which runs to an oppositely active charging space, wherein a drain line (16) branches off from the control pressure line (7, 8) and in which a spring loaded throttling multiway valve is installed and is in working connection with a measuring device that detects the movement speed of the consumer, said spring loaded throttling multiway valve being capable of throttling in intermediate positions and being spring-loaded in the closing direction; wherein the measuring device consists of a restrictor (12) that is installed in the line (5, 6) between the pressure medium source and the consumer, and wherein a line (13) branches off upstream from the restrictor which leads to a charging space of the multiway valve active in the opening direction, and a line (14) branches off downstream from the restrictor which leads to an oppositely active charging space of the multiway valve.

5,291,677

ROTARY PHOTOGRAPH FILE

Gerald Samson, and Mildreth Samson, both of 5701 W. Adams Blvd., Los Angeles, Calif. 90016

Filed Dec. 16, 1991, Ser. No. 808,149
Int. Cl.[5] G09F *11/00*
U.S. Cl. 40—494 2 Claims



1. A rotary photograph file comprising:

a base;

a U-shaped frame having a pair of spaced-apart support members joined by a cross-member;

swivel means pivotally connecting said U-shaped frame cross-member with said base for rotation of said frame about a vertical axis;

a turning shaft rotatably carried on said support members for rotation about a horizontal axis;

a plurality of holders disposed between said support members for rotation about a horizontal axis;

means operably joining said plurality of holders onto said turning shaft whereby said holders flip about said turning shaft as said shaft is rotated;

said joining means comprise a pair of rings fixedly secured to said turning shaft in spaced-apart relationship;

each ring of said pair having a gap defined between opposing ends of ring end segments and having an interconnecting arm connected at one end to said turn shaft and connected at the other end to said ring at a position spaced from one of said opposing ends of said ring end segments;

a closure member movably carried on said ring having a first position opening said gap and a second position closing said gap;

each of said holders includes a sheet of material folded over upon itself to provide an open-sided envelope adapted to insertably receive a graphic card through a selected one of said open sides;

said folded-over sheet providing a reinforced strip adjacent to said pair of rings;

said reinforcement strip having a pair of spaced-apart holes accepting said rings so as to be retained thereon;

said closure member is a sleeve having an open-ended passage extending between opposite ends of said sleeve to insertably receive said segment ends in slideable relationship;

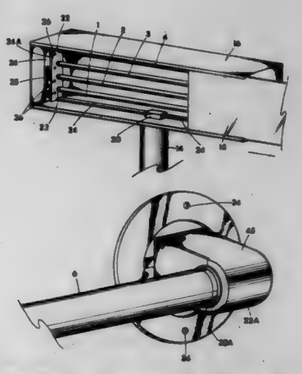
said sleeve includes a longitudinal slit between said sleeve composed of a pliable material and opposite ends and being expandable to yieldably engage with said ring end segments.

5,291,678

ELECTRIC SIGN WIRING IDENTIFICATION

Mickey R. Murray, P.O. Box 120, Magalia, Calif. 95954

Filed Dec. 6, 1991, Ser. No. 803,213
Int. Cl.[5] G09F *13/04*; H01R *13/64*
U.S. Cl. 40—564 1 Claim



1. In combination, an advertising sign having opaque wire raceways containing wiring connecting color-coded load side wires of a ballast within said sign to lamp sockets supported by said raceways, said lamp sockets having a single base each having a front surface for supporting florescent lamps within said sign, therebeing a plurality of generally flat panel color-coded markers each having a central opening, said color-coded markers being affixed one said color-coded marker adjacent the front of each of said lamp sockets, therebeing a single base of each of said lamp sockets inserted within said central opening of the adjacent said color-coded markers, said color-coded markers each being of a color equivalent to a particular color of said color-coded load side wires such that a particular color coded marker adjacent a particular one of said lamp sockets will allow visual detection of which said color-coded load side wires of said ballast feeds said particular one of said lamp sockets of said sign.

5,291,679

MAGAZINE WITH INDICATOR

Timothy A. Wollack, Maryville, Tenn., and John L. Wollack, Kula, Hi., assignors to E. M. Kelman; E. M. Kelman, Maryville, Tenn.; J. L. Wollack and J. E. Wollack, Kula, Hi.

Filed Jun. 15, 1992, Ser. No. 898,499
Int. Cl.[5] F41A *9/62*
U.S. Cl. 42—50 48 Claims

1. A magazine, comprising:

a hollow body having a bullet aperture and an indicator aperture;

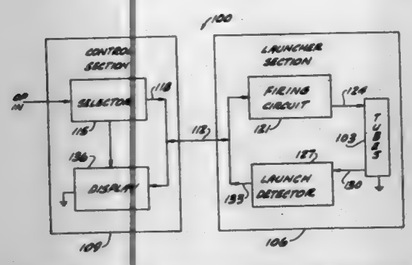
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a follower slidably mounted in said hollow body; and
an elongated indicator member attached to said follower, extending through said indicator aperture, and projecting outside said body by an indicator length;
whereby displacement of said follower causes a change in said indicator length;
wherein said indicator member comprises a plurality of knots spaced at predetermined intervals;
wherein said intervals are determined by the displacement of said follower caused by the ejection of first predetermined numbers of bullets from said hollow body and then by the ejection of second predetermined numbers of bullets from said hollow body;



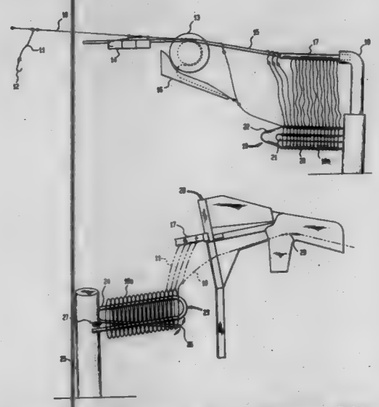
whereby each knot on a first part of said indicator member corresponds to a first predetermined number of bullets remaining in said magazine and each knot on a second part of said indicator member corresponds to a second predetermined number of bullets remaining in said magazine, wherein said first predetermined number is a first constant whole number and said second predetermined number is a second constant whole number;
whereby the number of said knots projecting outside said body indicates the number of bullets remaining said body.

5,291,680
GRENADE LAUNCHING APPARATUS
Paul G. Schabdach, Churchville; Irving F. Barditch, Baltimore; William G. Rouse, Aberdeen, and John P. Fiala, Forest Hill, all of Md., assigners to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sep. 19, 1992, Ser. No. 943,657
Int. Cl.[5] F41F *1/00*
U.S. Cl. 42—105 **3 Claims**



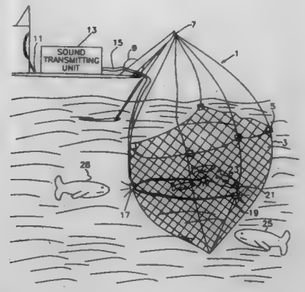
1. A grenade launcher for launching a plurality of grenades which includes a controller, comprising:
a selector responsive to operator input for selecting one or more of the grenades to be launched, said selector including means for sequentially designating which of the grenades have been selected wherein said means for sequentially designating includes means for producing a clock signal having one or more clock pulses corresponding to each of the selected grenades and means for assigning the clock pulses to the grenades for designating which of the grenades have been selected; and
display means for indicating that a selected grenade has been launched;
and means for launching one or more of the grenades comprising:
a firing circuit responsive to the selector for activating said launching means for launching each said selected grenade; and
a launch detector for detecting that a selected grenade has been launched by the firing circuit, wherein said display means is responsive to said launch detector.

5,291,681
MEANS FOR HANDLING A LONG LINE ON A FISHING VESSEL
Aegir Bjornson, Vallgatan 17, Smogen S-450 43, and Hans-Oskar Hasslof, Fotbollsvagen 6, Kungshamn S-456 00, both of Sweden
PCT No. PCT/SE91/00794, § 371 Date Aug. 4, 1992, § 102(e) Date Aug. 4, 1992, PCT Pub. No. WO92/09194, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 22, 1991, Ser. No. 910,277
Claims priority, application Sweden, Nov. 22, 1990, 9003711-0
Int. Cl.[5] A01K *91/00, 79/00*
U.S. Cl. 43—8 **9 Claims**



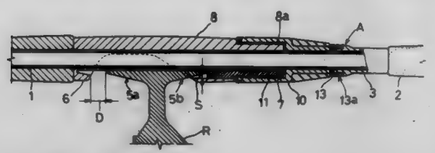
1. Apparatus for drawing in a monofilament fishing line including a plurality of branch lines with associated hooks to a first location on a fishing vessel and for laying out said monofilament fishing line from a second location on said fishing vessel, said apparatus comprising first monofilament fishing line carrier means mounted at said first location comprising an elongated substantially cylindrical body whereby a plurality of loops of said monofilament fishing line can be formed thereon, and second monofilament fishing line carrier means mounted at said second location comprising a substantially U-shaped yoke member whereby said plurality of loops of said monofilament fishing line can be removed therefrom, and braking means associated with said U-shaped yoke member for applying pressure to said plurality of loops and ensuring that said plurality of loops are removed individually from said substantially U-shaped yoke member.

5,291,682
SPECIES SELECTIVE FISHING NET SYSTEM
Nicole L. Zaccheo, 793 Uniontown Rd., Phillipsburg, N.J. 08865
Filed Sep. 30, 1991, Ser. No. 767,382
Int. Cl.[5] A01K *79/02*
U.S. Cl. 43—17.1 **7 Claims**



1. A fishing net system which is selective for catching one or more species and for excluding one or more species, which comprises:
(a) a fishing net having a webbing of adequate size to catch one or more desired species;
(b) a sound transmitting unit located at a remote location from said fishing net and having sound generating capability with sound which selectively deters one or more undesired species of fish away from the sound;
(c) one or more underwater speakers attached to said fishing net and being capable of receiving and broadcasting sound from said remote sound transmitting unit at a level adequate to deter one or more species away from said fishing net.

5,291,683
FISHING ROD
Yoshiro Yamato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Continuation of Ser. No. 726,963, Jul. 8, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,287
Claims priority, application Japan, Jul. 20, 1990, 2-77761[U]; Jul. 20, 1990, 2-77762[U]
Int. Cl.[5] A01K *87/06*
U.S. Cl. 43—22 **4 Claims**



1. A fishing rod comprising:
a single seat base disposed to cover a rod stock and defining a first opening edge and a second opening edge;
a fixed hood formed integral with said seat base wherein said fixed hood is adjacent to said second opening edge so as to engage a forward leg of a fishing reel;
a movable hood disposed adjacent to said first opening edge comprising a threaded portion at an outer peripheral surface thereof, said movable hood being accommodated within a guide hole formed in said seat base, said outer peripheral surface of said movable hood being placed in contact with an inner surface of said seat base adjacent to said first opening edge so as to restrict said movable hood from moving radially of the axis of said fishing rod; and
a rotatable adjusting element, relatively rotatably mounted on said seat base and extending from a small diameter portion of said seat base to said rod stock, said rotatable adjusting element defining an internal screw throughout an inside wall thereof opposed to said small diameter portion of the seat base, said adjusting element being rotatable about said rod axis while maintaining a position thereof along said rod axis so as to adjust a position of said movable hood along said rod axis thereby retaining said rearward leg of said fishing reel;
wherein said first and second opening edges are inclined, in side view, with respect to said axis of the fishing rod, with said second opening edge having a sharper slant then said first opening edge.

5,291,684
CASTING HANDLE FOR A FISHING ROD
Mitsuyoshi Oyama, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 30, 1993, Ser. No. 54,204
Claims priority, application Japan, Jun. 16, 1992, 4-47952
Int. Cl.[5] A01K *87/00*
U.S. Cl. 43—23 **11 Claims**



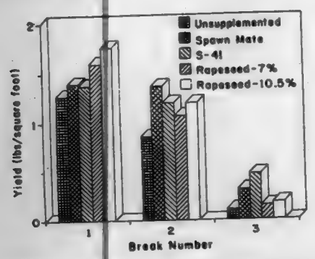
1. A casting handle for a fishing rod, comprising a reel mount having:
a reel leg placing section in an upper surface of said reel mount, said reel leg placing section extending in a longitudinal direction from a front end to a rear end and defining side edges;
a lower surface opposite said upper surface being curved such that, when viewed in cross section, said lower surface is most distanced from said upper surface at a middle portion and raised toward said side edges;
a sideward expanded portion which is formed by expanding said side edges of said reel leg placing section in a transverse direction with respect to said longitudinal direction at a portion proximate said rear end of said reel leg placing section; and
a trigger protruding from said lower surface at a position substantially opposite said rear end of said reel leg placing section, wherein edge lines are defined by said side edges, and a rear end portion of said edge lines of said sideward expanded portion is obliquely raised in a direction opposite said trigger.

5,291,685
INTACT SEED-BASED DELAYED-RELEASED NUTRIENT SUPPLEMENT FOR MUSHROOM CULTIVATION
C. Peter Romaine, State College, Pa., and Alan Marlowe, Ocean Side, Calif., assignors to The Penn State Research Foundation, University Park, Pa.
Filed Sep. 11, 1992, Ser. No. 943,669
Int. Cl.[5] A01G *1/04*; C05F *11/00*
U.S. Cl. 47—1.1 **17 Claims**

1. In a method of cultivating mushrooms wherein a time

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delayed-release nutrient supplement is utilized, the improvement comprising utilizing an intact rapeseed having its sprouting capability irreversibly inhibited or destroyed and having inherent delayed-release properties as the supplement.

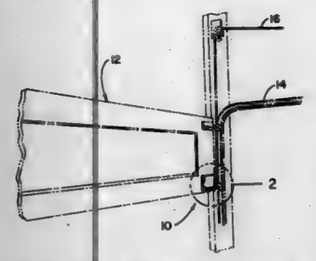


5,291,686

OVERHEAD DOOR SAFETY APPARATUS

Russ Sears, 95 County Road 14, Mount Brydges, Canada, and Dave Winser, 381 Waterloo St. 190 4, London, Ontario, Canada N6B 2R2

Filed Dec. 7, 1992, Ser. No. 986,446
Int. Cl.[5] E05D *13/00*
U.S. Cl. 49—322 **3 Claims**



1. A new and improved overhead door safety apparatus for a cable controlled door whose movement is guided by a stationary structure, the apparatus comprising:

a track near the door, and a track follower on the door, where movement of the track follower with respect to said track guides the motion of the door controlled by the control cable, the apparatus comprising:

cable-tension-responsive track follower means, connected to the door, for guiding motion of the door with respect to the track, said cable-tension-responsive track follower means having a first and a second operating state, said first operating state permitting smooth movement of said cable-tension-responsive track follower means with respect to the track when a control cable has a predetermined amount of cable tension, said second operating state providing a brake for movement of said cable-tension-responsive track follower means with respect to the track when a control cable has less than the predetermined amount of cable tension,

wherein said cable-tension-responsive track follower means is comprised of: an oblong brake plate having a first, relatively short external diameter, and having a second, relatively long external diameter, said oblong brake plate being positioned on the door such that:

when said short external diameter is substantially perpendicular to the track and said long external diameter is substantially parallel to the track, designated as a first or normal position for said cable-tension-responsive track follower means, either a gap exists between said brake plate and the track or a smooth surface contact exists between said brake plate and the track, whereby movement of said brake plate with respect to the track is smooth and continuous,

when said long external diameter is moved from a position of being substantially parallel to the track to a position approaching being perpendicular to the track, designated as a second or braking position for said cable-tension-responsive track follower means, a gap between said brake plate and the track is eliminated, and a rough surface contact exists between said brake plate and the track, whereby movement of said brake plate with respect to the track is braked, and

means for controlling the position of said brake plate, said means for controlling exerting a force opposing a predetermined cable tension for retaining said brake plate in said designated normal position when the cable maintains the predetermined cable tension, and said means for controlling moving said brake plate to said braking position when the cable no longer maintains the predetermined cable tension, wherein said brake plate includes interior components and an exterior surface, and said brake plate is comprised of:

a case member;

at least two opposing teeth-containing members retained by said case member;

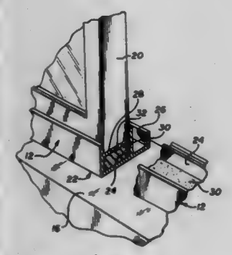
spring means, placed under said teeth-containing members, for urging said teeth-containing members toward the exterior of said brake member.

5,291,687

WINDOW TRACK DEBRIS ACCUMULATION PREVENTION SYSTEM

Alex Abad, 507 Earle La., Redondo Beach, Calif. 90278

Filed Feb. 4, 1993, Ser. No. 13,634
Int. Cl.[5] E05D *15/06*
U.S. Cl. 49—404 **13 Claims**



6. A window assembly, comprising:

a window frame including a window sill having a U-shaped window track, the window track including a window-supporting rail;

a sliding window adapted to fit within the track when closed, the sliding window being supported on the rail within the window track; and

removable means for substantially filling the track without interfering with the movement of he sliding window, whereby the removable track filling means prevents the accumulation of debris in the window track.

5,291,688

ADJUSTABLE DOOR ASSEMBLY

Robert D. Pederson, 312 Duenow St., Athens, Wis. 54411

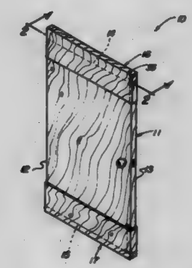
Filed Feb. 8, 1993, Ser. No. 14,756
Int. Cl.[5] E06B *3/00*
U.S. Cl. 49—501 **7 Claims**

1. An adjustable door assembly, comprising,

a rigid door, having a first side wall spaced from a second side wall, and a first end wall spaced from a second end wall, and

at least the first end wall including a cap member mounted to the first end wall, wherein the cap member includes a cap first end wall in adjacency to the first side wall and a cap second end wall in adjacency to the door second side wall, and the cap having a cap floor plate positioned in a spaced relationship above the door first end wall, and

hinge means mounted to the door first end wall and to the floor plate for pivotally mounting the cap member relative to the door, and



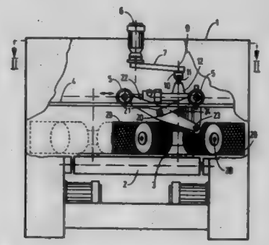
the floor plate includes a canted interior surface arranged in facing confronting relationship relative to the door first end wall, wherein the interior surface extends from the cap first end wall to the cap second end wall and is of a first thickness at the cap first end wall and a second thickness at the cap second end wall, wherein the second thickness is less than the first thickness, and the hinge means includes a bifurcated hinge web having a first hinge plate secured to the canted interior surface, and a hinge rod, with the hinge rod having a second plate hingedly mounted to the hinge rod, the hinge rod is orthogonally and slidably directed through the door first end wall.

5,291,689

METHOD AND MACHINING APPARATUS FOR USE ESPECIALLY IN THE SANDING OF ITEMS OF WOOD IN A SANDING MACHINE

Keld O. Hundebol, Ansager, Denmark, assignor to HH Patent A/S, Ansager, Denmark

Division of Ser. No. 699,181, May 13, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 950,416
Claims priority, application Denmark, May 22, 1990, 1271/90
Int. Cl.[5] B24B *7/00*
U.S. Cl. 51—72 R **11 Claims**



1. Sanding apparatus comprising:

spindle drive means, means for rotating said spindle drive means;

a plurality of spindles each extending radially from said spindle drive means, a sanding roller on each said spindle;

means for rotating each of said spindles with the sanding roller thereon;

means for conveying the articles to be sanded beneath the sanding rollers along a path in a first direction; and

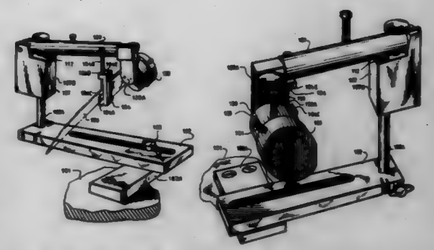
means for moving the spindle drive means and the rotating spindles thereon in a second direction across said path, the spindle drive means being suspended at one end of two first arms each of the first arms at their opposite ends together supporting a first wheel pair, a second wheel pair mounted to one end of two second arms, the second arms together supporting the second wheel pair, the second arms at their opposite ends being linked to the first arms.

5,291,690

NIPPER CLAMP FOR PRECISON CLAMP SCISSORS SHARPENING SYSTEM

Arthur Pike, 66 Crystal Rock Ct., Middle Island, N.Y. 11953

Continuation-in-part of Ser. No. 653,008, Feb. 8, 1991, Pat. No. 5,157,870, and a continuation-in-part of Ser. No. 890,963, May 29, 1992, abandoned. This application Oct. 21, 1992, Ser. No. 964,655
Int. Cl.[5] B24B *3/52, 3/60*
U.S. Cl. 51—122 **9 Claims**



1. An improved clamp scissors blade sharpening device wherein the device includes:

a rotating sharpening disc having a planar sharpening surface,

a clamp for a blade, the clamp movable toward the planar sharpening surface,

a holding device for the clamp including a vertical support member supporting a movable horizontal support member, the movable horizontal support member supporting the clamp, the vertical support member supported by a horizontal slidable base support member,

a spring loaded pin lever extending between the movable horizontal support member and the vertical support member, the lever using the horizontal support member away from the vertical support member,

the horizontal support member pivotable about a pivot in the vertical support member,

the vertical support member having a limit member to stop downward vertical movement of the horizontal support member with the clamp attached thereto,

wherein said clamp comprises a U-shaped clamp.

5,291,691

METHOD AND APPARATUS FOR DRESSING AN ELECTROPLATED GRINDING WHEEL

Kunihiko Unno, Kariya; Masato Kitajima, Hekinan; Hajime Fukami, Nagoya; Akimitsu Kamiya, Okazaki, and Shinji Soma, Handa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

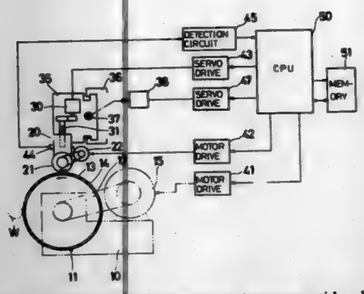
Filed Jan. 30, 1992, Ser. No. 828,105
Claims priority, application Japan, Feb. 5, 1991, 3-14412
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.87 **5 Claims**

1. A method of dressing an electroplated grinding wheel

having a circular core and a single layer of hard abrasive grains held on the peripheral surface of said core by a plating layer, said method comprising steps of:

rotating said grinding wheel about a first axis in a direction;

rotating a circular role made of ceramics about a second axis at a predetermined speed in a direction opposite to the rotational direction of said grinding wheel so that the difference in surface speed between said role and said grinding wheel becomes substantially zero at a location at which said role contact with said grinding wheel, said first axis and second axis being in a common plane; and



effecting relative infeed movement between said role and said grinding wheel in a radial direction of said grinding wheel so that said role is relatively fed toward the peripheral surface of said grinding wheel by a predetermined infeed amount from a radial position corresponding to the radial position of the peripheral surface of said grinding wheel, said infeed amount being larger than half of the size difference in diameter between the upper grain size and the lower grain size of the abrasive grains.

5,291,692

POLISHING WORK HOLDER

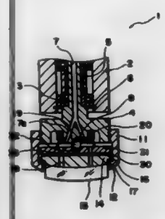
Mitsuaki Takahashi; Takayuki Kishida; Masaki Watanabe, all of Hachiooji, and Kazuo Ushiyama, Akishima, all of Japan, assignors to Olympus Optical Company Limited, Japan

Filed Sep. 10, 1990, Ser. No. 583,173

Claims priority, application Japan, Sep. 14, 1989, 1-239500; Sep. 29, 1989, 1-254719; Oct. 3, 1989, 1-258276

Int. Cl.[5] B24B *47/00*

U.S. Cl. 51—235 **16 Claims**



1. A polishing work holder, comprising: a holder body rotatably supported by a housing and having a recess portion formed on a rotating shaft of one end face thereof and a suction hole opened at the end face; a lens receptacle having a hole communicated with the suction hole to hold a lens through suction at one end surface; a spherical body disposed between the recess portion of the holder body and the lens receptacle so as to contact the another end face and for tiltably and movably supporting the lens receptacle relative to the axis of the holder body; a fixing ring concentrically secured to the holder body and engageable with an outer periphery face of the lens or an outer periphery face of the lens receptacle so as to limit the tilting and the diametrical moving of the lens; and a sealing member provided between the holder body and the receptacle and outside of the suction hole; wherein the holder body, the spherical body and the lens receptacle are arranged in series so that respective end faces of the holder body, the spherical body and the lens receptacle are in contact with each other.

5,291,693

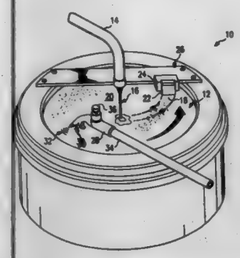
SEMICONDUCTORS STRUCTURE PRECISION LAPPING METHOD AND SYSTEM

Jane H. Nguyen, Fort Bend, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 20, 1992, Ser. No. 932,810

Int. Cl.[5] B24B *53/02*

U.S. Cl. 51—283 R **12 Claims**



1. A method for removing particulate from a lapping surface during a semiconductor lapping process, comprising the steps of:

rotating said lapping surface around a central axis in one direction;

directing a flow of water to said lapping surface;

continuously directing, opposite the direction of rotation, a controlled pressurized gas to a predetermined area of the lapping surface to remove the particulate from said predetermined area prior to said predetermined area contacting the semiconductor device and:

controlling noise associated with directing said controlled pressurized gas to said predetermined area by directing said controlled pressurized gas through a nozzle then through tubing associated with said nozzle, said tubing having a diameter narrower than said nozzle.

5,291,694

APPARATUS AND METHOD OF WORKING AND FINISH TREATING A STONE SURFACE

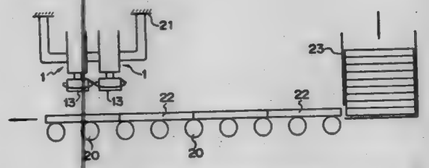
Fukutoshi Hosoya, and Nobuo Nakano, both of Tokyo, Japan, assignors to JSE Corporation, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,595

Claims priority, application Japan, Jun. 3, 1991, 3-131286

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—317 **6 Claims**



1. A method of working and finish-treating a surface of a stone, comprising the steps of:

at least one treatment selected from a group of treatments consisting of gang saw cutting, circular saw cutting, bush hammering, dab finishing, and flaming;

jetting a flow consisting solely of pressurized water directed at the stone surface, at a pressure not less than 200 kg/cm^2, through a plurality of nozzles generating jets that respectively overlap adjacent jets;

rotating said plurality of nozzles about a first axis to produce corresponding rotation of respective jets therefrom; and

translating said stone surface relative to said rotating jets at a rpedetermined spacing therefrom, said jetted flow thereby removing gangue from the surface to leave a finished stone surface which is close to a natural stone surface.

5,291,695

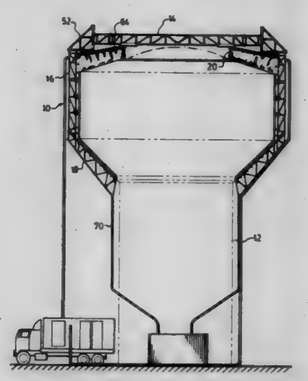
SCAFFOLDING WITH ENCLOSED MOVABLE WORK AREAS SEALED AGAINST WORK SURFACES

Stephen M. Healy, Islington; Daniel W. Diverty, Burlington, and Terrence F. Warren, Brantford, all of Canada, assignors to Blastco Corporation, Brantford, Canada

Filed Nov. 4, 1992, Ser. No. 971,205

Int. Cl.[5] B24C *3/00*

U.S. Cl. 51—410 **8 Claims**



1. For use in blasting, painting or otherwise treating at least the vertical wall of a structure which is circular in cross-section and which has a central vertical axis, where said treatment is to take place in a substantially enclosed environment, a containment scaffolding comprising:

a generally horizontal module positionable on top of said structure and rotatable about said vertical axis, extending across said structure and having opposite end portions, at least one of which extends slightly outwardly beyond said wall;

a vertical module connected to and depending from at least one said extending end portion of said generally horizontal module, in close proximity to said wall, each said vertical module defining at least one work area adjacent said vertical wall, each said work area having enclosed top, bottom, rear and side faces and an open front face facing said vertical wall; and

sealing mean at the edges of said open front face of each work area, adapted to contact the surface of said vertical wall and to effect a seal between said work area and said vertical wall.

5,291,696

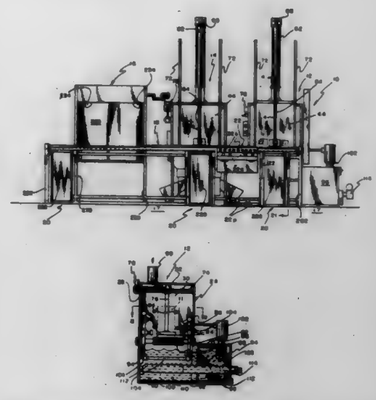
APPARATUS FOR CLEANING METALLIC WHEELS

Paul L. Enegren, Wichita, Kans., assignor to Viking Corp., Wichita, Kans. and International Marketing, Inc., Chambersburg, Pa.

Continuation of Ser. No. 80,016, Jul. 31, 1987, abandoned, and a continuation-in-part of Ser. No. 69,324, Jun. 18, 1987, Pat. No. 5,244,506. This application May 1, 1992, Ser. No. 877,527

Int. Cl.[5] B24C *3/08*; B08B *3/00*

U.S. Cl. 51—420 **11 Claims**



7. An apparatus for washing a metallic wheel comprising a conveying frame; a means supported by the conveying frame, for conveying a metallic wheel; a means, cooperating with the conveying frame and the means for conveying, for elevating a metallic wheel from a supporting surface to a level of the means for conveying; a means, cooperating with the conveying frame and the means for conveying, for receiving a metallic wheel off of the means for conveying and for washing a metallic wheel; and a means, engaged to said means for receiving and for washing, for pivoting a discharge bar means for pushing a metallic wheel from the means for receiving and for washing onto the means for conveying.

5,291,697

SURFACE ABRADING MACHINE HAVING TRANSVERSE OSCILLIATION

Robert T. Nelson, Oklahoma City, Okla., assignor to Nelco Acquisition Corporation, Oklahoma City, Okla.

Filed Jun. 11, 1992, Ser. No. 897,223

Int. Cl.[5] B24C *3/06*

U.S. Cl. 51—429 **25 Claims**

1. A machine for abrading a surface by propelling abrasive material against the surface, the machine comprising:

a wheeled frame having two side members;

a pair of parallel track members extending between the side members of the frame;

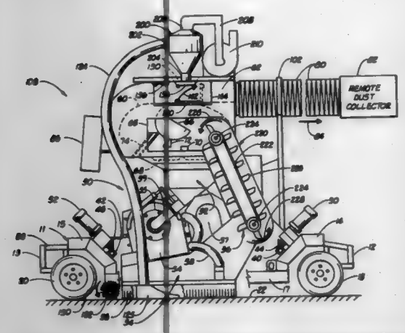
a blast housing movably supported upon the track members, the blast housing having a blast opening disposed toward the surface to be abraded;

a blast wheel rotatably mounted within the blast housing and adapted to propel abrasive material through the blast opening against the surface to be abraded;

a hopper communicating with the blast housing to feed abrasive material to the blast wheel and communicating with the blast opening to return abrasive material to the hopper for reuse; and

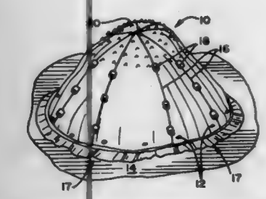
VOL 1160 ISS 2 MR 8 1994 UMI

oscillation means for moving the blast housing upon the track members to oscillate the blast housing over the



surface to be abraded between the two side members of the frame.

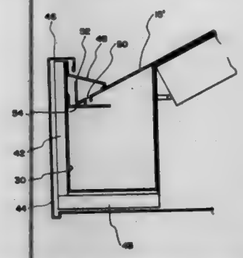
5,291,698
TARPAULIN AIR VENT SYSTEM
Richard W. Rayner, Jr., South Elgin, Ill., assignor to Rayner Covering Systems, Inc., South Elgin, Ill.
Filed Nov. 2, 1992, Ser. No. 970,054
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—3 **5 Claims**



1. A pile covering system for protecting a pile of material comprising:
a cover sheet constructed from a substantially water impermeable material;
a plurality of apertures formed in said cover sheet;
a plurality of tubular vents constructed from a flexible material; each said vent having a proximal end joined to said cover sheet to overlie one of said apertures, a distal open end, and an intermediate portion between said proximal and distal ends having opposing transversely facing joined wall segments to form a foldable reduced cross-section passageway at said intermediate portion for closing of said vent but otherwise permitting air flow from beneath said cover sheet.

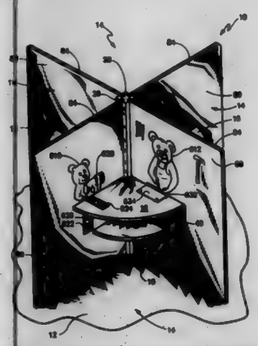
5,291,699
ROOF
Keiichi Fujita, 1887 Kizuki-sumiyoshicho Nakaharaku, Kawasaki-City Kanagawa-Prefecture, Japan
Filed Dec. 15, 1992, Ser. No. 991,537
Claims priority, application Japan, Dec. 17, 1991, 3-353433
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—11 **1 Claim**

1. A roof comprising;
a plurality of rafters **13**, **13'** each having at its upper end a connection **11** and having at its lower end a fixing section **12**; and
a rod **14** for retaining said connections of said rafters at predetermined intervals, wherein
said fixing sections **12** of said rafters **13**, **13'** are secured to corresponding eaves beams **22** of a building structure, and wherein
said rafters **13**, **13'** are arranged on both sides of said rod **14** so as to raise and support said rod **14** at a predetermined height,
said rafters **13**, **13'** and said rod **14** constituting a roof frame in cooperation; further comprising:



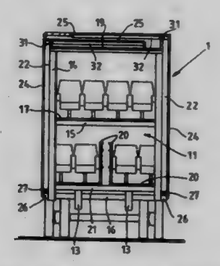
a sheathing surface **15'** formed over said rafters **13**, **13'** and having a lower edge;
a drainage hole **50** provided in the vicinity of the lower edge of said sheathing surface **15'**;
an eaves trough **30** disposed below said drainage hole **50**;
a vertical portion **52** obtained by an upwardly bent portion of the lower edge of said sheathing surface **15'**;
a root catch **54** on which said vertical portion **52** is placed; and
a drip cover **40** for covering an extremity side of the lower edge of said sheathing surface **15'**.

5,291,700
ACTIVITIES MODULE
Keith Chew, 3781 Unita St., Denver, Colo. 80237
Filed Nov. 6, 1991, Ser. No. 788,422
Int. Cl.[5] A47B *47/04, 96/04*; A47D *3/00, 5/04*
U.S. Cl. 52—36.1 **23 Claims**



1. An activities module adapted to be positioned on a support surface and operative to provide at least one horizontal work surface and at least one activity station comprising:
(a) an upright post member having at least two grooves formed therein such that, when said upright post member is oriented in an upright position, the grooves extend in a vertical direction;
(b) a first flat panel member of a selected thickness and having a first opening sized to receive said upright post member, said first flat panel member being oriented horizontally with respect to said upright post member when said upright post member is in the upright position with the first opening engaging said upright post member, said first flat panel member having an upper surface forming a horizontal work surface for the activities module, a peripheral edge opposite said first opening and a peripheral margin adjacent the peripheral edge;
(c) a plurality of upright partition panels each having a bottom edge operative to engage the support surface, an outer edge and an inner edge opposite said outer edge, each said partition panel being oriented perpendicularly with respect to said first flat panel member and having tongue means on the inner edge thereof for matably engaging a respective one of said grooves in said post member;
(d) first slot means for permitting engagement of said partition panels and said first panel member; and
(e) fastening means for securing each of said partition panels with respect to said post member whereby at least one divided activity area is formed between said partition panels.

5,291,701
EXTENDIBLE RIGID CONSTRUCTION
Michel Delcollette, Nandrin, and Charles A. Piette, Nassogne, both of Belgium, assignors to Espace Mobile International S.A., in short "E.M.I.-S.A." , Aubange, Belgium
PCT No. PCT/BE90/00005, § 371 Date Nov. 14, 1990, § 102(e) Date Nov. 14, 1990, PCT Pub. No. WO90/08861, PCT Pub. Date Aug. 9, 1990
PCT Filed Jan. 1, 1990, Ser. No. 474,848
Claims priority, application Belgium, Feb. 1, 1989, 8900097
Int. Cl.[5] B60P *3/00*
U.S. Cl. 52—67 **8 Claims**



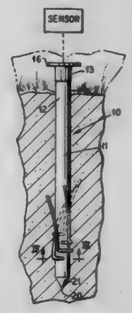
1. An extendable rigid construction comprising:
a first fixed box unit mounted on a fixed supporting chassis including parallel fixed crossbars carrying a floor, said first box unit having at least one open lateral side,
at least one second moveable box unit adapted to telescope at least partially over the first box unit, said second moveable box unit being mounted on slidable crossbars capable of sliding along said fixed crossbars between a retracted position and an extended position,
said second moveable box unit being provided with a floor connected to said slidable crossbar, the floor comprising a horizontal section connected to said slidable crossbars and a pivotable section connected to the horizontal section by means of a horizontal hinge, said pivotable section being pivoted towards a substantially vertical position when the moveable box is in retracted position and said pivotable section being pivoted about said horizontal hinge into a horizontal position whereby said pivotable section is resting on the slidable crossbars when the moveable box unit is in an extended position, and
driving means fixed to the fixed supporting chassis in order to cause the slidable crossbars to slide along said fixed crossbars.

5,291,702
CURVED SURFACE BUILDING MODULES
Percy R. Hooper, 570 S.W. Maynard Rd., Cary, N.C. 27511
Filed Sep. 5, 1991, Ser. No. 755,103
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—80.1 **5 Claims**



1. A modular building system comprising:
a) a plurality of saddle-shaped modules adapted to be joined together to form a space-enclosing structure, each saddle-shaped module including two continuously curved surfaces joined by four edges lying in respective planes of a circumscribing cube, and a flange extending along each edge perpendicularly from the plane of the circumscribing cube; and
b) connecting means for adjoining two or more modules together, said connecting means including an elongated channel member having an I-shaped cross-section, each said channel member including a top rail, a bottom rail disposed parallel to the top rail, and a web extending perpendicularly between the top and bottom webs so as to define two channels on opposite sides for the web for receiving the flanges extending along the edges of two adjoining modules.

5,291,703
SURVEY MONUMENT AND IMPROVED EXTRACTION RESTRICTION MEANS THEREFOR
Richard W. Ziegler, Tucson, Ariz., assignor to Surv-Kap, Inc., Tucson, Ariz.
Continuation-in-part of Ser. No. 927,018, Aug. 10, 1992, abandoned. This application Jan. 29, 1993, Ser. No. 11,259
Int. Cl.[5] E01F *9/02*
U.S. Cl. 52—103 **14 Claims**



1. An anchoring system comprising:
a rod-like cylindrically shaped elongated member having a diametral opening;
the lower most end of said rod-like member being formed to provide a piercing means to enhance penetration of the ground; and
extraction restricting means comprising a wire form spring

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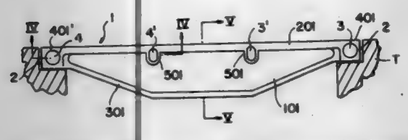
member shaped to provide a straight leg terminating in a co-planar curved leg extending through a sufficient arcuate dimension that it will effect a snap-on assembly with the rod-like member when the straight leg is inserted into a diametral opening formed in the rod-like member, and a longitudinally extending leg having an axially extending straight portion disposed in parallel relation to the axis of the rod-like member and having a curved portion bowed to extend upwardly and outwardly in a radially outwardly offset direction to thereby impart a rotational torque when the rod-like member is driven into the ground, and opening to restrict extraction when the rod-like element is moved in an opposite direction.

5,291,704

MODULAR CONSTRUCTION JOIST MADE UP OF A HIGH-STRENGTH PLASTIC MATERIAL, PARTICULARLY SUITABLE FOR REALIZING GRIDS, AND CLOSURE MEMBERS SUBJECTED TO PEDESTRIAN AND VEHICLE TRAFFIC

Sandra Savorani, Forlì, Italy, assignor to EDIL Plast S.R.L., Farli, Italy

Filed Oct. 18, 1991, Ser. No. 776,765
Claims priority, application Italy, Oct. 18, 1990, 15164/90[U]
Int. Cl.[5] E04F *11/16*
U.S. Cl. 52—177 **18 Claims**



1. A modular construction plastic filler-containing intermediate joist, comprising a body (**101**) with two ends having a lateral portion in the shape of an isosceles trapezium or of a circle sector whose straight-line edge is turned upwardly, an upper stringer (**201**) on an upper edge of said body (**101**), a lower stringer (**301**) on a lower edge of said body (**101**), a cross-section of said body (**101**), upper stringer (**201**) and lower stringer (**301**) being in the shape of a double T with the lower stringer (**301**) of a width less than a width of said upper stringer (**201**), a first and second parallelepipedal support (**401,401'**) on each end of said body (**101**), said first and second supports (**401,401'**) having a width equal to said width of said upper stringer (**201**), first and second symmetrically arranged raised portions (**500,501'**) extending from said body (**101**) and downwardly from said upper stringer (**201**), pins (**3,3'**) extending from a side of each of said first and second supports (**401,401'**) and first and second raised portions (**501,501'**), conjugated seat (**4,4'**) defined on a side of each of said first and second supports (**401,401'**) and each of said first and second raised portions (**501,501'**), each of said first and second supports (**401,401'**) and first and second raised portions (**501,501'**) has an opposing pin and seat.

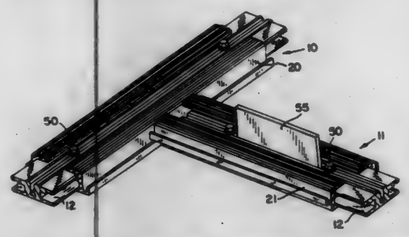
5,291,705

ENCASED SKYLIGHT FRAMEWORK

Gary O. Dickerson, Mequon, Wis., assignor to Super Sky Products, Inc., Mequon, Wis.

Filed May 20, 1992, Ser. No. 886,121
Int. Cl.[5] E04B *7/18*
U.S. Cl. 52—200 **11 Claims**

1. A skylight framework, comprising:
a plurality of spaced rafters joined by a plurality of crossbars,
the rafters and crossbars each including an elongated central support member having a base, lateral sides, and a top which together define an outer envelope, the top having a central fastener opening,



the rafters and crossbars each also having a separate cover member that surrounds the outer envelope of the support member except for the central fastener opening.

5,291,706

MODULAR CHIMNEY ARRANGEMENT

Jack M. Beardsley, 1961 Bellevue Dr., Glendale, Calif. 91201; Kendall L. Beardsley, 10799 Sherman Grove Ave., #34, Sunland, Calif. 91040, and Craig M. Beardsley, P.O. Box 3433, Glendale, Calif. 91221-0433

Filed Nov. 9, 1992, Ser. No. 973,661
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—218 **3 Claims**

1. A modular chimney arrangement, comprising,
a rectilinear support plate, the support plate having a central opening directed therethrough, and
a continuous skirt projecting downwardly and orthogonally relative to an outer periphery of the support plate, with the support plate having a plurality of L-shaped slots directed therethrough, and the support plate having four corners, and at least one of the L-shaped slots positioned in adjacency relative to each corner, and
a plurality of inner flanges, with each of said inner flanges projecting through one of the L-shaped slots, and
an outer flange positioned exteriorly to each inner flange, with a continuous mesh fence mounted to each inner flange wherein the each outer flange defining a supporting surface for engaging the support plate and holding the inner flange in the L-shaped slot, and
brick plates mounted to an exterior surface of the fence.

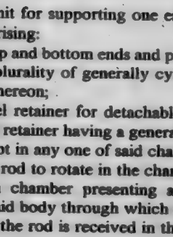
5,291,707

BIRD PROTECTOR FOR EXHAUST STACK

Dixie N. McDonald, 210 N. James, Carlsbad, N. Mex. 88220

Filed Mar. 27, 1992, Ser. No. 858,728
Int. Cl.[5] E04H *12/28*
U.S. Cl. 52—244 **17 Claims**

1. A flue gas stack having an outlet end, and a central longitudinal axis in combination with apparatus to prevent birds from alighting on the outlet end of said flue gas stack, comprising:
a conical wire screen cap of a size to preclude birds traveling therethrough and to freely allow flue gases to flow therethrough, said cap having a lower marginal end opposed to an apex thereabove;



fastener means by which said lower marginal end of said cap is affixed to the marginal outlet end of the stack with said apex being axially aligned with the central longitudinal axis of the stack;
said cap terminates in a sharp point at said apex.

5,291,708

MODULAR FRAMING SYSTEM

Victor G. Johnson, Miami Shores, Fla., assignor to Packer Plastics, Incorporated, Lawrence, Kans.

Filed Sep. 28, 1992, Ser. No. 951,880
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—282.2 **10 Claims**

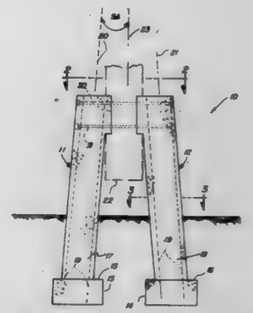
10. A framing unit for supporting one end of a panel, said framing unit comprising:
a body having top and bottom ends and presenting a periphery having a plurality of generally cylindrical chambers spaced apart thereon;
at least one panel retainer for detachable connection with said body, said retainer having a generally cylindrical rod for close receipt in any one of said chambers in a manner permitting the rod to rotate in the chamber in which it is received, each chamber presenting an opening at the periphery of said body through which said panel retainer projects when the rod is received in the chamber;
a panel cup on said panel retainer connected with said rod and being adapted to receive and support a lower edge of said one end of the panel, said cup being located out of the chamber which receives the rod and rotating with the rod to allow variation of the angular orientation of the panel relative to said body; and
means for securing said body against movement relative to the ground.

5,291,709

UTILITY POLE SUPPORT ARRANGEMENT

George Vranjesevic, 302 Church St. Apt. 3H, White Plains, N.Y. 10603

Filed Feb. 14, 1992, Ser. No. 835,336
Int. Cl.[5] E02D *27/00*
U.S. Cl. 52—297 **1 Claim**



1. A utility pole support arrangement, comprising,
a first clamp member positioned in confrontation with a second clamp member, and
the first clamp member and the second clamp member arranged to secure a utility pole therebetween, with the first clamp member and the second clamp member arranged in a mirror image symmetrical relationship about an axis oriented between the first clamp member and the second clamp member, and
the first clamp member including a first clamp base, the second clamp member including a second clamp base, and
a first clamp leg integrally mounted to the first clamp base extending upwardly therefrom, and a second clamp leg integrally mounted to the second clamp base extending upwardly therefrom, wherein the first clamp leg and the second clamp leg define an acute angle therebetween and are canted towards the axis, and
the first clamp leg defined along a first clamp leg axis, the second clamp leg defined along a second clamp leg axis, wherein an acute angle is defined between convergence of the first clamp leg axis and the second clamp leg axis, and
the first clamp leg and the second clamp leg each include a matrix of reinforcing rigid rods directed longitudinally therethrough, wherein the rigid rods of the first clamp leg extend into the first clamp base and the rigid rods of the second clamp leg extend into the second clamp base, and
an upper distal end of the first clamp leg includes a first arcuate clamp leg saddle, and an upper distal end of the second clamp leg includes a second arcuate clamp leg saddle, wherein the first arcuate clamp leg saddle and the second arcuate clamp leg saddle are each of a semicylindrical configuration and are concentric relative to the utility pole axis, and
the first clamp leg saddle includes a first saddle first bore and a first saddle second bore spaced apart a predetermined spacing to a parallel relationship, and the second clamp leg saddle includes a second saddle first bore and a second saddle second bore spaced apart the predetermined spacing in a parallel relationship, wherein the first saddle first bore and the second saddle first bore are coaxially aligned and the first saddle second bore and the second saddle second bore are coaxially aligned, and a first clamp rod is directed through the first saddle first bore and the second saddle first bore, and a second clamp rod is directed through the first saddle second bore and the second saddle second bore, and
the first clamp leg saddle and the second clamp leg saddle include a petroleum distillate impregnated first liner and a

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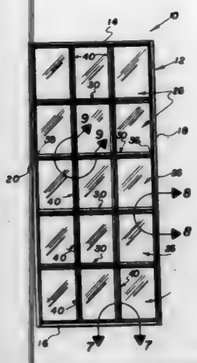
petroleum distillate impregnated second liner respectively coextensively mounted to the first arcuate clamp saddle and to the second clamp leg saddle, wherein the first liner includes a first arcuate metallic shield extending coextensively relative to the first liner, and the second liner includes a second arcuate metallic shield mounted coextensively to the second liner, each metallic shield includes a matrix of spike members projecting exteriorly of each shield, and each spike member includes an aperture oriented concentrically of each spike, whereupon clamping of the first clamp leg saddle and the second clamp leg saddle to the utility pole effects extrusion of petroleum distillate from the first liner and the second liner through the respective first metallic shield and the second metallic shield respectively into the utility pole.

5,291,710

TWO SIDED COLONIAL GRID ASSEMBLY SUCH AS A DOOR, WINDOW OR LIKE CLOSURE

Selig Golen, 5137 NW. 93rd Doral Way, Doral Estates, Miami, Fla. 33178

Filed Oct. 26, 1992, Ser. No. 966,628
Int. Cl.[5] B44F *7/00*
U.S. Cl. 52—311.1 **6 Claims**



1. A two-sided colonial grid closure assembly, said assembly comprising:

a) a plurality of panes of common size and shape, each pane having two opposing faces bounded by a peripheral edge,

b) a rectangular frame comprising a plurality of interconnected members, said members including header members and sill members disposed in spaced, parallel relation to one another and spaced, parallel jamb members interconnected between said head and sill members,

c) said plurality of interconnecting members defining a central assembly opening and each of said members including a longitudinally extending recess defining a receiving track,

d) a plurality of attachment bars each connected to a different one of said receiving tracks of the members and collectively defining an inner periphery of said central assembly opening,

e) each of said attachment bars including a support surface disposed in facing relation to said central assembly opening and adapted to receive and support a portion of said peripheral edge of a correspondingly positioned pane,

f) each of said attachment bars further including a facing surface disposed outwardly from said support surface thereof and said central assembly opening,

g) a plurality of true muntin bars disposed in spaced, parallel relation to one another and extending in interconnecting relation between said jamb members,

h) said plurality of true muntin bars including a facing surface and an elongated web having a supporting surface defined on each of two opposite sides of said web, said web extending between peripheral edges of adjacent panes and said supporting surfaces of said web adapted to receive and support said adjacent peripheral edges thereon,

i) a first plurality of false muntin bars disposed in interconnecting relation between adjacent true muntin bars and attachment bars and a second plurality of false muntin bars disposed in interconnection relation between adjacent and spaced apart true muntin bars,

j) said first and second plurality of muntin bars disposed in confronting engagement with said two opposing faces of said plurality of panes and each of said muntin bars outwardly extending facing surfaces,

k) a plurality of glazing strips connected in snap-fitted engagement with the peripheral edges of said plurality of panes and in attachment with said attachment bars and said true muntin bars and extending along the length thereof, and

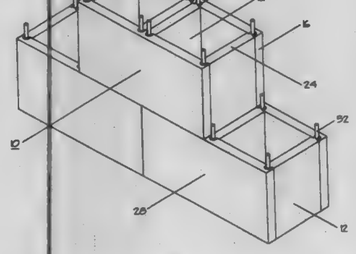
l) each of said plurality of glazing strips including a facing surface disposed in outwardly extending position relative to an opposite one of said opposing faces of the corresponding pane relative tot he disposition of said facing surfaces of said true muntin bars and attachment bars to which they are connected.

5,291,711

INNOVATIVE BUILDING BLOCKS

Anton G. Kopez, 2020 Bayside Pkwy., Ft. Myers, Fla. 33902

Filed Nov. 6, 1992, Ser. No. 972,769
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—503 **1 Claim**



1. Building blocks comprising;

A) two exterior wall members having;

1) an internal surface,

2) an exterior surface,

3) a top,

4) a bottom,

5) a predetermined height between said top and said bottom,

6) said predetermined height being approximately 8 inches,

7) a predetermined length,

8) said predetermined length being approximately 15 inches,

9) a predetermined width between said internal surface and said exterior surface,

10) four internal channel members each comprising;

a) a circular bore,

b) said circular bore extending from said top to said bottom,

c) said circular bore having a predetermined diameter,

d) an opening formed by said circular bore extending to and penetrating said internal surface of said exterior wall member,

e) said circular bore extending approximately one half of said width of said exterior wall member,

f) said opening having a predetermined width being less than said diameter of said circular bore,

B) four internal support members each comprising;

1) a top,

2) a bottom,

3) a predetermined height between said top and said bottom,

4) said height relatively equal to said height of said exterior wall members,

5) two opposing sides,

6) a predetermined width between said opposing sides,

7) two opposing ends,

8) each of said opposing ends comprising;

a) a uniform circular extension,

b) said uniform circular extension having a predetermined diameter,

c) said diameter being slightly smaller than said diameter of said circular bore of said exterior wall member,

d) a penetrating bore through said circular extension,

e) said penetrating bore having a predetermined diameter,

f) an upper insert bore,

g) said upper insert bore having a predetermined diameter,

h) said diameter of said upper insert bore being greater than said diameter of said penetrating bore,

i) said upper insert bore having a predetermined depth,

j) said upper insert bore aligned with said penetrating bore,

k) a lower insert bore,

l) said lower insert bore having a predetermined diameter,

m) said diameter of said lower insert bore being greater than said diameter of said penetrating bore,

n) said lower insert bore having a predetermined height,

o) said lower insert bore aligned with said penetrating bore,

C) a plurality of circular insert members each comprising;

1) a predetermined diameter,

2) said diameter being slightly smaller than said diameter of said upper insert bore and said lower insert bore of said circular extension,

3) a predetermined length,

4) said length being no greater than said depth of said upper insert bore of said circular extension plus said height of said lower insert bore of said circular extension,

5) a insert penetrating bore,

6) said penetrating bore having a predetermined diameter,

7) said diameter being relatively equal to said diameter of said penetrating bore of said circular extension of said internal support member,

whereby a plurality of building block would be constructed each using two exterior wall members and four internal support members and the resulting building blocks would be attached to each other using the circular insert members and all of the blocks within a wall could be further reinforced with rods inserted through the aligned penetrating bores.

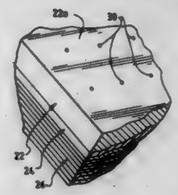
5,291,712

VAPOR PERMEABLE SHINGLES AND UNDERLAYMENT SHEETING FOR A ROOF COVERING

Laurence E. Curran, P.O. Box 991, Kennebunkport, Me. 04046

Continuation-in-part of Ser. No. 738,832, Aug. 1, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,620
Int. Cl.[5] E04D *1/00*
U.S. Cl. 52—526 **9 Claims**

1. A vapor permeable roof covering comprising, in combination, an array of asphaltic-type roof shingles and coated underlayment sheeting, said shingles and sheeting each having a pattern of pierced openings therethrough spaced along the length and width thereof, each of said openings functioning as a one-way valve which permits passage of water vapor therethrough under vapor pressure and concurrently prevents passage therethrough of liquid water.

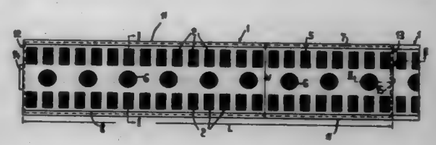


5,291,713

CONSTRUCTION ELEMENT FOR LIMITING THE FORE PART OF A FORMWORK

Fritz Brechbühler, Münsingen, Switzerland, assignor to Brefeba N.V., Willemstad, Netherlands Antilles

Filed Jun. 17, 1992, Ser. No. 900,949
Claims priority, application European Pat. Off., Jun. 17, 1991, 91810456.3
Int. Cl.[5] E04C *2/38*
U.S. Cl. 52—606 **7 Claims**



1. A construction element for limiting the fore part of a formwork, wherein said element is prefabricated of concrete, with a width corresponding to the thickness of a construction work to be fabricated and a modular length, comprising openings arranged in rows to allow the pushing through of reinforcing irons, pipework, or tubes and being provided with a reinforcement mesh which extends over said openings and prevents an outflow of concrete when concrete is poured into a formwork containing said element, wherein outside longitudinally extending edges of said element are provided with a finished surface generally matching a finish of a construction work to be erected, said element including longitudinally extending stepped portions on opposite sides of each of said outside longitudinally extending edges, and said element including a protruding shoulder at one end and a recessed shoulder at an opposite end, said shoulders being mutually complementary with respect to one another such that a plurality of said construction elements can be abutted end-to-end in precise alignment.

5,291,714

GRATING ASSEMBLY

Bruce H. Wright, Spring Grove, Ill., and George Gillis, Cascade, Wis., assignors to Architectural Gratings & Grillwork, Inc., Spring Grove, Ill.

Filed Jul. 28, 1992, Ser. No. 921,004
Int. Cl.[5] E04C *2/42*
U.S. Cl. 52—664 **6 Claims**

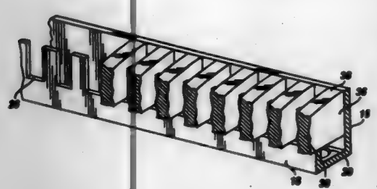
1. A grating assembly comprising:

(a) a plurality of pairs of end rails each in an opposed relationship and each having a bottom and a spaced parallel upwardly extending outside wall having a specified height and an inside wall the inside wall containing a plurality of

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slots, said inside wall being about one-half the height of the outside wall;

(b) a plurality of tread rails each having a first end and a second end said tread rails being arranged in a closely spaced relation, the first end engaging the outside wall of



an end rail and being secured in a slot in the inside wall of the end rail, the second end of the tread rail being secured in a slot in the inside wall of an opposed end rail and engaging the outside wall of the opposed end rail; and

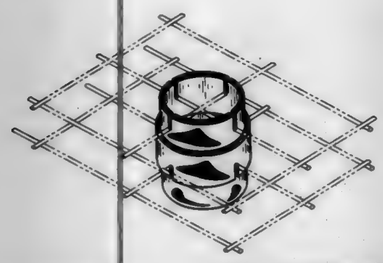
(c) a plurality of intermediate spacer support bars engaging the tread rails between the end rails.

5,291,715

SUSPENSION DEVICE FOR CONCRETE REINFORCEMENTS

Frank M. Basile, 361 Prospect St., E. Longmeadow, Mass. 01028

Filed Jan. 25, 1991, Ser. No. 645,785
Int. Cl.[5] E04C *5/16*
U.S. Cl. 52—687 **1 Claim**



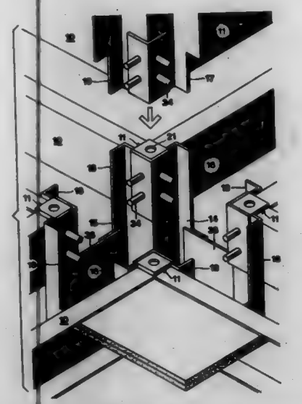
1. A suspension device to hold welded wire fabric within a poured concrete slab said suspension device comprising a non-malleable cylindrical ring having a top surface and a bottom surface of equal diameter and a coupling device of the same characteristics and composition as said suspension device but having a diameter slightly larger than said suspension device and having a top surface and a bottom surface of equal diameter, wherein one of said suspension devices is received through the top surface of said coupling device and another of said suspension devices is received through the bottom surface of said suspension device such that said suspension devices and coupling devices facilitate unlimited stacking and layering of welded wire fabric

5,291,716

METHOD FOR ERECTING BUILDINGS, AND STRUCTURAL ASSEMBLY FOR CARRYING OUT THE METHOD

Peter O. Broberg, Norra Kyrkogränden 5, S-261 31 Landskrona, Sweden; Find Madsen, Skovsvinget 15, DK-3480 Fredensborg, and Jorgen H. Christensen, Drodensvei 10, DK-2791 Dragor, both of Denmark

PCT No. PCT/SE90/00642, § 371 Date Mar. 19, 1992, § 102(e) Date Mar. 19, 1992, PCT Pub. No. WO91/05118, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 5, 1990, Ser. No. 838,805
Claims priority, application Sweden, Oct. 6, 1989, 8903284
Int. Cl.[5] E04B *1/348*
U.S. Cl. 52—745.03 **11 Claims**



1. A method of erecting buildings using horizontal beams, room-forming cassettes of polygonal horizontal section which have vertically oriented sectional elements fixedly connected thereto, and a column-forming material such as concrete; each of said cassettes being located between and fixedly connected to at least two of said sectional elements, each of said sectional elements having flanges projecting from its periphery, said flanges having recesses for receiving said horizontal beams, said method including the following steps:

arranging the cassettes so that the flanges associated with their respective sectional elements define vertical cavities,

placing end portions of said horizontal beams in said recesses in said flanges of the sectional elements,

applying a column-forming material such as concrete in the vertical cavities to form supporting columns which engage the horizontal beams so that the supporting columns and horizontal beams constitute a supporting and stabilising structural skeleton with rigid assemblage points.

5,291,717

CONSTRUCTION MEMBER AND METHOD FOR FORMING CURVED WALL AND THE LIKE

Arthur R. Turner, 9 The Parapeb, Terranaro-N.S.W. 2486, Australia

Filed May 16, 1991, Ser. No. 701,282
Claims priority, application Australia, May 18, 1990, PK0184
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—745.07 **5 Claims**

1. A method for constructing a curved wall on a floor, comprising the steps of:

a) marking a first arc on the floor;

b) providing a first flexible member which has a base portion and a plurality of tabs that extend from said base portion;

c) attaching one of said tabs of said first flexible member to the floor;

d) bending said first flexible member so that said base portion has a radius of curvature that corresponds with said first arc on the floor;

e) attaching said tabs of said first flexible member to the floor so that said base portion has a fixed radius of curvature;

f) marking a second arc on the floor;

g) providing a second flexible member which has a base portion and a plurality of tabs that extend from said base portion;

h) attaching one of said tabs of said second flexible member to the floor;



i) bending said second flexible member so that said base portion has a radius of curvature that corresponds with said second arc on the floor;

j) attaching said tabs of said second flexible member to the floor so that said base portion has a fixed radius of curvature;

k) inserting a plurality of studs between said first and second flexible members, said studs each having a pair of opposed longitudinal edges; and,

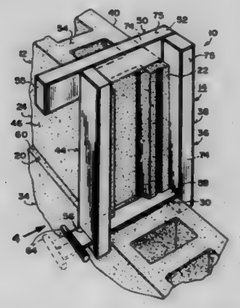
l) attaching said base portions of said first and second flexible members to said longitudinal edge of said studs.

5,291,718

MASONARY TOOL FOR A CONCRETE BLOCK WALL

Victor Moran, 77 Carlton Ave., Apt. 2, Brooklyn, N.Y. 11205

Filed Apr. 13, 1992, Ser. No. 867,962
Int. Cl.[5] E04G *21/20*
U.S. Cl. 52—749 **7 Claims**



1. A masonry tool for a concrete block wall which comprises:

a) means for positioning a side end of a first concrete block, with mortar applied thereto, next to a side end of a second concrete block on the wall when being built, so as to form front and rear mortar joints therebetween, a generally inverted U-shaped frame member, which is sized to fit about the side end of the second concrete block, so that the side end of the first concrete block can fit into said frame member, said generally inverted U-shaped frame member includes a first stanchion to cover a portion of a rear face of the second concrete block at the side end thereof, a portion of a rear face of the first concrete block at the side end thereof and the rear mortar joint therebetween, a second stanchion to cover a portion of a front face of the second concrete block at the side end thereof, a portion of a front face of the first concrete block at the side end thereof and the front mortar joint therebetween, means for retaining said first stanchion and said second stanchion in a vertical parallel spaced apart relationship, said retaining means includes a top end of said first stanchion and a top end of said second stanchion, said retaining means is a crossbar attached to said top end of said first stanchion and said top end of said second stanchion, in which said crossbar will extend across a top surface of the second concrete block, said crossbar includes an extension segment from the top end of said second stanchion, so that a person can grip said extension segment with one hand to manipulate said generally inverted U-shaped frame member; and

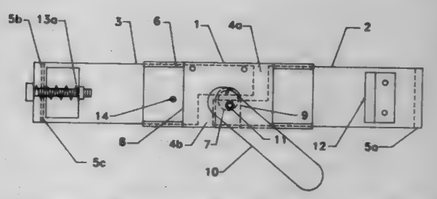
b) means on said positioning means for preventing the mortar from entering into a vertical open space in a third concrete block located below the front and rear mortar joints, said mortar preventing means includes said second stanchion having a horizontal slot located at a bottom end thereof, a blade which fits through said horizontal slot under a bottom surface at the side end of the second concrete block to butt against a bottom end of said first stanchion, so that when the side end of the first concrete block is placed next to the side end of the second concrete block, a bottom surface at the side end of the first concrete block will fit over said blade.

5,291,719

SUPPORT/GUIDE DEVICE FOR USE IN THE INSTALLATION OF HORIZONTALLY-DISPOSED SIDING

Claude Buster, 1103 S. 10th St., Merkel, Tex. 79536

Filed Jan. 13, 1993, Ser. No. 3,407
Int. Cl.[5] E04F *21/00*
U.S. Cl. 52—749 **3 Claims**



1. A support/guide device for use in the installation of horizontally-disposed building siding comprising:

a first upstanding, rigid and substantially rectangular strap-type body defining a plane, said first body having a length dimension terminating in upper and lower ends, said first body additionally having substantially parallel planar front and rear surfaces, said surfaces having upper and lower portions;

a second upstanding, rigid and substantially rectangular strap-type body defining a plane, said second body having a length dimension terminating in upper and lower ends, said second body additionally having substantially parallel planar front and rear surfaces, said surfaces having upper and lower portions, the lower portion of the rear surface of said second body engaging the upper portion of the front surface of said first body, said second body overlap-

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ping the upper end of said first body, said second body being affixed to said first body;

a third upstanding, rigid and substantially rectangular strap-type body defining a plane, said third body having a length dimension terminating in upper and lower ends, said third body additionally having substantially parallel planar front and rear surfaces, said surfaces having upper and lower portions, the length dimension of said third, second and first bodies being disposed in substantially the same direction, the upper portion of the rear surface of said third body engaging the lower portion of the front surface of said first body, said third body overlapping the lower end of said first body, said third body and said second body being disposed rectilinearly to one another and together substantially defining a plane, said third body and said second body having a width dimension of substantially equal extend, each said width dimension being divisible into left and right halves, there being substantially rectangular voids eliminating approximately the right half of the width of the upper end of said third body and the left half of the width of the lower end of said second body, said voids being diagonally opposed to each other in a configuration resembling a halved joint;

means for engaging and pressing inwardly against the transverse edges of a length of horizontally-disposed siding, said edge-pressing means being at the upper end of said second body and at the lower end of said third body;

means for providing a channel to help hold said third body in place against said first body, said channel providing a path for the vertical movement of said third body along the lower portion of the front surface surface of said first body;

camming means disposed atop the lower portion of the front surface of said second body, and atop the upper portion of the front surface of said third body;

plate-like camming means frame disposed atop the lower portion of the front surface of said second body and atop the upper portion of the front surface of said third body, said frame being affixed to said third body, said frame having avoid to accommodate said camming means, said frame and said camming means together substantially defining a plane;

means for activating the clamping action of the device, said clamping-activation means being disposed atop said camming means and affixed to it, said clamping-activation means and said camming means being rotatable jointly but not independently of one another;

means for providing an axis on which said clamping-activation means and said camming means can pivot, said axial means perforating said clamping-activation means, said camming means and said second body;

shelf-like means for supporting and positioning a length of siding for installation, said shelf-like means being affixed to the upper portion of the front surface of said second body;

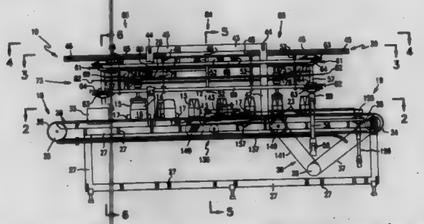
wherein upon placing the device vertically with the edge-pressing means spanning the height of the topmost length of installed siding and extending toward said siding, the second body being upward and the clamping-activation means outward, and wherein upon rotation of the clamping-activation means, the camming means pushes the camming means frame and the third body toward the second body, thereby clamping the device in operational position onto the siding by tensioning the edge-pressing means inwardly against the transverse edges of the siding; and wherein upon similarly installing at spaced intervals on the same length of siding one or more additional units of the device, the shelf-like means thereupon provide a base to support and position siding for installation on the next higher level.

5,291,720

ARTICLE ROTATING ASSEMBLY

Jeffrey A. Lashyro, Crosby, and Robert J. Bitner, Nisswa, both of Minn., assignors to Riverwood International Corporation, Denver, Colo.

Division of Ser. No. 771,151, Oct. 3, 1991, Pat. No. 5,181,598.
This application Oct. 22, 1992, Ser. No. 964,849
Int. Cl.[5] B65B *11/10, 21/24, 27/04*
U.S. Cl. 53—48.7 **8 Claims**



1. A packaging carton closure assembly for securing the end flaps of a carton about selected products or product groups being moved on a conveyor in a packaging operation comprising:

a) a frame structure having a generally horizontal working area and having conveyor means for transporting a product stream along a conveyance path through said working area;

b) a carton placement means for positioning an unassembled carton structure onto a product or product group in a configuration normal said conveyance path;

c) an adjustable vertical movement and rotating structure in synchronization with said conveyance means for engaging and rotating each product or product group on said conveyor means to a predetermined orientation on said conveyance path, said vertical movement including a top endless means and a bottom endless means, vertical connecting means mounted between said top and bottom endless means and wherein said top and bottom endless means have portions thereof for travel spacially parallel said conveyor means; and

d) carton end flap closure means mounted adjacent said conveyor means.

5,291,721

COVER FORMING APPARATUS HAVING PIVOTING FORMING MEMBERS

Donald E. Weder; Joseph G. Straeter, both of Highland, Ill., and Franklin J. Craig, Valley Park, Mo., assignors to Highland Supply Corporation, Highland, Ill.

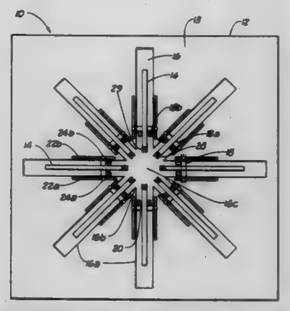
Filed Aug. 10, 1992, Ser. No. 927,891
Int. Cl.[5] B65B *11/00*
U.S. Cl. 53—530 **20 Claims**

5. A cover forming apparatus, comprising:

support means upon which a sheet of material is disposable and for supporting a flower pot having a outer surface in a position generally above the sheet of material;

a plurality of radially arranged adjustable pivotable forming members radially arranged around a common center location at which said flower pot is supported, wherein each pivotable forming member has a pivot point and means for radially adjusting said pivot point relative to said common center location and;

pivoting means pivotally attached to the pivotable forming members for pivotally urging the pivotable forming members from a forming member storage position spaced a distance from the outer surface of the flower pot and for moving the pivotable forming members to a forming member forming position wherein the pivotable forming members cooperate to engage the sheet of material thereby forming the sheet of material about the outer surface of the flower pot wherein the sheet of material is formed into a flower pot cover.

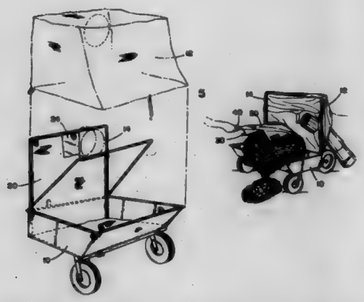


5,291,722

DUMP CLOTH FOR CART

James R. Schweigert, Plymouth, Minn., assignor to JRCO, Inc., New Hope, Minn.

Filed Jun. 10, 1992, Ser. No. 896,416
Int. Cl.[5] A01D *57/00, 75/00*
U.S. Cl. 56—203 **12 Claims**



1. An apparatus for removing grass clippings or leaves from a trailer box and cover over said trailer box, said apparatus comprising:

a) a flexible liner adapted to fit within said trailer box, said flexible liner having first and second ends;

b) attachment means for rotatably attaching said first end of said flexible liner proximate a rear of said trailer box; and

d) a dump handle attached to said flexible liner proximate said second end, said dump handle adapted to allow manipulation of said flexible liner to allow removal of material such as grass clippings or leaves from said trailer box.

5,291,723

TREE TRIMMING MACHINE AND METHOD

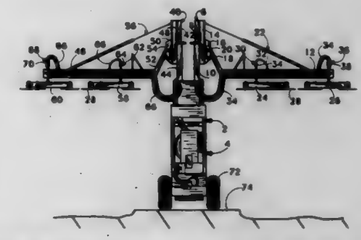
Robert J. Lindsey, 15675 Orange Ave., Ft. Pierce, Fla. 34945

Filed Apr. 5, 1993, Ser. No. 42,522
Int. Cl.[5] A01D *34/73;* **B27L** *1/10*
U.S. Cl. 56—235 **4 Claims**

4. In a method for trimming trees with a machine that includes a mobile base, at least one telescoping mast projecting upwardly from said base, an elongated boom pivotally connected to the upper portion of said mast for elevational movement with said mast and for pivoting in a vertical plane relative to said upper mast portion, an inboard rotor and an outboard rotor both rotatably mounted on said boom, a plurality of saws rotatably carried on each said inboard and outboard rotors for rotation in a generally parallel plane and actuating means between said boom and said upper portion of said mast for pivoting said boom relative to said upper portion to vary the position of said plane relative to the horizon, the improvement which comprises:

rotating said inboard rotor and said saws carried thereby counterclockwise and

rotating said outboard rotor and said saws carried thereby clockwise.

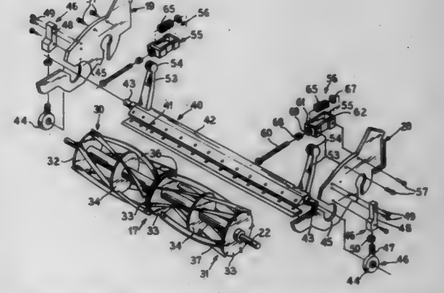


5,291,724

REEL ASSEMBLY FOR MOWER

Donald F. Cotton, Andalusia, Ala., assignor to T.I. International, Inc., Andalusia, Ala.

Filed Feb. 14, 1992, Ser. No. 837,251
Int. Cl.[5] A01D *34/47*
U.S. Cl. 56—251 **11 Claims**



1. Apparatus for automatically maintaining the reel of a lawn mower in adjustment with the bedknife of the mower that includes

a frame,

a bedknife unit for supporting a bedknife in said frame,

a reel unit rotatably mounted in the frame adjacent to the bedknife,

said reel unit being divided into two adjacent, axially-aligned half-sections,

each half-section further including a series of spaced-apart, radially disposeed discs and a plurality of helically-shaped blades mounted upon the outer periphery of said discs, said blades extending transversely across each half-section from the center of the reel to the outer edge thereof,

said helical blades being mounted in pairs on the adjacent half-sections with the inner edge of each pair being juxtaposed at the center of the reel, said blades being twisted in the direction of rotation of the reel so that at least one blade on each half-section is capable of contacting the bedknife at any given time, and

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biasing means for automatically maintaining a constant, uniform contact pressure between the blades and the bedknife as the blades move over the bedknife.

5,291,725

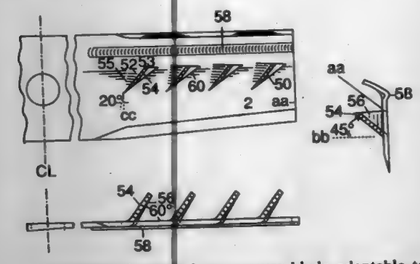
ROTARY MOWER BLADE

Wesley C. Meinerding, 4853 F Fulton Rd., NW., Canton, Ohio 44718

Continuation-in-part of Ser. No. 812,829, Dec. 24, 1991, Pat. No. 5,167,109. This application Oct. 9, 1992, Ser. No. 943,021

Int. Cl.[5] A01D *34/64, 34/73*

U.S. Cl. 56—295 **10 Claims**



1. An improved rotary lawn mower blade adaptable to a power lawn mower comprising:

(a) a plurality of shredders each having an inclined plate contiguous to the blade, said inclined plate being cut from the blade and bent upward to incline outwardly at an angle of about 60 degrees with respect to the surface of the blade; and

(b) a front cutting edge of the inclined plate slanting at an angle of 45 degrees with respect to a line perpendicular to the blade surface at an intersecting line between the blade and the inclined plate.

5,291,726

SHAKER ROD FOR A HARVESTER

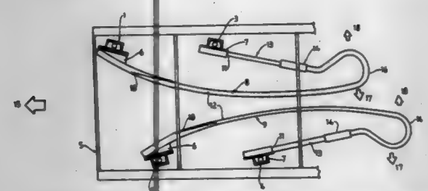
Donald J. Nairn, 12 Burnside Crescent, Christchurch, New Zealand

Filed Nov. 4, 1992, Ser. No. 971,394

Claims priority, application New Zealand, Nov. 4, 1991, 240461

Int. Cl.[5] A01D *46/28*

U.S. Cl. 56—330 **9 Claims**



6. A shaker rod for a harvester, the shaker rod being constructed in two parts of different rigidities, the first part of the shaker rod is constructed from a length of metal rod bent to include, in plan, a hook shaped region so that it is generally the shape of a head of a shepherd's crook with a handle which is curved, the second part and more rigid part being constructed from a generally straight length of metal rod which is joined to the hook shaped end of the first part, the first and second parts of the shaker rod are manufactured from metal materials of different rigidities selected to give in the first part a required degree of flexure the movement of which is stiffened by the counteracting movement of the second and more rigid part of to thereby form a generally continuous U-shaped shaker rod the ends of which are mountable to shaker posts or shaker frames of a harvester which creates movement in the shaker rod when the harvester is used.

5,291,727

SPINNING MACHINE SYSTEM HAVING A PLATFORM SUPPORTED ON SPINNING MACHINE FRAMES

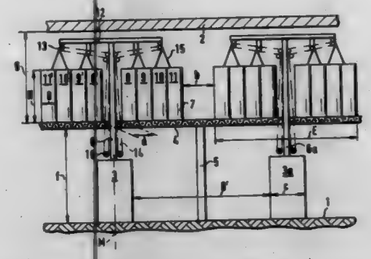
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 850,302

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109128

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—90 **15 Claims**



1. A spinning machine system comprising:

at least two ring spinning machines which are parallel to one another on a floor of a spinning room, each ring spinning machine having a machine frame and two machine sides, with both machine sides having a plurality of spinning stations arranged next to one another, with individual slivers being respectively provided from cans and fed to the spinning stations as the fiber material to be spun;

a platform arranged at a height of approximately two meters above the floor of the spinning room;

supports on the machine frames, the supports providing at least partial support of the platform;

transport devices having a drive provided between the cans and the spinning stations and which remove the slivers from the cans and non-draftingly transport the slivers to the spinning stations, the transport devices penetrating the platform in an area of a longitudinal center plane of the pertaining ring spinning machine;

wherein the cans are deposited above the ring spinning machines on the platform in several rows on both sides of the longitudinal center plane of each of the ring spinning machines, and the distance between the ring spinning machines corresponds approximately to twice the product of the diameter of one can and the number of the rows of cans required for one side of the machine.

5,291,728

SPINING MACHINE HAVING SLIVER TRANSPORT BELTS AND LATERAL GUIDING ELEMENTS FOR THE TRANSPORTS BELTS

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Werner Zott, Donzdorf, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of Fed. Rep. of Germany

Filed Apr. 20, 1993, Ser. No. 871,098

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1991, 4124313

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—90 **4 Claims**

1. A spinning machine comprising:

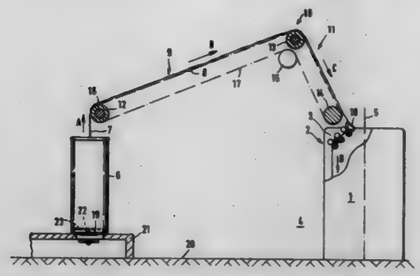
a plurality of spinning stations;

depositing sites for cans with silver;

transport devices which transport the silver from the cans to the spinning stations, the transport devices containing a plurality of transport belts which run from the area of the cans to the spinning stations;

deflecting rollers which deflect the transport belts;

guiding devices assigned to each transport belt, where each guiding device is arranged to provide guidance exclusively in an area directly in front of a deflecting roller and remote from the other deflecting rollers viewed in a running direction of the transport belt, the guiding devices



each having two opposite lateral guiding elements to guide the edges of the transport belt and a supporting element to support a flat side of the transport belt arranged between the lateral guiding elements;

wherein the lateral guiding elements are separated by a distance from one another which corresponds to the width of the transport belt plus a small safety distance;

wherein the supporting element is arranged between two of the deflecting rollers in the running direction, and is situated approximately in the plane of a tangent connecting the two deflecting rollers.

5,291,729

METHOD FOR PNEUMATIC THREADING IN A TWISTER WITH A DOUBLE HOLLOW MANDREL SPINDLE

Roberto Badiali, Pordenone; Vittorio Colussi, San Martino Colle Umberto, and Gian P. Canova, Pordenone, all of Italy, assignors to Savio S.p.A., Pordenone, Italy

Filed Jul. 23, 1992, Ser. No. 919,012

Claims priority, application Italy, Aug. 2, 1991, MI91 A 002197

Int. Cl.[5] D01H *9/18*

U.S. Cl. 57—279 **1 Claim**

1. A method of threading a double twist spindle for producing double ply yarns, wherein the method employs a compressed air source having a first port and a second port, wherein the spindle has a first and a second yearn feed bobbin and a first and a second hollow shaft respectively, having bores therethrough coaxially arranged for supporting each bobbin, and wherein the method comprises:

a) seizing an initial length of yarn from the first yarn feed bobbin, transversely placing said initial length of yarn on the first port of the compressed air source, and mounting the first yarn feed bobbin on the first hollow shaft;

b) placing the second yarn feed bobbin mounted on the second hollow shaft on the first port of the compressed air source and said placed initial length of yarn;

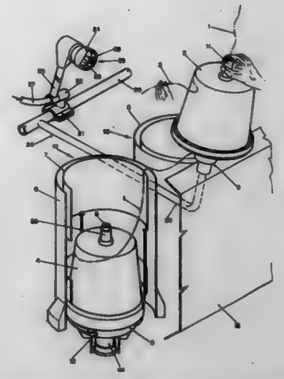
c) operating the first port of the compressed air source by contacting the second hollow shaft therewith thereby allowing a jet of air to blow said placed length of yarn through the bore of the second hollow shaft and thereby emerging a sufficient length therefrom;

d) seizing an initial length of yarn from the second yarn feed bobbin substantially corresponding with said emerged sufficient length of yarn and contacting therewith;

e) inserting the second yarn feed bobbin with the second hollow shaft into the spindle on top of the first hollow shaft in coaxial alignment;

f) placing said contacting lengths of yarn across the bore of the second hollow shaft;

g) placing the second port of the compressed air source upon the bore of the second hollow shaft and allowing commu-



nication between the bore of the second hollow shaft and the bore of the first hollow shaft by said placement;

h) injecting air from the second port through the bores of the first and second hollow shafts thereby blowing said contacted lengths of yarn through both shafts so that they can be seized to commence producing the double ply yarn.

5,291,730

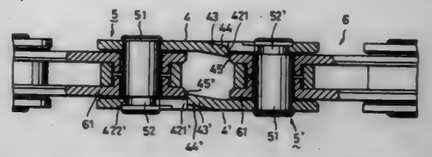
KNUCKLE CONNECTOR FOR CONNECTING END KNUCKLES OF A CHAIN STRAND

Nick Wu, Tainan, Taiwan, assignor to KMC Chain Industrial Co., Ltd., Taiwan

Filed Apr. 8, 1993, Ser. No. 44,943

Int. Cl.[5] F16G *13/02*

U.S. Cl. 59—85 **1 Claim**



1. A knuckle connector for connecting spacedly end knuckles of a chain strand to form a chain loop, each of said end knuckles having a pin hole formed therethrough, said knuckle connector including a pair of link units, each of said link units including a link pin and an oval-shaped link plate formed with a circular through-hole on one end and a retaining hole on an opposite end, said through-hole being defined by a through-hole surface, said through-hole surface having an inner diameter, said retaining hole including a large insert part and a diameter-reduced retaining part that is communicated with said insert part, said link pin having a head end and a tail end, said head end being opposite said tail end, said head end having a head end surface, said head end surface having an outer diameter, said inner diameter of said through-hole and said outer diameter of said head end being substantially identical, said head end being secured in said through-hole by the mating of said inner surface of said through-hole and said outer surface of said head end, said tail end having defined therein a peripheral

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channel, said link pin of one of said link units extending through said pin hole in a corresponding one of said end knuckles such that said tail end initially extends into said insert part of said retaining hole in said link plate of a remaining one of said link units, said peripheral channel of said link pin of said one of said link units engaging said link plate of said remaining one of said link units in said retaining part of said retaining hole when said end knuckles are pulled apart, said link units defining a space between said end knuckles of said chain strand when said link units are engaged with each other, wherein the improvement comprises:

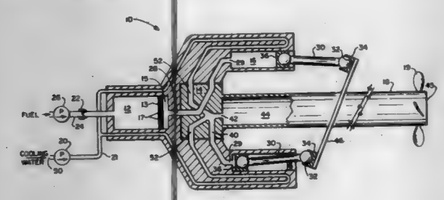
said link plate of each said link unit having an inner side and an outer side, each link plate of said link unit being provided with a stop member, said stop member comprising a cantilevered tab, said tab having an end knuckle abutment face, said tab extending in an inclined manner away from said inner side of said link plate, said tabs of said stop members of said link plates extending into said space between said end knuckles and facing a respective one of said end knuckles, said end knuckle abutment face of each said stop members being engaged with one of said end knuckles whereby said stop members prevent movement of said end knuckles toward one another.

5,291,731

TORPEDO WITH EXTERNAL COMBUSTION ENGINE HAVING AN EXPANSION CHAMBER

Anthony W. Duva, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1993, Ser. No. 35,862
Int. Cl.[5] F02C *5/00*
U.S. Cl. 60—39.6 **5 Claims**



1. A torpedo having an external combustion expander-type engine, comprising:

a combustion chamber for combusting a monopropellant fuel to form an energized gas;

an expansion area for receiving energized gas from the combustion chamber and expanding the energized gas, the expansion area being separated from the combustion chamber by a baffle plate having an effective flow area which is sufficiently large to eliminate the transmission of pressure pulsations to the combustion chamber while being small enough to substantially prevent combustion in the expansion area;

a cylinder fluidly connected to the expansion area for receiving the energized gas from the expansion area, the cylinder having a piston disposed therein, the energized gas being expanded in the cylinder to move the piston;

a drive shaft driven by the piston;

an exhaust passage formed in the drive shaft for removing spent gas from the engine; and

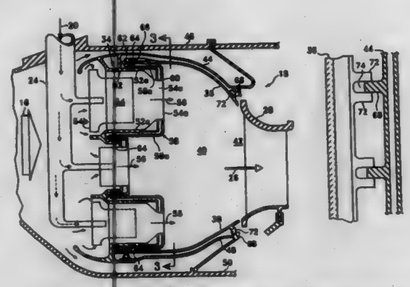
a rotary valve for transferring the energized gas from the expansion area to the cylinder and for transferring the expanded gas from the cylinder to the exhaust passage.

5,291,732

COMBUSTOR LINER SUPPORT ASSEMBLY

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 8, 1993, Ser. No. 14,886
Int. Cl.[5] F02C *7/20*
U.S. Cl. 60—39.31 **9 Claims**



1. A support assembly for a gas turbine engine combustor having an axial centerline axis comprising:

a dome assembly;

an annular frame having a plurality of circumferentially spaced apart, radially extending tenons;

an annular combustor liner disposed coaxially with said frame and spaced radially therefrom, said liner including:

a forward end having a plurality of circumferentially spaced apart mounting holes;

an aft end having a plurality of circumferentially spaced apart, radially extending tenons circumferentially adjoining respective ones of said frame tenons for radially and tangentially mounting said liner aft end to said frame while allowing unrestrained differential thermal radial movement therebetween; and

a plurality of radially extending mounting pins each joined at a proximal end to said dome assembly and each having a distal end slidably extending radially through a respective one of said mounting holes for mounting said liner forward end to said dome assembly while allowing unrestrained differential thermal radial movement therebetween.

5,291,733

LINER MOUNTING ASSEMBLY

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

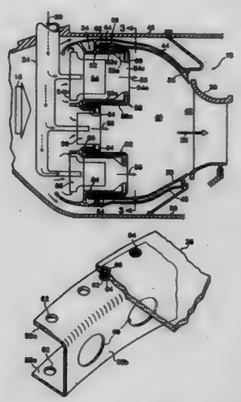
Filed Feb. 8, 1993, Ser. No. 14,923
Int. Cl.[5] F02C *7/20*
U.S. Cl. 60—39.31 **10 Claims**

1. A mounting assembly subject to combustion gases in a gas turbine engine comprising:

an annular supporting flange disposed coaxially about a centerline axis, and including a plurality of circumferentially spaced apart supporting holes extending radially therethrough;

an annular liner for bounding said combustion gases at least in part and disposed coaxially with said supporting flange, said liner having a plurality of circumferentially spaced apart mounting holes radially aligned with respective ones of said supporting holes; and

a plurality of mounting pins, each having a proximal end fixedly joined to said supporting flange through a respective one of said supporting holes, and a distal end radially slidably disposed through a respective one of said mounting holes for mounting said liner to said supporting flange



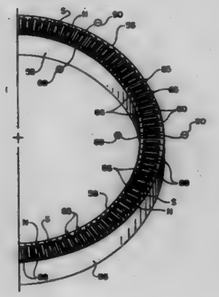
while allowing unrestrained differential thermal movement of said liner relative to said supporting flange.

5,291,734

PRIMARY FORCE RING FOR MAGNETOHYDRODYNAMIC PROPULSION SYSTEM

Michael J. Sohnly, 17723 - 160th Ave., SE., Renton, Wash. 98058

Division of Ser. No. 791,789, Nov. 12, 1991, Pat. No. 5,211,006.
This application Jan. 5, 1993, Ser. No. 638
Int. Cl.[5] F03H *1/00*; H05H *5/00*
U.S. Cl. 60—202 **6 Claims**



1. A Primary Force Ring for use with a magnetohydrodynamic propulsion system for a vehicle, said Primary Force Ring comprising, in combination:

a) means defining an endless closed loop vehicle housing;

b) means mounted on said vehicle housing for generating a plurality of discrete electric fields equally spaced apart about said endless closed loop vehicle housing; and,

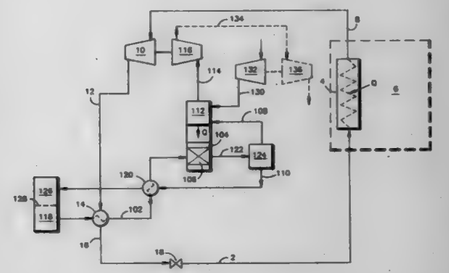
c) means mounted on said vehicle housing intermediate said discrete spaced apart electric field generating means for generating an endless closed loop segmented magnetic field essentially contained within said housing and intersecting said discrete spaced electric fields substantially at right angles with respect thereto.

5,291,735

HIGH EFFICIENCY, HYDROGEN-DRIVEN COOLING DEVICE

Arthur S. Kesten, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 23, 1993, Ser. No. 35,812
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—4 **30 Claims**



1. A cooling device, comprising:

(a) a cooling section that comprises:

(i) a working fluid,

(ii) a heat exchanger in heat transfer relationship with a conditioned space such that the heat exchanger transfers heat from the conditioned space to the working fluid, thereby cooling the conditioned space and converting the working fluid from a low pressure liquid to a low pressure gas,

(iii) a compressor in fluid communication with the heat exchanger such to that the compressor compresses the working fluid from a low pressure gas to a high pressure gas,

(iv) a condenser in fluid communication with the compressor such that the condenser removes heat from the working fluid, thereby condensing the working fluid from a high pressure gas to a high pressure liquid,

(v) means for expanding the working fluid, thereby converting the working fluid from a high pressure liquid to a low pressure liquid, wherein the means for expanding are in fluid communication with the condenser, and

(vi) means for conveying the working fluid from the means for expanding to the heat exchanger, and

(b) a power section that comprises:

(i) a dehydrogenation reaction zone,

(ii) a dehydrogenation catalyst disposed in the reaction zone,

(iii) means for supplying an endothermic heat of reaction to the reaction zone, wherein a portion of the heat of reaction is supplied by the heat removed from the working fluid in the condenser,

(iv) means for contacting the catalyst with an organic hydride such that the organic hydride dehydrogenates to form H_2 and at least one dehydrogenation product,

(v) a combustor in fluid communication with the reaction zone such that the combustor burns the H_2 to form combustion products,

(vi) means for supplying an oxygen-containing gas to the combustor, and

(vii) a turbine in fluid communication with the combustor and in mechanical drive relationship with the compressor such that the turbine expands the combustion products to form exhaust gases, thereby providing energy to drive the compressor.

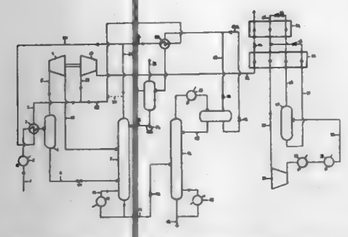
VOL 1160 ISS 2 MR 8 1994 UMI

5,291,736

METHOD OF LIQUEFACTION OF NATURAL GAS

Henri Paradowski, Cergy Pontoise, France, assignor to Compagnie Francaise D'Etudes et de Construction "Technip", France

Filed Sep. 30, 1992, Ser. No. 954,318
Claims priority, application France, Sep. 30, 1991, 91 12007
Int. Cl.[5] F25J 3/00
U.S. Cl. 62—20 9 Claims



1. Method of liquefaction of natural gas, comprising the steps of

cooling a natural gas containing methane and a hydrocarbon heavier than methane under a pressure P_1 so as to form at least one gaseous phase G_1,

expanding the gaseous phase G_1 to lower its pressure and to bring it to a pressure P_2 lower than the pressure P_1,

carrying the product of the expansion under the pressure P_2 into a first contact fractionating zone,

drawing off residual gas G_2 enriched with methane from the head of the first fractionating zone,

drawing off a liquid phase L_2 from the bottom of the first fractionating zone,

conveying the liquid phase L_2 into a second zone for fractionating through distillation,

drawing off at least one liquid phase L_3 enriched with hydrocarbons heavier than methane from the bottom of the second fractionating zone,

drawing off a gaseous phase G_3 from the head of said second fractionating zone,

condensing at least one part of the gaseous phase G_3 drawn off from the head of the second fractionating zone to produce a condensed phase L_4,

raising the pressure of at least one portion of the condensed phase L_4,

carrying said at least one portion of the condensed phase L_4 to the first fractionating zone as a reflux,

cooling the residual gas G_2 under a pressure at least equal to the pressure P_2 in a methane liquefaction zone so as to obtain a liquid rich in methane, and

operating the second fractionating zone under a pressure P_4 which is lower than the pressure P_2 of the first fractionating zone.

5,291,737

PROCESS OR APPARATUS FOR DISTILLING AIR AND APPLICATION IN FEEDING GAS TO A STEEL MILL

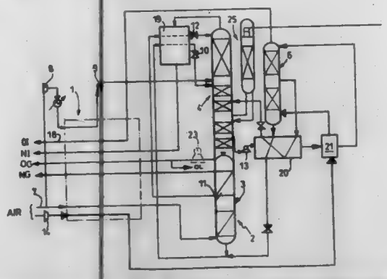
Francois Camberlein, Paris, France; Jean-Louis Girault, Liege, Belgium; Philippe Mazieres, Montfermeil, and Jean-Pierre Tranier, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Jul. 31, 1992, Ser. No. 923,336
Claims priority, application France, Aug. 7, 1991, 91 10035
Int. Cl.[5] F25J 3/04
U.S. Cl. 62—22 13 Claims

1. Process for distilling air by means of a double distillation column coupled to a mixing column and comprised of a low pressure column and a mean pressure column pressurized to a first pressure, said process comprising the steps of:

feeding the mixing column with an auxiliary gas consisting of a mixture of air gases;

withdrawing a liquid which is richer in oxygen than said auxiliary gas from said low pressure column and introducing said liquid into said mixing column; and



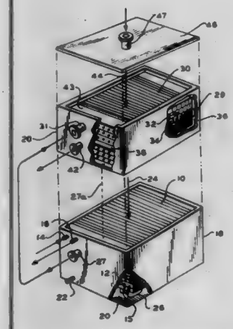
compressing each of said auxiliary gas and said liquid substantially to a same second pressure which differs from the first pressure of said mean pressure column.

5,291,738

VAPOR RECOVERY APPARATUS AND METHOD

Richard Waldrop, Kinnelon, N.J., assignor to Edwards Engineering Corp., Pompton Plains, N.J.

Filed Dec. 7, 1992, Ser. No. 986,515
Int. Cl.[5] F25J 3/00
U.S. Cl. 62—36 62 Claims



1. A vapor recovery apparatus consuming a source of liquified gas to condense vapors in a source of vapors, comprising:

an economizing heat exchanger having a vapor path adapted to be connected to said source of vapors, and a recovery path for exchanging heat with and cooling vapors in said vapor path; and

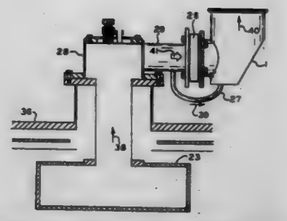
a finishing heat exchanger having a finishing path connected downstream of said vapor path of said economizing heat exchanger, and a coolant path adapted to be connected to said source of liquified gas for cooling and condensing vapors in said finishing path, said coolant path being isolated from said finishing path to avoid interpath mixing, said finishing path being connected to feed said recovery path of said economizing heat exchanger.

5,291,739

ADJUSTABLE ALIGNMENT FOR CRYOGEN VENTING SYSTEM FOR SUPERCONDUCTING MAGNET

Daniel C. Woods; William S. Stogner, and Robert R. Carey, all of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Jun. 29, 1992, Ser. No. 905,955
Int. Cl.[5] F17C 7/04
U.S. Cl. 62—48.1 12 Claims



1. A venting system for a superconducting magnet including a cryogen vent adapter pipe attached to the cryostat and connected to an exhaust vent in the enclosure in which the superconducting magnet is installed in order to vent cryogen gas from the cryostat to the atmosphere outside the enclosure, a floating flange alignment assembly positioned between, and sealing, the cryogen vent adapter and the exhaust vent and accommodating misalignments therebetween comprising:

a flange on said vent adapter;

a vent pipe including a flange proximate to said flange on said vent adapter and with a plurality of openings spaced about the circumference thereof;

the inside of said vent pipe being larger than the inside of said vent adapter;

said openings being larger than the difference between the insides of said vent pipe and said vent adapter;

a resilient seal positioned between the vent adapter flange and the vent pipe flange;

a clamping member positioned on the side of said vent pipe flange remote from said resilient seal; and

a plurality of adjustable fasteners extending between said clamping member and said vent pipe flange through said openings to compress said sealing member therebetween and provide a seal between said vent pipe and said vent adapter;

said vent pipe being radially moveable within the limits of movement of said openings about said fasteners to provide adjustable alignment between said vent pipe and said exhaust vent.

5,291,740

DEFROSTING TOOL FOR CRYOSTAT COLD HEAD INTERFACE

Steven D. Schnurer, 312 S. Guildford Cir., Florence, S.C. 29505

Filed Jul. 2, 1992, Ser. No. 908,102
Int. Cl.[5] F25D 21/06, 3/00; F25B 45/00
U.S. Cl. 62—51.1 8 Claims

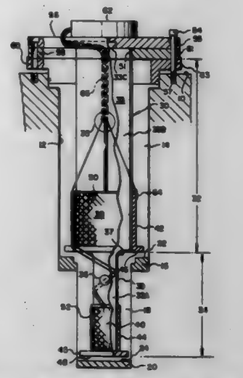
1. A tool for defrosting and maintaining the cold head interface of a cryostat in frost-free condition during temporary exposure of said interface to the external environment upon removal of said cryostat said tool comprising:

at least one heat station including a first heat exchange surface oriented to make thermally conductive contact with an oppositely facing first surface of said cold head interface when said tool is in its operative position in said cryostat;

means for electrically heating said heat exchange surface;

temperature responsive means for controlling the operation of said heating means;

whereby frost formed on said interface surface after removal of said cryostat is vaporized through contact with said heated heat exchange surface; and



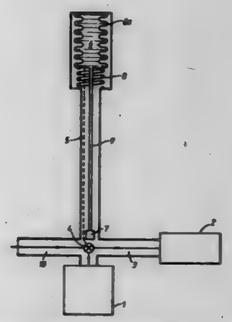
a passage to said external environment for the vaporized frost.

5,291,741

LIQUID HELIUM TOPPING-UP APPARATUS

David A. Grimes, Marcham, England, assignor to Oxford Magnet Technology Limited, Middlesex, United Kingdom

Filed Oct. 8, 1992, Ser. No. 957,557
Claims priority, application United Kingdom, Feb. 5, 1992, 9202399
Int. Cl.[5] F17C 7/02
U.S. Cl. 62—51.3 11 Claims



1. Apparatus for adding liquid helium to a cryogenic vessel comprising:

a cryogenic vessel,

a thermally insulated transfer tube for the transfer of liquid helium from a storage dewar to the cryogenic vessel,

thermally insulated valve means via which the transfer tube is arranged to communicate with the said vessel, and

a temperature sensitive valve actuator having a temperature sensor element positioned within the transfer tube at an end region thereof adjacent the cryogenic vessel, to which actuator the valve means is responsive for diverting helium gas away from the said vessel when the gas is above a predetermined temperature as sensed by the temperature sensor element, and

means for diverting helium gas away from the said vessel.

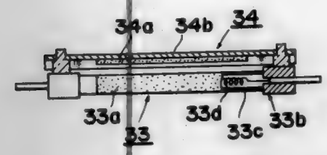
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5,291,742

DEODORIZING DEVICE FOR REFRIGERATOR

Kenji Kawatani, and Kazuaki Taki, both of Ueno, Japan, assignors to Matsushita Refrigeration Company and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 849,661
Claims priority, application Japan, Mar. 11, 1991, 3-044755; Sep. 20, 1991, 3-241042
Int. Cl.[5] F24F *3/16*
U.S. Cl. 62—78 12 Claims



1. A deodorizing device for a refrigerator, comprising:

a tubular heater, said tubular heater comprising an electric resistance member therein and having an effective heating portion thereof, said effective heating portion of said tubular heater having an outer periphery that is provided with a catalyst layer coated thereon for absorbing odor components of air circulating in the refrigerator, said catalyst layer comprising active alumina, silica and a platinum group metal; and

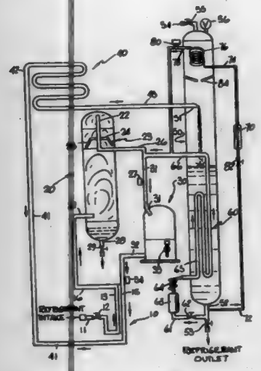
a cover member provided immediately above said tubular heater so as to cover said tubular heater for preventing water droplets deposited from a cooling coil from falling on said tubular heater.

5,291,743

REFRIGERANT RECLAIM WITH AUTOMATIC AIR PURGE

Leon R. Van Steenburgh, Jr., Estes Park, and David S. Brainard, Aurora, both of Colo., assignors to Leon R. Van Steenburgh, Jr., Estes Park, Colo.

Continuation-in-part of Ser. No. 332,235, Mar. 31, 1989, Pat. No. 5,195,333, which is a continuation of Ser. No. 109,958, Oct. 19, 1987, abandoned. This application Jan. 22, 1993, Ser. No. 7,500
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—85 10 Claims



1. In a refrigeration system having a vaporized refrigerant and a noncondensable gas in a gaseous mixture above a liquid refrigerant within a storage tank, an air purge system comprising:

(a) means, including expansion means, for feeding liquid refrigerant from said refrigeration system into an evaporator, and an outlet conduit in fluid communication with said evaporator for returning refrigerant to the refrigerant system,

(b) means for bringing said gaseous mixture into contact with the evaporator, thereby condensing at least a portion of said vaporized refrigerant out of the gaseous mixture and increasing the concentration of said noncondensable gas within the gaseous mixture.

(c) an air outlet in fluid communication with said evaporator for releasing the gaseous mixture out of the refrigeration system, and

(d) isolation means for at least partially isolating the evaporator from the storage tanks;

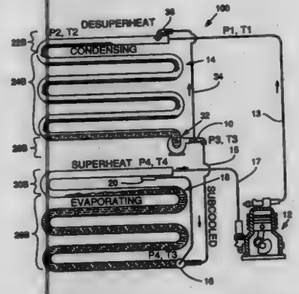
wherein the evaporator is held within the storage tank above the liquid refrigerant, and said isolation means includes a baffle disposed within the storage tank between the evaporator and the liquid refrigerant, said baffle having an opening for admitting the gaseous mixture.

5,291,744

LIQUID PRESSURE AMPLIFICATION WITH SUPERHEAT SUPPRESSION

Robert E. Hyde, 2229 SE. 170th, Portland, Oreg. 97233

Division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580.
This application Sep. 21, 1992, Ser. No. 948,300
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—86 20 Claims



11. A method for improving operation of a refrigeration or air-conditioning system which includes a compressor, a condenser, an expansion valve, and an evaporator connected in series by conduit for circulating refrigerant in a closed loop therethrough, the method comprising:

transmitting superheated vapor refrigerant from the compressor to the condenser at a first temperature and pressure;

condensing the vapor refrigerant to discharge liquid refrigerant at a second temperature and pressure less than said first temperature and pressure;

boosting the pressure of the liquid refrigerant discharged from the condenser to a third pressure greater than the second pressure by a substantially constant increment of pressure;

transmitting a first portion of the liquid refrigerant via the expansion valve into the evaporator; and

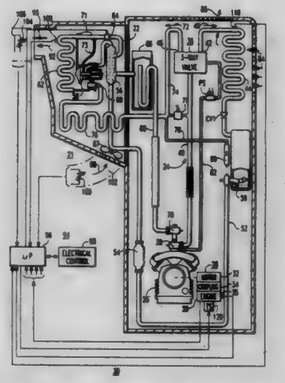
transmitting a second portion of the liquid refrigerant at said third pressure into the condenser, in an amount less than said first portion, together with the first temperature of the superheated vapor refrigerant is reduced toward said second temperature, thereby reducing said first pressure.

5,291,745

METHOD OF IMPROVING TEMPERATURE UNIFORMITY OF A SPACE CONDITIONED BY A REFRIGERATION UNIT

Jay L. Hanson, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 25, 1993, Ser. No. 23,021
Int. Cl.[5] G05D *23/32*
U.S. Cl. 62—89 17 Claims



1. A method of operating a refrigeration unit having a refrigerant compressor and an evaporator fan which circulates air between an evaporator coil and a conditioned space, with the compressor and evaporator fan being driven by a prime mover in selectable low and high speed modes in response to a set point temperature control algorithm which maintains the temperature of the conditioned space in a predetermined temperature range adjacent to a selected set point temperature, comprising the steps of:

providing a forced high speed mode of the prime mover which periodically forces the prime mover to the high speed mode notwithstanding the selection of the low speed mode by the set point temperature control algorithm,

providing a predetermined constant value which determines when the prime mover is forced to run in the forced high speed mode,

comparing the predetermined constant value with a predetermined parameter of the refrigeration unit,

and forcing the prime mover to operate in the high speed mode in response to a predetermined result of the comparison step, to increase the air flow rate of the evaporator fan and improve temperature uniformity in the conditioned space.

5,291,746

CONTAINER FOR STORAGE, COLLECTION AND TRANSPORTATION OF MEDICAL WASTE

Derwood C. Abbott, P.O. Box 331, Henderson, Tex. 75652

Filed Mar. 10, 1993, Ser. No. 28,977
Int. Cl.[5] F23D *3/02*
U.S. Cl. 62—89 9 Claims

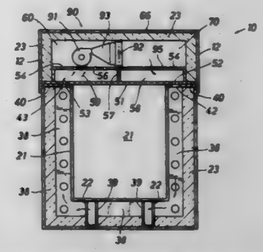
1. An insulated container for storing, transporting and disposing of waste materials, comprising:

a) a waste material holding inner box, having closed bottom and sides to prevent leakage of liquid or solid waste therefrom, and having an upper access opening for admitting and removing waste materials;

b) air channel means in heat exchanging contact with the inner box, having a refrigerated air inlet and a return air outlet;

c) refrigeration means releasably attached to the container and in communication with the air channel means for refrigerating and circulating air through the air channel means to cool the inner box and the materials contained therein;

d) Access cover means attached to the container for opening to admit waste materials and for closing to shut the interior of the inner box from communication with the atmosphere and environment surrounding the container;



e) Access cover locking means for locking the access cover to the container, in a closed position for preventing waste materials from leaking or spilling from the container during transportation; and

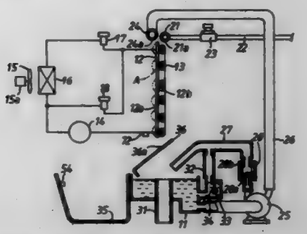
f) lifting means attached to the container adapted for engagement with a lifting device to invert the container and dump waste materials from the inner box through the access opening without necessity of personnel physically contacting the waste materials being removed.

5,291,747

ELECTRIC CONTROL APPARATUS FOR ICE MAKING MACHINE

Tadashi Sakai, Toyoake, and Yukimasa Takeda, Nagoya, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Aug. 12, 1992, Ser. No. 928,123
Claims priority, application Japan, Aug. 13, 1991, 3-228241; Aug. 13, 1991, 3-228242
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—135 8 Claims



1. An electric control apparatus for an ice making machine having an upright ice making plate arranged above a water tank, an evaporator mounted to a rear surface of the ice making plate, a refrigeration circuit including a compressor, a cooling device and an expansion valve for circulating refrigerant into the evaporator, a hot gas valve disposed within a bypass line of the refrigerant circuit to be opened for supplying hot gas from the compressor into the evaporator, a water pump arranged to supply fresh water from the water tank to a front side upper portion of the ice making plate, and a water valve arranged to control the supply of fresh water from an external source of water to a rear side upper portion of the ice making plate, the electric control apparatus comprising defrost/water supply cycle control means for opening the hot gas valve and water

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valve for a predetermined time in a condition where the compressor is being activated while the water pump is deactivated, ice making cycle control means for activating the water pump for a predetermined time in a condition where the compressor is being activated while the hot gas valve and water valve are closed, and means for alternately conducting a defrost/water supply cycle and an ice making cycle under control of the defrost/water supply cycle control means and the ice making cycle control means,

wherein the electric control apparatus further comprises:

initial water supply cycle control means for opening the water valve for a predetermined time prior to the defrost-/water supply cycle and the ice making cycle in a condition where the compressor and water pump are deactivated;

a water level sensor mounted within the water tank for detecting whether or not the level of water in the water tank is more than a predetermined level;

first checkup means for permitting operation of the defrost-/water supply cycle and the ice making cycle when the level of water in the water tank is more than the predetermined level after an initial water supply cycle conducted under control of the initial water supply control means and for repeating operation at the initial water supply cycle when the level of water in the water tank is less than the predetermined level; and

second checkup means for permitting operation of the ice making cycle when the level of water in the water tank is more than the predetermined level after the defrost/water supply cycle and for repeating operation at the initial water supply cycle when the level of water in the water tank is less than the predetermined level after the defrost-/water supply cycle.

5,291,748

AIR CONDITION CONTROL APPARATUS

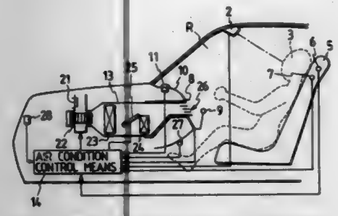
Matsuei Ueda, Aichi, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Oct. 16, 1992, Ser. No. 962,109

Claims priority, application Japan, Sep. 11, 1991, 4-269520; Oct. 16, 1991, 3-298254

Int. Cl.[5] F25D *17/00*

U.S. Cl. 62—179 **14 Claims**



1. An air condition control apparatus comprising:

indirect thermal sensation information detecting means for detecting information relating to a thermal sensation in the vicinity of an occupant in a room;

thermal sensation estimating means for estimating an actual thermal sensation on a basis of the history of a thermal sensation information in a predetermined period, said thermal sensation information being output from said indirect thermal sensation information detecting means;

control pattern storage means for storing a predetermined thermal sensation control pattern for achieving a target thermal sensation;

control value determining means for determining control values of air to be supplied into said room so that a thermal sensation output from said thermal sensation estimating means coincides with a thermal sensation control pattern stored in said storage means;

air condition control means for controlling a temperature of said air to be supplied into said room, on a basis of said control value output from said control value determining means; and

an air blower for supplying said temperature-controlled air into said room in accordance with said control value determined by said control value determining means.

5,291,749

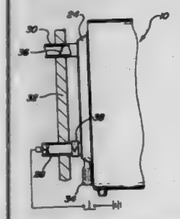
ENERGY EFFICIENT DOMESTIC REFRIGERATION SYSTEM

Edward R. Schulak, 567 Aspen, Birmingham, Mich. 48009

Filed Dec. 23, 1992, Ser. No. 995,980

Int. Cl.[5] F25B *39/04*

U.S. Cl. 62—183 **13 Claims**



1. An energy transfer system for a household refrigeration appliance, comprising:

housing means for enclosing a condenser in association with an external surface of said refrigeration appliance;

conduit means, connected to said housing means, for enabling the transfer of outlet air into, through and out of said housing means;

barrier means, in fluid communication with said conduit means, for controlling the transfer of air through said housing means in response to a predetermined temperature; and

fan means, in fluid communication with said housing means for forcing the transfer of outside air into, through and out of said housing means, said fan means is a thermostatically controlled fan which is disposed inside a portion of said conduit means.

5,291,750

INNOVATION ADSORPTION HEATING AND COOLING DEVICE FOR MICRO-CLIMATE APPLICATIONS

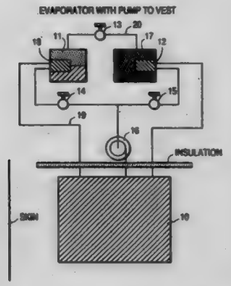
Clyde F. Parrish, Melbourne, and Robert P. Scaringe, Rockledge, both of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Feb. 6, 1992, Ser. No. 832,035

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—259.3 **5 Claims**

1. A heating/cooling system comprising a working fluid reservoir evaporator, a first heat exchanger operatively associated with the evaporator for cooling, an adsorption bed operatively connected with the evaporator to receive controlled amounts of working fluid vapor, a second heat exchanger operatively associated with the adsorption bed for heating, valves operatively associated with the first and second the exchangers for selectively cycling between the heating and cooling by the system, and, wherein a pump is operatively arranged with respect to the first and second heat exchangers to pump a second fluid thereto and therefrom to a location where one of heating and cooling is selectively desired and the location is a third heat exchanger arranged in a garment adapted to be worn by a person.



5,291,751

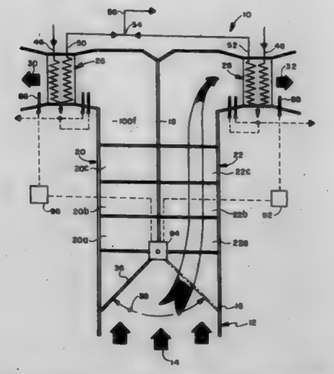
CRYO-MECHANICAL VAPOR RECOVERY APPARATUS

Louis Perez, Brentwood, Calif.; Glenn T. Sameshima, Chicago, and Robert J. Spencer, Naperville, both of Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Apr. 21, 1992, Ser. No. 871,934

Int. Cl.[5] F25J *3/00*; **F26B** *21/06*

U.S. Cl. 62—332 **22 Claims**



1. Hybrid cryo-mechanical apparatus for collecting a condensable vapor from an incoming flow of a gas mixture including the vapor and a carrier gas, comprising:

a thermally insulated vessel for confining the gas mixture flow, the thermally insulated vessel defining a plurality of flow paths, separate from one another;

a flow input means for inputting the incoming flow into the vessel;

a plurality of mechanically refrigerated cooling stages within the vessel arranged in series in the direction of the gas mixture flow, and cooperating to produce a refrigerated intermediate flow;

a cryogen-cooled refrigeration stage downstream of the mechanically refrigerated cooling stages, comprising indirect contact heat exchanger means having a first input for receiving the intermediate flow, a cryogen input means for inputting a cryogen refrigerant and barrier means for preventing physical contact between the intermediate flow and the cryogen refrigerant while permitting heat flow therebetween so as to condense vapor from the intermediate flow, condensation output means for outputting condensed vapor extracted from the intermediate flow, and a flow output means for outputting from the cryogen-cooled refrigeration stage, a modified gas flow from which the condensed vapor has been extracted; and

directing means for directing the flow along the flow paths through said plurality of mechanically refrigerated cooling stages and said cryogen-cooled refrigeration stage.

5,291,752

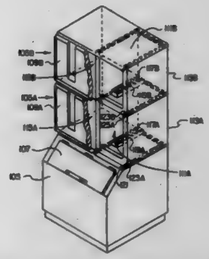
INTEGRALLY FORMED, MODULAR ICE CUBER HAVING A STAINLESS STEEL EVAPORATOR AND A MICROCONTROLLER

Robert J. Alvarez, 11233 Quivas Loop, Denver, Colo. 80234; Scott E. Bredesen, 3231 S. Pearl St., Englewood, Colo. 80110; James J. Wilson, 9241 W. 101st Pl., Westminster, Colo. 80021; Duane D. Flim, 18812 E. 22nd Dr., Aurora, Colo. 80011; Todd E. Kniffen, 130 N. Hampton Dr., Williamsburg, Iowa 52361, and Clinton O. Schahrer, 1313 9th Ave., Longmont, Colo. 80501

Division of Ser. No. 701,440, May 13, 1991, Pat. No. 5,182,925. This application Dec. 18, 1992, Ser. No. 993,386

Int. Cl.[5] F29C *5/18*

U.S. Cl. 62—344 **12 Claims**



1. A housing for an ice making apparatus, the housing having a reduced number of seams that may leak water and yet provide access to the ice making apparatus, the housing comprising: an integrally formed member defining three of four side walls and a bottom of a four-sided first compartment and a bottom of an adjacent second compartment, one side wall separating the first and the second compartments, wherein the three walls and bottom are joined without seams; the first compartment housing an ice making means over which water is circulated for making ice, and the second compartment housing means for chilling the ice making means; and removable wall means for enclosing the forth side of the first compartment and defining a forth wall of first compartment.

5,291,753

CONTINUOUS CONSTANT PRESSURE SYSTEM FOR STAGING SOLID-VAPOR COMPOUNDS

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Division of Ser. No. 716,065, Jun. 17, 1991, Pat. No. 5,241,831, which is a continuation-in-part of Ser. No. 436,431, Nov. 14, 1989, Pat. No. 5,025,635. This application May 27, 1993, Ser. No. 68,691

Int. Cl.[5] F25B *17/08*

U.S. Cl. 62—480 **8 Claims**

1. An apparatus comprising:

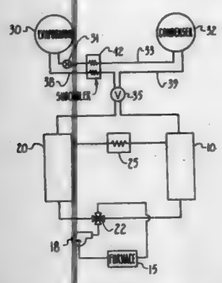
a plurality of two or more reactors, each reactor containing a plurality of two or more different compounds comprising a solid reactant adsorbent and a gaseous reactant adsorbed thereon, each of said compounds having a different gaseous reactant vapor pressure, substantially indepen-

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dent of the concentration of the gaseous reactant therein, said compounds arranged in ascending order of gaseous reactant vapor pressure,

means for supplying a heat transfer fluid to and from said reactors, and means for directing the heat transfer fluid through said reactors in successive thermal communication with said compounds therein,

a condenser for condensing gaseous reactant desorbed from said compounds, and first means for directing said gaseous reactant from said reactors to said condenser,



an evaporator for said gaseous reactant, and second means for directing said gaseous reactant from said evaporator to said reactors,

a first heat exchanger cooperating with said first means and said second means for transferring heat therebetween,

third means for directing condensed gaseous reactant from said condenser to said evaporator, and

a second heat exchanger cooperating with said second means and said third means for transferring heat therebetween.

5,291,754

EXPELLER WITH A GAS-BUBBLE PUMP

Hans Stierlin, c/o DAWP-Creatherm AG Müchwiesen 5, 8952 Schlieren, Switzerland

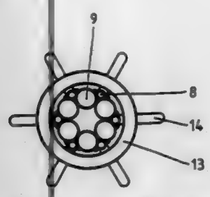
PCT No. PCT/CH90/00066, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO90/10834, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 14, 1990, Ser. No. 598,708

Claims priority, application Switzerland, Mar. 14, 1989, 930/89

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—487 **4 Claims**



1. An expeller with a gas-bubble pump for a diffusion absorption plant, comprising three or more pump tubes, arranged in a circle and the same number of flame tubes also arranged in a circle, alternating with the pump tubes wherein each of said flame tubes is contacting at least two of said pump tubes and each of said pump tubes is contacting at least two of said flame tubes.

5,291,755

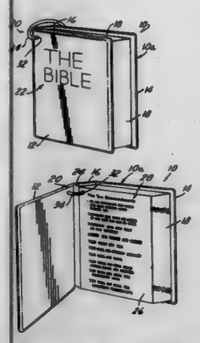
SIMULATED BIBLE CHARM

Vonda C. Grant, 15200 Glenwood, Detroit, Mich. 48205

Continuation-in-part of Ser. No. 954,243, Sep. 30, 1992. This application Nov. 30, 1992, Ser. No. 983,800

Int. Cl.[5] A44C *25/00*

U.S. Cl. 63—23 **6 Claims**



1. A simulated bible charm having a Christian bible appearance, said simulated bible charm being connectable to an article, said simulated bible charm comprising:

a main body comprising:

a front cover, said front cover having nomenclature thereon indicating that said simulated bible charm is a Christian bible;

a back cover;

a spine connected with said front and rear covers, said spine having an upper corner located above said nomenclature;

a simulated pages portion located between said front cover and said rear cover; and

at least one page located between said front cover and said rear cover, said page having indicia thereon in the form of selected writing from the Christian bible; and

mounting means connected with said main body adjacent said upper corner of said spine for connecting said main body to the article, said mounting means comprising:

said front and rear covers each having a hole therethrough located adjacent said upper corner of said spine; and

a ring passing through said hole in each of said front and rear covers;

wherein said front cover, said rear cover, said spine and said simulated pages portion are structured so as to present in combination a book-like appearance of said main body, said book-like appearance simulating that of a Christian bible in that said front cover, said rear cover and said spine have a leather-like appearance, and said simulated pages portion has a many sheets of paper appearance.

5,291,756

KNITTING MACHINE WITH NEEDLE SELECTING DEVICE

Marco Venturini, Genova, Italy, assignor to S.F.I.M. S.r.l., Brescia, Italy

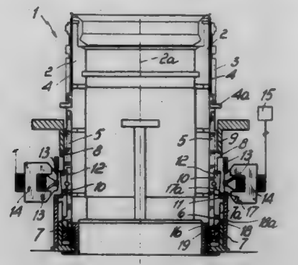
Filed Jul. 31, 1992, Ser. No. 922,406

Claims priority, application Italy, Aug. 23, 1991, MI91A002283

Int. Cl.[5] D04B *9/46*

U.S. Cl. 66—219 **15 Claims**

1. Knitting machine with needle selection device, comprising a needle supporting element, a plurality of grooves having a longitudinal extension defined in said needle supporting element, a needle member slideably accommodated in each of said grooves, and at least one actuation cam, said actuation cam facing said needle supporting element and being engageable, upon movement of said needle supporting element with respect to said cam along a direction transverse to said longitudinal extension of said grooves, with a portion of said needle member, said needle member being movable along one of said grooves from an active position, whereat said needle member engages said actuation cam, to an inactive position, whereat said needle member does not interferer with said actuation cam, said knitting machine further comprising a selection device, said selection device acting on said needle member for moving said needle member between said active position and said inactive position, wherein said needle member has at least one magnetized portion, said magnetized portion defining a



first magnetic field, and wherein said selection device comprises a selection element and magnetizing means, said selection element being made of magnetizable material and arranged proximate to said magnetized portion of said needle member in one of said grooves, said magnetizing means facing said needle supporting element at said selection element and being controllably activatable for inducing in said selection element a second magnetic field, said second magnetic field being oriented according to said first magnetic field, whereby to generate a magnetic interaction between said needle member and said selection element, actuation means cooperating with said selection element for transferring or keeping said needle member in said active position or in said inactive position according to orientation of said second magnetic field induced in said selection element.

5,291,757

DEVICE FOR HEAT TREATMENT AND/OR HUMIDIFICATION OF SPOOLS, COPS AND CONES

Freddy Wanger, Riedmatte 11, CH-5452, Oberrohrdorf, Switzerland

PCT No. PCT/CH90/00289, § 371 Date Aug. 6, 1991, § 102(e) Date Aug. 6, 1991, PCT Pub. No. WO91/10002, PCT Pub. Date Jul. 11, 1991

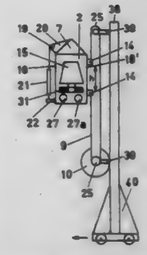
PCT Filed Dec. 20, 1990, Ser. No. 741,439

Claims priority, application Switzerland, Dec. 22, 1989, 4631/89

Int. Cl.[5] D06B *3/04*

U.S. Cl. 68—5.00 C **13 Claims**

1. A device for the heat treatment and/or humidification of textile items in a textile treatment system having a conveyor on which said textile elements are transported on individual spools, cops or cones; comprising an elongated vessel positioned proximate a portion of the conveyor and having a body and a lid operable to accept said textile elements within the vessel body; means mounted to said vessel for vertically positioning said vessel in a first position in which at least one of said textile items on said conveyor is located within said vessel body and for transporting said vessel and said at least one textile item vertically to a second position remote from said



conveyor; and means coupled to said vessel for providing heat or steam thereto when said vessel is in said second position.

5,291,758

FULLY AUTOMATIC CLOTHES WASHING MACHINE

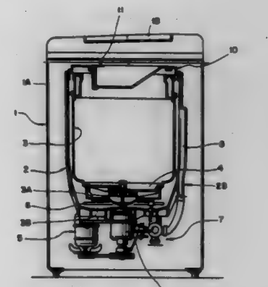
Hyu C. Lee, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 20, 1992, Ser. No. 885,885

Claims priority, application Rep. of Korea, May 25, 1991, 91-7510[U]

Int. Cl.[5] D06F *39/08*

U.S. Cl. 68—196 **8 Claims**



6. A washing machine comprising:

an upwardly open washing tank having a first side wall;

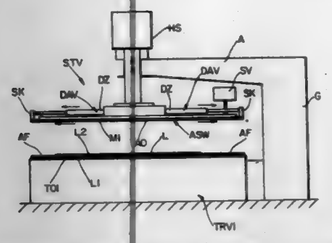
a water container having a second side wall extending around said first side wall and including an overflow pipe, an upper end of said second side wall forming an upwardly open opening;

a support member fixed to said upper end and extending around said opening, said support member forming an upwardly open annular groove spaced inwardly of said upper end of said second side wall; and

a cover for closing said opening, said cover being connected by a hinge to said support member to be swingable between open and closed positions, and including a water supply hole extending therethrough for conducting wash water, and a shutter mounted on said cover for movement between first and second positions for opening and closing, respectively, said water supply hole, said shutter being generally upright when in said second position.

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5,291,759
PROCESS AND EQUIPMENT FOR STRETCHING OF LEATHER
Jiri Dokoupil, Hochstrasse 9, Guckingen, Fed. Rep. of Germany 6251
PCT No. PCT/EP89/00998, § 371 Date Feb. 26, 1991, § 102(e) Date Feb. 26, 1991, PCT Pub. No. WO90/03448, PCT Pub. Date Apr. 5, 1990
Continuation of Ser. No. 455,441, Feb. 26, 1991, abandoned. This PCT application Aug. 25, 1989, Ser. No. 61,280
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833068
Int. Cl.[5] C14B *1/26*
U.S. Cl. 69—19.1 **22 Claims**



6. Facility for stretching leather and similar flat materials in a process including the steps of placing a piece of leather at least partly into a stretching device, loading the piece of leather with pressure forces spread over the leather piece, stretching the leather by means of stretching forces, said stretching forces acting at least approximately tangential to the leather as well as polydirectionally and distributedly over the perimeter of the piece of leather towards the outer margin thereof, said facility including:

a) a bearing appliance (TRV1, TRV2) for receiving the leather (L), said appliance including a bearing surface (AF) that is substantially stationary during leather stretching and which is slidable relative to an initial surface (L1) of the leather piece during stretching thereof;

b) a stretching device (STV) arranged opposite said bearing surface (AF) and including stretching means (ASW) acting on a second leather surface (L2) at least approximately tangentially thereto;

c) said stretching means (ASW) acting on said second leather surface (L2) polydirectionally and distributedly over the perimeter of the piece of leather towards the outer margin thereof;

d) said bearing surface (AF) during stretching of the leather being substantially stationary but slidable relative to the leather so as not to participate in said stretching.

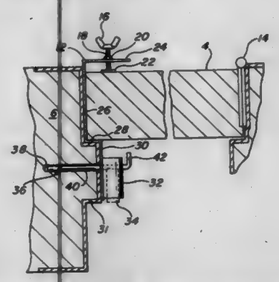
5,291,760
LOCK FOR DOORS
Anthony Schrader, 520 Oxford Rd., Havertown, Pa. 19083
Filed Aug. 25, 1992, Ser. No. 935,706
Int. Cl.[5] E05C *19/18*
U.S. Cl. 70—14 **14 Claims**

1. A portable lock assembly for a door mounted in a door frame, said lock assembly comprising:

(a) a unitary plate having a first section;

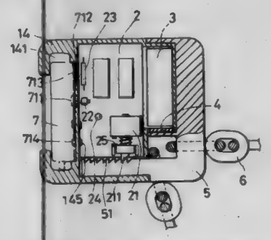
(b) a means for removably attaching and detaching said unitary plate from said door by hand only, without the use of tools, said attaching and detaching means comprises a wing nut attached to the proximal end of a threaded shaft and a disc attached to the distal end of said threaded shaft;

(c) a lock body mounted on said plate, said lock body comprising a lock cylinder and an opening for insertion of a peg through said lock body; and



(d) a means in said door frame for accepting said peg, said means comprising a hole formed in said door frame.

5,291,761
MOTORCYCLE INFRARED RAYS LOCK
Jein-Hei Lii, No. 38, Chung-Te 9th Street, Tainan, Taiwan
Filed Feb. 9, 1993, Ser. No. 15,379
Int. Cl.[5] E05B *71/00*
U.S. Cl. 70—18 **1 Claim**



1. A motorcycle infrared rays lock comprising:

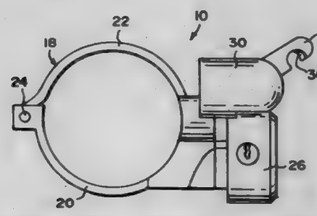
a housing comprising an upper plate and a lower plate combined together to contain an infrared rays receiving control board and a battery unit, having a rectangular chamber for depositing said battery unit, said chamber having a square opening in a side wall for a cap plate to close it up to keep said battery unit therein stabilized, a square notch in a rear side wall for a rack portion of a hook rod to pass through in and out of said housing, two upright locating plates provided parallel on an inner side of said lower plate for guiding a movable block to move between them when said movable block is attracted by an electro-magnetic switch, said block being pushed forward by a spring when it is not attracted by said electro-magnetic switch; said infrared rays receiving control board deposited in said housing having said electro-magnetic switch for retracting said movable block, a spring switch for turning on said control board, and a sensor to receive an infrared rays signal emitted by an infrared rays emitter and to pass it to an IC for examining said signal and a transistor to be turned on by said IC in case of a correct signal to electrify said electro-magnetic switch to retract said movable block;

a hook rod having an L-shape, having a rack on an end portion to engage with a tooth end of said movable block when said rack end portion is inserted through said notch in said housing so that said hook rod can be kept immovable with said rack engaging said tooth end of the movable block to lock said hook rod, another end portion having a rectangular cavity for said battery chamber of said housing to fit therein when said hook rod is locked by said tooth end of said movable block in said housing;

a chain having one end fixed unreleasable of said hook rod and another end free, said free end being releasably inserted on said rack end portion so as to wind said chain around a portion of a wheel of a motorcycle, said free end becoming impossible to be released from said hook rod after said rack end portion of said hook rod is inserted in said housing and engaging said tooth end of the movable block, said free end capable of being taken off of said hook rod and said chain capable of being taken off of said wheel, when an infrared rays emitting unit is placed in a front opening of said housing; and,

said infrared rays emitting unit deposited in a rectangular case, having said infrared rays emitter and a touch switch arranged on a board, a magnet on an outer surface of said case to attractingly contact said spring switch on said housing for conducting electricity and two contact points for wires to connect with said battery unit when said case is inserted in said front opening of said housing, said touch switch being pressed by a projection to turn on said emitter to emit said signal to be received by said sensor, said sensor placed behind a peep glass in a notch in a front side wall of said housing.

5,291,762
ARMORED COLLAR
Luigi Fornaro, 2222 McDonald Ave., Brooklyn, N.Y. 11223, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279
Filed Mar. 8, 1993, Ser. No. 27,674
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—18 **2 Claims**



1. A theft protection collar for a motor vehicle having a steering column with an ignition switch and shift lever, said collar comprising:

a) a bracket being of two pieces for encircling said steering column;

b) a hinge for joining said two pieces of said bracket together;

c) a lock having a dead bolt, said lock mounted to said first piece of said bracket;

d) a cover mounted to one side of said lock for preventing access to said ignition switch;

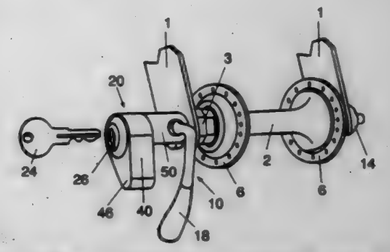
e) said second piece of said bracket having a recess for receiving said dead bolt of said lock, so as to retain said bracket to said steering column to prevent an unauthorized operation of said ignition switch; further including a retainer arm having a notch, said retainer arm extending from said cover, so that said notch can engage with said shift lever to stop movement of said shift lever and prevent an unauthorized operation of said shift lever; further including:

f) said hinge being adjustable and having an elongated slot therein, so that a pin of said hinge can ride within said slot;

g) said first piece of said bracket having a first set screw extending therethrough; and

h) said second piece of said bracket having a second set screw extending therethrough, so as to fit different diameter steering columns.

5,291,763
UNIVERSAL LOCK FOR QUICK RELEASE MECHANISM
Charles P. Cuisinot, 2120 Mills Ave., Menlo Park, Calif. 94025
Continuation of Ser. No. 761,389, Sep. 18, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,902
Int. Cl.[5] E05B *71/00*
U.S. Cl. 70—201 **19 Claims**



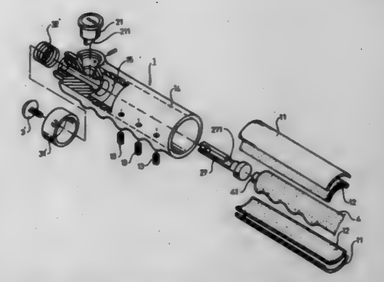
1. A lock for attachment to a conventional quick release mechanism, the lock comprising:

a plug lock mechanism having spring mounted pins which retract upon insertion of a key, the pins moving to an extended position when the key is removed;

a rotatable lock adaptor means having a threaded bore for attachment of the plug lock mechanism, the lock adaptor means prevented from rotating when the pins are in the extended position, the lock adaptor means defining extension means for preventing operation of the quick release mechanism when the pins are in the extended position and the lock adaptor means is rotated to a first blocking position; and

a housing for rotatably mounting the lock adaptor means thereon, the housing having an axial bore therethrough with means for attachment therein of the quick release mechanism and means for attachment therein of the plug lock mechanism.

5,291,764
DEVICE FOR PREVENTION OF ACCIDENTAL RELEASE OF HAND BRAKE OF MOTOR VEHICLE
Wen-Knei Chang, No. 30, Lane 208, Ho-Hsing Rd., Hsiang-Yang Village, Chang-Chih Hsiang, Pingtung Hsien, Taiwan
Filed Mar. 19, 1993, Ser. No. 34,765
Int. Cl.[5] G05G *5/00*
U.S. Cl. 70—202 **1 Claim**



1. A device for preventing an accidental pressing in of a press button of a hand brake of a motor vehicle comprising:

a key; and

a key controlled device including

a housing fastened securely to the hand brake,

a lock core mounted in said housing and capable of being rotated when said key is received therein from a first

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position to a second position, said lock cure including a control key which is rotated therewith, and

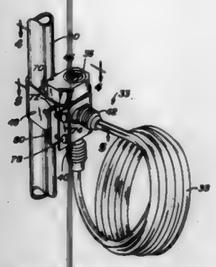
a shaft mounted in said housing for manual movement from a position adjacent the press button of the hand brake to a position where the press button is pressed in and the hand brake is released, said shaft including a restraining slot (a) in which said control key is received when said lock core is in the first position to prevent said shaft from moving and pressing in the press button and (b) in which said control key is not received when said lock core is in the second position so that said shaft is manually movable to press in the press button.

5,291,765

BICYCLE LOCK BRACKET

Gary Hoisington, 8411 N. Port, Huntington Beach, Calif. 92648

Filed Dec. 16, 1992, Ser. No. 991,576
Int. Cl.[5] B62H *5/00*
U.S. Cl. 70—233 **14 Claims**



1. A bracket for the attachment of a bicycle lock, having a lock body and a cable secured at one end to said lock body and having a lock tip at its free end, to a tubular member of a bicycle, comprising:

an elongated strap having a first end and a second end and having an inner side and an outer side, said strap being formed to completely encircle the lock body and the tubular member of the bicycle with said first and second ends in overlying juxtaposed relation so that the outer side of the first end is adjacent to the inner side of the second end, said first end defining a first opening through the strap and said second end defining a second opening through said strap, said strap being formed to substantially align said first opening with said second opening to receive the lock tip of the bicycle lock cable with said tip extending through each of the first and second openings and into said lock body to thereby secure said first end to said second end of said strap and thereby said bicycle lock to said tubular member of the bicycle.

5,291,766

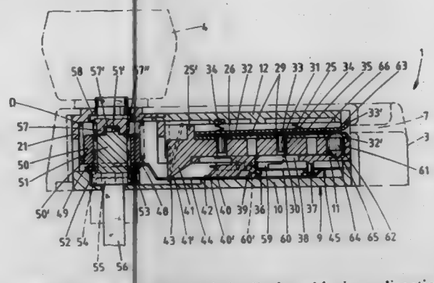
LOCK WITH LOCKING FUNCTION RELEASED BY INSERTING A KEY CARD WITH A MAGNETIZED REGION

Armin Eisermann, Velbert, Fed. Rep. of Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Fed. Rep. of Germany

PCT No. PCT/EP91/00034, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO91/11581, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 11, 1991, Ser. No. 916,138
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1990, 4002092
Int. Cl.[5] E05B *47/00*
U.S. Cl. 70—276 **7 Claims**

1. A lock having a locking function adapted to be released by insertion of a key card which is magnetized in a plurality of regions thereof, a housing, a slide translatable within the housing for releasing a latch of the lock, and a plurality of magnetic tumbler pins disposed in mounting recesses located in a region of the slide; wherein an edge of the key card drives said slide upon release of said slide by said magnetic tumbler pins, the mounting recesses in said slide extend transverse to the direction of insertion of the key card;

the lock further comprises



at least one element which is displaceable in a direction perpendicular to a path of motion of the key card upon movement of said slide, one end of said element scanning a profile of a part of the key card; and

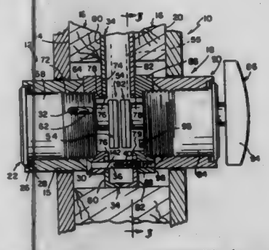
said element comprises a pin which is tapered on both ends, said pin being displaceable in a borehole in the slide within a further region of the slide which is free of said magnetic tumbler pins, said element providing additional security in operation of the lock.

5,291,767

PROTECTIVE LOCK CYLINDER MOUNTING ASSEMBLY

Charles T. Weindorf, Jr., Indianapolis, and Gary A. Pelsue, Lapel, both of Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Jul. 23, 1992, Ser. No. 919,093
Int. Cl.[5] E05B *9/08*
U.S. Cl. 70—370 **22 Claims**



1. A lock cylinder apparatus mountable in a mortise lock case, the mortise lock case having first and second exterior side walls arranged in spaced-apart parallel relation, the first exterior side wall being formed to include a cylinder assembly mounting hole, the apparatus comprising

a first lock cylinder assembly mounted on the first exterior side wall of the mortise lock case, the first lock cylinder assembly including a first lock body formed to include a cavity for the reception of an interchangeable lock core and a first adaptor ring around the first lock body, the first adaptor ring including an inner annular end wall engaging the first exterior side wall and being formed to include a central aperture receiving the first lock body therein and means for threadedly engaging the first lock body to fix the first lock body in the central aperture of the first adaptor ring, the first adaptor ring being positioned on the first exterior side wall of the mortise lock case to lie around the cylinder assembly mounting hole,

a second lock cylinder assembly mounted on the second exterior side wall of the mortise lock case, and

means for coupling the first lock cylinder assembly to the second lock cylinder assembly to trap the mortise lock case therebetween so that the first and second lock cylinder assemblies are rigidly fixed to the mortise lock case and positioned to engage and operate an internal locking mechanism contained in the mortise lock case, the coupling means including a threaded member extending through the mortise lock case and having a first end connected to the first adaptor ring and a second end connected to the second lock cylinder assembly, the first exterior side wall is formed to include a notch lying outside the perimeter of the cylinder assembly mounting hole and opening into the cylinder assembly mounting hole and a border edge around the notch, the threaded member being positioned to lie in offset radially outwardly spaced apart relation to the perimeter of the cylinder assembly mounting hole formed in the first exterior side wall of the mortise lock case and in the notch adjacent to the border edge.

5,291,768

PLASTIC KEY TAG WITH A KEY BAR

Robert Rieffel, Wallisellen, and Ernst Vögeli, Zurich, both of Switzerland, assignors to Robert Rieffel AG, Switzerland

Filed Apr. 10, 1992, Ser. No. 867,830
Claims priority, application Switzerland, Apr. 12, 1991, 01091/91
Int. Cl.[5] E05B *19/24*
U.S. Cl. 70—460 **16 Claims**



1. In a plastic key tag having a marker plate receptacle (1) with a through hole (2) and means for fastening a key (4) on the marker plate receptacle (1), the marker plate receptacle (1) having two plates (6,7) connected in one piece via a film hinge (9) which together form a foldable, form-fitting lockable frame that receives a marker plate (5), the improvement comprising:

the means for fastening the key (4) comprising a one-piece tongue (3) shaped as a band and having a fixed end connected with one plate (7) of the two foldable plates (6,7);

a free end (12) of the tongue (3) being form-fitting received between the two plates (6,7) when connected with each other; and

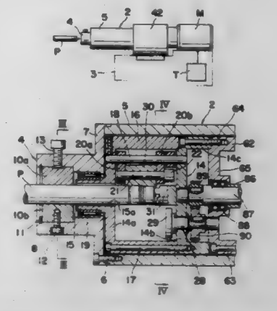
the band having two film hinges (12') extending crosswise to a longitudinal direction of the band and forming a lower end of the tongue (3) when the free end (12) is form-fitted between the two plates (6,7) connected with each other.

5,291,769

APPARATUS FOR FORMING END PORTION OF PIPE

Toshiharu Miyano, Barrington Hills, Ill., assignor to Kabushiki Kaisha Milano, Mitaka, Japan

Filed May 13, 1992, Ser. No. 882,320
Claims priority, application Japan, May 16, 1991, 3-141080
Int. Cl.[5] B21D *41/04*
U.S. Cl. 72—121 **12 Claims**



1. An apparatus for forming an end portion of a pipe comprising:

stationary pipe holding means for securely and stationarily holding an end portion of a pipe to be formed;

rotary means provided adjacent to said pipe holding means so as to be rotatable coaxially with the end portion of said pipe held by said pipe holding means;

drive means for rotating said rotary means;

a plurality of pivot shafts securely held by said rotary means so as to extend parallel with and be disposed around said pipe held by the pipe holding means;

a plurality of swing arm means having proximal ends pivoted to said pivot shafts, respectively, and having distal ends directed radially inward in opposing relationship with said end portion of said pipe to be formed;

a plurality of profile rolls carried by the distal ends of said swing arm means, respectively;

biasing means for imparting forces to said swing arm means so that said swing arm means will be caused to rotate about said pivot shafts in such directions that said profile rolls are moved away from said end portion of the pipe in a substantially cirucmferential direction of the pipe; and

lateral force application means supported by said rotary means adjacent to a lateral side of each swing arm means for imparting a force to each swing arm means in a lateral direction across the swing arm means against the force of said biasing means in such a manner that the profile roll on each swing arm means will advance substantially circumferentially of said end portion of the pipe to act on the end portion radially inwardly of the same.

5,291,770

ROLL CROSSING APPARATUS FOR CROSS-ROLLING MILL

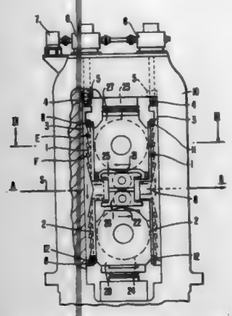
Hisayoshi Koujin; Kazuhiko Horie; Yutaka Matsuda; Tadashi Hiura, and Yoshiki Mito, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 922,464
Claims priority, application Japan, Jul. 30, 1991, 3-190358; Jun. 30, 1992, 4-172184
Int. Cl.[5] B21B *13/02, 31/30*
U.S. Cl. 72—237 **18 Claims**

1. A cross-rolling mill comprising: a housing; upper and lower rolls; upper and lower roll chocks rotatably supporting said upper and lower rolls, respectively, each of said roll chocks having liners on opposite sides thereof, said liners each

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having an outer cylindrical surface; upper and lower cross heads supporting said upper and lower roll chocks, respectively, each of said cross heads having a cylindrical surface at an inner side thereof complementary to and in face-to-face engagement with the cylindrical surface of the liner of the roll check which the cross head supports, and each of said cross heads having a plurality of steps at a gradient with respect to a vertical line at an outer side thereof, the gradient of the steps at corresponding ones of the outer sides of the upper end and the lower cross heads being opposite to one another with



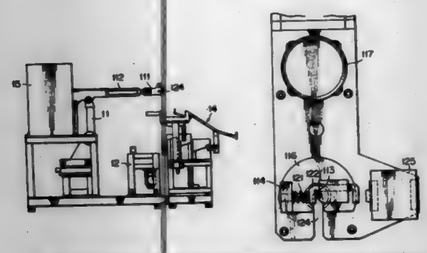
respect to the vertical line; vertically movable wedges associated with said cross heads, each of said wedges having a plurality of surfaces inclined relative to the vertical line, said plurality of surfaces being in sliding engagement with a number of said plurality of steps at a said outer side of a respective one of said cross heads, vertical movement of said wedges from a given position causing said upper and said lower rolls to cross one another so that rotational axes of said rolls are skewed relative to one another; and guides mounted to said housing and engaged with said wedges so as to guide said wedges in their vertical movement.

5,291,771

WIRE BENDING APPARATUS

Toshihiro Tomo, Toyota; Hiroyuki Ito, Anjo, and Nobumitsu Sakakibara, Kariya, all of Japan, assignors to Yashawa & Company, Ltd., Tokyo and Sindai Co., Ltd., Aichi, both of Japan

Filed Feb. 1, 1993, Ser. No. 11,899
Claims priority, application Japan, Feb. 3, 1992, 4-014265[U]
Int. Cl.[5] B21D *7/024*
U.S. Cl. 72—306 **8 Claims**



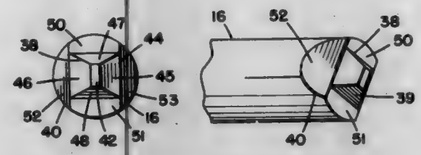
1. A wire bending apparatus comprising: the combination of a robot and at least one program-controlled wire bender discrete from said robot, said robot including a robot hand comprising a rotary body having opposite sides and a groove open at said opposite sides and into which groove a wire is insertable, wire gripping devices disposed at the opposite sides of said rotary body, respectively, and a control motor operatively connected to said rotary body so as to rotate the rotary body, each of said gripping devices including a fixed clamp fixed relative to said rotary body, a movable clamp, a spring exerting an urging force that biases said movable clamp toward the fixed clamp such that a wire received in said groove will normally be gripped by said fixed and movable clamps, and means for moving the movable clamp away from the fixed clamp against the urging force exerted by said spring.

5,291,772

COMPRESSION TOOL RAM

Neil P. Ferraro, Merrimack, N.H., assignor to Burndy Corporation, Norwalk, Conn.

Division of Ser. No. 737,559, Jul. 26, 1991, Pat. No. 5,193,379, which is a continuation of Ser. No. 589,331, Sep. 27, 1990, abandoned. This application Mar. 10, 1992, Ser. No. 849,509
Int. Cl.[5] B21D *37/00*
U.S. Cl. 72—476 **5 Claims**



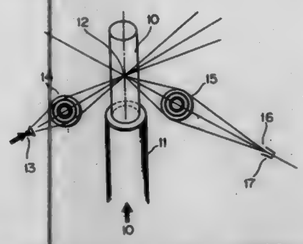
1. A ram for a crimping tool, the ram comprising:
a front pyramid section;
two angled side sections extending from a base of side walls of the pyramid section on two opposite sides of the pyramid section; and
two flat front sections extending from two other opposite side walls at the base of the pyramid section.

5,291,773

APPARATUS AND METHOD FOR ULTRASONIC DETECTION OF FOREIGN MATERIALS IN A SPECIMEN

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,224
Claims priority, application Japan, Dec. 28, 1990, 2-417788
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—24.03 **5 Claims**



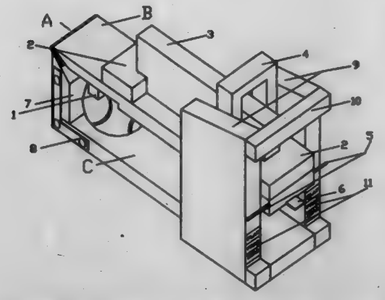
1. An apparatus for detecting foreign materials comprising:
a container having a wall surrounding an observation region;
an ultrasonic wave generator dispensed outside and spaced from the container for generating ultrasonic waves;
sound directing means disposed between and spaced from the container and the wave generator for directing and condensing in the observation region the ultrasonic waves generated by the ultrasonic wave generator;
a sound detector disposed outside of and spaced from the container for detecting ultrasonic waves; and
sound projecting means disposed between and spaced from the container and the sound detector for projecting ultrasonic waves scattered from the observation region to the sound detector.

5,291,774

TENNIS BALL TESTER

Charles E. Putnam, Jr., 7400 Crestway #511, San Antonio, Tex. 78239

Filed Apr. 14, 1993, Ser. No. 48,461
Int. Cl.[5] G01N *3/48*
U.S. Cl. 73—82 **1 Claim**



1. A tennis ball testing apparatus, comprising: a base (C), including an elongated horizontal bottom member, a vertically extending backstop 7 connected to a first end of the bottom member, and a pair of vertically extending housing members (9) having lower ends that are respectively connected to opposite sides of the bottom member adjacent to the second opposite end of the bottom member, each of said housing members including indicia (11) on the front of the respective housing members such that the indicia of both housing members are simultaneously viewable from a front of the apparatus, and a horizontally positioned connecting member (10) whose ends are respectively fixed to the upper ends of the housing members (9); and a compression arm assembly (B), including an elongated compression arm having a first end pivotally connected to the upper end of the backstop 7, a pair of horizontally extending indicator means (5) extending away from opposite sides of the compression arm adjacent to the second opposite end of the compression arm, said compression arm extending above the bottom member from the backstop (7) to a position passed the housing members, an arm lifter (6) coupled to the second end of the arm and projecting away from the arm towards the front of the apparatus, a weight (3) located on the upper surface of the compression arm, and a pressure member (1) attached to the lower surface of the compression arm adjacent the first end of the compression arm; whereby the backstop (7) comprises a means to permit consistent positioning of tennis balls to be tested between the pressure member (1) and upper surface of the bottom member; whereby said arm lifter (6) and said connecting member (10) together comprise a means to permit the compression arm to be raised away from the upper surface of the bottom member with a single operator hand; and whereby the indicator means and indicia of the front of the housing members together comprise a means to provide an indication of the condition of a tennis ball to be tested.

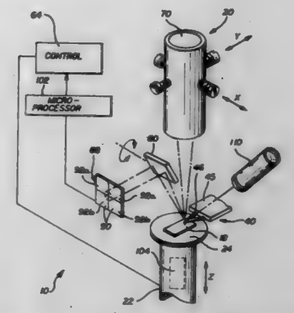
5,291,775

SCANNING FORCE MICROSCOPE WITH INTEGRATED OPTICS AND CANTILEVER MOUNT

Ronald C. Gamble, Altadena, and Paul G. West, Cupertino, both of Calif., assignors to Topometrix, Santa Clara, Calif.

Filed Mar. 4, 1992, Ser. No. 845,919
Int. Cl.[5] G01B *5/28;* **G01N** *23/00*
U.S. Cl. 73—105 **16 Claims**

1. A scanning force microscope for examining surface contours of a specimen, comprising:
a stationary body;
scanning means for mounting of said specimen for examination by said scanning force microscope, said scanning means being secured to said stationary body and adapted to move said specimen in three degrees of freedom relative to said body;
optical lever arm means secured to said stationary body, said optical lever arm means including a reflective surface;
probe means secured to said optical lever arm means and including a probe tip adapted to contact and follow the surface contours of the specimen with a substantially constant amount of force;



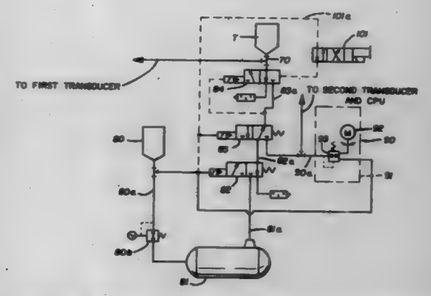
laser light source means for producing a focused laser beam directed at and deflected by said optical lever arm means;
photodetector means for receiving said laser beam deflected by said optical lever arm means and generating an output indicative of a degree of deflection of said laser beam by said optical lever arm means, said photodetector means being mounted in said stationary body; and
means for viewing said probe means adjacent to said surface contours of said specimen, said means for viewing being disposed in said stationary body.

5,291,776

TIRE INFLATION REGULATOR FOR TIRE UNIFORMITY MACHINE

Frank K. Mallison, Akron, Ohio, assignor to Akron Special Machinery, Akron, Ohio

Filed Apr. 13, 1992, Ser. No. 867,442
Int. Cl.[5] G01M *17/02*
U.S. Cl. 73—146 **3 Claims**

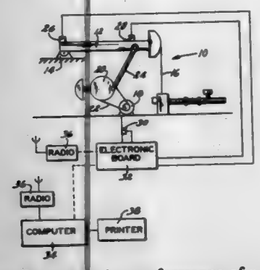


1. In a tire uniformity machine in which tires are inflated by air pressure for bead seating on opposed chucks for testing purposes, a control system comprising:
a) a source of air under pressure in fluid communication with the tire;
b) a servo-controlled mechanical regulator;

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c) at least one transducer positioned adjacent the chucks;
d) said regulator being connected to said source of air and said at least one transducer;
e) said at least one transducer being set to read chuck closing pressure and signal said regulator; and
f) said regulator providing testing pressure to the tire upon receiving a chuck closing pressure signal from said at least one transducer.

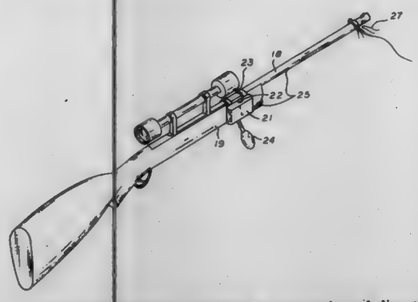
5,291,777
SYSTEM FOR MONITORING OIL WELL PERFORMANCE
Victor Chang; Noel Moreno, both of Miranda, and Cesar Alvarez, Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela
Filed Mar. 5, 1992, Ser. No. 848,665
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—151 **9 Claims**



1. A system for monitoring performance of a pumping unit of an oil well which comprises:
a first sensor for measuring an inclination angle of a beam forming part of a pumping unit;
said first sensor including a pendulum member which moves in response to changes in the inclination angle of said beam and first means for generating an electrical signal indicative of said inclination angle;
a second sensor for measuring a load on said beam;
said second sensor including a deformable sensor plate mounted to said beam and second means for generating a signal indicative of the load on said beam attached to said sensor plate for measuring the deformation of said sensor plate;
a third sensor for measuring a load on an electrical motor used in conjunction with said pumping unit means; and for receiving information from the first, second and third sensors for monitoring the performance of said pumping.

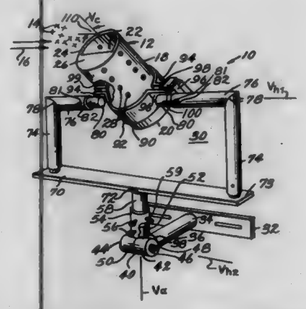
5,291,778
HUNTING WIND DIRECTION INDICATOR
Thomas H. Dexheimer, R.R. 1, Box 182, Woodbourne, N.Y. 12788, and John R. Nielsen, R.R. 1, Box 84B, Hurleyville, N.Y. 12747
Filed Sep. 9, 1991, Ser. No. 756,514
Int. Cl.[5] A63B *53/00*
U.S. Cl. 73—170.05 **2 Claims**

1. A hunting wind direction indicator for securement to a hunting weapon, wherein the apparatus includes
a support spindle boss, the support spindle boss including a concave side wall, with the side wall mounting an elongate thread filament, with the thread filament including a filament forward distal end spaced from the support spindle boss, and
the support spindle boss fixedly and coaxially mounted to a support member, the support member fixedly secured to the hunting weapon, and
the spindle boss is hollow and includes a cavity having filament therewithin, and the concave side wall includes an exit opening, with the filament directed therethrough, and the filament oriented exteriorly of the cavity is wound about the convex side wall for securement of the filament, with the forward distal end spaced from the convex side wall in use, and
the weapon includes a gun stock and a gun barrel, and the apparatus further includes a fluid reservoir secured to the gun stock, and mounting means for fixedly securing the fluid reservoir to the gun stock, and the reservoir including a squeeze bulb in pneumatic communication with the reservoir to pressurize the reservoir, and a game attracting



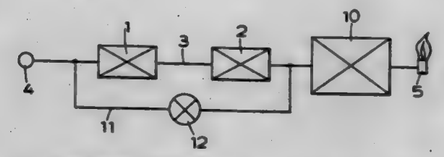
scented fluid contained within the reservoir and directed through a flexible feed conduit upon depression of the squeeze bulb, and the flexible feed conduit including a flexible feed conduit forward terminal end, and a hollow dispensing boss mounted to the support member spaced diametrically relative to the spindle boss, and the hollow dispensing boss including a rigid conduit mounting the flexible feed conduit thereabout, and the hollow dispensing boss including an end wall, the end wall including a matrix of apertures directed therethrough for dispersion of the fluid directed through the flexible feed conduit into the hollow dispensing boss.

5,291,779
HIGH-WIND SNOW COLLECTOR
John W. Govoni, Plymouth, N.H., and Debra A. Meese, Norwich, Vt., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 2, 1992, Ser. No. 908,210
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—170.17 **7 Claims**



7. Apparatus for collecting precipitation in a flexible bag in a high wind environment comprising:
an apertured vessel having an upstanding side wall, a closed bottom and an open top and apertures formed in the side walls;
baffle means secured to the vessel at the open top for covering a portion of the opening in the vessel; and
adjustable support means for selectively positioning the open top of the vessel with respect to prevailing winds, said flexible bag being located in the vessel and the apertures providing a region of low pressure between an inside wall of the vessel and the exterior of the vessel whereby the flexible bag is drawn against the inside wall of the vessel in response to prevailing winds.

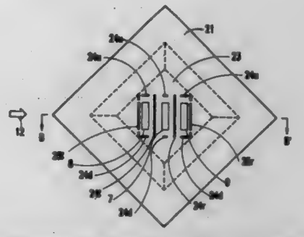
5,291,780
FLOW METERS
Paul D. Thomas, 11 Briston Close, Brierly Hill, West Midland DY5 3JX, Great Britain, and Cetin Mazharoglu, Eastern Mediterranean University Department Mechanical Engineering, Magosa, Cyprus
PCT No. PCT/GB90/00570, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/13007, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 12, 1990, Ser. No. 768,450
Claims priority, application United Kingdom, Apr. 12, 1989, 8908749
Int. Cl.[5] G01F *7/00*
U.S. Cl. 73—195 **5 Claims**



1. A flow meter comprising:
first and second flow measuring means having different frequency versus flow rate characteristics and which are connected together in series;
a third flow measuring means having another frequency versus flow rate characteristics which is larger than either the first and second flow measuring means, and which is connected in series with the first and second flow measuring means upstream or downstream therefrom;
a valve; and
a by-pass passage controlled by said valve connected between upstream and downstream ends of the first and second flow measuring means to by-pass the first and second flow measuring means at a given rate of flow, including means for calculating flow rates up to said given rate comprising a comparison between the characteristics of the first and second flow measuring means, wherein said third flow measuring means is adapted to measure flow rates above the said given rate.

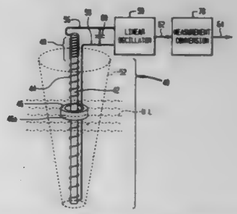
5,291,781
DIAPHRAGM-TYPE SENSOR
Mitsuhiko Nagata, Fujisawa; Shoji Kamiunten; Takashi Kurosawa, both of Chigasaki, and Tomoshige Yamamoto, Sagamihara, all of Japan, assignors to Yamatake-Honeywell Co., Ltd., Japan
Continuation of Ser. No. 685,077, Apr. 12, 1991, abandoned. This application May 10, 1993, Ser. No. 59,890
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **3 Claims**

1. A flow sensor for detecting a fluid flow comprising in combination:
a substrate with a cavity formed therein having a peripheral edge at one surface of said substrate;
a thin diaphragm completely covering said cavity by extending in all directions to said peripheral edge, said diaphragm being supported by said substrate and sealing said cavity from intrusion by dust particles borne by said fluid flow;
a heater formed on said diaphragm;
a first sensor formed on said diaphragm on one side of said heater and a second sensor formed on said diaphragm on another side of said heater; and



a first slit formed in said diaphragm between said first sensor and said heater, said first slit being sufficiently narrow that it blocks entry of said dust particles; and
a second slit formed in said diaphragm between said second sensor and said heater, said second slit being sufficiently narrow that it blocks entry of said dust particles.

5,291,782
EDDY CURRENT POSITION SENSOR
Howard E. Taylor, 7011-D 301 Blvd., Sarasota, Fla. 34243
Filed Feb. 16, 1993, Ser. No. 17,868
Int. Cl.[5] G01F *23/72*; G01B *7/14*
U.S. Cl. 73—319 **9 Claims**



1. An Eddy current position sensor comprising:
an elongated ferromagnetic core;
an electrically conductive wire coil wound around said core along a portion of the length of said core;
said wire coil having a progressively increasing spacing between each turn of said wire coil along said core from one end of said wire coil to the other end thereof;
each end of said wire coil operably connected to a linear oscillator structured to provide a radio frequency exciting current through said wire coil producing a generally conical electromagnetic field along the length of said wire coil;
a metallic ring positioned around, but not in contact with, said core and movable along the length of said core;
said linear oscillator also structured for sensing and producing an electrical signal proportional to an amount of absorption of said electromagnetic field by said ring;
said electrical signal being proportional to the position of said ring along said core;
said wire coil includes an exciter portion having uniform close spacing between each turn of said wire coil along said exciter portion wherein the overall strength of the electromagnetic field is increased; and
said exciter portion positioned immediately adjacent an end of said progressively increasing spacing of said wire coil.

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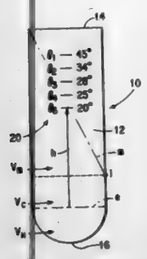
VOL 1160 ISS 2 MR 8 1994 UMI

5,291,783

TUBE FOR USE IN A FIXED ANGLE CENTRIFUGE ROTOR

Richard A. Hall, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1992, Ser. No. 995,512
Int. Cl.[5] G01F *19/00*
U.S. Cl. 73—426 4 Claims



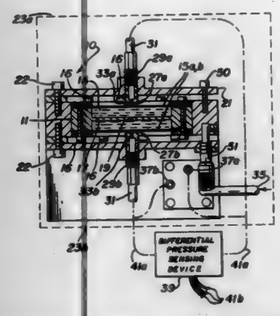
1. A tube for use in a fixed angle centrifuge rotor having a rotor cavity inclined at a predetermined angle Θ with respect to the axis of rotation, the tube comprising a body having a series of markings permanently provided thereon, each marking including an indication as to the identity of a rotor into which the tube may be inserted, each marking also indicating a level to which the tube may be filled with liquid without risk of spillage or seal challenge due to meniscus re-orientation when the tube is inserted into the rotor identified by the marking.

5,291,784

FLUID DYNAMIC LINEAR ACCELEROMETER

David R. Keyser, Churchville, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 919,694, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 590,873, Sep. 28, 1990, abandoned. This application May 17, 1993, Ser. No. 63,844
Int. Cl.[5] G01P *15/02*
U.S. Cl. 73—516 LM 5 Claims



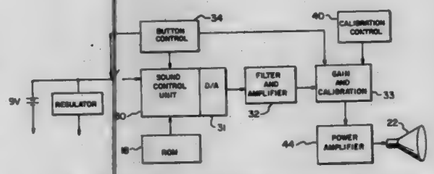
1. A fluid operated accelerometer for sensing linear acceleration, comprising:
- a fluid network being connected to a regulated fluid supply having a pair of similar fluid branches, each said fluid branch containing at least one fixed fluid resistance and at least one variable proximity resistance, said resistances comprising first and second position sensing means, respectively;
- a differential pressure sensor connected between said pair of fluid branches for measuring the fluid pressure differences provided therebetween;
- an acceleration sensitive means, having a container positioned thereabout, wherein said acceleration sensitive means comprises a bellows assembly containing a liquid mass; and
- wherein said first and second variable proximity resistances are positioned adjacent one each to a respective opposite side of said bellows assembly for sensing the relative movement thereof.

5,291,785

METHOD AND APPARATUS FOR TESTING AN INFANT FOR HEARING DEFECTS

Marion P. Downs, Denver, Colo., assignor to BAM World Markets, Inc., Englewood, Colo.

Filed Sep. 27, 1991, Ser. No. 767,002
Int. Cl.[5] A61B *1/22, 5/12*
U.S. Cl. 73—585 10 Claims



1. A method of testing a human infant for hearing defects by one testing individual using a sound producing testing apparatus, comprising the steps of;
- gaining attention of an infant by operation of one hand of a testing individual,
- reaching a second hand of said testing individual back of the said infant, as said second hand holds said testing apparatus containing a number of sounds stored therein,
- said testing individual moving said testing apparatus to a relatively long distance from said infant's ears and activating a relatively low intensity sound from said testing apparatus, said sound having characteristics of interest to said infant and being language independent, and observing said infant for a responsive thereto, and
- said testing individual moving said testing apparatus to a relatively close distance from said infant's ears and activating a relatively high intensity sound from said testing apparatus, said second sound having characteristics of a type known to produce reflex movement in an infant that is not deaf and being language dependent.

5,291,786

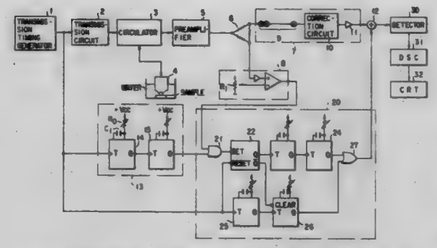
ULTRASONIC MICROSCOPE

Mitsumori Hayashida, New Hyde Park, N.Y., and Kiyoshi Fujii, Ina, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1991, Ser. No. 809,875
Int. Cl.[5] G01N *29/04*
U.S. Cl. 73—612 15 Claims

1. An ultrasonic microscope comprising:
- transmission timing means for generating a transmission timing signal at a predetermined transmission timing;
- ultrasonic pulse transmitting/receiving means for converting a transmission signal generated upon reception of the transmission timing signal into an ultrasonic pulse and radiating the ultrasonic pulse onto a sample and for receiving an echo from the sample and generating an electrical echo signal corresponding to the echo;
- distributing means for distributing the echo signal input from said ultrasonic pulse transmitting/receiving means and outputting a plurality of echo signals having the same level;

- delay means for receiving one of the plurality of echo signals distributed by said distributing means and delaying the input echo signal by a predetermined period of time;
- gate timing signal generating means for receiving remaining ones of the plurality of echo signals distributed by said distributing means, comparing the remaining signals with a preset threshold value, and generating a gate timing signal with reference to the echo signal exceeding the preset threshold value;
- first gate signal generating means for generating a first gate signal for determining a first gate period with reference to



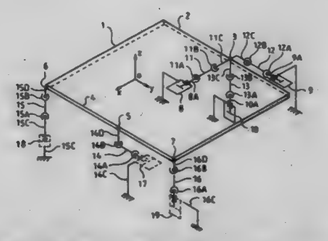
the transmission timing signal generated by said transmission timing means;
- second gate signal generating means for generating a second gate signal for determining a second gate period with reference to the gate timing signal when the gate timing signal is generated within the first gate period;
- gate means for receiving the echo signal delayed by said delay means and enabling a gate during the second gate period of the second gate signal to extract an echo component from the echo signal; and
- image forming means for forming an image of the sample from the echo component extracted from said gate means.

5,291,787

TRIAXIAL VIBRATING PLATFORM, PARTICULARLY FOR HELICOPTER SIMULATORS

Jacques Laforest, Luce, and René Le Guillou, Maurepas, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 25, 1992, Ser. No. 981,360
Claims priority, application France, Nov. 29, 1991, 91 14815
Int. Cl.[5] B06B *3/00*
U.S. Cl. 73—663 3 Claims



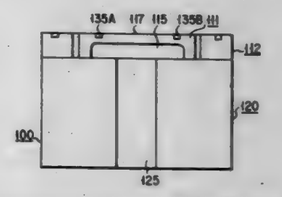
1. A triaxial vibration testing platform, with a general shape that is substantially rectangular, comprising:
- a plurality of suspension devices;
- four points for the fastening of said suspension devices, the first fastening point being located substantially in the middle of a first side of the platform, the second, third and fourth fastening points being distributed along a second, opposite side of the platform, the second fastening point being located substantially in the middle of the second side and the third and fourth fastening points being located near the ends of said second side, the first fastening point being connected to first, second and third suspension devices of said plurality of suspension devices wherein said first, second and third suspension devices are directed along three orthogonal axes, respectively, the second, third and fourth fastening points each being respectively connected to fourth, fifth and sixth suspension devices of said plurality of suspension devices, said fifth and sixth suspension devices for said third and fourth fastening points being positioned in a vertical direction, and the fourth suspension device for the second point being positioned in a horizontal direction, wherein at least the first, second and third suspension devices of the first fastening point comprise actuators having piston rods which are extended by first link-rods hinged at both ends thereof, and wherein the fourth, fifth and sixth suspension devices comprise second link-rods hinged at both ends thereof.

5,291,788

SEMICONDUCTOR PRESSURE SENSOR

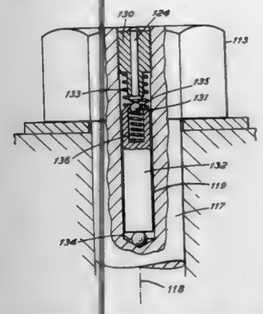
Satoshi Oohata, Tokyo; Satoshi Yonemoto, and Wataru Fukui, both of Tokorozawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 24, 1992, Ser. No. 950,162
Claims priority, application Japan, Sep. 24, 1991, 3-243734; Sep. 24, 1991, 3-243804; Sep. 7, 1992, 4-238503
Int. Cl.[5] G01L *9/06*
U.S. Cl. 73—727 11 Claims



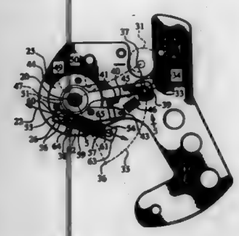
1. A semiconductor pressure sensor comprising: a first semiconductor substrate made of a monocrystalline semiconductive material having a crystal axis, the first semiconductor substrate having first and second surfaces, a recessed portion being formed on the first surface;
- a second semiconductor substrate also made of a monocrystalline semiconductive material having a crystal axis, the second semiconductor substrate having first and second surfaces and being disposed around the first semiconductor substrate;
- a tubular seat having first and second end surfaces, the first end surface being connected to the first surface of the first semiconductor substrate, the first end surface being connected to the first surface of the first semiconductor substrate to surround the recessed portion, the tubular seat comprising a pressure guide path communicating the second end surface the recessed portion;
- at least a differential pressure sensor disposed on the second surface of the first semiconductor substrate for detecting differential pressure in a direction vertical to the crystal axis of the firs semiconductor substrate;
- at least a differential pressure sensor disposed on the second surface of the first semiconductor substrate for detecting differential pressure in a direction parallel with the crystal axis of the first semiconductor substrate;
- at least a static pressure sensor disposed on the second surface of the second semiconductor substrate for detecting static pressure in a direction vertical to the crystal axis of the second semiconductor substrate; and
- at least a static pressure sensor disposed on the second surface of the semiconductor substrate for detecting static pressure in a direction parallel with the crystal axis of the second semiconductor substrate.

5,291,789
LOAD INDICATING
Brian Walton, Dudley, England, assignor to RotaBolt Limited, England
PCT No. PCT/GB89/00819, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO91/01484, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 17, 1989, Ser. No. 820,581
Int. Cl.[5] F16B *31/02*
U.S. Cl. 73—761 6 Claims



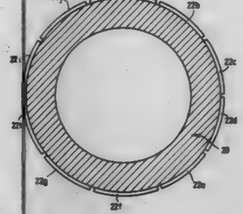
1. A hollow member having first and second electrically conductive elements which are anchored to or fixed with respect to respective portions of the member, which portions undergo relative movement when the member is stressed, characterised in that, when the member is subjected to a first load, the elements are in electrically conductive contact with each other at a position inside the hollow member, in that when the member is subjected to a second load, the elements are out of electrically conductive contact with each other, and the first element is electrically insulated from the hollow member and in that the first element is carried by a first carrier which is fixed with respect to the corresponding portion of the hollow member and is positioned within the hollow member.

5,291,790
COUNTER ASSEMBLY FOR GAS METER
Albert B. Atkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 5, 1993, Ser. No. 14,195
Int. Cl.[5] G01F *15/02*
U.S. Cl. 73—861.01 9 Claims



3. A counter assembly for a fluid meter having an output shaft rotatable proportionally to the volume of fluid flow through the meter, said counter assembly including
a support plate, an input crank shaft supported adjacent said plate and drivingly connectable with said output shaft, a computer mechanism connected to said plate, and a readable register driven by said computer mechanism to provide corrected fluid flow volume information,
said computer mechanism having a clutch shaft connected to said register and rotated about a longitudinal axis proportionally to the corrected volume flow of fluid through said meter, a one-way clutch unit including an input hub mounted rotatably on said clutch shaft to drivingly release from and connect with said clutch shaft for unidirectional rotation thereof, a crank connected to said crank shaft, a drive link with one end pivotally connected to said crank and an opposite end coupled to said input hub and being reciprocally movable in response to rotation of said crank to oscillate said input hub about said axis, a computer arm secured to and carried by said input hub for movement in unison therewith and having an outer end which with reciprocal movement of said link oscillates about said axis through an arc of travel delimited in length relative to a standard length between an adjusted initial position and a corrected end position, an adjustment mechanism connected to said computer arm for adjustment of said outer end angularly relative to said axis into a set angular position relative to said input hub to register precisely relative to said initial position at the start of each oscillation, a condition responsive stop positionable in the arc of travel of said computer arm to locate said corrected end position in response to changes relative to a preselected standard condition and thereby delimit the arc of travel of said arm relative to said standard length arc, and an overtravel spring-biased connection between said computer arm and said crank to accommodate relative movement therebetween when said outer end engages said stop.

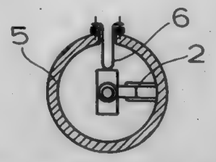
5,291,791
CAPACITANCE FLOW METER
Gary P. Lucas, Hilton, and Sam Simonian, Welwyn Garden City, both of England, assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed May 7, 1992, Ser. No. 879,824
Claims priority, application United Kingdom, May 8, 1991, 9109957
Int. Cl.[5] G01F *1/56*
U.S. Cl. 73—861.08 9 Claims



1. A multi-electrode capacitive apparatus for measuring multi-phase flows comprising:
a) a pipe through which a flow is directed having electrodes disposed around a wall thereof,
b) a switching arrangement,
c) sensing means for connection to each electrode by means of said switching arrangement, said switching arrangement operating to vary the connection of the electrodes to the sensing means such that an electric field experienced by the flow within said pipe rotates, wherein said electrodes are connected so as to form an excitation group of adjacent electrodes and a detection group of adjacent electrodes, the excitation group and the detection group being of approximately the same size, and
d) averaging means for determining an average capacitance

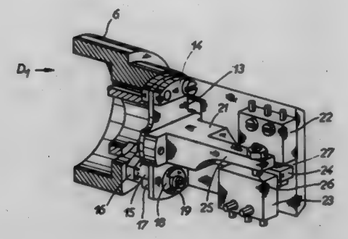
measured over an integer number of rotations independently of phase distribution in the pipe.

5,291,792
MASS FLOW METER
Yousif A. Hussain, Coulsdon, and Chris N. Rolph, Redhill, both of Great Britain, assignors to Krohne A.G., Uferstrasse, Switzerland
Filed Dec. 21, 1992, Ser. No. 993,429
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.37 1 Claim



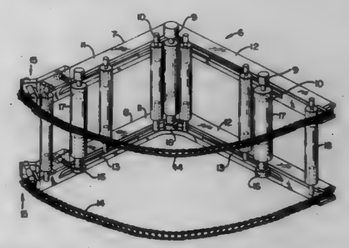
1. A mass flow meter for flow media that works on the Coriolis Principle, with at least one basically straight Coriolis pipe carrying the flow medium, at least one oscillator acting on the Coriolis pipe, at least one transducer detecting Coriolis forces and/or Coriolis oscillations based on Coriolis forces and stiffness increasing means including at least one reinforcing leaf spring (6) acting in the middle of the Coriolis pipe (1) that increases the stiffness of the Coriolis pipe for the excitation mode, the improvement wherein said spring is generally U-shaped with a bar (7) and two legs (8,9) connected to opposite ends of the bar, there being at least one flange (10, 11) on the ends of the legs (8,9) remote from the bar (7), said Coriolis pipe (1) is situated inside a housing (5) and the spring (6) is attached by said bar (7) to the Coriolis pipe (1) and is attached by said at least one flange (10,11) to the housing (5).

5,291,793
DYNAMOMETER LINK
Georges Roudavitch, Chatellerault, France, assignor to Sextant Avionique, Meudon la Foret, France
Filed Jun. 26, 1992, Ser. No. 904,727
Claims priority, application France, Jun. 27, 1991, 91 07950
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.53 9 Claims



5. Dynamometer link for transmitting an axial tensile or compressive force, comprising:
two transmission members adapted to slide axially relative to each other;
a lever comprising a radial arm formed by a radial plate made from an elastically deformable material fastened to one of said two transmission members and coupled to the other of said two transmission members, said radial arm having a central part to which is rigidly fixed an axial arm having a free end, a relative displacement of said two transmission members driving said lever in rotation about a rotation axis and generating an amplified displacement of the free end of said lever; and
two detector members disposed respectively close to two opposite sides of said free end in a plane perpendicular to said rotation axis, each detector member being assigned to detect a rotating motion of the free end of said axial arm in a respective direction corresponding to a direction of said force.

5,291,794
METHOD AND APPARATUS FOR MONITORING MECHANICAL POWER TRANSMISSION SYSTEMS
Friedrich Klein, Aalen, Fed. Rep. of Germany, assignor to Micro-Epsilon Messtechnik GmbH & Co. KG, Ortenburg, Fed. Rep. of Germany
Filed May 5, 1992, Ser. No. 878,942
Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115786
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.541 27 Claims



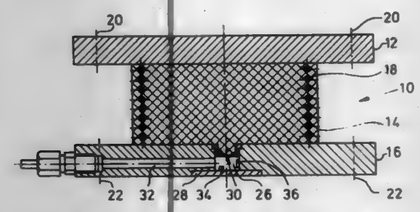
1. Method of monitoring mechanical power transmission systems, wherein the power transmitting system comprises at least one power transmitting element, comprising the following steps:
establishing two, substantially parallel planes on the power transmitting element in an unstressed condition, each plane being defined by at least three space coordinates on the power transmitting element;
determining the relative change in position of the two planes to one another on the power transmitting element in a stressed condition;
correlating the determined relative change in position as to local elongation or compression on the power transmitting element; and
calculating a tensile stress according to a Hooke Law formulation from the elongation and material-specific modulus of elasticity of the power transmitting element.

5,291,795
TRANSMISSION ELEMENT FOR FORCE OR MOMENT MEASURING DEVICES
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister Messtechnik GmbH, Augsburg, Fed. Rep. of Germany
Filed Nov. 15, 1991, Ser. No. 793,086
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1991, 4102931; Mar. 28, 1991, 4110356
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.629 13 Claims

1. A force transmission element for force and measuring devices, comprising:
a block of essentially incompressible elastomeric material or transmitting forces;
at least one force or pressure sensor means for sensing pressure or force arranged in close contact with said elastomeric material;
said block having a first end surface, a second opposite end

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surface, and a surrounding perimeter wall surface between said end surfaces;
said first end surface being constructed to receive a pressure force in an axial direction toward said second surface;
a perimeter wall enclosure around said surrounding perimeter wall surface;
said perimeter wall enclosure at a location around said surrounding perimeter wall surface being deformable in said



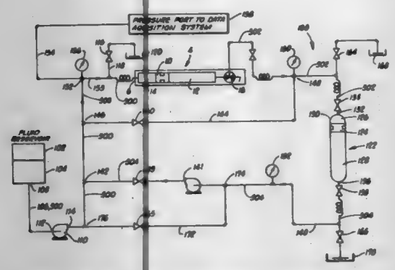
axial direction but essentially not expandable generally perpendicular to said axial direction;
said enclosure tightly surrounding said block around said surrounding perimeter wall;
wherein said perimeter wall enclosure around said surrounding perimeter wall is at least partially embedded in said elastomeric material of said block in said surrounding perimeter wall and fixedly adhered thereto.

5,291,796

APPARATUS AND METHOD FOR DRAINING HIGH PRESSURE FLUID SAMPLES WITHOUT MERCURY

Roger L. Schultz, Richardson, and Paul D. Ringgenberg, Carrollton, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Jul. 30, 1991, Ser. No. 737,751
Int. Cl.[5] G01N *1/00*
U.S. Cl. 73—863 **21 Claims**



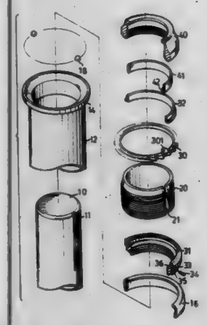
1. A system for draining fluid samples, comprising:
a sampler vessel having a sampler vessel inlet and a sampler vessel outlet;
a fluid reservoir;
a supply conduit connecting said fluid reservoir with said sampler vessel inlet;
a first pump means, disposed in said supply conduit, for pumping fluid from said fluid reservoir to said sampler vessel inlet;
a drain vessel for receiving a fluid sample from said sampler vessel, said drain vessel having a drain vessel inlet and a drain vessel outlet;
a drain conduit connecting said sampler vessel outlet with said drain vessel inlet;
a first valve disposed in said drain conduit;
a discharge conduit connecting said drain vessel outlet with said supply conduit between said first pump means and said sampler vessel inlet;
a second valve disposed in said discharge conduit; and
a second pump means, disposed in said discharge conduit, for pumping fluid from said drain vessel outlet to said supply conduit.

5,291,797

UPPER STEERING ASSEMBLY

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Jun. 17, 1993, Ser. No. 78,399
Int. Cl.[5] B62K *21/12*; F16C *43/00*
U.S. Cl. 74—551.1 **7 Claims**



1. An upper steering assembly for a bicycle comprising:
a steerer tube (10) with a longitudinal groove (11) on an upper section thereof and passing through a bicycle head tube (12);
a compression socket (20) mounted around the steerer tube (10), being threaded on an outer periphery thereof and having a longitudinal slit (21) in alignment with the longitudinal groove (11);
a ratchet wheel (30) mounted around the compression socket (20) and having a protrusion (301) projecting radially and inwardly through the slit (21) and received in the longitudinal groove (11);
an outer socket (31) mounted around the ratchet wheel (30) and having a radial threaded through hole (33) through which a bolt (34) passes to abut on a tooth of the ratchet wheel (30) to retain the ratchet wheel (30);
a compression ring (41) mounted around an upper section of the compression socket (20) and having a stop (42) projecting radially and inwardly through the slit (21) and received in the longitudinal groove (11); and
an actuating socket (40) mounted around the compression ring (41) and having inner threadings to engage with an upper section of the outer threadings of the compression socket (20).

5,291,798

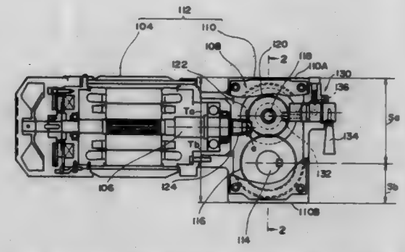
GEARED MOTOR FOR SELF-TRAVELLING CARRIER

Masayuki Tanigawa, Kariya; Tetuo Takechi, Handa, and Kiyoji Minegishi, Aichi, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 905,604
Claims priority, application Japan, Jun. 27, 1991, 3-183262
Int. Cl.[5] F16H *1/12*
U.S. Cl. 74—421 A **5 Claims**

1. A geared motor for a self-traveling carrier wherein a motor for driving a wheel of said self-traveling carrier which travels by rolling said wheel on a track, and a gear box housing a speed change mechanism which is disposed between a motor

shaft of said motor and said wheel are integrated, characterized in that
said speed change mechanism in said gear box comprises an output shaft with said wheel mounted thereon, an output shaft gear fixed onto said output shaft, an intermediate shaft disposed in parallel with said output shaft, an intermediate pinion mounted on said intermediate shaft and capable of meshing with said output shaft gear, a hypoid



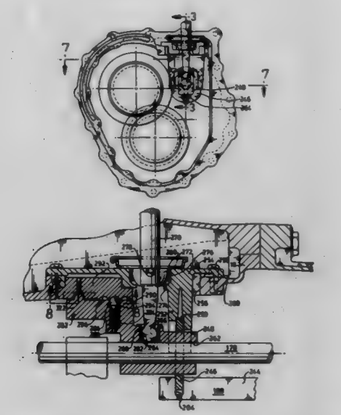
gear fixed onto said intermediate shaft, and a hypoid pinion integrally formed with said motor shaft and meshing with said hypoid gear, wherein
said motor shaft is disposed between said intermediate shaft and said output shaft orthogonally thereto, and
said intermediate pinion is axially slidable in a splined state on said intermediate shaft, and said splined state can be released by said sliding motion.

5,291,799

UNITARY RATIO SELECTOR MECHANISM FOR A MULTIPLE RATIO MANUAL TRANSMISSION

Robert L. Seaman, Farmington Hills, Mich., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Sep. 25, 1992, Ser. No. 951,051
Int. Cl.[5] F16H *61/00*
U.S. Cl. 74—473 R **6 Claims**



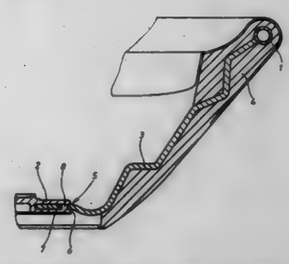
1. A manual transmission having gearing adapted to deliver torque from a driving shaft to a driven shaft including a housing, multiple ratio gearing in said housing, and a torque input gear connected to said driving shaft;
a main shaft connected to said driven shaft torque transfer gearing including gears disposed coaxially with respect to said mainshaft;
a countershaft disposed in offset parallel disposition with respect to said mainshaft, countershaft gear elements disposed coaxially with respect to said countershaft;
multiple synchronizer clutch means for selectively establishing and disestablishing plural torque flow paths through said gears and said gear elements, said synchronizer clutch means including multiple synchronizer clutch sleeves that are shiftable between two axial positions relative to the mainshaft;
a shift rail offset from said mainshaft, multiple shift forks supported by said shift rail;
a shift lever including a bellcrank extending transversely relative to said shift rail, shift lever support structure adapted to be secured to said housing;
a guide plate for said shift lever secured to said support structure, means for pivotally mounting said shift lever on said support structure;
said shift lever, said guide plate and said support structure defining a unitary subassembly separate from said gearing, an offset lever operatively connected to said bellcrank whereby movement of said lever in a transverse plane causes angular movement of said offset lever and movement of said lever in a plane parallel to said shift rail results in movement of said offset lever in an axial direction,
the position of said shift lever and said offset lever thereby being established with precision relative to said gears and said gear elements.

5,291,800

MOTOR VEHICLE STEERING WHEEL

Helmut Patzelt, Kernen-Stetten; Wolfgang Russ, Gingen/Fils; Joachim Kieserling, Kernen-Rom; Walter Rückert, Esslingen; Klaus Kuhn, Fellbach; Karl Peitsmeier, Remseck, and Manfred Link, Waiblingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Feb. 18, 1992, Ser. No. 836,511
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1991, 4105026
Int. Cl.[5] B62D *1/08*
U.S. Cl. 74—552 **1 Claim**

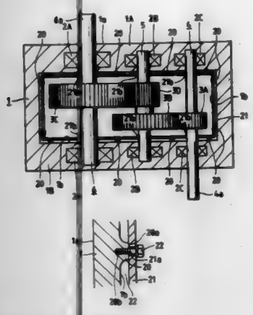


1. A motor vehicle steering wheel, comprising a steering-wheel rim, a cast hub, flat steel deformable spokes connecting the steering-wheel rim to the cast hub for mounting on a steering shaft, associated free ends of the spokes being cast into the cast hub in a cast-in area, and each spoke having in the cast-in area a passage bore which extends in an axial direction of the steering wheel and is penetrated by hub material during the casting process to form a tension-rod connection between hub material located above and below the spoke at the entry area of said spoke into the hub, wherein said passage bore is arranged directly adjacent to the entry area of the spoke into the hub, said hub having a rolling step at the outer peripheral edge of the hub on the underside of the hub, a portion of said spoke immediately curving away from the rim in a gradual manner at the rolling step, the spoke gradually continuing to curve as a function of distance from the hub such that the spoke curves towards the rim at a predetermined distance from the hub, whereby said curvature of said spoke in cooperation with said

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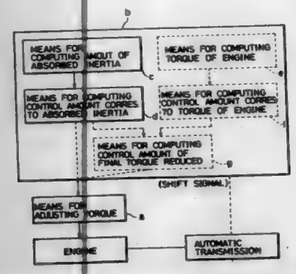
rolling step permits said spoke to deform in a defined manner having a large radius.

5,291,801
GEAR DEVICE
Seigo Hanada; Yukio Fukuchi; Junji Kawamoto; Koji Nakamura, and Masahiro Abe, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan
Filed Jun. 15, 1992, Ser. No. 899,275
Claims priority, application Japan, Jun. 20, 1991, 3-046649
Int. Cl.[5] F16H *57/02*; E04B *1/99*; F16F *15/00*
U.S. Cl. 74—606 R **11 Claims**



1. A gear device, comprising:
a casing;
an input shaft rotatably mounted in said casing;
an output shaft rotatably mounted in said casing;
at least a first gear fixedly mounted on said input shaft,
at least a second gear fixedly mounted on said output shaft;
said first gear and said second gear being operatively engaged so as to cause said output shaft to rotate at a second speed when said input shaft is rotated at a first speed; and
a plurality of vibration damping and sound absorbing sheets continuously arranged inside of said casing along substantially an entire periphery of an inner wall of said casing, said sheets being fixed upon an inner wall of the casing so as to define a space between said sheets and the entire periphery of said inner wall.

5,291,802
CONTROL SYSTEM FOR ENGINE AND AUTOMATIC TRANSMISSION
Minoru Kuriyama, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Oct. 8, 1992, Ser. No. 957,952
Claims priority, application Japan, Oct. 9, 1991, 3-262423
Int. Cl.[5] B60K *41/00*
U.S. Cl. 74—858 **7 Claims**

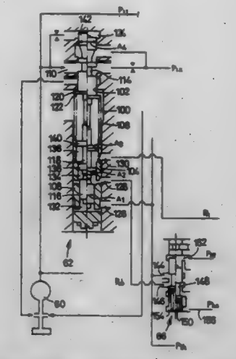


1. A control system for an engine and an automatic transmission for an automotive vehicle, having a torque adjusting means for adjusting torque of the engine and a control means for controlling said torque adjusting means so as to reduce the torque of the engine at the time of a shift of said automatic transmission with a multi-stage shift mechanism, wherein:
said control means comprises a first operational means for computing an amount corresponding to an amount of inertia absorbed during a shift of the automatic transmission, by detecting the rate of revolution of an input shaft of the shift mechanism prior to and subsequent to said shift; and a second operational means for setting a control amount for determining an amount of torque to be reduced when said shift occurs in accordance with the amount computed by said first operational means so as to reduce the torque more when the inertia is large than when the inertia is small.

5,291,803
AUTOMOTIVE VEHICLE CONTROLLING APPARATUS WITH FAILURE JUDGING FACILITY
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Feb. 11, 1992, Ser. No. 832,930
Claims priority, application Japan, Feb. 14, 1991, 3-40832
Int. Cl.[5] F16H *61/12*
U.S. Cl. 74—866 **18 Claims**

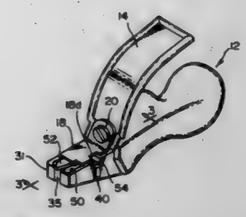
1. An automotive vehicle controlling apparatus with failure judging faculty comprising:
sensing means, including a plurality of sensors, for detecting operational conditions of the automotive vehicle to generate a plurality of condition signals;
signal processing means, including at least one control unit, for receiving and processing at least one of said plurality of condition signals and for generating at least one control signal;
actuating means, including at least one actuator, for controlling the automotive vehicle in response to said at least one control signal generated by said signal processing means; and
managing means for receiving information related to said plurality of condition signals generated by said sensing means and for processing the information to judge a failure of at least one sensor in the sensing means and/or at least one actuator in the actuating means,
said managing means further providing at least one correct condition signal related to at least one sensor which is judged to be abnormal, said correct condition signal being derived from condition signals generated by sensors which are judged to be normal.

5,291,804
APPARATUS FOR CONTROLLING LINE PRESSURE FOR AUTOMATIC TRANSMISSION UPON VEHICLE STARTING WITH THE TRANSMISSION PLACED IN SECOND OR HIGHER-GEAR POSITION
Yuji Kashihara, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Nov. 18, 1992, Ser. No. 978,515
Claims priority, application Japan, Nov. 18, 1991, 3-329467
Int. Cl.[5] B60K *41/04*
U.S. Cl. 74—867 **9 Claims**



1. A hydraulic control apparatus for an automatic transmission of a motor vehicle having a plurality of hydraulically operated frictional coupling devices for selectively establishing a first-speed position and at least one higher-speed position whose speed reduction ratio is lower than that of said first-speed position, the apparatus comprising:
a pressure regulating valve for regulating a line pressure of a working fluid to be applied to the hydraulically operated frictional coupling devices;
a cut-back valve having a first position selected when the transmission is placed in said first-speed position, and a second position selected when the transmission is placed in any one of said at least one higher-gear position, said cut-back valve when placed in said first position causing said pressure regulating valve to raise said line pressure by a predetermined amount to a higher level than a normal level as normally established by said pressure regulating valve, said cut-back valve when placed in said second position causing said pressure regulating valve to regulate said line pressure to said normal level;
mode selecting means for selecting a high-gear start mode in which the vehicle is started with said automatic transmission placed in a predetermined one of said at least one higher-gear position; and
pressure applying means, responsive to said mode selecting means, for applying to said cut-back valve a first and a second pressure to be applied to respective two coupling devices of said plurality of frictional coupling devices to establish said predetermined one higher-gear position, for placing said cut-back valve in said first position to raise said line pressure to said higher level,
said pressure applying means comprising first pressure applying means for applying said first pressure as a high-gear start pressure to said cut-back valve, and second pressure applying means for applying said second pressure to said cut-back valve,
said first pressure applying means including delay means for delaying the application of said first pressure to said cut-back valve, with respect to the application of said second pressure, for first applying only said second pressure to said cut-back valve to place said cut-back valve in said second position for lowering the line pressure from said higher level to said normal level, and then also applying said high-gear start pressure to said cut-back valve to place said cut-back valve in said first position for raising said line pressure to said higher level.

5,291,805
SHARPENING AND DEBURRING TOOL
Gary L. Byers, and Timothy W. Byers, P.O. Box 550, Whitefish, Mont. 59937
Filed Jul. 6, 1992, Ser. No. 908,420
Int. Cl.[5] B24D *15/06*
U.S. Cl. 76—88 **8 Claims**



1. A tool comprising:
a body having recesses in a first frontal section thereof to receive sharpening and/or deburring inserts and a second section located longitudinally rearwardly of said first frontal section, said recesses, being adapted to receive a first insert member in a generally lateral position with respect to the longitudinal axis of said body that extends transversely to a side of said body, and to receive a second insert member in a generally longitudinal position with respect to the longitudinal axis of said body that extends toward a front edge of said first frontal section, and to receive a third insert member in a generally longitudinal position respect to the longitudinal axis of said body that extends toward the front edge of said first frontal section;
a plurality of sharpening and/or deburring insert members comprising a first insert member having a ground surface providing at least one sharpening and/or deburring edge, said first insert member being positioned within said body recesses such that its ground surface is exposed at one side of said body; a second insert member having a ground surface providing at least one sharpening and/or deburring edge, said second insert member being positioned within said body recesses such that it partially overlays said first insert member in abutting contact therewith and such that its ground surface is oriented toward the outer end of said frontal section at an acute angle with respect to the longitudinal axis of said body; and a third insert member having a ground surface providing at least one sharpening and/or deburring edge, said third insert member being positioned within said body recesses such that it partially overlays said second insert member in abutting contact therewith and such that its ground surface is oriented at an acute angle with respect to the longitudinal axis of said body, the ground surfaces of said second and third insert members being convergent whereby an object to be sharpened or deburred may be inserted between the convergent ground surfaces for sharpening and/or deburring;
said body frontal section recesses and said second and third insert members being so constructed and arranged whereby said body frontal section front edge contains a notch therein that exposes a portion of the convergent ground surfaces of said second and third insert members;
said body frontal section also extending across the front ends of said second and third insert members whereby the front edge of said body frontal section provides a shield limiting

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sharpening and/or deburring access thereto to said notch; and

insert retaining means detachably secured to said body and adapted to contact said third insert member and to apply a sufficient force to that insert member whereby said first, second and third insert members are restrained from movement within said body recesses.

5,291,806

SPADE-TYPE DRILL BIT APPARATUS AND METHOD

John D. Bothum, Albert Lea, Minn., assignor to Enderes Tool Company, Inc., Apple Valley, Minn.

Division of Ser. No. 739,600, Jul. 31, 1991, Pat. No. 5,221,166. This application Jun. 14, 1993, Ser. No. 75,959

Int. Cl.[5] B21K *5/02*

U.S. Cl. 76—102 **9 Claims**



1. A method of forming a spade-type drill bit from an elongated piece of round metal stock, the method comprising the steps of:

smashing a portion of the round metal stock to include a generally planar portion, the unsmashed round portion forming a shank portion of the drill bit and defining a longitudinal axis of the drill bit about which the drill bit is rotated during drilling;

cutting the smashed planar portion of the metal stock into a spade bit portion of the drill bit, the spade bit portion having a center tip concentric with the longitudinal axis, the spade bit portion further having first and second corner tips radially disposed in opposite directions from the longitudinal axis on the spade bit portion, the spade bit portion further having a radial cutting edge extending between each of the respective first and second corner tips and the center tip; and

bending each of the first and second corner tips out of a plane defined by the planar portion of the spade bit portion in the direction of rotation of the spade bit wherein the radial cutting edges extending between the respective first and second corner tips and the center tip include nonlinear portion.

5,291,807

PATTERNED HARDFACING SHAPES ON INSERT CUTTER CONES

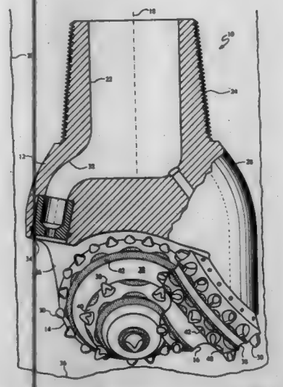
William D. Vanderford, Irving, and Alan D. Huffstutler, Grand Prairie, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 667,699, Mar. 11, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 926,377

Int. Cl.[5] B21K *5/02*

U.S. Cl. 76—108.2 **8 Claims**

1. A method of manufacturing a rolling cone cutter member useful in erosive and abrasive environments, such as are encountered in drilling oil and gas wells and having a plurality of circumferentially spaced insert elements formed of a material harder than said cutter member located in respective insert receiving holes on a land surface of the cutter member and having wear resistant hardfacing material added to the cutter member in precise positions between the insert elements, comprising the steps of: determining the number and arrangement of insert elements on at least one land surface of a cutter member, etching boundaries for the deposition of hardfacing material on the cutter member with the boundaries defining a pattern of shapes of hardfacing material located between an



spaced from the insert elements, placing hardfacing material within the etched boundaries, heat treating said cutter member, thereafter forming insert element receiving holes between the hardfacing material shapes, and forcing insert elements into the holes.

5,291,808

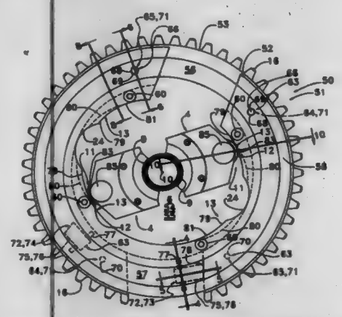
RING GEAR CAMMING MEMBER

David A. Buck, 1348 Sawmill Hwy., Breaux Bridge, La. 70517

Filed Jul. 8, 1992, Ser. No. 910,703

Int. Cl.[5] B25B *13/50, 21/00*

U.S. Cl. 81—57.18 **8 Claims**



1. A camming member for power tongs, comprising:

a. a ring-shaped body including a central opening formed therein, said body being rotatable about a point within said central opening, said body further including a slot, said slot opening through said body and communicating with said central opening;

b. a ring-shaped drive member including a central opening formed therein, said drive member being rotatable about said point, said drive member further including a slot, said slot opening through said drive member and communicating with said central opening of said drive member, said slot of said drive member being alignable with said slot of said body, said drive member being slidably mounted on said body such that said drive member may rotate independently of said body and such that said drive member is radially supported by said body; and

c. a means, mounted on said camming member, for allowing said body and said drive member to partially rotate relative to one another to a desired engaged position and then to maintain said engaged position as said camming member rotates.

5,291,809

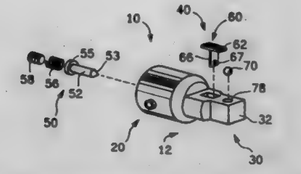
LOCKING ADAPTER FOR SOCKET WRENCH

Leonard J. Fox, III, 1920 College Blvd., #278, Oceanside, Calif. 92056, and Bruce A. Heckbert, 120 Tampa St., West Warwick, R.I. 02893

Continuation of Ser. No. 8,421, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 844,457, Mar. 2, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,635

Int. Cl.[5] B25B *13/00*

U.S. Cl. 81—177.85 **12 Claims**



1. A locking adapter for use with a drive member of a socket wrench system; said locking adapter comprising:

a shaft having:

a rear end including:

a rear free end surface;

coupling means for coupling said rear end to a socket system drive; and

a front end including: receiving means for torque-transferring engagement with a socket wrench system drive socket; and

drive socket locking means for locking a drive socket onto said receiving means; said drive socket locking means being operable between a first position for positively locking a drive socket to said receiving means and a second position for releasing a drive socket; said drive socket locking means comprising:

a central bore within said shaft extending from said shaft rear free end surface;

a thumb lever bore extending radially from said central bore and exiting said shaft;

a radial cavity from said central bore through said receiving means;

a detent disposed in said radial cavity in said receiving means; when said locking means is in its locking position, said detent having a locking position wherein it protrudes out of said receiving means so as to engage a drive socket and prevent its removal from said receiving means; when said locking means is in its releasing position, said detent having a releasing position wherein it resides substantially within said receiving means so as not to engage a drive socket;

a locking bolt within said central bore including:

a front section; and

a rear section;

said bolt being axially moveable such that as said bolt is moved from a release position to a locking position, its said front section contacts and moves said detent from its release position to its locking position;

retaining means releasably attached to said shaft for retaining a spring biasing means in said central bore;

spring biasing means in said central bore for biasing said bolt in its locking position; said spring biasing means having:

a fore end bearing against said locking bolt rear section; and

an aft end bearing against said retaining means; and

a thumb lever disposed in said thumb lever bore; said thumb lever having;

an inner end including:

engaging means for engaging said locking bolt rear section for moving said locking bolt to the releasing position; and

an outer end accessible to a user's thumb for axial movement for moving said bolt from its locking position to its release position.

5,291,810

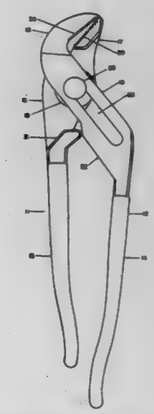
PINCH FREE GRIPPING PLIERS WITH ADJUSTABLE MULTIPLE POSITION GROOVE JOINT AND AN OVERTRAVEL STOP DEVICE

Jack Line, 1817 First Ave. South, Great Falls, Mont. 59401

Filed Jan. 19, 1993, Ser. No. 6,363

Int. Cl.[5] B25B *7/04*

U.S. Cl. 81—414 **1 Claim**



1. Pinch free gripping pliers, comprising:

a first leg including a first handle section, a first jaw section, and a first shank section joining the first handle section and jaw section;

a pivot bolt mounted to the first shank section;

a second leg including a second handle section, a second jaw section and a second shank section joining the second handle section and jaw section;

wherein the second shank section is elongated and includes an elongated slot formed therethrough, slidably receiving the pivot bolt such that the first and second legs will pivot about the pivot bolt between open and closed positions, and such that the second leg will slide relative to the first leg along the slot;

a raised arcuate rib on the first shank;

arcuate grooves spaced apart longitudinally on the second shank, and positioned thereon to slidably receive the arcuate rib and thereby set the jaws at any one of a plurality of jaw settings;

an overtravel stop on the first shank section, projecting toward the second shank section;

wherein the second shank section includes an edge surface facing the overtravel stop of the first shank section and formed at an acute angle to the slot so the distance between the edge surface and the slot increases progressively in the direction of the second handle section such

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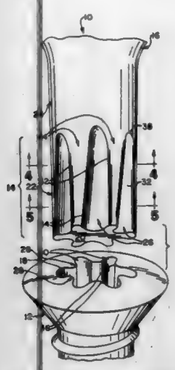
that the overtravel stop and edge surface limit pivotal motion of the handles together beyond a prescribed distance at any selected spacing jaw setting.

5,291,811

BACK-SIDE TAPER WEDGING DRIVE SYSTEM

David Goss, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed May 14, 1992, Ser. No. 883,133
Int. Cl.[5] B25B *15/00*
U.S. Cl. 81—460 **9 Claims**



1. A drive tool having an axis of elongation and a fastener engaging portion in combination with a fastener having a central fastener axis and a multilobular recess comprising complimentary lobes and flutes for receiving said fastener engaging portion; said drive tool including a multilobular fastener engaging portion for engaging said fastener, said fastener engaging portion including a plurality of lobes and flutes, adjacent lobes being separated by a flute, at least one of said lobes comprising a drive wall disposed on said engaging portion parallel to said axis of elongation for applying a torque to said fastener, and a trailing wall disposed on said engaging portion opposite said drive wall, said trailing wall being tapered relative to the axis of elongation, and said lobes and flutes being disposed on said drive tool for mating with said complementary lobes and flutes on the fastener such that said tapered trailing wall produced wedging engagement between said drive tool and said fastener while said drive wall is in full surface contact; said multilobular recess of said fastener being defined by alternating flutes and lobes, walls, of said multilobular recess being substantially parallel to said central fastener axis.

5,291,812

TURNING APPARATUS WITH IMPROVED CHIP HANDLING

David W. Yen, Rochester Hills, and John Alverio, Shelby Township, Macomb County, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 22, 1992, Ser. No. 327,188
Int. Cl.[5] B23B *27/22*
U.S. Cl. 82—134 **3 Claims**

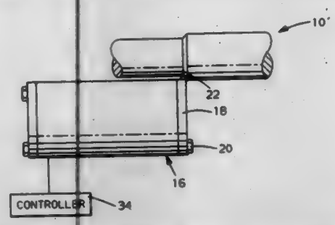
3. A turning apparatus for use in machining a workpiece that is rotated about an axis, comprising,

a tool holder movable axially relative to said rotating workpiece,

a cutter support on said tool holder adapted to withdraw and return axially relative to said tool holder in incremental fashion when an axial force is applied thereto,

a cutter rigidly fixed to said cutter support and engageable with said rotating workpiece as said tool holder moves to produce a continuous chip from said workpiece,

an impulse actuator on said tool holder operatively engaged with said cutter support and responsive to a rapid applied voltage change to expand and contract rapidly and



thereby apply an impulsive force to said cutter support of sufficient amplitude to cause said cutter to withdraw and return axially of said workpiece with an increment sufficient to break said continuously formed chip, and,

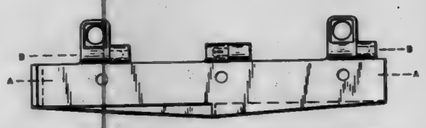
a controller for applying a rapidly changing voltage to said impulse actuator.

5,291,813

PAPER PERFORATING DEVICE

David S. Blumenthal, Natick; Richard Somersall, Sherborn, and Steven Pauplis, Paxton, all of Mass., assignors to Clix Products, Inc., Natick, Mass.

Continuation of Ser. No. 863,815, Apr. 6, 1992, abandoned. This application May 6, 1993, Ser. No. 61,427
Int. Cl.[5] B26F *1/32*
U.S. Cl. 83—599 **6 Claims**



1. A punch device for providing holes in sheet material, and comprising;

an elongated, substantially flat die plate formed of substantially rigid, hard, polymeric material and having a plurality of holes therethrough predeterminedly spaced from one another and disposed along a first linear axis;

an elongated, substantially flat punch plate also formed of substantially rigid, hard polymeric material and having a plurality of teeth projecting therefrom in said predetermined spacing and disposed along a second linear axis;

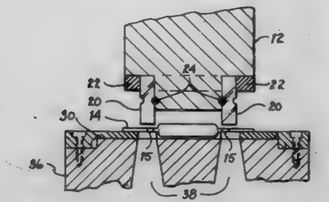
means, formed of polymeric material, for rotatably hinging said two plates together along respective edges thereof so that holes and teeth are in fixed registration with one another and so that no discernible relative axial displacement or travel of said two plates is permitted, said means comprising a plurality of elongated posts fixed to at least one of said plates, and a like plurality of corresponding tubular sockets fixed to the other of said plates, said posts and sockets being so arranged that said posts extend colinearly with one another into respective ones of said sockets and said sockets are rotatable about said posts, said means being so dimensioned and constructed that when said posts are fully extended within said sockets, said posts and sockets cannot be disengaged without seriously damaging said hinging.

5,291,814

LEAD FRAME CUTTING APPARATUS FOR INTEGRATED CIRCUIT PACKAGES

Richard H. J. Fierkens, Keurbeck 15, 6914 AE Herwen, Netherlands

Continuation of Ser. No. 814,503, Dec. 30, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 46,498
Int. Cl.[5] B26F *1/14*
U.S. Cl. 83—685 **9 Claims**



1. An improved lead frame cutting apparatus and integrated circuit package comprising, in combination:

a lead frame comprising a base portion having metal leads that extend from said base portion, and having dam bar metal interconnections adjacent said base portion and between said metal leads of said lead frame, and having an outer metal frame interconnecting all of said metal leads, and having a plurality of openings through said lead frame wherein each of said openings are defined by an adjacent pair of said leads, said outer metal frame, and a dam bar portion located between said adjacent leads, said dam bar interconnections comprising portions to be removed from said lead frame;

a semiconductor chip fixedly attached to said base portion of said lead frame and having bonding wires connecting portions of said semiconductor chip to said metal leads of said lead frame; and

means for surrounding and protecting said semiconductor chip and said base portion of said lead frame such that said metal leads of said lead frame extend to the exterior of said semiconductor chip;

cutting plate means located below said lead frame for cooperating to permit removal of said dam bar interconnections upon which said integrated circuit package is placed, having recesses that receive said portions to be removed from said lead frame; and

punching tool means having removable punch means spaced around said lead frame and aligned with said recesses in said cutting plate means for exerting a downward force on said lead frame to simultaneously cut out said portions of said lead frame for deposit into said recesses of said cutting plate means thereby removing said portions to be removed from said lead frame, said punch means comprising a single substantially rectangular shaped punch member for each dam bar interconnection, said punch member having a first end located opposite with respect to an axis perpendicular to said lead frame from a second end, said first and second ends having a planar, rectangular shaped cutting portion.

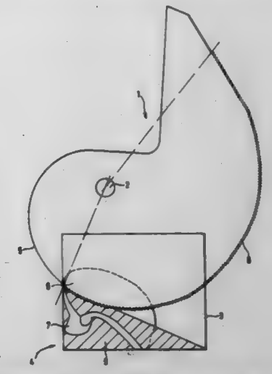
5,291,815

CUTTER

Uwe Reifenhauser, Bergstrasse 5, D-5232 Flammersfeld, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 991,987
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142937
Int. Cl.[5] B26D *1/12*
U.S. Cl. 83—837 **5 Claims**

1. In a rotary cutter for a meat portion which includes flesh and bone components, said cutter being adapted to be driven in a predetermined direction of rotation about an axis and having a spiral cutting edge surface, said surface being of an angular extent in the range of from about 150 to 360 degrees, said edge being divided into sections having variable increases in the rate of radial spacing of said edge from said axis, the improvement wherein said cutting edge includes a leading unserrated section adapted primarily to the cutting of said flesh components of



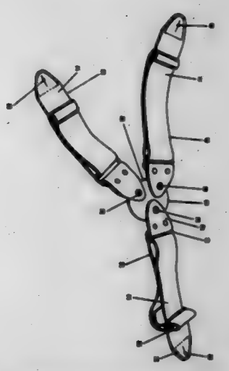
said meat portion and a trailing serrated edge section spaced further from said axis than said unserrated surface and adapted primarily to the cutting of said bone components, the rate of increase in radial spacing of said edge of said unserrated section from said axis being greater than the rate of increase in radial spacing of the edge of said serrated section from said axis, said serrated section increasing at a rate generally in accordance with a cosine function.

5,291,816

HARNESS FOR GUITAR OR LIKE INSTRUMENT

Cliff Adams, 6885 Shepard Mesa Rd., Carpinteria, Calif. 93013

Filed Jul. 9, 1993, Ser. No. 65,651
Int. Cl.[5] G10D *3/00*; G10G *5/00*
U.S. Cl. 84—327 **1 Claim**



1. A harness for positioning and stabilizing a musical stringed instrument comprising:

a discus backpiece;

a first segment having a first and second end; a first attachment means for rotationally attaching said first end of said first segment to said backpiece; a first anchoring means for

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anchoring said second end of said first segment to said instrument;

a second segment having a first and second end; a second attachment means for rotationally attaching said first end of said second segment to said backpiece; a second anchoring means for anchoring said second end of said second segment to said instrument;

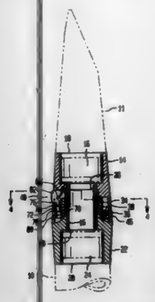
a third segment having a first and a second end; a third attachment means for rotationally attaching said first end of said third segment to said backpiece; a third anchoring means for anchoring said second end of said third segment to said instrument.

5,291,817

ADJUSTABLE BARREL TUNING APPARATUS FOR USE WITH A WOODWIND MUSICAL INSTRUMENT

Gary Smith, 256 W. 5th Ave., Collegeville, Pa. 19426, assignor to Mobile Music, Inc., Horsham; Gary Smith, Collegeville and Joseph Stefano, Oreland, all of Pa.

Filed Jan. 12, 1993, Ser. No. 3,346
Int. Cl.[5] G10D *9/00*
U.S. Cl. 84—386 **19 Claims**



1. An adjustable barrel tuning apparatus for use with a woodwind musical instrument comprising:

A. a first tubular member defining a first bore extending longitudinally and axially therethrough, said first tubular member defining a first bore upper end and a first bore lower end thereon;

B. a second tubular member defining a second bore extending longitudinally and axially therethrough, said second tubular member being in movable engagement with said first tubular member to be telescopingly slidable with respect thereto, said first bore and said second bore being oriented with the longitudinally extending axes thereof being coincident, said second tubular member defining a second bore upper end and a second bore lower end thereon;

C. a primary gear rack fixedly secured to said second tubular member and extending longitudinally therealong;

D. an adjustment wheel rotatably mounted on said first tubular member, said adjustment wheel including a gear fixedly secured thereto and positioned in engagement with said primary gear rack, said adjustment wheel being responsive to rotational movement thereof to urge telescoping movement of said first tubular member axially and longitudinally with respect to said second tubular member to provide adjustability in tuning for a woodwind musical instrument by varying the spatial relationship between said first bore upper end and said second bore lower end;

E. a locking means positioned between said first tubular member and said second tubular member and adapted to detachably secure said first tubular member to said second tubular member to restrict relative movement therebetween;

F. a first longitudinal orientation device fixedly attached to said first tubular member, said first longitudinal orientation device including at least one key member extending longitudinally along said first tubular member; and

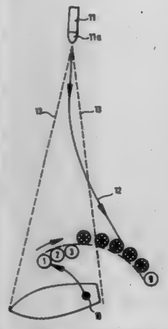
G. a second longitudinal orientation device fixedly attached to said second tubular member and in engagement with said first longitudinal orientation device to restrict relative rotational movement between said first tubular member and said second tubular member, said second longitudinal orientation device including at least one key slot extending longitudinally along said second tubular member, said key member and said key slot being engageable to one another to restrict relative rotational movement of said first tubular member with respect to said second tubular member.

5,291,818

PROCESS FOR DEFENDING OBJECTS EMITTING AN INFRARED RADIATION, AND DROPPABLE BODIES TO CARRY OUT THE PROCESS

Heinz Bannasch, Schönau am Königsee, Fed. Rep. of Germany, assignor to Buck Werke GmbH & Co., Uberkingen, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,856
Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115384
Int. Cl.[5] F41H *11/02*
U.S. Cl. 89—1.11 **7 Claims**



1. Process to defend objects emitting an infrared radiation against missiles, which are equipped with scanning, imaging, correlating or spectral filtering infrared seeker heads, comprising the following process steps to be carried out by the object to be defended:

a) locating the missile; and determining the missile speed, the missile flight direction and the missile momentary distance from the object;

b) releasing in a short period of time high infrared radiation near the object at least one large area and homogeneous pyrotechnical perturbing radiation cloud, which prevents the reception of the characteristic infrared signature of the object by means of the seeker head and hashes its locking on and pursuit electronics, and subsequently releasing for a comparatively long period a weak, transmission-reducing infrared radiation that simulates background radiation between said object and the missile;

c) starting immediately after termination of the high radiation phase of the perturbing radiation cloud, but at least still during its weak radiation phase, several successive large area and homogeneous pyrotechnical infrared fake target clouds that resemble the infrared signature of the object are produced, at least the fake target clouds being produced on a partial circle, whose center point is on the object to be defended, and starting from a point in the vicinity of the perturbing radiation cloud, side by side continuously in such a manner that they lead the seeker

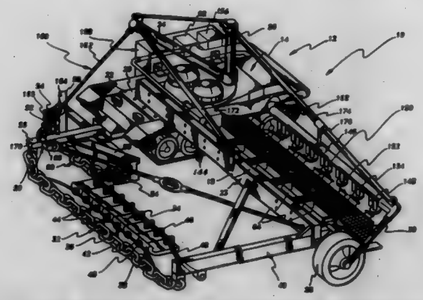
head and thus the missile step by step substantially diagonally to the approach direction away from the object.

5,291,819

BATTLEFIELD DEBRIS CLEARING APPARATUS

Harry N. Hambric, 5350 Wade La., Woodbridge, Va. 22192

Filed Sep. 29, 1992, Ser. No. 953,111
Int. Cl.[5] F41H *11/16*; E02F *3/76*
U.S. Cl. 89—1.13 **19 Claims**



1. A battlefield debris clearing apparatus for attachment to a vehicle, comprising:

a horizontal beam having a planar mounting bracket joined to one of its ends for rigid, lateral attachment to a vehicle; and

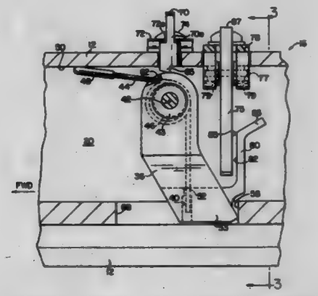
a basket pivotably attached to said beam, said basket comprises an assembly of planar panels of open lattice construction arranged so as to form a container for the selective retention of debris having a size greater than that of the lattice opening.

5,291,820

INERTIAL RESTRAINT MECHANISM FOR RAIL-MOUNTED MISSILES

Barton J. Hainsworth, Huntington, and Anton J. Kompare, Hamden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 10, 1992, Ser. No. 988,612
Int. Cl.[5] F41F *3/06*
U.S. Cl. 89—1.806 **9 Claims**



1. A restraint mechanism for restraining a rail mounted missile against forward movement along a missile launch rail in response to a deceleration force, the missile being supported on the rail by a plurality of missile shoes, said restraint mechanism comprising:

a moveable mass operable between a disengaged position and a missile restraining position wherein said missile is restrained against forward movement;

means for exerting a force which opposes movement of said mass; and

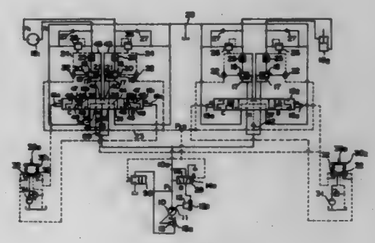
said mass being responsive to a deceleration force in excess of a threshold magnitude for overcoming said spring force and operating from said disengaged position to said missile restraining position.

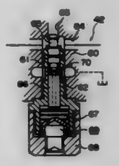
5,291,821

HYDRAULIC CIRCUIT FOR SWIVEL WORKING MACHINE

Kohji Yamashita, Yokahama; Teruo Akiyama, Fujisawa; Tadao Karakama, Mazashino, and Naoki Isizaki, Kamakura, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP92/00742, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/22712, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 969,161
Claims priority, application Japan, Jun. 12, 1991, 3-166230
Int. Cl.[5] F15B *11/16*
U.S. Cl. 91—447 **24 Claims**





1. A hydraulic circuit for a swivel working machine of the type in which a delivery conduit of a hydraulic pump is connected to a swiveling hydraulic motor and a working unit cylinder by way of first and second operating valves, respectively, and in which pressure compensating valves are provided between the first operating valve and the swiveling hydraulic motor and between the second operating valve and the working unit cylinder, the respective load pressures of the swiveling hydraulic motor and the working unit cylinder being introduced into a load pressure introducing conduit by way of check valves to set the pressure compensating valves by the load pressure of the load pressure introducing conduit, and with means for applying a closing pressure to the check valve for detecting the load pressure of the swiveling hydraulic motor, to close the check valve for detecting the load pressure of the swiveling hydraulic motor when the working unit cylinder is operated by the second operating valve.

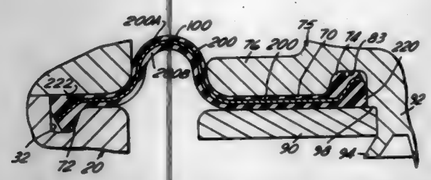
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5,291,822

DIAPHRAGM FOR PRESSURE REGULATORS AND METHOD OF MAKING

Daniel E. Alsobrooks; Steven P. Finkbeiner, both of Bay city, and Daryl O. Codling, Cass City, all of Mich., assignors to Orbital Walbro Corporation, Cass City, Mich.

Filed Nov. 16, 1992, Ser. No. 977,128
Int. Cl.[5] F01B *19/00*
U.S. Cl. 92—93 **2 Claims**



1. In a diaphragm assembly that comprises a flexible diaphragm having a central opening bounded by a circumferentially continuous annular rib, first means disposed on one side of said diaphragm having a channel in which said rib is disposed and second means opposed to said first means clamping said diaphragm therebetween, said first and second means forming fluid valve means spanning said central opening of said diaphragm, said diaphragm having a fabric core surrounded by flexible fluid-impervious material with said fabric core having a circular edge that is exposed through said material at said opening, the improvement to reduce wicking of fluid into said fabric core exposed at said circular edge around said opening in which said central opening is defined in part by a conical wall surface terminating at an axial surface of said diaphragm rib within said channel, said fabric core being exposed within said conical wall surface at a diameter greater than minimum diameter of said opening, said diaphragm at said minimum diameter of said opening being in sealing engagement with an opposed surface of said channel in said first means, said conical wall surface functioning in assembly with said first and second means to space said fabric edge from channel surface and thereby preventing wicking by direct contact of said fabric core with fluid on said channel surface.

5,291,823

PRESSING DEVICE FOR WINDING MACHINES FOR PRODUCING TUBULAR PACKS OF PRINTED PRODUCTS

Jan W. Krampe, Hinwil, Netherlands, assignor to Ferag AG, Hinwil, Switzerland

Filed May 13, 1992, Ser. No. 882,153
Claims priority, application Switzerland, May 14, 1991, 01454/91
Int. Cl.[5] B30B *9/00*
U.S. Cl. 100—76 **7 Claims**

1. An apparatus for fabricating tubular packages of printed products comprising the combination of

a frame;

a winding core (1) rotatably mounted on said frame in a fixed location and having a central axis;

two flexible endless belts;

means for supporting and guiding said belts for contact with the periphery of said core and products wound thereon;

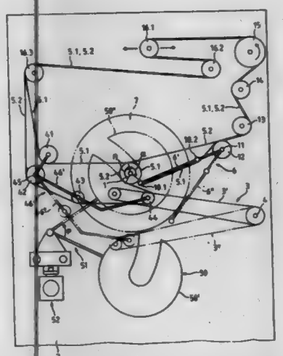
a belt conveyor (3) for delivering an imbricated stream of printed products to said core between said core and one of said belts for winding said products around said core to produce a package;

means for pivotably mounting said belt conveyor at a location remote from said core so that an end adjacent said core is movable to adapt to an increasing diameter of the package of products being wound on said core and so that said end adjacent is movable away from said core upon completion of a package;

said means for supporting and guiding said belts including

a plurality of belt guiding rolls for guiding said belts in a predetermined sequence,

pivotable support lever means for rotatably and transmutably mounting selected rolls of said plurality of rolls so that positions of said selected rolls are movable to adapt positions thereof to a changing diameter of a package being formed, and



means for compensating lengths of portions of said belts in contact with a package being formed to said changing diameter;

release means actuatable upon completion of a package for displacing said selected rolls and changing the belt guiding sequence and for fully withdrawing said belts from said core and products wound thereon; and

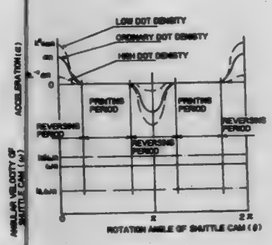
an ejector movable axially relative to said core for removing a completed tubular package form said winding core.

5,291,824

DOT LINE PRINTER HAVING ORDINARY LOW DOT AND HIGH DOT DENSITY PRINTING MODES

Yoshikane Matsumoto; Hiroto Inagawa; Shingo Nakahara, and Youichi Hujita, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo,

Filed Sep. 5, 1991, Ser. No. 755,371
Claims priority, application Japan, Sep. 7, 1990, 2-238193; Nov. 30, 1990, 2-337670; Jun. 11, 1991, 3-138097
Int. Cl.[5] B41J *3/00*
U.S. Cl. 101—93.04 **6 Claims**



1. A dot line printer for printing dot images on a printing sheet comprising:

a hammer bank comprising a plurality of print hammers arrayed in a shuttling direction, the hammer bank being reciprocally movable in the shuttling direction;

means for moving the printing sheet in a line to line direction;

a shuttling mechanism for moving the hammer bank in the shuttling direction, the shuttling mechanism comprising a shuttle motor and a cam mechanism drivingly connected to the hammer bank and having a shuttle cam driven by the shuttle motor, said shuttling mechanism moving the hammer bank through a printing region where the print hammers move toward the printing sheet for printing and a reversing region where the moving direction of the hammer bank is reversed and the print sheet is fed in the line to line direction, the hammer bank and the shuttling mechanism providing a first dot density printing mode having a first dot density and a second dot density printing mode having a second dot density less than the first dot density, wherein the shuttle motor rotates in the printing region at a first angular velocity in the first dot density printing mode and in the second dot density printing mode the hammer bank has a moving velocity greater than in the first dot density printing mode and the shuttle motor rotates in the printing region at a second angular velocity which is greater than the first angular velocity,

wherein the shuttling cam has cam profile means for providing a predetermined reversing period for reversing the hammer bank when the shuttle motor is rotated at a predetermined third angular velocity which is in the range between the first and second angular velocities, and

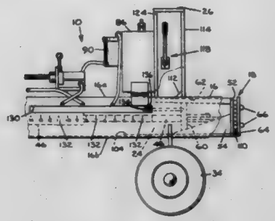
wherein the shuttle motor accelerates and decelerates the hammer bank for providing the predetermined reversing period during a reversing operation in both the first and second dot density printing modes.

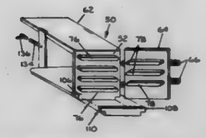
5,291,825

COMPACTING DEVICE INCLUDING BALE SIZE INDICATOR AND COMPACTING PROTRUSIONS

Carl O. Dietrich, 469 Portman Rd., Butler, Pa. 16001

Continuation-in-part of Ser. No. 959,544, Oct. 13, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 87,338
Int. Cl.[5] B30B *9/00, 15/00*
U.S. Cl. 100—98 R **14 Claims**





1. A compacting device disposed on a level surface for crushing material and compacting material into bales, comprising:

an elongated, square-shaped housing defined by a flat top member, an opposed floor, and a pair of vertically-depending sidewalls for enclosing a chamber which extends therethrough and into which material is deposited, the housing and the chamber extending generally horizontal to the level surface;

a reciprocable plunger for selective linear extension and retraction within the chamber, the extension and retraction occurring in a generally horizontal direction with respect to the level surface;

a plunger face mounted to the plunger for crushing and deforming material deposited within the chamber;

an exit chamber door attached to the housing for selectively closing the chamber and engaging material as a result of plunger extension forcing material against the door;

a wear plate mounted to the bottom of the plunger face and which rides upon the floor of the housing during plunger extension and retraction;

a pair of elongated, oppositely-disposed wear bars mounted to the floor and adjacent each respective sidewall of the housing and upon which the wear plate rides during retraction and extension of the plunger;

the housing having an elongated slot formed on one vertically-depending sidewall thereof adjacent the linear path of the plunger;

a plurality of measuring indicia arranged in a row and affixed to one of the vertically-depending sidewalls below the slot for indicating the amount of material baled during a baling operation; and

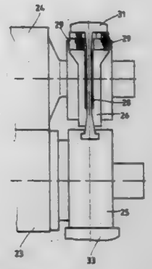
indicator means aligned with and projecting through the slot above the indicia and moving concomitant with the retraction and extension of the plunger for indicating the amount of material baled during a baling operation.

5,291,826

TENSION BARS FOR ROLL PRESS FOR PAPER MAKING MACHINE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP92/00672, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992
PCT Filed Mar. 26, 1992, Ser. No. 946,325
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110205
Int. Cl.[5] B30B *3/04*
U.S. Cl. 100—168 **34 Claims**



1. A roll press comprising:

a first press roll having a first axis and a periphery; the first press roll having an individual first end at each of its opposite ends; one of said first ends being axially spaced in a first direction from another of said first ends;

a second press roll having a second axis and a periphery; the second press roll having an individual second end at each of its opposite ends; one of said second ends being axially spaced in said first direction from another of said second ends;

the first and the second rolls being oriented so that the first and second axes define a press plane and so that the roll peripheries cooperate to form a press nip;

a pressing device adapted to load and unload the roll press;

a first bearing pedestal located at and supporting said one of the first ends of the first press roll;

a second bearing pedestal located at and supporting said one of the second ends of the second press roll; the second

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pedestal being movable relative to the first pedestal in the press plane;

at least one tension bar extending between the first and the second bearing pedestals and extending substantially parallel to the press plane and perpendicular to the first and second press roll axes; the tension bar having little tension when the roll press is in an unloaded condition; the tension bar being deformable for enabling relative movement of the first and second pedestals parallel to the press plane when the roll press is in a loaded condition.

5,291,827

PROCESS AND APPARATUS FOR THE ULTRASONIC CLEANING OF A PRINTING CYLINDER

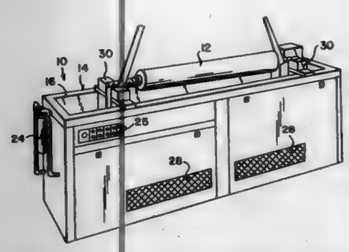
Arthur H. Liers, Smithtown; Louis J. Principe, Deer Park, and James Lagonigro, North Massapequa, all of N.Y., assignors to Sonicor Instrument Corporation, Copiague, N.Y.

Continuation-in-part of Ser. No. 781,699, Oct. 19, 1991, Pat. No. 5,240,506, which is a continuation of Ser. No. 328,953, Mar. 19, 1989, Pat. No. 5,058,611. This application Feb. 14, 1992, Ser. No. 835,777

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] B41F *35/00*

U.S. Cl. 101—424 **16 Claims**



1. An apparatus for cleaning a printing cylinder with a cleaning liquid using ultrasonic waves, said printing cylinder having an outer face comprising:

a cleaning tank capable of containing therein the printing cylinder to be cleaned, and for receiving the cleaning liquid into which the printing cylinder is immersed during cleaning;

means for heating the cleaning liquid to be contained within said cleaning tank when the printing cylinder is being cleaned;

means for generating the ultrasonic waves;

means for maintaining a desired distance between said ultrasonic generating means and the outer face of the cylinder, said maintaining means including means for positioning the printing cylinder within said tank including adjusting means for raising and lowering said positioning means and the printing cylinder so that said means for generating is maintained at a distance of, at least, approximately three inches from the outer face of the printing cylinder to be cleaned;

non-magnetic means for rotating the printing cylinder within the cleaning liquid, within said cleaning tank, during cleaning;

said means for rotating the printing cylinder rotates the printing cylinder at a velocity of between 1–4 rpm.

5,291,828

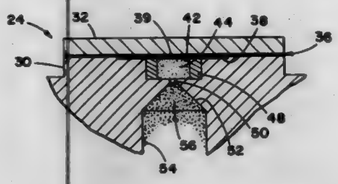
INSENSITIVE PROPELLANT IGNITOR

Eldon Nerheim, Edina; Peter R. Kalkbrenner, Eden Prairie, and Todd P. Goblish, Maple Grove, all of Minn., assignors to Alliant Techsystems, Inc., Edina, Minn.

Continuation of Ser. No. 745,936, Aug. 16, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 970,993

Int. Cl.[5] F42C *19/12*

U.S. Cl. 102—202 **9 Claims**



1. An explosively insensitive ignitor for igniting propellant in a propellant chamber, comprising:

an insensitive explosive material;

a slapper type detonator for initiating by shock the insensitive explosive material;

means for containing and dispersing a shockwave resulting from detonation of the insensitive explosive material such that the propellant is retained in the propellant chamber while the shockwave passes through the containing and dispersing means; and,

means for controlling the release of hot gases and particles resulting from detonation of the insensitive explosive material and directing the hot gases and particles to the propellant such that the propellant is ignited after the shockwave has ceased.

5,291,829

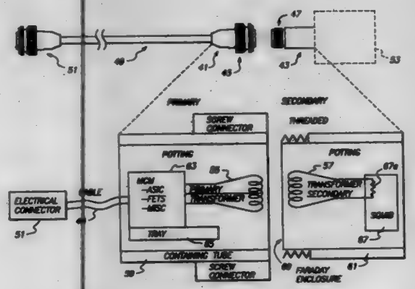
RADIO FREQUENCY ATTENUATING CONNECTOR

Mark Avory, Palo Alto; William D. Fahey, Cupertino; Theodore J. Netoff, Milpitas, and Pierre R. Irissou, Sunnyvale, all of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.

Filed Oct. 29, 1992, Ser. No. 968,358

Int. Cl.[5] F42B *3/18*

U.S. Cl. 102—202.2 **12 Claims**



1. A radio frequency attenuating connector, comprising:

a secondary coil connected to a load;

an electromagnetic shield enclosing said secondary coil and said load;

a primary coil;

means for detachably coupling said primary coil and said secondary coil;

an integrated circuit including a square wave oscillator producing complementary output signals;

power driver means responsive to said complementary output signals; and

first switching means responsive to said power driver means for causing a current to flow in one direction through at least a portion of said primary coil during a first half cycle of oscillation and second switching means responsive to said power driving means for causing a current to flow in an opposite direction through at least a portion of said primary coil during a second half cycle of oscillation.

5,291,830

DUAL-MODE SEMI-PASSIVE NOSETIP FOR A HYPERSONIC WEAPON

Allen D. Zwan, San Diego, Calif., assignor to Lockheed Corporation, Fort Worth, Tex.

Filed Oct. 30, 1992, Ser. No. 969,611

Int. Cl.[5] B64G *1/22;* **F42B** *10/00*

U.S. Cl. 102—293 **6 Claims**



1. A dual mode semi-passive nosetip for a hypersonic weapon comprising;

an elongated nosetip having a front end, a rear end and a predetermined length;

said nosetip being formed of a shell that is substantially cone-shaped with its width decreasing from its rear end to its front end, said front end having an outer surface and an inner surface and a stagnation region adjacent said inner surface;

a cone-shaped capsule having a front end and a rear end closed by a rear wall having an inner surface, said capsule being formed of a hollow shell whose interior forms a primary storage chamber;

sublimating material in a solid state is received in said primary storage chamber;

said capsule being smaller in length and width than the shell of said nosetip and it is positioned within said nosetip with a predetermined spacing between them that forms a discharge chamber for said sublimating material after it has been heated from a solid state into a vapor; and

means for directing an impinging stream of said sublimation material against the inner surface of the shell of said nosetip adjacent said stagnation region when said sublimating material is heated from a solid state to a vapor state thereby cooling the temperature of the front end of the nosetip.

5,291,831

BENEFICIAL USE OF CLASS 1.1 ROCKET PROPELLANT

Patrick L. Carney, 1080 Nowata, Dubuque, Iowa 52202, and Robert W. Perry, 16785 Gallop Dr., Morgan Hill, Calif. 95037

Filed Mar. 30, 1993, Ser. No. 38,773

Int. Cl.[5] F42B *3/00;* **C06C** *5/04*

U.S. Cl. 102—318 **20 Claims**

1. A method for detonating an explosive charge comprising a detonator formed of a cap and a booster, and an explosive charge wherein the detonator is positioned in close proximity to the explosive charge such that upon ignition of the detonator the energy is sufficient to cause the explosive to detonate, the improvement comprising a booster formed of 1.1 solid rocket propellant material.

5,291,832

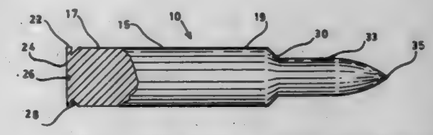
DUMMY ROUND

Magalene M. Plummer, 1008 Lovell View Dr., Knoxville, Tenn. 37922

Filed Jul. 17, 1992, Ser. No. 916,196

Int. Cl.[5] F42B *8/08*

U.S. Cl. 102—444 **8 Claims**



1. A dummy round for use in a firearm during firearms training, the firearm firing a given caliber of live ammunition, a round of the live ammunition having a separate casing and bullet, the casing and bullet each having a particular weight, the firearm having a chamber, a loading mechanism, for loading the live ammunition in the chamber and an ejector mechanism, for ejecting the casing from the chamber when the live round of ammunition of the give caliber has been fired in the firearm, said dummy round comprising:

a casing portion being fabricated from a substantially rigid material of a weight such that said casing portion is comparable in weight to the casing of the live round of ammunition used in the firearm, said casing portion having a rearward portion and a forward portion, said casing portion having a configuration conforming to the casing of the live round of ammunition, said rearward portion having a rearward face, said rearward face defining a firing pin receiver centrally disposed in said rearward face of said rearward portion of said casing portion, said firing pin receiver defining an opening for receiving a firing pin of the firearm, said firing pin receiver receiving the firing pin of the firearm such that the firing pin does not contact said rearward portion of said casing portion;

a bullet portion being fabricated from a substantially rigid material of a weight such that said bullet portion is comparable in weight to the bullet of the live round of ammunition used in the firearm, said bullet portion carried by said forward portion of said casing portion, said bullet portion and said casing portion having a one-piece construction whereby said bullet portion and said casing portion are permanently affixed together, said bullet portion having a configuration conforming to the bullet of the live round of ammunition;

a button carried by said rearward portion of said casing portion, said button being engageable by the ejector mechanism for facilitating ejection of said dummy round from the chamber, whereby said dummy round can be quickly removed from the chamber and replaced with a live round ammunition; and

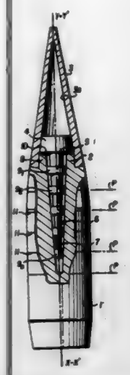
an annular recess disposed between said button and said rearward portion of said casing portion, said annular recess further facilitating engagement of the ejector mechanism with said button.

5,291,833

ARMOR-PIERCING FRAGMENTATION SUBCALIBER PROJECTILE

Roland Boual, Saint-Germain-du-Puy, France, assignor to Giat Industries, Versailles Cedex, France

PCT No. PCT/FR92/00154, § 371 Date Oct. 30, 1992, § 102(e) Date Oct. 30, 1992, PCT Pub. No. WO92/14984, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 17, 1992, Ser. No. 940,871
Claims priority, application France, Feb. 26, 1991, 91 02248
Int. Cl.[5] F42B *12/06*
U.S. Cl. 102—506 11 Claims



1. A perforating fragmentation non-explosive charge containing subcaliber projectile having a body made of a dense material, a head adjacent a front part of the body, and a transmission element for transmitting axial thrust interposed between the body and the head, wherein

the body comprises a block of dense material and a frustoconical axial bore, an open end of the axial bore being aligned with a front face of the front part of the body, the body having at least one area of less resistance established transversely to the longitudinal axis of the body,

the transmission element comprises a tail extending axially from a rear face of the head into the axial bore and having at least one frustoconical support engaging the axial bore of the body so as to leave a space between the rear face of the head and the front face, said at least one frustoconical support being located substantially in a transverse plane of the at least one area of less resistance, and

the body and the head are immobilized by the at least one frustoconical support of the tail engaging the bore, whereby upon impact, a relative axial displacement of the body due to said space causes said at least one frustoconical support to exert a radial force on the body thereby causing multiple fragmentation of the body.

5,291,834

RAIL FOR MAGNETIC LEVITATION VEHICLE

Hans-Rainer Quass, Gröbenzell, Fed. Rep. of Germany, assignor to Magnetbahn GmbH, Starnberg, Fed. Rep. of Germany

Continuation of Ser. No. 689,267, May 22, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 86,380
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1989, 3931794; Oct. 24, 1989, 3935323
Int. Cl.[5] E01B *25/10*
U.S. Cl. 104—281 15 Claims

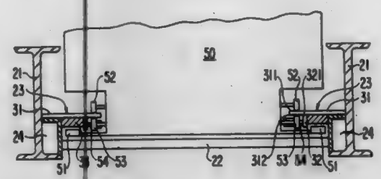
1. A rail for a magnetic levitation vehicle, comprising:

a railhead with an inner end section, a free end section, and an underside;

a long stator fastened to the underside of said railhead for generating, in cooperation with permanent magnets in the vehicle, supporting and driving forces for the vehicle; and

two oppositely disposed horizontal running surfaces for pairs of spacer rollers on the vehicle; and

a lateral guide profile fastened to the underside of said rail-



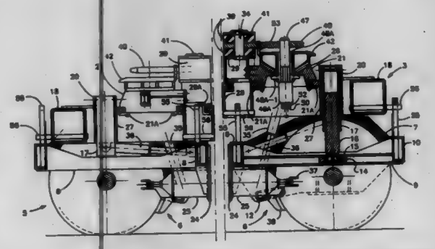
head, wherein said railhead consists of a rectangular steel plate and the free end section of said railhead presents oppositely disposed, horizontal running surfaces for pairs of spacer rollers on the vehicle and said lateral guide profile presents a vertical running surface for lateral guide rollers on the vehicle.

5,291,835

RETRACTABLE INTERMODAL VEHICLE

Harry O. Wicks, El Paso, Tex., assignor to RailRunner Systems, Inc., Griffin, Ga.

Filed Mar. 25, 1993, Ser. No. 37,040
Int. Cl.[5] B61F *3/12*
U.S. Cl. 105—4.2 20 Claims



17. An improved train of highway trailers including leading and trailing trailers interconnectable to each other and which are supported by intermodal vehicles when connected to each other, each of said highway trailers including a main frame and one or more highway wheel assemblies, and each of said intermodal vehicles being provided with forward and rearward projecting coupler tongues which are arranged to enter coupler tongue sockets at the adjoining ends of said highway trailers and effect a coupling between the intermodal vehicle and the trailer surmounting it, and in which each intermodal vehicle has two single axle rail wheel assemblies each mounted in its own steerable frame and means for transmitting steering forces from said frames to the trailers surmounting said vehicles.

5,291,836

SPACER ASSEMBLY

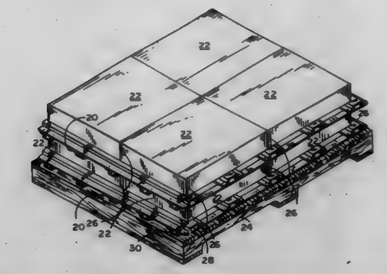
John W. Beamer, Grand Haven, Mich., assignor to Lorin Industries, Inc., Muskegon, Mich.

Continuation-in-part of Ser. No. 757,645, Sep. 11, 1991, Pat. No. 5,211,117. This application Jun. 23, 1992, Ser. No. 902,874
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.1 23 Claims

1. A spacer for supporting packages, comprising:

a plurality of first elongate members extending in a first direction;

a plurality of second elongate members extending in a direction substantially normal to said first direction, said first and second elongate members engaging one another at a plurality of intersections, said first and second elongate members defining a pair of spaced parallel support surfaces for supporting packages placed thereagainst and forming multiple interconnected passageways therebetween for communicating conditioned air therethrough, said first and second elongate members having a structural strength permitting layers of said packages to be alternatingly stacked with said spacers to form a multi-layered arrangement to facilitate cooling, stacking, transporting and handling of said packages;



joining means for interconnecting said first and second elongate members at several of said intersections so as to form a rigid unit, said joining means including adhesive placed at a plurality of said intersections and cured to securely bond said elongate members together;

said first and second elongate members being channels made from sheet metal; and

said joining means including a first section of material from one of said plurality of first elongate members which is pressed through a second section on one of said plurality of second elongate members, said sections being clinched together to form a secure interconnection therebetween, which clinched sections both temporarily hold said intersections together until said adhesive cures, and also add to the ultimate strength of the intersection.

5,291,837

PORTABLE SHIPPING PLATFORM FOR USE WITH SLIPSHEET HANDLING EQUIPMENT AND FORK LIFTS

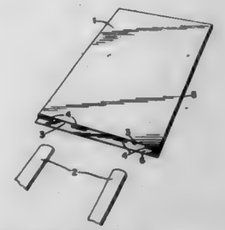
Stephen C. Adams, Jr., 14605 SE. 45th St., Bellevue, Wash. 98006

Continuation of Ser. No. 845,204, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 541,955, Jun. 22, 1990, Pat. No. 5,111,754. This application Feb. 4, 1993, Ser. No. 13,550
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 9 Claims

1. A portable shipping platform adapted for handling by forks and slipsheet handling types of devices and comprising:

upper and lower thin, flat, flexible planar support sheets and spacers separating said support sheets, said spacers being spaced apart laterally so as to define channels into which blades of a fork lift are insertable; and

an entry porch protruding outwardly from at least one edge of said lower support sheet beyond a corresponding edge of said upper support sheet and positionable at a raised angle of about 20° to 60° relative to the plane of said lower support sheet in order to provide a means for gripping said platform by a slipsheet gripping device:



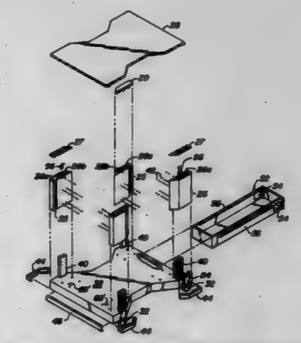
whereby said platform is interchangeably handleable by fork lift and slipsheet handling devices.

5,291,838

PACKAGING SYSTEM

Joerg U. Ferchau, Morgan Hill; Robert E. Smith, Woodwise; Hoa Pham, San Jose; Victor Trujillo, Fremont; Randall J. Diaz, Gilroy, and Josonando Joson, Fremont, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Oct. 10, 1991, Ser. No. 775,634
Int. Cl.[5] A47B *47/00*
U.S. Cl. 108—180 12 Claims



1. A packaging system for a plurality of self-contained electronic units, each of the plurality of electronic units having substantially identical footprint dimensions and having cabling emanating therefrom, first ones of the plurality of the electronic units having a first vertical dimension, second ones of the electronic units having a second vertical dimension, the packaging system comprising:

a base member, including a generally horizontal base support surface, for supporting on the base support surface a one of the plurality of electronic units, and a plurality of upright elements;

a plurality of shelf members, of substantially the same size and shape, each of the plurality of shelf members including a shelf support surface, for supporting a corresponding one of the electronic units, a number of downward vertical elements and, for each downward vertical element, an upward vertical element; and

a plurality of supporting sleeve members, each of the plurality of sleeve members being formed and configured to removable receive and connect corresponding ones of the upright elements of the base member and the downward vertical elements of a one of the shelf members and corresponding ones of the upward vertical elements and the downward vertical elements;

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whereby a number of the shelf members is supported by a number of the sleeve members above the base member in registered relation above the base member; and

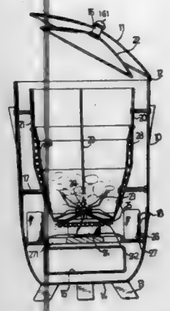
predetermined ones of the supporting sleeve members being vertically aligned, each of the predetermined supporting sleeve members having formed therein a cable-receiving channel, the cable-receiving channels of the predetermined ones of the supporting members being linearly aligned to form a cableway for receiving the cabling emanating from the electronic units.

5,291,839

COMBUSTION APPARATUS FOR TREATING WASTES

Ming Y. Wong, No. 3, Lane 59, Hsin Chien Rd., Tainan, Taiwan

Filed Aug. 11, 1992, Ser. No. 928,257
Int. Cl.[5] F23G *5/02*
U.S. Cl. 110—222 **5 Claims**



1. A combustion apparatus for treating wastes comprising:

a body;

a barrel disposed in the body for accommodating said wastes;

heating means disposed in said barrel for combusting said wastes;

a motor which is disposed in said body and comprises a spindle and a rotatable blade fixed on said spindle for comminuting said wastes when said motor is energized; and

a cap which is disposed above said motor for shielding said motor and comprises a plurality of fins depended therefrom.

5,291,840

INCINERATOR SYSTEMS

Shigeharu Nakao, Chitose, Japan, assignor to Nakso Co., Ltd., Japan

Filed Oct. 27, 1992, Ser. No. 966,760
Claims priority, application Japan, Oct. 28, 1991, 3-096662[U]
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—235 **8 Claims**

1. An incinerator system comprising:

a first furnace including a first hollow cylindrical body having an upper end and a lower end;

an ash receiver disposed in the lower end of said first hollow cylindrical body;

a roaster positioned above said ash receiver;

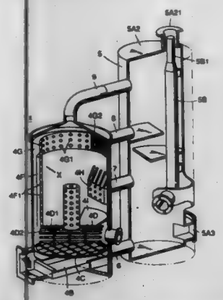
a flame diffuser positioned above and across said roaster, said flame diffuser including a first end and a second end;

a first burner connected to said first end of said flame diffuser;

a second furnace including a second hollow cylindrical body having an upper end and a lower end with an opening formed in said upper end including connector means for connection to a flue;

an air feed pipe disposed within said second hollow cylindrical body having an upper end positioned within said connector means and a bottom end attached to a blower means;

a second burner attached to said second hollow cylindrical body and in communication with the interior thereof; and,



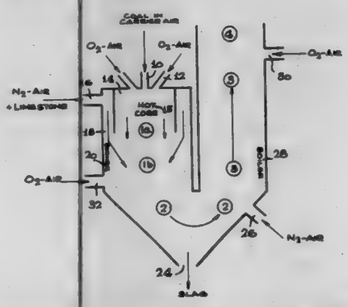
a plurality of fume guide pipes connecting the interiors of said first and second hollow cylindrical bodies and spaced from bottom to top between said first and second hollow cylindrical bodies.

5,291,841

COAL COMBUSTION PROCESS FOR SO_x AND NO_x CONTROL

Owen W. Dykema, 23429 Welby Way, West Hills, Calif. 91307

Filed Mar. 8, 1993, Ser. No. 27,467
Int. Cl.[5] F23D *1/00*
U.S. Cl. 110—347 **22 Claims**



1. A process for combustion of coal to maximize combustion efficiency while minimizing emissions of the air pollutants SO_x and NO_x, which comprises

introducing pulverized coal and a first oxygen-rich air into a first combustion zone (1*a*) in a first stage of combustion to form a mixture therein, and subjecting said mixture to combustion in said first combustion zone,

introducing a pulverized solid basic compound capable of reaction with sulfur generated from the coal and a first nitrogen-rich air into the products of combustion from said first combustion zone in a second combustion zone (1*b*) in said first stage of combustion, to form a mixture therein, and reacting said mixture in said second combustion zone, and forming solid sulfur-bearing compounds,

introducing a second oxygen-rich air into the products of combustion from said first combustion stage in a second stage of combustion (2) to form a mixture therein, and reacting said mixture in said second stage of combustion, to substantially burn out remaining hydrocarbons and to form molten slag, and encapsulating the sulfur-bearing compounds therein, and removing a major portion of said molten slag and said sulfur-bearing compounds from the combustion gas stream, and cooling the combustion gases,

introducing a second nitrogen-rich air into the products of combustion from said second combustion stage in a third stage of combustion (3), and reacting said mixture in said third stage of combustion and cooling the combustion gases, and

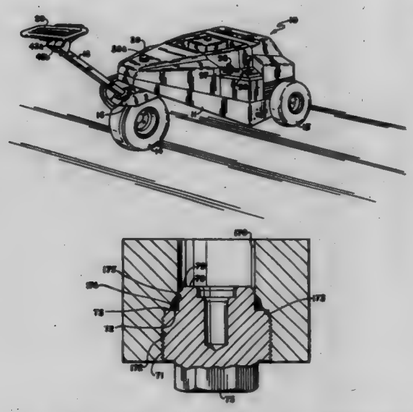
introducing a third oxygen-rich air into the products of combustion from said third combustion stage in a fourth stage of combustion (4) and completing combustion and cooling said mixture in said fourth stage of combustion.

5,291,842

HIGH PRESSURE LIQUID CONTAINMENT JOINT FOR HYDRAULIC AERATOR

Steven A. Sallstrom, Minnetonka; Gary R. Lamunga, Prior Lake, and Charles C. Holley, Bloomington, all of Minn., assignors to The Toro Company, Bloomington, Minn.

Continuation of Ser. No. 723,882, Jul. 1, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,350
Int. Cl.[5] A01C *23/02*
U.S. Cl. 111—127 **2 Claims**



1. In an apparatus for injecting high pressure liquid into the turf comprising a frame, means for propelling said apparatus, a plurality of fluid nozzles, means for pressurizing liquid to between about 2300 and 6500 pounds per square inch, means for providing a source of liquid to said pressurizing means, and means for controlling flow of the liquid from said pressurizing means to said nozzles at a pressure sufficient to cause the liquid to penetrate the turf, a high pressure liquid containment joint comprising:

(a) a polyurethane O-ring;

(b) a cylindrical plug comprising:

(i) a first end and a second end;

(ii) external threads located between said first and second ends;

(iii) means for accepting said polyurethane O-ring wherein said accepting means comprises a planar shoulder on said plug located between said external threads and said second end; and

(iv) means connected with said first end for accepting rotational force; and

(c) a high pressure liquid containment vessel in fluid communication with said presurizing means suitable for containing high pressure liquid wherein the vessel comprises means for accepting said cylindrical plug, said plug accepting means comprising:

(i) internal threads for engaging said external threads; and

(ii) means for contacting said polyurethane O-ring comprising a smooth, tapered surface wherein said O-ring slides along said surface when said external threads engage said internal threads whereby said O-ring is not significantly damaged during the thread engaging operation and wherein said tapered surface comprises a first frusto-conical surface adjacent to said planar shoulder and a second frusto-conical surface adjacent to said first frusto-conical surface and distal from said planar shoulder;

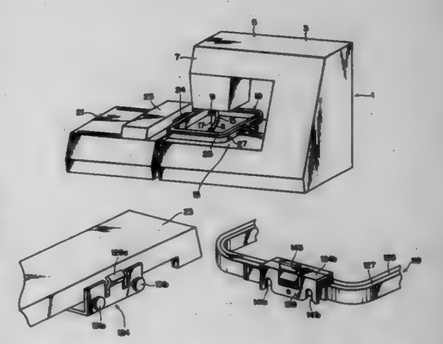
wherein said polyurethane O-ring and said contacting means form a liquid impermeable barrier when said external threads engage said internal threads and said plug and said polyurethane O-ring are rotated relative to said containment vessel and wherein said barrier lies between said high pressure liquid and said external threads and said internal threads whereby stresses on said internal threads in said containment vessel are reduced resulting in a reduced chance of failure of said containment vessel and wherein said first frusto-conical surface comprises a frusto-conical surface oriented 15 degrees off of an imaginary cylinder concentric with the centerline of said first frusto-conical surface and wherein said second frusto-conical surface comprises a frusto-conical surface oriented 45 degrees off of an imaginary cylinder concentric with the centerline of said second frusto-conical surface and wherein said high pressure liquid containment vessel comprises a hollow, extruded hardened stainless steel manifold wherein said nozzles provide outlets for said high pressure liquid in said manifold and wherein said plug provides a closure for said hollow manifold.

5,291,843

ATTACHMENT STRUCTURE FOR DETACHABLY ATTACHING WORKPIECE HOLDER TO MOVABLE BODY

Masayuki Hori, Gifu, Japan, assignor to Brother Kogyo Kabushikia Kaisha, Nagoya, Japan

Filed Mar. 9, 1992, Ser. No. 848,150
Claims priority, application Japan, Mar. 22, 1991, 3-17429[U]
Int. Cl.[5] D05C *9/04*
U.S. Cl. 112—103 **18 Claims**



1. An attachment structure in combination with a workpiece holder and a movable body for detachably attaching the workpiece holder to the movable body, the movable body being movable in a horizontal plane in synchronism with a reciprocating motion of a sewing needle in a sewing machine, the attachment structure comprising;

a first wall extending in a vertical direction and provided at one of the workpiece holder and the movable body, the first wall being formed with at least one engaging groove having U-shaped configuration;

a second wall extending in a vertical direction and provided at a remaining one of the movable body and the workpiece holder;

at least one engaging pin extending from the second wall, the at least one engaging pin being engageable with the at

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least one engaging groove in relative vertical sliding movement between the first and the second walls for preventing the workpiece holder from being moved in the horizontal plane;

a projecting member provided at one of the first and the second walls; and

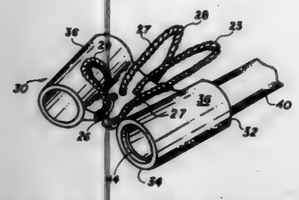
a resilient member provided at the remaining one of the second and the first walls, the resilient member having a guide portion engageable with the projecting member for preventing the workpiece holder from being moved in the vertical direction.

5,291,844

CLEW FOR A SAILBOARD BOOM

Charles D. McCormick, Corpus Christi, Tex., assignor to Gulftech, Inc., Corpus Christi, Tex.

Filed Oct. 11, 1991, Ser. No. 775,137
Int. Cl.[5] B63B *35/79*
U.S. Cl. 114—98 **10 Claims**



7. A clew for a sailboard boom, the boom having a mast end, a clew end, first and second tubular arms interconnecting the mast end and the clew end and defining a first plane perpendicular to a second plane bisecting the boom and defined by a sail attached to the mast and the clew end of the boom, each arm having a fore end at the mast end, an aft end opposite the fore end, and terminating at the clew end with a terminal fitting, the clew comprising

two cylinders, each having a front end and a rear end, a longitudinal cylinder axis, and concentric interior and exterior walls surrounding and parallel to the cylinder axis and defining a tubular recess, each cylinder adapted to receive within its tubular recess the terminal fitting of an arm;

a central flange defining a clew plane substantially parallel to the first plane and connecting the cylinders, the flange having a front edge and a rear edge corresponding to the front and rear ends of the cylinders;

latching means for securing each terminal fitting within one of the tubular recesses;

means for attaching the sail to the clew comprising

a lanyard adapted to loop around at least one interface means mounted on the sail, and to wrap at least once around the central flange;

a drag notch penetrating the central flange at its rear edge and adapted to receive a loop of the lanyard as it warps around the central flange; and

a jam not penetrating the central flange at its rear edge and adapted to receive and hole the lanyard at the end of its last loop around the central flange.

5,291,845

MARINE DECK PLATE

Stafford J. Vallery, 3170 SE. Dominica Ter., Stuart, Fla. 34997

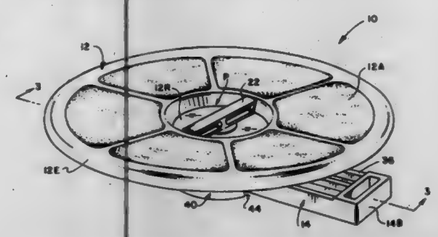
Filed Dec. 1, 1992, Ser. No. 983,886
Int. Cl.[5] B63B *19/12*
U.S. Cl. 114—203 **11 Claims**

1. A cover plate assembly for covering an access opening formed in a panel member having an exposed side and a hidden side comprising, in combination:

a cover plate having a central plate portion for covering the access opening and having a peripheral edge portion for engaging the exposed side of the panel member bordering the access opening;

a retainer bar having a central body member for spanning the access opening and first and second end portions for engaging the hidden side of the panel member bordering the access opening;

an actuator assembly coupling the central body member of said retainer bar to the central plate portion of the cover plate, said actuator assembly being manually operable for moving said retainer bar relative to said cover plate from a first position in which the retainer bar is retracted toward said cover plate and the first and second end portions are engaged against the hidden side of the panel member, to a second position in which said retainer bar is extended away from said cover plate and said end portions are disengaged from the hidden side of the panel member,



a compressive, resilient seal member disposed on the peripheral edge portion of said cover plate for engaging the exposed side of the panel member bordering the access opening and sealing the interface between said cover plate and the panel member in response to compression of said seal member between said cover plate and panel member; and

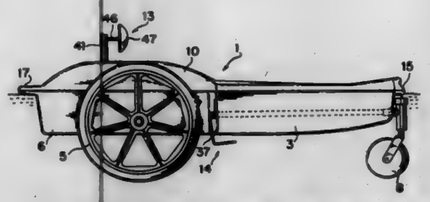
said cover plate having a sloping surface and an annular boss disposed on the peripheral edge portion, said annular boss having an axial projection relative to the cover plate which is a fraction of the unloaded axial projection of said seal member relative to the peripheral edge portion, and said cover plate having an annular pocket disposed between the annular boss and the sloping face for receiving said seal member.

5,291,846

AMPHIBIOUS MOBILITY ASSIST VEHICLE FOR MOBILITY IMPAIRED PERSONS

Frederick B. Davis, Jr., 2305 Batten Rd., Brooksville, Fla. 34601

Filed Feb. 25, 1993, Ser. No. 22,264
Int. Cl.[5] B63B *35/00*
U.S. Cl. 114—270 **17 Claims**



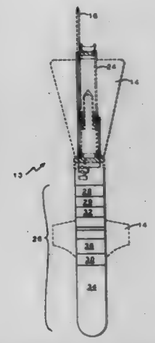
1. An amphibious mobility assist vehicle for mobility impaired persons, comprising a main flotation body, a pair of buoyant wheel assemblies connected to the front of and extending forwardly of the main flotation body for supporting the vehicle on the ground and in the water, a pair of ground engaging wheels detachably connected to the rear of said main flotation body, a seat portion provided in the rear portion of said flotation body and positioned between the rear wheels, and a lift mechanism extending from the vicinity of the seat portion and operatively connected to each of the buoyant wheel assemblies, whereby an occupant of the vehicle can manipulate the lift mechanism, to thereby move the buoyant wheel assemblies from a ground engaging position to an elevated position forwardly of and above the front of the main flotation body when the vehicle is floating in a body of water.

5,291,847

AUTONOMOUS PROPULSION WITHIN A VOLUME OF FLUID

Douglas C. Webb, 769 Palmer Ave., Falmouth, Mass. 02540

Continuation of Ser. No. 738,910, Aug. 1, 1991, abandoned. This application Oct. 14, 1992, Ser. No. 961,015
Int. Cl.[5] B63G *8/14*
U.S. Cl. 114—331 **18 Claims**



1. An autonomous engine for use in a volume of fluid, said engine comprising

an energy collector for collecting energy from temperature differentials in the volume of fluid, said energy collector comprising a medium for storing the collected energy and a movable partition for transferring said energy from a temperature-responsive material, adapted to collect said energy, to said medium,

a buoyancy shifter for using the collected energy to cause a shift in the buoyancy of the engine and to self-propel the engine autonomously to successive depths within the volume of fluid, and

a valving mechanism for selectively controlling when said buoyancy shifter uses the collected energy to self-propel the engine to successive depths.

5,291,848

PROTECTIVE BOAT HOOD

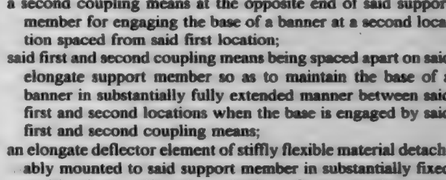
Arlan L. Wilhelm, and Bradley S. Wilhelm, both of Box 192, Surrey, N. Dak. 58785

Filed Jul. 9, 1993, Ser. No. 88,375
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 **7 Claims**

1. A protective boat hood, comprising,

a flexible hood, the flexible hood having a hood top wall extending from a top wall rear edge to a top wall nose, wherein the top wall is of a generally triangular configuration, with a side wall extending from the top wall from opposed sides of the top wall, wherein the side wall includes a side wall rear edge coextensive with the top wall rear edge, with the top wall including a first slot intersecting the top wall rear edge, wherein the first slot is spaced from the top wall nose, and

a second slot directed into the side wall from the side wall rear edge spaced from the top wall nose and oriented below the first slot, wherein the first slot includes a top wall first flap edge and a top wall second flap edge, and



the second slot includes a side wall first flap edge and a side wall second flap edge, with first straps mounted to the top wall extending over the first slot, with first connectors arranged for securement of the first straps thereto, and second straps mounted to the side wall extending over the second slot, and the side wall including buckles arranged for securement of the second straps thereto.

5,291,849

FLAG SUPPORT WITH FURL PREVENTER

Richard J. Zeitler, 36 High Ridge Rd., Brookfield, Conn. 06804

Filed Dec. 10, 1992, Ser. No. 988,711
Int. Cl.[5] G09F *17/00*
U.S. Cl. 116—174 **11 Claims**

1. An adjustable furl-preventing banner support assembly, comprising:

an elongate support member for alignment parallel to a base of a banner;

a first coupling means at one end of said support member for engaging the base of a banner at a first location;

a second coupling means at the opposite end of said support member for engaging the base of a banner at a second location spaced from said first location;

said first and second coupling means being spaced apart on said elongate support member so as to maintain the base of a banner in substantially fully extended manner between said first and second locations when the base is engaged by said first and second coupling means;

an elongate deflector element of stiffly flexible material detachably mounted to said support member in substantially fixed position intermediate the ends thereof and extending at an angle thereto, to position a free end thereof remote from said support member at a point within the outer borders of a banner attached to said support member;

the free end of said deflector element having means for attachment to a center portion of fabric of a banner attached to said support member; and mounting means pivotably coupled to said support member at spaced apart locations proximate the opposite ends thereof, for attaching said support member to an elongate flag staff and limiting rotation of said support member bout the axis of said mounting means to not substan-

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tially more than 180 degrees in either direction from a central position.

5,291,850

GOLFER STROKE-HOLE INDICATING DEVICES

LeRoy W. Gries, P.O. Box 2333, Florence, Oreg. 97439, and Van M. Lund, 2294 Elm Ridge Dr., Northbrook, Ill. 60062

Filed Dec. 18, 1992, Ser. No. 992,718
Int. Cl.[5] A63F *1/18*; G09F *11/04, 11/20*
U.S. Cl. 116—222 15 Claims



1. An indicating device or use on a golf course having holes to which handicap order numbers have been assigned in a particular order based upon relative difficulty of play, said device being usable in identifying stroke holes on which strokes may e given by one golfer to another golfer when said golfers have differences in handicaps which are based upon prior performances, said device comprising a plurality of first indicating means for indicating differences in handicaps, and a plurality of corresponding second indicating means for providing indications of stroke holes, support means for supporting said plurality of first indicating means and said plurality of corresponding second indicating means, selection means for selecting first and second indicating means including first and second registry means for permitting viewing of selected ones of said first and second indicating means and interengageable guide means on said support means and said selection means for guiding said support means for adjustable movement relative to said selection means in a certain path to position any selected one of said first indicating means in registry with said first registry means in accordance with a difference in handicaps between said one golfer and said another golfer while positioning at least one of said plurality of corresponding second indicating means in registry with said second registry means to provide an indication by said at least one of said plurality of corresponding second indicating means of stroke holes of said golf course on which strokes are to be given by said one golfer to said another golfer in accordance with said particular order to handicap order numbers.

5,291,851

GAUGE FOR AUTOMOBILE

Masahiro Muramatsu, Shimada, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 723,600, Jul. 1, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 22,867
Claims priority, application Japan, Jun. 29, 1990, 2-68476[U]
Int. Cl.[5] G01D *11/28, 13/22*
U.S. Cl. 116—286 9 Claims

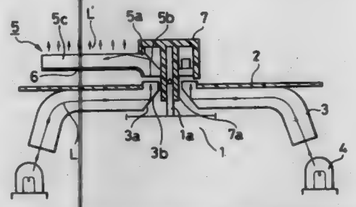
1. Automobile gauge comprising:

a main body with a needle shaft to be rotated in correspondence to what is measured;

a dial;

a needle having a base portion operatively cooperating with said needle shaft, and a solid elongate indicator portion with a pigmented layer forming a strip parallel to the length of the indicator portion, for pointing to a predetermined location on said dial in correspondence to what is measured; and

means for introducing light to said indicator portion for illuminating the indicator portion substantially uniformly along its length, said light being reflected back and forth along the length of the indicator portion producing a lens effect thereof,



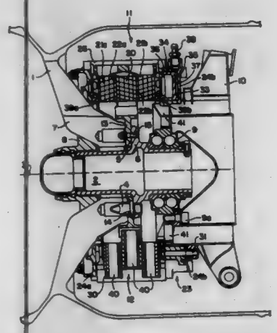
the indicator portion being shaped into a rectilinear cylindrical configuration of circular cross-section and constant diameter throughout its length.

5,291,852

DISC BRAKE PARTICULARLY FOR AN AUTOMOTIVE VEHICLE

Hubert Allera, Chatenay Malabry, and Guy Prud'Homme, Sainte Foy Les Lyon, both of France, assignors to Carbone Industrie, Bagnolet and Ligier Sports, Magny Cours, both of France

PCT No. PCT/FR90/00870, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO91/08128, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 30, 1990, Ser. No. 741,429
Claims priority, application France, Dec. 1, 1989, 89 15928
Int. Cl.[5] B60T *1/06*; F16D *65/853*
U.S. Cl. 188—18 A 15 Claims



1. A disc brake assembly for a wheel rotatably mounted upon an axle of an automotive vehicle comprising:

an annular disc including an inner annular member coaxially mounted about the axle to rotate wit the wheel, a concentric outer annular member having opposing, annular braking surfaces and means for interconnecting said inner and outer annular members for co-rotation while permitting relative axial movement therebetween, said interconnecting means defining a plurality of axial openings for the intake of a cooling medium, said disc further including a plurality of passageways extending radially therethrough in fluid communication with said axial openings;

first and second annular brake pads coaxially mounted about said disk, each of said brake pads having a friction surface adapted to engage and substantially totally cover a respective one of the opposing, annular braking surfaces of said disc, said brake pads including a plurality of radial passages therethrough in fluid communication with said axial openings;

means for axially shifting at least one of said brake pads relative to said disc to engage said friction surfaces with said braking surfaces; and

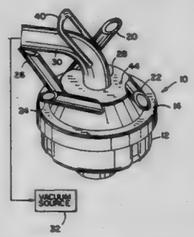
pad support means for positioning said brake pads relative to said disc, said pad support means spanning between said brake pads and including an axially extending peripheral wall provided with a plurality of radial openings for permitting the flow of the cooling medium from said radial passages and passageways therethrough, wherein said first brake pad is axially fixed relative to the axle, said second brake pad is axially shiftable, relative to said first brake pad, by said means for axially shifting and said pad support means includes a plurality of spaced bridges interconnecting said first and second brake pads to prevent rotation thereof, said plurality of spaced bridges collectively comprising said peripheral wall.

5,291,853

TOP UNLOADED MILKING CLAW

Gary C. Steingraber; Paul D. Thompson, both of Madison, and Terrence J. Mullen, Sun Prairie, all of Wis., assignors to DEC International, Inc., Madison, Wis.

Filed Apr. 8, 1993, Ser. No. 45,514
Int. Cl.[5] A01J *5/00*
U.S. Cl. 119—14.54 24 Claims



1. A top unloading milking claw comprising a lower bowl, an upper top closing said bowl, at least one inlet in said top directing incoming milk flow into said bowl, a vertical riser outlet tube extending from said top downwardly into said bowl and having an upper section connected to a vacuum source for drawing milk from said bowl, and having a lower section with a lower end adjacent the bottom of said bowl and spaced therefrom by a small space through which milk flows from said bowl into said outlet tube, wherein said upper top has a central aperture therethrough, and wherein said outlet tube comprises a continuous integral hollow cylinder extending through said aperture and having inner and outer cylindrical sidewalls and extending from said lower section within said bowl upwardly through said aperture to said upper section exterior of and projecting above said top.

5,291,854

BIODEGRADABLE BIRD FEEDER

Louis Tzanet, Montreal, and André Obidniak, Dollard des Ormeaux, both of Canada, assignors to Birds for Tomorrow Reg'D., St.-Laurent, Canada

Filed Apr. 2, 1993, Ser. No. 41,858
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—52.2 11 Claims

1. A bird feeder comprising an enclosure having a roof structure and at least two opposed inwardly tapered side walls, access means permitting the placement of bird seeds in said enclosure, a feeding port in each said tapered side wall of said enclosure adjacent a bottom wall thereof, removable closure means for closing said feeding ports, exterior bird perching means below each said feeding port, and seed dispensing means associated with each said feeding port to provide seeds to a feed area adjacent said feeding ports, said seed dispensing means being provided by a pair of opposed inclined guide walls disposed inside said enclosure across other opposed side walls and spaced inwardly and inclined to said tapered side walls adjacent said feeding ports and having a discharge opening for discharging seeds from inside said enclosure to an internal feed area on said bottom wall adjacent said feeding ports, said discharge opening being defined by opposed openings formed



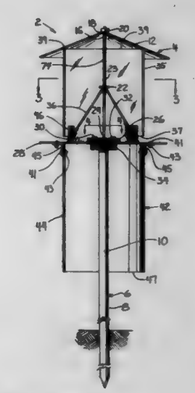
in each of said inclined guide walls adjacent a narrow rectangular bottom wall, a spacing tab formed with said bottom wall and extending in a common plane therewith and disposed adjacent a respective one of said opposed openings, said tabs and said narrow bottom wall retaining said inclined guide walls at an inclined position.

5,291,855

BIRD FEEDER

Ralph E. Laverty, 2606 Detroit Rd., Niles, Mich. 49120

Filed Sep. 14, 1992, Ser. No. 944,410
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—52.3 8 Claims



1. A bird feeder comprising:

a container for bird food, a post adapted for anchoring in the ground and supporting said container in an elevated position, said container including floor means for exposing said food for feeding, a tubular member located adjacently below said floor means and extending generally concentrically about said post, said tubular member having a lower open end defined by side wall spaced a sufficient distance from said post to prevent a ground animal in climbing the post when anchored in the ground from climbing around said tubular member lower edge, said tubular member having an upper closed end, said floor means extending peripherally beyond said tubular member upper closed end.

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5,291,856

DOG LEASH HAVING STIFFENING MEMBER ON DISTAL END THEREOF

Nathan Goller, 9446 Beverly Crest Dr., Beverly Hills, Calif. 90201

Filed Nov. 6, 1992, Ser. No. 972,858
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—795 7 Claims



1. A leash for an animal comprising:

(a) an elongate flexible member having opposite first and second ends, said first end to be held by the animal handler and the second end having attachment means detachably securably to a collar extending about the animal;

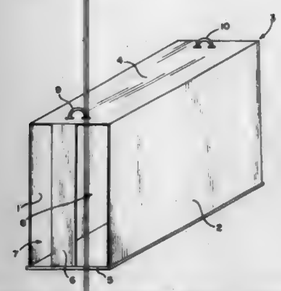
(b) stiffening means associated with a predetermined section of said flexible member extending from approximate the second end a predetermined distance whereby the section tends to not become entangled under the animal when the leash is slackened, said stiffening means comprising a coiled member extending about the flexible member.

5,291,857

PORTABLE ANIMAL RESTRAINING DEVICE FOR USE IN MEDICAL TESTING

Oscar Braun, Jr., 30 Hillcrest Ave., Washington, N.J. 07882

Filed Jul. 29, 1992, Ser. No. 921,252
Int. Cl.[5] A61D *3/00*
U.S. Cl. 119—751 16 Claims



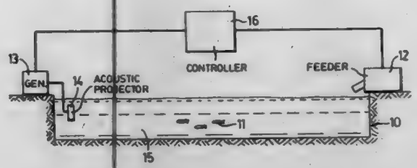
1. A portable animal restraining device, comprising a box including an open bottom, a substantially solid front wall, top wall and sidewalls, and a rear wall, said rear wall comprising a bottom horizontal cross beam and a vertical beam joining said top wall and said bottom cross beam at right angles, said vertical beam delineating a first vertical slot and a second vertical slot for providing access to hindquarters of an animal held within said restraining device; wherein the animal is introduced into said restraining device through the open bottom by placing said restraining device over the animal.

5,291,858

SOUND CONDITIONING IN FISH

Paul H. Patrick, Milton; Janusz J. Kowalewski, King City; Edward A. McLeod, Keswick; Alexander Sakuta, Toronto, and Michael B. Colbert, Mississauga, all of Canada, assignors to Ontario Hydro, Toronto, Canada

Filed Apr. 15, 1993, Ser. No. 45,946
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—230 7 Claims



1. A method of enhancing the survival and/or growth rates of fish in an aquatic environment, comprising

providing a feeder at a selected location for dispensing food to the aquatic environment,

providing an acoustic projector for generating acoustic signals within the frequency range 10Hz–4kHz,

ascertaining a frequency within said range to which the fish are preconditioned to respond,

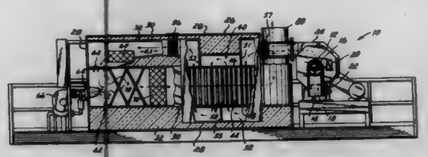
periodically dispensing food from the feeder and, at times coordinated with the times at which food is dispensed, actuating the acoustic projector to generate an acoustic signal at said ascertained frequency.

5,291,859

CATALYTIC INCINERATION SYSTEM

Joseph A. Brinck, 5545 Annamarie Ct., Cincinnati, Ohio 45247, and Stephen L. Reis, Cincinnati, Ohio, assignors to Joseph A. Brinck, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 11,286
Int. Cl.[5] F22D *1/00*
U.S. Cl. 122—7 R 7 Claims



1. A system for catalytically incinerating volatile organic compounds, comprising:

a dual shell housing having an outer shell and an inner shell, said inner shell capable of expansion and movement relative to said outer shell, and said inner shell defining a heat exchange chamber and a combustion chamber;

a blower for conveying the volatile organics first through said heat exchange chamber and then through said combustion chamber;

a multi-pass, tube-type heat exchanger in said heat exchange chamber, said heat exchanger comprising first and second tube sheets and a plurality of tubes through which the volatile organics pass, affixed at their respective ends to said first and second tube sheets, said heat exchanger suspended within said heat exchange chamber and fixed to said inner shell at one end only so that said heat exchanger can freely expand and contract due to temperature changes within said heat exchange chamber, thereby reducing thermal stresses on said heat exchanger and said housing;

a high pressure blower for supplying combustion air to said combustion chamber and mixing with the volatile organics;

a burner for heating the volatile organics to incineration temperature;

at least one flow baffle disposed within said combustion chamber in the flow path of the heated volatile organics and combustion air to provide a substantially uniform temperature distribution therein; and

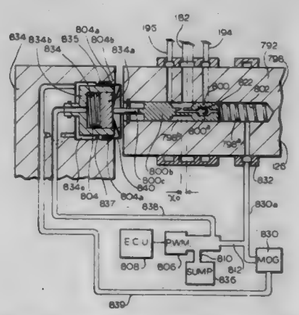
an oxidation catalyst in said combustion chamber through which the heated volatile organics and combustion air pass, said catalyst initiating incineration of the volatile organics, thereby producing hot exhaust vapors.

5,291,860

VCT SYSTEM WITH CONTROL VALVE BIAS AT LOW PRESSURES AND UNBIASED CONTROL AT NORMAL OPERATING PRESSURES

Quinn, Jr., Stanley B., Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Mar. 4, 1993, Ser. No. 26,398
Int. Cl.[5] F01L *1/34*; F15B *17/02*
U.S. Cl. 123—90.17 23 Claims



1. In a hydraulic system comprising a source of hydraulic fluid under pressure (**830**), a first hydraulic operator (**160***a*), first conduit means (**188**) for delivering hydraulic fluid from the source to the first hydraulic operator, second conduit means (**194**) for exhausting hydraulic fluid from the first hydraulic operator, a second hydraulic operator (**160***b*), third conduit means (**190**) for delivering hydraulic fluid from the source to the second hydraulic operator, fourth conduit means (**196**) for exhausting hydraulic fluid from the second hydraulic operator, and control means for controlling the exhausting of hydraulic fluid from the first hydraulic operator and the second hydraulic operator, said control means comprising:

a spool valve (**792**) in communication with said second conduit means and said fourth conduit means, said spool valve comprising a housing (**798**) and a valve member (**800**), said valve member being reciprocable within said housing and comprising first and second opposed ends and first and second spaced apart lands (**800***a* and **800***b*) between said opposed ends, said first land being capable of blocking flow through said second conduit means in first and third positions of said valve member and permitting flow through said second conduit means in a second position of said valve member, said second land being capable of blocking flow through said fourth conduit means in said first and second positions of said valve member and permitting flow through said fourth conduit means in said third position of said valve member;

fifth conduit means (**830***a*) for transmitting hydraulic pressure from the source to act on a first surface of said valve member at substantially the pressure of the source to urge the valve member in a given direction;

force imposing means imposing a load on said valve member to urge said valve member in an opposed direction, said force imposing means having a second surface with an area that is substantially greater than the area of said first surface;

sixth conduit means (**838**) for transmitting hydraulic pressure from the source to the force imposing means to act on said second surface of said force imposing means, said sixth conduit means comprising a control member (**806**) therein to controllably reduce the pressure of the source that acts on said second surface of said force imposing means;

centering means for centering said valve member in a fixed position relative to said housing when the hydraulic forces acting on said valve member are in balance; and,

biasing means for forcing said valve member to its full advance position during a low pressure condition of operation.

12. In an internal combustion engine having a rotatable crankshaft and a rotatable camshaft, the camshaft being position variable in a circumferential direction relative to the camshaft, means for varying the position of the camshaft relative to the crankshaft, said means for varying comprising a source of hydraulic fluid under pressure, a first hydraulic operator connected to said crankshaft and to said camshaft, the operation of said first hydraulic operator being effective to vary the position of the camshaft relative to the crankshaft in a given circumferential direction, first conduit means for delivering hydraulic fluid from the source to the first hydraulic operator to operate the first hydraulic operator, a second hydraulic operator connected to said crankshaft and to said camshaft, the operation of said second hydraulic operator being effective to vary the position of the camshaft relative to the crankshaft in an opposed circumferential direction, second conduit means for exhausting hydraulic fluid from the first hydraulic operator, third conduit means for delivering hydraulic fluid from the source to the second hydraulic operator to operate the second hydraulic operator, fourth conduit means for exhausting hydraulic fluid from the second hydraulic operator and control means for controlling the exhausting of hydraulic fluid from the first hydraulic operator and the second hydraulic operator to selectively permit hydraulic fluid from the source to operate one or another of said first hydraulic operator and said second hydraulic operator, said control means comprising:

a spool valve in communication with said second conduit means and said fourth conduit means, said spool valve comprising a housing and a valve member, said valve member being reciprocable within said housing and comprising first and second opposed ends and first and second spaced apart lands between said opposed ends, said first land being capable of blocking flow through said second conduit means in first and third positions of said valve member and permitting flow through said second conduit means in a second position of said valve member, said second land being capable of blocking flow through said fourth conduit means in said first and second positions of said valve member and permitting flow through said second conduit means in said third position of said valve member;

fifth conduit means for transmitting hydraulic pressure from the source to act on a first surface of said valve member at substantially the pressure of the source to urge the valve member in a given direction;

force imposing means for imposing a load on said valve member to urge said valve member in an opposed direction, said force imposing means having a second surface with an area that is substantially greater than the area of said first surface;

sixth conduit means for transmitting hydraulic pressure from

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the source to the force imposing means to act on said second surface of said force imposing means, said sixth conduit means comprising a control member therein to controllably reduce the pressure of the source that acts on said second surface of said force imposing means;

centering means for centering said valve member in a substantially fixed position relative to said housing when the hydraulic forces acting on said valve member are in balance; and,

biasing means for forcing said valve member to its full advance position during a low pressure condition of operation.

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MOVING STARTER SYSTEM

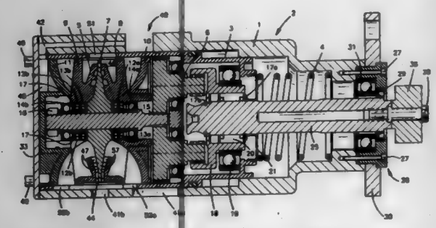
Gregory A. Bartlett, Chemung, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 2, 1992, Ser. No. 892,832

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] F02N *7/08*

U.S. Cl. 123—179.31 **7 Claims**



1. A starting system for an engine comprising:

an elongate casing;

an elongate liner mounted for reciprocation within said casing from a first non-operating position to a second operating position;

a motor mounted within said liner having its rotary output transmitted to a pinion for selective engagement with a gear means for rotating said engine; and

means for supplying motive media to said motor and for transporting said liner to a second operating position wherein said pinion engages said gear and said motor receives motive media.

5,291,862

CYLINDER SLEEVE ASSEMBLY USED IN CYLINDER BLOCK FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE, AND FORMING MOLD FOR USE IN PRODUCTION OF SAND MOLD FOR CASTING THE SAME

Hisashi Katoh, Saitama; Akio Simizu, Mie; Shigeo Abe, Saitama; Hiroshi Utagawa, Saitama, and Kiichiro Susa, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

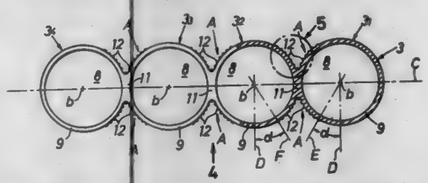
Filed Jan. 4, 1993, Ser. No. 289

Claims priority, application Japan, Jan. 9, 1992, 4-413 [U]; Jan. 9, 1992, 4-2473

Int. Cl.[5] F01B *11/02*

U.S. Cl. 123—193.2 **23 Claims**

1. A cylinder sleeve assembly cast in a cylinder barrel assembly in a cylinder block for a multi-cylinder internal combustion engine, comprising a plurality of cylinder sleeves whose adjacent cylindrical peripheral walls are coupled to each other, and a plurality of sink mark inhibiting engaging portions provided in each valley-like area of an outer peripheral surface of the cylinder sleeve assembly which is located on opposite sides of a coupled portion between the adjacent cylindrical peripheral walls, said sink mark inhibiting engaging portions being engaged with said cylinder barrel assembly during casting of said cylinder block.



5,291,863

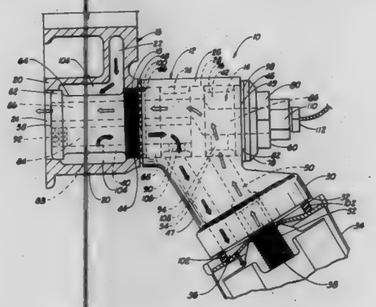
SPIN-ON OIL FILTER ADAPTER FOR SIX CYLINDER CONTINENTAL AIRCRAFT ENGINES

Floyd B. Jones, P.O. Box 3052, Borger, Tex. 79008

Filed Nov. 20, 1992, Ser. No. 979,101

Int. Cl.[5] F01M *11/03*

U.S. Cl. 123—196.00 A **8 Claims**



1. An apparatus comprising:

a six cylinder Continental Aircraft engine with an accessory case having an oil screen hole with two oil passage openings in the accessory case;

a tee casting secured to the accessory case and having a sleeve with a bore therethrough, an oil input passage, an oil output passage and a base, the base having a filter receiving end, the oil input passage and the oil output passage extending from the filter receiving end of the base into the bore of the sleeve;

a hub connected to the accessory case, the hub having an inner portion extending into the oil screen hole, an outer portion journaled through the bore of the sleeve, an oil input passage and an oil output passage, the oil input and oil output passages extending through said hub from the inner portion to the outer portion; and

a spin-on filter connected to the filter receiving end of the base;

wherein the oil is circulated through the oil inlet passages of the hub and the base and through the spin-on filter from one of said oil passage openings and discharged back into the other of said oil passage openings through the oil outlet passages of the tee casting and the hub.

5,291,864

SYSTEM FOR DRIVING ENGINE ACCESSORIES OF INTERNAL COMBUSTION ENGINE

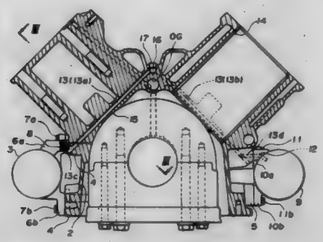
Takashi Suga, Yokosuka, and Shigeru Kamegaya, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 17, 1993, Ser. No. 77,439

Claims priority, application Japan, Jun. 29, 1992, 4-170299; Jun. 29, 1992, 4-170301; Mar. 3, 1993, 5-041580

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 R **16 Claims**



1. An engine accessory driving system for use with an internal combustion engine having a cylinder block, comprising:

a hydraulic pump mounted to said cylinder block and powered by said engine;

a hydraulic motor mounted to said cylinder block and driven by a highly pressurized oil fed by said hydraulic pump;

means defining in said cylinder block an oil flow passage through which said highly pressurized oil is conveyed from said hydraulic pump to said hydraulic motor; and

oil returning means for returning the oil from said hydraulic motor to said hydraulic pump.

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INTERNAL COMBUSTION ENGINE

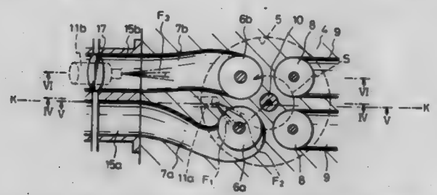
Shizao Sasaki, Numazu, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 9, 1992, Ser. No. 942,531

Claims priority, application Japan, Sep. 13, 1991, 3-234954

Int. Cl.[5] F02B *3/00*

U.S. Cl. 123—298 **17 Claims**



17. An engine including a cylinder which defines an axis, a cylinder head and a combustion chamber, the engine comprising:

a first intake valve and a second intake valve that are arranged on each side of a plane including the axis;

a first intake passage and a second intake passage that are connected to said combustion chamber via said first intake valve and said second intake valve, respectively, said first intake passage and said second intake passage extending along said plane in the same direction, wherein said first intake passage comprises a helical intake port formed in the cylinder head, and wherein said second intake port comprises a substantially straight intake port formed in the cylinder head;

a first fuel injector arranged in said combustion chamber that injects fuel only toward a region of said combustion chamber which is located on said first intake valve side of said plane, so that a mixture of air and the fuel injected by said first fuel injector occupies a first region of said combustion chamber; and

a second fuel injector arranged in said second intake passage that injects fuel into said second intake passage, so that a mixture of air and the fuel injected by said second fuel injector occupies a second region of said combustion chamber, wherein said first region and said second region are substantially separate for each other.

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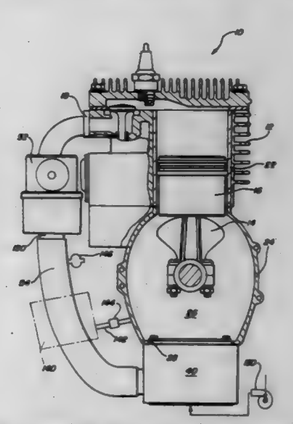
PULSE CHARGER

David R. Kosa, 10575 Swan Creek, Carleton, Mich. 48117

Filed Jul. 20, 1993, Ser. No. 94,939

Int. Cl.[5] F02B *75/02*

U.S. Cl. 123—317 **20 Claims**



1. A pulse charger for an internal combustion engine, said engine having an air intake and a crankcase, said crankcase defining an internal cavity, said pulse charger comprising:

a housing having an inlet port, an outlet port, an inlet opening and an outlet opening, said outlet port being in communication with said air intake of said engine, both said inlet opening and said outlet opening being in communication with said internal cavity defined by said crankcase;

first one-way valve means for allowing fluid flow between said inlet port and said inlet opening, said first one-way valve means being disposed within said housing between said inlet port and said inlet opening; and

second one-way valve means for allowing fluid flow between said outlet opening and said outlet port, said second one-way valve means being disposed within said housing between said outlet opening and said outlet port.

5,291,867

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Karsten Hummel, Beilstein-Schmidhausen; Karl Rapp, and Ernst Ritter, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1993, Ser. No. 60,621

Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217940

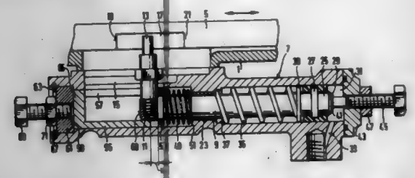
Int. Cl.[5] F02D *31/00*; **F02N** *17/00*; **F02B** *77/00*

U.S. Cl. 123—372 **7 Claims**

1. A fuel injection pump for internal combustion engines, comprising in-line pump pistons guided in cylinder liners (3) and each defining one pump work chamber; a governor rod (5) is supported longitudinally of the fuel injection pump in a

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pump housing (1) and is displaceable by a positioner in order to adjust a fuel injection quantity by the pump pistons and is joined to the positioner via a resiliently yielding drag member; and an adjusting device (7), said adjusting device including an adjusting piston (9) adjustable away from a stop (41) by a pressure medium counter to a force of a restoring spring (35), the adjusting piston acting upon the governor rod via an intermediate member (13) positioned between first and second stops (19, 21), said stops being located in succession in the direction of motion and disposed on at least one part that is moved with the governor rod upon its fuel injection quantity adjusting motion, said stops being arranged for limiting a governor rod



travel that is predetermined by the spacing of said stops, the adjusting piston (9) of the adjusting device (7) is displaceable as a function of the engine operating temperature by a temperature-dependent spring element (49), which spring element is disposed on a circumference of the adjusting piston and is supported at one end on a further third stop (51) that is structurally connected to the housing and acts counter to the restoring spring (35), the displacement of the adjusting piston (9) being such that the possible adjusting travel of the governor rod (5) is variable in the direction of a full-load supply quantity by contact of one of said first and second stops (19, 21) with the intermediate member (13).

5,291,868

SINGLE OVERHEAD CAM MULTI-VALVE ENGINE

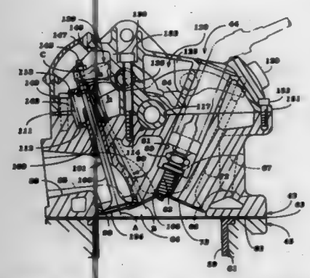
Kenichi Nonogawa; Makoto Shimamoto, and Wataru Fuchigami, all of Iwata, Japan, assignors to Yamaha Motor Co. Ltd.

Continuation-in-part of Ser. No. 619,907, Nov. 28, 1990, Pat. No. 5,230,317. This application Jul. 22, 1991, Ser. No. 734,180

Claims priority, application Japan, Nov. 29, 1989, 1-309466; Nov. 29, 1989, 1-309467; Nov. 29, 1989, 1-309469; Nov. 29, 1989, 1-309470

Int. Cl.[5] F02B *15/00*

U.S. Cl. 123—432 **50 Claims**



1. A cylinder head and valve arrangement for an internal combustion engine comprising a cylinder head assembly adapted to be affixed in sealing relation to an associated cylinder block for closing a cylinder bore therein, a pair of poppet valves supported for reciprocation within said cylinder head assembly about respective reciprocal axes each disposed at a different acute angle to a plane containing the axis of said cylinder bore, a camshaft journaled for rotation about a rotational axis lying contiguous to said plane, the axes of reciprocation of said valves intersecting at a line extending parallel to said plane at a point spaced from the tips of said valves, the stems of said valves having the same length and rocker arm means for operating said valves from said camshaft.

5,291,869

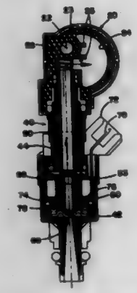
LIQUIFIED PETROLEUM GAS FUEL SUPPLY SYSTEM

David E. Bennett, 14687 County Rd. 8 SE., Lake Lillian, Minn. 56253

Filed May 28, 1993, Ser. No. 69,199

Int. Cl.[5] F02B *43/00*; F02M *15/00*

U.S. Cl. 123—527 **10 Claims**



1. A fuel supply system for providing liquified petroleum gas fuel to an internal combustion engine, the engine having an intake manifold, said fuel supply system comprising:

a fuel supply assembly including a fuel rail assembly having a first fuel supply channel and a first fuel return channel, the fuel rail assembly having first means for cooling fuel flowing through the first supply channel; and

means for injecting fuel, the injecting means having a second fuel supply channel and a second fuel return channel, the second fuel supply and return channels being in operable fluid communication with the first fuel supply and return channels, respectively, the fuel injecting means having second means for cooling fuel prior to injection into the intake manifold.

5,291,870

FUEL VAPORIZING SYSTEM

Ray M. Covey, Jr., Remuda Ranch, Jack Burden Rd., Wickenburg, Ariz. 85358

Filed Jan. 27, 1993, Ser. No. 9,991

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—545 **47 Claims**

1. A system for providing fuel to an engine in a vaporized condition comprising:

a vaporizer;

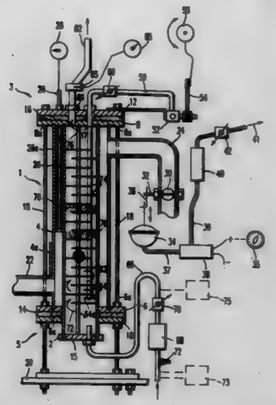
a fuel conduit connected to said vaporizer for supplying fuel to said vaporizer;

an air conduit connected to said vaporizer for supplying air to said vaporizer; and

said vaporizer including a source of heat, and a passageway extending therethrough, wherein air and fuel are introduced into a portion of said passageway and are heated and mixed as the air and fuel pass along said passageway toward a vapor outlet, said vapor outlet connected to a vapor conduit for supplying an air and fuel vapor mixture to an engine;

said vaporizer further including a plurality of baffles defining said passageway, such that the air and fuel pass along a tortuous passageway within said vaporizer;

wherein said vaporizer includes first and second ends, and wherein said fuel conduit extends into the vaporizer from the first end and toward the second end, and wherein said fuel conduit terminates at a nozzle portion, and further



wherein air and fuel move along said passageway in a direction from said second end toward said first end.

5,291,871

SUPERCHARGED DIESEL ENGINE

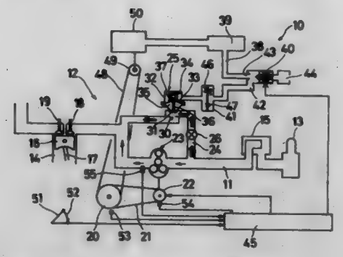
Makoto Shirai, Toyohashi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 8, 1992, Ser. No. 818,131

Claims priority, application Japan, Jan. 18, 1991, 3-004199

Int. Cl.[5] F02B *33/00*

U.S. Cl. 123—564 **9 Claims**



1. A supercharged diesel engine comprising:

an intake pipe;

a diesel engine including an air cleaner and a cylinder which are installed at both ends of said intake pipe, respectively;

a supercharge provided in said intake pipe and set to be driven by said diesel engine via clutch means;

a bypass passage which is installed in said intake pipe in parallel with said supercharger;

a bypass valve and restriction means which are arranged on said bypass passage in series; and

said restriction means restricting said bypass passage sufficiently such that said supercharger receives sufficient air that said supercharger is rotated by the air in the case that said clutch means is disengaged and said bypass valve is opened, thereby reducing friction wear of the clutch means.

5,291,872

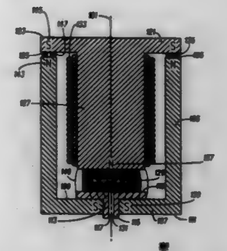
IGNITION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Sanjar Ghaem, Palatine, Ill., assignor to Motorola, Schaumburg, Ill.

Filed Jul. 2, 1992, Ser. No. 908,272

Int. Cl.[5] F02P *3/12*

U.S. Cl. 123—620 **31 Claims**



1. An ignition apparatus for providing energy to a spark plug comprising:

electromagnetic means having a north pole and an opposing south pole, said electromagnetic means having an opening formed therein;

insulating means disposed between the north pole and the opposing south pole, said insulating means having a feedthrough aperture disposed therethrough extending through the opening of said electromagnetic means; and

piezoelectric crystal means for producing energy, wherein said piezoelectric crystal means is located in contact with said insulating means and between said poles, and wherein said electromagnetic means, in response to electrical excitation, compresses said piezoelectric crystal means, thereby causing an ignition energy to be provided from said piezoelectric crystal means through the feedthrough aperture of said insulating means and through the opening of said electromagnetic means for igniting said spark plug.

5,291,873

METHOD AND ARRANGEMENT FOR DETERMINING A PARAMETER OF A LAMBDA CONTROLLER

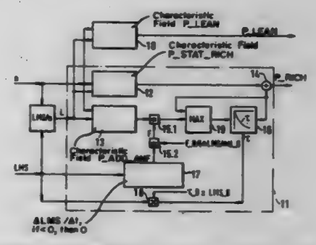
Klaus Hirschmann, Leonberg; Lothar Raff, Remseck; Lutz Reuschenbach, Stuttgart, and Eberhard Schnaibel, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart

Filed Jun. 8, 1992, Ser. No. 895,550

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1991, 4118575

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—682 **11 Claims**



1. A method for adjusting control parameters of a lambda control for an internal combustion engine wherein an average value of lambda is associated with steady state operating points of the engine, the method comprising:

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preselecting base values for the control parameters of the lambda control (P_STAT1, P_STAT2) in dependence upon operating points of the engine so that predetermined shifts of the average lambda value occur at steady state operating points of the engine;

modifying said base values with a time-decaying transition variable (P_ADD_ANF, F×P $_{ADD}$_ANF) when there is a change of the operating point of the engine so as to cause an additional shift of said average lambda value in the direction of a richer mixture during a change of the operating point; and,

coupling a start value of said time-decaying transition value to a change of an operating variable of the engine within a short pregiven time span when there is a change of the operating point of the engine.

5,291,874

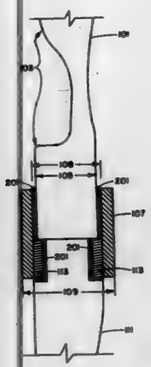
TWO-PIECE, TAKE-DOWN, LAMINATED-LIMB BOW

Jack B. Harrison, 6314 Hampton Dr., Anchorage, Ak. 99504

Filed Mar. 31, 1991, Ser. No. 672,897

Int. Cl.^{5} F41B *5/00*

U.S. Cl. 124—23.1 **29 Claims**



1. A two-piece, take-down bow using laminated-limbs, comprising:

an upper laminated-limb, having a sight-window formed therein and an outer diameter defined under the sight-window;

a metal female sleeve having an inner diameter larger than the outer diameter of the upper laminated-limb;

a first amount of shock-absorbing epoxy residing between a portion of the interior of said metal female sleeve and said upper laminated-limb;

a lower laminated-limb;

a metal male sleeve capable of slidable insertion in said female sleeve; and

a second amount of shock-absorbing epoxy residing between substantially all of the interior of said metal male sleeve and said lower laminated-limb.

11. A process for manufacturing a two-piece, take-down, laminated-limb bow comprising the steps of:

inserting a stainless-steel tube into a brass alloy tube, wherein the brass alloy tube is hotter than the tube of stainless-steel;

causing the temperature of the stainless-steel tube and the brass alloy tube to be substantially the same;

flattening a portion of the brass alloy tube, whereby a substantially flat surface substantially parallel to the axis of the brass alloy tube is defined;

forming two non-parallel lateral aspects in the outer diameter of the brass alloy tube, whereby said flattening the portion of the brass alloy tube and forming two non-parallel lateral aspects in the outer diameter of the brass alloy tube define a brass alloy sleeve;

flattening a portion of a stainless-steel tube, whereby a substantially flat surface substantially parallel to the axis of the stainless-steel tube is defined;

forming two non-parallel lateral aspects in the outer diameter of the stainless-steel tube, wherein said flattening the portion of the portion of the stainless-steel tube and said forming two non-parallel lateral aspects in the outer diameter of the stainless-steel tube define a stainless-steel sleeve;

attaching the brass alloy sleeve to a first laminated bow limb; and

attaching the stainless-steel sleeve to a second laminated bow limb.

29. A process for manufacturing a two-piece, take-down bow comprising the steps of:

heating a brass alloy tube,

expanding the brass alloy tube, and

sliding a stainless-steel tube into the brass alloy tube,

causing the temperature of the stainless-steel tube and the brass alloy tube to be substantially the same;

flattening, while the stainless-steel tube is still inserted in the brass alloy tube, a portion of the brass alloy tube, whereby a substantially flat surface substantially parallel to the axis of the brass alloy tube is defined in the brass tube, and whereby a second substantially flat surface is defined in the stainless-steel tube substantially parallel to the axis of the stainless-steel tube;

forming, while the stainless-steel tube is still inserted in the brass alloy tube, a first pair of non-parallel lateral aspects in the outer diameter of the brass alloy tube, whereby a second pair of non-parallel lateral aspects are defined in the outer diameter of the stainless-steel tube, whereby said flattening and forming define a brass alloy sleeve and a stainless-steel sleeve, repeatedly heating and water quenching the brass alloy tube until the brass alloy tube and the stainless-steel tube separate under the force of gravity;

aligning the first substantially flat surface with a substantially flat portion of the laminated bow limb;

inserting the aligned laminated bow limb into a laminated-limb portion of the brass alloy sleeve;

gluing the inserted laminated bow limb to the laminated-limb portion of the brass alloy sleeve with an anaerobic adhesive;

inserting shrinkless, shock resistant filler epoxy between the brass alloy sleeve and the laminated bow limb;

aligning the second substantially flat surface with a substantially flat portion of the laminated bow limb;

inserting the aligned laminated bow limb into a laminated-limb portion of the stainless-steel sleeve;

gluing the inserted laminated bow limb to the laminated-limb portion of the stainless-steel sleeve with an anaerobic adhesive; and

inserting shrinkless, shock resistant filler epoxy between the stainless-steel sleeve and the laminated bow limb.

5,291,875

ADJUSTABLE TUBE ASSEMBLY FOR A GAS BARBECUE GRILL

Walter Koziol, Antioch, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Filed Oct. 16, 1992, Ser. No. 961,991

Int. Cl.^{5} F24C *3/00*

U.S. Cl. 126—41 R **17 Claims**

1. An adjustable gas venturi tube assembly for a gas burner element comprising:

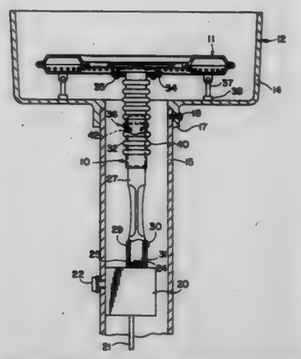
a first tubular member defining at least one aperture;

an air regulator member received by said first tubular member at one end thereof to control the flow of air entering through said aperture;

an opening defined by said first tubular member at said one end for receiving a gas supply means;

a second tubular member connected to said first tubular member at another end of said first tubular member in a telescoping and slidable relationship;

means for securing said second tubular member to said gas burner element at an end opposite the connection to said first tubular member; and



internal adjustable securing means operatively associated with said first and second tubular members defined by one of said tubular members having a multiplicity of internal cavity portions and the other of said tubular members having resilient projecting means to selectively fit within said internal cavity portions to retentively maintain said tubular members in various extendable and temporarily locked positions with respect to each other, said internal adjustable securing means being hidden from external view.

5,291,876

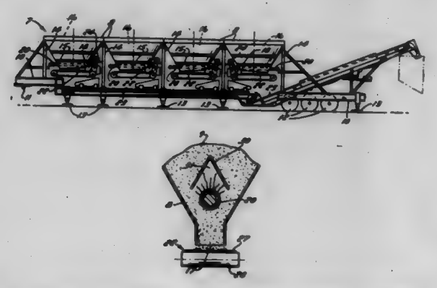
FEED HOPPER FOR PROVIDING PREHEATED AGGREGATE MATERIAL

John Milstead, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Oct. 7, 1991, Ser. No. 772,426

Int. Cl.^{5} E01C *19/45*

U.S. Cl. 126—343.5 A **13 Claims**



1. An apparatus for feeding preheated aggregate material, comprising:

a feed hopper having opposite upper and lower ends, said upper end being open and adapted to receive aggregate material therein, said lower end having a rectangular lengthwise extending discharge opening adapted to feed aggregate material therethrough;

an elongate gas fired radiant surface heater having an upper portion and a lower portion, said heater positioned within said hopper adjacent said lower end and adapted for preheating aggregate material prior to the aggregate material passing through said discharge opening, said heater extending lengthwise generally parallel to and above said opening and for substantially the full length of said opening; and

a cover positioned above and in spaced-apart relation from said heater and adapted for shielding the upper portion of said heater from direct contact with aggregate material, said cover, said heater, and said lower end of said hopper being dimensioned and positioned so as to allow the lower portion to have direct contact with aggregate material moving past said heater and toward said discharge opening.

5,291,877

LOW STARCH CONCENTRATION GEL AND PREPARATION THEREOF

Beatrice Conde-Petit, and Felix Escher, both of Zurich, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed May 21, 1992, Ser. No. 887,078

Claims priority, application European Pat. Off., Jun. 21, 1991, 91110137.6

Int. Cl.^{5} C08B *30/12*; A23L *1/05, 1/187*

U.S. Cl. 127—33 **23 Claims**

1. A process for preparing a gel composition comprising heating an aqueous mixture of a native starch and at least one emulsifier suitable for forming an inclusion complex with amylose, wherein the starch is in an amount of from 1% to 5% by weight starch dry matter and has an amylose content of from about 15% to about 30% by weight, at a temperature of from 90° C. to 125° C. for from 2 mins to 30 mins to gelatinize the starch, to release amylose from the starch, and to complex released amylose and said at least one emulsifier and then, cooling the heated aqueous mixture to gel the mixture.

5,291,878

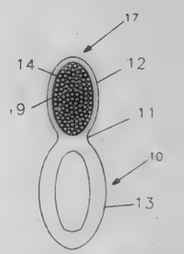
BABY TEETHING GUM MASSAGER

Steve Lombardo, and Joni B. Lombardo, both of 680 Skylark La., Port Charlotte, Fla. 33952

Filed Jul. 14, 1992, Ser. No. 913,066

Int. Cl.^{5} A61H *7/00*; A46B *9/04*

U.S. Cl. 128—62 A **1 Claim**



1. A teething gum massager for a child, said massager having curved and rounded edges, said massager comprising:

a figure eight shaped body having a first portion and a second portion, said first and second portions forming a juncture, said first portion having a top surface and a bottom surface, each of said surfaces defining a plane, said first portion sized for being fully inserted into said child's opened mouth, and said first portion having an exterior rim surrounding a bristle mounting area on said top surface and said bottom surface,

a plurality of tufted bristles extending from said bristle mounted area on said top surface and said bottom surface of said first portion, in randomly aligned rows of tufts

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substantially covering said top and bottom surfaces for gently massaging the tops and sides of the upper and lower gums simultaneously,

said second portion, shaped to form a grasping handle, and wider than a child's opened mouth to prevent said body from being inserted fully into a child's mouth, and said body having opposed recesses adjacent said juncture.

5,291,879

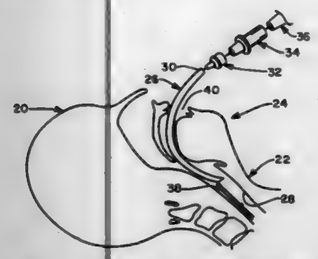
CARBON DIOXIDE DETECTION (II)

Albert L. Babb; Michael P. Hlastala, and Gary L. Tarbox, all of c/o Meridian Medical Corporation, 4811 Forest Ave. SE., Mercer Island, Wash. 98040

Continuation of Ser. No. 629,055, Dec. 14, 1990, Pat. No. 5,197,464, and a continuation of Ser. No. 464,709, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 315,730, Feb. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 160,863, Feb. 26, 1988, abandoned. This application Jul. 23, 1992, Ser. No. 918,372

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—200.26 **1 Claim**



1. A method of confirming that an airway tube has been placed and is being maintained in the trachea of a patient, said method comprising the steps of:

preparing a detector means including an indicator which is sensitive to CO_2 at predetermined threshold concentrations occurring in exhalations of the patient and is so selected: (a) as to undergo in cycles matching successive breaths of the patient a sustained pattern of periodic changes of color representing, in an alternating manner: (i) the presence of a threshold concentration of CO_2: within the airway tube, and (ii) the absence of the threshold concentration of CO_2 within the airway tube but to (b) be incapable of undergoing such periodic changes of color in the absence of exhalations producing such alternating pattern of CO_2 concentrations in the airway tube;

so associating the detector means with the airway tube and thereby making said indicator responsive to gases in the airway tube that if said tube is correctly placed in the trachea of the patient, said indicator will undergo said sustained pattern of periodic changes in contrast to the absence of a recurring pattern found when the detector means associated airway tube is mistakenly installed in the esophagus of the patient;

observing whether the detector means indicator undergoes the sustained pattern of periodic changes of color indicative of the placement and maintenance of the airway tube in the trachea of the patient or whether the sustained pattern of periodic changes is absent as is indicative of the airway tube having been dislodged or incorrectly placed in the patient's esophagus;

employing an observation of a sustained pattern of periodic changes of color as evidence that the airway tube has been placed and is being maintained in the trachea of the patient; and

employing an observation that a sustained pattern of periodic changes of color is not present as evidence that the airway tube was not or is no longer correctly placed in the trachea of the patient.

5,291,880

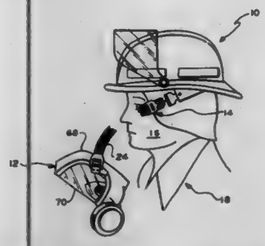
PROTECTIVE HELMET WITH PROTECTIVE FACEPIECE CONNECTION AND ADJUSTMENT PROVISION

Hans O. Almqvist; Bengt Kjellberg, both of Branford, Conn.; Benjamin Huey, West Chester, Pa.; Raymond E. Stevens, Jr., Greenville, Del., and Ian Drummond, Victoria, Australia, assignors to Cairns & Brother Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 568,420, Aug. 16, 1990, abandoned. This application Jul. 19, 1991, Ser. No. 731,315

Int. Cl.[5] A62B *17/04*

U.S. Cl. 128—201.22 **12 Claims**



1. In combination, comprising:

a protective helmet including an outer shell and a separate deformable inner impact shell mounted removably to the interior of said outer shell;

a protective facepiece; and

mounting means for mounting said facepiece removably to said separate deformable inner impact shell, and operable by the wearer of said helmet to force said facepiece into sealing engagement with the face of said wearer of said helmet; said mounting means are adjustable mounting means operable by said wearer to adjust the force with which said facepiece is forced into sealing engagement with the face of said wearer of said helmet; said protective helmet further includes a cradle of straps of webbing for engaging said head of said wearer of said helmet; and wherein said adjustable mounting means include:

(i) first mounting means for mounting said cradle of straps of webbing removably to said inner impact shell and internally thereof,

(ii) second mounting means mounted removably to said inner impact shell by said first mounting means, and

(iii) adjustable interconnecting means for interconnecting said facepiece to said second mounting means operable by said wearer to force said facepiece into sealing engagement with the face of said wearer with adjustable force.

5,291,881

AIR CLEANING CARTRIDGE FOR A GAS MASK AND BREATHING EQUIPMENT WITH AN INSERT

Wolfgang Drews, Zarpen; Gunther Kolbe, Mölln; Stephan Melzer, Bad Schwartau, and Hasso Weinmann, Lübeck, all of Fed. Rep. of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 895,528

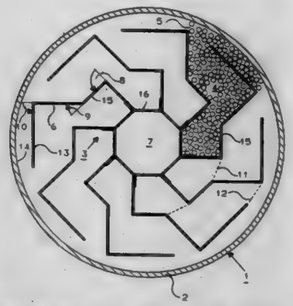
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1991, 4119660

Int. Cl.[5] A62B *7/10*

U.S. Cl. 128—205.27 **14 Claims**

1. A gas mask and breathing equipment air-cleaning cartridge, comprising a cartridge housing with a wall defining a cartridge chamber for gas flow through said chamber in a flow direction, said flow direction being substantially parallel to said

wall; a carbon dioxide-binding chemical packing provided in said chamber and an insert positioned in said chamber, said insert including legs arranged in a radiate pattern, extending perpendicular to said flow direction, said legs starting from a center of said insert and pointing toward said wall of the cartridge, said legs having leg ends adjacent said wall and not connected with said wall for subdividing the chemical packing into individual strands of chemical, said legs being flexible and displaceable relative to one another for compensating for differences in filling ratios of said strands of chemical, said legs having an identical bent zig-zag shaped design.



5,291,882

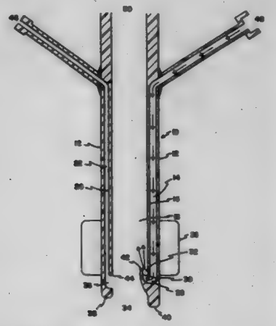
MULTI-LUMEN ITPV ENDOTRACHEAL TUBE

Imad R. Makhoul, 240 S. Doheny Dr., 190 306, Beverly Hills, Calif. 90211, and Joel E. Berkeland, 27846 Audrey Ct., Canyon Country, Calif. 91351

Filed May 11, 1992, Ser. No. 881,221

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.14 **14 Claims**



1. An endotracheal tube comprising:

a main tube having an inside, an outside, and proximal and distal ends, said distal end designed to be positioned in the trachea of a patient, said proximal end designed to be attached to a respirator;

at least one secondary tube having a distal end which terminates substantially adjacent to the distal end of said main tube, said secondary tube substantially parallel to said main tube near said distal end of said main tube;

at least one opening between said secondary tube and said inside of said main tube located substantially adjacent to the distal end of said secondary tube;

a tab located on the inside of said main tube between the distal end of said endotracheal tube and the opening between said secondary tube and said main tube, and oriented such that flow through said secondary tube toward the distal end of said secondary tube is directed away from said distal end of said main tube.

5,291,883

TRANSCUTANEOUS ELECTRIC NERVE STIMULATION SYSTEM

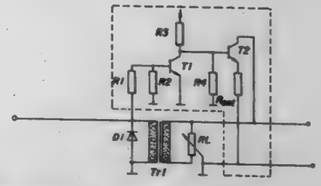
Bernd Kreutner, Ehringhausen, Fed. Rep. of Germany, assignor to Pierenkemper GmbH, Ehringhausen, Fed. Rep. of Germany

Filed Dec. 13, 1990, Ser. No. 627,092

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1990, 4007542

Int. Cl.[5] A61N *1/40*

U.S. Cl. 128—421 **15 Claims**



1. An apparatus for transcutaneous electric nerve stimulation (TNS) comprising:

a frequency generator;

an electric circuit means for generation of different output frequencies of variable intensity at output electrodes; and

an output short circuit network to improve an emitted pulse form, said output short circuit network comprising at least a first transistor and a second transistor, upon actuation of said first transistor by a triggering pulse, a collector of said first transistor activates a base of said second transistor, said output short circuit network being configured such that the triggering pulse is inverted in the first transistor, and the second transistor switches the pulse form to a negative pulse flank and an output of the second transistor is short-circuited by a discharge resistor connected to the second transistor emitter.

5,291,884

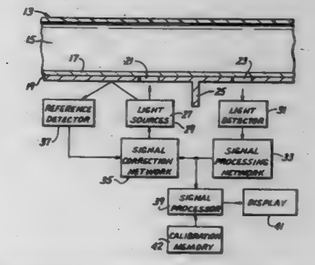
APPARATUS FOR MEASURING A BLOOD PARAMETER

Stan O. Heinemann, Trabuco Canyon; Paul J. Mullin, Westminster, and Susan Cavanaugh, San Clemente, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 7, 1991, Ser. No. 652,121

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **17 Claims**



1. An apparatus for measuring a blood parameter comprising:

at least first and second light sources for emitting light having first and second light intensities, respectively, toward

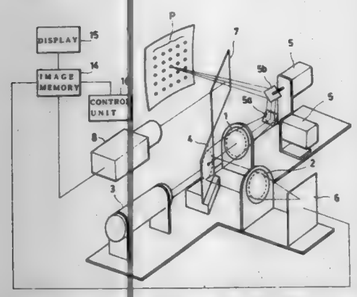
a blood-receiving location, the light emitted by said first and second light sources having first and second wavelength characteristics, respectively, said first and second wavelength characteristics being different;
a detector for receiving light from the first and second light sources after interaction with blood at the blood-receiving location;
means for adjusting the intensity of the light emitted by the first light source so that intensity of the light at the detector from the first light source is substantially constant over a range of values of the blood parameter and for adjusting the intensity of the light emitted by the second light source so that intensity of light at the detector from the second light source is substantially constant over a range of values of the blood parameter; and
means for providing a signal which is related to the intensity of at least one of the first and second light sources and which provides an indication of the blood parameter.

5,291,885

APPARATUS FOR MEASURING BLOOD FLOW

Ayafumi Taniji, and Muneharu Ishikawa, both of Tsukuba, Japan, assignors to Kowa Company Ltd., Japan

Filed Nov. 21, 1991, Ser. No. 795,814
Claims priority, application Japan, Nov. 27, 1990, 2-320640
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **9 Claims**



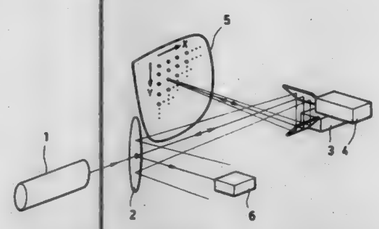
1. An apparatus for measuring a blood flow, comprising:
a scanning optical system having optical components for guiding a coherent light beam to impinge on a stationary measurement spot of a measurement plane of an in vivo tissue;
a light receiving optical system for focusing a light image of the measurement plane in the vicinity of an image point conjugate with the stationary measurement spot, the light image having an optical axis, and the light receiving optical system sharing at least a part of the optical components of the scanning optical system;
at least one photodetecting means disposed at prescribed positions perpendicular to the optical axis and in the vicinity of the image point for measuring light scattered from the in vivo tissue to provide blood flow information related to blood flowing at a depth within the in vivo tissue;
video imaging means for receiving a visible image of the measurement plane and converting it into a video image; and
image superimposing means for superimposing blood flow information corresponding to the position of the stationary measurement spot on the video image and displaying the superimposed blood flow information and video image as a composite visible image.

5,291,886

APPARATUS FOR MEASURING BLOOD FLOW

Koji Katayama; Ayafumi Taniji, and Muneharu Ishikawa, all of Tsukuba, Japan, assignors to Kowa Company Ltd., Japan

Filed Nov. 21, 1991, Ser. No. 795,848
Claims priority, application Japan, Nov. 27, 1990, 2-320641
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **19 Claims**



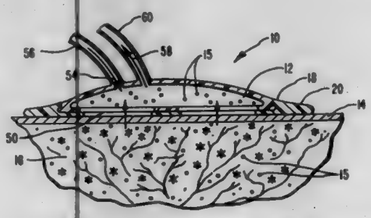
1. An apparatus for measuring blood flow comprising:
intermittent scanning means for repeatedly carrying out segmental scans each consisting of a period during which a segment of a prescribed two-dimensional plane of an in vivo tissue is spatially scanned with coherent light and a rest period during which coherent light is directed at a measurement point of the in vivo tissue;
measuring means for, during the rest period of each segmental scan, measuring time series data relating to intensity of scattered light from the measurement point in the in vivo tissue; and
calculating means for calculating data relating to blood within the in vivo tissue from the time series data by frequency analyzing the time series data and calculating blood-flow information dependent on a frequency spectrum derived from the frequency-analyzation.

5,291,887

APPARATUS AND METHODS FOR NONINVASIVE BLOOD SUBSTANCE MONITORING

Theodore H. Stanley, Salt Lake City, Utah, assignor to Anesta Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 360,876, Jun. 2, 1989, Pat. No. 5,139,023. This application Jun. 2, 1992, Ser. No. 892,287
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—637 **58 Claims**



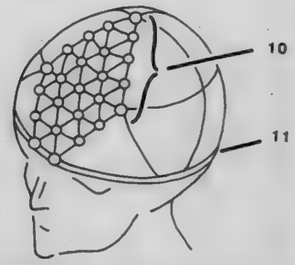
1. An apparatus for noninvasively collecting a desired substance from a subject comprising:
a) a substance receiving medium the substance receiving medium being capable of receiving the desired substance such that a quantity of the substance, which directly correlates with a subject's blood substance value, is capable of permeating the mucosal membrane into the substance receiving medium;
b) means for supporting the substance receiving medium against mucosal tissue of a subject from which the desired substance is to be collected; and
c) means for isolating the substance receiving medium from contaminating sources, such that a quantity of the substance to be collected permeates into the substance receiving medium in a concentration approximately proportional to the concentration of such substance in the subject's blood.

5,291,888

HEAD SENSOR POSITIONING NETWORK

Don M. Tucker, Eugene, Oreg., assignor to Electrical Geodesics, Inc., Eugene, Oreg.

Filed Aug. 26, 1991, Ser. No. 750,107
Int. Cl.[5] A61B *5/0478*
U.S. Cl. 128—644 **2 Claims**



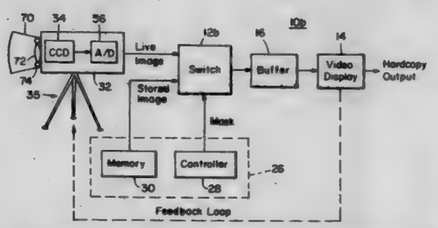
1. An apparatus for positioning sensors on the surface of a human head comprising:
(a) a plurality of sensors used for measuring brain anatomy or function,
(b) a plurality of means for creating tension between pairs of said sensors,
(c) means for arranging a tension network that systematically balances said plurality of means for creating tension based on partitioning the surface of a sphere into polygons, thereby causing said means of creating tension to adapt the positioning apparatus to the geometry of an individual head through a systematic conformation of the geometry of a sphere.

5,291,889

APPARATUS AND METHOD FOR SPATIALLY POSITIONING IMAGES

Robert O. Kenet, Lakeland, Fla., and Guillermo J. Tearney, Boston, Mass., assignors to Vanguard Imaging Ltd., Cambridge, Mass.

Filed May 23, 1991, Ser. No. 704,464
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—653.1 **38 Claims**



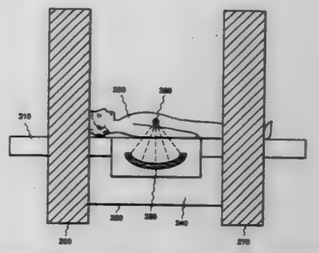
1. A method of facilitating the positioning of a live image of a body surface with respect to a reference image of the same body surface, comprising:
obtaining the live image;
obtaining the reference image;
intermingling the live and reference images to produce a composite image including alternately juxtaposing image portions of said live and reference images in a tesselation; and
displaying said composite image.

5,291,890

MAGNETIC RESONANCE SURGERY USING HEAT WAVES PRODUCED WITH FOCUSSED ULTRASOUND

Harvey E. Cline, Schenectady, and Thomas R. Anthony, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 29, 1991, Ser. No. 751,259
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **4 Claims**



2. A magnetic resonance (MR) surgery system that comprises:
a) a pulsed heat means adapted for providing pulsed energy of an intensity and rate to an application point within a patient to establish a desired temperature distribution T(r,t) around the application point. The pulsed heat means comprising:
1. an ultrasonic transducer adapted for generating pulsed ultrasonic energy, and
2. focussing means adapted for focussing the pulsed ultrasonic energy at the application point to create the desired temperature distribution T(r,t) around the application point;
b) MR compatible positioning means adapted for positioning the pulsed heat means and the application point to cause a selected tissue within the patient to have the desired temperature distribution T(r,t) where r is the radius from the application point and t is time;
c) an MR imaging means adapted for creating fast scan MR images of the temperature distribution T(r,t) around the application point during surgery using a temperature sensitive pulse sequence; and
d) display means adapted for interactively displaying the temperature sensitive images to an operator to allow the operator to control the temperature distribution T(r,t).

5,291,891

MONITORING BODY FUNCTIONS USING FAST NMR PULSE SEQUENCES

Thomas K. Foo, and Matthew A. Bernstein, both of Waukesha, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jul. 27, 1992, Ser. No. 920,351
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **2 Claims**

1. An NMR system, the combination comprising:
means for generating a polarizing magnetic field;
excitation means for generating an RF excitation magnetic field which produces transverse magnetization in spins subjected to the polarizing magnetic field;

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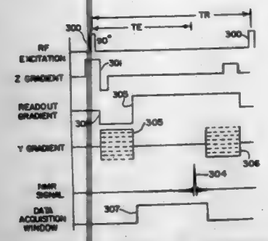
receiver means for sensing an S+ NMR signal produced by the transverse magnetization;

data acquisition means connected to acquire the S+ NMR signal sensed by the receiver means and digitize the S+ NMR signal as a series of NMR signal samples during a data acquisition window;

first gradient means for generating a first magnetic field gradient to impart a first phase component into the S+ NMR signal which is indicative of spin location along a first coordinate axis;

second gradient means for generating a second magnetic field gradient to impart a second phase component into the S+ NMR signal which is indicative of spin location along a second coordinate axis;

third gradient means for generating a third magnetic field gradient after the data acquisition window such that an S− NMR signal does not form in the data acquisition window;



pulse control means coupled to the excitation means, first and second gradient means, and data acquisition means, said pulse control means for conducting a scan comprised of a series of pulse sequences in which the second magnetic field gradient is stepped through a series of discrete values, a corresponding series of S+ NMR echo signals are produced, the first magnetic field gradient is produced while each of said S+ NMR echo signals is produced, and each of said S+ NMR echo signals is acquired to form an NMR data set by generating a gradient lobe on the first magnetic field gradient that causes a peak of each of said S+ NMR echo signals to form asymmetrically near the end of the data acquisition window in which it is acquired; and

processor means for storing each asymmetrically acquired S+ NMR echo signal in the NMR data set as part of a corresponding row in an NMR data array and for reconstructing an image from said NMR data set.

5,291,892

ULTRASONIC FLOW IMAGING

Matthew O'Donnell, Ann Arbor, Mich., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,422
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.08 **9 Claims**

1. In a coherent imaging system using vibratory energy for producing an image, a method of obtaining an indication of magnitude and direction of flowing reflectors, comprising the steps of:

a) producing a plurality of vibratory energy pulses at time intervals (ΔT);

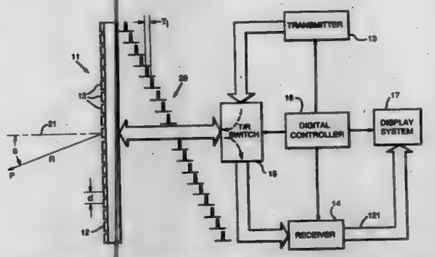
b) receiving echo signals resulting from reflection of the vibratory energy pulses by the flowing reflectors;

c) forming a plurality of signals representative of a plurality of receive beams produced from each echo signal steered in a corresponding plurality of beam angles;

d) sampling the plurality of signals representative of receive beams for a set of successive ranges along each receive beam;

e) correlating a central sample from signals representative of one of the receive beams formed from one of the echo signals with a corresponding sample from signals representative of said one of the receive beams formed from another one of the echo signals and the surrounding samples from signals representative of the plurality of receive beams formed from said another one of the echo signals to produce a set of correlation values;

f) calculating velocity of the reflectors at the central sample in both the range direction and cross range direction from the set of correlation values;



g) controlling intensity of an image pixel which corresponds to location of the central sample with the calculated velocity;

h) repeating steps e), f) and g) for central samples located at successive range values along said one of the receive beams; and

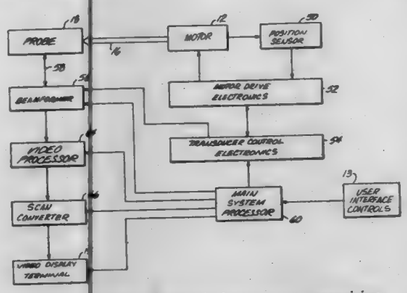
i) repeating steps a) through h) in which the plurality of receive beams formed in step c) are steered in a different beam angle.

5,291,893

ENDO-LUMINAL ULTRASONIC INSTRUMENT AND METHOD FOR ITS USE

Michael H. Slayton, Tempe, Ariz., assignor to Acoustic Imaging Technologies Corporation, Phoenix, Ariz.

Filed Oct. 9, 1992, Ser. No. 959,150
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **25 Claims**



1. An endo-luminal ultrasonic instrument comprising:

a motor having a fixed housing and a rotatable drive shaft that oscillates relative to the housing;

a flexible catheter sheath coupled at one end to the motor to oscillate with the drive shaft, the sheath having an axis about which it oscillates;

an ultrasonic transducer coupled to the other end of the sheath to oscillate therewith;

electronic means near the motor for operating the transducer;

wiring passing through the sheath to connect electrically the transducer and the electronic means;

means for attaching one end of the wiring to the transducer to oscillate therewith; and

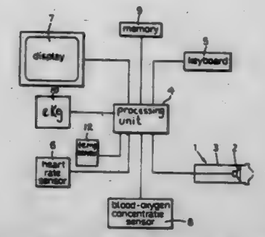
means for attaching the other end of the wiring to the motor housing so the wiring twists as the transducer oscillates.

5,291,894

APPARATUS FOR TREATING A PATIENT WITH ACOUSTIC WAVES

Lajos Z. Nagy, Groot Hertoginnelaan 26, 1405 Ed Bussum, Netherlands

Continuation-in-part of Ser. No. 602,513, Oct. 24, 1990, abandoned. This application May 20, 1992, Ser. No. 886,437
Claims priority, application Netherlands, Nov. 14, 1989, 8902809
Int. Cl.[5] A61H *23/00*
U.S. Cl. 128—670 **15 Claims**



1. An apparatus for treating a patient for blood circulation disturbances with a treatment of one of; acoustic waves, electromagnetic waves, or a combination of acoustic waves and electromagnetic waves, comprising:

a processing unit having means for generating a variable frequency in dependence on the change of the heart rate as a result of said treatment;

a treatment head having means for providing acoustic and/or electromagnetic waves, said treatment head coupled with said means for generating a variable frequency within a range specific to treating disturbances in blood circulation;

a plurality of sensors in communication with said processing unit each sensor having means for transmitting signals indicative of a physiological measurement, said plurality of sensors including a heart rate sensor having means for measuring the heart rate of said patient before and after said treatment, said processing unit having, means for controlling said treatment head and means for processing said signals transmitted by said sensors;

a display screen in communication with said processing unit that displays said signals on said display screen; and

a keyboard in communication with said processing unit having means for adjusting said variable frequency.

5,291,895

EVALUATION OF HEART MECHANICAL PERFORMANCE

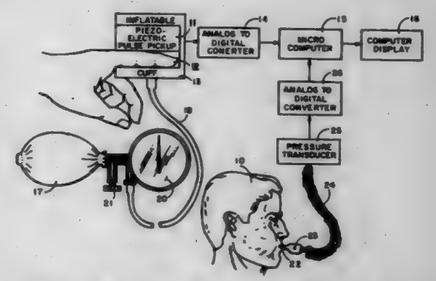
Kevin M. McIntyre, 160 Commonwealth Ave., Boston, Mass. 02116

Continuation of Ser. No. 758,783, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 563,869, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 353,373, May 16, 1989, abandoned, which is a continuation of Ser. No. 125,561, Nov. 25, 1987, abandoned, which is a continuation of Ser. No. 740,524, Jun. 3, 1985, abandoned. This application Dec. 29, 1992, Ser. No. 998,410
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—672 **18 Claims**

1. A method of evaluating the mechanical condition of a heart which method includes the steps of,

noninvasively providing a pulse signal representative of arterial pulsation by placing pressure sensitive transducing means for providing an electrical signal representative of pressure in contact with the skin of a patient while applying pressure at least in part through the pressure sensitive transducing means to adjacent skin at a controlled pressure within the range of at least just above the diastolic pressure of said patient and a pressure of substantially half of said diastolic pressure,

and detecting said pulse signal.

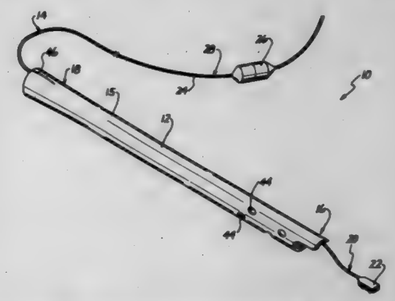


5,291,896

CARDIAC OUTPUT PROBE ASSEMBLY

James D. Fonger, Wayland, Mass.; David L. Swendson, Garden Grove, Calif.; Clifford E. Currier, Aliso Viejo, Calif.; David J. Evans, Irvine, Calif., and Donald E. Bobo, Jr., Orange, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Aug. 21, 1991, Ser. No. 748,484
Int. Cl.[5] A61B *5/00, 8/12*
U.S. Cl. 128—713 **29 Claims**



1. A medical device for use on extravascular tissue within a living body, comprising:

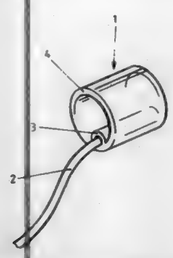
a temporarily implantable cardiac output probe comprising an attachment portion which is adapted to detachably fasten said implantable probe to the extravascular tissue;

a line, connected to said implantable probe, said attachment portion being configured to cause release of said implantable probe in response to a force on said line; and

a chest tube having a generally smooth outer surface to permit said chest tube to be inserted into and enclosed within the thoracic cavity of the living body and to be withdrawn from the living body by pulling thereon, said tube sized to permit said line to pass therethrough, and having a mouth portion which receives said implantable probe prior to withdrawal of said chest tube from the thoracic cavity.

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5,291,897
FASTENING MEMBER
Jan M. Gastrin, and Terhi Kajaste, both of Espoo, Finland, assignors to Instrumentarium Corporation, Finland
Filed Sep. 6, 1991, Ser. No. 755,873
Claims priority, application Finland, Sep. 6, 1990, 904407
Int. Cl.[5] A61B *5/00*; A61M *15/08*; A62B *7/00*
U.S. Cl. 128—716 13 Claims

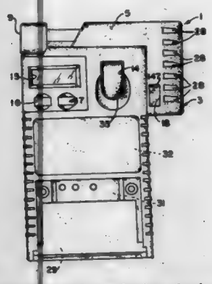


1. A fastening member (1) adapted to be placed in a passage of a patient for positioning a sampling means in the passage, said sampling means for conducting fluid samples to a measuring device, said passage being accessible from outside the patient's body and being lined with tissue, said fastening member comprising:

a tube formed of a deformable, resilient material, said tube having a port (5) extending therethrough parallel to a longitudinal axis of the tube, said tube being deformable by manual manipulation to facilitate placement in the passage, the resiliency of said tube tending to cause said tube to return to the undeformed state and to press against the tissue of said passage for retaining said tube in said passage, said port forming a fluid communication path through the tube to outside the patient's body for a medium in the passage when the fastening member is placed in the passage; and

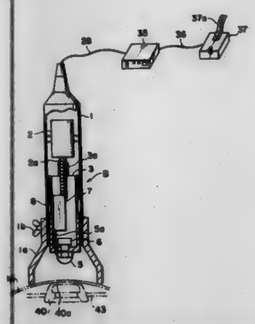
a connecting member (3) disposed inside said tube and attached to said tube for receiving the sampling means so that the sampling means may sample the medium in the passage.

5,291,898
BREATH ALCOHOL DEVICE
Karl P. W. Wolf, Webster Groves, Mo., assignor to Alcotek, Inc., St. Louis, Mo.
Filed May 22, 1992, Ser. No. 886,921
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—719 32 Claims



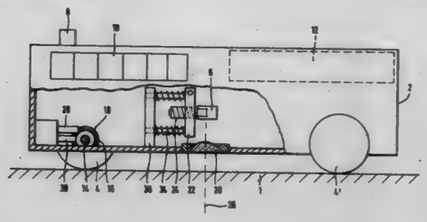
1. In a hand-held breath analyzing device with a housing having mouthpiece tube-receiving means, the improvement comprising detent means mounted in said housing to move between engaging and disengaging positions, and spring means biasing said detent means to disengaging position, a disposable mouthpiece having a tube with an inner end adapted to be embraced by said mouthpiece tube-receiving means, an outer end through which a subject blows, and means intermediate said outer and inner ends of said tube for engaging said detent means, said detent means being displaced against the bias of said spring by movement of said mouthpiece tube into seated condition in said mouthpiece tube-receiving means, and means, responsive to said displacement, for holding said detent means in mouthpiece-engaging position with said tube and embraced by said mouthpiece tube-receiving means until said detent holding means is deliberately released, whereupon said detent means, moving with the bias of said spring means, ejects said mouthpiece from said mouthpiece tube receiving means and away from said housing.

5,291,899
METHOD AND DEVICE FOR MEASURING INTRACRANIAL PRESSURE
Yasuo Watanabe, Komae, and Hideaki Shimazu, Tokyo, both of Japan, assignors to Kabushiki Kaisha Nihon M.D.M., Japan
Filed Apr. 29, 1991, Ser. No. 693,443
Claims priority, application Japan, May 10, 1990, 2-120450
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 20 Claims



1. A method for measuring intracranial pressure by using a device comprising a reservoir implantable under the skin of a patient and into which cerebrospinal fluid can be introduced from a brain ventricle of the patient, a flexible dome configured to be upwardly projected from said reservoir by the pressure of the cerebrospinal fluid and flexibly deformable according to an external force, a pressing part for pressing against said dome through the skin, a pressing-part-driving means for driving said pressing part toward said dome at a constant speed, a pressure transducer for measuring the force of the pressing part pressing the dome and a flexible membrane provided at the tip of the pressing part and having an interior filled with a fluid, the method comprising: pressing the flexible membrane of the pressing part against the dome of the reservoir through the skin by means of the pressing-part-driving means after a zero point correction of the pressure transducer is performed by communicating the interior of the flexible membrane with the atmosphere.

5,291,900
INSTRUMENT FOR MEASURING THE LENGTH OF INFANTS
Dieter Löwenstein, Medizintechnik GmbH, 6501 Bodenheim, Fed. Rep. of Germany
Filed Sep. 10, 1992, Ser. No. 942,851
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 9111428[U]
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 9 Claims



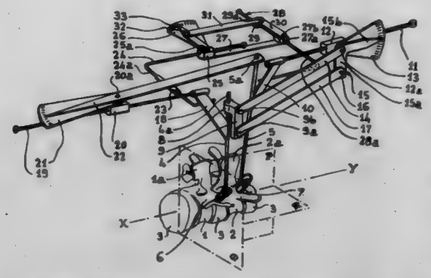
1. An instrument for use in conjunction with a base for measuring the length of infants, the instrument comprising:

a housing that can be moved uniformly in a straight line on the base;

a measuring device mounted in the housing for recording and displaying a translational movement path between a starting point and a certain end point of a translation movement; and

a device mounted in the housing emitting a scanning beam downward at a right angle to the base, separate and offset from the measuring device.

5,291,901
DEVICE FOR MEASURING ANGULAR MOVEMENT OF VERTEBRAE
Henry Graf, 8, rue Duquesne, Lyons, France 69006
Filed Sep. 14, 1992, Ser. No. 950,632
Claims priority, application France, Sep. 24, 1991, 91 11964
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—781 6 Claims



1. An apparatus for measuring an angle of movement of one vertebra of a patient with respect to another spaced vertebra relative to at least two of three orthogonal planes which extend through a longitudinal axis along which the vertebrae are aligned for purposes of making therapeutical decisions with respect to spinal surgical procedures, wherein the vertebrae include outwardly extending spinous processes and wherein the three orthogonal planes include a first plane extending along the longitudinal axis and in general alignment with the spinous processes, a second plane extending perpendicularly with respect to the longitudinal axis, and a third plane orthogonal to both the first and second planes and extending along the longitudinal axis, the apparatus comprising: a first scale for indicating a degree of flexion-extensional movement in said first plane of the spaced vertebrae with respect to one another and a second scale for indicating a degree of torsional movement of the spaced vertebrae with respect to one another in planes parallel to said second plane, first and second rods having lower ends for engaging the vertebrae in spaced relationship with respect to one another, a block freely rotatably mounted about said second rod, a first supplemental rod, means for connecting said first supplemental rod generally perpendicularly with respect to said first rod, a first carriage means movably mounted to said first supplemental rod so as to be slidable relative thereto, said first scale being mounted to said first carriage means, a first indicator means pivotably mounted to said first carriage means in adjacent relationship to said first scale, a first pair of parallel link members having first end portions pivotably connected to said block which is rotatably mounted to said second rod and second ends pivotably connected to said first indicator means, said parallel link members, said block and said first indicator forming a deformable parallelogram, whereby the degree of flexion-extensional movement of the spaced vertebrae relative to one another may be measured by the movement of said first indicator means relative to said first scale upon the application of force to cause a bending of the vertebrae relative to one another in said first plane to thereby shift said first and second rods relative to one another within a plane parallel to said first plane.

5,291,902
INCONTINENCE TREATMENT
Brent Carman, R.R. #1, Millarville, Alberta, T0L 1K0, Canada
Filed Jan. 11, 1993, Ser. No. 3,052
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—138 14 Claims

1. A method of improving the pelvic floor muscle strength of a person in a manner to lessen urinary incontinence comprising;

placing surface electrodes of electromyographic measuring apparatus on the perineum of the person,

measuring with said apparatus the bladder controlling pelvic floor muscle strength of the person while the person is tensing the pelvic floor muscles in a urine stopping manner to obtain an EMG signal, and

adjusting the threshold value of a portable electromyographic measuring unit to enable the person to repeat said measurement at different times to attempt to obtain better EMG signals in a urinary incontinence reducing sense, said portable unit giving an audible and/or visual indication when an EMG signal above said threshold value is achieved.

5,291,903
DISPOSABLE STERILE COVER AND RESTRAINT FOR SURGICAL ARM SUPPORT
Thomas C. Reeves, Birmingham, Ala., assignor to Production Products, Inc., Homewood, Ala.
Continuation of Ser. No. 711,859, Jun. 7, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 7,824
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—878 6 Claims

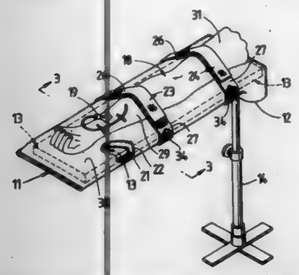
1. A disposable arm support cover for securing a patient's arm to a surgical arm supporting device during surgery and for isolating said arm support device from body fluids discharged from said patient's arm, said disposable arm support cover comprising:

(a) an elongated frangible disposable sheath which envelops an associated surgical arm supporting device, said sheath having an impermeable layer of material, an outer absorbent layer of material and an opening at one end thereof for insertion therein of said arm supporting device; and

(b) at least two straps connected to and spaced along an underside of said sheath and disposable therewith for

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securing said patient's arm against said outer absorbent layer of said sheath and to said arm supporting device without leaving an unsanitary adhesive residue on said patient's arm or said arm supporting device, wherein each of said straps comprises: a hooked portion of a hook-and-loop connector connected to a selected side of each of said



straps; and a looped portion of said hook-and-loop connector connected to a side opposite said selected side of each of said straps, wherein each of said straps is wrapped completely around said arm supporting device, said patient's arm and said sheath with said hooked portion being applied and detachable connected to said looped portion to secure said patient's arm to said arm supporting device.

5,291,904

DORSIFLEXION ASSISTING DEVICE FOR HEMIPLEGICS

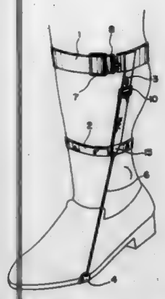
Marshall Walker, 72 Briern Barnet Lane, London N11 3NB, England

Filed Jun. 15, 1992, Ser. No. 897,940

Claims priority, application United Kingdom, Jun. 19, 1991, 9113232

Int. Cl.[5] A61F *5/37, 5/00*

U.S. Cl. 128—882 **6 Claims**



1. A dorsiflexion assisting device for Hemiplegics, comprising: a first strap for extending around the calf of a wearer, a second strap comprised of elastic material for extending around an ankle region of the wearer, a first connecting element comprised of elastic stretch material including means for adjusting an unextended length thereof and extending between and connecting the first strap with the second strap, a securing member attachable to the wearer's shoe so as to provide a securing point at the outer side of the shoe, at or forward of the instep region thereof, and a second connecting element extending between the second strap and said securing point, second connecting element being comprised of a cord having at one end a first reinforced region engageable with said securing member at said securing point, and having at the other end a second reinforced region engageable with a securing element located in the region where said first connecting element connects to the second strap.

5,291,905

HAIR TREATMENT APPLICATOR

Peter Busch, Erkrath; Klaus Thiele, Langenfeld, and Horst Hoeffkes, Duesseldorf-Hellerhof, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

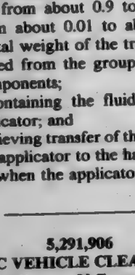
PCT No. PCT/EP89/00262, § 371 Date Sep. 21, 1990, § 102(e) Date Sep. 21, 1990, PCT Pub. No. WO89/09002, PCT Pub. Date Oct. 5, 1989

Continuation of Ser. No. 573,226, Sep. 21, 1990, abandoned. This PCT application Mar. 13, 1989, Ser. No. 924,387

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1988, 3809498; Dec. 14, 1988, 3842006

Int. Cl.[5] A45D *24/22*

U.S. Cl. 132—116 **20 Claims**



1. An applicator for the treatment of hair, said applicator comprising:

(A) a dispenser for contacting the hair;

(B) a fluid treating composition having a viscosity at room temperature of from about 0.9 to about 12 mPa.s and comprising from about 0.01 to about 20% by weight, based on the total weight of the treating composition, of materials selected from the group of hair-softening and hair-setting components;

(C) means for containing the fluid treating composition within the applicator; and

(D) means for achieving transfer of the fluid treating composition from the applicator to the hair at a suitable rate for hair treatment when the applicator is contacted with the hair.

5,291,906

AUTOMATIC VEHICLE CLEANING SYSTEM

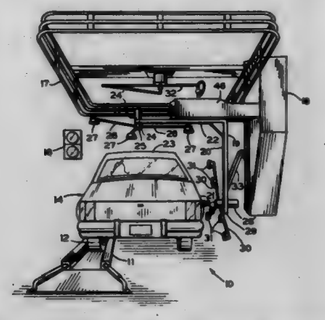
Kenneth P. White, Burlington, N.C., assignor to S.N.M. Manufacturing , Inc., Burlington, N.C.

Filed Dec. 21, 1992, Ser. No. 993,652

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—123 **3 Claims**

1. Apparatus for cleaning a vehicle while the vehicle is at a cleaning location which includes an overhead track mounted above and surrounding said cleaning location, a trolley mounted to move on said overhead track around said cleaning location, said trolley including a guide mounted to extend from said trolley along a horizontal axis substantially perpendicular to said overhead track, a plurality of spray nozzles mounted on said trolley to spray sides of a vehicle at said cleaning location as said trolley is advanced around said overhead track, said apparatus characterized by means for determining the location of at least one side of such vehicle relative to an adjacent side of said track, and means responsive to the determined location of said at least one side for adjusting the spacing between said spray nozzles and such vehicle side as said trolley is advanced along such side, said adjusting means including a spray bar mounting said spray nozzles, means mounting said spray bar on said guide to move along said guide axis, first and second cylinders, said first cylinder having a first end connected to a first end of said second cylinder with said cylinders having a common axis, a first piston rod extending from said first cylinder along said axis to form a second end of said first cylinder, a second piston rod extending from said second cylinder along said axis to form a second end of said second cylinder, means for selectively supplying fluid to said first cylinder for selec-



tively extending and retracting said first piston rod from said first cylinder along said axis, means for selectively supplying fluid to said second cylinder for selectively extending and retracting said second piston rod from said second cylinder along said axis, means for connecting said second end of said first cylinder to said trolley and means for connecting said second end of said second cylinder to said spray bar, whereby the position of said spray bar is indexed on said guide by selectively extending and retracting said first and second piston rods.

5,291,907

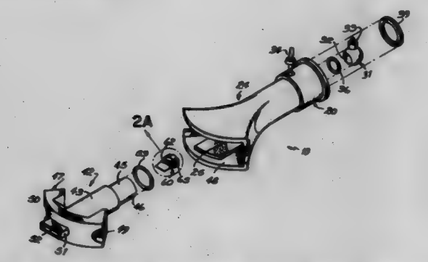
SCUBA EQUIPMENT RINSE NOZZLE

Raymond S. Clark, 124 Park Rd., Fort Mitchell, Ky. 41011

Filed Oct. 1, 1992, Ser. No. 955,050

Int. Cl.[5] B08B *3/04, 9/00*

U.S. Cl. 134—166 R **23 Claims**



19. A rinse nozzle for rinsing SCUBA diving equipment through a mouthpiece associated therewith, said rinse nozzle means having:

means for connecting said rinse nozzle to a source of rinse fluid;

flow diffusing means for reducing the velocity of rinse fluid flowing from said source into said nozzle; and

means for operably interconnecting said nozzle to a mouthpiece for supplying rinse fluid to the mouthpiece for rinsing said equipment.

5,291,908

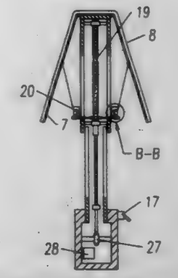
POWERED UMBRELLA

Clyde C. Grady, II, P.O. Box 303, Baytown, Tex. 77522

Continuation-in-part of Ser. No. 612,526, Nov. 13, 1990, Pat. No. 5,213,122. This application Aug. 10, 1992, Ser. No. 929,888

Int. Cl.[5] A45B *25/14*

U.S. Cl. 135—22 **4 Claims**



1. An umbrella having a frame of interconnected ribs covered by cloth and a means for the automatic opening and closing of the aforesaid ribs and cloth comprising:

a hollow one piece shaft provided with at least one slot extending therethru along a portion of its length;

a collar which slides along the exterior surface of the aforesaid hollow one piece shaft, wherein said collar is connected to the aforesaid interconnected ribs;

a threaded nut located concentrically within the aforesaid one piece shaft,

a reversible motor capable of driving said threaded rod in two directions to extend or close said umbrella; and

at least one pin extending through said at least one slot, said at least one pin being detachable from said threaded nut without being detached from said collar whereby

said collar may be manually slid up and down the length of said hollow shaft to manually open and close said cloth and ribs.

5,291,909

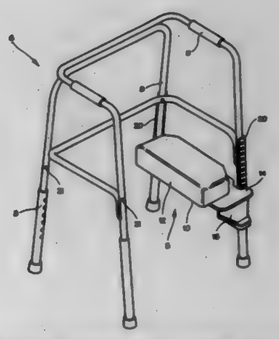
UNIVERSAL WALKER LEG SUPPORT DEVICE

Steven E. Skorman, 413 W. Warren St., and John H. Ellis, 1411 Deborah Cir., both of Shelby, N.C. 28150

Filed Mar. 13, 1991, Ser. No. 668,935

Int. Cl.[5] A61H *3/00*

U.S. Cl. 135—67 **9 Claims**



1. An adjustable leg support device configured for mounting on a variety of invalid walkers of the general type having an upright frame structure with handle portions positioned so as to be gripped by the user when standing or walking and having

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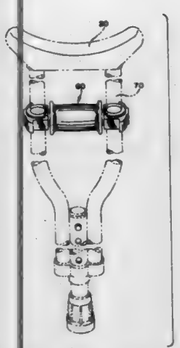
a plurality of downwardly projecting legs which provide support and stability of movement for disabled persons, said leg support device comprising means for supporting an injured leg, ankle, or foot of the user for added comfort and stability during movement or while standing at rest, said leg support device having means for selectively mounting said leg support device on said walker legs at any one of a multiplicity of predetermined positions located in spaced vertical relation to one another with said leg support being disposed generally horizontally at each said position whereby the vertical position of the leg support device can be adjusted according to the physical requirements of the user, and means for selectively changing the structural configuration of said leg support device including a platform support plate and at least one vertically oriented support plate mounted to said platform support plate with hinge means, said hinge means including a first hinge portion mounted on said vertically oriented support plate and a second hinge portion mounted onto said platform support plate, said hinge means providing selective angular orientation between said platform support plate and said vertical support plate of between 0° and 180°, thereby permitting selective mounting of said leg support device to a multiplicity of invalid walkers having said legs projecting downwardly at different angular orientations.

5,291,910

ADJUSTABLE HAND GRIP FOR ORTHOPEDIC CRUTCH

Cuong Bui, Yorba Linda, and Jim R. Schultz, Thousand Oaks, both of Calif., assignors to Guardian Products, Inc., Simi Valley, Calif.

Continuation-in-part of Ser. No. 881,531, May 12, 1992. This application Jan. 8, 1993, Ser. No. 1,830
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—68 **40 Claims**



1. An adjustable hand grip having a locking member in combination with for an orthopedic crutch with a pair of generally parallel, vertical supports rigidly attached to one another, with each of the supports having a plurality of spaced apertures along a longitudinal surface comprising:

a. a sleeve slidably surrounding each vertical support, each sleeve having an aperture that can be aligned with the apertures in the vertical support;

b. a bracket extending between the vertical supports to rigidly connect the sleeves; and

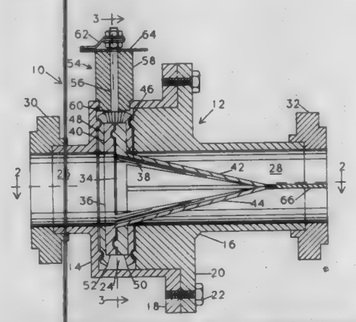
c. a clamp surrounding a portion of the sleeve and having a pin insertable through aligned apertures in the sleeve and the vertical support and movable into and out of the aligned apertures, the clamp firmly fixing the hand grip to the vertical supports when the pin is extended through the aligned apertures in the sleeve and vertical support.

5,291,911

CONICAL VARIABLE AREA THROTTLING DEVICE

Alvaro Bernal, Houston, and Jackie R. Boyles, Sugar Land, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 19, 1993, Ser. No. 92,964
Int. Cl.[5] F16K *11/14*
U.S. Cl. 137—1 **8 Claims**



8. A method for proportioning the non-predominant (volumetric-wise) phase of a two-phase fluid flow comprising the steps of:

providing a device with a housing defining a chamber having inlet and outlet passages in substantially axial alignment, first and second flow proportioning members mounted in said chamber, each said member having an annular flange segment and an integral conical segment extending toward said outlet passage, notched panel means fixed in said outlet passage lying in a plane defined by the maximum relative movement of said flow proportioning members and receiving said conical segments therein; and means to engage said flange segments and oppositely rotate said flow proportioning members around said outlet passage axis thereby changing the relative positioning of said conical segments whereby the ratio of the non-predominant (volumetric-wise) phase can be adjusted;

relatively rotating said flow proportioning members so that the conical surface thereof pseudo blocks the cross sectional area upstream forcing both two-phase fluid streams to change their velocities conveying the dominant phase into two different pressure gradient environments caused by the difference in velocity thereby selecting the path of the non-predominant phase particles based on particle size and relative vacuum to which it is exposed.

5,291,912

RUPTURE DISK FOR FIRE SAFE VALVES

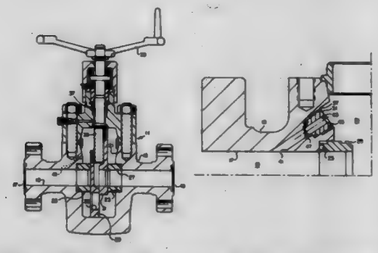
David D. Comeaux, Sugar Land, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Jun. 10, 1993, Ser. No. 75,065
Int. Cl.[5] F16K *17/14, 17/38*
U.S. Cl. 137—14 **13 Claims**

13. A method of relieving pressure in a gate valve having a body, a flow passage extending transversely through the cavity, defining an upstream passage side and a downstream passage side, an upstream seat ring located at the intersection of the upstream passage side with the cavity, a downstream seat ring located at the intersection of the downstream passage side with the cavity, a gate, and actuator means for moving the gate through the cavity between the seat rings between open and closed positions, comprising:

providing a relief passage extending from the cavity to the upstream passage side;

mounting a frangible member in the relief passage which blocks flow through the relief passage unless pressure in the cavity exceeds pressure in the upstream passage side by a selected amount; then, if a fire occurs and the gate is closed into engagement with both seat rings, trapping fluid in the cavity which is being heated by the fire,



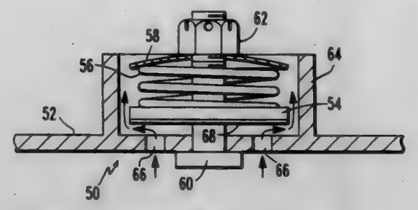
breaking the frangible member to allow pressure in the cavity to equalize with the upstream passage side.

5,291,913

FLUID VALVE HAVING A ZIRCONIUM OXIDE COATED VALVE DISC

James C. Hill, Ogden, and David W. Holt, Clearfield, both of Utah, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 26, 1993, Ser. No. 23,284
Int. Cl.[5] F16L *55/18*
U.S. Cl. 137—15 **5 Claims**



1. A fluid valve, comprising:

a valve body having a valve seat for receiving a valve disc to close the valve, the valve seat comprised of a material selected from the group iron and steel;

a zirconium valve disc having a zirconium oxide layer, which layer seats against the valve seat when the valve is closed.

5,291,914

PIERCING VALVE ASSEMBLY FOR PLIERS

Jack A. Bares, Chagrin Falls, and Gary E. Medved, Lyndhurst, both of Ohio, assignors to Milbar Corporation, Chagrin Falls, Ohio

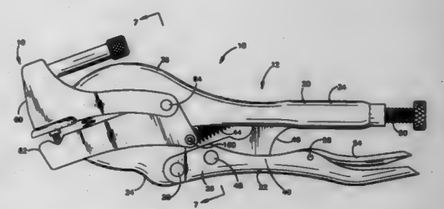
Filed Jun. 30, 1993, Ser. No. 86,046
Int. Cl.[5] F16L *41/04, 41.06;* **B25B** *7/22*
U.S. Cl. 137—15 **23 Claims**

22. A method for draining fluid in a pipe, comprising the following steps:

providing a pair of pliers having two handles pivotally attached and moveable with respect to one another by a pivot pin having a pivot axis, each handle having a handle portion and a jaw, wherein said jaws are located in opposed moveable relation to one another,

providing a piercing valve assembly comprising a pair of housing members pivotally attached to each other by a pivot device independent of said pivot pin, said piercing valve assembly including a bias device urging said housing members away from each other, one of said pair of housing members being designed to receive one of said jaws in engagement therewith and be removably mounted thereto, and the other of said pair of housing members being designed to receive the other of said pair of jaws in engagement therewith and to be removably mounted thereto,

mounting each housing member on a respective jaw of said pair of pliers with said pivot device being located essentially coaxial with said pivot axis, inserting a locking pin through apertures formed in said housing members to prevent said housing portions from being removed form said pair of pliers during use, said bias device urging said housing members against a respective jaw of the pair of pliers when the housing members are mounted to the pair of pliers, and allowing said handle portions of the pair of pliers to be squeezed together to bring the housing members together.

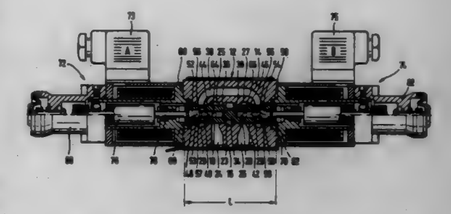


5,291,915

ADJUSTABLE PRESSURE RELIEF VALVE

Wolfgang Lukaszyk, Lohr/Main, and Norberto Thiesing, Frammersbach, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 864,356
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4110926
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—82 **34 Claims**



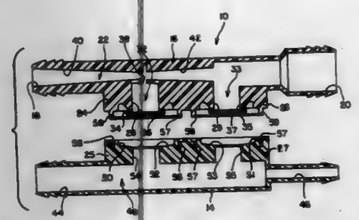
1. An adjustable pressure relief valve for generating a pressure output signal corresponding to one of an input valve and a signal in a valve connection, wherein the pressure relief valve comprises:

a duplex valve which includes a distributing valve housing of a standard way-valve design equipped with not greater than four connections, said housing having a piston bore wherein an exchangeable valve core is positioned in said bore, said valve core being equipped on opposite sides thereof with a separately controllable seat valve element and which is selectively closable on one side thereof against the pressure in said first and second output connections wherein individually adjustable pressure systems are connected to each of said opposite sides of said valve and wherein said valve core comprises a sleeve-shaped ele-

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ment which comprises on an inside portion thereof two valve seats that are connected by separate control oil ducts to a central pressure connection area.

5,291,916
CHECK VALVE
Kenneth D. Kloosterman, Bristol, and John Barlow, Elkhart, both of Ind., assignors to Excel Industries, Inc., Elkhart, Ind.
Filed Dec. 28, 1992, Ser. No. 997,546
Int. Cl.[5] F16K *11/10, 15/16*
U.S. Cl. 137—112 **4 Claims**



1. In a check valve including a valve body having a first air inlet port, an air outlet port in air flow communication with said first air inlet port to define an air passageway, a second air inlet port in air flow communication with said first air inlet port and said air outlet port wherein air is drawn from said second air inlet port towards said air outlet port, valve means positioned between said air passageway and said second air inlet port for inhibiting air flow from said air passageway through said second air inlet port, the improvement wherein said air passageway includes a venturi conduit positioned between said first air inlet port and said outlet port, said venturi conduit constituting means for enhancing air flow through said outlet port with a corresponding enhancement of air drawn from said second air inlet port towards said outlet port, said valve means including a valve seat positioned between said first and second inlet ports having an opening communicating with said air passageway, flexible seal means positioned in said valve seat for responding to air exiting said second air inlet port under outside vacuum influence and for seating against said valve seat to prevent air flow from said air passageway from exiting through said second air inlet port, said venturi conduit positioned immediately adjacent said valve seat opening to provide maximum vacuum boost through the valve seat.

5,291,917
HOUSING FOR A VACUUM VALVE UNIT
Junichi Yamanaka, Aichi, Japan, assignor to Inax Corporation, Tokoname, Japan
Filed Dec. 18, 1992, Ser. No. 992,745
Claims priority, application Japan, Mar. 30, 1992, 4-74090
Int. Cl.[5] F16L *5/00;* **B67C** *3/16*
U.S. Cl. 137—363 **7 Claims**

1. A housing made of synthetic resin and adated for use in a vacuum valve unit of a vacuum sewage system, comprising:

a left housing half including

a semicylindrical body,

two flanges extending outwardly from opposite edges of said body,

ribs attached to the inner peripheral surface of said body adjacent to said opposite edges of said body and extending horizontally when said housing is arranged in an upright position,

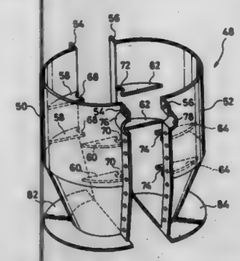
semicircular recesses defined in free ends of said ribs, and

a semicircular concaved portion formed in one of said flanges;

a right housing half completely identical in shape to said left housing half;

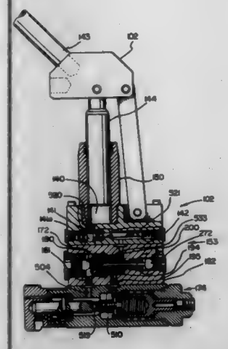
said flanges of said left and right housing halves being matingly connected by connecting means so that said left and right housing halves form a cylindrical housing;

said concaved portions defining an opening to receive a pipe when said flanges are mated together; and



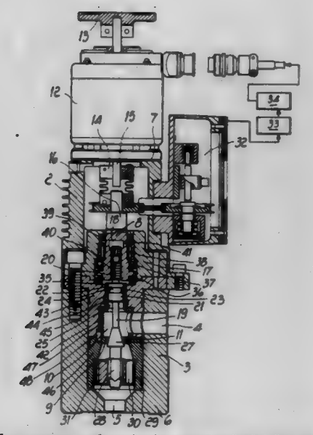
said free ends of said ribs being brought into contact with each other when said left and right housing halves are connected together whereby said semicircular recesses in said free ends of said ribs define openings to receive pipes.

5,291,918
SAFETY VALVE ACTUATOR ASSEMBLY
Clarence W. Johnson, Calgary, Canada, assignor to Barber Industries Ltd., Calgary, Canada
Division of Ser. No. 513,054, Apr. 11, 1990, Pat. No. 5,070,900, which is a continuation of Ser. No. 153,259, Feb. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 43,336, Apr. 28, 1987, abandoned. This application Dec. 9, 1991, Ser. No. 805,493
Int. Cl.[5] F16K *31/124*
U.S. Cl. 137—458 **23 Claims**



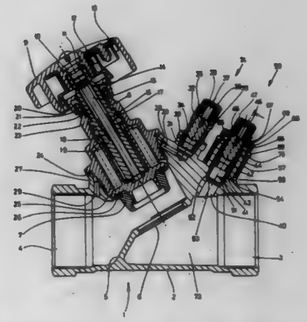
1. An actuator for opening and closing a valve, said actuator comprising a manually operated pump for pumping hydraulic fluid from a reservoir holding said hydraulic fluid to move a piston and a valve operated from said piston in a first direction and at least one spring to move said piston and said valve in a second direction opposed to said first direction, said spring being contained in said reservoir.

5,291,919
HIGH-PRESSURE VALVE DEVICE PARTICULARLY FOR PRESSURIZED FLUIDS
Luciano Calzavara, Baveno, Italy, assignor to Secondo Mona S.p.A., Somma Lombardo, Italy
Filed Nov. 20, 1992, Ser. No. 979,692
Claims priority, application Italy, Nov. 27, 1991, MI91 A 003163
Int. Cl.[5] F16K *37/00, 31/05, 31/50*
U.S. Cl. 137—554 **15 Claims**



1. High-pressure valve device particularly for pressurized fluids, comprising a valve body which has an elongated longitudinal extension, delimits a chamber and has an input port, which is defined on the lateral surface of said body, and an output port, which is arranged on a first end thereof along the axis of said valve body, wherein said valve body supports, on a second end, external actuation means which can be connected, by virtue of coupling means, to a shaft for the actuation of a first bush which is accommodated within said chamber, said first bush having actuation means for the sealed non-rotational movement of adjustment means for opening a connecting path between said input port and said output port, said adjustment means engaging in a neck located in said chamber and being movable toward said output port, in order to open said connecting path, and movable in an opposite direction, in order to close said connecting path, means being furthermore provided for detecting movement of said adjustment means, said adjustment means comprising a pin a first end of which is at least partially threaded on its surface, is provided with a lubricant entrainment system and penetrates a blind hole of said first bush, said pin having, proximate to said first end, a slider which is movable and sealed by extrusion-preventing rings and sealing rings, within a hole defined in a third hollow bush, said third bush being inserted in a fourth bush, said third bush and said fourth bush being mutually coaxial and being provided with a connection to said input port and to said output port, and entering a chamber for connection between said input port and said output port, said connecting chamber being delimited, toward said output port, by a neck provided on a fifth bush locked in alignment with respect to the fourth and third bushes and in which a frustum-shaped expansion of said pin engages, said pin being provided, on a second end which is arranged toward said output port, with a sixth bush which is provided with channels for connecting said chamber and said output port, means being further provided for engaging within grooves defined on walls of said sixth bush, said means being suitable to prevent the rotation of said pin.

5,291,920
APPARATUS FOR MEASUREMENT AND CONTROL, RESPECTIVELY, OF TEMPERATURE AND/OR PRESSURE
Leif Glansk, Fristad, and Leif Marstorp, Ljung, both of Sweden, assignors to Tour & Andersson AB, Sweden
PCT No. PCT/SE91/00024, § 371 Date Jul. 10, 1992, § 102(e) Date Jul. 10, 1992, PCT Pub. No. WO91/10852, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 15, 1991, Ser. No. 910,083
Claims priority, application Sweden, Jan. 15, 1990, 9000125; Aug. 28, 1990, 9002744
Int. Cl.[5] F16K *51/00*
U.S. Cl. 137—560 **10 Claims**



1. An apparatus for measuring and controlling at least one of temperature and pressure in a fluid medium channel comprising:

said channel being provided in a housing (2), a passage (30, 31, 40, 41) passing through said housing into said channel, at least one measuring and control nipple (50, 74) being inserted in said passage, such that said channel is in communication with said at least one nipple via said passage, wherein

said at least one nipple is a multiple function nipple that provides the additional functions of discharging fluid, filling fluid, and air removal, a neck (55) on said housing surrounds an outer portion of said passage, a casing (57, 57') surrounds said neck and is spaced therefrom forming a space therbetween, outlet openings (56) pass through said neck, one end of said outlet openings communicate with said passage and the other end of said outlet openings communicate with said space, a connection (60) is provided in said casing in communication with said space for executing said additional functions,

a sealing body (3)4 contained within said nipple, a slit (72) in said sealing body for the insertion of a measuring probe into and through said sealing body such that said probe extends through said sealing body into said passage into communication with said channel to measure said at least one of pressure and temperature.

5,291,921
DRAINAGE PLATFORM FOR THE DRAINING OF RESIDUAL CONTENTS OF A CONTAINER FOR COLLECTION AND SUBSEQUENT DISPOSAL
Robert Devine, Bayshore, N.Y., assignor to Chem-Tainer Industries, Inc., North Babylon, N.Y.
Filed Apr. 28, 1993, Ser. No. 55,716
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—86 **15 Claims**

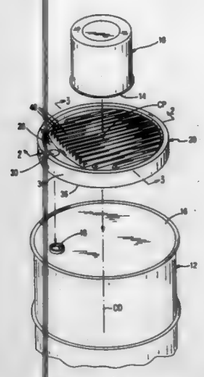
1. A drainage platform for supporting a container on a receptacle in a stable and appropriate orientation to assist in draining contents from the container downwardly in an essentially

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vertical direction into the receptacle, the container having a mouth through which the contents drain, the drainage platform comprising:

a pan having an outer peripheral rim and an inner sump, the pan including a bottom sloping downwardly between the rim and the sump, and a drain in the sump; and

a plurality of ribs having basal portions extending along the downwardly sloping bottom of the pan, and support portions extending essentially horizontally above the downwardly sloping bottom such that upon juxtaposition of the draining platform with the receptacle, the container is received in stable placement on the essentially horizontal support portions of the ribs, such that the contents are drained in the vertical direction essentially normal to the support portions with the mouth of the container confronting the downwardly sloping bottom of the pan, to drain the contents from the container to the pan and conduct the drained contents to the sump and through the drain to the receptacle.

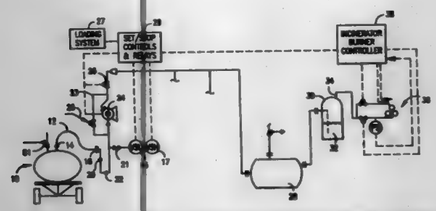


5,291,922

VACUUM ASSISTED LOADING SYSTEM

David N. Martin, Royal Oak, Mich., and Michael C. McCreery, Mineral Wells, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 21, 1992, Ser. No. 871,462
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—59 19 Claims



11. A vacuum assisted system for loading liquid product containing vapor into a plurality of tanks comprising:

a plurality of tanker loading bays, a header, and means connected to one end of said header for disposing of vapor recovered from the tanks, each one of said bays including the following:

means for loading the liquid product under pressure into a tank;

conduit means for interconnecting said tank and said header;

a blower in said conduit means for applying a predetermined vacuum to said tank, whereby the loading means pressure and the blower vacuum act to move vapor from said tank through said header to said vapor disposing means;

a by-pass conduit formed between the outlet and the inlet sides of said blower; and

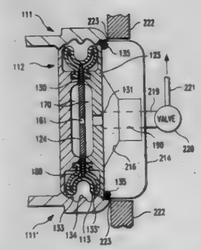
valve means in said by-pass conduit and responsive to the vacuum at the inlet side of said blower for progressively opening to permit by-pass flow of vapor from the outlet side to the inlet side of said blower, whereby maximum by-pass is provided when the vacuum approaches a predetermined maximum level.

5,291,923

DOOR OPENING SYSTEM AND METHOD

Gary M. Gallagher, Wappingers Falls, N.Y., and Gordon E. Johnson, Reading, Conn., assignors to Internatinal Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1992, Ser. No. 949,960
Int. Cl.[5] B65B *3/00*; H05K *1/00*
U.S. Cl. 141—98 6 Claims



1. A system for opening and closing an isolation structure comprising:

said isolation structure including

a shell having an interior adapted to accommodate a contamination sensitive item and having an opening leading to said interior, and

a closure member adapted to engage and disengage said shell opening, said closure member having

a closure member being having an outer periphery and a resilient seal on said outer periphery, said resilient seal and said closure member body defining a first volume therebetween, said closure member body further having a rear surface facing said shell interior when said closure member is received within said shell opening and a front surface opposite said rear surface, said front surface having at least one aperture therein, and a manifold for communicating pneumatic pressure between said first volume and said at least one aperture in said front surface, and

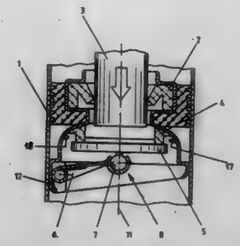
holding means for engaging and disengaging said closure member from said shell opening, said holding means including a structure adapted to removably engage said front surface of said closure member body in a sealed manner to define a second volume between said front surface and said structure, said holding means further including vacuum means for drawing a partial vacuum within said second volume and said second volume being in pneumatic communication with said first volume through said at least one aperture in said front surface.

5,291,924

SEALING SYSTEM FOR USE IN THE FILLER NECK OF A FUEL TANK

Andreas Sausner, Frankfurt am Main, and Jens Sielaff, Wald-Michelbach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Oct. 17, 1991, Ser. No. 779,348
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1990, 4034467
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—312 8 Claims



1. Sealing system for use in the filler neck of a fuel tank, said filler neck having a central axis and a radial gasket for sealing a filler nozzle inserted in said neck, said system comprising

a sealing surface concentric to the axis of said filler neck,

a spring loaded lever,

a valve attached to said spring loaded lever by a ball joint and urged by said lever with a force toward said sealing surface,

means causing said ball joint to bind so that movements within the joint are possible only by forces at least as great as the force produced by said spring loaded lever,

an axial gasket independent of said radial gasket and lying between said valve and said sealing surface, and

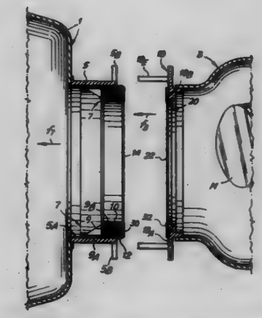
means for permitting pivoting of at least one of said valve and said axial gasket relative to said axis of said filler neck.

5,291,925

EQUIPMENT FOR FORMING TEMPORARY CONNECTIONS FOR THE TRANSFER OF OBJECTS BETWEEN DISCONTINUOUS CONFINED VOLUMES

Piero Marrucchi, Piazza Pitti No. 17, 50125 Firenze, Italy

Filed Sep. 15, 1992, Ser. No. 944,897
Claims priority, application Italy, Sep. 18, 1991, FI/91/A 230
Int. Cl.[5] B65B *25/08*; A61M *5/00*
U.S. Cl. 141—329 9 Claims



1. Equipment for forming connections between discontinuous confined volumes, comprising:

an isolating chamber;

an annular connector provided on said isolating chamber, said annular connector defining an isolating chamber access opening, said access opening having a first access opening dimension which is greater than a second access opening dimension, said second access opening dimension being perpendicular to said first access opening dimension, said annular connector including an internal wall defining a substantially constant isolating chamber access opening cross section;

a closure piece including an annular member, a closure piece membrane and an annular cutting means for cutting said closure piece membrane and for cutting another membrane joined thereto;

a transfer machine including a frame defining a passageway slot and a transfer machine membrane fastened to said frame;

adhesive means associated with each of said closure piece membrane and said transfer machine membrane for adhering said membranes to each other to form joined membranes upon said isolating chamber and said transfer machine being joined up, said annular cutting means cutting said joined membranes to form a joined membrane discoid formed by at least two peripherally joined thicknesses of said joined membranes, said joined membrane discoid being movable into one of said isolating chamber and said transfer machine;

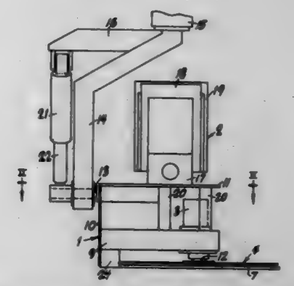
and an additional closure piece positioned in one of said isolating chamber and said transfer machine and being positionable in said annular connector from an interior of said isolating chamber to replace said closure piece of said joined membranes.

5,291,926

CUTTING AND SAWING UNIT PROVIDED WITH A TIMBER HANDLING ARRANGEMENT

Assar Jansson, Grindvägen 20 A, S-761 62 Norrtälje, Sweden

Continuation of Ser. No. 861,973, Jun. 30, 1992, abandoned.
This application Oct. 8, 1992, Ser. No. 958,303
Claims priority, application Sweden, Sep. 17, 1990, 9002974
Int. Cl.[5] A01G *23/08*
U.S. Cl. 144—34 R 11 Claims

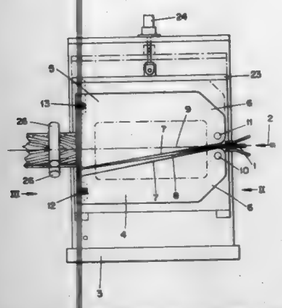


1. The combination of a cutting and sawing unit and a timber handling unit comprising a motor stand, a saw mounted on said motor stand for rotation, a toothed device fixed to said stand in proximity to said saw for producing a sawing and cutting operation therewith upon rotation of said saw, a gripping device mounted on said motor stand, a suspension link, a suspension shaft carrying said motor stand and rotatably supported by said suspension link, and means for rotating said suspension shaft and thereby said motor stand relative to said suspension link between first and second positions in one of which said gripping device is in operative position and said saw and toothed device are in inoperative position, and in the other of which the saw and toothed device are in operative position and the gripping device is in inoperative position.

5,291,927
DEVICE FOR TRUING PLANKS

Siegmar Gönner, Oberkirch, Fed. Rep. of Germany, assignor to Gebrüder Linck Maschinenfabrik "Gatterlinck" GmbH & Co. KG, Oberkirch, Fed. Rep. of Germany

PCT No. PCT/EP90/02266, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/16183, PCT Pub. Date Oct. 31, 1991
PCT Filed Dec. 19, 1990, Ser. No. 920,500
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1990, 4012645
Int. Cl.[5] B27H *1/00*
U.S. Cl. 144—256.1 11 Claims



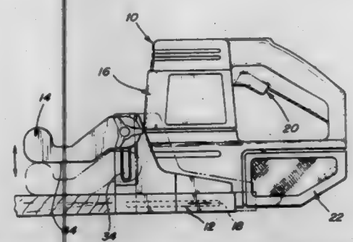
1. Apparatus for straightening twisted boards, comprising:
a set of first plates and a set of second plates, said sets forming therebetween a substantially narrow board-guiding channel having a board inlet and a board outlet, said channel defining a longitudinal axis,
said first plates being arranged adjacent one another such that first planes defined by said first plates are substantially parallel, said first plates being pivotable about a common first pivot axis situated adjacent said board inlet, said first pivot axis extending transversely of said first planes,
said second plates arranged adjacent one another such that second planes defined by said second plates are substantially parallel to one another and to said first planes, said second plates being pivotable about a common second axis oriented substantially parallel to said first pivot axis adjacent said board inlet, said channel being defined between opposing edges of said first and second plates, and
pivot drive means for effecting relative pivoting of said first plates about said first pivot axis, and for effecting relative pivoting of said second plates about said second pivot axis, to provide said channel with a twisted configuration along its longitudinal length.

5,291,928
PLATE JOINER

James A. Keith, Jr., Pickens, and William S. Ballew, Greer, both of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.

Filed Apr. 27, 1993, Ser. No. 54,640
Int. Cl.[5] B27M *1/00*
U.S. Cl. 144—371 7 Claims

7. A method of cutting an arcuate slot in a workpiece by selectively orienting a plate joiner having a planar cutter, the steps comprising:
providing a base axially movable relative to a plate joiner body, the base having a first fence having a planar surface oriented generally perpendicular to the plane of the planar cutter to cooperate with a first surface of the workpiece;
positioning an axially and pivotally movable handle affixed to the base, the handle having a grip portion adapted for cooperation with a hand of an operator, the handle having a second side with a planar surface forming a second fence cooperating with a second surface of the workpiece; and
fastening the handle to the base;
retaining the first fence and second fence securely against the workpiece having one hand of the operator gripping the handle grip;

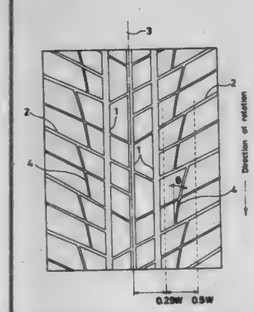


advancing the motor and planar cutter using the operator's other hand to cut an arcuate slot in the first surface of the workpiece;
retracting the motor and planar cutter; and
removing the plate joiner to expose the arcuate slot in the first surface of the workpiece.

5,291,929
PNEUMATIC TIRE

Yasujiro Daisho; Susumu Watanabe, both of Hiratsuka, and Izumi Kuramochi, Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,212
Claims priority, application Japan, Nov. 6, 1991, 3-289850
Int. Cl.[5] B60C *11/08*
U.S. Cl. 152—209 R 4 Claims



1. A pneumatic tire having a plurality of main grooves extending in the circumferential direction of a tread surface, and a plurality of auxiliary grooves each of which is disposed in the shape of the letter "V" and extended in one of the lateral directions of said tread surface, the apexes of said V-shaped auxiliary grooves being distributed in left and right first regions each first region being spaced from the equator of said tire from 5 to 25% of the width of a ground contacting portion of said tread surface, in such a manner that the numbers of said apexes in said left and right first regions become substantially equal to each other, wherein quasi-main grooves, each of which connects at least three circumferentially spaced auxiliary grooves together, are provided in left and right second regions each second region being spaced from the equator of said tire from 25 to 50% of the width of a ground contacting portion of said tread surface, in such a manner that said quasi-main grooves are inclined at an angle of 5°–25° with respect to the equator of said tire.

5,291,930
PNEUMATIC RADIAL TIRES INCLUDING FIBER/RESIN BELT CORDS HAVING ELLIPTICAL OR RECTANGULAR CROSS-SECTIONAL SHAPE

Michitsugu Kikuchi, Mitaka; Norio Inada, and Shizuo Iwasaki, both of Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 758,069, Sep. 12, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 10,449
Claims priority, application Japan, Sep. 12, 1990, 2-240092
Int. Cl.[5] B60C *9/00, 9/18*
U.S. Cl. 152—451 2 Claims

1. A pneumatic radial tire including one or more belt layers, wherein cords are used as cords for reinforcing at least one belt layer, the cords formed by impregnating and attaching an epoxy thermosetting resin having a modulus in tension of less than 150 kg/mm^2 to bundles of cord-like Aramid fibers composed of a number of filaments having tensile strength of not less than 15 g/d and a fineness of 1–15 deniers, each of the bundles of the Aramid fibers being not twisted, an impregnated and attached amount of the filaments being in a range of 30% to 70 wt % relative to an weight of the filaments and resin, and each of the cords has an elliptical or rectangular cross-sectional shape having an aspect ratio of a major axis (b)/a minor axis (a) being 1.5 to 5.

5,291,931
DEFORMABLE INSULATING PANEL FOR A GOODS-HANDLING DOOR, AND A DOOR INCLUDING SUCH A PANEL

Bernard Kraeutler, Dunieres, France, assignor to Nergeco (société anonyme), Dunieres, France

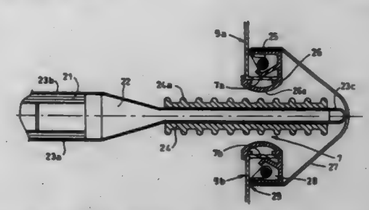
Filed Nov. 3, 1992, Ser. No. 970,785
Claims priority, application France, Nov. 7, 1991, 91 13726
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 R 12 Claims

1. A goods-handling door comprising:
a moving curtain having two side edges, said curtain comprising:
two airtight flexible skins lying parallel to each other and having a plurality of horizontal rectilinear spacers sandwiched between said skins, said spacers being spaced apart from one another up the curtain and said spacers defining air-filled intermediate spaces between the two skins,
wherein said goods-handling door is characterized in that each of said spacers comprises a section member having a bottom and two branches
wherein said two skins are applied to opposite sides of said spreaders so as to permit said skins to extend apart from each other over the branches of each of said spacer to thereby delimit said intermediate spaces, and permit said skins to approach one another over the bottoms of said spacers to thereby separate adjacent ones of said intermediate spaces,
wherein said spreaders are disposed in pairs,
wherein said spreaders defining each pair are spaced apart by a first distance,
wherein said pairs of spreaders are spaced apart from one another by a second distance, which is greater than the first distance,
wherein the respective bottoms of said two spacers in said pair of spacers face each other and said branches of each of said spacer in said pair of spacers points away from the other of said spacers defining said pair of spacers so as to permit said two skins to remain close to each other between said two spacers defining said pair of spacers, and
wherein said two skins are fixed to each other along said side edges of the curtain to thereby form air tight intermediate spaces.

5,291,932
GOODS-HANDLING DOOR HAVING A DRAFT-PROOF RAISABLE CURTAIN

Bernard Kraeutler, Dunieres, France, assignor to Nergeco, Dunieres, France

Filed Nov. 10, 1992, Ser. No. 974,290
Claims priority, application France, Nov. 12, 1991, 91 13860
Int. Cl.[5] E06B *3/94*
U.S. Cl. 160—84.1 R 8 Claims



1. A goods-handling door having a raisable curtain for closing a door-bay, the door including:
two rigid side uprights disposed on either side of the door-bay,
each upright including a slideway,
the door further including a curtain disposed between the uprights, the vertical edges of the curtain sliding in respective ones of the slideways,
each upright including a rigid web that faces said door-bay,
each slideway including a vertical slot formed through said rigid web, said vertical slot being delimited by two edges,
wherein each slideway further includes a flexible draft-proofing cloth interconnecting said two edges of said vertical slot over substantially the entire height of the vertical slot, thereby delimiting a vertical pocket on a side of said each slideway opposite the door-bay, which vertical pocket is designed to receive one of said vertical edges of the curtain, said one of said vertical edges bearing flexibly against a bottom of the vertical pocket, which said bottom has sufficient clearance to absorb movements and deformations of the one of said vertical edges of the curtain.

5,291,933
COVERING DEVICE

Wolfgang Fussnegger, Rohrau, and Meinrad Vollmer, Rottenburg, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 992,113
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202405
Int. Cl.[5] E06B *9/56*
U.S. Cl. 160—268.1 5 Claims

1. A covering device comprising:
a blind with a flexible web;
a plurality of hoops, having end sides, supporting said web, said web having a free end attached to a first of said plurality of hoops;
guide rails, having end faces, arranged in a longitudinal direction on both sides of said web and having stops mounted on the end faces of the guide rails, said plurality of hoops being displaceably mounted on the guide rails;

means for successively drawing said plurality of hoops together with said web of the blind from an open position;
wherein said web is freely movable relative to the other of said plurality of hoops and rests loosely upon them, said other hoops being longitudinally offset relative to the first hoop;
wherein the web can be rolled up onto a take-up rod ar-



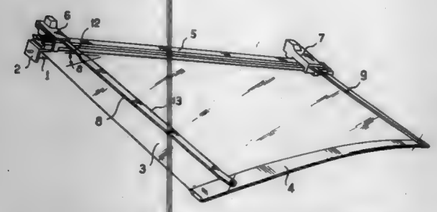
ranged at one end of the guide rails, said take-up rod being rotatably mounted and prestressed by spring force in a rolling-up mechanism for the web; and
wherein said means for successively drawing said plurality of hoops are formed by a mechanical coupling of the hoops, separate from the web, that can be pushed together, and wherein said mechanical coupling couples the plurality of hoops on their end sides.

5,291,934

MOTOR-DRIVEN BLIND FOR A CURVED REAR WINDOW OF A MOTOR VEHICLE

Gaston Ouvrard, Bressuire, and Franck Boissonneau, Moncoutant, both of France, assignors to Farnier & Penin, Bressuire, France

Filed Oct. 9, 1992, Ser. No. 958,186
Claims priority, application France, Oct. 14, 1991, 91 12622
Int. Cl.[5] E06B *9/56*
U.S. Cl. 160—310 **5 Claims**



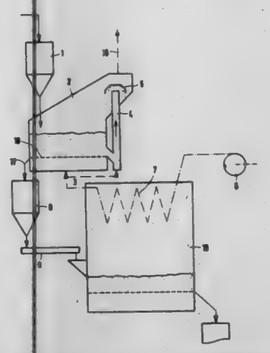
1. A motorized blind for a curved bay, comprising:
(a) an elongated cylindrical winder member for rotation about its axis;
(b) a planar, flexible blind having an end thereof fixed to the winder member;
(c) a pull-bar fixed to an opposite end of the blind and being elastically deformable in a direction perpendicular to the plane of the blind;
(d) a slideway extending substantially parallel to the axis of the winder member;
(e) first and second carriage means slidably connected to said slideway;
(f) an arm connected at end thereof, respectively, to each of said carriage means and connected at an opposite end thereof, respectively, to the pull-bar, said opposite end having a flat bearing surface, the plane of which is
(i) substantially parallel to the axis of the winder member and lying in a plane which includes the plane of the corresponding bearing surface of the other arm, when the blind is in a wound-up configuration; and
(ii) which plane intersects the axis of the winder member and forms a dihedral with a plane including the plane of the corresponding bearing surface of the other arm, when the blind is in the unwound configuration, said dihedral having an edge substantially orthogonal to the axis of the winder;
whereby the pull-bar is progressively bent in a direction perpendicular to the plane of the blind as the blind is deployed and progressively relaxed as the blind is retracted; and
(g) motor means for synchronously sliding the two carriage means in the slideway in opposite directions for deploying and retracting the blind.

5,291,935

PROCESS FOR THE MECHANICAL CLEANING OF FOUNDRY USED SAND

Volker Godderidge, Irdning, Austria, assignor to KGT Giessereitechnik GmbH, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,558
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1991, 4111726
Int. Cl.[5] B22C *5/18*
U.S. Cl. 164—5 **12 Claims**



1. A process for the cleaning of used foundry sand, comprising the steps of, in sequence:
(a) heating and mechanically pre-cleaning the sand in a batchwise manner in a pre-cleaning container by repeatedly pneumatically blowing the sand through a vertically positioned blast pipe with hot air against a deflection hood until an adequate cleaning level is achieved, the cleaning level being measured as a function of two or more in combination of the degree of contamination, degree of moisture and temperature in the preheating container, and
(b) thermally regenerating the sand in a regeneration container.

5,291,936

METHOD AND APPARATUS FOR PRODUCING MOLD PARTS FOR FOUNDRIES

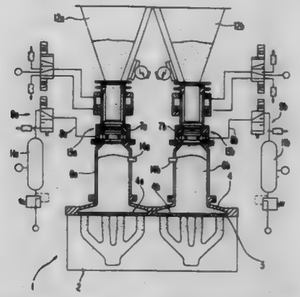
Reiner Rommel, Brühl, and Werner Landua, Mannheim, both of Fed. Rep. of Germany, assignors to Adolf Hottinger Maschinenbau GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 25, 1991, Ser. No. 782,587
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 4033887
Int. Cl.[5] B22C *15/26*
U.S. Cl. 164—22 **11 Claims**

1. An apparatus for producing mold parts for foundries, comprising:
a mold unit having at least two cavities for forming at least two mold parts;
a common shooting hood having at least two shoot-out areas arranged adjacent one another;
a first sand magazine;

a first shooting head for shooting sand from said first sand magazine to a first one of said at least two shoot-out areas;
a first shooting air source for supplying air to said first shooting head;
a second sand magazine;
a second shooting head for shooting sand from said second sand magazine to a second of said at least two shoot-out areas;
a second shooting air source for supplying air to said second shooting head;
wherein said at least two shoot-out areas are arranged adjacent one another such that each of said at least two shoot-out areas is supplied with sand from a respective one of said first and second sand magazines and ejects sand vertically downwardly into a respective one of said at least two cavities of said mold unit.

9. A method for producing a plurality of mold parts for foundries, comprising:



moving a mold unit having at least two cavities therein under a common shooting hood having at least two shoot-out areas arranged adjacent to one another, wherein each of said at least two shoot-out areas is supplied with sand from a respective zone of first and second sand magazines, each of said first and second sand magazines being provided with a respective one of first and second shooting heads for shooting sand therefrom;
shooting sand vertically downwardly into a first one of said at least two cavities in said mold unit from a respective first one of said at least two shoot-out areas at a first pressure and a first sand composition; and
shooting sand vertically downwardly into a second one of said at least two cavities in said mold unit from a second one of said at least two shoot-out areas at a second pressure and a second sand composition;
wherein said first pressure and said first sand composition are different than said second pressure and second sand composition, respectively.

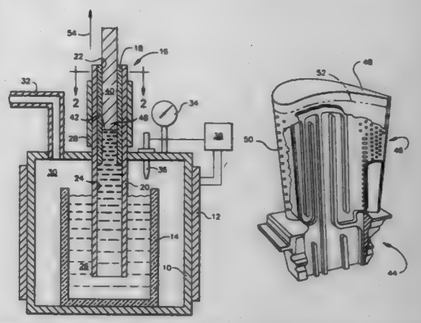
5,291,937

METHOD FOR PROVIDING AN EXTENSION ON AN END OF AN ARTICLE HAVING INTERNAL PASSAGEWAYS

Reed R. Corderman, Wyoming; Kevin G. McAllister, Fairfield, both of Ohio, and Brian J. McAndrews, Milford, N.H., John W. Locher, Sterling, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 30, 1992, Ser. No. 922,303
Int. Cl.[5] B22D *19/10*
U.S. Cl. 164—92.1 **6 Claims**

1. In a method for providing an extension on an end of an article having an outer cross-sectional shape, at least one passage defined by a wall through the article end communicating with a hollow interior, the article further having a directionally oriented microstructure and a superalloy chemical composition, the combination of steps of:
providing a molten material having a superalloy chemical composition compatible with the article chemical composition;
providing a die having an internal wall defining a die opening therethrough matched in cross-section with the article outer cross-sectional shape;
providing a die extension having a hollow interior defined by an extension wall disposed between and in communication with the die internal wall on a first extension end and with the molten material on a second extension end;
applying fluid pressure to the molten material to force the molten material into the die extension hollow interior through the second extension end;



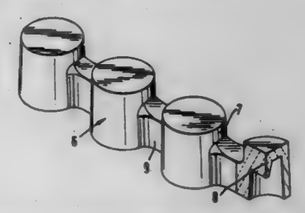
passing the article end through at least a portion of the die opening and into contact with the molten material;
holding the article end in contact with the molten material for a time sufficient for a portion of the article end to interact with the molten material as a directionally oriented microstructure growth seed; and then,
withdrawing the article end through the die opening at a rate which allows the molten material to directionally solidify in the die opening on the growth seed as an extension of and integral with the article end and with a crystal structure substantially continuous with the article directionally oriented microstructure.

5,291,938

VERTICALLY PARTED MOULD HAVING A FEEDER UNIT THEREIN

D. George Metevelis, Strongsville, Ohio, and Barry C. Wingfield, Tamworth, England, assignors to Foseco International Limited, Birmingham, England

Filed May 29, 1992, Ser. No. 890,225
Claims priority, application United Kingdom, Jun. 18, 1991, 9113121
Int. Cl.[5] B22C *9/02*
U.S. Cl. 164—359 **18 Claims**



1. An integral preformed mould parted vertically into only two parts the mould comprising one or more mould cavities and a plurality of feeder cavities each communicating with a mould cavity and the mould having therein a feeder unit comprising a plurality of interconnected feeder sleeves, each of the feeder sleeves having an inner surface and an outer surface and

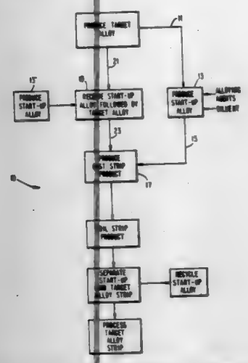
VOL 1160 ISS 2 MR 8 1994 UMI

each of the feeder sleeves surrounding one of the feeder cavities.

5,291,939
START-UP METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL INTO STRIP PRODUCT

John A. Hensley; James L. Stone; James C. Key, and George A. Sloan, all of Garland County, Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 23, 1992, Ser. No. 979,105
Int. Cl.[5] B22D *11/06, 11/08*
U.S. Cl. 164—479 **10 Claims**



1. A method of continuous casting a molten metal comprising the steps of:
a) providing a molten metal having a first composition;
b) providing a quantity of a start-up molten metal of a second composition;
c) initially continuously casting said start-up molten metal on to a moving unitary chill surface to establish steady state casting;
d) continuously casting said molten metal subsequent to said start-up molten metal being cast onto said moving unitary chill surface; and
e) recovering a cast strip product comprising a portion of said start-up molten metal having said first composition with the balance being a cast strip product having said second composition.

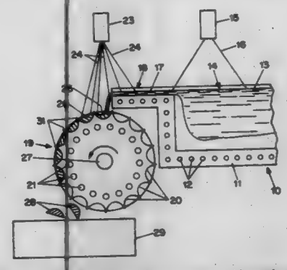
5,291,940
STATIC VACUUM CASTING OF INGOTS

Janine C. Borofka, Glenmoore; Robert A. Borowski, West Chester; Charles H. Entrekin, Coatesville, and Howard R. Harker, Malvern, all of Pa., assignors to Axel Johnson Metals, Inc., Lionville, Pa.

Filed Sep. 13, 1991, Ser. No. 759,422
Int. Cl.[5] B22D *27/02*
U.S. Cl. 164—494 **12 Claims**

1. Vacuum apparatus for forming metal ingots comprising hearth means for melting metallic material, outlet means for conveying molten material from the hearth means, mold means having a plurality of mold segments selectively positionable with respect to the outlet means to receive molten material from the hearth means to form a plurality of adjacent ingots in succession by static casting, and directionally controllable energy source mans for selectively direction a beam of energy toward the mold segment receiving molten metal from the outlet means to control the rate of solidification of the ingot during static casting, wherein the directionally controllable energy source means is arranged to selectively direct an energy beam toward the surface of a previously cast ingot in a mold segment adjacent to a segment receiving molten material from the outlet means.

10. A vacuum process for sequential static casting of ingots comprising melting metal in a hearth having an outlet for molten metal, supporting a series of mold segments adjacent to the hearth outlet, directing molten metal from the hearth outlet

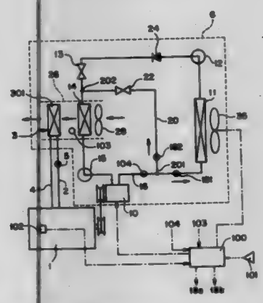


sequentially into adjacent mold segments, directing an energy beam toward the surface of the metal in the mold segment receiving molten metal from the hearth outlet to control the solidification rate of the molten metal and directing an energy beam toward the surface of an ingot in an adjacent mold segment after the mold segment has been filled to control cooling of the ingot.

5,291,941
AIRCONDITIONER HAVING SELECTIVELY OPERATED CONDENSER BYPASS CONTROL

Masayoshi Enomoto, Obu; Hiroshi Kishita, and Satoshi Itoh, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 23, 1992, Ser. No. 902,238
Claims priority, application Japan, Jun. 24, 1991, 3-151605; Oct. 23, 1991, 3-275449; May 8, 1992, 4-116325
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—62 **7 Claims**

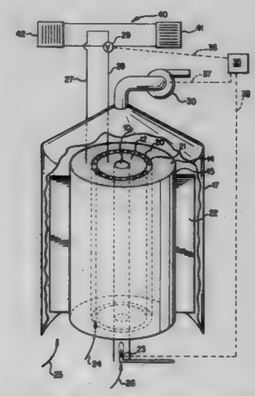


1. An air conditioner comprising:
main heating means for heating air passing therethrough;
compressor means for compressing a refrigerant and discharging said compressed refrigerant therefrom;
condenser means for condensing the refrigerant discharged from the compressor and for discharging condensed refrigerant therefrom;
a heat exchanger receiving the discharged condensed refrigerant;
first pressure reducing means for reducing the pressure of refrigerant which flows into the heat exchanger;
a main conduit which connects the compressor, the condenser, the heat exchanger and the pressure reducing means to each other;
a bypass conduit having a first end connected to the main conduit downstream of the compressor and a second end connected to the main conduit upstream of the heat exchanger, the bypass conduit being for introducing the compressed refrigerant toward the heat exchanger while bypassing the condenser;
valve means which selectively opens the bypass conduit and the main conduit between the compressor and the condenser;
a check valve disposed in said main conduit between said condenser and said heat exchanger; and
second pressure reducing means disposed in said bypass conduit between said valve means and said second end for reducing pressure of compressed refrigerant flowing through said bypass conduit;
the heat exchanger being disposed in such a manner that the heat exchanger exchanges heat with air which is subsequently heated by the main heating means, thereby complimentarily working to augment total heat added to the air.

5,291,942
MULTIPLE STAGE SORPTION AND DESORPTION PROCESS AND APPARATUS

William A. Ryan, Chicago, Ill., assignor to Gas Research Institute, Chicago, Ill.

Filed May 24, 1993, Ser. No. 66,485
Int. Cl.[5] F25B *17/08*
U.S. Cl. 165—104.12 **20 Claims**

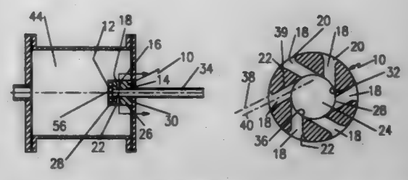


13. An apparatus for multi-stage sorption and desorption comprising:
a reactor vessel having a plurality of annular concentric compartments surrounding a gas-tight central passage, the separator between the innermost of said annular concentric compartments and said central passage capable of conductive thermal exchange, the separator between each said compartments being gas-tight and capable of conductive thermal exchange, the outermost wall of the outermost of said annular concentric compartments having a thermal exchange means associated therewith;
means for supplying hot thermal supply gas through said central passage;
means for supplying and removing process gas in desired sequence to and from each of said annular concentric compartments; and
each of said annular compartments containing a salt capable of sorbing and desorbing said process gas at a different temperature arranged in a gradient of said sorbing and desorbing temperatures in adjacent compartments from said innermost to said outermost compartment, the salt capable of said sorbing and desorbing at the highest temperature in said innermost of said annular concentric compartments and the salt capable of said sorbing and desorbing at the lowest temperature in said outermost of said annular concentric compartments.

5,291,943
HEAT TRANSFER ENHANCEMENT USING TANGENTIAL INJECTION

Vijay K. Dhir, Santa Monica, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Dec. 29, 1992, Ser. No. 998,536
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—109.1 **15 Claims**



1. A process for enhancing the heat transfer between a fluid flowing in a lumen in a tube and the wall of the tube, the tube having a defined length and the lumen having a defined cross sectional area, without increasing the power required to pump the fluid, comprising mounting on an inlet end of the tube a cap which allows swirl flow into the tube but which prevents axial flow along the tube, the cap having an open mounting end, a closed end spaced therefrom and a cap wall extending between the open mounting end and the closed end, the cap wall having one or more passageways of a defined cross sectional area extending from an outer surface of the cap wall to an inner surface of the cap wall, each passageway having a uniform cross sectional area for a first portion of its length and the remainder of its length increasing to a diameter at the outer surface of the wall of up to about three times the diameter of the first portion, said passageways being oriented so that fluid entering the passageway at the outer surface of the cap wall flows through the passageway and enters the tube tangential to the wall of the tube, causing swirl flow of the fluid along the tube for at least a substantial portion of the length of the tube, the sum of the cross-sectional areas of the passageways being from about 10% to about 40% of the cross sectional area of the lumen in the tube upon which the cap is mounted, the resultant enhancement of heat transfer at constant pumping power being greater than about 30%.

5,291,944
HEAT EXCHANGER

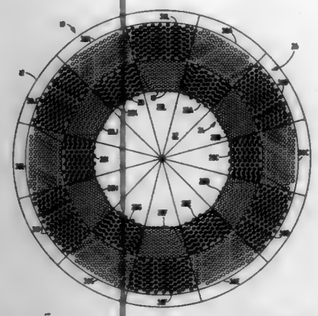
Delio Sanz, and Gary M. Sanz, both of 34 Mellowood Drive, Willodale, Canada M2L 2E3

Filed Nov. 25, 1993, Ser. No. 981,757
Int. Cl.[5] F28D *7/16*
U.S. Cl. 165—159 **19 Claims**

1. Heat exchange apparatus comprising:
a shell having a fluid inlet and a fluid outlet;
a plurality of heat exchange tubes housed in the shell, said tubes extending parallel to each other substantially the length of the shell, the tubes being arranged such that there is a central core devoid of tubes, an inner layer of tubes surrounding the central core, and an outer layer of tubes surrounding the inner layer, each layer of tubes being divided into a plurality of arcuate segments with the tubes in one segment being arranged in a different pattern from those in the adjacent circumferential and radial segments, the respective arrangements of tubes being such

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that fluid flowing inwardly to or outwardly from the central core through both layers has an equidistant flow



path and provides a uniform resistance to flow regardless of the direction of flow; and,

means for supporting the tubes installed in the shell.

5,291,945

BRAZED PLATE HEAT EXCHANGER

Ralf Blomgren, Skanör, and Anders Engström, Johannishus, both of Sweden, assignors to Alfa-Laval Thermal AB, Lund, Sweden

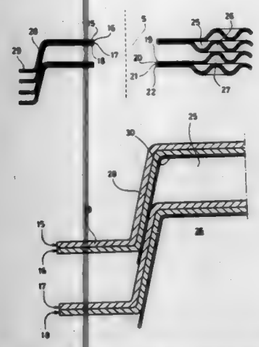
PCT No. PCT/SE91/00220, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO91/17404, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 21, 1991, Ser. No. 934,493

Claims priority, application Sweden, May 2, 1990, 9001568-6

Int. Cl.[5] F28F *3/08*

U.S. Cl. 165—167 **3 Claims**



1. Plate heat exchanger comprising a stack of plate elements, each of which has a central heat transferring portion and a surrounding edge portion, the heat transferring portions of the plate elements being permanently joined together at several spaced places and defining between themselves flow spaces for two heat exchange fluids, the edge portions of the plate elements having parts extending around the plate elements, which parts are bent in a like direction in said stack and are permanently joined by means of a connecting material which at one time was liquid, wherein:

each plate element is of a double-wall construction and comprises two nested thin heat transferring plates of the same size, which are pressed substantially to the same shape and which closely abut against each other but are arranged to admit a heat exchange fluid leaking out through a hole in one heat transferring plate to be conducted between the plates to the edge portion of the plate element, and

the heat transferring plates of each plate element have brims situated outside the part of the plate element edge portion which is connected with a corresponding part of an adjacent plate element edge portion by means of said connecting material, said brims being bent so that two adjacent brims of two adjacent plate elements are spaced from each other.

5,291,946

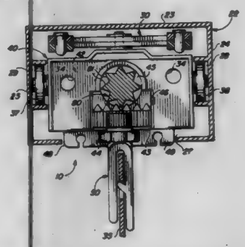
CARRIER ASSEMBLY FOR USE IN A VERTICAL BLIND ASSEMBLY

Piergiorgio Ciriaci, Hollywood, Fla., assignor to Micro Molds Corp., Miami, Fla.

Filed Feb. 5, 1993, Ser. No. 14,238

Int. Cl.[5] E06B *9/26*

U.S. Cl. 160—177 **4 Claims**



1. A carrier assembly for use in a vertical blind assembly of the type including an elongate track casing having a top, opposite side walls, and opposite end walls disposed in surrounding relation to a longitudinal channel extending along a length thereof, and a pair of inwardly disposed guide tracks confrontingly disposed along said opposite side walls of said channel, said carrier assembly comprising:

a plurality of carrier members movably disposed within said channel, each of said carrier members being supportably held between said guide tracks,

each of said carrier members including:

a carrier frame, said carrier frame having an axial bore extending therethrough, a transverse gear track tangentially disposed along a lower edge of said axial bore, and a generally C-shaped attachment member perpendicularly disposed along a lower edge of said carrier frame,

a stem member rotatably secured within said generally C-shaped attachment member, said stem member including a vane holder portion and a drive gear, said vane holder portion extending downwardly from said carrier frame so as to protrude from said longitudinal channel,

said vane holder portion having a bifurcated lower distal end portion, structured and disposed to removably an upper end of a vane, and a proximal, upper end structured and disposed to be pivotally interconnected with said drive gear such that said vane holder portion is independently rotatable relative to said drive gear,

stop means disposed on said vane holder portions, said stop means being structured and disposed to limit rotation of said vane holder portion of said stem member while allowing continued rotation of said drive gear,

a horizontal rack gear slidably disposed within said transverse gear track, said rack gear having a top edge, a front face and a rear face, said top edge including a first set of gear teeth extending therealong, and said front face including a second set of gear teeth extending therealong, said horizontal rack gear being disposed such that a portion of said first set of gear teeth extends into said axial bore and a portion of said second set of gear teeth extend into said generally C-shaped attachment member so as to engage said drive gear on said stem,

an axial pinion rod extending through said axial bore in said carrier frame of each of said carrier members, said pinion rod having a plurality of radially extending, elongate axial ridges disposed about a periphery thereof, said ridges being structured and disposed to engage said first set of gear teeth along said top edge of said horizontal rack gear such that rotation of said pinion rod results in corresponding lateral movement of said rack gear within said transverse gear track,

said rack gear including a protruding ridge extending across said rear face thereof, said ridge being slidably disposed within an elongate groove in said transverse gear track, thereby preventing vertical tilting of said rack gear within said transverse gear track,

means to rotate said pinion rod,

means interconnecting adjacently positioned carrier members, and

means to move said carrier members along said guide channel.

5,291,947

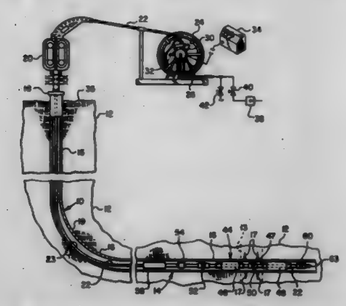
TUBING CONVEYED WELLBORE STRADDLE PACKER SYSTEM

Mark L. Stracke, Carrollton, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 8, 1992, Ser. No. 895,307

Int. Cl.[5] E21B *33/124, 33/127*

U.S. Cl. 166—187 **10 Claims**



1. A straddle packer system for insertion in a well, comprising:

spaced apart inflatable packers interconnected by tubing means;

packer control valve means associated with each of said packers for providing pressure fluid to inflate said packers to form a substantially fluid tight seal in a portion of said well between said packers, said packer control valve means being electrically controlled to provide pressure fluid to inflate said packers, respectively;

a tubing string connected to said packers for conveying pressure fluid to inflate said packers, respectively;

electrically controlled circulation valve means interposed in said tubing means between said packers for conducting pressure fluid between a space in said well between said packers and said tubing string; and

electrical conductor means associated with said tubing string for conducting electrical signals to said packer control valve means for controlling at least one of inflation and deflation of said packers, respectively.

5,291,948

Patent Not Issued For This Number

5,291,949

METHOD FOR INHIBITING CAUSTIC FLOOD BREAKTHROUGH

Hosi T. Dovan, Yorba Linda, and Richard D. Hutchins, Placentia, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 696,625, May 7, 1991, Pat. No. 5,111,886. This application Feb. 26, 1992, Ser. No. 842,214

Int. Cl.[5] E21B *33/13*

U.S. Cl. 166—295 **20 Claims**

1. A method for inhibiting caustic flood breakthrough at a production well, the method comprising sequentially injecting into the formation through the production well:

(a) a first slug of a spacer fluid;

(b) a slug of a composition capable of forming a gel, the composition comprising:

(i) a crosslinkable polymer selected from the group consisting of cellulose ethers, polyvinyl alcohol, polyvinyl pyrrolidone, polyalkyleneoxides, carboxyalkylhydroxyethyl celluloses, substituted hydroxyethylcellulose, lignosulfonates, ammonium and alkali metal salts thereof, and alkaline earth salts of lignosulfonates; and

(ii) a lanthanide; and

(c) a second slug of a spacer fluid.

5,291,950

METHOD OF WELL TREATMENT

Valentin Grebennikov, Moscow, Russian Federation, assignor to Petrosakh U.S.A., Dallas, Tex.

Filed Aug. 27, 1992, Ser. No. 936,933

Int. Cl.[5] E21B *43/27*

U.S. Cl. 166—307 **26 Claims**

1. A method of well treatment designed to enhance recovery of resources from said well, which method comprises:

a. introducing a base solution with an alkaline (pH>8) pH value into said well and allowing said alkaline solution to react in said well;

b. introducing a solution with a pH value close to neutral (pH≈7) into said well and allowing said neutral solution to treat the well during a soak or shut-in time period;

c. introducing a solution with an acidic (pH≈1) pH value into said well and allowing said solution to react in said well; and

d. introducing a solution with a pH value close to neutral (pH≈7) into said well and allowing said neutral solution to treat the well during a soak or shut-in time period.

5,291,951

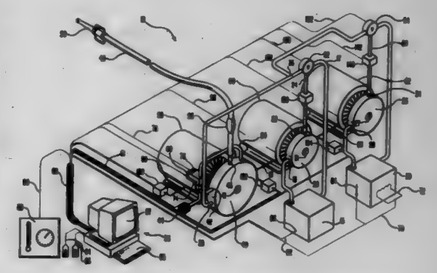
COMPRESSED AIR FOAM PUMP APPARATUS

James W. Morand, Wallsbury, Utah, assignor to Utah La Grange, Inc., Orem, Utah

Filed Dec. 28, 1992, Ser. No. 998,120

Int. Cl.[5] A62C *5/02*

U.S. Cl. 169—14 **38 Claims**



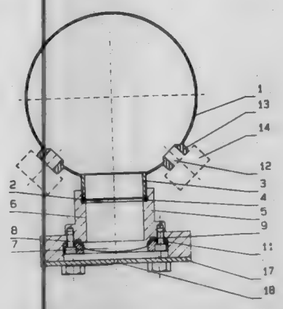
1. A compressed air foam pump apparatus comprising:

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(a) a drive means for cyclically driving a power transmission means;
(b) a means for delivering a fluid from a fluid source to a first fluid conduit;
(c) a first metering means, driven by said power transmission means, for metering a predetermined volume of said fluid with each cycle of said power transmission means, and comprising:
a first meter injection port, in fluid communication with the first fluid conduit, for introducing said fluid to the first metering means;
a first meter discharge port; and
a second fluid conduit in fluid communication with the first meter discharge port, into which said predetermined volume of fluid is discharged from the first metering means;
(d) a second metering means, driven by said power transmission means, for metering a predetermined volume of a foaming agent surfactant from a foaming agent surfactant source with each cycle of the power transmission means, and comprising:
a second meter injection port;
a foaming agent conduit, in fluid communication with both the second meter injection port and the foaming agent surfactant source, for introducing said foaming agent surfactant to the second metering means; and
a second meter discharge port, in fluid communication with said second fluid conduit, through which said predetermined volume of foaming agent surfactant is discharged into said second fluid conduit,
whereby said discharged predetermined volumes of foaming agent surfactant and fluid are mixed within said second fluid conduit to produce a foam solution mixture;
(e) an air compressor means, driven by said power transmission means, for metering, mixing, compressing and discharging both a predetermined volume of said foam solution mixture and a predetermined volume of air with each cycle of said power transmission means to produce an air-foam mixture, the air compressor means comprising:
at least one air inlet port for supplying air to the air compressor means;
a compressor injection port in fluid communication with said second fluid conduit for delivering said foam solution mixture to the air compressor means; and
a compressor discharge port through which the air-foam mixture is discharged from the air compressor means,
a portion of said second fluid conduit comprising a heat sink that is in contact with said air compressor means, whereby heat generated by said air compressor means is transferred to the foam solution mixture within said second fluid conduit.

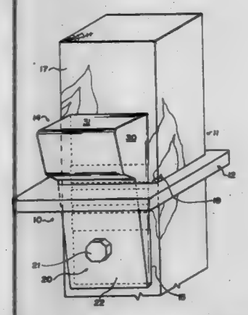
5,291,952
EXTINGUISHING AGENT CONTAINER
Roland Arend, Kettig, Fed. Rep. of Germany, assignor to Deugra Gesellschaft fur Brandschutzsysteme mbH, Ratingen, Fed. Rep. of Germany
Filed Aug. 25, 1992, Ser. No. 935,027
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1992, 4224184
Int. Cl.[5] A62C *13/22*
U.S. Cl. 169—71 **13 Claims**

1. In a system for the selective release of an agent into the ambient environment, the system including a container for storing the agent and an orifice through which the stored agent may be ejected from the container under the influence of a pressurized propellent gas, the orifice defining a first axis, the system further including a frangible member which normally defines a hermetic seal for the orifice, the improvement comprising:
at least a pair of gas injection ports in a wall of the container each of said ports defining an axis which is inclined obliquely relative to said first axis;
a gas generator connected to each of said injection ports, said gas generators being disposed externally of the container and being responsive to electrical signals for generating a highly pressurized propellant gas to be delivered into the container, the position and said inclination of said



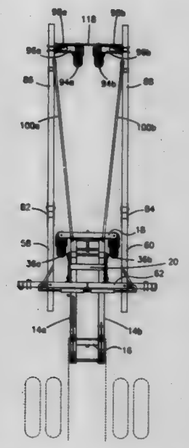
obliquely inclined injection port axes resulting in a swirling flow pattern of agent within the container when said propellent gas is delivered into the container; and
said frangible member comprising a pressure responsive disc, said disc being configured to rupture at a pressure which is less than the maximum pressure of the gas delivered into the container from said gas generators.

5,291,953
ADJUSTABLE SQUARE POST DRIVER ASSEMBLY
Joel W. Mitchhart, 27639 Lake Shore Dr. West, Spring Grove, Ill. 60081
Filed Jan. 19, 1993, Ser. No. 8,720
Int. Cl.[5] E02D *7/04*
U.S. Cl. 173—90 **26 Claims**



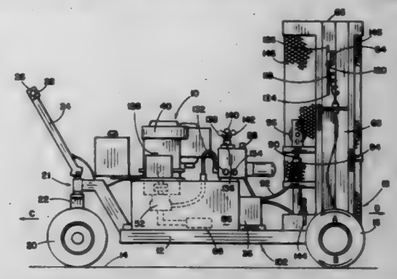
15. A post driver assembly for driving a post comprising a grip retainer plate having a plate hole centrally located in the plate which is oversized compared to an outside dimension of a square post, a post driver wedge having a wedge face for flush engagement with an outside surface of a post when said post driver wedge is telescoped through said plate hole, said post driver wedge having a tapered side opposite to said wedge face slidingly engageable with an edge of said plate hole for ensuring snug engagement of said wedge face against said face, and screw means threaded through said wedge for attaching said wedge to said post to resist vertical slippage of said wedge relative to a square post.

5,291,954
FRONT MOUNTED, FRONT FOLDING TOOL CARRIER BAR
Gerald R. Kirwan, 1018 Par St., O'Neill, Nebr. 68763
Filed Aug. 21, 1992, Ser. No. 932,937
Int. Cl.[5] A01B *49/00, 73/00, 59/04*
U.S. Cl. 172—311 **7 Claims**



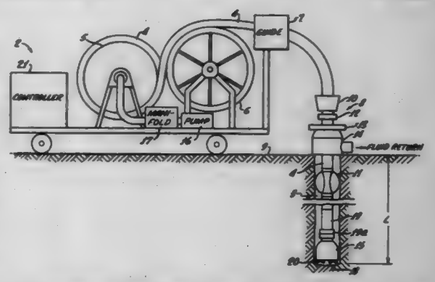
1. A front folding tool carrier bar for agricultural applications, said bar comprising;
a frame having opposite sides and having ground-engaging wheels mounted thereon;
means for coupling said frame to a vehicle, said means for coupling mounted on said frame;
a pair of forwardly folding wing bars having first and second ends, each of said first ends pivotally mounted on said frame such that said wing bars may pivot about a substantially vertical pivot axis, between a forwardly folded transport position and a transversely extended working position;
said wing bars pivotally mounted at opposite sides of said frame;
a pair of outrigger braces extending outwardly from said frame, pivotally mounted on said frame forwardly of said wing bars, one brace pivotally connected to each wing bar whereby said wing bars may be braced in said working position;
said outrigger braces further comprising pivot joints for mounting said braces to said frame and said wing bars;
said pivot joints each further comprising means for allowing pivotal motion of an outrigger brace attached thereto about a substantially horizontal pivot axis and means for allowing pivotal motion of an outrigger brace attached thereto about a substantially vertical pivot axis whereby said braces may be pivoted about said axes;
each of said outrigger braces further comprising at least one over-center hinge formed in each brace such that each outrigger brace acts as a rigid tensioning member when said wing bars are in said working position, and each outrigger brace may be folded in response to said wing bars pivoting from said working position to said transport position;
at least one ground-engaging wheel mounted on each wing bar; and
means for pivoting said wing bars between said transport position and said working position.

5,291,955
HYDRAULIC HAMMER
Thomas P. Clark, 1906 Cardinal La., McAlester, Okla. 74501
Filed Mar. 15, 1993, Ser. No. 31,674
Int. Cl.[5] B25D *9/00*
U.S. Cl. 173—24 **6 Claims**



1. A hydraulic hammer for breaking up a surface comprising:
weights movably attached to hydraulic lifting means provided on the hydraulic hammer, a digging tool attached to the weights so that the digging tool impacts the surface when the weights fall from a lifted position,
a limit switch located on the hydraulic hammer so the limit switch is tripped by the weights at their lifted position, said limit switch being electrically connected to a pair of delay timers, one said delay timer being electrically connected to a weight control means and the other said delay timer being connected to a drive control means, said weight control means connected to the hydraulic lifting means in order to control lifting and falling of the weights from their lifted position, said drive control means being connected to hydraulic drive means provided on the hydraulic hammer in order to control travel of the hydraulic hammer along the surface; and
said delay timers being synchronized so the hydraulic hammer travels as the weights are lifted and so the hydraulic hammer stops travelling as the weights fall.

5,291,956
COILED TUBING DRILLING APPARATUS AND METHOD
Mark D. Mueller; Julio M. Quintana, and Robert M. Hinkel, all of Bakersfield, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Apr. 15, 1992, Ser. No. 869,319
Int. Cl.[5] F21B *7/18, 17/20*
U.S. Cl. 175—67 **36 Claims**



1. A method for jet drilling and completing a well in a subsurface formation using tubing capable of being coiled upon a reel, the method comprising:
attaching a fluid jet drilling tool onto said coilable tubing, wherein said tool is capable of drilling a borehole in said formation;

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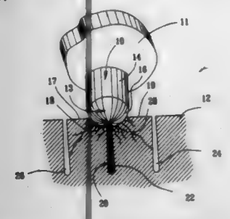
supplying sufficient pressurized fluid to said drilling tool through said coilable tubing to jet drill said borehole from an upper location to a lower location;
unreeling said tubing from said reel while supplying said pressurized fluid until one end of said tubing reaches said lower location;
supporting a first portion of said tubing at a support located near said upper location after reaching said lower location; and
separating said first tubing portion from the remaining tubing portion.

5,291,957

METHOD AND APPARATUS FOR JET CUTTING

Harry B. Curlett, Dallas, Tex., assignor to CCore Technology and Licensing, Ltd., Dallas, Tex.

Continuation of Ser. No. 849,194, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 577,501, Sep. 4, 1990, Pat. No. 5,199,512. This application Mar. 29, 1993, Ser. No. 38,994
Int. Cl.[5] E21B *7/18, 10/60*
U.S. Cl. 175—67 **44 Claims**



1. An improved cutting tool for the erosion of a surface, said tool being of a type wherein a liquid jet is discharged from said tool to create an eroded region, said improvement comprising:
a tool body having a plurality of discharge nozzles disposed thereabout;
said discharge nozzles extending outwardly from said tool body for engagement with said surface;
a generally cylindrical chamber disposed in flow communication with said nozzles;
means for creating a liquid swirl within said chamber; and
means for discharging said liquid swirl from said chamber and through said nozzles in a vortex jet stream against said surface for the erosion thereof.

5,291,958

Patent Not Issued For This Number

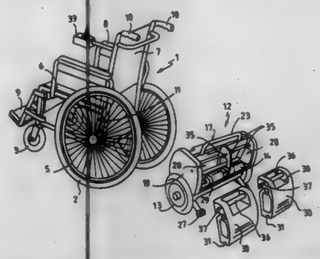
5,291,959

INDIVIDUAL VEHICLE USABLE IN A MANUAL OR A MOTORIZED VERSION, IN PARTICULAR A WHEELCHAIR OR A TRICYCLE

Paul Malblanc, Paris, France, assignor to Etablissements Poirier (Societe Anonyme), Fondettes, France

Filed Apr. 23, 1992, Ser. No. 872,393
Claims priority, application France, Apr. 26, 1991, 91 05182
Int. Cl.[5] B62B *3/02*
U.S. Cl. 180—11 **11 Claims**

1. Individual vehicle usable in a manual version and a motorized version, more specifically one of a wheelchair and a tricycle, said vehicle including a chassis (1) having a front and rear, said chassis provided, at the rear, with two laterally outwardly extending bearings (4) for receiving one of a pair of removable wheels (2), and a self-contained, removable propulsion unit (12), said propulsion unit including:
a locking means (16) for locking the unit to the chassis (1), driving wheels (13) rotatably about an axis, and
means (14) for rotationally driving said driving wheels (13), said propulsion unit (12) further comprises support means (15) for directly supporting the bearings (4), and a control means (17) for moving the locking means (16) between an active position wherein the propulsion unit is locked to the chassis and an inactive position wherein the propulsion unit is unlocked from the chassis, said locking means (16) cooperating with retaining means (11) provided on the chassis when the bearings (4) rest directly on said support means (15).

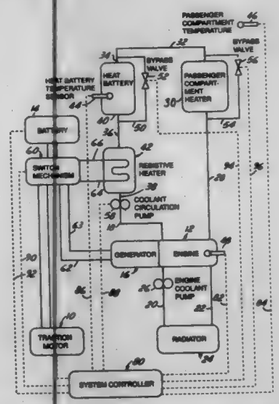


5,291,960

HYBRID ELECTRIC VEHICLE REGENERATIVE BRAKING ENERGY RECOVERY SYSTEM

Larry R. Brandenburg, Northville, and Edward T. King, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 30, 1992, Ser. No. 983,206
Int. Cl.[5] B60L *11/02*
U.S. Cl. 180—65.2 **13 Claims**



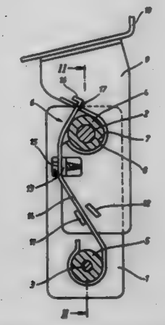
1. An automotive series hybrid vehicle having an electric traction motor with a drive mode and a regenerative braking mode, the latter mode producing a source of useful electrical energy, and means to utilize the electrical energy, including a storage battery power source for driving the traction motor, an internal combustion engine driven generator for supplying electrical energy to the traction motor and for charging the battery power source, switch means operable to control distribution of electrical energy from the generator to the traction motor and battery during the drive mode and from the traction motor to the battery and other means to to utilize the electrical energy during the regenerative braking mode, a liquid coolant circuit having a plurality of liquid coolant circuit containing elements which includes the internal combustion engine, a vehicle passenger compartment heater element, a vehicle radiator type heat exchanger element, and a high capacity heat storage battery, electrical resistive heater means in the coolant circuit and connected through the switch means to the traction motor and being operable at times in response to the establishment of the regenerative braking mode of the traction motor to receive surplus electrical energy therefrom for heating the coolant for selective distribution to one or more of the coolant circuit containing elements, and controller means operably connected to the switch means, the resistive heater means, and the plurality of coolant circuit containing elements for controlling the distribution of electrical energy to and from the traction motor during the drive and regenerative braking modes of operation.

5,291,961

MOUNTING ARRANGEMENT FOR A RADIATOR

Thomas Attinger, Stuttgart; Ingo Oses, Wäschenbeuren, and Burkhard Raabe, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 954,822
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1991, 4135387
Int. Cl.[5] B60K *11/04*
U.S. Cl. 180—68.4 **7 Claims**



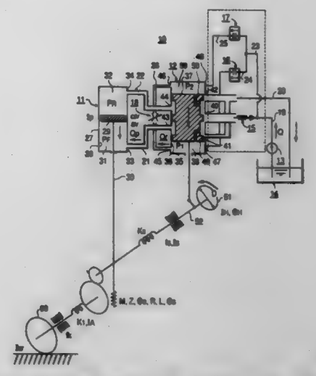
1. A mounting arrangement for supporting a radiator in a motor vehicle, said radiator having opposite narrow sides and upper and lower support pins projecting outwardly from each of its opposite narrow sides and being disposed in spaced relationship from one another and provided with elastic sleeves, and said vehicle having two spaced support panels provided with opposite recesses receiving two of said pins with said elastic sleeves for supporting said radiator pivotally in said opposite recesses, the other of said support pins being engaged by leaf springs mounted on said support panels, said support panels including first stops and said leaf springs being mounted on said support panels in a prestressed manner so as to abut said first stops with a predetermined force for locating said radiator in a predetermined installation position but permitting the radiator to pivotally yield so as to avoid damage when subjected to impact forces in excess of said predetermined force.

5,291,962

POWER STEERING DEVICE FOR USE IN MOTOR VEHICLES

Fujio Momiyama, and Noriaki Tokuda, both of Hino, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha, Japan

PCT No. PCT/JP89/01143, § 371 Date Mar. 19, 1991, § 102(e) Date Mar. 19, 1991, PCT Pub. No. WO91/06462, PCT Pub. Date May 16, 1991
PCT Filed Nov. 7, 1989, Ser. No. 655,360
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—132 **6 Claims**



1. A power steering device for steering the wheels of a motor vehicle, comprising:
booster means for receiving pressurized hydraulic oil from different directions and for generating a steering force to steer the wheels of the vehicle in a left or right direction depending on from which direction the pressurized oil is received;
hydraulic pump means for pressurizing hydraulic oil from an oil reserve and supplying the pressurized hydraulic oil to a feeding side hydraulic pipe arrangement;
directional control valve means connected to the feeding side hydraulic pipe arrangement and the booster means for controlling which direction the pressurized hydraulic oil flows to the booster, the directional control valve means having first and second reaction chambers;
an oil pressure setting valve positioned in the feeding side hydraulic pipe arrangement between the hydraulic pump means and the directional control valve means; and
pressurized oil injection valve means for injecting a pulse of pressurized hydraulic oil from the feeding side hydraulic pipe arrangement at an upstream side of the oil pressure setting valve to one of the first and second reaction chambers depending on the direction of a steering motion, the pulse of pressurized hydraulic oil being injected during an initial steering into a turn and having a pulse length per wavelength in steering effort ration of 0.075±0.075.

5,291,963

POWER STEERING SYSTEM

Henry C. Sangret, St. Clair Shores, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Sep. 19, 1992, Ser. No. 938,757
Int. Cl.[5] B62D *5/083;* **F15B** *9/08*
U.S. Cl. 180—141 **17 Claims**

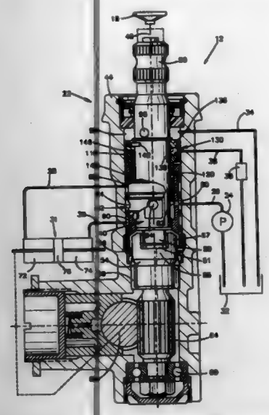
1. An apparatus comprising:
first and second valve members which are relatively movable to port fluid to a vehicle power steering motor;
a force transmitting member for applying a net force acting in a first direction that varies as a function of vehicle speed

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and resists relative movement between said first and second valve members;

means defining a first fluid pressure chamber disposed on one side of said force transmitting member, the fluid pressure in said first fluid pressure chamber urging said force transmitting member in said first direction;

means defining a second fluid pressure chamber disposed on



another side of said force transmitting member, the fluid pressure in said second fluid pressure chamber urging said force transmitting member in a direction opposite said first direction; and

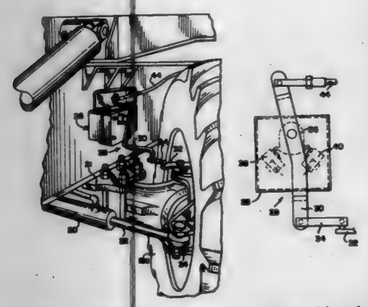
means for decreasing the fluid pressure in said second fluid pressure chamber as vehicle speed increases to thereby increase the resistance to relative movement between said first and second valve members as vehicle speed increases.

5,291,964

APPARATUS FOR AUTOMATICALLY CENTERING A STEERABLE WHEEL

Ronald L. Groenenboom, Oskaloosa, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Jan. 30, 1992, Ser. No. 828,243
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—142 **3 Claims**



1. Apparatus for centering one or more steerable wheels of a ground-traveling machine in alignment with a longitudinal axis of the machine, the centering apparatus comprising:

(a) means for steering the wheels;

(b) means for sensing the position of the wheels wherein said sensing means includes a cam mounted for pivotal movement in response to said steering of the wheels, and wherein said sensing means includes a first switch operable by said cam when the wheels are steered to a first side of a center position and a second switch operable by said cam when the wheels are steered to a second side of said center position;

(c) switch means for energizing said sensing means; and

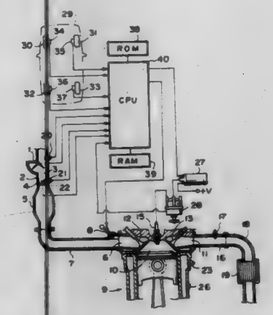
(d) means for operating said steering means in response to said sensing means upon engagement of said switch means to move the wheels to said center position.

5,291,965

ENGINE OUTPUT CONTROL SYSTEM FOR VEHICLE

Tetsuya Takata, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 26, 1991, Ser. No. 765,819
Claims priority, application Japan, Sep. 28, 1990, 2-262783
Int. Cl.[5] B60K *31/00*
U.S. Cl. 180—197 **6 Claims**



1. An engine output control system for a vehicle comprising a slip detecting means which detects a degree of slip driving wheels of the vehicle, an engine output reduction determining means which determines engine output reduction requirement by which the output of the engine is to be reduced in order to converge the degree of slip of the driving wheels on a target value according to the degree of slip of the driving wheels detected by the slip detecting means so that the engine output reduction requirement is larger when the slip is large than when the slip is small, an engine output reducing means which reduces the output of the engine by the engine output reduction requirement determined by the engine output reduction determining means so that the output of the engine is more reduced when the engine output reduction requirement is large than when the engine output reduction requirement is small, an engine speed detecting means which detects the engine speed, an engine output reduction inhibiting means which inhibits reduction of the engine output when the engine speed is lower than a preset engine speed, a preset engine speed changing means which changes the preset engine speed according to the engine output reduction requirement so that the preset engine speed is higher when the engine output reduction requirement is large than when the engine output reduction requirement is small.

5,291,966

AUTOMOBILE POWER PLANT APPARATUS

Yoshikazu Kato, Kasugai, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Filed Feb. 7, 1992, Ser. No. 832,380
Claims priority, application Japan, Feb. 15, 1991, 3-21835
Int. Cl.[5] B60K *5/00*
U.S. Cl. 180—292 **8 Claims**

1. An automobile power plant apparatus, comprising:

an engine;

a transmission connected to an output side of said engine in series in a vehicle lengthwise direction;

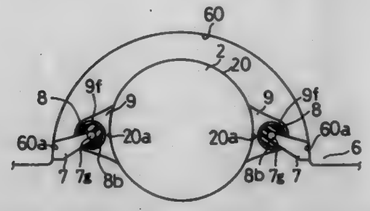
a propeller shaft connected to an output shaft of said transmission at an end thereof in said vehicle lengthwise direction;

a body;

a front mount elastically supporting said engine on said body;

a rear mount elastically supporting said transmission on said body;

said transmission including a mount engagement portion positioned substantially adjacent to a virtual center of said transmission in said vehicle lengthwise direction and which is positioned on a side of said transmission in a vehicle widthwise direction, said mount engagement portion including a cylindrical shape which has a hole adapted for press-fitting said rear mount therein;



said body including a mount installation portion positioned substantially adjacent to said virtual center of said transmission in said vehicle lengthwise direction and which is positioned opposite to said side of said transmission in said vehicle widthwise direction, said mount installation portion formed in a bracket shape which includes a rod portion extending in said vehicle lengthwise direction;

said rear mount being held between said mount engagement portion and said mount installation portion, said rear mount being press-fitted into said hole of said mount engagement portion and which is penetrated through the rod portion of said mount installation portion so that axial line thereof is placed substantially parallel with said vehicle lengthwise direction; and

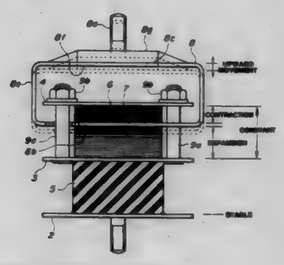
said transmission being elastically supported by said body at a position thereof adjacent to said virtual center thereof in said side thereof in said vehicle lengthwise direction.

5,291,967

POWER UNIT MOUNTING DEVICE

Hirofumi Aoki, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 19, 1991, Ser. No. 809,442
Claims priority, application Japan, Dec. 28, 1990, 2-409082
Int. Cl.[5] F16F *1/36*
U.S. Cl. 180—312 **16 Claims**



1. A mounting device comprising:

first and second plates which are spaced from each other;

a bracket member having a flat plate portion which is disposed between said first and second plates;

a first active damping actuator intimately disposed between said first plate and said flat plate portion;

a second active damping actuator intimately disposed between said flat plate portion and said second plate, each of said first and second active damping actuators being forced to vibrate while selectively expanding and contracting in accordance with an electric power applied thereto;

connecting means for connecting said first and second plates to tighten said first and second active damping actuators between said first and second plates; and

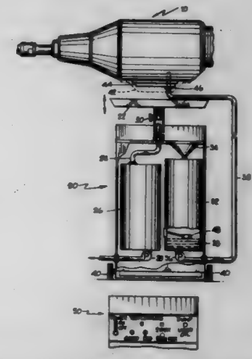
control means for controlling the electric power in such a manner that expansion and contraction vibrations of said first and second active damping actuators are equal in amplitude but different in phase by 180 degrees.

5,291,968

APPARATUS AND METHOD FOR CHANGING AUTOMATIC TRANSMISSION FLUID IN MOTOR VEHICLES

Paul V. Brown, Loveland, Colo., assignor to Pro Transmission, Inc., Loveland, Colo.

Filed May 17, 1993, Ser. No. 63,142
Int. Cl.[5] F16C *3/14*
U.S. Cl. 184—1.5 **2 Claims**



1. An apparatus for facilitating the fluid complete change of the fluid contained within an automatic transmission of a motor vehicle, the apparatus comprising:

drain pan means positioned for receiving used fluid drained from said automatic transmission;

a used fluid reservoir, coupled to said drain pan means, for retaining used fluid received by said drain pan means;

a new fluid reservoir for retaining a quantity of new fluid for replacement of the used fluid drained from said automatic transmission;

pump means, coupled to said fluid reservoir, for pumping a desired quantity of new fluid from said new fluid reservoir to said automatic transmission;

hose means, connecting an outlet of said pump mans to a filter outlet tube orifice of said automatic transmission; and

a control panel, including pump control means for enabling an operator to initiate operation of said pump means and for thereafter automatically halting operation of said pump means when said desired quantity of new fluid has been pumped from said new fluid reservoir.

2. A method for completely changing fluid contained within

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an automatic transmission of a motor vehicle, the method comprising:

providing a drain pan and a used fluid reservoir coupled together for receiving and containing used fluid drained from said automatic transmission, said drain pan being positioned beneath said automatic transmission;

removing a transmission pan from an underside of said automatic transmission to permit used fluid to drain by gravity from said automatic transmission;

providing a new fluid reservoir containing a quantity of new fluid to be supplied to said automatic transmission;

coupling said new fluid reservoir to a filter outlet tube orifice of said automatic transmission;

pumping a desired quantity of new fluid from said new fluid reservoir to said filter outlet tube orifice of said automatic transmission; and

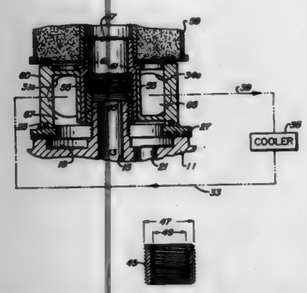
simultaneously running an engine of said motor vehicle for a period of time to thereby force said desired quantity of new fluid pumped from said new fluid reservoir through said automatic transmission and to also thereby force all of said used fluid from said automatic transmission into said said drain pan.

5,291,969

ADAPTER MECHANISM FOR FLUID COOLING AND FILTERING

Paul W. Diederich, Jr., 633 Hunters Trail, Glendora, Calif. 91740

Filed Jun. 16, 1992, Ser. No. 899,300
Int. Cl.[5] F01M *5/00*
U.S. Cl. 184—6.22 **7 Claims**



1. An adapter mechanism for coupling an engine oil circulation system to an external oil cooler manifold structure, wherein an engine has an externally threaded hollow boss constituting a first oil passage, an annular land surface concentric with said hollow boss, an annular recess between the hollow boss and the land surface, and a second oil passage connected to said recess, said adapter mechanism comprising:

a multiple thread surface nut threadable onto the hollow boss to form a threaded mounting surface for said manifold structure,

said nut having inner threads engageable with the threads on the hollow boss, and outer threads adapted to mesh with internally threaded connector means on said manifold,

an annular plate sandwiched between the manifold structure and the engine land surface, said annular plate having an outer edge and an inner edge, and

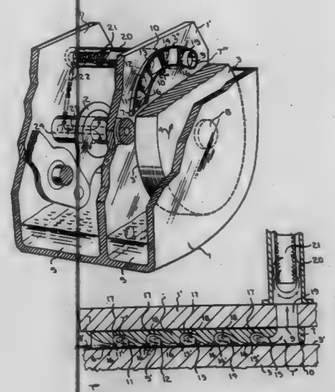
a flange projecting from said inner edge for piloting the plate to a predetermined position on the land surface.

5,291,970

ENTRAINMENT PUMP FOR VISCOUS FLUIDS, PARTICULARLY SUITABLE FOR LUBRICATING DOBBIES AND LOOMS

Costantino Vinciguerra, Florence, and Andrea Brocchini, Scandicci, both of Italy, assignors to Nuovopignone-Industrie Meccaneche e Fonderia SpA, Milan, Italy

Filed Sep. 15, 1992, Ser. No. 945,022
Claims priority, application Italy, Sep. 20, 1991, MI91 A 002516
Int. Cl.[5] F01M *1/00*
U.S. Cl. 184—11.2 **5 Claims**



1. An entrainment pump for viscous fluids, for lubricating dobbies and looms apparatus, characterized by comprising a flat wall of a member for movement in a predetermined direction for dipping into the viscous fluid, against which wall there cooperates, without contact but with extremely small clearances, a static element having a fluid guide of box form which is elongate in the direction of motion of said moving flat wall, said static element being open at one end, and provided on its sides and on another end with a discharge port, seals arranged to cooperate with said flat wall, within said guide there being provided successive trap chambers which with said flat wall forms clearances progressively decreasing in said predetermined movement direction in accordance with the thickness of the viscous fluid thereunder.

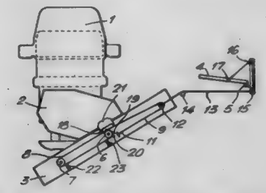
5,291,971

PLATFORM MECHANISM FOR A STAIR-LIFT

Jonathon C. Bovis, Hampshire, United Kingdom, assignor to Stannah Stairlifts Limited, Hampshire, United Kingdom

PCT No. PCT/GB92/01534, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO93/03993, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 20, 1992, Ser. No. 39,282
Claims priority, application United Kingdom, Aug. 20, 1991, 9117965
Int. Cl.[5] B66B *9/08*
U.S. Cl. 187—12 **4 Claims**

1. A mechanism for a stair-lift platform, there being a stair-lift carriage which runs up and down a flight of stairs and a platform which forms a bridge to the carriage at the top of the stairs, the platform being lowered so as to constitute the bridge and raised out of the way when the carriage descends, the mechanism comprising a coupling unit fixed with respect to the stairs, a linkage from the coupling unit to the platform and a pick-up on the carriage, the pick up engaging the coupling unit so as to cause a following movement of the coupling unit



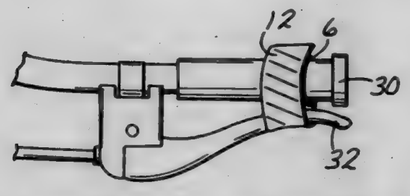
with respect to the carriage, which following movement causes the platform to be raised and lowered via the linkage.

5,291,972

METHOD FOR LOCKING A HAND OPERATED BRAKE LEVER IN ITS APPLIED POSITION

Robert C. Griffith, 21209 Dumetz Rd., Woodland Hills, Calif. 91364

Filed Jul. 26, 1990, Ser. No. 562,558
Int. Cl.[5] B62L *3/06*
U.S. Cl. 188—24.18 **5 Claims**



1. A method of maintaining a hand-operated, handlebar-mounted brake lever in its brake-engaging position comprising the steps of:

fixing one end portion of a strap to said handlebar by looping a fixed closed loop of said strap over said handlebar with one hand;

depressing said lever into its said brake-engaging position with said strap with said one hand;

closely wrapping said strap around said lever in its brake-engaging position with said one hand; and

securely fastening the free other end portion of said strap to said fixed end portion with said one hand.

5,291,973

DISK BRAKE FOR A WHEEL

Jean-Louis Chareire, Levallois Perret, France, assignor to Societe Anonyme dite: Aerospatiale Socitet Nationale Industrielle ayant son siege social, France

Filed Apr. 7, 1992, Ser. No. 864,566
Claims priority, application France, Apr. 19, 1991, 9104850
Int. Cl.[5] F16D *55/40;* **B60T** *17/10*
U.S. Cl. 188—71.5 **10 Claims**

1. A wheel brake for a wheel comprising:

at least two brake disks;

a brake fluid feed for feeding brake fluid under pressure; and

a pressure system connected to said brake fluid feed and acting on said brake disks;

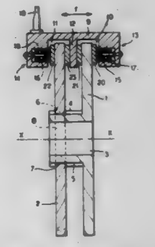
wherein:

at least one of said brake disks is made of metal, while at least one other of said disks is made of carbon;

said pressure system comprises first and second actuators, each including a piston, said actuators being associated respectively with said metal disk and with said carbon disk, the pistons of said actuators being biased by respective resilient return means tending to move said pistons away from said disks;

said first and second actuators are fed with brake fluid from said feed via respective parallel connections; and

interruption means, responsive to the pressure of said brake fluid, are disposed between said feed and said first actuator to allow communication between said first actuator and said feed only when the pressure of said brake fluid is below a limit pressure threshold,



said interruption means comprising a valve biased by a spring tending to move said valve away from a seat,

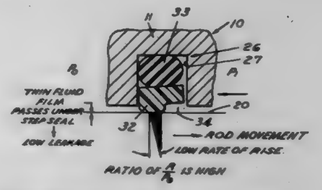
said resilient return means for the piston of said second actuator being rated so that said piston of said second actuator is pressed against said carbon disk only when the pressure of said brake fluid substantially equals or exceeds said limit pressure threshold.

5,291,974

HIGH PRESSURE SELF-CONTAINED GAS SPRING OR DIE CYLINDER AND SEALING ARRANGEMENT THEREFOR

Sabatino A. Bianchi, Bloomfield Hills, Mich., assignor to Livernois Automation Company, Dearborn, Mich.

Filed Aug. 24, 1992, Ser. No. 934,706
Int. Cl.[5] F16F *9/36;* **F16D** *15/32*
U.S. Cl. 188—322.17 **4 Claims**



1. A self-contained die cylinder comprising

a cylinder housing,

said cylinder housing having an open end and a closed end,

a piston rod having a piston thereon,

said die cylinder containing gas under pressure,

interengaging means on the housing defining a cylindrical surface engaged by said piston,

a pressure relieving primary seal assembly on one of said sleeve and said piston rod and engaging the other of said sleeve and engaging said piston rod,

a secondary seal assembly spaced from said primary seal assembly on one of said sleeve and said piston rod and engaging the other of said sleeve and said piston rod, and

said interengaging means comprises a sleeve provided in the open end of said housing, said sleeve supporting said primary and secondary seals,

said pressure relieving primary sealing assembly being constructed and arranged such that as said piston rod is moved inwardly of said housing, a partial venting of gas

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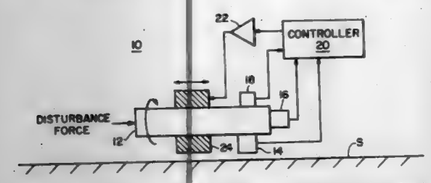
pressure in said die cylinder occurs and the gas passes toward said secondary assembly, said secondary seal assembly providing a seal for the gas pressure partially vented toward the secondary seal assembly such that said secondary seal assembly shares the sealing action with the primary seal assembly.

5,291,975

SYSTEM AND METHOD FOR DAMPING NARROW BAND AXIAL VIBRATIONS OF A ROTATING DEVICE

Bruce G. Johnson, Monument, Colo.; Richard Hockney, Lynnfield, Mass.; David Eisenhaure, Hull, Mass., and Ralph Fenn, Cambridge, Mass., assignors to SatCon Technology Corporation, Cambridge, Mass.

Filed Oct. 27, 1992, Ser. No. 967,806
Int. Cl.[5] F16F *7/10*
U.S. Cl. 188—378 **21 Claims**



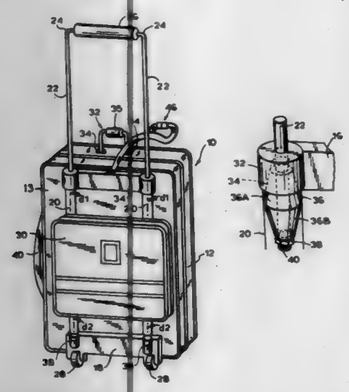
1. A method of damping axial vibrations of a rotating device, comprising:
coupling a reaction mass in a manner in which it has an effect on vibrations of the rotating device;
providing means for moving said reaction mass to counter vibrations from the rotating device;
measuring an effect of vibrations from the rotating device; and
moving said reaction mass in response to said measured effect to damp the effect and the vibrations.

5,291,976

WHEELED SUITCASE OF LUGGAGE SUPPORT WITH COLLAPSIBLE TOWING HANDLE

Don Ku, Flushing, N.Y., assignor to Liberty Leather Products Co. Inc., Brooklyn, N.Y.

Filed Mar. 4, 1993, Ser. No. 26,524
Int. Cl.[5] A45C *5/14*
U.S. Cl. 190—18 A **28 Claims**



1. A suitcase comprising:
a luggage member,
a support structure attached to the luggage member, the support structure comprising a first horizontal member having two wheels thereon to facilitate towing on the ground, a second horizontal member, two tubular members coupling the first and second horizontal members, thereby forming a rectangular frame, a shaft in extensible slidable engagement in each of said tubular members, the shafts being connected by a first handle, the shafts being extensible between a collapsed position in the tubular members and a fully extended position to enable towing of the luggage member on the wheels, at least one of the shafts including a wedging member slidable within the respective tubular member which is received frictionally in a first bore provided at an end of the respective tubular member adjacent the second horizontal member to maintain the shafts in the fully extended position.

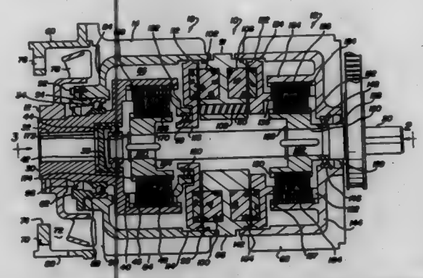
17. A luggage support comprising:
a support structure, the support structure comprising a first horizontal member having a planar luggage support surface and having two wheels thereon to facilitate towing on the ground, a second horizontal member, two tubular members coupling the first and second horizontal members, thereby forming a rectangular frame, a shaft in extensible slidable engagement in each of said tubular members, the shafts being connected by a first handle, the shafts being extensible between a collapsed position in the tubular members and a fully extended position to enable towing of the luggage member on the wheels, at least one of the shafts including a wedging member slidable within the respective tubular member which is received frictionally in a first bore provided at an end of the respective tubular member adjacent the second horizontal member to maintain the shafts in the fully extended position.

5,291,977

ELECTRICALLY ACTUATED CLUTCH BRAKE APPARATUS

Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Co., Warren, Mich.

Filed Jul. 27, 1992, Ser. No. 920,261
Int. Cl.[5] F16D *67/06*
U.S. Cl. 192—18 B **14 Claims**



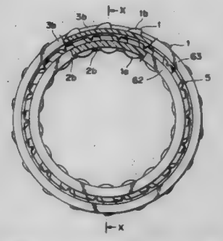
1. A clutch/brake drive for an apparatus for transmitting power from a drive means to a machine, said clutch/brake drive comprising:
a stationary housing;
output means for transmitting rotation from said clutch/brake drive; said output means operably associated with said machine and rotatably mounted in said housing;
input means for transmitting rotation to said clutch/brake drive; said input means operably associated with said drive means and rotatably mounted in said housing;
selectively operable brake means for prohibiting rotation of said output means with respect to said housing, said brake means disposed between said output means and said housing, said brake means being capable of being positioned in an applied or released condition;
selectively operable clutch means for locking said input means to said output means, said clutch means disposed between said input means and said output means, said clutch means being capable of being positioned in an engaged or disengaged condition;
spring means for biasing said selectively operable brake means into said applied position; said spring means also biasing said selectively operable clutch means into said engaged position; and
means for controlling said selectively operable brake and clutch means such that said drive means drives said machine along a specified speed/time relationship, said controlling means being capable of self-adjusting to meet said specified speed/time relationship.

5,291,978

ONE WAY CLUTCH HAVING OUTER AND INNER RETAINERS EACH MADE OF PLASTICS

Tetsuaki Numata, Kitakatsuragi, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Nov. 4, 1992, Ser. No. 971,478
Claims priority, application Japan, Nov. 5, 1991, 3-288599
Int. Cl.[5] F16D *41/07*
U.S. Cl. 192—45.1 **5 Claims**



1. A one-way clutch comprising: a plurality of sprags spaced at specified intervals in a circumferential direction of the one-way clutch; an annular inner retainer of fiber-reinforced plastic retaining radially inner portions of the sprags; an annular outer retainer of plastic retaining radially outer portions of the sprags; and a spring urging the sprags in one circumferential direction of the one-way clutch,
the fiber-reinforced plastic of the inner retainer having a greater strength than the plastic of the outer retainer.

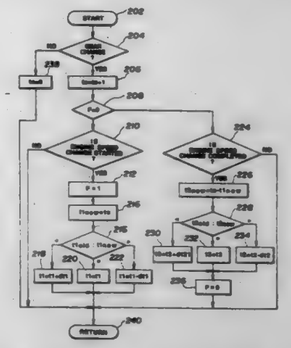
5,291,979

AUTOMATIC TRANSMISSION LOCKUP CLUTCH CONTROL APPARATUS

Naonori Iizuka, Fuji, Japan, assignor to JATCO Corporation, Fuji, Japan

Filed Jan. 12, 1993, Ser. No. 3,424
Int. Cl.[5] B60K *41/28*; F16H *45/02*
U.S. Cl. 192—.092 **6 Claims**

1. A lockup clutch control apparatus for use in an automotive vehicle including an internal combustion engine having a throttle valve, and an automatic transmission having an output shaft, an impeller, a turbine and a lockup clutch for producing selected one of a plurality of modes of gear change, comprising:
first sensor means sensitive to a speed of rotation of the engine for producing a first sensor signal indicative of a sensed engine speed;
second sensor means sensitive to a speed of rotation of the transmission output shaft for producing a second sensor signal indicative of a sensed transmission output shaft speed; and
a control unit coupled to the first and second sensor means for controlling the lockup clutch, the control unit including means for measuring a lapse time after the selected gear change mode starts, means for calculating a gear ratio from a relationship specifying the gear ratio as a function of the selected gear change mode and the measured lapse time, means for storing the calculated gear ratio, means for calculating a speed of rotation of the turbine based upon the sensed transmission output shaft speed and the calculated gear ratio, means for calculating a difference



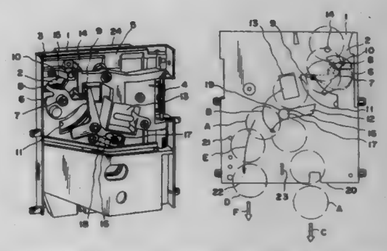
between the sensed engine speed and the calculated turbine speed, means for operating the lockup clutch in a slip lockup mode to bring the calculated difference to a predetermined value, means for monitoring changes in the sensed engine speed to measure a time interval required for the selected gear change mode, and means for modifying the relationship to correct the gear ratio stored for the selected gear change mode based upon the measured time interval.

5,291,980

DEVICE FOR SORTING GAME COIN BY PARAMAGNETIC PROPERTIES

Hiroshi Abe, Kodaira, Japan, assignor to Asahi Seiko Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,786
Claims priority, application Japan, Mar. 27, 1991, 3-132411
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—325 **4 Claims**



1. A device for sorting input coins and selecting a paramagnetic coin having a predetermined size and weight and 2–8 volume percent ferromagnetic material, said device comprising:
a first detector for detecting a ferromagnetic coin having substantially greater amount of said ferromagnetic material than said paramagnetic coin, said first detector rejecting said ferromagnetic coin from said device;

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a second detector for detecting an input coin having said predetermined size and weight provided from said first detector, said second detector allowing only input coins having said predetermined size and weight to go down to a next stage of said device;

an inclined rail for receiving said input coin from said second detector at its higher end so that the input coin rolls down on said inclined rail with a predetermined running speed at its lower end of said inclined rail, said inclined rail being arranged so that a nonmagnetic coin rolls down thereon with said running speed and flies out from said lower end along a reference direction to a return outlet of said device;

a third detector for detecting said paramagnetic coin rolling down on said inclined rail and changing direction of said paramagnetic coin to divert said paramagnetic coin into a genuine coin inlet of said device, said third detector being disposed on said inclined rail for deflecting said reference direction by applying magnetic force to said paramagnetic coin in order to distinguish said paramagnetic coin from said nonmagnetic coin, said third detector including a guide magnetic member having a cylindrical surface and is disposed on said lower end of said inclined rail such that it can rotate with said input coin, said guide magnetic member attracting said paramagnetic coin on said cylindrical surface so that said paramagnetic coin rotatably changing direction to fall down to said genuine coin inlet.

5,291,981

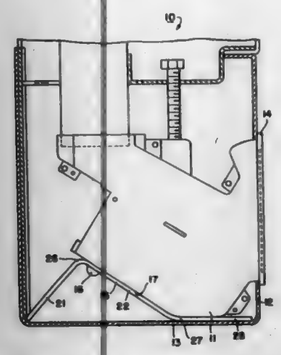
COIN BUCKET CHANGE RETURN AND BANK BOX PROTECTION DEVICE

Salvatore Anello, and Nathan Turk, both of Highland, N.Y., assignors to Sandt Technology, Ltd., Highland, N.Y.

Continuation-in-part of Ser. No. 932,959, Aug. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 907,601, Jul. 2, 1992, abandoned. This application Sep. 29, 1992, Ser. No. 953,729

Int. Cl.[5] H04M *17/00*; B65G *11/00*

U.S. Cl. 194—350 **14 Claims**



1. In a coin operated device having a front wall, a back wall, a top wall and a bottom wall which are joined by a first side wall and a second side wall and containing therein a bank box having an inner side wall, an outer side wall and a bottom wall, and a coin return bucket having a throat with a top wall, a bottom wall, an outer first side wall and an inner first side wall wherein; said bank box and said coin return bucket are mounted side by side within the device near the bottom wall of the device, the improvement for preventing tampering with and vandalization of the device by cutting or penetration of the bottom wall of the coin return bucket wherein a first bottom wall protection plate means for preventing tampering and vandalization is inserted between the bottom wall of the device and the bottom wall of the coin return bucket, said first bottom wall protection plate means being so configured as to generally follow the contour of the bottom wall of the coin return bucket and has a rear portion which extends downwardly from a back end of the bottom wall of the coin return bucket to the bottom wall of the device and a front portion of which lies along the bottom wall of the device and which stabilizes the first bottom wall protection plate means from movement within the device.

5,291,982

PASSENGER CONVEYOR, PLATFORM FLOOR FOR PASSENGER CONVEYOR, AND COMB FOR PLATFORM FLOOR

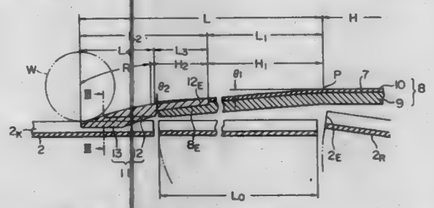
Chuichi Saito, Katsuta; Masao Takizawa, Mito; Kazutoshi Takeda, Katsuta; Kazuhira Ojima, Kasama, and Mitsuo Saito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 762,334, Sep. 19, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 3,672

Claims priority, application Japan, Sep. 19, 1990, 2-247549

Int. Cl.[5] B65G *47/66*

U.S. Cl. 198—325 **14 Claims**



1. A passenger conveyor comprising:

a plurality of treadboards interconnected in an endless manner so as to move along a predetermined path of travel having an advance side and a return side;

a platform floor provided at a platform of said advance side, said platform floor having upper and lower surfaces and having a slanting portion slanting downwardly in such a manner that the upper and lower surfaces of said slanting portion of the platform floor become closer to said treadboard of said advance side progressively toward a distal end of said slanting portion, and each of said treadboards is turned below said platform floor to be shifted from said advance side to said return side,

wherein a length of said slanting portion in the direction of travel of said treadboards is not less than a length of said treadboard in said direction of travel; and

wherein a starting point of said slanting portion remote from said distal end thereof is disposed in a vicinity of a highest position of a track of said treadboard during a turning of said treadboard below said platform floor.

5,291,983

APPARATUS FOR ALIGNING AND UNIFORMLY ORIENTING FISH

Giuliano Pegoraro, Bjuv, and Lars G. A. Wadell, Aengelholm, both of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Filed Dec. 2, 1992, Ser. No. 984,357

Claims priority, application European Pat. Off., Dec. 20, 1991, 91121890.7

Int. Cl.[5] B65G *47/24*

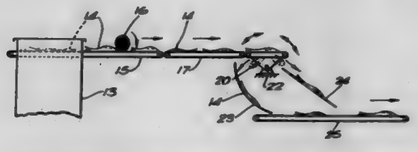
U.S. Cl. 198—399 **6 Claims**

1. An apparatus for aligning and uniformly orienting fish comprising:

a shuffle feed device for aligning and discharging fish in a single line;

a conveyor having a longitudinal upper run positioned for receiving and conveying aligned and discharged fish in a single line, in which fish are orientated in the longitudinal plane of the conveyor;

a sensor comprising an upper photocell and a lower photocell positioned at a downstream end of the conveyor such that, in operation, the sensor distinguishes between head-end-first and tail-end-first orientations of fish passing the



sensor based upon the sequence of activation of the photocells; and

means controllable by the sensor for uniformly orienting fish passing the sensor in the same orientation.

5,291,984

DEVICE FOR UPRIGHTING CONTAINERS FROM A POSITION WITH THEIR AXIS HORIZONTAL TO A POSITION WITH THEIR AXIS VERTICAL

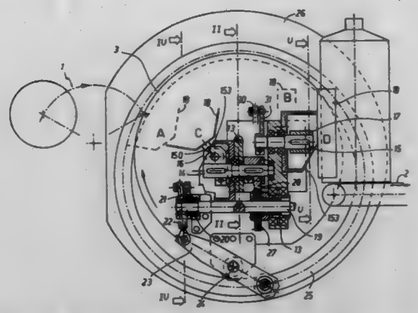
Wilder Lusetti, Bagnolo in Piano, Italy, assignor to O.M.S.O. S.p.A., Reggio Emilia, Italy

Filed Mar. 18, 1993, Ser. No. 36,643

Claims priority, application Italy, Apr. 2, 1992, RE92A00024

Int. Cl.[5] B65G *15/00*

U.S. Cl. 198—408 **7 Claims**



1. A device for uprighting containers from a position with their axis horizontal to a position with their axis vertical, characterised by comprising:

a circular plate (3) fixed to the end of a shaft (5) of horizontal axis by means of a support structure (4) arranged to undergo stepwise rotations of 180° in synchronism with a container feed line (1);

two parallel shafts (14, 15) symmetrically arranged about a diameter of the plate (3) and each carrying, at that end facing away from the plate, a receptacle (18) for seizing the containers, said shafts being connected mechanically such as to undergo equal rotations in the same direction, and carrying the receptacles (18) thereon with their axes mutually perpendicular;

a fixed positive-acting cam (25) within which there engages the end of a rocker arm (23) pivoted on the plate (3), its opposite end rotating one of the shafts (14 or 15) by means of a mechanism comprising a connecting rod-crank unit (21, 22).

5,291,985

METHOD AND DEVICE FOR FORMING GROUPS OF FLAT PRODUCTS, IN PARTICULAR BISCUITS, FOR SUPPLY TO A PACKING LINE

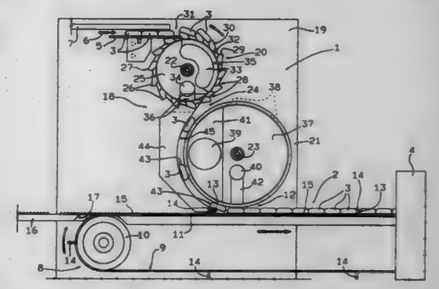
Mario Spatafora, and Giulio Strazzari, both of Bologna, Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A., Bologna, Italy

Filed Oct. 22, 1992, Ser. No. 964,887

Claims priority, application Italy, Oct. 23, 1991, B091A000391

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—419.3 **9 Claims**



1. A method of forming groups of flat products, particularly biscuits, for supply to a wrapping line, said method comprising the steps of:

feeding the products, contacting one another, in a given direction along a supporting surface; and

transferring the products, by means of a conveyor unit, from said supporting surface onto an output conveyor for forming the products into groups to supply said wrapping line;

wherein said transferring step comprises the step of:

feeding the products onto the output conveyor in a sequence presenting a series of gaps between adjacent products, by means of said conveyor unit which comprises a first conveyor and a second conveyor arranged in series between said supporting surface and said output conveyor; wherein:

the first conveyor is driven at a first speed for successfully withdrawing the products from the supporting surface;

the second conveyor is driven at a second speed greater than the first speed for spacing the products and forming said gaps; and

the output conveyor defines a series of pockets each of which is designed to receive a number of said products to form one of said groups, each of said pockets being defined by two projections, each traveling in time with a respective one of said gaps through a loading station wherein the products are loaded onto the output conveyor.

5,291,986

PRINTER EXIT RETRIEVER AND CONVEYOR

Robert A. Wheaton, Windsor, Conn., assignor to Aetna Life Insurance Company, Hartford, Conn.

Filed Nov. 16, 1992, Ser. No. 977,137

Int. Cl.[5] B65G *47/34*

U.S. Cl. 198—468.6 **5 Claims**

1. Apparatus for retrieving and temporarily storing stacked material comprising:

an elongated frame;

a stack conveyor mounted on top of said frame longitudinally thereof and including laterally spaced, parallel, coplanar support members for engaging the bottom of a stack of material and conveying the same longitudinally of said frame;

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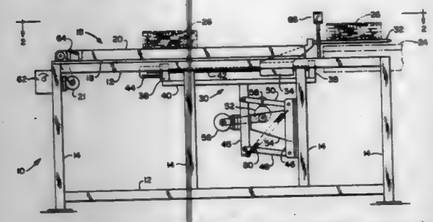
a retrieving assembly mounted on said frame at one end of said stack conveyor, said retrieving assembly including,

a plurality of coplanar, parallel elongated support fingers intermediate and generally parallel with said support members,

a head member from which said fingers project in a direction outwardly of said one end of said conveyor, said head member extending downwardly from said fingers,

mounting means positioned below said fingers and conveyor and upon which said head member is mounted for movement in a direction parallel to said fingers,

motor means operative to effect said movement of said of said head member to and from a retracted position where said fingers are generally within the confines of the conveyor and an extended position where said fingers extend beyond said end of the conveyor,



means supporting said fingers, head member, mounting means and motor means for limited vertical movement as a unit to and from a lower position where said fingers are below the upper surface of the conveyor and an upper position where said fingers project above the upper surface of said conveyor, the supporting means including,

a hinged parallelogram actuating assembly having vertically spaced generally horizontal arms and laterally spaced vertical arms pivotally interconnected, one end of said actuating assembly being fixed to said frame while the other end is free through pivotal action to move vertically,

and a motor operated eccentric effective to pivotally operate said actuating assembly to move said fingers to and from said upper and lower positions; and

means effective to control the operation of said motor means and said motor operated eccentric.

5,291,987

CONVEYOR FOR RAISING AND LOWERING ARTICLES

Arden K. Zink, Louisville, Nebr., assignor to Millard Manufacturing Corp., Omaha, Nebr.

Filed Mar. 25, 1993, Ser. No. 36,715

Int. Cl.[5] B65G *35/00*

U.S. Cl. 198—724 **2 Claims**

1. A vertical conveyor for conveying articles between vertically disposed locations, comprising:

a vertically disposed first support means rotatable about a vertical axis and having upper and lower ends;

a spiral support bed means having upper, lower, inner and outer ends extending around said first support means in a spaced-apart relationship for supporting the articles to be moved from the lower end to the upper end thereof, said spiral support bed means having a top surface upon which the articles are supported,

means for rotating said first support means with respect to said spiral support bed means,

means at the outer end of said spiral support bed means for maintaining the articles on said spiral support bed means,

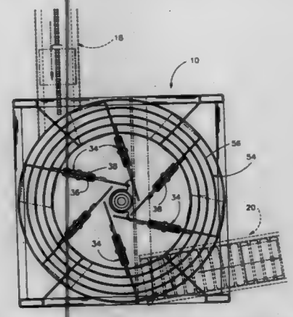
at least one vertically disposed pusher bar assembly positioned inwardly of said spiral support bed means and secured to said first support means for rotational movement therewith,

said pusher bar assembly having upper and lower ends,

said pusher bar assembly including a vertically disposed, movable endless chain means defining a conveying portion and a return portion, said chain means having a plurality of spaced-apart pusher bars secured thereto which extend laterally therefrom so that the said pusher bars, on said conveying portion, movably rest upon said top surface of said spiral support bed means,

the rotational movement of said first support means in a first direction causing the said pusher bars on the said pushing portion of said chain means to move upwardly along the top surface of said spiral support bed means to engage an article thereon to move the said article for the lower end of said bed means to the upper end of said bed means,

an entry conveyor means positioned adjacent the lower end of said spiral support bed means for supplying said articles thereto,



said entry conveyor means including a first elongated conveyor having first and second ends,

said entry conveyor means also including a second elongated conveyor having first and second ends,

said second end of said first conveyor being positioned with respect to said first end of said second conveyor so that articles passing from said second end of first conveyor will be delivered to said first end of said second conveyor,

said second end of said second conveyor being positioned adjacent the lower end of said spiral support bed, and

said second conveyor including a plurality of spaced apart lugs provided thereon to properly position the article thereon with respect to said pusher bars of said pusher bar assembly to time the delivery of the articles to said pusher bar assembly.

5,291,988

ADJUSTABLE GUIDE RAIL APPARATUS FOR CONVEYOR SYSTEMS

George E. Leonard, 8972 Wells Ferry Rd., Bettendorf, Iowa 52722

Filed Aug. 23, 1993, Ser. No. 110,669

Int. Cl.[5] B65G *21/20*

U.S. Cl. 198—836.3 **2 Claims**

1. An adjustable guide rail apparatus for conveyor systems, comprising:

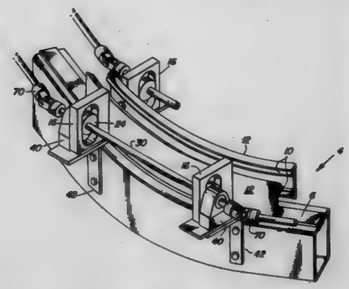
(a) guide rails for guiding items along the conveyor, said guide rails being disposed in a laterally spaced relationship and extending longitudinally of the conveyor;

(b) cam cages supporting said guide rails at longitudinally spaced intervals and slidably mounted adjacent the conveyor, said cam cages capable of lateral movement relative to the conveyor;

(c) cams rotatably mounted within said cam cages so as to cause lateral movement of said cam cages relative to the conveyor;

(d) a drive shaft extending longitudinally of the conveyor and passing through said cams and fixed thereto;

(e) bearing assemblies rotatably supporting said drive shaft at longitudinally spaced intervals adjacent the conveyor;



(f) drive means for rotating said drive shaft; and

(g) locking means for selectively preventing rotation of said drive shaft.

5,291,989

CATALYST SYSTEM FOR DISTILLATION REACTOR

Ronald Pinaire; Michael A. Ulowetz; Timothy P. Nace, and David A. Furse, all of Wichita, Kans., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Division of Ser. No. 475,971, Feb. 6, 1990, Pat. No. 5,108,550.

This application Oct. 11, 1991, Ser. No. 775,010

Int. Cl.[5] B01D *3/32*; B01J *8/04*

U.S. Cl. 202—158 **28 Claims**

1. An apparatus for use in a distillation column to provide concurrent reaction with distillation of fluid streams flowing through said distillation column, said apparatus comprising:

a plurality of spaced apart plates for presenting a fractional distillation and mass transfer zone;

a plurality of containers extending between said plates for containing in a fixed configuration a catalyst to form a catalytic reaction zone, said containers providing a primary flow path for liquid streams flowing between said spaced apart plates; and

solid members in surrounding relationship to at least some of said containers and having upper and lower ends, each said member being spaced from an associated container and coupled with the latter in fluid-tight relationship at the lower end of the member.

21. An apparatus for use in a distillation column to provide concurrent reaction with distillation of fluid streams flowing through said distillation column, said apparatus comprising:

a plurality of generally horizontally extending and vertically spaced apart plates for presenting a fractional distillation and mass transfer zone;

a plurality of containers extending between said plates for containing in a fixed configuration a catalyst to form a plurality of generally vertically extending catalytic reaction zones, said containers providing a primary flow path for liquid streams flowing between said spaced apart plates; and

an interference structure within at least some of said containers for slowing the rate of fall of liquid gravitating through the associated containers.

5,291,990

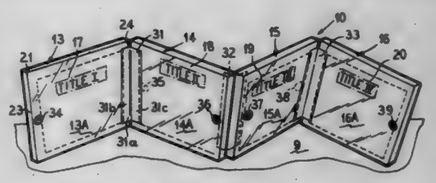
PRODUCT PACKAGING AND DISPLAY SYSTEM

Daniel A. Sejzer, 1815 Beverly Pl., Highland Park, Ill. 60035

Filed Feb. 16, 1993, Ser. No. 18,366

Int. Cl.[5] B65D *21/02, 85/57*

U.S. Cl. 206—45.110 **19 Claims**



1. A packaging and display system, comprising:

a plurality of items each having a substantially similar shape and size and a display surface containing product identifying indicia but wherein the product identifying indicia differs for at least two of the items;

the items being connected together in a chain by hinges mounted at a side edge of the items in alternating fashion along the chain between front and back surfaces of the items;

a releasable attachment member being provided on each of the items adjacent a side edge laterally opposite the side edge where the respective hinge is mounted and on a same respective front or back surface of each of the items where the respective hinge is mounted; and

the hinges and releasable attachment members being arranged and located such that the items can be closed upon one another into a compact bundle or can be unfolded by release of the releasable attachment members so that the individual items can assume a linked together configuration in either a zig-zag pattern or a straight line pattern.

5,291,991

ELONGATE CONTAINER HAVING TWO SEPARATE COMPARTMENTS, ONE BEING AN EXTENSION OF THE OTHER

Gabriel Meyer, Vesenaz, Switzerland, assignor to Becton Dickinson France S.A., France

PCT No. PCT/CH90/00219, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO91/04003, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 13, 1990, Ser. No. 675,904

Claims priority, application Switzerland, Sep. 14, 1989, 3358/89-5

Int. Cl.[5] B65D *81/32*

U.S. Cl. 206—221 **16 Claims**

1. An elongated container comprising first and second separate compartments for containing two separate substances to

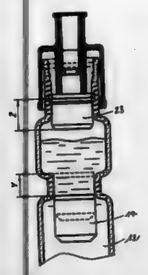
VOL 1160 ISS 2 MR 8 1994 UMI

be mixed together, one compartment being an extension of the other, the first compartment being suitable for containing a liquid substance, and the second compartment being suitable for containing one of a liquid substance, a powder substance and a lyophilisate substance, and the two separate substances being mixable in the second compartment

a central cylindrical throat having an intermediate sealing plug for separating the first and second compartments while the container is being stored;

said container including at least one open end being formed in at least one cylindrical neck integral with at least one of said first and second compartments, said at least one cylindrical neck having a narrower cross-section than a cross-section of said at least one of said first and second compartments integral with said at least one cylindrical neck, and a movable sealing plug engaging said at least one cylindrical neck, said movable sealing plug comprising at least one active sealing portion, said movable sealing plug being displaceable between a first storage position and a second, ready for use, position, and said movable sealing plug facilitating mixing of the two separate substances to be mixed together;

wherein said at least one cylindrical neck has a first region adjacent the open end of said cylindrical neck, and a second region situated between said first region and said at least one of said first and second compartments integral with said at least one cylindrical neck, said second region has a transverse cross-section which is smaller than that of



the first region, the first region has a transverse cross-section which is larger than the transverse cross-section of said active portion of the movable sealing plug, the second region of said at least one cylindrical neck has at least one section which has a smaller cross-section than the cross-section of said active portion of said movable sealing plug, and the cross-section of the intermediate sealing plug is smaller than the cross-section of said first region of the cylindrical neck and is larger than the cross-section of said second region of the cylindrical neck.

12. An elongated container comprising first and second separate compartments for containing two separate substances to be mixed together, one compartment being an extension of the other, the first compartment being suitable for containing a liquid substance, and the second compartment being suitable for containing one of a liquid substance, a powder substance and a lyophilisate substance, and said two separate substances, when contained in the first and second compartments, being mixable in the second compartment;

a central cylindrical throat having an intermediate sealing plug for separating the first and second compartments while the container is being stored;

said container including at least one open end being formed in at least one cylindrical neck integral with at least one of said first and second compartments, said at least one cylindrical neck having a narrower cross-section than a cross-section of said at least one of said first and second compartments integral with said at least one cylindrical neck, a movable sealing plug engaging said at least one cylindrical neck, said movable sealing plug comprising at least one active sealing portion, said movable sealing plug being displaceable between a first storage position and a second, ready for use, position in which said movable sealing plug facilitates mixing of said two separate substances to be mixed together;

wherein said at least one cylindrical neck has a first region adjacent the open end of said cylindrical neck, a second region situated between said first region and said at least one of said first and second compartments integral with said at least one cylindrical neck, said second region has a transverse cross-section which is smaller than that of the first region, the first region has a transverse cross-section which is larger than the transverse cross-section of said active portion of the movable sealing plug, the second region of said at least one cylindrical neck has at least one section which has a smaller cross-section than the cross-section of said active portion of said movable sealing plug, the container has a second opening at an end of said container opposite said at least one cylindrical neck, and said second opening receives a closing seal after one of the first and the second compartments is filled.

14. An elongated container comprising first and second separate compartments for containing two separate substances to be mixed together, one compartment being an extension of the other, the first compartment being suitable for containing a liquid substance, and the second compartment being suitable for containing one of a liquid substance, a powder substance and a lyophilisate substance, and said two separate substances, when contained in the first and second compartments, being mixable in the second compartment;

a central cylindrical throat having an intermediate sealing plug for separating the first and second compartments while the container is being stored;

said container including at least one open end being formed

in at least one cylindrical neck integral with at least one of said first and second compartments, said at least one cylindrical neck having a narrower cross-section than a cross-section of said at least one of said first and second compartments integral with said at least one cylindrical neck, a movable sealing plug engaging said at least one cylindrical neck, said movable sealing plug comprising at least one active sealing portion, said movable sealing plug being displaceable between a first storage position and a second, ready for use, position in which said movable sealing plug facilitates mixing of said two separate substances to be mixed together;

wherein said at least one cylindrical neck has a first region adjacent the open end of said cylindrical neck, a second region situated between said first region and said at least one of said first and second compartments integral with said at least one cylindrical neck, said second region has a transverse cross-section which is smaller than that of the first region, the first region has a transverse cross-section which is larger than the transverse cross-section of said active portion of the movable sealing plug, the second region of said at least one cylindrical neck has at least one section which has a smaller cross-section than the cross-section of said active portion of said movable sealing plug, said movable sealing plug is associated with a rigid connecting tip comprising a central conduit, and communication means is provided to allow the solution obtained after mixing the two components in said second compartment to flow into said central conduit.

16. An elongated container comprising first and second separate compartments for containing two separate substances to be mixed together, one compartment being an extension of the other, the first compartment being suitable for containing a liquid substance, and the second compartment being suitable for containing one of a liquid substance, a powder substance and a lyophilisate substance, and said two separate substances, when contained in the first and second compartments, being mixable in the second compartment;

a central cylindrical throat having an intermediate sealing plug for separating the first and second compartments while the container is being stored;

said container including at least one open end being formed in at least one cylindrical neck integral with at least one of said first and second compartments, said at least one cylindrical neck having a narrower cross-section than a cross-section of said at least one of said first and second compartments integral with said at least one cylindrical neck, a movable sealing plug engaging said at least one cylindrical neck, said movable sealing plug comprising at least one active sealing portion, said movable sealing plug being displaceable between a first storage position and a second, ready for use, position in which said movable sealing plug facilitates mixing of said two separate substances to be mixed together;

wherein said at least one cylindrical neck has a first region adjacent the open end of said cylindrical neck, a second region situated between said first region and said at least one of said first and second compartments integral with said at least one cylindrical neck, said second region has a transverse cross-section which is smaller than that of the first region, the first region has a transverse cross-section which is larger than the transverse cross-section of said active portion of the movable sealing plug, the second region of said at least one cylindrical neck has at least one section which has a smaller cross-section than the cross-section of said active portion of said movable sealing plug, the movable sealing plug is integral with a capsule, and said capsule has a vent and a hydroponic filter for evacuating pressurized gas from the first compartment.

5,291,992

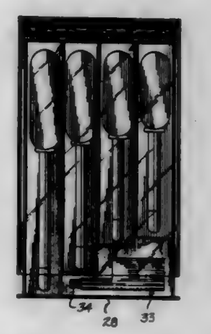
JAR UTENSIL KIT

Dee Olivetti, 2846 Congress Rd., Pebble Beach, Calif. 93953

Filed Feb. 8, 1993, Ser. No. 14,749

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—223 1 Claim



1. A jar utensil kit, comprising,

a housing, with the housing having a housing floor, spaced housing side walls, housing stepped first end wall, and a housing second end wall, with a plurality of spoon members extending from the stepped first end wall to the second end wall, with the spoon members including a first spoon member having a first length, a second spoon member having a second length less than said first length, a third spoon member having a third length less than said second length, and the first spoon member having a first handle shaft, the second spoon member having a second handle shaft, and the third spoon member having a third handle shaft, and

a first resilient head mounted to the first shaft, a second resilient head mounted to the second shaft, and a third resilient head mounted to the third shaft, and

each head formed of resilient material and including symmetrical orientation about a predetermined axis, wherein the predetermined axis extends symmetrically through each respective handle shaft and each respective head, and

each head includes a planar body side wall portion arranged in a parallel spaced relationship relative to the predetermined axis, and each ellipsoidal head including a minor axis, with the planar body side wall portion orthogonally oriented relative to the minor axis, and an ellipsoidal arcuate side wall extending about the predetermined axis, and a planar body end wall orthogonally oriented relative to the predetermined axis, and

a container, with the container having a container cavity, with the housing slidably received within the container, and the container including a transparent container top wall, and a first end wall flange extending beyond the stepped first end wall for manual grasping of the housing, and a lever extension mounted between the first end wall flange and the stepped first end wall, with each handle having a handle threaded socket at a free distal end of said each handle, and each said handle having a threaded socket plug removably mounted relative to said threaded socket, with the lever extension including a threaded end portion threadedly received within said threaded socket, and a first extension leg longitudinally aligned relative to the threaded end portion, and an extension handle projecting laterally of the extension leg integrally mounted relative to the extension leg for enhanced ease of manual grasping of the lever extension.

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5,291,993

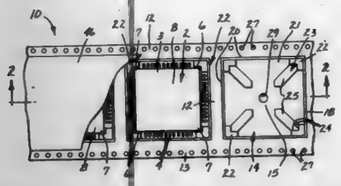
CARRIER TAPE

James L. Schenz, and Tom Skrtic, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 860,204, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 654,325, Feb. 12, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,377

Int. Cl.[5] B65D *85/38*

U.S. Cl. 206—330 26 Claims



1. A unitary flexible carrier tape adapted to transport a plurality of electronic components, each of the components having a body including side walls defining corners, top and bottom walls, and at least one lead projecting from said side walls with the corners being free of the leads,

said carrier tape comprising a strip like portion defining a top surface for said tape, and wall portions defining a plurality of similarly-shaped pockets spaced along said tape and opening through said top surface, said wall portions comprising:

bottom wall portions,

side wall portions extending between said strip like portion and said bottom wall portions,

said bottom wall portions including distal parts spaced from said top surface of said tape and embossed parts projecting above said distal parts and having abutment surfaces spaced above said distal parts, said abutment surfaces being adapted to abut the bottom walls of the electronic components to afford elevation of the electronic components relative to said distal parts, and

said side wall portions including longitudinal parts extending between said top surface of said tape and said distal parts and castellation parts having portions located above said embossed parts and inset from said longitudinal parts,

said castellation parts having engagement surfaces adapted to engage the portions of the side walls of the electronic components which are free of leads to retain the electronic components stationary with respect to said tape and to retain the orientation of the electronic components relative to said carrier tape, and

said castellation parts being adapted to prevent rotation of the electronic components with respect to said bottom wall portions during removal of the electronic components from said pockets.

23. A unitary flexible carrier tape adapted to transport an electronic component having a body including side walls defining corners, top and bottom walls, and at least one lead projecting from said side walls with the corners being free of the leads,

said carrier tape comprising a strip like portion defining a top surface for said tape, and wall portions defining a plurality of similarly-shaped pockets spaced along said tape and opening through said top surface, said wall portions comprising:

bottom wall portions including distal parts spaced from said top surface of said tape,

side wall portions extending between said strip like portion and said bottom wall portions, and

each of said pockets including embossed means for elevating said component relative to said distal parts, and

each of said pockets including engagement means inset from said side wall portions, for engaging the component to retain the orientation of the component relative to said pocket until the component is removed from said pocket.

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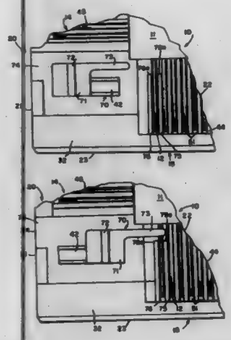
SLIDE TAB CARRIER FOR FLATPACK ELECTRONIC COMPONENT CARRIERS

Robert H. Murphy, Merrimack, N.H., assignor to R. H. Murphy Co., Inc., Amherst County, N.H.

Filed Jan. 8, 1993, Ser. No. 2,222

Int. Cl.[5] B65D *73/02*

U.S. Cl. 206—331 20 Claims



1. A carrier facilitating the handling of a flatpack electronic component with a planar housing and a plurality of terminals extending from the edges of the housing in a predetermined configuration, said carrier comprising:

A. terminal engagement means for supporting the plurality of terminals thereby to position the flatpack electronic component in said carrier in a first area adjacent said terminal engagement means,

B. frame means for supporting said terminal engagement means and having a slot formed therein along an axis adjacent said terminal engagement means, and

C. slide tab means in said frame means adjacent said terminal engagement means for linear reciprocal motion in said slot between first and second positions and parallel to the plane of the planar housing of the flatpack electronic component, said slide tab means including a body extended through and captured by said frame means and linearly slidable in said slot and an extension from said body that overlies said frame means when said slide tab means is in the first position, said extension in the second position is coextensive with and overlies a portion of a second area including a portion of said terminal engagement means and a portion of said first area whereby said slide tab means positions said extension to retain an electronic component in said carrier.

5,291,995

PACK FOR NOTIONS AND THE LIKE

Rudolf von Agris, Aachen; Helmut Schiffer, Stolberg; Lutz Mantsch, Aldenhoven, and Rolf Schumacher, Stolberg, all of Fed. Rep. of Germany, assignors to William Prym-Werke GmbH & Co. KG, Stolberg, Fed. Rep. of Germany

Filed Jun. 24, 1992, Ser. No. 903,711

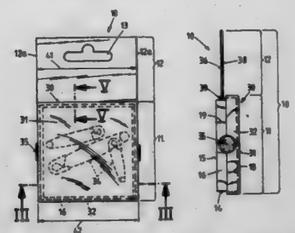
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 9109126[U]; Jan. 18, 1992, 4201236

Int. Cl.[5] B65D *5/22, 73/00*

U.S. Cl. 206—336 44 Claims

1. A pack for notions comprising a first one-piece section of a biodegradable material and a second one-piece section of a non-biodegradable material said non-biodegradable material

consisting of a light-transmitting plastic material, said first section comprising a container having an open top, a bottom wall, and sidewalls extending upwardly from said bottom wall and surrounding said open top, said first section further comprising a substantially plane carrier of one piece with said container said carrier extending substantially parallel to said



bottom wall and having means for suspending said first section on a support, said carrier further having a front side and a rear side and said sidewalls extending beyond said front side, said second section comprising a cover separably confining at least a portion of said container, said cover comprising a top wall confronting said open top and lateral walls outwardly adjacent said sidewalls.

5,291,996

REUSABLE DISPLAY SHEATH WITH FRANGIBLE LATCH MEANS

Erkki O. Lindén, Billnäs, Finland, assignor to Fiskars Oy Ab, Helsinki, Finland

Filed Jan. 15, 1993, Ser. No. 3,967

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—349 15 Claims



1. A reusable display sheath for protecting the working end of a tool having an opposed force applying end disposed across a protruding stud projecting from said tool, said sheath comprising:

an elongated passage having a longitudinal axis, a first end, and an opposed open end for accommodating insertion and withdrawal of said working end along said axis; and

frangible latch means, integrally formed in said sheath at said open end, comprising a frangible tongue separable from said sheath to effect unlocking of said tool from said sheath while permitting semi-permanent engagement of said tool with said sheath by said protruding stud.

5,291,997

MEDICAL MAILER BOX ASSEMBLY

Yun-Ju He; Shang-Li Wu, and Wei He, all of 5217 NW. 23rd Pl., Gainesville, Fla. 32606

Filed Aug. 10, 1992, Ser. No. 926,657

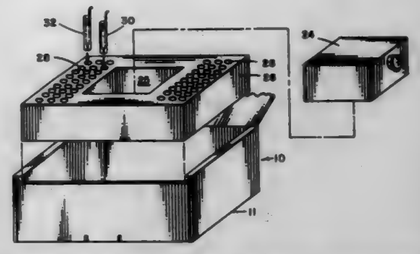
Int. Cl.[5] B65D *71/00*

U.S. Cl. 206—370 12 Claims

1. An assembly for housing medical supplies which are packaged and unused and for storing and then mailing the medical supplies after the medical supplies have been unpackaged and used, said assembly comprising:

a medical waste container having an aperture for allowing used medical supplies to be placed therein for storage;

a medical supply housing having a bay into which said medical waste container is inserted, said medical supply housing being provided with a plurality of apertures;



a plurality of packaged hypodermic needles and syringes inserted into the plurality of apertures of said medical supply housing, respectively; and

a mailer box which contacts said medical supply housing and into which said medical waste container and said medical supply housing are inserted.

5,291,998

REUSABLE STACKABLE HOLDER FOR FLANGED ARTICLES, ESPECIALLY ELECTRICAL LAMPS

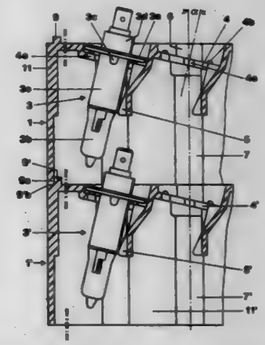
Werner Fiebig, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbh, Munich, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 21,788

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1992, 9204751

Int. Cl.[5] B65D *85/42*

U.S. Cl. 206—419 17 Claims



1. A stackable carrier plate (1) for combination with an essentially box-shaped carrier holder (14), and

for further combination with

articles (3) having an elongated portion (3*b*, 3*d*, 3*e*) and a transverse flange (3*a*) intermediate the elongated portion to retain said articles on the carrier plate,

said carrier plate (1) being adapted to be placed while essentially horizontal in stacked position with a further essentially identical carrier plate (1') in the essentially box-shaped carrier holder (14),

each carrier plate (1) defining a major plane, an upper side, and a lower side,

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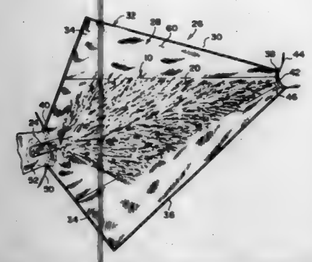
wherein, in accordance with the invention,
the carrier plate (**10**) essentially consists of plastic material;
the upper side of the carrier plate is formed with article receptors (**2**), said article receptor being formed with an aperture (**2***a*) and an engagement surface (**4**) surrounding the aperture, which engagement surface is dimensioned and shaped to be engaged by said transverse flange (**3***a*) of the article, said engagement surface receiving the article in position in which the elongated portion of the article passes through the aperture (**2***a*) in the engagement surface (**4**) and the flange (**3***a*) engages the engagement surface, whereby the article will hang on the engagement surface;
said engagement surface (**4**) being located at an acute angle (α) with respect to the major plane of the carrier plate, said acute angle (α) being selected to place the elongated portion (**3***b*, **3***e*) of the article depending beneath the engagement surface (**4**) between the elongated portion (**3***d*) of the article which is above the engagement surface (**4'**) of the further carrier plate (**1'**) positioned below the carrier plate (**1**) from which the article (**3**) hangs; and
spacing means (**9**) are provided, formed on at least one of said sides of the carrier plate for defining a stacking space between carrier plates stacked above each other, which stacking space is dimensioned to be less than the length of the articles (**3**).

5,291,999

CHRISTMAS TREE BAG

Walter E. Phair, 15445 39th La. South, Seattle, Wash. 98188

Filed Oct. 19, 1992, Ser. No. 962,700
Int. Cl.[5] B65D *85/50, 33/28*
U.S. Cl. 206—423 **6 Claims**



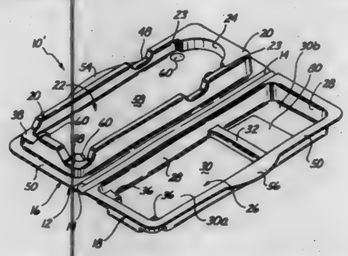
1. A Christmas tree bag for a cut down evergreen tree which comprises:
a) a flexible cone shaped enclosure having an entrance, so that the evergreen tree can be inserted therein, said flexible cone shaped enclosure includes a plurality of triangular shaped panels which are attached together, so as to extend about the foliage of the evergreen tree;
b) means for sealing the entrance of said flexible cone shaped enclosure to prevent needles from the foliage of the evergreen tree to exit therefrom, especially when being transported from one location to another, said sealing means is an elongated slide fastener, which extends from a top end to a bottom end of said flexible cone shaped enclosure;
c) a top casing attached at the top end of said flexible cone shaped enclosure, and a top drawstring extending through said top casing, which when pulled will cause said top casing to tighten about the top end above an apex of the evergreen tree;
d) a bottom casing attached at a center of the bottom end of said flexible cone shaped enclosure, and a bottom drawstring extending through said bottom casing, which when pulled will cause said bottom casing to tighten about a cut tree trunk end of the evergreen tree; and
e) an extension flap being secured to said bottom casing, so that said extending flap can be folded over the cut tree trunk end of the evergreen tree to prevent secretions from exiting therefrom, especially when being transported from one location to another.

5,292,000

HOLDER FOR MEDICAL SPECIMEN SLIDE

Abner Levy, 325 N. Oakhurst Dr., P4, Beverly Hills, Calif. 90210

Filed Nov. 13, 1992, Ser. No. 975,878
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—456 **10 Claims**



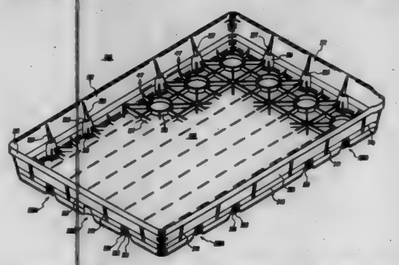
1. A holder for a specimen slide of substantially rectangular shape and having a top surface including an identification bearing portion and a specimen bearing portion of said top surface, said holder comprising:
a tray portion defining a slide receiving recess having a tray bottom surface and a cover portion having a cover top surface:
said cover portion configured and dimensioned to retentively engage said tray portion in a closed condition of said holder; and
a window defined in at least one of said tray bottom and cover top for exposing to view said identification bearing portion of a said slide in said closed condition;
said window being closed in an original condition of said holder by a panel attached to said least one of said tray bottom and cover top by supporting means, said supporting means being preferentially rupturable under manual force applied to said panel for removing said panel and opening said window.

5,292,001

NESTABLE STORAGE AND TRANSPORT TRAY

Keith A. Langenbeck, 4005 University Blvd., Dallas, Tex. 75205, and Jesse P. Kensinger, Richardson, Tex., assignors to Keith A. Langenbeck, Dallas, Tex.

Continuation-in-part of Ser. No. 435,540, Sep. 26, 1989, Pat. No. 5,009,053. This application Apr. 22, 1991, Ser. No. 689,458
Int. Cl.[5] B65D *21/04*
U.S. Cl. 206—518 **10 Claims**



1. A tray for storing articles in a substantially upright position, said tray having a bottom member and four wall members interconnected to provide an enclosure for receiving the articles, each of said wall members having a predetermined draft angle to allow said bottom member and substantial portions of said wall members of said tray to be received within the enclosure of another tray, whereby a plurality of trays are nestable, each of said wall members having a support member protruding into said enclosure from the corresponding wall member, each support member having an upwardly facing support surface intermediate a top portion of said tray and said bottom member for supporting a bottom member of another tray in an intermediate nested position between said top portion and said bottom member, each of said wall members further including a rib member protruding into said enclosure from the corresponding wall member, each of said rib members extending between said top portion and the corresponding support surface, each of said wall members further including a recess formed in an external surface of the corresponding wall member, each of said recesses extending from said bottom member at least partially upwardly along the corresponding wall member, each of said recesses being adapted to receive a corresponding one of said rib members when two trays are nested, to allow the bottom member of an inner tray in a nested configuration to contact the support surfaces of an outer tray in the nested configuration.

5,292,002

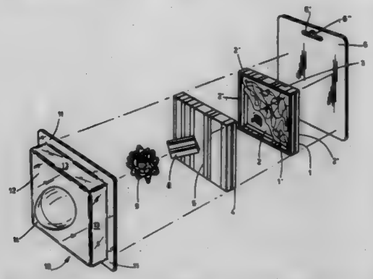
Patent Not Issued For This Number

5,292,003

COMBINED GIFT BOX AND DISPLAY PACKAGING

Ivan D. Baghdassarian, 130 De Languedoc, St Lambert, Quebec, Canada J4S 1T3

Filed Sep. 29, 1993, Ser. No. 128,230
Int. Cl.[5] B65D *71/00*
U.S. Cl. 206—575 **7 Claims**



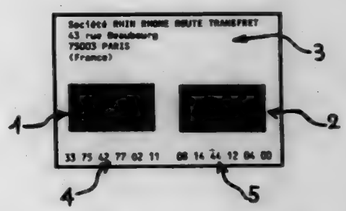
1. The combination of a gift box, a decorative bow and a display packaging for said box and bow, said combination comprising:
a) a gift box of a given size and height, said gift box being adapted to receive and contain a gift;
b) a decorative bow adapted to be glued onto said gift box to decorate the same; and
c) a display packaging comprising:
a back panel of greater dimensions than said gift box; and
a transparent cover for housing and protecting both of said box and said bow, said cover being made of semi-rigid transparent plastic material and
a front surface and a set of side walls of such a size and a height as to define a cavity in which the box may be housed;
a protruding hemispherical bubble formed in said front surface, said bubble being of such a size as to house and protect said bow, and
a perimetrical flange projecting from said side walls and adapted to be connected to said back panel with said box and bow housed in said transparent cover.

5,292,004

PROCESS FOR ADDRESSING TO A RECIPIENT

Roger Cesarini, 128, rue Paul Doumer, 94290 Villeneuve le Roi, France

Continuation of Ser. No. 434,687, Aug. 8, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,051
Claims priority, application France, Feb. 3, 1988, 88 01258
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—3.1 **1 Claim**



1. A process of delivering a message to a recipient, comprising the steps of:
determining an identifier for the recipient which is a combination of a code which represents a geographical location of the recipient and a telephone number of the recipient, and
determining a locator for the recipient from a grid which is internationally established for a certain geographical zone, the locator including coordinates of a grid which represent a most accurate geographical location possible of the recipient;
correlating the telephone number of the recipient with the geographical location of the recipient from either the identifier or the locator, and determining whether an error exists in the address by determining if the telephone number exists within the geographical location; and
delivering the message to the recipient if the correlating step indicates that the telephone number exists in the geographical location.

5,292,005

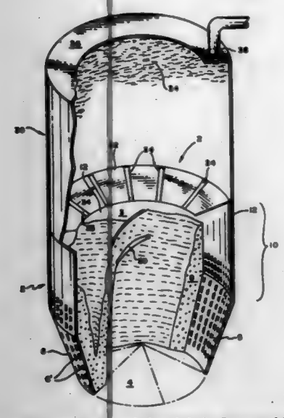
APPARATUS FOR ROASTING COFFEE BEANS OR THE LIKE

Jack Wireman, and Daniel R. Wireman, both of Fallbrook, Calif., assignors to Blaw Knox Food & Chemical Equipment Co., Buffalo, N.Y.

Division of Ser. No. 727,899, Jul. 10, 1991, Pat. No. 5,230,281. This application Feb. 9, 1993, Ser. No. 15,128
Int. Cl.[5] B07B *7/04*
U.S. Cl. 209—144 **4 Claims**

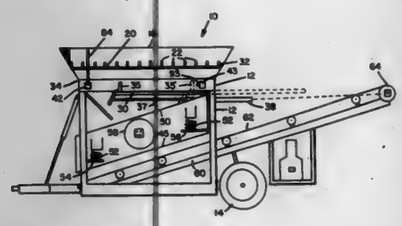
1. A cyclone separator comprising a generally cylindrical body having an inner wall and an annular opening at the bottom thereof, means including a plurality of radially extending louvers communicating with said opening at the bottom of said cylindrical body for receiving an upward flow of heated gas and entrained debris and for imparting sufficient rotational movement to the flow of gas so that the centrifugal forces imparted on the debris move the debris outwardly against said inner wall and upwardly toward the top of said cylindrical body, first exhaust means communicating with said top of said cylindrical body for exhausting a major portion of a flow of gas which is relatively free of debris from said cylindrical body

and second exhaust means in an upper portion of said cylindrical body next to said inner wall for removing a minor portion



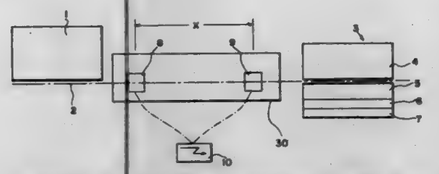
of the gas with a majority of the debris from said cylindrical body.

5,292,006
SCREENING APPARATUS
David M. Girts, Jr., 8553 Findley Lake Rd., North East, Pa. 16428
Filed Jan. 8, 1992, Ser. No. 818,271
Int. Cl.[5] B07B *1/00*
U.S. Cl. 209—242 13 Claims



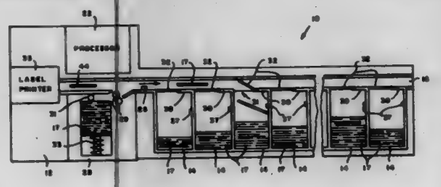
1. A screening plant comprising;
a conveyor, a loading means and a hydraulic motor adapted to drive said conveyor;
a first screen between said conveyor and said loading means to receive said material from said loading means and to deliver said screened material to said conveyor;
a first fluid means connected to said hydraulic motor;
said first fluid means having pressure proportional to the amount of said material on said conveyor;
a second fluid means connected to said loading means for driving said loading means; and,
a control means connected to said first fluid means and to said second fluid means and having means to stop said loading means when said material on said conveyor causes said pressure of said first fluid means to increase beyond a predetermined value.

5,292,007
METHOD OF AND APPARATUS FOR CONTINUOUS NON-DESTRUCTIVE TESTING OF BAR-SHAPED SPECIMENS
Gerhard Beer, Paderborn, and Georg Kellersohn, Bad Driburg, both of Fed. Rep. of Germany, assignors to Benteler Aktiengesellschaft, Paderborn, Fed. Rep. of Germany
Filed Mar. 11, 1991, Ser. No. 667,426
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1990, 4008300
Int. Cl.[5] B07C *5/14*
U.S. Cl. 209—518 5 Claims



1. Method of continuous non-destructive testing of bar-shaped specimens formed of iron containing materials of specific quality characteristics, comprising the steps of moving individual specimens at a definite translational velocity along an elongated path through a first testing block (8) coupled to an electronic testing installation (10), continuously comparing the specimens passing through the first testing block (8) via the electronic testing installation (10) with calibrated artificial flaws of a defined magnitude previously stored in the testing installation, and after passing the first testing block (8) classifying the specimens based on the comparison afforded by the testing installation, wherein the improvement comprises the steps of providing at least a second testing block (9) in the elongated path spaced downstream from the first testing block (8) with the second testing block coupled to the electronic testing installation (10) and with the first and second testing blocks logically linked together through the electronic testing installation, continuously comparing the specimens passing through the second testing block (9) via the electronic testing installation (10) with the calibrated artificial flaws of defined magnitude stored in the testing installation, and sorting the specimens into accepted and rejected specimens based on the amplitude level of signals from the electronic testing installation in a sorting station connected to the testing installation and downstream of the testing blocks (8, 9).

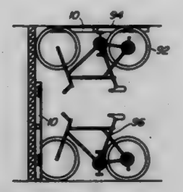
5,292,008
POSTAL TRAY LABEL APPARATUS AND METHOD
Ronald P. Sansone, and Robert P. Kemper, Weston, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Oct. 28, 1992, Ser. No. 967,333
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—584 4 Claims



1. Apparatus for sorting mail and providing mail tray label forms, comprising:
a processor,
a plurality of bins,

a conveyor for conveying mail pieces and mail tray label forms past said plurality of bins,
deflecting members in communication with said processor for deflecting selected mail pieces and mail tray label forms into said plurality of bins,
a sensor in communication with said processor for determining the presence of a defined quantity of mail pieces in a bin of said plurality of bins,
a label printer adjacent said conveyor and in communication with said processor for placing a mail tray label form of said mail tray label forms on said conveyor, whereby upon said sensor sensing said defined quantity of mail pieces in a bin, said printer prints a label for said bin and places the mail tray label form said conveyor to be conveyed to said bin.

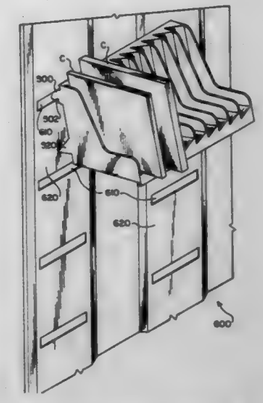
5,292,009
BICYCLE RACK
Terrance R. Smith, 13 Bateman Dr., Nepean, Ontario, Canada K2G 4N7
Filed Dec. 24, 1992, Ser. No. 996,701
Int. Cl.[5] A47F *7/00*
U.S. Cl. 21—20 14 Claims



1. A bicycle rack comprising:
an elongate channel adapted for securement to a supporting surface;
bicycle retaining means adapted for engagement with said channel, and to support and retain a bicycle thereon;
said channel having a base portion and a unitary wall extending at right angles from said base portion;
said base portion of said channel being stepped along its length to form an inner, deeper portion adjacent said wall, and an outer, shallower portion with elongate, narrow wall therebetween;
said outer shallower portion having a short lip extending upwardly and outwardly therealong; and
openings in said walls and said lip of said channel adapted for engagement with said bicycle retaining means.

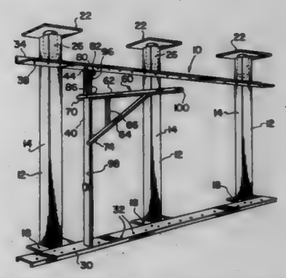
5,292,010
DATA STORAGE MEDIA HOLDER SYSTEM AND METHOD THEREFORE
Timothy J. Pickles, Brighton, and Macy J. Price, Jr., Louisville, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.
Filed Dec. 4, 1992, Ser. No. 986,103
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—41 9 Claims

1. A holder for storing data storage media, said holder comprising:
a rear wall;
a bottom surface;
a first flange portion extending inwardly from said rear wall;
a second flange portion spaced from said first flange portion and extending inwardly from said rear wall;
said first flange portion and said second flange portion forming a compartment for data storage media; and
a first member adjacent said rear wall between said first flange portion and said second flange portion and angled away from said rear wall and said first flange portion to guide data storage media inserted between said first flange portion and said second flange portion towards said first flange portion for securely holding differing widths of



data storage media between said first flange portion and said second flange portion.

5,292,011
CARPET DISPLAY RACK
John Kostigian, 39 Elgin St. S., Cambridge, Ontario, Canada N1R 5G3
Filed Jul. 24, 1992, Ser. No. 918,044
Int. Cl.[5] A47F *7/16*
U.S. Cl. 211—48 5 Claims



1. A display rack secured in an upright position for hanging carpets, the rack comprising;
at least one upright hollow support member,
an arm assembly carried by the support member, the arm assembly including a horizontal member and a brace,
an upper support roller on the horizontal member bearing on a side of the upright support,
a lower support roller on an end of the brace bearing on a side of the upright support opposite from the upper support roller, a first pulley on an upper end of the upright support,
a pair of top pulleys adjacent the support,
a bottom pulley on the arm assembly adjacent the support, and
a winch on the hollow support member whereby a flexible tension member wound on the winch extends over the first pulley, over one of the top pulleys, entrains the bottom pulley, the other top pulley, and has a free end secured adjacent the bottom pulley for moving the arm

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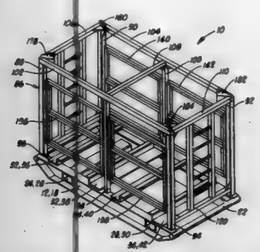
assembly from a lowered position to an upper carpet display position.

5,292,012

TANK HANDLING AND PROTECTION STRUCTURE

Gail F. Davis, and Brett L. Muckelrath, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 22, 1992, Ser. No. 993,865
Int. Cl.[5] B65D *87/00*
U.S. Cl. 211—71 **19 Claims**



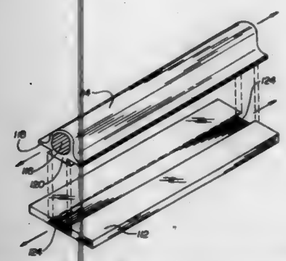
1. A tank handling and protection apparatus, comprising:
a frame base;
a mounting rack attached to said frame base, and having at least one tank base location defined thereon;
releasable connecting means for releasably connecting at least one tank to said mounting rack; and
a protective cage attached to said frame base and surrounding said tank location, said cage including at least one removable side wall to permit said tank to be inserted through an opening formed by removal of said side wall to place said tank on said mounting rack.

5,292,013

SUPPORT FERRULES

Tommy L. Earl, Greenville, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Oct. 23, 1992, Ser. No. 966,530
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—73 **4 Claims**



1. A ferrule for supporting a wiring harness or piping part on a host structure, comprising:
a base member for mounting to the host structure, the base member including a dovetail-shaped slot; and
a support member for detachably mounting to the base member, the support member including:
a cylindrical member extending along the longitudinal axis of the base member;
an aperture formed in the cylindrical member for receiving the wiring harness or piping part;
extension sections extending outwardly from the sides of the cylindrical member; and
a dovetail-shaped protuberance extending downwardly from the cylindrical member, the protuberance for inserting into the dovetail-shaped slot in the base member.

5,292,014

TENSILE SUPPORT DEVICE

Marion P. Lelong, 1308 Seaton La., Falls Church, Va. 22046

Continuation-in-part of Ser. No. 770,912, Oct. 4, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,317
Int. Cl.[5] E04B *1/34*
U.S. Cl. 211—88 **35 Claims**



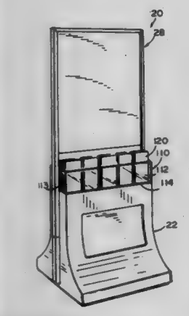
1. A tensile support device comprising a pair of rigid members having first and second ends and a predetermined length, said second ends being spaced apart for lateral stability and being adapted to engage a vertically disposed support surface, a connecting means for said first ends, a first flaccid tensile element which conjoins said rigid members along the length thereof, and a second flaccid tensile member having a first end which is attached to said connecting means and a second end which is attachable to said support surface.

5,292,015

DISPLAY STAND

Jeffrey B. Bumbera, Spring Lake, Mich., assignor to Harbor Industries, Inc., Grand Haven, Mich.

Filed Mar. 11, 1992, Ser. No. 849,745
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—189 **29 Claims**



1. A display comprising:
a preformed base having front and back surfaces interposed between a pair of upstanding sides;
a display frame with at least two elongate members extending in parallel and spaced from each other complimentary to the spacing of said sides; and
a connecting arrangement wherein one of said upstanding sides and said elongate members includes a tongue-like protrusion and the other of said upstanding sides and said elongate members includes a mating groove means for interlockingly engaging said tongue-like protrusion to permit releasable sliding engagement of said members with said sides whereby said frame can be releasably mounted to and supported by said base.

5,292,016

LUFFING JIB BACKSTOP ASSEMBLY

Terry Casavant, and Michael Wanek, both of Two Rivers, Wis., assignors to The Manitowoc Company, Manitowoc, Wis.

Filed Oct. 8, 1992, Ser. No. 958,230
Int. Cl.[5] B66C *23/00*
U.S. Cl. 212—177 **19 Claims**



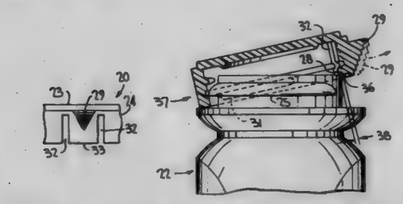
1. A luffing jib backstop assembly for limiting rotation between a luffing jib and a boom to which the luffing jib is attached, the assembly comprising:
(a) at least one backstop pendant attached at a first end to the luffing jib and at a second end to the boom, the pendant having a length sufficient to allow the luffing jib to be extended to an angle of 180° with respect to the boom;
(b) a deployable member which engages the attached backstop pendant and which, prior to deployment, permits the luffing jib to be extended to an angle of 180° with respect to the boom and which, upon full deployment, holds a portion of the attache backstop pendant away from the boom and luffing jib such that the pendant and deployable member prevent the luffing jib from rotating with respect to the boom beyond a permissible operating angle which is less than 180°.

5,292,017

CHILD-RESISTANT CLOSURE WITH EASY OPENING FEATURE

Richard F. Reifers, New Canaan, Conn., assignor to Calmar Inc., City of Industry, Calif.

Filed Jan. 26, 1993, Ser. No. 9,235
Int. Cl.[5] B65D *55/02, 41/18*
U.S. Cl. 215—206 **26 Claims**



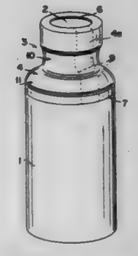
1. A child resistant package including a snap-on closure of rigid and stiff material, comprising a container having a neck finish including an annular locking rib with at least one notch therein, the closure, being disposed for rotary movement on the neck finish, having an end wall and a resilient peripheral skirt, a locking lug extending radially inwardly from said skirt in alignment in a fire position with said notch upon rotation of the closure to permit removal of said closure only when in the fire position, a finger tab extending radially outwardly from said skirt in alignment with said locking lug, said skirt having rib structure adjacent the lower peripheral edge thereof, said rib structure extending radially inwardly from said skirt and having a midsection diametrically opposite said locking lug, said rib structure being circumferentially spaced from said locking lug, said locking rib and said rib structure having coacting cam means for resiliently expanding said skirt and its rib structure upon snap locking the closure to the neck finish and upon removal of said closure, said locking lug and said rib structure being interengaged with said locking rib upon snap locking and said rib structure becoming disengaged from said locking rib upon the removal of said closure, the improvement wherein said skirt has at least one non-frangible disruption for permitting the lower peripheral edge of at least one segment of said skirt adjacent said one disruption to flex from an initial unflexed position thereof radially outwardly and back to the initial position as said rib structure disengages from said locking rib upon the removal of said closure and as said rib structure engages said locking rib upon the snap locking of the closure to the neck finish.

5,292,018

TAMPER EVIDENT SEAL AND SYSTEM

Frank P. Travisano, 601-B Waverly Way, Jamesburg, N.J. 08831

Filed Jul. 7, 1992, Ser. No. 909,762
Int. Cl.[5] B65D *41/02*
U.S. Cl. 215—246 **31 Claims**



1. A tamper evident seal system comprising, in combination, a container having a removable closure and a tamper indicating seal applied over said container and closure, said seal comprising a band of heat shrinkable material of a size to encircle said container and closure and to extend over said closure and an adjacent portion of said container, and at least one strip of adhesive material on the inner surface of said band interposed between said band and said container and closure said strip of adhesive having a width narrower than the circumference of said band and extending transversely across said band whereby that portion of said band on which said adhesive is located is positively adhered to said container and closure and across the juncture between said container and closure.

5,292,019

TAMPER EVIDENT CAP AND CONTAINER

Michael C. Patterson, Longview, Wash., assignor to L. Ring; R. Ring; Closure Technologies, Inc. and M. Patterson, a part interest

Continuation-in-part of Ser. No. 621,765, Dec. 4, 1990, Pat. No. 5,111,947. This application Apr. 10, 1992, Ser. No. 867,143
Int. Cl.[5] B65D *41/32*
U.S. Cl. 215—256 **7 Claims**

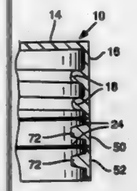
1. A tamper-evident system comprising:
(a) a container having a neck including:
a threaded annular portion;
a set of lugs constructed on the container neck below the threaded annular portion; and
(b) a cap including:
a top portion;
a first skirt portion depending from the top portion and having internal threads complementary to the container threads;

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an intermediate separable strip depending from the first skirt portion, a boundary between the first skirt portion and the separable strip defined by a first line of weakness;

a second skirt portion depending from the separable strip, a boundary between the separable strip and second skirt portion defined by a second line of weakness; and

a set of lugs extending inward on both the separable strip and the second annular skirt portion of the cap,



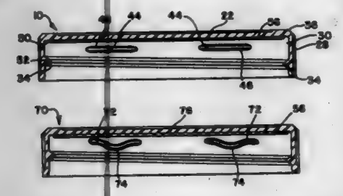
the lugs of the cap and the lugs of the container neck constructed to slide relative to each other upon threading of the cap onto the container while engaging each other to prevent unthreading of the cap from the container, the separable strip removable from the cap to leave a tamper-indicating gap between the first and second skirt portions.

5,292,020

CLOSURE WITH ANTI-BACKOFF FEATURE

James F. Narin, St. Charles, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed May 13, 1993, Ser. No. 61,161
Int. Cl.[5] B65D *41/04*
U.S. Cl. 215—330 **8 Claims**



1. A backoff resistant closure and container combination, the combination comprising:

a container having a neck portion with container threads integrally formed thereon, said container threads having an uppermost portion;

a closure having a generally planar top portion with an outer peripheral edge and an inner face, an annular skirt depending from said peripheral edge, said skirt having an inner surface provided with integral closure threads configured and arranged to matingly engage said container threads, said closure threads having an uppermost region; and

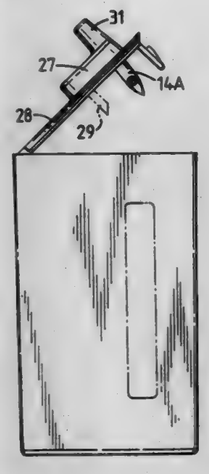
a plurality of protuberances integrally formed on the inner surface of said annular skirt, said protuberances being spaced from said uppermost region of said closure threads and positioned between said uppermost region of said closure threads and said inner face of said top portion of said closure, said protuberances abut against and provide a frictional retaining force against said uppermost portion of said container threads to prevent movement of said closure once secured onto said container, said protuberances being substantially equi-distantly spaced around said inner surface.

5,292,021

HOLDER FOR LIQUID CONTAINING PACKAGE

Christopher J. Lyon, "Quatrocento", 10 Quai des Sanbarbani, Monte Carlo 98000, Monaco

PCT No. PCT/GB90/00645, § 371 Date Mar. 26, 1991, § 102(e) Date Mar. 26, 1991, PCT Pub. No. WO90/13509, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 26, 1990, Ser. No. 671,781
Claims priority, application United Kingdom, Apr. 28, 1989, 8909845
Int. Cl.[5] B65D *17/44*
U.S. Cl. 220—253 **14 Claims**



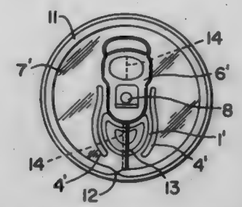
1. A hollow container of generally rectangular cross-section having a top and a bottom and forming an internal cavity which is sized to accommodate a rectangular sealed package of beverage with semi-rigid walls and a penetrable wall, there being an opening in the container providing access to the cavity whereby the package can be inserted into the cavity and be positioned therein with its top adjacent the top of the cavity, and be removed therefrom, wherein the sealed package is an aseptic package which comprises a semi-rigid beverage container which is designed to be sealed after filling and which is provided with an area in its top which is formed by a perforatable membrane which is to be perforated to enable the beverage to be consumed, and the upper end of the outlet opens into the interior of the mouthpiece, comprising: means operable to retain the package within the cavity; puncture means which depend from the top of the container and project into the cavity so as to pierce the top of the package when the latter is positioned therein with its top adjacent the top of the cavity, said puncture means forming an outlet for liquid from within the package through the top of the container, a mouth piece which is a separable and replaceable element and which comprises a hollow projecting portion with a perforated outer end, the perforated projecting portion to be placed within the mouth of a user so that liquid is drunk from within the aseptic package within the container when the latter is being used by the user sucking the liquid through the perforated outer end; releasable securing means being provided for fitting the mouthpiece to the top of the container so that there is a seal against leakage of liquid between it and the container; and a rotary shut-off valve operable to control communication between the interior of the aseptic package retained within the container and the interior of the mouthpiece.

5,292,022

CLOSURE FOR BEVERAGES METAL CONTAINERS

Arsenio G. Blanco, Villa de Marin, 26-6°, A, E-28029 Madrid, Spain

PCT No. PCT/ES91/00072, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO92/07766, PCT Pub. Date May 14, 1992
PCT Filed Oct. 28, 1991, Ser. No. 861,976
Claims priority, application Spain, Oct. 31, 1990, 9003134; Jul. 5, 1991, 9102145
Int. Cl.[5] B65D *51/20*
U.S. Cl. 220—257 **1 Claim**



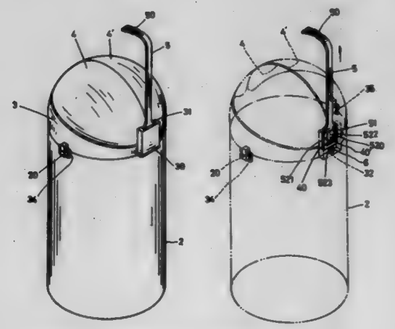
1. A closure for metallic beverage containing containers, the closure comprising an end wall, a ring connected to a tearable portion for exposing an opening in the end wall when said portion is torn upon pulling of said ring; and a hygienic protective sheet which is located below said ring and which entirely covers said end wall, said hygienic protective sheet including a planar portion and a hoop portion extending along a perimeter thereof, said hoop portion having a weak area and being tautly preformed such that, upon being severed at said weak area when said ring is pulled, said hoop portion is divided into two halves which roll themselves up dragging along said planar portion, said planar portion including an auxiliary rib radially extending over said tearing portion from said weak area to said ring and a weak line extending parallel to and close to said auxiliary rib between said weak area and said ring to ensure severance and division of said hoop portion and said planar portion along with said hoop portion into two halves which roll up exposing said opening and a hygienically clean area around said opening as said ring is pulled.

5,292,023

PORTABLE GARBAGE CAN

Fong-Chen Yen, No. 22, Jong-Juang Tzyy, Jea-Jong Tsuen, Shiah-Yng Shiang, Tainan Shien, Taiwan

Filed Aug. 25, 1993, Ser. No. 111,421
Int. Cl.[5] B65D *43/26*
U.S. Cl. 220—264 **1 Claim**



1. A portable garbage can comprising:

a cylindrical can body having a bottom closed, an open top, and two opposite stop projections on the top end;

an annular cap receiver hooked on the open top of said cylindrical can body, having an open top, two opposite swelled-to-the-middle upper edges, a square plate at one side, said square plate having an inside recess for receiving a square engage portion of a handle therein and a vertical hole in an inside bottom end, two engage holes in the other side of said square plate, two opposite hooks on a bottom edge for hooking said stop projections of said cylindrical body can to combine the cap receiver with said can body;

two half caps pivotally combined with said cap receiver, respectively having a curved shape of the same size, a stationary tooth on one side and a round projection on the opposite side;

a handle of an inverted L shape, having an upper horizontal portion being corrugated for gripping, a square engage portion formed at a bottom end and inserting in said inside recess of said square plate of said cap receiver, said square engage portion having two vertical opposite saw teeth on two opposite inner vertical sides to engage said two stationary teeth of said two half caps, and a round projection extending down from the bottom of said square engage portion;

a coil spring provided to fit around said round projection of said handle and resting on a bottom inner edge of said square plate; and

said two half caps being in a closed position (the original position) when said handle is not pressed down and pushed up by said coil spring, with the upper portions of said two saw teeth engaging said stationary teeth of said half caps, said half caps being in an open position for garbage to be thrown in said can body through said cap receiver when said handle is pressed down with hand to compress said coil spring, with said square engage portion moving up to rotate said two stationary teeth of said half caps, forcing said half caps swing outward, said two half caps being automatically moved to the original position, i.e. the closed position, in case the handle is released to be moved up by elasticity of said coil spring, said handle possible to be caught with hand to move this whole can by hooking the cap receiver with the can body without the garbage therein falling out to scatter around.

5,292,024

PLASTIC PAIL ASSEMBLY FOR HAZARDOUS MATERIALS

Gerald R. Koefelda, Seal Beach, and Arne Lang-Ree, Menlo Park, both of Calif., assignors to Rehrig Pacific Company, Inc., Los Angeles, Calif.

Filed May 19, 1992, Ser. No. 885,755
Int. Cl.[5] B65D *41/20*
U.S. Cl. 220—608 **9 Claims**

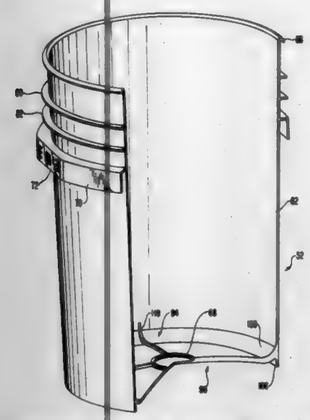
1. A pail assembly comprising:

a pail including a plastic sidewall defining in part a pail interior, a sealing bead disposed around an open top of said pail, a plastic pail floor connected to said sidewall and having a floor top surface and a floor bottom surface, and a plastic floor rib structure integrally molded on and extending generally across said floor top surface, said sidewall defining a rim foot extending down below the lowermost surface of said floor, said floor rib structure extends upward from and generally across said floor top surface, said floor being bowed inwardly at a central location thereof to resist outward deformation of said floor, said floor rib structure comprising a circular floor rib member disposed in a central location of said floor top surface and a plurality of radial floor ribs extending radially out from said circular floor rib member, the perimeter of said bowed floor connected to said sidewall by an upwardly curved connecting area and said radial floor ribs extending up said curved connecting area and partially up

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said sidewalls, said floor rib structure configured to resist the outward doming of said floor lid outer surface when said pail interior is subjected to a positive pressure; and

a plastic lid securable in a sealed tight relationship to said sidewall of said pail at said pail open top, said lid and said pail defining a pail interior, said lid including a circular edge outer flange and a circular edge inner flange defining a sealing bead receiving area therebetween for sealing engaging said sealing bead, a lid bottom surface generally within said edge inner flange, said lid bottom surface comprising a lid rib structure extending down from and generally across said lid bottom surface and integrally



formed therewith, said lid rib structure comprising a circular lid rib member disposed in a central location of said lid bottom surface and a plurality of radial lid ribs extending radially out from said circular lid rib member, said lid rib structure being bowed outwardly and configured to resist the outward doming of said lid outer surface when said pail interior is subjected to a positive pressure, said lid also including an opposite lid outer surface having a receiving channel for stably receiving the rim foot of another pail assembly stacked thereon;

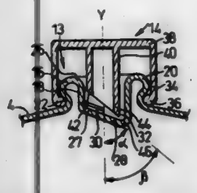
wherein said rim foot of said sidewall is adapted to engage the receiving channel on top of the lid of another pail assembly stacked therebeneath.

5,292,025

METALLIC CONTAINER PARTLY OPENABLE BY RUPTURE OF A LINE OF REDUCED STRENGTH

Jacques F. Dubreul, Talloires, France, assignor to Sollac, Puteaux, France

Filed Oct. 8, 1992, Ser. No. 957,780
Claims priority, application France, Oct. 11, 1991, 91 12574
Int. Cl.[5] B65D *17/44*
U.S. Cl. 220—278 **8 Claims**



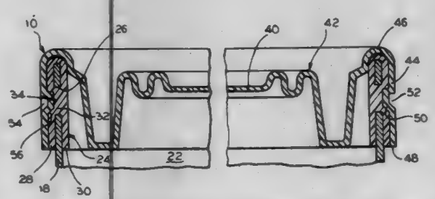
1. A comprising a side constituting a partly openable lid having a fixed part, a line of reduced strength defining in said fixed part an opening panel, a connection zone remaining between said fixed part and said panel so that in exerting on said panel a pressure directed toward the interior of said container, said line of reduced strength is broken and said panel is swung toward the interior of said container about said connection zone, said fixed part of said lid being so shaped as to define a cavity extending toward the interior of said container, said cavity comprising a lateral wall and a bottom wall in which bottom wall said opening panel is formed at least partly, said container further comprising opening means which are movable relative to said panel in order to exert said pressure on said panel, said opening means comprising an element mounted to be rotatable on said fixed part of said cover about an axis oriented obliquely relative to said bottom wall of said cavity, an active part of said rotatable element extending inside said cavity in the vicinity of said opening panel.

5,292,026

SNAP-ON LID

Michael D. Stoltzman, 1188 Old Colony Rd., Lake Forest, Ill. 60045

Continuation of Ser. No. 696,362, May 6, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 863,349
Int. Cl.[5] B65D *43/06*
U.S. Cl. 220—306 **13 Claims**



1. A self locking closure for use with a container having a cylindrical end portion defining a radially outwardly opening annular recess having an upper edge defining a right angle shoulder, said closure comprising:

a generally circular closure wall;

a generally cylindrical, continuous sidewall having an upper edge connected to said closure wall and a continuous annular lower edge, in use, said sidewall defining a cylindrical inner surface having an inner diameter slightly greater than an outer diameter of said container cylindrical end portion to provide a sealed fit therebetween;

a radially inwardly extending ridge on an inside of said sidewall contiguous for substantially 360° with the inside of the sidewall between said upper and lower edges, in use, said ridge having an inner diameter less than said container annular end portion outer diameter yet greater than an outer diameter of said annular recess, so that when said closure is installed on said container at least one of said container end portion and said sidewall is temporarily deformed to permit reception of said ridge in said recess to lock said closure on said container, said ridge having an upper annular planar surface defining a shoulder locking against said recess shoulder to effectively prevent removal of the closure; and

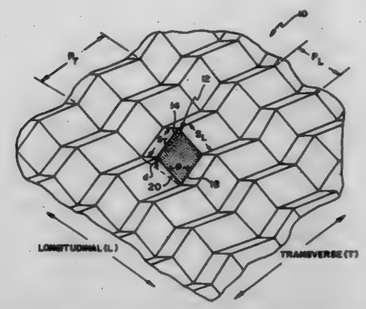
a radially outwardly opening annular recess on an outside of said sidewall axially aligned with said ridge between said upper and lower edges, wherein said sidewall radially outwardly opening annular recess includes a plurality of circumferentially spaced, longitudinally extending reinforcement ribs therein.

5,292,027

TENSION AND COMPRESSION EXTENSIBLE LINER FOR A PRIMARY VESSEL

Joseph C. Lueke, Downey, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 5, 1992, Ser. No. 956,200
Int. Cl.[5] B22F *5/00*
U.S. Cl. 220—470 **6 Claims**



1. A tension and compression extensible liner for a primary vessel, comprising:

a plurality of attached corrugated continuous sheets of membrane-type material, each sheet having a herringbone pattern of repetitive parallelogram-like elements, each parallelogram-like element being bounded at its four sides by bends to adjacent parallelogram-like elements each sheet having minimally developed corrugations having depth to pitch ratios of less than 0.20,

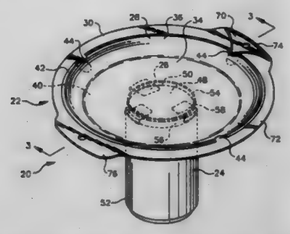
said continuous sheets thereby being supportable by load bearing walls of said primary vessel, for following any deflections of said walls, under conditions of structural stress and thermal deformation.

5,292,028

PLATE-AND-GLASS ASSEMBLIES (III)

Ronald Patterson, 11 Bd Albert-1[er], Monte-Carlo, Monaco, and John W. Patterson, 20819 229th Ave. SE., Maple Valley, Wash. 98038

Continuation-in-part of Ser. No. 870,392, Apr. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 832,436, Feb. 7, 1992, Pat. No. 5,176,283. This application Oct. 26, 1992, Ser. No. 967,257
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—574 **19 Claims**



1. A plate-and-beverage container assembly comprising:

a. a plate assembly having:

i. a plate with a food-receiving surface and a lower side;

ii. a plate holder having a plate-receiving surface and a lower side, where the plate is received on the plate receiving surface of the plate holder to form the plate assembly;

b. a beverage container with a radial lip at an upper end thereof; and

c. a beverage container holder on the lower side of the plate;

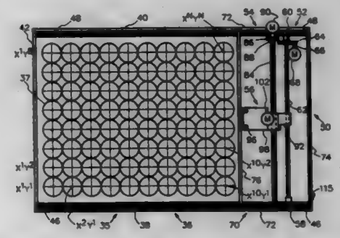
wherein the beverage container holder and the plate holder cooperate to allow relative radial sliding displacement of the beverage container relative to the plate and the beverage container holder having means so engageable with the lip on the container as to trap the lip against the lower side of the plate holder as the container is displaced relative to the plate and thereby so couple the container to the plate that the upper end of the container is covered by the plate holder and the container is in an upright orientation when the plate is horizontally oriented.

5,292,029

PATIENT MEDICATION DISPENSING AND ASSOCIATED RECORD

Walter G. Pearson, P.O. Box 5542, Alexandria, La. 71301

Continuation-in-part of Ser. No. 433,256, Nov. 8, 1989, abandoned. This application Aug. 29, 1991, Ser. No. 751,916
Int. Cl.[5] G07F *11/00*
U.S. Cl. 221—2 **5 Claims**



1. An electronic medication dispensing and accounting system for use in nurse car facilities to ensure correlation of doctor prescribed medication with individual patients and provide a running account of all medications dispensed to patients, comprising:

a digital computer having a monitoring means coupled thereto;

a computer access panel;

mobile unit means including a compartmentalized medication containing enclosure supporting said computer and a source of electrical energy;

circuit means including a plurality of data I/O channels coupling the access panel to the computer;

a plurality of medication container means in said mobile unit means including a plurality of upwardly open containers disposed in rows along the X and Y axes of an X, Y and Z axes rectangular Cartesian coordinate system;

gantry-like carriage means including mobile means movable along the respective X, Y and Z axes of the Cartesian coordinates;

pressure reduction means supported by the Z axis mobile means for moving medication from a selected said open container to a predetermined release position in response to software generated signals operating in conformance with manually supplied preprogrammed input data; and,

medication monitoring means connecting said motor driven mobile means with said circuit means.

VOL 1160 ISS 2 MR 8 1994 UMI

5,292,030

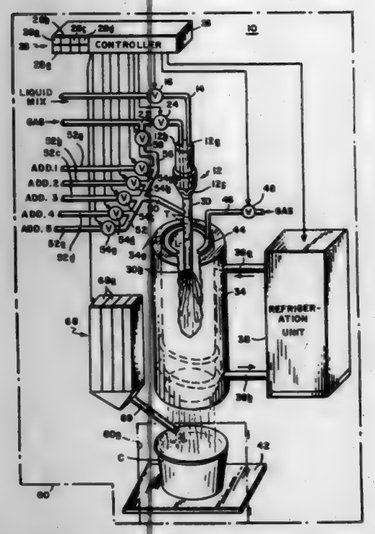
METHOD AND APPARATUS FOR PRODUCING AND DISPENSING AERATED PRODUCTS

Paul Kateman, Cambridge; Matthew K. Haggerty, Milton, and Clay A. Burns, Medford, all of Mass., assignors to Kateman Family Limited Partnership, Cambridge, Mass.

Continuation-in-part of Ser. No. 564,719, Aug. 6, 1990, abandoned. This application Aug. 6, 1991, Ser. No. 740,725

Int. Cl.[5] B67D *5/62;* **F25B** *37/00;* **F28D** *5/00;* **A23G** *9/00*

U.S. Cl. 222—1 **36 Claims**



1. A method of producing and dispensing an aerated food product comprising the steps of

mixing together a liquid and a gas to produce an atomized fluid stream comprised of liquid particles;

flowing said fluid stream through a confining passage so that the liquid particles coalesce and become aerated before the fluid exists the passage;

distributing the aerated fluid stream from said passage onto a surface as a relatively thin fluid layer;

rapidly changing the temperature of the fluid layer so that the layer at least partially solidifies to form an aerated surface coating, and

removing said coating from said surface.

12. Apparatus for producing and dispensing an aerated food product comprising

means for producing an atomized effluent, said producing means including a fitting having a first inlet for receiving a fluid to be atomized, a second inlet for receiving a gas so that the fluid and gas intersect and mix inside the fitting, and an outlet.

means for supplying a liquid to be atomized and an edible pressurized gas to the first and second inlets, respectively;

a conduit defining a relatively long turbulent mixing passage of small cross-section, said conduit having one end connected to said fitting outlet to receive the atomized effluent therefrom and an other end spaced from said one end so that the effluent is subjected to confined turbulent mixing in said passage during its transit thereof and prior to its discharge from said conduit other end, and

cooling means positioned to receive and at least partially freeze the discharge from said conduit other end.

5,292,031

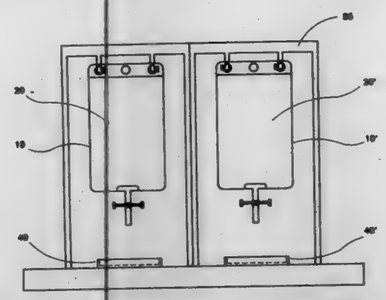
CONTAINER FOR CONTACT LENS SOLUTION

Baruch Dagan, 296 Torresdale Ave., Unit #4, Willowdale, Ontario, Canada M2R 3N3

Filed Aug. 14, 1992, Ser. No. 929,400

Int. Cl.[5] B65D *35/22*

U.S. Cl. 222—1 **8 Claims**



3. A method for storing contact lens solution and dispensing said solution into a contact lens holder, comprising the steps of:

a) storing sterilized contact lens solution within a flexible and collapsible container suspended from a support, said container having a valve extending from the bottom thereof and adapted to selectively allow the outflow of solution from said container, while substantially preventing backflow or the entry of air therein;

b) actuating said valve to dispense said solution into said holder.

5,292,032

PINCH TRIGGER WATER GUN WITH REARWARDLY MOUNTED HAND PUMP

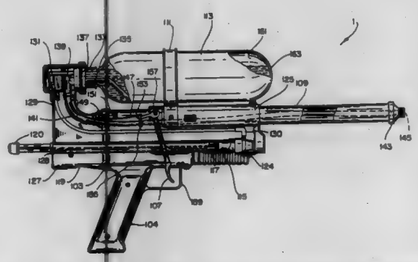
Lonnie G. Johnson, 4030 Ridgehurst Dr., Smyrna, Ga. 30080, and Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08889

Continuation-in-part of Ser. No. 841,762, Feb. 28, 1992, Pat. No. 5,150,819, which is a continuation of Ser. No. 680,247, Apr. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,145, Sep. 6, 1990, Pat. No. 5,074,437. This application Apr. 22, 1992, Ser. No. 872,952

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] A63H *3/18*

U.S. Cl. 222—79 **19 Claims**



1. A high pressure, self-contained, air pressured toy water gun, which comprises:

(a) a housing having a forward end and a rearward end;

(b) an extended handle connected to said housing;

(c) a trigger located on said housing adjacent said handle;

(d) a barrel portion of said housing extending forwardly from said handle;

(e) at least one high pressure, water storage reservoir externally attached to said housing, said reservoir having an orifice with connection means connected to said housing;

(f) an attachment means located on said water gun housing for attaching said water storage reservoir to said water gun housing by attachment of said connection means of said orifice to said attachment means, and, when said water storage reservoir is attached to said housing, said attachment means seals said reservoir and housing with a seal impervious to water and air;

(g) a pressuring means with a slider, for pressurizing air within said reservoir, said means being an integral part of said water gun and being rearwardly mounted in a handle extending rearwardly from said housing and said slider extending from said housing, said pressurizing means being remotely located from said reservoir;

(h) an elongated avenue of release for water displaced by said pressurized air, said avenue of release extending from said attachment means and running the length of said barrel;

(i) a water release means for regulating the fluid flow through said avenue of release, said water release means being operable by said trigger of said water gun and functionally connected to said avenue of release; and,

(j) a nozzle at the end of said barrel, said nozzle being connected to said avenue of release.

5,292,033

DISPENSER FOR A LIQUID TO PASTY PRODUCT AND SUBPLATE FOR A DISPENSER OF THIS KIND

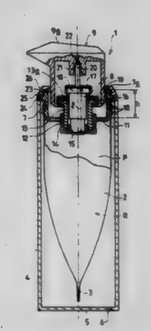
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 792,661, Nov. 15, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 46,381

Claims priority, application France, Nov. 16, 1990, 90 14271

Int. Cl.[5] G01F *11/04*

U.S. Cl. 222—95 **7 Claims**



1. A dispenser for a liquid or pasty product comprising a container containing the product, said container having an end connected with a rigid outer casing, said rigid outer casing having an upper part and a subplate connected to said upper part, said subplate supporting a hand pump with said hand pump having a fixed pump body and a movable part associated with a push button, said subplate being in the form of dish having a concave portion with said concave portion facing in a direction away from said container, said dish having a base and said pump body being supported on said base, wherein said dish has an upper edge and the depth of said dish is substantially equal to the length of the pump body and said base of said dish is provided with a separable transition component connected to said base to project in relation thereto away from said container, said pump body being engaged in said transition component so as to extend to but not beyond the level of said upper edge; said hand pump being crimped onto said transition component, said transition component being cylindrical in shape and having a circular section and comprising an upper part having a collar for receiving the crimp of a cap, said push button including a skirt having a lower edge, said collar being spaced a selected radial distance from said upper edge of said dish so as to permit said skirt of said push button to pass between said collar and said upper edge sufficiently far to allow said push button to effect dispensing.

5,292,034

METHOD FOR THE PRODUCTION OF A TUBE WITH A MULTI-LAYER TUBE HEAD AND A TUBE MADE OF A PIPE ELEMENT HAVING AT LEAST ONE PLASTIC LAYER AND A MULTI-LAYER TUBE HEAD

Gerhard Keller, Jongny, Switzerland, assignor to AISA Automation Industrielle SA, Vouvry, Switzerland

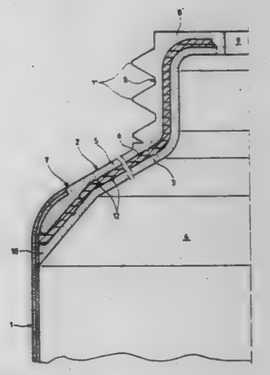
PCT No. PCT/EP91/00580, § 371 Date Nov. 25, 1991, § 102(e) Date Nov. 25, 1991, PCT Pub. No. WO91/15350, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 26, 1991, Ser. No. 771,273

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009656

Int. Cl.[5] B29D *23/20;* **B29C** *43/18;* **B65D** *35/10, 35/12*

U.S. Cl. 222—107 **10 Claims**



2. A tube comprising

a pipe element having an upper end and having at least one plastic pipe element layer;

a multi-layer tube head molded on said pipe element from heated pressed plastic blanks, said tube head having a neck part opening centrally into a dispensing opening with an outside thread;

each layer of the multi-layer tube head being made of plastic and pressed individually, layer by layer, onto the upper end of the pipe element;

wherein the multi-layer tube head comprises an outside layer, an inside layer, and at least one middle layer located between the outside layer and the inside layer; and

wherein at least one layer of the multi-layer tube head is a barrier layer.

5,292,035

REUSABLE DISPENSING CAP

David R. Millar, 162 Stonecliffe Aisle, Irvine, Calif. 92715

Filed Feb. 22, 1993, Ser. No. 21,167

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—185 **3 Claims**

3. A dispensing cap for supporting an associated container in an inverted position, said dispensing cap comprising:

a base, a funnel, a compression sleeve, and a seal;

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said base comprising an extended flange fixed to a receiving well, said receiving well comprising a first hollow cylindrical section, a second hollow cylindrical section, and a third conical section,

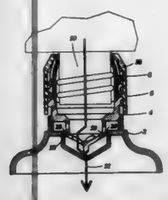
said first hollow cylindrical section being contiguous with said second hollow cylindrical section, having a diameter exceeding a diameter of said second hollow cylindrical section, and having an inner surface wherein at least one recessed groove is formed,

said second hollow cylindrical section having an inner surface whereon at least one raised ridge is formed, and said third conical section having an aperture extending therethrough, said aperture being disposed along a central axis of said conical section of said receiving well;

said funnel comprising a plurality of flexible flanges, a cap structure, and a cylindrical stem,

said flexible flanges being fixed to an upper surface of said cap structure, and said cap structure being fixed to an upper surface of said cylindrical stem,

said cap structure having an internal surface against which said seal may be disposed and an external surface com-



prising an upper section and a lower section, said upper section of said external surface being threaded to engage said compression sleeve, and said lower section having at least one anti-rotation key formed thereon, said at least one anti-rotation key being capable of slideably engaging said at least one recessed groove formed in said inner surface of said first cylindrical section of said receiving well, and

said cylindrical stem having a second raised ridge extending around its circumference and having a lower surface whereon a tip is mounted, said second raised ridge being capable of engaging said at least one raised ridge of said second cylindrical section of said receiving well to slideably couple said funnel to said base, said tip being dimensioned to mate with said aperture formed in said conical section of said receiving well; and

said compression sleeve having an inner surface whereon a second plurality of threads are formed, said second plurality of threads being capable of engaging said first plurality of threads formed on said upper section of said exterior surface of said cap structure, and said compression sleeve when engaging said cap structure being capable of forcing said flexible flanges in an inward direction.

5,292,036

ADJUSTABLE CAPACITY STORAGE TANK FOR LIQUID PRODUCT

Caryl Thome, Saint Egreve, France, assignor to Sames S.A., Meylan, France

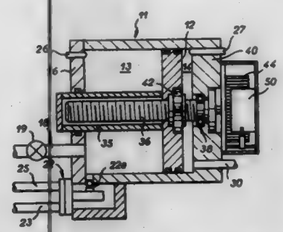
Filed Jun. 9, 1992, Ser. No. 895,706

Claims priority, application France, Jun. 11, 1991, 91 07050

Int. Cl.[5] B65B *9/047, 5/16;* **B67D** *5/60*

U.S. Cl. 222—333 **8 Claims**

1. Storage tank for a liquid coating product to be sprayed comprising: an internal piston dividing said storage tank into a first chamber adapted to receive the coating product under pressure and a second chamber adapted to receive a pressurized actuator fluid; and a step mode actuator coupled to said piston by means of a lead screw and nut system for controlling displacement of said piston during spraying of the coating



product while piston is urged by the pressurized fluid in said second chamber.

5,292,037

METERING DISPENSER FOR A BULK MATERIAL CONTAINER

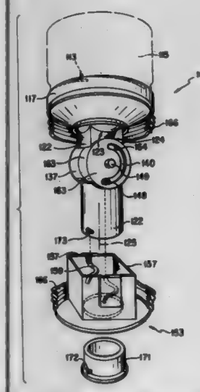
Wolfgang Held, Hard, Austria, assignor to Form Orange Produktentwicklung, Austria

Continuation-in-part of Ser. No. 920,362, Aug. 14, 1992, abandoned. This application Oct. 15, 1992, Ser. No. 961,784

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004818; PCT Int'l Appl., Feb. 15, 1991, PCT/EP91/00301

Int. Cl.[5] G01F *11/10*

U.S. Cl. 222—339 **13 Claims**



1. A metering dispenser for a bulk material container, the metering dispenser comprising:

an adapter, connection means for connecting said adapter to the bulk material container, said adapter having an inlet opening;

a delivery conduit having a first end sealably secured to said adapter and in communication with said inlet opening;

a rotary slider having a metering chamber, said rotary slider rotatably mounted with respect to said deliver conduit about a rotational axis, said rotary slider having an approximately cylindrical overall shape, at least one tang mounted on said rotary slider eccentrically with respect to said rotational axis; and

engagement means for engaging said tang and rotating said rotary slider between a first position of said rotary slider wherein communication is open between said inlet opening and said metering chamber and communication is closed between said metering chamber and said delivery conduit and a second position of said rotary slider wherein communication is closed between said inlet opening and said metering chamber and communication is open between said metering chamber and said delivery conduit, said engagement means comprising an activation body having a receptacle, said delivery conduit engageable within said receptacle, and said activation body comprising at least one side wall having a guide channel, said tang engageable within said guide channel, and said tang following said guide channel during relative displacement between said activation body and said tang along a longitudinal axis of said delivery conduit.

5,292,038

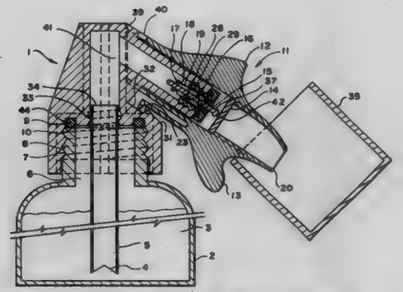
PRESSURIZED BOTTLE DISPENSING ASSEMBLY

John S. Seney, 57 Marlin Dr., Sugarloaf Shores, Fla. 33044

Filed Jan. 13, 1993, Ser. No. 4,133

Int. Cl.[5] B65D *83/20*

U.S. Cl. 222—402.13 **9 Claims**



1. A carbonated fluid dispensing device comprising:

an elongated non-wettable siphon tube to be inserted into a carbonated beverage container;

a screw-type cap to replace an original screw cap of said carbonated beverage container;

said screw-type cap having a central opening through which an upper end of said elongated tube is fed;

a dispensing head having said screw-type cap and said elongated tube operatively connected thereto;

an o-ring for sealing said screw-type cap to said dispensing head;

said dispensing head having a substantially continuous unitary flow path formed of an upward flow section and a downward flow section and further comprising:

a removable valve assembly located in said downward flow section of said dispensing head;

said removable valve assembly having a reciprocating actuating mechanism;

a removable valve actuator/discharge assembly operatively connected to said downward flow section of said dispensing head and which reciprocates longitudinally along the length of said downward flow section; and,

wherein an upward movement of said removable valve actuator/discharge assembly engages said reciprocating actuating mechanism opening said removable valve assembly allowing a continuous flow of carbonated liquid up through said elongated tube into said upward flow section and down through said downward flow section through said valve assembly and said removable valve actuator/discharge assembly.

5,292,039

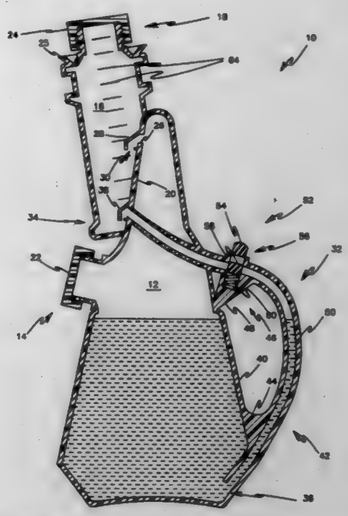
LIQUID MEASURING DISPENSER

John M. Neofitou, 2 Graham Dr., Newport News, Va. 23606

Filed Aug. 10, 1993, Ser. No. 103,690

Int. Cl.[5] G01F *11/28*

U.S. Cl. 222—424 **7 Claims**



1. A measuring and dispensing bottle having:

a storage container for holding a large quantity of liquid for subsequent measuring and dispensing, said storage container having an interior and including means defining a refill opening, and a first closure for sealing said refill opening;

a measuring vessel for measuring and dispensing the contained liquid, having an interior and means defining a dispensing opening, and a second closure for sealing said dispensing opening;

means defining a passageway extending and communicating between said storage container and said measuring vessel, there being a first opening open to said storage container interior and a second opening open to said measuring vessel interior;

a liquid return conduit communicating and extending between said storage container and said measuring vessel, having a third opening open to said storage container interior and a fourth opening open to said measuring vessel interior, said third and fourth openings being located at respective lowermost portions of said storage container interior and said measuring vessel interior, said liquid return conduit further including a manually operated valve selectively releasing excess liquid from back to said storage container from said measuring vessel, whereby liquid is poured from said storage container to said measuring vessel, air contained within said measuring vessel being displaced to said storage container through said liquid return conduit, when said measuring and dispensing bottle is inverted and said valve is opened; excess liquid is recirculated back to said storage container through said liquid return conduit when said measuring and dispensing bottle is turned upright and said valve is opened, a desired quantity of liquid thus remaining in said measuring vessel for dispensing when said vessel closure is removed.

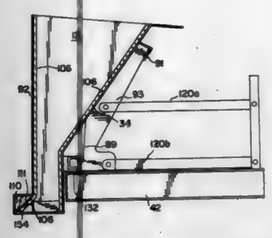
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,040

APPARATUS FOR APPLYING SEAMLESS FLOORING MATERIAL

Alan M. McKim, Oakville, Canada, assignor to Leemac Industries, Inc., Melrose Park, Ill.

Filed Mar. 17, 1992, Ser. No. 851,727
Int. Cl.[5] A01C *15/04*
U.S. Cl. 222—612 **10 Claims**



1. An applicator for applying seamless flooring material, comprising:
- a steerable chassis having first and second opposite, laterally extending sides and a rear, said chassis being mounted on wheels;
- a first lower pivot arm mounted on the first side of the chassis extending rearwardly and pivotable vertically and a second lower pivot arm mounted on the second side of the chassis extending rearwardly and pivotable vertically;
- a crossbar at the rear of the chassis extending transversely from the first side of the chassis to the second side;
- a first hopper bracket projecting upwardly from the crossbar at the first side of the chassis and being pivotally connected to the first lower pivot arm and a second bracket projecting upwardly from the crossbar at the second side of the chassis and being pivotally connected to the second lower pivot arm;
- a dispensing hopper mounted on the hopper brackets and the crossbar so as to be cantilevered at the rear of the chassis and pivotable vertically, the dispensing hopper having an opening at its bottom for dispensing flooring material; and
- a screed blade mounted on said hopper adjacent said dispenser hopper opening for distributing flooring material;

wherein the degree of vertical pivoting of the first lower pivot arm controls the height above the floor of the dispensing hopper opening and the screed blade at the first side of the chassis, and the second lower pivot arm controls the height above the floor of the dispensing hopper opening and the screed blade at the second side of the chassis.

5,292,041

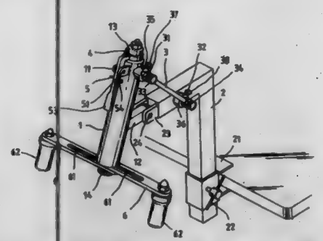
ADJUSTABLE ELASTIC BAND INSPECTING APPARATUS

Shin-Chuan Yao, Taipei, Taiwan, assignor to China Textile T & R Institute, Taipei, Taiwan

Filed May 25, 1993, Ser. No. 65,768
Int. Cl.[5] D06C *15/00*; B25B *1/00*
U.S. Cl. 223—63 **1 Claim**

1. An adjustable elastic band inspecting apparatus comprising a supporting frame, an inspection holder, and a positioning rod; in which

said supporting frame includes a C-clamp having an adjusting rod which enables the height of said supporting frame to be adjusted by loosening and tightening the adjusting rod of the C-clamp, and on the top of said supporting frame is a connecting portion to which said inspection holder is pivotally jointed by a pin; said inspection holder being is equipped with a rotatable inner axle on the upper end of which is arranged a locating ring with two symmetric engaging areas, and further having a locating bar of which one end is a hook portion engageable with the engaging areas of the locating ring and the other end is a lever under which is arranged a spring providing a constant resilient force to keep the hook portion pressed down against the engaging areas, said lever is pivotally connected to the inspection holder by a pin, the apparatus further including two brackets, shaped symmetric to each other and each having an elongated hole and an adjustable



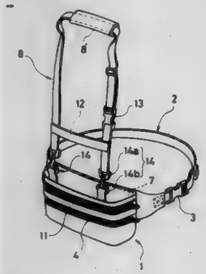
support abutment disposed at the outer end of each bracket thereof, and the brackets being attached to the lower end of the inner axle which passes through the elongated hole with a bolt fastened on the outermost end thereof; and said positioning rod being equipped with two pair of axle tubes and knobs, respectively mounted on axle bushes mounted to said supporting frame and said inspection holder.

5,292,042

WAIST BAG

Sumiko Yamaguchi; Takumichi Yamaguchi, both of 16-32-103 Sengen Uemachi, Fuji-shi, Shizuoka-ken, Japan, and Keiko Hirasawa, 1221-1 Matsuoka, Fuji-shi, Shizuoka-ken, Japan

Division of Ser. No. 654,888, Feb. 13, 1991, Pat. No. 5,195,666.
This application Dec. 30, 1992, Ser. No. 998,740
Claims priority, application Japan, Oct. 8, 1990, 2-105238
Int. Cl.[5] A45F *4/02*
U.S. Cl. 224—159 **3 Claims**



1. A waist bag comprising:
- a bag body having a flat top portion;
- a plate core with which said flat top portion is reinforced from the inside of the said bag body for seating a baby thereon;
- a first receptacle formed in said bag body for accommodating small articles therein;
- a first opening and shutting device provided at a front side of said bag body for opening and closing said first receptacle;
- a length-adjustable waist belt having opposite ends connected to opposite sides of said bag body;
- a length-adjustable shoulder strap for suspending said bag body from the neck or shoulder of a user;
- a pair of connector means fixed to upper portions of the front side of said bag body for detachably connecting opposite ends of said shoulder strap therewith and disposed at a distance enabling said shoulder strap, when connected with said connector means, to support the hips of the baby with the opposite ends of said shoulder strap when the baby is seated on said bag body;
- a second receptacle formed in said bag body and disposed between said plate core and said first receptacle for accommodating said shoulder strap therein; and
- a second opening and shutting device provided at the front side of said bag body for opening and closing said second receptacle;

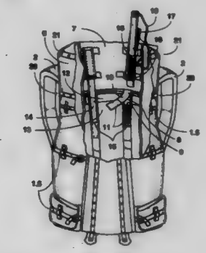
said shoulder strap being disconnected from said pair of connector means and accommodated within said second receptacle in the absence of a baby and extracted from said second receptacle and connected with said connector means in the presence of a baby to support the hips of the baby with the opposite ends of said shoulder strap.

5,292,043

EXTENSIBLE FRAME BACKPACK

Daniel M. McHale, 29 Dravus St., Seattle, Wash. 98109

Filed Feb. 7, 1990, Ser. No. 476,835
Int. Cl.[5] A45F *3/08*
U.S. Cl. 224—210 **6 Claims**



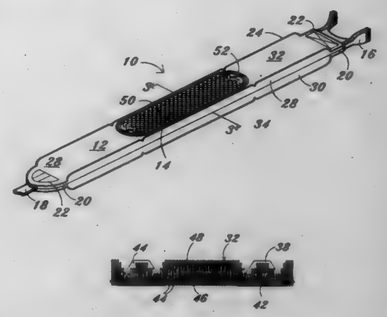
1. An extensible backpack, comprising:
- a pack shell having an internal compartment, said compartment capable of defining at least two predetermined volumes, a first volume for holding a maximum amount of load within the backpack and a second volume for holding a load less than a maximum load;
- means for converting said internal compartment from said first volume to said second volume and from said second volume to said first volume;
- a frame surface for supporting said pack shell, said frame surface having a main frame member, said frame surface further including means to hold and secure said main frame member to said frame surface;
- said main frame member connected to said frame surface, and said frame surface attached directly to said pack shell;
- an extension frame member for extending said main frame member, said extension frame member including means to hold and secure said extension frame member to said frame surface in an extended position, and said extension frame member having means to position said extension frame member in a second position, said second position defining a shortened overall length of said frame surface;
- said frame surface forms a part of an internal surface of said pack shell;
- wherein, said extension frame member is capable of extending the backpack to a full height such that said first volume of said pack shell is fully supported by said main frame member and said extension frame member, said backpack capable of being converted to a shortened position such that said second volume of said pack shell is fully supported by said main frame member.

5,292,044

NON-SLIP CARRYING STRAP

Eric W. Reimers, 1235 Starwood, Missoula, Mont. 59802

Filed Feb. 21, 1991, Ser. No. 659,013
Int. Cl.[5] A41F *15/02*; A45F *3/12*
U.S. Cl. 224—264 **12 Claims**



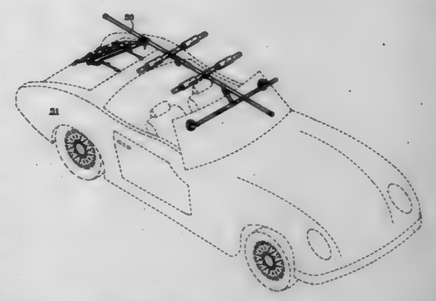
1. A sliding friction enhancing surface for a golf bag strap for inhibiting slippage between the surface of the strap and a human shoulder, comprising:
- a fabric material enclosing cushioning material, the fabric material having low resistance to sliding friction and having a structural backplane including distinguishable fibers;
- a non-slip pattern in the nature of and open array of flexible rubber-like material formed on the fabric material in such a manner that the rubber-like material encompasses a portion of said fibers.

5,292,045

MULTIPURPOSE RACK FOR CONVERTIBLE TOP MOTOR VEHICLES

F. Howard Mandel, 1597 Westdale, South Euclid, Ohio 44121

Filed Jul. 30, 1992, Ser. No. 923,098
Int. Cl.[5] B60R *9/08*
U.S. Cl. 224—309 **5 Claims**



1. An overhead rack for transporting equipment on a convertible top, hard top, or no top vehicle, comprising:
- (a) front support means attachable to the front of a vehicle comprising a spreader bar perpendicular to the direction of the vehicle, wherein said spreader bar is attached to the front of said vehicle by anchoring means;
- (b) a front connection means attached to said spreader bar extending from said spreader bar to a longitudinal assembly;
- (c) a rear support means attachable to the rear of the vehicle

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comprising a base extending perpendicular to the direction of the vehicle wherein said base is attached to the rear of the vehicle by second anchoring means; wherein said second anchoring means includes straps anchoring the base, and clips attached to said straps and anchored around a hinge edge and an open edge of a trunk lid of said vehicle;

(d) an upright support means extending from said base to said longitudinal assembly;

(e) said longitudinal assembly connected to the front support means by said front connections means and to said rear support means by said upright support means; and

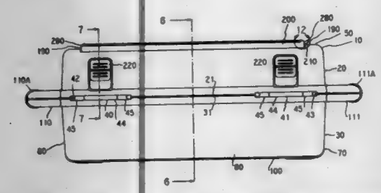
(f) equipment support means attached to said longitudinal assembly whereby said equipment support means can be used to support equipment.

5,292,046

ROLL FILM DISPENSER

Ian R. Kaiser, Encinitas; Michael C. Kaiser, Malibu, and Sean A. Neiberger, La Costa, all of Calif., assignors to Allen Reed Company, Incorporated, Los Angeles, Calif.

Filed Nov. 23, 1992, Ser. No. 980,456
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—19 **9 Claims**



1. A roll film dispenser for dispensing and cutting material on a roll comprising:

a container body divided into an upper portion and a lower portion attached thereto with a hinge, said upper portion including a top, rear, front, two sides and lower rim, said lower portion including a bottom, rear, front, two sides and upper rim;

a first lengthwise slot in said top of said upper portion adjacent said front of said upper portion;

a switch retractable blade for cutting the material capable of being selectively placed in one of a first retracted position and a second extended position and having a cutting edge which extends through said first lengthwise slot when said blade is placed in said second extended position;

a knurled switch front piece attached to said blade with a post; and

a crossbar attached to said post, a sideways "H" shaped slot fixed with respect to said container body and adapted to receive and lock said crossbar at upper and lower extremities of said sideways "H" shaped slot and to permit vertical movement of said post within said sideways "H" shaped slot when said crossbar is not locked thereto;

said switch, said post and said crossbar moveable in a direction normal to a plane defined by said front of said upper portion between an unlocked and a locked position and biased toward said locked position by a spring;

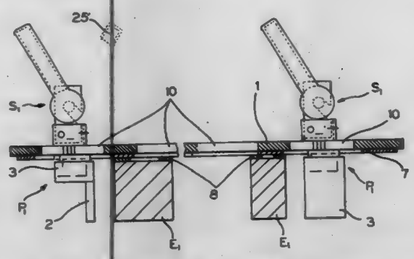
said switch, said post and said crossbar moveable between a first position corresponding to said first retracted position and a second position corresponding to said second extended position.

5,292,047

UNIVERSAL MOVABLE UPPER TOOL FOR A WASTE-STRIPPING STATION SITUATED WITHIN A SHEET DIE-CUTTING MACHINE USED FOR PRODUCING PACKAGES

Charly Varidel, Le Mont, Switzerland, assignor to Bobst SA, Switzerland

Filed Apr. 15, 1991, Ser. No. 684,837
Claims priority, application Switzerland, Apr. 26, 1990, 01431/90
Int. Cl.[5] B26F *3/02*; B26D *7/02*
U.S. Cl. 225—97 **11 Claims**



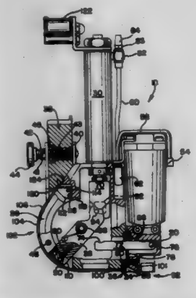
1. A universal movable upper tool for a waste-stripping station situated within a machine designed for die-cutting sheet or web-like matter used for producing packages, comprising a support on which stripping push-rods are carried and on which elastic pressers are fitted on the support in laterally adjustable positions by means of complementary mechanical retaining strips applied on every presser and on said support.

5,292,048

SEMIAUTOMATIC LUMBER TAG STAPLER

James J. Vanderwiel, Cary, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Dec. 13, 1991, Ser. No. 807,139
Int. Cl.[5] B25C *7/00*
U.S. Cl. 227—21 **12 Claims**



1. A semiautomatic stapler for affixing a tag from a roll of tags onto a surface, said stapler comprising:

a. an indexing arm for engaging and moving said tag along an arcuate path into position for affixing, said indexing arm having a ticket engaging end and an opposing end, said indexing arm being rotatable about a pivot positioned between said engaging end and said opposing end;

b. means directly connected to said indexing arm opposing end for rotating said ticket engaging end of said indexing arm along said arcuate path; and

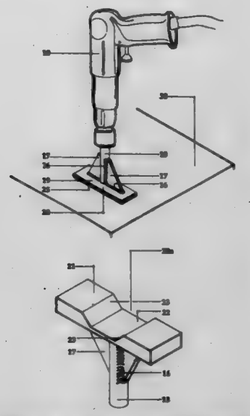
c. integral means for supporting said roll of tags within said automatic stapler.

5,292,049

PLATE DRIVER HEAD

Rodolphe Simon, Stockton Springs, Me., assignor to Kenney/-Williams/Williams Inc., Maple Glen, Pa.

Filed Dec. 16, 1992, Ser. No. 991,823
Int. Cl.[5] B25C *1/04*
U.S. Cl. 227—147 **10 Claims**



1. An apparatus for driving a plate comprising

a hand held power impact tool,

a plate driver head for use with said hand held power impact tool wherein said plate driver head comprises a driving means having an upper surface and a lower surface; a shank portion centrally positioned on said upper surface and extending perpendicularly therefrom; pressure distribution and support means securely attached to said upper surface of said driving means and said shank portion, and holding means for holding a workpiece in place relative to said plate driver head; said holding means defined by a pair of oppositely disposed planar surfaces in a first plane separated by a centrally located intermediate planar portion in a second plane having transition portions connecting said three planar surfaces whereby after inserting said shank portion into a power impact tool and placing a workpiece against the lower surface of said driving portion means an operator can hold a workpiece and by depressing the actuating means of said power impact tool drive said workpiece into a wallboard panel.

5,292,050

WIRE BONDER

Tetsuya Nagaoka, and Kazuhiro Yamamori, both of Yokohama, Japan, assignors to Kabushuki Kaisha Toshiba, Kawasaki, Japan

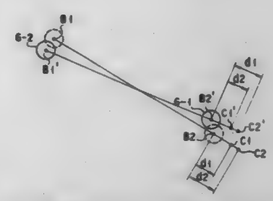
Filed Dec. 3, 1992, Ser. No. 985,111
Claims priority, application Japan, Dec. 6, 1991, 3-322626
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—4.5 **8 Claims**

1. A wire bonder comprising:

bonding means for bonding a first bonding pad formed on a first semiconductor chip and a second bonding pad formed on a second semiconductor chip by a bonding wire, said bonding means forming a metal ball at a second bonding point on the second bonding pad, cutting the bonding wire at a first cutting point separated from the second bonding point, bonding the bonding wire to a first bonding point on the first bonding pad by ball bonding, extending the bonding wire from the first bonding point to bond the wire to the metal ball by wedge bonding, and cutting the bonding wire at a second cutting point separated from the second bonding point;

pattern recognition means for detecting the first bonding pad and the second bonding pad;

shift amount calculation means for calculating amounts of shift of the first bonding pad and the second bonding pad detected by said pattern recognition means from reference locations;



correction means for correcting locations of the first bonding point, the second bonding point, the first cutting point, and the second cutting point in accordance with the amounts of shift calculated by said shift amount calculation means; and

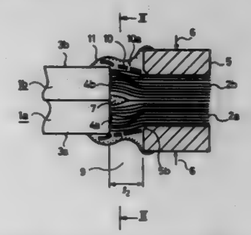
control means for controlling said bonding means in response to a signal output from said correction means.

5,292,051

CONNECTING METHOD AND STRUCTURE OF SUPERCONDUCTING WIRES

Toshinari Nagahiro, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,272
Claims priority, application Japan, Feb. 26, 1992, 4-039403
Int. Cl.[5] H01R *4/68*
U.S. Cl. 228—179.1 **8 Claims**



1. A connecting method of superconducting wires in which a stabilizer is removed from a connecting portion of each of the superconducting wires to be connected and each of superconducting filaments exposed by this stabilizer is bundled and inserted into a sleeve and is pressed;

said connecting method comprising the steps of:

disposing an exposed portion of the superconducting filaments between an end portion of said stabilizer and said sleeve;

winding said exposed portion and a peripheral portion of said stabilizer next to said exposed portion by a tensile winding material in a winding direction with a predetermined clearance; and

integrating at least a portion of said sleeve, the exposed portion, the peripheral portion and said winding material with each other by a fixing material.

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5,292,052

CONTINOUS HOT ROLLING METHOD AND JOINING METHOD OF SHEET BAR

Nobuhiro Ito; Toshisada Takechi; Hideo Takekawa; Fujio Aoki; Hiroyuki Yoshimura; Norio Takashima; Masanori Ebihara, and Masanori Kitahama, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

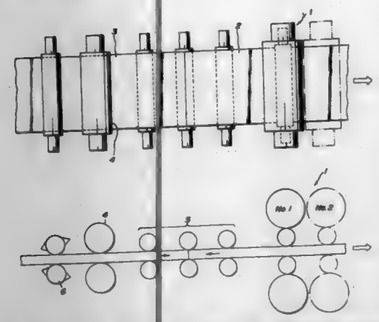
PCT No. PCT/JP91/01030, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO92/02314, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 1, 1991, Ser. No. 847,063

Claims priority, application Japan, Aug. 2, 1990, 2-203995; Aug. 2, 1990, 2-203998; Apr. 20, 1991, 3-115232; May 20, 1991, 3-142657

Int. Cl.[5] B21D *39/00*

U.S. Cl. 228—158 9 Claims



1. In a method of continuously hot rolling sheet bars by continuously feeding preceding sheet bar passed through a rough rolling strep and a succeeding transferred sheet bar followed thereto into a finish rolling mill, the improvement wherein a front end portion of the succeeding sheet bar is butted to a back end portion of the preceding sheet bar before an entrance side of the finish rolling mill so as to contact at least both widthwise side edge regions in the front end portion of the succeeding sheet bar with at least both widthwise side edge regions in the back end portion of the preceeding sheet bar at a compression stress of not less than 1 kgf/mm^2, and then the sheet bars are continuously fed into the finish rolling mill at such a butted state.

5,292,053

SURGICAL ANASTOMOSIS STAPLING INSTRUMENT

Federico Bilotti, Hamburg, Fed. Rep. of Germany; E. David Allen, Okeana, Ohio; Richard Smith, Miami Township, Clermont County, Ohio, and J. David Hughett, Cincinnati, Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 938,982, Sep. 1, 1992, Pat. No. 5,205,459, which is a continuation of Ser. No. 749,393, Aug. 23, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 4,351

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—179 4 Claims

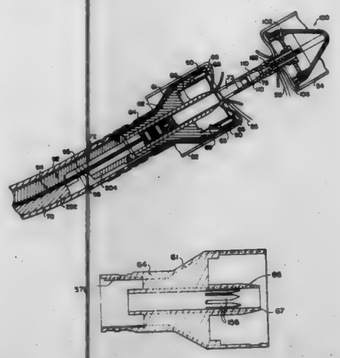
1. A surgical stapling instrument for applying a plurality of surgical staples to tissue, comprising:

a hollow casing including a central support tube having a distal end and extending longitudinally therein, said support tube having a generally cylindrical shape and having a varying outer circumference defined by a bevel, said varying circumference being smaller at the distal end of said support tube and gradually enlarging in a proximal direction;

a staple holder mounted in said casing and having a plurality of staple receiving slots for receiving a plurality of surgical staples;

an anvil for clamping the tissue against said staple holder and forming the staples, said anvil having an anvil shaft slidably received for longitudinal movement in said support tube;

a staple driver slidably mounted within said casing for movement longitudinally into said staple receiving slots for engaging and driving the staples from said staple receiving slots into the tissue and against said anvil; and



said anvil shaft including a raised circumferential section adapted to fit inside of said support tube when said anvil shaft is moved into said support tube to align said anvil with said staple holder.

5,292,054

METHOD OF MANUFACTURING HEAT TRANSFER DEVICES, AND A TOOL FOR CARRYING OUT THE METHOD

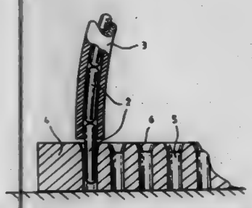
Karl-Erik Leeb, Djursholm, and Ulf I. Holmberg, Järfälla, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 20, 1991, Ser. No. 811,583

Claims priority, application Sweden, Dec. 20, 1990, 9004081

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—179.1 8 Claims



6. A holding device for use in a manufacture of heat transfer devices, comprising:

a perforated plate having provided therein a plurality of penetrating holes disposed in a pattern which corresponds to the positions of respective pins in the finished heat transfer device, the diameter of said holes being slightly larger than the diameter of the pins;

a suction device which is adapted to the perforated plate and which includes a distribution chamber capable of being connected to a vacuum source, such that when a subpressure is generated in the chamber, the perforated plate and pins loaded into the holes will be lifted; and

a thermostat-controlled heating device.

5,292,055

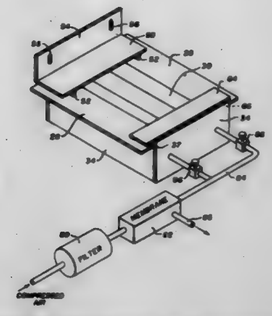
GAS SHROUDED WAVE IMPROVEMENT

John H. Gileta, Chateauguay, Canada, assignor to Electrovert Ltd., LaPrairie, Canada

Continuation-in-part of Ser. No. 961,781, Oct. 15, 1992, Pat. No. 5,240,169, which is a continuation-in-part of Ser. No. 860,316, Mar. 30, 1992, Pat. No. 5,203,489, which is a continuation-in-part of Ser. No. 804,904, Dec. 6, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 13,973

Int. Cl.[5] B23K *1/00, 3/08*

U.S. Cl. 228—180.1 44 Claims



1. A process of wave soldering an element comprising the steps of:

projecting at least one solder wave from a solder nozzle above a solder reservoir containing solder, through a slot in a cover means over at least a portion of the solder reservoir;

providing gas delivery means positioned on each side of the solder wave underneath the cover means to pass shield gas upwards through the slot on both sides of the solder wave and blanket the solder wave;

supporting the element by conveyor means;

conveying the element by the conveyor means in a predetermined path above the cover means so that at least a portion of the element passes through the solder wave while blanketed by the shield gas, and

directing shield gas passing upwards through the slot to blanket side edges of the element during the passing of at least a portion of the element through the solder wave.

5,292,056

METHOD OF WELDING HEAT EXCHANGERS

Werner Borchert, Mülheim-Ruhr, and Hans-Henning von Cleve, Bochum, both of Fed. Rep. of Germany, assignors to GEA Luftkühler GmbH, Bochum, Fed. Rep. of Germany

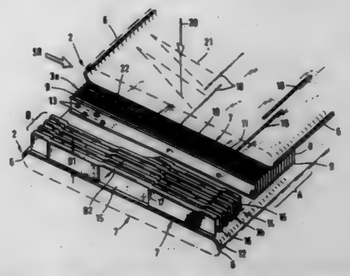
Division of Ser. No. 804,763, Dec. 9, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 17,337

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1990, 4039293

Int. Cl.[5] B23K *31/02, 101/14*

U.S. Cl. 228—183 2 Claims

1. A method of manufacturing a heat exchanger, the heat exchanger including a plurality of exchanger tubes having tube sides, and strips of fins extending transversely of and connecting the tube sides, the exchanger tubes having an elongated cross-section in a flow direction of an outer exchanger medium, the exchanger tubes having a length which is several times greater than the width thereof, wherein the exchanger tubes are arranged in a row extending transversely of the flow direction of the outer exchanger medium, wherein the exchanger tubes have ends, and wherein the exchanger tubes are composed of tube shells having longitudinal edges and inner and outer surfaces, the method comprising initially placing one of the tube shells on one of the strips of fins and welding the outer surface of the tube shell to an edge of the strip of fins by directing a fusion welding beam against the inner surface of the tube shell, such that a fusion welded connection is formed between the outer surface of the tube shell and the edge of the strip of fins, further comprising welding the tube shells together at the longitudinal edges thereof to produce the exchanger tubes, and inserting the ends of the exchanger tubes into cutouts of tube plates, the cutouts having inner surfaces, the cutouts being adapted to the cross section of the exchanger tubes, and welding the ends of the exchanger tubes to the inner surfaces of the cutouts.



5,292,057

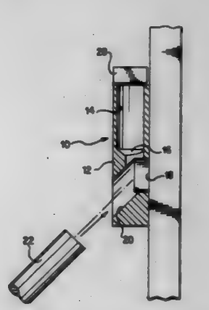
FIXTURE FOR, AND METHOD OF, WELDING GROUNDING CONNECTOR TO STRUCTURAL STEEL MEMBER

Joseph A. Lomastro, Pawtucket, R.I., assignor to Burndy Corporation, Norwalk, Conn.

Filed Feb. 11, 1993, Ser. No. 16,265

Int. Cl.[5] B23K *23/00*

U.S. Cl. 228—198 5 Claims



1. A fixture for forming a connection between a connector and a structural steel member, said fixture comprising:

a) a body having a front wall, a rear wall, a pair of spaced side walls, a top wall, and a bottom wall,

b) said body having a chamber formed therein,

c) said chamber opening upwardly through said top wall,

d) said chamber terminating in a channel at its lower end,

e) said body having an inlet passage extending inwardly, and upwardly, from the front wall of the body,

f) an outlet defined through said rear wall of said body to communicate with said channel,

g) a connector retained with said inlet passage in communication with said channel and said outlet,

h) magnetic means for securing said fixture to said structural steel member,

i) an ignitable substance introduced into said chamber, and

j) an igniter cap positioned over the open upper end of said chamber for providing a spark to said ignitable substance which produces a molten metal mass that flows through

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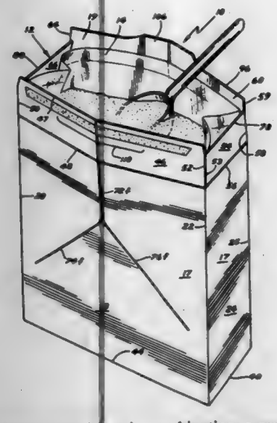
said channel and said outlet to bond said fixture and said connector to said structural steel member.

5,292,058

PACKAGE INCLUDING AN EXPANDABLE TOP OPENING

Robert A. Zoss, Minneapolis, and Francis M. Snee, Brooklyn Park, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Apr. 26, 1993, Ser. No. 51,961
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—123 19 Claims



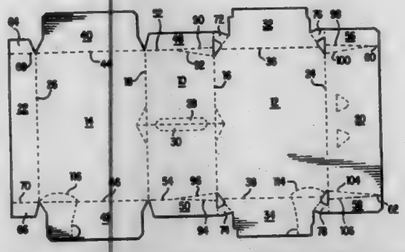
1. A package comprising, in combination: a carton comprising, in combination: a front panel having inside and outside surfaces, a top edge, a bottom edge, and first and second side edges; first and second side panels, with each of the side panels including inside and outside surfaces, a top edge, a botton edge, and first and second side edges; a back panel including inside and outside surfaces, a top edge, a bottom edge, and first and second side edges, with the first edges of the front and first side panels being connected about a fold line, with the second edges of the front and second side panels being connected about a fold line, with the second edges of the back and first side panels being connected about a fold line, with the first edges of the back and second side panels being connected about a fold line, with the height between the top edges and bottom edges of the front panel, the side panels, and the back panel being equal, with the width between the side edges of the front panel and the back panel being equal, with the width between the side edges of the first and second panels being equal, with the width between the side edges of the front panel and the back panel being substantially larger than the width between the side edges of the first and second side panels; a bottom closing and holding the bottom edges of the front panel, the side panels and the back panel in a rectangular configuration; and means for allowing the front and back panels to flex into a non-planar shape with the top edges of the front, side, and back panels being open and generally of an oval shape having a length less than the width between the side edges of the front panel and the back panel and a width greater than the width between the side edges of the first and second side panels, with the flex allowing means being spaced from the bottom edges and the first and second side edges of the front and back panels.

5,292,059

TUBULAR CARTON HAVING TRIANGULAR CORNER PANELS

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 18, 1993, Ser. No. 33,481
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—137 5 Claims



1. A carton comprising top and bottom walls connected together by first and second spaced side walls thereby forming a tubular structure having a longitudinal axis and end closure means disposed at an end of said tubular structure to close said end, said end closure means comprising:

a minor end flap foldably joined to one of said top and bottom walls and disposed generally perpendicularly to the axis of said tubular structure;

a major end flap foldably joined to said first side wall and disposed in overlapping relationship with said minor end flap; and

a web panel foldably interconnecting said major and minor end flaps, said web panel being tucked in between said major and minor end flaps,

a corner of said first side wall defined between said one wall and said major end flap being bevelled and being severed from adjacent portions of said carton, a junction between said one wall and said minor end flap comprising a single fold line extending from said second side wall toward said first side wall, said single fold line bifurcating into two branch fold lines at an intermediate point between said first and second side walls, said branch fold lines extending from said intermediate point to said bevelled corner of said first side wall so as to define a triangular corner panel foldably joined to said one wall and to said minor end flap.

5,292,060

FOLDING CONTAINER

Heinz Focke, Verden, and Harald Gosebruch, Hanover, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

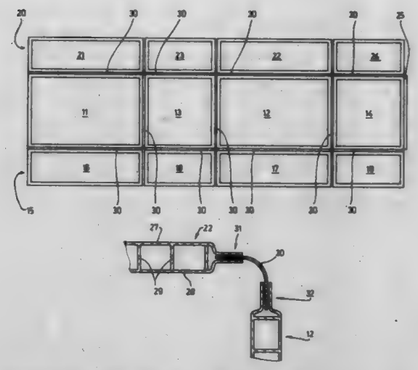
Filed May 28, 1992, Ser. No. 889,238
Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117663
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—198.1 14 Claims

1. A folding container comprising:

side walls, a bottom wall and a cover wall, the side walls consisting of rigid material and being foldable at vertical edges in such a way that an open folding container can be folded flat, said rigid material being waterproof or water-repellent; and

waterproof elastic hinge strips (30) connecting adjacent ones of said side walls to one another at the vertical edges;

wherein the bottom wall (15) and cover wall (20) are formed from folding tabs (16 to 19; 21 to 24) arranged at upper and lower free edges of the side walls (11 to 14), the folding tabs also consisting of waterproof or water-repellent material and being pivotally connected to the side walls (11 to 14) via waterproof elastic hinge strips (30) in such a way that the open folding container (10) can be folded flat; and



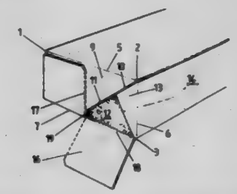
wherein the side walls (11 to 14; 39 to 42) have outer layers (33, 34) of high-density films between which a thicker stiffening ply (35), consisting of a material of lower dead weight, is arranged.

5,292,061

BOX WHICH CAN BE OPENED FOR THE REMOVAL OF A PORTION

Danielle Y. Castagnoni, Marseille, France, assignor to R C L, Marseille, France

Filed Mar. 11, 1993, Ser. No. 29,575
Claims priority, application France, Mar. 19, 1992, 92 03289
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—217 4 Claims



1. A parallelepiped shaped box including an end face having a first and a second edge, said second edge being opposite said first edge, said end face extending in a plane and including an opening having a first side which extends along said first edge and a second side which is inclined relative to said first side,

a closing flap extending from said second edge and having a free end portion, said closing flap being movable from a folded position wherein said closing flap extends to said first edge and closes said opening,

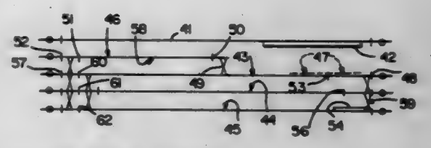
said end face including a panel including said second side of said opening, said panel being folded about said first edge and extending to said second edge and said closing flap being of a size such that said closing flap is insertable behind said panel to close said opening.

5,292,062

REUSABLE MAILER

Stanley C. Chess, Jerome, Id., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 936,394, Aug. 31, 1992, Pat. No. 5,253,803.
This application May 24, 1993, Ser. No. 65,783
Int. Cl.[5] B65D *27/06*
U.S. Cl. 229—306 17 Claims



1. A return mailer comprising:

an outgoing configuration comprising a plurality of plies, including a first ply having outgoing address indicin readily visible thereon, at least one insert ply, a second ply, and a third ply, said third ply having a first face visible in said outgoing configuration, and a second face opposite said first face and not visible in said outgoing configuration;

a sealing agent associated with one of said plies of said outgoing configuration for sealing plies of a reply configuration together;

said third ply having reply address indicia printed thereon on said second face, said third ply pivotally mounted at a portion thereof to one of said first and second plies; and

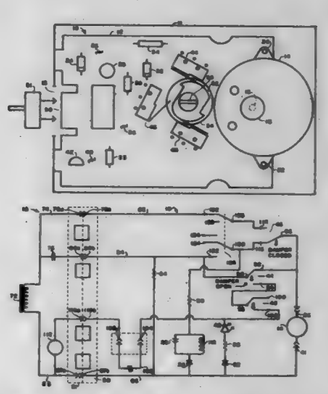
a reply configuration including said first, second, and third plies disposed with respect to each other so that said third ply is pivoted about said pivot portion thereof to a position wherein said second face of said third ply is readily visible, and said outgoing address is no longer visible, said third ply cooperating with said sealing agent to form a reply envelope.

5,292,063

DAMPER ACTUATOR

Michael J. Klaus, Watertown, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Feb. 4, 1992, Ser. No. 830,623
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—1 G 15 Claims



1. A stack damper control apparatus, adapted for use with a damper in an exhaust stack of a fuel-burning temperature conditioning system, for coupling an energy source to a source of

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fuel in response to a signal from a temperature sensitive switch, said apparatus comprising:

motor means responsive to said signal and coupled to said damper for driving said damper between a substantially open and a substantially closed position;

limit switch means coupled to said motor means for controlling the coupling of said energy source to said source of fuel when said motor means drives said damper to said open position;

relay means responsive to said signal for controlling coupling of said energy source to said motor means, said relay means comprising a relay coil, first relay switch means responsive to said relay coil for coupling said limit switch means to said relay coil, and second relay switch means responsive to said relay coil for coupling said limit switch means to said energy source, wherein said relay coil stores energy in response to said signal, and said first relay switch means couples said limit switch means to said relay coil when said relay coil stores energy and said second relay switch means couples said limit switch means to said energy source when said relay means does not store energy.

5,292,064

COVER FOR A HOUSED THERMOSTAT

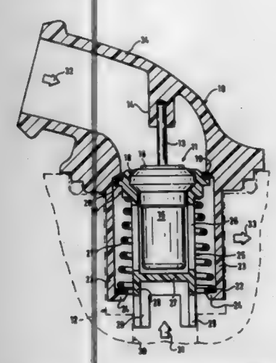
Roland Saur, Stuttgart; Friedrich Bauer, Kornwestheim, and Peter Leu, Denkendorf, all of Fed. Rep. of Germany, assignors to Behr-Thomson-Dehnstoffregler GmbH & Co., Fed. Rep. of Germany

Filed Mar. 22, 1993, Ser. No. 35,075

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 9204611

Int. Cl.[5] F01P *7/161*

U.S. Cl. 236—345 **12 Claims**



1. A cover for a housed thermostat, the housed thermostat having a main housing and a thermostat valve which is held on the cover and forms a main valve and a short-circuit valve, the thermostat valve containing a thermostatic working element with a housing and a main valve disk connected with the housing of the thermostatic working element, the cover comprising:

a projection molded to the main valve disk and which is a molded plastic part that surrounds the housing of the working element in a cage-type manner, an end of the projection projecting over the housing of the working element and forming a part of the short-circuit valve.

5,292,065

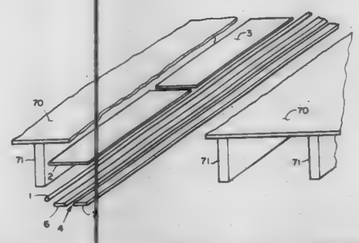
RADIANT FLOOR AND WALL HYDRONIC HEATING SYSTEMS

Joachim Fiedrich, 20 Red Pine Dr., Carlisle, Mass. 01741

Filed Jun. 30, 1992, Ser. No. 906,800

Int. Cl.[5] F24D *5/10*

U.S. Cl. 237—69 **27 Claims**



1. In a hydronic heating system having a supply line for hot supply water and a return line for cooler return water and one or more heating loops through which water flows from said supply line to said return line, said heating loop including a heating element that is a length of tubing that conducts water from said supply line to said return line and said length of tubing is mounted in a wall or a floor of an area heated by said system by RFH or RWH, respectively, in said area, the improvement comprising:

(a) a thermally conductive plate;

(b) with spaced apart co-planar plate holding boards of the same uniform thickness, each having length and width and together providing a surface area for holding said plate and an elongated space of uniform width therebetween for holding said length of tubing,

(c) said plate is held flat against said holding boards holding surface area,

(d) said elongated space has depth and length as well as uniform width of which said depth is equal to said boards thickness and said length is equal to said boards length and

(e) said length of tubing is held in said elongated space in thermal contact with said plate,

(f) whereby said plate is heated by conduction of heat from said tubing and

(g) said plate has a radiating surface that radiates heat to said area.

5,292,066

SEALANT FLOW CONTROL METHOD IN SEALING BY AN INDUSTRIAL ROBOT

Nobutoshi Torii, Hachioji; Tatsuo Karakama, Yamanashi, and Hitoshi Mizuno, Koganei, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00272, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO92/15401, PCT Pub. Date Sep. 7, 1992

PCT Filed Mar. 6, 1992, Ser. No. 945,976

Claims priority, application Japan, Mar. 7, 1991, 3-065213

Int. Cl.[5] B05B *17/04*

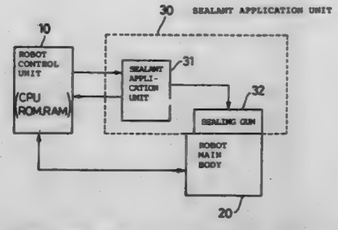
U.S. Cl. 239—1 **4 Claims**

1. A sealant flow control method in sealing by an industrial robot, wherein a sealing gun of a sealant application unit is attached to a distal end of an arm of the industrial robot which is controlled by a robot control unit, and the flow of a sealant discharged from the sealing gun is controlled in accordance with a signal issued from the robot control unit to a sealing gun control unit of the sealant application unit, characterized in that said method comprises;

(a) programming a combination of a sealing start command and a sealing condition number which specifies various sealing conditions, and a combination of a sealing end command and a preset gun OFF delay time in a teaching program when teaching to the robot is made, and

(b) in a process of acceleration control of an operation of the robot arm, i.e., an operation of the sealing gun, effected by pulse distribution for each block from the moment the operation starts to the moment a commanded speed is reached, and in a process of deceleration control of the operation effected upon completion of the pulse distribution from the commanded speed until when the operation is ended;

(b1) controlling the sealant flow in synchronism with and in the same pattern as the robot arm operation during said acceleration control process from the moment the robot arm operation starts, in case that a sealing start position is position-commanded by a sealing condition number combined with the sealing start command, to thereby determine the sealant flow to a value which is proportional to the moving speed of the robot arm, and



starting the sealing with a delay of a servo delay time plus a gun ON delay time preset under the sealing condition, relative to the sealing start command, and determining the sealant flow to a preset value, in case that ignoring of positioning the sealing start position is commanded by the sealing condition number, and

(b2) controlling the sealant flow in synchronism with and in the same pattern as the robot arm operation during said deceleration control process from the moment the pulse distribution is completed to the moment the arm operation is ended, in case that a sealing end position is position-commanded by a set value of the gun OFF delay time, to thereby determine the sealant flow to a value which is proportional to the moving speed of the robot arm, and causing the sealing to be ended delaying from the sealing end command by the gun OFF delay time plus the servo delay time, in case that ignoring of positioning the sealing end position is commanded by a set value of the gun OFF delay time.

5,292,067

APPARATUS AND METHOD FOR LIGAMENT MODE ELECTROSTATIC SPRAYING

Andrew Jeffries; Michael L. Green, and Timothy J. Noakes, all of Clwyd, Wales, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 2, 1992, Ser. No. 843,078

Claims priority, application United Kingdom, Mar. 1, 1991, 9104374; Mar. 1, 1991, 91004373; Oct. 15, 1991, 91309472

Int. Cl.[5] B05B *5/02*

U.S. Cl. 239—3 **24 Claims**

1. A process for electrostatically spraying liquid having a resistivity less than about 1×10^7 Ω cm and greater than about 1×10^4 Ω cm, comprising the steps of:

supplying said liquid to a spray head for discharge as a jet through an orifice of the spray head,

applying a high electrical potential to said spray head so that liquid supplied to the spray head is projected from the orifice under the influence of electrostatic forces, and

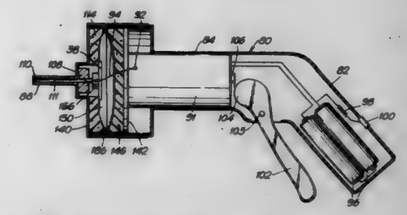
controlling the exit velocity of the liquid jet from the orifice and the potential gradient in the immediate vicinity of the orifice to effect necking of the discharging liquid jet to form a ligament having a cross-sectional dimension substantially smaller than the dimension of the orifice.

6. A ligament mode electrostatic spraying device for use in spraying liquid, said device including:

ligament forming means, said ligament forming means comprising

a spray head having an orifice of a given diameter,

liquid supplying means for supplying liquid having a resistivity of less than approximately 1×10^7 Ω cm to said orifice and for causing said liquid to be discharged from said orifice as a jet at a given exit velocity,



potential applying means for applying a high electrical potential to said spray head, for causing said liquid supplied to said orifice to discharge under the influence of electrostatic forces created by said potential applying means, and for establishing, in the immediate vicinity of said orifice, a potential gradient of sufficient magnitude to neck said jet into a ligament;

wherein said ligament forming means is for forming a ligament having a cross-sectional dimension substantially smaller than the diameter of the orifice.

5,292,068

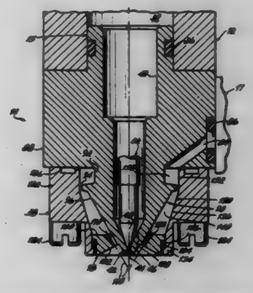
ONE-PIECE, ZERO CAVITY NOZZLE FOR SWIRL SPRAY OF ADHESIVE

John M. Raterman, Lawrenceville; Scott R. Miller, Roswell, and Roger A. Ziecker, Lawrenceville, all of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Aug. 17, 1992, Ser. No. 930,773

Int. Cl.[5] B05B *1/34, 7/10*

U.S. Cl. 239—11 **21 Claims**



20. A method of depositing an elongated adhesive fiber in a spiral pattern onto a substrate, comprising:

transmitting heated hot melt adhesive from an adhesive dispenser into an adhesive bore formed in a one-piece nozzle which is directly mounted to the adhesive dispenser by a nozzle cap;

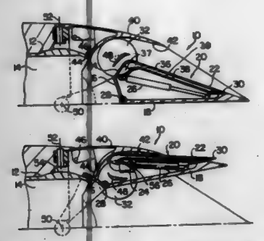
discharging an adhesive bead from the discharge bore of a nozzle tip formed at one end of the one-piece nozzle;

transmitting fluid along a fluid passage formed between an outer surface of the one-piece nozzle and an inner surface

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of the nozzle cap to a number of fluid jet bores formed in a disc portion of the one-piece nozzle;
emitting a fluid jet from each of said fluid jet bores which impact the adhesive bead to form an elongated adhesive fiber, and which impart a swirling motion to said elongated adhesive fiber so that it is deposited in a spiral pattern onto a substrate.

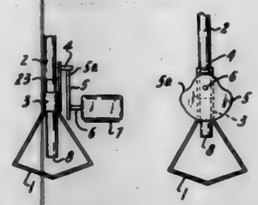
5,292,069
CONVERTIBLE PLUG NOZZLE
Edward B. Thayer, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Jul. 7, 1993, Ser. No. 87,827
Int. Cl.[5] F02K 1/40
U.S. Cl. 239—127.3 9 Claims



1. A convertible plug nozzle for discharging a gas stream form an aircraft gas turbine engine comprising:
a fixed exhaust collar having an internal passage for conducting the gas stream therethrough;
a pair of convergent flaps aft of said collar, moveable from an outboard convergent flap position to a central plug position with said pair of convergent flaps in contact with each other at said central plug position;
a pair of divergent flaps hinged to the aft end of said convergent flaps, moveable from an outboard divergent flap position to a central plug position where said divergent flaps are substantially in contact with each other;
a pair of plug surface flaps moveable from an external position outboard of said divergent flaps in the outboard divergent flap position, to an inboard position in contact with said convergent flaps at the forward end and forming an aftwardly tapering plug surface; and
two external shrouds, each forming an outboard surface of a flow path between one of said plug surface flaps and a corresponding one of said external shrouds.

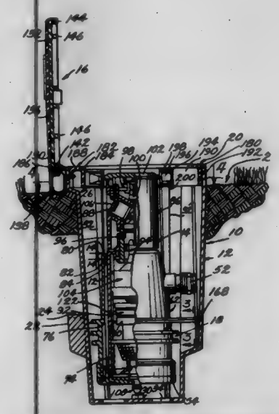
5,292,070
APPARATUS FOR THE INTEGRAL SPRINKLING OF LIQUIDS LADEN WITH SOLID MATERIALS IN SUSPENSION
David Gilbert, 43, Rue Descartes, 33000 Bordeaux, and David Bruno, Residence La Bergerie, Bt. Berry - Appt. 130, Rue Marechal Foch, 33500 Carbon Blanc, both of France
Filed Jul. 6, 1992, Ser. No. 909,246
Claims priority, application France, Jul. 5, 1991, 91 08705
Int. Cl.[5] B05B 3/00
U.S. Cl. 239—232 20 Claims

1. Apparatus for the integral sprinkling of liquids laden with solid materials of appropriate granulometry in suspension and contained in a vat, with the liquid contained in the vat, comprising:
return pipe means for returning liquid which has been taken from the vat, back to the vat with a substantially constant pressure;
movable diffusion means for diffusing the liquid returned to the vat by said return pipe means, said diffusion means being movable with respect to said return pipe means; and
moving means for:
repeatedly moving said diffusion means in predetermined cycles of movement with respect to said return pipe means, and
varying the times that the diffusion means remains at



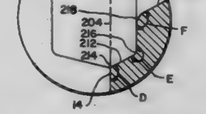
different positions relative to the return pipe means during each cycle,
so as to diffuse a substantially constant quantity of liquid at any surface position of the vat.

5,292,071
IN-GROUND PULL-UP SPRINKLER WITH ABOVE GROUND HOSE CONNECTION
Thomas R. Kruer, Edgewood, Ky., assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Jun. 17, 1993, Ser. No. 77,632
Int. Cl.[5] B05B 3/04
U.S. Cl. 239—242 20 Claims



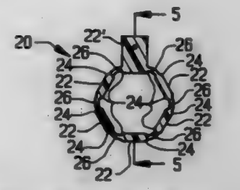
1. A lawn sprinkler device for installation within the ground for discharging water in a desired pattern on a lawn area of the ground when manually connected by a user with an above-ground hose as a source of water under pressure, said device comprising:
a manually operative combination of container, sprinkler head and lid components,
said container and lid components being manually movable between (1) a closed position wherein a substantially closed volume is defined within said container and lid components and (2) an open position wherein access to said closed volume is available through an open top of said container,
said container and lid components being adapted to be mounted within the ground in the lawn area to be sprinkled so that (1) when said container and lid components are in said closed position said closed volume extends downwardly from the level of the lawn area, and (2) when said container and lid components are in said open position access to said closed volume is available generally at the level of said lawn area,
said sprinkler head component including (1) a hose coupling inlet for manual connection by a user with an above-ground hose containing a supply of water under pressure and (2) an outlet structure for discharging water under pressure in a desired pattern on the lawn area to be sprinkled when an above-ground hose containing a source of water under pressure is manually connected with said hose coupling inlet,
said sprinkler head component being mounted with respect to said container and lid components for manual movement between (1) a storage position wherein said sprinkler head component is disposed within said closed volume with said container and lid components disposed in said closed position and (2) an operative position wherein said sprinkler head component is in accessed elevated relation to said closed volume with said container and lid components in said open position enabling said hose coupling inlet to be manually connected by a user with an above ground hose containing a source of water under pressure so that water will be discharged from said outlet structure in the desired pattern on the lawn area.

5,292,072
FUEL INJECTORS AND METHODS FOR MAKING FUEL INJECTORS
David M. Rix, Columbus, and Christine M. Yingling, North Vernon, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Continuation of Ser. No. 944,435, Sep. 14, 1992, abandoned, which is a continuation of Ser. No. 501,023, Mar. 29, 1990, Pat. No. 5,192,026. This application Jul. 15, 1993, Ser. No. 92,276
Int. Cl.[5] F02M 61/18
U.S. Cl. 239—533.3 4 Claims



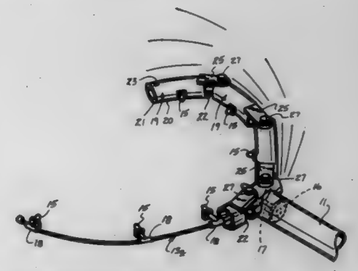
1. A fuel injector for an internal combustion engine, said fuel injector comprising:
an injector body defining a centrally-located, axially-extending, generally cylindrical main bore having an inside wall and a longitudinal center-line axis, said injector body further defining a generally cylindrical side bore having an inside wall and a longitudinal center-line axis which intersects said longitudinal center-line axis of said main bore within the injector body, said side bore being disposed in fuel flow communication with said main bore;
fuel control means disposed within said injector body; and
wherein the position and orientation of said main bore and of said side bore are such that the main bore and the side bore intersect, and their intersection defines an acute included angle between the intersection of their longitudinal center-line axes, such that the inside wall of said main bore and the inside wall of said side bore are separated by a portion of said injector body and connected by a convex radiused surface having a radius of at least 0.2 mm.

5,292,073
IRRIGATION TUBES WITH THICKENED WALL SECTIONS
David Zeman, c/o Disco, P.O. Box 42040, Las Vegas, Nev. 89116
Continuation-in-part of Ser. No. 409,005, Sep. 18, 1989, Pat. No. 5,141,360. This application Jul. 27, 1992, Ser. No. 918,613
Int. Cl.[5] B05B 1/20
U.S. Cl. 239—542 3 Claims



1. An elongated irrigation tube comprising:
a peripheral wall having an interior surface and an exterior surface, said wall defining the longitudinal direction of said tube;
said wall being defined by a plurality of longitudinally oriented relatively thicker and more rigid panels having substantially parallel edges, said thicker panels having therebetween a peripheral wall portion which is thinner and more flexible and extends longitudinally to serve as hinges joining the edges of adjacent thicker and more rigid panels, two of said thinner peripheral wall sections being opposite each other in said peripheral wall so that said tube can fold relatively flat, one of said thicker and more rigid panels being thicker than the other rigid panels to form a flange;
a plurality of irrigation holes formed in said flange spaced along the length thereof, said holes being at an acute angle with respect to the longitudinal direction of said tube.

5,292,074
POOL FILTER SPRAY HEAD APPARATUS
Steven J. Clark, and Evelyn J. Clark, both of 324 Ballet Dr., Las Vegas, Nev. 89107
Filed Mar. 15, 1993, Ser. No. 31,702
Int. Cl.[5] B05B 15/08
U.S. Cl. 239—546 3 Claims



1. A pool filter spray head apparatus, comprising,
a rigid primary conduit, having a conduit first end, with the first end including a coupling mounted thereon, wherein the rigid primary conduit includes a second end, and
an arcuate manifold in fluid communication with the rigid primary conduit through the second end, and
the arcuate manifold having a concave coextensive surface and the concave coextensive surface includes a semi-annu-

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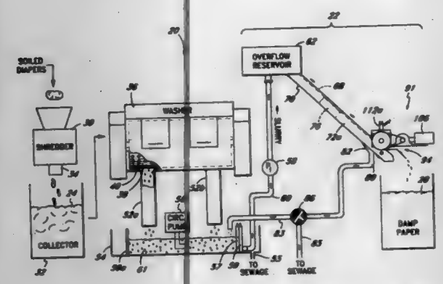
lar array of nozzles spaced an equal distance relative to one another along the concave surface, and
each of the nozzles are spaced from the concave surface about a manifold coupling, and
a plurality of arcuate tubular segments receive the arcuate manifold therethrough, and
each of the arcuate tubular segments are pivotally mounted relative to one another.

5,292,075

DISPOSABLE DIAPER RECYCLING PROCESS

Bruce L. Bartlett, Woodenville, Wash., assignor to Knobbe, Martens, Olson & Bear, Newport Beach, Calif.

Filed May 29, 1992, Ser. No. 890,940
Int. Cl.[5] B02C *23/18*
U.S. Cl. 241—20 **31 Claims**



1. A process for reclaiming the component liner and absorbent filler materials of soiled single-use human waste collecting and/or absorbing products, comprising:
forming openings in said liner materials of said soiled single-use human waste collecting and/or absorbing products;
agitating said products in a water solution such that said openings in said liner materials are propagated and the absorbent filler materials inside are substantially released from said liner materials;
spinning said liner and absorbent filler materials in a container such that said liner materials are separated from said absorbent filler materials, said liner materials being retained in said container and said absorbent filler materials being substantially extracted along with said water solution; and
removing excess water from said absorbent filler materials.

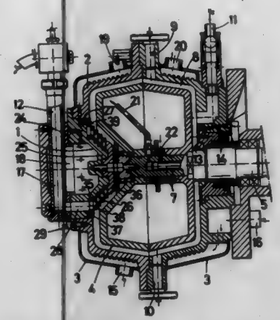
5,292,076

APPARATUS FOR COMMINUTING, CRUSHING AND DISAGGLOMERATION OF SOLIDS DISPERSED IN LIQUIDS

Carlos Oliver Pujol, Badalona, Spain, assignor to Oliver Y. Batlle, S.A., Badalona, Spain

Filed May 29, 1992, Ser. No. 891,650
Claims priority, application Spain, Jun. 27, 1991, 9101517
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] B02C *17/16*
U.S. Cl. 241—69 **3 Claims**

1. In a mill having an outlet and a grinding body separator, comprising a stator and rotor with a grinding chamber therebetween, and having a longitudinal axis and a truncated cone-shaped stepped support for grinding and breaking up solids predisposed in a liquid, the improvement comprising a separator 1 having a fixed base support 25 in the form of a truncated stepped cone fixed to the stator and supporting a plurality of rings 26 positioned on a series of circular steps formed on said base support 25; said circular steps and said rings being parallel to each other and perpendicular to the longitudinal axis of said separator; and said rings being of decreasing diameter from the base support to its cone end; each of said rings having a plurality of through bores wherein the number of said through bores decreasing as a function of a decrease in the diameter of said rings, and wherein said through bores are equidistantly spaced



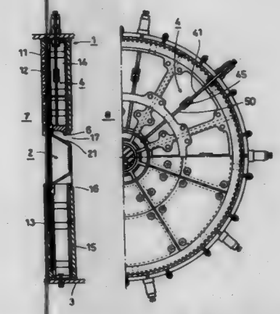
about said rings and enable the flow of said ground solids to enter and traverse said rings of said separator and to exit therefrom uniformly and smoothly and without any accumulation of solids in the grinding chamber of the mill.

5,292,077

FLOW RATE REGULATOR FOR USE IN A BALL MILL

Yasuo Inui, and Nobuhito Yagi, both of Osaka, Japan, assignors to Kurimoto, Ltd., Osaka, Japan

Filed Jul. 8, 1991, Ser. No. 726,959
Claims priority, application Japan, Mar. 29, 1991, 3-028520[U]
Int. Cl.[5] B02C *17/02*
U.S. Cl. 241—72 **2 Claims**



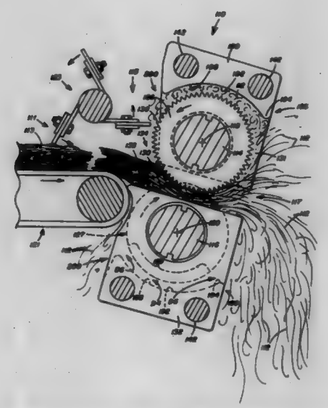
1. A flow rate regulator for a ball mill having an outer shell, comprising a partition diaphragm which divides the ball mill into not less than two grinding chambers;
said partition diaphragm comprising: a center core defining a conical surface; a screen plate facing a primary grinding chamber of the ball mill; a blind plate facing a secondary grinding chamber of the ball mill; a diaphragm chamber formed between said two plates around the center core; and a disc controller for opening and closing a discharge opening of the diaphragm chamber, said partition diaphragm being mounted on outer shell of the ball mill so as to move forward and backward; and
said disc controller comprising: a disc adjustment bar mounted on the outer shell of the ball mill so as to move forward and backward; a universal joint; a disc holder bar connected to said disc adjustment bar through the universal joint so as to be bendable; and a control disc mounted on one end of said disc adjustment bar and having a circular arc surface which is substantially coincident with the conical surface of the center core.

5,292,078

MACHINE FOR CUTTING MATERIAL

Frank J. Lodovico, Delmont, and John W. Wagner, New Alexandria, both of Pa., assignors to Allegheny Paper Shredders, Inc., Delmont, Pa.

Continuation-in-part of Ser. No. 775,159, Oct. 11, 1991, Pat. No. 5,178,336. This application Oct. 16, 1992, Ser. No. 961,876
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] B02C *18/16*
U.S. Cl. 241—167 **11 Claims**



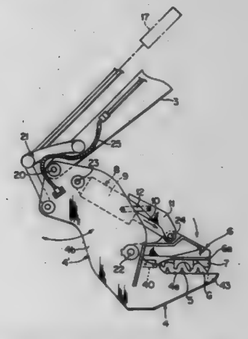
1. An improved machine capable of cutting material into at least narrow strips of the material, the machine being of a type which includes a pair of parallel cutting shafts mounted for rotation about central axes thereof in opposite directions, each of the cutting shafts supporting a plurality of cutting wheels mounted for rotation therewith, each of the cutting wheels having peripheral cutting means defining a circular path of the cutting wheel during the rotation, each of the cutting wheels on one of the cutting shafts axially separating and extending between axially adjacent cutting wheels on the other of the cutting shafts, a spacer-comber means mounted to extend around the cutting shaft between each of the adjacent cutting wheels thereon and to provide a guiding surface aligned with the cutting wheel on the other of the cutting shafts, the cutting wheels being capable of cutting the material into the narrow strips when the material is fed from a feed side of the machine into a cutting area between the cutting shafts for discharge toward a discharge side of the machine, wherein said improvement comprises:
a cutting wheel comber fixedly mounted remote from the cutting area and aligned with each of the cutting wheels and disposed between the adjacent spacer-comber means of the cutting wheel;
said cutting wheel comber having a concave surface adjacent to, partially surrounding, and radially spaced from the circular path of the cutting wheel;
said concave surface of said cutting wheel comber terminating at a convex rounded portion of said cutting wheel comber at a discharge end of said cutting wheel comber located toward the discharge side of the machine;
said convex rounded portion having a convex surface;
said concave surface and said convex surface having a smooth transition therebetween; and
said convex rounded portion being located toward the discharge side of the central axis and disposed therefrom toward a side which is remote from the cutting area.

5,292,079

CONCRETE BREAKER WITH PROTECTIVE COVER

Nobuyuki Zakohji, Osaka, Japan, assignor to Ohyodo Diesel Co., Ltd., Osaka, Japan

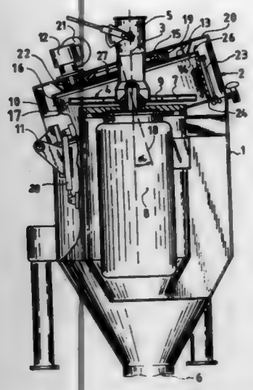
Filed Nov. 13, 1992, Ser. No. 975,683
Claims priority, application Japan, Aug. 10, 1992, 4-212638
Int. Cl.[5] B02C *1/04*
U.S. Cl. 241—264 **2 Claims**



1. A concrete breaker comprising:
a lower jaw tiltably pin-connected to a front end of a swing arm extending from a working machine, a plurality of lower cutting blades disposed at intervals and projecting from an upper side of a front end portion of said lower jaw,
an upper jaw pivotably pin-connected to said lower jaw such that a lower side of a front end portion of said upper jaw opposes said upper side of said lower jaw, said upper jaw having a plurality of upper cutting blades disposed at intervals and projecting from the lower side of the front end portion of said upper jaw,
a hydraulic cylinder comprising a cylinder body connected to a rear end portion of the lower jaw and a piston rod extending from the cylinder body, said piston rod connected at its front end to the upper jaw, an advance and retracting movement of said piston rod pivotably driving said front end portion of said upper jaw toward and away from said front end portion of said lower jaw for closing and opening movement, respectively,
a protective cover with a link wherein said link has two ends and is pin-connected at one end to the lower jaw and at the other end to a rear end of said protective cover, a front end of said protective cover being pin-connected to the upper jaw such that the protective cover extends along an outer side of the piston rod, said protective cover being swung in conjunction with the upper jaw in the opening and closing direction of the upper jaw at a position where it always covers the outer side of the piston rod.

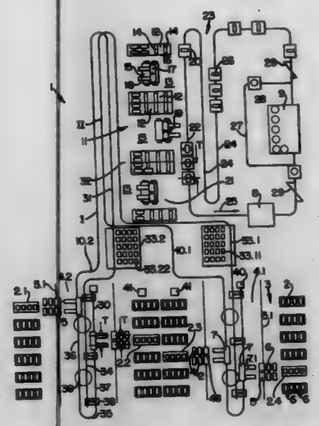
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,080
IMPACT MILL
Stefan Liebing, Braunschweig, Fed. Rep. of Germany, assignor to Bühler GmbH, Braunschweig, Fed. Rep. of Germany
Filed Dec. 4, 1991, Ser. No. 803,005
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1991, 4103468
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—275 21 Claims



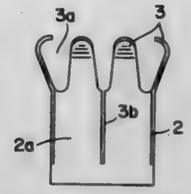
1. Apparatus for impacting a granular material, such as grains, seeds comprising
housing means having a distribution head mounted therein for rotation about a longitudinal axis;
said distribution head having wall means forming at least one radially extending channel;
drive means for rotating said distribution head;
a ring-shaped impact member surrounding said distribution head and having a central axis;
supply means arranged for supplying said granular material to said distribution head within a central region of the distribution head located at said longitudinal axis, so that the granular material being under the action of centrifugal force enters said at least one channel to be impacted against said impact member;
rotating means for rotating said impact member around the central axis of said impact member and around said distribution head;
wherein said housing means further comprises
lid means and a pivot, said lid means being pivotable about said pivot between an open position and a closed position for enabling access to said distribution head; and
bearing means for rotatably supporting said impact member on said lid means;
wherein said supply means comprises tubing means passing through an opening in said lid means, said opening being larger in diameter than said tubing means to permit a pivoting of said lid means while said tubing means is stationary;
wherein the longitudinal axis of said distribution head and said central axis of said impact member form an angle with each other; and
said impact member is spaced apart from said supply means allowing said supply means to remain stationary independent of rotation of said impact member, said impact member comprising an annular wall and an upper wall means shutting the upper side of said annular wall at least in part, but leaving at least one clearance adjacent to said annular wall bypassing said bearing means for enabling said material to pass through.

5,292,081
TEXTILE YARN SPINNING APPARATUS
Manfred Langen, and Thomas Lücke, both of Mönchengladbach, Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany
Filed Sep. 14, 1992, Ser. No. 945,114
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130300
Int. Cl.[5] B65H *67/06*
U.S. Cl. 242—35.5 A 22 Claims



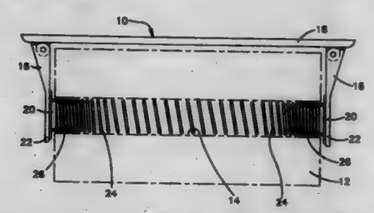
1. A textile yarn processing apparatus for the continuous production of synthetic filament yarns comprising
package winding means comprising a plurality of yarn winding machines arranged in parallel rows to define a service aisle therebetween,
package storage means comprising a plurality of creels of substantial height and which are arranged parallel to each other to define a storage aisle therebetween, and with each creel having a plurality of storage mandrels arranged side by side in vertically spaced apart horizontal rows, and with the mandrels projecting toward said storage aisle, and servicing means movable along said storage aisle for delivering full packages to selected mandrels of a selected creel and for removing the same from such creels,
package processing means comprising a receiving area positioned adjacent one of the ends of said storage aisle of said storage means, and a processing station spaced from said receiving area,
doffer means adapted to move along said service aisle of said winding means for removing full packages from the winding machines and replacing said packages with empty yarn winding tubes,
transport carriage means movable along a path of travel which includes said service aisle of said winding means and extends to a location adjacent one of the ends of said storage aisle of said storage means, and including transport mandrel means for receiving at least one full package from said doffing means and delivering the same to said servicing means of said storage means and for receiving at least one empty winding tube on its travel back to said service aisle and delivering the same to said doffer means, and
said package processing means further comprising conveyor means for receiving full packages from said servicing means of said storage means at said receiving area of said processing means and conveying the same to said processing station.

5,292,082
DEVICE FOR DRIVING THE BOBBIN OF A BANK OF SPINDLES FOR LONG AND SHORT FIBERS
Henri Genevray, Guebwiller, France, assignor to N. Schlumberger et Cie, S.A., Guebwiller, France
Continuation of Ser. No. 878,306, May 4, 1992, abandoned. This application Mar. 16, 1993, Ser. No. 31,917
Claims priority, application France, May 6, 1991, 91 05727
Int. Cl.[5] B65H *54/54, 75/30*
U.S. Cl. 242—46.21 1 Claim



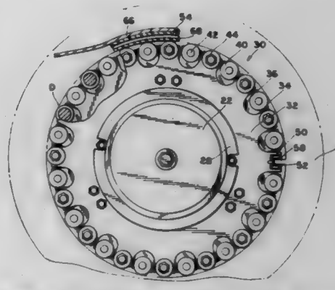
1. The combination of a rotatable spindle and a bobbin receivable on the spindle for winding fibers on the bobbin, the spindle having an upper free end, and on said upper free end an elastically deformable drive means for the bobbin, said drive means comprising a cylindrical base secured to the spindle and from which extends upwardly a circular array of spaced resilient spring leaves, the bobbin being hollow and having on its interior a correspondingly spaced series of recesses that receive the spring leaves, whereby rotation of the spindle is transmitted to the bobbin via said spring leaves and recesses, said spring leaves extending upwardly and radially outwardly from said base and terminating in incurved free ends, said spring leaves being separated by slots that progressively widen from said base to said free ends and that extend downwardly for most of the length of said base in slits of a uniform width substantially less than any width of said slots.

5,292,083
CONSTRUCTION FOR SECURING A PAPER ROLL TO A HOLDER
Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises, Inc., Mansfield, Ohio
Continuation of Ser. No. 567,297, Aug. 14, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 912,126
Int. Cl.[5] B65H *19/10*
U.S. Cl. 242—55.2 3 Claims



1. A support structure for helping to prevent a roll of paper which is rolled upon a core from being inadvertently pulled off a paper roll holder that includes a base, a pair of biased side arms extending from the base, at least one of said arms being deformable from a first position to a second position, said second position being outwardly spaced relative to said first position, a knob-like bearing member disposed on the free end of each side arm, the bearing members facing each other so that one end of the roll of paper can be placed over one bearing member and the opposite end of the roll can be placed over the other bearing member whereby the roll of paper is supported between the side arms, said support structure comprising:
spring means insertable within at least a portion of the core of the paper roll for exerting a force generally along the longitudinal axis of the roll of paper to urge said at least one of the side arms outwardly from said first position to said second position, said spring means including a coil spring inserted within the core of the paper roll; and
means for securing said spring means over at least one of the bearing members, wherein said means for securing said spring means comprises an end of said coil spring, said end of said coil spring directly engaging one of said bearing members and releasably retaining said spring means on said bearing member.

5,292,084
CORE SLIP APPARATUS FOR WINDING STRIPS INTO COILS
Roger J. Lofstrom, 151 S. Ridgedale Ave., East Hanover, N.J. 07936
Filed Jan. 8, 1992, Ser. No. 818,272
Int. Cl.[5] B65H *75/24*
U.S. Cl. 242—56.9 15 Claims



1. A core slip apparatus for winding a strip of material into a coil comprising:
an arbor rotating about a longitudinal axis;
core means for accepting at least a strip for winding;
supporting means for supporting said core means, said support means being arranged to permit said core means to rotate with respect to said arbor substantially without friction, said support means comprising a plurality of mounting disks, a plurality of rods holding said mounting disks together and an outer perimeter defined by a plurality of bearing means being rotatably mounted on said rods, each bearing means having an axis of rotation radially spaced from said longitudinal axis; and
tensioning means mounted on said support means for applying tension to said strip thereby winding said strip on said core means as said arbor rotates.

5,292,085
METHOD OF ACCOMMODATING PHOTOGRAPHIC FILM WITH ENLONGATED LEADER MEMBER IN PHOTOGRAPHIC-FILM CARTRIDGE
Katsuhiko Tanaka, and Junichi Tsuji, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan
Continuation of Ser. No. 721,003, Jun. 27, 1991, Pat. No. 5,165,619. This application Jun. 18, 1992, Ser. No. 900,294
Claims priority, application Japan, Sep. 14, 1990, 2-244845
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B65H *18/08, 18/00*; G03D *13/00*
U.S. Cl. 242—71.1 15 Claims

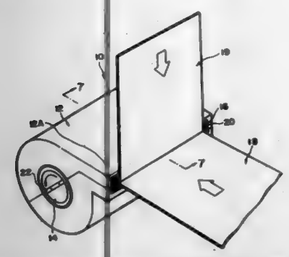
7. A method of accommodating a strip of photographic film in a main body of a photographic-film cartridge in a state in which a first end of an elongated leader ember provided sepa-

VOL 1160 ISS 2 MR 8 1994 UMI

rately from said strip of photographic film is mounted on a spool in said cartridge and a predetermined length of a second end of said elongated leader member extends out of said cartridge, said method comprising the following steps:

a first step of inserting the leading end of a strip of photographic film into said main body of said cartridge through a photographic-film outlet defined in said cartridge such that said photographic film contacts said second end of said elongated leader member extending from said cartridge;

a second step of rotating said spool and feeding said strip of photographic film into said main body of said cartridge with said leader member serving as a guide member for



said photographic film until a leading end of said strip of photographic film is held by successive convolutions of said leader member, or said leader member and said spool; and

a third step of rotating said spool to wind said strip of photographic film onto said spool with the aid of frictional force produced when the leading end of said strip of photographic film is held between successive convolutions of said leader member, and another frictional force produced when said leading end of said strip of photographic film is held between said leader member and said spool, thereby accommodating said strip of photographic film in said main body of said cartridge.

5,292,086

REEL DRIVE APPARATUS FOR MAGNETIC TAPE RECORDING AND PLAYBACK UNITS

Young H. Min, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 21, 1992, Ser. No. 933,072

Claims priority, application Rep. of Korea, Aug. 21, 1991, 91-13460

Int. Cl.[5] G11B *15/18*

U.S. Cl. 242—200 **15 Claims**



1. A reel drive apparatus for rotatably driving a cassette tape reel in a magnetic tape recording and playback unit, the unit including a main chassis, the reel drive apparatus comprising:

an elongated mounting shaft fixed onto the main chassis of the magnetic tape recording and playback unit;

a reel hub for rotatably engaging the cassette tape reel;

a reel disc having a tubular journal bearing portion and a concentric cylindrical drum, said reel disc being mounted on the elongated mounting shaft so that said reel disc supports and rotates together with the reel hub; and

an elastic and resilient geared belt tensely mounted on a peripheral surface of the cylindrical drum of said reel disc and engaged to a last-stage gear in a drive gear train.

5,292,087

BAITCASTING REEL

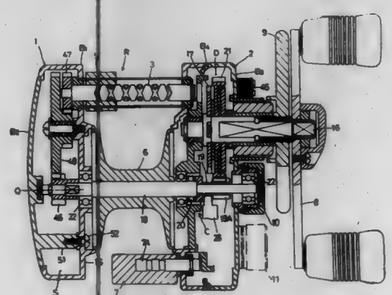
Jun Sato, Saksi, Japan, assignor to Shimano, Inc., Japan

Continuation of Ser. No. 739,487, Aug. 2, 1991, abandoned. This application May 5, 1993, Ser. No. 57,012

Claims priority, application Japan, Aug. 7, 1990, 2-83880[U]; Jan. 11, 1991, 3-473[U]

Int. Cl.[5] A01K *89/015, 89/02*

U.S. Cl. 242—268 **17 Claims**



1. A baitcasting reel comprising:

a reel body including right and left cases, said right case including a wall, said left case including a wall, said reel body further including components interconnecting said walls of said cases, said reel body further including a lid, said lid having an outer wall surface;

a rotatable member for winding a fishing line;

a transmission unit including a handle, a handle shaft, an output gear, a drag mechanism, and a clutch mechanism for transmitting torque from said handle to said rotatable member;

a level wind mechanism disposed between said walls of said cases, said level wind mechanism having a screw shaft; and

means for transmitting torque from said handle shaft to said screw shaft of said level wind mechanism; and

wherein at least said walls of said cases and said components interconnecting said walls are formed of a single material into an integral one-piece unit, said integral one-piece unit having an outer wall surface, said lid being attached to said integral one-piece unit so that one of said cases has a space for accommodating at least a portion of said torque transmitting means; and

wherein said outer wall surface of said integral one-piece unit and said outer wall surface of said lid are substantially flush with each other and define a substantially continuous exterior surface.

5,292,088

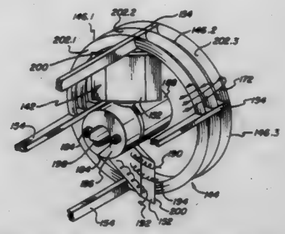
PROPULSIVE THRUST RING SYSTEM

Harold E. Lemont, 117 W. Church St., Seymour, Conn. 06483

Continuation-in-part of Ser. No. 419,137, Oct. 10, 1989, abandoned. This application Jun. 5, 1991, Ser. No. 711,622

Int. Cl.[5] F01D *1/02*

U.S. Cl. 244—65 **25 Claims**



10. An apparatus for moving fluid comprising:

a motor;

a propeller coupled to the motor for rotation thereby about an axis, said propeller having a relatively low aspect ratio;

a multiple ring cage structure formed of a plurality of rings and placed to surround the propeller, at least one of said rings being located within the axial span of said propeller and another ring being located downstream of said one ring, said rings being so axially-spaced from each other and so located with respect to the propeller as to form at least one flow augmenting aperture entirely within the axial span of the propeller between said one ring and said downstream-located ring, with said rings and aperture further being sized so as to enable fluid tip vortices from the propeller to be effectively converted to useful fluid mass flow.

5,292,089

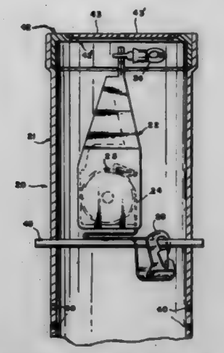
TIE DOWN APPARATUS

James M. Whitman, and Jeffrey J. Whitman, both of Fargo, N. Dak., assignors to Alvin Leingang, Mandan, N. Dak., by said James M. Whitman

Filed Feb. 6, 1992, Ser. No. 832,005

Int. Cl.[5] B64F *1/12*

U.S. Cl. 244—115 **5 Claims**



1. A aircraft arresting device comprising an upright storage container having a top, bottom and surrounding sides with an opening in its top with means to facilitate fixing the container in the ground with its top opening flush with the top surface of the ground and cover means to open and close the top opening; a tie down device receivable within an interior of the container and sufficiently smaller than the top opening so as to be removable therethrough by opening said cover means; said tie down device having a frame with a pair of side panels fixed to the frame and a spool rotatably mounted between the side panels; an elongated flexible belt wound on said spool having an inner end attached to said spool and having an outer end with a first hook means attached to said outer end; said first hook means being also attached to said container; spring means mounted between said tie down device frame and said spool to urge said spool to rotate on said frame in a direction to wind said belt onto said spool; a second hook means attached to said tie down device frame whereby said tie down device may be removed from said container through said top opening and may be drawn toward an eyelet tie down of an aircraft, while said first hook means remains attached to said container, with said belt unwinding from said spool to a length to span the distance of movement of the tie down device from the container, with the first hook means on the belt of of the tie down device thereupon also being attached to said eyelet of said aircraft, and with the tension of the spring on the spool acting to keep the belt connection between the container and aircraft taut.

5,292,090

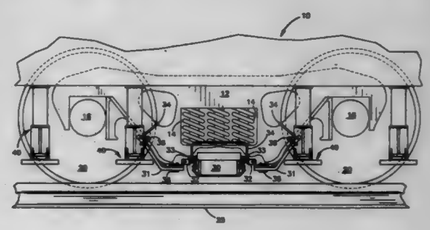
SIMULATOR FOR RAILROAD HOT WHEEL DETECTOR

Donald C. Wetzel, Berea, and Walter N. Arth, Jr., Middleburg Heights, both of Ohio, assignors to Meg Trans Corp., Berea, Ohio

Filed Dec. 2, 1992, Ser. No. 984,539

Int. Cl.[5] B61K *9/04*

U.S. Cl. 246—169 R **25 Claims**



1. An apparatus for simulating a hot wheel on railroad rolling stock to verify the operation of a hot wheel detector, comprising:

a movable carriage having left and right sides;

at least one left wheel rotatably mounted on the left side of the carriage having substantially parallel inner and outer faces defining substantially parallel planes; and

at least one heater attached to the carriage and disposed substantially between the planes of the faces of the left wheel to simulate a hot wheel.

5,292,091

OPERATING DEVICE FOR RAILWAY SWITCHES, PARTICULARLY FOR HIGH-SPEED LINES

Ugo Callegari; Giovanni Gritti, both of Bologna; Maurizio Biagiotti, Pisa, and Claudio Silinni, Florence, all of Italy, assignors to SASIB S.p.A., Bologna, Italy

Filed Oct. 4, 1991, Ser. No. 771,359

Claims priority, application Italy, Oct. 10, 1990, 12523 A/90

Int. Cl.[5] B61L *7/04*; E01B *7/02*

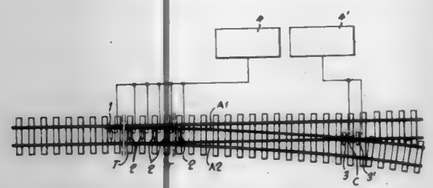
U.S. Cl. 246—258 **22 Claims**

1. An operating device for a railway switch, the railway switch including first and second main rails, a frog, and first and second blades associated respectively with the first and second main rails, with each blade having a toe at one end, an intermediate portion, and a heel end at the other end, said operating device comprising:

a hydraulic blade actuator means for switching the blades at the toes between a first position where the toe of the first blade is immediately adjacent the first main rail and the toe of the second blade is spaced from the second main rail and a second position where the toe of the first blade is spaced from the first main rail and the toe of the second blade is immediately adjacent the second main rail;

a hydraulic frog actuator means for switching the frog between a first position where the frog is immediately adjacent the heel end of the first blade and spaced from the heel end of the second blade and a second position where the frog is immediately adjacent the heel end of the second blade and spaced from the heel end of the first blade;

a hydraulic intermediate actuator means located between



said blade actuator means and said frog actuator means for switching the intermediate portions of said blades between first and second positions which are consistent with the first and second positions of the toes of the blades; and

a controlling means for controlling the hydraulic switching actions of said blade actuator means, said frog actuator means and said intermediate actuator means, said controlling means including

a fluid reservoir containing a fluid,

a pressure accumulator in which the fluid is accumulated under pressure, and

a pump means for pumping the fluid from said reservoir to said accumulator under pressure, said pump means including an electric motor and a no-break power unit for said electric motor.

5,292,092

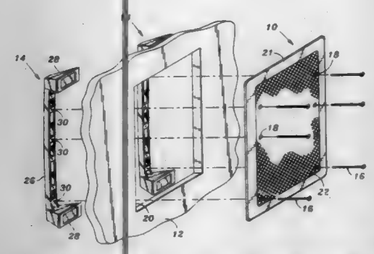
RETROFIT BRACKET FOR WALL MOUNT SPEAKERS

Jerry Curtis, Laguna Niguel; William J. Kindel, San Clemente; Geoffrey L. Spences, Laguna Niguel; Scott Struthers, San Clemente; F. Hendrik Huebscher; Walter Malzahn, both of Mission Viejo, and Ronald Maurer, El Cajon, all of Calif., assignors to Dana Innovations, San Clemente, Calif.

Filed Apr. 26, 1993, Ser. No. 54,082

Int. Cl.[5] G12B *9/00*

U.S. Cl. 248—27.1 **20 Claims**



1. A retrofit bracket for wall mount speakers comprising:

(a) a support surface configured for mounting at least one speaker thereto;

(b) at least two elongate bars attached to said support surface such that a wall covering is clampably capturable intermediate said support surface and said bars, each of said bars having a foot formed at each end thereof;

(c) adjustment means for varying the distance between said support surface and said bars;

(d) at least one cross-member interconnecting adjacent feet of the two bars; and

(e) frusto-conical male members formed upon said cross-member and complimentary frusto-conical female members formed within said feet to facilitate attachment of the cross-member to the feet;

(f) wherein said adjustment means facilitates the accommodation of various wall covering thicknesses.

5,292,093

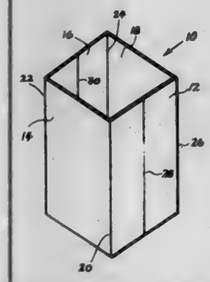
PROTECTIVE INSERT FOR A PLASTIC TRASH BAG

Ernest L. Shumake, 5404 Waterview Dr., Arlington, Tex. 76016

Continuation-in-part of Ser. No. 163,614, Mar. 3, 1988, abandoned. This application Nov. 21, 1988, Ser. No. 274,426

Int. Cl.[5] B65D *5/00*

U.S. Cl. 248—97 **5 Claims**



1. A dual-configuration holder for plastic trash bags of the type that are not self-supporting when they are empty, said holder having an expanded mode in which it is adapted to support a trash bag with its top open in a square configuration; to that trash may be easily inserted therein, and said holder also having a collapsed mode in which it may be stored in an essentially flat and relatively compact manner, comprising:

a set of serially connected structural panels that are permanently joined together along certain of their edges in such a way as to form an elongated tube, said tube having a length dimension that is oriented vertically when the tube is normally positioned to support a trash bag in an upright condition, and the surfaces of the panels being generally smooth and the panels being joined in such a way that the tube is switchable at will between an expanded and a collapsed mode, and the length of the tube being just slightly less than the height of an open trash bag for which the holder has been designed, and the girth of an expanded tube being approximately the same as the circumference of an open trash bag, such that the collapsed tube can be easily inserted into a bag and temporarily expanded to fully support the bag in its open condition—both when the bag is oriented vertically and when it is oriented horizontally, whereby the presence of the holder inside the trash bag protects the bag from being linearly torn when a sharp object is manually inserted into the open bag—by virtue of the fact that the sharp object will contact an interior surface of one of the structural panels instead of contacting the bag wherein the circumference of the opening in the trash bag that is to be supported is a value that can be ascertained by measurement, and wherein the girth of the connected panels of the holder in their expanded mode is within two percent of that ascertained value, whereby the expanded panels can fit within an open trash bag but only with a relatively tight fit, and whereby a trash bag will be inherently supported throughout its entire length by an

expanded holder without the need for any auxiliary clips or hooks.

5,292,094

BRACKET FOR ATTACHMENT OF I.V. STAND TO A HOSPITAL TRANSPORT DEVICE

Roger W. VanKuiken, 4377 Heartwood Rd., Okemos, Mich. 48864

Filed Sep. 2, 1992, Ser. No. 939,112

Int. Cl.[5] A47G *29/00*

U.S. Cl. 248—125 **5 Claims**



1. An apparatus for transporting a child in a hospital while the child is connected to an I.V., said apparatus comprising:

a child's wagon having a planar support surface, a plurality of wheels, at least two of said wheels being pivotal, two sides, two ends, and a pole handle at one of said ends for pulling said wagon and guiding said wagon around corners;

a bracket permanently attached to one of said sides of said wagon;

said bracket defining an opening;

an I.V. stand having a vertical stanchion for supporting an I.V. fluid container, said I.V. stand having at the lower end of said stanchion a plurality of wheels;

said I.V. stand being releasably connected to said wagon via said bracket such that said stanchion is disposed within said opening defined by said bracket; and

wherein at least one of said wheels of said I.V. stand is positioned vertically beneath said planar support section of said wagon at said one side to which said bracket is attached.

5,292,095

LEVELLING DEVICE, PARTICULARLY FOR FURNITURE

Carlo Cattaneo, Figino Serenza, Italy, assignor to Camar S.p.A., Figino Serenza, Italy

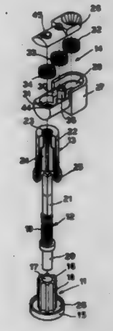
Filed Feb. 25, 1992, Ser. No. 842,036

Claims priority, application Italy, Feb. 26, 1991, MI9-1A000484

Int. Cl.[5] F16M *11/00*

U.S. Cl. 248—188.4 **6 Claims**

1. A furniture levelling device for positioning an item of furniture vertically on a support surface which comprises a foot which is height-adjustable by means of an adjustment mechanism comprising a lead-screw and nut-screw housed in a seat provided in a part of said item of furniture, said adjustment mechanism being operationally connected to a remote control gearbox which is operable from the interior of said furniture item, said lead-screw comprising an intermediate portion which is threaded and engages said nut-screw, said lead-screw having on one end a cylindrical stem which is inserted into said foot of said device and on the opposite end a shank having a



polygonal cross sectional which is adapted to engage said gearbox.

5,292,096

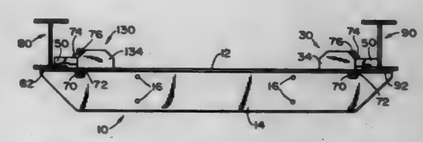
APPARATUS FOR REMOVABLY MOUNTING A GENERATOR UNIT TO A PAIR OF PARALLEL SPACED APART FLANGED BEAMS

Bert A. Bodenheimer, Stamford, Conn., assignor to B. A. Bodenheimer & Co., Stamford, Conn.

Filed May 28, 1993, Ser. No. 69,201

Int. Cl.[5] A47B *96/06*

U.S. Cl. 248—228 **20 Claims**



1. Apparatus for removably mounting a device having a pair of slots to a pair of parallel spaced apart flanged beams, comprising:

a) a pair of sliding guides, each sliding guide having a base portion and an upstanding side wall, a first cutout, and a raised tooth;

b) a pair of fixing pins extending downward from respective of said base portions of said sliding guides;

c) a pair of clamp plate means, each clamp plate means having a second cutout which is longer than wide, and at least one notch which engages said raised tooth of respective of said sliding guides, said pair of clamp plate means for engaging respective of the pair of parallel spaced apart flanged beams;

d) a pair of bolts which couple said sliding guides and said clamp plates to respective of the slots in the device, wherein

each sliding guide is positionable over a respective slot such that said fixing pin extends into the slot, each clamp plate means being positionable over a respective sliding guide such that said raised tooth abuts said at least one notch, each bolt being insertable through said first and second cutouts and a respective slot.

VOL 1160 ISS 2 MR 8 1994 UMI

5,292,097

WORK SURFACE SUPPORT

Edwin R. Russell, 414 Stirling Hwy., Cottesloe, Australia

Continuation-in-part of Ser. No. 607,448, Oct. 31, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 907,483
Claims priority, application Australia, Oct. 31, 1989, PJ7143
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—281.1 52 Claims



1. A support means for supporting a support platform from a fixed base whereby the support platform is movable between a first position at least partially below the fixed base and a second position in front of the fixed base, said support means comprising a first element adapted to be mounted to the support platform, a second element adapted to be affixed to said fixed base, a pair of linkage elements each pivotally fixed at one end to said first element at spaced intervals on said first element and each pivotally mounted at the other end to said second element at spaced locations spaced on said second element for movement of the support platform between the first and second positions and throughout such movement the attitude of said support platform remains substantially constant, said support means further comprising a locking means for locking said support platform in a range of positions including said second position, said locking means comprising a first locking member supported on one of said elements and having a first engagement face engagable with a second engagement face provided on a second locking member provided on another of said elements, said locking members being moveable relative to each other upon the exertion of a force to one of these two elements for moving said locking members to a released position at which the engagable faces are disengaged for subsequent movement of said support platform relative to said base to any of a plurality of desired positions, release of the force being effective to cause said engagement faces to re-engage to retain said second element relative to said first element in the desired positions.

5,292,098

SUPPORT WORK PROPS

Paul B. Worthington, Chorley, England, assignor to Thos. Storey (Engineers) Limited, United Kingdom

Continuation of Ser. No. 634,463, Dec. 27, 1990, abandoned, which is a continuation of Ser. No. 420,176, Oct. 12, 1989, abandoned. This application Feb. 28, 1992, Ser. No. 844,953
Int. Cl.[5] E04G *25/00*
U.S. Cl. 248—354.1 15 Claims



13. A support work prop comprising:

a plurality of solider members, each said solider member comprising first and second beams and tie plates, each of said beams having a top and bottom end, a top one of said tie plates being connected to the top ends of the first and second beams and a bottom one of said tie plates being connected to the bottom ends of the first and second beams to hold the beams parallel one to the other spaced one from the other, the first and second beams defining at least two apertures therein, the apertures of the first beam being aligned with those of the second beam;

connecting means that releasably secure said soldier members together intermediate their top and bottom ends to form a main body section, said main body section comprising at least a first subsection and a second subsection, each subsection including a plurality of soldier members releasably secured intermediate their top and bottom ends by said connecting means such that the soldier members are radially spaced around a center axis, the soldier members being parallel one to the other and to the center axis;

said connecting means being attached to each of said soldier members by way of the at least one pair of aligned apertures therein;

a head section comprising a head plate that releasably secures the top ends of said soldier members of said first subsection together; and

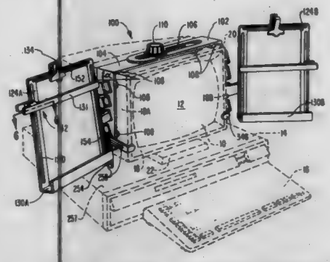
a base section comprising a base plate that releasably secures the bottom ends of said soldier members of said second subsection together, said bottom ends of said soldier members of said first subsection being releasably secured to the top ends of said soldier members of said second subsection with the center axes of the sections aligned, whereby said support work prop is dismantable into its component parts.

5,292,099

DISPLAY MOUNTED DOUMENT HOLDER

William R. Isham, American Fork, Utah, and Dale A. Crowther, Burley, Id., assignors to William R. Isham, American Fork, Utah

Filed Feb. 26, 1992, Ser. No. 841,831
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] B41J *11/00*
U.S. Cl. 248—442.2 44 Claims



1. An apparatus for holding a document adjacent to a display, said display having a substantially horizontal to surface, first and second substantially horizontal top surface, first and second substantially vertical sides, and a front display surface, comprising:

U-shaped attaching means for compressively clamping and gripping the top surface and the vertical sides of said display such that the positional relationship between said attaching means and said display remains fixed when force is applied thereto;

holding means for holding a document in an orientation to allow viewing of said document;

securing means for securing said holding means to said attaching means such that said holding means is positioned adjacent to the display in a position such that said document is viewable by a user of the display, said securing means comprising a sliding member attachable to said holding means; and

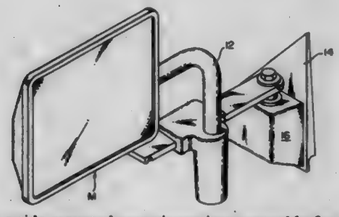
a plurality of substantially parallel slideway means integral with the attaching means for cooperatively engaging the sliding member of the securing means in such way that horizontal adjustment of the sliding member within the sliding means is enabled, thereby allowing horizontal adjustment of the holding means such that the holding mean may be moved closer to or further away from the user along one plane as desired, and allowing adjustment of the height of the holding means wherein the plurality of slideway means are positioned substantially vertically with respect to each other.

5,292,100

ADJUSTABLE SUPPORT FOR VEHICLE SIDE VIEW MIRROR

Gary L. Byers, and Timothy W. Byers, both of P.O. Box 550, Whitefish, Mont. 59937

Filed Apr. 16, 1993, Ser. No. 47,946
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—480 8 Claims



1. In a side mounted rear view mirror assembly for vehicles including a mirror and mirror support neck member wherein the mirror support neck member has a vertical mounting leg, and further including generally horizontally disposed support bar means, the improvement comprising:

a) a mirror support block means slidably mounted on said support bar means and having a first section through which said support bar means extends, and having a second section positioned rearwardly of said first section and depending downwardly, said first section having an enclosed horizontal first cavity extending completely therethrough for receiving and sliding upon said support bar means, and said second section having an elongated vertically-oriented neck support second cavity extending downwardly and terminating therein for receiving and supporting the vertical mounting leg of said mirror support neck member, said neck support cavity being aligned generally perpendicularly to said first cavity and spaced rearwardly of said first cavity whereby insertion of the vertical mounting leg of the support neck member will locate said vertical mounting leg rearwardly of said support bar means whereby said mirror will be positioned at a desired elevation; whereby an original equipment mirror and mirror support neck member might be utilized without modification and so mounted for movement as to be capable of in and out movement relative to a vehicle side mounting assembly; and

b) adjustment lock means in said block first section for releasably securing said block means to said support bar means at a desired position thereon; and second lock means in said block second section adapted to hold and secure said support neck member in said neck support cavity.

5,292,101

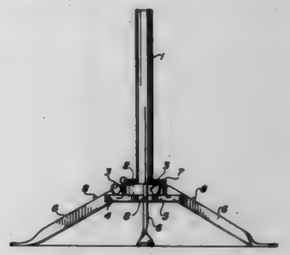
LOCKABLE LEVELING STRUCTURE

Robert M. Henson, 8170 State Highway 208, San Angelo, Tex. 76905

Filed Dec. 9, 1991, Ser. No. 804,290
Int. Cl.[5] A47G *33/00*
U.S. Cl. 248—526 17 Claims

1. A lockable leveling structure having a stand member supported by a base, said stand member having a vertical central axis; a leveling and locking means by which said stand member can be adjusted respective to said vertical axis; said leveling and locking means includes a slide collar which has an aperture which and telescopingly receives said stand member in a slidable manner; a plurality of radial slots positioned about a central axis of said base and outwardly extending therefrom;

a plurality of legs having a near end opposed to a far end, cam means on the near end of each of said legs, means pivotally receiving one of said plurality of legs within a



respective slot, said legs being foldable toward said stand from a load bearing configuration to a retracted configuration which presents a small compact package;

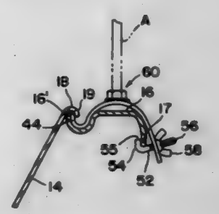
said slide collar has an outer wall surface that engages the cam means on the near end of said legs to abuttingly engage and arrest pivotal movement of the legs when pivoting upwardly, means by which said slide collar is locked into position to fix the position of said legs respective to said stand.

5,292,102

MOUNTING BRACKETS FOR BOATS

Robert J. Hoover, 106 Bluebird La., Spartanburg, S.C. 29303

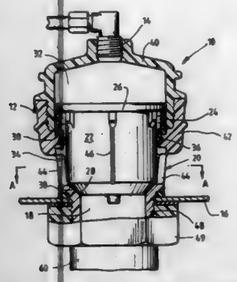
Filed Oct. 25, 1991, Ser. No. 782,541
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—539 4 Claims



1. A mounting bracket for a boat, said bracket comprising an elongated, arcuate member, said member having a first end, a second end and top and bottom surfaces, one of said ends of said member defining a lip for locking receipt about a portion of a boat onto which said bracket is to be mounted, an opposite end of said member defining an opening therethrough for receipt of a locking means, said member further having means secured thereto on a top surface thereof and intermediate the length thereof for receipt of an item to be mounted to said boat; and locking means associated with said bracket for removably locking said bracket to said boat, said locking means comprising an elongated element received through said opening, said element having a curved portion at one end of same adjacent a bottom surface of said member and being threaded along at least a portion of the length thereof, and a nut threadably received about said element.

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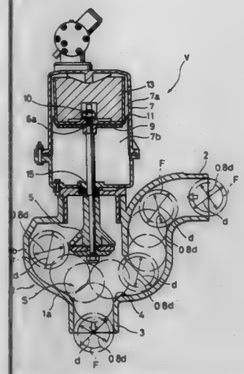
5,292,103
DRAIN VALVE
Christopher P. West, and David B. Neuwen, both of Malaga, Australia, assignors to Pollution Control Pty. Ltd., Mt. Lawley, Australia
Filed Jun. 15, 1992, Ser. No. 898,679
Claims priority, application Australia, Jun. 25, 1991, PK 6843
Int. Cl.[5] F16K *31/122*
U.S. Cl. 251—30.05 **14 Claims**



1. A valve for draining liquid from a reservoir of an evaporative cooler, the liquid in the reservoir being at atmospheric pressure, the valve comprising:
a housing adapted to be mounted within the reservoir and having a first inlet for supplying liquid under pressure to the housing, an outlet for draining liquid from the reservoir, and a second inlet for allowing liquid from the reservoir to flow into said housing and out through said outlet;
a plunger slidably received within said housing and adapted to move between an open position in which said outlet is open and liquid can drain out, and a closed position in which said plunger closes said outlet and said liquid is prevented from draining out, and wherein when liquid is supplied to the housing under pressure it can cause said plunger to move from its open to its closed position;
a biasing means provided within the housing for biasing said plunger towards its open position, wherein the pressure of the liquid supplied to the housing must overcome the force of said biasing means in order to move the plunger from its open to its closed position and wherein when the pressure of the liquid supplied to the housing is reduced sufficiently, said biasing means automatically moves the plunger to its open position to allow the reservoir to drain; and
pressure relief means, fitted in said plunger, including a passage through which a controlled quantity of said liquid under pressure can escape continuously into the reservoir to relieve the pressure of liquid acting on the plunger within the housing whereby, in use, when the supply of liquid to the housing is cut off the pressure of liquid within the housing is reduced sufficiently by said pressure relief means to allow the biasing means to automatically move the plunger to its open position.

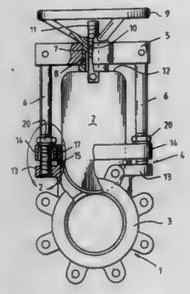
5,292,104
VACUUM INTERFACE VALVE
Akihiro Ushitora, and Yoshiharu Takahashi, both of Tokyo, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 980,924
Claims priority, application Japan, Nov. 27, 1991, 3-312264
Int. Cl.[5] F16K *31/145*
U.S. Cl. 251—61.2 **7 Claims**

1. A vacuum interface valve for use in a vacuum sewerage system, said valve comprising:
a casing having an inlet, an outlet and a valve seat;
a valve member provided in said casing and being linearly movable along a longitudinal axis of the valve member between a position engageable with said valve seat and a position away from said valve seat;
means for urging said valve member into engagement with said valve seat; and
means for lifting said valve member under the action of a vacuum to cause said valve member to disengage from said valve seat;



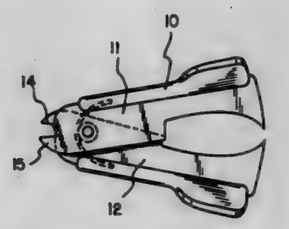
said casing having a bottom wall extending outwardly from said valve seat in a direction substantially perpendicular to the longitudinal axis of said valve member and a sidewall extending generally parallel to the longitudinal axis of the valve member from an end of said bottom wall remote from said valve seat so that said casing has a bulged configuration which inhibits foreign matters from being caught between said casing and said valve member.

5,292,105
KNIFEGATE VALVE
Goran Velimirovic, Nowra, Australia, assignor to Keystone International Holdings Corp., Houston, Tex.
PCT No. PCT/US91/04032, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO91/19122, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 7, 1991, Ser. No. 30,144
Int. Cl.[5] F16K *3/02*
U.S. Cl. 251—214 **6 Claims**



1. A knifegate valve, comprising:
a valve body,
a knifegate valve element,
a gland box connected to said valve body,
packing disposed in said gland box for sealing against said valve element,
actuating means for effecting reciprocal movement of said valve element into and out of said valve body through said gland box,
support means for supporting said actuating means in spaced relationship to said gland box and said valve body, and
securing means carried on said support means for retaining said packing in a compressed state in response to movement of said securing means along said support means.

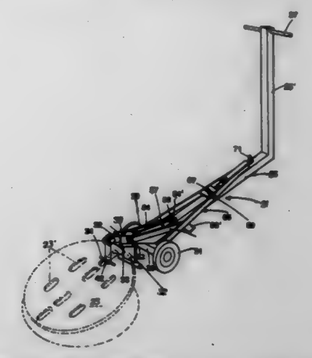
5,292,106
STAPLE REMOVER
Tianhou Li, UNO Box 486, New Orleans, La. 70148
Filed Mar. 29, 1993, Ser. No. 38,876
Int. Cl.[5] B25C *11/00*
U.S. Cl. 254—28 **4 Claims**



1. A new staple remover comprising:
a pair of pivotally-connected, spring-loaded arms;
staple-engaging and removing members present at one end of said arms;
and,
clamping members present at the opposite end of said arms, wherein said clamping members comprise a pair of serrated plates adapted to engage one with the other, and further wherein each of said arms is formed of a pair of connected, parallel vertical side walls; one end of each of said serrated plates fastened to one of said pair of side walls and having an aperture in the other end of said serrated plates; and a projection secured to the other of said pair of side walls, said projection extending therefrom and operable to enter within and mate with said aperture in said serrated plates to secure said serrated plates between said side walls.

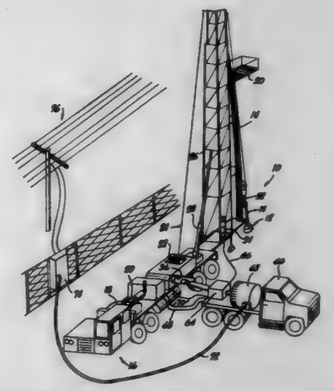
5,292,107
SEWER COVER LIFTING TOOL
Gerald T. Chick, 389 State Rd., Eliot, Me. 03903
Filed Dec. 11, 1992, Ser. No. 952,997
Int. Cl.[5] B66F *11/00*
U.S. Cl. 254—131 **9 Claims**

1. A sewer cover lifting tool comprising an elongated lifting arm, a cross-body connected to the forward end of the lifting arm and having supporting wheels journalled thereon; a depending fulcrum extending from the lifting arm for engagement with the ground to be effective for the initial lifting action close to the cover, a fitting attachment adapted with a sewer cover forward end of the lifting arm forwardly of the ground-engaging fulcrum and adapted for detachable engagement with edges of a sewer cover, said fitting attachment being so constructed as to have lifting engagement at one point on the sewer cover and dependent for further lifting engagement with the lifting arm at another point on the cover whereby the



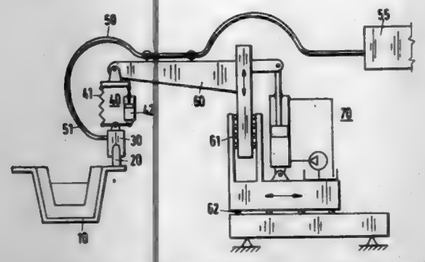
sewer cover will be bodily lifted from two points out of its opening when the lifting arm is lowered.

5,292,108
AUXILIARY VEHICLE FOR ELECTRICALLY POWERING A WELL PIPE EXTRACTOR
Sydney V. Sutton, Norco, Calif., assignor to California Production Service, Inc., Bakersfield, Calif.
Filed Nov. 8, 1991, Ser. No. 790,248
Int. Cl.[5] B66D *3/00*; E21B *19/00*; B66F *11/02*
U.S. Cl. 254—323 **13 Claims**



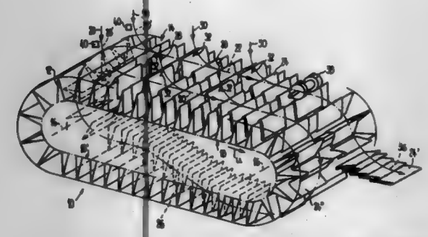
1. An electrically powered well pipe extractor comprising:
a well servicing rig including:
a rotatable winch drum;
a cable wrapped around the winch drum for extracting well pipe;
a combustion engine for rotating the winch drum;
means for mechanically engaging and disengaging the combustion engine and the winch;
an auxiliary vehicle having an electric motor including an output shaft; means for transferring power from the output shaft to the winch drum; and means for connecting the electric motor to a source of electric power.

5,292,109
DEVICE FOR COUPLING THE CURRENT FEED TO A METALLURGICAL VESSEL
Hans J. Bebber, Mülheim; Bernhard Espendiller, Dülmen; Klaus Giertz, Bochum, and Ulrich Katschinski, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Mar. 13, 1992, Ser. No. 851,014
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108583
Int. Cl.[5] H05B *7/02*
U.S. Cl. 266—242 **15 Claims**



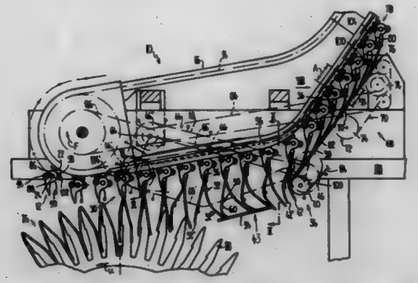
1. A device for coupling a flexible current feed (50) to a bottom electrode of a metallurgical vessel (10) having a first electrical coupling (20), comprising:
a second electrical coupling (30) for operatively engaging the first coupling (20), being connected to the flexible current feed (50);
a carrier element (60); and
a compensating element (40) between said carrier element (60) and said second electrical coupling (30), said compensating element (40) balancing a force of the flexible current feed (50) on the first electrical coupling said compensating element (40) comprising a hydraulic cylinder (43) which is displaceable by a fluid.

5,292,110
SIGNATURE TRANSPORT WITH SELECTIVE PARALLEL OR SERIES PATHS
Werner Honegger, Tann Rüti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Apr. 21, 1992, Ser. No. 871,825
Claims priority, application Switzerland, Apr. 26, 1991, 01267/91-4
Int. Cl.[5] B65H *5/30, 39/02*
U.S. Cl. 270—55 **27 Claims**



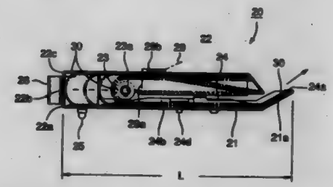
1. A method of processing printed products, such as newspapers, magazines and the like, comprising the steps of:
providing a first processing path;
driving a plurality of printed product receiving supports along said first processing path;
arranging a first infeed supply along said first processing path;
depositing printed products upon said printed product receiving supports with said first infeed supply;
selectively collecting or assembling printed products along the first processing path and respectively producing an end product or an intermediate product;
subsequently transporting away the printed products;
providing a second processing path;
driving a plurality of printed product receiving supports along said second processing path;
arranging a second infeed supply along said second processing path;
depositing printed products upon said printed product receiving supports with said second infeed supply;
selectively connecting in parallel or in series the second processing path to the first processing path;
simultaneously selectively collecting or assembling further printed products along the second processing path; and
subsequently transporting away the further printed products.
4. An apparatus for processing printed products, such as newspapers, magazines and the like, comprising:
a first processing path;
said first processing path being substantially linear at least by sectors;
an endless revolving conveying apparatus passing through said first processing path and defining a predetermined direction of revolving motion;
said endless revolving conveying apparatus comprising saddle-shaped supports extending transversely with respect to said predetermined direction of revolving motion: the printed products also including folded printed products;
said saddle-shaped supports serving to take up the folded printed products in a straddling configuration;
several infeed stations successively arranged along said first processing path for depositing in a straddling fashion said folded printed products upon said saddle-shaped supports or, as the case may be, upon previously deposited folded printed products;
an outfeed station arranged downstream of said infeed stations as viewed in said predetermined direction of revolving motion;
said outfeed station serving to transport away the folded printed products deposited one on top of the other;
a second processing path;
further infeed stations successively arranged along said second processing path;
a further outfeed station arranged downstream of said further infeed stations as viewed in said predetermined direction of revolving motion;
said endless revolving conveying apparatus passing through said second processing path;
means for selectively connecting said first processing path and said second processing path in parallel or in series; and
said outfeed station associated with said first processing path being disengageable when said processing paths are connected in series.

5,292,111
METHOD AND APPARATUS FOR OPENING FOLDED PRINTED PRODUCTS HAVING DISTINCT SHEET OPENING AND HOLD-OPEN MEANS
Egon Hansch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland
Filed Jun. 8, 1992, Ser. No. 895,334
Claims priority, application Switzerland, Jun. 10, 1991, 01724/91
Int. Cl.[5] B65H *39/02, 29/04*
U.S. Cl. 270—54 **23 Claims**
1. A method for opening folded printed products and depositing them on a saddle-type rest the method comprising the steps of:
holding the printed products at their fold by means of individually controllable grippers of a conveying device;
moving the controllable grippers in a conveying direction to an opening device;
opening the folded printed products at the opening device;
conveying the opened printed product from the opening device to a transfer region, the transfer region being spaced apart from the opening device;



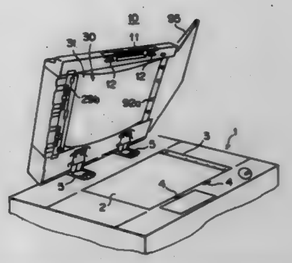
holding the printed products open with holding-open means separate from the opening device as they are conveyed from the opening device to the transfer region; and
depositing each of the open printed products astride a saddle-type rest in the transfer region by opening the grippers.

5,292,112
IMAGE FORMING APPARATUS
Kazuhiro Hirota, and Kohji Yoshie, both of Tokyo, Japan, assignors to Konica Corporation, Japan
Filed Nov. 12, 1992, Ser. No. 974,476
Claims priority, application Japan, Nov. 28, 1991, 3-314818; May 27, 1992, 4-135205
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—3.1 **8 Claims**



1. A sheet feed cassette for loading a recording sheet for an image forming apparatus, said sheet feed cassette being detachably provided in said image forming apparatus and comprising;
a supporting base forming a lower half of said cassette;
a casing member detachably mounted on said supporting base to form an upper half portion of said cassette, wherein the recording sheet can be loaded in a form of a U between said supporting base and said casing member, and one side of said cassette is cut out to form an opening through which said recording sheet is delivered to said image forming apparatus, one end of said casing member being connected with one end of said supporting base whereby said casing member can open or close the top of said supporting base, said one end of said casing member being connected to said one end of said supporting base by an upper hinge and lower hinge provided on the connecting portion; and
a sheet delivery guide member disposed between the supporting base and the casing member and arranged substantially in parallel with a side of said cassette on which the opening is provided, wherein the U-shaped recording sheet is folded around said sheet delivery guide member.

5,292,113
AUTOMATIC DOCUMENT FEEDER
Yuusuke Morigami; Hirokazu Matsuo; Hirofumi Tasakashi, all of Toyohashi; Yoshihito Hirano, Toyokawa; Hiroyasu Nagato, Toyokawa, and Takuma Ishikawa, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 28, 1992, Ser. No. 951,841
Claims priority, application Japan, Sep. 30, 1991, 3-252421; Sep. 30, 1991, 3-252422; Sep. 30, 1991, 3-252423; Sep. 30, 1991, 3-252424; Sep. 30, 1991, 3-252425
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—7 **12 Claims**

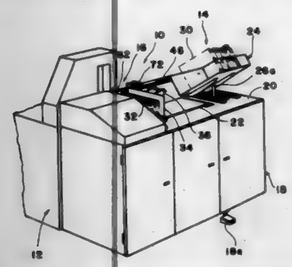


11. An automatic document feeder for feeding a document into a platen glass of an image forming apparatus and discharging the document therefrom, the automatic document feeder comprising:
a main frame;
a subframe rotatably provided on said main frame;
a first roller provided on said main frame;
a second roller provided on said subframe in parallel to the first roller;
a conveyer belt laid between the first roller and the second roller; and
a stopper which holds the subframe on the main frame at a predetermined relation in which the distance between the first roller and the second roller becomes a predetermined distance.

5,292,114
AUTOMATIC FEEDER MODULE FOR A MAIL SORTING SYSTEM
William P. McConnell, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 27, 1991, Ser. No. 766,731
Int. Cl.[5] B65H *3/04, 9/00, 3/62*
U.S. Cl. 271—34 **10 Claims**
1. An automatic feeder module for a mail sorting system comprising:
a cabinet having first and second ends and an upper planar surface;
a conveyor belt having an upper run travelling along the upper surface of the cabinet;
a drive plate linearly driven along the conveyor belt at the same speed as the conveyor belt and having a forward side and a rearward side;
means for driving the conveyor belt and the drive plate at the same speed;
a singulator assembly including pick-off means against which a stack of mail is pressed by the drive plate and the conveyor belt, and a stack pressure switch for turning the driving means on and off to maintain a predetermined stack pressure against the pick-off means; and
a mail tray pivotally mounted at the first end of the cabinet

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on the upper surface thereof, and means for tilting and vibrating the mail tray when loaded with mail pieces, for



edge-referencing the mail pieces on at least two edges of each mail piece.

5,292,115

PAPER FEEDING DEVICE AND PAPER CURLING CORRECTING DEVICE

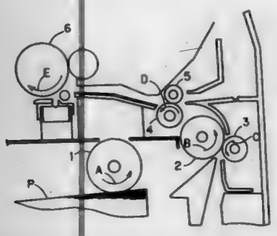
Makoto Egi; Masao Otsuka, both of Osaka; Morishita, Nara; Masanobu Maeshima, Habikino; Junya Sasabe, Kobe; Kazushiro Taguchi, Hirakata; Hiroshi Kubota, Osaka; Kenji Oda, Toyonaka, and Masami Fuchi, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 11, 1992, Ser. No. 943,471

Claims priority, application Japan, Sep. 17, 1991, 3-267291; Sep. 17, 1991, 3-267294

Int. Cl.[5] B65H *3/46*

U.S. Cl. 271—122 **2 Claims**



1. A paper feeding device wherein a pair of paper separation rollers comprising a forward roller which is rotated and driven in the direction in which paper sheets are fed and a reverse roller which is rotated and driven in the direction in which paper sheets are returned is provided upstream of a registration roller,

said reverse roller is provided with a first torque limiter for releasing transmission of power from a driving source to said reverse roller when load torque exerted on said reverse roller is not less than a first regulated torque, and

said forward roller is provided with a second torque limiter for releasing transmission of power from the driving source to said forward roller when the load torque exerted on said forward roller is not less than a second regulated torque higher than the first regulated torque.

5,292,116

SHEET FEEDING APPARATUS

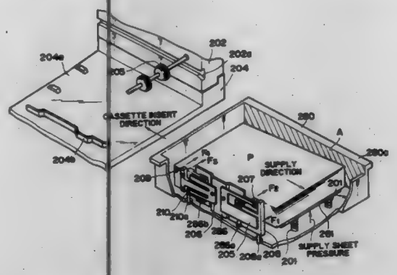
Ryukichi Inoue; Yutaka Kikuchi, both of Kawasaki; Yasuyoshi Hayakawa, Yokohama; Naoki Asano, Kawasaki, and Kazuhiro Nomoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,549

Claims priority, application Japan, Apr. 22, 1991, 3-90752

Int. Cl.[5] B65H *1/26*

U.S. Cl. 271—157 **27 Claims**



1. A sheet feeding apparatus comprising:

sheet supporting means removably insertable into said sheet feeding apparatus for supporting sheets;

regulating means provided on said sheet supporting means to regulate and position lateral edges of the sheets supported in said sheet supporting means;

urging means for urging at a predetermined urging force the sheets stacked in said sheet supporting means against said regulating means; and

urging force adjusting means for adjusting said urging means so that a magnitude of the urging force is increased during insertion of said sheet supporting means into said sheet feeding apparatus.

5,292,117

IMAGE FORMING APPARATUS HAVING SHEET CASSETTE HAVING LATERAL GUIDES

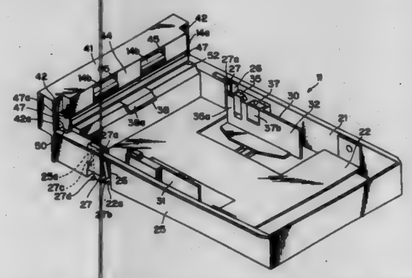
Kazuhiko Takagi, and Eiji Yokota, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 27, 1992, Ser. No. 936,619

Claims priority, application Japan, Sep. 13, 1991, 3-234771

Int. Cl.[5] B65H *9/00*

U.S. Cl. 271—234 **9 Claims**



1. A sheet feed cassette used in an image forming apparatus for storing a stack of a plurality of sheets and for delivering each one of the sheets to a desired position in a sheet feeding direction, the cassette comprising:

a sheet guide unit having a guide surface for guiding movement of the sheet in the sheet feeding direction, lateral side edges of the sheet being abuttable on the guide surface, the sheet guide unit having an upper end;

a sub-guide unit vertically movably provided at the sheet guide unit so as to be protrudable to a position above the upper end of the sheet guide unit, the sub-guide unit having an auxiliary guide surface flush with the guide surface of the sheet guide unit for guiding movement, in the sheet feeding direction, of an upper portion of the sheet stack when the sub-guide unit protrudes upwardly from the sheet guide unit, the upper portion of the sheet stack being positioned above the upper end of the sheet guide unit.

5,292,118

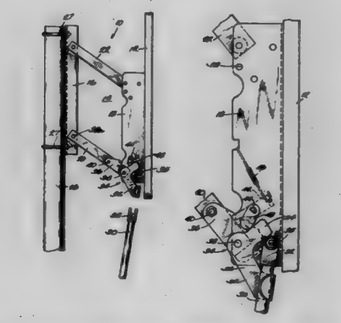
BASKETBALL BACKBOARD ELEVATOR SYSTEM

David A. Allen, Pewaukee; Joseph K. Bohrman, Eagle; James N. Fitzsimmons, and Michael A. Niver, both of Waukesha, all of Wis., assignors to Huffy Corporation, Waukesha, Wis.

Filed Jan. 31, 1992, Ser. No. 830,125

Int. Cl.[5] A63B *63/08*

U.S. Cl. 273—1.5 R **10 Claims**



1. An elevator system for a basketball backboard comprising, in combination,

a parallelogram frame and a backboard connected to said frame,

said parallelogram frame including,

first and second vertical, relatively parallel surfaces,

upper and lower arms disposed in parallel relation one above the other and extending between said first and second surfaces, and

means for pivotally connecting said arms to both of said vertical surfaces so that said first vertical surface is supported on said arms for vertical movement relative to said second vertical surface while maintaining said parallel relation between said first and second surfaces,

a ratchet and pawl arrangement connected between one of said arms and one of said vertical surfaces so that said first vertical surface is freely movable upward relative to said second vertical surface in response to a vertical lifting force applied to said first vertical surface and is held in a selected vertical position when the vertical lifting force applied to said first vertical surface is removed,

said ratchet including a plurality of ratchet teeth connected to and movable with said one arm relative to said first vertical surface,

said pawl being pivotally connected to said first vertical surface and disposed for engagement with said ratchet teeth to hold said first vertical surface in a selected vertical position when said vertical lifting force is removed,

means biasing said pawl toward selective engagement with said ratchet teeth depending upon the vertical position of said first vertical surface relative to said second vertical surface,

a bell crank lever pivotally connected to said first vertical surface and operatively associated with said ratchet and pawl arrangement,

means for connecting said bell crank lever to said pawl, pivotal movement of said bell crank operative to move said pawl out of engagement with said ratchet teeth, and

vertical manipulating means simultaneously engageable with said first vertical surface and with said bell crank for pivoting said bell crank lever and said pawl against said bias to positively disengage said pawl from said ratchet to permit lowering of said first vertical surface and also for applying said vertical lifting force to raise said first vertical surface without engaging said bell crank to positively disengage said pawl from said ratchet.

5,292,119

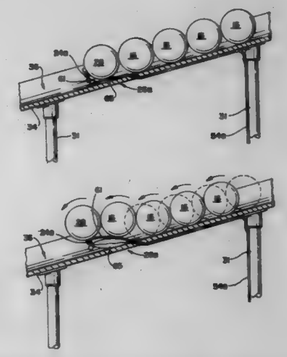
PNEUMATICALLY OPERATED BALL RELEASE BALL DELIVERY APPARATUS

Charles E. Norcross, 1448 Mediterranean Rd., Lake Clarke Shores, Fla. 33406

Continuation-in-part of Ser. No. 877,901, May 1, 1992, abandoned. This application Mar. 24, 1993, Ser. No. 36,311

Int. Cl.[5] A63B *69/40*

U.S. Cl. 273—26 D **12 Claims**



1. A ball delivering device for batting and racket swinging practice of a user, said device comprising:

structure for storing a plurality of balls, said structure defining a downwardly inclined passage for gravitational transfer of balls along said passage to a user;

means for elevating said structure;

stop means in said passage for restraining movement of balls long said passage;

ball release means connected to said structure and in said passage for selectively lifting a first one of said plurality of balls over said top means for subsequent travel along said passage for delivery to a user, said release means comprising an air bladder mounted beneath a flexible pad, said air bladder and said flexible pad being positioned beneath the first ball positioned adjacent to said stop means, such that when said air bladder is inflated, a ball in said first position will be urged over said stop and down said structure passage; and

means for providing a sufficient amount of air to said air bladder for intermittent inflation thereof.

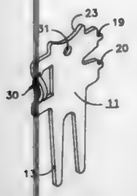
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,120

GOLF TOOL

Richard J. Pehoski, 133 Maplewood Dr., Bolingbrook, Ill. 60440, and Joseph A. Pesetti, 2910 N. Maple, Franklin Park, Ill. 60131

Filed Nov. 16, 1992, Ser. No. 976,482
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—32 B **1 Claim**



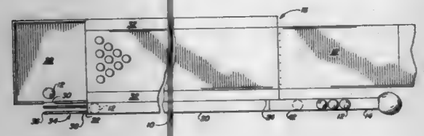
1. A unitary tool for golf equipment comprising in combination, an elongated flat body section, a pair of tapered legs extending downwardly from said body section, said legs providing a means of disturbing and removing sod to enable repair of a divot a pair of spaced shoulders extending outwardly from one side of said body section in a direction substantially perpendicularly to said legs, protrusions on the ends of said shoulders formed to accommodate holes in the base of golf cleats, a pair of spaced arms extending outwardly from the opposite side of said body section, a pair of rails extending between said spaced arms, said rails being curved in relatively opposite directions to form an oval ring thereby, each rail forming substantially one half of said oval ring, an opening in said arm adjacent said ring, said ring having internal dimensions to accommodate golf shoe cleats for permitting the inserting of said ring around a cleat to enable cleaning of said cleat.

5,292,121

PNEUMATIC BOWLING BALL RETURN METHOD AND APPARATUS

Will Heddon, Lake Wales, Fla., assignor to Heddon Bowling Corporation, Dundee, Fla.

Filed Sep. 3, 1992, Ser. No. 940,238
Int. Cl.[5] A63D *5/02*
U.S. Cl. 473—111 **21 Claims**



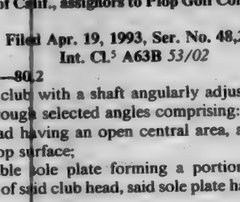
1. An apparatus for returning bowling balls from a pit end of a bowling alley to an approach end of the bowling alley, the apparatus comprising:
an elongated tube having a bore extending therethrough;
the tube having an entrance end and an exit end;
the bore being shaped for closely receiving bowling balls at the entrance end and sequentially passing the bowling balls therethrough to the exit end;
a track having a first end and a second end, the track having a set of parallel rails, the rails positioned so as to sequentially receive and pass the bowling balls, the track first end positioned for sequentially receiving the bowling balls at a trough located adjacent to and in alignment with a pit end of an alley, the track second end positioned below the first end and immediately adjacent to the entrance end of the tube;
means for delivering the bowling balls to a position immediately adjacent to and in alignment with the entrance end of the tube; and
means for sequentially sucking the bowling balls into the entrance end of the tube and for accelerating the bowling balls out the exit end.

5,292,122

WEIGHTED CAVITY BACK GOLF CLUB SET

Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Continuation of Ser. No. 749,553, Aug. 23, 1991, Pat. No. 5,193,805. This application Jan. 15, 1993, Ser. No. 4,960
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A **6 Claims**



1. An iron-type golf club head comprising:
a front face for impacting a golf ball;
a heel portion, a toe portion, a sole and a top rail;
said heel and toe portions being spaced apart and being located at opposite ends of said club head, said front face extending between said heel and toe portions along a frontal portion of said club head, said top rail extending between said heel and toe portions along an upper portion of said club head, and said sole extending between said heel and toe portions along a lower portion of said club head;
said toe portion and said top rail meeting at a junction located at an upper toe corner of said club head;
an undulating back surface formed on a back portion of said club head, said undulating back surface circumscribing a cavity formed in said back portion of said club head; and
said undulating back surface including a heel backsurface located in said heel portion of said club head, a toe backsurface located in said toe portion of said club head, a sole backsurface located adjacent said sole of said club head, a top rail backsurface located adjacent said top rail of said club head, and a first generally convex undulation straddling said junction of said toe portion and said top rail while protruding rearwardly away from said top rail backsurface, said first generally convex undulation having a portion thereof located on a top rail side of said junction and another person thereof located on a toe portion side of said junction.

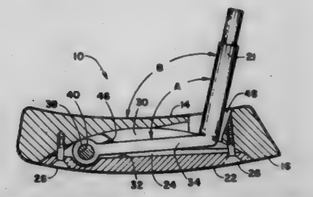
5,292,123

GOLF CLUB WITH LOCKABLE HEAD TO SHAFT RELATIVE ANGLE ADJUSTMENT

Jacob H. Schmidt, Jr., Cardiff, and Richard H. Hannon, Oceanside, both of Calif., assignors to Plop Golf Company, Carlsbad, Calif.

Filed Apr. 19, 1993, Ser. No. 48,295
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.2 **12 Claims**

1. A golf club with a shaft angularly adjustable relative to the head through selected angles comprising:
a club head having an open central area, a bottom surface and a top surface;
a removable sole plate forming a portion of the bottom surface of said club head, said sole plate having upstanding spaced apart walls extending within said club head open area;
an opening through the top surface of said head extending into said open area;
a club shaft, said club shaft having an extension arm angularly attached to a distal end, said distal end of said shaft and said extension arm extending through said opening, said extension arm having a distal end pivotably attached between said upstanding walls;



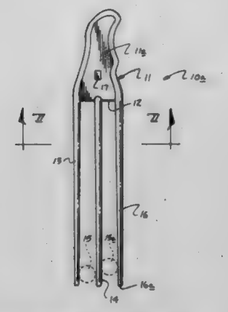
locking means at said distal end of said extension arm for preventing relative rotation between said upstanding walls and said extension arm when said sole plate is in place forming the bottom surface of said club thereby maintaining a selected relative angle between said surface of said club head and said shaft; and
means for securing said sole plate in place on the bottom surface of said club head.

5,292,124

WAND GAME APPARATUS

Steven A. Carpenter, 3236 Debbie Dr., Hendersonville, N.C. 28739

Filed Feb. 16, 1993, Ser. No. 18,148
Int. Cl.[5] A63B *67/14*
U.S. Cl. 273—109 **4 Claims**



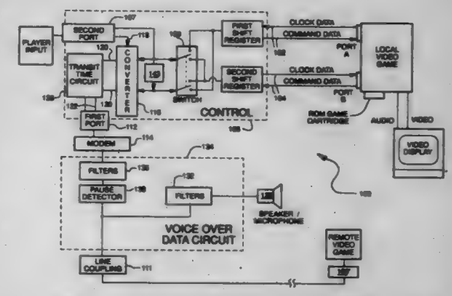
1. A wand game apparatus, comprising,
a wand member, the wand member including an elongate handle plate having a top surface spaced from and coextensive with a bottom surface, and
the handle plate including a forward end, and
a first and second elongate rail member fixedly and orthogonally mounted to the forward end, wherein the first and second elongate rail members are arranged in a coextensive relationship relative to one another diverging relative to one another, wherein a first spacing is oriented between the first rail member and the second rail member at the forward end, and a second spacing greater than said first spacing is oriented between the first rail member and the second rail member at a first rail member forward distal end and a second rail member forward distal end spaced from the handle forward end, and
a game sphere having a sphere diameter greater than said first spacing and less than said second spacing arranged for rotative mounting upon the first rail member and the second rail member, and
a third elongate rail member orthogonally and fixedly mounted to the handle forward end, and wherein the third elongate rail member is spaced from the second elongate rail member said first spacing at the handle forward end, and the third rail member including a third rail member forward distal end, and the third rail member forward distal end is spaced from the second rail member forward distal end said second spacing, and wherein the first rail member, the second rail member, and the third rail member are arranged in a substantially coplanar relationship.

5,292,125

APPARATUS AND METHOD FOR ELECTRICALLY CONNECTING REMOTELY LOCATED VIDEO GAMES

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098, and Jeffrey Tenenbaum, 6162 Wynford, West Bloomfield, Mich. 48322

Filed May 31, 1991, Ser. No. 708,682
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—148 B **45 Claims**



1. A video game communication assembly (**100**) for communicating command signals between a local video game (**28**) having at least two player ports (A, B), at least one set of player controls (**20**), and at least two operating modes, and at least one remote video game (**30**) through a medium (**110**) capable of transmitting a plurality of data signals and voice signals, said assembly (**100**) comprising:
control means (**106**) for controlling command signals received from a set of player controls (**20**) of the local video game (**28**) and for creating communication signals;
modem means (**114**) for bilaterally transmitting said communication signals between said control means (**106**) and at least one remote video game (**30**);
first port means (**112**) for bilaterally transmitting said communication signals between said control means (**106**) and said modem means (**114**), said assembly (**100**) characterized by
said control means (**106**) including transit time means (**126**) for determining the amount of time required for said communication signals to travel between said first port means (**112**) and the remote video game (**30**).

5,292,126

GAME EMPLOYING ROTATING DISKS

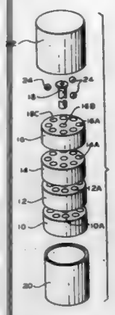
James Hanley, 28 Farmingdale, Parsippany, N.J. 07054

Filed Dec. 16, 1992, Ser. No. 991,399
Int. Cl.[5] A63F *9/06*; A63B *67/14*
U.S. Cl. 273—153 S **11 Claims**

1. A game comprising:
at least one playing piece;
a plurality of stacked disks each pierced by an angularly spaced plurality of peripheral apertures, at least one of

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said apertures in each of the disks being sized to allow passage of said playing piece, an entrapping one of said apertures in each of said disks being shaped to prevent passage of said playing piece, said entrapping one of said apertures in each of said disks passing through said disks to open on axially opposite sides thereof, said disks being



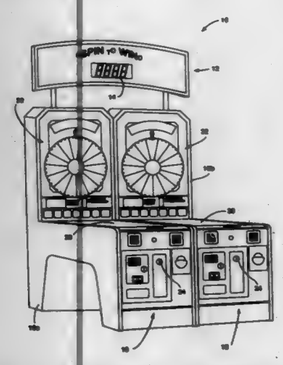
interconnected to rotate relatively and coaxially, each of said disks having its apertures alignable with those of adjacent ones of said disks; and

a pair of cups separately mounted on opposite, outermost ones of said stacked disks to turn therewith and to contain said playing piece.

5,292,127
ARCADE GAME

Bryan M. Kelly, Dublin; Norman B. Petermeier, Saratoga; Matthew F. Kelly, Dublin, all of Calif., and J. Richard Oltmann, Scottsdale, Ariz., assignors to Lazer-Tron Corporation, Pleasanton, Calif.

Filed Oct. 2, 1992, Ser. No. 956,057
Int. Cl.[5] A63F *7/00*
U.S. Cl. 273—138 R **5 Claims**



1. A multi-station game apparatus comprising:

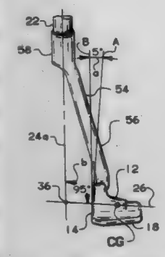
a plurality of individual game units, where each game unit is capable of dispensing awards based upon a skilled operation performed by a player of said game unit, wherein said individual game units include a playing surface, a first end and a second end, target means proximate said second end, and a playing piece capable of being directed towards said target means; and

a progressive bonus apparatus coupled to said plurality of game units and operative to accumulate a progressive score based upon contributions from said plurality of game units and further operative to provide a bonus award based upon said progressive score to a player of an individual unit when said player accomplishes a predetermined task.

5,292,128
PUTTER

Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 959,494, Oct. 9, 1992, Pat. No. 5,226,654. This application Apr. 27, 1993, Ser. No. 53,629
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] A63B *53/02, 53/04*
U.S. Cl. 273—169.1 **4 Claims**



1. A face-balanced golf club for putting comprising:

a) a putter head having a face, a toe and a heel and having a center of gravity which is located within said putter head and lies on a first imaginary line that extends normally relative to the face of said putter head;

b) an elongated shaft having a longitudinal axis and a lower end;

c) a hosel having a leg portion with a lower end and an upper end, said leg portion slanting upwardly and forwardly from its lower end which is attached to said putter head proximate the heel of said putter head to its upper end which is disposed above said putter head and which is forwardly offset relative to the face of said putter head, a boss on the upper end of said leg portion to which the lower end of said shaft is attached, said hosel being configured so that an extension of the longitudinal axis of said shaft intersects said first imaginary line at an intersection point which is forwardly disposed relative to both the center of gravity and the face of said putter head; and

d) first and second mass concentrations located adjacent the toe and heel, respectively, of said putter head, each of said first and second mass concentrations being arranged such that the length of a second imaginary line extending from said first mass concentration to said intersection point is equal to the length of a third imaginary line extending from said second mass concentration to said intersection point, said first and second mass concentrations being disposed on opposite sides of the center of gravity of the putter head and being generally aligned with each other in a heel-to-toe direction.

5,292,129
REINFORCED METAL GOLF CLUB HEAD

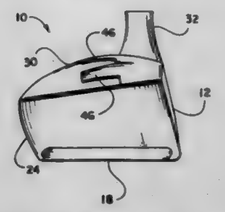
D. Clayton Long, and R. Mark Allen, both of Albany, Ga., assignors to MacGregor Golf Company, Albany, Ga.

Continuation of Ser. No. 824,359, Jan. 23, 1992, Pat. No. 5,213,328. This application Mar. 8, 1993, Ser. No. 27,874
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **26 Claims**

9. A golf club head comprising an enclosed metal body in the shape of a head for a golf driver, the metal body having:

a. a front striking face of predetermined height and width,
b. a sole of predetermined length and width,
c. a back side,
d. a toe,
e. a heel,
f. a top side of predetermined length and width, and
g. a hosel positioned adjacent the heel,

wherein the metal body has an integral cavity formed by internal surface of the striking face, the sole, the back side, the toe,

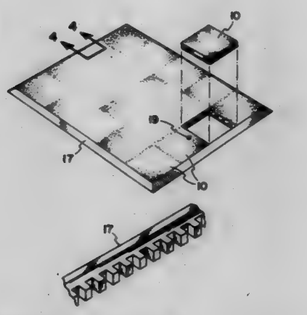


the heel, and the top side and wherein at least one rib extends along and between the internal source of the striking face and the internal surface of the top side to reinforce both the striking face and the top side and wherein the rib comprises a first element of substantially uniform cross-sectional area extending along more than half of the height of the internal surface of the striking face and a second member interconnecting the top side and the striking face and extending for less than half of the length of the top side and extending for less than half of the height of the striking face.

5,292,130
GOLF DRIVING MAT

Michael Hooper, 624D Beaver Dam Road N.E., Calgary, Alberta, Canada T2K 4W6

Filed Mar. 16, 1992, Ser. No. 851,969
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 A **4 Claims**



1. A golf driving mat, comprising:

a) an outer frame having a continuous outer perimeter;

b) a panel assembly disposed within said frame;

c) said panel assembly including a plurality of panels releasably joined with adjacent panels;

d) each said panel including a base having a plurality of engagement means on each of the edges thereof for interlocking engagement with adjacent panels;

e) said engagement means on said panels extending vertically in relation to said base for thereby permitting vertical separation of one panel from another;

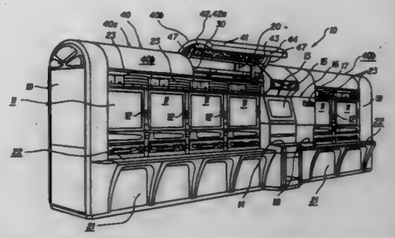
f) said frame including a plurality of engagement means on the internal perimeter thereof for interlocking engagement with the engagement means of said panels; and

g) bristles anchored within said base in an upstanding relationship thereto for thereby forming a simulated grass turf thereon.

5,292,131
CURTAIN PANEL ASSEMBLY FOR GAME MACHINE ISLAND

Takatoshi Takemoto; Toshikazu Chida, both of Tokyo, and Yoshihide Kurihara, Hanamaki, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 17,902
Claims priority, application Japan, Feb. 24, 1992, 4-36389
Int. Cl.[5] A63F *7/02, 7/36*
U.S. Cl. 273—148 R **5 Claims**



1. A curtain panel assembly for concealing the interior of a game machine island including a support frame on which a plurality of game machines are mounted in array, and a distribution gutter situated in and along an upper part of the support frame and extending over the game machines, said curtain panel assembly comprising:

(a) a curtain panel adapted to be openably mounted on the upper part of the support frame at an outside thereof;

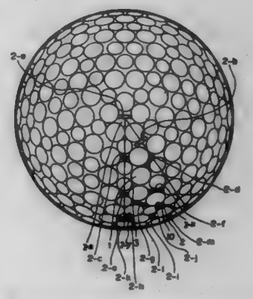
(b) said curtain panel having an upper edge adapted to be pivotally connected to an upper edge of the support frame; and

(c) said curtain panel having on its inside wall surface a mirror on which the image of the interior of the island including the distribution gutter is reflected so as to be observed from outside when said curtain panel is angularly moved about the upper panel edge to open as a lower edge of said curtain panel is pulled upwardly.

5,292,132
GOLF BALL

Kengo Oka, Kobe, Japan, assignor to Sumitomo Rubber Industries, Inc., Kobe, Japan

Filed May 22, 1992, Ser. No. 886,932
Claims priority, application Japan, May 24, 1991, 3-120124
Int. Cl.[5] A61B *37/14*
U.S. Cl. 273—232 **12 Claims**



1. A golf ball having dimples and lands and having a great

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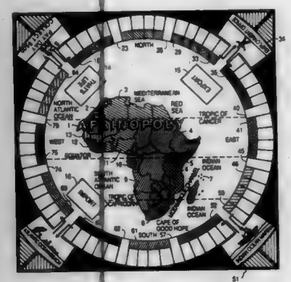
circle around an equator thereof, the golf ball, comprising less than 40 lands containing a rectangle having a short side greater than 0.4 mm and an area greater than 0.8 mm^2 and not including any parts of the dimple and failing to intersect the great circle, the dimples also failing to intersect the great circle around the equator.

5,292,133

GEOGRAPHIC CULTURAL AND ECONOMIC BOARD GAME

Eugene D. Alexander, 6323 Georgia Ave. NW., Brighton Station, Washington, D.C. 20011

Filed Feb. 21, 1992, Ser. No. 842,521
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—256 **10 Claims**



1. An economic, geographic, and cultural awareness board game apparatus, comprising;

a board having a playing surface which is a color-keyed map of a continent, a continuous circular playing path divided into a plurality of adjacent nation spaces, within distringuishable color blocks, and within four directionally significant quadrants with interposed satellite corner blocks, utilizing the acquisition of nations, and the exporting of resources;

a plurality of nation cards, each indicating required duty-fee and providing a brief description of the characteristics of a nation;

a plurality of import and export cards, said cards each indicating monetary loss or gain due to an import or an export transaction; and

culturally significant tokens for moving on said playing path;

wherein said plurality of nation cards, color-keyed to said nation spaces, utilize printed duty-fees to generate revenue, each nation card providing said brief description of the characteristics of the nation on the reverse side thereof, said brief description including capitol city, total area, major export, location within the continent, and national flag.

5,292,134

BALL CATCHING AND LAUNCHING TOY

David Schlundt, Hermosa Beach; Gregory Cannone, Redondo Beach, and John N. Handy, Long Beach, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Aug. 17, 1992, Ser. No. 930,947
Int. Cl.[5] A63B 65/12
U.S. Cl. 273—324 **10 Claims**

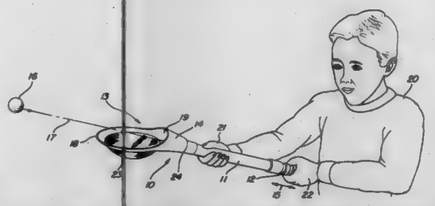
1. A ball catching and launching toy for use in combination with a compressible ball comprising:

a cylinder body defining a cylinder bore therein;

a piston and piston rod movable within said cylinder bore;

a catching receptacle having a concave portion and a tapered portion coupled to said cylinder; and

a ball receptacle defining a ball cavity supported between said tapered portion and said cylinder and having means for captivating said ball at least partially within said ball receptacle when said ball is drawn therein;



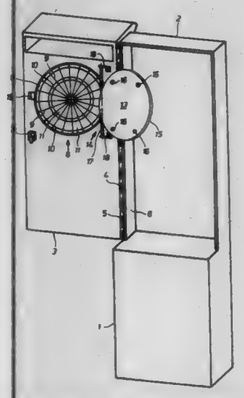
said catching receptacle being used to capture said ball in flight and direct it into said tapered portion as said toy is vertically oriented whereby said ball may then be drawn into said ball receptacle and launched therefrom by piston motion.

5,292,135

DART GAME

Wilhelm Menke, Ingelheim, Fed. Rep. of Germany, assignor to NSM Aktiengesellschaft, Bingen

PCT No. PCT/DE91/00190, § 371 Date Sep. 8, 1992, § 102(e) Date Sep. 8, 1992, PCT Pub. No. WO91/14147, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 2, 1991, Ser. No. 934,614
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1990, 4006850
Int. Cl.[5] F41J 5/04
U.S. Cl. 273—376 **5 Claims**



1. An electronic dart game apparatus comprising a housing having a front door hinged to a vertical longitudinal side of said housing and a dart board inserted into a recess of said front door, said dart board being formed of a plurality of radially extending ribs and a plurality of concentric circular ribs dividing said dart board into a plurality of scoring areas, a plurality of movable segments, each scoring area having a respective movable segment therein, each movable segment being adapted to be hit by the tip of a thrown dart, said movable segments each having a limited forward and back movement within their respective scoring areas, said movable segments being arranged so that when any of said movable elements is hit by a thrown dart, the hit movable segment moves backwards and actuates a switch matrix disposed on a carrier plate located behind said dart board to permit, by way of a switching device, automatic recording, counting and display of the points

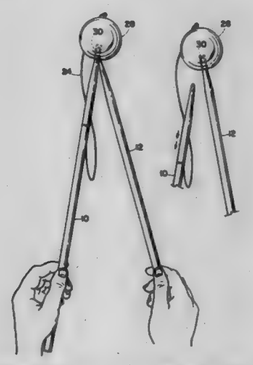
scored, said carrier plate, together with said switch matrix being hingedly fastened to the rear face of the front door behind said dart board sot hat said carrier plate is foldable away from said dart board and said front door for servicing, said dart board further comprising a plurality of guide devices connected to each of said movable segments and connected to said dart board ribs securely retaining each of said movable segments in its respective scoring area and preventing said movable segments from falling out of the front and rear of the dart board when said front door and said carrier plate are folded away for servicing.

5,292,136

GAME OF SKILL

Michael A. Cline, 3265 S. Cincinnati, Tulsa, Okla. 74105

Filed Jul. 27, 1992, Ser. No. 919,849
Int. Cl.[5] A63B 67/10
U.S. Cl. 273—440 **6 Claims**



1. Apparatus for playing a game of skill wherein a relatively stationary object is transferred from one rod to another comprising:

(a) a first rod having a tapered end,

(b) a ball of cross section greater than said tapered end having three openings therein, one extending directly into the spherical surface of the ball, one having a flattened surface around the opening, and one having a concave surface around the opening, each opening adapted to fit loosely over said tapered end,

(c) a cord attached to said first rod and said ball, and

(d) a second rod having a tapered end similar in configuration to the end of said first rod.

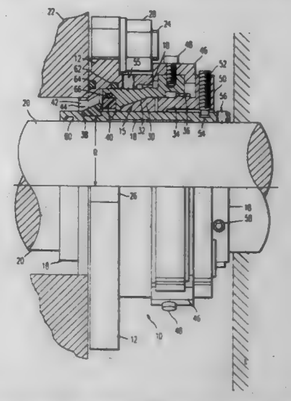
5,292,137

ROTARY SHAFT SEALING METHOD AND DEVICE

Brain Simmons, San Ramon; Leonid G. Zeltser, Pleasanton; Arnold Kholodenko, San Francisco, all of Calif., assignors to Rotoflex, Inc., Pleasanton, Calif.

Continuation of Ser. No. 868,080, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 735,920, Jul. 25, 1991, and Ser. No. 738,007, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 595,420, Oct. 11, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 996,520
Int. Cl.[5] F16J 15/34
U.S. Cl. 277—1 **20 Claims**

1. A method for preventing leakage around a rotary shaft extending through a structural casing by contacting a rigid smooth sealing surface with a projecting sealing edge of an annular resilient seal without liquid lubrication therebetween, the resilient seal having a breaking elongation of at least about 100 percent of its original length, the resilient seal being stretched from at least about 20 up to about 40 percent of its breaking elongation in a direction substantially parallel to the smooth sealing surface, whereby to reduce the coefficient of friction between the projecting sealing edge and the smooth sealing surface by stress hardening the projecting edge, aligning polymeric resilient seal components in a direction parallel with the smooth sealing surface, and smoothing the sealing



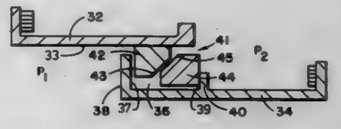
surface thereof; and pressing the projecting edge in an axial direction against the smooth sealing surface with a pressure which is sufficient to effect a seal therebetween under operating conditions of the seal but which will not produce heat of friction sufficient to cause significant chemical changes in the projecting edge of the resilient seal.

5,292,138

ROTOR TO ROTOR SPLIT RING SEAL

Christopher C. Glynn, Hamilton; Richard W. Albrecht, Fairfield; Robert J. Meade, West Chester, and Stephen D. Abernathy, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 21, 1992, Ser. No. 947,698
Int. Cl.[5] F16J 9/00
U.S. Cl. 277—173 **14 Claims**



1. An improved split-ring seal assembly for use in a rotating interface of a gas turbine engine for separating an area of relatively high pressure fluid from an area of relatively low pressure fluid, the seal assembly being subjected to a centrifugal force during rotation thereof and comprising:

an annular seal seat having a radially inner seal surface;

an annular seal carrier positioned radially inward of said seal seat and aligned therewith, said carrier having axially forward and axially aft annular flanges with inner seal sidewalls; and

a split ring assembly having a radially outer split ring member for seating against said seal seat and a radially inner ring member for urging said outer member axially forward into sealing engagement with said inner sidewall of said axially forward flange, said inner ring member being axially displaced with respect to said outer ring member with preselected overlapping portions, a radially inner edge of said outer ring member being formed with an angular surface at said over-lapping portion for transfer-

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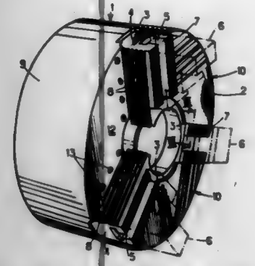
ring at least a portion of a radially directed centrifugal force on said inner ring member into an axially forward force on said outer ring member.

5,292,139

CLAMPING CHUCK FOR A MACHINE TOOL, ESPECIALLY AN AUTOMATIC MACHINE TOOL, AND A METHOD FOR PREPARING IT

Jean-Christophe Gaillard, Paris, France, assignor to Gamet Precision, S.A., Le Neubourg, France

Filed Dec. 4, 1992, Ser. No. 985,937
Claims priority, application France, Dec. 10, 1991, 91 15254
Int. Cl.[5] B23B *31/16*
U.S. Cl. 279—123 **13 Claims**



1. A clamping chuck for a machine tool, comprising:
a body, having a substantially cylindrical shape, said body having a rear frontal face configured to be fixed to the machine tool and an anterior frontal face directed towards a workpiece to be clamped, and having lateral walls defining radial cuts opening onto the anterior frontal face, the lateral walls comprising a plurality of first radial slideways having first frontal sliding surfaces,
jaw holders, for carrying clamping jaws, part of said jaw holders being configured to be engaged in one of the radial cuts, the part having two circumferentially opposed faces, and having on each of the two circumferentially opposed faces at least two second slideways having second frontal sliding surfaces for interacting with the first sliding surface, to guide the jaw holder radially,
control members placed in said body and able simultaneously to displace said jaw holders in the direction of a workpiece to be clamped, and to apply a predetermined radial clamping force to said jaw holders,
this force having the result that the first and second sliding surfaces are displaced axially relative to said body and to said jaw holder respectively, following an elastic deformation of the first radial slideways and second slideways,
the flexibility of the first radial slideways and second slideways being calculated and chosen so that the axial displacements of the first sliding surfaces and the second sliding surfaces are greater than the spreads which may exist between the axial distances separating two first sliding surfaces and two second sliding surfaces, wherein these spreads are the result of machining tolerances.

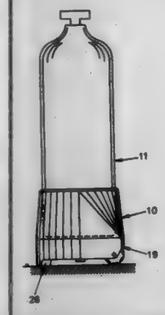
5,292,140

CARRIER FOR CYLINDRICAL CONTAINERS OF LIQUIDS AND GASES

Michael P. Laing, 4680 NW. 19th Dr., Coral Springs, Fla. 33071

Filed Aug. 26, 1991, Ser. No. 749,982
Int. Cl.[5] B62B *1/26*
U.S. Cl. 280—47.33 **7 Claims**

1. A carrier device for moving cylindrical containers along a floor, ground or the like, said carrier device operatively associated with a bottom portion of the cylindrical containers, said device comprising:
an integrally molded resilient body having a base member and an upper member including a side wall extending downward conically to said base portion, said base member having a top portion and bottom portion, said upper member having a cylindrical cavity shaped to conform to the bottom portion of the cylindrical container for snugly receiving the bottom portion of the cylindrical container, said cavity having a cavity wall;
means along a lower portion of one end of said base member for accommodating a roller wheel at a first end of said base member, wherein said means for accommodating is a substantially rectangular recess operatively associated



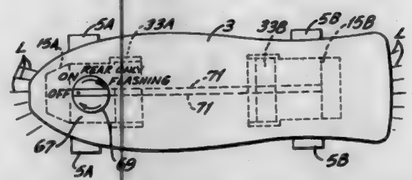
with said base member, said roller wheel turning freely over an axle attached to said base member, said roller wheel having a substantially cylindrical shape, said roller wheel having a substantially reduced external diameter middle section to define two contact points on said roller wheel, said contact points being located on both sides of said middle section and in continuous contact with the ground; and
means depending from a second end of said base member for providing a third contact point with the ground to prevent said carrier from rolling when said carrier is stationery.

5,292,141

SKATEBOARD HAVING ROTATABLY MOUNTED DISK WITH OR WITHOUT ILLUMINATION

David R. Ekedal, Carlsbad, Calif.; Kenneth D. Harris, Jr., Winsted, Conn., and Michael C. Copley, San Diego, Calif., assignors to Soaring Minds, Carlsbad, Calif.

Continuation-in-part of Ser. No. 576,859, Sep. 4, 1990, Pat. No. 5,119,277. This application Mar. 2, 1992, Ser. No. 844,447
Int. Cl.[5] B62K *9/00*
U.S. Cl. 280—87.042 **11 Claims**



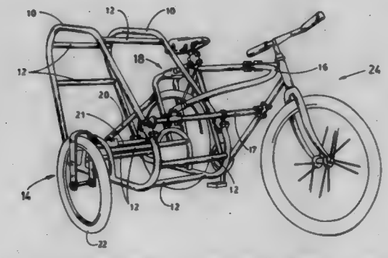
1. A skateboard with rotatably mounted disk for rotatably maneuvering the skateboard, comprising, in combination:
(a) a riding platform having a top riding surface and a bottom surface;
(b) wheels depending from said bottom surface and rotatable about their respective axles;
(c) a rotatable disk secured to the top surface of said riding platform so as to rotatably maneuver the skateboard in different directions when said disk is manipulated by a foot of the skateboard rider, said rotatable disk comprising a disk member having a top textured surface and a bottom surface; a mounting plate secured to the top surface of said riding platform, said mounting plate having a recessed, relatively smooth surface for receiving said disk and facilitating rotation of said disk member by pressing said disk member against said surface of the mounting plate, and a contour pad secured between the top surface of the platform and bottom surface of the plate, said contour pad including a central aperture aligned with the central aperture in said mounting plate, a retainer member inserted through said apertures for uniting said mounting plate and said contour pad, and a retainer clip for securing said mounting plate to said contour pad.

5,292,142

SIDECAR FOR BICYCLE

Art Vitarelli, 316 La Jolla Dr., Newport Beach, Calif. 92663

Filed Jun. 26, 1991, Ser. No. 721,833
Int. Cl.[5] B62K *27/12*
U.S. Cl. 280—203 **15 Claims**



1. A load carrying device for attaching rigidly to a side of a bicycle which bicycle has a seat post, head, top, down and seat tubes, chain and seat stays, and a rear axle, comprising:
an accessory rear mounting frame extending from the seat post or seat tube of said bicycle to the rear axle of said bicycle,
a structure for supporting a load with a wheel attached to one side at a point that, after said load carrying device is attached to said bicycle, is located forward of a line formed by extending the rear axle of said bicycle,
a plurality of elongated mounting members,
said elongated mounting members being rigidly connected between said accessory rear mounting frame and said bicycle on the one hand and said structure for supporting a load on the other hand; whereby said elongated mounting members can be connected between said structure for supporting a load and said accessory rear mounting frame far enough to the rear of said seat post or seat tube to allow space to pedal said bicycle while the stress of moving said structure for supporting a load is transferred by said accessory rear mounting frame to the seat tube of said bicycle so that the chain and seat stays of said bicycle will not be warped or broken.

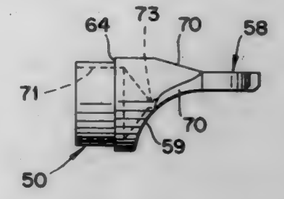
5,292,143

BICYCLE DROP-OUT AND METHOD OF ATTACHMENT

Dennis J. Stauch, and William E. Shaffer, both of Kennewick, Wash., assignors to Sandvik Special Metals Corporation, Kennewick, Wash.

Filed Jun. 9, 1992, Ser. No. 895,831
Int. Cl.[5] B62K *25/02*
U.S. Cl. 280—279 **26 Claims**

1. A one-piece metal dropout adapted to be attached to a hollow metal receiving tube of a bicycle for retaining a front axle, comprising:
a rear section including a cylindrical mounting portion sized to be inserted into the receiving tube, said cylindrical mounting portion being hollow to form a rearwardly open recess, a radially outwardly projecting shoulder disposed at a front end of said mounting portion for limiting the depth of insertion of said dropout into the receiving tube,
a front section including an axle-receiving portion having an axle-receiving slot, a thickness of said axle-receiving portion being less than an outer diameter of said mounting portion, and



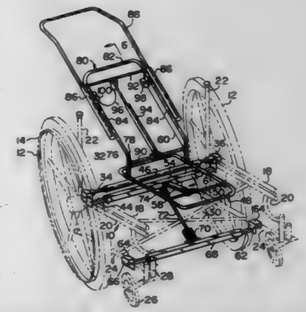
a transition portion disposed between said rear section and said axle-receiving portion and tapering toward said axle-receiving portion, a hole extending through said transition portion and opening into said recess in said mounting portion, said hole being of smaller cross section than said recess,
said axle-receiving portion being offset radially outwardly relative to a longitudinal axis of said mounting portion and offset radially inwardly relative to the largest outer diameter of said dropout.

5,292,144

WHEELCHAIR TILTING SEAT CONVERSION KIT

Fred Sosnoff, Paxton, Mass., assignor to Biomedical Horizons, Inc., Jackson, Mich.

Filed Nov. 5, 1992, Ser. No. 972,309
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—304.1 **11 Claims**

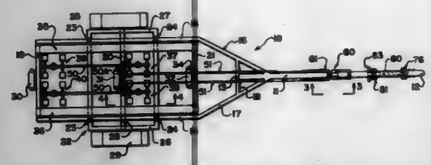


1. Apparatus for converting a standard non-tilting seat wheelchair to a tilting seat wheelchair wherein the wheelchair includes spaced upper and lower support rails, the improvement comprising, an elongated seat support extending between the upper support rails having ends, upper wheelchair rail mounting clamps defined on said seat support ends, a first elongated seat adjuster support having ends, means for attaching said seat adjuster support ends upon the upper wheelchair rails below said seat support, a seat frame mounted upon said seat support pivotal about a pivot axis, a seat adjuster anchor

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defined on said seat frame spaced from said pivot axis, an elongated longitudinally extendible lockable seat adjuster affixed to and extending between said first seat adjuster support and said seat adjuster anchor, and a manually operated control controlling locking of said seat adjuster.

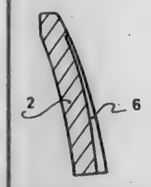
5,292,145
BOAT TRAILER
Dale Ostrand, 65 Dorothy Street, Thunder Bay, Ontario, Canada P7A 5Z6
Filed Jun. 3, 1992, Ser. No. 893,055
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **10 Claims**



1. A boat trailer comprising a trailer frame, hitch bar attached to the frame and extending forwardly therefrom, a ground wheel and suspension assembly attached to the frame for support thereof in movement across the ground, and support means for supporting a boat on the trailer frame for transportation and for loading onto and unloading from the trailer frame, the support means comprising bunk means comprising two parallel longitudinally extending, elongate, fixed support beams each arranged to extend along a respective side of the boat and having an upwardly facing surface for engaging the boat along a length thereof for providing a relatively large support area in engagement with the boat for transportation of the boat without stress points against the surface of the boat and four separate sets of roller means mounted at spaced positions across the trailer frame for engaging the boat for rolling on the roller means during loading and unloading, two sets being mounted at longitudinally spaced positions on one side of a center line of the boat and two sets being mounted at longitudinally spaced positions on an opposite side of the center line, four separate lever support members each separately mounted on the frame for pivotal movement relative thereto, each set being mounted on a respective one of the lever support members such that pivotal movement of the respective lever support member relative to the frame causes lifting of the respective set to increase the vertical height thereof such that said fours sets of roller means are raisable and lowerable to vary the relative height thereof whereby the bunk means engages the boat during transportation and the roller means lifts the boat away from engagement with he bunk means during loading and unloading, a winch mounted on the frame for pulling the boat longitudinally of the frame, and actuating means separate from the winch at a front of the trailer for simultaneously operating each of said lever support members for simultaneously raising said four sets of roller means.

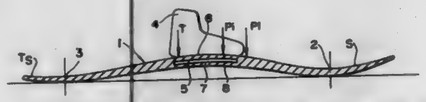
5,292,146
REINFORCED SPATULA FOR SKIS
Marie-Claude Palau, St-Jorioz, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Feb. 14, 1991, Ser. No. 655,039
Claims priority, application France, Feb. 21, 1990, 90 02376
Int. Cl.[5] A63C *5/06*
U.S. Cl. 280—601 **19 Claims**

1. A ski comprising:
a central portion, a rear portion, and a front portion, said front portion comprising a spatula;
said spatula comprising a tip affixed to said front portion of the ski;
said tip having a thickness defined by an upper surface and a lower surface;
said tip having at least a pair of lateral side portions, a rear end and a front end;
at least one reinforcement extending along and laterally bordering at least one of said pair of lateral side portions;



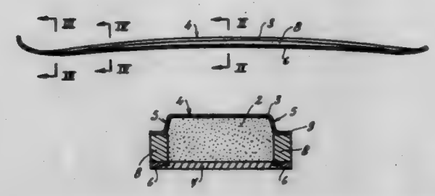
said reinforcement projecting with respect to at least one of said upper surface of said tip and said lower surface of said tip;
said reinforcement having a thickness defined by an upper reinforcement surface and a lower reinforcement surface, said reinforcement thickness increasing in magnitude from said rear end toward said front end of said tip.

5,292,147
CROSS COUNTRY SKI, ESPECIALLY FOR THE PRACTICE OF ALTERNATING STEPS
Alain Bejean, Alby sur Cheran, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Aug. 21, 1991, Ser. No. 747,952
Claims priority, application France, Aug. 24, 1990, 90 10747
Int. Cl.[5] A63C *5/07*
U.S. Cl. 280—602 **31 Claims**



1. A cross-country ski for practicing alternating steps, including an impulse phase and a sliding phase, said cross-country ski comprising:
an integral body having a central portion, said central portion having an upward chamber at least in a rest position of the ski and being adapted to support a ski boot at a boot support zone, the boot support zone having a heel zone for application of pressure by the foot of a skier during the sliding phase and a metatarsal-phalanges zone for application of pressure by the foot of the skier during the impulse phase, thereby defining an impulse zone; and
a slit formed within the central portion and having a predetermined longitudinal length of between 150–300 millimeters and extending transversely across the entire width of the ski, the slit being formed between an upper beam and a lower beam at least in the boot support zone, the upper and lower beams having opposed inner surfaces which are spaced apart by a substantially constant distance along the predetermined longitudinal length of the slit in the rest position of the ski, the slit extending forwardly beyond the impulse zone.

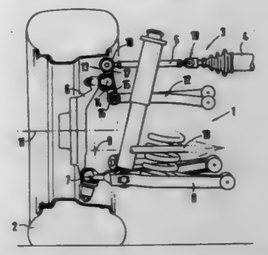
5,292,148
SHAPED SKI OF NON-RECTANGULAR CROSS SECTION
Roger Abondance, La Murette; Jean Bauvois, Villars De Lans, and Jean-Marc Forneri, Saint Sauveur, all of France, assignors to Skis Rossignol S.A., Voiron, France
Filed Oct. 9, 1992, Ser. No. 958,675
Claims priority, application France, Nov. 19, 1991, 91 14750
Int. Cl.[5] A63C *5/048, 5/07*
U.S. Cl. 280—602 **40 Claims**



1. A shaped ski of non-rectangular cross section, comprising:
a core;
a shell having a first portion forming an upper face of the ski and lateral portions forming at least parts of opposed lateral faces of the ski, said shell comprising two laterally disposed shoulders, each shoulder being essentially parallel to a plane of the sole;
a lower face opposite the upper face, said lower face including longitudinal metal edged disposed on opposed sides of the lower face and a central sliding sole; and
two longitudinal reinforcement elements extending in at least a binding mounting area of the ski and arranged on opposed sides of the core, each reinforcement element having a bottom surface extending over a second portion of a width of one of the edges, thereby supporting the edge, and an outside surface extending over at least a part of a height of the ski, a third portion of the outside surface of each reinforcement element being free of coverage by the shell, said third portion thereby forming a portion of one of the lateral faces of the ski in at least the binding mounting area of the ski, wherein each of said shoulders is supported by a respective one of said longitudinal reinforcement elements.

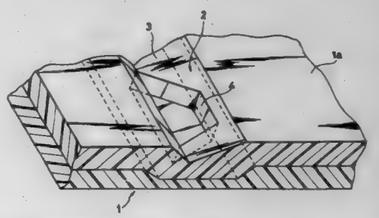
5,292,149
ARRANGEMENT FOR THE ACTIVE ADJUSTMENT OF A MOTOR VEHICLE WHEEL
Martin Luger, Glemseckstrade 28, Leonberg, Fed. Rep. of Germany
PCT No. PCT/EP91/01114, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/00201, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 15, 1991, Ser. No. 958,116
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020547
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **14 Claims**

1. An arrangement for the active camber and toe adjustment of a motor vehicle wheel by way of an adjusting device comprising an adjusting element, in which suspension links are linked to a wheel carrier, and swivellably held on the vehicle body, said adjusting element, by way of a connected intermediate element is connected with the wheel carrier while acting upon the wheel carrier in an adjusting manner, wherein the intermediate element, by way of a central ball joint, is linked directly to the wheel carrier in a tiltable manner, and a control rod of the adjusting device is connected with a first bearing, and the suspension link is connected with a second bearing, the adjusting device comprising a hydraulic adjusting element which is connected with the control rod and being constructed to be capable of moving in and out while influencing the position of the wheel by way of an electronic control unit for forced wheel position changes as a function of driving parameters, including at least one of: the suspension travel, the lateral acceleration, the speed, the longitudinal acceleration, the de-



celeration, yawings and steering angles, and wherein the wheel is adjustable about a swivel axis formed below the wheel spin axis by a wheel-carrier-side tie rod joint and a wheel-carrier-side link joint.

5,292,150
COVER OF AIR BAG DEVICE
Kazuo Watanabe, and Takayasu Zushi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Nov. 16, 1992, Ser. No. 977,208
Claims priority, application Japan, Dec. 11, 1991, 3-327583
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 B **4 Claims**



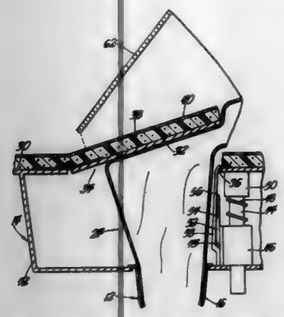
1. An air bag cover comprising:
a groove disposed in an inner surface of a cover and having a triangular cross section and a straight line at a bottom thereof,
recessed portions for tearing the cover which are disposed in the groove to be spaced apart from each other in a row, each of the recessed portion being trapezoid and the recessed portions being arranged such that each of long side of the trapezoid is situated on the straight line at the bottom of the groove,
each of top ends of the recessed portions in the direction of the row being pointed toward each of adjacent recessed portions, and
said pointed top end being situated at a position deviated from a center of the recessed portion along a lateral direction of the recessed portion.

5,292,151
SELF PIERCING COVER ASSEMBLY FOR AIR BAG HAVING DEFORMABLE DEFLECTOR SHIELD
Thomas Parker, Strafford, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Filed Feb. 19, 1993, Ser. No. 19,894
Int. Cl.[5] B60R *21/20, 21/22*
U.S. Cl. 280—728 B **16 Claims**

1. A self piercing cover assembly for concealing an air bag in a vehicle passenger compartment comprising:

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a support that is adapted for securement beneath a decorative panel in a vehicle passenger compartment;
a door that closes an opening in the support for deployment of an air bag;
the door having a rear end that is connected to the support by a hinge and a front end that is spaced from an edge of the opening in the support to maintain a slot at the front end of the door when the door is closed;
the outer surface of the support and the hinged door being in an underlying relationship to a covering that forms an outer surface of the decorative panel,
the support having means for holding an air bag housing beneath the opening in alignment with the door and for providing space beneath the door;
piercing means disposed in the space beneath the door and attached to an underside of the support for movement between a retracted position beneath the decorative panel and an extended position protruding through the decorative panel;
means holding the piercing means in the retracted position;



the piercing means including cutting edge means aligned with the slot to cut through the covering of the decorative panel when the piercing means moves to the extended position; and
deflector means disposed in the space beneath the door and attached to the piercing means so that the piercing means is moved outwardly by inflation of an air bag stored in the air bag housing impacting on the deflector means so that the cutting edge means projects through the slot and cuts through the covering at the front end of the door before the door itself is pivoted outwardly by the force of the inflating air bag,
stop means for limiting outward movement of the piercing means, and
the deflector means including means for allowing deformation so that the deflector means is deformed outwardly by the force of the inflating air bag to provide a shield for the cutting edge means when outward movement of the piercing means stops.

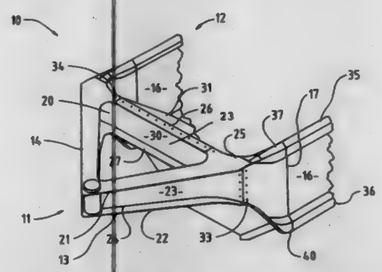
5,292,152

TRANSPORT APPARATUS

Arthur W. Chaseling, 10 Malvern Street, Albany Creek, Queensland, Australia 4035 , and Peter B. McGiffin, 11 Sidney Street, Clayfield, Queensland, Australia 4011

Filed Oct. 29, 1991, Ser. No. 784,551
Claims priority, application Australia, Oct. 2, 1990, PK3156
Int. Cl.[5] B62D *21/02, 21/20*
U.S. Cl. 280—789 **13 Claims**

1. An integral hitch assembly for an articulated trailer having an open-topped box-like hopper as its primary load-carrying member and including left-hand and right-hand side walls and a front wall, said articulated trailer being supported by said integral hitch assembly at its leading end,
and wherein said integral hitch assembly extends forwardly from and is attached rigidly to the front ends of said left-hand and right-hand side walls of the open-topped hopper for articulated connection to the pivot pin of a draft vehicle, said integral hitch assembly comprising:
a hitch pin housing;
a pair of rearwardly diverging front beam members joining said hitch pin housing rigidly to said left-hand and right-hand side walls, and



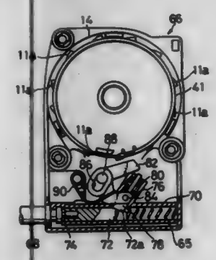
a cross-beam member disposed forwardly of and being independent from said front wall and joining the rear ends of said rearwardly diverging front beam members, said cross-beam member co-operating with said rearwardly diverging front beam members to form a rigid structure able to transfer operative bending loads about horizontal axes from one said side wall to the other said side wall substantially independently of said front wall.

5,292,153

SEAT BELT RETRACTOR

Jyoji Mishina, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,400
Claims priority, application Japan, Jul. 24, 1991, 3-184675
Int. Cl.[5] B60R *22/34*
U.S. Cl. 280—807 **8 Claims**



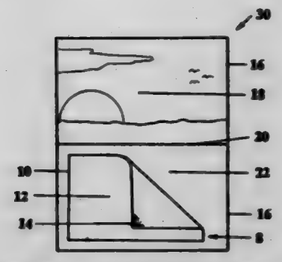
1. A seat belt retractor comprising:
a reel for retracting a seat belt therearound;
a frame for holding said reel in a rotatable manner;
a main spring for normally biasing said reel in a direction of retracting said belt;
an auxiliary spring disposed parallel to said main spring for producing a biasing force in the direction of retracting said belt;
means for detecting an open/closed state of a door at a side of a seat on which said seat belt is fastened,
off-and-on means for applying said biasing force to said reel in an off-and-on way, said off-and-on means interrupting transmission of the biasing force from said auxiliary spring to said reel when said door open/closed state detecting means detects a closed state of said door and transmitting the biasing force from said auxiliary spring to said reel when said door open/closed state detecting means detects an open state of said door, said off-and-on means including:
a slider having a rear end connected to the detecting means and capable of shifting over a stroke in response to a back-and-forth movement of said detecting means;
a sloped surface formed at a fore end of said slider and extending in a direction transversal to a direction in which said slider moves back and forth;
a piston provided to be movable back and forth in a direction substantially vertical to the sloped surface of said slider, said piston being able to selectively take an advanced state where a fore end of said piston is abutted with the sloped surface of said slider, and a retreated state where the fore end of said piston is abutted with a side surface of said slider, and
biasing means for biasing said piston in a direction to the advanced state of said piston
so that when said detecting means detects the open state, said slider is moved back and the fore end of said piston is abutted with the sloped surface of said slider to allow said piston to advance, and when said detecting means detects the closed state, said detecting means pushes said slider to move forth so that said piston is retreated by being pushed by the sloped surface of said slider and the fore end of said piston is finally abutted with the side surface of said slider, thereby shifting said piston to a most retreated position.

5,292,154

METHOD AND MATERIALS FOR CALENDAR FABRICATION RENEWAL

Larry M. Williams, 440 Dixon Landing Rd. #C-101, Milpitas, Calif. 95035

Continuation of Ser. No. 803,132, Dec. 5, 1991. This application Jun. 9, 1993, Ser. No. 75,013
Int. Cl.[5] B42D *5/04*
U.S. Cl. 283—2 **4 Claims**



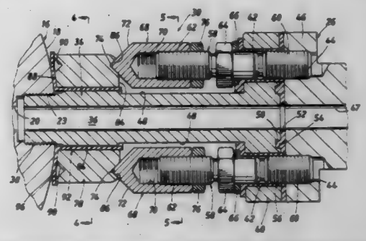
1. In a combination a pictorial calendar, having artwork and expired calendar information printed thereupon, and calendar stickers adherent to the pictorial calendar and covering the expired calendar information, the calendar stickers being substantially opaque, the front of the calendar stickers having printed thereupon unexpired calendar information, the calendar stickers having an adhesive on the back surface for attachment to the pictorial calendar, whereby users can observe the unexpired calendar information on the calendar stickers and the artwork on the pictorial calendar.

5,292,155

METHOD AND APPARATUS FOR MOUNTING AN INSTRUMENT ASSEMBLY ON A MAIN FLOW LINE

J. David Bell, Katy; Alan F. Chou, and Randall J. Miller, both of Sugar Land, all of Tex., assignors to Keystone International Holdings Corp.

Filed Apr. 6, 1992, Ser. No. 864,309
Int. Cl.[5] F16L *35/00, 3/00*
U.S. Cl. 285—18 **11 Claims**



1. A stabilized connector assembly for connecting an instrument assembly to an orifice fitting assembly mounted within an intermediate portion of a continuous main flow line and for transmitting high and low fluid pressures from a pair of internally threaded fluid outlet ports of the orifice fitting assembly to a pair of aligned fluid inlet ports of the instrument assembly for measuring fluid pressure within said main flow line; said connector assembly comprising:
a pair of generally similar stabilized connector subassemblies positioned generally in side-by-side relation on said orifice fitting asembly and aligned in a direction parallel to the longitudinal axis of said main flow line, one of said subassemblies adapted to receive low pressure fluid and the other of said subassemblies adapted to receive high pressure fluid; each of said connector subassemblies including:
an elongate connector body having an externally threaded inner end for threaded engagement with an internally threaded fluid outlet port of said orifice fitting assembly and a flange on its outer end for connection to said instrument assembly, said elongate connector body having a central bore therethrough in axial alignment with said outlet port of the orifice fitting assembly and a fluid inlet port of said instrument assembly;
a pair of elongate force transmitting means on opposite sides of said connector body extending axially between said outer flange of said connector body and said orifice fitting assembly in spaced parallel relation to the longitudinal axis of said elongate connector body; and
means for compressing said pair of force transmitting means between said outer flange and said orifice fitting assembly for directing an axial force against said outer flange with said force transmitting means acting as braces for said connector body and transmitting radial forces from said instrument assembly and said outer flange to said orifice fitting assembly thereby minimizing deflection of said connector body.

5,292,156

CORRUGATED PIPE COUPLING

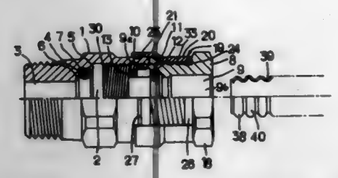
Takeya Sasa, and Yoshikazu Kobayashi, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,570
Int. Cl.[5] B65D *59/00;* **F16L** *19/02*
U.S. Cl. 285—23 **8 Claims**

1. A pipe coupling for a corrugated pipe, comprising:
a pipe body coupling body having a leading end, a rear end, an interior having an inner surface, and a seal ring fixed to said interior of said pipe coupling body;
a lock cylinder for fixing a corrugated pipe in said pipe coupling body, said lock cylinder being rotatably joined

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to said inner surface of said pipe coupling body, said lock cylinder having a leading end portion adapted to seal against said seal ring of said pipe coupling body upon rotation of said lock cylinder relative to said pipe coupling body for fixing the corrugated pipe and advance of said lock cylinder into said pipe coupling body; and



a spacer that is detachably attached to the outer periphery of both said pipe coupling body and said lock cylinder spacing said leading end portion of said lock cylinder from said seal ring of said pipe coupling body a predetermined closing distance, said spacer being adapted to detach from said lock cylinder and said pipe coupling body upon advance of said lock cylinder into said pipe coupling body.

5,292,157

DETACHABLE PUSH-IN CONNECTOR FOR SEMIRIGID PIPES

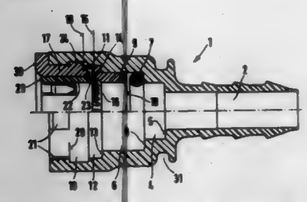
Michel Rubichon, Pommiers la Placette, France, assignor to A. Raymond & Cie, Grenoble-Cedex, France

Filed Nov. 3, 1992, Ser. No. 970,786

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137396

Int. Cl.[5] **F16L** *37/12*

U.S. Cl. 285—39 **4 Claims**



1. A detachable push-in connector for semi-rigid pipes comprising a housing having an axis and an axially oriented through hole for the passage of a fluid, a plurality of cavities therein increasing in size for receiving connecting parts and an entrance end through which a piece of pipe to be connected is pushed into the connector, a shoulder of a first and smallest cavity located the farthest from the entrance end serving as a stop for the pipe, a shoulder of a second larger cavity between the first cavity and said entrance end serving as a stop for an elastic sealing ring, the sealing ring having an inside diameter less than the outer diameter of the pipe and being preceded in the push-in direction of the pipe by a retaining ring having inwardly projecting spring tongues, said tongues forming a flat truncated cone, the apex of which points inwardly and in said push-in direction, the internal diameter of the tips of the tongues being less than the outer diameter of the pipe and adapted to grip said pipe and hold it in said connector, said tips being capable of opening out elastically, a stop ring between said sealing ring and said retaining ring, said retaining ring resting on and end of said stop ring opposite from said sealing ring, said end of the stop ring having a bevelled portion adjacent said spring tongues to permit and limit outward movement of said tongues, a supporting ring located in a third larger cavity preceding the retaining ring in the push-in direction, means for holding said supporting ring against axial movement in said third cavity and a disconnecting ring axially slidable relative to and internally of said supporting ring and preceding said retaining ring in the push-in direction, said disconnecting ring having a forward facing conical edge for pushing outward said spring tongues when it is pushed forward relative to the supporting ring in the push-in direction and a rearmost rear end face that extends substantially perpendicular to the axis of the connector and that is located axially inwardly of the rearmost portion of said connector at the entrance end of said housing.

5,292,158

LOCK MECHANISM AND LATCH DEVICE

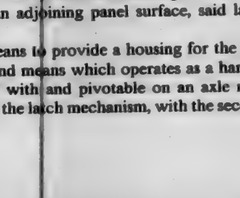
Mutsuo Kurosaki, Toyota, Japan, assignor to Nifco, Inc., Japan

Continuation of Ser. No. 762,931, Sep. 19, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 75,919

Claims priority, application Japan, Sep. 27, 1990, 2-258306; Nov. 13, 1990, 2-306878; Nov. 13, 1990, 2-306879; Nov. 30, 1990, 2-340669

Int. Cl.[5] **F05L** *19/02*

U.S. Cl. 292—45 **4 Claims**



1. A latch device for causing an openable member to engage with or disengage from a main body, comprising:
a housing fitted on said main body;
a striker fitted on said openable member; and
a latch body which is retained by said housing in a first state in which said latch body is pushed into said housing in an engaging direction and in a second state in which said latch body is partially withdrawn from said housing in a disengaging direction;
a pair of arms extending along a first direction away from said latch body for clamping said striker by rotating in a mutually approaching direction,
wherein the center of rotation of each of said arms is formed on substantially the same line as a line of action of a force acting on a retaining surface of each of said arms, each arm comprising an outer side surface E which originates at said latch body and extends along said first direction past its respective center of rotation, said outer side surface E being rectilinear and parallel with its respective line of action while said latch body is in said first state, said retaining surface preventing separation of said striker from said latch body, said force resulting from a pulling force W acting in said disengaging direction.

5,292,159

LATCH MECHANISM FOR VEHICLE GLOVE BOXES OR THE LIKE

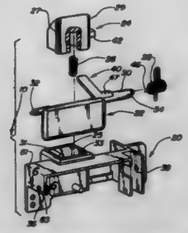
Chain S. Sandhu, Farmington Hills, and Lev Lilov, Southfield, both of Mich., assignors to NYX, Inc., Redford, Mich.

Filed Mar. 24, 1993, Ser. No. 36,629

Int. Cl.[5] **E05C** *5/00*

U.S. Cl. 292—173 **15 Claims**

1. A latch mechanism for securing a door in flush position relative to an adjoining panel surface, said latch mechanism comprising,
(i) first means to provide a housing for the mechanism,
(ii) a second means which operates as a handle, said handle integral with and pivotable on an axle member, for unlocking the latch mechanism, with the second means being spring biased to a generally flush position relative to the door and panel surface,
(iii) a third actuator means centrally located with respect to said handle, which is movable between at least first and second positions to lock and unlock the latch mechanism, and said actuator means including a spring member which biases the actuator means into a locked position,



said actuator means being of sufficient width to provide a strong retaining force for the latch mechanism upon the event of a vehicle crash impact and also to provide a wide contact locking surface to thereby assist in preventing flex distortions between said door and panel surface.

5,292,160

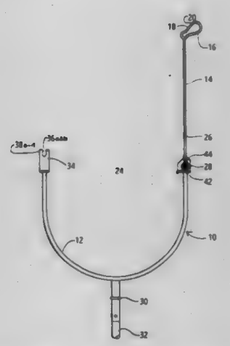
DEVICE FOR PASSING A ROPE AROUND AN OBJECT

William G. Deichman, 3210 Thompson Ave., Alameda, Calif. 94501

Filed Oct. 22, 1992, Ser. No. 964,714

Int. Cl.[5] **B25J** *1/00*; **B63B** *21/54*

U.S. Cl. 294—19.1 **6 Claims**



1. A device for passing a line around an object, comprising:
a stationary member having a first end and a second end, said first end of said stationary member having a line holding means,
a pivoting member having a first end and a second end, said first end of said pivoting member being pivotally attached to said second end of said stationary member, said second end of said pivoting member having a line grasping means, said pivoting member having a pin means extending therefrom at a point intermediate said first end and said second end,
and a biasing means which normally urges said pivoting member to pivot away from said stationary member,
whereby when a line is placed so that an end of said line is held in said line holding means and the body of said line extends from said line holding means and passes around said pin means and a tension is created in said line, said pivoting member will be caused to pivot with respect to said stationary member until said line grasping means approaches said line holding means and said line grasping means grasps said line proximate said end and removes said line from said line holding means.

5,292,161

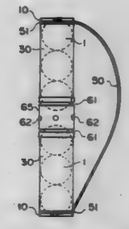
BALL PICKUP APPARATUS

Peter F. Green, P.O. Box 56277, New Orleans, La. 70156

Continuation-in-part of Ser. No. 323,349, Mar. 14, 1989, abandoned. This application Oct. 29, 1991, Ser. No. 783,986

Int. Cl.[5] **B63B** *47/02*; **B65D** *85/00*; **A63B** *47/02*

U.S. Cl. 294—19.2 **7 Claims**



1. A tennis ball apparatus comprising:
a connecting member for removably connecting first and second tennis ball containers, each container having a first, open end and a second, closed end, the connecting member comprising:
first and second ends; and
first and second engaging means for engaging the tennis ball containers, wherein:
the tennis ball containers each comprise a first portion having a first outer diameter and connecting means, adjacent the second end thereof, comprising a reduced-diameter portion having an outer diameter smaller than the first outer diameter of the tennis ball container; and
the connecting member comprises a sleeve having an inner surface, an outer surface, and a first inner diameter no smaller than the first outer diameter of the tennis ball container; and
the first and second engaging means each comprise a circumferential projection on the inner surface of the sleeve for engaging the connecting means, the engaging means each having an inner diameter smaller than the first outer diameter of the tennis ball container.

5,292,162

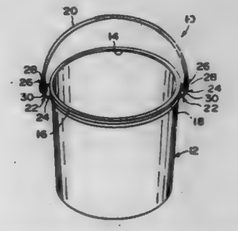
RECEPTACLE CARRYING DEVICE

Sam Korngold, 2235 E. 24th St., Brooklyn, N.Y. 11229-4953

Filed Apr. 2, 1992, Ser. No. 862,222

Int. Cl.[5] **B65D** *25/32*

U.S. Cl. 294—31.2 **5 Claims**



1. A device attachable to a container to enable carrying of the container, the device comprising: a closed, wire ring com-

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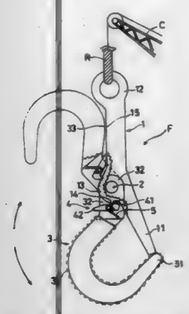
prised of a length of wire bend into a closed, non-overlapping ring shape, the closed ring lying in a given plane and being dimensioned to slidably fit over the outside of a container and releasably engage with the container at the upper portion thereof, two generally C-shaped wire members spot welded to the wire ring at opposed locations from one another, the two C-shaped members being curved radially outwardly from the ring in the given plane of the ring, and a handle pivotably connected at opposite ends thereof to the two C-shaped members to permit the handle to pivot upwardly to a raised position above the top of the container to enable carrying of the container by the device.

5,292,163

HOOK APPARATUS FOR LIFTING A HEAVY OBJECT

Sumiko Matsuyama, 3-2-713 Higashiuna 1-chome, Koto-ku, Tokyo 135, Japan

Filed Jul. 28, 1992, Ser. No. 920,336
Claims priority, application Japan, Aug. 2, 1991, 3-216524
Int. Cl.[5] B66C *1/36*
U.S. Cl. 294—82.33 **7 Claims**



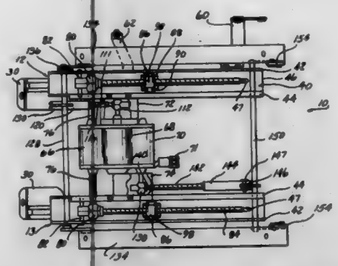
1. A hook apparatus adapted to be attached to a distal end of a wire of a lifting machine to lift a heavy object, comprising:
(i) a hook support having a fall preventing portion at a distal end thereof and a wire securing portion at a proximal end thereof;
(ii) a hook having a distal end portion and a shank portion formed opposite the distal end portion to define a throat therebetween, and a proximal end portion formed at the distal end of the shank portion, said proximal end portion having a bifurcated structure including a pair of branched end portions, said hook being pivotably attached to said hook support through a connecting pin which extends between said branched end portions and through a section of said hook support which is disposed in a space defined between said branched end portions;
(iii) a lock adapted to lock said hook support and said hook to each other when said fall preventing portion of said hook support and the distal end portion of said hook are placed substantially in contact with each other, said lock being disposed in the space defined between said branched end portions and being engageable with a locking surface which is radially outwardly spaced from the connecting pin; and
(iv) said hook being pivotable reversely relative to said hook support so that a back surface of said hook can abut on a side of said hook support when said hook support and said hook are unlocked from each other by disengaging said lock and such that an inner surface of the fall preventing portion and the inner surface of the proximal end portion extend generally within a plane which intersects a plane in which the inner surface of the shank portion generally extends so that the two planes form an obtuse angle with each other.

5,292,164

POWER SEAT ADJUSTER WITH HORIZONTAL SLOT DRIVE

Richard W. A. Rees, Rochester Hills, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 23, 1992, Ser. No. 995,983
Int. Cl.[5] B60N *1/02*
U.S. Cl. 296—65.1 **38 Claims**



1. A power seat adjuster for a vehicle seat having a seat bottom displaceable horizontally between a plurality of selectible positions with respect to a vehicle floor, the power seat adjuster comprising:
a pair of track assemblies mounted in a spaced apart relationship on a vehicle floor and supporting a seat bottom of a vehicle seat thereon, each track assembly including:
a lower track;
means connected to the lower track for stationarily securing the lower track to a vehicle floor;
an upper track slidably mounted on the lower track, a slot formed in and extending through the upper track;
a lower track coupler having a leg extending through the slot in the upper track and fixedly connected to the lower track;
extensible means, stationarily coupled at one portion to the lower track coupler for exhibiting extensible movement with respect to the lower track coupler; and
horizontal drive means, stationarily mounted to the upper track and having a rotatable output element engaged with the extensible means, for driving the extensible means with respect to the lower track coupler to bi-directionally move the upper track with respect to the lower track.

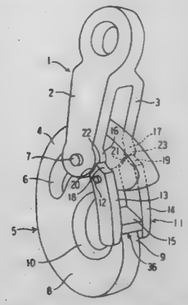
5,292,165

LIFTING HOOK WITH A SAFETY LATCH AND CAPABLE OF BEING PROVIDED WITH AUTOMATIC LOAD RELEASE FUNCTION

Henry W. Wiklund, Bäckvägen 1, Arbra S-820 10, Sweden

Filed Feb. 10, 1993, Ser. No. 16,046
Claims priority, application Sweden, Feb. 18, 1992, 9200471-2
Int. Cl.[5] B66C *1/36*
U.S. Cl. 294—82.33 **11 Claims**

1. A lifting hook comprising a suspension part (1) which can be suspended from a traction element, a curved hook part (5) supported by a suspension shaft (7) fitted in said suspension part and extending from a suspension portion (4) to a free hook point (9), therebetween forming an opening (10) for the reception of a lifting means, and provided with a slot (6) receiving said suspension shaft which is displaceable in the slot; and a safety latch (11) which is journalled in the hook part by means of a second shaft (12), the slot (6) being inclined, when the hook is in a load receiving position, so that its one end which faces in a main direction outwards from the opening (10) is located higher than its opposite end, the hook part (5) and suspension part (1) being rotatable relatively to each other around a centre (24) of the suspension shaft, and the safety latch (11) being rotatable around a centre (25) of the second shaft between a position blocking the opening (10) and a position freeing said opening, characterized in that the suspension part (1) is provided with at least one arced contact surface (16, 17) which is concentric with the centre (24) of said suspension shaft and which faces the safety latch (11), that the second shaft (12) is fixedly arranged in the radial direction and that the safety latch is provided, with at least one end surface (20, 21) intended to engage the contact surface (16, 17) when the safety latch is in said blocking position and, connecting with and extending at an angle to the first end surface, at least one second end surface (18, 19) intended to engage the contact surface (16, 17) when the safety latch is in said freeing position, the first end surface (20, 21) being so located in relation to the



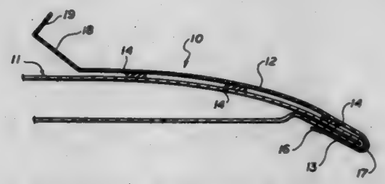
centre (25) of the second shaft that when engaging the contact surface (16, 17) it permits a displacement of the suspension shaft (7) to said higher end of the slot (6), and the second end surface (18, 19) being so located in relation to the second shaft centre (25) that when engaging the contact surface it causes a displacement of the suspension shaft (7) in a direction away from the higher end of the slot (6), the first end surface (20, 21) being arranged, when engaging said contact surface, to extend with a highest edge surface (22, 23) above a straight line drawn from the suspension shaft centre (24) and the centre (25) of the second shaft, whereby a rotation of the safety latch in a direction freeing the opening (10) is prevented when the hook part (5) is loaded by a load suspended from the same.

5,292,166

VEHICLE HOOD PROTECTIVE SHIELD

Richard H. Emery, 725 Miami Ave., Terrace Park, Ohio 45174

Filed Mar. 22, 1993, Ser. No. 35,198
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—91 **22 Claims**



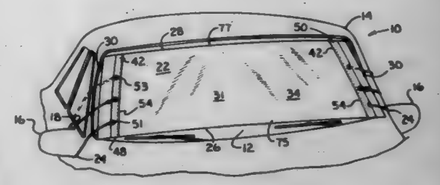
1. A hood protective shield capable of semi-permanent attachment to the hood of a motor vehicle for deflecting insects and road debris thrown towards the hood during travel, said protective shield comprising:
(a) a main body member of durable scratch-resistant material shaped to fit the contour of a front portion of the hood and dimensioned to extend substantially laterally across the hood and longitudinally from a front edge thereof to about four inches to about eighteen inches therefrom and a lip member extending substantially fully across the main body member and extending from the main body member to wrap around the front edge of the hood to engage an underside of said hood to snugly hold the protective shield article to the hood, and further having a set of drain holes where said lip member and said main body member meet; and
(b) a set of spacers attached to an underside of the main body member to hold said main body member off the hood so as to create a shock absorbing air gap cushion area and to provide a flow path for rain water to drain from the hood.

5,292,167

COVER FOR WINDSHIELDS

Lloyd S. Hellman, Leawood, Kans., assignor to Sleet Sheet Company, Kansas City, Mo.

Filed Aug. 14, 1992, Ser. No. 930,378
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—95.1 **22 Claims**



1. A cover for windshields, which comprises:
(a) a panel assembly comprising a flexible material and having:
(1) first and second longitudinal edges;
(2) first and second side edges extending between said longitudinal edges;
(3) first and second flaps each positioned inboard of a respective side edge; and
(b) a pair of tensile members each having first and second ends;
(c) a pair of first anchoring means each adapted for anchoring a respective tensile member first end to a respective flap;
(d) a pair of second anchoring means each adapted for anchoring a respective tensile member second end to a respective flap, each said second anchoring means being connected to a respective flap in proximity to or below a point located generally midway between said panel assembly first and second longitudinal edges; and
(e) a pair of strut means each fastened to said panel assembly in proximity to a respective side edge thereof and terminating in spaced relation above the point of connection of said second anchoring means.

5,292,168

SIDE WINDOW SUNSHADE FOR A MOTOR VEHICLE

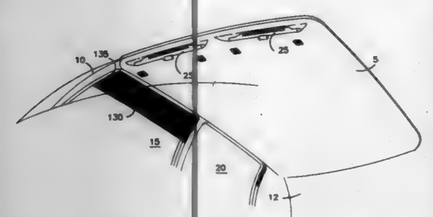
William Mykytiuk, Taylor, and Abdi Lawassani, Pontiac, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Division of Ser. No. 752,408, Aug. 30, 1991, Pat. No. 5,192,110.
This application Dec. 14, 1992, Ser. No. 990,221
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.8 **4 Claims**

1. A side, sunshade system for a motor vehicle interior including a headliner and a plurality of roof pillars, said side

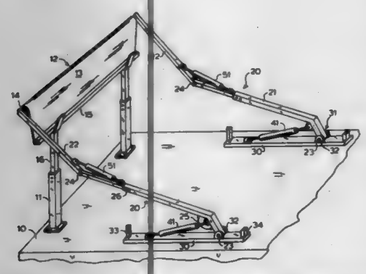
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sunshade system comprising a concealable, flexible sheet storable in a furled condition within said motor vehicle interior in



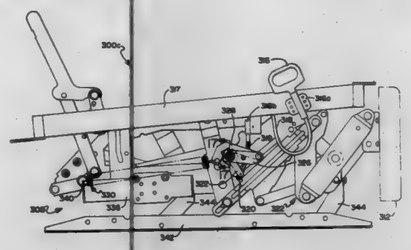
one of said roof pillars and extendable in a unfurled condition to another of said roof pillars.

5,292,169
TRUCK CONTAINER COVER
Woody V. O'Brian, 3301 Teal Dr., Wilson, N.C. 27893
Filed Mar. 4, 1993, Ser. No. 26,450
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—98 **7 Claims**



1. For use on a truck bed on which can be positioned a container of various sizes, an apparatus for attachment to the truck bed for extending and retracting flexible cover sheet over said container, said apparatus comprising:
a cover means including a flexible cover sheet having a size sufficient to cover the container and a roller means on which said flexible cover sheet may be rolled;
a vertical support means mounted on the truck bed for supporting said cover means;
a pair of arm members, each positioned on the side of the truck bed with the container therebetween, said arm member comprised of a base portion and an extension portion connected by a pivotal connection therebetween;
said arm member connected on the end of the extension portion to said cover means and the end of the base portion provided with a pivotal aperture;
a horizontal support means mounted on the truck bed for supporting said arm member and providing a mount for the pivotal aperture;
first activating means mounted to said horizontal support means and said base portion of the arm member with the pivotal aperture mount spanned therebetween;
second activating means mounted to the base portion and the extension portion of said arm member and spanning the pivotal connection therebetween;
whereby said first and second activating means are capable of being selectively activated in order to control the movement of said arm member in extending or retracting said cover sheet over a pre-determined various sized open container.

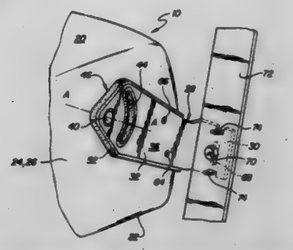
5,292,170
RECLINER ASSIST APPARATUS
Larry P. LaPointe, Temperance; Karl J. Komorowski, Petersburg, and Jonathan R. Saul, LaSalle, all of Mich., assignors to La-Z-Boy Chair Co., Monroe, Mich.
Continuation-in-part of Ser. No. 740,980, Aug. 6, 1991, Pat. No. 5,271,660. This application Apr. 9, 1993, Ser. No. 40,004
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—85 **14 Claims**



1. A seating section having a recliner assist apparatus unit for use in an article of furniture of the type having a frame section within which said seating section is secured, said seating section comprising:
a seat member;
a leg rest assembly supported for movement between a retracted position and an extended position;
drive means for urging said leg rest assembly into said extended position, said drive means being movable between a locked position wherein said leg rest assembly is releasably retained in said retracted position and a released position wherein said leg rest assembly is permitted to move toward said extended position;
manually-operated recliner assist means for initiating movement of said leg rest assembly from said retracted position to said extended position, said recliner assist means including a manually engagable release member, release assist bracket means operationally coupled to said release member for moving rotationally in response to movement of said release member, and drive bracket means operationally coupled to said drive means, said drive bracket means being urged rotationally in response to movement of said release assist bracket means from a first position wherein said drive means is in said locked position toward a second position wherein said drive means is in said released position; and
biasing means operationally coupled to said drive bracket means and a portion of said seating section for urging said drive bracket means towards said second position after a predetermined amount of rotational travel of said drive bracket means, and for urging said drive bracket means into said first position after a predetermined degree of travel of said leg rest assembly as said leg rest assembly is urged into said retracted position.

5,292,171
VEHICLE SEAT ARMREST BRACKET AND COVER ASSEMBLY
David J. Harrell, Royal Oak, Mich., assignor to Lear Seating Corporation, Southfield, Mich.
Filed Jun. 1, 1992, Ser. No. 891,607
Int. Cl.[5] A47C *17/04*
U.S. Cl. 297—113 **12 Claims**

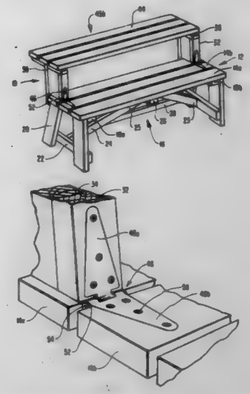
1. A vehicle seat armrest assembly comprising:
an armrest (10) having a top (20), a bottom (22) and a pair of opposing sides (24,26);
a bracket (28) disposed adjacent at least one of said sides (24,26) of said armrest (10), said bracket (28) including a mounting portion (30) for fixedly attaching said bracket (28) to a seat (12) and an armrest supporting portion (32) extending from said mounting portion (30) and adjacent said side (24,26) of said armrest (10), for supporting said armrest (10), said armrest supporting portion (32) having an inner surface (34) facing toward said armrest (10) and an outer surface (36) facing away from said armrest (10);
pivot means (40) extending between said bracket (28) and said adjacent side (24,26) of said armrest (10) for defining a pivot axis (A—A) for pivotally supporting said armrest (10) for movement about said axis (A—A) between a horizontal use position and an upright non-use position; an arcuate slot (42) formed in said armrest supporting portion (32) of said bracket (28) and spaced from said pivot means (40), a follower pin (44) projecting outwardly from said side (24,26) of said armrest (10) and received in said arcu-



ate slot (42) of said adjacent bracket (28) for guiding said armrest (10) upon rotation about said axis (A—A) between said use and non-use positions; and characterized by shielding means (46) disposed between said side (24,26) of said armrest (10) and said adjacent bracket (28) for shielding said side (24,26) of said armrest (10) against direct contact with said bracket (28), said shielding means including an arcuate slot (54) in registry with said arcuate slot (42) of said bracket (28), said arcuate slot (54) of said shielding means (46) having an upstanding border (56) extending outwardly about the periphery of said slot (54) and received in said bracket slot (42) for receiving said follower pin (44) therein, thus preventing direct contact between said pin (44) and said bracket (28), while guiding said armrest (10) between said horizontal use position and said upright non-use position.

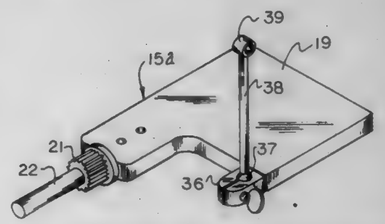
5,292,172
CONVERTIBLE BENCH/TABLE APPARATUS
Stephen P. Watts, 1131 E. 350 North, Orem, Utah 84057, and M. Brent Norton, 1303 N. Lakeview Dr., Provo, Utah 84604
Filed Aug. 28, 1992, Ser. No. 937,473
Int. Cl.[5] A47B *85/06*
U.S. Cl. 297—127 **1 Claim**

1. A convertible bench/table apparatus, comprising:
a seat member;
a means for supporting said seat member;
a backrest/tabletop member;
an armrest assembly having a base board, a second member comprising a majority of the body of the armrest, a lateral extension that transversely extends along the second member a greater length than the body of the armrest, and a backboard member that extends a greater length upwardly along the backside of the armrest assembly;
a hinge means for pivoting the convertible bench/table from a first position, exhibiting a seat with a backrest, into a second position, exhibiting a seat with an adjacent tabletop, wherein the means for pivoting the bench from the first to the second position, and vice versa, comprises a hinge bracket with arms extending therefrom containing a plurality of openings for multiple screws to be inserted therethrough into the adjoining base board of the armrest assembly and the adjacent seat member, with an aperture medially located between the arms of said hinge bracket enclosing a hinge pin whereby the hinge bracket is pivoted thereon;
a means for structurally supporting the backrest/tabletop when the convertible bench/table is pivoted into the second position exposing a first structural stop providing a surface abutment between the body of the armrest assem-



bly and contiguously acting against the surface of the seat member, and a second structural stop providing a surface abutment between the lateral extension of the armrest assembly resting against the seat member and the means for supporting said seat member providing overall structural integrity to the tabletop and the forces applied thereupon.

5,292,173
CHAIR MOUNTED COMPUTER PLATE
David E. Lambert, 4830 Miramar St., Cocoa, Fla. 32927
Filed Oct. 19, 1992, Ser. No. 962,692
Int. Cl.[5] A47B *39/12*
U.S. Cl. 297—161 **5 Claims**



1. A chair mounted computer plate for securement to a chair assembly, wherein the chair assembly includes a chair seat and at least one chair arm, and the chair arm includes a chair arm bottom surface, wherein the computer plate comprises,
a planar support plate of a generally L-shaped configuration having a first plate portion coplanar with a second plate portion, the first plate portion includes a first plate portion end wall orthogonally oriented relative to the first plate portion, and a spline shaft having a first diameter orthogonally mounted to the first plate portion end wall, and a guide shaft coaxially aligned with the spline shaft having a second diameter less than the first diameter is coaxially aligned with and fixedly mounted to the spline shaft, and a support hub, wherein the support hub includes a first

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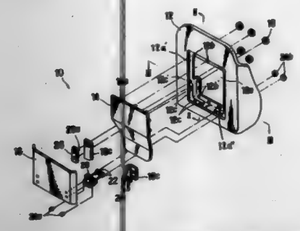
cylindrical bore coaxially aligned with a second cylindrical bore, the second cylindrical bore includes a splined interior surface to receive the spline shaft therewithin, and the first cylindrical bore complementarily receives the guide shaft therewithin, and mounting hub means arranged for securement to the chair arm bottom surface, with a support hub means further arranged for receiving the support hub thereon.

5,292,174

POCKET STRUCTURE IN AUTOMOTIVE SEAT

Yasuo Ohnuma, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan

Filed Oct. 22, 1991, Ser. No. 780,362
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—191 **10 Claims**



1. A pocket structure in an automotive seat, comprising:
a back board mounted on a back side of a seat back of said seat, said back board having a portion thereof recessed inwardly, said back board having a through opened area formed at a center part thereof, with said through opened area provided with a peripheral stepped flange along its peripheral edges and a lower stepped flange which is recessed more inwardly of said back board than said peripheral stepped flange, thereby defining a spacing inwardly of the back side of said seat back;
a base board secured to said back board to cover said through opened area, said base board having a lower half area recessed inwardly of said back board;
a pocket board member for covering said back board and defining a spacing in association with said back board and said base board to accommodate articles;
a spring means provided between a lower end part of said back board and that of said pocket board member, said spring means biasing said pocket board member in a direction towards said back board.

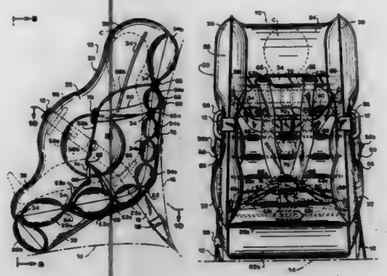
5,292,175

INFLATABLE CHILD VEHICLE SEAT

Lawrence Artz, Wilton, Conn., assignor to Babystar, Brooklyn, N.Y.

Filed Sep. 4, 1992, Ser. No. 939,521
Int. Cl.[5] B60N *2/28*
U.S. Cl. 297—250.1 **21 Claims**

1. A child seat device for use in a vehicle having a seatbelt for securing the child seat device to the vehicle seat, comprising:
(A) an inflatable child seat including
(i) an inflatable bottom panel;
(ii) an inflatable back panel upstanding from the rear of said bottom panel;
(iii) a pair of opposed, laterally spaced inflatable sidewall panels, each of said sidewall panels having a back portion projecting forwardly from a respective side of said back panel and a bottom portion projecting upwardly from a respective side of said bottom panel; and
(iv) an inflatable bracing means, disposed in each of said sidewall panels intermediate said back and bottom sidewall portions and spaced from both said bottom panel and said back panel, for limiting pivotal movement of said back and bottom sidewall portions towards each other; and



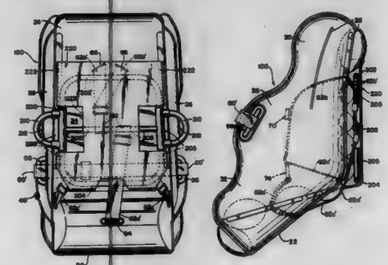
(b) releasable harness means for maintaining the torso of a child intermediate said sidewall panels.

5,292,176

INFLATABLE CHILD VEHICLE SEAT

Larry Artz, Wilton, Conn., assignor to Babystar, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 939,521, Sep. 4, 1992. This application Apr. 16, 1993, Ser. No. 48,753
Int. Cl.[5] A47C *31/00, 5/12;* A47D *1/00*
U.S. Cl. 297—250.1 **10 Claims**



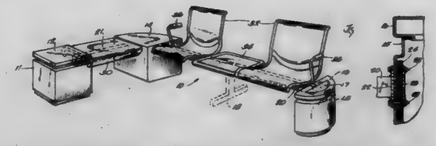
10. A child seat device for use in a vehicle having a seatbelt for securing the device to a vehicle seat, comprising:
(A) an inflatable child seat including
(i) an inflatable bottom panel;
(ii) an inflatable back panel upstanding from the rear of said bottom panel;
(iii) a pair of opposed, laterally spaced inflatable sidewall panels, each of said sidewall panels having a back portion projecting forwardly from a respective side of said back panel and a bottom portion projecting upwardly from a respective side of said bottom panel;
(B) releasable harness means for maintaining the torso of a child intermediate said sidewall panels; and
(C) a substantially rigid frame secured to and disposed adjacent the back of said back panel for movement therewith as a unit, said frame extending over substantially the entire width of said back panel and over at least 50% of the height of said back panel, said frame defining a pair of horizontally spaced apart apertures extending laterally of said back panel configured and dimensioned to receive therethrough a seatbelt, thereby to secure the device to the vehicle seat, said frame defining a periphery having a pair of spaced apart vertical side members, top and bottom transverse members connecting said vertical side members, at least one intermediate transverse member intermediate said top and bottom transverse members and connecting said vertical side members, and a pair of ears extending laterally outwardly from said vertical side members and defining said apertures;
opposite ends of said harness means being secured to different transverse members of said frame.

5,292,177

MODULAR SEATING SYSTEM

Nicola Balderi, Green Bay, and David R. Funk, De Pere, both of Wis., assignors to Krueger International, Inc., Green Bay, Wis.

Filed Nov. 25, 1991, Ser. No. 820,318
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—232 **9 Claims**



1. A modular component for a seating system comprising at least two supporting elements, each comprising a hollow shape having vertical supporting walls and being formed from a cured polymeric material reinforced by an inert fibrous filler,
a seating component comprising a beam provided with a first reinforcing plate affixed at each end of said beam, said plate at each end of said beam being positioned in a plane perpendicular to the longitudinal axis of said beam, said plate having a broad surface having an area substantially greater than the cross sectional area of said beam, said beam being at each of its ends affixed to and suspended by one of said supporting elements, mechanical fasteners extending through said first reinforcing plates and through a vertical wall of said hollow shapes,
a second reinforcing plate being provided on the inside of said vertical wall,
said fasteners extending through said second reinforcing plates and causing said first and second plates to apply compressive force on said supporting wall,
at least one seating unit attached to and supported by said beam.

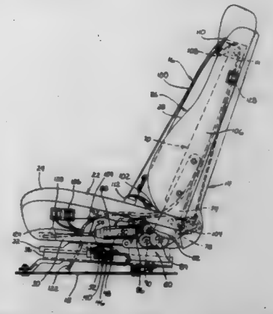
5,292,178

FRONT SEAT FOR TWO-DOOR VEHICLE

Richard D. Loose, Birmingham; Gregory S. Ches, Clinton Township, Macomb County, and John De Bano, Shelby Township, Macomb County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 15, 1992, Ser. No. 914,818
Int. Cl.[5] B60N *2/12*
U.S. Cl. 297—344.1 **4 Claims**

3. A front seat assembly for a vehicle being movable for access to a rear seat, the front seat assembly comprising:
a seat bottom;
a power longitudinal seat adjuster mechanism slideably and constantly engageably connecting the seat bottom to the vehicle for adjustably positioning the seat bottom between a forward position and a rearward position;
a seat back;
a power reclining mechanism connecting the seat back to the seat bottom for positioning and constantly retaining the seat back in positions between a forward tilt position and a rearward reclined position;
first switch means mounted on the seat back accessible to a rear seat occupant for simultaneously actuating the power longitudinal seat adjuster mechanism and the power reclining mechanism to simultaneously move the seat bottom and the seat back either forwardly or rearwardly; and
second switch means mounted on the seat bottom accessible to a front seat occupant for actuating the power longitudinal seat adjuster mechanism and the power reclining



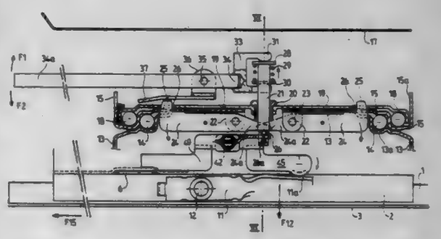
mechanism to independently move the seat bottom and the seat back forwardly or rearwardly.

5,292,179

SAFETY ROTARY BASE ENABLING A ROTATION OVER 180 DEGREES OF SEAT IN AN AUTOMOBILE VEHICLE OR THE LIKE

Dominique A. Forget, Orne, France, assignor to Bertrand Faure Automobile "BFA", Essone, France

Filed Dec. 8, 1992, Ser. No. 988,901
Claims priority, application France, Dec. 10, 1991, 91 15288
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—344.24 **2 Claims**



1. A safety rotary base for a vehicle seat, allowing a 180° rotation of the seat, said rotary base comprising:
longitudinal adjusting slides each comprised of an upper mobile profiled member and a lower fixed profiled member, said upper mobile profiled member slidable on said lower profiled fixed member;
a fixed plate connected to said slides comprising a first ball bearing;
a cover comprising a second ball bearing, said cover fixedly connected to said fixed plate;
a rotary intermediate plate, connected between said fixed plate and said cover via said first and said second ball bearings so as to be rotatable relative to said fixed plate and said cover, said fixed plate, said rotary intermediate plate, and said cover centered by said first and said second ball bearings;
a rod centrally penetrating said fixed plate, said rotary intermediate plate, and said cover, said rod being slidably connected to said fixed plate, said rotary intermediate plate, and said cover, with said rod having a head;
a washer slidably connected to said rod near said head;
a spring concentrically positioned about said rod and connected between said head and said washer for biasing in a downward direction said washer;

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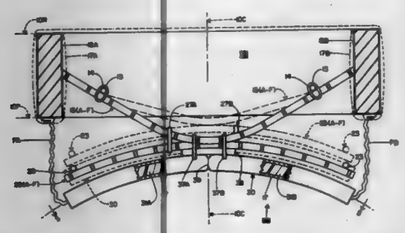
a lever pivotably supported at said fixed plate, said lever having a forked end, said forked end having a first leg resting on said head and a second leg resting on a downward side of said washer;
a first and a second arm connected remote from said head to said rod in pivotable manner;
a locking mechanism for locking said upper mobile profiled member relative to said lower fixed profiled member, said locking mechanism released upon actuation of said lever in a first direction of movement resulting in a downward movement of said rod and a downward pivoting of said first arm so that said first arm releases said locking mechanism;
two safety latches locking said rotary intermediate plate against rotation, said forked end of said lever actuating in a second direction of movement opposite to said first direction of movement said safety latches for releasing said rotary intermediate plate only after first releasing said locking mechanism and pushing the vehicle seat forward; and
a latching mechanism locking said rotary intermediate plate against rotation, said latching mechanism released by tilting a back portion of the vehicle seat toward a sitting portion of the vehicle seat.

5,292,180

UPHOLSTERED SEATING FURNITURE HAVING BACKREST PROVIDED WITH OCCUPANT'S UPPER-BODY-CONFORMING CAPABILITY

Charles Schneider, 314 S. 67th St., Omaha, Nebr. 68132

Filed Dec. 11, 1992, Ser. No. 989,142
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.52 **8 Claims**



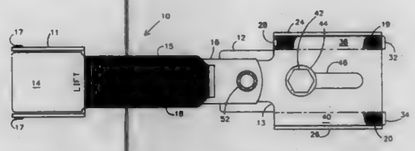
1. For the environment of upholstered seating furniture having a rearwardly positioned upright backrest and a forwardly positioned horizontal seat and which backrest and seat are both intersected by a vertical central-plane, said backrest comprising a pair of rigidly and spaced-apart sidemembers flanking said central-plane and lying along a vertical forward-plane that perpendicularly intersects said central-plane, said backrest sidemembers being attachably provided with a primary-array of horizontal and vertically-undulate metallic primary-springs that respectively extend concavely forwardly from said sidemembers and beyond said forward-plane, an improved backrest having cradling and upper-body-conforming capability to a seated occupant and that upper-bodily recumbently leans directionally rearwardly toward said upright backrest and comprising:
(A) a secondary-array comprising a plurality of horizontal and vertically-aligned and vertically-undulate metallic secondary-springs attachably located and extending at an abruptly-convex-value forwardly of said primary-array to provide a combined-array, each said secondary-spring being attached to a pair of upright secondary-rods flanking said central-plane, said secondary-array being capable of assuming a lesser-convexity-value whenever a said seated person leans recumbently rearwardly against said combined-array, and said attachment between primary-array and secondary-array being in the form of at least one primary-spring and horizontally aligned secondary-spring in a trans-springs joinder attachment; and
(B) a substantially vertically extending resiliently-compressible padding means located immediately forwardly of said secondary-array and being attached to said combined-array and being flexible along said vertical central-axis to assume said lesser-convexity-value concommitantly with said secondary-array of secondary-springs.

5,292,181

ANTI-CINCH AND ANTI-CHAFE SEAT BELT SYSTEM

Niels Dybro, Carmel, Ind., assignor to Indiana Mills & Manufacturing, Inc., Westfield, Ind.

Filed Mar. 20, 1992, Ser. No. 854,213
Int. Cl.[5] B60R *22/26*
U.S. Cl. 297—468 **4 Claims**



3. A seat belt assembly, comprising:
a mounting bracket attachable to a structure;
a belt connector;
a connecting member connectable with said belt connector;
means for connecting said connecting member with said belt connector;
said connecting member being coupled with said mounting bracket and being movable relative said mounting bracket between first and second positions, said connecting member being retracted relative said mounting bracket in the first position and said connecting member being extended relative said mounting bracket in the second position;
means for biasing said connecting member in the first position; and
a fastener, said fastener coupling said connecting member with said mounting bracket and attaching said mounting bracket to the structure.

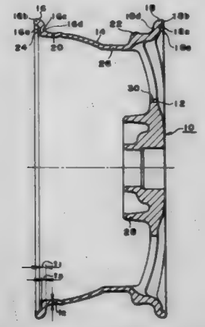
5,292,182

LIGHT ALLOY CAST WHEEL

Michio Kanazawa, Gamagouri; Kuniaki Tomoda, and Masayuki Atari, both of Toyokawa, all of Japan, assignors to Topy Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 757,607, Sep. 11, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 52,239
Claims priority, application Japan, Sep. 13, 1990, 2-95595
Int. Cl.[5] B60B *21/02, 3/06*
U.S. Cl. 301—65 **6 Claims**

1. A light alloy cast wheel comprising:
a disk portion extending in a direction substantially perpendicular to an axis of the light alloy cast wheel; and
an annular rim portion constructed integral with the disk portion, the rim portion including a first flange located closer to the disk portion, a second flange located farther from the disk portion, a first bead seat portion connected to the first flange, a second bead seat portion connected to the second flange, and a dropped portion connecting the first bead seat portion and the second bead seat portion, the second flange including a curled portion at a radially outer end of the second flange and a radially extending portion connecting the curled portion of the second flange and the second bead seat portion, the radially extending portion of the second flange having an outboard surface extending in a direction substantially perpendicular to the axis of the light alloy cast wheel and an inboard surface, the second flange having a plurality of grooves formed through casting and recessed from the outboard surface of the radially extending portion toward the inboard surface of the radially extending portion; and wherein
non-recessed portions remain between adjacent grooves of the plurality of grooves, the non-recessed portions forming radially extending ribs which reinforce the second flange, the non-recessed portions having a first thickness and the second bead seat portion has a second thickness, the first thickness being larger than the second thickness;



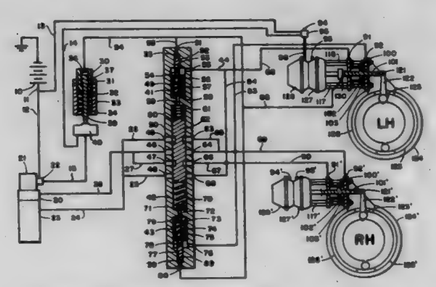
grooved portions of the radially extending portion of the second flange have a third thickness, the third thickness being smaller than the second thickness; and
wherein the second flange has an average thickness comprised of grooved and non-recessed portions about the circumference of the second flange, and the average thickness of the second flange is less than or equal to the second thickness.

5,292,183

COMBINATION AIR/HYDRAULIC INTERMITTENT BRAKING SYSTEM

Carl D. Russell, P.O. Box 334, Sallisaw, Okla. 74955

Filed Jun. 24, 1992, Ser. No. 905,298
Int. Cl.[5] B60T *13/58*
U.S. Cl. 303—2 **6 Claims**



1. A braking apparatus comprising:
a brake;
a brake applying means for applying said brake;
a compressed air operating means for operating said brake applying means such that, when an amount of compressed air pressure which is at least as large as a threshold compressed air pressure is applied to said compressed air operating means, said compressed air operating means imparts a force to said brake applying means which urges said brake applying means to apply said brake; and
a second operating means for automatically operating said brake applying means such that, while said amount of compressed air pressure which is at least as large as said threshold compressed air pressure is applied to said compressed air operating means, said brake is alternatingly released and reapplied,
wherein said brake applying means comprises an elongate shaft having a longitudinal axis, said elongate shaft being operably associated with said brake such that said brake is applied by moving said elongate shaft in a first direction along said longitudinal axis and said brake is released by moving said elongate shaft in a second direction along said longitudinal axis;
said compressed air operating means is associated with said elongate shaft such that, as long as said amount of compressed air pressure which is at least as large as said threshold compressed air pressure is applied to said compressed air operating means, said compressed air operating means urges said elongate shaft in said first direction; and
said second operating means comprises:
a piston connected to said elongate shaft and having a first side and second side;
a hydraulic chamber surrounding said piston; and a delivering means for automatically alternatingly delivering, while said amount of compressed air pressure which is at least as large as said threshold compressed air pressure is applied to said compressed air operating means, a pressurized hydraulic fluid (a) to said hydraulic chamber on said second side of said piston such that said pressurized hydraulic fluid urges said piston and said elongate shaft in said second direction with sufficient force to cause said elongate shaft to move in said second direction and thereby release said brake and then (b) to said hydraulic chamber on said first side of said piston such that said pressurized hydraulic fluid operates with said compressed air operating means to move said elongate shaft in said first direction and thereby reapply said brake.

5,292,184

WHEEL SPEED CORRECTION DEVICE WHICH COMPENSATES FOR CHANGES IN TIRE DIAMETER AND DURING VEHICLE TURNS

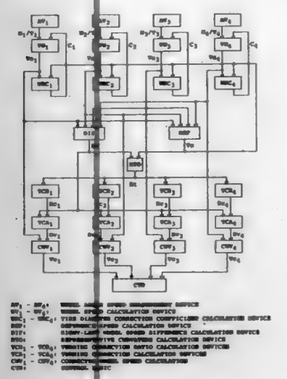
Koji Takata, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,686
Claims priority, application Japan, Mar. 12, 1991, 3-046774
Int. Cl.[5] B60T *8/24*
U.S. Cl. 303—100 **15 Claims**

1. A wheel speed correction device for use in a vehicle having a plurality of wheels and a wheel behavior control device, comprising:
means for measuring a wheel rotation angular speed of each wheel;
means for correcting a coefficient representing a tire diameter for each wheel;
means for calculating diameter-corrected wheel speeds for left and right wheels of the vehicle using the measured angular speed and the corrected coefficient;
means for obtaining a turning correction amount from a difference between the diameter-corrected wheel speeds of the left and right wheels; and
means for correcting the diameter-corrected wheel speed using the turning correction amount and for producing a

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turning-corrected wheel speed for each wheel, so that the turning-corrected wheel speed is provided as a wheel



speed to be used in a control logic of the wheel behavior control device.

5,292,185

ARRANGEMENT OF ELECTRONIC PARTS FOR AN ANTI-LOCK BRAKING SYSTEM FOR A VEHICLE

Hiebl Johann, Waldmünchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

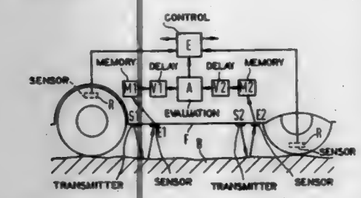
PCT No. PCT/DE91/00656, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO92/03316, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 19, 1991, Ser. No. 955,861

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1990, 9012296

Int. Cl.[5] B60T *8/58*; B61C *15/08*

U.S. Cl. 303—100 **6 Claims**



1. A circuit arrangement for an anti-lock braking system for a motor vehicle, comprising:

electronic wheel sensors which monitor rotation behavior of wheels of the motor vehicle during braking;

a control unit which evaluates signals from the wheel sensors and which acts on the wheels to prevent locking thereof;

a first clearance sensor, which is fitted close to or on a vehicle floor of the motor vehicle and which is directed toward a road surface, and which has a radiation transmitter and a radiation receiver;

a memory unit which briefly stores sensor signals received from the first clearance sensor;

an evaluation unit, by means of which the stored sensor signals of the first clearance sensor are checked for changes which indicate a movement of the motor vehicle;

a second clearance sensor fitted close to or on the vehicle floor, and directed toward the road surface, such that the second clearance sensor receives radiation signals reflected from the road surface at a point at which the first clearance sensor has previously received the reflected radiation signals for a straight-ahead movement of the motor vehicle;

at least one adjustable delay unit connected to the evaluation unit;

the sensor signal, which is received from the first clearance sensor and stored, being compared by the evaluation unit, after an adjusted delay time, with a sensor signal received from the second clearance sensor, and, if the compared sensor signals correspond, a control signal being transmitted to the control unit, which control signal indicates that the motor vehicle is skidding.

5,292,186

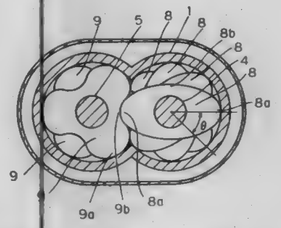
CONTINUOUS KNEADING MACHINE

Yohji Kubo; Takashi Kobayashi; Akira Toyomi, and Yoshiyuki Otake, all of Osaka, Japan, assignors to Kurimoto, Ltd., Osaka, Japan

Filed Jun. 9, 1993, Ser. No. 73,492

Int. Cl.[5] B28C *1/16*; B01F *7/04*

U.S. Cl. 366—97 **1 Claim**



1. A continuous kneading machine comprising a cylindrical body of which sectional shape is formed of a plurality of circles partially crossover each other, rotaion shafts disposed in said circles in parallel thereto in the same number as said circles, and a number of paddles disposed on said rotation shafts forming a plurality of pairs so as to engage with each other,

characterized in that sectional shape of one paddle in a section perpendicular to a rotation shaft is formed of n (where n is an integer, and n≧2) pairs of major radius parts and minor radius parts which are alternately arranged with equal angle therebetween and formed by a gentle curve, and that sectional shape of another paddle is formed of m (where m is an integer, m≧2, and n≠m) pairs of major radius parts and minor radius parts which are formed by an escribed envelope curve drawn by rotation in cooperation with said one paddle, and in which rotation of said another paddle is performed in a direction different from said rotation shaft of said one paddle at a different ratio of rotation frequency.

5,292,187

SLIP CONTROL SYSTEM FOR AN AUTOMOTIVE VEHICLE

Toru Onaka, and Toshiaki Tsuyama, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 16, 1992, Ser. No. 991,326

Claims priority, application Japan, Dec. 16, 1991, 3-352747

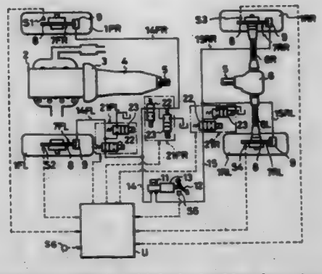
Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—103 **20 Claims**

1. A slip control system for an automotive vehicle capable of controlling braking force so as not to cause a wheel to be locked at the time of braking and so as to sustain the braking force, elevate the braking force, or reduce the braking force, comprising:

a first start means for starting the control of the braking force from a state in which the braking force is reduced, when a slip value indicative of a magnitude of deceleration of the wheel or the tendency of locking the wheel against a road surface exceeds a predetermined threshold value; and

a second start means for starting the control of the braking



force from a state in which the braking force is sustained, when a deviation obtained by subtracting a wheel speed from a vehicle speed reaches a predetermined value or larger.

5,292,188

ANTI-SPIN BRAKING SYSTEM FOR MAINTAINING DIRECTIONAL STABILITY OF A VEHICLE

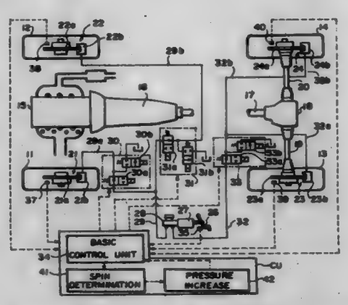
Haruki Okazaki, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 11, 1992, Ser. No. 943,869

Claims priority, application Japan, Sep. 13, 1991, 3-234362

Int. Cl.[5] B60T *8/58*

U.S. Cl. 303—111 **9 Claims**



1. An anti-skid brake system for a vehicle comprising a hydraulic circuit for applying braking pressure to each wheel of the vehicle in response to depression of a brake pedal, a braking pressure control means which controls the braking pressure applied to each wheel, a wheel speed detecting means which detects the rotational speeds of the wheels, a pseudo vehicle speed setting means which sets a pseudo vehicle speed on the basis of the wheel speeds, and a control means which causes the braking pressure control means to increase and reduce the braking pressure to each wheel so that the wheel speed of the wheel falls at a target deceleration according to the wheel speed of the wheel detected by the wheel speed detecting means and the pseudo vehicle speed set by the pseudo vehicle speed setting means, wherein the improvement comprises

a spin determination means which determines that the vehicle is spinning when a state where the braking pressure applied to any one of the wheels is not increased for a predetermined time while said control means is causing the braking pressure control means to increase and reduce the braking pressure to each wheel so that the wheel speed of the wheel falls at the target deceleration, and

a pressure increasing means which causes the braking pressure control means to increase the braking pressures to all the wheels when the spin determination means determines that the vehicle is spinning.

5,292,189

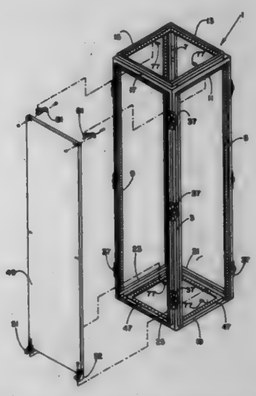
SUB-PANEL GUIDE SYSTEM FOR ELECTRICAL ENCLOSURE

Robert G. Lau, Anoka; Trent T. Jones, White Bear Lake, and Jeffrey A. Earles, Rochester, all of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

Filed Nov. 27, 1991, Ser. No. 799,339

Int. Cl.[5] A47B *47/00*

U.S. Cl. 312—265.3 **14 Claims**



1. An enclosure with a sub-panel guide system for proper installation and positioning of sub-panel mounting boards within the enclosure, comprising:

(a) a generally rectangular free-standing enclosure with an open interior and lower interior peripheral portions, said enclosure having opening-defining portions through which at least one sub-panel mounting board having upper and lower ends is received within said interior of said enclosure, said enclosure including a continuous channel member extending around said lower interior peripheral portions of said enclosure;

(b) a pair of channel followers mounted on said lower end of said sub-panel mounting board, said channel followers being constructed and arranged in cooperative guided inter-engagement with said channel member to facilitate proper alignment and installation of said sub-panel mounting board within said enclosure; and

(c) each of said channel followers having a depending leg portion which extends downwardly into said channel member and outwardly from said mounting board to provide a sliding support which engages said channel member in slidable relation upon tilting of said mounting board.

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5,292,190

HOLLOW STOCK FILLED WITH FOAM FOR MAKING DRAWER SIDES AND A METHOD OF MANUFACTURING SAME

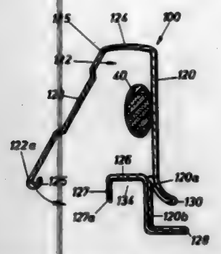
Horst Lautenschläger, Reinheim, and Horst Berger, Bielefeld, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger GmbH & Co. KG Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Dec. 11, 1990, Ser. No. 625,910

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1990, 4004332

Int. Cl.[5] A47B *88/00*; B32B *1/06*

U.S. Cl. 312—330.1 2 Claims



1. A hollow stock for drawer sides, said hollow stock comprising a single metal sheet bent or rolled to comprise uniformly in the longitudinal direction

a cross-sectional hollow space for accommodating therein a foam filling,

upper and lower outwardly projecting flanges having a folded-back double wall construction, said upper and lower flanges forming therebetween a slot for accommodating a side edge of a drawer bottom plate, and

a catch projection formed at a first free end of said sheet and an outwardly projecting catch limb formed at a second free end of said sheet, said catch projection being snappingly retained on said catch limb to form said hollow space,

said catch limb and said lower flange forming therebetween an inverted channel for accommodating a drawer slide.

5,292,191

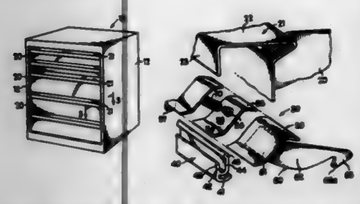
LATCH MECHANISM FOR A CABINET DRAWER

George R. Slivon, Kenosha, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Nov. 25, 1991, Ser. No. 797,049

Int. Cl.[5] A47B *95/00*

U.S. Cl. 312—332.1 11 Claims



1. A latch mechanism for a drawer of a cabinet having side walls, the drawer including an elongated drawer pull fixed to the drawer having a length and a depending member with a free end, said latch mechanism comprising: coupling means at the free end of the depending member for defining a first slot, said coupling means including a trim member secured to the depending member of the drawer pull, said trim member having said first slot and a second slot, said second slot securely receiving the free end of the depending member of the drawer pull, an elongated actuator plate under the drawer pull and extending substantially the length of the drawer pull, said actuator plate being disposed in said first slot for pivotal movement, said actuator plate having one end thereof disposed adjacent to one of the side walls, a hook at said one end of said actuator plate, and a keeper on said one of the side walls of the cabinet, said hook being arranged to engage said keeper when the drawer is closed, said hook being releasable from said keeper by pivoting said actuator plate toward the drawer pull.

5,292,192

GUIDE RAIL FOR ROLLER DRAWER GUIDES

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co. KG, Fed. Rep. of Germany

PCT No. PCT/EP92/00792, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/21268, PCT Pub. Date Dec. 10, 1992

PCT Filed Apr. 8, 1992, Ser. No. 971,864

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1991, 4118567

Int. Cl.[5] A47B *88/00*

U.S. Cl. 312—330.12 2 Claims



1. An article of furniture having a furniture carcass and a profiled rail of metal plate with an approximately U-shaped cross-section provided as a guide rail for roller drawer guides in said article of furniture, having a web surface which is screwed onto the support wall of the furniture carcass of said article of furniture and having strip-shaped limb sections projecting from the web surface and running a roller of the profiled rail on a withdrawable furniture portion and wherein the front end of said profile rail at the exterior of the furniture carcass and carriers a substantially flat surfaced fastening flange as an extension of the web surface from which a pivot pin for the fixed running roller which is running on the profiled rail also projects, characterised in that the fastening flange is bent with respect to the plane of the web surface of the profiled rail about an axis extending substantially transverse to the longitudinal direction of the profiled rail such that when the profiled rail is placed against the said support wall of the furniture carcass, wherein initially, only an end of the profiled rail inside the furniture carcass and a vertical front edge of the fastening flange engage the support wall whilst in the intervening regions there is a small gap between the support wall and the associated flat sides of the web surface and of the fastening flange.

5,292,193

APPARATUS FOR THE HIGH INTENSITY DISPERSION OF AGGLOMERATED POWDERS IN CROWDED SUSPENSIONS HAVING AN AGITATOR DISK

James E. Funk, 301 Maple Ave., Seneca, S.C. 29678

Filed Jan. 12, 1993, Ser. No. 3,523

Int. Cl.[5] B01F *7/26*

U.S. Cl. 366—307 7 Claims

1. An apparatus for deagglomerating powder in a mixture of liquid and powder, wherein said apparatus is comprised of a mixing tank, an agitator disk disposed within said mixing tank, said disk rotating in a horizontal plane, a means for rotating said agitator disk, and a first baffle, wherein:

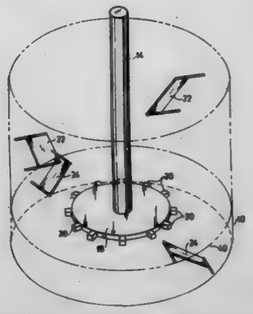
(a) said agitator disk is circular, smooth, and flat and has a diameter of from about 6 to about 40 inches, said diameter of said agitator disk is from about 0.2 to about 0.4 times as great as the maximum internal width of said mixing tank;

(b) said agitator disk is comprised of a multiplicity of compound teeth radially and removable attached to the perimeter of said disk, wherein the distance between adjacent compound teeth on said perimeter of said agitator disk is from about 3 to about 5 inches;

(c) said agitator disk has a thickness of from about 0.15 to about 0.5 inches, and a frontal area of said compound teeth attached to said agitator disk is from about 0.25 inches by 0.25 inches to about 1.0 inch by 1.0 inch;

(d) each of said compound teeth is comprised of a substrate to which is attached a front plate, a top plate, and a bottom plate, wherein each of said front plate, said top plate, and said bottom plate consists essentially of ceramic material;

(e) said first baffle is mounted on the inner wall of said mixing tank at an angle of from about 20 to about 45 degrees to said horizontal plane of the disk and at a distance of at least about 2 inches from said inner wall.



5,292,194

DEVICE FOR PREPARING LIQUID TO THIN PULPY MEDIA

Dieter Gabor, Im Holzgarten 2/1, 7143, Vaihingen/Enz, Fed. Rep. of Germany

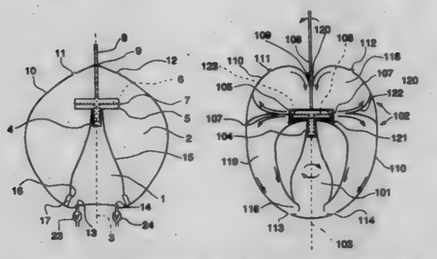
PCT No. PCT/DE89/00535, § 371 Date Feb. 14, 1991, § 102(e) Date Feb. 14, 1991, PCT Pub. No. WO90/01985, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 16, 1989, Ser. No. 656,095

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827659

Int. Cl.[5] B01F *5/12*

U.S. Cl. 366—263 13 Claims



1. A device for circulating fluid, the device comprising:

an inner chamber having a neck end and a passage end, said inner chamber being substantially symmetrical about a longitudinal axis, said inner chamber having an outer circumference, said outer circumference initially decreasing gradually in size and then decreasing more strongly from said passage end to said neck end to form a bottle like shape;

an outer chamber surrounding said inner chamber, said outer chamber being also substantially symmetrical about said longitudinal axis, said outer chamber communicating with said inner chamber through a neck opening in said neck end of said inner chamber and a passage opening in said passage end of said inner chamber;

a centrifuge wheel positioned inside said outer chamber and outside said inner chamber, said centrifuge wheel having an intake pipe extending from a center of said centrifuge wheel through said neck opening and into said inner chamber, said centrifuge wheel defining a plurality of separate radial channels extending from an outer delimitation of said centrifuge wheel to said longitudinal axis, each of said plurality of radial channels being bent into the direction of said longitudinal wax is as said each separate radial channel approaches said longitudinal axis, said intake pipe having an opening inside said inner chamber,. said centrifuge wheel and said intake pipe being substantially symmetrical with, and rotating about, said longitudinal axis.

5,292,195

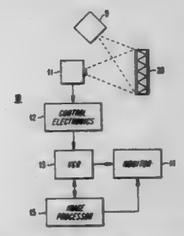
THERMOGRAPHIC EVALUATION TECHNIQUE

Elton M. Crisman, Jr., Saint Cloud, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Sep. 9, 1992, Ser. No. 942,216

Int. Cl.[5] G01N *25/72*

U.S. Cl. 374—4 14 Claims



1. A method for thermographically evaluating objects, comprising the steps of:

(a) applying a selected amount of energy to a first object having a known surface structure in order to raise the surface temperature of the first object;

(b) imaging the first object having a known surface structure and ensuring that the thermographic imaging device substantially reaches the maximum limit of its dynamic range when imaging the known surface structure;

(c) recording on a storage device the image of the first object having the known surface structure;

(d) enhancing the recorded image of the first object to reveal the known surface structure;

(e) applying the selected amount of energy to a second object to be evaluated in order to raise the surface temperature of the second object;

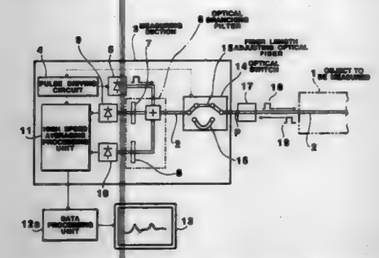
(f) imaging the second object with the thermographic imaging device;

(g) enhancing the image of the second object; and

(h) comparing the recorded image of the first object having the known surface structure to the image of the second object to be evaluated, in order to determine whether there are any differences in the surface structure of the second object.

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OPTICAL FIBER TYPE TEMPERATURE DISTRIBUTION MEASURING APPARATUS
Osamu Iida, and Yuuichi Uchizima, both of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Feb. 17, 1993, Ser. No. 18,570
Int. Cl.[5] G01J *5/10*; G01N *21/65*
U.S. Cl. 374—131 **2 Claims**



1. An optical fiber type temperature distribution measuring apparatus, wherein a light pulse is transmitted into an optical fiber installed in an object to be measured, and a temperature distribution value representing a series of segment average temperatures of the optical fiber is measured on the basis of the intensity of Raman back scattering light and a time until the Raman back scattering light returns, said optical fiber type temperature distribution measuring apparatus comprising:

light pulse oscillating means for oscillating the light pulse having a predetermined pulse width;

selective switching means provided at a light pulse transmitting side of the optical fiber and including a plurality of fiber length adjusting optical fibers respectively having different lengths so that their mutual phase difference is smaller than a distance resolution in temperature measurement, said selective switching means selectively connecting the plurality of fiber length adjusting optical fibers to the optical fiber to form a plurality of detection routes having different lengths; and

calculating means for calculating a plurality of temperature distribution measurement values respectively corresponding to the plurality of detection routes, and for calculating a temperature distribution value representing a series of temperature values of respective subsegments of the optical fiber, a plurality of the subsegments corresponding to a segment which in turn corresponds to the distance resolution.

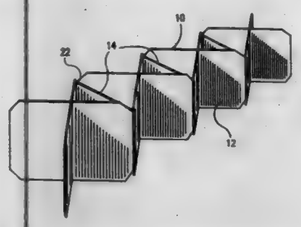
5,292,197
SELF-EXPANDING FILLER
Ron Reisman, 5 Hasatat, Jerusalem, Israel
Filed Mar. 23, 1993, Ser. No. 35,834
Int. Cl.[5] A45C *7/00*
U.S. Cl. 383—127 **12 Claims**

1. A self-expanding filler device for use in stuffing a soft item, comprising:

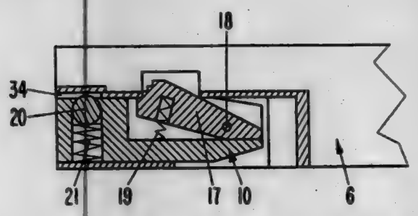
(a) a first structural member including at least two adjacent panels being pivotally connected to each other about a common boundary, each of said panels including a slot set off from said common boundary and extending substantially parallel to said common boundary from a point on the edge of said panel;

(b) a second structural member including at least two adjacent panels being pivotally connected to each other about a common boundary, each of said panels including a slot set off from said common boundary and extending substantially parallel to said common boundary from a point on the edge of said panel each slot of said panels of said second structural member interlocking with said panels of said first structural member; and

(c) self-expanding means connected to interlocking panels of said first and second structural members to urge said interlocking panels to orient substantially perpendicular to each other.



5,292,198
PULL-OUT GUIDE FITTING FOR DRAWERS
Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Mar. 8, 1993, Ser. No. 28,949
Claims priority, application Austria, Mar. 11, 1992, 474/92
Int. Cl.[5] A47B *88/04*
U.S. Cl. 384—21 **41 Claims**



1. In an assembly for use on each of opposite sides of a drawer for guiding sliding movement thereof into and out of a furniture body, said assembly including at least one bracket to be mounted on a respective side of the furniture body, a pull-out guide fitting to be mounted on the drawer and to be mounted on said bracket when the drawer and said fitting are assembled to the furniture body, said fitting including at least a support rail to be fixed relative to the furniture body when the drawer is assembled thereto and a pull-out rail to be fixed relative to the drawer and to be longitudinally slidable relative to said support rail, and a connection structure for, upon assembly of the drawer and said fitting to the furniture body, attaching said support rail to said bracket such that said support rail is fixed relative to the furniture body while said pull-out rail and the drawer are longitudinally slidable relative thereto, the improvement wherein said connection structure comprises:

a detent edge and a catch on said bracket;

a housing on said support rail;

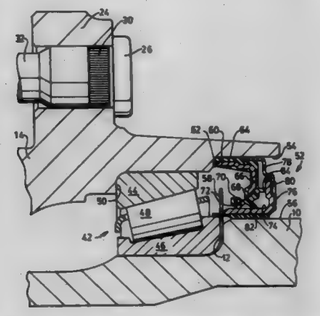
a locking lever mounted on said housing for pivotal movement relative thereto about an axis;

a first spring mounted to urge said locking lever about said axis in a direction such that, upon assembly of the drawer and said fitting to the furniture body, said locking lever abuts said detent edge and thereby prevents movement in a first direction of said support rail relative to said bracket;

a catch member mounted on said housing; and

a second spring mounted to urge said catch member relative to said housing in a direction such that, upon assembly of the drawer and said fitting to the furniture body, said catch member abuts said catch and thereby prevents movement of said support rail relative to said bracket in a second direction transverse to said first direction.

5,292,199
AXLE WHEEL SEAL AND BEARING ARRANGEMENT FOR A MOTOR VEHICLE
John H. Hosbach; Binod K. Agrawal, both of Rochester Hills, and Harold L. Chambers, Clinton Township, Macomb County, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 7, 1993, Ser. No. 57,917
Int. Cl.[5] F16C *33/78*; F16J *15/34*
U.S. Cl. 384—478 **8 Claims**



1. An assembly for an automotive vehicle axle, comprising:

a first component;

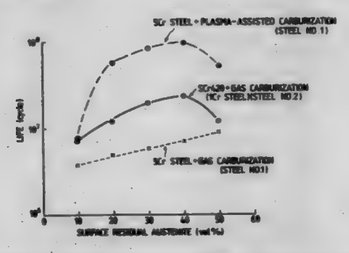
a second component adapted for rotation relative to the first component;

a bearing located between the first component and second component, providing support for relative rotation therebetween;

means for sealing a space between the first and second components against passage of fluid, having a first element contacting the first component, and second element contacting the second component, the first and second elements mutually axially displaceable and rotatable; and

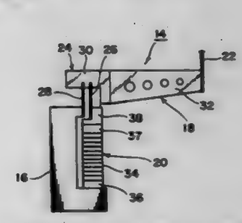
a slinger fixed against axial movement, having a surface located adjacent the seal for limiting movement of one of the first element and second element toward the bearing.

5,292,200
BALL-AND-ROLLER BEARING
Yoichi Matsumoto; Kenji Yamamura, and Kousuke Nonaka, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan
Continuation of Ser. No. 928,304, Aug. 12, 1992, abandoned.
This application Jun. 28, 1993, Ser. No. 82,169
Claims priority, application Japan, Aug. 14, 1991, 3-204275
Int. Cl.[5] F16C *33/62*
U.S. Cl. 384—492 **6 Claims**



1. A ball or roller bearing comprising an inner race, an outer race and rolling elements, at least one of said inner race, said outer race and said rolling elements being made of an alloy steel that consists of 0.1–1.2 wt % of carbon, 3.0–18.0 wt % of chromium, 0.01–1.5 wt % of silicon, 0.3–1.5 wt % of manganese, up to 2.5 wt % of molybdenum, up to 0.002 wt % of oxygen, up to 0.015 wt % of sulfur and the balance being iron and incidental impurities, at least one of said inner race, said outer race and said rolling elements being subjected to plasma-assisted carburization and hardened to such an extent that it has a relative surface carbon area of 15–45%, a surface carbon concentration of 1.6–3.5 wt % and a surface retained austenite level $[\gamma_R]_{surf}$ of 20–45 vol %.

5,292,201
PRINTING HEAD OF WIRE-DOT IMPACT PRINTER
Akio Yano, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 16, 1992, Ser. No. 977,027
Claims priority, application Japan, Nov. 18, 1991, 3-301437
Int. Cl.[5] B41J *2/295*
U.S. Cl. 400—124 **2 Claims**



1. A printing head comprising a frame, a plurality of impact printing wires constituting a wire-dot matrix, and a plurality of actuators respectively corresponding to, and for selectively driving, said respective impact printing wires; each of said actuators including:

a movable member having one end to which the respective one of said impact printing wires is connected;

a piezoelectric device having a first end connected to said frame and a second end, said piezoelectric device being responsive to selective application of an electrical voltage thereto to undergo longitudinal expansion and contraction;

a first leaf spring having a first end fixedly connected to the second end of said piezoelectric device and a second end fixedly connected to said movable member adjacent to the other end thereof, a width of said first leaf spring being narrower at a central portion thereof and being gradually increased toward said first and second ends of said first leaf spring;

a second leaf spring disposed in substantially parallel relationship to said first leaf spring and having a first end fixedly connected to said frame and a second end fixedly connected to said movable member adjacent to the other end thereof so that the extent of longitudinal expansion and contraction of said piezoelectric device in response to the selective application of an electrical voltage thereto is enlarged by said movable member and transmitted thereby to said impact printing wire, a width of said second leaf spring being narrower at a central portion thereof and being gradually increased toward said first and second ends of said second leaf spring;

said first and second leaf springs each have opposite side edges which are symmetrical with respect to a longitudinal center line of each said leaf spring, each side edge being contoured by a first arc having a large radius of curvature at the central portion of each said leaf spring and a pair of second arcs each having a small radius of curvature at said first and second ends of each said leaf spring; and

said contoured side edges of both said first and second leaf springs face generally perpendicular to a length of said

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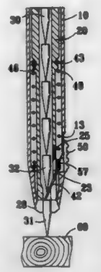
movable member which is defined between said one end of said movable member and said other end of said movable member.

5,292,202

RETRACTABLE, REFILLABLE, SHARPEN-FREE PENCIL ASSEMBLY

Robert Lee, Taipei, Taiwan, assignor to Pencell Co., Ltd., Taipei, Taiwan

Filed Jan. 5, 1993, Ser. No. 731
Int. Cl.[5] B43K *21/16*
U.S. Cl. 401—57 3 Claims



1. A retractable, refillable, sharpen-free pencil assembly comprising:

an axially extending outer tube including an inner wall, an upper cut-out section and an open lower end, said open lower end having a reduced diameter portion and an axially extending, elongated slot defining a slotted hole portion and a closed slot portion;

an inner tube coaxially, slidably mounted within said outer tube for axial movement relative to said outer tube, said inner tube including an elongated upper section extending closely adjacent the inner wall of said outer tube and a reduced diameter lower section, said upper section carrying an actuating member that protrudes through the cut-out section of said outer tube, said reduced diameter lower section including a pair of flanges formed adjacent the upper section, an axial end portion formed with several wedge-shaped protruded portions that define a chucking device and a reduced diameter, axially extending lead hole, said wedge-shaped protruding portions having a diameter greater than the diameter of the open lower end of said outer tube, said chucking device being shiftable between a first portion adjacent a lower portion of said slotted hole portion and a second position axially spaced from the open lower end of said outer tube, said inner tube further being formed with at least one pair of axial slots extending from said chucking device along a predetermined length of said inner tube;

a plurality of pre-sharpened leads each having a cylindrical-shaped top portion and a conical bottom portion, said plurality of leads being positioned in said inner tube;

a push plate having first and second opposing sides with the first side defining a finger engaging surface and the second side carrying an upper protruding member and a pair of lower, juxtaposed protruding members, said push plate being slidably mounted in the elongated slot of said outer tube with said upper and lower protruding members extending through the slotted hole portion thereof; and

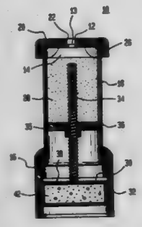
a coil spring having an upper coil engaged with the pair of flanges formed on said inner tube, a lowermost coil supported by the upper protruding member of said push plate and a lower extension piece that extends between the pair of lower protruding members of said push plate, through said at least one slotted hole in said inner tube and into said chucking device, wherein said push plate is normally biased downward in the elongated slot of said outer tube and said inner tube is normally biased upward within said outer tube by said coil spring such that, in a non-use position of said pencil assembly, the lower extension piece of said coil spring extends into said chucking device and engages the conical bottom portion of a lowermost one of said plurality of pre-sharpened leads, when it is desired to position one of said plurality of pre-sharpened leads for writing, said inner tube is shifted relative to said outer tube and against the biasing force of said coil spring by means of the actuating member carried by the upper section of said inner tube such that said chucking device protrudes out of the open lower end of said outer tube while the lower extension piece of said coil spring is engaged by said inner tube and forced out of said chucking device, said inner tube is then permitted to return to its non-use position with the air of said coil spring whereupon said lower extension piece will again extend into said chucking device and will abut the cylindrical-shaped top portion of the lowermost pre-sharpened lead while said chucking device grasps said cylindrical-shaped top portion, and when it is desired to retract said lowermost pre-sharpened lead, said push plate is shifted upward within the elongated slot of said outer tube, against the biasing force of said coil spring, to cause said lower extension piece to again be retracted from within said chucking device whereby said lowermost lead will be free to shift upward within said inner tube upon the application of an upward force thereon.

5,292,203

SELF SEALING SUBSTANCE DISPENSER

Robert S. Whitman, 2714 Northview Rd., Philadelphia, Pa. 19152

Continuation of Ser. No. 734,530, Jul. 23, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 989,467
Int. Cl.[5] B65D *51/00*
U.S. Cl. 401—122 19 Claims



1. A substance dispenser for dispensing substance to an article, comprising:

first and second reservoir means for storing substance;

a powdered substance;

openable closure means for closing said first reservoir means and containing said powdered substance within said first reservoir means;

said openable closure means having opening means for opening to permit passage of said article through said openable closure means and into said first reservoir means for dispensing said powdered substance to said article; and,

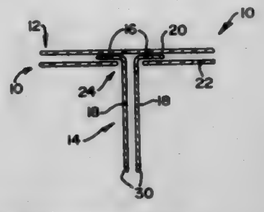
stationary directing means rigidly coupled to said first reservoir means for directing said powdered substance within said first reservoir means toward said opening of said openable closure means.

5,292,204

PAPER BINDER

Murray B. Blumberg, Sandton, South Africa, and William M. Hoffman, Hamilton, Ohio, assignors to Technokantoor Limited, Brussels, Belgium

Filed Jan. 12, 1993, Ser. No. 3,464
Int. Cl.[5] B42F *13/06*
U.S. Cl. 402—14 10 Claims



1. A paper binder which comprises

a pair of prongs;

an anchor formation at one end of each prong;

a head, the anchor formations being embedded in the head, said head being made of a non-metallic material; and

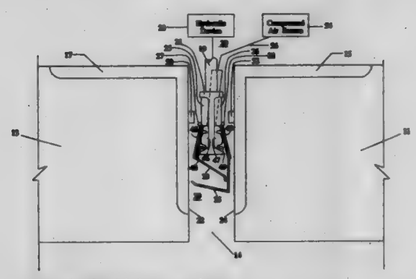
said head comprising two thin disc-like elements with the anchor formations sandwiched therebetween.

5,292,205

BACKUP PROTECTION FOR SEALED STRUCTURAL EXPANSION JOINTS

Bertram V. Burke, N. Plainfield, N.J.; David Hall, Gansevoort, and Jay Burdett, Saratoga Springs, both of N.Y., assignors to Infrastructure Protection Systems, Inc., Florham Park, N.J.

Continuation-in-part of Ser. No. 653,254, Feb. 11, 1991, Pat. No. 5,141,358. This application Feb. 11, 1992, Ser. No. 834,060
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] E01C *11/02*
U.S. Cl. 404—49 18 Claims



1. A method which comprises:

adhesively securing a run-off arrangement on opposing vertical faces that form a gap in an expansion joint of a roadway;

said adhesively securing step including:

a. removably mounting a run-off member on a horizontal thrusting device, with the member having an adhesive section facing away from the thrusting device;

b. lowering the thrusting device and the member into the gap between the vertical faces;

c. pressing the adhesive section of the member against one of the vertical faces by actuating the horizontal thrusting device;

d. deactuating the thrusting device; and

e. withdrawing the thrusting device from the gap; and

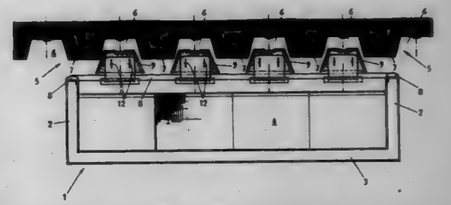
said securing step further including applying a second member horizontally overlapping the first member against the other of the faces within the gap.

5,292,206

DEVICE FOR SEALING A CAISSON IN A WATERTIGHT WAY

Willy Sonck, Denderleeuw, and Eric Van Draege, Lokeren, both of Belgium, assignors to General Coatings, Erembodegem, Belgium

Filed Sep. 16, 1992, Ser. No. 946,272
Claims priority, application Belgium, Sep. 18, 1991, 09100864
Int. Cl.[5] B63C *11/00, 11/40*
U.S. Cl. 405—12 9 Claims



1. A device for sealing a caisson comprising a bottom, two upright side walls and a back wall in a watertight way against a sheet pile wall having a longitudinal profile composed of a succession of grooves and ridges, said device comprising the combination of:

a) an inflatable continuous air chamber extending along the bottom of the caisson over the total width of the caisson and along the upright side walls thereof to sealingly engage the ridges of the sheet pile wall while conforming to irregularities therein;

b) a series of deformable sealing elements disposed along the bottom of the caisson to sealingly engage the grooves of the sheet pile wall, each having a profile approaching the profile of a groove, which elements are each mounted between two horizontal guiding plates disposed one above the other in a manner such as to allow a displacement of the elements in the direction of the sheet pile wall in front of the grooves therein, while said inflatable air chamber is provided for pressing these elements against the wall to enable the deformable sealing elements to adapt to deformed and irregular grooves;

c) a core provided between each of said sealing elements and the air chamber, which core is adapted to be displaced between said guiding plates and is fixed to the adjoining sealing element; and

d) means for allowing a lateral displacement of said sealing elements together with the guiding plates above and underneath these sealing elements with respect to the caisson.

5,292,207

ICE CRUSH RESISTANT CAISSON FOR ARCTIC OFFSHORE OIL WELL DRILLING

William A. Scott, Calgary, Canada, assignor to Allen Bradford Resources, Inc., Calgary, Canada

Filed Feb. 17, 1993, Ser. No. 18,446
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—207 15 Claims

1. A submersible mobile caisson having ice crush resistance for adapting mobile offshore drilling units and mobile offshore oil well production rigs which are ice crush sensitive, for use in ice bearing offshore ocean waters, said caisson comprising:

i) a floatable generally four-sided caisson with a fixed upstanding front outer wall and fixed upstanding opposing side outer walls and an upstanding rear outer wall having a removable entrance door,

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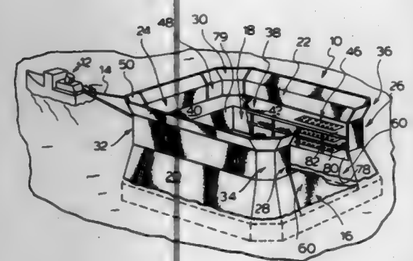
ii) said caisson being of a height to permit offshore drilling and/or production when said caisson is submersed to rest on an ocean floor,

iii) said outer walls being reinforced to withstand crushing forces exerted by ice bearing offshore oceans and said outer wall height being sufficient to turn back a maximum design wave, said outer walls having an inwardly sloping wall portion about the caisson perimeter above and below submersed water level to wedge upwardly advancing ice,

iv) a cavity being provided within said upstanding front and rear outer walls and said opposing side outer walls, access to said cavity being provided by removing said entrance door,

v) said cavity being defined by a base, a front inner wall, opposing side inner walls and a rear inner wall on said entrance door, said inner walls being spaced from corresponding said outer walls of said front and opposing sides with an upper support deck spanning said spaced apart outer and inner walls, said front, said rear including said door and said side inner and outer walls defining a caisson perimeter structure, the interior space of said cavity being protected from ice crushing forces by said caisson perimeter structure,

iv) said perimeter structure and said base having a plurality of ballast compartments to float said caisson and when said compartments are filled with a ballast liquid, said



caisson sinks towards and rests on the ocean floor where said caisson perimeter structure is of a height to provide above water level a sea break to safeguard operating facilities and personnel,

vii) said base of said cavity being positioned relative to said deck to provide sufficient draft when said caisson is floating and said door is open to permit entrance and exit of mobile offshore drilling units and/or production units,

viii) said deck along each of said opposing side walls having at least one drilling/production service hatch,

ix) each portion of said perimeter structure which extends along said opposing side walls having extending vertically therethrough, a drilling/production moon pool system which extends from and is in communication with said corresponding service hatch,

x) said caisson perimeter structure comprises an ocean floor perimeter foot portion of solid reinforced structural material, said cavity base being of reinforced structural material tied into said perimeter foot portion,

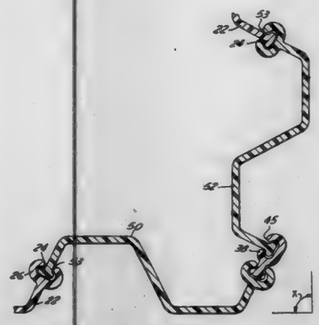
xi) said inner and outer walls to at least above submersed water level when said perimeter foot is resting on ocean floor are of reinforced structural material, said plurality of said ballast compartments being provided between said inner and outer walls with a majority of each ballast compartment being below submersed water level when said perimeter foot is resting on ocean floor.

5,292,208

CORNER ADAPTER FOR CORRUGATED BARRIERS

Lawrence E. Berger, Sterling Heights, Mich., assignor to C-Loc Retention Systems, Inc., Utica, Mich.

Filed Oct. 14, 1992, Ser. No. 960,980
Int. Cl.[5] E02D *29/02, 5/00*
U.S. Cl. 405—281 **10 Claims**



1. A barrier comprising:

a first corrugated section having a tongue at one lateral end and a groove at an opposed lateral end;

a second corrugated section having a tongue at one lateral end positioned adjacent said groove on said first corrugated section, and a groove at an opposed lateral end; and

a corner adapter having an adapter groove receiving said tongue of said second corrugated section and having a tongue received in said groove of said first corrugated section, said corner adapter resulting in a barrier wherein said first and second corrugated sections extend at an angle relative to each other, said adapter groove having an entrance and a groove base, said adapter groove including a first plane extending from the center of said entrance towards the center of said groove base, said tongue including a second plane, said tongue extending from said groove along said second plane, said first and second planes being substantially non-parallel, said second plane passing into said adapter groove intermediate said groove base and said entrance.

5,292,209

BEARING PLATE

Frank Calandra, Jr., Pittsburgh; John C. Stankus, Canonsburg, and Eugene H. Stewart, Pittsburgh, all of Pa., assignors to Jennmar Corporation, Pittsburgh, Pa.

Filed May 14, 1993, Ser. No. 61,841
Int. Cl.[5] F21D *21/00*
U.S. Cl. 405—302.1 **20 Claims**

1. Apparatus for supporting a rock formation comprising,

an elongated member having a base portion with a length substantially greater than a width defining longitudinal edges forming a channel therebetween,

said base portion having a bearing surface for contacting the rock formation and an opposite surface,

means for reinforcing said elongated member extending the length of said base portion and positioned centrally on said opposite surface within said channel,

at least one opening extending through said means for reinforcing said elongated member,

a bearing plate including a contact surface and an outer surface, said contact surface positioned in overlying abutting relation with said elongated member opposite surface,

a circular embossed area extending outwardly from said plate outer surface and defining a recessed portion having a bottom wall with a central opening therethrough,

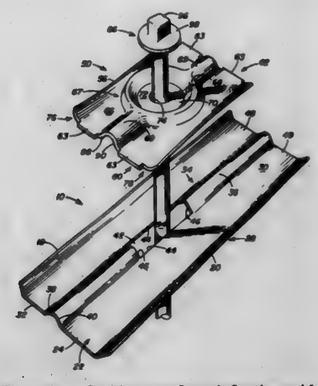
said recessed portion bottom wall positioned in said opening

in said elongated plate and positioned adjacent to said means for reinforcing said elongated member to restrain longitudinal movement of said plate on said elongated member,

said plate central opening aligned with said elongated member opening,

a longitudinal embossed area extending outwardly from said opposite sides of said circular embossed area of said bearing plate into overlying relation with said means for reinforcing said elongated member,

said longitudinal embossed area projecting from said plate outer surface in a configuration complementary with the



configuration of said means for reinforcing said elongated member,

said plate longitudinal embossed area engaged to said means for reinforcing said elongated member to restrain lateral movement of said plate on said elongated member to stationarily position said plate on said elongated member, and

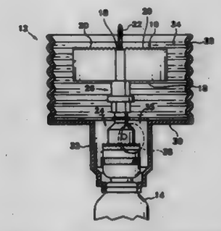
anchor means extending through said aligned openings into the rock formation and bearing against said plate recessed portion for urging said elongated member into compressive engagement with the rock formation to support the rock formation.

5,292,210

DUSTLESS HOLE SAW ENCLOSURE

Linda P. Nowick, 329 Via Colusa Rd., Redondo Beach, Calif. 90277

Filed Dec. 10, 1992, Ser. No. 988,767
Int. Cl.[5] B23B *45/00*
U.S. Cl. 408—67 **8 Claims**



1. A dust catcher for use with a hole saw in a drill motor, said dust catcher comprising:

a collapsible boot, removably mountable to a non-rotating portion of said drill motor, surrounding and extending past said hole saw when mounted in a chuck for rotation by said drill motor, said boot catching debris resulting from operation of said hole saw in said drill motor, said boot having a collapsible portion sized to surround said hole saw while permitting rotation thereof;

chuck access means through the collapsible boot for adjusting a drill motor chuck by which said hole saw is mounted to said drill motor, said access means including a sleeve portion sized to surround said drill motor chuck while permitting rotation thereof; and

means for viewing the operation of a pilot drill in the hole saw to position the pilot drill at a desired target in a surface to be cut, said viewing means having an end plate fastened between one end of said collapsible portion and one end of said sleeve portion providing said means for viewing said pilot drill operation;

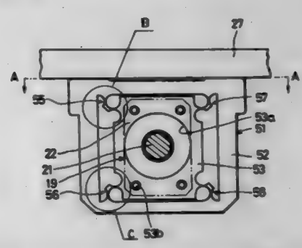
whereby said hole saw may be mounted in said drill motor chuck on a drill motor to which said boot has been attached, said pilot drill accurately applied to said desired target and said drill motor operated to cause said hole saw to cut a circular opening in said surface while said boot is pressed against said surface to collect all debris from said operation.

5,292,211

DRIVE APPARATUS AND XY DRIVE APPARATUS ON WHICH IT IS EQUIPPED

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,972
Claims priority, application Japan, Mar. 27, 1992, 4-100329
Int. Cl.[5] B23B *35/00*
U.S. Cl. 408—91 **7 Claims**



6. An XY drive apparatus having a pair of tables arranged to be mutually intersecting and able to move by one of the tables supporting the other, with each of the above-mentioned tables containing a feed screw and a nut that screws onto the above-mentioned feed screw and is coupled to a driven object; wherein, an intermediate member is provided that is attached to said driven object and supports the above-mentioned nut so as to allow movement of said nut within a plane roughly perpendicular to the shaft center of the above-mentioned feed screw, and the above-mentioned intermediate member is composed of a base portion that is mounted on the above-mentioned driven object, a moving portion that is attached to the above-mentioned nut, and flexible portions able to be deflected that integrate the above-mentioned base portion and the above-mentioned moving portion within the above-mentioned plane.

5,292,212

APPARATUS FOR POSITIONING A GEAR BLANK

Lowes J. Taylor, East Peoria; Joseph R. Peska, Manito; Charles E. Lindsey, Middletown, and David B. Swigart, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

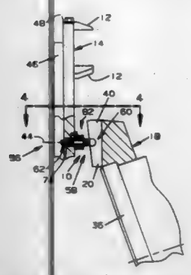
Filed Apr. 5, 1993, Ser. No. 43,084
Int. Cl.[5] B23F *23/12;* **G01B** *5/00*
U.S. Cl. 409—61 **10 Claims**

1. An apparatus for orienting cutter blades of a milling cutter of a gear generating machine, said cutter blades and milling

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cutter being orientated relative to a gear blank and rough-cut teeth of the gear blank, adjacent rough-cut teeth of said gear blank each having an adjacent flank defining an intervening space having a centerline, comprising:

one of said milling cutter and gear blank having a mounting area located at a preselected position thereon;



the other of said milling cutter and gear blank having a preselected orientation area;

an indicating element having first and second end portions, said first end portion being connectable to said mounting area and said second end portion being alignable with said orientation area.

5,292,213

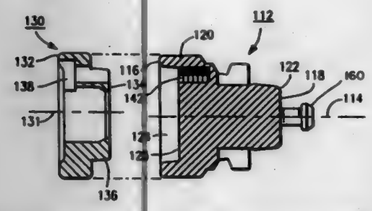
COUPLING DEVICE FOR HIGH-SPEED ROTATION

Ted R. Massa, Latrobe; David R. Siddle, Greensburg, and John S. VanKirk, Murrysville, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sep. 2, 1992, Ser. No. 939,240

Int. Cl.[5] B23B *31/10*; B23C *5/26*

U.S. Cl. 409—234 **20 Claims**



20. A coupling device for high rotational speed applications comprised of:

a) a first member symmetrical about a first longitudinal axis and having a captivating collar extending from a base to a collar front face to define a cavity within the collar wherein the captivating collar is made of a resilient material and has a radial expansion stiffness;

b) a second member symmetrical about a second longitudinal axis which may be offset from the first longitudinal axis comprised of a captivated sleeve integral with the second member and comprised of a cylinder having a solid wall to promote uniform radial expansion and receivable within said cavity and wherein the captivated sleeve is made of a resilient material and has a radial expansion stiffness which is less than that of the captivating collar; and,

c) wherein the front face of the sleeve is adapted to receive milling cutter inserts mounted peripherally about the sleeve front face and protruding beyond the front face such that when the captivated sleeve is inserted within the captivating collar and the first member and second members are rotated, the captivated sleeve radially expands at a greater rate than the captivating collar and as the rotational speed increases contacts the captivating collar thereby tending to minimize or eliminate the offset between the first and second members.

5,292,214

SLOTTING MACHINES

Arthur E. Bishop, Sydney, Australia, assignor to A. E. Bishop & Associates Pty Limited, North Ryde, Australia

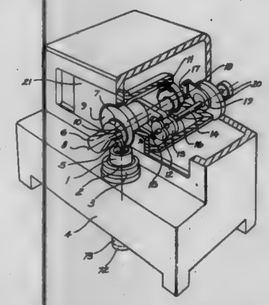
PCT No. PCT/AU92/00159, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO92/18276, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 10, 1992, Ser. No. 39,245

Claims priority, application Australia, Apr. 12, 1991, PK5592

Int. Cl.[5] B23D *5/00*

U.S. Cl. 409—307 **24 Claims**



1. A machine for machining a plurality of parallel longitudinally extending slots in a bore of a component, comprising an indexable workholding spindle housing a workholding device for gripping said component, a cutting tool mounted on a cutting spindle, said cutting spindle being pivotally supported for angular reciprocation in a spindle carrier, the rotational axis of said cutting spindle being substantially perpendicular to and mutually offset from the rotational axis of said workholding spindle, characterised in that said spindle carrier is in turn pivotally supported on a rotational axis for angular oscillation within a cutting capsule, said rotational axis of said cutting spindle being parallel to and offset relative to the rotational axis of said spindle carrier, connecting means connecting a rotatable shaft member and said cutting spindle to effect angular reciprocation of said cutting spindle upon rotation of said shaft member, desmodromic cam means controlling angular oscillation of said spindle carrier upon rotation of said shaft member, wherein said axis of said cutting spindle is movable towards said axis of said workholding spindle during each cutting stroke and away from said axis of said workholding spindle during each return stroke such that the path of travel of a cutting edge of the cutting tool is different during cutting and return strokes thereby effecting cutting tool relieving, first cutting capsule traversing means independent of said desmodromic cam means for traversing said cutting capsule towards said axis of said workholding spindle to effect cutting tool infeed to some predetermined depth within the bore of the component and thereafter traversing said cutting capsule away from said axis of said workholding spindle after the machining of each slot.

5,292,215

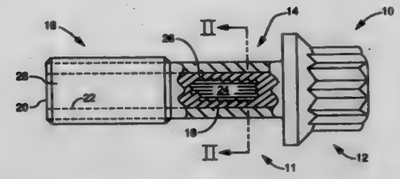
METAL BOLT WITH A COMPOSITE CORE FOR ENHANCEMENT

Herbert C. Roberts, III, Palm Beach Gardens, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 7, 1992, Ser. No. 957,976

Int. Cl.[5] F16B *35/04*

U.S. Cl. 411—424 **5 Claims**



1. An improved metal matrix bolt, said metal matrix bolt comprising:

a metal shell, said metal shell comprising:

a head;

a shank; said shank attached to said head; and

a threaded section, said threaded section attached to said shank, said shell having a longitudinal space substantially therethrough; and

a composite core, said composite core being bonded within said longitudinal space, said composite core comprising:

at least one group of longitudinal fibers; and

at least one group of spiral fibers, said spiral fibers being bonded to said at least one group of longitudinal fibers.

5,292,216

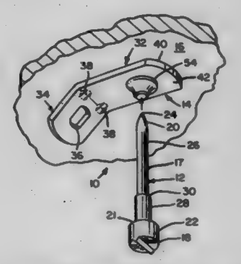
FASTENER ASSEMBLY FOR A POWER ACTUATED TOOL

Don T. Van Allman, Palatine, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Mar. 12, 1993, Ser. No. 31,205

Int. Cl.[5] F16B *15/00*, *15/02*

U.S. Cl. 411—441 **14 Claims**



1. A fastener assembly, comprising:

an elongate drive pin having a cylindrical shank including first and second opposite ends, said first end of said shank including an enlarged head and said second opposite end of said shank being tapered to a point; and

a clip member having a base which comprises first and second opposite sides, said first side being capable of engaging a surface of a substrate into which said drive pin is to be driven, and said second opposite side including a tubular chimney portion extending axially therefrom a predetermined distance and being formed as a continuous, substantially annular member having a central bore extending through said chimney portion and said base of said clip member, said bore of said chimney portion having a non-annular cross-sectional configuration along a longitudinal portion thereof so as to provide discontinuous contact about the outer periphery of said drive pin such that said drive pin is able to be press-fitted within said longitudinal portion of said bore so as to releasably retain said drive pin within said clip member prior to use and so as to further enable said chimney portion to positively guide and align said drive pin as it is driven into said substrate, said enlarged head of said drive pin shank simultaneously engaging a distal free end of said chimney portion of said clip member so as to cause controlled outward curling of said distal free end of said chimney portion of said clip member by said head of said drive pin shank upon driving of said drive pin through said bore of said chimney portion such that said clip member is secured upon said surface of said substrate as a result of said curled end of said chimney portion being interposed between said surface of said substrate and said head of said drive pin shank.

5,292,217

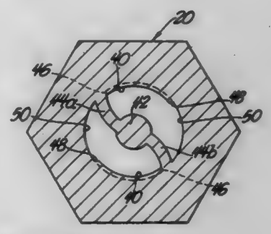
QUICK FASTENER

John G. Korpi, 14399 Ramblewood, Livonia, Mich. 48154

Filed Jun. 17, 1993, Ser. No. 77,760

Int. Cl.[5] F16B *21/00*, *35/04*

U.S. Cl. 411—553 **9 Claims**



1. A fastener assembly comprising

a head;

a longitudinal axis;

finger elements extending from the head along the axis;

a first set of thread segments on radially outer portions of the finger elements;

first curved surfaces on radially inner portions of the finger elements;

a specially configured female member engaged to the finger elements;

second sets of thread segments on an inner diameter of the female member, the second sets threadingly complimentary to the first sets;

second curved surfaces on the inner diameter of the female member between the second sets of thread segments;

a core body at the center of the female member, the body having third curved surfaces upon which slide the first curved surfaces;

internal means for both allowing limited angular relative mobility between the finger elements and the inner diameter and for affixing the core body within the female member, the internal means comprised of internal members extending from the core body to the inner diameter.

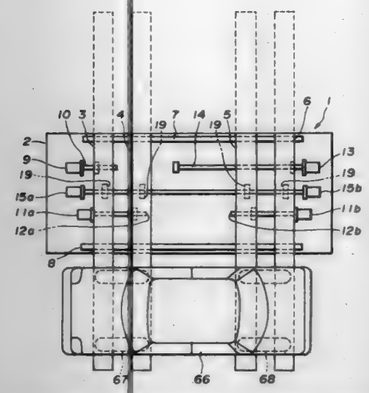
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5,292,218

APPARATUS FOR TRANSFERRING A MOTOR VEHICLE AND MULTISTORY PARKING LOT

Terumasa Ikenouchi; Niro Okabe; Hirofumi Ishikawa; Haruki Takeuchi, and Osamu Nagata, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,585
Claims priority, application Japan, Jul. 19, 1991, 3-179270; May 22, 1992, 4-154110; May 22, 1992, 4-154111
Int. Cl.[5] E04H *6/18*
U.S. Cl. 414—256 16 Claims



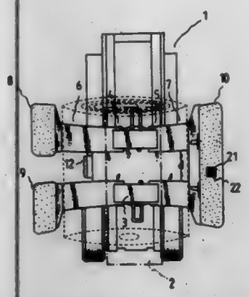
1. An apparatus for transferring a motor vehicle, comprising:
a frame body;
two pair of slide forks, each of which holds front wheels and rear wheels of a motor vehicle, respectively, and moves the motor vehicle, said two pairs of slide forks moving in a direction perpendicular to a longitudinal direction of the frame body;
said two pairs of slide forks having a first pair of slide forks positioned on a side of said frame body corresponding to the front wheels, and a second pair of slide forks positioned on a side of said frame body corresponding to the rear wheels;
each of said two pairs of slide forks having a base plate, a center beam, and a top beam, said center beam being connected to the base plate by means of a first shuttle movement mechanism for moving on the base plate, and said top beam being connected to the base plate by means of a second shuttle movement mechanism for moving on the center beam;
said base plate having rollers on both sides of each end thereof, and said center beam has a cam on both sides of a center portion thereof, said cams of the center beam engaging with said rollers of said base plate;
a first adjusting means for adjusting a distance between said first pair of slide forks and said second pair of slide forks to be equal to a distance between a shaft of the front wheels and a shaft of the rear wheels, said first adjusting means being positioned on at least one side selected from the side of said frame body corresponding to the front wheels and the side of said frame body corresponding to the rear wheels, and said first adjusting means moving at least one pair of said two pairs of slide forks in a longitudinal direction of the frame body; and
a second adjusting means for adjusting a hold distance between slide forks forming each of said first pair of slide forks and said second pair of slide forks, said hold distance being adjusted to a diameter of tires of each of said wheels.

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PROCEDURE AND APPARATUS FOR THE HANDLING OF LOADS

Peter Merin, Helsinki, and Pertti Haapasalo, Espoo, both of Finland, assignors to Auramo Cargo Systems Oy, Vantaa, Finland

Division of Ser. No. 655,737, Feb. 14, 1991, abandoned. This application May 6, 1992, Ser. No. 879,851
Claims priority, application Finland, Feb. 23, 1990, 900938
Int. Cl.[5] B66C *1/42*
U.S. Cl. 414—621 7 Claims



1. Gripper for a fork-lift truck for handling paper rolls, the gripper comprising a lifting device with which at least one roll can be lifted by at least one lifting cylinder, operating by means of a working fluid, and jaws closed to grasp said at least one roll by at least one compression cylinder, operating by means of a working fluid, the gripper further comprising:
at least one measuring device for measuring continuously the slippage between said at least one roll and the jaws;
at least one pressure sensing device for measuring the pressure of a working fluid flowing into said at least one compression cylinder producing a compressive force; and
a control unit for controlling said at least one lifting cylinder to lift the jaws with said at least one roll, after the compressive force reaches a predetermined precompression value, and for increasing the compressive force in a continuum from the predetermined precompression value, to a value at which there is no slippage between said at least one roll and the jaws;
wherein the device measuring the slippage is a pulse counting device and is so mounted on a jaw flap at the end of a jaw that it comes into contact with said at least one roll;
wherein the compressive force is increased from the predetermined precompression value in proportion to the amount of slippage measured by the measuring device;
wherein the gripper is provided with at least one valve which admits a small flow of working fluid into the lifting cylinder to facilitate a preliminary lifting operation; and
wherein the gripper is provided with a pressure limiting valve to limit the pressure of the working fluid admitted into said at least one compression cylinder once slippage between said at least one roll and the jaws ceases.

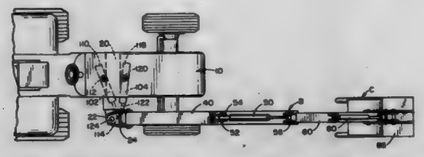
5,292,220

DUAL CYLINDER ACTUATED BOOM ARM

Jack O. Cartner, 1005 N. 8th St., Cambridge, Ohio 43725

Continuation of Ser. No. 635,364, Dec. 28, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,912
Int. Cl.[5] E02F *9/24*
U.S. Cl. 414—687 19 Claims

1. A linkage mechanism which allows a substantially 180° pivoting motion of a boom arm around a pivot axis, comprising:
a mast which is pivotably mounted on a pivot axis to an associated support frame, the boom arm being secured at a first end to said mast and supporting on a second end an associated tool;
a first hydraulic cylinder including a piston and a piston rod and having a piston rod end and a cylinder end, one of said first hydraulic cylinder ends being pivotably secured to a first side of said mast and the other end of said first hydraulic cylinder being secured to the associated support frame;
an overload protection circuit connected to said first hydraulic cylinder such that said mast, and the boom arm, will pivot around said pivot axis in the event the associated tool meets an obstruction, wherein said mast will pivot away from the obstruction in order to avoid damaging the associated tool;
a control means connected to said first hydraulic cylinder for effecting a linear movement of said piston rod and a pivotal movement of the mast, and hence the boom arm secured thereto, about the mast's pivot axis; and,
a means responsive to a movement of said piston for disabling said overload protection circuit, said means for disabling being located between said overload protection circuit and said first hydraulic cylinder and being connected to both.

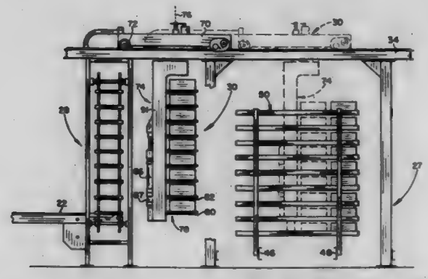


5,292,221

APPARATUS FOR MOVING A PLURALITY OF PALLETS LOADED WITH BUILDING BLOCKS

Jaymes K. Fenander, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 16, 1991, Ser. No. 745,931
Int. Cl.[5] B65G *7/12*
U.S. Cl. 414—744.3 22 Claims



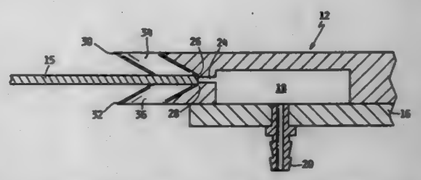
1. Apparatus for moving a plurality of pallets loaded with building blocks and being supported in a vertical stack in parallel relation to one another, said apparatus comprising:
a spade assembly having a plurality of laterally extending spades one above the other, said spades being constructed to support and lift said pallets when each spade is positioned under a corresponding pallet and the spade assembly is shifted upwardly;
a transfer carriage mounted on a track above said spade assembly for lateral shifting movement;
means for suspending said spade assembly from said transfer carriage;
a pivot shaft mounted on said transfer carriage and having a vertical axis, said shaft having a driving end connected to said spade assembly for pivoting the same about a vertical axis; and
means for allowing removal of said shaft while said spade assembly remains suspended from said transfer carriage.

5,292,222

ROBOTIC LOAD DEVICE FOR OUTER DIAMETER PICKUP OF A DISK

Gerald D. Malagrino, Jr., Rochester, and Lawrence M. Prenzlow, Kasson, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1992, Ser. No. 860,929
Int. Cl.[5] B25J *15/06*
U.S. Cl. 414—786 3 Claims



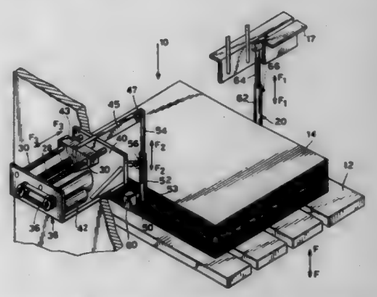
1. A method for engaging a disk comprising the steps of:
a. providing a member with a radial flat surface for engaging an outer rim of a disk;
b. providing a slot through a partial portion of said radial flat;
c. creating a vacuum through said radial flat; and
d. engaging said radial flat against said outer rim of said disk for movement of said disk, from a first point to a second point.

5,292,223

AUTOMATIC DEVICE FOR ALIGNING PAPER-SHEETS IN A PACKAGE

Luciano Meschi, Leghorn, Italy, assignor to Industria Grafica Meschi SRL, Livorno, Italy

Filed Apr. 11, 1991, Ser. No. 683,877
Claims priority, application Italy, Apr. 23, 1990, 20108 A/90; Oct. 3, 1990, 21875/90 [U]
Int. Cl.[5] B65H *31/34*
U.S. Cl. 414—788 2 Claims



2. A device for aligning a continuous strip of flexible sheets of paper folded along a separating or folding line forming a package (14) on a horizontal stacking plane (12) movable in a vertical direction, including:

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a first lateral locator (**20**) arranged along one side of said plane (**12**) for contacting a side of said package (**14**) and movable in a vertical direction;

a second lateral locator (**50**) arranged along the opposed side of said plane (**12**) for contacting another side of said package (**14**) and movable in both a transversal and a vertical direction;

each said locator (**20, 50**) comprising at least a straight vertical rod formed by at least two pieces arranged telescopically with respect to each other, and each said locator including a radially most external piece (**52, 62**) having a convex shape facing towards the stacking plane (**12**); and

moving means associated with said second locator (**50**) and sensor means (**60**) for controlling a motor means of said moving means.

5,292,224

APPARATUS FOR HOLDING STACKED WORKPIECES AND FEEDING THE SAME

Nobutoshi Torii, Hachioji; Shigemi Inagaki, Gotenba; Ryo Nihei, and Mitsuhiro Yasumura, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

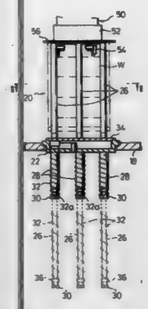
PCT No. PCT/JP91/00704, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/18812, PCT Pub. Date Dec. 12, 1991

PCT Filed May 27, 1991, Ser. No. 820,674

Claims priority, application Japan, May 30, 1990, 2-138574; May 30, 1990, 2-138575

Int. Cl.[5] B65G *59/02, 61/00*

U.S. Cl. 414—796.4 **10 Claims**



1. An apparatus for holding workpieces in a stack and feeding the same, including a workpiece feed means for holding a plurality of workpieces in a stack and sequentially feeding the same, and a workpiece transporting means having a workpiece gripping hand for gripping an uppermost workpiece among the workpieces held in a stack on the workpiece feed means, the workpiece transporting means removing a workpiece gripped by the workpiece gripping hand from said workpiece feed means and transferring said gripped workpiece to a desired position, characterized in that

said workpiece feed means comprises a pallet, a plurality of upright workpiece support rods arranged at intervals in a circle on said pallet, to thereby stably support in place said plurality of workpieces stacked on a workpiece support surface of said pallet, means for depressing said plurality of workpiece support rods to a position below said workpiece support surface of said pallet, and a means for constantly and resiliently lifting said plurality of workpiece support rods upward to extended upward from said workpiece support surface of said pallet,

said workpiece gripping hand of said workpiece transporting means having a plurality of gripping fingers for releasably gripping a workpiece, and a depressing means disposed on a back side of said gripping fingers for simultaneously depressing said plurality of workpiece support rods of said workpiece feed means whereby said gripping fingers are brought to a position suitable for gripping said uppermost workpiece as said workpiece gripping hand is moved downward toward said uppermost workpiece.

5,292,225

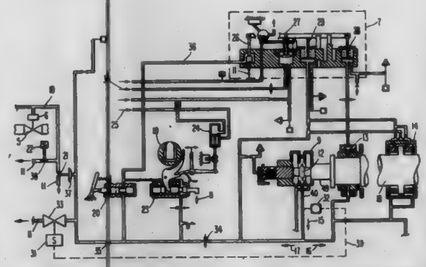
OVERSPEED PROTECTION APPARATUS FOR A TURBOMACHINE

Glenn E. Dyer, Ocala, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 18, 1992, Ser. No. 946,692

Int. Cl.[5] F01D *17/00, 21/00*

U.S. Cl. 415—29 **3 Claims**



1. In a steam turbine having (i) a rotor driven by a flow of steam, (ii) a first valve for admitting steam to said steam turbine, said first valve having an actuator actuated by pressure of a control fluid supplied thereto by a first header, whereby said first valve closes when the pressure of said control fluid in said first header drops below a first predetermined value, thereby tripping said steam turbine, (iii) a second valve in flow communication with said first header for dumping said control fluid in said first header to a drain when said second valve opens, said second valve having an actuator actuated by pressure of a control fluid supplied thereto by a second header, whereby said second valve opens when the pressure of said control fluid in said second header drops below a second predetermined valve, (iv) a pump for pressurizing said control fluid in said second header, said pump driven by rotation of said rotor, the pressure to which said control fluid is pressurized in said second header being proportional to the speed at which said rotor drives said pump, whereby said pressure in said second header is proportional to the rotational speed of said rotor, (v) first trip means in flow communication with said second header for tripping said steam turbine by dumping said control fluid supplied to said second valve actuator by said second header to a drain when said first trip means is actuated, thereby dropping said pressure of said control fluid in said second header below said second predetermined value and causing said second valve to open and said first valve to close, and (vi) means for actuating said first trip means when said rotor exceeds a first predetermined speed, a system for preventing overspeed of said rotor while testing said first trip means comprising:

a) a sensor for sensing said pressure to which said control fluid is raised by said pump;

b) a lockout device in flow communication with said second header and disposed between said first trip means and said second valve actuator for isolating said first trip means from said second header, whereby said first trip means can be tested without tripping said turbine;

c) second trip means in flow communication with said second header and disposed between said lockout device and said second valve actuator for tripping said steam turbine by dumping said control fluid supplied to said second valve actuator by said second header to a drain when said second trip means is actuated, whereby said lockout device does not isolate said second trip means from said second header; and

d) means for actuating said second trip means when said fluid pressure sensed by said sensor exceeds a second predetermined value.

5,292,226

VACUUM SEAL

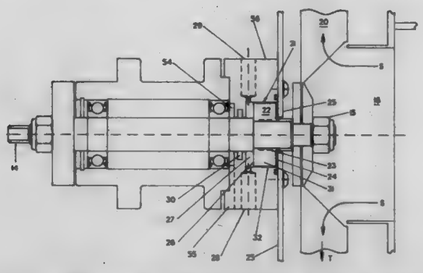
Dudley E. J. Ward, Auckland, New Zealand, assignor to Milcon Developments (NZ) Limited, Auckland, New Zealand

Filed Jan. 21, 1992, Ser. No. 822,646

Claims priority, application New Zealand, Jan. 25, 1991, 236907

Int. Cl.[5] F01D *11/00*

U.S. Cl. 415—170.1 **12 Claims**



1. A vacuum sealing arrangement to seal an area in which a pressure differential exists comprising a rotor member rotatable within said area, said rotor member having a first sealing face orthogonal to the axis of rotation of said rotor member and defining a gap with a second sealing face, said first and second sealing faces defining said area in which said seal is to be created, said first sealing face having at least one fluid flow path into which a sealing fluid can be supplied to be held by counterbalanced centrifugal and pressure differential forces to create said seal within said gap between said first and second sealing faces, wherein said second sealing face is provided by a stationary plate member through which extends a shaft with which said rotor member rotates.

5,292,227

TURBINE FRAME

Robert P. Czachor, Cincinnati, and Christopher C. Glynn, Hamilton, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 10, 1992, Ser. No. 988,637

Int. Cl.[5] F03D *11/00*

U.S. Cl. 415—209.3 **8 Claims**

1. A turbine frame comprising:

a first ring disposed coaxially about an axial centerline axis and having a plurality of circumferentially spaced apart first ports;

a second ring disposed coaxially with said first ring and spaced radially therefrom, and having a plurality of circumferentially spaced apart second ports;

a plurality of circumferentially spaced apart struts joined radially between said fist and second rings, each strut having radially opposite first and second ends, and a through channel extending therebetween; and

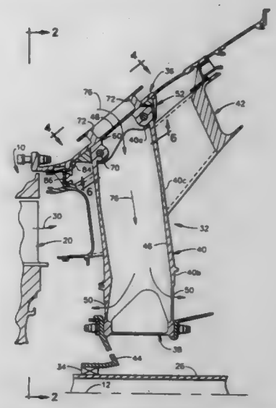
a plurality of clevises, each of said clevises being disposed between a respective one of said strut first ends and said first ring in alignment with a respective one of said first ports for removably joining said struts to said first ring for both carrying loads and providing access therethrough;

each of said clevises comprising:

a base disposed against said first ring and having a plurality of mounting holes receiving mounting bolts therethrough to removably fixedly join said base to said first ring, said base having a central aperture aligned with said first port; and

first and second legs extending away from said base and spaced circumferentially apart to define a U-shaped clevis slot receiving said strut first end;

said first and second legs and said strut first end having a pair of spaced apart bores extending therethrough and receiving a respective pair of expansion bolts for removably fixedly joining said strut first end to said first



and second legs, with said strut through channel being disposed between said expansion bolt pair and aligned with both said base aperture and said first port; and

wherein said strut first end is disposed in said clevis slot in abutting contact with an inner surface of said first ring through said clevis base central aperture for carrying compressive loads directly thereto through said strut and wherein said strut first end is in sealing arrangement with said first port for ensuring flow of cooling air therethrough.

5,292,228

CEILING FAN SUPPORT

David L. Dye, 3541 High Countryside Dr., Grapevine, Grapevine County, Tex. 76051

Filed Jul. 13, 1992, Ser. No. 913,606

Int. Cl.[5] F04D *29/14*

U.S. Cl. 416—5 **12 Claims**

1. A ceiling fan, comprising:

a support member including a plurality of support openings;

a plurality of rigid support arms extending downwardly in a cone-shaped pattern from the support member, the first end of each support arm extending through a support opening in the support member;

a bowl-shaped housing having a rim thereof positioned toward said support member and the base thereof positioned away from said support member, said housing suspended from the second end of the support arms, said housing including a plurality of support openings and an opening in the base thereof;

fastening means for mounting the support arms to the support member and housing through the support openings;

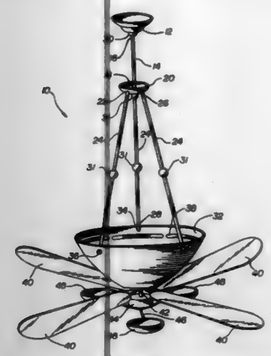
a fan motor mounted to and supported only by the bowl-shaped housing below the rim thereof for driving a plurality of fan blades;

a rotatable armature as a part of said fan motor, the rotatable armature extending downwardly at the opening in the base of the housing;

a plurality of fan blades; and

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a plurality of attachment means, each having one end fastened to an end of one blade, said attachment means extending through the opening in the base of said housing for attachment to the rotatable armature.

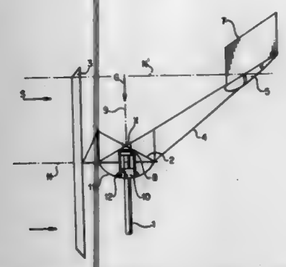


5,292,229

ROTOR BEARING ASSEMBLY FOR A WIND POWER ENGINE

Alberto Kling, Calle 77A No. 11-92, Bogota, Colombin, and Mauricio Kling, Kardinal-Faulhaber-Strasse 5, 8000 Muenchen 2, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 867,675
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1990, 4000092
Int. Cl.[5] F03B 7/00
U.S. Cl. 416—9 23 Claims



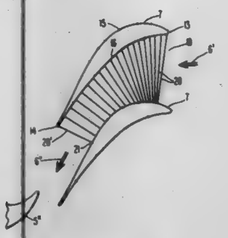
1. A rotor bearing assembly for a wind power engine comprising: a rotor assembly; at least one pair of contra-rotating rotors on a multiaxially movable bearing body which includes a positioning device and which is mounted on at least one stationary support device, said rotor assembly being arranged at one side of a horizontal pivot axis, wherein said bearing body is supported above its center of gravity on said support device to pivot about said horizontal pivot axis, said horizontal pivot axis extends above a horizontal center axis of said rotor assembly, and at another side of said horizontal pivot axis said bearing body comprises an extended end section with at least one aerodynamic control wing which is pivotably mounted on said end section and which produces a downward force when air flows over said control wing.

5,292,230

CURVATURE STEAM TURBINE VANE AIRFOIL

Wilmott G. Brown, Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1992, Ser. No. 991,799
Int. Cl.[5] H01D 5/14
U.S. Cl. 416—223 A 17 Claims



1. A steam turbine comprising:
a) a stationary cylinder for containing a steam flow, and a rotor enclosed by said cylinder;
b) a row of blades attached to the periphery of said rotor; and
c) a row of vanes supported on said cylinder and disposed upstream of said row of blades, each of said vanes having an airfoil portion having leading and trailing edges and forming a suction surface and a pressure surface between said leading and trailing edges, said airfoil portion having a width in the axial direction and having a cross-sectional shape that, in conjunction with said trailing edge of an adjacent one of said vanes in said row, defines a gauging point on said suction surface, said pressure surface having a cross-sectional shape in at least one radial location along said airfoil that has a substantially flat portion that extends upstream from said trailing edge by a distance of at least approximately 40% of said airfoil axial width, said suction surface having a cross-sectional shape in said at least one radial location along said airfoil that has:
(i) a substantially flat first portion forming all of said suction surface that is downstream of said gauging point,
(ii) a curved section portion upstream of said gauging point, said second portion having a first curvature,
(iii) a second curvature along a third portion upstream of said second portion, said second curvature being less than said first curvature, and
(iv) a third curvature along a fourth portion upstream of said third portion and ending at said leading edge, said third curvature being greater than said second curvature.

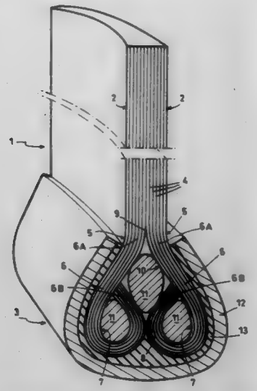
5,292,231

TURBOMACHINE BLADE MADE OF COMPOSITE MATERIAL

Gérard Lauzeille, Marles en Brie, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Dec. 31, 1992, Ser. No. 999,359
Claims priority, application France, Dec. 31, 1991, 91 16358
Int. Cl.[5] F01D 5/28
U.S. Cl. 416—229 A 3 Claims

1. A turbomachine blade made of fiber-reinforced composite material, said blade comprising:
an aerodynamic portion and a root portion for fixing said blade on a rotary disc of the turbomachine, said root portion being formed by at least two distinct arms which branch and spread out without any discontinuity from said aerodynamic portion, and at least two separation cores, each of said arms being formed into a loop which completely surrounds a respective one of said separation cores wherein said root portion is formed by two of said arms and three of said separation cores, each of said two arms forming a loop which turns inwardly towards the other and is closed around a respective one of said cores, said two loops being in mutual contact and defining, together with the portions of said arms diverging from said aerodynamic portion of said blade, a cavity containing the third core.

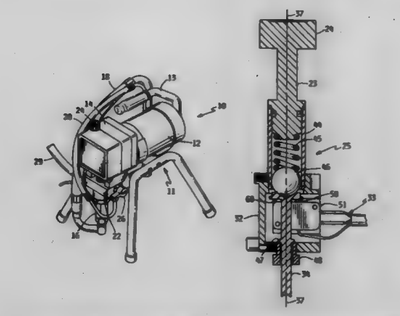


5,292,232

LIQUID PUMP PRESSURE CONTROL SYSTEM

Duane D. Krohn, and Dean L. Schaffran, both of Westminster, Colo., assignors to Graco Inc., Golden Valley, Minn.

Filed Jan. 19, 1993, Ser. No. 5,588
Int. Cl.[5] F04B 49/08
U.S. Cl. 417—44 A 17 Claims



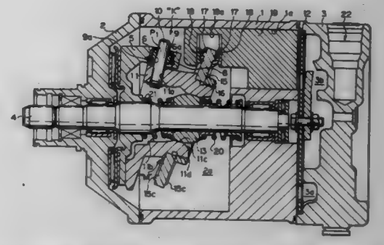
1. An apparatus for pumping liquid under pressure, comprising:
a) a rotatable shaft drive motor coupled via a crank arm to a piston reciprocable within a cylinder;
b) a manifold affixed adjacent an end of said cylinder, said manifold having an internal chamber and flow passages coupling said chamber to said cylinder;
c) means for coupling a liquid delivery hose to said manifold chamber;
d) a pressure transducer in said manifold having a slidable piston in a passage, said passage being in liquid flow communication to said manifold chamber, and a movable first rod contacting said piston, said first rod extending outside said manifold;
e) a first ball slidably positioned within a channel in said pressure transducer, said ball supported by an end of said movable first rod;
f) a push rod supported by said ball, said push rod having means for actuating an electrical switch;
g) a spring means for urging a force against said push rod in opposition to the force of said movable first rod; and
h) an electrical switch positioned adjacent said push rod and actuable by said push rod switch actuating means; whereby said drive motor is controlled by said electrical switch.

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VARIABLE CAPACITY SWASH PLATE TYPE COMPRESSOR

Kenji Takenaka; Hiroaki Kayukawa, and Kazuya Kimura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 8, 1993, Ser. No. 45,506
Claims priority, application Japan, Apr. 10, 1992, 4-91094
Int. Cl.[5] F04B 1/12; F16M 23/08
U.S. Cl. 417—222.2 4 Claims



1. A variable capacity swash plate type refrigerant compressor including:
a compressor housing means defining therein a suction chamber for receiving a refrigerant gas to be compressed, a discharge chamber for receiving the refrigerant gas after compression, a crank chamber capable of functioning as a capacity control chamber, and a plurality of cylinder bores;
a plurality of piston elements received in the cylinder bores of said compressor housing means to be reciprocated therein, said piston elements having one end acting as compressing head and the other end axially opposite to said compressing head, respectively;
an axial drive shaft rotatably supported by said compressor housing means, and extended axially through said crank chamber of said compressor housing means;
a rotary support means fixed to said axial drive shaft so as to be rotated together with said drive shaft within said crank chamber, said rotary support means being provided with a support arm thereof arranged in said crank chamber;
a hinge-ball means axially slidably mounted on said axial drive shaft;
a swash plate means in the form of a generally hollow cylindrical means mounted around said drive shaft and pivotally connected to said support arm of said rotary support means, said swash plate means being slidably engaged with said hinge-ball means so as to change an angle of inclination thereof with regard to a plane perpendicular to the axis of said axial drive shaft, and provided with a disk-like swash plate operatively connected to the plurality of piston elements so as to reciprocate said piston elements in said cylinder bores in response to the rotation of said drive shaft, and;
a control means for controlling a pressure level prevailing in said crank chamber and capable of adjustably changing the angle of inclination of said swash plate means to thereby vary the compression and discharge capacity of the compressor;
wherein said hinge-ball means is provided with single spheri-

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cal outer face spherically engageable with a central bore of said swash plate means, a central bore in which said axial drive shaft is slidably fit, and a pair of axially opposite flat faces arranged symmetrically with regard to a plane perpendicular to the axis of the central bore of said hinge-ball means and extending through the middle position of said single spherical outer face, and

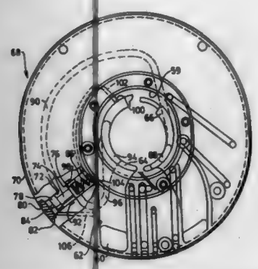
wherein said swash plate means in the form of the hollow cylindrical means is provided with a central bore enclosed by an inner axially extending wall, said inner axial wall of said swash plate means being provided with at least a spherical wall region capable of being spherically engaged with said single spherical outer face of said hinge-ball means, and a pair of guide recesses for permitting said hinge-ball means to be inserted into said central bore of said swash plate means from an end thereof in such a manner that said flat faces of said hinge-ball means are slidably guided by said guide recesses when said hinge-ball means is assembled in said swash plate means.

5,292,234

SYSTEM FOR PREVENTING CAVITATION IN AN HYDRAULIC PUMP

Ching-Chung Ling, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1993, Ser. No. 55,592
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—309 **4 Claims**



1. A system for controlling operation of an hydraulic pump, comprising:

a source of hydraulic fluid;

an inlet connected to the fluid source;

an outlet;

pumping elements for pumping fluid from the inlet to the outlet;

value means for opening a connection between the outlet and inlet when a pressure difference between the inlet and fluid source reaches a predetermined magnitude and for closing said connection when said pressure difference is below said magnitude, said valve means comprising:

a spool having a control land, movable in a bore;

a first port connecting the inlet and bore, located on a first side of the land;

a second port connecting the fluid source and bore, located on a second side of the land opposite the first side; a spring biasing the spool toward the second port and away from the first port;

a third port connecting the bore and outlet;

a fourth port connecting the inlet and bore, a connection between the third and fourth ports being opened and closed by the land in accordance with the magnitude of said pressure differential, whereby the outlet is connected to the inlet when said pressure differential is equal to or greater than said predetermined pressure differential and disconnected when said pressure differential is less than said predetermined pressure differential.

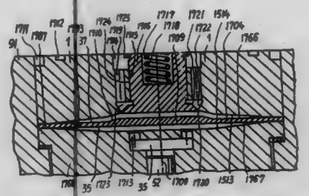
5,292,235

MEMBRANES AND NEIGHBORING MEMBERS IN PUMPS, COMPRESSORS AND DEVICES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 481,917, Feb. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 146,929, Jan. 22, 1988, Pat. No. 4,904,167. This application Jan. 15, 1992, Ser. No. 820,825

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1986, 3632717; Sep. 29, 1986, 3633053; Oct. 17, 1986, 3635315; Feb. 26, 1987, 3706188
Int. Cl.[5] F04B *43/02*
U.S. Cl. 417—383 **7 Claims**



1. A membrane in a device wherein two chambers flank said membrane with the first chamber communicated to a cylinder with a therein reciprocable piston, the second chamber communicated to an inlet means and an outlet means, said membrane associated to an annular passage for improvement of the activity of said membrane at its stroke and for the improvement of the life time of said membrane,

wherein said second chamber is bordered by a body with a therein axially limitedly movable passage-control valve which narrows and widens by its axially directed stroke the cross-sectional area of said passage to and from said second chamber and which includes at least one portion of said stroke of said valve a narrow circular clearance between said valve and said body with said clearance being smaller than the thickness of said membrane.

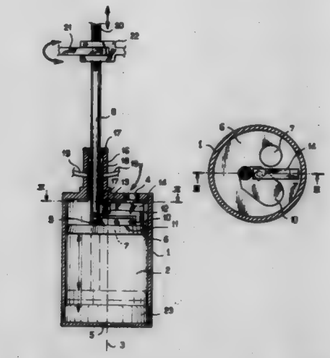
5,292,236

POSITIVE DISPLACEMENT PUMP WITH PIVOT PISTON VALVE

André Graffin, la Chapelle du Bois, France, assignor to Serac France, La Ferte Bernard, France

Filed Mar. 23, 1993, Ser. No. 35,621
Claims priority, application France, Apr. 7, 1992, 92 04232
Int. Cl.[5] F04B *21/04*
U.S. Cl. 417—510 **6 Claims**

1. A positive displacement pump comprising a cylinder delimiting a cylindrical pumping chamber having a longitudinal axis and including a feed orifice and a delivery orifice at respective opposite ends, a piston pierced by a pumping orifice and associated with a piston drive rod for causing the piston to slide with reciprocating motion inside the pumping chamber between the feed orifice and the delivery orifice, and a pumping orifice closure device for closing the pumping orifice, wherein the pumping orifice closure device includes a closure member mounted to pivot about an axis which is adjacent to the pumping orifice and extends in a direction parallel to said longitudinal axis of said cylindrical pumping chamber, said closure member including a closure face that is substantially plane and that faces the piston, said pumping orifice closure device also including a drive member connected to the closure member, extending outside the cylinder to enable the closure member to be pivoted between a position in which the closure face of the closure member is pressed against the pumping orifice, overlying it in sealed manner, and a position in which the closure face is disengaged from the pumping orifice.

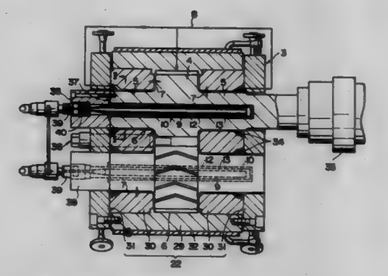


5,292,237

MELT PUMP

Tali Orimo; Shinichi Fukumizu; Hideki Uots; Masashi Konno, and Nobuki Nagami, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 7, 1992, Ser. No. 864,798
Int. Cl.[5] F04C *15/00*
U.S. Cl. 418—94 **3 Claims**



1. A melt pump comprising:

a pump housing having an intake port and a discharge port;

a pair of gear rotors, each having a gear part and a shaft part integrated with each other, which are arranged within said pump housing in such a manner as to be rotatable in mutually meshing condition;

a recovering passage for guiding resin leaking through a clearance between said pump housing and each of said gear rotors into said intake port;

a cooling hole drilled inside each of said gear rotors;

a pipe inserted into the cooling hold of each of said gear rotors for supplying cooling liquid to said pump housing; and

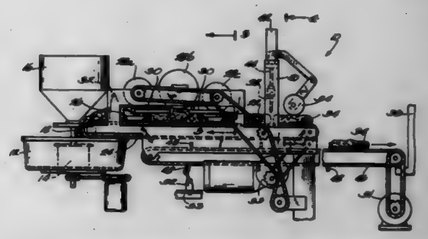
a sleeve inserted into each of said cooling holes for lining an internal periphery of each of said cooling holes, such that an internal periphery of said sleeve and an external periphery of said pipe define a cooling liquid passage for leading said cooling liquid supplied through said pipe to an exhaust means, and said sleeve prevents said cooling liquid supplied through said pipe from directly contacting said gear rotors.

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APPARATUS FOR MAKING COTTON CANDY AND PREPARING IT FOR PACKAGING

David W. Michalak, Glendale Heights, Ill., assignor to Mama Irene's Specialty Candies, Inc., Oak Creek, Wis.

Filed May 20, 1992, Ser. No. 886,514
Int. Cl.[5] A23G *3/00, 3/10*
U.S. Cl. 425—9 **6 Claims**



1. An apparatus for manufacturing sections of cotton candy, comprising:

means for melting and extruding sugar, producing strands of melted, extruded sugar;

means for pulling said strands of sugar onto a first conveyor, forming said strands into a continuous bundle, said first conveyor moving in a predetermined direction;

a cutting blade slidable, by an actuator, in a direction transverse to the direction of movement of said first conveyor, for cutting said bundle into sections of predetermined length;

a second conveyor, having an endless drive means, for receiving said cut sections from said first conveyor, said endless drive means having trip markers distributed along its length; and

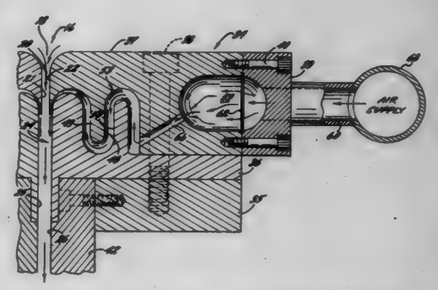
a switch, which is activated by passage of said trip markers, upon activation of which said blade cuts said bundle, wherein said switch is movable with respect to said second conveyor, and fixable in a single location with respect to said second conveyor, the location of said switch with respect to said second conveyor determining the location of said sections on said second conveyor.

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APPARATUS FOR PRODUCING NONWOVEN FABRIC

Leon M. Zeldin, Greer; John V. Francis, Taylors, both of S.C., and Jean-Pierre R. Vuillet, Mulhouse, France, assignors to Fiberweb North America, Inc., Simpsonville, N.C.

Filed Jun. 1, 1992, Ser. No. 891,723
Int. Cl.[5] D04H *3/03*
U.S. Cl. 425—66 **17 Claims**



1. An apparatus for forming a nonwoven fabric web comprising

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melt spinning means including a spinneret for extruding a plurality of continuous polymeric filaments,

filament drawing means defining a longitudinal elongate slot positioned below said spinneret for receiving and drawing the filaments therein, said slot having a vertical length and a longitudinal length, said means defining said slot including a horizontally directed elongate open upper end and opposing side walls depending substantially vertically downwardly from said open end, and

nozzle means having an outlet communicating with said slot longitudinally along at least one of said side walls at a medial location along the vertical length of said slot for introducing a downwardly directed stream of air into said slot along substantially the entire longitudinal length of said slot at a location immediately adjacent said one side wall and in a direction which is essentially parallel to said one side wall so that air is drawn into the upper end of said slot and the drawn-in air and the air introduced by said nozzle means form a relatively non-turbulent flow along the vertical length of said slot which exerts a drawing force on the filaments as they pass vertically through said slot, said nozzle means further comprising first and second wall surfaces which extend along the longitudinal length of said slot, with said first and second wall surfaces being spaced apart so as to define, when viewed in transverse cross section, an air passageway which is composed of a discharge segment communicating with said outlet and a rearward segment which has a serpentine configuration of smoothly and gradually reducing width in the direction moving toward said outlet, and

moving belt means positioned below said slot for receiving the filaments and forming the same into a nonwoven fabric web.

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PELLETIZER WITH CUTTING KNIFE CONTROL

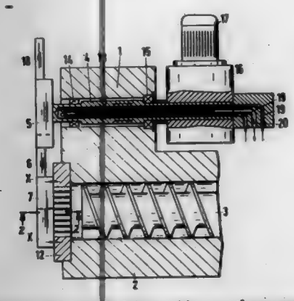
Gerd Capelle, Langenhagen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 54,061

Claims priority, application Fed. Rep. of Germany, May 7, 1992, 4214481

Int. Cl.[5] B28B *11/16*; B29B *9/00*

U.S. Cl. 425—142 **5 Claims**



1. A pelletizer for pelletizing rubber or thermoplastic material discharged by a conveying screw from an extruder, comprising:

a die plate mounted at a discharge end of the extruder outwardly of the conveying screw, said die plate having an outer face;

a knife shaft mounted parallel to and spaced from the conveying screw, and drive means spaced rearwardly from said discharge end of said extruder for rotating said knife shaft;

a stationary bearing for supporting said knife shaft adjacent said drive means, and a mobile bearing for supporting said knife shaft at an outer end thereof adjacent the discharge end of the extruder, means for heating and cooling said shaft to permit linear expansion and contraction of said shaft through said mobile bearing;

a knife beam holder mounted on the outer end of said shaft for rotation with said shaft;

a plurality of knife beams mounted in spaced relation on said knife beam holder, said knife beams carrying cutting knives which rotate closely adjacent and across the outer face of said die plate so as to cut the stands extruded through said die plate into short pieces or pellets, with the spacing of said cutting knives form the outer face of said die plate being controlled by the linear position of said shaft which is in turn controlled by said heating and cooling means.

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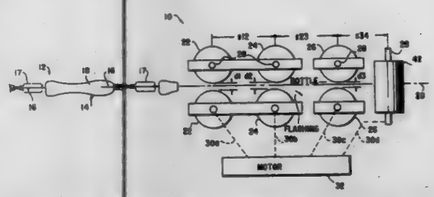
APPARATUS FOR DRESSING OF BLOW-MOLDED ARTICLES IN A STRAND

Jin-Liou Fang, San Jose, Calif., and James E. Maly, Ridgefield, Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Oct. 1, 1992, Ser. No. 955,628

Int. Cl.[5] B29C *49/72*

U.S. Cl. 425—289 **15 Claims**



1. A dresser apparatus for a strand of blow-molded articles interconnected by flashings shorter than the articles which flashings are to be separated from the articles, said dresser apparatus comprising:

a first pair of first rollers mounted for rotation and defining a first pinching plane equidistantly therebetween and along which said first pinching plane the strand is directed, said first pair of first rollers being relatively spaced to laterally engage and hence deform toward said first pinching plane the articles and flashings passing therebetween;

a first moving means for rotating at least one of said first rollers at a first speed;

a second pair of second rollers mounted for rotation, defining a second pinching plane equidistantly therebetween which is generally parallel to said first pinching plane, and between which said second rollers the strand is directed after passing between said first rollers, said second pair of second rollers being relatively spaced to laterally engage and hence deform toward said second pinching plane the articles and flashings passing therebetween and being spaced from said first pair of first rollers such that said second pair of second rollers engage a) each flashing while a succeeding article is being engaged by said first pair of first rollers and b) each article while a succeeding flashing is being engaged by said first pair of first rollers;

a second moving means for rotating at least one of said second rollers at a second speed which is greater than said first speed such that a) each flashings pulled from the succeeding article by said second rollers as the succeeding article is held by said first pair of first rollers and b) each article is pulled from the succeeding flashing by said second rollers as the succeeding flashing is held by said first pair of first rollers;

a final pair of final rollers mounted for rotation, final pinching plane is rotated relative to a longitudinal axis for the article and with respect to said second pinching plane, and between which said final rollers the articles from said second pair of second rollers are directed so that lateral deformation of the articles toward said first and second pinching planes caused by passage between said first and second rollers is compensated for by passage of the articles between said final rollers which laterally deform the articles toward said final pinching plane which is rotated relative to said first and second pinching planes; and

a final moving means for rotating at least one of said final rollers at a final speed at least equal to said second speed.

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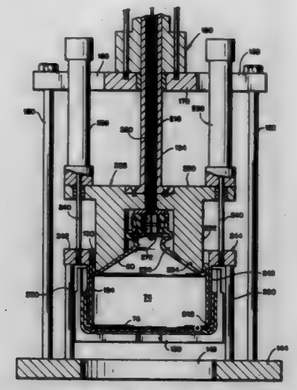
APPARATUS FOR FORMING A COLLAPSIBLE CONTAINER

Edward S. Robbins, III, 459 North Ct., Florence, Ala. 35631

Division of Ser. No. 828,473, Jan. 30, 1992, Pat. No. 5,206,037, which is a division of Ser. No. 576,080, Aug. 31, 1990, Pat. No. 5,224,613. This application Feb. 1, 1993, Ser. No. 11,624

Int. Cl.[5] B29C *53/02*

U.S. Cl. 425—342.1 **11 Claims**



1. Apparatus for collapsing and folding an upright container to a compact stackable configuration, the container having a bottom wall, peripheral side wall with at least upper, lower and intermediate annular stepped portions in the peripheral side wall, and a top wall having a discharge opening therein, the apparatus comprising:

means for supporting and holding the container in an upright position; first forming means for engaging and exerting a downward force on the intermediate annular stepped portion of the peripheral side wall and for effecting the formation of a first folded portion in the peripheral side wall; and second forming means for engaging and exerting a downward force on the top wall for effecting the formation of a second folded portion in the peripheral side wall substantially concentric with and radially adjacent the first folded portion.

5,292,243

APPARATUS FOR HEATING PORTIONS OF CONTAINER PREFORMS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 28, 1992, Ser. No. 952,231

Int. Cl.[5] B29C *49/64*

U.S. Cl. 425—526 **13 Claims**

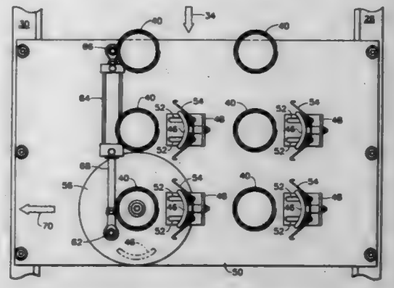
1. Apparatus for heating selected surfaces of a blow molding preform to a higher temperature than adjacent surfaces, said apparatus comprising:

a. a supporting frame;

a plurality of pallets, each of the pallets supporting a pair of container preforms in side-by-side relationship and conveying the container preforms along a preform movement path which includes a lateral shift, the pallets being supported for movement along the supporting frame;

c. a reheat station carried by the supporting frame for uniformly heating container preforms from ambient temperature to a desired first elevated temperature to soften the preforms for later blowing in a blow mold;

d. an auxiliary heating station carried by the supporting frame, downstream from and adjacent the reheat station, the auxiliary heating station including a plurality of heating elements adjustably positioned and geometrically configured to heat a selected circumferential area of the preforms to a desired second elevated temperature greater



than the desired first elevated temperature to provide a non-symmetrical circumferential temperature distribution within the preform, at least one heating element in the auxiliary heating station being movable to a position out of the preform movement path; and

e. a blowing station carried by the supporting frame, downstream from and adjacent the auxiliary heating station, for introducing pressurized air into the preforms while the preforms are within a non-symmetrical mold cavity to expand the preforms to conform with the walls of the cavity, the temperature distribution in the preform allowing expansion of the preform within the mold cavity to provide a blown article with substantially uniform wall thickness in a transverse plane.

5,292,244

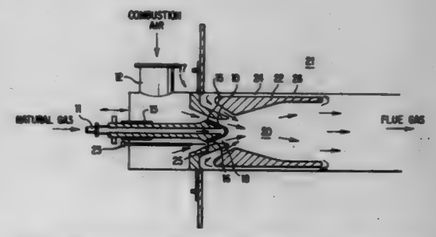
PREMIXED FUEL/AIR BURNER

Tian-yu Xiong, Darien, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Division of Ser. No. 866,344, Apr. 10, 1992, Pat. No. 5,240,409. This application Jun. 23, 1993, Ser. No. 81,523

Int. Cl.[5] F23C *5/06*

U.S. Cl. 431—189 **16 Claims**



1. A premix fuel/oxidant burner with velocity and fuel/air ratio control comprising:

a nozzle having a nozzle wall forming a Venturi mixer and a nozzle exit;

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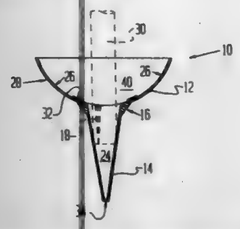
means for separately introducing fuel and oxidant into said nozzle;
a hollow body disposed inside said nozzle, said hollow body moveable in a longitudinal direction toward said nozzle exit;
said hollow body having at least one orifice through a wall of said hollow body at an angle with respect to a longitudinal axis of said nozzle; and
means for recirculating flue gases resulting from the combustion of said premixed fuel and oxidant from downstream of said nozzle exit toward said nozzle exit.

5,292,245

PLASTIC HAND HELD CANDLE HOLDER

Kenneth A. Spoonhour, 6 Drexel Hills Cir., New Cumberland, Pa. 17070

Filed Aug. 27, 1992, Ser. No. 935,914
Int. Cl.[5] F23D *3/16*
U.S. Cl. 431—292 **23 Claims**



1. A hand held candle holder comprising a molded plastic integral one piece body having
a) a tubular handle with a closed end, an open end opposite the closed end, and an interior candle contact surface extending between said open and closed ends;
b) a cup integrally joining the handle at the open end and extending upwardly and outwardly away from the handle; and
c) a plurality of elongate candle piercing ridges extending along the length of the interior contact surface of the handle and projecting radially inwardly for piercing and frictionally engaging the stem of a candle inserted into the handle.

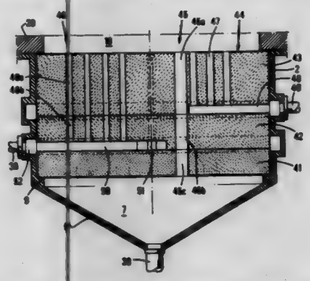
5,292,246

BURNER FOR THE MANUFACTURE OF SYNTHETIC GAS COMPRISING A SOLID ELEMENT WITH HOLES

Paul Gateau, Saint Nom la Breteche; Michel Maute, Les Clayes Sous Bois, and Alain Feugier, Orgeval, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 346,225, May 2, 1989, abandoned. This application Aug. 4, 1992, Ser. No. 931,134
Claims priority, application France, May 2, 1988, 88 05960
Int. Cl.[5] F23D *14/00*
U.S. Cl. 431—328 **5 Claims**

1. A chemical reactor for producing synthesis gas, said reactor comprising a reaction zone and a burner, said burner having means for separately conveying at least two reactive fluids to the reaction zone of the reactor, one fluid comprising a fuel and the other fluid comprising an oxidizer, said means for separately conveying the at least two fluids comprising a solid element which comprises at least one solid block and in which at least two groups of a plurality of passages are arranged, each group penetrating the solid element at different levels along a longitudinal axis of said element and each group including passages opening at one of their ends into the reaction zone and at the other end into a supply means for supplying one of the at least two reactive fluids, respectively; the passages within said solid element being formed by bores extending longitudinally through said solid element; said burner further comprising a housing which surrounds at least two faces of the solid element and which contacts at least one of said two faces, one of said faces being exposed within said housing and, together



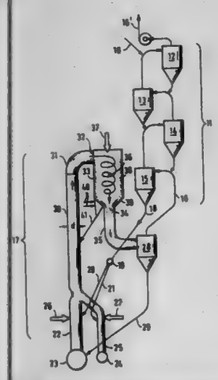
with a portion of said housing, defining a chamber forming a supply means for one of said groups of passages.

5,292,247

APPARATUS FOR THERMAL PROCESSING OF RAW MATERIALS IN DUST FORM

Claus Bauer, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,847
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123306
Int. Cl.[5] F27B *7/02*
U.S. Cl. 432—58 **12 Claims**



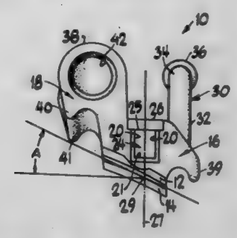
1. Apparatus for thermal processing of raw materials, in dust form, in particular in the production of cement clinker from cement raw meal, said raw meal being thermally processed in a burning process by means of preheating, calcination, sintering and cooling, and the off-gas stream of the sintering stage and the exhaust air stream of the cooling stage from the clinker cooler being utilized separately or jointly for the calcination of the raw meal in the calcination stage (17), which is supplied with fuel, the gas-solids suspension in the calcination stage (17) being diverted and led into the lowermost cyclone (28) of the cyclone preheater for the purpose of separating the calcined raw meal (29) from the gas stream, a swirl chamber (33) being arranged in the calcination stage (17) in the region of its flow diversion with imparting of a swirl to the gas-solids suspension, characterized by the fact that the swirl chamber (33) exhibits an opening (32) in its upper region for the tangential inlet of all the gas-solids suspension and a central opening (34) on its bottom for the discharge of the swirled gas-solids suspension to said lowermost cyclone (28) via a gas-conveying pipe (35).

5,292,248

MOLAR APPLIANCE

Charles J. Schultz, West Babylon, N.Y., assignor to GAC International, Inc., Central Islip, N.Y.

Continuation of Ser. No. 782,371, Oct. 24, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,825
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—17 **16 Claims**



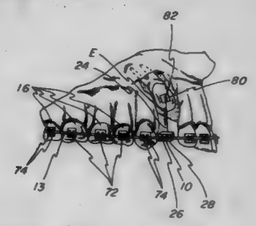
1. An orthodontic appliance for a molar comprising:
a gingival portion defining a first tie-wing and a lip-bumper portion defining an opening for receiving a lip bumper, the first tie wing being wedge shaped;
an occlusal portion defining a second tie-wing, the second tie-wing being wedge shaped;
an arch-wire slot defining a base surface and extending substantially in the mesial-distal direction between the gingival and occlusal portions for receiving an arch wire;
a distally-opening hook portion defining a base extending from the occlusal portion in the buccal direction and an arm portion coupled to the base portion extending distally from the base portion; and
a base defining a tooth-abutting surface and coupled to the occlusal and gingival portions, the tooth-abutting surface being oriented at an acute angle relative to a plane of the base surface of the arch-wire slot for applying a torque to the molar through the tooth-abutting surface.

5,292,249

ADJUSTABLE ALIGNING REEL AND METHODS FOR ALIGNING A TOOTH

Daniel S. German, 689 Dell Ridge Dr., Dayton, Ohio 45429

Filed May 4, 1992, Ser. No. 878,450
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—22 **34 Claims**



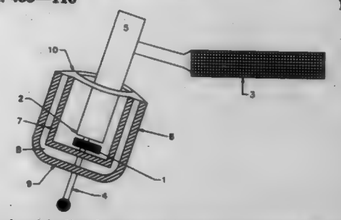
1. An adjustable aligning reel for aligning a tooth into a predetermined position in an arch of teeth, said adjustable aligning reel comprising:
an adjustable tensioner which is capable of being mounted on an archwire in operative relationship with the tooth; and
a filament for coupling the tooth to said adjustable tensioner;
said adjustable tensioner being adjustable to cause the filament to apply a predetermined tension to the tooth in order to maneuver the tooth towards the predetermined position;
said adjustable tensioner further comprising protection means for ensuring that the predetermined tension does not exceed a preselected tension limit.

5,292,250

VISUAL INDICATING DENTAL HANDPIECE SHEATH

Eugene G. Sherburne, 8905 Orleans Dr., Baton Rouge, La. 70810

Filed Feb. 1, 1993, Ser. No. 11,982
Int. Cl.[5] A61C *1/16*
U.S. Cl. 433—116 **1 Claim**



1. A visual indicating dental handpiece sheath designed for use on a dental handpiece and which provides a physical and germicidal barrier to the intake of contaminated fluids and particulate matter into the high-speed dental handpiece, to eliminate the transfer of contagious diseases among a dentist's patients comprising:
a germicide impregnated gasket which is for positioning on the face of the handpiece so that it acts as a physical and germicidal barrier to fluids and particulate matter containing infectious agents,
a laminate positioned above the gasket which consists of three layers comprised of:
an inner layer of plastic film which acts as a physical barrier to fluids and particulate matter,
a middle layer of water-soluble dye impregnated paper, which dye is activated by fluids generated during patient treatment,
an outer layer of absorbent paper which absorbs the dye exuded from the middle layer and which provides a visual indication of an unhygienic sheath and handpiece,
said gasket and laminate having orifices in them to allow for the rotable mounting of the dental burr, and the protrusion of air/water jets and light,
and an elastic band fixed to the laminate, which is used to attach the sheath to the handpiece.

5,292,251

Patent Not Issued For This Number

5,292,252

STIMULATOR HEALING CAP

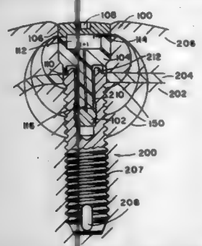
Bruce L. Nickerson, Davie; Chad J. Patterson, Plantation, and Richard A. Smolowitz, Davie, all of Fla., assignors to Implo-Med, Inc., Sunrise, Fla.

Filed Dec. 14, 1992, Ser. No. 990,064
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **14 Claims**

1. A stimulator healing cap for enhancing in a patient the growth of bone cells and bone tissue surrounding a dental implant having and a threaded open interior portion having a proximal opening located near the gingival-cortical plate interface in the patient, said stimulator healing cap comprising:
a) a conductive threaded first portion having a longitudinal axis which threads in and matingly engages in the open threaded interior portion of the implant, wherein an unthreading of said conductive threaded first portion from the threaded open interior portion of the dental implant disengages said stimulator healing cap from the dental implant;
b) a conductive second portion axially removed from the conductive threaded first portion along said longitudinal axis, and adapted to reside substantially in the gingiva of the patient;

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c) an insulated third portion insulating said conductive second portion from said conductive threaded first portion, and adapted to extend outside the implant; and



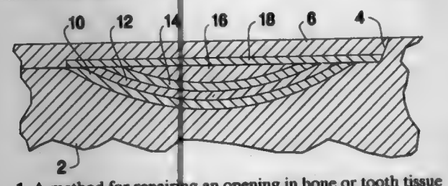
d) a current source having two poles, with a first of said two poles being electrically coupled to said conductive second portion, and the other of said two poles being electrically coupled to said threaded conductive first portion.

5,292,253

METHOD FOR REPAIRING TOOTH AND BONE TISSUE

Guy Levy, Tustin, Calif., assignor to Laser Medical Technology, Inc., San Clemente, Calif.

Filed Jun. 22, 1992, Ser. No. 901,834
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—215 **10 Claims**



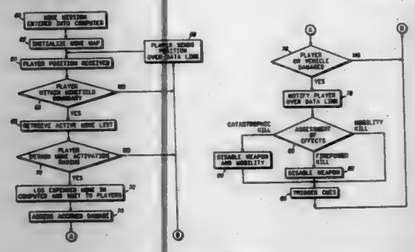
1. A method for repairing an opening in bone or tooth tissue comprising: at least partially filling the opening with a calcium-containing material in a moldable state and a protein gel; and applying to the gel laser radiation in a manner to weld the gel to one of the bone or tooth tissue adjacent the opening and the calcium-containing material without causing harmful side effects to the bone or tooth tissue.

5,292,254

METHOD FOR DETERMINING MINEFIELD EFFECTS IN A SIMULATED BATTLEFIELD

Joseph R. Miller, Tempe, and Craig T. Griffin, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1993, Ser. No. 76
Int. Cl.[5] F41A *33/00*
U.S. Cl. 434—11 **24 Claims**



1. A method for minefield simulation comprising the steps of:

determining by a player detection device a position of a player in a simulated battlefield;

determining by a central computer whether the player is with a particular activation radius of a simulated mine in the minefield simulation of the simulated battlefield;

recording by the central computer an identity of an expended mine in a minefield bit map, if the player is within the particular activation radius of the mine; and

determining by the player detection device the effects of the expended mine upon the player.

5,292,255

BEADED PICTURE KIT AND METHOD

Solomon P. Goldwasser, P.O. Box 129, Rte. 52, Loch Sheldrake, New York, N.Y. 12759

Filed Nov. 30, 1992, Ser. No. 982,984
Int. Cl.[5] G09B *11/00*
U.S. Cl. 434—84 **14 Claims**



1. A kit for making beaded pictures comprising:

a base card with a picture outline printed thereon and also impressed into the surface of said base card;

numbers printed within each outlined area of the picture, each number representing the color of beads to be applied to said outlined area;

a number key chart to indicate the color corresponding to each number;

a supply of strings of beads of various colors, each string accommodating only beads of one color;

a glue pen for use in applying adhesive to the surface of said base card to permanently affix the beads thereon;

a brush for spreading the adhesive over surface areas of the base card;

transparent craft glue for use in coating the finished picture to further affix the beads to the base card.

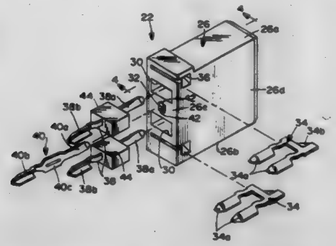
5,292,256

HIGH SPEED GUARDED CAVITY BACKPLANE CONNECTOR

David L. Brunker, Philip J. Dambach, both of Naperville; Frank A. Harwath, Downers Grove; Joseph W. Nelligan, Jr., La-Grange Park, and Robert M. Petrie, Glen Ellyn, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Division of Ser. No. 878,803, May 5, 1992, Pat. No. 5,215,473.
This application Jan. 11, 1993, Ser. No. 3,199
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] H01R *13/652*
U.S. Cl. 439—108 **11 Claims**

1. An electrical signal connector, comprising a conductive housing having cavity means for receiving at least two signal terminals and at least one ground terminal, at least one signal terminal being molded at least in part in an insulating mounting body to provide a module for mounting in the cavity means to insulate the terminal from the conductive housing, the ground terminal being in direct conductive engagement with the housing, the terminals comprising stamped and formed metal components, and including at least one ground clip mounted on the conductive housing in direct conductive engagement therewith and adapted for commoning to a ground on a respective



backplane and daughter printed circuit board, whereby the housing establishes a primary ground reference for the connector.

5,292,257

MODULAR OUTLET STRIP

Henry Milan, P.O. Box 881, Rochester, Mich. 48308-0881

Filed Jul. 23, 1992, Ser. No. 918,241
Int. Cl.[5] H01R *25/16*
U.S. Cl. 439—214 **1 Claim**

1. A surge protection system of a modular nature including, in combination:

(a) a power distribution module to receive and distribute power from a source of line current, said power distribution module including surge protection, a housing, a female portion of a quick connect means formed on one end of said housing, and a line cord connectable at one end to a source of power, said line cord connected at its other end to a power transfer receptacle, and

(b) at least one power supply module removably connectable to said power transfer receptacle of said power distribution module to receive power from said power distribution module and to supply power to electrically operated equipment through at least one power supply receptacle provided thereon, each said power supply module including a housing having a male portion of a quick connect means connectable to the female portion of the quick connect means of said power distribution module;

wherein each of said power supply modules further includes

(a) a male power transfer connector connectable to a female power transfer receptacle, and

(b) quick connect means to connect said power supply modules to other power supply modules; and

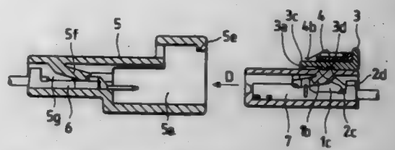
wherein one of said power supply modules further includes a modem surge protector.

5,292,258

CONNECTOR ASSEMBLY'S LOCKING MECHANISM

Kazuaki Sakurai, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed May 3, 1993, Ser. No. 55,366
Claims priority, application Japan, May 8, 1992, 4-115951
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 **2 Claims**



1. A locking mechanism for a connector assembly comprising:

a pair of male and female electrical connectors each having terminals and being engaged with each other, a housing of one of said connectors having a connector receiving portion for receiving a housing of the other of said connectors

a guide frame mounted on the outer wall of said housing of said other connector;

a locking spring substantially inverted-V-shaped in section provided with said guide frame, one end portion of said locking spring being fixedly secured to said guide frame;

a slide piece between said guide frame and said outer wall of said housing of said other connector, said slide piece being slidable in an axis of a connector insertion direction;

a locking member for holding said slide piece at a forward position and at a backward position, said locking member being provided between said slide piece and said outer wall of said housing of said other connector; and

a spring receiving member for engaging with said locking spring, said spring receiving member being provided with said connector receiving portion,

wherein when said slide piece is at said forward position, a free end of said locking spring is positioned above a front end portion of said slide piece, and when said slide piece is at said backward position, a free end of said locking spring is positioned in front of said front end portion of said slide piece.

5,292,259

ELECTRICAL CONNECTOR

Christopher Sheldrake, Basingstoke, and Adam White, London, both of England, assignors to Nokia Mobile Phones (U.K.) Limited, Surrey, England

Continuation of Ser. No. 681,894, Apr. 8, 1991, abandoned. This application Mar. 4, 1992, Ser. No. 845,521
Claims priority, application United Kingdom, Apr. 12, 1990, 9008348
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—353 **24 Claims**

1. A portable electronic apparatus and removable electrical cable assembly comprising:

a frame forming at least a portion of a housing of the portable electronic apparatus, the frame having a socket;

a battery removably mounted to the frame; and

an electrical plug connector removably mounted at the socket, the connector having the cable connected thereto, the connector comprising:

(a) a main body having a portion adapted for insertion into the socket;

(b) a resilient tongue biased away from the main body and extending laterally therefrom generally in the direction of insertion, wherein the tongue and the socket are provided with complementary catch means which mutually engage when the plug is inserted into the socket, said catch means being releasable by pressing said

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tongue towards the main body, and wherein a rigid joining member extends between a trailing end of the tongue and the main body;



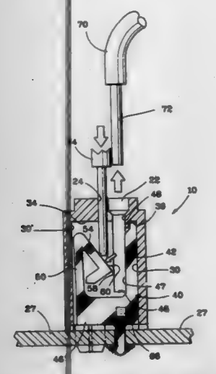
wherein an abutment on the main body of the plug is adapted to bear against the battery when the plug is fully inserted in the socket whereby removal of the battery is prevented.

5,292,260

BALLAST CONNECTOR FOR LIGHTING FIXTURE

David B. Sinisi; Carolyn S. Sinisi, both of Harrisburg, and Robert H. Frantz, Newville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 21, 1993, Ser. No. 6,888
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—441 9 Claims



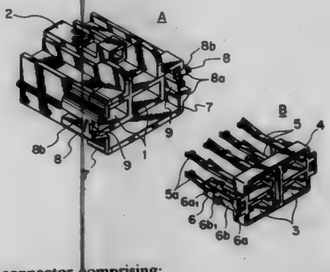
1. In an electrical connector of the type allowing for the individual or mass loading and extraction of electrical conductors therefrom, where said connector includes a plurality of cavities therein extending longitudinally between a contact loading face and a conductor receiving face, where said conductor receiving face includes an aligned row of conductor openings of a like plurality communicating with said cavities, and a stamped electrical contact within each said cavity, said contact including a base and a pair of spaced apart arms upstanding therefrom, where the inner edge of a first arm is aligned with its corresponding conductor opening, and the other arm includes an angular extension directed downwardly and toward said first arm, where the end most edge thereof is aligned with and exposed to its corresponding conductor opening, the improvement comprising in combination therewith the provision that each said contact is planarly aligned in a direction transverse to said longitudinal direction, and that said angular extension is arranged to flex within the plane of said contact upon loading and extracting conductors therefrom, and a lateral slot extending from each said conductor opening for receiving an externally applied extraction member, whereby said extraction member may be received in said lateral slot to laterally flex said angular extension to provide a free path for said electrical conductor so as to remove said electrical conductor from contact with said inner edge.

5,292,261

TERMINAL RETAINER FOR CONNECTOR

Seiji Hirano, Aki; Kenji Takenouchi, and Toshihiko Makita, both of Haibara, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 398,562, Aug. 25, 1989, abandoned.
This application Oct. 31, 1990, Ser. No. 608,586
Claims priority, application Japan, Aug. 30, 1988, 63-112834[U]
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 2 Claims



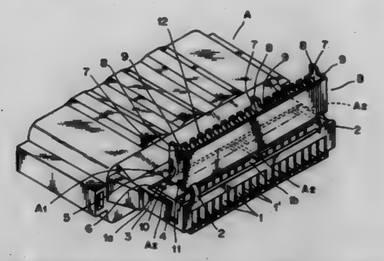
1. A connector comprising:
a connector housing having a plurality of terminal chambers;
a plurality of terminal members to be inserted in a respective said terminal chamber, each of said terminal members having an electrical contact portion; and
a terminal retainer adapted for engaging with a rear portion of said connector housing initially in a first stage engagement position and then in a second stage engagement position, said terminal retainer having a plurality of flexible pins for extending into the terminal chambers of said connector housing,
each of said terminal members being inserted into a corresponding said terminal chamber when said terminal retainer is in the first stage engagement position,
each flexible pin of said flexible pins of said terminal retainer including an engaging end portion,
each terminal chamber including a stopper for detecting unsatisfactory insertion of each said terminal member, each said stopper being located in a respective said terminal chamber such that said stopper abuts against the engaging end portion of one of said flexible pins on said terminal retainer for preventing said terminal retainer from shifting from said first stage engagement position to said second stage engagement position when said terminal member is unsatisfactorily inserted and such that said stopper does not interfere with satisfactory insertion of said terminal member, said flexible pin thereby allowing said terminal retainer to shift from said first stage engagement position to said second stage engagement position when said terminal member is satisfactorily inserted.

5,292,262

ELECTRICAL CONNECTOR WITH REAR HOLDER

Takayoshi Endo; Tamio Watanabe, and Keishi Jinno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 961,262, Oct. 15, 1992, abandoned.
This application Jul. 9, 1993, Ser. No. 88,587
Claims priority, application Japan, Oct. 18, 1991, 3-271100
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—752 10 Claims



1. An electrical connector with a rear holder comprising:
a connector housing;
a plurality of terminal accommodating chambers formed in the connector housing, each containing a resilient locking piece for preventing a terminal lug inserted therein, through an insertion hole substantially axially aligned therewith, from rearwardly slipping off;
an opening extending to each of the terminal accommodating chambers, formed in an outer peripheral wall of the connector housing, the opening communicating with the associated accommodating chamber substantially perpendicularly to a longitudinal axis of the accommodating chamber at a position intermediate the length thereof;
a rear holder integrally joined to the connector housing by at least one hinge strap and including a number of terminal locking projections corresponding to and insertable into the openings; and
engagement means provided on the connector housing and on the rear holder, engageable with each other to have the rear holder mounted on the outer peripheral wall of the connector housing, the engagement means including means for having the rear holder mounted in a preliminarily engaged state and means for having the rear holder mounted in a fully engaged state,
wherein when the rear holder is in the preliminarily engaged state, the terminal locking projections are located out of movement paths of the terminal lugs in the terminal accommodating chambers and when the rear holder is in the fully engaged state, the terminal locking projections are located in the movement paths of the terminal lugs.

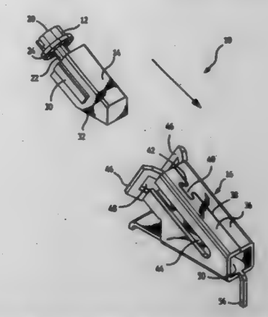
5,292,263

ELECTRICAL CONNECTOR

III Mosser, Middletown, and Robert H. Frantz, Newville, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 12, 1993, Ser. No. 3,159
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—812 9 Claims

1. An electrical connector comprising: an enclosed cage surrounding a wire engaging clamp, guide elements on the cage receiving complementary guide elements on the clamp, the guide elements on the cage extending to an open end of the cage into which the clamp is assembled, a screw rotatably mounted in the cage and threadably connected to the clamp for advancing the clamp to engage a wire in a wire receiving area of the cage, and bendable portions of the cage having transverse slots, the bendable portions being bendable to move the



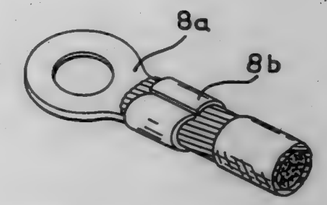
transverse slots closer together to receive rotatably therein a transverse flange on the screw.

5,292,264

EARTHING STUD

Ekhard Blank, Wolfsburg, Fed. Rep. of Germany, assignor to Emhart Inc., Newark, Del.

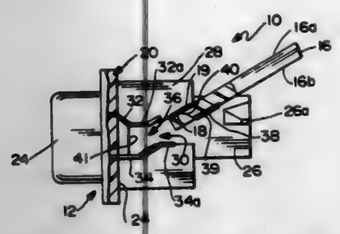
Filed Sep. 15, 1992, Ser. No. 945,189
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1991, 9111564[U]
Int. Cl.[5] H01R *4/30*
U.S. Cl. 439—813 4 Claims



1. An earthing connection mount for use in connecting an earthing cable to an automobile body comprising
a stud adapted to be welded to an automobile body part, said stud including a non-circular base and an elongated threaded part;
a plastic part including an end wall having an aperture, said aperture being shaped and sized to be fitted over said base for non-rotatable engagement therewith;
said plastic part including a generally cylindrical portion surrounding said threaded part and spaced therefrom to allow mounting of an electric connector and a nut on said threaded part;
said plastic part further including recesses through said cylindrical portion for receiving at any one of said recesses, a radially extending connection to the earth cable;
the width of said recesses corresponding approximately to the width of the connection extending therethrough to minimize rotation of the connector on said stud.

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5,292,265
EDGE MOUNTED CIRCUIT BOARD ELECTRICAL CONNECTOR
Yu-Wen Chen, Taipei, Taiwan, and Nai K. Wong, Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.
Filed Mar. 2, 1993, Ser. No. 25,199
Int. Cl.[5] H01R 4/02
U.S. Cl. 439—876 17 Claims



1. In an electrical connector for surface mount soldering along opposite faces of an edge of a circuit board in a straddle mount configuration, said connector being adapted to permit the application of solder paste to contact pads on opposite faces of the circuit board prior to positioning the circuit board in said straddle mount configuration and subsequently positioning the circuit board in the straddle mount configuration without substantially wiping away the solder paste from the contact pads, said contact pads being adapted to receive solder paste thereon;

said circuit board having a pair of parallel, generally planar faces, each face including a plurality of contact pads positioned thereon in a row along and generally parallel to said edge;

said connector having a dielectric housing including a straddle mount face for receiving the edge of the circuit board thereat;

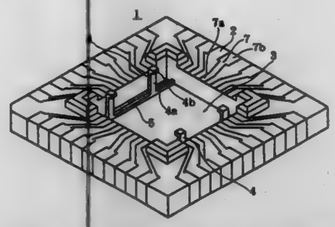
a plurality of terminals mounted in said housing with a solder tail of each terminal being positioned adjacent said straddle mount face for permanent soldering to a respective one of said contact pads when said circuit board is positioned at said straddle mount face in a straddle mount configuration, said solder tails being positioned in first and second parallel rows to define a slot therebetween, each row being generally aligned with a longitudinal axis of said connector, the housing and the terminals being configured to receive the edge of the circuit board in said slot without substantially wiping away solder paste applied to said contact pads prior to insertion of said edge into said slot;

wherein the improvement comprises:

the housing and the solder tails of the terminals being configured so that the edge of said circuit board can be inserted at a first angular orientation relative to the housing with zero contact force between the solder tails and the contact pads, said housing and terminals being adapted to permit the circuit board to be rotated to a second angular orientation relative to the housing wherein said solder tails contact solder paste applied to their respective contact pads on the circuit board;

whereby solder paste can be applied to the contact pads of the circuit board prior to insertion thereof into said slot, said edge of the circuit board can be inserted into said slot between the first and second rows of solder tails at said first angular orientation without substantially wiping away said solder paste from said contact pads, and said circuit board can be rotated to its second angular orientation whereat it is secured in order to permit soldering of said solder tails to their respective contact pads.

5,292,266
INTEGRATED CIRCUIT CARRIER
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 31, 1992, Ser. No. 999,142
Claims priority, application Japan, Mar. 12, 1992, 4-087473
Int. Cl.[5] H05K 1/00
U.S. Cl. 439—526 3 Claims



1. In an integrated circuit carrier having a frame defining an integrated circuit receiving recess therein and having an inner peripheral surface, an outwardly facing surface, an inwardly facing surface and an outer peripheral surface, a plurality of latch members on said frame adapted to be engaged with and disengaged from an integrated circuit package received in said integrated circuit receiving recess with a plurality of leads extending from the integrated circuit package held on a surface of said frame so that the integrated circuit package is carried by said integrated circuit carrier by said leads; the improvement comprising:

an electrical conductive pattern on said frame having a plurality of conductor portions spaced around said frame, a plurality of first contact portions on one of said inwardly and outwardly facing surfaces of said frame adjacent said integrated circuit receiving recess for being contacted by corresponding contact ends of said leads extending from an integrated circuit package and each being in electrical contact with one end of a corresponding conductor portion, a plurality of second contact portions on said outer peripheral surface of said frame and each being in electrical contact with the other end of a corresponding conductor portion, said second contact portions being spaced from each other greater distances than said first contact portions;

whereby spring contacts on a socket for receiving said integrated circuit carrier thereon and spaced at larger intervals from each other than the leads on said integrated circuit package can be moved laterally of said outer peripheral surface into and out of contact with said second contact portions for making electrical connection to said integrated circuit package and permitting said integrated circuit carrier to be moved into and out of said socket.

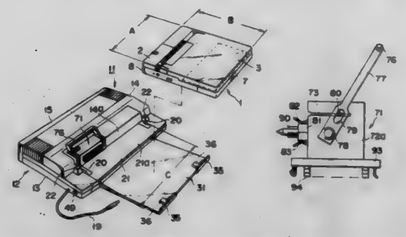
5,292,267
CONNECTOR UNIT WITH MOVABLE CONNECTOR
Takaichi Kobayashi, Itsukaichi; Kazuya Shibasaki, Hamura; Takashi Hosoi; Masami Honda, both of Oome, and Kazuyoshi Takahashi, Tama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and KEL Corporation, Tokyo, both of Japan
Continuation of Ser. No. 777,593, Oct. 16, 1991, abandoned, which is a division of Ser. No. 627,738, Dec. 14, 1990, Pat. No. 5,182,698. This application Mar. 31, 1993, Ser. No. 40,583
Claims priority, application Japan, Dec. 15, 1989, 1-144810[U]; Feb. 12, 1990, 2-31207; Apr. 13, 1990, 2-98441; Nov. 29, 1990, 2-333055
Int. Cl.[5] H01R 13/629
U.S. Cl. 439—310 15 Claims

1. A connector unit associated with an external apparatus to which an electronic device having a connector is connected, said connector unit comprising:

a connector holder mountable to the external apparatus and including a pair of side walls facing each other, and a bottom wall connecting the side walls;

a slider supported between the side walls of the connector holder for reciprocation in a predetermined direction;

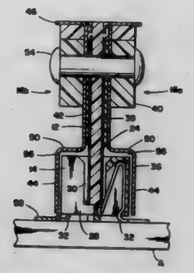
a connector body connected electrically to the external apparatus and situated between the slider and the bottom wall, the connector body being engaged the slider for movement along with the slider;



means for supporting the connector body for movement in a direction substantially perpendicular to the predetermined direction, the supporting means having a first elastic member disposed between the connector body and the slider, and a second elastic member disposed between the bottom wall and the connector body, the connector body being held between the first and second elastic members; and

operating means connected to the slider, for moving the slider in said predetermined direction between a retreated position and an advanced position in which the connector body is engageable to the connector of the electronic device.

5,292,268
CONTROLLED IMPEDANCE SHIELD FOR AN ELECTRICAL CONNECTOR
William B. Walkup, Huntington, Conn., assignor to Burndy Corporation, Norwalk, Conn.
Filed Aug. 5, 1992, Ser. No. 926,100
Int. Cl.[5] H01R 13/648
U.S. Cl. 439—607 11 Claims



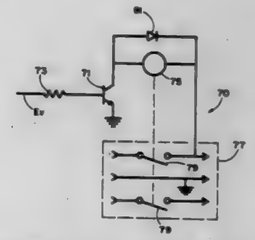
1. An electrical connector comprising:

a frame having a substantially planar section forming a card edge connection area;

signal conductors connected to the frame along the card edge connection area;

a metal shield connected to the frame, the shield having a first section located proximate the card edge connection area, but electronically isolated from the signal conductors, a second section spaced from the frame and generally parallel to the first section, and a stepped section between the first and second sections, the stepped section offsetting the second section from the first section and the frame to thereby form a second connector receiving space between the frame and the second section such that at least a portion of the card edge connection area can be positioned into a second connector with a portion of the second connector being received in the second connector receiving space.

5,292,269
TROLLING MOTOR AUTOMATIC DISCONNECT
Gerald N. Plost, 1725 E. 19th, Tulsa, Okla. 74104, and Gene B. Randall, Jr., 11635 S. 73 E. Ave., Bixby, Okla. 74008
Filed Feb. 19, 1993, Ser. No. 20,103
Int. Cl.[5] B63H 21/22
U.S. Cl. 440—1 13 Claims



1. For interrupting power to a trolling motor and controller from an electrical power source when the trolling motor is not in a trolling position, an automatic disconnect comprising:

means between the trolling motor and controller and the power source for electrically connecting and disconnecting the trolling motor and controller to and from the power source;

means for switching said connecting and disconnecting means between a connect condition and a disconnect condition;

means mounted on and movable with the trolling motor for sensing when the immersible portion of the trolling motor is not in a stored position; and

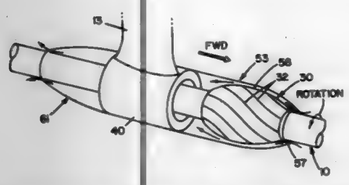
means responsive to said sensing means for electrically energizing said switching means to said connect condition when the immersible portion of the trolling motor is not in said stored position and for electrically deenergizing said switching means to said disconnect condition when the immersible portion of the trolling motor is in said stored position whereby operation of a propeller driven by the trolling motor is controlled.

5,292,270
COMPOSITE AND FAIRWATER STRUCTURES FOR MARINE VESSELS
W. Randall Tucker, Sheffield Lake, Ohio; Gary M. Rafferty, and Dean T. Dutton, both of Jacksonville, Fla., assignors to The B. F. Goodrich Company, Akron, Ohio
Continuation-in-part of Ser. No. 739,003, Aug. 1, 1991. This application Dec. 18, 1992, Ser. No. 995,901
Int. Cl.[5] B63H 5/10
U.S. Cl. 440—82 41 Claims

1. In a marine vessel having a boat hull, an engine within said hull, a propeller at the stern of said marine vessel, a shaft for drivingly connecting said engine to said propeller, a first cover encompassing and secured to said shaft for rotation therewith, a support member secured to said hull and extending downward to adjacent said first cover, bearing means encompassing said shaft for supporting said shaft for rotation, and an outer cover encompassing said first cover and secured to said sup-

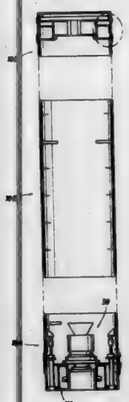
VOL 1160 ISS 2 MR 8 1994 UMI

port member, said first cover having a clearance space between said first cover and said outer cover to facilitate the flow of



water therebetween and through said bearing means to lubricate said shaft and bearing means.

5,292,271
DISCONNECTABLE MOORING SYSTEM
L. Terry Boatman, Katy, and Charles O. Etheridge, Houston, both of Tex., assignors to Sofec, Inc., Houston, Tex.
Division of Ser. No. 767,016, Sep. 27, 1991. This application Apr. 15, 1993, Ser. No. 26,842
Int. Cl.[5] B63B *22/02*
U.S. Cl. 441—3 **4 Claims**



1. For a detachable vessel mooring system designed to have a vertically aligned turret rotatably secured to its hull such that said hull and turret may rotate with respect to each other including a buoyant mooring element and including a selectively operable hydraulic connector assembly having a collet flange hub mounted at the top of said mooring element and a hydraulic collet connector mounted to the bottom of said turret,

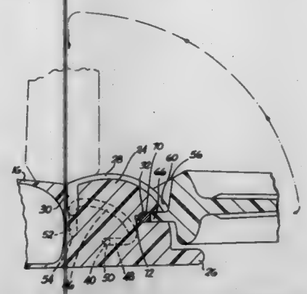
a method of manufacture comprising the steps of

fabricating a lower section of said turret separately from one or more upper sections of said turret, said lower section having a bottom part,

mounting said hydraulic collet connector to said bottom part of said lower section of said turret, and

before said lower section of said turret is mounted on said vessel, mating the top of said mooring element including said collet flange mounted thereon respectively with said bottom part of said turret lower section, including said hydraulic collet connector mounted thereon.

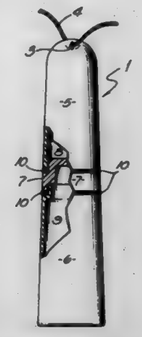
5,292,272
DUAL MODE SWIM FIN
Roger W. Grim, 815 N. Main St., Lafayette, Ga. 30728
Filed Jun. 28, 1993, Ser. No. 84,342
Int. Cl.[5] A63B *31/11*
U.S. Cl. 441—62 **10 Claims**



1. A swim fin convertible between a swimming mode and a walking mode comprising: a shoe having an axially elongated foot receiving pocket at one end for receiving a foot of a swimmer and a bulbous connecting member at another end spaced from said pocket, a web member providing an enlarged surface for aiding in providing propulsive thrust to said swimmer while in water, said web having a free end spaced from said connecting member and a second end adjacent said connecting member, a plurality of spaced apart fingers disposed at said second end and extending in a direction remote from said free end, a plurality of spaced apart slots equal in number to the number of fingers formed in said connecting member defining tracks, each track extending from a first terminus at a disposition at an end of said connecting member remote from said one end of said shoe to a second terminus at a disposition substantially 90° thereto adjacent said foot receiving pocket, a finger receiving cavity recessed into said connecting member at each terminus of said track, each cavity at said first terminus having an axis substantially parallel to the axis of elongation of said pocket and each cavity at the second terminus having an axis substantially perpendicular to said axis of elongation, and means for resiliently securing said web to said connecting member and for urging said fingers into respective cavities at said first terminus of said track when said web is in an extended swimming position relative to said shoe and into respective cavities at said second terminus when said web is in a folded walking position upright relative to said shoe, and for permitting said fingers to be removed from the cavities at one terminus and inserted into the cavities at the other terminus.

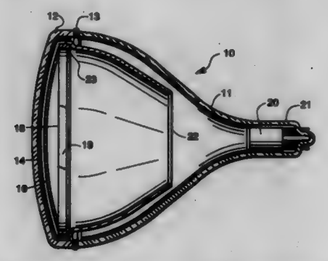
5,292,273
WATERTIGHT CONTAINER
Klaus-Dieter Giessl, Rupertigaustr. 65, 6000 Munchen 50, Fed. Rep. of Germany
PCT No. PCT/DE90/00398, § 371 Date Jan. 10, 1992, § 102(e) Date Jan. 10, 1992, PCT Pub. No. WO90/14989, PCT Pub. Date Dec. 13, 1990
PCT Filed May 29, 1990, Ser. No. 777,271
Int. Cl.[5] B63C *9/15*
U.S. Cl. 441—123 **22 Claims**

1. Inflatable cushion comprising a watertight container adapted thereto, said container being provided with an eye for threading a carrying strap therethrough, said container comprising an upper and a lower hollow part each open at a front face and an intermediate piece whereby the container is provided with separated upper and lower cavities, the upper and lower part respectively being attachable directly to one another without said intermediate piece to form a cavity of about double size, the cushion being adjusted in its dimensions to the container so that it will fit into one of the separated cavities only when in a non-inflated condition in a folded or rolled-up



form, the watertightness of each one of said cavities being maintained when the other part forming the respective other cavity is separated from the intermediate piece.

5,292,274
METHOD OF MANUFACTURING A COLOR CRT TO OPTIMIZE THE MAGNETIC PERFORMANCE
Rein R. Mutso, and Ralph J. D'Amato, both of Lancaster, Pa., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Mar. 25, 1993, Ser. No. 37,046
Int. Cl.[5] C23C *8/10*
U.S. Cl. 445—47 **5 Claims**

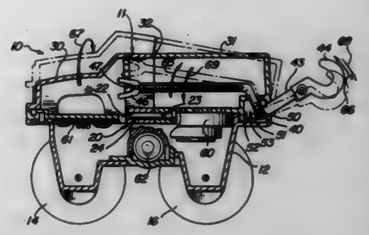


1. A method of manufacturing a CRT to optimize its magnetic performance by firing ferromagnetic components thereof to anneal said components and form a stable black oxide layer on a surface thereof, including the steps of 'introducing said components into a furnace having an exothermic atmosphere, said components being heated to an initial temperature sufficient to initiate a pre-oxidation on said surface thereof,

increasing said temperature to a subsequent temperature to optimize the magnetic characteristics of said components and at least partially relieve stress therein, and

cooling said components to a predetermined temperature, lower than said initial and said subsequent temperatures, while air is introduced into a zone of said furnace to optimize the thickness of said stable black iron oxide layer formed on said surface of said components.

5,292,275
TOY VEHICLE HAVING GROWLING ACTION
Gary R. Swisher, Hermosa Beach; Kevin W. Gray, San Pedro, and Thomas M. Robinson, Lakewood, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.
Filed Aug. 17, 1992, Ser. No. 931,100
Int. Cl.[5] A63H *5/00, 17/26, 17/00*
U.S. Cl. 446—409 **9 Claims**



1. A toy vehicle comprising:

a chassis having a plurality of supporting wheels;

sound producing means supported upon said chassis for producing predetermined sounds;

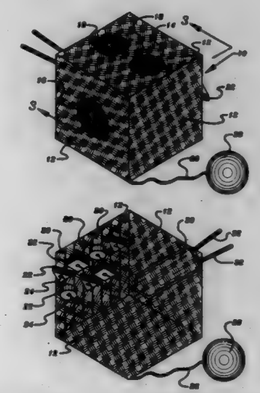
a body having a cab portion, a rear portion pivotally coupled to said chassis, and a pivotal attachment between said cab and rear portions;

pivot means coupled to said rear portion and said chassis for pivoting said rear portion relative to said chassis and raising said cab portion causing pivotal motion between said rear portion and said cab portion; and

switch means coupled to said sound producing means and said pivot means and actuated by said pivot means activating said sound producing means when said rear portion is pivoted away from said chassis;

said cab portion undergoing pivotal motion with respect to said rear portion as it is raised due to said pivotal attachment.

5,292,276
EARLY CHILDHOOD LEARNING TOY
Teresita D. Manalo, 76 Wiley Avenue, Toronto, Ontario, Canada M4J 3W6
Filed Aug. 2, 1993, Ser. No. 100,254
Int. Cl.[5] A63H *5/00, 33/00; G09B 19/00*
U.S. Cl. 446—418 **9 Claims**



1. A new and improved early childhood learning toy, com-

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prising: a housing portion which includes planar walls, wherein at least two of said planar walls include different colors, wherein at least two of said planar walls include different visible patterns, said planar walls defining an interior chamber, one of said planar walls including one aperture permitting communication between said interior chamber and outside said housing portion, one of said planar walls including two apertures permitting communication between said interior chamber and outside said housing portion,

a plurality of cords including respective ends attached to opposite ends of a planar wall, said cords extending across the planar wall, and

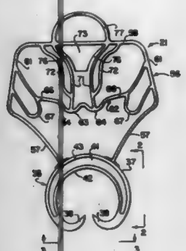
a plurality of solid geometrical shapes supported by said cords such that said geometrical shapes can be selectively moved along said cords.

5,292,277

POULTRY HOCK RETAINER

Daniel J. Volk, Turlock, and Glenn A. Reese, Grass Valley, both of Calif., assignors to Volk Enterprises, Inc., Turlock, Calif.

Filed Jun. 8, 1993, Ser. No. 74,127
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—174 **13 Claims**



1. A retainer for attachment to the body of eviscerated poultry having a spine and hocks to hold the hocks together comprising an anchor element having opposed hooks for hooking about said spine, means for holding the hocks together in juxtaposition to each other and at least one connector for joining the anchor element to the holding means.

5,292,278

METHOD FOR REDUCING FECAL LEAKAGE AND CONTAMINATION DURING MEAT AND POULTRY PROCESSING

Norbert D. Neal, Cross Plains, Wis., and Robert E. Cook, Alexandria, Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and Oscar Mayer Foods Corp., Madison, Wis.

Continuation of Ser. No. 785,831, Oct. 31, 1991, Pat. No. 5,120,267, which is a continuation of Ser. No. 619,237, Nov. 28, 1990, Pat. No. 5,083,975. This application Mar. 31, 1992, Ser. No. 860,953
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—176 **4 Claims**

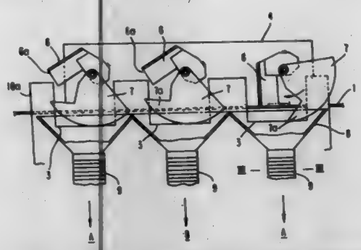
1. A pre-eviscerated poultry product comprising a slaughtered poultry carcass having a sealed cloacal vent opening including a cured firmly adherent adhesive composition.

5,292,279

MEDAL DISTRIBUTION APPARATUS FOR SLOT MACHINE ISLAND

Takatoshi Takemoto; Keizo Kasahara, both of Tokyo, and Meiji Muramatsu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Ace Denkea, Tokyo, Japan

PCT No. PCT/JP91/01303, § 371 Date Jun. 16, 1992, § 102(e) Date Jun. 16, 1992, PCT Pub. No. WO92/05846, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 910,123
Claims priority, application Japan, Sep. 27, 1990, 2-258745
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—56 **4 Claims**



1. A medal distribution apparatus for a slot machine esland wherein gaming medals can be distributed into juxtaposed slot machines and medal lending machines by a distributing conveyor belt extended in a horizontal direction, the medal distribution apparatus comprising:

shafts rotated backwards and forward, stretched across said conveyor belt and positioned inward of respective release ports which are provided at predetermined intervals of said conveyor belt;

a guide valve fixed to each shaft so as to fall, when its lower edge has approached a top surface of said conveyor belt in parallel therewith, into a shape in which said guide valve is located aslant in a widthwise direction of said conveyor belt and is inclined relative to the corresponding release port; and

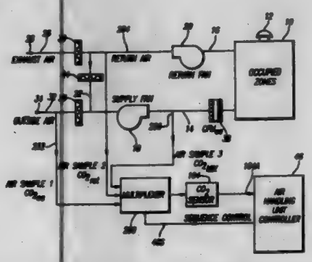
a shutter, which opens or shuts said corresponding release port, mounted on a distal end side of each shaft.

5,292,280

METHOD AND APPARATUS FOR CONTROLLING VENTILATION RATES AND INDOOR AIR QUALITY IN AN HVAC SYSTEM

George J. Janu, Brookfield; Mark W. Tellier, Brown Deer, both of Wis., and Kirk H. Drees, West Lafayette, Ind., assignors to Johnson Service Co., Milwaukee, Wis.

Continuation-in-part of Ser. No. 835,667, Feb. 14, 1992. This application Oct. 15, 1992, Ser. No. 963,319
Int. Cl.[5] F24F *11/00*
U.S. Cl. 454—229 **7 Claims**



1. An apparatus for determining the flow rate of supply fluid being utilized to circulate a mixed fluid of said supply fluid and a return fluid within a volume, said apparatus comprising:

sensor means for sensing a component of said supply fluid, a component of said return fluid, and a component of said mixed fluid; and for providing a first output indicative of said supply fluid component, a second output indicative of said return fluid component, and for providing a third output indicative of said mixed fluid component;

a circulation device configured to introduce said mixed fluid into said volume; and

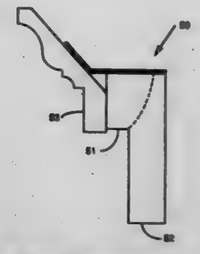
means for determining the flow rate of said supply fluid being utilized from the ratio of the difference between said second output and said third output to the difference between said second output and said first output.

5,292,281

VERTICAL SOFFIT VENT

Dennis Butler, McDonald, Pa., assignor to Glenn Technologies, Inc., Cecil, Pa.

Filed Jan. 16, 1992, Ser. No. 821,920
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—260 **12 Claims**



1. A vertical soffit vent, comprising:

a length of soffit molding, and

a frieze board affixed adjacent said soffit molding,

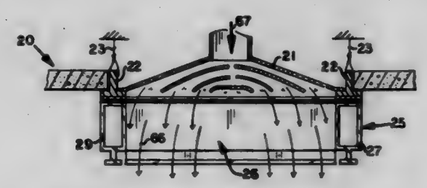
said frieze board further having a plurality of volutes extending along a portion of the frieze board therein between the front face of said frieze board and the uppermost horizontal surface of said frieze board, said volute being a concave cutout in said frieze board and said volute further having an inlet end and an outlet end, wherein said outlet end of said volute is covered by an insect screen.

5,292,282

AIR GUARD

Mike T. Callas, 5701 Camelback Dr., Edina, Minn. 55436

Filed Oct. 13, 1992, Ser. No. 959,595
Int. Cl.[5] F24F *13/08*
U.S. Cl. 454—292 **12 Claims**



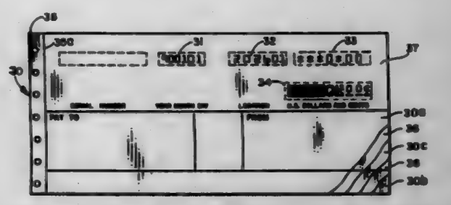
1. An apparatus for directing air and dirt flowing from an air diffuser from a ceiling surface including magnetic holding means comprising: a plurality of elongated members mounted on the ceiling, each member having body means, neck means extending from the body means and shoulder means joined to the neck means defining groove means, and magnet means secured to the body means releasably attachable to magnetic holding means, the magnet means having a continuous top surface extending between opposite ends of the body means thereby releasably holding the member on the magnetic holding means adjacent the diffuser.

5,292,283

MONEY ORDER IMPRINTER

Robert P. Koper, Bensenville, and Howard R. Konieczka, Chicago, both of Ill., assignors to The Paymaster Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 623,035, Dec. 6, 1990, abandoned, which is a division of Ser. No. 418,670, Oct. 10, 1989, Pat. No. 4,995,315. This application Jan. 28, 1992, Ser. No. 827,159
Int. Cl.[5] B41L *1/20*
U.S. Cl. 462—18 **16 Claims**



1. A form set for use with apparatus used for imprinting indicia on negotiable instruments, said form set comprising:

an upper negotiable instrument sheet having a printed front surface and a back surface and comprised of an absorbing type paper sheet material for absorbing dye-based ink to permit the permeation of dye-based ink through said sheet from its printed front surface to its back surface to provide on its back surface a mirror image of the image imprinted on said printed front surface,

a lower customer receipt sheet,

an intermediate voucher sheet positioned between said upper negotiable instrument sheet and said lower customer receipt sheet,

a first transfer medium positioned between said upper negotiable instrument sheet and said intermediate voucher sheet, and

a second transfer medium positioned between said lower customer receipt sheet and said intermediate voucher sheet, said first transfer medium and second transfer medium each comprising an optical character recognition grade carbon sheet to provide optical character recognition indicia on said intermediate voucher sheet and said lower customer receipt sheet.

5,292,284

RELUCTANCE TORQUE COUPLER

Joseph Denk, Manhattan Beach; Edmund G. Koltz, Los Angeles; Henry Rodriguez, Maywood, and Frederick B. McCarty, San Pedro, all of Calif., assignors to Alliedsignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 345,312, Apr. 29, 1989, abandoned, and a continuation-in-part of Ser. No. 386,830, Jul. 27, 1989, abandoned. This application Sep. 27, 1991, Ser. No. 768,130
Int. Cl.[5] F16D *27/00*
U.S. Cl. 464—29 **20 Claims**

1. A reluctance torque coupler comprising:

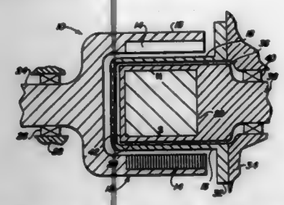
magnetic source means for providing magnetic flux having at least one magnetic axis;

first rotor means for allowing said at least one magnetic axis to be rotated about a rotational axis;

at least two elongated, arcuate, ferromagnetic flux conduo-

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tors whose opposing ends define narrow spaces, said conductors functioning to conduct at least some of said flux provided by said magnetic source means, said flux conductors having a higher magnetic permeability than said spaces; and



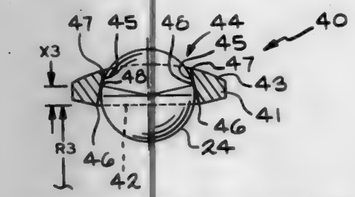
second rotor means, to which said flux conductors are secured, for allowing said flux conductors to be rotated about said rotational axis, whereby said coupler is in a minimum reluctance position when at least one magnetic axis is aligned with said spaces.

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CROSS GROOVE CONSTANT VELOCITY JOINT CAGE HAVING ANGLED BALL RETANINING WINDOWS

Steven L. Ingalsbe, and James W. Warnke, both of Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed May 27, 1992, Ser. No. 889,166
Int. Cl.[5] F16D *3/227*
U.S. Cl. 464—144 **5 Claims**



1. A cross groove constant velocity universal joint comprising:

a hollow outer race defining an axis of rotation, said outer race including an inner surface having a plurality of grooves formed therein, said outer race grooves being alternately inclined relative to said axis of rotation;

an inner race disposed within said outer race, said inner race including an outer surface having a plurality of grooves formed therein, said inner race grooves being alternately inclined relative to said axis of rotation, each of said inner race grooves being associated with one of said outer race grooves, said associated inner and outer race grooves being inclined in opposite directions relative to said axis of rotation;

a hollow cage disposed between said inner and outer races, said cage including an inner surface, an outer surface, and a plurality of openings formed therethrough between said inner and outer surfaces, each of said openings including a pair of side walls which intersect with said inner surface at respective inner corner edges and which intersect with said outer surface at respective outer corner edges, said side walls being angled relative to a plane bisecting said cage; and

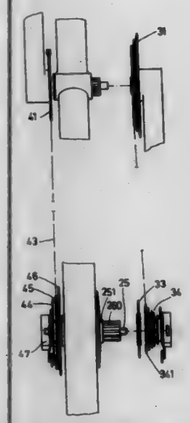
a ball disposed in each of said openings and in each of said associated inner and outer race grooves, said balls engaging said side walls at points of contact which are intermediate of said inner and outer corner edges.

5,292,286

BICYCLE POWER TRAIN ASSEMBLY

Jin-Hua Lan, No. 9, Lane 12, Chin-Te Rd., Changhua City, Taiwan

Filed May 14, 1992, Ser. No. 883,155
Int. Cl.[5] F16H *9/00*
U.S. Cl. 474—73 **1 Claim**



1. A bicycle power train assembly, including

a crank axle having first and second ends;

a primary driving sprocket cluster means mounted on said first end of said crank axle and having a plurality of primary driving sprockets of varying diameters;

a rear wheel axle having first and second ends;

a primary driven sprocket cluster means mounted on said first end of said rear wheel axle and having a plurality of primary driven sprockets of varying diameters; and

a primary drive chain trained between said primary driving cluster means and said primary driven sprocket cluster means;

rotation of said primary driving sprocket cluster means being transmitted to drive rotatably said rear wheel axle when said primary drive chain trains said primary driving sprocket cluster means and said primary driven sprocket cluster means;

a secondary driving sprocket mounted on said second end of said crank axle and rotating with said crank axle, said secondary driving sprocket being smaller than a smallest one of said primary driving sprockets;

a secondary driven sprocket mounted on said second end of said rear wheel axle and being larger than a largest one of said primary driven sprockets;

a secondary drive chain trained between said secondary driving sprocket and said secondary driven sprocket;

an idle sprocket means rotatably mounted on said rear wheel axle between said first and second ends of said rear wheel axle; and

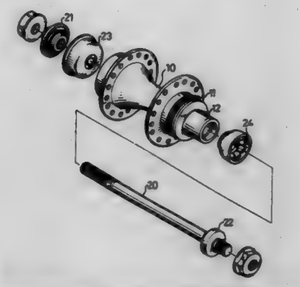
a ratchet clutch means disposed between said second end of said rear wheel axle and said secondary driven sprocket to disengage said secondary driven sprocket from said rear wheel axle so as to permit idle rotation of said secondary driven sprocket when said primary drive chain is trained between said primary driving sprocket cluster means and said primary driven sprocket cluster means and to engage said secondary driven sprocket and said rear wheel axle so as to drive rotatably said rear wheel axle when said primary drive chain is trained between said primary driving sprocket cluster means and said idle sprocket means.

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HUB ASSEMBLY FOR A REAR WHEEL AXLE OF A BICYCLE

Kinka Hsieh, No. 125, Shih Chien St., Feng Yuan City, Taichung Hsien, Taiwan

Filed Jun. 4, 1992, Ser. No. 893,550
Int. Cl.[5] F16C *35/00*
U.S. Cl. 474—151 **1 Claim**



1. A hub assembly for a rear wheel axle of a bicycle comprising a body rotatably engaged on said rear wheel axle, said rear wheel axle including a first cone threadedly engaged on a first end thereof and a second cone formed integral on a second end thereof, said body including a first end portion located close to said first cone of said rear wheel axle and a second end portion having a plurality of sprockets engaged thereon, a first bearing rotatably engaged between said first end portion of said body and said first cone, a barrel formed integral on said second end portion of said body and extended outward toward said second cone, a second bearing rotatably engaged between said barrel and said second cone, whereby, said first bearing and said second bearing are rotatably engaged on said first end and said second end of said rear wheel axle respectively such that said rear wheel axle is stably supported in place.

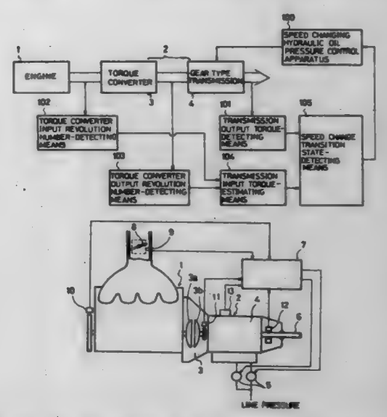
5,292,288

SPEED-CHANGING HYDRAULIC OIL PRESSURE CONTROL APPARATUS FOR AN AUTOMATIC TRANSMISSION OF AN AUTOMOBILE

Masuo Kashiwabara; Yoshikazu Tanaka; Kazuki Kamada, and Hideki Sekiguchi, all of Isesaki, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

PCT No. PCT/JP91/00457, § 371 Date Nov. 22, 1991, § 102(e) Date Nov. 22, 1991, PCT Pub. No. WO91/15689, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 5, 1991, Ser. No. 776,007
Claims priority, application Japan, Apr. 6, 1990, 2-90431
Int. Cl.[5] F16H *59/16*
U.S. Cl. 475—63 **3 Claims**

1. A speed-changing hydraulic oil pressure control apparatus for an automatic transmission of an automobile having a gear-type transmission connected to an output shaft of an engine through a torque converter, said apparatus comprising means for detecting output torque Tout of the transmission, means for detecting the input revolution number Ne of the torque converter, means for detecting the output revolution number Nt of the torque converter, means for estimating the input torque Tin of the transmission from said input revolution number and output revolution number, and means for detecting the transition state of the speed change from said input torque and said output torque for controlling hydraulic oil pressure of speed-changing elements in the transmission, wherein the speed change transition state-detecting means comprises means for computing the torque difference between the input torque Tin and output torque Tout of the transmission, and means for comparing the computed torque difference with a predetermined value and judging the phase as the torque phase when the computed value is smaller than the predetermined value or judging the phase as the inertia phase



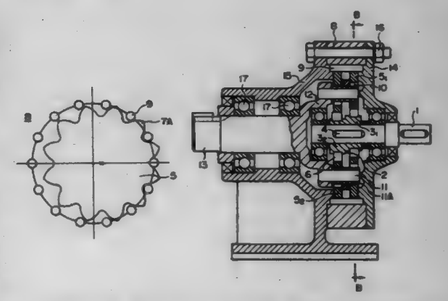
when the computed value is larger than the predetermined value.

5,292,289

INTERNALLY MESHING PLANETARY GEAR ASSEMBLY

Seishiro Ogata, Hando; Atsushi Takahashi, and Hideyoshi Tanaka, both of Obu, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo

PCT No. PCT/JP91/00024, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO92/12360, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 14, 1991, Ser. No. 923,920
Claims priority, application Japan, Dec. 8, 1989, 1-317827
Int. Cl.[5] F16H *1/32*
U.S. Cl. 475—176 **2 Claims**



1. A planetary speed-up and -down gearing comprising an external gear defined by a trochoidal curve and an internal gear having outer pins internally meshed with said external gear, said external gear and said internal gear being meshed in such a manner as to rotate eccentrically and swingingly relative to each other, so that phases of said external gear and said internal gear are shifted by a predetermined difference in the number of teeth between both said gears for each of said eccentric and swinging rotations, to thereby take out rotation corresponding to a difference in phase caused by the predetermined difference in the number of teeth,

wherein when a radius of a pitch circle of the outer pins of said internal gear is A, the eccentric amount is B, the

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radius of each said outer pin is C, the speed reduction ratio is I, and the difference in the number of teeth between both said gears is N, these factors are set to meet;

$B \times I/A = 0.7$ to 1.5,

$C/A = 0.02$ to 0.05,

$C \times I \times N/A = 1$ to 2, and

the difference in the number of teeth N is not less than 3.

5,292,290

TRANSMISSION ARRANGEMENT FOR VEHICLES

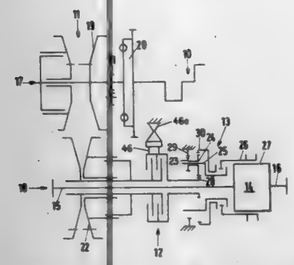
Romanus Scholz; Paulus Heidemeyer, both of Wolfsburg, and Dag-Arnulf Schlaf, Braunschweig, all of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,829

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141451; Jul. 6, 1992, 4222115

Int. Cl.[5] F16H *3/78, 3/54*; B60K *17/08*

U.S. Cl. 475—231 **30 Claims**



1. A transmission arrangement for vehicles comprising a housing, a planetary gear set contained in the housing including an axle step-up and reversing gear and a driven component following the planetary gear set, wherein the planetary gear set includes a planet gear carrier carrying planet gears having sets of gear teeth with different diameters and wherein one set of planet gear teeth engages a stationary first ring gear, another set of planet gear teeth engages a second ring gear, and one of the two sets of planet gear teeth engages a sun gear, and wherein either the planet gear carrier or the second ring gear is connectable to the driven component.

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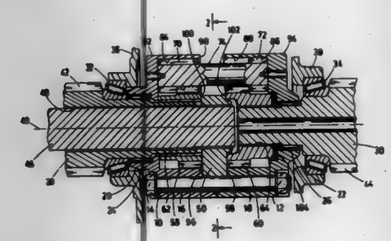
PARALLEL-AXIS GEAR DIFFERENTIAL WITH EXTENDED PLANET GEARS

Steven E. Ostertag, Rochester, N.Y., assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed May 28, 1992, Ser. No. 890,565

Int. Cl.[5] F16H *1/42*

U.S. Cl. 475—252 **22 Claims**



1. A differential gear assembly comprising:

a housing rotatable about a pair of drive shafts sharing a common axis of rotation;

a pair of side gears positioned in said housing for receiving ends of the respective drive shafts for rotation therewith about the common axis;

at least one pair of combination gears positioned in said housing operatively connecting said pair of side gears for opposite directions of relative rotation;

each of said combination gears having a first gear section in meshing engagement with one of said side gears, a second gear section in meshing engagement with its paired combination gear, and a stem section interconnecting said first and second gear sections;

at least one pair of pockets formed in said housing supporting said combination gears for rotation about respective axes that extend parallel to the common axis;

each of said pockets having a first bearing portion rotatively supporting said first gear section, a second bearing portion rotatively supporting said second gear section, and an intermediate portion providing clearance for said stem section;

at least one window forming a passageway through an exterior of said housing connecting the housing exterior to said intermediate portion of the pockets;

said intermediate portion of one pocket of said pair of pockets being aligned with said intermediate portion of the other pocket of said pair of pockets through a first distance along the common axis; and

said window passageway connecting the housing exterior to both intermediate portions of said pair of pockets.

5,292,292

EPICYCLIC GEAR TRAIN PLANET CARRIER

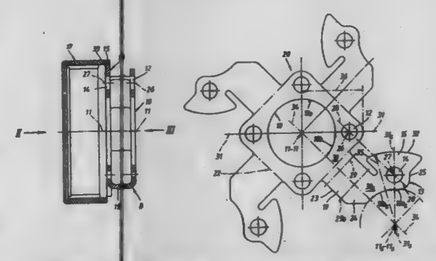
Karl Heinrich, Waldenweiler, and Günter Kirsch, Stuttgart, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,871

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138548

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—331 **8 Claims**



1. A planet carrier for an epicyclic gear train, comprising a central free cage ring having mounting holes arranged axially parallel to an axis of the cage ring and adapted to receive one end of respective mounting pins, cage arm parts, each having a mounting hole arranged axially parallel to the cage ring axis and adapted to receive the other end of the respective mounting pins, connection means joined for movement with the cage arm parts, for connecting the planet carrier to a transmission member concentric to the cage ring axis, and connecting arms arranged axially parallel to the cage ring axis for connecting the free cage ring for movement with the cage arm parts joined to the connection means, wherein the free cage ring and edge portions constituting the connection means are a one-piece sheet pressing.

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PROGRAMMABLE PHYSICAL EXERCISE APPARATUS WITH INERTIA

Jean-Michel Schumacher, Rue de la Couture 36, B-4821 Andrimont, Belgium

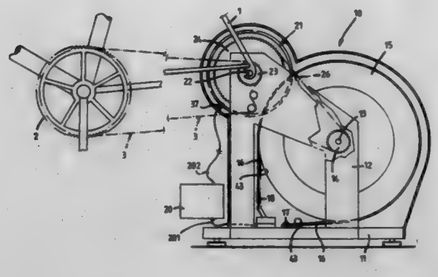
PCT No. PCT/BE92/00020, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/20408, PCT Pub. Date Nov. 26, 1992

PCT Filed May 15, 1992, Ser. No. 969,812

Claims priority, application Belgium, May 17, 1991, 9100470

Int. Cl.[5] A63B *24/00*

U.S. Cl. 482—4 **6 Claims**



1. A physical exercise apparatus comprising a stand;

a rotary member mounted on the stand so as to be able to turn freely about a horizontal pin;

an inertia flywheel coupled to the rotary member;

a strap clamped around part of the perimeter of the inertia flywheel, and attached at one end to a pin fixed to the stand and attached at its opposite end to the end of a spring, the other end of the spring being connected to an adjustable traction device mounted on the stand in such a way as to exert a predetermined tensile force on the spring and strap;

a device coupled mechanically to said inertia flywheel for measuring the change in the drive torque relative to the braking force exerted by the inertia flywheel and for producing an electrical signal representing the said change;

said device for measuring the change in the drive torque relative to the braking force comprising a drive pinion designed to be driven by a pedal drive mechanism and a pulley coupled mechanically to the inertia flywheel;

said pulley being also coupled to the drive pinion by means of a number of compressed springs, each spring being held between a first ball fixed to the drive pinion and a second ball fixed to the pulley;

a number of first annular segments fixed to the perimeter of the pulley and a number of second annular segments fixed to the perimeter of the pinion;

the said first and second annular segments being arranged in such a way that the mutually confronting ends of each first annular segment and the consecutive second annular segment are separated, forming a slot which is proportional to the braking force; and

a device for measuring the length of said slots and for producing electrical signals representing the change in length of said slots.

5,292,294

ROTATIONAL BELT EXERCISE APPARATUS

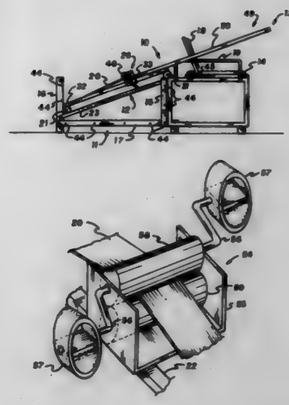
Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321

Filed Jun. 5, 1991, Ser. No. 710,541

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—51 **17 Claims**



1. A rotational belt exercise apparatus comprising:

a structural frame means having an adjustable seat means mounted thereon;

a rotational belt assembly means having a rotatable closed loop belt means adjustably mounted on said frame means between a substantially horizontal position and a substantially vertical position;

said structural frame means comprising:

a vertical and horizontal support means for supporting at least one end of said rotational belt assembly means; and

a second vertical support means for supporting a second end of said rotational belt assembly means; and

user engagement means directly connected to said rotational belt means to operate said rotational belt assembly means; whereby

a user may participate in upper and lower body exercises while in a seated position.

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EXERCISE HOOP

Michael J. Gerlach, 21133 Stonecrop Pla., Ashburn, Va. 22011

Continuation-in-part of Ser. No. 826,794, Jan. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 476,801, Feb. 8, 1990, Pat. No. 5,102,119, which is a continuation-in-part of Ser. No. 250,172, Sep. 28, 1988, Pat. No. 4,902,004. This application Aug. 3, 1992, Ser. No. 923,553

Int. Cl.[5] A63B *25/08*

U.S. Cl. 482—77 **21 Claims**

1. An exercise device for bouncing a user carried by the device from a utility surface, comprising:

at least an elongate resilient member having opposite ends;

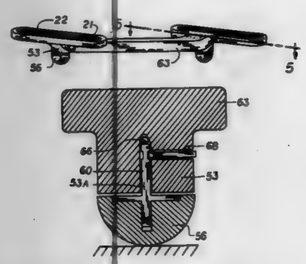
means connecting the opposite ends in juxtaposition forming an annulus having a tear drop configuration when in an unflexed state with a supporting portion, said supporting portion having a foot support and a handle spaced in a longitudinal direction from the foot support for grasping by a user when standing on the foot support, said annulus bouncing a user off the utility surface engaged by the annulus upon the flexing of the annulus in response to a jumping motion of a user supported by the supporting portion; and

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a stabilizing member slidably mounted to the supporting portion and fixedly mounted to the annulus for maintaining substantial symmetry of flexure in response to a compressive and recovery force in the longitudinal direction.

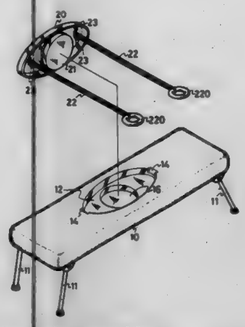


5,292,296
BALANCE BOARD
Barry J. Davignon, 2709 Sibley Ave., Terre Haute, Ind. 47803
Filed Sep. 15, 1992, Ser. No. 945,342
Int. Cl.[5] A63B *22/16*
U.S. Cl. 482—146 **3 Claims**



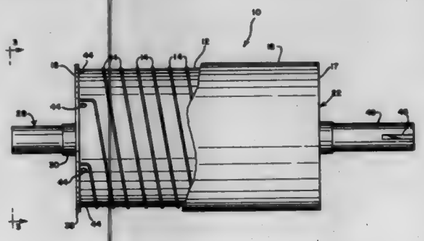
1. A balancing device comprising:
ground contact means for pivotally contacting a horizontal surface;
a main body connected to the ground contact means, said main body being normally disposed horizontally above the ground contact means when the balancing device is in use, said main body including pivot supports for the ground contact means, each pivot support having a vertical axial opening;
first and second foot receiving means supported by the main body and normally disposed outward from the main body at opposite sides thereof, said foot receiving means comprising footpads; and the ground contact means comprising first and second hemispherical pivots, each pivot including a pivot axle having upper and lower ends and an intermediate portion, the lower end being firmly secured to the corresponding hemispherical pivot, the pivot axle extending upwardly into the vertical, axial opening in the pivot support, and bearing means disposed above the pivot axle in the axial opening, the ground contact means being disposed below the main body and inwardly from the first and second foot receiving means, and connected to the main body and the first and second foot receiving means to support a user standing on the foot receiving means, whereby the device can be moved by the alternate shifting of the user's body weight from one footpad to the other.

5,292,297
EXERCISE DEVICE
Sam Hsu, No. 35, Lane 156, Sung Chiang Rd., Taipei, Taiwan
Filed May 18, 1993, Ser. No. 63,536
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—146 **3 Claims**



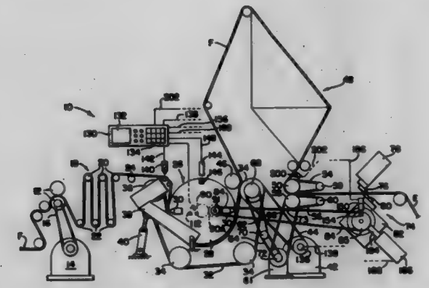
1. An exercise device comprising:
a board comprising an upper side and a lower side;
a first non-circular recess formed in said board;
a second recess formed in said non-circular recess;
a plate comprising a first side and a second side and being receivable in said first recess so that it is kept from rotating relative to said board;
a disk rotatably attached to said second side of said plate, said disk comprising a first position such that it is received in said second recess and that said first side of said plate and said upper side of said board form a plain surface on which exercisers can do sit-ups and a second position such that said disk is exposed and that exercisers can twist thereon.

5,292,298
HEAT TRANSFER ROLL
Daniel B. Scannell, Valparaiso, Ind., assignor to Roll Service Incorporated, South Holland, Ill.
Filed Jan. 6, 1993, Ser. No. 1,757
Int. Cl.[5] B23P *15/00*
U.S. Cl. 492—46 **9 Claims**



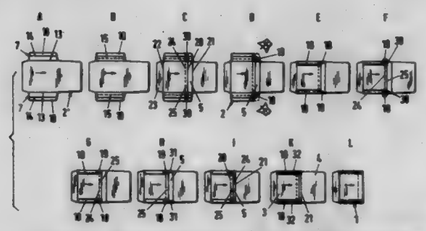
1. A heat transfer roll comprising in combination:
an inner tubular body having an end, a wall, and an outer surface,
a plurality of ribs on said outer surface of said inner tubular body,
an outer tubular shell fitted over said ribs to form a plurality of channels between said inner tubular body and said outer tubular shell,
an end section fitted into said end, said end section having a central opening and a passageway extending from said central opening to each of said spiral channels for conducting a fluid from said central opening to each of said channels, and,
means for individually blocking the flow of fluid to any one of said spiral channels.

5,292,299
MAINTAINING PERFORATION PHASING
Danford C. Anderson, Green Bay; Peter J. Hatchell, New Franken, both of Wis., and Emiel Lambrecht, Aalst, Belgium, assignors to FMC Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 981,967, Nov. 25, 1992. This application Feb. 26, 1993, Ser. No. 23,992
Int. Cl.[5] B31B *1/64, 19/00*
U.S. Cl. 493—11 **4 Claims**



4. A method of producing plastic bags from a continuous film of material having printed matter appearing thereon at regularly spaced intervals, comprising the steps of:
imparting transverse seals to the film at regularly spaced intervals;
imparting transverse perforations to the film at regularly spaced intervals;
maintaining a desired spacing between the seals and the printed matter;
simultaneously maintaining a desired spacing between the printed matter and the perforations.

5,292,300
ENCLOSURE AND METHOD FOR MAKING THE ENCLOSURE
Martin Bluemle, Horhausen, Fed. Rep. of Germany, assignor to Winkler & Duennebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Fed. Rep. of Germany
Filed Jul. 6, 1992, Ser. No. 909,313
Claims priority, application Japan, Jul. 8, 1991, 4122575
Int. Cl.[5] B31B *33/00, 37/00*
U.S. Cl. 493—231 **2 Claims**



1. A method for producing from a blank (2') an enclosure having a front portion (3), a back portion (4), side flaps (6, 7), a bottom (5) bridging a spacing between said front portion (3) and said back portion (4), said bottom (5) forming an integral one piece component of said front portion and of said back portion (4), each of said side flaps (6, 7) comprising a bottom side tongue (18, 19), and a number of old lines (13, 14, 15), said enclosure further having a back-foldable section (25, 25C), and a folding precrease (24) between said back-foldable section (25, 25C) and said front portion (3), said folding precrease (24) functioning as a hinge for said back-foldable section (25, 25C) to be folded onto said front portion (3) in an empty condition of said enclosure, whereby said enclosure can be laid flat when empty and provides a substantial space between said front portion (3) and said back portion (4) when filled, said blank having a front section (3), a back section (4), side flap sections (6, 7), a bottom section (5), and a back-foldable section (25, 25C), said method comprising the following steps:
A) producing in said side flap sections (6, 7) longitudinal first hinging precreases (13, 14) to form respective enclosure corners along said fold lines;
B) producing in said side flap sections (6, 7) longitudinal second hinging precreases (15) for forming a fold;
C) producing third crosswise precreases (20, 21, 24) in said bottom section (5) for folding said back-foldable section (25, 25C) and fourth angular precreases (30) in said side flap sections (6, 7) near said bottom (5) section for folding said bottom side tongues (18, 19);
D) cutting said blank to form said bottom side tongues (18, 19);
E) folding said side flap sections (6, 7) to form folding sections (8, 9) extending along said second hinging precreases (15) for displacing said side flap sections (6, 7) into said enclosure, whereby said folding sections (8, 9) are placed onto each other in said flat empty condition of said enclosure and said bottom side tongues (18, 19) come to rest against said bottom section (5);
F) flapping and pulling said bottom side tongues (18, 19) about respective ones of said third precreases (24) operating as back and forth folding precreases and further flapping said bottom side tongues (18, 19) about said fourth angular precreases (30) while tilting said bottom side tongues (18, 19) around 90°, whereby said bottom side tongues (18, 19) open up away from said blank;
G) folding said bottom side tongues (18, 19) toward the center of the blank said blank, whereby said bottom side tongues (18, 19) contact portions (10) of said folding sections (9);
H) applying first adhesive for securing said bottom section (5) to said bottom side tongues (18, 19);
I) back-folding said back-foldable section (25, 25C) in a Z-configuration onto said bottom section (5), whereby simultaneously said bottom side tongues (18, 19) are flapped onto said bottom section (5);
K) applying second adhesive for securing said side flap sections (6, 7) to said back section (4); and
L) folding and closing said back section (4), whereby said second adhesive bonds said side flaps (6, 7) to said back portion (4), and said enclosure has a flat bottom that enables the enclosure to stand on said bottom in an unfolded condition and that rests flat against said enclosure in a folded condition.

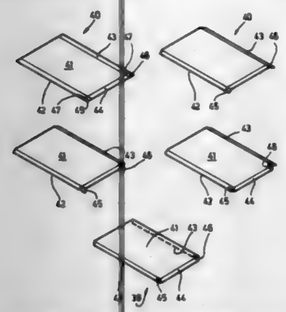
5,292,301
PACK FOR CIGARETTES OR THE LIKE AND PROCESS AND APPARATUS FOR THE PRODUCTION THEREOF
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany
Division of Ser. No. 690,186, Apr. 19, 1991. This application Oct. 16, 1992, Ser. No. 961,856
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013264
Int. Cl.[5] B65H *45/12*
U.S. Cl. 493—356 **7 Claims**

1. A process for producing filling pieces, from thin cardboard blanks, for cigarette packs which have a top cavity therein after being filled with cigarettes to form a completed pack,

a) wherein each blank (40) has a rectangular filling piece wall (41), oppositely situated side panels (42, 43) a cross-panel (44) which is located at the top in the completed pack and which is directed transversely relative to the filling piece wall (41) and the side panels (42, 43), and corner tabs (45, 56) which are connected to the cross-panel (44) and extend as an extension of the side panels (42, 43),

and wherein said process comprises the following steps:

b) separating the corner tabs (45, 56) from the side panels (42, 43) by severing cuts (47), and folding the corner tabs (45, 56) to a position transverse to the cross-panel (44);



c) then, folding the cross-panel (44) with the corner tabs (45, 56) to a position transverse to the filling piece wall (41); and

d) then, folding the side panels (42, 43) to a position transverse to the filling piece wall (41) further comprising the following steps:

first, folding the tabs (45, 56) together with the side panels (42, 43) to an intermediate folding position that is inclined relative to the filling piece wall (41), and then further folding only the tabs (45, 46) to said position transverse to the cross-panel (44); and

after the cross-panel (44) has been folded, folding the side panels (42, 43) from the inclined intermediate position to said position transverse to the filling piece wall (41).

5,292,302

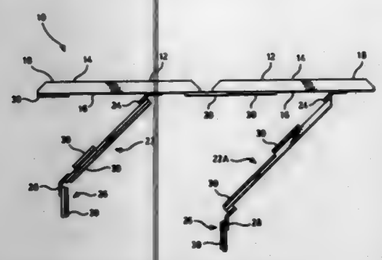
ARTICULATING SPLINT

Mark L. Gianferante, 11421 NW. 39 St., Sunrise, Fla. 33323

Filed Dec. 5, 1991, Ser. No. 802,496

Int. Cl.[5] A61F *5/04*

U.S. Cl. 602—13 **9 Claims**



1. An emergency splint device comprising:

first and second main members, each of said main members comprising

an elongated rigid radio-translucent member having upper and lower active surfaces;

projections upstanding from longer sides of said radio-translucent members to form in conjuction with said upper active surfaces first and second beds for receiving body parts;

said main members being pivotally connected to each other at ends thereof;

arm means pivotally connected to at least one of said main members for fixedly establishing an angle between said main members;

securing means fixed to at least one of said main members and to said arm means, and said main member securing adapted to interlock with said arm securing means, for securing said arm means to said at least one of said main members at locations removed from said pivotal connection of said arm means to said at least one of said main members, for locking said at least one of said main members at said angle; and strap means fixed to said upper active surface and adapted to attach said main members to said body parts.

5,292,303

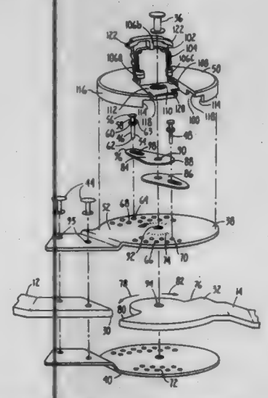
HINGED ORTHOPEDIC BRACE HAVING AN ADJUSTABLE PIVOT RANGE

Charles A. Bastyr, and David B. Winer, both of San Diego, Calif., assignors to Smith & Nephew Donjoy, Inc., Carlsbad, Calif.

Filed Jul. 1, 1992, Ser. No. 907,480

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—16 **16 Claims**



1. An orthopedic hinge brace comprising:

a first arm having an end shaped-apart holes formed therethrough;

a second arm having an end;

arm connection means for pivotally connecting said end of said first arm to said end of said second arm;

limiting means for adjustably establishing a plurality of pivot limit positions for said second arm relative to said first arm, said limiting means comprising a limiting member, a first hole through said plate, and a second hole through said plate spaced a radial distance apart from said first hole, wherein said limiting member is insertable into said first hole to abut said second arm at a first pivot limit position when said second arm is pivoted in a first direction relative to said first arm, thereby limiting pivoting of said second arm past said first pivot limit position in said first direction, further wherein said limiting member removable from said first hole and insertable into said second hole to abut said second arm at a second pivot limit position when said second arm is pivoted in said first direction relative to said first arm, thereby limiting pivoting of said second arm past said second pivot limit position in said first direction; and

a retention member pivotally connected to said plate and having a longitudinal slot formed therethrough separately alignable with said first and second holes, wherein said limiting member is slidably positioned within said longitudinal slot.

5,292,304

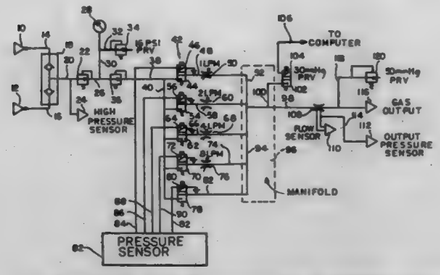
INSUFFLATOR DIGITAL GAS FLOW SYSTEM

Robert R. Mantell, Arlington Heights; Albert Nowasielski, Roselle, and Charles Zander, Grayslake, all of Ill., assignors to Northgate Technologies, Inc., Arlington Heights, Ill.

Filed Jun. 2, 1992, Ser. No. 892,049

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—26 **10 Claims**



1. A digital flow controlling system for an insufflator comprising means for connection to a source of pressurized insufflating gas, input flow means connected to said connection means in gas flow relation therewith, a plurality of gas flow control means of differing flow capacities in digital capacity relation to one another, the first of said plurality of gas flow control means having a fixed rate of flow of one unit of gas, and each succeeding one of said gas flow control means having a fixed rate of flow which is twice the unit flow rate of the preceding gas flow control means, each having an input end and an output end and each including an on-off valve, means connecting the input ends of said plurality of said gas flow control means in continuously open gas flow relation in parallel with one another

to said input flow means, output gas flow means, means connecting the output ends of said gas flow control means in continuously open gas flow relation in parallel with one another to said output gas flow means, and means for selectively opening and closing said on-off valves singly and in combination to provide digitally differing rates of gas flow to said output gas flow means.

5,292,305

DOUBLE-LUMEN ANGIOSCOPY CATHETER

Alexander C. Boudewijn, La Leek, and Gjalt Bosma, Ek Drachten, both of Netherlands, assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Sep. 1, 1992, Ser. No. 938,620

Claims priority, application Netherlands, Sep. 10, 1991, 9101534

Int. Cl.[5] A61M *3/00*

U.S. Cl. 604—43 **7 Claims**

1. A double-lumen angioscopy catheter, comprising:

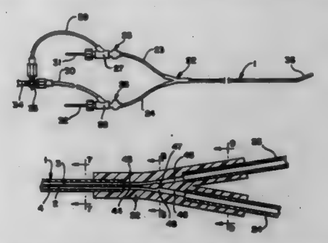
a length of double-channel tubing having a first longitudinal channel and a second longitudinal channel longitudinally adjacent to said first longitudinal channel, said double-lumen tubing having a distal tip end and a proximal portion;

a fork member having a distal portion with two passageways therebetween, said fork member having two proximal portion lumens, said two passageways of the distal portion and said two proximal portion lumens communicating with each other through a transitional passageway between said two passageways of the distal protion and said two proximal portion lumens;

each said transitional passageway is substantially devoid of internally protruding edges and has a tapered surface on one of its faces and a generally semi-cylindrical surface on its opposite face, said generally semi-cylindrical opposite face being coextensive both with a generally semi-cylindrical portion of one of said passageways of the distal portion and also with a generally semi-cylindrical portion of one of said proximal portion lumens;

first and second lengths of single-channel tubing each having a lumen concentric with said respective two proximal portion lumens of the fork member;

an endoscopic optic fiber bundle positioned within a first continuous passageway, said first continuous passageway being defined by said first length of single-channel tubing, by one of said proximal portion lumens, by one of said transitional passageways, by one of said proximal passageways within the fork member, and by said first longitudinal channel of the double-channel tubing, said first continuous passageway presenting a continuous length having a generally semi-cylindrical configuration which is constant in shape and size, said continuous length including said generally semi-cylindrical opposite face of its transitional passageway and extending at least throughout said transitional passageway and the proximal portion of said first longitudinal channel of the double-lumen tubing;



a second continuous passageway defined by said second length of single-channel tubing, by the other of said proximal portion lumens, by another of said transitional passageways, by the other of said proximal passageways within the fork member, and by said second longitudinal channel of the double-channel tubing, said second continuous passageway presenting a continuous length having a generally semi-cylindrical configuration which is constant in shape and size, said continuous length including said generally semi-cylindrical opposite face of its transitional passageway and extending at least throughout said transitional passageway and the proximal portion of said second longitudinal channel of the double-lumen tubing; and

said second continuous passageway receives a guidewire therewithin.

5,292,306

METHOD OF DETECTING OCCLUSIONS IN A SOLUTION PUMPING SYSTEM

Richard D. Wynkoop, Des Plaines; John E. Ogden, and Sheldon M. Wecker, both of Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 29, 1993, Ser. No. 11,062

Int. Cl.[5] A61M *1/00*

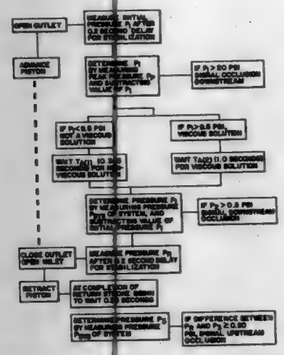
U.S. Cl. 604—51 **12 Claims**

1. A method of operating a solution pumping system including pump means which creates a positive liquid pressure at said pump means during a pumping stroke, and a negative liquid

pressure at said pump means during a return stroke, said method comprising the steps of:

determining a pressure P_1 during a pumping stroke of said pump means corresponding to a peak pressure of said system;

waiting a predetermined time interval T_A after determination of said pressure P_1;



determining a pressure P_2 corresponding to the pressure of said system; and

providing a signal indicating occlusion of said system downstream of said pump means if P_2 exceeds a predetermined value.

5,292,307

DISPENSING PACKAGE FOR UNIT DOSAGE

Theodore W. Dolzine, 412 Rock Run Pl., Havre de Grace, Md. 21078, and Steven I. Baskin, 1412 Cherokee La., Bel Air, Md. 21015

Filed Sep. 16, 1992, Ser. No. 945,671
Int. Cl.[5] A6MN *31/00*
U.S. Cl. 604—54 **13 Claims**



1. A method of administering a unit dosage into a body cavity, comprising the steps of

encapsulating the unit dosage in the center of a packet comprising a pair of confronting leaves of frangible material,

positioning the dosage between the leaves at the center part of the packet and sealing the leaves around the periphery of the packet, to form a sealed packet which seals the unit dosage from exposure to conditions which might cause degradation of the dosage,

providing an elongated tubular injector having a head end and a tail end with a longitudinal bore extending from end to end with a cross section larger than said dosage, and a plunger mounted for longitudinal displacement within said bore,

said plunger having a nose portion having a cross section corresponding to the cross section of the bore, and with a beveled edge at one side of the plunger with a contour along the periphery of said nose cross section, and operable to slide within said bore,

said plunger having a tail portion projecting out of said bore at the tail end of the injector,

mounting said packet in said injector adjacent the head end remote from said tail end, and registering the dosage in the packet in alignment with said bore, and supporting said packet in said injector with an annular ring having a central opening corresponding in size with the cross section of said nose, said central opening having a contour conforming to the contour of said beveled edge,

positioning the head end of the injector in the body cavity receiving the dosage, and

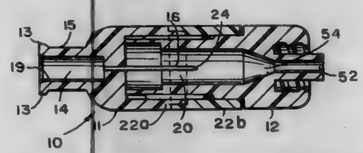
dispensing said unit dosage by using the tail to displace the nose of the plunger through said packet and through the opening of said annular ring, whereby said beveled edge at one side of the plunger first penetrates the frangible material at said one side to provide a dispensing opening in the packet for the unit dosage and then the nose expresses the unit dosage out from between the leaves of the packet and through the opening of said ring and then through the head end of the injector into the body cavity receiving the dosage.

5,292,308

THREE PIECE INTRAVENOUS LINE CONNECTOR

Dana W. Ryan, 11520 SW. 22nd Ct., Davie, Fla. 33325

Filed May 4, 1993, Ser. No. 57,525
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—86 **18 Claims**



1. A three piece fluid line connection assembly for permitting the coupling and uncoupling of an influent supply line terminating in a first male luer and an effluent supply line starting with a first female luer, the assembly comprising:

a) a two piece female connector, a first one of said two pieces having first and second hollow portions, a dividing wall separating said first and second hollow portions, and a hollow needle having a first sharp end,

said first hollow portion having a first substantially cylindrical wall forming a first part of a receiving chamber with a first substantially open end having a first stepped diameter,

said second hollow portion having a second substantially cylindrical wall with an inside surface forming a second female luer for mating with said first male luer of said influent supply line, and an outside surface of reduced outer diameter relative to the outer diameter of most of said first substantially cylindrical wall,

said hollow needle forming a passageway through said dividing wall and connecting said receiving chamber and said second female luer, with said first sharp end of said hollow needle extending into said receiving chamber,

a second one of said two pieces having a second substantially cylindrical wall forming a second part of said receiving chamber and having a second substantially open end with a second stepped diameter which couples with said first substantially open end, and a third substantially open end, and

said second substantially cylindrical wall having at least one inwardly extending knob; and

b) a male connector with a hollow first end cylindrical portion having a first opening, a hollow middle body cylindrical portion, a hollow second end cylindrical portion with a second male luer for mating with said first female luer of said effluent supply line extending therefrom, and a resilient septum,

said hollow first end cylindrical portion containing said resilient septum in said first opening, and said hollow first end cylindrical portion and said hollow middle body cylindrical portion being of reduced outer diameters relative to the inner diameter of said receiving chamber of said female connector, and

said hollow middle body cylindrical portion having at least one inwardly extending bayonet recess, wherein

said bayonet recess includes a locking section, and said bayonet recess and said inwardly extending knob are dimensioned such that said inwardly extending knob is received in said bayonet recess and can lock in said locking section, and

the axial distance between said inwardly extending knob and the sharp end of said needle along a longitudinal axis of said female connector is smaller than the axial distance between said septum and the locking section of said bayonet recess along a longitudinal axis of said male connector such that when said said female connector and male connector are mated, said sharp end of said needle pierces said septum, wherein

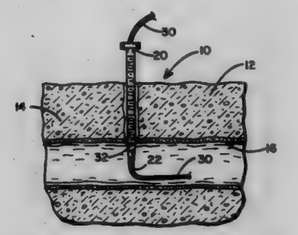
said two piece female connector and said male connector have outer surfaces which present a substantially smooth continuous surface when said two piece female connector and said male connector are mated.

5,292,309

SURGICAL DEPTH MEASURING INSTRUMENT AND METHOD

Robert A. Van Tassel, Excelsior, Minn.; Joshua Makower, Nanuet, N.Y., and Robert J. Thatcher, Eden Prairie, Minn., assignors to Schneider (USA) Inc., Plymouth, Minn.

Filed Jan. 22, 1993, Ser. No. 7,696
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—117 **10 Claims**



1. A device for measuring the depth below skin level of a blood vessel that has been punctured in the course of an interventional vascular procedure comprising:

(a) a tubular member having a proximal end, a longitudinally tapered distal end portion terminating in a generally pointed tip and a wall defining a first lumen, said first lumen extending between said proximal end toward but short of said pointed tip;

(b) a side entry port extending through said wall in fluid communication with said first lumen; and

(c) graduated markings on said wall of said tubular member extending from said side entry port toward said proximal end of said tubular member.

5,292,310

SAFETY NEEDLE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Dec. 27, 1990, Ser. No. 688,139
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **9 Claims**



4. A safety needle comprising an elongate tubular needle having a sharp distal end for penetrating tissue and a proximal end;

a safety probe having a blunt distal end and movable within said needle between an extended position with said probe distal end protruding distally of said needle distal end and a retracted position with said probe distal end disposed proximally of said needle distal end;

means for biasing said safety probe distally toward said extended position and for permitting said safety probe to move proximally to said retracted position in response to a proximally directed force applied to said probe distal end; and

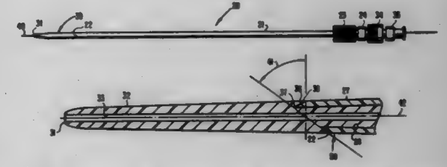
means responsive to said biasing means for automatically, releasably locking said safety probe in said extended position after puncturing of the wall of an anatomical cavity including means extending from said safety probe for permitting said safety probe to be pulled back to said retracted position.

5,292,311

RECESSED DILATOR-SHEATH ASSEMBLY AND METHOD

Constantin Cope, Elkins Park, Pa., assignor to Cook Incorporated, Bloomington, Ind.

Continuation of Ser. No. 606,050, Oct. 30, 1990, abandoned, which is a continuation of Ser. No. 304,667, Jan. 31, 1989, Pat. No. 5,011,478. This application Jul. 31, 1992, Ser. No. 924,365
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—165 **13 Claims**



1. A dilator-sheath assembly for use in percutaneous entry comprising:

a sheath having an external surface and one end adapted to be inserted into the body;

a dilator within said sheath and having an external surface and a distal portion extending beyond the one end of the sheath so as to define a transition, said dilator having two ends and a longitudinal passageway extending between said ends, said external surface being formed to include an annular abutment surface against which said one end of said sheath abuts such that said transition from said external surface of said dilator to said external surface of said sheath is smooth, whereby said dilator shields said one end of said sheath when the dilator-sheath assembly is inserted in the body.

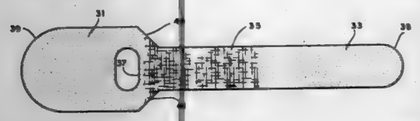
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,312

UNIVERSAL TUBE LUMEN CATHETER HOLDER

Robert E. Delk; Sharon D. Cheatwood, both of Dallas, and Michael L. Bowen, Arlington, all of Tex., assignors to Struckmeyer Corporation, Dallas, Tex.

Filed Jan. 8, 1993, Ser. No. 2,313
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—180 **15 Claims**



1. A conduit holder for releasably securing medical conduit to the external skin surface of a patient comprising:

base plate means having substantial area and comprising:

a pliable support substrate easily contourable to a skin surface;

a generally smooth upper attachment area; and

a lower surface coated with medical grade adhesive for semi-permanent attachment to the skin of the patient;

strap means having a substantial length for looping around said conduit and adjustably but firmly securing said conduit generally parallel to the skin surface and orthogonal to said strap length; and

pressure sensitive attachment means for holding said strap means to said upper attachment;

said strap means being fully detachable from said plate means, and having wide and narrow ends and a generally smooth transition zone between said ends; and

said strap means further comprising:

a generally smooth upper surface;

a generally rough lower surface which, together with said generally smooth upper attachment area of said base plate means, forms said pressure sensitive attachment means; and

a slot centrally located in said wide end near said transition zone, said slot having a width just sufficient to allow unimpeded passage of said narrow end through said slot and at the same time restraining said narrow end to remain axially aligned with said wide end after looping around said conduit;

said generally smooth upper surface of said strap means including a central band of high friction material for tightly gripping said conduit after looping around said conduit, said high friction band extending fully across the width of said strap and from approximately the region of said transition zone toward said narrow end of said strap means;

said generally rough lower surface of said strap means being interrupted by a relatively smooth central band for presenting a smooth exposed surface after looping around said conduit, said smooth central band extending fully across the width of said strap and from approximately the region of said transition zone toward said narrow end of said strap means.

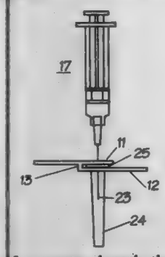
5,292,313

SYRINGE NEEDLE COVER HOLDER/GRASPER

Daryl C. Fallas, P.O. Box 123, Deal, N.J. 07723

Filed Feb. 7, 1992, Ser. No. 832,417
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **1 Claim**

1. A hypodermic syringe having a barrel and a needle assembly connected therewith, a cover for protecting said needle assembly when inserted within said cover, a surrounding lip on said cover, a holder having a first end for receiving said cover and for grasping said surrounding lip, said holder also having a second end; and means of securing said second end of said holder to a fixed surface; wherein said cover is of a length to extend to a point just short of said barrel, and wherein said holder is secured to grasp said surrounding lip of said cover at said point, wherein said holder includes a pair of extension arms to grasp said surrounding lip of said cover therebetween at said point, wherein said extension arms are each of a generally U-shape configuration, wherein one of said U-shaped



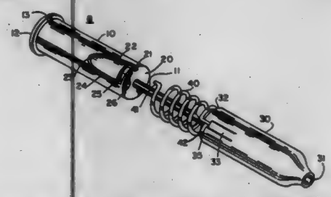
extension arms is of a greater length than the other of said U-shaped extension arms, wherein said one U-shaped extension arm grasps said surrounding lip form below and wherein said other U-shaped extension arm grasps said surrounding lip from above, wherein said one U-shaped extension arm is inwardly bent at a remote end thereof.

5,292,314

AUTOMATIC NEEDLE PROTECTOR

Larry M. D'Alessio, Manasquan, N.J., and John F. Romano, Washington Crossing, Pa., assignors to International Medical Consultants, Inc., Washington Crossing, Pa.

Filed Feb. 11, 1993, Ser. No. 16,285
Int. Cl.[5] A61M *5/32, 5/00*
U.S. Cl. 604—198 **14 Claims**



1. A needle protector comprising a tubular needle mount, having a hypodermic needle mounted at its lower end; a protective sleeve of a slightly larger inner diameter than the diameter of said tubular needle mount; the upper portion of said sleeve fitting over said lower end of said mount, and the lower portion of said sleeve being open but extending beyond the sharp end of said needle to guard said needle; an entrance slot in a side of said mount extending upwards a given distance from said lower end of said mount; an exit slot in said side of said mount, substantially parallel with said entrance slot, extending downwards from said given distance to said lower end of said mount; a crossover slot in said side of said mount, at said given distance above said lower end, connecting the upper ends of said entrance and exit slots; a spring-loaded lug projecting inside of said upper portion of said sleeve to fit in and be guided by said slots in said mount; and a lower end connected to said upper portion of said sleeve; said spring supplying a rotary force to hold said lug in line with said exit slot, and an axial force to push said lug toward said lower end of said mount; an arming slot disposed between said lower ends of said exit and entrance slots to permit said sleeve to engage said lug in the beginning of said entrance slot upon rotation of said sleeve; means for depressing said spring axially to move said lug to said given distance from said entrance slot, to expose said needle for use, after which, said rotary force of said spring moves said lug along said crossover slot to said exit slot, whereat said axial force of said spring moves said lug down said exit slot to said lower end of said mount; and a ridge at said lower end of said exit slot to receive said lug, and lock said lug

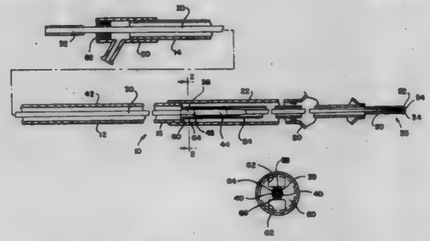
and said sleeve in a position to securely cover said needle; and means for coupling said upper end of said needle mount to any device requiring a needle.

5,292,315

LOW PROFILE CATHETER FOR INCREASING LUMEN SIZE OF A BLOOD VESSEL AND GUIDE WIRE THEREFOR

Charles L. Euteneuer, St. Michael, Minn., assignor to Scimed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 583,437, Sep. 17, 1990, Pat. No. 5,195,989. This application Jun. 17, 1992, Ser. No. 899,771
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **23 Claims**



1. A low profile catheter for intravascular use, comprising:

a catheter shaft having proximal and distal ends and defining an axis extending therebetween;

a guide wire positioned in the catheter shaft, said guide wire having proximal and distal ends, said distal end extending beyond the distal end of the catheter shaft; and

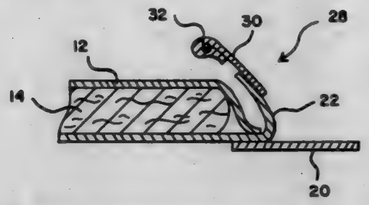
means for automatically transmitting torque from the catheter shaft to the guide wire when the catheter shaft is rotated with respect to the guide wire and for automatically permitting relative axial movement therebetween when the guide wire is advanced with respect to the catheter shaft, said means located in said catheter shaft at least in part adjacent to said guide wire.

5,292,316

DISPOSABLE ABSORBENT ARTICLE HAVING MULTI-COMPONENT UPSTANDING LEG GATHERS

Migaku Suzaki, Kamakura, Japan, assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Filed Oct. 14, 1992, Ser. No. 960,902
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.2 **9 Claims**



1. A disposable absorbent article, comprising:

an absorbent core;

a liquid permeable topsheet positioned on top of said absorbent core to define a top surface;

and a backsheet assembly positioned beneath said absorbent core,

said backsheet assembly including a central liquid impermeable layer, and opposite side marginal portions comprising nonwoven fabric,

said liquid impermeable layer including opposite side edges extending upwardly about respective opposite side edges of said absorbent core to form a pair of standing leg gathers each having an impermeable portion coinciding with the respective side edge of the liquid impermeable layer, each of said leg standing gathers being spaced from said top surface of said topsheet to form a channel between the impermeable portion of each said standing gather and the respective side edge of said absorbent core,

each of said standing leg gathers further including an upper element each comprising hydrophobic nonwoven material, with each said upper element joined to a respective one of said side edges of said impermeable layer, and elastic means operatively associated with an upper free edge portion of the respective upper element for elastically contracting each of the standing leg gathers.

5,292,317

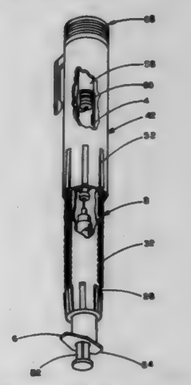
Patent Not Issued For This Number

5,292,318

SYRINGE FILLING AND METERING DEVICE FOR PHARMACEUTICAL CONTAINERS

Terry M. Haber, Lake Forest, and Clark B. Foster, Laguna Niguel, both of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 741,777, Aug. 7, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 42,841
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—407 **4 Claims**



3. A syringe filling and metering assembly comprising:

a piston driver having an inner surface and internal threads formed on said inner surface;

an elongate piston stop housed within the piston driver;

a pharmaceutical cartridge, including a hollow body with first and second ends, a needle-pierceable septum at the first end, a piston slidably mounted within the body between the first and second ends, the second end being open and through which the piston stop passes to engage the piston, the pharmaceutical cartridge including a liquid within a variable volume region defined between the piston and the septum;

an open ended syringe carrier to which a syringe with a needle cannula is mounted, the syringe carrier including external threads mating to the internal threads of the piston driver so to mount the syringe carrier and syringe therewith to the piston driver, with the needle cannula piercing the septum of the pharmaceutical cartridge;

whereby rotating the external threads with respect to the internal threads causes the piston stop to force the piston towards the septum so as to force the liquid through the needle cannula and into the syringe; and

means for precisely indicating the volume of liquid which has been transferred from the pharmaceutical cartridge to the syringe said indicating means including a detent lock protruding from an outer surface of the syringe carrier and a detent ridge axially extending along the inner surface of the piston driver, the detent ridge sized and positioned to engage the detent lock each time the syringe carrier is rotated a set distance with respect to the piston driver.

5,292,319

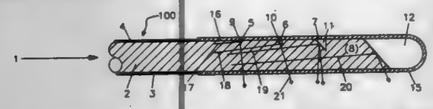
Patent Not Issued For This Number

5,292,320

RADIAL MEDICAL LASER DELIVERY DEVICE

Joseph Brown, Acworth, Ga., and Wolfgang Neuberger, Monchen-Gladbach, Fed. Rep. of Germany, assignors to CeramOptec, Inc., Enfield, Conn.

Filed Jul. 6, 1992, Ser. No. 908,382
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—15 **11 Claims**



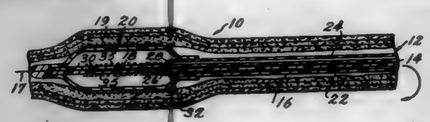
1. A medical delivery system capable of emitting radiation with wavelengths between 190 nm and 16 um in one or more essentially directed, predetermined patterns, which comprises:
(a) at least one solid optical fiber, having a core and a cladding on said core and said cladding having refractive index smaller than the core, having an input end suitably configured to connect to an appropriate radiation source and having a distal end in the proximity of which two or more grooves are penetrating into the core, said grooves having at least partial reflector capability so as to deflect radiation in one or more predetermined patterns; and,
(b) a cap placed over said at least one fiber at its distal end and over said two or more grooves.

5,292,321

THERMAL BALLOON ANGIOPLASTY WITH THERMOPLASTIC STENT

Benjamin I. Lee, 4911 Van Ness St., NW., Washington, D.C. 20016

Continuation-in-part of Ser. No. 765,326, Sep. 25, 1991, Pat. No. 5,190,540. This application Mar. 1, 1993, Ser. No. 25,415
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—28 **34 Claims**



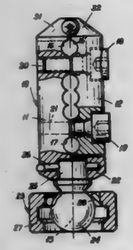
1. A method for delivering a stent within a coronary artery having a stenosis comprising the steps of:
positioning a balloon of a catheter within the stenosis of the artery, said balloon having a thermoplastic stent disposed thereon in an unexpanded condition to be expanded by the inflation of said balloon within the stenosis,
increasing the temperature of the thermoplastic stent, stenosis and artery surrounding the balloon prior to the inflation of the balloon to an inflation extent sufficient to cause outward expansion for a clinically appropriate time period and to a temperature level sufficient to cause a change in the thermoplastic stent, stenosis and surrounding artery from a relatively solid state into a softer and more moldable state and thereafter,
increasing the inflation of the balloon so that outward expansion of the thermoplastic stent occurs within the stenosis and artery in said softer and more moldable state to thus reduce the tendency of the stenosis and artery to fracture during expansion,
reducing the temperature of the thermoplastic stent, stenosis and surrounding artery while maintaining the expansion by balloon inflation for a clinically appropriate time period and to a temperature level sufficient to re-establish the relatively solid state of the thermoplastic stent, stenosis and surrounding artery; and
then deflating the balloon and thereafter withdrawing the catheter.

5,292,322

CLAMPING COUPLING FOR AN EXTERNAL FIXATOR

Giovanni Faccioli, Monzambano, and Daniele Venturini, Verona, both of Italy, assignors to Orthofix S.r.l., Bussolengo, Italy

Continuation-in-part of Ser. No. 788,136, Nov. 5, 1991. This application Jul. 1, 1993, Ser. No. 86,156
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—59 **5 Claims**



1. As an article of manufacture, an elongate clamping coupling having at one end ball-joint connection means adapted for selectively detachable connection to an external fixator having a coacting ball-joint connecting formation, said clamping coupling comprising two elongate half shells having confronting separable portions that are grooved for reception of bone screws or bone pins, clamp bolts for clamping said shells together for fixed retention of bone screws or the like in said grooves, said ball-joint connection means being connected to said one end of one of said half shells, and a pinned hinge connection of said half shells to each other at the other end of said half shells.

5,292,323

Patent Not Issued For This Number

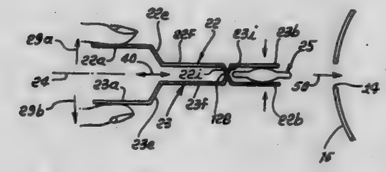
5,292,324

ENDWISE ADJUSTABLE FORCEPS FOR LENS IMPLANTATION IN EYE

Henry H. McDonald, 65 N. Madison, #810, Pasadena, Calif. 91101, assignor to Henry H. McDonald and William W. Haefliger, Pasadena, Calif., a part interest

Filed Mar. 18, 1993, Ser. No. 33,377
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—107 **19 Claims**

1. An improved intraocular lens implantation forceps, comprising:
a) first and second arms, the first arm having a first handle and a first lens engagement blade spaced from the first handle, the second arm having a second handle and a second lens engagement blade spaced from the second handle, the blades extending generally longitudinally in laterally spaced relation and at opposite sides of a plane bisecting the forceps,
b) the first arm having a primary section and a secondary section, the primary and secondary arm sections extending between the first handle and first blade, the second arm having a primary section and a secondary section, the primary and secondary arm sections of the second arm extending between the second handle and second blade, the blades being movable by the handles and arm sections between closed and open positions, the arm primary sections in said open position,
c) the secondary arm sections extending generally longitudinally in substantially parallel relation and positioned such that when the blades are in said closed position one secondary arm section extends at one side of said plane and the other secondary arm section extends at the other side of said plane, and when the blades are in said open positions said one secondary arm section extends at said other side of said plane and said other secondary arm section extends at said one side of said plane.

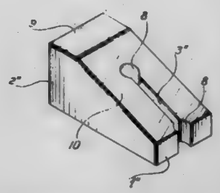


5,292,325

DEVICE FOR AND METHOD OF SUBCUTANEOUS INTRODUCTION OF A CATHETER INTO A PERIPHERAL ARTERY

Simon Gurmarnik, 38 Garrison, Rd., Brookline, Mass. 02146

Filed Dec. 4, 1992, Ser. No. 985,855
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—108 **1 Claim**



1. A device for facilitating subcutaneous introduction of a catheter in a peripheral artery, comprising an element having a supporting portion arranged to be supported on a skin of a patient, and a guiding portion connected with said supporting portion and extending substantially transversely to said supporting portion and having at least one slot formed so that when said supporting portion is placed on the skin of the patient and oriented on a surface projecting line of an artery and a catheter is introduced through said slot of said guiding portion the catheter is guided on an edge formed in said guiding portion by said slot so that a tip of the catheter is introduced exactly into the artery, said slot having two ends each provided with an orifice having a diameter which is greater than a width of said slot, and one of said orifices being open outwardly at an edge of said element so as to facilitate easy introduction of a catheter and location of said surface projection line of the artery on the skin.

5,292,326

APPARATUS AND METHOD FOR SUBCUTICULAR STAPLING OF BODY TISSUE

David T. Green, Westport; Henry Bolanos, East Norwalk; Diego Fontayne, Norwalk, and Henry Sienkiewicz, Stamford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 581,776, Sep. 13, 1990, and a continuation-in-part of Ser. No. 630,224, Dec. 19, 1990. This application Feb. 27, 1992, Ser. No. 842,448
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—143 **44 Claims**



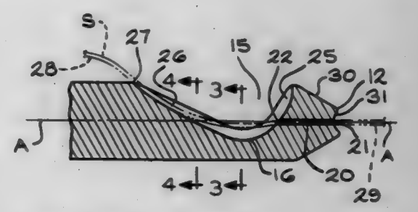
1. A surgical apparatus for attaching at least two portions of body tissue, which comprises:
a) a pair of opposed jaws;
b) body tissues engaging means extending from each jaw and facing said opposed jaw and adapted to engage the respective opposed portions of the body tissue such that when said jaws are moved toward each other said engaging means causes said two end portions of the body tissue to be displaced toward each other and engage at the interface so as to assume an irregular shape;
c) at least one elongated fastener member positioned proximally of said pair of opposed jaws;
d) actuating means;
e) means actuated by said actuating means for moving said opposed jaws together toward each other; and
f) means for directing said at least one elongated fastener member generally medially of the body tissue interface to thereby attach the opposed portions of the body tissue.

5,292,327

SURGICAL KNOT PUSHER

Joseph T. Dodd, 5440 Brixton Sylvania, Ohio 43560, and Robert J. Greenler, 29071 Belmont Lake Rd., Perrysburg, Ohio 43551

Filed Oct. 8, 1992, Ser. No. 958,661
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **14 Claims**



1. A surgical knot pusher comprising:
(a) an elongated rod extending along a longitudinal axis from a first concave engagement end to a second grasping end, said rod having a central longitudinal axis;
(b) a notch in said rod spaced from said engagement end;
(c) a passageway in said rod lying on said central longitudinal axis and extending from said engagement end to said notch, said passageway sized to receive a strand of suture material therethrough; and
(d) a camming surface, in said notch, positioned to be engaged by said suture material as it is fed through said

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passageway from said engagement end to said notch, said camming surface directing said suture material to a position for grasping.

5,292,328

POLYPROPYLENE MULTIFILAMENT WARP KNITTED MESH AND ITS USE IN SURGERY

Matthew E. Hain, New Haven, and Cheng-Kung Liu, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 18, 1991, Ser. No. 780,857
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—151 13 Claims

1. A warp knitted surgical mesh fabricated from polypropylene multifilament yarn, the polypropylene being an isotactic polypropylene resin having a melt flow index, g/10 min, of from about 2 to about 6, the yarn possessing a denier of at least about 10 and being constructed with from about 10 to about 60 filaments each having a denier of from about 0.5 to about 6, the mesh possessing from about 20 to about 80 courses per inch and from about 12 to about 40 wales per inch, the yarn being produced by the process which comprises melt spinning the polypropylene employing an extruder equipped with a spinneret and downstream of the extruder a draw frame possessing three pairs of godets, the extruder being operated in one or more zones thereof at a temperature of from about 230° to about 270° C., the pressure of the extruder being from about 1000 to about 2000 psi, the temperature of the spinneret being from about 220° to about 250° C., the first pair of godets being operated at a temperature of from about 50° to about 90° C. and an mpm of from about 100 to about 300, the second godet being operated at a temperature of from about 70° to about 130° C. and an mpm of from about 300 to about 1000 and the third godet being operated at ambient temperature and an mpm of from about 250 to about 1000, the draw ratio of the yarn being from about 2 to about 4 and the shrinkage of the yarn being from about 5 to about 15 percent.

5,292,329

RETRACTABLE SURGICAL KNIFE

Richard S. Werner, 2920 W. 38th St., Minneapolis, Minn. 55410

Filed Dec. 4, 1992, Ser. No. 986,139
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—167 20 Claims



1. A retractable scalpel, comprising:
a sheath member having front and back ends;
a blade support member partially disposed in the sheath member and telescopically received in the sheath member for movement between an inoperative position wherein the blade support member is retracted into the sheath member, and an operative position wherein the blade support member extends out of the sheath member;
said blade support member having a pair of transversely elongated and longitudinally extended slots wherein one of the slots is disposed along a top side of the blade support member and the other slot is disposed along a bottom side of the blade support member, an enlarged slot portion disposed proximate a back end of the top side slot, a first spring member being disposed inside of the blade support member;
said sheath member including a pair of diametrically opposite top and bottom openings in transverse alignment with said slots;
latch means, having a push button section projecting through said top opening and said top side slot, and a bottom section projecting through said bottom opening and said bottom side slot, for latching the scalpel in an extended, operative position, the push button section being telescopically received by the bottom section, an enlarged section being disposed on said push button section for receipt in the enlarged slot portion upon alignment therewith, thereby locking the sheath member and the blade support member against further relative movement, a second spring member being disposed between the push button section and the bottom section of the latch means;
locking collar means for securing the blade support member, the sheath member and the latch means together;
means for mounting a blade on the blade support member; and
means for limiting movement of the blade support member beyond the operative position and the inoperative position including means for transversely extending through the top side and bottom side slots of said blade support member and a pair of oppositely disposed openings of the sheath member which are in alignment with the top side and bottom side slots of said blade support member.

5,292,330

RETRACTABLE SURGICAL INSTRUMENT WITH CURVED OPERATIVE ELEMENT

George V. Shutt, Glendora, Calif., assignor to Linvatec Corporation, Largo, Fla.

Continuation of Ser. No. 531,176, May 31, 1990, abandoned.
This application Jan. 29, 1992, Ser. No. 829,602
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 5 Claims



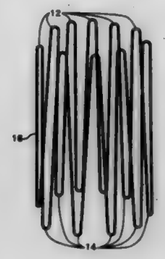
1. A retractable surgical instrument comprising:
a handle;
an elongated tubular member secured to and extending from said handle, said tubular member being cylindrical and having its distal end formed into a flattened linear sheath terminating in a slit opening;
an elongated, longitudinally movable support shaft aligned within said tubular member, said support shaft having a proximal end thereof extending rearwardly of said tubular member into said handle;
an operative surgical element secured to the distal end of said support shaft and movable therewith between a retracted position, wherein said element is enclosed within said tubular member, and at least one extended position, wherein said element is extended from said tubular member, said element preformed to maintain a predetermined transverse curve when in said extended position;
a guard projection extending a predetermined distance from the distal end of only one side of said flattened sheath, said element having its concave side facing away from said guard projection when it is extended from said sheath; and
trigger means operatively situated on said handle for extending and retracting said element, said trigger means operable upon the proximal end of said support shaft to thereby move said element between said retracted and extended positions.

5,292,331

ENDOVASCULAR SUPPORT DEVICE

Michael D. Boneau, Campbell, Calif., assignor to Applied Vascular Engineering, Inc., Santa Rosa, Calif.

Filed Aug. 24, 1989, Ser. No. 398,180
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 7 Claims



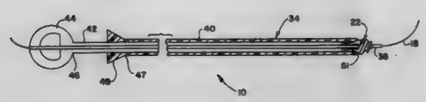
1. A stent for implantation within a vessel within the human body comprising a plurality of N substantially straight segments of wire-like material, each segment having a first and second ends wherein the first end of a first segment is connected to the first end of a second segment, the second end of the second segment is connected to the second end of the third segment, the first end of the third segment is connected to the first end of the fourth segment, and so on until the second end of the Nth segment is connected to the second end of the first segment, with no segment overlapping any other segment and the plurality of segments being capable of being compressed onto a catheter for delivery to an affected area of a vessel and then forcibly expanded to maintain the affected area of a vessel at a diameter larger than if the support device were not implanted.

5,292,332

METHODS AND DEVICE FOR PERCUTANCEOUS SEALING OF ARTERIAL PUNCTURE SITES

Benjamin I. Lee, 4911 Van Ness St, NW., Washington, D.C. 20016

Filed Jul. 27, 1992, Ser. No. 918,614
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—213 43 Claims



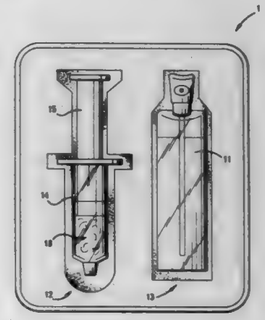
1. A method of closing a puncture in a wall of an artery made for the purpose of moving an elongated cardiac catheter into the artery in which an exterior guide tube is extended through a passage leading to the puncture and through the puncture in the wall of the artery and into the artery so as to enable the catheter to be guidingly moved through the guide tube and into the artery, the method comprising the steps of:
withdrawing the cardiac catheter from the guide tube,
extending a plug having a removable guide wire extending longitudinally therethrough into said guide tube so that the guide wire extends from the plug through said puncture,
moving the guide tube outwardly so that it no longer extends within the puncture and leaves the guide wire extending through the puncture,
moving the plug inwardly along the guide wire into blocking relation with said puncture, and
withdrawing the guide wire from the plug so as to leave the plug sealed in blocking relation with said puncture.

5,292,333

BIOLOGICAL TISSUE ADHESION

Robert G. Johnson, Chestnut Hill, Mass., assignor to Beth Israel Hospital, Boston, Mass.

Filed Sep. 5, 1991, Ser. No. 755,523
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—214 18 Claims



1. A method for the application of gelatin-resorcinol aldehyde glue to a biological tissue surface, comprising:
(i) applying a solution of gelatin-resorcinol to the surface to obtain a gelatin-resorcinol coated surface using a kit including a first container of a solution of gelatin-resorcinol and a second container of a solution of an aldehyde, the second container including means for aerosolizing the solution of aldehyde;
(ii) aerosolizing a solution of an aldehyde onto the gelatin-resorcinol coated surfaced wherein the aldehyde is an aqueous solution of approximately 25% glutaraldehyde and
(iii) allowing the mixture of gelatin resorcinol and the aldehyde on the surface, obtained in step (ii), to polymerize.

5,292,334

SURGICAL FASTENER

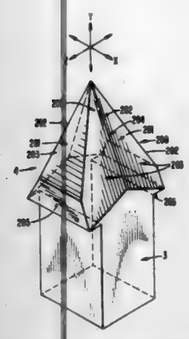
Steven Howansky, Wilton, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 31, 1993, Ser. No. 41,010
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—220 13 Claims

1. A surgical fastener comprising:
a) a generally U-shaped fastener member including
(i) a backspan, the lengthwise extent of which defines an X direction,
(ii) at least two substantially parallel prongs extending substantially perpendicularly from said backspan and each having a tip portion terminating in a point for piercing body tissue, the lengthwise extent of said prongs defining a Y direction, said fastener member having at least one surface defining a Z direction which is transverse to both of said X and Y directions, said fastener member having at least two cutting edges located on the tip portion of said prongs and aligned in the X direction, and each prong having at least one locking surface extending from said prong in the Z direction; and,
b) a retainer portion having
(i) a base, and
(ii) at least two columnar members attached to said base,

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each columnar member having an aperture to receive and retain the tip portion of a respective one of said



prongs, and locking means to engage said locking surface.

5,292,335

INFANT PACIFIERS WITH DIAPHRAGM MELODY GENERATOR

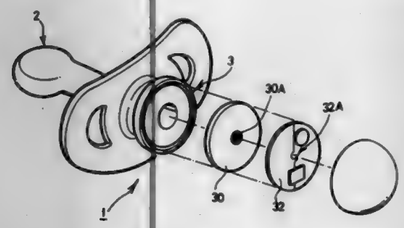
Jong-Hyun Shin, 212 Kumho Apt. Chunho 1-Dong, Kangdong-Gu, Seoul, Rep. of Korea

Filed Oct. 2, 1992, Ser. No. 955,652

Claims priority, application Rep. of Korea, Oct. 10, 1991, 91-16678

Int. Cl.[5] A61J *17/00*

U.S. Cl. 606—234 **5 Claims**



1. An infant pacifier comprising:
a nipple for insertion into an infant's mouth;
a handle coupled to the nipple for permitting the pacifier to be held; and
melody generating means enclosed within the handle and being activatable by a pressure transfer generated when the infant compresses the nipple, the melody generating means including
a diaphragm switch for turning on or off the melody generating means in response to the pressure transfer, the diaphragm switch having a conductive material at its center and being deformable by the pressure transfer, and
an electronic circuit board for generating a melody in response to activation of the diaphragm switch, the electronic circuit board having a switching portion with separated positive and negative terminal wires, the positive and negative terminal wires being minutely spaced apart from the diaphragm switch so that deformation of the diaphragm switch allows the conductive material at the center of the diaphragm switch to form a circuit between the positive and negative terminal wires.

5,292,336

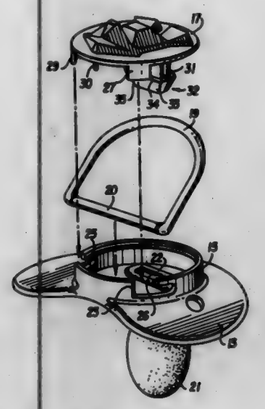
PACIFIER WITH HANDLE

Meredith Spence, Jr., Cuyahoga Falls, and James J. Keane, Aurora, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.

Filed Mar. 25, 1993, Ser. No. 37,139

Int. Cl.[5] A61J *17/00*

U.S. Cl. 606—236 **6 Claims**



1. A pacifier comprising
a substantially rigid shield;
a slot passing through said shield;
a substantially circular flange extending outwardly from one side of said shield and terminating in an upper rim, said slot being within an area of said shield enclosed by said flange;
a first slot in said flange having an entry section extending downwardly from said upper rim of said flange and an elongated section within said flange extending at substantially a right angle to said entry section;
a second slot in said flange having an entry section extending downwardly from said upper rim of said flange and an elongated section within said flange extending at substantially a right angle to said entry section, said second slot being spaced from said first slot;
a C-shaped handle having a bar secured to and interconnecting the open ends of said C-shaped handle with open ends, said bar resting within said elongated sections of said first and second slots and extending outwardly of said flange;
a nipple having a shank and lips, said shank extending through said slot passing through said shield with said lips located within said area of said shield enclosed by said flange;
a cap having periphery and a dimension to mate with and be retained by said flange;
a barb including shoulders which are wider than said slot passing through said shield, said barb extending downwardly from said cap, said barb extending through said slot passing through said shield within said shank of said nipple wherein said shoulders bear against said shank and said shield so as to provide an interference fit between said barb, said shank, and said shield;
a pair of fingers extending downwardly from the periphery of said cap, one of said fingers mating with the entry section of said first slot in said flange and the other of said fingers mating with the entry section of said second slot in said flange; and
means for securing said cap and said fingers to said continuous flange.

5,292,337

Patent Not Issued For This Number

5,292,338

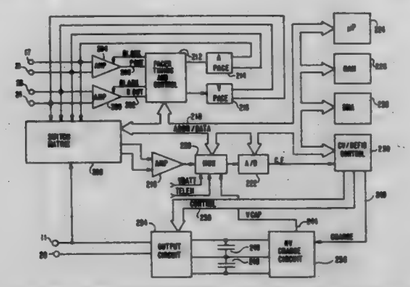
ATRIAL DEFIBRILLATOR EMPLOYING TRANSVENOUS AND SUBCUTANEOUS ELECTRODES AND METHOD OF USE

Gust H. Bardy, Seattle, Wash., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 30, 1992, Ser. No. 922,587

Int. Cl.[5] A61N *1/36*

U.S. Cl. 607—5 **16 Claims**



1. An apparatus for defibrillating the atrium of a patient's heart, comprising:
a first defibrillation electrode means for location in the right ventricle of said patient's heart;
an implantable defibrillation pulse generator having a housing and having a first output coupled to said first defibrillation electrode; and
a second defibrillation electrode comprising a conductive portion of said housing of said defibrillation pulse generator and coupled to a second output of said defibrillation pulse generator; and
means for sensing the occurrence of atrial fibrillation and for triggering the delivery of a defibrillation pulse between said first and second electrodes in response to sensing the occurrence of atrial fibrillation.

5,292,339

IMPLANTABLE PACEMAKER/CARDIOVERTER/DEFIBRILLATOR DEVICE AND METHOD INCORPORATING MULTIPLE BRADYCARDIA SUPPORT PACING RATES

Anthony C. Stephens, Willoughby, and Stephen G. Wilson, Stanmore, both of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

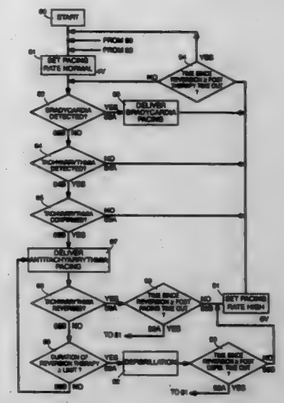
Filed Apr. 29, 1992, Ser. No. 875,777

Claims priority, application Australia, Jun. 14, 1991, 6715

Int. Cl.[5] A61N *1/00*

U.S. Cl. 607—15 **33 Claims**

1. A method for treating a patient's malfunctioning heart comprising the steps of detecting episodes of bradycardia of the heart, delivering bradycardia support pacing to the heart at a first standby rate during episodes of bradycardia other than those that immediately follow reversion of a tachycardia, detecting tachycardia of the heart, reverting said tachycardia, delivering bradycardia support pacing to the heart at a second standby rate, greater than said first standby rate, during initial periods of episodes of bradycardia which immediately follow reversions of tachycardia, said initial periods being predetermined time periods, and delivering support pacing at said first standby rate upon expiration of said predetermined time periods during continuance of any episodes of bradycardia which follow reversions of tachycardia.



5,292,340

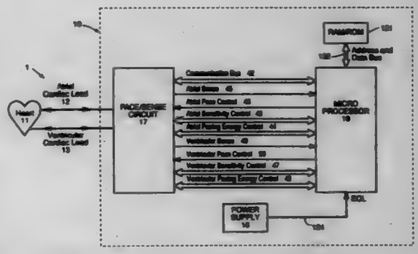
PHYSIOLOGICALLY-CALIBRATED RATE ADAPTIVE, DUAL CHAMBER PACEMAKER

Peter A. Crosby, Greenwood Village; John R. Hamilton, Littleton, and Anthony J. Ujhazy, Denver, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Jan. 4, 1993, Ser. No. 176

Int. Cl.[5] A61N *1/365*

U.S. Cl. 607—17 **50 Claims**



1. A dual-chamber rate-responsive pacemaker, comprising:
means for generating ventricular pacing pulses;
means for measuring metabolic indicator values;
means for determining metabolic indicator rates as a function of said metabolic indicator values and a predetermined rate response factor;
means for sensing atrial heartbeats;
means responsive to said atrial heartbeat sensing means for determining intrinsic atrial rate values;
means for ascertaining whether sensed atrial heartbeats are occurring at rates which are pathological, on one hand, and non-pathological, on the other hand;
means for storing at least one intrinsic atrial rate value and at least one metabolic indicator value when said ascertaining means has determined that the rate of atrial heartbeats is non-pathological; and
means for controlling said generating and sensing means to operate normally in a first mode in which ventricular pacing pulses are generated in synchrony with atrial heart-

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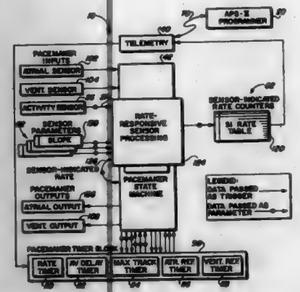
beats sensed by said sensing means but to switch to a second mode in which ventricular pacing pulses are generated at a rate which is a function of said metabolic indicator rates, with timing independent of said atrial heartbeats sensed by said sensing means, when said ascertaining means has determined that the rates of atrial heartbeats are pathological, said controlling means, upon switching from said first mode to said second mode, operating to update said rate response factor as a function of said stored at least one intrinsic atrial rate value and said stored at least one metabolic indicator value, and said controlling means, thereafter functioning in said second mode, operating to update said metabolic indicator rates as a function of said updated rate response factor and said stored metabolic indicator values.

5,292,341

METHOD AND SYSTEM FOR DETERMINING AND AUTOMATICALLY ADJUSTING THE SENSOR PARAMETERS OF A RATE-RESPONSIVE PACEMAKER

Jeffery D. Snell, Northridge, Calif., assignor to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Mar. 2, 1992, Ser. No. 844,818
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—30 **22 Claims**



1. A rate-responsive pacing system comprising:

(1) an implantable rate-responsive pacemaker including:

(a) sensing means for sensing natural contractions of a heart,

(b) stimulation means for generating stimulation pulses for delivery to the heart at a prescribed pacing rate in the absence of sensed natural contractions,

(c) physiological sensor means for sensing a physiological parameter and generating a sensor indicated rate (SIR) signal as a function thereof,

(d) control means for defining said prescribed pacing rate as a selected one of either a programmed pacing rate value or said SIR signal, and

(e) counting means for counting and storing each occurrence of said SIR signal that falls within one of a plurality of rate ranges, whereby SIR histogram data is collected within said rate-responsive pacemaker; and

(2) an external programming device having:

(a) telemetry means for establishing an RF telemetry link with said implantable pacemaker through which said SIR histogram data may be retrieved,

(b) distinguishing means for identifying which of a plurality of different pacemaker models said implantable pacemaker is,

(c) programming means for selected control data into said rate-responsive pacemaker through said RF telemetry link, said control data including said programmed value of said pacing rate, an indication of whether the programmed value or the SIR signal is to be used to define said pacing rate, and a set of SIR control parameters that define the manner in which said SIR signal is generated from the physiological parameter sensed by said physiological sensor means, and

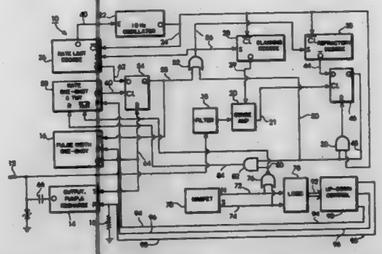
(d) processing means for processing said SIR histogram data so as to produce a recommended set of SIR control parameters for programming into said rate-responsive pacemaker.

5,292,342

LOW COST IMPLANTABLE MEDICAL DEVICE

Gary E. Nelson, Schaumburg, Ill., and David L. Thompson, Fridley, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 1, 1992, Ser. No. 877,639
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—30 **10 Claims**



1. An implantable cardiac pacemaker programmable by application of a magnetic field means for generating a first external magnetic field having a first polarity and a second external magnetic field having a second polarity comprising:

a pulse generator for generating a cardiac stimulating pulse;

voltage generation means coupled to said pulse generator for generating a first analog voltage and a second analog voltage;

a first analog voltage storing device coupled to said voltage generation means for storing said first analog voltage;

a first magnetic sensor circuit, having a first magnet signal generating means responsive to said first external magnetic field of said first polarity to produce a first magnet signal, and further having a second magnet signal generating means responsive to said second external magnetic field of said second polarity to produce a second magnet signal;

a logic circuit, coupled to said magnetic sensor circuit and to said first analog voltage storing device, said logic circuit having a first increase signal generating means responsive to a first predetermined sequence of said first and second magnet signals to generate a first increase signal, and further having a first decrease signal generating means responsive to a second predetermined sequence of said first and second magnet signals to generate a first decrease signal, such that said first stored voltage is increased in response to said first predetermined sequence and decreased in response to said second predetermined sequence;

a first reference current generating circuit, coupled to said first analog voltage storing device, for generating a first reference current proportional to said first stored analog voltage;

sensing means, for sensing at least one cardiac event; and

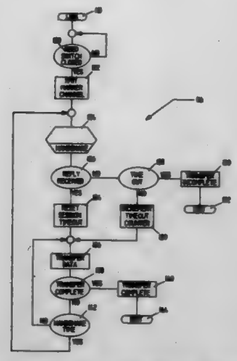
a base rate circuit, coupled to said pulse generator, said sensing means, and to said first reference current generating circuit, said base rate circuit having means for generating a trigger signal when a first time interval elapses following a previous cardiac event, wherein no new cardiac event occurs during said first time interval, and wherein said first time interval is proportional to said first reference current.

5,292,343

HAND SHAKE FOR IMPLANTED MEDICAL DEVICE TELEMETRY

Christine M. Blanchette, Maple Grove; James W. Busacker, Buffalo; David E. Dalluge; John J. Grevious, both of Minneapolis; Paul B. Wyborny, Coon Rapids; Glenn M. Roline, Anoka; Lucy M. Nichols, Maple Grove, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 765,475, Sep. 25, 1991, Pat. No. 5,127,404, which is a continuation of Ser. No. 468,407, Jan. 22, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,645
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—32 **3 Claims**



1. In a system employing an implantable medical device and an external device which communicates with said implantable medical device via means for transmission of a stream of data and means for receiving said stream of data, and further having means coupled to said transmission means for inserting a link maintenance message into said stream of data, and means coupled to said receiving means for recognizing said link maintenance message, wherein said recognizing means is further coupled to a means for replying to said link maintenance message with a reply message, and further having means coupled to said transmission means for responding to said reply message with a confirmation message, the improvement comprising:

(a) means coupled to said transmission means for recording an inoperative link in response to failure to receive said reply message within a predetermined period of time; and

(b) means coupled to said receiving means for recording an inoperative link in response to failure to receive said confirmation message within a second predetermined period of time.

5,292,344

PERCUTANEOUSLY PLACED ELECTRICAL GASTROINTESTINAL PACEMAKER STIMULATORY SYSTEM, SENSING SYSTEM, AND PH MONITORING SYSTEM, WITH OPTIONAL DELIVERY PORT

Donald D. Douglas, 2009 Madison Ave., Lewisburg, Pa. 17837

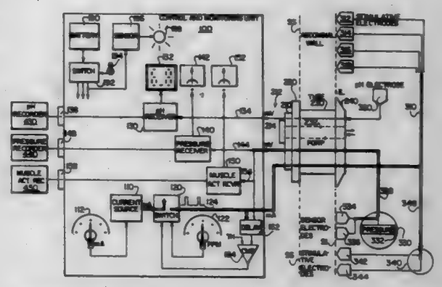
Filed Jul. 10, 1992, Ser. No. 911,703
Int. Cl.[5] A61N *1/32*
U.S. Cl. 607—40 **30 Claims**

1. A stimulatory system especially suitable for being placed percutaneouly into a subject's gastorintestinal tract, the system comprising:

means for providing an electrical current;

means for percutaneously carrying the electrical current through the skin of a subject at a point substantially directly adjacent a portion of the gastrointestinal tract; and

means for applying the electrical current directly to the inner lining of the gastrointestinal tract from inside the gastrointestinal tract, the means for applying extending, at least in part, in a direction generally perpendicular to a



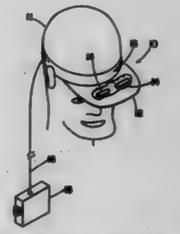
direction of the means for carrying so as to extend substantially away from the means for carrying to allow the means for applying to directly contact the inner lining.

5,292,345

PORTABLE PHOTONEURONIC ENERGIZER

Ernesto A. Gerardo, 4507 Groveland Rd., University Heights, Ohio 44118

Continuation of Ser. No. 88,383, Aug. 24, 1987, abandoned. This application Oct. 30, 1989, Ser. No. 427,984
Int. Cl.[5] A61N *5/00*
U.S. Cl. 607—88 **5 Claims**



1. A portable photoneuronic energizer, comprising head support means for mounting on the head of a user person suffering Seasonal Affective Disorder, at least one full spectrum fluorescent light bulb affixed to said head support means and being positioned above and forward of the user person's eyes wherein indirect light from said fluorescent light bulb when illuminated enters the eyes of the user person, said fluorescent light bulb being limited to one that emits light in the wave length of 400 nanometers (red) to 740 nanometers (violet) at a temperature range of 5000° K. to 7000° K., electric power means for illuminating said fluorescent light bulb of at least 500 lux, and electric circuit means for conducting electric power from said electric power means to said fluorescent light bulb to illuminate said fluorescent light bulb in continuous, uninterrupted light emission.

5,292,346

BACTERICIDAL THROAT GUN

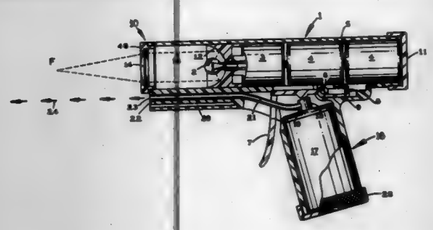
Frank J. Ceravolo, 2877 NE. 29th St., Fort Lauderdale, Fla. 33306

Filed Feb. 20, 1992, Ser. No. 837,898
Int. Cl.[5] A61N *5/06*
U.S. Cl. 607—80 **15 Claims**

1. A bactericidal ultraviolet light radiating device for treatment of dermal tissues disposed in forward direction for the

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radiating device comprising an ultraviolet light source, optical light-directing means optically coupled to said ultraviolet light source for directing said ultraviolet light to said dermal tissues, electric power supply means connected to said ultraviolet light



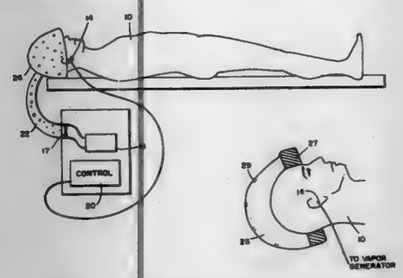
source for supplying electric power for said ultraviolet light source, a trigger in said electric power supply means for activating said power supply means, and medication dispensing means coupled to said trigger for dispensing mediation to said dermal tissues upon operation of said trigger.

5,292,347

METHOD AND APPARATUS FOR REGULATING BODY TEMPERATURE

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Continuation-in-part of Ser. No. 479,332, Feb. 13, 1990, abandoned. This application Sep. 25, 1991, Ser. No. 765,486
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—104 19 Claims



1. A method of quickly and safely raising a patient's body temperature, comprising the steps of:

a) enclosing a portion of the patient's head with an enclosure which does not enclose the patient's mouth or nostrils so that the portion of the patient's head is isolated from an external environment;

b) generating heated vapor having a dew point temperature less than 47° C. and greater than tympanic temperature of the patient; and

c) inputting the heated vapor to the enclosure so that the heated vapor condenses on the portion of the patient's body that is isolated and raises the patient's body temperature; and

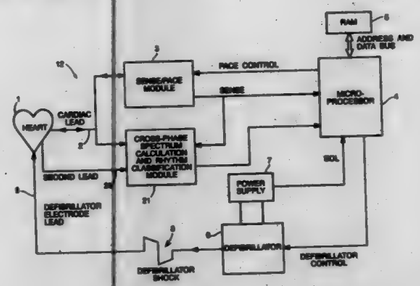
d) monitoring the patient's temperature and controlling the heated vapor to reduce heat transfer to the patient as desired patient temperature is obtained.

5,292,348

IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR AND METHOD EMPLOYING CROSS-PHASE SPECTRUM ANALYSIS FOR ARRHYTHMIA DETECTION

Richard Saumarez, Old Coulsdon, England, and Anthony Murphy, Leichhardt, Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Apr. 13, 1992, Ser. No. 867,835
Claims priority, application Australia, Jun. 14, 1991, PK6714
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 17 Claims



1. A method of detecting and reverting pathological heart rhythms of a patient, comprising the steps of:

sensing each of a plurality of electrical heart rhythm signals of the patient at two different locations;

calculating cross-phase spectra of sensed heart rhythm signals;

classifying the heart rhythms based upon information contained in said cross-phase spectra; and,

delivering appropriate therapy to the patient's heart to revert heart rhythms classified as pathological.

5,292,349

SURGICAL AID ENDOWED WITH OSTEOTROPIC ACTIVITY

Giancarlo Foresti, Via Albricci, 3 - 20122 Milan, Italy

Filed Feb. 14, 1989, Ser. No. 309,858
Claims priority, application Italy, Feb. 16, 1988, 19417 A/88
The portion of the term of this patent subsequent to Jul. 23, 2007, has been disclaimed.
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 8 Claims



1. A surgical aid endowed with an osteotropic activity, characterized in that it comprises a base and a suspended substance, which constitutes the active element, with said base being constituted by gelatine of pharmacologic grade, in a pure state, and the suspended matter being constituted by ceramic hydroxy-apatite dispersed in the base, said surgical aid containing glycerol and being prepared in two successive phases, said

two phases comprising an intermediate hydrate phase and a final anhydrous phase, with said hydrate phase substantially comprising:

hydroxy-apatite	61.35%
gelatine	13.56%
glycerol	12.65%
water	12.44%

and said anhydrous phase substantially comprising:

hydroxy-apatite	70.00%
gelatine	15.05%
glycerol	14.04%
water	0.91%.

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5,292,350

METHOD FOR PREPARING TINTED CONTACT LENS

Frank F. Molock; James D. Ford, both of Orange Park; John C. Heaton; Edmund C. Rastrelli, both of Atlantic Beach, and Gregory A. Hill, Jacksonville, all of Fla., assignors to Vistakon, Inc., Jacksonville, Fla.

Filed Apr. 24, 1992, Ser. No. 873,316
Int. Cl.[5] G02C 7/04; D06P 5/00
U.S. Cl. 8—507 14 Claims

1. An improved process for producing a soft, hydrogel contact lens having a dye dispersed substantially uniformly throughout the lens, which process comprises the steps of:

(a) polymerizing a mixture comprising (i) a homogeneous solution of a hydrophilic monomer including a hydroxyalkyl acrylate or methacrylate and (ii) a water-soluble mono- or dihalotriazine dye, in an inert diluent, to form a lens-shaped polymer swollen with said diluent, said lens-shaped polymer containing hydroxyalkyl groups;

(b) immersing the product of step (a) in aqueous alkali containing a surfactant to replace said diluent with water and to react said water-soluble mono- or dihalotriazine dye with the said hydroxyalkyl groups, said surfactant being present in an amount effective to enhance the uniformity of the dye throughout the lens-shaped polymer, and said surfactant having a hydrophilic/lipophilic balance greater than 10 and being present in an amount less than 0.25 weight percent based on the total weight of the lens-shaped polymer swollen.

5,292,351

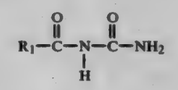
COMPOSITION OF MATTER FOR ALOYL AND AROYL UREAS AS NITRIC OXIDE REDUCING AGENTS IN DIESEL EMISSIONS

Thomas F. DeRosa, Passaic, N.J.; Rodney Lu-Dai Sung, Fishkill, and Benjamin J. Kaufman, Hopewell Jct., both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,640
Int. Cl.[5] C10L 1/22; C01B 21/00
U.S. Cl. 44—417 7 Claims

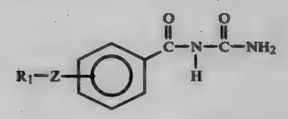
1. A composition of matter comprising:

a) an aloyl urea represented by the formula



where R_1 is hydrogen or a (C_1–C_{50}) linear or branched aliphatic, alkenyl, alkynyl, or aryl hydrocarbon; and

b) an aroyl urea represented by the formula



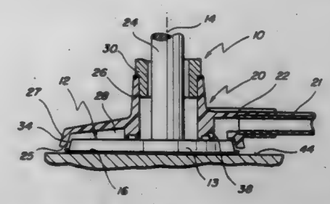
where R_1 is a (C_1–C_{50}) linear or branched aliphatic, alkenyl, alkynyl or aryl hydrocarbon; and Z is a heteroatom selected from the group consisting of Group IVa, Group Va and Group VIa materials of the periodic table.

5,292,352

METHOD FOR GRINDING PLASTICS OR GLASS

Boris E. Rudolf, Stuttgart, and Horst Moisel, Nürtingen, both of Fed. Rep. of Germany, assignors to C. & E. Fein GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 923,296
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1991, 4125795
Int. Cl.[5] B24B 29/02
U.S. Cl. 51—283 R 10 Claims



1. A dry method for treating the surface of a transparent acrylic glass with an abrasive, comprising the steps of:

moving a mechanically driven grinding tool across said surface of transparent acrylic glass, said grinding tool performing at least one of an orbital movement and an oscillating movement about a fixed rotary axis and using a dry abrasive without any liquid working agent, said abrasive comprising abrasive grains held resiliently on a carrier that is removably attached to said grinding tool;

extracting, from a marginal area of said grinding tool, grinding dust arising from the movement of said abrasive across the transparent acrylic glass surface;

controlling the speed of the grinding tool such that the average speed of the abrasive grains relative to the surface of transparent acrylic glass is in the range of two to twenty meters per second; and

controlling the contact pressure between the grinding tool and the surface of transparent acrylic glass such that a surface temperature of approximately 50° Centigrade is not exceeded.

5,292,353

AIR SCRUBBER

Arnold S. Kaufman, Studio City; Robert L. Anderson, Van Nuys, both of Calif.; Donald W. Alwood, Mt. Pleasant, Mich.; James T. Otenbaker, Mt. Pleasant, Mich., and Frederick F. Fritz, Mt. Pleasant, Mich., assignors to Copeland Corporation, Sidney, Ohio

Filed Jul. 3, 1991, Ser. No. 725,591
Int. Cl.[5] B01D 47/02, 50/00
U.S. Cl. 55—227 43 Claims

1. An air scrubber for removing impurity from a flow of impurity-laden air, comprising:

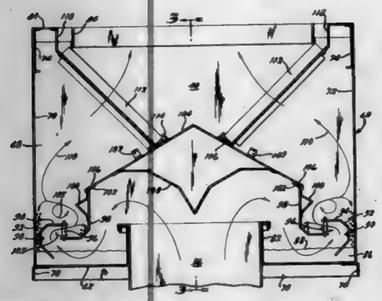
(a) a substantially fully enclosed housing having an inlet opening and an outlet opening, said housing being adapted to be mounted in the path of said flow of impurity-laden air with air entering said housing through said inlet opening and leaving said housing through said outlet opening;

(b) means in said housing defining a pan adapted to contain a cleaning fluid bath;

(c) scrubbing means in said housing having a deflector for deflecting inlet air toward the surface of said cleaning bath, said air undergoing an initial flow reversal before contacting said bath and a plurality of flow reversals after contacting said bath, said scrubbing means being operative to cause sufficient turbulence and mixing of the air and cleaning fluid bath to disperse said cleaning fluid throughout the air to remove a major portion of said impurity,

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substantially all of said fluid being provided by contact of said air with said bath; and



(d) a filter disposed in said housing for enhancing removal of said impurity after said air contacts said bath.

5,292,354

METHOD OF PRODUCING DEALKALIZED SHEET GLASS

André Hecq, Nalinnes; Camille Dupont, Courcelles, and Karel V. Baelen, Mol, all of Belgium, assignors to Glaverbel, Société Anonyme, Brussels, Belgium

Continuation of Ser. No. 798,885, Nov. 27, 1991, abandoned, which is a division of Ser. No. 646,520, Jan. 25, 1991, Pat. No. 5,093,196, which is a continuation of Ser. No. 126,121, Nov. 27, 1987, abandoned. This application Dec. 4, 1992, Ser. No. 985,757

Claims priority, application United Kingdom, Dec. 4, 1986, 8629042

Int. Cl.[5] C03C *15/00*

U.S. Cl. 65—31 **18 Claims**

1. A method of producing dealkalized sheet glass in which sheet glass is dealkalized in stages, the method comprising:

a. dealkalizing sheet glass in a first stage by exposing the sheet glass to contact with a first dealkalizing medium comprising at least one acid gas consisting essentially of an acid gas selected from the group consisting of sulfur trioxide and hydrogen chloride for a period of at least 1 minute while the sheet glass is at a temperature above 400° C.; and

b. further dealkalizing the sheet glass in a subsequent stage by exposing the sheet glass after the first stage to contact with a second dealkalizing medium comprising at least one acid gas consisting essentially of an acid gas selected from the group consisting of sulfur trioxide and hydrogen chloride for a period of at least 3 minutes while the sheet glass is at a temperature which is one of at least 50° C. below the temperature of the sheet glass during said first stage and the minimum temperature of the sheet glass during said first stage, and ranges between 400° C. and 250° C.

5,292,355

METHOD AND APPARATUS FOR BENDING A GLASS SHEET

Risto K. Nikander, Kemiankatu 10, SF-33720 Tampere, Finland

PCT No. PCT/FI91/00187, § 371 Date Dec. 31, 1992, § 102(e) Date Dec. 31, 1992, PCT Pub. No. WO92/00921, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 12, 1991, Ser. No. 956,481

Claims priority, application Finland, Jul. 5, 1990, 903397

Int. Cl.[5] C03B *23/025*

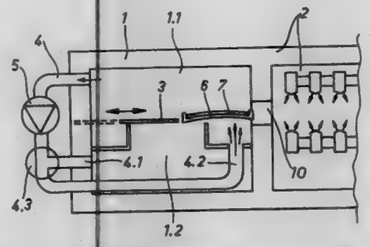
U.S. Cl. 65—107 **13 Claims**

1. A method for bending a glass sheet, comprising:

heating a glass sheet in a bending furnace close to its softening temperature; supporting the heated glass sheet on a ring mould;

allowing the glass sheet to bend by gravity;

circulating air from a furnace section above the glass sheet into a furnace section below said glass sheet so as to create a different pressure effect on opposite sides of the glass sheet; and



supporting, by this pressure effect, the glass sheet to be bent which is heated also over its central area to a sufficient temperature for tempering, which temperature is so high that without said pressure effect the central glass sheet area would bend and sag excessively downwards.

5,292,356

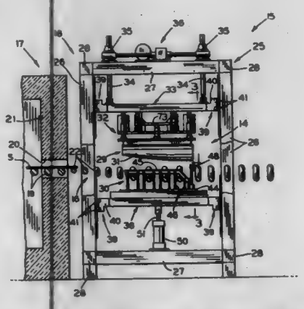
SUPPORT MECHANISM FOR A GLASS SHEET PRESS BENDING MOLD

Richard A. Herrington, Walbridge, Ohio, and Jeffrey R. Flangher, Carlton, Mich., assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Division of Ser. No. 732,780, Jul. 19, 1991, Pat. No. 5,143,535. This application May 4, 1992, Ser. No. 878,434

Int. Cl.[5] C03B *23/03*

U.S. Cl. 65—273 **4 Claims**



1. Apparatus for press bending a glass sheet between opposed first and second bending members having complemental shaping surfaces, comprising a framework within which said first and second bending members are carried, a platen frame carried by the framework, means mounting said platen frame for reciprocating movement within said framework, a base plate carried by the platen frame, a subplate carrying said first bending member, and means mounting said subplate on said base plate for reciprocating movement relative to said base plate, said means mounting said subplate including means for moving the subplate and the first bending member relative to the base plate to effect bending of the glass sheet between the first and second bending members.

5,292,357

DEVICE FOR THE SUPPORTING AND CURVING OF GLASS SHEETS

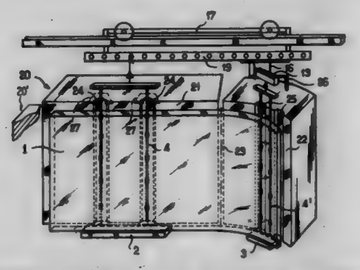
Jean Arnould, Verrieres Le Buisson; Christian Pommera, Charly Sur Marne; Georges Vallee, Jouarre, and Bruno Vandecastele, Chateau Sur Marne, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Apr. 12, 1991, Ser. No. 684,376

Claims priority, application France, Apr. 13, 1990, 90 04806

Int. Cl.[5] C03B *23/031*

U.S. Cl. 65—289 **13 Claims**



1. Curving device for curving glass sheets, comprising:

a vertical curving press comprising molds; and

a support device for supporting the glass sheet in a vertical or substantially vertical position, the support device being comprised of at least one cross-member upon which a lower edge face of a glass sheet rests, a lifting beam from which at least each cross-member is suspended, and at least one pair of stays extending down two opposite faces of glass sheets supported in the supporting device and connecting the cross-members to the lifting beam,

wherein the molds of the curving press having bearing surfaces for the glass sheet, the bearing surfaces including recesses in which the stays are accommodated.

5,292,358

SINTERED ALUMINUM-ALLOY

Shin Miura; Youichi Hirose; Yoshio Machida, and Mitsuaki Sato, all of Saitama, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 635,444, Dec. 28, 1990, Pat. No. 5,176,740. This application Oct. 19, 1992, Ser. No. 962,709

Claims priority, application Japan, Dec. 29, 1989, 1-342931; Aug. 7, 1990, 2-207496

Int. Cl.[5] C22C *21/08*

U.S. Cl. 75—249 **45 Claims**

1. A sintered aluminum-alloy consisting essentially of from 0.1 to 2.0% by weight of Mg, from 0.1 to 2.0% by weight of Si, from 0.2 to 6% by weight of Cu, and Al and unavoidable impurities in balance, said aluminum-alloy produced by sintering a mixed, aluminum-alloy starting powder which consists of a mixture of a first aluminum-alloy starting powder and at least one second aluminum alloy starting powder such that diffusion occurs between the first and second starting powder, said first aluminum-alloy starting powder consisting of from 0.1 to 3.0% by weight of Cu and Al and unavoidable impurities in balance, and said second aluminum-alloy starting powder selected from (1) an aluminum alloy starting powder consisting of from 4 to 20% by weight of Mg, from 12 to 30% by weight of Si, and Al and unavoidable impurities in balance, and (2) an aluminum-alloy starting powder consisting of from 0.1 to 20.0% by weight of Mg, from 1 to 20% by weight of Si, from 30 to 50% by weight of Cu, and Al and unavoidable impurities in balance,

5,292,359

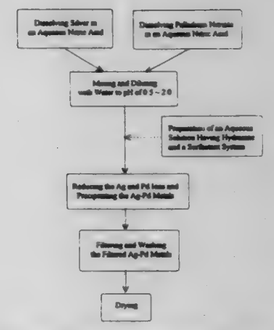
PROCESS FOR PREPARING SILVER-PALLADIUM POWDERS

Jean Jeag-Shyong, and Cheau Tei-Chih, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 16, 1993, Ser. No. 93,521

Int. Cl.[5] B22F *9/24*

U.S. Cl. 75—351 **4 Claims**



1. A process for preparation of silver-palladium fine powders comprising the steps of:

(a) dissolving palladium nitrate and silver in aqueous nitric acid solutions separately, mixing the resulting aqueous nitric acid solutions and diluting the mixed nitric acid solution with pure water until a pH value of 0.5–2.0 is obtained;

(b) preparing an aqueous solution of a hydrazine and a surfactant system containing 0.5–5.0% of caprylic acid and 0.5–5.0% of triethanolamine, based on the volume of the aqueous solution, or 0.25–1.30% of oleic acid and 0.25–1.30% of triethanolamine, based on the volume of the aqueous solution;

(c) adding the diluted mixed nitric acid solution from step (a) to the aqueous solution from step (b) while stirring at 200–500 rpm to effectuate a reduction reaction such that the silver and palladium ions contained in the diluted mixed nitric acid solution are reduced to their corresponding metals, respectively, and precipitated therefrom, wherein the amount of hydrazine contained in the aqueous solution is 1–10 times the stoichiometric amount needed to reduce the silver and palladium ions, and the reduction reaction is carried out at 35°–50° C., and

(d) recovering said precipitated silver and palladium metals from said reaction mixture by filtration, washing the recovered silver and palladium metals with an organic solvent and water, and drying the washed metals to obtain silver-palladium fine powders.

5,292,360

5A ZEOLITE/KAOLINITE ADSORBENT FOR GAS PURIFICATION

Bernard Pacaud, Nanterre, and Marc Mercier, Ales, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 620,716, Dec. 3, 1990, abandoned, which is a division of Ser. No. 220,253, Jul. 18, 1988, Pat. No. 5,001,098. This application May 27, 1992, Ser. No. 888,830

Claims priority, application France, Jul. 17, 1987, 87 10109

Int. Cl.[5] B01D *53/02*

U.S. Cl. 95—90 **16 Claims**

1. A process for the purification of gases by passing same over a zeolite molecular sieve to adsorb impurities therefrom, the improvement which comprises utilizing as the adsorbent

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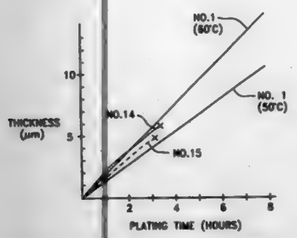
therefor, an adsorbent material adapted for the purification of gases by adsorbing impurities therefrom that are more polar or polarizable than the gases to be purified, comprising a matrix of a 5A zeolite molecular sieve and a kaolinite clay binder therefor, said clay binder comprising a concentration of at least 75% by dry weight of kaolinite and a maximum quartz concentration of 20% by dry weight.

5,292,361

ELECTROLESS PALLADIUM PLATING COMPOSITION

Kuniaki Otsuka, Osaka; Eiichi Torikai, Yao; Shigemitsu Kawagishi, Suita, and Kazuyoshi Okuno, Ashiya, all of Japan, assignors to Okuno Chemical Industries Co., Ltd., Osaka, Japan

Filed Jul. 30, 1992, Ser. No. 923,097
Claims priority, application Japan, Aug. 2, 1991, 3-194451
Int. Cl.[5] C23C *18/44*
U.S. Cl. 106—1.28 **5 Claims**



1. An electroless palladium plating composition which comprises (1) 0.001–0.1 mol/l of a palladium compound, (2) 0.01–1 mol/ of a hypophosphite compound (3) 0.01–5 mol/l of at least one member selected from the group consisting of ammonia of alkylamine compounds, (4) 0.01–20 mg/l of high-molecular weight polyethyleneimine having molecular weight of 300 to 100,000 and (5) 0.01–10 g/l of an aliphatic alkylamine, said composition being at a pH in the range of 5–10.

5,292,362

TISSUE BONDING AND SEALING COMPOSITION AND METHOD OF USING THE SAME

Lawrence S. Bass, Little Neck, N.Y.; Steven K. Libutti, Fort Lee, N.J., and Alexander M. Eaton, Durham, N.C., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 560,069, Jul. 27, 1990, Pat. No. 5,209,776. This application Jul. 9, 1991, Ser. No. 727,607
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] C09J *189/00, 199/00*
U.S. Cl. 106—124 **42 Claims**

1. A platelet-free composition for bonding separated tissues together or for coating tissues or prosthetic materials comprising:
(a) at least one first component in an amount of at least 4.2% by weight based on the total weight of the composition, said first component being selected from the group consisting of naturally occurring peptides, synthetic peptides, and mixtures thereof; and
(b) at least one second component, which is different than the first component, adapted to support the first component to form a matrix, sol or gel with the first component.

39. A composition for bonding separated tissue together or for coating tissues or prosthetic materials comprising:
(a) a first material selected from albumin, fibrinogen, fibrin, fibrinectin, collagen and mixtures thereof in an amount of 8–35% by weight; and
(b) a second material selected from hyaluronic acid, sodium salts thereof, chondroitin sulfate, hydroxypropylmethylcellulose, hydroxyethylcellulose, carboxymethylcellulose, in an amount of 0.1 to 20% by weight, said composition having a viscosity in the range of from about 1,000 to 200,000 centipoise.

41. A method of producing a composition for bonding separated tissues together or for coating tissues or prosthetic materials which comprises:
(a) at least one first component in an amount of at least 4.2% by weight selected from naturally occurring or synthetic peptides, and mixtures thereof; and
(b) at least one second component, which is different than the first component, adapted to support the first component to form a matrix, sol or gel with the first component; said method comprising:
(1) combining the first and second components;
(2) agitating the product obtained from step (1) to form a mixture;
(3) placing the product step (2) into a vessel adapted to store or deliver the composition.

42. A composition for bonding separated tissues together or for coating tissues or prosthetic materials comprising:
(a) at least one first component in an amount of at least 4.2% by weight based on the total weight of the composition, said first component being selected from the group consisting of naturally occurring peptides, synthetic peptides and mixture thereof; and
(b) at least one second component selected form the group consisting of naturally occurring or synthetic proteoglycans, saccharides, polyalcohols and mixtures thereof.

5,292,363

PAPERMARKING COMPOSITION, PROCESS USING SAME, AND PAPER PRODUCED THEREFROM

Gary S. Hutcheson, Macon, Ga., assignor to Sequa Chemicals, Inc., Chester, S.C.

Continuation of Ser. No. 748,086, Aug. 21, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 16,663
Int. Cl.[5] C08L *1/02;* **C09D** *101/02, 7/12*
U.S. Cl. 106—243 **14 Claims**

1. A composition for addition to a pulp slurry of cellulose fibers in a papermaking process for enhancing brightness, opacity and sizing of a paper produced from said pulp comprising an amphoteric softener, a cationic softener, an acid, a surfactant and a carbamide.

11. A method of preparing an emulsion of fatty acid amides of an alkanoldiamine in water where the concentration of fatty acid amides is greater than 5% comprising the steps of:
providing said fatty acid amides of an alkanoldiamine at a temperature of about 200° F.;
mixing said fatty acid amides with the liquid serving as an emulsifier until said fatty acid amides are dispersed therein;
rapidly cooling said mixture of fatty acid amides and emulsifier such that said fatty acid amides will remain in an emulsified state with respect to said emulsifier.

5,292,364

PRIMER COMPOSITION

Akihiko Hiraiwa; Kenji Ito, and Kaoru Kimura, all of Nagoya, Japan, assignors to Toagosei Chemica Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 299,734, Jan. 19, 1989, abandoned, which is a division of Ser. No. 78,403, Jul. 27, 1987, Pat. No. 4,818,325, which is a division of Ser. No. 818,716, Jan. 14, 1986, abandoned. This application Sep. 16, 1992, Ser. No. 945,835
Claims priority, application Japan, Jan. 18, 1985, 60-5936; Jan. 31, 1985, 60-15486
Int. Cl.[5] C09J *5/02, 5/04*
U.S. Cl. 106—287.1 **32 Claims**

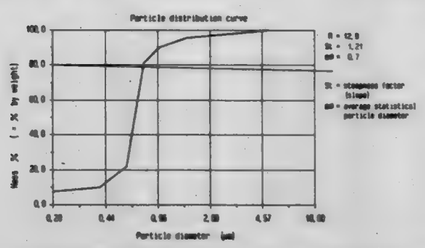
1. In an adhesive system comprising a 2-cyanoacrylate based adhesive and a primer therefor containing an organometallic compound and an organic solvent, the improvement wherein said primer has a moisture content of not more than 500 ppm.

5,292,365

MINERAL FILLERS AND PIGMENTS CONTAINING CARBONATE

Pierre Delfosse, Rutland, Vt., assignor to Pleuss Staufer AG, Oftringen, Switzerland

Filed Aug. 27, 1992, Ser. No. 936,269
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4128570
Int. Cl.[5] C04B *14/28*
U.S. Cl. 106—464 **19 Claims**



1. Mineral fillers or pigments containing calcium carbonate having
a) a rhombohedral or round particle shape
b) a steepness factor (slope) of between 1.1 and 1.4
c)

$$\text{a ratio } R = \frac{\%\text{ of particles} < 1\ \mu m}{\%\text{ of particles} < 0.2\ \mu m} = 8\text{–}19$$

and
d) an average statistical particle diameter of between 0.4 and 1.5 μm.

5,292,366

PUMICE CONTAINING COMPOSITION

Joseph J. Miceli, 7902 Limoges Dr., Jacksonville, Fla. 32210

Filed Sep. 26, 1991, Ser. No. 766,819
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] C04B *14/16*
U.S. Cl. 106—708 **10 Claims**

1. A composition for forming a high strength, hard material with good insulation properties upon the addition of water, comprising a mixture of crushed pumice, type S mortar and a refractory additive, where the weight of the combination of crushed pumice and type S mortar is greater than approximately 70 weight percent of the total weight of the mixture, and where the weight of the refractory additive is less than approximately 30 weight percent of the total weight of the mixture, and where the weight of the crushed pumice is between 60 to 75 weight percent of said combination of crushed pumice and type S mortar, and where the weight of the type S mortar is between 25 to 40 percent of said combination of crushed pumice and type S mortar.

5,292,367

DISPERSANT COMPOSITIONS FOR SUBTERRANEAN WELL DRILLING AND COMPLETION

James B. Bloys; William N. Wilson, both of Plano; Edward Malachosky, Coppell; Robert B. Carpenter, Hurst, and Roger D. Bradshaw, Allen, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 887,227, May 18, 1992, abandoned, which is a continuation of Ser. No. 510,638, Apr. 18, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 982,024
Int. Cl.[5] C04B *24/04, 24/06, 24/00*
U.S. Cl. 106—802 **20 Claims**

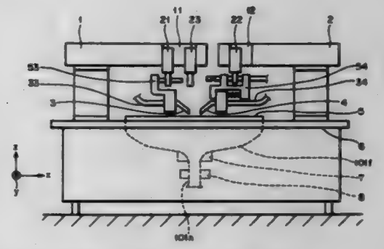
1. A slurry for use in drilling and completion of subterranean wells, comprising:
a cement slurry; and
from 0.1 to 20.0 pounds per 42.0 gallons of said cement slurry of a polymeric dispersant selected from the group consisting of a hydroxypropyl acrylate-acrylic acid copolymer; sulfonated vinyl toluene-maleic anhydride copolymer; sulfonated vinyl toluene-maleic acid copolymer; sulfonated methyl polyacrylamide; sulfonated ethyl polyacrylamide; sulfonated phenyl polyacrylamide; and copolymers of ethylenic acids, acrylamides and ethylenic esters of phosphoric acid.

5,292,368

DEVICE FOR APPLYING FLUID USING ROBOT CONTROLLED NOZZLES

Tetsuya Komine, Shinagawa, and Katsutoshi Hosoi, Inazawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

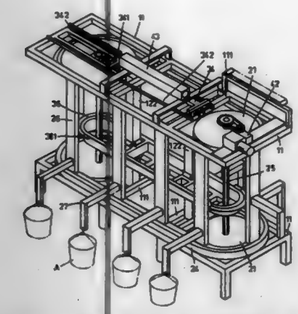
PCT No. PCT/JP91/01139, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO92/04725, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 28, 1991, Ser. No. 855,007
Claims priority, application Japan, Sep. 7, 1990, 2-38098
Int. Cl.[5] B05B *15/06, 15/08*
U.S. Cl. 118—315 **3 Claims**



1. A device for applying a fluid, comprising:
at least a first robot and a second robot; and at least
a first nozzle and a second nozzle for receiving respective fluid coating materials;
said first robot and said second robot being constructed and arranged to hold independently the first nozzle and the second nozzle, respectively, and to move the respective nozzles along different paths over a surface to which the fluid coating materials are applied;
wherein said first robot is further constructed and arranged to hold both said first nozzle and said second nozzle simultaneously.

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5,292,369
AUTOMATIC MACHINE FOR HOT DIPPING GALVANIZATION
Chin-Chuan Chung, Chung Hwa Hsien, Taiwan, assignor to Taiwan Galvanizing Co., Ltd., Taipei, Taiwan
Filed Apr. 15, 1992, Ser. No. 868,675
Int. Cl.[5] B05C *3/10*
U.S. Cl. 118—696 3 Claims



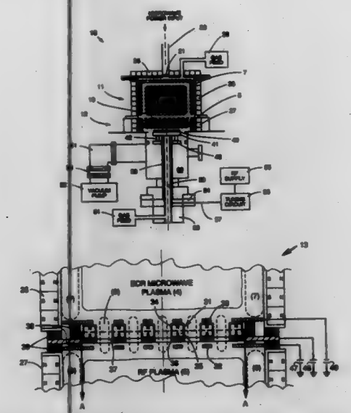
1. An automatic machine for hot dipping galvanization comprising a main frame, a slide means; an elevator means and a control means;

said main frame having a lower and an upper rectangular frame each having a plurality of beams transversely connected thereon, said upper frame being supported by two rectangular posts to stand above said lower frame;

said slide means having at least two pairs of sprocket wheels each of said pair having two sprocket wheels mounted at respective ends of said lower and upper frame, two link belts engaged said two pairs of sprocket wheels each of said link belts having a plurality of rollers and slidably located within two slideways, respectively, two shafts having one end of each connected to the center portion of each said lower sprocket wheel and the other end of said shafts connected to the center portion of each upper sprocket wheel to drive said lower sprocket wheels to rotate with said upper sprocket wheels; a plurality of guide rails each being formed with two U-shaped plates having opposite ends each U-shaped plates is secured to one of said link belts to be slide along with said link belts; a plurality of arms each having a first roller at one end, a crank swiveably mounted to the other end, each of said arm having said first roller extending outwards from one end thereof, a flange extending upwards from the same end, for second rollers mounted at four corners of said flange slidably installed within said guide rail for sliding within said guide rail, and a crank swiveably mounted at the other end; said elevator means having an elongated elevator positioned on top of said lower frame by at least four guide supports each having an end secured to said elevator and another end extending upwards and secured to a U-shaped rod via a guide wheel, a block offset from one end of said U-shaped rod, two arcuate plates extending outwards from opposite ends of said elevator, each arcuate plate having a horizontal block at one end for carrying an arm upwards and a vertical block at another end of said arcuate plate for carrying an arm downwardly, two sets of rollers being secured on the elevator, respectively;

said control means having a central processing unit controlling the entire movement, a motor connected with one of said sprocket wheels to rotate said sprocket wheels, a cylinder having a shaft connected with said flange of said U-shaped rod to lift and lower said elevator.

5,292,370
COUPLED MICROWAVE ECR AND RADIO-FREQUENCY PLASMA SOURCE FOR PLASMA PROCESSING
Chin-Chi Tsai, Oak Ridge, and Halsey H. Haselton, Knoxville, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Aug. 14, 1992, Ser. No. 930,590
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 MP 8 Claims



1. In a plasma processor incorporating an electron cyclotron resonance (ECR) microwave plasma source to initiate and feed the radio-frequency (RF) plasma of a RF plasma source in a common vacuum chamber, the improvement comprising:

said microwave plasma source including static magnetic field producing means located at the walls of said microwave source for producing an ECR zone over a maximum extent of inner wall area, said microwave source operating at ECR and producing a uniform ECR microwave plasma over at least a 1000 cm^2 area at a pressure below 0.1 mtorr;

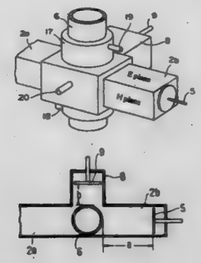
said RF plasma source including static magnetic field means for producing ECR zones within said RF plasma source; and

a magnetic filter between said plasma sources, said filter including static magnetic field means and electrically biased plates for affecting said ECR microwave plasma and said RF plasma;

said static magnetic field means of said filter also producing ECR zones within said ECR microwave plasma source and said RF plasma source.

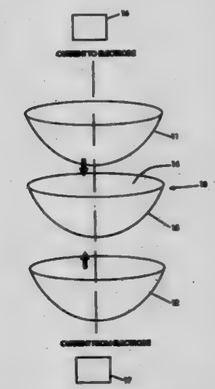
5,292,371
MICROWAVE PLASMA CVD APPARATUS COMPRISING DUAL PLUNGERS FOR TWO-DIMENSION PLASMA POSITION ADJUSTMENT
Haruo Yasui, and Munehiro Choss, both of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1992, Ser. No. 966,368
Claims priority, application Japan, Feb. 26, 1991, 3-54072
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 MW 3 Claims

1. A microwave plasma chemical vapor deposition apparatus comprising a microwave oscillator, a microwave waveguide, a first plunger mounted in an end of the microwave waveguide, and a reaction tube extending through the microwave waveguide perpendicularly to an E plane thereof adjacent to the end of the microwave waveguide, said microwave waveguide and said reaction tube jointly defining a reaction region at an intersection thereof, wherein the improvement comprises a second plunger disposed on an H plane of said microwave waveguide adjacent to the end thereof, said second



plunger extending perpendicularly to said microwave waveguide and said reaction tube and facing said reaction region.

5,292,372
METHOD OF REMOVING CONTAMINANTS FROM A CONTACT LENS USING ELECTROBLOTTING
Harold E. Swaisgood, and Marie K. Walsh, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Sep. 9, 1992, Ser. No. 942,561
Int. Cl.[5] B08B *6/00*
U.S. Cl. 134—1 20 Claims



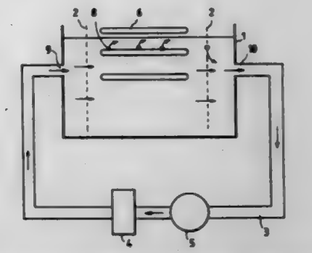
1. A method of removing contaminants from a contact lens, comprising:

(a) positioning the contact lens, a first adsorbent, and an electric current source configured so that said adsorbent is disposed between the contact lens and the electric current source and so that the current passes through said lens, said adsorbent including a free chemical substituent having a affinity for protein;

(b) immersing the contact lens, the adsorbent, and the electric current source so disposed in a saline solution; and then

(c) applying an electric current from the current source through the adsorbent and the contact lens so that contaminants carried by the contact lens migrate to the adsorbent.

5,292,373
APPARATUS AND PROCESS FOR WASHING WAFERS
Naomi Arita, and Yoshitaka Danmi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 9, 1992, Ser. No. 910,920
Claims priority, application Japan, Jul. 10, 1991, 3-169936
Int. Cl.[5] H01L *21/306;* B08B *3/08*
U.S. Cl. 134—2 1 Claim



1. A process for washing semiconductor wafers comprising the steps of:

holding a plurality of semiconductor wafers parallel to each other in a holding means;

producing an essentially horizontal flow of a washing liquid in a wafer-washing tank; and

immersing said holding means into the washing liquid in the wafer-washing tank so that the front and back surfaces of the semiconductor wafers are parallel to the level of the washing liquid in the wafer-washing tank and the back surface of each of the semiconductor wafers is upper and the front surface of that semiconductor wafer is lower, said immersing step including a step of holding at least one of the semiconductor wafers above the level of the washing liquid in the wafer-washing tank until a possible particulate sticking to the back surface of a preceding semiconductor wafer which has been immersed in the washing liquid in the wafer-washing tank has gone out of the washing liquid in a region right below the one semiconductor wafer.

5,292,374
PROCESS AND PLANT FOR PICKLING STAINLESS STEEL STRIP
Gerald Maresch, Mödling; Wilhelm Hofkirchner, Gablitz, and Erich Mahr, Purkersdorf, all of Austria, assignors to Maschinenfabrik Andritz Actiengesellschaft, Graz-Andritz, Austria
Continuation of Ser. No. 436,635, Nov. 15, 1989. This application Feb. 25, 1992, Ser. No. 839,896
Claims priority, application Austria, Nov. 15, 1988, A2799/88
Int. Cl.[5] C23G *1/02*
U.S. Cl. 134—3 15 Claims



1. A process for pickling a steel strip, in a form of a coil, in a treatment line comprising the steps of:

a) uncoiling the strip by an uncoiling hasp;

b) mechanically descaling the uncoiled strip of step a) by passing the strip through an abrasive blaster;

c) pickling the descaled strip of step b) with a plurality of pickling acids after mechanically descaling the strip;

d) rinsing the pickled strip of step c);

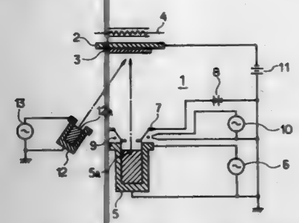
VOL 1160 ISS 2 MR 8 1994 UMI

e) clamping the rinsed strip of step d) to a recoiling hasp; and
f) recoiling the clamped strip of step e);
wherein the strip is pushed through the treatment line at least until a front end of the strip reaches the recoiling hasp and wherein further the strip is drawn through the treatment line by at least the recoiling hasp.

5,292,375
REMOVAL OF LEAD BASED COATING BY VITRIFICATION
Ashok Kumar, Champaign, and John P. Petreanu, Oak Forest, both of Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 7, 1993, Ser. No. 71,881
Int. Cl.[5] B08V *7/00, 3/14*; C03C *23/00*; C03B *37/00*; C04B *35/14*
U.S. Cl. 134—38 **18 Claims**

1. A method for removing a lead based coating from a surface of a structure without creating a hazardous waste, said method comprising:
(a) flame spraying particles of a first glass material onto the lead based coating on said surface to form a primary layer of glass material, said first glass material having an expansion coefficient which is substantially different from that of said structure;
(b) permitting said primary layer to cool sufficiently so that said primary layer spalls, thereby forming fragments of said primary layer which have separated from said structure;
(c) collecting the thus formed fragments of said primary layer;
(d) flame spraying particles of a second glass material onto the residue of said lead based coating on said surface to form a secondary layer of glass material, said second glass material having an expansion coefficient which is substantially different from that of said structure;
(e) permitting said secondary layer to cool sufficiently so that said secondary layer spalls, thereby forming fragments of said secondary layer which have separated from said structure; and
(f) collecting the thus formed fragments of said secondary layer.

5,292,376
THERMOELECTRIC REFRIGERATION MATERIAL AND METHOD OF MAKING THE SAME
Yasuo Sase, and Akira Kawamoto, both of Ibaraki, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Mar. 18, 1992, Ser. No. 853,127
Claims priority, application Japan, Mar. 18, 1991, 3-078556
Int. Cl.[5] H01L *35/14, 35/20*
U.S. Cl. 136—239 **14 Claims**



1. A thermoelectric refrigeration material having a thermoelectric conversion characteristic and formed by adding silicon monoxide (SiO) to a system of bismuth-antimony (Bi-Sb) at a predetermined rate such that the formed material has a granular crystalline structure containing crystal grains of around one micron.

5,292,377
FLUX SUITABLE FOR COATING MOLTEN ZINC, MOLTEN ALLOY OF ALUMINUM AND ZINC, AND MOLTEN ALUMINUM
Tatsumi Izeki, Mino; Yoshihiko Takano, Otsu; Koshi Takada, Higashiosai, and Tetsuya Nakada, Suita, all of Japan, assignors to Tanaka Galvanizing Co., Ltd., Osaka and Sumitomo Metal Mining Co., Ltd., Tokyo, both of Japan
Continuation of Ser. No. 798,790, Nov. 27, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 928,168
Claims priority, application Japan, Nov. 30, 1990, 2-339495
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 **10 Claims**

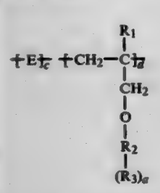
1. A flux for use in a dry process for the flux treatment of the material to be coated with molten metal, said flux comprising (i) at least one chloride selected from the group consisting of zinc chloride and stannous chloride, (ii) at least one compound selected from the group consisting of an alkali metal chloride and an alkaline earth metal chloride and (iii) at least one alkyl quaternary ammonium salt with alkyl group having 1 to 18 carbons.

5,292,378
VISIBLE DRIED-IN-PLACE NON-CHROME TREATMENT FOR ALUMINUM
Jiangbo Ouyang, Bensalem; Bruce V. Haberle, Fogelsville; Philip D. Deck, Ardsley, and William L. Harpel, Langhorne, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed Mar. 26, 1993, Ser. No. 38,592
Int. Cl.[5] C23C *22/06*
U.S. Cl. 148—241 **4 Claims**

1. A method of imparting color to a dried-in-place non-chromate conversion coating formed on an aluminum or an aluminum alloy surface through contact with the conversion coating treatment solution comprising adding a phthalo green pigment to said conversion coating treatment solution prior to said contact thereby making the conversion coating visible but not so strong as to bleed through a subsequently applied coating.

5,292,379
METHOD AND COMPOSITION FOR TREATMENT OF ALUMINUM
David W. Reichgott, Richboro, and Fu Chen, Newtown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Continuation of Ser. No. 654,159, Feb. 12, 1991, Pat. No. 5,188,622. This application Jun. 19, 1992, Ser. No. 901,340
Int. Cl.[5] C23C *22/06*
U.S. Cl. 148—251 **10 Claims**

1. A method of pretreating a metal surface prior to coating comprising reacting the metal surface with an aqueous solution of water soluble or water dispersible polymers having repeat units represented by the formula

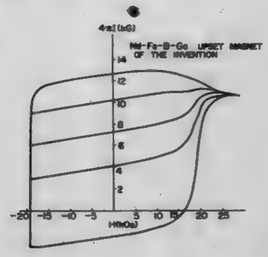


wherein E is the repeat unit remaining after polymerization of an alpha, beta ethylenically unsaturated compound, R_1 is H or lower (C1–C4) alkyl, R_2 is $+CH_2-CH_2-O+_nH$,

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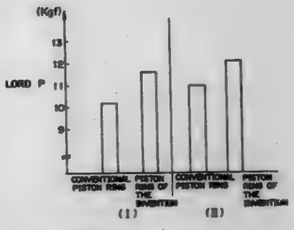
monohydroxylated C1–C8 alkyl, monohydroxylated C1–C8 alkylene, di-or polyhydroxy C1–C8 alkylene, n is an integer of from 1 to about 20, a is 0 or 1, R_3 is hydrogen or an acetate formed by reacting an acetylating agent with an allyl ether, the molar ratio of repeat units c:d is from about 15:1 to about 1:10; and optionally an acid selected from the group consisting of acetic acid, glycolic acid, dihydrohexafluotitanic acid, dihydrohexafluosilicic acid, dihydrohexafluozirconic acid and fluoboric acid and combinations thereof wherein said aqueous solution is rinsed or dried in place.

5,292,380
PERMANENT MAGNET FOR ACCELERATING CORPUSCULAR BEAM
Shigeho Tanigawa, Konosu, and Kimio Uchida, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Sep. 9, 1988, Ser. No. 242,947
Claims priority, application Japan, Sep. 11, 1987, 62-228883
Int. Cl.[5] H01F *1/053*
U.S. Cl. 148—302 **3 Claims**



1. A permanent magnet having superior resistance to radioactive deterioration of magnetic properties when subjected to a corpuscular beam having a wave length of not more than about 1Å, said magnet having a composition consisting essentially of $R_aFe_{bal.}Co_bB_cGa_dM_e$ where R is at least one element selected from the group consisting of Nd, Pr, Dy, Tb, Ho, and Ce, and M is at least one element selected from the group consisting of Al, Si, Nb, Ta, Ti, Zr, Hf, and W, with the proviso that $12 \leqq a \leqq 18$, $0 \leqq b \leqq 30$, $4 \leqq c \leqq 10$, $0.01 \leqq d \leqq 3$, and $0 \leqq e \leqq 2$ in terms of atomic percent, said magnet having a microstructure comprised of fine crystal grains having an average grain size of about 0.01 μm to about 0.5 μm and being magnetically anisotropic, said crystal grains being rendered magnetically anisotropic by plastically deforming said magnet at a temperature in the range from about 600° C. to about 800° C. at a strain rate in the range from about 1×10^{-4} sec^{-1} to about 1×10^{-1} sec^{-1}, the plastic working ratio h_o/h, where h_o is the height of said magnet before plastic deformation and h is the height of said magnet after plastic deformation, being about 2 or more.

5,292,381
PISTON RING AND PROCESS FOR MANUFACTURING THE SAME
Takeshi Tsuchiya; Shuji Sameshima; Yoshio Onodera, and Satoshi Kawashima, all of Yono, Japan, assignors to Nippon Piston Ring Co., Ltd., Japan
Filed Jul. 15, 1992, Ser. No. 913,349
Claims priority, application Japan, Jul. 24, 1991, 3-184876
Int. Cl.[5] C21D *1/06*
U.S. Cl. 148—318 **9 Claims**



1. A piston ring comprising:
a steel body having a slidable surface which is to face an inner peripheral surface of a cylinder, a first surface and a second surface both connected to the slidable surface by way of corner portions;
a nitrided layer consisting of a low-temperature nitrided layer formed by low-temperature nitriding and a high-temperature nitrided layer formed by high-temperature nitriding, said nitrided layer being formed on said slidable, first and second surfaces and said corner portions, said nitrided layer comprising a diffusion layer and an outer white layer formed thereon, wherein
a first portion of a white layer which is formed on the slidable surface is removed, and a second portion of the white layer which is formed on each of the first surface, the second surface and the corner portions is at least partially removed to have a thickness of not more than 5 μm.

5,292,382
MOLYBDENUM-IRON THERMAL SPRAYABLE ALLOY POWDERS
Frank N. Longo, East Northport, N.Y., assignor to Sulzer Plasma Technik, Troy, Mich.
Filed Sep. 5, 1991, Ser. No. 755,376
Int. Cl.[5] C22C *30/00*
U.S. Cl. 148—320 **9 Claims**



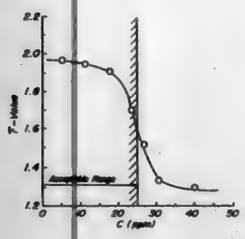
1. A thermal sprayable molybdenum-iron alloy powder having an average particle size of less than about 80 mesh, said alloy powder having the following composition in weight percent:

Mo	25–50
Cr	4–10
Ni	10–18
C	1–2.5
Si	2–3
B	0.2–1

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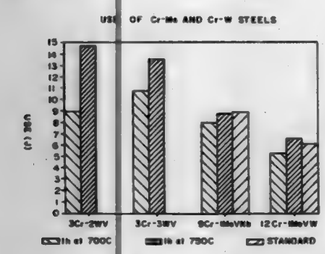
Ti	0–2
Mn	0–3
Fe	25–50.

5,292,383
STEEL SHEETS FOR PROCELAIN ENAMELING AND METHOD OF PRODUCING THE SAME
Kazunori Osawa; Susumu Satoh; Toshiyuki Kato; Hideo Abe, and Keiji Nishimura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan
Division of Ser. No. 486,960, Mar. 1, 1990, Pat. No. 5,098,491. This application Dec. 17, 1991, Ser. No. 808,753
Claims priority, application Japan, Mar. 10, 1989, 1-56345; Feb. 19, 1990, 2-31521
Int. Cl.[5] C22C *38/16*
U.S. Cl. 148—330 7 Claims



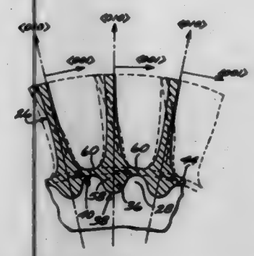
2. A steel sheet for porcelain enameling having improved fishscale resistance and pressformability, consisting essentially of not more than 0.0050 wt% of C, not more than 0.50 wt% of Mn, 0.007–0.020 wt% of B, 0.01–0.07 wt% of Cu, not more than 0.010 wt% of Al, 0.008–0.020 wt% of O, 0.005–0.020 wt% of N, not more than 0.020 wt% of P, at least one of not more than 0.050 wt% of Ti and not more than 0.050 wt% of Nb provided that a total amount of Ti and Nb is 0.001–0.050 wt%, and the balance being Fe and inevitable impurities.

5,292,384
CR-W-V BAINITIC/FERRITIC STEEL WITH IMPROVED STRENGTH AND TOUGHNESS AND METHOD OF MAKING
Ronald L. Klueh, Knoxville, and Philip J. Maziasz, Oak Ridge, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Jul. 17, 1992, Ser. No. 914,452
Int. Cl.[5] C22C *38/22*; C21D *6/00*
U.S. Cl. 148—333 20 Claims



1. A high strength, high toughness bainitic/ferritic steel alloy comprising about 2.75% to 4.0% chromium, about 2.0% to 3.5% tungsten, about 0.10% to 0.30% vanadium, and about 0.1% to 0.15% carbon with the balance iron, wherein the percentages are by total weight of the composition, wherein the alloy having been heated to an austenitizing temperature and then cooled at a rate sufficient to produce carbide-free acicular bainite.

5,292,385
TURBINE ROTOR HAVING IMPROVED RIM DURABILITY
Harry L. Kington, Scottsdale, Ariz., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Dec. 18, 1991, Ser. No. 809,663
Int. Cl.[5] F01D *5/28*; C22C *19/05*
U.S. Cl. 148—404 6 Claims



1. A turbine rotor, comprising:
a turbine disk having radial and circumferential directions; and
a plurality of single-crystal turbine blade segments fixed to the turbine disk around a circumference of a rim of the turbine disk, each turbine blade segment being made of a material having a cubic crystal structure and having a <010> direction oriented parallel to the radial direction of the turbine disk and a <001> direction oriented substantially parallel to the circumferential direction of the turbine disk in the region where the turbine blade segment is fixed to the turbine disk.

5,292,386
PROCESS FOR THE MANUFACTURE OF ALUMINUM SHEETS
Werner Schelb, Rausbach-Baumbach; Manfred Peters, Bad Honnef-Rhöndorf, and Karl Welpmann, Köln, all of Fed. Rep. of Germany, assignors to Hoogovens Aluminium GmbH, Dusseldorf and Duetsche Forschungsanstalt fur Luft und Raumfahrt DLR, Cologne, both of Fed. Rep. of Germany
Filed Apr. 22, 1992, Ser. No. 870,656
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113352
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—691 8 Claims



1. A process of manufacturing sheets of an aluminum-lithium alloys of thickness between about 0.5 and 10 mm, said process comprising the steps of:

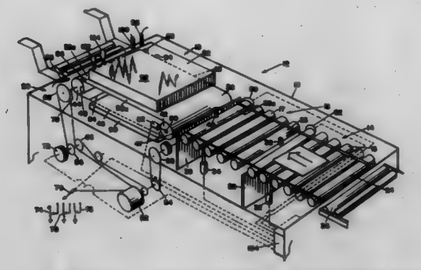
(a) shaping a bar made from said alloy by hot rolling into a sheet, strip or other similar semifinished product;
(b) subjecting said semifinished product to solution heat treatment;
(c) quenching said solution heat-treated semifinished product;
(d) cold rolling the quenched semifinished product at a reduction of between about 2% to 60%;
(e) subjecting the reduced product to intermediate annealing in a temperature range of about 250° to 475° for a period of 1to 85 hours;
(f) subjecting the annealed semifinished product to cold rolling at a reduction between about 40% and 90%;
(g) solution heat treating the cold worked semifinished product at a temperature at which recrystallization occurs;
(h) quenching said solution-treated semifinished product;
(i) working said quenched semifinished product at a reduction of up to about 8% by cold stretching and/or cold stretch-forming to provide a finished product; and
(j) aging said finished product.

5,292,387
PHASE-STABILIZED AMMONIUM NITRATE AND METHOD OF MAKING SAME
Thomas K. Highsmith, North Ogden; Carol J. Hinshaw, Pleasant View, and Robert B. Wardle, Logan, all of Utah, assignors to Thiokol Corporation, Ogden, Utah
Filed Jan. 28, 1993, Ser. No. 10,391
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.1 23 Claims

1. Phase-stabilized ammonium nitrate composition comprising ammonium nitrate and a phase-stabilizer comprising at least one metal dinitramide salt having the formula MX_n wherein M is a metal cation, X is a dinitramide anion, and n is 1, 2 or 3, said metal dinitramide salt being present in a phase stabilizing amount.

10. A solid propellant comprising a binder system and the phase-stabilized ammonium nitrate composition according to claim 1.

5,292,388
CONVEYORIZED VACUUM APPLICATOR AND METHOD THEREFOR
Amedeo Candore, Bodio Lomnago, Italy, assignor to Morton International, Inc., Chicago, Ill.
Filed Aug. 5, 1992, Ser. No. 926,120
Claims priority, application Italy, Aug. 9, 1991, RM91-A00610
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—64 19 Claims

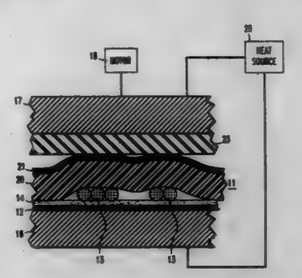


1. A method of vacuum laminating a prelaminated board comprising the step of:
(a) placing the board on the entrance end of a moving belt conveyor for movement into a vacuum laminator having an upper platen and a lower platen, which belt conveyor has an endless belt under tension that has an aperture therein and is characterized in having an initial or set-point position such that as the board is moved on the endless belt into the region of the vacuum chamber of the vacuum laminator the aperture is moved into alignment with and between the board and the lower platen;
(b) sensing by proximity switch means having a member movable with the endless belt the positioning of the board in the vacuum chamber of the vacuum laminator and stopping the movement of the belt conveyor;
(c) relieving the tension on the endless belt;
(d) lifting the lower platen up through the aperture in the endless belt into sealing engagement with the upper platen and thereby capturing within the vacuum chamber of the vacuum laminator the board and the portion at least of the endless belt upon which the board is positioned; and
(e) evacuating the vacuum chamber of the vacuum laminator.

5,292,389
PROCESS FOR PRODUCING NONWOVEN FABRIC
Isei Tsuji, Chibe; Hideki Harada, and Masato Doi, both of Himeji, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1992, Ser. No. 847,649
Claims priority, application Japan, Mar. 12, 1991, 3-73968
Int. Cl.[5] D04H *3/14, 3/00*
U.S. Cl. 156—167 11 Claims

1. A process for producing a nonwoven fabric by the uniaxially drawing of a web made of continuous long-fibers, said process comprising the steps of:
bonding polypropylene long-fibers making up main fibers of the web to one another at an index of birefrigence of 0.02 or less to produce a raw nonwoven fabric; and
uniaxially drawing the nonwoven fabric at a draw temperature of 80°–130° C. and a draw magnification of 1.5–2.5 to produce a final nonwoven fabric.

5,292,390
OPTICAL FIBER ENCAPSULATING TECHNIQUES
John J. Burack, Toms River, N.J., and William R. Holland, Ambler, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 30, 1992, Ser. No. 954,720
Int. Cl.[5] B29C *65/18*
U.S. Cl. 156—176 14 Claims



1. A method for encapsulating optical fiber comprising the steps of:
causing the optical fiber to adhere to an upper surface of a flat flexible plastic substrate;
covering the optical fiber with a sheet of thermoplastic material to form a composite structure comprising said sheet of thermoplastic material, optical fiber and plastic substrate;
compressing the composite structure at a first elevated temperature and at a first relatively high pressure which are sufficient to cause adherence of the sheet of thermoplastic material to the plastic substrate;

VOL 1160 ISS 2 MR 8 1994 UMI

while maintaining said first relatively high pressure, allowing the composite structure to cool;

heating the sheet of thermoplastic material to a second elevated temperature while compressing the composite structure at a second pressure;

the second elevated temperature being higher than said first temperature and being sufficiently high to cause said thermoplastic material to flow about and encase the optical fiber, and the second pressure being smaller than the first pressure and being sufficiently small to avoid damaging said optical fiber.

5,292,391

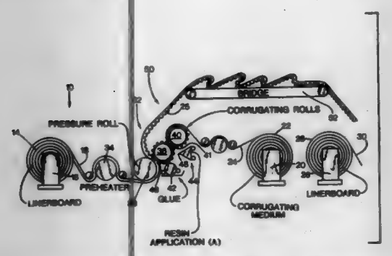
CORRUGATED PAPERBOARD STRENGTH ENHANCING PROCESS

Scott A. Wallick, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 692,861, Apr. 29, 1991. This application Apr. 27, 1992, Ser. No. 874,492

Int. Cl.[5] B32B *31/08*; B31F *1/20*

U.S. Cl. 156—205 **15 Claims**



1. A process for increasing the strength of combined corrugated paperboard using a strength enhancing resin, comprising:

providing a fluted medium having side edges and flutes extending transversely between the side edges, the flutes having flute tips, flute troughs and flute side walls between the flute tips and flute troughs;

moving the fluted medium in a direction with the flutes extending transversely to the direction of travel of the medium;

applying a preselected amount of uncured strength enhancing isocyanate resin to the moving fluted medium after it has been fluted so as to create continuous spaced apart columns of resin in the fluted medium of a first concentration extending transversely relative to the direction of travel of the fluted medium, said resin extending from one side edge to the opposite side edge of the fluted medium, said resin being applied so as to create bridging areas of resin in the fluted medium of a second concentration lower than the first concentration and extending between the continuous columns of resin;

adhesively securing at least a first liner to the fluted medium; and

curing the isocyanate resin to harden to the resin with columns and bridging areas in the fluted medium and so as to provide enhanced strength to the paperboard.

5,292,392

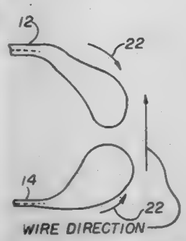
METHOD OF MAKING FREE EDGE-SEALED FILM ARTICLES

Burdette W. Miller, Freeland; John O. McCree, Saginaw, and William D. Price, Midland, all of Mich., assignors to Dowbrands Inc., Indianapolis, Ind.

Continuation of Ser. No. 513,537, Apr. 23, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 994,605

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—308.4 **7 Claims**



1. A method of making film articles having two film portions free edge-sealed together using a hot sealing wire wherein at least one of the two free edged-sealed film portions consists essentially of a plurality of layers of diverse thermoplastic materials, comprising the steps of:

ordering the plurality of layers of diverse thermoplastic materials within a respective layered film portion such that on free-edge sealing the film portions together using a hot sealing wire, the ordered layered film portion is curled toward the other of the two film portions along at least a portion of the free-edge seal;

clamping the two film portions approximately parallel to each other and closely enough together such that when curling occurs during free-edge sealing with a hot sealing wire the ordered layered film portion runs into or abuts the other of the two film portions, bridging the gap between the two film portions, and forming a seal with the other of the two film portions; and

hot-wire sealing the film portions together along at least a portion of the free-edge seal.

5,292,393

MULTICHAMBER INTEGRATED PROCESS SYSTEM

Dan Maydan, Los Altos Hills; Sasson Somekh, Redwood City; David N. Wang, Cupertino; David Cheng; Masato Toshima, both of San Jose; Isaac Harari, Mountain View, and Peter D. Hoppe, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 482,331, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 451,817, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 371,700, Jun. 23, 1989, Pat. No. 4,951,601, which is a continuation of Ser. No. 283,015, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 944,803, Dec. 19, 1986, abandoned. This application Dec. 16, 1991, Ser. No. 808,786

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] C23C *16/00*; B65G *1/06*

U.S. Cl. 156—345 **11 Claims**

1. An integrated vacuum processing system for workpieces comprising:

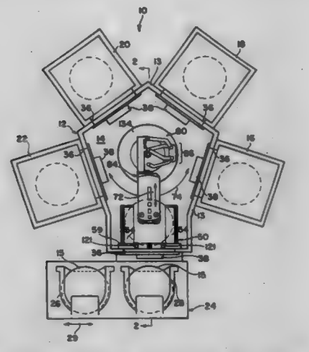
a vacuum load lock chamber, having a closable entrance;

a plurality of vacuum processing chambers mounted to said load lock chamber and communicating therewith via openings in the adjacent chambers;

each of said processing chambers including a workpiece support means and further including means for reversibly moving a workpiece along an axis from a selected internal position adjacent the workpiece support means to and onto the workpiece support means;

a workpiece handling robot mounted within the load lock chamber, comprising: a workpiece support blade; a foldable dual four-bar link mechanism mounted the blade at a first, output end thereof and having a second, opposite actuator end comprising an input link rotatable mounted at a selected location within the chamber for moving the four-bar link mechanism between a folded configuration with the output end on one side of the selected mounting position and selected extended orientations with the output end on the opposite side of the selected mounting position, including an extended configuration with the workpiece support blade at said selected internal position; means for rotating the input link to extend and retract the foldable dual four-bar link mechanism and workpiece support blade;

at least one of the processing chambers further comprising: an electrode assembly having a horizontal upper face for supporting the workpiece, said electrode face being generally aligned with the selected internal position; and said moving means in said at least one processing chamber comprising: a group of generally vertically oriented pins; support means mounting the pins in a spaced array; and means for sequentially moving the support means upwardly and downwardly to remove the workpiece form the workpiece support blade at the selected internal position adjacent the processing chamber opening and onto the workpiece support blade at the selected internal position; and



the moving means of at least a second one of the processing chambers further comprising: a first generally circular horizontal array of fingers adapted for holding the workpiece; a second generally circular horizontal array of fingers interdigitated with the first fingers, the second fingers being adapted for holding a generally circular susceptor in a horizontal orientation; a first vertically movable elevator mechanism mounting the first fingers for moving the first fingers (a) upwardly to lift the workpiece off the blade preparatory to lifting movement of the second fingers into a processing position and (b) downwardly to return the workpiece to the selected internal position and the load lock blade; and a second vertically movable elevator mechanism mounting the second fingers for moving the second fingers (c) upwardly past the first fingers to lift the workpiece therefrom and onto the susceptor and into the said processing position, and (d) downwardly for depositing the processed workpiece onto the first fingers preparatory to return by the first fingers to the selected internal position and the load lock blade.

5,292,394

APPARATUS FOR LARGE-AREA IONIC ETCHING

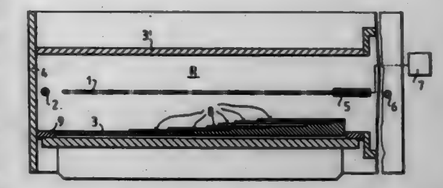
Bernhard Cord, Alzenau, and Helmut Rauner, Nidderau, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed May 12, 1992, Ser. No. 881,530

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137257

Int. Cl.[5] C23F *1/02*

U.S. Cl. 204—298.39 **10 Claims**



1. Apparatus for ionic etching of a large area of a substrate, comprising

an evacuable tank enclosure,

a planar cathode provided as a substrate holder in said enclosure and connected to a high frequency voltage source,

an inlet for introducing a gas to be ionized to said enclosure,

an outlet for removing said gas from said enclosure, and

a first anode situated between said inlet and said outlet, said anode having continuous surface which is stepped to form planar areas facing said cathode substantially parallel to said cathode, the distance between said surface and said cathode decreasing from said inlet toward said outlet, said anode being at group potential.

5,292,395

ECR PLASMA REACTION APPARATUS HAVING UNIFORM MAGNETIC FIELD GRADIENT

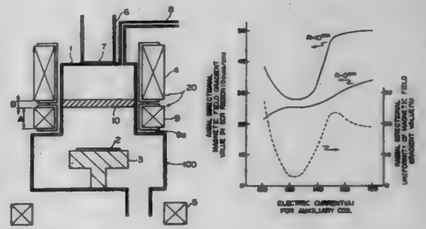
Nobuo Fujiwara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,603

Claims priority, application Japan, May 21, 1991, 3-115909

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—345 **9 Claims**



1. A plasma reaction apparatus comprising:

a reaction chamber for accommodating a semiconductor substrate;

a waveguide connected to said reaction chamber for introducing microwave energy into said reaction chamber; and

magnetic field generating means disposed around said reaction chamber and having a central axis for generating a magnetic field having an axial gradient of no more than 50 gauss/cm along the central axis of said magnetic field generating means and a second magnetic field gradient along a direction parallel to the central axis and spaced

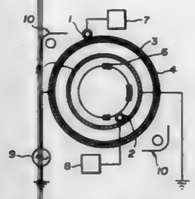
from the central axis by ten centimeters wherein the difference between the axial and the second magnetic field gradients does not exceed 10 gauss/cm, and for exciting an electronic cyclotron resonance in a plasma produced by the microwave energy for processing a semiconductor substrate in said reaction chamber.

5,292,396

PLASMA PROCESSING CHAMBER

Shigekazu Takashima, Musashino, and Norio Sakamoto, Tachikawa, both of Japan, assignors to M. C. Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 968,750
Claims priority, application Japan, Nov. 11, 1991, 3-322502
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—345 **2 Claims**



1. A coaxial feeding type plasma processing chamber or an opposed electrode-type plasma processing chamber using an Etch-tunnel comprising: a cylindrical treatment chamber having a gas-introducing mechanism and a gas-exhausting mechanism, and equipped with a heating mechanism at the periphery thereof;

an external electrode disposed in close contact to the outer periphery of the cylindrical treatment chamber; and

a metal cylindrical member disposed coaxially at a predetermined gap to the inner wall of the cylindrical treatment chamber and having a plurality of small apertures in the side wall thereof,

the gas-introducing mechanism being composed of a gas-introducing pipe having a plurality of gas-blowout means and disposed along the longitudinal direction of the cylindrical treatment chamber, and a gas reservoir connected by way of a pipeline; the gas-exhausting mechanism being composed of a gas-exhausting pipe having a plurality of gas-suction apertures and disposed along the longitudinal direction of the cylindrical treatment chamber and a vacuum means connected by way of a pipeline; and at least the gas-exhausting pipe being disposed to the inside of the metal cylindrical member.

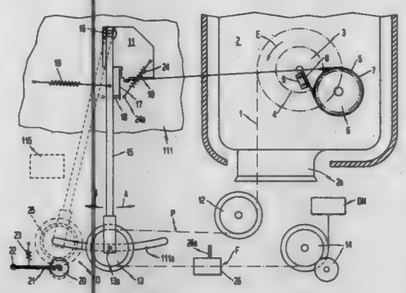
5,292,397

METHOD OF AND APPARATUS FOR LOCATING THE ENDS OF WEBS

Bernhard Lorenz, Freising; Christian Richter, München, and Rainer Tuercke, Taufkirchen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,240
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141895
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—351 **18 Claims**

1. A method of locating a trailing end of an elongated flexible strip having a leader affixed to a trailing end of an elongated flexible web of photosensitive material which is wound onto a rotary carrier separably connected to the trailing end of the strip, comprising the steps of unwinding successive increments of the web from the carrier and advancing the unwound increments along a predetermined path; positioning next to a predetermined portion of said path a signal generating monitoring device which is activatable to detect the trailing end of the strip; and activating the monitoring device upon advancement of the leader of the strip at least into said portion of said path.

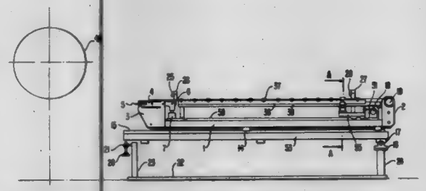


5,292,398

APPARATUS FOR JOINING A TREAD IN A MACHINE FOR MAKING A TIRE

Yoshinori Miyamoto; Jiro Agawa, and Hidemasa Sato, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 612,142, Nov. 13, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,238
Claims priority, application Japan, Nov. 13, 1989, 1-292418; Aug. 6, 1990, 2-206733
Int. Cl.[5] B29D *30/30*
U.S. Cl. 156—405.1 **9 Claims**



1. Apparatus for joining opposite ends of a tread in a tire making machine, said apparatus comprising:

a rotatable drum around which a tread is to be wrapped in the apparatus;

a conveyor upstream of said drum in the apparatus, said conveyor including two lateral endless loops and a guide interposed between said loops so as to maintain a tread placed on the endless loops of the conveyor in position relative to the conveyor;

clamping means for clamping opposite sides of a tread placed on the conveyor to said lateral endless loops of the conveyor, respectively;

a drive motor connected to the endless loops of said conveyor so as to drive said loops; and

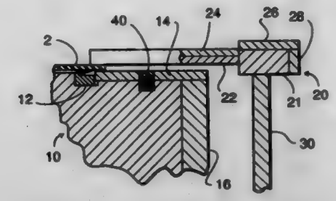
a carrier on which said clamping means is supported, said carrier being movable in the apparatus in the longitudinal direction of said conveyor such that when said clamping means clamps opposite sides of a tread placed on the conveyor to said endless loops and said endless loops are driven by said drive motor, said carrier and the clamping means mounted thereto are moved in the longitudinal direction of the conveyor.

5,292,399

PLASMA ETCHING APPARATUS WITH CONDUCTIVE MEANS FOR INHIBITING ARCING

Terrance Y. Lee, Oakland; Fred C. Redeker; Petru N. Nitescu, both of Fremont; Robert J. Steger, San Jose; David W. Groechel, Sunnyvale; Semyon Sherstinsky, San Francisco; Maya Sheadon, San Carlos, and Samuel Luong, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 513,341, Apr. 19, 1990, abandoned. This application Jan. 8, 1992, Ser. No. 819,573
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **33 Claims**



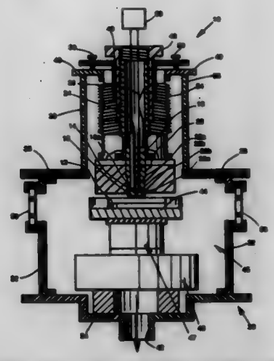
1. A method for plasma etching a semiconductor wafer without damaging said wafer by arcing from charge buildup on one or more insulation surfaces adjacent said wafer which comprises etching said wafer in a plasma etching apparatus having a plurality of conductive plug means for inhibiting arcing from electrical charges on said one or more insulation members which are located on metal members at rf potential within said apparatus, said conductive plug means extending through said one or more insulation surfaces to said metal members.

5,292,400

METHOD AND APPARATUS FOR PRODUCING VARIABLE SPATIAL FREQUENCY CONTROL IN PLASMA ASSISTED CHEMICAL ETCHING

Peter B. Mumola, Huntington, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 23, 1992, Ser. No. 854,718
Int. Cl.[5] B44C *1/22*; H01L *21/306*; C03C *15/00*
U.S. Cl. 156—643 **17 Claims**



15. A method for local precision figuring, flattening or smoothing of a substrate or film with a plasma assisted chemical etching apparatus having a plurality of plasma chambers comprising the steps of:

mounting an etchable substrate surface to an electrode;

selecting a plasma chamber for performing plasma assisted chemical etching;

positioning said preselected plasma chamber over a spot on the surface of the substrate, the precise position of the chamber dictated by the etching profile desired;

feeding a process gas stream into a feed inlet of an rf driven gas diffuser/electrode within said preselected plasma chamber;

applying rf power to an electrode within said preselected the plasma chamber to create an rf electric field within the preselected plasma chamber for decomposing the process gas into a plasma; and

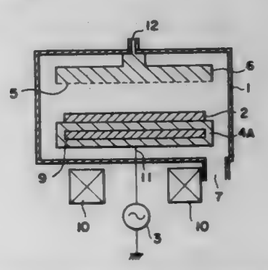
controlling the area of etching and the profile of etching by relative movement between the substrate and said preselected plasma chamber.

5,292,401

METHOD OF FORMING A FINE PATTERN

Masahiro Yoneda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 865,648, Apr. 10, 1992, Pat. No. 5,228,940, which is a continuation of Ser. No. 644,574, Jan. 23, 1991. This application Apr. 8, 1993, Ser. No. 44,009
Claims priority, application Japan, Oct. 3, 1990, 2-263872
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **9 Claims**



1. A fine pattern forming method comprising the steps of:

placing a sample on which a fine pattern is to be formed on a stage in a vacuum chamber;

evacuating the interior of said vacuum chamber to achieve a predetermined degree of vacuum;

supplying a reactive gas into said vacuum chamber;

applying a magnetic field to levitate one of said stage and an opposed electrode located in said vacuum chamber to maintain a predetermined gap between said stage and said opposed electrode; and

generating a plasma of said reactive gas within said vacuum chamber by said stage and said opposed electrode, thereby forming a fine pattern in said sample.

5,292,402

MASKING MATERIAL FOR APPLICATIONS IN PLASMA ETCHING

Norman E. Abt, Burlingame, and Sheldon Aronowitz, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 9, 1992, Ser. No. 910,951
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—659.1 **9 Claims**

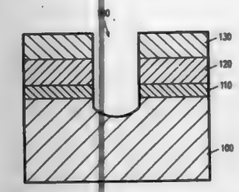
1. A method for etching a body using a fluorine or chlorine-based plasma etch, comprising the steps of:

forming a first layer of material selected from the lead perovskite family over the body;

forming a patterned masking layer over the first layer;

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forming a patterned first layer by etching the first layer through the masking layer; and



etching the body through the patterned first layer using a fluorine or chlorine-based plasma.

5,292,403

METHOD FOR INHIBITING THE DEPOSITION OF ORGANIC CONTAMINANTS IN PULP AND PAPERMAKING PROCESSES

David D. Dreisbach, and Mark E. Laurint, both of Jacksonville, Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Filed Mar. 10, 1993, Ser. No. 29,209
Int. Cl.[5] D21H *17/72*
U.S. Cl. 162—158 8 Claims

1. A method for inhibiting the deposition of organic contaminants in a pulp and papermaking system comprising adding to the system an effective amount for the purpose of a detackifying composition comprising an anionic polymer and cationic surfactant, wherein the anionic polymer is selected from the group consisting of carboxymethyl cellulose, carboxymethylated starch, xantham gum, guar gum and polyacrylic acid, the cationic surfactant is selected from the group consisting of alkyltrimethyl amine and alkyl imidazoline and the anionic surfactant is the sodium soap of tall oil fatty acid wherein the ratio, by weight, of charged polymer to oppositely charged surfactant is approximately 1 to 1.

5,292,404

PROCESS FOR TRASH REMOVAL OR PITCH-LIKE RESIN CONTROL IN THE PAPER MANUFACTURE

Hans-Georg Hartan, Kevelaer, and Alfons Landscheidt, Krefeld, both of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 479,306, Feb. 13, 1990, abandoned.
This application Mar. 27, 1992, Ser. No. 861,156
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3905049
Int. Cl.[5] D21H *17/55, 21/02*
U.S. Cl. 162—164.6 10 Claims

1. In the manufacture of paper wherein paper pulp is contacted with water and chemicals resulting in production of by-product trash comprising dissolved or colloidally dissolved anionic oligomers or polymers and non-ionic hydrocolloids, which trash is contained in the water, and the water is recycled, the method of preventing excessive build-up of the trash in the recycled water which comprises incorporating into the re-cycled water a polymer consisting essentially of

a) 50 to 100%-wt. quaternized dimethylaminopropylacrylamide or dimethylaminopropylmethacrylamide and

b) 0 to 50%-wt. acrylamide, acrylic acid, methacrylic acid, acrylamidomethylpropanesulfonic acid, or mixtures of these monomers,

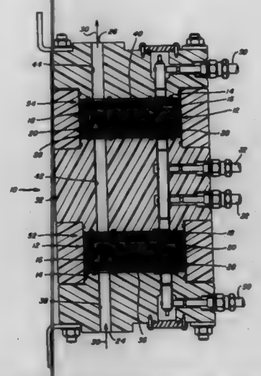
the polymer exhibiting an intrinsic viscosity of at most about 100 ml/g as determined in a 10 wt % NaCl solution.

5,292,405

ELECTROLYTIC CELL AND METHOD

Graham Wicks, Aberdeen, Scotland, assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 17, 1992, Ser. No. 900,051
Int. Cl.[5] C25B *1/00, 9/00, 15/08*
U.S. Cl. 204—1.11 20 Claims



20. A method of electrolysis comprising the steps of:

a. introducing an electrolyte into an electrolysis cell at an inlet port;

b. passing the electrolyte over a plurality of electrically energized electrodes arranged in a first electrode stack with an imposed charge thereon in a first polarity, the intrastack spacing between said electrodes being substantially equal;

c. passing the electrolyte through a conduit to a second electrode stack;

d. passing the electrolyte over a plurality of electrically energized electrodes arranged in a second electrode stack with an imposed charge thereon in the opposite polarity, the intrastack spacing between said electrodes being substantially equal, and the space between said first and second electrode stacks being substantially greater than the intrastack electrode spacing of each of said stacks; and

e. discharging the electrolyte from the electrolysis cell at a discharge port downstream of the second electrode stack.

5,292,406

PROCESS FOR ELECTROLYTIC PRODUCTION OF ALKALI METAL CHLORATE AND AUXILIARY CHEMICALS

Johan Wanngard, Linjeviigen, Sweden; Arne Carlsson, Columbus, Miss., and Jan E. Bäckström, Nödinge, Sweden, assignors to Eka Nobel AB, Bohus, Sweden

Filed Feb. 5, 1992, Ser. No. 831,544
Claims priority, application Sweden, Feb. 5, 1991, 9100365-7
Int. Cl.[5] C25B *1/24*
U.S. Cl. 204—95 11 Claims

1. A process for the production of alkali metal chlorate by electrolysis, comprising the steps of:

(a) obtaining purified alkali metal chloride by purification of technical grade alkali metal chloride in at least one ion-exchange step;

(b) obtaining an aqueous solution comprising a first portion of the purified alkali metal chloride from step (a) and water, said aqueous solution forming a first alkali metal chloride electrolyte;

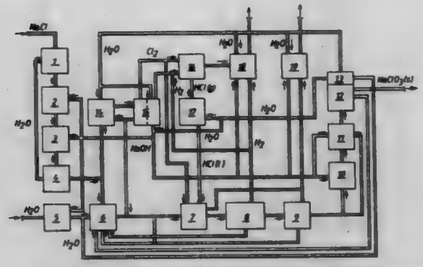
(c) electrolyzing the first alkali metal chloride electrolyte from step (b), thereby forming alkali metal chlorate in the electrolyte;

(d) alkalizing a portion of the chlorate in the electrolyte obtained from step (c);

(e) evaporation the water from the alkalized electrolyte from step (d) in a crystallizer, to thereby precipitate alkali metal chlorate and form a mother liquor;

(f) condensing the water evaporated in step (e) in an indirect condenser;

(g) combining a first portion of the condensed water from step (f) and a second portion of the purified alkali metal



chloride from step (a) to form a substantially chlorate free second alkali metal chloride electrolyte;

(h) electrolyzing the second alkali metal chloride electrolytic from step (g) to form alkali metal hydroxide;

(i) using at least a portion of the alkali metal hydroxide from step (h) for alkalization in step (d); and

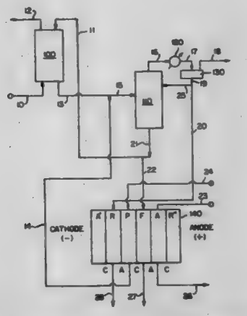
(j) using the mother liquor separated in step (e) and a second portion of the condensed water from step (f) for obtaining the aqueous solution in step (b).

5,292,407

PROCESS FOR CONVERTING HEAT STABLE AMINE SALTS TO HEAT REGENERABLE AMINE SALTS

Veronique Roy, Laval; Leo E. Hakka, Dollard des Ormeaux, and Jean I. Sarlis, Laval, all of Canada, assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 18, 1992, Ser. No. 993,015
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—101 18 Claims



1. A process for converting heat stable amine salts to heat regenerable amine salts which comprises:

(a) passing a feedstream comprising an amine in salt form having heat stable anions associated therewith to an electrodialysis zone having a cathode compartment, an anode compartment and at least one repeat unit comprising a reflux compartment disposed between the cathode compartment and the anode compartment, a product compartment disposed between the reflux compartment and the anode compartment, a feed compartment disposed between the product compartment and the anode compartment, and an acid compartment disposed between the feed compartment and the anode compartment, said feed stream being passed to the feed compartment;

(b) passing a reflux stream comprising a salt or acid of a heat regenerable anion to the reflux compartment;

(c) passing a direct current potential transversely across each compartment, said current being effective to cause: (1) amine cations to dissociated from the heat stable amine salts in the feed compartment and pass into the product compartment; (2) heat regenerable anions to dissociate from the salt or acid in the reflux compartment and pass into the product compartment; and (3) heat stable anions to dissociate from the heat stable amine salts in the feed compartment and pass into the acid compartment; and

(d) discharging from the product compartment a product stream comprising an amine in salt form having regenerable anions associated therewith.

5,292,408

PITCH-BASED HIGH-MODULUS CARBON FIBERS AND METHOD OF PRODUCING SAME

Eiji Tanigawa, Izumiotsu; Takemi Nakamura, Kyoto, and Takayuki Mine, Nara, all of Japan, assignors to Osaka Gas Company Limited and Dainippon Ink and Chemicals, Incorporated, both of Japan

Continuation of Ser. No. 540,164, Jun. 19, 1990, abandoned.
This application Jul. 25, 1991, Ser. No. 737,608
Int. Cl.[5] D01F *11/10*
U.S. Cl. 204—129.1 7 Claims

1. In the process of producing optically anisotropic pitch-based carbon fibers which comprises spinning a spinnable pitch containing an optically anisotropic component, treating the resulting pitch fibers to render the fibers infusible, and carbonizing same, the improvement comprising producing carbon fibers having higher modulus than the carbon fibers obtained in said process by removing the surface layer of low modulus of elasticity from the carbon fibers obtained in the said process.

5,292,409

CATHODE AND PROCESS FOR DEGRADING HALOGENATED CARBON COMPOUNDS IN AQUEOUS SOLVENTS

Brian G. Dixon, Sandwich, and Leah J. Bialic, Walpole, both of Mass., assignors to Cape Cod Research, Inc., East Falmouth, Mass.

Continuation-in-part of Ser. No. 506,798, Apr. 10, 1990, abandoned. This application Dec. 12, 1991, Ser. No. 806,779
Int. Cl.[5] C25F *5/00*
U.S. Cl. 204—130 11 Claims

1. In a process for degrading wastes comprising one or more halogenated carbon compounds by the steps of providing an electrolyte cell comprising an anode, a cathode, and a source of oxygen, and impressing a voltage across said anode and cathode sufficient to reduce said oxygen at said cathode to superoxide ion, wherein the improvement comprises degrading said halogenated carbon compounds in an electrolyte comprising by volume from about 1 to 99 percent water by contacting said electrolyte with said cathode which consists essentially of an electrically conducting substrate and a heterogeneous coating said coating of which completely covers the surface of said substrate comprising two coats a and b, coat a is in contact with said substrate and containing superoxide catalyst and coat b is in contact with the electrolyte and with covering power for coat a and comprising ion exchange material.

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5,292,410

METHOD FOR CONVERSION OF CELLULOSIC AGRICULTURAL WASTES IMPROVING DIGESTIBILITY OF GRAINS FOR LIVESTOCK FEED

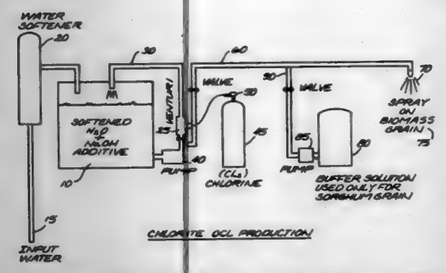
Charles T. Sweeney, 4421 88th St., Lubbock, Tex. 79427

Continuation-in-part of Ser. No. 885,431, May 18, 1992, which is a continuation-in-part of Ser. No. 593,028, Oct. 5, 1990, Pat. No. 5,118,397, and a continuation-in-part of Ser. No. 808,223, Dec. 16, 1991. This application Jul. 7, 1992, Ser. No. 909,726

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] A23K *1/00*

U.S. Cl. 204—131 15 Claims



1. A method for treating feed materials from the class of feed grains and cellulosic wastes to increase their digestibility by ruminants, which comprises preparing an aqueous solution of chlorites, having a chlorite normality of about 0.02–0.03 and pH above about 8.5 and treating the feed materials with 5–15% by weight of said feed materials of said solution for a time sufficient to convert the feed materials to a more highly digestible state.

5,292,411

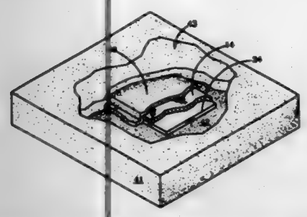
METHOD AND APPARATUS FOR CATHODICALLY PROTECTING REINFORCED CONCRETE STRUCTURES

John J. Bartholomew, Mentor; John E. Bennett, Chardon; Barry L. Martin, Concord, and Thomas A. Mitchell, Mentor, all of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 580,033, Sep. 7, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,913

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 12 Claims



1. A method of patching an eroded area, such as a pothole, within the surface of a reinforced concrete structure, which method comprises:

(a) initiating said patching by removing old concrete from the eroded area to prepare said area for patching;

(b) inserting within the resulting prepared area for patching a cathodic protection anode assembly comprising a metal anode having ionically conductive hydrogel adhered to said anode, said hydrogel of said assembly being also adhered to the concrete of the prepared area;

(c) applying Type III cement to cover said anode assembly within said area for patching; and

(d) connecting the metal anode of said assembly in electrical connection to the reinforcement of said concrete structure.

5,292,412

REMOVAL OF MERCURY FROM WASTE STREAMS

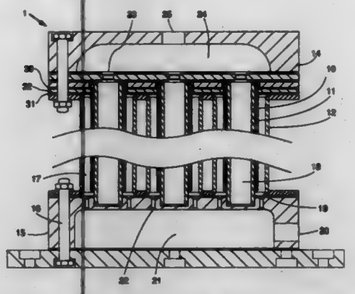
Oscar A. Pitton, Geneva, Switzerland, assignor to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Apr. 10, 1991, Ser. No. 683,010

Claims priority, application European Pat. Off., Apr. 12, 1990, 90810297.3

Int. Cl.[5] C02F *1/461*

U.S. Cl. 204—149 33 Claims



1. A method of purifying a waste stream solution contaminated with mercury by flowing the stream through at least one electrolytic cell provided with an anode and a cathode having a surface made of tin, copper, silver or alloys thereof including alloys with gold, zinc, iron, gallium, aluminum and sodium as alloying element(s), which method comprises:

(a) introducing the solution into at least one cell having a cylindrical microporous, high surface area cathode body of sintered metal or foam metal through which a solution can pass;

(b) passing the solution through the body of the cylindrical microporous cathode of said cell;

(c) sweeping the cathode body microporous surfaces with solution to reduce or prevent unwanted deposits;

(d) passing solution through unseparated anolyte and catholyte compartments of said cell so that the anolyte from one cell passes into the catholyte compartment of the same cell or of another cell; and

(e) removing deposits from the microporous surfaces of the cathode body by flowing a cleaning fluid through the microporous body counter-current to the flow of said solution.

5,292,413

CATHOLYTE FOR THE KARL FISCHER COULOMETRIC WATER DETERMINATION

Eugen Scholz, Garbsen, Fed. Rep. of Germany, assignor to Riedel-De Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 909,155

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4123976

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.22 10 Claims

1. Catholyte for the Karl Fischer coulometric water determination comprising a solution of one or more salts of an organic nitrogen base and acid in a non-halogenated solvent and being essentially free of sulphur dioxide.

5,292,414

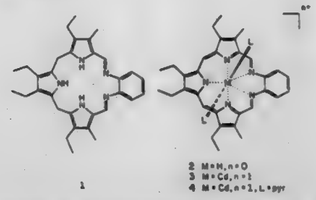
EXPANDED PORPHYRINS: LARGE PORPHYRIN-LIKE TRIPYRROLEDIMETHINE-DERIVED MACROCYCLES FOR SINGLET OXYGEN PRODUCTION

Jonathan L. Sessler, Austin, Tex.; Murai Toshiaki, Gifu, Japan, and Gregory W. Hemmi, Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 771,393, Sep. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,975, Jun. 18, 1990, Pat. No. 5,162,509, which is a division of Ser. No. 320,293, Mar. 6, 1989, Pat. No. 4,935,498. This application Apr. 20, 1992, Ser. No. 871,357

Int. Cl.[5] C01B *13/00*

U.S. Cl. 204—157.5 12 Claims



8. A method of photosensitization comprising the production of light-induced singlet oxygen using an aromatic pentadentate expanded porphyrin analog metal complex having an absorption range from about 730 to about 770 nanometers and forming long-lived triplet states in high yield.

5,292,415

CHLORO-TERMINATED POLYSILANE AND PROCESS FOR MAKING

Shigeru Mori; Eiichi Tabei, and Hisashi Umehara, all of Kawasaki, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,487

Claims priority, application Japan, Jan. 21, 1992, 4-30103; Mar. 27, 1992, 4-101804

Int. Cl.[5] C07F *7/08*; C07B *9/00*

U.S. Cl. 204—157.64 10 Claims

1. A process for preparing a chloro-terminated polysilane comprising the step of exposing a chlorinated hydrocarbon solution of a high molecular weight polysilane to ultraviolet radiation in an inert gas atmosphere.

5,292,416

PULSED-FIELD SEPARATION OF POLYSACCHARIDES IN CAPILLARIES

Milos V. Novotny, and Jan Sudor, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Nov. 13, 1992, Ser. No. 975,314

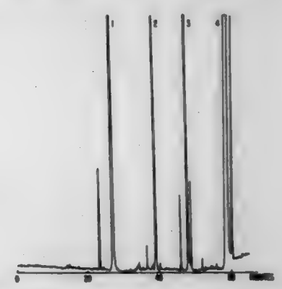
Int. Cl.[5] C25B *7/00*

U.S. Cl. 204—182.8 20 Claims

1. A method for the separation of a mixture of polysaccharides in a sample, comprising:

(a) drawing said sample into a capillary through one end thereof defined as a sample introduction end, said capillary filled with an electrophoretic separation medium; and

(b) imposing through said capillary an electric field in the direction away from said sample introduction end, said direction being defined as the forward direction, for time intervals defined as forward field time intervals, separated by intervening time intervals during which no electric field is imposed in said forward direction, the field strength of said electric field and the duration of said forward field and intervening time intervals being selected to cause electrophoretic migration of individual polysaccharides through said capillary in said forward direction



at differing rates corresponding to the molecular weights of said polysaccharides.

5,292,417

METHOD FOR REACTIVE SPUTTER COATING AT LEAST ONE ARTICLE

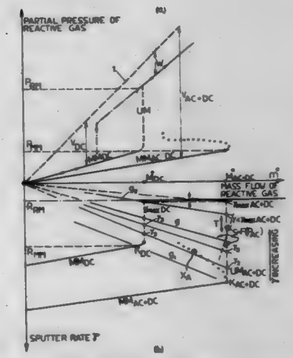
Eduard Kügler, Feldkirch-Tisis, Austria, assignor to Balzers Aktiengesellschaft, Liechtenstein, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,116

Claims priority, application Switzerland, Apr. 12, 1991, 1095/91-1

Int. Cl.[5] C23C *14/54*

U.S. Cl. 204—192.13 32 Claims



1. A method for coating at least one workpiece with at least one layer, comprising the steps of:

providing a target of ohmically conductive material and a workpiece within a vacuum treatment chamber,

generating within said chamber a glow discharge by electrically supplying said target with a direct current signal and, superimposed thereon, an alternating current signal, said alternating current signal being selected so that its frequency spectrum is between 50 Hz and 250 kHz, both inclusively,

sputtering said target within said glow discharge,

reacting particles sputtered off said target in a space between said target and said workpiece with a reactive gas,

depositing the reaction product of said reaction of said particles with said reactive gas on said workpiece,

operating said sputtering and said deposition only in an unstable transition mode between a metallic and a reactive mode,

whereby said reacted sputtered particles are deposited on

said workpiece to form a layer of lower conductivity than said material of said target.

4. The method according to claim 1, further comprising the step of stabilizing said coating process by negative feedback control to maintain operation in said unstable transition mode.

5,292,418

LOCAL LASER PLATING APPARATUS

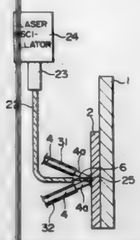
Takeshi Morita; Minoru Fujita; Masatoshi Sunamoto; Osamu Hayashi, and Susumu Hoshinouchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,950

Claims priority, application Japan, Mar. 8, 1991, 3-043427; Mar. 8, 1991, 3-043428

Int. Cl.[5] C25D *17/00*; B05B *5/00*; B05D *3/06*

U.S. Cl. 204—224 R **5 Claims**



1. An apparatus for locally plating a material, said apparatus comprising:

a plurality of convergingly oriented nozzles for individually applying jets of plating solution to a site on said material to be plated such that the jets converge at the site;

laser beam generation means for generating a laser beam; and

an optical fiber for introducing the laser beam generated by said laser beam generation means to a vicinity of the site to be plated to directly irradiate the vicinity of the site with the laser beam, wherein the optical fiber is disposed exteriorly of said nozzles with a beam exit end thereof positioned proximate and perpendicular to the material such that the laser beam can irradiate said site independently of said nozzles.

5,292,419

SPUTTERING UNIT

Gerhard Moses, Hanau; Klaus Michael, Gelnhausen; Ulrich Patz, Linsengericht, and Michael Scherer, Rodenbach, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 684,666, Apr. 12, 1991, abandoned. This application Mar. 24, 1992, Ser. No. 856,880

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040856

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.28 **12 Claims**

1. Sputtering unit comprising:

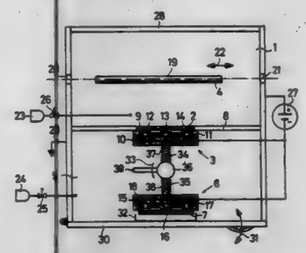
a) a working chamber (1) of a first predetermined volume including a substrate (4) to be treated by sputtered material;

b) a first target (2) to be sputtered and being arranged opposite to said substrate (4), said target being connected to a first electrode (3);

c) an antechamber (5) of a second predetermined volume including at least a second target (7), said second target being connected to a second electrode (6) and further including a door (30) for opening said antechamber (5), said door (30) being arranged opposite said second target (7) and away from said first target (2);

d) means (8) for separating said working chamber (1) from said antechamber (5) and said substrate (4), said separating means (8) having an opening therein and said first target (2) immerging into said opening, a distance between said separating means (8) and said door (30) being constant when said door is closed;

e) a third electrode (32) in said antechamber (5), said third



electrode being arranged opposite said second target (7) and being electrically connected to said door (30); and

f) means (34–39) for removing said first target (2) from said working chamber (1) and bringing said second target (7) to the place of said first target (2), said removing means comprising means for varying the distance between said first and second targets during their exchange.

5,292,420

TWO-DIMENSIONAL GEL ELECTROPHORESIS APPARATUS

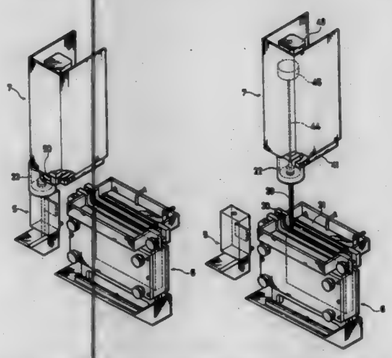
Shin Nakanura, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 17, 1992, Ser. No. 853,395

Claims priority, application Japan, Mar. 29, 1991, 3-93710

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—299 R **13 Claims**



1. A two-dimensional gel electrophoresis apparatus, comprising:

a first-dimensional gel housing storing a first-dimensional gel;

first-dimensional electrophoresis means for conducting a first-dimensional electrophoresis with said first-dimensional gel;

a second-dimensional gel housing storing a second-dimensional gel;

second-dimensional electrophoresis means for conducting a second-dimensional electrophoresis with said second-dimensional gel; and

gel transfer means for transferring said first-dimensional gel after being electrophoresed by said first-dimensional electrophoresis means from said first-dimensional gel housing to one end of said second-dimensional gel housing, said gel transfer means comprising:

a grasping mechanism for grasping said first-dimensional gel housing,

a moving mechanism for raising up a lower end of said first-dimensional gel housing to a position higher than an upper end of said second-dimensional gel housing and horizontally moving said first-dimensional gel housing longitudinally along the upper end of said second-dimensional gel, and

an extrusion mechanism for extruding said first-dimensional gel from said first-dimensional gel housing following said horizontal movement of said first-dimensional gel housing by said moving mechanism at the same speed as said horizontal movement.

5,292,421

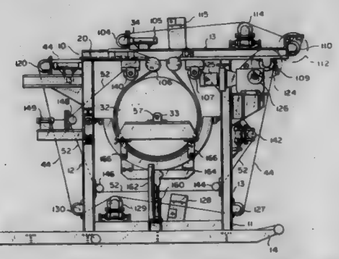
APPARATUS AND METHOD FOR REMOVAL OF LIQUIDS

Nagabhusan Senapati, 1188 Kilham Ct., Worthington, Ohio 43235; Harold W. Johnson, 4222 Cedar Valley, Kingwood, Tex. 77345; Byung C. Kim, 55 W. Livingston Ave., Apt. 307, Columbus, Ohio 43215; Satya P. Chauhan, 1073 Bluffpoint Dr., Columbus, Ohio 43235; Dennis A. Gamlen, 2315 Deer Meadow, Missouri City, Tex. 77459; Raju Eason, 11507 Gondola, Stafford, Tex. 77477; H. S. Muralidhara, 2660 Sawmill Forest Ave., Dublin, Ohio 40317, and Matthew S. Zelinski, 446 Colonial Ave., Worthington, Ohio 43085

Division of Ser. No. 400,296, Aug. 28, 1989, Pat. No. 5,114,560. This application Feb. 25, 1992, Ser. No. 841,095

Int. Cl.[5] B01D *57/02, 43/00*; C02F *1/469*

U.S. Cl. 204—300 R **6 Claims**



1. An apparatus for continuously removing liquid from a moist material which is advanced along a processing path, the apparatus comprising:

a support;

a first electrode arrangement coupled with said support, at least part of said first electrode arrangement being movable relative to said support;

a second electrode arrangement coupled with said support;

a movable transport element, at least part of which is disposed adjacent said second electrode arrangement, said transport element being movable relative to said support and in unison with at least the movable part of said first electrode arrangement, at least part of said transport element being liquid permeable;

a working space between said first electrode arrangement and said transport element, so that said movement of said part of said first electrode arrangement which is movable and said transport element in unison continuously advances the moist material along the processing path, said first and second electrodes providing an electrical potential between them in said working space to effect flow of electrical current through the moist material while in the working space; and

an acoustic transducer arrangement coupled with said support and disposed adjacent said working space for subjecting the moist material in said working space to an acoustic field concurrently with the moist material also being subjected to the electrical field;

whereby at least part of said first electrode continuously moves along with the moist material in the processing path while the material is subjected to both an electrical and acoustical field in a continuous process, thereby providing continuous movement of the moist material with little sliding motion between the moist material and the electrode arrangements; and

wherein said first electrode arrangement includes an anode roller and a first continuous, flexible belt which rides over the anode roller and which continuous belt is disposed between the anode roller and the working space, such that said first flexible belt contacts the moist material in said working space, said anode roller and said first continuous belt being movable relative to said support such that the entirety of the first electrode arrangement is movable relative to said support.

5,292,422

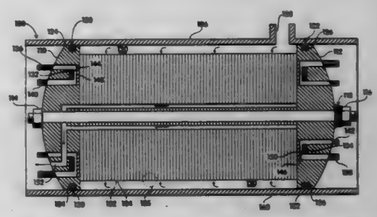
MODULES FOR ELECTRODEIONIZATION APPARATUS

Li-Shiang Liang, Berlin; Gary C. Ganzi, Lexington, and Frederick Wilkins, Pepperill, all of Mass., assignors to IP Holding Company, Wilmington, Del.

Filed Sep. 15, 1992, Ser. No. 945,151

Int. Cl.[5] B01D *63/00*

U.S. Cl. 204—301 **41 Claims**



1. A modular cell for use in an electrodeionization apparatus, the cell comprising an electrically inert disk-shaped spacer having a central hub and upper and lower surfaces, an anion permeable membrane disposed adjacent to one of said upper and lower surfaces and a cation permeable membrane disposed adjacent to the other of said upper and lower surfaces to thereby define a first compartment between said anion permeable and said cation permeable membranes, the periphery of the disk-shaped spacer having a process stream inlet and the central hub of the spacer including at least one transit channel isolated from the first compartment, the transit channel providing fluid communication at least with a second compartment positioned immediately adjacent to and isolated from said first compartment, the hub further including a process stream outlet constructed and arranged to provide fluid communication with at least one other compartment, said other compartment isolated from said first compartment and having at least one second compartment disposed between itself and the first compartment.

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5,292,423

METHOD AND APPARATUS FOR TRACE METAL TESTING

Joseph Wang, Las Cruces, assignor to New Mexico State University Technology Transfer Corp., Las Cruces, 5 03081994 ZZX None 46 1 1 Bell; Bruce F. Niebling; John 9 20

Continuation-in-part of Ser. No. 682,907, Apr. 9, 1991. This application Apr. 7, 1992, Ser. No. 864,942

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—434 **46 Claims**

1. A method of analyzing trace metals comprising the steps of:

a) providing a plurality of electrodes screen-printed on a substrate;

b) electrolytically depositing a metal film upon at least one of the plurality of screen-printed electrodes; and

c) analyzing a sample for heavy metal content by using electrochemical stripping analysis with the plurality of electrodes.

5,292,424

METHOD FOR CONTROLLING THE WORK CYCLE OF ELECTROPLATING PLANTS

Horst Blasing, Berlin; Manfred Maurer, Heideck, and Rolf Schroder, Burgthann, all of Fed. Rep. of Germany, assignors to Atotech Deutschland GmbH, Berlin, Fed. Rep. of Germany

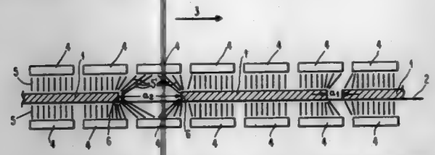
PCT No. PCT/DE90/00943, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/08327, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 30, 1990, Ser. No. 852,246

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939681

Int. Cl.[5] C25D *21/12, 19/00*

U.S. Cl. 205—82 **10 Claims**


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VOL 1160 ISS 2 MR 8 1994 UMI

5,292,430
OIL SPILL RECOVERY AND STORAGE SHIP

John L. Sullivan, Rossmoor; David B. Sucharski, Irvine, and Harry G. Kumpis, Fountain Valley, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 798,469, Nov. 26, 1991. This application Mar. 3, 1993, Ser. No. 25,911
Int. Cl.[5] B01D *17/02, 17/12*
U.S. Cl. 210—121 8 Claims



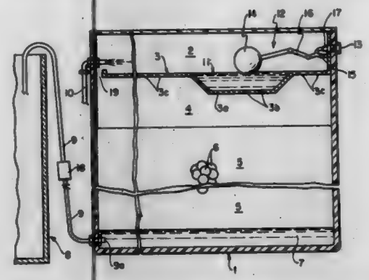
1. A seagoing oil recovery and storage ship for recovering relatively large quantities of oil or a similar pollutant disposed on the surface of the sea, said ship comprising:
- a hull including a bow, and a stern, and opposed longitudinal sides;
- means defining an opening in each of said sides of said hull at predetermined points between said bow and said stern;
- means forming respective oil and water-receiving compartments adjacent said openings for receiving oil and water on or near the surface of the sea;
- respective oil-gathering boom means connected to said ship for gathering oil to flow through said openings;
- means for connecting one end of each of said boom means to said ship comprising a generally vertically extending guideway on each of said sides of said ship adjacent said opening;
- buoyant car means disposed to float on the surface of the sea and for movement along said guideway as the draft of said ship changes relative to the surface of the sea, said buoyant car means being connected to said one end of said boom means, respectively; and
- moveable outrigger means respectively connected at one end to said ship and to the opposite ends of each of said boom means at respective points spaced from said one end of said outrigger means, respectively, and spaced longitudinally from said openings with respect to the length of said ship, for deploying said opposite ends of each of said boom means at a point spaced from said sides of said ship, respectively.

5,292,431
PRESSURIZED PERCOLATING FILTER OF THE TYPE USED FOR THE REGENERATION OF WATER IN AQUARIUMS

Silvestro Romagnoli, Via Nomentana, 322 - I-00141, Roma, Italy

Filed Dec. 21, 1992, Ser. No. 994,323
Claims priority, application Italy, Jan. 20, 1992, RM92 A 000041
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—127 7 Claims

1. A pressurized percolating filter for use in regeneration of water in aquariums, comprising in a closed receptacle from top to bottom a prefiltering chamber with a perforated bottom, an intermediate chamber, a percolation chamber filled with a percolation material for settling of bacterial colonies, the intermediate chamber being arranged between said prefiltering chamber and said percolation chamber, a collection chamber for collecting regenerated water, a feed pipe for communicating said collection chamber with an aquarium tank; an inflow opening for admitting air from the outside; pump means for feeding said prefiltering chamber through a single leader pipe from outside with a mixture of air and water to be regenerated, said perforated bottom having a lower portion in a shape of a tub at an elevation which is lower than a remaining portion of said perforated bottom, said lower portion having a smaller number of calibrated holes than that in said remaining portion of said perforated bottom; and a float valve for opening and closing said inflow opening for air admission from the outside

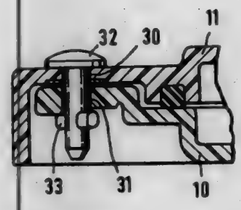


by actuating in response to a level of water in said lower portion, said float valve closing said inflow opening in response to said percolator filter being in operation.

5,292,432
FILTER FOR FLUIDS

Herbert Jainek, Heilbronn, and Michael Wolf, Gaeufelden, both of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,544
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141823
Int. Cl.[5] B01D *35/30, 27/08;* F01M *11/03*
U.S. Cl. 210—168 7 Claims

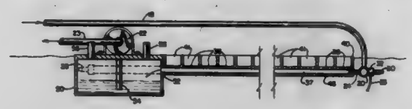


1. A fluid filter comprising:
- top and bottom housing parts,
- a raw fluid inlet disposed on one of said parts and an outlet disposed on the other of said parts,
- a filter element disposed within and between said housing parts,
- peripheral sealing means positioned between said housing parts for sealing the same when assembled, and
- fastener means for releasably secure said housing parts together,
- wherein said filter element is configured as a bag and said top and bottom housing parts are provided at the circumferential sealing margins thereof with bores, said bores being aligned with one another, and said fastener means consist of catch pins inserted into the bores for removably assembling said parts,
- wherein said aligned bores are configured as elongated holes and at least one said catch pin has a cross pin adapted to be inserted into said elongated holes and at least one of said top and bottom parts has a inclined plane means with a recess, adjacent the bore in said at least one of said top and bottom housing parts for releasable securing said cross pin after being inserted through the aligned bore said catch pin is rotated by a quarter turn to disalign the cross pin with the elongated hole and move the cross pin up the inclined plane means and into the recess to thereby secure said housing parts together, the catch pin being rotatable to an open position to allow separation of the housing parts.

5,292,433
METHOD AND APPARATUS FOR RECOVERING OIL SPILL

Gerald L. Fletcher, and Gregory T. Fletcher, both of P.O. Box 4978 JKTM, Jakarta 12049, Indonesia

Filed Aug. 4, 1992, Ser. No. 926,053
Int. Cl.[5] L02B *15/04*
U.S. Cl. 210—170 14 Claims

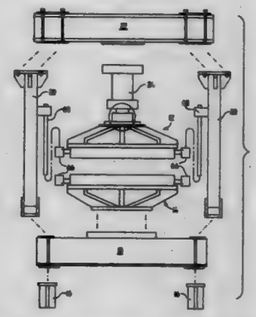


1. In an oil spill recovery system for collecting oil spill contaminants from the surface of a body of water wherein a host vessel is provided with a source of air under pressure, the combination therewith comprising:
- a buoyant suction blanket in the form of a flexible, elongated sheet member having opposed upper and lower surface portions and a plurality of conduits extending through said blanket between said upper and lower surface portions, and suction ports at spaced intervals along said conduits for extension behind said vessel between an associated one of said conduits and at least one of said upper and lower surface portions, said blanket having a continuous series of depressions in closely spaced relation to one another formed in at least one of said upper and lower surface portion and said ports communicating with said depressions in said one surface portion;
- means for towing said blanket behind said vessel;
- air intake and exhaust means cooperating with said conduits to induce the flow of water and any oil spill accumulating on said one surface portion through said ports into said conduits as said blanket is being towed; and
- means for collecting said water and contaminants from said conduits.

5,292,434
FILTER APPARATUS AND METHOD USING BELT FILTER MEDIUM

Steve C. Benesi, 611 McClay Rd., Novato, Calif. 94947

Filed Apr. 7, 1992, Ser. No. 864,524
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—770 27 Claims

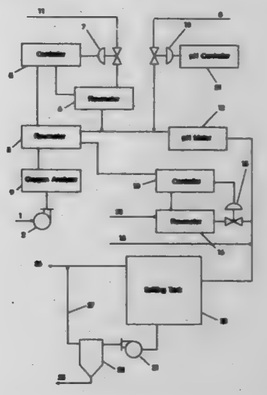


17. A method for separating solid materials from liquid materials in a fluid slurry material employing a filter apparatus having separable chamber plate members with mating peripheral sidewalls and a belt filter medium positionable between said chamber plate members at said peripheral sidewalls and within said chamber created by said chamber plate members, said sidewalls having internal grooves along their mating perimeter faces, said internal grooves being adapted to be separately pressurized, the steps comprising:
- a) positioning said belt filter medium within said chamber plate members and between said perimeter faces, guiding said chamber plate members to align said internal grooves in said mating perimeter faces, and closing said plate members against each other under pressure to seal said chamber and said internal grooves in said perimeter faces,
- b) applying a pressurized gas to said internal grooves of said sidewalls so as to create a differential pressure between the groove in one of said separable chamber plate members with respect to the pressure in the groove of the other of said separable plate members,
- c) filling said chamber with said fluid slurry material,
- d) interrupting said filling with said fluid slurry material and applying a pressurized fluid to said filter chamber while said fluid slurry material is in said chamber to force fluids from said fluid slurry material while retaining solid materials of said fluid slurry material within said chamber and on said belt filter medium,
- e) removing said pressurized gas from said sidewall internal grooves and removing said pressurized fluid from said filter chamber, and separating said chamber plate members to open said filter chamber,
- f) moving said belt filter medium from between said separated filter plate members to remove said retained solid materials from said filter apparatus, removing said retained solid materials from said belt filter medium, and
- g) repeating steps a) through f).

5,292,435
EQUIPMENT AND PROCESS FOR SOLID WASTE MINIMIZATION IN CHROMIUM AND HEAVY METAL REMOVAL FROM GROUNDWATER

Klaus Schwitzgebel, 7507 Chimney Corners, Austin, Tex. 78731

Filed Sep. 28, 1992, Ser. No. 952,063
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—712 4 Claims



1. A process for removing chromium and other heavy metals including cobalt, nickel, zinc, cadmium, manganese, copper, and lead, from groundwater comprising:
- a) pumping and measuring a flow of groundwater to a solid separator means;
- b) sampling, determining the concentration of chromium VI and oxygen and adding approximately twice the theoreti-

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cal quantity of an alkali sulfite necessary to form alkali sulfate from said oxygen in said groundwater, said addition being upstream of said solids separator means;

c) adding an alkali to adjust pH of said flow to a minimum of 7.5 and a maximum of about 11 downstream of said alkali sulfite addition and upstream of said solid separator means;

d) adding approximately twice the theoretically necessary quantity of a ferrous salt to said flow to reduce said chromium VI to chromium III to thereby coprecipitate chromium III and said other heavy metals as hydroxides upstream of said solids separator and downstream of said alkali sulfite addition;

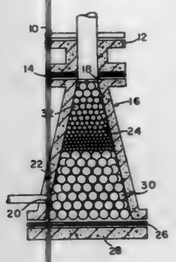
e) recycling liquid containing less than one ppm of each of said heavy metals and removing solids from said solids separator means.

5,292,436

TAPERED BED FILTRATION APPARATUS

Alexander P. Mathews, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed May 13, 1992, Ser. No. 882,516
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—275 10 Claims



1. A filter apparatus comprising:

an upright casing defining an inlet and an outlet, and having upper and lower ends and a peripheral wall extending between the inlet and outlet, the peripheral wall defining a filtration chamber having a longitudinal axis and a transverse cross-sectional area which increases between the inlet and the outlet;

a bed of particulate filtering media within the chamber and including at least one layer of media having a specified, common density, the media within said at least one layer ranging in size between relatively large particles and relatively small particles, the media within said at least one layer being distributed by particle size within the chamber, with the large particles being disposed closer to said inlet and with smaller particles being disposed closer to the outlet so that the particle size of the media of said at least one layer in the chamber decreases from the inlet toward the outlet while the transverse cross-sectional area of the chamber increases; and

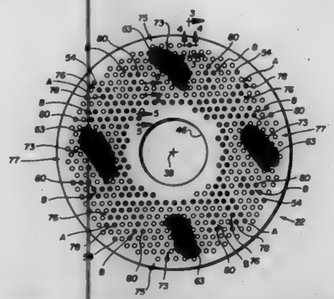
fluid delivery means operably coupled with said casing for delivery of unfiltered fluid to said inlet for passage of unfiltered fluid from the inlet to the outlet through said chamber in order to filter the initially unfiltered fluid, and for alternate delivery of backwashing fluid to the lower end of said chamber for passage of backwashing fluid upwardly through the chamber in order to fluidize the bed of particulate filtering media for cleaning thereof.

5,292,437

MULTILAYER FRUSTOCONICAL FILTER STRUCTURE

David F. Ford, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Sep. 21, 1992, Ser. No. 947,466
Int. Cl.[5] B01D *27/04, 29/13*
U.S. Cl. 210—478 12 Claims



1. A reusable multilayer filter for use with a beverage brewing apparatus, said multilayer filter comprising:

a frustoconical foraminous support layer having an inside surface and an outside surface and a multiplicity of spaced apart bores extending therethrough;

a porous mesh layer attached to said inside surface of said frustoconical foraminous support layer, said porous mesh layer having a multiplicity of pores extending from a first side of said mesh layer therethrough to a second side of said mesh layer, said pores in said porous mesh layer having a smaller diameter than said bores in said frustoconical foraminous support layer for retaining material having dimensions larger than the diameter of said pores

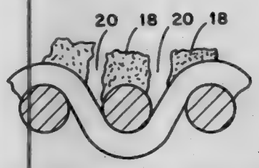
a multiplicity of dimples in said porous mesh layer, each said dimples being disposed within a corresponding area defined on said inside surface of said frustoconical foraminous support layer by a perimeter of a corresponding one of said bores of said foraminous support layer, said dimples projecting into said corresponding one of said bores, said dimples increasing the effective internal surface area of said reusable multilayer filter.

5,292,438

FILTRATION MEDIUM INCLUDING UNIFORMLY POROUS PLANAR SUBSTRATE AND UNIFORMLY SPACED APART THERMOPLASTIC RESIN

Charles A. Lee, Knoxville, Tenn., assignor to Cer-Wat, Inc., Knoxville, Tenn.

Filed Aug. 28, 1992, Ser. No. 937,988
Int. Cl.[5] B01D *39/16*
U.S. Cl. 210—504 7 Claims



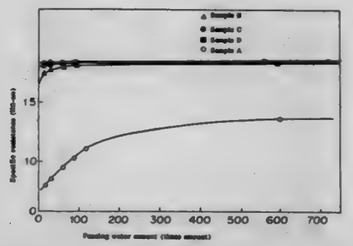
1. A filtration medium comprising a planar porous substrate means having first and second substantially planar opposite surfaces and which provides support for the medium and further defines a plurality of substantially uniformly sized open passageways between said opposite surfaces to define the gross filtration capacity of the medium, and a layer of discrete and substantially uniformly spaced-apart thermoplastic resin particulates of substantially uniform particle size overlaid on one of said surfaces of said substrate, said resin particulates being bonded at spaced apart locations to said substrate, the particle size of the particulates of said resin particulates being selected to controllably define structured open passageways through the layer of resin particulates and prevent their ready passage through the open passageways of said substrate means prior to their being bonded to said substrate.

5,292,439

METHOD FOR PREPARING ULTRAPURE WATER

Takamitsu Morita, Yokohama; Junya Watanabe, Tokyo, and Toyokazu Sugawara, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,389
Claims priority, application Japan, Nov. 22, 1990, 2-318286
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—638 49 Claims



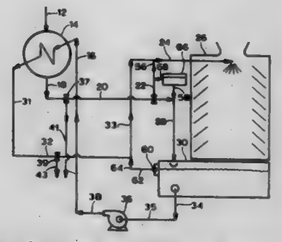
1. A method for preparing ultrapure water, including removing impurities including inorganic salts, organic substances, fine particles and microorganisms, comprising flowing water to be purified through an ion exchange resin containing a copolymer comprising a polyvinyl compound and a monovinyl aromatic compound as a matrix, said ion exchange resin further comprising a regenerated form ion exchange resin eluting an organic compound of a molecular weight of less than 3,000 but substantially not eluting an organic compound of a molecular weight of not less than 3,000 when dipped in a hot water at 50° C. for 7 days.

5,292,440

REMOVAL OF HYDROGEN SULFIDE FROM SOUR WATER WITHOUT LOSS OF HEAVY METAL

Leslie C. Hardison, Barrington, Ill., assignor to Ari Technologies, Inc., Palatine, Ill.

Filed Aug. 24, 1992, Ser. No. 934,575
Int. Cl.[5] C02F *1/74*
U.S. Cl. 210—712 12 Claims



1. A process for removing H_2S from an aqueous condensate containing dissolved H_2S which comprises:

including with the condensate a chelated polyvalent metal catalyst in an amount sufficient to oxidize the dissolved H_2S to sulfur;

introducing the condensate containing the catalyst to a cooling tower from which it flows downwardly against an upward flow of air to cool and oxygenate the condensate and evaporate a portion of the condensate;

forming a recycle liquid in the cooling tower comprising cooled and oxygenated condensate;

collecting the recycle liquid in a water collection basin;

recycling the recycled liquid for reuse;

periodically removing and discarding from the process about 1% to about 10% of the recycle liquid after heat exchange with and condensation of a vaporized liquid containing H_2S, but before the recycle liquid is recycled to the cooling tower;

adding a chelated polyvalent metal to the condensate in an amount equal to the amount of recycle liquid removed and discarded from the process; and

periodically or continuously adding a chelon, without polyvalent metal, to the condensate in an amount greater than the amount of polyvalent metal added to the condensate, and in an amount sufficient to maintain the polyvalent metal catalyst sufficiently active to oxidize the dissolved H_2S and provide, continuously, an amount of active polyvalent metal catalyst in the condensate of about 0.1 ppm to about 10 ppm by weight.

5,292,441

QUATERNIZED POLYVINYLAMINE WATER CLARIFICATION AGENTS

Jen-Chi Chen, Morrisville; Stephen R. Vasconcellos, Doylestown; Gerald C. Walterick, Jr., Levittown, and Fu Chen, Newtown, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 12, 1993, Ser. No. 3,186
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—735 6 Claims

1. A method of reducing the turbidity of an aqueous system containing suspended solids comprising adding to the aqueous system an amount effective for the purpose of flocculating the suspended solids and reducing turbidity of a quaternary polyvinylamine of the general formula:

$$\begin{array}{l} +CH_2-CH+ \\ \quad\quad | \\ [R_3]-N^+-[R_1]Cl^- \\ \quad\quad | \\ \quad [R_2] \end{array}$$

wherein R_1, R_2, and R_3 are, independently, methyl, ethyl or benzyl and wherein X^- is a water soluble anion and removing the flocculated suspended solids from the aqueous system.

5,292,442

PROCESS FOR DISPOSING OF SEWAGE SLUDGE

Motasimur R. Khan, Wappingers Falls, N.Y.; Harvey D. Schindler, Fair Lawn, N.J.; Christine C. Albert, Peekskill, and Stephan J. DeCanio, Montgomery, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 1, 1992, Ser. No. 955,007
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—770 15 Claims

1. A process for disposing of sewage sludge comprising:

(1) dewatering an aqueous slurry of sewage sludge to a solids content in the range of about 8 to 35 wt. %;

(2) heating the dewatered aqueous slurry of sewage sludge from (1) to a temperature in the range of about 120° F. to 210° F. and at atmospheric pressure by direct contact with steam, and holding said material at said elevated temperature for about 1.0 to 30.0 minutes while simultaneously

removing off-gas comprising air, H_2O, and organic vapors;
(3) heating, mixing an shearing the aqueous slurry of sewage sludge from (2) by indirect heat exchange in the absence of air at a temperature in the range of about 210° F. to 350° F. and at a preasure of about 50 to 100 psig above the vapor pressure of water at that temperature, for a period in the range of about 2.0 to 10.0 minutes;
(4) hydrothermally treating the aqueous slurry of sewage sludge from (3) by direct steam injection in an autoclave in the absence of air and holding said material in said autoclave for about 15 to 120 minutes at a temperature in the range of about 450° F. to 600° F. and a pressure of about 50 to 100 psig above the vapor pressure of water at the holding temperature, while simultaneously removing off-gas comprising air, H_2O, organic vapors, CO_2, H_2S, and COS;
(5) suddenly reducing the pressure of the aqueous slurry of sewage sludge from (4) to a value in the range of about 25 to 50 psig and flash evaporating water to increase the solids content of said aqueous slurry of sewage sludge to about 25 to 55 wt. %;
(6) centrifuging the aqueous slurry of sewage sludge from (5) to remove water and to provide a solids content in the range of about 28 to 58 wt. %; and
(7) burning said pumpable slurry of sewage sludge with or without admixture with supplemental solid carbonaceous fuel either: (a) in a furnace, boiler, or incinerator to produce a hot raw effluent gas stream; or (b) in a partial oxidation gas generator to produce a hot raw stream of synthesis gas, reducing gas, or fuel gas.

5,292,443

PROCESS FOR PRODUCING NEUTRALIZED SULFURIZED ALKYLPHENATE LUBRICANT DETERGENT ADDITIVE

Carl K. Esche, Jr., Wappinger Falls; Gregory P. Anderson, Beacon, both of N.Y., and John R. Sanderson, Leander, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 21, 1992, Ser. No. 933,621
Int. Cl.[5] C10M *105/72*
U.S. Cl. 252—42.7 **4 Claims**

1. A non-diluent oil process for producing a fluid neutralized/sulfurized phenate comprising:
a) oligomerizing a (C_3–C_{20}) olefin;
b) alkylating phenol with said oligomerized olefin to produce a oligomerized (C_6–C_{20}) alkyl phenol;
c) neutralizing and sulfurizing said oligomerized (C_6–C_{20}) alkyl phenol, with $Ca(OH)_2$, ethylene glycol and elemental sulfur in the absence of an oil diluent to produce a fluid neutralized/sulfurized phenate product; and
d) recovering said fluid phenate product.

5,292,444

LUBE OIL COMPOSITIONS CONTAINING FULLERENE-GRAFTED POLYMERS

Abhimanyu O. Patil, Westfield; George W. Schriver, Somerville, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 2, 1992, Ser. No. 955,627
Int. Cl.[5] C10M *133/00*
U.S. Cl. 252—50 **13 Claims**

1. A lube oil composition comprising a base oil and an effective dispersant, antioxidant, and viscosity improving amount of a hydrocarbon soluble reaction product of a fullerene and a hydrocarbon containing polymer having at least one reactive amino group selected from the group consisting of primary amino groups, secondary amino groups, and mixtures thereof.

5,292,445

WET-ETCH PROCESS AND COMPOSITION

Douglas E. Fjare, Naperville; Allyson J. Beuhler, Indian Head Park, and Cynthia A. Navar, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 605,555, Oct. 30, 1990, Pat. No. 5,183,534, and a continuation-in-part of Ser. No. 491,438, Mar. 9, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 915,102
Int. Cl.[5] C09K *13/00*
U.S. Cl. 252—79.5 **10 Claims**

1. A wet-etch composition for selectively etching a polyamic acid of a partially cured polyamic acid comprising an aqueous solution comprising at least 50 weight percent of the total composition of water, a substituted hydrocarbon solvent, and an alkylamine wherein the weight ratio of the substituted hydrocarbon solvent to the alkylamine is about 0.1–49:49–0.1, weight the proviso that the composition contains less than 1.0 weight percent of the total composition ionic base.

5,292,446

NONPHOSPHATED AUTOMATIC DISHWASHING COMPOSITIONS WITH OXYGEN BLEACH SYSTEMS AND PROCESS FOR THEIR PREPARATION

Jeffrey D. Painter, Cincinnati; Janet L. Marshall, Wyoming, and James C. B. St. Laurent, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 613,190, Nov. 14, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 908,616
Int. Cl.[5] C11D *3/37, 7/12, 7/18, 17/06*
U.S. Cl. 252—99 **2 Claims**

1. A process for making a granular automatic dishwashing detergent which is substantially free from inorganic phosphate builders, comprising:
(a) forming a fluid premix comprising an aqueous mixture of a chelant and a polymer organic dispersant containing at least 8 carboxylate groups, said chelant and organic dispersant being at a weight ratio of from about 3:1 to about 1:300, dry basis, and said fluid premix comprising from about 30% to about 70% water and about 30% or higher of the sum of said chelant and said organic dispersant at a pH of combined chelant and dispersant in the range from about 7 to about 8.5;
(b) in one or more mixing/drying steps, co-contacting the fluid premix of step (a) with solid-form water-soluble nonphosphorus salts which comprises a mixture of sodium citrate, sodium carbonate and sodium sulfate in weight ratios of from about 1:1:3 to about 1:3:10, at a weight ratio of said fluid premix to solid-form water-soluble nonphosphorus salts of from about 1:30 to about 1:4 to form a particulate agglomerate and drying said agglomerate to about 8%, or less, free moisture; and
(c) one or more steps of mixing the particulate agglomerate of step (b) with solid-form particulate admixes comprising bleach active salts selected from the group consisting of sodium perborates, sodium percarbonates and mixtures thereof, said bleach-active salts constituting 3% or more, dry weight basis, of the total composition.

5,292,447

HETEROCYCLIC PEROXIDES HAVING N-AMIDIC HETEROATOMS

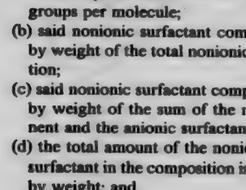
Carlo Venturello, Novara, and Claudio Cavallotti, Milan, both of Italy, assignors to Ausimont S.r.l., Italy

Division of Ser. No. 687,147, Apr. 18, 1991, Pat. No. 5,179,205, which is a division of Ser. No. 366,512, Jan. 14, 1989, Pat. No. 5,041,546. This application Sep. 18, 1992, Ser. No. 946,227
Claims priority, application Italy, Jun. 14, 1988, 20957 A/88
The portion of the term of this patent subsequent to Dec. 10, 2009, has been disclaimed.
Int. Cl.[5] C07C *409/06*; D06L *3/02*; C11D *3/28, 3/395*
U.S. Cl. 252—102 **7 Claims**

1. A detergent formulation containing an effective bleaching amount of a heterocyclic nitrogen amidic heteroatom containing (poly)peroxycarboxylic acid bleaching agent having the formula (I):

$$R-(CH_2)_m-R' \quad (I)$$

(1) R and R′ are the same as each other and represent a group of formula II:



(II)

or (2) R represents a hydrogen atom and R′ represents a group defined by formula II above, and wherein the other symbols have the following meanings:
R″ represents a hydrogen atom or any other substituent nonreactive in the presence of the active oxygen of the peroxycarboxylic group and/or under preparation conditions;
m represents a number between 1 to 12;
n represents a number selected from 0, 1 and 2;
p represents a number between 1 and 3, and at least one additional additive selected from builders, surfactants, soaps, zeolites, hydrotropic agents, corrosion inhibitors, enzymes, optical bleaches, stabilizers or other peroxidic compounds.

5,292,448

ENZYMATIC DETERGENT COMPOSITION

Jan Klugkist, Vlaardingen, Netherlands, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 350,054, May 10, 1989, abandoned. This application Jan. 29, 1993, Ser. No. 11,086
Claims priority, application United Kingdom, May 10, 1988, 881045
Int. Cl.[5] C11D *3/386, 1/83, 17/06*
U.S. Cl. 252—174.12 **7 Claims**

1. A detergent composition comprising an anionic surfactant, a nonionic surfactant and a lipase produced by cloning the gene from *Humicola lanuginosa* and expressing the gene in *Aspergillus oryzae* characterized in that:
(a) the nonionic surfactant of the composition comprises a nonionic surfactant component selected from alkoxylate adducts of fatty alcohols, fatty acids, fatty esters, fatty amides and fatty amines of at least C_{10} chain length and mean alkylene oxide content of less than 5 alkylene oxide groups per molecule;
(b) said nonionic surfactant component forms at least 30% by weight of the total nonionic surfactant of the composition;
(c) said nonionic surfactant component forms less than 50% by weight of the sum of the nonionic surfactant component and the anionic surfactant;
(d) the total amount of the nonionic surfactant and anionic surfactant in the composition is in the range of 1% to 30% by weight; and
(e) the lipase enzyme is present in an amount of about 0.005 to 100 Lu/mg based on the weight of the detergent composition.

5,292,449

SCALE INHIBITING COMPOSITION

Lawrence L. Shyu, Yorktown Heights, N.Y., assignor to Akzo nv, Arnhem, Netherlands

Filed Nov. 24, 1992, Ser. No. 980,872
Int. Cl.[5] C02F *5/10*
U.S. Cl. 252—180 **12 Claims**

1. A scale inhibiting composition for use in water treatment systems which comprises a combination of from about 10% to about 60%, by weight of the composition, of a water soluble unsaturated dicarboxylic acid, from about 3% to about 45%, by weight of the composition, of phosphorous acid, and from about 15% to about 80%, by weight of the composition, of a peroxide.

5,292,450

PRODUCTION OF HEXABROMOCYCLODODECANE

Phillip R. Beaver, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 487,780, Mar. 5, 1990, abandoned. This application Dec. 16, 1992, Ser. No. 991,143
Int. Cl.[5] C07C *17/02*; C09K *3/00*
U.S. Cl. 252—182.12 **6 Claims**

1. A method for brominating cyclododecatriene with bromine in a batch operation, said process comprising:
(a) charging a reaction vessel, containing a solvent reaction media in which bromine and cyclododecatriene are substantially soluble, with a first amount of bromine, said first amount being an amount in the range from about 0.05 to about 06 weight percent of the stoichiometric amount of bromine needed to form hexabromocyclododecane from cyclododecatriene, based on the total amount of cyclododecatriene being brominated;
(b) subsequent to the charging in step (a), concomitantly adding to the reaction vessel cyclododecatriene and a second amount of bromine, the respective rates of addition of said cyclododecatriene and second amount of bromine being such that, at all times during this addition, the second amount of bromine being added is within the range of from about 1 to about 10 weight percent in excess of the stoichiometric amount of bromine required to form hexabromocyclododecane from said cyclododecatriene, based on the amount of cyclododecatriene being charged to the reaction vessel.

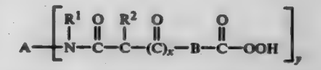
5,292,451

UREIDOPEROXYCARBOXYLIC ACIDS AND PREPARATION AND USE THEREOF

Hanspeter Gethöffer, Frankfurt am Main; Gerd Reinhardt, Kelkheim (Taunus), and Peter Naumann, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 703,461, May 21, 1991, Pat. No. 5,149,864. This application Jun. 5, 1992, Ser. No. 893,772
Claims priority, application Fed. Rep. of Germany, May 25, 1990, P4016980.4
Int. Cl.[5] C01B *15/00*; C11D *7/54, 7/38*
U.S. Cl. 252—186.42 **6 Claims**

1. A bleaching, oxidizing, or disinfecting composition comprising:
a) a compound of the formula



present in a bleaching, oxidizing, or disinfecting amount, where
y is 1 or 2,
A is selected from the group consisting of hydrogen, C_1–C_2-alkyl, aryl and a group of the formula

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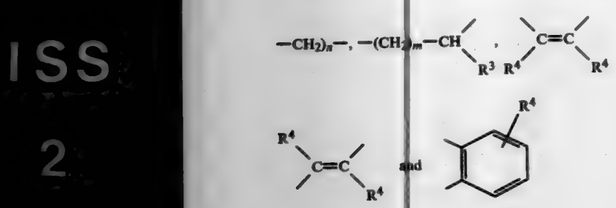


if y is 1, or, A is selected from the group consisting of C_2–C_{20}-alkylene and arylene if y is 2,

R^1 and R^2 can be identical or different and each is selected from the group consisting of hydrogen, C_1–C_{20}-alkyl, aryl, haloaryl, alkoxyaryl and alkylaryl, or else R^1 and R^2 together are a C_2–C_4-alkylene radical,

x is 0 or 1,

B is selected from the group consisting of the formula



n is from 1 to 20,

m is selected from the group consisting of 0, 1 and 2,

R^3 is C_1–C_{20}-alkyl and

R^4 is in each case hydrogen or C_1–C_{20}-alkyl and

b) a detergent.

5,292,452

ALKENYLCYCLOHEXANE LIQUID CRYSTALLINE COMPOUNDS

Richard Buchecker, Zurich; Alfred Germann, Basel; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

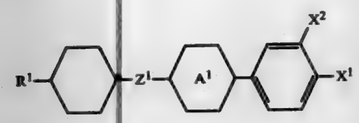
Filed Aug. 19, 1991, Ser. No. 747,033

Claims priority, application Switzerland, Sep. 14, 1990, 2992/90; May 14, 1991, 1434/91

Int. Cl.[5] C09K *19/34, 19/30;* **C07D** *239/00, 211/72*

U.S. Cl. 252—299.61 **16 Claims**

9. A liquid crystalline mixture having at least two components, wherein at least one component is a compound of the formula



wherein R^1 is 1E-alkenyl of 2 to 12 carbon atoms; Z^1 is a single covalent bond or $—CH_2CH_2—$; ring A^1 is 1,4-phenylene, pyrimidin-2,5-diyl, pyridin-2,5-diyl or, when Z^1 is $—CH_2CH_2—$, A^1 also can be trans-1,4-cyclohexylene; X^1 is fluorine or chlorine; and X^2 is fluorine or chlorine; or when X^1 is chlorine, X^2 also can be hydrogen; and when ring A^1 is pyridin-2,5-diyl and Z^1 is $—CH_2CH_2—$, X^2 also can be hydrogen.

5,292,453

FERROELECTRIC LIQUID CRYSTAL COMPOSITION WITH IMPROVED DRIVING VOLTAGE AND TEMPERATURE MARGINS AND LIQUID CRYSTAL DEVICE USING SAME

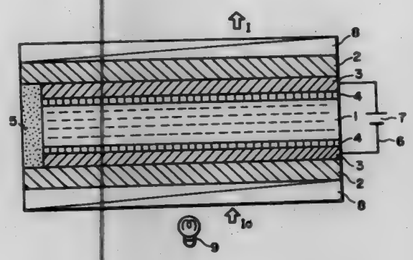
Kenji Shinjo, Atsugi; Takao Takiguchi, Tokyo; Hiroyuki Kitayama, Sagamihara; Kazuharu Katagiri, Tama; Masataka Yamashita, Hiratsuka; Masahiro Terada, Atsugi; Takeshi Togano, Yokohama; Yoshiko Kimura, Hiratsuka; Masanobu Asaoka, Yokohama, and Junko Sato, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,030, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 370,724, Jun. 23, 1989, abandoned. This application Apr. 19, 1993, Ser. No. 48,071

Claims priority, application Japan, Jun. 24, 1988, 63-157675; Jul. 29, 1988, 63-188110; Jul. 29, 1988, 63-188112; Jun. 9, 1989, 1-147990

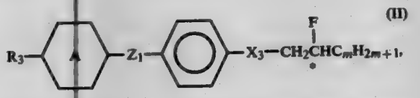
Int. Cl.[5] C09K *19/34, 19/30, 19/20;* **G02F** *1/13*

U.S. Cl. 252—299.61 **7 Claims**



1. A ferroelectric chiral smectic liquid crystal composition, comprising:

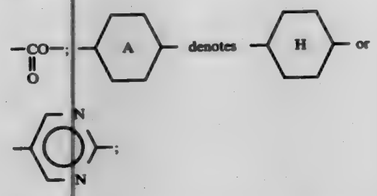
at least one compound represented by the following formula (II):



wherein R_3 denotes a linear or branched alkyl group having 1–18 carbon atoms wherein R_3 is optionally substituted with alkoxy group; X_3 denotes a single bond,

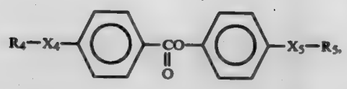


Z_1 denotes a single bond or

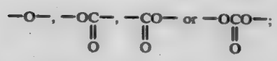


and m is 1–12;

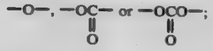
at least one compound represented by the following formula (III):



wherein R_4 and R_5 denote a linear or branched alkyl group having 1–18 carbon atoms, at least one of R_4 and R_5 being optically active; X_4 denotes a single bond,

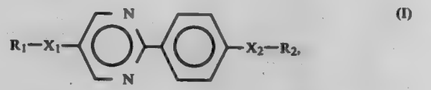


and X_5 denotes a single bond,

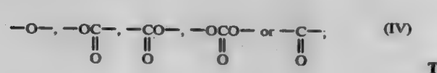


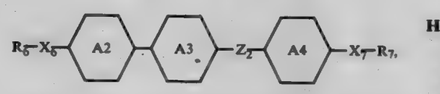
and

at least one compound represented by the following formula (I) or (IV):

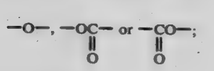


wherein R_1 and R_2 denote a linear or branched alkyl group having 1–18 carbon atoms; X_1 and X_2 denote a single bond,

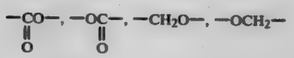




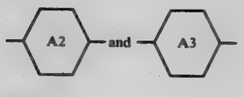
wherein R_6 and R_7 denote a linear or branched alkyl group having 1–18 carbon atoms wherein R_6 is optionally substituted with alkoxycarbonyl group or halogen; X_6 and X_7 denote a single bond,



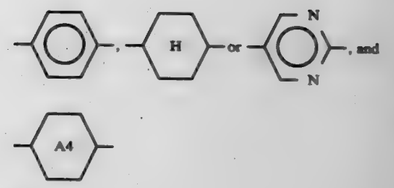
Z_2 denotes



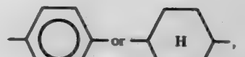
or a single bond;



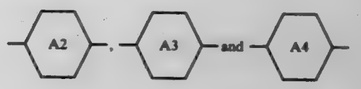
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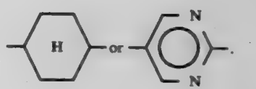
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with proviso that at least one of



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5,292,454

TRIFLUOROTOLUENE COMPOUNDS, AND A LIQUID CRYSTALLINE MEDIUM

Hans A. Kurmeier, Seeheim-Jugenheim; Reinhard Hittich, Modautal; Eike Poetsch, Mühltal; Volker Meyer, Gross-Zimmern; Herbert Plach, Darmstadt, and David Contes, Merley Wimborne, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

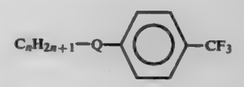
Continuation of Ser. No. 549,000, Jul. 26, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,727

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917119

Int. Cl.[5] C09K *19/12, 19/30;* **G02F** *1/13*

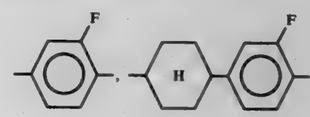
U.S. Cl. 252—299.66 **6 Claims**

1. A nematic liquid-crystalline medium having at least two liquid-crystalline components, which contains at least one trifluorotoluene compound of the formula I



I

in which n is 1 to 12, and Q is



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-continued



5,292,455

CORROSION INHIBITION OF CALCIUM CHLORIDE BRINE

Suzanne M. Zefferi, Morrisville, and Roger C. May, Glenside, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 25, 1993, Ser. No. 23,249
Int. Cl.[5] C23F *11/10*
U.S. Cl. 252—389.23 3 Claims

1. A method of inhibiting corrosion of metal surfaces in contact with calcium chloride brines comprising adding to a calcium chloride brine an inhibitor comprising 2-hydroxyphosphonoacetic acid in amounts from about 240 to 1000 parts per million.

5,292,456

WASTE SITE RECLAMATION WITH RECOVERY OF RADIONUCLIDES AND METALS

Arokiasamy J. Francis, Middle Island, and Cleveland J. Dodge, Wading River, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Mar. 20, 1992, Ser. No. 855,096
Int. Cl.[5] G21F *9/16*
U.S. Cl. 252—628 13 Claims

1. A method for decontamination and reclamation of materials contaminated with radionuclides, metals, or mixtures thereof comprising:

(i) contacting the material with an organic complexing agent comprising citric acid, a citrate salt or mixture thereof in an aqueous solution to remove said radionuclides, metals or mixtures thereof from the material and yield a radionuclide and/or metal-citrate complex-containing solution;

(ii) treating the radionuclide and/or metal-citrate complex-containing solution with a bacterial culture containing *Pseudomonas fluorescens* ATCC No. 55241 wherein a nutrient carbon source for the bacteria consists substantially of citrate in the form of the radionuclide and/or metal-citrate complexes, said treatment resulting in the precipitation or incorporation into biomass of the radionuclides and/or metals; and

(iii) if the material being decontaminated and reclamated contains the radionuclide uranium, exposing the uranium citrate complex-containing solution to light resulting in the breakdown of the complex and precipitation of uranium as a polymer; so that the radionuclides and/or metals are recovered in a concentrated form.

5,292,457

METHOD FOR MOLDING OPTICAL ELEMENTS

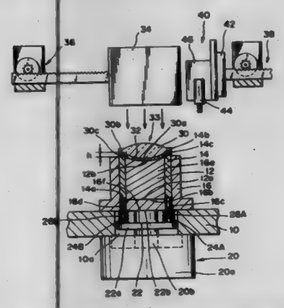
Takashi Arai, Tokyo, and Yukihisa Baba, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,100
Claims priority, application Japan, Apr. 30, 1991, 3-099184; Apr. 20, 1992, 4-099333
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.7 6 Claims

1. An optical-element molding method for forming an optical element in which a glass material and a resin material are integrated, said molding method including the steps of supplying the resin material, which is a type cured by an activating energy beam, to a molding member having a molding surface, which functions to transfer an optical surface onto a surface of the resin material, and forming a resin layer made of the resin material on the surface of the glass member, said step of forming a resin layer comprising:

a first step of placing the glass member upon supporting means for supporting the glass member in a state in which the lower surface of the glass member is spaced away from a molding surface of mold means by a predetermined distance which determines the thickness of the resin layer;

a second step of holding the glass member in the state in which the lower surface thereof is spaced away from the molding surface by the predetermined distance until the



resin material, which has been charged into a space defined by the molding surface and the lower surface of the glass member, cures to a predetermined degree of polymerization which will not cause deformation that leads to a comparatively large decline in optical performance; and

a third step of moving said mold means and said supporting means relative to each other, after the resin material has been cured to said predetermined degree of polymerization, in such a manner that the glass member is supported on the resin layer independently.

5,292,458

METHOD OF PRODUCING PHOTOSENSITIVE MICROCAPSULES

Hiroshi Takahashi; Toshihiko Sakuharn, and Fumiharu Iwasaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Apr. 9, 1991, Ser. No. 682,914
Claims priority, application Japan, Apr. 10, 1990, 2-94305; Jun. 5, 1990, 2-147021; Jun. 15, 1990, 2-158191; Jul. 5, 1990, 2-179250; Oct. 17, 1990, 2-278194
Int. Cl.[5] B01J *13/16*; G03C *1/72*
U.S. Cl. 264—4.7 22 Claims

1. A method of producing a photosensitive microcapsule which contains a polymerizable monomer and a polymerization initiator to initiate the polymerization of said polymerizable monomer, said method comprising the steps of: displacing soluble water in said polymerizable monomer; producing a solution to be contained in the microcapsules by adding the polymerization initiator and a first material for the microcapsule membrane to said polymerizable monomer in which said soluble water is displaced; producing an emulsion by adding an ionic surfactant solution to said solution to be contained in the microcapsules and emulsifying said solution with an agitator; and producing a microcapsule membrane by adding a second material for the microcapsule membrane to said emulsion.

5,292,459

PROCESS FOR THE PRODUCTION OF A CONTINUOUS OBJECT OF A THERMOSETTING POLYMER

Franciscus W. M. Gelissen, Selfkant Havert, Fed. Rep. of Germany, and Cornelis W. M. Bastiaansen, Maastricht, Netherlands, assignors to DSM N.V., Netherlands

Continuation of Ser. No. 735,017, Jul. 25, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 920,517
Claims priority, application Netherlands, Jul. 28, 1990, 9001715
Int. Cl.[5] B29C *35/10*
U.S. Cl. 264—22 1 Claim

1. The process for the production of a continuous running length fiber of a thermosetting polymer comprising the steps of:

extruding a sheath of continuous running length of hollow filament of a film forming polymer from an opening in a die at a linear speed of from about 3 m/m to about 200 m/m,

injecting in liquid form the corresponding monomer of said thermosetting polymer into the hollow of said sheath, said injecting being in the plane of said die opening or immediately downstream, said liquid not being self supporting as a shaped object,

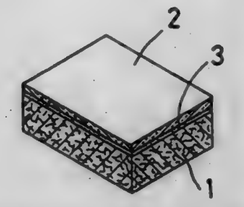
stretching said sheath containing said monomer, and curing said monomer at a temperature of from about 20° C. to about 150° C. for a time of from about 1 sec. to about 30 sec., said fiber of thermosetting polymer having a diameter of from between about 0.1 to about 3.2 mm.

5,292,460

METHOD OF MANUFACTURING A HIGH BULK DENSITY CARBON FIBER FELT

Hirofumi Kyutoku, Ikoma; Kouichi Yamamoto, Amagasaki, and Yoshihisa Otani, Himeji, all of Japan, assignors to Osaka Gas Company Limited, Osaka and Japan Felt Industrial Company Limited, Himeji, both of Japan

Division of Ser. No. 484,407, Feb. 26, 1990, Pat. No. 5,145,732. This application May 28, 1992, Ser. No. 889,365
Claims priority, application Japan, Mar. 1, 1989, 1-49233; Mar. 23, 1989, 1-73662; Jun. 12, 1989, 1-148653
Int. Cl.[5] B32B *5/16*
U.S. Cl. 264—29.5 13 Claims



1. A method of manufacturing high bulk density carbon fiber felt, comprising the steps of:

mixing together (i) first fibers of at least one of fibers selected from the group consisting of carbon fibers, pitch fibers subjected to an infusible treatment, rayon fibers, polyacrylonitrile fibers and cellulose fibers subjected to an infusible treatment, and (ii) phenol resin fibers which are longitudinally shrunk by calcination and which can be carbonized and/or graphitized;

mechanically compressing and entangling said first fibers with said phenol resin fibers to prepare a felt; and

calcining said felt to shrink said phenol resin fibers and obtain a high bulk density carbon fiber felt having a bulk density of at least about 0.1 g/cm^3.

5,292,461

PROCESS FOR THE PRODUCTION OF PELLETS

Rolf-Dieter Juch, Schaenggelistr. 32, CH-4612 Wangen b. Olten, and Gerd Birenbach, Weidweg 693, CH-4616 Kappel (SO), both of Switzerland

Filed Aug. 22, 1991, Ser. No. 748,686
Claims priority, application Switzerland, Aug. 24, 1990, 02760/90-8
Int. Cl.[5] B29B *9/08*
U.S. Cl. 264—37 24 Claims

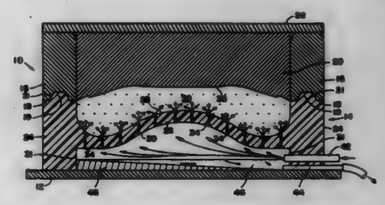
1. A process for the production of pellets, comprising passing the material to be pelletized through a mixer with an approximately helical centrifugal motion in an orbit in the direction of motion of the mixer in the mixing vessel and, by continuous or batchwise application of a finely nebulized wetting agent, which may contain a binder, to said material until the relative moisture content is at least 70%, measured in the stream of material, the agglomeration of said material is maintained until pellets with a diameter of 0.5 mm to 2.5 mm are obtained.

5,292,462

FOAM-REBONDING METHOD

David E. Nestle, Coral, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 639,140, Jan. 9, 1991, Pat. No. 5,173,307. This application Sep. 4, 1992, Ser. No. 940,432
Int. Cl.[5] B29B *17/00*
U.S. Cl. 264—37 9 Claims



1. A method for forming a chair seat or backrest comprising the steps of

providing a mold having a mold cavity with a surface formed of an epoxy resin;

blending together particles of flexible foam, a fire retardant compound and a rebonding composition until the foam particles are coated with the fire retardant compound and rebonding composition, the particle size of the foam particles being predominantly in the range of ¼–½" in diameter;

introducing the blended particles into the mold;

closing the mold and compressing the particles into the shape of the mold cavity;

introducing steam into the mold for a time in the range of thirty to forty seconds at a low pressure and at a steam temperature in the range of 225°–235° F. to bond the particles together and to set the particles into a molded shape;

opening the mold; and

removing the article thus produced from the mold.

5,292,463

VARIABLE WIDTH FILM DIE

William C. Paul, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 3, 1992, Ser. No. 939,790
Int. Cl.[5] B29C *47/86*
U.S. Cl. 264—40.6 17 Claims

1. An extrusion die for extruding products comprising:

an elongated die body;

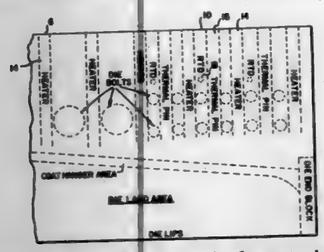
at least one inlet leading into said die body;

means for heating said die body;

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an extruder die; and

at least one means for removing heat from said die body wherein said die body comprises more than one zone, each said zone comprising at least one means for heating and at least one means for removing heat whereby, by adjusting the temperatures of the zones, the width of the extruded product may be adjusted without changing the die.



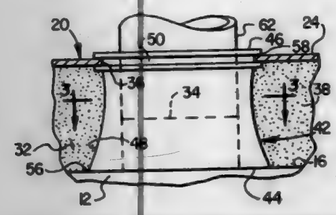
9. A method for varying the width of an extruded article from an extruder said method comprising extruding a thermoplastic material through an extruder having a extrusion die having fixed dimensions an elongated die body; at least one inlet leading into said die body; means for heating said die body; an extruder die; and at least one means for removing heat from said die body; whereby the width of the extruded article is varied by adjusting the amount of heat supplied to the extrusion die without changing the dimensions of the die.

5,292,464

METHOD OF INSULATING A WATER HEATER AND PREVENTING FLASH USING A FOAM STOP

David M. Haaning, and Gordon W. Stretch, both of Montgomery, Ala., assignors to Rheem Manufacturing Company, New York, N.Y.

Filed Aug. 25, 1992, Ser. No. 934,957
Int. Cl.[5] B29C 67/22
U.S. Cl. 264—46.5 5 Claims



1. A method of thermally insulating the storage tank of a water heater, said method comprising the steps of:

operatively positioning a jacket structure outwardly around said storage tank to define a hollow, enclosed insulation space that extends externally around said storage tank, the operatively positioned jacket structure having a pipe opening therein;

providing a hollow, generally tubular foam stop member formed from a relatively thin resilient material;

installing said foam stop member within said enclosed insulation space by axially inserting said foam stop member inwardly through said jacket structure pipe opening in a manner creating a snap-fitted engagement between the inserted foam stop member and said jacket structure and axially compressing said foam stop member between said storage tank and said jacket structure; and

injecting a liquid foam insulation material into said enclosed insulation space to essentially fill it with insulation,

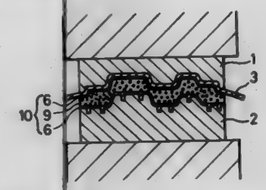
the installed foam stop member serving as a relatively small barrier that essentially precludes the injected liquid foam insulation material from escaping outwardly through said jacket structure pipe opening.

5,292,465

PROCESS FOR PREPARING COMPOSITE FOAMED MOLDED ARTICLE

Tosio Kobayashi; Mitsuru Watari, both of Ichihara, and Toru Inoue, Anjou, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,741
Claims priority, application Japan, Dec. 28, 1991, 3-314595
Int. Cl.[5] B29C 67/22
U.S. Cl. 264—45.5 4 Claims



1. A process for preparing a composite foamed molded article comprising the steps of:

setting a skin material between a surface of an upper mold kept at a temperature of 10 to 50°0 C. and a surface of a lower mold;

feeding a molten polypropylene resin composition for a substrate containing a foaming agent kept at a temperature of not lower than a decomposition temperature of the foaming agent and within the range of 180 to 240° C. onto the surface of the lower mold kept at a temperature of 30 to 80° C.;

closing the upper and lower mold within 10 seconds after feeding of the polypropylene resin composition to clamp the molds at a pressure of 20 to 70 kg/cm^2, thereby to laminate a substrate later formed from the polypropylene resin composition and the skin material simultaneously with shaping of the substrate;

lifting the upper mold before a thickness of each of hardened layers formed on both surfaces of the polypropylene resin composition layer reaches 1.0 mm to open the upper mold and the lower mold to a distance between these molds of 1.1 to 2 times a thickness of a flat portion having neither boss nor rib in the polypropylene resin composition layer, thereby to foam the polypropylene resin composition; and

cooling the foamed substrate layer made of the polypropylene resin composition to harden the substrate layer.

5,292,466

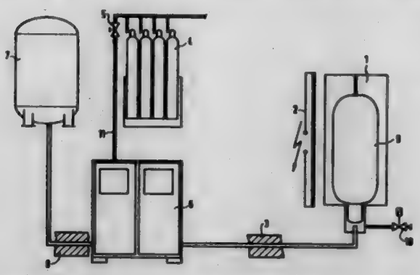
PROCESS FOR THE PRODUCTION OF BARRIER LAYERS FOR ADMIXTURES OF POLAR AND NON-POLAR MATERIALS ON THE INNER SURFACE OF HOLLOW MOLDED PARTS MADE OF THERMOPLASTICS

Rolf van Bonn, Duisburg, and Manfred Eachwey, Dusseldorf, Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt, Fed. Rep. of Germany

Filed Apr. 15, 1993, Ser. No. 48,146
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1992, 4212969
Int. Cl.[5] B29C 49/46
U.S. Cl. 264—83 4 Claims

1. In a process for the production of barrier layers for admixtures of polar and non-polar substances on the inner surface of hollow molded parts made of thermoplastics, which are blown in a supporting mold and then exposed for some time to a treatment gas containing fluorine, the improvement being in

that the temperature of the surface at the beginning of exposure lies between 60° C. and 250° C. [140° F. and 482° F.], and the



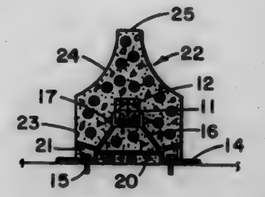
reaction energy released during fluorination being removed by cooling the treatment gas.

5,292,467

HIGHWAY BARRIER METHOD

Theodore O. Mandish, and Doneath M. Mandish, both of 5055 State Rd. 46, Mims, Fla. 32754

Division of Ser. No. 712,966, Jun. 10, 1991. This application Apr. 29, 1993, Ser. No. 53,478
Int. Cl.[5] B28B 1/16; B29C 33/40
U.S. Cl. 264—112 11 Claims



1. The process of making an energy absorbing roadway barrier for dissipating kinetic energy upon impact by a moving vehicle comprising the steps of:

forming an elongated core of reinforced high density concrete;

attaching a plurality of elongated core supports and roadway barrier anchor members to said elongated core;

mixing a plurality of lightweight polymer pieces with fiber glass, microsilica, sand, portland cement and water to form a lightweight polymer concrete mixture;

forming an elongated roadway barrier mold of predetermined shape around said elongated core and around each elongated core support and anchor member to provide a molding cavity in which said lightweight polymer concrete mixture is cast; and

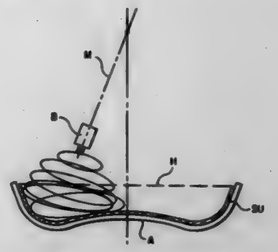
curing said mixture cast in said molding cavity to form a roadway barrier member of lightweight polymer concrete around said elongated core, and around each elongated core support and anchor member, said roadway barrier member having said lightweight polymer pieces provided in said concrete for energy and sound absorption by said lightweight polymer concrete, whereby said energy absorbing roadway barrier for dissipating kinetic energy upon impact by a vehicle is made of said lightweight polymer concrete roadway barrier member surrounding said elongated core of reinforced high density concrete.

5,292,468

PROCESS FOR THE PRODUCTION OF NON-STICKY THERMOFUSIBLE AUTOADHESIVE SHAPES

Jean J. Colombani, Auffargis, France, assignor to Ceca S.A., Courbevoie, France

Filed Apr. 1, 1991, Ser. No. 678,839
Claims priority, application France, Apr. 2, 1990, 9004154
Int. Cl.[5] B29C 39/12
U.S. Cl. 264—130 4 Claims



1. A process for the manufacture by casting of a block of a hot-melt, pressure-sensitive adhesive substance with an outer web lacking in stickiness or self-adhesion under weak pressure compriaing spinning a web of a fiber of a hot-melt, non-pressure-sensitive adhesive substance over the interior surface of a mold at least coextensive with such interior surface as is to be filled with a molten hot-melt, pressure-sensitive adhesive substance, then casting said molten hot-melt, pressure-sensitive adhesive substance into said web-coated mold, and after cooling of said molten adhesive substance, spinning a web of a fiber of said hot-melt, non-pressure-sensitive adhesive sustance onto a portion of the free surface of said cooled adhesive substance.

5,292,469

PROCESS FOR COAGULATION, WASHING AND LEACHING OF SHAPED POLYBENZAZOLE ARTICLES

Reid H. Bowman, Walnut Creek; Willie E. Rochefort, Hercules; Ming-Biaan Liu, Clayton, and Peter E. Pierini, Berkeley, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1993, Ser. No. 847
Int. Cl.[5] B29C 71/02
U.S. Cl. 264—169 23 Claims

1. A process to coagulate, wash and leach a shaped polybenzazole article, comprising the steps of:

(1) contacting a shaped article, other than a fiber, that contains a dope containing polybenzazole polymer and polyphosphoric acid, with a acidic liquid coagulant, and

(2) contacting the shaped article, before substantial drying, with a leaching fluid, that is capable of removing residual phosphorous compounds, at a temperature of at least about 60° C.,

for a combined residence time in steps (1) and (2) of no more than about 35 minutes, whereby a polybenzazole article containing no more than about 2000 ppm phosphorus is formed.

5,292,470

CONVECTIVE LEACHING OF POLYBENZAZOLE FILMS

Lalitha Reddy, Walnut Creek; Willie E. Rochefort, Hercules; Ming-Biaan Liu, Clayton, and Peter E. Pierini, Berkeley, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1993, Ser. No. 848
Int. Cl.[5] B29C 71/02
U.S. Cl. 264—169 19 Claims

1. A process to leach residual solvent from a polybenzazole film that has two faces, comprising the step of contacting one

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face of the wet, never-dried polybenzazole film with a fluid, that is capable of removing residual solvent from the film, at a pressure higher than the pressure on the other face of the film such that the fluid passes through the film from one face to the other, whereby a polybenzazole film containing no more than about 2000 ppm phosphorus is formed.

5,292,471

PROCESS FOR FORMING A POLYESTER FILM

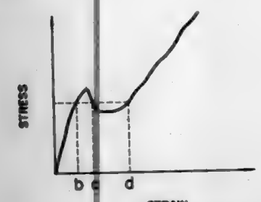
Tatsuya Ito, Gifu; Kenji Tsunashima, Kyoto; Hideyuki Yamauchi, Kusatsu; Seizo Aoki, Shiga, and Hirokazu Kurome, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 805,479, Dec. 11, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,714

Claims priority, application Japan, Dec. 13, 1990, 2-401878; Mar. 27, 1991, 3-63516

Int. Cl.[5] B29C *47/06;* **B32B** *7/00, 27/36*

U.S. Cl. 264—171 **14 Claims**



1. A process for forming a polyester film comprising the step of forming a laminated film, which is made by laminating a polyester A-layer having no yield point in a temperature range of a glass transition temperature thereof to 140° C. onto a substantially non-oriented polyester B-layer whose main component is polyethylene terephthalate, at a condition causing said laminated film to have no yield point at a temperature in the range of 80° C. to 140° C.

5,292,472

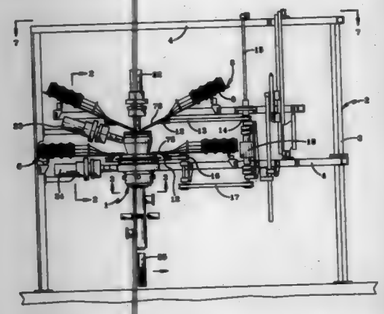
COEXTRUSION APPARATUS AND METHOD WITH ROTATING CORD GUIDANCE

Dale A. Tompkins, Akron, Ohio, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 995,395

Int. Cl.[5] B29C *47/02, 47/20*

U.S. Cl. 264—173 **16 Claims**



1. Coextrusion apparatus having a central axis for producing a generally tubular elastomeric ply made up of at least first, second and third coaxial streams of elastomeric material which merge together at an annular extrusion orifice; said apparatus including:

a) stationary first channel forming means for forming an inner flow channel for delivering the first stream of elastomeric material to the extrusion orifice;

b) stationary second channel forming means for forming an intermediate flow channel for delivering the second stream of elastomeric material to the extrusion orifice, said second channel forming means being located concentrically about said first channel forming means;

c) stationary third channel forming means for forming an outer flow channel for delivering the third stream of elastomeric material to the extrusion orifice, said third channel forming means being located concentrically about said first and second channel forming means;

d) an inner guide element rotatably mounted between the stationary first and second channel forming means for delivering a plurality of individual reinforcing elements in a first helical pattern to the annular extrusion orifice for introducing into the interface of the merging first and second streams of elastomeric material;

e) an outer guide element rotatably mounted between the stationary second and third channel forming means for delivering a plurality of individual reinforcing elements in a second helical pattern opposed to the first helical pattern, to the annular extrusion orifice for introducing into the interface of the merging second and third streams of elastomeric material, with the second stream of elastomeric material separating the first and second helical patterns of reinforcing elements;

f) means for rotating said inner and outer guide elements in opposite directions with respect to each other; and

g) means for positioning discharge ends of the first, second and third channel forming means and discharge ends of the inner and outer guide elements, at an imaginary circle which lies in a plane which extends generally transverse to the axis of the coextrusion apparatus, whereby said first, second and third streams of elastomeric material and the first and second pluralities of reinforcing elements substantially simultaneously merge together at the extrusion orifice.

10. A method of producing a generally tubular elastomeric ply including the steps of:

providing three separate extruders;

producing first, second and third annular streams of elastomeric materials, one stream from each of said extruders, said streams moving generally axially concentrically within an extrusion head toward an extrusion orifice;

rotating first and second pluralities of individual reinforcing elements in opposite directions with respect to each other within the extrusion head to form two helical patterns of said reinforcing elements; and

substantially simultaneously merging the two helical patterns of reinforcing elements into the three streams of elastomeric materials at the extrusion orifice with the second stream of elastomeric material separating the two helical patterns of reinforcing elements, and with the first and third streams of elastomeric material each coating a respective one of said helical patterns of reinforcing elements to form said tubular elastomeric ply.

5,292,473

PROCESS FOR PREPARING PITCH FOR MATRIX

Takashi Maeda, and Toshifumi Kawamura, both of Kashima, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 10,007

Claims priority, application Japan, Jan. 31, 1992, 4-040667

Int. Cl.[5] D01F *11/10, 11/12, 11/14*

U.S. Cl. 264—183 **4 Claims**

1. A process for preparing a pitch for matrix, which process comprises melt spinning an optically isotropic pitch to form a fibrous pitch, and nitrating the fibrous pitch thus obtained with a nitration reagent in the presence of an acid catalyst.

5,292,474

METHOD OF MAKING A PREFORMED FABRIC LINER WHICH LINES A TOOTHED BELT CONSTRUCTION

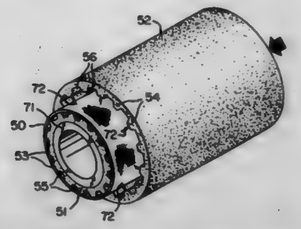
Danny L. Thomas, Forsyth, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 705,876, May 28, 1991, Pat. No. 5,176,867, which is a continuation of Ser. No. 388,541, Aug. 2, 1989, abandoned. This application Aug. 20, 1992, Ser. No. 932,864

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] B29C *33/40*

U.S. Cl. 264—224 **3 Claims**



1. In a method of making a preformed fabric means for lining the toothed surface means of a toothed belt construction, said method comprising the step of forming a fabric means so as to have serially disposed tooth-shaped projections substantially throughout the length thereof that accurately correspond to the teeth of said belt construction so as to line the toothed surface means thereof, the improvement comprising the steps of forming said preformed fabric means to comprise an endless tubular sleeve, the step of forming said fabric means to have said tooth-shaped projections comprising the step of disposing said fabric means between a pair of cooperating and telescoped cylindrical mold members respectively having teeth that index with each other to form said tooth-shaped projections of said fabric means, forming one of said mold members by deforming a first sleeve of polymeric material under heat and pressure against a cylindrical mold device that has teeth thereon that are substantially the same size and configuration as the teeth of said belt construction whereby said first sleeve has teeth formed therein, removing said first sleeve from said mold device, inverting said first sleeve, deforming a second sleeve of polymeric material under heat and pressure against said inverted first sleeve to form teeth in said second sleeve that are in indexed relation with said teeth of said first sleeve, inverting said sleeves while said second sleeve is against said first sleeve, and then separating said inverted sleeves whereby said separated sleeves now comprise said cylindrical mold members to be utilized to form said fabric means therebetween.

5,292,475

TOOLING AND PROCESS FOR VARIABILITY REDUCTION OF COMPOSITE STRUCTURES

William T. Mead, Cypress, and Colin G. Clayton, Torrance, both of Calif., assignors to Northrop Corporation, Los Angeles

Filed Mar. 6, 1992, Ser. No. 847,519

Int. Cl.[5] B32B *31/04;* **B29C** *33/42*

U.S. Cl. 264—257 **1 Claim**

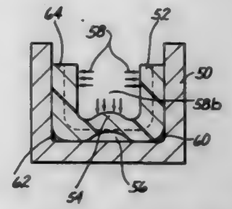
1. A method of manufacturing a structural composite layup from a laminate of uncured layers of resin impregnated continuous fiber reinforced composite material in the shape of a mandrel a portion of which has an inside radius of curvature, comprising:

shaping said laminate around a tool having a portion with an outside radius of curvature conforming, when taken with the laminate, generally to that of said inside radius portion of said mandrel to form a shaped layup,

providing on said tool, adjacent said outside radius of curvature, a deformation about which said laminate further extends to provide an additional bulk of laminate positioned to lie adjacent said inside radius and adequate to allow slippage between laminate layers when said shaped layup is later molded onto said mandrel,

placing the shaped layup into said mandrel,

thereafter applying pressure to said layup to press the layup into conformance with said mandrel and said inside radius of curvature therein,



the excess material in said deformation allowing slippage between the laminate layers so that said additional bulk thereat moves into close conformance with said radius of inside curvature to form a consolidated composite closely conforming to said mandrel and its inside radius of curvature free of defects.

5,292,476

METHOD OF MAKING A VISOR

Bryan G. Jones, West Olive, Mich., assignor to Prince Corporation, Holland, Mich.

Division of Ser. No. 763,923, Sep. 23, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,381

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.6 **8 Claims**

1. A method of manufacturing a vehicle visor body comprising the steps of providing flexible shaped material having two parts, said parts having substantially identical peripheral edges, substantially defining the peripheral shape of a visor, said edges defining upper and lower elongated sides with spaced ends intersecting said sides to provide at least one upper corner;

superimposing said parts of said shaped material over one another with said peripheral edge of one part engaging the peripheral edge of the other part;

sealing said peripheral engaging edges of said parts along substantially the entire length of said peripheral edges of said parts except for an unsealed portion at said corner forming a relatively small opening at said corner;

drawing the flexible material through said opening to turn said superimposed shaped material inside out to form a flexible container with substantially the entire sealed edges extending into the interior of said container through which filling material can be received;

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injecting an amorphous uncured filling material through said opening into said container to fill said container; and curing said filling material to form a rigid visor body.

5,292,477

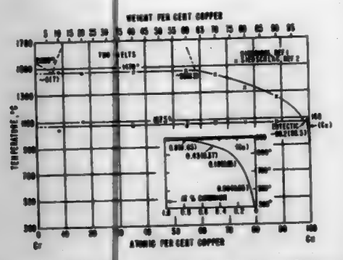
SUPERSATURATION METHOD FOR PRODUCING METAL POWDER WITH A UNIFORM DISTRIBUTION OF DISPERSANTS METHOD OF USES THEREOF AND STRUCTURES FABRICATED THEREWITH

Dudley A. Chance, Newton, Conn.; David B. Goland, Bedford Hills, N.Y.; Srinivasa S. N. Reddy, LaGrangeville, N.Y.; Subhash L. Shinde, Croton-on-Hudson, N.Y., and Donald R. Wall, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1992, Ser. No. 965,149

Int. Cl.[5] B22F *7/00*

U.S. Cl. 419—9 **26 Claims**



1. A method for forming an electrical conductor having controlled grain size comprising the steps of:

providing a molten admixture of an electrically conductive material and a grain growth control additive;

projecting a stream of said molten admixture into a cooling environment to form electrically conductive particles supersaturated on atomic scale with said additive;

said grain growth control additive being present in said molten admixture in an amount sufficient for said particles to be supersaturated with said grain growth control additive;

aggregating said particles to form a precursor to said electrical conductor;

heating said precursor to density and sinter said particles to said electrical conductor comprising a plurality of electrically conductive grains having grain boundaries;

said step of heating resulting in additive containing particles within said particles;

said additive containing particles pinning said grain boundaries during said heating to control the grain size of said grains.

5,292,478

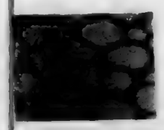
COPPER-MOLYBDENUM COMPOSITE STRIP

Clive Scorey, Cheshire, Conn., assignor to Ametek, Specialty Metal Products Division, Wallingford, Conn.

Filed Jan. 24, 1991, Ser. No. 719,412

Int. Cl.[5] B22F *1/02, 3/02*

U.S. Cl. 419—20 **10 Claims**



MOLYBDENUM PARTICLES IN A COPPER MATRIX (250X)

1. A process for forming a composite strip material having a matrix component and a low conductivity phase material component, said process comprising:

blending a low expansion phase material in powder form with an oxide of a desired matrix component in powder form;

heating said blended low expansion phase material and matrix oxide in a reducing atmosphere so as to form a coating of said matrix component about individual particles of said low expansion phase material;

blending said coated particles in powdered form with said matrix component in powdered form; and

rolling compacting said powdered coated particles and said powdered matrix component to form said composite strip material such that said low expansion material has an aspect ratio in the range from about 1:1 to about 4:1 so as to create a thermal path length through the matrix from a first side of said composite strip material to a second side of said composite strip material.

5,292,479

AIR TREATMENT BY MULTI-STACKED PLATE ASEMBLY

Hisato Haraga; Hajime Miyazaki; Yasuo Hamada; Katsushi Akamatsu, and Ayako Hirano, all of Kanagawa, Japan, assignors to Toto Ltd., Fukuoka, Japan

Filed Jul. 15, 1992, Ser. No. 914,445

Claims priority, application Japan, Nov. 27, 1990, 2-326420; Feb. 27, 1991, 3-33010; Feb. 27, 1991, 3-33066

Int. Cl.[5] A61L *09/00*; E03D *09/052*; B01D *45/14, 53/02*

U.S. Cl. 422—5 **23 Claims**



1. Apparatus for performing air treatment functions, comprising:

a plurality of circular plates stacked in a spaced-apart manner defining a stacked annular plate assembly having a central circular air inlet opening and a plurality of annular circular layers of air, each of said layers of air being between an adjacent pair of said annular plates and communicating with said central air inlet opening, spacings of said layer of air being determined to generate a laminar air flow upon rotation of said stacked annular plate assembly, said each annular circular solid plate having a flattened surface on both surfaces thereof;

a plurality of vanes being interposed between said annular plates in a circumferentially spaced apart manner, said vanes extending radially and being operable as means for enhancing the propulsion of laminar air flow and for defining an accurate space between said annular plates;

at least one composition of matter for effecting said air treatment function, exposed on a surface of at least one of said adjacent pairs of annular plates; and

means for rotating said annular plates so that a spacing of said annular plates produces a centrifugal-blowing function utilizing centrifugal forces, resulting from circular movement of the air due to shear forces, and said air is expelled in a laminar flow from said stacked annular plate assembly along a logarithmic spiral path from said central air inlet opening to an outer circumferential periphery of said annular plates guided by said vanes;

whereby said laminar flow of said air generates minimal noise and produces an amount of interaction between said at least one composition of matter and said air which is increased by a provision of said vanes.

5,292,480

ACID-ANHYDRIDE ESTERS AS OIL FIELD CORROSION INHIBITORS

Eugene R. Fischer, James Island; John A. Alford, Goose Creek, and Paul G. Boyd, Moncks Corner, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

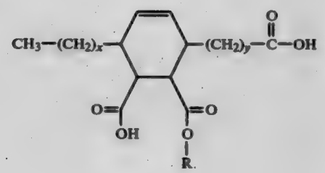
Continuation-in-part of Ser. No. 897,007, Jun. 11, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 46,077

Int. Cl.[5] C23F *11/04*

U.S. Cl. 422—12 **19 Claims**

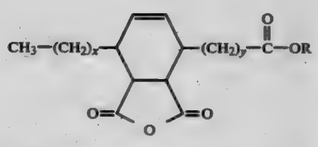
1. A method for inhibiting corrosion in downwell oil field equipment and piping which is in contact with an oil/water medium taken from a producing well by coating said equipment and piping with a corrosion inhibitor having the general chemical structure of a member selected from the group consisting of:

A)



and

B)



where R is a polyalcohol and x + y = 12.

5,292,481

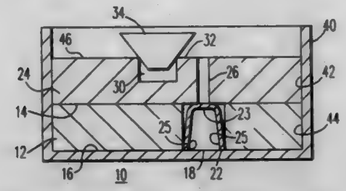
CRACK PROPAGATION TEST SPECIMEN

Robert G. Aspden, Export, and Thomas G. Bengel, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1993, Ser. No. 15,962

Int. Cl.[5] G01N *17/00, 17/04*

U.S. Cl. 422—53 **5 Claims**



1. A crack propagation test specimen comprising:

a base metal having an upper surface and a bottom surface, and a hole extending from the bottom surface toward the upper surface;

a cladding metal on the upper surface of the base metal, the cladding metal having a first slot cut therethrough, the first slot in fluid flow communication with the hole in the base metal, and having a second slot cut therein adjacent to the first slot for receiving a wedge, the first slot and the second slot defining a wall which closes over the first slot when a wedge is forced into the second slot;

a mechanically deformed metal sample disposed in the hole in the base metal; and

a specimen holder which encases the base metal and at least a portion of the cladding metal.

5,292,482

AUTOMATIC ANALYZING APPARATUS AND AUTOMATIC ANALYZING METHOD

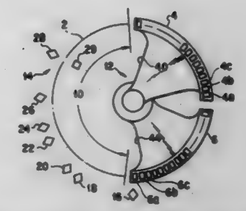
Sugio Manabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,348

Claims priority, application Japan, Feb. 7, 1991, 3-016631

Int. Cl.[5] G01N *31/00, 35/06*

U.S. Cl. 422—64 **18 Claims**



1. An automatic analyzing apparatus comprising:

a plurality of reaction container holders which are independently movable along a circulation line having a single center of rotation, said reaction container holders being rotated around the single center of rotation, each of said reaction container holders holding a plurality of reaction containers and having a length which is no greater than ½ of a circumference of the circulation line;

injector means, arranged along the circulation line, for injecting at least one of a sample and a reagent into the reaction containers;

a photometric unit, arranged along the circulation line, for optically analyzing a concentration of chemical components of the sample injected into the reaction containers;

rotating means for rotating the reaction container holders independently of one another; and

a control unit for controlling the rotating means to cause the reaction container holders to be continuously rotated and to temporarily stop rotation of a respective reaction container holder when said respective reaction container holder comes to a position corresponding to the injector means, while at least one other reaction container holder is continuously rotated.

5,292,483

DETECTING A RADIATION SIGNAL

Wilbur I. Kaye, Princeville, Hi., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 722,823, Oct. 8, 1991. This application Sep. 1, 1992, Ser. No. 938,818

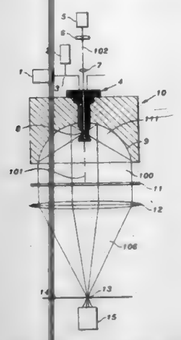
Int. Cl.[5] G01J *1/58*; G01N *21/49, 21/85*

U.S. Cl. 422—82 **52 Claims**

1. Apparatus for directing a radiation signal to a detector comprising means for generating an incident radiation signal caused by the interaction of a flowing sample with an exciting radiation source, reflection means being a reflecting surface of revolution having an axis and having a focal point, for receiving the generated incident radiation signal and for reflecting

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the incident signal as an output reflection signal to a detector, means for generating the incident radiation signal being substantially at the focal point of the reflection means, wherein at least one of the directions of the flowing sample or the direction of exciting radiation is substantially collinear with the axis



of the reflecting surface at least at the focal point, means for flowing a sample substantially along the axis of revolution, said means being an elongated tube having a side wall, and wherein the exciting radiation source is a laser radiation such that the laser radiation essentially travels within the tube and is free of contacting the tube side wall.

5,292,484

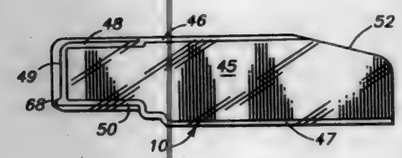
CUVETTE AND CUVETTE CARTRIDGE FOR A CHEMICAL ANALYZER

Norman Kelly; Thomas Tiffany, both of Spokane; Robin Olson, Veradale, and Bruce Weyrauch, Newman Lake, all of Wash., assignors to Spectrum Systems, Inc., Spokane, Wash. and Schiapparelli Biosystems, Inc., Fairfield, N.J.

Filed Jul. 16, 1992, Ser. No. 916,040

Int. Cl.[5] B01L *3/00;* **G01N** *21/00, 1/10*

U.S. Cl. 422—102 **14 Claims**



1. A cuvette for use in a chemical analyzer, in which the cuvette is integrally molded from rigid liquid impervious material in a hollow rectangular cross sectional configuration, the cuvette comprising:

two parallel side walls arranged in transversely spaced positions extending between opposed ends of the cuvette, each side wall having top and bottom edges and two end edges arranged across the respective ends of the cuvette;

one end of the cuvette having an opening extending across its end edges and continuing between the top edges of the side walls to provide vertical access to the interior of the cuvette for delivery of liquids into the cuvette when it is upwardly inclined relative to the horizontal;

the remaining end of the cuvette being closed by an end wall formed across the two side walls;

a top wall joining the end wall and the respective top edges of the two side walls;

a bottom wall joining the end wall and the respective top edges of the two side walls;

optical surface areas provided at the remaining end of the cuvette for transmission of light during optical testing of cuvette contents;

wherein outer surfaces of the optical surface areas are each recessed inwardly from the adjacent edges of the side walls to protect the optical surface areas from abrasion or physical contact.

5,292,485

HEAT-RESISTANT METAL MONOLITH

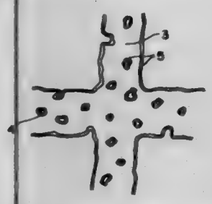
Takashi Harada, Nagoya; Hiroshige Mizuno, Tajimi; Fumio Abe, Handa, and Tsuneaki Ohashi, Obgaki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 545,488, Jun. 29, 1990. This application Oct. 1, 1992, Ser. No. 955,247

Claims priority, application Japan, Apr. 3, 1990, 2-88955

Int. Cl.[5] F01N *3/10;* **B21D** *39/00*

U.S. Cl. 422—180 **20 Claims**



1. A heat-resistant metallic monolith comprising:

a porous sintered metal monolith comprising an outer shell and a matrix of intersecting porous partition walls thereby defining a plurality of honeycomb passages, said partition walls and outer shell being integrally formed together to form a unitary structure, said metal monolith containing Fe, Cr and Al, wherein $10 < Cr \leqq 25$ wt %, $3 < Al \leqq 20$ wt %, the balance being substantially Fe; and

a heat-resistant metal oxide coated on a surface of the partition walls and surfaces of pores in said metal monolith.

5,292,486

CRYSTAL PULLING METHOD AND APPARATUS FOR THE PRACTICE THEREOF

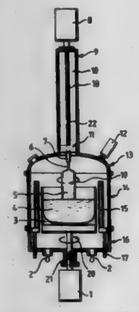
Dieter Drechsel, Bruchköbel, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Aug. 20, 1991, Ser. No. 747,532

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123336

Int. Cl.[5] B01D *9/00*

U.S. Cl. 422—249 **1 Claim**



1. Method for pulling crystals from the melt, comprising:

utilizing a crystal pulling apparatus which has a device for measuring the position of the surface of the melt during the pulling process, a charging device for recharging the melt during the pulling process, a positioning device for positioning the crucible during the pulling process, and performing the recharging such that, with the position of the melt surface constant with respect to the crystal pulling apparatus, during a first time interval (34) a recharge amount (37) per unit time is greater than an average recharge amount (38, 39) per unit time that would be necessary in order to make up for material consumption by a growing crystal (5), and in which during a second time interval (45) a recharge amount (46) per unit time is smaller than the average recharge amount (38, 39) per unit time that would be necessary in order to make up for the material consumption by the growing crystal (5), and which includes during the first time interval (34), to keep a melt surface (25) constant with respect to the crystal pulling apparatus, lowering the crucible (3) and which includes during the second time interval (45), to keep the melt surface (25) constant with respect to the crystal pulling apparatus, raising the crucible (3).

5,292,487

CZOCHRALSKI METHOD USING A MEMBER FOR INTERCEPTING RADIATION FROM RAW MATERIAL MOLTEN SOLUTION AND APPARATUS THEREFOR

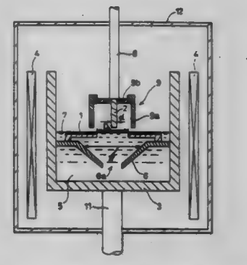
Masami Tatsumi, and Shin-ichi Sawada, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1992, Ser. No. 865,040

Claims priority, application Japan, Apr. 16, 1991, 3-083770; Aug. 22, 1991, 3-210786

Int. Cl.[5] B01D *9/00*

U.S. Cl. 422—249 **14 Claims**



1. An apparatus for manufacturing a single crystal, comprising:

a crucible for containing a raw material melt; a lower shaft for supporting said crucible; a heater arranged around said crucible for heating said crucible and melt; a coracle in said crucible, said coracle having a recess and an opening communicating with said melt of for containing raw material melt such that a surface area of said raw material melt in said coracle recess has a prescribed size; a rotatable and vertically movable upper shaft for holding a seed crystal at a lower end of said upper shaft for pulling a single crystal from said raw material melt; a first radiation intercepting member having a central hole through which said seed crystal is passed, said first heat radiation intercepting member resting initially on said coracle in a movable manner, said first member covering a melt surface of said raw material melt in said coracle for intercepting heat radiation from said raw material melt to a space above said melt surface; a second radiation intercepting member carried by said upper shaft and covering said central hole in said first intercepting member for further intercepting heat radiation through said central hole of said first radiation intercepting member, and means for moving said first intercepting member together with said second intercepting member and with said upper shaft upwardly when said single crystal is being pulled from said melt in said coracle recess.

5,292,488

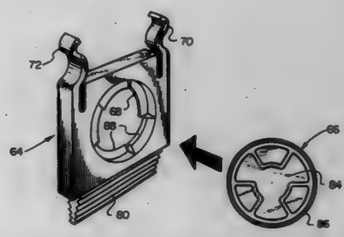
CATALYST SUPPORT ASSEMBLY FOR A CONTACT LENS STERILIZING APPARATUS

Joseph J. Cerola, Guntersville, and Steven C. Perlaky, Arab, both of Ala., assignors to Ciba Vision Corporation, Atlanta, Ga.

Division of Ser. No. 631,759, Dec. 21, 1990, Pat. No. 5,196,174, Continuation of Ser. No. 364,471, Jun. 9, 1989, abandoned. This application Jun. 19, 1991, Ser. No. 716,703

Int. Cl.[5] A61L *2/00*

U.S. Cl. 422—292 **8 Claims**



1. A catalyst support assembly for use with apparatus for sterilization of contact lenses; said catalyst support assembly comprising: a generally rectangular carrier configured for interfitting within a receptacle formed in a lens supporting means for contact lenses, a catalytic agent for neutralizing a hydrogen peroxide solution used in the sterilization of contact lenses carried by said carrier in such a manner that the catalytic agent is exposed at an exterior surface of said carrier for direct contact with hydrogen peroxide solution upon immersion of said catalyst support assembly in a hydrogen peroxide solution, retention means integrally formed on said carrier projecting outwardly of said carrier and configured for engaging the receptacle formed in the lens supporting means for contact lenses when said carrier is inserted into said receptacle, thereby removably mounting said catalyst support assembly relative to the lens supporting means and preventing contact of the catalytic agent with the hydrogen peroxide sterilizing solution in a reaction vessel until the catalyst support assembly mounted to the lens supporting means is immersed in a sterilizing solution in the reaction vessel for beginning a sterilizing process, to thereby prevent premature breakdown of a sterilizing solution prior to the introduction of contact lenses carried by the lens supporting means for sterilization therein.

5,292,489

TERNARY SILICON-RARE EARTH NITRIDES AND PROCESS FOR THEIR PREPARATION

Anthony J. Fanelli, Rockaway, N.J.; Jeffrey P. Solar, Silver Spring, Md.; Beili L. Wu, and Jean Yamanis, both of Morristown, both of N.J., assignors to AlliedSignal Inc., Morristownship, N.J.

Filed Jun. 24, 1991, Ser. No. 720,272

Int. Cl.[5] C04B *35/58*

U.S. Cl. 423—21.1 **11 Claims**

1. A compound having the formula $LnSi_3N_5$ wherein Ln is

selected from the group consisting of scandium, yttrium, cerium, praseodymium, neodymium, promethium, samarium,



europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutetium.

5,292,490

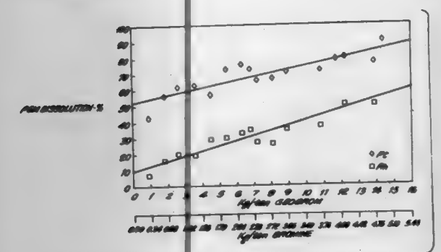
RECOVERY PLATINUM GROUP METALS FROM OXIDES ORES

Willem P. C. Duyvesteyn, San Jose; Houyuan Liu, Sunnyvale, both of Calif., and Saskia Duyvesteyn, Cambridge, Mass., assignors to BHP Minerals International Inc., Reno, Nev.

Continuation-in-part of Ser. No. 845,068, Mar. 3, 1992. This application Jun. 10, 1992, Ser. No. 896,675

Int. Cl.[5] C01G *55/00*; C22B *11/00*

U.S. Cl. 423—22 **11 Claims**



6. A method for recovering from an ore at least one platinum group metal selected from the group consisting of platinum, palladium, rhodium and ruthenium, said platinum group metal being disseminated through said ore in at least one form selected from the group consisting of said platinum group metal in the elemental state, ferro-alloys of said platinum group metal and at least one platinum group metal compound selected from the group consisting of sulfides, arsenides, tellurides, selenides, antimonides, and bismuthinides, which comprises:

reducing the particle size of said ore to a size less than about 100 mesh;

roasting said ore at an elevated temperature of about 275° C. to 750° C. sufficient to free up occluded platinum group metal in said ore and to decompose by oxidation any platinum group metal compounds present in said ore thereby rendering said platinum group metal leachable,

and subjecting said ore to leaching with a sulfuric acid solution maintained at a pH of less than about 1 during leaching, said solution containing an amount of a soluble bromide compound at least sufficient to form a soluble platinum group metal bromide complex while maintaining an amount of an oxidizing agent in said solution at least sufficient to provide a redox potential of at least about 700 mv as determined against Standard Calomel Electrode (SCE) to maintain said platinum group metal in an ionic form conducive to forming a soluble bromide complex, thereby dissolving substantial amounts of said at least one platinum group metal and form a solution thereof,

and recovering a product predominantly of said platinum group metal from said solution.

5,292,491

PROCESS FOR THE SOLVENT EXTRACTION OF PALLADIUM FROM AQUEOUS SOLUTIONS

Oliver Schumacher, Werne, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

PCT No. PCT/EP91/01193, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/01819, PCT Pub. Date Feb. 6, 1992

PCT Filed Jun. 26, 1991, Ser. No. 938,215

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1990, 4022472

Int. Cl.[5] C01G *55/00*

U.S. Cl. 423—22 **10 Claims**

1. Process for the solvent extraction of palladium from aqueous solutions of palladium salts which contain nitrate ions and are essentially free of halide and pseudohalide ions, comprising the following steps:

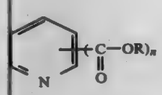
(1) contacting the aqueous, palladium salt-containing solution with a solution of an extraction medium in a water-immiscible organic solvent;

(2) separating the aqueous solution from the solution of the extraction medium in the water-immiscible organic solvent into which the palladium has been extracted;

(3) contacting the resulting organic phase with an aqueous strip solution, the palladium transferring into the aqueous strip solution;

(4) separating the aqueous strip solution, into which the palladium has transferred, from the solution of the extraction medium in the water-immiscible organic solvent;

the extraction medium used being pyridinecarboxylic esters of the general formula (1)



(1)

in which n=1 to 3 and R is identical or different hydrocarbon radicals having 5–36 C atoms and where the sum of the carbon atoms of all the Rs is between 16 and 36.

5,292,492

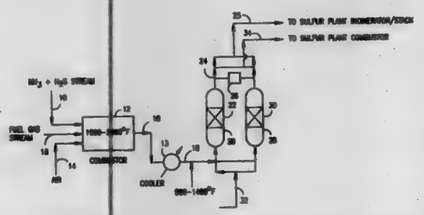
RECOVERING SULFUR FROM AMMONIA ACID GAS STREAM

J. Scott Buchanan, Mercerville, and Jagannathan N. Iyengar, Chester, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 4, 1992, Ser. No. 877,936

Int. Cl.[5] C01B *17/16*

U.S. Cl. 423—222 **25 Claims**



1. A method of recovering sulfur from an ammonia acid gas stream containing hydrogen sulfide comprising the steps of:

combusting said ammonia acid gas stream in a combustor with an excess of air or oxygen to convert the ammonia and all of the hydrogen sulfide therein to N_2 and SO_x,

respectively, and thus forming a nitrogen and sulfur oxide enriched gas stream;

contacting said nitrogen and sulfur oxide enriched gas stream with a solid absorbent bed for adsorbing thereon the sulfur oxides in the form of inorganic sulfates or sulfur oxides or combinations thereof, and thus forming a nitrogen bearing stream;

contacting said absorbent bed with a hydrogen and/or hydrocarbon bearing stream to regenerate said absorbent bed by reducing said retained inorganic sulfates or sulfur oxides or combinations thereof to hydrogen sulfide optionally with sulfur dioxide, and thereby forming a hydrogen sulfide bearing stream optionally with sulfur dioxide,; and

recovering sulfur from said hydrogen sulfide bearing stream in a sulfur plant.

5,292,493

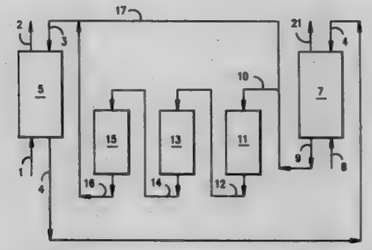
CLEAN UP OF ETHANOLAMINE SOLUTION BY TREATING WITH WEAK ION EXCHANGE RESINS

Costandi A. Audeh, Princeton, N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 628,310, Dec. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,282, Jun. 22, 1990, abandoned, which is a continuation of Ser. No. 288,392, Dec. 22, 1988, abandoned, which is a division of Ser. No. 113,316, Oct. 28, 1987, Pat. No. 4,795,565. This application Dec. 5, 1991, Ser. No. 802,586

Int. Cl.[5] C01B *17/16, 31/20*; C02F *1/422*

U.S. Cl. 423—229 **13 Claims**



1. A process for rejuvenating a spent aqueous alkanolamine solution comprising the steps of:

(a) providing an aqueous alkanolamine solution having alkanolamine concentration sufficient to effectively sorb H_2S, CO_2, or both from a gaseous hydrocarbon stream having H_2S, CO_2, or both dissolved therein;

(b) continuously contacting said aqueous alkanolamine solution with said hydrocarbon gas stream of step (a) whereby salts are accumulated in said aqueous alkanolamine solution, said salts exerting a deleterious effect on the acid gas sorption capacity of said aqueous alkanolamine solution;

(c) contacting said aqueous alkanolamine solution of step (b) with a weak cationic exchange resin having a pKa of from about 1 to about 7 for time sufficient to sorb from said aqueous alkanolamine solution at least a portion of said accumulated salts;

(d) repeating steps (b) and (c) to maintain the acid gas sorption capacity of said aqueous alkanolamine solution at a substantially constant value in the absence of fresh makeup alkanolamine;

(e) regenerating said weak cationic exchange resins with an aqueous solution of $(NH_4)_2CO_3$, NH_4HCO_3, NH_4OH or a mixture thereof; and

(f) removing counter-ions introduced by said regeneration solution by stripping said aqueous alkanolamine solution with steam and recycling said steam-stripped alkanolamine solution to step (b), wherein the corrosion rate in the presence of carbon steel is less than the same process using other ion exchange resins.

5,292,494

PROCESS FOR PRODUCTION OF RED PHOSPHOROUS POWDER

Yoshikazu Inao; Yasuo Nojiri, and Katsutoshi Shibata, all of Toyama, Japan, assignors to Rinkagaku Kogyo Company, Ltd., Toyama, Japan

Filed Feb. 18, 1993, Ser. No. 19,258

Claims priority, application Japan, Feb. 18, 1992, 4-069002

Int. Cl.[5] C01B *25/01, 25/02, 25/04*

U.S. Cl. 423—322 **9 Claims**

1. A process for the production of a red phosphorus powder by the thermal conversion of yellow phosphorus, which comprises heating the yellow phosphorus with refluxing at the boiling point thereof in the presence of a dispersant thereby to convert the yellow phosphorus to red phosphorus until a desired conversion ratio, removing most of the unconverted yellow phosphorus by distillation at the boiling point of yellow phosphorus, and then heating the residue to a temperature not lower than the boiling point of yellow phosphorus thereby to remove the unconverted yellow phosphorus still remaining;

wherein the dispersant is a member selected from the group consisting of a surfactant, a sparingly soluble in water, finely powdered inorganic compound having an average particle size of 1 μm or less, an inorganic ammonium salt, and an organic compound containing an amino group;

and wherein the thermal conversion reaction proceeds in the presence of from 0.01 to 5% by weight of the dispersant based on the amount of the yellow phosphorus.

5,292,495

POROUS PARTICLES OF CALCIUM CARBONATE AND METHOD FOR THE PREPARATION THEREOF

Takayuki Nakajima; Masao Kanoh, both of Kanagawa; Isao Sekiguchi, and Yoshio Iwasaki, both of Tokyo, all of Japan, assignors to Kowa-Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 792,289, Nov. 14, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 49,959

Claims priority, application Japan, May 27, 1991, 3-151155

Int. Cl.[5] C01F *5/24*

U.S. Cl. 423—432 **5 Claims**

1. A method for imparting porosity to particles of pulverized calcium carbonate mineral which comprises the steps of:

(a) blending particles of said calcium carbonate mineral, of which the particle diameter is in the range from 1 μm to 20 μm and the average particle diameter is in the range from 5 μm to 15 μm, with from 0.1 to 0.3% by weight of particles of a porosity-forming agent selected from the group consisting of alkali metal halides, alkaline earth metal halides and mixtures thereof to give a uniform powder blend mixture consisting essentially of particles of said calcium carbonate and said agent;

(b) calcining the solid phase powder blend at a temperature in the range from 800° C. to 1000° C. to decarbonate the solid phase calcium carbonate mineral particles into solid phase particles of calcium oxide having pores developed therein;

(c) slaking the solid phase particles of calcium oxide with steam to convert the calcium oxide particles into solid phase particles of calcium hydroxide;

(d) drying the particles of calcium hydroxide at a temperature in the range from 100° C. to 350° C.; and

(e) carbonating the dried solid phase particles of calcium hydroxide with carbon dioxide gas at a temperature in the range from 600° C. to 750° C.

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5,292,496

PROCESS FOR THE PREPARATION OF HYDROGEN PEROXIDE

Hiromitsu Nagashima, Kashiwa; Yukio Ishiuchi, Ushiku; Yasushi Hiramatsu, Niigata, and Michiya Kawakami, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,380
Claims priority, application Japan, Oct. 31, 1991, 3-314073
Int. Cl.[5] C01B *15/01*
U.S. Cl. 423—584 18 Claims

1. A process for the preparation of hydrogen peroxide which comprises catalytically reacting oxygen with hydrogen in an acidic reaction medium in the presence of a platinum group metal catalyst, wherein a composite oxide consisting essentially of

(i) cerium oxide; and

(ii) at least one member selected from the group consisting of titanium oxide, zirconium oxide and lanthanum oxide;

is used as a carrier for said platinum group metal catalyst.

5,292,497

METHOD OF REDUCING CHEMOTHERAPY TOXICITY USING (METHYLAMINOPROPYLAMINO)PROPYL DIHYDROGEN PHOSPHOROTHIOATE

Philip S. Schein, Bryn Mawr, Pa., and James R. Piper, Birmingham, Ala., assignors to U.S. Bioscience, Inc., West Conshohocken, Pa.

Continuation of Ser. No. 918,784, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 798,046, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 532,245, Jun. 5, 1990, abandoned, which is a continuation of Ser. No. 136,721, Dec. 22, 1987, abandoned. This application Mar. 29, 1993, Ser. No. 39,690
Int. Cl.[5] A61K *49/00, 31/54, 31/44, 31/685*
U.S. Cl. 424—10 4 Claims

1. A method of decreasing the toxicity of alkylating agents and/or platinum anti-cancer agents administered in cancer chemotherapy comprising orally administering to a patient undergoing said chemotherapy an effective amount of S-3-(3-methylaminopropylamino)propyl dihydrogen phosphorothioate.

5,292,498

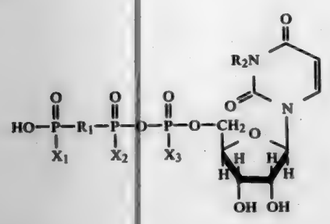
METHOD OF TREATING LUNG DISEASE WITH URIDINE TRIPHOSPHATES

Richard C. Boucher, Jr., Chapel Hill, N.C., assignor to The University of North Carolina At Chapel Hill, Chapel Hill, N.C.

Filed Jun. 19, 1991, Ser. No. 717,747
Int. Cl.[5] A61K *31/00;* A61L *9/04*
U.S. Cl. 424—45 26 Claims

11. A method of treating cystic fibrosis in a human subject in need of such treatment, comprising administering by inhalation an aerosol suspension of respirable particles to the respiratory system of said subject, said particles comprised of a compound of Formula I below, or a pharmaceutically acceptable salt thereof:

(I)



wherein:

X_1, X_2, and X_3 are each independently selected from the group consisting of OH and SH;

R_1 is selected from the group consisting of O, imido, methylene, and dihalomethylene; and

R_2 is selected from the group consisting of H and Br;

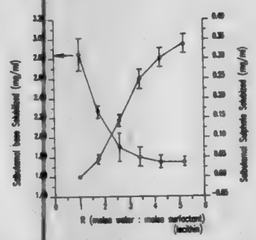
in an amount effective to hydrate retained lung mucous secretions in the lungs of said subject, whereby the retained mucous secretions are more easily transported from the lungs via mucociliary action.

5,292,499

METHOD OF PREPARING MEDICAL AEROSOL FORMULATIONS INCLUDING DRUG DISSOLVED IN REVERSE MICELLES

Richard M. Evans, Norwood, Mass., and Stephen J. Farr, Cardiff, Wales, assignors to University of Wales College of Cardiff, Cardiff, United Kingdom

Continuation of Ser. No. 580,926, Sep. 11, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 828,195
Int. Cl.[5] A61K *9/12*
U.S. Cl. 424—45 31 Claims



1. A method of preparing an aerosol formulation for drug delivery to a patient's lungs, comprising the steps of:

drying a surfactant from which reverse micelles can be formed; and

mixing said surfactant with a drug, an amount of water, and a propellant to form reverse micelles of said surfactant in said propellant which incorporate said drug, said surfactant being present in an amount ranging from 0.025 to 2.5 percent weight in volume, said drug being present in an amount less than 10 percent by weight, said propellant being present in an amount of at least 90 percent by weight, and said amount of water resulting in a molar ratio of water to surfactant ranging from approximately 1:1 to 20:1.

5,292,500

PLAQUE-INHIBITING TOOTHPASTE COMPRISING ANTIBACTERIAL BIGUANIDES

Peter Wuelknitz, Langenfeld-Berghausen; Rudolf Lehmann, Leichlingen; Walter Ploeger, Hilden, and Franz Foerg, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01346, § 371 Date Feb. 25, 1992, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/02513, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 16, 1990, Ser. No. 835,920
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928063
Int. Cl.[5] A61K *7/22*
U.S. Cl. 424—49 16 Claims

1. A toothpaste in the form of an aqueous dispersion comprising:

10 to 60% by weight polishing agents,

2 to 20% by weight humectants

0.5 to 5% by weight of water-soluble consistency regulators,

0.02 to 0.5% by weight of antimicrobial biguanides selected from the group consisting of water-soluble, physiologically compatible salts of chlorhexidine,

1 to 5% by weight of other additives from the group consisting of surfactants, flavoring oils, and sweeteners,

wherein the improvement comprises the presence in the toothpaste of:

predominantly α-aluminium oxide trihydrate, said α-aluminum oxide trihydrate having particles predominantly smaller than 50 micrometers in size with an average of approximately 1 to 50 micrometers, as polishing agent,

nonionic polysaccharide derivatives as consistency regulators,

an alkyl glycoside and, optionally, a nonionic solubilizer for the flavouring oil as surfactants, and

L-aspartyl-L-phenyl alanine methyl ester as sweetener.

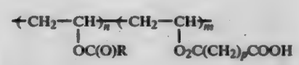
5,292,501

USE OF A CARBOXY-SUBSTITUTED POLYMER TO INHIBIT PLAQUE FORMATION WITHOUT TOOTH STAINING

Charles R. Degenhardt, and Barbara A. Kozikowski, both of The Procter & Gamble Company, Miami Valley Laboratories, P.O. Box 398707, Cincinnati, Ohio 45239-8707

Continuation of Ser. No. 808,250, Dec. 10, 1991, abandoned, which is a division of Ser. No. 542,868, Jun. 25, 1990, Pat. No. 5,093,170. This application Apr. 26, 1993, Ser. No. 52,850
Int. Cl.[5] A61K *7/16, 7/24*
U.S. Cl. 424—49 16 Claims

1. An oral composition comprising: (a) a safe and effective amount of a carboxy-substituted polymer active agent having the formula



or the salts thereof, wherein R is a C_2–C_8 alkyl group, n is in the range of from 0 to about 2,000, m is in the range of from about 10 to about 2,000, and p is in the range of from about 1 to about 10; and (b) a pharmaceutically acceptable carrier.

5,292,502

NON-IRRITATING DENTIFRICE

Michael R. Burke, Somerset; Michael Prencipe, East Windsor, and James M. Buchanan, Mercerville, all of N.J., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Jul. 2, 1992, Ser. No. 908,104
Int. Cl.[5] A61K *7/16, 7/18, 7/22*
U.S. Cl. 424—54 16 Claims

1. A substantially non-irritating oral composition which is a dentifrice toothpaste, gel, dental cream, mouthwash or rinse of an acceptable taste, the composition being comprised of an effective amount of a sodium lauryl sulfoacetate surfactant purified to contain about 18% or less by weight impurities, and is substantially free of bitter tasting impurities as well as oral mucosa irritating sodium lauryl sulfate, the effective amount being a concentration of about 0.5 to about 5.0% by weight at which concentration the purified sodium lauryl sulfoacetate is found unexpectedly not to have the normal bitter taste associated with unpurified commercial sodium lauryl sulfoacetate.

5,292,503

STABLE WATER IN OIL EMULSIONS

William J. Raleigh, Rensselaer, and Raymond J. Thimineur, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 9, 1991, Ser. No. 773,838
Int. Cl.[5] A61K *7/42, 7/44, 7/48, 9/10*
U.S. Cl. 424—59 6 Claims

1. A lotion comprising:

(a) from about 89.5 to about 40 parts by weight of an aqueous solution as a discontinuous phase;

(b) from about 10 to about 45 parts by weight of a volatile liquid having a normal boiling point of less than 250° C. as a continuous phase, said volatile liquid being selected from the group consisting of organosiloxane fluids having the average unit formula

$$(CH_3)_aSiO_{(4-a)/2} \quad (I)$$

(c) from about 0.1 to about 3 parts by weight of an organic oil-in-water surfactant having an HLB value of from 8 to 18 inclusive; and

(d) from about 0.4 to about 20 parts by weight of a polyorganosiloxane polyoxyalkylene copolymer surface active agent of the formula

$$MD_xD'_yM \quad (II)$$

wherein

D is $R_2SiO_{2/2}$ where R is hydrogen or methyl, ethyl, vinyl, phenyl, trifluoropropyl or unsubstituted hydrocarbon radical of from 1 to about 12 carbon atoms;

D' is $RR'SiO_{2/2}$ where R' is a polyalkylene ether of the formula

$$—R^3_a—(OR^2)_n—OR^4 \quad (III)$$

where R^2 is a $—CH_2—CH_2—$ group, R^3 is unsubstituted alkylene group of 1 to 20 atoms, R^4 is the same as R, n has a value of from 5 to about 20, and a is 0 or 1;

M is trimethylsiloxy endcapping units;

x is from about 335 to about 475; and

y is from about 4 to about 23;

with the proviso that the molecular weight of polysiloxane units D is from about 25,000 to about 35,000 and the weight ratio of D to D' is from greater than 60/40 to 90/10.

5,292,504

ANTI-LICE TREATMENT COMPOSITIONS

Caroline W. Cardin, and David W. Peter, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 510,659, Apr. 18, 1990, abandoned. This application Feb. 21, 1992, Ser. No. 841,232
Int. Cl.[5] A61K *7/075*
U.S. Cl. 424—70 18 Claims

1. An ovicidal/pediculicidal hair care composition comprising:

a) a synthetic pyrethroid selected from the group consisting of phenothrin, permethrin, and mixtures thereof;

(b) a natural pyrethrin selected from the group consisting of esters of Cinerin I, Cinerin II, Jasmolin I, Jasmolin II, Pyrethrin I, and Pyrethrin II and mixtures thereof wherein Pyrethrin I and Pyrethrin II comprise about 70% of the said mixture; and

(c) an acceptable liquid hair care vehicle;

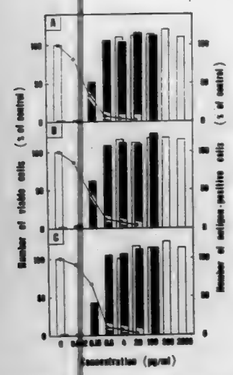
wherein the ratio of (a) to (b) is from about 6:1 to about 10:1.

5,292,505

SULPHATED VINYL POLYMER IN COMPOSITION FOR TREATING RETROVIRAL INFECTIONS

Masanori Baba; Erik D. A. De Clercq, both of Leuven, Belgium; Sándor Görög, Budapest, Hungary; Miklós Lów, Budapest, Hungary; Miklós Nagy, Budapest, Hungary, and Sándorné Györgyi, Budapest, Hungary, assignors to Stichting Rega VZW, Leuven, Belgium and Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Division of Ser. No. 315,413, Feb. 23, 1989, Pat. No. 5,152,978.
This application Jan. 15, 1992, Ser. No. 821,021
Claims priority, application Netherlands, Feb. 22, 1989, 8900442
Int. Cl.[5] A61K *47/34*
U.S. Cl. 424—78.08 7 Claims



1. A pharmaceutical composition in unit dosage form for treating of immunodeficiency disease causally connected to human immunodeficiency virus, comprising at least one pharmaceutically acceptable excipient and a quantity of a sulfated vinyl polymer active ingredient selected from the group consisting of sulfated polyvinylalcohol and sulfated copolymers of (meth)acrylic acid and vinylalcohol, wherein said sulfated vinyl polymer further has a sulfation degree between 50 and 60%, in an amount which upon administration of one or more unit doses thereof establishes a blood plasma concentration of 0.8–4 μg/ml, effective to treat said immunodeficiency disease, and to demonstrate improved effectiveness against HIV-1 and HIV-2 virus, in a patient to which one or more unit doses are administered.

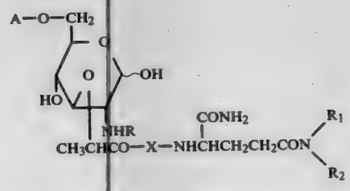
5,292,506

MURAMYLDIPEPTIDE DERIVATIVES AND INFLUENZA VACCINE COMPRISING THE DERIVATIVES

Masaharu Oki, Urayasu; Hideya Tsuge, Chiba; Kunio Ohkuma, and Tetsuya Oka, both of Kumamoto, all of Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo and The Chemo-Sero-Therapeutic Research Institute, Kumamoto, both of Japan

Filed Oct. 28, 1991, Ser. No. 783,148
Claims priority, application Japan, Oct. 30, 1990, 2-293335; Oct. 30, 1990, 2-293336
Int. Cl.[5] A61K *39/12, 37/00, 37/10;* C07K *9/00*
U.S. Cl. 424—89 15 Claims

1. Muramyldipeptide derivatives of the following general formula (I) and salts thereof:



(I)

wherein R represents an acyl group having 2 to 6 carbon atoms, X represents L-alanine residue, A represents a branched fatty acid residue having 20 to 60 carbon atoms, and R_1 and R_2 independently represent a hydrogen atom or a substituted or unsubstituted lower alkyl group.

5,292,507

METHOD OF USING POLYSACCHARIDES TO STABILIZE MICROORGANISMS FOR INOCULATING PLANT SEEDS

Robert Charley, Oakville, Canada, assignor to Imperial Oil Limited, Canada

Continuation of Ser. No. 563,800, Aug. 6, 1990, abandoned, which is a continuation of Ser. No. 385,926, Jul. 27, 1989, abandoned, which is a continuation of Ser. No. 892,078, Aug. 1, 1986, abandoned. This application Sep. 14, 1992, Ser. No. 945,437
Int. Cl.[5] C12N *1/04, 1/00;* C05F *11/08*
U.S. Cl. 424—93 K 12 Claims

1. A method for maintaining a microorganism comprising the steps of:

(i) selecting a microorganism selected from the group consisting of Serratia, Arthrobacter, Azospirillium, Rhizobium, Bacillus, *Pseudomonas fluorescens* and *Pseudomonas putida* which has a beneficial effect on growth or yield of a plant;

(ii) providing a solution comprising about 0.01% to about 20% of a substantially soluble, non-crosslinked polysaccharide having no more than about 10% of crosslinking;

(iii) preparing a suspension of said microorganism;

(iv) mixing the suspension of the microorganism with the polysaccharide solution to form a pourable composition which, at 4° C.–30° C., is a liquid, said composition comprising from about 0.005% to about 10% by weight of the non-crosslinked polysaccharide; and

(v) storing the composition.

5,292,508

Patent Not Issued For This Number

5,292,509

METHOD FOR THE DISINSERTION OF VITREOUS BODY BY AN ENZYME WHICH DISRUPTS OR DEGRADES CHONDROITIN SULFATE PROTEOGLYCAN

Gregory S. Hageman, St. Louis, Mo., assignor to Bethesda Eye Institute, St. Louis, Mo.

Continuation of Ser. No. 509,367, Apr. 16, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 894,526
Int. Cl.[5] A61K *37/54*
U.S. Cl. 424—94.61 9 Claims

1. A method for selectively and completely disinserting the ocular vitreous body, epiretinal membranes or fibrocellular membranes from the neural retina, ciliary epithelium and posterior lens surface of the mammalian eye as an adjunct to vitrectomy which comprises administering to said eye an effective amount of an enzyme which disrupts or degrades chondroitin sulfate proteoglycan localized specifically to sites of vitreoretinal adhesion and thereby permit complete disinsertion of said vitreous body and/or epiretinal membranes.

5,292,510

WS7622A MONO- OR DI- SULFATE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Shigehiro Takase, Ishioka; Hiroshi Hatanaka, Ibaraki; Masami Ezaki, Tsukuba; Eisaku Tsujii, Tsubuka; Masanori Okamoto, Tsukuba; Nobuharu Shigematsu, Tsukuba, and Masakuni Okuhara, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 11, 1991, Ser. No. 713,295
Claims priority, application United Kingdom, Jun. 29, 1990, 9014546
Int. Cl.[5] A61K *35/74*
U.S. Cl. 424—117 10 Claims

1. WS7622A mono- or di- sulfate or their pharmaceutically acceptable salts, among which the di-sodium salt of WS7622A di-sulfate or the di-potassium salt of WS7622A di-sulfate have the following physico-chemical properties:

Di-sodium salt of WS7622A di-sulfate:	
Appearance:	colorless crystals
Solubility:	soluble; water, methanol insoluble; chloroform, n-hexane
Melting point:	257–263° C. (dec.)
Specific rotation:	$[\alpha]_D^{23}$ + 37.5° (C = 1.0, methanol)
Molecular formula:	$C_{47}H_{61}N_9O_{19}S_2Na_2$
Elemental analysis:	
calcd.	($C_{47}H_{61}N_9O_{19}S_2Na_2.6H_2O$); C 44.30, H 5.77, N 9.89, S 5.03, Na 3.61%
found:	C 44.98, H 5.90, N 10.06, S 5.00, Na 3.98%
Molecular weight:	FAB-MS m/z 1188 (M + Na)$^+$

Thin layer chromatography:

Stationary phase	Developing solvent	Rf value
silica gel (Merck Art 5715)	$CHCl_3$—CH_3OH—H_2O (65:25:4)	0.11
	n-butanol-acetic acid-water (4:2:1)	0.29

Infrared absorption spectrum: (attached FIG. 1): ν_{max}^{KBr} 3360, 2960, 1735, 1660, 1640, 1530, 1500, 1380, 1250, 1200, 1060, 1030, 940, 890 cm^{-1}

^1H Nuclear magnetic resonance spectrum (attached FIG. 2):

(400 MHz, D_2O) δ	
7.50	(1H, s)
7.27	(1H, s)
7.33–7.24	(3H, m)
6.94	(1H, q, J=7Hz)
6.85	(2H, br d, J=8Hz)
5.53	(1H, m)
5.37	(1H, m)
4.80	(1H, br s)
4.63–4.57	(2H, m)
4.53	(1H, m)
4.06	(1H, m)
3.99	(1H, d, J=10Hz)
3.56	(1H, br d, J=14Hz)
3.46	(1H, m)
2.97	(3H, s)
2.97–2.88	(2H, m)
2.72	(1H, m)
2.59	(1H, m)
2.51–2.38	(2H, m)
2.09–1.91	(4H, m)
1.82–1.60	(3H, m)
1.77	(3H, d, J=7Hz)
1.50	(3H, d, J=6.5Hz)
1.40	(1H, m)
1.11	(6H, d, J=7Hz)
0.99	(3H, d, J=6.5Hz)
0.97	(3H, d, J=6.5Hz)

^{13}C Nuclear magnetic resonance spectrum (attached FIG. 3):

(100 MHz D_2O) δ	
183.6	(s)
177.9	(s)
177.7	(s)
174.8	(s)
173.8	(s)
173.3	(s)
172.4	(s)
167.8	(s)
161.5	(s)
145.5	(s)
144.9	(s)
139.6	(d)
139.0	(s)
137.0	(s)
136.0	(s)
132.3	(d) × 2
131.0	(d) × 2
129.6	(d)
127.4	(d)
125.9	(d)
77.4	(d)
75.1	(d)
63.8	(d)
62.7	(d)
59.1	(d)
55.9	(d)
54.9	(d)
51.9	(d)
41.9	(t)
37.2	(d)
36.9	(t)
34.1	(q)
32.3	(d)
31.9	(t)
31.8	(t)
31.2	(t)
27.5	(t)
23.7	(t)
21.7	(q)
21.4	(q) × 2
21.3	(q)
21.1	(q)
15.5	(q)

Amino acid analysis

Di-sodium salt of WS7622A di-sulfate (1 mg) was hydrolyzed with 6N HCl (1 ml) at 110° C. for 20 hours and the mixture was evaporated to dryness; the obtained mixture was analyzed on Hitachi 835 automatic amino acid analyzer; Amino acid standard solution [Type H (Wako Chemicals 013-08391) and Type B (Wako Chemicals 016-08641) were used.] were used as reference;

As the result, threonine, valine, phenylalanine, ornithine, NH_3 and unknown ninhydrin-positive components were detected; or

Di-potassium salt of WS7622A di-sulfate:	
Appearance:	colorless amorphous powder
Solubility:	soluble; water, methanol insoluble; chloroform, n-hexane
Melting point:	230–237° C. (dec.)
Specific rotation:	$[\alpha]_D^{23}$ + 34° (C = 1.0, methanol)
Molecular formula:	$C_{47}H_{61}N_9O_{19}S_2K_2$
Elemental analysis:	
calcd.	($C_{47}H_{61}N_9O_{19}S_2K_2.6H_2O$); C 43.21, H 5.63, N 9.65, S 4.91, K 5.99%
found:	C 43.96, H 5.44, N 9.97, S 5.09, K 4.49%
Molecular weight:	FAB-MS m/z 1236 (M + K)$^+$

Thin layer chromatography:

Stationary phase	Developing solvent	Rf value
silica gel (Merck Art 5715)	$CHCl_3$—CH_3OH—H_2O (65:25:4)	0.13

Melting point: 230°–237° C. (dec.)
Specific rotation: $[\alpha]_D^{23}$ + 34° (C = 1.0, methanol)
Molecular formula: $C_{47}H_{61}N_9O_{19}S_2K_2$

Elemental analysis: calcd. ($C_{47}H_{61}N_9O_{19}S_2K_2.6H_2O$); C 43.21, H 5.63, N 9.65, S 4.91, K 5.99% found: C 43.96, H 5.44, N 9.97, S 5.09, K 4.49%

Infrared absorption spectrum: (attached FIG. 4): ν_{max}^{KBr} 3360, 2960, 1735, 1660, 1640, 1530, 1500, 1405, 1380, 1250, 1200, 1050, 1030, 940, 890 cm^{-1}

^1H Nuclear magnetic resonance spectrum (attached FIG. 5):

(400 MHz, D_2O) δ	
7.52	(1H, s)
7.28	(1H, s)
7.34–7.25	(3H, m)
6.96	(1H, q, J=7Hz)
6.87	(2H, br d, J=8Hz)
5.56	(1H, m)
5.40	(1H, m)
4.84	(1H, br s)
4.70–4.55	(3H, m)
4.10	(1H, m)
4.03	(1H, m)
3.60	(1H, br d, J=14Hz)
3.50	(1H, m)
3.00	(3H, s)
3.00–2.85	(2H, m)
2.76	(1H, m)
2.62	(1H, m)
2.55–2.40	(2H, m)
2.12–1.95	(4H, m)
1.90–1.65	(3H, m)
1.79	(3H, d, J=7Hz)
1.53	(3H, d, J=6.5Hz)
1.45	(1H, m)
1.14	(6H, d, J=7Hz)
1.02	(3H, d, J=6.5Hz)
1.00	(3H, d, J=6.5Hz)

Amino acid analysis:

Di-potassium salt of WS7622A di-sulfate (1 mg) was hydrolyzed with 6N HCl (1 ml) at 110° C. for 20 hours and the mixture was evaporated to dryness; the obtained mixture was analyzed on Hitachi 835 automatic amino acid analyzer; Amino acid standard solution [Type H (Wako Chemicals 013-08391) and Type B (Wako Chemicals 016-08641) were used.] were used as reference;

As the result, threonine, valine, phenylalanine, ornithine, NH_3 and unknown ninhydrin-positive components were detected.

5,292,511

PROCESS FOR MANUFACTURING A HEALTH-SUPPLEMENTARY FOOD CONTAINING ALOE AS AN ACTIVE INGREDIENT

Il C. Kim; Sang Y. Lee, and Chang W. Choi, all of Seoul, Rep. of Korea, assignors to Pulmuwon Food Co., Ltd., Chengcheong-buk-Do, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 989,540

Claims priority, application Rep. of Korea, Jul. 3, 1992, 92-11893

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 8 Claims

1. A process for manufacturing a health-supplementary food containing aloe as an active ingredient, comprising, in the order recited, the steps of:

a. washing aloe, fresh leaf vegetables including kale, root vegetables including carrot, and fruit including tomato thoroughly with water;

b. pulverizing from 70 to 85 wt. % of aloe, from 10 to 20 wt. % of leaf vegetables including kale, from 5 to 15 wt. % of root vegetables and fruit including, respectively, carrot and tomato, into pieces having a length of 2 cm or less using a chopper to provide a pulverized mixture;

c. mixing sugar with the pulverized mixture to provide a sugar concentration for the mixture of from 15 to 37.5 Brix;

d. innoculating the mixture with from 2 to 5% by weight of a starter per 100% by weight of total starting materials, the starter having been cultured from a strain of Lactobacillus family grown in an MRS medium, in a fermenter at a temperature ranging from 20° to 35° C.;

e. fermenting the mixture for from 48 to 96 hours;

f. stopping fermentation when the mixture has a pH ranging from 3.2 to 3.7;

g. squeezing the mixture using a press to obtain a fermented liquid;

h. admixing additional sugar with the fermented liquid until homogenized to maintain the sugar concentration at a range of from 50 to 60 Brix; and

i. aging the mixture at room temperature.

5,292,512

COSMETIC OR PHARMACEUTICAL COMPOSITION CONTAINING MICROSPHERES OF POLYMERS OR OF FATTY SUBSTANCES FILLED WITH AT LEAST ONE ACTIVE PRODUCT

Hans Schaefer, Antibes; Francine Watts, Le Bar sur Loup; Christos Papantoniou, Montmorency, and Claude Mahieu, Paris, all of France, assignors to Centre Internationale de Recherches Dermatologiques (C.I.R.D.), Valbonne, France

Filed Dec. 20, 1989, Ser. No. 451,963

Claims priority, application Luxembourg, Dec. 20, 1988, 87 410

Int. Cl.[5] A61K *6/00*

U.S. Cl. 424—401 33 Claims

1. A pharmaceutical or cosmetic composition for topical application to the skin comprises, in a pharmaceutically or cosmetically acceptable carrier for topical application to the skin, microspheres of a polymer or fatty substance having a melting point approximately higher than 50° C., said microspheres being filled with at least one pharmaceutically or cosmetically active product and having a size such that they enter the sebaceous follicle on topical application to the skin and selectively and progressively reach the follicular canal whereby the said pharmaceutically or cosmetically active product diffuses into the follicular canal and surrounding tissue and the solid substrate forming said microspheres is rejected thereby avoiding any undesirable reaction between the organism and said solid substrate, at least 80 weight percent of said microspheres having a diameter ranging from 3 μm to 10 μm.

5,292,513

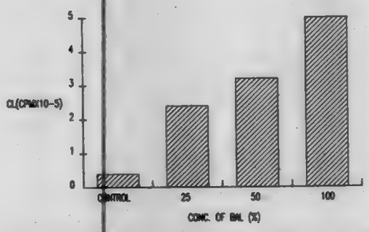
METHOD FOR NONSPECIFIC CELLULAR IMMUNE STIMULATION

Anthony G. Gristina, 11605 Deer Forest Rd., Reston, Va. 22091, and Quentin N. Myrvik, Caswell Beach, N.C., assignors to Anthony G. Gristina, Reston, Va.

Filed May 18, 1992, Ser. No. 885,301

Int. Cl.[5] A61K *9/04;* A61K *9/14, 45/05;* C12Q *1/18*

U.S. Cl. 424—401 8 Claims



1. A method for priming macrophages in vivo in patients in need of prophylactic treatment for bacterial and viral infections, comprising the steps of:

day when a providing patient enhanced macrophage activity by administering to said patient an effective dose of phagocytosable particles selected from the group consisting of biodegradable particles, opsonized zymosan particles, PMMA latex, polystyrene, heat killed-BCG, and heat killed *Staphylococcus epidermis* one to four days prior to said day when said patient requires enhanced macrophage activity, whereby said phagocytosable particles prime macrophages in said patient for enhanced macrophage activity.

5,292,514

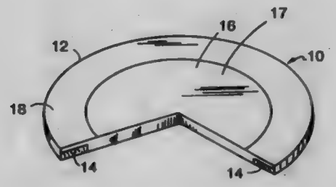
AZLACTONE-FUNCTIONAL SUBSTRATES, CORNEAL PROSTHESES, AND MANUFACTURE AND USE THEREOF

John T. Capecchi, Oakdale; Steven M. Heilmann, Afton; Larry R. Krepski, White Bear Lake; Oh-Seung Kwon, Woodbury, and David B. Olson, May Township, County of Washington, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 24, 1992, Ser. No. 903,367

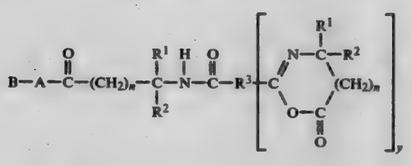
Int. Cl.[5] A61F *2/14;* C08K *5/15*

U.S. Cl. 424—422 32 Claims



1. A mammalian body implant comprising: a hydrogel having azlactone-reactive nucleophilic surfaces, a multi-functional azlactone composition covalently coupled using at least one azlactone moiety to the azlactone-reactive nucleophilic surfaces, and a biologically active material coupled to the multi-functional azlactone composition using at least one azlactone moiety;

wherein the mammalian body implant has the formula:



wherein R^1 and R^2 independently can be an alkyl group having 1 to 14 carbon atoms, a cycloalkyl group having 3 to 14 carbon atoms, an aryl group having 5 to 12 ring atoms, an arenyl group having 6 to 26 carbon atoms and 0 to 3 S, N, and nonperoxidic O heteroatoms, or R^1 and R^2 taken together with the carbon to which they are joined can form a carbocyclic ring containing 4 to 12 ring atoms, and n is an integer 0 or 1;

wherein y is at least one and is the number of azlactone moieties less at least one;

wherein R^3 is a bridging group capable of covalently connecting a plurality of azlactone moieties; and

wherein B is the hydrogel having azlactone-reactive nucleophilic surfaces and A is a residue of a azlactone-reactive nucleophilic group on the surface on the hydrogel, the azlactone-reactive nucleophilic group comprising O, S, or NR^4, and wherein R^4 is hydrogen or an alkyl group containing from 1 to 4 carbon atoms.

5,292,515

MANUFACTURE OF WATER-SWELLABLE HYDROPHILIC ARTICLES AND DRUG DELIVERY DEVICES

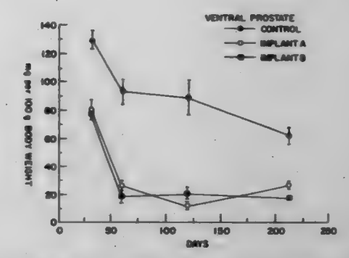
Daniel G. Moro, Randolph; Petr Kuzma, Monmouth Junction, and Harry Quandt, North Middletown, all of N.J., assignors to Hydro Med Sciences, a Division of National Patent Development Corporation, New York, N.Y.

Continuation of Ser. No. 589,957, Sep. 28, 1990, abandoned. This application Mar. 31, 1993, Ser. No. 41,523

Claims priority, application European Pat. Off., Oct. 5, 1992, 92 300394.1

Int. Cl.[5] A61M *5/178*

U.S. Cl. 424—422 42 Claims



1. A method for centrifugally casting a biocompatible, non-biodegradable, water-swellable, water-insoluble, hydrophilic plastic cartridge of uniform wall thickness useful as a rate-limiting barrier in a drug delivery device which comprises:

a. rotating a tube comprising a core of smooth uniform cylindrical surface, said tube containing a predetermined quantity of at least one polymerizable hydrophilic liquid monomer and closure means to prevent loss of said liquid monomer during rotation;

b. maintaining the longitudinal axis of the rotating tube parallel to the ground and effecting the rotation at a speed sufficient to cause radially outward displacement of said liquid monomer to assume a cylindrically-shaped liquid cartridge having a predetermined configuration within said tube;

c. subjecting the tube to polymerization conditions to convert said liquid state cartridge to a solid state hollow plastic cartridge of predetermined configuration; and

d. recovering a biocompatible, non-degradable, water-swellable, water-insoluble, hydrophilic cylindrically-shaped plastic cartridge having walls of uniform thickness between its smooth external and internal cylindrical surfaces.

5,292,516

BODY CAVITY DRUG DELIVERY WITH THERMOREVERSIBLE GELS CONTAINING POLYOXYALKYLENE COPOLYMERS

Tacey X. Viegas, Ann Arbor; Lorraine E. Reeve, Dexter, both of Mich., and Robert S. Levinson, Chesterfield, Mo., assignors to Mediventures, Inc., Grosse Pointe Park, Mich.

Continuation-in-part of Ser. No. 517,278, May 1, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 790,664

Int. Cl.[5] A61K *9/10, 47/34*

U.S. Cl. 424—423 26 Claims

1. A process for treating a condition requiring a medical device or the application of a medicament, which comprises administering to a body cavity of a mammal a hyperosmotic, iso-osmotic, or hypo-osmotic aqueous composition, having a buffered pH, which is a liquid at room temperature or below and an aqueous gel with a desired osmolality at mammalian body temperature, said aqueous composition containing;

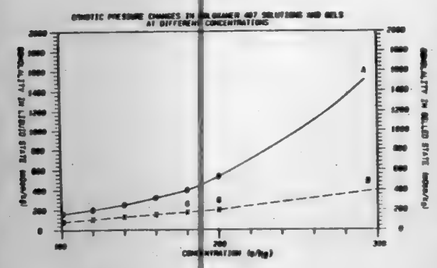
(1) about 20% to about 80% by weight of water and

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(2) about 10% to about 50% by weight of a polyoxyalkylene block copolymer of formula

$$Y[(A)_n—E—H]_x \quad (I)$$

wherein A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 1, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E. is a polyoxyethylene moiety, n has a value such that the minimum molecular weight of A is between about 500 to about 900, as determined by the hydroxyl number of an intermediate of formula



$$Y[(A)_n—H]_x \quad (II)$$

and the total average molecular weight of the polyoxyalkylene block copolymer is at least about 5000;

wherein the osmolality of the composition in the liquid state is adjusted to achieve the desired value of the osmolality of the aqueous gel by assuming that the polyoxyalkylene block copolymer does not contribute to the osmolality in the aqueous gel.

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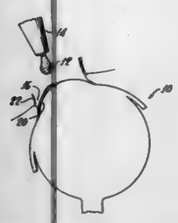
PH SENSITIVE, REVERSIBLE GELLING, COPOLYMERIC ERODIBLE DRUG DELIVERY SYSTEM

Nienyuan J. Chang, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Feb. 25, 1992, Ser. No. 840,875

Int. Cl.[5] A61K *9/08, 47/32*

U.S. Cl. 424—426 **15 Claims**



1. A reversible gelling drug delivery composition exhibiting a change in solution viscosity in response to variations in pH value, said composition comprising:

an aqueous solution of from about 1 w/v% to about 25 w/v% poly(methylvinylether/maleic acid) having a number-averaged molecular weight of from about 20,000 to about 100,000 and from about 0.005 w/v% to about 50 w/v% of a therapeutic or diagnostic pharmaceutical compound, said aqueous solution having a formation pH value of from about 1–4 and said therapeutic or diagnostic pharmaceutical compound being chemically stable in the presence of said poly(methylvinylether/maleic acid).

5,292,518

PROLONGED-RELEASE DRUG TABLET FORMULATIONS

Eric H. Kuhrts, Santa Barbara, Calif., assignor to Hauser-Kuhrts, Redwood City, Calif.

Continuation-in-part of Ser. No. 440,730, Nov. 22, 1989, Pat. No. 5,096,714. This application Mar. 16, 1992, Ser. No. 851,584

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] A61K *9/16, 9/22, 47/26, 47/36*

U.S. Cl. 424—439 **69 Claims**

1. A solid prolonged-release oral unit dosage composition for oral administration and ingestion in solid form, and intended to be swallowed as such, which consists essentially of a solid admixture of an effective dose of a biologically-absorbable therapeutic agent or drug, a gel-forming dietary fiber, and a mineral salt which releases a physiologically-acceptable gas upon ingestion, wherein the combination of the fiber and salt provides prolonged but effective release of the drug or therapeutic agent upon oral ingestion and exposure of the solid composition to biological fluids.

5,292,519

PROCESS FOR PRODUCING A PHARMACEUTICAL TABLET USING A HOMOZYGOUS WHITE STARCH

David J. Mauro, Dolton, Ill., and Frances L. Turnak, Hammond, Ind., assignors to American Maize Technology, Inc., Dimmitt, Tex.

Filed Apr. 10, 1992, Ser. No. 866,421

Int. Cl.[5] A61K *9/48, 47/00*

U.S. Cl. 424—465 **6 Claims**

1. In a process for making pharmaceutical tablets wherein compression is used to form the pharmaceutical tablets and wherein starch is used as a binder in formulating the tablets, the improvement which comprises using an effective amount of a white corn starch obtained from a starch bearing plant which is homozygous with the white gene (ww) as a binder in formulating the tablets thereby reducing the amount of energy necessary to eject the tablets compared to bleached common corn starch and microcellulose, the amount of said starch being effective to make the tablets friable.

5,292,520

STABILIZED SOLID PHARMACEUTICAL COMPOSITION CONTAINING ACID ADDITION SALTS OF A BASIC DRUG AND AN ALKALINE STABILIZER

Pieter de Haan, Oss, and Cornelus J. Maria van der Ven, Uden, both of Netherlands, assignors to Akzo N.V., Belperweg, Netherlands

Continuation of Ser. No. 842,278, Feb. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 581,859, Sep. 13, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 938,325

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—465 **6 Claims**

1. An improved granulation process utilizing temperatures greater than 45° C. and involving a mixture of a water soluble acid addition salt of a poorly soluble basic drug and an excipient wherein the improvement consists essentially of the steps of: selecting the drug from the group consisting of apomorphine,

chlorpromazine, imipramine, promethazine, and mianserin, selecting the excipient from the group consisting of

microcrystalline cellulose, lactose and calcium hydrogen phosphate, and adding a pharmaceutically acceptable alkaline compound having a water solubility of at least two milligrams/milliliter to the mixture before or during heating, said pharmaceutically acceptable alkaline compound being present in an amount from about 0.5 to about 10 percent by the dry weight of the granulation mixture.

5,292,521

SOLID ORAL PREPARATION CONTAINING A PYRROLIDINE DERIVATIVE WITH A CATECHOL GROUP

Mitsumasa Shino, Ibaraki, and Sachiyuki Hamano, Kanagawa, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

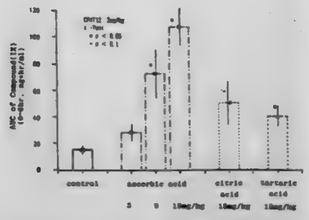
PCT No. PCT/JP91/00453, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO91/15204, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 5, 1991, Ser. No. 777,272

Claims priority, application Japan, Apr. 6, 1990, 2-91727

Int. Cl.[5] A61K *31/395, 31/40*

U.S. Cl. 424—484 **17 Claims**



1. A solid oral preparation comprising an organic acid, or a salt thereof selected from the group consisting of ascorbic acid, citric acid, tartaric acid, aspartic acid and cysteine, and a pyrrolidine derivative having a catechol group, or a pharmacologically acceptable salt thereof.

5,292,522

AQUEOUS FILM COATING AGENT FOR SOLID MEDICAMENTS

Hans-Ulrich Petereit, Darmstadt; Manfred Assmus, Bickenbach, and Klaus Lehmann, Rossdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 825,006, Jan. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 707,320, May 28, 1991, abandoned, which is a continuation of Ser. No. 541,278, Jun. 20, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 998,882

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920082

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **9 Claims**

1. A stable film forming aqueous coating composition for solid pharmaceutical dosage forms, comprising

(a) an aqueous dispersion, prepared directly by aqueous emulsion polymerization, of a film forming polymer comprising at least one member selected from the group consisting of acrylic acid, methacrylic acid, alkyl esters of these acids, and aminoalkyl esters of these acids, and, added to said dispersion,

(b) a water insoluble organic lipophilic emulsifier having a hydrophile-lipophile balance (HLB) value from 3.5 to 5, in an amount which is from 0.1 to 8 percent by weight of said polymer.

5,292,523

METHOD FOR GROWTH PROMOTION OF ANIMALS AND POWDER COMPOSITIONS CONTAINING KILLED MICROBIAL CELLS OF BACTERIA BELONGING TO GENUS CLOSTRIDIUM

Kazumi Kono; Yasuyuki Mizukai, both of Kasukabe; Kazuo Mizuochi, Konosu; Takeshi Asano, Fujioka; Takaichi Murayama, Takasaki; Toshio Kitajo, and Mamoru Tanaka, both of Nagano, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo and Miyarisan Pharmaceutical Co., Ltd., Toguramachi, both of Japan

Filed Dec. 3, 1992, Ser. No. 985,639

Claims priority, application Japan, Dec. 11, 1991, 3-327707; Oct. 23, 1992, 4-285834

Int. Cl.[5] A61K *35/74;* **C12N** *1/00, 1/20*

U.S. Cl. 424—520 **6 Claims**

1. A method of promoting growth in an animal which comprises orally administering to the animal killed microbial cells of bacteria belonging to *Clostridium butyricum* in an amount effective to promote growth of the animal.

5,292,524

BLOOD PLATELET LOADED WITH DIAGNOSTIC OR THERAPEUTIC-CONTAINING LIPOSOME OR RECONSTITUTED SENDAI VIRUS

Roxanne Male, Pasadena, and Wilton E. Vannier, Sierra Madre, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 6, 1991, Ser. No. 755,835

Int. Cl.[5] A61K *37/22, 43/00, 49/04;* **A61M** *36/14*

U.S. Cl. 424—1.17 **10 Claims**

1. A composition consisting essentially of loaded blood platelets wherein said loaded blood platelets comprise:

a blood platelet comprising a membrane and a cell interior surrounded by said membrane;

a loading vehicle located within said blood platelet cell interior, said loading vehicle being selected from the group consisting of liposomes and reconstituted Sendai virus envelopes wherein said liposomes or reconstituted Sendai virus envelopes are of a size capable of being incorporated into the interior of said blood platelet; and

a diagnostic or therapeutic agent encapsulated within said loading vehicle.

5,292,525

METHOD AND COMPOSITION FOR REMOVING AN ALGINATE FROM A CUTANEOUS SUBSTRATE

R. A. Brenden, Clayton; J. Burkey, Fenton, and F. T. Kirchner, St. Charles, all of Mo., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1992, Ser. No. 961,003

Int. Cl.[5] A01N *59/26*

U.S. Cl. 424—601 **8 Claims**

1. A method for removing an alginate from a cutaneous substrate which comprises: A) contacting said alginate with an effective amount of a chelant solution which comprises a) at least about 0.1 weight %, based on the weight of said composition, of a chelant; and b) the balance water; and B) removing said alginate from said cutaneous substrate.

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5,292,526
ANTIBACTERIAL ANTIPLAQUE ANTICALCULUS ORAL COMPOSITION
Abdul Gaffar, Princeton; Nuran Nabi, North Brunswick; John Affilitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Co., New York, N.Y.
Division of Ser. No. 657,885, Feb. 19, 1991, Pat. No. 5,180,578, which is a continuation of Ser. No. 398,605, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Oct. 23, 1992, Ser. No. 966,104
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] A61K *7/16, 7/18*
U.S. Cl. 424—49 33 Claims

1. An oral composition comprising an orally acceptable aqueous-humectant dentifrice or toothpaste vehicle, a dentally acceptable water-insoluble polishing agent, a water-soluble or swellable anti-bacterial enhancing agent which is effective to enhance the anti-bacterial effect of a substantially water-insoluble non-cationic antibacterial agent, which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing group, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment adherence or bonding of said antibacterial agent on oral tooth and gum surfaces, and an effective anticalculus amount of a linear molecularly dehydrated polyphosphate, wherein the polyphosphate is present in amount such that the weight ratio of polyphosphate ion to anti-bacterial agent ranges from in excess of 0.72:1 to less than 4:1 said dentifrice or toothpaste having an optimized antiplaque effectiveness by presentation of said non-cationic antibacterial agent in a macroemulsion formed by adding said "A.E.A", or antibacterial enhancing agent incrementally, to a clear solution micro-emulsion of said antibacterial agent typically dissolved in admixtures of humectant and surface active agent, until the solution becomes cloudy, and may be characterized as a macroemulsion.

5,292,527
NON-ALCOHOLIC AQUEOUS MOUTHWASH
Kenneth D. Konopa, Duluth, Ga., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jul. 2, 1992, Ser. No. 908,091
Int. Cl.[5] A61K *7/16, 7/22, 7/26*
U.S. Cl. 424—54 22 Claims

1. An aqueous, slightly acidic, non-alcoholic mouthwash composition made by a method, comprising:
a) mixing a water insoluble flavoring oil in an amount of about 0.05 to about 2.0% by weight of said composition into a hydrogenated castor oil surfactant in an amount of less than about 1.0% by weight of said composition to form a mixture;
b) adding, subsequently, a humectant to said mixture in an amount sufficient to form a first phase that is clear and homogeneous in appearance;
c) mixing at least one cationic antimicrobial agent into water that comprises about 0.1% to about 1.0% by weight of said composition of a buffer effective to obtain a slightly acidic final pH to form a second phase; and
d) mixing said first phase into said second phase in a slow, controller manner so as to prevent said first phase from visually coagulating into discrete particles in said second phase wherein said mixed composition is of clear, homogeneous, stable appearance.

5,292,528
ORAL COMPOSITION
Shigeki Mori, and Chiho Tomita, both of Takatsuki, Japan, assignors to Sunstar Kabushiki Kaisha, Osaka, Japan
Filed Jun. 14, 1993, Ser. No. 75,387
Int. Cl.[5] A61K *7/16, 7/22, 9/68, 31/14*
U.S. Cl. 424—54 9 Claims

1. An oral hygiene composition selected from the group consisting of tooth powder, toothpaste, dermatologic ointment, mouth wash, gargle, chewing gum, dental cream, and dental floss, said composition comprising an organosilicon-type quaternary ammonium salt bactericide which has a tendency to aggregate in an aqueous system immobilized on a water-insoluble solid stabilizing carrier.

5,292,529
PRESERVED SUNSCREEN COMPOSITION
Marion F. Gregory, Bebington, and Christine Morris, Upton By Chester, both of United Kingdom, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jun. 29, 1992, Ser. No. 905,941
Claims priority, application United Kingdom, Jul. 2, 1991, 9114317
Int. Cl.[5] A61K *7/06, 7/42, 7/44, 7/48*
U.S. Cl. 424—59 3 Claims

1. A preserved sunscreen composition suitable for topical application to the surface of the human body, in order to prevent it from the injurious effects of UV A-radiation, which comprises:
(i) from 0.1 to 20% by weight of 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane;
(ii) from 0.1 to 5% by weight of an organic acid or salt thereof selected from the group consisting of sorbic acid, potassium sorbate and combinations thereof; and
(iii) a cosmetically acceptable carrier for the sunscreen; the composition having a pH value not exceeding about pH 6.

5,292,530
STABLE ANHYDROUS TOPICALLY-ACTIVE COMPOSITION AND SUSPENDING AGENT THEREFOR
Andrew D. McCrea, Chicago, and Michael P. Diulus, Oak Park, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 360,418, Jun. 2, 1991. This application Oct. 4, 1991, Ser. No. 770,888
Int. Cl.[5] A61K *7/34, 7/38, 7/42, 7/48*
U.S. Cl. 424—066 46 Claims

1. An antiperspirant composition comprising:
(a) about 0.01% to about 50% by weight of an antiperspirant compound;
(b) from about 20% to about 98.89% by weight of a volatile liquid carrier selected from the group consisting of a cyclic volatile silicone having a viscosity of about 0.5 to about 10 centistokes, a linear volatile silicone having a viscosity of about 0.5 to about 10 centistokes, a volatile hydrocarbon including from about 10 to about 30 carbon atoms, and combinations thereof;
(c) from about 0.1% to less than 2% by weight of a finely-divided silica; and
(d) from about 1% to about 15% by weight of a suspending wax composition, wherein the suspending wax composition comprises from about 5% to about 50% by weight of a wax having a melting point of at least 150° F.; from about 0.1% to about 94.9% by weight of a volatile solvent selected from the group consisting of a volatile silicone, a volatile hydrocarbon and a combination thereof, wherein said volatile silicone has a viscosity of about 0.5 to about 10 centistokes and said volatile hydrocarbon includes from about 10 to about 30 carbon atoms; and from about 0.1% to about 94.4% by weight of an ester including at least 10 to about 32 carbon atoms, provided that the composition includes about 4.5% or less by weight of the wax.

5,292,531
DERMATOLOGIAL EXTERNAL AGENT
Keiichi Uehara; Yoshihiro Ohhata, both of Yokohama; Akio Kawabata, Hyogo; Yoshikazu Inoue, Kakogawa; Yoshihiro Yokogawa, Yokohama, and Yuji Tsutsumi, Tokyo, all of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan
Filed Sep. 12, 1991, Ser. No. 761,855
Claims priority, application Japan, Jan. 19, 1990, 2-10023
Int. Cl.[5] A61K *7/48*
U.S. Cl. 424—40 L 4 Claims

1. A method for inhibiting bacterial dermatological diseases comprising administering to a patient in need thereof a dermatological external agent comprising an antibacterial effective amount of at leas tone compound selected from the group consisting of tetrahydroabietic acid, salts thereof, hydrogenated rosin and salts thereof, and a cosmetically and pharmacologically acceptable carrier.

5,292,532
AQUEOUS ANTIFUNGAL VAGINAL DOUCHE
Felice Bombart, 240 East 27th Street, Apt. 6J, New York, N.Y. 10016
Continuation of Ser. No. 752,161, Aug. 21, 1991, abandoned, and a continuation of Ser. No. 633,224, Dec. 21, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,609
Int. Cl.[5] A01N *25/04, 43/16, 43/52*
U.S. Cl. 424—405 13 Claims

1. An aqueous antifungal vaginal douche composition consisting essentially of an antifungal agent selected from the group consisting fomiconazole, clotrimazole, ketoconazole and nystatiin in an amount effective to kill and/or inhibit the growth of yeasts or fungi in the vagina, a penetrating agent selected from the group consisting of ethoxylated alcohols, ethoxylated alkylphenols, ethoxylated fatty acids, ethoxylated castor oil, alkanolamides, ethylene glycol/propylene glycol copolymers, ethoxylated sorbitol, ethoxylated sorbitol esters, ethoxylated glycerol esters, alkyl sulfosuccinates, alkyl sulfonates, alkyl sulfates, alkyl aryl sulfonates, alkyl aryl sulfates, phosphate esters and betaines in an amount effective to enhance penetration of the antifungal agent into vaginal tissue, an adherent agent selected from the group consisting of arabic, align, guar, tragacanth and xanthan gums, pectin, dextran, sodium carboxymethyl cellulose, methyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxyethyl methyl cellulose, polyvinyl alcohol, polyacrylic acid and acidic gums in an amount effective to enhance adherence of the antifungal agent to vaginal tissue and a carrier or solvent selected from the group consisting of polyethylene glycols, polyoxyethylene glycols, polypropylene glycols and polyoxypropylene glycols, wherein said douche composition has a pH of about 5.5. to 8.5 and will not disturb the normal bacterial balance in the vagina.

5,292,533
CONTROLLED RELEASE MICROCAPSULES
William A. McMahon; Chel W. Lew, both of San Antonio, Tex., and Keith L. Branly, Brandon, Fla., assignors to Micro Flo Co., Mulberry, Fla.
Filed Mar. 27, 1992, Ser. No. 858,130
Int. Cl.[5] A01N *25/28*
U.S. Cl. 424—408 11 Claims

1. A microcapsule comprising:
a core material comprising a dry hydrophilic material, a hydrophilic material in a hydrophobic carrier liquid, or a hydrophobic material;
a capsule shell wall which completely surrounds said core material, wherein said shell wall material comprises: (a) a glutaraldehyde crosslinked gelatin containing 1–75 wt % of at least one water soluble plasticizer selected from the group consisting of water soluble starches, sugars, cyclodextrins, maltodextrins, corn syrup solids, and sorbitol which inhibits transfer of said core material through said crosslinked gelatin; and (b) a feeding deterrent comprising a cucurbitacin.

5,292,534
SUSTAINED RELEASE COMPOSITION AND METHOD UTILIZING XANTHAN GUM AND AN ACTIVE INGREDIENT
William Valentine, and William K. Valentine, both of Lawrenceville, Ga., assignors to Valentine Enterprises, Inc., Lawrenceville, Ga.
Filed Mar. 25, 1992, Ser. No. 857,516
Int. Cl.[5] A61K *9/48*
U.S. Cl. 424—451 71 Claims

1. A sustained release composition for slow delivery of a drug as an active ingredient to the gastro-intestinal tract consisting of an effective amount of said active ingredient in mixture with xanthan gum and a lubricant, the mixture being in the form of a compacted unit dose, said active ingredient being present in an amount of 40–80 weight percent of said unit dose, said xanthan gum being present in an amount of 20–50 weight percent of said unit dose.

5,292,535
HYPEROSMOTIC SOLUTIONS FOR ISONATREMIC RESUSCITATION
George C. Kramer, Davis; Azad Sheikh, Elk Grove, and Robert A. Gunther, Davis, all of Calif., assignors to Regents of the University of Californin, Oakland, Calif.
Filed Jun. 15, 1990, Ser. No. 538,848
Int. Cl.[5] A61K *33/14, 37/00, 31/70, 31/195*
U.S. Cl. 424—680 7 Claims

1. A method of preventing or treating hypodynamic circulatory shock in a mammal, comprising the step of administering to said mammal in a condition or potentially in a condition of shock, a therapeutically effective dose of a physiologically acceptable solution, said solution comprising reabsorbable solutes and a sodium salt, said reabsorbable solutes consisting essentially of at least one sugar or a derivative of a sugar and at least one amino acid or a derivative of an amino acid and said solution having an osmolarity in excess of 1000 mOsms.

5,292,536
SUGAR-COATED ARTICLE
Makoto Sato; Yukio Tsuchiya, both of Saitama; Masaki Shibata, Tokyo; Toshinobu Tsurumi, and Sadanori Tanaka, both of Saitama, all of Japan, assignors to Lotte Company Limited, Tokyo, Japan
Filed Apr. 15, 1992, Ser. No. 868,503
Claims priority, application Japan, Apr. 17, 1991, 3-85405
Int. Cl.[5] A23G *3/30*
U.S. Cl. 426—5 4 Claims

1. A sugar-coated confection comprising an edible center material and a layer coating said edible center material, wherein said layer comprises at least 25% by weight palatinose.

5,292,537
METHOD FOR STABILIZING RICE BRAN AND RICE BRAN PRODUCTS
Neal A. Hammond, Cordova, Tenn., assignor to Bran Tec, Inc., Baton Rouge, La.
Filed Nov. 12, 1992, Ser. No. 975,527
Int. Cl.[5] A23C *9/12*; C12N *9/96*
U.S. Cl. 426—44 8 Claims

1. A method for enzymatically stabilizing rice bran ground to a flour having a 40 mesh and smaller particle size, said rice bran containing protein and having a naturally occurring lipase enzyme that causes rancidity comprising:
(a) selecting an antilipase enzyme which inactivates the naturally occurring lipase enzyme in the rice bran, said antilipase enzyme being a nonspecific protease;

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(b) mixing the rice bran with water and the antilipase enzyme, said antilipase enzyme being in an amount effective to substantially inactivate the lipase enzyme in a period of time that is dependent on the amount of water; and,

(c) holding the mixture of rice bran, water and antilipase enzyme at a temperature below a temperature at which the antilipase enzyme is denatured while waiting the period of time for the inactivation to occur whereby a wet stabilized rice bran is produced without denaturing the protein.

5,292,538

IMPROVED SUSTAINED ENERGY AND ANABOLIC COMPOSITION AND METHOD OF MAKING

Stephen M. Paul, San Clemente, Calif., and H. DeWayne Ashmead, Fruit Heights, Utah, assignors to Metagenics, Inc., San Clemente, Calif. and Albion International, Inc., Clearfield, Utah

Filed Jul. 22, 1992, Ser. No. 918,446
Int. Cl.[5] A23L *1/305*
U.S. Cl. 426—74 **25 Claims**

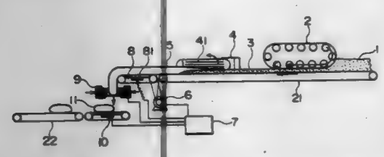
1. A fructose/glucose/protein blend composition comprising in parts by weight (a) from 25 to 100 parts of glucose polymers; (b) from 5 to 20 parts of fructose; (c) from 5 to 25 parts of a hydrolyzed protein source, the hydrolyzed protein source comprised of at least di- and longer chain peptides and at least 40% of said protein source having a mean molecular weight of less than 500 daltons; (d) from 0 to 20 parts of a lipid source; (e) from 50 to 500$\times(10^{-3})$ parts of magnesium; and from 0.03 to 6 parts of an amino acid ligand source; wherein the magnesium is present as an amino acid chelate formed from said amino ligand source wherein the mole ratio of amino acid ligand to magnesium in said chelate is at least 1:1.

5,292,539

METHOD OF CONTINUOUSLY SHAPING BAR-SHAPED BREAD

Yasunori Tashiro; Michio Morikawa; Torahiko Hayashi; Shigeo Uesawa, and Toru Watanabe, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Utsunomiya, Japan

Division of Ser. No. 12,073, Feb. 1, 1993. This application Aug. 4, 1993, Ser. No. 101,861
Claims priority, application Japan, Mar. 30, 1992, 4-105498; Jun. 10, 1992, 4-176118; Jul. 30, 1992, 4-223290; Jul. 30, 1992, 4-223291
Int. Cl.[5] A21D *8/00*
U.S. Cl. 426—231 **13 Claims**



1. A method of continuously shaping bar-shaped bread dough pieces, comprising the steps of

conveying a mass of bread dough on a horizontal conveyor in a traveling direction,

stretching said conveyed mass of bread dough into a dough sheet having a uniform width and thickness,

rolling the dough sheet in a direction perpendicular to the traveling direction to form a bar-shaped dough body extending in the traveling direction,

causing the dough body to hang over a downstream end of the conveyor, and

cutting the hanging dough body by squeezing the dough body with a cutter having flat pressing surfaces.

5,292,540

PROCESS FOR PREPARING LOW FAT POTATO CHIPS

Stephen Laufer, 1452 Cerro Gordo St., Los Angeles, Calif. 90026

Continuation-in-part of Ser. No. 712,943, Jun. 10, 1991, Pat. No. 5,194,277. This application Mar. 12, 1993, Ser. No. 30,794
Int. Cl.[5] A23L *1/217*
U.S. Cl. 426—242 **16 Claims**

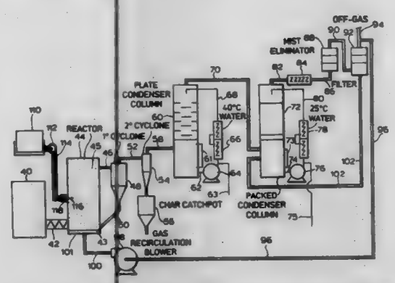
1. A method for preparing a potato product having a low fat content in which none of the natural foodstuffs of the potato are removed, said method consisting of the following steps: cutting a potato to produce a plurality of potato slices; baking the slices for a period of about six to twelve minutes within a temperature range of about 250 to 500 degrees Fahrenheit; and microwave heating the slices for a period of about two to seven minutes to produce a product having substantially the same flavor, color, crispness and slightly greasy appearance as deep-fried potato chips and having no added fat content.

5,292,541

BROWNING MATERIALS DERIVED FROM THE PYROLYSIS OF SUGARS AND STARCHES

Gary L. Underwood, and John A. Stradal, both of Manitowoc, Wis., assignors to Red Arrow Products Company Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 535,735, Jun. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 498,849, Mar. 26, 1990, abandoned, and a continuation-in-part of Ser. No. 416,963, Oct. 4, 1989, Pat. No. 5,039,537, and a continuation-in-part of Ser. No. 358,650, May 26, 1989, Pat. No. 4,994,297. This application Mar. 27, 1991, Ser. No. 674,442
Int. Cl.[5] A23L *1/03*
U.S. Cl. 426—250 **25 Claims**



1. A process for producing a pyrolysis product of sugars, starches or mixtures thereof comprising:

pyrolyzing a member of the group consisting of sugar, starch and mixtures thereof to produce a vaporous pyrolysis product;

condensing the vaporous pyrolysis product to produce a water-soluble pyrolysis liquid;

contacting the water-soluble pyrolysis liquid with an organic solvent which is essentially insoluble in water to extract flavoring materials from the water-soluble pyrolysis liquid into the organic solvent; and

separating the organic solvent from the so-extracted water-soluble pyrolysis liquid to yield the so-extracted water-soluble pyrolysis liquid as a browning liquid product which has substantially no detectable smoke flavoring ability by taste.

5,292,542

PROCESS FOR MAKING DEHYDRATED POTATO PRODUCTS

Roderick G. Beck; Clayton D. Pratt, and Pamela R. Bartausky, all of Blackfoot, Id., assignors to Services Alimentaires, S.A., Filed Jun. 19, 1992, Ser. No. 901,533

Int. Cl.[5] A23L *1/2165*
U.S. Cl. 426—285 **29 Claims**

1. A process for making a dehydrated potato product from potato flakes, comprising:

mixing potato flakes with a sufficient amount of water to increase their moisture content to a predetermined level;

lowering the temperature of the moistened potato flakes to a temperature and for a period of time sufficient for retrogradation of free soluble starch contained in the potato flakes;

reducing the size of the potato flakes in a manner to minimize breakage of potato cell walls; and then

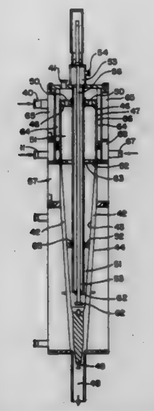
drying the resulting potato product for a period of time sufficient to remove a desired amount of the moisture contained therein.

5,292,543

METHOD FOR ASEPTICALLY RECONSTITUTING BEVERAGES

Harold R. Heath, and Jack F. Brumley, both of Houston, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 675,778, Mar. 27, 1991, Pat. No. 5,101,713. This application Jan. 13, 1992, Ser. No. 820,281
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—506 **11 Claims**



1. A process for the aseptic preparation of a liquid or jelled food product containing a fraction of reconstituting water and a fraction of concentrate comprising the steps of:

introducing into a mixing chamber having an adjustable volume a flow of superheated water and a flow of concentrate to form an aseptic reconstituted liquid or jelled food product;

removing reconstituted food product from said mixing chamber as the reconstituted food product is formed;

interrupting the flow of superheated water and the flow of concentrate in said mixing chamber for a period of time;

reducing the volume of said mixing chamber from a preset volume during said period of time in such a manner as to reduce possible degradation of the reconstituted product and to avoid loss of or reacquire aseptic conditions when the flow of superheated water and concentrate is resumed; and

subsequently resuming the flow of superheated water and the flow of concentrate into said mixing chamber and simultaneously increasing the volume of said mixing chamber back to said preset volume.

5,292,544

TRICALCIUM PHOSPHATE TO GENERATE SMOOTHNESS AND OPAQUENESS IN REDUCED FAT LIQUID FOOD PRODUCTS AND METHOD

Antoine F. Coutant, Jersey City, and Philip Wong, Kendall Park, both of N.J., assignors to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Continuation-in-part of Ser. No. 818,690, Jan. 7, 1992, abandoned. This application Dec. 2, 1992, Ser. No. 984,155
Int. Cl.[5] A23L *1/05*; A23C *9/154*
U.S. Cl. 426—573 **14 Claims**

1. A method of preparing smooth low fat, very low fat or fat-free emulsion-simulating food products with opaque appearance and non-gloppy texture from a low fat, vary low fat or fat-free emulsion-simulating food products mixture having up to 15% fat mimetic additive and from 0.1 to 5% gum, comprising

homogenizing said mixture; and

adding to the mixture, either before or after said homogenizing, from greater than 1% to 10% tricalcium phosphate;

all of the above percentages based on the total weight of said food product.

5,292,545

STABLE GUM SYSTEM FOR VERY LOW CALORIE TABLE SYRUP APPLICATIONS

Lynne J. Jones, Lake Zurich, and Warren A. Gordon, Rochester, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 559,121, Jul. 26, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 784,359
Int. Cl.[5] A23L *2/00*
U.S. Cl. 426—575 **45 Claims**

1. A gum system for use in very low calorie table syrup applications, said gum system comprising by weight of said total syrup composition:

a. from about 1.00% to about 1.75% carboxymethylcellulose; and

b. from about 0.10% to about 0.27% xanthan gum; wherein the weight ratio of the carboxymethylcellulose to xanthan gum ranges from about 5:1 to about 12:1.

5,292,546

PROCESS FOR THE REMOVAL OF CHOLESTEROL FROM EGG YOLK

Jan Cully, Garching/Alz, and Heinz-Rüdiger Vollbrecht, Altenmarkt, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 613,320, Nov. 15, 1990, abandoned. This application Mar. 4, 1992, Ser. No. 845,347
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013367
Int. Cl.[5] A23L *1/015*
U.S. Cl. 426—614 **33 Claims**

1. A method for removing 80 to 95% by weight of the total weight of cholesterol contained in an egg yolk, said method comprising the sequential steps of:

(a) adding water and ammonium carbonate or ammonium bicarbonate to the egg yolk to form an aqueous egg yolk mixture, said ammonium carbonate or ammonium bicarbonate being added in an amount insufficient to cause breaking of the egg yolk;

(b) admixing a solid adsorbent or a complexing agent with the aqueous egg yolk mixture whereby the cholesterol contained in said aqueous egg yolk mixture is adsorbed on the adsorbent or complexed with the complexing agent;

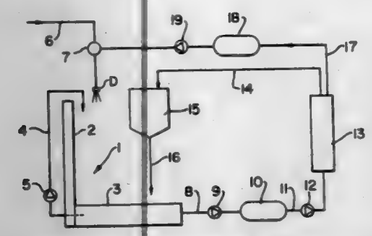
(c) separating the adsorbent loaded with the cholesterol or the cholesterol complexed with the complexing agent from the aqueous egg yolk mixture to obtain an aqueous egg yolk mixture of reduced cholesterol content; and
(d) removing the ammonium carbonate or ammonium bicarbonate from the aqueous egg yolk mixture of reduced cholesterol content.

5,292,547

METHOD FOR ENVIRONMENTALLY BENIGN PAINT SPRAYING USING A DISPERSION OF OVEN CURED LACQUER ENAMEL IN WATER

Georg Schlumpf, Herisau, and Hanspeter Wepf, Frauenfeld, both of Switzerland, assignors to Unicolor AG, Lachen, Switzerland

Filed Sep. 2[illegible], 1991, Ser. No. 743,413
Claims priority, application Switzerland, Dec. 22, 1989, 4615/89-4
Int. Cl.[5] B05D *1/02*; B01D *61/14*
U.S. Cl. 427—8 **9 Claims**



1. A method for paint spraying with a dispersion of oven curable lacquer enamel in water in a paint spraying booth that is provided with a cubicle with a water-rinsed rear wall for collecting and washing out of overspray in sink water in the spraying booth, the entire sink water being separated by ultrafiltration into ultrafiltrate water and lacquer-containing residue, the ultrafiltrate water being returned to the paint spraying booth, the lacquer-containing residue being enriched with lacquer by removing water until its lacquer content is essentially equal to that of dispersion that is freshly fed to the spray painting booth, the residue that is enriched with lacquer in this way being admixed to the freshly fed dispersion for reuse in spray painting, a constituent for preventing coagulation of the lacquer being admixed to the dispersion fed to the paint spraying booth, a constituent for inhibition of curing is admixed to the dispersion that is fed to the paint spraying booth, a constituent is admixed to the sink water for adjusting the flow rate of the ultrafiltrate water through the ultrafilter, and the conductivity of the water returned to the paint spraying booth is monitored and kept below $10^{-4}\ \Omega^{-1}cm^{-1}$.

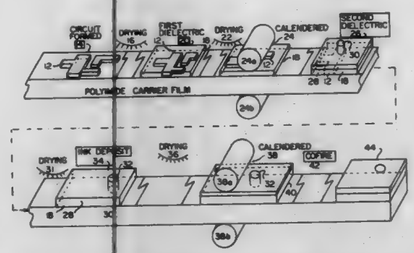
5,292,548

SUBSTRATES USED IN MULTILAYERED INTEGRATED CIRCUITS AND MULTICHIPS

Jewel G. Rainwater, North Richland Hills, Tex., assignor to Vistatech Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 504,330, Apr. 3, 1990, Pat. No. 5,101,319. This application Mar. 30, 1992, Ser. No. 860,063
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—97 **21 Claims**

1. A method for making a substrate for use in a multilayered integrated circuit or multichip module which comprises:
coating a conductive material on a surface of a support sheet to form a conductive circuit;
drying said conductive circuit;
coating a first dielectric layer on the support surface in the areas where the conductive material is not coated;
densifying by calendering to form a first densified conductive circuit embedded dielectric layer;
coating a second dielectric layer over the first densified conductive circuit embedded dielectric layer, said second



layer characterized by vias therein which are in communication with at least a portion of the conductive circuit; and filling said vias in the second dielectric layer to form electrically conductive vias.

5,292,549

METALLIC COATED STEEL HAVING A SILOXANE FILM PROVIDING TEMPORARY CORROSION PROTECTION AND METHOD THEREFOR

Wim J. van Ooij; Ricole A. Edwards, both of Fairfield, and Ashok Sabata, Middletown, all of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Oct. 23, 1992, Ser. No. 965,313
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—155 **14 Claims**



1. A method of providing temporary corrosion protection for steel by applying a siloxane film which is removable by alkaline rinse, comprising the steps of:
providing a steel sheet coated with a metal from the group consisting of zinc, zinc alloy, aluminum and aluminum alloy,
rinsing the sheet with a solution containing a silane and 0.1–1.0 vol. % of a crosslinking agent, and
curing the silane coating at a temperature less than 200° C. thereby forming the siloxane film.

5,292,550

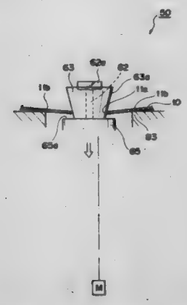
MANUFACTURING METHOD OF SUBSTRATE MEANS FOR OPTICAL RECORDING DISK AND APPARATUS THEREFOR

Seiro Fujii; Satoshi Jinno, and Takahiro Kobayashi, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,749
Claims priority, application Japan, Jun. 20, 1991, 3-148643
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—165 **3 Claims**

1. A manufacturing method of a substrate means for an optical recording disk comprising the steps of:
coating an ultraviolet setting resin solution onto either one of a stamper and a disk-shaped substrate having a light transmissive property in a form of a concentric circle with

respect to a central axis of either one of the stamper and the substrate;
forcibly deforming a portion of the substrate ranging from a center portion to an outer circumferential portion thereof into substantially a conical-convex shape;



press-contacting the stamper to the substrate thereby to spread the coated ultraviolet setting resin solution between the stamper and a convex side of the substrate; and setting the ultraviolet setting resin solution by irradiating ultraviolet rays through the substrate thereby to form a transfer layer on the substrate.

5,292,551

PROCESS FOR PRODUCING ELECTROCONDUCTIVE POWDERS

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 29, 1992, Ser. No. 906,076
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—215 **11 Claims**



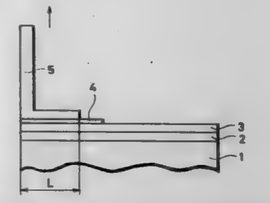
2. A process for making a coated powder comprising the steps of:
(a) providing a suspension comprising at least one particulate substrate material,
(b) applying a coating comprising amorphous silica associated with a hydrous antimony-containing tin oxide onto said particulate substrate; wherein the silica and hydrous antimony-containing tin oxide are simultaneously applied onto the particulate substrate and wherein the pH of the suspension during said applying is maintained in the range of about 1.0 to about 4.0,
(c) recovering solids from the suspension, washing said solids, and;
(d) heating the solids at a temperature and for a time sufficient to convert at least a portion of the hydrous antimony-containing tin oxide to an antimony-containing tin oxide,
(e) optionally continuing said heating at a temperature and for a time sufficient to calcine at least a portion of said solids; thereby obtaining the coated powder.

5,292,552

METHOD FOR FORMING METALLIZED LAYER ON AN ALUMINUM NITRIDE SINTERED BODY

Akira Yamakawa, and Akira Sasame, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 628,210, Dec. 17, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 902,446
Claims priority, application Japan, Dec. 20, 1989, 1-331726
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—229 **4 Claims**



1. A method of increasing the peel strength between a metallized layer and a surface of an aluminum nitride sintered body, comprising the steps of:
(a) forming and sintering an aluminum nitride body to provide a sintered aluminum nitride body;
(b) preparing a metal paste of tungsten and oxide components including at least SiO_2, CaO, and Al_2O_3 present in said metal paste within the range of at least 10 percent by weight and not more than 40 percent by weight of said metal paste, said oxide components including said SiO_2 in a content of at least 1 percent by weight and not more than 30 percent by weight of said oxide components, said CaO being present in a weight ratio of at least 0.5 and not more than 2.0 relative to said Al_2O_3;
(c) applying said metal paste onto said surface of said aluminum nitride sintered body; and
(d) firing said aluminum nitride sintered body coated with said metal paste in a non-oxidizing atmosphere at a temperature of at least 1500° C. and less than 1600° C., whereby said peel strength between said metallized layer and said aluminum nitride sintered body is at least 1.47 kg/mm^2.

5,292,553

ULTRA THIN ZIRCON COATING AND MEMBRANE

Phillipe J. A. M. Leture, Lyon; Alain Dauger, Limoges, and Michel Prassas, Paris, all of France, assignors to Corning Incorporated, Corning, N.Y.

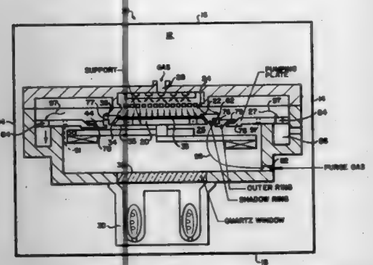
Filed Sep. 28, 1992, Ser. No. 952,053
Claims priority, application France, Oct. 1, 1991, 91 12038
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—244 **14 Claims**

1. A process to produce an ultra thin zircon coating comprising:
A) mixing (i) a homogenous alcoholic sol resulting from hydrolysis and partial condensation of a silicon alkoxide with (ii) a homogenous solution of a zirconium compound chelated in an alcohol and (iii) in the presence of a doping agent being soluble in the resulting mixture and promoting zircon crystallization, with proportions of the sol and the solution yielding a molar ratio Si/Zr close or equal to 1, until a homogenous mixed sol is obtained;
B) forming a matured sol containing colloidal particles and/or polymeric entities by a procedure selected from:
(i) stirring the mixed sol for approximately 30 minutes to 24 hours to obtain the matured sol, and
(ii) gelling the mixed sol, drying and forming a powder of the resultant gel, and mixing the powder with acidified water to obtain the matured sol;

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C) forming a coating of the matured sol on a microporous substrate;
D) drying the sol coating sufficiently slowly to convert the sol coating to a gel coating and avoid flaws in the gel coating;
E) firing the gel coating on the substrate at a temperature of 900° to 1500° C. to form an adherent ultra thin zircon layer on the microporous substrate.

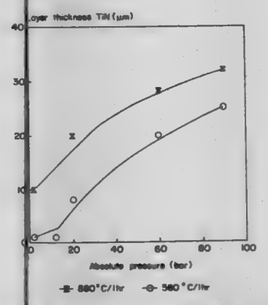
5,292,554
DEPOSITION APPARATUS USING A PERFORATED PUMPING PLATE
Ashok K. Sinha, Palo Alto; Steve G. Ghanayem, Sunnyvale, and Virendra V. S. Rana, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Nov. 12, 1992, Ser. No. 975,251
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—251 **24 Claims**



1. An apparatus for depositing a material on a substrate, the substrate comprising a deposition surface and a second surface on which substantially less material deposition is to occur, the apparatus comprising:
(a) a support for the substrate;
(b) a process gas section in contact with the deposition surface of the substrate when the substrate is on the support;
(c) a first inlet for introducing a process gas comprising at least a component of the material into the process gas section during a deposition stage;
(d) a barrier means separating the process gas section from the second surface of the substrate for inhibiting process gas from contacting the second surface;
(e) a second inlet for introducing a purge gas into a flow path comprising a section proximate to the second surface of the substrate when the substrate is positioned on the support during a purge stage; and
(f) a plurality of perforations in the barrier, the cross sectional area of the perforations being sufficiently large to allow the purge gas to flow through the barrier into the process gas section without moving the substrate relative to the support.

12. A method for depositing material on a substrate, the substrate comprising a deposition surface and a second surface on which substantially less material deposition is to occur, the method comprising the steps of:
(a) loading the substrate onto a support contained in a deposition chamber, the chamber having a process gas section in contact with the deposition surface of the substrate
(b) after the loading step, depositing the material on the substrate by introducing a process gas into the process gas section, the deposition chamber having a perforated plate separating the process gas section from the second surface of the substrate for inhibiting process gas from contacting the second surface, the perforations being sufficiently small that substantially no deposition of material on the backside of the substrate occurs; and
(c) after the deposition step, introducing a purge gas into a flow path that comprises a section proximate to the second surface of the substrate, the cross sectional area of the perforations being sufficiently large to allow the purge gas to flow through the separation plate into the process gas section without moving the substrate relative to the support.

5,292,555
PROCESS FOR APPLYING NITRIDE LAYERS TO TITANIUM
Friedrich Preisser, Buedingen, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation of Ser. No. 665,652, Mar. 7, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 984,136
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1990, 4021286
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.1 **25 Claims**



1. A process for applying a nitride layer to a part made of titanium, a titanium alloy or a mixture thereof, comprising: contacting said part in a thermochemical treatment with ammonia or ammonia-containing gas mixture in a chamber furnace at a temperature of 500° to 1000° C. and under a pressure of 0.2 to 9 MPa, wherein the ammonia partial pressure is at least 0.2 MPa.

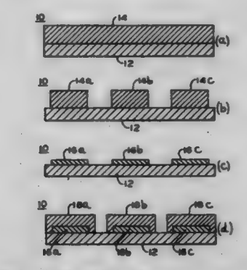
5,292,556
METHOD FOR PREPARING NEGATIVE-WORKING WASH-OFF RELIEF IMAGES
Sheau-Hwa Ma, Chadds Ford, Pa., and Andrew E. Matthews, Leeds, England, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 22, 1992, Ser. No. 994,821
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—264 **14 Claims**

1. A method for preparing negative-working wash-off relief images comprising the sequential steps of:
(a) providing a non-photosensitive, aqueous processable layer, said layer comprising a dispersion of solvent-coalesceable particles in a polymer matrix;
(b) imagewise applying an ink to the non-photosensitive layer to coalesce the particles and form a continuous phase, water insoluble polymer blend of coalesced particles with the polymer matrix in the ink applied areas; and
(c) washing the layer with an aqueous developer to remove the non-ink applied areas of the layer.

5,292,557
ELECTROLESS PLATING OF SUBSTRATES
Larry D. Olson, Viroqua, Wis., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Nov. 16, 1992, Ser. No. 976,866
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—437 **10 Claims**

1. A method for electroless deposition of copper from solution onto a substrate comprising treating said substrate with an effective amount of a stilbene-based fluorescent brightener to sensitize said substrate and thereafter contacting said substrate with an electroless copper plating solution.

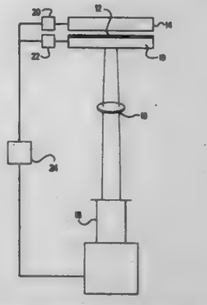
5,292,558
PROCESS FOR METAL DEPOSITION FOR MICROELECTRONIC INTERCONNECTIONS
Adam Heller, Austin, Tex.; Panagiotis Argitis, Piraeus, Greece, and Joseph C. Carls, Austin, Tex., assignors to University of Texas at Austin, Texas, Austin, Tex.
Filed Aug. 8, 1991, Ser. No. 742,391
Int. Cl.[5] B05D *5/12*; C23C *16/06*; H01L *21/314*
U.S. Cl. 427—533 **129 Claims**



1. A method of selectively forming interconnections in a microelectronic device comprising:
spin coating on a surface of said microelectronic device a solution containing a polyoxometalate and an organic constituent, the polyoxometalate containing at least one element selected from the group consisting of tungsten, molybdenum, vanadium, niobium, and tantalum to provide a film;
said polyoxometalate being soluble in water and polar organic solvents and including said one element in a high oxidation state;
substantially removing the organic constituent of said film; and
reducing the film from which the organic constituent has been substantially removed to a metallic layer.

5,292,559
LASER TRANSFER PROCESS
James L. Joyce, Jr., Winston-Salem, and Marlin R. McCleaf, Colfax, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 10, 1992, Ser. No. 820,443
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 427—597 **8 Claims**

1. In a method for producing a smooth continuous and adherent pressure bonded or cold welded layer of a metal containing composite on a base metal through the driving force of a pulsed laser, which includes the steps of selecting a laser transparent substrate, applying to said substrate a thin polymeric film characterized by a high optical coefficient of absorption to the wavelength of said laser, applying said metal containing composite onto said thin polymeric film, and placing said base metal in close proximity to said thin polymeric film containing composite, the improvement comprising in combination therewith the steps of
a) preparing said thin polymeric film containing composite as a multilayered composite comprising an absorptive polymer, a metal, nickel and a metal flash layer, and
b) directing pulsed laser energy at an energy density of between about 12 and 18 J/cm^2 through said transparent substrate toward said thin polymeric film containing composite whereby said laser energy is absorbed by said thin polymeric film causing heating and vaporization of said film to a controlled depth of said film, leaving remaining portions of said film unvaporized after said depth to act as support for said composite to be pressure bonded or cold welded, said vaporization providing the necessary pressure to blowoff said remaining unvaporized portions of said film, thereby propelling said composite onto said base metal.



5,292,560
THERMOPLASTIC FILMS FOR USE IN STRETCH/CLING APPLICATIONS
Paul M. German, Friendswood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.
Continuation-in-part of Ser. No. 123,002, Nov. 19, 1987, abandoned. This application Dec. 6, 1990, Ser. No. 623,010
The portion of the term of this patent subsequent to Sep. 7, 2008, has been disclaimed.
Int. Cl.[5] B65B *53/00*
U.S. Cl. 428—34.9 **25 Claims**

1. A thermoplastic cling film comprising a cling layer, said cling layer comprising a polymer of two or more monomers, wherein a first monomer comprises ethylene and a second monomer comprises an acrylate, wherein said polymer has a acrylate content of about 20% to about 40% by weight based upon the weight of said polymer.

5,292,561
TRANSPARENT SHRINK FILM MADE FROM BIAXIALLY ORIENTED POLYPROPYLENE
Herbert Peiffer, Mainz-Finthen; Ursula Murschall, Nierstein, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 19, 1991, Ser. No. 762,491
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 4030385
Int. Cl.[5] B65B *53/00*
U.S. Cl. 428—35.1 **22 Claims**

1. A film comprising a propylene polymer, wherein said film has at 100° C. a shrinkage in the longitudinal direction of at least about 10% and a shrinkage in the transverse direction of less than about 2%.

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5,292,562

FUSER ROLL FOR FIXING TONER TO A SUBSTRATE

John J. Fitzgerald, Webster; Wayne T. Ferrar, Fairport; Tonya D. Binga, Rochester, and John R. Bablarz, Waterloo, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1992, Ser. No. 984,072
Int. Cl.[5] G03G *15/20*
U.S. Cl. 428—35.8 9 Claims

1. The fuser roll useful for heat-fixing an electrographic toner to a substrate, wherein the roll comprises a core having thereon a base cushion layer comprising a condensation-cross-linked poly(dimethylsiloxane) elastomer,

characterized in that the base cushion layer has chromium oxide particles dispersed therein in a concentration of from 25 to 40 percent of the total volume of the base cushion layer.

5,292,563

METALLIZABLE, TWIST WRAP, BIAXIALLY ORIENTED, POLYPROPYLENE FILM

Herbert Peiffer, Mainz-Finthen; Ursula Murschall, Nierstein, and Gunter Schloegl, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 794,893
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037417
Int. Cl.[5] B32B *27/08*; B29D *7/24*
U.S. Cl. 428—35.9 28 Claims

1. A metallizable, biaxially oriented, transparent, multilayer film comprising:

a) a base layer consisting essentially of polypropylene, an antistatic agent, and a low-molecular weight hydrocarbon resin having a softening point of about 130° to about 180° C., and

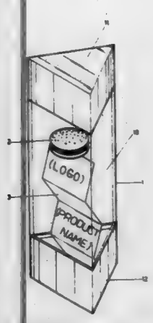
b) an additional layer comprising polypropylene and an antiblocking agent, wherein said additional layer does not contain lubricants.

5,292,564

FLUID-CONTAINED DISPLAY ORNAMENT

Vincent K. W. Lee, No. 44, Lane 458, Sheh Chung Street, Taipei, Taiwan

Filed Mar. 11, 1992, Ser. No. 849,581
Int. Cl.[5] G09F *19/02*
U.S. Cl. 428—13 5 Claims



1. A fluid-contained display device comprising:

a) a transparent fluid container with opposite ends and having therein a fluid with a first specific gravity;

b) a movable pilot element located in the fluid within the container, the pilot element having a second specific gravity different from the first specific gravity such that, when the pilot element is located adjacent to one end of the container, it will move toward the opposite end when the container is inverted; and,

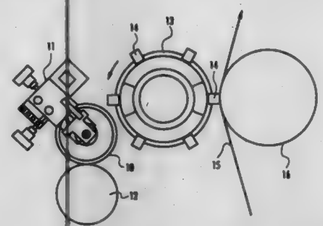
c) at least one display member having a first end portion attached to the pilot element and a second end portion attached to an end of the container such that as the pilot element moves toward the end of the container to which the display member is attached, the at least one display member is collapsed, and as the pilot element moves toward the opposite end of the container, the at least one display device is expanded.

5,292,565

INK ROLL FOR HIGH SPEED PRINTING

Lisa A. Napier; Stephanie S. Hinton, both of Cookeville, and Sherron F. Stanton, Baxter, all of Tenn., assignors to Porelon, Inc., Cookeville, Tenn.

Filed Jun. 7, 1991, Ser. No. 712,125
Int. Cl.[5] B41K *1/42*
U.S. Cl. 428—36.5 13 Claims



1. An ink roll, comprising a roll consisting essentially of a microporous thermoplastic structure of interconnected aggregates forming substantially uniform, unitary cohesive structure, and an ink impregnated in the microporous structure, wherein the microporous thermoplastic structure is made from a resin which consists essentially of a blend of a first polymer having particle sizes in the range of 1 to 100 μm, and a second polymer having particle sizes from more than 100 μm to 600 μm, the second polymer having a composition different from the first polymer that imparts greater strength and abrasion resistance to the roll than the first polymer, which resin has been plasticized and fused in the presence of a plasticizer to form of an open-celled network of pores both at its surface and throughout its interior, the pores being small enough to prevent substantial leakage of an ink but large enough to permit ink flow to the microporous roll surface, whereby the thermoplastic structure, when the ink roll is rotatably mounted on a bracket in tangential contact with a drive roll and a transfer roll, has sufficient strength, toughness and flexibility to deliver an ink from its outer peripheral surface to the outer peripheral surface of the transfer roll without substantial misting of the ink from the ink roll surface as the ink roll is driven under pressure from tangential contact with the drive roll at a peripheral speed of at least 200 ips.

5,292,566

BATTERY LABEL WITH NON-SHRINKABLE TOP LAYER

James H. Shackett, III, Ambler, Pa., assignor to National Label Company, Lafayette Hill, Pa.

Filed May 22, 1990, Ser. No. 527,220
Int. Cl.[5] H01M *2/02*
U.S. Cl. 428—40 18 Claims

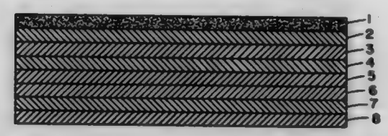
1. A hard, high surface gloss, multilayered, protective seal battery label disposed on a generally cylindrical battery body having top and bottom end faces and a circumferential surface extending in length between said top and bottom end faces comprising:

(A) a heat shrinkable inner plastic layer, said inner plastic layer having a central portion which is generally coincident in length with said battery circumferential surface length, said inner plastic layer having and being defined by top and bottom edge portions, said edge portions extending lengthwise from said central portion and projecting beyond said circumferential surface;

(B) an outwardly visible imprint layer disposed above said inner plastic layer;

(C) an inner adhesive layer generally coincident in length with said inner plastic layer, said inner adhesive layer being disposed beneath said inner plastic layer;

(D) an outer adhesive layer, said outer adhesive layer being disposed above said imprint; and



(E) a non-shrinkable outer plastic layer disposed above said outer adhesive layer, said outer plastic layer being substantially coincident in length with the edge portions of said shrinkable inner plastic layer;

(F) a metal layer disposed adjacent the inner heat-shrinkable layer wherein said top edge portion is shrunk onto said top end face, said bottom portion is shrunk onto said bottom end face, said shrinkable inner plastic layer edge portions being affixed to said end faces by said inner adhesive layer, said outer non-shrinkable plastic layer edge portions being adhesively secured to said inner shrinkable layer by said outer adhesive layer, said outer non-shrinkable layer further being drawn over said end faces by said shrinkable inner plastic layer when said edge portions are shrunk onto said end faces.

5,292,567

BUFFING PAD

James Foster, Numeaton, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 701,875, May 17, 1991, abandoned.
This application Jul. 8, 1992, Ser. No. 911,343
Int. Cl.[5] B32B *5/06, 5/22*
U.S. Cl. 428—64 14 Claims

1. A disc-shaped buffing pad laminate having one side adapted to be releasably engaged with a buffing apparatus having a hook-face attachment surface and an opposite side for buffing, said buffing pad laminate comprising a non-woven buffing layer comprising crimped fibers having a fiber thickness of up to 11 dtex and a fiber length of from 40 to 200 mm, a non-woven attachment layer comprising crimped fibers having a fiber thickness greater than 11 dtex and a fiber length of at least 40 mm, wherein said buffing layer and said attachment layer are secured together by intermingling fibers of said buffing layer with fibers of said attachment layer, said buffing pad having a diameter of from 50 to 200 mm, said buffing pad having a density of from 0.1 to 0.3 g/cm^3, and said buffing pad having a thickness of from 3 to 8 mm.

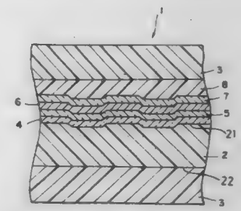
5,292,568

OPTICAL DISK HAVING A HARD COAT LAYER

Shin-ichi Tezuka, and Tsuneo Kuwahara, both of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 773,844
Claims priority, application Japan, Oct. 12, 1990, 2-274879
Int. Cl.[5] B32B *03/02*
U.S. Cl. 428—64 4 Claims

1. An optical disk comprising a resinous substrate and a hard coat layer on at least a light incident side of the substrate, said hard coat layer having a thickness of 1–30 μm and containing electroconductive particles transparent to recording and reproducing light and having a mean particle diameter of 3 to 30



nm, said hard coat layer comprising 10 to 70% by volume of electroconductive particles.

5,292,569

ROTATIONALLY RELIEVED FLEXURE FOR ACCELEROMETER

John M. Barry, Lexington; Anthony Petrovich, Tewksbury, and Thomas E. Shelvey, Westford, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 26, 1992, Ser. No. 936,092
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—66 8 Claims



1. A flexure for an accelerometer comprising:

an inner hub;

an outer rim spaced from said inner hub; and

at least three curved, tapered beams extending between said rim and said hub with the widest beam portion proximate said rim for flexibly supporting the proof mass of said accelerometer and enabling relative rotational relief between said hub and rim for preventing non-linear stretching of the beams; said beams being tapered along a portion of their lengths extending from said hub and said rim.

5,292,570

DIMENSIONALLY STABLE THERMOPLASTIC SEMIFINISHED PRODUCT

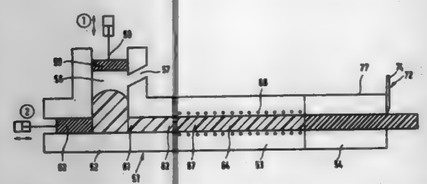
Gerd Ehnert, Graben-Neudorf; Manfred Ehlers, Kraichtal-Unteröwisheim, and Rolf von Paumgartten, Wiesloch, all of Fed. Rep. of Germany, assignors to Menzolit GmbH, Kraichtal-Menzingen, Fed. Rep. of Germany

Division of Ser. No. 154,325, Feb. 10, 1988, Pat. No. 4,935,182.
This application Feb. 21, 1990, Ser. No. 482,763
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1987, 3704037; Aug. 13, 1987, 3726921
The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.
Int. Cl.[5] B32B *1/04, 3/02*
U.S. Cl. 428—74 5 Claims

1. Semifinished product comprising a compressed felt or

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wadding core and a dimensionally stable rigid outer covering formed on said core, said covering and said core being formed



of the same homogenous mixture of fibers and thermo-plastic material.

5,292,571

DRAWER DIVIDER

Forrest G. Quinn, 13836 Bora Bora, # 326, Marina Del Rey, Calif. 90292

Filed Nov. 25, 1991, Ser. No. 796,863
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—178 **7 Claims**



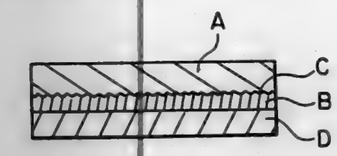
1. A drawer dividing device comprising:
a plurality of independent sheets formed of resilient material with each of said sheets connected to an adjacent one of said sheets at spaced intervals to define a plurality of individual storage spaces therebetween and wherein 6 said sheets are undulating in a sinusoidal manner. having forwardly and rearwardly extending portions with studs projecting outwardly from the apices of each of said forwardly and rearwardly expending portions along one edge of said sheets, and openings mateable with said studs formed in the apices of each of said forwardly and rearwardly extending portions adjacent a second edge of said sheets to provide said sheets with a releasable connection.

5,292,572

HEAT-TRANSFER IMAGE RECORDING MEDIUM

Kunihiro Koshizuka, Hachioji; Toshiaki Tezuka, Tokorozawa; Shigeru Mano; Toshiharu Takeyama, both of Hachioji, and Takao Abe, Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 556,387, Jul. 24, 1990, abandoned. This application Sep. 1, 1992, Ser. No. 938,679
Claims priority, application Japan, Jul. 26, 1989, 1-194846
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 **22 Claims**



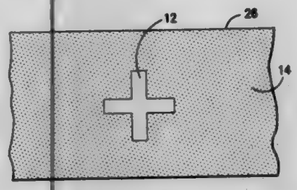
1. A heat transfer image recording medium comprising a support having a thickness not greater than 30 μm; a heat-transfer layer, provided on said support, comprising a thermofusible substance, a thermoplastic polymer and a colorant; and a non-transfer layer having a thickness of 0.3 to 5 μm, which is interposed between said support and said heat-transfer layer and consists essentially of a colorant, a thermoplastic polymer selected from the following Group A and a thermoplastic polymer selected from the following Group B:
Group A: an ethylene-vinyl acetate copolymer, an ethylene-ethyl acrylate copolymer and a styrene-containing polymer;
Group B: a polyester resin, a polyurethane resin, a polyvinyl chloride resin and an epoxy resin.

5,292,573

METHOD FOR GENERATING A CONDUCTIVE FABRIC AND ASSOCIATED PRODUCT

Louis W. Adams, Jr., Spartanburg; Michael W. Gilpatrick, Chesnee, and Richard V. Gregory, Anderson, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 448,035, Dec. 8, 1989, abandoned. This application Feb. 11, 1992, Ser. No. 833,605
Int. Cl.[5] B05D *5/00*
U.S. Cl. 428—196 **30 Claims**



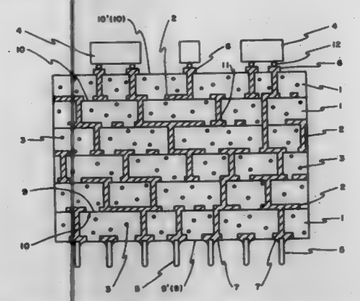
1. A method for generating a conductive woven fabric which exhibits anisotropic electrical conductivity, said method comprising
a. coating a substantially non-conductive fabric with an electrically conductive coating
b. selectively removing at least portions of said coating in selected areas of said fabric using high velocity jets of water.

5,292,574

CERAMIC SUBSTRATE HAVING WIRING OF SILVER SERIES

Keiichiro Kata, and Yuzo Shimada, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 5, 1991, Ser. No. 740,634
Claims priority, application Japan, Aug. 8, 1990, 2-209484
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **8 Claims**



1. A ceramic substrate comprising:
a ceramic body having a major face and consisting essentially of alumina and glass;

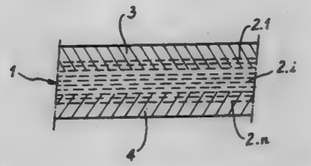
silver particles having a 1 to 5 μm diameter and being dispersed substantially uniformly in said ceramic body; and
a wiring layer formed on said major face of said ceramic body and being made of silver or a material containing silver;
wherein;
in every portion of said ceramic body, the weight percentage of said silver particles is 0.1% or more, to stabilize the specific resistance of said wiring layer, and is 2.5% or less, to preserve the insulating characteristics of said ceramic body.

5,292,575

SHEET MATERIAL FOR CONSTRUCTING HIGH PERFORMANCE THERMAL SCREENS

Guy Metivaud, Talence, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 743,137, Aug. 9, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,079
Claims priority, application France, Aug. 21, 1990, 90 10518
Int. Cl.[5] B32B *3/06, 7/00;* B27N *9/00;* D03D *3/00*
U.S. Cl. 428—224 **16 Claims**



1. A thermal screen for protection against a fire, which screen is constructed from a sheet material comprising a pad constituted by the superimposition of a plurality of fabric layers made from carbonizable oxidized organic fibers, the face of said pad intended to be directed towards said fire being covered by a layer consisting of a silicone which decomposes under the effects of thermal attack, the decomposition ultimately leaving a silica residue which blocks the interstices of the fabric layers so as to constitute a barrier to the penetration of hot gases and the face of said pad intended to be directed away from said fire being covered with a layer of endothermic filled silicone which is a fire protection material employing simultaneously the two phenomena of intumescence and endothermicity to obtain optimal protection characteristics maintaining the element to be protected at a temperature below or about 150° C. when it is subjected to thermal attack corresponding to a flame temperature of 700° to 1000° C. for a duration of at least one hour for a thickness of the material between 10 and 20 mm, essentially characterized in that it is a flexible material comprising: a binder which is a silicone elastomer in a proportion of 30 to 35% by weight, a reinforcing charge which is a metal oxide compatible with said silicone elastomer in a proportion of 17 to 23% by weight; an active charge of borax ($Na_2B_4O_7$, 10 H_2O) in a proportion of 38 to 45% by weight; and an insulative charge of mica or vermiculite in a proportion of 5 to 10% by weight, these proportions being relative to the total weight of said material.

5,292,576

WALL COVERING

Kenneth H. Sanders, Jonesville, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 21, 1993, Ser. No. 78,633
Int. Cl.[5] B32B *5/08, 5/12, 7/12*
U.S. Cl. 428—232 **6 Claims**

1. A wallcovering product comprising: a face material, a substrate fabric and an adhesive between said face material and said substrate fabric to maintain the face material adhered to said substrate fabric, said substrate fabric being a weft inserted



warp knit fabric with the weft inserted yarn being cotton with a count in the range of 18's–30's.

5,292,577

NONWOVEN MATERIAL USED AS UNDERLAYER FOR A FABRIC COVERING SEATS INTENDED FOR PASSENGER TRANSPORT

Josef Van Kerrebrouck, Bernem, and Hendrik Vercouter, Oostrozebeke, both of Belgium, assignors to Libeltex N.V., Meulebeke, Belgium

Filed Jan. 10, 1992, Ser. No. 818,912
Claims priority, application France, Jan. 11, 1991, 91 00309
Int. Cl.[5] A47C *7/00, 27/00;* B32B *5/26;* B60N *2/44;* B68G *11/02*
U.S. Cl. 428—233 **18 Claims**

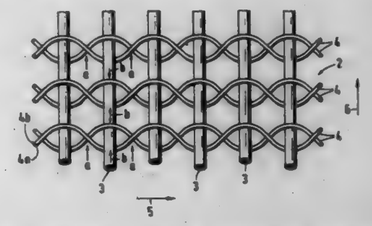
1. Covering for seats intended for passenger transport, characterised in that it comprises a cover fabric and a nonwoven material which is produced by a dry process, the said material having an apparent density between 20 and 100 kg/m^3 and a thickness between 4 and 40 mm and comprising a minimum of 50% of synthetic fibres of a thickness of 3 to 40 dtex and a length of 2 to 12 cm, which are needle bonded, the said material having a minimum thickness of 2 mm when a static pressure of 20 cN/cm^2 is applied to it.

5,292,578

MATERIAL FOR REINFORCING DUROPLASTICS WOVEN FABRIC FOR REINFORCING DUROPLASTICS HAVING A SPECIFIC DISTRIBUTION OF HOLLOW THERMOPLASTIC MICROSPHERES WITHIN THE THREAD SYSTEM

Klaus K. Kölzer, Benrather Schlossufer 65b, 4000 Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 366,899, Jun. 15, 1989, abandoned. This application Jul. 15, 1991, Ser. No. 731,359
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1988, 3820511
Int. Cl.[5] B32B *5/16, 7/00;* D03D *13/00*
U.S. Cl. 428—240 **12 Claims**



1. In a reinforcing material for duroplastics comprising a woven web, having at least two interwoven thread systems and hollow thermoplastic microspheres with a diameter of 20 to 300 μm positioned inside the thread systems, the improvement wherein the woven web has a floating weave, of warp and weft threads wherein each warp thread skips two weft threads so that particular points (a) of intersection of one pair of warp threads are displaced one weft thread from points (a) of intersection of an adjacent pair of warp threads, the thread

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system extending in the warp direction containing approximately 60 to 100% by volume of the microspheres and covering at least partly the thread system extending in the weft direction containing 40 to 0% by volume of the microspheres, the reinforcing material having an almost flat and board-like surface.

5,292,579

COMPRESSED SHEET AND METHOD OF MANUFACTURING THEREOF

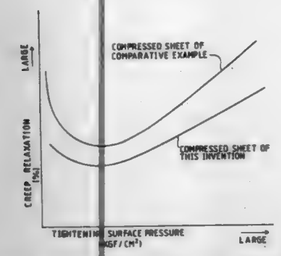
Hiromi Kitayama, Kamifukuoka; Tsutomu Tomizawa, Niiza; Ken Fujiwara, Kitakyushu; Fumiya Shigeta, Urawa, and Hiroyuki Nakano, Kawaguchi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Nippon Leakless Ind. Co., Ltd., both of Tokyo, Japan

Filed Jun. 12, 1991, Ser. No. 715,081

Claims priority, application Japan, Jun. 20, 1990, 2-159671

Int. Cl.[5] B32B *9/04;* **B65D** *53/00;* **C09K** *3/10;* **F16J** *15/06*

U.S. Cl. 428—283 **12 Claims**



1. A compressed sheet comprising a base layer having first and second sides and comprising organic fibers and/or inorganic fibers other than asbestos, said base layer further comprising a rubber, vulcanizing agent, vulcanizing accelerator, and fillers;

a smoothing and reinforcing layer comprising a smoothing and reinforcing material having particulate calcium carbonate and applied on at least one of said first and second sides of said base layer;

wherein said particulate calcium carbonate has a particle size of about 10 to 30 μm and has a specific surface area of about 50 to about 60 m^2/g.

5,292,580

PLASTIC SHEET FOR A BOAT HULL AND THE LIKE AND METHOD OF MAKING IT

Charles H. Dore, III, Wilmington, Del., assignor to C.C. Omega Chemical, Inc., Moorestown, N.J.

Division of Ser. No. 616,239, Nov. 20, 1990, Pat. No. 5,126,172. This application Jun. 30, 1992, Ser. No. 906,582

Int. Cl.[5] B32B *5/28, 5/30, 31/12*

U.S. Cl. 428—283 **7 Claims**

1. A FRP laminate comprising

a layer of synthetic resin material,

short strands of chopped fibers mixed into the resin in criss-cross, hodge-podge fashion, and

sphere means mixed into the chopped fibers and the resin to force down any upstanding chopped fibers and to make the chopped fibers lie flat in the resin layer and to force air out of the resin layer,

said sphere means comprising a plurality of high density spheres.

5,292,581

WET WIPE

Helen Viazmensky, South Windsor, and Eugene R. Benjamin, Windsor Locks, both of Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Dec. 15, 1992, Ser. No. 991,361

Int. Cl.[5] D04H *1/58*

U.S. Cl. 428—288 **19 Claims**

1. A nonwoven wipe material suited for wet household and personal care use comprising a fibrous web material comprising a mixture of pulp fibers and at least five percent by weight man-made fibers and containing less than two percent by weight of a wet strength agent, the fibers within the web material being hydroentangled at an entanglement energy level up to 0.2 horsepower-hours per pound of web, the web material exhibiting no significant reduction in absorption capacity relative to comparative material without the wet strength agent.

5,292,582

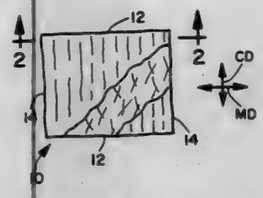
ELASTIC DUST CLOTH

Lesley L. Gibbs, Norcross, and Charles J. Morell, Dunwoody, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 271,208, Nov. 14, 1988, abandoned, which is a division of Ser. No. 848,431, Apr. 4, 1986, Pat. No. 4,823,427. This application Apr. 27, 1992, Ser. No. 876,681

Int. Cl.[5] D04H *1/58*

U.S. Cl. 428—288 **25 Claims**



1. A nonwoven dust cloth, said dust cloth comprising at least one elastomeric nonwoven composite web comprising an admixture of:

elastomeric meltblown fibers formed from a material selected from the group consisting of one or more of poly-(ethylene-vinyl acetate), thermoplastic polyurethanes, A-B-A′ block copolymers, blends of one or more of poly-(ethylene-vinyl acetate), thermoplastic polyurethanes, and A-B-A′ block copolymers, and blends of one or more poly(ethylen-vinyl acetate), thermoplastic polyurethanes, and A-B-A′ block copolymers with one or more polyolefins, and

at least one nonelastomeric fibrous material,

said web having: elasticity in at least one direction; said cloth being characterized by a dust gathering capacity of at least about 0.185 grams per inch square of web; and an abrasion resistance of at least about 50 cycles on a Taber scale.

5,292,583

THERMAL TRANSFER RECORDING SHEET

Tsutomu Taki, Tokyo, and Katsuhiko Kuroda, Yokohama, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 910,445

Claims priority, application Japan, Jul. 8, 1991, 3-167193

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—323 **18 Claims**

1. A thermal transfer recording sheet comprising a base film, a heat transferable ink layer formed on one side of the base film and a heat resistant lubricating layer formed on the other side of the base film, wherein elastomer particles having an average particle size of from 0.1 to 10 μm are dispersed in the heat resistant lubricating layer.

5,292,584

ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE AND LIGHTLY-FILLED COMPOSITES THEREOF

Edward G. Howard, Hockessin, and Stuart M. Nemser, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1991, Ser. No. 683,930

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—327 **25 Claims**

1. A homogeneous, particulate, cold-pressable and free-sinterable composite comprising (a) about 75–99.5% by weight of ultrahigh molecular weight polyethylene having a molecular weight of at least 800,000 and (b) about 0.5–25% by weight of at least one finely-divided, filler compound having a neutral-to-acidic surface, in which substantially all of said polyethylene is polymerized onto the surface of said filler, and substantially all of said filler has polyethylene polymerized thereon, said composite having a surface area of at least about 4 m^2/g.

5,292,585

MAGNETIC RECORDING MEDIUM COMPRISING A MAGNETIC FILM LAYER AND A COATING OF PURIFIED PERFLUOROPOLYTHER LUBRICANT

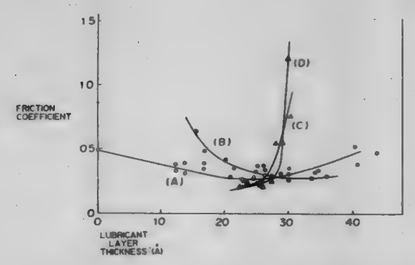
Yukio Ohnuki, Yokohama; Satoshi Kurosawa, Ebina, and Akio Kondo, Konan, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,230

Claims priority, application Japan, Aug. 30, 1990, 2-226768; Nov. 1, 1990, 2-293701

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—336 **4 Claims**



1. A magnetic recording medium comprising a magnetic film layer having coated thereon a layer of purified perfluoropolyether lubricant having the formula:

$$\text{Piperonyl—OCH}_2\text{CF}_2\text{O—(CF}_2\text{CF}_2\text{O)}_n\text{—(CF}_2\text{O)}_m\text{—CF}_2\text{CH}_2\text{O—Piperonyl}$$

which lubricant has a weight-average molecular weight of at least 2000 and a weight-average molecular weight/number average molecular weight ratio of not more than 1.3 and which contains no chemical species having a molecular weight of less than about 700, and wherein said lubricant has been purified by

1) dissolving said lubricant in a good solvent to obtain a uniform solution,

2) adding to the solution of lubricant in good solvent a poor solvent under stirring in an amount of from 4–5 times the amount of good solvent already present,

3) thoroughly mixing the solution obtained in (2),

4) allowing the mixed solution obtained in (3) to stand still and phase separate,

5) collecting the good solvent containing the lubricant,

6) repeating steps (2)–(4) at least three times,

7) removing the good solvent from the lubricant,

8) filtering the lubricant.

5,292,586

SOLVENTLESS OR HIGH SOLIDS-CONTAINING SILICONE PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Shaow B. Lin, Schenectady, and Jeffrey H. Wengrovius, Scotia, both of N.Y., assignors to General Electric Company, Waterford

Filed Mar. 26, 1991, Ser. No. 675,232

Int. Cl.[5] C09J *7/02, 183/05, 183/07*

U.S. Cl. 428—355 **30 Claims**

1. An article of manufacture comprising a solid support carrying on at least one surface thereof an organopolysiloxane composition curable to produce a pressure sensitive adhesive having high tack and high peel adhesion, consisting essentially of by weight;

(A) from about 50 to about 75 parts by weight of a toluene soluble, resinous copolymer comprising $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R is a monovalent hydrocarbon radical having from 1 to about 6 carbon atoms, wherein the resinous copolymer comprises from about 0.2% to about 5.0% by weight, based on the total weight of the copolymer, of hydroxyl radicals, at least 95% of all R groups being an alkyl group, the total number of R radicals that are alkenyl radicals being 0–0.5% of all R radicals, the molar ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units being from about 0.6 to about 0.9 inclusive;

(B) an alkenyl-terminated polydiorganosiloxane having a viscosity of from about 10 to about 500 centipoise at 25° C. and having the general formula

$$R^2R^1{}_2SiO(R^3{}_2SiO)_mSiR^1{}_2R^2 \quad (I)$$

wherein each R^1 is independently an alkyl group having from 1 to about 10 carbons atoms or an aryl group, R^2 is an alkenyl group having from 1 to about 10 carbon atoms, each R^3 is independently R^1 or R^2, with the proviso that at least 99.5% of all R^3 radicals are R^1, "m" is a number in the range of from about 1 to about 300;

(C) a hydride-terminated organohydrogenpolysiloxane compatible with the mixture of (A) and (B) and having a viscosity of from about 10 to about 1,000 centipoise at 25° C. and having the general formula

$$R^4{}_2HSiO(R^5{}_2SiO)_aSiHR^4{}_2 \quad (II)$$

wherein each R^4 is independently an alkyl group having from 1 to about 10 carbons atoms or an aryl group, and each R^5 is hydrogen or R^4, with the proviso that at least 99.5% of all R^5 radicals are R^4, "a" is a number in the range of from 1 to about 500, there being at least two silicon-bonded hydrogen atoms per molecule of (C), no silicon atom bearing more than one silicon-bonded hydrogen atom; the total of (B) and (C) being from about 25 to about 50 parts by weight; the total of (A), (B), and (C) being 100 parts by weight; the molar ratio of silicon-bonded hydrogen groups in (C) to silicon-bonded alkenyl groups in (A) and (B) being in the range of from about 1.2:1 to about 15.0:1;

(D) a catalytic amount of hydrosilation catalyst; and

(E) from 0 to about 40% by weight of an organic solvent.

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5,292,587

MATERIAL FOR EXTRUSION MOLDING AND PROCESS FOR PREPARATION OF MOLDING PRODUCT

Keisuke Funaki, Ichihara, and Komei Yamasaki, Sodegaura, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 464,935, Jan. 16, 1990, Pat. No. 5,164,479.
This application Aug. 17, 1992, Ser. No. 930,329
Claims priority, application Japan, Jan. 24, 1989, 13238/1989
Int. Cl.[5] B29B *9/06*; C08L *25/04*
U.S. Cl. 428—402 14 Claims

1. A pellet for extrusion molding having a ratio of length in extrusion direction to length in perpendicular direction of 0.5 to 3 and a length or width of extrusion direction or perpendicular direction of 1 to 6 mm comprising at least one member selected from the group consisting of polystyrene, poly(alkylstyrene), and copolymer of styrene and alkylstyrene having a high degree of syndiotactic configuration, a melt viscosity of 10^3 to less than 10^6 poise measured at 300° C. and a shearing rate of 10/sec, and a crystallinity of 15% to 60%.

5,292,588

PROCESS FOR PREPARING STABLE DISPERSIONS USEFUL IN TRANSPARENT COATINGS

Boris J. Katsen, Longmeadow, Mass., assignor to Rexham Graphics Inc., South Hadley, Mass.

Division of Ser. No. 603,002, Oct. 25, 1990, Pat. No. 5,210,114.
This application Nov. 13, 1992, Ser. No. 976,507
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—411.1 11 Claims



3. A process for preparing a ground plane, which comprises
(i) providing a support;
(ii) coating onto the support a stable dispersion of conductive particles in a binder resin solution prepared by the process of
(iii) dispersing a pigment into a binder resin solution;
(iv) comminuting the dispersion until a bi-modal distribution of pigment particles is obtained;
(v) separating the dispersed particles into two fractions of dispersed particles including a stable dispersion of smaller particles in a binder resin solution; and
(vi) drying the coating to thereby form a conductive layer on the support.

5,292,589

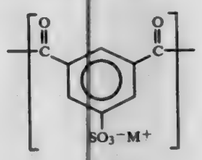
LAMINATES OF WHOLLY AROMATIC LIQUID CRYSTALLINE POLYMERS CONTAINING IONIC MONOMER UNITS

James P. Shepherd, Springfield, N.J.; Gerald Farrow, Charlotte, N.C., and Kurt F. Wissbrun, Summit, N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

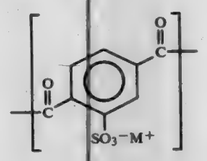
Division of Ser. No. 858,148, Mar. 20, 1992, Pat. No. 5,227,456.
This application Oct. 30, 1992, Ser. No. 968,708
Int. Cl.[5] B32B *27/06*
U.S. Cl. 428—412 19 Claims

1. A laminate structure exhibiting improved adhesion properties comprising at least a first and a second layer, the first layer consisting of a melt processable wholly aromatic liquid crystalline polymer capable of forming an anisotropic melt phase at a temperature below about 400° C. and containing in the polymer backbone from approximately 0.05 to approximately 2.0 mole percent of at least one ionic recurring moiety selected from the formulae:

4



and



wherein M^+ is a cation, said polymer backbone being a melt processable wholly aromatic polymer selected from the group consisting of wholly aromatic polyesters, polycarbonates, poly(ester-carbonates), poly(ester-amides) and polyaramides, and wherein the second layer is selected from the group consisting of metals, ceramics, glasses, polymers, and mixtures thereof.

5,292,590

TIRE INNERLINER

Kuang F. Lin; Daniel W. Klosiewicz, and Gregory I. Brodsky, all of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 700,836, May 16, 1991, Pat. No. 5,156,921, which is a division of Ser. No. 492,698, Mar. 13, 1990, Pat. No. 5,040,583, which is a continuation-in-part of Ser. No. 180,925, Apr. 11, 1988, abandoned. This application Jul. 24, 1992, Ser. No. 918,535
Int. Cl.[5] B32B *25/08*
U.S. Cl. 428—494 13 Claims

1. A laminated structure comprising at least one layer of a thin film non-elastomeric barrier material that (i) has an air permeability of no more than 0.05 Barrer at 23° C., (ii) is thermally stable to withstand the conditions required for the vulcanization of the rubber layer, and (iii) has adequate flexibility and extensibility to meet the requirement for fabrication process and functional needs, and a layer of an elastomer based material adhered to each surface of each barrier layer, the laminated structure being extensible beyond the elastic limit of the barrier layer without destroying its barrier ability.

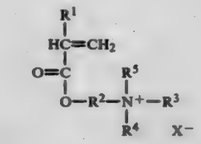
5,292,591

STABILIZATION OF DISPERSIONS OF METAL OXIDES AND/OR CARBON BLACK IN WATER

Philippe J. Teyssié, Neuville en Condroz; Luc E. Leemans, Diepenbeek; Walter A. Verdyck, Schoten, and Nikolaas C. de Jaeger, Hove, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Division of Ser. No. 727,446, Jul. 9, 1991, Pat. No. 5,200,456.
This application Mar. 9, 1993, Ser. No. 28,176
Claims priority, application European Pat. Off., Jul. 10, 1990, 90201849.8
Int. Cl.[5] B32B *27/30*
U.S. Cl. 428—522 5 Claims

1. An element comprising on a support at least one layer comprising a hydrophilic binder, a metal oxide and/or carbon black and a block-copolymer which comprises at least one block of a methacrylate or acrylate monomer corresponding to the general formula:



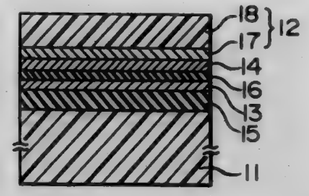
wherein R^1 represents a methyl group or hydrogen, each of R^3, R^4 and R^5 which may be the same or different represent a hydrogen, an alkyl, aryl or alkylaryl group, R^2 represents a divalent organic group and X^- represents an anion.

5,292,592

OPTICAL INFORMATION RECORDING MEDIUM IN WHICH A PROTECTIVE LAYER COMPRISES A NI-CR ALLOY LAYER

Masaki Itoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,017
Claims priority, application Japan, May 10, 1991, 105848
Int. Cl.[5] B32B *15/08*; G11C *13/06*; G11B *7/24*
U.S. Cl. 428—626 9 Claims



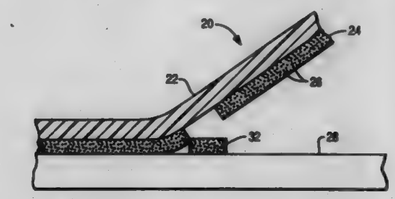
1. An optical information recording medium comprising a substrate, a protective layer, a recording layer between said substrate and said protective layer, and a reflecting layer between said protective layer and said recording layer, said reflecting layer containing Al, said protective layer comprising an alloy layer of a Ni-Cr alloy on said reflecting layer, said Ni-Cr alloy containing 20% by weight of Cr.

5,292,593

TRANSFER RIBBON FOR USE WITH A THERMAL PRINTER OR WITH AN IMPACT PRINTER

Shashi G. Talvalkar, Kettering, and Marion E. McCreight, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 6, 1992, Ser. No. 863,940
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—474.4 18 Claims



1. A transfer ribbon suitable for use with either a thermal printer or an impact printer, said transfer ribbon comprising:
a substrate in the range of 20 to 75 gauge thickness; and
a transfer coating which is coated on one side of said substrate, said transfer coating in the range of 5 to 30 milligrams per four square inches and comprising a mixture containing as essential ingredients about 20–80 percent pigment; and about 20–60 percent primary amide.

5,292,594

TRANSITION METAL ALUMINUM/ALUMINIDE COATINGS

Joseph Liburdi, Hamilton; Paul Lowden, Cambridge, and Alina Aguero, Guelph, all of Canada, assignors to Liburdi Engineering, Ltd., Canada

Division of Ser. No. 572,598, Aug. 27, 1990, Pat. No. 5,139,824.
This application Apr. 13, 1992, Ser. No. 867,641
Int. Cl.[5] B32B *15/01*
U.S. Cl. 428—650 2 Claims

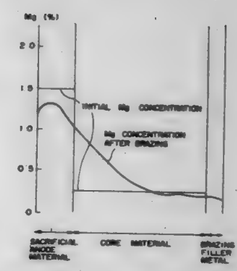
1. A coated product comprising a metal or alloy substrate having a first coating consisting of aluminum or aluminide or mixture thereof, and a second coating thereon of chemically vapor deposited yttrium or scandium.

5,292,595

CLAD ALUMINUM ALLOY MATERIAL HAVING HIGH STRENGTH AND HIGH CORROSION RESISTANCE FOR HEAT EXCHANGER

Shigenori Yamauchi, Aichi; Yoshifusa Shoji, Nagoya; Kenji Kato; Yuji Suzuki, both of Tokyo; Chian T. Su, Naogya; Mituo Hashiura, Kariya, and Sunao Fukuda, Handa, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 19,127
Claims priority, application Japan, Feb. 18, 1992, 4-030644; Feb. 18, 1992, 4-030646; Feb. 18, 1992, 4-030648
Int. Cl.[5] B32B *15/20*; F28F *19/06*, *21/08*
U.S. Cl. 428—654 6 Claims



1. A clad aluminum alloy having high strength and high corrosion resistance for a heat exchanger, which is composed of:
a core material made of an aluminum alloy consisting of 0.3 to 2.0% of Mn, 0.25 to 0.8% of Cu, 0.05 to 1.0% of Si and 0.5% or less of Mg with the balance consisting of Al and unavoidable impurities;
a sacrificial anode material bonded to one surface of said core material, said sacrificial anode material being made of an aluminum alloy consisting essentially of 1.0 to 2.5% of Mg and 0.05 to less than 0.20% of Si with the balance being Al and unavoidable impurities; and
a cladding bonded to the other surface of said core material, said cladding being made of a brazing filler metal consisting of an Al-Si-base aluminum alloy.

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5,292,596

FORCE-TRANSMITTING SURFACES OF TITANIUM PROTECTED FROM PRETTING FATIGUE BY A COATING OF CO-NI-FE

Hugh M. Privett, III, Palm Beach Gardens, Fla., and Shiro Fujishiro, Tokyo, Japan, assignors to United Technologies Corporation, Hartford, Conn. and The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 699,283, May 13, 1991, abandoned. This application Aug. 19, 1992, Ser. No. 932,148
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—660 5 Claims

1. A metallic structure subject to fretting, said structure comprising a substrate selected from titanium, titanium alloys, and titanium intermetallics, said substrate having an anti-fretting coating on the surface thereof, wherein the improvement comprises said coating being consisting essentially of, by weight, from about 30 to about 70% cobalt, from about 25 to about 55% nickel, and from about 5 to about 25% iron, said iron being oxidizable to hematite at elevated temperature said coating having a thickness of from 1 to about 1000 microns.

5,292,597

MAGNETIC RECORDING MEDIUM

Hitoshi Noguchi; Shinji Saito, and Hiroshi Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1991, Ser. No. 777,147
Claims priority, application Japan, Oct. 17, 1990, 2-276391
Int. Cl.[5] B32B *5/16*; G11B *5/66*
U.S. Cl. 428—694 B 13 Claims

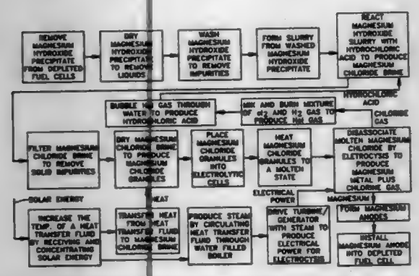
1. A magnetic recording medium comprising a non-magnetic support having thereon at least two magnetic layers, wherein said at least two magnetic layers comprise a ferromagnetic powder and a binder resin; the uppermost magnetic layer arranged farthest from the support contains a cobalt-containing iron oxide powder having an Fe^{2+}/Fe^{3+} mole ratio of 20/100 to 50/100 and a coercive force of 650 to 1,500 Oe; and at least one of said magnetic layers is a lower magnetic layer in contact with said uppermost magnetic layer and contains a cobalt-containing iron oxide powder having an Fe^{2+}/Fe^{3+} mole ratio of less than 20/100 and a coercive force of 0.6 to 1.0 times that of the cobalt-containing iron oxide powder contained in the uppermost magnetic layer.

5,292,598

METHOD FOR RENEWING FUEL CELLS USING MAGNESIUM ANODES

Stuart Rosner, 285 Stegman Pkwy., Jersey City, N.J. 07305

Division of Ser. No. 809,303, Dec. 17, 1991, Pat. No. 5,228,529.
This application Apr. 21, 1993, Ser. No. 50,875
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—17 13 Claims



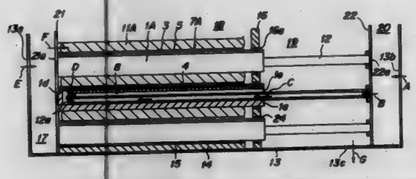
1. A method for renewing a fuel cell (hydrogen gas generator) having a magnesium anode which has been depleted by galvanic action into magnesium hydroxide precipitate and an electrolytic solution, the method comprising:
A. removing the precipitate and the electrolytic solution from a fuel cell,
B. drying the precipitate to produce a dried precipitate,
C. washing the dried precipitate with water to remove impurities and to produce a washed precipitate,
D. adding water to the washed precipitate to form a slurry,
E. reacting the slurry with hydrochloric acid means to form magnesium chloride brine,
F. filtering the magnesium chloride brine to remove solid impurities and produce filtered magnesium chloride brine,
G. drying this filtered magnesium chloride brine to produce dried magnesium chloride,
H. heating the dried magnesium chloride to a molten state, so as to produce molten magnesium chloride,
I. disassociating the molten magnesium chloride by electrolysis to produce magnesium metal in highly pure form and chloride gas,
J. forming the magnesium metal into fuel cell anodes,
K. installing these anodes in depleted fuel cells so as to re-energize the depleted fuel cells.

5,292,599

CELL UNITS FOR SOLID OXIDE FUEL CELLS AND POWER GENERATORS USING SUCH CELL UNITS

Takao Soma, Nishikamo; Shinji Kawasaki, and Katsuki Yoshioka, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Sep. 2, 1992, Ser. No. 948,011
Claims priority, application Japan, Sep. 27, 1991, 3-249619; Dec. 12, 1991, 3-328697; Dec. 12, 1991, 3-328698
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—30 24 Claims



1. A cell unit for use in a solid oxide fuel cell, said cell unit having a laminate structure comprising:
a cell element comprising a dense and planar solid electrolyte and an air electrode film and a fuel electrode film provided on opposite surfaces of said solid electrolyte, respectively, said cell element having a rectangular planar shape and a ratio of a short side to a long side of said rectangular planar shape being not less than 2;
a separator comprising a dense electron conductor; and
a plurality of oxidizing gas flow paths defined between said separator and said air electrode of said cell element.

5,292,600

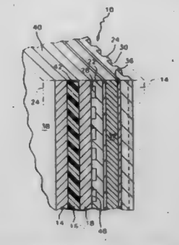
HYDROGEN POWER CELL

Arthur Kaufman, West Orange, N.J. 07052, assignor to H-Power Corp., Belleville, N.J.

Filed Aug. 13, 1992, Ser. No. 929,627
Int. Cl.[5] H01M *2/14*
U.S. Cl. 429—39 11 Claims

1. An ion-exchange membrane electrolyte, water-producing, fuel cell for electricity generation by catalytic combustion of a gaseous hydrogenous fuel with gaseous oxygen leading to formation of water at the cathode, said fuel cell comprising:
a) an anode;
b) means to supply a gaseous hydrogenous fuel to said anode;
c) an oxygen-gas-pervious cathode;

d) an electrolyte disposed between said anode and said cathode; and
e) a water-pervious, electrically conductive, graphitic, oxygen-distribution member positioned adjacent said cathode to supply oxygen thereto and remove water therefrom, and having oxygen-distribution passages communicating with said cathode for the supply of oxygen thereto;



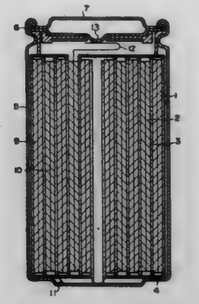
wherein said graphitic oxygen-distribution member is composed of a graphite material chemically activated to be hydrophilic, mechanically strong and electrically conductive, whereby water formed at said cathode is transported through said graphitic oxygen-distribution member with said oxygen-distribution passages remaining open for the distribution of oxygen to said cathode.

5,292,601

NONAQUEOUS ELECTROLYTE SECONDARY BATTERY

Naoyuki Sugeno; Masanori Anzai, and Toru Nagaura, all of Fukushima, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 792,628
Claims priority, application Japan, Nov. 17, 1990, 2-312481; Mar. 7, 1991, 3-067998
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—197 1 Claim



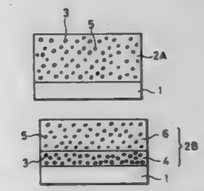
1. A nonaqueous electrolyte secondary battery comprising:
a negative electrode including a carbonaceous material capable of doping and de-doping lithium, the carbonaceous material selected from the group consisting of furan resins and petroleum pitches and having a spacing of (002) planes of not less than 3.70 angstroms and any exothermic peak at temperatures not lower than 700° C. when determined differential thermal analysis, the carbonaceous material further including at least one of 0.2 to 5.0 wt % of phosphorus and 0.1 to 2.0 wt % of boron, a positive electrode made of an active material which includes a Li-containing metal complex oxide of the general formula Li_xMO_2, wherein M represents at least one member selected from the group consisting of Co, Ni and Mn and $0.5 \leqq X \leqq 1$, and a nonaqueous electrolyte which contains an electrolyte and an organic solvent therefor, the organic solvent being a mixed solvent of propylene carbonate and at least one member selected from the group consisting of diethyl carbonate and dipropyl carbonate.

5,292,602

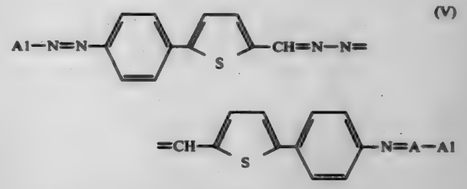
BISAZO PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Masami Kuroda, Amano; Masayo Amano, and Noboru Furusho, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Division of Ser. No. 15,915, Feb. 10, 1993, which is a division of Ser. No. 982,897, Nov. 30, 1992, Pat. No. 5,266,430, which is a division of Ser. No. 799,601, Nov. 27, 1991, Pat. No. 5,198,318, which is a division of Ser. No. 530,088, May 31, 1990, Pat. No. 5,087,541. This application Jun. 11, 1993, Ser. No. 74,597
Claims priority, application Japan, Jun. 6, 1989, 1-143523
Int. Cl.[5] G03G *5/06*, *5/047*
U.S. Cl. 430—58 3 Claims

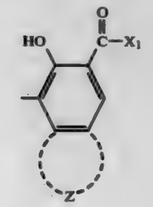


1. A photoconductor for electrophotography, comprising:
an electroconductive substrate; and
a photosensitive layer formed on said electroconductive substrate and including a charge transporting substance and a charge generating substance which is at least one bisazo compound represented by general formula (V):



(V)

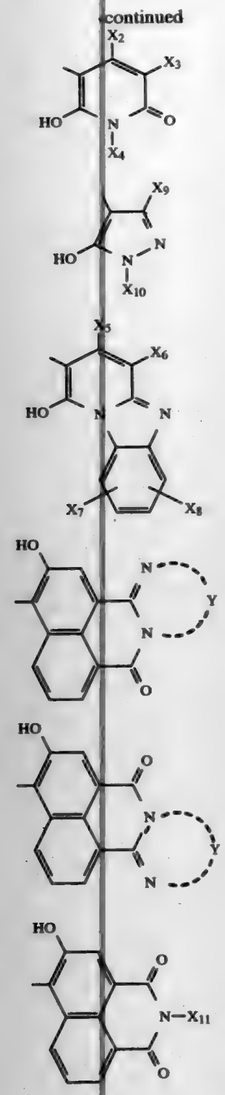
wherein A_1 is a coupler residual group represented by one of general formulae (IX) to (XV):



(IX)

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continued



(X) consisting of a hydrogen atom, a halogen atom, a nitro group, an alkyl group and an alkoxy group, the alkyl group and the alkoxy group of which may be substituted, X_9 is selected from the group consisting of an alkyl group, an aryl group, a carboxyl group and an ester group, X_{10} is one of an aryl group and a heterocyclic group, which groups may be substituted, and Y is a residual group which forms an aromatic ring or a heterocycle.

3. The photoconductor as claimed in claim 1, wherein said

(XI) photosensitive layer comprises a laminate of a charge transporting layer mainly composed of the charge transporting substance and a binder, and a charge generating layer including the charge generating substance and a binder.

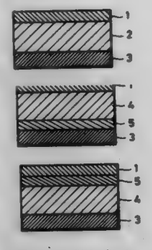
5,292,603

(XII) **IMAGE HOLDING MEMBER AND APPARATUS WHICH USES THE SAME**

Kiyoshi Sakai, Tokyo; Naoto Fujimura, Kanagawa, and Seiko Nakano, Mie, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,426
Claims priority, application Japan, Feb. 28, 1991, 3-034753
Int. Cl.[5] G03G *5/147, 15/22;* G03C *3/00*
U.S. Cl. 430—18 21 Claims

(XIII)



(XIV)

1. An image bearing member having a surface layer comprising a high melting point polyester resin having a melting point of at least 160° C., a cured resin and an antioxidant.

5,292,604

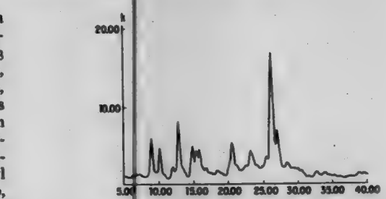
PHTHALOCYANINE CRYSTAL OF MIXED PIGMENTS AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING THE SAME

Katsumi Nukada; Akira Imai; Katsumi Daimon, and Masakazu Iijima, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Japan

Filed Jun. 16, 1992, Ser. No. 898,010
Claims priority, application Japan, Jun. 21, 1991, 3-175789
Int. Cl.[5] G03G *5/00, 15/00*
U.S. Cl. 430—78 18 Claims

(XV)

wherein Z is a residual group which condenses with a benzene ring to form an aromatic polycycle or heterocycle, X_1 is one of OR_1 and NR_2R_3, each of R_1, R_2 and R_3 is selected from the group consisting of a hydrogen atom, an alkyl group, an aryl group and a heterocyclic group, which groups may be substituted, each of X_2 and X_5 is selected from the group consisting of an alkyl group, an aryl group and a heterocyclic which groups may be substituted, each of X_3 and X_6 is selected from the group consisting of a hydrogen atom, a cyano group, a carbamoyl group, a carboxyl group, as ester group and an acyl group, each of X_4 and X_{11} is selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, a aryl group and a heterocyclic group, each of X_7 *and* X_8 is selected from the group



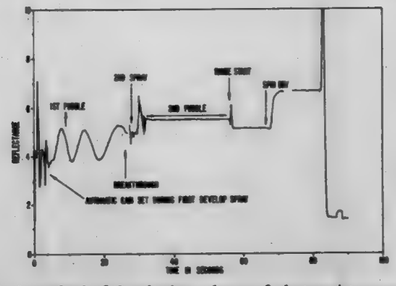
1. A phthalocyanine crystal of mixed pigments of oxytitanium phthalocyanine and a halogenated gallium phthalocyanine or a halogenated indium phthalocyanine.

5,292,605

METHOD FOR CONTROL OF PHOTORESIST DEVELOP PROCESSES

Mariste A. Thomson, Santa Clara, Calif., assignor to Xinix, Inc., Santa Clara, Calif.

Continuation of Ser. No. 526,639, May 18, 1990, Pat. No. 5,196,285. This application Oct. 7, 1992, Ser. No. 957,660
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—30 14 Claims



1. A method of developing a layer of photoresist material, comprising the steps of:

commencing application of a developer solution onto the photoresist layer,

monitoring the development process in a manner to determine when the photoresist layer is first developed completely therethrough,

changing, while still continuing, the developing process in direct response to said determination, and

terminating action of the developer solution on the photoresist layer at a controlled time after the photoresist layer is first developed completely therethrough, whereby the photoresist development is completed after said controlled time.

5,292,606

FUSER ROLL FOR FIXING TONER TO A SUBSTRATE

John J. Fitzgerald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1992, Ser. No. 987,919
Int. Cl.[5] B29D *22/00;* B32B *1/08*
U.S. Cl. 428—35.8 10 Claims

1. A fuser roll useful for heat-fixing an electrographic toner to a substrate, wherein the roll comprises a core having thereon a base cushion layer comprising a condensation-cross-linked poly(dimethylsiloxane) elastomer and having at least one other layer thereover,

characterized in that the base cushion layer has zinc oxide particles dispersed therein in a concentration of from 8 to 40 percent of the total volume of the base cushion layer.

5,292,607

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING POLYCARBONATE RESIN AS A BINDER AND METHOD FOR PREPARATION THEREOF

Ryoko Aso; Michio Kawai, both of Yokohama; Osamu Murakami, Machida; Mamoru Nozomi, Yokohama; Ryuji Nakayama, Sagamihara, and Tadashi Umehara, Odawara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 965,929
Claims priority, application Japan, Oct. 22, 1991, 3-274279; Jul. 6, 1992, 4-178559
Int. Cl.[5] G03G *9/087*
U.S. Cl. 430—96 16 Claims

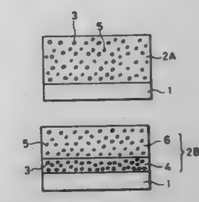
1. An electrophotographic photoreceptor comprising an electroconductive support and a photosensitive layer containing a photoconductive material and a binder resin, wherein said binder resin is a polycarbonate resin having a weight average molecular weight of not less than 200,000.

5,292,608

BISAZO PHOTOCONDUCTOR FOR ELECTROPHOTOGRAPHY

Masami Kuroda; Masayo Amano, and Noboru Furusho, all of Kawasaki, Japan, assignors to Fugi Electric Co., Ltd., Kanagawa, Japan

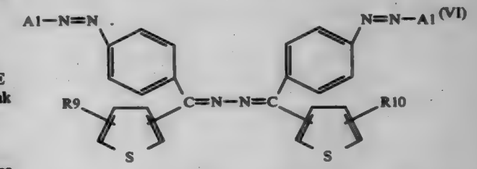
Division of Ser. No. 15,915, Feb. 10, 1993, which is a division of Ser. No. 982,897, Nov. 30, 1992, Pat. No. 5,266,430, which is a division of Ser. No. 799,601, Nov. 27, 1991, Pat. No. 5,198,318, which is a division of Ser. No. 530,088, May 31, 1990, Pat. No. 5,087,541. This application Jun. 11, 1993, Ser. No. 75,300
Claims priority, application Japan, Jun. 6, 1989, 1-143523
Int. Cl.[5] G03G *5/06, 5/047*
U.S. Cl. 430—58 3 Claims



1. A photoconductor for electrophotography, comprising:

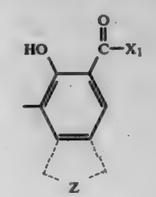
an electroconductive substrate; and

a photosensitive layer formed on said electroconductive substrate and including a charge transporting substance and a charge generating substance which is at least one bisazo compound represented by general formula (VI):

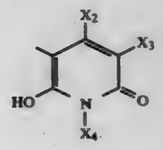


(VI)

wherein each of R_9 and R_{10} is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group and an aryl group, and A_1 is a coupler residual group represented by one of general formulae (IX) to (XV):

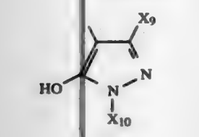


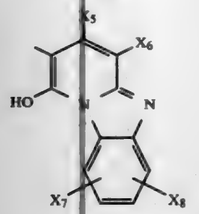
(IX)

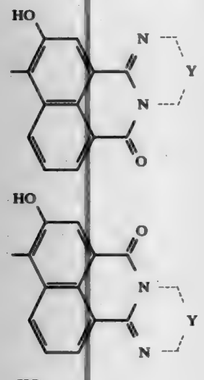


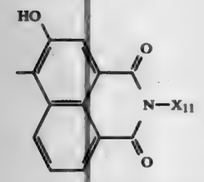
(X)

-continued









(XV)

wherein Z is a residual group which condenses with a benzene ring to form an aromatic polycycle or heterocycle, X_1 is one of OR_1 and NR_2R_3, each of R_1, R_2 and R_3 is selected from the group consisting of a hydrogen atom, an alkyl group, an aryl group and a heterocyclic group, which groups may be each of X_2 and X_5 is selected from the group consisting of an alkyl group, an aryl group and a heterocyclic group, which groups may be substituted, each of X_3 and X_6 is selected from the group consisting of a hydrogen atom, a cyano group, a carbamoyl group, a carboxyl group, an ester group and an acyl group, each of X_4 and X_{11} is selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group, an aryl group and a heterocyclic group, each of X_7 and X_8 is selected from the group consisting of a hydrogen atom, a halogen atom, a nitro group, an alkyl group and an alkoxy group the alkyl group and the alkoxy group of which may be substituted, X_9 is selected from the group consisting of an alkyl group, an aryl group, a carboxyl group and an ester group, X_{10} is one of an aryl group and a heterocyclic group, which groups may be substituted, and Y is a residual group which forms an aromatic ring or a heterocycle.

(XI) 3. The photoconductor as claimed in claim 1, wherein said photosensitive layer comprises a laminate of a charge transporting layer mainly composed of the charge transporting substance and a binder, and a charge generating layer including the charge generating substance and a binder.

5,292,609

(XII) **ELECTROPHOTOGRAPHIC DEVELOPER HAVING DIFFERENT POLYOLEFIN WAXES**

Yuzaburo Yoshikawa; Toshiaki Yamauchi; Toshiyuki Oba, and Akira Takano, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1992, Ser. No. 856,660
Claims priority, application Japan, Jun. 4, 1991, 3-133033
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **6 Claims**

1. A developing agent comprising:

a first polyolefin wax having a first softening point in the range between 102°–170° C.; and

(XIII) a second polyolefin wax having a second softening point lower than the first softening point by 2°–20° C. and in the range between 100°–168° C.;

a vinyl-based polymer synthetic resin mixed with the first polyolefin wax and the second polyolefin wax; wherein said first polyolefin wa is blended into the polymer synthetic resin during polymerization thereof, and the second polyolefin wax is blended thereinto during molten-kneading, wherein the content of each of said first and second waxes is 0.5 to 10 parts by weight with respect to 100 parts

(XIV) by weight of said vinyl-based polymer.

5,292,610

MICROCAPSULES AND THEIR USE

Günter Helling, Odenthal; Michael Müller, Bergisch Gladbach, and Wolfgang Podszun, Cologne, all of Fed. Rep. of Germany, assignors to AGFA Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 846,812
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109287
Int. Cl.[5] G03C *1/72*
U.S. Cl. 430—138 **11 Claims**

1. Microcapsules comprising a wall containing an internal phase comprising at least one leuco dye, at least one photopolymerisation initiator and at least one photopolymerisable monomer, characterized in that the photopolymerisable monomer corresponds to the following formula

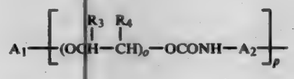
$$A[-NHCO-X-L_1-(OCO-CR_1{=}CH_2)_n]_m$$

wherein

A denotes a tri- to hexa-valent organic group having the following meanings:

a) a saturated hydrocarbon group having 5 to 25 carbon atoms or

b)



wherein

A_1 stands for a straight chained or branched aliphatic group having 2 to 20 carbon atoms and optionally containing 1 to 3 oxygen atoms, an aromatic group having 6 to 24 carbon atoms, an araliphatic group having 7 to 26 carbon atoms or a cycloaliphatic group having 6 to 26 carbon atoms,

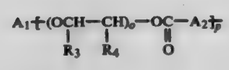
R_3 and R_4 denote hydrogen or methyl,

A_2 denotes a saturated hydrocarbon group having 5 to 25 carbon atoms,

o denotes a number from 0 to 5 and

p denotes a number from 3 to 6, or

c)



wherein A_1, A_2, R_3, R_4, o and p have the meanings indicated above,

X denotes O or NR_2,

L_1 denotes a divalent or trivalent aliphatic hydrocarbon group whose carbon chain may be interrupted by 1 to 3 oxygen atoms,

R_1 denotes hydrogen or methyl,

R_2 denotes hydrogen or C_1–C_4-alkyl,

n stands for 2 and

m stands for a number from 3 to 6.

5,292,611

DYE IMAGE FORMING METHOD

Keiji Ohbayashi; Masaru Tsuchiya, and Kazuhiro Miyazawa, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

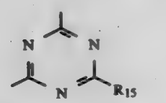
Filed Dec. 1, 1992, Ser. No. 984,866
Claims priority, application Japan, Dec. 17, 1991, 3-333519
Int. Cl.[5] G03C *5/54, 1/34*
U.S. Cl. 430—203 **5 Claims**

1. In a method for forming a dye image wherein a heat-processable light-sensitive material comprising a support having thereon a non-light-sensitive layer and a light-sensitive layer containing a light-sensitive silver halide and a dye-providing material capable of releasing and forming a diffusible dye upon heat development is imagewise exposed to light and thereafter is subjected to heat development to release or form the diffusible dye, which is transferred to a dye-receiving material having a dye-receiving layer to form a dye image on the dye-receiving layer, the improvement wherein the heat development or the transfer of the dye is carried out in the presence of a compound represented by formula 1 and a compound represented by formula 3,

$$(X_1)_t{-}Q \qquad \text{formula 1}$$

$$R_{31}{-}X_2 \qquad \text{TM formula 3}$$

wherein X_1 represents a chlorine atom ; Q represents



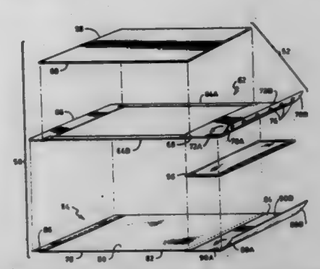
wherein R_{15} represents a monovalent organic group having not less than 8 carbon atoms; t represents 2; R_{31} represents an alkyl group or a cycloalkyl group; X_2 represents a bromine atom or an iodine atom; and wherein said compound represented by formula is contained in the non-light-sensitive layer or the dye receiving layer; and said compound represented by formula 3 has a molecular weight not less than 200 and is contained in the light-sensitive layer.

5,292,612

FILM-SHEET ASSEMBLAGE FOR PEEL-APART SELF-DEVELOPING FILM

Leonard Polizzotto, Stow, and Robert J. Boyea, Wellesley Hills, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 28, 1992, Ser. No. 936,513
Int. Cl.[5] G03C *5/54;* **G03D** *9/02*
U.S. Cl. 430—207 **13 Claims**



1. A self-developing, peel-apart film unit assemblage, for insertion into a developer liquid spreading system, comprising:

a first sheet element having 1) a leading end, 2) a non-photosensitive coating on one side, 3) a rupturable pod of developer liquid on said leading end on the same side said sheet element as said nonphotosensitive coating, and 4) means projecting laterally from a side of said leading end opposite the side on which said rupturable pod is located for engagement by force transmitting means from a side opposite said nonphotosensitive coating for movement therewith; and

a second sheet element having 1) a leading end, 2) a photosensitive layer on one side, and 3) means projecting laterally from a side of said leading end for engagement by force transmitting means for movement therewith whereby said first and second sheet elements may be driven by the force transmitting means into the spread system with their said coated sides facing one another in an overlying relation, for the spreading of developer liquid from said rupturable pod therebetween.

5,292,613

PHOTOSENSITIVE TRANSFER MATERIAL AND IMAGE-FORMING PROCESS

Morimasa Sato; Masayuki Iwasaki, and Fumiaki Shinozaki, all of Shizuoka,, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 29, 1992, Ser. No. 827,765
Claims priority, application Japan, Jan. 29, 1991, 3-9292; May 24, 1991, 3-120228
Int. Cl.[5] G03C *11/12*
U.S. Cl. 430—257 **19 Claims**

18. An image-forming process, which comprises the steps of

(a) adhering a photosensitive transfer layer of a photosensitive transfer material comprising

a temporary support having formed thereon in sequence a thermoplastic resin layer, a separating layer having only slight permeability to oxygen, and a photosensitive resin layer, wherein the adhesion between the thermoplastic resin layer and the separating layer is weakest,

to a permanent support while heating,

(b) peeling off the temporary support and the thermoplastic resin layer,

(c) pattern-exposing the photosensitive resin layer through the separating layer, and

(d) developing the photosensitive resin layer to form images on the permanent support.

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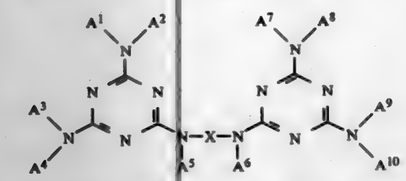
5,292,614

NEGATIVE PHOTOSENSITIVE COMPOSITION AND METHOD FOR FORMING A RESIST PATTERN

Tamaichi Ochiai, Sagamihara; Noriaki Takahashi, and Tomoyo Ishiguro, both of Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jul. 27, 1992, Ser. No. 919,941
Claims priority, application Japan, Aug. 2, 1991, 3-194445
Int. Cl.[5] C08F *2/46, 4/04*
U.S. Cl. 430—270 **14 Claims**

1. A negative photosensitive composition comprising an alkali-soluble resin having phenolic hydroxyl groups, a photo-acid-generating material selected from the group consisting of an organic halogen compound, an onium salt and a sulfonic acid ester and a crosslinking agent for the alkali-soluble resin, which acts under an acidic condition, wherein the crosslinking agent is a compound of the following formula (I):



(I)

wherein each of A^1 to A^{10} which are independent of one another, is a hydrogen atom, $—CH_2OH$ or $—CH_2OR$, wherein R is C_1–C_4 linear or branched chain alkyl, and X is C_2–C_{10} linear or branched chain alkylene, provided that at least four among A^1 to A^{10} are $—CH_2OR$, and a plurality of $—CH_2OR$ may be the same or different.

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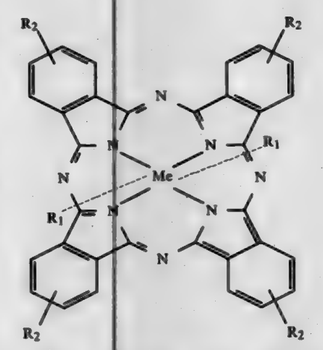
OPTICAL RECORDING MEDIUM

Takashi Yamada, and Fumio Matsui, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 679,393, Apr. 2, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,659
Claims priority, application Japan, Oct. 3, 1990, 2-265364
Int. Cl.[5] G11B *7/24*
U.S. Cl. 435—270 **7 Claims**

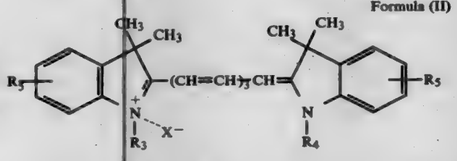
1. An optical recording medium comprising a substrate and a recording film disposed thereon;

wherein the recording film comprises a phthalocyanine-type coloring matter and a light absorbing agent comprising a polymethine cyanine dye having an absorption in a wavelength region corresponding to a laser recording wavelength, and wherein said light absorbing agent is present in an amount of 5–20 wt % based on the phthalocyanine-type coloring matter, said phthalocyanine-type coloring matter being represented by formula (I):



Formula (I)

wherein R_1 represents a linear alkyl group, and each R_2 represents any one of Cl, CH_3, SO_2 or an aromatic group, and Me represents a metal atom;
and said light absorbing agent being represented by formula (II):



Formula (II)

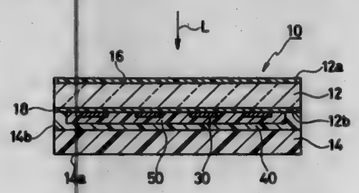
wherein R_3 and R_4 each represents an alkyl group having 1–5 carbon atoms, and R_5 represents a hydrogen atom or a substituent group, and x^- represents a counter ion.

5,292,616

OPTICAL CARD OF CLOSED TYPE

Minoru Fujita; Yuji Kakizuma, and Yoichi Fukushima, all of Tokyo, Japan, assignors to Kyodo Printing Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01352, § 371 Date Feb. 12, 1991, § 102(e) Date Feb. 12, 1991, PCT Pub. No. WO91/06098, PCT Pub. Date May 2, 1991
PCT Filed Oct. 19, 1990, Ser. No. 651,362
Claims priority, application Japan, Oct. 20, 1989, 1-271516
Int. Cl.[5] G11B *7/24*; G03C *1/00*
U.S. Cl. 430—271 **11 Claims**



1. An enclosed-type optical card wherein optical recording section for recording information is isolated from an environment outside the optical card, said optical card comprising a first substrate capable of transmitting light having a first side and a second side, said first and second sides extending in parallel relation to each other, the first side of the first substrate being a writing side upon which a writing light is incident, an optical recording section located on said second side of said substrate, said optical recording section being capable of recording information such that pits are formed by optical energy of said writing light, said optical recording section including a thin membrane layer made of a recording material having light reflectivity, a sensitizing layer having first and second sides, the sensitizing layer being directly laminated on said optical recording section, said sensitizing layer being comprised of a self-oxidizable or thermoplastic resin, said sensitizing layer providing means for the escape of molten recording material when pits are formed in said optical recording section and means for enclosing said optical recording section, said means including a coating layer coated upon said sensitizing layer wherein said coating layer is an adhesive layer having first and second sides, and wherein said adhesive layer is attached to said second side of the first substrate such that said optical recording section is sandwiched between said adhesive layer and said second side of said first substrate and wherein a second card substrate is attached to the adhesive layer on the second side of adhesive layer, and wherein the optical recording section is smaller in dimension then the first substrate capable of transmitting light, wherein the optical recording section is enclosed within the adhesive layer and the sensitizing layer on lateral sides of the optical card.

5,292,617

PHOTOSENSITIVE ELEMENT HAVING SUPPORT WITH ADJUSTABLE ADHESION

Bernard Feinberg, Englishtown, N.J., and Richard P. Pankratz, Circleville, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1992, Ser. No. 860,865
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—271 **10 Claims**

1. A photosensitive element comprising in order:
(A) a support;
(B) a thermally hardened layer containing the reaction product of (i) either an organic polymer having reactive segments and nonreactive segments or a blend of organic polymers wherein at least one polymer has reactive segments and at least one polymer has nonreactive segments, (ii) a crosslinking agent and (iii) a catalyst; and
(C) a photohardenable layer.

5,292,618

PHOTOCURABLE SELF-RETAINABLE GEL, SHAPED ARTICLE PREPARED THEREFROM, APPLICATIONS AND PREPARATIONS THEREOF

Yoshichi Hagiwara; Yuichi Mori; Hiroshi Samukuua, all of Kanagawa, and Kazuhide Saigo, Tokyo, all of Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Apr. 18, 1991, Ser. No. 687,358
Claims priority, application Japan, Apr. 19, 1990, 2-104357; Apr. 19, 1990, 2-104358; Feb. 28, 1991, 3-034267; Mar. 1, 1991, 3-036077
Int. Cl.[5] G03C *1/725*
U.S. Cl. 430—280 **16 Claims**

1. A Photocurable, self-retainable gel comprising:
(a) a polymer composition having isotactic polymethyl methacrylate moiety and syndiotactic polymethyl methacrylate moiety,
(b) a photopolymerizable ethylenically unsaturated compound;
(c) a photopolymerization initiator;
(d) an epoxy compound having at least two epoxy groups and
(e) an epoxy hardener.

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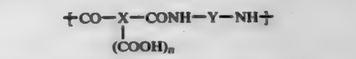
PHOTOSENSITIVE POLYMER COMPOSITION

Hiroshige Okinoshima, Annaka, and Hideto Kato, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 853,683
Claims priority, application Japan, Mar. 18, 1991, 3-078587
Int. Cl.[5] G03C *1/725*
U.S. Cl. 430—283 **13 Claims**

1. A photosensitive polymer composition comprising, in admixture,

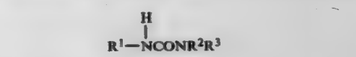
a polymer predominantly comprising a recurring unit of the formula (I):



(I)

wherein X is a tri- or tetravalent organic group, Y is a divalent organic group, and n is equal to 1 or 2 and

a compound having a urea bond of the formula (II):



(II)

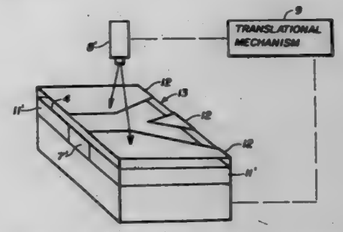
wherein R^1 is a group having a functional group capable of forming a dimer or polymer upon exposure to radiation, and R^2 and R3are independently a hydrogen atom or a monovalent organic group.

5,292,620

OPTICAL WAVEGUIDE DEVICES, ELEMENTS FOR MAKING THE DEVICES AND METHODS OF MAKING THE DEVICES AND ELEMENTS

Bruce L. Booth, West Chester, and Joseph E. Marchegiano, Landenberg, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 297,641, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 144,003, Jan. 15, 1988, abandoned. This application Apr. 8, 1993, Ser. No. 45,280
Int. Cl.[5] G03H *1/04*
U.S. Cl. 430—290 **25 Claims**



1. A substantially dry method of making an optical waveguide device with at least one buried channel waveguide in a laminated and hardened matrix, comprising the steps of:
exposing to light at least a first region of a substantially dry photohardenable film having first and second surfaces, with a support removably adhered to the first surface, polymerizing at least one monomer in the film and changing the refractive index of the region to form at least a first optical waveguide;
laminating a first surface of a first substantially dry photohardenable layer to the film second surface, with a support removably adhered to a second surface of the first layer;
after the exposing step and then the first laminating step, removing the support from the film first surface;
laminating a first surface of a second substantially dry photo-

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hardenable layer to the film first surface, with a support removably adhered to a second surface of the second layer; and

after the second laminating step, hardening the layers and film forming a hardened matrix, substantially fixing the indexes of refraction of the layers and the film, and forming at least one buried waveguide, wherein the hardening step comprises flooding the layers and film with light forming the hardened matrix.

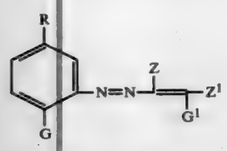
5,292,621

ELECTROSTATOGRAPHIC TONER CONTAINING YELLOW PIGMENT

Brian H. Johnston, and Thomas H. Whitesides, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1992, Ser. No. 888,696
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—106 **22 Claims**

1. A dry, particulate electrostatographic toner composition comprising a binder polymer having mixed therewith a yellow pigment which is a coordination complex of a divalent or trivalent metal ion and a monazo dyestuff having the formula:



wherein G is a metal chelating group;

R is selected from the group consisting of hydrogen and SO_2NHR^2 wherein R^2 is a substituted or unsubstituted alkyl group having from 1 to 8 carbon atoms or a substituted or unsubstituted aryl group having from 6 to about 10 carbon atoms;

Z is an electron withdrawing group;

G^1 is selected from the group consisting of OH; $OCOR^5$, $OCOOR^5$; and $OCON(R^5)_2$ wherein each R^5 is a substituted or unsubstituted alkyl group having from 1 to 8 carbon atoms or a substituted or unsubstituted aryl group having from 6 to about 12 atoms; and

Z^1 is selected from the group consisting of a substituted or unsubstituted alkyl group having from 1 to about 8 carbon atoms; a substituted or unsubstituted aryl group having from 6 to about 10 carbon atoms; and $N(R^3)_2$ wherein R^3 is hydrogen, a substituted or unsubstituted alkyl group having 1 to about 8 carbon atoms or a substituted or unsubstituted aryl group having 6 to about 10 carbon atoms;

said toner having an average particle size within the range of from about 0.1 to about 100 microns.

5,292,622

PROCESS FOR PREPARATION OF IMAGES ON TONABLE LIGHT-SENSITIVE LAYERS

Bernhard Metzger, Darmstadt, and Helmut H. Fröhlich, Heusenstamm, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 620,892, Dec. 3, 1990, abandoned. This application Nov. 23, 1992, Ser. No. 981,904
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1989, 3941493
Int. Cl.[5] G03C *1/66*
U.S. Cl. 430—291 **6 Claims**

1. A process for preparing multi-color images which comprises:

(a) applying a light-sensitive layer onto a support;

(b) exposing imagewise the light-sensitive layer to actinic radiation to produce tacky and non-tacky areas;

(c) contacting the exposed layer with a light-insensitive transfer layer on a support, the transfer layer consisting essentially of (i) at least one polymer with a tensile strength in the range of 5–60 N/mm^2 and (ii) at least 20 percent by weight based on the dry transfer layer of at least one finely divided powder or a combination of a finely divided powder and at least one dissolved dye;

(d) removing the support of the transfer layer together with the areas of the transfer layer which do not adhere to the tacky areas of the imagewise exposed layer;

(e) applying a new light-sensitive layer onto the existing image; and

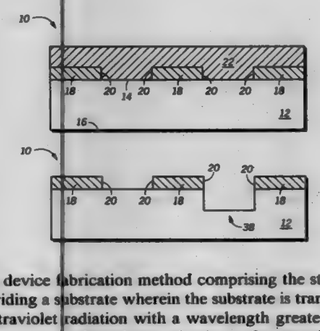
(f) repeating steps (b) through (e) at least twice.

5,292,623

METHOD FOR FORMING INTEGRATED CIRCUIT DEVICES USING A PHASE SHIFTING MASK

Kevin G. Kemp, and Bernard J. Roman, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1992, Ser. No. 907,973
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—313 **15 Claims**



1. A device fabrication method comprising the steps of:

providing a substrate wherein the substrate is transparent to ultraviolet radiation with a wavelength greater than 190 nanometers, the substrate having a front surface and a back surface;

forming an optical mask overlying the front surface of the substrate, the optical mask being opaque to ultraviolet radiation with a wavelength greater than 190 nanometers;

depositing an image reversible photoresist layer overlying the optical mask;

forming a first exposed region and an unexposed region in the image reversible photoresist layer, the first exposed region having a sidewall wherein the sidewall overlies a portion of the optical mask;

treting the first exposed region to form a hardened first exposed region;

exposing the back surface of the substrate to an optical illumination source, wherein radiation from the optical illumination source passes through a portion of the substrate to form a second exposed region that lies within a remaining portion of the unexposed region;

removing the second exposed region to uncover a portion of the substrate and to form an etch mask, the etch mask comprising the hardened first exposed region and the remaining portion of the unexposed region;

etching the uncovered portion of the substrate to form a trench region; and

removing the etch mask to form a phase shifting mask.

5,292,624

METHOD FOR FORMING A METALLURGICAL INTERCONNECTION LAYER PACKAGE FOR A MULTILAYER CERAMIC SUBSTRATE

Shih-Long Wei, Hsinchu, Taiwan, assignor to International Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 14, 1992, Ser. No. 944,348
Int. Cl.[5] G03F *7/00*; **H05K** *3/02*
U.S. Cl. 430—313 **11 Claims**

1. A method of fabricating on a multilayer ceramic body, a metallurgical interconnection layer system for interconnection of a plurality of large scale integrated circuit semiconductor chips, said ceramic body including conductive circuitry and vias therein, the vias extending from said conductive circuitry and forming a planar surface with said ceramic body, said method comprising:

screen printing, drying and firing a blanket layer of etchable conductive metal paste on said ceramic body;

depositing a layer of photoresist over said metal paste;

exposing and developing said photoresist to form a fine line circuit pattern including exposed areas between the fine line pattern;

etching the exposed areas of the fired layer of metal paste to form a circuit pattern, and removing the developed photoresist layer;

screen printing, drying and firing a layer of dielectric material over said circuit pattern, said layer of dielectric material having via holes;

filling the via holes with a conductive paste, and drying and firing said conductive paste;

repeating the aforesaid process steps to build up the necessary levels of the interconnection pattern;

screen printing, drying and firing a top layer of etchable conductive paste;

said metal paste including conductivity imparting powders, glass frit, and a vehicle which includes a nonvolatile resin and volatile solvent,

depositing a layer of photoresist on the surface of said conductive paste, exposing said photoresist to form a fine line top circuit pattern, and developing the photoresist; and

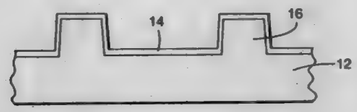
etching the exposed areas of the layer of etchable conductive paste, and removing the remaining photoresist.

5,292,625

METHOD FOR SELECTIVELY EXPOSING AN UNEVEN SUBSTRATE SURFACE

Francis J. McFadden, Lake Elmo, and Michael F. Weber, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 3, 1992, Ser. No. 863,402
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—325 **28 Claims**



1. A method for selectively removing a coating from portions of a substrate surface having upper and lower portions, including the steps of

a. applying a layer of photosensitive material over a substrate surface covered with a coating, wherein said substrate surface has upper and lower portions;

b. placing a prismatic element on top of the photosensitive-covered, substrate surface;

c. projecting light rays through said prismatic element toward said substrate surface so that the portions of said photosensitive material proximate said prismatic element are exposed to said light rays, while the portions of said photosensitive material not proximate said prismatic element are left unexposed;

d. removing those portions of said photosensitive material which are soluble in developer; and

e. removing those portions of said coating which are no longer covered by said photosensitive material.

5,292,626

DEVELOPER COMPOSITION FOR IRRADIATED, RADIATION-SENSITIVE POSITIVE-WORKING, NEGATIVE-WORKING AND REVERSIBLE REPROGRAPHIC LAYERS

Gerhard Buhr, Koenigstein; Andreas Elsaesser, Idstein; Hans W. Frass, Wiesbaden, and Ernst I. Leupold, Neu-Anspach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 27, 1991, Ser. No. 750,313
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027299
Int. Cl.[5] G03F *7/32*
U.S. Cl. 430—331 **20 Claims**

1. A developer composition for radiation-sensitive positive-working, negative-working and reversible reprographic layers which contain a binder which is insoluble in water but soluble in aqueous-alkaline solutions, the developer composition comprising:

(a) O-carboxymethyl ethylene glycol or O,O'- bis-carboxymethyl ethylene glycol or O-carboxymethyl polyethylene glycol or O,O'-bis-carboxymethyl polyethylene glycol wherein the, polyethylene glycol comprises 2 to about 500 ethylene glycol units, wherein the,

(b) at least one compound which shows an alkaline reaction in an aqueous solution, selected from the group consisting of alkali metal hydroxides, alkali metal silicates, alkali metal phosphates, alkali metal borates, ammonium hydroxides, ammonium silicates, ammonium phosphates and ammonium borates, and

(c) water.

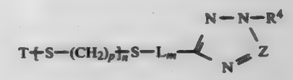
5,292,627

TONE CONTROL OF PHOTOGRAPHIC IMAGES

Stephen A. Hershey, Fairport; J. Ramon Vargas, Webster, and Paul A. Burns, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 3, 1992, Ser. No. 892,850
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—356 **20 Claims**

16. A process comprised of developing a photographic element comprised of an emulsion layer containing radiation sensitive silver bromide or silver bromoiodide fine grains having a mean equivalent circular diameter of less than 0.3 μm to produce a silver image of modified tone in the presence of an azole in a concentration effective to modify the tone of the developed silver image, the azole having the formula:



(I)

wherein
Z is —N═ or —C(R)═;
L is a divalent aliphatic linking group containing 1 to 8 carbon atoms;
T is an aliphatic terminal group containing 1 to 8 carbon atoms;
m is 0 or 1;
n is an integer of 2 to 4;
p is an integer of 2 to 4; and
R^4 and R^5 together complete a 5 or 6 member heterocyclic nucleus containing 1 to 3 ring nitrogen atoms or
R^4 is hydrogen, an aliphatic group of 1 to 8 carbon atoms or an aromatic group of 1 to 8 carbon atoms and
R^5 is hydrogen, —NH_2, an aliphatic group of 1 to 8 carbon atoms or an aromatic group of 1 to 8 carbon atoms.

5,292,628

PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH GELATIN LAYER CONTAINING SILICA

Fritz Nittel; Heinz-Günther Auweiler; Manfred Peters, and Hartmut Randolph, all of Leverkusen, Fed. Rep. of Germany, assignors to AGFA Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1993, Ser. No. 53,456
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1992, 4213869
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—539 **5 Claims**

1. Photographic material that contains, disposed on a film base, a coating with at least one light-sensitive silver halide emulsion layer and optionally further light-sensitive and/or non-light-sensitive binder layers, wherein the film base
either has, on one or both sides, a surface consisting of a polyolefin layer that has been treated with a corona discharge,
or consists of a polyester film provided with a (first) substrate layer,
characterized in that there is disposed on the surface of the film base facing the coating and consisting of the polyolefin layer or the first substrate layer a substratum adhesive layer consisting of
50 to 60 wt % of high-boiling water-insoluble organic compounds (oil-formers) and
40 to 50 wt % of a solid consisting of
50 to 80 wt % gelatin and
20 to 50 wt % colloidal SiO_2.

5,292,629

Patent Not Issued For This Number

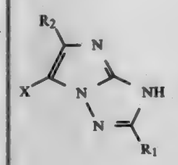
5,292,630

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING AN IMIDAZOTRIAZOLE CYAN COUPLER

Yasuhiro Shimada, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1993, Ser. No. 18,454
Claims priority, application Japan, Feb. 17, 1992, 4-61474
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—543 **10 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer containing at least one imidazotriazole cyan coupler of the following formula (I):



(I)

where R_1 represents a hydrogen atom or a substituent; R_2 represents an electron attracting group having a Hammett's constant value σp of 0.35 or more; X represents a hydrogen atom or a group released by coupling with an oxidation product of an aromatic primary amine color developing agent; and R_1 or R_2 may also be a divalent group forming a dimer or higher polymer, or they each may be bonded to a polymer chain to form a homopolymer or copolymer.

5,292,631

RADIOGRAPHIC ELEMENTS WITH IMPROVED COVERING POWER

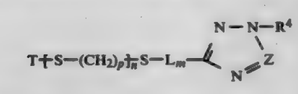
Stephen A. Hershey; J. Ramon Vargas, and Paul A. Burns, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 3, 1992, Ser. No. 892,851
Int. Cl.[5] G03C *1/035, 1/06*
U.S. Cl. 430—567 **16 Claims**

1. A silver image forming radiographic element comprised of
a transparent support and coated thereon
at least one hydrophilic colloid layer including an emulsion layer containing radiation sensitive silver bromide, silver bromochloride or silver bromoiodide grains having a mean equivalent circular diameter of at least 0.3 μm and a grain population wherein at least 50 percent of the total grain population projected area is accounted for by tabular grains having a tabularity of greater than 8, as determined by the relationship:

$$T = \frac{ECD}{t^2}$$

wherein
T is tabularity;
ECD is the mean effective circular diameter in μm of the tabular grains; and
t is the mean thickness in μm of the tabular grains,
said element including in said emulsion layer or in a hydrophilic colloid layer contiguous to said emulsion layer an azole in a concentration effective to increase the covering power of the silver image, the azole having the formula:



(I)

wherein
Z is —N═ or —C(R^5)═;
L is a divalent aliphatic linking group containing 1 to 8 carbon atoms;
T is an aliphatic terminal group containing 1 to 10 carbon atoms;
m is 0 or 1;
n is an integer of 2 to 4;
p is an integer of 2 to 4 and
R^4 and R^5 together complete a 5 or 6 member heterocyclic nucleus containing 1 to 3 ring nitrogen atoms or
R^4 is hydrogen, an aliphatic group of 1 to 8 carbon atoms or an aromatic group of 1 to 8 carbon atoms and
R^5 is hydrogen, —NH_2, an aliphatic group of 1 to 8 carbon atoms or an aromatic group of 1 to 8 carbon atoms.

5,292,632

HIGH TABULARITY HIGH CHLORIDE EMULSIONS WITH INHERENTLY STABLE GRAIN FACES

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 955,010, Oct. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 764,868, Sep. 24, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 35,349
Int. Cl.[5] G03C *1/035, 1/07*
U.S. Cl. 430—567 **12 Claims**



1. A radiation sensitive emulsion containing a silver halide grain population internally free of iodide at the site of grain nucleation and comprised of at least 50 mole percent chloride, based on total silver forming the grain population, in which greater than 30 percent of the grain population projected area is accounted for by tabular grains having a mean thickness of less than 0.3 μm,
Characterized in that the tabular grains
(a) have parallel major faces lying in {100} crystallographic planes,
(b) have an average aspect ratio (ECD/t) in the range of from greater than 7.5 to 50, and
(c) have an average tabularity (ECD/t^2) in the range of greater than 25 to 1000,
where
ECD is the mean effective circular diameter of the tabular grains in μm and
t is the mean thickness of the tabular grains in μm.

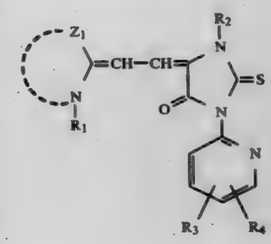
5,292,633

SILVER HALIDE BLACK & WHITE LIGHT-SENSITIVE MATERIAL COMPRISING SPECTRALLY SENSITIZED SILVER HALIDE GRAINS CONTAINING RHODIUM IN A SPECIFIC AMOUNT

Mitsuhiro Okumura; Masataka Nakano, and Yuji Tanaka, all of Hinoo, Japan, assignors to Konica Corporation, Tokyo, Japan

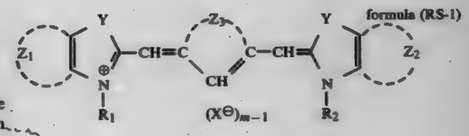
Filed Jan. 30, 1992, Ser. No. 828,132
Claims priority, application Japan, Feb. 4, 1991, 3-13330
Int. Cl.[5] G03C *1/005, 1/494*
U.S. Cl. 430—574 **11 Claims**

1. A silver halide black and white photographic light-sensitive printing material comprising a support having thereon a silver halide emulsion layer comprising silver halide grains, wherein said silver halide grains contain rhodium in an amount of 10^{-8} to 10^{-5} mols per mol of silver halide; and said grains are spectrally sensitized with a combination of sensitizing dyes [GS-1) and (RS-1), each represented by the following formula:



formula (GS-1)

wherein Z^1 represents a group consisting of non-metal atoms necessary for forming an oxazole ring, a benzoxazole ring or a naphthoxazole ring, each of which may have a substituent; R^1 and R^2 each represent an alkyl group; R^3 and R^4 each represent a hydrogen atom, an alkyl group, an alkoxy group, a sulfo group, a sulfoalkyl group, a carboxy group or a halogen atom;



formula (RS-1)

wherein R^1 and R^2 each represent an alkyl group; Z^1 and Z^2 each represent a group consisting of non-metal atoms necessary for forming a benzene ring or a naphthalene ring; Z^3 represents a group consisting of atoms necessary for forming a 6-membered hydrocarbon ring; m is an integer of 1 or 2; Y represents a sulfur atom or a selenium atom; and X represents an anion.

5,292,634

Patent Not Issued For This Number

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5,292,635

THIOSULFONATE-SULFINATE STABILIZERS FOR PHOTOSENSITIVE EMULSIONS

Roger Lok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1990, Ser. No. 634,407
Int. Cl.[5] G03C *1/34, 1/09*
U.S. Cl. 430—611 **21 Claims**

1. A method for reducing speed change on aging in a silver halide photographic material, which comprises a negative photographic emulsion coated on a paper support, said emulsion comprising crystals of a compound selected from the group consisting of silver chloride and : silver bromochloride, said method comprising treating said emulsion with an amount effective for reducing speed change upon storage of said photographic material of a compound of formula I:

$$Z^1—X^1O_2S—M^1 \quad (I)$$

and a compound of formula II:

$$Z^2—X^2O_2—M^2 \quad (II)$$

wherein X^1 is sulfur and X^2 is selected from the group consisting of sulfur and selenium, M^1 and M^2 are independently selected from the group consisting of an alkali metal ion and



wherein R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen and an alkyl of 1–3 carbon atoms, and Z^1 and Z^2 are independently selected from the group consisting of an unsubstituted or substituted alkyl of 1 to 18 carbon atoms, an unsubstituted or substituted aryl group having 6 to 10 carbon atoms, an unsubstituted or substituted 5-membered or 6-membered heterocyclic group having one or two heteroatoms, and L, wherein L is a divalent linking group, provided that, if Z^1 is L, the compound of formula I is a polymer and, if Z^2 is L, the compound of formula II is a polymer.

5,292,636

THERAPEUTIC AND DIAGNOSTIC METHODS USING SOLUBLE T CELL SURFACE MOLECULES

Patrick C. Kung, Lexington; Stephen H. Ip, Sudbury; Michael C. Brown, Wayland, all of Mass., and Linda A. MacKeen, Elkins Park, Pa., assignors to T Cell Diagnostics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 254,551, Oct. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 20,819, Mar. 2, 1987, Pat. No. 5,006,459, which is a continuation-in-part of Ser. No. 846,230, Mar. 19, 1986, abandoned. This application Nov. 9, 1989, Ser. No. 434,398
Int. Cl.[5] G01N *33/543, 33/564, 33/574, 33/577*
U.S. Cl. 435—5 **37 Claims**

1. A method for detecting or measuring the amount in a sample of a soluble molecule carrying antigenic determinants of the CD4 T cell surface antigen comprising:

(a) contacting the sample with a first anti-CD4 monoclonal antibody and with a second anti-CD4 monoclonal antibody that does not compete for the same binding site on the CD4 antigen as the first anti-CD4 antibody under conditions which allow immunospecific binding; and

(b) detecting whether immunospecific binding occurs of a component in the sample with both first and second anti-CD4 antibodies, in which immunospecific binding of a component of the sample with both first and second anti-CD4 antibodies indicates the presence of the soluble molecule,

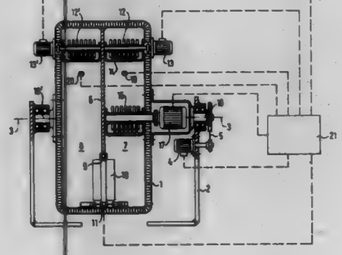
in which the sample contains only such soluble molecules as are spontaneously released.

5,292,637

PROCESS AND APPARATUS FOR THE BIOLOGICAL CONVERSION OF ORGANIC MATERIAL IN BIOMASS

Franz Böhnensieker, Holtrup 60, D-4722 Ennigerloh-Westkirchen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 905,892, Jun. 29, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 944,948
Claims priority, application European Pat. Off., Nov. 21, 1991, 91119832.3
Int. Cl.[5] C12Q *3/00;* **C12M** *1/38, 1/06*
U.S. Cl. 435—3 **22 Claims**



1. A process for biological conversion (composting) of organic material into biomass wherein the organic material is treated by mixing it for a time in at least two separate, substantially-closed chambers, said process comprising the steps of:

introducing first organic material into a first substantially-closed chamber and treating it therein by mixing it and comminuting it until its conversion into biomass has progressed to an intermediate stage only;

monitoring a temperature in the first substantially-closed chamber and in response to the temperature reaching a predetermined temperature level, thereby indicating that the conversion of said first organic material has progressed to said intermediate stage, transferring only a portion of the first organic material converted to the intermediate stage from the first to a second substantially-closed chamber for final composting into biomass;

introducing second organic material into the first substantially-closed chamber to be treated with a remaining portion of the first organic material converted to the intermediate stage left in the first substantially-closed chamber, whereby treatment by mixing and comminuting of the second organic material is effected in the first substantially-closed chamber in the presence of said remaining portion of first organic material already converted to the intermediate stage.

5,292,638

METHOD OF DETERMINING FUNCTIONAL ESTROGEN RECEPTORS FOR PROGNOSIS OF CANCER

Christopher C. Benz, Novato, and Gary K. Scott, Berkeley, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 7, 1990, Ser. No. 623,607
Int. Cl.[5] C12Q *1/68;* **G01N** *33/574, 33/561*
U.S. Cl. 435—6 **6 Claims**

1. A method for determining the relative proportion of functional estrogen receptor in human tumor tissue, wherein functional estrogen receptor binds normally to estrogen responsive element, and wherein the relative proportion of functional receptor is correlated to responsiveness of the tumor tissue to hormonal treatment, said method comprising the steps of:

(a) contacting a first sample of the human tumor tissue with an anti-estrogen receptor antibody to determine the total amount of immunoreactive estrogen receptor in the human tumor tissue;

(b) contacting a second sample of the human tumor tissue with non-specific DNA oligomers in an amount sufficient to eliminate non-specific DNA binding;

(c) contacting the human tumor tissue sample of step (b) with end-labeled duplexed estrogen responsive element DNA oligomers;

(d) dividing the sample of step (c) into two parallel samples and incubating one with anti-estrogen receptor antibody;

(e) separating normal estrogen receptor-estrogen responsive element complexes from other complexes in each of the parallel samples of step(d) by gel shift assay, according to molecular weight;

(f) determining the proportion of normal estrogen receptor in the tumor tissue by measuring the amount of estrogen receptor which forms normal estrogen receptor-estrogen responsive element complexes and comparing it to the amount of immunoreactive estrogen receptor in the human tumor tissue; and

(g) correlating the proportion of functional estrogen receptor in the tumor tissue with the responsiveness of the tumor tissue to hormonal treatment, wherein tumor tissue with 50% or more functional estrogen receptor is presumed to be responsive to hormonal treatment, while tumor tissue with less than 50% functional estrogen receptor is presumed to be non-responsive.

5,292,639

ASSOCIATION OF BOVINE MITOCHONDRIAL DNA WITH TRAITS OF ECONOMIC IMPORTANCE

Donald C. Beitz; Albert E. Freeman, both of Ames, Iowa; Michael M. Schutz, Laurel, Md., and Gary L. Lindberg, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 398,898, Aug. 28, 1989. This application Apr. 24, 1992, Ser. No. 872,265
Int. Cl.[5] C12Q *1/08;* **C12P** *19/34;* **C07H** *5/04, 17/00*
U.S. Cl. 435—6 **16 Claims**

1. A method of evaluating the material mitochondrial phenotypic contribution to economic traits of milk production and reproduction efficiency of a dairy cow comprising:

assaying for the presence of one or more genetic markers in the mitochondrial D-loop of said cow.

5,292,640

Patent Not Issued For This Number

5,292,641

ALLOANTIGEN TESTING BY BINDING ASSAY

Philippe Pouletty, Atherton, Calif., assignor to SangStat Medical Corporation, Menlo Park, Calif.

Filed Dec. 13, 1991, Ser. No. 807,287
Int. Cl.[5] G01N *33/543*
U.S. Cl. 435—7.24 **4 Claims**

1. A method for detecting histocompatibility between a human donor and recipient of a transplant, said method comprising:

preparing at least two samples, wherein each sample is prepared by combining a blood aliquot from said donor and a blood aliquot from said recipient, and wherein differing samples have differing ratios of recipient to donor aliquot volumes, and wherein in each of said samples said aliquot from said recipient is not greater than the volume of said aliquot from said donor, and at least one control lacking said donor blood aliquot;

incubating said samples for sufficient time for any complexes between soluble HLA antigen and IgG anti-HLA antigen to form;

adding each of said samples to a different solid support coated with substantially all of the popular HLA allelic proteins;

determining the amount of IgG antibody bound to each of said solid supports as compared to at least one control, where an increase in the inhibition of IgG antibody bound to the support with a decreasing ratio of recipient to donor aliquot volumes when corrected for the value from the control indicates lack of histocompatibility.

5,292,642

METHODS AND COMPOSITIONS FOR THE DETECTION OF MONOCYTE CYTOTOXICITY INDUCING FACTOR

C. Michael Jones, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 417,162, Oct. 4, 1989, Pat. No. 5,112,948, which is a continuation of Ser. No. 917,983, Oct. 10, 1986, Pat. No. 4,977,245. This application Dec. 7, 1990, Ser. No. 624,298
Int. Cl.[5] C07K *15/28;* **G01N** *33/48, 33/68, 33/577*
U.S. Cl. 435—7.24 **8 Claims**

1. A method of detecting the presence of human monocyte cytotoxicity inducing factor (MCF) in a biologic sample comprising contacting the sample with a composition which comprises an anti-MCF antibody under conditions which allow for an antibody antigen reaction, and detecting the formation of an MCF antigen-antibody complex, said MCF antibody characterized as having the ability to immunologically recognize MCF characterized by the following properties:

(a) capability of inducing human monocytes to a cytotoxic state;

(b) an apparent molecular weight of 29 kilodaltons, or between about 14.7 and about 18.1 kilodaltons, as determined by SDS-polyacrylamide gel electrophoresis after production under serum-free conditions;

(c) retention of biological activity following treatment at ph 2 for one hour;

(d) retention of biological activity following treatment at 60° C. for one hour;

(d) retention of biological activity in the presence of antiserum to interferon gamma, interferon alpha, or a combination of anti-sera to interferon alpha and gamma.

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5,292,643

FUSARIC ACID RESISTANT GENES

Yuji Shibano, Toyonaka; Hideyoshi Toyoda, Hirakata; Ryutaro Utsumi, Nara, and Kazuaki Obata, Toyonaka, all of Japan, assignors to Suntory Limited and Daikin Industries, Ltd., both of Osaka, Japan

Filed Feb. 28, 1991, Ser. No. 661,610
Claims priority, application Japan, Feb. 28, 1990, 2-45481; Feb. 18, 1991, 3-044027
Int. Cl.[5] C12N *15/00, 15/11, 15/31, 15/70*
U.S. Cl. 435—69.1 11 Claims

1. An isolated and purified DNA consisting essentially of a sequence encoding amino acid sequences which decompose or detoxify fusaric acid, said amino acid sequences being SEQ ID NOS: 2–6.

5,292,644

RAPID PROCESS FOR DETECTION COLIFORM BACTERIA

James D. Berg, Aquateam, Postboks 6593, Rodelokka, 0501 Oslo 5, Norway

Continuation of Ser. No. 117,481, Nov. 5, 1987, abandoned. This application Feb. 8, 1991, Ser. No. 653,869
Int. Cl.[5] C12Q *1/02, 1/04;* C12M *1/16;* C12N *1/20*
U.S. Cl. 435—29 12 Claims

1. A rapid process for assaying a natural population of live coliform bacteria present in an original liquid or liquefied sample of product for human consumption, which may contain as well other live microorganisms, the process comprising:

(a) collecting a known volume of the original liquid or liquefied sample;

(b) contacting at least a portion of the known volume prior to any substantial reproduction of the coliform bacteria therein with an actuating medium thereby forming a mixture comprising:

(1) a nutrient for supporting metabolism of the live coliform bacteria;

(2) an amount of lactose for inducing the production of B-D-galctosidase enzyme in the live coliform bacteria while the bacteria are metabolizing;

(3) an amount of 4-methylumbelliferone-B-D-galactoside for being acted upon by the enzyme; and,

(4) an amount of sodium aluryl sulfate for enhancing fluorescence;

(c) incubating the mixture for a brief period of time of less than one hour wherein occurs:

(1) metabolism of the live coliform bacteria;

(2) production of the enzyme;

(3) reaction of the enzyme whether inside or outside the live coliform bacteria with the 4-methylumbelliferone-B-D-galactoside wherein is produced 4-methylumbelliferone; and,

(4) substantially no reproduction of the live coliform bacteria;

(d) irradiating the mixture at intervals during the incubation period with light of a wavelength sufficiently close to that of an excitation wavelength characteristic of the 4-methylumbelliferone and sufficiently intense as to cause the 4-methylumbelliferone to fluoresce;

(e) measuring, at such intervals during the incubation period, the amount of emitted fluorescence;

(f) calculating a rate of change in the amount of emitted fluoresce; and

(g) determining the concentration of the live coliform bacteria in the original sample by comparing the rate of change of emitted fluorescence with a preestablished rate of change-to-coliform concentration correlation schedule.

5,292,645

Patent Not Issued For This Number

5,292,646

PEPTIDE AND PROTEIN FUSIONS TO THIOREDOXIN AND THIOREDOXIN-LIKE MOLECULES

John McCoy, Reading, and Edward R. LaVallie, Tewksbury, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 745,382, Aug. 14, 1991, which is a continuation-in-part of Ser. No. 652,531, Feb. 6, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 921,848
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] C12N *1/00, 5/10, 15/62, 15/63;* C07K *13/00*
U.S. Cl. 435—69.7 24 Claims

21. A method for obtaining a non-eukaryotic protein comprising the steps of:

culturing under suitable conditions a host cell transformed with, or having integrated into the genome thereof, a fusing DNA comprising a first DNA encoding a thioredoxin-like protein fused in frame to a second DNA encoding said protein, said fusion DNA under the control of an expression control sequence;

recovering said fusion protein from said culture; and

cleaving said protein from said fusion protein.

5,292,647

STRAIN OF STREPTOMYCES FOR PRODUCING AVERMECTINS AND PROCESSES THEREWITH

Rosanne Bonjouklian, Indianapolis; Otis W. Godfrey, Greenwood; Tim A. Smitka, Indianapolis, and Raymond C. Yao, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 30, 1992, Ser. No. 984,078
Int. Cl.[5] C12P *17/18, 17/02;* C12N *1/20;* A01N *43/02*
U.S. Cl. 435—119 6 Claims

1. A biologically pure culture of the microorganism *Streptomyces avermitilis* subspecies *niger* NRRL 21005, or an avermectin-producing mutant thereof.

5,292,648

MICROORGANISM OF GENUS EUPENICILLIUM

Miyako Masubuchi, Yokohama; Toru Okuda, and Hisao Shimada, both of Fujisawa, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 947,194, Sep. 18, 1992, Pat. No. 5,229,123. This application Feb. 18, 1993, Ser. No. 19,385
Claims priority, application European Pat. Off., Oct. 9, 1991, 91117164.3
Int. Cl.[5] C12P *17/18;* C12N *1/14, 1/00;* A01N *25/34*
U.S. Cl. 435—119 1 Claim

1. A biologically pure culture of *Eupenicillium* sp. NR7125 (FERM-BP No. 3588).

5,292,649

METHOD FOR REACTION OF LIPASE UPON FATTY ACID

Yoshitsugu Kosugi, Yatabemachi; Hideo Suzuki, Tokyo, and Akio Sato, Ibaraki, all of Japan, assignors to Agency of Industrial Science & Technology, Ministy of International Trade & Industry, Tokyo, Japan

Continuation of Ser. No. 614,040, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 243,131, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 839,536, Mar. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 586,563, Mar. 6, 1984, abandoned. This application Jul. 9, 1992, Ser. No. 912,655
Claims priority, application Japan, Mar. 29, 1983, 58-53285
Int. Cl.[5] C12P *7/40*
U.S. Cl. 435—136 6 Claims

1. In an enzymatic hydrolysis reaction involving a fatty acid using lipase enzyme, the improvement which comprises:

bringing a reaction mixture (a) containing an oily substance into contact with a carrier (b) having a plurality of pores whose average radius is in the range of 100 to 10,000 Å, having incorporated therein a multiplicity of free anion-exchange radicals, which radicals are a chemical residue selected from the group consisting of amine compound radicals, ammonium compound radicals and derivatives thereof, having said lipase immobilized by multiple-point bonding directly and through available anion-exchange radicals on said carrier (b) so that not less than about 2×10^5 anion-exchange residues per molecule of said lipase are existent on said carrier to thereby allow the pH of said reaction mixture (a) to be on the acidic side, causing said free anion-exchange radicals of said carrier (b) to dissociate in said reaction mixture (a), which, because they are charged positively, are thereby enabled to expel cations from the microenvironment of said carrier and consequently allow the pH of said microenvironment to shift to the alkali side, the activity of said lipase to remain intact, and said enzymatic hydrolysis reaction of said fatty acid to proceed with high efficiency.

5,292,650

PREPARATION OF HAPALINDOLE-RELATED ALKALOIDS FROM BLUE-GREEN ALGAE

Roseanne Bonjouklian, Zionsville, Ind.; Richard E. Moore; Gregory M. L. Patterson, both of Honolulu, Hi., and Tim A. Smitka, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind. and University of Hawaii, Honolulu, Hi.

Continuation-in-part of Ser. No. 784,299, Oct. 29, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 946,501
Int. Cl.[5] C07D *209/56;* C12P *17/16, 17/18, 17/10*
U.S. Cl. 435—121 10 Claims

1. A process for preparing hapalindole-related alkaloid A89271 B that comprises culturing a blue-green alga selected from the group consisting of *Fischerella ambigua* ATCC 55210, *Hapalosiphon hibernicus* ATCC 55225, *Westiellopsis prolifica* Janet (UH isolate EN3-1), and a mutant thereof that produces A89271 B, under submerged aerobic conditions in a suitable culture medium until recoverable amount of A89271 B is produced, and recovering said A89271 B.

5,292,651

METHOD FOR CLONING AND PRODUCING THE NAEI RESTRICTION ENDONUCLEASE AND METHYLASE

Ellen P. Guthrie, Andover; Elizabeth M. Van Cott, Malden, and Christopher H. Taron, Marblehead, all of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed May 12, 1992, Ser. No. 880,913
Int. Cl.[5] C12N *9/22, 15/55*
U.S. Cl. 435—199 7 Claims

1. Isolated DNA coding for NaeI restriction endonuclease, wherein the isolated DNA is obtainable from the plasmid pCTnaeIR16-1.

5,292,652

AMYLOIDIN PROTEASE AND USES THEREOF

Harry F. Dovey, Pacifica; Peter A. Seubert, San Mateo, and Sukanto Sinha, San Francisco, all of Calif., assignors to Athena Neurosciences, Inc., South San Francisco, Calif. and Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 594,122, Oct. 5, 1990, abandoned. This application Sep. 30, 1991, Ser. No. 766,351
Int. Cl.[5] C12N *9/64*
U.S. Cl. 435—226 15 Claims

1. Human amyloidin protease, a metalloprotease capable of cleaving the Met-Asp bond in the substrate: acetyl-Ser-Glu-Val-Lys-Met-Asp-Ala-Glu-Phe-Arg (Seq ID No:1), substantially free of natural contaminants, which has a molecular weight of about 80,000 daltons as determined by SDS-polyacrylamide gel electrophoresis.

5,292,653

EQUINE HERPESVIRUS 1 TK MUTANTS

Malon Kit, and Saul Kit, both of Houston, Tex., assignors to NovaGene, Inc. and Baylor College of Medicine, both of Houston, Tex.

Filed Sep. 27, 1989, Ser. No. 413,040
Int. Cl.[5] C12N *7/00, 15/00*
U.S. Cl. 435—235.1 27 Claims

1. The equine herpesvirus type 1 (EVH-1) which fails to produce any functional thymidine kinase as a result of a deletion, an insertion or both a deletion and an insertion in the EHV-1 thymidine kinase gene.

5,292,654

MUTANT EPO RECEPTOR AND USES THEREFOR

Akihiko Yoshimura, Somerville; Gregory D. Longmore, Brookline, and Harvey Lodish, Brookline, all of Mass., assignors to Whitehead Institute for Biomedical Research, Cambridge, Mass.

Filed Dec. 13, 1990, Ser. No. 626,923
Int. Cl.[5] C12Q *1/68;* C12P *21/06;* C12N *5/00;* C07H *15/12, 17/00;* C07K *3/00, 13/00, 15/00, 17/00*
U.S. Cl. 435—240.2 3 Claims

1. DNA encoding a mutant erythropoietin receptor having an alteration of the wild-type murine erythropoietin receptor selected from the group consisting of:

a) replacement of the C-terminal 42 amino acids with alanine-leucine;

b) replacement of the arginine at codon 129 with cysteine; and

c) replacement of the C-terminal 42 amino acids with alanine-leucine and replacement of the arginine at codon 129 with cysteine.

5,292,655

METHOD FOR THE FORMATION OF A HISTOLOGICALLY-COMPLETE SKIN SUBSTITUTE

John J. Wille, Jr., 2801 Main St., Lawrenceville, N.J. 08648

Filed Jan. 29, 1990, Ser. No. 471,976
Int. Cl.[5] C12N *5/00;* A61F *2/10*
U.S. Cl. 435—240.2 6 Claims

1. The method for the formation of a histologically-complete skin substitute that is recovered from the culture by treatment with a protease comprising the steps of:

(a) feeding basal keratinocyte stem cells a medium consisting essentially of N(2-OH-ethyl-)piperazine-N'-(2-ethane-sulfonic acid) in a concentration in the range of 14 mM to 22 mM, sodium chloride in a concentration in the range of 90 mM to 140 mM, calcium 2+ ion in a concentration in the range of 0.03 mM to 0.3 mM, histidine in a concentration in the range of 1.0×10^{-4}M to 2.5×10^{-4}M, isoleucine in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, methionine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, phenylalanine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, tryptophan in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, tyrosine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, hydrocortisone in a concentration in the range of 1.0×10^{-7}M to 5.0×10^{-7}M, phosphoethanolamine in a concentration in the range of 0.5×10^{-4}M to 2.0×10^{-4}M, ethanolamine in a concentration in the range of 0.5×10^{-4}M, to 2.0×10^{-4}M, epidermal growth factor in a concentration in the range of 1 ng/ml to 25 ng/ml, and insulin-like growth factor-1 in a concentration in the range of 0.3 ng/ml to 30 ng/ml;

(b) replacing the preceding medium with a medium consisting essentially of N-(2-OH-ethyl)piperazine-N'-(2-ethanesulfonic acid) in a concentration in the range of 14 mM to 22 mM, sodium chloride in a concentration in the range of 90 mM to 140 mM, calcium 2+ ion in a concentration in the range of 0.7 mM to 3.0 mM, histidine in a concentration in the range of 1.0×10^{-4}M to 2.5×10^{-4}M, isoleu-

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cine in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, methionine in a concentration in he range of 1.0×10^{-4}M to 5.0×10^{-4}M, phenylalanine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, tryptophan in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, tyrosine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, hydrocortisone in a concentration in the range of 1.0×10^{-7}M to 10.0×10^{-7}M, phosphoethanolamine in a concentration in the range of 0.5×10^{-4}M to 2.0×10^{-4}M, ethanolamine in a concentration in the range of 0.5×10^{-4}M to 2.0×10^{-4}M, epidermal growth factor in a concentration in the range of 1 ng/ml to 5 ng/ml, insulin-like growth factor-1 in a concentration in the range of 0.3 ng/ml to 30 ng/ml, and Beta-transforming growth factor in a concentration in the range of 3.0 ng/ml to 30 ng/ml; and

(c) replacing the preceding medium with a medium consisting essentially of N-(2-OHethyl)piperazine-N'-(2-ethanesulfonic acid) in a concentration in the range of 14 mM to 22 mM, sodium chloride in a concentration in the range of 90 mM to 140 mM, calcium 2+ ion in a concentration in the range of 0.7 mM to 3.0 mM, histidine in a concentration in the range of 1.0×10^{-4}M to 2.5×10^{-4}M, isoleucine in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, methionine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, phenylalanine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, tryptophan in a concentration in the range of 0.5×10^{-4}M to 5.0×10^{-4}M, tyrosine in a concentration in the range of 1.0×10^{-4}M to 5.0×10^{-4}M, linoleic acid in a concentration in the range of 1 microgram/ml to 15 microgram/ml, hydrocortisone in a concentration in the range of 1.0×10^{-7}M to 10.0×10^{-7}M, phosphoethanolamine in a concentration in the range of 0.5×10^{-4}M to 2.0×10^{-4}M, and ethanolamine in a concentration in the range of 0.5×10^{-4}M to 2.0×10^{-4}M, with the replacements of said media preferably done by aspiration accomplished under sterile conditions.

5,292,656

RAT OSTEOSARCOMA CELL LINE OSR-6

Claus-Jens W. Doersen, and Robert J. Isfort, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 26, 1992, Ser. No. 903,435

Int. Cl.[5] C12N *5/06;* **C12P** *21/02*

U.S. Cl. 435—240.2 **1 Claim**

1. A cell line having all of the identifying characteristics of American Type Culture Collection Accession No. CRL 11069.

5,292,657

PROCESS FOR PREPARING ROTARY DISC FATTY ACID MICROSPHERES OF MICROORGANISMS

William M. Rutherford, Des Moines; Jack E. Allen, Boonville, both of Iowa; Herman W. Schlameus, San Antonio, Tex.; Donald J. Mangold, San Antonio, Tex.; William W. Harlowe, Jr., San Antonio, Tex., and Joseph R. Lebeda, Urbandale, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 635,973, Dec. 31, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 842,226

Int. Cl.[5] C12N *1/00, 1/02, 1/20;* **A23L** *1/28;* **B01J** *13/02;* **A61K** *9/16, 9/14*

U.S. Cl. 435—243 **9 Claims**

1. A process of preparing discrete individual fatty acid matrix microspheres of microorganisms said microorganisms dwelling in a fatty acid matrix, said process comprising:

preparing a first feed stream of fatty acid melt of a C_{12} to C_{24} fatty acid,

preparing a second feed stream of microorganism culture, feeding separately said culture feed stream and said fatty acid melt feed stream into a rotary disc processor to provide a mixture which is from 50% to about 90% by weight of said fatty acid melt, and

rotary disc microsphere processing said mixture in a rotary disc processor to provide free-flowing fatty acid matrix microspheres of organisms.

5,292,658

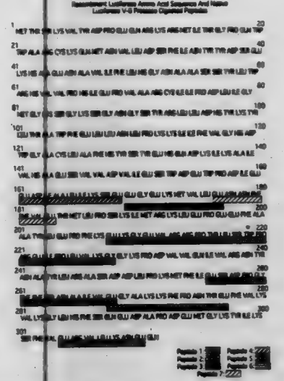
CLONING AND EXPRESSIONS OF *RENILLA LUCIFERASE*

Milton J. Cormier, Bogart, and William W. Lorenz, Athens, both of Ga., assignors to University of Georgia Research Foundation, Inc Boyd Graduate Studies Research Center, Athens, Ga.

Continuation of Ser. No. 933,017, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 458,952, Dec. 29, 1989, abandoned. This application Jun. 17, 1993, Ser. No. 79,700

Int. Cl.[5] C12N *15/53, 15/70, 9/02*

U.S. Cl. 435—252.33 **9 Claims**



1. An isolated DNA or RNA molecule consisting essentially of a nucleotide sequence encoding a Renilla luciferase.

5,292,659

BIOLOGICALLY PURE PHYTOPATHOGENIC FUNGUS *COLLETOTRICHUM CAPSICI*

D. Kelly Cartwright, 408 Harlon Dr., Apt, A-2, Cary, N.C. 27511, and George E. Templeton, II, 2310 Winwood Dr., Fayetteville, Ark. 72703

Filed Jan. 31, 1992, Ser. No. 828,850

Int. Cl.[5] C12N *1/14;* **C12P** *1/02;* **A01N** *63/00*

U.S. Cl. 435—254.1 **2 Claims**

1. A biologically pure culture of a fungus having all of the identifying characteristics of *Colletotrichum capsici* NRRL 18944 or a mutation thereof.

5,292,660

REMOVAL OF RESIDUAL MONOMERS FROM POLYMERS USING PEROXIDE-GENERATING ENZYME

Gerardus C. Overbeek, Sprang-Capelle, and Yvonne W. Smak, Nieuwegein, both of Netherlands, assignors to ICI Resin BV, Waalwijk

Filed Jun. 29, 1992, Ser. No. 905,820

Claims priority, application United Kingdom, Jun. 27, 1991, 9113912

Int. Cl.[5] C08F *6/16*

U.S. Cl. 435—262 **29 Claims**

1. Method for the removal of free radical-polymerisable olefinically unsaturated monomer or monomers from a dispersion in a liquid medium of a polymer prepared from at least one olefinically unsaturated monomer using a polymerisation process which does not employ an enzyme and containing a residual level of free radical-polymerisable olefinically unsaturated monomer or monomers used in said polymerisation process, wherein said method comprises treating the dispersion with a peroxide-generating enzyme and an enzyme substrate(s) for the enzyme under conditions where they effect a reduction in the level of said residual monomer or monomers in the dispersion.

5,292,661

NON-AFLATOXIGENIC ASPERGILLUS PARASITICUS STRAINS AND THEIR USE IN CONTROLLING AFLATOXIN CONTAMINATION

Richard J. Cole; Joe W. Dorner, both of Albany, and Paul D. Blankenship, Preston, all of Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 7, 1991, Ser. No. 741,691

Int. Cl.[5] C12N *1/14;* **C07G** *17/00;* **A01N** *63/00, 25/32*

U.S. Cl. 435—267 **5 Claims**

1. A method of protecting peanuts susceptible to growth of an aflatoxin-producing fungus against contamination by aflatoxin comprising applying to the soil where the peanuts are grown a non-aflatoxigenic strain of *Aspergillus parasiticus* in an amount effective to inhibit growth of native *Aspergillus parasiticus* strains and their subsequent biosynthesis of aflatoxin.

5,292,662

POSITION-SPECIFIC INSERTION VECTORS AND METHOD OF USING SAME

Suzanne B. Sandmeyer, Corona Del Mar, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 276,201, Nov. 23, 1988, abandoned. This application Jun. 8, 1992, Ser. No. 895,333

Int. Cl.[5] C12N *15/85, 15/52, 15/11*

U.S. Cl. 435—320.1 **7 Claims**

1. A recombinant nucleic acid molecule comprising a gene encoding a desired protein, said gene being flanked by the position-specific integration markers of *S. cerevisiae* Ty3, wherein said gene is not native to Ty3.

5,292,663

METHOD OF TREATING BLOOD CONTAINING LABILE GLYCOSYLATED HEMOGLOBIN A_{1C}

Kazutoshi Yamazaki, Ohtsu; Masahiro Takechi, Nishinomiya; Toshiki Kawabe, Kyoto, and Masayuki Yokoi, Kusatsu, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 758,383, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 252,774, Oct. 3, 1988, abandoned. This application May 3, 1993, Ser. No. 56,989

Claims priority, application Japan, Nov. 30, 1987, 62-303782; Dec. 22, 1987, 62-326463

Int. Cl.[5] G01N *33/72, 30/04*

U.S. Cl. 436—67 **14 Claims**

1. A method of analyzing a blood sample containing labile glycosylated hemoglobin A_{1c} and stable glycosylated hemoglobin A_{1c} comprising

admixing a blood sample containing labile glycosylated hemoglobin A_{1c} with an eliminating agent selected from the group consisting of condensed phosphoric acids and salts thereof;

allowing the blood sample and eliminating agent to remain in contact with each other for a sufficient period of time so that the eliminating agent converts the labile glycosylated hemoglobin A_{1c} into non-glycosylated hemoglobin and glucose to form a treated sample; and analyzing said treated sample to determine the amount of stable glycosylated hemoglobin A_{1c}.

5,292,664

FUNCTIONAL TEST AND REAGENT FOR DETERMINING FIBRINOGEN

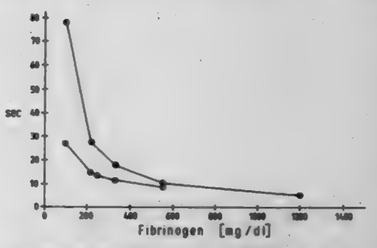
Karl Fickenscher, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Oct. 9, 1992, Ser. No. 958,770

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1991, 4133946

Int. Cl.[5] G01N *33/86;* **C12Q** *1/56*

U.S. Cl. 436—69 **5 Claims**



1. A method for the determination of fibrinogen in an undiluted sample of a biological fluid, comprising the steps of:

a) incubating the undiluted sample with a reagent wherein said sample and reagent are mixed in a ratio of from 1:1 to 1:5, the reagent comprising

at least one inhibitor of fibrin aggregation to increase coagulation time to about 50 to 150 seconds; and

thrombin or a protease with analogous activity in an amount effective to convert fibrinogen into soluble fibrin without the inhibition of fibrin aggregation;

b) determining the coagulation time; and

c) correlating fibrinogen with coagulation time.

5,292,665

CATALYST FOR PREPARING POLYACRYLAMIDE GEL WHICH IMPROVES THE DETECTION OF BIOMATERIALS BY SILVER STAINING

Denis F. Hochstrasser, Geneva, Switzerland, and Carl R. Merril, Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 323,851, Mar. 15, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 849,344

Int. Cl.[5] G01N *21/77*

U.S. Cl. 436—86 **15 Claims**

1. A method for preparing a polyacrylamide gel comprising polymerizing acrylamide with diacrylylpiperazine in the presence of a catalyst system which comprises dimethylpiperazine in combination with ammonium persulfate or potassium persulfate.

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METHOD FOR THE MEASUREMENT OF THE TOTAL CONTENT OF ORGANIC CARBON AND NITROGEN IN WATER

Walter Fabinski, Kriftel; Peter Hübschmann, Nidderau; Peter Schlau, Frankfurt, and Christian Wolff, Karben, all of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 880,576

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115425

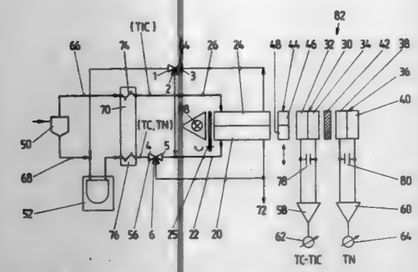
Int. Cl.[5] G01N *33/00, 21/00*

U.S. Cl. 436—114 **13 Claims**

1. A method for a determination of the total content of organic carbon and of nitrogen in an aqueous fluid comprising the steps

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separating an inorganic carbon dioxide part from a sample taken from said fluid with the aid of a phase separator, said inorganic carbon dioxide part being and loaded with water vapor;
passing the inorganic carbon dioxide part through a first cooler;
using the inorganic carbon dioxide part coming from the first cooler as comparison gas;
employing two adjacently disposed sample and comparison cuvettes, where the sample and the comparison gas are fed to a respective one of said cuvettes, and wherein the cuvettes are passed by modulated light beams of an infrared radiator, and wherein the light beams are falling on pneumatic receiver detectors, disposed behind the cuvettes, after partial first absorption of said light beams in the cuvettes;
passing the inorganic carbon dioxide part used as comparison gas through said comparison cuvette;
feeding the inorganic carbon dioxide part after passing the comparison cuvette to the sample to be evaporated and to be oxidized;
evaporating the sample taken from the fluid;
oxidizing the carbon part present in the sample to carbon dioxide, and oxidizing the nitrogen part present in the sample to nitrogen oxide in a thermal reactor;
loading the oxidized sample obtained into a second cooler with a water vapor of a partial pressure corresponding to a water vapor saturation at the same temperature as the temperature of water vapor saturation in the first cooler;



feeding the sample coming from the second cooler as a measurement gas to the sample cuvette, wherein the measurement gas contains the total carbon dioxide part and the total nitrogen oxide part of the sample, wherein the comparison gas with the actual inorganic carbon dioxide part is fed simultaneously through the sample cuvette and the comparison cuvette for taking into consideration the inorganic carbon dioxide CO_2 part, which is present as an interfering background in the sample, and wherein the measurement is performed on the basis of the sample, containing carbon dioxide CO_2 and nitrogen oxide NO formed by the sample;
generating a first pneumatic signal in a first receiver detector, wherein the first receiver detector has two chambers, disposed successively as seen in beam direction, wherein each chambers is are filled with the same gas component to be determined of the sample, wherein a radiation filter is employed between the receiver detectors, wherein the radiation filter is transparent to the light beams in a region of radiation absorption of the component nitrogen oxide NO of the sample; amplifying the first pneumatic signal generated in the first receiver detector with a first electronic amplifier, wherein said pneumatic signal corresponds to the difference of the total carbon part and of the inorganic carbon part and thus corresponds to the organic carbon part of the sample;
generating a second pneumatic signal in a second receiver detector sensitized to nitrogen oxide, wherein the second receiver detector has two chambers, disposed successively as seen in beam direction, wherein the two chambers is filled with the same gas component to be determined;
amplifying the second pneumatic signal generated in the second receiver detector with a second electronic amplifier, wherein said second pneumatic signal corresponds to the difference of the water vapor loaded nitrogen oxide part of the measurement gas and of the water vapor part of the comparison gas and thus to the total nitrogen part of the sample;
employing a non-dispersive infrared gas analyzer for a simultaneous measurement of the components carbon dioxide and nitrogen oxide in the sample.

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DETECTION AND TREATMENT OF ULCERATIVE COLITIS

Daniel K. Podolsky, Wellesley Hills, and Deborah A. Fournier, Attleboro, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 213,222, Jun. 29, 1988, abandoned. This application Mar. 20, 1991, Ser. No. 678,574
Int. Cl.[5] G01N *33/53, 33/577;* **C07K** *15/28;* **C12N** *5/12*
U.S. Cl. 436—548 **19 Claims**

1. A monoclonal antibody produced by a hybridoma selected from the group consisting of ATCC Accession HB 9753 and HB 9756.

18. A method to aid in the diagnosis of ulcerative colitis in a human patient, comprising contacting a sample suspected of containing colonic mucin glycoprotein associated with ulcerative colitis from said patient with a monoclonal antibody of claim 1, and detecting immune complexes formed with said monoclonal antibody, wherein the presence of said complexes is an indication that said patient has ulcerative colitis.

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BISPECIFIC ANTIBODY DETERMINANTS

Henry P. Paulus, Boston, Mass., assignor to Boston Biomedical Research Institute, Inc., Boston, Mass.

Continuation of Ser. No. 603,125, Apr. 23, 1984, and a continuation-in-part of Ser. No. 332,881, Dec. 21, 1981, Pat. No. 4,444,878. This application Dec. 5, 1990, Ser. No. 622,601
Int. Cl.[5] G01N *33/53;* **A61K** *35/14;* **C12Q** *1/34, 1/28*
U.S. Cl. 436—547 **1 Claim**

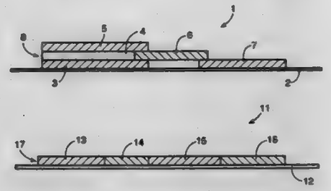
1. A process for preparing covalent hybrid antibodies comprising the steps of:
A) selectively cleaving a first monoclonal immunoglobulin molecule which is an antibody to a first antigen into its heavy chain-light chain half-molecules by cleavage of the inter-heavy chain disulfide linkage to produce half-molecules;
B) selectively cleaving a second monoclonal immunoglobulin molecule which is an antibody to the first or a second antigen into its heavy chain-light chain half-molecules by reduction of the inter-heavy chain disulfide linkage to produce reduced half-molecules; and
C) combining the half-molecules from step (A) with the reduced half-molecules from step (B).

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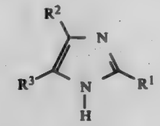
AGENTS FOR THE DETECTION OF SUBSTRATES WITH HYDROLASE ACTIVITY

Hans-Joachim Guder, Weilheim; Werner Güthlein, Mannheim; Wolfgang Weckerle, Grünstadt, all of Fed. Rep. of Germany; Johann Berger; Harvey Buck, both of Indianapolis, Ind., and Rupert Herrmann, Weilheim, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 422,496, Oct. 17, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 927,870
Int. Cl.[5] C12Q *1/44, 1/42;* **C07D** *277/82, 233/56*
U.S. Cl. 435—18 **26 Claims**



1. In a process for the detection of hydrolase activity on an absorbent or swellable carrier by mixing (a) a hydrolase-containing sample with a hydrolase substrate which is cleavable by the hydrolase, with consumption of water, into a chromogenic compound and (b) an oxidation agent capable of oxidizing said chromogenic compound to effect a color change and then relating the resultant color change to hydrolase activity, the improvement which comprises employing as the hydrolase substrate at a pH of from 5 to 11, a compound of the formula



wherein each of R^1, R^2 and R^3 is C_1–C_4 alkyl, or phenyl optionally substituted in the meta- or para- position by C_1–C_6 alkyl, C_1–C_6 alkoxy or mono- or di-(C_1–C_6)-alkylamino, or optionally substituted by an O—X group in which X is a glycosyl, phosphate or acyl moiety of a natural substrate of the corresponding glycosidase, phosphatase or esterase, with the proviso that one of R^1, R^2 and R^3 is phenyl as set forth above which is substituted by a O—X group as set forth above and that another or both others of R^1, R^2 and R^3 is phenyl as set forth above without an O—X group, whereby glycosidase activity is detected when X is the glycosyl moiety, phosphatase activity is detected when X is the phosphate moiety or esterase activity is detected when is the acyl moiety.

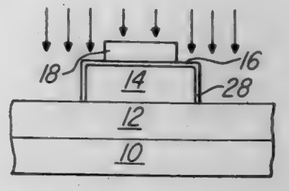
5,292,670

SIDEWALL DOPING TECHNIQUE FOR SOI TRANSISTORS

Ravishankar Sundaresan, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 10, 1991, Ser. No. 712,381
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—21 **5 Claims**

1. A process for fabricating a semiconductor-on-insulator integrated circuit structure, comprising the steps of:
providing a substrate having at a surface thereof a layer of monocrystalline semiconductor material overlying an insulator layer;
depositing an oxide layer, covering said monocrystalline semiconductor layer;
depositing a patterning a masking layer comprising a polysilicon layer and a nitride layer over said oxide layer, said masking layer being patterned to cover predetermined portions of said monocrystalline semiconductor layer where active devices are to be formed;
etching said patterned masking layer down to said oxide layer;
depositing nitride, to form sidewall spacers on said patterned masking layer, so that said patterned masking layer with said spacers covers a larger fraction of said semiconductor layer than was covered by said masking layer along;
etching away at least some portions of said monocrystalline semiconductor material, using said patterned masking layer and said spacers as a mask to form a mesa with edges;



forming sidewall insulation filaments on said monocrystalline semiconductor material, so that said monocrystalline semiconductor layer with said filaments covers a larger fraction of said semiconductor layer than was covered by said masking layer along;
stripping said nitride and said nitride layer, leaving the polysilicon masking layer of the patterned masking layers intact;
implanting a dopant substantially into at least some of the portions of said semiconductor material which are not covered by said polysilicon masking layer to form doped mesa edges;
removing said polysilicon masking layer, and;
fabricating active devices in said mesas.

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METHOD OF MANUFACTURE FOR SEMICONDUCTOR DEVICE BY FORMING DEEP AND SHALLOW REGIONS

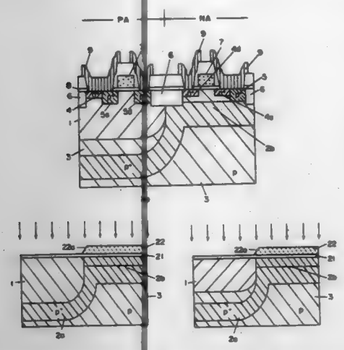
Shinji Odanaka, Osaka, Japan, assignor to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Division of Ser. No. 744,651, Aug. 9, 1991, Pat. No. 5,160,996, which is a continuation of Ser. No. 368,385, Jun. 8, 1989, abandoned. This application Jul. 29, 1992, Ser. No. 921,156
Claims priority, application Japan, Oct. 8, 1987, 62-254203; Apr. 11, 1988, 63-88714
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—29 **12 Claims**

1. A method of manufacturing a semiconductor device, comprising:
forming a first film over the entire surface of a semiconductor substrate which is of a first conductivity type and selectively forming a photoresist pattern on the first film, the photoresist pattern being formed with tapered edge portions;
executing implantation of ions of the first conductivity type through the first film and the photoresist pattern to thereby simultaneously form a first region of the first conductivity type within a lower area of the substrate where the substrate is not coated with the photoresist pattern, and a second region of the first conductivity type within an upper area of the substrate where the substrate is coated with the photoresist pattern, the second region being integrally formed with the first region of the first conductivity type to form a continuously extending region; and

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executing implantation of ions of a second conductivity type through the first film, to thereby form a well which is of



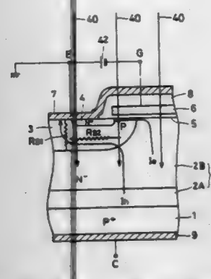
the second conductivity type within an upper area of the substrate where the substrate is not coated with the photoresist pattern.

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METHOD OF MANUFACTURING AN INSULATED GATE BIPOLAR TRANSISTOR

Hajime Akiyama, and Hisao Kondoh, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 543,502, Jun. 26, 1990, Pat. No. 5,182,626. This application Apr. 1, 1992, Ser. No. 862,604
Claims priority, application Japan, Sep. 20, 1989, 1-245914
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **6 Claims**



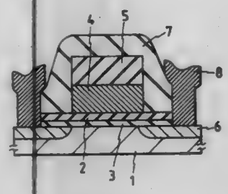
1. A method of manufacturing an insulated gate bipolar transistor, comprising the steps of:
(a) preparing a first semiconductor layer of a first conductivity type having first and second major surfaces;
(b) forming a second semiconductor layer of a second conductivity type on said first major surface of said first semiconductor layer;
(c) selectively forming a first semiconductor region of the first conductivity type on a surface of said second semiconductor layer;
(d) selectively forming a second semiconductor region of the second conductivity type on a surface of said first semiconductor region;
(e) forming an insulating film on the surface of said first semiconductor region between said second semiconductor layer and said second semiconductor region;
(f) forming a control electrode on said insulating film;
(g) forming a first main electrode lying over said first and second semiconductor regions;
(h) forming a second main electrode on said second major surface of said first semiconductor layer, and
(i) irradiating an ionizing radiation from an upper side of said control electrode with a given voltage being applied between said control electrode and said first main electrode.

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METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Hiroshi Shinriki; Masayuki Nakata, and Kiichiro Mukai, all of Tokyo, Japan, assignors to Hitachi, Ltd, Chiyoda, Japan

Continuation of Ser. No. 561,602, Aug. 2, 1990, abandoned. This application May 15, 1992, Ser. No. 883,531
Claims priority, application Japan, Aug. 16, 1989, 1-210071
Int. Cl.[5] H01L *21/336, 21/28, 21/285*
U.S. Cl. 437—42 **42 Claims**



1. A method of manufacturing a semiconductor device comprising the following steps:
(a) a step of forming a first insulating film on a main surface of a semiconductor substrate, the first insulating film being a laminate of a first layer of an oxide of material of the semiconductor substrate, and a second oxide layer, the second oxide layer being formed of an oxide selected from the group consisting of tantalum pentoxide, niobium oxide, yttrium oxide, hafnium oxide, zirconium oxide and titanium oxide, the first layer being formed by applying a heat treatment to the semiconductor substrate in a dry oxidizing atmosphere,
(b) a step of laminating a conductive film of a material selected from the group consisting of tungsten and molybdenum on said first insulating film,
(c) a step of removing an unnecessary portion of said conductive film thereby forming a gate electrode and exposing the surface of said first insulating film extending beyond edges of the gate electrode, and
(d) while the first insulating film extends beyond the edges of the gate electrode, a step of implanting impurity ions into predetermined surface regions of said semiconductor substrate, thereby forming source and drain regions.

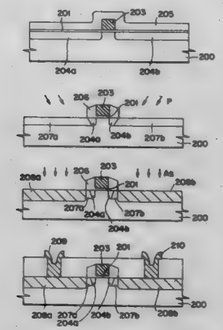
5,292,674

METHOD OF MAKING A METAL-OXIDE SEMICONDUCTOR FIELD-EFFECT TRANSISTOR

Kazuhiro Okabe, and Isami Sakai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,170
Claims priority, application Japan, Nov. 30, 1990, 2-339394
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—44 **1 Claim**

1. A method of making a metal-oxide semiconductor field-effect transistor comprising the steps of:
preparing a semi-fabricated product comprising a semiconductor substrate of one conductivity type with a gate insulating layer formed on its top surface, and a gate built on said gate insulating layer;
injecting an impurity of the other conductivity type into said semiconductor substrate perpendicular to the top surface of said semiconductor substrate to form two opposite diffusion layers of least concentration of impurity in said semiconductor substrate, extending from first and second locations under one and the other edge of said gate respectively in the opposite directions;
forming a side wall surrounding said gate on said semiconductor substrate;
injecting the impurity of the other conductivity type into said semiconductor substrate at a given acute angle with respect to the normal line perpendicular to the top surface of said semiconductor substrate to form two opposite



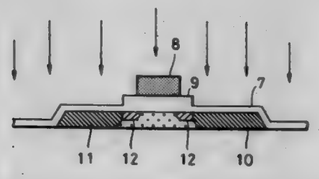
diffusion layers of less concentration of impurity in said semiconductor substrate, extending short of the terminal ends of said diffusion layers of least concentration of impurity;
injecting the impurity of the other conductivity type into said semiconductor substrate perpendicular to the top surface of said semiconductor substrate to form two opposite diffusion layers of relatively high concentration of impurity in said semiconductor substrate, extending from the first and second locations under one and the other edge of said side wall in the opposite directions; and
forming drain, source and gate electrodes respectively.

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METHOD FOR FORMING A MOS TRANSISTOR AND STRUCTURE THEREOF

Mitsufumi Codama, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1992, Ser. No. 990,288
Claims priority, application Japan, Dec. 24, 1991, 3-356299
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **22 Claims**



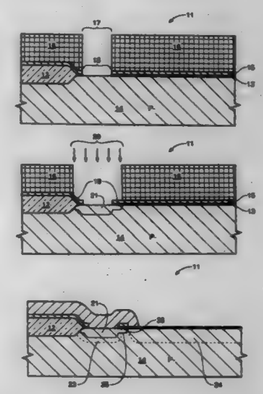
1. A method for forming a MOS transistor comprising the steps of:
forming a semiconductor film on a substrate;
forming a gate insulating film on said semiconductor film;
forming a conductive material on said gate insulating film;
patterning said conductive material into an island;
removing a portion of said gate insulating film by etching to form an insulating film thinner than said gate insulating film;
forming a gate electrode by reducing a width of said island by removing a portion of said island by etching; and
introducing an impurity into said semiconductor film with said gate electrode as a mask wherein the amount of said removed portion of the gate insulating film is controlled so that the impurity concentration in said semiconductor film under said insulating film thinner than said gate insulating film is rendered larger than that in said semiconductor film under the removed portion of said island by said introducing step.

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SELF-ALIGNED LOW RESISTANCE BURIED CONTACT PROCESS

Monte Manning, Kuna, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jul. 29, 1992, Ser. No. 921,175
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—46 **2 Claims**



1. A process for forming a buried contact between a transistor element at the surface of a substrate and a remote diffusion region which comprises the steps of:
growing an insulation layer of silicon oxide over said surface;
depositing a first layer of polysilicon over said insulation layer;
depositing a photoresist over said first polysilicon layer;
patterning a window in said photoresist;
etching said first polysilicon layer and oxide layer through said window;
descuming the edges of said photoresist window to expose a peripheral width of said first polysilicon layer;
implanting a doping element into said substrate through said descumed window and peripheral width to form a central zone of buried contact aligned with said window and a peripheral zone of buried contact substantially aligned with said peripheral width, wherein said peripheral width receives a lesser amount of doping element than said central zone;
removing said photoresist after said implanting;
depositing a second layer of polysilicon over said first layer; and
patterning said second layer to form the source, drain and other parts of said transistor, and access to said buried contact.

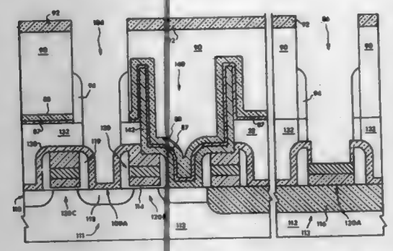
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REDUCED MASK CMOS PROCESS FOR FABRICATING STACKED CAPACITOR MULTI-MEGABIT DYNAMIC RANDOM ACCESS MEMORIES UTILIZING SINGLE ETCH STOP LAYER FOR CONTACTS

Charles H. Dennison, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 18, 1992, Ser. No. 947,523
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **18 Claims**



1. A method of fabricating a integrated circuit dynamic random access memory (DRAM), said DRAM comprising a semiconducting wafer having: a semiconducting substrate; a plurality of transistors formed on said substrate, each transistor including a gate conducting layer; a capacitor formed on said substrate and having a capacitor first conducting layer, a capacitor dielectric layer, and a capacitor second conducting layer; an active area on said substrate adjacent one of said transistors; a bit line contact contacting said active area; and a gate contact contacting said gate conducting layer; said method comprising the steps of:

employing a first etch stop layer to self align said capacitor first conducting layer contact to said gate conducting layer;

employing said first etch stop layer to self align said bit line contact to said gate conducting layer; and

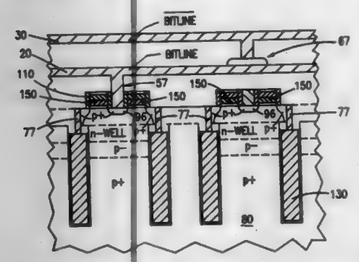
utilizing a single photo mask and etch process to define said bit line contact and etch to said active area and to define said gate contact and etch to said gate conducting layer.

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FORMING A BIT LINE CONFIGURATION FOR SEMICONDUCTOR MEMORY

Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 787,196, Nov. 4, 1991, Pat. No. 5,170,243. This application May 14, 1992, Ser. No. 882,735
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—50 **1 Claim**



1. A method of fabricating a folded bit line structure for a semiconductor memory device comprising the steps of:

Step 1: providing a substrate containing a plurality of spaced drain junction regions therein,

Step 2: forming a conductive bit line stud over each of said plurality of drain regions,

Step 3: forming a vertical pillar over each of said plurality of conductive bit line studs,

Step 4: depositing a layer of insulating material on the top and sides of each of said plurality of pillars,

Step 5: removing said insulating material from a first side of alternating ones of said plurality of pillars,

Step 6: removing said insulating material from a second side opposite to said first side of the other of said plurality of pillars disposed between said pillars having said insulating material removed from said first side,

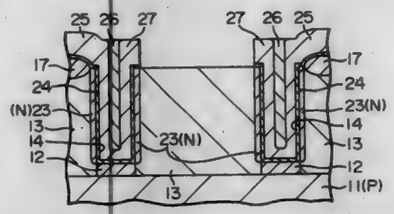
Step 7: forming conductive pairs of conductive spacer rail bit line pairs, one bit line spacer rail of each pair being disposed on said first and second opposite side of each of said plurality of pillars.

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PROCESS FOR PRODUCING A SEMICONDUCTOR MEMORY DEVICE HAVING MEMORY CELLS INCLUDING TRANSISTORS AND CAPACITORS

Kenji Anzai, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,306
Claims priority, application Japan, Apr. 23, 1992, 4-130002
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **2 Claims**



1. A process for producing a semiconductor memory device having memory cells each including a transistor and a capacitor which cooperate with each other to store information, comprising the steps of:

preparing a semiconductor substrate;

forming an insulator film on said semiconductor substrate in a pattern;

selectively epitaxially growing a semiconductor material on said semiconductor substrate using said insulator film as a mask for growth to form an epitaxial layer for relatively forming a trench having said insulator film as a bottom and end surface of said epitaxial layer as a sidewall; and

forming said capacitor on the sidewall of said trench.

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METHOD OF FORMING A CONVEX CHARGE COUPLED DEVICE

Water Lur, Taipei; J. Y. Wu, Dou-Liu, and Jenn-Tarng Lin, Taipei, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 7, 1993, Ser. No. 57,883
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **25 Claims**

1. The method of fabricating a convex charge coupled device in an integrated circuit comprising:

forming a silicon oxide layer over the surface of a silicon substrate;

patterning said silicon oxide layer to provide openings to said silicon substrate;

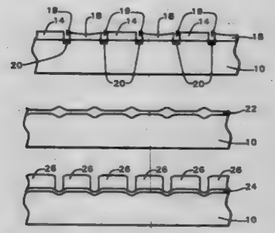
forming nitride spacers on the sidewalls of said patterned oxide layer;

coating said integrated circuit with a spin-on-glass layer and curing said spin-on-glass layer;

etching back said spin-on-glass layer to expose said nitride spacers;

removing said nitride spacers leaving a second set of openings to said silicon substrate;

implanting ions into said substrate through said second set of openings;



removing said silicon oxide layer;

providing global thermal oxidation;

removing said thermal oxide leaving a convex surface on said silicon substrate;

forming a gate silicon oxide layer on said convex surface of said silicon substrate;

depositing a polysilicon layer overlying said gate silicon oxide layer; and

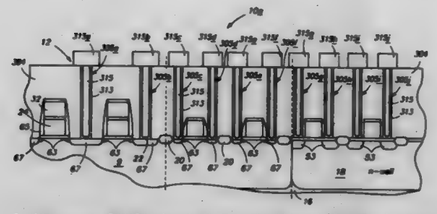
patterning said polysilicon layer to form gate electrodes to complete formation of said charge coupled device.

5,292,681

METHOD OF PROCESSING A SEMICONDUCTOR WAFER TO FORM AN ARRAY OF NONVOLATILE MEMORY DEVICES EMPLOYING FLOATING GATE TRANSISTORS AND PERIPHERAL AREA HAVING CMOS TRANSISTORS

Roger R. Lee; Tyler A. Lowrey; Fernando Gonzalez, and J. Dennis Keller, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Sep. 16, 1993, Ser. No. 123,611
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—48 **28 Claims**



1. A process for fabricating a semiconductor wafer to form a memory array and peripheral area, the array comprising nonvolatile memory devices employing floating gate transistors of a first conductivity type, the peripheral area comprising first and second conductivity type CMOS transistors, the method comprising the following steps:

providing field and gate insulating layers on a semiconductor wafer, and defining an array area and an area peripheral to the array area for formation of first conductivity type nonvolatile memory devices in the array and formation of first and second conductivity type CMOS transistors in the peripheral area, the peripheral area comprising first and second peripheral areas, the first and second conductivity type CMOS transistors to be formed in the first and second peripheral areas respectively, such providing and defining comprising N-well and P-well formation, such formation comprising: a) oxidizing the wafer to create a first silicon dioxide layer thereon; b) subjecting the wafer to a blanket P-well implant; c) masking future P-well regions with photoresist; d) etching away those portions of the first silicon dioxide layer that are not subjacent photoresist; e) recessing those portions of the substrate that are not subjacent photoresist; f) subjecting the wafer to an N-well implant; g) stripping photoresist; and h) subjecting the wafer to a high-temperature substrate drive step to drive atoms of the P-well implant and atoms of the N-well implant to diffuse deeper into the substrate;

providing a first layer of conductive material atop the insulating layers;

providing a dielectric layer atop the first conductive layer for use in floating gate transistors within the array;

etching the dielectric layer and first conductive material from the peripheral area, and leaving dielectric layer and first conductive material in the array;

after etching the dielectric layer and first conductive material from the peripheral area, providing a second layer of conductive material atop the wafer which covers the peripheral area and dielectric layer of the array;

patterning and etching the first conductive, second conductive and dielectric layers of the array and second conductive layer of the peripheral area to form gate regions of floating gate transistors in the array, and to cover the peripheral area;

patterning and etching the second conductive layer in the peripheral area to form transistor gates for the first conductivity type CMOS transistors in the first peripheral area, and to cover the second peripheral area;

after patterning and etching the array to form floating gate transistors and after patterning and etching the peripheral area to form transistor gates for the first conductivity type CMOS transistors, first doping exposed areas of only one of the array or first peripheral area while the second peripheral area and other of the array or first peripheral area are masked;

after the first doping, masking the second peripheral area with the second conductive layer without the use of photoresist and common doping exposed areas of the array and first peripheral area with first conductivity type material in the same step;

after patterning the array and first peripheral area, patterning and etching the second conductive layer in the second peripheral area to form transistor gates for the second conductivity type CMOS transistors in the second peripheral area; and

after patterning and etching the second peripheral area, doping exposed areas of the second peripheral area with second conductivity type material while the array and first peripheral area are masked.

5,292,682

METHOD OF MAKING TWO-PHASE CHARGE COUPLED DEVICE

Eric G. Stevens; Stephen L. Kosman, both of Rochester, and Paul L. Roselle, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1993, Ser. No. 86,072
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **16 Claims**

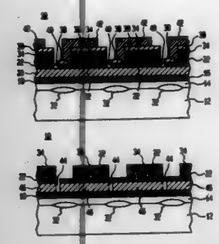
1. A method of making a two-phase CCD having a planar gate electrode structure comprising the steps of:

forming a layer of a conductive material over and insulated from a surface of a body of a semiconductor material of one conductivity type;

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forming sections of a first masking layer over and spaced along the conductive material layer;

forming a second masking layer on a portion of the surface of the conductive material layer between the sections of the first masking layer, each second masking layer extending from the same end of an adjacent section of the first



masking layer a distance toward the other adjacent section of the first masking layer so as to leave exposed a portion of the conductive material layer between the sections of the first masking layer; and

removing the exposed portions of the conductive material layer to divide the conductive material layer into individual gate electrodes.

5,292,683

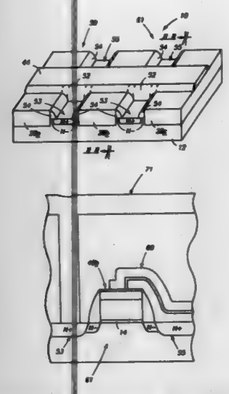
METHOD OF ISOLATING SEMICONDUCTOR DEVICES AND ARRAYS OF MEMORY INTEGRATED CIRCUITRY

Charles H. Dennison, and Trung T. Doan, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 9, 1993, Ser. No. 71,752

Int. Cl.[5] H01L *21/304*

U.S. Cl. 437—63 **14 Claims**



1. A semiconductor processing device isolation method comprising:

providing non-LOCOS insulating device isolation blocks by trench and refill technique on a substrate, the device isolation blocks having an outer surface and being laterally spaced from one another to provide outwardly open and recessed moat volume therebetween;

providing gate dielectric within the moat volume between adjacent isolation blocks;

providing a layer of electrically conductive material over the substrate and gate dielectric to a thickness sufficient to completely fill the moat volume between adjacent isolation blocks;

chemical-mechanical polishing the layer of electrically conductive material to provide a planarized upper electrically conductive material surface;

photopatterning and etching the layer of electrically conductive material to provide an electrically conductive runner which overlies a plurality of the isolation blocks and to selectively remove the electrically conductive material from within selected regions of moat volume to define field effect transistor gates within the moat volume; and

providing conductivity enhancing impurity through the selected regions of moat volume into the substrate to define source/drain regions adjacent the field effect transistor gates.

5,292,684

SEMICONDUCTOR DEVICE WITH IMPROVED CONTACT AND METHOD OF MAKING THE SAME

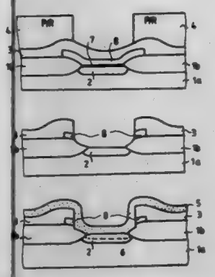
In S. Chung, Ichonkun, and Youn J. Kim, Seongnamsi, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichonkun, Rep. of Korea

Filed Mar. 25, 1993, Ser. No. 36,897

Claims priority, application Rep. of Korea, Mar. 28, 1992, 1992-5201

Int. Cl.[5] H01L *21/28*

U.S. Cl. 437—69 **4 Claims**



1. A method of making a semiconductor device comprising the steps of:

forming element-isolation oxide films on a semiconductor substrate and forming an impurity diffusion region as an active region by implanting and diffusing impurity ions in a portion of the semiconductor substrate between said element-isolation oxide films;

forming an oxide film on said impurity diffusion region;

depositing an etch barrier material film on edges of the element-isolation oxide films adjacent the active region and said oxide film while leaving portions of the element-isolation oxide films exposed; and

coating an insulating film on the upper surface of the resulting entire structure, forming a contact hole through which said active region is exposed, by etching said insulating film, said etch barrier material film and the oxide film at their portions disposed over the active region, and depositing a conductive material film over the upper surface of the resulting entire structure.

5,292,685

METHOD FOR PRODUCING A DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER DEVICE

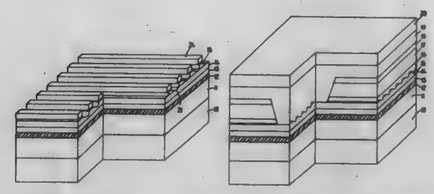
Kazuhiko Inoguchi; Satoshi Sugahara; Mototaka Taneya; Hiroaki Kudo; Chitose Nakanishi, and Haruhisa Takiguchi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1992, Ser. No. 919,665

Claims priority, application Japan, Jul. 24, 1991, 3-184928; Jul. 26, 1991, 3-187903; Feb. 7, 1992, 4-022912

Int. Cl.[5] H01L *21/203*

U.S. Cl. 437—107 **13 Claims**



1. A method for producing a distributed feedback semiconductor laser device including a structure for controlling a longitudinal mode of light to be emitted and a structure for controlling a transverse mode of the light, the method comprising:

a first crystal growth step of sequentially growing a first cladding layer of a first conductive type, an active layer, and an optical waveguide layer of a second conductive type on a semiconductor substrate of the first conductive type;

a step of forming a diffraction grating at a surface of the optical waveguide layer;

a second crystal growth step of growing a current block layer of the first conductive type on the optical waveguide layer having the diffraction grating, said second crystal growth step includes a step of forming an etching stop layer on the optical waveguide layer;

a step of selectively etching the current block layer to expose the diffraction grating and thus to form a stripe groove; and

a third crystal growth step of growing a second cladding layer of the second conductive type on the diffraction grating inside the stripe groove and on the current block layer.

5,292,686

METHOD OF FORMING SUBSTRATE VIAS IN A GAAS WAFER

Susan Riley, Gaston, and Terri L. Clayton, Aloha, both of Oreg., assignors to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 748,202, Aug. 21, 1991, abandoned. This application Dec. 18, 1991, Ser. No. 810,740

Int. Cl.[5] H01L *21/26*

U.S. Cl. 437—173 **36 Claims**

1. A method of forming substrate vias in a GaAs wafer, the method comprising the steps of

(a) providing a GaAs wafer having a top surface, an active integrated circuitry layer including metal via contacts, a GaAs substrate, and a bottom surface;

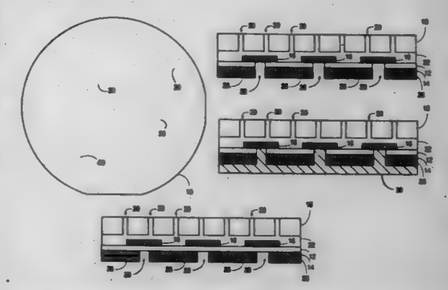
(b) forming a protective layer on the top surface of the wafer;

(c) removing a portion of the substrate from the bottom surface to achieve a predetermined substrate thickness;

(d) metalizing the bottom surface with a first metal layer;

(e) laser drilling substrate vias from the bottom surface of the wafer to within a predetermined substrate thickness from the metal via contacts;

(f) etching the substrate vias to remove the remaining substrate thickness;



(g) metalizing the bottom surface and the substrate vias with a second metal layer; and

(h) removing the protective layer.

5,292,687

PROCESS FOR LAY-OUT OF A SEMICONDUCTOR INTEGRATED CIRCUIT

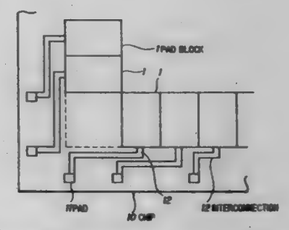
Tomoaki Isozaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 7, 1992, Ser. No. 832,331

Claims priority, application Japan, Feb. 8, 1991, 3-017807

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **6 Claims**



1. A process for lay-out of a semiconductor integrated circuit, comprising the steps of:

determining a coordinate of a pad position which is most appropriate in accordance with a lead frame for packaging said semiconductor integrated circuit and a chip size of said semiconductor integrated circuit;

arranging a pad at said coordinate;

connecting said pad to a pad block, said pad block being positioned to be most appropriate relative to said pad;

determining a coordinate of said pad block; and

connecting internal regions of said pad block in accordance with said coordinate of said pad block.

5,292,688

SOLDER INTERCONNECTION STRUCTURE ON ORGANIC SUBSTRATES AND PROCESS FOR MAKING

Richard Hsiao, Vestal; Jack M. McCreary, Apalachin; Voya R. Markovich, Endwell, and Donald P. Seraphim, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 493,125, Mar. 14, 1990, Pat. No. 5,121,190. This application Jun. 1, 1992, Ser. No. 890,798
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—209 7 Claims



1. A method of providing solder interconnections between a semiconductor device and a supporting organic substrate comprising attaching said device to said organic substrate by a plurality of solder connections that extend from the supporting substrate to electrodes on said semiconductor device to form a gap between said supporting substrate and said semiconductor device;

filling said gap with a composition that contains:

A. a curable thermosetting binder said binder having a viscosity at room temperature of no greater than about 1,000 centipoise;

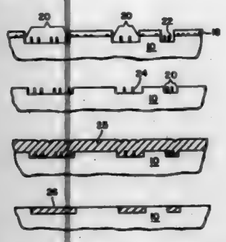
B. filler having a maximum particle size of 50 microns wherein the amount of A is about 60 to about 25 percent by weight of the total of A and B, and correspondingly the amount of B is about 40 to about 75 percent by weight based upon the amount of A and B; and curing said composition.

5,292,689

METHOD FOR PLANARIZING SEMICONDUCTOR STRUCTURE USING SUBMINIMUM FEATURES

John E. Cronin, Milton, and Howard S. Landis, Underhill, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1992, Ser. No. 940,427
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 21 Claims



1. A method of planarizing over a recessed area of a semiconductor structure, said method comprising:

a) forming pillars and a recessed area on a semiconductor structure, said semiconductor structure having a surface thereof adjacent said recessed area, said pillars being formed within said recessed area, wherein said pillars are less than the minimum feature size that can be formed for said semiconductor structure;

b) depositing a layer of fill over said pillars, said recessed area, and said surface, said pillars preventing substantial depression of said layer of fill overlying said recessed area relative to said surface; and

c) planarizing said layer of fill by chemical-mechanical polishing wherein a second surface of said planarized layer of fill is thereby substantially planar with said surface of said semiconductor structure.

5,292,690

GLASS COMPOSITION FOR GLASS BUBBLES WITH INCREASED COMPRESSIVE STRENGTH

Shinji Kawachi, and Yoshifumi Sato, both of Shiga, Japan, assignors to Nippon Electric Glass Company, Ltd., Shiga, Japan

Filed Mar. 26, 1992, Ser. No. 858,345
Claims priority, application Japan, Mar. 29, 1991, 3-93273
Int. Cl.[5] C03C *3/078*
U.S. Cl. 501—33 2 Claims

1. Glass bubbles having diameters of 1–130 μm and wall thickness of 0.5–10 μm and consisting essentially of, by weight percentage, SiO_2 42–58%, R_2O 3–16%, R_2O being at least one metal oxide selected from the group consisting of Li_2O, Na_2O, and K_2O; B_2O_3 3.5–23%; RO 6–22%, RO being at least one metal oxide selected from the group consisting of CaO, MgO, BaO, ZnO, and SrO; RO_2 7–26%, RO_2 being at least one metal oxide selected from the group consisting of TiO_2 and ZrO_2; Al_2O_3 0–13%; P_2O_5 0–2%; and SO_3 0.2–0.8%.

5,292,691

MOLYBDENUM DISILICIDE MATRIX COMPOSITES REINFORCED WITH CONTINUOUS CERAMIC FIBERS

Ralph J. Hecht, North Palm Beach, and Michael J. Maloney, Port St. Lucie, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1992, Ser. No. 819,720
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 14 Claims

13. A ceramic fiber reinforced molybdenum disilicide composite a molybdenum disilicide matrix and from about 30 to about 40 volume percent silicon carbide continuous reinforcing fiber, wherein the coefficient of thermal expansion of said molybdenum disilicide matrix is modified by the addition of from about 30 to about 60 volume percent particulate silicon carbide.

14. A ceramic fiber reinforced molybdenum disilicide composite comprising a molybdenum disilicide matrix and from about 30 to about 40 volume percent aluminum oxide continuous reinforcing fiber, wherein the coefficient of thermal expansion of said molybdenum disilicide matrix is modified by the addition of from about 5 to about 15 volume percent of a particulate modifying agent selected from the group consisting of silicon carbide, silicon nitride, and mixtures thereof.

5,292,692

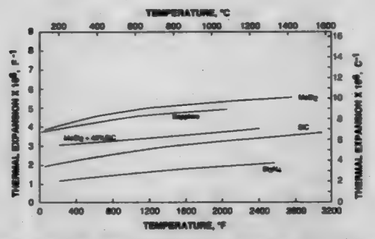
METHOD FOR IMPROVING CERAMIC FIBER REINFORCED MOLYBDENUM DISILICIDE COMPOSITES

Michael J. Maloney, Port St. Lucie, and Ralph J. Hecht, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1992, Ser. No. 819,721
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 18 Claims

17. In a process for producing a ceramic fiber reinforced molybdenum disilicide composite, the improvement comprising adding to the molybdenum disilicide from about 30 to about 40 volume percent silicon carbide continuous reinforcing fiber, and modifying the coefficient of thermal expansion of said molybdenum disilicide to approximate that of said reinforcing fiber, by adding from about 30 to about 60 volume percent particulate silicon carbide.

18. In a process for producing a ceramic fiber reinforced molybdenum disilicide composite, the improvement comprising adding to the molybdenum disilicide from about 30 to about 40 volume percent single crystal aluminum oxide continuous reinforcing fiber, and modifying the coefficient of thermal expansion of said molybdenum disilicide to approximate that of said reinforcing fiber, by adding about 10 volume percent particulate modifying agent selected from the group consisting of silicon carbide, silicon nitride, and mixtures thereof.



5,292,693

SLURRY COMPOSITION AND SINTERED PART PREPARED THEREFROM

Takao Kaga; Yuzi Hoshi, and Yutaka Kimura, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Limited, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 837,972
Claims priority, application Japan, Feb. 22, 1991, 3-028152
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—103 15 Claims

1. A sheet-forming slurry composition comprising zirconia powder, an organic binder, and a solvent,

the zirconia powder containing 2 to 10 mol % of yttria in solid solution form and having a specific surface area of 5–10 m^2/g as measured by BET method and a mean particle size multiplied by the specific surface area of up to 3 $\mu m.m^2/g$;

wherein the organic binder is present in an amount of 16–30 parts by weight per 100 parts of zirconia powder.

5,292,694

METHOD OF PRODUCING LOW TEMPERATURE FIRING DIELECTRIC CERAMIC COMPOSITION CONTAINING B_2O_3

Masahiro Abe; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Sep. 25, 1992, Ser. No. 950,664
Claims priority, application Japan, Sep. 27, 1991, 3-276587; Mar. 18, 1992, 4-92180; Sep. 21, 1992, 4-276597
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—139 21 Claims

1. A method of producing a dielectric ceramic composition, comprising the steps of:

preparing a main ceramic composition comprising BaO, TiO_2, and Re_2O_3 as major components, Re representing at least one rare earth metal, wherein a mixture of starting materials which give said main ceramic composition is calcined at a temperature not lower than 1050° C.;

finely pulverizing said calcined mixture to provide a calcined ceramic powder having an average grain size of not larger than 0.8 μm; and

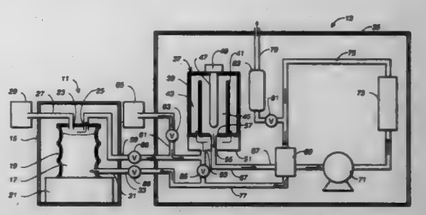
adding a secondary component comprising B_2O_3 powder or a glass powder containing B_2O_3 to said calcined ceramic powder or said mixture of starting materials prior to calcining, wherein B_2O_3 is contained in the dielectric ceramic composition in an amount of 0.1–7.5 parts by weight per 100 parts by weight of the main ceramic composition.

5,292,695

PROCESS FOR REACTIVATING PARTICULATE ADSORBENTS

Terry R. Galloway, San Leandro, Calif., assignor to Synthetica Technologies, Inc., Richmond, Calif.

Filed Nov. 18, 1992, Ser. No. 978,265
Int. Cl.[5] B01J *20/34, 38/10, 38/06*
U.S. Cl. 502—53 7 Claims



1. A method for reactivating contaminated particulate adsorbent material, comprising, confining said contaminated adsorbent material to an enclosed space while passing therethrough a gas stream comprised substantially of steam, hydrogen, and carbon monoxide, said gas stream being substantially free of unbound oxygen and being at a temperature and a flow rate selected to volatilize volatile organic compounds adsorbed by said adsorbent material, thereafter reacting the gas stream with steam at a temperature of at least 700° F. in a reaction zone separate from said enclosed space, said steam being in excess of the stoichiometric amount required to react with substantially all organic compounds in the gas stream, and thereafter circulating said gas stream back to said adsorbent material in said enclosed space for passing therethrough, and continuing said steps until the level of contamination of said adsorbent material by said adsorbed volatile organic compounds is below level, sufficient to produce reactivation of said adsorbent material.

5,292,696

HYDROCARBON ADSORBING BODY

Tetsuo Ito, Fujisawa, and Hiroyuki Kanesaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 15, 1992, Ser. No. 945,784
Claims priority, application Japan, Sep. 18, 1991, 3-238082
Int. Cl.[5] B01J *29/06*
U.S. Cl. 502—66 16 Claims

1. In an exhaust treating body for adsorbing hydrocarbons from an internal combustion engine exhaust gas, the improvement wherein a monolith carrier is coated with a first layer of HZSM-5 zeolite powder ion-exchanged with palladium, which in turn is overcoated with a coating layer of a zeolite powder other than that of the first coating layer.

5,292,697

NONDESTRUCTIVE TRIVALENT CATION EXCHANGE OF MOLECULAR SIEVES

Marvin R. Klotz, Batavia, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Nov. 23, 1992, Ser. No. 980,586
Int. Cl.[5] B01J *29/00, 37/30*
U.S. Cl. 502—73 20 Claims

14. A method for the nondestructive aluminum ion exchange of molecular sieves comprising ion exchanging at least one molecular sieve with an aluminum cation, wherein said ion exchange is performed at ion exchange conditions with an ion exchange solution comprising said aluminum cation, a trivalent cation complexing agent comprising at least one member selected from the group consisting of 2-hydroxypropionic acid, 2-hydroxyacetic acid, 2-hydroxybutanoic acid, 2-hydroxypen-

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tanoic acid, 3-hydroxybutanoic acid, and 3-hydroxypentanoic acid, and a suitable amount of ammonium hydroxide to form an ion exchange solution having a pH ranging from about 4.5 to about 7.0.

15. The method of claim 14 wherein said trivalent cation complexing agent has a complexing stability constant ranging from about 2 to about 15.

5,292,698

CATALYST COMPRISING MCM-36

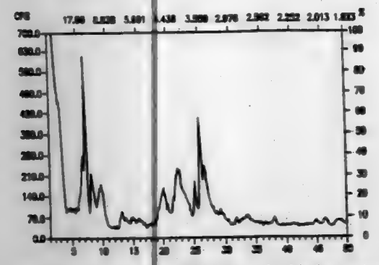
Cynthia T-W. Chu, Princeton Junction, N.J.; Charles T. Kresge, West Chester, Pa.; Wieslaw J. Roth, Sewell, N.J.; Kenneth G. Simmons, deceased, late of Williamstown, N.J. by Kenneth G. Simmons, executor , and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 811,360, Dec. 20, 1991, which is a continuation-in-part of Ser. No. 776,718, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 640,330, Jan. 11, 1991, abandoned, said Ser. No. 811,360, Continuation-in-part of Ser. No. 640,329, and a continuation-in-part of Ser. No. 640,339, and a continuation-in-part of Ser. No. 640,341. This application Aug. 12, 1992, Ser. No. 929,061

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] B01J *21/06*

U.S. Cl. 502—84 13 Claims



1. A catalyst comprising MCM-36 and a binder material.

5,292,699

POLYMERIZATION PROCESS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 837,136, Feb. 19, 1992, Pat. No. 5,279,177. This application Feb. 22, 1993, Ser. No. 20,934

Claims priority, application Netherlands, May 31, 1991, 9100940

Int. Cl.[5] G01J *31/24*

U.S. Cl. 502—162 7 Claims

1. A catalyst composition formed by reacting a compound of palladium, with an anion of a non-hydrohalogenic acid having a pKa below 2 and a bis(diethylphosphino)alkane.

5,292,700

POLYMERIZATION CATALYST

Peter A. A. Klusener; Johannes J. M. Snel, and Hans A. Stil, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 774,942. This application Jan. 25, 1993, Ser. No. 8,381

Claims priority, application Netherlands, Dec. 11, 1990, 9002719

Int. Cl.[5] B01J *31/04*

U.S. Cl. 502—167 9 Claims

1. In a catalyst composition formed from a salt of palladium, the anion of a non-hydrohalogenic acid having a pKa below 4, a bidentate phosphine ligand, the improvement of additionally providing to the catalyst composition an aromatic amine selected from the group consisting of pyridine, alkyl-substituted pyridine, quinoline and alkyl-substituted quinoline.

5,292,701

HIGH PORE VOLUME AND PORE DIAMETER ALUMINUM PHOSPHATE AND METHOD OF MAKING THE SAME

Rimantas Glemza, Baltimore, Md., and Yves O. Parent, Golden, Colo., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 362,545, is a continuation-in-part of Ser. No. 188,808, May 2, 1988, abandoned, which is a continuation of Ser. No. 770,550, Aug. 29, 1985, abandoned. This application May 10, 1991, Ser. No. 698,524

Int. Cl.[5] B01J *21/02*

U.S. Cl. 502—202 16 Claims

1. A homogeneous, single-phase amorphous aluminum phosphate composition in which phosphorus and aluminum are present in a ratio of from about 0.8:1 to about 1:1 and which is characterized by a total pore volume of at least about 1.0 cubic centimeters per gram and a surface area of between about 200 and about 400 square meters per gram, the combination of pore volume and surface area yielding an average pore diameter of at least about 125 Angstroms.

5,292,702

PRESULFURIZED HYDROTREATING, HYDROCRACKING OR TAIL GAS TREATING CATALYST

James D. Seamans, Woodlands; Charles T. Adams, Houston; Wendy B. Dominguez, Rosenberg, and Andrew A. Chen, Houston, all of Tex., assignors to CRI International, Inc., Houston, Tex.

Continuation of Ser. No. 737,630, Jul. 30, 1991, Pat. No. 5,215,954. This application Oct. 30, 1992, Ser. No. 969,660

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] B01J *27/04, 27/047, 27/045*

U.S. Cl. 502—219 20 Claims

1. A presulfurized catalyst composition prepared by a process which comprises:

(a) contacting a presulfidable metal oxide(s)-containing catalyst with elemental sulfur at a temperature such that said elemental sulfur is substantially incorporated in the pores of said catalyst by sublimation and/or melting and

(b) heating said sulfur-incorporated catalyst in the presence of a liquid olefinic hydrocarbon at a temperature greater than about 150° C.

5,292,703

CATALYST AND PROCESS FOR OXYCHLORINATION OF ETHYLENE TO EDC

George H. Young, League City, Tex.; Joseph A. Cowfer, Medina, and Victor J. Johnston, Silver Lake, both of Ohio, assignors to The Geon Company, Independence, Ohio

Filed Jul. 28, 1992, Ser. No. 920,721

Int. Cl.[5] B01J *23/72, 23/78, 23/10*

U.S. Cl. 502—303 16 Claims

1. A catalyst comprising a support having deposited thereon an active metal composition comprising from about 2% to about 8% by weight of copper, from about 0.2% to about 2% by weight of alkali metal(s), from about 0.1% to about 9% by weight of rare earth metal(s), and from about 0.05% by weight to about 4% by weight of Group IIA metal(s) selected from the group consisting of magnesium and barium, all weight percents based upon the total weight of the catalyst composition, and wherein said catalyst has a surface area from about 20 to about 220 m^2/g.

5,292,704

CATALYST FOR DESTRUCTION OF ORGANOHALOGEN COMPOUNDS

George R. Lester, Park Ridge, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 714,364, Jun. 12, 1991, Pat. No. 5,176,897, which is a continuation of Ser. No. 345,802, May 1, 1989, abandoned. This application Oct. 6, 1992, Ser. No. 957,547

Int. Cl.[5] B01J *23/64*

U.S. Cl. 502—309 5 Claims

1. A catalyst for contacting a gas stream containing organohalogen compounds, other organic compounds or mixtures thereof, in the presence of an oxidizing agent and optionally water and producing carbon dioxide, water and haloacids, comprising as active catalytic components titania and relative to the titania 0.1–20 wt. % (as metal) vanadium oxide, 0.1–20 wt. % (as metal) tungsten oxide, and 0.01–5 wt. % of at least one noble metal selected from the group consisting of platinum, palladium, and rhodium, the catalyst characterized in that the vanadium oxide, tungsten oxide, and noble metal are uniformly dispersed on the titania.

5,292,705

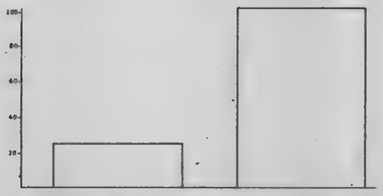
ACTIVATION OF HYDROCARBON SYNTHESIS CATALYST

Willard N. Mitchell, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 24, 1992, Ser. No. 949,935

Int. Cl.[5] B01J *21/06, 23/74, 23/96;* C07C *1/04*

U.S. Cl. 502—325 10 Claims



1. A method for activating an essentially fresh, reduced cobalt containing Fischer-Tropsch catalyst which comprises treating the catalyst with hydrogen or a hydrogen containing gas in the presence of hydrocarbon liquids for a period sufficient to increase substantially the initial catalyst productivity.

5,292,706

PREPARING CARBON MOLECULAR SIEVES OF INCREASED DENSITY

Chin-Hsiung Chang, Palatine; Li Wang, Bloomingdale, and Mark Kaiser, Brookfield, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 906,995, Jul. 1, 1992. This application Oct. 21, 1992, Ser. No. 964,174

Int. Cl.[5] C01B *31/02, 31/08;* B01J *20/30, 20/20*

U.S. Cl. 502—418 4 Claims

1. In the method of preparing a carbon molecular sieve by carbonizing a precursor polyvinylidene chloride polymer the improvement comprising impregnating said precursor polymer with additional vinylidene chloride monomer from which said polymer was derived and polymerizing said monomer to increase the density of said precursor polymer and the resulting carbon molecular sieve.

5,292,707

IMPROVING THE DENSITY OF CARBON MOLECULAR SIEVES FOR THE STORAGE OF NATURAL GAS

Luis M. Aparicio, Madison, Wis.; Scott R. Keenan, Dover, N.J., and Li Wang, Bloomingdale, Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 25, 1992, Ser. No. 981,702

Int. Cl.[5] C01B *31/02, 31/08;* B01J *20/30, 20/20*

U.S. Cl. 502—418 8 Claims

1. In the method of preparing a carbon molecular sieve by carbonizing a precursor polymer made by suspension polymerization of vinylidene chloride the improvement comprising increasing the density of said precursor polymer by using peroxy carbonate initiators for polymerization capable of maximizing polymer density and using an initial reaction pressure above atmospheric.

5,292,708

METHOD OF PRODUCING ACTIVATED CARBON FROM PIT-WET LIGNITE

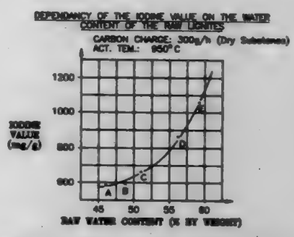
Alfons Karl, Gruendau, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 742,516, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 544,459, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 415,979, Oct. 3, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,140

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 3834745

Int. Cl.[5] C01B *31/12, 31/08;* B01J *20/20*

U.S. Cl. 502—427 7 Claims



1. A method of producing an activated carbon from pit-wet lignite by an activation reaction, consisting essentially of adding potassium ions to the pit-wet lignite and then adding water vapor and simultaneously heating the pit-wet lignite to a temperature of at least 600° C. for a time sufficient for activation and subsequently washing with water, to obtain an activated carbon which displays improved adsorption capacity, wherein up to 2% by weight potassium ions on a dry basis are added to the lignite and said water vapor being present in an amount sufficient to improve the adsorption capacity of said activated carbon.

5,292,709

METHOD FOR ADHERING THERMOSENSITIVE TRANSFER FILM TO BE USED FOR COLOR PRINTING

Kenji Sakamoto, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,922

Claims priority, application Japan, May 27, 1991, 3-121259

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 14 Claims

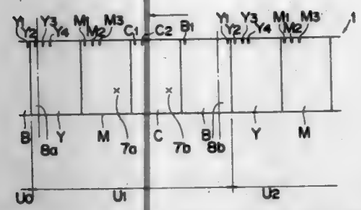
7. A thermosensitive transfer film for use in color printing, comprising:

a plurality of color frame units, each said color frame unit comprising at least a yellow frame, a magenta frame and a cyan frame arranged in a straight line in the order of said yellow frame, said magenta frame and said cyan frame, and each said frame having a transfer starting mark;

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a first cut through said film forming a first cut edge such that a said transfer starting mark of a said frame through which said first cut extends is broken;

a second cut through said film forming a second cut edge, said second cut extending through a said frame forward of



the said transfer starting mark of the succeeding said color frame, the succeeding said color frame having the same color as said frame through which said first cut extends; and

a connection connecting both said cut edges with each other.

5,292,710

IMAGE-RECEIVING SHEET

Noritaka Egashira, Ichikawa; Yoshikazu Ito, Tokyo; Tatsuya Kita, Tokyo; Masahisa Yamaguchi, Tokyo; Masaki Kutsukake, Fujimi, and Kazunobu Imoto, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 798,354, Nov. 21, 1991, Pat. No. 5,210,068, which is a continuation of Ser. No. 612,994, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 168,908, Mar. 16, 1988, Pat. No. 5,001,106. This application Jan. 19, 1993, Ser. No. 5,806

Claims priority, application Japan, Mar. 20, 1987, 62-66879; Mar. 20, 1987, 62-66880

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **5 Claims**



1. An image-receiving sheet for use in heat transfer recording, comprising:

a base sheet comprising a laminate of (i) a first layer having a porous structure or foamed structure, (ii) a second layer of core material and (iii) a third layer having a porous structure or foamed structure; and

a receiving layer provided on one surface of said base sheet for receiving a dye or a pigment migrating from a heat transfer sheet during said heat transfer recording, the receiving layer comprising a resin for receiving the thus migrated dye or pigment from the heat transfer sheet.

5,292,711

THERMOSENSITIVE RECORDING MATERIAL

Masaki Nishimura, Tokyo; Kunitaka Toyofuku, Sakura, and Yoshiyuki Takahashi, Kawasaki, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,389

Claims priority, application Japan, May 10, 1991, 3-105818; Oct. 25, 1991, 3-279965

Int. Cl.[5] B41M *5/32*

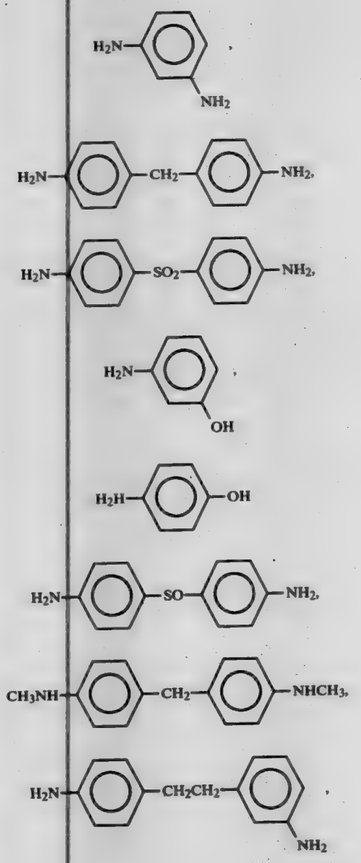
U.S. Cl. 503—209 **8 Claims**

1. A thermosensitive recording material comprising:

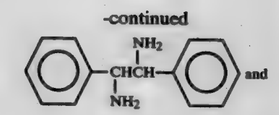
a sheet substrate; and

a thermosensitive image-forming layer formed on a surface of the sheet substrate and comprising a substantially colorless dye precursor, a color developing agent reactive with the dye precursor upon heating to thereby develop a color, a colored image-stabilizing agent comprising at least one member selected from the group consisting of aromatic aziridinyl compounds having at least one aziridinyl group, and aromatic epoxy compounds having at least one epoxy group, and a binder,

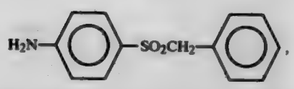
said thermosensitive colored image-forming layer further containing an additional colored image-stabilizing agent comprising a member selected from the group consisting of (1) amino compounds having at least one member selected from the group consisting of primary and secondary amine groups, (2) mixtures of at least two of the amino compounds, (3) carboxylic compounds having at least one member selected from the group consisting of a carboxyl group and a group of the formula —CO—O—CO—, and (4) mixtures of at least two of the carboxyl compounds, the amino compounds being selected from the group consisting of the compounds of the formulae:



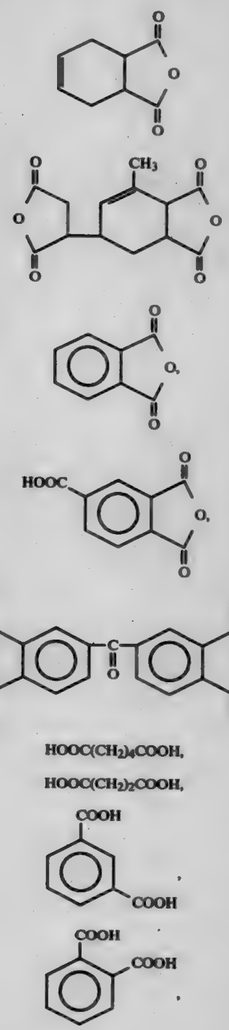
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and



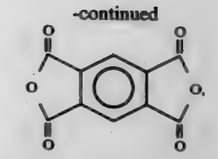
and the carboxylic compounds being selected from the group consisting of the compounds of the formulae:

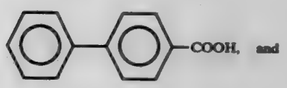


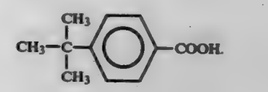
HOOC(CH2)4COOH,

HOOC(CH2)2COOH,

-continued







5,292,712

THERMOREACTIVE RECORDING MATERIAL HAVING PARTICULAR STABILITY

Günter Klug, Monheim; Heinrich Schrage, Krefeld; Pieter Ooms, Krefeld, and Hans-Josef Buysch, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

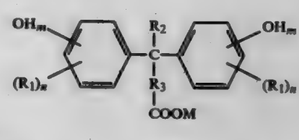
Filed Jul. 20, 1992, Ser. No. 916,938

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1991, 4125118

Int. Cl.[5] B41M *5/28*

U.S. Cl. 503—209 **10 Claims**

1. A thermoreactive recording material comprising a support coated with a coating comprising a chromogen, a color developer and at least one salt of a modified bisphenol carboxylic acid of the formula (I)



(I)

in which

R_1 in each case represents, independently of one another, C_1-to C_5-alkoxy, C_6-alkyl, C_3- to C_6-cycloalkyl or phenyl,

R_2 represents hydrogen, C_1- to C_6-alkyl or phenyl,

R_3 represents C_1- to C_5-alkylene,

m in each case represents, independently of one another, one or two,

n in each case represents, independently of one another, zero, one or two and

M represents an equivalent of a polyvalent metal ion.

5,292,713

LINERLESS THERMAL AND THERMAL TRANSFER LABELS

Herbert J. Stenzel, 7834 Michael Rd., Orchard Park, N.Y. 14127, and William D. Swierez, 5568 Juno Dr., Lakeview, N.Y. 14085

Filed Jul. 15, 1992, Ser. No. 914,116

Int. Cl.[5] B41M *5/20;* **B32B** *7/12*

U.S. Cl. 503—226 **7 Claims**

1. Linerless thermosensitive label stock, comprising:

a substrate having first and second faces;

a pressure sensitive adhesive covering said second face of said substrate;

a thermosensitive layer on said first face of said substrate; and

a release coating, of a material that has a low adherence to said pressure sensitive adhesive, directly on and covering said thermosensitive layer, with no barrier coat between



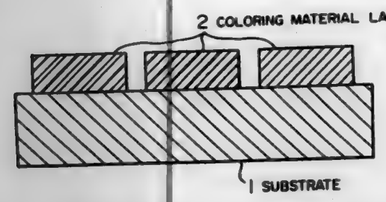
said release coating and said thermosensitive layer, said release coating containing as the primary operative ingredient chromium pentahydroxy (tetradecanoato) di-.

5,292,714

DYE TRANSFER TYPE THERMAL PRINTING SHEETS

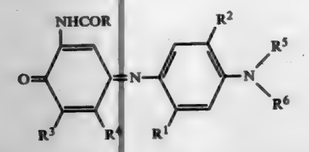
Tetsuji Kawakami, Katano; Akihiro Imai; Nobuyoshi Taguchi, both of Ikoma; Yukichi Murata, Sagamihara, and Takao Hirota, Machida, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Mitsubishi Kasei Corporation, Tokyo, both of Japan

Division of Ser. No. 597,349, Oct. 10, 1990, Pat. No. 5,217,941, which is a division of Ser. No. 288,139, Dec. 22, 1988, Pat. No. 4,985,396. This application Feb. 10, 1993, Ser. No. 15,819
Claims priority, application Japan, Dec. 29, 1987, 62-334576
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 9 Claims



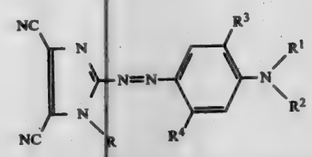
1. A dye transfer thermal printing sheet which comprises coloring material layers different in hue and arranged in sequence on a substrate, said coloring material layers containing respectively a binder and at least one sublimable cyan dye represented by the following formula (I), a binder and at least one sublimable magenta dye represented by the following formula (II) and a binder and at least one sublimable yellow dye selected from the dyes represented by the following formula (III):

(I)



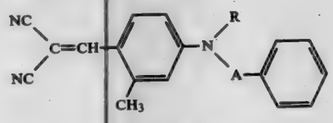
wherein R^1 represents a hydrogen atom, an alkyl group which may be substituted with fluorine atom, an alkoxy group, a formylamino group, an alkylcarbonylamino group which may be substituted with a fluorine atom, an arylcarbonylamino group or a halogen atom, R^2 represents a hydrogen atom, an alkyl group which may be substituted with fluorine atom, an alkoxy group or a halogen atom, R^3 and R^4 each represents a hydrogen atom, an alkyl group which may be substituted with fluorine atom, an alkoxy group or a halogen atom and R, R^5 and R^6 each represents a hydrogen atom, a substituted or unsubstituted alkyl group of 1–8 carbon atoms or an aryl group;

(II)



wherein R, R^1 and R^2 each represents an allyl group, an alkyl group of 1–8 carbon atoms, an alkoxyalkyl group of 3–8 carbon atoms, an aralkyl group or a hydroxyalkyl group, R^3 represents a hydrogen atom, an alkoxy group of 1–4 carbon atoms, a methyl group or a halogen atom and R^4 represents a methyl group, a methoxy group, a formylamino group, an alkylcarbonylamino group of 1–8 carbon atoms, an alkylsulfonylamino group of 1–8 carbon atoms or an alkoxycarbonylamino group of 1–8 carbon atoms;

(III)



wherein R represents an allyl group, a methyl group, an ethyl group or a straight chain or branched chain propyl group or a straight chain or branched chain butyl group and A represents $—CH_2—$, $—CH_2CH_2—$, $—CH_2CH_2O—$, $CH_2CH_2OCH_2—$ or $CH_2CH_2OCH_2CH_2—$.

5,292,715

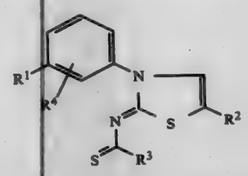
IMINOTHIAZOLINES, THEIR PRODUCTION AND USE AS HERBICIDES

Shinichi Kawamura, Osaka; Keiichi Izumi, Nishinomiya; Junichi Sato, Toyonaka; Yuzuru Sanemitsu, Ashiya, all of Japan; Ryo Sato, Durham, N.C.; Tatsuhiro Hamada, Kakogawa, and Hideyuki Shibata, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 28, 1992, Ser. No. 936,516
Claims priority, application Japan, Aug. 28, 1991, 3-217175
The portion of the term of this patent subsequent to Feb. 14, 2010, has been disclaimed.
Int. Cl.[5] N01N *43/78;* C07D *277/18*
U.S. Cl. 504—266 14 Claims

1. An iminothiazoline compound of the formula:

(I)



wherein R^1 is halogen, halo(lower)alkyl, halo(lower)alkoxy or halo(lower)alkylthio; R^2 is methyl, ethyl, chlorine, bromine or iodine; R^3 is lower alkyl, lower cycloalkyl, lower alkoxy, lower cycloalkoxy, lower alkylamino, phenylamino or phenyl, all of which are optionally substituted with at least one substituent selected from halogen, lower alkyl, lower alkoxy, halo(lower)alkyl, lower cycloalkyl and lower cycloalkoxy; and R^4 is hydrogen or halogen.

5,292,716

OXIDE SUPERCONDUCTING MATERIAL AND PROCESS FOR PRODUCING THE SAME

Hitoshi Sakai, Komaki; Hitoshi Yoshida, Okazaki; Hideyuki Baba, Nagoya, and Manabu Yoshida, Aichi, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jan. 15, 1992, Ser. No. 820,783
Claims priority, application Japan, Jan. 18, 1991, 3-18404; Jan. 7, 1992, 4-693
Int. Cl.[5] C01F *17/00;* C01G *3/02;* H01L *1/08, 39/12*
U.S. Cl. 505—1 3 Claims

1. A RE-Ba-Cu-O type oxide superconducting material, comprising:

a matrix of grains of $REBa_2Cu_3O_y$ and, uniformly dispersed therein, fine particles of RE_2BaCuO_5, wherein RE is at least one element selected from the group consisting of Y, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, and Lu; and

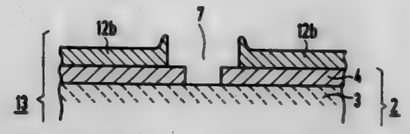
Ce in an amount of 0.1–10% by weight in terms of its oxide (IV) based on said RE-Ba-Cu-O type oxide superconducting material.

5,292,717

METHOD FOR THE PRODUCTION OF A STRUCTURED COMPOSITE WITH HIGH-TEMPERATURE SUPERCONDUCTOR MATERIAL

Bernhard Roas, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1992, Ser. No. 822,973
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1991, 4101604
Int. Cl.[5] H01L *39/24*
U.S. Cl. 505—1 23 Claims



1. A method for producing a layer having a structure formed of a first material having at least one recess, said structured layer being deposited on a substructure formed of at least one second material, one of said first and second materials including a metal oxide superconductor material with a high transition temperature which is sensitive to solvents containing acids, said method comprising the steps of:

forming a first composite by applying a varnish layer to the substructure, the varnish layer is soluble in a first solvent that does not attack the substructure and has a structure corresponding to the structure of the structured layer of the first material to be produced;

cold depositing, on the first composite, an auxiliary layer of a third material that is soluble in a second solvent which does not attack the first and second materials and which cannot be attacked by the first solvent and does not enter into any reaction with the first and second materials at an elevated deposition temperature at which the first material is deposited, and further is itself substantially unreactive at the elevated deposition temperature;

forming a second composite from the first composite by removing the varnish layer along with a part of the auxiliary layer resting thereon using the first solvent;

applying the layer of the first material to said second composite at said elevated deposition temperature that is approximately between 150° C. and 1000° C. in an atmosphere containing oxygen; and

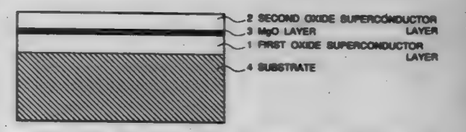
removing with the second solvent a remaining part of the auxiliary layer remaining in the area of the at least one recess along with the portion of the layer of the first material resting thereon.

5,292,718

PROCESS FOR PREPARING SUPERCONDUCTING JUNCTION OF OXIDE SUPERCONDUCTOR

Saburo Tanaka; Hidenori Nakanishi; Hideo Itozaki, and Takashi Matsuura, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 707,374, May 30, 1991, abandoned.
This application Oct. 6, 1992, Ser. No. 957,639
Claims priority, application Japan, May 30, 1990, 2-140516; Jun. 4, 1990, 2-145936
Int. Cl.[5] B05D *5/12;* H01L *39/24*
U.S. Cl. 505—1 14 Claims



1. A process for fabricating a superconducting junction by depositing successively a first oxide superconductor thin film layer, a non-superconducting intermediate thin film layer having a thickness between 1 and 10 nm and a second oxide superconductor thin film layer on a substrate in this order, wherein before said non-superconducting intermediate layer is deposited, said substrate on which said first oxide superconductor thin film layer has been deposited previously is heated at a temperature between 600° and 650° C. for at least 5 minutes in the presence of oxygen and in that said first oxide superconductor thin film layer is deposited in a different deposition chamber from said non-superconducting intermediate layer and wherein said substrate on which said first oxide superconductor thin film layer has been previously deposited is heated at a temperature between 200° and 400° C. during said deposition of said non-superconducting intermediate thin film layer.

5,292,719

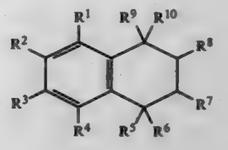
TETRALIN FORMATE ESTER AROMA CHEMICALS

Walter C. Frank, Holland, Pa., assignor to Union Camp Corporation, Princeton, N.J.

Filed Jun. 18, 1993, Ser. No. 80,078
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—19 42 Claims

1. A compound of the formula:

(I)



wherein

R^1 is —H, $—CH_3$, $—CH_2CH_3$, $—OCH_3$ or —OH,

R^2 and R^3 are, independently, —H, $—CH_3$, $—CH_2CH_3$, OCH_3, —OH or $—OC(O)H$,

R^4 is —H,

R^5 is —H, $—CH_3$ or $—CH_2CH_3$,

or R^4 and R^5, taken together, are $—(CH_2)_2$,

R^6 is $—CH_3$ or $—CH_2CH_3$,

R^7 is —H, $—CH_3$ or CH_2CH_3,

or 6 and R^7, taken together, are $—(CH_2)_3—$,

R^8 and R^9 are, independently, —H, $—CH_3$ or $—CH_2CH_3$, and

R^{10} is $—CH_3$,

provided that

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(i) one of R^2 and R^3 is —OC(O)H, and one of R^2 and R^3 is other than —OC(O)H,
(ii) when R^1 is —H, then R^2 and R^3 are other than —OCH_3 or —OH,
(iii) no more than one of R^5 and R^9 is —H,
(iv) no more than one of R^5, R^6, R^7, R^8 and R^9 is —CH_2CH_3,
(v) when R^1 is —OCH_3, then R^2 and R^3 are other than —H or —OH,
(vi) when R^1 is —OH, then R^2 and R^3 are other than —OH or —OCH_3,
(vii) when R^1 is —CH_3 or —CH_2CH_3, then at least one of R^7 and R^8 are H,
(viii) when R^4 and R^5, taken together, are —$(CH_2)_2$—, then R^1 is —H, —OCH_3 or —OH, R^7 is —H, and R^8 is —H, and
(ix) when R^6 and R^7, taken together, are —$(CH_2)_3$—, then R^1 is —H, —OCH_3 or —OH, and R^8 is —H.

5,292,720

FORMATE ESTER INDANE COMPOUNDS

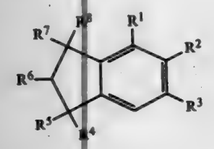
Walter C. Frank, Holland, Pa., assignor to Union Camp Corporation, Princeton, N.J.

Filed Jun. 19, 1993, Ser. No. 79,008
Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—19 **42 Claims**

1. A compound of the formula:

(I)



wherein
R^1 is H, CH_3, CH_2CH_3, OCH_3 or OH,
R^2 and R^3 are, independently, H, CH_3, CH_2CH_3, OCH_3, OH or OC(O)H,
R^4 and R^7 are, independently, H, CH_3, CH_2CH_3 or $CH(CH_3)_2$,
R^5 and R^8 are, independently H or CH_3, and
R^6 is H, CH_3 or CH_2CH_3,
provided that
(i) one of R^2 and R^3 is OC(O)H, and one of R^2 and R^3 is other than OC(O)H,
(ii) when R^1 is H, then R^2 and R^3 are other than OCH_3 or OH,
(iii) when R^1 is other than H, then R^7 is CH_3 or CH_2CH_3,
(iv) no more than one of R^4, R^6 or R^7 is CH_2CH_3 or $CH(CH_3)_2$,
(v) no more than one of R^4, R^5, R^6, R^7 and R^8 is H,
(vi) when each of R^1, R^3, R^4 and R^5 are CH_3, then R^8 is H,
(vii) when R^4 is $CH(CH_3)_2$, then at least one of R^5 or R^6 is H,
(viii) when R^7 is $CH(CH_3)_2$, then at least one of R^6 or R^8 is H,
(ix) when R^1 is OCH_3, then R^2 and R^3 are other than OH, and
(x) when R^1 is OH, then R^2 and R^3 are other than OH or OCH_3.

5,292,721

USE OF GROWTH HORMONE TO ENHANCE PORCINE FETAL ENERGY AND SOW LACTATION PERFORMANCE

R. Dean Boyd; Dale E. Bauman, both of Ithaca, and Walter R. Butler, Freeville, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 333,878, Apr. 4, 1989, Pat. No. 5,134,120, which is a continuation of Ser. No. 925,474, Oct. 31, 1986, abandoned, which is a continuation of Ser. No. 637,642, Aug. 3, 1984, abandoned. This application Apr. 6, 1992, Ser. No. 864,391
Int. Cl.[5] A61K *37/02*

U.S. Cl. 514—12 **9 Claims**

1. A method of enhancing the survivability of newborn pigs which comprises increasing growth hormone levels in the mother during the latter stages of pregnancy by the subcutaneous, intramuscular, or intravenous administration of exogenous means selected from porcine growth hormone or growth hormone releasing factor in an amount sufficient and for a time sufficient to increase growth hormone levels in the mother and thereby enhance survivability of the newborn pigs.

5,292,722

INTRAVENOUS SOLUTION THAT DIMINISHES BODY PROTEIN LOSS

Douglas Wilmore, Brookline, Mass., assignor to Brigham and Women's Hospital, Boston, Mass.

Filed Nov. 6, 1992, Ser. No. 971,623
Int. Cl.[5] A61K *31/195, 31/70*

U.S. Cl. 514—23 **6 Claims**

1. A composition for decreasing dehydration and nitrogen loss in a mammal comprising from about 4% to 10% dextrose and from about 1% to 2% glutamine, or glutamine equivalent, wherein said glutamine equivalent is capable of being converted to glutamine by said mammal.

5,292,723

LIQUID NUTRITIONAL COMPOSITIONS COMPRISING SLOWLY ABSORBED GLUCIDES

Francis Audry, Creully; Daniel Evard, Vincennes; Etienne Grasset, Neuilly Sur Seine, and Véronique Jaussan, Caen, all of France, assignors to Clintec Nutrition Company, Deerfield, Ill.

Filed Mar. 5, 1992, Ser. No. 846,382
Claims priority, application France, Mar. 13, 1991, 91 03042
Int. Cl.[5] A61K *31/715, 9/08, 31/195*

U.S. Cl. 514—58 **16 Claims**

1. A liquid nutritional composition comprising a lipid fraction, a protein fraction and a glucide fraction comprising at least both glucose polymers and slowly absorbed glucides, wherein the fractions are selected such that the composition remains liquid after a heat treatment.

5,292,724

INTRAOCULAR ANTICOAGULANT INCLUDING ANTITHROMBIN III AND METHOD OF ADMINISTRATION

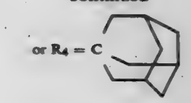
Kiyoshi Kita, No. 4-4-7-502, Honmachi, Shibuyaku, Tokyo, Japan

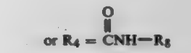
Division of Ser. No. 391,323, Jul. 25, 1989, Pat. No. 5,182,259. This application Jun. 25, 1992, Ser. No. 904,506
Claims priority, application Japan, Jul. 25, 1988, 63-183680; Nov. 10, 1988, 63-282398
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] A61K *37/02, 47/36*

U.S. Cl. 514—21 **14 Claims**

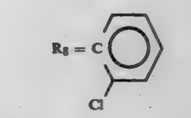
1. A method of preventing fibrin clot formation on an intraocular lens surface, comprising the step of:
administering antithrombin III by injection into an ocular chamber during cataract and intraocular lens implant surgery.

-continued





and



or R_8=$(CH_2)_7CH_3$;
and R_2=OH and R_3=OH, monophosphate, diphosphate or triphosphate group
or R_2 and R_3 are linked to form a 3', 5'-(cyclic monophosphate derivative,
or a metabolite of said compound, said metabolite being a member of the group consisting of:
N^6-(Δ^2-isopentenyl) adenine;
6-N-(3-methyl-3-hydroxybutylamino) purine;
Adenine;
Hypoxanthine;
Uric Acid; and
Methylated xanthines.

5,292,725

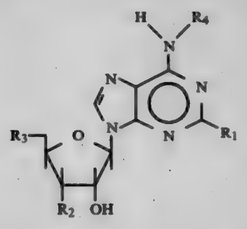
ADMINISTERING PARTICULAR COMPOUNDS AGAINST VARIOUS PARASITES, MYCOPLASMAS, OTHER INDICATIONS AND OTHER INFECTIONS

Patrick T. Prendergast, Baybush, Straffan, County Kildare, Ireland

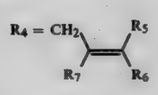
Continuation-in-part of Ser. No. 483,679, Feb. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 362,820, Jun. 7, 1989, abandoned. This application Jun. 21, 1991, Ser. No. 719,017
Claims priority, application Ireland, Aug. 25, 1988, 2585/88; Jun. 21, 1990, 2244/90
Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—46 **21 Claims**

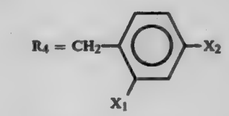
1. A method of treating a human or animal suffering from a haemoflagellate parasitic infection comprising administering to a human or animal who has been infected with a haemoflagellate parasite an effective amount of a pharmaceutical formulation comprising a compound, or a physiologically acceptable salt thereof, selected from the group having the formula:



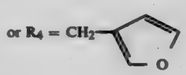
wherein:
R_1=H, R_2=CH_3, R_3=CH_3 and R_4=H, or
R_1=H or CH_3S and



and
R_5=CH_3, Cl, OH or a monophosphate group
R_5=CH_3, CH_2OH or Cl
R_7=H or Br
or R_1=H and



and X_1 and X_2 are independently selected from H, methyl, ethyl, hydroxyl, the halogens and carboxyl



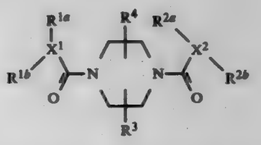
5,292,726

N,N-DIACYLPIPERAZINES

Wallace T. Ashton, Clark; Conrad P. Dorn, Plainfield; William J. Greenlee, Teaneck; Malcolm MacCoss, Freehold; Sander G. Mills, Woodbridge, and Mu T. Wu, Clark, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 703,953, May 22, 1991, abandoned. This application May 19, 1992, Ser. No. 885,416
Int. Cl.[5] A61K *31/675, 31/495;* **C07D** *241/04;* **C07F** *9/6509*
U.S. Cl. 514—85 **16 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein:
R^{1a} is
1) H,
2) C_{1-8} alkyl,
3) phenyl, either unsubstituted or substituted with one or two substituents selected from:
a) —C_{1-4} alkyl,
b) halo,
c) —OH,
d) —CF_3,
e) —NH_2,
f) —$NH(C_{1-4}$ alkyl),
g) —$N(C_{1-4}$ alkyl)$_2$,
h) —CO_2H,
i) —$CO_2(C_{1-4}$ alkyl), and
j) —C_{1-4} alkoxy; or
4) C_{1-4} alkyl-phenyl, wherein the phenyl is either unsubsti-

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tuted or substituted with one or two substituents selected from:
a) —C_{1-4} alkyl,
b) halo,
c) —OH,
d) —CF_3,
e) —NH_2,
f) —NH(C_{1-4} alkyl),
g) —N(C_{1-4} alkyl)$_2$,
h) —CO_2H,
i) —CO_2(C_{1-4} alkyl), and
j) —C_{1-4} alkoxy;

R^{1b} is selected from:
1) R^{1a},
2) —C_{3-7} cycloalkyl, and
3) —CH_2—R^{1a};

R^{2a} and R^{2b} are independently phenyl, either unsubstituted or substituted with one or two substituents selected from:
1) —C_{1-4} alkoxy,
2) halo,
3) —OH,
4) —CF_3,
5) —NH_2,
6) —NH(C_{1-4} alkyl),
7) —N(C_{1-4} alkyl)$_2$,
8) —CO_2H,
9) —CO_2(C_{1-4} alkyl), and
10) —C_{1-6} alkyl, either unsubstituted or substituted with:
a) halo,
b) —OH,
c) —CF_3,
d) —NH_2,
e) —NH(C_{1-4} alkyl),
f) —N(C_{1-4} alkyl)$_2$,
g) —CO_2H,
h) —CO_2(C_{1-4} alkyl), and
i) —C_{1-4}alkoxy,
j) —S(O)$_x$(C_{1-4} alkyl) wherein X is 0, 1 or 2,
k) —C_{3-7} cycloalkyl,
and the phenyl groups of R^{2a} and R^{2b} may be joined together at the ortho carbon atoms through a carbon-carbon single bond or a C_{1-3} alkylene to form a tricyclic group with the X^2 to which they are attached;

X^1 is —N, —CH or O, with the proviso that if X^1 is O, R^{1a} is absent;

X^2 is —N or —CH, with the proviso that if X^1 is —CH, X^2 is not —CH;

R^3 is
1) —C_{1-4} alkyl,
2) —CO_2R^6,
3) —CH_2OCOR^6,
4) —CH_2OH,
5) —CH_2OR^5,
6) —$CH_2S(O)_xR^5$,
7) —$CH_2OCONR^5R^6$,
8) —$CH_2CONR^5R^6$,
9) —$CONR^5R^6$,
10) —CO_2R^8,
11) —$CH_2CO_2R^6$,
12) —CH_2CO_2R8,
13) —$CONHSO_2R^9$,
14) —$CH_2N(R^6)CONR^5R^6$,
15) —CH_2NH_2,
16) —CH_2NH(C_{1-4} alkyl), or
17) —CH_2N(C_{1-4} alkyl)$_2$; wherein

R^5 is C_{1-6} alkyl either unsubstituted or substituted with:
1) —halo,
2) —OH,
3) —CF_3,
4) —NH_2,
5) —NH(C_{1-4} alkyl),
6) —N(C_{1-4} alkyl)$_2$,
7) —CO_2H,
8) —CO_2(C_{1-4} alkyl),
9) —C_{3-7} cycloalkyl, or
10) phenyl, either unsubstituted or substituted with
a) —C_{1-4} alkyl,
b) —halo,
c) —OH,
d) —CF_3,
e) —NH_2,
f) —NH(C_{1-4} alkyl),
g) —N(C_{1-4} alkyl)$_2$,
h) —CO_2H, or
i) —CO_2(C_{1-4} alkyl);

R^6 is —H or C_{1-4} alkyl; or

R^5 and R^6 can be joined together to form with the nitrogen to which they are attached a ring of the formula —N(CH_2CH_2)$_2$L, wherein L is:
i) a single bond,
ii) —CH_2—,
iii) —O—,
iv) —S(O)$_p$—, or
v) —NR^7;

R^7 is
1) —H,
2) —C_{1-6}alkyl, unsubstituted or substituted with —OH, —C_{1-4}alkoxy, or —N(C_{1-4}alkyl)$_2$,
3) —aryl, wherein aryl is phenyl, either unsubstituted or substituted with
a) —C_{1-4} alkyl,
b) —halo,
c) —OH,
d) —CF_3,
e) —NH_2,
f) —NH(C_{1-4} alkyl),
g) —N(C_{1-4} alkyl)$_2$,
h) —CO_2H, or
i) —CO_2(C_{1-4} alkyl);
4) —CH_2-aryl, wherein aryl is as defined above;

R^8 is
1) —H
2)



wherein R^{10} is
a) —C_{1-6}alkyl,
b) —aryl, wherein aryl is as defined above, or
c) —CH_2-aryl, wherein aryl is as defined above,
3) —CH_2-aryl, wherein aryl is as defined above;

R^9 is
1) —aryl, wherein aryl is as defined above,
2) —C_{3-7}cycloalkyl,
3) —polyfluoro-C_{1-4}alkyl
4) —C_{1-6}alkyl, either unsubstituted or substituted with
a) —aryl, wherein aryl is as defined above,
b) —OH,
c) —SH,
d) —C_{1-4}alkyl,
e) —C_{3-7}cycloalkyl,
f) —C_{1-4}alkoxy,
g) —C_{1-4}alkylthio,
h) —CF_3,
i) —halo,
j) —NO_2,
k) —CO_2R^6,
l) —N(R^6)$_2$, wherein the R^6 groups are the same or different,
m) —NH aryl,
n) —N(aryl)$_2$,
o) —PO_3H_2,
p) —PO(OH)(OC_{1-4}alkyl) or
q) a ring of the formula —N(CH_2CH_2)$_2$L, wherein L is as defined above; and

R^4 is H or R^3.

5,292,727

USE OF THE TREATMENT OF ACNE

Wagn Ole Godtfredsen, Vaerlose, Denmark, assignor to Leo Pharmaceutical Products Ltd., Ballerup, Denmark

PCT No. PCT/DK91/00056, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/12807, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 25, 1991, Ser. No. 859,529
Claims priority, application United Kingdom, Mar. 1, 1990, 9004544
Int. Cl.[5] A61K *31/595*
U.S. Cl. 514—168 **2 Claims**

1. The method of treating acne which comprises administering to a subject in need of such treatment an effective amount of calcipotriol.

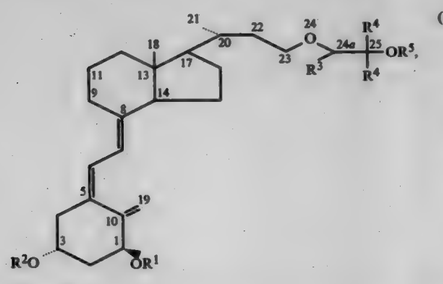
5,292,728

24-OXA DERIVATIVES IN THE VITAMIN D SERIES

Gunter Neef; Gerald Kirsch; Andreas Steinmeyer; Katica Schwarz; Matthias Brautigam; R. Thieroff-Ekerdt, and Petra Rach, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 938,175
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011682
Int. Cl.[5] A61K *31/59*; C07C *401/00*
U.S. Cl. 514—167 **7 Claims**

1. 24-Oxa derivatives in the vitamin D series of general formula I



(I)

in which
R^1, R^2 and R^5, independently of one another, are a hydrogen atom or an acyl group with 1 to 9 carbon atoms,
R^3 is a hydrogen atom or a linear or branched alkyl group with 1 to 4 carbon atoms and
R^4 is a hydrogen atom or a linear or branched alkyl group having 1 to 4 carbon atoms.

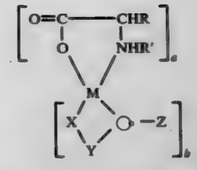
5,292,729

II-BOND AROMATIC VITAMIN CHELATES

Harvey H. Ashmead, Kaysville, Utah, assignor to Albion International, Inc., Clearfield, Utah

Filed Aug. 14, 1992, Ser. No. 930,747
Int. Cl.[5] A61K *33/24*; C07D *401/14, 417/14*
U.S. Cl. 514—168 **50 Claims**

1. A vitamin mineral chelate having at least one π-cloud bond formed between the π cloud of an aromatic moiety of a water soluble vitamin and the mineral, said chelate having the formula:



wherein a is an integer of 0, 1 or 2, b is an integer of 1, 2 or 3, with the proviso that the sum of a and b does not exceed 3, the combination of X, Y and ◯ -Z is the residue of said water vitamin wherein X is a member selected from the group consisting of OH, SH and NH_2, Y is a member selected from the group consisting of CH_2, CH_2CH_2, and C(O), ◯ is the aromatic ring of said water soluble vitamin and Z is the remainder of the residue of said water soluble vitamin not defined by X, Y and ◯ with the proviso that ◯ , Y and X are configured to form a five or six membered ring structure when bonded to M; R is the residue of any naturally occurring α-amino acid, R' is a member selected from the group consisting of H and [C(O)CHRNH]$_e$H where e is an integer of 1 or 2, and M is a metal ion selected from the group consisting of Fe, Cu, Mn, Zn, Ca and Mg.

5,292,730

MODULATION OF IMMUNE SYSTEM WITH Δ5 -ANDROSTENES

Henry A. Lardy, Madison, Wis., assignor to Humanetics Corporation, Chaska, Minn.

Continuation-in-part of Ser. No. 867,288, Apr. 10, 1992, which is a continuation of Ser. No. 575,156, Aug. 29, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 922,850
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—171 **4 Claims**

1. A method for modulating the immune system of a mammal comprising the step of administering to the mammal an effective amount of a steroid selected from the group consisting of Δ5-Androstene-3β-ol-17-one having a C_7 substituent selected from the group consisting of oxo, hydroxy and groups convertible thereto by hydrolysis.

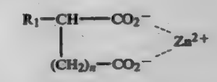
5,292,731

METHODS OF TREATMENT USING METHOTREXATE COMPOSITIONS

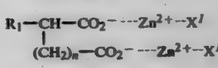
Bernard Loev, Scarsdale, N.Y., assignor to Chemex Pharmaceuticals, Inc., Fort Lee, N.J.

Division of Ser. No. 713,558, Jun. 10, 1991, Pat. No. 5,166,149, which is a continuation of Ser. No. 404,424, Sep. 8, 1989, abandoned. This application Jul. 21, 1992, Ser. No. 916,432
Int. Cl.[5] A61K *31/555*
U.S. Cl. 514—186 **15 Claims**

1. A method of treating a hyperproliferative disorder of the skin comprising orally or parenterally administering or topically applying a composition to a patient, said composition comprising a pharmaceutically suitable carrier and a therapeutically effective amount of a compound of the general formula (I), (II), (III) or (IV):



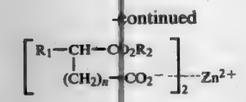
(I)



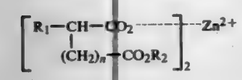
(II)

VOL 1160 ISS 2 MR 8 1994 UMI

—continued

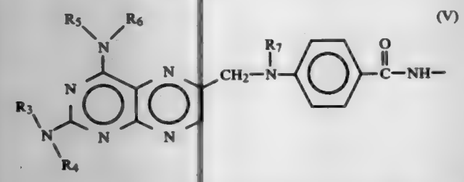


(III)



(IV)

wherein n is 0 or an integer from 1 to 4, X^- is an anion, R_2 is hydrogen or an aliphatic, aromatic or arylalkyl group, and R_1 is of the general formula (V):



(V)

wherein R_3, R_4, R_5, R_6 and R_7 are hydrogen or an alkyl group of 1 to 5 carbons.

5,292,732

PYRROLOPYRAZINE DERIVATIVES

Stephan Röver, Grenzach-Wyhlen, Fed. Rep. of Germany, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

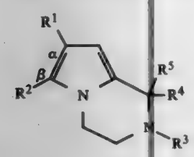
Filed Jun. 24, 1992, Ser. No. 905,584

Claims priority, application Switzerland, Jul. 2, 1991, 1950/91; May 22, 1992, 1567/92

Int. Cl.[5] **C07D** *487/04, 209/60, 233/61;* **A61K** *31/495*

U.S. Cl. 514—249 **13 Claims**

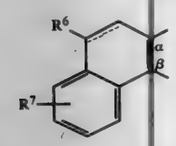
1. A compound of the formula:



I

wherein

one of R^1 and R^2 is aryl and the other is hydrogen, lower alkyl or aryl, or R^1 and R^2 together with the two carbon atoms denoted by α and β, is the following group A:



A

wherein:

R^3 is hydrogen or lower alkyl and R^4 is hydrogen or R^3 and R^4 together are an additional C—N bond;

R^5 is hydrogen or lower alkyl;

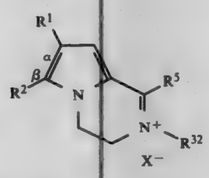
R^6 is hydrogen or lower alkyl;

R^7 is hydrogen, halogen, lower alkyl, unsubstituted lower alkoxy, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkenyl, C_{3-6}-cycloalkyloxy, hydroxy, trifluoromethanesulphonyloxy, unsubstituted benzyloxycarbonyloxy, benzyloxyxcarbonyloxy substituted on its phenyl ring with nitro, or substituted lower alkoxy wherein at least one hydrogen atom on the alkyl group is replaced by (i) oxo, (ii) hydroxy, (iii) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom, or (iv) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom and one oxygen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom; and

the ring carbon atom substituted by R^6 can be saturated or unsaturated;

and pharmaceutically acceptable acid addition salts of the compounds of formula I.

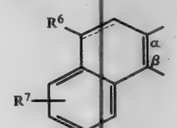
12. A compound of the formula:



VI

wherein

one of R^1 and R^2 is aryl and the other is hydrogen, lower alkyl or aryl, or R^1 and R^2 together with the two carbon atoms denoted by α and β, is the following group A:



A

wherein:

X is halogen;

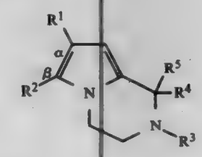
R^{32} is lower alkyl;

R^5 is hydrogen or lower alkyl;

R^6 is hydrogen or lower alkyl;

R^7 is hydrogen, halogen, lower alkyl, unsubstituted lower alkoxy, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkenyl, C_{3-6}-cycloalkyloxy, hydroxy, trifluoromethanesulphonyloxy, unsubstituted benzyloxycarbonyloxy, substituted benzyloxycarbonyl wherein a hydrogen atom on the phenyl ring is replaced by a nitro group, or substituted lower alkoxy wherein at least one hydrogen atom on the alkyl group is replaced by (i) oxo, (ii) hydroxy, (iii) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom, or (iv) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom and one oxygen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom; and the ring carbon atom substituted by R^6 can be saturated or unsaturated.

13. A medicament comprising a compound having the formula:

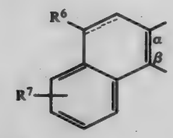


I

wherein

one of R^1 and R^2 is aryl and the other is hydrogen, lower

alkyl or aryl, or R^1 and R^2 together with the two carbon atoms denoted by α and β, is the following group A:



A

wherein:

R^3 is hydrogen or lower alkyl and R^4 is hydrogen or R^3 and R^4 together are an additional C—N bond;

R^5 is hydrogen or lower alkyl;

R^6 is hydrogen or lower alkyl;

R^7 is hydrogen, halogen, lower alkyl, unsubstituted lower alkoxy, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkenyl, C_{3-6}-cycloalkyloxy, hydroxy, trifluoromethanesulphonyloxy, unsubstituted benzyloxycarbonyloxy, benzyloxyxcarbonyloxy substituted on its phenyl ring with nitro, or substituted lower alkoxy wherein at least one hydrogen atom on the alkyl group is replaced by (i) oxo, (ii) hydroxy, (iii) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom, or (iv) a 5- or 6-membered unsubstituted saturated heterocycle ring having one nitrogen atom and one oxygen atom with the remaining ring atoms being carbon, the ring being attached via the nitrogen atom; and

the ring carbon atom substituted by R^6 can be saturated or unsaturated;

and pharmaceutically acceptable acid addition salts of the compounds of formula I; and a therapeutically inert carrier material.

5,292,733

CEPHALOSPORIN COMPOUNDS

Yong Z. Kim; Hun S. Oh; Jae H. Yeo; Jong C. Lim; Won S. Kim; Chan S. Bang, and Hyeon J. Yim, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Rep. of Korea

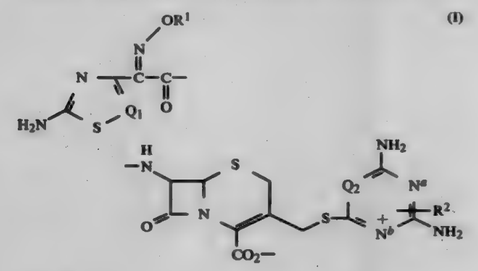
Filed Apr. 9, 1992, Ser. No. 866,156

Claims priority, application Rep. of Korea, Apr. 12, 1991, 91-5843; Apr. 23, 1991, 91-6494

Int. Cl.[5] **C07D** *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **5 Claims**

1. A cephalosporin compound of the formula (I) and its isomers and pharmaceutically acceptable non-toxic salts:



(I)

wherein:

R^1 is a C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl or $—C(R^3)(R^4)COOH$ wherein R^3 and R^4, which may be the same or different, are a hydrogen or a C_{1-4} alkyl group, or constitute a C_{3-7} cycloalkyl group with the carbon atoms to which R^3 and R^4 are linked;

R^2, which may be attached to N^a or N^b, is a C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-7} cycloalkyl, phenyl or amino group;

Q_1 is CH or N; and

Q_2 is N.

5,292,734

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

Jeremy I. Levin, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to Americas Cyanamid Company, Wayne, N.J.

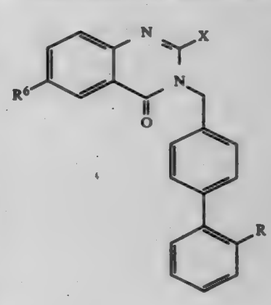
Filed Apr. 23, 1993, Ser. No. 52,936

Int. Cl.[5] **C07D** *401/14, 403/14;* **A61K** *31/505, 31/535*

U.S. Cl. 514—212 **22 Claims**

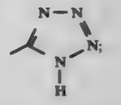
1. A quinazolinone compound having the formula:

FORMULA I



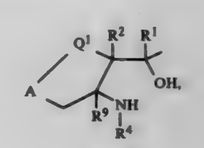
wherein:

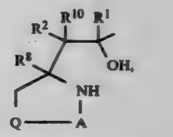
R is

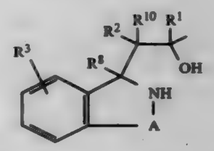


X is lower alkyl of 3 to 5 carbon atoms;

R^6 is:







R^1 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with $—OR^7$, $—CO_2R^7$, —CN, $—N(R^7)(R^{13})$), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)),

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phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, —SPh, —$N(R^7)(R^{13})$, or



R^2 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, or



$R^3$is H, lower alkyl of 1 to 4 carbon atoms, phenyls substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, theinyl, furyl, —CO_2R^7, —$CON(R^7)(R^{13})$, —CN, —NO_2, or



$R^4$is H, —CO_2R^7, —SO_2R^{12}, lower alkyl of 1 to 4 carbon atoms, benzyl, substituted benzyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, P, Cl, or Br), —$CON(R^7)(R^{13})$ or



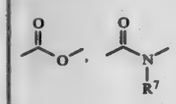
R^{12} is phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br);
R^5 is H, lower alkyl of 1 to 4 carbon atoms;
R^7 is H, lower alkyl of 1 to 4 carbon atoms;
R^8 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), —CO_2R^7, —CH_2OH, —CN, —$CON(R^7)(R^{13})$ or



R^9 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br);
R^{10} is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, theinyl, furyl, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



R^{13} is H, lower alkyl of 1 to 4 carbon atoms;
Q is —O—, —$(CR^{11}R^{14})_m$— or a single bond;
Q^1 is —O—, —$(CR^{11}R^{14})_n$—,



or a single bond;
n is 1;
A is —$(CR^{11}R^{14})_m$—;
m is 2;
R^{11} is H, lower alkyl to 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from monolower alkyl of I to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br) pyridinyl, thienyl, furyl, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



R^{14} is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of I to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from monolower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



or the pharmaceutically acceptable salts thereof.

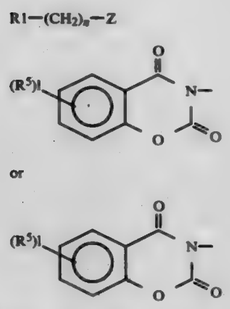
5,292,735

CYCLIC AMIDE DERIVATIVES

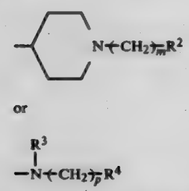
Hachiro Sugimoto; Masahiro Yonaga; Norio Karibe; Youichi Iimura; Satoshi Nagato; Atsushi Sasaki; Yoshiharu Yamanishi, all of Ibaraki, Japan; Hiroo Ogura, Maryland, Md.; Takashi Kosasa; Kumi Uchikoshi, both of Ibaraki, Japan, and Kiyomi Yamatsu, Kanagawa, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1991, Ser. No. 715,754
Claims priority, application Japan, Jun. 15, 1990, 2-157134
Int. Cl.[5] **C07D** *265/26, 265/18;* **A61K** *31/535*
U.S. Cl. 514—230.5 **12 Claims**

1. A cyclic amide derivative having the formula wherein R^1 is



wherein R^5 is hydrogen, a lower alkyl, a lower alkoxy, a halogen, an amino or nitro and l is an integer of 1 to 4;p n is an integer of 1 to 10 and Z is



wherein R^2 is an aryl selected from the group consisting of phenyl and naphthyl, cycloalkyl selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl, a pyridyl group, a 1,3-dioxolan-2-yl group, a furyl group, a thienyl group or a tetrahydrofuryl group; R^4 is naphthyl, cycloalkyl selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl, a pyridyl group, a 1,3-dioxolan-2-yl group, a furyl group, a thienyl group or a tetrahydrofuryl group; m is an integer of 1 to 6; p is an integer of 1 to 6; R^3 is a hydrogen or a lower alkyl; or a pharmaceutically acceptable salt thereof.

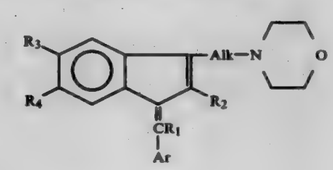
5,292,736

MORPHOLINOALKYLINDENES AS ANTIGLAUCOMA AGENTS

Virendra Kumar, Colonie, and Susan J. Ward, East Greenbush, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Feb. 26, 1993, Ser. No. 23,452
Int. Cl.[5] **A61K** *31/535*
U.S. Cl. 514—231.5 **5 Claims**

1. A method for the treatment of glaucoma which comprises administering to a patient in need of such treatment a medicament containing an effective intraocular pressure reducing amount of a compound having the formula:



wherein
Alk is lower-alkylene;
R_1 is hydrogen, lower-alkyl, Ar or ArCOO;
R_2 is hydrogen or lower-alkyl;
R_3 and R_4 are the same or different hydrogen, fluoro, chloro, bromo, hydroxy, lower-alkoxy, lower-alkyl, or trifluoromethyl;
Ar is phenyl, naphthyl, anthryl, 2-phenylethenyl or a 5- or 6-membered monocyclic or 9- or 10-membered bicyclic fused aromatic heterocyclic ring containing carbon and one or two heteroatoms independently selected from oxygen, nitrogen and sulfur, or such carbocyclic or heterocyclic rings substituted with from 1 to about 3 of lower-alkoxy, lower-alkyl, lower-alkylthio, lower-alkyl sulnyl, lower-alkyl sulfonyl, hydroxy, cyano, amino, lower-alkylamino, dilower-alkylamino or halo;
or phamaceutically acceptable acid addition salts thereof.

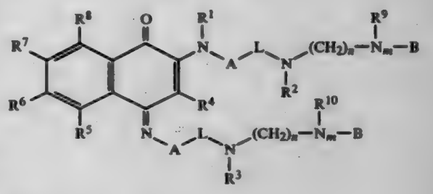
5,292,737

N,N'-BIS(SULFONAMIDO)-2-AMINO-4-IMINONAPHTHALEN-1-ONES AND N,N'-BIS(AMIDO)-2-AMINO-4-IMINONAPHTHALEN-1-ONES

Jean M. Defauw, Durham, N.C., assignor to Sphinx Pharmaceuticals Corporation, Durham, N.C.

Filed Oct. 23, 1992, Ser. No. 965,354
Int. Cl.[5] **A61K** *31/50, 31/505, 31/44;* **C07D** *237/08, 401/12, 261/08, 239/24*
U.S. Cl. 514—247 **26 Claims**

1. A compound having the formula:



wherein:
a is: a phenyl or naphthyl ring system;
L is: SO_2 CO;
R^1–R^3 are each, independently: hydrogen, alkyl, aryl, alkylaryl, arylalkyl, or cycloalkyl;
R^4–R^8 are each, independently: hydrogen, alkyl, aryl, alkylaryl, arylalkyl, halogen, nitro, amino, acylamino, hydroxy, carboxyl, alkoxy, aryloxy, thioalkoxyl, alkylthio, arylthio or a fused aromatic ring;
B is: hydrogen, aryl, arylalkyl, alkylaryl, C_3–C_8 cycloalkyl; C_{2-C20} alkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, acyl or substituted thereof; or pyrrolyl, imidazolyl, triazolyl, tetrazolyl, furanyl, thiophenyl, isoxazolyl, isothiazolyl, oxazolyl, 1,2,4-thiadiazolyl, pyridazinyl, pyridinyl, pyrimidinyl, pyrazinyl, quinoxalinyl, quinolinyl, isoquinolinyl, wherein all rings may be substituted;
m is: 0–1; and
n is: 0–6;
wherein when m is 1,
R^9 and R^{10} are each, independently: hydrogen, alkyl, aryl, alkylaryl, arylalkyl or cycloalkyl groups;
or pharmaceutically acceptable salts of said compound.

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5,292,738

ANTI-VIRALLY ACTIVE PYRIDAZINAMINES

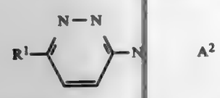
Raymond A. Stokbroekx, Beerse; Marcel J. M. Van der Aa, Kasterlee; Joannes J. M. Willems, Oud-Turnhout, and Marcel G. M. Luyckx, Geel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 637,991, Jan. 3, 1991, Pat. No. 5,157,035, which is a division of Ser. No. 702,772, Feb. 15, 1985, Pat. No. 5,001,125, which is a continuation-in-part of Ser. No. 593,444, Mar. 26, 1984, abandoned. This application Aug. 13, 1992, Ser. No. 929,622

Int. Cl.[5] C07D *237/06*

U.S. Cl. 514—252 8 Claims

1. A compound of the formula:



a pharmaceutically acceptable acid-addition salt or a stereoisomeric form or a tautomeric form thereof, wherein:

R^1 is a member selected from the group consisting of hydrogen, halo, 1H-imidazol-1-yl, lower alkyloxy, aryloxy, aryllower alkyloxy, lower alkylthio, arylthio, hydroxy, mercapto, amino, lower alkylsulfinyl, lower alkylsulfonyl, cyano, lower alkyloxycarbonyl, lower alkylcarbonyl, and lower alkyl; and

A^2 is a bivalent radical of the formula:

$$—C_mH_{2m}—C(R^5)(R^6)—C_nH_{2n}— \quad \text{(c); or}$$

$$—C_{m-1}H_{2(m-1)}—C(R^7)=C(R^8)—C_nH_{2n}— \quad \text{(d);}$$

wherein one of the hydrogen atoms within the radical C_mH_{2m}, $C_{m-1}H_{2(m-1)}$, or C_nH_{2n} may be replaced by lower alkyl or aryl;

m is the integer 1 or 2 and n is the integer 2;

R^5 is hydrogen, aryl, arylamino, (aryl)(lower alkyl)amino, hydroxy, or indolyl;

R^6 is hydrogen, aryl, arylcarbonyl, or (arylcarbonyl)lower alkyl; and

R^7 and R^8 are, each independently, members selected from the group consisting of hydrogen, lower alkyl, aryl, aryl-lower alkyl, and pyridinyl;

wherein aryl is phenyl, being optionally substituted with up to 3 substituents, each independently selected from the group consisting of halo, lower alkyl, trifluoromethyl, nitro, amino, lower alkyloxy, hydroxy and lower alkyloxycarbonyl; thienyl; and naphthalenyl,

provided that when A^2 is a radical of formula (c) and one of R^5 and R^6 is hydrogen, then the other of R^5 and R^6 cannot be hydrogen, hydroxy, or lower alkyl.

5,292,739

ARYL(OR HETEROARYL) PIPERAZINYLALKYLAZOLE DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION AS MEDICAMENTS

Ramon Merce-Vidal; Jordi Frigola-Constansa, and Juan Pares-Corominas, all of Barcelona, Spain, assignors to Laboratorios del Dr. Esteve, S.A., Barcelone, Spain

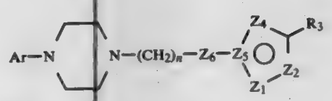
Filed Jan. 27, 1992, Ser. No. 825,929

Claims priority, application France, Jan. 28, 1990, 90 00923

Int. Cl.[5] A61K *31/495;* C02D *403/00*

U.S. Cl. 514—253 8 Claims

1. A heterocyclic compound characterized in that it has the formula I



in which

n may have values 1 to 6,

Ar represents an aromatic radical selected from the group consisting of phenyl, phenyl substituted with a methoxy or a halogen atom, a 3-(1, 2-benzisothiazole radical) and a 2-N-methyl-imidazole radical,

Z_1 represents a nitrogen atom or a C-R_1 group,

Z_2 represents a nitrogen atom or a C-R_2 group,

Z_4 represents a nitrogen atom or a C-R_4 group,

Z_5 represents a nitrogen atom, and

Z_6 represents a methylene group

and R_1, R_2, R_3 and R_4, which may be identical or different, represent a hydrogen atom, a halogen atom, a lower alkyl radical, a carboxy radical, a carboxomide radical, an alkyl carboxylate radical or a phenyl radical.

5,292,740

SULFONAMIDES

Kaspar Burri, Binningen, Switzerland; Martine Clozel, St. Louis, France; Walter Fischli, Allschwil, Switzerland; Georges Hirth, Huningue, France; Bernd-Michael Löffler, Oberrimsingen, Fed. Rep. of Germany; Werner Neidhart, Bartenheim, France, and Henri Ramuz, Birsfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

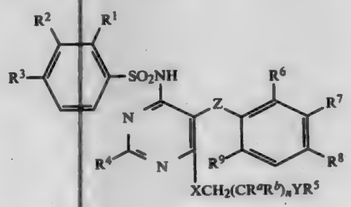
Filed Jun. 9, 1992, Ser. No. 896,015

Claims priority, application Switzerland, Jun. 13, 1991, 1760/91; May 12, 1992, 1516/92

Int. Cl.[5] C07D *403/04, 413/04, 401/14, 403/14, 239/47, 239/48, 401/04;* A61K *31/505*

U.S. Cl. 514—256 33 Claims

1. A compound of the formula



wherein

R^1 is hydrogen, lower-alkyl, lower alkoxy, lower-alkylthio, halogen or trifluoromethyl;

R^2 is hydrogen, halogen, lower-alkoxy, trifluoromethyl or —OCH_2COOR^a; and

R^3 is hydrogen, halogen, lower-alkyl, lower-alkylthio, trifluoromethyl, C_3–C_8 cycloalkyl, lower-alkoxy or trifluoromethoxy; or

R^2 and R^3 together signify butadienyl, methylenedioxy, ethylenedioxy or isopropylidenedioxy;

R^4 is hydrogen, lower-alkyl, C_3–C_8 cycloalkyl, trifluoromethyl, lower-alkoxy, lower alkylthio, lower-alkylthio-lower-alkyl, hydroxy-lower-alkyl, hydroxy-lower alkoxy, lower-alkoxy-lower alkyl, hydroxy-lower-alkoxy-lower-alkyl, hydroxy-lower-alkoxy-lower-alkoxy, lower-alkylsulphinyl, lower-alkylsulphonyl, 2-methoxy-3-hydroxypropoxy, 2-hydroxy-3-phenylpropyl, amino-lower alkyl, lower-alkylamino-lower-alkyl, di-lower-alkylamino-lower-alkyl, amino, lower-alkylamino, di-lower-alkylamino, unsubstituted phenyl amino, phenylamino substituted with halogen, lower-alkyl, lower alkoxy-carboxyl or trifluoromethyl, unsubstituted phenylthio, phenylthio substituted with halogen, lower-alkyl, lower alkoxy carboxyl or trifluoromethyl, unsubstituted phenoxy, phenoxy substituted with halogen, lower alkyl, lower-alkoxy-carboxyl or trifluoromethyl, unsubstituted phenyl-lower alkyl, phenyl-lower-alkyl substituted with halogen, lower-alkyl, lower-alkoxy-carboxyl or trifluoromethyl, unsubstituted heterocyclyl selected from 2-furyl, 3-furyl, pyrimidyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyridyl N-oxide, 1,2-diazinyl, 1,4-diazinyl, morpholino, 2-thienyl, 3-thienyl, isoxazolyl, oxazolyl, imidazolyl, pyrrolyl, benzofuranyl, benzothienyl, indolyl, purinyl, quinolyl, isoquinolyl and quinazolyl or heterocyclyl as defined above substituted by lower alkyl, lower alkoxy, halogen, phenyl, or phenyl-lower alkyl;

R^5 is hydrogen, lower-alkyl, lower-alkanoyl, benzoyl, heterocyclylcarbonyl wherein the heterocyclyl is selected from unsubstituted 2-furyl, 3-furyl, pyrimidyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyridyl N-oxide, 1,2-diazinyl, 1,4-diazinyl, morpholino, 2-thienyl, 3-thienyl, isoxazolyl, oxazolyl, imidazolyl, pyrrolyl, benzofuranyl, benzothienyl, indolyl, purinyl, quinolyl, isoquinolyl and quinazolyl or heterocyclyl as defined above substituted by lower alkyl, lower alkoxy, halogen, phenyl, phenyl-lower alkyl, heterocyclyl methyl wherein the heterocyclyl is selected from 2-furyl, 3-furyl, pyrimidyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyridyl N-oxide, 1,2-diazinyl, 1,4-diazinyl, morpholino, 2-thienyl, 3-thienyl, isoxazolyl, oxazolyl, imidazolyl, pyrrolyl, benzofuranyl, benzothienyl, indolyl, purinyl, quinolyl, isoquinolyl and quinazolyl or heterocyclyl as defined above substituted by lower alkyl, lower alkoxy, halogen, phenyl or phenyl-lower alkyl, or tetrahydropyran-2-yl;

R^6 to R^9 are hydrogen, halogen, trifluoromethyl, lower-alkyl, lower-alkoxy, lower-alkylthio, hydroxy, hydroxy-methyl, cyano, carboxyl, formyl, methylsulphinyl, methylsulphonyl, methylsulphonyloxy or lower-alkyloxycarbonyloxy; or

R^7 together with R^6 or R^8 signify butadienyl, methylenedioxy, ethylenedioxy or isopropylidenedioxy;

Z is —O—, —S—, vinylene, —CO—, $OCHR^{10}$— or —$SCHR^{10}$,

R^{10} is hydrogen or lower alkyl;

X and Y each independently are O, S or NH; or YR^5 is lower-alkylsulphinyl;

R^a, R^b, R^c and R^d each independently are hydrogen or lower-alkyl; or R^c and R^d together are methylene, ethylene or isopropylidene; and

n is 1, 2 or 3,

or a stereoisomer or salt thereof.

5,292,741

MACROCYCLES INCORPORATING QUINAZOLINONES

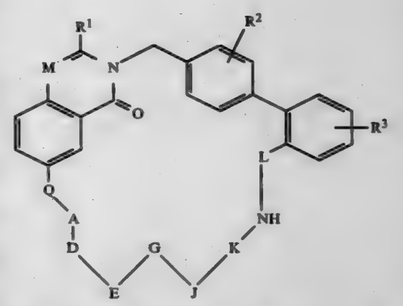
Stephen E. deLaszlo, Atlantic Highlands; Tomasz Glinka, Westfield; Robert B. Nachbar, Washington Crossing; Eric E. Allen, Somerset, all of N.J., and Kristine Prendergast, Doylestown, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 18, 1992, Ser. No. 931,749

Int. Cl.[5] C07D *515/18, 515/22;* A61K *31/395, 31/38*

U.S. Cl. 514—257 10 Claims

1. A compound of structural formula I:



or a pharmaceutically acceptable salt thereof, wherein:

Q is —$N(R^4)$— or



R^1 is

a) aryl,

b) C_{1-6} alkyl or C_{2-5} alkenyl, each of which is unsubstituted or substituted with aryl, C_{3-7} cycloalkyl, halo, CF_3 or CF_2CF_3,

c) C_{3-7} cycloalkyl or

d) perfluoro C_{1-4} alkyl;

R^2 is C_{1-6} alkyl or F;

R^3 is

a) H,

b) C_{1-6} alkyl,

c) aryl,

d) heteroaryl,

e) C_{1-4} alkylamino,

f) di(C_{1-4} alkyl)amino,

g) (C_{1-6} alkoxy)CH_2—,

h) (C_{1-6} alkylthio)CH_2—,

i) C_{1-6} alkylthio,

j) (C_{1-6} alkyl)$_2NCH_2$—,

k) C_{2-6} alkenyl,

l) C_{2-6} alkynyl,

m) aryl C_{1-6} alkyl-, or

n) C_{3-7} cycloalkyl;

R^4 is

a) —COR^6 wherein R^6 is

1) aryl,

2) heteroaryl,

3) morpholinyl,

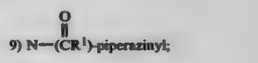
4) piperazinyl,

5) N-(C_{1-4} alkyl)-piperazinyl,

6) N-(aryl)piperazinyl

7) C_{1-6} alkyl, or

8) substituted C_{1-6} alkyl or



9) N—(CR^1)-piperazinyl;

b) —CO_2R^7 wherein R^7 is

1) C_{1-6} alkyl

2) substituted C_{1-6} alkyl,

3) aryl, or

4) heteroaryl;

c) —$CONR^7R^8$ wherein R^8 is C_{1-4} alkyl or H;

d) C_{1-6} alkyl,

e) substituted C_{1-6} alkyl,

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f) aryl, or
g) heteroaryl;
h) hydrogen,
M is —N= or



wherein R^9 is H, C_{1-3} alkyl, F or CF_3;
K is —CO— or —SO_2—;
L is —CO— or —SO_2—
A is —CO—, or —CH_2—;
D is —CH_2—, —O—, —NR^8 or a single bond;
E is $(CH_2)_b$ wherein b=0–6;
G is (a) —$C(R^5)_2$—, wherein the R^5 groups are the same or different and R^5 is C_{1-6} alkyl, substituted C_{1-6} alkyl, aryl, heteroaryl or hydrogen
(b) —O—,
(c) —$S(O)_p$— wherein p is 0–2,
(d) —CH=CH—,
(e) —CO—,
(f) —NR^5CO—,
(g) —$NHSO_2NH$—,
(h) —CO_2—,
(i) —OCONH—,
(j) —$NHCO_2$—,
(k) —NR^7,
(l) aryl,
(m) heteroaryl, or
(n) single bond;
J is
(a) $(CH_2)_n$, wherein n is 1–8, or
(b) single bond
with the provisos that:
1) if A is CO then R^4 is C_{1-6} alkyl, substituted C_{1-6} alkyl, aryl, heteroaryl or H;
2) if A is CO and D is O or NR^8 then:
(a) E is $(CH_2)_n$ wherein n is 2–6;
(b) E is CH_2 and G is —$C(R^5)_2$—; or
(c) E is a single bond and G is aryl or heteroaryl;
3) if A is —(CH_2)—, then R^4 is —COR^6, —CO_2R^7, —$CONR^7R^8$ or H and D is —CH_2— or a single bond;
4) if Q is piperazine then A is CO
wherein:
aryl denotes phenyl or naphthyl, which can be unsubstituted or substituted with C_{1-3} alkyl, C_{1-3} alkoxy, halo, or CF_3; and
heteroaryl means a 5- or 6-membered heteroaromatic comprising up to 3 heteroatoms selected from O, N and S selected from imidazole, pyrazole, triazole, thiazole, oxazole, thiadiazole, oxadiazole, oxathiazole, pyridine, pyrimidine, pyrazine, pyridazine, thiazine, wherein the heteroaromatic can be unsubstituted or substituted with one or two substituents selected from C_{1-3} alkyl, C_{1-3} alkoxy, halo or CF_3.

6. A pharmaceutical composition useful in the treatment of hypertension which comprises a pharmaceutically acceptable carrier and a pharmaceutically effective amount of a compound of claim 1.

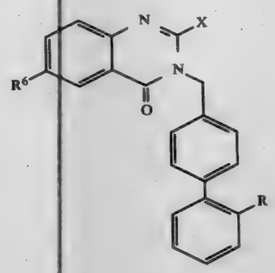
5,292,742

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

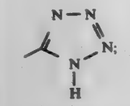
Arunapakam M. Venkatesan, Elmhurst, and Jeremy I. Levin, Nanuet, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,939
Int. Cl.[5] A61K *31/505;* **C07D** *403/14, 403/10*
U.S. Cl. 514—259 **22 Claims**

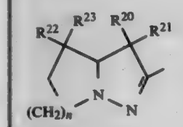
1. A quinazolinone compound having the formula:



wherein
R is

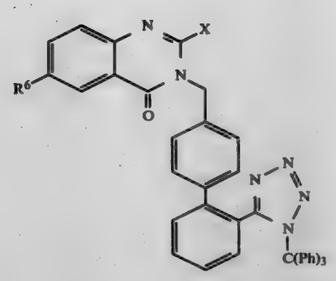


X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is

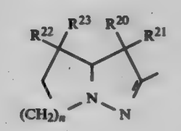


R^{20} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, 0-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{21} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{22} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{23} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
n is 1 or 2;
or pharmaceutically acceptable salts of these compounds.

4. A quinazolinone compound having the formula:

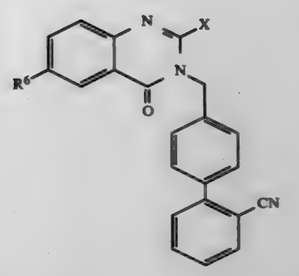


wherein:
X is straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is

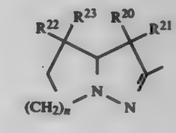


R^{20} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{21} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{22} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{23} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
n is 1 or 2.

6. A quinazolinone compound having the formula:



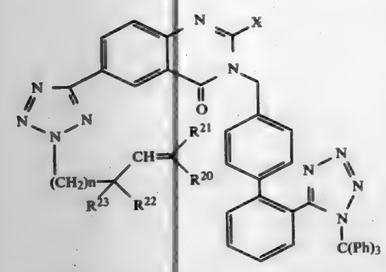
wherein:
X is straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is



R^{20} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{21} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{22} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{23} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
n is 1 or 2.

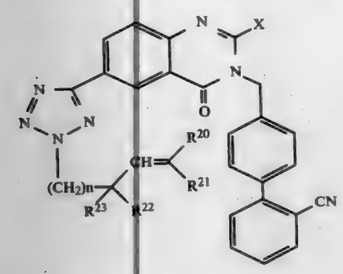
8. A quinazolinone compound having the formula:

VOL 1160 ISS 2 MR 8 1994 UMI



wherein:
X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^{20} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{21} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{22} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{23} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
n is 1 or 2.

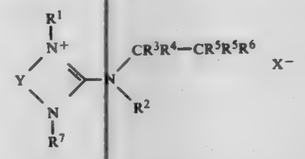
9. A quinazolinone compound having the formula:



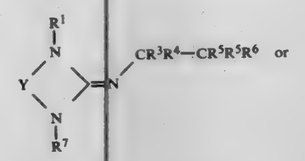
wherein:
X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^{20} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{21} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{22} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
R^{23} is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms), benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms);
n is 1 or 2.

5,292,743
FUNGICIDAL COMPOSITIONS, FUNGICIDAL COMPOUNDS, THEIR PRODUCTION AND USE
John W. Liebeschuetz, Wantage, Great Britain; Michel J. Jung, Tradate, Italy, and Thomas A. K. Smith, Huntington, Great Britain, assignors to DowElanco, Indianapolis, Ind.
PCT No. PCT/GB90/01555, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992
PCT Filed Oct. 9, 1990, Ser. No. 847,017
Int. Cl.[5] A01N *43/54, 55/00*
U.S. Cl. 514—275 **13 Claims**

1. An agricultural fungicidal composition comprising a fungicidally effective amount of a compound of the formula:

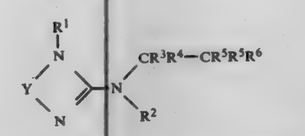


(I-A)



(I-B)

or



(I-C)

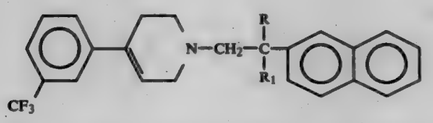
wherein R^1 and R^7 are each independently hydrogen or C_1–C_3 alkyl,
R^2 is hydrogen or C_1–C_6 alkyl,
R^3 and R^4 independently, and each R^5 independently are hydrogen or C_1–C_4 alkyl,
R^6 is phenyl or phenyl substituted with from 1 to 5 groups of the formula R^8,
R^8 is halogen, C_1–C_{10} alkyl, C_1–C_{10} alkoxy, tri-C_1–C_4-alkylsilyl, phenoxy, phenyl, phenyl-C_1–C_2-alkylene, or phenyl-C_2-alkenylene, provided that any R8 that includes a phenyl ring may be substituted on the phenyl ring with one or more groups selected from halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, trihalomethyl, phenyl, or phenoxy,
Y is a group of the formula $—(CR^9R^9)_3—$, wherein each R^9 independently is hydrogen or C_1–C_4 alkyl and X is a suitable counter-ion,
together with an agriculturally acceptable carrier.

5,292,744
1-[PYRI(MI)DYL-(2)]-5-HYDROXY-PYRAZOLE MICROBICIDES
Klaus Sasse, Bergisch-Gladbach; Michael Schwamborn; Peter Wachtler, both of Cologne; Monika Frie, Odenthal; Georg-Wilhelm Ludwig, Krefeld; Wilfried Paulus, Krefeld, and Hans-Georg Schmitt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 731,680, Jul. 17, 1991, Pat. No. 5,175,176. This application Aug. 12, 1992, Ser. No. 929,652
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1990, 4023488
Int. Cl.[5] A01N *43/56, 43/54;* **C07D** *401/04*
U.S. Cl. 514—275 **7 Claims**

1. A compound selected from the group consisting of:
1-(2-pyrimidyl)-3-phenyl-5-hydroxypyrazole;
1-(2-pyrimidyl)-4-benzyl-3-phenyl-5-hydroxypyrazole;
1-(2-pyrimidyl)-4-phenyl-phenyl)-3-methyl-5-hydroxypyrazole;
1-(5-chloro-6-methylamino-2-pyrimidyl)-4-ethyl-5-hydroxy pyrazole; and
1-(5-chloro-6-methylamino-2-pyrimidyl)-4-cyclohexyl-5-hydroxy pyrazole.

5,292,745
USE OF 4-(3-TRIFLUOROMETHYLPHENYL)-1,2,3,6-TETRAHYDROPYRIDINE DERIVATIVES AS FREE RADICAL SCAVENGERS
Michel Heaulme, Montpellier, France, and Umberto Guzzi, Milan, Italy, assignors to Elf Sanofi, Paris, France
Filed Feb. 4, 1992, Ser. No. 830,857
Claims priority, application France, Feb. 5, 1991, 91 01283
Int. Cl.[5] C07D *211/70;* **A61K** *31/44, 31/445*
U.S. Cl. 514—277 **1 Claim**

1. A method of scavenging free radicals in human and animal subjects comprising administering to said subjects an effective amount of a compound of formula (I)

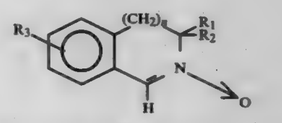


(I)

wherein R and R_1, each independently, represent a hydrogen atom or a methyl group, or of a pharmaceutically acceptable acid addition salt thereof.

5,292,746
CYCLIC NITRONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND THEIR USE IN TREATING SHOCK
Albert A. Carr, Cincinnati; Craig E. Thomas, West Chester; Ronald C. Bernotas, Cincinnati, and George Ku, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 828,075, Jan. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,063, Sep. 12, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 926,109
Int. Cl.[5] A61K *31/47;* **C07D** *217/08, 221/20*
U.S. Cl. 514—278 **34 Claims**

1. A cyclic nitrone of the formula:

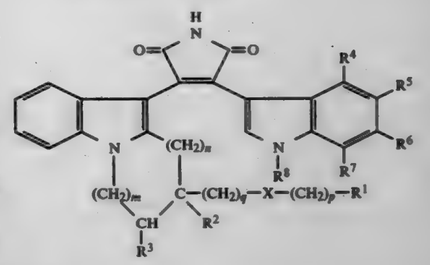


Formula I

in which R_1 and R_2 are each independently represented by a C_{1-3} alkyl or R_1 and R_2 together form a C_{2-7} alkylene chain; n is represented by an integer from 0–2; and R_3 is represented by a substituent selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, $—CF_3$, —OCF3 and —OH.

5,292,747
SUBSTITUTED PYRROLES
Peter D. Davis, Letchworth; Christopher H. Hill, Knebworth, and Goeffrey Lawton, Hitchin, all of England, assignors to Hoffman-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 740,546, Aug. 5, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 949,185
Claims priority, application United Kingdom, Aug. 7, 1990, 9017269; May 8, 1991, 9109959
Int. Cl.[5] A61K *31/44;* **C07D** *471/00*
U.S. Cl. 514—285 **24 Claims**

1. A compound of the formula



I

wherein
R^1 and R^3 together form a bond and R^2 is hydrogen or R^1 and R^2 together form a bond and R^3 is hydrogen;
R^4, R^5, R^6 and R^7 each independently are hydrogen, halogen, C_{1-7} alkyl, halo C_{1-7} alkyl, C_{1-7} alkoxy, nitro, amino, C_{1-7} alkanoylamino, aroylamino, C_{1-7} alkylthio or C_{1-7} alkylsulfonyl;
R^8 is hydrogen, C_{1-7} alkyl or aryl C_{1-7} alkyl;
X is $—N(R^9)—$ or $—CHN(R^{10},R^{11})—$ in which R^9, R^{10} and R^{11} each are hydrogen, C_{1-7} alkyl, aryl C_{1-7} alkyl or C_{1-7} alkanoyl;
m is 0–2 and n is 1–3, with the proviso that the sum of m and n is 1–3;
p is 0–4 and q is 0–4, with the proviso that the sum of p and q is 2–4 when X is $—N(R^9)—$, that the sum of p and q is

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1–5 when X is —CHN(R^{10}, R^{11})— and R^1 and R^2 together form a bond, that the sum of p and q is 0–4 when X is —CHN(R^{10}, R^{11})— and R^1 and R^3 together form a bond, and that p is 1–4 when X is —N(R^9)—, R^1 and R^3 together represent a bond and m is 0,

or a pharmaceutically acceptable salt of an acidic compound of formula I with a base or of a basic compound of formula I with an acid.

5,292,748

PROCESS FOR THE PRODUCTION OF SUBSTITUTED VINYLBENZENES

Aleksander Warm, Visperterminen, and David Laffan, Visp, both of Switzerland, assignors to Lonza, Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 964,056, Oct. 21, 1992. This application Apr. 8, 1993, Ser. No. 44,168

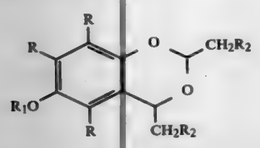
Claims priority, application Switzerland, Oct. 23, 1991, 3101/91

Int. Cl.[5] C07D *319/08*

U.S. Cl. 549—365 **2 Claims**

1. An acetal of general formula:

VIII



wherein R is a lower alkyl group having 1 to 4 C atoms, R_1 is hydrogen or an acetyl group and R_2 is hydrogen, a lower alkyl group having 1 to 4 C atoms or a benzyl group.

5,292,749

ANTIMUSCARINIC BRONCHODILATORS

Alan Stobie, Deal, England, assignor to Pfizer Inc., New York, N.Y.

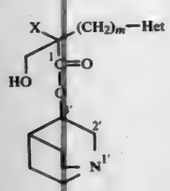
Filed Jun. 5, 1992, Ser. No. 852,261

Claims priority, application United Kingdom, Sep. 6, 1990, 9019472; Mar. 28, 1991, 9106733

Int. Cl.[5] C07D *453/00*; A61K *31/435*

U.S. Cl. 514—305 **14 Claims**

1. A compound of the formula:



(I)

or a pharmaceutically acceptable salt thereof, wherein X is either (a) a phenyl group optionally substituted by 1 or 2 substituents each independently selected from halo, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy and hydroxy or (b) a thienyl group; and "Het" is either (a) a 5-membered nitrogen containing heterocyclic group attached to the adjacent carbon atom either by a carbon or a ring nitrogen atom and which is selected from imidazolyl, pyrazolyl, triazolyl and tetrazolyl, (b) an oxadiazolyl or thiadiazolyl group attached to the adjacent carbon atom by a carbon atom, or (c) a pyridinyl group attached to the adjacent carbon atom by a carbon atom, "Het" being optionally substituted by up to 2 substituents each independently selected from halo, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, amino and azido; and m is 1 or 2.

5,292,750

THERAPEUTIC AGENTS

Yoshiaki Yoshikuni, Uji; Nobutoshi Ojima, Moriyama, and Kazuya Mori, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Division of Ser. No. 747,454, Aug. 12, 1991, Pat. No. 5,192,772, which is a continuation of Ser. No. 281,495, Dec. 8, 1988, abandoned. This application Sep. 8, 1992, Ser. No. 941,792

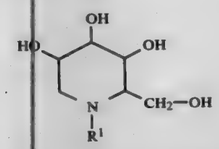
Claims priority, application Japan, Dec. 9, 1987, 62-311348

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—315 **2 Claims**

1. A method of lowering the activity of an α_2-plasmin inhibitor which comprises administering to a human or an animal in need thereof an effective amount sufficient to lower the activity of an α_2-plasmin inhibitor of a compound selected from the group consisting of

a. A compound of the formula



,a pharmaceutically acceptable acid addition salt thereof or a quaternary salt thereof wherein R^1 is hydrogen, alkyl of 1 to 10 carbon atoms, carboxyalkyl of 1 to 10 carbon atoms in the alkyl moiety, lower alkyloxycarbonylalkyl of 1 to 10 carbon atoms in the alkyl moiety, hydroxyalkyl of 1 to 10 carbon atoms in the alkyl moiety, cycloalkyl lower alkyl wherein the cycloalkyl moiety is of 3 to 7 carbon atoms, aryl lower alkyl, aryloxy lower alkyl, alkenyl of 2 to 10 carbon atoms or arylalkenyl of 2 to 10 carbon atoms in the alkenyl moiety.

5,292,751

5,7-DIHYDROXY-2-METHYL-8-(4-(3-HYDROXY-1-(1-PROPYL))PIPERIDINYL)-4H-1-BENZOPYRAN-4-ONE, ITS PREPARATION AND ITS USE

Ramachandra G. Naik, Mulund; Shrikant V. Rao, Dombivili (West); Aftab D. Lakdawala, Bombay; Mandakini V. Shirole, Thane; Bansi Lal, Mulund (West); Noel J. de Souza, Bandra, all of India, and Jürgen Blumbach, Niedernhausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 8, 1992, Ser. No. 865,247

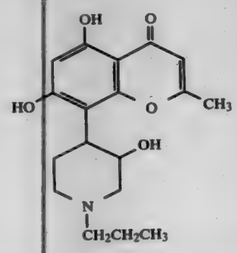
Claims priority, application European Pat. Off., Apr. 10, 1991, 91105643.0

Int. Cl.[5] A61K *31/445*; C07D *405/04*

U.S. Cl. 514—320 **6 Claims**

1. 5,7-Dihydroxy-2-methyl-8-[4-(3hydroxy-1-(1-propyl)-piperidinyl]-4H-1-benzopyran-4-one, a compound of formula I

I



the stereoisomers and the pharmacologically tolerable acid addition salts thereof.

5,292,752

ANTITHROMBOTIC COMPOUNDS

Albert A. Carr; Richard C. Dage; John E. Koerner; Tung Li, all of Cincinnati; Francis P. Miller, Loveland, and Thaddeus R. Nieduzak, Golf Manor, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

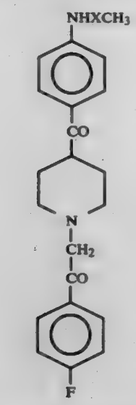
Continuation-in-part of Ser. No. 673,888, Mar. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,651, Nov. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 454,497, Dec. 21, 1989, abandoned. This application Mar. 5, 1992, Ser. No. 847,971

Int. Cl.[5] A61K *31/445*; C07D *211/32*

U.S. Cl. 514—330 **15 Claims**

1. A compound of the formula:

FORMULA I



in which X is represented by CO or SO_2 and the pharmaceutically acceptable acid addition salts thereof.

5,292,753

SEPARATION OF ENANTIOMERS OF CIMATEROL, (-)-CIMATEROL AND THE USE THEREOF IN PHARMACEUTICAL COMPOSITIONS AND ANIMAL FEEDS

Wolfgang Resemann; Adolf Durr; Gunther Engelhardt, all of Biberach, and John F. Quirke, Bingerbruck, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim Vetmedica GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 693,760, Apr. 30, 1991, Pat. No. 5,248,695. This application Jun. 23, 1993, Ser. No. 81,996

Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014252

Int. Cl.[5] A01N *37/34*

U.S. Cl. 514—524 **2 Claims**

1. A pharmaceutical composition, suitable for treating obesity, obstructive lung disorders, allergic bronchial asthma, spastic bronchitis, inflammation or premature labor, comprising the compound according to (—)-1-(4'-amino-3'-cyanophenyl)-2-isopropylaminoethanol and a pharmaceutically acceptable carrier.

5,292,754

TREATMENT FOR HYPERTENSION OR GLAUCOMA IN EYES

Morio Kishi, Kyoto; Kimio Takahashi, Nishinomiya; Kenji Kawada, Toyonaka, and Yasumasa Goh, Sanda, all of Japan, assignors to Shionogi & Co., Ltd., Japan

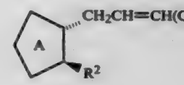
Continuation-in-part of Ser. No. 778,983, Nov. 6, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,179

Claims priority, application Japan, Mar. 8, 1990, 2-57476

Int. Cl.[5] A61K *31/557*

U.S. Cl. 514—530 **19 Claims**

1. A method for treating hypertension or glaucoma in the eye comprising contacting the surface of the eye with a therapeutic amount of a 15-deoxyprostaglandin derivative of the formula (I):

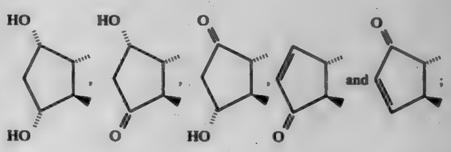


(I)

in which



is a 5 membered ring which is selected from a group consisting of



R^1 is hydrogen or lower alkyl;

R^2 is C_6–C_{12} alkyl, C_6–C_{12} alkenyl or C_6–C_{12} alkadienyl or a pharmaceutically acceptable salt thereof.

5,292,755

USPA BENZOLYGUANIDINES

Heinrich C. Englert; Hans-Jochen Lang, both of Hofheim am Taunus; Wolfgang Linz, Mainz; Bernward Schölkens, Kelkheim, and Wolfgang Scholz, Eschborn, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

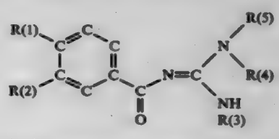
Division of Ser. No. 576,937, Sep. 4, 1990, Pat. No. 5,091,394. This application Jan. 31, 1992, Ser. No. 830,355

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1989, 3929582

Int. Cl.[5] A61K *31/445*; C07D *211/28*; C07C *279/10*

U.S. Cl. 514—331 **4 Claims**

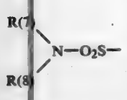
1. A benzoylguanidine of formula I



(I)

in which one of R(1) and R(2) is R(6)—S(O)$_m$— or

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and the other of R(1) and R(2) is H, F, Cl, Br, I, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenoxy which is unsubstituted or carries one to three substituents selected from fluorine, chlorine, methyl or methoxy, R(6)—$S(O)_n$ or



in which R(6) is C_1–C_6-alkyl, C_5–C_7-cycloalkyl, cyclopentylmethyl, cyclohexylmethyl or phenyl which is unsubstituted or carries one to three substituents selected from fluorine, chlorine, methyl or methoxy;

R(7) and R(8) are identical or different and are H or C_1–C_6-alkyl; or R(7) is phenyl-$(CH_2)_m$— where m=1-4, or phenyl which is unsubstituted or carries one or two substituents selected from fluorine, chlorine, methyl or methoxy; or

R(7) and R(8) together are a straight or branched C_4–C_7 chain,

R(3), R(4) and R(5) are hydrogen; and

n is zero, 1 or 2;

and their pharmaceutically tolerable salts,

with the proviso that said benzoylguanidine is not 3-methylsulfonyl-4-(1-piperidinyl)benzoylguanidine, 4-phenylthio-3-sulfamoylbenzoylguanidine, or 3-methylsulfonyl-4-phenylthiobenzoylguanidine.

5,292,756

NOVEL SULFONAMIDE FIBRINOGEN RECEPTOR ANTAGONISTS

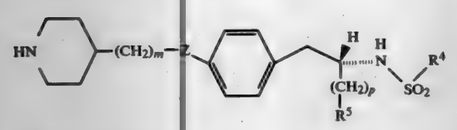
Mark E. Duggan, Narberth; Melissa S. Egbertson, Ambler; Wasyl Halczenko, Hatfield, and George D. Hartman, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 750,647, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 589,130, Sep. 27, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 860,747

Int. Cl.[5] A61K *31/445;* **C07D** *267/22, 211/18;* **C07C** *311/13*

U.S. Cl. 514—331 **16 Claims**

1. A compound of the structural formula



and the pharmaceutically acceptable salts thereof, wherein

R^4 is

aryl,

C_{1-10} alkyl, or

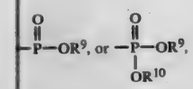
C_{4-10} aralkyl,

wherein aryl is phenyl, pyridyl, thienyl, tetrazole or oxazale;

R^5 is

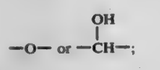


wherein R^8 is hydroxy or C_{1-10} alkyloxy,



wherein R^9 and R^{10} are selected from the group consisting of hydrogen, C_{1-10} alkyl and phenyl C_{1-4} alkyl;

Z is



p is zero or one; and

m is an integer from two to six.

5,292,757

1,4-DIHYDROPYRIDINE COMPOUNDS USEFUL AS REVERSE RESISTANCE AGENTS

Koji Ohsumi; Takeaki Sekiyama; Ryusuke Nakagawa; Takashi Tsuji; Yoshihiro Morinaga, and Kazuo Ohishi, all of Tokyo, Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,159

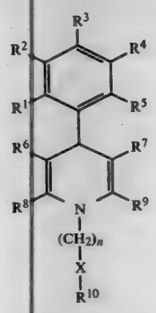
Claims priority, application Japan, Apr. 26, 1991, 3-191362

Int. Cl.[5] C07D *211/90;* **A61K** *31/44*

U.S. Cl. 514—332 **9 Claims**

1. A 1,4-dihydropyridine derivative of Formula 1 or a pharmaceutically acceptable salt thereof:

Formula 1



wherein

each of R^1, R^2, R^3, R^4 and R^5 independently represents a hydrogen atom, a lower alkyl group having 1 to 3 carbon atoms, a hydroxy group, a lower alkyloxy group having 1 to 3 carbon atoms, or a nitro group, or two of the substituents represented by R^1, R^2, R^3, R^4 and R^5 adjacent to each other on the benzene ring are combined together to form an alkylenedioxy group having 1 to 3 carbon atoms;

at least one of R^6 and R^7 represents:

(i) an alkyloxycarbonyl group selected from the group consisting of a pyridylalkyloxycarbonyl group which may be substituted on the pyridyl moiety, a N,N-dialkylaminoalkyloxycarbonyl group in which the dialkylamino moiety may take on a cyclic structure, a N,N-alkylarylaminoalkyloxycarbonyl group, a N,N-diaralkylaminoalkyloxycarbonyl group, and a N,N-aralkylalkylamino-alkyloxycarbonyl group; or

(ii) an alkylaminocarbonyl group selected from the group consisting of a pyridylalkylaminocarbonyl group which may be substituted on the pyridyl moiety, a (N,N-dialkylamino)alkylaminocarbonyl group in which the dialkylamino moiety may take on a cyclic structure, a (N,N-alkylarylamino)alkylaminocarbonyl group, a (N,N-diaralkylamino)alkylaminocarbonyl group, and a (N,N-aralkylalkylamino)alkyl-aminocarbonyl group;

and where when only only one of R^6 and R^7 represents said alkyloxycarbonyl group or said alkylaminocarbonyl group, the other is an unsubstituted alkyloxycarbonyl group;

each of R^8 and R^9 independently represents a hydrogen atom or a lower alkyl group having 1 to 5 carbon atoms;

n represents an integer of 2 to 9;

X represents a methylene group or oxygen atom, wherein the methylene is optionally substituted with a lower alkyl group having 1 to 5 carbon atoms, or a lower alkyloxy group having 1 to 5 carbon atoms; and,

R^{10} represents an aryl group or an aralkyl group, wherein the aryl moiety in the aryl group and aralkyl group is phenyl or naphthyl at said aryl moiety and is optionally substituted with a substituent selected from the group consisting of a halogen atom, a lower alkyl group having 1 to 5 carbon atoms, a lower alkyloxy group having 1 to 5 carbon atoms, a hydroxy group an aryl group, an aryloxy group, an aralkyl group, or an aralkyloxy group, or two substituents adjacent to each other on the benzene ring are combined together to form an alkylenedioxy group having 1 to 3 carbon atoms.

5,292,758

SULFONAMIDE DERIVATIVES

Hiroshi Yoshino, Chiba; Norihiro Ueda, Ibaraki; Hiroyuki Sugumi, Ibaraki; Jun Niijima, Ibaraki; Yoshihiko Kotake, Ibaraki; Toshimi Okada, Ibaraki; Nozomu Koyanagi, Ibaraki; Tatsuo Watanabe, Osaka; Makoto Asada, Ibaraki; Kentaro Yoshimatsu, Ibaraki; Atsumi Iijima, Ibaraki; Takeshi Nagasu, Ibaraki; Kappei Tsukahara, Ibaraki, and Kyosuke Kitoh, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 742,618, Aug. 8, 1991, Pat. No. 5,250,549. This application Jul. 31, 1992, Ser. No. 923,345

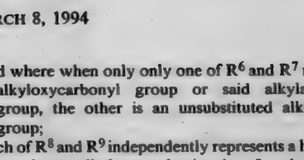
Claims priority, application Japan, Aug. 20, 1990, 2-218710; Mar. 5, 1991, 3-038509; May 27, 1991, 3-121041

Int. Cl.[5] C07D *213/81;* **A61K** *31/44*

U.S. Cl. 514—332 **4 Claims**

1. Sulfonamide derivatives of the formula (I) or pharmacologically acceptable salts thereof:

(I)



wherein:

R^1 represents a hydrogen atom, halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, nitro group, phenoxy group, cyano group, acetyl group, amino group or a protected amino group, R^2 and R^3 may be the same or different from each other and each represent a hydrogen atom, halogen atom, lower alkyl group or lower alkoxy group, R^4 and R^7 may be the same or different from each other and each represents a hydrogen atom or a lower alkyl group, R^5 and R^6 may be the same or different from each other and each represents a hydrogen atom, halogen atom, lower alkoxy group, amino group or amino group substituted with a lower alkyl or a phenyl group, A is =CH—, B is =N—, and E is a pyridyl group or a pyridyl group having from 1 to 3 substituents, said substituents being the same or different from one another and selected from the group consisting of a halogen atom, lower alkyl group, lower alkoxy group, hydroxyl group, protected hydroxyl group, carboxyl group, esterified carboxyl group, amidated carboxyl group, lower alkylthio group and phenoxy group.

5,292,759

O-BENZYLOXIME ETHERS AND CROP PROTECTION AGENTS CONTAINING THESE COMPOUNDS

Siegbert Brand, Birkenheide; Uwe Kardorff, Mannheim; Reinhard Kirstgen, Neustadt; Bernd Mueller, Frankenthal; Klaus Oberdorf, Eppelheim; Hubert Sauter, Mannheim; Gisela Lorenz, Neustadt; Eberhard Ammermann, Ludwigshafen; Christoph Kuenast, Otterstadt, and Albrecht Harreus, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

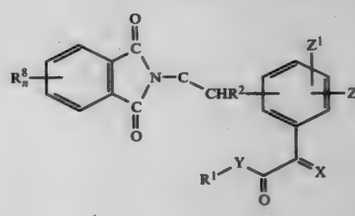
Division of Ser. No. 722,209, Jun. 27, 1991, Pat. No. 5,194,662. This application Oct. 15, 1992, Ser. No. 962,340

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1990, 4020384; Jun. 27, 1990, 4020388

Int. Cl.[5] C07D *401/04, 209/48;* **A01N** *43/38, 43/40*

U.S. Cl. 514—339 **8 Claims**

6. A process for combating fungi, wherein the fungi, or the materials, plants or seeds threatened by fungus attack, or the soil, are treated with a fungicidally effective amount of a compound of the formula



where

X is CH_2, CH—C_1–C_4-alkyl, CH—C_1–C_4-alkoxy, CH—C_1–C_4-alkylthio or N-C_1–C_4-alkoxy,

Y is O, S or NR^5,

R^1, R^2 and R^5 are H or C_1–C_4-alkyl,

Z^1 and Z^2 are identical or different and each is H, halogen, methyl, methoxy or cyano, n is an integer from 1 to 4, and

R^8 is, or, when n>1, the R^8's are identical or different and are each, H, halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, substituted or unsubstituted phenyl, substituted or unsubstituted phenoxy, substituted or unsubstituted benzyloxy, or substituted or unsubstituted pyridyl-2, wherein the substituents are halo, cyano, methyl, or methoxy.

5,292,760

4-HETEROARYL-1,3-BENZODIAZEPINES AND 2-SUBSTITUTED-α-(HETEROARYL)BENZENEETHANAMINES

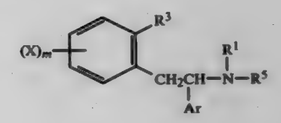
Lawrence L. Martin, Lebanon; Joseph F. Payack, Somerset, and Salvatore M. Brucato, Carteret, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation of Ser. No. 632,556, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 331,429, Mar. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 275,804, Nov. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 129,820, Dec. 7, 1987, abandoned. This application Apr. 22, 1992, Ser. No. 872,215

Int. Cl.[5] C07D *33/20, 213/38;* **A61K** *31/44, 31/38*

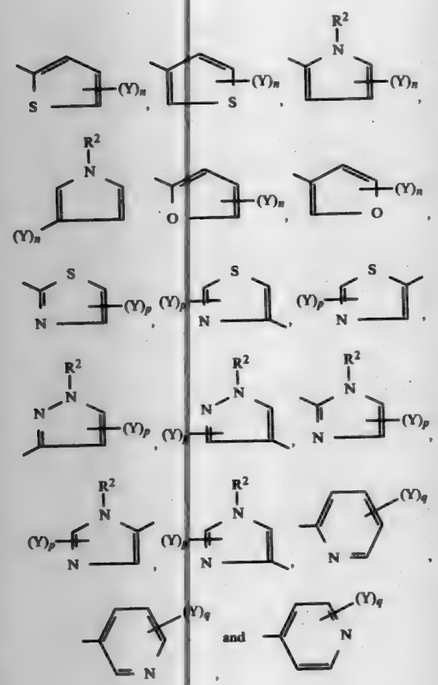
U.S. Cl. 514—357 **72 Claims**

1. A compound of the formula:



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wherein Ar is selected from the group consisting of



wherein R^2 is hydrogen, loweralkyl or loweralkanoyl, Y is selected from the group consisting of halogen, hydroxyl, loweralkyl, loweralkoxy and trifluoromethyl, n is an integer having a value from 0 to 3 inclusive, p is an integer having a value of 0 or 1, and q is an integer having a value from 0 to 4 inclusive; X is selected from the group consisting of halogen, hydroxyl, nitro, loweralkyl, loweralkoxy, and trifluoromethyl; m is an integer having a value from 0 to 3 inclusive; R^1 is selected from the group consisting of hydrogen, loweralkyl, and aralkyl; R^3 is hydroxy, loweralkoxy, amino, loweralkylamino, diloweralkylamino, nitro, or $NR^6C(O)R^4$ wherein R^4 and R^6 are independently hydrogen or loweralkyl; and R^5 is hydrogen, loweralkyl or $C(O)R^7$ where R^7 is hydrogen or loweralkyl; wherein for each value of m, n, p or q each X or Y may be the same or different; the geometrical isomers, optical antipodes or pharmaceutically acceptable acid addition salts thereof.

5,292,761

PIPERIDINE, TETRAHYDROPYRIDINE AND PYRROLIDINE COMPOUNDS

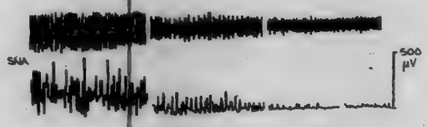
Gilbert Lavielle, La Celle Saint Cloud; Michel Laubie, Vaucresson, and Francis Colpaert, Le Vesinet, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 723,757, Jul. 1, 1991. This application Nov. 5, 1992, Ser. No. 972,120

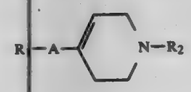
Claims priority, application France, Jul. 10, 1990, 90 08729

Int. Cl.[5] A61K *31/44*; C07D *211/70*

U.S. Cl. 514—357 6 Claims



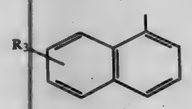
1. A compound selected from three of the formula I:



(I)

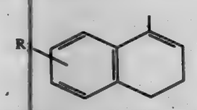
in which

R_1 represents a naphthyl radical, of formula y_1:



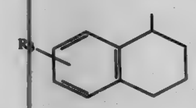
(y_1)

a dihydronaphthyl radical, of formula y_2:



(y_2)

a tetrahydronaphthyl radical of formula y_3:

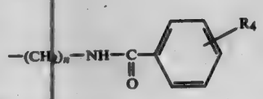


(y_3)

in which formulae R_3 represents hydrogen, halogen, an alkyl having 1 to 6 carbon atoms inclusive, hydroxyl, or alkoxy having 1 to 6 carbon atoms inclusive,

R_2 represents:

hydrogen, or alkyl having 1 to 6 carbon atoms inclusive, or aminoalkyl having 1 to 6 carbon atoms, inclusive cyanoalkyl having 1 to 6 carbon atoms inclusive or a radical or formula w_1:



(w_1)

in which

n is 1–6, inclusive and

R_4 represents hydrogen, halogen, alkyl having 1 to 6 carbon atoms inclusive or alkoxy having 1 to 6 carbon atoms inclusive,

on condition, however, that

when R_1 is a radical y_1 and R_3 represents hydrogen R_2 does not at the same time represent a hydrogen, and

its possible stereoisomers,

and its addition salts with a pharmaceutically acceptable acid.

5,292,762

HALOPROPARGYL COMPOUNDS, COMPOSITIONS, USES AND PROCESSES OF PREPARATION

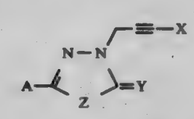
Adam C. Hsu, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 370,373, Jun. 22, 1988. This application May 29, 1990, Ser. No. 530,770

Int. Cl.[5] C07D *285/13, 285/135*; A01N *43/82*

U.S. Cl. 514—363 6 Claims

1. A compound of the formula



(I)

wherein A is selected from the group consisting of hydrogen, (C_1–C_{18}) straight or branched alkyl; (C_3 to C_8) cycloalkyl; (C_3 to C_6) alkenyl; (C_3 to C_5) alkynyl; (C_7 to C_{12}) aralkyl; (C_6 to C_{12}) aryl; (C_6 to C_{12}) aryl substituted with 1 to 3 substituents selected from the group consisting of halogen, (C_1 to C_4) alkyl (C_1 to C_4) alkoxy, nitro, cyano, carboxyl (C_1 to C_4) alkoxycarbonyl, (C_1 to C_4) alkyl thio, -S(O)nR^2 where n is 1 or 2 and R^2 is (C_1–C_4) alkyl; and a halo-substituted, nitro-substituted, or un-substituted moiety selected from the group consisting of 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridyl, 3-pyridyl, and 4-pyridyl;

Y is selected from the group consisting of O, S, and N–R;

Z is S;

R is selected from the group consisting of hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkenyl, substituted or unsubstituted alkynyl, substituted or unsubstituted phenyl, and substituted or unsubstituted heterocyclic; and

X is selected from the group consisting of I and Br.

5,292,763

SYNERGISTIC MICROBICIDAL COMBINATIONS CONTAINING 4,5-DICHLORO-2-OCTYL-3-ISOTHIAZOLONE AND CERTAIN COMMERCIAL BIOCIDES

Jenin C. Hsu, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 591,316, Oct. 1, 1990, abandoned, which is a division of Ser. No. 431,367, Nov. 2, 1989, abandoned. This application Dec. 19, 1991, Ser. No. 810,602

Int. Cl.[5] A61K *31/425*

U.S. Cl. 514—372 2 Claims

1. A microbicidal composition the first component of which is 4,5-dichloro-2-octyl-3-isothiazolone and the second component is 2-bromo-2-nitropropanediol; wherein the weight ratio of the first component to second component is in the range of from about 1:0.4 to about 1:100.

5,292,764

AZOLE DERIVATIVES FOR PROTECTING INDUSTRIAL MATERIALS FROM BACTERIA

Masato Arahira; Toshihide Saishoji, both of Iwaki; Katsuhisa Ohsugi, Tokyo, and Satoru Kumazawa, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 604,397, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 344,932, Apr. 28, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 918,152

Claims priority, application Japan, May 10, 1988, 63-111713; Aug. 12, 1988, 63-200051

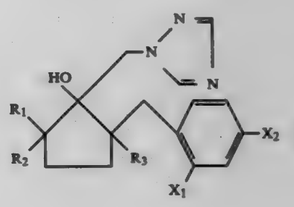
Int. Cl.[5] A61K *31/41, 31/415*

U.S. Cl. 514—383 6 Claims

1. A treated industrial material resistant to deterioration by bacteria noxious to the untreated industrial material,

wherein the industrial material is selected from the group consisting of paper, pulp, fibers, leather, rubber and synthetic resins;

said industrial material having been treated with a triazole derivative in an amount which renders said industrial material bactericidally resistant to deterioration by said bacteria, said triazole derivative being a compound represented by the following formula (I):



(I)

wherein

X_1 and X_2 individually are selected from the group consisting of a hydrogen atom, a halogen atom, and C_1–C_4 alkyl, phenyl and cyano groups, R_1 and R_2 individually are selected from the group consisting of a hydrogen atom and C_1–C_5 alkyl groups, and R_3 is selected from the group consisting of a hydrogen atom and C_1–C_3 alkyl groups; and

wherein

(i) when R_1, R_2, R_3 and X_1 are hydrogen atoms, X_2 is selected from the group consisting of cyano, phenyl, fluorine, chlorine and bromine;

(ii) when R_1, R_2 and R_3 are hydrogen atoms and X_1 is a fluorine atom, X_2 is selected from the group consisting of fluorine and chlorine;

(iii) when R_1, R_2 and R_3 are hydrogen atoms and X_1 is a chlorine atom, X_2 is a chlorine atom;

(iv) when R_1 and R_2 are individually selected from the group consisting of a hydrogen atom and C_1–C_5 alkyl groups, R_3 is a hydrogen atom, and X_1 is a hydrogen atom, X_2 is selected from the group consisting of C_1–C_4 alkyl and phenyl groups, fluorine, chlorine and bromine, provided that one of R_1 and R_2 is not a hydrogen atom;

(v) when R_1 and R_2 are individually selected from the group consisting of a hydrogen atom and C_1–C_5 alkyl groups, R_3 is a hydrogen atom and X_1 is chlorine or fluorine, X_2 is chlorine provided that one of R_1 and R_2 is not a hydrogen atom; and

(vi) when R_1 and R_2 are individually a C_1–C_5 alkyl group and R_3 is a C_1–C_3 alkyl group, X_1 is a hydrogen atom and X_2 is a chlorine atom.

VOL 1160 ISS 2 MR 8 1994 UMI

5,292,765

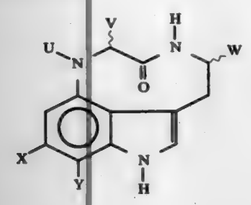
NEUROPROTECTION BY INDOLACTAM V AND DERIVATIVES THEREOF

Dennis W. Choi, and Dean M. Hartley, both of Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 562,680, Aug. 3, 1990, Pat. No. 5,089,517. This application Nov. 27, 1991, Ser. No. 800,148
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] A01N *43/90*; C07D *487/02*
U.S. Cl. 514—411 12 Claims

1. A method for reducing adverse effects of neurotoxic injury, which comprises:

administering to a patient susceptible to neurotoxic injury an amount sufficient to reduce said effects of a compound having an indolactam V ring system, wherein said compound has a formula



wherein:

U is H or methyl;

V is H or an alkyl group;

W is H, an alkyl group, or an alkyl group substituted with a hydroxyl group: and

X and Y independently represent hydrogen or a hydrophobic substituent containing up to 15 carbon atoms, with the proviso that said hydrophobic substituent is not a hydrocarbon substituent and X and Y are not simultaneously hydrogen.

5,292,766

METHOD FOR IMPROVING PRIMARY MEMORY AND/OR LEARNING

James A. Clemens, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 25, 1992, Ser. No. 857,521
Int. Cl.[5] A61K *31/405*
U.S. Cl. 514—415 9 Claims

1. A method for improving primary memory or learning in a mammal, comprising administering to a mammal in need of primary memory or learning improvement a 4-amino benz[cd]indole selected from the group (±)-4-(di-*n*-propyl)amino-6-methoxy-1,3,4,5-tetrahydrobenz[cd]indole, (±)-6-acetyl-4-(di-*n*-propylamino)-1,3,4,5-tetrahydrobenz[cd]indole, (±)-6-(2,2-dimethylpropanoyl)-4-(di-*n*-propylamino)-1,3,4,5-tetrahydrobenz[cd]indole, (2aS,4R)-,(2aR,4S)-6-acetyl-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]-indole, (2aR,4R)-6-acetyl-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, (2aS,4S)-6-acetyl-4-(di-*n*-propylamino)-1,2,2a3,4,5-hexahydrobenz[cd]indole, (+)-(2aS,4R)-6-acetyl-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, (−)-2aR,4S)-6-acetyl-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, (+)-(2aS,4R)-6-(2-methylpropanoyl)-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, (+)-(2aS,4R)-6-(benzoyl)-4-(di-*n*-propylamine)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, and (+)-(2aS,4R)-6-(propanoyl)-4-(di-*n*-propylamino)-1,2,2a,3,4,5-hexahydrobenz[cd]indole, or a pharmaceutically acceptable salt thereof, which is a 5-hydroxytryptamine receptor agonist selective for the 5-hydroxytryptamine-1A subtype, at a dose effective for improving primary memory or learning.

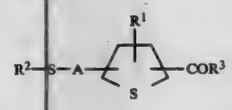
5,292,767

TETRAHYDROTHIOPHENE DERIVATIVES

Shiro Mita, Ashiya; Yoichi Kawashima, Kyoto; Nobuharu Kato, Osaka; Hiroshi Suhara, Osaka; Koji Yoneda, Osaka, and Masataka Morishita, Osaka, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 19,202
Claims priority, application Japan, Feb. 28, 1992, 4-79249
Int. Cl.[5] A01N *43/08*; A61K *31/38*; C07D *409/12, 233/54*
U.S. Cl. 514—444 15 Claims

1. A compound of the formula (I) and pharmaceutically acceptable salts thereof,



(I)

wherein

R^1 is hydrogen or lower alkyl;

R^2 is hydrogen, lower alkyl, lower alkenyl, lower alkanoyl, phenyl lower alkyl, phenylcarbonyl, phenyl lower alkylcarbonyl, trityl or tetrahydropyranyl, and the phenyl ring of the said phenyl lower alkyl, phenylcarbonyl or phenyl lower alkylcarbonyl is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, carboxy or lower alkoxycarbonyl;

R^3 is hydroxy, lower alkoxy, lower alkenyloxy, phenyl lower alkoxy, N-succinimidoxy, amino or lower alkylamino, and the lower alkyl of the said lower alkylamino is unsubstituted or substituted by imidazolyl, carboxy, amino, lower alkylamino, lower alkoxycarbonylamino, phenyl lower alkoxycarbonylamino or hydroxy, and the phenyl ring of the said phenyl lower alkoxy or phenyl lower alkoxycarbonylamino is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, carboxy or lower alkoxycarbonyl, and

A is straight or branched lower alkylene, and the sulfur atom in the side chain may be directly joined with —CO— to form a thiolactone ring.

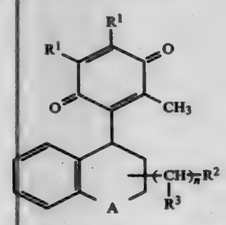
5,292,768

COMPOUND EFFECTIVE AS CEREBRAL INSUFFICIENCY IMPROVER

Toshio Tatsuoka, Nishinomiya; Kenji Suzuki, Osaka; Fumio Satoh, Nagaokakyo; Seiji Miyano, Fukuoka, and Kunihiro Sumoto, Oonojo, all of Japan, assignors to Suntory Limited, Osaka, Japan

Division of Ser. No. 737,717, Jul. 30, 1991, Pat. No. 5,179,092, which is a division of Ser. No. 286,857, Dec. 20, 1988, Pat. No. 5,057,514. This application Nov. 23, 1992, Ser. No. 980,207
Claims priority, application Japan, Dec. 22, 1987, 62-322951; Feb. 3, 1988, 63-21863; Sep. 5, 1988, 63-220497
Int. Cl.[5] A61K *31/35, 31/38*; C07D *311/04, 335/06*
U.S. Cl. 514—456 15 Claims

1. A compound having the formula (I):



wherein A is A is —O— or —S—; R^1 is CH_3 or OCH_3; R^2 is a carboxy, carboxylic acid or carboxylic acid ester; R^3 is H or a lower alkyl; and n is 0 or an integer of 1 to 6, and a salt thereof.

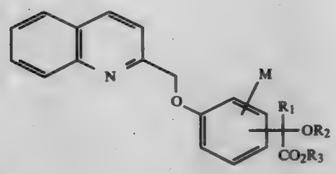
5,292,769

SUBSTITUTED MANDELIC ACID DERIVATIVES AND THEIR USE IN MEDICAMENTS

Klaus-Helmut Mohrs, Wuppertal; Siegfried Raddatz, Cologne; Michael Matzke, Wuppertal; Romanis Fruchtmann, Cologne; Armin Hatzelmann, Konstanz; Christian Kohlsdorfer, Erftstadt; Reiner Müller-Peddinghaus, Bergisch-Gladbach, and Pia Theisen-Popp, Aachen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 934,059
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128681
Int. Cl.[5] C07D *215/16*; A61K *31/47*
U.S. Cl. 514—311 10 Claims

1. A substituted mandelic acid derivative compound of the formula:



wherein

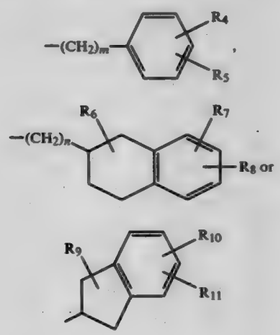
M represents hydrogen, fluorine, chlorine, bromine, trifluoromethoxy or carboxyl; or

represents straight-chain or branched alkyl which has up to 8 carbon atoms and is optionally substituted by hydroxyl, fluorine, chlorine or bromine; or

represents straight-chain or branched alkoxy or alkoxycarbonyl having in each case up to 8 carbon atoms; or

represents phenyl which is optionally substituted by fluorine, chlorine, bromine, nitro, cyano or by straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms;

R_1 represents a group of the formula:



wherein

n and m are identical or different and denote the number 1, 2, 3, 4, 5, 6 or 7; and

R_4, R_5, R_6, R_7, R_8, R_9, R_{10} and R_{11} are identical or different and denote hydrogen, fluorine, chlorine, bromine, trifluoromethyl, trifluoromethoxy or straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms;

R_2 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms; and

R_3 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms;

or a physiologically acceptable salt thereof.

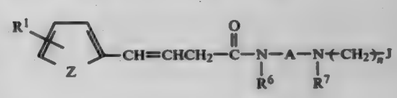
5,292,770

BUTENOIC ACID DERIVATIVES

Norio Minami; Fumihiro Ozaki; Keiji Ishibashi; Yasuhiro Kabasawa; Toshiaki Ogawa; Hideyuki Adachi, and Takanori Kawamura, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 837,599, Feb. 20, 1992, Pat. No. 5,166,188, which is a continuation of Ser. No. 518,508, May 3, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 960,883
Claims priority, application Japan, May 19, 1989, 1-126174; Nov. 29, 1989, 1-309866
Int. Cl.[5] A61K *31/44, 31/415*; C07D *401/04*
U.S. Cl. 514—341 4 Claims

1. A butenoic acid compound having the formula (I) or a pharmacologically acceptable salt thereof:



(I)

wherein

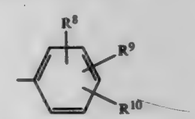
R^1 represents an imidazole group;

Z represents an azomethyne (—N=CH—) group,

R^6 and R^7 may be the same or different from each other and each represent a hydrogen atom or a lower alkyl, cycloalkyl or allyl group;

A represents a $C_{1\sim6}$ alkylene group which may have a lower alkyl or hydroxy-substituted lower alkyl substituent bonded to any carbon of the group;

J represents a group of the formula:



wherein R^8, R^9 and R^{10} may be the same or different, each represent a hydrogen or halogen atom, a lower alkyl, lower alkoxy, hydroxyl, nitro, cyano, trifuloromethyl group, a group represented by the formula:



wherein R^{11} and R^{12} may be the same or different and each represent a hydrogen atom or a lower alkyl group, or an alkanoylamino group, or any two members of R^8, R^9 and R^{10} may form an alkylenedioxy group together with adjacent carbon atoms; and n represents an integer of 1 to 6.

5,292,771

SUBSTITUTED β-DIKETONES AND THEIR USE

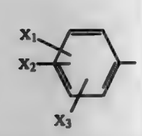
Reijo J. Backström, Helsinki; Erkki J. Honkanen, Vantaa; Jarmo J. Pystynen, Espoo; Anne M. Luiro, Helsinki; Päivi A. Aho, Helsinki; Inge-Britt Y. Linden, Helsinki; Erkki A. O. Nissinen, Espoo, and Pentti Pohto, Helsinki, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

Division of Ser. No. 648,661, Jan. 31, 1991, Pat. No. 5,185,370.
This application Oct. 8, 1992, Ser. No. 958,487
Claims priority, application United Kingdom, Sep. 1, 1988, 8820729; Feb. 2, 1990, 9002337
Int. Cl.[5] A61K *31/38, 31/47, 31/44, 31/345*
U.S. Cl. 514—472 12 Claims

1. A method of treatment of inflammatory bowel disease by administering to a patient in need of such treatment a therapeutically effective amount of the compound of formula I



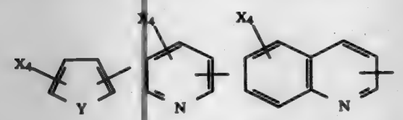
wherein n is 0 or 1, R_1 and R_2 are independently methyl, ethyl or cyclopropyl and R is an unsubstituted or substituted phenyl;



wherein X_1 is hydrogen, hydroxy or C_{1-2} alkoxy which is unsubstituted or substituted by carbocyclic aryl; X_2 and X_3 are independently hydrogen, nitro, cyano, halo, trifluoromethyl, formyl, carboxy, acetamido, or the group

$R_3S(O)_m$—

wherein m is 0, 1 or 2 and R_3 is C_{1-2} alkyl, carbocyclic aryl or carbocyclic aryl C_{1-2} alkyl; or carbamoyl which is unsubstituted or substituted by C_{1-2} alkyl, carbocyclic aryl C_{1-2} alkyl, aryl, or R is one of the following heteroaryl groups;



wherein Y is oxygen or sulfur and X_4 is hydrogen, nitro or halo; or a pharmaceutically acceptable salt or ester thereof to treat inflammatory bowel disease.

5,292,772

METHOD FOR THE PREVENTION AND CONTROL OF EPILEPTIC SEIZURE ASSOCIATED WITH LENNOX-GASTAUT SYNDROME

Robert D. Sofia, Willingboro, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 626,198, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 412,964, Sep. 26, 1989, Pat. No. 4,978,680. This application Oct. 26, 1992, Ser. No. 966,964
Int. Cl.[5] A61K *31/24*
U.S. Cl. 514—534 1 Claim

1. A method for the prevention and control of seizures associated with Lennox-Gastaut syndrome which comprises administering to a warm-blooded animal in need of such treatment 2-phenyl-1,3-propanediol dicarbamate in a daily dosage of from about 100 milligrams to about 5 grams.

5,292,773

TREATING AIDS AND HIV INFECTION WITH METHIONINE

Gerald P. Hirsch, 3136 Brook Dr., Decatur, Ga. 30033-3912, and Robert K. Bayless, 6402 Woodhue Dr., Austin, Tex. 78745-3836

Continuation-in-part of Ser. No. 479,961, Feb. 14, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 845,157
Int. Cl.[5] A01N *37/30, 37/12, 37/44;* A61K *31/13*
U.S. Cl. 514—554 1 Claim

1. A method for ameliorating the inflammatory symptoms of human immunodeficiency virus infection and AIDS in man employing the administration to the subject in need thereof a therapeutic composition in dosage form consisting essentially of an anti-inflammatory amount of methionine compound selected from the group consisting of dl-methionine, methyl, ethyl, propyl and isopropyl esters thereof, N-acetyl-dl-methionine, N-formyl dl-methionine and methyl, ethyl, propyl and isopropyl esters of N-acetyl and N-formly dl-methionine to provide a total daily methionine dosage in the range of 1.0 to 10 grams per 70 kg of body weight and further comprising at least one triglyceride normalizing compound selected from the group consisting of serine and glycine, the serine and glycine are present from 1/5 to 3 times the methionine compound present.

5,292,774

SUBSTITUTION FLUID PREPARATION COMPRISING 3-HYDROXY-BUTYRIC ACID (β-HYDROXYBUTRIC ACID) AND ITS SALTS

Atsushi Hiraide, Osaka, and Masami Katayama, Nishinomiya, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 751,619, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 272,955, Nov. 18, 1988, abandoned. This application Apr. 27, 1993, Ser. No. 53,314
Claims priority, application Japan, Jul. 26, 1988, 63-185725
Int. Cl.[5] A61K *31/19*
U.S. Cl. 514—557 4 Claims

1. A method of supplying an energy source to a patient in a state of being substantially unable to metabolize carbohydrates, the method consisting of administering a substitution fluid preparation until said patient recovers the ability to metabolize carbohydrates, the preparation consisting essentially of:
an effective amount of at least one compound selected from the group consisting of (R)-3-hydroxybutyric acid, (RS)-3-hydroxybutyric acid, sodium (R)-3-hydroxybutyrate, sodium (RS)-3-hydroxybutyrate, potassium (R)-3-hydroxybutyrate and potassium (RS) 3-hydroxybutyrate, and
a pharmaceutically acceptable carrier.

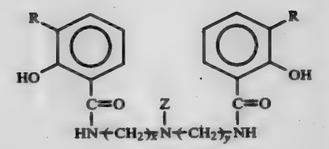
5,292,775

ANTI-NEOPLASTIC, ANTI-VIRAL AND RIBONUCLEOTIDE REDUCTASE ACTIVITY AFFECTING PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

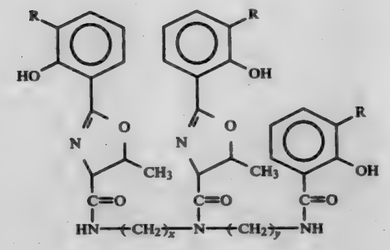
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 645,644, Jan. 25, 1991, Pat. No. 5,173,505, which is a division of Ser. No. 313,734, Feb. 22, 1989, Pat. No. 5,128,353, which is a continuation-in-part of Ser. No. 746,672, Jun. 20, 1985, abandoned. This application Dec. 21, 1992, Ser. No. 993,620
Int. Cl.[5] A01N *43/76;* A61K *31/42*
U.S. Cl. 514—374 9 Claims

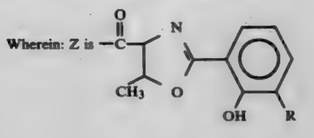
1. A pharmaceutical composition in unit dosage form adapted for administration to a human or non-human animal comprising a) an anti-viral effective amount of a compound of the formula:



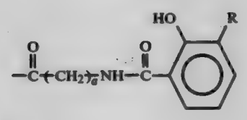
or



Wherein: Z is



or



R is H or OH,
x is 3 or 4,
y is 3 or 4, and
a is 1, 2 or 3, or
a pharmaceutically acceptable salt or complex and b) a pharmaceutically acceptable carrier therefor.

5,292,776

MICROBIAL INHIBITING COMPOSITIONS AND THEIR USE

Deborah K. Donofrio, The Woodlands, Tex., and Wilson K. Whitekettle, Jamison, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 26, 1993, Ser. No. 38,583
Int. Cl.[5] A01N *33/18, 41/10*
U.S. Cl. 514—709 6 Claims

1. A method for controlling the growth of fungal microbes in an aqueous system which comprises adding to an infected aqueous system a synergistic fungicidally effective amount of the mixture of diiodomethyl-p-tolylsulfone and (b) 2-bromo-2-nitropropane-1,3 diol, the weight ratio of (a) to (b) being from about 1:3800 to 1:14.8.

5,292,777

(I) METHOD FOR HYDROPHILIZING ABSORBENT FOAM MATERIALS USING SORBITAN MONOLAURATE

Thomas A. DesMarais, Norwood, and Keith J. Stone, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 743,838, Aug. 12, 1991, abandoned.
This application Apr. 30, 1993, Ser. No. 55,419
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—64 5 Claims

1. A method for preparing a hydrophilized polymeric foam material suitable for absorbing hydrophilic liquids, which
(II) method comprises:
A) polymerizing a water-in-oil emulsion containing polymerizable monomers and from about 0.5% to 20% by weight of the polymerizable monomers of sorbitan monolaurate in the oil phase of said emulsion, to thereby form a polymeric foam material; and
B) thereafter drying said polymeric foam material to remove water therefrom and to leave incorporated within said foam material: (1) no more than about 50% by weight of said foam material of free water; and (2) a substantially uniformly distributed, hydrophilizing amount of said sorbitan monolaurate.

5,292,778

POLYMER-MODIFIED POLYOL DISPERSIONS AND PROCESSES FOR PRODUCTION AND USE THEREOF

Kasper J. Van Veen, and G. Ronald Blair, both of Richmond Hill, Canada, assignors to Woodbridge Foam Corporation, Mississauga, Canada

Filed Nov. 20, 1992, Ser. No. 980,204
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—126 39 Claims

1. A polymer-modified polyol dispersion comprising a polyaddition product dispersed in a polyol, the polyaddition product being present in an amount of from about 25 to about 70 percent by weight based on the total weight of the polyaddition product and the polyol, the dispersion having a viscosity in the range of from about 4,000 to about 50,000 mPa.s, the viscosity remaining substantially the same after production of the polymer-modified polyol dispersion.

5,292,779

CARBORANE-(SILANE OR SILOXANE)-UNSATURATED HYDROCARBON BASED THERMOSETTING POLYMERS

Teddy M. Keller, Alexandria, and Leslie J. Henderson, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 963,194, Nov. 30, 1992. This application Dec. 17, 1992, Ser. No. 991,940
Int. Cl.[5] C08F *2/46;* C08G *77/56*
U.S. Cl. 522—99 20 Claims

1. An organoboron thermoset polymer having a repeating unit comprising at least one carboranyl group, one or more silyl or siloxanyl groups, and at least one alkenyl crosslinked functionality.

5,292,780

COMPOSITIONS FOR FRICTION ELEMENTS

Christopher G. Godfrey, South Glamorgan, and Bryan H. McCormick, Newport, both of United Kingdom, assignors to BP Chemicals Limited, London, England

Filed Jul. 11, 1990, Ser. No. 551,203
Claims priority, application United Kingdom, Jul. 19, 1989, 8916445
Int. Cl.[5] C08J *5/14*
U.S. Cl. 523—152 16 Claims

1. A composition suitable for use in a composite said composition comprising a frictional material and a binder characterised in that the binder comprises a blend of

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a) a polyvinyl alkyl ether (PVAE) and
b) a curable phenolic resin.

5,292,781

PAPER COATING COMPOSITION

William C. Floyd, Chester, S.C., assignor to Sequa Chemicals, Inc., Chester, S.C.

Filed Aug. 6, 1992, Ser. No. 927,058
Int. Cl.[5] B05D *5/04;* **C08L** *3/02, 89/00*
U.S. Cl. 524—17 **11 Claims**

1. Paper coating composition comprising by weight 100 parts of a pigment, about 3 to 20 parts by weight of a binder effective to bind the pigment selected from the group consisting of starch, polyvinyl alcohol, protein and their mixtures, and as an insolubilizer for the binder, a cyclic phosphate salt at a level of about 1 to 15% based on the weight of the binder, wherein the cyclic phosphate salt is selected from the group consisting of trimetaphosphate salt, tetrametaphosphate salt and hexametaphosphate salt or mixtures thereof.

5,292,782

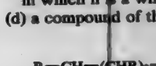
BIODEGRADABLE POLYMERIC COMPOSITIONS BASED ON STARCH AND THERMOPLASTIC POLYMERS

Catia Bastioli, Novara; Vittorio Bellotti, Fontaneto D'Agogna, and Alessandro Montino, Robbio Lomellina, all of Italy, assignors to Novamont S.p.A., Milan, Italy

Continuation of Ser. No. 839,322, Feb. 20, 1992, abandoned. This application Dec. 28, 1992, Ser. No. 996,880
Claims priority, application Italy, Feb. 20, 1991, T091A000118
Int. Cl.[5] C08L *3/00*
U.S. Cl. 524—47 **21 Claims**

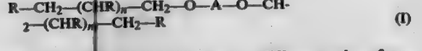
1. A thermoplastic polymeric composition comprising starch, at least one synthetic thermoplastic polymer, and a plasticizer, wherein the starch and the polymer form a structure in which they are at least partially interpenetrated at the molecular level, said composition being obtained by melting at least part of the starch in the presence of the plasticizer, said plasticizer being:

(a) a compound selected from the group consisting of $R—CH_2—(CHR)_n—CH_2—R$ wherein n is an integer from 2 to 4, $CH_3—CH_2—C(CH_2R)_3$, $C(CH_2R)_4$, a vinylic polymer having repeating units of the formula $—(CH_2CHR)_n—$ wherein n is an integer from 3 to 20, and $H(OCH_2—CHR—CH_2)_nR$ wherein n is an integer from 2 to 10, wherein R is selected from the group consisting of:
—O—$(CH_2)_n$—H in which n is 1–18,
—O—CH=CH—R_1 in which R_1 is H or —CH_3,
—O(—CH_2—CHR_1—O)$_n$—H in which R_1 is H or CH_3 and n is 1–20,
—O—$(CH_2)_n$—Ar in which Ar is a simple, substituted, or heterocyclic aromatic radical and n is 0–4,
—OCO—H,
—OCO—$CR_1R_2R_3$ in which the R_1, R_2, and R_3 groups are the same or different and are selected from H, Cl, and F,
—OCO—$(CH_2)_n$—H in which n is 2–18,
—ONO_2,
—OPO_3M_2in which M is H, ammonium, an alkali metal, an alkaline earth, or an organic cation,
—SO_3—Ar in which Ar is benzene or toluene,
—OCO—CH(SO_3M)—COOM in which the Ms are the same or different and are selected from the group consisting of H, an alkali metal, an alkaline earth, ammonium, and an organic cation,
—OCO—B—COOM in which B is $(CH_2)_n$ where n is 1–6 or —CH=CH—, and M is H, an alkali metal, an alkaline earth, —$(CH_2)_n$H where n is 1–6, or an aryl group,
—OCONH—R_1 in which R_1 is H or an aliphatic or aromatic radical,
—O—$(CH_2)_n$—COOM in which n is 1–6 and M is H, an alkali metal, an alkaline earth, ammonium, or an organic cation,
—O—$(CH_2)_n$—$COOR_1$ in which n is 1–6, R_1 is $H(CH_2)_m$— where m is 1–6,
—NR_1R_2 in which R_1 and R_2 are the same or different and are H, CH_3—, CH_3CH_2—, —CH_2—CH_2OH, or a salified amino group,
—O—$(CH_2)_n$—NR_1R_2 in which n is 1–4, R_1 and R_2 are the same or different and are H, CH_3—, CH_3CH_2—, or —CH_2—CH_2OH, and in which the amino group may be salified,



—O—CH_2—CHOH—CH_2—NR_1R_2 in which R_1 and R_2 are the same or different and are selected from the group consisting of H, $H(CH_2)_n$ where n is 1–6, and in which the amino group may be salified,
—O—CH_2—CHOH—CH_2—$R_1{}^+Cl^-$ in which $R_1{}^+$ is trialkylammonium, pyridinium, or picoline,
—O—$(CH_2)_n$—$R_1{}^+Cl^-$ in which n is 1–6 and $R_1{}^+$ is trialkylammonium, pyridinium, or picoline,
—O—$(CH_2)_n$—CN in which n is 1–6,
—O—$(CH_2)_n$—$CONH_2$ in which n is 1–6,
—O—$(CH_2)_m$—SO_2—$(CH_2)_n$—H in which m and n are the same or different and are 1–4,
—$SCSNH_2$,
—O—SiX_3 and —O—$SiOX_3$ in which X may be an aliphatic or an aromatic radical, and
hydroxyl,
wherein at least one of the R substituents is different from hydroxyl;

(b) compound of the formula:



(I)

in which n and m have the same or different values from 1 to 6, the R groups are the same or different and have the meaning attributed to R in subparagraph (a) of this claim, and in which A is selected from the group consisting of:
—CHR_1— where R_1 is H or H—(H—$(CH)_n$— where n is 1–5,
—$(CH_2)_n$— where n is 1–6,
—$(CH_2$—O—$CH_2)_n$ where n is 1–20,
—$(CH_2CH_2$—O)$_n$$CH_2CH_2$— where n is 1–20,
—OC—$(CH_2)_n$—CO— where n is 0–6,
—OC—Ar—CO— in which Ar is a heterocyclic aromatic radical,
—PO_2—, and
—CONH—$(CH_2)_n$NHCO—;

(c) a compound of the formula:



(II)

in which n and m are the same or different and are whole numbers from 1 to 6, the R groups are the same or different and have the meaning attributed to R in subparagraph (a) of this claim, and in which A is selected from the group consisting of —NH— and —NH—(CH_2—CH_2—NH)$_n$— in which n is a whole number from 1 to 6;

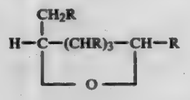
(d) a compound of the formula:



(III)

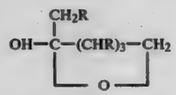
in which the R groups are the same or different and have the meaning attributed to R in subparagraph (a) of this claim;

(e) an aldohexose or a derivative thereof of the formula:



(IV)

or a ketohexose or a derivative thereof of the formula:



(V)

in which the R groups are the same or different and have the meaning attributed to R in subparagraph (a) of this claim; or

(f) a polyol oxidation product having from 1 to 20 repeating hydroxylated units each including from 2 to 6 carbon atoms including at least one aldehydic or carboxylic functional group or mixtures thereof.

5,292,783

ALIPHATIC-AROMATIC COPOLYESTERS AND CELLULOSE ESTER/POLYMER BLENDS

Charles M. Buchanan, Bluff City; Robert M. Gardner, Gray; Matthew D. Wood, Kingsport; Alan W. White, Kingsport; Steven C. Gedon, Kingsport, and Fred D. Barlow, Jr., Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 736,262, Jul. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,225, Nov. 30, 1990, abandoned. This application Nov. 21, 1991, Ser. No. 797,512
Int. Cl.[5] C08L *1/14*
U.S. Cl. 524—37 **58 Claims**

1. A binary blend comprising:

(A) about 5% to about 98% of a C_1–C_{10} ester of cellulose having a DS/AGU of about 1.7 to about 2.75 and an inherent viscosity of about 0.2 to about 3.0 deciliters/gram as measured at a temperature of 25° C. for a 0.5 g sample in 100 ml of a 60/40 parts by weight solution of phenol/-tetrachloroethane, and

(B) about 2% to about 95% of an aliphatic polyester having an inherent viscosity of about 0.2 to about 2.0 deciliters/-gram as measured at a temperature of 25° C. for a 0.5 g sample in 100 ml of a 60/40 parts by weight solution of phenol/tetrachloroethane, said percentages being based on the weight of component (A) plus component (B).

5,292,784

ANTI-GLARE COATING FOR REFLECTIVE-TRANSMISSIVE SURFACES AND METHOD

Walter S. McKinney, and Malcolm J. Chatham, II, both of Houston, Tex., assignors to Ganns Financial Group, Inc., dba Glare Tech Industries Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 355,769, May 23, 1989, abandoned. This application Oct. 23, 1989, Ser. No. 425,703
Int. Cl.[5] B05D *5/00;* **C08K** *3/00*
U.S. Cl. 524—80 **10 Claims**

1. A composition for application to a reflective-transmissive surface for reducing glare therefrom that is polished by wiping with a polish comprising an organic solvent and a wax, said composition comprising:

between about 7.59 and about 22.85% of a resin binder;

between about 63.10 and about 90.50% of a solvent in which said resin binder is solubilized for application to the reflective-transmissive surface;

a quantity of plasticizer compatible with said resin binder sufficient to impart flexibility to said resin binder after application to the reflective-transmissive surface and evaporation of said solvent therefrom; and

between about 0.60 and about 1.60% of a flatting agent suspended in the solubilized resin binder.

5,292,785

BIS-PHOSPHITE STABILIZED COMPOSITIONS

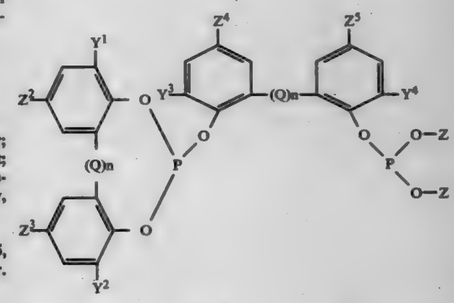
Stephen D. Pastor, Danbury, Conn., and Sai P. Shum, Hawthorne, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 878,675, May 5, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 983,108
Int. Cl.[5] C08K *5/5393, 5/527*
U.S. Cl. 524—117 **12 Claims**

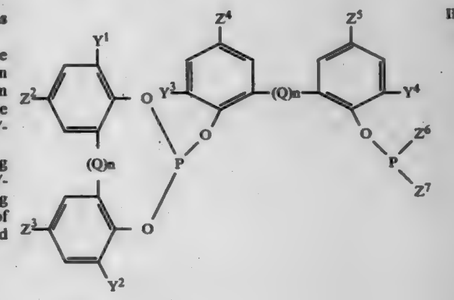
1. A stabilized composition which comprises

(A) an organic material subject ot oxidative, thermal or actinic degradation, and

(B) an effective stabilizing amount of a bisphosphite of formula I, or III



I



III

wherein
n has a value of 0 or 1;
when n is 0, Q is a direct bond,
when n is 1, Q is —CR^1R^2 wherein each R^1 and R^2 independently represents hydrogen, straight chain alkyl of 1 to 18 carbon atoms, branched chain alkyl of 1 to 12 carbon atoms, phenyl, tolyl or anisyl;
each Y^1, Y^2, Y^3, Y^4, Z^2, Z^3, Z^4 and Z^5 independently represents hydrogen, a straight or branched chain alkyl of 1 to 18 carbon atoms, bicycloalkyl of 7 to 10 carbon atoms, phenyl, benzyl, 1-phenylethyl, cyclohexyl, 1-methylcyclohexyl, cyano, halogen, nitro, trifluoromethyl, hydroxy, amino, alkanoyl of 2 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms or $E^1E^2E^3Si$ where E^1, E^2 and E^3 are independently hydrogen, alkyl of 1 to 4 carbon atoms or phenyl;
each Z independently represents alkyl of 1 to 18 carbon atoms, phenyl or said phenyl mono- or di-substituted by alkyl of 1 to 8 carbon atoms or 1-phenylethyl; or by cyano,

halogen, nitro, trifluoromethyl, hydroxy, amino, alkanoyl of 2 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms or $E^1E^2E^3Si$ where E^1, E^2 and E^3 are independently hydrogen, alkyl of 1 to 4 carbon atoms or phenyl; and

Z^6 and Z^7 are independently hydrogen, a straight or branched chain alkyl of 1 to 18 carbon atoms, phenyl, said phenyl substituted by alkyl of 1 to 8 carbon atoms; or are independently benzyl, 1-phenylethyl, cyclohexyl, 1-methylcyclohexyl, cyano, halogen, $-NR^3R^4$, and $-SR^5$ where R^3, R^4 and R^5 are independently hydrogen, a straight or branched chain alkyl of 1 to 18 carbon atoms, phenyl, benzyl, cyclohexyl or 1-methylcyclohexyl.

5,292,786

FLAME RETARDANT BLENDS OF POLYCARBONATE, ABS AND A POLYALKYLMETHACRYLATE HAVING INCREASED WELD LINE STRENGTH

Satish K. Gaggar, Parkersburg, W. Va., and James J. Ziegelmeyer, Henry, Ill., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 22, 1990, Ser. No. 542,124

Int. Cl.[5] C08J *5/10*; C08K *5/52*; C08L *69/00*

U.S. Cl. 524—127 **14 Claims**

1. A polymer blend composition, comprising a polycarbonate polymer, an ABS resin, a phosphate flame retardant compound and a polyalkylmethacrylate homopolymer.

5,292,787

EPOXYSILICONE CONTROLLED RELEASE COMPOSITION

Roy M. Griswold, Bailston Spa, and Michael J. O'Brien, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 30, 1992, Ser. No. 923,114

Int. Cl.[5] C08K *5/24*

U.S. Cl. 524—265 **15 Claims**

1. A curable organopolysiloxane composition comprising:

(A) from about 1 to about 98% by weight of the curable composition of an epoxy-functional siloxane which functions as a release additive to control adhesion comprising unit(s) of the formula (I):

$$R_aR_b^1SiO_{(4-a-b)/2} \quad (I)$$

and unit(s) of the formula (II);

$$RSiO_{3/2} \quad (II)$$

where R is unsubstituted or substituted $C_{(1-8)}$ alkyl, R^1 is a monovalent epoxy-functional organic radical of from about 2 to about 20 carbon atoms; a is 1, 2 or 3; b is 0, 1, 2 or 3; and a+b is 2 or 3; and with the provision that at least one unit of formula (I) contains the monovalent epoxy-functional radical per molecule;

(B) from about 1 to about 98% by weight of the curable composition of a vinyl-functional siloxane of the general formula with the provision that at least 2 to about 6 units of the above formula are vinyl-functional:

$$R_cR_d^2SiO_{(4-c-d)/2}$$

where R is as defined above, R^2 is unsubstituted or substituted vinyl-functional $C_{(1-8)}$ alkenyl; c is 0, 1, 2 or 3; d is 0, 1, 2 or 3; and c+d is 2 or 3.

(C) an effective amount of a temperature-dependent hydrosilation addition reaction inhibitor;

(D) an effective amount of a hydrosilation catalyst; and

(E) from about 1 to about 10% by weight of the curable composition of an organopolysiloxane which functions as a crosslinker of the general formula:

$$R_eH_fSiO_{(4-e-f)/2}$$

where R is as defined in (A); e is 0, 1 or 2; f is 0, 1, 2 or 3; and e+f is 0, 1, 2 or 3 with the provision that sufficient SiH functional units such that the ratio of SiH units to the sum of vinyl and epoxy units of the curable composition is from about 0.8 to about 2.5.

5,292,788

Patent Not Issued For This Number

5,292,789

POLYPHENYLENE SULFIDE RESIN COMPOSITION

Hiromi Ishida, and Hidekazu Kabaya, both of Moka, Japan, assignors to GE Plastics Japan, Ltd., Japan

Filed May 15, 1992, Ser. No. 883,520

Claims priority, application Japan, May 16, 1991, 3-139549

Int. Cl.[5] C08K *5/13*; C08L *53/00*

U.S. Cl. 524—320 **5 Claims**

1. A polyphenylene sulfide resin composition comprising

(A) 35 to 59 parts by weight of polyphenylene sulfide,

(B) 6 to 19 parts by weight of polyphenylene ether,

(C) 11 to 29 parts by weight of polyamide,

(D) 11 to 24 parts by weight of a hydrogenated conjugated diene compound/aromatic monovinyl compound block copolymer, and

(E) 1 to 14 parts by weight of modified polyolefine having at least one functional group selected from the group consisting of carboxylic acid groups and acid anhydride groups, and further comprising, per 100 parts by weight of said A, B, C, D and E in total,

(F) 0.01 to 10 parts by weight of a compatibilizer, and

(G) at least 0.1 part by weight and less than 5 parts by weight of a particulate or laminar inorganic filler, characterized in that said polyamide (C) is a copolymer of nylon-6 and nylon-12, and that the polyphenylene sulfide forms a continuous phase, the polyamide disperses in said continuous phase, and the polyphenylene ether and a most part of said inorganic filler disperse in said polyamide dispersion phase.

5,292,790

CONJUGATED DIENE SERIES RUBBER COMPOSITIONS

Takashi Shimizu, Hachioji; Takashi Kitamura, Musashimurayama, and Ryota Fujio, Akigawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,257

Claims priority, application Japan, Jul. 31, 1991, 3-213232

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—496 **8 Claims**

1. A conjugated diene series rubber composition comprising 100 parts by weight of a diene series rubber containing at least 30 parts by weight of a modified styrene-butadiene copolymer rubber (modified S-SBR) obtained by copolymerizing 1,3-butadiene and styrene at a weight ratio of 80:20–50:50 in a hydrocarbon solvent in the coexistence of an organolithium compound as an initiator and 0.01–0.3 mol per 1 gram equivalent of the organolithium compound of at least one alkali metal compound selected from alkali metal compounds represented by the following general formulae:

$$R^1M,\ R^2OM,\ R^3COOM \text{ and } R^4R^5NM$$

(wherein each of R^1, R^2, R^3, R^4 and R^5 is an akly group, a cycloalkyl group, an alkenyl group, an aryl group or a partially substituted group thereof, and M is Na, K, Rb or Cs) and then modifying an active terminal of the resulting copolymer with a modifier, and 30–80 parts by weight of carbon black having a specific surface area of nitrogen adsorption of not less than 70 m^2/g and a dibutyl phthalate absorption of 70–150 ml/100 g.

5,292,791

MIXTURE SUITED FOR CROSSLINKING POLYMERS, AND PROCESS FOR CROSSLINKING POLYMERS WITH EXTENSION OF THE SCORCH TIME

Jurgen Groepper, Gunzburg, and Harald Hofmann, Weißenhorn, both of Fed. Rep. of Germany, assignors to ELF Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 777,475, Oct. 17, 1991, Pat. No. 5,245,084, which is a continuation of Ser. No. 361,165, Jun. 5, 1989, abandoned. This application Jun. 25, 1993, Ser. No. 83,955

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1988, 3820252

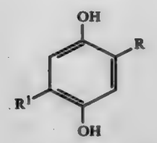
Int. Cl.[5] C08F *8/30*

U.S. Cl. 524—530 **18 Claims**

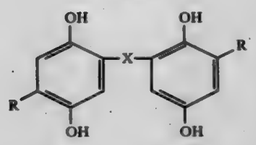
1. A process for preparing a crosslinkable polymeric composition having extended scorch time, which consists essentially of adding to the polymer to be crosslinked a mixture consisting essentially of

(a) at least one organic peroxide suited for crosslinking polymers, said peroxide being at least 40% by weight of said mixture, and being selected from the group consisting of dialkyl peroxides, ketal peroxides, peresters, dialkyl peroxide perketals, diaryl peroxides, monoperoxy carbonates and mixtures thereof,

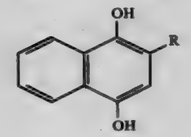
(b) at least one hydroquinone derivative selected from the group represented by the general formulas I, II and III



(I)



(II)



(III)

wherein R and R^1, which may be the same or different, represent H, t-alkyl, t-cycloalkyl, or aryl-t-alkyl and X represents C_{1-18}-alkylene which may be substituted by substituents selected from among the groups consisting of C_{1-10}-alkyl, C_{1-10}-alkoxy phenyl and mixtures thereof; C_{2-18}-alkenylene or C_{2-18}-alkpolyenylene both of which may be substituted with substituents selected from among the group consisting of C_{1-10} alkyl, or $-(CR^2R^3)n-Ar-(CR^2R^3)m$ and mixtures thereof wherein R_2 and R_3 may be the same or different and represent hydrogen or C_{1-10} alkyl, Ar represents phenyl or naphthyl, n and m may each vary from 0 to 18, and $n+m \leqq 18$, and the hydroquinones of the formula III may be substituted by C_{1-10} alkyl on the benzene ring of the naphthalene structure which is not substituted by the hydroxy groups and R; and

(c) at least one crosslinkage promoter.

5,292,792

CONDUCTIVE POLYMERS

Evan B. Carew, 23131 Lodge La., Dearborn, Mich. 48124

Continuation of Ser. No. 529,958, May 29, 1990, Pat. No. 5,130,380. This application Apr. 21, 1992, Ser. No. 871,338

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] C08F *8/00*

U.S. Cl. 524—550 **1 Claim**

1. An ultraviolet light absorbant and infrared radiation reflective intrinsically conductive coating for transparent and semitransparent materials including glass and ceramics, comprising an intrinsically doped alkali metal polyacetylide solution in an organic solvent carrier.

5,292,793

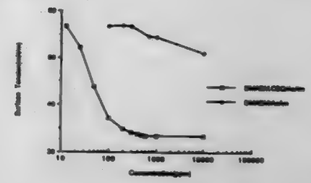
HYDROPHOBIC POLYELECTROLYTES USED IN COLOR REMOVAL

Manian Ramesh, Naperville; Chandrashekar S. Shetty, Lisle, and Martha R. Finck, Countryside, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 14, 1992, Ser. No. 913,244

Int. Cl.[5] C08L *39/00, 77/00*; C08F *220/56, 214/00*

U.S. Cl. 524—555 **8 Claims**



1. A color removal agent which consists essentially of a hydrophobic polyelectrolyte copolymer, said hydrophobic polyelectrolyte copolymer consisting of an acrylamide, a hydrophobic monomer selected from the group consisting of: dimethylaminoethylacrylates having C8 to C20 quaternaries and dimethylaminoethylmethacrylates having C8 to C20 quaternaries, water and a polymer initiator.

5,292,794

REMOVABLE PROTECTIVE COATING COMPOSITION FOR SPRAY PAINTING AREAS

Michael A. Maginnis, Dover, N.J., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 1, 1991, Ser. No. 724,002

Int. Cl.[5] C08F *8/42*

U.S. Cl. 524—556 **14 Claims**

1. A protective coating composition consisting essentially of:

(a) about 50 to 95% water; and

(b) about 50 to 5% of a random ionic copolymer consisting of monomeric repeating units derived from the following:

i) an α-olefin of the formula $RCH=CH_2$, wherein R is selected from the group consisting of hydrogen and alkyl radicals having from 1–8 carbon atoms; and

ii) an α,βethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid and ethacrylic acid, wherein at least 50% of the carboxylic acid groups in said α,βethylenically unsaturated carboxylic acid are neutralized with metal ions; and,

wherein following application of paint over said composition, said composition may be removed from a surface by washing with water.

VOL 1160 ISS 2 MR 8 1994 UMI

5,292,795

VERY FINE STABLE DISPERSIONS OF BLOCK COPOLYMERS

Jeffrey G. Southwick, Houston, and David M. Austgen, Jr., Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 8, 1992, Ser. No. 880,946
Int. Cl.[5] C08L 57/00, 95/00; C09D 5/02
U.S. Cl. 524—562 6 Claims

1. A stable polymer dispersion having an average particle size of no more than 1 micron comprising water, a surfactant and a block copolymer having a molecular weight of at least 1,000 comprising at least one polymer block formed of a conjugated diene and/or a vinyl aromatic hydrocarbon and at least one acrylic monomer block with the structure



wherein R_1 is selected from the group consisting of hydrogen, phenyl and alkyl radicals which are linear or branched and contain from 1 to 10 carbon atoms, and R_2 is a cyclic or non-cyclic alkyl radical which is branched at the first carbon atom, contains from 1 to 14 carbon atoms and may contain a tertiary amine or an ether linkage.

5,292,796

UREA-ALDEHYDE CONDENSATES AND MELAMINE DERIVATIVES COMPRISING FLUOROCHEMICAL OLIGOMERS

Rudolf J. Dams, and Johan E. De Witte, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 2, 1991, Ser. No. 679,652
Int. Cl.[5] C08L 61/32; C08G 12/40; B32B 27/06, 27/08
U.S. Cl. 524—598 31 Claims

1. A fluorochemical composition comprising one or more fluorinated compounds, each of the latter comprising:

a fluorochemical oligomeric portion comprising an aliphatic backbone with a plurality of fluoroaliphatic groups attached thereto, each fluoroaliphatic group having a fully fluorinated terminal group and each independently linked to a carbon atom of the aliphatic backbone through an organic linking group, wherein the oligomeric portion is bonded through a linking group selected from the group consisting of —O—, —S—, —NH—, and —CO_2—, to a moiety comprising a group derived from an amino resin.

5,292,797

WATER-SOLUBLE VINYL POLYMER SUSPENSION FOR USE AS A THICKENING AGENT, AND PROCESS FOR ITS PREPARATION

Ernst Göldner, Riedlingen, and Martina Haas, Griesheim, both of Fed. Rep. of Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 992,757
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141693
Int. Cl.[5] C08K 5/05
U.S. Cl. 524—761 6 Claims

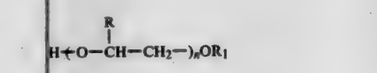
1. A water-soluble polymer suspension comprising more than 12% by weight of a copolymer comprising

a) 30 to 99.99% by wt. of an alkali, ammonium, or amine salt of acrylic or methacrylic acid or a mixture thereof,

b) 0.01 to 5% of a crosslinking monomer having at least two polymerizable double bonds and

c) 0 to 69.99% by wt. of one or more hydrophilic comonomers different from a) and b) above,

and at least one solvent selected from the group consisting of oligoalkylene oxide compounds of formula I



where

R=H or CH_3

R_1=H, CH_3 or C_2H_3

n=2, 3 or 4,

wherein said suspension contains no more than 0.5% by weight of water, based on the total amount of said at least one solvent.

5,292,798

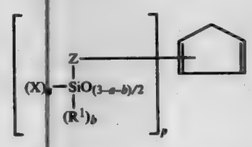
CYCLOPENTADIENYL AND/OR CYCLOPENTADIENYLENE AND/OR DICYCLOPENTADIENYLENE SUBSTITUTED POLYORGANOSILOXANES CROSSLINKABLE INTO ELASTOMERIC STATE

Jean-Marc Frances, Villeurbanne, and Frederic Leising, Mornant, both of France, assignors to Rhone-Poulenc Chimie, Courvevoie, France

Filed Apr. 30, 1992, Ser. No. 876,523
Claims priority, application France, Apr. 30, 1991, 91 05648
Int. Cl.[5] C08K 3/08
U.S. Cl. 524—779 9 Claims

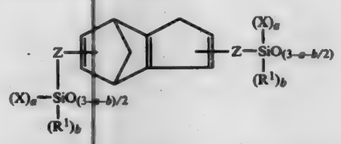
1. A polyorganosiloxane polymer comprising a polysiloxane (P_1) having, per molecule, at least one structural unit of the formula:

(I)



and/or a polysiloxane (P_2) having, per molecule, at least one structural unit of the formula:

(I')



in which formulae the radicals X, which may be identical or different, are each a hydrolyzable halogen atom, N-substituted amino, N-substituted amido, N,N-disubstituted amino, ketiminoxy, aldiminoxy, alkoxy, acyloxy, enoxy or alkoxyalkyleneoxy radical; the radicals R^1, which may be identical or different, are each a monovalent hydrocarbon radical having from 1 to 10 carbon atoms or a monovalenet hydrocarbon radical having from 1 to 10 carbon atoms substitued by halogen atoms or cyano groups; Z is a straight or branched chain divalent saturated hydrocarbon radical having from 1 to 10 carbon atoms; a is zero, 1 or 2; b is zero, 1or 2; a+b is at most 2; and p is 1 or 2, with the proviso that said polysiloxane (P_1) has, per molecule, at least one structural unit (1) if a is other than zero and at least two structural units (1) if a is zero.

5,292,799

SOLVENT-FREE, COLD-SETTING ORGANOSILOXANE COMPOSITION AND ITS USE

Hiroyuki Naito; Tomio Suzuki, both of Tokyo, and Kimie Watanabe, Funabashi, all of Japan, assignors to Suzuki Sangyo Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,478
Claims priority, application Japan, Aug. 5, 1992, 3-205311
Int. Cl.[5] C08K 3/10
U.S. Cl. 524—783 21 Claims

1. A solvent-free, cold-setting ternary organosiloxane composition, which contains (A) liquid organopolysiloxane, (B) a cross-linking agent, and (C) a curing catalyst, said organopolysiloxane (A) constituted by a organosilicon group of X—Si wherein X represents a hydrogen atom or a monovalent hydrocarbyl group and functional side chain of OR wherein R represents a hydrogen atom, a C_1–C_5 alkyl group or an acyl group, said cross-linking agent (B) being at least one of an organoboron compound or an organosilicon compound having at least one functional group selected from the group consisting of an alkoxy group, an acyloxy group and an oxime group, and said curing catalyst (C) being a metal-containing organic compound, with the total content of the metal elements of the ternary composition being 40% by weight or more in terms of $MO_{y/2}$ wherein M represents aluminum, boron, silicon, titanium or zirconium, and y represents a valency of the metal elements.

5,292,800

WATER-IN-OIL POLYMER EMULSIONS

Dietmar Moench, Weinheim; Heinrich Hartmann, Limburgerhof, and Hans-Ulrich Wekel, Ellerstadt, all, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 929,025
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127571; Nov. 26, 1991, 4138791
Int. Cl.[5] C08K 5/11
U.S. Cl. 524—801 2 Claims

1. A water-in-oil polymer emulsion which contains a water-soluble or water-swellable polymer finely distributed in a continuous, water-immiscible organic phase, a water-in-oil emulsifier and, optionally, a wetting agent, wherein the continuous organic phase consists of an oil of vegetable or animal origin and contains, as a water-in-oil emulsifier, a compound which is obtainable by

(A) reacting a C_{10}–C_{22}-fatty alcohol with epichlorohydrin in a molar ratio of from 1:0.5 to 1:1.5 to give a glycidyl ether,

(B) reacting the glycidyl ether with (1) a saturated C_2–C_6-alcohol containing from 2 to 6 OH groups or (2) the monoether thereof with a C_{10}–C_{22}-fatty alcohol, in a molar ratio of glycidyl ether to (1) or (2) of from 1:0.5 to 1:6, in the presence of an acid or base and

(C) alkoxylating the reaction product from (B) with one or more C_2–C_4 alkylene oxides in a molar ratio of from 1:1 to 1:6,

optionally, from 5 to 95% by weight of the stated water-in-soil emulsifier being replaced with other water-in-oil emulsifiers.

5,292,801

DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS

David Avnir; Michael Ottolenghi; Sergei Braun, and Riyka Zusman, all of Jerusalem, Israel, assignors to YISSUM, Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Division of Ser. No. 637,873, Jan. 8, 1991. This application Aug. 31, 1992, Ser. No. 937,258
Claims priority, application Israel, Jan. 23, 1990, 93134
Int. Cl.[5] C08G 63/48; B01D 53/00; G01N 21/00, 33/00
U.S. Cl. 525—54.1 5 Claims

1. A process for the preparation of a reactive sol-gel glass, comprising polymerizing at least one monomer of the formula $M(R)_n(P)_m$ and selected from the group consisting of metal alkoxides, semi-metal alkoxides, metal esters and semi-metal esters, wherein M is a metallic or semi-metallic element, R is a hydrolyzable substituent, n is an integer of 1 to 6, P is a non-polymerizable substituent and m is an integer of 0 to 6, and optionally an organic monomer, under acidic, neutral or basic conditions and in the presence of a dopant to form a porous xerogel containing the dopant trapped therein, said polymerization including a gelling step conducted at not greater than room temperature and a drying step conducted at not greater than 45° C., said dopant being selected from the group consisting of organic compounds, stable organic radicals, organometallic compounds, inorganic compounds and molecules of biological origin, the dopant being reactive after preparation of the xerogel.

5,292,802

COLLAGEN-POLYMER TUBES FOR USE IN VASCULAR SURGERY

Woonza Rhee, Palo Alto, and Kimberly McCullough, Hayward, both of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 922,541, Jul. 30, 1992, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Dec. 2, 1992, Ser. No. 985,680
Int. Cl.[5] C08G 63/48, 63/91
U.S. Cl. 525—54.1 23 Claims

1. A hollow, flexible tube having a circular cross-section, an outer diameter in the range of about 0.25 mm to about 5.0 cm , an inner diameter in the range of 0.05 mm to 4.95 cm, and a length of greater than 10 mm, the tube comprising collagen chemically conjugated to a synthetic non-immunogenic hydrophilic polymer by a covalent bond wherein the covalent bond is selected from the group consisting of an ester linkage, a urethane linkage, and an ether linkage.

5,292,803

PROCESS FOR THE PRODUCTION OF POLYMERIC POLYOLS

Tadayuki Ohmae, Chiba; Hisao Tanaka, Ichihara; Sumio Hara, Sodegaura, and Kenzo Chikaaari, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 6, 1992, Ser. No. 957,008
Int. Cl.[5] C08F 8/00
U.S. Cl. 525—61 8 Claims

1. A process for the production of polymeric polyols, which comprises the steps of:

partially or completely saponifying a heterogeous two-phase mixture of (a) a heated molten liquid containing an ethylene-saturated carboxylic acid vinyl ester copolymer having a number average molecular weight of from 800 to 5000 and a saturated carboxylic acid vinyl ester content of from 1 to 50% by weight, and (b) an aliphatic alcohol, in the presence of an alkali catalyst, while removing a saturated carboxylic acid alkyl ester byproduct from the reaction system by increasing temperature;

then removing the residual aliphatic alcohol from the reaction system; and

supplying an alkylene oxide to effect an alkylene oxide-addition reaction, optionally after further supplying the alkali catalyst.

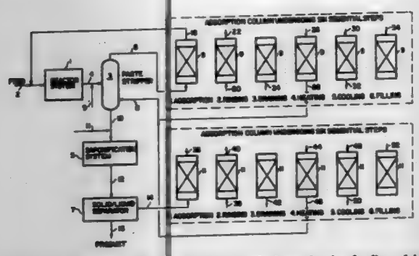
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5,292,804

SEPARATION OF AZEOTROPES IN POLY(VINYL ALCOHOL) PROCESS

Michael S. Chen, Zionsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 23, 1991, Ser. No. 764,412
Int. Cl.[5] C08F *116/06*
U.S. Cl. 525—62 **14 Claims**



1. In a process for preparing poly(vinyl alcohol) which includes stripping poly(vinyl acetate) paste with a first stream of hot methanol vapor, an improved method to separate a methanol/vinyl acetate azeotrope or a methanol/methyl acetate azeotrope or both comprising selective adsorption of methanol on an adsorbent followed by regeneration of the adsorbent with a second stream of hot methanol vapor wherein the second stream of hot methanol vapor is recycled as a portion of the first stream of hot methanol vapor.

5,292,805

FILLED POLYPHTHALAMIDE BLENDS HAVING IMPROVED PROCESSABILITY AND COMPOSITE AND FILLED ARTICLES THEREFROM

Edward E. Paschke, Wheaton; Charles L. Myers, Palatine, and Glenn P. Desio, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed May 29, 1992, Ser. No. 889,814
Int. Cl.[5] C08L *77/10*
U.S. Cl. 525—66 **9 Claims**

1. A filled polyphthalamide comprising at least one filler selected from structural fiber and particulate fillers, and a blend of (a) 100 pbw of a copolyphthalamide comprising from about 50 to about 90 mole % hexamethylene terephthalamide units; (b) from about 5 to about 40 pbw crystalline polypropylene; and (c) from 2 to about 20 pbw, per 100 parts combined weight of polypropylene and polyphthalamide, of carboxyl-modified polypropylene.

5,292,806

COMPOSITIONS CONTAINING BLENDS OF POLYSTYRENE–POLYISOPRENE–POLYSTYRENE BLOCK COPOLYMERS

Charles F. Diehl, and Jean M. Tancrede, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich. and Exxon Chemical Patents, Inc., Linden, N.J.

Continuation-in-part of Ser. No. 393,545, Aug. 11, 1989, Pat. No. 5,143,968. This application Dec. 11, 1990, Ser. No. 626,084
Int. Cl.[5] C08L *53/02*
U.S. Cl. 525—89 **11 Claims**

1. A composition of matter which comprises
a blend of A-B-A block copolymers, where the A component of each block copolymer of the blend is polystyrene and the B component is polyisoprene, said blend including
A) a first A-B-A block copolymer having an overall number average molecular weight ranging from about 90,000 to about 250,000, wherein the polyisoprene has a number average molecular weight ranging from about 80,000 to about 225,000, the polystyrene block has a number average molecular weight ranging from about 8,000 to about 17,000 and the overall styrene content of the block copolymer ranges from about 10 percent to about 24 percent, and
B) a second A-B-A block copolymer having an overall number average molecular weight ranging from about 60,000 to about 110,000, wherein the polyisoprene has a number average molecular weight ranging from about 30,000 to about 70,000, the polystyrene block has a number average molecular weight ranging from about 12,000 to about 20,000, and the overall styrene content of the block copolymer ranges from about 25 percent to about 50 percent,
from about 40 parts to about 95 parts of the first A-B-A block copolymer,
from about 5 parts to about 60 parts of the second A-B-A block copolymer,
from about 80 parts to about 225 parts of compatible primary tackifying resin, or resins, per 100 parts by weight of the blend of block copolymers, and
from about 0.1 percent to about 2 percent of a stabilizer, based on the weight of the total composition.

5,292,807

COMPOSITIONS OF CYCLIC ISOUREA COMPONENT WITH CARBOXYL COMPONENT

Walter Schäfer, Leichlingen; Hanns P. Müller, Odenthal-Höffe; Hans-Joachim Kreuder, Toenisvorst; Manfred Bock, Leverkusen, and Knud Reuter, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,516
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1992, 4203085
Int. Cl.[5] C08G *12/32, 18/38, 59/14;* C08L *33/08*
U.S. Cl. 525—113 **4 Claims**

1. A composition which is storage stable at room temperature and comprises
A) at least one compound having at least two cyclic isourea groups per molecule and
B) at least one compound having at least two carboxyl groups per molecule which is selected from copolymers having an acid number of at least 28 mg KOH/g and prepared by the copolymerization of olefinically unsaturated carboxylic acids with other olefinically unsaturated monomers,
in an amount sufficient to provide a molar ratio of isourea groups to carboxyl groups of 0.5:1 to 1.5:1.

5,292,808

MULTI-PHASE STRUCTURE AND PROCESS FOR PRODUCING THE SAME

Tadayuki Ohmae; Yoshiki Toyoshima; Kentaro Mashita; Noboru Yamaguchi, all of Chiba, and Jinsho Nambu, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 477,383, Feb. 9, 1990, abandoned. This application Jun. 7, 1993, Ser. No. 72,695
Claims priority, application Japan, Feb. 9, 1989, 1-31494
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—113 **7 Claims**

1. A multi-phase structure comprising:
(A) from 70 to 97 parts by weight of a polyamide resin containing
(A-1) at least 2 parts by weight, per 100 parts by weight of the sum of the components (A) and (B), of a polyamide resin having a concentration ratio of terminal carboxyl group to terminal amino group of 1.5 or more,
(B) from 3 to 30 parts by weight of an ethylene copolymer comprising:
(a) from 40 to 90% by weight of an ethylene unit,
(b) from 5 to 60% by weight of an α,β-unsaturated carboxylic acid alkyl ester unit, and
(c) from 0.3 to 10% by weight of a maleic anhydride unit,

with the sum of the components (a), (b) and (c) being 100% by weight, and
(C) from 0.01 to 20 parts by weight, per 100 parts by weight of the sum of the components (A) and (B), of a compound selected from the group consisting of an aliphatic diamine carbamate, an aliphatic polyamine, an alicyclic polyamine, an aromatic amine, an ethylene copolymer comprising an ethylene unit and an N,N-dialkylaminoalkyl, α,β-unsaturated carboxylic acid ester unit, an ethylene copolymer comprising an ethylene unit and an N,N-dialkylaminoalkyl α,β-unsaturated carboxylic acid amide unit, and a compound having at least two epoxy groups in the molecule thereof, and
wherein a part of the polyamide resin (A) constitutes a matrix phase, the ethylene copolymer (B) constitutes a first-order disperse phase, and the remainder of the polyamide resin (A) constitutes a second-order disperse phase in the first-order disperse phase.

5,292,809

BLENDS OF POLYCARBONATE CONTAINING FLUORINATED-BISPHENOL A AND POLYMETHYL METHACRYLATE

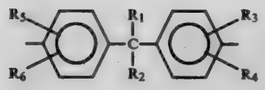
Michael A. Drzewinski, Princeton Junction, N.J., assignor to Enichem S.p.A., Milan, Italy

Filed Jun. 1, 1992, Ser. No. 891,036
Int. Cl.[5] C08L *69/00, 33/12*
U.S. Cl. 525—147 **6 Claims**

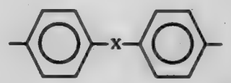
1. A composition comprising: a thermodynamically miscible blend of
(I) 10 to 90 weight % of polymethyl methacrylate (PMMA) and
(II) 90 to 10 weight % of an aromatic polycarbonate represented by the formula



wherein Y is



wherein R_1 and R_2 independently are fluorinated C_1–C_6 alkyl or fluorinated C_6–C_{10} aryl group; R_3, R_4, R_5 and R_6 are each independently hydrogen, C_1–C_3 alkyl, chlorine and bromine;
Z is a radical of the formula



wherein X is C_1–C_6 straight or branched alkyl, carbonyl, sulfonyl, oxygen, sulfur or a single bond, n is an integer between 5 and 10,000 m is an integer of 0–10,000, provided $n \geq 0.15\ (m+n)$, wherein said composition has been melt blended and said blend of components (I) and (II) has one Tg.

5,292,810

THERMOPLASTIC ELASTOMER COMPOSITION

Kenji Manabe; Masahiro Niwano, both of Tsukuba, and Tadashi Hikasa, Sodegaura, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

PCT No. PCT/JP91/01110, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO92/03501, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 21, 1991, Ser. No. 937,883
Claims priority, application Japan, Aug. 22, 1990, 02-221767; Aug. 7, 1991, 03-197927
Int. Cl.[5] C08L *63/00*
U.S. Cl. 525—190 **11 Claims**

1. A thermoplastic elastomer composition comprising a thermoplastic graft copolymer of which main chain is constituted by a polymer having a glass transition temperature of 10° C. or below and side chain is constituted by an aromatic oligomer having a flow temperature between 100° C. and 400° C., and an olefinic polymer wherein the flow temperature is the temperature at which the oligomer shows a melt viscosity of 48,000 poises when the oligomer is melted by heating at a rate of 4° C./min and extruded from a nozzle of 1 mm in inner diameter and 10 mm in length under a load of 100 kg/cm^2 and wherein a ratio of the polymer having the glass transition temperature of 10° C. or below to the aromatic oligomer is 99:1 to 50:50 by weight.

5,292,811

PROCESS FOR PREPARING THERMOPLASTIC ELASTOMERS

Kazuhiko Murata; Shizuo Shimizu, both of Ichihara; Mamoru Kioka, and Akinori Toyota, both of Kuga, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 490,562, Jan. 30, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,432
Claims priority, application Japan, Nov. 21, 1989, 63-294071
Int. Cl.[5] C08L *23/26, 53/00*
U.S. Cl. 525—193 **13 Claims**

1. A process for preparing partially or fully crosslinked thermoplastic elastomers, which comprises dynamically heat treating polymer particles together with a crosslinking agent,
each of said polymer particles is composed of from 80 to 20 parts by weight of a crystalline portion comprising a crystalline propylene polymer and from 20 to 80 parts by weight of an amorphous portion comprising an amorphous ethylene-α-olefin copolymer, wherein said polymer particles composed of a crystalline portion and an amorphous portion have a sea-and-islands structure in which said islands comprise said amorphous portion and said islands have an average particle diameter not exceeding 0.5 μm,
said polymer particles having an average particle diameter of from 10 to 5000 μm and an apparent bulk density of at least 0.2 g/ml,
each of said polymer particles is obtained from a polymerization process comprising at least two steps in series to form said amorphous and crystalline portions in the polymer particles.

5,292,812

ADHESIVE OF EPOXY RESIN, CTBN AND MALEIMIDE

Hajime Yamazaki, Hadano; Hiroyuki Wakamatsu, Kawasaki; Toshinobu Takahashi, Kanagawa, and Naoya Adachi, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 644,917, Jan. 23, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,701
Claims priority, application Japan, Jan. 24, 1990, 2-12512
Int. Cl.[5] C08L *63/02, 63/04, 63/10*
U.S. Cl. 525—112 **8 Claims**

1. An adhesive composition consisting essentially of:
(I) an epoxy resin selected from the group consisting of a

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glycidyl ether epoxy resin, a cresol-novolak epoxy resin, a glycidyl ester epoxy resin, an aliphatic epoxy resin, an alicyclic epoxy resin and a halogenated epoxy resin;

(II) a carboxyl group-containing acrylonitrile-butadiene or methacrylonitrile-butadiene copolymer or a combination thereof in an amount of from 5 to 50 parts by weight per 100 parts by weight of the epoxy resin (I);

(III) a maleimide compound in an amount that satisfies the following equation: $1 \leqq (II)/(III) \leqq 10$ on a weight basis; and

(IV) an imidazole compound in an amount of from 0.5 to 20 parts by weight per 100 parts by weight of the epoxy resin (I).

5,292,813

FULLERENE-GRAFTED POLYMERS AND PROCESSES OF MAKING

Abhimanyu O. Patil, Westfield; George W. Schriver, Somerville, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 2, 1992, Ser. No. 955,649

Int. Cl.[5] C08L *23/36*; C08F *210/16*

U.S. Cl. 525—240 **17 Claims**

7. A polymeric composition comprising the reaction product of

a fullerene; and

a reaction product of a long chain hydrocarbyl substituted mono- or dicarboxylic acid or an anhydride of the dicarboxylic acid, said long chain hydrocarbyl having a number average molecular weight of from about 500 to about 10,000, and a polyamine containing at least 2 reactive amino groups selected from the group consisting of primary amino groups, secondary amino groups, and mixtures thereof, wherein the reaction product contains at least one reactive amino group selected from the group consisting of primary and secondary amino groups.

8. The composition of claim 7 wherein the long chain hydrocarbyl is an ethylene alpha-olefin copolymer.

5,292,814

PROCESS FOR THE PREPARATION OF MONODISPERSED POLYMER BEADS

Ernst Bayer, Bei der Ochsenweide 17, and Wolfgang Rapp, Uranainer Ring 105, both of D-7400 Tübingen, Fed. Rep. of Germany

Continuation of Ser. No. 187,647, Apr. 28, 1988, abandoned. This application Mar. 14, 1991, Ser. No. 669,598

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1967, 3714258

Int. Cl.[5] C08F *2/22, 2/24, 2/16*

U.S. Cl. 525—243 **17 Claims**

1. A process for the preparation of monodispersed polymer beads having a diameter of 0.5 to 50 μm, wherein, in a first homogeneous stage, a seed polymer is prepared by polymerizing a monomer dissolved in at least one organic solvent, yielding a monodispersed seed, in the presence of a polymerization initiator and triphenylmethane or a compound having the formula R—X, wherein

R is a saturated or unsaturated, linear or branched aliphatic radical with more than 6 carbon atoms, and

X is selected from the group consisting of a hydrogen, halogen atom, a hydroxy group, a C_1–C_6 alkoxy group, an amino group, a C_1–C_6 alkylamino group, a di-C_1–C_6 alkylamino group, a phenyl group or a phenyl group optionally substituted with a C_1–C_4 alkyl group, a polyoxyethylenated hydroxy group or a sulfonic acid group;

separating the seed polymer obtained; and wherein, in a second stage, an emulsion polymerization is carried out by polymerizing a monomer in the presence of the seed polymer, an emulsifier, a polymerization initiator and optionally a cross-linking agent, in an aqueous medium.

5,292,815

PEROXIDE VULCANIZED RUBBER COMPOSITION

Carel T. J. Wreesmann, Naarden; Auke G. Talma, and Willem C. Endstra, both of Bathmen, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Oct. 28, 1992, Ser. No. 967,354

Claims priority, application European Pat. Off., Oct. 29, 1991, 91202788.5

Int. Cl.[5] C08F *8/00*

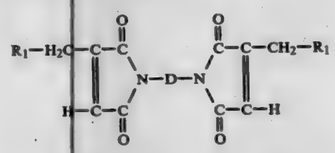
U.S. Cl. 525—259 **13 Claims**

1. A peroxide-vulcanized rubber composition which comprises the vulcanization reaction product of:

(A) 100 parts of at least one natural or synthetic rubber;

(B) 0.04 to 10 parts by weight of an organic peroxide;

(C) 0.5 to 10 parts by weight of a biscitraconimido compound represented by formula I:



wherein D is a divalent group chosen from the group of alkylene, alkarylene, cycloalkylene, arylene, aralkylene, and alkenylene, and R_1 is hydrogen or an alkyl group with 1–18 carbon atoms; and

(D) 0.1 to 10 parts by weight of a radical scavenger, all amounts based on the weight of said rubber.

5,292,816

PLASTIC MATERIALS MADE OF HETEROGENEOUS COPOLYMERS OF VINYLIDENE FLUORIDE AND CHLOROTRIFLUOROETHYLENE, USE AND PROCESS OF MANUFACTURE

Jean-Yves Metz, and Paul Plissart, both of Brussels, Belgium, assignors to SOLVAY (Société Anonyme), Brussels, Belgium

Filed Jan. 29, 1993, Ser. No. 11,203

Claims priority, application Belgium, Feb. 5, 1992, 09200123

Int. Cl.[5] C08F *259/00*

U.S. Cl. 525—276 **7 Claims**

1. A plastic material of heterogeneous copolymers of vinylidene fluoride and chlorotrifluoroethylene, the plastic material comprising elastomeric nodules of heterogeneous copolymers of vinylidene fluoride and chlorotrifluoroethylene, representing more than about 55% by weight of the plastic material, said elastomeric nodules being dispersed in a crystalline continuous phase of quasi vinylidene fluoride polymer, said quasi vinylidene fluoride polymer representing at least about 10% by weight of the plastic material.

5,292,817

FLAME-RETARDANT THERMOPLASTIC COPOLYMERS BASED ON VINYL PHOSPHONATE DERIVATIVES GRAFTED ONTO RUBBER

Roger A. Grey, and Shao H. Guo, both of West Chester, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.

Division of Ser. No. 922,600, Jul. 30, 1992. This application Sep. 3, 1993, Ser. No. 116,429

Int. Cl.[5] C08F *2/18, 255/06, 279/02*

U.S. Cl. 525—285 **14 Claims**

1. A flame-retardant polymer composition comprising recurring units of:

(a) a vinyl aromatic monomer;

(b) an unsaturated organic diacid, ester, or anhydride;

(c) a vinyl phosphonic acid derivative selected from the group consisting of vinyl phosphonic acids and vinyl phosphonate mono- and diesters; and

(d) optionally, one or more additional ethylenically unsaturated monomers;

wherein the composition is grafted onto from about 1 to about 50 wt. % based on the total amount of polymer composition of a rubber selected from the group consisting of polybutadiene, polyisoprene, EPDM rubber, styrene-isoprene copolymers, and styrene-butadiene copolymers; and wherein the polymer composition has a number average molecular weight within the range of about 30,000 to about 400,000.

7. A process for making a flame-retardant polymer composition grafted onto a rubber, said process comprising polymerizing a mixture that contains a vinyl aromatic monomer, a free-radical initiator, and from about 1 to about 50 wt % based on the total amount of polymer composition of a rubber selected from the group consisting of polybutadiene, polyisoprene, EPDM rubber, styrene-isoprene copolymers, and styrene-butadiene copolymers, while continuously adding to the mixture a vinyl phosphonic acid derivative selected from the group consisting of vinyl phosphonic acids and vinyl phosphonate mono- and diesters to produce the flame-retardant polymer composition.

11. A process for making a flame-retardant polymer composition grafted onto a rubber, said process comprising polymerizing, in an aqueous suspension and in the presence of a phase-transfer catalyst, a vinyl aromatic monomer, from about 1 to about 50 wt % based on the total amount of polymer composition of a rubber selected from the group consisting of polybutadiene, polyisoprene, EPDM rubber, styrene-isoprene copolymers, and styrene-butadiene copolymers, and a relatively water-soluble vinyl phosphonic acid derivative selected from the group consisting of vinyl phosphonic acids and vinyl phosphonate mono- and diesters.

5,292,818

METHOD FOR PRODUCING A CARRIER FOR CATION EXCHANGE LIQUID CHROMATOGRAPHY AND A METHOD FOR DETERMINING GLYCOSYLATED HEMOGLOBINS USING THE CARRIER

Kazuyuki Oishi, Kyoto; Kazutoshi Yamazaki; Toshiki Kawabe, both of Ohtsu; Masahiro Takechi, Takatsuki, and Makoto Takahara, Mishima, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP90/01522, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO92/09889, PCT Pub. Date Nov. 6, 1992

PCT Filed Nov. 21, 1990, Ser. No. 915,685

Int. Cl.[5] C08F *265/04*; G01N *33/72*

U.S. Cl. 525—301 **19 Claims**

1. A production method of a carrier for cation exchange liquid chromatography comprising the steps of:

providing an aqueous dispersion in which hydrophobic crosslinked polymer particles to which a polymerization initiator is adhered are dispersed; and

adding a polymerizable monomer having a carboxyl group to the aqueous dispersion and polymerizing the monomer on the surface of the hydrophobic crosslinked polymer particle, thereby forming a polymer layer having carboxyl groups on the surface of the hydrophobic crosslinked polymer particle to obtain a coated polymer particle,

wherein said hydrophobic crosslinked polymer is obtained by homopolymerizing or copolymerizing at least one kind of a hydrophobic crosslinkable monomer, or copolymerizing at least one kind of a hydrophobic crosslinkable monomer and at least one kind of a hydrophobic noncrosslinkable monomer, where said hydrophobic crosslinkable monomer is selected from the group consisting of poly(meth)acrylates and aromatic compounds having at least two vinyl groups;

and further wherein said polymerizable monomer having a carboxyl group selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid and crotonic acid.

5,292,819

RADIAL BLOCK COPOLYMERS CONTAINING BUTADIENE ENDBLOCK

Charles F. Diehl; Gary R. Marchand; Michael O. Myers, and Jean M. Tancrede, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich. and Exxon Chemical Patents, Inc., Linden, N.J.

Continuation-in-part of Ser. No. 393,545, Aug. 11, 1989, Pat. No. 5,143,968. This application May 24, 1991, Ser. No. 705,193

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **20 Claims**

1. A radial block copolymer constituted of a polystyrene block segment and a polyisoprene block segment an end of which is constituted of butadiene, as characterized by the formula:

$$(pS\text{-}pI\text{-}pB)_nX$$

where pS is polystyrene, pI is polyisoprene, pB is polybutadiene, X is the residue of a multifunctional coupling agent used in the production of the radial block copolymer, and n is a number greater than 2 representative of the number of branches appended to X,

pS has an average number molecular weight ranging from about 10,000 to about 25,000, pI-pB has an average number molecular weight ranging from about 20,000 to about 70,000, the overall number average molecular weight of the block copolymer ranges from about 90,000 to about 380,000, and wherein the pS component is present in an amount of at least 25 parts to about 50 parts per 100 parts by weight of the radial block copolymer.

5,292,820

SOLID ELASTOMERIC BLOCK COPOLYMERS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 466,233, Jan. 16, 1990, Pat. No. 5,187,236. This application Jul. 25, 1991, Ser. No. 735,552

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **35 Claims**

1. A solid elastomeric block copolymer wherein either 1) the terminal blocks are polymers of at least one conjugated diene I, which contains at least five carbon atoms with at least one of each pair of double-bonded carbon atoms in the polymerized diene I units being additionally single-bonded to two carbon atoms, at least one middle or interior block is a butadiene polymer, and at least one middle or interior block is a polymer of at least one aryl-substituted olefin S; or 2) the terminal blocks are random copolymers IB of at least one diene I and butadiene (B), and at least one middle or interior block is a polymer of at least one aryl-substituted olefin S, said butadiene polymer or random IB copolymer blocks containing below about 10% of polyethylene crystallinity after hydrogenation.

5,292,821

CATONIC ACRYLAMIDE POLYMERS AND THE APPLICATIONS OF THESE POLYMERS

Toshihiko Takaki; Kenji Tsuboi; Hiroshi Itoh, and Atsuhiko Nitta, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 725,611, Jul. 3, 1991, Pat. No. 5,239,014, which is a division of Ser. No. 454,526, Dec. 21, 1989, Pat. No. 5,039,757. This application Jun. 28, 1993, Ser. No. 82,773

Claims priority, application Japan, Dec. 28, 1988, 63-328902; Feb. 21, 1989, 1-42179; Feb. 21, 1989, 1-42180

Int. Cl.[5] C08F *8/20*

U.S. Cl. 525—328.4 **15 Claims**

1. Paper prepared using a cationic acrylamide polymer made by a method which comprises reacting an acrylamide polymer and a hypohalogenite under alkaline conditions as a pH of at least 11 for the specified short reaction time, t (sec);

$$t(\text{sec}) \geqq e^{\frac{15{,}150}{273+T}} \times 2.5 \times 10^{-20}$$

$$t(\text{sec}) \leqq e^{\frac{15{,}150}{273+T}} \times 10^{-18} + 30$$

where T is reaction temperature (°C) and 50° C.≦T≦110° C.

5,292,822

HIGH MOISTURE-ABSORBING AND RELEASING FIBERS AND PROCESS FOR PRODUCING THE SAME

Koji Tanaka, and Kazutoshi Muta, both of Okayama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1992, Ser. No. 973,386
Claims priority, application Japan, Nov. 11, 1991, 3-322454
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—329.1 **5 Claims**

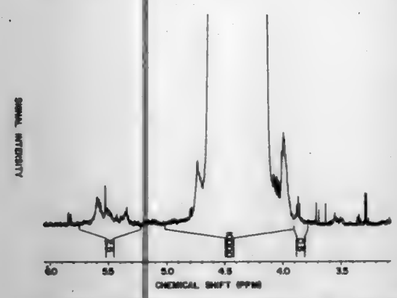
1. High-moisture absorbing and releasing fibers which comprises cross-linked acrylic fibers having 1.0 to 8.0 % by weight increase in nitrogen content by hydrazine cross-linking, wherein 1.0 to 4.5 mmol/g of salt type carboxyl groups are introduced in a part of remaining nitrile groups and amido groups are introduced in the remainder.

5,292,823

THERMALLY STABLE POLYVINYL CHLORIDE RESIN

Naser Pourahmady, Avon Lake, Ohio, assignor to The Geon Company, Independence, Ohio

Continuation of Ser. No. 692,983, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 522,280, May 11, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 919,638
Int. Cl.[5] C08F *8/26*
U.S. Cl. 525—331.5 **1 Claim**



1. A polyvinyl chloride resin containing no analytically detectable level of allylic chlorine, primary chlorine and allylic branching as measured by H^1 NMR analysis, wherein said resin lacks a peak at between 4.05 and 4.1 ppm and between 5.7 and 5.9 ppm, wherein said resin has a melting point distinct from its degradation temperature, and wherein said melting point ranges from about 190° C. to about 220° C.

5,292,824

PROCESS FOR PRODUCING A POLYACETAL RESIN COMPOSITION

Satoshi Nagai; Masao Hasegawa; Hiroshi Mimura, and Makoto Kobayashi, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,412
Claims priority, application Japan, Mar. 19, 1992, 4-063848
Int. Cl.[5] C08L *59/00, 61/02*
U.S. Cl. 525—399 **7 Claims**

1. A process for producing a polyacetal resin composition, which comprises mixing a polyacetal resin (A), a thermoplastic polyurethane elastomer (B) and a polyhydric alcohol (C) selected from the group consisting of glycerine, trimethylolethane, trimethylolpropane, hexantriol, triethanolamine, diglycerine, pentaerythritol, tetraethanol ethylenediamine, methylglucosite, aromatic diamine-tetraethanol adduct, sorbitol, dipentaerythritol, cyclodextrin, phenoxy resin and polyvinyl alcohol, in molten state with shear, at a temperature of 180° to 250° C., the polyacetal resin (A), the thermoplastic polyurethane elastomer (B) and the polyhydric alcohol (C) being used at such weight ratios as satisfy the equations below:

$$99/1 \leqq (A)/(B) \leqq 40/60$$

$$0.01 \leqq \frac{(C)}{(A)+(B)} \times 100 \leqq 10.$$

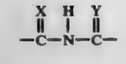
5,292,825

VULCANIZABLE EPOXY GROUP-CONTAINING ELASTOMER COMPOSITION

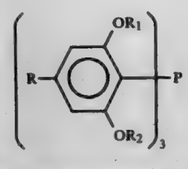
Keisaku Yamamoto; Hideaki Yamada, and Masahiro Fukuyama, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 7, 1990, Ser. No. 578,905
Claims priority, application Japan, Sep. 8, 1989, 1-234376
Int. Cl.[5] C08F *8/30*; C08L *63/08*
U.S. Cl. 525—340 **6 Claims**

1. A vulcanizable epoxy group-containing elastomer composition comprising (A) an epoxy group-containing elastomer, (B) an organic compound containing at least two



bonds, wherein X and Y, which may be the same or different, each represents an oxygen atom or a sulfur atom, per molecule or an organic compound containing at least two carboxyl groups per molecule, and (C) a phosphine compound represented by formula:



wherein R_1 and R_2, which may be the same or different, each represents an alkyl group having from 1 to 4 carbon atoms; and R represents a hydrogen atom or an alkoxy group having from 1 to 4 carbon atoms, wherein component (B) is present in an amount of from 0.2 to 5 parts by weight per 100 of the component (A), and wherein component (C) is present in an amount of from 0.1 to 5 parts by weight of 100 parts by weight of component (A).

5,292,826

PROCESS FOR LOWERING IODINE VALUE OF RESIN

Yoshiteru Manabe, Osaka; Kiyoshi Sato, Sakai, and Toshihiko Izumi, Osaka, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1993, Ser. No. 36,549
Claims priority, application Japan, Apr. 6, 1992, 4-083691
Int. Cl.[5] C08F *4/14*
U.S. Cl. 525—371 **13 Claims**

1. A process for preparing a resin having a low iodine value, comprising treating a resin having a residual unsaturated bond

in its molecule with a cationic polymerization catalyst, said resin obtained by polymerizing at least one of an aromatic monomer, and α-olefin having 3 to 22 carbon atoms and a (meth)acrylic acid ester.

11. A flame retarder having excellent weatherability, comprising a resin whose iodine value is lowered by the process of claim 1.

5,292,827

EPOXY-CAPPED BRANCHED SILICONES AND COPOLYMERS THEREOF

William J. Raleigh, Rensselaer, N.Y.; Michael A. Lacarelli, Mattoon, Ill., and James F. Hoover, Evansville, Ind., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 25, 1993, Ser. No. 23,187
Int. Cl.[5] C08G *65/48*
U.S. Cl. 525—390 **31 Claims**

1. A thermoplastic copolymer composition comprising:
(a) a thermoplastic polymer having alcohol and/or amine substituents; and
(b) a branched epoxy-modified silicone copolymerizate having the following general formulae:

$$T_{z-2}D_xM'_z \text{ or } Q_yD_xM'_{2y+2}$$

wherein T represents a trifunctional silicone of the formula $RSiO_{1.5}$ where R is a monovalent alkyl, cycloalkyl or phenyl group, D represents a difunctional silicone of the formula R_2SiO where each R is independently as defined above, x is 0 or an integer of 1 or greater, Q is a quadrifunctional silicone of the formula SiO_2, M' is an epoxy-modified monofunctional silicone of the formula $R^1{}_3SiO_{0.5}$ where R^1 is a monovalent alkyl, cycloalkyl or phenyl group or an epoxy group provided at least one R^1 is an epoxy group, y is an integer of from 1 to 4, inclusive, and z is an integer of 3 or greater.

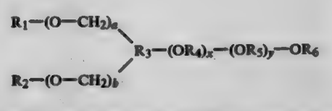
5,292,828

POLYMERS CONTAINING COMPLEX HYDROPHOBIC GROUPS

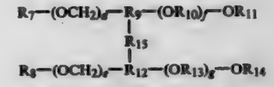
Richard D. Jenkins, Hurricane; David R. Bassett, Charleston, both of W. Va., and Gregory D. Shay, Cary, N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed May 29, 1992, Ser. No. 887,641
Int. Cl.[5] C08F *283/04*
U.S. Cl. 525—420 **17 Claims**

1. A water-soluble polymer which comprises hydrophobic segments, each segment containing at least one hydrophobic group or complex hydrophobic group covalently bonded to the polymer, wherein the polymer has an amount of complex hydrophobic groups sufficient to provide for enhanced thickening of aqueous solutions containing the polymer when compared with a polymer of essentially the same structure but which has only hydrophobic groups other than complex hydrophobic groups, wherein said complex hydrophobic group is derived from a compound represented by the formula selected from:



wherein R_1 and R_2 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided at least two of R_1, R_2, R_3, R_4, R_5 and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2 and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5; and



wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater; provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} an R_{14} or having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13} and R_{15}.

5,292,829

ISOCYANURATE RING-CONTAINING CROSSLINKED POLYURETHANE POLYUREA PARTICULATE POLYMER AND PROCESS FOR PRODUCING THE SAME

Hidetoshi Konno; Yoichi Tanimoto; Ichiro Muramatsu; Mitsuo Kase, and Noboru Okoshi, all of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,898
Claims priority, application Japan, Feb. 22, 1991, 3-028572; Feb. 17, 1992, 4-029367; Feb. 18, 1992, 4-030660
Int. Cl.[5] C08G *18/79*; C08L *75/02*
U.S. Cl. 524—591 **8 Claims**

1. A process for producing a crosslinked polyurethane polyurea spherically particulate polymer having an average particle diameter of 0.1 to 500 μm wherein the polymer molecule contains an isocyanurate ring in an amount of 10 to 30% by weight, comprising the steps of: reacting an isocyanurate ring-containing polyisocyanate compound with a polyhydroxy compound to form an organic phase capable of forming a three-dimensional crosslinked structure due to the reaction, wherein the amount of isocyanate groups in the polyisocyanate compound is stoichiometrically larger than that of hydroxyl groups in the polyhydroxy compound; finely dispersing the organic phase into water; and adding a polyamine to the dispersion to make interfacial polymerization between the organic phase and the polyamine and a polyurethane-forming reaction within particles, wherein the amount of the polyamine is stoichiometrically equivalent to or smaller than the stoichiometrical excess of isocyanate groups.

5,292,830

THERMOSETTING COPOLYMERS, SILICON CARBIDE-BASED FIBER AND PROCESSES FOR PRODUCING SAME

Osamu Funayama; Tomohiro Kato; Rika Takatsu; Yuuji Tashiro; Toshihide Kishi; Takayuki Date, and Takeshi Isoda, all of Saitama, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,843

Claims priority, application Japan, Jun. 20, 1991, 3-148678; Jul. 31, 1991, 3-192074

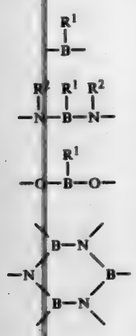
Int. Cl.[5] C08G 77/56

U.S. Cl. 525—478 20 Claims

1. A thermosetting copolymer comprising a perhydropolysilazane or polyborosilazane block A and a thermoplastic silicon-containing polymer block B, said perhydropolysilazane block comprising a main repeating unit represented by the formula:



and having a number average molecular weight of 100 to 50,000, said polyborosilazane block having a main cross linkage represented by any one of the following formulae (i), (ii), (iii), or (iv);



(i)

(ii)

(iii)

(iv)

where R^1 stands for hydrogen atom, halogen atom, alkyl having 1 to 20 carbon atoms, alkenyl, cycloalkyl, aryl, alkoxy, alkylamino, hydroxy or amino, and R^2 stands for a hydrogen atom, halogen atom and alkyl having 1 to 20 carbon atoms, and in the formula (iv), at least two of the three nitrogen atoms and three boron atoms are used for the cross linkage and the remaining atoms are bound to R^1, and having an atomic ratio of B/Si of 0.01 to 3 and a number average molecular weight of 200 to 50,000.

5,292,831

MESOGENIC EPOXY COMPOUNDS

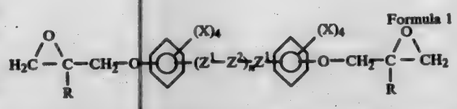
Jimmy D. Earls; Robert E. Hefner, Jr., and Paul M. Puckett, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 616,538, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 553,492, Jul. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 298,431, Jan. 17, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,677

Int. Cl.[5] C08G 59/00, 59/20

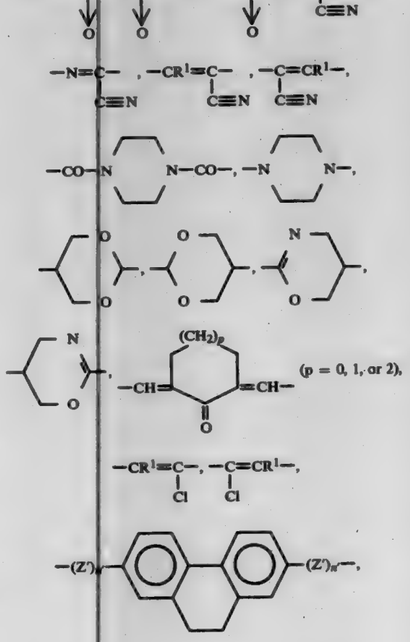
U.S. Cl. 525—523 3 Claims

1. A phenoxy resin composition prepared by reacting (A) one or more epoxy resins containing one or more rodlike mesogenic moieties represented by either the following Formula I



Formula I

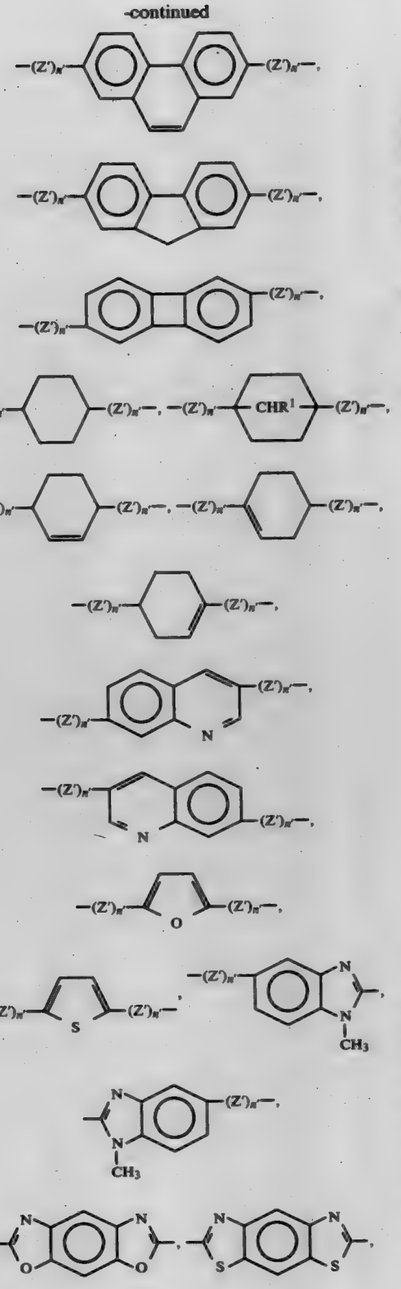
wherein at least about 80 percent of the $-(Z^1-Z^2)_n-Z^1-$ linkages and the glycidyl ether groups are in the para position with respect to each other; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, $-NO_2$, or $-C\equiv N$; each Z^1 is independently $-CR^1=CR^1-$, $-CR^1=CR^1-CR^1=CR^1-$, $-CR^1=N-N=CR^1-$, $-CR^1=CR^1-CO-O-CH_2-$, $-CR^1=CR^1-CO-O-CH_2-CH_2-$, $-CH_2-O-CO-CR^1=CR^1-$, $-CH_2-CH_2-O-CO-CR^1=CR^1-$, $-CR^1=CR^1-CO-O-$, $-O-CO-CR^1=CR^1-$, $-CO-NR^1-$, $-NR^1-CO-$, $-CO-NR^1-NR^1-CO-$, $-C\equiv C-$, $-C\equiv C-C\equiv C-$, $-N=N-$, $-CO-S-$, $-S-CO-$, $-CR^1=N-$, $-N=C-R^1-$, $-CO-CR^1=CR^1-$, $-CR^1=CR^1-CO-$, $-CR^1=CR^1-O-CO-CH_2-$, $-CH_2-CO-O-CR^1=C-R^1-$, $-CR^1=CR^1-O-CO-CH_2-CH_2-$, $-CH_2-CH_2-CO-O-CR^1=CR^1-$, $-CH_2-CH_2-CO-O-$, $-O-CO-CH_2-CH_2-$, $-CO-O-CR^1=CR^1-$, $-CR^1=C-R^1-O-CO-$, $-O-CO-$, $-CO-O-$,



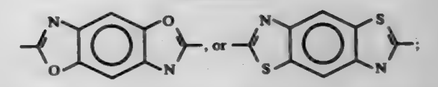
(p = 0, 1, or 2),

and (B) at least one compound having an average of more than one active hydrogen atom per molecule; wherein components (A) and (B) are employed in amounts which provide a ratio of active hydrogen atoms per epoxide group of from about 0.96:1 to about 1.05:1; with the proviso that (a) the phenoxy resin composition can not be the phenoxy resin resulting from component (A) being the diglycidyl ether of 1,4-bis(p-hydroxyphenyl)cyclohexane and component (B) being 1,4-bis(p-hydroxyphenyl)cyclohexane; and (b) the phenoxy resin composition can not be the phenoxy resin resulting from component (A) being the diglycidyl ether of a compound represented by Formula I wherein n is zero and Z^1 is $-CR^1=N-$ or $-N=CR^1-$ and component (B) is a compound which does not contain a mesogenic moiety.

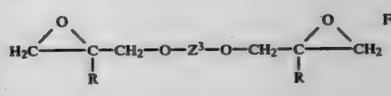
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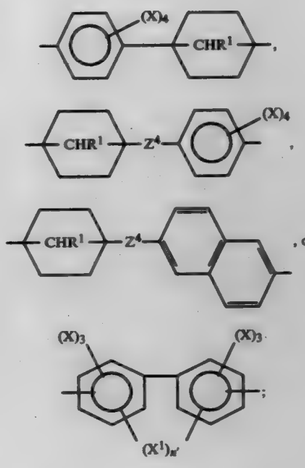


Z^2 is a group represented by a cyclic or bicyclic ring system containing from 5 to about 12 carbon atoms which is cycloaliphatic, polycycloaliphatic, aromatic or a combination thereof; n is 0 to 2; each Z' is independently a —CO—, —O—CO—, —CO—O—, —CO—NR^1—, or —NR^1—CO— group and each n' independently has a value of zero or one; or the following Formula II



Formula II

wherein Z^3 is



and Z^4 is —CO—O—, —O—CO—, —NR^1—CO— or —CO—NR^1—; X^1 is a divalent hydrocarbyl group having from 1 to about 10 carbon atoms which can contain one or more heteroatoms selected from N, O or S which is saturated or unsaturated;

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5,292,832

CONTROLLED FILM BUILD EPOXY COATINGS USING GLYCIDYL ETHERS OF OXYALKYLATED AROMATIC AND CYCLOALIPHATIC DIOLS

Richard A. Hickner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 782,926, Oct. 25, 1991, Pat. No. 5,216,045, which is a continuation-in-part of Ser. No. 464,501, Jan. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 143,772, Jan. 13, 1988, abandoned. This application Jan. 5, 1993, Ser. No. 940

Int. Cl.[5] **C08F** *283/00;* **C08G** *59/14;* **C08L** *63/00;* **C08K** *3/20*

U.S. Cl. 525—524 **2 Claims**

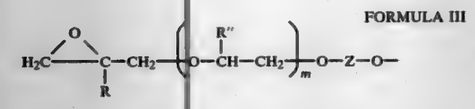
1. A blend comprising

(I) an advanced epoxy-based cationic resin prepared by reacting in the presence of a suitable catalyst

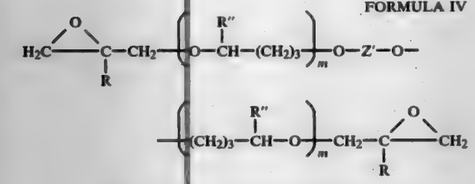
(A) a composition comprising

(1) from about 20 to 100 weight percent of a diglycidyl ether of (a) an oxyalkylated aromatic diol or (b) an oxyalkylated cycloaliphatic diol or (c) a combination of such diols, which diols are represented by the following formulae III or IV:

FORMULA III

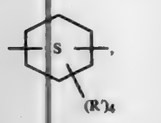


FORMULA IV

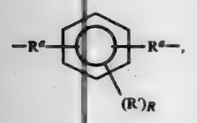


wherein each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; R″ is hydrogen or an alkyl group having from 1 to 6 carbon atoms; each m is independently an integer from 1 to 15; and Z or Z[1] is a group represented by the following formulas A, B, C, D, E, F or G:

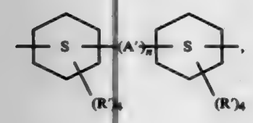
Formula A



Formula B

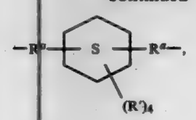


Formula C

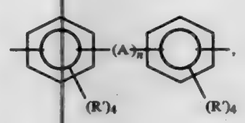


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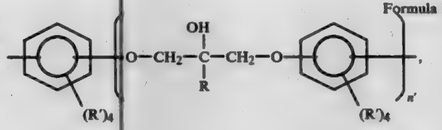
Formula D



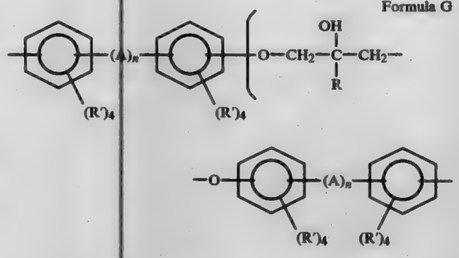
Formula E



Formula F



Formula G



wherein A is a divalent hydrocarbon group having from 1 to 12 carbon atoms, —S—, —S—S—, —SO_2—, —SO—, —CO—, —O—CO—O—, or —O—; A′ is a divalent hydrocarbon group having from 1 to about 6 carbon atoms; each R is independently hydrogen or a hydrocarbyl group having from 1 to 4 carbon atoms; each R′ is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to 4 carbon atoms, or a halogen; R^d is a divalent hydrocarbon group having from 1 to about 6 carbon atoms; n has a value of zero or 1; n′ has a value from zero to 10; and

(2) from zero to about 80 weight percent of a diglycidyl ether of a dihydric phenol; with

(B) at least one dihydric phenol; and optionally,

(C) a monofunctional capping agent; wherein components (A) and (B) are employed in such quantities that the resultant advanced epoxy resin has an average epoxide equivalent weight of from about 350 to about 10,000, whereby there is formed an advanced epoxy resin having terminal oxirane groups; and component (C) is present in an amount of from about zero to about 0.7 equivalent of phenolic hydroxyl groups per equivalent of epoxide which would remain after reaction of substantially all of the phenolic groups of the dihydric phenol of component (B); and subsequently converting at least some of the oxirane groups to cationic groups; and

(II) a different epoxy-based cathodic electro- deposition resin; and

wherein components (I) and (II) are employed in amounts of from about 10 to about 90 percent of component (I) and from about 90 to about 10 percent of component (II) by weight.

5,292,833

THERMOSETTING REACTIVE RESIN MIXTURE, MOULDED ARTICLE AND COATING MADE THEREFROM

Gerwald F. Grahe; Arthur Lachowicz, and Roland Fromme, all of Berlin, Fed. Rep. of Germany, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 813,741

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1991, 4101158

Int. Cl.[5] **C08F** *283/00*

U.S. Cl. 525—531 **23 Claims**

1. A thermosetting reactive resin mixture comprising

(a) at least one organic compound, which possesses at least two epoxide groups,

(b) at least one carbamate compound of the general formula I,



I

wherein

R^1, R^2 mean a hydrogen atom or a methyl group,

R^3 means a hydrogen atom, a methyl group or a di- or trivalent aliphatic, cycloaliphatic, aromatic or heterocyclic residue with at most 20 carbon atoms,

n means 1, 2 or 3,

and said at least two epoxide groups of the organic compound react with the urethane group of formula I,

(c) at least one basic catalyst, and with or without

(d) other processing aids and/or additives.

5,292,834

METHOD OF PREVENTING POLYMER SCALE DEPOSITION

Mikio Watanabe; Masahiro Usuki, both of Kamisu, and Susumu Ueno, Hazaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 727,901

Claims priority, application Japan, Jul. 11, 1990, 2-183073

Int. Cl.[5] **C08F** *2/00*

U.S. Cl. 526—62 **23 Claims**

1. A method of preventing polymer scale deposition in a polymerization vessel during polymerization of a monomer having an ethylenic double bond and having the general formula (I):



(I)

wherein X is a hydrogen atom or the methyl group; Y is a hydrogen atom, an alkyl group or a group represented by the formula: —COOH, —COOM where M is an alkali metal or an ammonium ion, —COOR, —OCOR, —OR where in the formulas R is an alkyl group, —CH, —C_6H_5, C_6H_4Z where Z is an hydrogen atom, —OH, —CH_3 or —CH=CH_2, or —CH=CH_2, wherein said polymerization is carried out in a polymerization vessel of which the inner wall has been previously coated with a first coating liquid comprising:

(A) a water-soluble anionic dye, and

(B) a salt of a metal selected from the group consisting of alkaline metals, zinc family metals, aluminum family metals, tin family metals, iron family metals, chromium group metals, manganese family metals, copper family metals, silver and platinum family metals, to form a first coating,

wherein the first coating has been dried and then coated with a second coating liquid comprising:

(C) an alkaline earth metal compound, and at least one member selected from the group consisting of:

(D) a water-soluble anionic dye and

(E) an inorganic colloid, to form a second coating which second coating has also been dried.

5,292,835

MICROCAPSULES

Ekkehard Jahns, Hirschberg, and Ulrich Freundschuh, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 896,870, Jun. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 699,526, May 14, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 93,996

Claims priority, application Fed. Rep. of Germany, May 16, 1990, 4015753

Int. Cl.[5] **B01J** *13/02;* **C08F** *218/02*

U.S. Cl. 526—73 **8 Claims**

1. Microcapsules which are obtained by polymerizing

A) 30–100% by weight of one or more C_1–C_{24}-alkyl esters of acrylic or methacrylic acid (monomers I),

B) 0–70% by weight of a bi- or polyfunctional monomer (monomer II) which is soluble in a solvent, which solvent is insoluble or only sparingly soluble in water, the solvent being present together with the monomers and a free radical initiator as the disperse phase of a stable oil-in-water emulsion, the polymerization being initiated and controlled by decomposing the free radical initiator at at least two temperatures, the first and lower temperature being from 51° to 65° C., and the subsequent and higher temperature being from 59° to 72° C.

5,292,836

PREPARATION OF VINYL CHLORIDE POLYMERS USING HIGH-SPEED AND LOW-SPEED SHEAR AGITATION

Hajime Kitamura, Ichihara, and Ichiro Kaneko, Hazaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 680,353, Apr. 4, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,472

Claims priority, application Japan, Apr. 5, 1990, 2-90683

Int. Cl.[5] **C08F** *2/18*

U.S. Cl. 526—88 **5 Claims**

1. A process for preparation of a vinyl chloride polymer comprising the steps of subjecting an aqueous medium containing vinyl chloride monomer or a mixture of vinyl chloride monomer with other vinyl monomer, a polymerization initiator and a dispersant to high-speed shear agitation at a shear rate of from 10^4 sec^{-1} to 10^6 sec -1 at 10° to 30° C. for 0.05 to 5 seconds to prepare a suspended dispersion containing fine particles of the monomer(s) dispersed therein, then subjecting the suspended dispersion to low-speed agitation at a shear rate of from 10 to 100 sec^{-1} at 10° to 30° C. for 1 to 30 minutes, and thereafter starting suspension polymerization.

5,292,837

PROCESS FOR THE PREPARATION OF ETHYLENE (CO)POLYMERS

Andreas Heinrich, Hofheim am Taunus; Ludwig Böhm, Hattersheim am Main, and Hans-Albrecht Scholz, Hochheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,983

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 4126093

Int. Cl.[5] **C08F** *4/64*

U.S. Cl. 526—114 **9 Claims**

1. A process for the preparation of an ethylene polymer having a uniform coarse particle shape and high bulk density by polymerizing ethylene or ethylene with up to 10% by weight, based on the total amount of the monomers, of a 1-olefin of the formula R^6—CH=CH_2 in which R^6 is a straight-chain or branched alkyl radical having 1 to 12 carbon atoms, in suspension, in solution or in the gas phase, at a temperature of from 20° to 120° C. and at a pressure of from 2 to 60 bar, which comprises carrying out the polymerization in the presence of a catalyst which comprises

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a) the entire product of the components consisting essentially of

a1) a magnesium alkoxide of the formula I

$$Mg(OR^1)(OR^2) \quad (I)$$

in which R^1 and R^2 are identical and are an unbranched or branched alkyl radical having 1 to 20 carbon atoms or a $-(CH_2)_nOR^3$ radical where R^3 is an alkyl radical having 1 to 4 carbon atoms and n is an integer from 2 to 6,

a2) a tetravalent transition-metal compound of the formula II

$$M^1X_m(OR^4)_{4-m} \quad (II)$$

in which M^1 is titanium, zirconium or hafnium, R^4 is an alkyl radical having 1 to 9 carbon atoms, X is a halogen atom and m is an integer from zero to 4, and

a3) an organoaluminum compound of the formula III

$$AlR^5_pX_{3-p} \quad (III)$$

in which R^5 is an alkyl radical having 1 to 6 carbon atoms, X is a halogen atom and p is a number from zero to 3, or the reaction product of a trialkylaluminum compound or dialkylaluminum hydride with a diene, in the $Mg:M^1:Al$ ratio of 1:0.05 to 10:0.01 to 4, and

a4) a metal halide of the formula IV

$$M^2Cl_4 \quad (IV)$$

in which M^2 is titanium, silicon or tin, or BCl_3, in the $M^1:M^2$ ratio of from 1:0.2 to 100, the intermediate product of essentially the components a1, a2, and a3 having been reacted with said component a4, and

b) a trialkylaluminum compound having 1 to 6 carbon atoms in the alkyl radicals or the product of the reaction of a trialkylaluminum compound or dialkylaluminum hydride with a diene.

5,292,838

PROCESS AND CATALYST FOR PRODUCING SYNDIOTACTIC POLYMERS

Abbas Razavi, Patourage, Belgium, assignor to Fina Technology, Inc., Dallas, Tex.

Division of Ser. No. 876,714, Apr. 24, 1991, Pat. No. 5,223,467, which is a continuation of Ser. No. 418,497, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 220,007, Jul. 15, 1988, Pat. No. 4,892,851. This application May 25, 1993, Ser. No. 66,890

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] C08F *4/642*

U.S. Cl. 526—160 **16 Claims**

9. A process for the production of syndiotactic polypropylene comprising;

(a) providing a stereorigid cationic metallocene catalyst characterized by the formula:

$$[(CpSx)(CpS'y)MeQk]+Pa^-$$

wherein:

Cp is a substituted cyclopentadienyl ring;

each S is the same or different and is a hydrocarbyl radical having from 1-20 carbon atoms;

each S' is the same or different and is a hydrocarbyl radical having from 1–20 carbon atoms and selected such that CpSx is a sterically different ring than CpS'y and is in a sterically hindered relationship relative to CpS'y sufficient to prevent rotation of said rings and impart stereorigidity to said catalyst;

each Q is a hydrocarbyl group having 1–20 carbon atoms or is a halogen;

Me is a Group 4, 5, or 6 metal from the Periodic Table of Elements;

x is 1 to 5; y is from 1 to 5; k is from 0 to 2; and

Pa^- is a stable noncoordinating counter anion

(b) contacting said catalyst with propylene in a polymerization reaction zone and maintaining said reaction zone under polymerization reaction conditions to produce syndiotactic polypropylene.

5,292,839

ALLYL PEROXYKETAL CHAIN TRANSFER AGENTS

Luc L. T. Vertommen, Westervoort; John Meijer, Deventer, both of Netherlands, and Bernard J. Maillard, Pessac, France, assignors to Akzo N.V., Arnhem, Netherlands

PCT No. PCT/EP91/02008, § 371 Date Apr. 28, 1993, § 102(e) Date Apr. 28, 1993, PCT Pub. No. WO92/06953, PCT Pub. Date Apr. 30, 1992

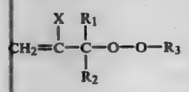
PCT Filed Oct. 16, 1991, Ser. No. 39,253

Claims priority, application PCT Int'l Appl., Oct. 16, 1990, PCT/EP90/01780

Int. Cl.[5] C08F *4/32*

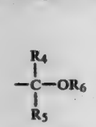
U.S. Cl. 526—232 **7 Claims**

1. Peroxides useful as chain transfer agents in radical (co)-polymerization of monomers characterized in that said peroxides are represented by the following formula:



(IV)

wherein R_1 and R_2 are independently selected from hydrogen, lower alkyl, alkenyl and aryl, or R_1 and R_2 may combine to form a C_5–C_7 aliphatic ring: R_3 is represented by the formula V:



(V)

wherein R_4, R_5 and R_6 are independently selected from optionally substituted lower alkyl, alkenyl aryl and hydrogen, whereby R_4 and R_5 cannot be hydrogen together, or any two of R_4, R_5 and R_6 may combine to form a ring; and X is an activating group capable of enhancing the reactivity of the olefinic group towards free radical addition, and together with R_1 or R_2, may combine to form an aliphatic ring.

5,292,840

POLYMERIC SUPPORTS

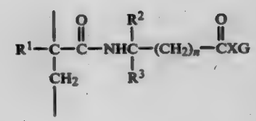
Steven M. Heilmann, Afton; Jerald K. Rasmussen, Stillwater; Larry R. Krepski, White Bear Lake; Dean S. Milbrath, Stillwater; Patrick L. Coleman, Minneapolis, and Margaret M. Walker, Apple Valley, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 158,258, Feb. 19, 1988, Pat. No. 4,871,824, which is a continuation-in-part of Ser. No. 25,605, Mar. 13, 1987, Pat. No. 4,737,560. This application Apr. 10, 1989, Ser. No. 335,835

Int. Cl.[5] C08F *20/58, 22/38*

U.S. Cl. 526—304 **10 Claims**

1. A polymeric adduct support having units of the formula



wherein

R^1 is H or CH_3,

R^2 and R^3 each independently is an alkyl group having 1 to 14 carbon atoms, a cycloalkyl group having 3 to 14 carbon atoms, an aryl group having 5 to 12 ring atoms, an arenyl group having 6 to 26 carbon and 0 to 3 S, N, and non-peroxidic O heteroatoms, or R^2 and R^3 taken together with the carbon to which they are joined can form a carbocyclic ring containing 4 to 12 ring atoms,

n=0 or 1,

X is —O—, —S—, —NH—, or $-NR^4$ wherein R^4 is alkyl or aryl, and

G is the residue of HXG which performs the adsorbing, complexing, catalyzing, separating, or reagent function of the adduct supports, said adduct support having in the range of 0 to 99 molar parts of crosslinking monomer incorporated therein, and said adduct support being a bead.

5,292,841

LAMINATING RESINS HAVING LOW ORGANIC EMISSIONS

Thomas W. Smeal, Murrysville, and George L. Brownell, Mount Lebanon Township, Allegheny County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1993, Ser. No. 47,526

Int. Cl.[5] C08F *12/24*

U.S. Cl. 526—313 **5 Claims**

1. A laminating resin composition comprising (A) an acrylated or methacrylated cycloaliphatic epoxide, (B) an acrylated or methacrylated alkoxylated bisphenol-a, in a weight ratio of (A) to (B) of about 3 to 1 to abut 1:5, and (C) about 5% to about 50%, based on the total composition, cyclohexyl methacrylate.

5,292,842

ADHESIVE ACRYLIC COPOLYMERS WITH A BROAD MOLECULAR WEIGHT DISTRIBUTION

Henry W. Yang, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 749,095, Aug. 23, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 23,748

Int. Cl.[5] C08F *220/06, 220/10*; C08L *31/02, 33/02*

U.S. Cl. 526—318.4 **24 Claims**

1. A pressure sensitive adhesive comprising an acrylic copolymer comprising:

from about 10 to about 50 percent by weight of lower alkyl acrylate, said lower alkyl having 1 to 4 carbon atoms, from about 25 to about 88 percent by weight of an upper alkyl acrylate, said upper alkyl having 5 to 14 carbon atoms, and from about 1 to about 15 percent by weight of a acrylic acid, said copolymer having a unimodal Gaussian type molecular weight distribution of at least about 6 with a minimum Mn of about 10,000.

5,292,843

POLYMERS CONTAINING MACROMONOMERS

Richard D. Jenkins, Hurricane; David R. Bassett, Charleston, both of W. Va., and Gregory D. Shay, Cary, N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed May 29, 1992, Ser. No. 887,647

Int. Cl.[5] C08F *20/06*

U.S. Cl. 526—318.5 **17 Claims**

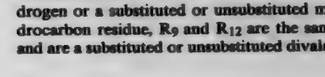
1. A polymer comprising the reaction product of:

(A) about 1–99.9 weight percent of one or more alpha, beta-monoethylenically unsaturated carboxylic acids;

(B) about 0–98.9 weight percent of one or more monoethylenically unsaturated monomers;

(C) about 0.1–99 weight percent of one or more complex hydrophobe-containing monoethylenically unsaturated macromonomers; and

(D) about 0–20 weight percent or greater of one or more polyethylenically unsaturated monomers; wherein said complex hydrophobe-containing monethylenically unsaturated macromonomer is represented by the formula:



wherein:

R^1 is a monovalent residue of a substituted or unsubstituted complex hydrophobe compound;

each R^2 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue;

R^3 is a substituted or unsubstituted divalent hydrocarbon residue;

R^4, R^5 and R^6 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue; and

z is a value of 0 or greater; in which said substituted or unsubstituted complex hydrophobe compound is represented by the formula selected from:

wherein R_1 and R_2 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided at least two of R_1, R_2, R_3, R_4, R_5 and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2 and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5; and

wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent

hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater, provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} an R_{14} having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13} and R_{15}.

5,292,844

VINYL ACETATE MODIFIED SUSPENSION POLYMER BEADS, ADHESIVES MADE THEREFROM AND A METHOD OF MAKING

Chung I. Young, St. Paul, and Stephen E. Krampe, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 998,257, Dec. 31, 1992, abandoned, which is a continuation of Ser. No. 703,891, May 22, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 74,991

Int. Cl.[5] C08F *220/18, 220/40*

U.S. Cl. 526—329.5 **26 Claims**

1. A method for suspension polymerization of a pressure-sensitive acrylate copolymer bead having a glass transition temperature of 0° C. or less, comprising the steps of:

(a) making a monomer-containing premix comprising

(i) about 70 to about 98 parts by weight acrylic acid ester monomer of non-tertiary alcohol, said alcohol having from 1 to 14 carbon atoms, with the average number of carbon atoms being about 4 to about 12;

(ii) about 1 to about 10 parts by weight polar monomer copolymerizable with said acrylic acid ester monomer;

(iii) about 1 to about 40 parts by weight vinyl acetate monomer;

wherein (i), (ii), and (iii) comprise 100 parts by weight of said monomer-containing premix;

(iv) about 0.01 to about 0.5 part by weight chain transfer agent;

(v) about 0.05 to about 1.0 parts by weight free-radical initiator; and

wherein (iv) and (v) are each independently based upon 100 parts by weight total monomer content;

(b) combining said monomer-containing premix with a water phase containing a suspending agent to form an oil-in-water suspension;

(c) concurrently agitating said suspension and permitting polymerization of said monomers until copolymer beads are formed in water; and

(d) collecting said copolymer beads; wherein about 0.05 to about 30 parts by weight total of a modifier moiety based upon 100 parts by weight total monomer content is present in one or more of the following: said monomer-containing premix, said water phase; said oil-in-water suspension; the aqueous suspension of polymer beads after the exotherm of the polymerization has been reached.

5,292,845

ETHYLENE/ALPHA-OLEFIN/7-METHYL-1,6-OCTADIENE COPOLYMER RUBBER AND COMPOSITION OF THE SAME

Masaaki Kawasaki; Toshimasa Takata; Mitsuhiko Onda, all of Waki; Hidenari Nakahama, and Kiyoshi Honma, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,986

Claims priority, application Japan, Jan. 23, 1992, 4-010299; Oct. 14, 1992, 4-275870; Oct. 14, 1992, 4-275871

Int. Cl.[5] C08F *236/20;* **C08L** *23/16*

U.S. Cl. 526—335 **12 Claims**

1. An ethylene /α-olefin/7-methyl-1,6-octadiene copolymer rubber, said copolymer rubber being a random copolymer rubber of ethylene, α-olefin and 7-methyl-1,6-octadiene copolymer, wherein the ethylene/α-olefin/7-methyl-1,6-octadiene copolymer rubber comprises

(i) a molar ratio of ethylene to α-olefin (ethylene/α-olefin) in the range of 40/60 to 90/10;

(ii) a content of 7-methyl-1,6-octadiene in the range of 0.4 to 25% by mol;

(iii) an intrinsic viscosity (η) as measured in decahydronaphthalene at 135° C., from 0.1 dl/g to 8 dl/g;

(iv) an intensity ratio D of $T\alpha\beta$ to $T\alpha\alpha(T\alpha\beta/T\alpha\alpha)$ in a ^{13}C-NMR spectrum of said copolymer rubber not more than 0.5;

(v) a B value determined by a ^{13}C-NMR spectrum of said copolymer rubber and the following formula in the range of 1.00 to 1.50

$$B = P_{OE} / (w P_E \cdot P_O)$$

wherein P_E is a molar fraction of the ethylene units derived from ethylene; P_O is a molar fraction of the α-olefin units derived from α-olefin; and P_{OE} is a ratio of the number of α-olefin/ethylene chains to the number of all dyad chains in the random copolymer rubber; and

(vi) a glass transition temperature Tg measured by DSC not higher than −53° C.

5,292,846

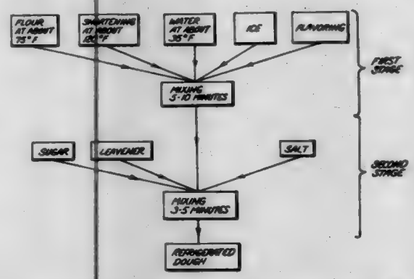
METHOD OF MANUFACTURING REFRIGERATED DOUGH

Joseph C. McDilda; Cheryl L. Mitchell, both of Brooklyn Park, and Barbara L. Francken, Richfield, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 1, 1992, Ser. No. 876,925

Int. Cl.[5] A21D *6/00, 8/02*

U.S. Cl. 426—549 **10 Claims**



1. A method of manufacturing refrigerated sweet dough at or below 70 degrees Fahrenheit or thereabout without cooling flour below about 75° F., comprising:

a) combining and mixing flour, water, ice, and fat to form a dough;

b) mixing said dough to develop the gluten;

c) adding sugar and leavener to said developed dough wherein said sugar is chosen to maintain the temperature of said dough at or below 70 degrees Fahrenheit or thereabout; and

d) mixing said dough with said sugar and said leavener to evenly distribute said sugar and said leavener throughout said dough.

5,292,847

SILICONE ALKOXYLATES

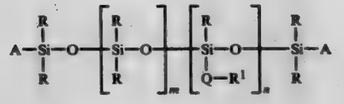
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Corporation, Toronto, Canada

Continuation-in-part of Ser. No. 37,655, Mar. 18, 1993, abandoned. This application Sep. 29, 1993, Ser. No. 128,161

Int. Cl.[5] C08G *77/14*

U.S. Cl. 528—14 **18 Claims**

1. A silicone compound which conforms to the following structure;



wherein

R is methyl;

R^1 is $-(-CH_2-CH_2-O-)_x-(CH_2-CH(CH_3)-CH_2-O)_y-(CH_2-CH_2-O)_z-H$

Q is a $-(CH_2)_c-CO(O)-O-$;

c is an integer ranging from 3 to 17;

A is either —R or $-Q-R^1$,

m is an integer ranging from 1 to 200;

n is an integer ranging 0 to 10 when A is $-Q-R^1$, and an integer ranging from 1 to 10 when A is R;

x, y and z are each independently integers ranging from 0 to 20 with the proviso that x+y+z be greater than or equal to 1.

5,292,848

FLUOROSILICONE COMPOSITION AND ITS GELLIKE CURED PRODUCT

Masayuki Ikeno; Miyuki Tanaka; Hiroyasu Hara, all of Annaka; Hironao Fujiki, Takasaki; Shinichi Sato, and Hiroshi Inomata, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,946

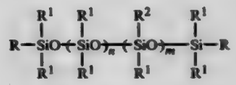
Claims priority, application Japan, Oct. 22, 1991, 3-302284

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **7 Claims**

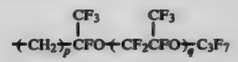
1. A fluorosilicone composition, comprising:

(A) an alkenyl group-containing organopolysiloxane represented by the following general formula (1):



(1)

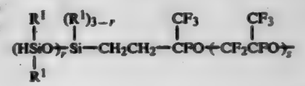
wherein R represents an alkenyl group, R^1's, which may be the same or different, each represent an alkyl group having 1 to 8 carbon atoms or a phenyl group, R^2 represents a group represented by the following formula (2)



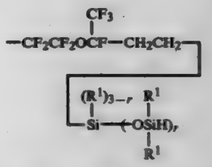
(2)

in which p is an integer of 2 to 8 and q is an integer of 1 to 10, and n and m are each a positive integer,

(B) a hydrogensiloxane having silicon-bonded hydrogen atoms represented by the following general formula (3):



(3)



wherein R^1 has the same meaning as defined above, r is an integer of 2 or 3, and s is a positive integer, and

(C) a platinum family metal catalyst.

5,292,849

PROCESS FOR THE MANUFACTURING OF ACRYLIC ORGANOPOLYSILOXANES

Kazutoshi Fujioka; Takafumi Sakamoto, and Masatoshi Arai, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

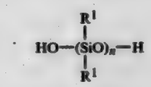
Filed Dec. 28, 1992, Ser. No. 997,485

Claims priority, application Japan, Dec. 27, 1991, 3-359422

Int. Cl.[5] C08G *77/06*

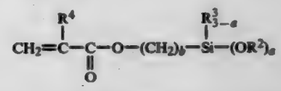
U.S. Cl. 528—18 **8 Claims**

1. A process for the production of an acrylic organopolysiloxane, comprising reacting a hydroxyl group containing organosilicon compound (A) of formula (1):



(1)

wherein each R^1 independently is a substituted or an unsubstituted monovalent hydrocarbon group, and n is an integer from 1 to 10,000, with an acrylic group-containing silane compound (B) of formula (2):

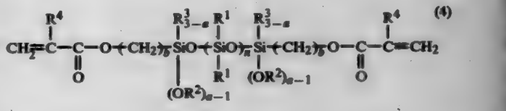


(2)

wherein each of R^2 and R^3 independently is a substituted or an unsubstituted monovalent hydrocarbon group, R^4 is a hydrogen atom or a methyl group, and each of a and b independently is an integer from 1 to 3, in the presence of a divalent tin compound of formula (3):

$$SnX_x \quad (3)$$

wherein each X independently is a halogen atom, an alkoxy group, or the residue of carboxylic acid, to produce an acrylic organopolysiloxane of formula (4):



(4)

wherein R^1 through R^4, n, a and b are as described above.

VOL 1160 ISS 2 MR 8 1994 UMI

5,292,850

POLYSILOXANIC STABILIZERS CONTAINING STERICALLY HINDERED PHENOL GROUP AND REACTIVE GROUPS

Luciano Pallini, San Donato Milanese; Daniele Fabbri, Riccione; Rossella Farris, and Carlo Neri, both of San Donato Milanese, all of Italy, assignors to Enichem Synthesis, Palermo, Italy

Filed Sep. 11, 1992, Ser. No. 944,061
Claims priority, application Italy, Sep. 11, 1991, MI91-A/002400
Int. Cl.[5] C08G *77/20, 77/26, 77/00, 77/16*
U.S. Cl. 528—32 **11 Claims**

1. Polymeric stabilizers having the formula:

$$MX_mY_pZ_qM'$$

wherein

X is —O—Si(R1)(R2)— or —O3/2Si(R2)—

Y is —O—Si(R1)(R4)— or —O3/2Si(R4)—

Z is —O—Si(R1)(R1)— or —O1/2Si(R1)— or —O4/2Si—

M is R″—Si(R′)(R′)—, H, R4,

M′ is —OM,

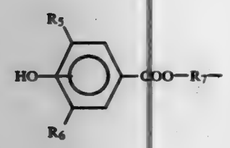
M and M′ can optionally form together a direct bond thus producing a cyclic structure,

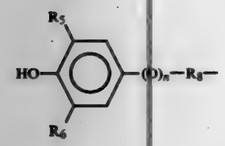
R_1 is a phenyl or a linear or branched alkyl radical containing from 1 to 20 carbon atoms,

R_2 si a reactive organic group which contains a carbon-carbon double bond, an epoxy ring, a sulfide group, or an aminic group,

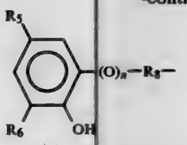
R_3 is a linear or branched alkyl radical containing from 1 to 6 carbon atoms,

R_4 is a radical selected from the group including:





-continued



wherein,

R_5 and R_6, which may be the same or different, are linear or branched alkyl radicals which contain from 1 to 10 carbon atoms,

R_7 is a linear or branched alkylene radical which contains from 3 to 10 carbon atoms,

R_8 is a linear or branched alkylene radical which contains from 1 to 10 carbon atoms or a biradical selected from the group consisting of —R9—COO—R10, —R9—COO—R10—S—R11—, and —R10—S—R11—,

R_9, R_{10} and R_{11}, which may be the same or different, are linear or branched alkylene radicals which contain from 2 to 10 carbon atoms,

R′ is a phenyl or a linear or branched alkyl radical which contains from 1 to 10 carbon atoms,

R″ is the same as R′, R_2 or R_4,

m and p, which may be the same or different, are integers from 1 to 50, and

q is an integer between 0 and 50,

n is equal to 0 or 1.

5,292,851

SUBSTITUTED SILYL-TERMINATED COMPOUNDS AND POLYMERS THEREOF

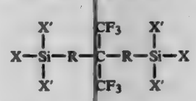
Kreisler S. Y. Lau, Alhambra; Abraham L. Landis, Northridge, and Thomas K. Dougherty, Playa del Rey, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 507,070, Apr. 10, 1990, Pat. No. 5,149,764, which is a division of Ser. No. 73,025, Jul. 14, 1987, Pat. No. 4,935,479. This application Aug. 10, 1992, Ser. No. 926,625
Int. Cl.[5] C08C *77/04*
U.S. Cl. 528—38 **11 Claims**

1. A method for forming a polymer-ceramic network, comprising the steps of:

a) providing a compound selected from the group consisting of:

(1) a compound having the formula



I

where

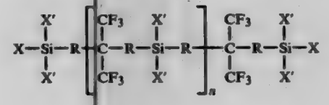
R is a benzoxazole group substituted with a phenylene group on the oxazole moiety, such that the fused benzene ring of the benzoxazole group is attached to the C_3F_6 group and the phenylene group on the oxazole moiety is attached to the —SiXX′2 group,

X is OR′, OH, H, Cl, or Br,

X′ is OR′, Cl, or Br and

R′ is an alkyl group having 1 to 8 carbon atoms; and

(2) a compound having the formula:



IV

where

X, R and R′ are as defined above, and

n is an integer from 1 to about 10;

b) dissolving said compound in a solvent to form a solution; and

c) adding sufficient water to said solution to hydrolyze and polymerize said compound and thus form said polymer-ceramic network.

5,292,852

Patent Not Issued For This Number

5,292,853

POLYURETHANE RESIN CONTAINING A PHOSPHORIC ACID GROUP

Masahiko Yasuda; Shigeo Hosokawa; Yorozu Yokomori, all of Mie; Shinichiro Jimbo, Tokyo, all of Japan, and Edmond G. Kolycheck, Lorain, Ohio, assignors to Kyowa Hakko Kogyo Co., Ltd. and The B.F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 426,132, Oct. 24, 1989, Pat. No. 5,037,934. This application Aug. 5, 1991, Ser. No. 740,398
Claims priority, application Japan, Oct. 28, 1988, 63-271035; May 22, 1989, 1-126580; Aug. 8, 1989, 1-203738
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] C08G *18/00*
U.S. Cl. 528—72 **8 Claims**

1. A polyurethane resin, comprising:

a urethane resin synthesized from a reactant mixture of at least one phosphorus compound, an epoxy compound having at least two epoxy groups, one epoxy group and at least one hydroxyl group, or combinations thereof,

a polyisocyanate, and

a polyfunctional hydroxyl compound having a molecular weight by end group analysis of from about 300 to about 10,000, and

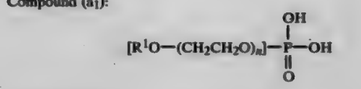
optionally, a chain extender,

said urethane resin containing one phosphoric acid group or one residual group derived from phosphoric acid per 3,000 to about 200,000 number average molecular weight of said urethane resin, said urethane resin having a weight average molecular weight of from about 10,000 to about 350,000;

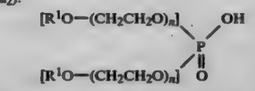
said phosphorus compound being a phosphorus compound (a) represented by the structural formula set forth below, or a phosphorus compound (b) represented by the structural formula set forth below, or a phosphorus compound (c) set forth by the structural formula set forth below,

said phosphorus compound (a) being a compound (a_1) alone or a mixture of the compound (a_1 and another compound (a_2):

Compound (a_1):

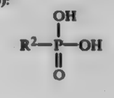


Compound (a_2):

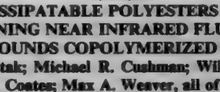


wherein R^1 is a hydrogen atom, a phenyl group, an alkyl group having 1–40 carbon atoms, or an alkylphenyl group having 1–40 carbon atoms, and n is an integer of 0–30.

Phosphorus compound (b):



wherein R^2 is a phenyl group, an alkyl group having 1–40 carbon atoms, or an alkylphenyl group having 1–40 carbon atoms; and wherein phosphorus compound (c) is



where R^3 is an aromatic or an alkyl substituted aromatic having from 6 to 40 carbon atoms, and R^4 is a disubstituted alkyl having from 1 to 12 carbon atoms.

5,292,854

SYNTHESIS OF PHTHALONITRILE RESINS CONTAINING ETHER AND IMIDE LINKAGES WITH AROMATIC DIAMINE CURING AGENT

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 698,741, Jan. 10, 1991, Pat. No. 5,159,054, and Ser. No. 352,327, May 16, 1989, Pat. No. 5,003,078. This application Jul. 30, 1992, Ser. No. 921,776
Int. Cl.[5] C08G *63/44*
U.S. Cl. 528—170 **12 Claims**

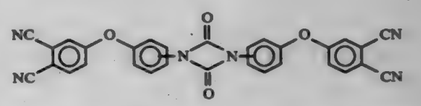
1. A method of polymerization comprising:

heating a composition comprising at least one monomer and at least one aromatic diamine curing agent above the composition melting point;

continuing to heat said composition at a temperature above the glass transition temperature to the composition gelation point;

curing the composition to complete crosslinking of the polymer;

wherein the composition comprises at least one monomer of the formula:



where R is an aromatic tetravalent radical or substituted aromatic tetravalent radical.

5,292,855

WATER-DISSIPATABLE POLYESTERS AND AMIDES CONTAINING NEAR INFRARED FLUORESCENT COMPOUNDS COPOLYMERIZED THEREIN

James J. Krutak; Michael R. Cushman; William W. Parham; Clarence A. Coates; Max A. Weaver, all of Kingsport, Tenn., and Gabor Patonay, Stone Mountain, Ga., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1993, Ser. No. 19,535
Int. Cl.[5] C08G *63/44*
U.S. Cl. 528—289 **7 Claims**

1. A water-dissipatable polymer comprising:

(i) monomer residues of at least one dicarboxylic acid;

(ii) about 4 to 25 mole percent, based on the total of all acid, hydroxy and amino equivalents, of monomer residues of at least one difunctional sulfo monomer containing at least one sulfonate group bonded to an aromatic ring where the functional groups are hydroxy, carboxyl or amino;

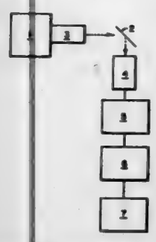
(iii) monomer residues of at least one diol or a mixture of a diol and a diamine; and optionally

(iv) monomer residues of at least one difunctional monomer reactant selected from hydroxycarboxylic acids, aminocarboxylic acids and aminoalkanols;

provided that at least 20 percent of the groups linking the

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monomeric units are ester linkages; said water dissipatable polyester having from about 0.1 ppm by weight to about 10%



by weight of a thermally stable near infrared flouorphoric compound copolymerized therein.

5,292,856

AROMATIC CONDENSATION POLYAMIDES WITH PENDANT ESTER AND AMIDE GROUPS

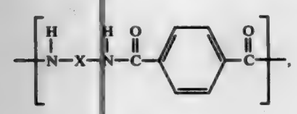
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

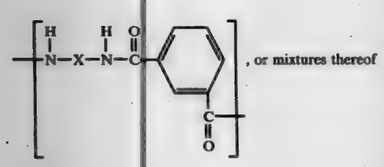
Filed Apr. 8, 1993, Ser. No. 44,013

Int. Cl.[5] G08G *69/32, 69/12*

U.S. Cl. 528—331 **6 Claims**

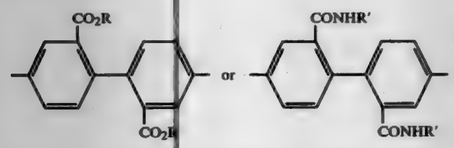
1. A polyamide comprising repeat units of the formula



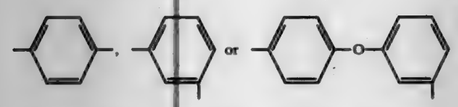


, or mixtures thereof

where X is



or mixtures thereof with from 2 to 95 mole % of



where R is alkyl or aralkyl and R′ is methyl or ethyl.

5,292,857

PREPARATION OF NYLON 66 POLYMERS FROM 1,8-DIAZACYCLOTETRADECANE-2,7-DIONE

David N. Marks, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1993, Ser. No. 16,948

Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—335 **2 Claims**

1. A process for the production of nylon 66 polymer or copolymer from 1,8-diazacyclotetradecane-2,7-dione which comprises (a) forming a reaction mixture containing 10 to 90 parts by weight 1,8-diazacyclotetradecane-2,7-dione and a complementary amount of at least one member of the group consisting of the salt of adipic acid and hexamethylenediamine, and epsilon-caprolactam, (b) heating said mixture under a pressure greater than atmospheric pressure, (c) slowly lowering the pressure to atmospheric pressure while increasing the temperature to about 275 degrees C., (d) maintaining the temperature at about 275 degrees C. and at a pressure no more than atmospheric pressure until polymer having a relative viscosity of at least about 25 is obtained, where relative viscosity is measured at 25 degrees C. in a solution of 8.4% by weight polymer in formic acid containing 10% by weight water.

5,292,858

METHOD OF PRODUCTION OF COPOLYMERS OF POLYAMINO ACIDS

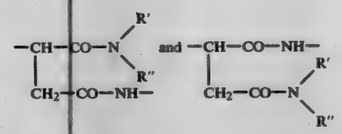
Louis L. Wood, Elkridge, Md., assignor to SRCHEM Incorporated, Elkridge, Md.

Filed Mar. 16, 1993, Ser. No. 31,856

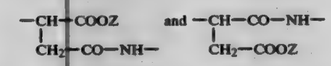
Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—345 **8 Claims**

1. A method of synthesis of a polyamide that has a repeating unit of the general formula of



wherein R′ is a hydrogen or an alkyl group having 1 to 36 carbons and R″ is a hydrogen or an alkyl group having 1 to 36 carbons, together with at least one of the groups



wherein Z represents a hydrogen atom, an alkali metal or an alkaline earth metal, as a repeating unit, the method comprising reacting maleic anhydride with an alcohol containing 1 to 36 carbons, to form the half ester followed by the addition of an equivalent of ammonia, or ammonia and an amine, containing one to 36 carbons, and heating to 120°–350° C., until one equivalent of alcohol is distilled away and hydrolyzing the copolymer of polysuccinimide formed with an alkaline earth or alkali metal hydroxide or ammonium hydroxide.

5,292,859

RARE EARTH METAL COORDINATION COMPOUNDS AS LACTONE POLYMERIZATION CATALYSTS

Thomas M. Ford, Greenville, and Stephan J. McLain, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

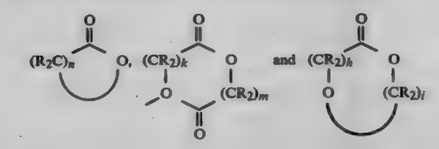
Filed Dec. 22, 1992, Ser. No. 995,457

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] C08G *63/84, 63/91*

U.S. Cl. 528—354 **19 Claims**

1. A process for polymerizing lactide comprising: contacting at 100° C. to 220° C. a lactide and up to 20 mole percent of another lactone selected from the group consisting of



and mixtures thereof, where n is 4 or 5, h, i, k and m are independently 1 or 2, each R is independently selected from H, a hydrocarbyl containing up to 12 carbon atoms or substituted hydrocarbyl containing up to 12 carbon atoms with a catalytic amount of a catalyst of the formula MZ_3, or MZ_3 coordinated with one or more neutral ligands, wherein M is metal selected from the group consisting of scandium, yttrium, bismuth and lanthanide series rare earth metals and the Zs are independently the same or different highly coordinating ligands and cooling the resulting polymer.

5,292,860

COPOLYMER AND METHOD FOR PRODUCTION THEREOF

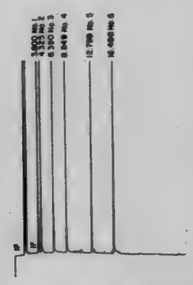
Takeshi Shiotani, Kakogawa, and Genta Kobayashi, Takasago, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 16, 1992, Ser. No. 945,505

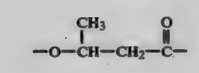
Claims priority, application Japan, Sep. 17, 1991, 3-267255

Int. Cl.[5] C08G *63/06;* **C12D** *7/62*

U.S. Cl. 528—361 **22 Claims**

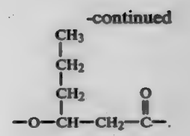


1. A two-component copolymer consisting of 3-hydroxybutyrate (3HB) units and 3-hydroxyhexanoate (3HHx) units, wherein said units, respectively, have the following structures:



(3HB)

-continued



(3HHx)

5,292,861

TRIFUNCTIONAL CYANATE ESTERS, POLYMERS THEREOF; USE AND PREPARATION THEREOF

Konstantinos I. Papathomas, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1992, Ser. No. 996,904

Int. Cl.[5] C08G *73/06*

U.S. Cl. 528—422 **10 Claims**

1. Trisphenol PA tricyanate.

5,292,862

METHOD FOR THE PYROLYSIS OF POLYMERS

Eigo Miura; Takashi Yamanaka; Ryoji Ohori; Akio Ohdaira; Kenichi Nishiwaki; Yoshikuni Itoh; Yoshinori Morita, and Hajime Inagaki, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

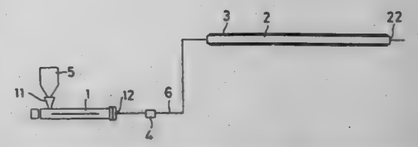
PCT No. PCT/JP91/00471, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO91/15521, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 10, 1991, Ser. No. 778,051

Claims priority, application Japan, Apr. 10, 1990, 2-94498; May 14, 1990, 2-123865; Jun. 28, 1990, 2-170438

Int. Cl.[5] C08F *6/26*

U.S. Cl. 528—481 **9 Claims**



1. A method for the pyrolysis of an olefin polymer for producing a pyrolytic wax comprising the steps of:

feeding an olefin to an extruder where the polymer is melted,

metering the molten polymer from the extruder to a tubular pyrolysis reactor through a gear pump connected to the extruder;

pyrolytically decomposing the polymer in the tubular pyrolysis reactor in the presence of a higher fatty acid, a hydrochloric acid acceptor or a mixture thereof, to produce low molecular weight polymers;

introducing the low molecular weight polymers from the tubular pyrolysis reactor into an evaporator while adjusting the temperature in the evaporator to about 250° to 430° C., and causing evaporation of the volatile components in the evaporator while blowing an inert gas into the evaporator with the low molecular weight polymers; and

withdrawing volatile components separated from the low molecular weight polymers from the evaporator.

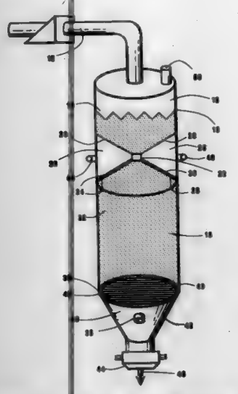
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,863

PROCESS FOR REMOVING UNPOLYMERIZED GASEOUS MONOMERS FROM OLEFIN POLYMERS

Duan-Fan Wang, Somerville, N.J., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Nov. 2, 1992, Ser. No. 970,190
Int. Cl.[5] C08F *6/28*
U.S. Cl. 528—483 **14 Claims**



1. A process for removing unpolymerized gaseous monomers from a solid olefin polymer containing said gaseous monomers which comprises

(a) counter-currently passing a purge gas through said polymer in a purge vessel in an amount and at a velocity sufficient to remove substantially all of said gaseous monomers from said polymer and to form and maintain a fully expanded bed within said vessel having an upper limit defined by gas permeable, solids impermeable constraint means positioned within said vessel;

(b) passing said gaseous stream containing said gaseous monomer through said constraint means and thence out of said vessel; and

(c) discharging polymer solids from said vessel.

5,292,864

DECOLORIZING POLYASPARTIC ACID POLYMERS

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to SRCHEM Incorporated, Elkridge, Md.

Continuation-in-part of Ser. No. 926,243, Aug. 7, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 44,902
Int. Cl.[5] C08G *69/10*
U.S. Cl. 528—490 **14 Claims**

1. A method for decolorizing polymers of aspartic acid prepared by thermal condensation comprising reacting a water solution of the polymer with a decolorizing agent selected from the group consisting of hypochlorite, chlorine, chlorine dioxide, hydrogen peroxide, a peroxydicarbonate or ozone.

5,292,865

PROCESS FOR PREPARATION AND AFTER-TREATMENT OF POLYESTER PELLETS

Hans Kerpes, Grossheubach, and Ulrich Thiele, Bruchkoebel, both of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,842
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1992, 4223197
Int. Cl.[5] C08F *6/10*
U.S. Cl. 528—492 **6 Claims**

1. Process for production and thermal after-treatment of pellets of ethylene terephthalate homopolymers or copolymers starting from polyesters having an intrinsic viscosity within the range of 0.45 to 0.95 dL/g, whereby less than 1 ppm free acetaldehyde and less than 12 ppm bound acetaldehyde are present in the after-treated pellets comprising the steps of

a) partially crystallizing the polyester by extruding the polyester in a molten state to form strands,

cooling said strands to a temperature in the range of glass transition temperature to 30° C. below the melting point at at least the surface,

drawing said strands by a factor of at least 2 at said cooling temperature, and

immediately chopping into pellets said strands at a temperature in the range of said drawing temperature to 30° C. below the melting point

said pellets having a specific surface area in the range of 1.95 to 2.90 m^2/kg,

an individual pellet weight in the range of 5–15 mg, and a bulk density in the range of 750–900 kg/m^3,

and b) heating said pellets for 2 to 20 hours at a temperature of 140°–185° C. in the presence of a flowing gas mixture consisting of

60–90 vol % N_2,

5–21 vol % O_2,

0.5–25 vol % CO_2 (total 100%),

and having a dew point of less than −20° C.

the velocity of flow being 5–40 m/min at a quantity ratio of 0.5 to 2.5 kg/h of gas mixture per 1.0 kg/h polyester.

5,292,866

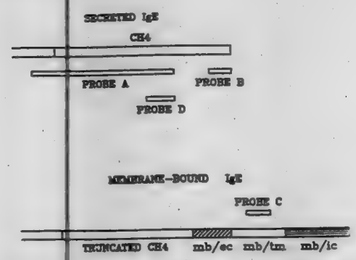
Patent Not Issued For This Number

5,292,867

CHIMERIC MONOCLONAL ANTIBODIES WHICH BIND TO THE EXTRACELLULAR SEGMENT OF THE MEMBRANE-BOUND DOMAIN OF A HUMAN MEMBRANE-BOUND IMMUNOGLOBULIN

Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.

Continuation of Ser. No. 817,918, Jan. 6, 1992, abandoned, which is a division of Ser. No. 272,243, Nov. 16, 1988, Pat. No. 5,091,313. This application Jan. 11, 1993, Ser. No. 3,839
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] C07K *15/28*
U.S. Cl. 530—387.3 **2 Claims**



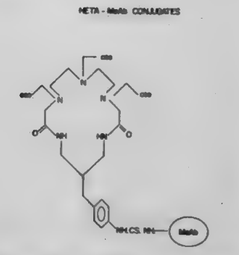
1. Chimeric monoclonal antibody which binds to the extracellular segment of the membrane-bound domain of a human membrane-bound immunoglobulin ϵ chain wherein the antibody's variable and constant regions originated from different species.

5,292,868

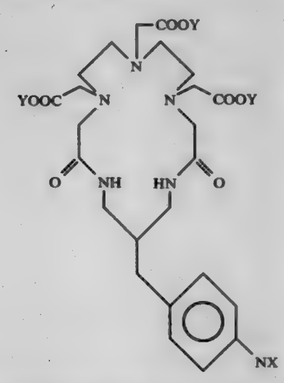
CHELATING AGENTS FOR ATTACHING METAL IONS TO PROTEINS

Ramaswamy Subramanian, Frederick, Md., assignor to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 720,277, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 438,558, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 358,917, May 26, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 44,875
Int. Cl.[5] C07K *15/28, 17/02;* A61K *49/02, 39/44*
U.S. Cl. 530—391.5 **16 Claims**



1. A complex comprising a polypeptide bound to the chelating agent HETA of the formula:



wherein X is selected from the group consisting of O_2, NBr, H_2, $HCOCH_2Br$ and CS; and Y is selected from the group consisting of H, CH_3 and C_2H_5.

5,292,869

METHOD FOR ISOLATING AND PURIFYING TRANSFERRIN AND LACTOFERRIN RECEPTOR PROTEINS FROM BACTERIA AND THE PREPARATION OF VACCINES CONTAINING THE SAME

Anthony B. Schryvers, Calgary, Canada, assignor to The Board of Governors of the University, Alberta, Canada

Continuation-in-part of Ser. No. 344,356, Apr. 27, 1989, abandoned. This application Apr. 11, 1990, Ser. No. 507,481
Int. Cl.[5] A61K *39/095, 39/04, 39/02;* C07C *103/52*
U.S. Cl. 530—413 **4 Claims**

1. A method for isolating and purifying transferrin receptor protein from bacterial pathogens containing the same comprising isolating a membrane preparation from a bacterial strain expressing transferrin-binding activity binding a biotinylated derivative of transferrin to said membrane preparation, and isolating said transferrin receptor protein by affinity chromatography with a compound selected from the group consisting of immobilized streptavidin and immobilized avidin.

5,292,870

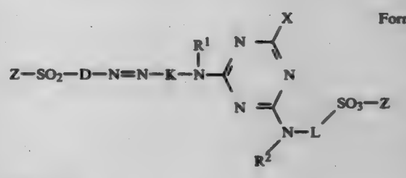
REACTIVE AZO DYES INCLUDING A TRIAZINE RING AND SULPHATOVINYL OR SULPHATOETHYL SUBSTITUENTS

Keaneth Anderton, Bury, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 8, 1991, Ser. No. 789,758
Claims priority, application United Kingdom, Nov. 16, 1990, 9025018
Int. Cl.[5] C09B *62/51;* D06P *1/38*
U.S. Cl. 534—638 **5 Claims**

1. A compound which, in the free acid form, is of Formula (1):

Formula (1)



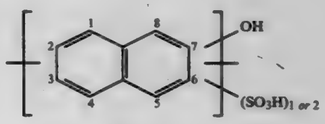
wherein:

Z is vinyl, $—CH_2CH_2OSO_3H$, $—CH_2CH_2SSO_3H$, $—CH_2CH_2Cl$ or $—CH_2CH_2OCOCH_3$;

D and L are phenylene;

K is of Formula (4):

Formula (4)



R^1 is H or C_{1-4}-alkyl;

R^2 is C_{1-4}-alkyl; and

X is chloro.

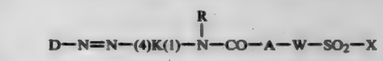
5,292,871

WATER-SOLUBLE COMPOUNDS HAVING A FIBER-REACTIVE GROUP OF THE VINYL SULFONE MONOAZO SERIES BONDED TO AN ALKANOYLAMINO OF BENZOYLAMINO GROUPING, SUITABLE AS DYESTUFFS

Ludwig Schläfer, Kelkheim, and Werner H. Russ, Flörsheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 22, 1992, Ser. No. 965,072
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135067
Int. Cl.[5] C09B *62/51;* D06P *1/384*
U.S. Cl. 534—642 **7 Claims**

1. A monoazo compound conforming to the formula (1)



(1)

wherein:

D is monosulfophenyl or disulfophenyl, each unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, carboxy and alkanoylamino of 2 to 5 carbon atoms, or is mono-, di- or trisulfonaphthyl;

K is para-phenylene unsubstituted or substituted by 1 or 2

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subatituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, alkanoylamino of 2 to 5 carbon atoms, ureido, carbamoyl and sulfo, or is 1,4-naphthylene unsubstituted or substituted by substituents selected from 1 or 2 sulfo groups and 1 alkoxy group of 1 to 4 carbon atoms;
R is hydrogen or alkyl of 1 to 4 carbon atoms;
A is phenylene or a direct bond;
W is different from A and is a direct bond or an alkylene of 1 to 4 carbon atoms, provided, that either A or W is a direct bond;
X is vinyl or is ethyl substituted in the β-position by a substituent eliminable by alkali to form the vinyl group.

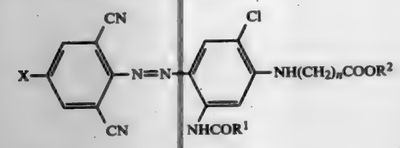
5,292,872

MONOAZO DISPERSED DYES, MIXTURES CONTAINING THEM, AND THE PREPARATION AND THE USE THEREOF

Ulrich Bühler, Alzenau, Fed. Rep. of Germany, assignor to Hoechst Mitsubishi Kasei Co., Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,711
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140036
Int. Cl.[5] C09B *29/085, 67/22*; D06P *1/18, 3/54*
U.S. Cl. 534—854 **15 Claims**

1. A monoazo dye of the general formula I



(I)

in which
X is methyl, chlorine or bromine
R^1 is ethyl, n-propyl, i-propyl, n-butyl or i-butyl
R^2 is methyl, ethyl, n-propyl, i-propyl, n-butyl or i-butyl and n is 2 or 3.

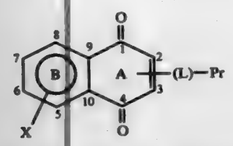
5,292,873

NUCLEIC ACIDS LABELED WITH NAPHTHOQUINONE PROBE

Steven E. Rokita, Port Jefferson, and Moneesh Chatterjee, Stony Brook, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Nov. 29, 1989, Ser. No. 442,947
Int. Cl.[5] C07H *21/00*
U.S. Cl. 536—24.3 **11 Claims**

1. A naphthoquinone probe for covalently bonding a nucleic acid target molecule in response to photochemical activation by light irradiation, the naphthoquinone probe having the formula:



wherein X is a methyl group, and X is positioned on nay of carbon atoms 2–3 and 5–8, wherein said methyl group is capable of alkylation of and covalent bonding to a nucleic acid target molecule due to photochemical activation by light irradiation of the naphthoquinone probe; wherein L is an N-hydroxy succinimide ester linking group for attaching a probe that localizes to nucleic acid to either ring A or ring B; and wherein Pr is a nucleic acid probe that preferably localizes to nucleic acid for binding to a nucleic acid target molecule.

5,292,874

NUCLEIC ACID PROBES TO *STAPHYLOCOCCUS AUREUS*

Curt L. Milliman, St. Louis, Mo., assignor to Gen-Probe Incorporated, San Diego, Calif.

Filed Sep. 4, 1991, Ser. No. 753,362
Int. Cl.[5] C07H *17/00*; C12Q *1/68*; C12N *15/00*
U.S. Cl. 536—24.32 **2 Claims**

1. An oligonucleotide probe having the nucleotide sequence CCACTCAAGAGAGACAACATTTTCGACTAC (SEQ ID NO. 1), or its complementary sequence, whereby said probe, when under hybridization conditions, is able to distinguish *Staphylococcus aureus* from *Staphylococcus cohnii, Staphylococcus epidermidis, Staphylococcus haemolyticus, Staphylococcus hominis, Staphylococcus intermedius, Staphylococcus saprophyticus, Staphylococcus simulans,* and *Staphylococcus warneri.*

5,292,875

METHOD OF SYNTHESIZING SULFURIZED OLIGONUCLEOTIDE ANALOGS

Wojciech J. Stec; Bogdan Uznanski, both of Lodz, Poland; B. John Bergot, Redwood City, Calif.; Bernard L. Hirschbein, San Francisco, Calif., and Karen L. Fearson, Union City, Calif., assignors to Lynx Therapeutics, Inc., Foster City, Calif.

Continuation of Ser. No. 908,719, Jun. 24, 1992, abandoned, which is a division of Ser. No. 512,644, Apr. 20, 1990, Pat. No. 5,151,510. This application Aug. 27, 1993, Ser. No. 113,725
Int. Cl.[5] C07H *21/00*
U.S. Cl. 536—25.33 **5 Claims**

1. A method of sulfurizing a phosphate or thiophosphite linkage in an oligonucleotide, the method comprising the step of reacting said phosphite or thiophosphite linkage with a thiophosphorus compound to form a phosphorothioate linkage or a phosphorodithioate linkage, respectively, wherein said thiophosphorus compound is selected from the group consisting of thiophosphoric acid disulfide, dithiophosphoric acid disulfide, thiophosphinic acid disulfide, and dithiophosphinic acid disulfide.

5,292,876

MIXED CELLULOSE ESTERS

Kenneth E. Simmons, Blountville, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1990, Ser. No. 555,223
Int. Cl.[5] C08B *3/00, 3/16*
U.S. Cl. 536—63 **15 Claims**

1. A mixed cellulose ester having
9 to 16 weight % butyryl or propionyl;
6 to 11 weight % acetyl; and
12 to 15 weight % hydroxyl;
wherein said mixed cellulose ester has a surface tension of less than about 45 dynes/cm measured as a 0.1 weight % aqueous solution.

5,292,877

CELLULOSE ACETOACETATES

Kevin J. Edgar, and William W. Blount, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 742,821, Aug. 9, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,205
Int. Cl.[5] C08B *3/00, 3/06*
U.S. Cl. 536—63 **21 Claims**

1. A process for preparing cellulose acetoacetate, said process comprising contacting in any order the following:
(i) a cellulose material,

(ii) diketene, an alkyl acetoacetate, 2,2,6-trimethyl-4H-1,3-dioxin-4-one, or a mixture thereof,
(iii) a solubilizing amount of a solvent system comprising lithium chloride plus a carboxamide selected from the group consisting of 1-methyl-2-pyrrolidinone, N,N dimethylacetamide, or a mixture thereof, and
(iv) optionally, a catalytic amount of pyridine, NaOAc, Et_3N, amine, mineral acid, or alkali or alkaline earth metal salt
under conditions to promote formation of the desired cellulose acetoacetate having a DS/AGU of 0.1 to about 2.9.

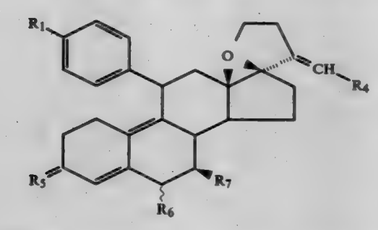
5,292,878

17-SPIROFURAN-3'-YLIDENE STEROIDS

Johannes A. M. Hamersma, and Everardus O. M. Orlemans, both of Oss, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 21, 1992, Ser. No. 994,039
Claims priority, application European Pat. Off., Dec. 20, 1991, 91.203.366.9
Int. Cl.[5] C07J *21/00*; A01K *31/56*
U.S. Cl. 540—28 **4 Claims**

1. A 17-spirofuran-3'-ylidene steroid having the formula



I

wherein
R_1 is NR_2R_3, lower acyl, OH, SH, O-lower alkyl, or $S(O)_n$-lower alkyl wherein n is 0–2;
R_2 and R_3 are independently selected from hydrogen and lower alkyl;
R_4 is hydrogen or lower alkyl;
R_5 is O, (H,H), (H,OH), (H,O-lower acyl), or NOH;
R_6 and R_7 are both hydrogen, or one is hydrogen and the other lower alkyl; and
the twitched line represents an α or β bond.

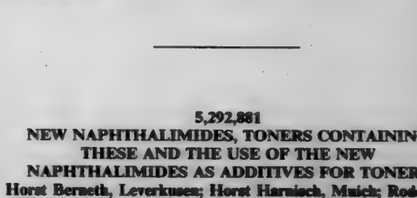
5,292,879

INTERMEDIATES FOR PREPARING CATIONIC-2-HETEROARYL-PHENYL-CARBAPENEM ANTIBACTERIAL AGENTS

Frank DiNinno, Old Bride; Ravindra N. Guthikonda, Edison, and Susan M. Schmitt, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 28, 1992, Ser. No. 937,632
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] C07D *487/04*
U.S. Cl. 540—302 **6 Claims**

1. A compound of the formula:



wherein;
R is H or CH_3;
P' is a removable protecting group for hydroxy;
M is a removable protecting group for carboxy;
R^a is selected from the group consisting of H, OP', Cl, Br, I, SCH_3, CN, CHO, $SOCH_3$, SO_2CH_3, CO_2M, CH_2OP' or $CONH_2$; and with the proviso that the $—CH_2Z$ substituent is in the 2- or 3-position of the heteroaromatic ring;
X is O or S, and
Z is a leaving group selected from the group consisting of alkylsulfonyloxy, substituted alkylsulfonyloxy, arylsulfonyloxy, substituted arylsulfonyloxy, fluorosulfonyloxy, and halogen.

5,292,880

SYNTHESIS OF CAPROLACTAM USING CATALYSTS

Minas R. Apelian, Vincentown; Weldon K. Bell, Pennington, both of N.J.; Anthony S. Fung, Chadds Ford, Pa.; Werner O. Haag, Lawrenceville, N.J., and Chaya Venkat, Princeton, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 881,282, May 11, 1992, Pat. No. 5,242,676. This application Mar. 12, 1993, Ser. No. 30,512
Int. Cl.[5] C07D *201/04*
U.S. Cl. 540—536 **21 Claims**

1. In a process for the manufacture of epsilon-caprolactam by contacting cyclohexanone oxime under conversion conditions with a catalyst composition comprising a crystalline aluminosilicate zeolite having a Constraint Index greater than 1 and an Alpha Value in the range of from about 0.1 to about 50, the improvement comprising treating said crystalline aluminosilicate zeolite with dicarboxylic acid prior to said contacting step for a sufficient time to effect at least about a 40% reduction in surface acidity with less than about 50% overall dealumination.

5,292,881

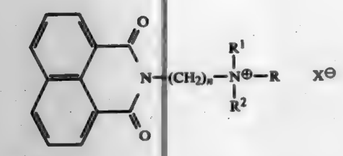
NEW NAPHTHALIMIDES, TONERS CONTAINING THESE AND THE USE OF THE NEW NAPHTHALIMIDES AS ADDITIVES FOR TONERS

Horst Berneth, Leverkusen; Horst Harnisch, Muich; Roderich Raue, Leverkusen; Jürgen-Rolf Haasdenteufel, Bergisch Gladbach, and Matthias Köcher, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 19, 1992, Ser. No. 838,129
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106122
Int. Cl.[5] C07D *221/14, 413/06*; G03G *9/097*; H01F *1/00*
U.S. Cl. 546—99 **10 Claims**

1. naphthalimides of the formula (I)

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in which
R represents C_1- to C_{22}-alkyl,
R^1 and R^2 independently of one another in each case represent C_1- to C_4-alkyl, or R^1 and R^2, together with the nitrogen atom in between, form a pyrrolidine, piperidine or morpholine ring,
n represents 2 or 3 and
$X^\ominus$ represent one equivalent
of nitrobenzoate or of a benzoate or naphthoate, which is optionally substituted by chlorine, bromine, methyl, methoxy, hydroxyl, cyano cyano and/or hydroxycarbonyl,
of a naphthalenesulphonate which is optionally substituted by amino or a sulphonic acid group, or
of a fluorine-substituted anion of a C_4- to C_{18}-alkanecarboxylic or -alkanesulphonic acid.

5,292,882

Patent Not Issued For This Number

5,292,883

2-(4-PIPERIDINYL)-1H-PYRIDO[4,3-B]INDOL-1-ONES AND RELATED COMPOUNDS

Lawrence L. Martin, Lebanon; Denise M. Flanagan, Livingston, and Joseph F. Payack, Somerset, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 821,364, Jan. 15, 1992, Pat. No. 5,229,517, which is a division of Ser. No. 588,870, Sep. 27, 1990, Pat. No. 5,102,889. This application May 27, 1993, Ser. No. 67,891
Int. Cl.[5] C07D *401/00, 209/42*
U.S. Cl. 546—201 **3 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, loweralkyl, phenyl, phenyl substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups, phenylloweralkyl or phenylloweralkyl in which the phenyl group is substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups; R^2 is loweralkyl, furanylloweralkyl, thienylloweralkyl, pyrrolylloweralkyl, pyridinylloweralkyl, phenylloweralkyl, or phenylloweralkyl in which the phenyl group is substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups; X is hydrogen, loweralkyl, loweralkoxy, halogen, or trifluoromethyl; m is 0, 1 or 2; n is 1 or 2; an optical isomer thereof or a salt thereof.

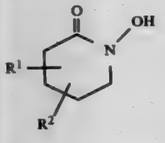
5,292,884

CYCLIC HYDROXAMIC ACIDS

Kenneth V. Honn; Carl R. Johnson, both of Detroit, Mich.; Yung-Fa Chen, Tainan, Taiwan; Katsu-Ichi Shimoji, Detroit, Mich., and Lawrence J. Marnett, Nashville, Tenn., assignors to Biomide Investment Limited Partnership, Grosse Pointe Farms, Mich. and Vanderbilt University, Nashville, Tenn.

Continuation-in-part of Ser. No. 785,927, Oct. 31, 1991, Pat. No. 5,234,933. This application Oct. 13, 1992, Ser. No. 959,999
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] C07D *211/40*; A61K *31/445*
U.S. Cl. 546—216 **4 Claims**

1. A cyclic hydroxamic acid of the formula:



wherein R^1 is C_1 to C_{24} alkyl and wherein R^2 is benzyl.

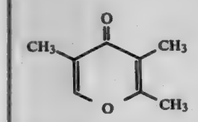
5,292,885

PYRANONE, PROCESS FOR ITS PREPARATION, ITS USE IN THE PREPARATION OF A NEW PYRIDINONE AND A PROCESS FOR THE PREPARATION OF SAME

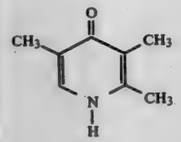
Didier G. Wirth, Paris; Dominique Gibert, Villers, and Laurence Ferrucio, Paris, all of France, assignors to Isochem, Paris, France

Filed Aug. 13, 1990, Ser. No. 565,835
Claims priority, application France, Aug. 11, 1989, 89 10831
Int. Cl.[5] C07D *213/08, 213/28, 315/00*
U.S. Cl. 546—250 **8 Claims**

1. 2,3,5-(4H)-trimethyl 4-pyranone having the formula:



7. 2,3,5-(1H)-trimethyl 4-pyridinone having the formula:



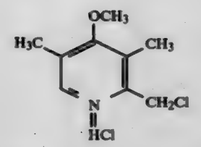
5,292,886

PROCESS FOR THE PREPARATION OF 2-HALOMETHYL-3,5-DIMETHYL-4-METHOXYPYRIDINE HALOHYDRATE

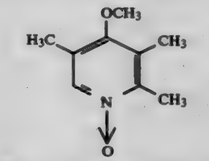
Alberto Palomo Coll, Doctor Carulla 10, 08017-Barcelona, Spain

Filed Nov. 20, 1991, Ser. No. 796,070
Claims priority, application Spain, Dec. 5, 1990, 9003113
Int. Cl.[5] C07D *213/89*
U.S. Cl. 546—303 **12 Claims**

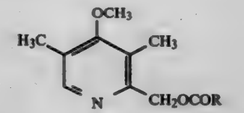
1. A process for the preparation of 2-chloromethyl-3,5-dimethyl-4-methoxypyridine hydrochloride of formula VI



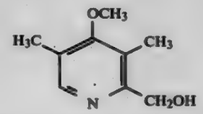
the process comprising:
acyloxylation of the 2-position methyl group of 2,3,5-trimethyl-4-methoxypyridine N-oxide of formula III



by treatment with an acylating agent in the presence of a catalyst, selected from 4-dimethylaminopyridine, 4-guanidinopyridine or 4-pyrrolidinopyridine, to obtain the compound of formula IVa



wherein R is methyl, trichloromethyl or trifluoromethyl;
basic hydrolysis of the formula IVa compound under mild conditions, carried out by adding an aqueous alkaline hydroxide solution having a pH between 11 and 13 in the presence of a cosolvent and at 0° to 75° C., to give 2-hydroxymethyl-3,5-dimethyl-4-methoxypyridine represented by the formula Va



which is finally chlorinated with an amidinium chloride to give the 2-chloromethyl-3,5-dimethyl4-methoxypyridine hydrochloride.

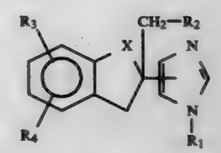
5,292,887

SUBSTITUTED IMIDAZOLE DERIVATIVES AND THEIR PREPARATION AND USE

Arto J. Karjalainen, Oulu; Raimo E. Virtanen, Rusko, and Arja L. Karjalainen, Oulu, all of Finland, assignors to Farmos-yhtyma Oy, Turku, Finland

Filed Dec. 6, 1989, Ser. No. 446,839
Claims priority, application United Kingdom, Dec. 9, 1988, 8828831
Int. Cl.[5] A61K *31/44*; C07D *233/54, 233/56*
U.S. Cl. 514—396 **30 Claims**

1. A compound which is a substituted imidazole of the formula:



or non-toxic, pharmaceutically acceptable salt thereof wherein
X is —CH_2— or



R_1 is H, C_{1-5}-alkyl or benzyl, which can be or unsubstituted or substituted by C_{1-3} alkyl, C_{1-3} alkoxy or halogen
R_2 is H, C_{1-4}-alkyl, OH or C_{1-3}-alkoxy
R_3 is H, CH_3, CH_2CH_3, OCH_3 or Hal
R_4 is H, CH_3, CH_2CH_3, OCH_3 or Hal
provided that when R_2 is H, OH or C_{1-4}-alkyl then R_1 cannot be hydrogen and when R_2 is OH or C_{1-3}-alkoxy then X cannot be CO.

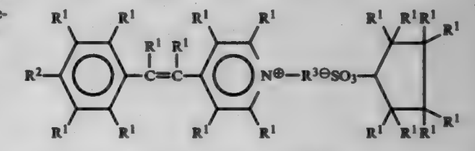
5,292,888

HIGH MELTING POINT STILBAZOLIUM SALTS

Kevin R. Stewart, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1993, Ser. No. 82,704
Int. Cl.[5] C07D *211/70*
U.S. Cl. 546—347 **3 Claims**

1. A stilbazolium salt having the formula



wherein each R^1 is independently hydrogen or deuterium, R^2 is HO—, H_3CO— or $(R^3)_2N$— and each R^3 is independently an aliphatic, alicyclic or aromatic radical.

5,292,889

FUNGICIDAL AND INSECTICIDAL SUBSTITUTED-HETEROCYCLYL-ACRYLIC ESTERS

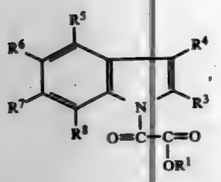
Alexander Klausener, Krefeld; Dieter Berg, Wuppertal; Thomas Seitz, Monheim; Wilhelm Brandes, Leichlingen; Stefan Dutzmann, Duesseldorf; Gerd Hänssler, Leverkusen, and Ulrike Wachendorff-Neumann, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 604,739, Oct. 26, 1990, Pat. No. 5,137,898. This application Jun. 9, 1992, Ser. No. 895,961
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1989, 3939238
Int. Cl.[5] C07D *417/02*
U.S. Cl. 548—181 **3 Claims**

1. A ketocarboxylic acid derivative of the formula

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(VI)



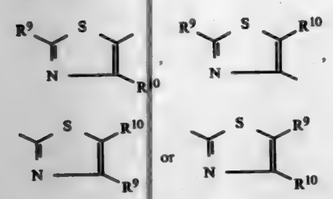
in which

R^1 represents straight-chain or branched alkyl having 1 to 6 carbon atoms, or represents benzyl,

R^3 and R^4 in each case independently of one another represent hydrogen, cyano, fluorine, chlorine, bromine or straight-chain or branched alkyl having 1 to 6 carbon atoms,

R^5, R^6 and R^8 independently of one another represent hydrogen, fluorine, chlorine, bromine, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, n- or i-propoxy, methylenedioxy, methylthio, trifluoromethyl, trifluoromethoxy, difluoromethoxy, trifluoromethylthio, methoxycarbonyl, ethoxycarbonyl, methoximinomethyl, ethoximinomethyl, methoximinoethyl, ethoxyiminoethyl, cyclopentyl, cyclohexyl, divalent 1,3-propanediyl or 1,4-butanediyl, or represents phenyl, benzyl, phenoxy, benzyloxy, phenylthio or benzylthio, each of which is optionally monosubstituted or trisubstituted in the phenyl moiety by identical or different substituents from the group consisting of fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, methylthio, trifluoromethyl, difluoromethoxy, trifluoromethoxy and trifluoromethylthio, and

R^7 represents



where

R^9 and R^{10} in each case independently of one another represent hydrogen, fluorine, chlorine, bromine, cyano, in each case straight-chain or branched alkyl, alkoxy, alkylthio or halogenoalkyl having 1 to 6 carbon atoms and where appropriate 1 to 13 identical or different halogen atoms, or represent straight-chain or branched alkoxycarbonyl having 1 to 6 carbon atoms in the alkoxy moiety, or dialkylaminocarbonyl which has 1 to 4 carbon atoms in each alkyl moiety, each of the individual alkyl moieties being straight-chair on branched and substituted by identical or different substituents, or represents phenyl, benzyl, phenyloxy, phenylthio, benzyloxy or benzylthio, each of which is unsubstituted or monosubstituted to trisubstituted by identical or different substituents, or represent 5- or 6-membered heteroaryl which contains 1 to 3 hetero atoms from the group consisting of nitrogen, oxygen and sulphur and which is unsubstituted or monosubstituted or distributed by identical or different substituents, the substituents in each case being halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkyloxy, halogenoalylthio, each of which has 1 to 4 carbon atoms and where appropriate 1 to 9 identical or different halogen atoms, dialkylamino or dialkylaminocarbonyl, each of which has 1 to 4 carbon atoms in each of the straight-chain or branched alkyl moieties, 1,3-propanediyl, 1,4-butanediyl, or phenyl or benzyl which are unsubstituted or monosubstituted to disubstituted by identical or different substituents selected from the group consisting of halogen and phenyloxy.

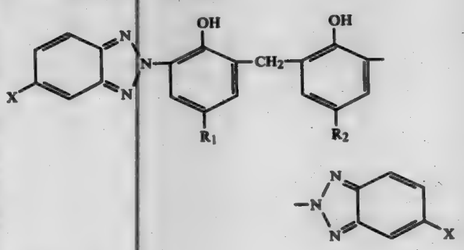
5,292,890

ASYMMETRICAL BENZOTRIAZOLYLPHENOLS

Semyon Moshchitsky, Old Bride, N.J., and William E. Leistner, Atlantic Beach, N.Y., assignors to Fairmount Chemical Company, Inc., Newark, N.J.

Filed May 5, 1993, Ser. No. 58,012
Int. Cl.[5] C07D *249/20*
U.S. Cl. 548—260 2 Claims

1. An asymmetrical hydroxyphenyl benzotriazolylphenol compound having the formula:



wherein:

R_1 is methyl;

R_2 is octyl; and

X is selected from the group consisting of hydrogen, halogen, C_1 to C_{12} alkyl, and C_1 to C_{12} alkoxy.

5,292,891

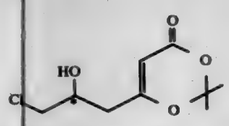
OPTICALLY ACTIVE 2,2-DIMETHYL-1,3-DIOXIN-4-ONES AND METHOD FOR PREPARING SAME AND METHOD FOR PREPARING OPTICALLY ACTIVE COMPOUND FOR SYNTHESIS OF PHYSIOLOGICALLY ACTIVE SUBSTANCE AND OPTICALLY ACTIVE INTERMEDIATE COMPOUND

Chikara Kaneko, and Masayuki Sato, both of Sendai, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 836,425, Feb. 18, 1992, Pat. No. 5,256,800, and a continuation-in-part of Ser. No. 836,426, Feb. 18, 1992, abandoned. This application Dec. 15, 1992, Ser. No. 991,551
Claims priority, application Japan, Feb. 21, 1991, 3-047285; Feb. 21, 1991, 3-047286
Int. Cl.[5] C07D *301/27, 309/10, 309/30*
U.S. Cl. 549—273 6 Claims

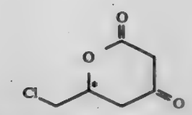
1. A method for preparing an optically active compound for the synthesis of a physiologically active substance which comprises lactonizing optically active 2,2-dimethyl-6-(3-chloro-2-hydroxypropyl)-1,3-dioxin-4-one represented by formula (1)

(1)



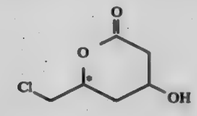
to form optically active 6-chloromethyltetrahydropyran-2,4-dione represented by formula (2)

(2)



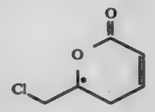
reacting the thus formed compound with hydrogen in the presence of a catalyst to obtain optically active 6-chloromethyl-4-hydroxytetrahydropyran-2-one represented by formula (3),

(3)



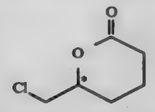
subjecting the compound of formula (3) to a dehydration reaction, thereby obtaining optically active 6-chloromethyldihydropyran-2-one represented by formula (4),

(4)



reacting the compound of formula (4) with hydrogen in the presence of a catalyst to form optically active 6-chloromethyltetrahydropyran-2-one represented by the formula (5),

(5)



and treating the compound of the formula (5) in an alcohol solvent under basic conditions to prepare an optically active 5,6-epoxyhexanoic acid ester represented by formula (6)

(6)



(in each formula, the symbol * represents an asymmetric carbon atom, and R is a methyl group or an ethyl group).

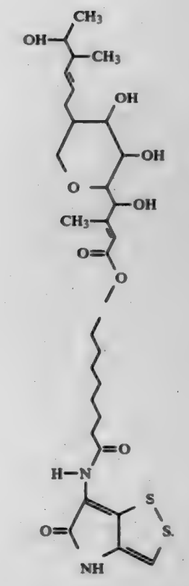
5,292,892

ANTI-BACTERIAL COMPOUND AND PHARMACEUTICAL COMPOSITIONS THEREOF

Shuji Takahashi; Hideyuki Shiozawa; Hideyuki Haruyama, all of Tokyo; Takeshi Kagasaki, Iwaki; Kentaro Kodama, and Akira Ishii, both of Tsukuba, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 876,500, Apr. 30, 1992, abandoned. This application Jan. 8, 1993, Ser. No. 2,085
Claims priority, application Japan, May 7, 1991, 3-101575
Int. Cl.[5] C07D *495/04;* A61K *31/40*
U.S. Cl. 548—453 3 Claims

1. A compound of the formula (I):



5,292,893

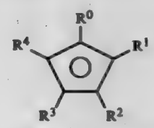
CATALYTIC ASYMMETRIC AND NON-ASYMMETRIC REDUCTION OF TIMES AND OXIMES USING METAL CATALYSTS

Stephen L. Buchwald, and Christopher A. Willoughby, both of Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 698,940, May 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,892, Nov. 21, 1990. This application Nov. 14, 1991, Ser. No. 792,229
Int. Cl.[5] C07D *207/02, 307/02, 207/06;* C07C *209/40, 209/52*
U.S. Cl. 548—577 45 Claims

1. A catalytic asymmetric reduction process, comprising the steps of:

providing a catalytic amount of an active species of an enantiomerically enriched chiral catalyst selected from the group consisting of M(L)(L')(L''), M(L)(L')(L'')(L'''), M(L)(L')(L'')(L''') (L^{iv}), and M(L)(L')(L'')(L''')(L^{iv})L^v, where M is a group 3, 4, 5 or 6 metal, a lanthanide or an actinide, and L, L', L'', L''', L^{iv}, L^v, independently, is some combination of H, alkyl, aryl Si(R)(R')(R''), halogen, —OR, —SR, or —NR(R'), or a cyclopentadienyl group having the formula



where R, R', and R'' is H, alkyl, or aryl and may be different or the same, and where R^0, R^1, R^2, R^3, and R^4 are hydrogen, alkyl, aryl, trialkylsilyl, triarylsilyl, (dialkyl-)arylsilyl, or (diaryl)alkylsilyl groups in any combination:

adding a silane compound to the catalyst;

reacting a substrate, selected from the group consisting of imines, oximes, hydrazones, oxime O-alkyl ethers, oxime

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O-aryl ethers, N,N-dialkylhydrazones, N,N-diarylhydrazones, and N-alkyl-N-arylhydrazones, in the presence of said catalyst and the silane compound; and

recovering and purifying an amine reaction product having a high level of enantiomeric purity.

5,292,894

PREPARATION OF BENZO[B]THIOPHENES

Klaus Ebel, Mutterstadt, and Juergen Schroeder, Viernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

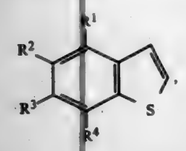
Filed Feb. 17, 1993, Ser. No. 18,499

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4204969

Int. Cl.[5] C07D *333/54*

U.S. Cl. 549—43 4 Claims

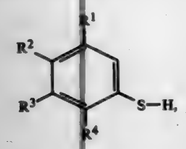
1. A process for the preparation of a benzo[b]thiophene of the general formula I below



(I)

in which R^1, R^2, R^3, R^4 independently denote hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, nitro, cyano, halo, C_1–C_4 alkylcarbonyl, benzoyl, C_1–C_4 alkylcarbonylamino, benzoylamino, N-(C_1–C_4 alkyl)phenylamino, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylsulfonyl, phenylsulfonyl, aminosulfonyl, aminocarbonyl, C_1–C_4 phenylalkyl and nitrobenzyl or R^1+R^2 or R^2+R^3 or R^3+R^4 denote a butadienediyl chain optionally substituted by R^1 to R^4, wherein

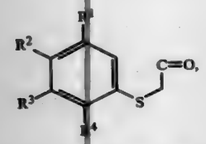
a) a thiophenol of the general formula II



(II)

in which the substituents R^1 to R^4 have the aforementioned meanings, is reacted with chloroacetaldehyde at a temperature ranging from 0° to 150° C. and

b) the resulting (arylthio)acetaldehyde of the general formula III



(III)

in which the substituents R^1 to R^4 have the aforementioned meanings, is cyclized by passing them into polyphosphoric acid or a mixture of phosphoric acid and phosphorus pentoxide at a temperature ranging from 100° to 300° C. and a pressure ranging from 0.001 to 1 bar.

5,292,895

Patent Not Issued For This Number

5,292,896

AMINO STYRENE DERIVATIVES

Masayuki Shoshi, Numazu, and Masaomi Sasaki, Susono, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 545,124, Jun. 27, 1990, Pat. No. 5,072,043, which is a continuation of Ser. No. 403,055, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 839,965, Mar. 17, 1986, abandoned, which is a division of Ser. No. 646,064, Aug. 31, 1984, Pat. No. 4,603,097. This application Sep. 4, 1991, Ser. No. 754,552

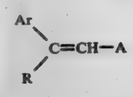
Claims priority, application Japan, Oct. 28, 1983, 58-201021; Oct. 28, 1983, 58-201022; Oct. 28, 1983, 58-201023; Oct. 28, 1983, 58-201024; Oct. 28, 1983, 58-201025; Oct. 28, 1983, 58-201026

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

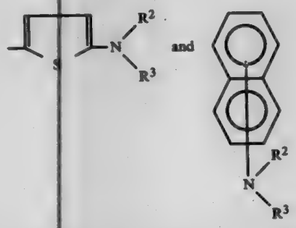
Int. Cl.[5] C07C *211/45*; C07D *333/20*

U.S. Cl. 549—68 3 Claims

1. A styrene derivative of the formula:



wherein A is selected from the group consisting of:



and

wherein R^2 and R^3 each represent a lower alkyl group, an aralkyl group or an unsubstituted or substituted phenyl group, with the provision that at least one of R^2 and R^3 is an aralkyl group, or an unsubstituted or substituted phenyl group; Ar is an unsubstituted or substituted phenyl group, or an unsubstituted or substituted styryl group; and R is hydrogen, a lower alkyl group, or an unsubstituted or substituted phenyl group, the substituent on said substituted phenyl group or substituted styryl group or R^2, R^3, Ar and R being selected from the group consisting of alkyl, alkoxy, aryloxy, aralkyloxy, thioalkoxy, thiophenyl, halogen, dialkylamino, hydroxy, acyl, carboxy, carboxy ester, trifluoromethyl, nitro and cyano.

5,292,897

PROCESS FOR PREPARING HALO ACETALS FROM ENAMINES

Pierre Chaboche, Sainte Foy Les Lyon; Lucette Duhamel; Pierre Duhamel, both of Mont Saint Aignan; Jerome Guillemont, Beuzeville, and Jean-Marie Poirier, Saint Martin Du Vivier, all of France, assignors to Rhone-Poulenc Nutrition Animale, Commentry, France

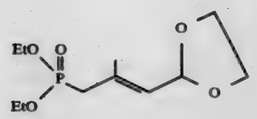
Division of Ser. No. 620,610, Dec. 3, 1990, Pat. No. 5,145,972. This application Mar. 27, 1992, Ser. No. 858,406

Claims priority, application France, Dec. 1, 1989, 89 15868

Int. Cl.[5] C07F *9/06*

U.S. Cl. 549—221 1 Claim

1. A compound of the formula (IV):



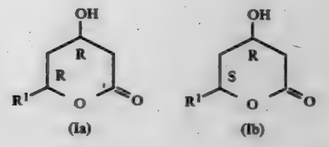
(IV)

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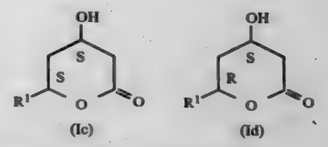
and, optionally, when R^1 is a straight-chain or branched alkenyl group,

c) hydrogenating the double bonds in the alkylene chain.

7. A process for the preparation of 5-substituted 3R, 5R, 3R, 5S, 3S, 5S and 3S, 5R δ-catones of the formula Ia, Ib, Ic or Id



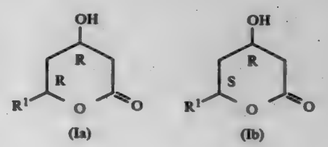
(Ia) (Ib)



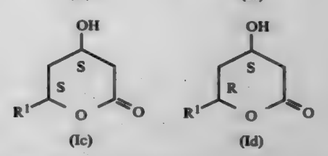
(Ic) (Id)

in which R^1 is CH_2OH, which comprises

a) reacting a compound of the formula Ia, Ib, Ic or Id

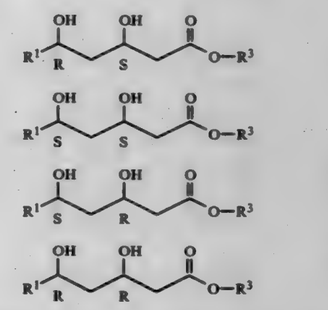


(Ia) (Ib)



(Ic) (Id)

in which R^1 is a straight-chain or branched alkyl group having 3to 15 carbon atoms or a straight-chain or branched alkenyl group having 3 to 15 carbon atoms and 1 to 7 C—C double bonds, with a compound of the formula R^3—O^-, in which R^3 is an alkyl group having 1 to 5 carbon atoms or a tertiary butyl group, to give a compound of the formula Va, Vb, Vc, or Vd



(Va) (Vb) (Vc) (Vd)

b) ketalizing with acetone or dimethyoxy propane to give a compound of the formula VIa, VIb, VIc or VId

5,292,898

PROCESS FOR THE STEREOSELECTIVE PREPARATION OF 5-SUBSTITUTED DELTA-LACTONES AND USE THEREOF

Peter Hammann, Babenhausen; Susanne Grabley, Königstein/-Taunus; Ernold Granzer, Kelkheim/Taunus, and Yvonne Romeyke, Gross-Gerau, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

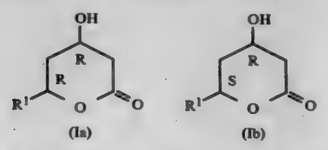
Continuation of Ser. No. 737,715, Jul. 30, 1991, abandoned. This application Sep. 1, 1992, Ser. No. 937,718

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1990, 4024425; Jun. 1, 1991, 4118009

Int. Cl.[5] C07D *309/10*

U.S. Cl. 549—292 7 Claims

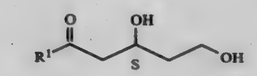
1. A process for the preparation of 5-substituted 3R, 5R and 3R, 5S δ-lactones of the formula Ia or Ib



(Ia) (Ib)

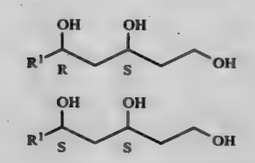
in which R^1 is a straight-chain or branched alkyl group having 3 to 15 carbon atoms or a straight-chain or branched alkenyl group having 3 to 15 carbon atoms and 1 to 7 C—C double bonds, which comprises

a) disastereoselectively reducing a compound of the formula IIa



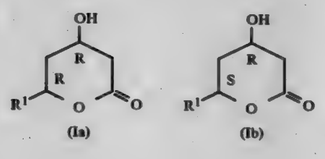
(IIa)

to a compound of the formula IIIa or IIIb



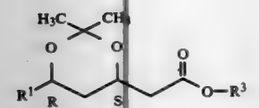
(IIIa) (IIIb)

b) regioselectively oxidizing to a compound of the formula Ia or Ib

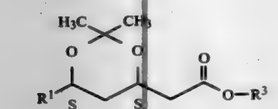


(Ia) (Ib)

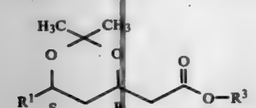
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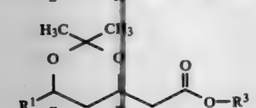
(VIa)



(VIb)

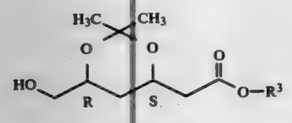


(VIc)

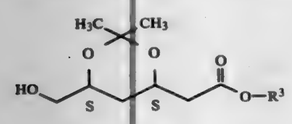


(VId)

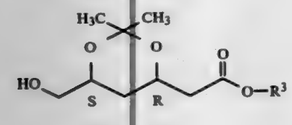
c) oxidizing with ozone to give a compound o the formula VIIa, VIIb, VIIc or VIId



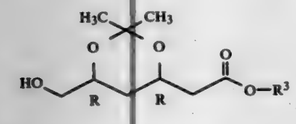
(VIIa)



(VIIb)



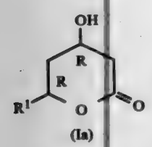
(VIIc)



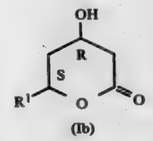
(VIId)

and

d) cleaving with acid to give a compound of the formula Ia, Ib, Ic or Id

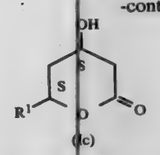


(Ia)

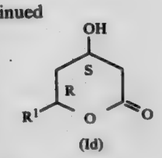


(Ib)

-continued



(Ic)



(Id)

(VIb) in which R^1 is a CH_2OH group.

5,292,899

SYNTHESIS OF 11-NOR-Δ-9-TETRAHYDROCANNABINOL-9-CARBOXYLIC ACID GLUCURONIDE

Marcus A. Tius, Kailua, and Mark R. Hagadone, Honolulu, both of Hi., assignors to Synthetic Technology Corporation, Honolulu, Hi.

Filed Nov. 27, 1991, Ser. No. 800,501
Int. Cl.[5] C07D *311/80, 311/00*
U.S. Cl. 549—390 **6 Claims**

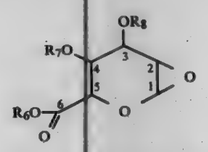
1. A method of producing an 11-nor-Δ^8-THC glucuronide or 11-nor-Δ^9-THC glucuronide comprising:

reacting a deuterated or undeuterated blocked Δ^8- or Δ^9-THC carboxylic acid precursor of the formula:



wherein one of R_1, R_2, R_3, and R_4 comprises a carboxyl group; the remainder of R_1, R_2, R_3, and R_4 comprise hydrogen, deuterium or one or more hydroxyl groups blocked by a protective agent selected from the group consisting of tert-butyl dimethyl silyl, tert-butyl dimethyl allyl, t-hexyldimethylsilyl, triethylsilyl, and tri-isopropylsilyl; Δ^8 and Δ^9 comprise different anomeric linkage in double bonding between the carbon atoms substituted with R_1 and R_2, or R_2 and R_3; and, R_5 is a deuterated or undeuterated hydrocarbon chain comprising at least one carbon atom,

with a dual-blocked sugar epoxide precursor of the formula:



wherein R_8 comprises a first protective agent selected from the group consisting of benzyl, methoxybenzyl, dimethoxybenzyl, cinnamyl, allyl, methallyl, trityl, fluorenyl, diphenylmethyl, phenylpropenyl and p-methoxyphenylmethyl groups, and R_7 and R_8 comprise a second protective agent selected from the group consisting of tert-butyl dimethyl silyl, tert-butyl dimethyl allyl, t-hexyldimethylsilyl, triethylsilyl, and tri-isopropylsilyl;

and then removing the first and the second protective agents to obtain the 11-nor-Δ^8- or Δ^9-THC-carboxylic acid glucuronide.

5,292,900

O-SUBSTITUTED N-HYDROXYUREA DERIVATIVES

Anwer Basha, Lake Forest, and Dee W. Brooks, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 18, 1992, Ser. No. 992,389
Int. Cl.[5] C07D *209/04*
U.S. Cl. 549—419 **1 Claim**

1. The compound having the name O-(tetrahydropyran-2-yl)-N-hydroxyurea.

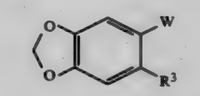
5,292,901

BENZODIOXOLE DERIVATIVES

Yoshitake Ogata; Makoto Ikeda, both of Tsukuba; Seiichiro Nomoto, Ushiku; Makoto Okita, Tsukuba; Naoyuki Shimomura, Tsukuba; Toshihiko Kaneko, Tsukuba; Takashi Yamanaka, Tsukuba; Ieharu Hishinuma, Ibaraki; Junichi Nagakawa, Tsukuba; Kazuo Hirota, Tsukuba; Kaname Miyamoto, Tsukuba; Toru Horie, Tsukuba, and Tsuneo Wakabayashi, Mito, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

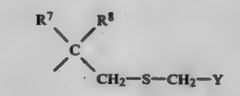
Division of Ser. No. 517,444, Apr. 23, 1990, Pat. No. 5,110,956, which is a continuation of Ser. No. 160,333, Feb. 25, 1988, abandoned. This application Feb. 6, 1992, Ser. No. 832,220
Claims priority, application Japan, Mar. 4, 1987, 62-49141; Apr. 3, 1987, 62-82258; Apr. 27, 1987, 62-103724; Apr. 28, 1987, 62-105508; Apr. 28, 1987, 62-105509; Sep. 28, 1987, 62-243492
Int. Cl.[5] C07D *317/54*; A61K *31/36*
U.S. Cl. 549—441 **8 Claims**

1. A benzodioxole derivative having the formula (I) or a pharmaceutically acceptable salt thereof

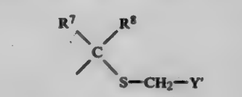


(I)

wherein R^3 is H, lower alkyl, or phenethyl; and W is (b)



wherein R^7 and R^8 are the same or different and selected from H, lower alkyl, benzyl or phenethyl, Y is COOH or $CONR^5R^6$, wherein R^5 and R^6 are the same or different and selected from H, lower alkyl and carboxymethyl, or (c)



wherein R^7 and R^8 are the same or different and selected from H, lower alkyl, benzyl, or phenethyl, Y is $CONR^5R^6$ wherein R5 and R^6 are the same or different and selected from H, lower alkyl, or carboxymethyl.

5,292,902

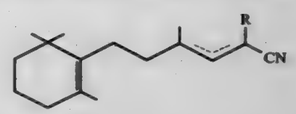
PROCESS FOR THE MANUFACTURE OF ODORANTS AND INTERMEDIATES USED THEREIN

Daniel Helmlinger, Dübendorf, Switzerland, assignor to Givaudan-Roure Corporation, Clifton, N.J.

Filed Jul. 24, 1992, Ser. No. 919,520
Claims priority, application Switzerland, Aug. 2, 1991, 2308/91
Int. Cl.[5] C07D *307/92*; C07C *255/07*
U.S. Cl. 549—458 **5 Claims**

1. A process for the manufacture of a mixture of (3aα,5aβ,9aα,9bβ)-dodecahydro-3a,6,6,9a-tetramethylnaptho-[2,1-b]furan and (3aα,5aβ,9aα,9bα)-dodecahydro-3a,6,6,9a-tetramethylnaphthol[2,1-b]furan which comprises:

(a) saponifying a compound of the formula II



II

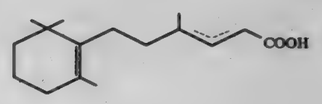
wherein

one of the bonds - - - denotes a single bond and the other denotes a double bond, and, R represents hydrogen or the ester group $COOR^1$, in which R^1 represents a lower alkyl or aryl group, and,

where R in formula II represents the ester group $COOR^1$, decarboxylating said group,

in a solvent selected from the group consisting of inert protic organic solvents, aromatic hydrocarbons, cyclic ethers and water, with a base, at temperatures between about 20° C. and about 130° C.,

to produce a compound of the formula I



I

and,

(b) converting said compound of formula I to said mixture.

5,292,903

ONE STEP METHOD FOR THE PREPARATION OF DIFURFURYL DIAMINES

Anthony H. Cooper, Madison; Michael S. Holfinger, Charles G. Hill, Jr., Madison, both of Wis.; William J. McKillip, Crystal Lake, Ill., and Rolf H. Reimann, Amanzintoti, South Africa, assignors to The United States Department of Agriculture as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 22, 1991, Ser. No. 748,380
Int. Cl.[5] C07D *307/40*
U.S. Cl. 549—472 **14 Claims**

1. A one step method for the production of difurfuryl diamines comprising:

reacting unprotected furfurylamine with a carbonyl-containing compound in the presence of a catalyst wherein said furfurylamine to said catalyst is in a weight:weight ratio ranging from 0.1:1 to 20:1, wherein the concentration of said catalyst is between 0.1N to 16N, wherein said one step method is performed at temperature ranges from −10° C. to 100° C., and wherein the reaction time ranges from 0.1 minute to 48 hours.

5,292,904

METHOD FOR PRODUCTION OF ETHYLENE OXIDE

Masayuki Sawada, and Yukihiko Kakimoto, both of Yokohama, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,632
Claims priority, application Japan, Sep. 12, 1991, 3-233427; Sep. 2, 1992, 4-234749
Int. Cl.[5] C07D *301/10, 303/04*
U.S. Cl. 549—534 **4 Claims**

1. A method for the production of ethylene oxide by the catalytic vapor phase oxidation of ethylene with a molecular oxygen-containing gas, which method is characterized by using a vertical shell-and-tube exchanger type reactor comprising a shell plate, an upper tube plate, a lower tube plate, a

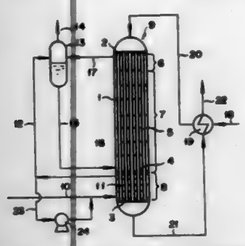
VOL 1160 ISS 2 MR 8 1994 UMI

partition plate for separating a shell side of a reaction zone and a shell side of a cooling zone, and a multiplicity of reaction tubes and a preheating zone having the inlet of the reaction tubes packed with an inert packing, a reaction zone having the reaction tubes packed with a silver catalyst between the inlet and the outlet thereof, and a cooling zone having the outlet of the reaction tubes packed with an inert packing and

effecting the production by

supplying hot water at a temperature in the range between 100° C. and 150° C. through a first hot water supply conduit to the cooling zone,

where said hot water contacts the exteriors of said reaction tubes containing a reaction product gas at a temperature in the range between 200° C. and 300° C. in said cooling zone, and exchanges heat with the reaction product gas containing ethylene, ethylene oxide, and oxygen, and assumes a temperature in the range between 200° C. and 250° C. causing a first portion of said hot water to be



forwarded through a first hot water discharge conduit to a gas-liquid separation tank,

circulating the remainder of said hot water by a pump to said cooling part,

introducing the hot water separated in said gas-liquid separation tank through a second hot water supply conduit to said reaction zone, allowing the introduced hot water to contact the outer sides of the reaction tubes of the reaction zone to remove the heat of the reaction, and

bringing into contact with the exteriors of said reaction tubes in said preheating zone the remainder portion of hot water which has contacted the exteriors of said reaction tubes in said reaction zone, absorbed the heat of reaction, and assumed the boiled state of a gas-liquid mixed phase in said reaction zone

thereby preheating raw material gas and inducing spontaneous circulation of said gas-liquid mixed phase through a second hot water discharge conduit to said gas-liquid separation tank.

5,292,905

CYAN DYES

Toshihisa Inoue; Tetsuya Abe, and Yoshio Fujiwara, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

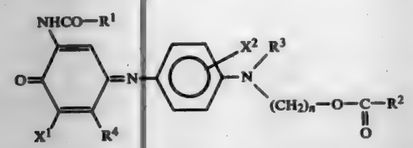
Filed Mar. 13, 1992, Ser. No. 851,999

Claims priority, application Japan, Mar. 13, 1991, 3-048424

Int. Cl.[5] C09B *53/00, 53/02;* B41M *5/26*

U.S. Cl. 552—302 **2 Claims**

1. A cyan dye of the formula:



wherein X^1 represents chlorine, X^2 represents hydrogen, methyl, or perfluoroalkyl; R^1 represents methyl, propyl, phenyl, CF_3, or perfluoroalkyl; R^2 represents methyl, propyl, phenyl, chlorine-substituted phenyl or perfluoroalkyl; R^3 represents ethyl; R^4 represents ethyl, methyl, or alkoxy; and n is an integer of 1 or more.

5,292,906

TRICYCLIC STEROID ANALOGS

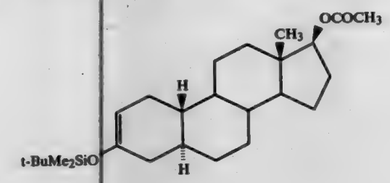
Douglas F. Covey, Ballwin; Yuefei Hu, and Charles F. Zorumski, both of St. Louis, all of Mo., assignors to Washington University, St. Louis, Mo.

Division of Ser. No. 811,208, Dec. 20, 1991, Pat. No. 5,206,415. This application Jan. 14, 1993, Ser. No. 4,768

Int. Cl.[5] C07C *69/74, 67/02*

U.S. Cl. 552—619 **3 Claims**

1. A compound having the structure:



5,292,907

PROCESS FOR THE MANUFACTURE OF (6E)-LEUKOTRIENE B_4 AND INTERMEDIATES OF THE SAID MANUFACTURING PROCESS

Jean Maignan, Tremblay-les-Gonesse; Guy Solladie, and Guy Stone, both of Strasbourg, all of France, assignors to L'Oreal, Paris, France

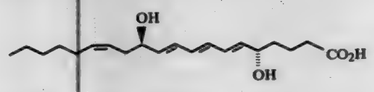
Filed Jul. 20, 1993, Ser. No. 93,752

Claims priority, application France, Jul. 21, 1992, 92 08978

Int. Cl.[5] C07C *51/09, 31/18;* C07D *309/00*

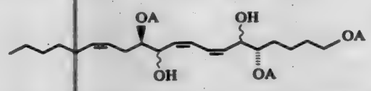
U.S. Cl. 554—127 **23 Claims**

1. Process for the preparation of leukotriene B_4 (LTB_4) in the 6-trans (6E) form, having the formula:



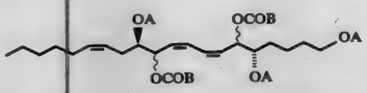
(1)

characterized in that a butadienediol of formula:



(2)

in which A is a silylated protective group, is prepared; the hydroxyl groups are esterified to produce a group OCOB, B being a phenyl radical or a phenyl radical substituted by a C_1–C_6 alkyl or alkoxy radical, to produce the diester of formula:



(3)

and this diester is subjected to a reductive elimination using low valency titanium [Ti(0)] or an alkali metal amalgam to produce the 6-trans triether of formula:

the groups —OA in positions 5 and 12 of which are then converted to 13 CH groups, and the group $—CH_2OA$ in position 1 of which is then converted to a —COOH group, to produce 6-trans-LTB_4.

5,292,908

MODIFIED BENTONITE

Masanobu Oaikata, Gunma, and Mitsuji Kondo, Tochigi, both of Japan, assignors to Hojun Kogyo Co., Ltd., Annaka, Japan

Filed Jan. 11, 1993, Ser. No. 3,049

Claims priority, application Japan, Mar. 9, 1992, 4-85055

Int. Cl.[5] C07F *5/06*

U.S. Cl. 556—173 **3 Claims**

1. Modified bentonite which can be dispersed in water to perform a function of adjusting rheology of an aqueous liquid, which is obtained by

adding at least one alkyltrialkoxysilane represented by formula (I):

$$R^1Si(OR^2)_3 \quad (I)$$

wherein R^1 represents a saturated alkyl group having from 1 to 22 carbon atoms; and R represents a methyl group, an ethyl group, a propyl group or a butyl group, to bentonite in such an amount that the resulting product can retain an excellent water-dispersibility, and then

stirring and pulverizing the mixture in a water-free atmosphere to add an alkylsilyl group to a part of the surface of bentonite particles.

5,292,909

CATALYTIC CONVERSION OF DIRECT PROCESS HIGH-BOILING COMPONENT TO CHLOROSILANE MONOMERS IN THE PRESENCE OF HYDROGEN CHLORIDE AND HYDROGEN

Kirk M. Chadwick, S. Glamorgan, United Kingdom; Ajay K. Dhaul, Carrollton, Ky.; Roland L. Halm, Madison, and Richard G. Johnson, Hanover, both of Ind., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 14, 1993, Ser. No. 91,141

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—468 **17 Claims**

1. A process for converting a high-boiling component resulting from the reaction of an organochloride with silicon, to monosilanes, the process comprising: contacting a high-boiling component, resulting from the reaction of an organochloride with silicon, and hydrogen chloride and hydrogen gas at a temperature within a range of about 250° C. to 1000° C. in the presence of a catalyst selected from a group consisting of activated carbon, alumina, silica, zeolite, $AlCl_3$, $AlCl_3$ supported on a support selected from a group consisting of carbon, silica, and alumina; platinum supported on a support selected from a group consisting of carbon, silica, and alumina; and palladium supported on a support selected from a group consisting of carbon, silica, and alumina.

5,292,910

USE OF HYDROPHOBIZED HYDROTALCITES AS CATALYSTS FOR ETHOXYLATION OR PROPOXYLATION

Hans-Christian Raths; Wolfgang Breuer; Klaus Friedrich, all of Duesseldorf, and Klaus Herrmann, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00566, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/15441, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 25, 1991, Ser. No. 930,667

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1990, 4010606

Int. Cl.[5] B01J *23/02;* C07C *41/03, 43/00, 69/22*

U.S. Cl. 554—149 **20 Claims**

1. A process for the catalyzed ethoxylation or propoxylation of compounds selected from the group consisting of organic compounds containing active H atoms, esters of fatty acids containing 2 to 22 carbon atoms with monoalkanols containing 1 to 22 carbon atoms, and full esters of fatty acids containing 2 to 22 carbon atoms with polyols containing 2 to 12 carbon atoms and 2 to 6 hydroxyl groups, wherein the improvement comprises the use as catalyst for the ethoxylation or propoxylation of hydrophobicized hydrotalcites corresponding to general formula I:

$$Mg_xAl(OH)_y(CO_3)_m(A)_n \cdot zH_2O \quad (I)$$

in which A is selected from the group consisting of (i) a dianion of an aliphatic dicarboxylic acid containing 4 to 44 carbon atoms and (ii) two anions of aliphatic monocarboxylic acids containing 2 to 34 carbon atoms; $1<x<5$; $y \leqq 2x+2$; $\{y+2(m+n)\}=2x+3$; $m+n \leqq 0.5$; $m \geqq 0$; $n>0$; and $0<z<10$.

5,292,911

MONOCYCLIC TERPENE DERIVATIVES

Hisao Takayanagi; Yasunori Kitano, both of Yokohama, and Yasuhiro Morinaka, Tsuchiura, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

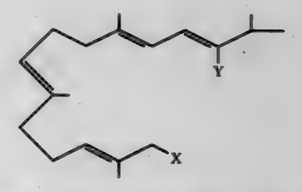
Division of Ser. No. 555,999, Jul. 16, 1990, Pat. No. 5,118,827. This application Mar. 10, 1992, Ser. No. 849,576

Claims priority, application Japan, Jul. 14, 1989, 1-181709; Jul. 14, 1989, 1-181710; Dec. 20, 1989, 1-330258

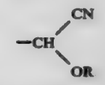
Int. Cl.[5] C07F *7/10;* C07C *69/52*

U.S. Cl. 554—224 **5 Claims**

1. A compound of the formula:



wherein X is halogen or a group of the formula: $—OSO_2R^1$ wherein R^1 is a C_{1-4} alkyl group which is unsubstituted or is substituted by a halogen atom or a phenyl group which is unsubstituted or is substituted by a C_{1-4} alkyl group, and Y is $—CO_3Et$, $—CH_2OH$, —CHO or



wherein R is hydrogen, trimethylsilyl or 1-ethoxyethyl.

5,292,912

CATALYTIC CONVERSION OF DIRECT PROCESS HIGH-BOILING COMPONENT TO CHLOROSILANE MONOMERS IN THE PRESENCE OF HYDROGEN CHLORIDE

Kirk M. Chadwick, S. Glamorgan, Wales; Ajay K. Dhaul, Carrollton, Ky.; Roland L. Halm, Madison, and Richard G. Johnson, Hanover, both of Ind., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 19, 1993, Ser. No. 94,593

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—468 **15 Claims**

1. A process for converting a high-boiling component resulting from the reaction of an organochloride with silicon, to monosilanes, the process comprising: contacting a high-boiling component, resulting from the reaction of an organochloride with silicon, and hydrogen chloride at a temperature within a range of about 250° C. to 1000° C. in the presence of a catalyst selected from a group consisting of activated carbon, platinum

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supported on alumina, zeolite, $AlCl_3$, and $AlCl_3$ supported on a support selected from a group consisting of carbon, alumina, and silica.

5,292,913

MYOINOSITOL DERIVATIVES AND PREPARATION PROCESS THEREOF

Shoichiro Ozaki; Yutaka Watanabe, both of Matsuyama; Akira Awaya, and Yasuko Ishizuka, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 519,463, May 7, 1990, abandoned, which is a division of Ser. No. 131,049, Oct. 20, 1987, Pat. No. 4,952,717. This application Sep. 24, 1992, Ser. No. 950,760

Claims priority, application Japan, Mar. 11, 1986, 61-51325; Mar. 11, 1986, 61-51326; Sep. 3, 1986, 61-205895; Mar. 10, 1987, 62-53062; PCT Int'l Appl., Mar. 11, 1987, PCT/JP87/00149

Int. Cl.[5] C07F 9/117

U.S. Cl. 558—87 **3 Claims**

1. A process for the preparation of 1,4,5-triphospho-myoinositol labelled with tritium or deuterium at the 2-position which comprises reacting a 2-oxo-3,6-di-(catalytic reduction removable group-substituted)-4,5-bis(di-phospho-substituted)-myoinositol with a hydride reducing agent containing a tritium or deuterium labelling atom.

5,292,914

ORGANIC PEROXIDE AND USE THEREOF

Shuji Suyama; Tomoyuki Nakamura; Hiroyuki Nagai, all of Aichi, and Mieko Takei, Handa, all of Japan, assignors to NOF Corporation, Tokyo, Japan

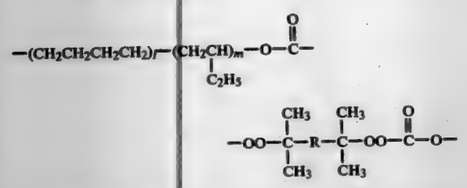
Filed Jul. 1, 1993, Ser. No. 84,174

Claims priority, application Japan, Jul. 28, 1992, 4-219611

Int. Cl.[5] C07C 69/96

U.S. Cl. 558—264 **12 Claims**

1. An organic peroxide consisting of 1 to 30 repeating units represented by the formula:



wherein R stands for one group selected from the class consisting of ethylene, acetylene, cyclohexylene, and phenylene groups and one of l and m stands for an integer of at least 1 and 1+m stands for an integer in the range of from 6 to 220.

5,292,915

COMPOUNDS CONTAINING CARBONATE GROUPS AND CARBONYL GROUPS AND THE PREPARATION AND USE THEREOF

Andreas Boettcher, Neuss-loch, and Manfred Schwartz, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 4, 1992, Ser. No. 830,854

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1991, 4105355

Int. Cl.[5] C07C 69/96; C07F 5/04

U.S. Cl. 558—273 **3 Claims**

1. A compound containing carbonate groups and carbonyl groups, and having the general formula (I)



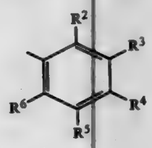
(I)

in which

R is a straight-chain C_1–C_4-alkyl radical, a branched-chain C_3–C_4-alkyl radical optionally substituted, a C_6–C_{20}-aryl radical, or a radical

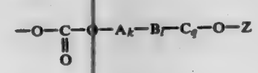
R^1, where

R^1 has the following formula:



in which

each of R^2 to R^6 is H, C_1–C_4-alkyl, phenyl, OH, OCH_3, OC_2H_5, SH, SCH_3, SC_2H_5, SO_3H, $SO_3\ominus$, F, Cl, Br, CN, COOH, $COO\ominus$, COO-(C_1–C_{17}-alkyl), COO-aryl, CF_3, $N(C_1$–C_4-alkyl$)_2$, $N(C_1$–C_4-alkyl) (C_6–C_{20}-aryl), or $N(C_6$–C_{20}-aryl$)_2$, provided that R^2 and R^6 are not OH, SH, or primary or secondary alkyl and at least one but not more than three of the radicals R^2 to R^6 is a radical of the formula



in which

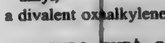
each of A, B and C is a radical of the formula:



in which

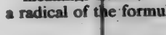
m is an integer from 1 to 6, and each of R^a and R^b is H, OH, aryl, COOH, $COOCH_3$, $COOC_2H_5$, SO_3H, or C_1–C_4-alkyl,

a divalent oxaalkylene radical of the formula:



where y is an integer from 1 to 80 and R^a and R^b have the meanings stated,

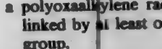
a radical of the formula:



where n is an integer from 1 to 5 and p is an integer from 1 to 5,

a polyoxaalkylene radical of from 2 to 20 oxygen atoms linked by at least one $—CH_2—$ or $—CH_2—CH(CH_3)—$ group,

a radical of the formula:



---

or



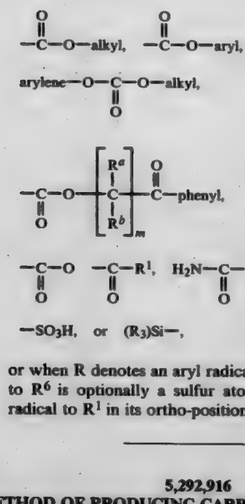
where m is an integer from 1 to 10 and n is an integer from 1 to 10,

a C_5–C_{10}-cycloalkyl radical optionally substituted, a (bis)-methylenecycloalkylene radical of from 6 to 12 carbon atoms, or an o—, m— or p-phenylene radical optionally substituted, and

k, l and q are each an integer from 1 to 80, and

A_k and C_q alternatively are single bonds, and at least one of the radicals A_k, B_l and C_q contains two oxygen atoms, and

Z is H, C_1–C_6-alkyl, phenyl, phenyl substituted by straight-chain or branched-chain C_1–C_{20}-alkyl, or a radical of the formula:



$—SO_3H$, or $(R_3)Si—$,

or when R denotes an aryl radical, one of the radicals R^2 to R^6 is optionally a sulfur atom which links the aryl radical to R^1 in its ortho-position.

5,292,916

METHOD OF PRODUCING CARBONIC ACID DIESTER

Tokuo Matsuzaki; Tuneo Shimamura; Satoru Fujitsu, and Yoshinobu Toriyahara, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

PCT No. PCT/JP91/01313, § 371 Date May 22, 1992, § 102(e) Date May 22, 1992, PCT Pub. No. WO92/06066, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 30, 1991, Ser. No. 859,294

Claims priority, application Japan, Sep. 28, 1990, 2-257042; Sep. 28, 1990, 2-257043

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] C07C 69/96

U.S. Cl. 558—275 **18 Claims**

1. A method of producing a carbonic acid diester, characterized by catalytically reacting carbon monoxide with a nitrous acid ester in a gas phase in the presence of a solid catalyst composed of a solid carrier and a catalytic solid material carried on the carrier, and comprising:

(a) at least one member selected from the group consisting of platinum group metals and compounds thereof;

(b) at least one member selected from the group consisting of iron compounds, copper compounds, bismuth compounds, cobalt compounds, nickel compounds and tin compounds; and

(c) at least one member selected from the group consisting of vanadium compounds, molybdenum compounds and tungsten compounds, sulfuric acid and phosphoric acid.

5,292,917

PROCESS FOR PURIFYING DIMETHYL CARBONATE

Keigo Nishihira; Shinichi Yoshida, and Shuji Tanaka, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Continuation of Ser. No. 837,881, Feb. 9, 1992. This application May 5, 1993, Ser. No. 56,891

Claims priority, application Japan, Feb. 26, 1991, 2-053148

Int. Cl.[5] C07C 69/96

U.S. Cl. 558—277 **4 Claims**

1. A process for purifying dimethyl carbonate which comprises:

(a) (1) continuously feeding a crude reaction mixture 1 which is a mixture mainly comprising dimethyl carbonate and methanol to a first column can A, and

(2) simultaneously and continuously feeding a solution of dimethyl oxalate to the first column can A from the bottom of a second column can B wherein said dimethyl oxalate is added in an amount of 0.3 or more in terms of a mole fraction;

(b) refluxing the mixture by heating the bottom of the first column to effect continuous distillation, removing methanol from the top of the first column as a first column distilled solution 3,

(c) feeding a first column can solution 2 at the bottom thereof which is a mixture of dimethyl carbonate and dimethyl oxalate to the second column can B,

(d) refluxing the mixture of dimethyl carbonate and dimethyl oxalate to effect continuous distillation, removing dimethyl carbonate from the top of the second column as a second column distilled solution 5, and

(e) returning a second column can solution 4 at the bottom thereof which is dimethyl oxalate as a distillation residue to the first column can A.

5,292,918

DIASTEREOSELECTIVE PROCESS FOR PREPARING N-SUBSTITUTED AMINO ACIDS AND DERIVATIVES

Jacques Gosteli, Basel; Ingrid Mergelsberg, Dagmersellen, and Markus Tanner, Schachen, all of Switzerland, assignors to Schering Corporation, Kenilworth, N.J.

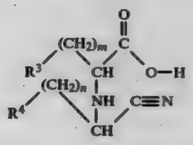
PCT No. PCT/US91/02034, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO91/17141, PCT Pub. Date Nov. 14, 1991

Continuation-in-part of Ser. No. 514,798, Apr. 26, 1990, abandoned. This PCT application Mar. 29, 1991, Ser. No. 934,537

Int. Cl.[5] C07C 253/30

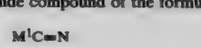
U.S. Cl. 558—352 **16 Claims**

1. A process for preparing an (S,S) or (R,R) diastereoisomer of the formula:



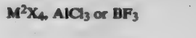
(X)

or salts, esters or amides thereof, wherein R^3 and R^4 independently represent hydrogen, alkyl, aryl or aryl substituted with halogen, alkyl, nitro or alkoxy, and n and m independently represent integers from one to six, comprising combining a cyanide compound of the formula:



(III)

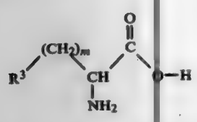
wherein M^1 is hydrogen, trimethylsilyl or a metal selected from the group consisting of sodium, potassium, lithium, cesium, iron, nickel, cadmium and zinc, with an optionally added proton source, a solvent and a Lewis acid of the formula:



(IV)

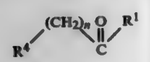
VOL 1160 ISS 2 MR 8 1994 UMI

wherein M^2 is Sn or Ti and X represents chloro, bromo, fluoro or iodo, with an optically active α-amino acid compound of formula (I):



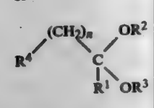
(I)

or salts, esters or amides thereof, wherein R^3 and m are as defined hereinbefore, followed by addition of an acyl or acetal compound of formula (II)



(IIa)

or



(IIb)

wherein m, n and R^4 are as defined hereinbefore, R^1 is hydrogen, alkyl or phenyl and R^2 and R^3 independently represent alkyl.

5,292,919

METHOD FOR PURIFICATION OF ACETONITRILE

Barry W. Himes, Guilford, and R. Clive Greenough, Milldale, both of Conn., assignors to Cryodyne Technologies, Inc., Chester, Conn.

Continuation-in-part of Ser. No. 886,745, May 21, 1992, abandoned. This application May 21, 1993, Ser. No. 64,972

Int. Cl.[5] C07C *253/32, 253/34*

U.S. Cl. 558—435 **14 Claims**

1. A combination method for removal of deleterious impurities from acetonitrile of a total starting impurity amount of above 10 ppm wherein the deleterious impurities are at least water, oxazole, acrylonitrile, crotonitrile, acetamide, methacrylonitrile, and methyloxazole, comprising: treating at ambient temperature acetonitrile with ozone for a time sufficient to oxidize the deleterious impurities in said acetonitrile; and, then passing the thus ozone treated acetonitrile through columns of at least a), a) and b), or a), b) and c) and wherein a) is a molecular sieve; b) is activated alumina, zirconia or silica gel and c) is charcoal or graphitized carbon, whereby a substantially impurity free acetonitrile is obtained wherein each of the deleterious impurities present are substantially entirely removed as determined spectrographically.

5,292,920

SALTS OF N-NITROSOPHENYLHYDROXYLAMINE

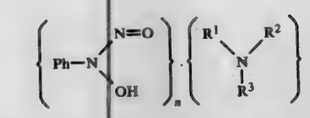
Rita K. Upmacis, North Wales; William Bauer, Jr., Huntingdon Valley, both of Pa., and Samuel F. Reed, Jr., Seabrook, Tex., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 731,562, Jul. 17, 1991, Pat. No. 5,262,569. This application Aug. 24, 1993, Ser. No. 111,256

Int. Cl.[5] C07C *57/075, 69/54, 243/06;* C07D *265/30*

U.S. Cl. 560—4 **15 Claims**

1. A method for inhibiting formation of undesired polymer from an ethylenically unsaturated monomer, which comprises adding to the monomer an effective amount of a salt of N-nitrosophenylhydroxylamine (NPHA) and an amine, expressed in the neutral form as Formula I:



(I)

wherein n is an integer of from one to the number of basic nitrogens in the amine; R^1 is hydrogen or C_1–C_5 alkyl; R^2 is hydrogen, C_1–C_5 alkyl, or C_1–C_{10} aminoalkyl; and R^3 is C_1–C_5 alkyl or C_1–C_{10} aminoalkyl provided that:

a. if R^1 is hydrogen then R^2 and R^3 cannot both be C_1–C_5 alkyl,

b. if R^2 is hydrogen then R^1 and R^3 cannot both be C_1–C_5 alkyl, and,

c. if R^1 and R^2 are both hydrogen then R^3 cannot be C_1–C_5 alkyl.

5,292,921

PROCESS FOR THE ENANTIOSELECTIVE PREPARATION OF PHENYLISOSERINE DERIVATIVES

Arlene Correa, Sao Carlos, Brazil; Jean-Noel Denis, Uriage, France; Andrew Elliot Greene, Uriage, France, and David S. Grierson, Magny les Hameaux, France, assignors to Rhone-Poulenc Rorer S.A., France

PCT No. PCT/FR91/00405, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/17976, PCT Pub. Date Nov. 28, 1991

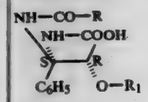
PCT Filed May 21, 1991, Ser. No. 946,448

Claims priority, application France, May 22, 1990, 90 06369

Int. Cl.[5] C07C *269/00*

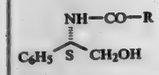
U.S. Cl. 560—29 **10 Claims**

1. Process for the enantioselective preparation of phenylisoserine derivatives of formula (I)



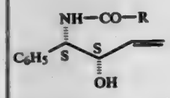
(I)

in which R is a phenyl or tert-butoxy radical and R_1 is a protecting group for the alcohol group, comprising treating S(+)-phenylglycine with a reducing agent and an agent for introducing a benzoyl or t-butoxycarbonyl group to give an alcohol of formula V



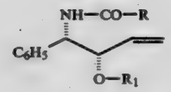
(V)

in which R is as defined above, which is oxidized and then reacted with a vinylmagnesium halide to give a product of the formula (VI)



(VI)

in which R is as defined above, the hydroxyl group of which is then protected by a group R_1 to give a product of formula (VII)



(VII)

in which R and R_1 are as defined above, which is oxidized to the product of formula (I).

5,292,922

N-ACYL-N-PHENYLTETRAHYDROPHTHALAMIC ACID DERIVATIVES, METHODS OF PRODUCING SAME, AND HERBICIDES CONTAINING SAME AS EFFECTIVE COMPONENTS

Tetsuo Takematsu, Tochigi; Takashi Kume; Takeo Komata, both of Saitama; Kiyoshi Suzuki, Tochigi; Matsue Minezaki, Saitama; Yumiko Shirakawa, Saitama, and Kaoru Mori, Saitama, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

PCT No. PCT/JP91/01109, § 371 Date Apr. 22, 1992, § 102(e) Date Apr. 22, 1992, PCT Pub. No. WO92/03407, PCT Pub. Date Mar. 5, 1992

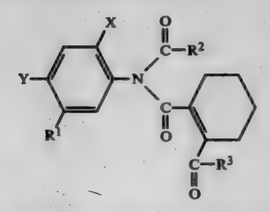
PCT Filed Aug. 21, 1991, Ser. No. 849,063

Claims priority, application Japan, Aug. 22, 1990, 2-220892

Int. Cl.[5] C07C *229/00, 233/00*

U.S. Cl. 560—47 **36 Claims**

1. N-acyl-N-phenyltetrahydrophthalamic acid derivatives represented by the general formula (I),



[I]

wherein X and Y each individually represent hydrogen atoms or halogen atoms, R^1 represents a hydrogen atom, a halogen atom, a lower alkoxyl group, a lower alkenyloxy group, a lower alkynyloxy group, a lower alkoxyalkoxy group or a lower alkoxycarbonylalkoxy group, R^2 represents a lower alkyl group, a halogenated lower alkyl group, or a substituted or unsubstituted phenyl group, and R^3 represents a lower alkoxy group, a lower alkenyloxy group, a lower alkynyloxy group, a lower alkoxyalkoxy group, benzyloxy group or a lower alkoxycarbonylalkoxy group.

5,292,923

METHOD OF PREPARING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER HYDROCHLORIDE

Toshihisa Kato; Shinichi Kishimoto; Hideo Takeda; Mikiya Kano, and Tadashi Takemoto, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,101

Claims priority, application Japan, May 23, 1991, 3-221332

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—40 **9 Claims**

1. A method for preparing α-L-aspartyl-L-phenylalanine methyl ester hydrochloride, which comprises:

(a) adding water to an organic solvent reaction mixture containing N-formyl-α-L-aspartyl-L-phenylalanine methyl ester to form an aqueous layer and an organic layer, and extracting N-formyl-α-L-aspartyl-L-phenylalanine methyl ester into said aqueous layer, at a temperature of from 40° C. to 80° C.;

(b) isolating, at a temperature from 40° C. to 80° C., said aqueous layer and deformylating the N-formyl-α-L-aspartyl-L-phenylalanine methyl ester therein by adding hydrochloric acid and methanol to said isolated aqueous layer; and

(c) crystallizing α-L-aspartyl-L-phenylalanine methyl ester hydrochloride salt crystals out of the mixture obtained in step (b).

5,292,924

OPTICALLY ACTIVE N-α-FLUOROACRYLOYLAMINO ACID POLYMERS FOR THE RESOLUTION OF RACEMATES

Rolf Grosser, Leverkusen; Walter Lange, Cologne; Bruno Bömer, Bergisch Gladbach; Dieter Arlt, Cologne, and Dietmar Bielefeldt, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

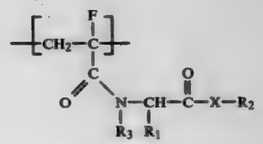
Division of Ser. No. 955,225, Oct. 1, 1992, which is a continuation of Ser. No. 721,065, Jun. 26, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,246

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021108

Int. Cl.[5] C07C *233/05, 233/06, 229/08, 229/12*

U.S. Cl. 560—41 **9 Claims**

1. An optically active polymer containing at least 40 mol % of structural units of the formula (V)



(V)

in which

R_1 represents a straight-chain or branched C_1–C_8-alkyl, a C_7–C_{12}-aralkyl, a C_3–C_{10}-cycloalkyl, a C_6–C_{14}-aryl or a furyl, thienyl or pyridyl radical, which are unsubstituted or substituted by benzyloxycarbonyl, alkoxycarbonyl of up to 6 C atoms, hydroxyl, alkyl, cycloalkyl or alkoxy each having up to 6 C atoms, halogen, phenoxy, benzoxy, acylamino of up to 8 C atoms or by carbonylalkoxy of up to 6 C atoms,

R_3 represents hydrogen or C_1–C_4-alkyl or together with R_1 forms a tri- or tetramethylene group,

X is oxygen or an NR group, in which

R_4 represents hydrogen or straight-chain or branched C_1–C_4-alkyl or together with R_2 and the nitrogen atom forms a 5- or 6-membered ring which is unsubstituted or substituted by an alkoxycarbonyl group of up to 6 carbon atoms or by one or two alkyl groups each having 1 to 4 carbon atoms, and

R_2 represents a straight-chain or branched C_1–C_{22}-alkyl, C_7–C_{12}-aralkyl, C_3–C_{10}-cycloalkyl, C_6–C_{14}-aryl or a terpenyl radical, each of which is unsubstituted or substituted by halogen, alkyl or alkoxy each having to 4 C atoms.

5,292,925

N-T-BUTYLOXYCARBONYL-3-CYCLOHEXYL-L-ALANINE METHYL ESTER IN CRYSTALLINE FORM

Masahiko Kurauchi, and Tohru Nakamura, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

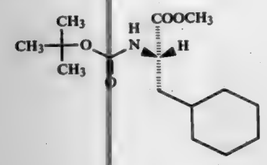
Continuation of Ser. No. 813,692, Dec. 27, 1991, abandoned. This application Feb. 5, 1993, Ser. No. 13,990

Claims priority, application Japan, Dec. 28, 1990, 2-418803

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—115 **1 Claim**

1. N-t-butyloxycarbonyl-3-cyclohexyl-L-alanine methyl ester of formula (1) in crystalline form:



(1)

5,292,926

CYSTEINE DERIVATIVES

Takakazu Morita, Toyonaka; Tadashi Iso, Kawachinagano; Shiro Mita, Ashiya, and Yoichi Kawashima, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

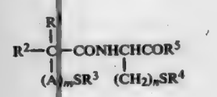
Continuation of Ser. No. 610,346, Nov. 5, 1990, abandoned, which is a continuation of Ser. No. 298,189, Jan. 17, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 44,908

Claims priority, application Japan, Jan. 25, 1988, 63-14189

Int. Cl.[5] C07C *321/00*

U.S. Cl. 560—147 **5 Claims**

1. A compound of the formula (I),



[I]

wherein

R^1 and R^2 are methyl;

R^3 and R^4 are hydrogen; and

R^5 is hydroxy, lower alkoxy, amino or lower alkylamino;

or a pharmaceutically acceptable salt thereof.

5,292,927

FLUORINATED RESINS WITH LOW DIELECTRIC CONSTANT

James R. Griffith, Lanham, and Henry S. W. Hu, Derwood, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1992, Ser. No. 841,944

Int. Cl.[5] C07C *69/52, 41/00*

U.S. Cl. 560—221 **4 Claims**

1. A compound comprising a benzene ring having attached thereto the following groups:

A. Two or more groups having the following structure:

$$-R^1-R^2-R^3-$$

where, individually for each of said two or more groups, R^1 is a monounsaturated radical of 2 to 6 carbon atoms; R^2 is oxygen; and R^3 is a fluorinated hydrocarbon radical containing 2 to 6 carbon atoms; and

B. at least one group having the following structure:

$$R^4-O-(CX_2)_n-$$

where R^4 is a fluorinated hydrocarbon group of 2 to 6 carbon atoms; n is 2 to 6; and X is fluorine.

5,292,928

PROCESS FOR THE REACTION OF A LOW-MOLECULAR HYDROXYL COMPOUND WITH A CARBOXYLIC ACID HALIDE

Karlheinz Miltenberger, Gersthofen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main

PCT No. PCT/JP91/00131, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992, PCT Pub. No. WO91/11423, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 24, 1991, Ser. No. 917,050

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003014

Int. Cl.[5] C07C *69/76, 69/63, 53/00*

U.S. Cl. 560—226 **8 Claims**

1. A process for the preparation of a carboxylic acid or carboxylic acid ester by reacting, in a reaction zone, a hydroxyl compound and a carboxylic acid halide, comprising the steps of:

introducing into the reaction zone 5 to 20 mol % of the total amount of carboxylic acid halide to be reacted,

introducing into the reaction zone over a period of time the remainder of said total amount of carboxylic acid halide while introducing into the reaction zone a first amount of hydroxyl compound, said first amount of hydroxyl compound being approximately stoichiometric with respect to said remainder, the rate of introduction of said first amount of hydroxyl compound being approximately stoichiometric with respect to the rate of introduction of said remainder, so that during and at the conclusion of the introduction of said first amount of hydroxyl compound, essentially unreacted carboxylic acid halide is present in the reaction zone,

adding a second amount of hydroxyl compound which is at least stoichiometric with respect to said essentially unreacted carboxylic acid halide present in the reaction zone at the conclusion of the introduction of said first amount of hydroxyl compound, the total of said first amount and said second amount of hydroxyl compound being 105 to 120 mol %, based on said total amount of carboxylic acid to be reacted.

5,292,929

ASYMMETRIC SYNTHESIS OF CHIRAL SECONDARY ALCOHOLS

Jeffrey M. Sullivan, Longmont, Colo., assignor to Boulder Scientific Company, Mead, Colo.

Filed Apr. 26, 1993, Ser. No. 51,994

Int. Cl.[5] C07C *69/02*

U.S. Cl. 560—231 **5 Claims**

1. A process for synthesizing a chiral secondary alcohol which comprises photohalogenating a cyclic alkanol to produce haloaldehyde and thereafter reacting said haloaldehyde with a dialkyl zinc in the presence of a chirally active catalyst to produce said chiral secondary alcohol.

5,292,930

Patent Not Issued For This Number

5,292,931

CARRIER CATALYST, PROCESS FOR ITS PREPARATION, AND ITS USE FOR THE PREPARATION OF VINYL ACETATE

Peter Wirtz, Königstein; Karl-Fred Wörner, Eschborn; Friedrich Wunder, Hattersheim am Main; Klaus Eichler, Eschborn; Günter Roecher, Kelkheim, all of Fed. Rep. of Germany, and Ioan Nicolau, Corpus Christi, Tex., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 900,839, Jun. 18, 1992, Pat. No. 5,250,487. This application Apr. 7, 1993, Ser. No. 44,212

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120492

Int. Cl.[5] C07C *67/05*

U.S. Cl. 560—245 **5 Claims**

1. A process for the preparation of vinylacetate, comprising:

bringing a gas phase comprising ethylene, acetic acid, and oxygen or an oxygen containing gas into contact with a catalyst which contains:

palladium and/or compounds thereof and alkali metal compounds, and additionally cadmium compounds and/or gold and/or compounds thereof, on support particles which have been pressed from SiO_2 or an SiO_2-Al_2O_3 mixture with the aid of a binder comprising one or more Li, Mg, Al, Zn, Fe or Mn salts of a C_2–C_{26}-carboxylic acid and have subsequently been roasted in oxygen-containing gases at 500°–900° C. for a period of 0.25–5 hours, and thereafter have a surface area of 50–250 m^2/g and a pore volume of 0.4–1.2 ml/g at a particle size of 1–15 mm, 5–20% of the pore volume being formed by pores having a radius of 200–3000 Å, and 50–90% of the pore volume being formed by pores having a radius of 70–100 Å, said catalyst having been prepared by the steps comprising:

a) washing the roasted support particles with an acid which does not react with SiO_2 or SiO-Al_2O_3 mixtures, until no further cations of the binder employed during pressing of the support particles are released from the support particles;

b) then impregnating the support particles with palladium, and gold or cadmium;

c) then bringing the impregnated support particles into contact with a solution of a base at least until the thickness of the noble metal shell generated in this way on the support particles no longer changes substantially; and

d) then impregnating the support particles with an alkali metal compound.

5,292,932

PROCESS FOR THE PREPARATION OF 5-CHLORO-2-HYDROXY-4-ALKYL-BENZENESULFONIC ACIDS

Wolfgang Tronich, Eppstein/Taunus; Carl-Stephan Fröhlich, Kriftel, and Gunther Sell, Kronberg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/01324, § 371 Date Apr. 10, 1992, § 102(e) Date Apr. 10, 1992, PCT Pub. No. WO91/02717, PCT Pub. Date Mar. 7, 1991

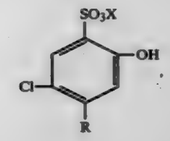
PCT Filed Aug. 11, 1990, Ser. No. 829,081

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1989, 3927258

Int. Cl.[5] C07C *309/30*

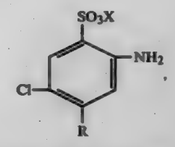
U.S. Cl. 562—78 **20 Claims**

1. A process for the preparation of a compound of the formula (1)



(1)

in which R is an alkyl (C_1–C_6) group and X is a hydrogen or alkali metal atom, which comprises converting a compound of the formula (2)



(2)

in which R and X have the abovementioned meanings, into the corresponding diazonium compound with a diazotizing agent in a mineral acid at temperatures of about −5° C. to about +25° C., subsequently reacting this diazonium compound, without or after intermediate isolation, with aqueous mineral acid at temperatures of about 70° C. to about 120° C. to obtain the compound of the above formula (1).

5,292,933

PROCESS FOR THE RESOLUTION OF THREO-3-[(2-AMINOPHENYL)-THIO]-2-HYDROXY-3-(4-METHOXY-PHENYL)PROPIONIC ACID

Kálmán Harsányi; Elemér Fogassy; Mária Ács; Tibor Gizur; Zsuzsanna Aracs née Tischler; Katalin Berki; László Töke, and Zsuzsanna Mártonffy née Jászay, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

PCT No. PCT/HU90/00045, § 371 Date Apr. 9, 1991, § 102(e) Date Apr. 9, 1991, PCT Pub. No. WO91/00270, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 29, 1990, Ser. No. 684,892

Claims priority, application Hungary, Jun. 30, 1989, 3335/89; Jun. 30, 1989, 3336/89

Int. Cl.[5] C07B *57/00*

U.S. Cl. 562—401 **3 Claims**

1. Process for the resolution of a threo-acid mixture containing (+)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionic acid and (−)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxy-phenyl)-propionic acid, which comprises

a)

(i) preparing a solution containing D-(−)-phenylglycine amide from a mixture containing same and L-(+)-

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phenylglycine amide by the use of (−)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionic acid as resolving agent and using the solution obtained as a resolving agent for the resolution of the threo acid mixture; or

(ii) using an acid addition salt of D-(−)-phenylglycine amide in a solid or dissolved form as a resolving agent, to obtain (−)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionic acid; or

b)

(i) preparing a solution containing L-(+)-phenyl-glycine amide from a mixture containing L-(+)-phenylglycine amide and D-(−)-phenylglycine amide by the means of (+)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionic acid as resolving agent and using the solution obtained as a resolving agent for the resolution of the threo acid mixture; or

(ii) using an acid addition salt of L-(+)-phenylglycine amide in a solid or dissolved form as a resolving agent to obtain (+)-threo-3-[(2-aminophenyl)thio]-2-hydroxy-3-4(4-methoxyphenyl)-propionic acid.

5,292,934

METHOD FOR PREPARING AROMATIC CARBOXYLIC ACIDS

David L. Sikkenga, Wheaton; George E. Kuhlmann, Naperville; Paul K. Behrens, Warrenville; Martin A. Zeitlin, Naperville, and Stephen V. Hoover, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 18, 1992, Ser. No. 900,593

Int. Cl.[5] C07C *51/23, 51/265, 51/487*

U.S. Cl. 562—413 **23 Claims**

1. A method for preparing an aromatic carboxylic acid comprising a) oxidizing in the liquid phase an aromatic compound having at least one oxidizable alkyl or acyl group with an oxygen-containing gas, in a solvent comprising a low molecular weight carboxylic acid, in the presence of a oxidation catalyst comprising heavy metal components, and at a reaction temperature of about 250° F. to about 450° F., thereby forming an oxidation reaction product mixture comprising an aromatic carboxylic acid; subsequently b) heating the oxidation reaction product mixture at a temperature of at least about 550° F. thereby forming a second product mixture; and c) recovering from the second product mixture the aromatic carboxylic acid.

5,292,935

METHOD OF SYNTHESIS AND NOVEL COMPOUNDS FOR PHARMACEUTICAL USES

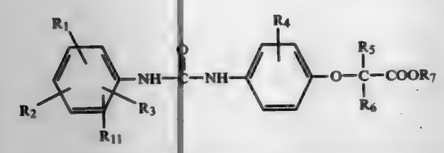
Iraj Lalezari, and Parviz Lalezari, both of Scarsdale, N.Y., assignors to Montefiore Medical Center, Bronx, N.Y.

Division of Ser. No. 477,048, Feb. 7, 1990, Pat. No. 5,093,367, which is a division of Ser. No. 207,098, Jun. 15, 1988, Pat. No. 4,921,997. This application Jan. 15, 1992, Ser. No. 821,409

Int. Cl.[5] C07C *273/18*

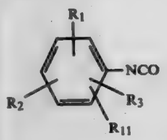
U.S. Cl. 562—439 **1 Claim**

1. A process for the preparation of a compound of formula I:

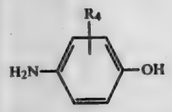


I

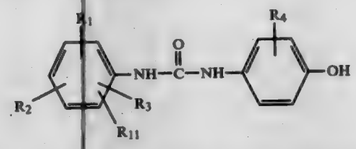
wherein R_1,R_2,R_3,R_4,R_5,R_6 and R_{11} are the same or different and are independently selected from the group consisting of hydrogen, halogen, straight and branched alkyl of from 1 to 6 carbon atoms, aryl, cycloalkyl of 3 to 7 carbon atoms; and alkoxy of 1 to 6 carbon atoms; R_5 and R_6 may be the same or different and are selected from the group consisting of hydrogen, halogen, straight or branched chain alkyl groups of from 1 to 6 carbon atoms; aralkyl groups wherein the alkyl portion has from 1 to 6 carbon atoms, cycloalkyl of from 3 to 7 carbon atoms and aryl; R_7 is hydrogen said process which comprises contacting a compound of the formula:



wherein R_1,R_2, R_3 and R_{11} are the same as hereinabove described; with a compound of the formula:



wherein R_4 is the same as hereinabove described; to form a compound of the formula:



wherein R_1,R_2, R_3 and R_{11} are the same as hereinabove described; recovering said compound and contacting said compound with alkali, chloroform and a compound of the formula:



wherein R_5 and R_6 are the same as hereinabove described to form a compound of formula I.

5,292,936

PROCESS TO PREPARE AMINO CARBOXYLIC ACID SALTS

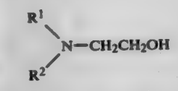
Thaddeus S. Franczyk, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 12, 1993, Ser. No. 44,682

Int. Cl.[5] C07C *51/00, 51/097*

U.S. Cl. 562—526 **10 Claims**

1. A process to manufacture an amino carboxylic acid salt which comprises contacting an aqueous solution of an amino alcohol represented by the formula:



wherein R^1 and R^2 are individually selected from the group consisting of hydrogen, $—CH_2CH_2OH$, $—CH_2COOH$, an alkyl group having from 1 to 6 carbon atoms, and phosphonomethyl; with an alkali metal hydroxide in the presence of an effective amount of a Raney copper catalyst containing from about 50 parts per million to about 10,000 parts per million of an element selected from the group consisting of chromium, titanium, niobium, tantalum, zirconium, vanadium, molybdenum, manganese, tungsten, cobalt, nickel and mixtures thereof.

5,292,937

USE OF MALONIC ACID DERIVATIVE COMPOUNDS FOR RETARDING PLANT GROWTH

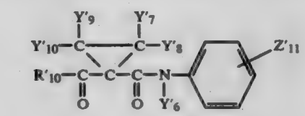
David T. Manning, Cary; James J. Cappy, Raleigh; Raymond M. See, Franklinton; Anson R. Cooke, Durham; Charles D. Fritz, and Thomas N. Wheeler, both of Raleigh, all of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 571,026, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 465,548, Jan. 16, 1990, abandoned, which is a continuation of Ser. No. 361,810, May 30, 1989, abandoned, which is a continuation of Ser. No. 18,129, Mar. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 846,670, Mar. 31, 1986, abandoned. This application Jan. 21, 1993, Ser. No. 8,248

Int. Cl.[5] C07C *229/46*

U.S. Cl. 562—457 **2 Claims**

1. A malonic acid derivative compound having a formula



wherein:

Z'_{11} is: 2—Cl—4Br; 4—Br; 4—Cl; 2—F—4—Cl; 2—Cl—4—Cl; 2—CH_3—4—Cl—5—Cl; 2—CH_3—4—Br; 4—CF_3; 2—F—4—Br; 2—Br—4—Cl; or 2—Br—4—Br; and any remaining positions on the phenyl ring are substituted by hydrogen;

Y'_6 is hydrogen or alkyl; Y'_7, Y'_8, Y'_9 and Y'_{10} are each independently hydrogen, halogen or alkyl; and

R'_{10} is $R''_{10}Y'_{41}$ in which R''_{10} is hydrogen, a derivative salt or an unsubstituted or substituted lower alkyl and Y'_{41} is O.

5,292,938

SYNTHESIS OF 4-SUBSTITUTED-TRANS-1, 2-DIAMINOCYCLOHEXYL POLYAMINOCARBOXYLATE METAL CHELATING AGENTS FOR THE PREPARATION OF STABLE RADIOMETAL ANTIBODY IMMUNOCONJUGATES FOR THERAPY AND SPECT AND PET IMAGING

Ronnie C. Mease, Coram; Leonard F. Mausner, Stony Brook, and Suresh C. Srivastava, Setauket, all of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Apr. 13, 1992, Ser. No. 867,533

Int. Cl.[5] C07C *61/08*

U.S. Cl. 562—507 **5 Claims**

1. The compound [4-haloacetamido-trans-1,2-diaminocyclohexyl polyaminocarboxylate]trans-1,2-di[bis(carboxymethyl)amino]-4-haloacetamido-cyclohexane.

5. The compound trans-1,2-diamino-4-acetamidocyclohexane.

5,292,939

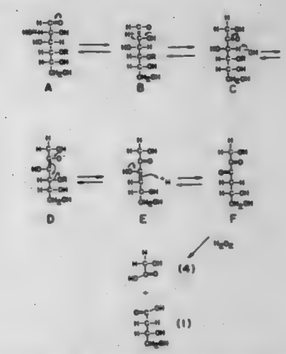
PROCESS FOR THE PREPARATION OF 3,4-DIHYDROXYBUTANOIC ACID AND SALTS THEREOF

Rawle I. Hollingsworth, Haslett, Mich., assignor to Board of Trustees Operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 698,854, May 13, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,571

Int. Cl.[5] C07C *51/285*

U.S. Cl. 562—515 **18 Claims**



1. A process for the conversion of a hexose source containing D-hexose as a substituent and another sugar attached to the D-hexose substituent in the 4 position to 3,4-dihydroxybutyric acid and glycolic acid which comprises:

(a) reacting in a reaction mixture the hexose source with a base selected from the group consisting of an alkali metal hydroxide and an alkaline earth metal hydroxide and a peroxide oxidizing agent until 3,4-dihydroxybutyric acid and glycolic acid are formed as essentially the only products, wherein the peroxide and the base are present in a range up to a 4 molar excess over the D-hexose and wherein the D-hexose is between about 0.05 to 80% by weight per volume of the reaction mixture.

5,292,940

PROCESS FOR THE PREPARATION OF ALKALI METAL SALTS OF ETHER-CARBOXYLIC ACIDS

Franz-Josef Carduck, Haan; Harald Liebs, Leverkusen, and Willi Wuest, Ratingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 836,325, Apr. 28, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 73,919

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3929063

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—538 **15 Claims**

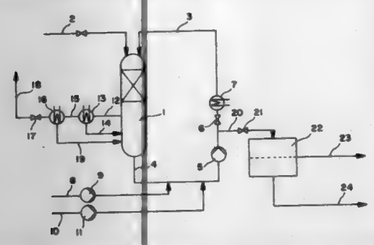
1. A process for the manufacture of alkali metal salts of an ether-carboxylic acid of the general formula I

$$R—(OC_mH_{2m})_n—O—CH_2COOM \quad (I)$$

in which R stands for an alkyl group having from 1 to 22 carbon atoms, an aryl group of an aralkyl group, m stands for the number 2 or 3, n stands for a number in the range of from 0 to 20 and M stands for an alkali metal selected from the group consisting of lithium, sodium and potassium, which comprises oxidizing an ether-alcohol of the general formula II

$$R—(OC_mH_{2m})_n—O—CH_2CH_2OH \quad (II)$$

in which R, m and n are defined as above, in the aqueous phase with oxygen or an oxygen containing gas at elevated temperatures in the presence of an alkali metal hydroxide and a precious metal catalyst wherein an aqueous, alkali lye containing solution of ether alcohols in a thin layer on a solid carrier or in



the form of micrometric particles at a pH value of at least 9 is brought into contact with oxygen or an oxygen containing gas as a continuous phase, wherein the concentration of the ether alcohols in the aqueous phase is in the range from at least 0.5 to 15 weight-%-related to the total weight of the aqueous phase.

5,292,941

METHOD FOR OZONIZING UNSATURATED FATTY ACIDS OR LOWER ALKYL ESTERS THEREOF AND METHOD FOR THE OXIDATIVE DECOMPOSITION OF OZONIZED PRODUCTS

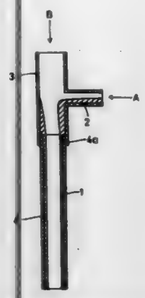
Hitoshi Kigawa, Hiratsuka; Hiroshi Yamaya, Fuchu, and Yurie Iino, Kawasaki, all of Japan, assignors to Lion Corporation, Tokyo, Japan

PCT No. PCT/JP91/01046, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO93/02991, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 6, 1991, Ser. No. 966,155

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—544 **11 Claims**



1. A method for ozonizing an unsaturated fatty acid or a lower alkyl ester thereof, characterized by comprising the steps of:

supplying an unsaturated fatty acid or a lower alkyl ester thereof as a thin film stream, and

passing a gas containing ozone in oxygen or a mixture of oxygen and air or inert gas in the same direction as the flow direction of said thin film stream, thereby achieving gas-liquid contact between the thin film stream of unsaturated fatty acid or lower alkyl ester thereof and the ozone-containing gas.

5,292,942

PROCESS FOR THE PREPARATION OF AQUEOUS BETAINE SOLUTIONS

Rudolf Aigner, Burgkirchen; Guillermo Maier, Haiming; Rainer Müller, Burghausen, and Hubert Seitz, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

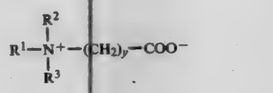
Filed Apr. 2, 1993, Ser. No. 42,115

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211190

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—575 **13 Claims**

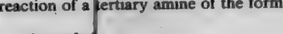
1. A process for the preparation of aqueous solutions of betaines of the formula 1



(1)

in which: R^1 is an alkyl radical having 6 to 22 carbon atoms or is a radical of the formula $R'CONH(CH_2)_z$—, in which R′ has the meaning of R^1 and z is 2, 3 or 4, R^2 is an alkyl radical having 1 to 4 carbon atoms or is a radical of the formula $—(CH_2)_m—OH$, in which m is 1, 2 or 3, R^3 is an alkyl radical having 1 to 4 carbon atoms or is a radical of said formula $—(CH_2)_m—OH$ and y is 1, 2 or 3,

by reaction of a tertiary amine of the formula 2



(2)

in which R^1, R^2 and R^3 have the meanings given above, with an ω-halocarboxylic acid of the formula 3



(3)

in which X is a halogen and y has the above-mentioned meaning,

and with alkali metal hydroxide in the aqueous phase, which comprises carrying out the reaction continuously in two or three stirred tanks arranged in a cascade and proceeding in such a way that

a) the first stirred tank is supplied simultaneously and continuously with the tertiary amine and the ω-halocarboxylic acid in an amount of 1 to 1.3 mol per mole of tertiary amine, the alkali metal hydroxide in an amount of only 0.80 to 0.98 mol per mole of ω-halocarboxylic acid and the water in an amount such that the betaine content of the finished aqueous betaine solution is 20 to 50% by weight, and in this tank at a temperature of 60 to 100° C. a residence time is maintained such that the product leaving this tank and entering the second stirred tank still contains 2 to 15 mol-% of tertiary amine, based on tertiary amine used, and

b) the second stirred tank is continuously supplied with a further amount of alkali metal hydroxide which is in the range from the remainder of the stoichiometric amount of alkali metal hydroxide remaining from the first tank up to an excess of 5 mol-%, and in this tank at a temperature of 60 to 100° C. a residence time is maintained such that the aqueous betaine solution leaving the tank contains less than 2 mol-% of tertiary amine, based on tertiary amine used, where, when three stirred tanks are used, the third is used for a following reaction at a temperature of 70 to 100° C. in order to obtain an aqueous betaine solution which, in comparison with the betaine solution from the second stirred tank, has a still lower content of tertiary starting amine.

5,292,943

METHOD FOR THE PREPARATION OF LOW ODOR 2,3-DIMERCAPTOSUCCINIC ACID

Elvin R. Lukenbach, Flemington, N.J., assignor to McNeil - PPC, Inc., Milltown, N.J.

Filed Jan. 23, 1992, Ser. No. 824,640

Int. Cl.[5] C07C *323/00*

U.S. Cl. 562—594 **7 Claims**

1. A method of preparing low odor meso-2,3-dimercaptosuccinic acid comprising:

washing a meso-2,3-dimercaptosuccinic acid substrate at least twice with an aqueous wash medium containing less than about 10% by weight alcohol; and

drying the washed meso-2,3-dimercaptosuccinic acid substrate.

5,292,944

PROCESS FOR THE PREPARATION OF ADIPIC ACID OR PENTENOIC ACID

Erdem M. Atadan, Wilmington, and Harold S. Bruner, Jr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 29, 1993, Ser. No. 81,885

Int. Cl.[5] C07C *51/12, 51/10*

U.S. Cl. 562—590 **7 Claims**

1. A process for the preparation of adipic acid and/or pentenoic acids which comprises (1) forming a reaction mixture containing (a) one or more acids or lactones selected from saturated branched six carbon diacids, saturated five carbon lactones, saturated six carbon diacid anhydrides and branched mono-olefinic five carbon monoacids (b) carbon monoxide, and (c) an iodide promoted iridium catalyst (2) heating said reaction mixture to a temperature in the range of about 175 degrees C. to about 230 degrees C. while under a carbon monoxide pressure of between 0 to 2000 psi absolute and where the ratio of active iodide to iridium in the reaction mixture is 0.5:1 to 20:1, and the iridium content of the reaction mixture is about 100 to 8,000 parts per million by weight of the reaction mixture.

5,292,945

PROCESS FOR PREPARING α-CHLORO-α-OXIMINO-4-HYDROXYACETOPHENONE

John R. Durrwachter, Corpus Christi; Charlet R. Lindley, Portland, and Graham N. Mott, Corpus Christi, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 801,999, Dec. 3, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,550

Int. Cl.[5] C07C *53/00*

U.S. Cl. 562—804 **18 Claims**

1. A method for preparing α-chloro-α-oximino-4-hydroxyacetophenone, comprising the step of reacting 4-hydroxyacetophenone with nitrosyl chloride, said reaction being carried out in the presence of a strong acid catalyst which was added to the 4-hydroxyacetophenone before contacting with the nitrosyl chloride.

5,292,946

IN-SITU PREPARATION OF DIISOPINOCAMPHENYL CHLOROBORANE

Pamela M. Simpson, North Brunswick; David M. Tschaen, Aberdeen, and Thomas R. Verhoeven, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

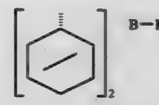
Continuation of Ser. No. 586,933, Sep. 24, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,595

Int. Cl.[5] C07F *5/02*

U.S. Cl. 562—906 **4 Claims**

1. A process of making diisopinocampheylchloroborane comprising:

(a) contacting borane methylsulfide in an etheral solvent with (1R)-(+)-α-pinene, having optical purity of between about 91% ee to 95% ee, to form the diisopinocampheylborane of Formula I,



(b) contacting, without further purification, the impure product of step (a) with an acidic chloride to yield diisopinocamphenylchloroborane of Formula 2;



5,292,947

PROCESS FOR PREPARING ALKYLSULFONIC ANHYDRIDES

Theodore R. Walker, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,228

Int. Cl.[5] C07C *303/22, 303/00, 45/00*

U.S. Cl. 562—872 **10 Claims**

1. A process for preparing an alkylsulfonic anhydride comprising

contacting

(A) a dehydrated phosphoric acid with

(B) an alkylsulfonic acid having 1 to 6 carbon atoms,

under conditions of temperature from about 180° C. to about 300° C. and press less than 20 mm Hg to result in the absence of phosphoric/alkylsulfonic mixed anhydride and production of a mixture of alkylsulfonic acid and its corresponding anhydride at a conversion of at least 10% of said alkylsulfonic acid to the corresponding alkylsulfonic anhydride.

5,292,948

CONTINUOUS PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE OR MIXTURES OF ACETIC ANHYDRIDE AND ACETIC ACID

Joseph R. Zoeller; Charles E. Outlaw, and Regina M. Moucier, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 630,625, Dec. 20, 1990, abandoned. This application May 28, 1993, Ser. No. 68,583

Int. Cl.[5] C07C *51/56, 51/12, 51/573*

U.S. Cl. 562—891 **11 Claims**

1. Continuous process for the preparation of acetic anhydride which comprises carbonylating a mixture comprising (i) methyl iodide and (ii) methyl acetate and/or dimethyl ether in the presence of a rhodium catalyst and a promoter wherein the concentration of mesityl oxide in the carbonylation mixture is suppressed by the presence therein of about 100 to 500 ppm of dissolved ferrous and/or cobaltous ion.

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5,292,949

PROCESS FOR THE PREPARATION OF ACID ANHYDRIDES

Pasquale Gallegra, Muttenz, and Gerhard Degischer, Füllinsdorf, both of Switzerland, assignors to Saurefabrik Schweizerhall, Schweizerhalle, Switzerland

Filed Dec. 16, 1992, Ser. No. 991,407

Claims priority, application Switzerland, Dec. 20, 1991, 3813/91

Int. Cl.[5] C07C *51/567, 53/18*

U.S. Cl. 562—897 24 Claims

1. A process for the preparation of a symmetrical acid anhydride of formula



(I)

wherein R_1 is an aliphatic, cycloaliphatic, aromatic, cycloaliphatic-aliphatic or araliphatic radical, with the proviso that functional groups present in R_1, if necessary, are in protected form,

which process comprises reacting a compound of formula



(II)

wherein R_1 has the meanings assigned to it above, and wherein X is chloro or bromo, with an acid anhydride of formula



(III)

wherein R_2 is an aliphatic hydrocarbon radical or cycloalkyl, with removal by distillation of the compound of formula



(IV)

wherein R_2 and X have the meanings assigned to them above, and removing any protective groups present.

5,292,950

N,N-DIALKYLAMINOALKYL (METH) ACRYLAMIDE COMPOSITION WITH IMPROVED STORAGEABILITY

Hiroshi Oka, Hatano City; Yasutaka Doi, and Takashi Maruyama, both of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Tokyo and Sumitomo Chemical Co., Ltd., Osaka, both of Japan

PCT No. PCT/JP90/00107, § 371 Date Nov. 13, 1990, § 102(e) Date Nov. 13, 1990, PCT Pub. No. WO90/08788, PCT Pub. Date Aug. 9, 1990

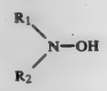
PCT Filed Jan. 30, 1990, Ser. No. 582,186

Claims priority, application Japan, Jan. 31, 1989, 1-19760

Int. Cl.[5] C07C *237/16*

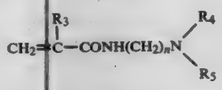
U.S. Cl. 564—4 4 Claims

1. A composition having improved storageability, consisting essentially of an N,N-dialkylaminoalkyl(meth)acrylamide of the following formula (II) and an N,N-dialkylhydroxylamine of the following formula (I) in an amount of from 10 to 10,000 ppm:



(I)

where R_1 and R_2 each independently represent an alkyl group having from 1 to 4 carbon atoms;



(II)

where R_3 represents a hydrogen atom or a methyl group; R_4 and R_5 each independently represent an alkyl group having from 1 to 4 carbon atoms; and n represents an integer of from 2 to 4.

5,292,951

1,3,4-OXADIAZOLES CONTAINING THE PENTAFLUOROTHIO (SF_5) GROUP

Michael E. Sitzmann, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 59,768, May 10, 1993, Pat. No. 5,274,103. This application Sep. 10, 1993, Ser. No. 119,296

Int. Cl.[5] C07C *243/14*

U.S. Cl. 564—151 8 Claims

1. A diacylhydrazine that is

N-(4-pentafluorothioperfluorobutyryl)-N′-(4,4,4-trinitrobutyryl)hydrazine,

N-(3-pentafluorothioperfluoropropionyl)-N′-(4,4,4-trinitrobutyryl)hydrazine,

N-(4-pentafluorothioperfluorobutyryl)-N′-(4-fluoro-4,4-dinitrobutyryl)hydrazine,

N-(3-pentafluorothioperfluoropropionyl)-N′-(4-fluoro-4,4-dinitrobutyryl)hydrazine,

N-(4-pentafluorothioperfluorobutyryl)-N′-(pentafluorothioacetyl)hydrazine,

N-(3-pentafluorothioperfluoropropionyl)-N′-pentafluorothioacetyl)hydrazine,

N-(pentafluorothioacetyl)-N′-(4,4,4-trinitrobutyryl)hydrazine,

N-(pentafluorothioacetyl)-N′-(4-fluoro-4,4-dinitrobutyryl)-hydrazine,

N-pentafluorothioacetyl)-N′-(perfluorobutyryl)hydrazine,

N-(pentafluorothioacetyl)-N′-(perfluoropropionyl)hydrazine, or

N-(pentafluorothioacetyl)-N′-(trifluoroacetyl)hydrazine.

5,292,952

PROCESS FOR PRODUCING 2-FLUORO-4-(TRIFLUOROMETHYL) ACETANILIDE

Noriyasu Sakamoto, Nishinomiya; Toshiaki Taki, Toyonaka, and Noritada Matsuo, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,888

Claims priority, application Japan, Nov. 20, 1991, 3-304609

Int. Cl.[5] C07C *233/15*

U.S. Cl. 564—218 12 Claims

1. A process for producing 2-fluoro-4-(trifluoromethyl) acetanilide which comprises reacting 3,4-di-fluorobenzotrifluoride with acetamide in the presence of alkali metal hydride or alkali metal carbonate in a solvent selected from the group consisting of at least one aprotic polar solvent and a mixture of at least one aprotic solvent and at least one aprotic non-polar solvent.

5,292,953

PROCESS FOR THE PREPARATION OF AZOMETHINES

Reinhard Langer; Hans-Josef Buysch, both of Krefeld, and Paul Wagner, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

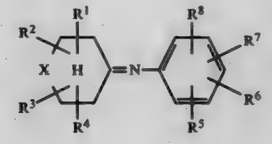
Continuation of Ser. No. 739,116, Jul. 31, 1991, abandoned. This application May 3, 1993, Ser. No. 57,199

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025185

Int. Cl.[5] C07C *249/02*

U.S. Cl. 564—277 19 Claims

1. A process for the preparation of an azomethine of the formula



in which

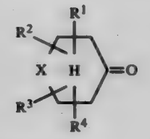
R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 independently of one another denote hydrogen, linear or branched C_1–C_6-alkyl, C_3–C_6-cycloalkyl, benzyl or aryl, and

R^5, R^6, R^7 and R^8 independently of one another additionally denote halogen, linear or branched C_1–C_6-alkoxy, hydroxyl, amino, C_1–C_6-alkylamino, di-C_1–C_6-alkylamino, aryloxy or arylamino,

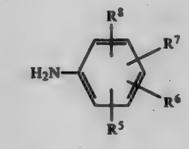
aryl representing phenyl or 5-membered or 6-membered heteroaryl attached in the 2-, 3- or 4-position and having 1 or 2 hetero atoms belonging to the group N, O and S, and

X denotes —CH_4— or a direct bond between the adjacent C atoms,

comprising the condensation of a cycloalkanone of the formula



with an aniline of the formula



in which R^1 to R^8 and X have the above meaning, in the presence of an acid heterogeneous catalyst with azeotropic removal of the water of reaction, wherein the condensation reaction is carried out at a molar ratio of cycloalkanone to analine of 2:1-1:2, a pressure of 0.5 mbar-3 bar and in a continuous reaction in a column-like reactor having an applied temperature profile, ranging from 10° C. to 300° C. the starting materials being fed in in the low-temperature zone and, of the reaction products, the water of reaction to be removed as an azeotrope also being removed in the low-temperature zone and the azomethine formed being removed in the high-temperature zone.

5,292,954

AMINE OXIDE COMPOSITION AND PROCESS

James E. Borland; Joe D. Sauer, and Kim R. Smith, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 524,497, May 17, 1990, abandoned. This application Dec. 17, 1990, Ser. No. 627,982

Int. Cl.[5] C07C *291/02*

U.S. Cl. 564—298 12 Claims

1. In a process for preparing a tert-amine oxide by reacting a tert-amine with aqueous hydrogen peroxide, the improvement which comprises conducting at least the latter part of the reaction in the presence of a nonionic surfactant as the sole organic solvent; at least a portion of the nonionic surfactant being a compound corresponding to the formula $Z[OC(Z')HCH_2]_mOH$ in which Z is an alkylphenyl group wherein alkyl group contains 4–30 carbons, Z′ is hydrogen or an alkyl or hydroxyalkyl group containing 1–3 carbons, and m is an integer of 1–100.

5,292,955

AMINE OXIDE COMPLEXES

Kim R. Smith; James E. Borland, and Joe D. Sauer, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 736,251, Jul. 26, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 902,157

Int. Cl.[5] C07C *291/04*

U.S. Cl. 564—298 9 Claims

1. A process which comprises (1) reacting one molar proportion of an amine oxide corresponding to the formula:

$$RR'R''NO{\cdot}xH_2O$$

with y molar proportions of an aqueous hydrogen peroxide having a concentration of 50–80% by weight in an organic solvent to form a solution of perhydrate corresponding to the formula:

$$RR'R''NO{\cdot}xH_2O{\cdot}yH_2O_2$$

and (2) cooling the solution to crystallize the perhydrate; R in the above formulas being a primary alkyl group containing 8–24 carbons; R′ being methyl, ethyl, or 2-hydroxyethyl; R″ being independently selected from methyl, ethyl, 2-hydroxyethyl, and primary alkyl groups containing 8–24 carbons; x being 0 or 1; y being 1 or 2; and the sum of x and y being 2.

5,292,956

HYDROXYPHENYL-SUBSTITUTED AMINE ANTIOXIDANTS

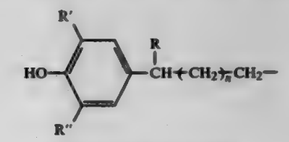
Vincent J. Gatto, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 1, 1992, Ser. No. 937,784

Int. Cl.[5] C07C *211/27, 211/29*; C10M *133/08*

U.S. Cl. 564—374 20 Claims

1. A 3,5-dihydrocarbyl-4-hydroxyphenalkylamine corresponding to the formula $Z_2Z'N$ in which Z is a 3,5-dihydrocarbyl-4-hydroxyphenalkyl group having the structure:



wherein R is hydrogen or an alkyl group of 1–3 carbons; R′ and R″ are hydrocarbyl groups independently selected from alkyls and cycloalkyls of up to six carbons; n represents zero or one; and Z′ is Z or an alkyl, alkenyl, or aralkyl group of up to 18 carbons.

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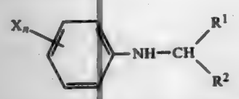
5,292,957

PROCESS FOR THE PREPARATION OF N-ALKYLHALOGENOANILINES

Werner Brodt, Eppstein/Taunus, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

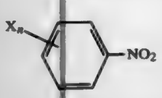
PCT No. PCT/EP90/01003, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/00262, PCT Pub. Date Jan. 10, 1991
PCT Filed Jul. 2, 1990, Ser. No. 778,163
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921447
Int. Cl.[5] C07C *209/26*
U.S. Cl. 564—417 7 Claims

1. A process for the preparation of N-alkylhalogenoanilines of the general formula (I)



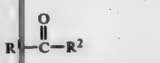
(I)

in which X is a chlorine or bromine atom and n is the number 1 or 2, R^1 is a linear or branched alkyl (C_1–C_4) radical, R^2 a linear or branched alkyl (C_1–C_6) radical or R^1 and R^2 together with the carbon atom to which they are bound can form a five- or six-membered cycloalkane ring, which comprises reacting a halogenonitrobenzene of the general formula (II)



(II)

in which X and n have the abovementioned meanings with 1 to 1.5 times the stoichiometric amount of a carbonyl compound of the general formula (III)



(III)

in which R^1 and R^2 have the abovementioned meanings or R^1 and R^2 together with the carbon atom of the carbonyl group can form a five- or six-membered cycloalkane ring, in an organic solvent which is inert towards the reactants under the reaction conditions at temperatures of 30° to 50° C., at a hydrogen superatmospheric pressure of about 0 to about 50 bar, in the presence of a sulfited platinum catalyst on activated carbon.

5,292,958

PROCESS FOR ELIMINATING THE DIETHANOLAMINE PRESENT IN TRIETHANOLAMINE AND PREPARATION PROCESS FOR PURIFIED TRIETHANOLAMINE

Gabrielle Claud, Paris, and Alain Blanc, Saint Denis, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Oct. 29, 1992, Ser. No. 968,315
Claims priority, application France, Oct. 29, 1991, 91 13329
Int. Cl.[5] C07C *209/84, 209/86*
U.S. Cl. 564—499 5 Claims

1. Process for the elimination of the diethanolamine present in triethanolamine wherein the triethanolamine containing diethanolamine is treated with glyoxal in a molar ratio of glyoxal to diethanolamine greater than or equal to 1.

5,292,959

4,4-DINITROADAMANTANGE-2,6-DIONE

Paritosh R. Dave, Little Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 4, 1992, Ser. No. 878,370
Int. Cl.[5] C07C *79/36, 79/08*
U.S. Cl. 568—305 1 Claim

1. 4,4-Dinitroadamantane-2,6-dione.

5,292,960

PROCESS FOR PURIFICATION OF CYCLOHEXANONE

Heinz-Peter Meier, Kapellen; Jan van Esbroeck, Kalmthout, and Eddy Terwesuwe, Berchem, all of Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,502
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1992, 4205633
Int. Cl.[5] C07C *45/85*
U.S. Cl. 568—366 11 Claims

1. A process for the purification of cyclohexanone which has been obtained by dehydrogenation of a cyclohexanone/cyclohexanol mixture, wherein the dehydrogenation mixture is treated in the gas or liquid phase with H_2 on a hydrogenation catalyst at 20° to 180° C. and at an H_2 pressure of 0.1 to 15 bar.

5,292,961

PROCESS FOR THE PREPARATION OF HALOGENATED POLYETHERS

Antonio Marraccini; Giovanni Gustalla, both of Novara; Alessandro Malacrida, Milan, and Giorgio Guglielmo, Venice, all of Italy, assignors to Ausimont S.p.A., Italy

Continuation of Ser. No. 860,598, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 693,020, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 546,701, Jul. 3, 1990, abandoned, which is a continuation of Ser. No. 361,776, May 26, 1989, abandoned, which is a continuation of Ser. No. 119,169, Nov. 10, 1987, abandoned. This application Jun. 4, 1993, Ser. No. 71,876
Claims priority, application Italy, Nov. 14, 1986, 22347 A/86
Int. Cl.[5] C07C *41/06*
U.S. Cl. 568—604 4 Claims

1. A process for the preparation of halogenated polyethers of the formula:

$$R_FO-CF_2CF_2-OR'_F \text{ and} \quad \text{(I)}$$

$$R_FO-CF(CF_3)-OR'_F \quad \text{(II)}$$

wherein: R_F and R'_F, either equal to or different from each other, are fluorinated alkyl radicals having from 1 to 20 carbon atoms; said process consisting in reacting a fluoroxy compound of the formula R'_FOF with a flourovinylether of the formula $R_FO-CF=CF_2$, wherein R_F and R'_F are defined as above, at a temperature between −30° C. and −100° C., in the liquid phase in the presence of an inert solvent selected from chlorofluorohydrocarbons or perfluorohydrocarbons.

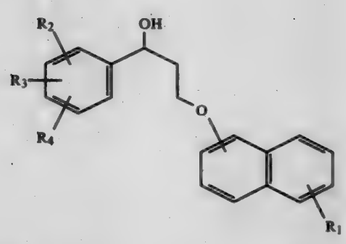
5,292,962

INTERMEDIATES TO 1-PHENYL-3-NAPHTHALENYLOXY-PROPANAMINES

Charles A. Alt, Indianapolis; Roger L. Robey, Greenwood, and Eldon E. Van Meter, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 11, 1992, Ser. No. 989,291
Int. Cl.[5] C07C *43/23*; C07D *317/50, 317/52, 317/54*
U.S. Cl. 568—633 20 Claims

1. A compound of the formula I



I

wherein:
R_1 hydrogen, halo, C_1–C_5 alkyl, C_1–C_3 alkoxy or halo-C_1–C_5 alkyl;
each R_2, R_3 and R_4 independently is hydrogen, halo C_1–C_5 alkyl, C_1–C_3 alkoxy or trifluoromethyl;
or any adjacent two of R_2, R_3 and R_4 can be combined to form methylenedioxy.

5,292,963

PROCESS FOR PRODUCING ETHER COMPOUND

Nakagawa Kanji, and Matsuo Makoto, both of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Oct. 16, 1992, Ser. No. 962,264
Claims priority, application Japan, Oct. 18, 1991, 3-333836
Int. Cl.[5] C07C *41/06*
U.S. Cl. 568—697 15 Claims

1. A process for continuously producing an ether compound comprising the steps of:

subjecting a lower alcohol having 1 to 3 carbon atoms to a reaction procedure with a hydrocarbon mixture consisting of hydrocarbon compounds having 3 to 6 carbon atoms and comprising, as the major component thereof, an unsaturated hydrocarbon compound having 4 or 5 carbon atoms, to provide a reaction product mixture comprising a resultant ether compound, a non-reacted portion of the lower alcohol and a non-reacted portion of the hydrocarbon mixture;

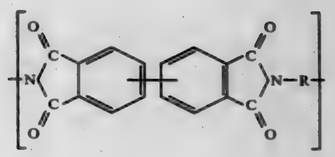
feeding the resultant reaction product mixture to a distillation procedure in a distillation column, to provide a bottom liquid fraction comprising the resultant ether compound and a top vapor fraction comprising the non-reacted lower alcohol portion and the non-reacted hydrocarbon mixture portion;

collecting the bottom liquid fraction through a bottom outlet of the distillation column;

discharging the top vapor fraction through a top outlet of the distillation column;

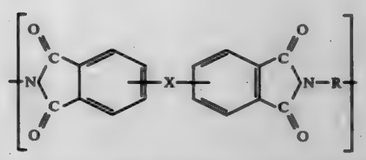
liquefying the top vapor fraction by cooling;

bringing the liquefied top fraction into contact with one side face of an aromatic polyimide asymmetric separating membrane having a separation factor, as defined below, of 200 or more, at a temperature of 50° C. or more, while exposing the opposite side face of the separating membrane to an atmosphere maintained under reduced pressure, to allow a vapor fraction comprising, as a major component thereof, the non-reacted lower alcohol to selectively permeate the separating membrane, said aromatic polyimide in the asymmetric separating membrane comprises 70 to 100 molar % of at least one type of recurring unit selected from those of the formulae (I) and (II):



[I]

and



[II]

wherein R represents a divalent aromatic group having 2 to 4 benzene ring structures and X represents a member selected from the group consisting of —S—, —SO_2—, —CO— —O—, —$C(CH_3)_2$—, —CH_2—, and —$C(CF_3)_2$— groups, and said separation factor being determined in accordance with the equation:

$$\alpha = C_1/C_2$$

wherein α represents the separation factor of the separating membrane, C_1 represents a proportion in weight of the non-reacted lower alcohol contained in the permeated fraction and C_2 represents a proportion in weight of the non-reacted lower alcohol contained in the liquefied top fraction to the non-reacted hydrocarbon mixture contained in the liquified top fraction;

cooling the permeated lower alcohol vapor fraction to liquefy and collect the same;

returning the liquefied lower alcohol fraction to the reaction step.

5,292,964

PREPARATION OF ALKYL TERTIARY BUTYL ETHER

Vijai P. Gupta, Berwyn, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Nov. 16, 1992, Ser. No. 976,800
Int. Cl.[5] C07L *41/09*; C07C *41/06*
U.S. Cl. 568—697 5 Claims

1. The process for the production of methyl tertiary butyl ether of ethyl tertiary butyl ether which comprises:

a) reacting tertiary butyl alcohol with a lower alcohol selected from methanol or ethanol in an etherification zone and forming an etherification effluent containing lower alkyl tertiary butyl ether, water of reaction, and lower alcohol, the concentration of lower alcohol in said effluent being at least 1 mol lower alcohol per 2 mols lower alkyl tertiary butyl ether;

b) passing the etherification effluent to a distillation zone and distilling the effluent from step a) to separate an overhead mixture of ether and lower alcohol substantially free of water from a bottoms comprised of tertiary butyl alcohol, lower alcohol and water; and

c) reacting a lower alcohol/ether admixture from said overhead mixture with isobutylene in a second etherification zone to form lower alkyl tertiary butyl ether.

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5,292,965

STARTING MATERIALS FOR IMPROVED RADIATION-HARDENABLE DILUENTS

Francis A. Higbie, Bound Brook, N.J.; Robert A. LieBerman, Naperville, Ill., and Ross Ira M., Millburn, N.J., assignors to Diamond Shamrock Chemicals Company

Division of Ser. No. 925,505, Aug. 5, 1992, Pat. No. 5,243,085, which is a division of Ser. No. 696,471, May 6, 1991, Pat. No. 5,159,119, which is a division of Ser. No. 472,138, Jan. 30, 1990, Pat. No. 5,053,554, which is a continuation of Ser. No. 74,991, Jul. 17, 1987, abandoned, which is a division of Ser. No. 849,301, Apr. 8, 1986, Pat. No. 4,876,384, which is a continuation-in-part of Ser. No. 725,801, Apr. 22, 1985, abandoned, and a continuation-in-part of Ser. No. 797,483, Nov. 13, 1985, abandoned. This application Jun. 14, 1993, Ser. No. 76,563

Int. Cl.[5] C07C *43/11*

U.S. Cl. 568—623 1 Claim

1. A lower alkyl ether which is monomethoxy propoxylated glycerol having an average of about three moles of propylene oxide.

5,292,966

PROCESS FOR THE PREPARATION OF 2-NITRO-3, 6-DICHLOROPHENOL

Michael Meier, Frankfurt am Main, and Heinz-Georg Kautz, Birstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 33,110

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1992, 4208630

Int. Cl.[5] C07C *205/26, 205/20*

U.S. Cl. 568—709 20 Claims

1. A process for the preparation of 2-nitro-3,6-dichlorophenol by sulfonation of 2,5-dichlorophenol and subsequent nitration and desulfonation, which comprises carrying out the nitration by metering in a nitrating acid comprising 98 to 100% strength nitric acid and 96 to 100% strength sulfuric acid at temperatures from −15° to 35° C. and for a metering time of at least 1 hour.

5,292,967

PROCESS FOR PRODUCING 2,3-DIFLUORO-6-NITROPHENOL

Theodor Papenfuhs, Frankfurt am Main; Joachim Hackenbruch, Mainz, and Ralf Pfirmann, Karlsruhe, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01829, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/05141, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 35,719

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1990, 4030263

Int. Cl.[5] C07C *205/20*

U.S. Cl. 568—709 9 Claims

1. A process for the preparation of isomerically pure 2,3-difluoro-6-nitrophenol, which comprises reacting 2,3,4-trifluoronitrobenzene with aqueous alkali metal hydroxide solution or alkaline earth metal hydroxide solution or suspension in the absence of organic solvent at temperatures of about 20° C. to about 100° C., adjusting the resulting reaction mixture to a pH of about 1 to about 6 by addition of acid, steam-distilling the resulting product and isolating the 2,3-difluoro-6-nitrophenol from the distillate after cooling, no organic solvent being present in any process step.

5,292,968

PROCESS FOR PRODUCING OVER-BASED ALKALINE EARTH METAL PHENATE

Sanae Ueda; Yoshihiro Kojima; Makoto Nishishita, and Shinji Yamaoka, all of Saitama, Japan, assignors to Cosmo Research Institute and Cosmo Oil Co., Ltd., both of Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,101

Claims priority, application Japan, Feb. 26, 1992, 4-075252; Aug. 15, 1992, 4-238898

Int. Cl.[5] C07C *39/00, 39/235*

U.S. Cl. 568—716 16 Claims

1. A process for producing an over based alkaline earth metal phenate in a sulfurized or unsulfurized form or as a mixture thereof, in which said process comprises the steps of: effecting reactions among phenols having a hydrocarbon side chain of 4 to 36 carbon atoms, dihydric alcohols having a carbon number of from 2 to 6 and an alkaline earth metal oxide or hydroxide or a mixture thereof (referred to as "alkaline earth metal reagent" hereinafter), or among said compounds further mixed with one or both of sulfur and water at a temperature of from 60° to 200° C.; removing an excess amount of the dihydric alcohols and at least an excess amount of water by distillation; and subsequently treating resulting distillation residue with carbon dioxide at a temperature of from about 50° to 230° C., wherein the improvement resides in that said carbon dioxide treatment is carried out in the presence of water in an amount of from about 0.01 to 1.0 mol per 1 mol of said alkaline earth metal reagent.

5,292,969

PHENOLIC ANTIOXIDANT AND PROCESS

Bruce C. Berris, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 1, 1993, Ser. No. 41,097

Int. Cl.[5] C07C *39/12*

U.S. Cl. 568—720 17 Claims

1. In a process for preparing a 1,3,5-trimethyl-2,4,6-tris(3,5-dialkyl-4-hydroxybenzyl)benzene by reacting a 2,6-dialkyl-4-methoxymethylphenol with mesitylene in an aliphatic or cycloaliphatic hydrocarbon solvent while distilling methanol by-product out of the reaction mixture as it is formed, the improvement which comprises conducting the reaction in the presence of at least about 10 mol %, based on the amount of mesitylene, of a hydrocarbon-soluble acid as a catalyst.

5,292,970

METHOD OF MANUFACTURING ORTHO-SUBSTITUTED ALKYLPHENOLS, AND CATALYST THEREFOR

Friedrich-Wilhelm Küpper, and Wolfgang Müller, both of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Nov. 30, 1992, Ser. No. 983,048

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139056

Int. Cl.[5] C07C *37/14*

U.S. Cl. 568—794 11 Claims

1. A method of preparing an ortho-substituted alkylphenol, comprising: reacting phenol or a 2-(C_{3-10})alkylphenol with a 2-alkyl-1-alkene or a 2-aryl-1-alkene in the liquid phase, at a temperature of from 1° to 100° C. and a pressure of from 0.1 to 20 bar; wherein the reaction is carried out in the presence of a modified aluminum-containing catalyst prepared by a method comprising adding a small amount of one or more polyhalophenol as a cocatalyst to one or more aluminum tris(2-alkyl-)phenolate catalysts, wherein said one or more polyhalophenols each have at least 3 halogen substituents, which may be the same or different, and are selected from the group consisting of fluorine, chlorine, and bromine; wherein the catalyst is formed in the presence of the cocatalyst, or the cocatalyst is added to the already formed catalyst prior to the start of the reaction step, in an amount such that the molar ratio between the cocatalyst and the aluminum compound is from 0.5:1 to 8:1.

5,292,971

FLOURINE-SUBSTITUTED VICINAL AND METHOD FOR THEIR PREPARATION, AND THEIR USE

Jürgen Kulpe, and Heinz Strutz, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

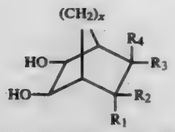
Filed Feb. 12, 1993, Ser. No. 17,687

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206384

Int. Cl.[5] C07C *35/29*

U.S. Cl. 568—819 8 Claims

1. A fluorine-substituted vicinal glycol of the formula



in which R_1 is an alkyl of the formula

$$-(CH_2)_m-(C_nF_{2n+1}),$$

in which m is 1 or 2, and n is an integer from 1 to 17, and x is 0 or 1 and R_2, R_3 and R_4 are the same or different and are radicals selected from the group consisting of H, fluorine, C_1 to C_{18}-alkyl, fluorine-substituted C_1 C_{18}-alkyl and an alkyl of the formula

$$-(CH_2)_m-(C_nF_{2n+1}),$$

in which m is 1 or 2, and n is an integer from 1 to 17.

5,292,972

PRODUCTION OF DICHLOROHYDRIN

Christopher S. John, and Wilfridus P. M. Maas, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 960,144

Claims priority, application European Pat. Off., Oct. 10, 1991, 91202641.6

Int. Cl.[5] C07C *31/34*

U.S. Cl. 568—847 7 Claims

1. A process for the production of dichlorohydrin which comprises:

(a) reacting allyl chloride, water and chlorine in a reaction zone to form an aqueous solution comprising dichlorohydrin and chlorinated organic byproducts;

(b) adding to and contacting said aqueous solution with 1,2,3-trichloropropane to obtain an aqueous layer comprising the dichlorohydrin and an organic layer comprising trichloropropane and chlorinated organic byproducts;

(c) separating the aqueous layer from the organic layer; and

(d) recovering dichlorohydrin from the aqueous layer.

5,292,973

PHOSPHINE OXIDE REMOVAL FROM COMPOUNDS FORMED BY A WITTIG REACTION

Takehiko Fukumoto, and Akira Yamamoto, both of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 81,961

Int. Cl.[5] C07C *29/38, 33/025, 17/26, 29/19*

U.S. Cl. 568—878 6 Claims

1. In a method for the removal of a phosphine oxide compound from a mixture of the phosphine oxide compound and an olefin compound formed by a Wittig reaction for the preparation of the olefin compound from a phosphorane compound and a carbonyl compound, the improvement which comprises the steps of:

(a) admixing the mixture in a hydrocarbon solvent with a lower carboxylic acid having 1 to 4 carbon atoms in a molecule to dissolve the phosphine oxide compound forming a fluid containing the phosphine oxide compound which is immiscible with the mixture of the olefin compound and the hydrocarbon solvent; and

(b) separating the fluid containing the phosphine oxide compound from the mixture of the olefin compound and the hydrocarbon solvent.

5,292,974

ALKYLENE OXIDE ISOMERIZATION PROCESS AND CATALYST

Mahmoud K. Faraj, Newtown Square, Pa., assignor to ARCO Chemical Technology, L.P., Wilmington, Del.

Division of Ser. No. 879,673, May 6, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,080

Int. Cl.[5] C07C *29/56, 33/03*

U.S. Cl. 528—908 9 Claims

1. A process for isomerizing an alkylene oxide to an allylic alcohol, said process comprising heating the alkylene oxide in the presence of a supported catalyst, wherein the supported catalyst comprises:

(a) from about 5 to about 60 percent by weight of lithium phosphate; and

(b) from about 40 to about 95 percent by weight of an alkali metal-exchanged zeolite.

5,292,975

PROCESS FOR DECREASING THE HALOGEN CONTENT OF POLYHALOGENATED AROMATICS

Heinrich Schrage, Krefeld, and Helmut Fiege, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 21,835

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206530

Int. Cl.[5] C07C *25/02, 25/22*

U.S. Cl. 570—147 8 Claims

1. In a process for decreasing the halogen content of polyhalogenated aromatics selected from the group consisting of benzene, naphthalene and biphenyl, each of which is polyhalogenated with one or more halogens selected from the group consisting of chlorine, bromine and iodine, and which, in addition to said halogenation, can have up to two C_1–C_4-alkyl substituents by reaction of said polyhalogenated aromatics with monohalogenated aromatics, non-halogenated aromatics, or mixtures thereof selected from the group consisting of halogenated and non-halogenated benzene, naphthalene and biphenyl which, if halogenated, are halogenated by a halogen selected from the group consisting of fluorine, chlorine, bromine and iodine, and which, whether halogenated or non-halogenated, are optionally substituted with up to two C_1–C_4-alkyl groups in the gas phase, in which halogen atoms are transferred from said polyhalogenated aromatics to said monohalogenated aromatic, non-halogenated aromatic or mixtures thereof, and at the same time hydrogen atoms are transferred from said monohalogenated aromatic, non-halogenated aromatic or mixtures thereof to the polyhalogenated aromatic, the improvement which comprises carrying out the reaction in the presence of a catalyst containing at least one element from the group of platinum metals in elemental form or in the form of compounds and with the addition of from 5 to 200% by weight of a hydrogen halide selected from the group consisting of hydrogen chloride, hydrogen bromide and hydrogen iodine.

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5,292,976

PROCESS FOR THE SELECTIVE CONVERSION OF NAPHTHA TO AROMATICS AND OLEFINS

Ralph M. Deasau, Edison, and Mohsen N. Harandi, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 27, 1993, Ser. No. 52,964
Int. Cl.[5] C07C *4/00, 4/06;* C10G *63/04*
U.S. Cl. 585—322 21 Claims

1. A staged process for the selective conversion of C_6+ naphtha hydrocarbon feedstream containing n-paraffins and naphthenes to C_6+ aromatics and light olefins with a reduced production of C_3− paraffins, comprising:

contacting said feedstream in an aromatization reaction zone with nonacidic zeolite catalyst particles containing metal from Group VIII of the Periodic Chart of the Elements under aromatization reaction conditions whereby a high selective conversion of said n-paraffins to said aromatics is achieved and said first reaction zone effluent is rich in unconverted naphthenes;

passing said effluent without separation to a naphthenes cracking zone in contact with cracking catalyst comprising acidic zeolite catalyst particles under cracking conditions whereby conversion of said naphthenes to light olefins is achieve while said C_3− paraffins production is reduced; and

separating effluent from said cracking zone by distillation to recover an overhead stream comprising hydrogen and C_5− olefinic hydrocarbons and a bottom stream comprising C_6+ hydrocarbons rich in aromatics.

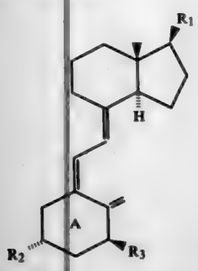
5,292,977

PALLADIUM CATALYZED ALKYLATIVE CYCLIZATION USEFUL IN SYNTHESIS OF VITAMIN D AND ANALOGUES

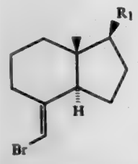
Barry M. Trost, Los Altos Hills, and Jacques Dumas, Palo Alto, both of Calif., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 831,687, Feb. 5, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 49,607
Int. Cl.[5] C07C *13/36, 13/38, 403/00*
U.S. Cl. 585—359 6 Claims

1. A method for the convergent synthesis of vitamin D analogues, represented by the following structural formula I having a Vitamin D analogues side chain R_1 and a Vitamin D analogues ring A comprising:



providing a first precursor having the structure



and a second precursor, the second precursor being a 1,7 enyne; and,

reacting the first and second precursors in the presence of a palladium catalyst to form a reaction product having a vitamin D analogue ring A derived from the second precursor via a new carbon-carbon bond.

5,292,978

SELECTIVE CYCLOALKYLATION OF NAPHTHALENE ON ZEOLITES

Jonis Solofo, Montpellier; Patrice Moreau, Saint-Gely-du-Fesc; Patrick Geneste, and Annie Finiels, both of Montpellier, all of France, assignors to Michelin Recherche et Technique, Friebourg, Switzerland

PCT No. PCT/CH90/00178, § 371 Date Mar. 21, 1991, § 102(e) Date Mar. 21, 1991, PCT Pub. No. WO91/01959, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 23, 1990, Ser. No. 656,152
Claims priority, application France, Jul. 26, 1989, 89 10322
Int. Cl.[5] C07C *2/00, 2/64*
U.S. Cl. 585—467 11 Claims

1. A method for preparing a cycloalkyl naphthalene comprising

forming a reaction mixture comprising naphthalene, a cycloalkylating agent and a solid catalyst, said catalyst being a zeolite of faujasite structure having pore openings of greater than 6.7 Å, a silica/alumina ratio of greater than 2.5 and a residual content of at least one alkaline ion of less than 3%; and

reacting the naphthalene and the cycloalkylating agent at a temperature of between 20° C. and 250° C. and a pressure of at most 30 bars for a period of time sufficient to form cycloalkylnaphthalenic products, wherein the molar ratio of cycloalkylating agent to naphthalene is at least one.

5,292,979

METHOD FOR CONVERTING ETHYLENE INTO LIGHT ALPHA OLEFINS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Alain Forestiere; Francois Hugues, both of Vernaison, and Lucien Saussine, Croissy sur Seine, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

PCT No. PCT/FR91/00945, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992, PCT Pub. No. WO92/10446, PCT Pub. Date Jun. 25, 1992
PCT Filed Nov. 27, 1991, Ser. No. 930,596
Claims priority, application France, Dec. 4, 1990, 90 15268
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—523 21 Claims

1. A process for conversion of ethylene into light alpha olefins comprising contacting ethylene with at least one catalyst obtained by the reaction of a performed mixture of alkyl zirconate and ether, in an ether/zirconate molar ratio of 0.5:1 to 10:1, with at least one aluminum compound of general formula AlR_nX_{3-n} in which R is a hydrocarbyl radical, X is a chlorine or bromine atom and n is 1–2.

5,292,980

BASE-CATALYZED REACTIONS USING ZEOLITE CATALYSTS

Ralph M. Deasau, Edison, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 811,198, Dec. 20, 1985, Pat. No. 5,026,919.
This application Apr. 18, 1991, Ser. No. 686,957
Int. Cl.[5] C07C *5/23, 5/27*
U.S. Cl. 585—666 3 Claims

1. A process for catalytically isomerizing olefins comprising contacting an olefin of the formula $R—CH=CH_2$, wherein R is an alkyl of 1 to 4 carbon atoms, with a catalyst composition comprising a zeolite,

wherein the zeolite is ZSM-5 and

wherein the catalyst composition contains ions of alkali metal or alkaline earth metal, wherein the ions are present in a molar amount which exceeds framework aluminum content of the zeolite, on a molar basis,

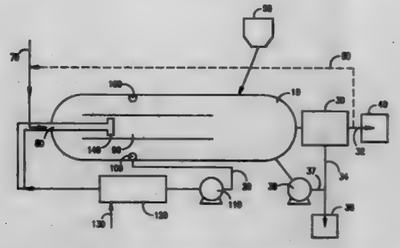
wherein said contacting is undertaken under conditions effective to convert the olefin to an isomer thereof.

5,292,981

ISOPARAFFIN-OLEFIN ALKYLATION PROCESS

Tracy J. Huang, Lawrenceville, N.J., and Reuel Shinnar, Great Neck, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 16, 1992, Ser. No. 899,537
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—722 28 Claims



1. A process for isoparaffin-olefin alkylation which comprises the steps of:

(a) introducing into a reactor fluidizable solid acid zeolite catalyst particles whose largest dimension ranges from 20–2000 microns;

(b) introducing into the reactor a feed of liquid reactants comprising isoparaffins and olefins at a first isoparaffin to olefin molar ratio of less than 100;

(c) forming a slurry of said catalyst particles and said feed and circulating said slurry within the reactor such that the isoparaffin reacts with the olefin to produce alkylate product and the isoparaffin to olefin molar ratio of the slurry increases to a value in excess of said first ratio;

(d) removing a first portion of said slurry which comprises said alkylate product, olefin and isoparaffin, from the reactor and directly recycling said first portion at a rate of at least 5 volume percent of said total reactor volume per minute to mix with the feed and provide an isoparaffin to olefin molar ratio in the reactor of at least 500;

(e) removing a second portion of the slurry from the reactor and passing said second portion to a separating means to separate alkylate product from the solid catalyst particles; and

(f) regenerating the separated catalyst particles and recycling the regenerated catalyst particles to the reactor.

5,292,982

LIQUID ACID ALKYLATION CATALYST AND ISOPARAFFIN-OLEFIN ALKYLATION PROCESS

Kenneth J. Del Rossi, Woodbury, N.J., and Albin Huss, Jr., Chadds Ford, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 719,277, Jun. 21, 1991, Pat. No. 5,196,628, and a continuation-in-part of Ser. No. 761,567, Sep. 18, 1991, Pat. No. 5,202,518, and a continuation-in-part of Ser. No. 765,228, Sep. 25, 1991, abandoned, and a continuation-in-part of Ser. No. 719,276, Jun. 21, 1991, Pat. No. 5,220,096. This application Nov. 12, 1992, Ser. No. 974,550
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—724 18 Claims

1. A catalyst composition for aklylation of an isoparaffin with an olefin comprising:

(a) hydrofluoric acid;

(b) an additive in admixture with said hydrofluoric acid, said additive selected from the group consisting of the compounds having the formula $R'—(NO_2)$, wherein R' is an alkyl, aromatic, alkyl halide, or halide-substituted aromatic group having from about 1 to about 30 carbon atoms, the compounds having the formula R"—COOH wherein R" is C_6H_5 or CF_3, and the compounds having the formula ROC(O)OR or



wherein R is an alkyl or an alkyl halide, or an aromatic or halogenated aromatic group having from about 1 to about 30 carbon atoms, wherein said additive is present in a quantity sufficient to effect deactivation of said hydrofluoric acid for isoparaffin-olefin alkylation such that the catalytic properties of said admixture of said hydrofluoric acid and said additive, in the absence of superacid promoter are characterized by the conversion of a mixed isoparaffin-olefin stream to product containing more than about 0.1 weight percent of alkyl halide; and

(c) a superacid promoter selected from the group consisting of BF_3, $AlCl_3$, $AlBr_3$, TaF_5, SbF_5, NbF_5, PF_5, BCl_3, TiF_4, CF_3SO_3H, and FSO_3H in concentration sufficient such that contacting said catalyst composition comprising said hydrofluoric acid, said additive, and said superacid promoter with a mixed isobutane/2-butene feedstream in an isobutane/2-butene molar ratio of more than about 2:1 under alkylation conversion conditions yields a product containing at least 50 percent of the trimethylpentanes obtained by contacting said isobutane/2-butene feedstream with concentrated HF under said alkylation conversion conditions.

5,292,983

PROCESS FOR THE PRODUCTION OF ISOPARAFFINS

Swan T. Sie, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 6, 1992, Ser. No. 880,107
Claims priority, application United Kingdom, May 7, 1991, 9109747
Int. Cl.[5] C07C *4/06, 5/27*
U.S. Cl. 585—733 18 Claims

1. A process for the production of isoparaffins having 4 to 7 carbon atoms per molecule from synthesis gas comprising the following steps:

a) syntheaizing a heavy paraffins-containing hydrocarbon mixture over a Fischer-Tropsch catalyst;

b) converting at least part of the heavy paraffins-containing hydrocarbon mixture over a bi-functional isomerization/-hydrocracking catalyst comprising at least one catalytically active metal chosen from the metals of Groups VIB, VIIB, VIII and mixtures thereof and a zeolite having a pore diameter from about 0.5 nanometers to about 1.0

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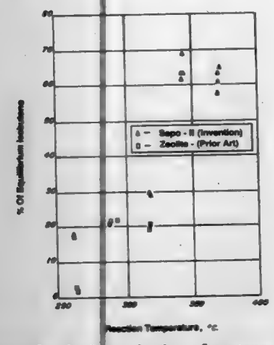
nanometers and a silica:alumina ratio from about 5 to about 200 under isomerization/hydrocracking conditions;
c) separating normal paraffins from at least part of the isoparaffins-containing product of step (b); and
d) recycling at least part of the normal paraffins to step (b) and withdrawing C_4–C_7 isoparaffins as a product from the process.

5,292,984

PENTENE ISOMERIZATION AND ETHERIFICATION

Gregory J. Gajda, Mount Prospect, and Paul T. Barger, Arlington Heights, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 814,167, Dec. 30, 1991, Pat. No. 5,191,146, which is a continuation-in-part of Ser. No. 670,139, Mar. 15, 1991, Pat. No. 5,132,484, which is a continuation-in-part of Ser. No. 442,879, Nov. 29, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 995,182
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] C07C *5/22, 5/23, 5/25*
U.S. Cl. 585—667 **18 Claims**



1. A process for the isomerization of pentenes which comprises contacting a pentene-containing feedstock, comprising raffinate pentenes from an etherification process, at isomerization conditions with a catalyst containing at least one non-zeolitic molecular sieve to provide a product containing at least one pentene isomer in greater concentration than in the feedstock.

5,292,985

MULTI-STAGE OLEFIN ISOMERIZATION

James R. Lattner, Seabrook, and Robert S. Smith, Houston, both of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed May 14, 1991, Ser. No. 699,545
Int. Cl.[5] C07C *5/22*
U.S. Cl. 585—671 **7 Claims**

7. A multi-stage process for isomerizing a stream comprising an isomerizable olefin which comprises:
(a) introducing a stream comprising an isomerizable olefin to a first reaction zone and contacting the stream with an isomerization catalyst, whereby some of the isomerizable olefin is converted to product olefin;
(b) removing from the first reaction zone a first outlet fluid stream comprising unconverted isomerizable olefin;
(c) removing from the first reaction zone a first outlet catalyst stream comprising isomerization catalyst from the first reaction zone;
(d) introducing the first outlet fluid stream to a second reaction zone and contacting the first outlet fluid stream with an isomerization catalyst therein whereby some of the isomerizable olefin is converted to product olefin;
(e) removing from the second reaction zone a second outlet fluid stream;
(f) removing from the second reaction zone a second outlet catalyst stream comprising isomerization catalyst from the second reaction zone;
(g) introducing the second outlet catalyst stream to the first reaction zone;
(h) introducing the second outlet fluid stream to a third reaction zone and contacting the second outlet fluid stream with an isomerization catalyst therein;
(i) removing a third outlet fluid stream from the third reaction zone;
(j) removing a third outlet catalyst stream comprising isomerization catalyst from the third isomerization zone; and
(k) introducing the third outlet catalyst stream to the second reaction zone;
wherein (1) the isomerizable olefin is an alkenyl bridged ring compound, (2) the isomerization catalyst comprises sodium dispersed on a calcined support material consisting essentially of alumina, (3) the isomerization catalyst is treated with an oxygen containing gas before contact with the isomerizable olefin, and (4) the temperature of the first reaction zone is 100° to 130° C., the temperature of the second reaction zone is 50° to 80° C. and the temperature of the third reaction zone is 0° to 50° C.

5,292,986

ISOPARAFFIN-OLEFIN ALKYLATION CATALYST COMPOSITION AND PROCESS

Ronald G. Abbott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 20, 1992, Ser. No. 870,983
Int. Cl.[5] C07C *2/62*
U.S. Cl. 585—730 **8 Claims**

5. A composition comprising
antimony pentafluoride;
trifluoromethane sulfonic acid; and
methanesulfonic acid,
wherein the molar ratio of antimony pentafluoride to trifluoromethane sulfonic acid in said composition is in the range of from about 0.25:1 to 3:1, and wherein the methanesulfonic acid is present in said composition in an amount exceeding about 50 mole percent.

5,292,987

HYDROCARBON ADSORPTION AND ISOMERIZATION PROCESS

Andrew S. Zarchy, Amawalk, N.Y.; Nelson Cusher, Buffalo Grove, Ill., and Gary J. Welch, Danbury, Conn., assignors to UOP, Des Plaines, Ill.

Continuation of Ser. No. 735,559, Jul. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 571,484, Aug. 23, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 951,060
Int. Cl.[5] C07C *5/13, 7/12*
U.S. Cl. 585—738 **18 Claims**

11. An adsorption-isomerization process for increasing the dimethyl-branched paraffin content of a hydrocarbon feed containing components selected from the group consisting of normal paraffins or monomethyl-branched paraffins in the C_5–C_6 carbon range or mixtures thereof, which feed additionally contains at least sulfur and/or nitrogen components, said process comprising:
(a) passing said hydrocarbon feed to a catalytic reaction zone containing a catalytically effective amount of catalyst, under hydrogen sulfide and ammonia forming conditions to convert substantially all of the sulfur in the hydrocarbon feed to hydrogen sulfide and substantially all of the nitrogen in the hydrocarbon feed to ammonia and thereby produce a hydrogen sulfide and/or ammonia containing hydrocarbon feed;
(b) passing said hydrogen sulfide and/or ammonia-containing hydrocarbon feed to a first adsorber bed in a first adsorption zone having at least two adsorber beds containing adsorbent selective for the adsorption of hydrogen sulfide and ammonia to adsorb said hydrogen sulfide and/or ammonia and withdrawing a first adsorption effluent depleted in said hydrogen sulfide and/or ammonia;
(c) passing a reactor feed comprising hydrogen and at least a portion of said first adsorption effluent to an isomerization reactor containing an isomerization catalyst which is deleteriously affected by the presence of hydrogen sulfide and/or ammonia to produce a reactor effluent comprising said dimethyl-branched paraffins and an adsorbate fraction comprising said components;
(d) passing a portion of an adsorber feed comprising at least a portion of said reactor effluent as a first feedstream to one adsorber bed in a second adsorption zone having at least four adsorber beds containing adsorbent and bed void space to adsorb said adsorbate fraction and withdrawing a second zone adsorption effluent comprising said dimethyl-branched paraffins;
(e) passing a first purge feed comprising a hydrogen-containing non-adsorbable purge gas to the one adsorber bed in the second adsorption zone wherein the void space contains a first void space gas comprising said reactant components and dimethyl-branched paraffins, withdrawing a first purge effluent comprising said first void space gas and passing said first purge effluent to at least one other adsorber bed in the second adsorption zone to comprise a portion of said adsorber feed;
(f) passing a second purge feed comprising said hydrogen-containing non-adsorbable purge gas and a portion of said dimethyl-branched paraffins to the one adsorber bed in the second adsorption zone to desorb said adsorbate fraction and withdrawing a second zone desorption effluent comprising said hydrogen-containing non-adsorbable purge gas, said adsorbate fraction, and at least a portion of dimethyl-branched paraffins;
(g) passing a second feedstream comprising a portion of said adsorber feed to the one adsorber bed in the second adsorption zone wherein the void space contains a second void space gas comprising said non-adsorbable purge gas, withdrawing a second purge effluent comprising said second void space gas, passing said second purge effluent to at least one other adsorber bed in the second adsorption zone to comprise a portion of said hydrogen-containing non-adsorbable purge gas and continuing said passing of said second purge effluent until a portion of said dimethyl-branched paraffins has eluted from the void space of the one adsorber bed in the second adsorption zone until the concentration of the hydrogen in said second purge effluent is less than 90 mol. %;
(h) passing said second zone desorption effluent to the isomerization reactor to comprise at least a portion of said reactor feed; and
(i) passing at least a portion of said second zone adsorption effluent without recovering said hydrogen-containing, non-adsorbable purge gas to said first adsorber bed to desorb said hydrogen sulfide and/or ammonia and provide a first zone desorption effluent comprising said dimethyl-branched paraffins and hydrogen sulfide and/or ammonia.

5,292,988

PREPARATION AND USE OF ISOMERIZATION CATALYSTS

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 3, 1993, Ser. No. 12,662
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—741 **25 Claims**

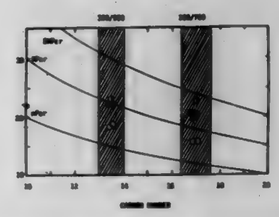
1. A cycloalkane conversion process which comprises contacting, at a temperature of up to about 100° C., at least one feed cycloalkane containing 5–10 carbon atoms per molecule with an isomerization catalyst composition at effective isomerization conditions, and producing at least one product cycloalkane isomer having the same number of carbon atoms per molecule as said at least one feed cycloalkane but having a different structural formula; wherein said isomerization catalyst composition has been prepared by a preparation method consisting essentially of the steps of:
(1) impregnating alumina having a surface area of at least about 40 m^2/g with a solution of at least one metal salt selected from the group consisting of copper(II) sulfate, iron(II) sulfate, cobalt(II) sulfate, nickel(II) sulfate, manganese(II) sulfate, zinc sulfate and magnesium sulfate;
(2) calcining the material obtained in step (1) for a period of at least 0.5 hour at a temperature of about 400°–750° C.;
(3) heating for a period of at least one hour, at a temperature in the range of about 40° C. to about 90° C. and in substantial absence of water, a mixture consisting essentially of the calcined material obtained in step (2), aluminum chloride and at least one chlorinated hydrocarbon selected from the group consisting of dichloromethane, chloroform, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1-dichloropropane, 2,2-dichloropropane, 1-chlorobutane and 2-chloro-2-methylbutane; wherein the weight ratio of $AlCl_3$ to said calcined material obtained in step (2) is at least about 0.35:1, and
(4) separating the solid material contained in the reaction mixture formed in step (3) from said at least one chlorinated hydrocarbon under a dry gas atmosphere.

5,292,989

SILICA MODIFIER HYDROISOMERIZATION CATALYST

Stephen M. Davis, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 760,266, Sep. 16, 1991, Pat. No. 5,187,138.
This application Jan. 8, 1993, Ser. No. 1,955
Int. Cl.[5] C07C *5/13*
U.S. Cl. 585—751 **5 Claims**



1. A process for isomerizing was in a wax containing feed by contacting a wax containing feed and hydrogen, at isomerization conditions, in the presence of a catalyst, the improvement comprising using a catalyst having a surface area of about 180–400 square meters per gram and comprising a Group VIII metal and at least 0.5 wt % silica deposited on the surface of a support consisting of alumina or silica alumina wherein the silica content of the support is less than about 35 wt %.

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5,292,990

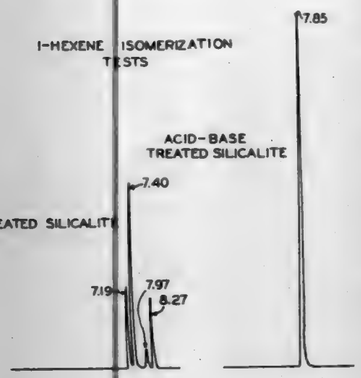
ZEOLITE COMPOSITION FOR USE IN OLEFINIC SEPARATIONS

Edward Kantner, East Brunswick; David W. Savage, Lebanon, and Richard J. Bellows, Hampton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 524,949, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 281,311, Dec. 7, 1988, abandoned. This application Dec. 10, 1990, Ser. No. 625,337

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—820 11 Claims



1. A process for substantial separation of linear olefins and paraffins from mixtures containing at least linear and branched aliphatic hydrocarbons comprising:

contacting the mixture with a zeolite molecular sieve having a silica to alumina ratio of greater than about 50:1, internal pore diameters of at least 5.0Å, and which has been first treated with an acid in an amount sufficient to dissolve at least some of the acid soluble impurities in the zeolite and then treated with sufficient base to neutralize the acidic impurities whereby the sieve is substantially non-reactive toward olefin isomerization and oligomerization, the contacting being conducted under conditions sufficient to effect adsorption of linear olefins and linear paraffins by the zeolite to the substantial exclusion of branched aliphatic hydrocarbons whereby the linear olefins and paraffins are substantially separated from the mixture of aliphatic hydrocarbons.

5,292,991

PROCESS FOR REMOVAL OF HYDROCARBONS CARBON MANOXIDE, AND OXIDES OF NITROGEN FROM OXYGEN-CONTAINING WASTE GAS USING MOLECULAR SIEVE-PALLADIUM-PLATINUM CATALYST ON A SUBSTRATE

Irwin M. Lachman; Mallanagouda D. Patil, both of Corning; Louis S. Socha, Jr.; Srinivas H. Swaroop, both of Painted Post, and Raja R. Wusirika, Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 857,738, Mar. 26, 1992, Pat. No. 5,244,852, which is a continuation of Ser. No. 587,484, Sep. 19, 1990, abandoned, which is a continuation of Ser. No. 273,214, Nov. 18, 1988, abandoned. This application Mar. 10, 1993, Ser. No. 29,147

Int. Cl.[5] C07C *7/152, 7/00;* B01J *29/06, 8/00*

U.S. Cl. 585—850 12 Claims

1. A process for the removal of hydrocarbons, carbon monoxide, and oxides of nitrogen from oxygen-containing waste gas comprising:

A) providing a substrate supporting a catalyst, the catalyst comprising a washcoat consisting of:

(1) zeolite selected from the group consisting of ZSM zeolite and silicalite, the zeolite being mixed with high surface area oxide, and

(2) a noble metal, the noble metal selected from the group consisting of platinum and palladium,

the washcoat being characterized in that substantially all of the noble metal is sited on the high surface area oxide such that both the noble metal and the zeolite are available to catalyze reactants in the waste gas most suited for their respective properties; and

B) contacting the waste gas with the noble metal and the zeolite to oxidize hydrocarbons and carbon monoxide to carbon dioxide and water, and to reduce oxides of nitrogen to nitrogen and water.

5,292,992

PROCESS FOR REMOVING CONJUGATED DIENES FROM ALPHA-OLEFINS

Stephen E. Belmont; Patrick G. Simms, and Keith G. Anderson, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 874,922, Apr. 28, 1992, abandoned. This application Mar. 30, 1993, Ser. No. 40,387

Int. Cl.[5] C07C *7/12*

U.S. Cl. 585—820 10 Claims

1. A process for improving a conjugated diene containing linear alpha-olefin product, said process comprising contacting said linear alpha-olefin product, which contains from about 100 to 1000 pm of conjugated dienes, with a montmorillonite clay, said clay consisting essentially of a montmorillonite clay which has been treated with an acid so as to replace alkali metal ions in the clay with hydrogen ions and which contains at least about 2 weight percent water, which clay is effective to reduce the conjugated diene content of said linear alpha-olefin product to less than about 100 ppm without substantial isomerization of the linear alpha-olefins to internal olefins.

5,292,993

PROCESS FOR REMOVING IMPURITIES FROM PETROLEUM PRODUCTS

Claus-Peter T. Hildig, London, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Aug. 5, 1992, Ser. No. 925,539

Claims priority, application United Kingdom, Aug. 8, 1991, 9117071

Int. Cl.[5] C07C *7/00, 41/00;* C10G *57/00;* B01D *3/34*

U.S. Cl. 585—864 16 Claims

1. A process for reducing the content of an impurity in a fraction containing C_5 or C_6 tertiary olefins obtained by distillation of a cracked product, said process comprising the steps of feeding an alkanol selected from the group consisting of ethanol, methanol, and mixtures thereof to the distillation of the cracked product and recovering the impurity as a fraction with a higher boiling point than the fraction containing the C_5 or C_6 tertiary olefins.

5,292,994

TONE SETTING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

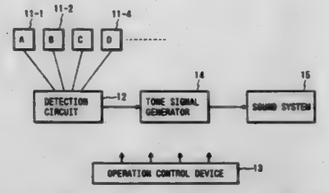
Ikuo Kobayashi, and Toshihide Saito, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Continuation of Ser. No. 787,743, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 584,838, Sep. 19, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 997,626

Claims priority, application Japan, Sep. 26, 1989, 1-249776

Int. Cl.[5] G10H *1/18*

U.S. Cl. 84—602 1 Claim



1. A tone setting device for use in an electronic musical instrument, comprising:

a plurality of tone setting switches;

a detection circuit for detecting certain switches of said tone setting switches, which are operated to set a certain tone, and an operating sequence of said certain switches;

an operation control device for controlling an operation of said detection circuit;

a tone signal generator responsive to an output of said detection circuit to generate a tone signal under control of said operation control device;

a sound system responsive to said tone signal for said tone signal generator to generate sound corresponding thereto; and

a signal generator circuit included in said detection circuit for generating a tone setting completion signal when a tone setting is completed,

said signal generator circuit being adapted to send said tone setting completion signal to said tone signal generator, to cause said tone signal generator to generate different phases preliminarily prepared for cases when said tone setting is correct and not correct, respectively.

5,292,995

METHOD AND APPARATUS FOR CONTROLLING AN ELECTRONIC MUSICAL INSTRUMENT USING FUZZY LOGIC

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 22, 1989, Ser. No. 440,869

Claims priority, application Japan, Nov. 28, 1988, 63-301486; Nov. 28, 1988, 63-301487; Nov. 28, 1988, 63-301488; Nov. 28, 1988, 63-301489; Nov. 28, 1988, 63-301490; Nov. 28, 1988, 63-301491

Int. Cl.[5] G10H *5/07;* H03G *3/00*

U.S. Cl. 84—626 18 Claims

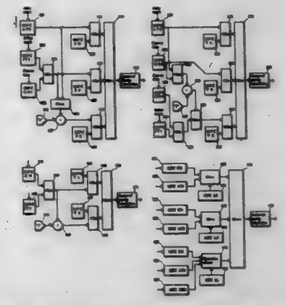
9. A musical tone control method for controlling an electronic musical instrument, comprising the steps of:

inputting musical performance data including note-on data representing note generation and at least two kinds of tone control data representing a desired musical performance state of said instrument;

performing a fuzzy inference operation based on said at least two kinds of control data and generating an operation result from said fuzzy inference operation;

generating a parameter according to said operation result; and

controlling said musical tone responsive to said note-on data and based on said parameter;



wherein said generating step includes the step of selecting reverberation of said tone as said parameter.

5,292,996

MICROCOMPUTER WITH FUNCTION TO OUTPUT SOUND EFFECTS

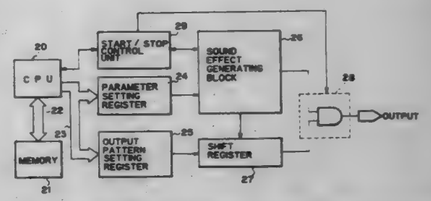
Ryuichi Ogawa, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 837,209

Claims priority, application Japan, Aug. 7, 1991, 3-198078

Int. Cl.[5] G10H *1/02, 1/46*

U.S. Cl. 84—626 19 Claims



1. A microcomputer having a sound effect output function, comprising:

register means for temporarily storing a parameter specifying a repetition unit of a sound effect to be output;

sound effect generating means for generating repeatedly a signal representing a repetition unit of a sound effect according to a parameter applied by said register means;

output pattern setting means for temporarily storing a repetition pattern of said repetition unit signal supplied from said sound effect generating means, said repetition pattern being represented by data of a plurality of bits, each bit indicating whether or not said repetition unit signal is to be output;

shift register means for shifting repetition pattern data by one bit responsive to respective one generation of said repetition unit signal and sequentially outputting bit data of said repetition pattern; and

output control means for outputting said repetition unit signal, supplied from said sound effect generating means, according to output bit data supplied from said shift register means.

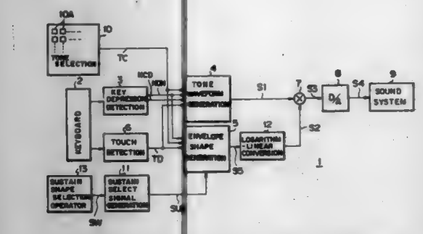
VOL 1160 ISS 2 MR 8 1994 UMI

5,292,997

TOUCH RESPONSIVE ENVELOPE SHAPE GENERATION DEVICE

Mitsumi Kato, and Yasuhiro Kawano, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 16, 1990, Ser. No. 568,675
Claims priority, application Japan, Aug. 17, 1989, 1-212558; Aug. 17, 1989, 1-212559
Int. Cl.[5] G10H *1/057*
U.S. Cl. 84—627 6 Claims



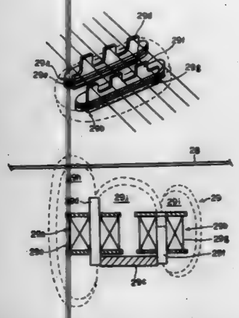
2. An envelope shape generation device comprising:
envelope memory means for storing plural envelope data;
touch information generation means for generating touch information;
address signal generation means for generating an address signal based on said touch information generated by said touch information generation means; and
envelope data reading means for selectively reading out the envelope data stored in said envelope memory means in response to said address signal to form an envelope shape signal, said envelope data reading means reads out one of said plural envelope shapes as a sustain envelope shape followed by an attack envelope shape, and said plurality of sustain envelope shapes further includes a loop sustain envelope shape and a fixed sustain envelope shape having a constant envelope shape value and said envelope shape reading means reads out the loop sustain envelope shape repeatedly when said envelope shape reading means has selected the loop sustain envelope shape.

5,292,998

ELECTRONIC GUITAR EQUIPPED WITH ASYMMETRICAL HUMBUCKING ELECTROMAGNETIC PICKUP

Leo J. Knapp, North Hollywood, Calif., assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 31, 1992, Ser. No. 861,292
Int. Cl.[5] G10H *3/18*
U.S. Cl. 84—726 15 Claims



1. An electric string musical instrument comprising:
a solid body;
a neck portion projecting from the solid body;
a predetermined number of first strings stretched over the solid body and the neck portion;
a predetermined number of second strings stretched over the solid body and the neck portion; and
an electromagnetic pickup device mounted on the solid body, and located under the first and second strings, for producing electric signals indicative of vibrations of at least one of the strings, the electromagnetic pickup device including
a) a first core member defining a first upper surface portion and a first lower surface portion, the first upper surface portion facing one of the first strings and the first lower surface portion facing one of the second strings, the first upper surface portion and the first string defining a first spacing and the first lower surface portion and the second string defining a second spacing, the second spacing being greater than the first spacing, the first upper surface portion and the first lower surface portion having associated magnetic fields, wherein the magnetic field produced by the first lower surface portion is substantially less extensible than the magnetic field produced by the first upper surface portion,
b) a first coil member wound on the first core member,
c) a second core member, in spaced relation to the first core member, defining a second upper surface portion and a second lower surface portion, the second upper surface portion facing one of the second strings and the second lower surface portion facing one of the first strings, the second upper surface portion and the second string defining a third spacing and the second lower surface portion and the first string defining a fourth spacing, the fourth spacing being greater than the third, wherein the second core member is a mirror-image of the first core member, and is arranged parallel to the first core member and staggered by at least the width of the first upper surface portion of the first core member, the second upper surface portion and the second lower surface portion having associated magnetic fields, wherein the magnetic field produced by the second lower surface portion is substantially less extensible than the magnetic field produced by the second upper surface portion;
d) a second coil member wound on the second core member, and
e) a permanent magnetic member associated with the first and second core members, and magnetizing the first and second core members.

5,292,999

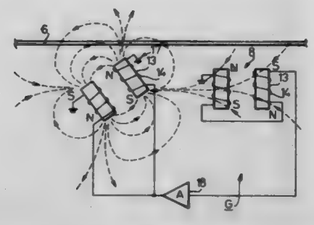
ELECTRIC STRINGED INSTRUMENT HAVING A DEVICE FOR SUSTAINING THE VIBRATION OF THE STRING

Kenji Tumura, Osaka, Japan, assignor to Fernandes Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 928,728
Claims priority, application Japan, Aug. 14, 1991, 3-204331
Int. Cl.[5] G10H *1/057, 3/18*
U.S. Cl. 84—728 12 Claims

1. A device for sustaining the vibration of the string of an electric stringed instrument, comprising electromagnetic pickup mean for converting the vibration of a string of the instrument to an electric signal, amplifying means for amplifying the electric signal from said electromagnetic pickup means, and electromagnetic driver means for converting the amplified electric signal into a magnetic driving force to drive rand thereby sustain the vibration of the string; said electromagnetic pickup means and said electromagnetic driver means being arranged at a predetermined angel in relation to each other

such that induced electromagnetic forces caused by magnetic flux from said electromagnetic driver means cancel each other



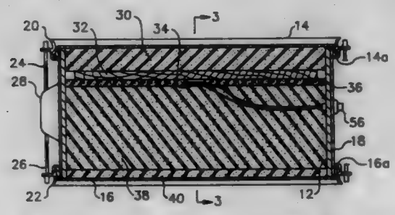
in said electromagnetic pickup means to thereby reduce magnetic feedback in said device.

5,293,000

ELECTRONIC PERCUSSION SYSTEM SIMULATING PLAY AND RESPONSE OF ACOUSTICAL DRUM

Alfonso M. Adinolfi, 9016 Red-Wood Rd., Redmond, Wash. 98052

Filed Aug. 25, 1992, Ser. No. 935,047
Int. Cl.[5] G10H *3/12*
U.S. Cl. 84—730 15 Claims



1. An electronic percussion device having the appearance and strike response of an acoustic drum, comprising:
a cylindrical drum body shell having open ends;
a striking drum head mounted in stretched condition across one of said open ends and a lower drum head mounted in stretched condition across the other open end and thereby forming a drum cavity bounded by the interior surfaces of said shell and heads;
a sound energy attenuating elastomeric foam filler in said cavity; and
a sound-to-electrical transducer means disposed within said filler and being spaced from said drum head and drum shell so that no direct mechanical energy is coupled from said head or shell to said transducer means, whereby said cylindrical shell body and drum heads have the stick response and appearance of an acoustic drum.

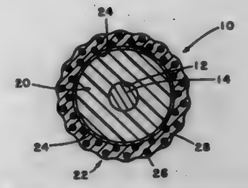
5,293,001

FLEXIBLE SHIELDED CABLE

Bernhart Allen Gebs, Richmond, Ind., assignor to Belden Wire & Cable Company, Richmond, Ind.

Filed Apr. 14, 1992, Ser. No. 868,446
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 14 Claims

1. A flexible shielded cable comprising:
at least one elongated flexible metal conductor;
a layer of flexible dielectric material disposed about said conductor;
a thin foil disposed about said layer of flexible dielectric material, said thin foil being selected from a copper foil tape, a copper composite tape and a conductive epoxy, said copper foil tape, the copper layer on said copper composite tape or the conductive epoxy having a thickness of less than 0.0030 inches;
a metallic braid disposed about said thin foil;
a layer of bonding agent bonding said braid and said thin foil; and



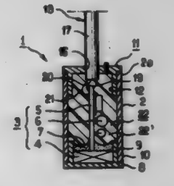
said metallic braid is selected from the group consisting of bronze, plated bronze, nickel, plated nickel, silver, and gold.

5,293,002

ELECTRICAL DEVICE WITH EMBEDDED RESIN AND VISIBLE RESIN INLET AND DISCHARGE DUCTS

Gilles Grenet, Mornac; Catherine Ullmann, Lyons, and Gérard Pitault, Ruelle, all of France, assignors to Telemecanique, Rueil-Malmaison, France

Filed Mar. 20, 1992, Ser. No. 856,652
Claims priority, application France, Mar. 20, 1991, 91 03381
Int. Cl.[5] H01L *23/28*
U.S. Cl. 174—52.2 3 Claims



1. An electrical device provided with a casing adapted to accommodate electrical components (5, 6), in particular a proximity detector in which a sensing probe (4) is placed at one end of the casing while an opposite end of said casing is adapted to accommodate insulated electrical connection means (18, 36) for supplying the detector and transmitting signals delivered by said detector, said components being embedded in a hardened insulating resin within said casing, said electrical device comprising furthermore an orifice (14) through which a resin surface is visible and which comprises a visible flux inlet leading portion and a visible flux discharge leading portion.

5,293,003

ELECTRICAL BOX EXTENDER

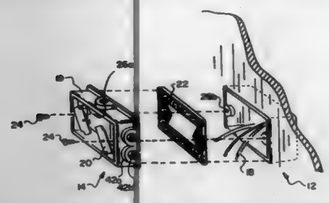
Marshall J. Prairie, Jr., 61 Lowden St., Pawtucket, R.I. 02860

Filed Oct. 8, 1992, Ser. No. 958,655
Int. Cl.[5] H02G *3/08*
U.S. Cl. 174—57 18 Claims

1. An electrical box extender comprising:
A) a housing including first and second pairs of opposing side walls, an open front, an open back, and a first set of mounting holes disposed near the back;
B) first and second movable gates, each in the form of an elongated plate having a first end and a second, free end, said movable gates having a second set of mounting holes for mounting an electrical device, each said gate having one of said holes of said second set disposed intermediate said first and second ends; said movable gates being secured to said housing at said first ends for pivotal move-

ment between a closed position at which both said first and second ends of said movable gates are disposed adjacent said first pair of housing side walls, and an open position at which said second, free ends of said movable gates are disposed in spaced relation to said housing side walls; and

C) said housing including (i) first and second gate support members integral with said walls of said housing for supporting said free ends of said gates when said gates are in said closed position, and (ii) means for retaining said movable gates in said closed position comprising said gate support members and first and second gate retaining members, each said gate retaining member being located in spaced relation to and nearer the open front than a corresponding one of said gate support members such that each said gate retaining member and said corresponding gate support member cooperate to capture therebetween said free end of an associated one of said movable gates when said associated movable gate is disposed in said closed position, said support and retaining members and said movable gates being configured such that movement of said movable gates from said open position into said closed position requires flexure of said movable gates, and such that restoring forces due to said flexure retain said movable gates in said closed position.

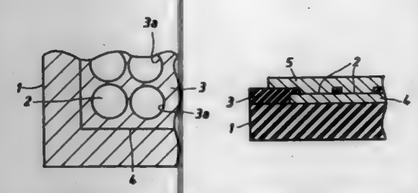


5,293,004

PRINTED CIRCUIT BOARD HAVING AN ELECTROMAGNETIC SHIELDING LAYER

Shin Kawakami, and Katsutomo Nikaido, both of Saitama, Japan, assignors to Nippon CMK Corp., Japan

Filed Jan. 6, 1992, Ser. No. 820,290
Claims priority, application Japan, Sep. 2, 1991, 3-078139[U]
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **8 Claims**



2. A printed wiring board, comprising: an insulating substrate having opposed sides; a ground circuit formed on at least one side of the substrate; an insulating layer formed on the ground circuit and having a plurality of individual curved openings of relatively small size extending therethrough to the ground circuit to expose corresponding connection lands of the ground circuit, the curved openings being of circular or elliptical shape and being effective to prevent the formation of bubbles when forming an electromagnetic wave shielding layer on the insulating layer to thereby enhance the electrical and mechanical connection between the electromagnetic wave shielding layer and the connection lands; and an electromagnetic wave shielding layer formed on at least a portion of the insulating layer and extending through the curved openings of the insulating layer and being electrically and mechanically connected with the ground circuit through the connection lands.

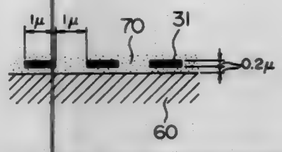
5,293,005

ELECTRONIC DEVICE HAVING HIGH-DENSITY WIRING

Hideho Yamamura, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,967
Claims priority, application Japan, Sep. 30, 1991, 3-250898
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—251 **20 Claims**

PRIOR ART



1. An electronic device having high-density wiring comprising a plurality of conductors distributed with high density and each being formed to have a sectional area determined on the basis of length thereof.

wherein ones of said plurality of conductors which have relatively longer lengths have sectional areas which are larger than those ones of said plurality of conductors of relatively shorter lengths, and

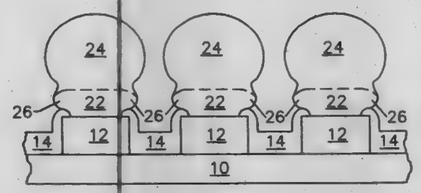
wherein each of said plurality of conductors is formed to have one of a plurality of sectional areas, used for said plurality of conductors in said device, as determined on a basis of the relative length thereof.

5,293,006

SOLDER BUMP INCLUDING CIRCULAR LIP

Edward K. Yung, Carrboro, N.C., assignor to MCNC, Research Triangle Park, N.C.

Division of Ser. No. 759,450, Sep. 13, 1991, Pat. No. 5,162,257.
This application Aug. 7, 1992, Ser. No. 927,069
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—261 **7 Claims**



1. An interconnection system for a microelectronic substrate comprising:

a plurality of contact pads on said substrate;

a older bump on each of said contact pads each solder bump having a circular base on said contact pad; and

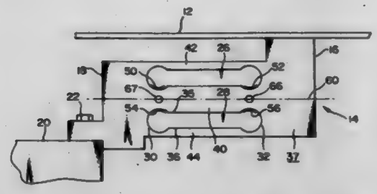
an intermetallic layer between each solder bump and contact pad, said intermetallic layer including a lip which extends beyond the base of the solder bump outwardly over the associated contact pad, to thereby protect the contact pad.

5,293,007

METHOD FOR MOMENT BALANCING A PARALLEL BEAM LOAD CELL AND THE ARTICLE PRODUCED THEREBY

Timothy J. Darst, Issaquah, and Mona L. Mundheak, Maple Valley, both of Wash., assignors to Stress-Tek, Inc., Renton, Wash.

Filed Apr. 2, 1992, Ser. No. 862,504
Int. Cl.[5] G01G *3/08, 19/52;* G01L *25/00, 1/22*
U.S. Cl. 177—229 **13 Claims**



1. A method for reducing the sensitivity of a parallel beam load cell to load position on a load-receiving member associated with the load cell, wherein the load cell includes opposing longitudinal side surfaces and at least two generally opposed upper and lower beam surfaces which extend between the side surfaces, thereby defining at least one beam, wherein the one beam includes reduced vertical dimension portions between the upper and lower beam surfaces at selected locations therealong, defining strain-sensitive flexure regions of said one beam, wherein strain elements are mounted on the beam surfaces in the strain-sensitive regions thereof, the method comprising the steps of:

determining differences in output of the load cell for a plurality of load positions on the load receiving member; and

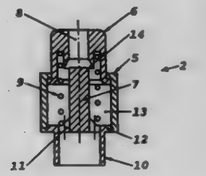
removing load cell material from at least one longitudinal side surface in at least one strain-sensitive flexure region sufficient to reduce the differences in output relative to load position to a selected level.

5,293,008

EARWAX TRAP FOR USE WITH HEARING-AID APPARATUS, AND HEARING-AID APPARATUS WITH SUCH A TRAP

Finn Danielsen, Lyngby, Denmark, assignor to Oticon A/S, Denmark

PCT No. PCT/DK91/00051, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO91/13525, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 20, 1991, Ser. No. 910,271
Claims priority, application Denmark, Feb. 26, 1990, 499/90
Int. Cl.[5] A61B *7/02*
U.S. Cl. 181—135 **12 Claims**



1. An earwax trap for use with hearing-aid apparatus, said trap comprising

a) in a first part, a space adapted to provide an acoustic connection between an interior part of the hearing-aid apparatus and the external auditory meatus of the user's ear, and

b) means for preventing earwax after having entered said space from leaving said space toward said interior part,

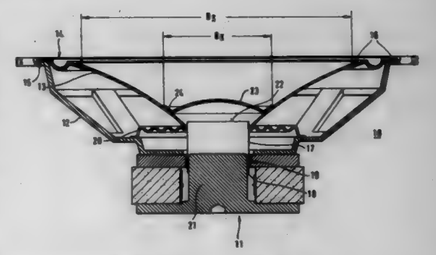
said means comprising at least one piston- or plug-shaped member, which is adapted by relative movement between itself and the first part containing said space, to enter said space in a first direction away from said interior part of said hearing-aid apparatus, and to leave said space in a direction opposite to said first direction and thus re-establish the acoustic connection between said interior part and said space.

5,293,009

DUST PROTECTION CAP FOR CONICAL LOUDSPEAKER

Rudiger Fleischer, Grafling, Fed. Rep. of Germany, assignor to Nokia (Unterhaltungselektronik/(Deutschland) GmbH, Pforzheim, Fed. Rep. of Germany

Filed May 20, 1992, Ser. No. 886,069
Int. Cl.[5] G10K *13/00*
U.S. Cl. 181—169 **5 Claims**



1. A conical loudspeaker (10) comprises:

a magnet assembly (11) having an air gap (19);

a loudspeaker basket (12) having an upper forward rim (15);

a conical membrane (13) that is arranged in the loudspeaker basket (12), having a sound-delivering inner surface contour and having a forward end of larger diameter and a rear end of smaller diameter, with the forward end of the membrane (13) being anchored by means of a circumferential lock beading (14) to the upper forward rim (15) of the loudspeaker basket (12), and the other rear end of the membrane (13) having a tubular moving coil support (17) anchored thereon, projecting into the air gap (19) of the magnet assembly (11) and having a front opening (22); and

a dust protection cap (23) that is glued to the inner surface contour of the membrane (13) and which encloses and hermetically seals the front opening (22) of the moving coil support (17);

characterized in that the dust protection cap (23) is made of hot-pressed foam.

5,293,010

SOUND DAMPENING DEVICE FOR HORNS

Bruno Archambault, Sherbrooke; Mario Maltais, Stoke, and André Albert, Sherbrooke, all of Canada, assignors to Boultar, Inc., Richmond, Canada

Filed Mar. 3, 1993, Ser. No. 25,522
Int. Cl.[5] G10K *11/00*
U.S. Cl. 181—179 **7 Claims**

1. A horn housing comprising:

an inner solid horn containing metal box having a shape of a prism with an open end and a closed end;

an outer dense solid box molded from a composite material having a shape of a prism with an open end and a closed end, the outer box containing the inner box;

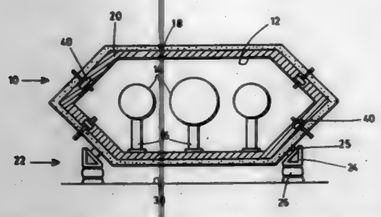
an intermediate low density sound absorbing synthetic filler for filling a space between the inner and the outer boxes;

means for connecting the inner box to the outer box, said

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connecting means transmitting little vibration from the inner box to the outer box in a frequency range of the horn; and

means for mounting a side of the outer box to a structure for housing at least one person, said mounting means transmitting little vibration from the outer box to said structure,



whereby at least one horn is installed inside the inner box for directing sound through said opening of the inner box and through said opening of the outer box, said housing absorbing most of said sound propagating sideways towards said structure, whereby sound may be reflected from a wall and said closed end and reflected out through said open end.

5,293,011

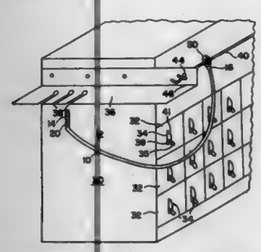
POWER LOCKOUT DEVICE

Deanis Mokert, Missoula, Mont., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 3, 1992, Ser. No. 970,812

Int. Cl.[5] H01H *9/28*

U.S. Cl. 200—43.14 **20 Claims**



1. A power lockout device for a control center comprising a plurality of power source switch boxes each having a safety switch whose switch handle has a hole alignable with a matching hole on the switch box when the switch handle is in an off position comprising:

(A) a cable;

(B) a tip connected to one end of said cable adapted to be threaded through aligned holes of a sequence of safety switches in the power off position;

(C) said tip having a transverse opening adapted to receive a padlock; and

(D) passage prevention means adjacent the other end of said cable adapted to prevent that end of said cable from passing through a switch handle hole;

(E) whereby said tip and connected cable can be threaded through a sequence of safety switch handles in the off position and a padlock is mounted in said transverse opening of said tip and locked so that each threaded safety switch cannot be switched from the off position.

5,293,012

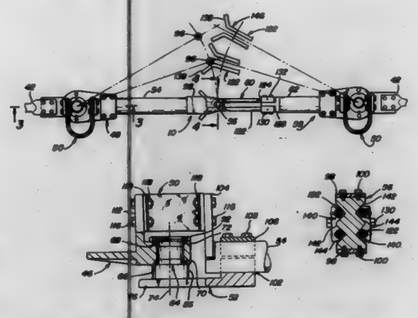
DISCONNECTING SWITCH

Jozef Levi, Mentor, Ohio, assignor to E Manufacturing Company, Inc., Mentor, Ohio

Filed Oct. 28, 1992, Ser. No. 967,799

Int. Cl.[5] H01H *31/00*

U.S. Cl. 200—48 P **16 Claims**



1. A rotary action disconnecting switch comprising:

a first generally cylindrical contact having two abutting frusto-conical surfaces forming a circumferential V-groove;

a second contact in the form of a cylindrical finger; and

means imparting relative rotary motion between said contacts to swing from an open switch position in which said contacts are spaced apart to a closed switch position in which said finger is in contact with both frusto-conical surfaces of said V-groove.

5,293,013

SWITCHING CABLE

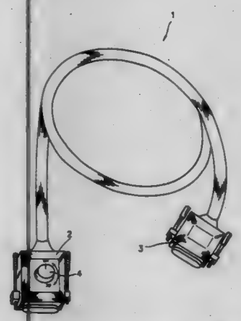
Toshiyuki Takahashi, Nakano, Japan, assignor to Supital Sangyo Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,400

Claims priority, application Japan, Feb. 6, 1992, 4-4277[U]

Int. Cl.[5] H01R *13/70*

U.S. Cl. 200—51 R **5 Claims**



1. A switching cable for connecting a computer to another machine, said switching cable comprising:

(a) a pair of connectors each having a plurality of pins;

(b) a plurality of wires for connecting the individual pins of one of said connectors with the individual pins of the other connector; and

(c) switching means mounted on at least one of said connectors, said switching means being a rotary switch for switching over a connecting state of said pins between a straight connection wherein said pins of said connectors are connected in a corresponding relationship and a reverse connection wherein at least one pin of a first connector is connected with a pin of a second connector which is not in said corresponding relationship so that the one switching cable can be sued for both straight and reverse connection.

5,293,014

CIRCUIT BREAKER WITH TRIPLE MOVEMENT FOR HIGH OR MEDIUM VOLTAGES

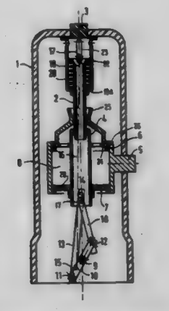
Michel Perret, Bourgoin-Jallieu, France, assignor to GEC Alsthom SA, Paris, France

Filed Nov. 3, 1992, Ser. No. 970,831

Claims priority, application France, Nov. 4, 1991, 91 13561

Int. Cl.[5] H01H *33/42, 33/91*

U.S. Cl. 200—148 A **5 Claims**



1. A circuit breaker comprising, within a casing filled with a dielectric gas, a first arcing contact electrically connected to a first terminal, and a second arcing contact electrically connected to a second terminal and movable within a fixed cylinder, a piston slidably mounted in said fixed cylinder and forming with said cylinder a compression chamber, means for mounting said first arcing contact for movement coaxially towards and away from said piston, the circuit breaker further comprising actuating means for actuating the first arcing contact in a direction opposite to a displacement of the second arcing contact and for actuating the piston in a direction opposite to that of the displacement of the second arcing contact, and wherein the movement of the first arcing contact and that of said piston are simultaneous.

5,293,015

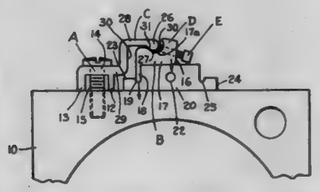
APPARATUS FOR ADJUSTABLY POSITIONING SWITCHES

Lawrence F. Yuda, P.O. Box 499, Westminster, S.C. 29693

Filed Sep. 28, 1992, Ser. No. 951,761

Int. Cl.[5] F16M *13/00*

U.S. Cl. 200—294 **3 Claims**



1. Apparatus for positioning a switch upon a base member comprising:

an elongated longitudinally extending rail, with which said switch is aligned, positionable in fixed relation upon said base member;

a locking bracket extending transversely over and having a portion adjacent one edge engaging said switch adjacent one side thereof adjacent said rail;

a transversely extending rocker arm fixed upon said rail for extending over said locking bracket for exerting a force against an intermediate portion of said locking bracket;

said locking bracket being independent of and moveable longitudinally of said rocker arm;

an abutment extending upwardly from said locking bracket adjacent an edge opposite said one edge thereof; and

a bearing member carried by said abutment, engaging said rocker arm and forcing said locking bracket downwardly into said engagement with said switch on said one side and on the other side of said switch;

whereby said locking bracket clamps said one side of said switch against said base member responsive to said rocker arm extending said force and clamps said other side of said switch against said base member responsive to said bearing member forcing said locking bracket into said engagement.

5,293,016

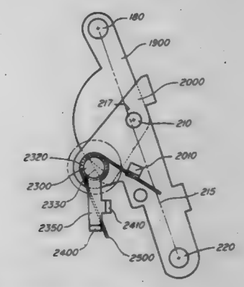
CIRCUIT BREAKER

Ramesh G. Nar, Cambridge, Md., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 535,804, Jun. 11, 1990, abandoned. This application Jun. 24, 1993, Ser. No. 82,323

Int. Cl.[5] H01H *5/00*

U.S. Cl. 200—401 **18 Claims**



1. A circuit breaker, comprising:

a frame;

a handle, pivotably connected to one end of said frame;

a first electrical contact which is substantially stationary relative to said frame;

a contact bar, bearing a second electrical contact, which is pivotably connected to a second end of said frame, the pivotal motion of said contact bar serving to move said second electrical contact into and out of electrical contact with said first electrical contact; and

a toggle mechanism extending from said handle to said contact bar, said toggle mechanism including

a cam link, pivotably connected to said handle, said cam link including a first surface having a first end and an opposite second end and intersected by a second surface, said first surface oriented substantially normal to said second surface

a link housing, a first end of which is pivotably connected to said cam link and a second end of which is pivotably connected to said contact bar, and

a sear pin, extending through an aperture in said link housing, said sear pin including a curved surface intersected by a substantially planar surface, a portion of said first surface of said cam link overlapping and contacting a portion of

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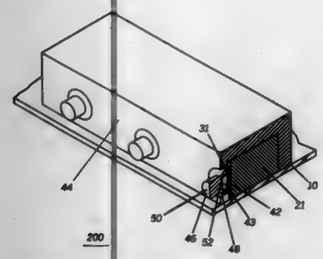
said curved surface of said sear pin when said toggle mechanism is locked, characterized in that
the length of overlap between said first surface of said cam link and said curved surface of said sear pin when said toggle mechanism is locked, expressed as a percentage of a length of said first surface from said first end to said second end, is greater than about 75 percent.

5,293,017

RIGHT ANGLE ELASTOMERIC CONTROL SWITCH

Michael H. Bartlett, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1992, Ser. No. 955,172
Int. Cl.[5] H01H *1/14*
U.S. Cl. 200—511 **6 Claims**



1. A switch assembly comprising:
a substrate having conductive traces providing connectors on the substrate;
a resilient, multiple conductive contact material having a plurality of electrically isolated conductors extending between planar surfaces of the multiple conductive contact material, the contact material positioned over the substrate to be continuously in contact with the connectors, the multiple conductive contact material electrically engaging each of the connectors at a large number of separate and isolated electrical engagement regions; and
a pressure sensitive conductive elastomeric switch having switch contacts coupled to a pressure sensitive conductive underside, the conductive underside providing switch closure electrical coupling between the switch contacts, the switch disposed in perpendicular relationship to the connectors of the substrate to force the conductive underside into engagement with the conductors, the elastomeric switch having resiliency to provide a return bias force tending to maintain the switch contacts in an open condition and being biased towards a nonactuated, open contact position at the switch contacts, and the conductive underside being coupled into switch closure engagement with the switch contacts and electrically coupling the conductors and the connectors to the closed switch contacts in response to operator actuation of the pressure sensitive conductive underside.

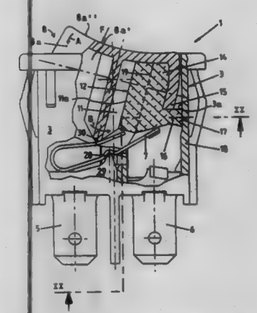
5,293,018

ELECTRIC SWITCH

Hermann Lander, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Marquardt GmbH, Rietheim-Weilheim, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 930,352
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128714
Int. Cl.[5] H01H *21/24*
U.S. Cl. 200—557 **9 Claims**

1. An electric switch comprising
(a) a switch housing having an inner wall face;
(b) a contact member movably supported in the switch housing and having first and second positions;
(c) a rocking operating member tiltably supported in said switch housing and having a position of rest and an actuated position; the operating member further having
(1) a first part including a surface accessible exteriorly of said switch housing and being engageable for imparting an operating force thereon for moving said first part in a depressing direction; and
(2) a second part formed as an elongated switching pin extending from said first part into said switch housing and being operatively connected with said contact member for moving said contact member upon tilting motion of said operating member; said switching pin being movable in a compressing direction upon movement of said first part in said depressing direction; said depressing direction being generally perpendicular to said compressing direction; said switching pin having a side oriented towards said inner wall face; a distance



between said side of said switching pin and said wall face of said switch housing being reduced upon motion of said operating member from said position of rest toward said actuated position; and
(d) an inherently elastically compressible element having opposite first and second surface portions and being disposed between said inner wall face and said side; in said position of rest of said operating member, said first surface portion of said compressible element being in a face-to-face engagement with said side and said second surface portion of said compressible element being in a face-to-face engagement with said inner wall face of said switch housing; in said actuated position said compressible element being compressed in said compressing direction and exerting a resilient force on the side of the switching pin urging said operating member into said position of rest.

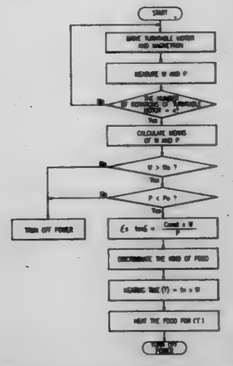
5,293,019

AUTOMATIC COOKING APPARATUS AND METHOD FOR MICROWAVE OVEN

In K. Lee, Kyungsangnam, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 15, 1992, Ser. No. 913,360
Claims priority, Application Korea, July 15, 1991, 12058
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—708 **12 Claims**

1. An automatic cooking method for a microwave oven comprising the steps of:
subjecting food in the microwave oven to microwave energy;
detecting continuously and during a predetermined time a microwave energy level not absorbed into the food and a weight of the food; calculating an average microwave energy level and an average weight of the food on the basis of said detection;
calculating a relative dielectric constant and a dielectric factor of the food on the basis of said average microwave energy level and said average weight; and



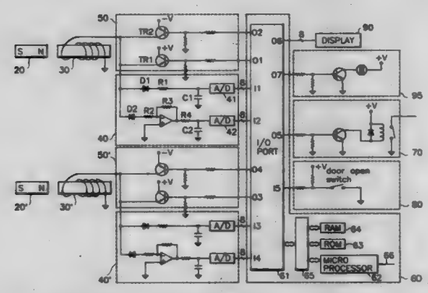
cooking the food in accordance with the calculated relative dielectric constant and dielectric factor.

5,293,020

MICROWAVE OVEN DOOR CONTROL DEVICE

Jangseop Han, Seoul, and Jaeyong Lee, Incheon, both of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 998,012
Claims priority, application Rep. of Korea, Dec. 31, 1991, 91-25636
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—724 **12 Claims**



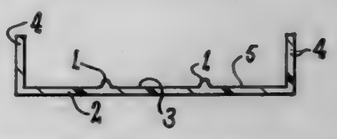
1. A microwave oven comprising:
an enclosure having therein a heating chamber adapted to receive an object to be heated;
a door mounted at an opening of the heating chamber;
at least two magnetic materials provided at one side of the door;
at least two electromagnets provided on the enclosure and adapted to contact with the respective magnetic materials;
at least two door state detecting means each connected with one of the electromagnets for generating a first signal based on electromotive forces, said electromotive forces being generated in the electromagnets when the door is being closed or opened;
a door open switch means for generating a second signal, said second signal being generated upon pressing a door open switch;
a processing means for generating in response to the first signal and the second signal a first control signal when the door is closed and a second control signal when the door is to be opened;
at least two door latching and opening means each connected with one of the electromagnets for latching and opening the door in response to the first and the second control signals, said door being latched by applying an electric current to the electromagnets in one direction and opened by applying another electric current to the electromagnets in another direction;
a microwave energy generator adapted to radiate energy within the enclosure; and
a load driving power switching means for activating the generator in response to the first control signal.

5,293,021

EGG POACHER FOR MICROWAVE OVEN

John E. Davis, Melbourne, Australia, assignor to Tasman Manor Pty. Ltd., South Melbourne, Australia

PCT No. PCT/AU92/00399, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992
PCT Filed Aug. 3, 1992, Ser. No. 955,893
Claims priority, application Australia, Aug. 2, 1991, PK 7558
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—728 **9 Claims**



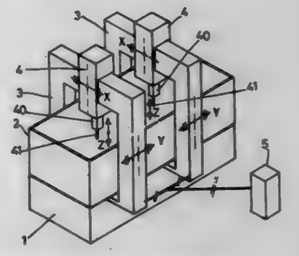
1. A microwave egg cooking utensil, comprising:
a container body of microwave transmissible material, said body including a side wall and a base for supporting said utensil when resting on a flat surface;
said side wall merging with said base and being of sufficient height to restrain and mold a shelled egg;
said base including at least one projection centrally disposed thereon to form a yolk retention portion;
said base forming with said side wall a white retention portion surrounding said yolk retention portion, and wherein said projection being of sufficient height to hold the yolk within said yolk retention portion and having a height which is less than the height of the yolk.

5,293,022

SPARK EROSION MACHINE

Carmelo Onandia-Alberdi, Durango, Spain, assignor to Ona Electro-Erosion, S.A., Spain

Filed Oct. 22, 1992, Ser. No. 964,721
Claims priority, application Spain, Nov. 4, 1991, 9103267[U]
Int. Cl.[5] B23H *7/00, 7/26*
U.S. Cl. 219—69.11 **4 Claims**



1. A spark-erosion machine comprising:

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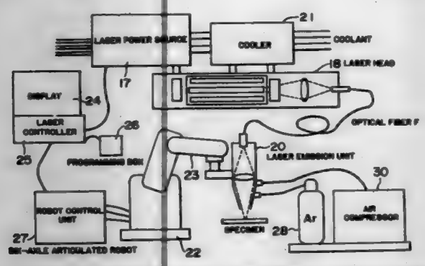
(a) at least two portals, each portal comprising a bottom piece, two legs and a top piece;
(b) each said portal being driven independently of another portal, and each said portal being movable in the Y direction;
(c) a header carrier mounted on the top piece of each said portal, each said header carrier being movable in the X direction;
(d) a header with an electrode being mounted on each said header carrier, each said electrode being movable in the Z direction;
(e) a machine bed which forms a container, said container having a front wall, a back wall and side walls at each end, at least one of said side walls forming an access door having locked and open positions, said access door being hermetically sealed when in the locked position;
(f) at least one inner door in said container, said at least one inner door dividing said container into at least two subcontainers; and
(g) wherein at least one of said portals is positioned about one of the subcontainers and another of said portals is positioned about another one of said subcontainers.

5,293,023

LASER IRRADIATION NOZZLE AND LASER APPARATUS USING THE SAME

Kohichi Haruta, Sodegaura, and Yuichiro Terashi, Chiba, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,537
Claims priority, application Japan, Mar. 13, 1992, 4-89814
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.6 **6 Claims**



1. A laser irradiation nozzle comprising a conical outside nozzle and a conical inside nozzle for irradiating a laser beam being arranged concentrically to provide a concentrical ring-shaped nozzle top, having provided between said inside and outside nozzles an assist gas outlet to eject therefrom an assist gas, wherein, the outer surface of the inside nozzle is tilted from the vertical axis at a tilt angle θ (deg) defined by $\theta = k\,\theta_o$ (where, $1 \leq k \leq 2$), where θ_o represents converging angle of laser beam is obtained from the numerical aperture of the laser, NA, as $NA = \sin\theta_o$, and the laser irradiation nozzle is shaped as such that the ratio $\eta(\%)$ of the cross sectional area (mm^2) of the assist gas outlet, which is defined by the area between the inside nozzle and the outside nozzle, to that of the top of the inside nozzle as defined by the outer diameter (mm^2), may satisfy the relations defined:

$$\eta \leqq -(3/5)h + 30$$

$$\eta \geqq -(3/5)h + 10$$

$$\eta > 0,\ h \geqq 10$$

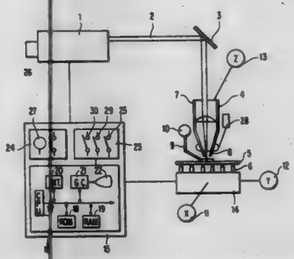
where, h (mm) is the distance between the laser beam focal plane of image-formation side and the top of the laser irradiation nozzle.

5,293,024

MACHINING APPARATUS WITH AUTOMATIC RESTART FUNCTION

Masayuki Sugahara; Hitoshi Ozawa, and Kiyoshi Hattori, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,316
Claims priority, application Japan, Oct. 7, 1991, 3-258854; Feb. 13, 1992, 4-26539
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 **20 Claims**



1. A machining apparatus for cutting products from a workpiece, comprising:
laser beam means for generating a laser beam;
a cutting head for performing a cutting operation by focusing the laser beam onto the workpiece and by moving the laser beam relative to the workpiece along a desired path, in order to cut-out said products;
a cutting table for holding the workpiece; and
information processing means for controlling movement of said cutting head based on program blocks of information, said information processing means comprising:
first memory means for storing cutting programs and data, said programs containing said program blocks which are used to control said cutting head;
second memory means for storing auxiliary function states and travel values for said cutting head;
fault detection means for detecting faults that occur during said cutting operation; and
restart means for automatically restarting the cutting operation based on said stored travel values and auxiliary function states, when said fault detection means detects a fault, by commanding the cutting head to move the laser beam from a current position to a restart position and to restart the cutting operation, said current position corresponding to a point on the workpiece at which the fault occurred and said restart position being based on the travel values stored in the second memory means.

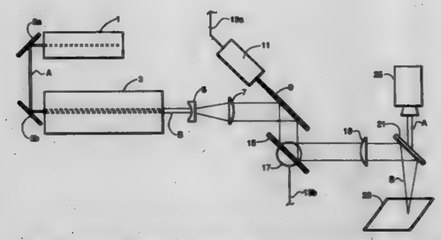
5,293,025

METHOD FOR FORMING VIAS IN MULTILAYER CIRCUITS

Carl B. Wang, Chapel Hill, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 1, 1991, Ser. No. 739,295
Int. Cl.[5] B23K *26/08*
U.S. Cl. 219—121.71 **1 Claim**

1. A method for rapidly forming a patterned array of via holes of predetermined size in an unfired layer comprising finely divided particles of dielectric solids dispersed in an ablatable organic medium containing substantially no volatile organic solvents, the layer having a thickness of 1–2000 microns, comprising the sequential steps of:
(a) positioning a source of YAG laser light to enable directing the laser beam to a predetermined position on the surface of the dielectric layer;
(b) directing onto the predetermined position on the surface of the dielectric layer a plurality of YAG laser beam pulses at a rate of at least 1 kHz, the laser beam being characterized as having (1) a beam size of at least 1 mil but no greater than the predetermined size of the hole to be formed, (2) depth of focus greater than the thickness of the dielectric layer, and (3) a power level of at least 1 W, and the number of pulses being sufficient to effect complete ablation of the organic medium through the dielectric layer within area beneath the laser beam without incurring densification of the dielectric solids, thereby forming a residue of finely divided dielectric particles within the thusly formed holes;



(c) by means of a programmed galvonometric beam positioner, repositioning the laser light source to enable directing the laser beam to a further predetermined position on the surface of the dielectric layer; and
(d) repeating the sequence of steps (b) and (c) at the rate of at least 50 times per second to form the patterned array of holes in the unfired layer;
in which the rate of forming the via holes in the patterned array is optimized by drilling the via holes in a sequence determined by application of an heuristic algorithm of the symmetric traveling salesman problem.

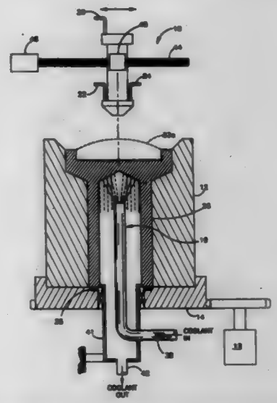
5,293,026

HARDSURFACING MATERIAL FOR ENGINE COMPONENTS AND METHOD FOR DEPOSITING SAME

Roger D. Dennis, Mulberry, Fla.; Michael L. Killian, Troy, Mich.; Jay M. Larson, Marshall, Mich.; Sundaram L. Narasimhan, Marshall, Mich.; Dennis T. Vukovich, Canton, Mich., and Homer D. Wireman, Ventura, Iowa, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 28, 1991, Ser. No. 646,121
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.59 **15 Claims**

1. A method for applying a wear resistant metallic material to a first surface of a metallic workpiece comprising the steps of supporting the workpiece in intimate contact with a block of heat conducting material with the first surface oriented substantially horizontally, depositing the wear resistant material to said first surface in a molten state, and simultaneously with said deposition step directing a fluid coolant only onto a second surface of a portion of said workpiece directly underlying said first surface.

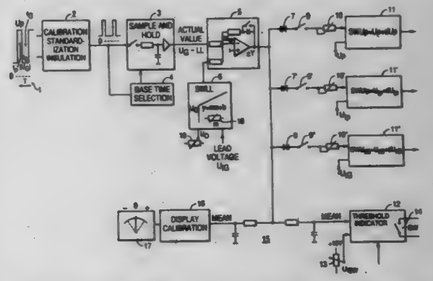


5,293,027

ELECTRONIC WELDING CURRENT GENERATOR FOR IMPULSE ARC WELDING

Haas G. Strumpf, Reut, Fed. Rep. of Germany, assignor to UTP Schweissmaterial GmbH & Co. KG, Bad Krozingen, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 905,825
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1991, 4121237
Int. Cl.[5] B23K *9/09*
U.S. Cl. 219—130.51 **14 Claims**

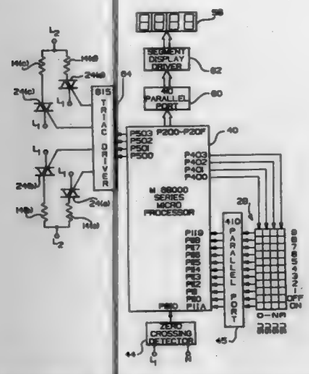


1. Electronic welding current generator for impulse arc welding having a power component that is controllable by electric lead parameters which are preselected by way of electronic circuits, whereby during pulsed operation a higher generator pulse current or a higher generator pulse voltage U_p is produced during pulse phases and a lower generator base current I_G or a lower generator base voltage is produced during base phases, comprising:
a) controlling means for, on the basis of a $U_p - I_G$ modulation, controlling the pulse voltage U_p during the pulse phases and controlling the base current I_G during the base phases;
b) measuring means for, during the base phases, measuring the base voltage at selected times, and storing and updating the measured value after each pulse period;

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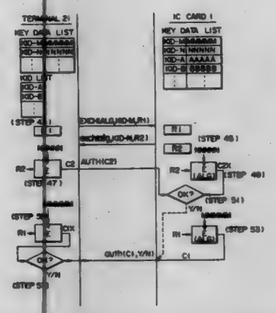
c) comparing means for comparing the measured value, which represents the real, active length of the arc, with a selectively adjustable nominal value for the length of the arc; and
d) overriding means for overriding control of the welding process based on the measured value.

5,293,028
COOKTOP APPLIANCE WITH IMPROVED POWER CONTROL
Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jan. 5, 1987, Ser. No. 426
Int. Cl.[5] H05B 1/02
U.S. Cl. 219—486 12 Claims



1. An electric cooking appliance adapted for energization by a standard domestic household power supply characterized by an output power signal with a predetermined RMS voltage, said cooking appliance comprising:
at least one electric resistive heating unit designed for steady state energization at a maximum RMS voltage level less than the RMS voltage level of the output power signal of the external power supply;
user actuable input selection means enabling the user to select one of a plurality of power settings including an OFF setting for said heating unit;
power control means responsive to said input selection means operative to couple power pulses of predetermined fixed duration from said external power supply to said heating unit at one of a plurality of power pulse repetition rates, each repetition rate establishing a corresponding RMS voltage level for application to said heating unit, each user selectable power setting having associated with it a corresponding one of said plurality of power pulses repetition rates; the repetition rate associated with the maximum user selectable power setting effectively applying an RMS voltage level to said heating unit corresponding to the RMS voltage level for which said heating unit is designed, whereby the RMS voltage applied by said heating unit when operating at the power level associated with the maximum user selected power setting is less than the RMS voltage level of the output power signal from the power supply; and
timing means for measuring the elapsed time since the last occurring user selection of said OFF setting for said heating unit; said power control means further comprising means for detecting the transition from an OFF power setting to one of said non-off power settings said power control means being operative to apply an RMS voltage level equal to the RMS voltage level of the power signal form the power supply to said heating unit for a transient heat up period, upon detection of a transition from said OFF setting to a non-Off power setting, the duration of said transient heat up period being controlled as a function of said elapsed time.

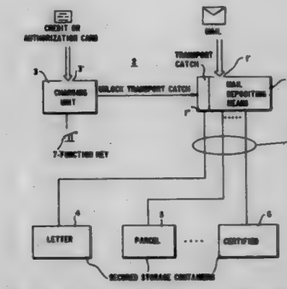
5,293,029
SYSTEM FOR MUTUALLY CERTIFYING AN IC CARD AND AN IC CARD TERMINAL
Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 747,420, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 463,601, Jan. 11, 1990, abandoned. This application Sep. 9, 1992, Ser. No. 942,337
Claims priority, application Japan, Jan. 17, 1989, 1-8010; Jan. 17, 1989, 1-8011
Int. Cl.[5] G06K 5/00; H04L 9/14
U.S. Cl. 235—380 2 Claims



2. A certification method for an IC card system utilizing an IC card having a plurality of key data and a plurality of encryption algorithms and an external device having a plurality of key data and a plurality of encryption algorithms, the external device and the IC card exchanging certification data to certify each other, the method comprising the steps of:
sending from the IC card to the external device a first designation data for designating a first pair of key data and an encryption algorithm stored in said external device;
reading out the first pair of key data and the encryption algorithm stored in said IC card;
generating first and second certification data;
encrypting the first certification data using the first pair of key data and the encryption algorithm read out from said IC card, to deliver a first encryption output;
comparing the first encryption output obtained in said IC card and a second encryption output obtained in said external device to deliver a first coincidence output;
reading out a second pair of key data and an encryption algorithm from said IC card in accordance with a second designation data sent from the external device;
encrypting the second certification data by using the second pair of key data and the encryption algorithm designated by the external device to deliver a second encryption algorithm output in response to the first coincidence output;
encrypting the first cerification data to deliver a second encryption output by using the first pair of key data and the encryption algorithm read out from the external device in accordance with the first designation data sent from the IC card;
designating a second pair of key data and the encryption algorithm stored in said external device;
encrypting the second certification data by using the second pair of key data and the encryption algorithm read out from the external device to deliver a fourth encryption output when the first coincidence output is delivered;

comparing the fourth encryption output with the second encryption output to deliver a second coincidence output;
producing a valid output signal signifying that the IC card is valid when the second coincidence output is obtained; and
sending a command from the external device to the IC card requesting further processing when the valid output signal is delivered at the output delivering step.

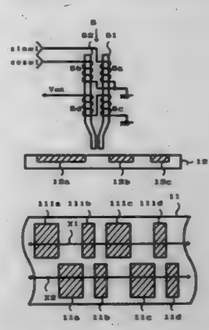
5,293,030
METHOD AND DEVICE FOR PROCESSING MAIL
Klaus Dietrich, and Wolfgang Thiel, both of Berlin, Fed. Rep. of Germany, assignors to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany
Filed Mar. 9, 1992, Ser. No. 848,262
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4108180
Int. Cl.[5] G06F 7/08
U.S. Cl. 235—381 12 Claims



1. A device for processing mail and charging required postage, comprising standardized mail depositing means having a transport catch, a charging unit connected to said mail depositing means for charging postage after mail has been inserted in said mail depositing means, secured storage containers for receiving mail from said mail depositing means, and means for receiving a postage credit card or authorization card and for activating said charging unit after the postage credit card or authorization card has been inserted, and for subsequently unlocking said transport catch and depositing the mail without a postage imprint into said secured storage containers.

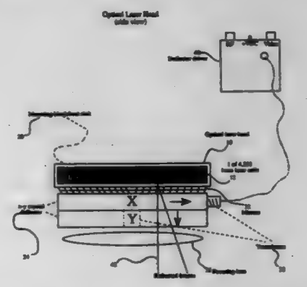
5,293,031
MAGNETIC BAR CODE READING SYSTEM EMPLOYING PHASE-SHIFT TYPE SENSOR HAVING PLURAL SENSING SECTIONS
Atsutoshi Goto; Wataru Ichikawa, and Eiichi Hirai, all of Tokyo, Japan, assignors to Atsutoshi Goto, Tokyo, Japan
Filed Mar. 18, 1991, Ser. No. 670,822
Int. Cl.[5] G06K 7/08, 19/06; G11B 5/17
U.S. Cl. 235—449 20 Claims

18. A coded pattern information reading system comprising:
a recorded pattern having first and second patterns in parallel to each other, said first pattern being formed of first and second pattern elements which are provided in an arrangement representing an entire coded information and which exhibit different reluctance characteristics, said second pattern being formed of first and second pattern elements which exhibit different reluctance characteristics and which are provided in an arrangement having a reluctance relationship opposite to the arrangement of said first and second pattern elements of said first pattern;
scanning means for scanning said patterns by approaching said pattern recording means, said scanning means having sensor means displaceable relative to said patterns for scanning the same, said sensor means having first and second sensing sections excited by an ac signal to produce an induced output signal, said sensing sections being spaced from each other in a direction substantially perpendicular to a direction in which said sensor means scans the pattern, in such manner that, when scanning the pattern, the first sensing section approaches the first pattern while the second sensing section approaches the second pattern,



whereby said induced output signal is produced in correspondence with said pattern; and
signal forming means responsive to the induced output signal from said sensor means for forming a signal determining information represented by said pattern.

5,293,032
DIGITAL DATA OPTICAL RECORDING AND PLAYBACK SYSTEM
Sydney Urshan, 3151 Cahuenga Blvd., West, Suite 300, Los Angeles, Calif. 90068
Filed Feb. 10, 1992, Ser. No. 845,331
Int. Cl.[5] G06K 7/10, 19/00
U.S. Cl. 235—454 7 Claims



1. A digital data recording and playback system including an optical recording and playback head for recording and reproducing data on and from an optical storage card positioned in operative relationship with the head, the head comprising: a plurality of individual miniature laser cells mounted in positions to direct laser beams to a surface of the storage card, with the beams from each of the cells being directed to a different area of the surface of the card; optical means interposed between the cells and the card for directing the laser beams from the cells to respective spots on the surface of the card; and driver means for causing the laser beams from the cells to be scanned over a predetermined number of spots on the surface of the card, in which each of said cells includes at least two independent laser chips for recording and playback modes respectively; and said head including a plurality of elements for directing the laser beams from the two laser chips of each cell to a spot on said optical means corresponding to that cell.

UMI

VOL 1160 ISS 2 MR 8 1994 UMI

5,293,033

OPTICAL READING APPARATUS

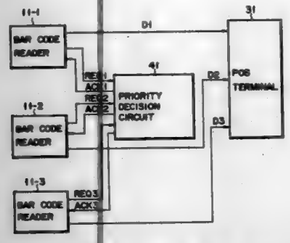
Yasuhisa Yamashita, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 407,940, Sep. 15, 1989, abandoned. This application Feb. 5, 1992, Ser. No. 831,000

Claims priority, application Japan, Sep. 20, 1988, 63-235420; Sep. 20, 1988, 63-235421

Int. Cl.[5] G06K 7/10

U.S. Cl. 235—462 17 Claims



1. An optical reading apparatus for use with an article to which a light reflective symbol is affixed, comprising:

a plurality of symbol reading means, facing a path through which said article is moved, for reading said symbol by emitting light to scan the article and detecting light reflected from the symbol affixed to said article to respectively generate symbol signals corresponding to data represented by said symbol, wherein all of said plurality of symbol reading means respectively scan primarily different parts of said article when said article is located at a predetermined position along said path; and

circuit means responsive to signals related to said symbol signals for selecting only one symbol reading means from among a group of said plurality of symbol reading means which have succeeded in reading said symbol to output the symbol signal generated by said one selected symbol reading means.

5,293,034

FOCUS STATE DETECTION DEVICE

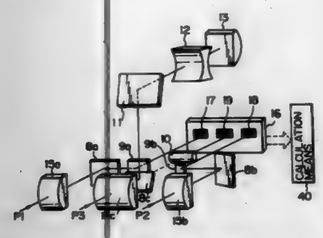
Yoshimi Ohno, Kawasaki; Junichi Shinohara, and Ikuya Tsurukawa, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,972

Claims priority, application Japan, Jun. 5, 1990, 2-145290; Jul. 6, 1990, 2-179362; Jul. 20, 1990, 2-190738; Sep. 4, 1990, 2-232368; Sep. 12, 1990, 2-240108; Apr. 18, 1991, 3-115322

Int. Cl.[5] G01J 1/20

U.S. Cl. 250—201.8 8 Claims



1. A focus state detection device comprising:

a first optical conversional system for introducing an optical flux of a predetermined region in a view field frame to be photographed to one of two symmetric positions with respect to an optical axis of said optical flux;

a second optical conversional system for introducing an optical flux of said predetermined region to the other of said two symmetric positions;

a third optical conversional system for introducing an optical flux of said predetermined region to a position including said optical axis;

a first photoelectric converter means for generating an electric signal in response to optical intensity distribution of said optical flux introduced by said first conversional system;

a second photoelectric converter means for generating an electric signal in response to optical intensity distribution of said optical flux introduced by said second conversional system;

a third photoelectric converter means for generating an electric signal in response to optical intensity distribution of said optical flux introduced by said third conversional system; and

a calculation means for detecting a focus state of one subject to be photographed on the basis of correlation between the three electric signals output from said first, second and third converter means.

5,293,035

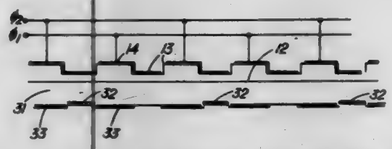
CHARGE-COUPLED DEVICES

James W. Lyons, 1 Bridge Road, South Cave, Brough, Yorkshire, and John D. Bannister, 202 New Village Road, Cottingham HU16 4NL, Yorkshire, both of England

Filed Oct. 3, 1974, Ser. No. 512,315

Int. Cl.[5] H01L 31/00, 31/0352

U.S. Cl. 250—208.1 5 Claims



1. A charge-coupled detector array, comprising a semi-conductor substrate having first and second oppositelyfacing surfaces on opposite sides thereof, an insulating layer on said first surface, a first series of electrodes applied to said insulating layer and connected to a first common lead, a second series of electrodes applied to said insulating layer and connected to a second lead, said insulating surface layer being castellated so as to give portions thereof at a first level and portions thereof at a second different level and each electrode applied so as to extend across two adjacent portions of said castellated surface respectively at said first and second levels and also down an intervening castillation flank, and a passivating material applied to only those areas of said second surface of said substrate surface that are opposite portions of the electrodes of said first series that are at said first level, said passivating material forming a heterojunction to change the response waveband of those areas to which it is applied.

5,293,036

RADIATION DETECTOR ARRAY HAVING CENTER SURROUND PIXEL OUTPUT

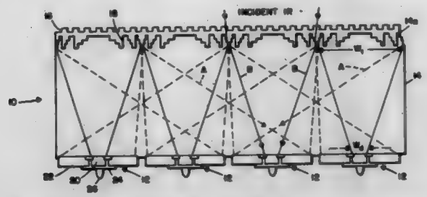
Paul R. Norton, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 11, 1989, Ser. No. 393,343

Int. Cl.[5] H01J 40/14

U.S. Cl. 250—208.1 21 Claims

1. A radiation detector having an output terminal for expressing a center-surround output signal, the radiation detector comprising a first radiation detector having a radiation absorbing area substantially surrounded by a radiation absorbing area of a second radiation detector, an anode of the first radiation detector being electrically coupled to a cathode of the second radiation detector, an anode of the second radiation detector



being electrically coupled to a cathode of the first radiation detector and electrically coupled also to the output terminal.

5,293,037

OPTO-ELECTRONIC CONVERTER WITH ELECTRON MIRRORS AND QUANTUM WIRE

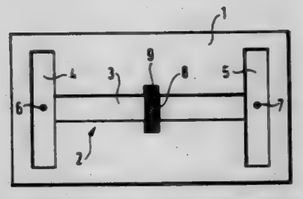
Alain Le Mehaute, Gif sur Yvette, and Christian Joachim, Lagardelle sur Leze, both of France, assignors to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Jul. 20, 1992, Ser. No. 915,513

Claims priority, application France, Jul. 19, 1991, 91 09175

Int. Cl.[5] H01J 40/14

U.S. Cl. 250—214.1 13 Claims



1. An opto-electronic converter comprising a mesoscopic resonant cavity constituted by a pair of electron mirrors and a quantum wire made of a material that is conductor or a semiconductor and situated between said electron mirrors, said wire being interrupted over a gap having a width of 5 Å to 100 Å, a photosensitive material inserted into said gap, and tabs provided at the ends of said cavity and connected to respective ones of said mirrors and said quantum wire to pass an electrical current through said cavity.

5,293,038

OPTICAL PICK-UP HEAD APPARATUS WHEREIN HOLLOGRAPHIC OPTICAL ELEMENT AND PHOTODETECTOR ARE FORMED ON SEMICONDUCTOR SUBSTRATE

Shinichi Kadowaki, Osaka; Yoshiaki Komma, Kyoto, and Seiji Nishino, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,777

Claims priority, application Japan, Apr. 8, 1992, 4-086852

Int. Cl.[5] H01J 3/14

U.S. Cl. 250—216 25 Claims

1. An optical pick-up head apparatus comprising:

a semiconductor laser source for emitting a coherent or semimonochromatic beam;

first reflection means for reflecting said beam from said semiconductor laser source to change the advancing direction of said beam therefrom;

second reflection means for reflecting the beam reflected on said first reflection means to change the advancing direction thereof;

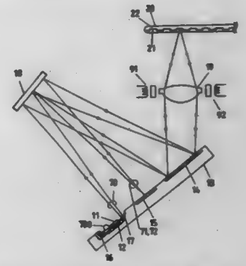
third reflection means for reflecting the beam reflected on said second reflection means to change the advancing direction thereof;

a converging optical system for receiving the beam reflected on said third reflection means to focus the beam on a microscopic spot on an optical storage medium;

a reflection type holographic optical element for receiving the beam reflected and diffracted on said optical storage medium to generate a diffraction beam; and

a photodetector having a plurality of photodetecting elements to receive said diffraction beam from said reflection type holographic optical element to generate a photoelectric conversion signal,

wherein said laser source is formed on a first semiconductor substrate so that said beam from said laser source is emitted in a direction substantially parallel to a surface of said first semiconductor substrate, said reflection type holographic optical element is formed in said third reflection means, said diffraction beam from said reflection type holographic optical element is incident on said photodetector after being reflected on said second reflection means, said first reflection means, said third reflection means and said photodetector are formed on a second semiconductor substrate, a light-receiving surface of said photodetector is arranged to be substantially parallel to a surface of said second semiconductor substrate, and said surface of said first semiconductor substrate is disposed to be substantially parallel to said surface of said second semiconductor substrate.



5,293,039

SANDWICHED FIBER-OPTIC PRESSURE DETECTOR

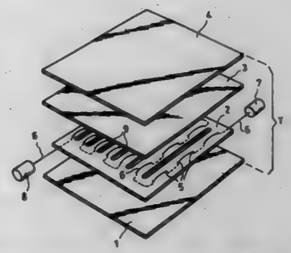
Mireille Mongiols, Tours sur Meymont, France, assignor to Opto Industrie, Tours Sur Meymont, France

Filed Mar. 8, 1993, Ser. No. 27,358

Claims priority, application France, Mar. 26, 1992, 92 03677

Int. Cl.[5] H01J 5/16

U.S. Cl. 250—227.16 10 Claims



1. A fiber-optic pressure detector, including a mat which comprises two superposed main sheets between which an optical fiber runs following a path that has no fiber-fiber crossovers, the optical fiber is operatively associated with a source

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of light and with a light receiver such that the receiver receives the light flux transmitted by the optical fiber from the light source so as to indicate the changes therein due to deformation of the optical fiber caused by the application of a pressure force to the mat, thereby enabling said force to be detected,

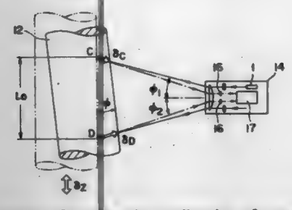
the optical fiber of the detector is mounted on a third sheet made of a material softer than the optical fiber, the optical fiber passing from place to place through the third sheet via through holes so as to extend alternately over one face and over the other face of said third sheet, in an undulating configuration, said third sheet with the optical fiber mounted thereon forming an intermediate sheet which is sandwiched between the two main sheets.

5,293,040

METHOD AND APPARATUS FOR MEASURING VIBRATIONS OF ROTATING SHAFT

Yukio Watanabe; Fukumi Shimizu, and Katsuhiko Naruse, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 29, 1992, Ser. No. 889,902
Claims priority, application Japan, May 30, 1991, 3-127526
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.1 **10 Claims**



1. An apparatus for measuring a vibration of a rotating shaft, comprising:

a rotating shaft;

a first group of projections, said projections of said first group being spaced along the circumference of said rotating shaft;

a second group of projections, said projections of said second group being spaced along the circumference of said rotating shaft, the first and second groups of projections being spaced from each other along an axis of said rotating shaft and the projections of the first and second groups have a same height; and

shaft vibration detecting means for detecting shaft vibration including means for irradiating said first and second groups of projections with measuring light, reflected light receiving and generating means for receiving measuring light reflected by said first and second groups of projections and for generating signals indicative of the reflected measuring light, and means for calculating a peripheral speed difference between two axially spaced projections based on said signals.

5,293,041

THIN FILM PYROELECTRIC IMAGING ARRAY

Paul W. Kruse, Jr., Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 787,169, Nov. 4, 1991, abandoned. This application May 12, 1993, Ser. No. 63,182
Int. Cl.[5] G01J *5/06*
U.S. Cl. 250—338.3 **11 Claims**

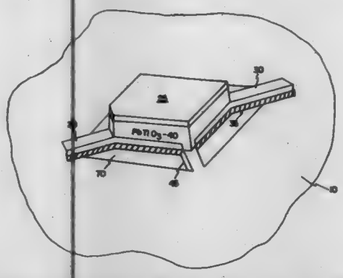
1. A radiation sensor comprising:

(a) a substrate having opposing flat surfaces wherein one surface has a cavity;

(b) a microbridge suspended over the cavity comprised of a material selected from the group consisting of silicon oxide and silicon nitride, wherein the microbridge includes a plurality of support legs;

(c) a first conductive thin film electrode deposited on one of the legs covering substantially half the surface of the microbridge;

(d) a second conductive thin film electrode deposited on the opposing leg and substantially covering the remaining



portion of the microbridge in such a manner as to allow a gap to exist between the first and second electrodes;

(e) a thin film of pyroelectric material deposited on, and substantially covering, the surface of the first and second electrodes; and

(f) a thin film conductor deposited on the surface of the pyroelectric material.

5,293,042

SERVO CIRCUIT OF SCANNING PROBE MICROSCOPE

Hirofumi Miyamoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,358
Claims priority, application Japan, May 10, 1991, 3-105826; Dec. 19, 1991, 3-336967
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 **23 Claims**

1. A servo circuit of a scanning probe microscope for outputting a three-dimensional image in response to a scanning output signal generated when a probe relatively scans a surface of a sample in a direction parallel thereto, said servo circuit keeping a distance between the probe and the sample constant when the probe scans the surface of the sample, and comprising:

moving means for relatively moving the probe in a direction perpendicular to the surface of the sample;

deviation detecting means for detecting a deviation from a reference value of the scanning output signal and generating a deviation signal;

control means for:

receiving the deviation signal from said deviation detecting means,

generating a drive signal corresponding to the deviation signal and possessing a predetermined response characteristic to the deviation signal, and

supplying the drive signal to said moving means, thereby moving the probe; and

servo characteristic changing means for:

receiving the deviation signal from said deviation detecting means,

detecting an excess of a value of the deviation signal over a predetermined value, and

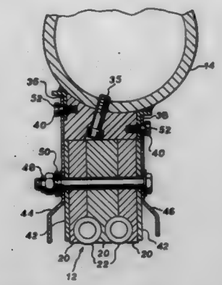
changing the predetermined response characteristic to the deviation signal, possessed by the drive signal generated from said control means, in response to the excess being detected, to a faster response characteristic.

5,293,043

ELECTRODE ASSEMBLY FOR A CORONA TESTER

William H. Bonner, Cedarburg, Wis., assignor to Pillar Technologies, Hartland, Wis.

Filed Dec. 24, 1992, Ser. No. 996,736
Int. Cl.[5] H01T *19/00*
U.S. Cl. 250—324 **8 Claims**



1. An improved electrode assembly for a corona treater of the type having an electrode magazine in which at least one high voltage electrode is mounted and a support tube on which the electrode magazine is removably mounted, the improvement comprising:

a plurality of projections on either of the electrode magazine or the support tube, and

a plurality of projection receiving slots on the other of the electrode magazine or the support tube such that the electrode magazine may be removably mounted on the support tube by sliding said projections into said slots.

5,293,044

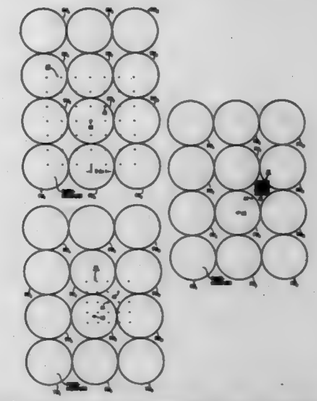
METHOD FOR RAPID LOCALIZATION OF A SCINTILLATION EVENT IN A GAMMA CAMERA USING A MAXIMUM LIKELIHOOD ESTIMATOR

Klaus Klingenbeck-Regn, Nuernberg, and Bernhard Conrad, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 4, 1992, Ser. No. 940,682
Claims priority, application European Pat. Off., Sep. 11, 1991, 91115370.8
Int. Cl.[5] G01T *1/17*
U.S. Cl. 250—369 **13 Claims**

1. In a process for localizing a scintillation event in a gamma camera having a plurality of photomultipliers forming a camera surface, each photomultiplier generating an output signal in response to said scintillation event, said process including the steps of generating a plurality of comparative signal sets from output signals of said photomultipliers corresponding to respective scintillation events of known locations, forming a location-dependent probability function based on a comparison of outputs of said photomultipliers for a scintillation event of unknown location with said comparative signal sets, said probability function having a maximum, and defining the location of said scintillation event of unknown location as the location corresponding to said maximum of said location-dependent probability function, the improvement comprising:

initially undertaking a pre-localization by defining a part of said camera surface, in which a high probability exists that



the location of said scintillation event of unknown location lies, as a partial camera surface; and

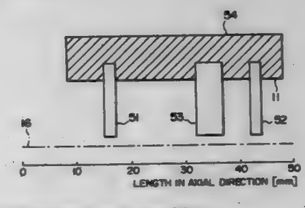
limiting the forming of said location-dependent probability function to locations within said partial camera surface.

5,293,045

ELECTROSTATIC LENS

Motosuke Miyoshi, Tokyo; Katsuya Okumura, Yokohama, and Yuichiro Yamazaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 10, 1992, Ser. No. 988,701
Claims priority, application Japan, Jan. 13, 1992, 4-3849
Int. Cl.[5] H01J *37/12*
U.S. Cl. 250—396 R **9 Claims**



1. An electrostatic lens comprising:

at least three electrodes; and

an insulating holder for holding said at least three electrodes in an inner wall, the inner wall of said holder being coated with a silicone carbide film.

5,293,046

OPTICAL HIGH PRESSURE SENSOR

Samuel E. Wheatley, Encinitas, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 13, 1992, Ser. No. 851,405
Int. Cl.[5] F01J *1/58*
U.S. Cl. 250—458.1 **9 Claims**

1. An optical pressure sensor comprising:

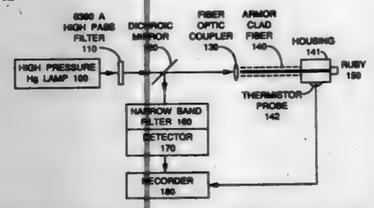
an excitation source which produces an illumination signal;

an optical sensor which receives said illumination signal from said excitation source, said optical sensor responding

to said illumination signal with fluorescence which experiences a spectral wavelength shift in response to its environment, said wavelength shift in said fluorescence providing an optical measurement in pressure changes which are ambient to said optical sensor;

a means for measuring said spectral wavelength shift in said fluorescence produced by said optical sensor, said measuring means thereby yielding an indication of pressure changes in said optical sensors environment, said pressure changes ranging up to about 10 kbars said measuring means also receiving a temperature measurement signal and adjusting said indication of pressure changes for changes in temperature;

a means for conducting optical signals; said optical conducting means optically connecting said optical sensor with said excitation source and said measuring means, said optical conduction means thereby conducting said illumination signal to said optical sensor, and conducting said



fluorescence from said optical sensor, to said measuring means; and

a means for measuring temperatures in proximity with said optical sensor and outputing said temperature measurement signal so that thermally induced changes in said wavelength shift of said fluorescence are anticipated and subtracted from the wavelength shift actually measured, said temperature measuring means thereby providing an opportunity to eliminate thermal contamination from the indication of pressure changes measured in said optical sensor's environment; and

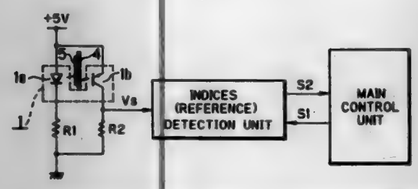
a means for recording data, said recording means being electrically connected with said means for measuring said spectral wavelengths shift and said means for measuring temperature so that an actual wavelength shift of said fluorescence is measured while effects of thermal contamination of said wavelength shift are accounted for and eliminated from the induction of pressure changes in said optical sensor's environment.

5,293,047

METHOD AND AN APPARATUS FOR DETECTING INDICES OF PAPER BASED ON A REPLACEABLE INTERMEDIATE OR AVERAGE THRESHOLD VALUE

Hideaki Matsuda, Miyagi, Japan, assignor to Tohoku Ricoh Co., Ltd., Shibata, Japan

Filed Aug. 10, 1992, Ser. No. 926,419
Claims priority, application Japan, Aug. 13, 1991, 3-202831
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 12 Claims



1. A method for detecting indices provided on an elongated paper with a distance therebetween along the longitudinal direction thereof, wherein a light is applied to produce a resulting light for sequential detection of the positions of said indices, the method comprising the steps of:

detecting said resulting light by a light detector positioned along a feed path of said paper along the longitudinal direction thereof;

sequentially detecting the positions of said indices by comparing outputs from said light detector with a threshold value; and

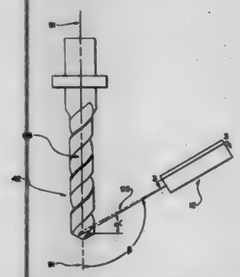
replacing said threshold value with a new threshold value after every at least three indices are detected, each new threshold value based upon a peak memorized value of the outputs from said light detector during the period that each said at least three preceding indices are detected.

5,293,048

LASER SENSOR FOR DETECTING THE PRESENCE OF AN OBJECT IN CONTINUOUS MOTION

Timothy A. Skunes, Columbia Heights, and Steven K. Case, St. Louis Park, both of Minn., assignors to CyberOptics Corporation, Minneapolis, Minn.

Continuation of Ser. No. 636,272, Dec. 31, 1990, abandoned.
This application Oct. 30, 1992, Ser. No. 968,261
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—561 36 Claims



1. A sensor for detecting the presence of an object in continuous repetitive motion about an axis, comprising:

a single energy source remotely positioned from the object and at an oblique angle to the axis of continuous motion;

means for focusing the energy from said single energy source into a single beam concentrated directly onto a reflective portion of a surface of the object;

means for sensing energy that is generated by said single energy source and reflected directly from said reflective surface of the object and for converting the sensed energy into electric signals, said energy sensing means remotely positioned from the object and at an oblique angle to the axis of continuous repetitive motion; and

means, connected to the energy sensing means, for detecting fluctuating electrical signals that fluctuate at the frequency at which energy is reflected from the object, which is directly related to the frequency of the continuous repetitive motion, comprising:

means for filtering the electrical signal to eliminate electrical signals that do not fluctuate and pass the electrical signals whose frequency of fluctuation is directly related to the frequency of the continuous repetitive motion; and

means for determining the presence of an object in continuous repetitive motion, comprising:

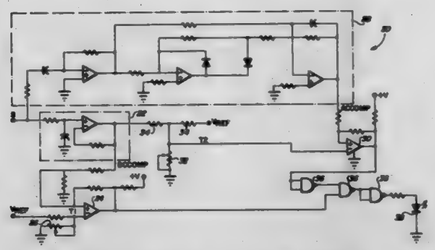
means for analyzing fluctuating electrical signals.

5,293,049

AEROSOL DISCRIMINATOR FOR PARTICLE DISCRIMINATION

Richard K. Morey, Tucson; Donald R. Chansky, Jr., Oracle; Douglas J. Wylie, Tucson; Mark A. Mormino, Tucson, and Joseph F. Halik, IV, Tucson, all of Ariz., assignors to Allied-signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 694,188, May 1, 1991, Pat. No. 5,164,604. This application Aug. 10, 1992, Ser. No. 927,441
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—574 24 Claims



1. A method of analyzing a scatter signal from an optical particle counter, said scatter signal indicating an amount of radiation scattered by a sample flow, said method comprising the steps of:

determining the AC component of said scatter signal; and

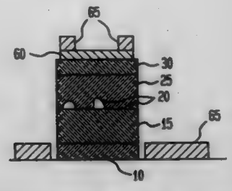
comparing said AC component to a reference signal indicating the amount of scatter caused by a particular aerosol.

5,293,050

SEMICONDUCTOR QUANTUM DOT LIGHT EMITTING/DETECTING DEVICES

Jonathan D. Chapple-Sokol, Poughkeepsie; Seshadri Subbanna, Hopewell Junction, and Manu J. Tejwani, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1993, Ser. No. 37,154
Int. Cl.[5] H01L *31/12*
U.S. Cl. 257—17 5 Claims



1. A semiconductor light emitting and light detecting device, comprising:

a first doped silicon layer of a first conductivity type;

an intrinsic silicon epitaxial layer formed on said doped silicon layer;

at least one quantum dot embedded within said intrinsic silicon epitaxial layer; and

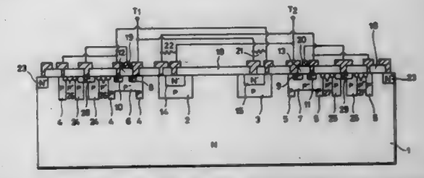
a second doped silicon layer of a second conductivity type formed on said intrinsic silicon epitaxial layer.

5,293,051

PHOTOSWITCHING DEVICE INCLUDING A MOSFET FOR DETECTING ZERO VOLTAGE CROSSING

Mitsuru Mariyama, and Nobuyuki Kato, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 16,546
Claims priority, application Japan, Feb. 14, 1992, 4-28130; Jul. 10, 1992, 4-183706
Int. Cl.[5] H01L *29/74, 27/02, 29/34*
U.S. Cl. 257—129 8 Claims



1. A switching device formed on a main surface of an N-type semiconductor substrate, comprising:

a first thyristor, and

a first MOSFET for detecting a zero voltage crossing and providing a first zero crossing signal to said thyristor, said MOSFET including a first gate electrode electrically connected to said N-type substrate, and

a first voltage clamp circuit for preventing voltage applied to said gate electrode from exceeding a predetermined voltage including:

a first N^+-type contact region formed in a surface layer of said N-type substrate and electrically connected to said gate electrode, and

a first P-type guard ring surrounding said N^+-type contact region,

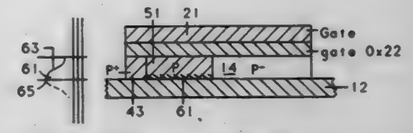
wherein a depletion layer expands throughout an interior region of said first P-type guard ring when the voltage applied to said first gate electrode exceeds said predetermined voltage to electrically isolate said first N^+-type contact region from said N-type substrate.

5,293,052

SOT CMOS DEVICE HAVING DIFFERENTIALLY DOPED BODY EXTENSION FOR PROVIDING IMPROVED BACKSIDE LEAKAGE CHANNEL STOP

Richard D. Cherne, West Melbourne; James F. Buller, Indialantic, and William H. Speece, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 23, 1992, Ser. No. 855,834
Int. Cl.[5] H01L *27/01, 27/12, 29/04, 29/36*
U.S. Cl. 257—349 17 Claims



1. A semiconductor device comprising:

a substrate;

a first semiconductor region of a first conductivity type formed on a first substrate portion of said substrate;

a second semiconductor region of a second conductivity type formed on a second surface portion of said substrate contiguous with said first surface portion, so as to form a first junction with said first semiconductor region, said first junction having a first length along said first semiconductor region;

a third semiconductor region of said second conductivity

type formed on a third surface portion of said substrate, spaced apart from said second surface portion by said first surface portion therebetween, and being contiguous with said first portion, so as to form a second junction with said first semiconductor region, said second junction having a second length along said first semiconductor region;

a layer of conductive material overlying said first semiconductor region, said layer of conductive material being insulated from said first semiconductor region by a layer of insulating material therebetween; and

said first semiconductor region being configured to include at least one extension region beyond said second and third semiconductor regions underlying said layer of conductive material, and wherein a portion of said at least one extension region underlying said layer of conductive material has an impurity distribution profile that is increased along the interface of said portion of said at least one extension region with said substrate relative to a top surface of said at least one extension region.

5,293,053

ELEVATED CMOS

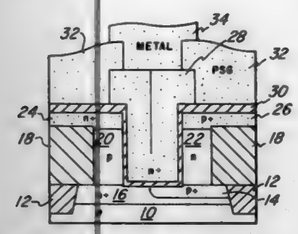
Satwinder S. Malhi; Ravishankar Sundaresan, both of Garland, and Shivaling S. Mahant-Shetti, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 916,664, Oct. 8, 1986, abandoned. This application May 1, 1991, Ser. No. 655,500

The portion of the term of this patent subsequent to Dec. 1, 2008, has been disclaimed.

Int. Cl.[5] H01L *27/02, 29/78, 27/01, 29/06*

U.S. Cl. 257—330 **16 Claims**



1. An integrated circuit device comprising:

a dielectric layer having a recess therein;

an n-type insulated gate vertical-channel field effect transistor having its vertical-channel within, and on one side of said recess;

a p-type insulated gate vertical-channel field effect transistor having its vertical channel within, and on another side of said recess opposite from the vertical-channel of said n-type insulated gate vertical-channel field effect transistor; and

a control gate disposed in said recess between said n-type and p-type insulated gate vertical-channel field effect transistors connected to control current flow in said vertical-channel of both said n-type and said p-type insulated gate vertical-channel field effect transistors.

5,293,054

EMITTER SWITCHED THYRISTOR WITHOUT PARASITIC THYRISTOR LATCH-UP SUSCEPTIBILITY

Mallikarjunaswamy S. Shekar, and Bantval J. Baliga, both of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Nov. 23, 1992, Ser. No. 980,466

Int. Cl.[5] H01L *29/080, 29/520*

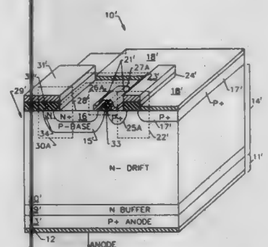
U.S. Cl. 257—152 **23 Claims**

16. A semiconductor switching device comprising:

a semiconductor substrate;

an emitter switched thyristor in said semiconductor substrate, said thyristor having an anode region, a first base region, a second base region, and a floating emitter region of first conductivity type in said second base region, said floating emitter region being located at a face of said semiconductor substrate;

a cathode contact region of second conductivity type in said semiconductor substrate, said cathode contact region forming a P-N junction with said first base region;



a field effect transistor of second conductivity type at said face, electrically connected between said cathode contact region and said second base region, said field effect transistor having an active region in said first base region and a source region of second conductivity in said first base region, adjacent said cathode contact region; and

a metal strap at said face, electrically connecting said source region of said first field effect transistor to said floating emitter region.

5,293,055

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

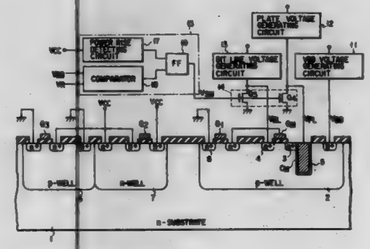
Takahiko Hara, and Syuso Fujii, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1992, Ser. No. 889,635

Claims priority, application Japan, May 28, 1991, 3-123936

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—296 **19 Claims**



1. A DRAM comprising:

a semiconductor substrate;

a first region of a first conductivity type formed in the substrate;

a well of a second conductivity type, surrounded by the first region;

a capacitor formed in the well and having an plate electrode which is in capacitive coupling to the well;

a transfer MOS transistor serving as transfer gate means and formed in the well, said transfer MOS having a source/-drain terminal connected to the capacitor;

a bit line connected to another source/drain terminal of the transfer MOS transistor;

a word line connected to a gate of the transfer MOS transistor;

means for applying a first potential to the first region;

means for applying a well potential to the well; and

grounding means for temporarily grounding at least one of the plate electrode and the bit line when application of the first potential is started.

5,293,056

SEMICONDUCTOR DEVICE WITH HIGH OFF-BREAKDOWN-VOLTAGE AND LOW ON RESISTANCE

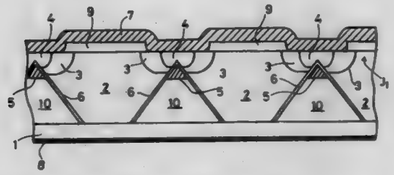
Tomohide Terashima, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1992, Ser. No. 863,758

Claims priority, application Japan, Jun. 17, 1991, 3-144709

Int. Cl.[5] H01L *29/76, 29/94, 31/062, 31/113*

U.S. Cl. 257—339 **7 Claims**



1. A semiconductor device, comprising:

a first conductivity type first semiconductor layer having a top major surface and a bottom major surface;

a second conductivity type first semiconductor region formed in said top major surface of said first semiconductor layer;

at least one first conductivity type second semiconductor region selectively formed in a top surface of said first semiconductor region;

a first trench extending from said bottom major surface of said first semiconductor layer into said second semiconductor region through said first semiconductor layer and said first semiconductor region;

a first insulating layer coating said first trench;

a first control electrode disposed opposite said first semiconductor region through said first insulation layer;

a first electrode formed on said first and second semiconductor regions; and

a second electrode formed on the bottom major surface of said first semiconductor layer;

wherein said first trench has a cross sectional area which decreases with a distance from its bottom surface to its top surface, said cross sectional area being perpendicular to a direction along which said distance is measured.

5,293,057

ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT FOR SEMICONDUCTOR DEVICE

Fan Ho, and Mitchel A. Daher, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 14, 1992, Ser. No. 929,818

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—356 **10 Claims**

1. An ESD protection structure for a MOS device having a bonding pad and a P— substrate, comprising:

a symmetrical elongated bi-polar transistor fabricated on and in the P— substrate, the bi-polar transistor comprising an electrically floating elongated base region having a width less than two microns;

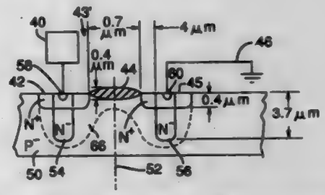
a first N+ semiconductor region formed in the substrate adjacent to a first edge margin of the elongated base region;

a first N— well having a depth greater than two microns formed in the first N+ semiconductor region;

a second N+ semiconductor region formed in the substrate adjacent to a second edge margin of the elongated base region;

a second N— well having a depth greater than two microns formed in the second N+ semiconductor region;

the first N— well electrically connected to an internal circuit of the MOS device and at a plurality of points to the bonding pad; and



the second N— well electrically connected at a plurality of points to a ground line,

whereby, upon receipt of an ESD pulse, the ESD protection structure undergoes an avalanche breakdown that effectively conducts the ESD pulse between the bonding pad and the ground line and away from the internal circuit.

5,293,058

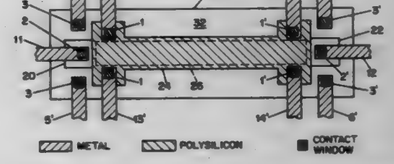
LINEAR VOLTAGE-CONTROLLED RESISTANCE ELEMENT

Yannis Tsividis, Agia Paraskevi, Greece, assignor to The Trustees of Columbia University, New York, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,599

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—364 **9 Claims**



1. A voltage-controlled linear resistance device comprising:

a field-effect transistor having spaced source and drain regions formed in a semiconductor body region, a first electrode for applying a first voltage signal to the source region, a second electrode for applying a second voltage signal to the drain region, and a gate electrode overlying the body region between the source and drain regions, the gate electrode having a first end adjacent to the source region and a second end adjacent to the drain region;

first means for applying a first offset voltage between the source region and the first end of the gate electrode, and between the drain region and the second end of the gate electrode; and

second means for applying a second offset voltage between the source region and a portion of the body region adjacent to the source region, and between the drain region and a portion of the body region adjacent to the drain region,

whereby the resistance between the first and second electrodes is substantially constant with respect to the voltage across the first and second electrodes.

VOL 1160 ISS 2 MR 8 1994 UMI

5,293,059

MOS SEMICONDUCTOR DEVICE WITH DOUBLE-LAYER GATE ELECTRODE STRUCTURE

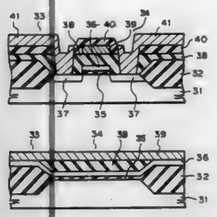
Hiroyuki Tamura, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 662,399, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 443,165, Nov. 30, 1989, abandoned, which is a division of Ser. No. 240,729, Sep. 6, 1988, Pat. No. 4,900,690. This application Mar. 10, 1992, Ser. No. 850,010

Claims priority, application Japan, Sep. 7, 1987, 62-221840

Int. Cl.[5] H01L *29/76, 23/48*

U.S. Cl. 257—412 15 Claims



15. A semiconductor device comprising:

a pair of wiring layers respectively contacting an n-type source diffusion region and an n-type drain diffusion region formed in an upper portion of a semiconductor substrate at a predetermined distance;

a gate silicon oxide layer formed between said n-type source diffusion region and said n-type drain diffusion region;

a frame shaped field region formed on said semiconductor substrate and surrounding said pair of wiring layers, said n-type source diffusion region and said n-type drain diffusion region such that said gate silicon oxide layer is integrally connected to opposite inner sides of said frame shaped field region;

a two-layered electrode having a bottom layer formed of polycrystalline silicon and having a top layer formed of low resistance material, each layer thereof contacting the other at opposite ends extending on an upper surface of said frame shaped field region and located on said gate silicon oxide layer; and

an insulating layer for insulating between said two-layered electrode and said pair of wiring layers and between said frame shaped field oxide layer and said pair of wiring layers.

5,293,060

SEMICONDUCTOR DEVICE WITH DIFFUSION WELL ISOLATION

Shigeki Komori, and Katsuhiro Tsukamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 906,890

Claims priority, application Japan, Jul. 17, 1991, 3-176982; Apr. 8, 1992, 4-87330

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—544 6 Claims

1. A semiconductor device comprising:

a semiconductor substrate having an active region defined in a surface thereof;

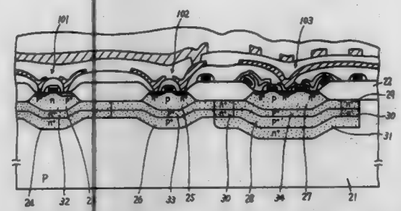
as isolation oxide film formed on the surface of said semiconductor substrate for isolating said region;

an upper well of a first conductivity type in said active region formed from the surface of said semiconductor substrate to a predetermined depth in said semiconductor substrate;

a first conductivity type layer formed as a buried layer extending continuously along the entire area of said active region to enclose the bottom of said upper well of the first conductivity type;

a lower well of the first conductivity type formed as a buried layer extending along the entire area of said active region to enclose the bottom of said first conductivity type layer, and

a second conductivity type well of a predetermined thick-



ness formed as a buried layer to enclose the bottom and the outer circumferential sidewall of said lower well of the first conductivity type and the outer circumferential sidewalls of said upper well of the first conductivity type and said first conductivity type layer of high concentration,

wherein said first conductivity type layer has a concentration higher than that of said upper well of the first conductivity type.

5,293,061

SEMICONDUCTOR DEVICE HAVING AN ISOLATION LAYER REGION ON THE SIDE WALL OF A GROOVE

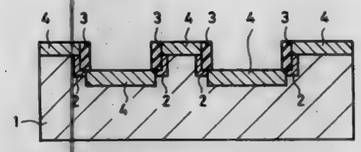
Takashi Hosaka, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Continuation of Ser. No. 678,874, Apr. 4, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,461

Claims priority, application Japan, Apr. 9, 1990, 2-94773

Int. Cl.[5] H01L *29/06, 29/00*

U.S. Cl. 257—622 16 Claims



1. A semiconductor device comprising:

a substrate of semiconductor material having an upper surface, there being at least one groove extending into said substrate from said surface, the groove having a bottom and two side walls which extend at an angle of the surface;

a first impurity diffusion region formed in said surface of said substrate adjacent said groove, at least the first impurity diffusion region containing a first transistor;

a second impurity diffusion region formed by diffusing impurities into said semiconductor material of said substrate at said bottom of said groove, said second impurity diffusion region having an upper surface which is spaced from said upper surface of said substrate in a direction perpendicular to said upper surface of said substrate, at least the second impurity diffusion region containing a second transistor; and

an isolation layer region formed in at least one side wall of said groove between said first impurity diffusion region and said second impurity diffusion region.

5,293,062

FET NONVOLATILE MEMORY WITH COMPOSITE GATE INSULATING LAYER

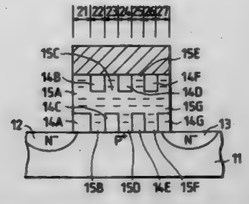
Hironobu Nakao, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 2, 1991, Ser. No. 801,537

Claims priority, application Japan, May 25, 1991, 3-149414

Int. Cl.[5] H01L *29/78, 23/48, 29/46, 29/62*

U.S. Cl. 257—638 4 Claims



1. A field effect transistor nonvolatile memory having a gate insulating layer formed on a channel region of a semiconductor substrate and interposed between a gate electrode and the semiconductor substrate, said gate insulating layer comprising:

a first part including a first oxide layer formed on and in direct contact with the channel region and a first nitride layer formed between the gate electrode and the first oxide layer; and

a second part including a second nitride layer formed on and in direct contact with the channel region and a second oxide layer formed between the gate electrode and the second nitride layer;

wherein the first and second parts are arranged adjacent to each other between a source region and a drain region.

5,293,063

MONOLITHIC STRUCTURE COMPRISING TWO SETS OF BIDIRECTIONAL PROTECTION DIODES

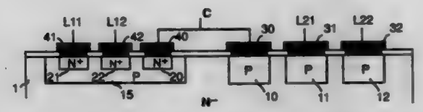
Christine Anceau, Saint Roch, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Feb. 11, 1992, Ser. No. 834,052

Claims priority, application France, Feb. 12, 1991, 91/01975

Int. Cl.[5] H01L *29/06*

U.S. Cl. 257—653 5 Claims



1. Protective system for at least two groups of electrical lines exposed to different breakdown voltages per group, comprising:

a plurality of head-to-tail diodes each connected between a reference potential and a corresponding one of said lines, said head-to-tail diodes forming a set of diodes for each group of lines and for each one of said breakover voltages;

wherein said sets of diodes are monolithically assembled about a common substrate of a first conductivity type disposed in a plane;

wherein each of said set of diodes includes a plurality of regions of a conductivity different from said substrate and formed in parallel upon said substrate, each being provided with a metallisation on top of it, one metallisation being connected to said reference potential to form with the associated region a single and common tail diode for the set, the other metallisations of a set being connected to the respective lines of the same group to form the respective head diodes thereof.

5,293,064

LEAD FRAME AND METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

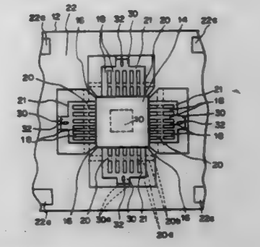
Masanori Yoshimoto; Kazuto Tsuji; Masao Sakuma, all of Kawasaki, and Kouichi Takeshita, Satsuma, all of Japan, assignors to Fujitsu Limited, Kawasaki and Kyushu Fujitsu Electronics Limited, Satsuma, both of Japan

Filed Feb. 3, 1992, Ser. No. 829,221

Claims priority, application Japan, Feb. 7, 1991, 3-016361

Int. Cl.[5] H01L *23/50*

U.S. Cl. 257—666 16 Claims



1. A lead frame comprising:

at least one set of substantially parallel leads, the leads respectively having inner ends for connection to a semiconductor chip, outer ends for external connection, and central portions therebetween;

each set of substantially parallel leads having a corresponding outer tiebar interconnecting the respective outer ends of the leads; and

each outer tiebar having at least one guide hole therein, of an elongated configuration and with the longer dimension thereof parallel to the leads, for engaging a locating pin during bending of the leads from a substantially planar initial configuration to a final configuration in which the respective leads of each set are bent in the corresponding central portions thereof thereby to dispose the respective outer ends of the leads of each set in a second plane, different from the first plane, the corresponding outer tiebar maintaining the interconnection of the outer ends of the leads of the at least one set in the initial configuration and during bending thereof into the final configuration and being severable therefrom after bending into the final configuration.

5,293,065

LEAD FRAME HAVING AN OUTLET WITH A LARGER CROSS SECTIONAL AREA THAN THE INLET

Min Y. Chan, Singapore, Singapore, assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Aug. 27, 1992, Ser. No. 936,159

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—667 5 Claims

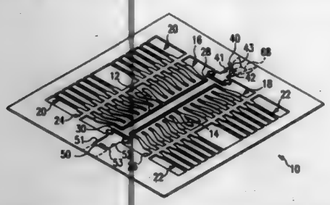
1. A lead frame for an integrated electrical circuit comprising:

a plurality of elongated conductive leads extending in side by side relationship for attachment with the integrated electrical circuit;

an opening, including a first slot through one portion of the lead frame, for injecting molding compound through the lead frame after the lead frame and attached integrated electrical circuit have been positioned in a mold cavity; and

an opening, including a second slot through a portion of the lead frame opposite from the first slot, for air to escape

from the mold cavity during injection of resin into the cavity, the second slot has a larger cross-sectional flow



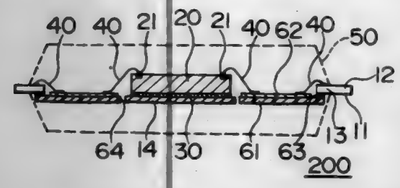
area as compared to the cross-sectional flow area of the first slot.

5,293,066

SEMICONDUCTOR DEVICE MOUNTING STRUCTURE INCLUDING LEAD FRAME AND LEAD PLATE

Kiyoaki Tsumura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 846,906
Claims priority, application Japan, Mar. 8, 1991, 3-043254
Int. Cl.[5] H01L *23/48, 29/44, 29/82, 29/60*
U.S. Cl. 257—668 **15 Claims**



1. A semiconductor device mounting structure comprising:
a unitary main lead frame having a reverse structure and an obverse structure and including a peripheral frame, a die pad disposed within said peripheral frame, suspending leads supporting said die pad and extending from said peripheral frame, and a plurality of connecting leads, each connecting lead having an inner end and an outer end, said connecting leads being arranged around and spaced from said die pad at said peripheral frame; and
a terminal lead plate including an electrically insulating resin layer having a reverse surface and an obverse surface, a central opening receiving said die pad, a plurality of metal terminal leads disposed on the obverse surface of said electrically insulating resin layer, each terminal lead having an inner end and an outer end, each of said terminal leads extending radially relative to said die pad toward the inner end of a corresponding connecting lead wherein at least part of the reverse surface of said main lead frame is in contact with at least part of the obverse surface of said electrically insulating resin layer.

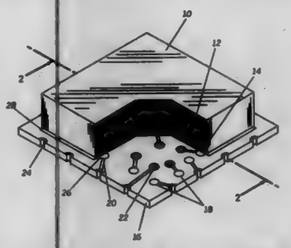
5,293,067

INTEGRATED CIRCUIT CHIP CARRIER

Kenneth R. Thompson, Sunrise; Kingshuk Banerji, Plantation, and William B. Mullen, III, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 704,471, May 23, 1991, abandoned. This application Jan. 12, 1992, Ser. No. 898,231
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—668 **14 Claims**

1. A semiconductor device assembly, comprising:
an integrated circuit chip having a length, a width, and an active surface having interconnection pads disposed thereon, and electrically conducting bumps on the interconnection pads;
a circuit carrying substrate having;
a length, a width, a top side, and a bottom side;
plated through holes;
a metallization pattern on the top side, comprising bonding pads corresponding to the integrated circuit chip interconnection pads, the bonding pads connected by conductive runners to corresponding plated through holes positioned away from the bonding pads; and



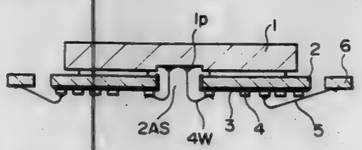
an array of solder pads on the bottom side, connected to the metallization pattern by the plated through holes, the distance between the individual solder pads being greater than the distance between the individual bonding pads; and
the integrated circuit chip attached to the bonding pads by means of the electrically conducting bumps, at least some of the plated through holes being covered by the active surface of the integrated circuit chip, and the length and width of the circuit carrying substrate, each being a maximum of about 0.1 inches greater than the length and width of the integrated circuit chip.

5,293,068

SEMICONDUCTOR DEVICE

Ryuji Kohno, Ibaraki; Makoto Kitano, Tsuchiura; Asao Nishimura, Ushiku; Akihiro Yaguchi, and Sueo Kawai, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 649,712, Feb. 1, 1991, Pat. No. 5,159,434. This application Oct. 13, 1992, Ser. No. 959,613
Claims priority, application Japan, Feb. 1, 1990, 2-023457
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Int. Cl.[5] H01L *39/02, 23/12, 23/14*
U.S. Cl. 257—676 **12 Claims**



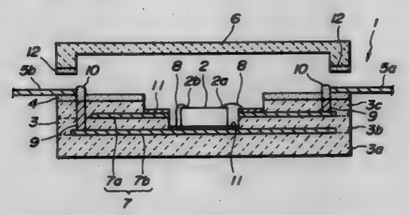
1. A semiconductor device comprising:
a chip pad having a conducting pattern;
a semiconductor chip having at least one electrode pad to be coupled to the chip pad; and
at least one lead connected via the conducting pattern to the electrode pad,
wherein the chip pad, the chip and at least a portion of the leads are encapsulated,
wherein at least one through-hole is formed in said chip pad at a position corresponding to the electrode pad of the semiconductor chip,
wherein said conducting pattern is formed on an insulating coat formed on the chip pad,
wherein the semiconductor chip is mounted on a surface of the chip pad opposite to a surface thereof on which the conducting pattern is formed in such a manner that the electrode pad faces towards said through-holes,
wherein the electrode pad of the semiconductor chip is electrically connected to said conducting pattern by at least one first conducting member provided within said through-hole, and
wherein said conducting pattern is electrically connected to said leads by at least one second conducting member, and
wherein said first conducting member is a conducting wire for connecting the electrode pad and said conducting pattern.

5,293,069

CERAMIC-GLASS IC PACKAGE ASSEMBLY HAVING MULTIPLE CONDUCTIVE LAYERS

Naomiki Kato, and Kazuyuki Maruyama, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 12, 1992, Ser. No. 974,894
Claims priority, application Japan, Nov. 15, 1991, 3-300433; Sep. 1, 1992, 4-258962
Int. Cl.[5] H01L *23/02, 23/12, 39/02, 23/29*
U.S. Cl. 257—698 **20 Claims**



1. An IC package assembly comprising:
a ceramic base having a laminated structure including first and second conductive layers;
an IC chip installed on said base and having a plurality of power source terminals electrically connected to said first conductive layer by wire bonding and a plurality of earth terminals connected to said second conductive layer by wire bonding;
a first external lead electrically connected to said first conductive layer to serve as a power source lead;
a second external lead electrically connected to said second conductive layer to serve as an earth lead;
first sealing glass means for securing said first and second external leads to said base;
a closure member; and
second sealing glass means for securing said closure member to said base and hermetically sealing said IC chip;
said first sealing glass means further comprising a sheet of first low temperature glass having a pair of openings filled with silver glass for electrically connecting said first and second external leads to said first and second conductive layers, respectively.

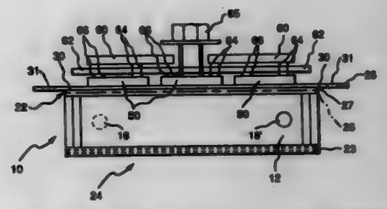
5,293,070

INTEGRATED HEAT SINK HAVING A SINUOUS FLUID CHANNEL FOR THE THERMAL DISSIPATION OF SEMICONDUCTOR MODULES

James F. Burgess; Wivina A. A. Rik DeDoncker, both of Schenectady; Donald W. Jones, Burnt Hills, and Constantine A. Neugebauer, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 681,845, Apr. 8, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,603
Int. Cl.[5] H01L *23/02, 25/04;* **H02B** *1/00;* **H02K** *5/00*
U.S. Cl. 257—714 **3 Claims**

1. An electronic semiconductor module heat sink for providing direct heat exchange medium contact with a module electrode and possessing a uniform TCE, comprising:
a) a base having generally a block shape and comprised of a first thermally conductive material, said base containing a sinuous channel therethrough which communicates between inlet and outlet means;
b) a first place disposed on top of said base and covering said channel, said first plate comprising said module electrode, said module electrode comprising an electrically and thermally conductive element layer direct bonded to a ceramic substrate, said ceramic substrate contacting directly with said sinuous channel such that a plurality of semiconductor chips that are soldered to said top-disposed plate contact, in common, said electrically and thermally conductive element layer of said module electrode and are in thermal communication with said channel through said electrically and thermally conductive element layer and said ceramic substrate; and
c) a second plate disposed on said base opposite said top-disposed plate and comprising a second thermally conductive material which is TCE-compatible with said base and covers said channel opposite said top-disposed plate.

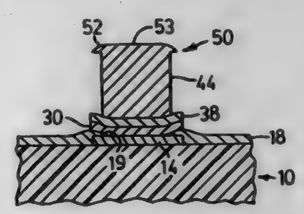


5,293,071

BUMP STRUCTURE FOR BONDING TO A SEMI-CONDUCTOR DEVICE

George Erdos, Toronto, Canada, assignor to Gennum Corporation, Burlington, Canada

Filed Feb. 18, 1992, Ser. No. 836,580
Int. Cl.[5] H01L *29/440, 29/460*
U.S. Cl. 257—737 **5 Claims**



1. In an integrated semi-conductor device having a surface and a laterally extending conductive termination pad on said surface, and a protective passivation layer covering said surface and overlapping the edges of said pad, said passivation layer having an opening therein having edges, said opening being of lateral dimensions between said edges of said opening which are less than the lateral dimensions of said pad to expose a portion of said pad through said opening, an improved bump structure extending vertically above said pad for connection of a lead to said device, said bump structure comprising a lower bump portion having a lower layer of a barrier material, said lower bump portion further having an upper layer of a soft conductive material different from said barrier material and overlying said lower layer, said soft conductive material being gold, said upper layer entirely covering said lower layer and said lower layer having lateral dimensions greater than the

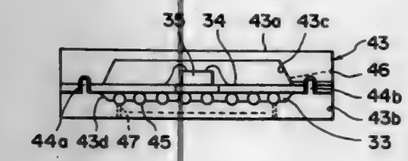
lateral dimensions of said opening, said lower bump portion being located over said opening and having side margins extending laterally beyond the edges of said opening to cooperate with said passivation layer to seal said pad, and an upper bump portion having a top and a stem of a soft conductive material different from said barrier material, said stem having side margins and being of lateral dimensions less than those of said opening, said stem being located over said lower bump portion and over said opening with said side margins of said stem being entirely within said edges of said opening, said stem being of vertical thickness greater than the vertical thickness of said lower bump portion, said lead being thermo-compression bonded onto said top of said upper bump portion, the vertical thickness of said lower layer in said side margins of said lower bump portion which extend laterally beyond said side margins of said stem being between 1,000 Angstroms and 10,000 Angstroms, there being no intervening layer between said upper layer of said lower bump portion and said stem, so that when said lead is compressed downwardly onto said top of said upper bump portion the compressive forces transmitted through said stem will be primarily applied directly through said lower bump portion to the portion of said pad immediately below said stem and will not tend to crack said passivation layer, and said side margins of said lower bump portion form a protective sealing skirt extending laterally beyond said edges of said opening to seal said pad.

5,293,072

SEMICONDUCTOR DEVICE HAVING SPHERICAL TERMINALS ATTACHED TO THE LEAD FRAME EMBEDDED WITHIN THE PACKAGE BODY

Kazuto Tsuji; Tetsuya Hiraoka, both of Kawasaki; Tsuyoshi Aoki, Sagamihara, and Junichi Kasai, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 720,209, Jun. 24, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,802
Claims priority, application Japan, Jun. 25, 1990, 2-165979
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—737 **6 Claims**



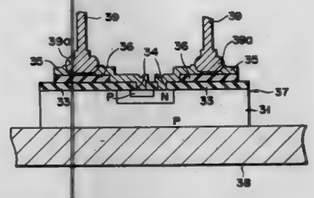
6. A semiconductor device accommodated in a package, comprising:
a semiconductor chip;
a package body for accommodating the semiconductor chip, said package body comprising a metallic lead frame having a top surface and a bottom surface;
the package body comprising a plastic material encapsulating the semiconductor chip and the metallic lead frame therewithin and having a plurality of openings formed in a bottom portion thereof and exposing therethrough corresponding positions on the bottom surface of the metallic lead frame; and
a plurality of terminal members of a fusible metallic material selectively, electrically connected to the semiconductor chip, each of said terminal members having a spherical form of a substantially identical diameter, the depth of each opening in the package body being less than the diameter, but greater than half the diameter, of the spherical terminal members, at least the surface of each terminal member and the bottom surface of the metallic lead frame being formed of a low melting temperature material, the plurality of terminal members being received, respectively, in the plurality of openings and having uppermost surfaces lying substantially in a common plane and integrally interconnected with the metallic lead frame, at the respective positions on the bottom surface of the metallic lead frame, by corresponding fused regions produced by annealing same together, the spherical terminal members thereby being embedded in said package body and retained with at least the uppermost surfaces thereof embedded in and integral with the respective fused regions of the metallic lead frame and thereby being retained within said package and prevented from coming off, while protruding from the respective openings by a common distance and being connected through the respective fused regions to the semiconductor chip.

5,293,073

ELECTRODE STRUCTURE OF A SEMICONDUCTOR DEVICE WHICH USES A COPPER WIRE AS A BONDING WIRE

Tadaaki Ono, Hyogo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 796,889, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 542,715, Jun. 25, 1990, abandoned. This application Mar. 24, 1993, Ser. No. 37,184
Claims priority, application Japan, Jun. 27, 1989, 1-164533
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—740 **4 Claims**



1. A semiconductor device comprising:
a semiconductor substrate,
a first insulation film formed to said semiconductor substrate;
a metal film having a bonding pad portion formed above said first insulation film;
a second insulation film, containing carbon, formed between said first insulation film and said bonding pad portion and being in contact with said first insulation film and said bonding pad portion, said second insulation film being formed only directly under said bonding pad portion, said second insulation film being stiffer than said first insulation film for preventing stress from locally concentrating under said bonding pad portion, and said second insulation film having a thickness between 500 and 3,000Å; and
a bonding wire made of one of copper and an alloy containing copper connected to said bonding pad portion.

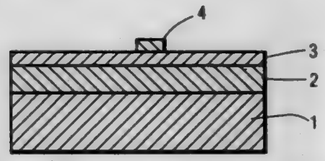
5,293,074

OHMIC CONTACT TO P-TYPE ZNSE

Nikhil R. Taskar; Babar A. Khan, both of Ossining, and Donald R. Dorman, Carmel, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed May 5, 1992, Ser. No. 878,657
Int. Cl.[5] H01L *23/48, 29/46, 29/62*
U.S. Cl. 257—744 **11 Claims**

1. A semiconductor structure comprising a p-type ZnSe layer doped with nitrogen and provided with an improved ohmic contact, said ohmic contact consisting of a layer of $Hg_xZn_{1-x}Te_aSe_bS_c$, wherein x has a value of 0—1, the value of x being 0 at the surface of said ZnSe layer and increasing



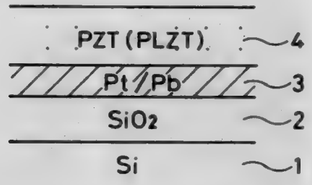
thereafter and a, b and c, each have a value of 0—1 and a+b+c=1.

5,293,075

SEMICONDUCTOR DEVICE WITH PZT/PLZT FILM AND LEAD-CONTAINING ELECTRODE

Shigeo Onishi, Nara; Kazuya Ishihara, Tenri, and Keizo Sakiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka

Filed May 29, 1992, Ser. No. 890,230
Claims priority, application Japan, Sep. 3, 1991, 3-222928
Int. Cl.[5] H01L *29/400, 27/108*
U.S. Cl. 257—769 **3 Claims**



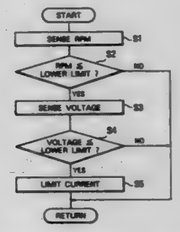
1. A semiconductor device comprising:
a substrate;
an oxide film formed on the substrate;
an electrode formed on the oxide film; and
a PZT or PLZT film formed on the electrode;
the electrode being a deposit of platinum containing lead, wherein said deposit contains 5 to 20 wt. % of lead.

5,293,076

VEHICLE CONTROL APPARATUS

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,131
Claims priority, application Japan, Apr. 16, 1991, 3-082749; Apr. 17, 1991, 3-084950; Apr. 18, 1991, 3-086513
Int. Cl.[5] H02J *7/00, 7/14*
U.S. Cl. 290—40 C **15 Claims**



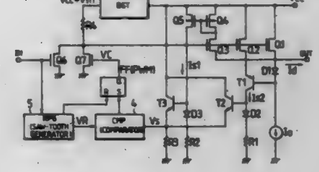
1. A control apparatus for a vehicle equipped with an engine comprising:
an electrically powered actuator;
condition sensing means for sensing a condition indicating a capacity of a battery of the vehicle; and
actuator control means responsive to the condition sensing means for controlling a drive current for the actuator in accordance with the sensed condition of the battery, wherein the actuator control means comprises means for reducing the drive current for the actuator to a lower, finite, non-zero value when the capacity of the battery is below a prescribed level.

5,293,077

POWER SWITCHING CIRCUIT

Kunio Seki, Hinode; Yasuhiro Nunogawa, Takasaki; Hirotaka Mochizuki, Fujioka; Makoto Kobayashi, Sayama, and Makoto Goto, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer Engineering, Ltd., Kodaira, both of Japan

Continuation of Ser. No. 313,859, Feb. 23, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 920,170
Claims priority, application Japan, Feb. 29, 1988, 63-47193; Apr. 5, 1988, 63-83699
Int. Cl.[5] B60L *1/14;* **G05F** *1/00, 1/44;* **H05B** *37/02*
U.S. Cl. 307—10.8 **47 Claims**



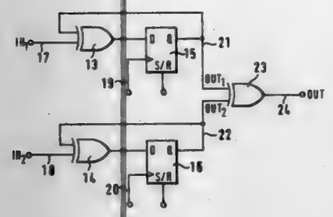
1. A semiconductor integrated circuit device formed on a common semiconductor substrate, comprising:
an insulated gate field-effect transistor, having a gate, source and drain, and wherein the semiconductor substrate functions as a drain region; and a bipolar transistor which is formed on said semiconductor substrate, said bipolar transistor having an emitter, base and collector and wherein the base is connected to the source of said insulated gate field-effect transistor, the emitter is connected to the gate of said insulated gate field-effect transistor, and the collector is connected to the gate or the drain of said insulated gate field effect transistor.

5,293,078

Patent Not Issued For This Number

VOL 1160 ISS 2 MR 8 1994 UMI

5,293,079
FORMATTER CIRCUIT
Ulrich Knoch, Gaertringen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 22, 1992, Ser. No. 964,772
Claims priority, application European Pat. Off., Nov. 11, 1991, 91119190.6
Int. Cl.[5] H03K *5/13*
U.S. Cl. 307—234 9 Claims



1. A formatter circuit for an integrated circuit tester receiving at least two data signals, at least two timing signals, and providing at least one pulse sequence for application to at least one pin of a device under test, said formatter circuit comprising:

at least two edge-triggered, toggle flip-flop means, each said toggle flip-flop means having a clock input, a data input and an output, wherein said timing signals are fed to clock inputs of each said toggle flip-flop means respectively and said data signals are fed to data inputs of each said toggle flip-flop means respectively, each said toggle flip flop means (i) inverting a level on said output in response to a first direction edge transition of a said timing signal when said data input is in a true state and (ii) maintaining unchanged a level on its output when said data input is in a false state, irrespective of edge transitions of a said timing signal, and wherein outputs of said toggle flip-flop means are fed to inputs of EXOR circuitry.

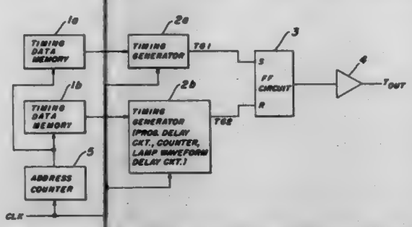
5,293,080
METHOD AND APPARATUS FOR GENERATING TEST WAVEFORMS TO BE APPLIED TO A DEVICE UNDER TEST
Kiyoyasu Hiwada, Kanagawa, and Nobuyuki Kasuga, Tokyo, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 767,242, Sep. 27, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,683
Claims priority, application Japan, Oct. 9, 1990, 2-272017
Int. Cl.[5] H03K *4/00, 5/13, 7/00, 17/00*
U.S. Cl. 307—260 12 Claims

1. Apparatus for storing data defining test waveforms having a series of transitions and generating said test waveforms such that they may be applied to a device under test (DUT) during testing of said DUT by an IC tester, comprising:

a) first storage means for storing first timing information defining rising edge transitions on the basis of a first reference signal, said first timing information including an indication of whether or not a first corresponding timing pulse is to be outputted and when relative to said first reference signal it is to be outputted;

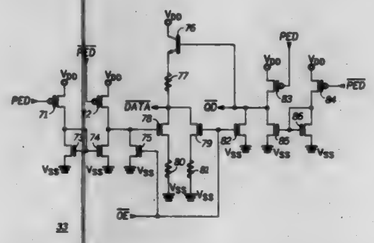
b) second storage means for storing second timing information defining falling edge transitions on the basis of a second reference signal, said second timing information including an indication of whether or not a second corresponding timing pulse is to be outputted and when relative to said second reference signal it is to be outputted;

c) timing generator means, coupled to said first and second storage means, for generating timing pulses only at said transitions of said test waveform on the basis of said first and second timing information and said first and second reference signals, said timing generator means comprising first and second output terminals for outputting first and second timing pulses (TG1, TG2); and



d) waveform generating means, coupled to said timing generator means, for generating test waveforms on the basis of said timing pulses, said waveform generating means comprising a flip-flop circuit, said flip-flop circuit comprising (1) a set input terminal (S) coupled to said first output terminal of said timing generator means, (2) a reset input terminal (R) coupled to said second output terminal of said timing generator means, and (3) an output terminal for outputting said test waveforms, said test waveforms being defined by said first and second timing pulses.

5,293,081
DRIVER CIRCUIT FOR OUTPUT BUFFERS
Jennifer Y. Chiao; Stephen Flannagan, and Taisheng Feng, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 696,407, May 6, 1991, Pat. No. 5,184,033.
This application Sep. 28, 1992, Ser. No. 951,620
Int. Cl.[5] H03K *3/01, 19/0175*
U.S. Cl. 307—270 15 Claims



1. A driver circuit comprising:

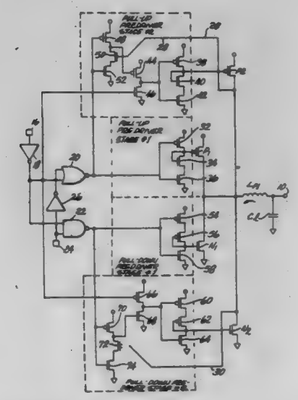
a first transistor having a collector coupled to a first power supply voltage terminal, a base for receiving a first signal, and an emitter;

a second transistor having a first current electrode coupled to said emitter of said first transistor and providing an output signal thereon, a control electrode for receiving a second signal, and a second current electrode coupled through a first resistor to a second power supply voltage terminal;

a third transistor having a first current electrode coupled to said emitter of said first transistor, a control electrode for receiving a control signal, and a second current electrode coupled through a second resistor to said second power supply voltage terminal; and

a fourth transistor having a first current electrode coupled to said base of said first transistor, a control electrode for receiving said control signal, and a second current electrode coupled to said second power supply voltage terminal.

5,293,082
OUTPUT DRIVER FOR REDUCING TRANSIENT NOISE IN INTEGRATED CIRCUITS
Mehdi Bathaee, Riverside, Calif., assignor to Western Digital Corporation, Irvine, Calif.
Continuation of Ser. No. 895,251, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 710,246, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 209,648, Jun. 21, 1988, abandoned. This application Jun. 4, 1993, Ser. No. 71,598
Int. Cl.[5] H03K *4/26, 5/01, 17/16*
U.S. Cl. 307—270 12 Claims



1. An integrated circuit comprising:

a plurality of parallel channels of digital circuitry;

a plurality of connections including a first power supply pin, a second power supply pin, and a plurality of output terminals equal in number to the channels;

a plurality of output driver circuits equal in number to the channels, each output driver having:

a binary data input terminal;

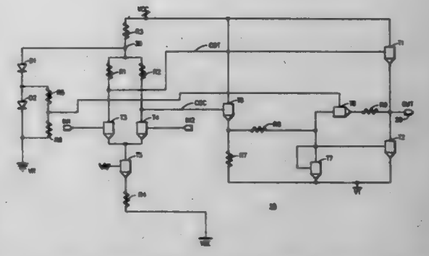
a plurality of first switches connected between the first power supply pin and the corresponding output terminal;

first means as a binary signal at the input terminal changes from a first level to a second level for sequentially closing the individual first switches responsive to different voltage levels at the corresponding output terminal to increase the charging or discharging current in stepwise fashion as the corresponding output terminal is switched to the first power supply pin;

switching means connected between the second power supply pin and the corresponding output terminal; and

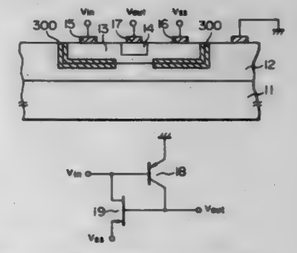
second means as a binary signal at the input terminal changes from the second level to the first level for closing the switching means to switch the corresponding output terminal to the second power supply pin.

5,293,083
FAST LIMITED SWING PUSH-PULL DRIVER
Haluk O. Askin, Clinton Corners; David T. Hui, Poughkeepsie; Bijan Salimi, Wappingers Falls, and Charles B. Winn, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 30, 1992, Ser. No. 906,811
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—443 6 Claims



1. A push-pull driver including means for providing a source of potential with first and second driver transistors connected in series with said source of potential with the emitter of said first transistor connected to the collector of said second transistor at the output node, a differential pair predriver including a third and fourth transistor coupled together at the emitters to a current source, said collector of said third transistor coupled to the base of said first transistor and a first load resistor and the collector of said fourth transistor coupled to a second load resistor and through an emitter follower to the base of said second transistor, the input driver signal applied to the base of one or differentially to both of said third and fourth transistors, the improvement for decreasing the switching times of said driver and lowering the power dissipation comprising a sixth transistor connected between the output node and the base of the second transistor and means for providing a first fixed voltage smaller than said source of potential to the first and second load resistors and providing a second smaller fixed voltage to the base of the sixth transistor to limit both the up and down levels at the output node.

5,293,084
HIGH SPEED LOGIC CIRCUIT
Hiroyuki Itoh, Akigawa; Toshiyuki Usagawa, Yono, and Atsushi Takai, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 9, 1992, Ser. No. 942,181
Claims priority, application Japan, Sep. 10, 1991, 3-230043
Int. Cl.[5] H03K *19/08;* H01L *29/161*
U.S. Cl. 307—446 19 Claims



1. A high speed logic circuit comprising:

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a vertical hetero-junction bipolar transistor, in which two-dimensional carriers formed at a semiconductor hetero-junction interface are used as a base layer, the uppermost layer being a collector layer, the lowest layer being an emitter layer; and wherein

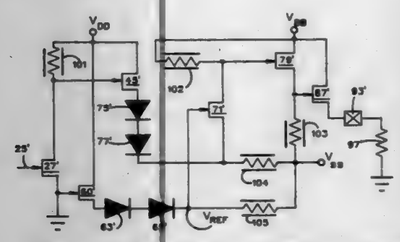
said bipolar transistor has two base electrodes making contact with the base layer, putting a collector electrode on said collector layer horizontally therebetween, and said base electrodes are used at the same time as a source electrode and a drain electrode, respectively, of a field effect transistor using said two-dimensional carriers as an active layer, one of the base electrodes of said bipolar transistor being an input terminal, the other being connected with a power supply, the emitter being grounded, the collector being an output terminal.

5,293,085

GAAS DRIVER CIRCUIT

John J. Ennis, Corona, and Gary L. Heimbigner, Anaheim, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 29, 1985, Ser. No. 728,546
Int. Cl.[5] H03K *19/094, 19/0175, 19/017*
U.S. Cl. 307—475 **4 Claims**



1. A gallium arsenide driver for level shifting and amplifying logic high and low signals and having float capability, comprising in combination:

a level shift circuit comprising a first MESFET having a gate lead for receiving said signals, a drain lead for connection to a first source of potential and a source lead;

a common gate amplifier comprising a second MESFET having a gate lead, drain lead and a source lead;

at least one level shifting diode connected between the source lead of the first MESFET and the source lead of the second MESFET;

a pull down device connected between the source lead of the second MESFET and a second source of potential;

a further source of potential;

a pull up device connected between said drain lead of the second MESFET and said further source;

an output MESFET having a source output transmission line load connected to ground;

a bidirectional pad interposed between the transmission line load and the output MESFET source;

the output MESFET having its drain connected to said further source;

a gate connection for said output MESFET from the drain lead of said second MESFET; and,

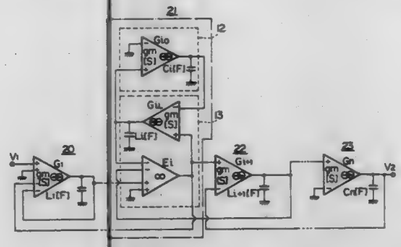
means applying a fixed reference potential to the gate lead of said second MESFET to establish conduction therein only when a low logic signal is applied to its source, whereby when the signal is low at the gate of the first MESFET, the output MESFET is cut off because said low signal is down shifted by the level shifting diode such that the second MESFET is turned on to decrease the gate signal at the output MESFET.

5,293,086

POLAR LEAPFROG FILTER

Hiroshi Tanigawa; Hiroshi Kondo; Tsuneo Tohyama, and Isao Fukai, all of Tsurugashima, Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 858,063
Claims priority, application Japan, Mar. 29, 1991, 3-089440
Int. Cl.[5] H03F *3/64, 1/34*
U.S. Cl. 307—520 **2 Claims**



1. A polar leapfrog filter comprising:

at least one polar network which comprises a differentiator constituted by an operational amplifier having input and output terminals, and a first integrator for providing negative feedback to said operational amplifier, said first integrator comprising a first capacitor and a first variable transconductance amplifier, and a second integrator for providing negative feedback to said first integrator, said second integrator comprising a second capacitor and a second variable transconductance amplifier;

a third and a fourth integrator provided at input and output portions of said filter respectively; and

a fifth integrator provided at a stage following said polar network;

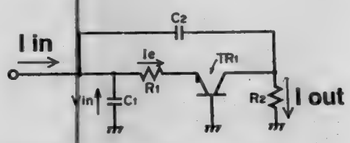
wherein the sum of all the circuits is selected to be even and equal to the order of said filter; adjacent ones of said circuits are connected in such a manner that leapfrog type negative feedback is applied therebetween; and only said third integrator is constructed in the form of self negative feedback type.

5,293,087

FILTER CIRCUIT AND FILTER INTEGRATED CIRCUIT

Hiroshi Hamano; Izumi Amemiya; Yoichi Oikawa; Takuji Yamamoto; Takeshi Ihara, and Yoshinori Nishizawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 19, 1992, Ser. No. 963,574
Claims priority, application Japan, Oct. 17, 1991, 3-269772
Int. Cl.[5] H03K *5/01*
U.S. Cl. 307—520 **4 Claims**



1. A low-pass filter circuit, comprising:

a common-base transistor;

a first resistor connected between an input signal source and an emitter of a common-base transistor;

the first capacitor connected between said input signal source and a reference voltage point;

a second capacitor connected between said input signal source and a collector of the common-base transistor; and

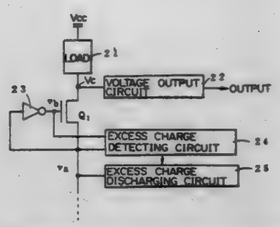
a second resistor connected between the collector of the common-base transistor and the reference voltage point.

5,293,088

SENSE AMPLIFIER CIRCUIT

Yasushi Kasa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 15, 1990, Ser. No. 523,507
Claims priority, application Japan, May 16, 1989, 1-121927
Int. Cl.[5] G11C *7/00*
U.S. Cl. 307—530 **11 Claims**



1. A sense amplifier circuit for use in a non-volatile memory comprising:

excess charge detecting means for detecting an excess charge on a bit line of said non-volatile memory and producing a detection output when a potential of said bit line exceeds a predetermined value, said excess charge detecting means comprising a comparator for detecting the excess charge based on a reference voltage supplied to said comparator; and

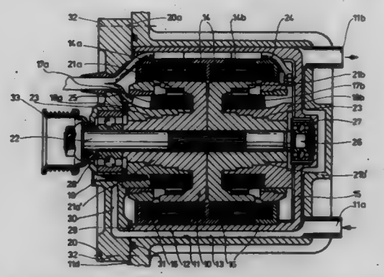
excess charge discharging means for discharging said excess charge on said bit line to return the bit line potential to the predetermined value in response to said detection output.

5,293,089

LIQUID-COOLED ELECTRIC GENERATOR

Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00871, § 371 Date Apr. 22, 1992, § 102(e) Date Apr. 22, 1992, PCT Pub. No. WO91/09445, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 14, 1990, Ser. No. 849,407
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1989, 3941474
Int. Cl.[5] H02K *9/19, 5/18, 5/20, 16/00*
U.S. Cl. 310—54 **22 Claims**



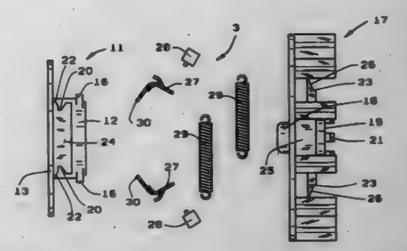
1. A liquid-cooled electric generator for a motor vehicle comprising a housing including two bearing brackets, each of the bearing brackets having a rotor shaft bearing, a rotor mounted on a rotor shaft in the housing with the rotor shaft engaged in the bearings, a stator in the housing, and liquid cooling means including a cooling jacket for a cooling liquid, the housing being received in a part of the motor vehicle which has an accommodating cavity so that the cooling jacket is formed between a closed external surface of the housing wall of the cooling jacket and the cavity of the part of the motor vehicle which forms an outer wall of the cooling jacket.

5,293,090

CENTRIFUGAL ACTUATOR ASSEMBLY

Ray Heilman, Florissant, and Jeffrey Sherman, Maryland Heights, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 19, 1993, Ser. No. 21,158
Int. Cl.[5] H02K *11/00;* **H01H** *35/10*
U.S. Cl. 310—68 E **6 Claims**



1. In an electric motor having a stator assembly and a rotor assembly including a shaft, a starting winding, a starting switch for energizing and deenergizing the starting winding, a centrifugal actuator assembly rotatably mounted on the rotor shaft for actuating the starting winding, the centrifugal assembly having a base for mounting on the rotor shaft, a pair of actuating levers having mirror image legs mounted on the base, and a sleeve in slidable relationship with the rotor shaft having an annular collar at one end and a shoulder extending normally from the collar to provide seats for the legs of the acuator levers, the improvement in the sleeve comprising:

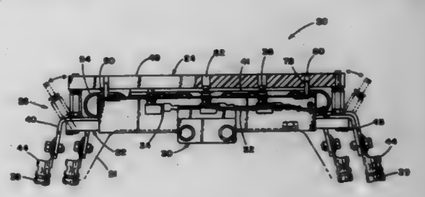
ramp means formed on the shoulder at the junction of the shoulder and the collar and extending from the collar to the seats to provide guides for the insertion of the lever legs in the seats during assembly.

5,293,091

GENERATOR OUTPUT RECONNECTION SWITCH

Clyde S. Edwards, and Richard R. Scroggins, both of Fridley, Minn., assignors to ONAN Corporation, Minneapolis, Minn.

Filed Dec. 24, 1991, Ser. No. 813,349
Int. Cl.[5] H02K *11/00*
U.S. Cl. 310—71 **14 Claims**



1. An apparatus comprising:

(a) an electrical generator having a plurality of armature coils;

(b) a first board mounted on the generator and including a plurality of electrically conducting buses, to which input and output leads are attachable proximated one end, and

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having an electrical contact proximate another end, selected ones of the leads are also attached to selected ones of the field coils; and

(c) a second board being interchangeably attachable to the first board, including a plurality of electrically conducting buses, wherein the buses are configured and arranged to selectively electrically connect selective ones of the contacts on the first board, thereby electrically connecting selected ones of the input leads to selected ones of the output leads to provide predetermined generator electric output, when the second board is not in place the connections are not made.

5,293,092

ASSEMBLED COMMUTATOR

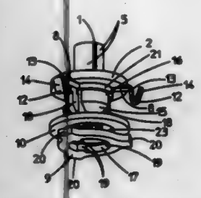
Georg Strobl, Stuttgart, Fed. Rep. of Germany, assignor to Johnson Electric S.A., Switzerland

Filed Nov. 12, 1992, Ser. No. 976,167

Claims priority, application United Kingdom, Nov. 12, 1991, 9124017; Apr. 15, 1992, 9208306

Int. Cl.[5] H02K *13/04*

U.S. Cl. 310—233 **21 Claims**



1. An assembled commutator comprising:

an insulating commutator body having a cylindrical outer surface, an integral, radially extending axial support means formed with axially extending openings each having a passage which extends through the axial support means, the axial support means having first and second sides, the first side adjacent the cylindrical outer surface, the second side being opposite the first side, and further comprising an axial extension on the second side of the axial support means;

at least three commutator segments mounted on the body, each having an arcuate brush contacting portion seated on the cylindrical outer surface of the body, and further having radial positioning means, comprising an axial terminal stem portion extending axially from one end of the brush contacting portion into one of the axially extending openings so that the axial terminal stem portions are disposed within respective ones of the passages and the commutator segments are held securely in position on the commutator body, and further having a radial terminal stem portion disposed at approximately a right angle to the axial terminal stem portion extending respectively from the axial terminal stem portion on the second side of the axial support means;

an electromagnetic interference suppressor element having a first aperture therein through which first aperture the axial extension extends and said element being in electrical contact with the radial terminal stem portions; and

an insulating clamping member having a second aperture therein through which second aperture the axial extension extends, for clamping the radial terminal stem portions and the suppressor element together between the axial support means and the insulating clamping member.

5,293,093

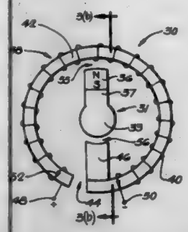
LIMITED LARGE ANGLE ROTARY DYNAMOELECTRIC MACHINE

Stephen B. Warner, Evanston, Ill., assignor to MPC Products Corporation, Skokie, Ill.

Filed Nov. 25, 1991, Ser. No. 797,576

Int. Cl.[5] H02K *1/12*

U.S. Cl. 310—254 **23 Claims**



1. A dynamoelectric machine comprising:

a stator including a broken toroid defining a first air gap and an L-shaped extension attached to said stator at a point of said stator adjacent to said first air gap, said broken toroid defining a cylindrical area;

a first wire coil wound helically about said broken toroid, said first wire coil defining first and second terminals;

a rotor including a generally cylindrical portion and a magnetized portion, said magnetized portion located at least partially within said cylindrical area defined by said broken toroid; and

said rotor and said L-shaped extension defining a second air gap.

5,293,094

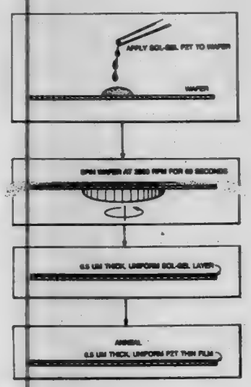
MINIATURE ACTUATOR

Anita M. Flynn, Arlington; Lee S. Tavrow, Somerville; Rodney A. Brooks, Lincoln, all of Mass.; Leslie E. Cross, State College, Pa., and Stephen F. Bart, Watertown, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 405,460, Sep. 8, 1989, abandoned. This application Dec. 5, 1990, Ser. No. 626,224

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—323 **16 Claims**



1. A motor comprising

a substrate;

a stator comprising a thin film formed on said substrate by spinning a sol of ferroelectric material onto said substrate, and an array of contacts in electrical contact with said thin film;

an actuator in frictional contact with said stator; and

an electrical excitation source for supplying phased electrical signals to said contacts, the phase and amplitude of said signals being such as to produce a travelling wave of mechanical deformation in said ferroelectric thin film and thereby cause movement of said actuator relative to said stator.

5,293,095

AIR PRESSURE VARIATION DETECTOR

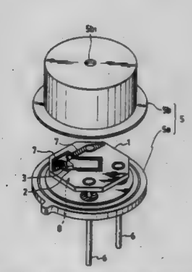
Yukitoshi Tamura, Sakura, Japan, and Stephen J. Lane, Chadderworth, United Kingdom, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan and Racom Intellectual Property Ltd., Newbury, United Kingdom

Filed Oct. 23, 1991, Ser. No. 781,991

Claims priority, application Japan, Oct. 31, 1990, 2-294510

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—338 **8 Claims**



1. An air pressure variation detector comprising:

a base plate having a through hole or a cavity;

a piezoelectric element equipped on both the surfaces thereof with electrodes, formed in a strip-like shape having a width narrower than the inside width of said through hole or cavity and a thickness thinner than 300 μm, and fixed to said base plate in the form of a cantilever;

an impedance converter circuit consisting of a field effect type transistor and a leak resistor; and

an electrically conductive accommodating container having a vent hole;

said base plate and said piezoelectric element being disposed within said accommodating container; and

said air pressure variation detector being adapted to be capable of detecting variations of pressure of air admitted into said accommodating container through said vent hole by:

an end of said piezoelectric element being supported on said base plate so that said piezoelectric element can be vibrated in said through hole or cavity of said base plate,

an output terminal of said piezoelectric element being connected to a gate of said field effect type transistor of said impedance converter circuit, and

said leak resistor being connected between said gate and a ground terminal of said piezoelectric element.

5,293,096

CATHODE RAY TUBE DEVICE HAVING INSULATOR COATING

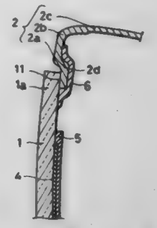
Kouji Nakamura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo

Filed Jun. 3, 1992, Ser. No. 892,769

Claims priority, application Japan, Jun. 13, 1991, 3-141532

Int. Cl.[5] H01J *29/88*

U.S. Cl. 313—477 R **7 Claims**



1. A cathode ray tube for an image display comprising:

a glass faceplate forming an image display surface;

said metal funnel connected to a peripheral part of said faceplate and forming a side wall;

a phosphor screen coated on an inside surface of said faceplate;

a metal film covering said phosphor screen, said metal film being spaced from metal funnel along the peripheral part of said faceplate; and

an insulating layer covering mutually adjacent inside areas of said metal film and said faceplate.

5,293,097

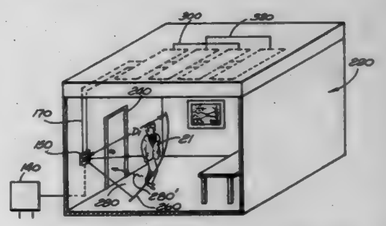
FULLY AUTOMATIC ENERGY EFFICIENT LIGHTING CONTROL AND METHOD OF MAKING SAME

Brian E. Elwell, Brentwood, Calif., assignor to Novitas, Inc., Culver City, Calif.

Continuation-in-part of Ser. No. 619,794, Nov. 29, 1990, Pat. No. 5,142,199. This application Nov. 27, 1991, Ser. No. 799,490

Int. Cl.[5] H05B *37/02, 41/36*

U.S. Cl. 315—154 **37 Claims**



1. An energy efficient lighting control, comprising:

preselection means having at least three selectable settings, a first setting for activating all of at least two banks of lights within a bounded area, said banks of lights electrically connected thereto, a second setting for activating a portion only of said banks of lights and a third setting for not activating any of said banks of lights, said preselection means being changeably preset to selectively activate all, none or a portion only of said banks of lights; and

means for detecting an occupant within said bounded area, said detecting means coupled to said preselection means and said banks of lights and adapted to activate all, none or a portion of said banks of lights upon detecting an occupant within said bounded area, depending upon if said

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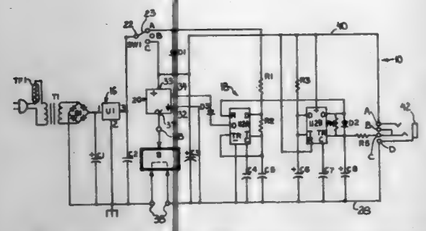
preselection means is preset to said first, said second or said third setting.

5,293,098

POWER SUPPLY FOR ELECTROLUMINESCENT LAMPS

Greg A. Brownell, South Bend, Ind., assignor to SEG Corporation, Mishawaka, Ind.

Filed Feb. 26, 1992, Ser. No. 846,251
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.3 **14 Claims**



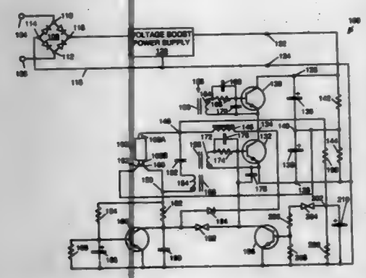
1. In combination, a power supply and an electroluminescent lamp, said lamp being substantially capacitive, said power supply including;
a voltage source means for providing a DC voltage;
converting means operatively associated with said voltage source means for converting said DC voltage into a sinusoidal voltage of a predetermined frequency, said converting means including an output, said sinusoidal voltage being at said output with said DC voltage applied to said converting means;
said converting means output connected to said lamp;
said lamp being illuminated by said sinusoidal voltage when said converting means is turned on and connected to said lamp;
said capacitive lamp constituting means for adjusting the output frequency of said sinusoidal voltage as said lamp ages.

5,293,099

CIRCUIT FOR DRIVING A GAS DISCHARGE LAMP LOAD

Andrew Bobel, Des Plaines, Ill., assignor to Motorola Lighting, Inc., Buffalo Grove, Ill.

Filed May 19, 1992, Ser. No. 885,173
Int. Cl.[5] H04B *37/02, 39/04, 41/36*
U.S. Cl. 315—225 **16 Claims**



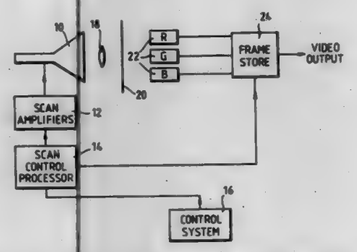
1. A circuit for driving a gas discharge lamp load, the circuit comprising:
oscillator means;
initiating means for initiating operation of the oscillator means after power-up of the circuit;
first disabling means for disabling the initiating means after a predetermined time following power-up of the circuit; and
second disabling means for disabling the oscillator means in response to a fault condition after the predetermined time.

5,293,100

CATHODE RAY TUBE BURN COMPENSATION

Peter R. Swinson, St Albans, and Terence W. Mead, Hertford, both of United Kingdom, assignors to Rank Cintel Limited, United Kingdom

Filed Dec. 9, 1992, Ser. No. 988,169
Claims priority, application United Kingdom, Jan. 21, 1992, 9201252
Int. Cl.[5] H01J *29/70, 29/72*
U.S. Cl. 315—364 **19 Claims**



1. A method for compensating for phosphor burn in a Cathode Ray Tube (CRT) of a flying spot film scanner which scans frames of film to convert between images stored on film and images represented by video signals, comprising:
scanning a frame of film with the CRT raster to produce a video signal representative of an image exposed on the film frame, the raster scan having a vertical component and a horizontal component;
storing the video signal in a frame store for output;
offsetting said vertical component of said scan by a distance equal to a non-integral scan line spacing;
performing an offset scan by rescanning said film frame in the offset position;
supressing the video signal produced by the offset scan; and
repeating the signal stored in the frame store in place of the supressed signal.

5,293,101

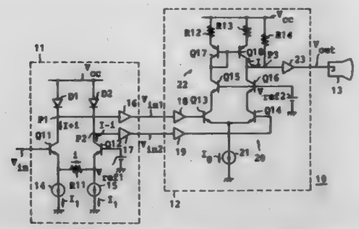
DRIVING CIRCUIT APPARATUS FOR CRT

Hisao Sakurai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 916,380
Claims priority, application Japan, Jul. 25, 1991, 3-210135
Int. Cl.[5] H01J *29/52*
U.S. Cl. 315—383 **9 Claims**

1. A driving circuit apparatus comprising:
an IC incorporating logarithmic converting means for logarithmically compressing an input video signal and outputting as an output video signal;
exponential converting means coupled directly to said logarithmic converting means for inverse logarithmically converting and outputting said output video signal outputted from said logarithmic converting means as an output image signal; and

driving means for outputting said output image signal outputted from said exponential converting means to a high



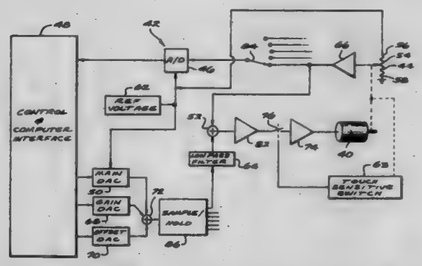
resolution image receiving tube for use in computer aided design and drive controlling said image receiving tube.

5,293,102

AUTOMATED FADER SYSTEM

Joseph Martinson, Alhambra, and Dale Manquen, Thousand Oaks, both of Calif., assignors to Martinsound Technologies, Inc., Alhambra, Calif.

Division of Ser. No. 479,983, Feb. 14, 1990, which is a continuation-in-part of Ser. No. 444,273, Dec. 1, 1989, Pat. No. 5,102,373. This application Apr. 1, 1992, Ser. No. 861,615
Int. Cl.[5] G05B *19/00*
U.S. Cl. 318—2 **18 Claims**



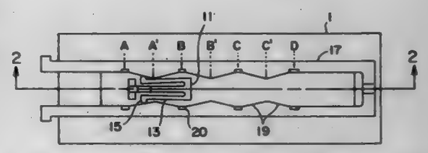
1. A servo control system for detecting a present position of a device and for moving said device to a selected position, said servo system comprising:
a position sensor to develop a first analog signal indicative of said present position of said device;
an analog-to-digital converter to convert said first analog signal to a first digital signal;
a controller to which said first digital signal is applied to develop a second digital signal indicative of said selected position;
a digital-to-analog converter to convert said second digital signal to a second analog signal;
a summing circuit to develop an electrical signal which is a difference between said first analog signal and said second analog signal;
means for manually moving said device to different positions;
a motor operatively coupled to said device, said electrical signal being coupled to said motor;
a motor drive transconductance amplifier having an electrical signal input and a current output, said current output being proportional to said electrical signal input and said output being electrically coupled to said motor;
isolation means located between said summing circuit and said transconductance amplifier for electrically isolating said transconductance amplifier from said summing circuit, said isolation means enabling the transconductance amplifier to ignore position error signals during manual movement and to develop a voltage equal in amplitude and polarity to any induced EMF developed by said motor during manual movement of said device to reduce the drag felt by the manual operator by eliminating dynamic braking torques; and
said isolation means further comprising one or more switches serially disposed between said summing circuit and said transconductance amplifier, said switch being enabled whenever said means for manually moving said device to different positions is touched manually by said manual operator, said isolation means switching a low current level, thereby enabling said switch to be implemented with a small-signal transistor.

5,293,103

QUIET FAN SPEED CONTROL WITH LINEAR ADJUSTMENT ACTUATOR

Robert S. Hanna, Coopersburg, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Feb. 12, 1990, Ser. No. 478,604
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—268 **15 Claims**



1. An apparatus for manually adjusting the speed of an electric motor driven ceiling fan, comprising:
a) a support plate having an elongated slot and a plurality of holes for mounting to an electrical wallbox;
b) a cradle, mounted on said support plate, having a snap retaining means;
c) a four-position linear slide switch retained by said snap retaining means;
d) first and second capacitors electrically connected to and mounted on either side of said slide switch; and
e) an actuator, slidably retained by said cradle and extending through said elongated slot to selectively position said slide switch in each of a plurality of discrete positions to connect at least one of said capacitors in series with said electric motor.

5,293,104

DRIVE DEVICE FOR MOVABLE STRUCTURAL COMPONENT UNITS

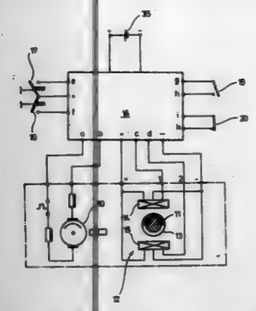
Friedrich-Wilhelm Dreier, Bühl, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00874, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/09198, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 14, 1990, Ser. No. 777,549
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1989, 3941651
Int. Cl.[5] H02P *1/00*
U.S. Cl. 318—280 **6 Claims**

1. A drive device for movable structural component unit, particularly in vehicles such as window lifters, sliding-roof actuators, mirror adjusters and the like, the drive device comprising a reversible electric motor having a rotor shaft driveable in two rotating directions; a control device for switching on said motor in a predetermined rotating direction of said rotor shaft at switch-on command; and a sensor assigned to said rotor shaft of said motor for detecting rotational movements of said rotor shaft, said sensor being effective in a

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switched-off state of said motor, said control device containing an evaluating unit for evaluating signals of said sensor and for generating said switch-on command in a rotating direction opposite the rotational movement of said rotor shaft, said sensor providing an output signal for a predetermined rotary angle of said rotor shaft, said evaluating unit being formed so that it generates a counting pulse for every signal component,



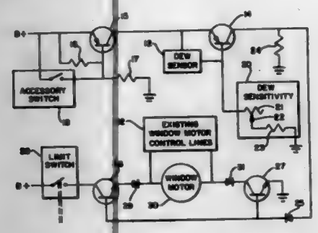
counts the counting pulses and generates the switch-on command at a predetermined number of the counting pulses, said sensor having a permanent magnet which is fixed with respect to rotation relative to said rotor shaft, and two stationary Hall sensors which are offset in the rotating direction of said rotor shaft and supply two pulse sequences composed of square pulses which are phase-shifted to two output channels.

5,293,105

RAIN SENSOR CAR ELECTRIC WINDOW CLOSURE CONTROL

Kenneth O. West, Jr., 3102 O'Henry, Garland, Tex. 75042

Filed Oct. 2, 1992, Ser. No. 955,413
Int. Cl.[5] E05F *15/20*; B60R *16/02*
U.S. Cl. 318—483 **4 Claims**



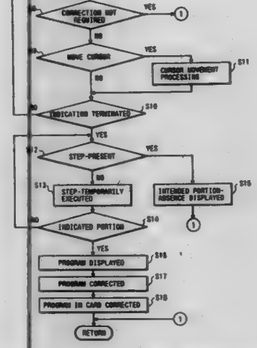
1. A vehicle electric window rain sensor closure control comprising: a solid state on-off electric power device having at least three electrodes; a moisture content sensor element interconnecting first and second electrodes of the solid state on-off electric power device positionable on a vehicle to indicate moisture content consistent with rainfall and correspondingly increase electrical conductivity; electric power source means connected to said first electrode of said solid state on-off electric power device and to said moisture content sensor element; first resistive means connected to said moisture content sensor element and to said second electrode of said solid state on-off electric power device, and to an electric potential reference source forming a voltage divider with the junction of said moisture content sensor element and said resistive means connected to said second electrode; an electric window driven by a window drive motor; an electric power circuit connected to said electric power source means and extended through said window drive motor to circuit connection with said electric potential reference source; and on-off solid state switch means in said electric power circuit, circuit means connected to a third electrode of said solid state on-off electric power device; wherein said third electrode has a connection through second resistive means to said electric potential reference source; wherein an on-off solid state device circuit is a power on-off control in the power supply circuit from a vehicle battery connected as said electric power source means to said vehicle electric window rain sensor closure control; said on-off electric power device is a PNP transistor; said on-off solid state device in the power supply circuit is a PNP transistor; and wherein a resistor and an accessory switch are connected in parallel between the emitter and base of said on-off solid state device PNP transistor, and a resistor is connected between the transistor and ground.

5,293,106

PROGRAM REVIEWING DEVICE IN NUMERICAL CONTROL PROCESSING APPARATUS

Takami Miyamoto, Gifu, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 622,438, Dec. 5, 1990, abandoned. This application Aug. 25, 1992, Ser. No. 932,734
Claims priority, application Japan, Dec. 11, 1989, 1-322176
Int. Cl.[5] B21D *28/00*
U.S. Cl. 318—568.1 **2 Claims**



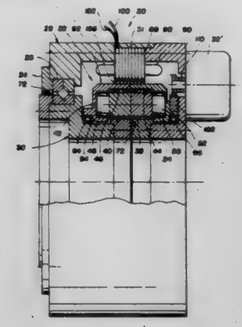
1. A device for reviewing a NC program in a numerical control processing apparatus comprising:
a display;
shape display control means for displaying a representation of a work piece, which would be obtained in accordance with the NC program, on the display;
indicator means for indicating a reviewing portion of the work piece representation displayed on the display;
identifying means for identifying a step of the NC program which corresponds to the indicated reviewing portion; and
step display control means for displaying the step of the NC program which corresponds to the indicated reviewing portion.

5,293,107

MOTORIZED ROTARY JOINT AND METHOD OF CONSTRUCTING A MODULAR ROBOT UTILIZING SAME

Hadi A. Akeel, Rochester Hills, Mich., assignor to FANUC Robotics North America, Inc., Auburn Hills, Mich.

Filed Feb. 24, 1993, Ser. No. 22,000
Int. Cl.[5] B25J *9/00*; H02K *5/167*
U.S. Cl. 318—568.11 **12 Claims**



1. A motorized rotary joint for driving a load coupled thereto, the joint comprising:
a cylindrical power transmission having a central hole;
an electric motor in driving engagement with the power transmission for driving the power transmission;
a hollow housing having an outside dimension and an inside dimension, the housing including first and second housing parts for housing the power transmission and the motor wherein one of the first and second housing parts is adapted to be coupled to the load;
first bearing means disposed between the first and second housing parts for allowing relative rotary movement between the first and second housing parts to drive the load; and
second bearing means disposed within the housing for rotatably supporting the power transmission and the motor wherein the rotary joint provides a central hollow core for passing service lines therethrough and wherein the inside dimension is relatively large in relation to the outside diameter and wherein the electric motor includes a stator supported on one of the housing parts within the housing and a rotor wherein the second bearing means rotatably supports the rotor and wherein the rotor is supported on the power transmission within the housing and wherein the power transmission is a planetary type speed reducer including a carrier and wherein the carrier also supports the rotor.

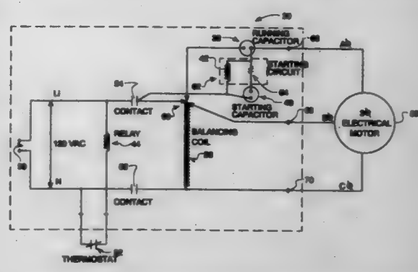
5,293,108

STATIC PHASE CONVERTER

Anthony Spudich, 819 E. Central Ave., Benld, Ill. 62009

Filed Aug. 5, 1991, Ser. No. 740,437
Int. Cl.[5] H02P *1/26*
U.S. Cl. 318—749 **13 Claims**

9. An appliance, such as a refrigerator, comprising:
a housing;
a three phase electrical motor disposed within said housing; and
means for statically converting single phase electrical power to three phase electrical power which includes a set of three output terminals, adapted to be connected to said three phase electrical motor and a pair of input terminals adapted to be connected to a source of single phase electrical power, said converting means including a balancing coil and a capacitor coupled across said output terminals and having predetermined impedances selected to provide relatively balanced phase voltages and phase currents to



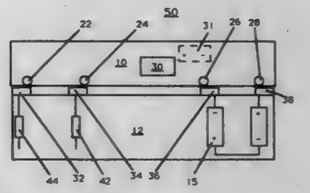
said three phase electrical motor, wherein said converting means is disposed in a compartment having a predetermined volume within said housing.

5,293,109

EARLY RECOGNITION BATTERY DISCONNECT

Steven R. Fischl; Russell E. Gyenes, both of Sunrise, Fla., and Harold Gorenz, Lisle, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1992, Ser. No. 952,090
Int. Cl.[5] H02J *7/00*; H01M *2/10*
U.S. Cl. 320—2 **20 Claims**



1. A battery pack for connection to an electronic product, comprising:
a housing;
energy storage means located within the housing for storing a charge;
a first contact and a second contact coupled to the energy storage means and exposed externally from the housing;
circuitry means coupled to said energy storage means for providing at least interconnection between the first and the second contact and the energy storage means;
at least a third contact exposed externally from the housing and coplanarly disposed with the first and the second contact and coupled to at least one electronic device within the housing; and
means for electronically connecting the first and the second contact of the battery pack to the electronic product after electronically connecting the third contact to the electronic product.

5,293,110

BRIDGE CAPACITOR BANK INSTALLATION

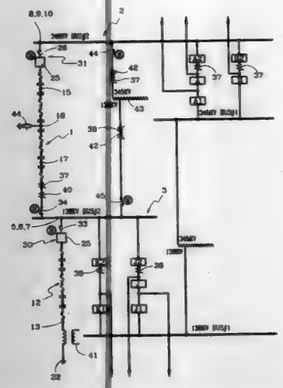
Radu G. Andrei, Columbus, Ohio, assignor to American Electric Power Service Corporation, Columbus, Ohio

Filed Jun. 8, 1992, Ser. No. 895,106
Int. Cl.[5] G05F *1/70*
U.S. Cl. 323—209 **8 Claims**

1. An electrical power system comprising a three phase high voltage system and a three phase low voltage system in phase

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with the high voltage system, and a three phase capacitor bank connected between the high and low voltage systems for generating reactive power and for transferring said reactive power only from the low voltage system into the high voltage system.

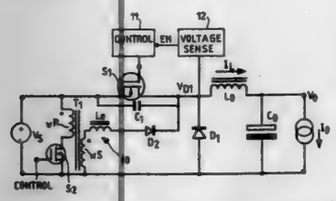


5,293,111

METHOD FOR MINIMIZING THE SWITCHING LOSS IN A POWER SWITCH

Alan H. Weinberg, Sassenheim, Netherlands, assignor to Agence Spatiale Europeenne, Paris Cedex, France

Filed Jan. 22, 1992, Ser. No. 823,752
Claims priority, application France, Jan. 22, 1991, 91 00669
Int. Cl.[5] H02M *3/335*
U.S. Cl. 323—222 **2 Claims**



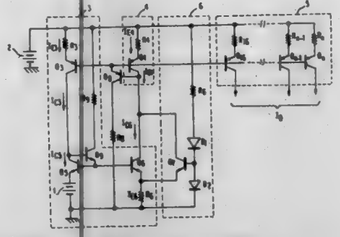
1. A method for minimizing the switching loss in at least one controlled power switch connected in an electric circuit having an input connected across an input voltage source and having an output, the method comprising the step of connecting switching converter means in parallel with the at least one controlled power switch so that the switching converter means is allowed to operate from the input voltage and transfer energy from input to output of the controlled power switch during the turn-on periods of the controlled power switch, the step of connecting switching converter means including providing transformer means having a primary winding and a secondary winding, the primary winding being connected in series with the switching converter means across the input voltage, connecting the secondary winding in series with unidirectional switch means, the secondary winding and the unidirectional switch means being connected across the output of the at least one controlled power switch, providing capacitor means connected in parallel with the at least one controlled power switch, and allowing the controlled power switch to turn ON only after the at least one switching converter means is turned ON, whereby the controlled power switch is allowed to turn ON with a near-to-zero voltage across it.

5,293,112

CONSTANT-CURRENT SOURCE

Norihito Takahashi, Yamagata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,422
Claims priority, application Japan, Jul. 26, 1991, 3-186753
Int. Cl.[5] G05F *3/20*
U.S. Cl. 323—315 **4 Claims**



1. A constant-current source comprising:
a constant-current output circuit for supplying a constant current provided with one or more transistors having bases interconnected through a base line,
a first circuit which provides a first current signal for setting a strength of the constant current to be delivered from the constant-current output circuit,
a second circuit which generates a second current signal in response to a potential of the base line,
a third circuit which operates to minimize any deviation of the second current signal from the first current signal, causing the potential of the base line to change, and
a DC power supply for energizing at least the first, second and third circuits, wherein
the first circuit comprises:
a first resistance connected to a first electrode of the DC power supply at one end thereof,
a first transistor of a first conductivity type having an emitter connected to the other end of the first resistance and a base connected to the base line,
a constant voltage source having a second electrode connected to a second electrode of the DC power supply,
a second transistor of a second conductivity type having an emitter connected to a first electrode of the constant voltage source and a collector connected to a collector of the first transistor through a branch point where a difference current corresponding to a deviation of the collector current of the second transistor from the collector current of the first transistor is branched,
a regulation circuit which supplies a base current to the second transistor so as to minimize the deviation,
a second resistance connected to the second electrode of the constant voltage source at one end thereof, and
a third transistor of the second conductivity type having an emitter connected to the other end of the second resistance, a base connected to the base of the second transistor and a collector connected to the second circuit, wherein the second circuit comprises:
a third resistance connected to the first electrode of the DC power supply at one end thereof, and
a fourth transistor of the first conductivity type having an emitter connected to the other end of the third resistance, a base connected to the base of each transistor in the constant-current output circuit through the base line forming a current-mirror circuit and a collector connected to the collector of the third transistor through a branch point where a difference current corresponding to a deviation of the collector current of the fourth transistor, which is the second current signal, from the collector current of the third transistor, which is the first current signal, is branched to be supplied to the third circuit, the first resistance being determined so

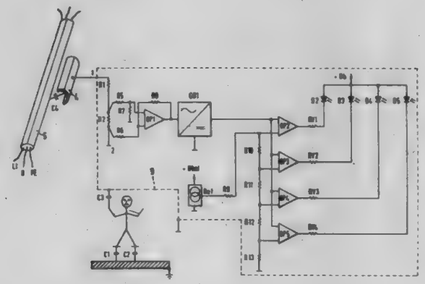
that a ratio of the first resistance to the third resistance equals a reciprocal of a ratio of the collector current of the first transistor to the collector current of the third transistor, and the first, second, third and fourth transistors having such transconductances that the ratio of the transconductance of the fourth transistor to that of the first transistor is equal to the ratio of the transconductance of the third transistor to that of the second transistor.

5,293,113

TEST INSTRUMENT FOR THE DISPLAY OF ELECTRIC VOLTAGES

Christian Beha, Glottertal, Fed. Rep. of Germany, and Martin Schwartz, Carrigaline, Ireland, assignors to Ch. Beha BmbH, Glottertal, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 960,952
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1991, 4134695
Int. Cl.[5] G01R *31/02*; G08B *21/00*
U.S. Cl. 324—72.5 **20 Claims**



1. A single probe, alternating current voltage testing device comprising a test electrode, a grounding electrode electrically coupled to a user, said user being connected to ground by capacitative reactances, a series resistor circuit comprising at least first and second resistors in series between said test electrode and said grounding electrode, with said first resistor being connected to said test electrode and said second resistor being connected somewhere in said series resistor circuit between said first resistor and said grounding electrode, and means for providing a plurality of reference voltages for comparative purposes, wherein the first resistor has an impedance which is at least ten times as great as the total impedances in series with said series resistor circuit, said impedances in series with said series resistor circuit being, first, any impedance between an object to be tested and said test electrode, second, any impedance existing between said grounding electrode and said user, and, third, any impedance existing between said user and ground, and wherein the second resistor is a measurement resistor across which a voltage is derived for comparison with said reference voltages.

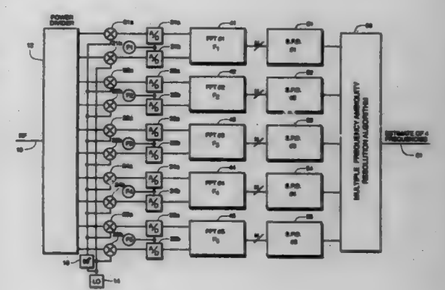
5,293,114

FREQUENCY MEASUREMENT RECEIVER WITH MEANS TO RESOLVE AN AMBIGUITY IN MULTIPLE FREQUENCY ESTIMATION

William S. McCormick, Centerville, and James B. Y. Tsui, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 24, 1992, Ser. No. 997,262
Int. Cl.[5] G06F *15/31*; G01R *23/00*
U.S. Cl. 324—76.22 **3 Claims**

1. A frequency measurement receiver system capable of resolving up to M signal frequencies f_m ($1 \leqq m \leqq M$) appearing on an RF input line within a same measurement interval, comprising I FFT units and I spectrum peak detector units, M and I being positive integers with I being greater than M, each FFT unit having an input coupled to the RF input line via mixers and analog-to-digital (A/D) converter means to provide complex signals having digital in-phase and quadrature components, processor means for multiple frequency ambiquity resolution, each FFT unit having N outputs coupled to one of the peak detector units, and each of the peak detector units having outputs coupled to the processor means;
the A/D converter means for each of the I FFT units having a different sampling speed F_i ($1 \leqq i \leqq I$), wherein for each signal frequency, f_m, each FFT unit includes means for measuring a remainder, α_{mi}, which is related to f_m for complex input as



$$f_m = \alpha_{mi} + K_{mi} F_i \quad (1)$$

for the M signal frequencies, where K_{mi} is an unknown integer and represents an aliasing ambiguity;
wherein each spectrum peak detector unit includes means for scanning the magnitudes of the N outputs of the FFT unit to which it is coupled and identifying all frequency bins, n_{mi}, where frequency magnitude exceeds a maximum anticipated sidelobe level;
wherein the processor means includes a plurality of read-only memory units (ROM) having look-up tables for converting the n_{mi} outputs of the spectrum peak detector units to corresponding remainders α_{mi} using the following transformation,

$$\alpha_{mi} = \text{Nearest Integer}\left\{\left[\frac{n_{mi}}{N}\right] F_i\right\} \quad (2)$$

where a dedicated ROM generates α_{mi}, ($1 \leqq m \leqq M$), for each of the I FFT units;
wherein the processing means includes means coupled to the read-only memory units for solving the aliasing ambiquity for each subset of two FFT units and one signal frequency f_m, which protects the remainder from a noise perturbation of q(Hz) and gives the correct resolved frequency to within q over a bandwidth, B, given as

$$B = \frac{F_1 F_2}{4q + 1}, \quad (3)$$

wherein using properties from number theory, the F_1F_2 are related as

$$F_1 = (4q+1)p_1 \quad (4)$$

$$F_2 = (4q+1)p_2$$

where p_1, p_2 are relatively prime integers;
wherein the processing means includes means for exhaustively considering all possible

$$M^2\begin{bmatrix} I \\ 2 \end{bmatrix}$$

groupings of α_{jl} $(1 \leq j \leq N;\ 1 \leq l \leq 2)$ remainders for all the M remainders in the subset of 2 FFTs used in the single frequency resolution, wherein the symbol

$$\begin{bmatrix} I \\ 2 \end{bmatrix}$$

represents a binomial coefficient which gives the number of unique groups of FFT units out of a total number of I FFT units, there being M^2 possible groupings or combinations of remainders or resolved frequencies for each of the

$$\begin{bmatrix} I \\ 2 \end{bmatrix}$$

possible groups of 2 FFT units out of a total of I FFT units, each of these remainder combinations producing one resolved frequency using the single frequency method, wherein of the

$$M^2\begin{bmatrix} I \\ 2 \end{bmatrix}$$

frequencies,

$$M\begin{bmatrix} I \\ 2 \end{bmatrix}$$

represent true frequencies, while

$$(M^2 - M)\begin{bmatrix} I \\ 2 \end{bmatrix}$$

represent incorrect frequencies resulting from a false or spurious grouping of remainders; wherein the bandwidth of the multiple frequency resolution algorithm, B_μ, will equal the minimum of all

$$\begin{bmatrix} I \\ 2 \end{bmatrix}$$

bandwidths, B, as given by equation (3);
wherein the processing means further includes sorting means for selecting the M true frequencies based on the number of repeats, from the

$$M^2\begin{bmatrix} I \\ 2 \end{bmatrix}$$

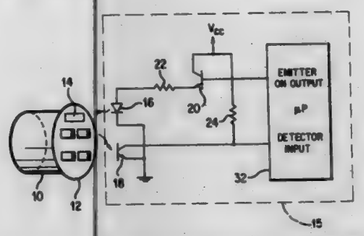
output frequencies generated.

5,293,115

METHOD AND SYSTEM FOR SENSING REMOVAL OF A UTILITY METER FROM ITS SOCKET

Scott C. Swanson, Roswell, Ga., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Continuation of Ser. No. 741,006, Aug. 6, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 77,258
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—110 **7 Claims**



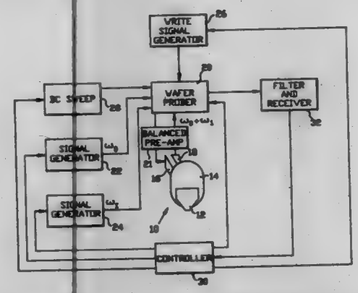
2. A device for detecting tampering of a connection between an electricity meter, of the type which includes plug extensions which plug into respective sockets in a base external to said meter, and an external base to which said electricity meter is plugged and through which external power is supplied to said meter, said device comprising:
(a) passive means which is part of said meter which can modify a signal from a source external to said meter;
(b) active means, contained solely within said external base, said active means not being a part of said meter or needing any physical connection to said meter apart from plugging said meter into said external base, said active means providing a signal to said passive means; and
(c) detecting means, contained solely within said external base for indicating the proximity of said meter to said external base and for thereby detecting that said meter has been unplugged from said external base, whereby a tampering condition will be indicated.

5,293,116

METHOD AND APPARATUS FOR MEASURING NONLINEARITY IN THIN FILM HEADS DURING THEIR FABRICATION

Donald E. Horne, 963 Summerleaf Dr.; Prakash Kasiraj, 1343 Via De Los Reyes, and Fior D. Sargent, 6143 Oak Forest Way, both of San Jose, Calif. 95120

Continuation of Ser. No. 708,486, May 31, 1991, abandoned. This application May 8, 1992, Ser. No. 882,246
Int. Cl.[5] G01R *33/12*; G11B *3/90, 27/36*; G11C *7/06*
U.S. Cl. 324—212 **23 Claims**



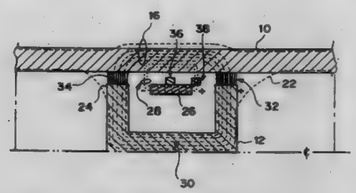
1. A method of measuring variations in the nonlinearity of a recording head representative of the expected noise in the read-back signal of the head during normal read and write operations comprising the steps of:
applying an oscillating signal to a coil of head;
applying a DC signal to the coil along with the oscillating signal;
varying the magnitude of the DC signal while maintaining an amplitude of the oscillating signal substantially constant; and
detecting a level of distortion in an output signal of the coil representative of a level of expected noise in the read-back signal of the head during normal read and write operations.

5,293,117

MAGNETIC FLAW DETECTOR FOR USE WITH FERROMAGNETIC SMALL DIAMETER TUBULAR GOODS USING A SECOND MAGNETIC FIELD TO CONFINE A FIRST MAGNETIC FIELD

Jackson H. Hwang, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed May 14, 1992, Ser. No. 882,810
Int. Cl.[5] G01N *27/72, 27/82*; G01R *33/12*
U.S. Cl. 324—220 **6 Claims**



1. A magnetic inspection probe for internal use for determining flaws in ferromagnetic tubular goods, comprising:
a first magnetizer element having poles of opposite polarity for establishing a magnetic circuit in a wall of a specimen under study, said wall having inner and outer surfaces;
a second magnetizer element having poles of opposite polarity for confining the magnetic field of the first magnetizer to a desired volumetric region in said wall;
said first magnetizer element being positioned between the poles of said second magnetizer element, like poles of said first and second magnetizer elements being juxtapositioned; and
sensor means positioned between the poles of said first magnetizer for detecting and discriminating between flaws on the inner surface and flaws on the outer surface of said specimen.

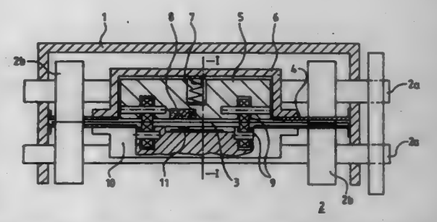
5,293,118

DEVICE FOR MEASURING THICKNESS OF SHEET ARTICLE WITH MAGNET AND PROBE CARRIERS PROVIDED WITH ROLLERS

Guido Grossmann, Munich; Hans-Joachim Reuter, Neufahrn, and Werner Nitsche, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 823,105
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1991, 4104460
Int. Cl.[5] G01B *7/10*; G01R *33/12*; B65H *7/02*
U.S. Cl. 324—229 **12 Claims**

1. An arrangement for measuring a thickness of an X-ray sheet film in an X-ray cassette loading and unloading device during an X-ray sheet film transportation, the arrangement comprising a magnet carrier arranged at one side of a sheet article transportation path and spring-biased in a direction perpendicularly to the transportation path so as to be displaceable in said direction; a permanent magnet fixedly mounted on said magnet carrier near said first side of said magnet transportation path; at least one roller body arranged on said magnet carrier rotatably in a transportation direction of the sheet article and so as to be displaceable in said direction together with said magnet carrier; a probe carrier fixedly arranged parallel to a second side of the transportation path opposite to said magnet carrier; a Hall probe arranged on said probe carrier opposite to said permanent magnet at another side of the transportation path so that said magnet is displaceable perpendicularly to the transportation path and relative to said Hall probe, depending on a thickness of a transported sheet article;



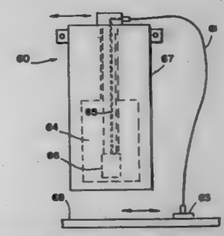
at least one roller body arranged on said probe carrier, said probe carrier having a number of said roller bodies which corresponds to a number of said roller bodies on said magnet carrier, said roller bodies of said magnet carrier and said probe carrier being roller-shaped and rolling over one another in the transportation direction and in a plane of the transportation path which extends through the arrangement in one plane; and control means for evaluating an output signal of said Hall probe so as to determine whether a single sheet film or a double sheet film is transported and to control the transportation correspondingly.

5,293,119

ELECTROMAGNETIC MICROSCOPE FOR EVALUATION OF ELECTRICALLY CONDUCTIVE AND MAGNETIC MATERIALS

Walter N. Podney, San Diego, Calif., assignor to SQM Technology, Inc., La Jolla, Calif.

Filed Feb. 20, 1992, Ser. No. 837,967
Int. Cl.[5] G01N *27/87*; G01R *33/035*
U.S. Cl. 324—242 **19 Claims**



1. An electromagnetic flaw detecting apparatus, comprising an array of probes, each probe having a pickup loop forming a gradiometer and a drive coil, and a superconducting quantum interference device (SQUID) connected to the pickup loops, wherein plural SQUIDS are mounted in a liquid helium bath within a vacuum jacket and plural probes are connected to the SQUIDS by a flexible cryogenic umbilical cord, which includes electrical connectors for supplying current to the drive coils and for communicating sensed currents from the pickup loops to the SQUIDS, and thermal conductors for cooling the plural probes.

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5,293,120

RESONATOR FOR ELECTRON SPIN RESONANCE SPECTROSCOPY

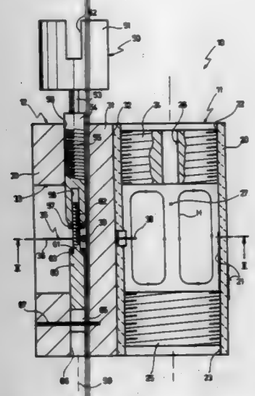
Ekkehard Gentsch, Karlsruhe, and Dieter Schmalbein, Marxzell-Burbach, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,711

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107627

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—316 **4 Claims**



1. A resonator for electron spin resonance spectroscopy comprising:

means forming a cavity configured to propagate a predetermined electromagnetic wave oscillation mode;

means forming a waveguide section for receiving input electromagnetic energy;

coupling means for coupling said electromagnetic energy from said waveguide section to said cavity; and

tuning means including an elongated tuning rod means extending into said waveguide section and being displaceable along a longitudinal axis, said tuning means further including a pair of conductive wafers carried by said tuning rod means, said wafers being respectively disposed on opposite sides of said coupling means and displaceable by said tuning rod means relative to said coupling means.

5,293,121

ISOLATED CURRENT MONITORING CIRCUIT FOR MEASURING DIRECT AND HIGH DUTY FACTOR CURRENTS

Earl M. Estes, Jr., Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 670,664, Mar. 18, 1991, Pat. No. 5,196,784. This application Oct. 8, 1992, Ser. No. 957,964

Int. Cl.[5] G01R *33/00, 1/20*

U.S. Cl. 324—117 R **3 Claims**

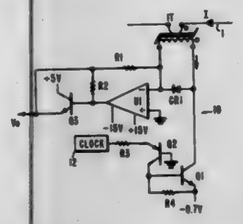
1. An isolated current monitoring circuit for measuring direct and high duty factor current in a conductor comprising:

transformer means for magnetically sensing current flow in said conductor, said transformer means including a transformer having a primary winding connected electrically in series with said conductor and a secondary winding;

means, including an operational amplifier connected to said secondary winding, for driving said transformer into saturation during a first time interval;

biasing means for preventing the introduction of an error signal into said operational amplifier;

means for bringing said transformer out of saturation and operating said transformer as a current transformer during a second time interval; and



means for providing an output signal, after the initiation of the second time interval, which is proportional to the flow of current in said conductor.

5,293,122

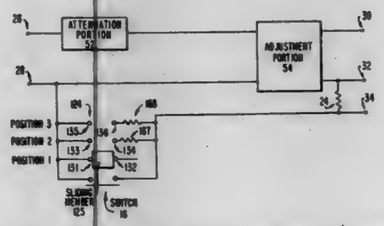
SIGNAL PROBE WITH REMOTE CONTROL FUNCTION

Brian V. Cake, Monroe, N.Y., and Stephen T. Dye, Buntingford, England, assignors to LeCroy Corporation, Chestnut Ridge, N.Y.

Filed Jun. 8, 1992, Ser. No. 895,101

Int. Cl.[5] G01R *1/067, 1/38*

U.S. Cl. 324—158 P **17 Claims**



4. Signal probe apparatus for use with and for controlling a signal measuring device operable to perform a plurality of functions, said apparatus comprising:

a plurality of signal lines connectable to said signal measuring device;

means for supplying a signal to be measured to one of said signal lines;

a plurality of resistors, each being connectable across a number of said signal lines; and

switch means selectively connecting respective ones of said resistors across said number of signal lines to produce a respective predetermined resistance value thereacross which represents a respective one of said functions so as to provide an indication for said signal measuring device to activate the respective function, thereby controlling said signal measuring device.

5,293,123

PSEUDO-RANDOM SCAN TEST APPARATUS

Albert Jordan, Mountain View; Peter L. Fu, Sunnyvale, and David J. Garcia, San Jose, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 600,384, Oct. 19, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 939,964

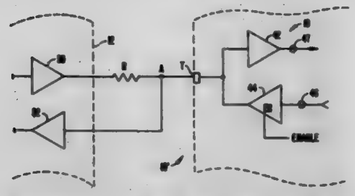
Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158 R **6 Claims**

1. In a system for performing pseudo-random testing of a digital device, the digital device having input/output terminals and an input/output circuit means coupled to at least one of the input/output terminals, the input/output circuit means being operable in a first mode for receiving a digital input signal and in a second mode for applying a digital output signal to the one input/output terminal, apparatus for monitoring the input/output circuit means during pseudo-random testing of the digital device, the apparatus comprising:

output means for providing a digital test signal;

impedance means for coupling the digital test signal to the one input/output terminal, the impedance means having



an impedance value such that when the input/output circuit means is in the second mode, and, at the same time, the digital test signal is applied to the one input/output terminal, the digital output signal dominates to produce a representative signal indicative of the digital output signal at the one input/output terminal; and

monitoring means coupled to receive the digital test signal or the representative signal appearing at the one input-/output terminal.

5,293,124

SENSING DEVICE FOR DETECTING THE ROTATIONAL SPEED OF A ROTATING ELEMENT MOUNTED ON A NON-ROTATING ELEMENT BY MEANS OF A BEARING

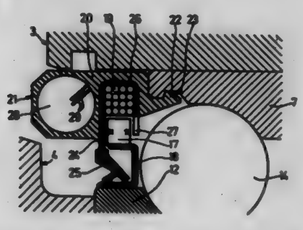
Claude Caillaut, Saint Roch; Christophe Houdayer, Tours; Pascal Lhote, Saint Cyr sur Loire, and Christian Rigaux, Artannes sur Indre, all of France, assignors to SKF France, Clemart Cedex, France

Filed Dec. 30, 1991, Ser. No. 814,625

Claims priority, application France, Jan. 10, 1991, 91 00233

Int. Cl.[5] G01P *3/48, 3/54*; G01B *7/14*

U.S. Cl. 324—173 **13 Claims**



1. A device for sensing the rotational speed of a rotating element mounted on a non-rotating element by means of a roller bearing, said device comprising:

coding means integral with the rotating element, said coding means having a multipolar ring which has a plurality of magnetic segments with regularly and alternately arranged magnetic poles for producing an alternating magnetic field during rotation;

sensor means made integral with the non-rotating element, and

magnetic flux concentrating means of annular shape arranged in the immediate vicinity of the multipolar ring and cooperating with the sensor means in order to concentrate and channel magnetic flux emitted by the multipolar ring, the flux concentrating means including a first end shield and a second end shield, said first end shield including a radial part with a circular edge provided on its circumference with a sealing lip for providing a seal between the rotating and non-rotating elements, said second end shield having radial teeth which are spaced regularly along a circular path,

said multipolar ring being axially magnetized and arranged in an axial space which lies between the radial part of the fist end shield and the radial teeth of the second end shield, said radial teeth simultaneously being axially aligned with magnetic poles of the same polarity of the multipolar ring.

5,293,125

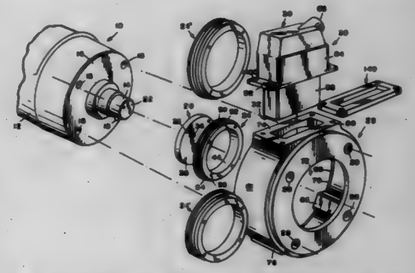
SELF-ALIGNING TACHOMETER WITH INTERCHANGEABLE ELEMENTS FOR DIFFERENT RESOLUTION OUTPUTS

Neil C. Griffen; Richard S. Stokes, and Joseph F. Bioty, all of Westerville, Ohio, assignors to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Jan. 17, 1992, Ser. No. 822,016

Int. Cl.[5] G01P *3/487*; H02K *11/00*

U.S. Cl. 324—173 **23 Claims**



13. A tachometer for monitoring the rotation of an output shaft of a motor enclosed within a housing having a standard NEMA end plate secured to the housing via a plurality of fasteners extending through aligned mounting holes in the end plate and the housing wherein the output shaft projects from the housing, the tachometer comprising:

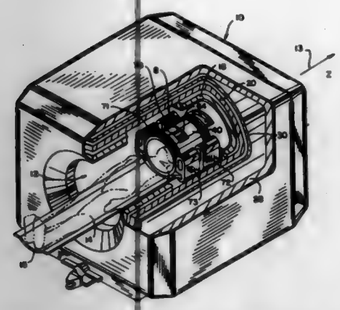
a) a substantially cylindrical enclosure adapted to be secured to the end plate of the motor housing using the aligned mounting holes in the end plate and the housing, the enclosure having a radial center and a longitudinal axis which, when the enclosure is secured to the housing, are aligned with a longitudinal axis of the output shaft, said enclosure having at least one machined mounting surface in a wall portion thereof which projects radially from said enclosure; said mounting surface having an aperture therein open in a radial direction;

b) a sensor module including at least one sensor, said sensor module mountable on said machined mounting surface of said enclosure such that said module protrudes through said aperture with said sensor facing radially inwardly; and

c) an annular drum having at least one pattern arranged on a circumferential surface thereof capable of being sensed by said sensor, said drum enclosed within said enclosure and operatively fixed on said output shaft for rotation therewith, wherein said at least one pattern is axially aligned with said sensor and radially spaced therefrom by a predetermined radial gap in a self-aligning manner and without further adjustment when said drum is fixed to said output shaft and said enclosure is mounted on said end plate in an operatively assembled relationship, so that upon rotation of said shaft and said drum, said sensor will sense rotation of said pattern.

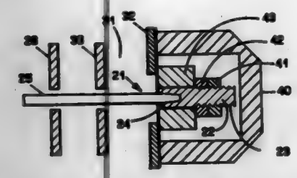
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,126
LOCAL TRANSVERSE GRADIENT COIL
Daniel J. Schaefer, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.
Filed Nov. 9, 1992, Ser. No. 973,444
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **6 Claims**



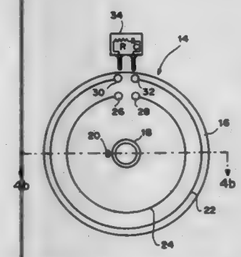
1. A coil assembly for use in an NMR system that produces a polarizing magnetic field, which comprises:
a cylindrical form disposed around a central opening and having a central axis aligned with the polarizing magnetic field of the NMR system;
a first pair of gradient coils mounted to one side of the cylindrical form for producing a first magnetic field which is oriented substantially parallel to the polarizing magnetic field within the central opening and is directed in a first direction therealong; and
a second pair of gradient coils mounted to a side opposite to said one side of the cylindrical form for producing a second magnetic field which is oriented substantially parallel to the polarizing magnetic field within the central opening and is directed in a second direction therealong which is opposite to the direction of the first magnetic field;
each gradient coil having a set of loops oriented in planes which are tilted from a plane perpendicular to the central axis and the first and second magnetic fields having a gradient perpendicular to the polarizing magnetic field.

5,293,127
SUPPORT ROD
Alex Palkovich, Oxford; John Bird, Charlbury, and Neil Clarke, Oxford, all of England, assignors to Elscint Ltd., Haifa, Israel
Continuation of Ser. No. 658,247, Feb. 20, 1991, abandoned.
This application Feb. 24, 1993, Ser. No. 22,388
Claims priority, application United Kingdom, Feb. 20, 1990, 9003779.7
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—318 **5 Claims**



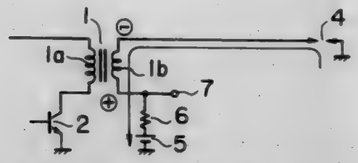
1. A support rod in combination with a cryostat for supporting a superconducting magnet within said cryostat, said support rod comprising:
a rod like mid-section of material of low thermal conductivity,
a first head section of higher thermal conductivity disposed at the other end of said support rod,
a second head section of higher thermal conductivity disposed at the other end of said support rod,
said first and second head sections being threaded to anchor said support rod between a supporting member on the cryostat and said supported magnet,
said supporting member mounted on the outside of said cryostat so as to minimize the length of said head sections relative to said mid section inside said cryostat, and thermally reduce the heat transfer between the cryostat and the environment,
said mounting on the outside of said cryostat enabled by said first and second head sections each being cylindrically shaped and having a single external diameter for the entire length.

5,293,128
METHOD AND APPARATUS FOR CALIBRATING THE OUTPUT MEASUREMENT OF A LOGGING TOOL AS A FUNCTION OF EARTH FORMATION PARAMETERS
Qiang Zhou, Missouri City, Tex., assignor to Western Atlas International, Inc., Houston, Tex.
Filed Jul. 2, 1992, Ser. No. 909,059
Int. Cl.[5] G01V *13/00*
U.S. Cl. 324—339 **12 Claims**



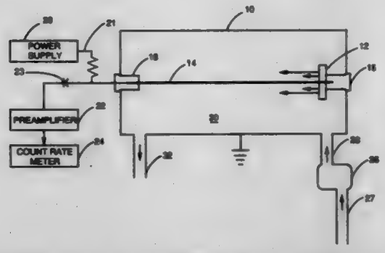
1. A passive calibration fixture for use with an air-hung electromagnetic logging tool, the logging tool including an elongated mandrel, having a longitudinal axis, for axially supporting at least one transmitter and two spaced-apart receivers mounted remotely from the transmitter, comprising:
an insulating support means removably secured around said mandrel between said transmitter and said receivers;
a plurality of concentric coplanar conductive calibration loops mounted on said support means for receiving radiation from said transmitter and for reradiating the received radiation to said receivers, said calibration loops being mounted coaxially with said transmitter and receivers;
multiple-tap impedance quantizing means for terminating each one of said conductive calibration loops in discrete steps such that the radiation re-radiated to said receivers is attenuated by said quantizing means to simulate, when said tool is under calibration, the signal attenuation effects of earth formations having different resistivities.

5,293,129
IONIC CURRENT SENSING APPARATUS FOR ENGINE SPARK PLUG WITH NEGATIVE IGNITION VOLTAGE AND POSITIVE DC VOLTAGE APPLICATION
Masayuki Ikeuchi; Shigemi Murata; Toshio Iwata; Toshio Ohsawa, and Takanobu Yonetsu, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 29, 1991, Ser. No. 783,908
Claims priority, application Japan, Nov. 9, 1990, 2-304778; Nov. 9, 1990, 2-304779; Nov. 9, 1990, 2-304780; Nov. 9, 1990, 2-304781
Int. Cl.[5] F02P *17/00, 9/00*
U.S. Cl. 324—399 **5 Claims**



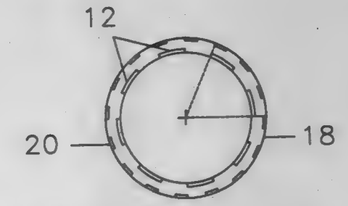
4. An ionic current sensing apparatus for an internal combustion engine comprising:
a spark plug having a first electrode and a grounded second electrode;
an ignition coil having a secondary winding with a first, high voltage end connected to the first electrode of the spark plug and a second, low-voltage end for applying a negative ignition voltage between the first and second electrodes; and
a direct current voltage source and a current sensing resistor for sensing ionic current flowing between the first and second electrodes, connected in series between ground and the second, low-voltage end of the secondary winding, the voltage source having a polarity so as to apply a positive voltage between the first and second electrodes of the spark plug.

5,293,130
PROPORTIONAL COUNTER DEVICE FOR DETECTING ELECTRONEGATIVE SPECIES IN AN AIR SAMPLE
Steve L. Allman; Fang C. Chen, and Chung-Hsuan Chen, all of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Jul. 2, 1991, Ser. No. 724,655
Int. Cl.[5] G01N *27/64*; H01J *47/04*
U.S. Cl. 324—469 **26 Claims**



1. Apparatus for detecting the presence of an electronegative species in an air sample comprising:
a proportional counter comprising an analysis chamber, an electrode extending through said analysis chamber and electrically insulated therefrom, and charging means in electrical communication with said electrode for charging said electrode to a positively charged state relative to said analysis chamber, said positively charged state being sufficient to attract toward said electrode electrons produced by ionization of at least a portion of an air sample to produce gas amplification therein;
an air sampling means in fluid communication with said analysis chamber for admitting an air sample into said analysis chamber;
an ionization means disposed within said analysis chamber for ionizing at least a portion of the air sample; and,
a circuit means in electrical communication with said electrode for measuring the quantity of electrons collected at said electrode for determining the presence of an electronegative species in the air sample by detecting a reduction in the number of electrons collected at said electrode, said reduction due to capture of electrons by the electronegative species.

5,293,131
CAPACITIVE PROBE FOR BORE MEASUREMENT
Timothy D. Semones, Atlanta, and Carl E. Price, Marietta, both of Ga., assignors to Measurement Systems, Inc., Marietta, Ga.
Filed Sep. 4, 1992, Ser. No. 940,627
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—662 **4 Claims**



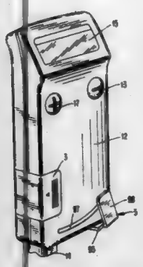
1. A capacitive probe for measurement of a bore having a plurality of lands and grooves, comprising:
an elongated, generally cylindrically shaped housing formed of an electrically insulating material comprising a proximal end for insertion into a bore;
a plurality of electrically conductive plates affixed around the circumference of the housing, said plates alternating at one of two distances from the proximal end of the housing and being electrically isolated from each other; and
means for connecting said plates to a data receiving means.

5,293,132
COATING THICKNESS MEASUREMENT GAUGE
Frank J. Koch, Ogdensburg, N.Y., assignor to DeFelsko Corporation, Ogdensburg, N.Y.
Continuation of Ser. No. 533,444, Jun. 1, 1990, Pat. No. 5,241,280. This application Jun. 1, 1993, Ser. No. 69,864
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—671 **5 Claims**

1. A gauge for measuring the thickness of a coating on a substrate of an element comprising:
a probe assembly for contacting a substrate having a coating;
transducer means operatively associated with said probe assembly for providing a usable output in response to the thickness of the coating;
a housing encircling said probe assembly, said housing being provided with an opening for allowing said probe assembly to be brought into contact with a substrate on which is located a coating whose thickness is to be measured; and
cover and supporting means mounted on the housing and movable between a first position for covering the opening

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in the housing to protect the probe assembly from damage, and a second position for providing a support leg that



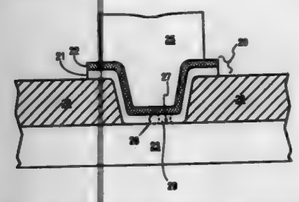
rests upon the element and steadies the gauge during measurement of a thickness of a coating on the substrate.

5,293,133

METHOD OF DETERMINING AN ELECTRICAL CHARACTERISTIC OF AN ANTIFUSE AND APPARATUS THEREFOR

John M. Birkner, Portola Valley; David T. Martin, Santa Clara, and Richard J. Wong, Milpitas, all of Calif., assignors to QuickLogic Corporation, Santa Clara, Calif.

Filed Aug. 27, 1992, Ser. No. 937,071
Int. Cl.[5] G11C *17/16*
U.S. Cl. 324—713 **35 Claims**



1. A method of determining an electrical characteristic of an antifuse of a programmable device, said programmable device comprising a series element, a parallel element and said antifuse, said method comprising the steps of:

(a) determining an electrical characteristic of a first conductive path, said first conductive path comprising said series element disposed electrically in series with said parallel element, said parallel element being controlled to be at least substantially conductive;

(b) after step (a), at least partially programming said antifuse;

(c) after step (b), determining an electrical characteristic of a second conductive path, said second conductive path comprising said series element disposed electrically in series with said antifuse, said parallel element being controlled to be substantially nonconductive;

(d) after step (b), determining an electrical characteristic of a third conductive path, said third conductive path comprising said series element disposed electrically in series with said antifuse and said parallel element, said antifuse and said parallel element being disposed electrically in parallel with respect to each other, said parallel element being controlled to be at least substantially conductive; and

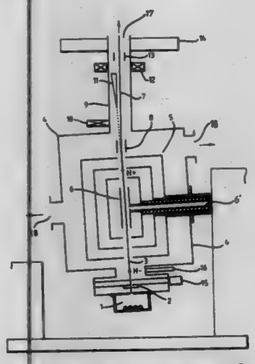
(e) determining said electrical characteristic of said antifuse based at least in part on said electrical characteristic determined in step (a), said electrical characteristic determined in step (c), and said electrical characteristic determined in step (d).

5,293,134

TANDEM ACCELERATOR

Andrew J. T. Holmes, Marcham, and Gary Proudfoot, Wantage, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Didcot, United Kingdom

Filed Mar. 9, 1992, Ser. No. 848,700
Claims priority, application United Kingdom, Mar. 13, 1991, 9105368.6
Int. Cl.[5] H05H *5/06*
U.S. Cl. 328—227 **1 Claim**



1. A tandem accelerator ion beam source for producing a beam of positive ions having energies greater than 1 MeV and a beam current greater than 10 mA, comprising a volume ion source for producing a beam of negative ions having an energy of the order of tens of kilowatts and a beam current of at least 10 mA, a windowless ion stripper cell arranged to convert the negative ions to positive ions, means for supplying an electron stripping gas to the stripper cell, a plurality of electric stress shields surrounds the ion stripper cell and arranged to produce an electric field of about 20 kV/cm in the region of the ion stripper cell, means for removing uncharged species from the beams of positive ions, means for controlling the direction of the beam of positive ions, a vacuum envelope enclosing the ion beam path within the tandem generator, the electric stress shields and the windowless stripping cell, and a vacuum system for producing a dynamic vacuum of at least 10^{-5} torr within the vacuum envelope.

5,293,135

FM DEMODULATOR WITH SELF-TUNING QUADRATURE DETECTOR

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

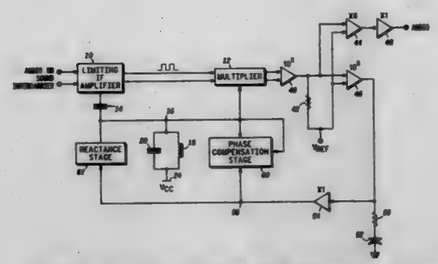
Filed Dec. 31, 1992, Ser. No. 999,424
Int. Cl.[5] H03D *3/06*
U.S. Cl. 329—337 **17 Claims**

1. A quadrature detector, comprising:

a multiplier circuit having first and second inputs and an output, said first and second inputs receiving first and second input signals operating at a frequency;

first means having an output coupled to said second input of said multiplier at a first node for developing a reactive load to establish a predetermined phase relationship between said first and second input signals; and

second means coupled between said output of said multiplier and said first node for adjusting said reactive load to



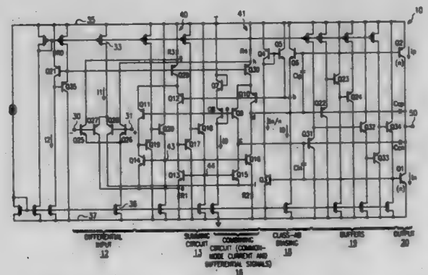
maintain said predetermined phase relationship as said frequency of said first and second input signals changes.

5,293,136

TWO-STAGE RAIL-TO-RAIL OPERATIONAL AMPLIFIER

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 17, 1992, Ser. No. 946,764
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—258 **28 Claims**



1. An operational amplifier, comprising:

a differential input circuit adapted to receive a differential input signal to produce an amplified differential output signal for application to first and second nodes;

said differential input circuit having a common-mode control circuit that produces first and second common-mode control voltages on said first and second nodes, whereby said common-mode control voltages are combined with said amplified differential output signal on said first and second nodes to produce a first stage differential output signal;

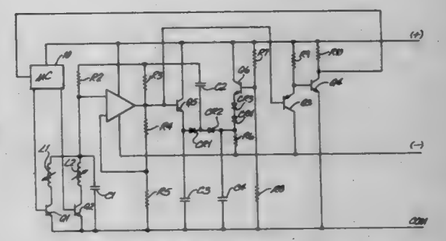
and a high-swing output stage connected to receive the first stage differential output signal.

5,293,137

DIGITAL TRANSDUCER SYSTEM INCLUDING TWO REACTIVE TRANSDUCERS FORMING RESONANT OSCILLATOR CIRCUITS

John R. Tavis, Mariposa, and Laurence R. Nicholson, Nevada City, both of Calif., assignors to Tavis Corporation, Mariposa, Calif.

Filed May 26, 1992, Ser. No. 888,768
Int. Cl.[5] H03B *5/12*; G01L *7/08, 9/10*
U.S. Cl. 331—49 **6 Claims**



1. A digital transducer system receiving a force input, the system comprising:

a first resonant circuit activated by a first control signal and having a first variable resonant frequency dependant on the force input;

a second resonant circuit activated by a second control signal;

a means for producing the first control signal and the second control signal at predetermined times;

a means for frequency measurement connected to the first resonant circuit and second resonant circuit;

means for calculating a quotient of the first frequency and second frequency;

means for calculating a transducer value proportional to the quotient;

means for calibrating the transducer value to provide a system output; and

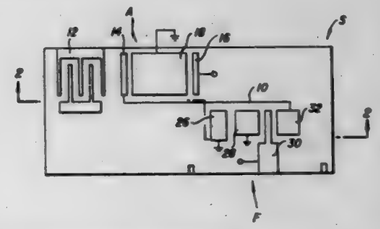
oscillator control means receiving a frequency signal from the first and second resonant circuits, when activated, for providing feedback to the first and second resonant circuits to maintain constant amplitude oscillation.

5,293,138

INTEGRATED CIRCUIT ELEMENT, METHODS OF FABRICATION AND UTILIZATION

Robert J. Kansy, Champagne, Ill., assignor to Electronic Decisions Incorporated, Urbana, Ill.

Filed Apr. 12, 1988, Ser. No. 180,775
Int. Cl.[5] H01L *29/00*
U.S. Cl. 333—193 **48 Claims**



1. A circuit element, comprising:

a) an acoustic charge transport device comprising a buried channel formed in a piezoelectric semiconductor substrate

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including input means at one end of said channel, barrier means overlaid on said channel, output means at an end of said channel opposite to said input means end, and transducer means proximate said input means for propagating an acoustic wave through said channel for transporting charge between said input means and said output means;

b) a transistor assembly comprising source means, gate means and drain means; and,

c) means operably interconnecting one of said input, output and barrier means with one of said source, drain and gate means.

5,293,139

CMOS-COMPANDER

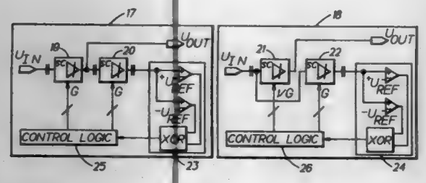
Jouni Polonen, Salo; Mika Gronroos, Piispanristi, and Kim Kaltiokallio, Salo, all of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 13, 1992, Ser. No. 960,960

Claims priority, application Finland, Oct. 16, 1991, 914884

Int. Cl.[5] H03G *7/06*

U.S. Cl. 333—14 **14 Claims**



14. A compander having a compressor and an expander, the expander comprising:

a first controlled amplifier having signal input and signal output means;

a second controlled amplifier, the input of which is connected to the output of the first amplifier, the amplifiers being switched capacitor (SC) amplifiers;

a level detection circuit, for detecting the level of the second amplifier output signal; and a control circuit controlling the first and the second amplifiers responsive to the level detection circuit,

characterized in that

the level detection circuit includes means for comparing the detected level of the second amplifier output signal with an upper (+Uref) and a lower (−Uref) reference voltage, the output of the detection circuit having a first value when the detected signal level lies in a zone between the reference voltages, and having a second value when the input signal lies outside the zone between the reference voltages, and

the control circuit comprises counting means in which the counting direction is determined according to the value of the detection circuit output, and in which the counting result is used to generate a control word for the amplifiers.

5,293,140

TRANSMISSION LINE STRUCTURE

Robert J. Higgins, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 636,963, Jan. 2, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 908,622

Int. Cl.[5] H01P *3/08*

U.S. Cl. 333—204 **6 Claims**

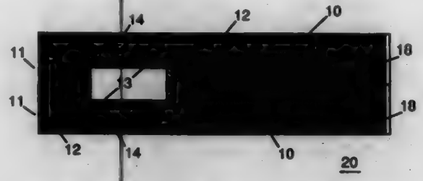
1. A transmission line structure comprising:

a dielectric substrate having opposed sides;

a conductive line disposed on one of said sides, the conductive line having a predetermined width and length;

a ground plane disposed on the other of said sides of the dielectric substrate;

the dielectric substrate having a cavity providing an area of reduced thickness, the area of reduced thickness having a predetermined length, width, and thickness, the width of the area of reduced thickness is substantially the same as the width of the conductive line, the conductive line is



partially disposed on said area of reduced thickness and the length of the area of reduced thickness is substantially smaller than the length of the conductive line, the cavity providing for increased capacitance between the conductive line and the ground plane; and the conductive line has an open end and a shorted end, and the area of reduced thickness is found substantially at the open end of the conductive line.

5,293,141

DIELECTRIC FILTER HAVING EXTERNAL CONNECTION TERMINALS ON DIELECTRIC SUBSTRATE AND ANTENNA DUPLEXER USING THE SAME

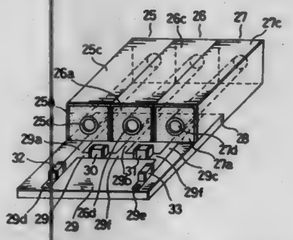
Yasumi Kobayashi; Kousuke Takeuchi; Kachio Ikeda; Kenichi Shibata, all of Osaka, and Kazuhiko Kuroki, Kyoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 18, 1992, Ser. No. 853,049

Claims priority, application Japan, Mar. 25, 1991, 3-060393; Apr. 2, 1991, 3-070074; Apr. 9, 1991, 3-076302

Int. Cl.[5] H01P *1/205*

U.S. Cl. 333—206 **13 Claims**



1. A dielectric filter comprising:

a plurality of coaxial resonators, each of said coaxial resonators comprising

a dielectric body having an outer peripheral surface and an inner peripheral surface parallel to a common axis and having first and second faces crossing said axis,

first and second conductive layers coating said outer peripheral surface and said inner peripheral surface, respectively

a third conductive layer formed on said second end face for short-circuiting said first and second conductive layers, and

a depressed part formed by removing a portion of the first conductive layer on the side of said first end face or a portion of the first conductive layer including the dielectric block;

a dielectric substrate having a plurality of capacitance forming electrodes for forming capacitances between the electrodes and the second conductive layers of said coaxial resonators and external connection means formed thereon and mounted on said depressed part; and

reactance means comprising interstage coupling chip capacitors provided on said dielectric substrate for coupling said capacitance forming electrodes to each other.

5,293,142

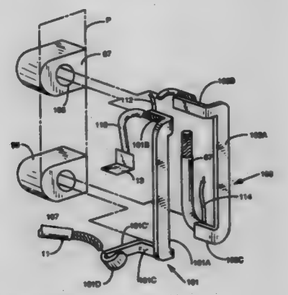
GROUND FAULT CIRCUIT BREAKER WITH FLAT BUS BARS FOR SENSING COILS

Joseph P. Fello, Penn Hills Township, Allegheny County; Michael J. Whipple, New Sewickley; William E. Smith, New Brighton, and Wilbert E. Lindsay, Robinson, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 11, 1992, Ser. No. 943,670

Int. Cl.[5] H01H *73/00*

U.S. Cl. 335—18 **13 Claims**



1. A circuit breaker comprising:

a power circuit and neutral circuit;

separable power contacts connected in said power circuit;

an operating mechanism for opening and closing said separable power contacts;

a trip mechanism responsive to selected current conditions in said power circuit for tripping said operating mechanism to open said separable power contacts; and

ground fault interrupt means including:

a pair of toroidal sensing coils laterally spaced from each other in a common plane, each sensing coil having a coil end face and a central aperture transverse to said coil end face, said coil end face of each sensing coil being in said common plane; and

a pair of flat bus bars each having a flat center section with its widest portion laying flat and in a plane extending parallel to said common plane of said coil end face of each sensing coil and between said toroidal sensing coils and offset laterally from the flat center section of the other bus bar, and flat leg sections extending generally laterally from each end of the center section and bent to extend one through each of said aperture of said toroidal sensing coils generally transverse to said common plane, and means connecting one of said flat bus bars in said power circuit and the other of said flat bus bars in said neutral circuit, and actuating means connected to said sensing coils and operative to actuate said trip mechanism in response to a ground fault in either said power circuit or said neutral circuit.

5,293,143

SWITCH DEVICE

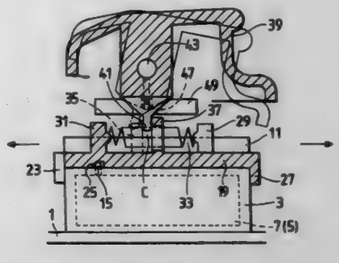
Takahiro Sakakino, Kyoto, and Seiki Satoh, Chiba, both of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Jun. 26, 1992, Ser. No. 904,052

Claims priority, application Japan, Jun. 28, 1991, 3-49870; Jun. 28, 1991, 3-49871; Jun. 28, 1991, 3-50047

Int. Cl.[5] H01H *3/00, 23/00, 45/00*

U.S. Cl. 335—186 **10 Claims**



1. A switch device comprising:

a switch casing accommodating therein switch mechanisms having respective first and second actuators juxtaposed with each other, each of said actuators projected from an outer surface of said casing, wherein when one of said actuators is depressed, a corresponding switch mechanism contact portion is independently switched;

a first slide plate slidably provided on said outer surface of said switch casing and having a cam portion which depresses said first actuator by a predetermined constant amount when said first slide plate is move in a first direction from its neutral position, said first slide plate being prevented by a stopper from being slid from its neutral position in a second direction opposite to said first direction;

a second slide plate slidably provided on said outer surface of said switch casing and having a cam portion which depresses said second actuator by said predetermined constant amount when said second slide plate is slid in said second direction from its neutral position, said second slide plate being prevented by a stopper from being moved from its neutral position in said first direction;

a spring means interposed between said first and second slide plates for forcing said first slide plate in said second direction and said second slide plate in said first direction;

a knob having an engagement portion which is engaged between a first engagement projection formed on said first slide plate and a second engagement projection formed on said second slide plate and reciprocally movable in said first and second directions; and

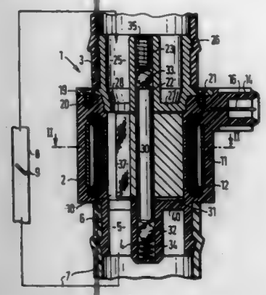
a switch shifted position holding solenoid means including,

a movable member movable on a guide means in said first and second directions and engaged between said first engagement projection of said first slide plate and said second engagement projection of said second slide plate so that movements in said first and second directions of said movable member are restricted thereby; and

an electromagnetic attraction means for applying a first attraction force to said movable member to move said movable member in said first direction by depressing said first actuator and for applying a second attraction force to said movable member to move said movable member in said second direction by depressing said second actuator, so that when said movable member is moved more than a predetermined amount in said first or second direction, said movable member is held at its position.

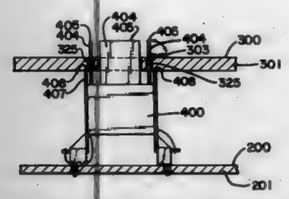
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5,293,144
ELECTRIC ROTARY ACTUATOR
Erwin Krimmer, Pluederhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE90/00556, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992
PCT Filed Jul. 25, 1990, Ser. No. 828,929
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1989, 3926610
Int. Cl.[5] H01F *7/08*
U.S. Cl. 335—272 10 Claims



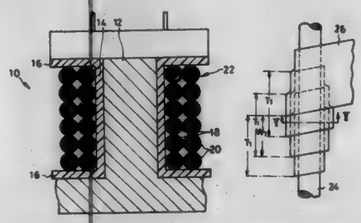
1. An electric rotary actuator, particularly for controlling a throttle cross section in a line conducting operating fluid of an internal combustion engine, comprising a housing; motor actuating means including windings and magnetic poles located in said housing and a magnetic armature rotatable relative to said windings and to said magnetic poles, said magnetic poles being concentric to said armature; and a throttle member, said housing having ducts leading into an interior space between said windings and each having an end at another end face of said armature, said armature having at least one cutout extending in an axial direction and bringable in alignment with said ducts, said armature forming said throttle member through which a fluid to be controlled is conducted.

5,293,145
SWITCH BATTERY CHARGER WITH REDUCED ELECTROMAGNETIC EMISSION
Robert Rynkiewicz, Minneapolis, Minn., assignor to Onan Corporation, Fridley, Minn.
Continuation of Ser. No. 409,627, Sep. 19, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 24,801
Int. Cl.[5] H01F *15/02, 27/30*
U.S. Cl. 336—65 3 Claims



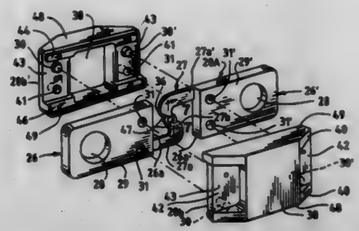
1. A power transformer apparatus, comprising:
first and second printed circuit boards extending substantially parallel to one another;
a core;
a primary winding wound around said core;
a secondary winding wound around said core with a flexible flat foil conductor;
a body including a top surface adapted to support the first printed circuit board and a bottom surface adapted to mount on the second printed circuit board;
means for electrically connecting the flat foil conductor of the secondary winding to a top surface of the first printed circuit board the connecting means including a plurality of slots on the first printed circuit board, the flexible flat foil conductor having terminal portions extending normally to the first printed circuit board top surface through the slots, the terminal portions being bent over the first printed circuit board top surface and electrically connected to the first printed circuit board; and
means for electrically mounting the primary winding to the second printed circuit board of the bottom surface.

5,293,146
ELECTRIC COIL DEVICE FOR USE AS A TRANSFORMER OR THE LIKE
Yoshiki Aosaki, Sakado, and Tadashi Yamaguchi, Toubumachi, both of Japan, assignors to Sankea Electric Co., Ltd., Japan and Totoku Electric Co., Ltd., Japan
Filed Jun. 3, 1991, Ser. No. 709,481
Claims priority, application Japan, Jun. 8, 1990, 2-150174
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—206 6 Claims



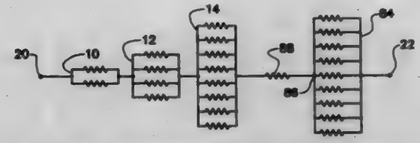
1. An electric coil device having a winding around a core, the winding comprising:
(a) a conductor wire;
(b) a first insulating tape of predetermined width wound in a first direction and with an overlap of predetermined width around the conductor wire, the first insulating tape being not bonded to the conductor wire;
(c) a second insulating tape having a width less than the width of the first insulating tape and wound in a second direction, opposite to the first direction, and with an overlap around the conductor wire via the first insulating tape, the ratio of the width of the overlap of the second insulating tape to the width of the second insulating tape being less than the ratio of the width of the overlap of the first insulating tape to the width of the first insulating tape, the second insulating tape being bonded to the first insulating tape; and
(d) a third insulating tape having a width less than the width of the second insulating tape and wound in the first direction and with an overlap around the conductor wire via the first and the second insulating tapes, the ratio of the width of the overlap of the third insulating tape to the width of the third insulating tape being less than the ratio of the width of the overlap of the second insulating tape to the width of the second insulating tape, the third insulating tape being bonded to the second insulating tape.

5,293,147
AUTOMOTIVE HIGH CURRENT FUSE
Seibang Oh, Elk Grove, and Robert Madland, Schaumburg, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 838,969, Feb. 21, 1992. This application Mar. 17, 1993, Ser. No. 32,629
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[5] H01H *85/143, 85/04*
U.S. Cl. 337—227 15 Claims



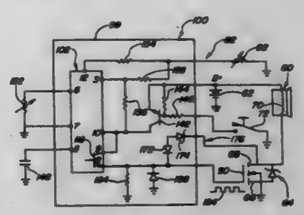
1. A fuse comprising: a metal portion formed of an integral piece of metal having outermost, spaced terminal-forming portions with bolt-anchoring holes therein and a fuse link-forming intermediate portion wider than its thickness between said terminal-forming portions, the fuse link-forming portion being of a thickness which is only a fraction of the thickness of said terminal-forming portions to provide spaced confronting faces with opposite lateral margins, said fuse link-forming portion having a first outer leg connected only to one of said confronting faces of one of said terminal-forming portions of said metal piece at one lateral margin thereof and an opposite leg connected only to the other confronting face of the other terminal-forming portion of said metal piece at the lateral margin thereof diagonally opposite to said one lateral margin, said fuse link-forming portion providing a desired overall resistance which provides a desired delay in the time a given overload current flow which will melt said fuse link-forming portion and open the fuse, and under short circuit conditions will blow quickly.

5,293,148
HIGH RESOLUTION RESISTOR LADDER NETWORK WITH REDUCED NUMBER OF RESISTOR ELEMENTS
Peter G. Hancock, Plano, Tex., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 13, 1992, Ser. No. 912,936
Int. Cl.[5] H01C *7/22*
U.S. Cl. 338—295 19 Claims



1. A resistor network for providing a desired resistance between first and second circuit points, comprising:
a plurality of series connected resistor cells, each of said plurality of series connected resistor cells comprising a preselected number of parallel connected resistors which is related to the preselected number of resistors of at least one other of said plurality of resistor cells by a factor of two; and
a group of resistors connected in series with said plurality of resistor cells and comprising a nonbinary number of resistors, said nonbinary number being reducible in stages to a plurality of combinations, each of said combinations having a resistance that is related to the resistances of the other combinations in a manner which results in a plurality of resistance differences that are sufficiently equivalent to each other to provide a series of incremental resistive steps which are generally monotonic and have a greater resolution than any of said plurality of resistor cells.

5,293,149
VEHICLE HORN WITH ELECTRONIC SOLID STATE ENERGIZING CIRCUIT
Carl R. Wilson, Texico, and Jeffrey G. Hertenstein, Flora, both of Ill., assignors to Sparton Corporation, Jackson, Mich.
Filed Apr. 12, 1991, Ser. No. 684,693
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—384.73 13 Claims



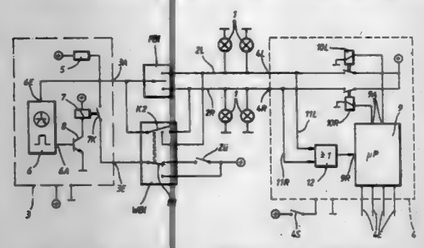
1. A horn for an automotive vehicle having a vehicle supply voltage source, said horn comprising:
a housing having a diaphragm mounted on the housing with its periphery clamped thereto and forming a chamber,
a driving coil mounted within said chamber,
a magnetic pole piece mounted on said housing and extending axially of said coil,
a magnetic plunger mounted on said diaphragm and extending toward said pole piece for imparting motion to the diaphragm upon energization of said coil,
said diaphragm providing a resilient suspension of said plunger for reciprocating motion relative to said coil and having a spring characteristic whereby said diaphragm and the mass carried thereby have a resonate frequency of mechanical vibration,
an energizing circuit coupled between said voltage source and said coil for generating a DC pulse train for energizing said coil,
said energizing circuit including first adjustment means for setting the pulse repetition rate of said pulse train substantially equal to said resonant frequency,
and said energizing circuit including a second adjustment means for setting the duty cycle of each pulse in said pulse train to a desired value.

5,293,150
CIRCUIT ARRANGEMENT OF AN ANTI-THEFT ALARM
Klaus Neuffer, Böblingen, and Helmut Grickscheit, Sindelfingen, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Jul. 13, 1992, Ser. No. 912,278
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1991, 4123270
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—426 11 Claims

1. Circuit arrangement for an anti-theft alarm for a vehicle, comprising:
light sources on said vehicle which are activatable via lines by the circuit arrangement as well as by externally supplied electrical signals;
and a control unit, that controls the anti-theft alarm, the control unit having a clock generator therein for intermittently and cyclically activating said light sources via said

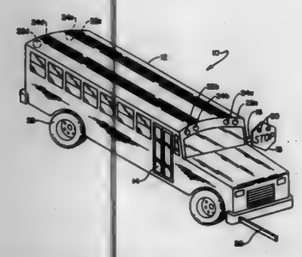
VOL 1160 ISS 2 MR 8 1994 UMI

lines upon occurrence of an alarm and having control logic coupled to said lines for detecting an externally supplied electrical signal occurring on said lines and for



suppressing the cyclical activating of said light sources with the clock generator for a predetermined amount of time upon the detection of the externally supplied electrical signal.

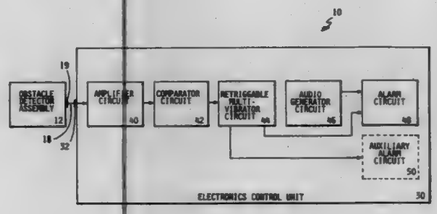
5,293,151
AUDIBLE WARNING OF DISEMBARKED BUS PASSENGERS
Dean E. Rose, 2843 Ross Rd., Sunbury, Ohio 43074
Filed Sep. 29, 1992, Ser. No. 952,973
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 340—433 **21 Claims**



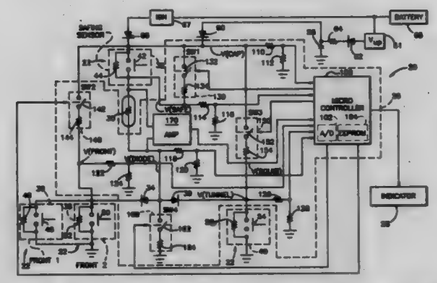
1. In a vehicle for carrying passengers having a door actuatable from a closed to an opened condition for the egress of said passengers, a method for warning disembarked passengers of the impending departure of said vehicle comprising the steps of:
stopping said vehicle at a predetermined location for passenger debarkation;
actuating said door to said opened condition to allow said passengers to disembark;
actuating said door to said closed condition after said passengers have disembarked; and
automatically providing an audibly perceptible alarm of a select duration to said disembarked passengers upon said actuating of said door to said closed condition.

5,293,152
VEHICLE OBSTACLE DETECTOR AND ALARM SYSTEM
George N. Bussis; Dentcho S. Sivov, both of 2934 Tyler Ct., Simi Valley, Calif. 93063, and Roy L. Nembaard, 17063 Mindora Ct., Granada Hills, Calif. 91344
Filed Feb. 10, 1992, Ser. No. 833,151
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—435 **11 Claims**

1. An obstacle detector and alarm system comprising:
a) at least one flexible obstacle detector assembly having means for producing electrical oscillations when said assembly touches or scrapes against an obstacle where said detector assembly comprises:
(1) an impact head having a back projecting cavity,
(2) a piezoelectric element having an outer electrode and an inner electrode, where the outer electrode of said element is tightly fitted against the cavity wall and forward end of said cavity in a prestressed condition to maintain said element in its maximum sensitivity, where when said impact head touches or scrapes against an obstacle, said piezoelectric element produces electrical oscillations, and
(3) a flexible housing having a front end that is sized to tightly fit into said back cavity behind the back end of said piezoelectric element, said housing comprising a coaxial cable that includes an inner electrical conductor and an outer shield conductor, where at the front end of the cable the inner conductor is attached to the inner electrode and the outer conductor is attached to the outer electrode of said piezoelectric element, where from said obstacle detector, via said coaxial cable, are emitted the electrical oscillations.
b) an electronics control unit that is solely powered from a vehicle battery and having means for receiving and processing the electrical oscillations from said obstacle detector assembly and for providing an alarm when said assembly has encountered an obstacle, said unit comprising:
(1) an amplifier circuit having a first operational amplifier and means for receiving, processing and amplifying the electrical oscillations from said assembly and for producing an output signal,
(2) a comparator circuit having a second operational amplifier and means for comparing the output signal from said amplifier circuit with a preset threshold voltage that when equalled or exceeded, produces corresponding digital signals,
(3) a retriggable multivibrator circuit having a third operational amplifier and means for receiving the digital signals from said comparator circuit and for producing a signal consisting of a series of time dependent output pulses,
(4) an audio generator circuit having a fourth operational amplifier and means for producing a series of audio frequency pulses, and
(5) an alarm circuit that receives the output pulses from said multivibrator circuit and the audio frequency pulses from said audio generator circuit, said alarm circuit having means for converting the two inputs into visual and audio alarm signals that indicate when said obstacle detector assembly has encountered an obstacle.

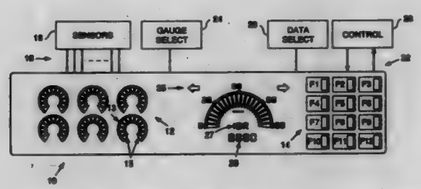


5,293,153
METHOD AND APPARATUS FOR TESTING AN AIRBAG RESTRAINT SYSTEM WITH PARALLEL SENSORS
Jeffrey R. Rochette, Livonia, and Edward J. Abeska, Ferndale, both of Mich., assignors to TRW, Inc., Lyndhurst, Ohio
Filed Apr. 9, 1991, Ser. No. 682,566
The portion of the term of this patent subsequent to Feb. 16, 2000, has been disclaimed.
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **9 Claims**



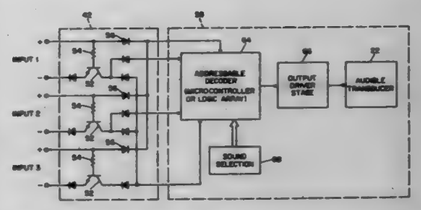
1. An apparatus for testing an airbag restraint system of the type having a firing circuit including at least two parallel connected inertia sensors connected in series with a squib across a source of electrical energy, each of said at least two parallel connected inertia sensors having a normally open switch and an associated parallel connected resistor, said apparatus comprising:
means for isolating at least one of the parallel connected inertia sensors of the firing circuit from the other inertia sensor of the firing circuit;
means for monitoring, in said firing circuit, at least one voltage value at a component connection while said at least one of the parallel connected inertia sensors is isolated;
means for determining from the monitored voltage value a value functionally related to the resistance of at least one circuit component of said firing circuit while said at least one of the parallel connected inertia sensors is isolated;
means for comparing the determined value against a predetermined limit; and
means for providing an error indication in response to said means for comparing.

5,293,154
CENTER JUSTIFIED GAUGE
Geoffrey D. Ginzel, Peoria, and Ricky D. Vance, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Sep. 16, 1992, Ser. No. 945,462
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **18 Claims**



1. An apparatus for displaying the level of a sensed parameter in a center justified format, comprising:
a sensor means for producing a sensor signal having a value representative of the level of a sensed parameter, said sensor signal having a reference value;
a gauge means for displaying the level of said sensed parameter, said gauge means having a plurality of high indicating segments, a plurality of low indicating segments, and a central segment, said plurality high and low indicating segments and said central segment being illuminable; and
instrument means for receiving said sensor signal and responsively displaying the level of the sensed parameter in the center justified format by illuminating said central segment and progressively illuminating said plurality of high and low indicating segments in response to the value of said sensor signal substantially increasing and decreasing from said reference value, respectively.

5,293,155
INTERFACE FOR A SUPERVISED MULTI-INPUT AUDIBLE WARNING SYSTEM
John J. Nicol, North Brunswick; Bart Falzarano, Jr., Bayville, and Joseph Kosich, South Toms River, all of N.J., assignors to Wheelock Inc., Long Branch, N.J.
Continuation-in-part of Ser. No. 520,269, May 7, 1990, abandoned. This application Apr. 10, 1991, Ser. No. 681,758
Int. Cl.[5] G08B *29/00*
U.S. Cl. 340—506 **23 Claims**



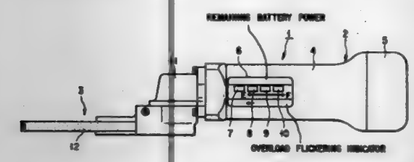
16. A multi-input audible warning system for generating an audible alarm from at least one of a plurality of multiple input circuits, comprising:
multiple input means for providing a plurality of potential input signals for generating an audible alarm;
addressable decoding means coupled to said multiple input means for prioritizing said potential input signals from a highest priority to a lowest priority;
audible alarming means for generating in response to the highest priority of said potential input signals an audible frequency-response output corresponding to said highest priority input signal, said audible alarming means including means for generating a plurality of audible signal frequency outputs; and
selection means coupled to said addressable deocoding means for selecting said audible frequency-response output from among said plurality of audible signal frequency outputs corresponding to one of said input signals.

5,293,156
HAND TOOL DRIVEN BY DC BATTERY WITH MULTIPLE LEVEL BATTERY CONDITION INDICATOR
Michihiro Shoji, and Kenji Fukuda, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1992, Ser. No. 833,156
Claims priority, application Japan, Feb. 15, 1991, 3-006368[U]
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—636 **8 Claims**

1. A hand tool including:
a main body having a DC source;
a tool section connected to the main body;
a plurality of LEDs provided on the main body;
a motor for driving the tool section;
means electrically connected between the DC source and

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the plurality of LEDs, for turning on, in sequence, the LEDs in accordance with power remaining in the DC source; and



flickering means electrically connected between the LEDs and the motor, and to the DC source, for turning on and off all of the LEDs when the motor is overloaded while in operation.

5,293,157

WORK CLAMPING METHOD AND APPARATUS USING MULTI-POSITIONAL FINGER MEMBERS

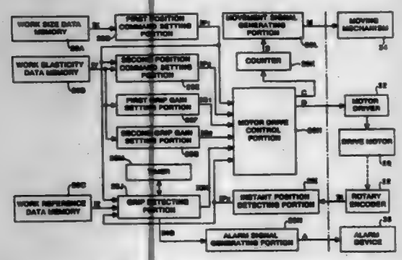
Takeshi Yakou, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 609,727, Nov. 6, 1990, Pat. No. 5,139,246. This application Jun. 3, 1992, Ser. No. 893,144

Claims priority, application Japan, Nov. 8, 1989, 1-288619; Oct. 30, 1990, 2-290722

Int. Cl.[5] G08B *21/00*; B23Q *3/00*

U.S. Cl. 340—674 **16 Claims**



1. A method of detecting the state of clamping of a workpiece by a pair of finger members of a clamping apparatus, comprising the steps of:

moving the finger members relative to each other in a clamping direction in accordance with the configuration of the workpiece to a first position where the finger members contact the workpiece with a first force;

further moving the finger members in the clamping direction toward a second position with a second force smaller than the first force;

detecting whether any further movement of the finger members toward the second position has been actually effected; and

determining that the workpiece is in position for actual clamping when substantial further movement of the finger members is not detected in the detecting step and determining that the workpiece is not in the position for clamping when substantial further movement of the finger members is detected in the detecting step.

5,293,158

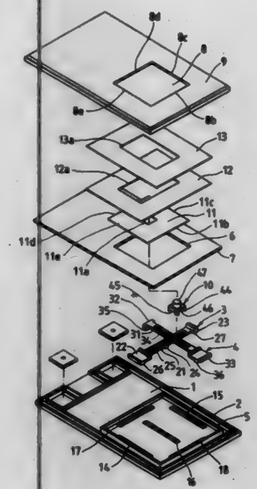
X-Y DIRECTION INPUT DEVICE

Masahiro Soma, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,673

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—161 **4 Claims**



1. A cursor control device for controlling the position of a cursor on a display, said cursor control device comprising:

a lower plate;

a base plate fixedly connected to said lower plate, said base plate defining a first opening having a plurality of edges, said base plate having a lower surface facing said lower plate;

an upper plate fixedly connected to said lower plate such that said base plate is disposed between said lower plate and said upper plate, said upper plate defining a second opening;

a first elongated holding member slidably disposed between said base plate and said lower plate, said first holding member extending in a first direction and being slidable in a second direction perpendicular to said first direction, said first holding member including a first detector element for generating a signal representing a motion of said first holding member;

a second elongated holding member slidably disposed between said base plate and said lower plate, said second holding member extending in said second direction and being slidable in said first direction, said second holding member including a second detector element for generating a signal representing a motion of said second holding member;

an engaging member slidably connected to both of said first and second holding members, said engaging member including a portion extending through said first and second openings; and

a plurality of independently slidable cover plates disposed between said base plate and said upper plate, said plurality of cover plates cooperating to cover said first opening in said base plate, thereby preventing dust from passing through said first opening to said first and second holding members.

5,293,159

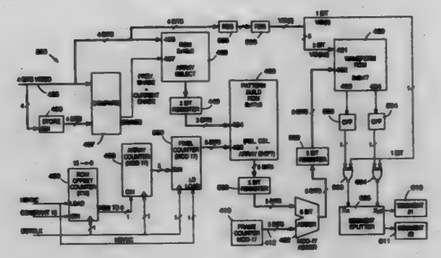
METHOD AND APPARATUS FOR PRODUCING PERCEPTION OF HIGH QUALITY GRAYSCALE SHADING ON DIGITALLY COMMANDED DISPLAYS

Chester F. Bassetti, Jr., Cupertino; Dayakar C. Reddy; Ekaputra Laiman, both of Milpitas, and Bryan M. Richter, Saratoga, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 335,622, Apr. 10, 1989, Pat. No. 5,185,602. This application Apr. 6, 1992, Ser. No. 865,046

Int. Cl.[5] G09G *3/20, 5/10*

U.S. Cl. 345—149 **2 Claims**



1. A system for controlling a digitally commanded multiple panel display unit having pixels arranged in rows and columns to produce the perception of an image having plural levels of brightness, comprising:

row addressing means for designating the row number of a desired pixel;

column addressing means for designating the column number of a desired pixel;

image memory means for producing brightness data indicating a desired level of brightness to be produced at a pixel addressed by the row and column numbers of the row and column addressing means;

waveform memory means, responsive to the brightness level produced by the image memory means, for storing a predetermined set of brightness-setting waveforms and selecting one of the stored waveforms in response to the brightness level value, the waveform memory means including bit position selecting means for selecting a first desired bit within the selected brightness setting waveform and outputting said selected first bit as a current display command bit and for selecting a look-ahead bit within the selected brightness setting waveform and outputting said look-ahead bit as a look-ahead display command bit; and

phase-placement patterning means, responsive to the row and column numbers, for producing a bit position selecting value to be used by the waveform memory means, said bit position value being determined in accordance with a predetermined phase-placement pattern, the phase-placement patterning means including information corresponding to said predetermined phase-placement pattern, so that the waveform memory means provides a first output stream of current command bits and a second output stream of look-ahead command bits for use by the multiple panel display unit.

5,293,160

KEYLESS VEHICLE LOCK SYSTEM WITH DISTANCE MEASURING

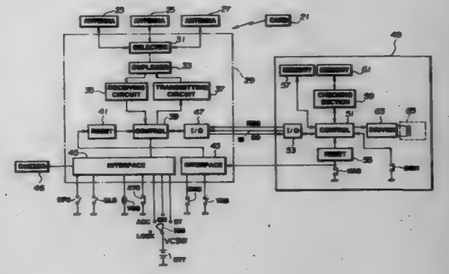
Tomotaka Kurozu, and Mikio Takeuchi, both of Kanagawa, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 606,277, Oct. 31, 1990, Pat. No. 5,157,389. This application May 29, 1991, Ser. No. 705,700

Claims priority, application Japan, Nov. 2, 1989, 1-284946; Nov. 2, 1989, 1-284947; May 31, 1990, 2-139836

Int. Cl.[5] G08C *19/00*; B60R *25/10*; G01S *11/02*

U.S. Cl. 340—825.32 **30 Claims**



1. A keyless lock system for a vehicle, comprising:

a portable communicating means for transmitting a code signal;

an onboard communicating means for receiving said code signal from said portable communicating means;

a primary means for detecting a predetermined vehicle condition of the vehicle;

a final means for producing a first warning signal in response to a first alarm command signal; and

a controlling means for producing an automatic request signal when said predetermined vehicle condition is detected by said primary means, ascertaining an existence of said portable communicating means by receiving said code signal through said onboard communicating means from said portable communicating means, when said automatic request signal is produced, and producing said first alarm command signal if said portable communicating means is absent, said controlling means being connected with said primary means to receive a signal from said primary means and further connected with said final means to send said first alarm command signal to said final means,

wherein said primary means comprises a vehicle condition sensing means for detecting said predetermined vehicle condition which normally exists when said portable communicating means is moved out of the vehicle through one of doors and windows of the vehicle.

5,293,161

SELECTIVE CALL RECEIVER HAVING A VARIABLE FREQUENCY VIBRATOR

John F. MacDonald, Coral Springs, and Jeffrey S. King, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 539,404, Jun. 18, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,226

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.46 **20 Claims**

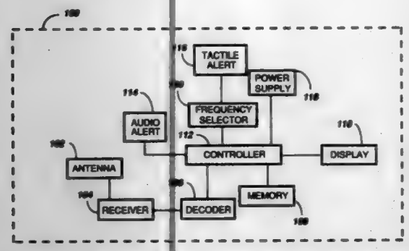
1. An electronic device powered by a battery, comprising:

a receiver for receiving a message;

a vibrator capable of vibrating at a selected one of at least two frequencies for alerting a user of the received message;

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selector means for enabling a user selectable frequency of vibration of said vibrator which optimizes the user's response to the vibrator; and



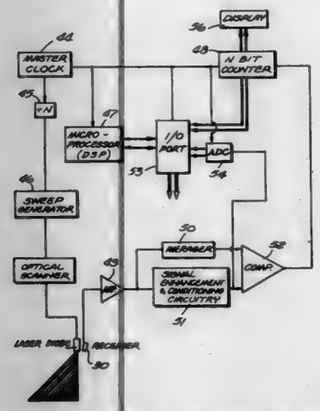
controller for monitoring a characteristic of said vibrator and for adjusting a parameter of said vibrator in response to the monitored characteristic for maintaining a constant rate of vibration of the selected frequency of vibration of said vibrator.

5,293,162

LASER BASED TRACKING DEVICE FOR DETECTING THE DISTANCE BETWEEN A VEHICLE AND A ROADWAY MARKER

William D. Bachalo, Sunnyvale, Calif.

Filed Mar. 9, 1992, Ser. No. 847,378
Int. Cl.[5] G08G *1/09*
U.S. Cl. 340—905 **4 Claims**



1. A laser tracking device for determining the distance between a vehicle and a roadway marker on the surface of a roadway, comprising:

a laser diode for generating and transmitting a laser beam;

a rotating polygonal mirror coupled to a controllable motor, said mirror being located within an optical path of said laser beam, for sweeping said laser beam across said roadway surface, said mirror also receiving a reflection of said laser beam back from said roadway surface, and directing said reflected laser beam to a receiver means;

master clock means coupled to said controllable motor for generating a first timing signal and issuing a series of timing pulses when said laser beam starts to sweep across said roadway surface;

counter means coupled to said master clock means, said counter means beginning to count said timing pulses when said master clock means generates said first timing signal, said counter means continuing to count said timing pulses concurrently as said laser beam sweeps across said roadway surface;

wherein said receiver means generates a second timing signal when said reflected laser beam is incident on it, and wherein said counter ceases counting upon said generation of said second timing signal; and

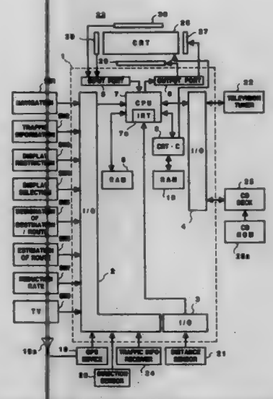
microprocessor means coupled to said receiver means and said master clock means for analyzing the number of said timing pulses counted by said counter means between generation of said first and second timing signals so as to calculate a distance between said tracking device and said roadway marker.

5,293,163

NAVIGATION APPARATUS FOR VEHICLES

Masaki Kakihara, Kronberg, Fed. Rep. of Germany; Masao Sasaki, Hiroshima, Japan; Yasuyuki Masaki, Sagamihara, Japan; Tatsuaki Taniguchi, Hiroshima, Japan; Toshihiko Okamoto, Hiroshima, Japan; Futoshi Shoji, Hiroshima, Japan, and Keiji Takao, Higashihiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 711,614, Jun. 5, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,834
Claims priority, application Japan, Jun. 6, 1990, 2-148136
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—995 **15 Claims**



1. A navigation system having display means for displaying road map information, comprising:

current position estimation means for estimating an actual position of the vehicle on a displayed map;

designating means operated by a drive for designating a destination;

storage means for previously storing a large amount of road map information which consists of image data to be displayed and logical data on which logical determination can be made by determination means, said road map information being static;

reading means for searching for road map information related to roads between the estimated current position of the vehicle and the designated destination location, and for reading out that information from said storage means;

determination means for determining the relation degree of the read out road map information to at least one of the estimated actual position and the designated destination on the basis of the individual logical data contained in the read out road map information; and

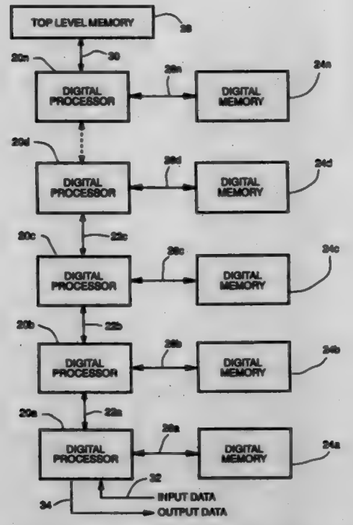
display control means for restricting display of the road map information which is determined as less related to the destination.

5,293,164

DATA COMPRESSION WITH PIPELINE PROCESSOR HAVING SEPARATE MEMORIES

Joseph M. Bugajski, Ypsilanti, and James T. Russo, Ann Arbor, both of Mich., assignors to Triada, Ltd., Ann Arbor, Mich.

Continuation of Ser. No. 706,949, May 29, 1991, Pat. No. 5,245,337. This application Nov. 18, 1992, Ser. No. 978,360
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—51 **5 Claims**



1. The method of operating upon an incoming data stream to generate an ordered body of data from which the incoming data stream may be reconstructed, comprising the steps of:

providing a plurality of sequentially ordered memory levels and a plurality of processing means, each processing means being associated with one of said memory levels;

at the processor means associated with the first memory level:

receiving said incoming data stream;

analyzing said stream to detect the occurrence of previously non-occurring sequences of data elements in said stream;

storing said non-occurring sequences in said first memory level; and

outputting a signal representative of the storage location in said first memory level for each sequence of data elements in said incoming stream;

at the processing means associated with each sequential memory level;

receiving an output signal from the processing means associated with the sequentially lower memory level;

analyzing said output to detect the occurrence of previously non-occurring sequences of storage location elements occurring in said output signal;

storing said non-occurring sequences; and

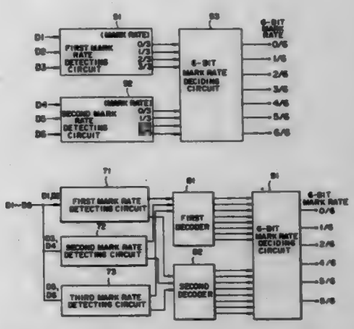
outputting to the processing means associated with the next higher memory level signals representative of the storage location in its associated memory level of each sequence of storage location elements in its incoming signal.

5,293,165

5B6B CODING RULE INVERSE CONVERSION CIRCUIT FOR DIGITAL TRANSMISSION

Hiroyuki Iwaki; Mitsuhiro Kawaguchi; Shuji Miyake, and Shuji Yamamoto, all of Osaka, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 5, 1991, Ser. No. 787,864
Claims priority, application Japan, Nov. 9, 1990, 2-304523; Mar. 19, 1991, 3-054977
Int. Cl.[5] H03M *13/02*
U.S. Cl. 341—102 **3 Claims**



1. A 5B6B coding rule inverse conversion circuit in a data transmission system utilizing the 5B6B code as a code format on a transmission line, comprising:

a first decoder for generating a signal of eight patterns from the upper three bits in a six bit signal which has been converted by the 5B6B coding rule conversion method;

a second decoder for generating a signal of eight patterns from the lower three bits in the six bits;

a mark rate detecting circuit for detecting a mark rate of six bits from the signal of eight patterns outputted from the first and second decoders;

a code inverse conversion circuit for executing the inverse conversion of the 5B6B coding rule responsive to the mark rates detected by the mark rate detecting circuit in order to convert the six bits into a signal of five bits; and

a select circuit for selecting and outputting only one signal among the signal of five bits inversely converted by the code inverse conversion circuit, signal of upper five bits among the six bits and an error signal, responsive to the mark rate detected by the mark rate detecting circuit.

5,293,166

DIGITAL-TO-ANALOG CONVERTER AND BIAS COMPENSATOR THEREFOR

Paul D. Ta, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 31, 1992, Ser. No. 860,946
Int. Cl.[5] H03M *1/66, 1/06*
U.S. Cl. 341—118 **9 Claims**

1. A digital-to-analog converter comprising:

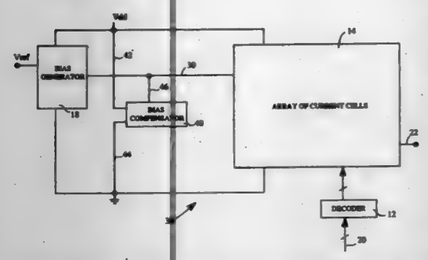
decoder means responsive to a multi-bit digital input and operative to decode said digital input into a plurality of cell activation signals;

conversion means comprising a plurality of current cells, where each of said current cells includes a cell bias input, a cell activation input, and a cell analog output, wherein said cell analog outputs of said plurality of current cells are coupled together to provide a converter analog output;

bias generator means having a reference input coupled to a bias generator voltage reference source, a bias output

coupled to the cell bias inputs of said plurality of current cells, and a power input;

variation detection means coupled to said power input for detecting a voltage variation on said power input and operative to develop an error signal in response to said voltage variation; and



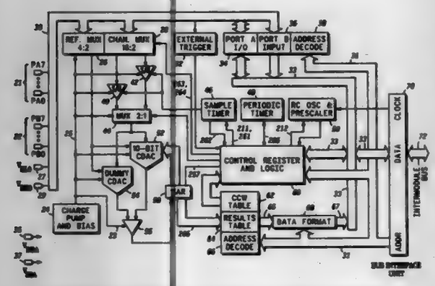
variation compensation means responsive to said error signal and operative to vary said bias output to compensate for said voltage variation, wherein an input of said variation compensation means is coupled to said error signal and an output of said variation compensation means is coupled to said bias output.

5,293,167

AUTOMATIC A/D CONVERTER OPERATION WITH SELECTABLE RESULT FORMAT

Jules D. Campbell, Jr.; Craig D. Shaw, and William DeWitt Huston, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 577,247, Sep. 4, 1990. This application Aug. 3, 1993, Ser. No. 101,262
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—141 **5 Claims**



1. An analog-to-digital conversion system comprising:

(a) an address bus;

(b) an N-bit data bus;

(c) an analog input terminal;

(d) a sample and hold circuit having an input coupled to the analog input terminal and having an output;

(e) an analog-to-digital converter circuit having an input coupled to the output of the sample and hold circuit and having an M-bit digital output, where M is less than N;

(f) an interface circuit coupled to receive an address from the address bus and coupled to provide data to the data bus, the interface circuit also having an input coupled to the M-bit digital output of the analog-to-digital converter, the interface circuit further comprises:

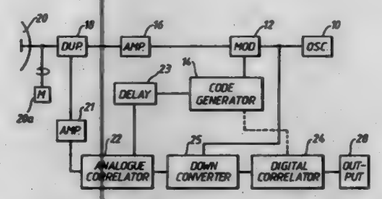
a data format circuit coupled to receive at least a portion of the address, the data format circuit couples an M-bit digital signal received from the analog-to-digital converter to either a first portion of the N-bit data bus or a second portion of the N-bit data bus, depending on a value of the portion of the address received by the data format circuit.

5,293,168

RADAR APPARATUS AND METHOD

Alistair R. Faulkner, Essex, United Kingdom, assignor to GEC-Marconi Limited, Middlesex, United Kingdom

Filed Jan. 29, 1993, Ser. No. 9,478
Claims priority, application United Kingdom, Mar. 6, 1992, 9204866
Int. Cl.[5] G01S *13/28, 13/38*
U.S. Cl. 342—145 **17 Claims**



1. A method of determining the range of a radar signal reflecting object which method comprises the steps of generating a radar frequency carrier wave,

(1) modulating said carrier wave with a first code having a first bit rate and a first code repetition rate,

(2) modulating said carrier wave with a second code having a bit rate equal to and synchronous with said first code repetition rate,

(3) transmitting said modulated carrier wave as a radar signal,

(4) feeding a received echo to an analogue correlator whereto is also fed a delayed version of said first code,

(5) and feeding an output of said analogue correlator via a down converter to a digital correlator for correlation therein with said second code,

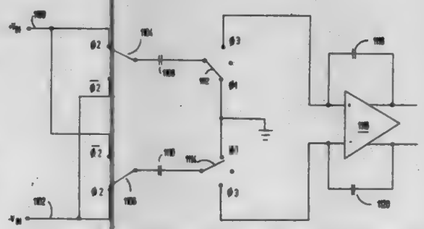
whereby a received echo correlated in said analogue correlator provides information as to a range cell wherein the reflecting object lies and correlation of the output of the analogue correlator in the digital correlator provides information as to a range band in which the range cell lies.

5,293,169

SWITCHED CAPACITOR CIRCUIT FOR PRECISION RESISTANCE

Richard A. Baumgartner, Palo Alto, Calif.; Charles E. Moore, Loveland, Colo., and Earl C. Herleikson, Yamhill, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 876,611, Apr. 30, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 49,927
Int. Cl.[5] H03F *1/02*
U.S. Cl. 341—172 **10 Claims**



1. In a differential amplifier circuit having a first resistance between a first input signal and a first amplifier input, a second resistance between a second input signal and a second amplifier input, a switched capacitor circuit for the first and second resistances, the switched capacitor circuit comprising the following:

first and second capacitors, each having a first capacitor terminal and a second capacitor terminal;

first, second and third clock signals,

wherein a rising edge of the second clock signal follows a falling edge of the third clock signal, a falling edge of the second clock signal precedes a rising edge of the third clock signal, a rising edge of the first clock signal follows the rising edge of the second clock signal and a falling edge of the first clock signal precedes the falling edge of the second clock signal;

first switch means for connecting the first capacitor terminal of the first and second capacitors to one of the following:

the first and second input signals respectively when the second clock signal is logically TRUE;

the second and first input signals respectively when the second clock signal is logically FALSE; and

second switch means for connecting the second capacitor terminal of the first and second capacitors to one of the following:

an analog ground when the first clock signal is logically TRUE;

the first and second amplifier inputs respectively when the third clock signal is logically TRUE;

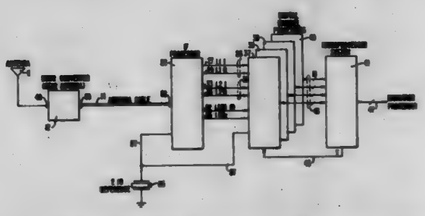
floating when the first and third clock signals are logically FALSE.

5,293,170

GLOBAL POSITIONING SYSTEM RECEIVER DIGITAL PROCESSING TECHNIQUE

Robert G. Lorenz, Newark; Roger J. Helkey, Goleta, and Kamran K. Abadi, Menlo Park, all of Calif., assignors to Ashtech Inc., Sunnyvale, Calif.

Continuation of Ser. No. 683,608, Apr. 10, 1991, Pat. No. 5,134,407. This application Apr. 6, 1992, Ser. No. 864,461
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] H04B *7/185;* G01S *5/02;* H03D *3/18*
U.S. Cl. 342—352 **44 Claims**



1. A system for processing L1 and L2 signals received from a satellite that include a unique frequency carrier with a known pseudo-random P-code and an unknown code modulated thereon, comprising:

means for generating replicas of the respective unique frequency carriers of the received L1 and L2 signals,

means for generating a replica of the known pseudo-random P-code modulated on the received L1 and L2 signals,

means receiving the L1 and L2 signals for demodulating the L1 and L2 signals with the replicas of their carriers provided by the carrier replica generating means and with the P-code replica provided by the P-code replica generating means, thereby producing demodulated L1 and L2 signals,

means receiving the demodulated L1 and L2 signals for separately integrating them over time periods equal in length to a plurality of P-code cycles, thereby producing integrated demodulated L1 and L2 signals,

means receiving the integrated demodulated L1 and L2 signals for correlating them with each other, thereby generating a correlation level, and

means communicating with said carrier replica generating means and said P-code replica generating means for adjusting the phases of the carrier replicas and of the P-code replica relative to the incoming L1 and L2 signals in a manner to substantially maximize a measure of said correlation level,

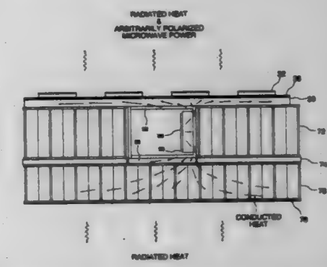
whereby useful phases of the carrier and P-code replicas are obtained.

5,293,171

PHASED ARRAY ANTENNA FOR EFFICIENT RADIATION OF HEAT AND ARBITRARILY POLARIZED MICROWAVE SIGNAL POWER

Alan R. Cherrette, 36-03 Ravens Crest Dr., Plainsboro, N.J. 08536

Filed Apr. 9, 1993, Ser. No. 44,622
Int. Cl.[5] H01Q *1/38, 21/00*
U.S. Cl. 343—700 MS **9 Claims**



1. An active phased array antenna panel for radiating both heat and arbitrarily polarized microwave signal power comprising;

a plurality of electronics modules, each of said electronics module including electronic circuit means comprising a plurality of electronic components including an amplifying means for amplifying microwave signal power, a phase shifting means for changing the phase of microwave signals, an attenuating means for attenuating microwave signals, and a digital control means for controlling said amplifying means, said phase shifting means and said attenuating means, a first multilayered circuit board made of a dielectric material with high thermal conductivity to which said electronic circuit means are attached in an electrical and heat conducting relationship, a housing made of a material with high thermal conductivity to which said first multilayered circuit board is attached in an electrical and heat conducting relationship, a plurality of input and output connector means attached to said housing and electrically connected to said electronic circuit means, a thermal contact pad made of dielectric material with high thermal conductivity, means for attaching said thermal contact pad to said housing in an electrical insulating and heat conducting relationship;

a plurality of subarray elements, each of said subarray element comprising a plurality of patch radiators, each of said patch radiator comprising a first mirror bonded to the top exterior surface of a patch substrate made of a thermally stable low dielectric constant material, a second multilayered circuit board made of a dielectric material with high thermal conductivity, said second multilayered circuit board including a microstrip feed network and a ground plane common to said microstrip feed network and to respective ones of said plurality of patch radiators,

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said microstrip feed network adapted to receive microwave signal power from said electronics module, said ground plane including a plurality of coupling slots for coupling said microwave signal power from said microstrip feed network through said ground plane to respective ones of said plurality of patch radiators, a second mirror having a plurality of areas with reflective coating removed corresponding in shape with respective ones of said plurality of patch radiators, means for bonding a plurality of said patch radiators to the top surface of said second mirror such that said plurality of patch radiators are aligned to respective ones of said plurality of areas with reflective coating removed, means to bond said second multilayered circuit board to the bottom surface of said second mirror such that said plurality of coupling slots are aligned to respective ones of said plurality of patch radiators;

a support structure assembly comprising a lightweight lower support structure made of a material with high electrical and thermal conductivity, a third mirror bonded to the bottom exterior surface of said lightweight lower support structure, a third multilayered circuit board comprising a plurality of imbedded transmission line layers for distributing microwave power, DC bias power, and control signals to respective ones of said plurality of electronics modules, a plurality of output connectors to receive input connectors on respective ones of said plurality of electronics modules, a plurality of holes in said third multilayered circuit board for receiving respective ones of said plurality of thermal contact pads on said electronics modules, a lightweight upper support structure made of a material with high electrical and thermal conductivity, said lightweight upper support structure including a plurality of holes corresponding in shape and adapted to receive respective ones of said plurality of electronics modules, means for attaching said third multilayered circuit board to the top surface of said lightweight lower support structure and to the bottom surface of said lightweight upper support structure to form a composite assembly,

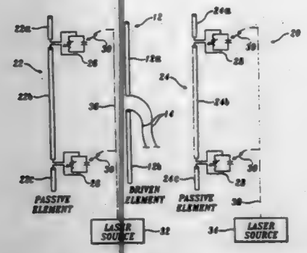
means for attaching said plurality of electronics modules to said support structure assembly in an electrical and heat conducting relationship, means for attaching said plurality of subarray elements to respective ones of said plurality of electronics modules in an electrical and heat conducting relationship.

5,293,172

RECONFIGURATION OF PASSIVE ELEMENTS IN AN ARRAY ANTENNA FOR CONTROLLING ANTENNA PERFORMANCE

Bernard J. Lamberty; George S. Andrews, both of Kent, and James L. Freeman, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1992, Ser. No. 953,528
Int. Cl.[5] H01Q *1/26, 19/30*
U.S. Cl. 343—701 **14 Claims**



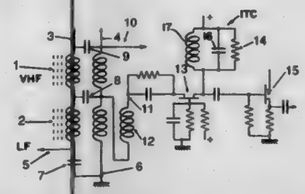
1. An optically reconfigurable array antenna, comprising:
(a) a driven element that is couplable to a transmission line;
(b) first and second passive elements positioned on opposite sides of the driven element, the first passive element including at least two co-axially arranged antenna segments and an optoelectronic switch that couples the antenna segments together, the optoelectronic switch having a first, substantially conducting impedance state and a second, substantially non-conducting impedance state, the optoelectronic switch being responsive to an optical activation signal such that the strength of the activation signal determines the impedance state of the optoelectronic switch; and
(c) non-metallic means for providing an optical activation signal to the optoelectronic switch.

5,293,173

SIGNAL SEPARATING DEVICE

Jerzy J. Kropielnicki, Knutsford, and Brian Easter, Llangefni, both of United Kingdom, assignors to Glass Antennas Technology Limited, Stockport, United Kingdom

PCT No. PCT/GB90/01059, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/01575, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 10, 1990, Ser. No. 820,612
Claims priority, application United Kingdom, Jul. 19, 1989, 8916524
Int. Cl.[5] H01Q *1/020, 1/320*
U.S. Cl. 343—704 **15 Claims**



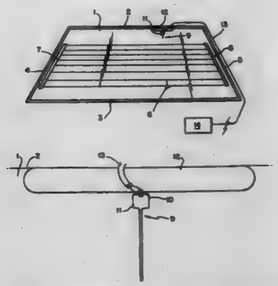
1. A signal separating device for use at long wave/medium wave frequencies and for separating a radio signal from the heating element of an electrically heated motor vehicle window to enable such heating element to be used as a radio antenna, said device comprising first terminals (3, 4) for connection to said heating element, second terminals (5, 6) for connection with a power supply for the said heating element, a radio signal terminal connection (11) connected via a VHF choke (1) to at least one of said first terminals (3, 4) and an LF choke (2) arranged between the said first and second terminals for blocking passage of radio signals to the power supply whilst permitting flow of current from the power supply to the heating element, said LF choke (2) comprising two mutually inductively coupled coils wound in a common direction, characterized in that there is provided a radio signal LF amplifier (13) connected to said radio signal terminal (11) and comprising an FET amplifier stage connected in grounded gate configuration, said LF amplifier (13) having an input impedance which is low relative to the impedance of said radio antenna and to the impedance of the said LF choke (2).

5,293,174

VEHICLE ANTENNA

Jerzy J. Kropielnicki, 40 Glebelands Road, Knutsford Cheshire; James D. Last, Orchard House, Gorddinog, Llanfairfechan, Gwynedd, and Brian Easter, Slieve Donard, Talwrn Road, Llangefni, Gwynedd, all of United Kingdom

Continuation of Ser. No. 688,712, Apr. 23, 1991, abandoned, which is a continuation of Ser. No. 458,625, Jan. 19, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 975,963
Claims priority, application United Kingdom, May 21, 1987, 8711995
Int. Cl.[5] H01Q *1/320, 1/380, 9/380*
U.S. Cl. 343—713 **14 Claims**



1. A vehicle window having a plurality of peripheral edges comprising a top edge, a bottom edge and two side edges, and an antenna for use with radio apparatus, said antenna comprising in combination an elongate conductor, applied to one surface of said window, and a separate conductive strip also applied to said surface of the said window and defining a ground plane for the said antenna, the longer side of said conductive strip extending along and contacting one of said peripheral edges to provide said ground plane, the length of said longer side of the said conductive strip extending along and contacting said one of said peripheral edges to provide the said ground plane being greater than half the wavelength of the central frequency of the frequency band to which said radio apparatus is tuned, said elongate conductor having terminal means at its one end and located adjacent to the said strip and separated from said strip by a narrow gap defined between said terminal means and the said strip, and the other end of the said elongate conductor projecting away from said strip, the length of said elongate conductor being a minor proportion of the length of any of said peripheral edges.

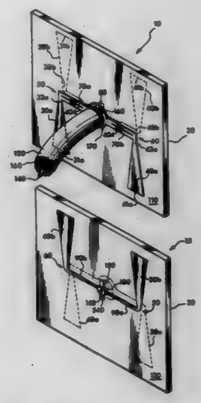
5,293,175

STACKED DUAL DIPOLE MMDS FEED

Dale L. Hemmie, Burlington, Iowa, and Robert M. Evans, Hightstown, N.J., assignors to Conifer Corporation, Burlington, Iowa

Continuation of Ser. No. 733,108, Jul. 19, 1991, Pat. No. 5,229,782. This application Mar. 15, 1993, Ser. No. 31,522
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[5] H01Q *9/28, 19/19*
U.S. Cl. 343—795 **37 Claims**

1. A single stacked dual dipole feed for use in the S-band of 2000 to 3000 MHz, said dual dipole feed comprising:
a thin board having conductive material on both sides thereof,
a first portion of said feed formed in said conductive material on the front side of said board, said first portion having:
(a) two opposing lower isosceles triangular shaped dipole half elements with the unequal sides extending outwardly on said front side form the centerline of said feed,
(b) a front linear trace connecting the apexes of said two opposing lower dipole half elements along said centerline, and
(c) an outer circular ring centrally disposed on said front trace between said apexes of said lower half elements,
said board having a formed hole through said board, said formed hole being centrally located in said second portion having:
a second portion of said feed formed in said conductive material on the rear side of said board, said second portion having:
(a) two opposing upper isosceles triangular shaped dipole half elements with the unequal sides extending outwardly on said rear side from said centerline of said feed, said opposing upper extending half elements being of the same dimension as said lower half elements,



(b) a rear linear trace connecting the apexes of said two opposing upper dipole half elements, said rear trace being centrally positioned over said front trace along said centerline, said rear trace having a combiner formed thereon for combining the outputs of said half elements, and
(c) an inner circular ring centrally disposed on said rear trace between said apexes of said upper half elements, said inner circular ring being centrally located over said formed hole, said first and second portions cooperating together to feed said signals in said S-band.

5,293,176

FOLDED CROSS GRID DIPOLE ANTENNA ELEMENT

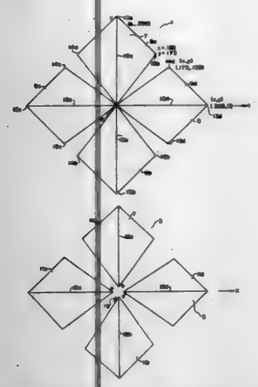
Paul G. Elliot, Vienna, Va., assignor to APTI, Inc., Washington, D.C.

Filed Nov. 18, 1991, Ser. No. 793,657
Int. Cl.[5] H01Q *21/26*
U.S. Cl. 343—797 **28 Claims**

1. An antenna element comprising:
a ground plane
a first crossed grid dipole, said first crossed grid dipole being arranged in an X-Y plane corresponding to a first tier, the first tier being vertically separated from a second tier and said ground plane, said second tier being located between said ground plane and said first tier, the first crossed grid dipole having an interconnected plurality of arms;
a second crossed grid dipole, said second dipole arranged in an X-Y plane corresponding to said second tier, said second crossed grid dipole having a plurality of non-intercon-

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nected arms, each of said non-interconnected arms having a feed input; and



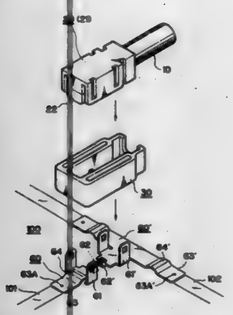
said first crossed grid dipole being connected to said second crossed grid dipole by conductors.

5,293,177

ANTENNA CONNECTOR

Kaoru Sakurai, Kawasaki, and Hideki Watanabe, Yokohama, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Filed Mar. 24, 1992, Ser. No. 858,120
Claims priority, application Japan, Mar. 29, 1991, 3-20192[U]
Int. Cl.[5] H01Q *1/50*
U.S. Cl. 343—906 **6 Claims**



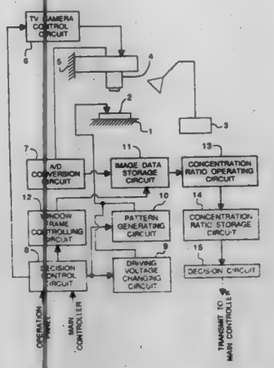
1. An antenna connector comprising:
a first housing for housing an end of a feeding cable;
first and second contacts to be connected to a core wire and a shield wire, respectively, of the cable housed in said first housing;
a second housing for housing said first housing; and
a pair of conductive feeding metal plates being arranged on and secured to a conductive antenna pattern formed on an insulative substrate and each having first hold means for receiving and holding said second housing and second hold means for receiving and holding said first and second contacts, wherein said feeding metal plates form together a general T-shape and ends of branches thereof are soldered to said conductive antenna pattern.

5,293,178

DISPLAY SCREEN INSPECTING APPARATUS

Akira Kobayashi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1992, Ser. No. 902,895
Claims priority, application Japan, Jun. 27, 1991, 3-156932
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—87 **5 Claims**



1. A display screen inspecting apparatus for inspecting a liquid crystal display having an image density which varies in proportion to a change in a drive voltage applied to the liquid crystal display, said apparatus comprising:
drive voltage varying means for applying plural different drive voltages to the liquid crystal display to obtain respective plural images on the liquid crystal display having different image densities;
image pick-up means for picking up an image of the respective plural images on the liquid crystal display having different image densities;
storage means for storing data indicative of the different image densities of the plural images picked up by said image pick-up means;
image density ratio means for determining a ratio of the different image densities stored in said storage means and for storing the thus determined image density ratio;
decision means for determining an acceptability of the liquid crystal display based on an extent of a variance in the image density ratio stored in said image density ratio means.

5,293,179

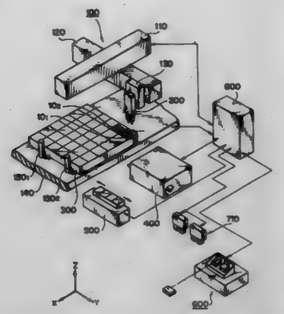
WORK CONVEY METHOD AND APPARATUS

Fumio Ichikawa, Kamakura; Kunio Ohtaki, Ryuugasaki; Eiichi Kato, Tsukuba, and Tsuyoshi Orikawa, Kasukabe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 793,092
Claims priority, application Japan, Nov. 20, 1990, 2-312771; Nov. 20, 1990, 2-312772; Nov. 20, 1990, 2-312773
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—140 R **17 Claims**

1. A work convey method for picking up a plurality of workpieces from a storage means in which a plurality of non-processed workpieces with non-processed surfaces thereof face down are placed at a first pitch and conveying the plurality of workpieces to a process machine, said method comprising the steps of:
simultaneously picking up the plurality of non-processed workpieces in a first convey step from the storage means while maintaining the workpieces at the first pitch and with the non-processed surfaces facing down and conveying the picked-up workpieces;

simultaneously receiving the plurality of non-processed workpieces conveyed in the first convey step, and simultaneously inverting the workpieces in a first inverse step so as to turn the non-processed surfaces of the workpieces upward;
simultaneously receiving the plurality of inverted work-



pieces with the non-processed surfaces facing upward and converting the first pitch between the workpieces into a second pitch in a first pitch conversion step; and
simultaneously receiving the plurality of non-processed workpieces, with the first pitch having been converted to the second pitch, and conveying the workpieces to the process machine in a second convey step.

5,293,180

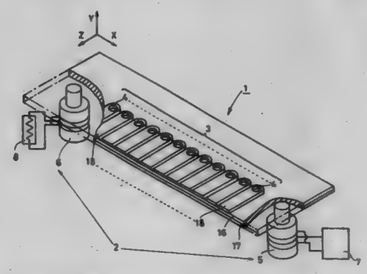
Patent Not Issued For This Number

5,293,181

IMAGE RECORDING APPARATUS

Naoto Iwao, Nagoya, and Shoji Yamada, Aichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 28, 1991, Ser. No. 783,248
Claims priority, application Japan, Oct. 29, 1990, 2-291116
Int. Cl.[5] B41J *2/415*
U.S. Cl. 346—140 R **13 Claims**



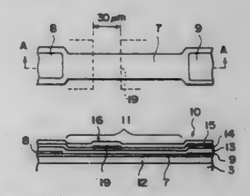
5. A recording apparatus comprising:
supply means for supplying toner particles;
attracting means for attracting the toner particles on a recording medium to receive the toner particles from the supply means;
generating means for generating toner particles toward the recording medium;
a control electrode disposed between the generating means and the attracting means, said control electrode comprising an electrode body, a plurality of apertures arranged in a line in the electrode body, electrodes associated with the apertures for controlling flow of toner particles through the apertures toward the recording medium;
a vibration means connected to said control electrode for mechanically vibrating a portion of the electrode in which the apertures are formed to generate mechanical vibrational waves which travel progressively in a direction along the line of the electrode body; and
said vibration means having means connected to said control electrode for preventing reflection of said progressive waves in the control electrode.

5,293,182

LIQUID JET RECORDING HEAD WITH SELECTED BUBBLE DISAPPEARANCE POSITION

Takuro Sekiya; Takashi Kimura, and Mitsuru Shingyouchi, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,763
Claims priority, application Japan, Feb. 13, 1991, 3-41283
Int. Cl.[5] B41J *2/05*
U.S. Cl. 346—140 R **4 Claims**



1. A liquid jet recording head comprising:
liquid storage means for storing a liquid used for recording images; and
heater means, coupled to said liquid storage means, for generating heat, generation of a bubble and disappearance thereof being alternately carried out in the liquid stored in said liquid storage means when said heater means is activated and inactivated alternately, and a liquid droplet being jetted from said liquid storage means by a propulsion force of the bubble,
said heater means comprising:
a heat reserve layer;
a resistance layer formed on said heat reserve layer;
electrodes electrically connected to said resistance layer, said resistance layer generating heat when an electrical current is supplied to said resistance layer via said electrodes; and
a protection layer stacked on said resistance layer, the heat generated by said resistance layer being transmitted to the liquid via said protection layer;
wherein said heater means has a special part in which a radiator member is provided at a position on said protection layer, said position corresponding to a disappearance position where the bubble disappears on said heater means, so that the special part is cooled by said radiator member, said disappearance position being obtained based on the following relationship;

$$C1/C2 = W2/W1$$

where C1 is a distance between a front end of said heater means and said disappearance position, C2 is a distance between a rear end of said heater means and said disappearance position, W1 is a volume of a space lying between a first end of said liquid storage means and the front end of said heater means, and W2 is a volume of a space lying between a second end of said liquid storage means and the rear end of said heater means.

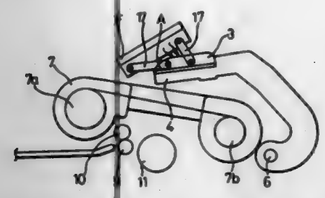
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,183

HEAT BLOWING EQUIPMENT OF THERMAL PRINT HEAD FOR COLOR VIDEO PRINTER

Jai S. Kim, Suwon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 998,574
Claims priority, application Rep. of Korea, Dec. 20, 1991, 91-23635
Int. Cl.[5] B41J *29/377*
U.S. Cl. 346—146 6 Claims



1. Heat blowing equipment for a thermal print head, comprising:

radiating means attached to an upper surface of said thermal print head for scattering heat from said thermal print head;

ventilation means for emitting heat from said radiating means; and

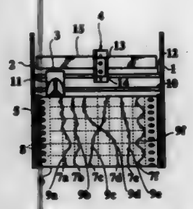
means for mounting said ventilation means to said radiating means so as to place said ventilation means to a first position relative to said radiating means when said thermal print head moves upwards and to a second position different from said first position relative to said radiating means when said thermal print head moves downwards.

5,293,184

METHOD AND APPARATUS FOR MULTI-COLOR CONTINUOUS LINE GRAPHIC RECORDING OF MULTI-CHANNEL MEASUREMENT DATA

Kimisori Ishizuka, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,093
Claims priority, application Japan, May 10, 1990, 2-118547
Int. Cl.[5] G01D *9/32*
U.S. Cl. 346—161 18 Claims



1. A method of graphically recording multi-channel measurement data given in a plurality of channels, comprising the steps of:

recording the multi-channel measurement data by plotting a monochromatic line for each channel of the multi-channel measurement data on a recording paper; and

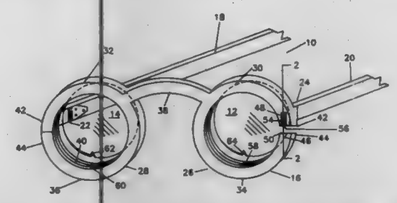
plotting at regular intervals in overlapping relation to each monochromatic line a channel discrimination mark having a respective color.

5,293,185

EYEGLASS FRAME PERMITTING INTERCHANGING OF LENSES

Ray A. Berger, 825 West Pajabon Dr., Palmyra, Pa. 17078, and David H. Foster, 108 Meadowlark Rd., Reading, Pa. 19606

Filed Sep. 17, 1992, Ser. No. 945,914
Int. Cl.[5] G02C *1/08*
U.S. Cl. 351—95 6 Claims



1. An eyeglass frame adapted to receive removable lenses comprising:

a. a pair of split lens rings wherein each of said lens rings includes a projection to receive and retain a prescription eyeglass lenses;

b. temple means endured to each of said lens rings;

c. at least one resilient rod and coil spring locking device connected to each of split lens rings for opening and closing said split to allow said eyeglass to be retained to removed from said split lens, said resilient rod and coil spring locking device forming an integral part of said split and capable of being loosened or tightened by hand without the said of a separate instrument.

5,293,186

CONTACT LENS

William E. Seden, Fareham, and Ronald S. Hamilton, Southampton Hants, both of England, assignors to British Technology Group Ltd., London, England

PCT No. PCT/GB90/01699, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/07687, PCT Pub. Date May 30, 1991
PCT Filed Nov. 6, 1990, Ser. No. 867,684
Claims priority, application United Kingdom, Nov. 8, 1989, 8925246
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—160 R 42 Claims

1. A contact lens comprising a central area of diameter of at least 5 mm and holes of exit diameter of at least one micron and an exit area not exceeding 5×10^{-4} mm^2 going part or all the way from one lens surface to the other, said holes being distributed so that no holes are present in said central area, said holes being in sufficient number to account for at least 5% of the area of the lens.

5,293,187

METHOD AND APPARATUS FOR EYE TRACKING FOR CONVERGENCE AND STRABISMUS MEASUREMENT

R. Benjamin Knapp; Lisa E. Hake, both of Pacifica, and Hugh S. Lusted, Palo Alto, all of Calif., assignors to Biocontrol Systems, Inc., Palo Alto, Calif.

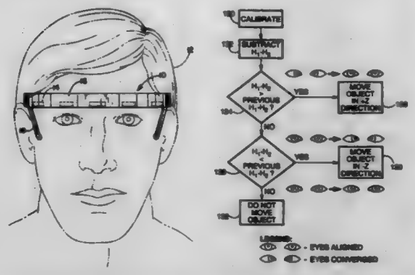
Filed Feb. 5, 1992, Ser. No. 831,561
Int. Cl.[5] A61B *3/14*
U.S. Cl. 351—210 11 Claims

1. A method for determining eye position in relation to a reference point, comprising the steps of:

(a) sensing electro-oculogram voltage signals produced by movement of at least one eye;

(b) calibrating said electro-oculogram voltage signals to zero amplitude while focusing said eye on a reference point;

(c) monitoring said electro-oculogram signals for a change in amplitude; and



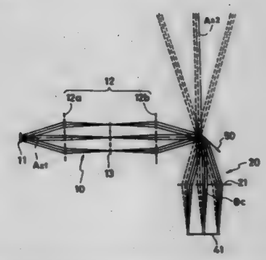
(d) converting said change in amplitude to a positional signal representing the position of said eye in relation to said reference point.

5,293,188

REFLECTING ILLUMINATION TYPE PROJECTING DEVICE

Kazushi Yoshida; Ryota Ogawa, and Tetsuya Abe, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 691,673, Apr. 25, 1991, Pat. No. 5,192,961, which is a continuation of Ser. No. 383,079, Jul. 21, 1989, abandoned. This application Dec. 10, 1992, Ser. No. 988,792
Claims priority, application Japan, Jul. 22, 1988, 63-183099; Jan. 13, 1989, 1-006786; May 26, 1989, 1-133260; Jun. 19, 1989, 1-157578
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] G03B *21/28, 21/08*
U.S. Cl. 353—66 15 Claims



1. A reflecting illumination type projecting device, comprising:

a projection lens having an optical axis intersecting an object having a patten to be projected;

a light source for illuminating said object through said projecting lens;

a screen onto which an image of said object is projected by light that is reflected from said object and which passes through said projecting lens; and

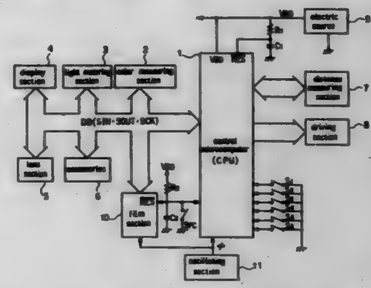
an optical path separating element disposed substantially at an exit pupil of said projecting lens, said optical path separating element being formed with a total reflecting mirror portion for reflecting substantially all illumination light or reflected light, said optical path separating element having a transmitting portion for transmitting a remaining light, thereby making said illumination light incident to said projecting lens and guiding said reflecting light towards said screen.

5,293,189

PHOTOGRAPHIC SYSTEM CAPABLE OF RECORDING THEREIN PHOTOGRAPHING DATA AND READING OUT THE SAME AND FILM STRUCTURE FOR USE IN THE PHOTOGRAPHIC SYSTEM

Nobuyuki Taniguchi; Manabu Inoue; Reiji Seki, and Katsuyuki Nanba, all of Azuchi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 768,332, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 488,999, Mar. 6, 1990, abandoned. This application Aug. 18, 1992, Ser. No. 929,503
Claims priority, application Japan, Mar. 6, 1989, 1-053389; Mar. 6, 1989, 1-053390; Mar. 6, 1989, 1-053391; Mar. 6, 1989, 1-053392
Int. Cl.[5] G03B *07/00*
U.S. Cl. 354—21 4 Claims



1. A camera which can record photographing data into a memory device provided in a recording medium loaded in the camera, comprising:

first recording means for recording predetermined data in the recording medium every time one film frame is photographed, said predetermined data being timely recorded only at a time when said one film frame is photographed;

operating means for writing second data which represents a descriptive caption of an object to be photographed, said second data capable of being rewritten; and

second recording means for recording the second data in said memory device of the recording medium when the operating means is operated, and not recording the second data in said memory device of the recording medium when the operating means is not operated.

5,293,190

Patent Not Issued For This Number

5,293,191

CAMERA

Takao Umetsu, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jul. 6, 1993, Ser. No. 86,122
Claims priority, application Japan, Jul. 24, 1992, 4-198623
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.1 4 Claims

1. A camera comprising:

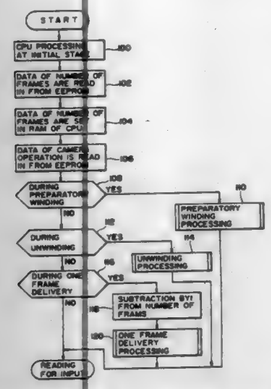
a memory means capable of electrically writing in, erasing and holding the content of memory without a backup power source;

a film delivery means for electrically delivering film by power from a battery;

a display means for displaying the number of film frames on the basis of a film count value; and

a control means for controlling said film delivering means and causing said memory means to store information of camera operation immediately before the start of the film delivery and the number of film frames at the time of

change of said film count value, said control means being reset during the removal of said battery or the voltage drop, reading out the information of camera operation immediately before the reset and the number of film frames from said memory means during the processing at

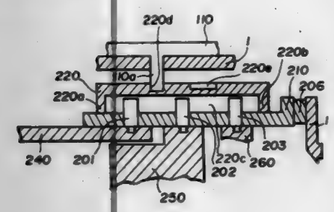


the initial stage after the operations become possible by the exchange of the batteries and the like and setting the number of film frames changed by one from the number of film frames recorded as said film count value when the information of camera operation indicates one frame delivery.

5,293,192
CAMERA

Hiroshi Akitake; Kazuhiro Satoh, both of Sagamihara, and Shigeo Hayashi, Okaya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,108
Claims priority, application Japan, Jan. 8, 1992, 4-001778
Int. Cl.[5] G03B *13/02*
U.S. Cl. 354—219 26 Claims

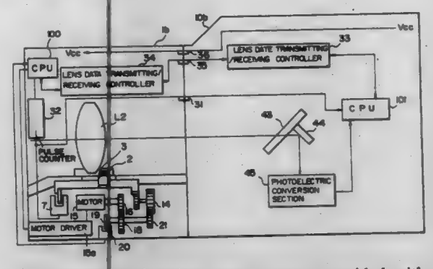


1. A camera comprising:
a stationary frame adjustable in position with respect to a camera body in a direction of an optical axis;
a cam frame disposed around an outer circumference of said stationary frame to be rotatable about the optical axis and movable in a direction of the optical axis with respect to said stationary frame;
a finder optical system provided on said camera body; and
a finder optical system driving cam provided integrally with said cam frame for driving said finder optical system,
wherein in-focus position adjustment of a photographing optical system of said camera is performed during assembly by moving only said stationary frame in the direction of the optical axis, while said cam frame is kept immobile with respect to said camera body.

5,293,193
AUTOMATIC FOCUSING CAMERA WITH CONTROL OF FOCUSING OPTICAL SYSTEM POSITION AND DRIVING POWER SOURCE VELOCITY

Hiroshi Okano, Tokyo, and Yoshiharu Shiokama, Chiba, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 782,297, Oct. 24, 1991, Pat. No. 5,250,976.
This application May 10, 1993, Ser. No. 58,363
Claims priority, application Japan, Oct. 30, 1990, 2-290904; Dec. 25, 1990, 2-414275
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 5 Claims



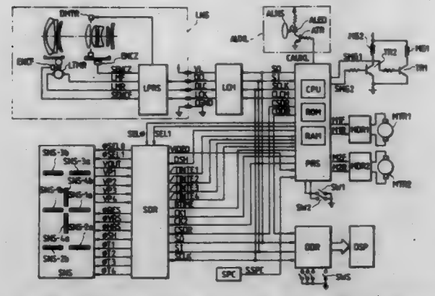
1. An automatic focusing camera system provided with a lens barrel in which a focusing optical system is incorporated, and a camera body, comprising:
driving means incorporated in said lens barrel, said driving means having a driving power source and transmission member for transmitting the driving power of said driving power source to said focusing optical system;
first signal generating means incorporated in said lens barrel, said first signal generating means being provided at the final stage of said transmission member to generate a first driving signal in response to the driving of said focusing optical system;
first terminal means provided in said lens barrel, said first terminal means transmitting said first driving signal to said camera body on real time;
focus detecting means incorporated in said camera body, said focus detecting means detecting the focusing condition of an objective image to output focus detecting signal;
second terminal means provided in said camera body, said second terminal means receiving said first driving signal on real time; and
calculating means incorporated in said camera body, said calculating means calculating the driving information of said focusing optical system on the basis of said focus detecting signal and said first driving signal.

5,293,194
FOCUS DETECTION APPARATUS HAVING AN AUXILIARY LIGHT

Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 645,474, Jan. 24, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,394
Claims priority, application Japan, Jan. 25, 1990, 2-016802; Jan. 25, 1990, 2-016803
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—402 25 Claims

1. A focus detection apparatus for detecting focus states in a plurality of different areas in a scene based on outputs from a plurality of sensor circuits each of which independently receives light from a different area of the scene, said apparatus comprising:
a determination circuit for determining whether a focus undetectable state occurs in a specific one of the different areas on the basis of an output from a sensor circuit corresponding to the specific area; and

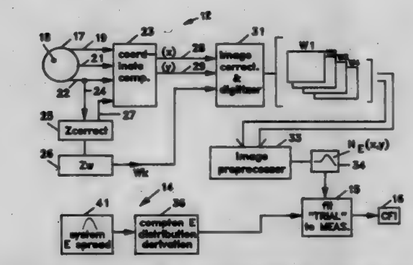


an auxiliary light control circuit for generating a signal for driving an auxiliary light source when the focus undetectable state is determined by said determination circuit.

5,293,195
REDUCTION OF IMAGE ARTIFACTS CAUSED BY COMPTON SCATTER

Gideon Berlad; Dov Maor; Yigal Shrem, and Adrian Soil, all of Haifa, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed May 15, 1991, Ser. No. 700,420
Claims priority, application Israel, Jun. 11, 1990, 094691
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.24 44 Claims

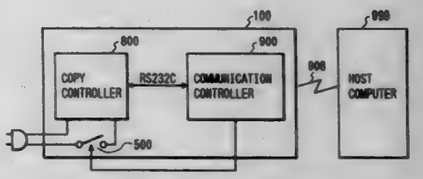


1. A method of reducing the contribution of Compton scattered photons on an image produced by a gamma ray imaging system, said method comprising the steps of:
detecting as counts photons impinging on a gamma ray detector reponsive to gamma radiation from a source,
determining an X,Y coordinate location for each detected count according to the location of the impingement of the photons on the detector
using a plurality of energy windows that together span an energy range to obtain the energy of the impinging photons,
placing each detected count in an energy compartment of one of a plurality of memory matrices said energy compartment corresponding to one of said plurality of energy windows according to a measured energy of the impinging photons,
said plurality of memory matrices each located at X,Y coordinates, said matrices each being digital images, said X,Y coordinates corresponding to the location of the impingement of the photons on the detector and of a pixel in the images,
providing a measured energy spectrum per X,Y location using the counts accumulated in each compartment of the matrices at each of the X,Y coordinate locations, said measured energy spectrum including counts produced by both scattered and unscattered photons,
calculating the energy distribution of one or more orders of Compton scattered photons using physical relativistic Compton characteristics,
convolving the calculated energy distributions of one or more orders of Compton scattered photons with a system energy spread function to obtain a system dependant energy distribution of the one or more orders of Compton scattered photons,
constructing a trial function by:
summing the convolved system dependant energy distribution of one or more orders of Compton scattered photons with unknown amplitude coefficients and the contribution of the system spread function with the unknown amplitude coefficients,
locally fitting the trial function to the measured energy spectrum to solve for the unknown amplitude coefficients and thus determining the counts of the unscattered photons, and
using the counts of the unscattered photons per pixel to provide an image with reduced artifacts due to Compton Scatter.

5,293,196
COMMUNICATION CONTROL APPARATUS FOR MONITORING A CONDITION OF A MACHINE AND FOR TRANSMITTIING THE CONDITION TO AN EXTERNAL APPARATUS

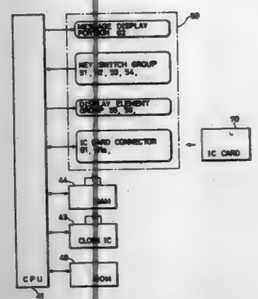
Satoshi Kaneko, Kawasaki; Masanori Miyata, Yokohama; Hideki Adachi; Shinichi Nakamura, both of Kawasaki; Naoyuki Ohki; Tokuharu Kaneko, both of Yokohama; Satoshi Kuroyanagi; Hiroshi Ozaki, both of Tokyo; Hisatsugu Tahara, Kawasaki; Taisei Fukada, Tokyo, and Mitsuharu Takizawa, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 868,865
Claims priority, application Japan, Apr. 18, 1991, 3-085606; Apr. 18, 1991, 3-085607; Apr. 18, 1991, 3-085608; Apr. 18, 1991, 3-085624
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 12 Claims



1. A power supply control apparatus comprising:
input means for receiving data from a machine, the data being indicative of a condition of a malfunction occurring in the machine;
communicating means for communicating between said input means and an external apparatus installed at a position separate from the machine; and
power supply control means for controlling a supply of electric power to the machine;
wherein said communication means transmits the received data to the external apparatus, and based on the malfunction condition indicated by the data the external apparatus transmits an instruction to said communication means to interrupt the supply of power to the machine, and said power supply control means interrupts the supply of power to the machine in accordance with the instruction from the external apparatus.

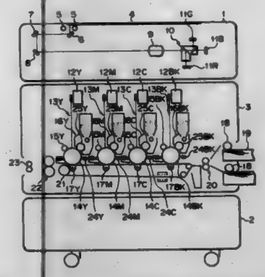
5,293,197
IMAGE FORMING DEVICE CAPABLE OF BEING MAINTAINED EASILY BY USING IC CARD
Soichi Iwao, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 738,147, Jul. 30, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 50,998
Claims priority, application Japan, Jul. 31, 1990, 2-204259
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—204 24 Claims



1. An image forming apparatus operable in response to information stored in a storage medium, comprising:
a main body of the image forming apparatus,
connection means on said main body to which said storage medium storing management data indicative of an improvement history of the apparatus may be detachably connected,
data reading means on the main body for reading the management data from said connected storage medium,
first displaying means on the main body for displaying the improvement history of the apparatus based on said read management data,
inputting means for inputting state data indicative of a stage in the improvement history of the device,
storing means for storing said input state data, and
second displaying means on the main body for displaying the stage in the improvement history of the apparatus based on the state data stored in said storing means.

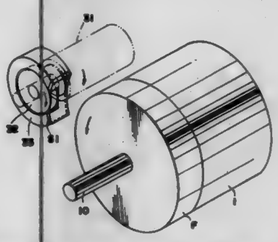
5,293,198
IMAGE FORMING APPARATUS FOR CONTROLLING THE DYNAMIC RANGE OF AN IMAGE
Noboru Sawayama, Tokyo; Katsuhiro Aoki, Yokohama, and Takayuki Maruta, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 8, 1991, Ser. No. 742,896
Claims priority, application Japan, Aug. 10, 1990, 2-213340; Aug. 20, 1990, 2-219807; Nov. 7, 1990, 2-301421; Jun. 21, 1991, 3-150345
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—214 9 Claims

1. An image forming equipment for electrostatically forming a latent image on a photoconductive element and developing the latent image by a developer containing at least a toner to produce a corresponding toner image on the photoconductive element, the equipment comprising:
a) developing means including a developing sleeve for forming a predetermined toner image pattern on the photoconductive element;
b) photosensor means for sensing a reflection from the predetermined toner image pattern; and
c) control means for changing at least one of:
1) a developing bias;
2) a charge potential;
3) a quantity of exposing light; and
4) a quantity of toner supply;
in response to the output signal of the photosensor means representative of a reflection incident to the photosensor means, wherein the control means includes:
1) means for comparing:
i) a background output VSG+ of the photosensor means representative of a reflection from a non-image area of the photoconductive element and appearing when the developing sleeve is not rotating and the photoconductive element is rotating, and



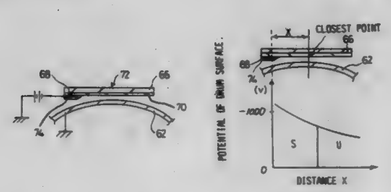
ii) a background output VSG of the photosensor means representative of a reflection from the photoconductive element and appearing when the developing sleeve is rotating and the photoconductive element is rotating; and
2) means for controlling at least one of the developing bias, the charge potential, the quantity of exposing light and the quantity of toner supply by using a greater of the background outputs VSG+ and VSG.

5,293,199
IMAGE FORMING APPARATUS HAVING SPACING ROLLER FOR MAINTAINING UNIFORM SPACING BETWEEN IMAGE BEARING MEMBER AND DEVELOPING MATERIAL SUPPLYING MEANS
Naomasa Saito; Tatsumi Fujishima, both of Toyokawa, and Shoichi Suzuki, Aichi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 1, 1991, Ser. No. 694,337
Claims priority, application Japan, May 11, 1990, 2-049717[U]; Dec. 3, 1990, 2-404598; Mar. 26, 1991, 3-060734
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 10 Claims



9. An image forming apparatus, comprising:
an image bearing member for bearing an electrostatic latent image, said image bearing member being rotatable in a direction and an edge thereof being made of an electrically insulative material;
a developing means for developing the electrostatic latent image in a reversing development process, said developing means including developing material and a developing roller;
a positioning roller rotatably supported on a rotating shaft of the developing roller and making contact with the edge of said image bearing member so as to position the developing roller relative to the image bearing member;
a housing for covering said positioning roller, said housing having an opening wherefrom said positioning roller protrudes on a surface of the housing that confronts said image bearing member; and
a seal member provided around the opening so as to seal up a gap between said housing and said image bearing member.

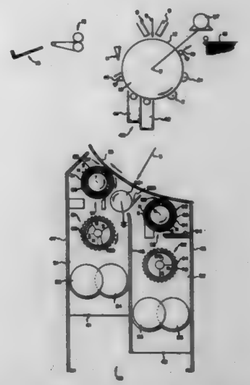
5,293,200
ELECTROSTATIC DEVICE FOR CHARGING A PHOTOSENSITIVE SURFACE
Shusaku Tsusaka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Dec. 29, 1992, Ser. No. 997,910
Claims priority, application Japan, Feb. 18, 1992, 4-030911; Feb. 18, 1992, 4-030912
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 20 Claims



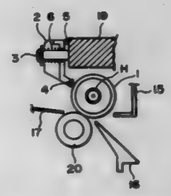
1. An electrostatic device for electrifying an electrostatic latent image holder, comprising:
an insulative substrate;
a resistance film overlaid on the substrate, the resistance film having a side portion; and
at least one electrode having an area in common with the side portion of the resistance film.

5,293,201
IMAGE FORMING APPARATUS IN WHICH TONER IS RECYCLED BETWEEN TONER APPLYING AND CLEANING STATIONS
Dennis R. Kamp, Spenceport, and Kevin E. Yousey, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 9, 1992, Ser. No. 973,803
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—269 10 Claims

1. Image forming apparatus comprising:
means for applying toner to an image surface,
a laser positioned to imagewise tack toner to said surface,
means operable after toner has been imagewise tacked by said laser for cleaning untacked toner from said surface,
said means for applying toner including,
first containing means for containing a supply of particulate material including toner particles, and
means for transporting particulate material from the first containing means through a toner applying zone in toner applying relation with the image surface,
said toner cleaning means being adjacent said toner applying means and including,
second containing means for containing a supply of particulate cleaning material, and
means for transporting particulate cleaning material from the second containing means through a cleaning zone in cleaning relation with said image surface, and
means for removing toner from the particulate cleaning material including a rotatable member positioned between said toner applying means and said toner cleaning means and having a detoning surface for receiving toner from said particulate cleaning material and means for scraping toner from said detoning surface into the first containing means.



5,293,202
IMAGE FIXING APPARATUS
Nobukazu Adachi, Tokyo; Yuzo Isoda, Yokohama; Toshio Miyamoto, Tokyo, and Yohji Tomoyuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 475,796, Feb. 6, 1990, abandoned. This application Jan. 3, 1992, Ser. No. 818,451
Claims priority, application Japan, Feb. 8, 1989, 64-029422; Jul. 24, 1989, 64-191102
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 26 Claims



1. An image fixing apparatus, comprising:
a fixing rotatable member for fixing a toner image on an image supporting material; and
a separating guide for separating the image supporting material from said fixing rotatable member, said separating guide being disposed along a direction of a generating line of said fixing rotatable member with a predetermined gap from a surface of said fixing rotatable member,
a contact portion contacting a surface of said fixing rotatable member to form the gap;
wherein said contact portion partly overlaps with both a maximum sheet passage region and a non-sheet passage region.

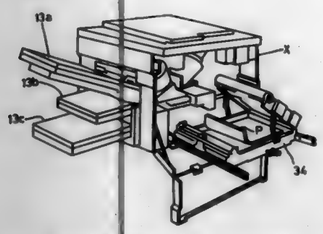
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,203

IMAGE FORMING APPARATUS HAVING A MOVABLE SHEET RECEIVING TRAY

Kenichi Wada; Tsukasa Yagi; Tomohiko Masuda; Hirchisa Kitano; Itaru Saitoh; Ken Matsubara, and Kohichi Shingaki, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 503,533, Apr. 3, 1990, Pat. No. 5,103,267.
This application Nov. 21, 1991, Ser. No. 795,466
Claims priority, application Japan, Apr. 4, 1989, 1-86171; Apr. 7, 1989, 1-89169; Apr. 7, 1989, 1-89170
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 21 Claims



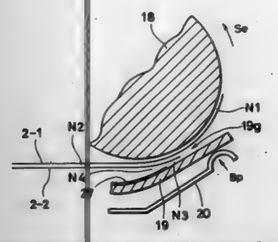
1. An image forming apparatus for producing completed copies, comprising:
a main body;
an image forming device, provided in said main body, which forms images on paper to produce the completed copies;
a tray, provided in said main body, which receives and stacks the completed copies produced by said image forming device;
a sheet transport path which transports the completed copies from said image forming device to said tray; and
a support mechanism which movably supports said tray in a first position inside of said main body where the completed copies are received and stacked thereon and a second position outside of said main body where the completed copies can be manually removed therefrom.

5,293,204

COPIER WITH A SUPERPOSED-SHEET SEPARATION MECHANISM

Hiroshi Tabuchi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 779,832, Oct. 21, 1991, abandoned.
This application Nov. 12, 1992, Ser. No. 975,165
Claims priority, application Japan, Oct. 25, 1990, 2-290464
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 5 Claims



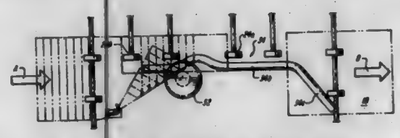
1. A copier comprising a sheet supply means for supplying a plurality of sheets in succession and a writing section wherein an image is written on a one of the plurality of sheets, said copier further comprising:
(a) a sheet separation mechanism disposed between the sheet supply means and the writing section to separate the plurality of sheets into individual sheets when the plurality of sheets are supplied in superposition from the sheet supply means, said sheet separation mechanism comprising:
i. a drive roller having a cylindrical surface;
ii. a friction piece having a surface facing the cylindrical surface of the drive roller;
iii. means for pressing the fraction piece against the cylindrical surface of the drive roller;
iv. a sheet accepting cavity being defined by said cylindrical surface of the drive roller and said surface of the friction piece on an entry side on which the plurality of sheets supplied from the sheet supply means are received;
v. a gap being formed by said surface of the friction piece and said cylindrical surface of the drive roller, the plurality of sheets being allowed to pass through the gap one at a time;
vi. a slidable film attached to or a slidable layer formed on part of said surface of the friction piece to cover the area of the friction piece where the one of the plurality of sheets initially comes into contact with the friction piece, while the area near the gap is not covered with the slidable film or slidable layer, to give the required friction;
(b) a sheet sensor producing a signal indicative of the passage of the sheet through a predetermined location between the sheet separation mechanism and the writing section; and
a control means for controlling the timing of the writing such that the initiation of the writing is in time with the arrival, at the writing section, of the leading end of the area of the one of the plurality of sheets in which the image is to be written.

5,293,205

SIDE TO SIDE SHEET INVERTER

Paul E. Plasschaert, Limehouse, and Jeffrey P. Belbeck, Mississauga, both of Canada, assignors to Delphax Systems, Canton, Mass.

Filed Jan. 13, 1992, Ser. No. 819,826
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—319 12 Claims



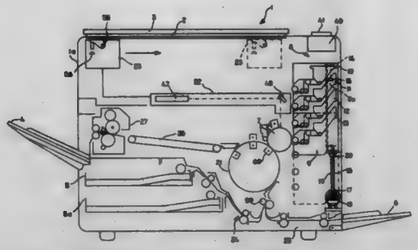
1. A side to side sheet inverter for turning a sheet over to face an opposite direction while preserving its end-to-end orientation, such inverter comprising
a linearly extending channel having a plurality of drive means extending into the channel for engaging a sheet and transporting the sheet therealong
first deflector means for deflecting a leading edge corner of the sheet upwardly and bending the corner over as the sheet is transported along the channel so that the sheet is curled over side-to-side
first drive means for gripping a side of the sheet opposite said corner to drive the sheet past the first deflector means
second drive means for gripping and driving the leading edge to drive the sheet along the channel, and
second deflector means for engaging the sheet at a bend as the sheet is driven by said second drive means, said second deflector means angling outwardly to an edge such that as the sheet is transported its trailing edge is pulled around the bend inverting the sheet.

5,293,206

COLOR IMAGE FORMING APPARATUS WITH OPTIUM OPERATION OF DEVELOPING DEVICE POSITIONING MECHANISM

Takao Ichihashi, Osaka; Syuji Yamada, Hyogo; Masashi Matsumoto, Osaka; Mayumi Uramoto, Nara, and Yasuyuki Fukunaga, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 26, 1990, Ser. No. 589,175
Claims priority, application Japan, Jul. 11, 1989, 1-289679; Sep. 19, 1989, 1-256665
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 3 Claims



2. An image forming apparatus comprising:
a plurality of color developers of a number n, wherein n is a number more than 4 which are arranged in a row in one direction;
a means for changing a color developer opposed to a photosensitive body by moving corresponding color developers in each of said number n;
a means for controlling the moving sequence of the plurality of color developers of said number n to form a color image of a document on a transfer sheet; and
a means for adjusting a position of the developers at a predetermined adjusted position thereof during changing of the developers;
said image forming apparatus further characterized in that;
the color developers of said number n are arranged according to a moving sequence such that a moving distance of each of said color developers is n pitches at a maximum;
the developers of said number n are changed through a shortest moving path when one of the plurality of developers of the number n is changed to another developer; and
the position of the number n of plurality of developers is adjusted only when the predetermined adjusted position is on said shortest moving path.

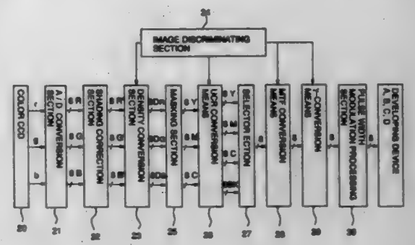
5,293,207

COLOR IMAGE FORMING APPARATUS WITH BLACK TONER CONTROL

Satoshi Haneda, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,259
Claims priority, application Japan, Jan. 29, 1992, 3-38757
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—327 3 Claims

1. A color image forming apparatus comprising:
(a) an image carrier;
(b) charging means for charging said image carrier;
(c) imagewise exposing means for forming a latent image on said image carrier corresponding to image data including a plurality of different color data;
(d) a plurality of developing means for respectively developing said latent image with a plurality of different colored toners, wherein each of said different colored toners is registered on said image carrier to form a registered color image; and
(e) converting means for converting an edge portion of said image data corresponding to said registered color image so that a quantity of black toner to be used is increased to be greater than a plurality of quantities of other colored toners to be used to form said registered color image;



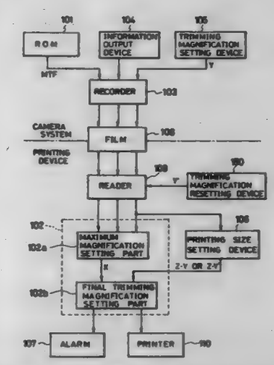
said converting means comprising:
means for changing an under color removal amount; and
means for changing a modulation transfer function.

5,293,208

CAMERA AND PRINTING APPARATUS WHICH CAN BE USED FOR TRIMMING SHOTS

Hiroshi Okano, Tokyo; Yoshiharu Shiokama, Kawasaki, and Tsuneo Watanabe, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 768,333, Sep. 30, 1991, which is a continuation of Ser. No. 663,063, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 416,502, Oct. 3, 1989, abandoned. This application Apr. 19, 1993, Ser. No. 47,405
Claims priority, application Japan, Oct. 6, 1988, 63-252698; Oct. 13, 1988, 63-258221; Dec. 5, 1988, 63-307436
Int. Cl.[5] G03B *27/46, 27/52*
U.S. Cl. 355—55 5 Claims



1. A printing apparatus for preparing a print image out of a subject image formed by a photographic optical system, comprising:
a recording medium on which data including optical-performance data indicating the optical performances of said photographic optical system is recorded along with said subject image;
a reading means for reading said data recorded on said recording means;
a trimming-magnification setting means for setting a trimming magnification determining the trim range of said subject image recorded on said recording medium;
a printing-size setting means for setting the size of said print image;

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a means for setting a maximum enlarging magnification for enlarging the subject image to a print image on the basis of said data read and said trimming magnification; and

a means for determining a final enlarging magnification for enlarging the subject image to a print image on the basis of said maximum enlarging magnification and the size of said print.

5,293,209

ELECTROPHOTOGRAPHIC APPARATUS CONTAINING A CHEMICAL ADSORPTION FILM COATING

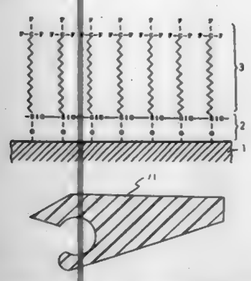
Mamoru Soga, Osaka; Norihisa Mino, Settu, and Kazufumi Ogawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 914,534

Claims priority, application Japan, Jul. 22, 1991, 3-180792; Aug. 28, 1991, 3-217611; Aug. 28, 1991, 3-217612; Apr. 22, 1992, 4-103194; Apr. 22, 1992, 4-103195; Apr. 22, 1992, 4-103196

Int. Cl.[5] G03G *15/00, 21/00*

U.S. Cl. 355—200 **14 Claims**



1. An electrophotographic apparatus for obtaining duplicate images comprising a photoimaging component coated with a chemical adsorption film containing a fluorocarbon group, said chemical adsorption film bonded directly to the photoimaging component through —SiO— covalent bonds.

5,293,210

DETECTION OF BACTERIA IN BLOOD CULTURE BOTTLES BY TIME-RESOLVED LIGHT SCATTERING AND ABSORPTION MEASUREMENT

Klaus W. Berndt, Stewartstown, Pa., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 24, 1992, Ser. No. 874,252

Int. Cl.[5] G01N *33/48*

U.S. Cl. 356—39 **33 Claims**

1. A method for detecting the presence of bacteria in a scattering and/or absorbing sample comprising the steps of:

introducing modulated electromagnetic radiation into the sample at a first point;

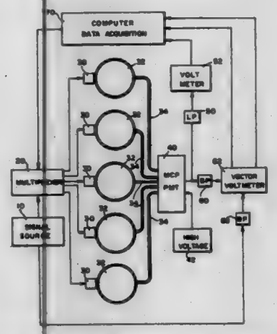
receiving collected modulated electromagnetic radiation at a second point;

determining a time-average intensity of the collected modulated electromagnetic radiation over time;

determining an amplitude of the collected modulated electromagnetic radiation relative to the introduced modulated electromagnetic radiation;

determining a modulation degree of the collected modulated electromagnetic radiation relative to the introduced modulated radiation;

comparing the determined modulation degree of the collected modulated electromagnetic radiation with a modulation degree measured at a prior time to detect the presence of bacteria; and



indicating that bacteria are present in the sample if the determined modulation degree is significantly different than the modulation degree measured at the prior time.

5,293,211

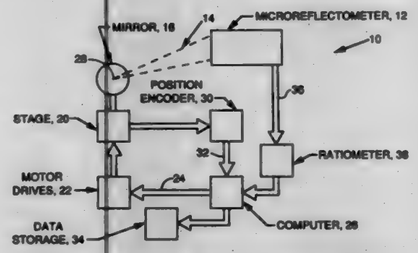
MICROREFLECTOMETER SYSTEM

Jay M. Bernard, Torrance; Harold Mirels, Rolling Hills Estates, and Eugene B. Turner, Torrance, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 6, 1983, Ser. No. 543,657

Int. Cl.[5] G01B *9/00*; G01N *21/00, 21/55*

U.S. Cl. 356—128 **1 Claim**



1. A microreflectometer system for measuring defects in a mirror coating on a mirror, said system comprising:

a microreflectometer outputting a focused beam onto said mirror, said microreflectometer receiving a reflected signal beam formed from a part of said focused beam reflected from said mirror coating of said mirror, said microreflectometer outputting intensity signals, one intensity signal being directly related to an intensity of said reflected signal beam, another intensity signal being directly related to an intensity of a reference beam; said microreflectometer comprising:

a laser, said laser outputting a laser beam;

a beam expander, said beam expander receiving said laser beam and outputting an enlarged laser beam;

a beam splitter, said beam splitter receiving said enlarged laser beam and outputting a signal beam and a reference beam;

a lens means, said lens means focusing said signal beam to form said focused beam to a spot, said spot being about 0.01 mm^2, said reflected signal beam being formed from said part of said focused beam reflected from said mirror, said reflected signal beam passing through said lens means, and reflecting off of said beam splitter;

a retroreflector reference being a reference mirror, a part of reference beam reflected off said retroreflector reference forming a reflected reference beam, said reflected reference beam passing through said beam splitter;

a beam chopper, said beam chopper repeatedly interrupting said reflected reference beam and said reflected signal beam; and

a detector, said detector receiving said reflected reference and signal beams and outputting said intensity signals;

a ratiometer, said ratiometer receiving said intensity signals from said microreflectometer, said ratiometer outputting a relative reflectivity signal;

a three dimensional translation stage, said mirror mounted upon said stage, said stage moving said spot about said mirror coating in a selected manner, said stage moving in a vertical axis to maintain said spot on a surface of said mirror coating, said stage having motor drives for movement and position encoders for outputting the position of said stage;

a computer, said computer directing the movement of said stage through said motor drives, said computer receiving the position of said stage from said position encoders, said computer receiving said relative reflectivity signal from said ratiometer, said computer storing position information and reflectivity associated with said position information, said computer directing said stage in the vertical axis to insure that said focused beam has said spot on said surface of said mirror coating.

5,293,212

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE ALLOWING ERASE OF STORAGE DATA OF AN ARBITRARY MEMORY CELL AND METHOD OF ERASING DATA IN NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

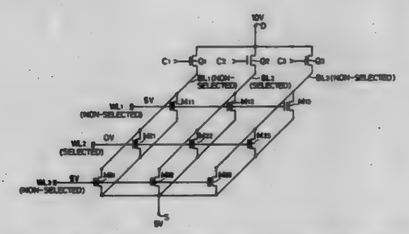
Makoto Yamamoto, and Kazuo Kobayashi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 829,143

Claims priority, application Japan, Feb. 8, 1991, 3-018044

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—218 **13 Claims**



1. A non-volatile semiconductor memory device comprising:

memory cells arranged in a plurality of rows and columns,

a plurality of word lines provided corresponding to said plurality of rows,

a plurality of bit lines provided corresponding to said plurality of columns,

each of said plurality of memory cells including a field effect semiconductor device having a first conduction terminal connected to a corresponding one of said bit lines, a control terminal connected to a corresponding one of said word lines, a floating gate region for storing electric charges and a second conduction terminal,

first selecting means for selecting one of said plurality of bit lines in response to an address signal in a selective erasing mode of operation of said memory device, and

second selecting means for selecting one of said plurality of word lines in response to said address signal in said selective erasing mode of operation of said memory device, and

first voltage supplying means for supplying a voltage across said one bit line selected by said first selecting means and said one word line selected by said second selecting means whereby a charge stored on the floating gate of a corresponding floating gate region is removed therefrom by a tunnel phenomenon caused between the corresponding first conduction terminal and the corresponding floating gate region.

5,293,213

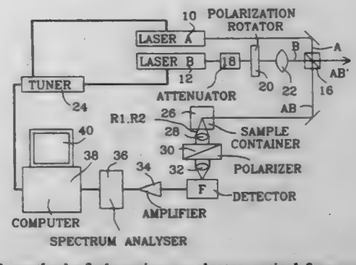
UTILIZATION OF A MODULATED LASER BEAM IN HETERODYNE INTERFEROMETRY

Uwe K. A. Klein, King Fahd University of Petroleum and Minerals Box 546; Joseph N. Mastromarino, King Fahd University of Petroleum and Minerals Box 641, and Abdul-Aziz A. Suwaiyan, King Fahd University of Petroleum and Minerals Box 625, all of Dhahran, Saudi Arabia 31261

Filed Aug. 12, 1992, Ser. No. 929,155

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—349 **32 Claims**



1. A method of observing an electro-optical frequency response characteristic of a portion of a workpiece, comprising:

(a) irradiating a molecular (or atomic) population of the workpiece portion with a first laser beam having a first wavelength in a range of approximately 250 to 4000 nm;

(b) varying this first wavelength to bring it within an absorption curve of the workpiece portion and hence cause elevation of at least some of said population from a first energy level to a second energy level;

(c) simultaneously irradiating the same workpiece portion with a second laser beam having a second wavelength in the same range but different from the first wavelength;

(d) detecting the population elevation caused by the first laser beam to form a first response, and thereupon varying the second wavelength to bring it within the same absorption curve of the workpiece portion and hence cause a further molecular (or atomic) population to be elevated from the same first energy level to the same second energy level whereby the combined populations in the second energy level experience irradiation by both beams simultaneously in the form of a carrier beam of a mean frequency halfway between the first and second wavelengths, said carrier beam being amplitude modulated at a beat frequency equal to the difference between the first and second wavelengths;

(e) detecting this combined population elevation in the form of a second response that is modulated at the beat frequency, and thereupon varying at least one of the first and second wavelengths to vary at least one of the beat frequency and the mean frequency while maintaining both said first and second wavelengths within the absorption curve; and

(f) measuring at least one characteristic of the second, modulated response as a function of at least one of the beat frequency and the mean frequency to generate data on an

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electro-optical response characteristic of the workpiece portion.

5,293,214

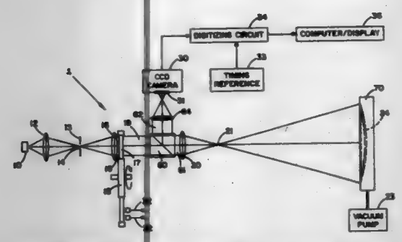
APPARATUS AND METHOD FOR PERFORMING THIN FILM LAYER THICKNESS METROLOGY BY DEFORMING A THIN FILM LAYER INTO A REFLECTIVE CONDENSER

Anthony M. Ledger, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 804,872, Dec. 6, 1991. This application May 29, 1992, Ser. No. 891,344

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—355 **52 Claims**



1. An apparatus for measuring the thickness of a layer of material having front and rear surfaces, wherein said material of said layer has a property that allows radiation to be transmitted therethrough, said apparatus comprising:

means for deforming said layer of material into a reflective condenser;

means for irradiating said front surface of said deformed layer of material with monochromatic radiation, wherein said monochromatic radiation is reflected from said front and rear surfaces of said deformed layer of material having characteristics that correspond to the thickness of said layer of material;

means for receiving said reflected monochromatic radiation and for detecting said characteristics; and

means for comparing said detected characteristics of said received reflected monochromatic radiation with a set of reference characteristics that correspond to known thicknesses and for providing an output that corresponds to the thickness of said layer of material.

5,293,215

DEVICE FOR INTERFEROMETRIC DETECTION OF SURFACE STRUCTURES

Thomas Pfendler, Gerlingen, and Pawel Drabarek, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00066, § 371 Date Aug. 13, 1991, § 102(e) Date Aug. 13, 1991, PCT Pub. No. WO90/10195, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 1, 1990, Ser. No. 752,597

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906118

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—360 **6 Claims**

1. A device for interferometric detection of surface structures, comprising

at least two laser sources (10–12) for generating at least two laser beams (13–15) of different respective wavelengths,

a coupler/splitter device (16), coupled to respective outputs of said laser sources, for combining said at least two laser beams into a combined beam and splitting said combined beam into two partial beams,

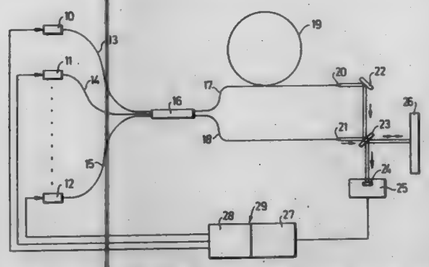
means for shifting frequency of one of said two partial beams with respect to the other of said beams, one of the partial beams serving as a reference beam and the other serving as a measuring beam, said measuring beam being guided to a measuring point on an object (26) whose surface is to be measured and reflected there, said referenced beam and said measuring beam being interferometrically superimposed at a photodetector (25),

and an evaluating device (27) connected to an output of said photodetector device for detecting at least one phase shift, wherein

more than one laser source (10, 11, 12) is provided;

at least one modulation means (28) is provided, modulating at least one of laser pumping current of each laser source and laser frequency of said laser sources (10, 11, 12);

the respective outputs of said laser sources are coupled to the input of the coupler/slitter device (16) using optical



fibers (13, 14, 15); said two partial beams leaving the coupler/splitter device (16) pass through respective optical fibers (17, 18) for at least a portion of a distance to said photodetector (25);

and said means for shifting frequency includes a lengthening (19) in one (17) of said partial beam optical fibers (17, 18) with respect to the other (18) fiber;

and wherein

the laser sources (10, 11, 12) operate sequentially; only a single photodetector (24) is provided in the photodetector device (25), and

the phase difference is determined in the evaluation device (27) from the interferometrically superimposed signals from each laser source (10, 11, 12), in the course of which a comparison of different phase differences is performed.

5,293,216

SENSOR FOR SEMICONDUCTOR DEVICE MANUFACTURING PROCESS CONTROL

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1990, Ser. No. 638,472

Int. Cl.[5] G01B *11/30*; G01N *21/00*; B23K *26/00*

U.S. Cl. 356—371 **48 Claims**

1. A sensor for semiconductor device manufacturing process control wherein said semiconductor device is on a semiconductor wafer comprising:

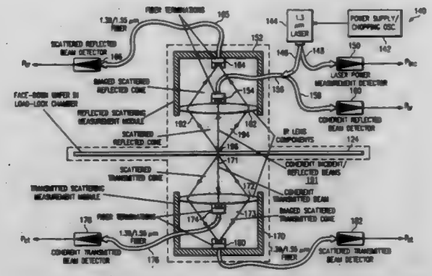
a coherent electromagnetic beam energy source;

a fiber optic network associated with said energy source, said fiber optic network including a fiber termination for directing coherent electromagnetic beam energy in the direction of the semiconductor wafer and for receiving coherent electromagnetic beam energy reflected from the semiconductor wafer in a specular direction;

a first receive sensor element connected to said fiber termination for measuring the coherent electromagnetic beam energy reflected in the spectral direction as coherent beam power;

a second receive sensor element for measuring electromagnetic beam energy reflected as scattered beam power from the semiconductor wafer, said second receive sensor element measuring simultaneously with said first receive sensor element;

a lens for focusing said electromagnetic beam energy reflected as scattered beam power to said second receive sensor and disposed between said semiconductor wafer and said fiber termination; and



circuitry of determining semiconductor wafer surface roughness based on the measurements of said beam energy reflected as coherent beam power and reflected as scattered beam power.

5,293,217

BONDING WIRE INSPECTION APPARATUS

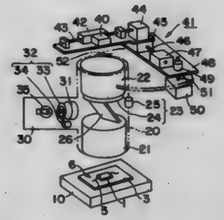
Kenji Sugawara, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,731

Claims priority, application Japan, Dec. 10, 1991, 3-349754

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—372 **2 Claims**



1. A bonding wire inspection apparatus characterized in that said apparatus comprises: an optical system installed above an object of inspection, an illumination means which illuminates said object of inspection, a photoelectric converter element which is provided at the imaging level of said optical system, and an X-Y table which moves only said photoelectric converter element in the X and Y directions.

5,293,218

INTERFEROMETRIC JFTOT TUBE DEPOSIT MEASURING DEVICE

Robert E. Morris, Silver Spring, Md., and Robert Wagner, Ann Arbor, Mich., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1992, Ser. No. 906,903

Int. Cl.[5] G01B *11/06*

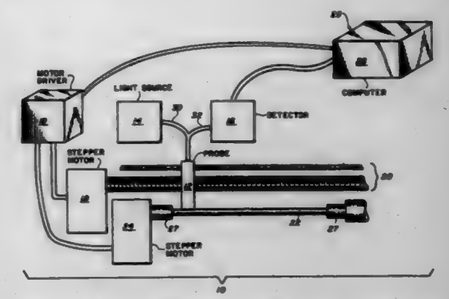
U.S. Cl. 356—382 **20 Claims**

1. A device for measuring the thickness and volume of a deposit on a heater tube having a long axis and a circumference, comprising:

(a) an optical probe wherein said probe is aimed at the tube;

(b) a light source, optically coupled to said probe;

(c) a detector of reflected light, for detecting reflected light of a predetermined wavelength, optically coupled to said probe;



(d) means for longitudinally translating said optical probe, parallel to the long axis of the tube, thereby longitudinally traversing the tube;

(e) means for axially rotating the tube about its long axis;

(f) means for computing the thickness and volume of the deposit on the tube in accordance with the equations:

$$t = \frac{m\lambda}{2n\cos\theta}$$

where t is the thickness of the deposit at a point on the tube, m is the thickness multiplier, λ is the wavelength of the detected light, n is the refractive index of the deposit, and θ is the angle at which the source optics are oriented with respect to the heater tube, and

$$V_{slice} = \frac{\pi\left(2rA + \frac{A^2}{L}\right)}{d}$$

where V_{slice} is the volume of the deposit on a longitudinal traversal of the tube, A is the area under the thickness profile along the tube, L is the length of the tube, r is the radius of the tube, and d is the number of longitudinal traversals around the tube circumference.

5,293,219

FIBER LENGTH ANALYZER

John A. Ayer, Lyanfield, Mass., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Dec. 31, 1991, Ser. No. 815,258

Int. Cl.[5] G01B *11/02*; G01N *15/02*

U.S. Cl. 356—383 **24 Claims**

1. A system for analyzing the size distribution of a wood pulp fiber sample comprising:

(a) source means for providing a fluid consisting essentially of the wood pulp fiber sample dispersed in a liquid;

(b) a measurement station including a measurement cell having an inlet and an outlet for said fluid and means for measuring the size of each fiber that passes through the cell from the inlet to the outlet;

(c) first conduit means for delivering said fluid from the source means to the inlet of the measuring cell;

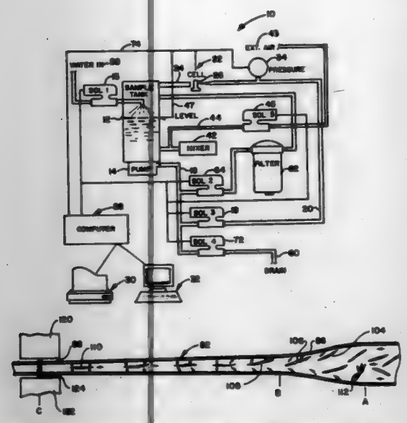
(d) means for maintaining a substantially constant volumetric flow rate of fluid through the first conduit and measuring cell;

(e) wherein the measurement cell includes

(1) a single flow tube having a first end fluidly connected at the cell inlet only to the first conduit means, a second

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end fluidly connected to the cell outlet, and an axis between the first and second ends, said flow tube further having a substantially transparent measurement portion with a substantially round flow area having a diameter in the range of about 1.0–3.0 mm intermediate the ends and a transition portion that gradually narrows in the direction of flow between the first end and the measurement portion, such that the fibers accelerate in forward velocity through the transition portion and pass through the measurement portion on the tube axis in spaced-apart, serial order,



(2) a light source for projecting a single beam of light at a preestablished intensity through the measurement portion transversely to the tube axis, as the fluid passes therethrough,

(3) sensor means for detecting variations in the intensity of the light that passes through the measurement portion in response to the passage of each dispersed fiber through the beam as the fluid passes through the measurement portion; and

(f) wherein the measurement station includes processing means responsive to the sensor means for recording fiber size distribution values commensurate with the variations in detected light intensity.

5,293,220

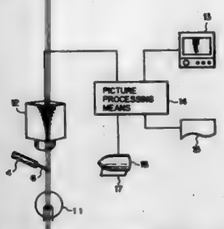
METHOD FOR INSPECTING STRIPPED CONDITION OF ELECTRIC WIRE

Michio Fukuda, and Yoshihide Ichikawa, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Sep. 15, 1992, Ser. No. 944,984

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—394 **2 Claims**



1. A method of inspecting a stripped wire to determine if the wire is in good or poor stripped condition, said wire having been stripped of a length of sheath to form a stripped end by means of a stripper for installation of a crimp-style terminal thereon, said method comprising the steps of:

illuminating a core at a tip portion of said wire and its vicinity by means of illumination means, said tip portion being exposed due to stripping;

imaging said core and its vicinity by an imaging means, said imaging means disposed in opposite relation to said illumination means with said wire therebetween;

determining a coordinate position of said stripped end of said sheath in an imaging plane of said imaging means using illumination data of a picture obtained by said imaging means;

determining a coordinate position of a tip end of said tip portion of said wire in said imaging plane;

determining a shape of said core; and

determining at least one of whether said coordinate position of said stripped end is within a standard range, whether a length and a thickness of said core are within a standard range, and whether there are strands coming out of said core.

5,293,221

LEVEL SENSOR

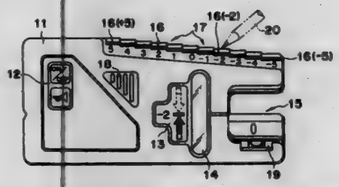
Eiichi Kitajima, Yokohama; Akihiko Morishita, Kawasaki, and Shigeru Isono, Odawara, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,659

Claims priority, application Japan, Mar. 8, 1991, 3-20383[U]; Oct. 11, 1991, 3-82767[U]

Int. Cl.[5] G01B *11/26*

U.S. Cl. 356—400 **16 Claims**



1. A level sensor for determining the position of an incident beam of radiation, comprising:

a housing;

photo-sensing means provided on said housing for sensing the beam to detect displacement of a reference position of said housing relative to the beam along a predetermined direction;

a plurality of marking indices arranged at respective positions along said predetermined direction on said housing; and

means responsive to said photo-sensing means for indicating, at different displacements of said reference position relative to the beam along said predetermined direction, which of said marking indices has a predetermined positional relationship to the beam along said predetermined direction.

5,293,222

METHOD AND DEVICE FOR DISPLAYING A BACK-SCREEN AND CHARACTERS BY USING AN ON-SCREEN SIGNAL TO AVOID THE NEED FOR DEDICATED BACK-SCREEN CIRCUITRY

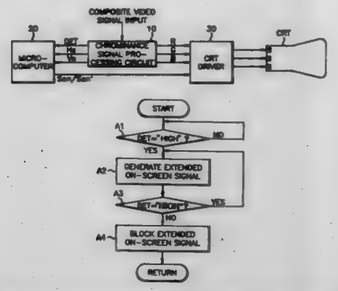
Jae-Mo Yang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 3, 1992, Ser. No. 892,983

Claims priority, application Rep. of Korea, Jul. 23, 1991, 1991-12629

Int. Cl.[5] H04N *9/74, 5/262, 5/272*

U.S. Cl. 348—578 **20 Claims**



1. A method of a back-screen processing system, comprising the steps of:

detecting a determination signal indicative of whether a video signal is received;

generating an extended on-screen signal in a microcomputer and transferring said extended on-screen signal to a cathode ray tube driver when the video signal is not received, said microcomputer being directly connected to said cathode ray tube driver for directly transferring of said extended on-screen signal from said microcomputer to said cathode ray tube driver;

displaying a back-screen on a visual display in response to the extended on-screen signal; and

disabling said back-screen from being displayed on said visual display by blocking said extended on-screen signal from being transferring directly from said microcomputer to said cathode ray tube driver when said video signal is received.

5,293,223

TIME-DIVIDING METHOD AND CIRCUIT, AND TELEVISION WHITE BALANCE CONTROL UTILIZING SUCH CIRCUIT

Koji Kawamoto, Hitachi; Masanori Kamiya, Yokohama; Hideaki Ohki, Fujisawa, and Shun Terada, Kamakura, all of Japan, assignors to Hitachi, Ltd and Hitachi Video & Information Systems, Inc, both of Japan

Filed Sep. 16, 1991, Ser. No. 760,153

Claims priority, application Japan, Sep. 17, 1990, 2-243735

Int. Cl.[5] H04N *9/73;* **H03K** *5/22*

U.S. Cl. 348—655 **13 Claims**

1. A time-dividing method utilizing circuitry including first and second capacitors, said method comprising the steps of:

receiving a periodic input signal;

discharging said second capacitor in synchronism with the period of the input signal;

distributing a part of the charge on said first capacitor onto said second capacitor;

discharging the charge remaining on said first capacitor after said distribution;

re-charging said first capacitor;

comparing the voltages on said first and second capacitors; and

generating a time-dividing output signal when the voltage on said first capacitor exceeds the voltage on said second capacitor.

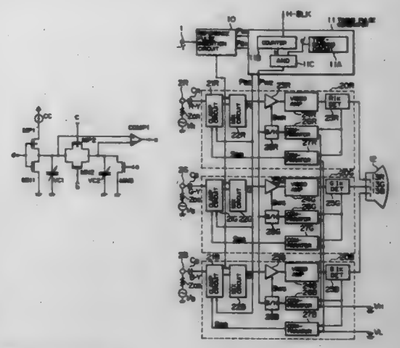
12. An automatic white balance control circuit for a color television receiver comprising:

means for detecting cathode currents of a color television cathode ray tube;

reference signal generating means for generating reference signals;

comparing means for comparing the outputs of said cathode current detecting means and the reference signals from said reference signal generating means;

control means for controlling said cathode currents;



a first capacitor;

a second capacitor;

means for charging said first capacitor;

means for distributing the charge on said first capacitor onto said second capacitor with a predetermined ratio;

comparing means for comparing the voltages on said first and second capacitors;

means for discharging the charges on said first and second capacitors; and

control means for producing control signals for controlling said respective means.

5,293,224

WHITE BALANCE CONTROL SYSTEM

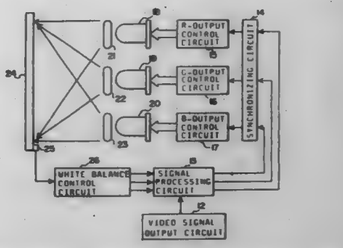
Kohsuke Ajima, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 646,040, Jan. 28, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 911,374

Claims priority, application Japan, Jan. 30, 1990, 2-21489

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—656 **2 Claims**



1. A white balance control system of a projector having a red output control circuit, green output control circuit and a blue output control circuit, and three cathode ray tubes for

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projecting beams of three colors onto a screen respectively, comprising:
- a detector for detecting a quantity of light of the beams;
- calculator means for calculating an actual ratio of the detected quantity of light to a whole quantity;
- a memory storing a reference ratio for obtaining a white balance;
- comparing means for comparing the calculated actual ratio with the reference ratio stored in the memory;
- separating means for separating the quantity of light into respective quantities of the three colors, wherein said calculator means is configured to calculate respective actual ratios of the three colors;
- correcting means for reducing, when one of the calculated actual ratios does not coincide with the reference ratio, light quantities of two colors other than a color which has a smallest light quantity so as to coincide the calculated actual ratio with the reference ratio; and
- signal processing means for processing video signals applied to the three output control circuits in accordance with the corrected quantity.

5,293,225

DIGITAL SIGNAL PROCESSING SYSTEM FOR COLOR CAMERA APPARATUS INCLUDING SEPARATE DELAYS FOR COLOR SIGNAL AND BRIGHTNESS SIGNAL PROCESSING

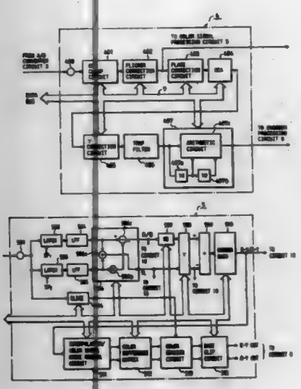
Hiroshi Nishiyama; Shozo Yokoyama; Masanori Kubota, all of Yokohama; Takashi Kiyofuji, Yokosuka, and Mamoru Miyashita, Kitamoto, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 28, 1992, Ser. No. 889,567

Claims priority, application Japan, May 31, 1991, 3-155368; Jun. 22, 1991, 3-177639

Int. Cl.[5] H04N *9/07, 9/077, 9/04*

U.S. Cl. 348—242 **8 Claims**



1. A color camera apparatus comprising:
- an image pickup element having a stripe/mosaic type color filter and photoelectrically converting an arriving optical image into a multiplexed signal including at least a brightness component and a color component;
- an A/D converter for digitizing said multiplexed signal;
- a brightness signal processing circuit for separating the brightness component from the multiplexed signal, said brightness signal processing circuit including a first delay element for delaying a signal by a delay corresponding to two horizontal scanning periods, and for carrying out an aperture correction by use of said first delay element; and
- a color signal processing circuit for separating the color component from the multiplexed signal and for obtaining two line-sequential color difference components, said color signal processing circuit including a second delay element for delaying a signal by a delay corresponding to two horizontal scanning periods, said color signal processing circuit comprising first and second circuit arrangements, said first circuit arrangement carrying out a circular-type noise removal processing by use of said second delay element, and said second circuit arrangement carrying out a rearrangement of said line-sequential color difference components by use of said second delay element.

5,293,226

THREE TUBE COLOR TELEVISION PROJECTION DISPLAY DEVICE

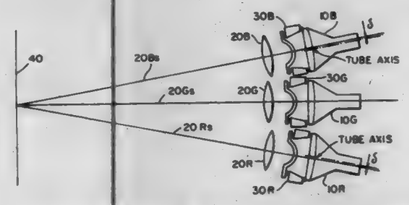
Hideki Yamamoto, and Takayuki Yoshioka, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,120

Claims priority, application Japan, Dec. 26, 1990, 2-414057

Int. Cl.[5] H04N *5/74, 9/31*

U.S. Cl. 348—780 **6 Claims**



1. A three-tube projection television display device comprising:
- a projection screen;
- red, green and blue projection tubes, each of said projection tubes having a plano-convex faceplate, a projection tube optical axis of at least two of said projection tubes being inclined with respect to a line normal to a surface of said projection screen;
- first, second and third meniscus lenses for said red, green and blue projection tubes, respectively;
- first, second and third optical coupler frames for mounting said first, second and third meniscus lenses, respectively, to a faceplate of said red, green and blue projection tubes, respectively, said first, second and third optical coupler frames being identical to one another;
- a coolant filled in a space between said first, second and third meniscus lenses and the faceplates of said red, green and blue projection tubes, respectively;
- first, second and third projection lenses for said red, green and blue projection tubes, respectively, for projecting images displayed on said red, green and blue projection tubes onto said projection screen, each of said projection lenses having a projection lens optical axis parallel to the projection tube optical axis and to an electron gun axis of the respective one of said projection tubes, and said projection lens optical axis of each of said projection lenses for said at least two of said projection tubes inclined with respect to said line normal to said surface of said projection screen being offset from said projection tube optical axis and said electron gun axis of said respective one of said projection tubes by an amount which is substantially equal to a distance δ defined by the following equation:

$$\delta = R \cdot \sin \beta$$

where:

$$\tan \beta = (n/m) \tan \theta,$$

θ = angle between a lens surface of said projection lens and said screen,

R = curvature of said plano-convex faceplate of said respective one of said projection tubes,
m = magnification of said projection lens, and
n = refractive index of said coolant.

5,293,227

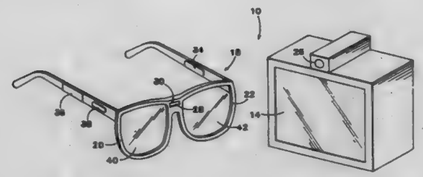
SELF-SYNCHRONIZING OPTICAL STATE CONTROLLER FOR INFRARED LINKED STEREOSCOPIC GLASSES

Dennis W. Prince, Banks, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 24, 1992, Ser. No. 919,815

Int. Cl.[5] H04N *13/04*

U.S. Cl. 348—53 **17 Claims**



1. A pair of electromagnetically-linked active stereoscopic glasses for use in a stereoscopic imaging system including a display that displays stereoscopic images including right- and left-eye views, the glasses comprising:
- respective right and left light polarization state changers;
- a receiver that receives a train of electromagnetic synchronization pulses each synchronized with one of the stereoscopic images, the receiver producing an electrical pulse train signal corresponding to the train of electromagnetic synchronization pulses so that each electrical pulse is synchronized with one of the stereoscopic images; and
- self-synchronizing optical states controlling means receiving the electrical pulse train signal for producing drive signals for controlling the right and left state changers, the drive signals being timed relative to one of the electrical pulses for controlling both the right and left state changers to allow a viewer to view through the right and left state changers both the right- and left-eye views of the stereoscopic image to which the one of the electrical pulses is synchronized.

5,293,228

METHOD FOR THE CODING OF COLOR IMAGES AT HIGH COMPRESSION RATE WITHOUT FILTERING, CORRESPONDING DECODING METHOD, CODER, DECODER AND APPLICATIONS

Bernard Marti, Noyal-sur-Vilaine, France, assignor to France Telecom, Les Moulineaux and Telediffusion De France S.A., Montrouge, both of France

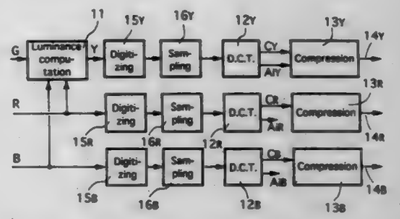
Filed May 15, 1992, Ser. No. 883,879

Claims priority, application France, May 17, 1991, 91 06134

Int. Cl.[5] H04N *7/133, 7/13*

U.S. Cl. 348—391 **20 Claims**

1. A method for the coding of color images represented by at least two source signals comprising the following steps:
- forming a luminance signal, by linear combination of said at least two source signals, using positive coefficients;
- forming at least one color signal, from at least one of said source signals;
- digitizing said luminance signal and said at least one color signal, so as to form a digitized luminance signal and at least one digitized color signal;
- sampling said digitized luminance signal and said at least one digitized color signal, so as to form a sampled luminance signal and at least one sampled color signal;
- subjecting said sampled luminance signal and said at least one sampled color signal to a reversible mathematical transformation in the frequency domain, associating to said sampled luminance signal a transformed luminance signal and associating to each said at least one sampled color signal a corresponding transformed color signal, each of said transformed luminance signal and said at least one transformed color signal comprising a series of components consisting of one continuous component and of alternating components;



- quantizing and assigning a code value to the continuous component and to each component of a set of the alternating components of the transformed luminance signal to provide a coded continuous component and a set of coded alternating components of the transformed luminance signal; and
- quantizing and assigning a code value to only the continuous component of each said at least one transformed color signal to provide a coded continuous component of each of said at least one transformed color signal.

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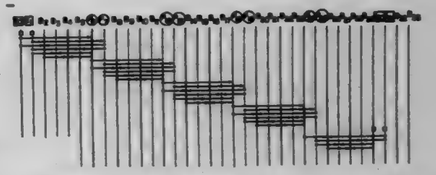
APPARATUS AND METHOD FOR PROCESSING GROUPS OF FIELDS IN A VIDEO DATA COMPRESSION SYSTEM

Siu L. Iu, Bensalem, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 27, 1992, Ser. No. 859,145

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—415 **12 Claims**



1. A method for automatically encoding a sequence of video image fields comprising the steps of:
- encoding each field in said sequence of video image fields in a predetermined order to produce a sequence of encoded fields wherein a plurality of the fields in the sequence of video image fields are bidirectionally predictively encoded;
- decoding each field in the sequence of encoded fields to produce a sequence of decoded fields; and
- storing each field in said sequence of decoded fields to produce a sequence of stored fields;

wherein, each field in said sequence of video image fields which is bidirectionally predictively encoded is encoded using data from one of said stored fields which is closest in position in said sequence of video image fields to the field being bidirectionally predictively encoded.

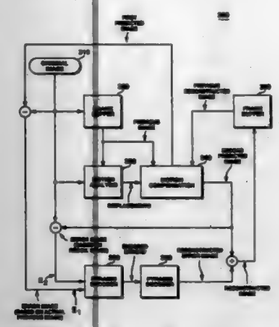
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5,293,230

PYRAMIDAL ENCODER FOR ENCODING ERROR IMAGES

Stuart J. Golin, East Windsor, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 813,884, Dec. 23, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,124
Int. Cl.[5] K04N 7/13
U.S. Cl. 348—410 8 Claims



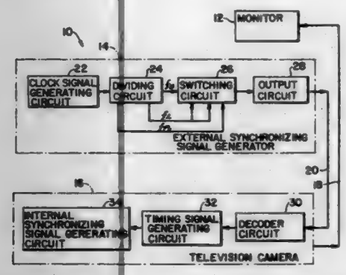
1. A method for encoding an image in a sequence of two or more digital video images, comprising the steps of:
(a) selecting an original image from said sequence;
(b) forming a first error image from said original image and a first predicted image;
(c) forming a second error image from said original image and a second predicted image, said second predicted image being different from said first predicted image;
(d) resolving said first error image into at least one lower resolution image;
(e) encoding said at least one lower resolution image;
(f) forming an expanded image from the result of step (e), said expanded image being of the same level of resolution as said second error image;
(g) encoding an image representative of the difference between said second error image and said expanded image.

5,293,231

APPARATUS FOR SYNCHRONIZING TERMINAL EQUIPMENT

David Elberbaum, Tokyo, and Yoshio Kaneta, Machida, both of Japan, assignors to Ebex Video, Ltd., Tokyo, Japan

Continuation of Ser. No. 788,987, Nov. 7, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 48,079
Int. Cl.[5] H04N 5/04
U.S. Cl. 348—521 8 Claims



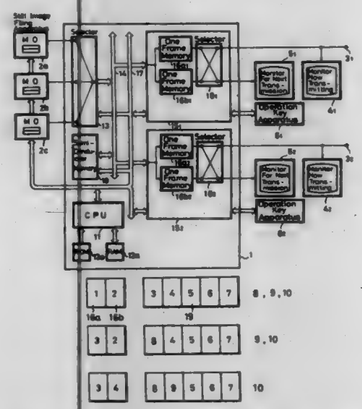
1. An apparatus for synchronizing one or more terminal equipment, comprising:
an external synchronizing signal generator generating at least two different frequency signals and an external synchronizing signal at a frequency different from said at least two frequency signals, and for alternately transmitting said at least two frequency signals at the frequency rate of said external synchronizing signal to said one or more terminal equipment through a transmission line;
first processing means disposed at said external synchronizing signal generator; and
second processing means disposed at each of said one or more terminal equipment;
said first processing means generating said at least two frequency signals each having a frequency higher than a frequency of said external synchronizing signal, for transmission of said at least two frequency signals at an alternating rate of the frequency of said external synchronizing signal to each of said terminal equipment; and
said second processing means receiving said alternating at least two frequency signals from said first processing means of said external synchronizing signal generator, decoding said alternating rate of said at least two frequency signals to produce a decoder signal having said alternating rate and applying the decoder signal to the terminal equipment in which it is located for synchronizing said terminal equipment to said external synchronizing signal.

5,293,232

APPARATUS FOR TRANSMITTING STILL IMAGES RETRIEVED FROM A STILL IMAGE FILLING APPARATUS

Yousuke Seki, and Akihiko Matsumoto, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,591
Claims priority, application Japan, Apr. 2, 1991, 3-069966; Apr. 4, 1991, 3-071845
Int. Cl.[5] H04N 5/907
U.S. Cl. 358—715 8 Claims



1. Apparatus for transmitting still images retrieved from a still image filing apparatus, the transmitting apparatus comprising:
transmission sequence memory means for storing a transmission sequence of still images,
frame memory means for temporarily storing said still images;
means for reading out the contents of the frame memory means and supplying the read out contents of the frame memory means as an output;
semiconductor memory means for storing a plurality of those still images which are retrieved from the still image filing apparatus in accordance with the transmission sequence;
processor means for controlling the semiconductor memory means to store the still images identified by the transmission sequence and for receiving the transmission sequence stored in the transmission sequence memory means; and
transferring means responsive to the reading out of the contents of the frame memory means for transferring a still image from the semiconductor memory means to the frame memory means in accordance with the transmission sequence.

7. Apparatus for transmitting still images retrieved from a still image filing apparatus, the transmitting apparatus comprising:
transmission sequence memory means for storing a transmission sequence of still images;
frame memory means for temporarily storing said still images;
means for reading out the contents of the frame memory means and supplying the read out contents of the frame memory means as an output;
semiconductor memory means for storing a plurality of those still images which are retrieved from the still image filing apparatus in accordance with the transmission sequence;
processor means for controlling the semiconductor memory means to store the still images identified by the transmission sequence and for receiving the transmission sequence stored in the transmission sequence memory means; and
transferring means responsive to the reading out of the contents of the frame memory means for transferring a still image from the semiconductor memory means to the frame memory means in accordance with the transmission sequence, said processor means inhibiting the retrieval of a still image from the still image filing apparatus to said semiconductor memory means when the still image to be transferred to said frame memory means in accordance with the transmission sequence is already stored in said semiconductor memory means.

5,293,233

DIGITAL VIDEO EFFECTS WITH IMAGE MAPPING ON TO CURVED SURFACE

Robert Billing, Crowthorne, and Nicholas Barton, Wokingham, both of United Kingdom, assignors to Questech Limited, Wokingham, United Kingdom

PCT No. PCT/GB91/00033, § 371 Date Jul. 10, 1992, § 102(e) Date Jul. 10, 1992, PCT Pub. No. WO91/10966, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 10, 1991, Ser. No. 890,597
Claims priority, application United Kingdom, Jan. 21, 1990, 9000674
Int. Cl.[5] G06F 15/72; H04N 5/262
U.S. Cl. 348—581 17 Claims

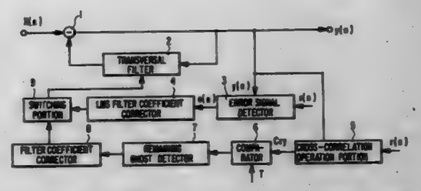
16. A data processing device for enabling stored video images to be processed to reproduce image information from one image frame of a video signal so that it appears within another image frame of a video signal as if transposed onto a curved surface, the data process device comprising:
means for generating a first set of co-ordinate signals the values of which represent the co-ordinate positions of image information within a store containing the picture information of said one image frame;
means for transforming the values of said first set of co-ordinate signals according to functions defining a desired curved surface in order to derive a second set of co-ordinate signals the values of which represent the co-ordinate positions within said other image frame at which the said curved surface will appear;
means for processing said second set of co-ordinate signals to derive therefrom a plurality of subsets of said signals each of which subsets includes a plurality of signals defining immediately adjacent co-ordinate positions at the corners of a given geometric area of a digital video image;
subset processing means for processing at least some of said subsets of signals to derive, for each of said geometric areas exceeding a given size, a plurality of further sets of co-ordinate signals corresponding to the co-ordinates of a plurality of smaller geometric areas of similar shape into which the first area can be subdivided, said smaller areas each lying within predetermined limits of size, said subset processing means comprising a memory store including a look up table containing for each of a finite number of two dimensional geometric figures within a given range of sizes a corresponding distribution of values of co-ordinate positions within the figure, said values being determined in accordance with vectors of corresponding linear sides of each figure, such that the stored distributions collectively include substantially all possible distributions of such values that can occur within a given incremental area of a digital video image frame; and
means for addressing said memory store with said subsets of signals to retrieve the correspondingly stored distributions of values as said further sets of co-ordinate signals;
means for generating from said second set of co-ordinate signals and said further sets of co-ordinate signals output signals comprising a continuous array of co-ordinate values extending within said geometric area;
a data store;
means for addressing said data store with said output signals of said subset processing means; and
writing means for writing into said data store values derived from said first set of co-ordinate signals whereby at each co-ordinate address of the store defined by said output signals of the subset processing means there are stored corresponding values of input co-ordinates, said writing means including means for comparing said output signals of the subset processing with manually adjustable horizontal and vertical, high and low co-ordinate limits to produce an enable signal whereby said enable signal is false outside said limits, and means for suppressing said writing means when said enable signals is false.

5,293,234

GHOST CANCELLING APPARATUS HAVING TRANSVERSAL FILTER FOR GENERATING GHOST CANCELLING SIGNAL AND METHOD THEREOF

Do Y. Ko, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 989,572
Claims priority, application Rep. of Korea, Dec. 11, 1991, 91-22621
Int. Cl.[5] H04N 5/21
U.S. Cl. 348—614 4 Claims



1. A ghost cancelling apparatus having a transversal filter for generating a ghost cancelling signal to cancel a ghost in an input video signal, thereby providing a ghost-cancelled output video signal, the apparatus comprising:
a first filter coefficient corrector for generating a first filter coefficient correction signal based on an error signal between the ghost-cancelled output video signal and a ghost cancelling reference signal;
a cross-correlation operation means for performing a cross-

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correlation operation between the ghost-cancelled output video signal and the ghost cancelling reference signal;

a remaining ghost detector for detecting remaining ghost information that is not less than a predetermined threshold value in the ghost-cancelled output video signal in accordance with an output of said cross-correlation operation means;

a second filter coefficient corrector for generating a second filter coefficient correction signal of said transversal filter based on the remaining ghost information detected by said remaining ghost detector; and

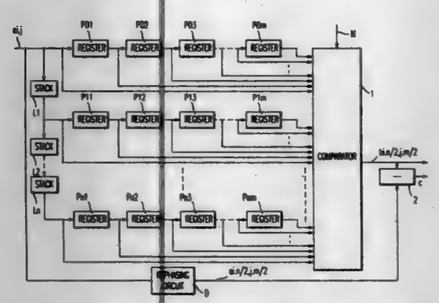
switching means for supplying the second filter coefficient correction signal to said transversal filter when the second filter coefficient correction signal is generated by said second filter coefficient corrector, and for supplying the first filter coefficient signal to said transversal filter when the second correction coefficient signal is not generated from said second filter coefficient corrector.

5,293,235

METHOD AND DEVICE FOR BORDERING, IN DIGITAL OPTICAL IMAGE FORMATION, A SUBJECT INCRUSTED ON A BACKGROUND

Catherine Guede, Maison Laffitte, and Jean-Luc Grimaldi, Ermont, both of France, assignors to Thomson-Broadcast, Cergy St Christophe, France

Filed Mar. 6, 1992, Ser. No. 846,928
Claims priority, application France, Mar. 8, 1991, 91 02823
Int. Cl.[5] H04N *5/265*
U.S. Cl. 348—586 **5 Claims**



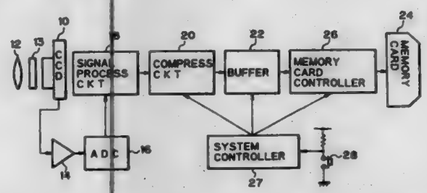
1. A method for bordering, in digital optical image formation, a subject incrusted on a background, when the subject's key signals are input in digital form to a comparator means, comprising: a) making an analysis by comparing the values of the subject's key signal for points located in a search window having a central point, so as to determine a maximum value and to constitute, with this maximum value, the value of a border key signal relating to the central point of the search window, and b) delaying the subject's key signals for the different points of the search window so that the key signals of the subject are simultaneously input to said comparator wherein said maximum value is determined so that a border can be created around the subject incrusted on said background.

5,293,236

ELECTRONIC STILL CAMERA INCLUDING AN EEPROM MEMORY CARD AND HAVING A CONTINUOUS SHOOT MODE

Kaoru Adachi, and Satoru Okamoto, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 31, 1991, Ser. No. 814,835
Claims priority, application Japan, Jan. 11, 1991, 3-012511; Feb. 22, 1991, 3-048585
Int. Cl.[5] H04N *5/30*
U.S. Cl. 348—231 **3 Claims**



1. An electronic still camera capable of continuously shooting a scene and storing picture data representative of pictures of said scene in a memory card, said camera comprising:

picture recording means including an EEPROM memory card;

image pick-up means for continuously shooting a scene;

signal processing means for executing signal processing with picture data fed from said image pick-up means to thereby produce processed picture data;

compressing means for coding said processed picture data by compression to thereby produce compressed picture data;

buffer means for storing said compressed picture data representative of a plurality of serial frames and outputted by said compressing means at a high speed, and feeding said compressed picture data to said picture recording means at a low writing speed; and

storage control means for causing said image recording means to record said data fed from said buffer means frame by frame;

said buffer means further comprising:

a dual port memory having a data writing speed and a data reading speed which are different from each other;

write address generating means for feeding a write address to said buffer means in synchronism with a read-out speed from said compressing means;

read address generating means for generating a read address in synchronism with a data write-in speed to said image recording medium;

control means for causing said write address generating means and said read address generating means to start operating when data outputted by said compressing means is valid and said image recording means is ready to write; and

detecting means for inhibiting a reading operation on detecting that the addressees from said write address generating means and said read address generating means are identical.

5,293,237

CCD IMAGE SENSING DEVICE HAVING A P-WELL REGION WITH A HIGH IMPURITY CONCENTRATION

Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,904
Claims priority, application Japan, May 10, 1991, 3-105597
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—314 **4 Claims**

1. A CCD image sensing device comprising:

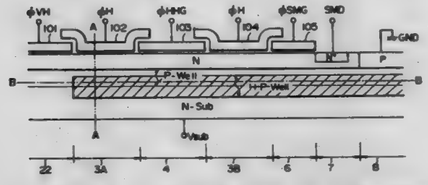
a. a semiconductor substrate of a first conduction type;

b. an image sensing region provided with a matrix of light-receiving elements, and a plurality of vertical shift registers for vertically transferring signal charge of the light-receiving elements;

c. a first horizontal shift register for horizontally transferring the signal charge vertically transferred by the (2n+1)-th (n is zero and positive integers) vertical shift registers;

d. a second horizontal shift register for horizontally transferring the signal charge vertically transferred by the 2n-th vertical shift registers;

e. a transfer gate disposed between the first and second horizontal shift registers;



f. a smear gate, a smear drain region and a channel stop region of a second conduction type disposed on one side of the second horizontal shift register opposite to the other side on which the image sensing region is formed; and

g. a well region of the second conduction type formed on the semiconductor substrate;

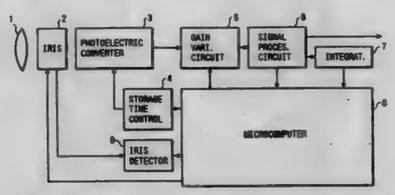
wherein the potential of the well region of the second conduction type is approximately equal to that of the channel stop region and further wherein the impurity concentration of the well region of the second conduction type is determined so that the potential of the well region of the second conduction type is neutralized by an operating bias voltage for the first and the second horizontal shift registers.

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TELEVISON CAMERA

Takahiro Nakano, Ibaraki, and Takuya Imaide, Kanagawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,250
Claims priority, application Japan, Jun. 24, 1991, 3-151452
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—226 **5 Claims**



1. In a television camera having an optical system, an iris device, an automatic iris control device for automatically controlling opening of said iris device, a photoelectric conversion element for converting an optical image obtained through said optical system and said iris device into an electric signal, an automatic gain control device for controlling gain of the electric signal, a first detection means responsive to flickering in the electric signal at an output of said photoelectric conversion element for detecting flickering at a flickering frequency of a first illumination light source, each half cycle of the flickering frequency defining a flickering period, a signal storage time control means for controlling a signal storage time of said photoelectric conversion element such that in response to the first detection means detecting the flickering, the signal storage time is controlled to become an integer multiple of the flickering period of said first light source, whereby changing the signal storage time to an integer multiple of the flickering period substantially eliminates flicker in the electric signal at the output of the photoelectric conversion element, THE IMPROVEMENT COMPRISING:

a second detection means including:

a means for storing a current iris value in response to the first detection means detecting the flickering frequency, current iris values with the stored iris value, and

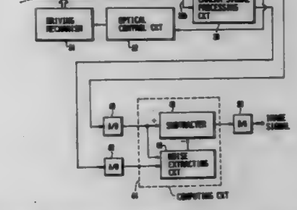
a means connected with the signal storage time control means for causing the signal storage time control means to change the signal storage time of said photoelectric conversion element from the integer multiple of the flickering period to a predetermined time different from the time which is the integer multiple of the flickering period when said comparing means detects a change in the iris value above a preselected minimum change indicative of a switching of said first light source to another light source.

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CAMERA APPARATUS

Koji Takahashi, and Teruo Hieda, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 325,544, Mar. 20, 1989, abandoned.
This application Oct. 23, 1990, Ser. No. 602,918
Claims priority, application Japan, Mar. 30, 1988, 63-077334
Int. Cl.[5] H04N *3/14, 5/335*
U.S. Cl. 348—241 **53 Claims**



1. A camera apparatus comprising:

a) image sensing means for successively outputting a first image signal obtained for a first exposure period of time and a second image signal obtained for a second exposure period of time which is shorter than said first exposure period of time;

b) noise extracting means for extracting a fixed pattern noise from a plurality of second image signals;

c) computing means for performing a computing operation on said first image signal and said fixed pattern noise extracted by said noise extracting means; and

d) an exposure control means for setting said first exposure period of time and said second exposure period of time in the image sensing means.

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COLOR IMAGING SYSTEM USING SOLID STATE IMAGE SENSOR WITH SIGNAL CHARGE READ CONTROLLER

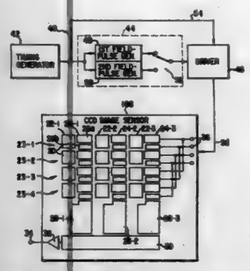
Yoshiyuki Matsunaga, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1992, Ser. No. 851,669

Claims priority, application Japan, Mar. 16, 1991, 3-51760; Dec. 25, 1991, 3-342804

Int. Cl.[5] H04N *3/14, 5/335, 9/09*

U.S. Cl. 348—312 **18 Claims**



1. An imaging system comprising:

an array of rows and columns of photosensitive cells for photoelectrically producing charge carriers in response to an incident light;

a charge transfer section coupled to said array, said charge transfer section including first transfer means coupled to the columns of photosensitive cells for allowing the charge carriers to be transferred substantially simultaneously form said columns to said first transfer means while readout charge carriers of respective neighboring cells in each column are added to the transferred charge carriers, and second transfer means coupled to said first transfer means for sending forth the charge carriers sent from said first transfer means; and

drive means associated with said array and said first transfer means, for controlling movement of charge carriers from said columns to said charge transfer section during a frame period including first and second field periods so that adjacent ones of the rows of said array differ from each other in amount of charge carriers to be supplied to said first transfer means as effective signal charge carriers and have first and second charge carrier integration time lengths during the first field period, and that the adjacent rows are reversed in carrier integration time length during the second field period, said drive means alternately changing the first and second charge carrier integration time lengths for each other between the first and second field periods.

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METHOD AND CIRCUIT FOR CONTROLLING OPENING/CLOSING OF A CAMCORDER IRIS DIAPHRAGM

Jung S. Song, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 25, 1992, Ser. No. 857,498

Claims priority, application Rep. of Korea, Apr. 2, 1991, 5304/1991; Jun. 24, 1991, 9409/1991

Int. Cl.[5] H04N *5/238*

U.S. Cl. 348—365 **18 Claims**

1. A circuit for controlling the opening and closing of a camcorder iris diaphragm, comprising:

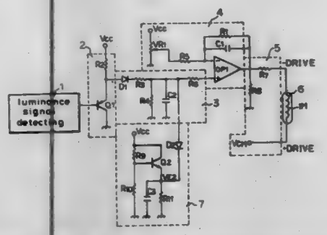
luminance signal detecting means for detecting a luminance signal from an image signal of an object received therein and outputting the luminance signal;

buffering means for buffering the luminance signal output from said luminance signal detecting means and outputting a buffered luminance signal;

signal converting means for converting the buffered luminance signal output from said buffering means into a DC signal having a mean value level of the buffered luminance signal;

differential amplifying means for amplifying a level difference between the DC signal from said signal converting means and a first predetermined reference signal;

motor driving means for receiving an output signal from said differential amplifying means, as a drive voltage signal of a first polarity, and a predetermined motor voltage signal, as a drive voltage signal of a second polarity, a difference between the drive voltage signal of the first polarity and



the drive voltage signal of a second polarity being a motor drive voltage signal;

an iris motor for opening or closing the iris diaphragm in response to the motor drive voltage signal; and

clipping means connected between the output of said signal converting means and the input of said differential amplifying means, for blocking the DC signal output from said signal converting means to said differential amplifying means when the level of the DC signal is greater than a second predetermined reference signal and passing the DC signal output from said signal converting means to said differential amplifying means when the level of the DC signal is less than the second predetermined reference signal.

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SHORT RANGE OBJECT PHOTOGRAPHING DEVICE

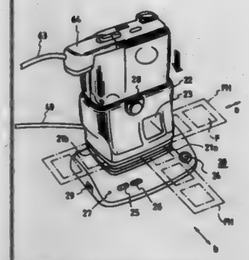
Toshiharu Mamiya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,659

Claims priority, application Japan, Oct. 2, 1990, 2-265344; Oct. 2, 1990, 2-265345; Oct. 2, 1990, 2-265346; Oct. 2, 1990, 2-265348; Oct. 23, 1990, 2-286395

Int. Cl.[5] H04N *5/30, 5/225*

U.S. Cl. 348—362 **23 Claims**



1. A photographing device comprising:

a camera mounting unit on which a camera is detachably mounted and having a receiving portion which covers a portion of said camera on which a lens unit is provided,

said camera mounting unit having operation buttons corresponding to operation buttons of said camera;

a light source unit arranged to be separated from said camera mounting unit by a predetermined distance; and

a table which is arranged between said light source unit and said camera mounting unit, and on which an object is placed,

wherein when said camera is mounted on said camera mounting unit, an operation of said camera using said operation buttons of said camera is inhibited, and the object placed on said table is illuminated by said light source unit and can be photographed by an operation using said operation buttons of said camera mounting unit.

5,293,243

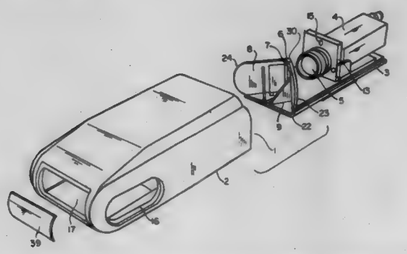
IMAGE SPLITTER FOR SECURITY CAMERAS

Donald E. Degnan, 314 E. 77th St., New York, N.Y. 10021, and Howard A. Schnad, 490 S. Soangepaha Rd., Galesburg, Ill. 61401

Filed Apr. 21, 1992, Ser. No. 871,440

Int. Cl.[5] H04N *7/18;* **G02B** *5/08*

U.S. Cl. 348—369 **4 Claims**



1. An image splitting optical system an image splitting optical system comprising:

(a) a platform;

(b) optical means secured to said platform and disposed thereon to provide simultaneously to a camera a plurality of images; and

(c) means for securing a camera to said platform and further comprising a housing for enclosing said platform, said housing comprising a pair of windows disposed to enable transmission of images therethrough; and wherein said optical means comprises a pair of mirrors joined at an edge and disposed at an angle between approximately 60° and 120° to each other, said mirrors mounted on a mirror mounting means such that images transmitted through each of said windows of said housing are reflected by said mirrors towards said camera;

and wherein said mirrors are bevelled at said joining edges and fitted together at said joining edge such that no image is generated from the area within and between the respective surfaces thereof and wherein said mirror mounting means comprises a hinged mounting assembly attached to said mirrors, a pin inserted through said hinged mounting assembly and into one of a plurality of alignment holes on said platform, such that said mirror mounting means can be secured to any of a number of fixed positions on said platform and the position thereof can be adjusted as desired.

5,293,244

REAR PROJECTION TYPE TELEVISION UNIT

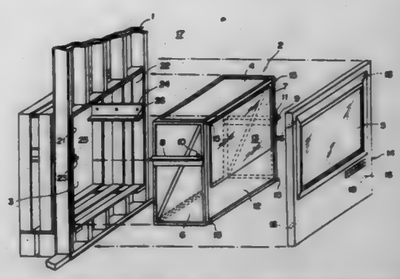
Yoshihiro Kawaguchi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 631,317, Dec. 21, 1990. This application Mar. 26, 1992, Ser. No. 859,252

Claims priority, application Japan, Jul. 13, 1990, 2-74631[U]

Int. Cl.[5] H04N *5/72, 5/64, 5/655*

U.S. Cl. 348—789 **8 Claims**



1. A rear projection type television unit of the type which is accommodated in an accommodating portion recessed in a wall of a room, comprising:

a television body having an outer casing which is recessed in the wall and in which electric and optical parts are accommodated and having an engaging member; and

a front panel detachably attached to a front portion of said television body so as to entirely cover the front portion thereof, said front panel being provided with a hole with which said engaging member is engaged, said front panel integrally including control circuitry and a control panel having an operational element for controlling an operation of said television unit, a screen on which color images are formed, and a portion adapted to cover a loudspeaker, said front panel further having a front surface disposed along the same plane as that of a surface of the wall when the television unit is accommodated in the accommodating portion of the wall.

5,293,245

VIDEO DEMODULATION APPARATUS WITH MOIRE COMPONENT CANCELLATION

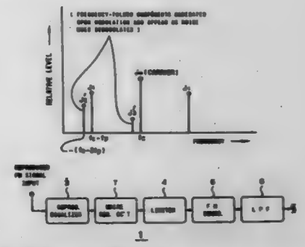
Junichi Hasegawa, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 12, 1992, Ser. No. 881,613

Claims priority, application Japan, May 15, 1991, 3-139605

Int. Cl.[5] H04N *5/92*

U.S. Cl. 358—328 **3 Claims**



1. Image signal demodulation apparatus for demodulating a frequency modulated image signal having a carrier, an upper sideband and first and second lower sidebands, of which FM image signal, a modulating signal frequency is comparably

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close to a carrier frequency of the FM image signal, said apparatus comprising:

means for equalizing group delay characteristics of the FM image signal inputted thereto at around the carrier frequency thereof;

means for delaying, with respect to said carrier, respective aliasing components of said first and second lower sidebands by predetermined amounts respectively in response to an output of said equalizing means;

limiter for restoring said upper sideband and removing amplitude variations of an output of said delaying means;

means for demodulating an output of said limiter, an output of said demodulating means containing a baseband component having a maximum frequency;

means for passing only said baseband component lower than said maximum frequency;

said demodulating means together with said delaying means causing a first moire component generated due to an aliasing caused upon modulation of said FM image signal to become opposite in phase relationship to a second moire component generated upon demodulation of said FM image signal by said demodulating means, so that said first and second moire components cancel each other.

5,293,246

APPARATUS FOR REMOVING FOREIGN MATERIALS FROM THE HEAD OF A VIDEO

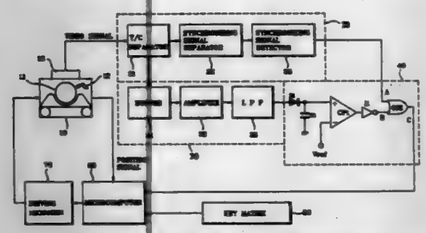
Hee M. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 9, 1992, Ser. No. 942,445

Claims priority, application Rep. of Korea, Sep. 9, 1991, 91-15879

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—310 **6 Claims**



1. An apparatus for removing foreign materials from a head of a video apparatus by closely contacting a head cleaner to a drum, which forms part of a video mechanism in the video apparatus, during loading or unloading of a video tape, comprising:

a synchronizing signal detecting section connected to the video mechanism, for detecting synchronizing signals from among video signals amplified by a pre-amplifier of the video mechanism, and for converting the detected synchronizing signals into a DC voltage output;

an envelope detecting section connected to said synchronizing signal detecting section, for detecting envelope signals from among the video signals, and for converting the detected envelope signals into a DC voltage output;

a comparing section connected to said synchronizing signal detecting section and said envelope detecting section, for comparing the output of said synchronizing signal detecting section with the output of said envelope detection section in order to measure a state of removal of the foreign materials; and

a microcomputer connected to said comparing section, for controlling said head cleaner in accordance with an output of said comparing section.

5,293,247

DIGITAL DEMODULATOR WITH A UNIT FOR CORRECTING OVER MODULATION AND PREVENTING BLACK REVERSING

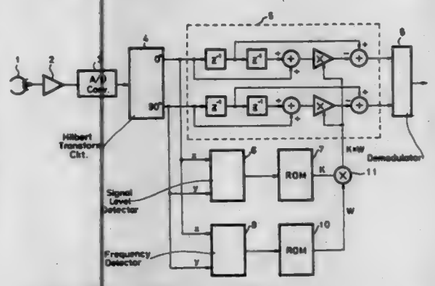
Shigeru Ganse, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,066

Claims priority, application Japan, Mar. 26, 1992, 4-068546

Int. Cl.[5] H04N *9/79, 5/91, 5/213*

U.S. Cl. 358—328 **5 Claims**



1. A digital demodulator comprising:

a reproducing head for reproducing an analog video signal from a recording medium;

an analog to digital converter for converting the analog video signal from said reproducing head into a digital signal;

a Hilbert transform circuit for transforming the digital signal into transformed signals whose phases are shifted by first and second angles from a phase of the digital signal, respectively;

a frequency detector for detecting a frequency of the transformed signals;

first coefficient calculation means for producing a weighting coefficient from an output signal of said frequency detector;

second coefficient calculation means for producing a weighting coefficient from the transformed signals;

a multiplier for multiplying together the weighting coefficients from said first and second coefficient calculation means and producing a correction signal;

an equalizer receiving said correction signal and said transformed signals for correcting a frequency characteristic of the transformed signals in response to said correction signal; and

a demodulator for demodulating an output signal of said equalizer, wherein the frequency characteristic of said equalizer is corrected in accordance with said correction signal from said multiplier.

5,293,248

SYSTEM AND APPARATUS FOR RECORDING AND REPRODUCING AND EXTENDED DEFINITION VIDEO SIGNAL IN/FROM A TRACK ON A MAGNETIC CARRIER

Franciscus H. M. Bergen; Jan J. Rotte; Stephanus J. J. Nijssen, and Peter H. N. De With, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,290

Claims priority, application European Pat. Off., May 6, 1991, 91201070.9; Feb. 27, 1992, 92200566.5

Int. Cl.[5] H04N *9/79*

U.S. Cl. 358—330 **24 Claims**

3. A recording device for use in a system for recording and reproducing an extended definition (ED) video signal in/from a track on a magnetic record carrier, said ED video signal being in the form of pictures, each picture comprising first lines having a chrominance signal and a first luminance signal, and

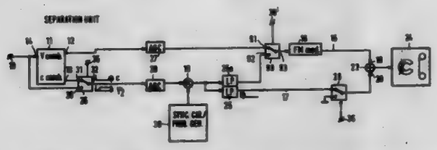
second lines comprising a second luminance signal modulated with a suppressed carrier, said recording device comprising:

an input terminal for receiving the ED video signal;

a separation unit having an input coupled to the input terminal, and first and second outputs, said separation unit being arranged for deriving the first luminance signal from the ED video signal and presenting this first luminance signal at the first output, and for deriving the chrominance signal and presenting the chrominance signal at the second output;

a first signal path comprising an FM modulator having an input coupled to said first output of said separation unit, said FM modulator shifting a frequency range of the first luminance signal to a predetermined frequency range;

a second signal path comprising a mixer stage having an input coupled to the second output of said separation unit, said mixer stage mixing the chrominance signal with a predetermined frequency signal;



a signal combining unit having first and second inputs coupled to an output of the respective first and second signal paths, and an output, said signal combining unit combining the frequency-shifted first luminance signal and the mixed chrominance signal; and

writing means having an input coupled to the output of the signal combining unit for writing the output of the signal combining unit into tracks on the magnetic record carrier; characterized in that the recording device further comprises:

a third signal path having an output coupled to a third input of the signal combining unit; and

supply means having an input coupled to the input terminal and an output coupled to an input of the third signal path, said supply means being arranged for supplying the second luminance signal in the second lines to the input of the third signal path.

5,293,249

VIDEO CASSETTE RECORDER HAVING A PROGRAM RESERVING FUNCTION INVOLVING A USER-COLORABLE OPAQUE MARK

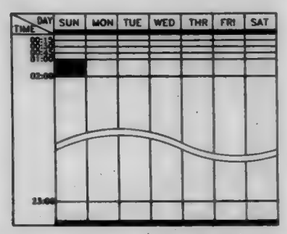
Kwon-pyo Hoong, Euiwang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Mar. 13, 1992, Ser. No. 850,925

Claims priority, application Rep. of Korea, Apr. 1, 1991, 91-5235

Int. Cl.[5] G11B *15/07, 23/087*

U.S. Cl. 358—335 **6 Claims**



1. A video cassette recorder having a program reserving function, comprising a tuner for selecting a broadcasting channel according to the tuning voltage of a phase-locked loop driven by a key signal generated from and controlled in a key matrix, a digitron displaying various functions of a VCR, and a timer control portion for generating a control signal driving an on-screen display which displays a character signal on a television screen and audio/video unit whenever the function of a VCR or a television is carried out, and for generating control signals to drive said phase-locked loop, said digitron, and said on-screen display, said VCR further comprising:

program board means installed in the front plate of said VCR and formed with a track consisting of a signal detecting section and a plurality of sections which are related to the appointed time and date of a program;

sensor means for detecting the programmed time and date displayed on said program board means and providing program reserving data to said timer control portion; and

wherein said sensor means comprises a light emitting portion for generating a predetermined light to detect the time and date of the program displayed on said program board means and a light receiving portion for providing a data signal for the appointed time and date of a program to said timer control portion according to a blocking or an absorption of the light generated in said light emitting portion by the sections of the time and date of the program board means.

5,293,250

A SYSTEM FOR NOTIFYING A DESTINATION TERMINAL THAT ELECTRONIC MAIL HAS REACHED A HOST COMPUTER

Shigemi Okumura, Kiyose, and Toshio Hirosawa, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 850,969

Claims priority, application Japan, Mar. 14, 1991, 3-049319

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—402 **10 Claims**



1. An electronic mailing system having at least two terminals and a host computer connected through a communication line, one terminal sending an electronic mail to said host computer, said host computer storing said electronic mail, and the other terminal of a subscriber receiving said electronic mail stored in said host computer, comprising.

said sending terminal including means for generating information designating a type of mail-receiving notice according to a sender's request of how urgently mail-reception is noticed, adding the designating information to an electronic mail to be sent, and sending the added result to said host computer;

said host computer including means for receiving said information designating the type of the mail-receiving notice

from said sending terminal and means for generating the mail-receiving notice information based on the received information designating the type mail-receiving notice and means for sending the generated mail-receiving notice to said receiving terminal; and

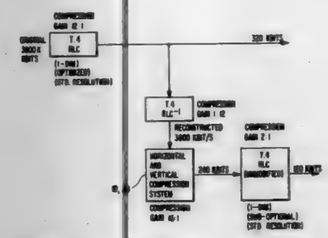
said receiving terminal including means for receiving the mail-receiving notice information from said host computer and means for notifying the user on said receiving terminal of that said electronic mail is received in said host computer according to the received mail-receiving notice information.

5,293,251

ENCODING/DECODING SYSTEM WITH TWO-STAGES OF ENCODING/DECODING

Franklin L. Corcoran, Rockville, and Spiros Dimolitsas, Gaithersburg, both of Md., assignors to Comsat Corporation, Bethesda, Md.

Filed Oct. 31, 1991, Ser. No. 786,210
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—426 **9 Claims**



1. An encoding system for compressing an original facsimile image, comprising:

a first encoder, coupled to receive the facsimile image, for vertically compressing the original facsimile image, thereby providing a first vertically-compressed facsimile image; and

a second encoder, coupled to receive an output of said first encoder, for vertically compressing the first vertically-compressed facsimile image from said first encoder, thereby providing a second vertically-compressed facsimile image;

said first encoder vertically compressing the original facsimile image by selectively retaining scan lines thereof, and said second encoder vertically compressing the first vertically-compressed facsimile image provided by said first encoder by performing a logical OR operation on pairs of scan lines of the first vertically-compressed facsimile image.

5,293,252

METHOD OF COMPRESSING DIGITAL IMAGE DATA AND DEVICE THEREOF

Jong-Kug Kim, Taeku; Min-Seok Hong, Suwon, and Tae-Eung Kim, Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Mar. 4, 1992, Ser. No. 845,701
Claims priority, application Rep. of Korea, Mar. 27, 1991, 1991-4791
Int. Cl.[5] H04N *1/415*
U.S. Cl. 358—432 **26 Claims**

1. A method of compressing image data, comprising the steps of:

forming a plurality of "M×N" pixel blocks (where M, N are natural numbers) from a luminance signal, first and second chrominance signals;

detecting first, second, third and fourth edge values respectively from said luminance signal, said first and second chrominance signals and an output of said pixel blocks;

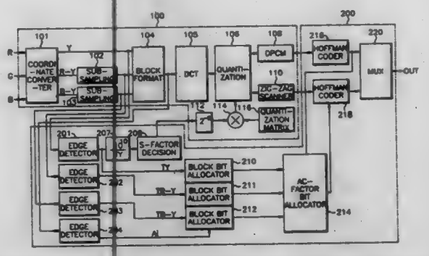
normalizing said first edge value to provide a quantization scaling factor;

allocating a number of bits corresponding to each block according to said first, second, third and fourth edge values;

subtracting a number of DC factor bits of each block one-dimensionally coded from said output of said pixel blocks in association with said quantization scaling factor from a number of the block allocation bits to allocate a number of AC factor bits; and

one-dimensionally coding said AC factor bits, and multiplexing between the one-dimensionally coded DC factor bits and the one-dimensionally code AC factor bits to provide a compressed image signal.

6. An image data compression device having coding means, comprising:



detection means connected to said coding means, for detecting first, second, third and fourth edge values respectively from a luminance signal, first and second chrominance signals and image blocks representative of a block format combination of said luminance signal and said first and second chrominance signals of said coding means;

decision means for normalizing said first edge value to provide a quantization scaling factor;

block bit allocation means for allocating a number of bits corresponding to said each image block according to said first, second, third and fourth edge values; and

factor bit allocation means for subtracting a number of DC factor bits of each image block coded by a one-dimensional Huffman coding technique from a number of the block allocation bits allocated by said block bit allocation means to thereby allocate a number of AC factor bits.

5,293,253

FACSIMILE APPARATUS FOR RECEIVING FACSIMILE TRANSMISSION SELECTIVELY

Yasushi Kida, Fukuoka, and Koichiro Maemura, Isehara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,881
Claims priority, application Japan, Oct. 6, 1989, 1-261383; Jul. 30, 1990, 2-202302
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—440 **10 Claims**

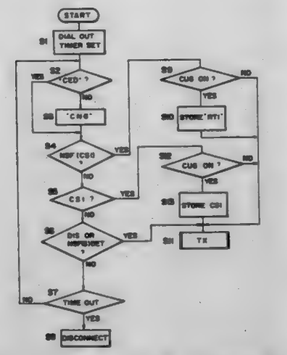
1. A facsimile apparatus for transmitting and/or receiving image data to and from another facsimile apparatus in another station, comprising:

communication control means connected with a communication line for establishing a connection with another station via the communication line, said communication control means sending station identification data to a calling station for identifying own station when a call is received from the calling station, said communication control means further receiving station identification data from a called station, when the facsimile apparatus has made a call to the called station, for identifying the called station;

image data transmission and reception means for transmitting image data to the called station via the communication control means when a call is made to the called station and for receiving image data from the calling station via the communication control means when a call is received from the called station;

image reading means for reading an image and producing the image data corresponding to the image, said image reading means transferring the image data to the image data transmission and reception means for transmission to the called station;

image recording means supplied with the image data received from the calling station from the image data trans-



mission and reception means for recording the image data on a recording sheet as a reproduced image;

memory means for storing the station identification data of selected stations; and

memory control means for controlling the memory means such that, when a call is made to a called station, the station identification data that is returned from the called station is stored in the memory means as one of the station identification data of the selected stations;

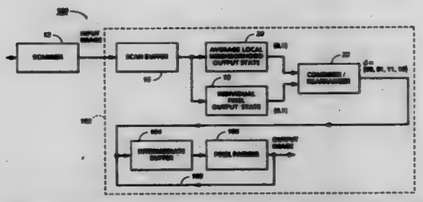
wherein said communication control means rejects reception of the image data transmitted from the calling station when the calling station is not included in a list of stations stored the memory means.

5,293,254

METHOD FOR MAINTAINING BIT DENSITY WHILE CONVERTING IMAGES IN SCALE OR RESOLUTION

Reiner Eschbach, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1991, Ser. No. 802,790
Int. Cl.[5] G06K *9/36*
U.S. Cl. 358—445 **28 Claims**



1. An apparatus for increasing resolution of an input image in an input bitmap while performing a density preserving smoothing operation, the input bitmap including a first set of pixels, said apparatus comprising:

means for mapping the first set of pixels into a second set of individual pixels, each of the individual pixels of the second set having a value selected from a first set of output states, each of the output states corresponding with a level of discretized information;

means for developing pixel arrays from the second set of individual pixels, the pixel arrays respectively representing local neighborhoods for the individual pixels of the second set, each of the local neighborhoods having a value selected from a second set of output states, each of the output states of the second set of output states corresponding with a level of discretized information;

means for combining the output state of each individual pixel with the output state of its respective local neighborhood resulting in a selected one of a third set of output states based on a predetermined relationship between the first and second sets of output states, each of the output states of the third set of output states corresponding with a level of discretized information, the selected one of the third set of output states reflecting a current output state of a selected individual pixel and a preference of the selected individual pixel for a selected one of the output states of the first set of output states, at least one of the third set of output states having at least one counterpart in the third set of output states; and

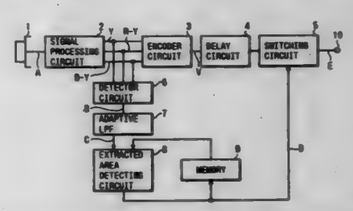
means for examining the individual pixels within a preselected area to locate a preselected number of individual pixels including a first individual pixel having a selected one of the third set of output states and at least a second individual pixel having a counterpart value to the first individual pixel having the selected one of the third set of output states, said examining means altering the respective output states of the first and second individual pixels when the first and second individual pixels are within the preselected area wherein the resolution of the output image is changed and the output image is smoothed without changing the density of the output image relative to the input image.

5,293,255

METHOD AND SYSTEM FOR EXTRACTING A SPECIFIC IMAGE

Akihito Nishizawa, Yokosuka; Takuya Imaide, Yokohama, and Mayuko Yamamoto, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 798,892
Claims priority, application Japan, Nov. 29, 1990, 2-325643
Int. Cl.[5] H04N *1/387*
U.S. Cl. 358—453 **19 Claims**



1. A method for extracting a desired specific image within an image comprising the steps of:

designating a prescribed area within the image as an initial extracting area and storing an area extracting signal which is obtained through said designation;

extracting an area which fulfills conditions determined from an image signal of the image according to characteristics of the specific image as a candidate area and converting it into a candidate area signal;

generating a comparative area signal presenting an area slightly larger than the extracted area, which is necessary

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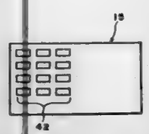
for expanding the extracted area, from the area extracting signal of the stored initial extracting area;
comparing said comparative area signal that has been generated with the candidate area signal and converting the candidate area signal in said comparative area signal into a new area extracting signal;
rewriting the area extracting signal in the initial extracting area by using the new area extracting signal; and
performing either the extraction or removal of the image signal inside the area which is determined by the new area extraction signal.

5,293,256

FACSIMILE APPARATUS COMPRISING A ONE-TOUCH DIAL FUNCTION

Shigenobu Fukushima, and Hiroya Sugawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 567,143, Aug. 14, 1990. This application Sep. 29, 1992, Ser. No. 953,182
Claims priority, application Japan, Aug. 14, 1989, 1-210521; Aug. 14, 1989, 1-210522
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—468 **8 Claims**



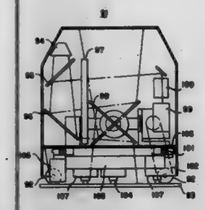
1. A facsimile apparatus comprising:
input means including a print key and a plurality of one-touch dial keys arranged on an operation panel, each key of said plurality of one-touch dial keys designating a destination to communicate;
storage means for storing data of destinations and facsimile numbers thereof so as to correspond to respective said plurality of one-touch dial keys of said input means;
line connection means for dialing through a communication line said facsimile number stored in said storage mean corresponding to a pressed one of said plurality of one-touch dial keys of said input means when one of said plurality of one-touch dial keys of said input means is pressed; and
print means automatically responsive to pressing of said print key for printing said data of destinations thereof stored in said storage means on a piece of paper or label in a format suitable for sticking it in the vicinity of each of said plurality of one-touch dial keys of said input means on said operation panel.

5,293,257

MOBILE SIZE INDEPENDENT IMAGE INPUT/OUTPUT APPARATUS AND PLATE

Katsuya Masao, 7190 103, 4-9-24 Nishikicho, Tachikawa Shi, Tokyo, Japan

Filed Dec. 5, 1991, Ser. No. 800,913
Claims priority, application Japan, Dec. 11, 1990, 2-415727; Dec. 11, 1990, 2-415728
Int. Cl.[5] H04N *1/10*
U.S. Cl. 358—472 **41 Claims**



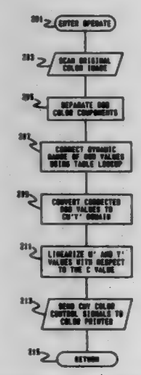
1. An image input apparatus for inputting images written on a plate, wherein said image input apparatus is movable on said plate and comprises:
wheels assembled to be able to run on said plate, and
motors for driving said wheels such that said image input apparatus moves on said plate by said motor driven wheels,
wherein said image input apparatus has a size independent from the size of said plate, and
said image input apparatus comprising image pick-up means for picking up images written on said plate.

5,293,258

AUTOMATIC CORRECTION FOR COLOR PRINTING

Anthony J. Dattilo, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 636,513, Dec. 31, 1990, abandoned. This application Oct. 26, 1992, Ser. No. 966,677
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 **6 Claims**



1. A method to process color component signals for printing accurate color image reproductions comprising steps of:
scanning a color image to be reproduced to derive said color component signals from the color image;
adjusting the color component signals to correct errors in the signals introduced by the scanning step including extending a dynamic range of each color component signal to pass through its white and black points;

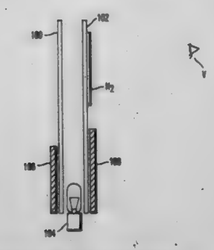
converting said adjusted color component signals to intermediate color printing signals to regulate hue values;
correcting the intermediate color printing signals for nonlinearities in reproduction characteristics of inks used to print the reproduction;
transforming corrected intermediate color printing signals to compensate color printing signals by steps of
deriving a factor for each of said color printing signals depending on its black paint, and
multiplying one of the intermediate color printing signal by a nonlinear factor proportional to its derived factor to obtain a first compensated color printing signals value and each of the other two intermediate color printing signals by a nonlinear multiplier proportional to its derived factor and the first compensated color printing signal value to obtain the other two compensated color printing signals; and
printing a color reproduction of the color image to be reproduced according to the values of the compensated color printing signals.

5,293,259

INTEGRATED RAINBOW HOLOGRAM

Qiang Huang, Huntsville, and John A. Gilbert, Gurley, both of Ala., assignors to The University of Alabama in Hunstville, Huntsville, Ala.

Filed Dec. 7, 1992, Ser. No. 986,508
Int. Cl.[5] G03H *1/22, 1/30*
U.S. Cl. 359—1 **17 Claims**



1. A holographic display comprising:
first and second spaced transparent sheets;
a holographic plate mounted upon one of said sheets;
first and second mirrors respectively overlying portions of said first and second spaced transparent sheets such that reflective surfaces of the first and second mirrors are facing each other and wherein said first mirror is disposed on the same sheet upon which the holographic plate is mounted and is larger than said second mirror; and
a light source disposed between said transparent sheets.

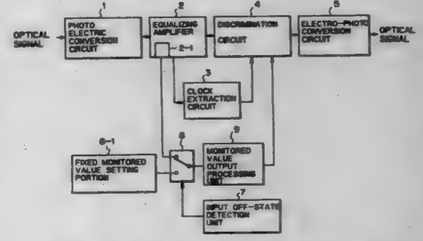
5,293,260

OPTICAL REPEATER OFF-STATE SUPERVISORY METHOD AND DEVICE THEREFOR

Katsumi Kikawa, Ichikawa, and Mitsuo Kitamura, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 12, 1991, Ser. No. 729,306
Claims priority, application Japan, Jul. 13, 1990, 2-186179
Int. Cl.[5] H04B *10/08, 10/02*
U.S. Cl. 359—177 **3 Claims**

2. An optical repeater OFF-state supervisory device comprising:
a photoelectric conversion means for converting an input optical signal into an electrical signal;
an equalizing amplifier means for waveform-shaping said electrical signal output from said photoelectric conversion means;
a monitoring circuit means, associated with said equalizing amplifier means, for detecting a monitored value when converted into an electrical signal;
a clock extraction means for extracting a timing clock for regenerating signals from an output of said equalizing amplifier means;
a discrimination circuit means for regenerating the output of said equalizing amplifier means into a desired pulse waveform by means of a timing clock from said clock extraction means;
an electro-photoconversion means for converting an electrical pulse signal into an optical pulse signal;
a monitoring circuit means further includes:
a monitored value output processing unit for receiving a monitored value from said monitoring circuit means and carrying out phase modulation after an A/D conversion of said monitored value, and for outputting said modulated signal into said discrimination circuit means, and



an input OFF-state detection means, operably connected to said monitored value output processing unit, for detecting an input OFF-state from a signal of said discrimination circuit means to send the output to a change-over circuit; and
a change-over circuit means, operably connected to said input OFF-state detection means, for receiving a signal of the result of detection from the input OFF-state detection means,
wherein, while it is not detected that an input optical signal has been in an OFF state, said change-over circuit means is in a HIGH level state and when it is detected at said input OFF-state detection means that the input optical signal has been in an OFF state, the change-over circuit means is switched over to a LOW level state so as to detect that a fault has occurred in an optical transmission line connected to an optical repeater when said input optical signal is in said input OFF-state and when said change-over circuit means has been switched over to a LOW level state.

5,293,261

DEVICE FOR LOW ELECTRIC-FIELD INDUCED SWITCHING OF LANGMUIR-BLODGETT FERROELECRIC LIQUID CRYSTAL POLYMER FILMS

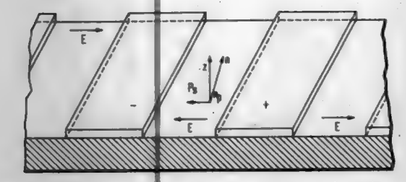
Ranganathan Shashidhar, Springfield; Jawad Naciri, Falls Church, both of Va.; Sebastian Pfeiffer, Washington, D.C., and Thomas L. Fare, Glenside, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C. and Geo-Centers, Inc., Newton Centre, Mass.

Filed Dec. 31, 1992, Ser. No. 999,619
Int. Cl.[5] G02F *1/13, 1/1343*
U.S. Cl. 359—087 **20 Claims**

1. A liquid crystal device comprising:
(a) substrate;

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(b) at least one pair of electrodes disposed on said substrate; and



(c) a Langmuir-Blodgett film of a liquid crystal polymer disposed on said substrate between said at least one pair of electrodes.

5,293,262

LIQUID CRYSTAL DISPLAY DEVICE HAVING HEAT-INSULATING MEMBERS AND DRIVING CIRCUIT BOARDS ATTACHED TO REAR EDGES OF LIGHT BOX

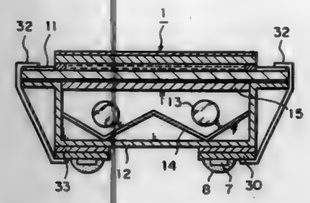
Kohei Adachi; Hideaki Otsuki; Kenichi Niki; Hayato Takasago, and Tetsuro Makita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 682,531, Apr. 9, 1991, abandoned, which is a division of Ser. No. 307,739, Feb. 8, 1989, Pat. No. 5,029,984. This application Aug. 17, 1992, Ser. No. 928,663

Claims priority, application Japan, Mar. 15, 1988, 63-62137; Mar. 15, 1988, 63-62138

Int. Cl.[5] G02F *1/133*; G09F *9/00*

U.S. Cl. 359—88 **3 Claims**



1. A liquid crystal display device comprising;

a light box having an open front, two side walls, and a rear wall;

a liquid crystal display panel arranged to cover said open front substantially parallel with said rear wall to form with said light box an enclosure;

a first sheet-like heat insulating member having a first side and a second side, said first side being attached to said rear wall of said light box external to said enclosure;

a first circuit board having a first side and a second side, said first side of said first circuit board being attached to said second side of said first sheet-like insulating member to be substantially parallel with said liquid crystal display panel, said second side of said first circuit board having drive circuitry, wherein said first circuit board is arranged on said first sheet-like insulating member so that an edge of said first circuit board is aligned with an edge of one of said side walls of said light box;

a second sheet-like heat insulating member having a first side and a second side, said first side being attached to said rear wall of said light box external to said enclosure;

a second circuit board having a first side and a second side, said first side of said second circuit board being attached to said second side of said second sheet-like insulating member to be substantially parallel with said liquid crystal display panel, said second side of said second circuit board having drive circuitry substantially the same as the drive circuitry on the second side of said first circuit board,

said second circuit board being arranged on said second sheet-like insulating member so that an edge of said second circuit board is aligned with an edge of the other of said side walls of said light box; and

a film-like connector for electrically connecting said drive circuitry with said liquid crystal display panel.

5,293,263

ELECTRO-OPTICAL MODULATOR WHICH PROVIDES OPTICAL BIAS STABILIZATION DURING OPERATION

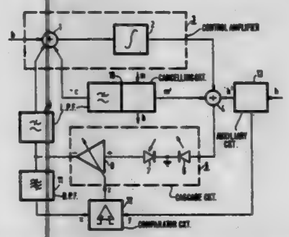
Alexander C. De Rijck, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 580,241, Sep. 7, 1990. This application Mar. 31, 1992, Ser. No. 860,866

Claims priority, application European Pat. Off., Apr. 3, 1991, 91200774.7

Int. Cl.[5] H04B *10/04, 10/06*

U.S. Cl. 357—180 **12 Claims**



1. An electro-optical modulation circuit for modulating the optical output of an electro-optical converter in accordance with a received modulating signal while maintaining a selected bias level of said optical output which is independent of the received modulating signal; said modulation circuit comprising:

an opto-electrical converter optically coupled to said electro-optical converter;

a negative feedback path having an input and an output and including there-between said electro-optical converter, said opto-electrical converter and an automatic gain control amplifier in that order, the output of said automatic gain control amplifier being the output of said negative feedback path;

a control amplifier having a first input for receiving a DC bias reference voltage corresponding to said selected optical bias level, a second input coupled to the output of the negative feedback path for receiving an output signal of said path, and an output at which said control amplifier is adapted to produce a bias control signal corresponding to a combination of the signals at the inputs thereof;

combining means having a first input coupled to the output of said control amplifier and having an output coupled to the input of said negative feedback path so as to complete a negative feedback DC control loop which includes said negative feedback path, said control loop being operative to stabilize the optical output of said electro-optical converter at said selected bias level; and

signal cancelling circuit means for deriving from the received modulating signal (i) a modulating current signal corresponding thereto and supplying said modulating current signal to a second input of said combining means, and (ii) a cancelling signal which is supplied to a third input of said control amplifier, said cancelling signal being the negative of a low frequency (including DC) component of the output signal of said negative feedback path caused by the modulating current signal supplied to the input of said negative feedback path via said combining means;

whereby the bias control signal produced by said control amplifier corresponds to said biasing reference voltage independently of any low frequency (including DC) component of the received modulating signal.

5,293,264

TRANSMISSION SYSTEM FOR THE POLARIZATION-INSENSITIVE TRANSMISSION OF SIGNALS

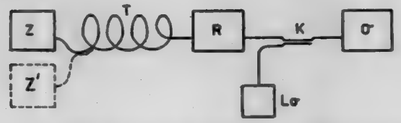
Mattijs O. van Deventer, Leidschendam, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Dec. 5, 1991, Ser. No. 803,188

Claims priority, application Netherlands, Dec. 10, 1990, 9002713

Int. Cl.[5] H04B *10/06*

U.S. Cl. 359—192 **3 Claims**



1. Transmission system for the polarization-insensitive transmission of a frequency-modulated binary digital signal having binary states respectively represented by two optical frequencies, the system comprising:

a transmitter of said frequency-modulated binary digital signal,

a transmission path for transmitting said signal,

a receiver for receiving said signal transmitted via said transmission path, said receiver including a local oscillator for generating a local oscillator signal and a coupling device for coupling said frequency-modulated binary digital signal, when received, with said local oscillator signal, and

a high-order retarder, having two principal axes, for converting at least a part of said frequency-modulated binary digital signal into a frequency- and polarization-modulated signal having polarization switching between two different polarization states which correspond to said two optical frequencies, characterized in that

said high-order retarder is connected between said transmission path and said coupling device, and in that

said local oscillator signal has a polarization which is at an angle to one of the principal axes of said high-order retarder which is greater than 0° and less than 180° according to Poincaré's, representation.

5,293,265

REAL TIME VARIABLE LASER BEAM SPINNER

Stephen Aleshin, Cincinnati, and Lorne A. Weeter, Maineville, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 24, 1992, Ser. No. 933,650

Int. Cl.[5] G02B *26/08*

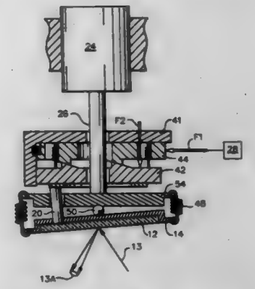
U.S. Cl. 359—198 **15 Claims**

1. A real time variable laser beam spinning apparatus comprising;

optical means adapted to deflect an incident laser beam when said optical means is tilted at a predetermined angle with respect to said incident beam;

means occupied to said optical means for imparting a rotational movement coupled to said optical means about an axis nonparallel to a plane of said optical means; and

means coupled to said optical means for applying a predetermined and variable tilted position to said optical means during rotation, said tilted position applying means including displaceable means coupled to said optical means; and



control means coupled to said displaceable means for displacing said displaceable means for a predetermined tilted distance.

5,293,266

OPTICAL BEAM SCANNING APPARATUS

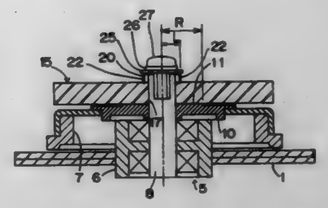
Jun Kohsaka; Hiromu Nakamura; Masanori Yamamoto, and Shinya Sakanashi, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1992, Ser. No. 990,512

Claims priority, application Japan, Oct. 30, 1992, 4-292977

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—218 **33 Claims**



1. An optical beam scanning apparatus comprising:

a polygonal scanner which is made of resin and has a plurality of reflective facets on its periphery;

a motor which has a rotary shaft for rotating the polygonal scanner;

a scanner rest for supporting the polygonal scanner thereon, the scanner rest being rotatable together with the rotary shaft of the motor; and

a pressing member which presses the polygonal scanner against the scanner rest to fasten the polygonal scanner to the rotary shaft of the motor, the pressing member pressing the polygonal scanner at such points that forces caused by the pressure and applied to all the reflective facets will be substantially even.

5,293,267

SOLID-STATE IMAGING DEVICE

Junichi Nakai, Fukuyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1992, Ser. No. 843,891

Claims priority, application Japan, Jul. 15, 1991, 3-174167

Int. Cl.[5] G02B *27/00*; H01L *31/0232*

U.S. Cl. 359—619 **7 Claims**

1. A solid-state imaging device provided with a plurality of microlenses disposed above a light receiving section on a

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substrate, the plurality of microlenses comprising a first lens layer formed in stripes and a second lens layer formed on the



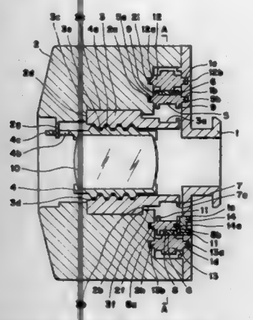
first lens layer in islands, wherein at least the second lens layer is subjected to softening treatment.

5,293,268

AUTOFOCUS LENS BARREL

Yuji Ihara, Kawasaki, and Naoya Sugimoto, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 903,270
Claims priority, application Japan, Jul. 11, 1991, 3-196966
Int. Cl.[5] G02B *15/14, 7/02*
U.S. Cl. 359—704 **4 Claims**



1. An autofocus lens barrel comprising:
optical system shifting means for shifting a focusing optical system forward or backward along an optical axis;
a driven pulley rotatively driven around the optical axis for actuating said optical system shifting means, the driven pulley being rotatably seated in a fixed barrel of the lens barrel;
a driving pulley to be driven by receiving a driving force;
an idler pulley provided at a position substantially symmetrical to said driving pulley with respect to the optical axis; and
a belt for transmitting the driving force from said driving pulley to said driven pulley and said idler pulley.

5,293,269

ASPHERIC CYLINDRICAL LENS AND METHOD OF FABRICATION

Gordon H. Burkhart, St. Louis, and Ronald A. Ferrante, St. Charles, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

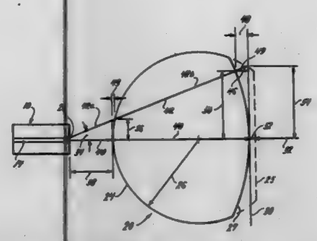
Continuation of Ser. No. 695,393, May 3, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 26,654
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—719 **4 Claims**

1. An optical lens for collimating a divergent input light, comprising:
a substantially cylindrical and spherical back lens surface;
a cylindrical and aspherical front lens surface defined by a plurality of coordinates, a set of said coordinates consisting of a first displacement from an optical axis of a divergent input light and a second displacement from a collimation plane, said optical axis and said collimation plane being orthogonally positioned wherein said front lens surface has been formed such that the optical path length traveled by each ray of said divergent input light from a source of said divergent input light to the collimation plane is substantially equal; and;
said plurality of sets of coordinates satisfy the following conditions (1) and (2):

$$H_2=H_1+(2R-(R-(R^2-H_1^2)^{\frac{1}{2}}))(\tan\Theta_2)-((D)^2-SAG_2(H_2)^2)^{\frac{1}{2}}$$

$$SAG_2(H_2)=D*\cos\Theta_2$$

wherein reference symbol R is a radius of curvature of said spherical back lens surface, reference symbol H_1 is a height above said optical axis which an off-axis diverging input light ray enters said back lens surface, reference symbol Θ_2 is an angle between an off-axis ray and a line parallel to said optical axis, and reference symbol D satisfies the following condition (3):



$$D=(OPL_1+OPL_2-OPL_0)/(n-\cos\Theta_2)$$

wherein reference symbol n is a refractive index of a lens medium for said optical lens, reference symbol OPL_0 is an optical length, measured along said optical axis, from the source of said diverging input light to said aspheric front lens surface, reference symbol OPL_1 is an optical length, measured along an off-axis ray of input light from said source of said diverging input light to a point on said back lens surface, and reference symbol OPL_2 satisfies the following condition:

$$OPL_2=n(((2R-(R-(R^2-H_1^2)^{\frac{1}{2}}-OS)*\tan\Theta_2)^2+(2R-(R-(R^2-H_1^2)^{\frac{1}{2}}-OS)^2)^{\frac{1}{2}}) \quad (4)$$

wherein reference symbol OS is the distance, measured along said optical axis, from said collimation plane to said aspherical front lens surface.

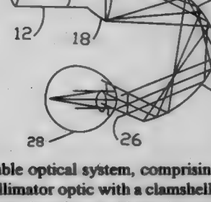
5,293,270

READING LENS SYSTEM

Hiroyuki Hirano, and Takashi Iizuka, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,788
Claims priority, application Japan, Jan. 31, 1992, 4-16901
Int. Cl.[5] G02B *9/62*
U.S. Cl. 359—760 **1 Claim**

1. A Gauss-type reading lens system, comprising in order from the object side:
a positive meniscus first lens element having a convex surface directed toward an object;
a positive meniscus second lens element having a convex surface directed toward the object;
a negative meniscus third lens element cemented with said second lens element and having a convex surface directed toward the object;
a negative meniscus fourth lens element having a concave surface directed toward the object;
a positive meniscus fifth lens element cemented with said fourth lens element and having a concave surface directed toward the object; and
a biconvex sixth lens element; and



wherein said reading lens system satisfies the following conditions:

f = 35.00 FNO 1:4.0 m = −0.126 ω = 19.2°

i	r(i)	d(i)	n(i)	ν(i)
1	21.600	3.58	1.71615	53.6
2	58.500	0.10		
3	10.688	3.25	1.77620	49.6
4	18.810	0.90	1.72311	29.5
5	7.547	11.38		
6	−9.200	0.90	1.72311	29.5
7	−21.730	2.86	1.77620	49.6
8	−11.551	0.10		
9	222.238	3.43	1.71615	53.8
10	−30.398			

where f denotes the focal length of the overall system, FNO is the F number, m is the magnification, ω is the half view angle, r(i) is the radius of curvature of the (i)th surface, d(i) is the distance between the (i)th surface and the (i+1)th surface, n(i) is the refractive index of the lens defined by the (i)th and (i+1)th surfaces at the e-line, and ν(i) is the Abbe number of the lens defined by the (i)th and (i+1)th surfaces.

5,293,271

RETROCOLLIMATOR OPTICAL SYSTEM

Nelson A. Merritt, Pleasantville, N.Y., and Arden Strasser, New Haven, Conn., assignors to Virtual Reality, Inc., Pleasantville, N.Y.

Filed Apr. 15, 1992, Ser. No. 868,521
Int. Cl.[5] G02B *27/10, 17/06, 5/10*
U.S. Cl. 359—858 **7 Claims**

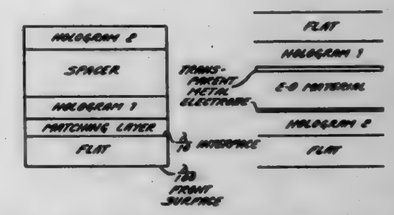
1. A mountable optical system, comprising:
(a) a retrocollimator optic with a clamshell geometry formed by two curved surfaces with conic section cross sections which intersect at a curved line thus forming a continuous inner surface mounted so as to intercept an optical image and thereafter reflect the image into the eye of the observer; and
(b) a means for projecting an optical image into said retrocollimator optic.

5,293,272

HIGH FINESSE HOLOGRAPHIC FABRY-PEROT ETALON AND METHOD OF FABRICATING

Tomasz P. Jannson; Tin M. Aye, both of Torrance; Jay W. Hirsh, Los Angeles, and Christopher C. Rich, San Pedro, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Filed Aug. 24, 1992, Ser. No. 934,793
Int. Cl.[5] G03H *1/00*; G01B *9/021*
U.S. Cl. 359—1 **22 Claims**



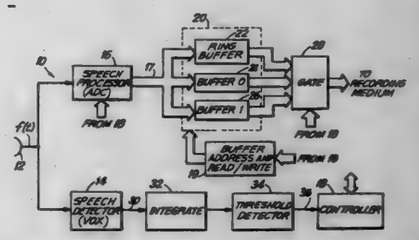
10. A method of fabricating a high finesse holographic Fabry-Perot etalon comprising the steps of:
providing a spacer having two sides, each of moderate surface quality on the order of λ/10;
coating each side of the spacer with a holographic material;
providing a flat having a front surface and an interface surface, the front surface being of high optical quality on the order of 80 /100 and the interface surface being of moderate optical quality on the order of λ/10;
providing a mirror having high optical quality on the order of λ/100;
joining the flat, spacer, and mirror such that the spacer is sandwiched between the interface surface of the flat and the mirror, with an index matching medium between the spacer and mirror and between the spacer and interface surface;
recording the holographic material using a one step holographic recording process; and,
removing the mirror.

5,293,273

VOICE ACTUATED RECORDING DEVICE HAVING RECOVERY OF INITIAL SPEECH DATA AFTER PAUSE INTERVALS

Gene S. Glick, Pleasantville, N.Y., assignor to Touchstone Applied Science Associates, Inc., Brewster, N.Y.

Continuation of Ser. No. 574,210, Aug. 28, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 946,040
Int. Cl.[5] G11B *5/00*
U.S. Cl. 360—5 **15 Claims**



1. A data recording system for efficiently recording signals containing information and pauses of different intervals, wherein information following each pause is captured for recording and space occupied on a recording medium for recording of said pauses is minimized, said system comprising:

input means for supplying an input signal containing information and pauses of different intervals to be processed for recording on a recording medium;
processor means coupled to said input means for supplying a stream of output data corresponding to said input signal including said pauses of different intervals;
storage means including:
first buffer means coupled to said processor means for storing data supplied by said processor means; and
second buffer means coupled to said processor means for storing data supplied by said processor means;
control means coupled to said processor means and including buffer address and read/write enable means associated with said first and said second buffer means, for controlling a sequence of operations of said recording system and for enabling storing and reading of data in and out of selected addresses of said first and said second buffer means;
record signal generating means having an input coupled to said input means and an output, for producing a record signal in response to an input signal having information of a certain duration, and for producing a no-record signal in response to a pause in the input signal of a determined interval, said output being coupled to an input of said control means;
said first buffer means having a storage capacity corresponding to said information of a certain duration; and
wherein said control means include
first means for storing data supplied from said processor means at selected addresses from an initial address to a last address of said first buffer means before a record signal is produced by said record signal generating means, including means for recirculating data storage from said initial address to said last address after data is stored at said last address and the record signal generating means continues to output a no-record signal,
second means for reading out data stored in said first buffer means after a record signal is produced by said record signal generating means,
third means for storing data supplied from said processor means at selected addresses of said second buffer means after a record signal is produced by said record signal generating means,
fourth means for reading out data stored in said second buffer means following the data read out from said first buffer means,
fifth means for returning data storage to the control of said first means when the record signal from said record signal generating means changes from a record to a no-record signal;
sixth means for measuring lengths of pauses in data from said processor means and for encoding the pause lengths for recording on the recording medium at corresponding positions in the recorded data, and
seventh means for deleting from the data from said processor means, before recording, data corresponding to a pause in the input signal for said determined interval when the signal from said record signal generating means changes to a no-record signal.

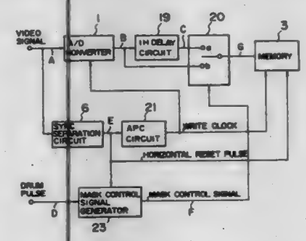
5,293,274

TIMEBASE AXIS ERROR COMPENSATION APPARATUS IN AN INFORMATION RECORDING/REPRODUCTION APPARATUS

Hiroshi Yamada, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 713270, Jun. 11, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 96,859
Claims priority, application Japan, Jun. 11, 1990, 2-153186
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—36.2 **3 Claims**

1. A timebase error compensating apparatus in a video tape recorder (VTR) for compensation for a timebase error included in a reproduced video signal, said apparatus comprising:
delay means for delaying said reproduced video signal a time period corresponding to one horizontal period;
signal generation means responsive to a drum pulse generated in said VTR for generating a control signal which represents one line of a horizontal scan of said reproduced



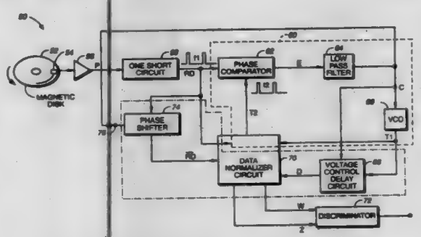
video signal corresponding to a first horizontal sync signal which is separated from said reproduced signal;
changeover means for selecting for output either an output signal of said delay means or said reproduced video signal in response to said control signal; and
compensation means for compensating for the timebase error included in an output signal of said changeover means.

5,293,275

DATA RECOVERY SYSTEM FOR INFORMATION RECORDING MEDIA

Ken Kawasaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 5, 1990, Ser. No. 622,862
Claims priority, application Japan, Dec. 5, 1989, 1-316207; Nov. 22, 1990, 2-319431
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 **8 Claims**



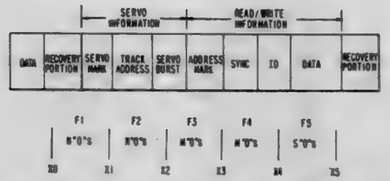
1. Data regeneration apparatus for use in data storage systems to suppress errors in data recovery where the data is digitally recorded on and retrieved from an information recording medium in the form of pulses which may be subjected to peak shifts and frequency fluctuations induced by storage system operation, comprising:
waveform shaping means for receiving and shaping data signals in the form of pulses from an information recording medium, and generating a shaped read data signal having a fundamental pulse period;
phase synchronizing means connected to an output of the waveform shaping means for generating a synchronizing signal synchronized with the data fundamental pulse period having a loop filter;
phase correction means connected to receive the synchronizing signal and an output of the loop filter, for adjusting the relative phase between said synchronization signal and the shaped read data signal in the presence of undesired frequency fluctuations, in response to an output voltage of the loop filter; and
a data normalizer connected to receive at least one output from said phase correction means and receive said shaped read data signal and configured to generate a normalized read data signal and a window signal from the received read data signal in response to the phase correction means output.

5,293,276

METHOD FOR GENERATING A REFERENCE SIGNAL FROM UNIQUE SERVO MARK PATTERN DETECTION

Mary E. Dunn, Longmont, and David E. Norton, Jr., Boulder, both of Colo., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 24, 1992, Ser. No. 825,387
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 **27 Claims**



1. A method of generating a signal mark pattern for a disk storage system for distinguishing servo data from informational data, said method comprising the steps of:
generating a first plurality of mark data sequences each having a first length, generating a second plurality of mark data sequences each having a second length, in which at least one mark data sequence contained in the first and second pluralities of mark data sequences has a data run-length greater than a predetermined data run-length, generating a reference signal located after said second plurality of mark data sequences, and recording said signal mark pattern including said reference signal in an area located prior to said servo data.

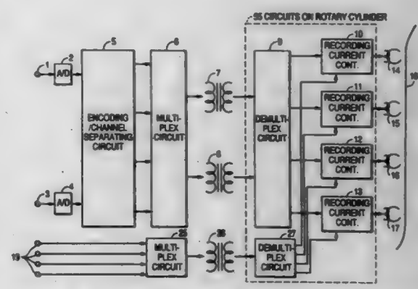
5,293,277

DIGITAL SIGNAL MAGNETIC RECORDING APPARATUS WITH TIME-DIVISION MULTIPLEX SIGNAL TRANSMISSION TO A ROTARY CYLINDER

Hiroaki Shimazaki, Hirakata, and Masamitsu Ohtsu, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 14, 1991, Ser. No. 791,536
Claims priority, application Japan, Nov. 21, 1990, 2-319015
Int. Cl.[5] G11B *15/14*
U.S. Cl. 360—64 **3 Claims**

1. A digital signal magnetic recording apparatus comprising:
means for encoding and separation an input digital signal to obtain digital signals of plural channels;
multiplex means for time-division multiplexing the digital signals of plural channels to obtain a digital transmission signal;
first transmitting means for transmitting the digital transmission signal to a rotary cylinder;
demultiplex means provided on the rotary cylinder for obtaining the digital signals of plural channels from the digital transmission signal transmitted through the first transmitting means; and
a plurality of magnetic heads provided on the rotary cylinder for recording the digital signals of plural channels



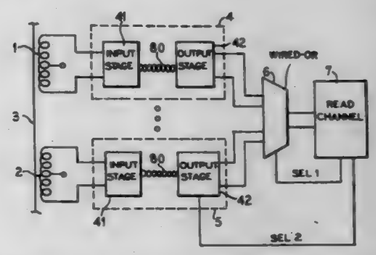
from the demultiplex means on a magnetic recording medium.

5,293,278

CIRCUIT FOR SELECTIVELY SWITCHING READ SIGNALS FROM A MULTIPLE MAGNETIC HEAD INTO A MEMORY

Per O. Pahr, Lier, Norway, assignor to Tandberg Data A/S, Norway

Filed Mar. 13, 1992, Ser. No. 850,821
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109589
Int. Cl.[5] G11B *5/02*
U.S. Cl. 36—67 **17 Claims**



1. A circuit for selectively coupling one of a plurality of magnetic systems of a multiple magnetic head to a read channel of a magnetic layer memory unit, comprising:
a preamplifier associated with each magnetic system, the preamplifiers having respective signal outputs electrically coupled together in parallel and to the read channel; and
selection means operatively electrically coupled to said preamplifiers for activating of one of the preamplifiers at a time selected to allow transmission of read signals only from the magnetic system associated with the selected preamplifier to the read channel, each preamplifier including an input stage spatially directly associated with its respective magnetic system, and an output stage spatially separated from the input stage and spatially associated with the read channel, the input and output stages being electrically coupled together by a flexible connecting line, each input stage including means for switching the input stage into a high impedance state as long as the preamplifier is not selected by the selection means.

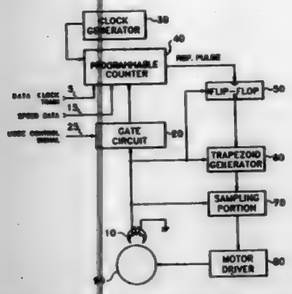
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5,293,279

CAPSTAN MOTOR CONTROLLER

Han-kyun Sin, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 16, 1991, Ser. No. 777,621
Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1863
Int. Cl.[5] G11B *15/46*
U.S. Cl. 360—73.08 22 Claims



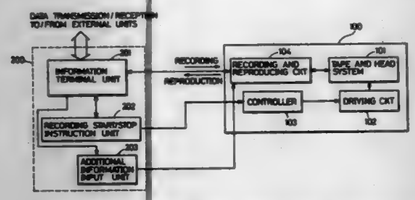
1. In a video recording/playback apparatus using tape as a recording medium, a capstan motor controller, comprises:
- a capstan motor for moving said recording medium;
- a motor driver for driving said capstan motor in response to a sampled signal;
- a capstan frequency generator for generating a capstan frequency generator signal having a frequency varying according to rotation of said capstan motor;
- speed designating means for generating speed data corresponding to a running speed of said recording medium according to driving modes of said recording medium;
- a speed controller for generating a reference pulse train having different periods according to said speed data designated by a user and said capstan frequency generator signal;
- a trapezoid generator for converting said reference pulse train into a trapezoid signal; and
- a sampling portion for generating said sampled signal by sampling said trapezoid signal according to said capstan frequency generator signal and supplying said sampled signal to said motor driver.

5,293,280

MAGNETIC RECORDING AND REPRODUCTION APPARATUS FOR DATA PROCESSING UNIT AND MAGNETIC TAPE FOR USE IN SUCH APPARATUS

Toshio Ishikawa; Shigeo Terashima, both of Nara, and Taizo Sasada, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1991, Ser. No. 739,218
Claims priority, application Japan, Aug. 2, 1990, 2-206159
Int. Cl.[5] G11B *15/48*
U.S. Cl. 360—74.1 16 Claims



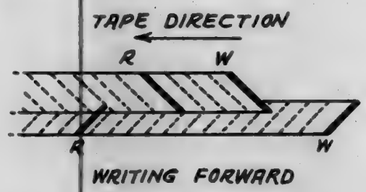
1. A magnetic recording and reproduction apparatus for recording a plurality of independent data on a plurality of recording tracks on a magnetic tape which are parallel to a moving direction of the magnetic tape and share a same starting position and for reproducing said plurality of independent data from said plurality of recording tracks, said magnetic recording and reproduction apparatus comprising:
- a plurality of magnetic heads located at the same position, said plurality of magnetic heads being arranged in parallel to a width direction of said magnetic tape so as to correspond to said plurality of recording tracks in a one-to-one correspondence,
- said plurality of independent data corresponding to said plurality of recording tracks in a one-to-one correspondence;
- magnetic tape drive circuit means for moving said magnetic tape so as to record data onto said magnetic tape and reproduce the data from said magnetic tape; and
- control means for controlling said drive circuit means and being responsive to an end position of said recording of data and an end position of said reproduction of data on said magnetic tape for immediately returning said magnetic tape to said starting position, said starting position corresponding to a predetermined initial position of said plurality of magnetic heads relative to said magnetic tape.

5,293,281

METHOD OF READING AND WRITING DATA TRANSITIONS ON SIDE-BY-SIDE TRACKS ON MAGNETIC MEDIA

Michael I. Behr, 395 S. Oakland, Pasadena, Calif. 91001, and Frank C. Bumb, Jr., 395 Ano Nuevo Ave., #217, Sunnyvale, Calif. 94086

Division of Ser. No. 485,060, Feb. 26, 1990, Pat. No. 5,132,861, which is a continuation-in-part of Ser. No. 415,718, Oct. 2, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 865,621
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] G11B *5/584, 5/596*
U.S. Cl. 360—77.07 3 Claims



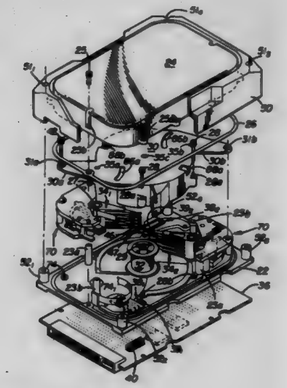
1. In the method of writing and reading data, by operation of magnetic head means, on side-by-side tracks defined by magnetic recording media on a substrate, said tracks having lengths and widths, said magnetic head means having lengthwise elongated magnetic flux gaps, the steps that include:
- a) magnetically writing data magnetic transitions on the tracks, and to extend at angles relative to the length directions of the tracks, at least one angle being acute relative to said length direction,
- b) and immediately thereafter magnetically reading said transitions,
- c) the method including operating said magnetic head means to cause the data transitions, as recorded, to have lengths as measured along the direction of gap lengthwise elongation greater than the widths of said side-by-side tracks, and operating the head means to perform read after write on two or more adjacent data tracks simultaneously, in either direction of media travel relative to and along said length directions of the tracks,
- d) there being servo bands buried in the media beneath said data tracks, each servo band underlying multiple of said data tracks,
- e) and operating said magnetic head means to write servo transitions in said buried servo bands, servo transitions extending at angles other than normal to said tracks and bands, individual servo transitions bridging multiple data tracks.

5,293,282

MULTIPLE ACTUATOR DISK DRIVE

John P. Squires, Boulder; Glade N. Bagnell; Charles M. Sander, both of Longmont, and Kurt M. Anderson, Louisville, all of Colo., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 431,575, Nov. 3, 1989, Pat. No. 5,223,993. This application Nov. 9, 1990, Ser. No. 614,853
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.08 7 Claims



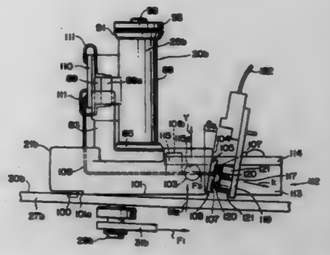
1. A disk drive, comprising:
- a housing, including
  - a flat base plate,
  - a cover engaging said base plate to form a controlled environment therebetween, and
  - a shock frame, coupled to said base plate;
- at least one disk having a first and second sides, each side including a plurality of tracks for storing data, wherein said housing includes seated gaskets providing a controlled environment isolated from ambient atmospheric conditions, and said at least one disk is provided in said controlled environment;
- means for mounting said at least one disk in said housing and for rotating said disk;
- at least four transducers for interacting with said at least one disk to read data from and record data on said tracks;
- first means for supporting and positioning a first and second ones of said transducers adjacent to said first and second sides of said at least one disk;
- second means for supporting and positioning a third and fourth ones of said transducers adjacent to said first and second sides of said at least one disk; and
- third means for controlling said first and second means to position said transducers over selected ones of said tracks to read and write data on each side of said disk.

5,293,283

TAPE GUIDING ASSEMBLY FOR RECORDING AND/OR REPRODUCING APPARATUS EMPLOYING ULTRASONICALLY VIBRATED TAPE GUIDES

Shigeru Masuda; Hiroshi Kiriyama; Osamu Shimizu, and Kazunari Tanimura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

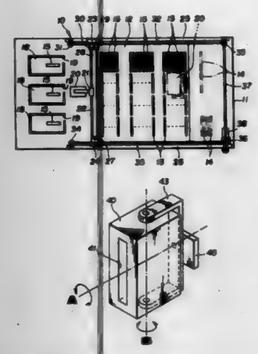
Filed Apr. 8, 1992, Ser. No. 865,174
Claims priority, application Japan, Apr. 12, 1991, 3-106581
Int. Cl.[5] G11B *15/665*
U.S. Cl. 360—85 30 Claims



1. A tape recording and/or reproducing apparatus comprising:
- a guide drum with rotary head means thereon moving in a planar orbit coinciding with a circumferential surface of the drum for recording or reproducing signals in slant tracks scanned on a longitudinally transported tape wrapped helically about said circumferential surface between a tape-entry position and a tape-exit position; and
- a tape-guiding assembly including first and second ultrasonically vibrated tape guides engageable by the tape adjacent said tape-entry and tape-exit positions, respectively, first and second auxiliary guide elements angled relative to said first and second vibrated tape guides, respectively, and being disposed for engagement by the tape between said first vibrated tape guide and said tape-entry position and between said second vibrated tape guide and said tape-exit position, respectively, said first and second auxiliary guide elements having respective surface projections extending therefrom at positions therealong corresponding to widthwise portions of the tape at which said rotary head means scan the tape adjacent said tape-entry and tape-exit positions, respectively, said first vibrated tape guide and first auxiliary guide element are mounted on a first slider and said second vibrated tape guide and second auxiliary guide element are mounted on a second slider, and said first and second sliders are mounted for movement between unloaded and loaded positions, and means for tensioning the tape so that said surface projections on said auxiliary guide elements relatively increase tension in the tape at said widthwise portions for minimizing error that may arise in the signals recorded or reproduced in said tracks adjacent said tape-entry and tape-exit positions due to vibrations transmitted along the tape from said vibrated tape guides; and further comprising main loading means for moving said sliders from said unloaded positions to said loaded positions which includes stopper means fixed at each of said loaded positions for determining the position of the respective slider in said loaded position; and mutually engaging contact means on each of said sliders and on the respective one of said stopper means which are inclined upwardly and forwardly, in the direction of said movement, from a perpendicular orientation to the plane of said movement, for supplying energizing power to said vibrated tape guide on the respective slider when the latter is disposed at said loaded position thereof.

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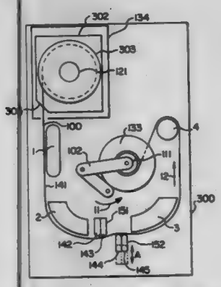
5,293,284
CASSETTE AUTOCHANGER
Keiji Sato, and Hideaki Noguchi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 11, 1992, Ser. No. 897,045
Claims priority, application Japan, Jun. 17, 1991, 3-144346
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 6 Claims



1. A cassette autochanger comprising:
at least first and second cassette containers which are differently oriented and which each contain a respective plurality of cassettes placed therein in a vertical posture and each having a medium with a signal recorded thereon;
at least one reproducing unit for reproducing the signal recorded on the medium of one of said cassettes placed in a horizontal posture in said reproducing unit;
a cassette holder rotatable about a first axis between vertical and horizontal postures and about a second axis substantially normal to said first axis between at least first and second orientations corresponding to the differently oriented first and second cassette containers, respectively; and
a carrying device for carrying said cassette holder between said cassette containers and said reproducing unit, said carrying device including selectively operable means for rotating said cassette holder about said first and second axis so as to dispose said cassette holder in said vertical posture in a selected one of said first and second orientations to permit said cassette holder to receive a selected one of said cassettes from said first or second cassette container or to transfer the selected cassette into said first or second cassette container, or so as to dispose said cassette holder in said horizontal posture for transferring the selected cassette into said reproducing unit or for receiving the selected cassette from said reproducing unit.

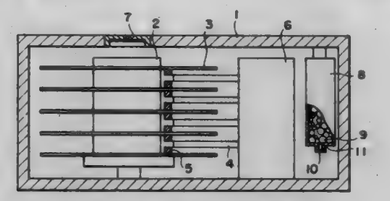
4. A cassette autochanger comprising:
at least one cassette container for containing a plurality of cassettes placed therein in a vertical posture and each having a medium on which a signal is recorded;
at least one reproducing unit for reproducing the signal recorded on the medium of one of said cassettes placed therein in a horizontal posture, said reproducing unit having an orientation different from an orientation of at least said one cassette container;
a cassette holder rotatable about a first axis between vertical and horizontal postures and about a second axis substantially normal to said first axis between first and second orientations corresponding to said orientation of said one cassette container and said orientation of said reproducing unit, respectively, for receiving a selected one of said cassettes into said cassette holder from said cassette container and transferring the selected cassette therefrom into said cassette container when said cassette holder is in said vertical posture and said first orientation, and for transferring the selected cassette from said cassette holder to said reproducing unit and receiving the selected cassette therefrom when said cassette holder is in said horizontal posture and said second orientation; and
a carrying device for carrying said cassette holder between said cassette container and said reproducing unit, said carrying device including means for rotating said cassette holder about said first axis from the horizontal posture into the vertical posture and about said second axis from said second orientation to said first orientation to permit said cassette holder to receive the selected cassette from said cassette container or transfer the selected cassette into said cassette container and for rotating said cassette holder about said first axis from the vertical posture into the horizontal posture and about said second axis from said first orientation to said second orientation to permit said cassette holder to receive the selected cassette from said reproducing unit or transfer the selected-cassette into said reproducing unit.

5,293,285
APPARATUS AND MEDIA FOR RECORDING DATA ON TWO SIDES OF A MAGNETIC TAPE
Michael L. Leonhardt, Longmont, and Hartvig E. Melbye, Boulder, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Jun. 1, 1992, Ser. No. 891,778
Int. Cl.[5] G11B *15/43*
U.S. Cl. 360—95 33 Claims



1. A tape drive for reading/writing data on a two-sided magnetic recording tape having first and second recording surfaces, located on opposite sides, respectively, of said magnetic recording tape, wherein said magnetic recording tape is wound on a source reel, comprising:
takeup reel means for transporting said magnetic recording take from said source reel;
tape path means for guiding said magnetic recording tape along a tape path from said source reel to said takeup reel means;
first head means, having read/write elements for reading/writing data on said first recording surface of said two-sided magnetic tape, located juxtaposed to said tape path such that said read/write elements are proximate to said first recording surface of said magnetic recording tape when said magnetic recording tape is guided along said tape path;
second head means, having read/write elements for reading/writing data on said second recording surface of said two-sided magnetic tape, located juxtaposed to said tape path and on a side of said magnetic tape opposite from said first head means such that said read/write elements are proximate to said second recording surface of said magnetic recording tape when said magnetic recording tape is guided along said tape path; and
wherein said read/write elements of said first head means and said second head means are oriented to create magnetic fields that are angularly displaced with respect to each other.

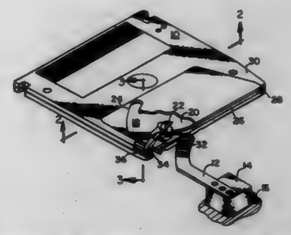
5,293,286
MAGNETIC DISC APPARATUS FOR MAINTAINING AN OPTIMUM HUMIDITY IN A HEAD DISC ASSEMBLY
Akihoro Hasegawa; Yoshihiro Terada; Takashi Koshiyama; Hiroyuki Haruyama, and Toshio Yasuda, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 643,260, Jan. 22, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 22,871
Claims priority, application Japan, Jan. 19, 1990, 2-9641; Nov. 13, 1990, 2-306547
Int. Cl.[5] G11B *33/14*
U.S. Cl. 360—97.02 8 Claims



1. A magnetic disc apparatus, comprising:
an enclosed head disc assembly; and
means for adjusting a humidity within said enclosed head disc assembly having silica gel being previously supplied with a predetermined amount of water before said silica gel is accommodated in position, and capable of releasing moisture by use of the supplied water to provide a predetermined humidity level such that when said humidity inside the head disc assembly rises above the predetermined humidity level, said humidity adjusting means becomes operative for absorbing moisture in the enclosed head disc assembly, and becomes inoperative when said humidity inside the enclosed head disc assembly drops to said predetermined humidity level, and
wherein said humidity adjusting means becomes operative, when said humidity inside the enclosed head disc assembly falls below the predetermined humidity level, for releasing moisture into the enclosed head disc assembly, and becomes inoperative when said humidity inside the enclosed head disc assembly increases to said predetermined humidity level.

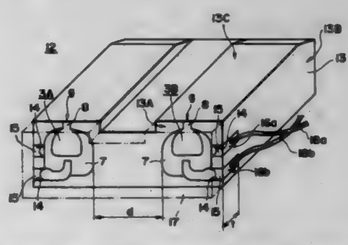
5,293,287
APPARATUS AND METHODS FOR BACKSIDE STABILIZATION OF FLEXIBLE OPTICAL MEDIA IN INFORMATION STORAGE SYSTEM
Israel Tzur, and David R. Dodds, both of Boulder, Colo., assignors to Iomega Corporation, Roy, Utah
Continuation of Ser. No. 525,894, May 18, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,992
Int. Cl.[5] G11B *23/033, 25/04*
U.S. Cl. 360—98.03 18 Claims

1. A stabilizer for providing Bernoulli stabilization in an information storage system to two flexible disks, each disk having an active side and a backside, wherein said disks are oriented so that said backsides are facing one another and wherein movement of said disks creates an air flow wherein air passes between said disks, said stabilizer comprising, a finger and first and second surfaces of a contour formed on said finger sufficient to provide Bernoulli stabilization to said disks passing thereover, each of said first and second surfaces having a number of grooves formed therein so that said air flow is channelled, wherein said stabilizer is positioned between said disks so that said first surface is proximate the backside of one disk and said second surface is proximate the backside of the other disk providing stabilization directly to the backsides of the disks and wherein air moving between said disks is channelled by the grooves formed in said first and second surfaces



so that disruption of air moving between said disks is minimized.

5,293,288
DUAL THIN-FILM MAGNETIC HEAD WITH SIDE SURFACE TERMINALS
Wataru Ishikawa, and Takashi Watanabe, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 700,870, May 16, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,597
Claims priority, application Japan, May 17, 1990, 2-127588
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 6 Claims



1. A thin-film magnetic head comprising: a floating slider having a floating surface, an end surface at the trailing edge of said slider transverse to and adjacent said floating surface, and a pair of side surfaces transverse to and adjoining said floating and end surfaces, two pairs of deep recesses, said pairs of recesses each being provided on said side surfaces and said end surface; a pair of thin-film magnetic head elements formed between said two pairs of recesses; and terminals formed by completely filling up said recesses of the floating slider with a conductive material; characterized in that each terminal has a front surface exposed in said end surface of the floating slider and a side surface exposed in the side surface of said floating slider adjacent to said end surface, lead wires may be connected respectively to the side surfaces of the terminals exposed respectively in the side surfaces of the floating slider adjacent to the end surface of the same.

5,293,289
HEAD CARRIAGE DEVICE
Fumio Nagase, Tama, Japan, assignor to Teac Corporation, Tokyo, Japan
Continuation of Ser. No. 742,642, Aug. 7, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 21,656
Claims priority, application Japan, Aug. 10, 1990, 2-213523
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 5 Claims

1. A disk recording/reproducing unit in which a head mounted on a head carriage is positionable to read or write

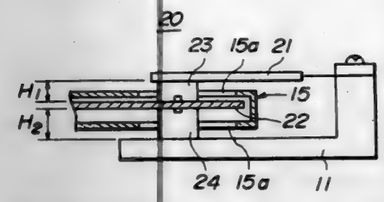
VOL 1160 ISS 2 MR 8 1994 UMI

data on a recording medium having a top surface and a bottom surface accommodated in a disk case adapted to be placed into said disk recording/reproducing unit at a recording/reproducing position thereof, said head carriage comprising:

an arm on which a first magnetic head having a bottom surface is mounted, said arm being movably supported so that said bottom surface of said first magnetic head is postionable on said top surface of said recording medium;

a carriage member having a mounting surface separated a fixed distance from said arm; and

a second magnetic head mounted on the mounting surface of said carriage member, said second magnetic head having a



top surface positionable on said bottom surface with said second magnetic head disposed opposite to said first magnetic head,

wherein said arm is displaced a first distance from the bottom surface of said first magnetic head and said carriage member is displaced a second distance from the top surface of said second magnetic head with said first and second distance being unequal and with said recording medium positioned nonsymmetrically between said arm and said carriage member by a distance corresponding to difference between said first and second distances thereby reducing the thickness of the disk recording/reproducing unit for accommodating said head carriage.

5,293,290

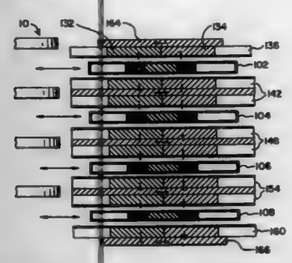
STACKABLE LINEAR ACTUATOR USING EMBEDDED COIL CARRIAGES

Kenneth R. Owens, Longmont; Robert D. Stroud, and Lester M. Yeakley, both of Boulder, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Oct. 17, 1991, Ser. No. 777,799

Int. Cl.[5] F11B *5/55*

U.S. Cl. 360—106 **20 Claims**



1. A stackable linear actuator having at least one carriage, said actuator comprising:

a structure comprising a plurality of plates stacked one on top of another, each of said plates having a substantially planar upper and lower surface;

said plates being positioned substantially parallel to each other to maintain a gap between adjacent ones of said plates for receiving one of said at least one carriage;

bearing means for supporting each of said at least one carriage for movement of said carriage within said gap and parallel to said planar upper and lower surfaces of said plates;

moving means comprising a part of each of said at least one carriage to individually move each of said at least one carriage in a linear path parallel to said planar upper and lower surfaces of said plates; and

each of said at least one carriage and said moving means comprising a single thin structure having substantially planar upper and lower surfaces.

5,293,291

OPTICAL INTEGRATED DEVICE FOR MAGNETO-OPTICAL REPRODUCING HEAD

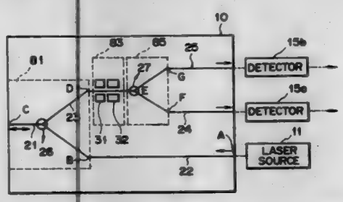
Hiroshi Ohki, Yokohama; Masaaki Doi, Kashiwa, and Hideki Akasaka, Kamagaya, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 677,478, Mar. 29, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,019

Claims priority, application Japan, Apr. 9, 1990, 2-92045

Int. Cl.[5] G11B *7/135, 11/14*

U.S. Cl. 360—114 **8 Claims**



1. An optical integrated device for a magneto-optical reproducing head, comprising:

a substrate;

a first wave guide for guiding a light beam for irradiating a magneto-optical recording medium and a signal light beam reflected by the medium;

a first TE-TM mode splitter for splitting said first wave guide into two wave guides;

a second wave guide coupled to said first wave guide through said first splitter for guiding the light beam for irradiating the magneto-optical recording medium to said first wave guide;

a third wave guide coupled to said first wave guide through said first splitter for guiding said signal light beam from said first wave guide;

polarization plane rotation means arranged in a course of said third wave guide for rotating a polarization plane of said signal light beam;

a second TE-Tm mode splitter for splitting said third wave guide into two wave guides;

a fourth wave guide and a fifth wave guide coupled to said third wave guide through said second splitter for guiding detection light beams split by said second splitter;

said five wave guides and said two mode splitters being formed on said substrate;

wherein said first TE-Tm mode splitter guides all of a TM mode component and some of a TE mode component of the signal light beam reflected from the recording medium into said third wave guide.

5,293,292

MAGNETIC TAPE CASSETTES AND A SEPARATE HOUSING PART THEREFOR

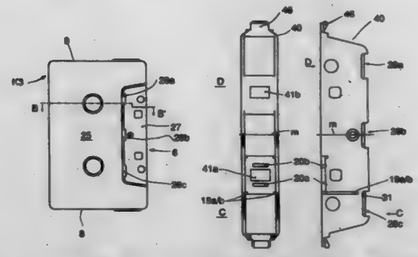
Klaus Schoettle, Heidelberg; Joachim Eberhard, Kippenheim; Kurt Schmidts, Schwanau, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 780,503

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 9014774

Int. Cl.[5] G11B *23/12*

U.S. Cl. 360—132 **14 Claims**



1. A magnetic tape cassette comprising bottom, lid, front, back and side walls and comprising two rotatably mounted coplanar hubs and a magnetic tape to be wound and unwound between the hubs and to be scanned by at least one magnetic head on a cassette apparatus, and a housing having first and second housing parts of molded plastic comprising bottom and lid walls and tape guide elements, said housing having a raised portion adjacent to the front wall of the housing parts for accepting the at least one head; said tape guide elements being located within the contour of the raised portion of the housing, said first and second housing parts forming the bottom and lid walls respectively have been molded as essentially planar parts without any inhomogeneities affecting the planarity of their inner surfaces, said essentially planar parts having molded thereon said back and side walls and said guide elements, and said raised portion and substantially said front wall of the housing have been molded as a third separate housing part of U-shape for at least partially connecting said first and second housing parts together.

5,293,293

DISK CARTRIDGE FOR EXCHANGEABLY ACCOMMODATING A DISK-SHAPED RECORDING MEDIUM

Hirokimi Iwata, Ibaragi, and Shuji Haruna, Tokyo, both of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 429,805, Oct. 31, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 851,874

Claims priority, application Japan, Nov. 11, 1988, 63-147216

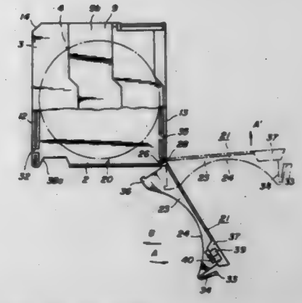
Int. Cl.[5] G11B *23/03*

U.S. Cl. 360—133 **2 Claims**

1. A disk cartridge adapted to releasably receive therein a disk-shaped recording medium for engagement by a recording-/reproducing means within the cartridge, said disk cartridge comprising:

a) a flat rectangular main body having broad top and bottom walls connected by shorter walls around part of its periphery to form a three-walled enclosure with one open side into which said recording medium may be received, said main body further having a semicircular wall within the enclosure to position said recording medium; and

b) a closure member adapted to swing from an open position, in which said recording medium may be introduced into the main body enclosure through said one open side, to a closed position whereby said closure member closes off said one open side of said main body to lockably secure said recording medium within the enclosure, said closure member being pivotable between open and closed positions by a hinge connecting the closure member to the open body, wherein said closure member pivots about an axis at one side of said one open side, in a plane parallel to



the broad top and bottom walls, wherein said disc cartridge further comprises means for unlocking said closure member when in said closed position to thereby allow said closure member to be pivoted to said open position.

5,293,294

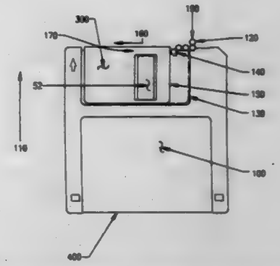
SHUTTER FOR DISK-BASED MEMORY MEDIUM HOUSING AND METHOD OF FABRICATION

Gregory E. Chappell, Charlotte, N.C., assignor to Verbatim Corporation, Charlotte, N.C.

Filed Jul. 7, 1992, Ser. No. 909,973

Int. Cl.[5] G11B *23/033*

U.S. Cl. 360—133 **9 Claims**



1. A shutter for a housing of a disk-based memory medium, comprising:

a metal body of selected thickness including a spine having spaced ends and a pair of integral legs along spaced edges of the spine and having spaced ends substantially aligned with the spaced ends of the spine; and

a surface-hardening coating at least on the thickness of an end of a leg in a region thereof near the spine to inhibit wear and deformation thereof.

5,293,295

DIGITAL PROTECTIVE RELAY APPARATUS

Yasuchika Nishitani, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 2, 1992, Ser. No. 907,632

Claims priority, application Japan, Jul. 5, 1991, 3-165597

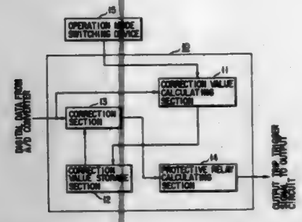
Int. Cl.[5] H02H *3/08*

U.S. Cl. 361—63 **12 Claims**

1. A digital protective relay apparatus for outputting a trip

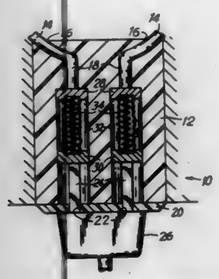
VOL 1160 ISS 2 MR 8 1994 UMI

instruction to a breaker provided in a power system for protecting the same when a fault occurs therein, comprising:
an analog input section for sampling an analog amount of electricity in the power system to subject the sampled electricity to predetermined processing;
A/D converter means for receiving the analog amount of electricity output from the analog input section to convert the same to digital data;
correction value-calculating means for receiving the digital data from the A/D converter means to calculate a correction value for correcting an error contained in the digital



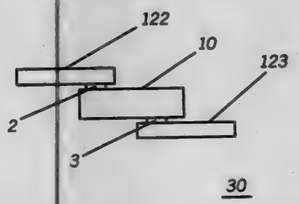
data when the digital data passes through the analog input section and the A/D converter means;
storage means for storing the correction value obtained by the correction value-calculating means;
correction means for correcting the digital data output from the A/D converter means by the use of the correction value stored in the storage means; and
protective calculating means for receiving the corrected digital data, and operating predetermined calculation using the received data, and outputting the trip instruction to the breaker when a calculation result indicates that the fault occurs in the power system.

5,293,296
EJECTING OUTLET AND ADAPTER
James C. Carl, Apt. 1C, 101 Highland Ave., Yonkers, N.Y. 10705
Filed Feb. 3, 1992, Ser. No. 829,288
Int. Cl.[5] H01H *77/00*
U.S. Cl. 361—93 **1 Claim**



1. An ejecting electrical outlet comprising:
an electrical receptacle box with apertures permitting the passage of prongs of an electrical plug and being connected to powerlines;
a first set of magnets positioned within said electrical receptacle and electrically connected to said powerlines;
a second set of magnets being disposed within said electrical receptacle and being displaceable from a position in juxtaposition to said apertures of said electrical receptacle to a position in close juxtaposition to said first set of magnets; and
a biasing means between said first and second magnets;
wherein entry of said prongs of said electric plug into said apertures slots of said electrical receptacle causes said second set of magnets to be displaced towards said first set of magnets, and said first and second magnets having sufficient attractive forces to hold said prongs of said plug within said electrical receptacle; and
wherein the strength of a magnetic field generated by an overload electric current in said powerlines is sufficient to defeat the attractive forces between said first and second magnets and to permit displacement of said second set of magnets toward said openings of said electrical receptacle.

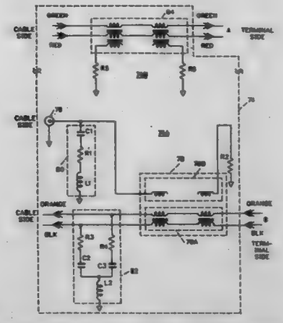
5,293,297
THERMALLY REGULATED SAFETY DEVICE FOR PORTABLE ENERGY UNITS
Venus D. Desai, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 30, 1991, Ser. No. 814,647
Int. Cl.[5] H02H *5/04*
U.S. Cl. 361—106 **10 Claims**



1. An improved circuit protection device, comprising:
a PTC element;
at least two electrodes connectable to a source of electrical power so that current passes between the electrodes through the PTC element; and
at least one nichrome electrical lead, in direct physical contact with the PTC element, which electrically connects one of the electrodes to the source of electrical power.

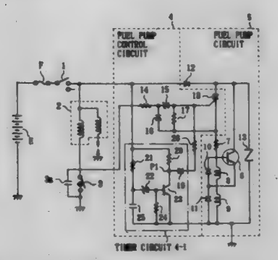
5,293,298
ELECTRICAL CONNECTOR
Henry R. Foglia, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 16, 1991, Ser. No. 778,416
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—113 **14 Claims**

1. An improved electrical connector comprising:
at least one multi-media port for interconnecting to a multi-media communications network;
at least one broadband port for interconnecting to a broadband device;
at least one baseband port for interconnecting to a baseband device; and
a circuit means positioned to interconnect each port; said circuit means providing a first transmission path which transmits multi-media electrical signals and a second transmission path which transmits baseband electrical signals;
with the first transmission path including a first transformer with at least one cylindrical ferrite core with a first set of windings for coupling the baseband port to the broadband port, a first circuit means, coupling a second set of selected windings of the first transformer to a first reference voltage potential, for terminating broadband signals and protecting devices connected to the baseband port against high voltage surge and a second circuit means, interconnecting a third set of selected windings of the first transformer to the first reference voltage potential, for terminating broadband signals within a selected voltage range and protecting devices connected to the broadband port against high voltage surge, and a transmission media inter-



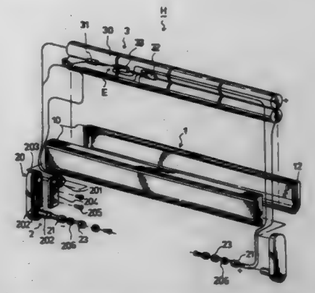
connecting the first circuit means to the multi-media port; and
the second transmission path including a second transformer with a cylindrical core and windings thereon for interconnecting the baseband port to the multi-media port.

5,293,299
FUEL PUMP CONTROL CIRCUIT
Hideo Iwabuchi, and Takeo Shimada, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan
Filed Feb. 18, 1992, Ser. No. 836,767
Claims priority, application Japan, Feb. 20, 1991, 2-13570[U]
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] F02D *41/00*
U.S. Cl. 361—152 **2 Claims**



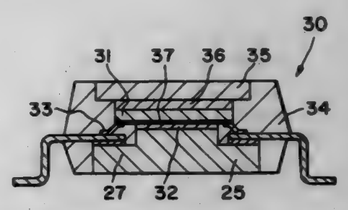
1. A fuel pump control circuit comprising:
an SCR for controlling, after turning on of an ignition switch, power supply from a power source to a fuel pump circuit for driving a fuel pump, said SCR being turned on by a gate current supplied from said power source through a first conduction path;
a timer circuit for shunting the gate current, which flows into said first conduction path, to a second conduction path when a predetermined time elapses after turning on of said ignition switch; and
a current limiting resistor inserted in said first conduction path.

5,293,300
PORTABLE COMPUTER WITH A DETACHABLE HANDLE INCLUDING A BATTERY
Chee-Chun Leung, Taipei, Taiwan, assignor to Quanta Computer, Inc., Taipei, Taiwan
Filed Dec. 2, 1992, Ser. No. 984,641
Int. Cl.[5] H05K *7/10, 7/16*; G06F *1/16*
U.S. Cl. 361—683 **4 Claims**



1. A portable computer including a computer body which has a housing and an internal power unit mounted in said housing, the improvement comprising;
a handle including a handle casing, a pair of spaced and opposite arm members extending symmetrically from said handle casing and being mounted detachably and pivotally to said housing, and a battery unit mounted in said handle casing; and
means for connecting electrically said battery unit to said internal power unit when said arm members are mounted to said housing.

5,293,301
SEMICONDUCTOR DEVICE AND LEAD FRAME USED THEREIN
Masato Tanaka, Nakano; Katsuya Fukase, Nagano; Mitsuharu Shimizu, Nagano, and Toshiyuki Murakami, Nagano, all of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan
Filed Nov. 27, 1991, Ser. No. 798,736
Claims priority, application Japan, Nov. 30, 1990, 2-340496; Nov. 30, 1990, 2-340500; Nov. 30, 1990, 2-340501
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—707 **4 Claims**



1. A semiconductor device comprising:
a lead frame comprising,
a first heat sink having a peripheral area and a central projected land, said first heat sink having a relatively good heat radiating characteristic, and
a plurality of inner leads, each having an inner end superimposed on said peripheral area of the first heat sink by an electrically insulating material; a semiconductor chip having a chip surface on which a junction pattern is arranged, said semiconductor chip mounted on said central

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projected land of the first heat sink by an electrically insulating adhesive so that said chip surface faces said projected land; TAB leads for electrically connecting said junction pattern of said semiconductor chip to said inner leads; and

a sealing resin hermetically sealing semiconductor chip, said first heat sink, said TAB leads and said inner leads.

5,293,302

ELECTRONIC PART ASSEMBLY

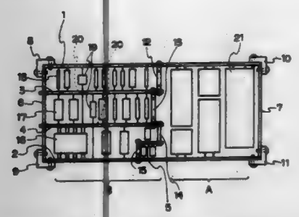
Miki Hasegawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 10, 1993, Ser. No. 29,225

Claims priority, application Japan, Mar. 25, 1992, 4-067139

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—784 **5 Claims**



1. An electronic part assembly comprising a wiring board formed with a wiring circuit, and a plurality of electronic parts mounted to the wiring board, wherein the wiring board is composed of a plurality of stages stacked up; the electronic parts are sorted into large parts which are high profile and small parts and disposed separately on the wiring board, while at least some of the small parts are each vertically disposed in the longitudinal direction of the wiring board and connected to adjacent stages of the wiring board by means of leads extending from the bath sides thereof.

5,293,303

CIRCUIT BOARD INJECTOR/EJECTOR DEVICE FOR A CIRCUIT BOARD ENCLOSURE

Neil C. Fletcher, Southampton, and David Horne, Winchester, both of England, assignors to BICC Public Limited Company, London, England

Filed Dec. 9, 1992, Ser. No. 987,619

Claims priority, application United Kingdom, Dec. 11, 1991, 9126235

Int. Cl.[5] H05K *7/14*

U.S. Cl. 361—798 **4 Claims**

1. A circuit board injector/ejector device for injecting and ejecting a circuit board into a rack, the rack housed in an enclosure having a backplane, to electrically connect a rear edge of the circuit board to the backplane, the circuit board injector/ejector device comprising:

a body secured to a front plate, the front plate secured to a front edge of the circuit board;

a lever pivotally mounted on said body, said lever pivotable in both a first direction and a second direction opposite to the first direction, the lever having at least a first surface and a second surface;

an elongated member extending transversely across the rack, the elongated member having a push-in surface and a push-out surface, the lever engagable with said elongated member;

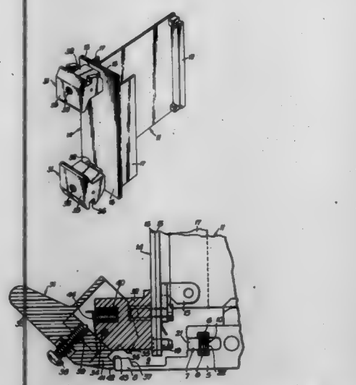
wherein when the lever is pivoted in the first direction, the first surface of the lever engages with the push-in surface on the elongated member to connect the circuit board to the backplane by injecting a plurality of pins on one of said rear edge of said circuit board and said backplane into a plurality of sockets on the other one of said rear edge of said circuit board and said backplane;

the lever having at least one surface engaging a surface on said elongated member when said plurality of pins have been injected into said plurality of sockets to prevent withdrawal of said circuit board from the rack unless the lever is first pivoted in the second direction;

the second surface of the lever engaging with the push-out surface on said elongated member to eject said plurality of pins from said plurality of sockets when the lever is pivoted in the second direction;

the body of the device having a tapped hole; and

a fixing screw insertable through the lever into said hole when the plurality of pins have been injected into said plurality of sockets, the fixing screw threadably insertable into said tapped hole to prevent pivotal movement of the lever.



5,293,304

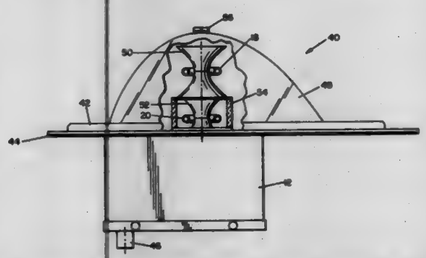
DUAL MODE ANTICOLLISION/RECOGNITION LAMP FOR AIRCRAFT

George W. Godfrey, Pinellas County, Fla., assignor to Godfrey Engineering, Oldsmar, Fla.

Filed Jun. 8, 1992, Ser. No. 895,483

Int. Cl.[5] B64D *47/04*

U.S. Cl. 362—62 **26 Claims**



1. An exterior light system for an aircraft comprising first and second lamp means; switching means for indicating when the aircraft is airborne and when the aircraft is on the ground and providing a status signal indicative thereof; and activating means responsive to said status signal for activating said first lamp means when the aircraft is airborne and said second lamp means when the aircraft is on the ground.

5,293,305

LIGHT GUIDANCE SYSTEM FOR THE ILLUMINATION OF AN INTERIOR AREA

Helmut Koster, Karl-Bieber-Hohe 15, D-6000 Frankfurt (Main) 56, Fed. Rep. of Germany

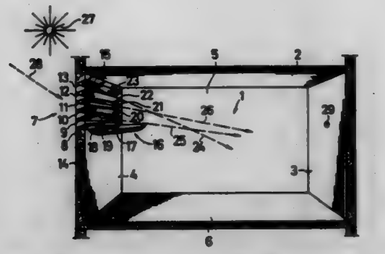
PCT No. PCT/DE90/00131, § 371 Date Aug. 20, 1991, § 102(e) Date Aug. 20, 1991, PCT Pub. No. WO90/10176, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 27, 1990, Ser. No. 743,318

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906229; May 23, 1989, 3916688

Int. Cl.[5] F21S *3/14*; F21V *7/09*

U.S. Cl. 362—147 **18 Claims**



1. A light guidance system for the illumination of an inside of a room with a light deflection device which deflects daylight coming from outside of the room as well as artificial light coming from inside of the room, characterized in that the light deflection device (7, 34, 58, 65, 107) comprises several elements (8–13; 37–51; 68–78) each having at least one reflector surface (53, 80) directed into the inside of the room (1) which reflector surface is formed by an element impervious to light, that these elements (8–13; 37–51; 68–78) are disposed parallel to one another and are arranged at such a distance from one another that light from outside of the room can penetrate through this distance into the inside of the room (1), and that an artificial light source (16, 54, 61, 82–86, 218) is provided which irradiates said at least one reflector surface (53, 80) from a direction from which the light from outside of the room is not substantially directly visible.

5,293,306

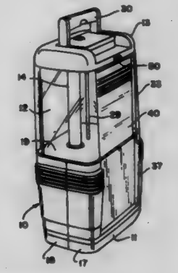
LANTERN WITH SLIDABLE SHUTTER

David J. Bamber, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Dec. 8, 1992, Ser. No. 986,922

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—186 **12 Claims**



1. A lantern comprising:

a base,

a globe mounted on the base,

a light source supported by the vase and positioned inside of the globe, and

a top supported by the globe, the improvement comprising the globe being integrally molded from transparent plastic and including a pair of integrally molded tracks which extend between the base and the top, the base including a pair of tracks which are aligned with the tracks in the glove, and a shutter slidably mounted in the tracks on the glove and on the base and being slidable between a closed position on the glove in which the shutter prevents light from the light source from shining through a portion of the globe and an open position on the base in which the shutter does not prevent light from the light source from shining through said portion of the globe.

5,293,307

MINIATURE FLASHLIGHT

Anthony Maglica, Ontario, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Continuation of Ser. No. 809,846, Dec. 18, 1991, Pat. No. 5,143,441, which is a continuation of Ser. No. 553,977, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 356,361, May 23, 1989, Pat. No. 4,942,505, which is a continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Sep. 1, 1992, Ser. No. 938,626

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—203 **1 Claim**



1. A flashlight comprising

a barrel for retaining at least one dry cell battery and having an inwardly extending lip at a first end of said barrel;

a head assembly mounted to axially move relative to said first end of said barrel and including fixed therein a lens and a substantially parabolic reflector having a central hole;

a lamp bulb extending freely through said central hole;

an insulated receptacle including an inner receptacle portion positioned in said barrel against said lip and an outer receptacle portion axially slidably engaged with said inner receptacle portion and positioned outwardly of said first end of said barrel against said reflector, one of said outer receptacle portion and said inner receptacle portion including a stop to limit relative axial movement between said inner and said outer receptacle portions, said lamp bulb being mounted to said outer receptacle portion and said inner receptacle portion having a contact extending to adjacent said lip.

VOL 1160 ISS 2 MR 8 1994 UMI

5,293,308

INDUCTIVE POWER DISTRIBUTION SYSTEM

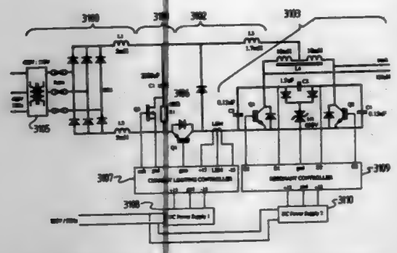
John T. Boys, Birkdale, and Andrew W. Green, Papatoetoe, both of New Zealand, assignors to Auckland Uniservices Limited, Auckland, New Zealand

Filed Jan. 30, 1992, Ser. No. 827,887

Claims priority, application New Zealand, Mar. 26, 1991, 237572; Jul. 1, 1991, 238815; Sep. 19, 1991, 239862; Sep. 30, 1991, 240018; Netherlands, Jan. 23, 1992, 238815; Jan. 23, 1992, 239862; Jan. 23, 1992, 240018; New Zealand, Jan. 23, 1992, 237572

Int. Cl.[5] H02M *5/458*

U.S. Cl. 363—37 44 Claims



1. An inductive power distribution system comprising:

an electric power supply,

a primary conductive path connected to said electric power supply;

one or more electrical devices for use in conjunction with said primary conductive path; the or each device capable of deriving at least some power from a magnetic field associated with said primary conductive path;

the or each device having at least one pick-up coil comprising a resonant circuit having a pick-up resonant frequency, and at least one output load capable of being driven by electric power induced in the pick-up coil, wherein the or each device comprises control means to at least partly decouple said pick-up coil from said primary conductive path.

5,293,309

ESTIMATE GENERATING SYSTEM FOR AUTOMOTIVE PANEL REPAIRING

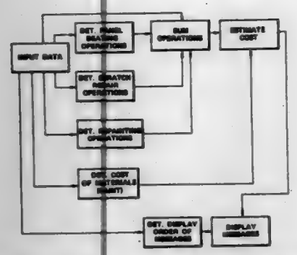
Nobuhiro Sakai, Yokosuka, and Michio Sugiyama, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 29, 1987, Ser. No. 102,417

Claims priority, application Japan, Sep. 30, 1986, 61-232759

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 6 Claims



1. A system for generating a repair cost estimate for a vehicle having one or more damaged panels comprising:

data input means having manually actuatable input keys for providing data input signals in response to the actuation of said input keys;

display means which is responsive to display command signals on which messages and data input can be displayed;

a microprocessor operatively connected with said keyboard and said screen, said microprocessor including circuitry means for:

(a) producing display control signals which cause said display means to display a message requesting a number of damaged individual panels to be inputted via the keyboard;

(b) recording the data input signals from said data input means indicative of an inputted number of panels;

(c) producing display control signals which cause said display means to display a message requesting a number of damaged sections of a first of the damaged panels and a presence or absence of scratches which are separate from the damaged sections;

(d) recording the data input signals from said data input means indicating the number of damaged sections and the presence or absence of scratches;

(e) producing display control signals which cause said display means to display a message requesting a surface area and degree to which damage has occurred for each of the damaged sections;

(f) recording the data input signals from said data input means indicative of surface area and damage degree data;

(g) producing signals indicating an amount of panel repair required for each damaged section;

(h) repeating signal generating operations (e) to (g) in the event that more than one damaged section has been recorded in operation (d);

(i) producing display control signals which cause said display means to display a message requesting input of data relating to the scratches in the event that the presence of scratches is recorded;

(j) recording the data input signals from said data input means indicative of number, depth and length of the scratches;

(k) producing signals indicative of an amount of repainting required to repair the scratches;

(l) repeating signal generating operations (c) to (k) in the event that more than one panel is recorded in operation (b);

(m) producing display control signals which cause said display means to display a message requesting input of data relating to repainting of damaged portions;

(n) recording the data input signals from said data input means data pertaining to type of paint used and number of colors required;

(o) producing signals based on paint related data recorded in operation (n), the amount of repainting required, and the amount of paint required to repair the damaged sections following repair of same;

(p) producing display control signals which cause said display means to display a message requesting that a current labor rate be inputted;

(q) recording the data input signals from said data input means indicative of the current labor rate;

(u) producing signals indicative of a cost of repair by adding cost of the paint to a sum of the panel repair, panel repainting and scratch repair and repainting operations, multiplied by the current labor rate; and

(v) producing display control signals based on the cost indicative signals and supplying these display control signals to the display means.

5,293,310

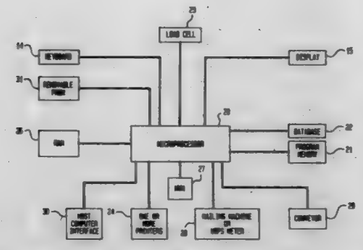
FLEXIBLE METHOD FOR APPLYING CUSTOMIZED RATING ADJUSTMENTS TO TRANSACTION CHARGES

Terri A. Carroll, Milford, and Jacques E. Hasbani, Bethel, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed May 22, 1992, Ser. No. 888,682

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—408 16 Claims



1. A method for determining charges for a class of transactions, comprising the steps of:

a) partitioning said class into cells in accordance with predetermined criteria;

b) providing a user with apparatus for computing base rates for said transactions, said apparatus being responsive to configuration data stored in said apparatus to select particular discounts or surcharges from a plurality of predetermined discounts or surcharges, and to apply said particular discounts or surcharges to said base rates for said transactions to determine said charges, said configuration data defining correspondences between said discounts or surcharges and said cells, and said configuration data having a predetermined form and being communicated to said apparatus through a selected medium;

c) defining custom discount rates for said user;

d) transmitting data defining said custom discount rates to a data processing center;

e) at said data processing center, inputting said defining data to means for translating said defining data into corresponding configuration data in said form, and

f) transmitting said corresponding configuration data to said apparatus through said medium to update said stored configuration data and implement said custom discount rates.

5,293,311

APPARATUS AND A METHOD FOR CHANGING A RESOLUTION VALUE OF INPUT MUSICAL DATA

Kiyomi Takauji, Hamamatsu, Japan, assignor to Kawai Musical Inst. Mfg. Co., Ltd., Sizuoka, Japan

Continuation of Ser. No. 539,353, Jun. 6, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 903,082

Claims priority, application Japan, Jun. 7, 1989, 1-144968

Int. Cl.[5] G06F *15/44*

U.S. Cl. 364—410 34 Claims

1. An apparatus for changing a resolution value of input musical data in an electronic musical instrument, comprising:

old input musical data storing means for storing old input musical data previously input thereto;

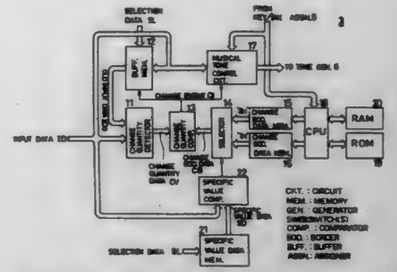
change quantity calculating means for calculating a quantity of a change of input musical data, newly input thereto and old input musical data received from said old input musical data storing means;

change border data generating means for generating a plurality of change border data each having a different value and representing the resolution value of the input musical data;

first determining means for determining if the quantity of a change of input data calculated by said change quantity calculating means is not less than a value of one of the change border data received from said change order data generating means;

input musical data processing means for effecting predetermined musical process according to the change of input musical data, on the basis of the determination of said first determining means;

second determining means for determining whether the value indicated by input musical data is equal to at least one predetermined value; and



change border data changing means for changing the value of the change border data to that of another one of the change border data generated by said change border data generating means, on the basis of the determination of said second determining means, and changing the resolution value of the input musical data to the predetermined value.

5,293,312

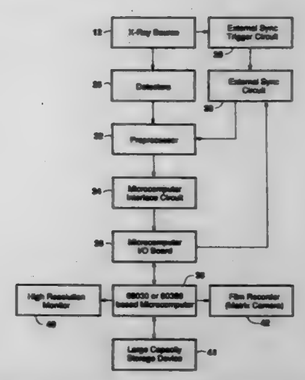
METHOD AND APPARATUS FOR COMPUTING TOMOGRAPHIC SCANS

Robert G. Waggener, P.O. Box 23120, San Antonio, Tex. 78223

Continuation-in-part of Ser. No. 391,252, Aug. 9, 1991, Pat. No. 5,128,864. This application Jun. 20, 1991, Ser. No. 718,544

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.21 12 Claims



1. A method of back projecting the image of a CT scan comprising the steps of:

(a) exposing a target object to an x-ray fan beam;

(b) producing a signal representing the intensity of a beam of the x-ray incident upon a detector after passing through the target object;

(c) scaling the signal in accordance with the signal which would have been produced by the detector producing the

signal had the x-ray incident thereon not passed through the target object;

(d) correcting the scaled signal for the magnification resulting from the spread of the x-ray fan beam using a back projected parallel beam established for each angular increment to establish a coordinate grid in the tomographic plane defined by the intersection of the fan beam and the target object, the parallel and fan beams intersecting in a locus of points which define the diameter of a reconstruction circle which is coplanar with the fan and reconstructed parallel x-ray beams, the coordinate grid defined by the spacing between the detectors in a linear detector array, and a scaling transformation which is the Jacobian of the transformation from the linear detector array to each of a plurality of planes through the reconstruction circle;

(e) convolving the scaled signal to produce a value representing the signal which would have been produced by the detector had the ray of the x-ray fan beam incident thereon been a ray comprising a parallel beam, the central axis of which is contiguous and co-linear with the central axis of the fan beam; and

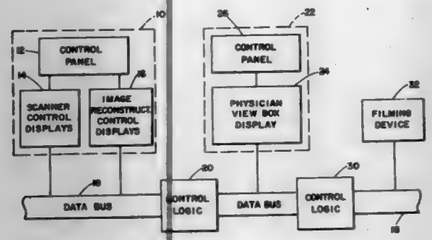
(f) repeating steps (a)–(e) at a plurality of incremental angles around the target object to produce a back projected image of the target object.

5,293,313

REAL TIME PHYSICIAN VIEW BOX

Robert A. Cecil, Solon; John J. Barni, Mayfield Village, and Lawrence R. McMillen, Richmond Heights, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Nov. 21, 1990, Ser. No. 616,987
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.22 **17 Claims**



1. A diagnostic image display system comprising:

a diagnostic scanner which generates a series of high gray scale resolution digital electronic diagnostic image representations;

a digital mass storage means for receiving and storing at least the series of generated digital high gray scale resolution electronic image representations;

an interpolating means for reducing a number of pixels per digital high gray scale resolution electronic image representation received from the mass storage means to generate a plurality of reduced pixel digital electronic image representations;

a digital image video memory means formatted to store a plurality of the reduced pixel digital electronic image representations for concurrent display in a common video frame in a selected array pattern;

a bit storage control for independently controlling a fraction of gray scale resolution bits of each reduced pixel electronic image representation stored in the digital image video memory means, such that each stored reduced pixel digital electronic image representation has only an independently selected fraction of the gray scale resolution bits received from the digital mass storage means;

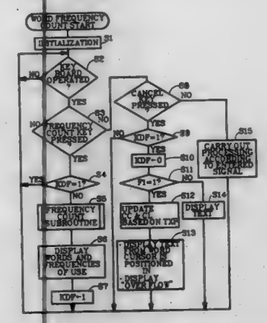
a video monitor means connected with the digital image video memory means for converting the digital electronic image representations stored in the digital image video memory means into a common analog video frame signal for display of human-readable images in the selected pattern, the fraction of gray scale resolution bits of each displayed image representation of the common video frame being independently controlled.

5,293,314

WORD PROCESSOR HAVING A WORD FREQUENCY COUNT UNIT

Toshiyuki Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 3, 1991, Ser. No. 754,018
Claims priority, application Japan, Sep. 4, 1990, 2-235426
Int. Cl.[5] G06F *15/38, 15/40*
U.S. Cl. 364—419.07 **18 Claims**



1. A word processor having a capability of counting frequency of use of words, comprising:

(a) an input means for inputting a text data and an instruction data into the word processor;

(b) a text storage area provided in a text memory for storing the text data inputted by the input means;

(c) a frequency data area provided in an unused, remaining area of the text memory for storing an address data of a word data in association with a frequency data of the word data and a start point for defining the frequency data area being changeable according to an amount of the text data stored therein;

(d) a read-out means for successively reading out the word data and an address data of the word data from the text memory;

(e) an address storage means for successively storing the address data of the word data read out by the read-out means in the frequency data area according to a predetermined order;

(f) a frequency count means for counting the frequency of use of the word data in the text memory based on the address data stored in the frequency data memory and of the corresponding word data in the text memory, and storing the frequency of use of the word data in association with the address data;

(g) a determination means for determining whether unused area is available in the frequency data area when the address data is stored by the address storage means; and

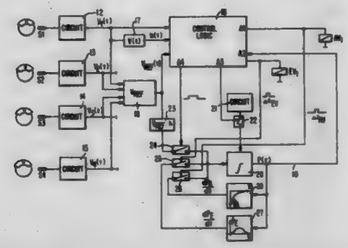
(h) a boundary means for storing the address data of either a lastly read-out word data read out by the read-out means or a next, first unread-out word data in the text storage area when the determination means determines that no available area exists in the text memory thereby creating a boundary between a counted area and an uncounted area of the text storage area.

5,293,315

CIRCUIT CONFIGURATION FOR AN AUTOMATIVE VEHICLE HAVING TRACTION SLIP CONTROL

Alexander Kolbe, Gross-Zimmern, and Klaus Honus, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 3, 1991, Ser. No. 709,861
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1990, 4017845
Int. Cl.[5] B60T *8/32*; B60K *28/16*
U.S. Cl. 364—426.02 **11 Claims**



1. Traction slip control apparatus for a wheel mounted on a vehicle, said apparatus comprising:

means for setting a basic threshold corresponding to a predetermined traction slip value;

means for developing an indication of the speed of a wheel mounted on a vehicle;

means for developing an indication of the speed of said vehicle on which said wheel is mounted;

means responsive to said indication of wheel speed and said indication of vehicle speed for developing an indication of wheel slip;

means responsive to said indication of wheel slip for developing an indication of wheel slip acceleration;

means for comparing said indication of wheel slip with a variable control threshold of wheel slip dependent 17 upon said basic threshold and said wheel slip acceleration and for developing a traction slip control when said indication of wheel slip exceeds said control threshold;

and means responsive to said traction slip control for controlling the operation of a brake associated with said wheel.

5,293,316

CLOSED LOOP LAUNCH AND CREEP CONTROL FOR AUTOMATIC CLUTCH

James M. Slicker, Union Lake, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 7, 1991, Ser. No. 772,204
Int. Cl.[5] G06F *15/50*; F16D *43/22*
U.S. Cl. 364—424.1 **28 Claims**

1. In a combination including a source of rotary motive power, a transmission, a friction clutch for selectively coupling the source of rotary motive power with the transmission and having an input shaft connected to the source of motive power and an output shaft connected to the transmission, and at least one inertially-loaded traction wheel connected via the transmission to the output shaft of the friction clutch having a torsional compliance exhibiting an oscillatory response to torque inputs, an automatic controller for the friction clutch comprising:

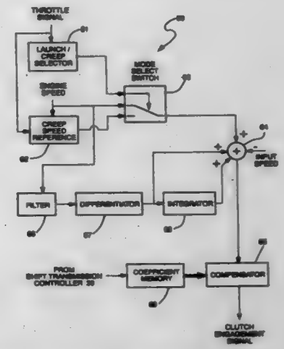
an engine speed sensor connected to the source of motive power for generating an engine speed signal corresponding to rotational speed of the source of motive power;

a reference speed generator connected to said engine speed sensor for generating a reference speed signal;

a transmission input speed sensor connected to the output shaft of the friction clutch for generating a transmission input speed signal corresponding to rotational speed of the output shaft of the friction clutch;

a clutch actuator connected to the friction clutch for controlling engagement of the friction clutch from disengaged to fully engaged according to a clutch engagement signal; and

a controller connected to said reference speed generator, said transmission input speed sensor, and said clutch actuator including



an algebraic summer connected to said reference speed generator and said transmission input speed sensor forming an algebraic sum signal corresponding to the difference between (1) said reference speed signal and (2) said transmission input speed signal, and

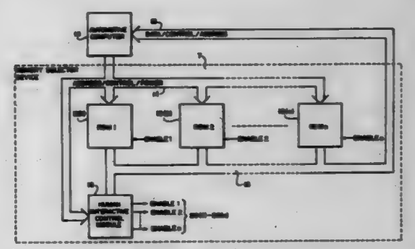
a compensator connected to said algebraic summer for generating a clutch engagement signal from said algebraic sum signal for supply to said clutch actuator for engaging the friction clutch in a manner causing said transmission input speed signal to asymptotically approach said reference speed signal.

5,293,317

AUTOMOTIVE MULTIPLE MEMORY SELECTOR APPARATUS

John B. Adrain, 723 Ocean View Dr., and John Von Colln, 673 Ocean View Dr., both of Port Hueneme, Calif. 93041

Continuation of Ser. No. 830,552, Jan. 30, 1992, Pat. No. 5,200,900. This application Mar. 18, 1993, Ser. No. 33,040
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—431.12 **20 Claims**



1. An improvement in a vehicle having a predetermined combination of operational elements for controlling vehicular operation according to at least one originally provided program, said predetermined combination of operational elements being defined in a fixed system having a bus with a predeter-

mined operable design for operation of said vehicle, said elements of said system controlled by an electronic control unit according to said originally provided program, said improvement comprising:

a universal module coupled to said bus for arbitrarily reconfiguring programmed control of said electronic control unit regardless of the design of said system in which said electronic control unit is employed, said universal module for permitting selection among a plurality of additional operational protocols not originally included within said fixed system design, said universal module comprising:

a plurality of preprogrammed memories, each of said memories for storing at least one additional program for use in controlling operation of said vehicle in a distinguishable protocol in addition to those provided by said originally provided program and in lieu of control provided by said originally provided program; and

a control coupled only to said plurality of preprogrammed memories for selectively communicating one of said plurality of preprogrammed memories to said electronic control unit, operation of said vehicle being changed by said control while said vehicle is in transit and thereafter becomes controlled according to said additional program in said selected preprogrammed memory in lieu of said originally provided program,

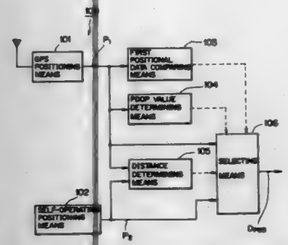
whereby said vehicle is caused to operate in a protocol selected from among a plurality of alternatives available in said plurality of preprogrammed memories.

5,293,318

NAVIGATION SYSTEM

Atsuhiko Fukushima, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 909,622
Claims priority, application Japan, Jul. 10, 1991, 3-170060
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **4 Claims**



1. A navigation system for use on a mobile object, comprising:

GPS positioning means for receiving radio waves from GPS satellites, determining a present position of the mobile object based on the received radio waves, and outputting first positional data indicative of the determined position;

self-operating positioning means having a sensor on the mobile object for determining a present position of the mobile object and outputting second positional data indicative of the determined position;

first positional data comparing means for comparing previous first positional data and the present first positional data to determine whether the difference between the previous and present first positional data is equal to or smaller than a first predetermined value;

PDOP value determining means for determining whether a PDOP value of the present first positional data is equal to or smaller than a second predetermined value;

distance determining means for comparing the present first positional data and the second positional data to determine whether the distance between the present position of the mobile object as indicated by the present first positional data and the present position of the mobile object as indicated by the second positional data is equal to or greater than a third predetermined value; and

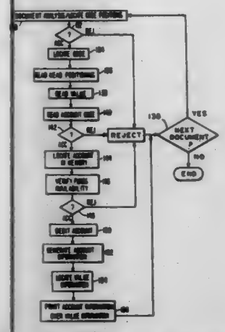
selecting means for outputting the first positional data as present positional data if the difference between the previous first positional data and the present first positional data is equal to or smaller than the first predetermined value, if the PDOP value is equal to or smaller than the second predetermined value, and also if the distance is equal to or greater than the third predetermined value.

5,293,319

POSTAGE METER SYSTEM

Michael J. DeSha, Yorktown Heights, N.Y., and David E. Pitchenik, Fairfield, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 632,860, Dec. 24, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,405
Int. Cl.[5] G07B *17/00*
U.S. Cl. 364—464.02 **8 Claims**



1. A system for processing documents with printed values, comprising:

first printing means for printing information representative of value on a document,

second printing means for printing database information representative of an account to be debited by said value,

first reading means for reading said value information,

second reading means for reading said database information,

accounting means for accounting for said value, said accounting means being responsive to said second reading means for debiting an account identified by said database information by the amount of said value,

marking means responsive to said accounting means for marking said document with a mark uniquely identifying said marking means and representing successful accounting of said value,

said marking means being positioned with respect to said document so as to cause said mark to over-write said value information, said reading means, accounting means and marking means all being positioned within a secure housing, said secure housing includes input means, a central processor, and a memory, said input means being accessible from outside said secure housing and being coupled to said central processor, said central processor being responsive to entry of an access code in said input means to provide access to said secure housing and storing a record of said access in said memory,

validation means located outside said secure housing for verifying said mark,

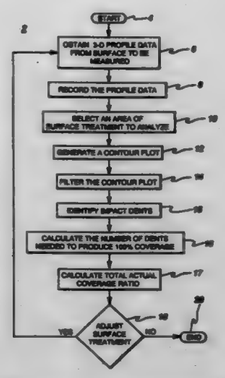
said reading means includes means responsive to a failure to properly accounting by said accounting means to provide an ejection signal, and ejection means responsive to said ejection signal to eject said document from said reader prior to said marking means.

5,293,320

MEASURMENT OF SHOT PEENING COVERAGE BY IMPACT DENT CHARACTERIZATION

Robert A. Thompson, Quaker Street, and Mark A. Tascillo, Endicott, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1992, Ser. No. 850,732
Int. Cl.[5] B24C *1/10*
U.S. Cl. 364—474.02 **2 Claims**



1. A method for measuring shot peening coverage having a substrate including a first side which has been surface treated by a shot peening operation, said method comprising the steps of:

measuring a predetermined area of said surface treatment on said first side to obtain profile data;

recording said profile data;

identifying impact dent data in said predetermined area;

filtering said impact dent data to select at least one predetermined dent size and dent shape;

calculating A,B,n, according to the equation

$$\rho = \frac{Ax}{1 + Bx^n}$$

where ρ=dimple density (dimples/in^2) and x=coverage by comparing ρ and x for at least three separate points;

calculating ρ for a predetermined shot density;

determining actual shot peening coverage in said predetermined area; and

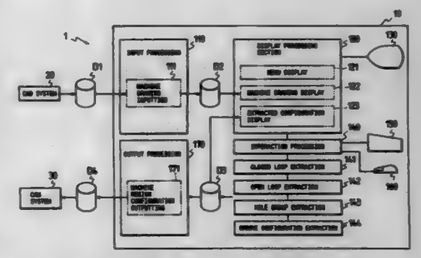
adjusting, if needed, said surface treatment so that the actual coverage of a subsequently formed surface treated area is substantially in conformance with a predetermined desired coverage.

5,293,321

CURVE EXTRACTING APPARATUS AND NC PROGRAMMING SYSTEM FOR FORMING NC PROGRAM BASED ON CURVES EXTRACTED BY THE APPARATUS

Satoru Fujita; Mitsuaki Oshita, and Yuka Mitani, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1991, Ser. No. 731,828
Claims priority, application Japan, Jul. 13, 1990, 2-185562
Int. Cl.[5] G06F *15/46, 15/40*
U.S. Cl. 364—474.26 **24 Claims**



1. A curve extracting apparatus comprising:

input processing means for inputting drawing data;

display processing means for performing a graphic displaying operation including a drawing displaying operation or a menu displaying operation in accordance with said drawing data;

interaction processing means for processing interactions between said apparatus and an operator who inputs commands; and

closed loop extracting means which prompts said operator to specify as an initial edge an edge on a drawing displayed graphically, traces edges connected successively to said initial edge, and when a branch point connected to at least two edges is reached, prompts said operator to specify one of said edges connected to said branch point, and traces the following edges, to extract, as a closed loop, said edges which are traced until said initial edge is reached again.

5,293,322

INDUSTRIAL ROBOT APPARATUS

Nobuo Yagi; Teruo Kurihara, and Hisao Kato, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 582,036, Sep. 13, 1990, abandoned. This application Apr. 14, 1992, Ser. No. 867,082
Claims priority, application Japan, Oct. 24, 1989, 1-276412
Int. Cl.[5] G05B *13/00*
U.S. Cl. 364—478 **5 Claims**

1. An industrial robot apparatus for loading workpieces on a pallet and adapted for use with an industrial robot and a peripheral unit for supplying said workpieces to said industrial robot, said apparatus comprising:

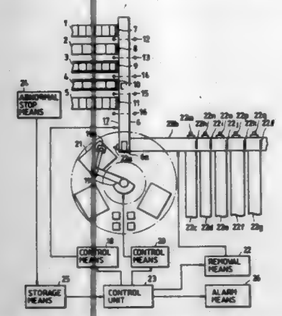
control means for controlling said industrial robot and said peripheral unit associated with said industrial robot by using a program to load the workpieces on the pallet;

abnormal stop means for detecting an abnormality which occurs in at least one of said industrial robot and said peripheral unit and for stopping both said industrial robot and said peripheral unit;

storage means for storing a step of said program which is being executed when said abnormal stop occurs; and

removal means for removing remaining workpieces from said peripheral unit which have not been loaded on said pallet in steps of the program following said step stored in

said storage means, wherein said control means actuates said removal means to remove all of said remaining work-



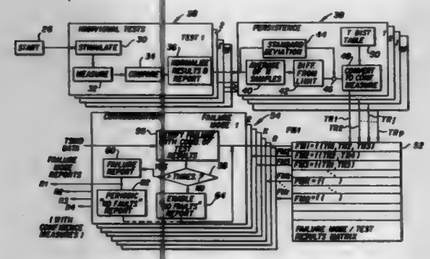
pieces from said peripheral unit upon detection of said abnormality by said stop means.

5,293,323

METHOD FOR FAULT DIAGNOSIS BY ASSESSMENT OF CONFIDENCE MEASURE

Douglas C. Doskocil, North Reading, and Alan M. Offt, Chelmsford, both of Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Oct. 24, 1991, Ser. No. 782,191
Int. Cl.[5] G01B 21/00
U.S. Cl. 364—551.01 14 Claims



1. A method for diagnosing the failure condition during operation and maintenance of a system having a plurality of test points, comprising the steps of:

(a) performing a sequence of each of a plurality of individual tests upon the system to evoke a like sequence of measured responses at a designated configuration of test points;

(b) determining a persistence factor T for a sequential measured set of a plurality N of at least one selected test response;

(c) converting the T factor to a bipolar confidence measure CM then established for that set of sequential test responses actually measured;

(d) determining at least one failure mode based upon a preselected combination of a plurality of confidence measures of sequential ones of all of the selected test responses, as specified by a predetermined corroboration-failure mode operator line; and

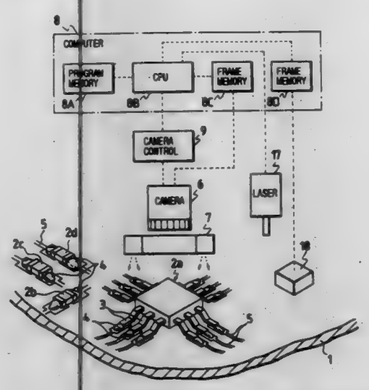
(e) corroborating the determined failure mode by a numerical combination of comparisons to other data obtained from the system, prior to reporting the existence of that mode for the system.

5,293,324

METHOD AND APPARATUS FOR INSPECTING SOLDER PORTIONS USING FUZZY INFERENCE

Nobufumi Tokura, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,643
Claims priority, application Japan, Apr. 15, 1991, 3-82277
Int. Cl.[5] G06F 15/62
U.S. Cl. 364—552 10 Claims



1. An apparatus for automatically inspecting a solder portion of a device comprising:

a source of light for illuminating the solder portion of said device;

a camera for providing a signal representing an image of the solder portion;

a computer means for receiving said signal from said camera, said computer means including a program memory, a central processing unit, a first frame memory receiving said signal from said camera and a second frame memory;

control means, responsive to an output from said computer means, for controlling movement of said camera;

a source of laser light;

means for directing said laser light to said solder portion of said device; and

detection means for receiving reflected laser light from said solder portion of said device and outputting a signal representing a condition of said solder portion to said second frame memory; wherein said computer means includes

means for calculating values of goodness/poorness judgment factors from the signal representing an image of the solder portion,

means for calculating grades of the goodness/poorness judgment factors from the calculated values of the goodness/-poorness judgment factors and from predetermined membership functions of the goodness/poorness judgment factors according to predetermined rules each having a condition part related to the goodness/poorness judgment factors and a conclusion part related to a goodness degree,

means for calculating partial figures from predetermined membership functions of the goodness degree and from the calculated grades of the goodness/poorness judgment factors,

means for combining the partial figures into a final figure,

means for calculating a position of a centroid of the final figure, and

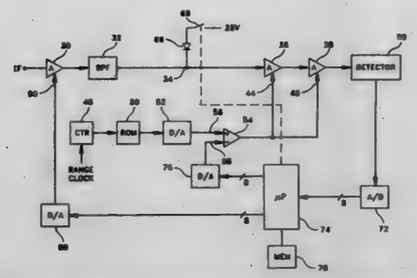
means for deciding whether or not the solder portion is good on the basis of the calculated position of the centroid with respect to a predetermined judgment scale.

5,293,325

APPARATUS AND METHOD FOR COMPENSATING A RADAR'S SENSITIVITY TIMING CONTROL CIRCUIT

Mark G. Roos, Shawnee, Kans., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 22, 1991, Ser. No. 797,511
Int. Cl.[5] G01R 17/02
U.S. Cl. 364—571.01 14 Claims



1. An apparatus for correcting a gain of a sensitivity timing control circuit, comprising:

(a) test signal generation means for providing an input test signal to the sensitivity timing control circuit so that an output signal having a given amplitude results;

(b) computing means for calculating an amplitude of a gain correction signal using said given output signal amplitude, wherein said computing means sets a present gain correction signal amplitude to a value of substantially zero, calculates a difference between a desired output signal amplitude and said given output signal amplitude, calculates a new gain correction signal amplitude, and averages a stored gain correction signal amplitude and said new gain correction signal amplitude to calculate said gain correction signal amplitude; and

(c) summing means for modifying the gain of the sensitivity timing control circuit using said gain correction signal.

5,293,326

ULTRASONIC INSPECTION AND IMAGING INSTRUMENT

Yukio Arima, Tsukuba; Hiroaki Yanagimoto, Ibaraki; Yuichi Kunitomo, Tsuchiura; Shouya Makihara, and Tetsuyoshi Tominaga, both of Ibaraki, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

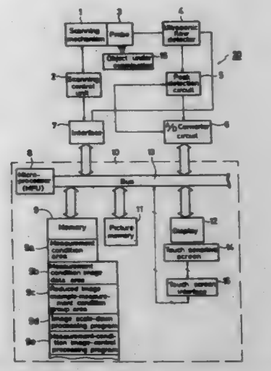
Filed Jun. 24, 1991, Ser. No. 719,510
Claims priority, application Japan, Jun. 29, 1990, 2-172370
Int. Cl.[5] G01N 29/00; G09G 5/00
U.S. Cl. 364—579 14 Claims

1. An ultrasonic inspection and imaging instrument for detecting an echo obtainable from an object under examination by two-dimensionally scanning the object under examination using an ultrasonic probe to obtain display data and for displaying a measurement picture of the object under examination corresponding to said two-dimensional scanning, said instrument comprising:

a memory unit for storing data of a plurality of images and a plurality of measurement conditions corresponding to said plurality of images, including measurement conditions under which said measurement picture is obtained;

a processor unit for concurrently displaying a plurality of images without being overlapped on a display screen according to the plurality of image data stored in said memory unit, for obtaining from said memory unit the measurement conditions stored corresponding to image data of an image selected from said plurality of stored images, and for displaying the measurement picture of the object under examination on the display screen by subjecting the object under examination to said two-dimensional scanning in accordance with the selected image; and

means for two-dimensionally scanning the object under



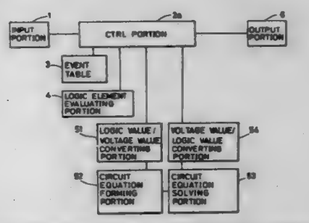
examination responsive to a signal from the processor unit that automatically presets the scanner with the measurement conditions in accordance with a user-indicated one of the displayed images.

5,293,327

METHOD OF LOGIC CIRCUIT SIMULATION

Mikio Ikeda, and Norihiko Kotani, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1991, Ser. No. 718,686
Claims priority, application Japan, Jun. 25, 1990, 2-166054; Apr. 26, 1991, 3-096535
Int. Cl.[5] G06F 15/60, 15/20
U.S. Cl. 364—578 5 Claims



1. A method of simulating delay time in a logic circuit, comprising the steps of:

reading delay time of the logic element itself calculated in advance;

converting an output logic value of said logic element to a voltage value;

forming a circuit equation based on connection information of an output impedance circuit of said logic element;

calculating a voltage value at an arbitrary node of said output impedance circuit by solving said circuit equation; and

converting a voltage value of an input node of a logic element in the succeeding stage to a logic value; whereby

delay time between an input node of an arbitrary logic element and an input node of an arbitrary logic element of the succeeding stage can be accurately simulated.

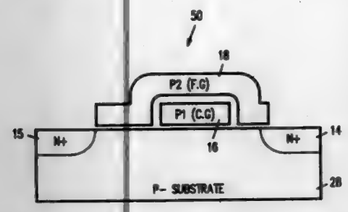
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,328

ELECTRICALLY REPROGRAMMABLE EPROM CELL WITH MERGED TRANSISTOR AND OPTIUMUM AREA

Alsaeldin A. M. Amin, Dhahran, Saudi Arabia, and James Brennan, Jr., Saratoga, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 15, 1992, Ser. No. 821,165
Int. Cl.[5] G11C *11/40*; H01L *29/68*
U.S. Cl. 365—185 8 Claims



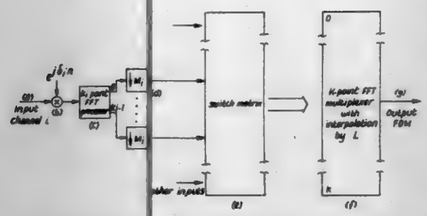
1. A reprogrammable nonvolatile memory device comprising:
a substrate of a first conductivity type;
a channel region portion of said substrate;
a drain region formed within said substrate and having a second conductivity type opposite said first conductivity type;
a source region formed within said substrate and having a second conductivity type opposite said first conductivity type, said source region being separated from said drain region by said channel region;
a control gate formed as a first conductive layer formed above a first part of said channel region; and
a floating gate formed as a second conductive layer overlapping a portion of said channel region between said first part of said channel region and said drain region, said control gate, and a portion of said channel region not overlapped by said control gate, located between said first part of said channel region and said source region.

5,293,329

APPARATUS FOR AND METHOD OF DIGITAL SIGNAL PROCESSING

Alexander W. Wishart, Francis J. Lake, and Paul C. Marston, all of Stevenage, Great Britain, assignors to British Aerospace Public Limited Company, London, England

Filed Feb. 24, 1992, Ser. No. 839,555
Claims priority, application United Kingdom, Feb. 28, 1991, 9104186
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.13 13 Claims



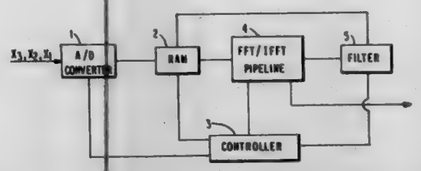
1. An apparatus for digital signal processing of a plurality of variable bandwidth input signals comprising:
a plurality of signal input channels, each said input channel having a vernier frequency correction element, a first of said plurality of input signals input into a first of said plurality of input channels;
a bank of contiguous digital filters having overlapping frequency responses that together span the bandwidth of said first input signal, said bank of digital filters combine to decimate said plurality of input signals.

5,293,330

PIPELINE PROCESSOR FOR MIXED-SIZE FFTS

Soheil I. Sayegh, Germantown, Md., assignor to Communications Satellite Corporation, Bethesda, Md.

Filed Nov. 8, 1991, Ser. No. 789,854
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 15 Claims



9. An apparatus for performing on an input signal mixed size fast Fourier transforms (FFT) or inverse fast Fourier transforms (IFFT) simultaneously in a single pipeline structure having multiple stages, said apparatus comprising:
a memory for storing an input data stream in a first order as data samples;
a multiple-stage FFT/IFFT pipeline processor for performing fast Fourier transforms and inverse fast Fourier transforms, each stage of said pipeline processor comprising a butterfly computational element for performing predetermined mathematical operations on data samples applied thereto, and a delay-switch-delay circuit for selectively delaying and ordering data samples operated upon by said butterfly computational element, a first stage of said pipeline processor receiving reordered data samples from said memory;
a controller for calculating a new order in which the data samples are written from memory to the pipeline for controlling said delay-switch-delay elements to select a delay time and data sample order set thereby, and for bypassing selected ones of said stages when a size of said data stream is less than a predetermined value, said new order being determined in accordance with a number of stages actively operating upon said data samples and with delay times and data sample orders set by said delay-switch-delay elements, wherein a single said apparatus can perform Fourier transforms on data streams of different sizes.

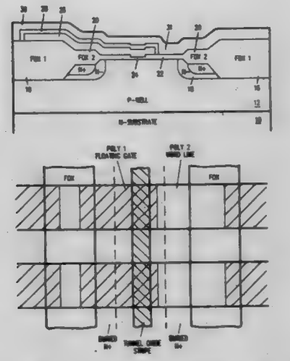
5,293,331

HIGH DENSITY EEPROM CELL WITH TUNNEL OXIDE STRIPE

Michael J. Hart, Palo Alto, and Albert Bergemont, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 1, 1992, Ser. No. 891,764
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—185 16 Claims

9. An electrically-erasable programmable read only memory (EEPROM) cell formed in semiconductor material of P-type conductivity, the EEPROM cell comprising:
(a) first and second spaced-apart first field oxide (FOX1) regions formed in the P-type semiconductor material to define a P-type active device region therebetween;
(b) first and second space-apart bit lines of N-type conductivity formed in the P-type semiconductor material adjacent to the first and second FOX1 regions, respectively, such that the first and second bit lines define a P-type channel region therebetween;
(c) first and second spaced-apart second field oxide (FOX2) regions formed adjacent to the first and second FOX1 regions, respectively, and overlying the first and second bit lines, respectively;
(d) a layer of gate dielectric material formed on the P-type semiconductor material between the first and second FOX2 regions and having a dielectric tunnel stripe formed therein such that the thickness of the dielectric tunnel stripe is less than the thickness of the gate dielectric material;



(e) a layer of first conductive material formed over the gate dielectric material and the dielectric tunnel stripe to define a floating gate of the EEPROM cell;
(f) a layer of intermediate dielectric material formed over the floating gate; and
(g) a layer of second conductive material formed over the intermediate dielectric material to define a control gate of the EEPROM cell,
the dielectric tunnel stripe extending across a plurality of EEPROM cells sharing the first and second bit lines, a tunneling region of each such EEPROM cell being defined by the intersection of the dielectric tunnel stripe and the floating gate of each such EEPROM cell.

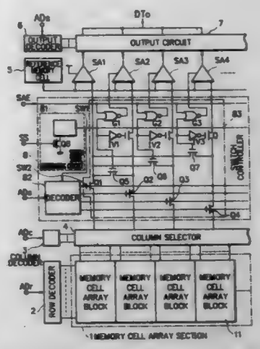
5,293,332

SEMICONDUCTOR MEMORY DEVICE WITH SWITCHABLE SENSE AMPS

Takayuki Shirai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1993, Ser. No. 95,195
Claims priority, application Japan, Jul. 29, 1992, 4-201684
Int. Cl.[5] G11C *7/06*
U.S. Cl. 365—189.02 3 Claims

1. A semiconductor memory device, comprising:
memory cell array means having a plurality of memory cell array blocks to be read out data from addresses selected by a first address signal;
a plurality of sense amplifiers corresponding to the memory cell array blocks, the sense amplifiers detecting levels of data transferred from the memory cell array blocks when the sense amplifiers are activated, to output the detected levels;
a switch circuit for activating one of the sense amplifiers and successively transferring the data read out of the memory cell array blocks to the one activated sense amplifier according to a second address signal in a normal mode and for activating all the sense amplifiers and transferring the data read out of the memory cell array blocks to the corresponding sense amplifiers in a page mode; and



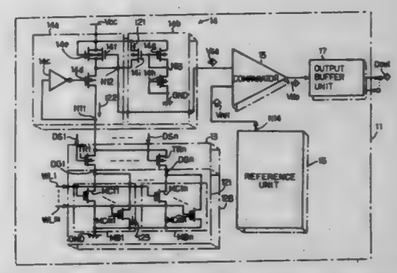
an output circuit for outputting the data of the one activated sense amplifier in the normal mode and successively outputting the data of the plurality of sense amplifiers according to the second address signal in the page mode.

5,293,333

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE EQUIPPED WITH HIGH-SPEED SENSE AMPLIFIER UNIT

Kiyokazu Hashimoto, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 744,216
Claims priority, application Japan, Oct. 11, 1990, 2-272571
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.09 4 Claims



1. A non-volatile semiconductor memory device fabricated on a single semiconductor chip, comprising:
a) a plurality of memory cells each selectively entering first and second states for changing the amount of current passing therethrough;
b) a selecting means for selecting one of said plurality of memory cells;
c) a sense amplifier unit for producing an output voltage level indicative of one of said first and second states, and having an input node coupled with said one of said plurality of memory cells, a gate means shifted between on and off states depending upon the state of said one of said plurality of memory cells for controlling a current path between said input node and an output node, a current supplying circuit for controlling the amount of current supplied from a first source of voltage level to said output node, and a make-up circuit for constantly supplementing current to said output node until said output node reaches

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a predetermined voltage level as high as said first source of voltage level, said gate means comprising a gate transistor coupled between said input node and said output node of said sense amplifier unit, and an inverting circuit having an input node coupled with said input node of said sense amplifier unit and an output node coupled with a gate electrode of said gate transistor, said current supplying circuit comprising a parallel combination of a first n-channel enhancement type field effect transistor and first p-channel enhancement type field effect transistor coupled between said first source of voltage level and said output node of said sense amplifier unit, a gate electrode of said first n-channel enhancement type field effect transistor being coupled with said first source of voltage level, a gate electrode of said first p-channel enhancement type field effect transistor being coupled with said output node of said sense amplifier unit, said make-up circuit comprises a series combination of a second p-channel enhancement type field effect transistor and an n-channel depletion type field effect transistor coupled between said first source of voltage level and a second source of voltage level, and a third p-channel enhancement type field effect transistor coupled between said first source of voltage level and said output node of said sense amplifier unit, gate electrodes of said second and third p-channel enhancement type field effect transistors being coupled with a common drain node of said series combination, a gate electrode of said n-channel depletion type field effect transistor being coupled with said second source of voltage level;

d) a reference unit for producing a reference voltage level at an output node thereof; and

e) a comparator means having a first input node coupled with said output node of said sense amplifier unit and a second input node coupled with said output node of said reference unit, and operative to compare the output voltage level with said reference voltage level for producing an output voltage signal indicative of said one of said first and second states.

5,293,334

PATTERN LAYOUT OF POWER SOURCE LINES IN SEMICONDUCTOR MEMORY DEVICE

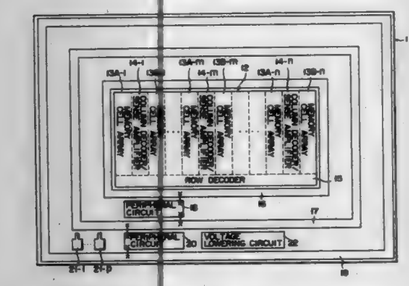
Mitsuru Shimizu, Sakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1991, Ser. No. 799,078

Claims priority, application Japan, Nov. 30, 1990, 2-329856

Int. Cl.[5] H01L *27/10*

U.S. Cl. 365—51 **26 Claims**



1. A semiconductor memory device comprising:

a semiconductor body;

a memory area provided in said semiconductor body;

a first power source line arranged around said memory area and applied with a first potential;

a second power source line arranged in the surrounding region of said first power source line and applied with a second potential;

a first circuit disposed in that area of said semiconductor body which lies between said first and second power source lines and driven by a potential difference between said first and second potentials;

a third power source line arranged in the surrounding region of said second power source line and applied with a third potential;

a second circuit disposed in that area of said semiconductor body which lies between said second and third power source lines and driven by a potential difference between said second and third potentials; and

lowering means for lowering the potential difference between said second and third potentials to produce the first potential.

5,293,335

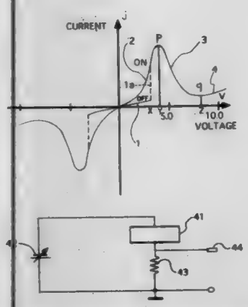
CERAMIC THIN FILM MEMORY DEVICE

Udo C. Pernisz; Keith W. Michael, and Loren A. Haluska, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 915,572, Jul. 20, 1992. This application Dec. 9, 1992, Ser. No. 988,046

Int. Cl.[5] G11C *11/56*

U.S. Cl. 365—148 **30 Claims**



1. A digital memory circuit for electronic applications comprising a circuit having at least one memory element connected to logic control circuitry, the digital memory circuit including a voltage supply and a data input/output terminal, the memory element in the digital memory circuit being substantially in the form of a silicon dioxide derived from the oxidation of a hydrogen silsesquioxane resin, and including electrical contacts for applying an electrical potential difference across the film, the silicon dioxide film being characterized by a conductive and a resistive state between which transitions can be induced by the application of voltage pulses, the silicon dioxide film being further characterized by a jV curve which includes both linear and non-linear regions for the memory element, the jV curve of the silicon dioxide film including: (i) a first non-linear region wherein increasing the voltage applied to the memory element increases the current to a current maximum; followed by (ii) a second non-linear region of a negative differential resistance wherein increasing voltage applied to the memory element decreases the current to a current minimum while the voltage is increasing; the jV curve of the silicon dioxide film including (iii) a third region capable of being activated by a voltage in excess of the voltage at the current minimum, up to which a rapid removal of the excess voltage causes the current to decrease in a linear fashion; and the jV curve of the silicon dioxide film including (iv) a fourth region wherein an increase of voltage applied to the memory element up to a threshold voltage causes a rapid transition from an essentially linear current increase to a non-linear current increase which continues to the current maximum.

5,293,336

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR MANUFACTURING THE SAME

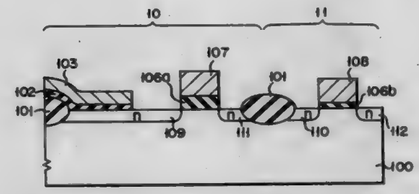
Takeaki Ishii, and Satoshi Maeda, both of Ooita, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1991, Ser. No. 784,519

Claims priority, application Japan, Oct. 30, 1990, 2-290844

Int. Cl.[5] H01L *21/72*

U.S. Cl. 365—149 **1 Claim**



1. A semiconductor memory device comprising:

a memory cell composed of a select MOS transistor and an information storage capacitor both formed on a surface portion of a first conductivity type semiconductor region of a substrate and a peripheral circuit composed of a MOS transistor formed on the surface portion of the semiconductor region of the substrate at a peripheral portion of the memory cell, wherein a thickness of a gate oxide film of the MOS transistor of the peripheral circuit is between a thickness of a gate oxide film of the select MOS transistor and a thickness of an insulating film of the information storage capacitor.

5,293,337

ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH ELECTRIC FIELD DECREASING CONTROLLER

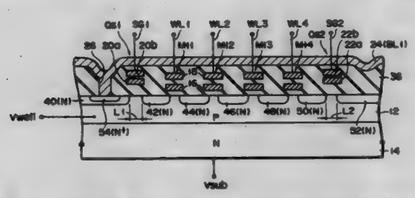
Seiichi Aritome; Riichiro Shirota, both of Kawasaki; Ryouhei Kirisawa, Yokohama; Yoshihisa Iwata, Yokohama, and Masaki Momodomi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 11, 1991, Ser. No. 683,733

Claims priority, application Japan, Apr. 12, 1990, 2-95049

Int. Cl.[5] G11C *11/34*; H01L *29/788, 29/792*

U.S. Cl. 365—185 **13 Claims**



13. An electrically erasable non-volatile semiconductor memory device comprising:

(a) a semiconductive substrate;

(b) data transfer lines arranged on said substrate;

(c) program lines insulatively intersecting said data transfer lines on said substrate to define cross points therebetween;

(d) field effect transistors at said cross points as memory cell transistors, each of said transistors having a carrier storage section and a control gate which is connected to a corresponding one of said program lines,

said memory cell transistors being divided into a plurality of cell units each of which has at least one of one memory cell transistor and a plurality of series-connected memory cell transistors;

(e) a switching transistor having an insulated gate and being provided at a first end portion of each of said cell units to selectively connect each of said cell units to a corresponding one of said data transfer lines;

(f) controller means for applying said insulated gate with a specific voltage which has a same polarity as a polarity of a preselected voltage to be applied to said substrate during an erase operation of said memory device;

wherein said controller means generates as said specific voltage, a direct current voltage at a potential level which is higher than zero and is less than or equal to said preselected voltage.

5,293,338

PERIPHERAL CIRCUIT IN A DYNAMIC SEMICONDUCTOR MEMORY DEVICE ENABLING A TIME-SAVING AND ENERGY-SAVING DATA READOUT

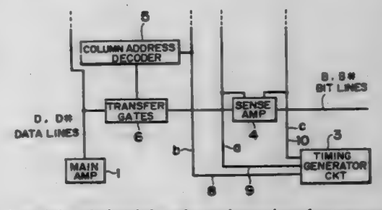
Makoto Ihara, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1991, Ser. No. 658,009

Claims priority, application Japan, Feb. 22, 1990, 2-43753; Mar. 14, 1990, 2-63612; Dec. 19, 1990, 2-403621

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—194 **12 Claims**



1. A peripheral circuit in a dynamic semiconductor memory device comprising:

a plurality of sense amplifiers each of which includes a pair of pull-up transistors and a pair of pull-down transistors and is connected to complementary bit lines for sense-amplifying a potential difference between the complementary bit lines;

a main amplifier connected to complementary data lines for further amplifying the potential difference amplified by the sense amplifiers;

a power supply and a ground for feeding power to the dynamic semiconductor memory device;

a data line bias circuit for biasing the complementary data lines to an intermediate potential between a power supply potential of said power supply and said ground before said main amplifier starts operating;

transfer gates provided between each sense amplifier and the complementary data lines;

a plurality of column address decoders for controlling the transfer gates for respective ones of the sense amplifiers; and

a timing generator circuit for, in response to a start signal indicating that sense amplification should start, generating a first control signal for activating the pair of pull-down transistors in each of said sense amplifiers, a second control signal for activating the pair of pull-up transistors in each of said sense amplifiers and a third control signal for activating the column address decoder to turn on the transfer gates at a plurality of times where each of the first, second and third control signals are supplied at a respective one of said plurality of times;

said timing generator circuit generates, in response to the start signal, one of the first and second control signals, and

VOL 1160 ISS 2 MR 8 1994 UMI

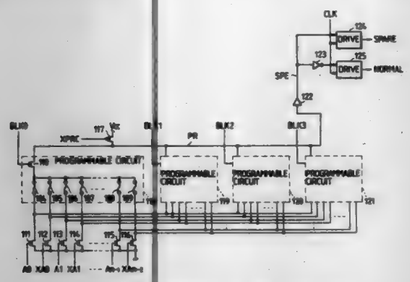
then the third control signal and finally the other of the first and second control signals in that order to perform sense amplification of the potential difference between the bit lines for a specific sense amplifier, output of the sense-amplified potential difference form the specific sense amplifier to the complementary data lines, and restoring of the bit lines in that order.

5,293,339

SEMICONDUCTOR INTEGRATED CIRCUIT CONTAINING REDUNDANT MEMORY ELEMENT

Toshikazu Suzuki, Nishikomiya; Hisakazu Kotani, Takarazuka, and Hironori Akamatsu, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1992, Ser. No. 863,268
Claims priority, application Japan, Apr. 4, 1991, 3-71581
Int. Cl.[5] G11C *8/00*; H03K *19/003*
U.S. Cl. 365—200 **4 Claims**



1. A semiconductor integrated circuit comprising:

a plurality of programmable circuits each including a plurality of fuses and a first transistor which has a gate subjected to an address decoded signal, a drain connected to first ends of the fuses, and a source connected to a common precharge node, wherein the address decoded signal results from decoding a first portion of an address signal for access to memory cells, and wherein the sources of the first transistors in the respective programmable circuits are connected to the common precharge node;

a plurality of second transistors having gates subjected to a second portion of the address signal, sources connected to a first power supply line, and drains coupled to second ends of the fuses in each of the programmable circuits respectively, wherein the second portion of the address signal differs from the first portion of the address signal; and

a third transistor having a gate subjected to a precharge control signal, a source connected to a second power supply line, and a drain connected to the common precharge node.

5,293,340

DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH MULTIPLE WORD LINE SELECTOR USED IN BURN-IN TEST

Mitsuoki Fujita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

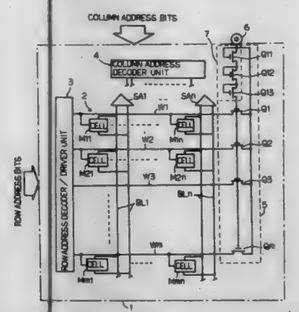
Filed Apr. 13, 1992, Ser. No. 867,361
Claims priority, application Japan, Apr. 19, 1991, 3-115563
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **4 Claims**

1. A dynamic random access memory device fabricated on a single semiconductor chip and having a standard mode and a diagnostic mode of operation, comprising:

a) a plurality of memory cells arranged in rows and columns;

b) a plurality of bit line pairs respectively coupled with the columns of said plurality of memory cells for propagating data bits;

c) a plurality of word lines respectively coupled with the rows of said plurality of memory cells, and selectively driven to an active level for allowing said data bits to be transferred between said plurality of bit line pairs and one of said rows of said plurality of memory cells in said standard mode of operation; and



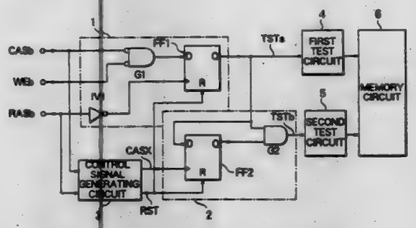
d) an auxiliary word line driving unit simultaneously providing conduction paths between said plurality of word lines and a first predetermined pin in response to a first external clock signal at said first predetermined pin in said diagnostic mode of operation, and operative to transfer a first external clock signal from said first predetermined pin to all of said plurality of word lines for allowing said plurality of memory cells to be concurrently conducted with said plurality of bit line pairs in said diagnostic mode of operation.

5,293,341

SEMICONDUCTOR MEMORY HAVING A TEST FUNCTION

Akira Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,036
Claims priority, application Japan, Jul. 2, 1992, 4-175114
Int. Cl.[5] G11C *11/40, 13/00*
U.S. Cl. 365—201 **4 Claims**



1. A semiconductor memory device, comprising:

a first test mode signal generating circuit for receiving a row address strobe signal, a column address strobe signal, and a write control signal, and for detecting, at a timing at which the row address strobe signal changes from an inactive level to an active level, that the column address strobe signal and the write control signal are at an active level to output an active first test mode signal;

a control signal generating circuit for receiving the row address strobe signal and the column address strobe signal, and for detecting, during a period in which the row address strobe signal is at the active level, that the column address strobe signal changes from the active level, through the inactive level, and then the active level again to generate the active control signal;

a memory circuit for storing data;

a first test circuit, coupled to the first test mode signal generating circuit and the memory circuit, for testing the memory circuit in response to output of the active first test mode signal; and

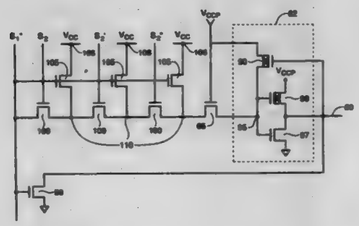
a second test circuit, coupled to the second test mode signal generating circuit and the memory circuit, for testing the memory circuit in response to output of the active second test mode signal.

5,293,342

WORDLINE DRIVER CIRCUIT HAVING AN AUTOMATIC PRECHARGE CIRCUIT

Stephen L. Casper, 2200 S. Crosscreek La., Boise, Id. 83706-6707; Adrian Ong, 5537 S. Indigo Pl., Boise, Id. 83705, and Paul S. Zagar, 2107 Bluestem La., Boise, Id. 83706-6117

Filed Dec. 17, 1992, Ser. No. 993,929
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—203 **8 Claims**



5. A circuit for automatically precharging a serial node, said circuit comprising:

a) an output node in electrical communication with the serial node and capable of being driven to active and inactive potentials;

b) a primary select node for accepting a primary select signal capable of having a first and a second potential and for determining a potential of the output node;

c) a pass device electrically interposed between the serial node and the primary select node;

d) a precharge node connectable to a precharge potential; and

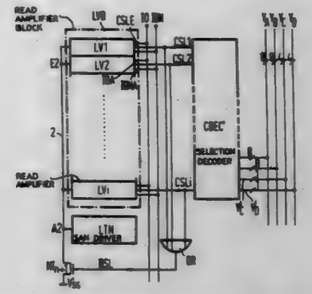
e) an automatic precharge device interposed between said precharge node and the serial node, said automatic precharge device having a control input in electrical communication with said primary select node such that when said primary select signal has said first potential said automatic precharge device pulls said serial node toward said precharge potential.

5,293,343

DYNAMIC SEMICONDUCTOR MEMORY HAVING A READ AMPLIFIER DRIVE CIRCUIT FOR ACHIEVING SHORT ACCESS TIMES WITH A LOW TOTAL PEAK CURRENT

Wolfgang Raab, München, and Heribert Geib, Grafing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich

PCT No. PCT/DE91/00697, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/05558, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 3, 1991, Ser. No. 988,956
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029847
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—205 **12 Claims**



1. A dynamic semiconductor memory, comprising:

a memory cell arrangement which has at least one word line block, said at least one word line block being composed of a multiplicity of bit line blocks, each of the bit line blocks having a multiplicity of bit line pairs;

a multiplicity of read amplifier blocks, each of the read amplifier blocks having a multiplicity of read amplifiers, each of the read amplifiers being connected to a bit line pair of a bit line block which is allocated to a respective read amplifier block and being constructed from an n-channel part and a p-channel part;

read amplifiers having amplified read signals that are switchable through to IO lines as a function of bit-line selection signals, the bit-line selection signals being produced by means of a column decoder;

a multiplicity of local drivers, a respective local driver being provided for common drive of n-channel parts of read amplifiers of a respective read amplifier block;

each of the local drivers, in order to achieve accelerated evaluation with a low peak current, additionally having an acceleration circuit with a driver transistor and being connected to a first terminal of the driver transistor; and

each of the acceleration circuits that are drivable such that the accelerated evaluation takes place only in a read amplifier block in which amplified read signals are also switched through to the IO lines as a function of the bit-line selection signals.

5,293,344

WRITE CIRCUIT FOR NON-VOLATILE MEMORY DEVICE

Takao Akaogi, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

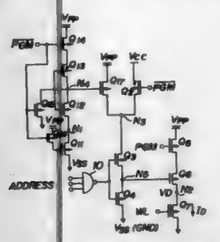
Filed Feb. 19, 1991, Ser. No. 656,502
Claims priority, application Japan, Feb. 19, 1990, 2-37581
Int. Cl.[5] G11C *7/00, 11/40*
U.S. Cl. 365—210 **15 Claims**

1. A write circuit for a non-volatile memory device including a plurality of cell transistors, each of said cell transistors

being connected to one of a plurality of bit lines, and a bit line select transistor provided with respect to each bit line and which supplies a source current thereof to one of the cell transistors, as a drain current of the cell transistor, via a corresponding one of the bit lines, said write circuit comprising:

a dummy cell transistor which detects a breakdown voltage of the cell transistor in a write mode;

circuit means, coupled to said dummy cell transistor and responsive to a write mode signal which is indicative of the write mode, for varying the gate voltage of the bit line select transistor as a function of the breakdown voltage detected by said dummy cell transistor and thereby to make the gate-source voltage of the bit line select transistor approximately constant, so that the drain current of the cell transistor during the write mode is maintained approximately constant; and



the non-volatile memory device further comprising a row decoder connected to the word lines and which selects one of the word lines in response to an address signal, a column decoder connected to the bit lines and which selects one of the bit lines in response to the address signal, and a sense amplifier which senses and amplifies information read out from the cell transistors, said bit line select transistor being provided within said column decoder and said circuit means supplying a power source voltage for said column decoder.

5,293,345

SEMICONDUCTOR MEMORY DEVICE HAVING A DATA DETECTION CIRCUIT WITH TWO REFERENCE POTENTIALS

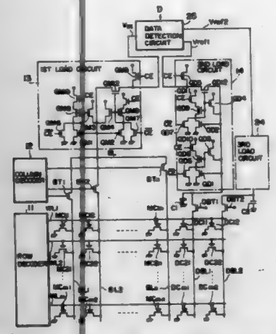
Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 536,739, Jun. 12, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 874,220

Claims priority, application Japan, Jun. 12, 1989, 1-148676

Int. Cl.[5] G11C *7/06, 16/04*

U.S. Cl. 365—210 **18 Claims**



1. A semiconductor memory device comprising:

a memory cell for storing binary data, said cell being connected to a signal line to which a first load circuit is connected;

a first reference cell storing a first logic level of binary data, said first reference cell being connected to a first reference line, a second load circuit having an identical current supply ability as that of said first load circuit and a first capacitor, for compensating parasitic capacitance of the signal line, both said second load circuit and said first capacitor being connected to said first reference line, wherein, since the second load circuit and the first load circuit have the same circuit configuration and the same current supply abilities, a fluctuation in a power supply voltage has the same effect for both said memory cell and the first reference cell, thereby preventing an erroneous operation of the semiconductor memory device;

a second reference cell storing a second logic level of binary data, said second reference cell being connected to a second reference line, a third load circuit having an identical current supply ability as that of said first load circuit and a second capacitor, for compensating parasitic capacitance of the signal line, both said third load circuit and said second capacitor being connected to said second reference line, wherein, since the third load circuit and the first load circuit have the same circuit configuration and the same current supply abilities, the fluctuation in the power supply voltage has the same effect for both said memory cell and the second reference cell, thereby preventing an erroneous operation of the semiconductor memory device; and

a data detection circuit for detecting the stored data of said memory cell, said data detection circuit having a first input, a second input, a third input and an output, said first input being connected to said signal line, said second input being connected to said first reference line, said third input being connected to said second reference line, said data detection circuit comparing a potential of said signal line with potentials of said first and second reference lines, a logic level of the output being determined by comparing the potential of said signal line with the potentials of said first and second reference lines.

5,293,346

SIMPLIFIED SERIAL SELECTION CIRCUIT FOR SERIAL ACCESS IN SEMICONDUCTOR MEMORY AND OPERATING METHOD THEREOF

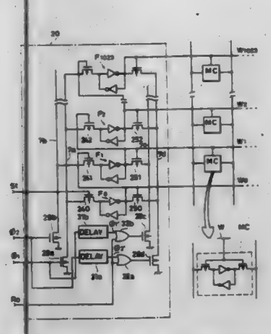
Michio Nakajima, and Yukio Miyazaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 760,470

Claims priority, application Japan, Sep. 28, 1990, 2-260706

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—221 **14 Claims**



1. A serial selection circuit for a semiconductor memory comprising:

a plurality of selecting lines each connected to a memory cell for selecting a memory cell to be accessed;

a plurality of state holding means for respectively holding the state of each of said plurality of selecting lines;

activation means responsive to an externally applied clock signal for sequentially activating said plurality of state holding means; and

deactivation means responsive to the activation of the state holding means in the subsequent stage for deactivating the state holding means in the preceding stage.

5,293,347

SEMICONDUCTOR MEMORY DEVICE HAVING READ/WRITE OPERATION IMPROVED IN PIPE LINE PROCESSING

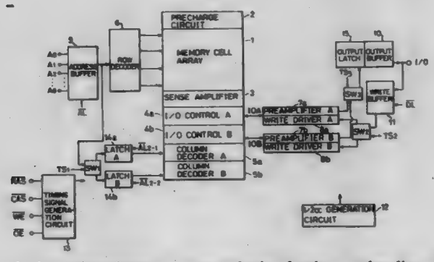
Toshiyuki Ogawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,174

Claims priority, application Japan, Jan. 17, 1991, 3-003859

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.01 **12 Claims**



1. A semiconductor memory device having a plurality of memory cells arranged in a matrix of rows and columns for writing information into a memory cell corresponding to a specified row and column, and for reading information from a corresponding memory cell, comprising:

row address input means for entering a row address,

a row address specify means for specifying said input row address,

column address input means for inputting sequentially a column address with respect to said input row address,

first column address holding means for holding one of said input column address,

first column address specify means for specifying said column address held by said first column address holding means,

second column address holding means for holding a column address input succeeding said column address held by said first column address holding means,

second column address specify means for specifying said column address held by said second column address holding means,

operation means for carrying out writing or reading operation of information with respect to a memory cell corresponding to specified row and column addresses, and

control means for operating said operation means according to said first row and column addresses specified by said row address specify means and said first column address specify means, for enabling said second column address holding means before the termination of the operation of said operation means according to said specified first row and column addresses, and for operating said operation means according to said second row and column addresses specified by said row address specify means and said second column address specify means after the termination of the operation of said operation means according to said first row and column addresses.

5,293,348

RANDOM ACCESS MEMORY DEVICE WITH COLUMNS OF REDUNDANT MEMORY CELLS DISTRIBUTED TO MEMORY CELL ARRAYS AND SHARED THEREBETWEEN

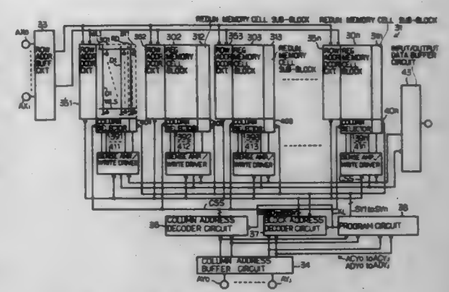
Kazuhiko Abe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,852

Claims priority, application Japan, Sep. 10, 1991, 3-258404

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—230.03 **4 Claims**



1. A random access memory device comprising:

a) a plurality of regular memory cell blocks respectively assigned block addresses, and each having columns of regular memory cells respectively assigned column addresses;

b) at least one column of redundant memory cells associated with one of said plurality of regular memory cell blocks, said redundant memory cells respectively storing data bits, one of said columns of regular memory cells of any one of said plurality of regular memory cell blocks being replaced with said at least one column of redundant memory cells when said one of said columns contains at least one defective regular memory cell;

c) a plurality of row address decoder circuits respectively associated with said one of said plurality of regular memory cell blocks and with the others of said plurality of regular memory cell blocks, and selectively enabled with block selecting signals indicative of one of said block addresses;

d) a plurality of column selector circuits respectively associated with said plurality of regular memory cell blocks, and each responsive to column selecting signals indicative of one of said column addresses for selecting a column of regular memory cells from the associated regular memory cell block;

e) at least one transfer means coupled with said at least one column of redundant memory cells, and responsive to a redundant column selecting signal for transferring one of said data bits stored in said redundant memory cells;

f) a plurality of amplifier means respectively coupled with said plurality of column selector circuits for a read-out mode and a write-in mode of operation, one of said plurality of amplifier means being further coupled with said transfer means, said plurality of amplifier means being selectively enabled with said block selecting signals;

g) a program circuit storing a set of block and column addresses assigned to said one of said columns of regular memory cells containing said at least one defective regular memory cell, and comparing block and column addresses indicated by external address bits to see whether or not said block and column addresses are consistent with said set of block and column addresses, said program circuit producing a disable signal and said redundant column selecting signal when said block and column addresses are consistent with said set of block and column addresses;

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h) a column address decoder circuit selectively shifting said column selecting signals to an active level on the basis of parts of said external address bits indicative of said one of said column addresses in the absence of said disable signal; and

i) a block address decoder circuit selectively shifting said block selecting signals to an active level on the basis of others of said external address bits indicative of said one of said block addresses in the absence of said disable signal, said block address decoder circuit being responsive to said redundant column selecting signal in the presence of said disable signal for shifting one of said block selecting signals indicative of said one of said plurality of regular memory cell blocks associated with said at least one column of redundant memory cells to said active level.

5,293,349

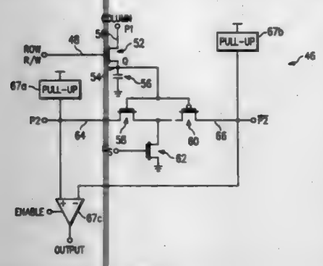
MEMORY CELL CIRCUITS, DEVICES, SYSTEMS AND METHODS OF OPERATION

James F. Hollander, Dallas; William R. Krenik, Garland, and Louis J. Izzi, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 24, 1991, Ser. No. 720,099

Int. Cl.[5] G11C *8/00, 11/34;* **G06F** *15/00;* **H01L** *27/11*

U.S. Cl. 365—230.05 **61 Claims**



1. A memory cell, comprising:

a node operable to present an electrical level representing a first state or a second state;

a first switching device having a first terminal connected to said node, wherein said first switching device is operable to close thereby connecting the state at the node to a second terminal of said first switching device;

a second switching device having first and second terminals and operable to switch as a function of the state at said node;

a third switching device having first and second terminals and operable to switch as a function of the state at said node; and

a single control switching device associated with said second and third switching devices, wherein a control signal switches said control switching device such that the state at said node is determined by connecting to the first terminals of said second and third switching devices.

5,293,350

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Jin-Ki Kim, and Hyung-Kyu Lim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki

Filed Feb. 17, 1993, Ser. No. 18,240

Claims priority, application Rep. of Korea, Feb. 19, 1992, 1992-2485

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—238.5 **20 Claims**

1. A nonvolatile semiconductor memory device having a page program mode of operation, comprising:

a memory cell array comprised of a plurality of memory cells connected to a plurality of intersecting row lines and bit lines at the intersections thereof;

a row decoder responsive to row address signals for selectively activating a selected one of said row lines;

a data input buffer for receiving program data;

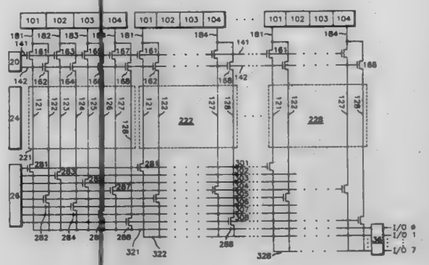
a data line connected at one end thereof to said data input buffer;

a plurality of column selecting MOS transistors each having a gate electrode, a first electrode connected to a respective one of said bit lines, and a second electrode connected to said data line;

a column decoder having a plurality of outputs connected to said gate electrode of respective ones of said column selecting MOS transistors, said column decoder being responsive to column address signals for electrically connecting a selected one of said bit lines to said data line;

a plurality of program voltage generating circuits each of which is selectively operable for generating a program voltage output having a first or second logic level, dependent upon the logic level of said program data;

alternating pairs of said bit lines being commonly connected to said program voltage output of respective ones of said program voltage generating circuits;



a plurality of first selecting MOS transistors having a first electrode connected to said program voltage output of respective ones of said program voltage generating circuits, a second electrode connected to respective ones of a first sequence of alternating ones of said bit lines, and a gate electrode;

a plurality of second selecting MOS transistors having a first electrode connected to said program voltage output of said respective ones of said program voltage generating circuits, a second electrode connected to respective ones of a second sequence of alternating ones of said bit lines, and a gate electrode, said bit lines of said second sequence being interposed between said bit lines of said first sequence; and,

a select circuit having a first output connected to said gate electrode of each of said first selecting MOS transistors and a second output connected to said gate electrode of each of said second selecting MOS transistors, said select circuit being selectively operable for selectively turning on either said first selecting MOS transistors or said second selecting MOS transistors, to thereby selectively couple either said bit lines of said first sequence or said bit lines of said second sequence to said program voltage output of said respective ones of said program voltage generating circuits.

5,293,351

ACOUSTIC SEARCH DEVICE

Seppo Noponen, Nivala, Finland, assignor to Transducer Valley, Inc., Ainastalo, Finland

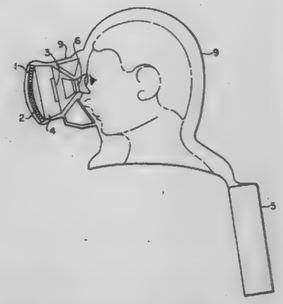
PCT No. PCT/FI91/00095, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO91/15781, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 3, 1991, Ser. No. 930,706

Claims priority, application Finland, Apr. 5, 1990, 901724

Int. Cl.[5] G03B *42/06*

U.S. Cl. 367—7 **11 Claims**



1. An acoustic search device including:

(a) a protective cap insertable over the head of a wearer;

(b) a face part constituting an integral part of said protective cap; and

(c) searching means located within said face part and including an optical viewing device, at least one first display and at least one ultrasonic transducer, all positioned in succession in the direction of sight at the eye level of the wearer, an electronic control unit, and a source of electric power for said electronic control unit;

(d) said ultrasonic transducer including a plurality of elements controlled by said electronic control unit for transmitting acoustic signals toward a viewed search area and for receiving echo signals therefrom;

(e) said display being controlled by said electronic control unit fir displaying an image of the viewed search area based on the echo signals reflected from the viewed search area; and

(f) said optical viewing device being adapted to allow viewing of said display image by said wearer.

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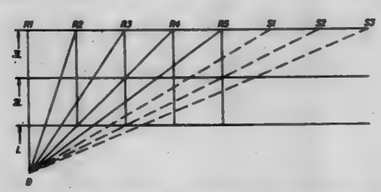
METHOD FOR REMOVING NOISE DUE TO NEAR SURFACE SCATTERERS

Ronald E. Chambers, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jan. 7, 1993, Ser. No. 1,444

Int. Cl.[5] G01V *1/36*

U.S. Cl. 367—38 **4 Claims**



1. In an acoustic data set, a method for reducing coherent noise contamination from shallow scatterers, comprising:

measuring the near surface velocity;

providing a suite of raw common source gathers displaying acoustic waveform envelopes;

enhancing the imagery of the waveform envelopes due to shallow acoustic scatterers at the expense of deep-seated acoustic reflection data by

(1) time-shifting said waveform envelopes in proportion to the source/receiver traveltime,

(2) migrating the time-shifted waveform envelopes using the measured near-surface velocity;

sorting the image-enhanced common source gathers to common receiver gathers;

array-forming said common receiver gathers to generate combined common receiver gathers;

resorting said combined common receiver gath. , to combined common source gathers;

reconstituting said combined common source gathers; and

subtracting the reconstituted resorted combined common source gathers from said suite of raw common source gathers.

5,293,353

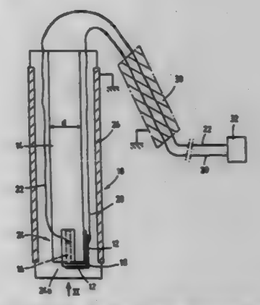
METHOD FOR MANUFACTURING AN ACOUSTIC SENSOR, AND ACOUSTIC SENSOR OBTAINED THEREBY, HAVING A SUBSTANTIALLY NON-DETACHABLE PROTECTIVE LAYER

Jean-Louis Mestas, Chassieu, and Dominique Cathignol, Genas, both of France, assignors to Technomed International, Paris, France

Filed Oct. 22, 1991, Ser. No. 787,322

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—157 **20 Claims**



1. A method of manufacturing a shockwave acoustic sensor for sensing shockwaves comprising the steps of:

providing an elongated support member having a front end positionable in a direction facing the shockwaves to be sensed, a rear end opposite said front end and at least one lateral surface joining said front and rear ends;

providing a piezoelectric sheet having a first surface provided with a first metal strip defining a first electrode having first and second portions, and a second opposite surface provided with a second metal strip having first and second portions defining a second electrode, said first portions of said first and second electrodes overlapping for defining an active sensing area;

mounting said piezoelectric sheet on said support member with said overlapping first positions of said first and second electrodes on said front end of said support member and with the second portions of said first and second electrodes on said at least one lateral surface of said support member;

connecting said second portions of said first and second electrodes with respective electrical conductors; and

coating said piezoelectric sheet with a macroscopically undeformable protective coating layer on said front end of said support member and at least a part of said at least one

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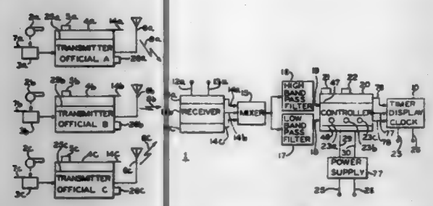
lateral surface of said support member comprising said second portions of said electrodes, said protective coating layer being made of a single polymerizable material having a thickness effective for sealing the piezoelectric sheet in a macroscopically undeformable block of material when receiving shockwaves.

5,293,354

REMOTELY ACTUATABLE SPORTS TIMING SYSTEM

Michael J. Costabile, P.O. Box 1445, Hillsborough, N.C. 27278

Filed Aug. 12, 1993, Ser. No. 106,122
Int. Cl.[5] G04G *8/00*; G04B *47/06*; H04B *1/34*
U.S. Cl. 368—11 **25 Claims**



1. A remotely actuatable sports timing system comprising: a timer;

switching means to actuate said timer;

a portable remote radio transmitter suitable to be carried by a sports official;

a signaling device adapted to be carried by said sports official to emit audible signals representing decisions by said sports officials to actuate said timer;

a radio receiver for receiving a radio control signal transmitted by said transmitter in response to said audible signals and for generating a remote switching signal in response to said radio control signal;

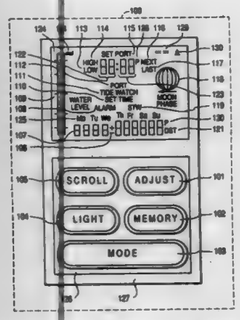
and means to operate said timer in response to said remote switching signal.

5,293,355

TIDAL WATCH

Randy M. Widen, 4 Elkins La., Lusby, Md. 20657, and Lance Stiles, Churchville, Va., assignors to Randy M. Widen, Lusby, Md.

Filed Oct. 26, 1990, Ser. No. 604,481
Int. Cl.[5] G04B *19/26*
U.S. Cl. 368—19 **24 Claims**



1. In a programmable microprocessor based tidal information calculating the displaying device, having memory for storing program code and tidal information input means for entering data and selecting functions, and display means for displaying at least port and tidal information, a custom port tide prediction method comprising the steps of:

pre-storing in the memory a data base of known tide data for a plurality of ports, at least one of which ports is adjacent to a desired port;

inputting with the input means observed or measured tide offset data for a desired port, the offset data being relative to said at least one adjacent port of said plurality of stored ports, said offset data being at least one of a time of a high tide at said desired port relative to said adjacent port, a time of a low tide at said desired port relative to said adjacent port, a height of a high tide at said desired port relative to said adjacent port and a height of a low tide at said desired port relative to said adjacent port;

producing with the microprocessor and storing in the memory, custom port data for said desired port as a combination of said tide offset data for said desired port and the tide data associated with said at least one adjacent port; and

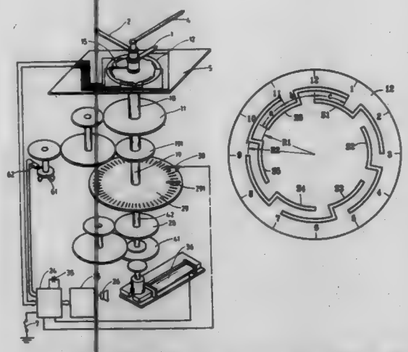
producing with the microprocessor using said custom port data stored in the memory and displaying on the display means, tidal information for the desired port, in response to inputting with the input means a request for tidal information for the desired port.

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VOCAL REPORTING DEVICE FOR POINTER TYPE TIMERS WITH PHOTOELECTRIC CALIBRATION DEVICE

Feng Chin-Hsing, Hsien, Taiwan, assignor to Tai-Chia Feng and Jung-Fu Pan, both of Taiwan

Filed Feb. 12, 1992, Ser. No. 834,377
The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.
Int. Cl.[5] G04B *21/00*
U.S. Cl. 368—63 **4 Claims**



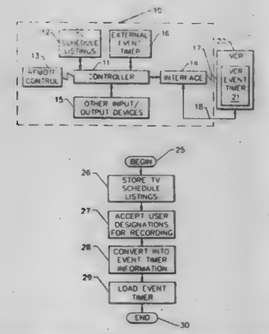
1. A vocal reporting device for pointer type timers with a photoelectric calibration device, wherein said pointer type timers comprise an hour pointer, a minute pointer and a second pointer respectively secured on and thus rotated by an hour shaft, a minute shaft and a second shaft which are in turn respectively driven by an hour gear, a minute gear and a second gear which are mechanically interconnected, said second gear being driven by a driving means and the improvements comprising a microprocessor, a voice synthesizing means which receives a digital time signal from the microprocessor and broadcasts said time signal upon triggered, an encoding board with an encoding circuit printed thereon and said photoelectric calibration device, said encoding circuit having a plurality of conductive index strips disposed thereon, an encoding arm, which is secured on the hour shaft and synchronously rotatable therewith with respect to the encoding circuit, cooperating with the index strips to provide the microprocessor with a calibration signal at every predetermined interval to synchronize the microprocessor with the pointers, said photoelectric calibration device comprising a counting disk secured on the minute shaft to be rotatable therewith and a photoelectric element containing at least a light emitting device to emit a light beam to interact with said counting disk and a photo-detector to send, in response to said light beam interacted with said counting disk, a signal to said microprocessor for calibration.

5,293,357

METHOD AND APPARATUS FOR CONTROLLING A TELEVISION PROGRAM RECORDING DEVICE

Peter D. Hallenbeck, Efland, N.C., assignor to The SuperGuide Corporation, Shelby, N.C.

Filed Sep. 10, 1990, Ser. No. 580,380
Int. Cl.[5] H01N *5/76*
U.S. Cl. 348—734 **8 Claims**



1. A method for setting an event timer to control a recording device for recording television programs, comprising the steps of:

electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs;

accepting user designation of selected ones of the electronically stored television program schedule listings for recording;

automatically electronically converting the selected ones of said television program schedule listings into event timer information sequences for directly controlling a recording device to record television programs in response to the user designation of selected ones of the electronically stored television program schedule listings for recording, said event timer information sequences including a television program start time, a television program end time or duration and a television program channel for each of the user selected ones of the television program schedule listings; and

loading the event timer information sequences into an event timer, such that the event timer information sequences in the event timer are used to control a recording device for recording television programs corresponding to the selected ones of the electronically stored television program schedule listings.

7. A method for setting an event timer to control a recording device for recording television programs, comprising the steps of:

electronically storing television program schedule listings comprising a time, a channel and a title for a plurality of television programs;

accepting user designation of selected ones of the electronically stored television program schedule listings for recording;

automatically electronically converting the selected ones of said television program schedule listings into event timer information sequences for directly controlling a recording device to record television programs in response to the user designation of selected ones of the electronically stored television program schedule listings for recording, said event timer information sequences including a television program start time, a television program end time or duration and a television program channel for each of the user selected ones of the television program schedule listings; and

loading the event timer information sequences into an event timer;

wherein said loading step comprises the step of transferring the event timer information sequences to said event timer over a data bus, such that the event timer information sequences in the event timer are used to control a recording device for recording television programs corresponding to the selected ones of the electronically stored television program schedule listings.

5,293,358

APPARATUS AND METHOD FOR GENERATION OF INTEGRATED COMPOSITE AUDIO-VISUAL WORKS

Bernard L. Krause, San Francisco, Calif., assignor to Wild Sanctuary Communications, Inc., Glen Ellen, Calif.

Filed Apr. 21, 1992, Ser. No. 871,846
Int. Cl.[5] H04B *1/20*; G09B *5/00*
U.S. Cl. 369—2 **34 Claims**



1. An apparatus for the arrangement and delivery of an integrated composite work having at least one of audio and visual content, said apparatus comprising:

(a) playback means for generation of at least one of audio and visual output;

(b) storage means;

(c) a plurality of works of predetermined fixed content contained in said storage means, each of said plurality of works containing one of sequentially related content and simultaneously related content to at least one other of said plurality of works, and distinctive identification means in said storage means associated with each of said plurality of works identifying the content of each of said works; and

(d) control means connected to said playback means and said storage means and generating playback through said playback means of selected works stored in said storage means, said control means selecting a first work of predetermined fixed content using said identification means and to producing playback of said first work through said playback means, and said control means further randomly selecting from a remainder of said plurality of works in said storage means at least one second work having one of sequentially related and simultaneously related content and producing playback of said second work by one of sequential and simultaneous playback with said first work to produce an integrated composite work.

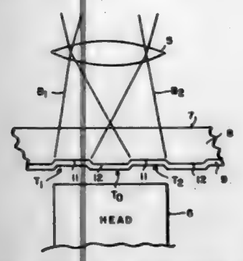
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,359

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING A FERRIMAGNETIC RECORDING MEDIUM, A MAGNETIC HEAD AND FIRST AND SECOND LIGHT SOURCES

Kenji Ohta, Kitakatsuragi; Akira Takahashi, Nara; Junsaku Nakajima, Yamatotakada; Yoshiteru Murakami, Nishinomiya, and Junji Hirokane, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1991, Ser. No. 741,932
Claims priority, application Japan, Aug. 10, 1990, 2-212619
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **4 Claims**



1. A magnetic recording and reproducing apparatus comprising:
an optically assisted magnetic disk, the magnetic disk comprising a light-transparent substrate and a recording medium;
an objective lens;
recording tracks formed on the recording medium;
a magnetic head for magnetically recording information on the recording tracks and for magnetically reproducing the information from the recording tracks, the magnetic head having a width larger than the width of the recording tracks;
a first light beam for recording; and
a second light beam for reproducing,
wherein the recording medium is made of a ferrimagnetic material;
the magnetic disk is interposed between the objective lens and the magnetic head;
the first light beam is converged through the objective lens on the recording track;
the second light beam is converged through the objective lens on the tracks on both sides of the recording track;
the first light beam is set to have a power strong enough to raise the temperature of the recording track to approximately a Curie temperature; and
the second light beam is set to have a power strong enough to raise the temperature of the tracks on both sides of the recording track to approximately a magnetic compensation temperature.

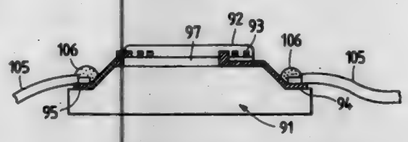
5,293,360

MAGNETIC FIELD GENERATING DEVICE

Koyo Hasegawa, Tokyo, and Shunpei Kimura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 491,194, Mar. 9, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,249
Claims priority, application Japan, Mar. 9, 1989, 1-55210; Mar. 9, 1989, 1-55211; Mar. 9, 1989, 1-55212; Mar. 9, 1989, 1-55214; Mar. 9, 1989, 1-55217; Mar. 9, 1989, 1-55218
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **8 Claims**

1. A magnetic field generating device comprising:
a substrate having a first face and a second face, different from the first face, the second face being stepped from the first face by a distance greater than 0.2 mm;
a magnetic field generating coil formed on the first face of said substrate;
terminals connected through conductive portions to said



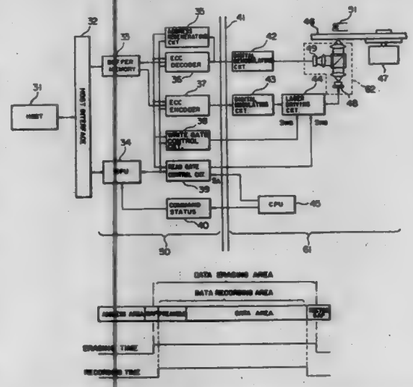
magnetic field generating coil and provided on the second face of said substrate; and
drive means, connected to said terminals, for driving said magnetic field generating coil.

5,293,361

INFORMATION PROCESSING METHOD AND APPARATUS THEREFOR IN WHICH AN ERASING DEVICE IS DRIVEN FOR A PERIOD LONGER THAN A NECESSARY PERIOD

Takayuki Aizawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 671,648, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 104,066, Oct. 5, 1987, abandoned. This application Oct. 13, 1992, Ser. No. 960,271
Claims priority, application Japan, Oct. 8, 1986, 61-238018
Int. Cl.[5] G11B *13/04, 11/12, 11/10*
U.S. Cl. 369—13 **5 Claims**



1. A method for recording information on a magneto-optical information recording medium that includes a sector having a recording area and a defined front gap portion and a defined rear gap portion respectively located before and after the recording area on the medium, and for erasing recorded information, by using an information processing apparatus that includes irradiating means for irradiating the recording medium with a light beam and applying means for applying a magnetic field to the recording medium, said method comprising the steps of:
recording information on the recording medium by scanningly irradiating the recording area of the sector of the medium with the light beam while applying a magnetic field to the medium in a predetermined direction, said recording step comprising intensity modulating the light beam according to recording information solely during an interval in which the light beam irradiates the recording area; and

erasing recorded information by scanningly irradiating the sector of the recording medium with the light beam used for recording, while applying a magnetic field to the medium in a direction opposite to the predetermined direction, said erasing step comprising (i) irradiating the front gap portion of the medium with the light beam at a predetermined intensity level sufficient to completely erase recorded information, (ii) continuing to irradiate the medium with the light beam at the predetermined intensity during an entire interval in which the light beam scans the front gap portion, passes through the recording area and into the rear gap portion, and (iii) stopping irradiation of the recording medium at the predetermined intensity when the light beam is in the rear gap portion, to completely erase recorded information even if errors occur in on and off timing of the light beam.

5. An apparatus for selectively effecting recording of information on and erasing of recorded information from a magneto-optical recording medium that includes a sector having a recording area and a defined front gap portion and a defined rear gap portion respectively located before and after the recording area on the medium, said apparatus comprising:
a light source for emitting a light beam to irradiate the recording medium;
moving means for relatively moving the light beam and the recording medium to scanningly irradiate the sector of the medium with the light beam;
applying means for selectively applying a magnetic field to the medium in a predetermined direction and in a direction opposite to the predetermined direction;
a driving circuit for driving said light source and for intensity modulating the light beam emitted from said light source;
a modulation circuit for supplying to said driving circuit a signal modulated according to recording information; and
a gate control circuit for selectively supplying to said driving circuit a first gate signal during information recording and a second gate signal during information erasing, respectively, the first gate signal having a length corresponding to an interval during which the light beam scanningly irradiates the recording area of the recording medium and the second gate signal being longer than the first gate signal,
wherein said driving circuit intensity-modulates the light beam according to the signal supplied from said modulation circuit during an interval in which the first gate signal is supplied to said driving circuit from said gate control circuit, the second gate signal having a length corresponding to an entire interval during which the light beam, at a predetermined intensity level sufficient to completely erase recorded information, scanningly irradiates the medium from the front gap portion, through the recording area and into the rear gap portion, and said driving circuit causes said light source to emit the light beam to irradiate the recording medium at the predetermined intensity during the entire interval in which the second gate signal is supplied to said driving circuit from said gate control circuit, to completely erase recorded information even if errors occur in on and off timing of the light beam.

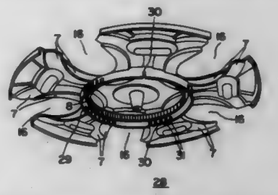
5,293,362

OPTICAL DISC PLAY-BACK DEVICE OF THE CAROUSEL TYPE, HAVING A MECHANISM FOR REDUCING ACCESS TYPE TO ANY SELECTED DISC

Jun Sakurai, and Toshiyuki Kajikano, both of Shirakawa, Japan, assignors to Nippon Columbia Co., Ltd., Kawasaki, Japan

Filed Jun. 4, 1992, Ser. No. 894,797
Claims priority, application Japan, Jun. 4, 1991, 3-159423
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—30 **19 Claims**

1. An optical disc playback device, comprising a housing, a disc transport turntable rotatably mounted within said housing, said disc transport turntable being adapted to receive a plurality of optical discs and upon rotation of said turntable to transport said discs within said housing to a corresponding plurality of predetermined locations, a disc-rotating and optical read-out subassembly disposed within said housing adjacent one of said predetermined locations; said turntable comprising a plurality of disc-holding sections and an axially extending annular rib formed on its underside; said annular rib having formed therein



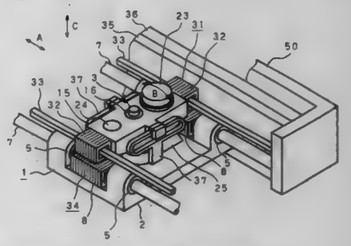
a distinct set of notches corresponding to each of said disc-holding sections, each said set of notches comprising a central position-indicating notch and disc number-indicating notches disposed symmetrically on both sides of said central position-indicating notch; said device further comprising optical detecting means cooperating with said annular rib to detect a presence or absence of said notches.

5,293,363

OPTICAL HEAD APPARATUS WITH LIGHT WEIGHT MOVABLE LENS HOLDER

Nobuo Takeshita, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 595,581, Oct. 11, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 32,418
Claims priority, application Japan, Oct. 13, 1989, 1-266684
Int. Cl.[5] G11B *7/00, 21/00*
U.S. Cl. 369—44.21 **12 Claims**



1. An optical head apparatus comprising:
a fixed body;
a moveable body translationally moveable relative to said fixed body;
a lens holder mounted on said moveable body and rotatable relative to said moveable body about a turning shaft;
an objective lens for condensing a light beam onto an optical recording medium, said objective lens having an optical axis parallel to said turning shaft and being mounted on said lens holder;
moving means for translationally moving said moveable body, said moving means comprising at least a first yoke and a first magnet mounted to said fixed body and at least a first moving coil mounted to said lens holder, said first moving coil having a hollow portion through which said first yoke passes; and
turning means for generating a force for rotating said lens holder around a turning shaft parallel to said optical axis, said turning means comprising said first magnet and said first yoke and at least a first turning coil separate from said first moving coil mounted on said lens holder.

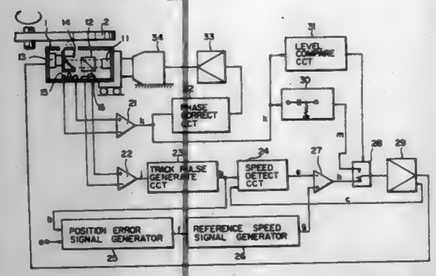
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,364

TRACK ACCESS CONTROL DEVICE FOR AN OPTICAL DISK DRIVE

Shigeru Shimonou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,824
Claims priority, application Japan, Dec. 10, 1991, 3-350843
Int. Cl.[5] G11B 7/095
U.S. Cl. 369—44.25 2 Claims



1. A track access control device for an optical disk drive which comprises a converging lens, an optical head for issuing a laser beam toward a medium via said converging lens to write or read data in or out of said medium, a lens driving circuit for generating a lens drive signal which moves said converging lens in a radial direction of said medium, a lens actuator responsive to said lens drive signal for moving said converging lens, lens position detecting means for generating a lens position signal representative of a position of said converging lens relative to said optical head, and head driving means responsive to said lens position signal for causing said optical head to follow a movement of said converging lens in such a manner as to reduce a positional deviation of said converging lens, said track access control device comprising:

signal level comparing means for comparing a level of the lens position signal with a predetermined reference level to produce a comparison signal;

a differentiating circuit for differentiating the lens position signal to produce a differentiation signal; and

signal selecting means responsive to the comparison signal for feeding, when the positional deviation of the converging lens exceeds a predetermined range, the differentiation signal to the lens actuator in place of the lens drive signal.

5,293,365

TRACK CONTROL CIRCUIT FOR OPTICAL CARD RECORDING/REPRODUCING APPARATUS

Takao Rokutan, Higashiosurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 704,338, May 23, 1991, abandoned.
This application Jul. 12, 1993, Ser. No. 90,985
Claims priority, application Japan, May 30, 1990, 2-140214
Int. Cl.[5] G11B 7/095
U.S. Cl. 369—44.25 14 Claims

1. A track control circuit for an optical card recording/reproducing apparatus, comprising:

light beam means for emitting a light beam for optically recording/reproducing information onto a card-like optical recording medium having a plurality of tracks;

focusing means for focusing the light beam emitted from said light beam means onto said card-like optical recording medium;

photosensing means for detecting a beam reflected by a desired track of said card-like optical recording medium;

error signal generating means for generating a track error signal output in accordance with a deviation of the reflected beam detected by said photosensing means;

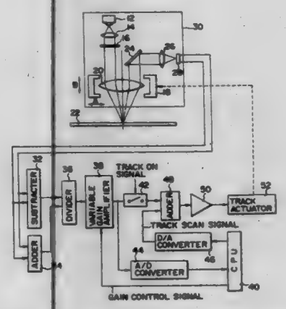
actuator means having a moving member which is movable across said tracks;

track scanning means for driving said actuator means by transmitting a track scanning signal to said actuator means, in a state wherein said actuator means is stopped relative to said card-like optical recording medium, thereby to perform a track scanning operation wherein the light beam moves across said tracks;

track servo means for holding the light beam on said desired track, by transmitting the track error signal to said actuator means so that said actuator means uses the track error signal in replacement of the track scanning signal;

gain setting means for setting a gain of the track error signal;

determining means for determining that the track error signal is abnormal when an amplitude level of the track



error signal differs from a predetermined amplitude level during the track scanning operation, and for determining that the track error signal is normal when the amplitude level of the track error signal is equal to the predetermined amplitude level during the track scanning operation; and

control means for outputting to said gain setting means a control signal for controlling the gain set by said gain setting means, only when said light beam means is stopped relative to said card-like optical recording medium and when said determining means determines that the track error signal is normal, and, when said determining means determines that the track error signal is abnormal, moving the light beam across said tracks again after moving said actuator means relative to said card-like optical recording medium.

5,293,366

INFORMATION RECORDING AND REPRODUCING APPARATUS PROVIDED WITH MEANS FOR ADDING TO A TRACKING SIGNAL OFFSET CORRESPONDING TO THE POSITIONAL DEVIATION OF A RECORDING SPOT AND A REPRODUCING SPOT

Shinichi Ohta, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 733,165, Jul. 19, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 46,519
Claims priority, application Japan, Jul. 27, 1990, 2-196104
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—44.31 47 Claims

1. An apparatus for effecting the recording of information on and reproduction of information from an information track on a recording medium, comprising:

means for applying a first light spot to the information track and for recording the information with the first light spot;

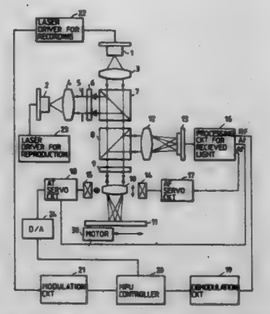
means for applying a second light spot comprising at least one light spot to the information track and for reproducing the information with the second light spot;

means for moving the recording medium relative to the first

and second light spots in the lengthwise direction of the information track;

means for detecting a tracking signal from reflected light from the recording medium, caused by the application of the second light spot to the recording medium;

tracking control means for moving the first and second light spots in a tracking direction orthogonal to the lengthwise direction of the information track in conformity with the tracking signal; and



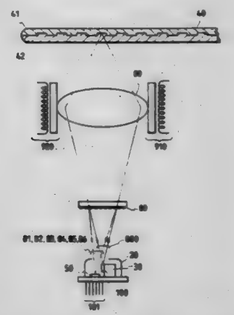
means for imparting an offset to the tracking signal, wherein upon recording information, the first and second light spots are applied to the information track and an offset corresponding to a positional deviation between the center of the first light spot and the center of the second light spot in the tracking direction is imparted to the tracking signal by said offset imparting means, and upon reproducing information, the second light spot is applied to the information track while the first light spot is not applied to the information track and any offset is not imparted to the tracking signal.

5,293,367

OPTICAL PICKUP HEAD WHEREIN AN ERROR SIGNAL IS PRODUCED BY DETECTING A PHASE DIFFERENCE IN DIFFRACTION BEAMS FROM A HOLOGRAPHIC OPTICAL ELEMENT

Shinichi Kadowaki; Yoshiaki Komma, and Naoyasu Miyagawa, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1991, Ser. No. 669,548
Claims priority, application Japan, Jun. 6, 1990, 2-147805
Int. Cl.[5] G11B 7/13
U.S. Cl. 369—44.37 4 Claims



1. An optical pickup head operating on an optical recording medium having a pit sequence, wherein a direction of the pit sequence is defined as a tangential direction of the optical recording medium and a direction perpendicular to the direction of the pit sequence is defined as a radial direction of the optical recording medium, the optical pickup head comprising:

a light source emitting a light beam;

means for focusing the light beam emitted from the light source on the optical recording medium, wherein the light beam is reflected and diffracted by the optical recording medium;

a holographic optical element having divided regions formed with different holographic patterns, wherein the divided regions diffract the light beam reflected and diffracted by the optical recording medium, and generate diffraction light beams from the light beam reflected and diffracted by the optical recording medium respectively, wherein the divided regions lie in quadrants of an imaginary X-Y coordinate system respectively, and an X axis of the coordinate system extends in a direction corresponding to the tangential direction of the optical recording medium and a Y axis of the coordinate system extends in a direction corresponding to the radial direction of the optical recording medium;

photodetectors receiving the diffraction light beams generated by the divided regions of the holographic optical element, and converting the received diffraction light beams into corresponding electric signals; and

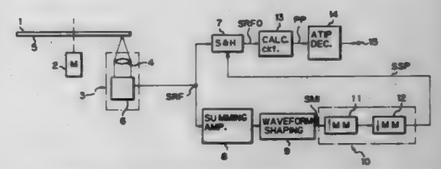
means for comparing phases of the electric signals and generating a tracking error signal on the basis of a result of said phase comparing.

5,293,368

APPARATUS FROM REPRODUCING ADDRESS DATA ON A DISK

Tadashi Nakata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1991, Ser. No. 749,110
Claims priority, application Japan, Sep. 4, 1990, 2-233593
Int. Cl.[5] G11B 7/00
U.S. Cl. 369—48 3 Claims



1. An apparatus for reproducing address data recorded on a disk record medium with an information signal which is recorded on the same by forming pit portions in response to the information signal comprising:

means for optically reproducing said recorded data and signals;

means for generating a sampling pulse from said recorded data and signals so that said sampling pulse occurs at a substantially beginning position of a mirror portion between said pit portions;

means for sampling and holding said recorded data and signals by said sampling pulse; and

means for decoding an output signal of said sampling and holding means so as to generate said address data.

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5,293,369

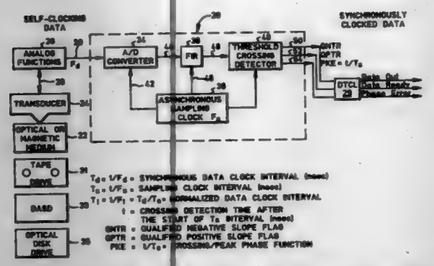
ASYNCHRONOUS SAMPLING DIGITAL DETECTOR SYSTEM FOR MAGNETIC AND OPTICAL RECORDING CHANNELS

Constantin M. Melas, Los Gatos, and Pantas Sutardja, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1992, Ser. No. 967,669

Int. Cl.[5] G11B *5/09;* **H04N** *5/76;* **G06F** *7/38;* **K03D** *1/22;* **H03K** *5/153*

U.S. Cl. 369—59 **21 Claims**



1. A method for detecting signal waveform crossings through a first threshold in a recording channel, said channel having a sampling clock rate F_s equal to the reciprocal of a sampling interval T_s, said signal waveform containing data occurring at a synchronous data clock rate F_d, where i is a nonzero positive integer, said method comprising the steps of:

(a) sampling said signal waveform at the end of an ith said sampling interval to create an ith waveform sample S_i, said sample S_i having a sign s_i;

(b) converting said waveform sample S_i to a first digital signal representing the value of said waveform sample S_i relative to said first threshold;

(c) comparing the signs of said first digital signal S_i with the sign s_{i-1} of a previous said first digital signal S_{i-1} from the $(i-1)^{th}$ said sampling interval;

(d) responsive to a difference between said first sign s_i and said previous sign s_{i-1}, performing the steps of

(d.1) interpolating the threshold-crossing time t of said signal waveform within said i^{th} sampling interval from said previous sample S_{i-1} to said sample S_i;

(d.2) creating a second digital signal representing said threshold-crossing time t in said i^{th} sampling interval,

(d.3) creating one or more digital flags representing the qualification of said waveform threshold-crossing, where said qualification is responsive to a threshold-crossing slope that exceeds a second threshold.

5,293,370

METHOD AND APPARATUS FOR CREATING OPTICAL DISC MASTERS

Robert C. Beauchamp, Westminster, Calif.; Jim Norton, Minneola, Kans.; Robert Dobbin, and David Loeppky, both of Irvine, Calif., assignors to Del Mar Avionics, Irvine, Calif.

Filed Jan. 16, 1991, Ser. No. 641,696

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] G11B *7/00*

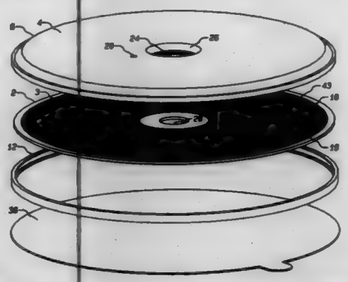
U.S. Cl. 369—109 **17 Claims**

1. An optical disc assembly for maintaining a portable clean-room environment used in the recording phase of optical disc mastering comprising:

a transparent optical disc having a writing surface with an optically active lamina formed thereon, said optically active lamina having ablative properties when radiated by laser light of a predetermined wavelength, and a nonwriting surface, said transparent optical disc permitting laser light of said predetermined wavelength, to pass through said transparent optical disc and focus on said optically active lamina to record data thereon;

a cover for said transparent optical disc, said cover being constructed to be of a size and shape to enclose said optically active lamina and create a cavity immediately above said optically active lamina within said cover such that said writing surface containing said optically active lamina is isolated from ambient atmospheric contamination;

means for removably securing said optical disc to said cover.



5,293,371

OPTICAL HEAD FOR A MAGNETO-OPTICAL INFORMATION REPRODUCING APPARATUS INCLUDING A LIGHT BEAM SPLITTER HAVING A FIRST GLASS, A UNIAXIAL CRYSTAL AND A SECOND GLASS ARRANGED IN SEQUENCE

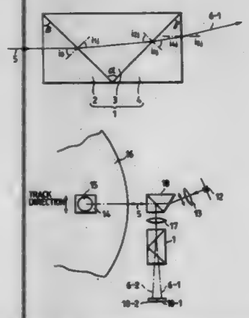
Osamu Koyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1991, Ser. No. 733,161

Claims priority, application Japan, Jul. 26, 1990, 2-196105

Int. Cl.[5] G11B *11/12, 7/14, 7/12*

U.S. Cl. 369—110 **9 Claims**



1. An optical head for a magneto-optical information reproducing apparatus comprising:

a semiconductor laser for emitting a light beam in a polarization direction;

focusing means for focusing the light beam from said semiconductor laser in a direction of incidence into a fine spot onto a magneto-optical recording medium; and

light beam splitting means for splitting a light beam reflected by the recording medium into a first light beam having a polarization component in a first direction, substantially 45 degrees with respect to the polarization direction of said semiconductor laser, and into a second light beam having a polarization component in a direction orthogonal to the first direction, said light beam splitting means comprising a first glass, a uniaxial crystal and a second glass arranged in this sequence in the direction of incidence of the light beam from said semiconductor laser,

wherein normal lines to joint planes of said first glass and said uniaxial crystal, and said second glass and said uniaxial crystal, respectively, are in a plane containing the first and second light beams and an optical axis of said uniaxial crystal is set in the first direction.

5,293,372

APPARATUS FOR OPTICALLY RECORDING AND REPRODUCING INFORMATION FROM AN OPTICAL RECORDING MEDIUM

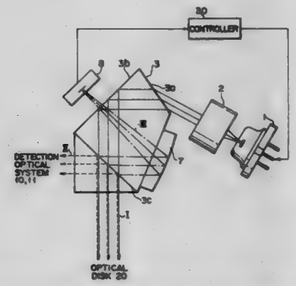
Isao Hoshino; Takashi Yoshizawa, both of Yokohama, and Takayuki Asano, Hamamatsu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 11, 1991, Ser. No. 728,586

Claims priority, application Japan, Jul. 13, 1990, 2-184212

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—116 **21 Claims**



1. An apparatus for optically reproducing information from an optical recording medium, comprising:

beam-generating means for generating a light beam;

splitting means for splitting the light beam into a first light beam and a second light beam;

guide means for guiding the first light beam to the optical recording medium in a first direction and returning the first light beam after being reflected by the optical recording medium to the splitting means, said splitting means directing said returned light beam in a second direction different than said first direction;

signal-responsive means, responsive to the first light beam returned to the splitting means in said second direction, for generating a reproduction signal;

reflecting/converging means, fixed to the splitting means, for reflecting and converging the second light beam split by the splitting means in a third direction back through said splitting means, said third direction being different than the first and second directions; and

driving means, responsive to the second light beam converged by the reflecting/converging means, for driving the beam-generating means, so as to control an intensity of the light beam.

5,293,373

OPTICAL DISK AND METHOD OF MANUFACTURING THE SAME

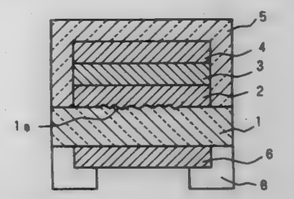
Yukari Toide; Motohisa Taguchi, and Yoshio Fujii, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 750,884, Aug. 26, 1991, abandoned. This application May 19, 1993, Ser. No. 64,731

Claims priority, application Japan, Aug. 29, 1990, 2-231974; Aug. 29, 1990, 2-231975; Nov. 9, 1990, 2-305214; Nov. 19, 1990, 2-315182; Nov. 19, 1990, 2-315184

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.5 **14 Claims**



1. An optical disk comprising:

a substrate made of translucent material, having opposite first and second sides,

a recording film formed on the second side of the substrate,

a warp preventive film formed on the first side of said substrate, for preventing warp of the substrate, and

a protective film disposed on and contacting the warp preventive film and the first side of said substrate, for preventing the warp preventive film from exfoliation.

5. An optical disk comprising:

a substrate of translucent material, having opposite first and second surfaces, wherein said second surface has a grooved area;

a recording film, having opposite first and second sides, wherein said recording film first side is facing said substrate second surface;

a warp preventive film having opposite first and second sides, wherein said second side is facing said substrate first surface; and

a protective film means for minimizing exfoliation of said warp preventive film, said protective film means contacts at least a portion of said first side of said warp preventive film and a portion of said substrate first surface.

5,293,374

MEASUREMENT SYSTEM CONTROL USING REAL-TIME CLOCKS AND DATA BUFFERS

John C. Eidson, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 675,029, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 331,419, Mar. 29, 1989, abandoned. This application May 20, 1992, Ser. No. 887,591

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—579 **5 Claims**

1. A method of controlling measurement instruments in a system having a coordination means that transmits control instructions to different ones of a plurality of remotely-located measurement instruments which are responsive to control instructions to perform measurements and transmit results of those measurements back to the coordination means, the method comprising:

transmitting from the coordination means to a first one of the measurement instruments a control instruction that specifies a measurement to be performed and a predetermined finite time after occurrence of a predefined event at which the measurement is to be performed;

storing the control instruction in a local buffer in the first measurement instrument;

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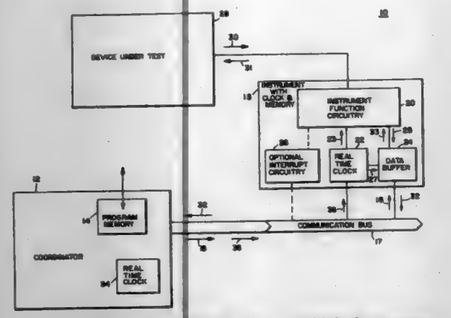
detecting the time of occurrence of the specified event by means of a local clock in a second measurement instrument;

transmitting said time of occurrence to the first measurement instrument;

determining by reference to a local clock in the first measurement instrument that the time at which the measurement is to be performed is at hand;

performing the measurement when said time to perform the measurement is at hand; and

storing the result of the measurement and the time at which the measurement was taken in the local buffer in the first measurement instrument.



5,293,375

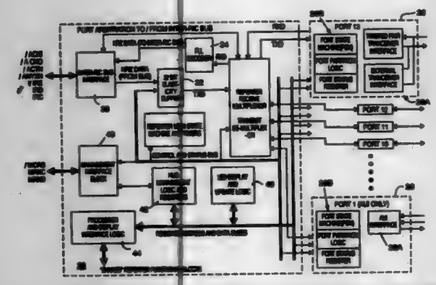
REPEATER INTERFACE CONTROLLER WITH A PARTITIONING PORT STATE MACHINE

Charles A. Moorwood, Sunnyvale; Charan J. Singh, Fairfield; Dennis E. Holland, Morgan Hill; Daniel J. Cimino, Mountain View; Howard Q. Vo, San Jose; Vickie M. Yeung, San Francisco, all of Calif.; David Crosbie, Erskine, Scotland, and Haresh K. Shah, Pleasanton, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 643,208, Jan. 18, 1991. This application Aug. 14, 1992, Ser. No. 930,751

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—13.1 **8 Claims**



1. A repeater interface controller for connecting a plurality of segments of a local area network, the repeater interface controller comprising:

(a) a central node that includes;

receiver means for receiving data packets,

repeater means responsive to receipt of the data packets by the receiver means for repeating each of the data packets to form repeated data packets, and

transmitter means for transmitting the repeated data packets; and

(b) a plurality of port nodes connected to the central node, each port node being connectable to a corresponding one of the plurality of segments, each port node including:

(i) means for receiving one or more data packets from said corresponding segment of the local area network,

(ii) a partitioning port state machine including:

means for detecting collisions from the beginning to the end of each of the one or more received data packets,

means for partitioning said port node from said corresponding segment when collisions are detected in a predetermined number of consecutive received data packets,

(iii) means for transmitting each of the one or more received data packets to the central node,

(iv) means for identifying the port node that first received one or more data packets as a source port node such that other of the plurality of port nodes cannot transmit data packets received from their corresponding segments to the central node while said port node is identified as the source port node,

(v) means for receiving the repeated data packets from the central node, and

(vi) means for transmitting the repeated data packets received from the central node to said corresponding segment when said port node is not identified as the source port node.

5,293,376

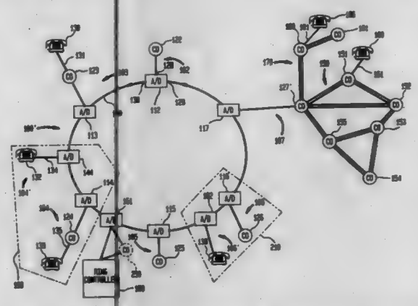
UPGRADED TELECOMMUNICATION NETWORK

Patrick E. White, Chester, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Jan. 10, 1992, Ser. No. 819,404

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—54 **9 Claims**



1. A communications network having both upgraded central offices allowing the offering of new services and central offices that have not been upgraded for such new services and wherein a subscriber desiring such new services can be connected to an upgraded central office while still utilizing a subscriber identifier associated with one of said other offices, said network comprising

a synchronous optical (SONET) network,

means individually connecting said upgraded and said other offices to said SONET network, and

a ring controller distinct from said offices and independently connected to said SONET network and maintaining a mapping between subscriber identifiers and the central office to which a subscriber is actually connected for a subscriber connected to an upgraded office while still utilizing the subscriber identifiers associated with a central office that has not been upgraded.

5,293,377

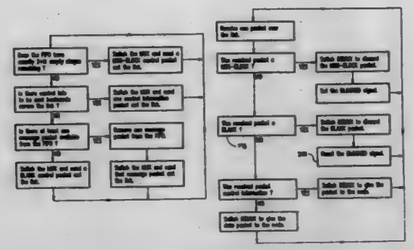
NETWORK CONTROL INFORMATION WITHOUT RESERVED BANDWIDTH

Joel M. Gould, Norwood, Mass., assignor to International Business Machines, Corporation, Armonk, N.Y.

Filed Oct. 5, 1990, Ser. No. 593,824

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **30 Claims**



16. Apparatus as recited in claim **10**, wherein the control information includes information requesting a re-transmission of the information.

5,293,378

PARALLEL MULTI-LINE PACKET TRANSMISSION SYSTEM

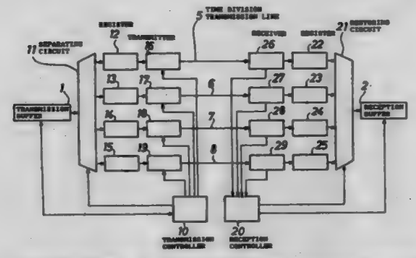
Hiroshi Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,295

Claims priority, application Japan, Sep. 13, 1991, 3-235067

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **9 Claims**



1. A parallel multi-line packet transmission system, comprising:

N time division transmission lines, N being an integral number equal to or greater than 2, which have successive sequence numbers applied thereto in advance; and

transmitter/receiver means for transmitting a packet signal by way of said time division transmission lines, said transmitter/receiver means including:

separating means for dividing a packet of the packet signal into M payloads for the packet transmission and outputting the M payloads as M transmission frames, M being an integral number equal to or greater than 2;

transmitting means for adding packet length information to the original packet signal as a delimiter information, adding to each of said M transmission frames a signal representing whether or not transmission of said packet signal is started in the transmission frame, coding the outputs of said separating means, transmitting them parallelly at a predetermined rate by way of said time division transmission lines, and sending out M transmission frames into the N time division transmission lines in order of the sequence numbers;

receiving means for receiving the outputs of said transmitting means by way of said time division transmission lines and decoding the received outputs; and

restoring means for assembling the M transmission frames received from said N time division transmission lines back into the original packet signal in accordance with the sequence numbers.

5,293,379

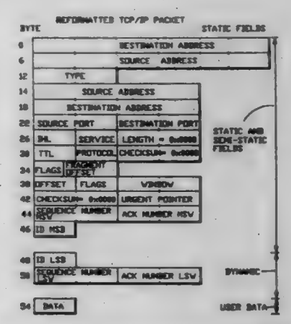
PACKET-BASED DATA COMPRESSION METHOD

David W. Carr, Nepean, Canada, assignor to Gandalf Technologies, Inc., Ontario, Canada

Continuation of Ser. No. 689,359, Apr. 22, 1991, abandoned. This application May 27, 1993, Ser. No. 68,284

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **21 Claims**



1. In a data processing system that employs packets, a packet including at least static fields and dynamic fields, said static fields including data which remains constant over plural packets, said dynamic fields including data which may change for each packet, some said packets also including user-data fields, a method for compressing said packets for transmission from one to another portion of the system, the method comprising:

a. reformatting each packet by associating its static fields with a first packet region, and its dynamic-fields with a second packet region;

b. assembling a static table that includes static field data from at least an initial data packet's first packet region and assigning a code value thereto;

c. identifying static field data associated with a subsequent packet's first packet region that is common to data in said static table, and selecting a code value assigned to said data that is common in said static table;

d. modifying said subsequent packet by replacing said common, static field data with said assigned code value; and

e. transmitting said modified subsequent packet.

5,293,380

FRAME SYNCHRONIZATION SYSTEM AMONG MULTIPLE RADIO BASE STATIONS FOR TDMA DIGITAL MOBILE COMMUNICATIONS SYSTEM

Seiji Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,894

Claims priority, application Japan, Dec. 27, 1989, 1-336380

Int. Cl.[5] H04L *7/00*

U.S. Cl. 370—95.3 **6 Claims**

1. A TDMA digital mobile communications system comprising a control station, a plurality of radio base stations each being located in respective one of service areas which are governed by said control station and each comprising a TDMA frame generator, and a plurality of mobile stations

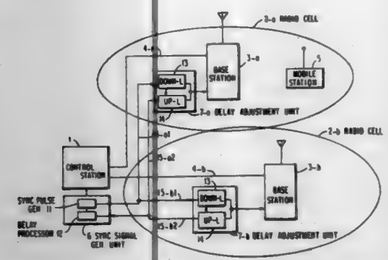
VOL 1160 ISS 2 MR 8 1994 UMI

each being movable in said service areas while interchanging digital signals with said radio base stations located in said service areas by using a given time slot, said system further comprising:

synchronous signal generating means placed in or in the vicinity of said control station for transmitting a reset pulse to said base stations for resetting their TDMA frame generators;

delaying means for delaying said transmitted reset pulse by a predetermined period of time, and inputting said delayed reset pulse to associated one of said radio base stations; and

means for applying said reset pulse inputted from said delaying means to associated one of said TDMA frame generators;



wherein a time delay assigned to each of said delaying means varies with a distance between said radio base station and said control station and is selected such that said reset pulse delayed by all of said radio base stations is inputted to all of said radio base stations at the same time; and

wherein said delaying means comprises returning means for receiving said reset pulse and returning said reset pulse as a return pulse to said synchronous signal generating means, and wherein said synchronous signal generating means comprises time delay determining means for detecting a first time when said return pulse is received and, on the basis of a period of time defined by a second time when said reset pulse is transmitted and said first time when said reset pulse is received, determining a time delay of said reset pulse.

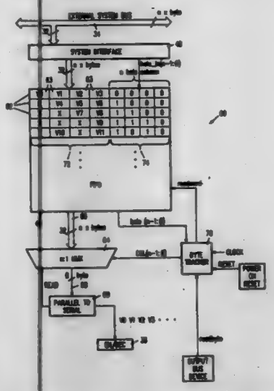
5,293,381

BYTE TRACKING SYSTEM AND METHOD

Henry S.-F. Choy, Fremont, Calif., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Mar. 27, 1992, Ser. No. 858,932
Int. Cl.[5] H04J *3/00*
U.S. Cl. 370—99 **5 Claims**

1. A system for transferring data in multiple byte words between a first bus and a second bus having different widths, which comprises a system interface connected to said first bus, a first-in-first-out buffer memory having an input connected to said system interface by a system interface bus having a width corresponding to said first bus, said first-in-first-out buffer memory being configured to store each multiple byte word in a multiple byte data field with an associated multiple bit byte validity field, said first-in-first-out buffer memory having an output connected by a buffer memory output bus having a width corresponding to said first bus, said buffer memory output bus being connected to a multiplexer, said multiplexer being connected to said second bus, and a byte tracker connected to the byte validity fields of said first-in-first-out buffer memory and to said multiplexer to control operation of said



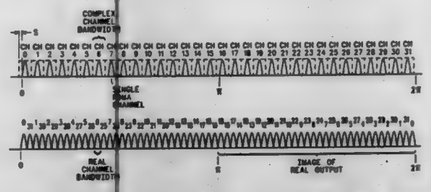
multiplexer to provide valid bytes from said first-in-first-out buffer memory to said second bus.

5,293,382

METHOD FOR FDMA SIGNAL MULTIPLEXING AND DEMULTIPLEXING

Lansing M. Carson, Chandler, and Robert J. Burdge, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,032
Int. Cl.[5] H04J *1/05*
U.S. Cl. 370—123 **20 Claims**



1. A method for multiplexing a series of frequency division multiple access (FDMA) signals to produce a multiplexed output signal, the method comprising the steps of:

providing a plurality of complex channels corresponding to the series of FDMA signals;

offsetting each of series of FDMA signals relative to each of the plurality of complex channels;

filtering each of the series of FDMA signals such that each of the series of FDMA signals is centered within and occupies one-half of an available bandwidth in each of the plurality of complex channels, leaving a series of "off" channels such that an "off" channel occurs between each pair of successive FDMA signals in the series of FDMA signals thereby producing said multiplexed output signal; and

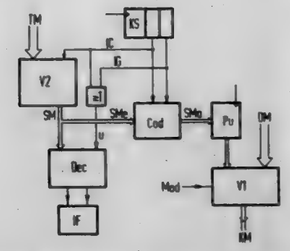
processing a real part of the multiplexed output signal such that a plurality of higher frequency signals of the series FDMA signals image into the series of "off" channels.

5,293,383

METHOD AND APPARATUS FOR TESTING A SMALLEST ADDRESSABLE UNIT OF A STORAGE MEDIUM OF A RAM MEMORY SYSTEM FOR DETERMINATION OF A NUMBER OF BIT ERRORS LYING ABOVE A DEFINED ORDER

Hans-Werner Knefel, Martinsried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 15, 1991, Ser. No. 684,836
Claims priority, application European Pat. Off., Apr. 27, 1990, 90108057.2
Int. Cl.[5] G06F *11/00, 11/22;* G11C *29/00*
U.S. Cl. 371—3 **15 Claims**



8. A circuit arrangement, for testing a smallest addressable unit of a storage medium of a RAM memory system for determination of a number of bit errors lying above a defined order, comprising: first means for generating and modifying a monitoring pattern that, together with a data pattern, is written into the smallest addressable unit of the memory module as a test pattern; second means for accepting a read-out test pattern, forming a further monitoring pattern from the data pattern according to a defined algebraic rule, and for generating by XOR formation of the further monitoring pattern with the read-out monitoring pattern a syndrome pattern that is supplied to the first means for modifying the bits of the monitoring pattern for the next test pattern; decoder means for decoding the syndrome pattern and for subsequent signalling of a number of bit errors lying above the defined order; third means for controlling an operating mode of the first and second means, as well as of the decoder means.

5,293,384

MICROPROCESSOR BUS INTERFACE PROTOCOL ANALYZER

James W. Keeley, Nashua, N.H., and Richard A. Lemay, Carlisle, Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

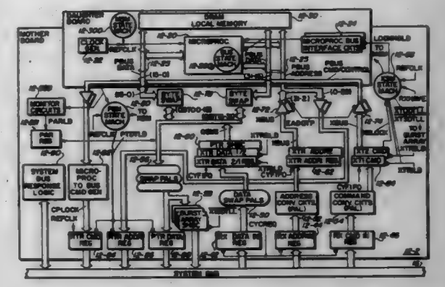
Filed Oct. 4, 1991, Ser. No. 771,581
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—16.3 **12 Claims**

1. Monitoring apparatus for use with a microprocessor which couples to a synchronous bus in common with a memory for carrying out memory read and write operations according to a predetermined bus protocol, said microprocessor including an interrupt interface for processing non-masked interrupts (NMI), said monitoring apparatus comprising:

input circuits for receiving a number of signals indicative of error conditions and being coupled to said interrupt interface, said input circuits in response to any one of said number of signals generating an NMI signal;

a state machine coupled to said input circuits to receive said NMI signal and to said synchronous bus, said state machine being programmed to generate a predetermined sequence of state signals for monitoring sequences of bus protocol signals generated by said microprocessor in issuing commands on said bus; and,

operational timer circuit means coupled to said state machine and to said input circuits, said timer circuit means being enabled by said state machine when in a first predetermined state to start a predetermined time interval corresponding to an interval normally required to complete execution of the type of command issued by said microprocessor, said timer circuit means generating a time-out



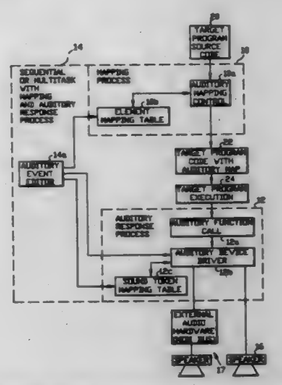
signal at the end of said predetermined time interval prior to receiving a reset signal from said state machine indicating proper completion of said command according to said bus protocol signals and said input circuits in response to said time-out signal generating said NMI signal to said interrupt interface.

5,293,385

METHOD AND MEANS FOR USING SOUND TO INDICATE FLOW OF CONTROL DURING COMPUTER PROGRAM EXECUTION

Joseph M. Hary, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1991, Ser. No. 815,295
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—19 **11 Claims**



1. In a computer system including means for parsing a computer program, means for executing a computer program and means for generating sounds in response to computer program events, a method for audibly communicating computer program execution, comprising the computer system-executed steps of:

in response to a computer program which includes syntactical elements:

identifying respective syntactical elements as syntactical cues by parsing lines of the computer program element by element; and

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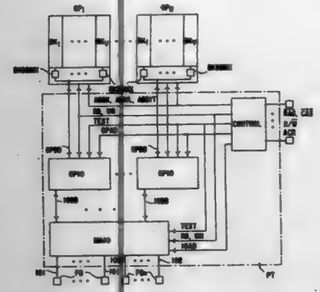
mapping a set of sounds to the set of syntactical cues;
executing the computer program; and
during execution of a procedural sequence in the computer program, generating a pattern of sounds in response to syntactical cues contained in the procedural sequence, the pattern of sounds including sounds in the set of sounds.

5,293,386

INTEGRATED SEMICONDUCTOR MEMORY WITH PARALLEL TEST CAPABILITY AND REDUNDANCY METHOD

Peter Muhmenthaler, Munich; Hans D. Oberle, Puchheim; Martin Peisl, Munich, and Dominique Savignac, Ismaning, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 974,855
Claims priority, application European Pat. Off., May 10, 1990, 90108836.9
Int. Cl.[5] G11C *7/00*
U.S. Cl. 371—21.1 **83 Claims**



1. An integrated semiconductor memory, comprising:
U block groups ($GP_{u=1 \ldots u}$) each having groups of M memory cells (MC) and word lines (WL), and means for simultaneously testing several of said groups of M memory cells (MC) for operation in a test mode, each of said groups of memory cells being disposed along a respective word line (WL) within a respective one of said U block groups (GP_u);
said testing means being in the form of a parallel test device (PT) associated with said U block groups ($GP_{u=1 \ldots u}$) for writing in and evaluating data to be written into and read out of the semiconductor memory; said parallel test device including means for evaluating data read out in the test mode separately for each of said block groups; and
I/O data lines (IO1, IO2, IO3) of the semiconductor memory separately carrying a result of the evaluation for each of said groups of M memory cells (MC).

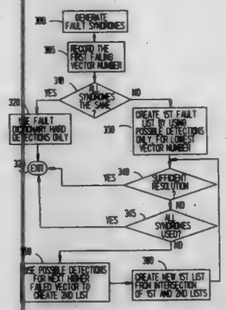
5,293,387

METHOD FOR INCREASING THE RESOLUTION OF A DIGITAL FAULT DICTIONARY

George L. Booth, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1991, Ser. No. 693,885
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—26 **11 Claims**

1. A method for determining a failed device in a unit under test, said unit under test having a plurality of inputs and a plurality of primary outputs, said unit under test being connected to an automated test instrument, said automated test instrument having access to a fault dictionary, said fault dictionary containing hard fault detection data and possible fault detection data, said method comprising the steps of:
generating a plurality of fault syndromes by sequentially applying a set of test vectors to said inputs of said unit under test, each of said fault syndromes corresponding to a vector number and a failing set of said primary outputs from said unit under test;
in response to the situation wherein all of said fault syndromes are the same, accessing only said hard fault detection data, and excluding said possible fault detection data, in said fault dictionary, said hard fault detection data to be used in determining said failed device; and



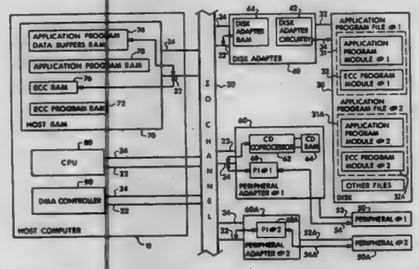
in response to the situation wherein at least one of said fault syndromes is different from any other of said fault syndromes, accessing only said possible fault detection data, and excluding said hard fault detection data, in said fault dictionary, said possible fault detection data to be used in determining said failed device.

5,293,388

COMPRESSION/DECOMPRESS WITH ECC DATA FLOW ARCHITECTURE

Kerry Jon Monroe, Fort Collins, and Kurt Evan Godwin, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1990, Ser. No. 612,566
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **7 Claims**



1. A computer system for providing error correction coding and compression/decompression of data, said computer system having a host computer, an input/output channel and one or a plurality of peripheral devices, said host computer and each of said plurality of peripheral devices connected to said input-/output channel, said computer system further comprising:
a compression/decompression circuit located in one of said peripheral devices for compressing and decompressing data,
means for storing one or a plurality of application programs, each one of said application programs for use with one of said peripheral devices, each of said application programs containing an error correction coding program module,

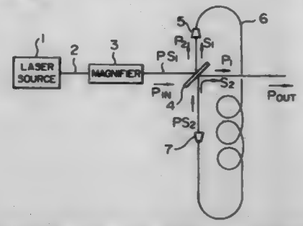
means in said host computer for receiving an application program from said storing means containing an error correction coding program module for one of said plurality of peripheral devices selected by said host computer, said host computer performing error correction on compressed data received over said input/output channel from said compression/decompression circuit based upon said received application program, said host computer further delivering the error corrected compressed data over said input/output channel to said selected peripheral device.

5,293,389

MULTI-PULSE LASER BEAM GENERATION METHOD AND DEVICE AND LASER BEAM MACHINING METHOD AND APPARATUS USING MULTI-PULSE LASER BEAM

Makoto Yano, Mito, and Kouji Kuwabara, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 760,945
Claims priority, application Japan, Sep. 19, 1990, 2-246976
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—30 **22 Claims**



1. A multi-pulse laser beam apparatus comprising: a pulse laser beam oscillator means for oscillating a pulse laser beam; a polarization beam splitter means for separating a pulse laser beam oscillated from said pulse laser beam oscillator means into laser beams in first and second direction and for providing a laser beam in said first direction at an output end of the apparatus; and non-linear polarization and time delay means for non-linearly polarizing a laser beam of said second direction of said laser beams separated into said first and second directions by said polarization beam splitter means and for delaying said non-linearly polarized laser beam by an amount of time by transmission through a length of an optical path constituted by an optically transmissive material so as to direct the delayed laser beam again to said polarization beam splitter means and to output components of the delayed laser beam separated in said first direction by said polarization beam splitter means at said output end.

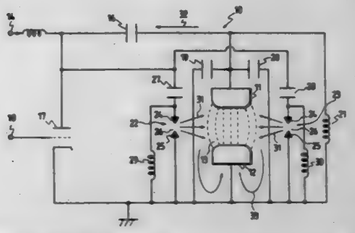
5,293,390

DISCHARGE-PUMPED GAS LASER WITH INDEPENDENT PREIONIZING CIRCUIT

Nobuaki Furuya, Kawasaki; Takuhiro Ono, Zama; Naoya Horiuchi; Keiichiro Yamanaka, both of Kawasaki; Takeo Miyata, Zama, and Kenichi Takahata, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 27, 1992, Ser. No. 873,854
Claims priority, application Japan, Apr. 25, 1991, 3-95816
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **14 Claims**

1. A discharge-pumped gas laser comprising:
main discharge means for producing a main electric discharge in a laser gas in a main discharge region to excite the laser gas for laser emission,
said main discharge means comprising a switching element for starting the main electric discharge, a charging circuit including a charging capacitor for storing an electric energy to operate said switching element, a peaking capacitor for storing the electric energy stored in said charging capacitor of said charging circuit by action of said switching element, and a discharging circuit including a pair of main discharge electrodes between which said main discharge region is defined for discharging the electric energy stored in said peaking capacitor to cause the main electric discharge in the laser gas in said main discharge region; and
preionizing means for preionizing the laser gas in said main discharge region prior to the main electric discharge caused by the electric energy which is discharged by said main discharge electrodes of said discharging circuit,



said preionizing means being arranged independent of said main discharge means, and
said preionizing means comprising a plurality of preionizing electrodes for producing a preionizing discharge to preionize the laser gas, and a plurality of distributing capacitors for respectively storing a preionizing energy to enable said preionizing electrodes to preionize the laser gas, said distributing capacitors having approximately equal capacitances to supply uniform electric currents to said preionizing electrodes, and the whole sum of the equal capacitances of said distributing capacitors being smaller than a capacitance of said charging capacitor of said charging circuit.

5,293,391

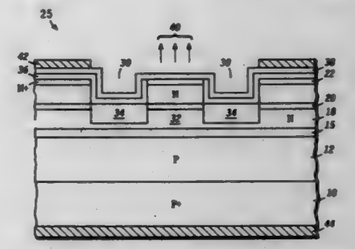
Patent Not Issued For This Number

5,293,392

TOP EMITTING VCSEL WITH ETCH STOP LAYER

Chan-Long Shieh, and Donald E. Ackley, both of Paradise Valley, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1992, Ser. No. 922,719
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **26 Claims**



19. In a top emitting vertical cavity surface emitting laser comprising:
an active and spacer layer having first and second opposed major surfaces;
a first parallel mirror stack affixed to and parallel with the first major surface and a second parallel mirror stack affixed to and parallel with the second major surface and

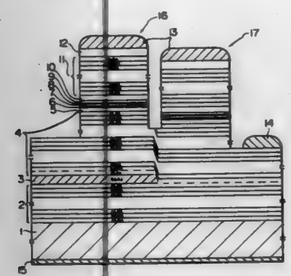
defining an emitting surface on the second parallel mirror stack opposite the major surface;
a layer of etch stop material positioned within the second parallel mirror stack a predetermined distance from the emitting surface and parallel therewith;
a portion of the second parallel mirror stack being etched from the emitting surface to approximately an upper surface of the etch stop layer with a remaining portion of the second parallel mirror stack defining an emitting area in the emitting surface; and
the remaining portion of the second parallel mirror stack being sufficient to promote lasing therein and the etched portion of the second parallel mirror stack being insufficient to promote lasing therein.

5,293,393

VERTICAL-TO-SURFACE TRANSMISSION ELECTROPHOTONIC DEVICE

Hideo Kosaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 44,372
Claims priority, application Japan, Apr. 10, 1992, 4-90995
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **2 Claims**



1. A vertical-to-surface transmission electrophotonic device in a structure having a first distributed Bragg reflector of a first conductivity type, a first spacer layer of the first conductivity type, an active layer, a second spacer layer of a second conductivity type opposite to the first conductivity type, and a second distributed Bragg reflector of the second conductivity type, all of which are formed on a substrate to constitute a cavity in a direction perpendicular to a formation surface, characterized in that one layer of said first distributed Bragg reflector is locally thickened to constitute a double cavity, and that a light-emitting portion of a single-cavity structure and a light-receiving portion of a double-cavity structure are formed on said single substrate.

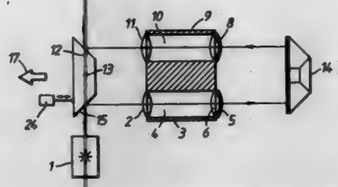
5,293,394

RAMAN LASER

Stewart T. Whittley, Edinburgh, United Kingdom, assignor to GEC Ferranti Defence Systems Limited, Stanmore, United Kingdom

Filed Jul. 16, 1992, Ser. No. 913,664
Claims priority, application United Kingdom, Jul. 18, 1991, 9115556
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—3 **24 Claims**

1. A Raman laser comprising a first and a second chamber each containing a Raman active gas, wherein the first chamber is arranged to receive an incident coherent pump beam which experiences forward Raman scattering on passing through the first chamber, and wherein the second chamber is arranged to receive an output beam from the first chamber which experiences further forward Raman scattering on passing through the second chamber, the Raman laser further comprising a steering optic by which the pump beam entering the first



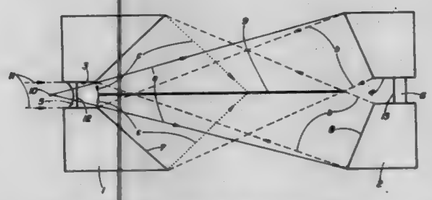
chamber, and the Raman shifted beam exiting the second chamber are deflected.

5,293,395

STIMULATED RAMAN LASER OF AMPLIFIER USING AXICON PUMPING

Georges R. Fournier, Quebec, and Pierre J. P. R. Mathieu, Cap-Rouge, both of Canada, assignors to Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 6, 1993, Ser. No. 44,575
Claims priority, application Canada, Aug. 24, 1992, 2076735
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—3 **21 Claims**



1. A raman cell comprising an enclosed cell containing a raman medium with an axicon being located on the cell's optical axis at each end of the cell, one axicon having an input window for a laser pump beam and a second axicon at the cell's other end being provided with an output coupler for raman radiation, each axicon being shaped to direct energy from the laser pump beam towards an extended line focus along said optical axis, the extended line focus for each axicon being substantially collinear with each other forming an extended raman gain region.

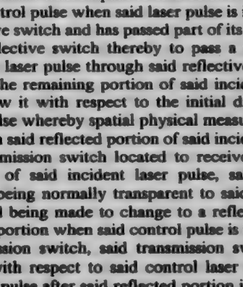
5,293,396

PLASMA GENERATING APPARATUS AND METHOD FOR EXTREME-ULTAVIOLET LASER

Toshihisa Tomie, Tsukuba, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,174
Claims priority, application Japan, Jul. 19, 1991, 3-204734
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—5 **18 Claims**

1. A plasma generating apparatus for an extreme-ultraviolet laser comprising:
a high temperature plasma source which generates a high temperature plasma;
a shield plate including a slit through which said high temperature plasma of said high temperature plasma source is discharged; and



exciting means for heating said high temperature plasma source from the opposite side of said slit.

5,293,397

MEANS AND METHOD FOR CHARACTERIZING HIGH POWER, ULTRA SHORT LASER PULSES IN A REAL TIME, ON LINE MANNER

James T. Veligdan, Manorville, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Nov. 24, 1992, Ser. No. 980,710
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—25 **19 Claims**

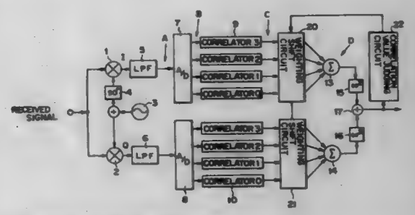
1. Apparatus means for characterizing the pulse length of an ultra short laser pulse comprising:
a) a first laser that is operable to generate an ultra short duration laser pulse in the order of 30 ps or less;
b) a control laser for generating a control pulse;
c) a reflective switch located to receive said laser pulse and said control pulse, said reflective switch being normally transparent to said laser pulse and being changed to a reflector of said laser pulse when said control pulse is impinged on said reflective switch, said reflective switch being located with respect to said control laser to receive said control pulse when said laser pulse is incident on said reflective switch and has passed part of its length through said reflective switch thereby to pass a portion of said incident laser pulse through said reflective switch and to reflect the remaining portion of said incident laser pulse and skew it with respect to the initial direction of said laser pulse whereby spatial physical measurements can be made on said reflected portion of said incident laser pulse;
d) a transmission switch located to receive said reflected portion of said incident laser pulse, said transmission switch being normally transparent to said reflected portion and being made to change to a reflector of said reflected portion when said control pulse is incident on said transmission switch, said transmission switch being located with respect to said control laser to receive said control pulse after said reflected portion is made incident on said transmission switch and has passed part way through said transmission switch, thereby to pass a portion of the length of said reflected portion of said incident laser pulse through said transmission switch and to reflect the remaining portion of said reflected portion, whereby said portion passed through said transmission switch is sliced from the remaining portion of said reflected portion so that only the sliced portion passes through the transmission switch;
e) directing means directing said control pulse onto said transmission switch and delaying said control pulse to be incident on said transmission switch after the sliced portion of said reflected portion of the laser pulse has passed through said transmission switch; and
f) measuring means located so that said sliced portion is made incident thereon for measuring the physical pulselength of said sliced portion, said physical pulselength being readily convertible into a temporal pulselength of said laser pulse.

5,293,398

DIGITAL MATCHED FILTER

Noriyuki Hamao, and Masahiro Hamatsu, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,291
Claims priority, application Japan, Dec. 13, 1991, 3-352018; Mar. 6, 1992, 4-084666
Int. Cl.[5] H04L *9/00, 27/30*
U.S. Cl. 375—1 **4 Claims**



1. A digital matched filter comprising:
frequency converting means for converting a received signal in frequency into a base band by using a signal having a same frequency as a carrier of the received signal;
A/D converting means for converting a signal obtained by the frequency conversion into a multi-bit signal;
a plurality of digital correlators for correlating different bit signals of said multi-bit signal with a set signal to output respective correlation values;
a plurality of weighting means for weighting differently outputs of the different correlators;
synthesizing means for combining outputs of said weighting means;
a judging circuit for comparing an output of said synthesizing means with a predetermined value to output a control signal, based on a comparison result thus obtained; and
control means for varying weighting factors, based on said control signal.

5,293,399

IDENTIFICATION SYSTEM

Aldo Hefti, Biasca, Switzerland, assignor to R. Audemars SA, Lugano, Switzerland

PCT No. PCT/EP87/00584, § 371 Date Dec. 8, 1989, § 102(e) Date Dec. 8, 1989, PCT Pub. No. WO88/03687, PCT Pub. Date May 19, 1988
PCT Filed Oct. 8, 1987, Ser. No. 449,900
Int. Cl.[5] H04B *1/38*
U.S. Cl. 375—7 **6 Claims**

1. An identification system comprising:
an interrogator/receiver comprising the following sections:
A) a section comprising a clock signal generator having a predetermined frequency for generating an RF power signal;

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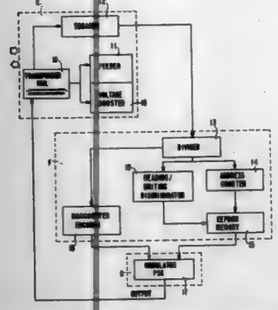
B) a signal conditioning section comprising a bandpass filter for recognizing the presence of a modulated signal having predetermined frequency and for discriminating between data and ground noise components of said modulated signal;

C) a section having a demodulator means for decoding data received from the signal conditioning section in order to make said data intelligible to a digital processor; and

D) a section comprising a coil means connected to said signal generator for transmitting said RF power signal and to said signal conditioning section for inductively coupling the interrogator/receiver with a passive transponder;

the passive transponder comprising the following sections:

E) a section for picking up the RF power signal transmitted by the interrogator/receiver, comprising a coil followed by a rectifier and a filter condenser for converting said RF power signal to supply DC power to the transponder, and a squarer means for using said RF power signal as clock for generating data;



F) a section comprising an encoder means for encoding said data generated by said squarer means according to a predetermined code contained in a memory; and

G) a section comprising means for phase modulating the encoded data to create said modulated signal for inductive transmission from said coil of the transponder;

wherein the RF power signal frequency is in the range of hundreds of kHz, and said modulated signal frequency is in the range of tens of kHz, the modulated signal being obtained by using a frequency divider located in the transponder, said bandpass filter being a very selective, multistage filter discriminating a frequency band width being not higher than one thousandth of the frequency of the signal transmitted by the transponder, and said demodulator means comprising a phase locked loop means.

5,293,400

CONTACTLESS LINKING DEVICE FOR INTERCONNECTING DATA BUS SECTIONS

Marie-Odile Monod, Saint Aubin, and Jean-Luc Lablee, Chaingy, both of France, assignors to Centre National Du Machinisme Agricole, Du Genie Rural, Des Eaux Et Des Forets, Antony, France

Filed May 17, 1991, Ser. No. 701,839

Claims priority, application France, May 18, 1990, 90 06273

Int. Cl.[5] H04L *5/14;* **H04B** *5/00*

U.S. Cl. 375—7 **7 Claims**

1. A contactless linking device for interconnecting first and second bus sections of a data bus in order to provide a transparent bi-directional data transmission of data along the data bus, irrespective of protocol used, said contactless linking device comprising:

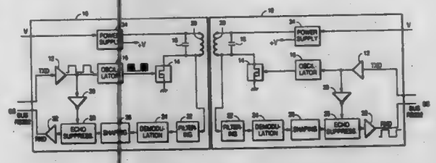
a first transmitter-receiver module connected to the first bus section; and

a second transmitter-receiver module connected to the second bus section, said first and second transmitter-receiver modules being disposed face-to-face without mutual contact;

wherein each of said and second transmitter-receiver modules includes:

a coil having first and second ends, the first end being connected to a fixed potential;

modulation means having an input connected to one of the first and second bus sections and an output connected to the second end of said coil, for supplying said coil with a signal to be transmitted, modulated by first data received from said one of the first and second bus sections; and



detection means having a detection input connected to the second end of said coil and a detection output connected to said one of the first and second bus sections, for receiving a modulated signal from said coil, for generating second data responsive to said modulated signal, and for transmitting said second data to said one of the first and second bus sections, and

wherein said coil in each of said first and second transmitter-receiver modules comprises a flat spiral winding for transmitting and signal and receiving said modulated signal, and

wherein said flat spiral winding of said first and second transmitter-receiver modules face each other and have axes substantially aligned to ensure electromagnetic coupling between the modules.

5,293,401

EQUALIZER FOR LINEAR MODULATED SIGNAL

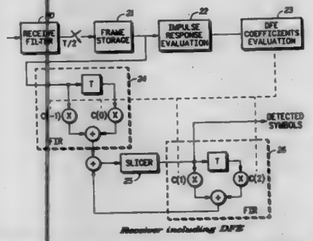
Salomon Serfaty, Doar Gaash, Israel, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1991, Ser. No. 754,869

Claims priority, application United Kingdom, Sep. 6, 1990, 9010508.2

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—13 **10 Claims**



1. An equalizer for equalizing a linear modulated signal, the linear modulated signal containing a first training sequence, followed by samples, and followed in turn by a second training sequence, the linear modulated signal being received over a radio channel, the equalizer comprising:

input means for inputting the linear modulated signal,

storage means coupled to the input means for storing at least the samples, thus forming stored received samples;

estimating and interpolating means coupled to the storage means for estimating a first impulse response for the channel based on the first training sequence thus forming a first estimated impulse response, and for estimating a second impulse response for the channel based on the second training sequence thus forming a second estimated impulse response,

and for interpolating between the first estimated impulse response and the second estimated impulse response; and,

digital filter means coupled to the storage means and having adjustable coefficients and including means for reading and equalizing the stored received samples, the digital filter means including means for adjusting the adjustable coefficients based on the first estimated impulse response and the second estimated impulse response, the adjustable coefficients being adjusted between samples.

5,293,402

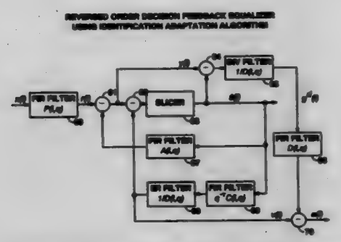
WIDEBAND DIGITAL EQUALIZERS FOR SUBSCRIBER LOOPS

Pedro M. Crespo, Bedminster, and Michal L. Honig, Montclair, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed May 2, 1991, Ser. No. 694,819

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—14 **4 Claims**



2. A decision feedback equalizer for receiving digital pulse transmission comprising

a finite impulse response filter in the feedback path of said equalizer,

an infinite impulse response filter in said feedback path in parallel with said finite impulse response filter,

said infinite impulse response filter having a zeros section and a poles section, and

adapting means utilizing a recursive least squares adaptation algorithm with exponentially decaying memory for adapting said infinite impulse response filter.

5,293,403

PULSE DISCHARGE LASER WITH PASSIVE ARC PROTECTION

Mark Bashkansky, Alexandria, and Bernard L. Wexler, Arlington, both of Va., assignors to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 953,605

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—87 **16 Claims**

1. A pulse discharge laser, comprising:

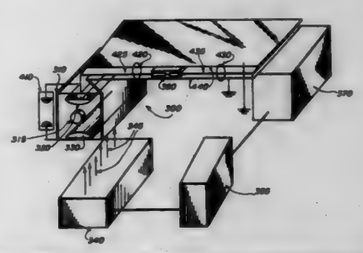
a preionizer generator to intermittently produce preionization energy;

a laser chamber enclosing a high pressure gas capable of preionization in response to the preionization energy;

a pair of laser electrodes disposed within said laser chamber;

a pulse forming network operatively connected to said pair of laser electrodes to intermittently supply a ramping voltage thereto; and

an electrode arc protector operatively connected to receive the ramping voltage for protecting the pulse discharge laser from damage by discharging itself if said preionizer



generator fails to produce proper preionization energy in said laser chamber.

5,293,404

THERMAL MEASURING AND TESTING SYSTEM HAVING SYNCHRONIZED SAMPLE TRANSPORTING MEANS

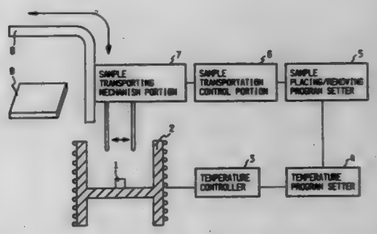
Haruo Takeda, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,060

Claims priority, application Japan, Nov. 29, 1990, 2-339874

Int. Cl.[5] H05B *1/02;* **G01N** *25/00*

U.S. Cl. 373—136 **4 Claims**



1. In a thermal measuring and testing system adapted to provide temperature data for analysis on a sample to be tested, the improvement wherein said thermal measuring and testing system comprises:

an electric furnace in which a sample is placed;

a temperature controller which controls the temperature of said electric furnace;

a temperature program setter which outputs temperature control information to said temperature controller, for setting serial steps which have start temperatures, finishing temperatures, heating or cooling rates and holding periods at finishing temperatures, and outputting synchronization signals at each step;

a sample placing/removing program setter connected for receiving said synchronization signals of each of said serial steps from said temperature program setter for outputting, in response to each synchronization signal, a selected one of a preset sample maintaining command for maintaining the sample in its existing position, a sample placing command for placing the sample in said electric furnace and a sample removing command for removing the sample from said electric furnace; and

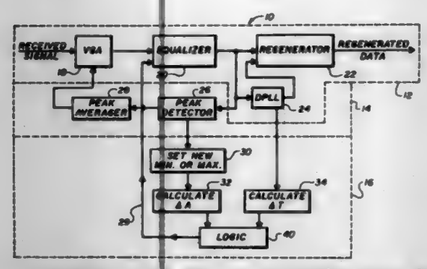
a sample transporter which holds the sample and places the sample in or removes the sample from said electric furnace according to a sample placing command or a sample removing command from said placing/removing program setter.

5,293,405

ADAPTIVE EQUALIZATION AND REGENERATION SYSTEM

John E. Gersbach, Burlington, Vt.; Charles R. Hoffman, Raleigh, and Ilya I. Novof, Durhan, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,488
Int. Cl.[5] H03H *7/30, 7/40;* H03K *5/159*
U.S. Cl. 375—14 18 Claims



1. An adaptive equalization and regeneration system for reconstructing a signal received in the form of a data pulse train which has been degraded with respect to amplitude and instantaneous frequency, comprising:

an equalizer for providing a variable gain function for said received signal and outputting an equalized signal, said equalizer gain function being varied in response to a voltage level applied to said equalizer to vary said equalizer gain function and increasing directly as a function of the frequency of said received signal, said voltage level varying the slope of said gain function, said gain function having a slope determined by a change in gain with respect to a change in said frequency;

digital phase lock logic for receiving said equalized signal and outputting timing information obtained from said equalized signal;

a regenerator for receiving said equalized signal and said timing information and matching said timing information with said equalized signal to reconstruct the received data essentially in its originally transmitted form; and

control circuitry connected to said equalizer for detecting variances in amplitude and instantaneous frequency in said equalized signal and for outputting said voltage level signal to said equalizer to vary said equalizer gain function in response to said detected variances, said control circuitry including control logic for (i) adding said variances in amplitude and instantaneous frequency in said equalized signal to provide a total signal variance, and (ii) determining the slope of said equalizer gain function at which said total signal variance is a minimum.

5,293,406

QUADRATURE AMPLITUDE MODULATOR WITH DISTORTION COMPENSATION

Hiroshi Suzaki, Kanagawa, Japan, assignor to Nippon Telegraph and Telephone Corporation and NTT Mobile Communications Network Inc., both of Tokyo, Japan

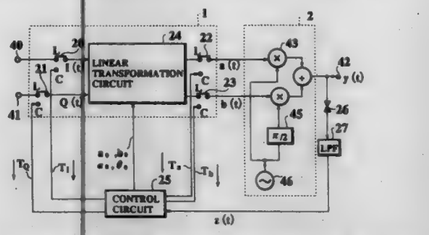
Filed Mar. 11, 1992, Ser. No. 849,595
Claims priority, application Japan, Mar. 11, 1991, 3-045250
Int. Cl.[5] H04L *27/04*
U.S. Cl. 375—59 26 Claims

26. A quadrature amplitude modulator, comprising:

linear transformation means for applying a linear transformation on in-phase and quadrature amplitude input signals to obtain in-phase and quadrature amplitude baseband signals;

quadrature modulation means for obtaining a modulated wave from the in-phase and quadrature amplitude baseband signals obtained by the linear transformation means; and

parameter generation means for determining appropriate values of linear transformation parameters of the linear transformation applied by the linear transformation means sequentially in such an order that the linear transformation



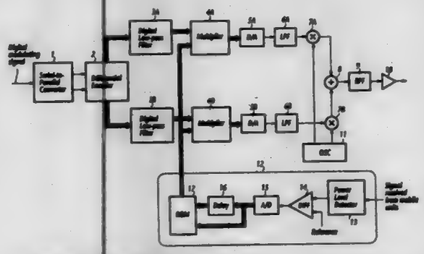
parameters for a DC off-set are determined first, then the linear transformation parameter for an amplitude balance is determined next while compensating distortion due to the DC off-set, and then the linear transformation parameter for an orthogonal phase relationship is determined while compensating distortions due to the DC off-set and the amplitude balance.

5,293,407

DIGITAL MODULATOR WITH DIGITAL POWER CONTROL CIRCUIT

Takayuki Shibata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,841
Claims priority, application Japan, Oct. 23, 1991, 3-275535
Int. Cl.[5] H04L *25/03*
U.S. Cl. 375—60 7 Claims



1. A digital modulator comprising:

a power control circuit for producing a digital power control signal;

first and second digital multipliers for multiplying digital signals having orthogonal phase relationships with said digital power control signal;

first and second digital-to-analog converters for converting digital output signals from said first and second multipliers into analog signals;

first and second low-pass filters connected to outputs of said digital-to-analog converters, respectively;

orthogonal modulator means for mixing orthogonal phase carriers with output signals from said first and second low-pass filters to produce first and second orthogonally modulated signals and combining the modulated signals to produce a transmit signal; and

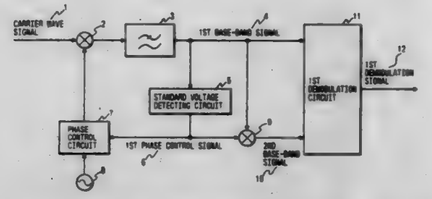
amplifier means for amplifying the transmit signal.

5,293,408

FSK DATA RECEIVING SYSTEM

Kazuaki Takahashi, Kawasaki; Makoto Hasegawa, Setagaya; Katsushi Yokozaki, Yokohama; Yasumi Imagawa; Hiroyuki Harada, both of Kanazawa; Masahiro Mimura, Suginami, and Yasuaki Namura, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 9, 1992, Ser. No. 942,183
Claims priority, application Japan, Oct. 14, 1991, 3-264464; Jun. 12, 1992, 4-153240; Jun. 26, 1992, 4-168834
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—102 49 Claims



1. A data receiving system comprising:

a carrier wave signal being modulated with a frequency deviation;

a local oscillator means generating a local oscillator signal having substantially the same frequency as said carrier wave signal;

a mixer means for producing a base-band signal by mixing said local oscillator signal and said carrier wave signal;

a standard voltage detecting means which detects a standard voltage of said base-band signal so as to change its output signal at the timing the standard voltage is detected;

a phase control means which is provided between said local oscillator means and said mixer means for shifting a phase of the local oscillator signal by an amount of 0° or 90° in response to the output signal from the standard voltage detecting means;

a first base-band mixer means for mixing said base-band signal and said output signal from said standard voltage detecting means; and

a first demodulation means for executing a demodulation on the basis of said base-band signal and an output signal from said first base-band mixer.

5,293,409

ELASTIC BUFFER

Anthony Doornenbal, Breakelen, and Paul G. Snaphaan, Amsterdam, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

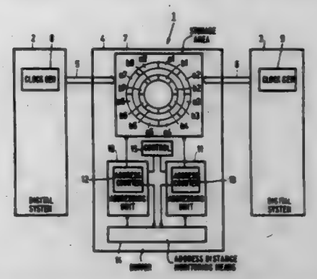
Filed Nov. 7, 1991, Ser. No. 789,224
Claims priority, application Netherlands, Nov. 8, 1990, 9002426
Int. Cl.[5] H04L *7/00, 25/36*
U.S. Cl. 375—106 6 Claims

1. Buffer for temporary storage of digital information which is transmitted between first and second digital systems, which systems are coupled to each other through the buffer, and which systems each comprise a respective clock generator, the buffer comprising

first and second rows of n successive memory locations, the locations of each row being cyclically addressable, where n is a number greater than one,

first and second addressing unit, each associated with a respective one of the systems, each addressing unit comprising a respective address counter, which addressing units are for addressing the memory locations, each addressing unit controlling access to the memory locations according to a respective time base determined by the respective clock generator of the respective one of the systems, the respective time bases being substantially the same, and

a control circuit, coupled to the addressing units, for controlling the addressing units so that the first system writes information in a memory location in the first row and



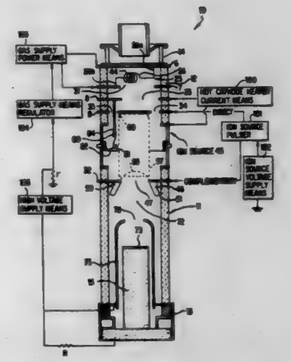
reads information from the corresponding memory location in the second row and the second system reads the information from the memory location in the first row and writes the information in the corresponding memory location in the second row.

5,293,410

NEUTRON GENERATOR

Felix K. Chen, Newtown, and Arthur D. Liberman, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 4, 1991, Ser. No. 754,842
Int. Cl.[5] G21B *1/00*
U.S. Cl. 376—108 39 Claims



1. A neutron generator comprising:

(i) an ion source comprising an anode and a dispenser cathode disposed in an ionizable gas environment;

(ii) means for heating said cathode so that the latter emits electrons which, when colliding with said gas atoms, generate ions;

(iii) a target;

(iv) an electrical gap to accelerate ions from said ion source towards said target upon impingement of said ions; and

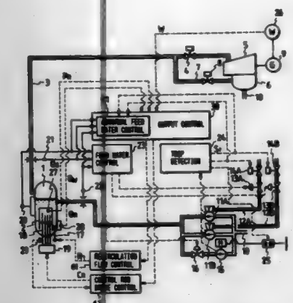
(v) control means for applying voltages to said anode, cathode and electrical gap, wherein a voltage applied to said anode by said control means is between 100 and 300 Volts to substantially reduce metal sputtering within the neutron generator.

5,293,411

NUCLEAR REACTOR POWER CONTROL METHOD AND DEVICE

Yoshiyuki Miyamoto; Fumio Mizuki, and Yoshie Takashima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 550,448, Jul. 10, 1990, abandoned, Continuation of Ser. No. 550,448, Jul. 10, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 935,655
Claims priority, application Japan, Jul. 14, 1989, 1-180349
Int. Cl.[5] G21C 7/32
U.S. Cl. 376—210 17 Claims



1. A boiling water type nuclear reactor power control method, comprising the steps of:

feeding water with a plurality of first pumps to the nuclear reactor;

generating a trip signal when one of the first pumps supplying feed water to the nuclear reactor is tripped; and

controlling the nuclear reactor power to be at a first value of at least 80 percent of rated output power prior to any of said first pumps being tripped and reducing the power in the nuclear reactor in response to the trip signal by first decreasing the speed of a recirculation pump providing core flow to a core of the nuclear reactor to provide a core flow corresponding to a nuclear reactor power of a second value less than said first value.

5,293,412

APPARATUS FOR DISMANTLING AN IRRADIATED COMPONENT OF A NUCLEAR REACTOR BY THE CUTTING OF ITS WALL

Paul Jacquier, Tassin-la-Demi-Lune, and Jean-Paul Guigon, Givry, both of France, assignors to Framatome, Courbevoie, France

Division of Ser. No. 721,699, Jun. 26, 1991, Pat. No. 5,239,564. This application Feb. 4, 1993, Ser. No. 977,716
Claims priority, application France, Jun. 27, 1990, 90 08117; Nov. 7, 1990, 90 13816
Int. Cl.[5] G21F 9/28
U.S. Cl. 376—260 9 Claims

1. An apparatus for dismantling an irradiated nuclear reactor component (1) having at least one tubular wall arranged with its axis in a vertical direction and fastened inside a vessel well (2) provided in a concrete structure (3), said apparatus comprising

(a) a supporting structure (11) resting on part of said concrete structure vertically in alignment with said vessel well (2);

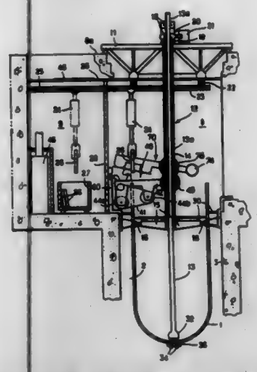
(b) a device for lifting said component (1), said device comprising

(i) a vertical mast (13);

(ii) means (32, 34, 36) for fastening a lower part of said mast (13) to a lower part of said component (1) in such a way that said mast (13) is arranged along said vertical axis of the tubular part of said component (1); and

(iii) means (20), resting on said supporting structure (11), for displacing said mast (13) in a vertical direction;

(c) cutting means (40, 70, 80, 90) arranged at an upper level of said vessel well (2);



(d) means (23, 24, 25) for handling cut blocks of irradiated material (26) of the wall of said component; and

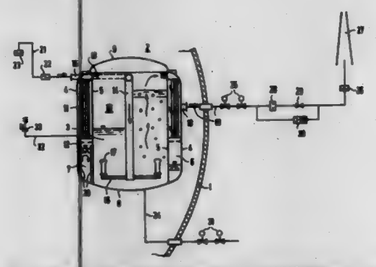
(e) means (27, 27') for storing said cut blocks, said means being arranged at an upper lateral position in relation to said vessel well (2).

5,293,413

SYSTEM FOR PRESSURE RELIEF OF THE CONTAINMENT OF A NUCLEAR POWER PLANT

Bernd Eckardt, Bruchköbel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 832,734, Feb. 7, 1992, Pat. No. 5,223,209. This application Mar. 22, 1993, Ser. No. 34,713
Claims priority, application European Pat. Off., Feb. 7, 1991, 91101714.3
Int. Cl.[5] G21C 9/00
U.S. Cl. 376—314 15 Claims



1. In a nuclear power plant having a containment, a system for pressure relief of the containment, comprising:

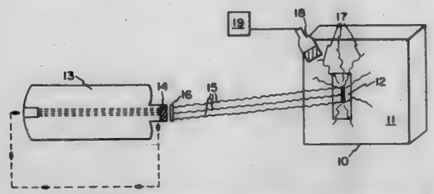
a filter disposed inside the containment, said filter having a container, at least part of said container having two walls defining a chamber between said walls, and a heat-conducting fluid at least partly filling said chamber during a heating period and being at least half evaporated after attainment of an operating temperature.

5,293,414

NUCLEAR RESONANCES IN ACTIVATION ANALYSIS, AND PARTICULARLY, ITS APPLICATION TO DETECTION OF NITROGEN BASED EXPLOSIVES IN LUGGAGE

Kamil V. Ettinger, and Joseph H. Brondo, both of East Hampton, N.Y., assignors to Scientific Innovations, Inc., Wainscott, N.Y.

Continuation-in-part of Ser. No. 349,326, May 8, 1989, Pat. No. 5,040,200. This application Mar. 4, 1991, Ser. No. 635,537
Int. Cl.[5] G01N 23/04
U.S. Cl. 378—88 28 Claims



1. An apparatus for scanning an object to determine the concentration of an element of interest in the object comprising:

means for producing primary gamma rays of required energy to be resonantly scattered by the element to be detected, said means for producing gamma rays includes an accelerator providing hydrogen or heavier ions directed at a target thereby producing excited atoms of the elements of interest which deexcite and provide a beam of gamma rays of the required energy to be resonantly scattered by the element of interest;

means for stabilizing the intensity and energy of said beam of gamma rays;

means for positioning said object within the beam of gamma rays;

means for detecting the resonantly scattered gamma rays and for producing output signals representative of the energy of said resonantly scattered gamma rays; and

means for processing and analyzing said output signal for determining the amount of the element of interest.

5,293,415

X-RAY FLUOROSCOPY SYSTEM FOR REDUCING DOSAGE EMPLOYING ITERATIVE POWER RATIO ESTIMATION

Richard I. Hartley; Aiman A. Abdel-Malek, and John J. Bloomer, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1992, Ser. No. 956,203
Int. Cl.[5] H05G 1/44
U.S. Cl. 378—108 15 Claims

1. A method of reduced dose X-ray imaging of a subject comprising the steps of:

a) selecting a minimum acceptable signal-to-noise ratio, $RATIO_{min}$ and maximum exposure per image, R_{max};

b) selecting an X-ray tube voltage U_i within an acceptable X-ray tube voltage range;

c) determining a photon count Q_i corresponding to the X-ray tube voltage U being less than a maximum allowable photon count Q_{max} consistent with limiting the subject's exposure to an acceptable level R_{max} and for creating an image having a signal-to-noise ratio at least as great as $RATIO_{min}$;

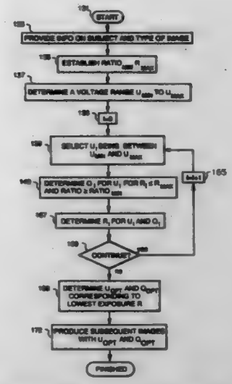
d) transmitting X-ray radiation through said subject by applying the X-ray tube voltage U_i and a current corresponding to photon count Q_i to an X-ray tube;

e) sensing the X-ray radiation which was transmitted through said subject;

f) constructing an X-ray image of said subject from the sensed X-ray radiation;

g) determining an exposure R per image;

h) repeating steps "b"-"g" for several selected X-ray tube voltages U_i;



i) setting U_{opt} and Q_{opt} to one of the selected X-ray tube voltages U_i and corresponding photon count Q_i respectively, which produce a minimum exposure R_i to said subject while creating an image with a signal-to-noise ratio greater than $RATIO_{min}$; and

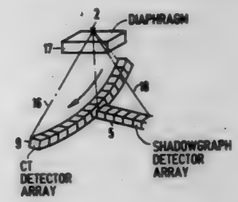
j) producing subsequent X-ray images with U_{opt} and Q_{opt}.

5,293,416

RADIOGRAPHY APPARATUS FOR PRODUCING X-RAY SHADOWGRAPHS

Manfred Pfeiler, and Paul Marhoff, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,055
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1992, 4200653
Int. Cl.[5] G21K 5/10
U.S. Cl. 378—146 3 Claims



1. A radiography apparatus for producing x-ray shadowgraphs comprising:

an x-ray radiator having a focus from which an x-ray beam emanates;

a detector array formed by a line of detector elements; and

means for moving said x-ray radiator while said detector array remains stationary for transirradiating a measurement field, disposed between said x-ray radiator and said detector array, from different directions with said x-ray beam with said x-ray beam being incident on said detector array after passing through said measuring field from said different directions, said detector array generating electrical signals corresponding to the x-rays incident thereon;

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means for constructing an x-ray shadowgraph from said electrical signals;

a computer tomography detector array curved around said focus of said x-ray radiator and forming, in combination with said x-ray radiator, a computer tomography measuring unit movable by said means for moving said x-ray radiator around a system axis, said detector array for producing x-ray shadowgraphs being disposed perpendicularly relative to said computer tomography detector array, said computer tomography detector array generating electrical signals corresponding to x-rays from said x-ray radiator incident thereon; and

means for generating a computer tomogram from said electrical signals from said computer tomography detector array.

5,293,417

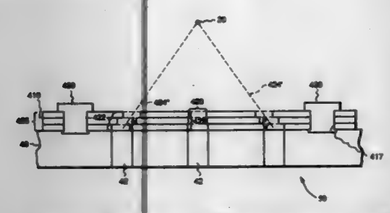
X-RAY COLLIMATOR

Ching-Yeu Wei; Robert F. Kwasnick, and George E. Possin, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 802,789, Dec. 6, 1991, Pat. No. 5,231,655. This application Mar. 15, 1993, Ser. No. 30,909

Int. Cl.[5] G21K *1/02*

U.S. Cl. 378—147 **5 Claims**



1. A method of fabricating a collimator for use in a radiation imager device having a point radiation source, comprising:

selectively removing material from each of a plurality of collimator plates to form passages therein corresponding to a respective selected pattern, each of said selected patterns corresponding to the arrangement of an array of radiation detector elements adjoining said collimator in the assembled imager device; and

stacking said collimator plates together to form a collimator body, said collimator plates being positioned so that passages in each of said collimator plates are disposed in spaced relation to respective passages in adjoining collimator plates to form channels through said collimator body, the longitudinal axis of each of said channels having a respective selected orientation angle;

each of said collimator plates comprising substantially only a radiation absorbent material selected to absorb radiation of the wavelength distribution emitted by said radiation point source and the number of collimator plates being selected to provide a predetermined overall thickness of radiation absorptive material so as to absorb substantially all radiation striking the collimator from said radiation point source;

the step of selectively removing material further comprising the steps of forming a respective mask corresponding to each of said plates, said mask each having a respective pattern of openings therein corresponding to a pattern of radiation detector elements in the radiation detector array to which said collimator is to be mated, and then etching each said collimator plates through its respective mask to form said passages therein.

5,293,418

MOBILE TERMINAL EQUIPMENT CAPABLE OF STORING CALLED STATE

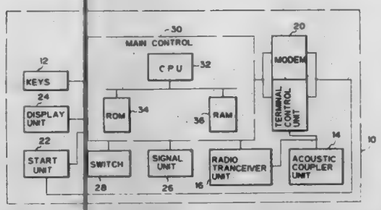
Yasurou Fukawa, Hiratuka, Japan, assignor to ANY Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1991, Ser. No. 716,119

Claims priority, application Japan, Jun. 20, 1990, 2-159857; Apr. 16, 1991, 3-109651

Int. Cl.[5] H04M *11/00, 1/64*

U.S. Cl. 379—58 **24 Claims**



1. Mobile terminal equipment communicable with a public switched network, which includes a stationary radio station for establishing a radio channel to said equipment and switches information including a message to said equipment on the radio channel, said mobile terminal equipment comprising:

receiving means for receiving the information over the radio channel from the radio station;

storing means for storing the information received;

display means for visually displaying the message received;

control means interconnected to said receiving means, said storing means and said display means for controlling, in response to said receiving means receiving the information, said storing means to store the information and said display means to display the message included in the received information;

indicator means interconnected to said control means for indicating that the information has been received from the radio station in response to said receiving means receiving the information; and

first input means for inputting a command for disabling said indicator means;

said control means controlling, in response to the command, said indicator means to inhibit said indicator means from indicating that the information has been received from the radio station, and controlling, in response to cancelling the command from said first input means, said storing means to read out the message from said storing means and said display means to display the message thus read out.

5,293,419

SIMULTANEOUS VOICE-CALL SYSTEM FOR CORDLESS TELEPHONE

Masahiro Hirano, Saitama, Japan, assignor to Pioneer Electronic Corp., Tokyo and Pioneer Communications Corp., Saitama, both of Japan

Filed Apr. 29, 1992, Ser. No. 875,422

Claims priority, application Japan, May 20, 1991, 3-114512

Int. Cl.[5] H04M *11/00*; H04Q *7/00*

U.S. Cl. 379—62 **1 Claim**

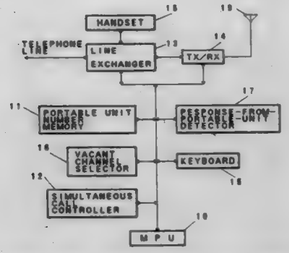
1. A simultaneous voice-call system for cordless telephone where communication between a base unit and a plurality of portable units is established through the use of a radio communication channel, said base unit comprising:

a radio control channel and a plurality of radio talk-channels;

a memory for storing portable-unit-identifying numbers, each of which being preassigned to each of said plurality of portable units;

a first controller responsive to a simultaneous call command from a user to establish radio talk-channel between said

plurality of portable units by transmitting through said radio control channel portable-unit-identifying numbers stored in said memory, a vacant-talk-channel number, and a simultaneous call code to said plurality of portable units, said talk-channel being a radio communication channel which is not currently used by other cordless telephones and through which a message is transmitted from the base unit to said plurality of portable units at the same time, said simultaneous call code indicating that said message is transmitted to said plurality of portable units at the same time: and each of said plurality of portable units comprising;



a local portable-unit-identifying number preassigned thereto; and

a second controller for receiving through said radio control channel from said base unit said portable-unit-identifying number, radio talk-channel number, and simultaneous call code, said second controller switching the transmitter/-receiver to said talk-channel if said portable-unit-identifying number transmitted from the base unit is the same as the preassigned local portable-unit-identifying number, and said second controller connecting a receiver output of said transmitter/receiver to a speaker to thereby receive said message from the base unit.

5,293,420

RING TRIP CIRCUIT

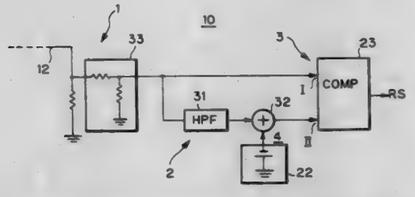
Takashi Nagato, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1993, Ser. No. 34,499

Claims priority, application Japan, Mar. 19, 1992, 4-063917

Int. Cl.[5] H04M *3/00*

U.S. Cl. 379—382 **10 Claims**



1. A ring trip circuit comprising:

a first means for picking up a signal that is proportional to a ringing tone signal transferred on a subscriber line;

a second means for extracting an ac component from the thus picked-up signal; and

a third means for receiving both the signals from said first and second means and comparing, in level, these two signals to produce a ringer stop signal if the level difference therebetween becomes larger than a setpoint value.

5,293,421

SUMMING AMPLIFIER WITH A COMPLEX WEIGHTING FACTOR AND INTERFACE INCLUDING SUCH A SUMMING AMPLIFIER

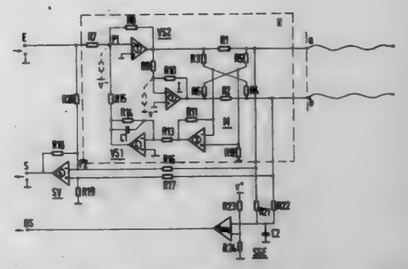
Hans-Jürgen Zanzig, Weil der Stadt, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Dec. 20, 1990, Ser. No. 632,963

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942757

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—399 **4 Claims**



1. Interface between a bidirectionally operated two-wire line, a unidirectionally operated receive line and a unidirectionally operated transmit line, said interface comprising

a first branch from the receive line to the two-wire line;

a second branch from the two-wire line to the transmit line;

a third branch from the receive line to the transmit line; and

a network terminating the two-wire line and simulating a complex impedance consisting of a resistor in series with a complex partial impedance, said network further comprising

a two-stage amplifier for producing a first output current with an associated gain relative to an input voltage, said associated gain being equal to a real multiple of said complex partial impedance, said two-stage amplifier further comprising

a first operational amplifier having an output and an inverting input,

a purely ohmic feedback resistor directly coupled between the output and the inverting input of the first operational amplifier such that no capacitive or inductive components are coupled between the output and the inverting input of the first operational amplifier,

a purely ohmic first dropping resistor directly coupled between the inverting input and a first circuit point coupled to the first signal voltage such that no capacitive or inductive components are coupled between the inverting input and the first circuit point,

a purely ohmic second dropping resistor directly coupled between the inverting input of the first operational amplifier and a second circuit point such that no capacitive or inductive components are coupled between the inverting input of the first operational amplifier and the second circuit point,

a purely ohmic third dropping resistor directly coupled between a third circuit point and a fourth circuit point coupled to the second signal voltage such that no capacitive or inductive components are coupled between the third circuit point and the fourth circuit point,

an additional operational amplifier also having an output and an inverting input, said additional operational amplifier being directly coupled between said second and third circuit points, and

a complex feedback impedance directly coupled be-

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tween the output and the inverting input of the additional operational amplifier,

wherein said complex weighting factor is established only by said feedback resistor, said first dropping resistor, said second dropping resistor, said third dropping resistor, and said complex feedback impedance;

first output means comprising a first current-sensing resistor for coupling said first output current to a first terminal of said two-wire line such that current flowing through said first current-sensing resistor is representative of current flowing through the network; and

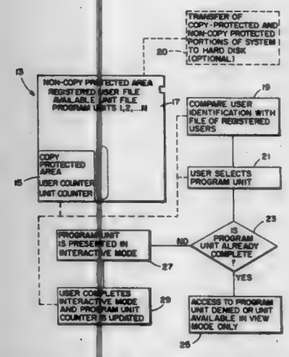
measuring means responsive to the current flowing through said first current-sensing resistor for deriving said input voltage.

5,293,422

USAGE CONTROL SYSTEM FOR COMPUTER SOFTWARE

Ronald Loiacono, Salinas, Calif., assignor to Dynatek, Inc., Salinas, Calif.

Filed Sep. 23, 1992, Ser. No. 950,248
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **21 Claims**



1. A method for controlling usage of a software program on a personal computer, said program comprising a set of units, each unit being instructions for an interactive activity between the program and a user which is to be completed separately from the completion of the other units in the set, said method comprising:

(a) associating a label with each of the units;

(b) recording a list of the labels on a recording medium, said list (i) being modifiable by the software program to identify those units which have been completed by the user, and (ii) being stored in a copy-protected form;

(c) detecting the selection of a unit to be performed;

(d) comparing the selection of the unit to be performed with the recorded list of labels to determine if the selected unit has been completed;

(e) denying access to the selected unit if it has been completed or allowing access to the selected unit if it has not been completed; and

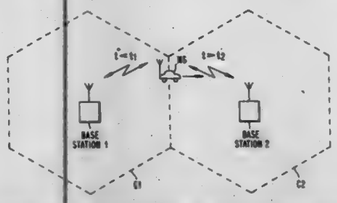
(f) detecting the act of completion of a unit by the user and modifying the list of labels to identify the completion of said unit.

5,293,423

SYNCHRONIZING METHOD IN A MOBILE RADIO SYSTEM

Jan E. Å. S. Dahlin, Järfälla; Walter Ghisler, Upplands Väsby, and Bengt Y. Persson, Djursholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 578,572, Sep. 7, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,244
Claims priority, application Sweden, Sep. 12, 1989, 8902994-6
Int. Cl.[5] H04L *9/12*
U.S. Cl. 380—48 **10 Claims**



1. A method for reestablishing the ciphering of information in a mobile radio system which lacks a global time reference, wherein the data messages and the signalling messages between a first base station and a mobile station are transmitted in frames having time slots and said messages are ciphered by combining said messages with a pseudorandom bit stream, wherein upon handing over the communication of the mobile from the first base station to a second base station ciphering is interrupted for a given period of time during which synchronization of the pseudorandom bit stream with said messages between the mobile and the first base station is lost due to the absence of said global time reference and frame synchronization is established between the mobile and the second base station, comprising the steps of:

generating a first signal which discloses a time point counted in numbers of frame intervals which shall pass until said ciphering is recommenced;

subsequent to completing the hand-over of said messages, transmitting said first signal from the second base station to the mobile station; and

recommencing said ciphering upon occurrence of said time point.

5,293,424

SECURE MEMORY CARD

Thomas O. Holtey, Newton, Mass., and Peter J. Wilson, Leander, Tex., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 14, 1992, Ser. No. 960,748
Int. Cl.[5] H04K *1/00*; G06K *5/00*; H04L *9/00*
U.S. Cl. 380—23 **26 Claims**

1. A secure memory card for use with a host portable computer, said memory card comprising:

a microprocessor connected for transmitting and receiving address, data and control information to and from said host computer and said microprocessor including:

an addressable non-volatile memory for storing information including a number of key values and configuration information;

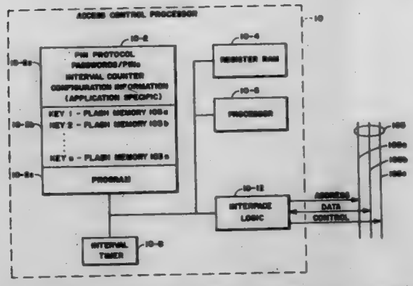
an internal bus connected to said microprocessor for transmitting address, data and control information defining memory operations to be performed by said card; and,

at least one non-volatile addressable memory being connected to said internal bus in common with said microprocessor for receiving said address, data and control information, said memory including a non-volatile memory section and a security control section, said memory section containing a memory array organized into a number of blocks, each block having a plurality of addressable locations and control logic means for performing said

memory operations and said security control section being connected to said internal bus, to said control logic means and to said memory array, said security control section including:

a number of non-volatile and volatile storage devices for storing at least one of said key values and configuration information associated with said blocks; and,

access control logic means connected to said control logic means and to said storage devices, said access control



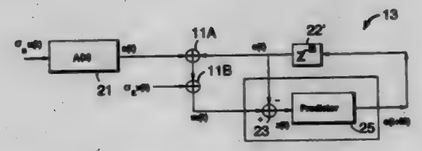
logic means enabling reading of information stored in addressed ones of said blocks of said memory array as specified by said configuration information only after said microprocessor has determined that a predetermined authentication procedure has been performed with said host computer and has enabled said access control logic means for allowing reading of said information from said memory array according to said configuration information.

5,293,425

ACTIVE NOISE REDUCING

Alan V. Oppenheim, Lexington, Mass.; Ehud Weinstein, Rumat-Gan, Israel; Kambiz C. Zangi, Cambridge, Mass., and Meir Feder, Herzilia, Israel, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 3, 1991, Ser. No. 802,121
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **13 Claims**



1. Active noise reducing apparatus comprising,

an input transducer that provides a transduced input signal,

an adaptive filter having an input coupled to said input transducer,

an output transducer coupled to the output of said adaptive filter that transducer the signal on said adaptive filter output to provide a transduced signal to create a noise reducing field at said input transducer,

said apparatus being free of acoustic feedback between said output transducer and said input transducer that supports oscillatory signals in said apparatus that impairs active noise reduction,

said apparatus being free of any other input transducer capble of providing a transduced input signal to said adaptive filter,

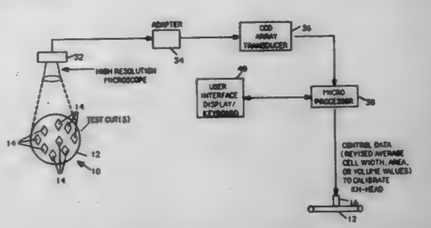
wherein said adaptive filter processes the signal on its input in accordance with a predictive algorithm so that said noise reducing field is of nearly equal magnitude and opposite phase relative to the noise field then at said input transducer in the absence of said noise reducing field.

5,293,426

PRINTING CYLINDER ENGRAVER CALIBRATION SYSTEM AND METHOD

Gerald Wouch, Lisle, and Gary Procknow, Chicago, both of Ill., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed May 25, 1990, Ser. No. 529,108
Int. Cl.[5] B41C *1/00*
U.S. Cl. 382—1 **24 Claims**



1. A method for calibrating an engraving mechanism of an engraver used to engrave a printing member, comprising:

cutting a plurality of cells in at least one test cut in the printing member;

making an optical image of the plurality of cells in the at least one test cut;

transducing the optical image into electrical signals;

digitally processing the electrical signals representing the optical image of the plurality of cells in the test cut to measure at least one morphological characteristic of each of the imaged cells cut while the engraver was operating at equilibrium conditions;

using said measured morphological characteristics to calculate a morphological parameter value for said test cut;

comparing the calculated morphological parameter value with a pre-determined morphological parameter value; and

adjusting the engraving mechanism of the engraver in accordance with any variance between said calculated morphological parameter value and said pre-determined morphological parameter value.

5,293,427

EYE POSITION DETECTING SYSTEM AND METHOD THEREFOR

Hiroshi Ueno, Yokohama, and Kazuhiko Yoshida, Yokosuka, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 11, 1991, Ser. No. 805,143
Claims priority, application Japan, Dec. 14, 1990, 2-402512
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **9 Claims**

1. An eye position detecting system for detecting an eye position in a face image taken by a camera, comprising:

(a) inputting means for inputting face image signals as light density gradation data;

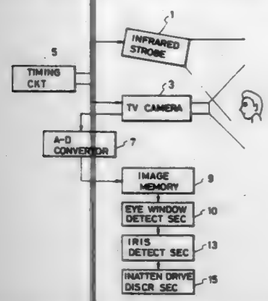
(b) binarizing means for binarizing the inputted face image signals;

(c) deciding means for obtaining a one eye detection area on a dark side in the face image when the inputted light density gradation data are not uniform on the right and left sides of the face image behond a predetermined density level, said deciding means having:

(1) discriminating means for discriminating density change points in a vertical direction on the basis of the binarized image signals to check whether the light density is not uniform on the right and left sides in the face image;

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(2) determining means for determining a threshold value only on the dark side of the face image; and



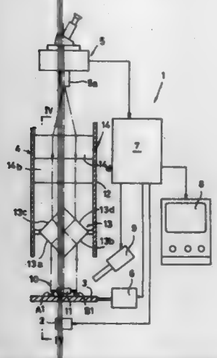
(3) setting means for setting only one eye detection area on the dark side in the face image when the number of the discriminated density change points exceeds the determined threshold value.

5,293,428

OPTICAL APPARATUS FOR USE IN IMAGE RECOGNITION

Yasukazu Kondou, and Hiroaki Hikita, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 28, 1992, Ser. No. 874,801
Claims priority, application Japan, May 8, 1991, 3-102644
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **14 Claims**



1. An image recognition apparatus comprising:

a support for holding an inspection object, the object having a reference line,

an image pickup unit, spaced from the support, for detecting an image of the inspection object,

means for analyzing said image to derive information about the object, the analyzing means being connected to the image pickup unit, and

means for alternating different image portions of the object, the alternating means being arranged in an optical path between the support and the image pickup unit, the alternating means including a quadratic prism having a longitudinal axis substantially parallel to the support and aligned with and parallel to the reference line, the quadratic prism having two incident surfaces directed toward the support for allowing separate entry of two different image portions of the inspection object, the two different image portions originating from opposite sides of the reference line, the quadratic prism further having two exit surfaces directed away from the support for allowing exit of the two different image portions which have been positionally alternated with each other within the quadratic prism,

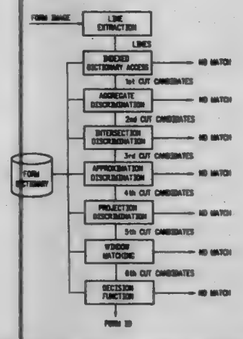
the quadratic prism comprising means for alternating both of said image portions with respect to the reference line, wherein the image pickup unit comprises means for detecting a composite image which comprises said two image portions which have been positionally alternated with respect to the reference line.

5,293,429

SYSTEM AND METHOD FOR AUTOMATICALLY CLASSIFYING HETEROGENEOUS BUSINESS FORMS

Arturo Pizano, Milpitas; May-Inn Tan, Saratoga, both of Calif., and Naoto Gambo, Tanashi, Japan, assignors to Ricoh Company, Ltd., Japan and Ricoh Corporation, San Clara, Calif.

Filed Aug. 6, 1991, Ser. No. 741,878
Int. Cl.[5] G06K *9/46*
U.S. Cl. 382—24 **11 Claims**



1. A business form recognition system comprising

means for storing template features of one or more business forms,

means for scanning one or more actual business forms to form scanned data representative thereof, including means for scanning said actual business forms on a line by line basis to form black and white pixel data representative thereof and means for identifying neighboring ones of said black pixels to identify connected components having X and Y components,

pattern recognition means for recognizing said scanned data, wherein said pattern recognition means include means for recognizing only vertical and horizontal line patterns on said scanned business forms,

matching means for matching the recognized data with a plurality of stored forms to provide a determination of the type of the actual business forms,

means for determining if said connected component forms elongated line segments,

means for determining whether two or more contiguous segments are part of the same line on said business form and means for merging said segments considered to be part of the same line,

post-processing means for eliminating noise or skewing information, and

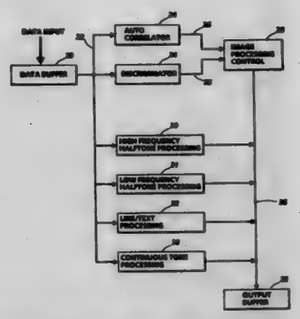
indexed dictionary access means for adding the length of all lines found in the scanned image to form a key value.

5,293,430

AUTOMATIC IMAGE SEGMENTATION USING LOCAL AREA MAXIMUM AND MINIMUM IMAGE SIGNALS

Jeng-Nan Shiau, Webster, and Barbara L. Farrell, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 722,568, Jun. 29, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 4,479
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—42 **21 Claims**



1. A method of processing image pixels in an electronic document image to determine the presence of halftone images, for optimum image processing thereof preparatory to printing the document, the steps comprising:

at an document image data buffer, receiving a document image defined by a plurality of pixels, each pixel a signal representing an optical density of the document at a discrete location therewithin and storing it in said document image data buffer;

with a comparison circuit operatively connected to said document image data buffer and having as inputs each pixel in a predetermined neighborhood thereof comparing said pixel to a group of neighboring pixels to determine whether it is a local area minimum or maximum and producing a local area minimum or maximum signal indicative thereof;

with a signal generator circuit responsive to said minimum or maximum signal, generating two image signals, a first image signal representing local area maximums of the image, and a second image signal representing local area minimums of the image;

with an averaging circuit having as input the image defined by a plurality of pixels, measuring optical density of the image over a block of T pixels with respect to a reference, and producing an average optical density signal indicative of the measured optical density;

with an auto correlation circuit having as inputs the first and second image signal, and operating on in response to the average optical density signal, auto correlating the first image signal if the average optical density signal is relatively high with respect to the reference, or auto correlating the second image signal if the average optical density signal is relatively low with respect to the reference, the auto correlation function evaluated over the block of T pixels, and for each of a plurality of offset values selected as corresponding to probable halftone frequencies;

from the auto correlated function, detecting for each offset value for which the auto correlation function was evaluated, whether the result of the evaluation is a zero or non-zero value, the presence of a non-zero value indicating the presence of halftone images at the frequency corresponding to the offset value; and

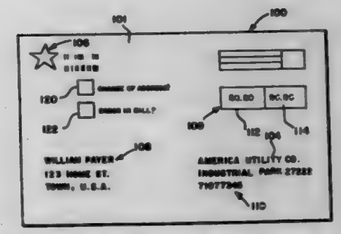
with an output signal generator, directing an output signal indicative of the presences of halftone images at the frequency corresponding to the offset value to an image processing control, to control the manner in which image pixels are processed when halftone images are detected.

5,293,431

SYSTEM FOR ORIENTING DOCUMENTS IN THE AUTOMATED PROCESSING OF BULK MAIL AND THE LIKE

George L. Hayduchok, Mantua, and William L. Heins, III, Medford, N.J., assignors to Opex Corporation, Moorestown, N.J.

Filed Sep. 6, 1991, Ser. No. 756,930
Int. Cl.[5] G06K *9/32*
U.S. Cl. 382—46 **4 Claims**
MICROFICHE APPENDIX INCLUDED
(4 Microfiche, 343 Pages)



1. An apparatus for determining the orientation of a document, comprising:

means for optionally inspecting the document, and for providing electrical signals representing an image acquired from the document;

means for processing the electrical signals, including means for comparing selected portions of the acquired image with a reference standard, and means for identifying the orientation of the document responsive to the comparing means; and

means for automatically selecting the portions of the acquired image which are to be compared with the reference standard, including means for correlating each of a plurality of defined regions of the acquired image with a corresponding mirror-image region, means for comparing relative densities of any markings located in each of the defined regions with any markings located in the corresponding mirror-image region, and means for identifying a selected number of compared regions and mirror-image regions having the greatest relative densities.

5,293,432

DOCUMENT IMAGE SCANNER WITH VARIABLE RESOLUTION WINDOWS

Karl E. Gonser, Camarillo; Curtis S. Averill, Thousand Oaks; Wiley B. Gilreath, Simi Valley, and Mark S. Laughery, Moorpark, all of Calif., assignors to Terminal Data Corporation, Moorpark, Calif.

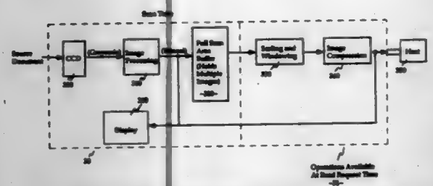
Filed Jun. 30, 1992, Ser. No. 906,706
Int. Cl.[5] G06K *9/42*
U.S. Cl. 382—47 **21 Claims**

1. A document image scanner for scanning a source document to generate digitized image data and reading said digitized image data, comprising:

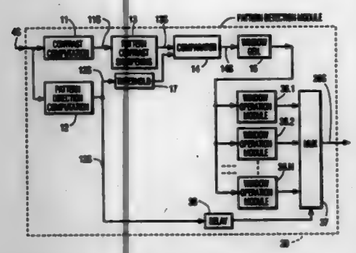
sensor means for scanning said source document to generate said digitized image data in a first resolution, said first resolution having a first vertical and first horizontal resolution;

memory means coupled to said sensor means for storing said digitized image data in said first resolution, said digitized image data being represented by a plurality of lines with each line having a predetermined number of pixels in said memory means;

input shifting means coupled to said memory means for receiving a first number of pixels per line of said digitized image data from said memory means;
vertical scaling means coupled to said memory means for changing said first vertical resolution to a second vertical resolution as said digitized image data is transferred to said input shifting means from said memory means;
output shifting means coupled to said input shifting means for receiving a second number of pixels per line of said digitized image data from said input shifting means, the ratio of said second number to said first number being the scaling factor;
horizontal scaling means coupled to said memory means for changing said first horizontal resolution to a second horizontal resolution as said digitized image data is transferred to said output shifting means from said input shifting means, said horizontal scaling means causing said output shifting means to receive said second number of pixels per line, said second number being a function of said second horizontal resolution; and
edge retention means coupled to said horizontal scaling means and to said input shifting means for preserving an edge transition between pixels as they are transferred to said output shifting means when said second resolution is less than said first resolution, wherein said vertical scaling means and said horizontal scaling means may be enabled multiple times using a different second vertical resolution and a different second horizontal resolution after a single scan of said source document.

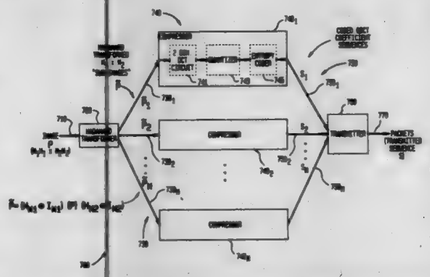


5,293,433
METHOD AND DEVICE FOR DETECTING PATTERNS ADAPTED AUTOMATICALLY FOR THE LEVEL OF NOISE
Johannes A. C. Bernsen, Eindhoven, Netherlands, and Seiji Kashioka, Tokyo, Japan, assignors to U.S. Philips Corporation, New York, N.Y. and Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 677,705, Mar. 29, 1991, Pat. No. 5,193,127. This application Nov. 25, 1992, Ser. No. 981,969
Claims priority, application Japan, Mar. 30, 1990, 2-80745
Int. Cl.[5] G06K *9/40*
U.S. Cl. 382—54 **5 Claims**



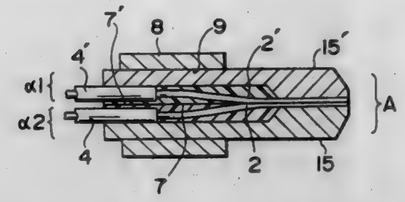
1. A method for distinguishing noise responses from true pattern responses comprising the steps of
a) receiving an input signal;
b) using first and second pattern detectors to generate first and second pattern contrast signals, the first and second pattern detectors having respective first and second edge extraction operators operating on input areas, the input areas having different input widths;
c) comparing the first and second pattern contrast signals at a candidate location; and
d) distinguishing the candidate location as containing a true pattern response based on a result of said comparing step.

5,293,434
TECHNIQUE FOR USE IN A TRANSFORM CODER FOR IMPARTING ROBUSTNESS TO COMPRESSED IMAGE DATA THROUGH USE OF GLOBAL BLOCK TRANSFORMATIONS
Ephraim Feig, Briarcliff Manor; William B. Pennebaker, Jr., Carmel, and Keith S. Pennington, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 10, 1991, Ser. No. 683,399
Int. Cl.[5] G06K *9/36*; G06F *15/00*
U.S. Cl. 382—56 **12 Claims**



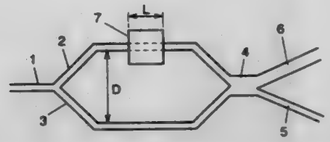
1. Apparatus for imparting robustness to image data against localized data loss comprising:
a first transformer, responsive to an incoming matrix of pixel values representing an image, for globally transforming said matrix of pixel values through a block transformation so as to produce a plurality of blocks of transformed pixel values such that each transformed pixel value in each of said blocks of transformed pixel values is a pre-defined combination of all the pixel values in said incoming matrix;
a second transformer for transforming each one of the blocks of transformed pixel values into a corresponding one of a plurality of blocks of transform coefficients;
a quantizer for quantizing each one of said plurality of blocks of transform coefficients to yield a corresponding one of a plurality of blocks of quantized transform coefficients;
a coder for compressively coding said plurality of blocks of quantized transform coefficients into corresponding symbols; and
means for applying said symbols in a pre-defined sequence to a channel; and
wherein as a result of globally transforming said matrix of pixel values an image represented by said symbols possesses increased robustness against localized data loss occasioned by a channel imperfection.

5,293,435
LIGHT DIVERGING/CONVERGING DEVICE, STRUCTURAL ELEMENT FOR SAID DEVICE AND METHOD OF PRODUCING SAID ELEMENT
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan
Filed Jun. 9, 1992, Ser. No. 895,700
Claims priority, application Japan, Dec. 27, 1991, 3-360532
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—85 **24 Claims**



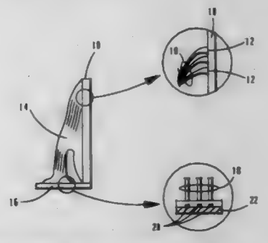
1. The method of making a structural element for a light diverging/converging device in the form of a double circuit diverging ferrule, said structural element including first and second semicylindrical ferrule elements of the same configuration, each ferrule element having an optical fiber secured therein by an adhesive and being in a close contact face-to-face relationship along a central axis plane, and a cylindrical bushing through which said first and second ferrule elements are press-fit to build an integral structure while maintaining the face-to-face relationship therebetween, wherein each of said first and second ferrule elements is prepared by the steps of
inserting an optical fiber having a sheath removed therefrom through a central fine hole of a cylindrical ferrule member having a stepped hole formed therein;
filling said stepped hole with an adhesive while locating said optical fiber at an offset position away from the central axis plane;
grinding the foremost end of said cylindrical ferrule member at a right angle relative to the central axis plane; and
grinding said cylindrical ferrule member to reach the central axis plane until one half of the cylindrical ferrule member is removed.

5,293,436
INTEGRATED OPTICAL DEVICE ADJUSTABLE AS A POLARIZATION SPLITTER BY MEANS OF A MACH-ZEHNDER INTERFEROMETER
Martinus B. J. Diemeer, Zoetermeer, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Filed Oct. 20, 1992, Ser. No. 963,842
Claims priority, application Netherlands, Nov. 1, 1991, 9101835
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—11 **7 Claims**



1. Passive optical polarisation splitting device comprising an input waveguide,
a Mach-Zehnder interferometer connected to the input waveguide, the interferometer having two monomodal waveguide branches which diverge from each other to beyond their mutual interaction spacing and which subsequently merge again,
a waveguiding output section connected to the interferometer, the output section including a bimodal waveguiding coupling section which branches asymmetrically into a first and second outgoing monomodal waveguide, and
a region of glassy polable material incorporated, at least locally, in one of said two monomodal waveguide branches of the Mach-Zehnder interferometer outside said interaction spacing, the glassy polable material in said region having a pre-adjusted degree of poling for providing an optical phase difference between the monomodal waveguide branches of the interferometer, said phase difference being required for polarisation splitting in the waveguide output section.

5,293,437
FIBER OPTIC DISPLAY WITH DIRECT DRIVEN OPTICAL FIBERS
Michael A. Nixon, Fuquay-Varina, N.C., assignor to Visual Optics, Inc., Frisco, Tex.
Filed Jun. 3, 1992, Ser. No. 893,222
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—115 **16 Claims**



1. An image transfer device, comprising:
a two dimensional display surface defining a two dimensional array of pixels;
a plurality of optical fibers having first and second ends with said second ends arranged in a two dimensional array corresponding to said two dimensional array of pixels on said display, each of said second ends abutting against a corresponding one of said pixels on said display surface, and said first ends arranged in a two dimensional array;
a plurality of light emitters arranged in a two dimensional array on a monolithic planar substrate, each of said light emitters associated with a corresponding one of said first ends of said optical fibers and each of said light emitters operable to emit light at a predetermined wavelength into said associated first end of said optical fibers, each of said light emitters operable to be selectively turned off or on and have the light intensity thereof varied when on; and
a pattern generator for controlling each of said light emitters to be on or off and also for controlling the light intensity thereof when on, said pattern generator determining which of said light emitters is on in order to emit light in accordance with a predetermined pattern and also controlling the intensity of the emitted light in accordance with said predetermined pattern.

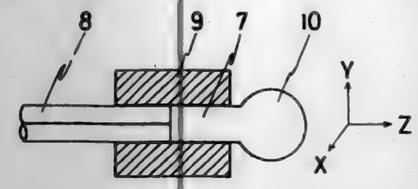
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,438

MICROLENSED OPTICAL TERMINALS AND OPTICAL SYSTEM EQUIPPED THEREWITH, AND METHODS FOR THEIR MANUFACTURE, ESPECIALLY AN OPTICAL COUPLING METHOD AND OPTICAL COUPLER FOR USE THEREWITH

Yoshihiro Konno, Saitama; Masato Tatenuma; Hiroshi Kume, both of Tokyo, and Yukihiko Mikami, Aomori, all of Japan, assignors to Namiki Precision Jewel Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,565
Claims priority, application Japan, Sep. 21, 1991, 3-270266; Apr. 6, 1992, 4-113051
Int. Cl.[5] G02B 6/32
U.S. Cl. 385—35 17 Claims



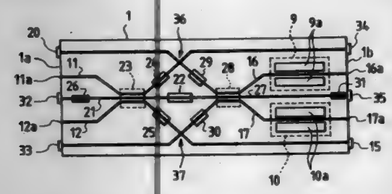
13. A microlensed optical fiber terminal configuration comprised of a first optical fiber, a second optical fiber, said second optical fiber being a non-clad constant refractive index fiber having the same outer diameter as the first optical fiber, beam entry and beam converging spherical lens portions and a single refractive index of equivalent value to that of a core of the first optical fiber, said first optical fiber being spliced by a fusion technique to the second optical fiber at a beam entrance side thereof; wherein said beam entry and beam converging spherical lens portions have a combined length which is sufficient for the flux of a Gaussian distributed-beam, propagated from the first optical fiber, to expand to at least 80 μm at an exit surface of the spherical lens portion; and wherein the surface of the spherical lens portion has a radius of curvature greater than 200 μm; said spherical lens portion comprises a fused, integral microlens which is configured to cause a beam exiting said exit surface to converge at a focal point which is nearer to the lens than would be required by a collimator.

5,293,439

INTEGRATED OPTICAL CIRCUIT FOR FIBER-OPTICS GYROSCOPES

Hiroshi Mori, and Akio Watanabe, both of Tokyo, Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 973,004
Claims priority, application Japan, Nov. 12, 1991, 3-295877; Nov. 26, 1991, 3-311021
Int. Cl.[5] G02B 6/12
U.S. Cl. 385—41 8 Claims



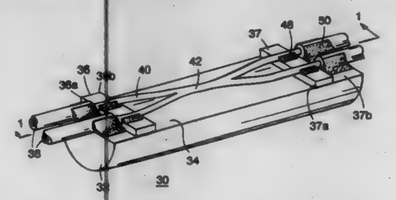
6. An integrated optical circuit for fiber-optics gyroscopes formed on a substrate made of $LiNbO_3$ or $LiTaO_3$ wherein:
two pairs of waveguide conduits are formed in positional relationship substantially opposed to each other so that each pair of waveguide conduits has a pair of input/output ports on each of end surfaces of said substrate opposed to each other;
a 3×3 type directional coupler is disposed between the two waveguide conduits forming each of said pairs of waveguide conduits;
a middle waveguide conduit of said 3×3 type directional coupler is formed by connecting middle input/output ports of said 3×3 type directional couplers to each other; and
the other conduits of said 3×3 type directional couplers are coated at least partially with metal films for attenuating electromagnetic beams and non-reflective coatings are formed on said other waveguide conduits on an end surface of said substrate for radiating electromagnetic beams outside said substrate.

5,293,440

ENVIRONMENTALLY STABLE FIBER OPTIC POLARIZATION MAINTAINING COUPLERS

David J. Miles, Holden; James R. Curley, Hopedale; Frederick J. Gillham, Westborough, and David W. Stowe, Milford, all of Mass., assignors to Aster Corporation, Hopkinton, Mass.

Filed Sep. 30, 1992, Ser. No. 954,266
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—51 15 Claims



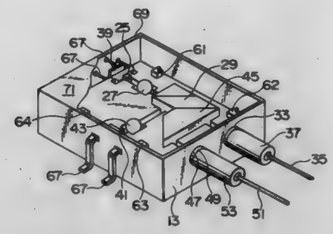
1. In a polarization maintaining fiber optic coupler package comprising a rigid substrate and a polarization maintaining coupler formed by at least two side-by-side optical fibers, each fiber having a core and a surrounding cladding, at least one of said fibers being a polarization-maintaining fiber with a stress field that produces a polarization-maintaining effect, the fibers being joined side-by-side in a coupler region and each fiber extending axially to opposite sides of said coupler region to a region of fixation of said rigid substrate having a coefficient of thermal expansion substantially matched to that of said fibers, the improvement comprising:
each of said optical fibers having said cladding, at each side of said coupler region, separately fixed at a primary region of fixation to a rigid mounting surface of said substrate using a rigid adhesive deposit,
each optical fiber, at each said primary region of fixation, extending over its respective rigid mounting surface with a side of each said fiber located in close proximity to, and in a substantially tangential relationship along a line with its mounting surface,
said rigid adhesive deposit, disposed on opposite sides of the line of tangency, forming a pair of substantially identical masses with mirror symmetry contacting only a portion of said cladding's circumference, and
each said adhesive mass joined to contiguous surface portions of said cladding and said mounting surface along said line of tangency, said masses effectively bonding said fiber to said mounting surface, at said primary region of fixation, in a manner that is asymmetrical relative to the central axis of said fiber but symmetrical relative to a surface defined by said central axis and said line of tangency.

5,293,441

OPTICAL DEVICE CAPABLE OF RELIABLY FIXING A SUBSTRATE TO A PACKAGE

Yasuhisa Tanisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,705
Claims priority, application Japan, Dec. 25, 1991, 3-343025
Int. Cl.[5] G02B 6/42
U.S. Cl. 385—92 18 Claims



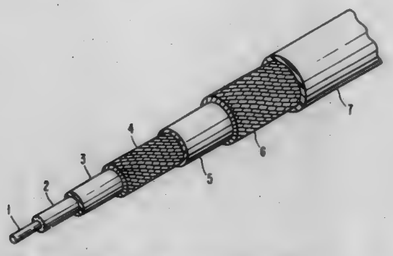
1. An optical device comprising:
a substrate having an upper surface on which at least one photoelectric element is formed;
a package having a bottom surface and a wall surface which define an installation space for receiving said substrate with the substrate brought into contact with said bottom surface, said package having a predetermined part on said wall surface and an internal surface which defines a perforation;
an optical fiber fixed to said package and optically coupled to said photoelectric element through said perforation; and
a block fixed to said upper surface by a low melting-point glass, said block being made of a welding material and welded to said predetermined part.

5,293,442

CRUSH-RESISTANT HIGH-STRENGTH BUFFERED OPTICAL WAVEGUIDE FIBER CABLE

Emile G. Sayegh, Austin, Tex., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jul. 15, 1992, Ser. No. 915,970
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—102 9 Claims



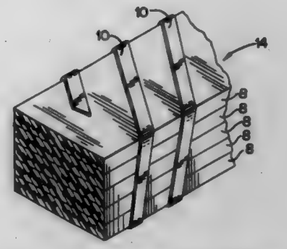
1. An optical fiber cable assembly comprising:
(a) a light-transmitting fiber core comprising an optical fiber surrounded by a cladding of lower refractive index than said fiber and a protective layer of higher refractive index than said cladding;
(b) a braided expanded porous polytetrafluoroethylene layer surrounding said core;
(c) an inner jacket of heat resistant polymer surrounding said braided fiber buffer layer;
(d) a braided fiber strength member surrounding said inner jacket; and
(e) an outer protective jacket.

5,293,443

CABLE UTILIZING MULTIPLE LIGHT WAVEGUIDE STACKS

Christopher K. Eoll; Andrew S. Dodd, and Richard S. Wagman, all of Hickory, N.C. 28601, assignors to Siecor Corporation, Hickory, N.C.

Continuation of Ser. No. 750,415, Aug. 27, 1991, Pat. No. 5,249,249. This application Mar. 15, 1993, Ser. No. 31,449
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—114 9 Claims



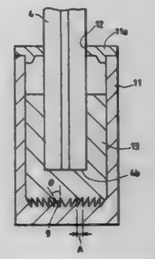
7. A cable comprising a compartment holding at least two stacks of light waveguide ribbons each bounded by a wrapped tape or thread, said stacks abutting each other in a side-by-side relation, wherein the relative order of the light waveguide ribbons within any stack cannot change under normal cable handling conditions.

5,293,444

WAVELENGTH CONVERTER

Naoto Uenishi, and Takafumi Uemiya, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 9, 1991, Ser. No. 803,998
Claims priority, application Japan, Dec. 14, 1990, 2-402384; Dec. 27, 1990, 2-408167; Dec. 27, 1990, 2-408168
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—122 29 Claims



1. A wavelength converter of an optical fiber type comprising:
a core;
a clad covering said core, at least one of said core and clad being made of a nonlinear optical material; and
a transparent layer covering said clad, said transparent layer having a groove formed circumferentially therein.

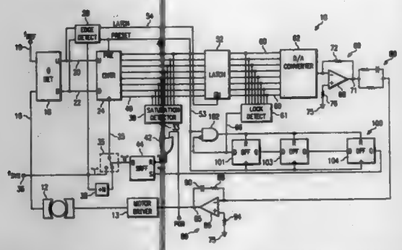
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,445

AGC WITH NON-LINEAR GAIN FOR PLL CIRCUITS

Francesco Carobolante, Phoenix, Ariz., assignor to SGS-Thomson Microelecetronics, Inc., Carrollton, Tex.

Filed May 29, 1992, Ser. No. 890,944
Int. Cl.[5] H02P *5/165*
U.S. Cl. 388—813 **22 Claims**



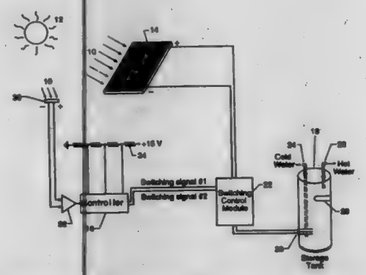
1. A circuit for automatically changing the gain in a PLL for driving a motor of the type having a motor speed signal that indicates the speed of motor rotation, comprising:
- a phase detector for sensing a phase difference between the motor speed signal and a reference frequency and for producing an output signal of duration proportional to the sensed phase difference;
- a counter;
- a motor driving circuit for driving said motor in response to the count reached by said counter through the duration of the phase detector output signal;
- a source of clock pulses at a first frequency and a second frequency, said second frequency being lower than said first frequency;
- a lock range sense circuit to produce a sense signal output that indicates when said PLL is within a predetermined phase difference range;
- and a circuit responsive to said sense signal output for selectively applying said first frequency to clock said counter when said PLL is within said predetermined phase difference range, and to apply said second frequency to clock said counter when said PLL is operating outside said predetermined phase difference range.

5,293,447

PHOTOVOLTAIC SOLAR WATER HEATING SYSTEM

A. Hunter Fanney, Gaithersburg, and Brian P. Dougherty, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jun. 2, 1992, Ser. No. 892,037
Int. Cl.[5] F24H *1/18*; G05F *1/60*
U.S. Cl. 392—449 **24 Claims**



1. Apparatus for heating water using energy of incident solar radiation, comprising:
- an array of photovoltaic cells for generating electrical energy responsive to incident solar radiation, the efficiency of said generation varying dependent on the intensity of the incident radiation;
- a water heater connected to said array of photovoltaic cells without intermediate electrical energy storage devices, said water heater comprising a water storage tank and a resistive heating element for heating water in said tank responsive to electric current supplied thereto, the resistance of said resistive heating element being controllably variable responsive to a control signal;
- a sensor for sensing the intensity of solar radiation incident on said array of photovoltaic cells, and for providing an intensity signal responsive to said sensed intensity; and
- a controller responsive to said intensity signal provided by said sensor for providing said control signal for controlling the resistance of said resistive heating element, so as to maximize the efficiency of generation of power by said array.

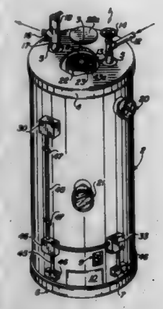
5,293,446

TWO STAGE THERMOSTATICALLY CONTROLLED ELECTRIC WATER HEATING TANK

George G. Owens, 1220 Highway 3033, West Monroe, La. 71292, and Ernest D. Brinson, Rt. 1 Box 148, Portland, Ark. 71663

Filed May 28, 1991, Ser. No. 705,746
Int. Cl.[5] H05B *1/02, 3/82*; F24H *1/20*
U.S. Cl. 392—449 **20 Claims**

1. A two-stage electric hot water heater comprising a tank for receiving cold water and dispensing hot water, a vertical sleeve conduit provided in said tank, a plurality of vertically disposed heat transfer conduits provided in said sleeve conduit, at least one electric heating element provided in at least one of said heat transfer conduits and thermostat means electrically connected to said at least one heating element for causing electricity to flow through said at least one heating element



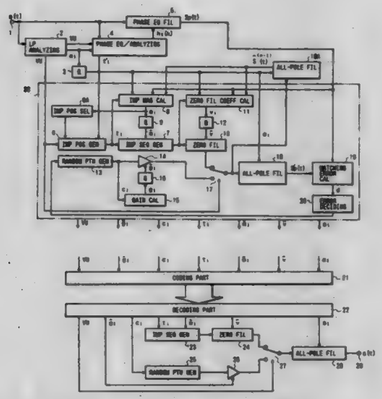
and heating said heat transfer conduits, said sleeve conduit and the water in said tank.

5,293,448

SPEECH ANALYSIS-SYNTHESIS METHOD AND APPARATUS THEREFOR

Masaaki Honda, Kodaira, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 592,444, Oct. 2, 1990, abandoned. This application Sep. 3, 1992, Ser. No. 939,049
Claims priority, application Japan, Oct. 2, 1989, 1-257503
Int. Cl.[5] G01L *9/18*
U.S. Cl. 395—2.17 **7 Claims**



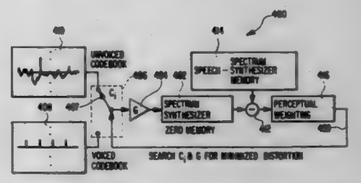
1. A speech analyzing apparatus comprising:
- linear predictive analysis means for performing a linear predictive analysis of an input speech signal for each analysis window of a fixed length to obtain prediction coefficients, said linear predictive analysis means including means for determining whether said input speech signal in an analysis window of fixed length is voiced or unvoiced and for providing a voiced/unvoiced decision signal;
- inverse filter means controlled by said prediction coefficients, for deriving a prediction residual from said input speech signal;
- speech phase equalizing filter means for rendering the phase of said input speech signal into a zero phase to obtain a phase-equalized speech signal;
- prediction residual phase equalizing filter means for rendering the phase of said prediction residual into a zero phase to obtain a phase-equalized prediction residual signal;
- reference time point gathering means for detecting impulses of magnitudes larger than a predetermined threshold value in said phase-equalized prediction residual signal and for outputting the positions of said impulses as reference time points;
- impulse position generating means responsive to said reference time points and said voiced/unvoiced decision signal for producing, based on said reference time points when said decision signal indicates that said speech signal is a voiced sound, differences between successive intervals of said reference time points for comparing the differences with a predetermined limit range, and for determining positions of impulses such that when the differences are within said predetermined limit range, said reference time points are determined as impulse positions, and when said difference are in excess of said predetermined limit range, impulse positions are determined by adding a time point to said reference time points or by omission of one of said reference time points or by shift of one of said reference time points so that the differences between the successive intervals of the processed reference time points are held within said limit range, said impulse positions thus determined being one of the parameters representing the excitation signal as a result of the speech analysis;
- impulse sequence generating means for receiving said impulse positions from said impulse position generating means and generating impulses at said impulse positions;
- all-pole filter means controlled by said prediction coefficients and excited by said generated impulse sequence to generate a synthesized speech; and
- impulse magnitude calculating means for determining magnitude values of said impulses generated by said impulse sequence generating means which minimize an error between a waveform of a synthesized speech obtainable by exciting said all-pole filter means with said impulse sequence and a waveform of said phase-equalized speech supplied from said speech phase equalizing filter means, and means for outputting said impulse magnitudes for use as another one of the parameters representing the excitation signal as a result of the speech analysis by said speech analyzing apparatus.

5,293,449

ANALYSIS-BY-SYNTHESIS 2,4 KBPS LINEAR PREDICTIVE SPEECH CODEC

Forrest F. Tzeng, Rockville, Md., assignor to Comsat Corporation, Bethesda, Md.

Continuation of Ser. No. 617,331, Nov. 23, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,239
Int. Cl.[5] G10L *9/14*
U.S. Cl. 395—2.32 **9 Claims**



1. A linear predictive speech codec arrangement for performing a closed loop analysis-by-synthesis operation, comprising:
- an excitation model means for generating a plurality of excitation signals comprising voiced excitation generator means in the form of a codebook for providing a plurality of possible pulse trains for use as an excitation signal; and Gaussian noise generator means in the form of a codebook for providing a plurality of possible random sequences for use as an excitation signal, wherein said voiced excitation generator means and said Gaussian noise generator means are provided in parallel arrangement;
- sequencing means, coupled to an output of said voiced excitation generator means and said Gaussian noise generator means, for providing all possible pulse trains and random sequences in sequence as possible excitation signals;
- spectrum synthesizer means, coupled to said sequencing means, for providing reconstructed speech generation in response to each of said plurality of excitation signals;
- distortion analyzer means, coupled to an output of said spectrum synthesizer means, for comparing said reconstructed speech with original speech, and providing a distortion analysis signal for each of said excitation signals; and
- means for comparing the distortion analysis signal for each of said excitation signals and selecting the excitation signal that produces the reconstructed speech with a minimum distortion analysis signal so as to provide optimal reconstructed speech.

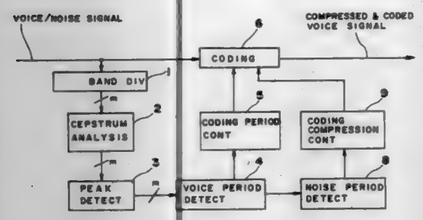
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,450

VOICE SIGNAL CODING SYSTEM

Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1991, Ser. No. 706,575
Claims priority, application Japan, May 28, 1990, 2-138065; May 28, 1990, 2-138066
Int. Cl.[5] G10L *3/02*
U.S. Cl. 395—2.35 **4 Claims**



1. A wanted signal coding system for coding an intermittent wanted signal contained in a mixed signal having the intermittent wanted signal mixed with a background noise signal, said system comprising:

coding means, receiving said mixed signal, for coding said mixed signal when a control signal is applied thereto to generate a coded output signal and for not coding said mixed signal when said control signal is not applied thereto;

wanted signal detecting means, receiving said mixed signal, for detecting periods during which said wanted signal is present in said mixed signal;

control signal generating means, coupled to said wanted signal detecting means, for generating said control signal applied to said coding means during periods detected by said wanted signal detecting means during which said wanted signal is present in said mixed signal;

noise prediction means for predicting a noise signal contained in said mixed signal during periods in which said wanted signal is present in said mixed signal based on a previous noise signal;

cancellation means for subtracting the predicted noise signal from the mixed signal to cancel the predicted noise signal from the mixed signal prior to coding of the mixed signal by said coding means;

noise signal detecting means, coupled to said wanted signal detecting means, for detecting noise signal periods during which the wanted signal is not present in said mixed signal;

coding-compression control means, coupled to said noise signal detecting means, for determining a duration of each noise signal period detected by said noise signal detecting means and for generating coded noise period data denoting the duration of each detected noise signal period, wherein said coded noise period data is inserted in said coded output signal generated by said coding means;

noise extraction means for extracting the noise signal from said mixed signal during said noise signal periods;

noise signal joining means for joining the extracted noise signal and the predicted noise signal to generate a continuous noise signal; and,

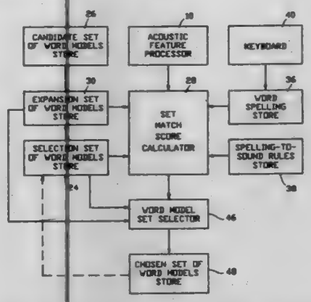
noise signal coding means for coding said continuous noise signal.

5,293,451

METHOD AND APPARATUS FOR GENERATING MODELS OF SPOKEN WORDS BASED ON A SMALL NUMBER OF UTTERANCES

Peter F. Brown, New York; Steven V. De Gennaro, Pawling; Peter V. Desouza, Mahopac Falls, and Mark E. Epstein, Katonah, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1990, Ser. No. 602,020
Int. Cl.[5] G10L *9/04*
U.S. Cl. 395—2.54 **16 Claims**



1. A method of modeling a word uttered at least two times, each utterance having at least one acoustic feature having a value, said method comprising the steps of:

measuring the value of the acoustic feature of each utterance;

storing a selection set of one or more probabilistic word model signals, each probabilistic word model signal in the selection set representing a probabilistic model of the word;

calculating, for the selection set, a match score representing the closeness of a match between the probabilistic word models in the selection set and the value of the acoustic feature of each utterance;

storing a candidate set of one or more probabilistic word model signals, each probabilistic word model signal in the candidate set representing a probabilistic model of the word, each probabilistic word model in the candidate set being different from each probabilistic word model in the selection set;

storing an expansion set comprising the probabilistic word model signals in the selection set and one probabilistic word model signal from the candidate set;

calculating, for the expansion set, a match score representing the closeness of a match between the probabilistic word models in the expansion set and the value of the acoustic feature of each utterance; and

modeling the word with the word models in the expansion set if the expansion set match score surpasses the selection set match score by a nonzero threshold value.

5,293,452

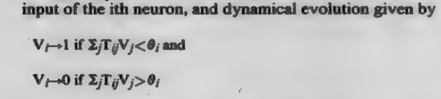
VOICE LOG-IN USING SPOKEN NAME INPUT

Joseph Picone, and Barbara J. Wheatley, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 1, 1991, Ser. No. 724,298
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.59 **17 Claims**

1. A voice log-in method for logging in to a system based on computerized recognition of a spoken name input comprising the steps:

creating an augmented name recognition model from the spoken name input for each person to be enrolled, wherein said augmented name recognition model includes constituent name-part utterances, and also includes any pause in the spoken name input, and wherein said augmented name recognition model represents a portion of said constituent name-part utterances as optional, thereby accommodating elimination of optional name-part utterances, and wherein said pause is also represented as optional, thereby accommodating unpredictable variations in said pause, and wherein said creating name recognition models is accomplished using HMM (Hidden Markov Modeling) to create HMM name recognition models;



storing said name recognition model for each person enrolled in a name recognition model database;

comparing the spoken name input with the stored name recognition models each time a person seeks access to the system by voice log-in; and

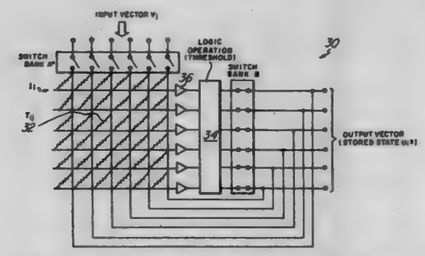
logging a person in to the system if a pattern match is found, during said comparing, between the spoken name input and one of the stored name recognition models.

5,293,453

ERROR CONTROL CODEWORD GENERATING SYSTEM AND METHOD BASED ON A NEURAL NETWORK

Gary A. Frazier, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 534,806, Jun. 7, 1990, abandoned. This application Feb. 13, 1992, Ser. No. 836,186
Int. Cl.[5] H03M *7/00*; G06F *15/18*
U.S. Cl. 395—22 **4 Claims**



1. A method for generating a sequence of K N-bit binary code words for information transmission encoding and decoding, comprising the steps of:

(a) providing a neural network with N neurons, each neuron has two states with output values 0 and 1, interconnection strengths T_{ij} connecting the output of the jth neuron to an input of the ith neuron, and dynamical evolution given by

$V_i \mapsto 1$ if $\Sigma_j T_{ij} V_j < \theta_i$ and

$V_i \mapsto 0$ if $\Sigma_j T_{ij} V_j > \theta_i$

where V_i is the output value of the ith neuron, V_j is the output value of the jth neuron and θ is a threshold;

(b) providing an initial N-bit binary code word U^1 with components U^1_j;

(c) setting said interconnection strengths $T_{ij} = U^1_i U^1_j$ for all i and j except setting $T_{ii} = 0$;

(d) inputting U^1 into said neural network, and letting said neural network evolve to a stable state V;

(e) taking said stable state V to define a new binary code word U^2;

(f) updating said interconnection strengths by adding $U^2_i U^2_j$ to the current T_{ij} for all i and j except i=j;

(g) repeating steps (d)–(f) with U^k replaced by U^{k+1} for $k = 1, 2, \ldots, K-1$; and

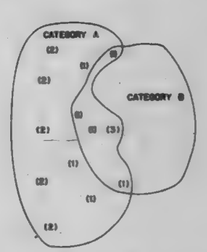
(h) applying said code words $U^1, U^2, \ldots U^k$ to establish an information transmission encoder and decoder.

5,293,454

LEARNING METHOD OF NEURAL NETWORK

Shin Kamiya, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 480,948, Feb. 16, 1990, abandoned. This application Sep. 18, 1991, Ser. No. 761,387
Claims priority, application Japan, Mar. 8, 1989, 1-57297
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—23 **5 Claims**



1. A method of selecting specific learning patterns from learning patterns utilized in a neural network for speech recognition or character recognition, by classifying learning patterns into types by the K (where K is an integer>0) nearest neighbor method, comprising the steps of:

(a) dividing the learning patterns into two categories;

(b) selecting a first target learning pattern from the learning patterns of a first category;

(c) selecting K learning patterns from the learning patterns of the first category in increasing order of distance from the first target learning pattern;

(d) calculating an average Euclidean distance between the K learning patterns and the first target learning pattern for the first category;

(e) repeating steps (c)–(d) replacing the first category with a second category;

(f) comparing a ratio of the average Euclidean distances of the K learning patterns of the first and second categories with a first predetermined threshold T_1 which is less than 1, and a second predetermined threshold, T_2, which is greater than 1;

(g) classifying the first target learning pattern as type (1) if the ratio of the average Euclidean distances of the K learning patterns of the first and second categories is between T_1 and T_2;

(h) selecting the first target learning pattern from the first category for utilization in the neural network for speech recognition or character recognition if it is type (1);

(i) selecting a second target learning pattern from the learning patterns of the second category;

(j) repeating steps (c)–(g) replacing the first target learning pattern with the second target learning pattern; and

(k) selecting the second target learning pattern from the second category for utilization in the neural network for speech recognition or character recognition if it is type (1).

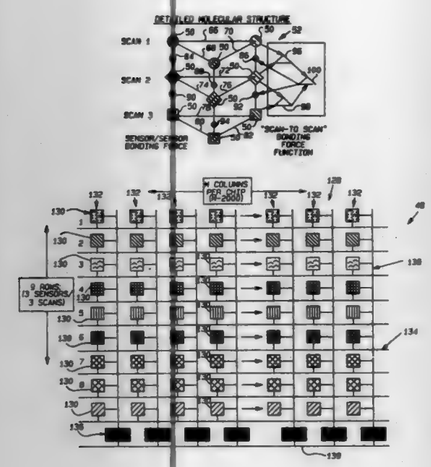
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,455

SPATIAL-TEMPORAL STRUCTURE PROCESSOR FOR MULTI-SENSOR, MULTI SCAN DATA FUSION

Patrick F. Castelaz, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 11, 1991, Ser. No. 660,362
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 26 Claims



1. A system for forming desired associations among a set of data values, each of said data values belonging to one of a plurality of classes and one of a plurality of types, said system comprising:

an array of memory cells arranged in rows and columns, each memory cell storing one of said data values, said data values arranged in said memory cells, so that each column contains one data value of each possible combination of said classes and types;

data bus means for transmitting said data values into and out of said memory cells;

an energy computation cell for each column coupled to said data bus means for computing an energy value for each column, wherein said energy value is proportional to the likelihood that the data values in said column together comprise one of said desired associations;

system control means connected to said data bus means and said energy computation cells for transferring said data values of a given class and type from one memory cell to another memory cell of the same class and type within a given row of memory cells, when said energy value for said column is lowered by said transfer;

said system control means including a summing means for adding up all the energy values computed by said energy computation cells to determine a total energy value proportional to the likelihood that all columns contain desired associations of data values, and

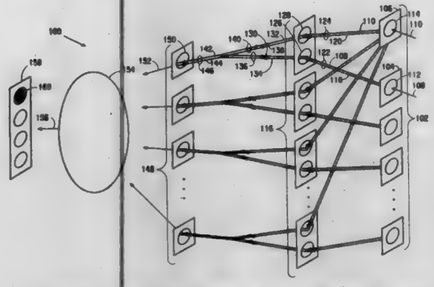
wherein each time said system control means transfers data values, said summing means determines the total energy value of all of said energy computation cells, whereby, the total energy value having a lowest total energy after successive transfers represents a state in which each column contains said desired associations of data values.

5,293,456

OBJECT RECOGNITION SYSTEM EMPLOYING A SPARSE COMPARISON NEURAL NETWORK

Ygal G. Guez, Philadelphia, and Richard G. Stafford, Chadds Ford, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 28, 1991, Ser. No. 723,348
Int. Cl.[5] G06K *9/66*
U.S. Cl. 395—24 4 Claims



1. An object recognition system for recognizing a known object in an image, comprising:

(a) means for generating a first known tensor representation of an image of at least one known object, the known object being represented by a first known tensor and for generating a first unknown tensor representation of an image of at least one candidate, unknown object, the unknown object being represented by a first unknown tensor;

(b) a comparison neural network comprising a plurality of parallel processing networks, each parallel processing network including:

(i) a first layer including a first input node for receiving the first known tensor and a second input node for receiving the first unknown tensor,

(ii) a second layer for receiving the first known and unknown tensors, the second layer having at least one first trainable weight tensor associated with the first known tensor and at least one second trainable weight tensor associated with the first unknown tensor, the second layer including first processing means for transforming the first known tensor on the first trainable weight tensor to produce a first known output, the first known output comprising a first known output tensor of at least rank zero having a third trainable weight tensor associated therewith, the second layer further including second processing means for transforming the first unknown tensor on the second trainable weight tensor to produce a first unknown output, the first unknown output comprising a first unknown output tensor of at least rank zero having a fourth trainable weight tensor associated therewith, the first known output tensor and the first unknown output tensor being combined to form a second input tensor having a fifth trainable weight tensor associated therewith,

(iii) a third layer for receiving the second input tensor, the third layer including third processing means for transforming the second input tensor on the fifth trainable weight tensor, thereby comparing the first known output with the first unknown output and producing a resultant output, wherein the resultant output is indicative of the degree of similarity between the first known tensor and the first unknown tensor;

(c) a selection criterion module for receiving and comparing the resultant output of each parallel processing network, the selection criterion module producing an outcome based on a predetermined selection criterion, wherein the outcome is indicative of the closest degree of similarity between the known object and the candidate, unknown object; and

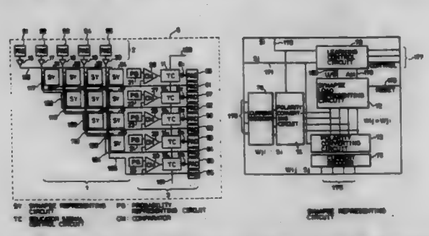
(d) a designating layer for designating the candidate object having the closest degree of similarity to the known object.

5,293,457

NEURAL NETWORK INTEGRATED CIRCUIT DEVICE HAVING SELF-ORGANIZING FUNCTION

Yutaka Arima; Ichiro Tomioka, and Toshiaki Hanibuchi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 515,476, Apr. 24, 1990, Pat. No. 5,148,514.
This application May 1, 1992, Ser. No. 877,514
Claims priority, application Japan, May 15, 1989, 1-121916; Sep. 19, 1989, 1-242998
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—24 27 Claims



1. An integrated circuit device having a learning function, being modelled on vital cells, said integrated circuit device comprising a plurality of nerve cell units performing functions of the bodies of said nerve cells respectively, a plurality of axon signal transfer lines provided in correspondence of respective nerve cell units for transferring axon signals indicating states of corresponding nerve cell units, a plurality of dendrite signal lines provided in correspondence to said respective nerve cell units for transferring signals to corresponding nerve cell units, and a plurality of synapse load repreaenting circuits provided on respective crosspoints between said plurality of axon signal transfer lines and said plurality of dendrite signal lines for joining specific synapse loads to signal potentials on corresponding axon signal transfer lines and transferring the same onto corresponding dendrite signal lines, said synapse loads begin adjustable in learning of said integrated circuit device,

each synapse load repreaenting circuit comprising:

learning control means for receiving a first axon signal Si and a second axon signal Sj and outputting a change value of each synapse load in accordance with a predetermined learning rule;

synapse load repreaenting circuit means for outputting a changed synapse load value Wij in accordance with said change value received from said learning control means;

first synapse coupling operating circuit means for transferring a signal indicating a product of said each synapse load from said synapse load repreaenting circuit means and said first axon signal to a first dendrite signal line; and

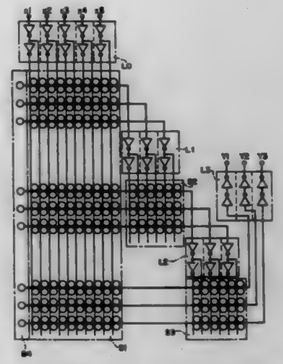
second synapse coupling operating circuit means for transferring a signal indicating a product of said each synapse load from said synapse load representing circuit means and said second axon signal onto a second dendrite signal line.

5,293,458

MOS MULTI-LAYER NEURAL NETWORK AND ITS DESIGN METHOD

Ho-sun Chung, and Sin-jin Kim, both of Taegu, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi

Filed Aug. 15, 1991, Ser. No. 745,348
Claims priority, application Rep. of Korea, Aug. 18, 1990, 90-12914
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 5 Claims



1. A MOS multi-layer neutral network receiving an m-bit input and generating an n-bit output, said neural network comprising:

an input layer having m neurons each selectively arranged to receive a corresponding bit value of said m-bit input, each neuron including first and second serially coupled CMOS inverters, an output from each first CMOS inverter being connected to an input of a corresponding second CMOS inverter to generate a non-inverted output therefrom, said output from each first CMOS inverter also providing an inverted output associated with each neuron;

an input synapse group having a plurality of transistor synapse means coupled to respective ones of said inverted and non-inverted outputs from said input layer to form a transistor group matrix, said transistor synapse means generating a plurality of output row bias signals, each transistor synapse means being assigned a predetermined weight value (current driving strength) in relation to its position along the transistor group matrix, each row in the transistor group matrix being responsive to a respective bias signal pre-assigned to provide a select unity weight value bias signal onto said each row and also being responsive to a sum bias signal from each of said transistor synapse means respectively coupled thereto and driven by corresponding ones of said inverted and non-inverted outputs,

wherein each row is associated with one of said output row bias signals generated in response to the selected unity weight value bias signal and the respective sum bias signal coupled thereto;

an output layer having n neurons each selectively arranged to output a corresponding bit value of said n-bit output;

at least one hidden layer, each coupled in succession between said input layer and said output layer and including n neurons, wherein a first hidden layer of said at least one hidden layers couples first preselected n output row bias signals from said input synapse group to respective ones of its corresponding n neurons; and

at least one transfer synapse group, each associated with a corresponding one of said at least one hidden layers and providing respective n first output row bias signals, each transfer synapse group having a plurality of transfer synapse means coupled to corresponding ones of inverted and

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non-inverted outputs from said respective n neurons and further coupled to second preselected n output row bias signals from said input synapse group to form a transfer group matrix for generating said respective first n output row bias signals, each transfer synapse means being assigned a predetermined weight value as a function of its position along the respective transfer group matrix,

wherein each row in a respective transfer group matrix is coupled to either a corresponding one of the n neurons of each successive said at least one transfer synapse group or, if said respective transfer synapse group is the last in succession, then to corresponding inputs of said n neurons of said output layer, and

wherein said input synapse group couples a supply voltage to each neuron of said output layer and said at least one hidden layer such that when a corresponding bit value into an input layer neuron is "1", then when a connection weight value is selected to be positive, a first supply voltage is connected with a connection strength of a corresponding connection weight value through a PMOS transistor whose gate is connected to each corresponding inverted output, and when a connection weight value is selected to be negative, a second supply voltage is connected instead through an NMOS transistor whose gate is connected to each corresponding non-inverted output,

when a corresponding bit value into said input layer is "0", then when a connection weight value is selected to be positive, a first supply voltage is connected with a connection strength of a corresponding connection weight value through a PMOS transistor whose gate is connected to each corresponding non-inverted output, and when a connection weight value is selected to be negative, a second supply voltage is connected instead through an NMOS transistor whose gate is connected to each corresponding inverted output, and

when said input bit value is "1" or "0" and a connection weight value is "0," nothing is connected,

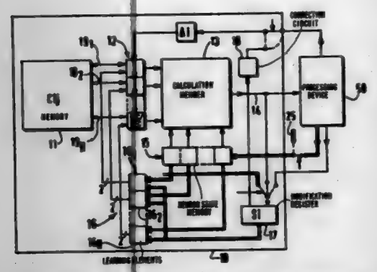
and wherein each transfer synapse group is composed of PMOS and NMOS transistors for connecting inverted and non-inverted neuron outputs associated therewith.

5,293,459

NEURAL INTEGRATED CIRCUIT COMPRISING LEARNING MEANS

Marc A. G. Duranton, Poissy Saint Leger, and Jacques A. Sirat, Limeil-Brevannes, both of, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 452,858, Dec. 18, 1989, abandoned. This application Oct. 23, 1991, Ser. No. 793,482
Claims priority, application France, Dec. 23, 1988, 8817109
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 **18 Claims**



1. A neural net comprising at least one integrated neural circuit, each neural circuit including:

i) a memory for storing synaptic coefficient values and for in parallel providing the synaptic coefficient values at a memory output;

ii) calculating means being coupled to the memory, and having an input for receiving input neuron values and an output for outputting an output neuron value, the output neuron value being generated by creating products by multiplying each of the input neuron values by a corresponding synaptic coefficient value and then summing the products;

iii) a control signal generator receiving the input neuron values for generating a plurality of control signals, each control signal depending on one of the input neurons values;

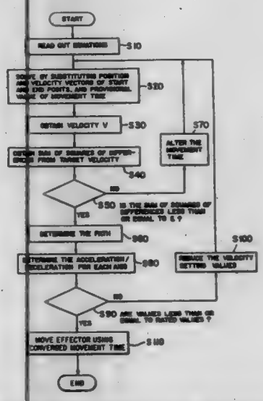
iv) modifying means being connected to the control signal generator and coupled to the memory output for receiving the synaptic coefficient values and performing in parallel operations on the synaptic coefficient values in response to the control signals each one of the control signals determining the operation to be performed, either creating a modified version of one of the coefficient values, or leaving the coefficient values unchanged, and for storing the modified version in the memory.

5,293,460

VELOCITY-VARIATION MINIMIZATION CONTROL METHOD FOR ROBOT

Yoshiaki Nakatsuchi, Kobe, and Tatsuo Yano, Ono, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 15, 1991, Ser. No. 684,765
Int. Cl.[5] G05B *19/42*
U.S. Cl. 395—80 **2 Claims**



1. A velocity-variation minimization control method for a robot comprising the steps of:

preparing cubic equations expressing positions of an effector of a robot and quadratic equations expressing velocity of said effector, said quadratic equations obtained by differentiating said cubic equations, said cubic and quadratic equations being functions with respect to time;

obtaining solutions for coefficients of said equations by substituting a position vector for an operation start point, a velocity vector for said operation start point, a position vector for an operation end point, a velocity vector for said operation end point, and a provisional movement time for moving from said operation start point to said operation end point into said equations;

obtaining a sum of squares of differences between a velocity obtained using said coefficients and a target velocity;

performing convergence calculations to obtain a value of said movement time that minimizes said sum of squares; and

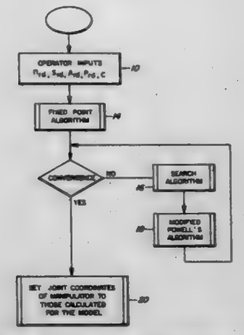
controlling said robot by moving said effector along a path using converged movement time.

5,293,461

SYSTEM FOR DETERMINING MANIPULATOR COORDINATES

Gregory Z. Grudic, Richmond, and Peter D. Lawrence, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Nov. 20, 1991, Ser. No. 794,953
Int. Cl.[5] G05B *19/00*
U.S. Cl. 395—97 **20 Claims**



1. A method of controlling a manipulator having arm segments interconnected by joints, comprising modifying offset values of selected of said arm segments to define a model of said manipulator for which it is possible to derive closed-form inverse kinematics equations for solving the joint variables for said model, deriving closed-form inverse kinematics equations for said model, developing from said derived closed-form inverse kinematics equations a system of not more than 3 non-linear equations in not more than 3 unknowns which when solved give an inverse kinematics solution for the model, solving said system of not more than 3 non-linear equations to calculate the inverse kinematic solution for said joint variables of said model, and adjusting said joints of said manipulator to correspond with said joint variables calculated for said model.

5,293,462

ELECTRONIC INFORMATION PROCESSING METHOD AND DEVICE FOR MODIFYING ELECTRONIC INFORMATION WITHOUT LOSING HIGH QUALITY THEREOF

Koichi Nishimoto; Toshihiro Hayashi, both of Hitachi; Keiji Oshima; Yukihiro Oda, both of Katsuta; Akira Sekine; Toshiaki Higashihara, both of Hitachioota, and Kouhei Seki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Process Computer Engineering, Inc., Hitachi, both of Japan

Filed Mar. 20, 1990, Ser. No. 496,303
Claims priority, application Japan, Mar. 20, 1989, 1-66210
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—100 **23 Claims**

1. A method in a computer system, of processing and electronically modifying information elements, comprising the steps executed by said computer system of:

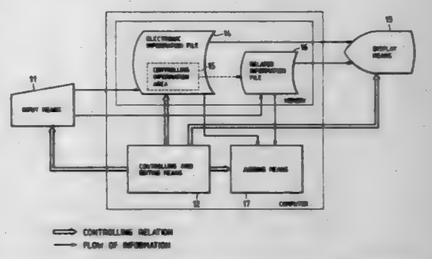
inputting a plurality of information elements, said plurality of information elements including at least first and second groups of information elements;

inputting a plurality of display information elements;

associating each of said plurality of display information elements with a corresponding element of said first group of information elements;

inputting a request for modification of one of said plurality of information elements;

determining which of said first group and said second group contains said one of said plurality of information elements to be modified; and



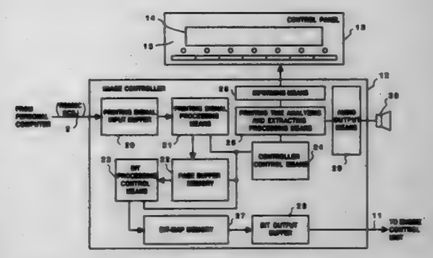
displaying a display element corresponding to said one of said plurality of information elements to be modified when said one of said plurality of information elements to be modified is included in said first group.

5,293,463

IMAGE PROCESSING APPARATUS

Shunichi Masuda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 847,267
Claims priority, application Japan, Mar. 13, 1991, 3-048041
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—101 **18 Claims**



1. An image processing apparatus comprising:

input means for inputting coded data from an external apparatus;

first converting means for converting the input coded data into intermediate coded data;

second converting means for converting said intermediate coded data into bit map data;

output means for outputting the bit map data to a printing unit;

predicting means for predicting a prediction time needed by said second converting means for converting the intermediate coded data for one page into bit map data; and

informing means for informing an operator of information relating to the prediction time.

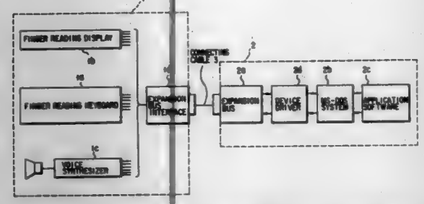
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5,293,464

BRAILLE READING DISPLAY TERMINAL DEVICE

Hiroshi Hirano, Tokyo; Yoshitaka Osaki, Osaka, and Junji Yamazaki, Urayasu City, all of Japan, assignors to NEC Corporation, Tokyo and KGS Corporation, Chiba, both of Japan

Filed Aug. 25, 1992, Ser. No. 935,527
Claims priority, application Japan, Aug. 26, 1991, 3-213672
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—101 **6 Claims**



1. A Braille reading display terminal device comprising:

input/output means, including a Braille reading keyboard, a Braille reading display and a voice synthesizer, for inputting and outputting data, said input./output means having no intelligence functions therein;

an expansion bus having an interface function and no intelligence function; and

a host computer connected to said input/output means through said expansion bus; and

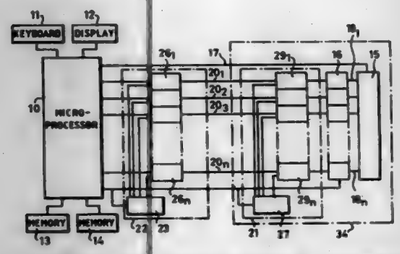
said host computer including software controlled means for exclusively controlling transferring of information including control information between said host computer and said input/output means, and wherein said host computer access and controls at least one of said Braille reading keyboard, said Braille reading display and said voice synthesizer of said input/output means through said expansion bus without requiring intelligence functions in said input/output means or in said expansion bus, and wherein said input/output means and said expansion bus do not control said transferring of information between said host computer and said input/output means.

5,293,465

FRANKING MACHINE WITH DIGITAL PRINTER

Cyrus Abamehdi, Harlow, and Raymond J. Herbert, Leigh-on-Sea, both of United Kingdom, assignors to Neopost Limited, Romford, United Kingdom

Filed Jul. 7, 1992, Ser. No. 909,753
Claims priority, application United Kingdom, Jul. 8, 1991, 9114694
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—113 **16 Claims**



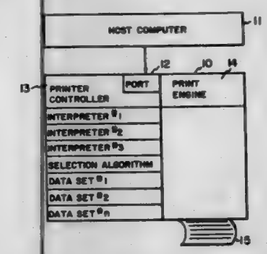
1. A franking machine including electronic accounting and control circuits and a digital printing device operable by print data signals comprising binary bits generated by the accounting and control circuits to print franking impressions including a representation of a postage charge means to transmit the print data signals from the accounting and control circuits to the digital printing device including encryption means at the accounting and control circuits comprising a first generator to generate a first pseudo random string of binary bits and means to logically combine successive bits of the first pseudo random string with bits of the print data signals to produce encrypted print data signals and decryption means at the printing device comprising a second generator to generate a second pseudo random string of binary bits corresponding to said first pseudo random string of binary bits and means to logically combine successive bits of the second pseudo random string of binary bits with bits of the encrypted print data signals to reproduce the bits of the print data signals to operate the printing device.

5,293,466

METHOD AND APPARATUS FOR SELECTING INTERPRETER FOR PRINTER COMMAND LANGUAGE BASED UPON SAMPLE OF PRINT JOB TRANSMITTED TO PRINTER

Michael W. Bringmann, Mobile, Ala., assignor to QMS, Inc., Mobile, Ala.

Filed Aug. 3, 1990, Ser. No. 562,371
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—114 **29 Claims**



17. In a printer for receiving an input stream of electrical signals defining a print job from a host computer, said input stream encoded by a computer application in any one of a plurality of printer control languages, said printer comprising means for interpreting each of said plurality of printer control languages to define a bit mapped image, means for converting the bit mapped image into a visual display of said image, the improvement comprising:

means for sampling a portion of an input stream,

means using a printer resident algorithm and a plurality of data sets obtained by statistical techniques for analyzing the sampled portion of the input stream to identify the printer control language in which it is coded, there being at least one data set for each printer control language, said data sets comprising statistical data setting forth a measure of the ability of selected n-grams occurring in print jobs to distinguish a given printer control language from all others, and

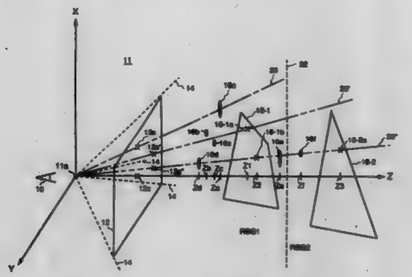
means for directing the interpreting means to interpret the input stream in accordance with the printer control language identified by the sampling and analyzing means.

5,293,467

METHOD FOR RESOLVING PRIORITY BETWEEN A CALLIGRAPHICALLY-DISPLAYED POINT FEATURE AND BOTH RASTER-DISPLAYED FACES AND OTHER CALLIGRAPHICALLY-DISPLAYED POINT FEATURES IN A CIG SYSTEM

Gregory C. Buchner, 2240 Brian Ave., South Daytona, Fla. 32119; Jeffrey D. Potter, 814 Banbury Dr., Port Orange, Fla. 32119, and Walter R. Steiner, 1-C Timberline Trail, Ormond Beach, Fla. 32174

Filed Apr. 3, 1991, Ser. No. 679,806
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—122 **17 Claims**



1. A method for determining a proper occultation relationship between a calligraphic point feature of a display image and at least one of another calligraphic point feature and a potentially-raster-visible surface face in the same cell of a display image comprised of an ordered set of display cells, comprising the steps of:

(a) resolving the occultation relationships between all calligraphic point features of a calligraphic portion of the display image, to obtain a depth-ordered set of calligraphic point features;

(b) resolving the occultation relationships between all potentially-raster-visible surface faces of a raster portion of the display image, to obtain a depth-ordered set of potentially-raster-visible surface faces; and

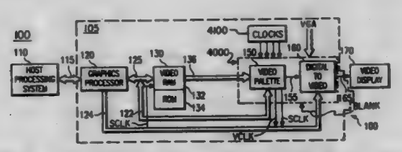
(c) then resolving for each cell of the display image the occultation relationships between each of the depth-ordered calligraphic point features and each of the depth-ordered potentially-raster-visible faces located along a sightline passing through that cell.

5,293,468

CONTROLLED DELAY DEVICES, SYSTEMS AND METHODS

Jeffrey L. Nye, Houston, and Karl M. Guttag, Missouri City, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 546,172, Jun. 27, 1990, abandoned.
This application Aug. 6, 1992, Ser. No. 925,885
Int. Cl.[5] G06F *15/66*; G09G *1/16*
U.S. Cl. 395—131 **41 Claims**



35. A palette device for use with circuitry that produces color codes and a blanking signal, the palette device comprising:

color code processing circuitry responsive to the color codes to supply color data words that are convertible to analog form;

a digital to analog converter connected to said color code processing circuitry to receive said color data words and convert said color data words to an analog signal, said converter having a blanking input for driving said analog signal to a blank level; and

a blanking circuit having the blanking signal as an input and having a plurality of serially connected flip-flops clocked to sample said blanking signal at progressively higher time resolutions in order to feed said blanking input of said digital to analog converter; and

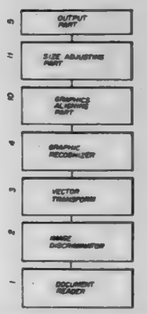
a programmable register to control operation of the palette device.

5,293,469

APPARATUS FOR GENERATING A GRAPHIC IMAGE HAVING SYMBOLS WHOSE CENTERS AND ALIGNED WITH EACH OTHER AND WHOSE SIZES ARE ADJUSTED TO ACCORD WITH EACH OTHER

Junichi Outa, Yokohama; Leo Macanna, Kawasaki; Takako Satoh, and Masashi Nakamura, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,529
Claims priority, application Japan, Oct. 23, 1991, 3-302638
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—133 **13 Claims**



1. An image processing apparatus for processing an input graphic image to generate an image with a number of graphic symbols whose centers are aligned with each other and whose sizes are adjusted to accord with each other, said image processing apparatus comprising:

first transforming means for transforming an input graphic image into a plurality of vectors defining a plurality of graphic symbols in the input graphic image, each vector having coordinates indicating positions of two end points of each vector, and a width indicating a line width of the vector;

first storage means for storing the plurality of vectors produced by said first transforming means;

recognizing means for recognizing a configuration of each graphic symbol in the input graphic image from said plurality of vectors stored in said first storage means, said recognizing means producing a set of symbol parameters with respect to each graphic symbol whose configuration is recognized, said set of symbol parameters indicating at least a type of each graphic symbol, a center position thereof, a height thereof, and a width thereof;

second storage means for storing said set of symbol parameters produced by said recognizing means;

aligning means for taking a group of graphic symbols with the symbol parameters which respectively indicate center positions falling within a predetermined range, from said second storage means, and for aligning the center of each

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graphic symbol of said group so as to accord with an average value of the center positions of the symbols of the group in said second storage means;

size adjusting means for taking a group of graphic symbols with the symbol parameters which respectively indicate heights and widths falling with a predetermined range, from said second storage means, and for adjusting a height and width of each graphic symbol of said group so as to accord with an average height and width of the symbols of the group in said second storage means; and

output means for outputting a graphic image generated by said aligning means and said size adjusting means.

5,293,470

DATA PROCESSING SYSTEM FOR DEFINING AND PROCESSING OBJECTS IN RESPONSE TO SYSTEM USER OPERATIONS

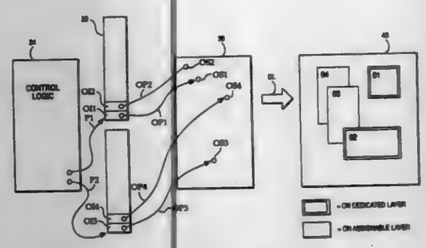
Gary J. Birch, Hemel Hempstead; Stephen J. Cook, Bishops Stortford; Alan S. Murphy, Hiltingbury; Patricia Tustin, Locks Heath, all of United Kingdom, and John A. Woolsey, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1991, Ser. No. 646,915

Claims priority, application European Pat. Off., Jan. 29, 1990, 90300885.2

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—135 **13 Claims**



1. In a data processing system including a plurality of interconnected workstations, each having an attached display device, in which said system defines and processes objects in response to operations performed by a system user, defines a plurality of virtual screens of display data with which views of objects can be associated, and provides for selection of a virtual screen whereby views of objects associated with a selected screen are displayed on a display device, the improvement comprising:

means for defining distinct anterior and posterior display layers for said display device with said anterior layer having a background such that a content of said posterior display layer can be viewed therethrough and within of said layers being assignable for display of said selected screen and another of said layers being dedicated for display of an additional screen;

means including control logic means which is responsive to a predetermined user input operation and a presence of a display cursors within a boundary of at least one of said objects for transferring said at least one of said objects between said anterior and posterior display layers;

wherein a view of said at least one of said objects varies in dependence upon a one of said display layers in which it is displayed; and

means, in response to user interaction with said system, for selecting a virtual display screen as a shared display screen in an assignable display layer of each of said attached display devices such that said assignable display layer may be shared by users of said plurality of workstations.

5,293,471

GRAPHICS PROCESSING SYSTEM FOR DELETING ONE OF OVERLAPPING LINE AND GRAPHICS IMAGES

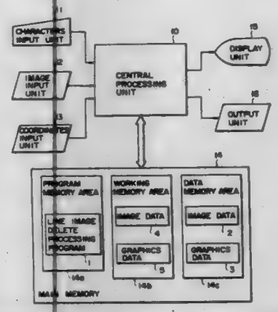
Tsutomu Ikeuchi, and Hirohiko Higasa, both of Yokohama, Japan, assignors to Hitachi Software Engineering Co., Ltd., Yokohama, Japan

Filed Sep. 10, 1990, Ser. No. 580,077

Claims priority, application Japan, Sep. 8, 1989, 1-233459

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—143 **6 Claims**



1. A graphics processing system arranged to display on a display screen of a display unit a line image produced from image data stored in a storage device and graphics produced from graphics data stored in a storage device in an overlapping manner, comprising:

display means for displaying the line image and the graphics in an overlapping manner;

first storage means for storing the line image produced from the image data;

second storage means for storing the graphics produced from the graphics data;

line image delete processing means for processing pixels of said image and said graphics data stored in said first and second storage means, respectively, to delete the line image in a segment in which a pixel displaying the graphics is displayed so as to overlap with a pixel displaying the line image, wherein the line image delete processing means is implemented so as to leave only the pixel displaying the graphics undeleted and to delete the pixel displaying the line image that is located within a range that is broader than a predetermined line width of a distorted line up to a line width of the line image; and

said line image delete processing means including means for determining if a pixel of the line image is an object for deletion located within said range, and for converting the pixel determined to be the object for deletion into a pixel with a background color with respect to the graphics.

5,293,472

METHOD OF GENERATING LINES AND CURVES OF USER SPECIFIED THICKNESSES ON A RASTER DEVICE

Jeffrey B. Lotspiech, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1991, Ser. No. 689,164

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—143 **14 Claims**

1. In a graphics processing system including a graphics processor and a raster device, a method of drawing a straight or curved stroke of predetermined thickness on a rectangular array of pels, comprising the steps of:

in the graphics processor:

generating a spine list comprising a digitization of a spine that can be swept by a preselected pen of thickness 2t centered on the spine to draw the stoke, the spine list including a set of X, Y coordinate values of a set of the pels in the array intersected by the spine;

generating a penleft list and a penright list, the penleft list including X, Y coordinate values of the left side of the pen and the penright list including X, Y coordinate values of the right side of the pen, respectively; and

generating left and right lists representing a pair of boundaries of the stroke by starting at a first end of the spine list and moving toward a second end of the spine list and for each sequential position in the spine list adding

the X, Y coordinate values thereof to the X, Y coordinate values in the penleft list and updating the left list when any of the resulting sums yields an X value less than the current X value for the corresponding Y value in the left list and updating the right list when any of the resulting sums yields an X value more than the current X value for the corresponding Y value in the right list; and

drawing the stroke with the raster device by filling in pel positions between the pair of boundaries represented by the left and right lists.

5,293,473

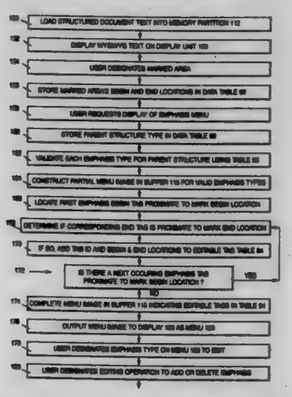
SYSTEM AND METHOD FOR EDITING A STRUCTURED DOCUMENT TO MODIFY EMPHASIS CHARACTERISTICS, INCLUDING EMPHASIS MENU FEATURE

Eric M. Hesse, Gaithersburg, and Kathleen E. McGill, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 516,373, Apr. 30, 1990, abandoned. This application Apr. 20, 1993, Ser. No. 31,052

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—146 **2 Claims**



2. In a data processing system for editing structured document text stored as an alphanumeric string displayed as WYSIWYG text, a method of changing undisplayed emphasis characters in said structured document text which are proximate to a marked area of the WYSIWYG text located in the structured document text, comprising the steps of:

storing in said data processing system, a first type identity for a first type emphasis character and a second type identity for a second type emphasis character in said data processing system;

storing in said data processing system, a string of structured document text containing a plurality of alphanumeric characters in an ordered sequence and which also contains a first begin tag for said first type emphasis character and a first end tag for said first type emphasis character to produce a first type emphasis in said structured document text, and which also contains a second begin tag for said second type emphasis character and a second end tag for said second type emphasis character to produce a second type emphasis in said structured document text;

storing in said data processing system, a begin mark location which identifies a first one of said alphanumeric characters where said marked area begins and storing an end mark location which identifies a second one of said alphanumeric characters where said marked area ends;

determining in said data processing system, if first begin tag for said first type emphasis character is adjacent to said first one of said alphanumeric characters and precedes it in said ordered sequence where said marked area begins and determining if said first end tag for said first type emphasis character is adjacent to said second one of said alphanumeric characters and follows it in said ordered sequence where said marked area ends, and if they are, then storing a first emphasis type flag;

determining in said data processing system, if second begin tag for said second type emphasis character is adjacent to said first one of said alphanumeric characters and follows it in said ordered sequence where said marked area begins and determining if said second end tag for said second type emphasis character is adjacent to said second one of said alphanumeric characters and precedes it in said ordered sequence were said marked area ends, and if they are, then storing a second emphasis type flag; and

displaying in said data processing system said first emphasis type flag for selection by a user to edit said first type emphasis in said structured document text and displaying said second emphasis type flag for selection by a user to edit said second type emphasis in said structured document text.

5,293,474

SYSTEM FOR RASTER IMAGING WITH AUTOMATIC CENTERING AND IMAGE COMPRESSION

Suhas S. Patil; Chester F. Bassetti, Jr., both of Cupertino, and Dayakar C. Reddy, Milpitas, all of Calif., assignors to Cirrus Logic, Inc., Milpitas, Calif.

Continuation of Ser. No. 632,583, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 336,384, Apr. 10, 1989, abandoned. This application Oct. 2, 1991, Ser. No. 771,875

Int. Cl.[5] G09G *1/00*

U.S. Cl. 395—148 **14 Claims**

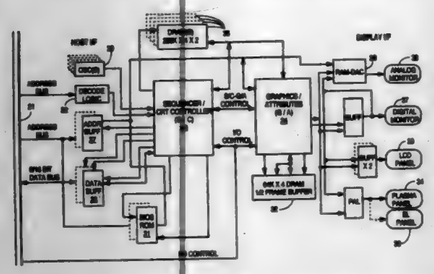
1. A method for producing vertical centering of a raster image made up of r sequential lines on a display device which displays a series of sequential frames of n horizontal lines on a raster imaging surface, where r is less than n, each said frame of n lines having a controllable start time, said method comprising the steps of

detecting the time of the beginning of the first line or the last line, or both, of said r lines in one of said raster images;

controlling the start time of a subsequent one of said sequential frames at a time determined by said detected time of said beginning of said first or said last, or both, of said r lines; and

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beginning the display of said raster image based on said controlled start time of said sequential frames of said n



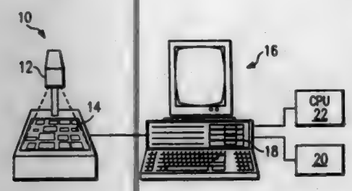
horizontal lines so that said r lines of said raster image are positioned in the center of said raster imaging surface.

5,293,475

ELECTRONIC YEARBOOK PUBLICATION SYSTEM

Edward L. Hennigan, Plano; Christopher M. Wiencek, Dallas, and Deborah Evans, Irving, all of Tex., assignors to Taylor Publishing Company, Dallas, Tex.

Filed Nov. 18, 1991, Ser. No. 795,198
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—148 **29 Claims**



1. A system for publishing yearbooks, including text, graphics, and images, comprising:

scanning circuitry for generating digital images from photographs;

image processing circuitry for processing the digital images, said image processing circuitry operable to enhance the quality of the images;

storage circuitry coupled to the image processing circuitry for storing the processed digital images;

publishing circuitry for generating page layouts, including text and graphics and further including defined regions where the processed digital images are to be subsequently placed; and

circuitry for sizing the stored digital images to fit the defined regions in the page layouts, and for placing the sized digital images in said defined regions.

5,293,476

SYSTEM FOR ENTERING AND MODIFYING VARIABLE NAMES FOR TERMINALS OF ICONS IN AN ICONIC PROGRAMMING SYSTEM

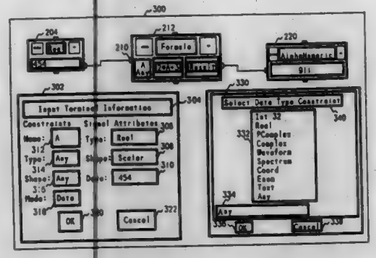
Susan G. Wolber, Ft. Collins, and Douglas C. Beethe, Loveland, both of Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Mar. 12, 1991, Ser. No. 668,285
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—159 **6 Claims**

4. A name modification system for entering and modifying names of terminals of an icon of an iconic programming system within a computer system, each icon having multiple terminals located on an edge of the icon, said name modification system comprising:

means for accepting a display request to display a name assigned to a terminal of an icon within said iconic programming system;

means for obtaining said name assigned to said terminal from said terminal of said icon;



means for displaying said name assigned to said terminal in a dialog box of said iconic programming system;

means for accepting input data to change said name, wherein said input data may either delete characters from said name, insert characters into said name, replace characters within said name, or delete said name;

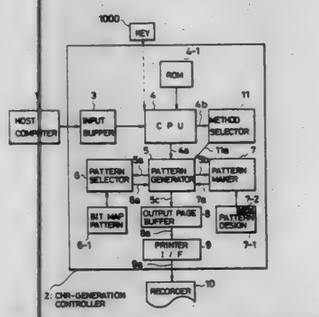
means for changing said name with said input data.

5,293,477

OUTPUT APPARATUS

Toru Matoba, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 489,233
Claims priority, application Japan, Mar. 8, 1989, 1-57313
Int. Cl.[5] G06F *03/14*
U.S. Cl. 395—151 **60 Claims**



11. An output apparatus operable in a first processing method in which a character pattern of a bit map form can be selected and output or in a second processing method in which a character pattern can be made by arithmetic operating processes and output, said apparatus comprising:

said discriminating means for discriminating a memory capacity in said apparatus in the case of outputting a certain character; and

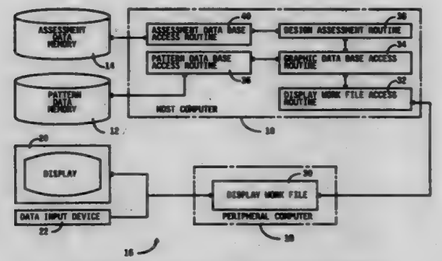
selecting means for selecting the second processing method when said discriminating means discriminates that the memory capacity is sufficient.

5,293,478

GRAPHICAL DESIGN PROCESSING APPARATUS FOR ASSESSING AND MODIFYING DESIGN OF COMPONENTS

Takemi Yamamoto, Nagoya; Hitoshi Yoshida, Kohnan, and Katsuhiko Yokoi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 18, 1990, Ser. No. 629,629
Claims priority, application Japan, Dec. 28, 1989, 1-344609
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—161 **7 Claims**



1. A graphic data processing apparatus comprising:

a data input device for entering graphic data and assessment item data, said graphic data including data representative of points defining a drawing of an article of manufacture, said assessment item data specifying at least one assessment item;

graphic data processing means for generating, according to said graphic data, drawing data representative of said article of manufacture, said drawing data including said data representative of said points and data representative of lines connecting the points;

a display for displaying a drawing corresponding to the generated drawing data;

a pattern data memory for storing the drawing data representative of said drawing;

an assessment data memory for storing assessment data; and

design assessing means for retrieving from said pattern data memory a retrieved portion of said drawing data, the retrieved portion relating to at least one assessment item specified by said assessment item data, and assessing said retrieved portion of the drawing data, for each of said at least one assessment item, based on a portion of said assessment data relating to said at least one assessment item,

said design assessing means including:

(a) means for displaying design assessment instructions on said display, according to said retrieved portion of said assessment data, so that a user of the apparatus is aided in assessing adequacy of said retrieved portion of said drawing data, for said each assessment item,

(b) means for rendering said graphic data processing means operable to permit a user of the apparatus to revise said retrieved portion of the drawing data in response to an assessment by said user, according to said design assessment instructions, that said retrieved portion of said drawing data is not acceptable,

(c) determining means for determining at least one physical value of said article of manufacture associated with said each assessment item, based on at least said retrieved portion of said drawing data, and

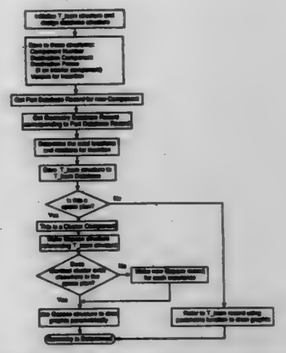
(d) decision means for deciding whether said at least one physical value calculated by said determining means is acceptable, by comparing each calculated physical value with a predetermined reference value, said decision means rendering said graphic data processing means operable to permit the user of the apparatus to change said retrieved portion of the drawing data, in response to a result of said comparison.

5,293,479

DESIGN TOOL AND METHOD FOR PREPARING PARAMETRIC ASSEMBLIES

Stephen Quintero, and Jim Smith, both of Los Angeles, Calif., assignors to Quintero Smith Incorporated, Los Angeles, Calif.

Continuation-in-part of Ser. No. 727,819, Jul. 8, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 871,310
Int. Cl.[5] G06F *15/60, 3/00*
U.S. Cl. 395—161 **24 Claims**



19. A method of designing a connected collection of components where each said component can be described by a least one constant characteristic and at least one variable characteristic, said method comprising

using a computer-based expert system which includes information about

a first connectable component and a second connectable component, each capable of being connected to the other determined by the state of a variable characteristic of said first component,

a stored value for said variable characteristic of said first component, and

a rule for connecting said first and second connectable components,

providing a first list of components which can be used to begin designing a connected collection, said first list including said first component,

selecting said first component from said first list,

testing the value of said variable characteristic of said first component to determine whether said first component can be combined with said second component, and if so

providing a second list of components which can be connected to said first component, said second list including said second component, and

selecting said second component from said second list to form a connected collection.

5,293,480

HIGH RESOLUTION GRAPHICS SYSTEM ARCHITECTURE

Robert W. Miller, Hazlet, and John H. Spicer, Scotch Plains, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 563,135, Aug. 6, 1990. This application Feb. 1, 1993, Ser. No. 13,488
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—163 **16 Claims**

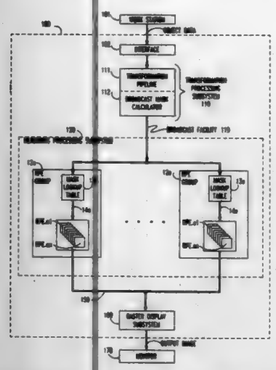
1. A graphics generation system comprising

means for assigning columns of pixels of a prestored image to successive rendering processor elements of a group of processor elements on a cyclically recurring basis,

means for routing object data, representing an object extending over several columns in said image, to selected proces-

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sor elements of said group of processor elements for concurrent processing thereat, said selected processor elements being selected to include all processor elements necessary to process any scan line of said object, each of



said selected processor elements assigned to render a column of pixels of said object, each of said selected processor elements being used to concurrently process all scan lines of said object.

5,293,481

DATA PARALLEL PROCESSING APPARATUS

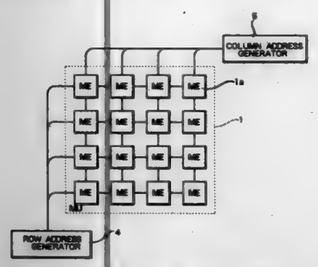
Yoshinobu Mita, Kawasaki; Miyuki Enokida, Yokohama; Yoshihiro Ishida, Kawasaki, and Naoto Kawamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,460, Mar. 12, 1991, abandoned, which is a continuation of Ser. No. 155,845, Feb. 12, 1988, abandoned. This application Jun. 3, 1993, Ser. No. 71,351

Claims priority, application Japan, Feb. 18, 1987, 62-033171; Feb. 18, 1987, 62-033170; Feb. 18, 1987, 62-033174; Feb. 18, 1987, 62-033175; Feb. 18, 1987, 62-033176; Feb. 18, 1987, 62-033177; Feb. 18, 1987, 62-033178; Feb. 18, 1987, 62-033179; Feb. 18, 1987, 62-033180; Feb. 18, 1987, 62-033181; Feb. 18, 1987, 62-033182; Feb. 19, 1987, 62-033172

Int. Cl.[5] G06F *3/153*

U.S. Cl. 395—163 **34 Claims**



1. An image processing apparatus comprising:

(a) an image memory for storing an image, the image memory being divided into a plurality of unit processing areas, each of said unit processing areas containing a plurality of areas, and each of said plurality of areas being further comprised of pixels, wherein each of said pixels is capable of being addressed and accessed independently;

(b) a processor unit comprising a plurality of processor elements arranged in a two-dimensional array, the number whereof is smaller than the number of pixels in each of said areas, for simultaneously processing a plurality of pixels in said plurality of areas without using a pyramidal array of processor elements; and

(c) address control means for controlling addresses in accordance with the relationship among the size of said plurality of areas, the number of said processor elements and the size of a unit processing area corresponding to one kind of image processing in order to scan the unit processing area and then scan said image memory by repeating scanning of the unit processing area in order, wherein said address control means controls addresses such that each of said plurality of processor elements sequentially accesses a plurality of pixels in the image which are isolated from each other.

5,293,482

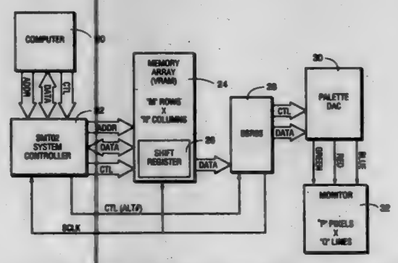
METHOD AND APPARATUS FOR PARTIAL DISPLAY AND MAGNIFICATION OF A GRAPHICAL VIDEO DISPLAY

George W. Lambidakis, Aptos, Calif., assignor to SuperMac Technology, Inc., Sunnyvale, Calif.

Filed Oct. 18, 1991, Ser. No. 779,398

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—164 **18 Claims**



1. An apparatus for transferring contents of a memory array to a display screen wherein the memory array is arranged in a plurality of rows each row containing a first number of information elements for displaying a pixel and the display is arranged in a plurality of lines having a second number of pixels in each line wherein a transfer may occur after any one of the pixels, the apparatus comprising:

a) a memory controller coupled to the memory array for transferring the elements in a row from the memory array to a temporary storage location;

b) a shift means coupled to the temporary storage location for transferring a predetermined group of the elements one at a time from the temporary storage location to the display from a first element in the group to a last element in the group;

c) a position comparator coupled to the memory controller for providing a first signal indicating that a predetermined number of elements remain in the temporary storage location to be transferred to the display;

d) a video controller coupled to the memory controller for providing a second signal indicating that a line currently being written has been completed; and

e) means coupled to the memory controller for providing a third signal indicating that the first and second signals will be provided within a predetermined time period of one another.

5,293,483

COMBINED IMAGE AND CONTROL DATA IMAGE MEMORY DEVICE

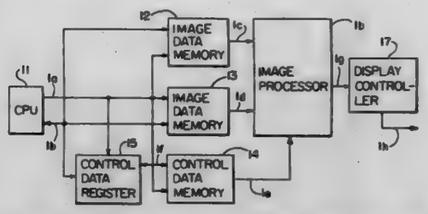
Norihiko Mizobata, Habikino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1991, Ser. No. 800,814

Claims priority, application Japan, Nov. 30, 1990, 2-340461

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—164 **12 Claims**



1. In an image data memory device for a computer system in which an image address signal and an image data signal are generated, said image data memory device comprises:

a plurality of image data storing means for receiving said image address signal and said image data signal, and for, when said image address signal indicates writing of an image data and writing address, storing an image data on said image data signal at said writing address specified by said image address signal, and for, when said image address signal indicates reading an image data and reading address, reading out an image data from said reading address specified by said image address signal, and outputting said read out image data as an image data output signal;

first control date storing means for receiving said image address signal, and for, when said image address signal indicates writing of an image data and writing address, storing a process control data on a process control data signal at said writing address specified by said image address signal, and for sequentially outputting stored process control data as a process control data output signal;

second control data storing means for receiving said image address signal and said image data signal, and for storing at least one process control data, and for, when said image address signal indicates writing a data into one of said image data storing means, outputting a stored process control data as said process control data signal, and for, when said image address signal indicates writing a data into said second control data storing means, storing a process control data on said image data signal; and

image processing means for receiving said image data output signals from said plurality of image data storing means, and said process control data output signal, and for processing image data on said image data output signals in accordance with the contents of said process control data output signal, and for outputting a processed image data as a processed image data signal.

5,293,484

METHOD AND APPARATUS FOR CONTROLLING ELECTRONICS SIGNS USING RADIOPAGING SIGNALS

James M. Dabbs, III, Duluth; S. Tom Smith, Ellenwood, and Robert S. Bundy, Snellville, all of Ga., assignors to SignTel, Inc., Ellenwood, Ga.

Filed Jul. 22, 1992, Ser. No. 917,206

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—164 **24 Claims**

1. A method for formatting display programs as radiopaging signals to control electronic signs, comprising the steps of:

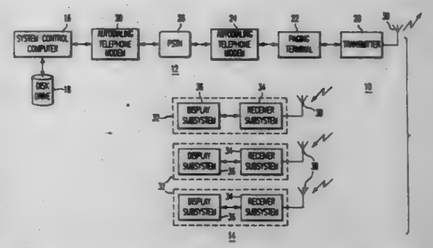
writing said display programs to digital memory;

creating a packet buffer in said digital memory;

generating a first data byte comprising a message identification number uniquely identifying at least one of said display programs and storing said message identification number in said packet buffer;

generating a second data byte comprising a packet sequence number uniquely identifying each of said packets created to transmit said display program to at least one electronic sign and storing said packet sequence number in said packet buffer;

reading a predetermined number of bytes of said display



program into said packet buffer, said predetermined number corresponding to the maximum number of bytes permitted per page in accordance with a selected radio paging format;

examining said display program stored in said digital memory to determine whether additional bytes of said display program remain;

transmitting the contents of said packet buffer to a paging terminal;

reading said predetermined number of said remaining bytes into said packet buffer; and

incrementing said packet sequence number by one.

5,293,485

DISPLAY CONTROL APPARATUS FOR CONVERTING COLOR/MONOCHROMATIC CRT GRADATION INTO FLAT PANEL DISPLAY GRADATION

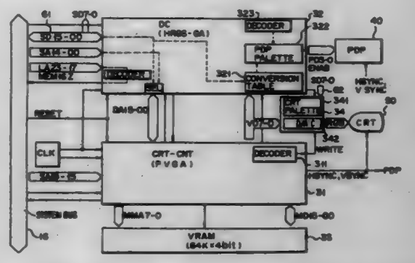
Hiroki Zenda, Hamura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 406,066, Sep. 12, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 7,023

Claims priority, application Japan, Sep. 13, 1988, 63-229016; Sep. 13, 1988, 63-229020

Int. Cl.[5] G06F *3/153*

U.S. Cl. 395—164 **52 Claims**



1. A display control apparatus in a system having a flat panel display (FPD) unit, the display control apparatus comprising:

CRT palette means for storing CRT display unit gradation data;

FPD palette means for storing FPD unit gradation data; and

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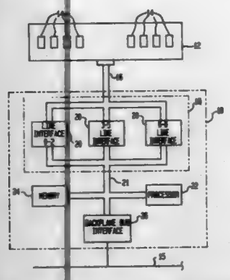
FPD unit gradation data generating means, coupled to the CRT palette means and the FPD palette means, for generating the FPD unit gradation data from the CRT display unit gradation data stored in said CRT palette means and for outputting the FPD unit gradation data to update said FPD palette means in response to a change in the CRT display unit gradation data stored in the CRT palette means.

5,293,486

DETERMINISTIC METHOD FOR ALLOCATION OF A SHARED RESOURCE

Michele A. Jordan, Moate, and Diarmiud J. Donnelly, Youghal, both of Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 724,538
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **6 Claims**



1. A method for allocating a shared resource among N operating devices in a computer system, the method comprising the steps of:

providing a plurality of buffers;

allocating preselected sets of the plurality of buffers to the N operating devices, one of the preselected sets of the plurality of buffers being allocated to one of the N operating devices for the storage of data relating to the respective one of the N operating devices;

operating the shared resource to poll the plurality of buffers in a round robin scheme, through a series of time slots, for processing of data stored in the plurality of buffers; and

operating the shared resource during each time slot to process data stored in at least one buffer of one of the preselected sets of buffers and to continue to process data in a second and subsequent buffers of the one of the preselected sets of buffers so long as the total amount of data processed in the time slot is less than a predetermined maximum amount of data.

5,293,487

NETWORK ADAPTER WITH HIGH THROUGHPUT DATA TRANSFER CIRCUIT TO OPTIMIZE NETWORK DATA TRANSFERS, WITH HOST RECEIVE RING RESOURCE MONITORING AND REPORTING

Andrew P. Russo, Hyde Park; Satish L. Rege, Groton, both of Mass.; Edward T. Sullivan, Highland Village, Tex., and Mark F. Kempf, Stow, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

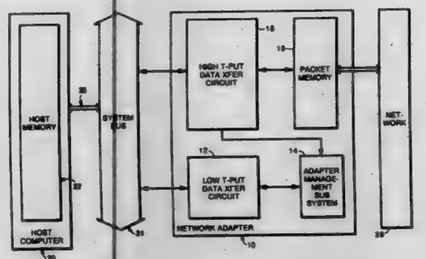
Filed Dec. 27, 1991, Ser. No. 815,008
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **18 Claims**

1. A network adapter for data transfer between a host computer system and a computer network, said network adapter coupled with both said host computer system and said computer network, said host computer system having a host memory, and said host memory containing one or more adapter manager command buffers, comprising:

a packet memory, containing one or more data packets received by said network adapter from said computer network;

a higher throughput data transfer circuit, coupled with said packet memory, for transferring said one or more data packets received from said computer network, from said packet memory to said host memory;

an adapter management subsystem, responsive to said adapter management command buffers in said host memory, for processing said adapter management command buffers, and for generating command responses in response to said adapter management command buffers; and



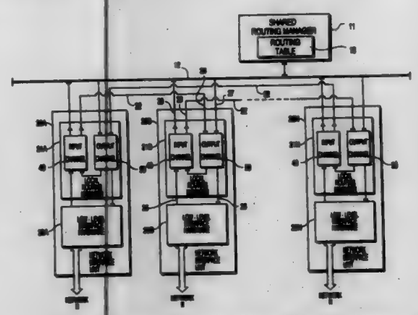
a lower throughput data transfer circuit, coupled with said adapter management subsystem, and responsive to said adapter management subsystem, for transferring said adapter management command buffers from said host memory to said adapter management subsystem and for transferring said command responses from said adapter management subsystem to said host memory.

5,293,488

MESSAGE-ROUTING APPARATUS

Martyn J. Riley, New Pitsligo, Scotland, and Anthony J. Wiley, Bristol, United Kingdom, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 26, 1992, Ser. No. 935,813
Claims priority, application European Pat. Off., Sep. 3, 1991, 91114793.2
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **14 Claims**



1. A message-routing apparatus for routing messages between a plurality of communications arrangements, each said message including a destination address at least when received at said message-routing apparatus, said apparatus comprising a plurality of interface units each operative to receive and/or transmit messages over an associated one of said communications arrangements, a shared routing manager, and internal

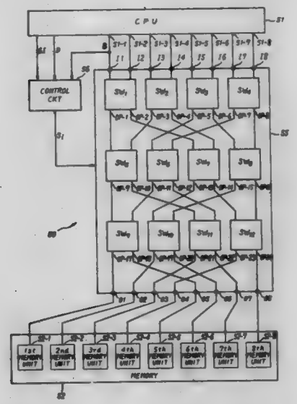
communication means inter-communicating the shared routing manager with the interface units, said shared routing manager providing a shared facility to said interface units for routing messages received by said units, on the basis of their respective destination addresses, to appropriate ones of said units for onward transmission over the associated communications arrangement, each said unit including a local routing manager with input means for receiving messages to be routed including messages newly received by the unit from its associated communications arrangement, first output means for messages that are to be transmitted on over the associated communications arrangement, and second output means for other of said messages, said local routing manager being operative to provide a limited routing function involving identifying messages received by said input means which from their destination addresses are to be transmitted on by the same interface unit over its associated communications arrangement, and passing the identified messages, as routed messages, to said first output means and other of said messages, as unrouted messages, to said second output means; and said apparatus including a plurality of point-to-point links that serve to interconnect the local routing managers into a closed loop by connecting said second output means to each local routing manager to the said input means of a next said local routing manager whereby to permit unrouted messages to be passed along between said units for routing; said apparatus further including forwarding means for passing messages unrouted by said local routing managers to said shared routing manager for routing thereby.

5,293,489

CIRCUIT ARRANGEMENT CAPABLE OF CENTRALIZING CONTROL OF A SWITCHING NETWORK

Toshiyuki Furui; Naoto Kaji; Gizo Kadaira, and Kouji Kinoshita, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 829,622, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 393,843, Aug. 7, 1989, abandoned, which is a continuation of Ser. No. 822,196, Jan. 24, 1986, abandoned. This application May 13, 1993, Ser. No. 60,719
Claims priority, application Japan, Jan. 24, 1985, 60-11564; Jan. 24, 1985, 60-11565; Jan. 30, 1985, 60-17628; Jan. 30, 1985, 60-17629; May 22, 1985, 60-109715; May 22, 1985, 60-109716
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **21 Claims**



1. A memory accessing system, comprising:

a memory including a plurality of memory units;

a switching network for accessing said memory, comprising

a first port set including consecutively numbered input ports,

a second port set including consecutively numbered output ports connected to said memory units, respectively,

ports of one set of said first port set and said second port set including a reference port having a reference port number,

ports of another set of said first port set and said second port set being arranged in a numerical order, and

a plurality of switching units for forming internal paths between said input ports and said output ports for selectively accessing said memory units,

said switching units connecting said ports of said one set to said ports of said another set at a predetermined port interval relative to said reference port,

said switching units forming said internal paths on the basis of a predetermined relationship between said reference port number and said predetermined port interval;

a control circuit for producing a control signal set including a set of control signals based upon said reference port number and said predetermined port interval; and

delivering means for delivering said control signal set to said switching units independently of said input ports and internal paths;

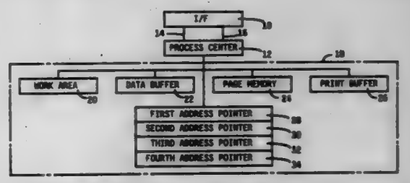
said control circuit performing concentrated control of said switching network with said control signals to cause said switching network to synchronously operate to simultaneously connect said input ports and said output ports to provide access to said memory units at said input ports.

5,293,490

DATA BUFFERING DEVICE HAVING SIMPLE DATA READING AND/OR STORING FUNCTION

Ichiro Sasaki, and Kouzi Nakayama, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 487,185, Mar. 1, 1990, abandoned. This application Apr. 30, 1993, Ser. No. 54,821
Claims priority, application Japan, Mar. 6, 1989, 1-53222
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—250 **23 Claims**



1. A data buffering device comprising:

a data buffer including a plurality of storage areas, each one of the plurality of storage areas capable of storing one of a plurality of data sets, the plurality of storage areas comprising a leading storage area, a trailing storage area and a predetermined sequence of intermediate storage areas between the leading and trailing storage areas;

a storage area point for pointing to one of the plurality of storage areas as a current storage area such that, after writing one of the plurality of data sets into the current storage area, the storage area pointer is advanced to point to a following one of the plurality of storage areas as a next storage area, the next storage area following the current storage area in the predetermined sequence;

a current output area pointer for pointing to a first one of a plurality of filled storage areas as a current output area, each one of the plurality of filled storage areas having one of the plurality of data sets stored herein, such that, after reading one of the plurality of stored data sets from the current output area, the current output area pointer is advanced to point to a following one of the plurality of

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filled storage areas as a next output area, the next output area following the current output area in the predetermined sequence;

a last output area pointer for pointing to a second one of the plurality of filled storage areas as a last output area;

first buffer-state-judging means for determining whether the data buffer is in a first state wherein a current relationship between the current output area and the trailing storage area coincides with a predetermined relationship between the current output area and the trailing storage area, thereby indicating a need to change the current output area pointer to point to the leading storage area as the current output area of the data buffer;

second buffer-state-judging means for determining whether the data buffer is in a second state wherein the current output area is greater than a first predetermined number of the plurality of storage areas from the current storage area;

third buffer-state-judging means for determining whether the data buffer is in a third state wherein the current output area is greater than a second predetermined number of the plurality of storage areas from the last output area, wherein the second predetermined number is not greater than the first predetermined number;

first data-buffering means for performing a simple data reading in response to a positive determination by the third buffer-state-judging means and without operating the first and second buffer-state-judging means, the simple data reading comprising (i) a data output operation and (ii) a current output area advancing operation; and

second data-buffering means for carrying out a complex data reading by operating the first and second buffer-state-judging means in response to a negative determination by the third buffer-state-judging means so that in response to at least one of a positive determination by the first buffer-state-judging means and a positive determination by the second buffer-state-judging means, the complex data reading comprises at least one of repositioning the current output area pointer to the leading storage area and repositioning the last output area pointer to a filled one of the plurality of storage areas spaced at least the first predetermined number from the current storage area, to place the data buffer into the third state prior to carrying out the simple data reading, and so that in response to a negative determination by the second buffer-state-judging means, the second data-buffering means prevents carrying out the simple data reading until the data buffer is placed into the second state.

5,293,491

DATA PROCESSING SYSTEM AND MEMORY CONTROLLER FOR LOCK SEMAPHORE OPERATIONS

Wan L. Leung; Richard A. Kelley, both of Coral Springs, and Leslie F. McDermott, Lake Worth, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 28, 1990, Ser. No. 635,896
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **10 Claims**

1. A data processing system comprising;

an expansion bus having address lines, data lines, and control lines including a BURST signal line for controlling burst I/O burst data transfers;

a local processor;

a remote processor;

a remote memory having a remote semaphore at a first semaphore address;

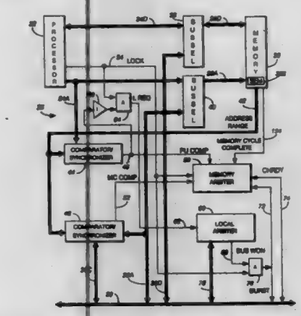
a remote memory controller connected to said remote memory for controlling access to said remote memory;

first means interconnecting said local processor, said remote processor, said remote memory controller, and said expansion bus, to share said remote memory between said processors;

said local processor being operative to initiate a first remote lock semaphore operation by generating a first LOCK signal and said first semaphore address;

bus arbitration means connected to said expansion bus and to said local processor, said bus arbitration means being responsive to said first LOCK signal for arbitrating for use of said expansion bus by said local processor and for generating a BUS WON signal when said local processor has been granted use of said expansion bus;

first logic means connected to said local processor, said expansion bus, and said bus arbitration means, said first logic means being responsive to said first LOCK signal and to said BUS WON signal to drive an active BURST signal onto said BURST line, said BURST line being used for remote lock semaphore operations as well as for controlling I/O burst data transfers;



said local processor being further operative, upon being granted use of said expansion bus, to transmit said first semaphore address on said address lines when said BURST signal is active on said burst line;

said remote memory controller includes memory arbitration means connected to said BURST signal line and being responsive to said active BURST signal and to said semaphore address, to arbitrate and permit said local processor to access said remote memory; and

said local processor being further operative to perform read/modify/write cycles on said remote semaphore, to thereby complete said first remote lock semaphore operation.

5,293,492

DATA PROCESSING SYSTEM CAPABLE OF STORING FIRMWARE DATA IN CONTROL MEMORIES OF AN INPUT-OUTPUT PROCESSOR WITH REDUCED HARDWARE

Hajime Oyadomari, and Toru Fukuta, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,162
Claims priority, application Japan, Aug. 31, 1988, 63-214789
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—275 **10 Claims**

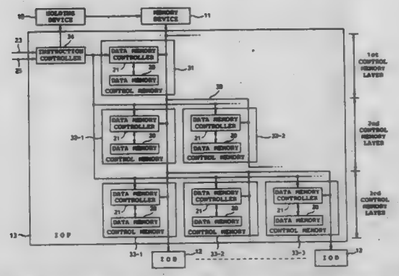
1. A data processing system for transferring input-output data between a memory device and input-output devices through a data path between said memory device and said input-output devices, comprising:

holding means for holding first through N-th firmware data;

an input-output processor comprising first through N-th control memory layers corresponding to said firth through said N-th firmware data, where N represents an integer greater than one, each of said first through said N-th control memory layers comprising at least one control memory connected to said data path, said input-output processor controlling transfer of input-output data between said memory device and said input-output devices through said data path when said first through said N-th firmware data are stored in said control memories of said first through said N-th control memory layers, respectively, and

said input-output processor further comprising data controlling means connected to said holding means and responsive to a firmware load instruction for issuing a read-out command for said first through said N-th firmware data to be read from said holding means as first through N-th read-out firmware data, respectively;

said holding means being connected to said memory device and responsive to said read-out command for providing said memory device with said first through said N-th



read-out firmware data, said memory device storing said first through said N-th read-out firmware data as first through N-th memorized firmware data, respectively;

said data controlling means being connected to the control memories of said first through said N-th control memory layers to store said first through said N-th memorized firmware data in said control memories of said first through said N-th control memory layers, respectively, through said data path,

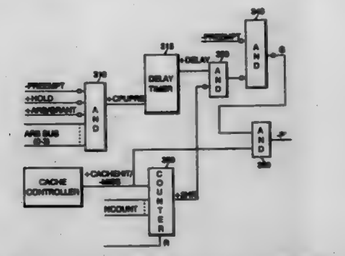
a control memory of one layer controlling transferring of said memorized firmware data to a control memory of another layer, through said data path.

5,293,493

PREEMPTION CONTROL FOR CENTRAL PROCESSOR WITH CACHE

Bruce A. Smith, Jupiter, and Loc T. Tran, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1989, Ser. No. 428,259
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **4 Claims**



1. In a computer system having a data bus and plural masters, including a main processor, connected thereto which contend for said data bus using bus request signals transmitted over a signal path connecting said masters to arbitration control logic which identifies, by a device identifying signal on an arbitration bus of said computer system, a current bus owner, said system having a memory cache system connected to said data bus to cooperate with said main processor to provide data from a cache buffer which includes first means to provide a first logic signal for each instance when such data is provided, a preference circuit for the main processor comprising:

second means connected to receive said device identifying signal for detecting intervals in which said main processor is identified as owner of the data bus and for generating a second logic signal during such interval;

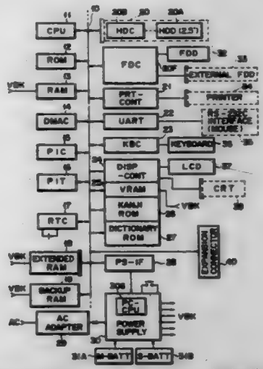
third means connected to said first means for receiving and counting said first logic signals and producing a third logic signal when a predefined count is reached; a gate connected to receive said second and third logic signals and included in said signal path ahead of said arbitration control logic to intercept said bus request signals, which gate blocks said bus request signals when said second logic signal is active while said third logic signal is not active and otherwise passes said bus request signal to said arbitration control logic.

5,293,494

PERSONAL COMPUTER FOR SETTING, IN A SOFTWARE SETUP OPERATION NORMAL/REVERSE DISPLAY, CONNECTION OF AN EXTERNAL DEVICE, AND AN AUTOMATIC DISPLAY OFF FUNCTION

Toshimitsu Saito, Fuchu, and Junko Koano, Oome, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 541,948, Jun. 22, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 29,963
Claims priority, application Japan, Jun. 23, 1989, 1-162232
Int. Cl.[5] G06F *13/00, 1/26*
U.S. Cl. 395—275 **17 Claims**



1. An information processing system including means for communicating address and data information in the system, means for supplying a driving power from a battery to the system, a memory, a peripheral device, means for accessing the peripheral device through the communicating means, coupled to the supplying means, for controlling the driving power to the peripheral device by using a setup utility stored in the memory, the controlling means comprising:

said memory including means for storing a power control interval, the interval representing an interval since the peripheral device has last been accessed;

means for executing the setup utility at a power-on of the system and displaying the stored power control interval;

means for selecting a power control interval of the system, coupled to the executing means;

means, coupled to the selecting means, for determining whether the selected power control interval is different from said stored interval;

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means for writing the selected interval in the storage means, thereby updating the stored interval when the selected interval is different from the stored interval;

means for determining whether the peripheral device is being accessed;

means for counting an interval since the peripheral device has been last accessed when the determining means determines that the peripheral device is not being accessed; and

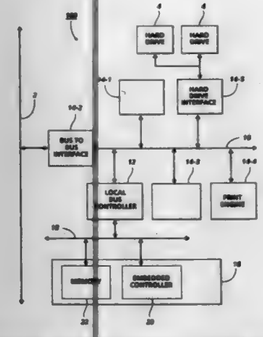
means, coupled to the counting means, for outputting a power control signal to the peripheral device when the counted interval exceeds the stored power control interval.

5,293,495

METHOD OF ADDRESSING DEVICES AND TRANSFERRING DATA ON A BUS

Uoc H. Nguyen; George L. Eldridge, both of Long Beach, and Otto Sperber, Huntington Beach, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1992, Ser. No. 907,756
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—325 **2 Claims**



1. A method for transferring data in a digital data bus system from a selected data source of one device to a selected destination of another device, the bus system including a bus having a clock line for communicating a clock signal, address lines for communicating address signals, data lines for communicating data signals, and control lines for communicating control signals, a bus controller connected to the bus for controlling the bus, the controlling including communicating bus address assignments on the address lines, and a plurality of devices, each device having at least one data source or data destination, each device, source and destination being connected to the bus and capable of being programmed with a predetermined bus address by the bus controller, the control lines including a bus grant line and a device select line to each device from said controller, the bus grant line for communicating a bus grant signal for permitting devices addressed by the bus controller to send or receive data signals, the device select lines for communicating device select signals that enable the selected device to source data onto the data bus, the method comprising the steps of:

generating, by the bus controller, a device select signal on the device select line of the device having the selected data source;

receiving, by the device selected by the device select signal, the device select signal;

generating, by the bus controller, a bus grant signal on the bus grant line and source address and destination address signals on the address lines, both addresses being sent out at the same time on the address lines;

receiving, by the devices, the bus grant signal and the source address and destination address signals;

decoding, by the devices, the source address and destination address signals in response to the bus grant signal;

comparing, by each device, the decoded source and destination addresses to its own predetermined bus addresses to determine the selected source and destination;

sending, by the device having the predetermined address corresponding to the decoded source address signal, of data signals along the data lines, in response to the bus grant signal, the device select signal and the decoded source address signal; and

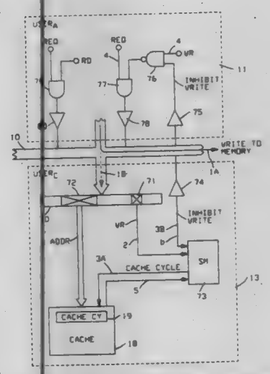
receiving, by the device having the predetermined address corresponding to the decoded destination address signal, of the data signals sent by the addressed source device, in response to the bus grant signal and the decoded destination address signal.

5,293,496

INHIBIT WRITE APPARATUS AND METHOD FOR PREVENTING BUS LOCKOUT

Theodore C. White, Tustin; Jayesh V. Sheth, Mission Viejo; Dan T. Tran, and Paul B. Ricci, both of Laguna Niguel, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 12, 1993, Ser. No. 3,352
Int. Cl.[5] G06F *13/36*
U.S. Cl. 395—325 **12 Claims**



1. In a computer system having a time-shared bus with a plurality of bus Users and a main memory coupled to said bus, said plurality of bus Users including first and second bus Users, said first bus User operative to issue bus requests to said bus to use said bus and to receive bus grants, granting bus use thereto, said bus requests including a write request to place a WRITE instruction on said bus to write to said main memory at an address specified by said WRITE instructions, said second bus User having a cache memory system for storing words from said main memory, said cache memory system having cache cycle control means for effecting a cache cycle in response to said WRITE instruction, said cache cycle being operative to determine if said cache memory system is storing a word from said main memory from said address specified by said WRITE instruction and to invalidate said word in said cache memory system; bus lockout prevention apparatus comprising

inhibit write means in said second bus User for issuing an INHIBIT WRITE signal to said bus during said cache cycle, and

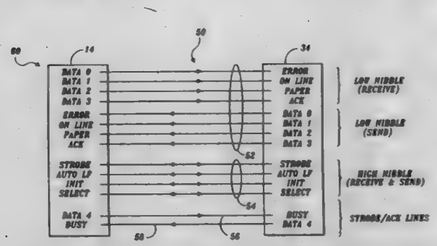
inhibiting means in said first bus User for inhibiting said write request in response to said INHIBIT WRITE signal and for issuing said write request to said bus when said INHIBIT WRITE signal terminates.

5,293,497

CABLE FOR TRANSMITTING EIGHT-BIT PARALLEL DATA

Gordon G. Free, Freeland, Wash., assignor to Traveling Software, Inc., Bothell, Wash.

Division of Ser. No. 668,778, Mar. 13, 1991, Pat. No. 5,261,060.
This application Apr. 15, 1993, Ser. No. 48,854
Int. Cl.[5] G06F *13/40*
U.S. Cl. 395—325 **4 Claims**



1. A cable for use in transmitting parallel data between a first computer and a second computer, wherein the first computer and the second computer are of the type that include a parallel communications port having a data output register, a status register and a control register, wherein the cable comprises:

a first connector that is connectable to the parallel communications port of the first computer,

a second connector that is connectable to the parallel communications port of the second computer,

a plurality of conductive leads disposed between the first and second connectors, wherein the plurality of conductive leads include:

a first set of leads that couple the data output register of the first computer to the status register of the second computer, wherein the first set of leads carry a first portion of the parallel data from the first computer to the second computer; and

a second set of leads that couple that control register of the first computer to the control register of the second computer, wherein the second set of leads carry a second portion of the parallel data from the first computer to the second computer.

5,293,498

ARRANGEMENT OF DESIGNATION OF DRIVE ELEMENT NUMBER USING MOTHER BOARDS

Masahito Iwatsubo, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 765,995, Sep. 26, 1991. This application Apr. 19, 1993, Ser. No. 49,879
Claims priority, application Japan, Sep. 28, 1990, 2-259073
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **8 Claims**

1. An apparatus for selecting a designated drive element from groups of drive elements, the apparatus comprising:

control means for communicating to the drive elements;

a first group of drive elements;

a second group of drive elements;

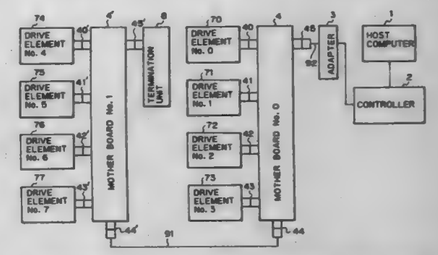
a first group of connecting means wherein each connecting means corresponds to a drive element from said first group of drive elements;

a second group of connecting means wherein each connecting means corresponds to a drive element from said second group of drive elements;

a first mother board, containing said first group of connecting means, for electrically coupling said first group of drive elements to said control means through said first group of connecting means;

a second mother board, containing said second group of connecting means, for electrically coupling said second group of drive elements to said control means through said second group of connecting means;

each of said corresponding connecting means including a plurality of connection terminals which correspond to bits that represent a drive element number such that the corresponding drive elemtns acknowledge their selection by comparing the drive element number, as communicated from the control means, to a logic level associated with



said connection terminals, the associated logic levels of the connection terminals defining at least two lower bits and at least an uppermost bit of the drive element number for a given drive element

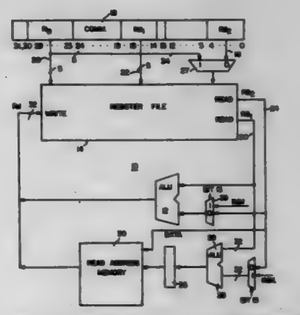
whereby said first and second group of connecting means have a same connection terminal structure so that said first and second mother boards have a substantially identical connection structure.

5,293,499

APPARATUS FOR EXECUTING A RISC STORE AND RI INSTRUCTION PAIR IN TWO CLOCK CYCLES

Eric H. Jensen, Livermore, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 458,576, Dec. 29, 1989, abandoned.
This application Sep. 21, 1990, Ser. No. 588,494
Int. Cl.[5] G06F *9/28*
U.S. Cl. 395—375 **6 Claims**



1. In a reduced instruction set computer (RISC) system comprising a first instruction having three read addresses and a second instruction having a read address, a data constant, and a write address, a central processing unit (CPU) for executing said first and second instruction in two clock cycles, said CPU comprising:

(a) first register means coupled to an instruction issuing unit of said RISC system for receiving said first and second instructions in a first and a second clock cycle as inputs, and in response, storing the first and second read addresses of said first instruction during said first clock cycle, said read address, data constant and write address of said second instruction during said second clock cycle, and the

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third read address of said first instruction during said first and second clock cycles, and outputting the first and second read addresses of said first instruction during said first clock cycle, the third read address of said first instruction and said read address, data constant, and write address of said second instruction during said second clock cycle;

(b) second register means coupled to said first register means for receiving the first and second read addresses of said first instruction during said first clock cycle, the third read address of said first instruction and said read address, data constant, and write address of said second instruction during said second clock cycle, and in response, outputting a first and a second data output during said first clock cycle, and a third and a fourth data output during said second clock cycle, and storing a data input during said second clock cycle;

(c) address generation means coupled to said second register means and a memory unit of said RISC system for receiving said first and second data output during said first clock cycle, and in response, generating a memory address for said memory unit during said first clock cycle;

(d) arithmetic means coupled to said first and second register means for receiving said fourth data output and data constant during said second clock cycle, and in response, generating said data input for said second register means during said second clock cycle, said third data output being received by said memory unit during said second clock cycle.

5,293,500

PARALLEL PROCESSING METHOD AND APPARATUS

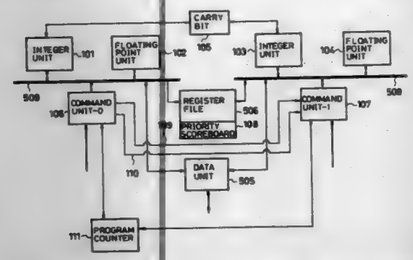
Hitoshi Ishida; Shigeyuki Kazama, and Minoru Shiga, all of Kanagawa, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Continuation of Ser. No. 523,811, May 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 478,196, Feb. 12, 1990, Pat. No. 5,226,166. This application May 27, 1993, Ser. No. 76,023

Claims priority, application Japan, Feb. 10, 1989, 1-31652; May 17, 1989, 1-123154; May 17, 1989, 1-123155; May 29, 1989, 1-135406

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **4 Claims**



1. A parallel processor for an information processing system having a plurality of processing units for performing general computer operations such as fetching, decoding, executing and storing commands, which comprises:

a plurality of register files provided for each of said processing units and each consisting of a plurality of registers for storing predetermined information;

an execution order arbiter for detecting a register contention between said processing units when a plurality of said processing units access the same register file, and adjusting an execution order for said processing units according to a predetermined priority order that a preceding command is executed before a succeeding command; and

a selector for enabling independent read operations by each of said processing units from the registers of each of said register files and simultaneous write operations by each of said processing units onto the registers of all of said register files, and controlled by said execution order arbiter to enable one of said execution order when a plurality of said processing units access the register simultaneously.

5,293,501

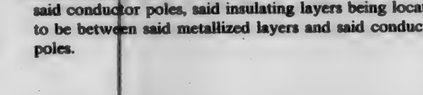
METHOD AND APPARATUS FOR INSTALLING/DRESSING A WIRING HARNESS

Kelvin J. Bennett, Tipton, and Mark E. DeMott, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 474,980, Feb. 5, 1990, Pat. No. 5,064,970. This application Sep. 6, 1991, Ser. No. 756,012

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—135 **10 Claims**



1. A method for inserting a wiring harness including loose extensions projecting therealong through an opening of a structural member during a manufacturing operation for producing a product including the structural member comprising the steps of:

forming a tubular shroud member of a stretchable material;

applying said tubular shroud member to the wiring harness to enshroud and thereby contain the extensions within said tubular shroud member;

passing the enshrouded wiring harness through said opening; and

removing the tubular shroud member after the wiring harness has been passed through said opening.

5,293,502

INTEGRATED CIRCUIT PACKAGE

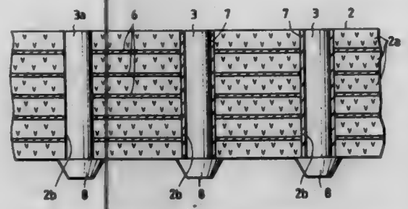
Yukihiro Kimura; Nobuhiko Miyawaki, and Masao Kuroda, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Apr. 15, 1992, Ser. No. 868,567

Claims priority, application Japan, Apr. 16, 1991, 3-83860

Int. Cl.[5] H05K *01/00*

U.S. Cl. 174—250 **16 Claims**



1. An integrated circuit package comprising;

an insulating substrate having a laminated structure including a plurality of insulating plates, said substrate defining a plurality of holes for receiving conductor poles;

metallized layers configured to shield said conductor poles from each other, said metallized layers being on said insulting plates; and

insulating layers for insulating said metallized layers from said conductor poles, said insulating layers being located to be between said metallized layers and said conductor poles.

5,293,503

SEMICONDUCTOR DEVICE HAVING MULTILAYER METAL INTERCONNECTION

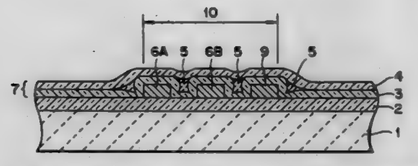
Tadashi Nishigoori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 943,228

Claims priority, application Japan, Sep. 11, 1991, 3-231300

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **2 Claims**



1. A semiconductor device, comprising: a semiconductor substrate; an insulating film formed on a major surface of said semiconductor substrate; a first wiring formed on said insulating film, said first wiring being elongated to provide a first elongated portion; a second wiring formed on said insulating film, said second wiring being elongated to provide a second elongated portion, said first elongated portion and said second elongated portion running in parallel to each other with a first space therebetween; a dummy wiring formed on said insulating film and elongated in parallel to said second elongated portion of said second wiring with a second space therebetween, said first space being substantially equal to said second space; a first interlayer insulating film consecutively covering said first wiring, said second wiring and said dummy wiring and said insulating film to thereby form a first groove along with said first space between said first elongated portion and said second elongated portion and a second groove along with said second space between said second elongated portion and said dummy wiring; a coated insulating film filling said first groove and said second groove to even out a surface of said first interlayer insulating film; and a second interlayer insulating film consecutively covering said first interlayer insulating film and said coated insulating film.

5,293,504

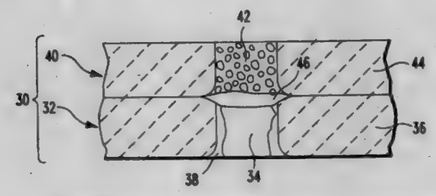
MULTILAYER CERAMIC SUBSTRATE WITH CAPPED VIAS

John U. Knickerbocker, Hopewell Junction; Charles H. Perry, Poughkeepsie, and Donald R. Wall, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1992, Ser. No. 949,598

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—262 **31 Claims**



1. A multilayer ceramic substrate for electronic applications comprising:

(a) at least one internal layer having vias at least partially filled with a metallic material;

(b) at least one sealing layer having vias at least partially filled with a composite material that is a mixture of ceramic and metallic materials wherein at least one via from the internal layer is aligned with at least one via from the sealing layer; and

(c) a cap of material interposed between the aligned vias wherein the cap of material is selected from the group of materials consisting of a metallic material and a composite material that is a mixture of ceramic and metallic materials and wherein the cap material is a composite material and has an amount of ceramic material that is equal to or less than that in the sealing layer vias.

5,293,505

QUICK RESPONSE SOLID STATE RELAY HAVING A THYRISTOR DISCHARGE CIRCUIT AND A PHOTOTRANSISTOR

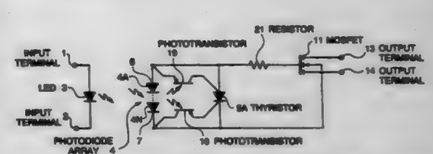
Kenji Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,377

Claims priority, application Japan, Feb. 26, 1992, 4-039813

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **8 Claims**



1. A solid state relay comprising a light emitting element receiving an input signal for emitting light, a photodiode array located to receive the light emitted from said light emitting element for generating a photo voltage corresponding to the received light, a MOSFET having its gate connected to an anode of said photodiode array so as to receive said photo voltage, a source and a drain of said MOSFET being connected to first and second output terminals, respectively, a thyristor having its anode and its cathode connected to said anode and a cathode of said photodiode array, respectively, and a first phototransistor located to receive the light emitted from said light emitting element and connected between said cathode of said photodiode array and a positive gate of said thyristor, for turning off said thyristor when said light emitting element is energized to emit the light and for turning on said thyristor when said light emitting element is deenergized to emit no light.

5,293,506

VACUUM SWITCH TUBE INCLUDING WINDMILL ELECTRODES

Mitsumasa Yorita, Kagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,032

Claims priority, application Japan, Jun. 17, 1991, 3-171718

Int. Cl.[5] H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**

1. A vacuum switch tube electrical assembly comprising:

a pair of windmill type electrodes, each including

an auxiliary electrode including

a central hub portion having an axis; and

a plurality of arcuate arms, each arcuate arm having proximate and distal ends, each arcuate arm being attached at the proximate end to the central hub portion and extending outward in a spiral direction along a plane that is substantially perpendicular to the axis of the central hub portion, and each arcuate arm having a connecting portion formed on a top side of the arcuate arm near the distal end; and

a ring-shaped electrode having top and bottom sides, the bottom side connected to the connecting portions of the plurality of arcuate arms; and

a pair of electrode bars, each electrode bar having a top end upon which is mounted the central hub portion of one of the pair of windmill type electrodes so that the hub axis is coincident with an axis of the electrode bar;



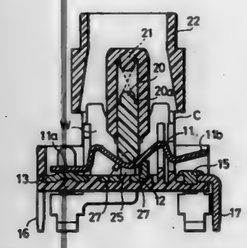
wherein the electrode bars are disposed in axial alignment within the vacuum switch tube so that the pair of windmill type electrodes are engageable and disengageable with one another.

5,293,507

MOVABLE CONTACT PIECE SUPPORT STRUCTURE OF A SEESAW SWITCH

Hiroshi Hayakawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 839,190
Claims priority, application Japan, Feb. 22, 1991, 3-14518[U]
Int. Cl.[5] H01H *1/22*
U.S. Cl. 200—244 **3 Claims**



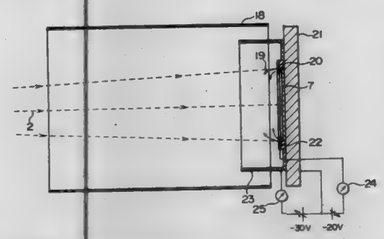
1. A movable contact piece support structure for a seesaw switch included in a housing comprising a bottom wall, a first side wall and a second side wall, said support structure comprising:
a central terminal formed on the bottom wall,
at least one fixed contact formed on the bottom wall,
a movable contact piece for rocking on said central terminal with said central terminal serving as a fulcrum, said rocking causing said movable contact to contact with and separate from said fixed contact,
a drive member for rocking said movable contact piece, and
a first and a second guide portion which are spaced apart from the central terminal and each other and formed on the first and second side walls, respectively, of said housing, wherein said movable contact piece includes a first and a second pair of bent portions which cooperate respectively with said first and second guide portions to guide said movable contact piece.

5,293,508

ION IMPLANTER AND CONTROLLING METHOD THEREFOR

Shigeru Shiratake, and Hirohisa Yamamoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,275
Claims priority, application Japan, Oct. 16, 1991, 3-267650
Int. Cl.[5] H01J *37/317*
U.S. Cl. 250—492.21 **9 Claims**



1. An ion implanter comprising:
an ion source,
extracting means for extracting ions from the ion source to form an ion beam;
scanning means for scanning the ion beam across a semiconductor substrate;
an ion implantation chamber for accommodating a semiconductor substrate;
a supporting bed disposed in the ion implantation chamber on which a semiconductor substrate is mounted;
a fixing member for retaining the semiconductor substrate on the supporting bed;
a first electrode disposed adjacent to the fixing member in a path of the ion beam scanned across the semiconductor substrate by the scanning means, surrounding the semiconductor substrate, and electrically insulated from the supporting bed, secondary electrons being produced in response to ions incident on the first electrode; and
a second electrode surrounding an outer periphery of the semiconductor substrate and electrically insulated from the first electrode for charging to a different electrical potential from the first electrode to direct secondary electrons generated at the first electrode toward the semiconductor substrate.

5,293,509

SINTERED BODY OF ALUMINUM NITRIDE

Akira Yamakawa; Masaya Miyake; Hitoyuki Sakanoue, and Koichi Sogabe, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 824,746, Jan. 17, 1992, which is a continuation of Ser. No. 352,265, May 16, 1989, abandoned. This application Jul. 6, 1993, Ser. No. 87,927
Claims priority, application Japan, May 16, 1988, 63-116843
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—705 **6 Claims**

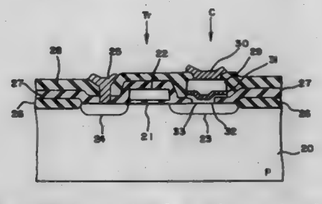
1. A high heat-conducting ceramic package comprising a substrate made of a sintered body of aluminum nitride, a semiconductor device thereon and a lead-frame surrounding said body and said device, wherein said sintered body of aluminum nitride comprises (i) aluminum nitride as a main component and (ii) at least one component selected from the group consisting of Zr, V, Nb, Ta, Cr, Co, Ni, Ho, Ti, and compounds thereof in the total proportion of not more than 1.0 wt % and not less than 0.2 wt % in terms of elements on the basis of sintered body, said sintered body being colored and having a thermal conductivity of at least 150 W/mK.

5,293,510

SEMICONDUCTOR DEVICE WITH FERROELECTRIC AND METHOD OF MANUFACTURING THE SAME

Kazuhiro Takenaka, Suwa, Japan, assignor to Ramtron International Corporation, Colorado Springs, Colo.

Filed Dec. 20, 1991, Ser. No. 778,895
Claims priority, application Japan, Apr. 24, 1990, 2-108011; Apr. 24, 1990, 2-108012; Apr. 24, 1990, 2-108013
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—295 **9 Claims**



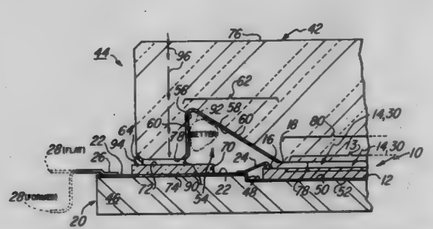
1. A ferroelectric capacitor for use in a semiconductor device, said capacitor comprising:
a substrate;
a conductive oxide film located over said substrate, wherein said conductive oxide film comprises at least two of the compounds selected from the group comprising ruthenium oxide, rhenium oxide, molybdenum oxide and indium tin oxide;
a bottom electrode located over said conductive oxide film;
a layer of ferroelectric material located over said bottom electrode; and
a top electrode located over said layer of ferroelectric material.

5,293,511

PACKAGE FOR A SEMICONDUCTOR DEVICE

Frank Poradish, and John T. McKinley, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1993, Ser. No. 33,687
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—434 **79 Claims**



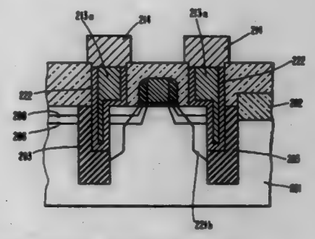
1. A package for a semiconductor device, the device being of the type which includes a light-reflecting beam movable between one position, in which light incident on the beam is and one or more other positions, in which the incident light is modulated, the package comprising:
a ceramic base having a mounting surface for supporting the device;
a first metallic pattern on the base, the first pattern including first metallic paths extending from the periphery of the base to the periphery of the mounting surface for electrical connection to the mounted device;
a generally torroidal and planar seal ring constituted of an electrically insulative, refractory material, the seal ring overlying the base and the first metallic paths between the peripheries of the base and the mounting surface, having its lower surface fused to the underlying base and first metallic paths and having an opposed upper surface ground and polished so as to be optically flat with a selected angular relationship relative to the mounting surface;
a light-transmissive glass cover overlying the device, which cover is generally congruent with the outer periphery of the seal ring, upper and lower faces of the cover being ground and polished to optical flatness and having a selected angular relationship to each other so that, with the outer portion of the lower face of the cover resting on the seal ring, the upper and lower faces have a selected angular relationship relative to the mounting surface, the lower face of the cover having formed therein an annular groove which generally overlies the inner periphery of the seal ring and the periphery of the mounting surface cavity, the groove being generally triangular in cross-section and having an outer wall which is generally perpendicular to the faces of the cover and an inner wall which slopes away from the outer wall toward the lower face of the cover;
a light-reflective coating on the walls of the groove; and
means for sealing the outer portion of the lower face of the cover to the seal ring.

5,293,512

SEMICONDUCTOR DEVICE HAVING A GROOVE TYPE ISOLATION REGION

Tadashi Nishigoori, and Takashi Kuwata, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 834,829
Claims priority, application Japan, Feb. 13, 1991, 3-19611; Apr. 4, 1991, 3-71349
Int. Cl.[5] H01L *27/02, 29/06*
U.S. Cl. 257—622 **6 Claims**



1. A semiconductor device, comprising:
a semiconductor substrate of a first conductivity type,
first and second circuit elements selectively formed in said semiconductor substrate,
a first groove selectively formed in said semiconductor substrate between said first and second circuit elements to separate said first and second circuit elements, said first groove having a first depth,
an insulating layer filling said first groove,
a second groove selectively formed in said insulating layer with a second depth smaller than said first depth to remove a part of said insulating layer, said second groove exposing a portion of said semiconductor substrate by a sidewall of said second groove,
a semiconductor region of a second conductivity type elongated from said first circuit element and formed in said portion of said semiconductor substrate, and
a conductive layer filling said second groove, said conductive layer being in contact with said semiconductor region and separated from said semiconductor substrate by said semiconductor region and said insulating layer.

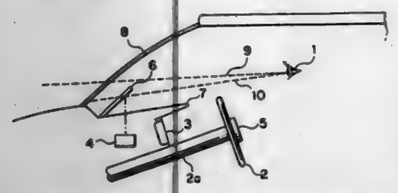
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,513

SWITCHING SYSTEM FOR AUTOMOTIVE VEHICLE INCLUDING A REFLECTOR POSITIONED BELOW A SIGHT LINE OF A DRIVER

Masaharu Umezu; Hiroaki Ideno; Yoshisada Mizutani, and Takeshi Inoue, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 681,819
Claims priority, application Japan, May 30, 1990, 2-142210
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 307—10.1 **10 Claims**



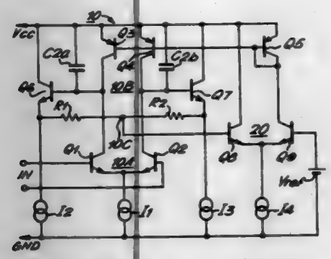
1. A switch system for an automotive vehicle comprising:
a plurality of switches disposed in a predetermined spatial orientation for operating various devices mounted on the vehicle;
a switch selection detector for detecting which one of said switches is selected by a driver;
display means for displaying the result of a driver's switch selection detected by said switch selection detector as well as the operating conditions of the devices as a result of the driver's switch selection; and
a reflector, provided at a location above a dash board, for reflecting the contents of said display means, said reflector providing the displayed contents of said display means to the driver along a display viewing sight line, which is oriented substantially in a same direction as, but below, a driver forward sight line,
wherein the reflected contents representative of the results of the driver's manipulations of said switches are provided at locations corresponding to the spatial orientation of said switches.

5,293,514

INTEGRATING FILTER CIRCUIT

Chikashi Nakagawara, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 24, 1992, Ser. No. 903,486
Claims priority, application Japan, Jun. 28, 1991, 3-159181
Int. Cl.[5] H03K *5/22, 5/00*
U.S. Cl. 307—494 **9 Claims**



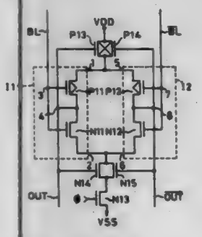
1. An integrating filter circuit comprising:
a reference potential source for supplying the integrating filter circuit with a prescribed reference potential;
a transconductance circuit provided with a differential circuit, a variable current source directly coupled to first and second outputs of the differential circuit and node means coupled to the variable current source for outputting an intermediate voltage of the differential circuit;
a common feedback loop with a comparison circuit coupled between the node means and the variable current source so as to stabilize the intermediate voltage in reference to a reference voltage supplied to the comparison circuit;
capacitors coupled between the variable current source and the reference potential source; and
another capacitor coupled between the first and second outputs of the differential circuit.

5,293,515

AMPLIFIER CIRCUIT HAVING TWO INVERTERS

Masanori Uchida, Kanagawa, and Tetsuya Iizuka, Chiba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 521,977, Aug. 24, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,521
Claims priority, application Japan, Sep. 12, 1989, 1-234657
Int. Cl.[5] H03K *19/094, 3/26*
U.S. Cl. 307—530 **3 Claims**



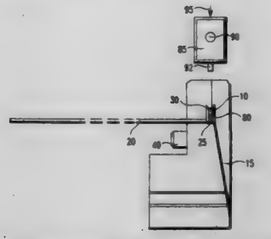
1. An amplifier circuit comprising:
first inverter circuit means responsive to a first power source voltage and a second power source voltage, wherein the first power source voltage is lower than the second power source voltage, for outputting a first output signal in response to a first input signal, wherein the first inverter circuit means includes:
a first MOS transistor of a first conductivity type having a source electrode supplied with the first power source voltage, a drain electrode, and a gate electrode supplied with the first input signal, and
a second MOS transistor of a second conductivity type having a source electrode supplied with the second power source voltage, a drain electrode connected to the drain electrode of the first MOS transistor, and a gate electrode supplied with the first input signal;
second inverter circuit means responsive to the first power source voltage and the second power source voltage, for outputting a second output signal in response to a second input signal, wherein the second inverter circuit means includes:
a third MOS transistor of the first conductivity type, having a source electrode supplied with the first power source voltage, a drain electrode, and a gate electrode supplied with the second input signal, a fourth MOS transistor of the second conductivity type having a source electrode supplied with the second power source voltage, a drain electrode connected to the drain electrode of the third MOS transistor, and a gate electrode supplied with the second input signal;
first circuit means for supplying the first power source voltage to the first and the second inverter circuit means, including a fifth MOS transistor of the first conductivity type having a gate electrode supplied with the output signal of the first inverter circuit means and a sixth MOS transistor of the first conductivity type having a gate electrode supplied with the output signal of the second inverter circuit means, wherein the fifth and the sixth MOS transistors are N-type MOS transistors; and
second circuit means for supplying the second power source voltage to the first and the second inverter circuit means.

5,293,516

MULTIPROBE APPARATUS

Jean-Claude Fouere, Poughkeepsie; Kyong-Min Kim, Hopewell Junction, and Pavel Smetana, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1992, Ser. No. 828,539
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—158 P **11 Claims**



1. A multiprobe apparatus for probing a device having a plurality of contacts, comprising:
a plurality of electrically conducting elongated probes, each probe comprising a wire of circular cross section, and each probe being adapted for electrical communication with a respective one of said contacts by tangential linear contact along the length of the probe;
a probe support comprising a silicon wafer having <100> orientation, said silicon wafer having a plurality of grooves along the <110> direction, each groove corresponding to a respective one of said contacts, and each groove having a respective one of said probes disposed therein for supporting said probes and for maintaining said probes in electrical communication with said contacts; and
holding means having a holding groove for fitting said device and said probe support with said probes therein, wherein said holding groove, in conjunction with the tangential linear contact of said probes with said contacts, allows said contacts to be properly contacted by said probes by alignment in one dimension.

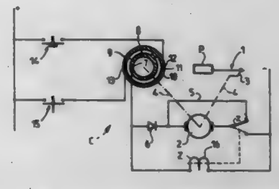
5,293,517

CONTROL DEVICE FOR A MOTOR VEHICLE PARKING BRAKE

Jean-Claude Andruet, Opio, France

PCT No. PCT/FR90/00854, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO91/08133, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 27, 1990, Ser. No. 859,353
Claims priority, application France, Nov. 27, 1989, 89 15548
Int. Cl.[5] B60T *13/74*; F16D *65/34*
U.S. Cl. 318—266 **13 Claims**

1. A device operating a parking brake for a vehicle including electric motor means for actuating the brake, said motor means having a drive shaft, said device including control means for controlling the operation of said motor means, said control means including a rotary crank drivingly connected to a linkage member for actuating the brake, said crank being drivingly connected by said drive shaft to said motor means for rotation thereof between an engagment position and a disengagment position, said device including a disk having two concentric, conductive tracks, one of said conductive tracks being interrupted by an insulating space, said disk being rotatably driven by said drive shaft, said device including brush means positioned to engage said tracks to provide an interruptable current path for electric current for driving said motor means to effect movement of said crank between said engagment and disengagment positions.

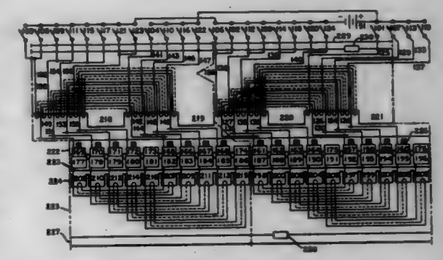


5,293,518

MULTIPLE TWO-NODE WINDINGS ELECTRICAL MOTORS CONTROLLERS

John T. R. Wilson, 736 Lynnhaven La., La Canada Flintridge, Calif. 91011

Continuation-in-part of Ser. No. 804,588, Mar. 20, 1986, Pat. No. 5,077,509, which is a continuation-in-part of Ser. No. 188,000, Sep. 17, 1980, abandoned. This application Aug. 19, 1991, Ser. No. 746,602
Int. Cl.[5] H01R *39/46*
U.S. Cl. 318—439 **19 Claims**



1. A controller for an electric motor comprising:
a motor including a stator and an armature and the stator including stator magnetic poles and the armature including multiple two-node, open circuit armature windings inductively linkage the armature and insulated from the armature and from each other;
the motor having at least one repeatable section, wherein a repeatable section includes a group of poles and windings;
the stator having two stator magnetic poles per repeatable section;
magnetomotive force means energizing the stator magnetic poles as a north pole and a south pole per repeatable section, and with adjacent poles being of opposite polarity; and
means to control electrical currents in from none to at least one two-node, open circuit armature winding thereby forming armature electromagnetic poles of various numbers to the strength levels available, with adjacent armature electromagnetic poles having opposite polarity, and with no more than two armature electromagnetic poles per repeatable section, to control the force and torque generated by the motor.

11. A controller for an electric motor comprising:
a motor including a stator and an armature and the stator including stator magnetic poles and the armature including multiple two-node, open circuit armature windings inductively linking the armature and insulated from the armature and from each other;

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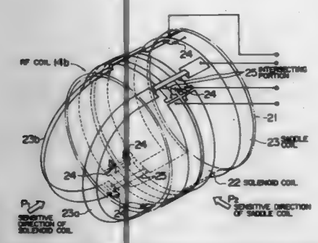
the motor having at least one repeatable section, wherein a repeatable section includes a group of poles and windings;
the stator having two stator magnetic poles per repeatable section;
magnetomotive force means energizing the stator magnetic poles as a north pole and a south pole per repeatable section, and with adjacent poles being of opposite polarity;
means to control electrical currents in from none to at least one two-node, open circuit armature winding thereby forming armature electromagnetic poles of various numbers to the strength levels available, with adjacent armature electromagnetic poles having opposite polarity, and with no more two armature electromagnetic poles per repeatable section;
means to recover electromagnetic energy format least one un-energized, two-node, open circuit armature winding as electrical energy; and
a second means to control the means to control electrical currents and the means to recover electromagnetic energy, to control the force and torque generated by the motor.

5,293,519

RF COIL FOR A NUCLEAR MAGNETIC RESONANCE IMAGING DEVICE

Hitoshi Yoshino, and Hiroyuki Takeuchi, both of Kashiwa, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 669,960
Claims priority, application Japan, Mar. 20, 1990, 2-068429; Jun. 26, 1990, 3-165797; Jul. 9, 1990, 2-179690
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **21 Claims**



1. RF coils for a nuclear magnetic resonance device having two conductive loops disposed so that sensitive directions thereof are substantially perpendicular to a direction of a static magnetic field and that said conductive loops intersect each other with a predetermined interval, in which said conductive loops have a small area at an intersecting portion where they are opposite to each other by a fact that a width of conductors is reduced, whereby parasitic capacitance at said intersecting portion is small so that coupling between said conductive loops is reduced.

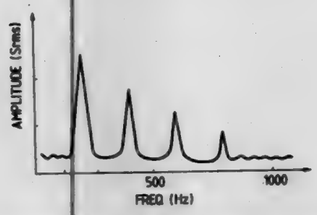
5,293,520

JITTER ANALYZER

Mishio Hayashi, Ohsato, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,852
Claims priority, application Japan, Oct. 18, 1991, 3-270726
Int. Cl.[5] G01R *29/02*; G11B *20/18*
U.S. Cl. 324—76.77 **10 Claims**

6. A jitter analyzer comprising:
successive period measuring means supplied with a sequence of pulses, for successively measuring the periods of said sequence of pulses;
means for computing period data, at predetermined constant time intervals, by an interpolation method, from said measured period data and elapsed times defined thereby; and



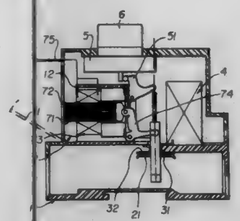
means for conducting a fast Fourier transform of said computed period data.

5,293,521

PROTECTIVE RELAY SWITCH HAVING TRAP DOOR

Christian Blanchard, Rueil Malmaison; Michel Laursire, Courbevoie, and Didier Vigouroux, Jouy-le-Moutier, all of France, assignors to Telemecanique, Rueil Malmaison, France

Filed Dec. 17, 1992, Ser. No. 992,011
Claims priority, application France, Dec. 17, 1991, 91 15766
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—132 **4 Claims**



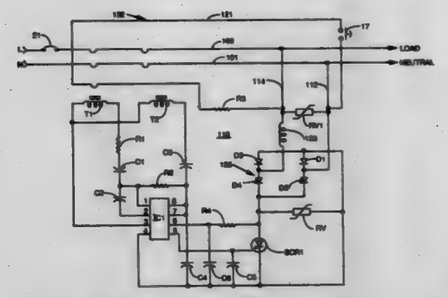
1. Protective switch device, provided with at least one pole having contacts that can be separated, comprising:
a box;
a control mechanism that can cause opening and closing of the contacts;
a protective means that can act in case of electrical failure to actuate the control mechanism;
a manual control button;
an electromagnet in the box and linked to the contacts for opening and closing the contacts, the electromagnet being controlled by the control button;
a movable trap door that opens and closes an opening of the box, which opening provides access to a coil of the electromagnet;
a trap door locking element that can be displaced between a closed position in which the locking element immobilizes the trap door to close the opening of the box and an open position in which the trap door can open;
selective blocking means connected between said manual control button and said locking element for immobilizing the locking element in the closed position responsive to the manual control button occupying all positions other than a stop position in which the electromagnet is inoperative, and for freeing the locking element so that the locking element can be brought into the open position in response to the manual control button occupying the stop position.

5,293,522

GROUND FAULT CIRCUIT BREAKER WITH TEST SPRING/CONTACTS DIRECTLY MOUNTED TO TEST CIRCUIT OF PRINTED CIRCUIT BOARD

Joseph P. Fello, Penn Hills Township, Allegheny County; Umesh C. Patel, Bridgeville; Michael J. Whipple, New Sewickley, and Garry B. Theadore, Patterson, all of Pa., assignors to Westinghouse Electric Company, Pittsburgh, Pa.

Filed Sep. 11, 1992, Ser. No. 943,801
Int. Cl.[5] H01H *73/00*
U.S. Cl. 335—18 **6 Claims**



1. A ground fault circuit breaker comprising:
at least one pair of separable power contacts;
tripping means for tripping said separable power contacts open in response to selected current conditions;
ground fault detection means including a printed circuit board, ground fault detection circuit means for detecting a ground fault condition and including a ground fault test circuit mounted on said printed circuit board, and actuating means responsive to detection of said ground fault conditions actuating said tripping means; and
test means comprising:
a fixed contact member directly mounted on and supported by said circuit board and electrically connected to said ground fault test circuit;
a resiliently deformable movable contact member having a first end directly mounted on and supported by said printed circuit board and electrically connected to said ground fault test circuit; and
a test button biased to an off position by said resiliently deformable movable contact member and depressible to resiliently deform said resiliently deformable movable contact member to contact said fixed contact member to complete said ground fault test circuit.

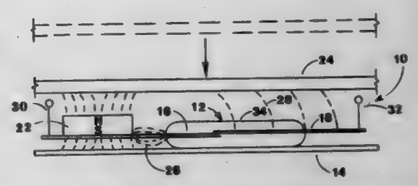
5,293,523

UNIDIRECTIONAL MAGNETIC PROXIMITY DETECTOR

William T. Posey, Chickasha, Okla., assignor to Hermetic Switch, Inc., Chickasha, Okla.

Filed Jun. 25, 1993, Ser. No. 83,687
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—205 **25 Claims**

1. A magnetic detector actuatable by unidirectional proximation of a permeable object, comprising:
a magnet means for producing a magnetic flux, said magnet means having a first end and a second end, said magnet means being oppositely polarized transversely through the first and second ends;
a magnetic switch means for opening and closing a circuit connected between switch output terminals, said magnetic switch means having first and second aligned contacts, wherein the first end of said magnet means is located adjacent the first aligned contact; and
an absorbing means for absorbing the magnetic flux from the first end of said magnet means, wherein an opposite magnetic flux is not produced across the first and second aligned contacts and said magnetic switch means is open;
wherein the unidirectional proximation of the permeable object to the second end of said magnet means enhances the magnetic flux from the first end of said magnet means



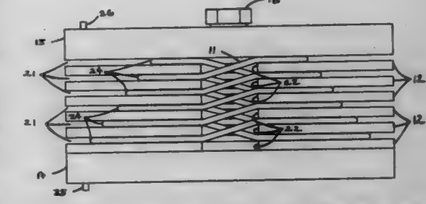
through the first aligned contact, and enhances the magnetic flux from the second end of said magnet means to the second aligned contact; thus, producing an opposite magnetic polarity across the first and second aligned contacts to actuate the switch means closed.

5,293,524

UNIFORMLY WOUND SUPERCONDUCTING COIL AND METHOD OF MAKING SAME

Sumit Mookerjee, Cedar Hill, Tex.; Shen Weijun, Beijun, China, and Billy Yager, Waxahachie, Tex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 15, 1992, Ser. No. 964,760
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—216 **17 Claims**



1. A method for forming a coil of superconducting wire for a superconducting magnet having an essentially dense and uniformly spaced winding to enhance homogeneity and strength of the magnetic field surrounding the coil including the steps of:
winding said superconducting wire about a mandrel, said mandrel including removable spacing and retaining means forming a plurality of outwardly opening laterally parallel slots, each of said slots extending generally about the periphery of the mandrel and being sized to receive and outwardly align and retain successive turns of the superconducting wire within each slot as the wire is wound around and laterally across the mandrel to form a plurality of wire ribbons of a predetermined thickness laterally across the mandrel;
effecting first bonding means to bond the turns of the superconducting wire together within each of the slots to form an integral ribbon of wire;
disassembling the mandrel by removing the spacing and retaining means to disengage the coil from the mandrel;
bending the coil to align the coil ribbons in a pre-established configuration; and
effecting second bonding means to secure the coil ribbons in said preestablished configuration.

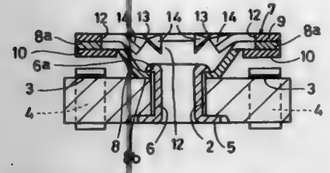
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,525

STRUCTURE FOR VARIABLE ELECTRONIC COMPONENT

Tamotsu Yoshimura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 2, 1993, Ser. No. 12,455
Claims priority, application Japan, Feb. 28, 1992, 4-043255
Int. Cl.[5] H01C *10/32*
U.S. Cl. 338—162 10 Claims



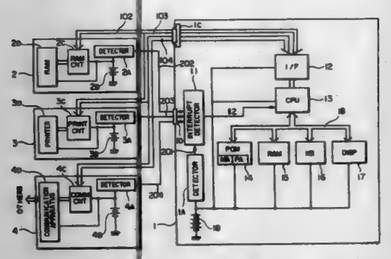
1. A variable electronic component comprising:
a substrate; and
a rotor rotatably supported on the substrate for parameter adjustment of the electronic component, the rotor having an opening and a plurality of engaging slots extending from the opening for engagement with a turning tool from one side of the opening;
wherein each of the engaging slots is flanked by a pair of tool guides which are inclined toward said each engaging slot in a direction away from said one side of the opening.

5,293,526

ELECTRONIC EQUIPMENT INCLUDING A PLURALITY OF INDEPENDENTLY POWERED APPARATUS

Kenji Takahashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 629,005, Dec. 18, 1990, abandoned, which is a continuation of Ser. No. 327,439, Mar. 23, 1989, abandoned, which is a continuation of Ser. No. 920,438, Oct. 20, 1986, abandoned. This application Jul. 1, 1992, Ser. No. 908,863
Claims priority, application Japan, Oct. 25, 1985, 237565
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—636 10 Claims



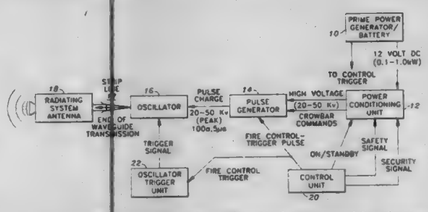
1. Electronic equipment comprising:
a plural number of independent apparatuses each having a different function from each other, each of which includes at least a signal line for transmitting and receiving information, a battery power source provided to each of said apparatuses, detecting means for detecting trouble of said power source and outputting means for outputting a detection signal as soon as trouble is detected by said detecting means; and
an information processing apparatus connected to said plural number of apparatuses, said information processing apparatus adapted to transmit through said signal lines said information to and to receive through said signal lines said information sent from any one of said plural number of apparatuses, said information processing apparatus including display means for displaying error information, and means for providing said error information to said display means to indicate that trouble has occurred with said power source of any one of said plural number of independent apparatuses, said information processing apparatus, in response to the reception of said detection signal, displaying said error information on said display means through said means for providing said error information.

5,293,527

REMOTE VEHICLE DISABLING SYSTEM

Richard W. Sutton, Oakton, and Jack C. Rains, Jr., Herndon, both of Va., assignors to Science Applications International Corporation, San Diego, Calif.

Filed Aug. 5, 1991, Ser. No. 740,259
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.570 7 Claims



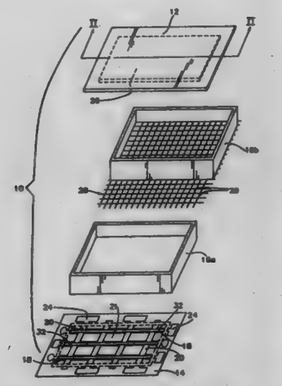
1. A compact transportable, selectively actuatable electromagnetic pulse (EMP) generating system for generating and transmitting EMPs at a target vehicle to disrupt electronics controlling the operation of the target vehicle, the system comprising:
a power source;
power conditioning means receiving power from the source and responsive to interlock signals and a user initiated command signal from a separate user responsive system control unit for developing and transmitting a predetermined high voltage output to a separate trigger controlled pulse generating means;
the separate trigger controlled pulse generating means receiving the high voltage output from the power conditioning means and responsive to a trigger pulse from the system control unit for generating a high current pulse characterized by a short duration and rapid rise and fall times;
trigger controlled oscillator means receiving the high current pulse from the trigger controlled pulse generating means and responsive to a trigger signal from an oscillator trigger means for generating a series of pulses characterized by amplitudes of at least about 300 kv, subnanoseconds rise and fall times and durations of greater than about 10 nanoseconds;
a radiating system connected to and receiving the series of pulses from the trigger controlled oscillator means for forming and radiating EMPs characterized by a rise time of less than one nanosecond and a duration of 10 nanoseconds or more, for disrupting electronic components controlling operation of the target vehicle;
the oscillator trigger means for receiving the trigger pulse from the system control unit and for generating a time delayed trigger signal for
triggering operation of the oscillator means; and
the separate user responsive system control unit for generating the command signal, the trigger pulse and the interlock signals.

5,293,528

ELECTROPHORETIC DISPLAY PANEL AND ASSOCIATED METHODS PROVIDING SINGLE PIXEL ERASE CAPABILITY

Frank J. DiSanto, North Hills, and Denis Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Filed Feb. 25, 1992, Ser. No. 841,380
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] G09G *3/34*
U.S. Cl. 345—107 13 Claims



1. In a tetrode-type electrophoretic display of the type having a plurality of parallel cathode lines arranged in a given direction, a plurality of parallel grid lines insulated by first insulator strips from said cathode lines and perpendicular thereto to form an X-Y addressing matrix, a plurality of local anode lines deposited upon said grid lines and insulated therefrom by second insulator strips, a remote anode separated from said local anode lines with space therebetween accommodating an electrophoretic dispersion including pigment particles suspended in a fluid and an electrically conductive screen allowing said pigment particles to pass therethrough, the improvement comprising:
each of said local anode lines being disposed perpendicular to said grid lines, said local anode lines having at least two tines with spaces therebetween for at least a portion of the length of said local anode lines.

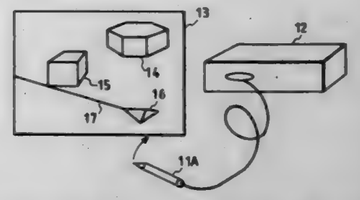
5,293,529

THREE-DIMENSIONAL INFORMATION HANDLING SYSTEM

Tetsuya Yoshimura, Kawasaki; Yasuhiro Nakamura, Tama, and Masataka Sugiura, Machida, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,601
Claims priority, application Japan, Mar. 12, 1991, 3-046574; Jan. 31, 1992, 4-016040
Int. Cl.[5] G09G *5/08*
U.S. Cl. 345—158 21 Claims

1. A three-dimensional information handling system comprising:
a display device for indicating a virtual three-dimensional space on a two-dimensional screen;
a position and orientation designating device for designating information of a three-dimensional position and a three-dimensional orientation;
a position and orientation measuring device for measuring the three-dimensional position and orientation information which is designated by the portion and orientation designating device;
a processing device for calculating three-dimensional display information on the basis of the three-dimensional position and orientation information measured by the position and orientation measuring device, and for controlling the display device and the position and orientation measuring device;
means for indicating a cursor on the screen of the display device;



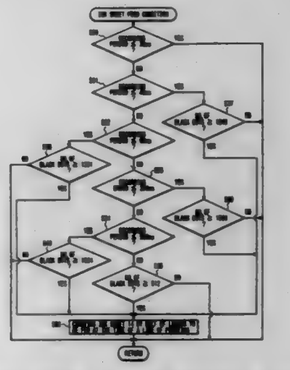
means for moving the cursor in accordance with movement of the position and orientation designating device;
means for indicating a figure on the screen of the display, the figure extending from the cursor in a direction independent of a velocity vector of the cursor and being in a fixed positional relation with the cursor; and
means for moving the figure in accordance with movement of the cursor.

5,293,530

THERMAL TRANSFER RECORDING APPARATUS AND FACSIMILE APPARATUS USING THE AFORESAID APPARATUS

Takehiro Yoshida, Tokyo; Makoto Kobayashi, Tama; Minoru Yokoyama, Yokohama; Takeshi Ono, Kawasaki; Takashi Awai; Yasushi Ishida, both of Tokyo; Akihiro Tomoda, Yokohama; Mamoru Osada, Yokohama; Takahiro Kato, Yokohama; Tomoyuki Takeda, Yokohama; Masaya Kondo, Tokyo; Masakatsu Yamada, and Yukio Nohata, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,122
Claims priority, application Japan, Oct. 17, 1990, 2-276523; Oct. 17, 1990, 2-276524; Dec. 26, 1990, 2-406813
Int. Cl.[5] B41J *72/08*
U.S. Cl. 346—76 PH 14 Claims



1. A thermal transfer recording apparatus for performing recording of an image on a recording medium by transferring

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an ink contained in an ink sheet to said recording medium, comprising:

ink sheet conveyance means for conveying said ink sheet;

recording medium conveyance means for conveying said recording medium;

recording means for recording said image on said recording medium by acting upon said ink sheet;

counting means for counting at least one black dot number in a line;

timing means for measuring an elapsed time since a image recording in a last line by said recording means; and

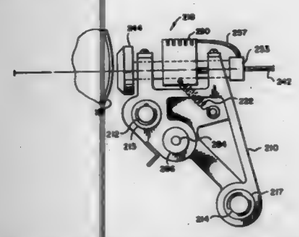
control means for controlling said ink sheet conveyance means so that said ink sheet is conveyed for a predetermined length without conveying said recording medium subsequent to a current line recording by said recording means in accordance with a timing value of said timing means and a counting value for the current line of said counting means.

5,293,531

WRITING TRANSLATOR MOUNT

Erich Zielinski, Bergen, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,383
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 L **6 Claims**



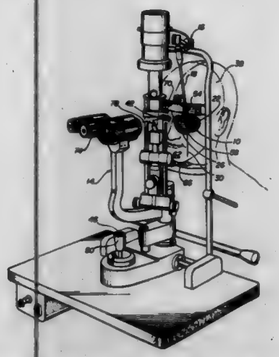
1. Thermal imaging apparatus comprising a horizontal imaging drum member mounted for rotation about its axis and arranged to mount a receiver member and a donor member in superposed relationship thereon, means for generating a plurality of modulated coherent light beams, means including a writing head mounted on a translator member for projecting said light beams as a line onto said donor member mounted on said drum member to transfer an image onto said receiver member by transfer of a dye from said donor member, means for rotating said drum member, means for supporting said translator member and said writing head substantially parallel with and at a substantially constant distance from the axis of said drum member for movement parallel thereto, said translator supporting means including a pair of spaced parallel translator support bars disposed in a predetermined relationship parallel with and at a given distance from said drum axis with one bar above the other and located closer to the drum axis than the other, said translator member being provided with a bearing means for each bar, the bearing means for the upper bar arranged only to locate said translator with respect to the vertical location of said translator and the lateral distance of the translator from the drum axis, the bearing means for the lower bar arranged to only locate the translator with respect to angular motion of the translator around the upper bar, each of said bearing means arranged to permit sliding motion of said translator parallel to said bars.

5,293,532

DEVICE AND METHOD FOR POSITIONING AND RELAXING ACCOMMODATION OF THE EYE

Forrest A. Marshall, 615 Acadamy Ave., Dublin, Ga. 31021

Continuation of Ser. No. 728,543, Jul. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 642,299, Jan. 17, 1991, Pat. No. 5,046,257, which is a continuation-in-part of Ser. No. 467,269, Jan. 19, 1990, Pat. No. 5,036,592. This application Dec. 31, 1992, Ser. No. 998,258
Int. Cl.[5] A61B *3/02*
U.S. Cl. 351—225 **13 Claims**



1. An apparatus for use in positioning a first eye of a patient having (i) first and second eyes, which first eye is capable of following movement of the second eye, and (ii) a facial region surrounding the second eye, comprising:

a. means for (i) contacting the facial region surrounding the second eye and (ii) occluding the second eye, but not the first eye, from ambient light; and

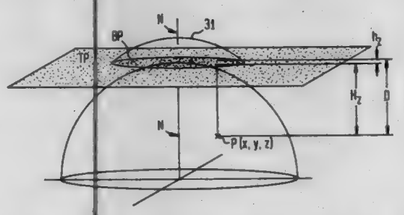
b. means, comprising a plurality of selectively illuminable light sources contained within the occluding means, for providing alternate fixation targets for the second eye to permit relative movement of the second eye and any selected one of the selectively illuminable light sources when the apparatus is in use.

5,293,533

SYSTEM FOR COMPUTERIZED FITTING OF CONTACT LENSES

Stephen D. Klyce, New Orleans, La., assignor to Computed Anatomy, Inc., New York, N.Y.

Filed Oct. 10, 1991, Ser. No. 774,580
Int. Cl.[5] A61B *3/00*
U.S. Cl. 351—247 **11 Claims**
(3 of 7 Drawing(s) in Color)



1. The process of automating the selection of an ocular contact lens to fit a patient's eye using a computer simulation of the fluorescein dye test, comprising the steps of:

a. reading data defining the corneal topography of the patient whose eye is to receive the contact lens;

b. reading data defining the interior surface topography of a contact lens;

c. determining the minimum average clearance between the topography of the contact lens and the cornea; and

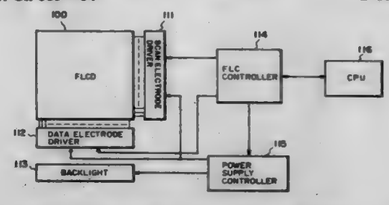
d. displaying said clearance using the same degree of fluorescence and fluorescent intensity corresponding to that which would be exhibited by fluorescein dye contained in a space equal to said minimum average clearance.

5,293,534

LIQUID CRYSTAL DEVICE

Tadashi Mihara, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 620,052, Nov. 30, 1990, Pat. No. 5,182,662. This application Jul. 28, 1992, Ser. No. 920,884
Claims priority, application Japan, Dec. 1, 1989, 1-310732
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—84 **2 Claims**



1. A liquid crystal display apparatus, comprising:

a liquid crystal device, comprising a pair of substrates having thereon opposite electrodes, a ferroelectric smectic liquid crystal disposed between the electrodes so as to have two stable molecular orientation states, and a polarizer and an analyzer disposed adjacent to the substrates so that one of the two stable molecular orientation states provides a dark state and the other of the two stable molecular orientation states provides a bright state; wherein a domain with a minor areal size changing with time is formed in an effective display area, and the polarizer and the analyzer are disposed so that the domain is present in a bright state of the effective display area;

a means for controlling a drive of the liquid crystal device; and

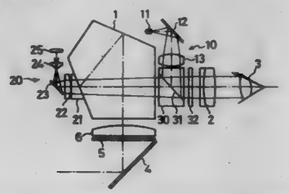
a means for controlling power supply to the drive controlling means of the liquid crystal device.

5,293,535

EYE DIRECTION DETECTING DEVICE

Takayuki Sensui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,384
Claims priority, application Japan, Nov. 29, 1991, 3-357384
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—410 **15 Claims**



1. An eye direction detecting device for determining a direction in which an eye gazes, comprising:

a light emitting system that emits a detecting light;

a light receiving system;

a polarization beam splitter that directs said detecting light in a first optical path so that said detecting light impinges upon the eye, and in a second optical path so that light reflected from the eye impinges upon said light receiving system to determine a direction in which the eye gazes and

a ¼ wave plate that is provided between said polarization beam splitter and the eye.

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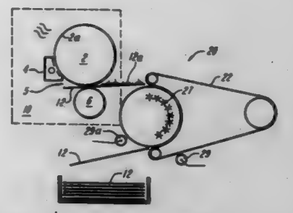
Patent Not Issued For This Number

5,293,537

IMAGE TRANSPORT FUSING SYSTEM

Jeffrey J. Carrish, Milford, Mass., assignor to Delphax Systems, Canton, Mass.

Continuation of Ser. No. 639,925, Jan. 10, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 983,101
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **20 Claims**



1. A heat fusing apparatus comprising

a belt having a non-tacky surface which is abherent with respect to a melted toner, said belt extending the width of a recording sheet

heating means for providing heat to a region of the belt having an area between approximately one third and several times as large as a printable area of the recording sheet, the heat heating the belt to a temperature not substantially above a melt temperature of a toner forming a toned image on the recording sheet, and

means for thermally contacting a toned side of the recording sheet to the abherent surface of the belt and synchronously moving the belt and the recording sheet such that an extend region of each is in contact as they move past the heating means so that the recording sheet attains the melt temperature of the toner whereby the toned image is efficiently and cleanly fused to the recording sheet as a permanent print.

5,293,538

METHOD AND APPARATUS FOR THE INSPECTION OF DEFECTS

Hisafumi Iwata; Yukio Matsuyama, both of Yokohama, and Hitoshi Kubota, Hujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1991, Ser. No. 705,537
Claims priority, application Japan, May 25, 1990, 2-133792
Int. Cl.[5] G01N *21/47*
U.S. Cl. 356—237 **6 Claims**

1. A method of inspecting an object, the object including an element coated with a transparent protection layer, to detect a defect within or on the surface of the transparent protection layer, said method comprising:

illuminating the surface of the object obliquely with a slit-formed illumination light;

automatically focusing the illumination light on the surface of the transparent protection layer;

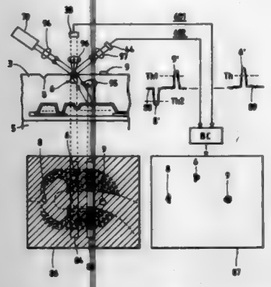
condensing light reflected obliquely from the transparent protection layer;

converting the condensed reflected light into a first image signal;

detecting waveforms in the first image signal less than a first

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threshold level to provide a first defect signal indicative of a void in the surface of the transparent protection layer;
detecting waveforms in the first image signal greater than a second threshold level to provide a second defect signal indicative of an etching remnant on the surface of the transparent protection layer;
condensing light scattered from the transparent protection



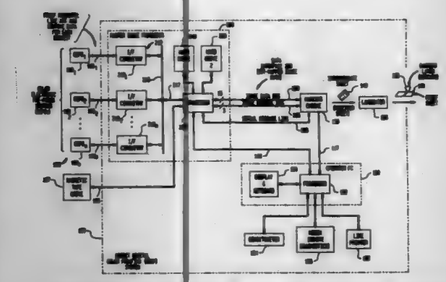
layer in a direction substantially normal to the surface of the transparent protection layer;
converting the condensed scattered light into a second image signal; and
detecting waveforms in the second image signal greater than a third threshold level to provide a third defect signal indicative of a transparent foreign body in the transparent protective layer.

5,293,539

METHOD AND APPARATUS FOR CALIBRATING TONE REPRODUCTION IN A PROOFING SYSTEM

John P. Spence, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 25, 1991, Ser. No. 782,940
Int. Cl.[5] H04N *1/40, 1/46*
U.S. Cl. 358—527 **34 Claims**



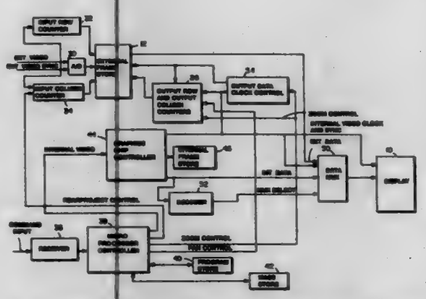
1. Apparatus for generating, through an imaging system having a native tone reproduction characteristic, an output image that depicts an input image such that the output image is substantially free of corruption attributable to the native tone reproduction characteristic of the imaging system, said apparatus comprising:
means, responsive to first data values representing a desired tone reproduction characteristic of the input image that is to be reproduced at a specific operating condition of the imaging system and to second data values representing an actual tone reproduction characteristic of the imaging system obtained at said operating condition, for forming a table of values representing the first data values modified by an inverse function of the second data values;
means, responsive to incoming digitized values that collectively represent the input image for routing each of said digitized values through the table to produce a corresponding modified value therefor so as to form a plurality of modified values; and
means for generating said output image in response to each of said modified values.

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METHOD AND APPARATUS FOR MERGING INDEPENDENTLY GENERATED INTERNAL VIDEO WITH EXTERNAL VIDEO

Stephen S. Trani; Garth S. Jones, both of Virginia Beach; James S. Love, Hampton, and James H. Vogeley, Yorktown, all of Va., assignors to nView Corporation, Newport News, Va.

Filed Jul. 29, 1991, Ser. No. 736,319
Int. Cl.[5] H04N *5/262, 9/74, 3/223*
U.S. Cl. 348—584 **21 Claims**



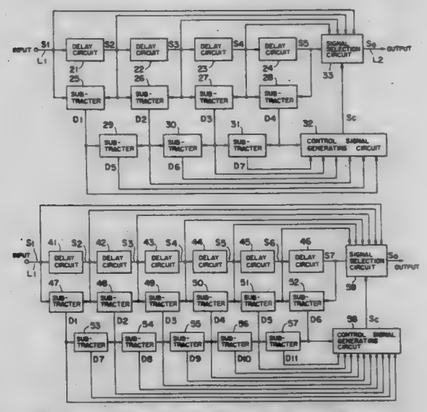
9. A method of mixing independently generated internal digital video with external digital video to provide a compound video signal to a display device, including providing a "pan", "zoom" and reverse or "mirror" image capability for digital video signals supplied to a display device, where said external digital video is supplied with an external sync signal and said internal digital video comprises one of a stored video read out of storage with an internal video sync signal and an internally generated video provided with an internal video sync signal, said method comprising the steps of:
clocking, by means of said external sync signal, said external digital video into a dual port external frame storage at predetermined row and column address locations where said predetermined row and column address locations are related to rows and columns of said display device, said row address locations related to rows of said display device and said column address locations are related to one of a reverse of address locations related to column locations of said display device and (b) column locations of said display device;
clocking said internal digital video into an internal frame store memory;
determining whether a reverse image is required and, if so, setting a beginning row and column address in an output row ana column counter means, where a beginning row address is related to a beginning row on said display device and a beginning column address is related to the other of said (a) reverse of locations related to column locations of said display device and (b) column locations on said display device;
clocking said stored external video out of said external frame storage and into a data multiplexer by means of a display sync signal and a row and column counter, where said row and column counter is controlled by a controller which establishes a beginning row and column address in said display sync row and column counter dependent upon the portion of digital video to which the display device is to be "panned" and which repeats each address a predetermined number of times for each row and column, until the end of a respective row and column of the display device is reached, said predetermined number of times dependent upon the amount of "zoom" desired;
clocking said stored internal video out of said internal frame store memory and into said data multiplexer by means of said display sync signal; and
controlling said data multiplexer so as to choose and pass desired portions of said stored internal video and said stored external video forming a compound video signal provided to said display device by means of said display sync signal.

5,293,541

PICTURE QUALITY IMPROVING APPARATUS FOR COMPENSATING CONTOUR OF IMAGES

Shigehiro Ito, Toride, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 18, 1992, Ser. No. 884,015
Claims priority, application Japan, May 16, 1991, 3-141116; May 21, 1991, 3-145514
Int. Cl.[5] H04N *5/14*
U.S. Cl. 348—625 **6 Claims**



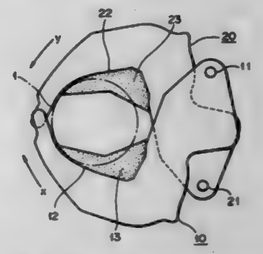
1. An image improvement apparatus including:
when input signals which are amplitude modulated by a modulating wave are first signals,
a delay circuit which outputs second signals which are said first signals which have been time delayed by an integral multiple of a cycle of said modulation wave, and third signals which are said second signals which have been time delayed by said positive integral multiple,
a first subtracter which subtracts said second signals from said first signals and outputs fourth signals,
a second subtracter which subtracts said third signals from said second signals and outputs fifth signals,
a third subtracter which subtracts said fifth signals from said fourth signals and outputs sixth signals,
a control signal generating circuit which is supplied with said fourth, fifth and sixth signals, and outputs a seventh signal which is a control signal for which the value changes in accordance with combinations of said fourth, fifth and sixth signals,
a composite circuit supplied with said first, second and third signals, and which combines said first signals and said second signals and outputs an eighth signal, and combines said second and third signal and outputs a ninth signal, and
a signal selection circuit supplied with said eighth, second, ninth and seventh signals, and which selects and outputs one of said eighth, second and ninth signals in accordance with said seventh signal which is a control signal,
said control signal generating circuit outputs
(a) a control signal for said signal selection circuit select and output said ninth signal when a value of the three signals of said fourth, fifth and sixth signals all have the same polarity when they are positive or negative at the same time,
(b) a control signal for said signal selection circuit to select and output said eighth signal when a value of the three signals of said fourth, fifth and sixth signals all have the same polarity when they are positive or negative at the same time, and when a value of said sixth signal is a value of a different polarity to the polarity of a value of said fourth and fifth signals, and
(c) a control signal for said signal selection circuit to select and output said second signal when a combination of the thee signals of said fourth, fifth and sixth signals is other than a combination of (a) and (b), and
wherein an output signal for which an edge of an envelope of first signals which are said input signals is emphasized.

5,293,542

IRIS FOR VIDEO CAMERA

Koichi Ise, and Yoshinori Tomita, both of Chiba, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 21, 1991, Ser. No. 718,970
Claims priority, application Japan, Jun. 25, 1990, P166380
Int. Cl.[5] H04N *5/238, 5/30*
U.S. Cl. 358—228 **3 Claims**



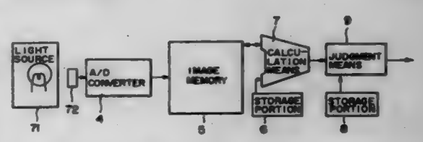
3. A video camera for converting an optical image arriving at an imager through an optical system including lenses and an iris to a video signal, according to claim 1, wherein said two diaphragms having said light transmission limiting, neutral density filters attached thereon are selectively slidable so as to effect said relative movement thereof toward or away from each other for opening and closing said iris.

5,293,543

APPARATUS FOR COLOR IMAGER DEFECT DETERMINATION

Kinji Okabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 11, 1992, Ser. No. 833,436
Claims priority, application Japan, Feb. 13, 1991, 3-20022
Int. Cl.[5] H04N *9/07*
U.S. Cl. 358—504 **7 Claims**



1. An inspection apparatus for inspecting a color solid-state image pickup element, comprising:
A/D conversion means for converting from analog to a

digital form image signals outputted by the color solid-state image pickup element;
an image memory for storing as image data the image signals which have been A/D converted by said A/D conversion means;
storage means for storing as a table numerical hue data which represent the degree of color unevenness between an actual object and a stored image which is generally recognized by the human eye as a perceived color, said numerical hue data being a numeric representation of a hue difference between a fault portion of color unevenness and a normal color portion, as perceived by a normal human eye, this hue difference weighting the length of a difference vector used in determining the presence of a fault in the image pickup element;
calculation means for performing image processing on the basis of said image data stored in said image memory, and which calculates judgment parameters on the basis of these image calculation results and said numerical hue data stored in said storage means; and
judgment means for judging whether a color solid-state image pickup element is faulty or not, on the basis of said judgment parameters.

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LIQUID CRYSTAL APPARATUS INCLUDING PANEL HAVING PLURAL BENT LAYERS OF LIQUID CRYSTAL MOLECULES

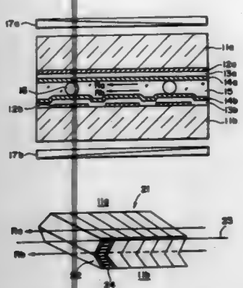
Yukio Hanyu, Atsugi, and Masanobu Asaoka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 813,768, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 489,338, Mar. 6, 1990, Pat. No. 5,109,294. This application Feb. 14, 1992, Ser. No. 834,987

Claims priority, application Japan, Mar. 7, 1989, 01-052878

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—78 **12 Claims**



1. A liquid crystal apparatus, comprising:
(a) a liquid crystal panel having a longitudinal direction and a plurality of peripheral sides in parallel with the longitudinal direction, and comprising a pair of substrates and a chiral smectic liquid crystal disposed between the substrates and forming plural layers of liquid crystal molecules, said plural layers of liquid crystal molecules being aligned in parallel with each other so that projections of the plural layers onto the substrates have a common normal, each of said plural layers being bent in an identical shape and including a plurality of liquid crystal molecules forming a pre-tilt angle of at least 5 degrees with an adjacent one of the substrates and each of said plural layers forming an obtuse angle with an adjacent one of the substrates measured in a direction identical to a direction for measuring the pre-tilt angle of the liquid crystal molecules adjacent to the substrate raising their heads from the substrate; and
(b) panel supporting means for supporting said liquid crystal panel having two fixing axes which extend in parallel with the longitudinal direction of said liquid crystal panel and fix the peripheral sides of said liquid crystal panel, the fixing axes forming an intersection angle θ_1 in the range of 0–25 degrees with said common normal.

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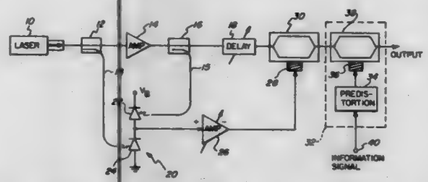
OPTICAL SOURCE WITH REDUCED RELATIVE INTENSITY NOISE

David R. Huber, Warrington, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Filed Jul. 27, 1992, Ser. No. 919,924

Int. Cl.[5] H01S *3/10, 3/102*

U.S. Cl. 359—111 **16 Claims**



1. Apparatus for producing an optical carrier with low relative intensity noise comprising:
a light source;
means for sampling a portion of light output from said light source;
means for generating an error signal from said sampled portion, said error signal being representative of relative intensity noise contained in the light from said light source; and
means for subtracting said error signal from light output from said light source to provide an optical carrier in which the relative intensity noise has been substantially reduced.

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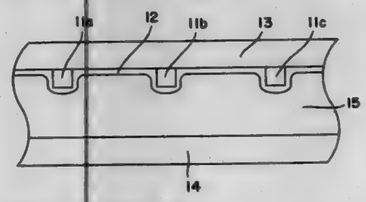
OXIDE COATED METAL GRID ELECTRODE STRUCTURE IN DISPLAY DEVICES

Maher E. Tadros, Ellicott City; James A. Mason, Abingdon, both of Md., and Christopher A. Kadoch, San Diego, Calif., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 17, 1991, Ser. No. 686,637

Int. Cl.[5] G02F *1/01*; G02B *5/23*

U.S. Cl. 359—269 **19 Claims**



1. A display device comprising:
(a) a working electrode comprising a metal grid having an electrically conductive metal oxide coating disposed thereon;
(b) a counter electrode; and
(c) an electrochromic material disposed between the working electrode and counter electrode wherein the electrically conductive metal oxide coating is disposed between the metal grid and the electrochromic material.

5,293,547

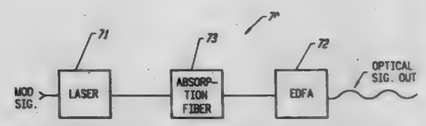
METHOD AND APPARATUS TO COMPENSATE FOR DISTORTION IN OPTICAL TRANSMISSION SYSTEMS

Hermann Gysel, and Mani Ramachandran, both of San Jose, Calif., assignors to Synchronous Communications, Inc., San Jose, Calif.

Division of Ser. No. 787,830, Nov. 5, 1991, Pat. No. 5,243,613. This application Mar. 3, 1993, Ser. No. 25,601

Int. Cl.[5] G02F *1/00*

U.S. Cl. 359—337 **3 Claims**



1. An apparatus for compensating for both expansion-type and compression-type gain distortion products resulting from the interaction of a laser and an erbium-doped fiber optical amplifier (EDFA) comprising:
a predetermined length of erbium-doped absorption fiber having an absorption profile as a function of wavelength which is equal in magnitude and opposite in phase to the variation from the mean gain profile of the EDFA; and
means for coupling said predetermined length of said erbium-doped absorption fiber between the optical output of said laser and the optical input of said optical amplifier.

5,293,548

DISPERSIVE RUGATE COATINGS

Edward T. Siebert, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 25, 1992, Ser. No. 857,007

Int. Cl.[5] G02B *5/28*

U.S. Cl. 359—580 **8 Claims**



3. An optical device for selectively transmitting or reflecting radiation having spectral lines of interest, comprising:
a substrate having a surface; and
a coating formed upon said surface of said substrate, said coating having a spatially varying index of refraction profile through a depth thereof, the profile being selected so as to provide said optical device with a prescribed phase shift at the spectral lines of interest wherein said coating includes a rugate coating having a spatially varying index of refraction profile n(x) that varies in accordance with a sinusoidal function, wherein n(x) is given by the expression:

$$n(x)=n_o[1+\int H(n_1K(x-x_o)/n_o u(K)\text{-})\sin(Kx+\phi(K))dK/K]$$

where n_o is equal to the average index of refraction, $K=4\pi n_o/\lambda, \theta'$ is the internal angle in the coating and λ is the wavelength, where $u(K)=4\tanh^{-1}[R(K)]^{\frac{1}{2}}$ is a number of cycles in the coating to achieve a desired reflectivity R(K), n_1 is the peak deviation of the index from n_o for a single wavelength, where $\phi(K)$ is the phase of the reflected light as a function of K, where x is a distance into the coating, and where H is an envelope or apodizing function located at x_o whose extent defines the region of index variation at the wavelength λ.

5,293,549

DIGITAL SIGNAL APPARATUS FOR CORRECTLY DEMODULATING DATA DESPITE A FLUCTUATION IN READING RATE OR VARIATION IN REGENERATED PULSE DURATION DUE TO ABNORMALITIES IN A RECORDING MEDIUM FROM WHICH DATA IS BEING READ

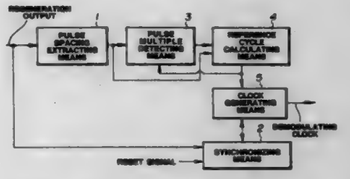
Kaori Ichikawa, Koganei, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,768

Claims priority, application Japan, May 16, 1991, 3-111869; Sep. 27, 1991, 3-249401

Int. Cl.[5] G11B *5/09, 15/52, 20/10, 27/22*

U.S. Cl. 360—51 **11 Claims**



1. A digital signal regeneration apparatus for processing regeneration output pulses produced by binary-coding an analog signal acquired by reading information from a recording medium and thereby regenerating a digital signal recorded on the recording medium, comprising:
a pulse spacing extracting means for extracting a pulse spacing of a binary-coded regeneration output pulse;
a pulse multiple detecting means for detecting a multiple indicating the number of times a pulse spacing extracted by said pulse spacing extracting means is larger than a reference cycle;
a reference cycle calculating means for calculating a new reference cycle using the pulse spacings and multiples of a plurality of predetermined sequential regeneration output pulses sent from said pulse spacing extracting means and said pulse multiple detecting means;
a clock generating means for generating a demodulating clock having a reference cycle calculated by said reference cycle calculating means;
a clock synchronizing means for synchronizing a demodulating clock generated by said clock generating means in phase with regeneration output pulses in given durations, and synchronizing the demodulating clock in phase with a regeneration output pulse coming in a given initial range of data regenerated not by locking the demodulating clock in a given duration but by matching the demodulation clock and the regeneration output pulse coming in the given initial range; and
a demodulating means for demodulating a binary-coded regeneration output pulse train using a demodulating clock generated by said clock generating means.

5,293,550

CASSETTE LOADING MECHANISM FOR A RECORDING AND REPRODUCING APPARATUS

Tsutomu Toyoguchi, Tokyo; Hideki Nonoyama, and Toyomi Fujino, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 476,718, Feb. 8, 1990, abandoned. This application Aug. 6, 1992, Ser. No. 924,800

Claims priority, application Japan, Feb. 10, 1989, 1-032270; Feb. 10, 1989, 1-032271; Feb. 10, 1989, 1-032272

Int. Cl.[5] G11B *15/675*

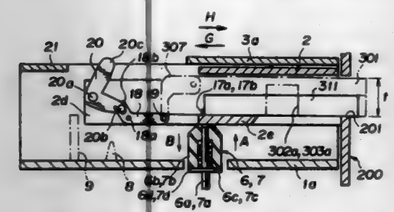
U.S. Cl. 360—96.5 **11 Claims**

1. A cassette loading mechanism in a recording/reproducing apparatus comprising:
a pair of reel shaft means for engaging with a pair of tape

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reels within a tape cassette by way of reel shaft insertion openings for driving said tape reels, each of said pair of reel shaft means having a reel engaging member slidably mounted on a supporting shaft for movement between a retracted position and an extended position, and means for biasing said reel engaging member toward the extended position;

cassette transfer means for receiving a cassette with a thickness and for transporting the cassette in said mechanism, said cassette transfer means being movable between a first position registering with a cassette insertion opening formed in a housing of said recording/reproducing apparatus and an intermediate position in a first direction extending perpendicular to said pair of supporting shafts and being movable in a second direction parallel to said pair of supporting shafts between the intermediate position and a second position with the amount of movement between said intermediate and second position being less than the thickness of the cassette and with the engaging members inserted through the reel shaft insertion opening and into said reels; and



first means for abutting an end of each of said reel engaging members and for shifting each reel engaging member against said biasing means a predetermined distance to the retracted position, said first means abutting on said ends when the transfer means is in said first position.

5,293,551

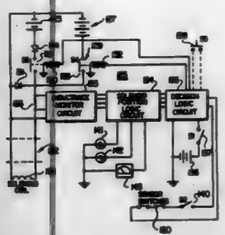
MONITOR AND CONTROL CIRCUIT FOR ELECTRIC SURFACE CONTROLLED SUBSURFACE VALVE SYSTEM

Donald H. Perkins, Carrollton, Tex., and Thomas M. Deaton, Tulsa, Okla., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 540,100, Jun. 19, 1990, abandoned, which is a division of Ser. No. 365,701, Jun. 14, 1989, Pat. No. 4,981,173, which is a continuation-in-part of Ser. No. 169,814, Mar. 18, 1988, Pat. No. 4,886,114. This application Mar. 24, 1992, Ser. No. 856,543

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—154 **29 Claims**



1. A control system for applying power to a solenoid operated valve in a well completion within a borehole comprising:

programmable power supply means mounted within a surface control unit for selectively applying electric power at a first selected higher current value and a second selected lower current value to a cable connected to supply operating current to the solenoid coil of said valve;

means located in said valve and responsive to said first higher value of current for operating said solenoid to move the valve to an open state and responsive to the second lower value of current for maintaining the open state of operation of the solenoid to hold the valve open and responsive to interruption of all current to the solenoid for closing said valve;

means for continuously monitoring the state of actuation of said valve and providing an indication thereof at the well surface; and

means within said programmable power supply means and responsive to said monitoring and indicating means for interrupting said higher value of current and applying said lower value of current in response to an indication that said valve has opened and for interrupting all current after a predetermined period of time following application of electric power at said higher current value and failure to receive an indication that said valve has opened.

5,293,552

METHOD FOR STORING BIBLIOMETRIC INFORMATION ON ITEMS FROM A FINITE SOURCE OF TEXT, AND IN PARTICULAR DOCUMENT POSTINGS FOR USE IN A FULL-TEXT DOCUMENT RETRIEVAL SYSTEM

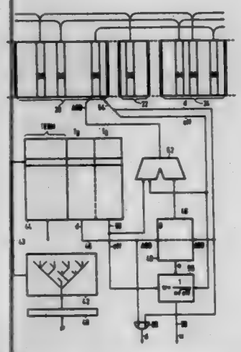
Ijsbrand J. Aalbersberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,615

Claims priority, application European Pat. Off., Apr. 8, 1991, 91200810.9

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.19 **9 Claims**



1. In a computer-based information storage and retrieval system, a method for computer storing of bibliometric information on items in a finite source of text, using a postulated relationship between the bibliometric property of an item and its rank number in a linear ordering of all items in said source, said method comprising the steps of:

a) computing and storing a linear ordering of all items including, for any item in said source, positioning it properly in the said linear ordering, each stored item in the linear ordering having a rank number,

b) determining an item's rank number in the linear ordering,

c) for any item in said source, storing the item's rank number as determined in step b) above as an indication of that item's bibliometric property,

d) using the item's rank number for managing information about the source.

5,293,553

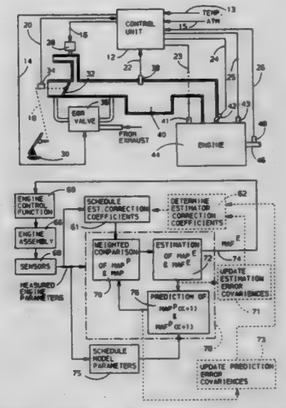
SOFTWARE AIR-FLOW METER FOR AN INTERNAL COMBUSTION ENGINE

Kenneth P. Dudek, Rochester Hills, and Vincent A. White, Northville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 653,931, Feb. 12, 1991. This application Dec. 6, 1991, Ser. No. 804,857

Int. Cl.[5] F02M *51/00, 63/00*

U.S. Cl. 364—431.04 **25 Claims**



1. An engine - controller combination, comprising:

a vehicle engine;

means for determining measures of a set of engine parameters and for providing measurement signals indicative of said measures; and

a microprocessor control unit, including (i) means for receiving the measurement signals, (ii) means for determining a prediction set including at least one predicted value of a measurable engine parameter and at least one predicted value of mass airflow into the engine, (iii) means for determining an estimation set including at least one estimated value of mass airflow into the engine, and (iv) means for controlling the engine in response to the estimated value of mass airflow, wherein

the microprocessor control unit iteratively (i) determines the prediction set in response to (a) the measurement signals, (b) a linear model comprising a set of fixed predetermined model parameters, and (c) the estimation set, and (ii) determines the estimation set in response to (a) a present measure of the measurable engine parameter, (b) the prediction set, and (c) a correction set of fixed predetermined correction coefficients wherein the estimated value of the mass airflow into the engine is a substantially accurate measure of actual mass airflow into the engine.

5,293,554

PROGRAM CONTROLLED IRRIGATION SYSTEM

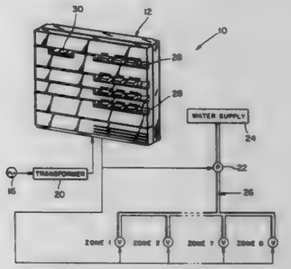
Laurence R. Nicholson, 13970 Red Dog Rd., Nevada City, Calif. 95959

Filed Aug. 10, 1990, Ser. No. 566,192

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—420 **8 Claims**

1. A multiple program controlled irrigation system which comprises: first means for dispensing an irrigation medium to a first zone in accordance with a first program; second means for dispensing the irrigation medium to a second zone in accordance with a second program; means for establishing a first start time and a second start time at which dispensing of the irrigation medium may begin; drive circuitry for said first and second dispensing means; means for selectively assigning the first start time and the second start time in a predetermined combination to first and second portions of said drive circuitry in accordance with the first and second programs for controlling the first dispensing means and/or the second dispensing means to initiate the dispensing of the irrigation medium to the first zone and/or to the second zone in accordance with the assignment of the first and second start times wherein such assignment is referred to as an existing assignment; such existing assignment by the assigning means being in any combination including the combination of assigning no start times to one of the first dispensing means and the second dispensing means and assigning both the first start time and the second start time to the other of the first dispensing means and the second dispensing means; means for changing either or both of



the assignments of the first start time and/or the second start time from one of said portions of said drive circuitry to the other of said portions of said drive circuitry and from the existing assignment to a next assignment for controlling the other of the first dispensing means and the second dispensing means to initiate the dispensing of the irrigation medium to the first zone and/or to the second zone in accordance with the next assignment of the start times; and which further comprises means for placing the start times into one of three categories including, (A) assigned to said first dispensing means, (B) assigned to said second dispensing means, and (C) unassigned and available; and which further comprises means, responsive to an effort by the changing means, for locating any start times in category (C) and presenting at least one of such start times to the changing means.

5,293,555

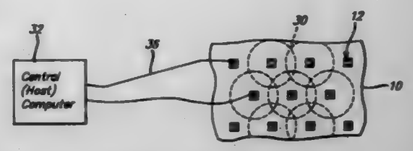
SYSTEM AND METHOD FOR LOCATING MATERIAL FATIGUE USING MULTIPLE SENSORS

Michael Anthony, Santa Ana, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 24, 1991, Ser. No. 705,247

Int. Cl.[5] G01S *3/80*; G01N *29/14*

U.S. Cl. 364—508 **15 Claims**



1. A system for locating a fatigue point on a structure wherein the emergence of the fatigue point propagates an acoustic wave through the structure, the system comprising:

at least one sensor patch, having a base layer, attached to the structure;

three triangularly adjacent sensor means, attached to said

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base layer of said sensor patch, for generating signals in response to receiving the incoming propagated acoustic wave;

processing means, located on said sensor patch and coupled to each of said sensor means, for determining the location of the fatigue point on the structure as a function of said generated signals from said sensor means;

a plurality of said sensor patches and a plurality of processing means, each sensor patch having a processing means associated therewith; and

a central processor means for collecting said determined fatigue point locations from each of said processing means.

5,293,556

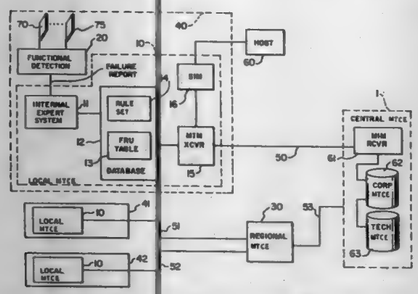
KNOWLEDGE BASED FIELD REPLACEABLE UNIT MANAGEMENT

Fletcher L. Hill, Golden; Douglas A. Holm, Broomfield; Nancy R. Jurestovsky, Golden, and Gregory A. Pinkham, Berthoud, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 29, 1991, Ser. No. 737,159

Int. Cl.[5] H04M *3/08, 3/22*; G06F *11/00*

U.S. Cl. 364—551.01 **34 Claims**



15. Apparatus for controllably managing the replacement of field replaceable units in a customer system, which customer system includes a plurality of operational elements, each interconnected to at least one other operational element via an interconnection path, said operational elements being mounted on a plurality of field replaceable units, comprising:

means for storing data identifying all said operational elements and said interconnection paths;

means for detecting the presence of a failure in said customer system;

means for generating a failure report which contains data relevant to said detected failure, including an identification of the failure mode and all operational elements that were cooperatively operative during said detected failure;

means for storing said failure report;

means for mapping said stored failure reports to a stored composite failure event containing a list of field replaceable units containing said set of operational elements; and

means, responsive to a craftsperson inquiry, for listing said stored composite failure event and said list in field replaceable units associated with said stored composite failure event;

means, responsive to said craftsperson selecting one of said field replaceable units identified in said list, wherein said identified field replaceable unit is one of a plurality of identical field replaceable units, for instructing said craftsperson to exchange said selected field replaceable unit with one of said plurality of identical field replaceable units;

means, responsive to said craftsperson performing said exchange, for generating a virtual composite failure event duplicative of said composite failure event associated with said selected field replaceable unit; and

means for mapping said virtual composite failure event to said exchanged selected field replaceable unit and said composite failure event with said exchanged one of said plurality of identical field replaceable units.

5,293,557

METHOD OF DESCRIBING A SURFACE OF AN OBJECT AFTER PROCESSING

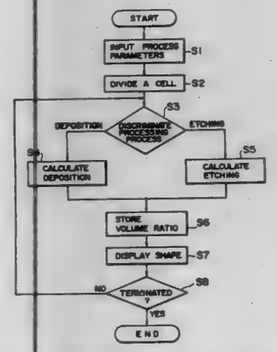
Masato Fujinaga, and Norihiko Kotani, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1991, Ser. No. 685,655

Claims priority, application Japan, Sep. 26, 1990, 2-254113

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—578 **6 Claims**



1. A method of describing a surface of an object subjected to processing that changes the shape of the surface comprising:

dividing an analysis volume including an object having a surface and a volume filling part of the analysis volume into a plurality of three-dimensional cells, each cell having a cell volume;

defining an initial volume ratio for each cell, the initial volume ratio for each cell equaling the volume of the object within that cell to the volume of that cell;

computing the rate at which a substance flows into and out of each cell during a process changing the shape of the surface of the object for every time period Δt during a treatment period t_o, where t_o is much longer than Δt;

computing a volume ratio for each cell from the initial volume ratio and the rates at which the substance flows into and out of the respective cell for every time period Δt;

after lapse of the time t_o, connecting the cells having a volume ratio with a predetermined value to describe the surface of the object; and

graphically displaying the described surface.

5,293,558

MULTIPLICATION, DIVISION AND SQUARE ROOT EXTRACTION APPARATUS

Masahisa Narita; Hisashi Kaziwara; Takeshi Asai; Shigeki Morinaga, all of Hitachi; Hiroyuki Kida, Kokubunji; Mitsuru Watabe, Katsuta; Tetsuaki Nakamikawa, Hitachi; Shunpei Kawasaki, Tokyo; Junichi Tatezaki, Kodaira; Norio Nakagawa, Koganei, all of Japan, and Yugo Kashiwagi, Bloomington, Ind., assignors to Hitachi, Ltd, Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan

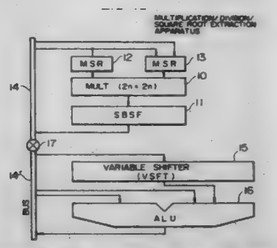
PCT No. PCT/JP89/01134, § 371 Date Jul. 3, 1990, § 102(e) Date Jul. 3, 1990, PCT Pub. No. WO90/05335, PCT Pub. Date May 17, 1990

PCT Filed Nov. 2, 1989, Ser. No. 536,565

Claims priority, application Japan, Nov. 4, 1988, 63-277242; Nov. 18, 1988, 63-290248; Dec. 9, 1988, 63-309968

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—752 **5 Claims**



1. A multiplication, division and square root extraction apparatus which, for carrying out multiplication, division and square root extraction calculations, calculates approximate solutions of multiplication, division and square root extraction functions by iteration through repeated multiplication, addition and subtraction, said apparatus comprising:

a multiplier of prescribed bit width, having first and second inputs and an output, for carrying out multiplication between respective values of a prescribed number of bits received at said first and second inputs, and for supplying the product of said values at said output;

a subtractor of prescribed bit width connected to said output of said multiplier for subtracting said product from a prescribed value and for outputting the result of the subtraction;

a data transfer device, connected to said output of said subtractor and said first and second inputs of said multiplier, for transferring said output of said subtractor to a selected one of said first and second inputs of said multiplier according to an iteration algorithm; and

a square root extraction approximation means for calculating a first product of a square of an approximate value and the number whose square root is to be obtained, subtracting said first product from a constant, calculating a second product of the result of the subtraction, the approximate value and another constant, and providing said second product for a subsequent approximation.

5,293,559

SEMICONDUCTOR MEMORY DEVICE HAVING NETLIKE POWER SUPPLY LINES

Hyun-Soo Kim, Suwon, and Yong-Sik Seok, Tsegu, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 3, 1991, Ser. No. 770,241

Claims priority, application Rep. of Korea, Aug. 1, 1991, 1991-13298

Int. Cl.[5] H01L *27/10*

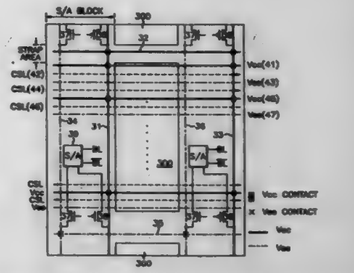
U.S. Cl. 365—63 **17 Claims**

1. A semiconductor memory device, comprising:

a plurality of bit lines arranged in a first direction;

a plurality of word lines arranged in a second direction;

a plurality of column select lines arranged in parallel with said plurality of bit lines in said first direction and formed over said plurality of bit lines; and



a plurality of first and second power supply lines arranged in parallel with said plurality of column select lines in said first direction, each one of said first and second power supply lines being alternatively disposed between said column select lines.

5,293,560

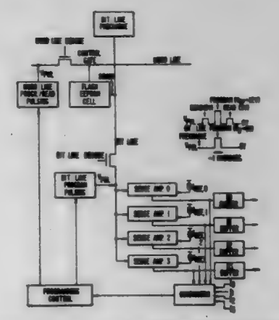
MULTI-STATE FLASH EEPROM SYSTEM USING INCREMENTAL PROGRAMING AND ERASING METHODS

Eliyahou Harari, 104 Auzerais Ct., Los Gatos, Calif. 95030

Continuation of Ser. No. 691,568, Apr. 25, 1991, abandoned, which is a division of Ser. No. 563,287, Aug. 6, 1990, which is a division of Ser. No. 380,854, Jul. 17, 1989, Pat. No. 5,043,940, which is a division of Ser. No. 204,175, Jun. 8, 1988, Pat. No. 5,095,344. This application Nov. 3, 1992, Ser. No. 970,949

Int. Cl.[5] G11C *16/04*

U.S. Cl. 365—185 **27 Claims**



1. An electrically erasable programmable read only memory (EEPROM) system, comprising:

a semiconductor substrate including an array of a plurality of storage cells arranged in rows and columns across said substrate, each cell including:

a source region and a drain region formed in said substrate with a channel therebetween,

a floating gate positioned over a first portion of the channel in a manner that a level of charge on the floating gate establishes a threshold level of a first transistor, thereby affecting a level of conductance through the first channel portion between the source and drain regions,

a control gate positioned over a second portion of the channel adjacent the first channel portion, thereby forming a second transistor connected in series with the first transistor, said control gate also extending across the floating

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gate in a manner that a level of electrical potential on the control gate affects the level of conductance of both of the first and second transistors through the respective first and second portions of the channel between the source and drain regions, and

an erase gate positioned adjacent said floating gate;

programming means connectable to a selected cell within the array of cells for applying voltages to the first transistor of the selected cell to increase an electron charge on its floating gate, thereby to alter the threshold level of the first transistor of the selected cell,

reading means connectable to an addressed cell within the array of cells for detecting a level of conductance between the source and drain regions of the addressed cell in response to a predetermined voltage being applied across the source and drain regions of the addressed cell and a predetermined potential level being applied to the control gate of the addressed cell,

erasing means connectable to erase gates of storage cells within one of a plurality of distinct blocks of cells of the array for simultaneously removing electrical charge from the floating gates of the cells within said one block that is sufficient to drive the threshold levels of the first transistors of said one block of cells to an erased level, each of said plurality of blocks including cells within multiple rows and multiple columns,

wherein said reading means includes means for discriminating between a plurality of more than two predetermined threshold levels of the first transistor of the addressed cell, at least one of said more than two programmable threshold levels having a net positive charge on the floating gate of the first transistor of the addressed cell, each cell having a plurality of storage states more than two, and

said programming means includes means for applying a sequence of programming voltage pulses to the first transistor of the selected cell to increase an electron charge on its floating gate from said erased level until at least either (a) a threshold level detected by said reading means in the first transistor of the selected cell is substantially equal to a desired one of the more than two threshold levels, or (b) a preset number of pulses has been applied.

5,293,561

WRITE-IN VOLTAGE SOURCE INCORPORATED IN ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY DEVICE WITH REDUNDANT MEMORY CELL ARRAY

Minoru Nizaka, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,335

Claims priority, application Japan, Feb. 15, 1991, 3-042982

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.11 **7 Claims**

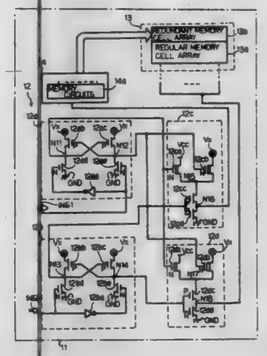
1. A write-in voltage source incorporated in an electrically erasable programmable read only memory device, comprising:

a first control circuit responsive to a first instruction signal indicative of one of a first voltage level and a second voltage level, and producing first and second control signals complementary to each other for specifying said one of said first voltage level and said second voltage level;

b) a second control circuit responsive to a second instruction signal indicative of a source of a third voltage level, and producing third and fourth control signals complementary to each other;

c) a first level-shifting circuit responsive to said first, second and third control signals, and producing a first one of said first, second and third voltage levels; and

d) a second level-shifting circuit responsive to said first, second and fourth control signals, and producing a second one of said first, second and third voltage levels different from said first one of said first, second and third voltage levels,



one of said first and second level-shifting circuits serving as said source of said third voltage level.

5,293,562

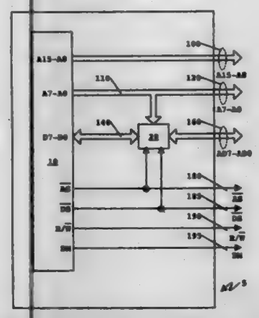
DEVICE WITH MULTIPLEXED AND NON-MULTIPLEXED ADDRESS AND DATA I/O CAPABILITY

Steven M. Pope, Los Gatos, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 797,111, Nov. 22, 1991, Pat. No. 5,262,991. This application Jun. 28, 1993, Ser. No. 84,350

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—189.02 **1 Claim**



1. A packaged electronic device which communicates address information and data information with other electronic devices, and packaged electronic device comprising:

means, including at least one electronic circuit, for generating and receiving said address and data information,

a package body enclosing said generating and receiving means,

a first plurality of electrical contacts connected to said generating and receiving means, and having ends extending out of said package body, wherein each of said first plurality of electrical contacts is dedicated to communicating the address information with the other electronic devices, and

a second plurality of electrical contacts connected to said generating and receiving means, said second plurality of electrical contacts having no contacts in common with said first plurality of electrical contacts and having ends

extending out of said package body, wherein each of said second plurality of electrical contacts is dedicated to communicating multiplexed address and data information with the other electronic devices, and said multiplexed address information being communicated by said second plurality of electrical contacts is the same address information being communicated by said first plurality of electrical contacts.

5,293,563

MULTI-LEVEL MEMORY CELL WITH INCREASED READ-OUT MARGIN

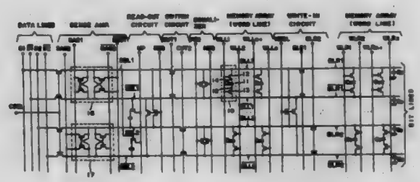
Yoshiji Ohta, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 455,969, Dec. 22, 1989, abandoned. This application Dec. 12, 1991, Ser. No. 807,054

Claims priority, application Japan, Dec. 29, 1988, 63-330970; Mar. 20, 1989, 1-068880

Int. Cl.[5] G11C *7/00, 11/40*

U.S. Cl. 365—190 **9 Claims**



1. A dynamic semiconductor memory device, comprising:

first and second data line pairs, wherein each data line pair comprises first and second data lines, said first and second data lines being complementary to each other,

a word line;

first, second and third bit line pairs, wherein each bit line pair comprises first and second bit lines, said first and second bit lines being complementary to each other;

a memory cell connected to the word line and the first bit line pair, wherein the memory cell comprises a storage capacitor and first and second selecting means for electrically connecting, under control of the word line, the storage capacitor to the first and second bit lines of said first bit line pair;

read-out means for reading data stored in said memory cell, wherein the read-out means comprise a first UP line, first and second signal line pairs, first and second capacitors and first and second field-effect transistors, wherein each signal line pair comprises first and second signal lines, said first and second signal lines being complementary to each other, wherein a gate of said first and second field-effect transistors is connected to the second and first signal lines, respectively, of said first signal line pair, wherein a first terminal of said first and second capacitors is electrically connected to the first and second signal lines, respectively, of the second signal line pair, and wherein a second terminal of said first and second capacitors is electrically connected through source-drain paths of said first and second field-effect transistors, respectively, to the first UP line;

switching means, connected to said first and second bit line pairs and said first and second signal line pairs, for temporarily electrically connecting said first bit line pair to said first signal line pair and said second bit line pair to said second signal line pair;

equalization means for equalizing the first and second bit line of the first and second bit line pairs, wherein the equalization means comprise a transmission gate formed by connecting first and second field-effect transistors to the first and second bit lines of said first and second bit line pairs;

a first sense amplifier connected to said first data line pair and said first signal line pair;

a second sense amplifier connected to said second data line pair and said second signal line pair; and

write-in means, connected to said first, second and third bit line pairs, for electrically connecting said first, second and third bit line pairs during a write operation.

5,293,564

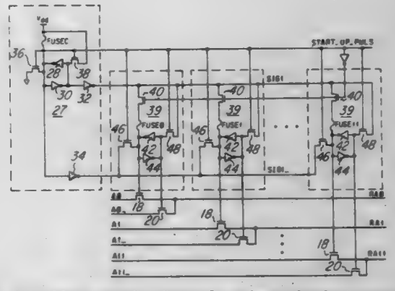
ADDRESS MATCH SCHEME FOR DRAM REDUNDANCY SCHEME

Shunichi Sukegawa, Ibaraki, Japan, and Hiep V. Tran, Carrollton, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1991, Ser. No. 693,757

Int. Cl.[5] G11C *7/00, 13/00*

U.S. Cl. 365—200 **3 Claims**



1. An address match scheme for using redundant memory, comprising:

a first sub-circuit including a fuse, said first sub-circuit further including a pair of cross-coupled inverters and a pair of switches, said switches being operable in connection with said fuse of said first sub-circuit to set a logic state at the input of each inverter of said cross-coupled inverters;

a first signal line coupled to said first sub-circuit;

a second signal line coupled to said first sub-circuit, operable to carry the complement of a signal on said first signal line, said signal lines being coupled to said fuse through said cross-coupled inverters;

at least one second sub-circuit coupled to said first and second signal lines, said second sub-circuit including a fuse;

said fuse of said first sub-circuit being blowable such that said fuse of said second sub-circuit can be interchanged between a scheme based on matching logic zeroes in an address and a scheme based on matching logic ones in an address.

5,293,565

FORTMAT FOR DATA-STORING DISK MEDIA WHEREIN ADDRESSABLE TRACK ANGULAR LENGTH IS INDEPENDENT OF DISK REVOLUTIONS

Glen A. Jaquette; John E. Kulakowski; Judson A. McDowell, and Rodney J. Means, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

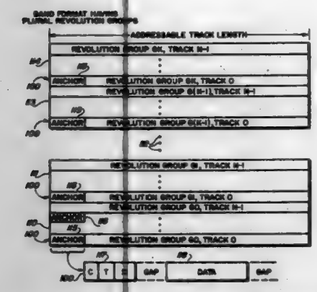
Filed Feb. 4, 1992, Ser. No. 831,026

Int. Cl.[5] G11B *5/09*

U.S. Cl. 369—32 **85 Claims**

1. A data-storing disk apparatus having a spiral track extending between a predetermined outer-radial position and a predetermined inner-radial position, the spiral track having a plurality of revolutions, a reference angular position extending radially of the spiral, each of said revolutions extending circumferentially between two radially displaced locations of said reference angular position, the improvement comprising:

a predetermined plurality of data-storing addressable entities respectively disposed in predetermined portions of said spiral track, each said predetermined portion being a revolution group of a given number of said revolutions, said given number being greater than one, said predetermined portion having two group ends in said spiral track, both of said ends respectively circumferentially aligned with said radial position;



first and second ones of said data-storing addressable entities respectively having a given end abutting said reference angular position;

a non-integral number of said data-storing addressable entities disposed in each of said given number of revolutions; and

a predetermined plurality of said data-storing addressable entities being disposed between said first and second ones of said data-storing addressable entities in said given number of revolutions.

5,293,566

INFORMATION RECORDING AND REPRODUCING APPARATUS

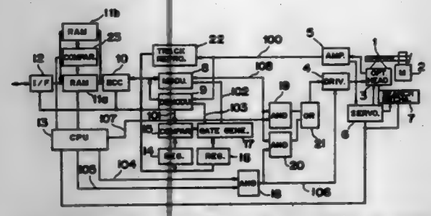
Isao Satoh, Neyagawa; Yoshihisa Fukushima, Osaka; Yuji Takagi, Hirakata; Yasushi Azumatani, Neyagawa, and Hiroshi Hamasaka, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 26, 1991, Ser. No. 749,603

Claims priority, application Japan, Aug. 28, 1990, 2-227027

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—49 **8 Claims**



1. An information recording and reproducing apparatus comprising:

a rewritable optical disc having a plurality of sectors on which data can be rewritten and being divided into an additionally recordable region in which the data are additionally recorded and a rewritable disc control region in which an address of a latest recorded sector in the additionally recordable region is recorded, said rewritable optical disc being used as an additionally recordable optical disc in which recording is permitted only one time and reproduction can be performed plural times;

an additionally recording and reproducing means for recording data on unrecorded sectors in said additionally recordable region and for reading the data from recorded sectors; and

a rewriting and reproducing means for rewriting and reproducing data in said disc control region,

whereby said rewriting and reproducing means reads said disc control region prior to additional recording of data, thereby finding a first unrecorded sector from the address of said latest recorded sector recorded in said disc control region, and whereby said additionally recording and reproducing means records data on unrecorded sectors following said first unrecorded sector, and upon termination of data recording, said rewriting and reproducing means rewrites the address of said latest recorded sector in said disc control region.

5,293,567

OPTICAL RECORDING METHOD

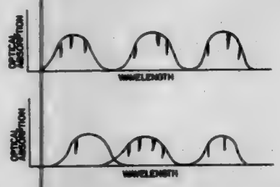
Motoyasu Terao; Masahiro Ojima, both of Tokyo; Yoshio Taniguchi, Hino; Yasushi Tomioka, Kokubunji, and Shuji Imazeki, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 566,323, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 149,477, Jan. 28, 1988, abandoned. This application Sep. 24, 1992, Ser. No. 950,216

Claims priority, application Japan, Feb. 4, 1987, 62-22309

Int. Cl.[5] G11B *3/70*

U.S. Cl. 369—94 **10 Claims**



1. An optical recording method utilizing hole burning with light, comprising:

providing a recording medium having a recording layer containing therein at least first and second groups of light absorption centers, said first group of light absorption having a first inhomogeneous absorption band covering a different set of wavelengths than a set of wavelengths covered by a second inhomogeneous absorption band of said second group;

projecting light at a plurality of wavelengths within said set of wavelengths covered by said first inhomogeneous absorption band onto a spot on said recording layer thereby burning a plurality of narrow spectral holes at various wavelengths in the inhomogeneous absorption band of a light a light absorption center of said first group; and

projecting light at a plurality of wavelengths within said set of wavelengths covered by said second inhomogeneous absorption band onto said spot on said recording layer thereby burning a plurality of narrow spectral holes at various wavelengths in the inhomogeneous absorption band of a light absorption center of said second group, whereby a high recording density can be realized.

5,293,568

TRACK-ADDRESS JUDGING METHOD

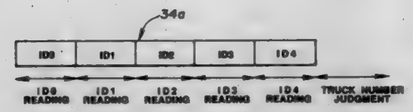
Mitsuo Oshiba, Hachioji, and Kazutake Sugawara, Mitaka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,036

Claims priority, application Japan, Jun. 28, 1991, 3-158822; Jun. 28, 1991, 3-158824

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—32 **14 Claims**



1. A track-address judging method which is used in an optical information recording and reproducing apparatus in which, with respect to a recording medium having a plurality of tracks, each of the plurality of tracks including at least one track address information section, track addresses being multiple-written respectively within each of the plurality of tracks, and each of the plurality of tracks including an information recording area executing at least one of recording and reproducing of the information, an optical spot being irradiated to the plurality of tracks of the recording medium, to simultaneously read out the information of the plurality of tracks for judging the track addresses of a desired track of said plurality of tracks, said method comprising the steps of:

simultaneously reading out one of the multiple-written track addresses for each of the plurality of tracks, from the track address information sections in at least two tracks of said plurality of tracks; and

judging a track address of a desired track according to a comparison of each track address read out from at least two tracks in said reading step during a period of time the optical spot reaches the information recording area from the remaining multiple-written track addresses.

5,293,569

MAGNETO-OPTICAL RECORDING/REPRODUCING APPARATUS INCLUDING AN OPTICAL HEAD WITH AN OPTICAL ELEMENT HAVING A PLURALITY OF PRISMS

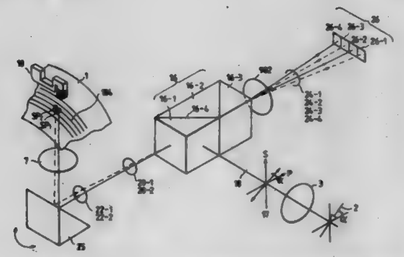
Osamu Koyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 758,685

Claims priority, application Japan, Sep. 13, 1990, 2-245716; Sep. 13, 1990, 2-245717; Sep. 13, 1990, 2-245718

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—112 **58 Claims**



1. An optical head for a magneto-optical recording/reproducing apparatus comprising:

a semiconductor laser,

ah object lens for condensing a light beam from said semiconductor laser onto a magneto-optical recording medium,

an optical element disposed in an optical path from said semiconductor laser to said object lens, said optical element comprising three substantially right-angled prisms and being arranged such that the light beam emitted from said semiconductor laser enters a first end face of a first substantially right-angled prism made of a uniaxial crystal and part of the light beam is reflected by a second end face of said first substantially right-angled prism to exit from a third end face substantially perpendicular to the first end face for separation into first and second light beams having their polarized directions orthogonal to each other, the uniaxial crystal of said first substantially right-angled prism having an optical axis substantially coincident with a propagating direction of the reflected light beam from the second end face, the light beam emitted from said semiconductor laser having its polarized direction inclined at a predetermined angle from said optical axis of the uniaxial crystal; the first and second light beams exiting from said first substantially right-angled prism are focused by said object lens as small first and second light spots on said magneto-optical recording medium; first and second reflected light beams from said magneto-optical recording medium enter said first substantially right-angled prism from the third end face thereof, partially pass through the second end face thereof to enter a second substantially right-angled prism made of a uniaxial crystal from a first end face thereof which is joined to the second end face of said first substantially right-angled prism, emit from a second end face of said second substantially right-angled prism substantially perpendicular to the first end face thereof, enter a third substantially right-angled prism made of glass from a first end face thereof which is joined to the second end face of said second substantially right-angled prism, and then exit from a second end face of said third substantially right-angled prism substantially perpendicularly, so that the two reflected light beams are each separated into two emergent light beams having their polarized directions orthogonal to each other, so that the first reflected light beam is separated into first and second emergent light beams and the second reflected light beam is separated into third and fourth emergent light beams; and said second substantially right-angled prism has an optical axis inclined 45° with respect to the polarized directions of the first and second light beams exiting from the third end face of said first substantially right-angled prism, and

light detectors for detecting the first, second, third and fourth emergent beams from said third substantially right-angled prism.

5,293,570

TELECOMMUNICATION NETWORK

Lothar Schmidt, Fuerstenfeldbruk; Alfred Jugel, Geretsried, both of Fed. Rep. of Germany; Andy Mallinson, Poole, Great Britain, and Peter Rau, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany and GPT Limited Coventry, London, United Kingdom

Filed Aug. 19, 1992, Ser. No. 932,314

Claims priority, application European Pat. Off., Aug. 19, 1991, 91307636

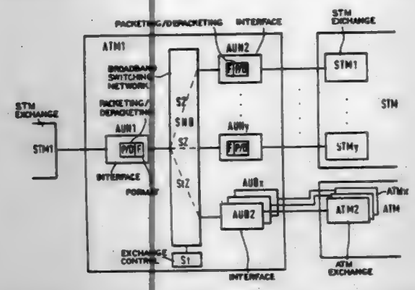
Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **3 Claims**

1. A telecommunication network having a plurality of switching centers composed of ATM exchanges and STM exchanges, the ATM exchanges of the plurality of switching centers operating on the basis of asynchronous through-connection of message packets in message cells of a fixed length via virtual connections and the STM exchanges of the plurality of switching centers operating on the basis of synchronous,

VOL 1160 ISS 2 MR 8 1994 UMI

circuit-switched through-connection, the ATM exchanges having interfaces for connecting transmission lines that are connected to STM exchanges and that carry out circuit-switched messages, comprising: in the interfaces of the ATM exchanges, packeting/depacketing means for packeting received circuit-switched messages into message cells of the same length and same structure by time channels as message cells used for connections between ATM exchanges for connections to be set up between an STM exchange via an ATM exchange and an ATM exchange or ATM terminal equipment



equipped for reception of asynchronously switched message packets, and, for a connection between STM exchanges to be set up via an ATM exchange, means for packeting received message parts of a plurality of incoming time channels that are to be through-connected to a common switching network output of the ATM exchange allocated to an exchange destination direction in multiplexed fashion irrespective of the sequence of the message parts in a pulse frame structure of the STM transmission mode into consideration, said message parts being packeted multiplexed in message cells that have the same length as said message cells used between ATM exchanges.

5,293,571

RECEIPT ACKNOWLEDGEMENT METHOD IN MULTIPLEX TRANSMISSION

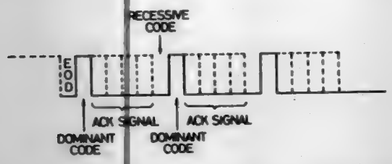
Yutaka Matsuda; Hiroo Moriue; Kyosuke Hashimoto, all of Hiratsuka; Yoshikazu Nobutoki, Higashihiroshima, and Hiroaki Sakamoto, Fukuyama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,339

Claims priority, application Japan, Aug. 23, 1991, 3-211762

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—85.3 **7 Claims**



1. A receipt acknowledgement method in multiplex transmission in which data transmission is conducted data frame by data frame among a plurality of nodes connected to one another through a common multiple transmission line, each data frame including a data frame area followed by an acknowledgement signal as measured along a time axis, said method being of the type including a step of returning an acknowledgement signal at a predetermined timing from each of receiving ones of normal ones of said nodes which have normally received one said data frame, after entry into the acknowledgement signal area of each data frame, said method comprising the steps of:

periodically sending out first signals from a transmitting one of said nodes, each said first signal including at least one dominant bit at a predetermined bit interval,

periodically sending out second signals, each including at least one recessive bit at the predetermined bit interval, from the transmitting node,

returning an acknowledgement signal from each of the normal receiving nodes in the form of an NRZ code in synchronization with one corresponding said dominant bit included in a corresponding one of the first signals periodically sent out from the transmitting node,

setting the predetermined bit interval so that a bit stuff rule is established with respect to the acknowledgement signal area irrespective of the number of the normal receiving nodes so that when there are a predetermined number "n" of consecutive bits of the same sign where, at least one bit whose sign is opposite to that of the "n" bits is inserted immediately after the "n" bits, and

dividing each of the acknowledgement signal areas into a plurality of small areas, each small area starting with a respective said first signal and ending with a respective said second signal, each small area being assigned to less than (n−1) of said plurality of nodes, and including less than (n+1) bits.

5,293,572

TESTING SYSTEM OF COMPUTER BY GENERATION OF AN ASYNCHRONOUS PSEUDO-FAULT

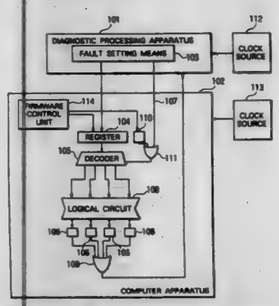
Isao Hasegawa, and Atsushi Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 8, 1991, Ser. No. 697,242

Claims priority, application Japan, May 9, 1990, 2-119368

Int. Cl.[5] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—3 **16 Claims**



1. A testing system of a computer, comprising:

(A) a diagnostic processing apparatus independent from a computer to be tested including fault setting means for providing a fault generation command to the computer, operative based on a first clock signal separate from a second clock signal used in the computer; and

(B) a computer, including:

(1) fault information holding means for holding fault mode information representative of a pseudo-fault location in the computer, set by the diagnostic processing apparatus; and

(2) fault enabling means responsive to the fault mode information, for generating an asynchronous pseudo-fault in the computer based on the fault mode information, for use in testing the computer.

5,293,573

STRIPLINE LASER INCLUDING ELECTRICALLY CONDUCTING MIRROR

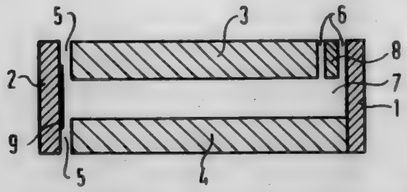
Wolfgang Welsch, Baldham, and Hans Krueger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1992, Ser. No. 950,061

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 4131623

Int. Cl.[5] H01S *3/097*

U.S. Cl. 372—82 **17 Claims**



1. A stripline laser for use with a plasma source, said stripline laser comprising:

first and second oppositely polarized electrodes with a volume therebetween communicable with said plasma source, said electrodes in combination forming means for placing plasma in said volume at a plasma-maintaining voltage;

an electrically conductive mirror bordering said volume; and

first and second insulating paths with at least one conductive path for said plasma therebetween, said first and second insulating paths having a size and orientation for forming, in combination, voltage division means for maintaining a region of said volume adjacent said mirror at a voltage below said plasma-maintaining voltage for preventing formation of deposits on said mirror.

5,293,574

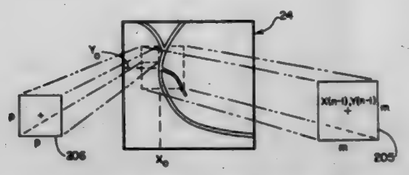
DIGITAL X-RAY IMAGING SYSTEM WITH AUTOMATIC TRACKING

Steven P. Roehm, Waukesha; James A. Smith, Pewaukee, both of Wis., and Ruchi Mangalik, Buffalo Grove, Ill., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 23, 1992, Ser. No. 965,467

Int. Cl.[5] H05G *1/64*

U.S. Cl. 378—98.2 **9 Claims**



1. In a digital x-ray system which produces a sequence of x-ray frames, a method for automatically displaying the sequence of x-ray frames which comprises:

identifying a feature depicted in the first of the x-ray frames;

for each subsequent x-ray frame in the sequence;

a) extracting a search kernel from the prior x-ray frame which is an array of pixel values centered on the identified feature located in the prior x-ray frame;

b) extracting a tracking window from the current x-ray frame which is an array of pixel values centered on the identified feature located in the prior x-ray frame;

c) filtering the data in both the search kernel and the tracking window to enhance the edges of features depicted therein;

d) finding the location of the identified feature in the current x-ray frame by locating the peak correlation between the search kernel and the tracking window;

e) extracting an array of image data from the current x-ray frame which is centered on the current location of the identified feature; and

f) producing a display using the array of image data.

5,293,575

FACSIMILE APPARATUS WITH AUDIO RESPONSE FUNCTION

Yuuzi Hirai, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

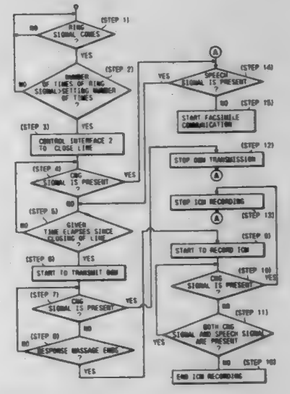
PCT No. PCT/JP90/00430, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO91/15915, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 1, 1991, Ser. No. 773,916

Claims priority, application Japan, Apr. 5, 1990, 2-90841

Int. Cl.[5] H04M *1/64, 11/00*

U.S. Cl. 379—100 **2 Claims**



1. A facsimile apparatus comprising:

a response message transmitting means for reproducing and transmitting a recorded response message;

a communication start signal detecting means for detecting a signal of a first frequency band corresponding to an image communication start signal;

a facsimile communication means for performing facsimile communication;

a speech signal detecting means for detecting a second signal of a second frequency band outside the first frequency band;

a first control means for suspending operation of the response message transmitting means in response to an output signal from the communication start signal detecting means; and

a second control means for starting the facsimile communication means in the case where the communication start signal detecting means detects a signal of the first frequency band and the speech signal detecting means continues to detect an absence of the second signal for a given time.

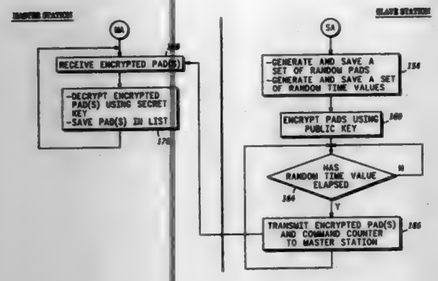
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,576

COMMAND AUTHENTICATION PROCESS

Thomas J. Mihm, Jr., Mesa, and Robert E. Penny, Jr., Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1991, Ser. No. 795,610
Int. Cl.[5] H04K 1/00
U.S. Cl. 380—21 49 Claims



29. In a system comprising a master station and a remotely located slave station,

wherein said master station includes a first transmitter for sending command to said slave station, a first receiver for receiving information from said slave station and a first memory,

wherein said slave station includes a second transmitter for sending information to said master station, a second receiver for receiving command from said master station and a second memory;

a method for communicating a command from said master station to said slave station so that said command can be authenticated before being executed by said slave station, said method comprising steps of:

(a) receiving from said slave station and storing in said first memory, a first code table having multiple entries common with a second code table stored in said second memory in said slave station;

(b) receiving from said slave station and storing in said first memory, a first index value identifying a particular entry in said first code table and a corresponding entry in said second code table;

(c) obtaining said command desired to be executed by said slave station;

(d) retrieving from said first memory said particular entry in said first code table identified by said first index value;

(e) combining in said first processor said particular entry in said first code table with said command to form an encrypted command message for transmission to said slave station, wherein different code table entries produce substantially different ciphertext even for identical plaintext; and

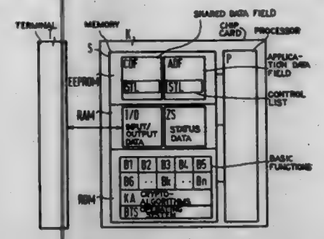
(f) using said first transmitter, transmitting said encrypted command message to said slave station for authentication utilizing said corresponding entry in said second code table identified by said first index value before execution of said command by said slave station.

5,293,577

METHOD AND APPARATUS FOR PREVENTING INADMISSIBLE DEVIATIONS FROM THE RUNTIME PROTOCOL OF AN APPLICATION IN A DATA EXCHANGE SYSTEM

Thomas Hueske; Hildegard Jost, both of Munich; Klaus Mueller, Ottobrunn, and Axel Pfau, Munich, all of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany

Filed Jul. 17, 1991, Ser. No. 731,257
Claims priority, application European Pat. Off., Jul. 20, 1990, 90113990.7
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—25 32 Claims



1. A method for preventing inadmissible deviations from a runtime protocol of an application in a data exchange system having at least one terminal and at least one portable data carrier, the portable data carrier having at least one processor and at least one memory for executing at least one application, comprising the steps of:

for data exchange, with the data carrier being connected to the terminal, placing a status memory area present in the memory of the data carrier into a basic status;

transmitting an application command from the terminal to the data carrier, said application command specifying an application allocated to the terminal;

transmitting a function command from the terminal to the data carrier, the function command containing at least one basic function designation of a basic function that is to be executed next;

comparing in the data carrier the basic function designation to basic function designations stored in the memory of the data carrier with reference to the previously specified application and with reference to an existing protocol status, said existing protocol status being fixed by an entry in the status memory area;

executing in the data carrier the basic function allocated to the basic function designation communicated to the data carrier, only for a positive comparison;

after a successful execution of the basic function, adapting the data deposited in the status memory area to a new protocol status, and transmitting an acknowledge signal from the data carrier to the terminal; and

if the application has not terminated by one of ending after execution of the basic function and being aborted during execution of the basic function transmitting a further function command from the terminal to the data carrier.

5,293,578

NOISE REDUCING DEVICE

Masaaki Nagami, Kobe; Akira Motojima, Akashi, and Yoshihiro Kageyama, Kobe, all of Japan, assignors to Fujitso Ten Limited, Hyogo, Japan

Continuation of Ser. No. 552,516, Jul. 16, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 908,571
Claims priority, application Japan, Jul. 19, 1989, 1-184740
Int. Cl.[5] A61F 11/06; H04R 3/02
U.S. Cl. 381—71 26 Claims

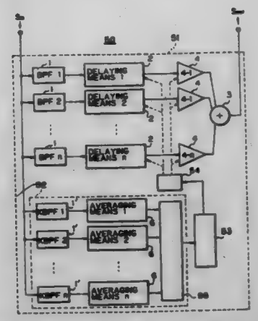
1. A noise reducing device in which noise is silenced by superposing on an original noise wave generated from a noise wave source a noise silencing wave having a different phase from that of said noise wave and generated from a noise silencing device, said noise silencing device comprising:

a) a frequency selecting means for selecting at least one frequency with respect to said noise wave, said frequency selecting means having

i) a first and pass filter means comprising a plurality of band pass filters having different pass bands, whereby an electric signal representing said noise wave is separated into a plurality of frequency bands;

ii) detecting means for detecting a frequency band in which a peak level of said noise wave exists;

b) a delaying means for delaying a phase of said noise wave, said delaying means comprising a plurality of delay circuits connected to said band pass filters to delay said separated electric signal;



c) an amplifying means for adjusting a gain of said delayed noise wave, said amplifying means comprising a plurality of amplifying circuits connected to said delay circuits for adjusting the gain to said delayed signal and servicing as a gate circuit;

d) factor selecting means for selecting at least one of a delaying factor used for said delaying means and a gain factor used for said amplifying means with respect to said selected frequency;

e) controlling means for controlling at least one of said delaying means and amplifying means utilizing said selected delaying factor and gain factor, respectively;

f) a processing means for processing at least a signal output from said amplifying circuit to output a noise silencing signal; and

g) means for superposing said noise silencing signal on said original noise wave.

5,293,579

METHOD AND APPARATUS FOR SMOOTHING JAGGED EDGES IN A GRAPHICS DISPLAY

John F. Stockholm, Palo Alto, Calif., assignor to Ray Dream, Inc., Mountain View, Calif.

Filed Feb. 18, 1992, Ser. No. 838,605
Int. Cl.[5] G06K 9/48
U.S. Cl. 382—22 6 Claims

1. A method for detecting jagged edges in an image represented by a rectangular array of pixels, the method comprising the steps of:

accessing a first group of pixel data from a data storage device, the first group of pixel data comprising a first set of pixel data and a second set of pixel data, wherein:

the first and second sets of pixel data are successive sets of pixel data from adjacent columns or adjacent rows; and

the successive sets of pixel data comprise pixel data for two adjacent pixels in each row or column;

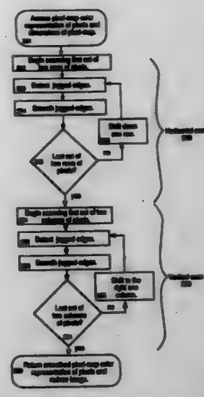
determining a first difference between the value of the pixel data for a first pixel of the first set and the value of the pixel data for a first pixel of the second set;

determining a second difference between the value of the pixel data for a second pixel of the first set and the value of the pixel data for a second pixel of the second set;

determining, based upon the comparison of the first and second sets of pixel data, whether a jagged edge is present in the image;

accessing a second group of pixel data from the data storage device, the second group of pixel data comprising a third set of pixel data and a fourth set of pixel data, wherein:

the third and fourth sets of pixel data are successive sets of pixel data from adjacent columns or adjacent rows; and



the successive sets of pixel data comprise pixel data for two adjacent pixels in each row or column;

determining a third difference between the value of the pixel data for a first pixel of the third set and the value of the pixel data for a first pixel of the fourth set;

determining a fourth difference between the value of the pixel data for a second pixel of the third set and the value of the pixel data for a second pixel of the fourth set; and

determining, based upon the comparison of the first and second sets of pixel data, and the comparison of the third and fourth sets of pixel data, the type of jagged edge present in the image.

5,293,580

MULTI-DIMENSIONAL IMAGE SIGNAL COMPRESSION AND DECOMPRESSION SYSTEM THAT GUARANTEES HIGH EFFICIENCY EVEN WHEN DIFFERENT COMPRESSION AND DECOMPRESSION SYSTEMS ARE USED ON TRANSMITTING SIDE AND RECEIVING SIDE FOR IMAGE INFORMATION SIGNALS

Kyoichi Shimizu, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 4, 1992, Ser. No. 831,108
Claims priority, application Japan, Feb. 5, 1991, 3-035479
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 15 Claims

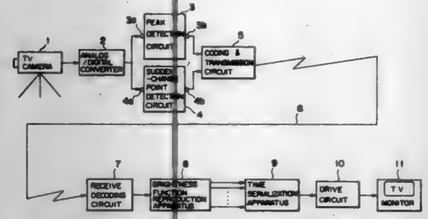
1. A multi-dimensional image compression and decompression method comprising:

a step of extracting as characteristic points of image information a local brightness maximum point, a local brightness minimum point, and a brightness sudden-change point in multi-valve image information as digital data which is converted form three-dimensional image information, and which includes two-dimensional multi-value brightness information and a time axis in a still image,

a step of transferring as compressed image information a

value for a position and a brightness characteristic point of said image information; and

a step of determining a position and a brightness corresponding to an image that is to have said characteristic points



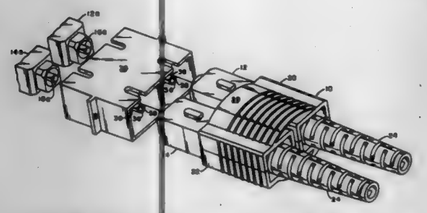
regenerated for said compressed image information, and decompressing by reference to complex interpolation lines inside a multi-dimensional space so that a distance from said characteristic point is proportional and does not influence peripheral picture elements.

5,293,581

FLEXIBLE CONNECTOR ASSEMBLY FOR FIBER OPTICS

Brian A. DiMarco, Simpsonville, S.C., assignor to Alcoa Fujikura Ltd., Brentwood, Tenn.

Filed Apr. 16, 1993, Ser. No. 48,808
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—76 **3 Claims**



2. A flexible fiber optic connector assembly comprising:

at least two individual connectors containing optical fibers extending along longitudinal axes of the connectors;

a first clamp member for engaging the connectors, said member having at least two U-shaped sections comprised of integral bases and leg portions extending from the bases, said leg portions being adapted to engage opposed sides of each connector and hold the same in a side-by-side manner; and

at least one outwardly bowed bridge means connecting the base portions of each U-shaped sections together;

said bridge means permitting relative movement of the connectors in directions perpendicular to their longitudinal axes.

5,293,582

FIBER OPTIC CONNECTOR

Michael S. Beard, Eden Prairie, and Curtis Puetz, Apple Valley, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Continuation of Ser. No. 816,743, Jan. 2, 1992. This application Apr. 19, 1993, Ser. No. 49,557
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—78 **9 Claims**

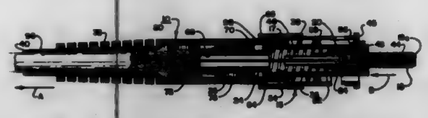
1. An optical fiber connector ferrule assembly comprising;

a ferrule having a longitudinal axis and a bore therethrough for receiving an optical fiber of a fiber cable;

a housing sized to slidably receive at least a portion of said ferrule with said ferrule extending outwardly along said longitudinal axis;

first biasing means for biasing said ferrule outwardly along said longitudinal axis from a cable entrance end of the housing to an opposite end thereof;

said first biasing means includes an elongated hub disposed



within said housing and having one end adapted for securely receiving said ferrule and first spring means disposed about a portion of said hub and biased to urge said hub toward said opposite end;

a cap enclosing said housing including means for causing said nut to be releasably secured to a connection member;

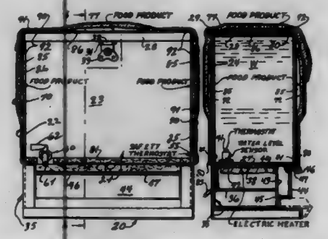
means for permitting limited movement of said housing relative to said ferrule along said longitudinal axis when the nut is secured to the connection member, said cable including a protective sheathing secured to said housing.

5,293,583

PORTABLE VEHICULAR WATER HEATING TANK HAVING INSULATING JACKET PROVIDING WARMING POCKETS FOR FOOD PACKETS

Kiran J. Chudgar, Louisville, Ky., assignor to K.C. Electronics Corporation, Louisville, Ky.

Filed Apr. 3, 1992, Ser. No. 863,246
Int. Cl.[5] H05B *1/02*; B65D *81/18*; F24H *1/06, 1/18*
U.S. Cl. 392—444 **22 Claims**



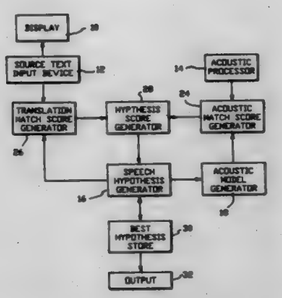
1. A combination water heater and food packet warming unit comprising, a tank in which water is selectively retained, said tank having inner and outer wall portions said inner and outer wall portions being uninsulated and made of good heat conducting material, a lid for selectively closing said tank, a heating element mounted in heat exchange relationship with said tank, control means for regulating said heating element so as to heat the water within said tank, a cover means mounted in covering relationship to the exterior surfaces of said tank, said cover means being pliable and including a heat insulating layer, at least one portion of said cover means being spaced outwardly with respect to said outer wall portions of said tank and an access opening into said at least one portion of said cover means, whereby at least one food packet may be selectively received intermediate said at least one portion of said cover means and said tank so that the contents of the food packet are heated by energy being dissipated through said outer wall portions of said tank.

5,293,584

SPEECH RECOGNITION SYSTEM FOR NATURAL LANGUAGE TRANSLATION

Peter F. Brown, New York; Stephen A. Della Pietra, Pearl River; Vincent J. Della Pietra, Blauvelt; Frederick Jelinek, Briarcliff Manor, and Robert L. Mercer, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1992, Ser. No. 887,205
Int. Cl.[5] G10L *5/00*
U.S. Cl. 395—2.86 **36 Claims**



19. A speech recognition method comprising:

displaying a source text comprising one or more words in a source language;

generating a sequence of coded representations of an utterance to be recognized, said utterance comprising one or more words in a target language different from the source language;

generating a set of one or more speech hypotheses, each speech hypothesis comprising one or more words from the target language;

generating an acoustic model of each speech hypothesis;

generating an acoustic match score for each speech hypothesis, each acoustic match score comprising an estimate of the closeness of a match between the acoustic model of the speech hypothesis and the sequence of coded representations of the utterance;

generating a translation match score for each speech hypothesis, each translation match score comprising an estimate of the probability of occurrence of the speech hypothesis given the occurrence of the source text;

generating a hypothesis score for each hypothesis, each hypothesis score comprising a combination of the acoustic match score and the translation match score for the hypothesis;

storing a subset of one or more speech hypotheses, from the set of speech hypotheses, having the best hypothesis scores; and

outputting at least one word of one or more of the speech hypotheses in the subset of speech hypotheses having the best hypothesis scores.

5,293,585

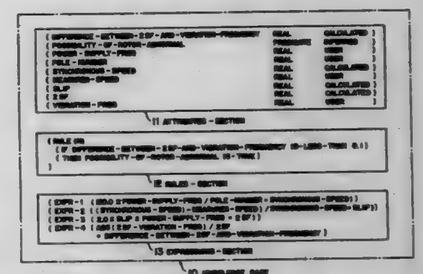
INDUSTRIAL EXPERT SYSTEM

Noboru Morita, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 567,242, Aug. 14, 1990, abandoned. This application Sep. 17, 1992, Ser. No. 946,157
Claims priority, application Japan, Aug. 31, 1989, 1-225301
Int. Cl.[5] G06C *15/00*
U.S. Cl. 395—52 **11 Claims**

1. An industrial expert system for use in designing a plant system or constituent devices thereof and in fault detection, said industrial expert system comprising:

a knowledge base including i) a rules-section for describing rules for deductive inference, ii) an expression-section for describing calculation formulas, each of said formulas having a single variable value to be determined on one side of an equation, the other side being expressed in the form of a polynomial including known functions, and iii) an attributes-section for declaring the nature and value of each attribute cited in a deductive inference and a calculation thereof, and for declaring parameters for controlling communication between a process of carrying out said deductive inference and a process of carrying out said calculation according to a calculation formula; and



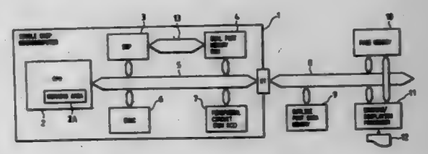
a deductive inference engine for executing a deductive inference, said inference engine including i) chaining means for processing said rules for deductive inference as well as a collection of the calculation formulas related to said rules stored in said knowledge base and for performing forward/backward inference chaining on the calculation formulas, and ii) means for searching said calculation formulas in order to enable use of calculation results in a conditional part of a rule for deductive inference.

5,293,586

DATA PROCESSING SYSTEM FOR DEVELOPMENT OF OUTLINE FONTS

Takanaga Yamazaki, Kodaira; Shiro Baba, Tokorozawa, both of Japan; Keiichi Kurakazu, Princeton, N.J.; Masaharu Ando, Kodaira, Japan; Toshio Tanaka, Yokohama, Japan, and Susumu Kaneko, Mitaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 415,173, Sep. 29, 1989, abandoned. This application Oct. 8, 1992, Ser. No. 958,610
Claims priority, application Japan, Sep. 30, 1988, 63-244001; Jun. 15, 1989, 1-152718
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **21 Claims**



1. A data processing system formed on a semiconductor substrate, comprising:

a microprocessor;

a first bus to which said microprocessor and a memory are coupled;

a digital signal processor, coupled to said first bus, and including storage means for storing a data processing procedure and executing means for executing processing of data transmitted through said first bus by accessing said memory in accordance with a command provided from

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said microprocessor through said first bus, in accordance with the procedure stored in said storage means;

a second bus, coupled to said digital signal processor, which transfers at least data executed by said digital signal processor; and

a dual port memory having a first port coupled to said microprocessor through said first bus and a second port coupled to said second bus, wherein the dual port memory stores the executed data by the digital signal processor and wherein said microprocessor includes means for accessing said dual port memory through said first bus and said digital signal processor includes means for accessing said dual port memory through said second bus.

5,293,587

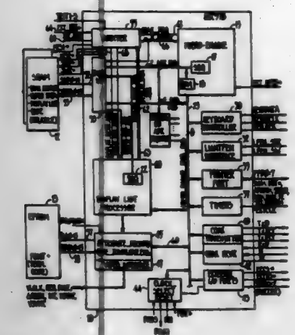
TERMINAL CONTROL CIRCUITRY WITH DISPLAY LIST PROCESSOR THAT FETCHES INSTRUCTIONS FROM A PROGRAM MEMORY, CHARACTER CODES FROM A DISPLAY MEMORY, AND CHARACTER SEGMENT BITMAPS FROM A FONT MEMORY

Alak K. Deb, San Jose; Yunghe Y. Han, Cupertino, and Morris E. Jones, Jr., Saratoga, all of Calif., assignors to Chips and Technologies, Inc., San Jose, Calif.

Filed Jun. 1, 1990, Ser. No. 532,264

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—162 **25 Claims**



9. For use in combination with a video display, a program memory for storing instructions, a display memory for storing display data items, and a font memory for storing font data, terminal control circuitry comprising:

scan line means for storing a range of scan lines and a current scan line;

string length mans for storing a string length and a current position in a string;

display memory address means for storing a starting display memory address and a current display memory address;

display memory access means, responsive to said current display memory address, for retrieving display data stored in said display memory at said current display memory address and for generating a signal signifying a successful memory access;

video data queue means, having a queue input and a queue output, for storing entries communicated to said queue input and presenting stored entries at said queue output in FIFO fashion;

means, responsive to said current scan line and said display data, for formulating entries and communicating said entries to said queue input, each of said entries including at least a portion that represents a font memory location;

font memory access means, responsive to a given entry at said queue output, for retrieving font data stored at a font memory location represented by said given entry;

video conversion means, responsive to said font data, for generating signals operative to place said font data on the display;

an instruction register;

means for fetching instructions from the program memory and loading said instructions in said instruction register; and

control means, responsive to the content of said instruction register, for directing operations in accordance with the instructions fetched;

said control means including means, responsive to a predetermined type of instruction in said instruction register, designated a DISPLAY STRING instruction that specifies a string length and a starting address in the display memory, for (1) storing the specified string length and starting address in said string length means and said display memory address means, respectively, (2) activating said display memory access means a number of times corresponding to the specified string length to retrieve display data form a range of sequential locations starting at the specified starting address, and (3) activating said means for formulating entries; and

said control means further including means, responsive to two predetermined instructions in said instruction register, designated LOOP and LOOPBACK instructions, said LOOP instruction specifying a series of scan lines, said LOOPBACK instruction specifying a transfer address, for (1) executing a sequence of instructions following the occurrence of said LOOP instruction until said LOOPBACK instruction is encountered by said control means, and (2) branching to the instruction immediately following said LOOP instruction until said sequence of instructions has been executed for all scan lines in the series specified by said LOOP instruction.

5,293,588

SPEECH DETECTION APPARATUS NOT AFFECTED BY INPUT ENERGY OR BACKGROUND NOISE LEVELS

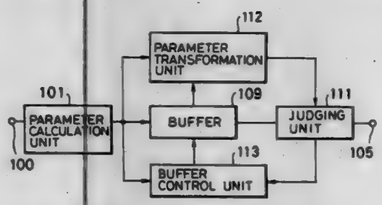
Hideki Satoh, and Tsuneo Nitta, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 9, 1991, Ser. No. 682,079

Claims priority, application Japan, Apr. 9, 1990, 2-92083; Jun. 27, 1990, 2-172028

Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2.42 **16 Claims**



1. A speech detection apparatus, comprising:

means for calculating a parameter for each one of input frames of an input speech;

means for judging said each one of the input frames as a speech segment or a noise segment;

buffer means for storing the parameters of the input frame which are judged noise segments by the judging means; and

means for transforming the parameter calculated by the calculating means into a transformed parameter in which a difference between speech and noise is emphasized by using the parameters stored in the buffer means, and supplying the transformed parameter to the judging means such that the judging means judges by searching a predetermined standard pattern of a class to which the transformed parameter belongs among a plurality of standard patterns for the speech segment and the noise segment.

5,293,589

CIRCUIT WITH PREDETERMINED DELAY FOR SELECTIVELY RELAYING INTERRUPT SIGNALS THROUGH A DAISY-CHAIN OF LINKED MODULES UPON REMOVAL OF A MODULE FROM A SLOT

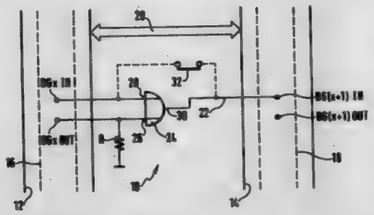
Evangelos Skordos, Langenpreising, and Stefan Hofmann, Gauting, both of Fed. Rep. of Germany, assignors to Force Computers GmbH, Fed. Rep. of Germany

Filed Jan. 30, 1990, Ser. No. 472,503

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1989, 8904936

Int. Cl.[5] G06F *13/37*

U.S. Cl. 395—325 **11 Claims**



1. A computer comprising a plurality of disconnectable plug-in modules, including a first module, subsequent modules including a second module and preceding modules including a third module, at plug-in locations of the computer, a bus connecting the modules to one another, the bus including a daisy-chained acknowledging signal line for carrying an acknowledging signal between the modules, means associated with each of said modules for and operatively associated with a single one of said modules for relaying said signal past its associated module if the signal is intended for said subsequent modules, a decoding circuit on each one of said modules for preventing a further relaying of the signal by the first module if the signal is intended for the first module, the means for relaying and the decoding circuit of the first module processing the acknowledging signal within a predetermined response time, a holding circuit associated with a corresponding one of said modules at the plug-in location for said corresponding module, said holding circuit having an input connected said acknowledging signal line and activated in response to a disconnection of the corresponding module from its plug-in location; and means in the holding circuit for forwarding the acknowledging signal along the acknowledging signal line when a delay forming an individual lag time for the corresponding module, a sum of said individual lag times for said modules at all said plug-in locations being a total lag time, said total lag time being less than the predetermined response time.

5,293,590

PERSONAL COMPUTER WITH INTERFACE CONTROLLER

Don S. Keener, and Richard W. Voorhees, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 6, 1992, Ser. No. 864,267

Int. Cl.[5] G06F *13/10*

U.S. Cl. 395—325 **6 Claims**

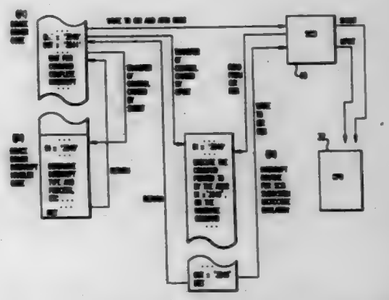
1. A personal computer system comprising:

a microprocessor functioning as a system central processing unit,

a direct access storage device for receiving, storing and delivering digital data, and

an interface controller having internal registers including interface registers and operation registers, said interface controller being operatively connected with said microprocessor and said storage device for directing the exchange of data with said storage device,

said interface registers being accessible by said microprocessor for exchanging therewith high level commands directing the handling of data by said storage device,



said operation registers for receiving, storing and delivering low level commands directing interaction with said storage device, and said controller providing for access by said microprocessor to said operation registers and directing sequencing of microprocessor access to said interface registers and said operation registers.

5,293,591

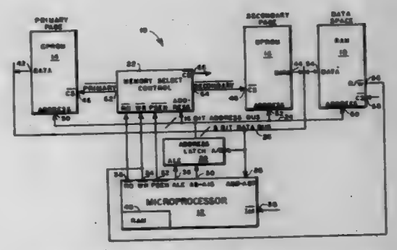
PROCESSING SYSTEM INCLUDING MEMORY SELECTION OF MULTIPLE MEMORIES AND METHOD IN AN INTERRUPT ENVIRONMENT

David R. Dettmer, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 10, 1991, Ser. No. 712,944

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—375 **64 Claims**



1. A processing system comprising: processor means for executing program instructions, said

processor means including means for generating

address for fetching said program instructions; primary memory means, coupled to said processor means, for

storing a first set of program instructions including a first set of execution program instructions and a plurality of transition program instructions, and for providing said processor means with said first set of program instructions;

secondary memory means, coupled to said processor means, for storing a second set of program instructions including a second set of execution program instructions and said plurality of transition program instructions, and for providing said processor means with said second set of program instructions;

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wherein each of said plurality of transition program instructions in said primary memory means has a corresponding transition program instruction in said plurality of transition program instructions in said secondary memory means, each transition program instruction in said primary memory means being stored in said primary memory means at a selected address, said corresponding transition program instruction in said secondary memory means being stored at an address in said secondary memory means identical to said selected address; and

control means, coupled between said processor means and said primary and secondary memory means, for selecting either said primary memory means or said secondary memory means, said control means being responsive to a select-primary address generated by said processor means for selecting said primary memory means, said control means being responsive to a select-secondary address generated by said processor means for selecting said secondary memory means, said select-primary address being different than said select-secondary address,

said processor means being responsive to said transition program instructions fetched from one of said primary memory means and said secondary memory means for generating one of said select-primary address and said select-secondary address to cause said control means to select the other one of said primary memory means and said secondary memory means when the execution of execution program instructions by said processor means requires the fetching of execution program instructions from said other one of said primary memory means and said secondary memory means, and

said control means including latch means for maintaining an identification of which of said primary memory means and said secondary memory means is selected.

5,293,592

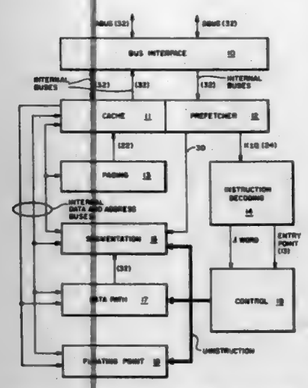
DECODER FOR PIPELINED SYSTEM HAVING PORTION INDICATING TYPE OF ADDRESS GENERATION AND OTHER PORTION CONTROLLING ADDRESS GENERATION WITHIN PIPELINE

Beatrice Fu, Mt. View, and Patrick P. Gelsinger, Santa Clara, both of Calif., assignors to Intel Corporatino, Santa Clara, Calif.

Continuation of Ser. No. 863,148, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 335,186, Apr. 7, 1989, abandoned. This application May 28, 1993, Ser. No. 68,834

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **11 Claims**



1. In a microprocessor having storage means for storing prefetched a plurality of instructions, decoding means for decoding the plurality of instructions from said storage means where at least two of the plurality of instructions are of different lengths and an execution unit for executing the plurality of instructions, wherein each of said plurality of instructions comprised of a plurality of bytes and has at least a first and second field, an improvement wherein said decoding means includes at least two sections,

the first of said sections coupled to receive n-bytes of said plurality of instructions and decoding a first field of one of said plurality of instructions from said n-bytes, said first field having information used by said first section to provide a first pointer to said storage means for selection of the second field of said one of said plurality of instructions from said storage means and to provide a second pointer to said storage means for selection of the first field of the instruction following said one of said plurality of instructions, said second field having information used by said second section for address generation, wherein said first section includes means for indicating to said second section the type of address calculation to be performed for said one of said instructions; and

said second section being coupled to receive m-bytes of instruction data from the storage means as indicated by said first pointer and to cause said setting up of said one of said instructions with said second field from said storage means, wherein said second section controls address calculations in response to said first section indicating the type of address calculation to be performed for said one of said instructions so that address calculations are sequenced, such that while said second section causes said setting up of said one of said instructions, said first section is decoding said first field of said instruction following said one of said plurality of instructions, and

wherein said second section includes means to synchronize results from said first section and from said second section, such that said one of said plurality of instructions is provided after decoding to said execution unit for execution while said second section sequences address calculations for the instruction following said one of said plurality of instructions, such that the first of said sections, the second of said sections and said execution unit operate synchronously.

5,293,593

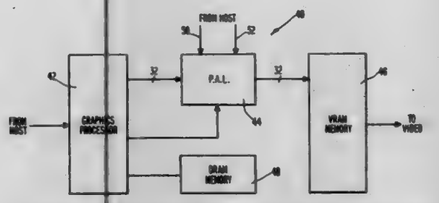
METHOD AND APPARATUS FOR THE MAPPING OF PHYSICALLY NON-CONTIGUOUS MEMORY FRAGMENTS TO BE LINEARLY ADDRESSABLE

David J. Hodge; John C. Keith, both of Loveland; Lief J. Sorensen, and Steven P. Tucker, both of Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 11, 1990, Ser. No. 596,176

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—400 **20 Claims**



1. Apparatus for use in read/write operations by a processor, wherein said processor reads and writes information in first and second address formats, said first address format for the storage of display information and said second address format for the storage of other information, said apparatus comprising: a memory; and a memory mapper, connected to said memory and said processor, said memory mapper for remapping those memory fragments not containing information stored in said first address format so that said memory fragments are linearly addressable by said processor for reading and writing information in said second address format.

5,293,594

DATA PROCESSING SYSTEM HAVING A PLURALITY OF REGISTER GROUPS AND A LOGICAL OR CIRCUIT FOR ADDRESSING ONE REGISTER OF ONE OF THE REGISTER GROUPS

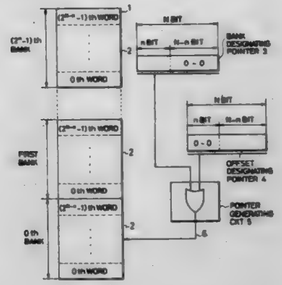
Tohru Nojiri, Tokyo; Shunpei Kawasaki, Koganei; Tan Watanabe, Yokohama, and Kousuke Sakoda, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 37,843, Apr. 13, 1987, Pat. No. 5,214,786, and a continuation-in-part of Ser. No. 52,873, May 22, 1987, abandoned. This application Apr. 3, 1990, Ser. No. 503,626

Claims priority, application Japan, May 24, 1986, 61-119803

Int. Cl.[5] G06F *12/02, 12/06*

U.S. Cl. 395—400 **13 Claims**



1. A register access mechanism for a data processing system having a plurality of register groups for storing first information, each register group including a plurality of registers who are selectively addressable by a register address to read said first information therefrom or write said first information therein, said register access mechanism comprising:

first storing means for storing second information given by an instruction and representing one of said plurality of register groups;

second storing means for storing third information given by said instruction and representing one register of the one register group represented by said second information of said instruction; and

a logical OR circuit coupled to said first and second storing means for performing an OR operation on respective bits of said second information and said third information to produce an ORed value as the register address of said one register of the one register group represented by said second and third information and outputting the register address of said one register of said one register group to said one register to read said first information therefrom or write said first information therein;

wherein said second information and said third information each include a valid part and an invalid part defined by said instruction, with the valid part of said second information being bit locations which correspond to the invalid part of said third information and vice versa, wherein bit locations in said invalid parts of said second information and said third information are always set to zero by said instruction, and wherein the valid part of said second information and the invalid part of said third information, and the invalid part of said second information and the valid part of said third information, when ORed by said logical OR circuit causes said logical OR circuit to produce an ORed value having the valid part of said second information and the valid part of said third information.

5,293,595

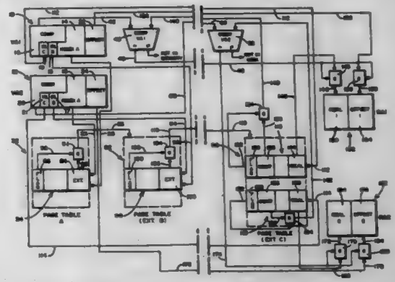
PAGING SYSTEM USING EXTENSION TABLES FOR CONFLICT RESOLUTION

Charles R. Caldarale, Minneapolis, Klaus G. Dudda, deceased, late of Rosevill Minn., by Sabine V. Dudda, Legal Representative; and Peter J. Hancock, White Bear Lake, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 17, 1990, Ser. No. 628,056

Int. Cl.[5] G06F *12/00, 12/10, 15/40*

U.S. Cl. 395—400 **4 Claims**



1. A process for resolving comparison conflicts in a memory search system when index values of different binary bit designators, which are representative of objects stored in memory at a defined hierarchical level, are compared, wherein said designators each comprise first, second and third segments, said first segments represent comparison values and said second segments represent said index values, comprising the steps of:

a) using said second segment to point to a first table entry in a first table when a first flag in said first table entry indicates that said second segments of a plurality of designators point to an identical entry in said first table,

b) using an extension value found in said first table entry to point to a second table,

c) using a first group of corresponding bits selected from said first segments of said designators to point to a second entry in said second table,

d) using, as necessary, an additional extension value found in said second table entry if a second flag indicates that said first group of bits of different designators point to an identical second entry of said second table, said second extension value pointing to an additional table,

e) using, as necessary, additional flags, extension values, tables and groups of other corresponding bits of said designators in a sequential manner until at least one group of bits is found which does not provide an identical entry for a corresponding group of bits of different designators or until all of said bits of said first segments have been used and additional groups of other corresponding bits of said designators which are selected from said first segments,

f) referencing a final table entry in a final table and retrieving stored comparison segments associated with each of said binary bit designtors when one of said flags indicates that no identical entry is found for a particular group of bits of different designators,

g) comparing said stored comparison segments with said first segments that are associated with the corresonding designators, and

h) combining stored value segments which are resident in said final table entries with the binary bits of said third segments of said binary bit designators if the corresonding stored comparison segments match said first segments.

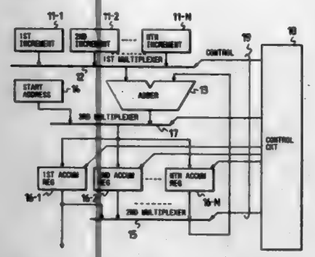
VOL 1160 ISS 2 MR 8 1994 UMI

5,293,596

MULTIDIMENSIONAL ADDRESS GENERATOR AND A SYSTEM FOR CONTROLLING THE GENERATOR

Masaki Toyokura; Kunitoshi Aono, both of Osaka, and Toshiyuki Araki, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 20, 1991, Ser. No. 658,154
Claims priority, application Japan, Feb. 21, 1990, 2-41424
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 **4 Claims**



1. A multidimensional address generator for generating one-dimensional addresses of a memory, which respectively correspond to $P_1 \times P_2 \times \ldots \times P_N$ data of a predetermined region of an N-dimensional entire data array (N is a positive integer larger than one) having $Q_1 \times Q_2 \times \ldots \times Q_N$ data stored in the memory (P_1, P_2 . . . and P_N and Q_1, Q_2 . . . and Q_N are positive integers and $P_1 \leqq Q_1$, $P_2 \leqq Q_2$, . . . and $P_N \leqq Q_N$), one-dimensional addresses being assigned to the $Q_1 \times Q_2 \times \ldots \times Q_N$ data, said multidimensional address generator generating the one-dimensional addresses respectively corresponding to the $P_1 \times P_2 \times \ldots \times P_N$ data in a sequence of cycles denominated Cycles 0 to $(P_N P_{N-1} \ldots P_2 P_1 - 1)$ of a cyclic access operation of accessing the $P_1 \times P_2 \times \ldots \times P_N$ data stored in the memory, which operation is performed by a processor, said multidimensional address generator comprising:

first, second and third multiplexers;

an adder; and

first and second, . . . to Nth accumulating registers, wherein

said first multiplexer selects one of a first to Nth increments respectively corresponding to a first to Nth directions, in which data to successively be accessed are arranged, and

said second multiplexer selects one of data stored in said first to Nth accumulating registers, and

said third multiplexer selects between a start address and an output of said adder, wherein

data selected by said first multiplexer is added by said adder to data selected by said second multiplexer, and

data selected by said third multiplexer is inputted to said first to Nth accumulating registers, wherein

a start address is written to said first to Nth accumulating registers in Cycle 0 when said address generator is activated, and

the first increment is added to the data held in said first accumulating register in each of Cycles 1 to $(P_1 - a)$ and Cycles $P_1 + 1)$ to $(2P_1 - 1)$ and . . . and Cycles $(P_N P_{N-1} \ldots P_2 - 1) P_1 + 1$ to $(P_N P_{N-1} \ldots P_2 P_1 - 1)$, and a result of the addition of the first increment to the data held in said first accumulating register is written to said first accumulating register, and

an nth increment (n=2, 3, . . . , N) is added to the data held in an nth accumulating register, and a result of the addition of the nth increment to the data held in said nth accumulating register is written to said first to nth accumulating registers, every $P_{n-1} P_{n-2} \ldots P_1$ cycles during Cycles $P_n P_{n-1} P_{n-2} \ldots P_1$ to $(P_n - 1)\, P_{n-1} P_{n-2} \ldots P_1$ and Cycles $(P_n + 1)\, P_{n-1} P_{n-2} \ldots P_1$ to $(2P_n - 1)\, P_{n-1} P_{n-2} \ldots P_1$ and Cycles $((P_N P_{N-1} \ldots P_{n+1} - 1)\, P_n + 1)\, P_{n-1} P_{n-2} \ldots P_1$ to $(P_N P_{N-1} \ldots P_{n+1} P_n - 1)\, P_{n-1} P_{n-2} \ldots P_1$, with regard to all possible values of n, and

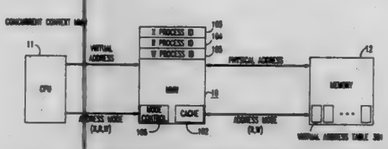
the data obtained in said first accumulating register as a result of an operation effected during Cycles 0 to $(P_N P_{N-1} \ldots P_2 P_1 - 1)$ is outputted.

5,293,597

CONCURRENT CONTEXT MEMORY MANAGEMENT UNIT

Craig W. Jensen, Aberdeen, and Frederick R. Keller, Jackson, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 529,765, May 25, 1990, abandoned, which is a continuation of Ser. No. 23,858, Mar. 9, 1987, abandoned. This application Jul. 30, 1991, Ser. No. 737,961
Int. Cl.[5] G06F *12/10, 12/14*
U.S. Cl. 395—400 **8 Claims**



1. A memory management unit for use in controlling data storage and retrieval from a memory, said memory management unit translating virtual addresses to physical addresses within said memory, said virtual addresses being received from a plurality of sources along with, for each received instruction, a read or a write instruction, each source having at least one virtual address mapped to at least one physical address, said memory management unit comprising

means for storing a set of translation information for each of said plurality of sources, each set of translation information mapping at least one virtual address to a respective physical address,

recording means including a read register and a write register for concurrently recording identities, each of a different one of said plurality of sources, and

means, responsive to an instruction received from a particular one of said plurality of different sources, for selecting, for use by said memory management unit, the one of said sets of translation information that is stored for the source whose identity is recorded a) in said read register, if said received instruction is a read instruction, or b) in said write register, if said received instruction is a write instruction.

5,293,598

RANDOM ACCESS MEMORY WITH A PLURALITY OF AMPLIFIER GROUPS

Kiyohiro Furutani; Koichiro Mashiko; Kazutami Arimoto; Noriaki Matsumoto, and Yoshio Matsuda, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 634,813, Dec. 31, 1990, abandoned, which is a continuation of Ser. No. 396,042, Aug. 21, 1989, abandoned, which is a division of Ser. No. 77,306, Jul. 24, 1987, Pat. No. 4,873,669. This application Jul. 9, 1992, Ser. No. 912,135
Claims priority, application Japan, Jul. 30, 1986, 61-179741
The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.
Int. Cl.[5] G06F *13/40*
U.S. Cl. 395—400 **10 Claims**

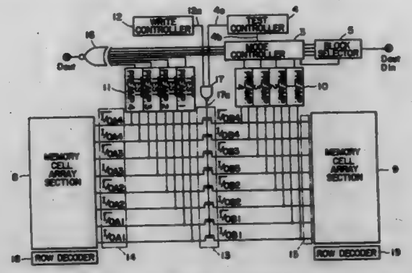
1. A semiconductor memory device for reading and writing in normal and test modes, respectively, comprising:

first and second memory cell sections, each section having a plurality of blocks, with each block having a plurality of memory cells;

first and second data bus line groups, each data bus line group having a plurality of data bus line pairs coupled to respective blocks of said first and second memory cell sections in such a manner that a given data bus line pair reads data from a memory cell, selected by address information, of the block to which that data bus line is coupled;

first and second amplifier groups, each amplifier group having a plurality of amplifier means having active and inactive states, each amplifier means being coupled to a respective one of said data bus line pairs;

an exclusive-NOR gate; and



means coupling said plurality of amplifier means of each of said first and second amplifier groups to the input side of said exclusive-OR gate;

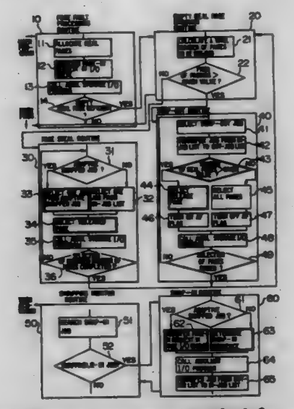
wherein, in a normal mode, the plurality of amplifier means of one of said amplifier groups are in their active state and the plurality of amplifier means of each other amplifier group are in their inactive state, and in a test mode, the plurality of amplifier means of all of said amplifier groups are in their active state, the amplifier means of each of said amplifier groups amplifying data appearing on the data bus line pair to which the amplifier means is coupled.

5,293,599

PROCESS FOR PARTIALLY SWAPPING REAL STORAGE AREAS USED BY A PROGRAM BETWEEN A REAL STORAGE AND AN AUXILIARY STORAGE

Toyohiko Kagimasa; Kikuo Takahashi, and Toshiaki Mori, all of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 4, 1989, Ser. No. 416,992
Claims priority, application Japan, Oct. 7, 1988, 63-251767
Int. Cl.[5] G06F *12/00, 13/00*
U.S. Cl. 395—425 **10 Claims**



1. A main storage management method for a computer system which executes programs by multiprogramming under control of a virtual storage type operating system, said method comprising the steps of:

(a) maintaining a first portion of a real storage area allocated to one of the programs within a real storage of the computer system in a state allocated to the program when the program is to be swapped-out, while saving contents of a second portion of the real storage area allocated to the program to be swapped into an auxiliary storage thereby deallocating the second portion from the program to be swapped; and

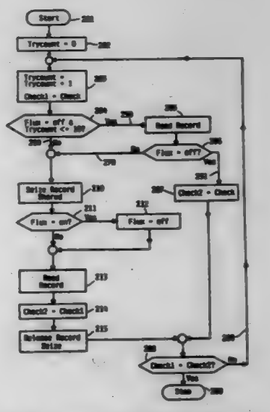
(b) loading saved contents of the second portion from the auxiliary storage to the real storage of the computer system when the program is to be swapped-in.

5,293,600

COUNTER AND FLUX BIT LOCKING FOR VERY FAST SHARED SERIALIZATION OF SHARED DATA OBJECTS

John J. Vriezen, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1990, Ser. No. 505,814
Int. Cl.[5] G06F *12/14, 12/16, 9/38*
U.S. Cl. 395—425 **37 Claims**



1. A method for managing access to shared data in a data processing system, comprising the steps of:

(a) initializing an n bit check count to keep track of each instance where an exclusive write access modifies a given shared data object;

(b) storing said check count in a has table; and

(c) setting a flux bit whenever said data object is subject to an exclusive seize, so that any shared read access initiated while said flux bit is set will initiate a shared seize prior to reading the data object.

5,293,601

FLOPPY DISK CONTROL UNIT AND APPARATUS HAVING A FLOPPY DISK CONTROL UNIT

Hiroshi Tsuyuguchi, Tokyo; Shinichiro Tanaka, Saitama; Fumio Nagase, Tama; Naoki Sugeta, Fuchu; Miya Enami, Higashikurume; Toru Miura, Mitaka, and Katsuya Enami, Higashikurume, all of Japan, assignors to Tesc Corporation, Tokyo, Japan

Filed Dec. 26, 1990, Ser. No. 633,665
Claims priority, application Japan, Dec. 27, 1989, 1-150426[U]; Jul. 13, 1990, 2-185566; Jul. 13, 1990, 2-185567
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **12 Claims**

1. An apparatus for controlling functions of a disk drive, said apparatus comprising:

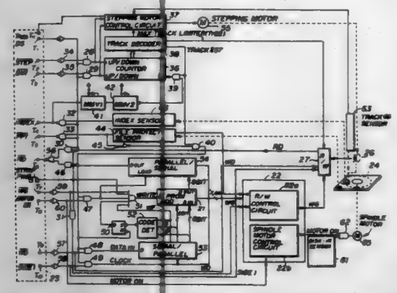
VOL 1160 ISS 2 MR 8 1994 UMI

control means for outputting control information appropriate to each of a plurality of kinds of controls;

a memory, coupled to the control means, for storing information used to select predetermined kinds of controls from among the plurality of kinds of controls, the control means outputting the control information corresponding to the predetermined kinds of controls which are selected based on the selecting information from the memory;

a plurality of controlled objects corresponding to the plurality of kinds of controls, said controlled objects being coupled to the control means and controlled by the control means;

a connection member connected to an external computer, first information from the external computer being transmitted to said memory via said connection member, and the information stored in said memory being read by the



external computer via said connection member, said first information including at least information used to control operations of said controlled objects, and including the information used to select predetermined kinds of controls: and

protection means coupled to said connection member and said memory, for authorizing the information by the external computer to the memory and/or the reading of the information by the external computer only when predetermined information is supplied from the external computer to said connection member,

wherein said protection means does not authorize the writing of the information to the memory and/or the reading of the information from the memory unless the predetermined information is continuously supplied for a predetermined time period.

5,293,602

MULTIPROCESSOR COMPUTER SYSTEM WITH DEDICATED SYNCHRONIZING CACHE

Masakazu Fukagawa, and Tadaaki Isobe, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1991, Ser. No. 647,513
Claims priority, application Japan, Feb. 1, 1990, 2-23310
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **3 Claims**

1. A computer system comprising:

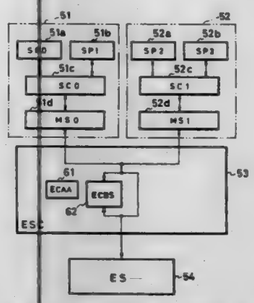
a plurality of processors including at least one scalar processor and at least one vector processor;

a shared storage shared by the plurality of processors, and

a storage controller having a communication buffer storage for storing a copy of a portion of data of the shared storage, the storage controller performing at least one of i) a send of an operand data of a vector instruction to be executed by the at least one vector processor from the shared storage directly to the at least one vector processor through a high throughput path and ii) a receive of said operand data thereof from the at least one vector processor, and, upon executing a particular synchronous instruction by the at least one scalar processor;

characterized in that said communication buffer storage stores only an operand data of said particular synchronous instruction among operand data of various data read instructions and data write instructions, the synchronous instruction used upon receipt or delivery of a shared variable data through the shared storage shared by the plurality of processors, and;

further characterized in that, upon executing the particular synchronous instruction by a first processor of the plural-



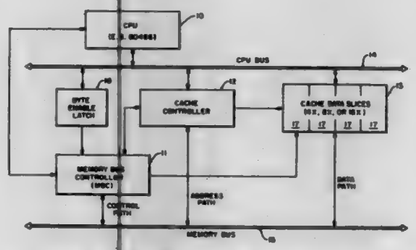
ity of processors, the storage controller uses the operand data of said particular synchronous instruction when a request for said particular instruction is received from the first processor and the operand data of said particular synchronous instruction exits in the communication buffer storage, in a first situation, and copies a portion of data of the shared storage, which said portion is the operand data of the particular synchronous instruction, and stores a resulting copy in the communication buffer storage when the operand data of said particular synchronous instruction does not exist in the communication buffer storage, in a second situation.

5,293,603

CACHE SUBSYSTEM FOR MICROPROCESSOR BASED COMPUTER SYSTEM WITH SYNCHRONOUS AND ASYNCHRONOUS DATA PATH

Peter D. MacWilliams; Clair C. Webb, both of Aloha, and Robert L. Farrell, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 4, 1991, Ser. No. 710,079
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **18 Claims**



1. A cache memory subsystem in a microprocessor-based computer system having a central processor unit (CPU) with a CPU clock, coupled to a CPU bus operating synchronously with the CPU clock, a main memory, a memory bus coupled to

the main memory and operating asynchronously with respect to the CPU clock, the cache memory subsystem comprising:

a) an integrated circuit cache memory comprising:

i) a read-write cache memory storage array for storing data and having a prescribed data line width;

ii) a CPU bus interface coupled to the CPU bus for transferring data to and from the CPU bus, and coupled to said read-write cache memory storage array for transferring a full cache storage line of data to and from said cache storage array;

iii) memory bus interface comprising a plurality of buffer latches coupled to the memory bus for buffering and transferring data to and from the memory bus, and coupled to said cache storage array for transferring data to and from said cache storage array; and

iv) a data path circuit for coupling said CPU bus interface to said memory bus for directly transferring data between said CPU bus interface and said memory bus interface;

b) a memory bus controller coupled to the CPU and to the memory bus for controlling the memory bus in in response to CPU memory bus requests; and

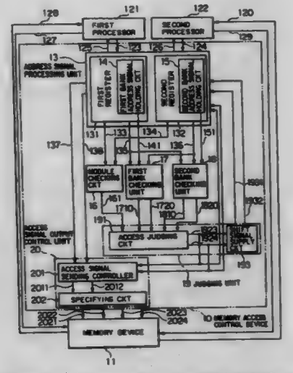
c) a cache controller coupled to the CPU bus, to the memory bus, to said integrated circuit cache memory storage array, and to said memory bus controller for controlling data transfers to and from the CPU bus, to and from said read-write cache memory storage array, and coordinating with said memory bus controller data transfers to and from the memory bus.

5,293,604

MEMORY ACCESS CONTROL DEVICE HAVING BANK ACCESS CHECKING CIRCUITS SMALLER IN NUMBER THAN MEMORY MODULES

Gizo Kadaira, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 15, 1991, Ser. No. 655,947
Claims priority, application Japan, Feb. 15, 1990, 2-35704
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **3 Claims**



1. A memory access control device which is for controlling access to a memory device including first through N-th memory modules, where N represents an integer greater than three, each of said memory modules comprising a predetermined number of memory banks, said memory access control device comprising:

address signal processing means supplied with first and second input address signals, said first input address signal including a first module address portion, a first bank address portion, and a first element address portion, said second input address signal including a second module address portion, a second bank address portion, and a second element address portion, said address signal processing means for processing said first and said second module address portions into first and second module address signals each of which represents one of addresses of said memory modules, said first and said second bank address portions into first and second bank address signals each of which represents one of addresses of said memory banks and for producing said first and second input address signals as first and second address signals as they are;

a first bank address signal holding circuit connected to said address signal processing means for holding said first bank address signal as a first bank address held signal;

a second bank address signal holding circuit connected to said address signal processing means for holding said second bank address signal as a second bank address held signal;

a module checking circuit connected to said address signal processing means for checking said first and said second module address signals to produce a module coincidence signal when said first and said second module address signals coincide;

a first bank access signal holding circuit connected to said first bank address signal holding circuit for holding a first bank access held signal;

a second bank access signal holding circuit connected to said second bank address signal holding circuit for holding a second bank access held signal;

a first bank access checking circuit connected to said address signal processing means and said first bank access signal holding circuit for checking said first bank address signal and said first bank access held signal to produce a first bank coincidence signal when said first bank address signal and said first bank access held signal coincide with each other;

a second bank access checking circuit connected to said address signal processing means and said second bank access signal holding circuit for checking said second bank address signal and said second bank access held signal to produce a second bank coincidence signal when said second bank address signal and said second bank access held signal coincide with each other;

access judging means connected to said module checking circuit and said first and said second bank access checking circuits for alternately producing a first inhibit signal and a second inhibit signal when supplied with said module coincidence signal, said access judging means producing said first inhibit signal when supplied with said first bank coincidence signal, said access judging means producing said second inhibit signal when supplied with said second bank coincidence signal, said access judging means producing first and second shift signals when said first and said second inhibit signals are not produced, respectively;

shift signal supply means connected to said access judging means and said first and said second bank address signal holding circuits for using said first and said second shift signals in transferring said first bank address held signal to said first bank access signal holding circuit as said first bank access held signal, and said second bank address held signal to said second bank access signal holding circuit as said second bank access held signal; and

access signal output control means connected to said memory modules, said address signal processing means, and said access judging means for specifying by said first address signal, as a first specified memory module and a first specified memory bank, a particular memory module of said memory modules and a particular memory bank of said predetermined number of memory banks in said particular memory module to send said first element address portion to said first specified memory bank of said first specified memory module when said access signal output control means is supplied with said first address signal and when said access judging means does not produce said first inhibit signal, said access signal output control means

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specifying by said second address signal, as a second specified memory module and a second specified memory bank, a specific memory module of said memory modules and a specific memory bank of said predetermined number of memory banks in said specific memory module to send said second element address portion to said second specified memory bank of said second specified memory module when said access signal output control means is supplied with said second address signal and when said access judging means does not produce said second inhibit signal.

5,293,605

APPARATUS TO SUPPLEMENT CACHE CONTROLLER FUNCTIONALITY IN A MEMORY STORE AND A CACHE MEMORY

David P. Wright, Birmingham, England, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

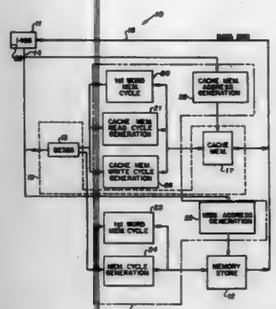
PCT No. PCT/GB90/01037, § 371 Date Mar. 4, 1991, § 102(e) Date Mar. 4, 1991, PCT Pub. No. WO91/00571, PCT Pub. Date Jan. 10, 1991

PCT Filed Jul. 5, 1990, Ser. No. 663,872

Claims priority, application United Kingdom, Jul. 5, 1989, 8915422

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **20 Claims**



11. A state machine to be used in a memory system comprising a memory store, a cache memory, and a cache controller, the memory store being comprised of a first plurality of multiword data elements and the cache memory being comprised of a second plurality of multiword data elements, the cache controller being inherently limited to providing cache functionality for single word data elements only, said state machine being connected to the cache controller, the cache memory, and the memory store, and having means for supplementing the cache controller to provide functionality for multiword data elements.

5,293,606

APPARATUS AND METHOD FOR TRANSFERRING INTERLEAVED DATA OBJECTS IN MASS STORAGE DEVICES INTO SEPARATE DESTINATIONS IN MEMORY

Carl E. Sassenrath, Ukiah, Calif., assignor to Commodore Electronics Limited, Nassau, The Bahamas

Filed Apr. 2, 1991, Ser. No. 679,371

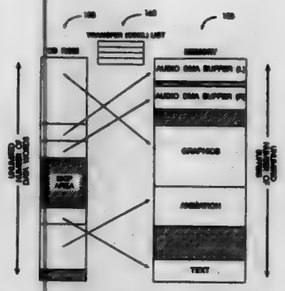
Int. Cl.[5] G06F *12/04*

U.S. Cl. 395—425 **7 Claims**

1. In a computer system having a memory and a optical storage means, said optical storage means interleaving a plurality of data objects into a location and said optical storage means having a plurality of locations sequentially arranged, a method for transferring the data objects into separate destinations in the memory comprising the steps of:

(a) constructing a transfer list having a plurality of nodes, wherein said nodes include size and destination information of the data objects;

(b) seeking once a data object at a location of the optical storage means;



(c) determining from a next node a size and a destination address for the data object; and

(d) transferring data from the data objects into the memory at said destination address, wherein said transferred data has a size equal to the size for the data object.

5,293,607

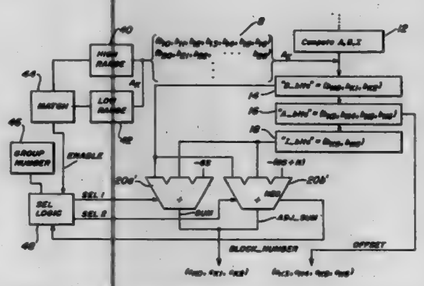
FLEXIBLE N-WAY MEMORY INTERLEAVING

Russell C. Brockmann; William S. Jaffe, both of Fort Collins, Colo., and William R. Bryg, Saratoga, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 3, 1991, Ser. No. 679,868

Int. Cl.[5] G06F *12/00, 12/06, 13/00*

U.S. Cl. 395—425 **9 Claims**



9. A digital system, comprising:

(a) a computer;

(b) memory means, coupled to the computer and comprising N memory blocks of size S, N and S being integers, for storing a list of data values in associated storage locations, each storage location being identifiable by an associated M-bit address, M being an integer; and

(c) addressing means for reading/writing said data values from/to said memory means in an interleaved fashion, said addressing means comprising:

(i) means for identifying a first group of bits (B_bits), comprising means for computing the values $A=\log_2(S)$, $B=M-A$, and $I=\text{truncate}(\log_2(N))$, and means for defining B_bits as the B MSBs of the address being translated;

(ii) means for identifying a second group of bits (I_bits) defining an interleave index corresponding to the address being translated, comprising means for identifying the A LSBs of the address being translated (A_bits),

and means for defining I_bits as the I LSBs of A_bits after first stripping away the $\log_2(L)$ LSBs of A_bits;

(iii) means for dividing said memory means into a plurality of groups, each group being identified by a number GS;

(iv) summing means for computing an unadjusted sum (SUM) and an adjusted sum (ADJ_SUM) in accordance with the following definitions;

$$SUM=B_bits+I_bits-GS,$$

and

$$ADJ_SUM=B_bits+I_bits-(GS+N);$$

and

(v) means for defining a block number corresponding to the address being translated, said block number being selected as the value of SUM when ADJ_SUM is less than zero and as the value of ADJ_SUM when ADJ_SUM is greater than or equal to zero.

5,293,608

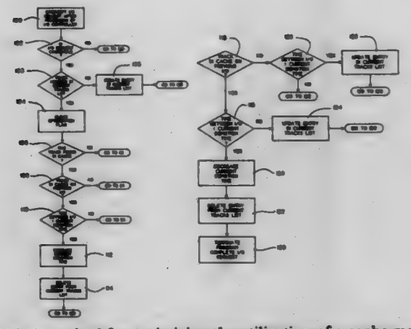
SYSTEM AND METHOD FOR OPTIMIZING CACHE MEMORY UTILIZATION BY SELECTIVELY INHIBITING LOADING OF DATA

Paul A. Johnson, Allison Park, and Thomas W. Ryan, Valencia, both of Pa., assignors to Legent Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1991, Ser. No. 688,189

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 **14 Claims**



14. A method for optimizing the utilization of a cache memory in a direct access storage device controller wherein the direct access storage device controller processes a direct access storage device request from a central processing unit for a track of data, determines whether the requested track of data resides in the cache memory or on one of a plurality of data storage devices in communication with the direct access storage device controller, and causes the requested track of data to replace the track of data in the cache memory least recently accessed by the central processing unit if the requested track of data does not already reside in the cache memory, said method comprising the steps of:

intercepting a direct access storage device request from the central processing unit for a requested track of data before said direct access storage device request is processed by the direct access storage device controller;

determining whether an entry for said requested track of data exists in a current tracks list;

determining whether an optimization flag is set in said entry for said requested track of data if said entry exists in said current tracks list;

inhibiting said requested track of data from being loaded into the cache memory from one of the plurality of direct access storage devices if said optimization flag is set in said entry for said requested track of data in said current tracks list;

intercepting said direct access storage device request after said direct access storage device request has been processed by the direct access storage device controller;

creating said entry for said requested track of data in said current tracks list if said entry does not already exist;

determining whether said requested track of data was found in the cache memory;

determining whether said requested track of data was found in the cache memory on an immediately preceding direct access storage device request for said track of data from the central processing unit;

calculating an elapsed time between an initiation of said direct access storage device request and an initiation of an immediately preceding direct access storage device request for said requested track of data from the central processing unit;

comparing said elapsed time to a demotion time which is an approximation of the length of time that any particular track of data will reside in the cache memory after a last direct access storage device request from the central processing unit for that track of data;

increasing said demotion time if (a) said requested track of data was found in the cache memory; (b) said requested track of data was found in the cache memory on said immediately preceding direct access storage device request for said requested track of data; and (c) said elapsed time is greater than said demotion time;

decreasing said demotion time if (a) said requested track of data was not found in the cache memory; (b) said requested track of data was found in the cache memory on said immediately preceding direct access storage device request for said requested track of data; and (c) said elapsed time is less than said demotion time;

setting the optimization flag in said entry for said requested track of data in said current tracks list if (a) said requested track of data was not found in the cache memory; (b) said requested track of data was found in the cache memory on said immediately preceding direct access storage device request for said requested track of data; and (c) said elapsed time is greater than said demotion time; and

deleting said entry for said requested tack of data in said current tracks list if said entry was found in said current tracks list for two successive direct access storage device requests and said optimization flag has not been set.

5,293,609

HIT-DENSITY-BASED REPLACEMENT FOR DATA CACHE WITH PREFETCHING

Feng-Hsien W. Shih, Yorktown Heights, N.Y.; James F. Macon, Jr., Boynton Beach, Fla., and Shauchi Ong, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1991, Ser. No. 688,732

Int. Cl.[5] G06F *12/12*

U.S. Cl. 395—425 **13 Claims**

1. A computer-implemented method for replacing data in a data cache store in which demand data is stored in a demand section of said data cache store and prefetch data is stored in a prefetch section of said data cache store, comprising in combination;

storing demand data in said demand section;

storing prefetch data in said prefetch section;

determining a prefetch hit probability for said prefetch section on the basis of a ratio of a number of hits in said prefetch section to a number of prefetch requests;

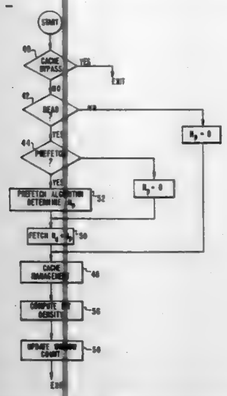
determining a demand hit probability for said demand section on the basis of a ratio of a number of hits in said demand section to a number of demand requests;

determining a prefetch hit density for said prefetch section

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on the basis of a ratio of prefetch hit probability to a number of data entries in said prefetch section;

determining a demand hit density for said demand section on the basis of a ratio of the demand hit probability to a number of data entries in said demand section; and



replacing an entry in said demand section or an entry in said prefetch section on the basis of a comparison of the demand hit density and the prefetch hit density.

5,293,610

MEMORY SYSTEM HAVING TWO-LEVEL SECURITY SYSTEM FOR ENHANCED PROTECTION AGAINST UNAUTHORIZED ACCESS

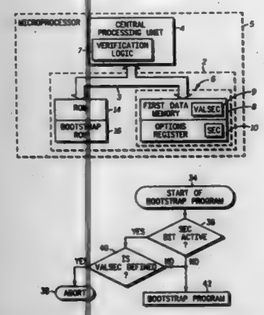
Roland H. Schwarz, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 525,816, May 21, 1990, abandoned. This application Jun. 10, 1991, Ser. No. 713,046

Claims priority, application United Kingdom, Aug. 4, 1989, 8917894

Int. Cl.[5] G06F *12/14*

U.S. Cl. 395—425 **6 Claims**



1. A processor including a memory system for storing data, the memory system comprising:

first alterable memory means;

second non-alterable memory means; and

data bus means coupled to said first and second memory means for allowing external access to data stored in said first and second memory means during a test mode of operation of said memory system;

said first alterable memory means comprising first security means programmable to an active state wherein said memory system prevents access by a device external to the processor to the data stored in said first alterable memory means during said test mode of operation when said first security means is in said active state, and

said first alterable memory means further comprising second security means programmable to a predetermined state; and

wherein said memory system prevents access by a device external to the processor to the data stored in both said first and second memory means during said test mode of operation when said first security means is in said active state and said second security means is in said predetermined state.

5,293,611

DIGITAL SIGNAL PROCESSOR UTILIZING A MULTIPLY-AND-ADD FUNCTION FOR DIGITAL FILTER REALIZATION

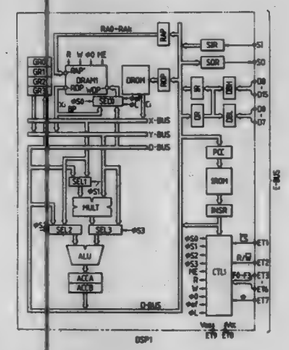
Hirofumi Wada, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 409,881, Sep. 19, 1989, abandoned. This application Jul. 9, 1991, Ser. No. 728,826

Claims priority, application Japan, Sep. 20, 1988, 63-236088

Int. Cl.[5] G06F *15/31*

U.S. Cl. 395—425 **11 Claims**



1. A digital signal processor comprising:

arithmetic means for executing arithmetic operations;

control means for controlling the arithmetic operations of said arithmetic means; and,

memory means including first selection means, second selection means, a memory array having a plurality of first word lines, second word lines, pairs of first data lines, pairs of second data lines, memory cells, and a transfer means for transferring data out of the memory array;

wherein each of said memory cells is coupled to one of said first word lines, to one of said second word lines, to a pair of said first data lines pairs and to a pair of said second data lines pairs;

wherein said first selection means is coupled to said plurality of first word lines and selects one first word line from said plurality of first word lines,

wherein said second selection means is coupled to said plurality of second word lines and selects one second word line from said plurality of second word lines,

wherein said transfer means is coupled to said pairs of first and second data lines and transfers the data from first memory cells coupled to said selected one first word line to second memory cells coupled to said selected one second word line in a substantially identical time period as a transfer of the data to the arithmetic means from the

memory means, and wherein the first and second memory cells comprise different memory cells.

5,293,612

SELECTIVE DUMP METHOD AND APPARATUS

Randall K. Shingai, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

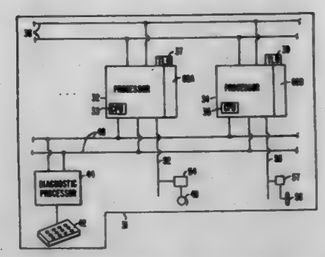
Continuation of Ser. No. 350,674, May 11, 1989, abandoned. This application Apr. 16, 1992, Ser. No. 870,735

Int. Cl.[5] G06F *12/16*

U.S. Cl. 395—425 **2 Claims**

MICROFICHE APPENDIX INCLUDED

(4 Microfiche, 204 Pages)



1. A process for conducting a tape dump of paged addressable memory in a computing device said paged addressable memory having contents, the tape dump being selective with respect to a non-frozen processor, which non-frozen processor acts to access memory locations, said non-frozen processor including an associated updatable microcode save are for storing information, said computing device including a data cache, data cache tags, and a translation lookaside buffer having storage locations, the process comprising:

providing a page table containing a first plurality of encoded page addresses used for address translation in a memory hierarchy process;

writing a second plurality of encoded page addresses to a plurality of storage locations within said translation lookaside buffer, said second plurality of encoded page addresses being addresses of said addressable memory which are accessed by the processor, wherein said writing to at least one of said plurality of readable storage locations in said translation lookaside buffer causes erasing of at least one of said first plurality of encoded page addresses from said translation lookaside buffer;

reserving at least a first data page of said paged addressable memory;

detecting an instruction to initiate a selective memory dump to a first address said first address being the address of an external storage device;

updating processor type information, physical memory size information and the number of pages in said dump in said microcode save area said updating occurring after said step of detecting;

comparing at least a first portion of said second plurality of encoded addresses in said translation lookaside buffer to at least a portion of said first plurality of encoded addresses in said page table to verify validity of said first portion of said plurality of encoded addresses;

writing to said first address, the contents of memory pages at page addresses, said page addresses encoded by a first half of said second plurality of written encoded page addresses;

writing to said first addresses, the contents of memory pages at page addresses, said page addresses being encoded by a second half of said second plurality of written encoded page addresses; and

writing to said first address, said data cache tags, the contents of said data cache, and at least said first data page.

5,293,613

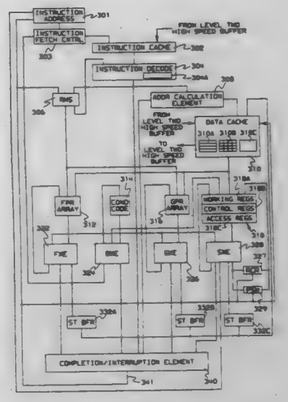
RECOVERY CONTROL REGISTER

Clifford O. Hayden, Jamaica Plain, Mass.; Robert J. Hurban, Rye, and Susan B. Stillman, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1991, Ser. No. 751,461

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—575 **16 Claims**



1. A recovery control register for use with an error recovery system, comprising:

a first register;

a second register, coupled to said first register, said second register being connected to provide data directly to said error recovery system;

means for selecting one of said first register and said second register;

means for transferring said data from said first register to said second register synchronously with a system checkpoint.

5,293,614

SYSTEM AND METHOD FOR HARD REAL-TIME GARBAGE COLLECTION REQUIRING A WRITE BARRIER BUT NO READ BARRIER

Edward E. Ferguson, Plano; David H. Bartley, Dallas, both of Tex., and Timothy J. McEntee, Milford, Ohio, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 8, 1991, Ser. No. 682,806

Int. Cl.[5] G06F *12/12, 12/16*

U.S. Cl. 395—600 **6 Claims**

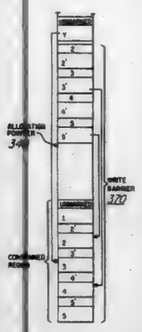
1. A method for garbage collecting a memory concurrently with the execution of other processes, comprising the steps of:

allocating a required space in a surviving region of said memory to receive an object to be transported from a condemned region of memory during a non-interruptable phase of garbage collection, copying during an interruptable phase of garbage collection each word of said object to be transported from said condemned region to said allocated space; and

maintaining consistency between said object from said con-

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demned space and said allocated space by writing to both said object and said allocated space whenever an application program updates said object and whenever an application program updates said allocated space.

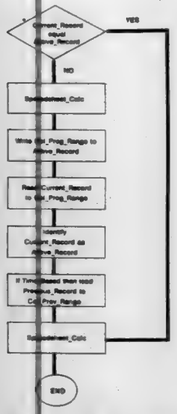


5,293,615

POINT AND SHOOT INTERFACE FOR LINKING DATABASE RECORDS TO SPREADSHEETS WHEREBY DATA OF A RECORD IS AUTOMATICALLY REFORMATTED AND LOADED UPON ISSUANCE OF A RECALCULATION COMMAND

Carlos A. Amada, 4 Ave. 20-38 Zona 14, Guatemala, Guatemala

Filed Nov. 16, 1990, Ser. No. 614,907
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **21 Claims**



1. An apparatus for carrying out spreadsheet calculations using data imported from a database via a point and shoot user interface to select a database record for loading into a specified range of the spreadsheet, comprising:

a computer having a display and a memory having one or more storage locations;

a spreadsheet program, having a spreadsheet data format, in execution on said computer for displaying a plurality of cells which define a spreadsheet, each of said cells having a unique identification code indicative of the location of said cell on said display and each said cell being associated with one or more of said storage locations in said memory, and wherein any one or more of said cells can be selected by a user as part of a selected range using a cursor, and wherein said spreadsheet program includes program code to control said computer to receive data from said user and to store said data in the storage locations associated with user designated cells wherein said data can be text, numbers, or formulas including mathematical or logical operators relating contents of the storage locations associated with one or more of said cells to the contents of the storage locations of one or more other ones of said cells mathematically or logically, and wherein said computer is controlled by said spreadsheet program to display on said display the contents of said storage locations associated with each said cell, except where the contents of the storage locations associated with a particular one of said cells are a formula, in which case the computer is caused to display the results of the mathematical or logical operations defined by said formula at the corresponding location for said cell on said display, and wherein said spreadsheet program includes a recalculation routine for controlling said computer so as to perform a recalculation upon receipt of a recalculation command where all formulas associated with all cells of said spreadsheet are recalculated using whatever the current values are for each said cell stored in the associated storage locations in said memory at the time the recalculation command is received and any new results stemming from recalculation of said formulas where new contents since a previous recalculation exist in the storage locations associated with said cells mathematically or logically related by said formulas are displayed on said display at the location of the corresponding cells;

a database file stored in said memory and containing one or more records, each said record is comprised of one or more fields, each said field contains data;

first means in execution on said computer for controlling said computer so as to display on said display one or more of said records of said database file within a window while said spreadsheet program is in execution;

second means in execution on said computer and coupled to said recalculation routine and to said database file and to said first means, for controlling said computer to display a cursor in said window in which said records from said database file are displayed, said cursor being movable within said window under control of said user and controlling said computer to recognize a select command entered by said user such that any said data record pointed to by said cursor at the time said select command is given by said user is selected, and for controlling said computer so as to automatically load said selected database record into said selected range of said spreadsheet when said recalculation command is given, said loading including automatically reformatting data of said selected database record to said spreadsheet data format prior to the recalculation of said spreadsheet, such that when said recalculation is performed by said spreadsheet program, the contents of the storage locations associated with the cells in said selected range will be set equal to the contents of the selected database record before the recalculation starts thereby forcing the storage locations associated with the cells of said selected range to be loaded with the contents of said fields of said selected database record before the recalculation starts;

database record identifier means for controlling said computer to maintain data pointing to the last database record loaded from said database file into said selected range of said spreadsheet; and

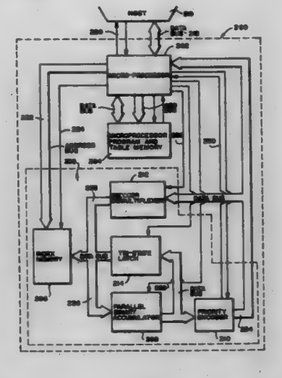
means for controlling said computer to load original contents of said storage locations associated with the cells of said selected range of said spreadsheet back into the database record pointed to by said database record identifier means before the contents of said selected database record are loaded into the cells of said selected range when said recalculation command is issued and before the recalculation is carried out.

5,293,616

METHOD AND APPARATUS FOR REPRESENTING AND INTERROGATING AN INDEX IN A DIGITAL MEMORY

Orin O. Flint, 26 Haviland St., Worcester, Mass. 01602

Filed Oct. 22, 1991, Ser. No. 780,203
Int. Cl.[5] G06F *15/411*
U.S. Cl. 395—600 **9 Claims**



1. A method for locating and retrieving data from an index database comprising the steps of:

storing records to be located and retrieved in an index database;

selecting at least one attribute that may be possessed by one or more records to be retrieved from the index database;

inputting said at least one attribute into a processing means;

said processing means including a processor memory and an index memory, said index memory containing a plurality of datawords located at addresses corresponding to said at least one attribute possessed by said one or more records in said index database;

determining the identity of an address in the index memory which corresponds to said at least one selected attribute;

reading a dataword from said index memory which is stored therein at the location corresponding to the address specified by said at least one selected attribute, said dataword including a plurality of binary bits with each said bit corresponding to a record in said index database; and

determining from the values of the bits in the dataword, the one or more records in said index database which possess said attributes.

5,293,617

DATA BASE SYSTEM CAPABLE OF QUICKLY RESTORING A DATA BLOCK IN A DATA SECTION WHEN A FAULT OCCURS DURING OPERATION

Hidemi Okada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 813,839
Claims priority, application Japan, Dec. 29, 1990, 2-416164
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **10 Claims**

1. A data base system comprising:

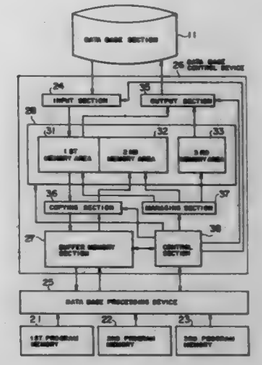
a data base section for memorizing a plurality of data blocks;

a buffer memory section for memorizing a selected one of said data blocks as a buffered data block;

a request producing section for producing a data block search request signal which specifies a specific data block when accesses said buffer memory section;

first memory means having a non-volatile storage structure for memorizing a first selected one of said data blocks as a first data block; and

control means coupled to said request producing section, said buffer memory section, and said first memory means for transferring said first data block to said buffer memory section in response to said data block search request signal



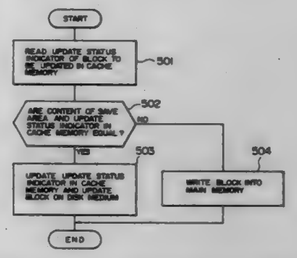
when said specific data block is absent in said buffer memory section.

5,293,618

METHOD FOR CONTROLLING ACCESS TO A SHARED FILE AND APPARATUS THEREFOR

Michio Tandai, Yokohama; Masaaki Hama, Fujisawa, and Fujio Fujita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co, Ltd, Yokohama, both of Japan

Filed Nov. 15, 1990, Ser. No. 614,088
Claims priority, application Japan, Nov. 18, 1989, 1-300611
Int. Cl.[5] G06F *7/00, 7/20, 7/04*
U.S. Cl. 395—650 **4 Claims**



1. An information processing system comprising:

a plurality of computer systems each including a central processing unit, a channel connected to the central processing unit, and a main memory connected to the central processing unit; and

a shared storage device connected to the channel of each of the computer systems for storing a plurality of data blocks each including an update area indicating an update status of the associated data block;

wherein the shared storage device includes a cache memory connected to the channel of each of the computer systems; and

wherein the central processing unit and the channel of each of the computer systems include means for

reading a data block to be updated from the shared storage device,

storing the data block to be updated in the main memory of the associated computer system,

VOL 1160 ISS 2 MR 8 1994 UMI

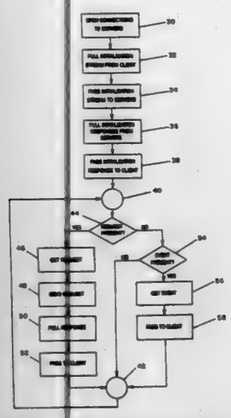
storing at least the update area of the data block to be updated in the cache memory as an update status indicator,
updating the data block to be updated in the main memory,
reading the update status indicator from the cache memory,
determining whether the update status indicator read from the cache memory and a corresponding portion of the updated data block in the main memory are equal,
if the update status indicator and the corresponding portion of the updated data block are equal, updating the update status indicator in the cache memory, reading the updated data block from the main memory, and storing the updated data block in the shared storage device in place of the data block to be updated, and
if the update status indicator and the corresponding portion of the updated data block are not equal, reading the data block to be updated from the shared storage device, storing the data block to be updated in the main memory, and repeating the preceding functions beginning with updating the data block to be updated in the main memory.

5,293,619

METHOD AND APPARATUS FOR COLLABORATIVE USE OF APPLICATION PROGRAM

Craig D. Dean, Sandia Park, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.

Filed May 30, 1991, Ser. No. 709,925
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—650 **20 Claims**



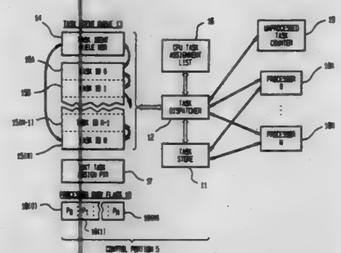
1. A method for interactively linking a computer application program with a plurality of stations on which one or more types of operating system are executing, the method comprising the steps of:
a) invoking on a coordinating computer a sole executing copy of a control program for communicating output commands from the application program to the stations and for communicating input signals from users of the stations to the application program, the control program being discrete from operating system programs executing on the coordinating computer and functioning independently of which types of operating system are executing on the plurality of stations;
b) specifying to the control program the stations to be interactively linked; and
c) directing by software command the application program to communicate with the control program.

5,293,620

METHOD APPARATUS FOR SCHEDULING TASKS IN REPEATED ITERATIONS IN A DIGITAL DATA PROCESSING SYSTEM HAVING MULTIPLE PROCESSORS

William Barabash, Acton, and William S. Yerazunis, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 366,774, Jun. 13, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 927,785
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—650 **51 Claims**



1. A digital data processing system comprising:
A. a plurality of digital data processors for processing a plurality of tasks;
B. a task identification queue for storing a plurality of task identification entries arranged in an order, where each one of the plurality of task identification entries correspondingly represents one of the plurality of tasks, respectively; and
C. a task dispatcher comprising means for sequentially dispatching the plurality of tasks to said plurality of digital data processors by sequentially referring to the plurality of task identification entries in the order that the plurality of task identification entries are arranged in said task identification queue to retrieve the plurality of tasks, and means for reordering the plurality of task identification entries in said task identification queue after all of the tasks represented by the plurality of task identification entries have been sequentially dispatched and processed so that a last one of the plurality of tasks to be processed has its representative one of the plurality of task identification entries placed at the beginning of said task identification queue.

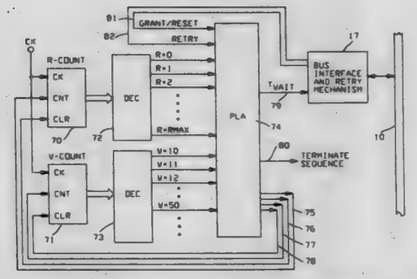
5,293,621

VARYING WAIT INTERVAL RETRY APPARATUS AND METHOD FOR PREVENTING BUS LOCKOUT

Theodore C. White, Tustin; Jayesh V. Sheth, Mission Viejo; Paul B. Ricci, and Dan T. Tran, both of Laguna Niguel, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 11, 1993, Ser. No. 2,566
Int. Cl.[5] G06F *13/42*
U.S. Cl. 395—650 **25 Claims**

1. In a computer system having a time-shared bus with a plurality of bus Users coupled to said bus, said plurality of bus Users including a first bus User operative to issue a bus request to said bus to use said bus and to receive a RETRY signal from said bus to retry said bus request, bus lockout prevention apparatus comprising
wait interval control means, in said first User, responsive to successive occurrences of said RETRY signal for generating a corresponding sequence of request retry wait intervals, said sequence beginning with a first burst of successive short wait intervals followed by a first long wait interval, at least two successive short wait intervals of said first burst being different with respect to each other, said long wait interval being long relative to said short wait intervals of said first burst, and
request retry means in said first User for issuing successive bus requests to said bus in response to said successive occurrences of said RETRY signal after respective controllable wait intervals controlled by said sequence,
said wait interval control means being operative to terminate said sequence when said bus is granted to said first user in response to one of said bus requests.

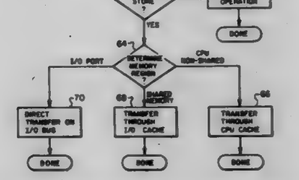


5,293,622

COMPUTER SYSTEM WITH INPUT/OUTPUT CACHE

James O. Nicholson; John C. O'Quin, III; John T. O'Quin, II, and Frederick E. Strietelmeier, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 711,343, May 31, 1991, Pat. No. 5,161,219, which is a continuation of Ser. No. 297,775, Jan. 13, 1989, abandoned. This application Jul. 24, 1992, Ser. No. 919,817
Int. Cl.[5] G06F *12/02, 13/00*
U.S. Cl. 395—425 **5 Claims**



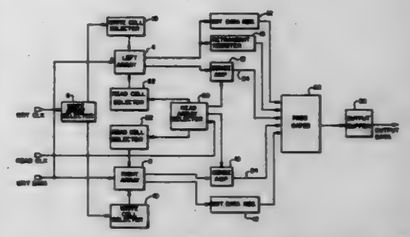
1. In a computer system having a central processor for accessing virtual pages, an input/output device for accessing virtual pages, a system memory, a central processor cache connected to the central processor and the system memory, and an input/output cache connected to the system memory, to the central processor, and to the input/output device, a method of accessing the system memory comprising the steps performed by the computer system of:
allocating locations in the system memory among a central processor non-shared region, an input/output non-shared region, and a shared region;
addressing the central processor non-shared region through the central processor cache in response to an access of a virtual page stored in locations allocated to the central processor non-shared region, wherein such access can only be initiated by the central processor;
addressing the shared region through the input/output cache in response to an access of a virtual page stored in locations allocated to the shared region, wherein such accesses can be initiated by either the central processor or the input/output device; and
addressing the input/output non-shared region through the input/output cache in response to an access of a virtual page stored in locations allocated to the input/output non-shared region, wherein such accesses can only be initiated by the input/output device.

5,293,623

RANDOM ACCESS MEMORY BASED BUFFER MEMORY AND ASSOCIATED METHOD UTILIZING PIPELINED LOOK-AHEAD READING

Jozef Froniewski, Palo Alto, and David E. Jefferson, Milpitas, both of Calif., assignors to Samsung Semiconductor, Inc., San Jose, Calif.

Continuation of Ser. No. 367,362, Jun. 16, 1989, abandoned. This application Nov. 16, 1992, Ser. No. 976,719
Int. Cl.[5] G06F *12/00*; G11C *8/04*
U.S. Cl. 395—425 **17 Claims**



1. A memory device for alternately storing successive data elements which are input to said memory device and for alternately reading out said successive data elements in response to a series of write clock signals and a series of read clock signals, respectively, said successive data elements including an initial data element, a first data element and at least one subsequent data element, said memory device comprising:
first and second memory arrays each comprising a plurality of memory cells;
gating logic means for generating an initial data register write signal and an initial data register read signal in response to a first write clock signal and a first read clock signal, respectively, from the series of write clock signals and the series of read clock signals;
initial data register storing means for storing said initial data element in response to said initial data register write signal and for outputting the stored initial data element in response to said initial data register read signal;
write cell select means for selecting in response to a first write select signal, said first data element to be stored into a predetermined first cell of one of said first and second memory arrays, and for selecting, in response to a second write select signal, a first subsequent data element of said at least one subsequent data element to be stored into a predetermined first cell of the other of said first and second memory arrays;
write array select means coupled to said write cell select means for alternately generating said first and second write select signals in response to a second write clock signal and a third write clock signal, respectively, from said series of write clock signals;
read cell select means for selecting in response to a first read select signal, the first data element stored in the predetermined first cell of said one of said first and second memory arrays to be output therefrom, and for selecting, in response to a second read select signals, the first subsequent data element stored in the predetermined first cell of said other of said first and second memory arrays to be output therefrom;

read array select means for generating said first and second read select signals in response to said first read clock signal and a second read clock signal, respectively, from said series of read clock signals, said gating logic means being responsive to logic signals output by said read array means to further selectively generate first and second select signals; and

first and second sense amplifier means responsive to said first and second select signals, respectively, for selectively sensing a data element output from a respective one of said first and second memory arrays one of the stored first data element and the stored first subsequent data element being gated to an output means from one of said first and second memory arrays, the gated data element having been previously sensed by the respective one of said first and second sense amplifier means during the previous read clock signal, said output means being coupled to said initial data register storing means and said gating logic means for selectively outputting the initial data element in response to the first read clock signal, for outputting the gated first data element in response to the second read clock signal, and for outputting the gated first subsequent data element in response to a third read clock signal.

5,293,624

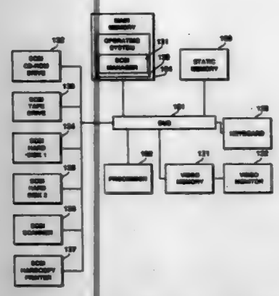
DATA CHAINING MECHANISM FOR SCSI DEVICES

Gustavo Andrade, San Jose; Mathew Gulick, Gilroy, and Gerald Katzung, San Jose, all of Calif., assignors to Apple Computer, Inc, Cupertino, Calif.

Continuation of Ser. No. 573,462, Aug. 27, 1990, abandoned. This application May 19, 1993, Ser. No. 63,637

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **21 Claims**



1. A computer system comprising a bus, a processor coupled to said bus; a memory means coupled to said bus for storing data; a plurality of Small Computer Standard Interface (SCSI) devices, wherein a SCSI manager provides routines and data structures for controlling communication between said plurality of SCSI devices, a mechanism for exchanging information between said SCSI devices including:

first means coupled to said bus for moving data between said SCSI devices, said means for moving including means for generating at least one move operation, wherein said means for generating has at least a first opcode field, a first count field, and a first offset field, wherein said first opcode field contains a move command represented as a buffer address, said count field specifies a number of bytes to transfer, and said first offset field contains an offset value to said buffer address; and

second means coupled to said bus for repeating an operation, wherein said means for repeating includes means for generating at least one looping operation, said means for generating at least one looping operation having at least a second opcode field, a second count field, and a second offset field, wherein said second opcode field specifies the looping operation, said second count field contains a loop count, said second offset field contains an offset number of operations for repeating in said at least one looping operation;

third means coupled to said bus for stopping the execution of said operations by said SCSI manager, wherein said SCSI manager halts execution of said move operations and said looping operations;

wherein said at least one move operation and said at least one looping operation are ordered for sequential execution by said SCSI manager, and further wherein said SCSI manager transfers said number of bytes to or from said buffer address and subsequently adds said offset value to said buffer address to create a current buffer address in one atomic operation upon execution of said at least one move operation and said SCSI manager repeats operations within said offset number of said looping operation in said sequential order until said loop count is exhausted upon execution of said at least one looping operation, wherein said at least one move operation accomodates a plurality of buffer addresses;

said SCSI manager transferring said number of bytes to or from said current buffer address when said SCSI manager re-executes said at least one move operation, wherein transfers occur between SCSI devices by allowing said at least one move operation to specify multiple source or destination buffers.

5,293,625

SIGNAL SELECTING CIRCUIT WHICH SELECTIVELY OUTPUTS PREDETERMINED SIGNAL TO HOST COMPUTER COMPATIBLE WITH PLURALITY OF COMPUTER HARDWARE TYPES AND DISK DRIVE HAVING SUCH SIGNAL SELECTING CIRCUIT

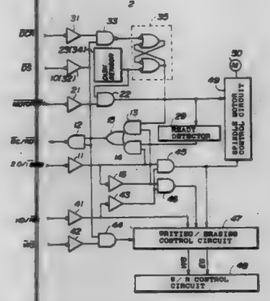
Tohru Miura, Mitaka; Hiroshi Tsuyuguchi, Tokyo, and Shozo Touma, Kokubunji, all of Japan, assignors to TEAC Corporation, Japan

Filed Sep. 20, 1991, Ser. No. 763,182

Claims priority, application Japan, Sep. 25, 1990, 2-255902

Int. Cl.[5] G11B *33/10*

U.S. Cl. 395—500 **7 Claims**



1. A disk drive, connected to a host computer compatible with a plurality of computer hardware types, comprising:

recording/reproducing means for recording information on one of plural kinds of disks which respectively have storage capacities corresponding to one of the plurality of computer hardware types, and/or for reproducing information therefrom;

signal outputting means for outputting plural kinds of control signals to the host computer, each of the plural kinds of control signals respectively corresponding to the plurality of computer hardware types and representing whether or not said recording/reproducing means can be used; and

signal selecting means, provided between said signal outputting means and the host computer, for automatically selecting one of the plural kinds of control signals output from said signal outputting means which corresponds to one of the computer hardware types which is being used in the host computer.

5,293,626

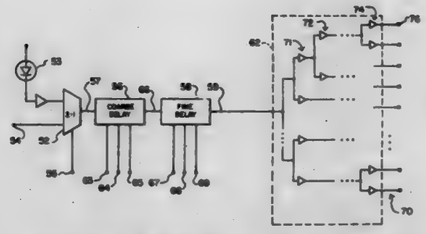
CLOCK DISTRIBUTION APPARATUS AND PROCESSES PARTICULARLY USEFUL IN MULTIPROCESSOR SYSTEMS

Edward C. Priest; Steven C. Barber, both of Eau Claire; Ken Shintaku; David A. Hanson, both of Altoona, and Dan L. Massopust, Eau Claire, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Filed Jun. 8, 1990, Ser. No. 536,270

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—550 **13 Claims**



1. Apparatus for distributing clock pulses from a master clock pulse generator to a system having at least one module which must receive a multiplicity of clock pulses at a multiplicity of clock pulse receiving points for operation of system components in response to arrival of clock pulses at the receiving points within a predetermined maximum time displacement relative to each other comprising:

a plurality of path establishing means each connected to receive clock pulses from the master clock and having an output connection to a respective clock pulse receiving point, each said path establishing means including elements connected for transferring the clock pulses from the master clock to said respective receiving point, and

means in at least one of said path establishing means for adjusting the delay of the clock pulses passing therethrough so that the said passing clock pulse arrives at the said output connection of the associated said path establishing means with a time displacement equal to or less than the predetermined maximum time displacement, said adjusting means including an adjustable electrical delay line responsive to control signals input thereto for establishing the amount of delay of the clock pulses passing therethrough, said adjustable electrical delay line including a serial connected network having means for providing a coarse time delay adjustment and means for providing a fine time delay adjustment, said course and fine delay adjustment means each including an input and an output with said input coupled to a plurality of serially coupled elements each having a finite time delay characteristic and a selector circuit responsive to said control signals introduced thereto for coupling signals from at least one of said adjustment means to said adjustment means output, said coarse and fine delay adjustment means each including an input and an output with said input coupled to a plurality of serially coupled elements each having a finite time delay characteristic and a selector circuit responsive to said control signals introduced thereto for coupling signals from at least one of said adjustment means to said adjustment means output, each said plurality of serially coupled elements being configured in a network including first and second transistor means with said first transistor means having the base thereof connected to said input and said second transistor means having the emitter-collector circuit thereof coupled to said output,

a bank of semiconductor elements having their collectors connected in parallel into said emitter-collector circuit of said second transistor, and

at least one of said semiconductor elements being coupled as a pulse delay stage by including means coupling said element in an emitter follower configuration with the base thereof connected to the collector circuit of said first transistor means,

whereby the amount of delay for a pulse travelling through said network between said input and output thereof is a function of the number of said semiconductor elements connected in said pulse delay stage configuration.

5,293,627

METHOD FOR ADJUSTING CURENT CLOCK COUNTS IN A DISTRIBUTED COMPUTER SYSTEM

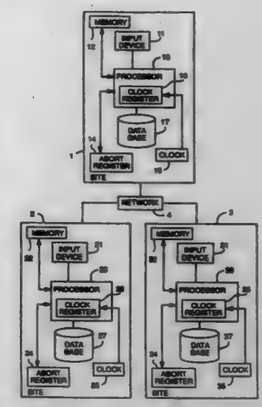
Nobuhiro Kato; Yojiro Morimoto; Miho Muranaga, and Koichi Sekiguchi, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 22, 1991, Ser. No. 704,581

Claims priority, application Japan, May 23, 1990, 2-131171

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—550 **18 Claims**



1. A method for adjusting current clock counts in a distributed computer system, wherein the distributed computer system includes a plurality of computer sites, each computer site including a processor, a memory having a plurality of record keys for storing a timestamp table, a database, abort register means for storing an abort count corresponding to the computer site, clock means for generating a clock signal indicating passage of time, and clock resister means responsive to the clock signal for storing a current clock count corresponding to the computer site, wherein the database for each computer site including a plurality of data entries that correspond to the plurality of record keys and that are accessed by a processor, wherein each record key corresponds to a timestamp which includes at least a clock count that indicates when a data entry corresponding to the record key was most recently accessed, wherein the distributed computer system includes network means for interconnecting the plurality of computer sites to enable a processor in one computer site to send data entries and requests for data entry accessing to another computer site, and wherein the following steps are executed by a processor in at least a first one of the computer sites;

asigning to a new transaction a timestamp related to the current clock count for the first computer site, at times

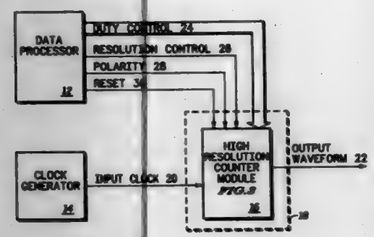
when the processor in the first one of the computer sites is initiating the new transaction;
reading the timestamp corresponding to the record key from the memory, at times when the processor in the first computer site is initiating the new transaction;
comparing an existing timestamp corresponding to the record key with the timestamp assigned to the new transaction;
aborting the new transaction, at times when the timestamp assigned to the new transaction is smaller than the existing timestamp corresponding to the record key;
incrementing an abort count corresponding to the first computer site, at times when the new transaction is aborted, to indicate the number of times that new transactions initiated by the first computer site have been aborted;
accessing an abort count in a second computer site corresponding to new transactions aborted in the second computer site;
comparing the abort count corresponding to the first computer site with the abort count corresponding to the second computer site; and
changing the current clock count corresponding to the first computer site to more closely match the current clock count corresponding to the second computer site, at times when the comparison between the abort counts in the first and second computer sites indicates the new transactions have been aborted more frequently in one of the two computer sites.

5,293,628

DATA PROCESSING SYSTEM WHICH GENERATES A WAVEFORM WITH IMPROVED PULSE WIDTH RESOLUTION

John A. Laagan; Robert J. Amedeo, and Roberto M. Frontera, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,167
Int. Cl.[5] G06F 1/04
U.S. Cl. 395—550 **20 Claims**



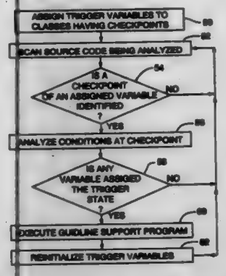
1. A data processing system, comprising:
a high resolution counter, said high resolution counter receiving a clock signal having a predetermined period and a predetermined half-period, the predetermined half-period being equal to one-half the predetermined period;
wherein said high resolution counter comprises:
counter means for counting, said counter means having a count value, the count value having a first portion and a second portion;
compare means for comparing, said compare means being coupled to said counter means, said compare means for receiving a duty control value, the duty control value having a first portion and a second portion, said compare means for comparing the first portion of the duty control value to the first portion of the count value; and
waveform means for generating an output signal, said waveform means being coupled to said compare means, if the duty control value is an even value, then the output signal transitions from a first logic state to a second logic state when the first portion of the duty control value matches the first portion of the count value, but if the duty control value is an odd value, then the output signal transitions from the first logic state to the second logic state one predetermined half-period after the first portion of the duty control value matches the first portion of the count value.

5,293,629

METHOD OF ANALYZING COMPUTER SOURCE CODE

Patrick O. Conley, Portland, Oreg., and Loren Cobb, Corrales, N. Mex., assignors to Abraxas Software, Inc., Portland, Oreg.

Filed Nov. 30, 1990, Ser. No. 621,248
Int. Cl.[5] G06F 9/44
U.S. Cl. 395—700 **10 Claims**



1. A method of analyzing computer source code having characteristics of maintainability, portability, and style and being organized as plural hierarchical program levels, to detect noncompliance with a predefined criterion relating to at least one of the characteristics, comprising:
defining a source code trigger condition relating to the predefined criterion;
assigning the source code trigger condition to a condition class corresponding to one of the hierarchical program levels;
defining in a selected programming language a criterion support program that supports the predefined criterion;
directing a computer to review the computer source code to determine whether the source code trigger condition is present therein; and
whenever the source code trigger condition is present in the computer source code, executing the criterion support program to support maintenance of the predetermined criterion in the computer source code.

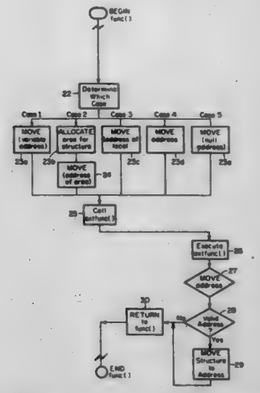
5,293,630

METHOD OF RETURNING A DATA STRUCTURE FROM A CALLEE FUNCTION TO A CALLER FUNCTION FOR THE C PROGRAMMING LANGUAGE

Reid E. Tatge, Richmond, and Alan L. Davis, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 414,056, Sep. 28, 1989, abandoned. This application Oct. 26, 1992, Ser. No. 970,582
Int. Cl.[5] G06F 9/45, 9/42
U.S. Cl. 395—700 **13 Claims**

1. A computer process for specifying an address for returning data in a variable type form of a predetermined structure to a caller function, which declares the returned data in the form of the predetermined structure rather than passes it as an argument, from a callee function, comprising the steps of:
for a call from said caller function to said callee function, determining whether said callee function will return data in the form of the predetermined structure to said caller function;
if said callee function will return data in the form of the predetermined structure, interpreting said caller function to determine whether other data in the form of the predetermined structure already has an address in memory and whether said caller function will use said returned data in the form of the predetermined structure;
if other data in the form of the predetermined structure already has an address in memory, generating a data return address corresponding to said address already in memory;
if other data in the form of the predetermined structure does not already have an address in memory, generating a data return address for said returned data as a new address;
if said caller function will not use said returned data, generating a data return address for said returned data as an invalid address;
commencing execution of said caller function;
passing said data return address to said callee function upon occurrence of the call from said caller function to said callee function; and
transferring control to said callee function upon occurrence of the call from said caller function to said callee function.



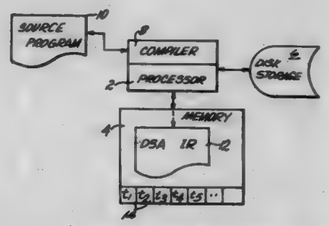
not already have an address in memory, generating a data return address for said returned data as a new address;
if said caller function will not use said returned data, generating a data return address for said returned data as an invalid address;
commencing execution of said caller function;
passing said data return address to said callee function upon occurrence of the call from said caller function to said callee function; and
transferring control to said callee function upon occurrence of the call from said caller function to said callee function.

5,293,631

ANALYSIS AND OPTIMIZATION OF ARRAY VARIABLES IN COMPILER FOR INSTRUCTION LEVEL PARALLEL PROCESSOR

Bantwal R. Rau, Los Altos, and Michael Schlansker, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 6, 1991, Ser. No. 741,292
Int. Cl.[5] G06F 9/44
U.S. Cl. 395—700 **19 Claims**



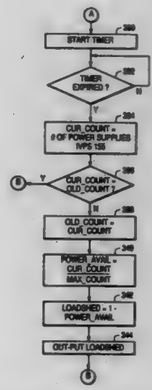
1. A method for optimizing an intermediate representation output of an instruction level parallel processor compiler computer program, the compiler computer program and the method being performed by a data processor coupled to a memory, the method comprising the steps of
(a) providing a source program as input to the compiler computer program,
(b) creating in the memory a plurality of expanded virtual register data structures each comprising a plurality of separately addressable elements identified by an EVR name;
(c) converting the source program into a single assignment intermediate representation comprising at least one assignment statement referencing an expanded virtual register data structure and storing the single assignment intermediate representation in the memory;
(d) converting the single assignment intermediate representation to a dynamic single assignment intermediate representation created in the memory by
(d1) outputting a remap() function in association with each assignment statement, wherein the remap() function receives an expanded virtual register as a parameter;
(d2) moving al the remap() functions to a top of a basic block in the dynamic single assignment intermediate representation;
(d3) removing redundant load operations in the dynamic single assignment intermediate representation by testing whether a first expanded virtual register element always refers to an identical location in the memory as a second expanded virtual register element, and if so, substituting the second expanded virtual register element for the first expanded virtual register element in the dynamic single assignment intermediate representation.

5,293,632

METHOD AND APPARATUS FOR LOAD SHEDDING USING A TRAINLINE MONITOR SYSTEM

Michael R. Novakovich, Pittsburgh, and Richard D. Roberts, Elizabeth, both of Pa., assignors to AEG Transportation Systems, Inc., Pittsburgh, Pa.

Filed Mar. 18, 1992, Ser. No. 853,540
Int. Cl.[5] G06F 1/32
U.S. Cl. 395—750 **5 Claims**



1. A method for controlling power consumed by a plurality of subsystems on a multi-car train having a plurality of power supplies connected in parallel for supplying power to the subsystems and a train wide communication network including a vehicle bus in each car of the train communicating with the power supplies and subsystems on the car, a train bus extending through the entire train, and communication nodes in each car interconnecting the train bus with each one of the vehicle buses, with one of the communication nodes in one of the cars constituting a master node and the other communication nodes

in the other cars constituting slave nodes, each slave node communicating status information about power supplies and subsystems on its vehicle bus to the master node and communicating control information to the power supplies and subsystems on its vehicle bus, said method comprising:

using the communications network to periodically ascertain how many of the power supplies connected in parallel are operating;

determining, based on how many power supplies are operating and therefore available for supplying power at any given time, a first variable correpsonding to total power available for power consuming sybsystems on the train; and

selectively reducing power consumption of subsystems on the train by way of the communications network in accordance with the first variable determined by said step of determining.

5,293,633

APPARATUS AND METHOD FOR PROVIDING DIGITAL AUDIO IN THE CABLE TELEVISION BAND

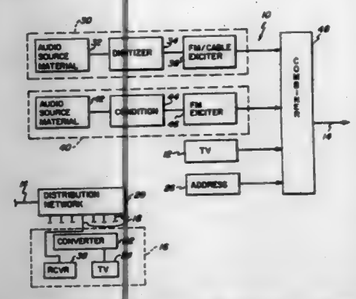
Clyde Robbins, Maple Glen, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Continuation-in-part of Ser. No. 280,770, Dec. 6, 1988, Pat. No. 5,038,402. This application May 17, 1991, Ser. No. 702,018

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] H04H *1/02*; H04B *5/00*; H04N *1/00*

U.S. Cl. 455—3.1 **20 Claims**



1. A method of broadcasting audio signals, comprising the steps of:

digitizing a channel of audio source material to produce a compressed digital data stream;

modulating a carrier with said data stream using multilevel modulation to produce a narrowband RF channel signal having a bandwidth of no more than about 400 KHz and a frequency within a range of about 45 MHz to about 54 MHz; and

transmitting the RF channel signal over a cable television system within a band extending from about 45 MHz to about 54 MHz.

5,293,634

SYSTEM FOR RETRIEVING TOKEN HAVING A SELECTED NEST LEVEL AND SATISFYING PREDETERMINED RETRIEVAL CONDITION

Kousuke Takahashi; Tetsuya Yamazaki, and Ryuichi Takahashi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1990, Ser. No. 634,739

Claims priority, application Japan, Dec. 27, 1989, 1-340102

Int. Cl.[5] G06F *13/3*

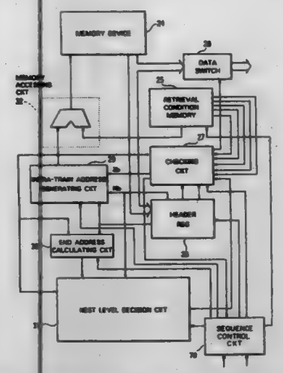
U.S. Cl. 395—800 **21 Claims**

1. A token train retrieval device including a memory device for memorizing, as stored tokens, a plurality of tokens each of which starts at a starting address and ends at an end address, each of said tokens having a nest level selected from first through N-th nest levels as a selected level, where N represents a predetermined natural number, said first through said N-th nest levels being a lowest through a highest nest level, respectively, each of said tokens comprising a header and a data set, said data set having a data length and nesting one of said tokens that has a higher nest level than said selected level, said header comprising a data length code representative of said data length and a data identifier code which includes a nest bit indicative of whether or not said one of said tokens is nested in said data set, said token train retrieval device retrieving said stored tokens to locate required data in said stored tokens that satisfy a retrieval condition and comprising:

condition memorizing means for preliminarily memorizing said retrieval condition as a stored condition;

a header register supplied as a supplied header with a header of each of selected tokens selected from said stored tokens for holding a data length code, a data identifier code, and a nest bit of said supplied header as a held data length code, a selected identifier code, and a held nest bit, respectively;

checking means connected to said condition memorizing means and to said header register and supplied with a decided nest level code for checking, in response to said



held data identifier code and to said decided nest level code, whether or not said stored condition is satisfied, said checking means producing a matching signal indicative of a binary one when said stored condition is satisfied;

intra-train address generating means connected to said header register, said checking means, and said memory device for generating an intra-train address variable in response to said matching signal, said held nest, bit, and said held data length code to select said selected tokens from said stored tokens, said selected tokens including said required data;

end address calculating means connected to said intra-train address generating means and to said header register for calculating an end address of each of said selected tokens as a calculated address by using said intra-train address and said held data length code; and

decision means connected to said header register, said intra-train address generating means, said end address calculating means, and said checking means for deciding a decided nest level by using said calculated address, said intra-train address, and said held nest bit, said decided nest level indicating one of said first through said N-th nest levels that is selected as said selected level, said decision means supplying a decided nest level code representative of said decided nest level to said checking means.

5,293,635

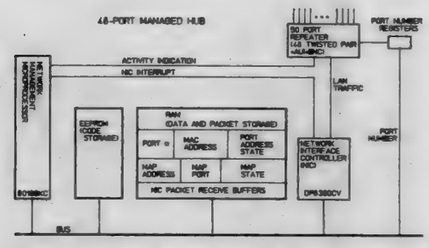
DETECTION ON A NETWORK BY A MAPPING APPLICATION OF A RELATIVE LOCATION OF A FIRST DEVICE TO A SECOND DEVICE

Robert L. Faulk, Jr., Roseville; Chuck A. Black, Rocklin, and Andrew S. Fraley, Roseville, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1991, Ser. No. 693,847

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—800 **6 Claims**



4. Within a network, a combination by which a mapping application within a first network station detects a relative location of a first device to a second device on the network, the combination comprising:

means, within the mapping application within the first network station, for directing the second device to listen for messages from the first device;

means, within the mapping application within the first network station, for instructing the first device to send a message to the second device;

listening means, within the second device, for in response to direction from the mapping application within the first network station listening for messages from the first device; and,

recording means within the second device for, when the listening means detects the second device has received a first message from the first device, recording a first port of the second device over which the second device received the first message, wherein the recording means is additionally for, when the listening means detects the second device has received a first message from the first device, recording an indication that the second device received a message from the first device over a single port, and wherein the recording means is additionally for, when the second device receives an additional message from the first device over a port of the second device other than the first port of the second device, indicating that the recording of the first port is invalid for determining network configuration.

5,293,636

MODULE FOR INSERTION INTO A MULTI-MODULE SYSTEM HAVING ELECTRONIC KEYING FOR PREVENTING POWER TO IMPROPERLY CONNECTED MODULES WITH IMPROPERLY CONFIGURED DIODE CONNECTIONS

William P. Bunton, New Braunfels; John M. Brown, Leander, and Patricia L. Whiteside, Austin, all of Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 464,817, Jan. 8, 1990, Pat. No. 5,203,004. This application Dec. 24, 1992, Ser. No. 996,728

Int. Cl.[5] G06F *1/26, 15/08*

U.S. Cl. 395—800 **3 Claims**

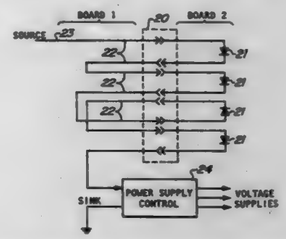
1. A module adapted to be inserted into a computer system having a system board, and a power supply, said system board having a plurality of first connector elements electrically interconnected in a first key configuration, said module comprising:

a plug-in assembly adapted for connection to the system board; and

an electrical keying circuit to enable operation of said module only when properly configured by said plug-in assembly in said system board, said keying circuit comprising:

a plurality of second connector elements located upon said module and adapted to engage the first connector elements located upon the system board;

a plurality of directional electrical connections configured



on said module and separately engaging said plurality of connector elements to define a second key configuration, each of said directional electrical connections conducting only in one direction; and

electrical power supply means for supplying enabling voltage from said power supply to said module only when said first and second key configurations enable a series connection through said plurality of directional electrical connections for conduction in a single direction.

5,293,637

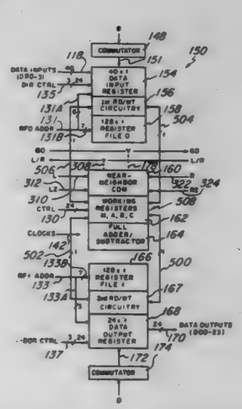
DISTRIBUTION OF GLOBAL VARIABLES IN SYNCHRONOUS VECTOR PROCESSOR

Jim Childers, Missouri City, Tex., and Hiroshi Miyaguchi, Tokyo, Japan, assignors to Texas Instruments, Dallas, Tex.

Continuation of Ser. No. 421,486, Oct. 13, 1989, abandoned. This application Jun. 10, 1993, Ser. No. 76,277

Int. Cl.[5] G06F *15/64*

U.S. Cl. 395—800 **9 Claims**



4. An instruction generator for a processor device having a plurality of processor elements, said instruction generator comprising:

means for supplying a common instruction to each of said processing elements;

an auxiliary register memory for storing a plurality of data

VOL 1160 ISS 2 MR 8 1994 UMI

words at respective addresses, said respective addresses of said auxiliary register memory occupying a predetermined portion of an address space;

a global variable distribution circuit coupled to said auxiliary register and each processing element for supplying data stored at a respective address within said auxiliary register memory to each processing element upon supply of an instruction to said processing elements for transfer of data from an address within said predetermined portion of said address space;

said auxiliary register memory including a plurality of multi-bit memories for storing multi-bit data words;

said instruction generator further comprising:

an auxiliary register memory select circuit for selecting one of said plural multi-bit memories, and

a data selection circuit for selecting one-bit of a multi-bit data word recalled from said selected multi-bit data memory.

5,293,638

INTERSYSTEM COMMUNICATION SYSTEM AND METHOD

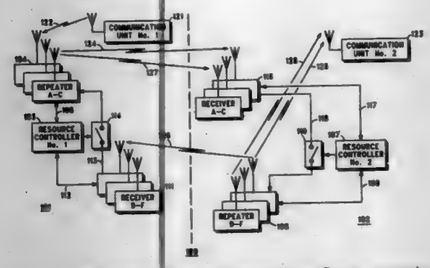
Michael D. Sasuta, Mundelein, and Gary D. Erickson, Wilmette, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 358,730, May 30, 1989, Pat. No. 5,095,529. This application Jun. 3, 1992, Ser. No. 892,916

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] H04B *7/14*

U.S. Cl. 455—16 **15 Claims**



1. In a communication system comprising a first communication system and a second communication system;

the first communication system including at least a first communication unit, a first set of communication resources, and a first resource control means for controlling the first set of communication resources;

the second communication system including at least a second communication unit, a second set of communication resources, second resource control means for controlling the second set of communication resources, and second receiver means substantially compatible with the first set of communication resources for receiving communications sourced by the first communication system;

the first communication system further including first receiver means substantially compatible with the second set of communication resources for receiving communications sourced by the second communication system;

a method for establishing communications between the first communication unit and the second communication unit, comprising the steps of:

(a) receiving, at the first communication system, a request from the first communication unit to communicate with the second communication unit;

(b) sourcing, from the first resource control means using the first set of communication resources, a notification for at least the second communication unit of a need to communicate;

(c) receiving, at the second receiver means, the notification from the first communication system and providing that notification to the second resource control means; and,

(d) sourcing, for the benefit of the second communication unit, at the second resource control means using the second set of communication resources, a notification of the need to communicate.

5,293,639

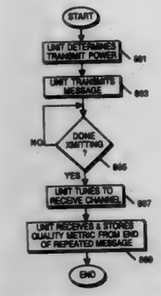
REDUCTION OF POWER CONSUMPTION IN A PORTABLE COMMUNICATION UNIT

Alan L. Wilson, Hoffman Estates, Ill.; David L. Muri, and Tony R. Branch, both of Sunrise, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 743,539, Aug. 9, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,530

Int. Cl.[5] H04B *1/40*

U.S. Cl. 455—17 **20 Claims**



1. A method of reducing power consumption in a portable communication unit, comprising the steps of:

transmitting at a first time, by the portable communication unit, a first message at a first transmit power level to a repeater on a first communication channel;

repeating at a second time, which second time is later than said first time, by said repeater, said first message, thereby transmitting a delayed message on a second communication channel;

tuning the portable communication unit to said second communication channel after transmitting all of said first message, so as to receive at least part of said delayed message;

establishing a receive quality metric for said first message at said repeater;

transmitting said receive quality metric appended to the end of said delayed message after all of said delayed message has been repeated;

receiving and storing in the portable communication unit said receive quality metric; and

determining, by the portable communication unit, a second transmit power level for transmitting a second message, said determining step using said stored receive quality metric.

5,293,640

METHOD FOR PLANNING RADIO CELLS

Krister Gunnar, and Ulf Tegth, both of Haninge, Sweden, assignors to Televerket, Farsta, Sweden

PCT No. PCT/SE90/00130, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991, PCT Pub. No. WO90/10342, PCT Pub. Date Sep. 19, 1990

PCT Filed Feb. 26, 1990, Ser. No. 752,510

Claims priority, application Sweden, Mar. 3, 1989, 8900743-9; Mar. 3, 1989, 8900744-7; Mar. 3, 1989, 8900745-4

Int. Cl.[5] H04B *15/00*

U.S. Cl. 455—33.1 **13 Claims**



1. A method for planning a plurality of radio cells, each radio cell having a transmitter and antenna arrangement, in a predetermined geographic area, comprising the steps of:

estimating a traffic demand for the plurality of radio cells in the predetermined geographic area;

producing a coverage of the estimated traffic demand by the plurality of radio cells with transmitter and antenna arrangements;

measuring coverage and interference values for each of the plurality of radio cells, which measurement results are stored in a measurement data base;

allocating to each of the plurality of radio cells a number of channels which corresponds to the estimated traffic demand, to generate a current allocation scheme;

calculating an exclusion matrix based on the measurement results, which extrusion matrix represents an interaction between the plurality of radio cells, including interference data between each of the plurality of radio cells; and

assessing an extent to which the estimated traffic demand can be covered by the current allocation system.

5,293,641

SIGNAL STRENGTH CONTROLLED DIRECTED RETRY IN A MOBILE RADIOTELEPHONE SYSTEM

Harald Kallin, Sollentuna, and Roland S. Bodin, Spanga, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 3, 1991, Ser. No. 770,487

Int. Cl.[5] H04Q *7/00*; H04B *7/26*

U.S. Cl. 455—33.1 **19 Claims**

1. A method of controlling communications with a mobile station in a radiotelephone network, comprising the steps of:

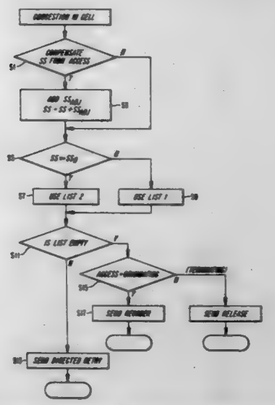
receiving a service request from said mobile station at a base station;

measuring at said base station the signal strength of a signal from said mobile station during said service request;

ascertaining whether said service request can be accepted based on the availability of voice channels assigned to said base station and, if said service request cannot be accepted;

comparing said signal strength with at least one threshold value; and

directing said mobile station to retry said service request on one or more of a first set of channels if said signal strength exceeds said threshold value; and otherwise directing said



mobile station to retry said service request on one or more of at least a second set of channels.

5,293,642

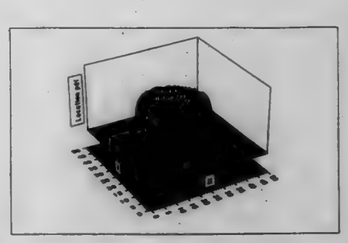
METHOD OF LOCATING A MOBILE STATION

Wing F. Lo, Plano, Tex., assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 19, 1990, Ser. No. 630,010

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 455—33.1 **14 Claims**



1. In a cellular communication system having a plurality of base station radios and mobile stations, a method of estimating the location of a mobile station being served by a first base station radio with respect to other base station radios, the method comprising the steps of:

a) transmitting a radio signal from said mobile station operating in said cellular communication system;

b) receiving said transmitted radio signal from said mobile station at said first base station radio and at a second base station radio and at any other base station radios operating in said cellular communications system within the propagation range of said mobile station;

c) measuring, for each received radio signal, radio propagation parameters associated with each of said base station radios;

d) operating on at least one of the measured propagation parameters of each base station radio, to form a location probability density function (pdf) expressed as

$$\frac{u_i(r,\theta) = ke(f_i(r,\theta) - f_{(0)})}{r}$$

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wherein k is a scaling constant, e is an error probability function, $f_i(r,\theta)$ is the signal propagation parameter function and f_{i0} is a measured propagation parameter of base station i and r is the distance from the base station to the mobile;

e) constructing a joint pdf by combining each individual pdf formed in step d;

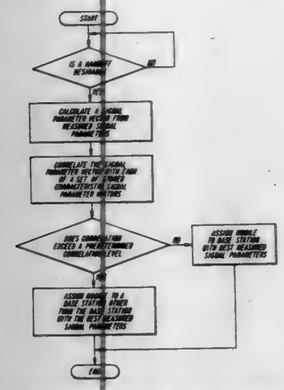
f) estimating, with respect to said base station radios, the location of the mobile station in said cellular communication system using the resulting joint probability density function.

5,293,643

METHOD FOR HANDOFF IN A MOBILE RADIO COMMUNICATION SYSTEM

Per V. Israelsson, Täby, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 23, 1991, Ser. No. 673,592
Claims priority, application Sweden, Apr. 26, 1990, 9001497-8
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—33.2 **12 Claims**



1. A method for handoff from a first base station in a cellular mobile radio communication system, in which signal parameters that describe, the reliability of signals between a mobile station and a set of base stations including a second base station surrounding said mobile station are measured and used by a mobile services switching center for handoff decisions, said method comprising the steps:

(a) calculating, when handoff is considered to be motivated, from said measured signal parameters a signal parameter vector which characterizes the geographical location of said mobile station within the cell that is associated with said first base station;

(b) correlating said signal parameter vector with each of set of stored characteristic signal parameter vectors associated with said first base station, each characteristic signal parameter vector characterizing a predetermined location in said cell; and

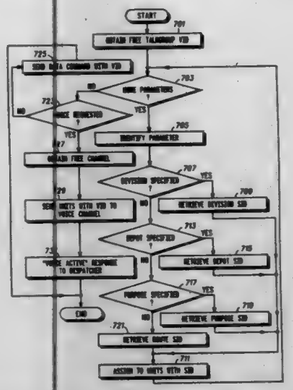
(c) assigning said mobile station to a base station in said set of base stations other than said second base station, said second base station having the measured signal parameters corresponding to the most reliable signal, when said correlation between said measured signal parameter vector and one of said stored characteristic signal parameter vectors exceeds a predetermined correlation level.

5,293,644

SECONDARY ID USAGE IN A SUBFLEET CALL

Kevin P. Barry, Streamwood; Thomas J. Karbowski, Carol Stream; Russell J. Lund, Lake Zurich; Glenn K. Labin, Schaumburg, all of Ill., and Steven Horvath, Salem, Oreg., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1991, Ser. No. 794,765
Int. Cl.[5] H04B *7/00, 17/02*
U.S. Cl. 455—38.1 **19 Claims**



1. A method for providing subfleet transmissions in a communication system, comprising the steps of: storing a secondary identification, wherein said secondary identification comprises a plurality of subfleets in a hierarchical arrangement and wherein said secondary identification reflects the hierarchial arrangement of said plurality of subfleets;

receiving a subfleet data transmission including a variable identification, said second identification and a command to store said variable identification;

storing said variable identification; and

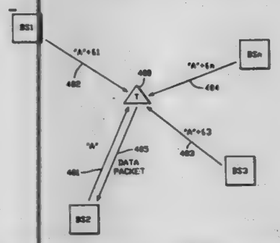
responding to a subsequent subfleet data transmission only when said subsequent subfleet data transmission includes one of said stored variable identification and said stored secondary identification.

5,293,645

APPARATUS AND METHOD FOR LOCATING MOBILE AND PORTABLE RADIO TERMINALS IN A RADIO NETWORK

Prem L. Sood, Vancouver, Wash., assignor to Sharp Microelectronics Technology, Inc., Camas, Wash.

Filed Oct. 4, 1991, Ser. No. 771,195
Int. Cl.[5] H04B *7/005, 17/02*
U.S. Cl. 455—54.1 **20 Claims**



1. An apparatus for locating a radio terminal in a radio network, comprising:

a plurality of base station in the radio network, each including a transmitter and a receiver communicating with the radio terminal if the radio terminal is located within an operating range of one of the plurality of base stations and transmitting a timing reference signal substantially synchronized with the timing reference sign

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DESIGN PATENTS

GRANTED MAR. 8, 1994

ERRATA

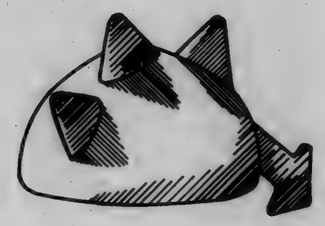
For CLASS	See PATENT NO.
015-138	D 345,041
028-013	D 345,042

VOL
1160
ISS
2
MR
8
1994
UMI

344,843
CHOCOLATE HAVING A HEART DESIGN
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S.A. Confiserie Leonidas, Brussels, Belgium
Filed Feb. 22, 1993, Ser. No. 5,053
Claims priority, application World Int. Prop. O., Sep. 1, 1992, DM/023.795
Term of patent 14 years
U.S. Cl. D1—112



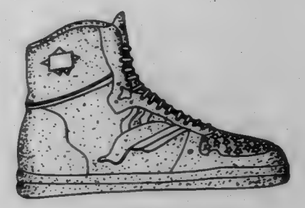
344,844
HELMET COVER
Julie Y. Beitscher, and Warren S. Beitscher, both of 2930 Cimarron Ct., Fort Collins, Colo. 80526
Filed Apr. 26, 1991, Ser. No. 692,057
Term of patent 14 years
U.S. Cl. D2—969



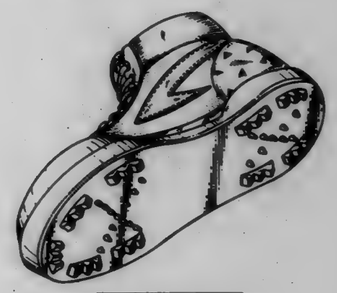
344,845
HELMET COVER
Julia Beitscher, and Warren S. Beitscher, both of 2930 Cimarron Ct., Ft. Collins, Colo. 80526
Filed May 3, 1991, Ser. No. 695,281
Term of patent 14 years
U.S. Cl. D2—969



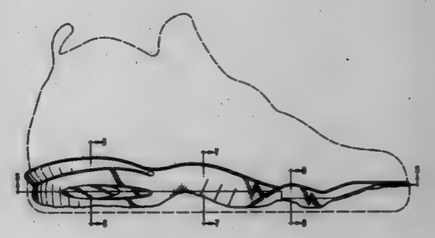
344,846
TENNIS SHOE
Anthony D. Brown, 2216 East 36th Street, Cleveland, Ohio 44115, assignor to Anthony D. Brown, Cleveland, Ohio
Filed Aug. 12, 1991, Ser. No. 743,603
Term of patent 14 years
U.S. Cl. D2—897



344,847
MULTI-SPORT SHOE
Joseph Mancebo, 1 Sherwood Ave., Leamington Ontario, Canada N8H 4V1
Filed May 14, 1992, Ser. No. 881,564
Term of patent 14 years
U.S. Cl. D2—902

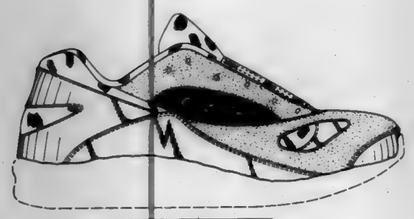


344,848
SHOE MIDSOLE
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1993, Ser. No. 6,407
Term of patent 14 years
U.S. Cl. D2—977



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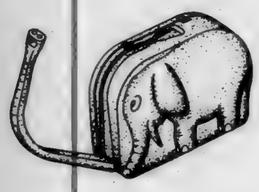
344,849
SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 3, 1993, Ser. No. 9,017
Term of patent 14 years
U.S. Cl. D2—969



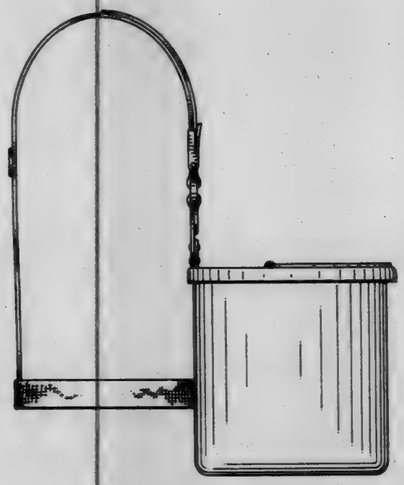
344,850
NECKWEAR BOLO
Richard D. Galmines, and Josephine A. Galmines, both of 120 Vail Dr., Frankfort, Ill. 60423
Filed Jun. 12, 1992, Ser. No. 897,519
Term of patent 14 years
U.S. Cl. D2—607



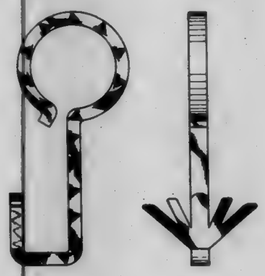
344,851
LUGGAGE
Phelan R. Thomas, 4509 Bel Aire Rd., Des Moines, Iowa 50310
Filed Jul. 27, 1992, Ser. No. 919,571
Term of patent 14 years
U.S. Cl. D3—271



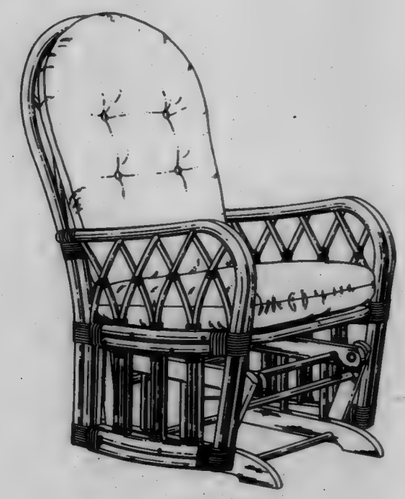
344,852
COMBINED PORTABLE PAINT BUCKET HARNESS AND HOLDER
Michael D. McManaman, 4129 Caldwell Ave., The Colony, Tex. 75056
Filed May 11, 1992, Ser. No. 881,223
Term of patent 14 years
U.S. Cl. D3—229



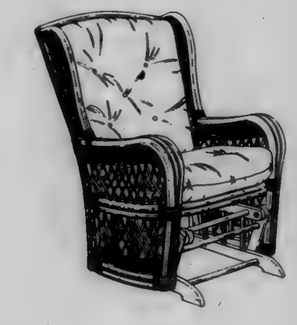
344,853
KIDS CLOSET HOOK
Peggy A. Russo, 20 Hunt Pl., Bethpage, N.Y. 11714
Filed Sep. 8, 1992, Ser. No. 940,812
Term of patent 14 years
U.S. Cl. D6—316



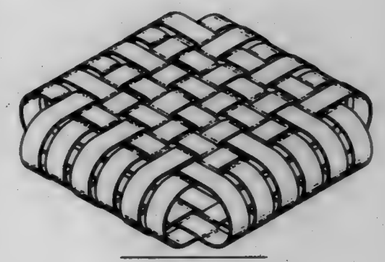
344,854
ROCKING CHAIR
Robert E. Stannard, Florham Park, N.J., assignor to Dutailier Inc., St. Pie, Canada
Filed Aug. 19, 1991, Ser. No. 747,910
Term of patent 14 years
U.S. Cl. D6—344



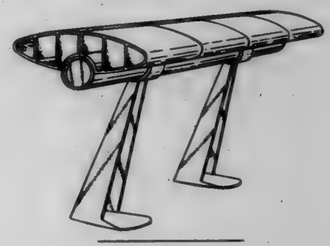
344,855
ROCKING CHAIR
Robert E. Stannard, Florham Park, N.J., assignor to Dutailier Inc., St. Pie, Canada
Filed Aug. 19, 1991, Ser. No. 747,911
Term of patent 14 years
U.S. Cl. D6—344



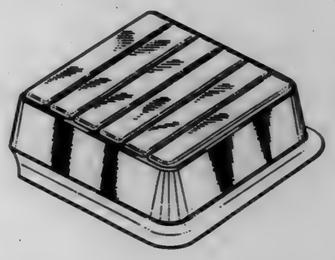
344,856
OTTOMAN
Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 21, 1992, Ser. No. 823,640
Term of patent 14 years
U.S. Cl. D6—349



344,857
SEATING UNIT
Rodney W. Kinsman, London, England, assignor to Kinsman Associates Limited, United Kingdom
Filed Mar. 6, 1992, Ser. No. 847,943
Claims priority, application United Kingdom, Sep. 13, 1991, 2017450
Term of patent 14 years
U.S. Cl. D6—349

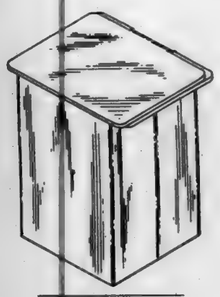


344,858
STEP STOOL
Paul Leduc, Scarborough, Canada, assignor to Santulin Management Ltd., Scarborough, Canada
Filed May 1, 1992, Ser. No. 877,607
Claims priority, application Switzerland, Nov. 21, 1991, 21-11-91-2
Term of patent 14 years
U.S. Cl. D6—349

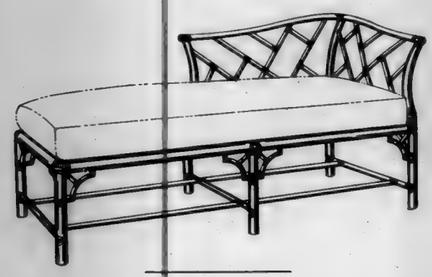


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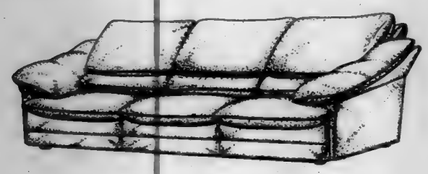
344,859
FOLDING STOOL
Russell Butterfield, Rte. 3, Box 32, Chippewa Falls, Wis. 54729
Filed Sep. 20, 1991, Ser. No. 763,063
Term of patent 14 years
U.S. Cl. D6—353



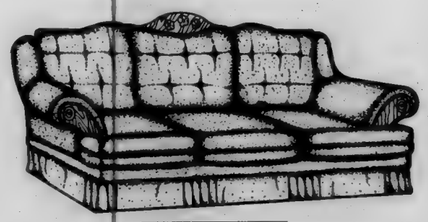
344,860
SOFA
Elinor S. McGuire, San Francisco, Calif., assignor to The McGuire Furniture Company, San Francisco, Calif.
Filed Jul. 16, 1992, Ser. No. 914,941
Term of patent 14 years
U.S. Cl. D6—369



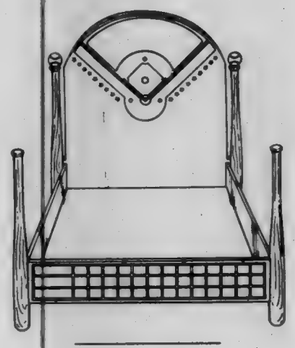
344,861
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Taisano, both of Italy, assignors to Industrie Natuzzi Spa, Bari, Italy
Filed Apr. 29, 1992, Ser. No. 876,205
Claims priority, application Italy, Apr. 7, 1992, MI920-000213
Term of patent 14 years
U.S. Cl. D6—381



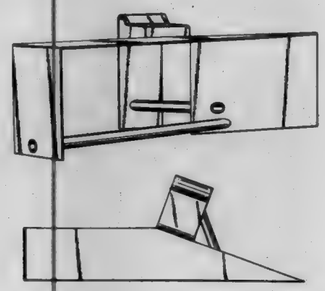
344,862
SOFA
Stanley P. Nash, Johnson Ck., Wis., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jun. 24, 1992, Ser. No. 904,530
Term of patent 14 years
U.S. Cl. D6—381



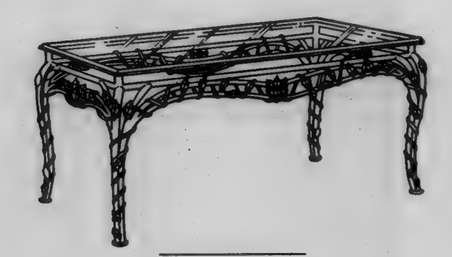
344,863
BASEBALL BED FRAME
Mark S. Winkler, 1285 Lenox, Bloomfield Hills, Mich. 48304
Filed Oct. 8, 1992, Ser. No. 304
Term of patent 14 years
U.S. Cl. D6—388



344,864
DESK
Maranda Leonard, 492 Beacon St., Boston, Mass. 02115
Filed Feb. 6, 1992, Ser. No. 831,279
Term of patent 14 years
U.S. Cl. D6—427



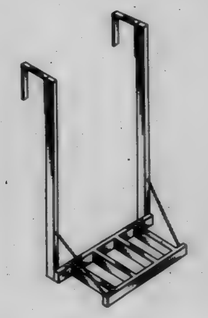
344,865
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 8, 1992, Ser. No. 884,587
Term of patent 14 years
U.S. Cl. D6—451



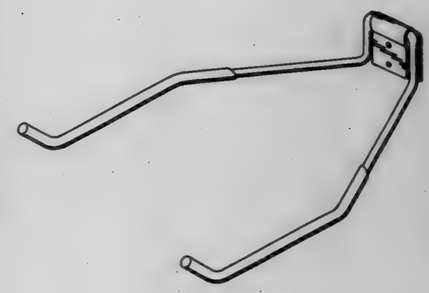
344,866
DECORATIVE END FRAME FOR A BED
Yuk-Ching Lee, No. 115, Chung-Tai-Tung Rd., N. Dist., Taichung City, Taiwan
Filed May 11, 1992, Ser. No. 881,123
Term of patent 14 years
U.S. Cl. D6—507



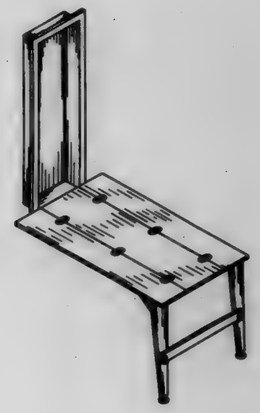
344,867
WALL PILLAR PLANT HANGER
Leonard W. Sutherland, 3044 W. Windrose, Phoenix, Ariz. 85029
Filed Jun. 12, 1992, Ser. No. 897,955
Term of patent 14 years
U.S. Cl. D6—513



344,868
WALL-MOUNTED BICYCLE RACK
Steven W. Martinell, Vancouver, Wash., assignor to Racor, Inc., Vancouver, Wash.
Filed Apr. 13, 1992, Ser. No. 867,923
Term of patent 14 years
U.S. Cl. D6—552



344,869
CABINET CONTAINED FOLDING TABLE
Joseph R. Paradis, 55 Auburn Rd., Londonderry, N.H. 03053, and David A. Hertzog, Old Lee Rd., Newfields, N.H. 03856
Filed Apr. 7, 1992, Ser. No. 864,564
Term of patent 14 years
U.S. Cl. D6—555

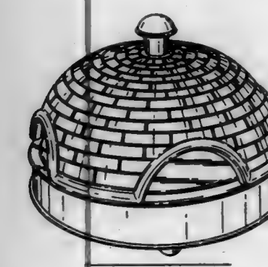


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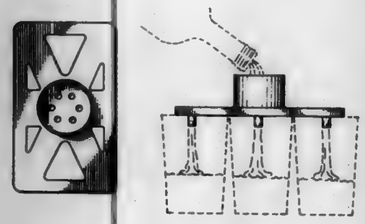
344,870
CARAFE
Bruce Ancona, 21 E. 22ad St., New York, N.Y. 10010
Filed Mar. 2, 1993, Ser. No. 4,862
Term of patent 14 years
U.S. Cl. D7—302



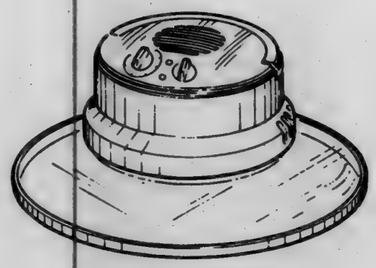
344,871
PIZZA OVEN
Markus Keller, Klingnau, Switzerland, assignor to Rob. Keller AG, Rekingen, Switzerland
Filed Jul. 22, 1992, Ser. No. 919,556
Claims priority, application Switzerland, Feb. 4, 1992, 119473
Term of patent 14 years
U.S. Cl. D7—348



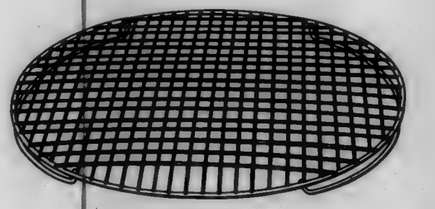
344,872
DEVICE FOR SERVING SIX GLASSES SIMULTANEOUSLY
Miguel A. Velez, Col. y Toste B-B-8, Levittown, P.R. 00949
Filed Aug. 3, 1992, Ser. No. 923,441
Term of patent 14 years
U.S. Cl. D7—397



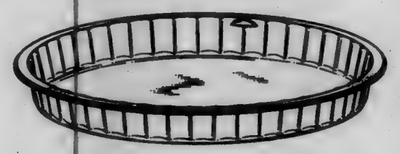
344,873
CONVECTION OVEN LID
Chung-Yuan Chang, 9245 Brown Deer Rd., San Diego, Calif. 92121
Filed Jul. 28, 1992, Ser. No. 920,994
Term of patent 14 years
U.S. Cl. D7—402



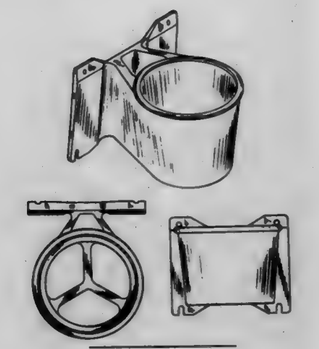
344,874
BROILING GRILL
Jay L. Howard, and Lewis A. Mendelson, both of Overland Park, Kans., assignors to Dazey Corporation, Industrial Airport, Kans.
Filed Jun. 26, 1992, Ser. No. 903,199
Term of patent 14 years
U.S. Cl. D7—409



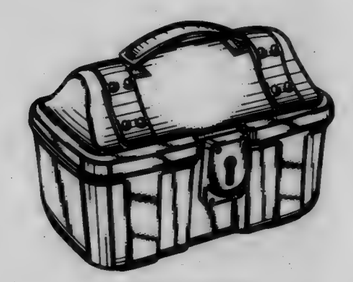
344,875
PIZZA TRAY
James F. Pomroy, St. Paul; Gilbert L. Eby, Minneapolis, and William H. Toms, Buffalo, all of Minn., assignors to Plastics, Inc., St. Paul, Minn.
Filed Dec. 19, 1991, Ser. No. 812,979
Term of patent 14 years
U.S. Cl. D7—552



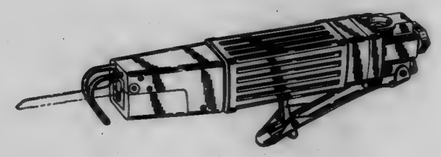
344,876
CONTAINER HOLDER
Daniel R. Vandergon, 196 Third St. West, Maple Lake, Minn. 55358
Filed Mar. 4, 1992, Ser. No. 844,427
Term of patent 14 years
U.S. Cl. D7—620



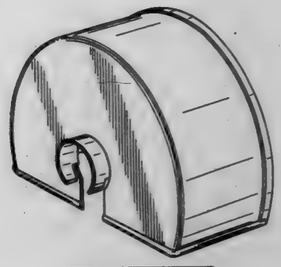
344,877
LUNCH BOX
Andre Doxey, Shaker Heights, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 27, 1992, Ser. No. 1,969
Term of patent 14 years
U.S. Cl. D7—709



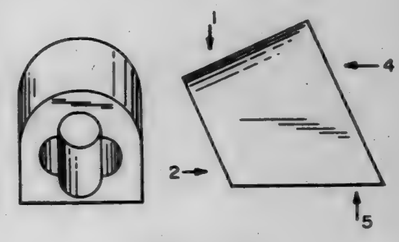
344,878
AIR SAW
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed Feb. 10, 1993, Ser. No. 4,663
Term of patent 14 years
U.S. Cl. D8—64



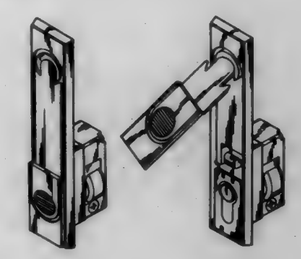
344,879
DRILL TOOL COVER
Peter C. W. Chan, 72 Busteed Dr., Midland Park, N.J. 07432
Filed Jan. 28, 1993, Ser. No. 4,221
Term of patent 14 years
U.S. Cl. D8—70



344,880
PENCIL HOLDER ATTACHMENT FOR A POWER TOOL
Encarnacion Sains, Jr., 1741 Half Mile East Expressway 83, Mercedes, Tex. 78570
Filed Aug. 14, 1992, Ser. No. 930,221
Term of patent 14 years
U.S. Cl. D8—71

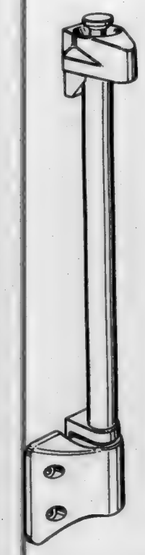


344,881
LOCK
Manfred Sauerland, Essen, Fed. Rep. of Germany, assignor to EMKA Beschlagteile GmbH & Co., Velbert, Fed. Rep. of Germany
Filed Sep. 30, 1992, Ser. No. 156
Claims priority, application Hagne, Mar. 31, 1992, DM/022486
Term of patent 14 years
U.S. Cl. D8—331



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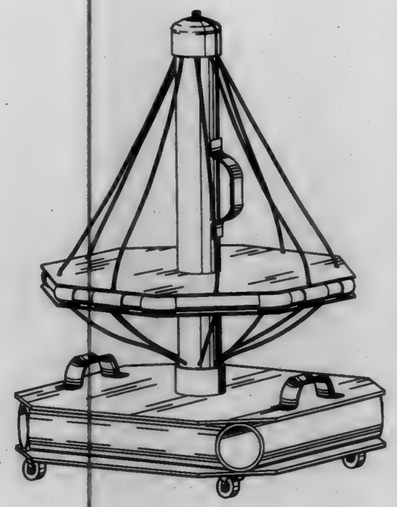
344,882
SELF LATCHING DEVICE
David Doyle, 7/30 Young Street, Cremorne, New South Wales, 2089, and Neil Dunne, 5/19-23 Cairo Street, Cammeray, New South Wales, 2250, both of Australia
Filed Mar. 20, 1992, Ser. No. 856,327
Term of patent 14 years
U.S. Cl. D8—339



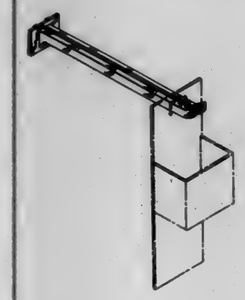
344,883
ROPE FASTENER
Shu-Mei Chuang, P.O. Box 82-144, Taipei, Taiwan
Filed Dec. 1, 1992, Ser. No. 2,073
Term of patent 14 years
U.S. Cl. D8—356



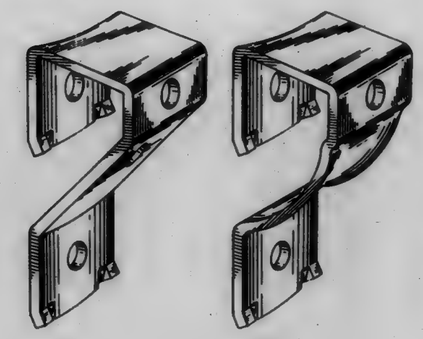
344,884
CABLE REEL
Donald W. Wilkerson, 2076 Country Club Rd., Mooresville, Ind. 46158
Filed Jun. 4, 1992, Ser. No. 893,527
Term of patent 14 years
U.S. Cl. D8—359



344,885
DISPLAY HOOK
Jonathon A. Loew, East Meadow, N.Y., assignor to Design Display Group, Carlstadt, N.J.
Filed Jun. 16, 1992, Ser. No. 900,099
Term of patent 14 years
U.S. Cl. D8—373



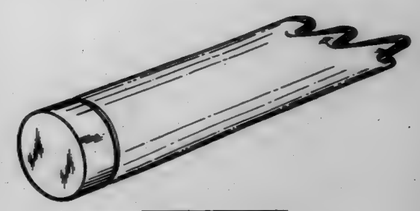
344,886
POLE ATTACHMENT BRACKET
Isaac Sachs, 283 Newton, Dollard-Des-Ormeaux, Quebec, Canada H9A 3G1
Filed Oct. 13, 1992, Ser. No. 323
Term of patent 14 years
U.S. Cl. D8—373



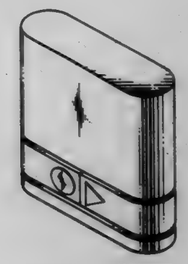
344,887
COMBINED SPRAY BOTTLE AND CAP
Susan R. Wacker, New York, N.Y., assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Jul. 31, 1992, Ser. No. 924,652
Term of patent 14 years
U.S. Cl. D9—300



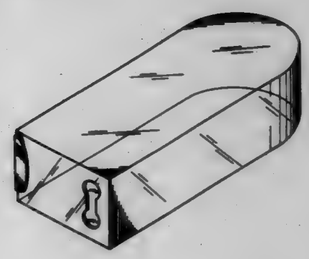
344,888
TUBE
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Mar. 27, 1992, Ser. No. 859,141
Claims priority, application France, Jan. 20, 1992, 920316; Feb. 26, 1992, 921201
Term of patent 14 years
U.S. Cl. D9—302



344,889
CHILD-PROOF TABLET DISPENSER
Edward R. Kozlowski, Southport; Lance Liljeqvist, Wilton, and Matthew Murray, Norwalk, all of Conn., assignors to Miles Inc., Elkhart, Ind.
Filed Jun. 10, 1992, Ser. No. 896,555
Term of patent 14 years
U.S. Cl. D9—339

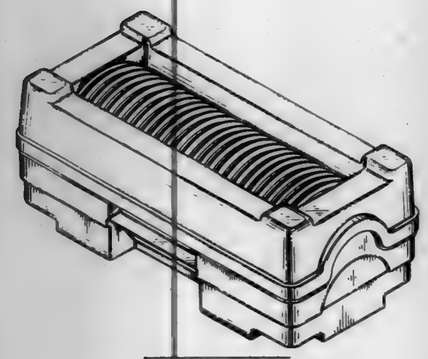


344,890
TRANSPARENT SHOE BOX
Lizzie B. Townes, 720 Lenox Ave. #15-G, New York, N.Y. 10039
Filed Mar. 6, 1992, Ser. No. 846,423
Term of patent 14 years
U.S. Cl. D9—418

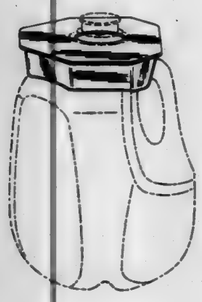


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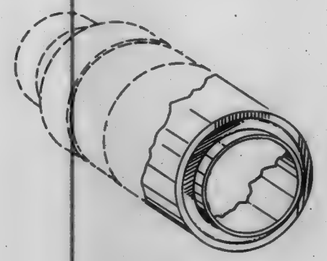
344,891
DISC PACKAGE FOR SEMICONDUCTOR WAFERS
Larry Dressen, Waconia, Minn., assignor to Empak, Inc., Chanhassen, Minn.
Filed Feb. 3, 1992, Ser. No. 829,171
Term of patent 14 years
U.S. Cl. D9—424



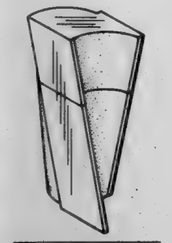
344,892
FOOD PACKAGE
Steven C. Roble, New Hope; Arne H. Brauner, Minnetonka, and Bradly A. Faber, Falcon Heights, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 30, 1992, Ser. No. 951
Term of patent 14 years
U.S. Cl. D9—431



344,893
ULTRA-SONIC WELDING HORN
Davis B. Dwinell, Carol Stream, Ill., assignor to American Flange & Mfg. Co., Inc., Carol Stream, Ill.
Division of Ser. No. 819,969, Jan. 13, 1992. This application Sep. 28, 1992, Ser. No. 951,707
Term of patent 14 years
U.S. Cl. D9—435



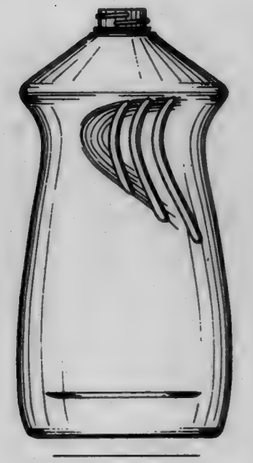
344,894
COMBINED BOTTLE AND CAP
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,617
Term of patent 14 years
U.S. Cl. D9—522



344,895
BOTTLE
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 24, 1992, Ser. No. 825,169
Term of patent 14 years
U.S. Cl. D9—542



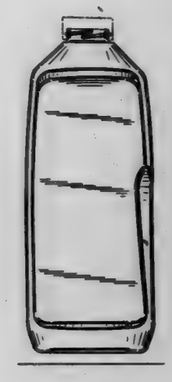
344,896
BOTTLE
Jon Zogg, Armonk, and Adam Sherman, Brooklyn, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 28, 1992, Ser. No. 952,164
Term of patent 14 years
U.S. Cl. D9—543



344,897
BOTTLE AND CAP
Susan R. Wacker, New York, N.Y., assignor to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.
Filed Jul. 31, 1992, Ser. No. 923,736
Term of patent 14 years
U.S. Cl. D9—544

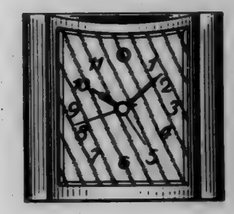


344,898
BOTTLE
Adam Sherman, Brooklyn, and Jon Zogg, Yonkers, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 25, 1991, Ser. No. 721,358
Term of patent 14 years
U.S. Cl. D9—575



344,899
CLOCK
Mitsuo Wada, and Mariko Minami, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed May 10, 1991, Ser. No. 698,535
Term of patent 14 years
U.S. Cl. D10—22

344,900
CLOCK
Yoshimi Tamura, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 18, 1991, Ser. No. 643,669
Term of patent 14 years
U.S. Cl. D10—25

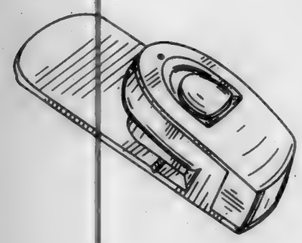


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344,901
FACE PLATE FOR A CONTROL PANEL FOR AN AUTOMATED SHOWER
Clifford P. Conforti, 42528 7th St. East, Lancaster, Calif. 93535
Filed Sep. 14, 1992, Ser. No. 948,766
Term of patent 14 years
U.S. Cl. D10—50



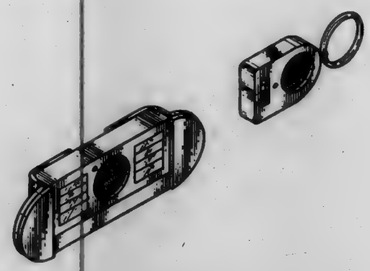
344,902
DIAGNOSTIC ELECTRODE
John R. North, Durrington, United Kingdom; Robert L. Kay, Thousand Oaks, and Jonathan Ivy, Ventura, both of Calif., assignors to Porton Diagnostics, Inc., Westlake Village, Calif.
Filed Jul. 21, 1992, Ser. No. 917,601
Term of patent 14 years
U.S. Cl. D10—78



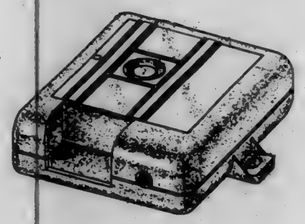
344,903
BIPOLAR PROBE
Kurt W. Gampp, Jr., Ellisville, and Gregg D. Scheller, Chesterfield, both of Mo., assignors to Surgical Technologies, Inc., St. Louis, Mo.
Filed Nov. 25, 1992, Ser. No. 1,926
Term of patent 14 years
U.S. Cl. D10—78



344,904
COMBINED TRANSMITTER AND RECEIVER FOR A VEHICLE ALARM
Michael Dotsikas, 3000-17 Stevens St., Oceanside, N.Y. 11572
Filed Jan. 14, 1993, Ser. No. 3,529
Term of patent 14 years
U.S. Cl. D10—106



344,905
VEHICLE ALARM CASE MODULE
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Jan. 15, 1993, Ser. No. 3,713
Term of patent 14 years
U.S. Cl. D10—106



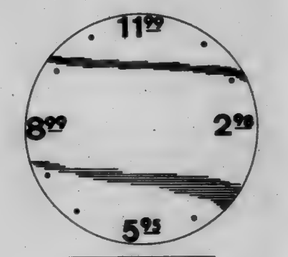
344,906
COMBINED TRANSMITTER FOR CHILDREN MONITORING AND BASE THEREFOR
Randy L. Abrams, Leominster, Mass.; David W. Crossley, Woonsocket, R.I., and Michael S. Bernstein, Natick, Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 8, 1993, Ser. No. 5,599
Term of patent 14 years
U.S. Cl. D10—106



344,907
RECEIVER FOR CHILDREN MONITORING
Randy L. Abrams, Leominster, Mass.; David W. Crossley, Woonsocket, R.I., and Michael S. Bernstein, Natick, Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 8, 1993, Ser. No. 5,606
Term of patent 14 years
U.S. Cl. D10—106



344,908
WATCH AND CLOCK FACE
Roger N. Millen, 205 Rindge Ave., Unit R, Cambridge, Mass. 02140
Filed Apr. 23, 1991, Ser. No. 690,086
Term of patent 14 years
U.S. Cl. D10—126



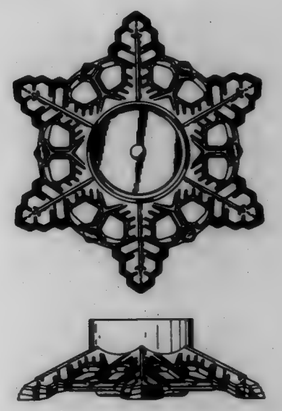
344,909
CAKE SCORING TOOL
Marjorie Schafrick, 50 Thompson Dr., Palo, Iowa 52324
Filed Jul. 1, 1992, Ser. No. 907,209
Term of patent 14 years
U.S. Cl. D10—46.2



344,910
EARRING
Virginia Nelson, 11410 Prospect NE. #C, Albuquerque, N. Mex. 87112
Filed Feb. 27, 1992, Ser. No. 842,584
Term of patent 14 years
U.S. Cl. D11—79

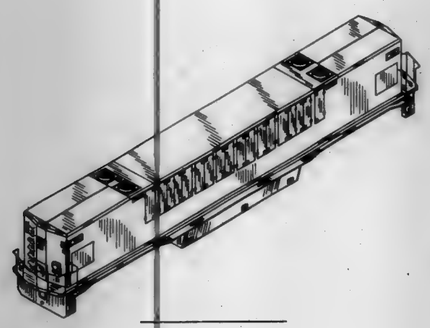


344,911
CHRISTMAS TREE STAND
Barbara J. Stork, Jersey City, N.J., assignor to Donsco, Inc., Wrightsville, Pa.
Filed Nov. 10, 1992, Ser. No. 1,319
Term of patent 14 years
U.S. Cl. D11—130.1



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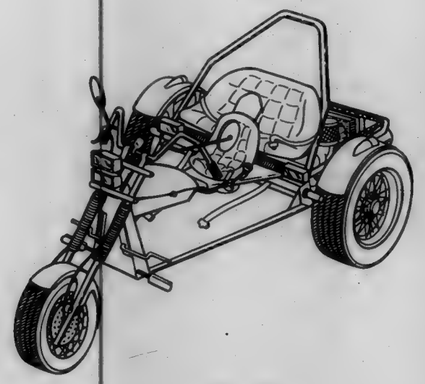
344,912
LOCOMOTIVE SOLID FUEL GASIFIER UNIT
Thomas W. Blasingame, P.O. Box 1532, Boise, Id. 83701
Filed Mar. 9, 1992, Ser. No. 847,224
Term of patent 14 years
U.S. Cl. D12—38



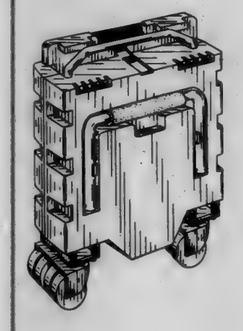
344,913
RAILWAY GONDOLA CAR
Donald B. Fetterman, Arlington, and Stephen W. Smith, Dallas, both of Tex., assignors to Trinity Industries, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 795,495, Nov. 21, 1991, Pat. No. 5,178,074. This application Dec. 9, 1992, Ser. No. 2,354
Term of patent 14 years
U.S. Cl. D12—41



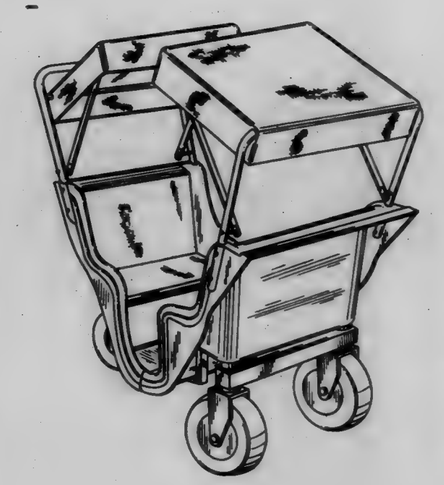
344,914
THREE WHEEL MOTORCYCLE
Paul A. McNutt, 2307 E. Claire Dr., Phoenix, Ariz. 85022
Filed Nov. 6, 1991, Ser. No. 789,158
Term of patent 14 years
U.S. Cl. D12—110



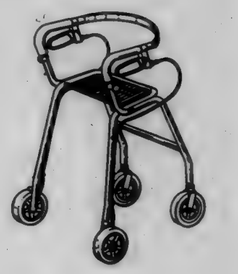
344,915
COLLAPSED WHEELED SEAT
Joseph M. Jarke, Austin, Tex., assignor to Jarke-Thorsen Products, Inc., Austin, Tex.
Filed Jan. 16, 1992, Ser. No. 821,534
Term of patent 14 years
U.S. Cl. D12—128



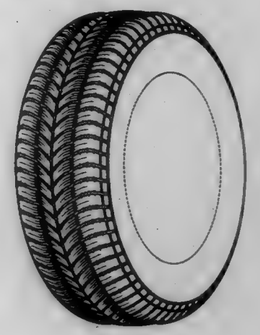
344,916
STROLLER
Helen McGuire, Longwood, Fla.; Dennis McGuire, Houston, Tex.; Wayne Martin, Orlando, Fla.; Gene Bertcher, Dallas, Tex., and Ronald J. Mosetich, Kosciusko, Miss., assignors to Medical Concepts, Inc., Dallas, Tex.
Filed Oct. 27, 1992, Ser. No. 834
Term of patent 14 years
U.S. Cl. D12—129



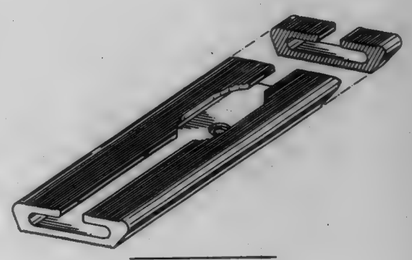
344,917
ROLLING WALKER
Sven I. Kjell, Nygatanis; Anders Ahlbertz, Gotenburg, and Kjell Henriksou, Bredaryd, all of Sweden, assignors to Dolomite Svenska AB, Sweden
Filed Aug. 20, 1992, Ser. No. 931,540
Term of patent 14 years
U.S. Cl. D12—130



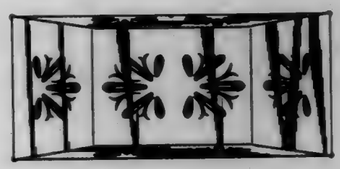
344,918
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 28, 1992, Ser. No. 951,705
Term of patent 14 years
U.S. Cl. D12—147



344,919
TRUCK BOX RAIL
Ignac Konte, 3349 McGinnis Rd., Westbank, B.C., Canada V0H 2A0
Filed Sep. 23, 1991, Ser. No. 764,390
Claims priority, application Canada, Apr. 30, 1991, 30-04-91-4
Term of patent 14 years
U.S. Cl. D12—400

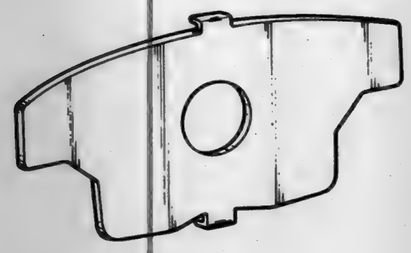


344,920
VEHICLE WINDOW COVER
William McGruder, 26 Woodcrest Dr., and Benjamin F. Moore, Jr., 912 Hiberuian St., both of Birmingham, Ala. 35214
Filed Jul. 10, 1992, Ser. No. 910,994
Term of patent 14 years
U.S. Cl. D12—401

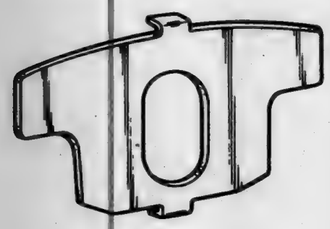


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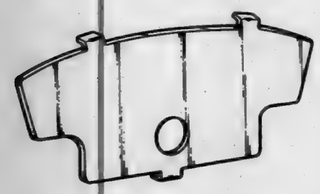
344,921
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 798,406, Nov. 26, 1991. This application Jul. 27, 1993, Ser. No. 11,124
Term of patent 14 years
U.S. Cl. D12—180



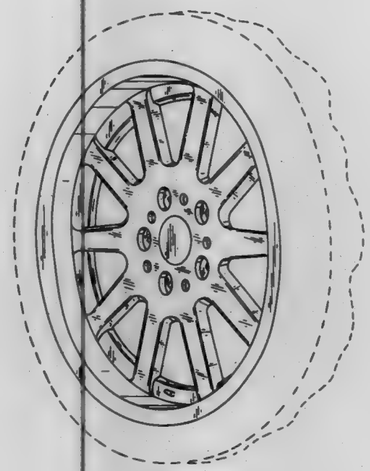
344,922
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 798,406, Nov. 26, 1991. This application Jul. 27, 1993, Ser. No. 11,123
Term of patent 14 years
U.S. Cl. D12—180



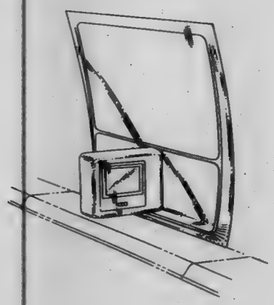
344,923
DISC BRAKE SHIM
Gustav J. Steinke, and Starla D. Huffer, both of Lima, Ohio, assignors to International Brake Industries, Inc., Lima, Ohio
Division of Ser. No. 798,406, Nov. 26, 1991. This application Jul. 27, 1993, Ser. No. 11,125
Term of patent 14 years
U.S. Cl. D12—180



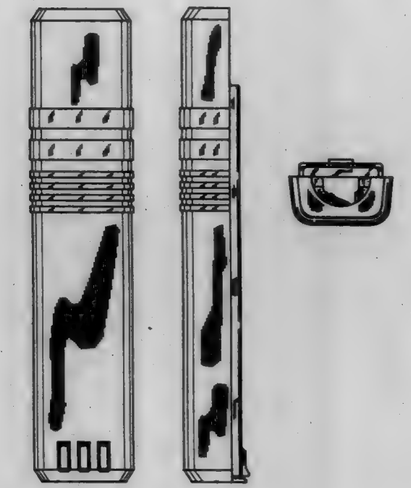
344,924
VEHICLE WHEEL EXTERIOR SURFACE
Martin Braungart, Alpirsbach, and Graham Thorpe, Munich, both of Fed. Rep. of Germany, assignors to BBS Kraftfahrzeugtechnik AG, Schiltach, Fed. Rep. of Germany
Filed Jun. 25, 1991, Ser. No. 721,225
Term of patent 14 years
U.S. Cl. D12—211



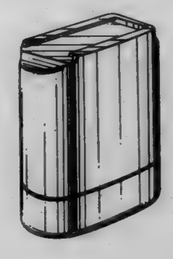
344,925
SHROUD-ENCLOSING PANEL FOR THE WALL OF THE INTERIOR OF AN AIRCRAFT
Fred J. Schimmelpfenning, Jr., San Antonio, Tex., assignor to Pat Pyka Design Consultants, Inc., San Antonio, Tex.
Filed Dec. 23, 1991, Ser. No. 814,297
Term of patent 14 years
U.S. Cl. D12—345



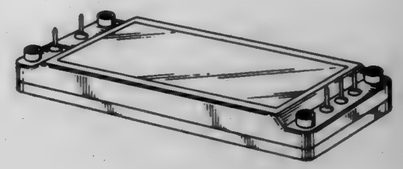
344,926
BATTERY HOUSING FOR A PORTABLE RADIO TELEPHONE
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Jun. 9, 1992, Ser. No. 895,395
Term of patent 14 years
U.S. Cl. D13—103



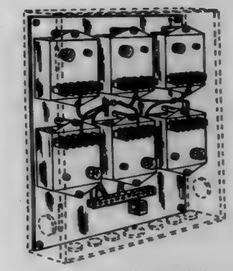
344,927
BATTERY FOR PORTABLE RADIOS
Steven L. Sands, and Richard Culbertson, both of Lynchburg, Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.
Filed Jul. 23, 1992, Ser. No. 917,437
Term of patent 14 years
U.S. Cl. D13—103



344,928
PACKAGE FOR DC-DC POWER CONVERTER OR RELATED CIRCUITRY
Patrizio Vinciarelli, Boston, and Fred M. Finnemore, North Reading, both of Mass., assignors to VLT Corporation, San Antonio, Tex.
Continuation-in-part of Ser. No. 809,412, Dec. 17, 1991. This application Jul. 17, 1992, Ser. No. 916,350
Term of patent 14 years
U.S. Cl. D13—110



344,929
POWER SURGE PROTECTOR
James T. Fesmire, and James A. Ford, both of Greensboro, N.C., assignors to Power Integrity Corp., Greensboro
Filed Jan. 8, 1992, Ser. No. 818,220
Term of patent 14 years
U.S. Cl. D13—160

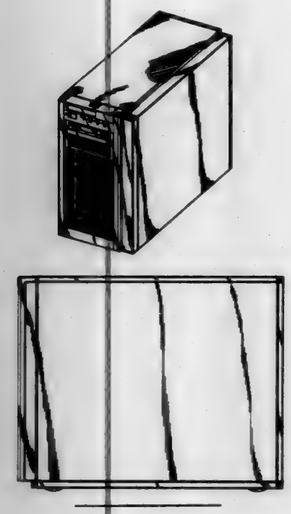


344,930
PUSHBUTTON ACTUATOR FOR AN ELECTRICAL SWITCH
Maurice Schaeffer, Strasbourg, France, assignor to BACO Constructions Electriques - Anct. Baumgarten S.A., France
Filed Jan. 13, 1992, Ser. No. 820,048
Term of patent 14 years
U.S. Cl. D13—171

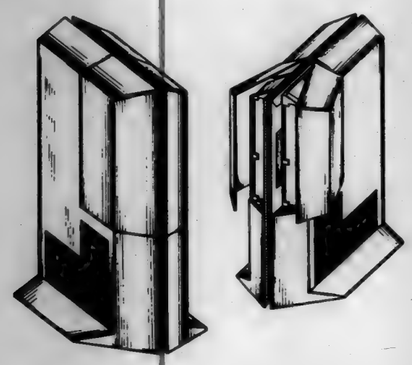


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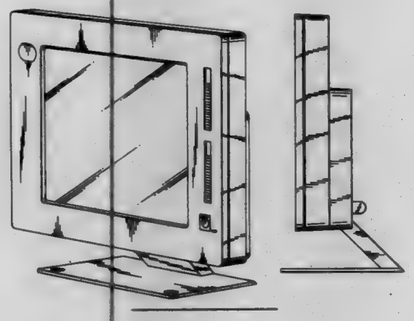
344,931
MINI COMPUTER SYSTEM
Bud M. Mosen, Auburn, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 24, 1992, Ser. No. 874,331
Term of patent 14 years
U.S. Cl. D14—100



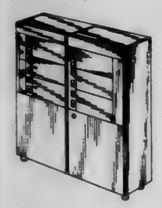
344,932
COMPUTER WORKSTATION
Fred J. Berkowitz, Los Gatos; Thomas D. Carroll; Eric M. Mousef, both of San Jose, and Robert A. Musetti, Cupertino, all of Calif., assignors to HaL Computer Systems, Inc., Campbell, Calif.
Filed Jul. 14, 1992, Ser. No. 914,936
Term of patent 14 years
U.S. Cl. D14—100



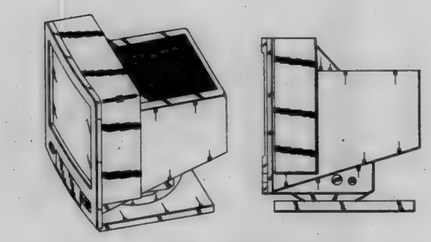
344,933
DISPLAY
John A. Wiseman, Hillsboro Beach, Fla.; Timothy J. Rodd, Lyndhurst, United Kingdom, and Kazuhiko Yamazaki, Hiratsuka, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 26, 1991, Ser. No. 765,866
Claims priority, application United Kingdom, Mar. 26, 1991, 2013805
Term of patent 14 years
U.S. Cl. D14—113



344,934
MAGNETIC TAPE STORAGE UNIT FOR AN ELECTRONIC COMPUTER
Yozo Sawada, and Kimio Nobeashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 914,602
Claims priority, application Japan, Jan. 21, 1992, 4-1079
Term of patent 14 years
U.S. Cl. D14—108



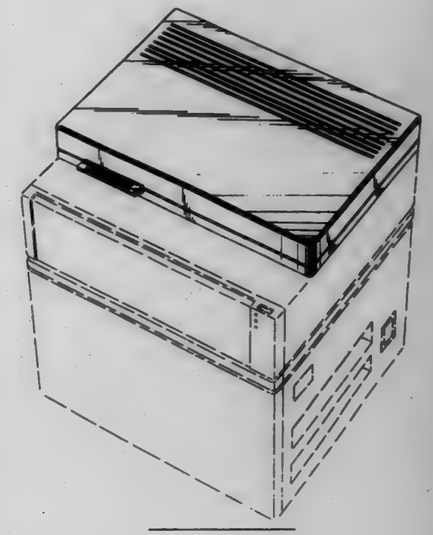
344,935
VIDEO DISPLAY
Toshitaka Imai, Sagamihara; Yoshiyuki Manabe, Ebina, and Tomoyuki Takahashi, Fujisawa, all of Japan, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 21, 1992, Ser. No. 934,071
Claims priority, application Japan, Feb. 21, 1992, 4-4495
Term of patent 14 years
U.S. Cl. D14—113



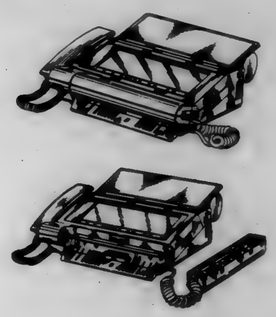
344,936
BAR CODE WAND
David W. Gilpin, Everett, and David R. Trine, Seattle, both of Wash., assignors to Intermec Corporation, Everett, Wash.
Filed Mar. 6, 1992, Ser. No. 846,447
Term of patent 14 years
U.S. Cl. D14—114



344,937
LAMP UNIT FOR FACSIMILE
Shin Takahashi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 28, 1992, Ser. No. 827,804
Claims priority, application Japan, Jul. 29, 1991, 3-22736
Term of patent 14 years
U.S. Cl. D14—118

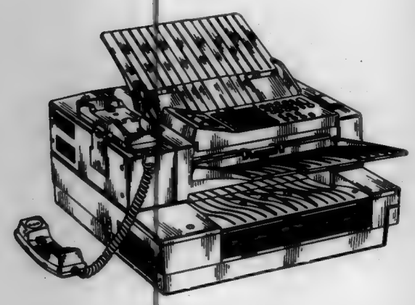


344,938
FACSIMILE TRANSCEIVER
Masahiko Kashiwabara, Yokohama, and Shin-ichi Hiroki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 5, 1992, Ser. No. 924,670
Claims priority, application Japan, Feb. 14, 1992, 4-3682
Term of patent 14 years
U.S. Cl. D4—118

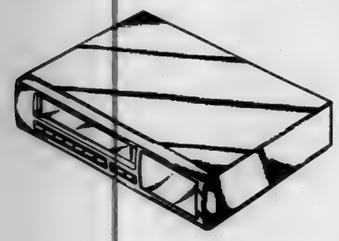


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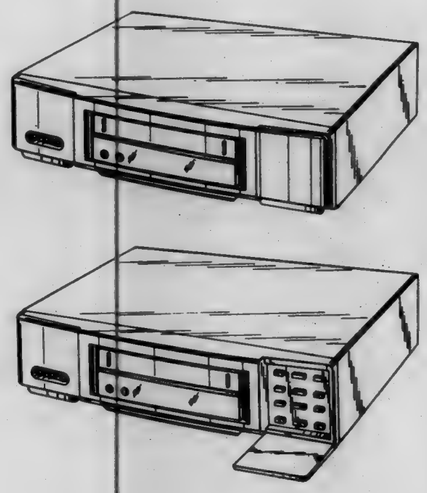
344,939
FACSIMILE TRANSCEIVER
Masahiko Kashiwabara, Yokohama, and Kimiko Kageyama, Koganei, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 3, 1992, Ser. No. 938,659
Claims priority, application Japan, Mar. 30, 1992, 4-8757
Term of patent 14 years
U.S. Cl. D14—118



344,940
VIDEO TAPE RECORDER
Masafumi Ito, Tokyo; Minoru Sube, Hachioji; Haruki Takita, Tokyo, and Hiroyuki Watanabe, Oume, all of Japan, assignors to Teac Corporation
Filed May 28, 1992, Ser. No. 890,462
Claims priority, application Japan, Nov. 29, 1991, 36269/1991
Term of patent 14 years
U.S. Cl. D14—135



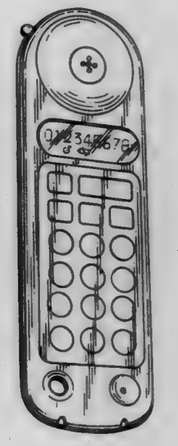
344,941
VIDEO TAPE RECORDER
Michio Ogawa, and Noriaki Itai, both of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 6, 1992, Ser. No. 157
Claims priority, application Japan, Apr. 9, 1992, 4-10798
Term of patent 14 years
U.S. Cl. D14—135



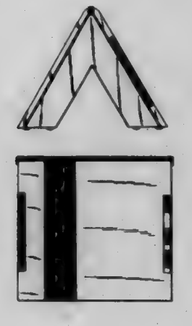
344,942
HAND-HELD NAVIGATIONAL UNIT
David J. Gilman, San Francisco; Jack P. Hall, Palo Alto; David J. Lima, Los Altos; John G. Tang, San Carlos; Lynn Weber, Saratoga; Arthur N. Woo, Cupertino, all of Calif., and Ben L. Allgood, Jr., Federal Way, Wash., assignors to Trimble Navigation Limited, Sunnyvale, Calif.
Filed Feb. 4, 1992, Ser. No. 830,276
Term of patent 14 years
U.S. Cl. D14—135



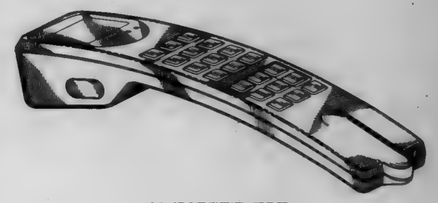
344,943
PORTABLE RADIO TELEPHONE
Takashi Kajita, Takaidohigashi; Takaharu Ando, Ryugasaki; Tadao Nakamura, Yokohama, and Masahiko Happo, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,857
Term of patent 14 years
U.S. Cl. D14—138



344,944
ANSWERING MACHINE
Carlo Fontana, via Benedetto Fortini, 145/b, Florence, Italy
Filed Sep. 6, 1991, Ser. No. 756,087
Claims priority, application Hague, Mar. 11, 1991, DMA/001 450
Term of patent 14 years
U.S. Cl. D14—141



344,945
TELEPHONE HANDSET HOUSING
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 4, 1992, Ser. No. 940,708
Term of patent 14 years
U.S. Cl. D14—148



344,946
PAGER
William J. Scheid, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1992, Ser. No. 851,771
Term of patent 14 years
U.S. Cl. D14—191



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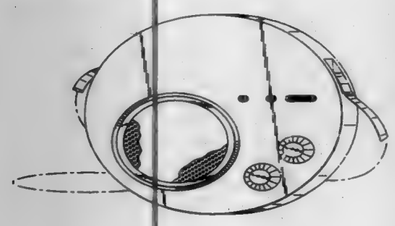
344,947
DISPLAY PAGER
William J. Scheid, Coral Springs; Jeffrey S. King, Boynton Beach, and Steven F. Fradella, Hypoluxo, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1992, Ser. No. 53
Term of patent 14 years
U.S. Cl. D14—191



344,948
SELECTIVE CALL RECEIVER
William J. Scheid, Coral Springs, and Dwight D. Brooks, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1992, Ser. No. 106
Term of patent 14 years
U.S. Cl. D14—191



344,949
RADIO
Cheong-Yin So, Kowloon, Hong Kong, assignor to Kaomen Industrial Limited, Kowloon, Hong Kong
Filed May 11, 1992, Ser. No. 881,387
Term of patent 14 years
U.S. Cl. D14—192



344,950
LOUDSPEAKER
David Lewis, Copenhagen K, Denmark, assignor to Bang & Olufsen A/S, Struer, Denmark
Filed Mar. 3, 1992, Ser. No. 847,238
Claims priority, application Denmark, Sep. 5, 1991, MA 0903 1991
Term of patent 14 years
U.S. Cl. D14—211

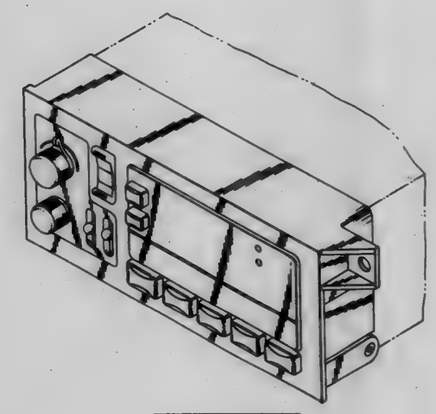


344,951
SPEAKER CABINET
Cary L. Christie, Bell Canyon, Calif., assignor to Infinity Systems, Inc., Chatsworth, Calif.
Filed Dec. 19, 1991, Ser. No. 813,410
Term of patent 14 years
U.S. Cl. D14—216

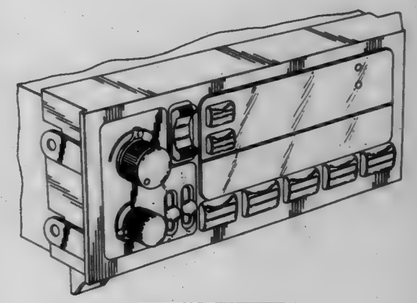
344,952
CHANNEL CHANGER
David A. Bartholomew, 3771 Stolberg Street, Richmond, B.C., Canada V6X 3N6
Filed Aug. 29, 1991, Ser. No. 751,257
Term of patent 14 years
U.S. Cl. D14—218



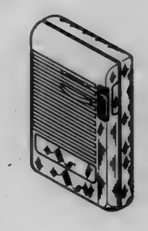
344,953
CONTROL PANEL FOR A COMBINED VEHICULAR RADIO RECEIVER AND DIGITAL CLOCK
Lee M. Dziekan, East Detroit; Daniel Fekete, Rochester Hills; Michael G. Moore, Rochester; James P. Muccioli, Farmington Hills, all of Mich., and Michael B. Sestina, Huntsville, Ala., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 14, 1992, Ser. No. 869,138
Term of patent 14 years
U.S. Cl. D14—258



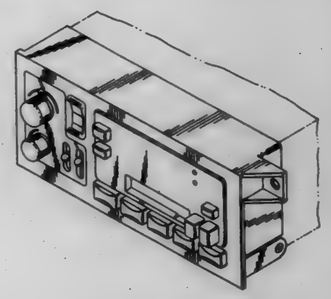
344,955
CONTROL PANEL FOR A COMBINED VEHICULAR RADIO RECEIVER AND DIGITAL CLOCK
Lee M. Dziekan, East Detroit; Daniel Fekete, Rochester Hills; Michael G. Moore, Rochester; James P. Muccioli, Farmington Hills, all of Mich., and Michael B. Sestina, Huntsville, Ala., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 14, 1992, Ser. No. 868,374
Term of patent 14 years
U.S. Cl. D14—258



344,954
RADIO INFORMATION RECEIVER
William J. Scheid, Coral Springs, and John K. Capp, Lighthouse Point, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 23, 1992, Ser. No. 824,263
Term of patent 14 years
U.S. Cl. D14—242

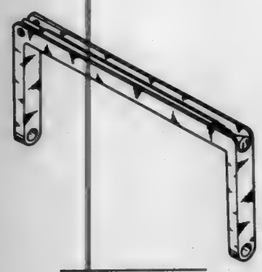


344,956
CONTROL PANEL FOR A COMBINED VEHICULAR RADIO RECEIVER, CASSETTE PLAYER AND DIGITAL CLOCK
Lee M. Dziekan, East Detroit; Daniel Fekete, Rochester Hills; Michael G. Moore, Rochester; James P. Muccioli, Farmington Hills, all of Mich., and Michael B. Sestina, Huntsville, Ala., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 28, 1992, Ser. No. 875,115
Term of patent 14 years
U.S. Cl. D14—258

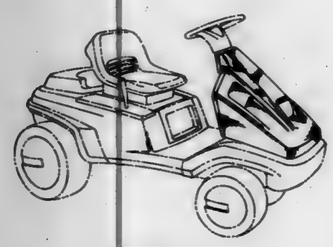


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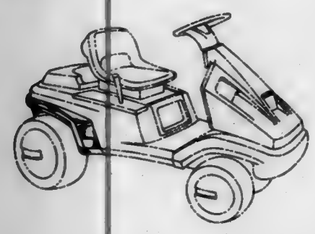
344,957
RADIO SET HANDLE
Kuo-Chi Chang, Room 505, No. 142, Sec. 4, Chung-Hsiao East Rd., Taipei, Taiwan
Filed Oct. 19, 1991, Ser. No. 774,264
Term of patent 14 years
U.S. Cl. D14—265



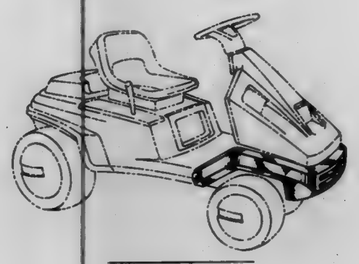
344,958
VEHICLE COWLING
Jon M. Patterson, Wauwatosa, Wis.; James H. Weitz, Ridgewood, N.J.; Daniel R. Nickles, Hewitt, N.J., and William E. Crookes, Waldwick, N.J., assignors to Deere & Company, Moline, Ill.
Filed Jan. 31, 1992, Ser. No. 828,599
Term of patent 14 years
U.S. Cl. D15—17



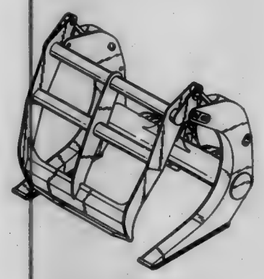
344,959
VEHICLE REAR TRIM
Jon M. Patterson, Wauwatosa, Wis.; James H. Weitz, Ridgewood, N.J.; Daniel R. Nickles, Hewitt, N.J., and William E. Crookes, Waldwick, N.J., assignors to Deere & Company, Moline, Ill.
Filed Jan. 31, 1992, Ser. No. 830,168
Term of patent 14 years
U.S. Cl. D15—17



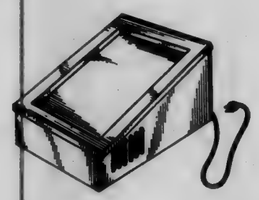
344,960
VEHICLE FRONT TRIM
Jon M. Patterson, Wauwatosa, Wis.; James H. Weitz, Ridgewood, N.J.; Daniel R. Nickeles, Hewitt, N.J., and William E. Crookes, Waldwick, N.J., assignors to Deere & Company, Moline, Ill.
Filed Jan. 31, 1992, Ser. No. 830,169
Term of patent 14 years
U.S. Cl. D15—17



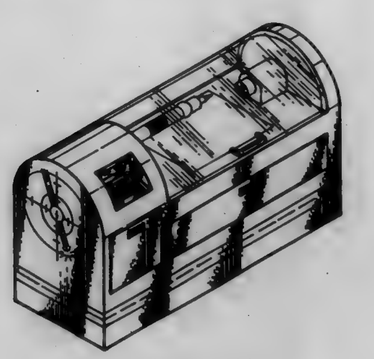
344,961
TIMBER LIFTING FORK
Karl-Gustav Kallen, Eskilstuna, Sweden, assignor to VME Industries Sweden AB, Eskilstuna, Sweden
Filed Dec. 22, 1992, Ser. No. 2,855
Claims priority, application Sweden, Jun. 22, 1992, 92-1345
Term of patent 14 years
U.S. Cl. D15—32



344,962
REFRIGERATOR
Koenraad P. Coleman, Mol, Belgium, assignor to North Atlantic Patent and Investment Holding S.A., Luxembourg
Filed Jan. 9, 1992, Ser. No. 820,947
Claims priority, application PCT Int'l Appl., Sep. 26, 1991, DM/020478
Term of patent 14 years
U.S. Cl. D15—79



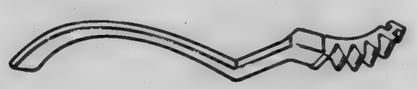
344,963
LASER LATHE
Jeffrey W. Lawhorn, 102 N. Peach St., DuQuoin, Ill. 62683
Filed Sep. 2, 1992, Ser. No. 938,351
Term of patent 14 years
U.S. Cl. D15—130



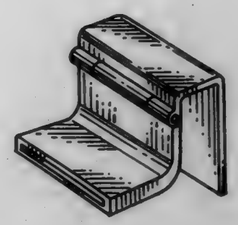
344,964
BALL BEARING FOR RECTILINEAR SLIDING
Mitsuru Yamazaki, Ojiya, Japan, assignor to Nippon Bearing Co., Ltd., Niigata, Japan
Filed Oct. 14, 1992, Ser. No. 444
Term of patent 14 years
U.S. Cl. D15—143



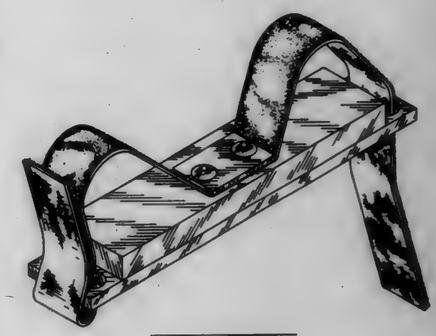
344,965
TEMPLE MEMBER FOR SUNGLASSES
Alan Kahaney, 2212 Place Monaco, Del Mar, Calif. 92014
Filed Jan. 21, 1993, Ser. No. 3,921
Term of patent 14 years
U.S. Cl. D16—127



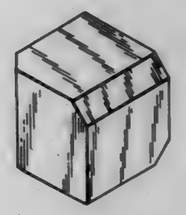
344,966
LENS MOUNT
Arthur S. Friedman, 2144 Seneca West, Merrick, N.Y. 11566
Filed Jun. 3, 1992, Ser. No. 891,478
Term of patent 14 years
U.S. Cl. D16—136



344,967
SUPPORT FOR ATTACHING BINOCULARS TO A TRIPOD
James A. Webster, 7720 E. Lurlene Dr., Tucson, Ariz. 85730
Filed Jun. 8, 1992, Ser. No. 894,234
Term of patent 14 years
U.S. Cl. D16—136

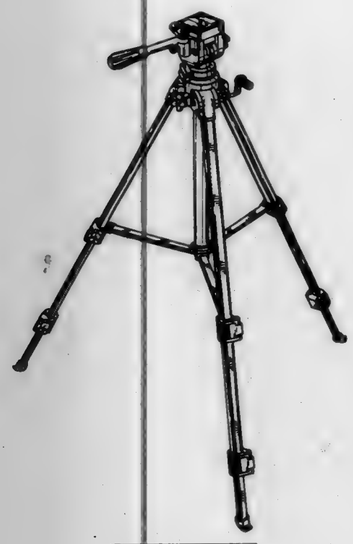


344,968
OPTICAL FILTER PRISM
David Dowd, Somerville, Mass., assignor to Luminanti Ltd., Inc., Winchester, Mass.
Filed Sep. 26, 1990, Ser. No. 588,959
Term of patent 14 years
U.S. Cl. D16—137

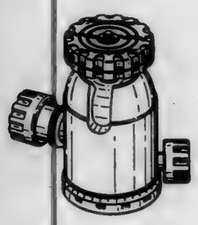


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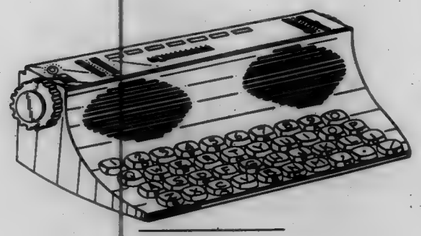
344,969
VIDEO CAMERA TRIPOD
Koichiro Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.
Filed Nov. 25, 1992, Ser. No. 1,923
Term of patent 14 years
U.S. Cl. D16—244



344,970
INCLINER
Rudolph M. Hanke, Moosheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG, Fed. Rep. of Germany
Filed Dec. 21, 1992, Ser. No. 2,781
Claims priority, application World Int. Prop. O., Aug. 17, 1992, DM/023646
Term of patent 14 years
U.S. Cl. D16—245



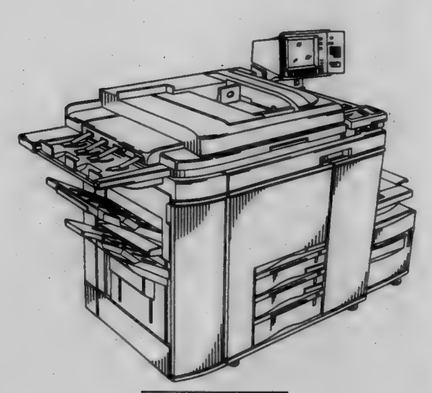
344,971
TYPEWRITER KEYBOARD MUSICAL INSTRUMENT
Lars D. Roose, 10100 Chapala Ct. NE., Albuquerque, N. Mex. 87111
Filed Nov. 8, 1991, Ser. No. 789,473
Term of patent 14 years
U.S. Cl. D17—2



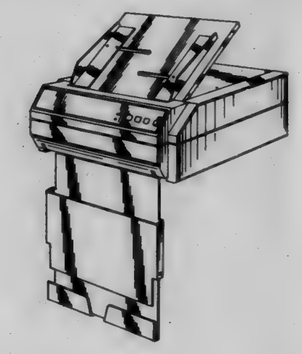
344,972
NECK FOR A STRING MUSICAL INSTRUMENT
Tomaž Rus, Resljeva 30, 61000 Ljubljana, Spratly Islands
Filed Aug. 26, 1992, Ser. No. 935,375
Claims priority, application Spratly Islands, Mar. 3, 1992, M 46/92
Term of patent 14 years
U.S. Cl. D17—20



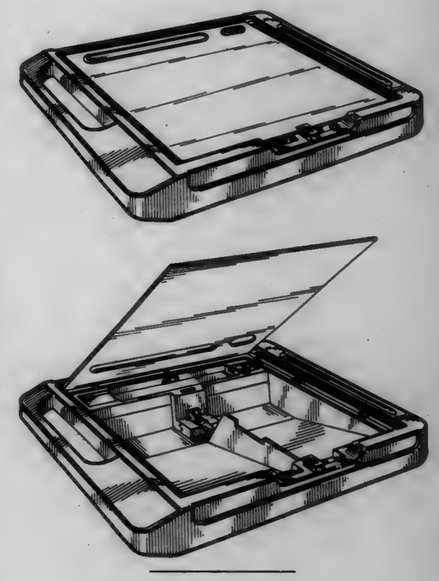
344,973
COPIER WITH DOCUMENT HANDLER AND FINISHER
Mark S. Penke, West Henrietta; Robert E. Kalvitis, Fairport; William T. Clark, III, West Henrietta, all of N.Y.; Marland Chow, Oceanside, Calif.; Leonard V. Gates, Widford Nr. Ware, England; Hideyuki Matsubara, and Chikako Sanaka, both of Yokohama,, Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 31, 1991, Ser. No. 785,607
Term of patent 14 years
U.S. Cl. D18—39



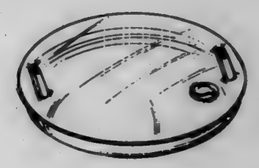
344,974
AUTO-RADIOGRAM IMAGE ACQUISITION SCANNER
Lloyd D. Clark, San Francisco; William T. Davids, Palo Alto, and George D. Rehkiau, Los Altos, all of Calif., assignors to Amoco Corporation, Chicago, Ill.
Filed May 26, 1992, Ser. No. 889,083
Term of patent 14 years
U.S. Cl. D18—54



344,975
COMBINED PORTABLE DRAWING SURFACE AND STORAGE SUPPLY UNIT
Richard A. Tarozzi, Gales Ferry, Conn., assignor to Binney & Smith Inc., Easton, Pa.
Filed Sep. 17, 1992, Ser. No. 948,811
Term of patent 14 years
U.S. Cl. D19—36

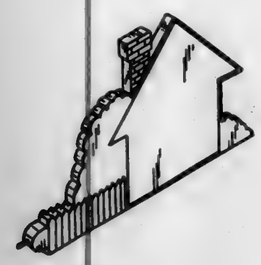


344,976
MAT FOR DEVELOPING HAND-TO-EYE COORDINATION IN INFANTS
Linda F. Dial, Atlanta, Ga., assignor to W. B. Nod & Company, Atlanta, Ga.
Filed Sep. 5, 1990, Ser. No. 577,626
The portion of the term of this patent subsequent to Jun. 22, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—64

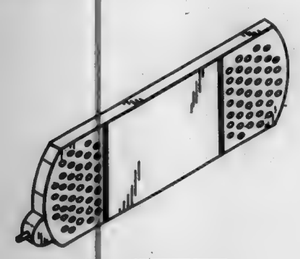


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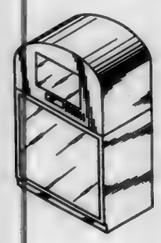
344,977
WRITING PEN
Ronald F. Moszyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,937
Term of patent 14 years
U.S. Cl. D19—42



344,978
WRITING PEN
Ronald F. Moszyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,957
Term of patent 14 years
U.S. Cl. D19—42



344,979
ILLUMINATED ADVERTISING DISPLAY UNIT
Seymour Cohen, 2321 Canyon Back Rd., Los Angeles, Calif. 90049
Filed Mar. 17, 1993, Ser. No. 6,007
Term of patent 14 years
U.S. Cl. D20—10



344,980
IDENTIFICATION TAG FOR ELECTRIC WIRES
Lars Skarin, Otterbäcken, Sweden, assignor to Partex Fabriksaktiebolag, Gullspang, Sweden
Filed Oct. 29, 1992, Ser. No. 966
Claims priority, application Sweden, Apr. 29, 1992, 92-0971
Term of patent 14 years
U.S. Cl. D20—22



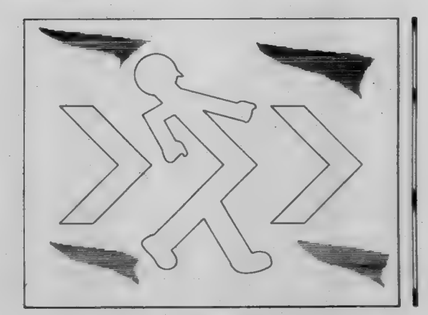
344,981
FOOD AND BEVERAGE MENU HOLDER FOR RESTAURANT TABLES
Robert A. Noreika, Rocky Hill, Conn., assignor to Gastro-Gnomes, Inc., Hartford, Conn.
Filed Mar. 30, 1993, Ser. No. 6,464
Term of patent 14 years
U.S. Cl. D20—40



344,982
FOOD AND BEVERAGE MENU HOLDER FOR RESTAURANT TABLES
Robert A. Noreika, Rocky Hill, Conn., assignor to Gastro-Gnomes, Inc., West Hartford, Conn.
Filed Mar. 30, 1993, Ser. No. 6,473
Term of patent 14 years
U.S. Cl. D20—40



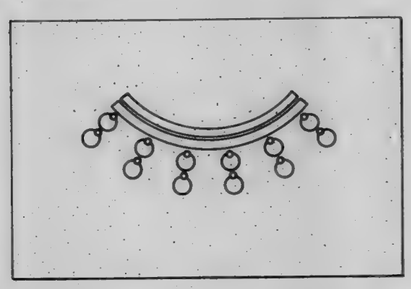
344,983
EXIT SIGN
Joseph S. Wegrzyn, Stratford, Conn., assignor to General Signal Corporation, Stamford, Conn.
Filed May 14, 1992, Ser. No. 883,255
Term of patent 14 years
U.S. Cl. D20—42



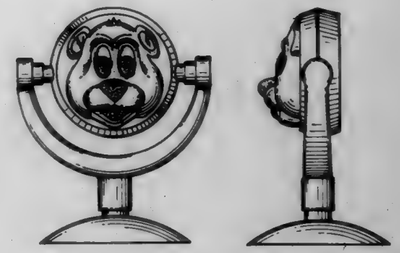
344,984
CIRCULAR LOTTERY NUMBER SELECTOR TILE
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Feb. 19, 1992, Ser. No. 840,685
The portion of the term of this patent subsequent to Oct. 5, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—37



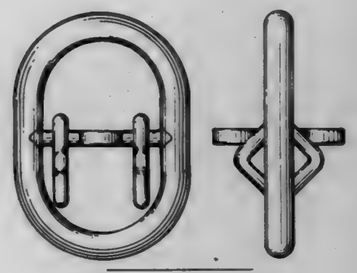
344,985
GAMING TABLE SURFACE
Anwar Masud, Sparks, and Ralph L. Albright, Reno, both of Nev., assignors to Riverboat Hotel & Casino, Reno, Nev.
Filed Nov. 24, 1992, Ser. No. 2,041
Term of patent 14 years
U.S. Cl. D21—37



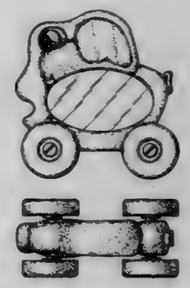
344,986
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,721
Term of patent 14 years
U.S. Cl. D21—65



344,987
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,835
Term of patent 14 years
U.S. Cl. D21—65

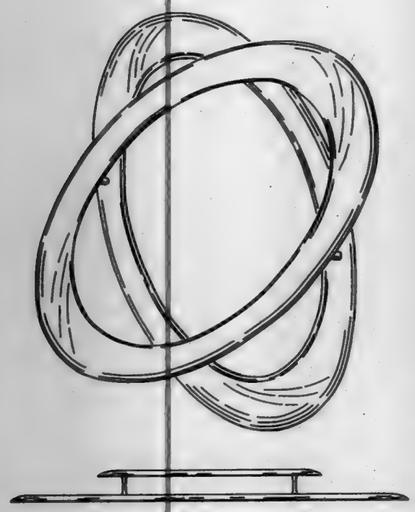


344,988
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,837
Term of patent 14 years
U.S. Cl. D21—65

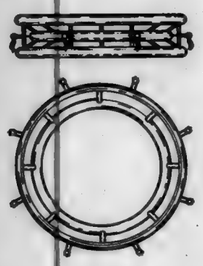


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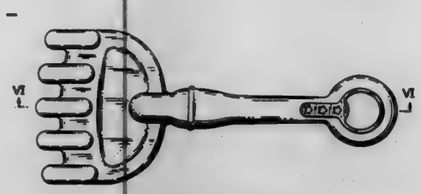
344,989
FLYING TOY
Miro Bouchakian, 2310 Jupiter Dr., Los Angeles, Calif. 90046
Filed Jul. 29, 1991, Ser. No. 737,499
Term of patent 14 years
U.S. Cl. D21—86



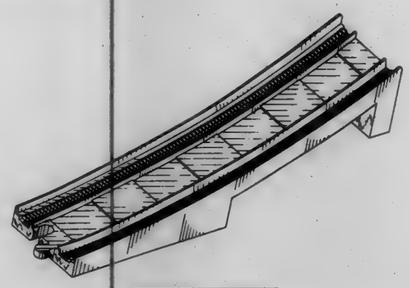
344,990
TOY HOOP
Leo F. Martinez, 2726 Campbell Rd. NW., Albuquerque, N. Mex. 87104
Filed Apr. 16, 1992, Ser. No. 868,255
Term of patent 14 years
U.S. Cl. D21—101



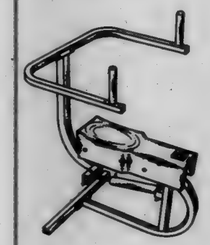
344,991
TOY RAKE
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,962
Claims priority, application Japan, May 29, 1992, 4-16024; May 29, 1992, 4-16025; May 29, 1992, 4-16026; May 29, 1992, 4-16027
Term of patent 14 years
U.S. Cl. D21—120



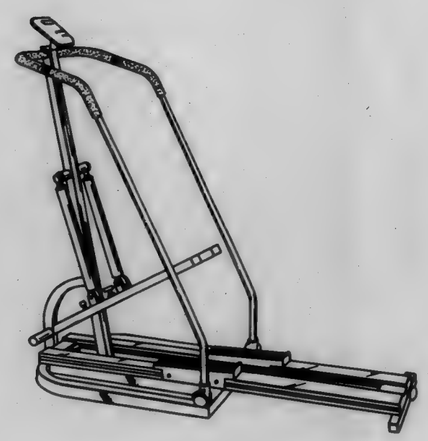
344,992
RAIL ELEMENT FOR A TOY TRAIN SET
Ede F. Ruszkai, Copenhagen, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,912
Term of patent 14 years
U.S. Cl. D21—143



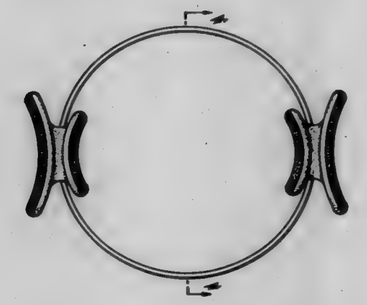
344,993
TORSO EXERCISE MACHINE
Robert W. Laratta, 721 Hillview Dr., Arlington, Tex. 76011
Filed Aug. 18, 1992, Ser. No. 931,306
Term of patent 14 years
U.S. Cl. D21—191



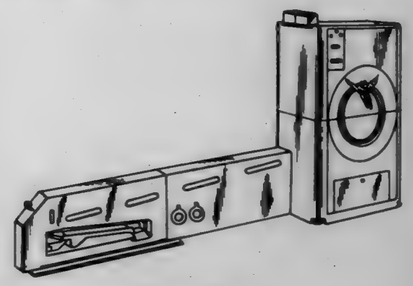
344,994
COMBINED STEPPER AND SIMULATED SKIING EXERCISER
Liang-Cheng Chi, Fengyuan City, Taiwan, assignor to Alpha Cycle Product Co., Ltd., Fengyuan City, Taiwan
Filed Sep. 15, 1992, Ser. No. 948,941
Term of patent 14 years
U.S. Cl. D21—195



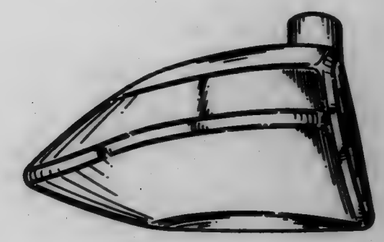
344,995
RESILIENT EXERCISE RING
Rina Sheppard, 8033 Sunset Blvd., Los Angeles, Calif. 90046
Filed Aug. 31, 1992, Ser. No. 936,915
Term of patent 14 years
U.S. Cl. D21—198



344,996
GOLF BALL DISPENSING AND TEEING MACHINE
Akio Nomura, Tokyo, Japan, assignor to Taito Corporation, Tokyo, Japan
Filed Sep. 17, 1990, Ser. No. 583,718
Claims priority, application Japan, Mar. 23, 1990, 2-9627
Term of patent 14 years
U.S. Cl. D21—208



344,997
GOLF CLUB HEAD
Dillis V. Allen, Elk Grove Village, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.
Filed May 13, 1992, Ser. No. 882,562
Term of patent 14 years
U.S. Cl. D21—214



344,998
GOLF CLUB HEAD
Tom Greene, Monson, Mass., assignor to Lisco, Inc., Tampa, Fla.
Filed May 26, 1992, Ser. No. 889,107
Term of patent 14 years
U.S. Cl. D21—214

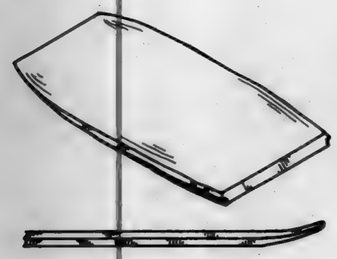


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344,999
GOLF CLUB HEAD
Edward A. Brown, 6542 Via Del Rancho; Brad R. Stormon, 3202 Oakshire, both of Chino Hills, Calif. 91709, and Jake Johnston, 7811 E. Bridgewood Dr., Anaheim, Calif. 92808
Filed Jun. 22, 1992, Ser. No. 902,046
Term of patent 14 years
U.S. Cl. D21—220



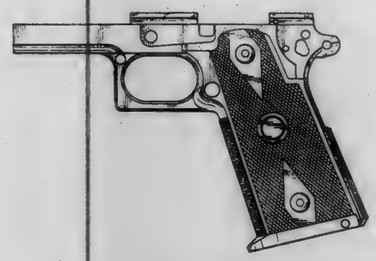
345,000
CHANNEL RAIL BODY BOARD
Robert W. Foulke, San Clemente, Calif., assignor to Earth and Ocean Sports, Inc., Hyannis, Mass.
Filed Jan. 10, 1992, Ser. No. 819,512
Term of patent 14 years
U.S. Cl. D21—228



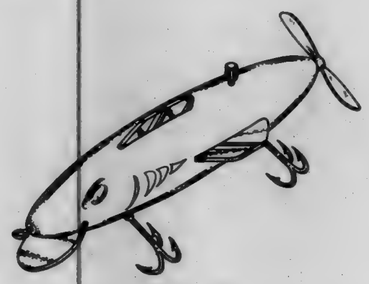
345,001
PISTOL BARREL TIP
William B. Ruger, Croydon Turnpike, Croydon, N.H. 03773
Filed May 6, 1992, Ser. No. 880,321
Term of patent 14 years
U.S. Cl. D22—108



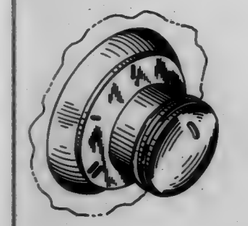
345,002
COMBINED FRAME WITH GRIP FOR HANDGUNS
Sandy L. Strayer, 305 Hickok, Round Rock, Tex. 78681, and Virgil P. Tripp, 8907 Sparkling Creek Circle, Austin, Tex. 78729
Filed Sep. 8, 1992, Ser. No. 939,874
Term of patent 14 years
U.S. Cl. D22—108



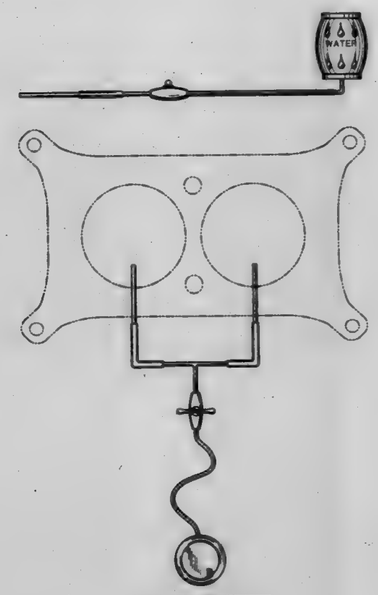
345,003
SELF-PROPELLED FISHING LURE
Edward F. Maleszewski, Jr., 3190 Woodhaven Dr., Franklin, Ohio 45005
Filed Jun. 9, 1992, Ser. No. 895,877
Term of patent 14 years
U.S. Cl. D22—133



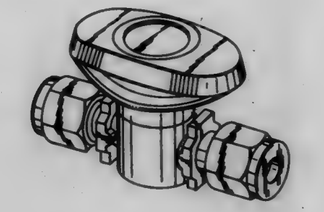
345,004
COMBINED PLUMBING FITTING HANDLE AND ESCUTCHEON
Alan D. Bengtson, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 824,486
Term of patent 14 years
U.S. Cl. D23—254



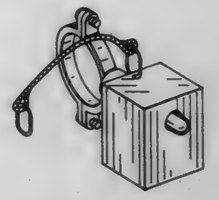
345,005
WATER INJECTOR FOR FUEL-AIR MIXTURE OF AN AUTOMOTIVE CARBURETOR
Peter D. Ens, Box 15, Esdako, Canada V0J 1L0
Filed Aug. 19, 1991, Ser. No. 747,115
Term of patent 14 years
U.S. Cl. D23—200



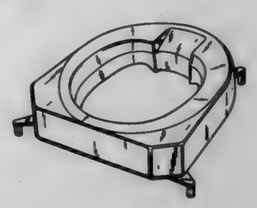
345,006
VALVE
Michael T. Gallagher, Mayfield Heights; Peter C. Williams, Cleveland Heights, and Richard F. Wozniak, Euclid, all of Ohio, assignors to Whitey Co., Highland Hts., Ohio
Filed Sep. 25, 1991, Ser. No. 765,108
Term of patent 14 years
U.S. Cl. D23—245



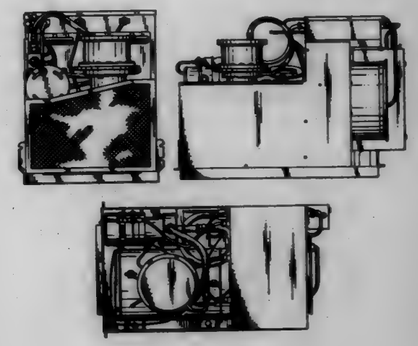
345,007
SHUT-OFF VALVE
Walter Korabiak, 103 Crine Rd., Morganville, N.J. 07751
Filed Mar. 5, 1992, Ser. No. 846,408
Term of patent 14 years
U.S. Cl. D23—249



345,008
ELEVATED TOILET SEAT
Tom Ahlström, and Hans Ehrich, both of Stockholm, Sweden, assignors to RFSU Rehab AB, Stockholm, Sweden
Filed Mar. 12, 1992, Ser. No. 850,067
Claims priority, application Sweden, Oct. 1, 1991, 91-1943
Term of patent 14 years
U.S. Cl. D23—311

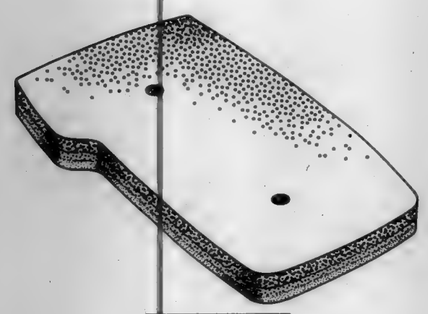


345,009
SELF-CONTAINED PORTABLE CRYOGENIC COOLING UNIT TO BE USED TO COOL ELECTRONIC COMPONENTS
Russell G. Lewis, Manlius, and Howard H. Fraser, Jr., Lafayette, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 21, 1992, Ser. No. 2,795
Term of patent 14 years
U.S. Cl. D23—333

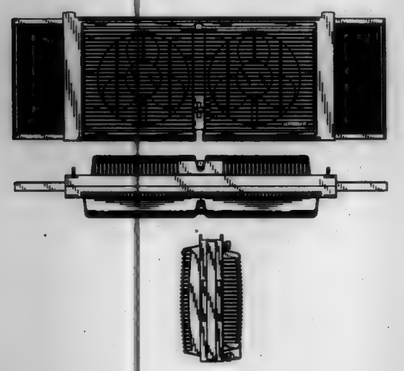


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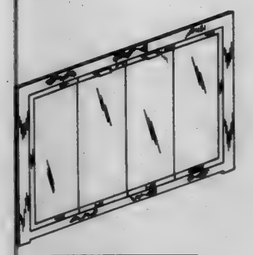
345,010
FILTER FOR USE IN A PORTABLE CUTTING MACHINE
Tore Aronsson, Mölndal, and Ove Donnerdal, Partille, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden
Filed Feb. 16, 1993, Ser. No. 4,803
Term of patent 14 years
U.S. Cl. D23—365



345,011
EXPANDABLE WINDOW FAN
Richard M. O'Grady, Southington, Conn., assignor to Duracraft Corporation, Whitinsville, Mass.
Filed Apr. 9, 1993, Ser. No. 6,881
Term of patent 14 years
U.S. Cl. D23—380



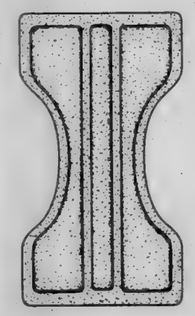
345,012
FIREPLACE SCREEN UNIT
Amit V. Patel, Stone Mfg. Co. 1636 W. 135th St., Gardena, Calif. 90249
Filed Sep. 25, 1992, Ser. No. 951,414
Term of patent 14 years
U.S. Cl. D23—406



345,013
COMBINED INHALER AND COVER
Charles M. Huck, Pottersville, and Charles R. Ashley, Pattenberg, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Jun. 11, 1992, Ser. No. 897,505
Term of patent 14 years
U.S. Cl. D24—110



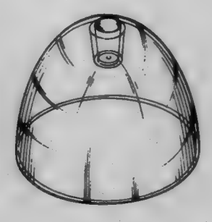
345,014
INSERT PAD FOR A DIAPER OR PANT
Gloria Huffman, Federal Way, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.
Filed Aug. 12, 1991, Ser. No. 745,124
Term of patent 14 years
U.S. Cl. D24—126



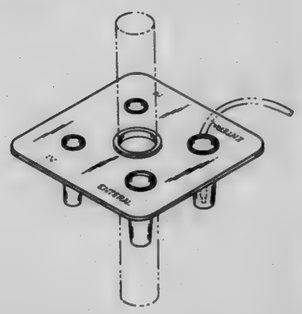
345,015
DIAPER
Dayna S. Booth, 316 S. Douglas St., Salt Lake City, Utah 84102
Filed Dec. 26, 1991, Ser. No. 813,422
Term of patent 14 years
U.S. Cl. D24—126



345,016
WOUND IRRIGATION SPLASH SHIELD
Keith Stamler, 26811 Westvale Rd., Palos Verdes Peninsula, Calif. 90274
Filed Jul. 20, 1990, Ser. No. 556,193
The portion of the term of this patent subsequent to Feb. 8, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—130



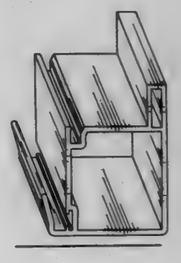
345,017
RESHEATHED NEEDLE HOLDER FOR USE ON AN INTRAVENOUS POLE
Robert J. Fischer, and Patricia A. Fischer, both of 60 Cook La., Marlboro, Mass. 01752
Filed Apr. 29, 1992, Ser. No. 875,135
Term of patent 14 years
U.S. Cl. D24—130



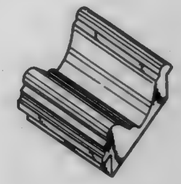
345,018
FOLDING ROOM DIVIDER
Paul Maas, 1387 Woodland La., Riverwoods, Ill. 60015
Filed May 29, 1991, Ser. No. 706,721
Term of patent 14 years
U.S. Cl. D25—49



345,019
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Mar. 20, 1991, Ser. No. 672,629
The portion of the term of this patent subsequent to Jan. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



345,020
DECORATIVE MOLDING
Salvatore Audia, 16627 Millar, Clinton Township, Mount Clemens County, Mich. 48026
Filed May 21, 1992, Ser. No. 886,743
Term of patent 14 years
U.S. Cl. D25—136

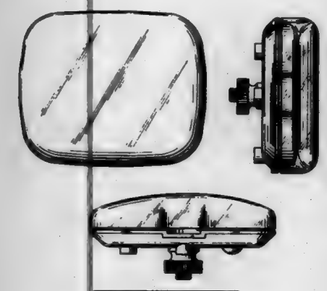


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345,021
FLOATING FIBER OPTIC LIGHT
William R. Storey, Roseville, and Jedy Liang, Belmont, both of Calif., assignors to Poolmaster, Inc., Sacramento, Calif.
Filed Oct. 5, 1992, Ser. No. 122
Term of patent 14 years
U.S. Cl. D26—27



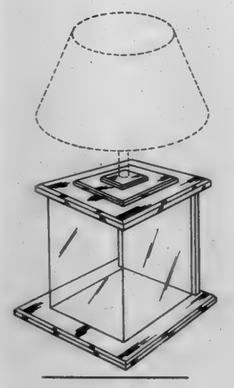
345,022
BATTERY-POWERED SAFETY LIGHT FOR BICYCLE AND JOGGER
Norman Hamasaki, Costa Mesa, Calif., assignor to SSB Design, Inc., Irvine, Calif.
Filed Apr. 6, 1992, Ser. No. 864,080
Term of patent 14 years
U.S. Cl. D26—28



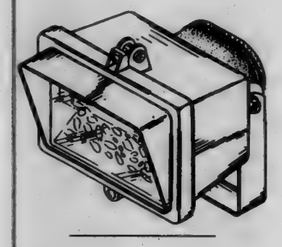
345,023
FRONT END MOUNTED VEHICLE BRAKE LIGHT
Thomas L. Janasiak, 605 Madison St., Michigan City, Ind. 46360
Filed Aug. 21, 1991, Ser. No. 748,056
Term of patent 14 years
U.S. Cl. D26—35



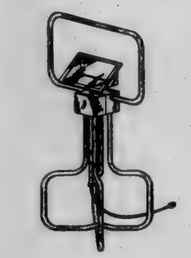
345,024
LAMP BASE AND DISPLAY CASE COMBINED
Jordan E. Fox, 4819 Platinum Loop, Rio Rancho, NM 87124
Filed Dec. 20, 1991, Ser. No. 810,924
Term of patent 14 years
U.S. Cl. D26—58



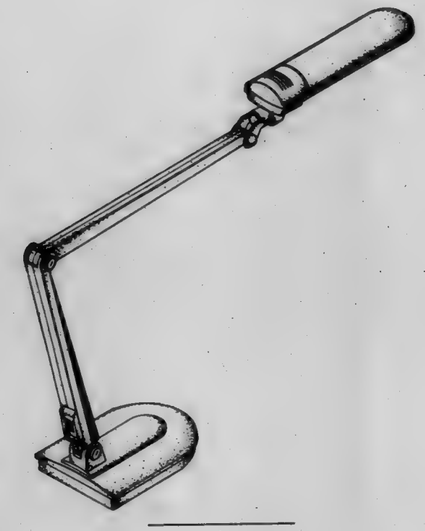
345,025
HALOGEN FLOODLIGHT
Frank Tsao, San Chung City, Taiwan, assignor to Caster Lighting, Inc., Taipei Hsien, Taiwan
Filed May 20, 1992, Ser. No. 885,227
Term of patent 14 years
U.S. Cl. D26—63



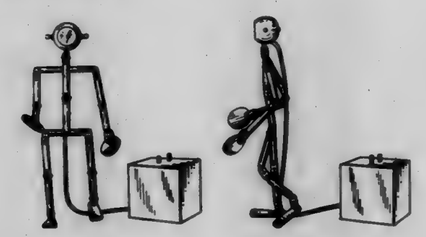
345,026
PORTABLE FLOODLIGHT
Ronald M. Pottebaum, R.R. 1, Box 129, Pierson, Iowa 51048
Filed Jun. 18, 1992, Ser. No. 900,344
Term of patent 14 years
U.S. Cl. D26—63



345,027
ADJUSTABLE-LAMP
H. T. Huang, San-Hsa, Taipei, Taiwan 237
Filed Dec. 3, 1991, Ser. No. 801,849
Term of patent 14 years
U.S. Cl. D26—65



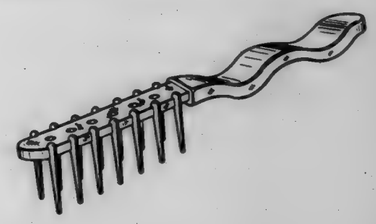
345,028
DESIGN FOR AN ARTICULATED LAMP
Jose Y. Alvarez Baranga, 1005, Chaussee De Ninove, Brussels, Belgium
Filed Sep. 20, 1991, Ser. No. 763,746
Claims priority, application Belgium, Mar. 27, 1991, DM/019239
Term of patent 14 years
U.S. Cl. D26—99



345,029
FLOOR LAMP
Francesco C. Morelli, Rome, Italy, assignor to Artemide S.p.A., Milan, Italy
Filed May 29, 1992, Ser. No. 891,463
Claims priority, application Italy, Nov. 29, 1991, TO910000252
Term of patent 14 years
U.S. Cl. D26—106

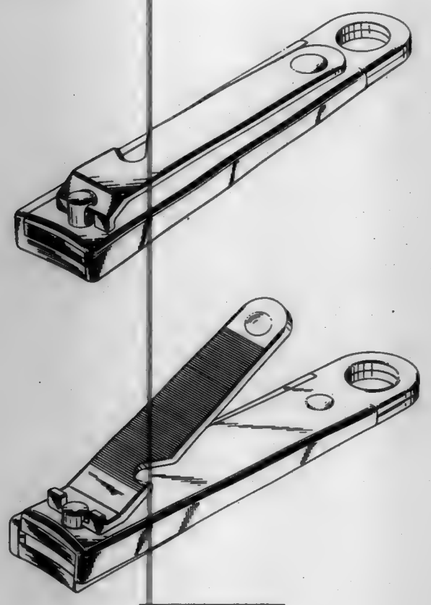


345,030
COMB
Thomas Van Dyk, Prospect Park, N.J., assignor to Goody Products, Inc., Kearny, N.J.
Filed May 4, 1992, Ser. No. 878,329
Term of patent 14 years
U.S. Cl. D28—28

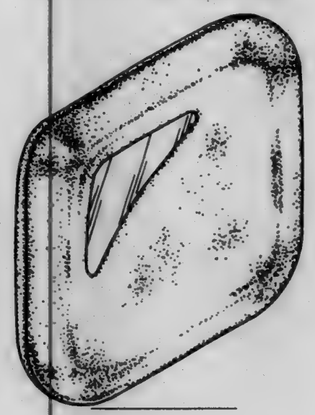


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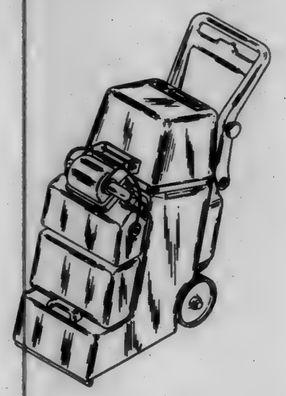
345,031
NAIL CLIPPER
Chieko Ostigaard, 4303 Oakdale Ave., Edina, Minn. 55424
Filed Mar. 5, 1992, Ser. No. 847,809
Term of patent 14 years
U.S. Cl. D28—60



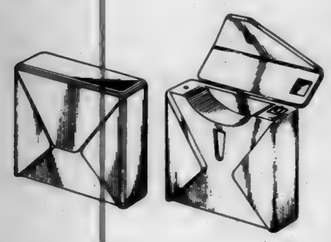
345,033
MAKE-UP CASE
Stanley Acker, Nyack, and Frank Garcia, Brooklyn, both of N.Y., assignors to Stanley Acker, Nyack, N.Y.
Filed Dec. 19, 1991, Ser. No. 812,978
Term of patent 14 years
U.S. Cl. D28—63



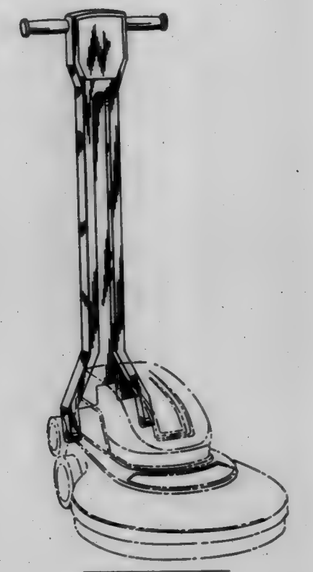
345,034
SELF CONTAINED CARPET CLEANING MACHINE
Edwin Fitzwater, Rahway, N.J., assignor to Rug Doctor, L.P., Fresno, Calif.
Filed Apr. 15, 1991, Ser. No. 685,013
Term of patent 14 years
U.S. Cl. D32—21



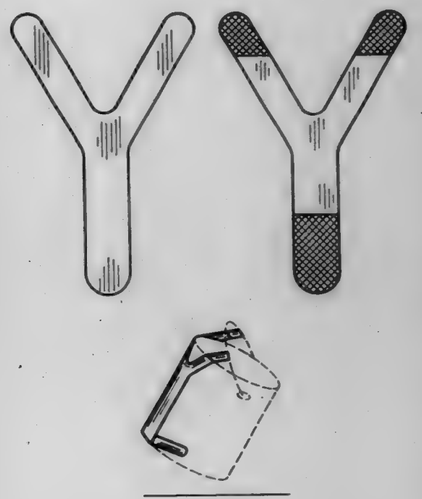
345,032
DENTAL FLOSS DISPENSER
John P. Curtis, Bloomsbury, N.J., and Adam Sherman, Brooklyn, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 8, 1992, Ser. No. 942,497
Term of patent 14 years
U.S. Cl. D28—64



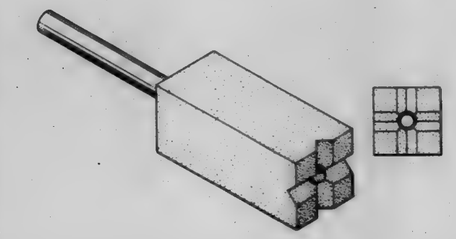
345,035
FLOOR MACHINE HANDLE
Richard F. Wulff, Maple Plain, Minn., assignor to Castex Industries, Inc., Holland, Mich.
Filed Feb. 24, 1992, Ser. No. 839,888
Term of patent 14 years
U.S. Cl. D32—34



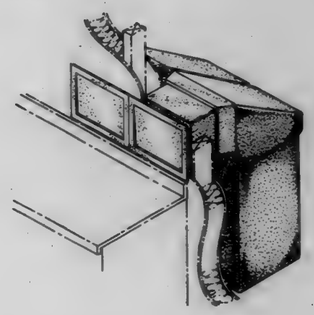
345,037
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David E. Sires, 4105 Horseshoe Dr., Cedar Falls, Iowa 50613
Filed Sep. 12, 1990, Ser. No. 582,594
Term of patent 14 years
U.S. Cl. D32—54



345,036
SPONGE MOP
Charles E. Townsend, Jr., 11 Ranch Rd., Orinda, Calif. 94563
Filed Aug. 10, 1992, Ser. No. 927,579
Term of patent 14 years
U.S. Cl. D32—51



345,038
THROUGH-THE-WALL RECYCLING BIN
Ronnie P. DeWeese, 370 Hickory Acres Dr., Smyrna, Ga. 30082
Filed Jul. 24, 1992, Ser. No. 918,402
Term of patent 14 years
U.S. Cl. D34—1

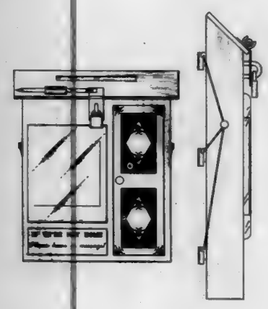


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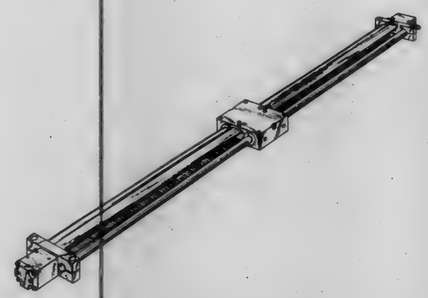
345,039
TELESCOPIC DOWNSPOUT
Monty M. Doyle, Quincy, Ill., assignor to Doyle Equipment Manufacturing Company, Quincy, Ill.
Filed Jul. 29, 1992, Ser. No. 922,038
Term of patent 14 years
U.S. Cl. D34—28



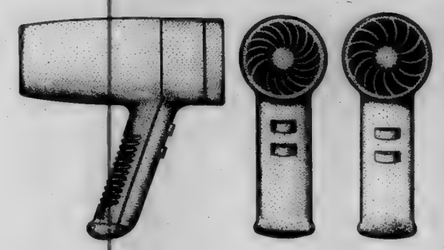
345,040
DOOR MESSAGE BOX
Edward M. Hollins, 424 Arnold Dr., Daytona Beach, Fla. 32114
Filed Jun. 22, 1992, Ser. No. 902,050
Term of patent 14 years
U.S. Cl. D99—33



345,041
LINEAR SLIDE WITH TOOTHED BELT DRIVES
Siegfried Bauer, Massbach-Volkershausen, Fed. Rep. of Germany, assignor to Deutsche Star GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Nov. 21, 1991, Ser. No. 795,640
Claims priority, application Fed. Rep. of Germany, May 22, 1991, M 9103785.7
Term of patent 14 years
U.S. Cl. D15—138



345,042
BLOW DRYER
James G. Montagnino; Richard Gibson, both of El Paso, Tex., and George Schmidt, Douglaston, N.Y., assignors to Helen of Troy Corporation, El Paso, Tex.
Filed Dec. 31, 1990, Ser. No. 636,385
Term of patent 14 years
U.S. Cl. D28—13



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MARCH, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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A. Raymond & Cie: *See*—
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Abad, Alex. Window track debris accumulation prevention system. 5,291,687, Cl. 49-404.000.

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Abbott Laboratories: *See*—
Basha, Anwer; and Brooks, Dee W., 5,292,900, Cl. 549-419.000.
Wynkoop, Richard D.; Ogden, John E.; and Wecker, Sheldon M., 5,292,306, Cl. 604-51.000.

Abbott, Ronald G., to Phillips Petroleum Company. Isoparaffin-olefin alkylation catalyst composition and process. 5,292,986, Cl. 585-730.000.

Abdel-Malek, Aiman A.: *See*—
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Abe, Hiroshi, to Asahi Seiko Co., Ltd. Device for sorting game coin by paramagnetic properties. 5,291,980, Cl. 194-325.000.

Abe, Kazuhiko, to NEC Corporation. Random access memory device with columns of redundant memory cells distributed to memory cell arrays and shared therebetween. 5,293,348, Cl. 365-230.030.

Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, to NGK Insulators, Ltd. Method of producing low temperature firing dielectric ceramic composition containing B_2O_3. 5,292,694, Cl. 501-139.000.

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Abernathy, Stephen D.: *See*—
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Rochette, Jeffrey R.; and Abeska, Edward J., 5,293,153, Cl. 340-438.000.

Abondance, Roger; Bauvois, Jean; and Forneri, Jean-Marc, to Skis Rossignol S.A. Shaped ski of non-rectangular cross section. 5,292,148, Cl. 280-602.000.

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Conley, Patrick O.; and Cobb, Lorea, 5,293,629, Cl. 395-700.000.

Abt, Norman E.; and Aronowitz, Sheldon, to National Semiconductor Corporation. Masking material for applications in plasma etching. 5,292,402, Cl. 156-659.100.

Abumehdi, Cyrus; and Herbert, Raymond J., to Neopost Limited. Franking machine with digital printer. 5,293,465, Cl. 395-113.000.

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Adachi, Kaoru; and Okamoto, Satoru, to Fuji Photo Film Co., Ltd. Electronic still camera including an EEPROM memory card and having a continuous shoot mode. 5,293,236, Cl. 348-231.000.

Adachi, Kohei; Otsuki, Hideaki; Niki, Kenichi; Takasago, Hayato; and Makita, Tetsuro, to Mitsubishi Denki Kabushiki Kaisha. Liquid crystal display device having heat-insulating members and driving circuit boards attached to rear edges of light box. 5,293,262, Cl. 359-88.000.

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Adachi, Nobukazu; Isoda, Yuzo; Miyamoto, Toshio; and Tomoyuki, Yohji, to Canon Kabushiki Kaisha. Image fixing apparatus. 5,293,202, Cl. 355-282.000.

Adams, Charles T.: *See*—
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Adams, Cliff. Harness for guitar or like instrument. 5,291,816, Cl. 84-327.000.

Adams, Louis W., Jr.; Gilpatrick, Michael W.; and Gregory, Richard V., to Milliken Research Corporation. Method for generating a conductive fabric and associated product. 5,292,573, Cl. 428-196.000.

Adams, Stephen C., Jr. Portable shipping platform for use with slipsheet handling equipment and fork lifts. 5,291,837, Cl. 108-51.300.

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Adinolfi, Alfonso M. Electronic percussion system simulating play and response of acoustical drum. 5,293,000, Cl. 84-730.000.

Adir et Compagnie: *See*—
Lavielle, Gilbert; Laubie, Michel; and Colpaert, Francis, 5,292,761, Cl. 514-357.000.

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Adorjan, Charles R. Water closet sealing adapter. 5,291,619, Cl. 4-252.600.

Adrain, John B.; and Von Colln, John. Automotive multiple memory selector apparatus. 5,293,317, Cl. 364-431.120.

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Aigner, Rudolf; Maier, Guillermo; Muller, Rainer; and Seitz, Hubert, to Hoechst Aktiengesellschaft. Process for the preparation of aqueous betaine solutions. 5,292,942, Cl. 562-575.000.

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Kobayashi, Tosio; Watari, Mitsuru; and Inoue, Toru, to Mitsui Petrochemical Industries, Ltd. Process for preparing composite foamed molded article. 5,292,465, Cl. 264-45.500.

Kobayashi, Yasumi; Takeuchi, Kousuke; Ikeda, Kachio; Shibata, Kenichi; and Kuroki, Kazuhiko, to Sanyo Electric Co., Ltd. Dielectric filter having external connection terminals on dielectric substrate and antenna duplexer using the same. 5,293,141, Cl. 333-206.000.

Kobayashi, Yoshikazu: *See*—
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Koefelda, Gerald R.; and Lang-Ree, Arne, to Rehrig Pacific Company, Inc. Plastic pail assembly for hazardous materials. 5,292,024, Cl. 220-608.000.

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Sato, Morimasa; Iwasaki, Masayuki; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Photosensitive transfer material and image-forming process. 5,292,613, Cl. 430-257.000.

Sato, Ryo: *See*—
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Satoh, Hideki; and Nitta, Tsuneo, to Kabushiki Kaisha Toshiba. Speech detection apparatus not affected by input energy or background noise levels. 5,293,588, Cl. 395-2.420.

Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; Azumatani, Yasushi; and Hamasaka, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Information recording and reproducing apparatus. 5,293,566, Cl. 369-49.000.

Satoh, Kazuhiro: *See*—
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Satoh, Seiki: *See*—
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Satoh, Susumu: *See*—
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Satoh, Takako: *See*—
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Sauer, Joe D.: *See*—
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Smith, Kim R.; Borland, James E.; and Sauer, Joe D., 5,292,955, Cl. 564-298.000.

Saul, Jonathan R.: *See*—
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Saumarez, Richard; and Murphy, Anthony, to Telectronics Pacing Systems, Inc. Implantable cardioverter/defibrillator and method employing cross-phase spectrum analysis for arrhythmia detection. 5,292,348, Cl. 607-5.000.

Saur, Roland; Bauer, Friedrich; and Leu, Peter, to Behr-Thomson-Dehnstoffregler GmbH & Co. Cover for a housed thermostat. 5,292,064, Cl. 236-345.000.

Saurefabrik Schweizerhall: *See*—
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Sausner, Andreas; and Sielaff, Jens, to Carl Freudenberg, Firma. Sealing system for use in the filler neck of a fuel tank. 5,291,924, Cl. 141-312.000.

Saussine, Lucien: *See*—
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Sauter, Hubert: *See*—
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Savignac, Dominique: *See*—
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Savorani, Sandra, to EDIL Plast S.R.L. Modular construction joist made up of a high-strength plastic material, particularly suitable for realizing grids, and closure members subjected to pedestrian and vehicle traffic. 5,291,704, Cl. 52-177.000.

Sawada, Masayuki; and Kakimoto, Yukihiko, to Nippon Shokubai Co., Ltd. Method for production of ethylene oxide. 5,292,904, Cl. 549-534.000.

Sawada, Shin-ichi: *See*—
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Sawayama, Noboru; Aoki, Katsuhiro; and Maruta, Takayuki, to Ricoh Company, Ltd. Image forming apparatus for controlling the dynamic range of an image. 5,293,198, Cl. 355-214.000.

Sayegh, Emile G., to W. L. Gore & Associates, Inc. Crush-resistant high-strength buffered optical waveguide fiber cable. 5,293,442, Cl. 385-102.000.

Sayegh, Soheil I., to Communications Satellite Corporation. Pipeline processor for mixed-size FFTs. 5,293,330, Cl. 364-726.000.

Scannell, Daniel B., to Roll Service Incorporated. Heat transfer roll. 5,292,298, Cl. 492-46.000.

Scaringe, Robert P.: *See*—
Parrish, Clyde F.; and Scaringe, Robert P., 5,291,750, Cl. 62-259.300.

Schaad, Howard A.: *See*—
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Schabdach, Paul G.; Barditch, Irving F.; Rouse, William G.; and Fiala, John P., to United States of America, Army. Grenade launching apparatus. 5,291,680, Cl. 42-105.000.

Schadt, Martin: *See*—
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Schaefer, Daniel J., to General Electric Company. Local transverse gradient coil. 5,293,126, Cl. 324-318.000.

Schaefer, Hans; Watts, Francine; Papantoniou, Christos; and Mahieu, Claude, to Centre Internationale de Recherches Dermatologiques (C.I.R.D.). Cosmetic or pharmaceutical composition containing microspheres of polymers or of fatty substances filled with at least one active product. 5,292,512, Cl. 424-401.000.

Schafer, Walter; Muller, Hanns P.; Kreuder, Hans-Joachim; Bock, Manfred; and Reuter, Knud, to Bayer Aktiengesellschaft. Compositions of cyclic isourea component with carboxyl component. 5,292,807, Cl. 525-113.000.

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Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,291,752, Cl. 62-344.000.

Schein, Philip S.; and Piper, James R., to U.S. Bioscience, Inc. Method of reducing chemotherapy toxicity using (methylaminopropylamino)-propyl dihydrogen phosphorothioate. 5,292,497, Cl. 424-10.000.

Schelb, Werner; Peters, Manfred; and Welpmann, Karl, to Hoogovens Aluminium GmbH; and Duetsche Forschungsanstalt fur Luft und Raumfahrt DLR. Process for the manufacture of aluminum sheets. 5,292,386, Cl. 148-691.000.

Schenz, James L.; and Skrtic, Tom, to Minnesota Mining and Manufacturing Company. Carrier tape. 5,291,993, Cl. 206-330.000.

Scherer, Michael: *See*—
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Schering Aktiengesellschaft: *See*—
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Schering Corporation: *See*—
Gosteli, Jacques; Mergelsberg, Ingrid; and Tamer, Markus, 5,292,918, Cl. 558-352.000.

Schiapparelli Biosystems, Inc.: *See*—
Kelln, Norman; Tiffany, Thomas; Olson, Robin; and Weyrauch, Bruce, 5,292,484, Cl. 422-102.000.

Schiel, Christian, to J. M. Voith GmbH. Tension bars for roll press for paper making machine. 5,291,826, Cl. 100-168.000.

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sulfone monoazo series bonded to an alkanoylamino of benzoylamino grouping, suitable as dyestuffs. 5,292,871, Cl. 534-642.000.

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Rutherford, William M.; Allen, Jack E.; Schlameus, Herman W.; Mangold, Donald J.; Harlowe, William W., Jr.; and Lebeda, Joseph R., 5,292,657, Cl. 435-243.000.

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Peiffer, Herbert; Murschall, Ursula; and Schloegl, Gunter, 5,292,563, Cl. 428-35.900.

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Schlumberger Technology Corporation: *See*—
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Schlumpf, Georg; and Weopf, Hanspeter, to Unicolor AG. Method for environmentally benign paint spraying using a dispersion of oven cured lacquer enamel in water. 5,292,547, Cl. 427-8.000.

Schlundt, David; Cannone, Gregory; and Handy, John N., to Mattel, Inc. Ball catching and launching toy. 5,292,134, Cl. 273-324.000.

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Schmale GmbH & Co. KG: *See*—
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Schmale, Karl E., to Schmale GmbH & Co. KG. Device for limiting the set-up angle between two planar components. 5,291,635, Cl. 16-371.000.

Schmidt, Jacob H., Jr.; and Hannon, Richard H., to Plop Golf Company. Golf club with lockable head to shaft relative angle adjustment. 5,292,123, Cl. 273-80.200.

Schmidt, Lothar; Jugel, Alfred; Mallinson, Andy; and Rau, Peter, to Siemens Aktiengesellschaft; and GPT Limited Coventry. Telecommunication network. 5,293,570, Cl. 370-60.100.

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Schnurer, Steven D. Defrosting tool for cryostat cold head interface. 5,291,740, Cl. 62-51.100.

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Schofield, Edward; Chen, Tien-Teh; and Youngblood, Michael P., to Eastman Kodak Company. Color photographic materials containing 5-pyrazolone polymeric couplers and solvents. 5,292,629, Cl. 430-546.000.

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Schrader, Anthony. Lock for doors. 5,291,760, Cl. 70-14.000.

Schrage, Heinrich; and Fiege, Helmut, to Bayer Aktiengesellschaft. Process for decreasing the halogen content of polyhalogenated aromatics. 5,292,975, Cl. 570-147.000.

Schrage, Heinrich: *See*—
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Schroeder, Juergen: *See*—
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Schryvers, Anthony B., to Board of Governors of the University, The. Method for isolating and purifying transferrin and lactoferrin receptor proteins from bacteria and the preparation of vaccines containing the same. 5,292,869, Cl. 530-413.000.

Schulak, Edward R. Energy efficient domestic refrigeration system. 5,291,749, Cl. 62-183.000.

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Schultz, Roger L.; and Ringgenberg, Paul D., to Halliburton Company. Apparatus and method for draining high pressure fluid samples without mercury. 5,291,796, Cl. 73-863.000.

Schumacher, Jean-Michel. Programmable physical exercise apparatus with inertia. 5,292,293, Cl. 482-4.000.

Schumacher, Oliver, to Schering Aktiengesellschaft. Process for the solvent extraction of palladium from aqueous solutions. 5,292,491, Cl. 423-22.000.

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Schwarz, Roland H., to Motorola, Inc. Memory system having two-level security system for enhanced protection against unauthorized access. 5,293,610, Cl. 395-425.000.

Schweigert, James R., to JRCO, Inc. Dump cloth for cart. 5,291,722, Cl. 56-203.000.

Schwitzgebel, Klaus. Equipment and process for solid waste minimization in chromium and heavy metal removal from groundwater. 5,292,435, Cl. 210-712.000.

Science Applications International Corporation: *See*—
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Scientific Innovations, Inc.: *See*—
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Scimed Life Systems, Inc.: *See*—
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Scorey, Clive, to Ametek, Specialty Metal Products Division. Copper-molybdenum composite strip. 5,292,478, Cl. 419-20.000.

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Scott, William A., to Allen Bradford Resources, Inc. Ice crush resistant caisson for arctic offshore oil well drilling. 5,292,207, Cl. 405-207.000.

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Seamans, James D.; Adams, Charles T.; Dominguez, Wendy B.; and Chen, Andrew A., to CRI International, Inc. Presulfurized hydrotreating, hydrocracking or tail gas treating catalyst. 5,292,702, Cl. 502-219.000.

Sears, Russ; and Winser, Dave. Overhead door safety apparatus. 5,291,686, Cl. 49-322.000.

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Secondo Mona S.p.A.: *See*—
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Seikoh Giken Co., Ltd.: *See*—
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Seitz, Hubert: *See*—
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Sejzer, Daniel A. Product packaging and display system. 5,291,990, Cl. 206-45.110.

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Seki, Kunio; Nunogawa, Yasuhiro; Mochizuki, Hirotaka; Kobayashi, Makoto; and Goto, Makoto, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Power switching circuit. 5,293,077, Cl. 307-10.800.

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Seki, Yousuke; and Matsumoto, Akihiko, to Sony Corporation. Apparatus for transmitting still images retrieved from a still image filling apparatus. 5,293,232, Cl. 358-715.000.

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Sekiya, Takuro; Kimura, Takashi; and Shingyouchi, Mitsuru, to Ricoh Company, Ltd. Liquid jet recording head with selected bubble disappearance position. 5,293,182, Cl. 346-140.00R.

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Senapati, Nagabhusan; Johnson, Harold W.; Kim, Byung C.; Chauhan, Satya P.; Gamlen, Dennis A.; Eason, Raju; Muralidhara, H. S.; and Zelinski, Matthew S. Apparatus and method for removal of liquids. 5,292,421, Cl. 204-300.00R.

Seney, John S. Pressurized bottle dispensing assembly. 5,292,038, Cl. 222-402.130.

Sensui, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Eye direction detecting device. 5,293,535, Cl. 354-410.000.

Seok, Yong-Sik: *See*—
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Hutcheson, Gary S., 5,292,363, Cl. 106-243.000.

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Yasuda, Masahiko; Hosokawa, Shigeo; Yokomori, Yorozu; Jimbo, Shinichiro; and Kolycheck, Edmond G., 5,292,853, Cl. 528-72.000.

Yokota, Eiji: *See*—
Takagi, Kazuhiko; and Yokota, Eiji, 5,292,117, Cl. 271-234.000.

Yokoyama, Minoru: *See*—
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Osada, Mamoru; Kato, Takahiro; Takeda, Tomoyuki; Kondo, Masaya; Yamada, Masakatsu; and Nohata, Yukio, 5,293,530, Cl. 346-76.0PH.

Yokoyama, Shozo: *See*—
Nishiyama, Hiroshi; Yokoyama, Shozo; Kubota, Masanori; Kiyofuji, Takashi; and Miyashita, Mamoru, 5,293,225, Cl. 348-242.000.

Yokozaki, Katsushi: *See*—
Takahashi, Kazuaki; Hasegawa, Makoto; Yokozaki, Katsushi; Imagawa, Yasumi; Harada, Hiroyuki; Mimura, Masahiro; and Namura, Yasuaki, 5,293,408, Cl. 375-102.000.

Yonaga, Masahiro: *See*—
Sugimoto, Hachiro; Yonaga, Masahiro; Karibe, Norio; Iimura, Youichi; Nagato, Satoshi; Sasaki, Atsushi; Yamanishi, Yoshiharu; Ogura, Hiroo; Kosasa, Takashi; Uchikoshi, Kumi; and Yamatsu, Kiyomi, 5,292,735, Cl. 514-230.500.

Yoneda, Koji: *See*—
Mita, Shiro; Kawashima, Yoichi; Kato, Nobuharu; Suhara, Hiroshi; Yoneda, Koji; and Morishita, Masataka, 5,292,767, Cl. 514-444.000.

Yoneda, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Method of forming a fine pattern. 5,292,401, Cl. 156-643.000.

Yonemoto, Kazuya, to Sony Corporation. CCD image sensing device having a p-well region with a high impurity concentration. 5,293,237, Cl. 348-314.000.

Yonemoto, Satoshi: *See*—
Oohata, Satoshi; Yonemoto, Satoshi; and Fukai, Wataru, 5,291,788, Cl. 73-727.000.

Yonetsu, Takanobu: *See*—
Ikeuchi, Masayuki; Murata, Shigemi; Iwata, Toshio; Ohsawa, Toshio; and Yonetsu, Takanobu, 5,293,129, Cl. 324-399.000.

Yoon, InBae. Safety needle. 5,292,310, Cl. 604-158.000.

Yorita, Mitsumasa, to Mitsubishi Denki Kabushiki Kaisha. Vacuum switch tube including windmill electrodes. 5,293,506, Cl. 200-144.00B.

Yoshida, Hitoshi: *See*—
Saksi, Hitoshi; Yoshida, Hitoshi; Baba, Hideyuki; and Yoshida, Manabu, 5,292,716, Cl. 505-1.000.
Yamamoto, Takemi; Yoshida, Hitoshi; and Yokoi, Katsuhiko, 5,293,478, Cl. 395-161.000.

Yoshida, Kazuhiko: *See*—
Ueno, Hiroshi; and Yoshida, Kazuhiko, 5,293,427, Cl. 382-1.000.

Yoshida, Kazushi; Ogawa, Ryota; and Abe, Tetsuya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflecting illumination type projecting device. 5,293,188, Cl. 353-66.000.

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Yoshida Kogyo K. K.: *See*—
Akashi, Shunji, 5,291,632, Cl. 16-87.002.
Yoshida Kogyo K.K.: *See*—
Morino, Atsuhiko, 5,291,641, Cl. 24-625.000.
Yoshida, Manabu: *See*—
Sakai, Hitoshi; Yoshida, Hitoshi; Baba, Hideyuki; and Yoshida, Manabu, 5,292,716, Cl. 505-1.000.
Yoshida, Shinichi: *See*—
Nishihira, Keigo; Yoshida, Shinichi; and Tanaka, Shuji, 5,292,917, Cl. 558-277.000.
Yoshida, Takehiro; Kobayashi, Makoto; Yokoyama, Minoru; Ono, Takeshi; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Osada, Mamoru; Kato, Takahiro; Takeda, Tomoyuki; Kondo, Masaya; Yamada, Masakatsu; and Nohata, Yukio, to Canon Kabushiki Kaisha. Thermal transfer recording apparatus and facsimile apparatus using the aforesaid apparatus. 5,293,530, Cl. 346-76.0PH.
Yoshie, Kohji: *See*—
Hirota, Kazuhiro; and Yoshie, Kohji, 5,292,112, Cl. 271-3.100.
Yoshikawa, Haruo, to Speedfam Clean Systems, Co., Ltd. Drying method and apparatus using hot D.I. water. 5,291,665, Cl. 34-9.000.
Yoshikawa, Yuzaburo; Yamauchi, Toshiaki; Oba, Toshiyuki; and Takano, Akira, to Kabushiki Kaisha Toshiba. Electrophotographic developer having different polyolefin waxes. 5,292,609, Cl. 430-110.000.
Yoshikuni, Yoshiaki; Ojima, Nobutoshi; and Mori, Kazuya, to Nippon Shinyaku Co. Ltd. Therapeutic agents. 5,292,750, Cl. 514-315.000.
Yoshimatsu, Kentaro: *See*—
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, 5,292,758, Cl. 514-332.000.
Yoshimoto, Masanori; Tsuji, Kazuto; Sakuma, Masao; and Takeshita, Kouichi, to Fujitsu Limited; and Kyushu Fujitsu Electronics Limited. Lead frame and method of manufacturing a semiconductor device. 5,293,064, Cl. 257-666.000.
Yoshimura, Akihiko; Longmore, Gregory D.; and Lodish, Harvey, to Whitehead Institute for Biomedical Research. Mutant EPO receptor and uses therefor. 5,292,654, Cl. 435-240.200.
Yoshimura, Hiroyuki: *See*—
Ito, Nobuhiro; Takechi, Toshisada; Takekawa, Hideo; Aoki, Fujio; Yoshimura, Hiroyuki; Takashima, Norio; Ebihara, Masanori; and Kitahama, Masanori, 5,292,052, Cl. 228-158.000.
Yoshimura, Tamotsu, to Rohm Co., Ltd. Structure for variable electronic component. 5,293,525, Cl. 338-162.000.
Yoshimura, Tetsuya; Nakamura, Yasuhiro; and Sugiura, Masataka, to Matsushita Electric Industrial Co., Ltd. Three-dimensional information handling system. 5,293,529, Cl. 345-158.000.
Yoshino, Hiroshi; Ueda, Norihiro; Sugumi, Hiroyuki; Niijima, Jun; Kotake, Yoshihiko; Okada, Toshimi; Koyanagi, Nozomu; Watanabe, Tatsuo; Asada, Makoto; Yoshimatsu, Kentaro; Iijima, Atsumi; Nagasu, Takeshi; Tsukahara, Kappei; and Kitoh, Kyosuke, to Eisai Co., Ltd. Sulfonamide derivatives. 5,292,758, Cl. 514-332.000.
Yoshino, Hitoshi; and Takeuchi, Hiroyuki, to Hitachi Medical Corporation. RF coil for a nuclear magnetic resonance imaging device. 5,293,519, Cl. 324-318.000.
Yoshioka, Katsuki: *See*—
Soma, Takao; Kawasaki, Shinji; and Yoshioka, Katsuki, 5,292,599, Cl. 429-30.000.
Yoshioka, Takayuki: *See*—
Yamamoto, Hideki; and Yoshioka, Takayuki, 5,293,226, Cl. 348-780.000.
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Young, Chung I.; and Krampe, Stephen E., to Minnesota Mining and Manufacturing Company. Vinyl acetate modified suspension polymer beads, adhesives made therefrom and a method of making. 5,292,844, Cl. 526-329.500.
Young, George H.; Cowfer, Joseph A.; and Johnston, Victor J., to Geon Company, The. Catalyst and process for oxychlorination of ethylene to EDC. 5,292,703, Cl. 502-303.000.
Youngblood, Michael P.: *See*—
Schofield, Edward; Chen, Tien-Teh; and Youngblood, Michael P., 5,292,629, Cl. 430-546.000.
Yousey, Kevin E.: *See*—
Kamp, Dennis R.; and Yousey, Kevin E., 5,293,201, Cl. 355-269.000.
Yuda, Lawrence F. Apparatus for adjustably positioning switches. 5,293,015, Cl. 200-294.000.
Yung, Edward K., to MCNC. Solder bump including circular lip. 5,293,006, Cl. 174-261.000.
Zaccheo, Nicole L. Species selective fishing net system. 5,291,682, Cl. 43-17.100.
Zagar, Paul S.: *See*—
Casper, Stephen L.; Ong, Adrian; and Zagar, Paul S., 5,293,342, Cl. 365-203.000.
Zakohji, Nobuyuki, to Ohyodo Diesel Co., Ltd. Concrete breaker with protective cover. 5,292,079, Cl. 241-264.000.
Zander, Charles: *See*—
Mantell, Robert R.; Nowesielski, Albert; and Zander, Charles, 5,292,304, Cl. 604-26.000.
Zanetti, Augusto, to Nuova Star S.r.l. A hinge for the constraining of hatches or doors from a support structure. 5,291,634, Cl. 16-333.000.
Zangi, Kambiz C.: *See*—
Oppenheim, Alan V.; Weinstein, Ehud; Zangi, Kambiz C.; and Feder, Meir, 5,293,425, Cl. 381-71.000.
Zanzig, Hans-Jurgen, to Alcatel N.V. Summing amplifier with a complex weighting factor and interface including such a summing amplifier. 5,293,421, Cl. 379-399.000.
Zarchy, Andrew S.; Cusher, Nelson; and Welch, Gary J., to UOP. Hydrocarbon adsorption and isomerization process. 5,292,987, Cl. 585-738.000.
Zefferi, Suzanne M.; and May, Roger C., to Betz Laboratories, Inc. Corrosion inhibition of calcium chloride brine. 5,292,455, Cl. 252-389.230.
Zeitler, Richard J. Flag support with furl preventer. 5,291,849, Cl. 116-174.000.
Zeitlin, Martin A.: *See*—
Sikkenga, David L.; Kuhlmann, George E.; Behrens, Paul K.; Zeitlin, Martin A.; and Hoover, Stephen V., 5,292,934, Cl. 562-413.000.
Zeldin, Leon M.; Francis, John V.; and Vuillet, Jean-Pierre R., to Fiberweb North America, Inc. Apparatus for producing nonwoven fabric. 5,292,239, Cl. 425-66.000.
Zelinski, Matthew S.: *See*—
Senapati, Nagabhusan; Johnson, Harold W.; Kim, Byung C.; Chauhan, Satya P.; Gamlen, Dennis A.; Eason, Raju; Muralidhara, H. S.; and Zelinski, Matthew S., 5,292,421, Cl. 204-300.00R.
Zeltser, Leonid G.: *See*—
Simmons, Brian; Zeltser, Leonid G.; and Kholodenko, Arnold, 5,292,137, Cl. 277-1.000.
Zeman, David. Irrigation tubes with thickened wall sections. 5,292,073, Cl. 239-542.000.
Zenda, Hiroki, to Kabushiki Kaisha Toshiba. Display control apparatus for converting color/monochromatic CRT gradation into flat panel display gradation. 5,293,485, Cl. 395-164.000.
Zexel-Gleason USA, Inc.: *See*—
Ostertag, Steven E., 5,292,291, Cl. 475-252.000.
Zhou, Qiang, to Western Atlas International, Inc. Method and apparatus for calibrating the output measurement of a logging tool as a function of earth formation parameters. 5,293,128, Cl. 324-339.000.
Ziecker, Roger A.: *See*—
Raterman, John M.; Miller, Scott R.; and Ziecker, Roger A., 5,292,068, Cl. 239-11.000.
Ziegelmeyer, James J.: *See*—
Gaggar, Satish K.; and Ziegelmeyer, James J., 5,292,786, Cl. 524-127.000.
Ziegler, Richard W., to Surv-Kap, Inc. Survey monument and improved extraction restriction means therefor. 5,291,703, Cl. 52-103.000.
Zielinski, Erich, to Eastman Kodak Company. Writing translator mount. 5,293,531, Cl. 346-76.00L.
Ziemiak, John J.: *See*—
McVicker, Gary B.; and Ziemiak, John J., 5,292,427, Cl. 208-139.000.
Zilog, Inc.: *See*—
Pope, Steven M., 5,293,562, Cl. 365-189.020.
Zimmer Aktiengesellschaft: *See*—
Kerpes, Hans; and Thiele, Ulrich, 5,292,865, Cl. 528-492.000.
Zink, Arden K., to Millard Manufacturing Corp. Conveyor for raising and lowering articles. 5,291,987, Cl. 198-724.000.
Zoeller, Joseph R.; Outlaw, Charles E.; and Moncier, Regina M., to Eastman Kodak Company. Continuous process for the preparation of acetic anhydride or mixtures of acetic anhydride and acetic acid. 5,292,948, Cl. 562-891.000.
Zorumski, Charles F.: *See*—
Covey, Douglas F.; Hu, Yuefei; and Zorumski, Charles F., 5,292,906, Cl. 552-619.000.
Zoss, Robert A.; and Snee, Francis M., to General Mills, Inc. Package including an expandable top opening. 5,292,058, Cl. 229-123.000.
Zott, Werner: *See*—
Stahlecker, Fritz; and Zott, Werner, 5,291,728, Cl. 57-90.000.
Zushi, Takayasu: *See*—
Watanabe, Kazuo; and Zushi, Takayasu, 5,292,150, Cl. 280-728.00B.
Zusman, Riyka: *See*—
Avnir, David; Ottolenghi, Michael; Braun, Sergei; and Zusman, Riyka, 5,292,901, Cl. 525-54.100.
Zwan, Allen D., to Lockheed Corporation. Dual-mode semi-passive nosetip for a hypersonic weapon. 5,291,830, Cl. 102-293.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MARCH, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Flexcon & Systems, Inc.: *See*—
Schnaars, Daniel R., Re. 34,560, Cl. 383-113.000.
Grigsby, John M., to North American Container Corporation. Wood reinforced corrugated paperboard shipping container with attaching strips. Re. 34,557, Cl. 229-23.00C.
Hosomizu, Hiroshi: *See*—
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomizu, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, Re. 34,558, Cl. 354-127.100.
Kamiya, Makoto: *See*—
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomizu, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, Re. 34,558, Cl. 354-127.100.
Mickowski, John. Diagnostic method for analyzing and monitoring the process parameters in the operation of reciprocating equipment. Re. 34,559, Cl. 364-550.000.
Minolta Camera Kabushiki Kaisha: *See*—
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomizu, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, Re. 34,558, Cl. 354-127.100.
North American Container Corporation: *See*—
Grigsby, John M., Re. 34,557, Cl. 229-23.00C.
Schnaars, Daniel R., to Flexcon & Systems, Inc. Semi-bulk with liner. Re. 34,560, Cl. 383-113.000.
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomizu, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, to Minolta Camera Kabushiki Kaisha. Flash device for use in photography. Re. 34,558, Cl. 354-127.100.
Tsuji, Kenji: *See*—
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomiza, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, Re. 34,558, Cl. 354-127.100.
Yamazaki, Keiji: *See*—
Taniguchi, Nobuyuki; Yamazaki, Keiji; Hosomizu, Hiroshi; Kamiya, Makoto; and Tsuji, Kenji, Re. 34,558, Cl. 354-127.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Endo, Takafumi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, B1 4,782,202, Cl. 219-68.000.
Katayama, Kohei: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, B1 4,782,202, Cl. 219-68.000.
Kisaragi, Takayasu; and Shirasaka, Yuichi, to Sumitomo Light Metal Industries, Ltd. Mist recovery apparatus with twisted strip inserted pipes. B1 5,035,730, 3-8-94, Cl. 55-269.000.
Leon, Robert L., to Liberty Technology Center, Inc. A.C. electromagnetic system for determining position of an encases movable electrically conductive element. B1 5,086,273, 3-8-94, Cl. 324-207.170.
Liberty Technology Center, Inc.: *See*—
Leon, Robert L., B1 5,086,273, Cl. 324-207.170.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, B1 4,782,202, Cl. 219-68.000.
Murata, Yukio: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, B1 4,782,202, Cl. 219-68.000.
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for resistance adjustment of thick film thermal print heads. B1 4,782,202, 3-8-94, Cl. 219-68.000.
Shirasaka, Yuichi: *See*—
Kisaragi, Takayasu; and Shirasaka, Yuichi, B1 5,035,730, Cl. 55-269.000.
Sumitomo Light Metal Industries, Ltd.: *See*—
Kisaragi, Takayasu; and Shirasaka, Yuichi, B1 5,035,730, Cl. 55-269.000.
Yamashita, Hiromi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; Katayama, Kohei; and Murata, Yukio, B1 4,782,202, Cl. 219-68.000.

LIST OF DESIGN PATENTEES

Abrams, Randy L.; Crossley, David W.; and Bernstein, Michael S., to Safety 1st, Inc. Combined transmitter for children monitoring and base therefor. 344,906, 3-8-94, Cl. D10-106.000.
Abrams, Randy L.; Crossley, David W.; and Bernstein, Michael S., to Safety 1st, Inc. Receiver for children monitoring. 344,907, 3-8-94, Cl. D10-106.000.
Acker, Stanley; and Garcia, Frank, to Stanley Acker. Make-up case. 345,033, 3-8-94, Cl. D28-83.000.
Adell, Robert. Circular lottery number selector tile. 344,984, 3-8-94, Cl. D21-37.000.
Ahlbertz, Anders: *See*—
Kjell, Sven I.; Ahlbertz, Anders; and Henrikson, Kjell, 344,917, Cl. D12-130.000.
Ahlstrom, Tom; and Ehrich, Hans, to RFSU Rehab AB. Elevated toilet seat. 345,008, 3-8-94, Cl. D23-311.000.
Aktiebolaget Electrolux: *See*—
Aronsson, Tore; and Donnerdal, Ove, 345,010, Cl. D23-365.000.
Albright, Ralph L.: *See*—
Masud, Anwar; and Albright, Ralph L., 344,985, Cl. D21-37.000.
Alexander Manufacturing Company: *See*—
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., 344,926, Cl. D13-103.000.
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., to Alexander Manufacturing Company. Battery housing for a portable radio telephone. 344,926, 3-8-94, Cl. D13-103.000.
Allen, Dillis V., to Vardon Golf Company, Inc. Golf club head. 344,997, 3-8-94, Cl. D21-214.000.
Allgood, Ben L., Jr.: *See*—
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Alpha Cycle Product Co., Ltd.: *See*—
Chi, Liang-Cheng, 344,994, Cl. D21-195.000.
Alvarez Baranga, Jose Y. Design for an articulated lamp. 345,028, 3-8-94, Cl. D26-99.000.
American Flange & Mfg. Co., Inc.: *See*—
Dwinell, Davis B., 344,893, Cl. D9-435.000.
Amoco Corporation: *See*—
Clark, Lloyd D.; Davids, William T.; and Rehklau, George D., 344,974, Cl. D18-54.000.
Ancona, Bruce. Carafe. 344,870, 3-8-94, Cl. D7-302.000.
Ando, Takaharu: *See*—
Kajita, Takashi; Ando, Takaharu; Nakamura, Tadao; and Happo, Masahiko, 344,943, Cl. D14-138.000.

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Artemide S.p.A.: *See*—
Morelli, Francesco C., 345,029, Cl. D26-106.000.
Ashley, Charles R.: *See*—
Huck, Charles M.; and Ashley, Charles R., 345,013, Cl. D24-110.000.
Audia, Salvatore. Decorative molding. 345,020, 3-8-94, Cl. D25-136.000.
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Bareiss, Raymond E. Combined bottle and cap. 344,894, 3-8-94, Cl. D9-522.000.
Bartholomew, David A. Channel changer. 344,952, 3-8-94, Cl. D14-218.000.
Bauer, Siegfried, to Deutsche Star GmbH. Linear slide with toothed belt drives. 345,041, 3-8-94, Cl. D15-138.000.
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Beitscher, Julie Y.; and Beitscher, Warren S. Helmet cover. 344,844, 3-8-94, Cl. D2-869.000.
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Beitscher, Julia; and Beitscher, Warren S., 344,845, Cl. D2-869.000.
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Chang, Kuo-Chi. Radio set handle. 344,957, 3-8-94, Cl. D14-265.000.
Chi, Liang-Cheng, to Alpha Cycle Product Co., Ltd. Combined stepper and simulated skiing exerciser. 344,994, 3-8-94, Cl. D21-195.000.
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Yamazaki, Mitsuru, to Nippon Bearing Co., Ltd. Ball bearing for rectilinear sliding. 344,944, 3-8-94, Cl. D15-143.000.
Zogg, Jon; and Sherman, Adam, to Colgate-Palmolive Company. Bottle. 344,896, 3-8-94, Cl. D9-543.000.
Zogg, Jon: *See*—
Sherman, Adam; and Zogg, Jon, 344,898, Cl. D9-575.000.

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Barr, William C., to Hines Nurseries, Inc. *Rhaphiolepis indica* "Hines darkleaf". 8,635, 3-8-94, Cl. 67.500.
Bear Creek Gardens, Inc.: *See*—
Zary, Keith W., 8,628, Cl. 12.000.
Zary, Keith W., 8,629, Cl. 17.000.
Zary, Keith W., 8,630, Cl. 18.000.
Zary, Keith W., 8,633, Cl. 20.000.
Zary, Keith W., 8,634, Cl. 28.000.
Cobia, Barnell L. Cactaceae plant 'Heather'. 8,636, 3-8-94, Cl. 88.500.
de Ruiter's Nieuwe Rozen B.V.: *See*—
de Ruiter, Gijsbert, 8,626, Cl. 7.100.
de Ruiter, Gijsbert, 8,627, Cl. 9.000.
Steenks, J. E., 8,632, Cl. 19.000.
Tulp, P. C., 8,631, Cl. 18.000.
de Ruiter, Gijsbert, to de Ruiter's Nieuwe Rozen B.V. Miniature rose plant named Ruinero. 8,626, 3-8-94, Cl. 7.100.
de Ruiter, Gijsbert, to De Ruiter's Nieuwe Rozen B.V. Miniature rose plant named Ruihonzev. 8,627, 3-8-94, Cl. 9.000.
Hines Nurseries, Inc.: *See*—
Barr, William C., 8,635, Cl. 67.500.
Kwekerij De Amstel: *See*—
van Diemen, Hubertus T., 8,637, Cl. 88.900.
Steenks, J. E., to De Ruiter's Nieuwe Rozen B.V. Hybrid tea rose plant named Ruisteenka. 8,632, 3-8-94, Cl. 19.000.
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van Diemen, Hubertus T., to Kwekerij De Amstel. *Ficus benjamina* plant named Monique. 8,637, 3-8-94, Cl. 88.900.
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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244	5,292,553
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264	5,292,556
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35.9	5,292,563
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64	5,292,567
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195	5,292,572
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414.4	5,292,593
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526	5,292,592
600	5,292,594
604	5,292,595
640	5,292,596
644 B	5,292,597
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99	5,292,600
107	5,292,601
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96	5,292,607
106	5,292,621
110	5,292,609
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18	5,292,669
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121	5,292,650
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254.1	5,292,659
262	5,292,660
267	5,292,661
270	5,292,615
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114	5,292,666
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53	5,292,680
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63	5,292,683
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107	5,292,685
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228	5,292,689
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214	5,292,257
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526	5,292,266
607	5,292,268
752	5,292,261
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812	5,292,263
813	5,292,264
876	5,292,265
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174	5,292,277
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56	5,292,279
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229	5,292,280
260	5,292,281
292	5,292,282
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33.2	5,293,643
38.1	5,293,644
54.1	5,293,645
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231	5,292,300
356	5,292,301
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96	5,292,691
	5,292,692
103	5,292,693
139	5,292,694
CLASS 502	
53	5,292,695
66	5,292,696
73	5,292,697
84	5,292,698
162	5,292,699
167	5,292,700
202	5,292,701
219	5,292,702
303	5,292,703
309	5,292,704
325	5,292,705
418	5,292,706
	5,292,707
427	5,292,708
CLASS 503	
209	5,292,711
	5,292,712
	5,292,713
226	5,292,709
227	5,292,710
	5,292,714
CLASS 504	
266	5,292,715
CLASS 505	
1	5,292,716
	5,292,717
	5,292,718
CLASS 514	
12	5,292,719
19	5,292,720
21	5,292,721
23	5,292,724
46	5,292,722
58	5,292,725
85	5,292,723
167	5,292,726
168	5,292,728
	5,292,727
171	5,292,729
186	5,292,730
206	5,292,731
212	5,292,733
230.5	5,292,734
231.5	5,292,735
247	5,292,736
249	5,292,737
252	5,292,732
253	5,292,738
256	5,292,739
257	5,292,740
259	5,292,741
275	5,292,742
	5,292,743
277	5,292,744
278	5,292,746
285	5,292,745
305	5,292,747
311	5,292,749
315	5,292,769
320	5,292,750
330	5,292,751
331	5,292,752
	5,292,755
332	5,292,756
	5,292,757
	5,292,758
339	5,292,759
341	5,292,770
357	5,292,760
	5,292,761
363	5,292,762
372	5,292,763
374	5,292,775
383	5,292,764
396	5,292,887
411	5,292,765
415	5,292,766
444	5,292,767
456	5,292,768
472	5,292,771
524	5,292,753
530	5,292,754
534	5,292,772
554	5,292,773
557	5,292,774
709	5,292,776
CLASS 521	
64	5,292,777
126	5,292,778
CLASS 522	
99	5,292,779
CLASS 523	
152	5,292,780
CLASS 524	
17	5,292,781
37	5,292,783
47	5,292,782
80	5,292,784
117	5,292,785
127	5,292,786
265	5,292,787
320	5,292,789
496	5,292,790
530	5,292,791
550	5,292,792
555	5,292,793
556	5,292,794
562	5,292,795
591	5,292,829
598	5,292,796
761	5,292,797
779	5,292,798
783	5,292,799
801	5,292,800
CLASS 525	
54.1	5,292,801
	5,292,802
61	5,292,803
62	5,292,804
66	5,292,805
89	5,292,806
112	5,292,812
113	5,292,807
	5,292,808
147	5,292,809
190	5,292,810
193	5,292,811
240	5,292,813
243	5,292,814
259	5,292,815
276	5,292,816
285	5,292,817
301	5,292,818
314	5,292,819
	5,292,820
328.4	5,292,821
329.1	5,292,822
331.5	5,292,823
340	5,292,825
371	5,292,826
390	5,292,827
399	5,292,824
420	5,292,828
478	5,292,830
523	5,292,831
524	5,292,832
531	5,292,833
CLASS 526	
62	5,292,834
73	5,292,835
[illegible]	5,292,836
114	5,292,837
160	5,292,838
232	5,292,839
304	5,292,840
313	5,292,841
318.4	5,292,842
318.5	5,292,843
329.5	5,292,844
336	5,292,845
CLASS 528	
14	5,292,847
15	5,292,848
18	5,292,849
32	5,292,850
38	5,292,851
72	5,292,853
170	5,292,854
289	5,292,855
331	5,292,856
335	5,292,857
345	5,292,858
354	5,292,859
361	5,292,860
422	5,292,861
481	5,292,862
483	5,292,863
490	5,292,864
492	5,292,865
908	5,292,974
CLASS 530	
387.3	5,292,867
391.5	5,292,868
413	5,292,869
CLASS 534	
638	5,292,870
642	5,292,871
854	5,292,872
CLASS 536	
24.3	5,292,873
24.32	5,292,874
25.33	5,292,875
63	5,292,876
	5,292,877
CLASS 540	
28	5,292,878
302	5,292,879
536	5,292,880
CLASS 546	
99	5,292,881
201	5,292,883
216	5,292,884
250	5,292,885
303	5,292,886
347	5,292,888
CLASS 548	
181	5,292,889
260	5,292,890
453	5,292,892
577	5,292,893
CLASS 549	
43	5,292,894
68	5,292,896
221	5,292,897
273	5,292,891
292	5,292,898
365	5,292,748
390	5,292,899
419	5,292,900
441	5,292,901
458	5,292,902
472	5,292,903
534	5,292,904
CLASS 552	
302	5,292,905
619	5,292,906
CLASS 554	
127	5,292,907
149	5,292,910
224	5,292,911
CLASS 556	
173	5,292,908
468	5,292,909
	5,292,912
CLASS 558	
87	5,292,913
264	5,292,914
273	5,292,915
275	5,292,916
277	5,292,917
352	5,292,918
435	5,292,919
CLASS 560	
4	5,292,920
29	5,292,921
40	5,292,923
41	5,292,924
47	5,292,922
115	5,292,925
147	5,292,926
221	5,292,927
226	5,292,928
231	5,292,929
232	5,292,930
245	5,292,931
CLASS 562	
78	5,292,932
401	5,292,933
413	5,292,934
439	5,292,935
457	5,292,937
507	5,292,938
515	5,292,939
526	5,292,936
538	5,292,940
544	5,292,941
575	5,292,942
590	5,292,944
594	5,292,943
804	5,292,945
806	5,292,946
872	5,292,947
891	5,292,948
897	5,292,949
CLASS 564	
4	5,292,950
151	5,292,951

218	5,292,952
277	5,292,953
298	5,292,954
	5,292,955
374	5,292,956
417	5,292,957
499	5,292,958
CLASS 568	
305	5,292,959
366	5,292,960
604	5,292,961
623	5,292,965
633	5,292,962
697	5,292,963
	5,292,964
709	5,292,966
	5,292,967
716	5,292,968
720	5,292,969
794	5,292,970
819	5,292,971
847	5,292,972
878	5,292,973
CLASS 570	
147	5,292,975
CLASS 585	
322	5,292,976
359	5,292,977
467	5,292,978
523	5,292,979
666	5,292,980
667	5,292,984
	5,292,985
722	5,292,981
724	5,292,982
730	5,292,986
733	5,292,983
738	5,292,987
741	5,292,988
751	5,292,989
820	5,292,990
	5,292,992
850	5,292,991
864	5,292,993
CLASS 602	
13	5,292,302
16	5,292,303
CLASS 604	
26	5,292,304
43	5,292,305
51	5,292,306
54	5,292,307
86	5,292,308
117	5,292,309
158	5,292,310
165	5,292,311
180	5,292,312
192	5,292,313
198	5,292,314
280	5,292,315
385.2	5,292,316
407	5,292,318
CLASS 606	
15	5,292,320
28	5,292,321
59	5,292,322
107	5,292,324
108	5,292,325
143	5,292,326
148	5,292,327
151	5,292,328
167	5,292,329
170	5,292,330
198	5,292,331
213	5,292,332
214	5,292,333
220	5,292,334
234	5,292,335
236	5,292,336
CLASS 607	
5	5,292,338
	5,292,348
15	5,292,339
17	5,292,340
30	5,292,341
	5,292,342
32	5,292,343
40	5,292,344
80	5,292,346
88	5,292,345
104	5,292,347
138	5,291,902
CLASS 623	
18	5,292,349

CLASSIFICATION OF DESIGNS

D1—	112	344,843		620	344,876	D11—	79	344,910		148	344,945		42	344,977		333	345,009
D2—	607	344,850		709	344,877		130.1	344,911		155	344,942			344,978		365	345,010
	869	344,844	D8—	64	344,878	D12—	38	344,912		191	344,946		64	344,976		380	345,011
		344,845		70	344,879		41	344,913			344,947	D20—	10	344,979		406	345,012
	897	344,846		71	344,880		110	344,914			344,948		22	344,980	D24—	110	345,013
	902	344,847		331	344,881		128	344,915		192	344,949		40	344,981		126	345,014
	969	344,849		339	344,882		129	344,916		211	344,950			344,982			345,015
	977	344,848		356	344,883		130	344,917		216	344,951		42	344,983		130	345,016
D3—	229	344,852		359	344,884		147	344,918		218	344,952	D21—	37	344,984			345,017
	271	344,851		373	344,885		180	344,921		242	344,954			344,985	D25—	49	345,018
D4—	118	344,938			344,886			344,922		258	344,953		65	344,986		124	345,019
D6—	316	344,853	D9—	300	344,887			344,923			344,955			344,987		136	345,020
	344	344,854		302	344,888		211	344,924			344,956			344,988	D26—	27	345,021
		344,855		339	344,889		345	344,925		265	344,957		86	344,989		28	345,022
	349	344,856		418	344,890		400	344,919	D15—	17	344,958		101	344,990		35	345,023
		344,857		424	344,891		401	344,920			344,959		120	344,991		58	345,024
		344,858		431	344,892	D13—	103	344,926			344,960		143	344,992		63	345,025
	353	344,859		435	344,893			344,927		32	344,961		191	344,993			345,026
	369	344,860		522	344,894		110	344,928		79	344,962		195	344,994		65	345,027
	381	344,861		542	344,895		160	344,929		130	344,963		198	344,995		99	345,028
		344,862		543	344,896		471	344,930		138	345,041		208	344,996		106	345,029
	388	344,863		544	344,897	D14—	100	344,931		143	344,964		214	344,997	D28—	13	345,042
	427	344,864		575	344,898			344,932	D16—	127	344,965			344,998		28	345,030
	451	344,865	D10—	22	344,899		108	344,934		136	344,966		220	344,999		60	345,031
	507	344,866		25	344,900		113	344,933			344,967		228	345,000		64	345,032
	513	344,867		46.2	344,909			344,935		137	344,968	D22—	108	345,001		83	345,033
	552	344,868		50	344,901		114	344,936		244	344,969			345,002	D32—	21	345,034
	555	344,869		78	344,902		118	344,937		245	344,970		133	345,003		34	345,035
D7—	302	344,870			344,903			344,939	D17—	2	344,971	D23—	200	345,005		51	345,036
	348	344,871		106	344,904		135	344,940		20	344,972		245	345,006		54	345,037
	397	344,872			344,905			344,941	D18—	39	344,973		249	345,007	D34—	1	345,038
	402	344,873			344,906		138	344,943		54	344,974		254	345,004		28	345,039
	409	344,874			344,907		141	344,944	D19—	36	344,975		311	345,008	D99—	33	345,040
	552	344,875		126	344,908												

CLASSIFICATION OF PLANTS

P.—	7.1	8,626		12	8,628		18	8,630		19	8,632		28	8,634		88.5	8,636
	9	8,627		17	8,629			8,631		20	8,633		67.5	8,635		88.9	8,637

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,291,724 5,291,903 5,292,242 5,292,294 5,292,464 5,292,488 5,293,259 5,293,466
02 : 5,291,874
04 : 5,291,703 5,291,870 5,291,893 5,292,122 5,292,128 5,292,254 5,292,385 5,293,049 5,293,121 5,293,135 5,293,382 5,293,392 5,293,445 5,293,565 5,293,576
05 : 5,291,939
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5,291,992 5,292,000 5,292,005 5,292,024 5,292,027 5,292,035 5,292,046 5,292,092 5,292,108 5,292,123 5,292,127 5,292,134 5,292,137 5,292,141 5,292,142 5,292,154 5,292,160 5,292,210 5,292,241 5,292,253 5,292,275 5,292,277 5,292,284 5,292,303 5,292,318 5,292,324 5,292,330 5,292,331 5,292,341 5,292,353 5,292,393 5,292,399 5,292,402 5,292,430 5,292,434 5,292,469 5,292,470 5,292,475 5,292,490 5,292,517 5,292,518 5,292,524 5,292,535 5,292,538 5,292,540 5,292,554 5,292,571 5,292,605 5,292,638 5,292,641 5,292,652 5,292,662 5,292,695
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08 : 5,291,700 5,291,743 5,291,752 5,291,785 5,291,968 5,291,975 5,292,010 5,292,232 5,292,340 5,292,929 5,293,258 5,293,276 5,293,282 5,293,285 5,293,287 5,293,290 5,293,387 5,293,388 5,293,476 5,293,556 5,293,593 5,293,607
09 : 5,291,623 5,291,654 5,291,655 5,291,663 5,291,664 5,291,674 5,291,735 5,291,820 5,291,849 5,291,880 5,291,986 5,292,008 5,292,017 5,292,088 5,292,096 5,292,175 5,292,176 5,292,268 5,292,326
10 : 5,292,328 5,292,334 5,292,400 5,292,477 5,292,478 5,292,581 5,292,785 5,292,919 5,293,214 5,293,310 5,293,410 5,293,548 5,292,551 5,292,580 5,292,584 5,292,590 5,292,856 5,292,857 5,292,859
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15 : 5,292,483 5,292,899
16 : 5,291,646 5,292,062 5,292,542 5,292,676 5,292,677 5,292,681 5,292,683 5,293,057 5,293,342
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18 : 5,291,767 5,291,916 5,292,072 5,292,181 5,292,296 5,292,298
26 : 5,292,416 5,292,463 5,292,647 5,292,650 5,292,766 5,292,962 5,293,001 5,293,098
19 : 5,291,667 5,291,831 5,291,964 5,291,988 5,292,639 5,292,657 5,293,175
20 : 5,291,696 5,291,989 5,292,167 5,292,436 5,293,306 5,293,325
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27 : 5,292,107
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25 : 5,293,546
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33 : 5,293,094 5,293,219 5,293,323 5,293,377 5,293,424
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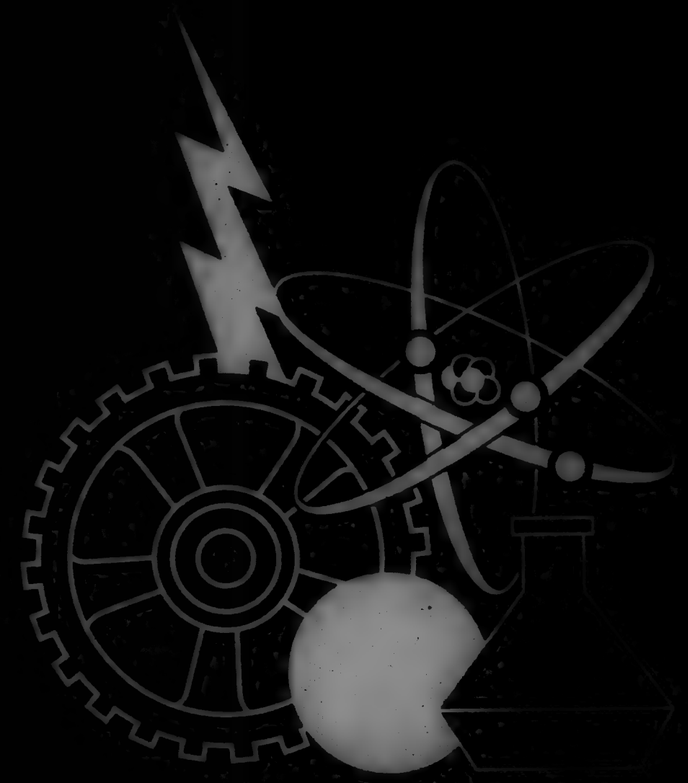
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March 15, 1994



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 12, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,998,296 through 4,999,844
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 10, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,648,136 through 4,649,570
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 8, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,375,702 through 4,376,311
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 26,1993 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,960	07/706,012	6/16/92
(4,891,626)	(07/298,031)	(1/02/90)
Re 34,240	07/686,513	5/04/93
(4,890,871)	(07/272,383)	(1/02/90)
Re 34,333	07/805,092	8/03/93
(4,890,883)	(07/276,917)	(1/02/90)
Re 34,561	07/816,028	3/15/94
(4,890,573)	(07/223,630)	(1/02/90)
4,308,626	06/230,130	1/05/82
4,309,169	06/219,712	1/05/82
4,309,301	06/221,945	1/05/82
4,309,390	06/218,060	1/05/82
4,309,468	06/223,442	1/05/82
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4,890,335	07/224,745	1/02/90
4,890,336	07/189,056	1/02/90
4,890,337	07/290,626	1/02/90
4,890,339	07/221,887	1/02/90
4,890,341	07/342,796	1/02/90
4,890,346	07/147,541	1/02/90
4,890,350	07/278,798	1/02/90
4,890,352	07/231,253	1/02/90
4,890,354	07/239,945	1/02/90
4,890,355	07/262,832	1/02/90
4,890,356	07/234,424	1/02/90
4,890,360	07/205,817	1/02/90
4,890,361	07/268,794	1/02/90
4,890,363	07/325,517	1/02/90
4,890,371	07/116,956	1/02/90
4,890,372	07/241,510	1/02/90
4,890,374	07/323,256	1/02/90
4,890,375	07/179,071	1/02/90
4,890,386	07/230,528	1/02/90
4,890,388	07/253,501	1/02/90
4,890,389	07/320,545	1/02/90
4,890,390	07/186,258	1/02/90
4,890,396	07/231,341	1/02/90
4,890,398	07/267,174	1/02/90
4,890,401	07/218,903	1/02/90
4,890,404	07/203,011	1/02/90
4,890,405	07/111,930	1/02/90
4,890,407	07/219,082	1/02/90
4,890,409	07/291,579	1/02/90
4,890,411	07/242,968	1/02/90
4,890,414	07/339,514	1/02/90
4,890,421	07/098,078	1/02/90
4,890,427	06/626,418	1/02/90
4,890,432	07/170,735	1/02/90
4,890,438	07/251,331	1/02/90
4,890,442	07/191,040	1/02/90
4,890,443	07/229,711	1/02/90
4,890,446	07/301,140	1/02/90
4,890,449	07/179,249	1/02/90
4,890,455	07/236,814	1/02/90
4,890,459	07/281,143	1/02/90
4,890,470	07/225,683	1/02/90
4,890,472	07/250,351	1/02/90
4,890,475	07/236,462	1/02/90
4,890,477	07/265,805	1/02/90
4,890,491	07/228,219	1/02/90
4,890,493	07/236,173	1/02/90
4,890,494	07/196,786	1/02/90
4,890,499	07/119,299	1/02/90
4,890,500	07/271,177	1/02/90
4,890,501	07/327,788	1/02/90
4,890,503	07/320,616	1/02/90
4,890,507	07/155,970	1/02/90
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4,890,529	07/244,606	1/02/90
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4,890,531	07/209,531	1/02/90
4,890,536	07/202,656	1/02/90
4,890,537	07/165,094	1/02/90
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4,890,546	07/162,336	1/02/90
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4,890,553	07/310,882	1/02/90
4,890,555	07/209,855	1/02/90
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4,890,561	06/703,380	1/02/90
4,890,564	07/183,588	1/02/90
4,890,571	07/280,306	1/02/90
4,890,574	07/206,400	1/02/90
4,890,576	07/108,061	1/02/90
4,890,578	07/100,788	1/02/90
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4,890,588	07/150,386	1/02/90
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4,890,604	07/095,998	1/02/90
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4,890,614	07/236,274	1/02/90
4,890,616	06/788,379	1/02/90
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4,890,623	07/167,878	1/02/90
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4,890,632	07/223,894	1/02/90
4,890,637	07/299,091	1/02/90
4,890,641	07/280,574	1/02/90
4,890,643	07/306,692	1/02/90
4,890,645	07/333,873	1/02/90
4,890,652	07/029,616	1/02/90

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Patent Number	Serial Number	Issue Date
4,890,657	07/285,654	1/02/90
4,890,661	07/229,525	1/02/90
4,890,663	07/191,264	1/02/90
4,890,669	07/174,291	1/02/90
4,890,672	07/261,712	1/02/90
4,890,675	07/321,414	1/02/90
4,890,676	07/256,703	1/02/90
4,890,678	07/177,481	1/02/90
4,890,679	07/293,089	1/02/90
4,890,680	07/139,455	1/02/90
4,890,688	07/338,240	1/02/90
4,890,691	07/271,908	1/02/90
4,890,692	07/280,645	1/02/90
4,890,696	07/353,454	1/02/90
4,890,707	07/198,395	1/02/90
4,890,711	07/204,234	1/02/90
4,890,714	07/225,639	1/02/90
4,890,723	07/199,089	1/02/90
4,890,724	07/193,781	1/02/90
4,890,727	07/224,994	1/02/90
4,890,728	07/335,747	1/02/90
4,890,730	07/210,349	1/02/90
4,890,741	07/232,939	1/02/90
4,890,745	07/273,905	1/02/90
4,890,749	07/141,008	1/02/90
4,890,753	07/189,980	1/02/90
4,890,755	07/236,166	1/02/90
4,890,760	07/338,150	1/02/90
4,890,761	07/204,116	1/02/90
4,890,769	07/357,096	1/02/90
4,890,770	07/203,923	1/02/90
4,890,773	07/357,899	1/02/90
4,890,775	07/286,369	1/02/90
4,890,776	07/297,330	1/02/90
4,890,778	07/188,455	1/02/90
4,890,787	07/258,461	1/02/90
4,890,788	07/255,982	1/02/90
4,890,791	07/252,258	1/02/90
4,890,795	07/252,071	1/02/90
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4,890,821	07/196,732	1/02/90
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4,890,829	07/246,331	1/02/90
4,890,831	07/215,376	1/02/90
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4,890,836	07/280,234	1/02/90
4,890,839	07/251,732	1/02/90
4,890,842	07/268,875	1/02/90
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4,890,850	07/182,510	1/02/90
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4,890,854	07/238,593	1/02/90
4,890,855	06/922,418	1/02/90
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4,890,985	07/236,001	1/02/90
4,890,994	07/251,698	1/02/90
4,890,997	07/163,607	1/02/90
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4,891,005	07/235,379	1/02/90
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4,891,009	07/118,955	1/02/90
4,891,012	07/170,256	1/02/90
4,891,014	07/319,130	1/02/90
4,891,021	07/331,050	1/02/90
4,891,027	07/351,252	1/02/90
4,891,030	07/187,424	1/02/90
4,891,032	07/242,498	1/02/90
4,891,034	07/118,114	1/02/90
4,891,046	06/589,747	1/02/90
4,891,053	07/263,661	1/02/90
4,891,054	07/292,083	1/02/90
4,891,058	07/220,299	1/02/90
4,891,060	07/234,686	1/02/90
4,891,067	07/193,873	1/02/90
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4,891,071	06/673,841	1/02/90
4,891,076	07/255,309	1/02/90
4,891,084	07/287,586	1/02/90
4,891,092	06/818,032	1/02/90
4,891,102	07/041,636	1/02/90
4,891,115	06/878,275	1/02/90
4,891,116	07/349,423	1/02/90
4,891,117	07/220,059	1/02/90
4,891,124	07/355,523	1/02/90
4,891,133	07/096,506	1/02/90
4,891,134	07/148,260	1/02/90
4,891,136	07/212,778	1/02/90
4,891,137	07/319,208	1/02/90
4,891,140	07/295,147	1/02/90
4,891,148	06/762,162	1/02/90
4,891,154	07/059,170	1/02/90
4,891,156	07/172,103	1/02/90
4,891,157	07/292,710	1/02/90
4,891,164	07/294,951	1/02/90
4,891,168	07/096,433	1/02/90
4,891,170	07/257,906	1/02/90
4,891,173	07/241,573	1/02/90
4,891,175	07/165,292	1/02/90
4,891,176	07/200,241	1/02/90
4,891,184	07/289,543	1/02/90
4,891,186	07/193,196	1/02/90
4,891,187	06/662,760	1/02/90
4,891,190	06/738,899	1/02/90
4,891,191	06/728,462	1/02/90
4,891,194	06/916,838	1/02/90
4,891,201	06/648,339	1/02/90
4,891,202	06/877,060	1/02/90
4,891,206	06/641,708	1/02/90
4,891,207	06/839,530	1/02/90
4,891,209	07/247,362	1/02/90
4,891,210	07/292,960	1/02/90
4,891,212	07/290,800	1/02/90
4,891,218	06/841,426	1/02/90
4,891,232	07/255,953	1/02/90
4,891,242	07/068,914	1/02/90
4,891,250	07/156,842	1/02/90
4,891,251	07/308,641	1/02/90

Patent Number	Serial Number	Issue Date
4,891,252	07/224,330	1/02/90
4,891,259	07/195,348	1/02/90
4,891,265	07/271,510	1/02/90
4,891,285	07/265,503	1/02/90
4,891,286	07/274,253	1/02/90
4,891,287	07/201,195	1/02/90
4,891,301	07/196,078	1/02/90
4,891,302	07/242,226	1/02/90
4,891,305	07/217,125	1/02/90
4,891,313	07/146,574	1/02/90
4,891,315	06/510,551	1/02/90
4,891,323	07/024,479	1/02/90
4,891,329	07/277,168	1/02/90
4,891,332	06/851,904	1/02/90
4,891,341	07/142,347	1/02/90
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4,891,382	07/184,647	1/02/90
4,891,399	07/110,129	1/02/90
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4,891,428	07/220,368	1/02/90
4,891,431	07/107,799	1/02/90
4,891,432	07/074,290	1/02/90
4,891,436	07/273,577	1/02/90
4,891,444	07/234,315	1/02/90
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4,891,513	07/217,744	1/02/90
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4,891,522	07/255,729	1/02/90
4,891,523	07/260,581	1/02/90
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4,891,530	07/017,353	1/02/90
4,891,538	07/211,386	1/02/90
4,891,553	07/213,072	1/02/90
4,891,563	06/732,479	1/02/90
4,891,566	07/228,609	1/02/90
4,891,574	07/287,099	1/02/90
4,891,576	07/234,768	1/02/90
4,891,582	07/348,127	1/02/90
4,891,585	06/904,600	1/02/90
4,891,589	07/302,485	1/02/90
4,891,597	07/267,138	1/02/90
4,891,600	07/045,040	1/02/90
4,891,602	07/001,161	1/02/90
4,891,605	07/198,997	1/02/90
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4,891,641	07/291,568	1/02/90
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4,891,653	07/185,904	1/02/90
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4,891,666	07/276,895	1/02/90
4,891,668	07/145,732	1/02/90
4,891,670	07/210,805	1/02/90
4,891,679	07/278,725	1/02/90
4,891,693	07/131,891	1/02/90
4,891,707	07/164,100	1/02/90
4,891,722	07/199,614	1/02/90
4,891,742	07/281,242	1/02/90
4,891,745	07/186,406	1/02/90
4,891,758	07/146,521	1/02/90
4,891,764	07/131,991	1/02/90
4,891,770	07/077,918	1/02/90
4,891,778	07/289,130	1/02/90
4,891,782	07/135,404	1/02/90
4,891,794	07/208,676	1/02/90
4,891,797	07/329,964	1/02/90
4,891,804	07/216,545	1/02/90
4,891,810	07/114,109	1/02/90
4,891,819	07/298,109	1/02/90
4,891,820	07/070,014	1/02/90
4,891,830	07/137,857	1/02/90
4,891,832	07/210,385	1/02/90

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,923,847, Re. S.N. 08/176,896, Jan. 3, 1993, Cl. 503/227, SHEET FOR HEAT TRANSFERENCE AND METHOD FOR USING THE SAME, Masanori Saito, et. al., Owner of Record: *Dai Nippon Insatsu Kabushiki, Kaisha, Japan,* Attorney or Agent: Christopher E. Chalsen,Ex. Gp.: 1513

5,055,481, Re. S.N. 08/178,666, Jan. 7, 1994, Cl. 514/387, TETRAZOLE DERIVATIVES AND ALDOSE REDUCTASE INHIBITION THEREWITH, Sinji Inukai, et. al., Owner of Record: *Wakamota Pharmaceutical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Karl R. Hermanns, Ex. Gp.: 1201

5,055,667, Re. S.N. 08/134,162, Oct. 8, 1993, Cl. 250/208, NON-LINEAR PHOTOSITE RESPONSE IN CCD IMAGERS, Michel Sayag, Owner of Record: *Loral Fairchild Corporation, Syosset, N.Y.,* Attorney or Agent: Joseph M. Villeneuve, Ex. Gp.: 2505

5,056,226, Re. S.N. 08/138,462, Oct. 15, 1993, Cl. 30/169, TOOL FOR CARRYING A SCRAPING OR STRIPPING BLADE, Donald Gringer, Owner of Record: *Allway Tools, Inc., Bronx, N.Y.,* Attorney or Agent: David M. Klein, Ex. Gp.: 3204

5,064,909, Re. S.N. 08/148,384, Nov. 8, 1993, Cl. 525/340, VINYLAMINE COPOLYMER FLOCCULATING AGENT AND PAPER STRENGTH INCREASING AGENT USING THE SAME, AS WELL AS PROCESS FOR PRODUCING THE SAME, Takahura Itagaki, et. al., Owner of Record: *Mitsubishi Kasei Corporation,* Attorney or Agent: George W. Neuner, Ex. Gp.: 1505

5,078,212, Re. S.N. 08/178,018, Jan. 6, 1994, Cl. 166/278, EMPLACEMENT OF FILTER PACKS AND SEALS FOR GROUNDWATER MONITORING, Daniel R. Boyle, et. al., Owner of Record: *Her Majesty the Queen in right of Canada as Represented by the Ministry of Energy, Mines; and Resources, Ottawa, Canada,* Attorney or Agent: Anthony Asquith, Ex. Gp.: 3506

5,080,314, Re. S.N. 08/178,534, Jan. 6, 1994, Cl. 248/346, ROLL STACKER, Mark A. Moyer, et. al., Owner of Record:

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Henry Molded Products, Inc., Lebanon, Pa., Attorney or Agent: Joseph A. Brown, Ex. Gp.: 3505

5,121,302, Re. S.N. 08/180,603, Jan. 13, 1994, Cl. 362/34, SOLID, THIN CHEMILUMINESCENT DEVICE, William E. Bay, et. al., Owner of Record: *American Cyanamid Company, Wayne, N.J.*, Attorney or Agent: Chuck H. Jew, Ex. Gp.: 3405

5,150,452, Re. S.N. 08/176,669, Jan. 3, 1994, Cl. 395/90, METHOD AND APPARATUS FOR ANTI-COLLISION AND COLLISION PROTECTION FOR MULTIPLE ROBOT SYSTEM, Steven H. Pollack, et. al., Owner of Record: *Megamation Inc., Lawrenceville, N.J.*, Attorney or Agent: Louis Weinstein, Ex. Gp.: 2308

5,197,820, Re. S.N. 08/177,341, Jan. 4, 1994, Cl. 404/128, ROADWAY CONDITIONING APPARATUS, Eric T. Skibsted, Owner of Record: *Inventor (AVF Rail-Tie, Ltd.), Rosebud, Canada*, Attorney or Agent: Eugene L. Johnson, Ex. Gp.: 3506

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,777,596, Reexam. No. 90/003,306, Jan. 14, 1994, Cl. 364/419.15, TEXT REPLACEMENT TYPING AID FOR COMPUTERIZED TEXT EDITOR, Gedaliah R. Shaffer, et. al., Owner of Record: *Productivity Software International, Inc., New York, N.Y.*, Attorney or Agent: Bruce E. Lilling, Lilling & Lilling, White Plains, N.Y., Ex. Gp.: 2311, Requester: Owner

5,149,960, Reexam. No. 90/003,304, Jan 14, 1994, Cl. 250/226, METHOD OF CONVERTING SCANNER SIGNALS INTO COLOIMETRIC SIGNALS, Bruce Dunne, et. al., Owner of Record: *R.R. Donnelley & Sons Comp., Lisle, Ill.*, Attorney or Agent: Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill., Ex. Gp.: 2509, Requester: Owner

5,193,936, Reexam. No. 90/003,305, Jan. 13, 1994, Cl. 405/128, FIXATION AND STABILIZATION OF LEAD IN CONTAMINATED SOIL AND SOLID WASTE, Dhiraj Pal, et. al., Owner of Record: *Maecorp Incorporated, Chicago, Ill.*, Attorney or Agent: Leonard D. Bowersox, Watson, Cole, Grindle & Watson, Washington, D.C., Ex. Gp.: 3500, Requester: Banner, Brich, McKie & Beckett, Washington, D.C.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 24, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,148	71/067,396	4/22/1913
91,280	71/066,113	4/22/1913
302,371	71/332,820	4/18/1933
302,385	71/331,720	4/18/1933
302,394	71/331,252	4/18/1933
302,398	71/328,546	4/18/1933
302,406	71/290,182	4/18/1933
302,411	71/331,654	4/18/1933
302,424	71/330,609	4/18/1933
302,432	71/323,840	4/18/1933
302,453	71/331,595	4/18/1933
302,463	71/332,255	4/18/1933
302,486	71/331,516	4/18/1933
573,334	71/545,786	4/21/1953
573,338	71/576,924	4/21/1953
573,344	71/580,657	4/21/1953
573,345	71/582,805	4/21/1953
573,355	71/599,962	4/21/1953
573,359	71/601,804	4/21/1953
573,361	71/603,996	4/21/1953
573,363	71/604,471	4/21/1953
573,367	71/605,512	4/21/1953
573,369	71/606,508	4/21/1953
573,371	71/606,549	4/21/1953
573,376	71/609,783	4/21/1953
573,382	71/613,318	4/21/1953
573,383	71/613,800	4/21/1953
573,384	71/614,029	4/21/1953
573,386	71/614,578	4/21/1953
573,387	71/614,606	4/21/1953
573,396	71/617,396	4/21/1953
573,399	71/617,835	4/21/1953
573,423	71/621,850	4/21/1953
573,431	71/622,770	4/21/1953
573,435	71/623,134	4/21/1953
573,439	71/623,806	4/21/1953
573,452	71/625,123	4/21/1953
573,454	71/625,596	4/21/1953
573,459	71/626,041	4/21/1953
573,461	71/626,289	4/21/1953
573,472	71/627,905	4/21/1953
573,476	71/628,379	4/21/1953
573,477	71/628,392	4/21/1953
573,487	71/629,203	4/21/1953
573,494	71/629,473	4/21/1953
573,505	71/630,341	4/21/1953
573,507	71/630,411	4/21/1953
573,515	71/631,617	4/21/1953
573,524	71/632,213	4/21/1953
573,527	71/632,756	4/21/1953
573,528	71/632,904	4/21/1953
573,529	71/632,972	4/21/1953
573,534	71/633,281	4/21/1953
573,540	71/633,649	4/21/1953
573,541	71/633,650	4/21/1953
573,550	71/634,390	4/21/1953
573,551	71/634,398	4/21/1953
573,552	71/634,405	4/21/1953
573,570	71/614,428	4/21/1953
573,576	71/627,561	4/21/1953
573,580	71/549,599	4/21/1953
573,596	71/609,682	4/21/1953
957,164	72/418,659	4/17/1973
957,165	72/418,740	4/17/1973
957,167	72/419,151	4/17/1973
957,168	72/419,197	4/17/1973
957,171	72/422,171	4/17/1973
957,174	72/363,222	4/17/1973
957,177	72/384,103	4/17/1973
957,180	72/417,790	4/17/1973
957,181	72/419,299	4/17/1973
957,182	72/419,559	4/17/1973
957,185	72/420,341	4/17/1973
957,188	72/420,736	4/17/1973
957,190	72/407,383	4/17/1973
957,194	72/300,104	4/17/1973
957,204	72/419,033	4/17/1973
957,206	72/364,953	4/17/1973
957,207	72/394,561	4/17/1973
957,213	72/417,302	4/17/1973
957,218	72/387,432	4/17/1973
957,221	72/418,408	4/17/1973

Reg. No.	Serial Number	Reg. Date
957,223	72/378,736	4/17/1973
957,224	72/401,559	4/17/1973
957,225	72/405,665	4/17/1973
957,228	72/408,739	4/17/1973
957,233	72/421,617	4/17/1973
957,234	72/421,618	4/17/1973
957,235	72/422,076	4/17/1973
957,236	72/422,361	4/17/1973
957,248	72/423,250	4/17/1973
957,249	72/423,330	4/17/1973
957,255	72/407,921	4/17/1973
957,259	72/411,990	4/17/1973
957,261	72/413,133	4/17/1973
957,264	72/414,173	4/17/1973
957,275	72/423,334	4/17/1973
957,276	72/423,569	4/17/1973
957,279	72/379,719	4/17/1973
957,283	72/419,569	4/17/1973
957,284	72/420,216	4/17/1973
957,286	72/420,214	4/17/1973
957,289	72/398,133	4/17/1973
957,292	72/380,519	4/17/1973
957,297	72/418,642	4/17/1973
957,299	72/422,786	4/17/1973
957,300	72/423,095	4/17/1973
957,302	72/409,358	4/17/1973
957,304	72/400,799	4/17/1973
957,305	72/408,329	4/17/1973
957,306	72/382,598	4/17/1973
957,307	72/391,079	4/17/1973
957,309	72/385,154	4/17/1973
957,313	72/410,700	4/17/1973
957,314	72/410,703	4/17/1973
957,315	72/412,559	4/17/1973
957,316	72/415,870	4/17/1973
957,325	72/389,272	4/17/1973
957,330	72/401,214	4/17/1973
957,346	72/397,132	4/17/1973
957,349	72/402,753	4/17/1973
957,350	72/404,670	4/17/1973
957,357	72/413,521	4/17/1973
957,369	72/417,942	4/17/1973
957,371	72/418,481	4/17/1973
957,373	72/377,211	4/17/1973
957,383	72/409,104	4/17/1973
957,385	72/352,877	4/17/1973
957,390	72/403,953	4/17/1973
957,391	72/404,273	4/17/1973
957,392	72/404,274	4/17/1973
957,394	72/407,358	4/17/1973
957,396	72/410,099	4/17/1973
957,399	72/414,430	4/17/1973
957,400	72/415,855	4/17/1973
957,401	72/416,697	4/17/1973
957,404	72/419,420	4/17/1973
957,405	72/420,404	4/17/1973
957,411	72/402,203	4/17/1973
957,413	72/404,164	4/17/1973
957,414	72/404,165	4/17/1973
957,416	72/323,475	4/17/1973
957,417	72/400,133	4/17/1973
957,419	72/421,658	4/17/1973
957,424	72/392,941	4/17/1973
957,425	72/397,721	4/17/1973
957,426	72/398,161	4/17/1973
957,431	72/414,385	4/17/1973
957,432	72/414,523	4/17/1973
957,439	72/413,349	4/17/1973
957,440	72/414,537	4/17/1973
957,441	72/415,880	4/17/1973
957,442	72/418,017	4/17/1973
957,443	72/418,117	4/17/1973
957,456	72/409,586	4/17/1973
957,457	72/415,177	4/17/1973
957,461	72/364,641	4/17/1973
957,462	72/377,962	4/17/1973
957,463	72/383,297	4/17/1973
957,465	72/386,880	4/17/1973
957,469	72/399,394	4/17/1973
957,475	72/416,518	4/17/1973
957,477	72/360,583	4/17/1973
957,479	72/399,365	4/17/1973
957,480	72/399,473	4/17/1973
957,486	72/414,835	4/17/1973
957,487	72/407,191	4/17/1973
957,488	72/418,217	4/17/1973
957,495	72/410,255	4/17/1973
957,497	72/429,806	4/17/1973
957,500	72/400,800	4/17/1973
957,501	72/407,154	4/17/1973
957,502	72/408,341	4/17/1973
957,504	72/404,823	4/17/1973
957,506	72/387,111	4/17/1973
957,507	72/387,540	4/17/1973
957,509	72/386,607	4/17/1973

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed hererin, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

J.M. Industries, Inc., South Bend, Ind., Reg. No. 1,609,702, for the mark "ULTRA VISOR (STYLIZED)", Canc. No. 21,351

Sport Blend Products, Inc., Houston, Tex., Reg. No. 1,630,568, for the mark "WORLD CLASS NU-FORM SUPPLEMENTS AND DESIGN", Canc. No. 21,353

Green, Young & Co., Ltd., Arlington, Va., Reg. No. 1,002,350, for the mark "FEMFRESH", Canc. No. 21,477

Stacey International, Inc., Broadview, Ill., Reg. No. 998,795, for the mark "FLUFFY'S AND DESIGN", Canc. No. 21,523

Stacey International, Inc., Broadview, Ill., Reg. No. 1,504,173, for the mark "FLUFFY COTTON CANDY AND DESIGN", Canc. No. 21,524

CHF Industries, Inc., New York, N.Y., Reg. No. 996,796, for the mark "VENTURE AND DESIGN", Canc. No. 21,540

Shimano Industrial Co., Ltd., New York, N.Y., Reg. No. 1,084,407, for the mark "TITLIST", Canc. No. 21,652

The Nucellus Company, Inc., Lodi, Calif., Reg. No. 1,629,608, for the mark "BACK TO NATURE", Canc. No. 21,731

One Love For The Tennisseur, Inc., Charlotte, N.C., Reg. No. 1,586,184, for the mark "ONE LOVE AND DESIGN", Canc. No. 21,865

Edward S. Caldwell, dba High Frequency Advertising, Park Ridge, Ill., Reg. No. 617,301, for the mark "HIGH FREQUENCY", Canc. No. 21,971

JEAN BROWN
Administrator, Trademark Trial and Appeal Board
For ROBERT ANDERSON
Acting Assistant Commissioner for Trademarks

Errata

"All refernece to Patent No. 5,284,696 to Kazuaki Satoh, et. al., of Japan for `CONDUCTIVE PATTERN LAYER STRUC-

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TURE AND METHOD OF PRODUCING THE CONDUCTIVE PATTERN LAYER STRUCTURE" appearing in the *Official Gazette* of February 8, 1994 should be deleted since no patent was granted."

"All reference to Patent No. 5,285,605 to Sherwood S. Greenfield of North Carolina for "PEDESTAL MODULE FOR RAISED FLOOR AND RAISED FLOOR" appearing in the *Official Gazette* of February 15, 1994 should be deleted since no patent was granted."

Registration To Practice

The following person successfully passed the registration examination that was held October 14, 1992. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 29, 1994.

Holtzman, Laura M., 2554 Nicky Ln., Alexandria, Va. 22311

February 15, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 8, 1992. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the pperson seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 29, 1994.

Rollins, John F., 1700 N. Northpark Ave., #3D, Chicago, Ill. 60614

February 15, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 29, 1994.

Bowen, Paul T., 3507 Raymoor Rd., Kensington, Md. 20895
Broome, Harold, 6313 32nd St., N.W., Washington, D.C. 20015
Burns, Todd J., 735 S. 22nd St., Arlington, Va. 22202
Diaconescu, Aprilia U., 93 Grosvenor St., Ottawa, Ont. K1S 4S7, Canada
Feutinske, Robert, 1387 Beaucourt Pl., Orleans, Ont. K4A 1W3, Canada
Lovell, Charles N., 5005 Cobblestone Rd., Danville, Va. 24540
Mayer, Albert J., 4747 Azalea Dr., #219, New Port Richey, Fla. 24652
Sprigings, Warren N., #2402-25 Greenville St., Toronto, Ont. M4Y 2X5, Canada

February 15, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons who successfully passed the registration examination that was held April 21, 1993. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before April 29, 1994.

Ehrlich, Alan M., 7425 Democracy Blvd., #205, Bethesda, Md. 20817
Klein, Kevin R., 3100 Connecticut Ave., N.W., #143, Washington, D.C. 20008

February 15, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed**. To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner
for Patents

Certificate of Corrections
Issue of March 15, 1994

PP 8,253	D. 339,707	4,804,912	4,910,866
RE 33,949	4,501,646	4,820,792	4,913,722
D. 321,269	4,551,550	4,845,744	4,919,713
D. 337,464	4,579,563	4,850,378	4,939,247
D. 338,121	4,673,434	4,879,643	4,963,242
D. 338,949	4,675,717	4,880,507	4,974,483
D. 339,072	4,772,552	4,903,069	4,975,832

4,982,402	5,145,578	5,191,411	5,210,106	5,131,356	5,185,687	5,205,818	5,221,163
4,989,538	5,145,601	5,191,435	5,210,239	5,132,545	5,186,175	5,205,991	5,221,376
4,994,488	5,146,320	5,191,580	5,210,294	5,133,340	5,186,618	5,206,132	5,221,561
4,995,151	5,146,716	5,192,028	5,210,350	5,133,471	5,186,763	5,206,345	5,221,615
5,001,642	5,147,168	5,192,114	5,210,538	5,133,930	5,186,973	5,206,760	5,221,727
5,009,489	5,147,903	5,192,560	5,210,560	5,134,100	5,187,000	5,207,804	5,221,839
5,013,453	5,149,232	5,193,067	5,210,789	5,134,147	5,187,187	5,208,279	5,221,981
5,019,245	5,149,609	5,193,147	5,210,808	5,134,198	5,187,220	5,208,443	5,222,036
5,027,690	5,149,645	5,193,409	5,210,864	5,134,568	5,187,367	5,208,542	5,222,113
5,035,768	5,149,890	5,193,575	5,211,853	5,135,166	5,187,595	5,208,760	5,222,377
5,037,775	5,151,206	5,193,583	5,212,166	5,135,761	5,187,665	5,208,793	5,222,492
5,039,786	5,151,363	5,194,063	5,212,289	5,136,259	5,187,943	5,208,834	5,222,530
5,039,836	5,151,697	5,194,157	5,212,290	5,136,783	5,188,029	5,208,897	5,222,660
5,039,874	5,151,910	5,194,220	5,212,621	5,137,082	5,188,762	5,208,905	5,222,723
5,040,006	5,152,268	5,194,683	5,212,660	5,137,628	5,189,366	5,208,961	5,223,299
5,043,765	5,152,519	5,194,756	5,213,339	5,140,447	5,189,855	5,209,044	5,223,425
5,045,631	5,153,709	5,194,929	5,213,816	5,141,463	5,190,330	5,209,119	5,223,566
5,046,812	5,153,911	5,196,102	5,213,956	5,142,631	5,190,849	5,209,879	5,223,760
5,048,338	5,154,601	5,196,236	5,214,208	5,144,686	5,191,067	5,210,014	5,223,770
5,061,041	5,154,782	5,196,266	5,214,226	5,224,041	5,229,690	5,235,028	5,240,578
5,062,626	5,154,831	5,196,434	5,214,244	5,224,362	5,229,723	5,235,085	5,240,623
5,064,401	5,155,277	5,196,504	5,214,518	5,224,584	5,229,792	5,235,165	5,240,733
5,073,592	5,155,440	5,196,928	5,214,540	5,224,748	5,229,821	5,235,168	5,240,736
5,079,303	5,157,112	5,197,016	5,214,626	5,224,964	5,229,918	5,235,187	5,240,755
5,085,229	5,157,167	5,197,169	5,214,638	5,225,500	5,230,332	5,235,324	5,240,812
5,087,342	5,157,510	5,197,470	5,214,755	5,225,542	5,230,361	5,235,757	5,241,194
5,089,932	5,158,949	5,198,235	5,215,311	5,225,544	5,230,721	5,235,826	5,241,394
5,090,235	5,160,902	5,198,427	5,215,444	5,225,676	5,231,030	5,235,881	5,241,619
5,093,399	5,160,933	5,198,701	5,215,536	5,225,705	5,231,051	5,235,891	5,241,650
5,094,241	5,161,011	5,198,863	5,215,669	5,226,027	5,231,285	5,235,897	5,241,919
5,095,324	5,161,924	5,199,102	5,215,714	5,226,037	5,231,326	5,235,955	5,242,434
5,095,565	5,162,052	5,199,511	5,215,882	5,226,046	5,231,336	5,235,964	5,242,438
5,095,921	5,162,205	5,200,374	5,216,039	5,226,105	5,231,735	5,235,992	5,242,571
5,096,066	5,162,238	5,200,800	5,216,117	5,226,186	5,231,968	5,236,020	5,242,795
5,099,179	5,162,272	5,200,811	5,216,246	5,226,427	5,231,990	5,236,281	5,242,830
5,099,192	5,162,878	5,201,087	5,216,308	5,226,454	5,232,027	5,236,308	5,242,891
5,099,373	5,164,460	5,202,298	5,216,448	5,226,473	5,232,060	5,236,327	5,243,029
5,100,487	5,164,497	5,202,360	5,216,703	5,226,588	5,232,232	5,236,423	5,243,076
5,101,296	5,166,658	5,203,013	5,216,724	5,226,616	5,232,352	5,236,673	5,243,138
5,103,919	5,168,320	5,203,387	5,217,136	5,226,858	5,232,361	5,236,775	5,243,604
5,108,060	5,170,482	5,203,786	5,217,432	5,227,013	5,232,408	5,237,025	5,243,753
5,108,415	5,170,507	5,204,023	5,217,603	5,227,342	5,232,761	5,237,094	5,244,181
5,109,187	5,171,614	5,204,233	5,217,683	5,227,631	5,232,785	5,237,604	5,244,792
5,109,347	5,171,701	5,204,235	5,217,716	5,227,856	5,233,066	5,237,891	5,244,882
5,111,362	5,172,415	5,204,639	5,217,998	5,227,979	5,233,278	5,238,027	5,245,606
5,111,905	5,173,100	5,204,675	5,218,024	5,227,981	5,233,322	5,238,143	5,246,568
5,112,640	5,173,477	5,204,754	5,218,241	5,228,254	5,233,987	5,238,446	5,247,548
5,114,079	5,175,413	5,204,758	5,219,118	5,228,307	5,234,236	5,238,489	5,248,255
5,114,080	5,176,637	5,204,779	5,219,155	5,228,372	5,234,276	5,238,866	5,248,513
5,114,771	5,177,685	5,204,851	5,219,317	5,228,424	5,234,304	5,238,874	5,248,537
5,117,830	5,178,633	5,204,874	5,219,569	5,228,531	5,234,319	5,238,880	5,249,595
5,118,134	5,179,940	5,204,953	5,219,591	5,228,596	5,234,387	5,238,891	5,249,736
5,118,290	5,180,266	5,204,988	5,219,800	5,228,699	5,234,455	5,239,034	5,252,801
5,118,702	5,181,475	5,205,027	5,219,864	5,228,868	5,234,577	5,239,121	5,258,158
5,121,011	5,181,605	5,205,047	5,220,179	5,228,889	5,234,782	5,239,429	5,259,477
5,124,560	5,182,671	5,205,053	5,220,610	5,229,090	5,234,783	5,239,644	5,259,581
5,126,354	5,182,796	5,205,223	5,220,612	5,229,160	5,234,835	5,239,802	5,261,750
5,129,906	5,183,079	5,205,251	5,220,762	5,229,281	5,234,889	5,239,863	5,273,752
5,131,067	5,183,581	5,205,326	5,220,768				
5,131,085	5,185,540	5,205,597	5,220,977	5,229,370	5,234,891	5,240,556	

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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 17-21, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication
1-21	EX	74088,804	Bullock and Jones, Inc.	2(d)		Refusal Reversed	"BULLOCK & JONES" [men's clothing and footwear; retail clothing store services]	"BULLOCKS" [retail department store services] et. al.,	No

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; CA= CANCELLATION; CU= CONCURRENT USE; (R)- REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box PATENT APPLICATION	New patent application and associated papers and fees.
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	Detroit Public Library	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
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Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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Wyoming	Casper: Naprona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	3/13/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/14/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 —RICHARD V. FISHER, Director	308-0651	11/13/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/13/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	5/27/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	8/18/92
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/31/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	3/16/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	7/08/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	6/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	7/25/92
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	10/21/91
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	1/25/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/30/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/22/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/04/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	4/22/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Feb. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,005,494 to 4,009,493 inclusive
Plant Patents ..... 4,013 to 4,018

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of February 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/27/93	12/23/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	12/23/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/25/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/21/93	11/24/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	9/29/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	11/05/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/14/93	12/20/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/01/93	11/19/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/03/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/17/93	12/13/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/28/93	12/07/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	12/15/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	11/24/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	11/15/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
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REEXAMINATIONS

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,504,310 (2242nd)
PROCESS FOR THE PRODUCTION OF HIGH PURITY METALS OR ALLOYS

Laurent L. Boulier, Gagny, France, assignor to C. Delachaux, Gennevilliers, France

Reexamination Request No. 90/002,180, Aug. 7, 1992.
Reexamination Certificate for Patent No. 4,504,310, issued Mar. 12, 1985, Ser. No. 520,802, Aug. 5, 1983.
Claims priority, application France, Aug. 20, 1982, 82 14386
Int. Cl.[5] C21B *15/02*
U.S. Cl. 75—623

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERINED THAT:

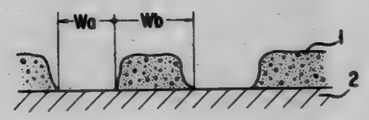
The patentability of claims **1, 2, 3 and 5–16** is confirmed.
Claim **4** is cancelled.

1. A process for the production of a high purity metal or metallic alloy, comprising
(a) forming a base metal or metallic alloy by an aluminothermic reaction between at least one metal oxide and comminuted aluminum, the reaction being kept out of equilibrium by a deficiency of aluminum relative to stoichiometic quantity, whereby said base metal or metallic alloy contains reducible non-metallic inclusions comprising principally inclusions of the oxide of the base metal, with a minor amount of inclusions of alumina;
(b) milling the base metal or metallic alloy thus obtained;
(c) agglomerating the milled metal or metallic alloy with an agglomerating agent and a reducing agent, so as to form compacted agglomerates; and
(d) subjecting the compacted agglomerates to a reducing treatment under regulated conditions of reduced pressure and elevated temperature at which the reducing agent acts on the non-metallic inclusions but substantial sublimation of the metal or metallic alloy is avoided.

B1 5,009,982 (2243rd)
RESIST INK COMPOSITION

Yuichi Kamayachi, Wako, and Syoji Inagaki, Sakado, both of Japan, assignors to Taiyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/002,935, Jan. 14, 1993.
Reexamination Certificate for Patent No. 5,009,982, issued Apr. 23, 1991, Ser. No. 204,927, Jun. 6, 1988.
Continuation of Ser. No. 850,220, Apr. 10, 1986, abandoned
Claims priority, application Japan, Apr. 19, 1985, 60-084987
Int. Cl.[5] G03F *7/031, 7/032;* C08G *59/02;* C08L *63/10*
U.S. Cl. 430—280



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

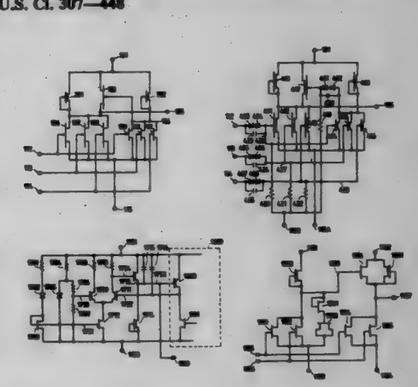
The patentability of claims **1–15** is confirmed.

1. A photosetting and thermosetting liquid resist ink composition developable with a dilute alkaline aqueous solution, which comprises in combination: a photosetting resin composition comprising
(A) a resin curable with an activated energy ray, which has an acid value in the range of 50 to 165 mg KOH/g and is obtained by the reaction of (a) a saturated or unsaturated polybasic acid anhydride with (b) a reaction product of a novolak epoxy compound and an unsaturated monocarboxylic acid in a proportion of 0.95 to 1.05 equivalent weight of said unsaturated monocarboxylic acid to 1 equivalent weight of said novolak epoxy compound,
(B) a photopolymerization initiator, and
(C) a diluent and an epoxy compound containing at least two epoxy groups in one molecule thereof as a thermosetting component.

B1 5,021,686 (2244th)
LOGIC CIRCUIT

Atsumi Kawata, Hachioji; Hiroyuki Itoh, Kodaira; Hirotoshi Tanaka, Kitatsuru; Kazuhiro Yoshihara, Nishitama, and Hiroki Yamashita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Reexamination Request No. 90/002,570, Feb. 14, 1992.
Reexamination Certificate for Patent No. 5,021,686, issued Jun. 4, 1991, Ser. No. 470,322, Jan. 25, 1990.
Claims priority, application Japan, Jan. 25, 1989, 1-13903; Aug. 11, 1989, 1-206744
Int. Cl.[5] H03K *19/003, 19/092, 19/094, 4/58*
U.S. Cl. 307—448



AS A RESULT OF REEXAMINATION , IT HAS BEEN DETERMINED THAT:

Claims **25** and **70** are cancelled.

Claims **1, 14, 20, 26–28, 34–40, 43, 45, 50, 63, 65** and **71–75** are determined to be patentable as amended.

Claims **2–13, 15–19, 21–24, 29–33, 41–42, 44, 46–49, 51–62, 64** and **66–69**, dependent on an amended claim, are determined to be patentable.

New claims **76–110** are added and determined to be patentable.

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1. A logic circuit for receiving [one or more inputs] *input* signals and producing a logic operation output based on the inputs, comprising:

at least one input;

a first group of one or more field-effect transistors, each having a gate connected to a respective input to receive one of the input signals, respectively;

a second group of field-effect transistors equal in number to the first group of transistors, and each transistor of said second group of transistors having a gate connected to a respective one of the gates of the first group of transistors to respectively receive one of the input signals;

first load means connected to said first group of transistors and providing the load for said first group of transistors;

second load means connected to said second group of transistors and providing the load for said second group of transistors;

an output connected between said first load means and said first group of transistors to provide the logic operation output of the first group of transistors based upon the input signals applied to said input;

field-effect transistor means for providing current through said output, in parallel with said first load means; and

said field-effect transistor means having a gate controlling the current passing therethrough to said output and being connected between said second group of transistors and said second load means.

B1 5,037,753 (2245th)

FELINE T-LYMPHOTROPIC LENTIVIRUS

Niels C. Pedersen, Winters, and Janet K. Yamamoto, Davis, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Reexamination Request No. 90/002,906, Dec. 9, 1992.

Reexamination Certificate for Patent No. 5,037,753, issued Aug. 6, 1991, Ser. No. 618,030, Nov. 16, 1990.

Continuation of Ser. No. 89,700, Aug. 26, 1987, abandoned

Int. Cl.[5] C12N *7/00*; **C12Q** *1/70*; **A61K** *39/21*; **C07K** *15/00*

U.S. Cl. 435—235.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–3 is confirmed.

New claims 4 and 5 are added and determined to be patentable.

1. Feline T-lymphotropic lentivirus (FTLV) isolated from cells grown in in vitro cell culture.

REISSUES

MARCH 15, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,561

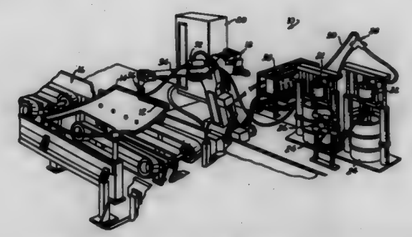
SYSTEM FOR APPLYING FLUENT MATERIALS

Robert J. Zaber, Detroit, Mich., assignor to Matcon Systems, Inc., Sterling Hgts., Mich.

Original No. 4,890,573, dated Jan. 2, 1990, Ser. No. 233,630, Jul. 25, 1988. Application for reissue Dec. 30, 1991, Ser. No. 816,028

Int. Cl.[5] B05C *11/00*

U.S. Cl. 118—667 **26 Claims**



1. A system for applying a fluent [thermal-cure] material to a substrate that includes means for supplying the material under pressure, means for heating the material to elevated temperature above ambient means for applying the material at said elevated temperature to a substrate, and conduit means for feeding the material from said supplying means to said heating means and thence to said applying means, characterized in that said means for heating the material comprises:

a hollow enclosure having a substantially cylindrical internal volume, a spirally coiled tube having axially opposed first and second ends suspending said tube substantially coaxially with said volume and being coupled to said conduit means, a heater positioned within said enclosure and having means responsive to application of electrical power for heating said volume, temperature sensing means positioned within said volume for supplying electronic signals as a function of temperature thereof, said heater and said temperature sensing means being positioned within said coiled tube subatantially centrally of said volume and said tube, and electronic control means including means responsive to said electronic signals for selectively applying electrical power to said heater to maintain temperature within said volume at said elevated temperature.

Re. 34,562

AMPLITUDE-ADAPTIVE VECTOR QUANTIZATION SYSTEM

Tokumichi Murakami; Masami Nishida, and Atsushi Ito, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 4,878,230, dated Oct. 31, 1989, Ser. No. 207,155, May 26, 1988. Application for reissue Sep. 18, 1991, Ser. No. 761,501

Claims priority, application Japan, Oct. 16, 1986, 61-246396; Jan. 20, 1987, 62-10487

Int. Cl.[5] H04B *14/06*

U.S. Cl. 375—27 **10 Claims**

1. An amplitude-adaptive vector quantization system comprising:

a mean value separating circuit which receives K-dimensional vectors derived from a continuous series of input signals divided into blocks of K-samples and separates out a mean value of said input signal vectors;

a predictive differential quantizer which implements DPCM quantization for said separated mean value;

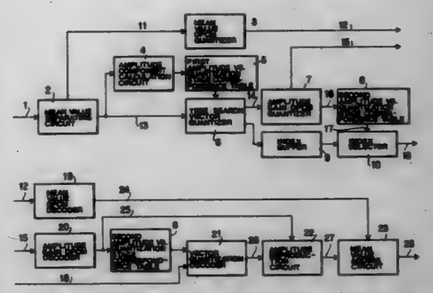
an amplitude component calculation circuit which calculates the magnitude of amplitude components of mean separated input vectors;

a first amplitude vs. quantization stage correspondence table which determines a quantization [state] *stage* of tree-search vector quantization in correspondence to the magnitude of said calculated amplitude components; and

a tree-search vector quantizer which calculates the inner product between each of said mean separated input vectors and normalized output vectors with zero mean arranged to have a tree structure, implements a tree-search for an output vector providing a maximum inner product sequentially up to a last stage, provides a maximum inner product at each stage as an amplitude gain at each stage along with an output vector index, and outputs selectively an amplitude gain of a quantization stage prescribed by said first amplitude vs. quantization stage correspondence table;

an index buffer which holds the output vector index of each quantization stage obtained during the quantization of said tree-search vector quantizer;

an amplitude gain DPCM quantizer which implements DPCM quantization for said output amplitude gain to



provide a DPCM-quantized differential amplitude gain and implements DPCM decoding to provide a reproduction of DPCM-quantized amplitude gain;

a second amplitude vs. quantization stage correspondence table which provides a true quantization stage selection signal from said DPCM-decoded reproduction amplitude gain;

a coding section which has an index selector for selecting an output vector to be outputted finally from among output vector indices of all stages held in said index buffer, and transmits or records three elements, including said DPCM-quantized mean value, DPCM-quantized amplitude gain and selected output vector, as a coding output; and

a decoding section including a mean value DPCM decoder and amplitude gain DPCM decoder which implement DPCM decoding for the DPCM quantized mean value and amplitude gain coded by said coding section respectively, an amplitude vs. quantization stage correspondence table which has the same content as said second amplitude vs. quantization stage correspondence table to determine from the DPCM-decoded amplitude gain a quantization output of which stage of coding section is the output vector index decoded by a vector quantization decoder, said vector quantization decoder implementing decoding

for said output vector index by switching output vectors adaptively in response to an output of said amplitude vs. quantization stage correspondence table, an amplitude reproducing circuit which implements amplitude reproduction of said decoded normalized output vector on the basis of said DPCM-decoded amplitude gain, and a mean value adding circuit which adds said DPCM-decoded mean value to said amplitude reproduced vector to produce an output signal vector.

Re. 34,563

HEAT-STABLE COPOLYCONDENSATE MOLDING MATERIALS

Gerhard Heinz, Weisenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Original No. 4,925,910, dated May 15, 1990, Ser. No. 36,,446, Apr. 9, 1987. Application for reissue May 15, 1992, Ser. No. 883,955

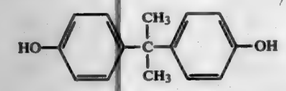
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1986, 3614753

Int. Cl.[5] C08K *3/34*

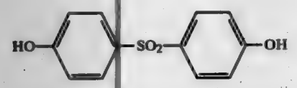
U.S. Cl. 528—171 **7 Claims**

1. A heat-stable copolycondensate molding material which contains polyarylene sulfone and polyarylene ether sulfone units in random distribution and is obtainable by polycondensation of a mixture of

(A) from 2 to 98 mol %, based on the sum of (A)–(C), of

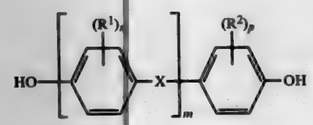


(B) from 2 to 98 mol %, based on the sum of (A)–(C),

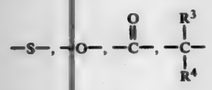


and

(C) from 0 to 96 mol %, based on the sum of (A)–(C), of



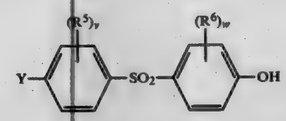
where X is a chemical bond or





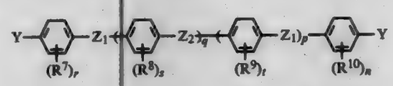
(only when n or p is *not* 0), R^1 and R^2 are each alkyl or alkoxy, each of 1 to 6 carbon atoms, R^3 and R^4 are each hydrogen, alkyl of 1 to 6 carbons atoms, aryl or halogen-substituted alkyl of 1 to 4 carbon atoms, m is 0 or 1 and n and p are 0, 1, 2, 3 or 4, with

(D) from 1 to 100 mol %, based on the sum of (D) and (E), of



where R^5 and R^6 are each hydrogen or have the same meanings as R^1 and R^2, Y is Cl or F, and v and w are each 0, 1, 2, 3 or 4, and

(E) from 0 to 99 mol %, based on the sum of (D) and (E), of



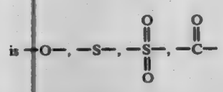
where Y is Cl or F, Z_1 is



or



, Z_2



or a chemical bond, R^7, R^8, R^9 and R^{10} are each hydrogen, Cl or F or may have the same meanings as R^1 and R^2, q and p are each 0 or 1 and r, s, t and u may each be an integer from 0 to 4, with the proviso that one or more of the components C and E are present and the molar ratio of B to the sum of A+C is not greater than 1.

Re. 34,564

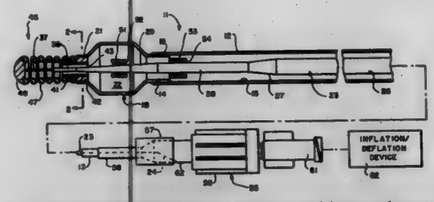
LIQUID FILLED LOW PROFILE DILATATION CATHETER

Craig E. Mar, Fremont, and Jeffrey S. Frisbie, San Jose, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Original No. 4,793,350, dated Dec. 27, 1988, Ser. No. 648, Jan. 6, 1987. Application for reissue Dec. 27, 1990, Ser. No. 634,670

Int. Cl.[5] A61M *29/02*

U.S. Cl. 604—96 **14 Claims**



1. A low profile dilatation catheter comprising an elongate flexible tubular member having proximal and distal extremities and having a flow passage extending therethrough, an inflatable balloon having proximal and distal extremities with the proximal extremity of the balloon connected to the distal extremity of the elongate flexible tubular member so that the interior of the balloon is in fluid communication with the flow passage in the tubular member, a flexible tip secured to the distal extremity of the balloon, a core wire having a tapered

distal extremity and extending through the balloon and into the flexible tip, means securing the distal extremity of the core wire to the flexible tip, means for rotating the proximal extremity of the core wire for causing rotation of the flexible tip, a passageway between the core wire and [the inner diameter of the flexible tip] for venting gas from the balloon to ambient without passage of inflation liquid therethrough, and an adapter carried by the proximal extremity of the elongate tubular member which is adapted to supply a liquid to the flow passage for inflating and deflating the inflatable balloon.

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PLANT PATENTS

GRANTED MARCH 15, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,638
RASPBERRY PLANT NAMED PSI 744
Stephen M. Ackerman, Salinas, Calif., assignor to Plant Sciences, Inc., Watsonville, Calif.
Filed Jul. 30, 1992, Ser. No. 921,716
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—46.2 **1 Claim**

1. A new and distinct golden raspberry variety known as PSI 744, herein described, illustrated and identified by the characteristics enumerated above.

8,639
RASPBERRY PLANT NAMED PSI 737
Stephen M. Ackerman, Salinas, Calif., assignor to Plant Sciences, Inc., Watsonville, Calif.
Filed Jul. 30, 1992, Ser. No. 921,834
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—46.2 **1 Claim**

1. A new and distinct golden raspberry variety known as PSI 737 as herein described, illustrated and identified by the characteristics set forth above.

8,640
TEXAS REDBUD TREE NAMED TRAVELLER
Daniel A. Hoeage, Jr., 2318 Hilliard Rd., San Marcos, Tex. 78666
Filed Sep. 10, 1992, Ser. No. 943,447
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—51.1 **1 Claim**

1. I claim a new and distinct variety of redbud, herein shown and described, characterized by its shoot tip growth orientation approximately −45° from the horizon with occasional arching shoots reorienting downwardly.

8,641
CHRYSANTHEMUM PLANT—GLASNOST CULTIVAR
Jacques C. M. van der Knaap, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands
Filed Mar. 16, 1993, Ser. No. 34,824
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Glasnost substantially as herein shown and described, which:

(a) exhibits attractive single purple anemone flowers with a more intense red-purple cushion having an overall diameter of approximately 50 mm.,
(b) exhibits a flower response period of approximately eight weeks,
(c) forms flowers that exhibit a good vase life,
(d) exhibits a substantial resistance to leafminers, and
(e) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

8,642
CHRYSANTHEMUM NAMED REAGAN
Martinus Van der Jagt, CJ Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles
Filed Oct. 22, 1991, Ser. No. 780,305
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum, named Reagan, as described and illustrated.

8,643
ALSTROEMERIA PLANT NAMED INCA KOYA
Michael R. Neuroth, 2322 N. Nugent Rd., Lummi Island, Wash. 98202
Filed Aug. 14, 1992, Ser. No. 929,820
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 **1 Claim**

1. The new and distinctive Alstroemeria cultivar, substantially as herein shown and described, characterized by the generally Rose-pink coloration of its large blossoms and distinguished in particular by the fragrance similar to the scent of a mildy spicy carnation.

8,644
ANTHURIUM PLANT NAMED PINK FROST
Richard J. Button, 1245 Obispo Ave., Coral Gables, Fla. 33134, and Ann E. Lamb, Lake Placid, Fla., assignors to Richard J. Button, Coral Gables, Fla.
Filed Mar. 12, 1993, Ser. No. 34,822
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named Pink Frost, as illustrated and described.

8,645
LOW MENTHOL MINT PLANT *MENTHA SPICATA* L. 'EROSPICATA'
George D. Sturtz, Albany, Oreg., assignor to Aromatics, Inc., Salem, Oreg.
Filed Oct. 27, 1992, Ser. No. 968,031
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—100 **1 Claim**

1. A new and distinct variety of a disease-resistant mint plant, substantially as shown and described, characterized particularly as to novelty by its production of an oil with a relatively low l-menthol content and high menthone content, when compared to the oil of its *Mentha spicata* parent, and at most only minor amounts of piperitone and l-carvone, said oil having a peppermint-like taste and a hot odor.

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ERRATA

For CLASS	See PATENT NO.
144-349	5,293,961
280-641	5,294,158
075-237	5,294,239
208-400	5,294,349
536-023	5,294,569
523-120	5,294,646
315-039	5,294,864
315-058	5,294,865
315-367	5,294,866
315-205	5,294,868
345-155	5,294,918
345-079	5,294,919
345-102	5,294,920
348-395	5,294,974
348-229	5,294,976
348-004	5,294,977
348-416	5,294,978
348-624	5,294,979
348-004	5,294,980
348-461	5,294,982
348-521	5,294,983
348-720	5,294,984
348-607	5,294,985
348-672	5,294,986
348-536	5,294,987
348-373	5,294,988
348-241	5,294,989
348-363	5,294,990
348-208	5,294,991
348-767	5,294,992
358-825	5,294,994
358-479	5,295,077
385-105	5,295,232

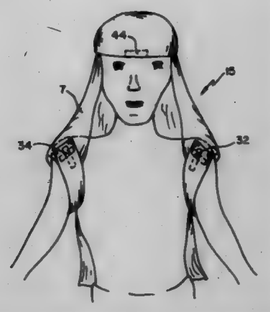
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PATENTS

GRANTED MARCH 15, 1994

GENERAL AND MECHANICAL

5,293,646
PROTECTIVE GARMENT
Paul Winston, 26 Dunellan Rd., Scarsdale, N.Y. 10583
Filed Sep. 16, 1992, Ser. No. 946,526
Int. Cl.[5] A41D *3/08*
U.S. Cl. 2—88 **16 Claims**



1. A protective garment comprising a planar fabric material to protect the head, neck, shoulders and back, said garment including:

a planar fabric material section having a central area, inner and outer surfaces, top and bottom opposed ends, first and second opposed sides wherein said top end consists of an upper straight edge for wrapping and covering the forehead,

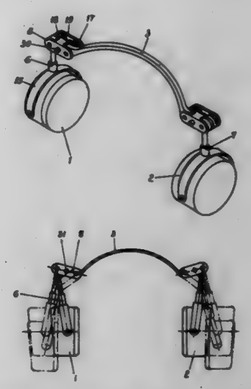
first and second independent elongated strips extending along said first and second opposed sides for a predetermined distance up from said bottom end in the direction of said top end, each said independent strip being elongated and having a free end,

said planar fabric material section further including first, second and third securing means, said first securing means attached adjacent to said first side for removably securing said free end of the first independent strip to the central area of the fabric during formation of a first sleeve, said second securing means attached adjacent to said second side for removably securing said free end of the second independent strip to the central area of the fabric during formation of a second sleeve, said third securing means removably securing said top end around a head of the wearer,

said top end being adapted to encircle a forehead so as to snugly fit thereabout by said third securing means and to enable the draping of said planar fabric material to cover at least said head, neck, shoulders and back of a wearer, and wherein said independent elongated strips being wrapped around corresponding shoulders to define said first and second sleeve portions, said second and third securing means removably attaching said free ends of said independent strips to the planar fabric material during formation of said first and second sleeve portions.

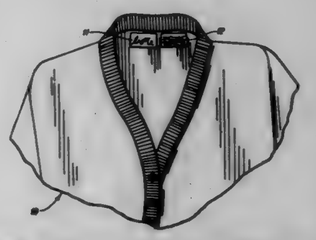
5,293,647
MULTI-ADJUSTABLE HEADSET
Michael Miranlakteyn, 818 N. La Jolla Ave.; Isaak Miranlakteyn, 1224 N. Fairfax Ave., Apt. 8, and Gennady Miranlakteyn, 818 N. La Jolla Ave., all of Los Angeles, Calif. 90046
Filed Aug. 19, 1991, Ser. No. 746,860
Int. Cl.[5] H04M *1/05*; A42B *1/06*
U.S. Cl. 2—209 **1 Claim**

1. A multi-adjustable headset comprising: a headband, a pair of ear cups, one at each end of said headband, a pair of holders of the ear cups, coupling members with two hinges on each coupling member, which are rotatively connected with the respective end of said headband from one side of said each coupling member and with a holder of the ear cup from the other side of said each coupling member, for the adjustment of



the axial distance between the ear cups with simultaneous adjustment of the vertical location of the ear cups with respect to said headband, securement means for simultaneously fixing the coupling members relative to the headband and the holders of the ear cups relative to the coupling members.

5,293,648
TAG FOR VISUALLY INDICATING LOSS OF A PROTECTIVE AGENT
Randolph L. Finley, Upper Montclair, N.J., assignor to Galey & Lord, Incorporated, Greensboro, N.C.
Filed Oct. 28, 1991, Ser. No. 783,142
Int. Cl.[5] D06P *5/00*; G01N *21/00*
U.S. Cl. 2—243.1 **27 Claims**



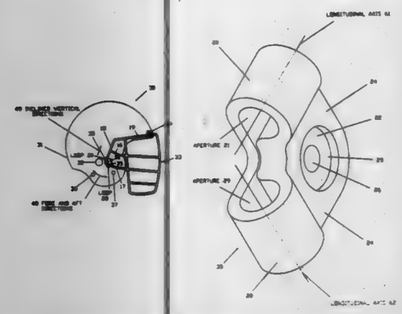
1. A textile article of manufacture comprising in combination:

a textile article which has been treated with a protective chemical treatment agent, and

an indicator tag attached to said textile article for visually indicating the remaining effectiveness of said protective chemical treatment agent on said textile article, said tag comprising a piece of fabric of a size significantly smaller than the overall size of said textile article, said fabric incorporating therein at least one dye which imparts to the piece of fabric a predetermined initial color which indicates that the chemical treatment agent on the textile

article is effective, said at least one dye having a chromophore which is susceptible to degradation by reagents which would destroy the effectiveness of said chemical treatment agent whereby exposure of the textile article to such reagents causes the indicator tag to change from said predetermined initial color to another color which is indicative of a loss in the effectiveness of said protective chemical treatment agent on the textile article, and wherein said piece of fabric is also treated with said protective chemical treatment agent.

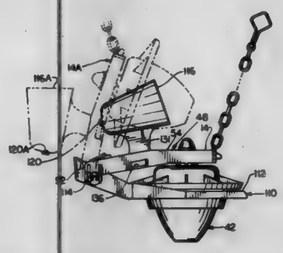
5,293,649
SIDE ATTACHMENT STRAP FOR HELMET
Thomas A. Corpus, 104 N. Oak St., Apt. #6, Greenville, N.C. 27858
Filed Oct. 31, 1991, Ser. No. 786,093
Int. Cl.[5] A41D *13/00*; A42B *3/00*
U.S. Cl. 2—424 **12 Claims**



1. In a helmet that has a face guard constructed of a series of bars, including bars in the rear section that extend in an inclined vertical direction, and a first front attachment means for attaching the guard to the front of the helmet such that the guard is hinged at the top of the helmet and can swing in the fore and aft directions, the improvement comprising: a unitary positively restricting side attachment means connected to a helmet at at least a common attachment point on at least one side of the helmet, said side attachment means having at least two portions which engage the face guard along two separate areas thereof, to positively restrict face guard movement to a significant degree in the fore and aft directions and in the inclined vertical direction, wherein respective axes of at least some of said at least two portions are non-parallel.

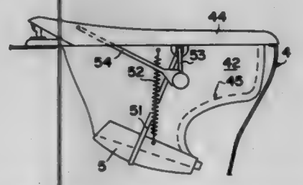
5,293,650
REPLACEMENT FLUSH VALVE
Adolf Schoepe, and Kabir Siddiqui, both of 1800 Via Burton, Anaheim, Calif. 92803
Continuation of Ser. No. 957,272, Oct. 6, 1992. This application Feb. 18, 1993, Ser. No. 19,416
Int. Cl.[5] E03D *1/34*
U.S. Cl. 4—378 **5 Claims**

1. Closing delay cup apparatus for use with a toilet flush valve member that can be opened to flush water of a water closet into a toilet bowl, comprising:
a cup for mounting on said valve member, said cup having a plurality of drain holes;
at least one plug constructed to mount in and substantially close one of said drain holes to block the flow of water therethrough by mere insertion of the plug into the drain hole and thereby securing the plug within the drain hole, whereby to control the drain rate out of the cup and



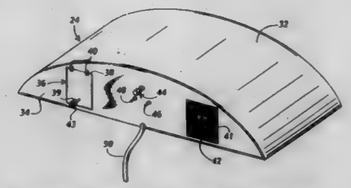
therefore the amount of water left in the water closet after a flushing.

5,293,651
TOILET SEAT
Lasse Johansson, 17740 Kasiniemi, Finland
PCT No. PCT/FI90/00307, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/09562, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 20, 1990, Ser. No. 916,984
Claims priority, application Finland, Dec. 29, 1989, 896362
Int. Cl.[5] E03D *1/012, 5/014*
U.S. Cl. 4—420 **8 Claims**



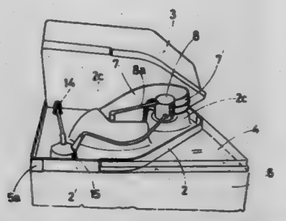
1. A toilet seat for composting toilets, said toilet seat comprising:
a) a bowl having a seat rim;
b) a seat cover attached to the bowl;
c) a seat ring attached to the bowl;
d) an interior bowl surface having a front part, a rear part, two side parts, and a bottom hole;
the front part of said interior bowl surface having an upper section, a middle section, and a curved lower section, with the upper section adapted to be essentially vertical, the middle section almost horizontal, and the curved lower section having a top end, a middle segment, and a bottom end, said curved lower section being convexly curved so that the apex of the curve is within the middle segment of said curved lower section closer to the rear part of the interior bowl surface than are either the top or bottom ends of said curved lower section; and
e) means for separating liquids, such as urine, from solid waste, such means comprising a shutter adapted to fit tightly against said bottom hole along the rear part and side parts of said interior bowl surface, but not the bottom end of the curved lower section of the front part of said interior bowl surface;
whereby liquid deposited on the front part of the interior bowl surface are conducted along the front part of said interior bowl surface into said liquids separation means.

5,293,652
SWIMMING POOL WINTERIZING METHOD AND APPARATUS
Jere P. Furr, 6460 Gordon La., Austell, Ga. 30001
Filed Mar. 8, 1993, Ser. No. 27,705
Int. Cl.[5] E04H *4/10*
U.S. Cl. 4—498 **21 Claims**



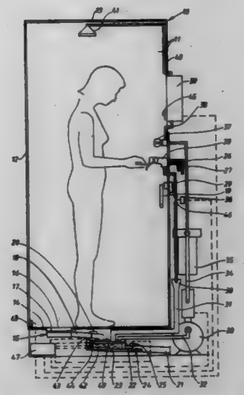
1. An inflatable pool cover system comprising:
a cover-sheet for covering a pool, wherein said cover-sheet is capable of assuming a substantially arched configuration over the pool;
inflation means for forcing air under pressure between said cover-sheet and the pool to cause said cover-sheet to assume a substantially arched configuration over the pool, and form a pressurized chamber between said cover-sheet and the pool; and
sensor means, directly sensitive to surrounding environmental light conditions, for causing said inflation means to operate when the light condition of the surrounding environment exterior to said system reaches a predetermined minimum threshold, and for ceasing operation of said inflation means when the light condition of the surrounding environment exterior to said system reaches a predetermined maximum threshold, whereby said cover-sheet assumes a substantially arched configuration over the pool when the environment exterior to said system is substantially dark.

5,293,653
DEVICE FOR THE PRODUCTION OF STEAM FOR INSTALLING ON THE ROOF OF A STANDARD SHOWER BOX
Alberto Filipponi, Montefano, Italy, assignor to Sea di Filipponi A. & C. - S.n.c., Selva, Italy
Filed Sep. 22, 1992, Ser. No. 949,785
Claims priority, application Italy, Sep. 27, 1991, AN91A000034
Int. Cl.[5] A61H *33/06*
U.S. Cl. 4—524 **8 Claims**



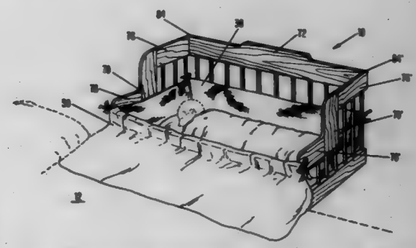
1. A device for the production of steam for installing on a top of a standard shower box wherein said shower box includes a wall and top railing, the device comprising a compact box-shaped roof having a hollow lid and a bottom, the bottom being closed by a matching base platform, the box-shaped roof housing a steam production and forced air circulation system, the base platform of the box-shaped roof being smaller than the top of the shower box on which the box-shaped roof is installed, the base platform having a bottom face, a separate covering screen disposed on the top of the shower stall, the covering screen being sized and shaped to seal the top of the shower box which is not covered by the box-shaped roof, the base platform having therein an input opening and an output opening for the forced circulation of the steam.

5,293,654
ENERGY AND WATER SAVING SHOWER ASSEMBLY
Lennart W. Castwall, Täby, and Karl F. Andersson, Åkersberga, both of Sweden, assignors to Aktiebolaget Electrolux, Sweden
Filed Oct. 26, 1992, Ser. No. 966,804
Claims priority, application Sweden, Nov. 22, 1991, 9103463-7
Int. Cl.[5] A47K *3/08*
U.S. Cl. 4—598 **17 Claims**



1. A shower assembly comprising at least one spray nozzle through which liquid flows and a collecting container for the liquid, a circulation system integrated with the nozzle and container and comprising a pump adapted for circulating the liquid in the collecting container through said nozzle, characterized in that the shower assembly has means for selectively directing the liquid to said container or to a sewage.

5,293,655
NURSING CRADLE
Tresa A. VanWinkle, and Larry K. VanWinkle, both of P.O. Box 778, Alamogordo, N. Mex. 88311-0778
Filed Jun. 3, 1992, Ser. No. 892,977
Int. Cl.[5] A47D *7/04*
U.S. Cl. 5—95 **10 Claims**

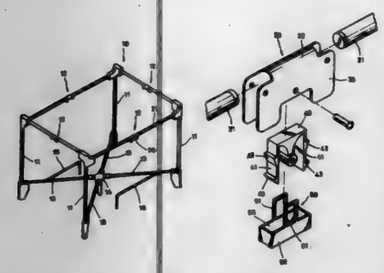


1. A nursing cradle for infants attachable to a bed, the nursing cradle comprising:
infant cradle means comprising:
mattress platform means;

VOL 1160 ISS 3 MR 15 1994 UMI

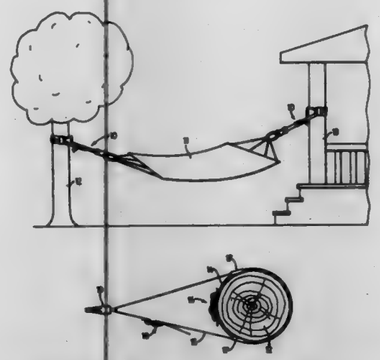
mattress means;
stepped side rail means comprising side rails which comprise a first end at a first predetermined height and a second end at a second predetermined height; and
back rail means;
means for affixing said infant cradle means to a bedstead;
adjustable leg means;
nursing cradle sheet means; and
nursing cradle bumper pad means.

5,293,656
FOLDABLE FRAME ASSEMBLY FOR A CHILDREN'S PLAYPEN
Te-Erh Chan, 9th Fl., 49, Chung Ching S. Rd., Sec. 1, Taipei, 100, Taiwan
Filed Dec. 21, 1992, Ser. No. 994,633
Int. Cl.[5] A47D *13/06*
U.S. Cl. 5—99.1 1 Claim



1. A foldable frame assembly for a children's playpen, comprising four leg supports four upper rails pivotally connected with said leg supports, a chassis seat, four lower rails the inner ends of which are pivotally connected with said chassis seat in a radial pattern, and two L-shaped members pivotally connected with two opposite lower rails, wherein said chassis seat is disposed at the center of the bottom of said frame assembly and the outer ends of said lower rails connect with the lower portions of said leg supports, each of said four upper rails being composed of two tubes having inner ends and outer ends and a foldable joint connecting said two tubes at the inner ends thereof, said frame assembly being characterized in that said foldable joint is formed by a cover having two ends a resilient member and a guide block, wherein said resilient member is secured in said cover, having two biasable plates on two sides, each of said biasable plates being formed with a middle projection and a lower projection both of which have lower slated faces, said guide block having an upper U-shaped section suitable to be hung inside said cover and move up and down therewithin and a lower block section formed with a triangular recess having two slanted walls, the upper edges of said slanted walls of said lower block section abutting against said lower slanted faces of said lower projections of said biasable plates of said resilient member, the inner ends of each of said two tubes pivotally connected with each of said two sides of said cover respectively, lower edges of said tubes being restricted in pivotal movement by said middle projections of said biasable plates to keep said upper rails in a straight configuration, said guide block being upward pushable such that said slanted walls of said triangular recess thereof moving said lower projections of said biasable plates and inwardly bias the same in order to release said lower edges of said tubes from restriction of said middle projections of said biasable plates and thus permit said upper rails to be downward folded at said pivots thereof.

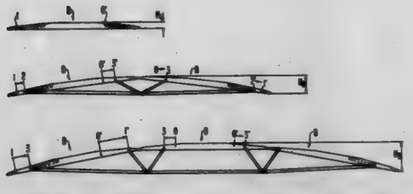
5,293,657
SUSPENSION DEVICE FOR HAMMOCKS AND OTHER OBJECTS
S. Samuel DeAth, R.R. #2, Campbellville, Ontario, Canada L0P 1B0
Filed Jan. 5, 1993, Ser. No. 867
Int. Cl.[5] A45F *3/24*
U.S. Cl. 5—127 8 Claims



6. A suspension device for suspending a hammock or other inanimate object from a load bearing member, comprising:
a) gripping means for gripping a load bearing member;
b) spanning means for spanning the distance between the object and the load bearing member, comprising a spanning belt and closure means for selectively forming the spanning belt into a closed circuit of adjustable length for encircling the load bearing member;
c) belt coupling means for releasably coupling the spanning belt to the gripping means around the load bearing member at a minimum of one tension point;
d) securing means for securing the spanning means to the object at a contact point;
e) wherein the gripping means comprises a gripping belt of determinate length to fit around the load bearing member, and cinching means for releasably cinching the gripping belt around the member; and
f) wherein the belt coupling means comprises a pair of belt loops dimensioned to be slideably received on the gripping belt and to slideably receive the spanning belt.

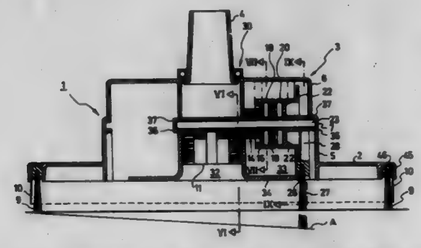
5,293,658
SEPARABLE BRIDGE
Herbert Hüther, Wangen, Fed. Rep. of Germany, assignor to Dornier GmbH, Fed. Rep. of Germany
Filed Nov. 13, 1992, Ser. No. 976,512
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137500
Int. Cl.[5] E01D *15/12*
U.S. Cl. 14—2.4 9 Claims

9. A bridge module comprising:
a roadway element having a plurality of fastening points, said fastening points being located at different distances from an end of the roadway element;
lower chords having ends and a constant length, each lower chord being shorter than the roadway element; and
diagonal elements with first and second ends and a constant length, with the first end of each diagonal element fastened to one of the ends of one of the lower chords;
wherein the lower chords and the second ends of the diagonal elements are selectively fastenable to different said fastening points such that the height of a framework of



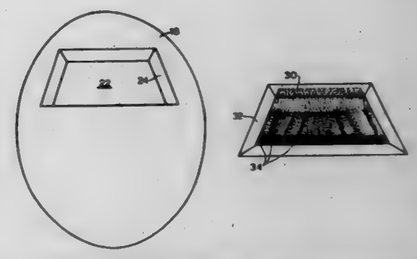
each bridge module formed by the roadway element, the lower chords, and the diagonal elements is adjustable.

5,293,659
AUTOMATIC SWIMMING POOL CLEANER
Dieter J. Rief, 8016 Mitchell Dr., Rohnert Park, Calif. 94928; Herman E. Frentzel, 424 Bee Stree, Sausalito, Calif. 94965; Jerauld G. Wright, 56, The Sparks Street Mall, Suite 100, Ottawa, Ont. K1P 5A9, Canada, and Paul Sebor, 45 Highcliff Way, Northcliff Ext. 12, Johannesburg 2195, South Africa
Continuation of Ser. No. 771,787, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 758,005, Sep. 12, 1991, abandoned, Continuation-in-part of Ser. No. 586,425, Sep. 21, 1990, abandoned. This application Apr. 27, 1993, Ser. No. 52,699
Int. Cl.[5] E04H *3/20*
U.S. Cl. 15—1.7 37 Claims



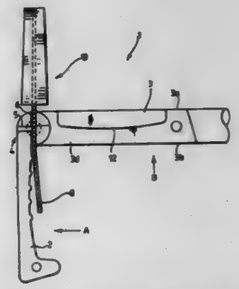
23. In a swimming pool cleaner suction head of the type having a housing forming a chamber open at its lower side and a connection for a hose by which a remote suction pump establishes a water flow through the chamber and into the hose, the improvement comprising:
a vibrator device secured to the housing to vibrate the suction head in response to flow of water through the chamber; and
flexible main bristles secured with respect to the housing and projecting downwardly therefrom to terminate in free main-bristle ends adapted to support the suction head on a surface to be cleaned, a preponderance of the main bristles being inclined such that when the main-bristle ends engage a horizontal surface to be cleaned, such preponderance of main bristles deviate from vertical in a common direction, whereby such main bristles and vibrator device work together to cause forward movement of the suction head over the surface to be cleaned.

5,293,660
FOOT SCRUB MAT
Jai H. Park, 113 Kings's Arms Apt., 1209 S. Charles Blvd., Greenville, N.C. 27858
Filed Apr. 21, 1993, Ser. No. 50,831
Int. Cl.[5] A46B *9/02*; A47I *23/26*
U.S. Cl. 15—160 6 Claims



1. A foot scrub mat, comprising:
(a) a replaceable pad comprising a bristled area defined by a plurality of bristles attached to a base layer, said base layer having an exterior rim surrounding the bristled area; and
(b) a flexible base made of an antislip material, said base having a cut-out area which provides an aperture through said mat to enable said bristled area to be exposed when the replaceable pad is placed beneath the cut-out area; wherein said bristled area has the general dimensions of said cut-out area; wherein when said replaceable pad is placed beneath and aligned with said cut-out area the bristled area is exposed and the exterior rim lies under said base; wherein the bristled area comprises a plurality of bristled segments, each of said bristled segments having all of the bristles in said segment oriented in a selected direction which direction differs between at least two of said segments.

5,293,661
INTERDENTAL BRUSH HOLDER
Richard Appleby, London, England, assignor to Westone Products Limited, London, United Kingdom
Filed Aug. 14, 1992, Ser. No. 929,364
Claims priority, application United Kingdom, Aug. 22, 1991, 9118147
Int. Cl.[5] A46B *3/08, 7/04*
U.S. Cl. 15—167.1 4 Claims



1. A brush holder for a replaceable interdental brush of the type having a stem extending away from a brush portion, said brush holder comprising:
(a) a body portion providing a handle and having a stem gripping portion having first and second oppositely di-

rected faces and a recess in said first face, said recess having a base surface, and

(b) a gripping member rotatably mounted on said body portion so as to be movable about an axis of rotation relative to said body portion between a first condition in which said stem of a said brush is insertable into and removable from said holder and a second condition in which said gripping member is releasably located in said recess, said gripping member having on opposite sides thereof a gripping face and a rear face, said gripping face in said second condition being closely opposed to said base surface of said recess in order to grip said stem of a said brush inserted in said recess,

(c) said gripping member having a width less than the width of said first face of said stem gripping portion and said gripping member and said recess of said stem gripping portion being complementarily shaped so that in said second condition said gripping member lies in said recess with said rear face thereof substantially flush with said first face of said stem gripping portion,

(d) said gripping member having two stem-receiving passages at an angle to each other and each passing through said axis of rotation of said gripping member so that a said brush stem is insertable selectively in said passages of said gripping member for selection of the brush orientation relative to the brush holder,

(e) said base surface of said recess and said gripping face of said gripping member clamping, in said second condition, a said brush stem inserted into the brush holder, and

(f) said gripping member and said body portion having cooperating means for retaining said gripping member in said second condition for use of a said brush held by the brush holder.

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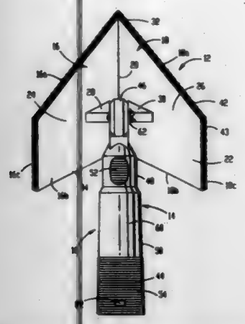
CORNER PAINT PAD ASSEMBLY

Robert D. Newman, Sr., and Robert D. Newman, Jr., both of Greenwood, Mo., assignors to Mr. Longarm, Inc., Greenwood, Mo.

Continuation of Ser. No. 751,487, Sep. 18, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 86,196

Int. Cl.[5] B05C *17/00*

U.S. Cl. 15—210.1 **1 Claim**



1. A corner paint pad assembly consisting essentially of:

a painting pad including a pair of interconnected wall sections disposed at a 90° angle with respect to one another to present a V-shaped body having an elongated apex at the joinder of said wall sections, said sections being relatively flexible and each having an inner and an outer face and presenting upper and lower marginal edges interconnected by a side marginal edge remote from said elongated apex, said lower marginal edges lying in a first plane substantially normal to said elongated apex, said upper marginal edges lying in a second plane which is obliquely oriented relative to said first plane with said side marginal edges having a length less than the length of said elongated apex, the ends of said upper marginal edges remote from said side marginal edges intersecting to define a pointed uppermost end for said body, said outer faces of said sections being coated with a porous material to receive paint, each of said inner faces having an inwardly projecting ear presenting an inboard face and an intersecting outer face, there being an opening in each of said ears extending inwardly from each corresponding inboard face and structure defining a beveled ramp in each ear inclined from each corresponding opening outwardly to the outer face of the ear;

an elongated handle oriented with the longitudinal axis thereof substantially within a third plane bisecting said body and passing through said elongated apex, said handle having a first end for releasable connection with said painting pad, and a second, hollow, threaded end remote from said first end for attachment of a handle extension; and

a pair of oppositely outwardly extending axle members on said first connection end of said handle and releasably received within said ear openings for swinging movement of the handle through an arc of about 180° with respect to said body, with the longitudinal axis of the handle substantially within said third plane, said swinging movement being about a pivot axis substantially perpendicular to said third plane, said axle members within said ear openings preventing swinging movement of the handle substantially outside of said third plane about axes other than said pivot axis, said axle members and ears cooperatively supporting said first connection end of said handle in spaced relationship to the inner faces of said wall sections and said apex for permitting said swinging movement of said handle through said arc in an unobstructed manner free of engagement between said first connection end and said inner faces and apex,

said ramps, and the relative flexibility of said interconnected wall sections facilitating insertion and removal of said axle members into and out of said ear openings whereby said handle may be readily attached and detached from said pad.

5,293,663

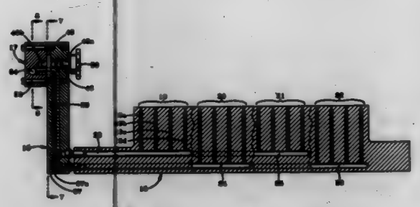
FLUID CLEANING SYSTEM

Timothy J. McCullough, Vermilion, Ohio, assignor to Food Industry Equipment International, Inc., Lorain, Ohio

Continuation-in-part of Ser. No. 777,694, Oct. 15, 1991, abandoned. This application May 19, 1993, Ser. No. 64,709

Int. Cl.[5] B08B *5/02*

U.S. Cl. 15—318.1 **21 Claims**



1. A cleaning system for removing particles from a rotating roll, said system including:

a manifold formed with a plurality of fixed fluid discharge nozzles extending in a generally axial direction along the roll for directing streams of a pressurized fluid against the rotating roll;

a plurality of fluid supply channels having inlet openings, each of said channels communicating with a selected group of nozzles of said manifold nozzles, for selectively supplying pressurized fluid to each of said selected nozzle groups;

fluid control means for sequentially opening and closing the fluid supply channels whereby only certain of said supply channels are open at the same time and are being supplied with fluid for subsequent discharge through their respective nozzle groups for impingement against the rotating roll, said control means including a rotating disc which sequentially opens and closes the fluid supply channels as it rotates past the fluid inlet openings of said supply channels; and

drive means for rotating the roll and the disc at different speeds.

5,293,664

LOW NOISE AND LESS VIBRATION VACUUM CLEANER

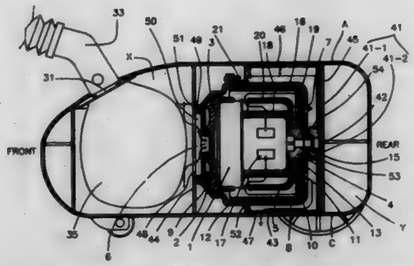
Moo S. Lim, Seoul; Chang W. Son, and Sang B. Kang, both of Incheon, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 2, 1992, Ser. No. 815,764

Claims priority, application Rep. of Korea, Jul. 26, 1991, 91-12898

Int. Cl.[5] A47L *9/22*

U.S. Cl. 15—326 **12 Claims**



9. A vacuum cleaner including an air suction portion at a first portion of the vacuum cleaner, a dust collecting room connecting to the air suction portion, a blower receiving room connecting to the dust collecting room for receiving an electric blower, and an outlet section for discharging air disposed on one side of the blower receiving room, a flow path extended from said dust collecting room to a suction hole at a first end of said electric blower being bent in an S shaped form, the flow path extended from a discharge hole which is disposed on a surface of said electric blower to outlet holes which are disposed on a surface of a blower case being bent in a L shaped form, a U shaped form and a S shaped form, and the flow path extended from said outlet holes of said blower case to said outlet section being bent at least twice in a L shaped form.

5,293,665

NOZZLE MECHANISM FOR A VACUUM CLEANER

Peter Wörwag, Romanshorn, Switzerland, assignor to Firma Fedag, Romanshorn, Switzerland

Filed Feb. 19, 1992, Ser. No. 839,326

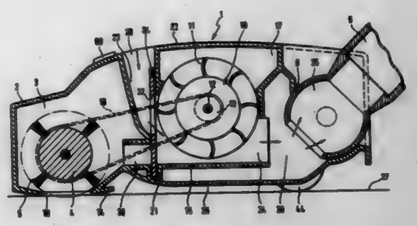
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1991, 4105012

Int. Cl.[5] A47L *9/04*

U.S. Cl. 15—387 **13 Claims**

1. In a vacuum cleaner nozzle mechanism having a sliding base with a first intake opening, a suction conduit connecting means for a vacuum cleaner, an air feed channel for establishing communication between said first intake opening and said connecting means, and a turbine that is driven by drawn-in air and serves to drive a brush roller that is rotatably mounted in the vicinity of said first intake opening, the improvement wherein:

a second intake opening is provided, with an intake channel that is independent of said first intake opening establishing communication between said second intake opening and a turbine chamber for said turbine, with said air for driving



said turbine being supplied to said turbine chamber at least partially via said second intake opening and said intake channel, with said air feed channel, which conveys dust-laden air, being disposed between said first intake opening and said turbine chamber, with said air feed channel and said intake channel opening out into said turbine chamber on one and the same side thereof.

5,293,666

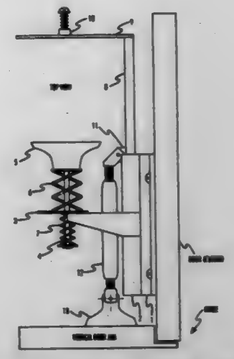
DELAYED ACTION DOOR HOLDER

Richard W. Armstrong, Star Rte. Box 44A, Swansboro, N.C. 28584

Filed Sep. 28, 1992, Ser. No. 952,662

Int. Cl.[5] E05F *3/00*

U.S. Cl. 16—66 **19 Claims**



1. An apparatus for retaining a member in a fixed position for a predetermined period of time, said apparatus comprising:

a suction pad mounted on said member;

a plate mounted on said member;

means for providing relative motion between said suction pad and said plate as said member is moved to said fixed position, said plate contacting said suction pad to form a vacuum therebetween when the member reaches said fixed position, said vacuum retaining the member in the fixed position;

means for controlling the duration of said vacuum.

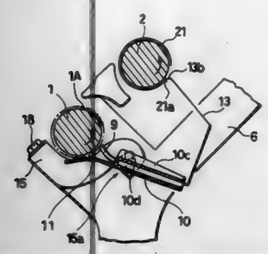
VOL 1160 ISS 3 MR 15 1994

5,293,667

CLEARER DEVICE FOR DRAFT ROLLER

Yoji Kitamura, 1-18, Deguchi 1-chome, Hirakata-shi, Osaka-fu, Japan

Filed Jul. 7, 1992, Ser. No. 909,789
Claims priority, application Japan, Jul. 5, 1991, 3-60659; Feb. 28, 1992, 4-79156
Int. Cl.[5] D01H *5/62*
U.S. Cl. 19—262 4 Claims



1. In combination with a draft roller of a drafting apparatus, the draft roller having a peripheral face and the drafting apparatus including an apron roller, the draft roller being rotatable about a fixed axis, a clearer device for clearing waste from said draft roller peripheral face, said clearer device including

an elongated support frame,

clearer pad means projecting from said support frame,

means for mounting said support frame parallel to the draft roller axis with draft roller engageable parts of the clearer pad means in a first mounted upright positioning of the support frame being engaged with the peripheral face of the draft roller at one side of the draft roller axis for brushing waste away from said peripheral face,

said mounting means including pivot means connected to said support frame intermediate the ends thereof,

an elongated resilient plate, said resilient plate at a first end thereof being connected to said support frame at a lower part of said support frame, an opposite end of said resilient plate being engageable/disengageable with an arresting ring extending from said apron roller so that each time said apron roller rotates, said resilient plate is engaged by said arresting ring and raised causing said support frame to pivot in a predetermined direction to a second mounted position in which it is inclined downwardly and the clearer pad means is moved to a position clear of the draft roller peripheral face with the draft roller engageable parts of said clearer pad means disposed at an opposite side of the draft roller axis and in which second mounted position waste accumulated on said support frame and clearer pad means can drop therefrom, disengagement of the resilient plate opposite end with from said arresting ring causing a repulsive force present in said resilient plate to pivot said support frame in an opposite direction and back to its first mounted position.

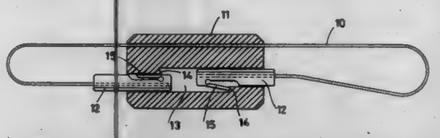
5,293,668

METHOD FOR MAKING SEALS, IN PARTICULAR FOR GARMENTS, AND SEAL IN ACCORDANCE WITH SAID METHOD

Giuseppe Tibiletti, Milan, Italy, assignor to G.T. S.A.S. Di Giuseppe Tibiletti & C., Baranzate di Bollate, Italy

Continuation of Ser. No. 551,949, Jul. 6, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 5,183
Claims priority, application Italy, Jul. 14, 1989, 21194 A/89
Int. Cl.[5] B65D *63/10*
U.S. Cl. 24—16 PB 7 Claims

1. An article comprising an elongate filament formed with alternating male and female gripper elements spaced lengthwise along the filament to provide a plurality of fasteners located in series end-to-end along the length of the filament, each fastener including at least one of the male gripper elements, one of the female gripper elements and a length of the filament between the male and female gripper elements, the fasteners being sequentially removable from the article by severing the filament between respective gripper elements, the male gripper element of a fastener being insertable in the female gripper element of the fastener when the fastener is removed from the article and the gripper elements including interlocking formations for precluding subsequent removal of the male gripper element from the female gripper element wherein the male gripper elements are arranged on the filament in pairs between respective female gripper elements with a portion of the filament between the male gripper elements of each pair, the fasteners being formed by serving the filament between the pairs of male gripper elements whereby each fastener comprises a central female gripper element and a pair of male gripper elements each separated from the female gripper element by a length of the filament extending from opposite ends of the female gripper element respectively, the filament extending linearly through each of the gripper elements and the female gripper elements each having opposed openings extending linearly into the element parallel to the filament for receiving the respective male gripper elements.

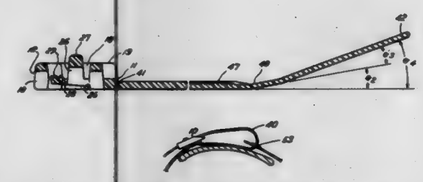


5,293,669

MULTI-USE FASTENER SYSTEM

Gregory Sampson, 2374 S. Colony Dr., Mt. Prospect, Ill. 60056

Filed Dec. 11, 1992, Ser. No. 989,096
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—16 PB 9 Claims



1. A method for engaging a reusable single piece fastener to secure a securable article comprising a head including a first side and a second side, a first channel passing through the head, a first aperture associated with the first channel and with the first side of the head and a second aperture associated with the first channel and with the second side of the head, a lace lock flexibly associated with the head including a flex point uniting the lace lock and the head, a lock release button, a pivot arm having a plurality of locking teeth, and a second channel complementary to the first channel and an elongated flexible lace having a first end integral to the head, a second end, and a plurality of lace teeth complementary to the locking teeth, the method comprising;

a. positioning the elongated flexible lace in relation to the securable article such that the elongated flexible lace can secure the securable article;

b. passing the second end of the elongated flexible lace through an aperture associated with a side of the head and through the first channel and the second channel until the second end protrudes from the opposing aperture to form a loop out of the single piece fastener;

c. grasping the protruding second end of the elongated flexible lace; and

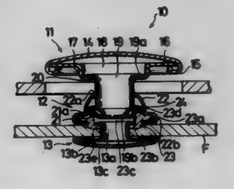
d. pulling the elongated flexible lace until one or more the plurality of lace teeth of the elongated flexible lace engages the locking teeth to give a locked single piece securing device.

5,293,670

TACK BUTTON

Hirokazu Watanabe, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 737,726, Jul. 30, 1991, abandoned. This application Dec. 1, 1992, Ser. No. 984,288
Claims priority, application Japan, Jul. 31, 1990, 2-81547
Int. Cl.[5] A44B *1/08*
U.S. Cl. 24—90 R 4 Claims



1. A tack button which comprises:

(a) a button body having a button tack secured to a cylindrical hub;

(b) a tack member non-removably secured to said hub;

(c) an anchoring member adapted to interconnect said button body and said tack member; and

(d) a spring member accommodated in said anchoring member and adapted to hold said cylindrical hub resiliently in place with in said anchoring member; said cylindrical hub having one marginal edge tiltably supported in said button back and the opposite marginal edge extending beyond the outer periphery of said hub and tiltably supported on said spring member;

wherein said spring member is in the form of a disc having a plurality of spaced leaf spring portions, each of which is bent radially inwardly to form a projecting lug.

5,293,671

SLIDER FOR CLOSING COUPLING ELEMENTS

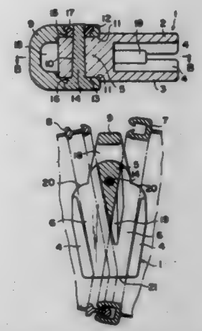
Kiyoshi Oda, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,187
Claims priority, application Japan, Feb. 27, 1992, 4-9321[U]
Int. Cl.[5] A44B *19/00*
U.S. Cl. 24—429 7 Claims

1. A slider for closing a coupling device, comprising:

a slider body having upper and lower wings and a central guide therebetween for guiding male and female coupling elements of the coupling device between the upper and lower wings, and a coupling guide channel between the upper and lower wings from a front end of said slider body to a back end of said slider body; and

a C-shape puller pivotally at its base to said front end of said slider so as to be free in pivotal motion in a horizontal plane, said C-shape puller arranged vertically, spanning between said upper ad lower wings there being a gap between said body and the puller.

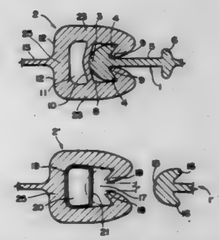


5,293,672

GAS-AND-WATER-TIGHT FLEXIBLE FASTENER

Yutaka Tominaga, Toyama, and Mitsuru Akeno, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,366
Claims priority, application Japan, Mar. 30, 1992, 4-17763
Int. Cl.[5] A44B *19/00*; B65D *33/00*
U.S. Cl. 24—587 4 Claims



1. A gas-and-water-tight flexible fastener comprising:

an plug being of a substantially arrow-shaped cross-section and including a shaft and a head mounted on a front end of the shaft, the head having a pair of locking fins formed at the proximal ends so as to be directed rearward and outwardly; and

a socket being of a substantially squared C-shaped cross-section and including a base, a pair of substantially parallel side plates one integrally formed with and extending perpendicularly from each end of the base, the side plates having a pair of locking hooks formed along their respective confronting distal edges so as to be directed rearward and inwardly for locking engagement with the locking fins when the plug is forced into the socket between the opposed locking hooks and resilient means interposed between the opposed side plates for defining an inner hollow and an outer locking groove.

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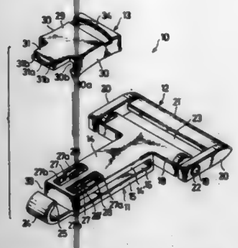
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,673

STRAP FASTENER

Ryukichi Murai, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 78,036
Claims priority, application Japan, Jun. 18, 1992, 4-048636[U]; Feb. 19, 1993, 5-011296[U]
Int. Cl.[5] A44B *13/00*
U.S. Cl. 24—600.4 5 Claims



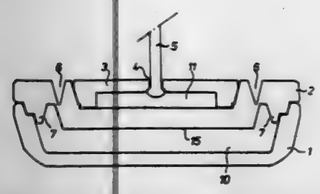
1. A strap fastener which comprises:
(i) a base member having an upper plate and a lower plate spaced apart from each other to define therebetween a guide chamber, said upper plate having a pair of slits and a pair of cantilevered resilient strips elastically deformably supported therein;
(ii) a strap retainer member connected to one end of said base member for receiving and retaining a loose end of a strap;
(iii) a hook connected to the opposite end of said base member and extending integrally from said lower plate; and
(iv) a slider having a base plate having side flanges including inwardly directed guide rails slidably movable in said guide channel and lying above the lower surface of said base member, a ledge extending integrally centrally from said base plate between said side flanges and releasably engageable with said hook and a pair of spaced engaging ribs diverging toward said ledge and adapted to engage said resilient strips.

5,293,674

SECURITY CLIP TO DISCOURAGE THEFT AND A PROCEDURE FOR MANUFACTURING SUCH A SECURITY CLIP

Jacobus G. M. Hendrikx, Diepenbrocklaan 23, 5242 HB Rosmalen, Netherlands

PCT No. PCT/NL91/00088, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/19874, PCT Pub. Date Dec. 26, 1991
PCT Filed May 30, 1991, Ser. No. 853,747
Claims priority, application Netherlands, Jun. 13, 1990, 9001337
Int. Cl.[5] G08B *13/00*
U.S. Cl. 24—704.1 9 Claims



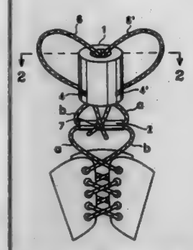
1. Security clip for discouraging theft of goods, comprising an ink-filled reservoir (10) having an outer circumference, a pin (5) and a pin-receiving member forming part of an electronic security system, the pin (5) being connected to the reservoir (10), and the reservoir having a rupture edge (6) which is situated between the pin and said circumference of the reservoir (10).

5,293,675

FASTENER FOR SHOELACES AND THE LIKE

Moti Shai, 6321 Nestle Ave., Reseda, Calif. 91355

Filed Dec. 28, 1992, Ser. No. 997,333
Int. Cl.[5] A43C *7/00*
U.S. Cl. 24—712.1 2 Claims



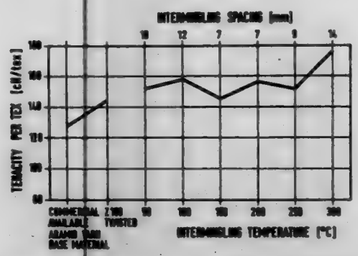
1. A fastener for the lacing of shoes and the like comprising:
a. a horizontal tube having an inside diameter to accommodate both laces with each lace being passed through said horizontal tube in opposing directions;
b. a vertical tube containing two slots in opposite walls; whereby the ends of the laces leaving the horizontal tube are introduced into the center of the vertical tube passed through corresponding slots, the lace ends formed into bows and then passed down through the vertical tube and finally knotted together.

5,293,676

INTERMINGLED MULTIFILAMENT YARN COMPRISING HIGH MODULUS MONOFILAMENTS AND PRODUCTION THEREOF

Josef Geirhos, Bobingen, and Ingolf Jacob, Untermeitingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 26, 1991, Ser. No. 692,215
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1990, 4013946
Int. Cl.[5] D02G *1/16*
U.S. Cl. 28—271 11 Claims



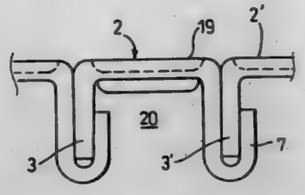
1. A process for producing a multifilament yarn having a total linear density of 500–4000 dtex and consisting at least in part of high modulus monofilaments having an initial modulus of more than 50 GPa in which individual filaments of the multifilament yarn are intermingled with one another by subjecting the filaments to an intermingling medium, carrying out intermingling of the individual filaments with one another at an intermingling temperature of 0.25–0.9 T_m where T_m is the melting point or decomposition temperature of the high modulus monofilaments measured in ° C. and wherein the yarn is intermingled to such an extent that an average entanglement spacing of the yarn, measured in a pin court test, is less than 150 mm.

5,293,677

PROCESS OF MAKING A CYLINDRICAL SLOTTED SIEVE FOR PAPER PULP STRAINER

Jean-Pierre Lamort, Vitry le Francois, France, assignor to E & M Lamort, Vitry le Francois, France

Filed Apr. 14, 1992, Ser. No. 868,763
Claims priority, application France, Apr. 17, 1991, 91-04693
Int. Cl.[5] B07B *1/18*
U.S. Cl. 29—163.6 11 Claims



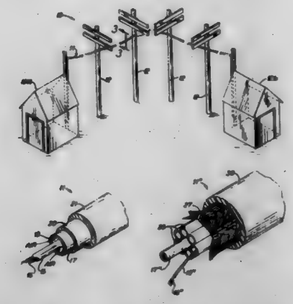
1. Process of making slots in a sieve element for separating solid material in a liquid stream, comprising the steps of providing a metal strip, forming from said strip an element of generally U-shape having a bottom, a first flange and a second flange each extending from said bottom, positioning said element on a template, pricking the bottom of the element at a regular spacing by a knife having a cutting edge perpendicular to the longitudinal axis of the strip and a wedge-shaped profile one face of which is perpendicular to the pricked surface.

5,293,678

METHOD FOR UPGRADING AND CONVERTING A COAXIAL CABLE WITH A FIBER OPTIC CABLE

John C. Chamberlain, and Christopher A. Story, both of Hickory, N.C., assignors to Comm/Scope, Hickory, N.C.

Filed Feb. 28, 1992, Ser. No. 843,733
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—401.1 10 Claims



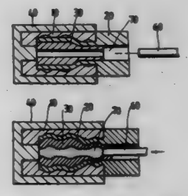
1. A method for upgrading a coaxial cable communications system with a fiber optic communications system for meeting increasing communications capacity demand, said method comprising the steps of:
installing a coaxial cable along a predetermined route, the coaxial cable having an empty longitudinal channel extending continuously along substantially the entire length thereof;
connecting coaxial cable termination electronics to the coaxial cable to define a coaxial cable communications system and operating the coaxial cable communications system at an initial communications capacity;
propelling a fiber optic cable through the empty longitudinal channel of the coaxial cable by fluid drag caused by passing fluid through the channel and alongside the fiber optic cable as the fiber optic cable is fed into the channel, thereby propelling the fiber optic cable into the channel; and
connecting fiber optic termination electronics to the fiber optic cable to define a fiber optic communications system and operating the fiber optic communications system at an upgraded communications capacity;
whereby the coaxial cable is first installed and operated to meet initial communications capacity demand and the propellable fiber optic cable is later installed for meeting increasing communications capacity demand.

5,293,679

METHOD OF CONNECTING TWO PIPES

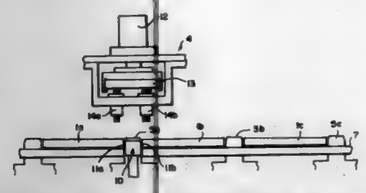
Tzu S. Hsu, 475-1, Kao Mei Rd., Ching Shui, Tai Chung Hsien, Taiwan

Filed Apr. 7, 1993, Ser. No. 43,737
Int. Cl.[5] B21D *39/04*; F16L *13/14*
U.S. Cl. 29—523 2 Claims



1. A method of connecting a first pipe to a second pipe, comprising the steps of:
a. positioning said first pipe within a die;
b. providing an intermediate tubular member having (1) a first end with an outside diameter substantially equal to an inside diameter of said second pipe, and (2) a second end of having an outside diameter substantially equal to an outside diameter of a neck portion formed on at least one end of said second pipe;
c. inserting said first end of said intermediate tubular member into said neck portion of said second pipe;
d. inserting said intermediate tubular member and at least a portion of said neck portion of said second pipe into a first bore formed in said first pipe member, said first bore being defined by a tubular wall of said first pipe, said second end of said intermediate member being disposed adjacent a shoulder portion of said first pipe within said first bore;
e. pressing said neck portion of said second pipe into a space disposed between an external surface of said intermediate tubular member and an internal surface of said tubular wall of said first pipe;
f. inserting a plastic rod within a second bore formed in said intermediate tubular member;
g. exerting an axial pressure against said plastic rod for radially displacing respective portions of said intermediate tubular member and said neck portion of said second pipe into cavities formed in said internal surface of said tubular wall of said first pipe; and,
h. removing said plastic rod from said intermediate tubular member and removing said die from said first pipe.

5,293,680
METHOD AND APPARATUS FOR PROCESSING MOLDED SYNTHETIC RESIN MATERIALS
Akira Mizuta, and Masazumi Ogawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 868,863, Apr. 16, 1992, abandoned.
This application Jun. 25, 1993, Ser. No. 82,523
Claims priority, application Japan, Apr. 17, 1991, 3-85578.
Int. Cl.[5] B23Q *7/02*; B65G *15/64*; B28B *1/48*
U.S. Cl. 29—559 6 Claims



1. A method for processing molded synthetic resin materials, wherein at least one of a procedure is carried out on and parts are associated with portions of a plurality of molded synthetic resin materials, wherein said resin materials are conveyed intermittently, the portions being located near leading and tail ends of said resin materials, wherein said leading and tail ends are designated in a direction along which said resin materials are conveyed so that said tail ends follow respective said leading ends,

the method for processing molded synthetic resin materials comprising the steps of:

i) simultaneously adjusting positions of a tail end of a first molded synthetic resin material and a leading end of a second molded synthetic resin material which is conveyed following said first molded synthetic resin material, said positions being adjusted with respect to two reference surfaces, which are spaced a predetermined distance apart from each other, said reference surfaces being opposite sides of a position adjusting block, wherein said first molded synthetic resin material is abutted against one reference surface and said second molded synthetic resin material is abutted against another reference surface, and

ii) performing at least one of carrying out a procedure simultaneously on and simultaneously associating parts with both a first portion of said first molded synthetic resin material, said first portion being located near said tail end of said first molded synthetic resin material, and a second portion of said second molded synthetic resin material, said second portion being located near said leading end of said second molded synthetic resin material, while said positions of said tail end and said leading end are kept in adjusted states.

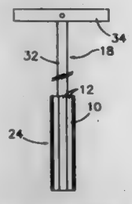
5,293,681
ROLL-UP STRIKER PLATE FOR UNDERGROUND STORAGE TANKS
John E. Tuma, Houston, Tex., assignor to Tanknology Corporation International, Houston, Tex.
Filed Oct. 15, 1991, Ser. No. 776,655
Int. Cl.[5] B23P *7/00*
U.S. Cl. 29—700 7 Claims

1. An apparatus including a protective plate for application of the protective plate to a surface to be protected, access to that surface being restricted by a relatively small opening, comprising:

a plurality of side-by-side elongate members, each of said elongate members being hingedly connected to an adjacent elongate member to form, in a first position a substantially flat plate which is rolled into a second position in which said elongate members form an elongate cylinder having a diameter substantially smaller than the width of the plate;

an elongate setting tool having said elongate members releasably mounted thereto;

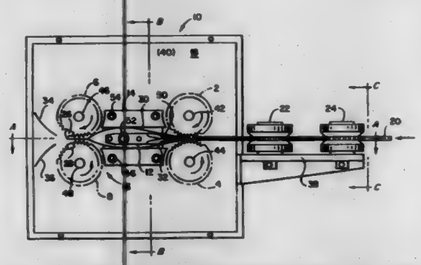
means mounted to said setting tool for allowing pivoting of said elongate members from a first position in which the long axis of each of said elongate members is substantially parallel to the long axis of said setting tool for passing the



cylinder formed by said elongate members, when rolled into said second position, through an opening restricting access to a surface to be protected to a second position in which the long axis of each said elongate member is substantially perpendicular to the long axis of said setting tool; and

means for unrolling said elongate members from said second, cylindrical position to said first, flat position for application of the plate to the surface to be protected.

5,293,682
APPARATUS FOR DISMANTLING POTENTIALLY CONTAMINATED TUBES FROM A TUBE BUNDLE
Robert B. Hahn, Virginia Beach, Va.; Edmund P. Dicker, and Edmund R. Dicker, both of Kunkletown, Pa., assignors to The Atlantic Group, Inc., Norfolk, Va.
Division of Ser. No. 834,814, Feb. 13, 1992. This application May 21, 1993, Ser. No. 64,656
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—727 13 Claims



9. An improved apparatus for deforming an elongated tubular structure, splitting the deformed tube structure into elongated, split wall sections and then chopping the wall sections into short lengths, said apparatus comprising:

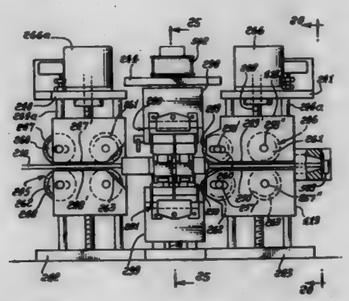
a. a housing having an axial passageway leading into a first station comprising first and second drive push rollers on parallel axes and spaced about a horizontal plane of said passageway, means to rotate each push roller so as to deformably engage opposite surfaces of said tubular structure in said passageway and axially move a deformed tube to a second station;

b. said second station comprising an axially elongated blade having an acute wedge angle spaced about said horizontal plane and an obtuse angle of attack in said horizontal plane and a cutting edge that is proximate to the outlet of said push roller, wherein said deformed tube will be split about said horizontal plane into top and bottom wall sections as the deformed tube axially enters the second station, and means to guide said split wall sections axially around said elongated blade towards a third station;

c. said third station comprising first and second drive pull rollers on parallel axes and spaced about the horizontal plane of said passageway, means to rotate each pull roller so as to deformably engage opposite outer surfaces of said split wall sections and urge inner surfaces of said split wall sections together, and advance said split wall sections axially to a chopping means for creating substantially planar wall segments of short length;

d. wherein the means to rotate the push rollers and the means to rotate the pull rollers are synchronized, so as to define a continuous axial motion of a tubular structure inserted into said axial passageway.

5,293,683
METHOD FOR PROCESSING CABLE AND WIRE
Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Company, Monrovia, Calif.
Division of Ser. No. 765,986, Sep. 26, 1991, which is a continuation-in-part of Ser. No. 659,557, Feb. 22, 1991, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Mar. 26, 1992, Ser. No. 857,972
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 21 Claims



1. In the method of processing wire to cut the wire into sections and to strip sheathing from the wire to expose wire ends at opposite ends of the sections, and by operation of wire feed means and cutter means, the steps that include:

a) providing and operating forward and rearward pairs of endless conveyors, and causing said conveyors to grip the wire along the length thereof and at opposite sides thereof, and forwardly and rearwardly of said cutter means to effect endwise wire displacement,

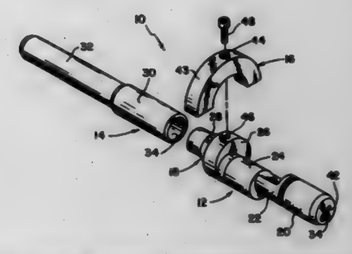
b) severing the wire thereby to form wire forward and rearward sections, the forward section having a rearward end portion, and the rearward section having a forward end portion, and

c) stripping controlled lengths of sheathing from the forward section rearward portion and from the rearward section forward portion thereby to expose wire ends at said portions;

d) said cutter means including three blade pairs, each pair including two blades located at opposite sides of said axis, both blades of one pair being displaced toward the wire to sever the wire, and including the step of displacing both blades of the remaining two pairs toward the wire sections to strip sheathing from the rearward and forward portions during controlled endwise displacement of said sections,

e) said displacing of the blades of the remaining two blade pairs toward the wire sections being carried out to control penetration of the blades into the sheathing to selected depth.

5,293,684
REDUCED MATERIAL CRANKSHAFT FABRICATION
Emanuel D. Fry, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Division of Ser. No. 920,822, Jul. 28, 1992, Pat. No. 3,237,892.
This application Jun. 4, 1993, Ser. No. 72,565
Int. Cl.[5] B23P *15/00*; F16C *3/04*
U.S. Cl. 29—888.08 3 Claims



1. A method for making a crankshaft, comprising the steps of:

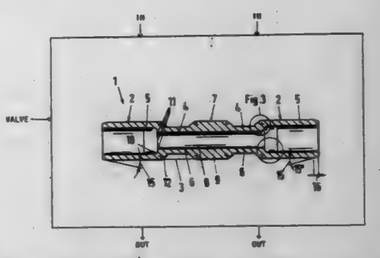
forming a high stress portion having a crankpin and an eccentric by forging a blank of steel material to a desired shape;

forming a reduced stress portion having a tubular cylindrical portion from an unforged steel material;

securely joining together a first axial end of said high stress portion to a second axial end of said reduced stress portion; and

attaching a separate counterweight to one of said high stress portion and said reduced stress portion.

5,293,685
METHOD OF MAKING SLIDE VALVES WITH TAPPETS AND THE SLIDE VALVES
Hans-Friedrich Meyer, Gehrden, and Ernst A. Meyer, Wennigsen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Sep. 10, 1992, Ser. No. 943,340
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131830
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.124 20 Claims



1. A method of making a slide valve with a tappet, said method comprising the steps of:

a) providing a slide valve body;

b) providing an injection molding machine;

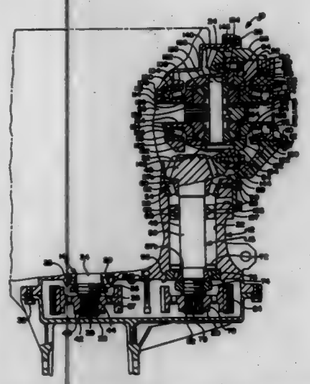
c) molding a tappet comprising the following steps:

c1) providing a mold for the injection molding machine by

forming the mold such that the mold is configured to form a body such that the body:
has a cylindrical shape with two ends and end segments at the ends;
has at least one intermediate segment between the end segments; and
has a hollow interior space;
the end segments being cylindrical, the end segments being coaxial with one another, the end segments having at least one diameter, and the end segments having walls which walls have thicknesses and which thicknesses are substantially equal;
the at least one intermediate segment being cylindrical, the at least one intermediate segment being coaxial with the end segments, the at least one intermediate segment having a diameter which diameter is smaller than the at least one diameter of the end segments, and the at least one intermediate segment having a wall which wall has a thickness;
c2) providing a plastic material;
c3) inserting the mold in the injection molding machine;
c4) inserting the plastic material in the injection molding machine; and
c5) operating the injection molding machine to mold the tappet from the plastic material in the mold, which tappet comprises:
two ends;
end segments at the ends; and
at least one intermediate segment between the end segments;
the tappet having a cylindrical shape;
the tappet having a hollow interior space;
the end segments being cylindrical, the end segments being coaxial with one another, the end segments having at least one diameter, and the end segments having walls which walls have thicknesses and which thicknesses are substantially equal;
the at least one intermediate segment being cylindrical, the at least one intermediate segment being coaxial with the end segments, the at least one intermediate segment having a diameter which diameter is smaller than the at least one diameter of the end segments, and the at least one intermediate segment having a wall which wall has a thickness; and
d) assembling a slide valve comprising inserting the tappet into the slide valve body.

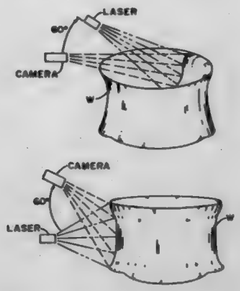
11. A slide valve with a tappet made by a method comprising the steps of:
a) providing a slide valve body;
b) providing an injection molding machine;
c) molding a tappet comprising the following steps:
c1) providing a mold for the injection molding machine by forming the mold such that the mold is configured to form a body such that the body:
has a cylindrical shape with two ends and end segments at the ends;
has at least one intermediate segment between the end segments; and
has a hollow interior space;
the end segments being cylindrical, the end segments being coaxial with one another, the end segments having at least one diameter, and the end segments having walls which walls have thicknesses and which thicknesses are substantially equal;
the at least one intermediate segment being cylindrical, the at least one intermediate segment being coaxial with the end segments, the at least one intermediate segment having a diameter which diameter is smaller than the at least one diameter of the end segments, and the at least one intermediate segment having a wall which wall has a thickness;
c2) providing a plastic material;
c3) inserting the mold in the injection molding machine;
c4) inserting the plastic material in the injection molding machine; and
c5) operating the injection molding machine to mold the tappet from the plastic material in the mold, which tappet comprises:
two ends;
end segments at the ends; and
at least one intermediate segment between the end segments;
the tappet having a cylindrical shape;
the tappet having a hollow interior space;
the end segments being cylindrical, the end segments being coaxial with one another, the end segments having at least one diameter, and the end segments having walls which walls have thicknesses and which thicknesses are substantially equal;
the at least one intermediate segment being cylindrical, the at least one intermediate segment being coaxial with the end segments, the at least one intermediate segment having a diameter which diameter is smaller than the at least one diameter of the end segments, and the at least one intermediate segment having a wall which wall has a thickness; and
d) assembling a slide valve comprising inserting the tappet into the slide valve body.

5,293,686
METHOD OF ADJUSTMENT FOR A NORTH-SOUTH AUTOMATIC TRANSAXLE
Berthold Martin, Shelby Township, Macomb County; James R. Klotz, Mt. Clemens; Steven A. Mikel, Farmington Hills, and John A. Fralt, Walled Lake, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 18, 1992, Ser. No. 993,941
Int. Cl.[5] F16H *57/12, 1/38, 57/02*
U.S. Cl. 29—893.1 **18 Claims**



1. A method of adjusting backlash for a north-south transaxle, said method comprising the steps of:
forming a case having a first passageway extending longitudinally, a second passageway spaced from the first passageway and being generally parallel to the first passageway and extending longitudinally, and a cavity at one end of the second passageway having an opening generally perpendicular to the second passageway;
disposing a transmission assembly in the first passageway;
disposing a transfer assembly in the second passageway;
interconnecting the transmission assembly and the transfer assembly for transferring torque from the transmission assembly to the transfer assembly;
disposing a differential assembly in the cavity and engaging the transfer assembly;
preloading the differential assembly;
determining the amount of backlash between the differential assembly and transfer assembly; and
adjusting the backlash between the differential assembly and transfer assembly.

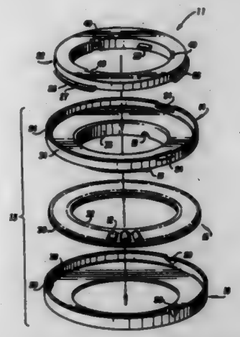
5,293,687
WHEEL MANUFACTURING METHOD
Louis G. Willoughby, Jr., Bay Village, and Donald G. Jordan, Willoughby, both of Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 698,754, May 10, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,616
Int. Cl.[5] B21K *1/28*; G01B *11/06*
U.S. Cl. 29—894.35 **6 Claims**



1. In a method for manufacturing wheels in a production line by hot-shaping metal into wheel-shaped articles which are larger in some areas than the wheels to be formed and which have a plurality of complexly-curved inner and outer surfaces; cooling the wheel-shaped articles; and removing excess metal from some areas of the wheel-shaped articles, an improvement which comprises: inspecting at least some of said wheel-shaped articles at a plurality of points along a transverse plane through said inner and outer surfaces and at a plurality of transverse plane locations about the perimeter of each article being inspected with a contactless gauging system recently after said articles have been hot-shaped to determine whether said articles are within dimensional requirements to form a wheel therefrom; and taking corrective action to the hot-shaping operation to minimize the number of unacceptable wheel-shaped articles that are formed.

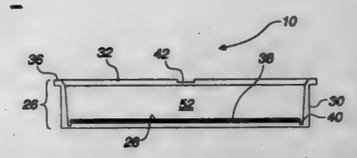
5,293,688
SHIM THRUST BEARING SYSTEM
Hans W. Koch, and Bobby L. Hodge, both of Charlotte, N.C., assignors to INA Bearing Company, Inc., Fort Mill, S.C.
Division of Ser. No. 500,193, Mar. 27, 1990, Pat. No. 5,110,223. This application Jan. 21, 1992, Ser. No. 822,753
Int. Cl.[5] F16C *43/00*
U.S. Cl. 29—898.041 **6 Claims**

6. A system for assembling a thrust bearing to be installed coaxially with respect to a mounting member having a segment having an axial dimension where the bearing is to be installed and a predetermined radial dimension, wherein said axial dimension varies within an expected range, comprising the steps of:
a) providing a thrust bearing having a radial dimension and an axial dimension, the axial dimension of said thrust bearing being less than a maximum dimension of said expected range;
b) providing a plurality of spacers of varying axial dimension, each of said plurality of spacers being color coded to correspond with a predetermined axial dimension within said expected range;
c) selecting from said plurality of spacers one spacer of a desired axial dimension; whereby a thrust bearing and spacer combination having an overall axial dimension corresponding to the axial dimension of a given mounting



member segment may be installed on that mounting member segment, and wherein each of said bearing and said spacer further include radially extending means for locking said spacer and said bearing together in combination,
d) coaxially assembling said thrust bearing and spacer combination by rotating same relative to one another such that their respective means for locking mate and lock.

5,293,689
METHOD AND APPARATUS FOR SHARPENING A CUTTING BLADE OF A ROTARY SHAVER
Rodger F. Voll, R.R. #4, Innisfail, Alberta, Canada T0M 1A0
Filed Dec. 17, 1992, Ser. No. 992,024
Int. Cl.[5] B26B *19/38*
U.S. Cl. 30—35 **6 Claims**



1. A method of sharpening the blades of a rotary shaver, having a body that houses a drive motor which rotates at least one drive shaft, at least one disc mounted for rotation on the at least one drive shaft, the disc having a plurality of cutting blades, a circular comb-like shaving head covering the disc, a support bracket supporting the shaving head and a cover plate with at least one circular opening which overlies the shaving head, comprising the steps of:
firstly, substituting a cup shaped sharpening head for the shaving head on the rotary shaver, the sharpening head being non-rotatably fixed to the body, the cup shaped sharpening head having a flat abrasive bottom in communication with cutting blade,
secondly, activating the drive motor whereby the disc rotates rapidly rubbing the cutting blades against the abrasive bottom of the cup shaped sharpening head.

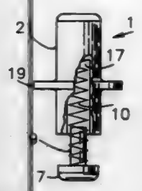
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,690

LOCKING DEVICE FOR FOLDING KNIFE, TOOL, ETC.

William E. Cassady, P.O. Box 723, San Anselmo, Calif. 94979

Filed Feb. 12, 1992, Ser. No. 834,463
Int. Cl.[5] B26B *1/04, 1/02, 1/00*
U.S. Cl. 30—161 8 Claims



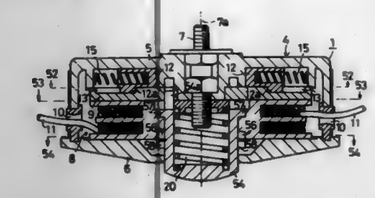
1. A folding hand tool comprising:
an elongated handle;
a working element rotating on a pivot attached to one end of said handle, said handle supporting said working element in an extended position and enclosing said working element in an enfolded position;
said handle further comprising an arcuate slot with ends, substantially centered on said pivot, and adjacent to said working element;
said arcuate slot having enlarged cavity means adjacent to said ends of said arcuate slot;
said working element having elongated crossbolt means located in an aperture in said working element;
said crossbolt means formed of two parts; each having two ends, and comprising elastic means forcing said ends apart, one end of said crossbolt means comprising a head portion which protrudes through said arcuate slot in said handle, and a broad ended portion which engages and disengages said cavity means;
whereby the opening and closing of said working element and the establishment and removal of the crossbolt in the locked positions of said arcuate slot at said extended open position and said closed position may be achieved by directed finger pressure upon said crossbolt means.

5,293,691

CUTTING HEAD FOR A CORD TYPE MOWER

Hideo Sugihara, and Hajime Tomita, both of Gifu, Japan, assignors to Diatop Corporation, Gifu, Japan

Division of Ser. No. 792,788, Nov. 15, 1991, Pat. No. 5,222,301.
This application Dec. 29, 1992, Ser. No. 998,567
Claims priority, application Japan, Nov. 16, 1990, 2-312500
Int. Cl.[5] A01G *3/06*
U.S. Cl. 30—276 6 Claims



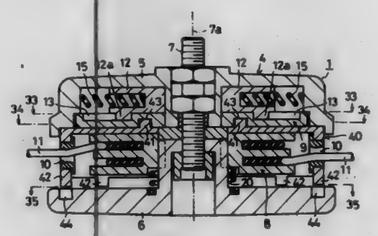
1. A cutting head for a cord-type mower having a motor for driving the cutting head, the cutting head being capable of automatic and manual cord feeding, the cutting head comprising:
a casing driven by the motor to rotate about an axis;
a bobbin mounted in said casing, and adapted to rotate around said axis relative to said casing;
a cord having a distal end wound about said bobbin;
a cord feed slot provided on the outer periphery of said casing, for permitting the distal end of said cord to extend outside said casing, to a suitable cutting position; and
cutting means for selectively coupling said bobbin to said casing, and for selectively automatically decoupling said bobbin from said casing, in accordance with a rotational speed of said casing, whereby said rotational speed varies as a function of the length of the cord extended from said cord feed slot;
said coupling means including:
a control plate capable of slipping relative to said casing about said axis;
a boss capable of rotating together with said control plate, for selectively coupling said control plate to said bobbin, said boss having a pressed portion which projects from a bottom of said casing and which should be pressed at the time of tapping operation;
said bobbin and said boss being provided with mutual linkage means for linking said boss to said bobbin, in the automatic cord feed mode;
said bobbin and said boss being further provided with rotation control means for permitting said bobbin to rotate relative to said boss by a predetermined angle, in the manual cord feed mode;
said boss capable of sliding relative to said control plate along said axis, between a first position where said bobbin is linked to said boss via said mutual linkage means, and a second position where said bobbin is released from said boss and can slip relative to said casing;
a spring provided within said casing for urging said boss toward the first position from the second position, wherein said boss is switched from the first position to the second position, against the action of said spring, in accordance with tapping operation;
at least one drive link slidably disposed in said casing, for reciprocating relative to said axis so as to be engagable to said control plate, and for coupling said control plate to said casing, wherein said drive link can move between a transmitting position for transmitting the rotation of said casing to said bobbin, via said control plate and said boss, and an idling position for allowing said bobbin, together with said boss and said control plate, to slip relative to said casing, without transmitting the rotation of said casing to said bobbin, according to centrifugal force depending on the rotational speed of said casing; and
at least one spring disposed within said casing for urging said drive link forward said transmitting position from said idling position.

5,293,692

CUTTING HEAD FOR A CORD TYPE MOWER

Hideo Sugihara, and Hajime Tomita, both of Gifu, Japan, assignors to Diatop Corporation, Gifu, Japan

Division of Ser. No. 792,788, Nov. 15, 1991. This application Dec. 29, 1992, Ser. No. 998,787
Claims priority, application Japan, Nov. 16, 1990, 2-312500
Int. Cl.[5] A01G *3/06*
U.S. Cl. 30—276 5 Claims



1. A cutting head for a cord-type mower having a motor for driving the cutting head, the cutting head being capable of automatic and manual cord feeding, the cutting head comprising:
a casing driven by the motor to rotate about an axis;
a bobbin mounted in the casing, and adapted to rotate together with said casing, and for sliding along said axis relative to said casing;
a cord having a distal end, wound about said bobbin;
a shifter mounted in said casing, for rotating relative to said casing about said axis, and for sliding along said axis relative to said casing;
a cord feed slot provided on the outer periphery of said shifter, for permitting a distal end of said cord to extend outside said casing, to a suitable cutting position;
coupling means for selectively coupling said shifter to said casing, and for selectively automatically decoupling said shifter from said casing, in accordance with a rotational speed of said casing which varies as a function of the length of the cord extended from said cord feed slot; and
switching means for reciprocating said shifter and said bobbin in response to a tapping operation, wherein said shifter is reciprocated between a first position where said shifter links to said casing via said coupling means, and a second position where said shifter is released from said coupling means and can slip relative to said casing by a predetermined angle, said switching means comprising:
a plurality of first engaging portions formed on said casing around said axis and having engagements formed thereon; and
a plurality of second engaging portions formed on said shifter, and having engagements formed thereon, such that they can be engaged with said first engaging portions in response to a tapping operation, whereby the engagements of said first and second engaging portions prevent said shifter from rotating relative to said casing, so as to determine the length of the cord to be extended;
wherein said coupling means includes:
a control plate capable of slipping relative to said casing about said axis, wherein said control plate and said shifter are provided with mutual linkage means for linking said control plate to said shifter, wherein said mutual linkage means connects said control plate and said shifter in automatic cord feed mode, so that they can rotate together, and wherein said shifter is disconnected from said control plate in said tapping operation, so that said shifter is independent of said control plate;
at least one drive link provided in said casing so that it reciprocates relative to said axis, for coupling said control plate to said casing, wherein said drive link can move between a transmitting position for transmitting the rotation of said casing to said control plate, and an idling position for allowing said control plate to slip relative to said casing without transmitting the rotation of said casing to said control plate, according to centrifugal force depending on the rotational speed of said casing; and
at least one spring disposed within said casing for urging said drive link toward said transmitting position from said idling position.

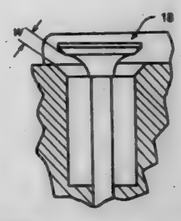
5,293,693

VACUUM VALVE DESIGN FOR DIE CASTING

Craig A. Nelson, Windom, Minn., and Russell J. VanReus, Milwaukee, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 27, 1992, Ser. No. 874,368
Int. Cl.[5] G01B *5/26;* B22D *17/20*
U.S. Cl. 33—1 R 10 Claims

1. A method of determining the size of open area of a valve means adapted to communicate a die cavity with a source of vacuum to enable the rapid evacuation of air from the die cavity immediately prior to placing a shot of molten metal into the die cavity, the valve means being used in a die casting apparatus of the type wherein the die comprises at least two components that are positioned together during a die casting operation and are separable to remove the die casting, the components defining parting lines along the interface of the components in the die cavity, the method comprising:
determining the total length of parting lines adjacent to the die cavity that are exposed to the exterior of the die;



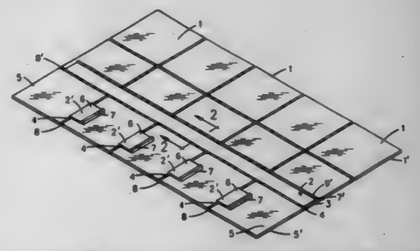
determining the size of the open area in square inches of the valve means to be equal to or greater than 0.003 inches multiplied by the determined total length in inches of parting lines.

5,293,694

DEVICES FOR FACILITATING THE LAYING OF TILE

James Swindle, 4626 25th Ave. North, St. Petersburg, Fla. 33713

Filed Feb. 12, 1993, Ser. No. 16,995
Int. Cl.[5] G01B *3/30*
U.S. Cl. 33—527 3 Claims



1. A combination of at least five flat rectangular tiles, each tile having similar rectangular dimensions, and having similar thickness dimensions, a first spacing device and a second spacing device for determining in the laying of said rectangular tile the spacing between adjacent tiles;
(a) said first spacing device comprising a four sided rectangular flat plate section having the length of each of two parallel sides thereof of a dimension greater than three times the greater side length of the rectangular individual tile and the remaining two sides of said rectangular flat plate section each having a dimension of a length less than each of the rectangular dimensions of the individual tiles, and having a lip extending downwardly from a first side of said flat plate section, said lip having a thickness corresponding in dimension to the width of the spacing desired between adjacent tile and a depth between ¼ and ¾ the dimension of the thickness of the tile;
(b) said second spacing device comprising a four-sided rectangular flat plate section having a length shorter than each of the sides of said individual tiles and having a lip extending downwardly from a first side of said flat plate section, the thickness and depth of said downwardly extending lip corresponding to the width and depth of the lip extending downwardly from said first spacing device, whereby the space between adjacent tiles is approximately the same as determined by said two downwardly extending lips, and
(c) in which said second spacing device has a lip extending upwardly from a second side of said rectangular flat plate

section, the thickness of said upwardly extending lip having a thickness different in dimension from the thickness of said lip extending downwardly from said second spacing device and corresponds to another width of space desired between adjacent tiles, and said first spacing device having a lip extending upwardly from the side of said rectangular flat plate section opposite to and parallel to the side of said flat plate section from which the downwardly extending lip extends, the thickness of said upwardly extending lip of said second spacing device corresponding substantially to the thickness of the upwardly extending lip of said first spacing device.

5,293,695

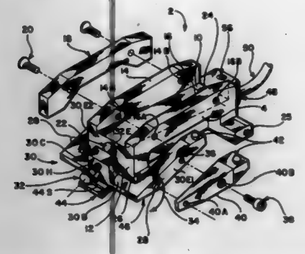
TOOL FOR MEASURING RELATIVE DISTANCE BETWEEN TWO ADJACENT SURFACES AND METHOD THEREFOR

Frank A. Olahefsky, Schenectady, N.Y., assignor to Equipment Development Services, Schenectady, N.Y.

Filed Jul. 31, 1992, Ser. No. 922,792

Int. Cl.[5] G01B *5/14*

U.S. Cl. 33—783 **11 Claims**



1. Apparatus to ascertain the relative distance between two adjacent surfaces, comprising:

first means movable along and maintaining constant contact with at least two points on one of said surfaces;

second means movable in concert with and pivoting relative to said first means to bias against the other of said surfaces, said second means movable along and maintaining constant contact with at least two points on said other surface;

means responsive to said second means for converting any vertical movement thereof relative to said first means as a relative distance between said two adjacent surfaces.

5,293,696

DEVICE FOR THE DEHYDRATION OF SEWAGE SLUDGE

Gerhard Schmidt, Sherwood Park, Canada, and Heinz Schmidt, Erftstadt, Fed. Rep. of Germany, assignors to Axbridge Holdings Ltd., Canada

PCT No. PCT/CA90/00074, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/09967, PCT Pub. Date Sep. 7, 1990

PCT Filed Mar. 1, 1990, Ser. No. 752,676

Claims priority, application European Pat. Off., Mar. 2, 1989, 89103604.8

Int. Cl.[5] F26B *21/06*

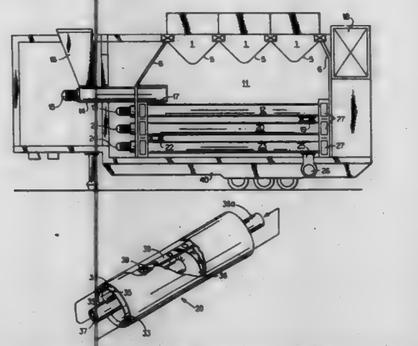
U.S. Cl. 34—76 **5 Claims**

2. An apparatus for dehydration of sewage sludge, comprising:

a. a dehydration chamber having an intake opening and a discharge opening;

b. a trough in which is rotatably mounted an auger for conveying sewage sludge from the intake opening to the discharge opening, the auger having a hollow shaft defining a fluid flow passage whereby preheated fluids are passed through the fluid flow passage to effect a heat exchange with sewage sludge being carried by the auger;

c. a plurality of radiant heaters with burners disposed in side by side relation, each of the radiant heaters having heat radiation surfaces disposed within the dehydration chamber which radiate heat, whereby sewage sludge is heated to convert moisture in the sewage sludge to steam and cause a gasification;



d. a condenser adjoining the dehydration chamber, means being provided to draw steam and gases from the dehydration chamber into the condenser, whereby the steam is condensed to form hot water;

e. a gas vent pipe diverting gases from the condenser to one of the burners of the radiant heaters, whereby the gases are burned; and

f. a first fluid flow line connecting the condenser with the fluid flow passage, whereby hot water from the condenser is directed through the fluid flow passage.

5,293,697

VACUUM DRYING APPARATUS

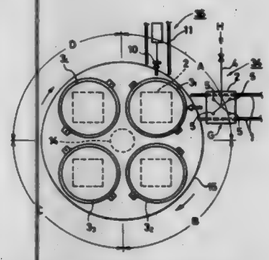
Osamu Kawakami, Amagasaki, Japan, assignor to Nikku Industry Co., Ltd., Itami and Senju Metal Industry Co., Ltd., Tokyo, both of Japan

Filed Dec. 16, 1992, Ser. No. 991,224

Claims priority, application Japan, Dec. 26, 1991, 3-107507[U]

Int. Cl.[5] F26B *13/30*

U.S. Cl. 34—92 **13 Claims**



1. A vacuum drying apparatus comprising

a rotary table;

two or more vacuum tanks, each of said vacuum tanks being capable of receiving an article to be dried, said vacuum tanks being concyclically disposed on said rotary table so as to define multiple zones, one of said zones being a carry-in and carry-out zone; and

a heater in each of said vacuum tanks means to produce a vacuum in said vacuum tanks.

5,293,698

SYSTEM FOR TEMPORARILY STORING PRINTED PRODUCTS REMOVED FROM A PRINTING MACHINE

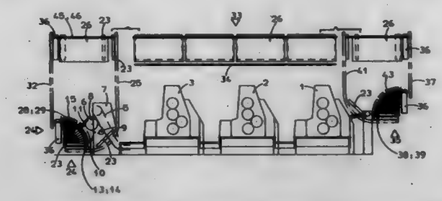
Godber Petersen, Augsburg, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 17, 1992, Ser. No. 852,683

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1991, 4114096

Int. Cl.[5] B65H *39/02*

U.S. Cl. 34—149 **20 Claims**



1. Removal system for printed products or signatures (6) from a printing machine (1, 2, 3) comprising

continuously moving product transport means (5) including gripper means (4) positioned to receive the printed products from the printing machine,

a storage unit (26, 33), said storage unit including

a plurality of pocket structures (12, 23, 36) positioned to receive the printed products from the transport means (4, 5) at a product loading station (24).

each of said pocket structures comprising

a plurality of connected sheet-like elements (16, 17), said sheet-like elements being pivotably coupled together next to each other an end portion and spreadably coupled at a region remote from said end portion to permit, selectively, spreading out, in fan form, of the sheet-like elements and defining pockets or pocket structures (15) between adjacent sheet-like elements for reception of at least one product or signature (6) in the pockets (15) between said elements at said delivery station (24),

said sheet-like elements being collapsible towards each other, with or without a product (6) in the pockets (15);

pocket structure transport means (13, 14, 25, 32, 37, 38, 39; 45, 46) engageable with the pocket structure having printed products therein, collapsing the sheet-like elements (16, 17) towards each other to close the pockets or pocket elements (15) and move said pocket structure to said storage unit 926, 33),

said pocket structure transport means further being engageable with collapsed, empty pocket structures (23) and moving said empty pocket structures to said delivery position (24) for receiving printed products in the pockets or pocket structures (15) formed by spreading the sheet-like elements (16, 17) of the respective empty pocket structure;

the storage unit (26) storing empty storage structures (23) and receiving storage structures (36) with products or signatures (6) in the pockets thereof,

said pocket structure transport means including removal transport means (37, 38, 39, 41, 51, 52) engageable, selectively, with the storage unit (26) for removal of the pocket structure from the storage unit.

5,293,699

PROCESS AND APPARATUS FOR GUIDING A COATED MATERIAL STRIP

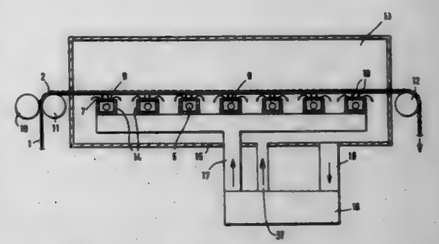
Horst Faust, Geisenheim-Johannisberg, and Joachim Stroszynski, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 10, 1992, Ser. No. 926,400

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127602

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—156 **15 Claims**



1. An apparatus for guiding a coated material strip through a dryer, said apparatus comprising:

a plurality of guide elements being disposed in the dryer so that the plurality of guide elements are equally spaced from each other, said plurality of guide elements each having a gas-permeable guide face which faces an underside of said coated material strip; and

means for supplying a gas to said plurality of guide elements so that a gas stream passes through each of said gas-permeable guide faces and supports said coated material;

a drying gas line through which a drying gas is supplied to said dryer, and wherein said common supply line is different from and is not associated with said drying gas line; and

a common supply line;

wherein each of said plurality of guide elements includes a duct or a supply tube which receives said gas, and said plurality of guide elements are all connected to said supplying means via said common supply line.

5,293,700

SYSTEM FOR DRYING GREEN WOODS

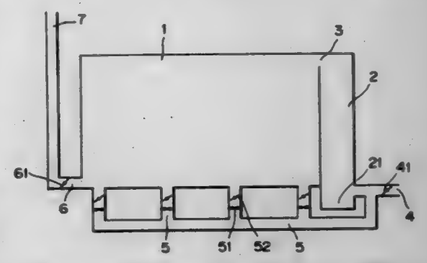
Sachio Ishii, 20-11, Shimokawamachi, Maebashi-shi, Gunma 379-21, Japan

Filed Oct. 9, 1991, Ser. No. 773,817

Claims priority, application Japan, Oct. 12, 1990, 2-272187

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—225 **10 Claims**



1. An apparatus for drying a quantity of wood which comprises:

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a wood drying room which includes a plurality of walls having exterior surfaces, which walls define a generally unobstructed open interior space and a combustion-gas supply passage therebetween which are capable of being sealed;

a combustion-gas generator provided with an air-inlet conduit for introducing fresh air for combustion use into a combustion chamber provided in a lower area of said combustion-gas generator,

said combustion-gas supplying passage extending from an upper area of said combustion-gas generator to an opening in said wood drying room which opening is located at an upper portion of said wood drying room at one side thereof;

an exhaust-gas discharging conduit extending to a chimney from a bottom area of said wood drying room, said chimney being located on a side of said wood drying room which is opposite said side at which said opening is located;

a combustion-gas recovery conduit extending from said bottom area of said wood drying room to said combustion-gas generator; and

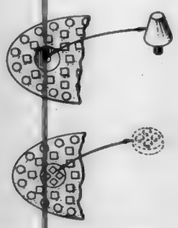
a gas flow-rate control unit provided in at least one of said exhaust-gas discharging control or said combustion-gas recovery conduit, wherein said generally unobstructed open interior space is rectangular.

5,293,701

CONVERTIBLE FOOTWEAR

William W. Sullivan, 17 Old Oak Ave., Westminster, Mass. 01473

Filed Mar. 19, 1990, Ser. No. 495,155
Int. Cl.[5] A43B *23/28;* A43C *15/00*
U.S. Cl. 36—59 R 7 Claims



5. Convertible footwear comprising

a cover with a base attached thereto; said base having an outer edge and a prescribed surface contacting pattern adapted to a special athletic event; and

means for altering said pattern to include a different surface contacting pattern to adapt said base for a different athletic event;

wherein said prescribed pattern is for athletic events on artificial turf comprises a set of quadrilateral protuberances which are disposed along an interior contour in alignment with said outer edge, and said altering means interrupt said pattern, adapts said base to athletic events on natural turf and comprises a plurality of cleats projecting from said base above the height of said quadrilateral protuberances in order to be suitable for natural turf; and

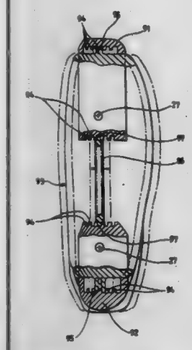
said cleats are insertable into said base along an interior contour containing a plurality of said protuberances between each of said cleats at prescribed positions containing means for receiving said cleats, with each receiving means occupied by an insert which completes the original protuberance pattern on said base.

5,293,702

METHOD AND APPARATUS FOR SELECTIVELY ORIENTING SKI BOOT

Terumasa Miyoshi; Shinichi Iwama, and Yasushi Asai, all of Tokyo, Japan, assignors to Daiwa Seiko, Higashikurume, Japan

Continuation of Ser. No. 748,873, Aug. 23, 1991, abandoned.
This application Jun. 28, 1993, Ser. No. 82,903
Claims priority, application Japan, Sep. 7, 1990, 2-94364[U]
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 6 Claims



1. A ski boot comprising:

a boot body having a bottom surface, and defining a longitudinal direction; and

boot soles attached to the bottom surface of said boot body, said soles having alignment means for changing an attaching of said soles with respect to said boot body in a foot-width direction which is transverse to said longitudinal direction, said attaching means including a plurality of attaching projections positioned adjacent one another in said foot width direction and extending in said longitudinal direction and engagement recesses positioned adjacent one another, said plurality of attaching projections and engagement recesses are respectively formed in one of said bottom surface and said boot soles, said plurality of attaching projections and engagement recesses variably and selectively engage one another to alter the alignment of said boot soles with respect to said boot body.

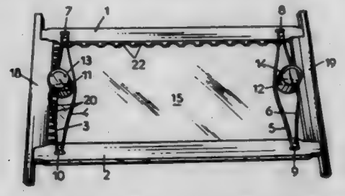
5,293,703

FRAME WITH FLEXIBLE TENSIONING STRIPS FOR STRETCHING A MEMBRANE AND GEL

Jérome C. D. Coste, Nice; Salah Aksas, Paris; Frédéric Ginot, Versailles, and Daniel Cohen, Saint Maude, all of France, assignors to Bertin & Cie, Plaisir, France

PCT No. PCT/FR91/00957, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/10272, PCT Pub. Date May 25, 1992
PCT Filed Dec. 3, 1991, Ser. No. 910,252
Claims priority, application France, Dec. 10, 1990, 90 15409
Int. Cl.[5] D06C *3/08;* B01D *57/02;* G01N *27/26*
U.S. Cl. 38—102.4 9 Claims

1. A frame for supporting and stretching a membrane, comprising at least two parallel bars and means for attaching the membrane to said bars along two parallel edges of said membrane, and means for causing the relative positioning of the two bars to vary between a position where said membrane is unstretched and a position where said membrane is stretched between said bars, said means for causing the relative positioning of said bars to vary comprising two pairs of closely spaced parallel and identical elastic strips having tow ends, each strip being secured by its respective ends to two corresponding ends of said bars, said strips being flexed apart from each other in



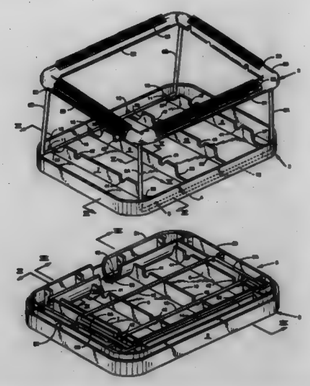
order to move the bars closer to each other for attaching the membrane to the bars.

5,293,704

COLLAPSIBLE CRAFTING FRAME WITH STORAGE COMPARTMENT BASE

Sandra L. Brown, 248 Outlook Dr., Pittsburgh, Pa. 15228

Filed Nov. 12, 1992, Ser. No. 975,004
Int. Cl.[5] D06C *3/08, 3/10*
U.S. Cl. 38—102.9 19 Claims



1. A transportable crafting apparatus including the combination of:

a base having a support surface opposite to a storage compartment;

a crafting frame having a window opening defined by carrier bars including cloth holding carding strips releasably engaging the cloth spanning said window opening for allowing crafting operations on the cloth from opposite sides thereof;

leg means for establishing a spaced apart operative position and a storage position for the crafting frame, the leg means in the operative position extending between the crafting frame and said base; and

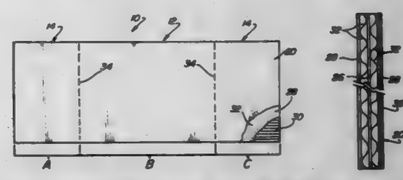
support means supporting said leg means for pivotal movement on one of said base and said crafting frame, said support means constraining said leg means to the other of said base and said crafting frame, said support means constraining said crafting frame against lateral movement relative to said storage compartment of the base while spaced therefrom in said operative position, said storage compartment of the base including means to prevent contact with said carding strips when said crafting frame is protectively supported in said storage compartment with said leg means in said storage position.

5,293,705

PORTABLE DISPLAY DEVICE

Donald L. Wood, Riverview, Fla., assignor to Showboard, Inc., Tampa, Fla.

Continuation of Ser. No. 599,488, Oct. 18, 1990, abandoned, which is a division of Ser. No. 212,684, Jun. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 118,980, Nov. 10, 1987, Pat. No. 4,794,712, which is a continuation of Ser. No. 800,663, Nov. 22, 1985, abandoned. This application Nov. 12, 1992, Ser. No. 975,217
The portion of the term of this patent subsequent to Jan. 3, 2006, has been disclaimed.
Int. Cl.[5] G09F *1/00*
U.S. Cl. 40—124.1 2 Claims



1. A portable display device for displaying educational or informational material comprising three panels including a center panel having a side panel hingedly attached to opposite sides thereof, each said side panel separated from said center panel by a score line to permit relative movement between adjacent panels, each said panel formed of a first and second corrugated substantially parallel rigid sections separated by a substantially rigid member, said first and second corrugated substantially parallel rigid sections each comprise an outer rigid surface and an inner corrugated portion, each said score line extends through said second corrugated rigid section and said substantially rigid member to form a flexible hinge between said adjacent panels along said score lines, a width being defined as a direction perpendicular to said score lines, said first and second corrugated substantially rigid sections, and said substantially rigid member forming a single rigid section extending for the majority of the width of each said panel, a height being defined as a direction extending parallel to said score lines, and each said side panel, and said center panel being a single rigid panel member, said panels being rigid in both the width and height directions, and said rigid sections ensuring that said side panels and said center panel being rigid in a direction into a plane of said panels, the width of each said side panel being equal to one-half the width of said center panel to permit folding of said side panels in substantially coplanar relationship relative to each other and in substantially parallel relationship to said center panel to form a substantially flat, rigid, configuration such that said adjacent panels may be folded relative to each other for storage and transport and wherein said side panels of said portable display device mutually provide stability when said side panels are extended from said parallel, coplanar relationship relative to said center panel whereby said outer rigid surface of said first corrugated rigid section forms a continuous, uninterrupted display surface.

5,293,706

MULTIPLE-IMAGE DISPLAY DEVICE

Cliff Wood, Bob Hill Rd., Pound Ridge, N.Y. 10576

Filed Dec. 4, 1992, Ser. No. 985,318
Int. Cl.[5] G09F *1/00*
U.S. Cl. 40—124.1 25 Claims

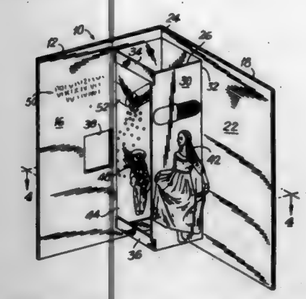
19. A multiple-image display device viewable by an observer, comprising:

a first panel having a substantially transparent window defined therethrough and a second panel, one of said first panels being movable relative to the other of said panels between a first position of substantial proximity of portions of said panels and a second position of relative spac-

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ing between said portions of said panels and defining an inner space between said panels, and each of said first and second panels having an edge along which said first and second panels are pivotally connected for relative pivotal movement of said first and second panels about said connected edges between said first and second positions;

a third panel disposed between said first and second panels and having a first edge along which said third panel is pivotally connected to an inner face of said second panel, said third panel having a second edge opposite said third panel first edge and connected to an inner face of said first panel disposed in confronting opposition to a first face of said third panel;

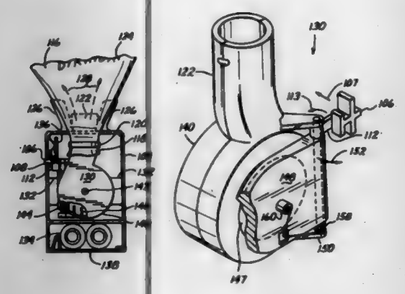


a first image disposed between said first and second panels and viewable through said window in said first position of the panels;

a second image disposed between said first and second panels so that said second image cannot be viewed through said window in said first position of the panels; and

means disposed between said first and second panels for reflecting an image of said first image in said second position of the panels so that the second image and the reflected image of said first image are concurrently viewable in said interior space in said second position of the panels.

5,293,707
EFFICIENT INFLATING DEVICE
Henry W. Shaeffer, 825 Elyria Dr., Los Angeles, Calif. 90065
Continuation-in-part of Ser. No. 584,340, Sep. 18, 1990, abandoned. This application Aug. 8, 1991, Ser. No. 742,393
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] G09F *19/02*
U.S. Cl. 40—412 **5 Claims**



1. In combination:

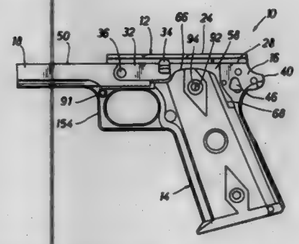
a) an inflatable balloon having an interior and an opening mouth;

b) pump means having an inlet port and an outlet port, said outlet port being pneumatically connected to said opening mouth of said inflatable balloon, for pressurizing gas at said outlet port and in the interior of said balloon;

c) switch means operably connected to said pump means for starting and stopping said pump means; and,

d) door sealing means operably connected to said switch means for selectively preventing the passage of gas through said opening mouth when said switch means is operated for stopping said pump means, and for selectively sealing at least one of said inlet port and said outlet port.

5,293,708
FRAME/HANDGRIP ASSEMBLY FOR AUTOLOADING HANDGUN
Sandy L. Strayer, 305 Hickok, Round Rock, Tex. 78681, and Virgil P. Tripp, 8907 Sparkling Creek Cir., Austin, Tex. 78729
Filed Jul. 8, 1992, Ser. No. 910,636
Int. Cl.[5] F41A *11/00, 21/00*
U.S. Cl. 42—75.03 **42 Claims**



1. A handgun frame/handgrip assembly for an autoloading handgun comprising:

(a) a frame having side portions defining parallel slide guide rails, said frame defining at least one handgrip seat on one of said side portions thereof defining an alignment edge, said frame further defining a cartridge magazine receptacle;

(b) an integral handgrip being configured for establishing intimate removable interlocked assembly with said frame, said handgrip having side portions and defining a cartridge magazine receptacle in registry with said cartridge magazine receptacle of said frame, said integral handgrip further defining at least one connecting element at a side portion thereof being in connecting engagement with said handgrip seat and having aligning engagement with said alignment edge; and

(c) retainer means retaining said frame and integral handgrip in releasable interlocking assembly.

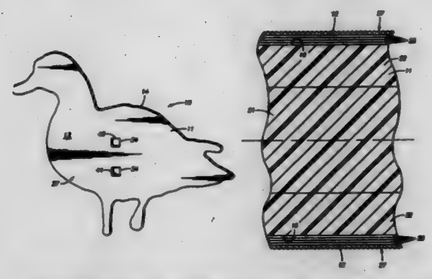
5,293,709
PHOTOGRAPHIC DECOYS
James A. Cripe, E. 1503 Riverview Dr., Colbert, Wash. 99005
Filed May 29, 1992, Ser. No. 889,819
Int. Cl.[5] A01M *31/06*
U.S. Cl. 43—3 **26 Claims**

1. An animal decoy, comprising:

a body having opposed surfaces;

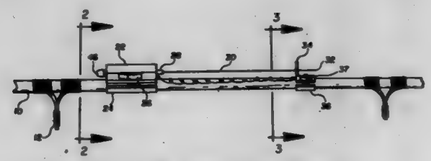
a photographic decoy image on at least one surface of the body; and

said photographic decoy image including a low glare coating comprised of a printed coating of non pigmented



ultraviolet ink with texturing means for reducing glare of the photographic image.

5,293,710
FISHING POLE STRIKE INDICATOR
Joseph P. Mills, 311 Southern Ave., Selah, Wash. 98942
Filed Oct. 13, 1992, Ser. No. 959,445
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **12 Claims**



1. A fishing pole strike indicator comprising:

a source of electrical power;

an elongated probe contact having first and second ends;

an electrical ring contact circumscribing the second end of said probe contact and engageable with the probe contact by lateral movement of the ring contact in any direction;

a signaling device;

circuit means for connecting a first end of said probe contact, said signaling device and said ring contact to said power source, whereby relative lateral movement of said ring contact and second end of said probe contact in any direction over a predetermined distance will close the circuit to energize the signaling device; and

means for connecting the probe contact and ring contact along the length of a flexible fishing pole.

5,293,711
FISHING ROD COVER
David A. Robinson, 3826 Castlewood Rd., Richmond, Va. 23234
Filed Sep. 3, 1992, Ser. No. 939,654
Int. Cl.[5] A01K *97/08*
U.S. Cl. 43—26 **3 Claims**

1. A fishing rod cover for receiving a fishing rod therewithin, wherein the fishing rod cover comprises,

a flexible tube, the flexible tube having a first end spaced from a second end, the first end having an entrance opening and an arcuate second end, wherein the flexible tube is longitudinally aligned to receive the fishing rod, and wherein securement means is mounted to the flexible tube in adjacency to the first end, and

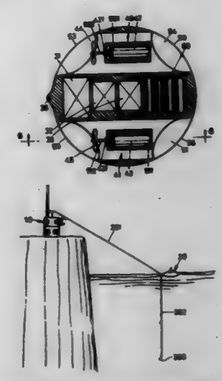
the securement means is a flexible drawstring directed through the flexible tube to permit securement of the fishing rod within the flexible tube, and

including an annular array of rigid loop members pivotally mounted through the flexible tube in adjacency to the second end, wherein each loop member is of a predetermined diameter, and wherein a first opening and a second opening is directed through the tube receiving each loop member, and the first opening and the second opening are spaced apart said predetermined diameter to pivotally



mount a respective loop member within a first opening and a second opening, and a rigid support rod is fixedly mounted to each loop member, and each rod includes a rod ring fixedly mounted to the rod spaced from the loop member, wherein each rod ring is arranged to secure a fishing component thereon.

5,293,712
REMOTE CONTROL FISHING TACKLE
Chung-Pao Lo, 4/F, No. 118-1, SEC. 1, Chung-Shan N. Rd., Taipei, Taiwan
Filed Oct. 19, 1992, Ser. No. 962,713
Int. Cl.[5] A01K *89/00*
U.S. Cl. 43—26.1 **8 Claims**



1. Remote control fishing tackle comprising:

a main controller comprising a first electric power means, a radio transmitter connected to said first electric power means, transmitter control means for controlling said radio transmitter, reel means, and a primary fishing line having at least a portion wound on said reel means and an

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outer end remote therefrom, said reel means being operable for unreeling and reeling in said primary fishing line;

a float unit comprising a second electric power source, a radio receiver connected to said second electric power source and tuned to said radio transmitter for receiving signals from said radio transmitter, drive control means operable by said radio receiver and connected to said second electric power source, two drive propeller means operatively connected to said drive control means for being driven thereby for driving said float unit, attachment means for attaching said outer end of said primary fishing line to said float unit, a secondary fishing line connected to said float unit and a fish hook connected to said secondary fishing line, so that said float unit is controlled by said radio signals from said radio transmitter for driving said float unit by said drive control means to a desired fishing location remote from said main controller with unreeling of said primary fishing line from said reel means and reeling in of said float unit by said reel means after fishing;

wherein,

said two drive propeller means comprise first and second drive propellers mounted on said float unit in spaced relationship relative to each other;

said drive control means comprises first and second controllers for said first and second drive propeller means, respectively;

said radio transmitter and said radio receiver are a bifrequency transmitter and a bifrequency receiver; and

said transmitter control means comprises first and second control rods for controlling said radio transmitter to transmit radio signals to said radio receiver for operating said first and second drive propeller means, respectively, to drive said float unit at controlled speeds and in forward, reverse, and turning directions.

5,293,713

DEVICE FOR SUPPORTING CUT FLOWERS

Hassen J. Ahmed, 125 Winding Rd., Irmo, S.C. 29063

Filed Sep. 21, 1992, Ser. No. 948,145
Int. Cl.[5] A01G *5/00*
U.S. Cl. 47—55 **13 Claims**



1. A device for supporting the stem of a flower, said device comprising:

a hollow tube having an interior surface defined by an axially extending central bore, said tube having an opening formed throughout the length thereof defining a longitudinal slot contiguous with said central bore said tube dimensioned to receive said stem, said opening being narrower than said stem;

at least one ridge formed on said interior surface along the length of said tube, said at least one ridge engaging said stem when said stem is in said tube and defining at least one channel between said stem and said interior surface; and

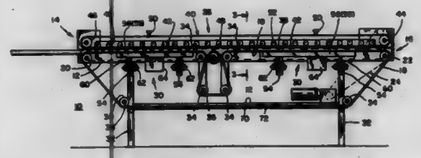
means carried by said tube along longitudinal edges of said opening for guiding said stem into said tube, said stem engaging said guiding means and increasing the width of said opening as said stem is moved through said opening.

5,293,714

METHOD AND APPARATUS FOR CLEANING SOD

Brian L. Bouchard, 890 Usquepaugh Rd., and Darrell H. Bouchard, 20 Knowles Ln., both of West Kingston, R.I. 02892

Filed May 4, 1992, Ser. No. 877,735
Int. Cl.[5] A01C *1/04*
U.S. Cl. 47—56 **21 Claims**



1. A sod cleaning apparatus for removing earth from the earth side of sod strips being transported thereon, said apparatus comprising:

a) an elongated rigid frame including a feeding end and a discharging end;

b) a conveyor belt being movably carried on said elongated rigid frame, said conveyor belt being perforate and adapted for substantially endless movement from said feeding end to said discharging end, said conveyor belt being adapted to support any sod strip being transported thereon;

c) at least one conveyor belt support assembly being mounted interior of said elongated rigid frame and intermediate said feeding end and discharging end, each of said conveyor belt support assemblies being suspended on said elongated rigid frame for allowing independent vibratory motion;

d) at least one vibrating means carried on each conveyor belt support assembly, said vibratory means adapted for providing said vibratory motion;

e) a brush assembly being powered and selectively positioned on said elongated rigid frame, said brush assembly being adapted for selectively contacting the earth side of the sod;

f) a drive means adapted for providing said movement of said conveyor belt at a selected rate;

g) a keeper belt assembly, said keeper belt assembly being carried on said elongated frame, said keeper belt having a selected portion of its length in substantially parallel alignment with a determined portion of said conveyor belt and being adapted for limiting the lifting of the transported sod during removal of the earth;

h) an adjustable mounting means for said keeper belt assembly, said adjustable mounting means adapted for providing a selected spacing between said keeper belt assembly and said sod carrying surface of said conveyor belt; and

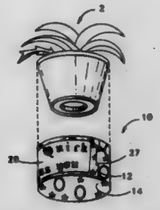
wherein said vibratory motion of each conveyor belt support assembly with said conveyor belt moving thereon in combination with the powered action of the brush assembly providing the removal of the earth from the transported sod strip.

5,293,715

REVERSIBLE DUAL-PURPOSE SELF-STANDING POT COVER

Rita Kaz, 6120 Radford Ave., North Hollywood, Calif. 91606

Filed Dec. 4, 1992, Ser. No. 986,081
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—72 **20 Claims**



1. A reversible dual-purpose self-standing pot cover, comprising:

a. a generally elongated rectangular shaped thin foldable cardboard member having two elongated straight opposite edges, a first narrow end and an opposite second narrow end, and a first side and an opposite second side;

b. an integral insert element at said first end of said cardboard member and a mating slot at said second end of said cardboard member folded to form a circumferential sidewall which is self-standing and can be placed around a flowerpot as a pot cover;

c. a thin flexible piece of fabric member completely covering said first side of said cardboard member to form a decoration side of said pot cover, and wrapping around said two opposite edges of said cardboard member and partially covering said second side of said cardboard member except a central area thereof to form a message side of side pot cover, where the uncovered central area serves as a writing surface; and

d. adhesive means for affixing securely said fabric member to said cardboard member;

e. whereby said pot cover is reversible between its said message side and its said decoration side, where a message can be written on said writing surface and when the message is desired to be displayed, said cardboard member can be folded and its said two opposite ends interlocked such that said message side of said pot cover is exposed outwardly, and when said decoration side of said pot cover is desired to be displayed, said interlocking means can be released so that said cardboard member can be folded reversely and its said two opposite ends interlocked again such that said decoration side of said pot cover is exposed outwardly.

5,293,716

GATE FOR TOLL SYSTEMS

Alexandre M. Rothschild, Port Washington, N.Y., assignor to TDC Electronics, Inc., Bayside, N.Y.

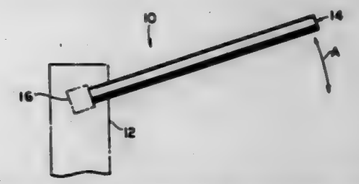
Continuation of Ser. No. 809,295, Dec. 17, 1991, abandoned.
This application Dec. 8, 1992, Ser. No. 989,472
Int. Cl.[5] E01F *13/00*
U.S. Cl. 49—49 **14 Claims**

1. Toll gate apparatus comprising;

an upright member;

a pivoting mechanism on said upright member; and

a single gate bar connected directly at one end by said pivoting mechanism to said upright member, said gate bar comprising of and having a single tubing and a shock absorbing sleeve substantially coextensive with and surrounding said tubing, said sleeve being made of a resilient



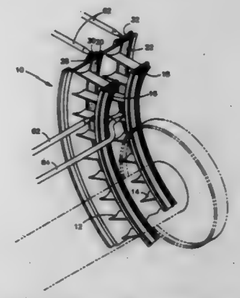
material having a thickness selected to avoid injury on impact with an object in any direction.

5,293,717

METHOD FOR REMOVAL OF ABRADABLE MATERIAL FROM GAS TURBINE ENGINE AIRSEALS

Kurt R. Snyder, Lebanon; Edward Marchitto, Vernon; Peter J. Draghi, Simsbury, and Gordon M. Reed, Plantsville, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 28, 1992, Ser. No. 920,936
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.71 **13 Claims**



1. A method for machining the inside surface of a circular workpiece utilizing a numerically controlled machining system, comprising the steps of:

(a) positioning the workpiece in a fixture means of the system;

(b) positioning a probe in a holder which is part of the system and moveable relative to the fixture means;

(c) moving, under the direction of a machine program, the holder and fixture means relative to each other to cause the probe to contact a plurality of points on the outer surface of the workpiece to be machined, and generating by such contacts data indicative of the position of such contacted points relative to the fixture means;

(d) storing in a memory of the system such contacted point position data;

(e) storing in the memory of the system preselected data indicative of desired after machining dimensions of the workpiece;

(f) removing the probe from and positioning a cutting tool in the holder; and

(g) machining the inner surface of the workpiece under the direction of a machine program which accesses the stored data and cause the cutting tool to follow the inner surface of the workpiece, removing material from the inner surface to preselected dimensions as the tool travels relative thereto, the fixture means and holder being reoriented relative to each other as the workpiece moves past the

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cutting tool to maintain the workpiece in appropriate positioned relation to the cutting tool over the entire circumference of the workpiece.

5,293,718

TANGENTIAL GRINDING MACHINE PARTICULARLY FOR RAILWAY RAILS

Claudio Favaron, Venezia Mestre, Italy, assignor to Loram Maintenance of Way, Inc., Hamel, Minn.

PCT No. PCT/EP91/00841, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO91/17310, PCT Pub. Date Nov. 14, 1991

PCT Filed May 3, 1991, Ser. No. 949,231

Claims priority, application Italy, May 8, 1990, 84127 A/90

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.87 **18 Claims**



1. A tangential grinding machine, particularly for railway rails, comprising a rotating member (4), for rotation about a transverse axis, a plurality of abrasive sectors (5) having curved transverse profiles conforming to the original profiles of the rails and mounted on supports radially movable on said rotating member, elements which radially move said supports in order to move said abrasive sectors outwards toward said rail by an extent which compensates their wear, and a plurality of sensors which when a predetermined degree of wear of the abrasive sectors is attained are activated to act under the control of an electronic unit on the radially movable supports, in order to restore the original grinding surface of the abrasive sectors which have undergone wear, characterised in that between the rotating member (4) provided with abrasive sectors (5) and the machine structure (1) slidable on the rail (3) there is interposed an articulated frame (8) having spaced-apart shoulders (9) joined by longitudinal members (10) for supporting said rotating member (4) with the transverse axis and provided with means (15, 16, 17) which cause said rotating member (4) with transverse axis to undergo transverse oscillations about a longitudinal axis substantially coinciding with the axis of curvature of the corresponding band of the rail (3) to be ground.

5,293,719

SEWER CHIMNEY COUPLING

Peter J. Sugda, 68 Sarrico Dr., Manchester, Conn. 06040

Division of Ser. No. 789,922, Nov. 19, 1991, Pat. No. 5,189,861. This application Jan. 11, 1993, Ser. No. 2,715

Int. Cl. 52 *745.03;* E02D *27/14*

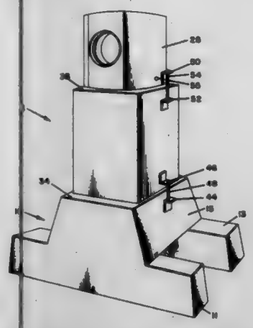
U.S. Cl. 52—21 **10 Claims**

1. A sewer chimney for connecting a surface branch sewer pipe to a deeply buried main sewer pipe having a fixture with an upwardly facing opening, said sewer chimney comprising:

(a) a base which has first and second leg portions which are positioned on opposite sides of the main sewer line and a bridge portion which extends from said first leg portion to said second leg portion and passes over the main sewer line, said bridge portion having a first vertical bore which is vertically aligned with said upwardly facing opening,

(b) a transitional section which rests on and is secured to said bridge portion, said transitional section having a second vertical bore which is vertically aligned with said first vertical bore,

(c) a cap block which rests on and is secured to the transitional section, said cap block having a third vertical bore which is vertically aligned with said first and second vertical bores, said cap block having a horizontal bore which intersects said third vertical bore, said horizontal bore having an outer opening which is adapted to receive a branch sewer pipe,



(d) an elongated pipe which extends from said first vertical bore, through said second bore and into said third vertical bore,

(e) a first seal between said transitional section and said bridge portion,

(f) a second seal between said transitional section and said cap block,

(g) a third seal between said pipe and said bridge portion,

(h) a fourth seal between said pipe and said cap block, and

(i) a fifth seal between said pipe and the fixture of said main sewer pipe.

5,293,720

MODULAR SUPPORT STRUCTURE FOR A CONTROL ROOM WORK STATION

Richard M. Brice, Duluth; Thomas M. Gattis, Marietta; Kent R. Brewer, and Arthur G. Howard, both of Atlanta, all of Ga., assignors to The Human Factor, Inc., Atlanta, Ga.

Filed Dec. 20, 1991, Ser. No. 811,249

Int. Cl.[5] A47B *5/00*

U.S. Cl. 52—36.1 **20 Claims**



1. A modular support structure for a control room work station capable of being used to support top surfaces of different shapes, comprising:

a plurality of posts wherein each post comprises two elongated rectangular post flanges, each said flange having a top edge for supporting the top surface, a bottom edge, an elongated outer edge and an elongated articulating edge opposing said outer edge, and means for articulating said two post flanges with each other along said articulating edges.

5,293,721

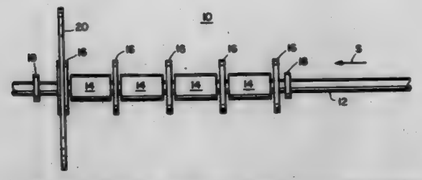
HORIZONTAL CABLE ANIMAL BARRIER

James T. Richard, Holden; George J. Costigan, Westford, both of Mass.; David J. Perry, Auburn, N.H., and Kevin T. Eldridge, Cheshire, Conn., assignors to The Omt Group, Auburn, N.H.

Filed Apr. 5, 1991, Ser. No. 681,573

Int. Cl.[5] A01K *39/01*

U.S. Cl. 52—101 **22 Claims**



1. An animal barrier for mounting on a non-vertical cable to deter animal passage along the cable, comprising:

a plurality of spaced, elongated, rotatable spacer elements having a first width and a central passage for rotatable mounting on a cable;

a plurality of spaced rotatable roller elements separate from said spacer elements, and having a second width larger than said first diameter, and a central passage for rotatable mounting on the cable;

said spacer and roller elements alternately, adjacently arranged along the cable to present a rotatable, uneven profile elongated rotating barrier at least as long as it is wide to deter animal passage.

5,293,722

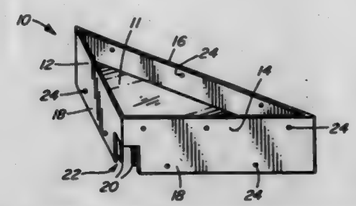
CONSTRUCTION UNIT SUITABLE FOR MAKING STAIR STRINGERS

Lyall V. Reimann, 7631 Tweedsmuir Avenue, Richmond, British Columbia, Canada V7A 1L1

Filed Jul. 13, 1992, Ser. No. 912,708

Int. Cl.[5] E04F *11/00*

U.S. Cl. 52—182 **5 Claims**



1. A construction unit comprising three side members which form a right triangle, wherein the side member forming the hypotenuse of the right triangle has a flat surface for locating the unit against a flat support surface and the side members forming the other two sides of the right triangle are provided with channels extending along their lengths, each channel for receiving the edge of a sheet or beam therein.

5,293,723

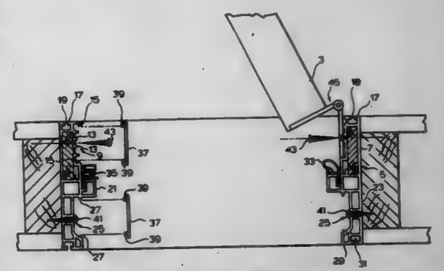
SYNTHETIC DOOR FRAME

Ted Slessor, Alliston, Canada, assignor to Canadian Heritage Window Mfg. Inc., Barrie, Canada

Filed Jul. 27, 1992, Ser. No. 918,620

Int. Cl.[5] E04B *1/04*

U.S. Cl. 52—213 **10 Claims**



1. A door frame with a resin material construction and having a first channel providing a mounting region for a final mounting of said frame to a surrounding support and a second channel providing a hanging region for an initial hanging of said frame prior to the final mounting, said first channel being covered by a first channel cap defining an outer door edge border for a door to be fitted in said frame, said second channel being covered by a second channel cap, said first and second channels being separated from one another by a door stop, said door stop being at right angles to said first channel cap.

5,293,724

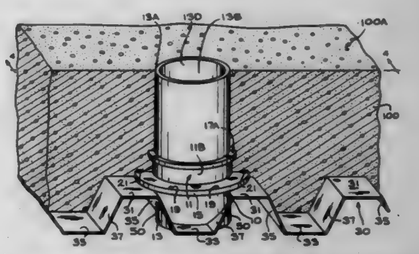
COUPLING ASSEMBLY FOR CORRUGATED DECKS AND METHOD FOR CONNECTING THERETO

Kenneth R. Cornwall, 4963 Springfield Dr., Dunwoody, Ga. 30338

Filed May 18, 1992, Ser. No. 885,298

Int. Cl.[5] E04B *5/48*

U.S. Cl. 52—220.8 **33 Claims**



1. A fitting assembly adapted to be secured to a deck means comprises of alternting side-by-side ridge and valley portions providing a corrugated shape and wherein the fitting assembly serves for carrying a fluid through an opening in the deck means, which comprises:

(a) a sleeve means having an outside sidewall between opposed open ends and an inside sidewall providing an opening along a longitudinal axis of the sleeve means and with an annular ring around the outside sidewall of the sleeve means;

(b) an attachment means extending from the sleeve means away from the longitudinal axis, wherein the attachment means serves to secure the sleeve means to the deck means mounted on an apex portion of at least two spaced apart

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ridge portions or valley portions of the corrguated deck means; and

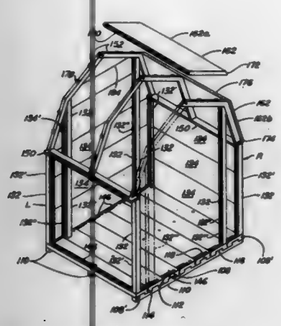
(c) a fluid carrying conduit means adapted to be mounted through the opening in the sleeve means and through the opening in the deck means and to extend above the sleeve means so that concrete can be poured around the conduit means, the sleeve means and the attachment means above the deck means to embed the fitting assembly in the concrete wherein the fluid carrying conduit means is comprised of an outside sidewall secured to the inside sidewall of the sleeve means wherein a diameter of the outside sidewall of the conduit means is only slightly smaller than a diameter of the inside sidewall of the sleeve means and an inside sidewall between opposed open ends defining a second opening through the conduit means for carrying the fluid and the conduit means having a length so that the outside sidewall of the conduit means is able to be adjustably mounted along the inside sidewall of the sleeve means to adjust a distance between one of the opposed open ends of the conduit means and one of the opposed open ends of the sleeve means and wherein the opposed open ends of the conduit means extend through the opening in the deck means to provide for carrying the flid through the deck means.

5,293,725

BUILDING STRUCTURE WITH INTERLOCKING COMPONENTS

Richard B. Matticks, 28501 Elmira, Livonia, Mich. 48150, and Michael H. Kinzel, 3451 Westwood, Dearborn, Mich. 48124

Filed Oct. 2, 1992, Ser. No. 955,478
Int. Cl.[5] E04B *1/343*
U.S. Cl. 52—271 **19 Claims**



1. A building structure, comprising:

a plurality of floor panels, each floor panel of said plurality of floor panels being arranged sequentially in a side-by-side relationship, said plurality of floor panels defining a perimeter having a plurality of sides;

first interlock means on each said floor panel for interlocking mutually adjoining floor panels of said plurality of floor panels to one another;

a plurality of floor stringers oriented transverse to said plurality of floor panels for supporting said plurality of floor panels;

second interlock means for interlocking each of said plurality of floor panels to said plurality of floor stringers so as to retain said adjoining floor panels in said side-by-side relationship, each floor stringer of said plurality of floor stringers being mutually spaced a predetermined distance apart for providing support to said plurality of floor panels;

a plurality of uprights oriented perpendicular with respect to said plurality of floor panels;

third interlock means connected with each upright of said plurality of uprights and floor panels of said plurality of floor panels for interlocking each said upright to said plurality of floor panels;

a plurality of sidewall panels arranged sequentially in a side-by-side relationship at predetermined sides of said plurality of sides;

fourth interlock means on each said sidewall panel for interlocking mutually adjoining sidewall panels of said plurality of sidewall panels to one another;

fifth interlock means on each upright of said plurality of uprights and each said sidewall panel for providing interlocking connection between each said sidewall panel and each said upright that is mutually adjoining thereto;

sixth interlock means on said plurality of floor panels adjacent said perimeter thereof and on a plurality of sidewall panels adjacent said plurality of floor panels for interlocking said plurality of sidewall panels adjacent said plurality of floor panel to said plurality of floor panels;

a plurality of roof trusses;

rail header means adjoining predetermined sidewall panels of said plurality of sidewall panels and connected with said plurality of uprights adjoining thereto for supporting said plurality of roof trusses;

a plurality of roof panels arranged sequentially in a side-by-side relationship on said plurality of roof trusses;

seventh interlock means on each roof truss of said plurality of roof trusses and each said roof panel of said plurality of roof panels for providing interlocking connection between said roof panels and said roof trusses;

eighth interlock means on roof panels of said plurality of roof panels adjoining said rail header means and on said rail header means for interlocking said plurality of roof panels with respect to said rail header means;

a peak lock panel for providing a peak with respect to said plurality of roof panels;

ninth interlock means located on said peak lock panel and on roof panels of said plurality of roof panels that adjoin said peak lock panel for providing interlocking connection between said plurality of roof panels and said peak lock panel; and

door assembly means connected with said plurality of uprights for providing selective access to the building structure.

5,293,726

HOLLOW COMPOSITE INTERIOR DOOR ASSEMBLY

Harold P. Schick, 7725 Glenoak Pkwy., Ft. Wayne, Ind. 46815

Filed Jul. 16, 1992, Ser. No. 914,967
Int. Cl.[5] E04C *2/34*
U.S. Cl. 52—455 **15 Claims**



1. A door assembly, comprising:

a front skin and a back skin,

said front skin and said back skin having corresponding, opposed recesses,

said opposed recesses establishing a plurality of panels, a plurality of hollow cavities surrounding said panels, a peripheral rectangular frame extending only around a perimeter of said door,

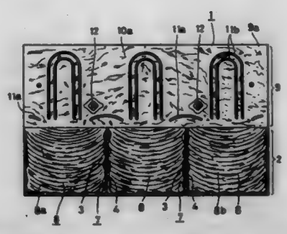
said front skin and said back skin fixed to said frame and said front skin fixed directly to said back skin along said opposed recesses thereby establishing an internal frame structure to provide strength and rigidity to said door assembly.

5,293,727

PLATE ROOFING MATERIAL

Kenichi Yoshimoto; Kazuhiro Sakamoto; Tadashi Akiyama; Hirofumi Takai; Tomomi Nagano; Mitsuji Hashimoto, and Kozo Tamamura, all of Inami, Japan, assignors to Daiken Kogyo K.K., Toyama, Japan

Filed Nov. 22, 1991, Ser. No. 796,561
Int. Cl.[5] E04D *1/00*
U.S. Cl. 52—560 **6 Claims**



1. A plate roofing material having a length which is parallel with a slope of a roof and a width which is perpendicular to the slope, the plate roofing material comprising an irregular upper surface including an exposure portion (2) and an overlap portion (9) along a length thereof, said exposure portion (2) being exposed when installed on the roof and said overlap portion being overlapped by an exposure portion of another plate roofing material when installed on the roof, said plate roofing material having a somewhat uniform smooth back surface over its length and width, said upper surface overlap portion having a generally flat surface, said upper surface exposure portion (2) including at least one longitudinal groove (7) extending from a lower edge of said roofing material on said upper surface exposure portion across a width of the roofing material up to said overlap portion, said at least one longitudinal groove being approximately V-shaped in cross section along the width of plate roofing material, said V-shaped cross section having a narrow part and a wide part with the wide part at the lower edge of said plate roofing material extending in a direction toward the narrow part and to the overlap portion, said longitudinal groove having a plurality of irregular stepped side surfaces and a linear bottom groove having an approximately constant depth and extending from said lower edge of said plate roofing material to said overlap portion.

5,293,728

INSULATED PANEL

Michael E. Christopher, Houston, and Oscar J. Chauvin, Pasadena, both of Tex., assignors to Texas Aluminum Industries, Inc., Houston, Tex.

Filed Sep. 17, 1992, Ser. No. 946,756
Int. Cl.[5] E04B *7/00, 9/00*; E04C *2/00*
U.S. Cl. 52—588.1 **5 Claims**

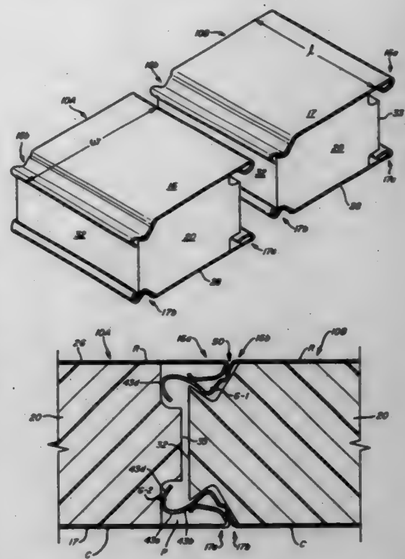
1. An insulating building panel wherein side edges of the panel are connectable to a like adjacently positioned second insulated panel to a form a building system, the panel comprising:

a central core of insulating material including first and second major, flat surfaces and side faces;

first and second relatively thin, substantially flat and oppositely positioned metallic sheets attached to said first and second major surfaces of said central core of insulating material respectively, said flat metallic sheets forming male and female side edge connectors adapted to be respectively joined to female and male side edge connectors of a like adjacently positioned panel to form said building system;

said male side edge connectors being formed integrally with said oppositely positioned thin metallic sheets to form mirror image male connectors, each of said male connectors including an internal, generally convex curved surface;

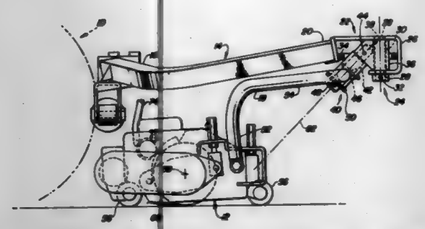
said female side edge connectors being formed integrally with said oppositely positioned thin metallic sheets to form mirror image female connectors, said female connectors including an externally facing generally V-shaped valley formed with an internally curled end portion which provides an externally curved connector area and which terminates outwardly spaced from a side edge of said central core;



said internal curved surfaces of said male connectors of said panel being capable of sliding over externally curved connector areas of internally curled end portions of female connectors of a like adjacently positioned panel such that said internal curved surfaces of said male connectors are adapted to nest in said V-shaped valleys of female connectors of a like adjacently positioned panel, one of said side faces of a like adjacently positioned panel core being positionable substantially adjacent to a side face of said central core of said panel, said V-shaped valley on an upper female connector adapted to cooperate with an internal, generally curved surface of an upper male connector of a like adjacent panel to form an elongated space which functions as a first gutter system, and said internally curved end portion of a bottom female connector functioning as a second gutter system to avoid or minimize leakage and condensation whenever said panel is used with an adjacent like panel as combination roof and ceiling members.

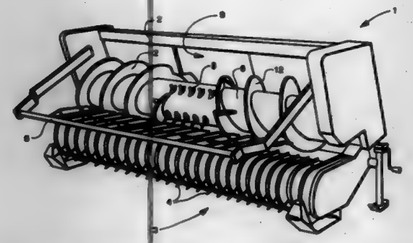
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,729
PIVOT MECHANISM FOR REEL MOWER CUTTING UNITS
Roger W. Curry, Horicon; Robert F. Hartwig, both of Horicon; Christopher S. Thorman, Beaver Dam, and Frank K. O'Toole, West Bend, all of Wis., assignors to Deere & Company, Moline, Ill.
Filed Oct. 7, 1992, Ser. No. 957,583
Int. Cl.[5] A01D *75/30, 34/44*
U.S. Cl. 56—7 22 Claims



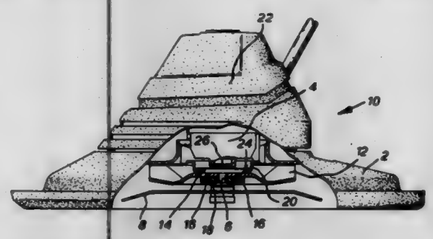
5. A mechanism for coupling a ground engaging cutting unit with a vehicle, said cutting unit including lateral edge portions and front and rear roller means, said mechanism comprising:
an inclined pivot mechanism having an axis and being coupled between the cutting unit and the vehicle for allowing the cutting unit to pivot about said axis as the cutting unit encounters side slopes, said axis being inclined and extending downwardly and rearwardly toward the cutting unit and between the front and rear roller means for reducing the tendency of the lateral edge portions of the cutting unit to press downwardly against the ground during execution of a turn.

5,293,730
AUGER FINGER CONTROL MECHANISM
Gary L. Bich, and Larry D. Hall, both of New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.
Filed Apr. 12, 1993, Ser. No. 44,660
Int. Cl.[5] A01D *41/00*
U.S. Cl. 56—10.2 7 Claims



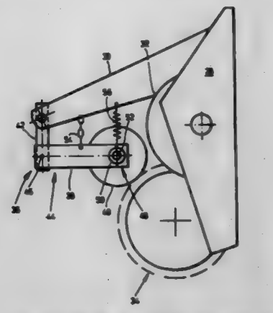
1. A crop gathering attachment comprising
a rotatable auger-like conveyor for transporting crop material,
drive means for rotating said conveyor,
a stationary crank shaft mechanism enclosed in said conveyor and having a shaft portion disposed eccentrically and parallel relative to the rotational axis of said conveyor, and
a retractable finger assembly comprising a plurality of finger members pivotally connected at their inner ends to said shaft portion and projecting outwardly through guiding members provided in the peripheral wall of said conveyor, the arrangement being timed such that due to the eccentric disposition of said shaft portion, said finger members are reciprocated relative to said conveyor wall upon rotation of said conveyor, thereby protruding from said wall at one side of said conveyor for projecting into said crop material and being retracted relative to said wall at the generally diametrically opposed side of said conveyor for releasing said transported crop, the improvement comprising
actuator means operatively connected to said crank shaft mechanism for remotely controlling the position of said shaft portion relative to said conveyor under conditions where said drive means is rotating said conveyor for transporting crop material, thereby varying the timing of said finger members.

5,293,731
LAWN MOWER
W. Roger Thomas, Stockton-on-Tees, and Vincent Carr, Heighington, both of England, assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 1, 1992, Ser. No. 907,096
Claims priority, application United Kingdom, Jul. 3, 1991, 9114434.5
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—11.3 20 Claims



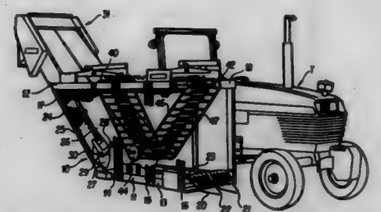
6. A lawn mower, comprising:
a deck;
a motor supported by said deck;
a drive shaft rotatably driven by said motor;
a blade connected to said drive shaft for rotation therewith;
an air impeller mounted below said motor on said drive shaft, said impeller being rotatable with and movable axially relative to said drive shaft, said impeller upon rotation by said motor creating a pressure differential from one side of said impeller to the other with the pressure on the side of the motor falling and drawing the impeller towards said motor against the action of said spring;
a spring urging said impeller axially away from said motor;
a stationary brake element connected to said deck and restrained against rotation;
a rotatable brake element mounted on said impeller for rotation and axial movement therewith;
said rotatable brake element being urged into braking contact with said stationary braking element by said spring; and
rotation of said impeller upon starting of said motor causing said impeller to lift said rotatable brake element away from said stationary brake element.

5,293,732
CROP HOLD DOWN ARRANGEMENT FOR PICK-UP
Claus-Josef Vogelgesang, Mandelbachtal, and Jana D. Frieling, Uplengen, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.
Filed Aug. 11, 1992, Ser. No. 928,833
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127155
Int. Cl.[5] A01D *89/00, 57/03*
U.S. Cl. 56—16.4 7 Claims



1. In a crop pick-up including a body rotatably supporting a tined pick-up drum and a conveyor arrangement for rotation about parallel axes extending perpendicular to a direction of travel of the pick-up with the conveyor being located behind and above said drum so as to receive a window of crop picked up and fed by said drum, and a frame joined to and, with reference to said direction of travel, extending forwardly from said body to a location above and ahead of said pick-up drum and an arm having a forward end end connected to said frame at said location and having a rearward end supporting a roll adjacent an upper forward location of the pick-up drum and a lower forward location of said conveyor for rotation about an axis extending parallel to the rotational axes of the pick-up drum and conveyor, the improvement comprising: connection means coupling said forward end of said arm to said frame for permitting said roll to undergo upward or downward motion respectively in response to an increase or decrease in height of the windrow being picked up and passing between said pick-up drum and roll.

5,293,733
DEFOLIATING TOBACCO HARVESTER
Robert G. Rosenkoetter, Tarboro, N.C., assignor to Long Manufacturing N.C., Inc., Tarboro, N.C.
Filed Jan. 6, 1993, Ser. No. 1,576
Int. Cl.[5] A01D *45/16*
U.S. Cl. 56—27.5 12 Claims



1. In a machine for removing leaves from vertically standing plant stalks, said machine having an endless defoliating means with a downwardly inclined front portion and an upwardly inclined rear portion, said defoliating means having a plurality of longitudinally spaced stalk receiving and leaf removing apertures, a mobile frame supporting said defoliating means, and means for moving said mobile frame and said defoliating means so that the horizontal velocity of said apertures on said inclined portions is substantially equal and opposite to that of said mobile frame so that as a stalk enters and passes along an aperture on the inclined front and rear portions the stalk remains substantially upright as the aperture moves along the stalk, the improvement comprising, said defoliating means having a plurality of picker bars defining said apertures, each of said picker bars having parallel side members connected by parallel front and rear members, the side members having forward and rearward portions providing, with the front and rear members, an aperture for receiving a stalk, said forward and rearward portions disposed at approximately 110° to each other.

11. In a conveyor assembly for carrying leaves from a lower to an upper position, in which said conveyor assembly includes a rearwardly and upwardly inclined section, said section having upper and lower endless conveyors having upper and lower ends and comprising spaced co-planar belts having upper and lower runs, the upper run of the lower conveyor cooperating with the lower run of the upper conveyor for moving leaves upwardly and rearwardly, the lower conveyor having its upper end terminating short of the upper end of the upper conveyor to provide a space for discharge of the leaves, and deflector means mounted between the spaced belts of the upper conveyor and at its upper end to deflect any leaves being carried upwardly beyond the upper end of the lower conveyor.

5,293,734
BOTTOM BLADE FOR GRASS CUTTING UNIT AND METHOD OF PRODUCING
John Mills, Trimley St Mary, England, assignor to Ransomes Sims & Jefferies Limited, Suffolk, England
PCT No. PCT/GB90/01206, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO91/03923, PCT Pub. Date Apr. 4, 1991
PCT Filed Aug. 2, 1990, Ser. No. 838,269
Claims priority, application United Kingdom, Sep. 15, 1989, 8920955
Int. Cl.[5] A01D *34/52*
U.S. Cl. 56—249 8 Claims



1. A method of producing a bottom blade for a grass cutting unit, comprising the steps of forming an elongate mounting element of relatively low hardness; welding thereto an elongate wear strip of relatively high hardness, the wear strip being positioned with an elongate edge thereof substantially aligned with an elongate edge of the mounting element; and, subsequent to said welding step, forming a bend in the mounting element, along a bend line parallel to the length of the strip.

5,293,735
MULCHING BLADE FOR ROTARY LAWN MOWER
Louis Nascone, P.O. Box 868, Brick Town, N.J. 08723
Filed Jul. 22, 1992, Ser. No. 916,619
Int. Cl.[5] A01D *34/68*
U.S. Cl. 56—255 12 Claims

1. A lawn mower mulching blade for lawn mowers for improving the mulching characteristics of the lawn mower in severing grass from a lawn, said mulching blade comprising:
a centrally-disposed mounting segment, generally disposed in a horizontal plane having an aperture therethrough for

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mounting said mulching blade on the spindle drive of said lawn mower;

a first cutting arm in alignment with a second cutting arm extending outwardly from said mounting segment, said second cutting arm defined by a leading edge and a trailing edge in sloped angular relationship, said trailing edge of said second cutting arm in planar relationship with said mounting segment, said leading edge of said second cutting arm disposed above said trailing edge, said leading



edge of said second cutting arm being sharpened to provide a cutting edge for engagement with grass clippings, said first cutting arm defined by a leading edge and a trailing edge in sloped angular relationship, said trailing edge of said first cutting arm in planar relationship with said mounting segment, said leading edge of said first cutting arm disposed lower than said trailing edge, said leading edge of said first cutting arm being sharpened to provide for a cutting edge for engagement with said grass.

5,293,736

SPINNING MACHINE

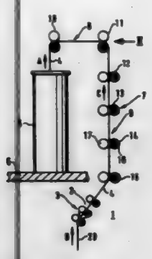
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 850,310

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109023

Int. Cl.[5] D01H *13/04*

U.S. Cl. 57—90 **18 Claims**



1. A spinning machine comprising:

a plurality of spinning stations for spinning yarn from sliver, and transport devices for transporting sliver to the spinning stations from sliver supply cans without drafting the sliver during the transport thereof;

wherein the transport devices define a sliver transport path between the sliver cans and the spinning stations, which transport path includes a first section starting above the sliver cans and a second essentially vertical section,

and wherein the transport devices, include a plurality of clamping devices arranged behind one another in the second section, each of said plurality of clamping devices in the second section being driven to carry out transport of the sliver while clamping same.

5,293,737

STEEL CORD FOR REINFORCEMENT OF RUBBER PRODUCTS

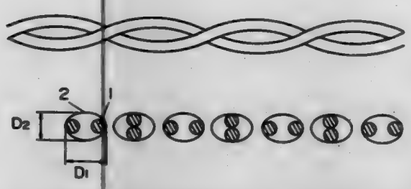
Yoshiroo Kobayashi, Yashiro; Koichi Hinoura, and Akihiro Nagamoto, both of Ono, all of Japan, assignors to Tokusen Kogyo Company Limited, Ono, Japan

Division of Ser. No. 630,325, Dec. 19, 1990, abandoned. This application Apr. 3, 1992, Ser. No. 866,941

Claims priority, application Japan, Dec. 20, 1989, 1-331983; Jun. 13, 1990, 2-152851

Int. Cl.[5] D02G *3/02, 3/48*

U.S. Cl. 57—236 **4 Claims**



1. A steel cord for reinforcement of rubber products, comprising:

a twisted cord formed of only two material wires;

wherein each of said two material wires has a diameter of 0.25 to 0.40 mm and a carbon content of 0.75 to 0.88 wt %;

wherein said two material wires are entwisted at a twist pitch of 9.0 to 16.0 mm and have an average preforming rate of 105% to 150%; and

wherein at every cross section along said twisted cord, outer peripheries of said two material wires are tangent to an imaginary elliptical shape which has substantially the same orientation at every cross section along said twisted cord and which has a ratio of length D_1 to breadth D_2 in a range of $1.1 \leqq D_1/D_2 \leqq 2.2$ at every cross section along said twisted cord, said two material wires being disposed within said imaginary elliptical shape at every cross section along said twisted cord.

5,293,738

DEVICE FOR PICKING UP AND PREPARING THE SKEIN END FOR REJOINING IN AN OPEN-END SPINNING MACHINE

Francesco Ferro; Claudio Perusch, both of Pordenone, and Donato Castellarin, Azzano Decimo, all of Italy, assignors to Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 730,686, Jul. 16, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,279

Claims priority, application Italy, Aug. 1, 1990, 21159 A/90

Int. Cl.[5] D01H *15/02*

U.S. Cl. 57—264 **6 Claims**

1. An apparatus for delivering a skein end of a thread wound in a path and onto a reel to an apparatus for returning the skein end to a spinning machine, said apparatus for delivering comprising:

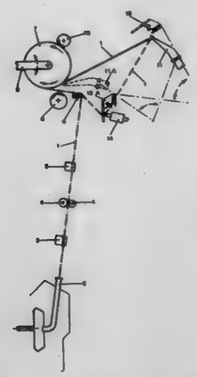
unwinding means for unwinding the reel on which the thread is wound;

suction means for capturing the skein end of the thread;

thread preparation means for removing a predetermined length of thread, wherein the predetermined length of thread is discarded, and for preparing the skein end of the thread for subsequent rejoining; and

grasping means for grasping the thread after said thread has been captured by said suction means, said grasping means movable into a path of said grasped thread after said capture to bring said grasped thread facing said thread preparation means and within a predetermined distance of said thread preparation means;

wherein said grasping means comprises a first V-shaped notch and a second V-shaped notch adapted for positioning the grasped thread, wherein said first V-shaped notch has a different V-shape from said second V-shaped notch,



and detecting means positioned therebetween for detecting and indicating the presence of the grasped thread grasped by said grasping means.

5,293,739

METHOD AND APPARATUS FOR SUPPLYING A SLIVER TO A SPINNING POSITION OF A SPINNING MACHINE

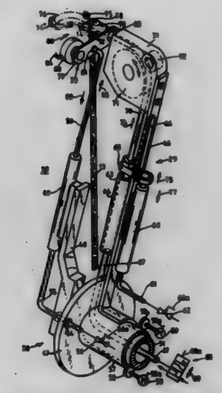
Karl-Josef Brockmanns, Willich; Reiner Reising, Mönchengladbach; Dietrich Witzler, Hückelhoven; Hans-Werner Schwalm, and Theo Lembeck, both of Mönchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 29, 1992, Ser. No. 922,056

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1991, 4125476; Feb. 12, 1992, 4204044

Int. Cl.[5] D01H *4/48*

U.S. Cl. 57—263 **16 Claims**



1. In a method for supplying a sliver from a filled sliver container to a spinning position of a spinning machine wherein a leading end of the sliver is introduced by a manipulator into a sliver supply location of the spinning position, the improvement comprising the steps of suctioning the leading end of the sliver at a defined position on the sliver container and fixing the leading end of the sliver, moving the leading end of the sliver into a position in front of the sliver supply location of the spinning position, opening the sliver supply location, releasing the leading end of the sliver from the suctioning and blowing the leading end of the sliver into the open sliver supply location, closing the sliver supply location, clamping the leading end of the sliver into the sliver supply location, and starting the spinning position.

5,293,740

METHOD AND ARRANGEMENT FOR CONTROLLING THE QUANTITY OF FUEL FOR AN INTERNAL COMBUSTION ENGINE HAVING A CATALYTIC CONVERTER

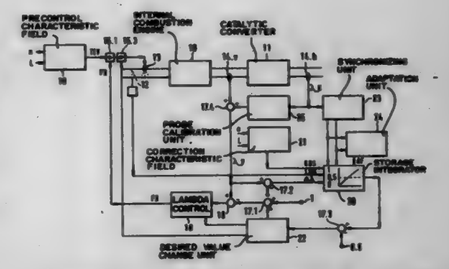
Bernd Heppner, Schwieberdingen; Wolfgang Richter, Ludwigsburg, and Axel Stuber, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 31, 1992, Ser. No. 937,430

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128718

Int. Cl.[5] F02D *41/14*

U.S. Cl. 60—274 **13 Claims**



1. A method for controlling the fuel quantity for an internal combustion engine having a catalytic converter, the method comprising the steps of:

determining the air mass flow inducted by the engine;

determining a precontrol variable for the quantity of fuel in dependence on current values of operating variables of the engine;

presetting a desired lambda value for the air/fuel mixture to be supplied to the engine;

checking the actual lambda value of the exhaust gas forward of the catalytic converter;

comparing the desired lambda value to the actual lambda value to form a comparison;

controlling the fuel quantity in dependence upon said comparison;

determining the oxygen actual charge level of the catalytic converter;

comparing the determined actual charge level to a desired charge level; and,

then, when the actual charge level is greater than the desired charge level, lowering the desired lambda value to below the value one; otherwise,

when the actual charge level is less than the desired charge level, increasing the desired lambda value above the value one.

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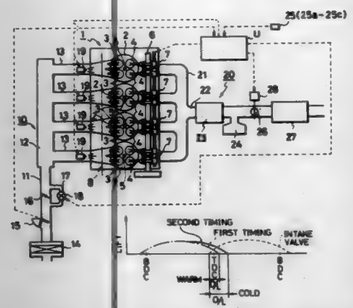
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,741

WARMING-UP SYSTEM FOR WARMING UP AN ENGINE FOR AN AUTOMOTIVE VEHICLE

Kenji Kashiyama, and Ken Umehara, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 1, 1993, Ser. No. 12,068
Claims priority, application Japan, Jan. 31, 1992, 4-2113; Jan. 31, 1992, 4-2114
Int. Cl.[5] F02D *13/02*
U.S. Cl. 60—284 19 Claims



1. A warming-up system for warming up an exhaust system for an automotive vehicle, comprising:
means for adjusting an amount of intake air to be inhaled into the engine;
means for changing an overlap period of time during which an intake valve and an exhaust valve of the engine are both open;
a first detection means for detecting a first state in which the engine is cold;
a second detection means for detecting a second state in which the engine is unloaded and the number of engine rotations is low; and
a control means for controlling said means for adjusting the amount of intake air and said means for changing the overlap period of time in response to output from said first detection means and said second detection means, so as to make said overlap period of time larger and to increase the amount of the intake air, while maintaining the number of engine rotations at a substantially constant level, during a cold time of the engine, relative to a warm time thereof, in a state in which the engine is unloaded and the number of engine rotations is low.

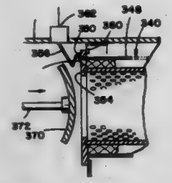
5,293,742

TRAP APPARATUS WITH TUBULAR FILTER ELEMENT

Gary R. Gillingham, Prior Lake; James C. Rothman, Burnsville; Kelly C. Robertson, Rosemount; Marty A. Barris, Lakeville; Peter Betts, Prior Lake, and Wayne M. Wagner, Apple Valley, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 722,598, Jun. 27, 1991, abandoned.
This application Apr. 14, 1993, Ser. No. 47,772
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—288 31 Claims

1. Apparatus for processing exhaust gases from an engine, said apparatus comprising:
a housing receiving said exhaust gases at an upstream end and exhausting said exhaust gases from a common space through an outlet downstream;
a plurality of flow paths for said exhaust gases in a region between said inlet and said common space;
an arrangement of filter modules operably placed in said flow paths;
means with said exhaust gases flowing for selectively regenerating at any time at least one and less than all of said filter modules; and
means for separating said exhaust gases upstream of said filter modules away from said one and less than all of said



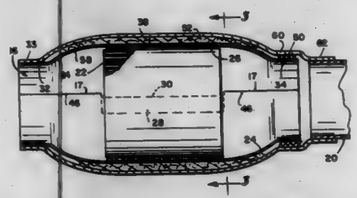
filter modules being regenerated and maintaining said exhaust gases separation from said one and less than all of said filter modules being regenerated until said exhaust gases flow to said common space.

5,293,743

LOW THERMAL CAPACITANCE EXHAUST PROCESSOR

Robert T. Usleman, and Mark A. Sickels, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed May 21, 1992, Ser. No. 886,955
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—299 17 Claims



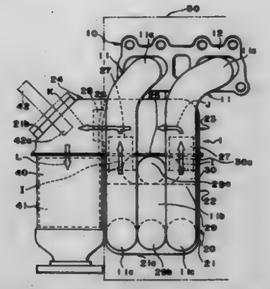
1. An exhaust processor assembly having substrate means for treating emissions contained in combustion product emitted from an engine exhaust, the exhaust processor assembly comprising
exhaust pipe means for providing an interior region,
second pipe means for providing a passageway receiving combustion product, the substrate means being disposed in the passageway to treat emissions passed therethrough, and
means for positioning the second pipe means in the interior region so that thermal transfer between the substrate means and the pipe means is minimized in order to maximize retention of thermal energy by the substrate means resulting from the combustion product traveling through the passageway, the second pipe means including a thin-walled cylindrical member formed to include a notch on one edge and having a tab on another edge sized to fit in the notch to establish a cylindrical shape for the thin-walled cylindrical member.

5,293,744

EXHAUST MANIFOLD MUFFLER FOR AN INTERNAL COMBUSTION ENGINE

Toshiyuki Imagawa; Hirohide Sakuma, and Eihi Nawata, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Takaoka Kabushiki Kaisha, both of Aichi, Japan

Filed Jul. 23, 1992, Ser. No. 919,429
Claims priority, application Japan, Jul. 26, 1991, 3-208736
Int. Cl.[5] F01N *3/28, 7/10*
U.S. Cl. 60—302 13 Claims



1. An exhaust manifold muffler for a multi-cylinder internal combustion engine comprising:
an exhaust manifold portion including a plurality of manifold pipes, each having an upstream end, an intermediate portion and a downstream end, wherein each of the upstream ends of the manifold pipes is connected to a respective cylinder of the internal combustion engine and each of the downstream ends is spaced from the other downstream ends and wherein the manifold pipes are arranged in parallel with each other and in a row; and
a muffler portion including a muffler housing defining a first muffler chamber, each of the downstream ends of the manifold pipes extending tangentially into the first muffler chamber so as to produce a swirl of exhaust gases in the first muffler chamber, a swirl pipe arranged in the first manifold chamber and extending in a semicircle from an upper portion of the first muffler chamber and a lower portion of the first muffler chamber, the swirl pipe having an inlet end that faces the swirl direction of the exhaust gases and an outlet end which is located between and faces the same direction as the downstream ends of the manifold pipes, and wherein the first muffler chamber is enlarged in cross-section compared with the manifold pipes.

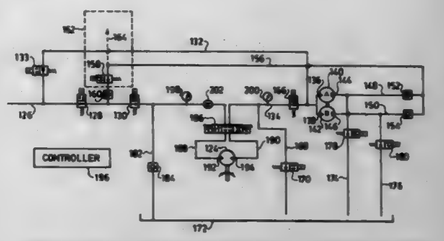
5,293,745

FLUID POWER REGENERATOR

Richard M. Roche, Gresham, Oreg., assignor to Roche Engineering Corporation, Portland, Oreg.

Division of Ser. No. 782,162, Oct. 24, 1991. This application Jun. 30, 1993, Ser. No. 85,510
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—419 13 Claims

9. A fluid actuating system comprising:
a store of low pressure fluid;
a supply of high pressure fluid;
a power beyond circuit for delivering high pressure fluid to another fluid actuating system;
an actuator operable by a flow of said high pressure fluid for moving a load and having input and output ports;
first and second displacers mechanically interconnected with each other independently of said actuator and having an input port and respective output ports;
a pressure line connecting said input port of the actuator to said supply of high pressure fluid;
an exhaust line connecting said output port of the actuator to said input port of the first and second displacers;
a return line connecting said respective output ports of the first and second displacers to said store of low pressure fluid;



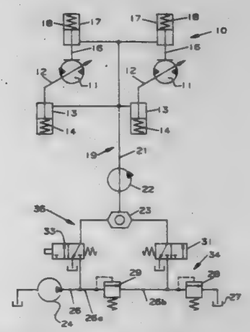
a feedback line connecting said output port of the first displacer to said power beyond circuit; and
a valve for alternatively connecting said output port of the first displacer to one of said return line and said feedback line.

5,293,746

HYDRAULIC CONTROL SYSTEM

Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Inc., Peoria, Ill.

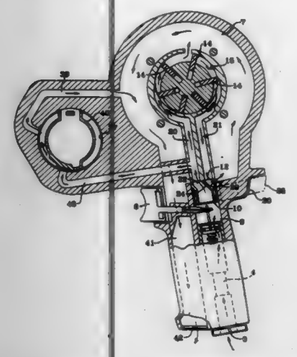
Filed Dec. 28, 1992, Ser. No. 997,428
Int. Cl.[5] F16D *1/02*
U.S. Cl. 60—435 6 Claims



1. A hydraulic control system comprising:
a first fluid actuator movable from a first position to a second position when the pressure of fluid directed thereto is at or exceeds a preselected low pressure;
a second fluid actuator movable from a first position to a second position only when the pressure of the fluid directed thereto reaches a preselected high pressure that is higher than the preselected low pressure;
a common fluid conduit connected to both the first and second actuators;
first means for selectively directing fluid at the preselected low pressure through the conduit so that only the first actuator is moved to its second position; and
second means for selectively directing fluid at the preselected high pressure through the conduit so that both the first and second actuators are moved to their second positions.

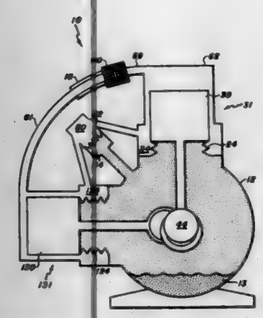
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,747
POWER REGULATOR FOR A PRESSURE FLUID MOTOR
Robert E. Geiger, Sayre, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jul. 27, 1992, Ser. No. 899,521
Int. Cl.[5] F28B *7/00*
U.S. Cl. 60—493 10 Claims



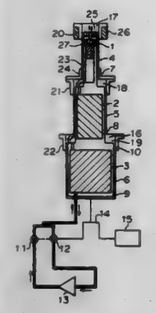
1. A power regulator for a pneumatic pressure fluid motor comprising:
a pneumatic pressure fluid motor means;
an inlet means for supplying pneumatic pressure fluid to said motor means;
an exhaust means for exhausting expanded pressure fluid from said motor means to atmosphere; and
adjustable means for bypassing a selected portion of said supplied pressure fluid to said exhaust means as a means for selectively backpressurizing said pneumatic pressure fluid motor as a means for reducing the output power of said pneumatic pressure fluid motor.

5,293,748
PISTON CYLINDER ARRANGEMENT FOR AN INTEGRAL STIRLING CRYOCOOLER
Paul J. Flanigan, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jul. 10, 1990, Ser. No. 550,589
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 9 Claims



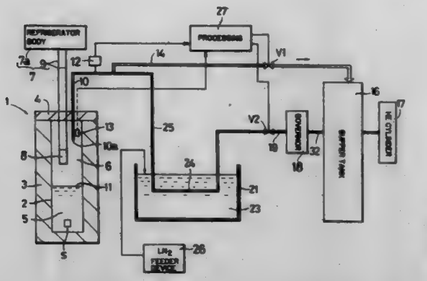
1. A fluid machine comprising:
housing means having a generally cylindrical piston bore formed therein and a guide bore coaxial with said piston bore;
said guide bore including a portion defined by an annular collar extending into said piston bore and coacting with said piston bore to define an annular space axially coextensive with said collar;
piston means having an annular cylindrical portion reciprocatably located in said piston bore and an integral guide rod with said guide rod being reciprocatably located in and coacting with said guide bore in a guided relationship and operatively connected to driving means for reciprocating said piston means;
said annular cylindrical portion of said piston means having a clearance with said piston bore such that contact does not take place therebetween during normal operation; and
a bellows assembly at least partially located in said annular space surrounding said annular collar and having a first end secured and sealed to said housing means and a second end secured and sealed to said annular cylindrical portion whereby said bellows assembly expands and contracts due to reciprocating movement of said piston means and moves in a telescoping fashion with respect to said annular collar.

5,293,749
MULTI-STAGE COLD ACCUMULATION TYPE REFRIGERATOR AND COOLING DEVICE INCLUDING THE SAME
Masashi Nagao; Hideto Yoshimura, and Takashi Inaguchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 722,547, Jun. 26, 1991, Pat. No. 5,154,063, Ser. No. 721,861, Jun. 26, 1991, Pat. No. 5,144,805, and Ser. No. 721,135, Jun. 26, 1991, Pat. No. 5,144,810, each is a division of Ser. No. 430,582, Nov. 1, 1989, Pat. No. 5,092,130. This application May 29, 1992, Ser. No. 890,265
Claims priority, application Japan, Nov. 9, 1988, 63-84450; Nov. 9, 1988, 63-84452; Nov. 9, 1988, 63-84453; Nov. 9, 1988, 63-84454; Nov. 9, 1988, 63-84455; Nov. 11, 1988, 63-85991
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 12 Claims



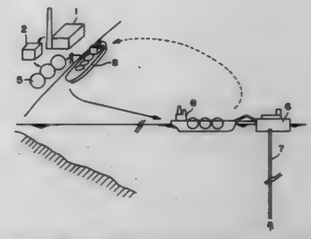
1. In a multi-stage cold accumulation type refrigerator comprising a compressor disposed at an ordinary temperature, a helium gas as a common operating fluid to be compressed by said compressor, and one or more expansion chambers and clod accumulators of different temperature levels; the improvements wherein at least one of said expansion chambers has a seal to prevent leakage of said helium gas, said seal being capable of sliding, wherein sliding resistance of said seal generates less heat than the theoretical generated refrigeration quantity of said expansion chamber, said theoretical generated refrigeration quantity being based on isothermal expansion in said expansion chamber; and a cold accumulating member of said cold accumulators is formed of an alloy or compound containing a rare earth metal.

5,293,750
CONTROL SYSTEM FOR LIQUEFIED GAS CONTAINER
Itsuro Tamura, Kawachinagano; Tsutomu Takae, Osaka; Yoshiyuki Kawashima, Amagasaki, and Kazunori Kawanishi, Osaka, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan
Filed Nov. 27, 1991, Ser. No. 799,273
Int. Cl.[5] F17C *5/02*
U.S. Cl. 62—47.1 4 Claims



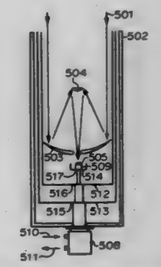
1. In an assembly including a container containing therein liquefied gas including a gas phase and a liquid phase, a superconductive quantum interference device immersed in the liquid phase and maintained thereby at a precise low temperature enabling said device to be employed to measure weak intensity magnetic fields, and a refrigerator including a recondenser for condensing the gas phase and thereby maintaining said device in the liquid phase at said precise low temperature, whereby it is necessary to stop operation of said refrigeration and said recondenser when said device is being employed to measure a weak intensity magnetic field, during which time the temperature of said device tends to rise above said precise low temperature, the improvement comprising a control system for controlling the gas and liquid phases in said container to ensure that said device is maintained at said precise low temperature in spite of stopping operation of said refrigerator and said recondenser, said system comprising:
pressure sensing means for sensing gas phase pressure in said container;
an on-off valve connected to said container for discharging therefrom the gas phase;
a source of gas of the same composition as the liquefied container in said container;
a flow control valve means between said source and said container for selectively supplying at a controllable flow rate gas from said source to said container; and
control means, operably coupled to said pressure sensing means, said on-off valve and said flow control valve means and responsive to an output from said pressure sensing means, for, when the pressure of the gas phase in said container is greater than a predetermined positive first value, opening said on-off valve to thereby discharge gas phase from said container and thus to prevent the temperature of said device from rising above said precise low temperature, and for, when the pressure of the gas phase in said container is negative, relative to atmospheric pressure, and of an absolute value greater than a predetermined second value, opening said flow control valve means by a predetermined degree of opening for a predetermined period of time to thereby supply gas from said source to said container at a controlled flow rate and thus to prevent the temperature of said device from dropping below said precise low temperature.

5,293,751
METHOD AND SYSTEM FOR THROWING CARBON DIOXIDE INTO THE DEEP SEA
Koetsu Asai, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 546,909, Jul. 2, 1990, abandoned. This application Sep. 29, 1992, Ser. No. 953,186
Claims priority, application Japan, Jul. 19, 1989, 1-186319
Int. Cl.[5] F17C *1/00*
U.S. Cl. 62—53.1 3 Claims



1. A method for discharging carbon dioxide into the deep sea, consisting of the steps of transporting carbon dioxide in a liquefied gas state on the sea by means of ships to a free floating marine float installation located offshore in the deep sea, and discharging the liquefied carbon dioxide into the deep sea through the lower end of a throw-in pipe reaching to a water depth of about 3,000 m at a distance of hundreds of meters above the sea bed, said pipe provided on a free floating marine float installation unattached to the sea bed and which pipe is always implemented to discharge the liquefied carbon dioxide into the deep sea.

5,293,752
MULTI-STAGE COLD ACCUMULATION TYPE REFRIGERATOR AND COOLING DEVICE INCLUDING THE SAME
Masashi Nagao; Hideto Yoshimura, and Takashi Inaguchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 722,547, Jun. 26, 1991, Pat. No. 5,154,063, Ser. No. 721,816, Jun. 26, 1991, Pat. No. 5,144,805, and Ser. No. 721,135, Jun. 26, 1991, Pat. No. 5,144,810, each is a division of Ser. No. 430,582, Nov. 1, 1989, Pat. No. 5,092,130. This application May 29, 1992, Ser. No. 891,160
Claims priority, application Japan, Nov. 9, 1988, 63-284450; Nov. 9, 1988, 63-284452; Nov. 9, 1988, 63-284453; Nov. 9, 1988, 63-284454; Nov. 9, 1988, 63-284455
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.1 9 Claims



1. An infrared telescope comprising a case, a first reflecting mirror disposed in said case, for reflecting infrared radiation entering said case from the outside of said case to a second

reflecting mirror, said second reflecting mirror reflecting said infrared radiation from said first reflecting mirror to an infrared detector, a multi-stage cold accumulation type refrigerator, and a helium reservoir, said helium reservoir containing liquid helium for maintaining the temperature stability of said infrared detector, said multi-stage cold accumulation type refrigerator comprising a compressor disposed at an ordinary temperature, a helium gas as a common operating fluid to be compressed by said compressor, a plurality of thermal stages, at least one cylinder, and one or more expansion chambers and cold accumulators of different temperature levels, said thermal stages and said cylinders having outer surfaces, the improvements wherein at least one of said expansion chambers has a seal to prevent leakage of said helium gas, said seal being capable of sliding, wherein sliding resistance of said seal generates less heat than the theoretical generated refrigeration quantity of said expansion chamber, said theoretical generated refrigeration quantity being based on isothermal expansion in said expansion chamber; and a cold accumulating member of said cold accumulators is formed of an alloy or compound containing a rare earth metal.

5,293,753

METHOD FOR PREVENTING BACTERIAL GROWTH IN A FOOD PROCESSING PLANT AND SUCH A PLANT FOR CARRYING OUT THE METHOD

Sven-Olle Rothstein, Angelholm, and Jan Solminger, Helsingborg, both of Sweden, assignors to Frigoscandia Food Process Systems AB, Helsingborg, Sweden

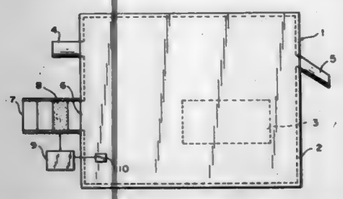
PCT No. PCT/SE90/00780, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO91/07994, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 854,600

Claims priority, application Sweden, Nov. 29, 1989, 8904041-4

Int. Cl.[5] F24F *3/16*

U.S. Cl. 62—78 **20 Claims**



1. A method for preventing bacterial growth in a refrigerating or freezing plant for food, said plant (1) comprising a substantially closed housing (2) and, arranged therein, refrigerating means (3) for refrigerating food in said housing, comprising:

activating said refrigerating means for a work period (T1) to refrigerate or freeze food; and

inactivating said refrigeration means and cleaning said plant during a rest period (T2), wherein said cleaning includes raising the temperatures in the plant above a temperature requisite for killing bacteria and maintaining air pressure in the plant higher than the ambient pressure, at least during the entire rest period, by supplying air free from bacteria within said plant.

5,293,754

LIQUID COOLANT CIRCULATING SYSTEM

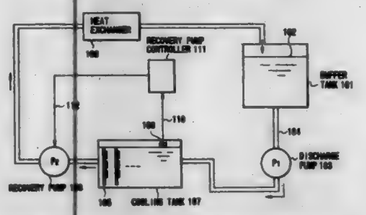
Tsukasa Mizuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 912,986, Jul. 14, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 32,401

Claims priority, application Japan, Jul. 19, 1991, 3-203712

Int. Cl.[5] F25D *17/02*; F28D *15/00*

U.S. Cl. 62—185 **14 Claims**



1. A liquid coolant circulating system, comprising:

a cooling tank filled with a liquid coolant for immersing an object to be cooled;

a discharge pump, arranged on an inlet side of said cooling tank, for supplying a liquid coolant to said cooling tank at a predetermined flow rate;

a recovery pump, arranged on an outlet side of said cooling tank, for recovering a liquid coolant from said cooling tank;

a heat exchanger, arranged on an outlet side of said recovery pump, for cooling a heated liquid coolant to a predetermined temperature and supplying a cooled liquid coolant to said discharge pump;

detecting means for detecting a value related to a pressure in said cooling tank; and

control means for controlling the ability of said recovery pump in response to a detection signal from said detecting means.

5,293,755

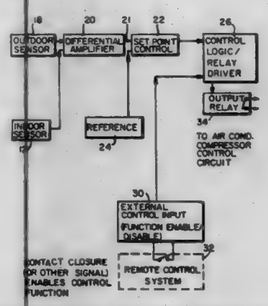
AIR CONDITIONING LOAD MANAGEMENT CONTROL SYSTEM

Charles V. Thomas, c/o Virginia Power Telecommunications 104 Wilden Dr., Ashland, Va. 23005-9413

Filed Dec. 9, 1992, Ser. No. 987,776

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—208 **12 Claims**



1. A load management control system for an air conditioner comprising:

an outdoor temperature sensor for sensing outdoor temperature of the outside of an enclosure to be air-conditioned;

an indoor temperature sensor for sensing an indoor temperature of the enclosure;

means for determining a difference in output of said indoor and outdoor temperature sensors;

means for comparing said difference in output of said indoor and outdoor temperature sensors with a reference input;

means for detecting an external controlling signal from an input device coupled to said system;

means for controlling an air conditioner control circuit based upon input from said comparing means and said detecting means, whereby, when an allowable temperature differential is exceeded while the external controlling signal is detected, said controlling means interrupts operation of said air conditioner control circuit so as to reduce electrical load, said controlling means restoring the operation of said air conditioner control circuit when said temperature differential is no longer exceeded.

5,293,756

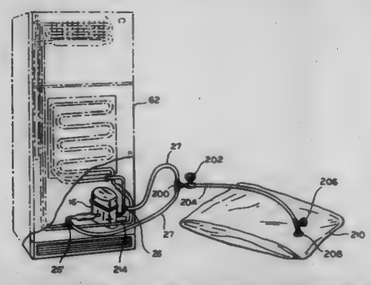
METHOD AND APPARATUS FOR RECOVERING REFRIGERANTS FROM HOME REFRIGERATION SYSTEMS

John A. Nelson, Benton Township, Berrien County; David B. Kirby; Phalgani S. Roy, both of St. Joseph Township, Berrien County; John L. Wuepper; Nihat O. Cur, both of Royalton Township, Berrien County, all of Mich.; Allen C. Schmaltz, Scipio Township, LaPorte County; John L. Deaner, Coolspring Township, LaPorte County, both of Ind., and Terry L. McGath, Kettering, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 413,823, Sep. 28, 1989, Pat. No. 4,996,848. This application Feb. 26, 1991, Ser. No. 661,463

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—292 **4 Claims**



1. An apparatus for capturing refrigerant contained in a sealed, pressurized refrigeration system having a refrigerant line providing access to said system, comprising:

a plastic bag of a film material to define an interior space at atmospheric pressure, the film material being insert to the refrigerant and other contents of the sealed system, and the film material including a barrier layer to prevent outward permeation of refrigerant;

an access opening defined by said film material providing an inlet to said space; and

means for connecting said bag at the opening thereof to said sealed system to permit said refrigerant to escape under pressure from said refrigeration system to the interior space of said bag,

wherein said bag comprises four sheets of laminate film material heat layered together and sealed about peripheral edges thereof to define an innermost interior space disposed between opposite outermost interior spaces and having an adapter fitting assembled to an opening through two of said films to provide an inlet to said innermost interior space.

5,293,757

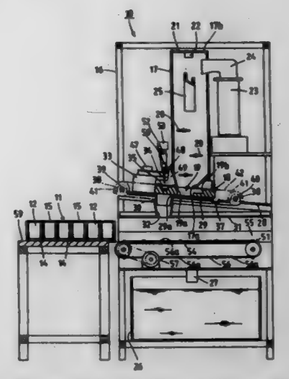
ICE DISPENSER

Tomoyuki Nishio, Toyoake, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed May 12, 1992, Ser. No. 881,801

Int. Cl.[5] F25C *5/18*

U.S. Cl. 62—344 **2 Claims**



2. An ice dispenser (10) which supplies a measured amount of ice pieces (13) to a plurality of vessels (12) arranged in rows, respectively, which comprises;

an ice bin (17) storing a predetermined amount of ice pieces (13) therein and having an ice discharge port (17*a*) at the bottom;

a fixed plate (29) disposed below the ice bin (17), having a plurality of openings (29*a*), at least in one row, at the position not in vertical alignment with the ice discharge port (17*a*); and

a measuring device (18) disposed slidably between the ice bin (17) and the fixed plate (29), having a plurality of measuring sections (19) corresponding to the number of openings (29*a*) defined in the fixed plate (29) arranged in a row in parallel with the row of the openings (29*a*), which can be shifted to the measuring position where the measuring section (19) are communicating to the ice discharge port (17*a*) of the ice bin (17) and to the discharging position where the measuring sections (19) are communicating through the corresponding openings (29*a*) defined in the fixed plate (29); and

wherein

the ice pieces (13) are designed to be charged to the measuring section2 (19) through the ice discharge port (17*a*) by shifting the measuring device (18) to the measuring position, with the vessels (12) being positioned below the respective openings (29*a*) of the fixed plate (29), and then discharged therefrom and supplied to the vessels (12) through the corresponding openings (29*a*) by shifting the measuring device (18) to the discharging position;

recesses (19*b*) are defined on the top surface of the measuring device (18) so as to communicate with the measuring sections (19) respectively, in such a way that they may extend toward the rear end of the measuring device (18) when the measuring device (18) is positioned at the measuring position; and

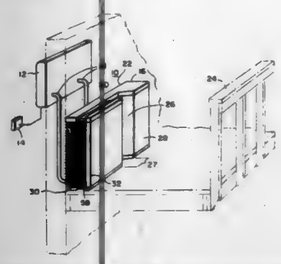
the ice pieces charged through the ice discharge port (17*a*) to the measuring sections (19) located at the measuring position are designed to be discharged therefrom and supplied to the vessels (12) positioned below the openings (29*a*) by shifting the measuring device (18) to the discharging position.

5,293,758

OUTSIDE SECTION FOR SPLIT SYSTEM AIR CONDITIONING UNIT

David Ames; Stephen Bartlett, both of London, England; Darrell D. Beitel; Carl Bergt, both of Tyler, Tex.; Alain R. Parmentier, Darnieulles, and Andre Vivarie, Dogneville, both of France, assignors to American Standard Inc., New York, N.Y.

Filed Aug. 29, 1991, Ser. No. 752,117
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—428 7 Claims



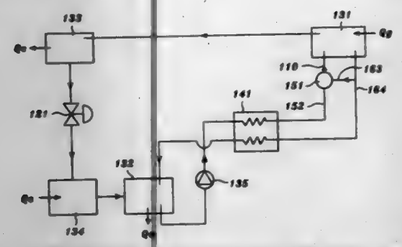
1. An outside section for a split system air conditioning unit comprising:
a housing including a first side, a second side, a top, a bottom, a front, and a back;
the housing including an air inlet located in a middle portion of the front, and an air outlet located in the first side; and
a first baffle dividing the housing interior into first and second segments,
wherein the first segment includes the air inlet, the air outlet and a heat exchange coil located therebetween,
wherein the second segment includes a compressor operably connected to the heat exchange coil, and
wherein the air inlet is a three sided recess where none of the three sides are parallel to any of the other sides of the recess.

5,293,759

DIRECT HEAT RECOVERY ABSORPTION REFRIGERATION SYSTEM

Chung-Chiang Lee; Hung-Yao Chao; Peggy Lin; Chi-Chen Chung, and Yuh-Yuan Yo, all of Hsinchu, Taiwan, assignors to Industrial Technology research Institute, Hsinchu, Taiwan

Filed Jul. 15, 1992, Ser. No. 914,478
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—476 6 Claims



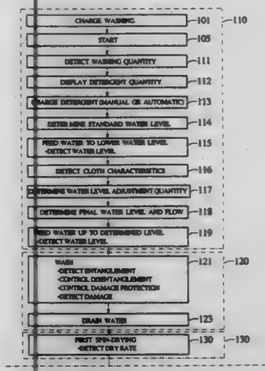
1. A direct heat recovery absorption refrigeration system using a solution and refrigerant contained in the solution as working mediums, comprising:
(a) a generator for heating solution introduced thereto to produce high temperature and high-concentrated solution, and to evaporate refrigerant into vapor;
(b) a condenser in communication with said generator, for condensing refrigerant vapor coming from said generator;
(c) a throttling device in communication with said condenser, for throttling condensed refrigerant coming from said condenser;
(d) an evaporator in communication with said throttling device, having water circulating therewithin, capable of effecting heat transfer between the refrigerant coming from said throttling device and the circulating water;
(e) an absorber in communication with said evaporator, having solution reservoired therewithin, for absorbing refrigerant coming from said evaporator by means of the reservoired solution;
(f) and heat exchanger in communication with said absorber and said generator, for performing indirect heat exchange between part of the high temperature and high-concentrated solution coming from said generator and cold solution coming from said absorber to produce moderate temperature and low-concentrated solution; and
(g) a high concentrated and low concentrated solution mixing device, disposed between said heat exchanger and said generator, for mixing another part of the high temperature and high-concentrated solution leaving said generator and the moderate temperature and low-concentrated solution entering said generator from said heat exchanger, whereby the temperature of the low-concentrated solution introduced into said generator reaches equilibrium temperature under the pressure in said generator.

5,293,760

WASHING MACHINE

Kazutoshi Tani, Tokyo; Kaichi Hatsukawa, and Satoko Hasegawa, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1993, Ser. No. 41,398
Claims priority, application Japan, Mar. 31, 1992, 4-077671
Int. Cl.[5] D06F *33/02*
U.S. Cl. 68—12.02 14 Claims



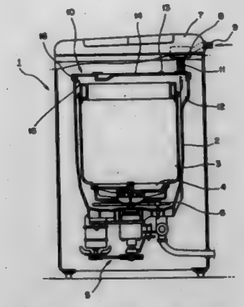
1. A washing machine comprising:
entanglement detection means for detecting forward load torque while water flow producing means is being drived in a forward direction during one of washing and rinsing operations as well as reverse load torque while the water flow producing means is being turned in a reverse direction, calculating a difference between the forward load torque and the reverse load torque, and determining that the washing are entangling with one another if the difference is greater than a reference value; and
disentangle means for disentangling the washing if said entanglement detection means determines that the washing are entangling.

5,293,761

BOILING-WATER CLOTHES WASHING MACHINE

Ki H. Jang, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 16, 1992, Ser. No. 961,831
Claims priority, application Rep. of Korea, Oct. 16, 1991, 91-17217
Int. Cl.[5] D06F *39/08, 39/14*
U.S. Cl. 68—15 11 Claims



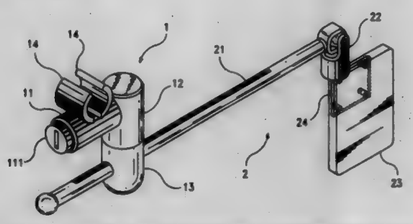
1. A clothes washing machine comprising:
an outer body forming a first internal space and having a first cover;
a tub disposed within said first internal space and forming a second internal space, said tub including
a first upstanding side wall terminating in an upper rim,
a second cover having an outer peripheral portion engageable with said upper rim to close said second internal space, and
an access door disposed in said second cover inwardly of said outer peripheral portion, said access door being openable for affording access to said second internal space;
a wash tank disposed within said second internal space and beneath said access door for receiving clothes when said access door is open, said wash tank having a second upstanding side wall; and
water guiding means connectible to a water source for guiding wash water through said outer body and directly to a portion of said second internal space disposed between said first and second upstanding side walls.

5,293,762

AUTOMOBILE LOCK

Stanley Kuo, P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 16, 1992, Ser. No. 991,385
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—238 1 Claim



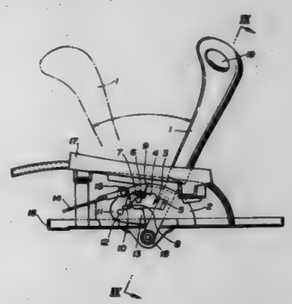
1. An automobile lock for locking a steering wheel and a cassette tape deck, comprising:
a locking member provided with a locking core in an interior portion and a clamp for engaging a steering wheel on an outer side;
a transmission member connected with said locking member by a gearing;
an adjusting member connecting with said transmission member by said gearing; and
a telescopic rod extending through said adjusting member, provided at an end with a universal joint connected with an insert plate for insertion into a cassette tape deck slot, and having a plurality of teeth;
said gearing having a first gear disposed in said locking member, a second gear mounted in said transmission member and engageable with said first gear, a third gear and a fourth gear mounted in said transmission member and engageable with each other, a slider between said third gear and said fourth gear, a fifth gear mounted on another end of said slider, a sixth gear in said adjusting member and engageable with said fifth gear, and a latch bolt at another end of said sixth gear for engaging a tooth of said telescopic rod.

5,293,763

GEAR SELECT LEVER LOCKING ARRANGEMENT

Yasushi Asano; Norio Togano, both of Shizuoka, and Satoshi Kobayashi, Kanagawa, all of Japan, assignors to Fuji Kiko, Ltd/Nissan Motor Co., Ltd., Japan

Filed Mar. 9, 1992, Ser. No. 848,660
Claims priority, application Japan, Mar. 7, 1991, 3-041600; Mar. 7, 1991, 3-041601
Int. Cl.[5] B60R *25/06*; G05G *5/06*
U.S. Cl. 70—248 27 Claims



1. A gear select lever locking arrangement, comprising:
a key operated cylinder rotatable upon insertion of a key;
a blocking mechanism so constructed and arranged as to block said key operated cylinder from rotating to a predetermined position wherein the key is removable from said key operated cylinder, said blocking mechanism having a blocking position wherein said key operated cylinder is blocked from rotating to said predetermined position and an unblocking position wherein said key operated cylinder is allowed to rotate to said predetermined position;
a gear select lever movable between a plurality of positions including a predetermined position, said gear select lever supporting a position pin and manually operable means for moving said pin;
a position plate formed with a groove receiving said position pin and a predetermined notch opening to said groove, said predetermined notch being arranged to come into registry with said position pin when said gear select lever is in said predetermined position for receiving said position pin for allowing movement of said position pin from said groove into said predetermined notch;
a catch mechanism constructed and arranged such that movement of said position pin from said groove into said

predetermined notch shifts said catch mechanism from an open position to a catch position, said catch mechanism including a blocking mechanism control lever rotatable about a first axis, a keeper lever rotatable around a second axis, said keeper lever being moved according to movement of said position pin when said position pin contacts said keeper lever when moving into said predetermined notch, movement of said keeper lever causing rotation of said blocking mechanism control lever around said first axis such that a projecting portion of said blocking mechanism control lever is moved to contact a side of said position pin other than that contacting said keeper lever such that said position pin is held locked between said keeper lever and said projecting portion of said blocking mechanism control lever within said predetermined notch, thus establishing said catch position;

said blocking mechanism control lever of said catch mechanism being operatively connected to said blocking mechanism such that when said catch mechanism assumes said open position, said blocking mechanism assumes said blocking position, while when said catch mechanism assumes said catch position, said blocking mechanism assumes said unblocking position.

5,293,764

SAFETY LOCK FOR HOUSE DOORS AND THE LIKE

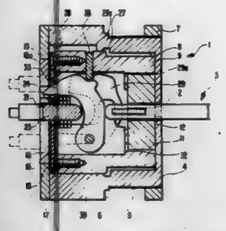
Alberto Guzzinati, Sant'Ambrogio, Italy, assignor to Mottura Serrature Di Sicurezza S.p.A., Sant'Ambrogio, Italy

Filed Dec. 18, 1992, Ser. No. 992,767

Claims priority, application Italy, Dec. 18, 1991, TO91 A000996

Int. Cl.[5] E05B *29/04*

U.S. Cl. 70—365 **4 Claims**



1. A lock for keys having a front active profile, comprising:

a casing

an outer drum member (4) which is to be fixed to the casing of the lock, having a substantially cylindrical inner cavity,

a cylindrical body (9) coaxially and rotatably supported within the cavity of the drum member, said body having an inner cavity (13) opening on its rear face,

a covering disk (15) for the inner cavity of the cylindrical body, connected to the rear face of the cylindrical body and having an aperture (19) in correspondence with the axis of the cylindrical body,

a T-shaped element (20) having a stem (25) which is slidably mounted within the aperture (19) in said covering disk along the axis of the cylindrical body, and a portion including brackets (22) housed within the cavity (13) of said cylindrical body, said brackets (22) having ends slidably mounted within longitudinal grooves (23) formed in the surface of the inner cavity of the cylindrical body,

a tab member (27) for locking the lock which is slidably mounted within a slot (26) extending radially through a wall of the cylindrical body, a radially outer end (27*a*) of said tab member being adapted to engage a corresponding cavity (28) formed on an inner wall of the drum member (4) to prevent a rotation of the cylindrical body with respect to the drum member,

a plurality of safety plates (29) parallel to each other and arranged side by side, and having notches (29*a*), said plates being housed within said cavity (13) in the cylindrical body and being free to move in their planes with respect to each other, said notches (29*a*) being adapted to define a seat for receiving a radially inner end of said tab member (27) when said plates have a predetermined position with respect to each other, and

cam means (33) housed within said cavity (13) of said cylindrical body, in contact with said tab member (27) and adapted to hold the tab member in a position, in which the latter engages the cavity (28) on the drum member,

wherein said plates (29) are pivotally mounted around an oscillation axis perpendicular to the axis of the cylindrical body.

5,293,765

METHOD AND APPARATUS FOR THE MANUFACTURE OF THREADED ALUMINUM CONTAINERS

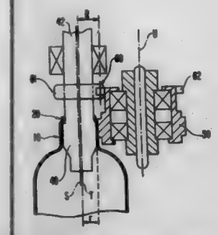
Thomas E. Nussbaum-Pogacnik, Frauenfeld, Switzerland, assignor to E. Nussbaum AG, Matzingen, Switzerland

Filed Apr. 16, 1992, Ser. No. 869,296

Claims priority, application Switzerland, Apr. 17, 1991, 01 149/91-9

Int. Cl.[5] B21H *3/04*

U.S. Cl. 72—42 **12 Claims**



1. A method for forming threads on an aluminum container comprising the steps of

forming a container having an open end,

positioning first and second thread-rolling tools adjacent inside and outside surfaces of the container, respectively, adjacent the open end,

moving the thread-rolling tools against the surfaces of the container to form threads, and

rotatably driving the second tool to produce slipping contact between the container surfaces and the tools while the threads are being formed.

5,293,766

METHOD FOR MAKING SLENDER SEAMLESS STEEL MOLD

Fu-Hsing Chang, No. 293, Min Tsu I Road, Kauhsiung, Taiwan

Filed Jan. 19, 1993, Ser. No. 5,253

Int. Cl.[5] B21D *51/16*

U.S. Cl. 72—283 **8 Claims**

1. A method for making slender seamless steel mold, comprising the following steps:

(a) chasing an outer surface of a solid slender male mold with required stripes and then heat-treating and hardening said male mold to a required hardness;

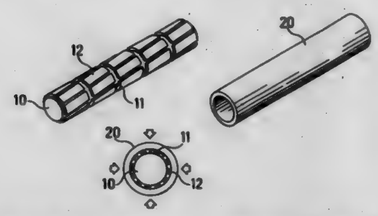
(b) fitting said male mold into a hollow slender female mold which has an outer surface and an inner surface having an inner diameter corresponding to the outer diameter of said male mold;

(c) exerting a hydraulic pressure onto the outer surface of said female mold which is fitted with said male mold so as to impress the stripes of the outer surface of said male mold onto the inner surface of said female mold;

(d) heating said fitted male and female molds to an anneal

temperature and then making the same cool naturally and thereafter drilling a longitudinal through hole the length of said male mold, thus defining a wall of said male mold having an inner surface;

(e) cutting at least three longitudinal slits on the inner surface of said male mold, the depth of each of said slits being smaller than the thickness of the wall of said male mold; and



(f) again heat-treating and hardening said male mold and making the wall sections near said slits of said male mold deform and crack into pieces, the pieces of said male mold being removed from said female mold to expose up the stripes impressed on the inner surface of said female mold by said male mold.

5,293,767

MACHINE TOOL

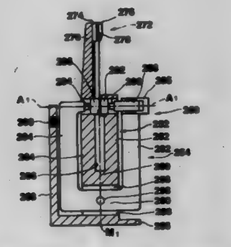
Franco Sartorio, Torino, Italy, assignor to Amada Company, Limited, Japan

Continuation of Ser. No. 726,821, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 551,781, Jul. 12, 1990, Pat. No. 5,052,208, which is a division of Ser. No. 388,478, Aug. 2, 1989, Pat. No. 5,077,998. This application Sep. 8, 1992, Ser. No. 940,740

Claims priority, application Italy, Aug. 3, 1988, 67735 A/88; Aug. 3, 1988, 67736 A/88

Int. Cl.[5] B21J *13/08, 13/04*

U.S. Cl. 72—311 **5 Claims**



1. A machine tool for punching a sheet metal workpiece, comprising:

a base;

a punch and a die, at least one of which is movable toward and away from the other along a substantially horizontal axis for punching the sheet metal workpiece;

a first frame erected vertically on the base for supporting one of the punch and die;

a second frame erected vertically on the base for supporting the other of the punch and die, the second frame being disposed apart from the first frame at a working space;

a surface provided on either one of the first and the second frames, for slidably supporting the sheet metal workpiece;

a third frame erected on a top end of the second vertical frame; and

a sheet metal workpiece moving and positioning means supported on the third vertical frame so as to be movable up and down for moving and positioning the sheet metal workpiece to be punched, said sheet metal workpiece moving and positioning means supported on the frame for moving the sheet metal workpiece in two perpendicular directions and positioning the sheet metal workpiece with respect to the punch and die, while suspending the sheet metal workpiece, the sheet metal workpiece moving and positioning means including a first slide supported on the frame for sliding in the vertical direction, a second slide supported on the first slide for sliding in the horizontal direction, and clamps mounted on the second slide for clamping an edge of the sheet metal workpiece; and

reaction force transmitting means for causing the pair of tools to move toward and away from each other and for transmitting a reaction force which is generated between the tools during processing, the reaction force transmitting means being connected to the base so as to be pivotable about an axis which is perpendicular to a working path of the pair of tools.

5,293,768

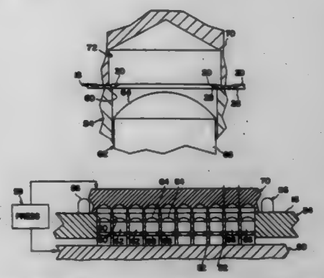
APPARATUS FOR MANUFACTURING A RAZOR BLADE STRUCTURE FOR SHAVING SYSTEMS

Daniel B. Lazarchik, Boston, and Henryk J. Chylinski, Haverhill, both of Mass., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 903,916, Jun. 25, 1992, Pat. No. 5,201,253, which is a continuation of Ser. No. 756,343, Sep. 6, 1991, abandoned, which is a division of Ser. No. 559,646, Jul. 30, 1990, Pat. No. 5,088,195. This application Dec. 14, 1992, Ser. No. 992,256

Int. Cl.[5] B21D *5/04, 22/22, 53/60*

U.S. Cl. 72—311 **6 Claims**



1. Apparatus for manufacturing a razor blade that has an aperture with an annular sharpened edge from an apertured structure having a preexisting annular edge, the apparatus comprising:

a punch structure,

a punch member upstanding from said punch structure that has a configuration identical to the configuration of said annular sharpened edge and of slightly greater dimension than said annular sharpened edge,

a die structure having a die recess of configuration identical to the configuration of said annular sharpened edge and of slightly greater dimension than said punch member,

a structure for positioning said apertured structure between said punch structure and said die structure, and

a structure for moving said punch structure and said die structure towards one another to cold-work only the portion of said annular edge portion immediately adjacent to the ultimate sharpened tip and mechanically displace the ultimate tip,

wherein said punch member and said die are configured such that when said punch member cold-works the preexisting annular edge in the apertured structure the cold-working provides a razor blade having an annular sharpened edge

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having a shaving angle in the range of 15°–35° and an exposure in the range of about 0.01–0.1 millimeter.

5,293,769

FORGING MACHINE WITH DIE HOLDER LATERAL ADJUSTMENT

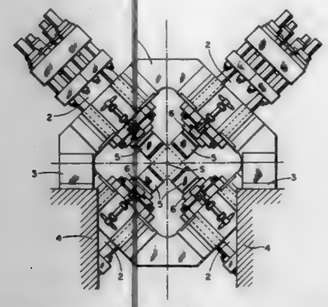
Peter Schubert, Kaarst, Fed. Rep. of Germany, assignor to SMS Hasenclever GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 30, 1992, Ser. No. 998,593

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1991, 4143175

Int. Cl.[5] B21J *7/02*

U.S. Cl. 72—402 **3 Claims**



1. A forging machine comprising:

a machine frame having a system axis extending therethrough;

four forging rams slidably mounted in said frame and disposed in an X arrangement at 90° to one another within a common working plane transverse to said system axis, each ram having a ram axis and being supported and guided by said machine frame for movement along said ram axis radially towards and away from said system axis over a working stroke;

a radially inner end on each ram;

pressure fluid piston and cylinder units on said machine frame each comprising a respective one of said rams as a constituent part thereof and having a stroke corresponding to said working stroke of said ram;

a respective crosshead supporting each of said piston and cylinder units and adjustably supported for movement relative to said machine frame for moving a respective one of said piston and cylinder units and setting the stroke position and radially innermost end position of a respective ram;

a die holder mounted on said radially inner end of each ram and adapted for adjustment of a die carried thereon in use in a direction transverse to said ram axis and within said common plane, so that said die holder is adjustable for offsetting from said ram axis within said working plane in dependence on said innermost end position of said ram whereby dies on said die holders in use, each having a working surface facing said system axis and side surfaces adjacent said working surface, are adjustable with parts of said working surfaces overlapping side surfaces of adjacent dies to form radially inwardly of said innermost end positions of said rams a closed forging pass contour smaller than the working surfaces of the dies; and

actuator means for moving each die holder in said direction transverse to said ram axis, each actuator means comprising a substantially radially extending holder drive shaft located externally of and adjacent to the associated ram and having radially inner and outer end portions, drive means for said holder drive shaft, a gear unit operatively engaging said radially inner end portion of said holder drive shaft in driving relation with said die holder and attached to the associated ram, and a rotary coupling between said gear unit and drive means for accommodating ram radial movement.

5,293,770

CALIBRATION DEVICE FOR USE IN CALIBRATING A SENSOR

Steffen T. Hansen, Copenhagen, and Poul R. Sorensen, Lyngby, both of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

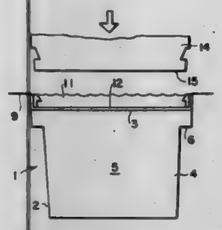
PCT No. PCT/DK89/00092, § 371 Date Dec. 21, 1990, § 102(e) Date Dec. 21, 1990, PCT Pub. No. WO90/01160, PCT Pub. Date Feb. 8, 1990

PCT Filed Apr. 20, 1989, Ser. No. 634,111

Claims priority, application Denmark, Jul. 21, 1988, 4083/88

Int. Cl.[5] G01N *27/26*

U.S. Cl. 73—1 R **29 Claims**



1. A process for calibrating a sensor in a calibration fluid, said process comprising:

(a) holding a calibration fluid of a known composition or condition in a calibration chamber of a calibration housing, said calibration housing being adapted for engagement with said sensor for providing a releasable fluid-tight seal between said calibration housing and at least part of said sensor, said calibration chamber comprising a rupturable barrier on at least one side for enabling said calibration chamber to remain fluid-tight with said calibration fluid sealed therein prior to calibrating said sensor;

(b) engaging said sensor with said calibration chamber at said rupturable barrier by applying said sensor against said barrier with sufficient force to rupture said barrier, thereby producing an opening in said barrier;

(c) moving at least part of said sensor through said opening and into said calibration chamber so that at least part of said sensor contacts said calibration fluid therein, said sensor and said calibration housing engaging for providing a releasable fluid-tight seal of at least part of said sensor in said calibration chamber.

5,293,771

GAS LEAK SENSOR SYSTEM

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Filed Sep. 1, 1992, Ser. No. 938,820

Int. Cl.[5] G01M *3/26*

U.S. Cl. 73—40 **14 Claims**

1. A gas leak sensor system for detecting the presence of gas leaking into any of a plurality of test spaces, comprising, in combination:

a plurality of tubes extending from each of the test spaces to a sensor location;

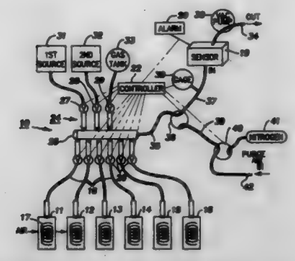
selector valve means connected to each tube;

a gas sensor having an alarm;

control means to actuate said selector valve means to select tubes in a particular order;

means connected to the selector valve means to draw air and any leaking gas through the selected tube and through the gas sensor;

means to purge said gas sensor at least when leaking as has been sensed; and



said purging means having a purging gas inlet remote from said test spaces.

5,293,772

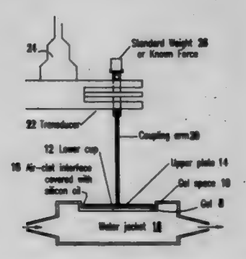
INSTRUMENTATION AND METHOD FOR EVALUATING PLATELET PERFORMANCE DURING CLOTTING AND DISSOLUTION OF BLOOD CLOTS AND FOR EVALUATING ERYTHROCYTE FLEXIBILITY

Marcus E. Carr, Jr., Richmond, Va., assignor to Center for Innovative Technology, Herndon, Va.

Continuation-in-part of Ser. No. 822,415, Jan. 17, 1992, Pat. No. 5,205,159. This application Dec. 1, 1992, Ser. No. 982,652

Int. Cl.[5] G01N *33/48*

U.S. Cl. 73—64.41 **10 Claims**



1. An instrument for measuring clot elastic modulus and clot retraction force, comprising:

a pair of spaced apart plates;

a displacement sensor connected to at least one of said pair of spaced apart plates; and

means for cyclicly compressing a blood sample between said spaced apart plates.

5,293,773

METHOD FOR DETERMINING THE WETTING PREFERENCE OF PARTICULATE SOLIDS IN A MULTIPHASE LIQUID SYSTEM

Alexander J. Babchin, Suite 202, 10160 - 115 Street, Edmonton, Alberta, Canada T5K 1T6; Haibo Huang, 310 Cumberland Avenue East, Saskatoon, Saskatchewan, Canada S7N 1M5; Kevin Rispler, 189 Callingwood Place, Edmonton, Alberta, Canada T5T 2C6, and William D. Gunter, 11239 - 63 Street, Edmonton, Alberta, Canada T5W 4E5

Filed May 8, 1992, Ser. No. 880,447

Claims priority, application United Kingdom, May 9, 1991, 9109995

Int. Cl.[5] G01N *13/02, 29/00*

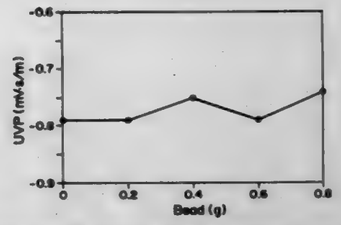
U.S. Cl. 73—64.48 **4 Claims**

1. A method for determining the wetting preference of particulate solids dispersed in a multiphase liquid medium having a continuous phase and a discontinuous phase, comprising:

(a) dispersing particulate solids in a multiphase liquid medium at varying solid contents;

(b) passing the dispersion through an electroacoustical cell;

(c) measuring an electroacoustical signal of the dispersion with varying solids content; and



(d) determining whether the signal remains substantially constant or decreases with increasing solids content, the former indicating that the particulate solids have a wetting preference for the continuous phase, the latter indicating that the solids have a wetting preference for the discontinuous phase.

5,293,774

SHAFT BREAKAGE DETECTION APPARATUS

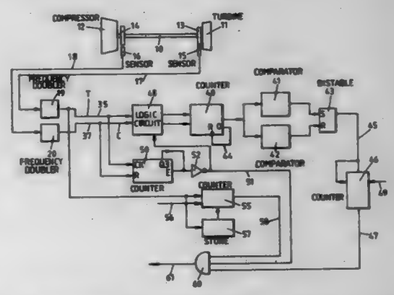
Edward M. Ratherham, Redditch, England, assignor to Lucas Industries Public Limited Company, England

Filed May 12, 1992, Ser. No. 881,839

Claims priority, application United Kingdom, Jun. 4, 1991, 9111906.5

Int. Cl.[5] F02G *3/00*; G01M *15/00*

U.S. Cl. 73—116 **17 Claims**



1. An apparatus for detecting breakage of a rotary shaft, comprising first and second sensors for producing first and second signals whose frequencies are dependent on first and second speeds of first and second regions, respectively, of the shaft, an up-down counter, control means for causing said counter to count in opposite directions in response to the first and second signals, respectively, means for biasing said counter towards zero, and signaling means for signaling if the count in said counter passes a first predetermined threshold.

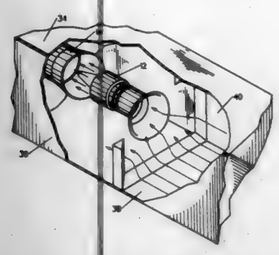
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,775

GAS TURBINE ENGINE TEST CELL

Terry A. Clark, East Hartford; Mark W. Peszko, Malborough; John H. Roberts, Bolton; George L. Muller, Middletown, and John P. Nikkanen, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1992, Ser. No. 970,214
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 11 Claims



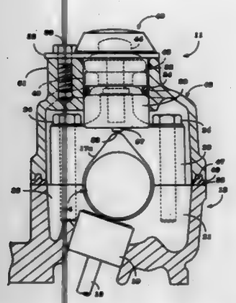
1. A test cell for testing a gas turbine engine comprising:
a plurality of planar walls defining an air flow duct, having an axis, a flow area and an upstream end;
a support for supporting a gas turbine engine having an inlet, within said duct;
an exhaust collector passage for removing air from said duct;
a plurality of ramp structures installed on at least two opposing walls of said air flow duct;
said ramp structures blocking between 30% and 50% of said flow area at a location at or adjacent the inlet of said gas turbine engine, when the gas turbine engine is supported in said duct; and
each ramp structure having an upstream facing surface at an angle between 40° and 50° from said axis.

5,293,776

CYLINDER DISCRIMINATING SENSOR LAYOUT

Masaki Takegami, and Hideaki Ueda, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 18, 1992, Ser. No. 837,805
Claims priority, application Japan, Mar. 15, 1991, 3-76805
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—119 R 20 Claims



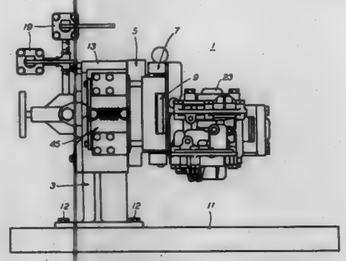
1. A sensor for indicating the phase of an internal combustion engine comprising an engine output shaft, a camshaft, means for driving said camshaft from said engine output shaft, said camshaft having at least one lobe thereon for operating a poppet valve of said engine, and a sensor fixed to said engine in proximity to said cam lobe for providing an output signal when said cam lobe passes said sensor.

5,293,777

HINGED ASSEMBLY FOR AIR BRAKE VALVE TEST FIXTURE

Jeffrey D. Reid, Vineland, and W. Thomas Digweed, Beamsville, both of Canada, assignors to Westinghouse air Brake Company, Wilmerding, Pa.

Filed Oct. 21, 1992, Ser. No. 964,178
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—121 12 Claims



1. For use with an air brake valve test rack, a test fixture comprising:
a) a test stand including a valve mounting manifold to which fluid under pressure is connected;
b) a primary test plate affixed at one face thereof to said valve mounting manifold, said one face having a plurality of inlet ports to certain ones of which fluid under pressure is connected from said manifold and another face having a plurality of outlet ports to certain ones of which fluid under pressure is connected from said certain ones of said inlet ports;
c) a secondary test plate having a plurality of inlet ports in one face thereof corresponding to said plurality of outlet ports in said other face of said primary test plate, and a plurality of outlet ports in another face of said secondary test plate on which a valve device may be mounted for testing; and
d) means for pivotally supporting said secondary test plate so as to provide rotation thereof between a test position in which said one face of said secondary test plate is engaged with said other face of said primary test plate and a load-/unload position in which said one face of said secondary test plate is disengaged from said other face of said primary test plate.

5,293,778

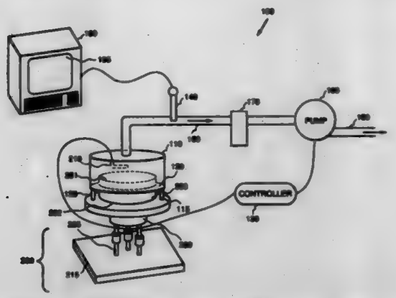
FLUID FLOW MEASURING SYSTEM

John L. Schneiter, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1993, Ser. No. 67,926
Int. Cl.[5] G01F *15/00*
U.S. Cl. 73—198 20 Claims

1. A system for measuring fluid flow through a plurality of holes in a part formed by a two-sided wall having an inner side and an outer side, said part having a primary axis and a first and second end with respect to said axis, said part further having a cross-section constituting a substantially smooth, closed figure taken along a plane oriented substantially perpendicular to said primary axis, the holes each extending from the inner side to the outer side of said wall, said system comprising:
a hood having a primary axis substantially parallel to the primary axis of said part and a hood cavity for receiving one of the ends of said part, said hood including a leak-resistant seal adapted to engage the outer side of the wall of the part;

a pump being coupled to said hood cavity by a fluid flow line and operable to affect pressure within said hood cavity;
a pressure sensor adapted to measure the pressure within said hood cavity;



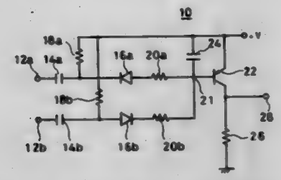
a controller responsive to said pressure sensor, being coupled to said pump and adapted to establish a predetermined pressure inside said hood cavity by controlling said pump; and
a fluid flow sensor incorporated in said flow line adapted to measure the fluid flow rate through said flow line.

5,293,779

DETECTING CIRCUIT FOR DETECTING AN ABNORMAL STATE IN A VIBRATING GYROSCOPE

Takeshi Nakamura, and Akira Mori, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Dec. 5, 1991, Ser. No. 802,671
Claims priority, application Japan, Dec. 11, 1990, 2-410294
Int. Cl.[5] G01P *9/04, 21/00*
U.S. Cl. 73—505 7 Claims



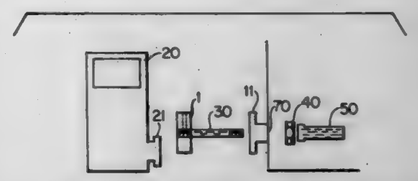
1. A detecting circuit for detecting an abnormal state i a vibrating gyroscope which generates an oscillation signal for driving a vibrator and a detection signal for detecting a rotary angular velocity of said vibrator, said detecting circuit comprising:
a first rectifying means for rectifying said oscillation signal;
a second rectifying means for rectifying said detection signal in the direction reverse to said oscillation signal rectified by said first rectifying means;
a composite means, operably coupled to said first and second rectifying means, for combining said oscillation signal rectified by said first rectifying means and said detection signal rectified by said second rectifying means, and for outputting a composite signal; and
a switching device operably coupled to said composite means, wherein said switching device is switched by said composite signal from said composite means.

5,293,780

HEAD-GAUGE/TANK-BLADDER

Harold D. Chadwick, P.O. Box 8, and William Kingsley, P.O. Box 4, both of Keene, N. Dak. 58847

Filed Apr. 21, 1992, Ser. No. 871,737
Int. Cl.[5] G01L *7/02, 7/10*
U.S. Cl. 73—706 18 Claims



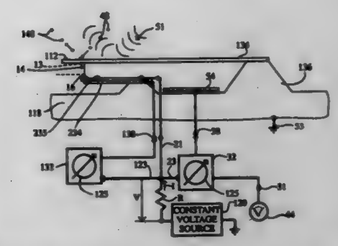
1. A head-gauge/tank-bladder device for measuring the pressure of a liquid within a tank while isolating the head gauge from the liquid contained within the tank, said head-gauge/tank-bladder comprising:
a head-gauge capable of measuring liquid
a first nipple with a first end and a second end, the first end connected by a first coupling means to the head-gauge, the second end being inserted into the tank;
a second nipple having a first end and a second end, the first end connected to the second end of the first nipple by a second coupling means;
a bladder made of material having elastic characteristics attached to the second end of the second nipple by a third coupling means;
a cavity defined by the two nipples and the bladder.

5,293,781

TUNNEL EFFECT MEASURING SYSTEMS AND PARTICLE DETECTORS

William J. Kaiser, West Covina, Calif.; Steven B. Waltman, Boulder, Colo., and Thomas W. Kenny, Glendale, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 685,553, Apr. 15, 1991, which is a continuation-in-part of Ser. No. 118,733, Nov. 9, 1987, abandoned. This application Dec. 24, 1992, Ser. No. 996,565
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.625 46 Claims



21. Apparatus for measuring a force acting on an object, comprising in combination:
an elastic beam suspending said object;
means for deflecting said elastic beam with an electrostatic feedback signal;
a tunneling tip, an electrode, and a tunneling gap between said tunneling tip and said electrode, one of said tunneling tip and said electrode connected to said elastic beam;
means for providing an electric tunneling current through

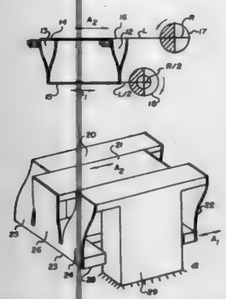
said tunneling gap between said tunneling tip and said electrode;
means for deflecting said elastic beam with said force to provide a variation in an electrical property of said gap relating to said tunneling current;
means including a servo loop responding to said variation in said electrical property;
means for deriving said electrostatic feedback signal from the servo loop;
means connected to said means for deriving said electrostatic feedback signal and to said means for deflecting said elastic beam, for restoring said deflected beam in position with said derived electrostatic feedback signal; and
means connected to said servo loop for providing a servo loop output signal indicative of said force.

5,293,782

PROCESS AND DEVICE FOR DRIVING A SURFACE IN A RECIPROCATING MOTION IN A PLANE

Michael Long, Rochester, N.Y., and Jacques Gaudillat, Chatenoy-En-Bresse, France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/FR91/00192, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/14886, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 11, 1991, Ser. No. 927,502
Claims priority, application France, Mar. 19, 1990, 9003698
Int. Cl.[5] F16H *21/18*
U.S. Cl. 74—25 **8 Claims**



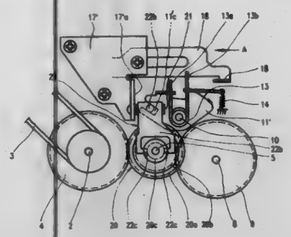
1. A distortable structure, for moving, according to a reciprocating displacement of magnitude A_2, a surface arranged in a first plane, comprising:
in a plane orthogonal to the first plane, two distortable parallelograms (12, 13), each one having two sides parallel to the first plane (14, 15, 16), one of these parallel sides (15) being common to the two parallelograms;
first means for driving the common side in a second plane parallel to the first one according to a reciprocating displacement of magnitude $A_1 = A_2/2$;
the other parallel side (14, 16) of the two parallelograms being arranged in a third plane, parallel to the first one, the other parallel side (14) of the first parallelogram being stationary, the other parallel side (16) of the second parallelogram being movable; and
second means for driving the other parallel side of the second parallelogram in said third plane according to a reciprocating displacement of magnitude A_2 in phase with the displacement of magnitude A_1.

5,293,783

DIFFERENTIAL POWER TRANSMISSION DEVICE FOR TAPE RECORDERS

Yong H. Han, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Nov. 15, 1991, Ser. No. 792,443
Claims priority, application Rep. of Korea, Dec. 4, 1990, 19866/1990
Int. Cl.[5] F16H *57/00*
U.S. Cl. 74—405 **2 Claims**



1. A differential power transmission device for a tape recorder comprising
a main base;
a pulley gear rotatably mounted to said main base and driven by drive means;
a connecting gear rotatably mounted to the main base to move vertically for selectively engaging said pulley gear;
a driven gear rotatably mounted to the main base to selectively receive the rotation force of the pulley gear via said connecting gear;
lifting means adapted to vertically move the connecting gear so as to engage it with the pulley gear, so that said driven gear is driven by the rotation force of the pulley gear transmitted via the connecting gear; and
said lifting means comprising a vertical pivot member adapted to pivotally move by the movement of a support plate, the vertical pivot member including at least one extension that reciprocates vertically in response to pivoting of said vertical pivot member so as to impart vertical movement to the connecting gear to cause the same to selectively engage or separate from said pulley gear, said lifting means including a shaft adapted to rotatably mount said vertical pivot member.

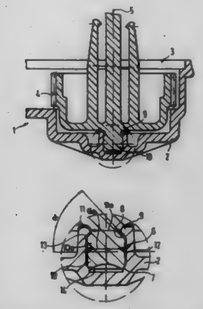
5,293,784

DRIVE DEVICE FOR A VEHICLE REAR-VIEW MIRROR

Richard Guttenberger, Greding, and Werner Seichter, Georgensgmuend, both of Fed. Rep. of Germany, assignors to Gebruder Buhler Nachfolger GmbH, Nuremberg, Fed. Rep. of Germany

Filed Sep. 3, 1992, Ser. No. 940,049
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129626; Aug. 1, 1992, 4225478
Int. Cl.[5] G02B *7/198*; F16H *55/00*
U.S. Cl. 74—425 **11 Claims**

1. In a drive device for positioning the mirror holder of a vehicle rear-view mirror assembly,
a worn gear adapted to be engaged by the output shaft of a motor;
a housing;
a single bearing for supporting said worn gear in said housing comprising:
(i) a cylindrical portion comprising a cylindrical region extending from said housing, said cylindrical portion having a free end, an upper guide surface adjoining an end of said cylindrical region, and an annular inwardly extending collar at the free end of the cylindrical portion having a convex guide surface at the inner diameter thereof;
(ii) a second guide surface carried by said housing;
(iii) said worn gear having a coupling part attached thereto and including an annular slot having a concave annular surface,
(iv) said collar extending into said annular slot with the convex guide surface thereof journalling the concave annular surface of said annular slot of said coupling part;
(v) said coupling part extending beyond said annular slot



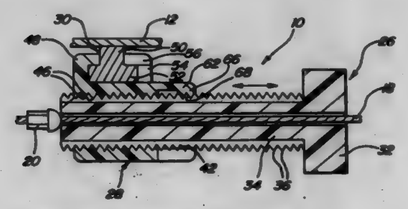
and having a cylindrical part thereof substantially coextensive with said cylindrical region and spaced inwardly from said cylindrical region;
(vi) said coupling part having guide surfaces engaging said guide surfaces of said cylinder and said housing;
(vii) the inside diameter of the annular collar being slightly smaller than the outside diameter of the cylindrical part of the coupling part;
(viii) the angle between a tangent to the part of the convex guide surface of the annular collar which is closest to said guide surface and the plane transverse to the axis of the coupling part being between 30° and 60°.

5,293,785

ADJUSTABLE CABLE STRAND END FITTING

Norman B. Lichtenberg, Troy, Mich., assignor to Nagle Industries, Inc., Clawson, Mich.

Filed Sep. 17, 1991, Ser. No. 760,724
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—500.5 **4 Claims**



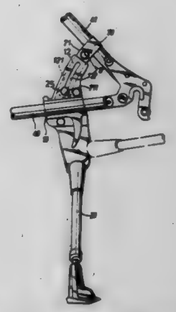
1. A motion control assembly comprising:
a conduit fixed relative to movement and a strand extending through said circuit and moveable relative to said conduit;
a strand end fitting removably fixed to a movable member and receiving one end of said strand, whereby movement of the other end of the strand moves the strand end fitting and moveable member; and
said strand end fitting comprising a housing attached to the moveable member and having means forming a passageway with a plurality of internal threads therealong and a rotatable screw member having a plurality of external threads cooperating with said internal threads for adjusting tension in said strand.

5,293,786

KICKSTAND FOR BICYCLES

Jack Hsu, No. 16, Fu Kun Rd., Fu Hsiang, Changhwa Hsien, Taiwan

Filed Feb. 8, 1993, Ser. No. 14,567
Int. Cl.[5] B62H *1/00*
U.S. Cl. 74—564 **5 Claims**



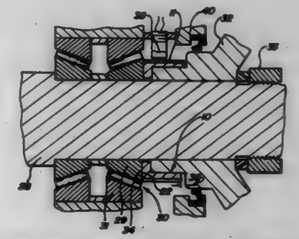
1. A kickstand for a bicycle, said kickstand comprising a bracket including a slot formed therein, a plate slidably engaged with said bracket, said plate including a panel-receiving slot formed therein, a panel having a first end extending through said panel-receiving slot of said plate and a second end fixed to said plate for securing said plate to a seat stay of a bicycle, and a bolt engaged through said plate and said slot of said bracket for coupling said plate to said bracket, whereby said plate is adjustable relative to said bracket.

5,293,787

ROTORS HAVING A COMBINED FUNCTION OF PROVIDING A VARIABLE RELUCTANCE MAGNETIC PATH AND AN AXIAL THRUST BEARING SURFACE

Surendar Paul, Laurinburg, N.C., and Charles Allen, Rochester Hills, Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 6, 1992, Ser. No. 909,474
Int. Cl.[5] G05G *1/00*; F16C *32/00*
U.S. Cl. 74—572 **3 Claims**



1. In combination with a transmission including an output shaft, a pair of axially spaced tapered roller bearings drivingly engaged to a drive line yoke by means of an interference fit achieved as a result of respectively interfitting tapers and maintained in engagement therewith by force transmitted via a retainer nut; an apparatus comprising:
a rotor including a circumferential axially extending portion continuously connected to a radially extending portion having a central opening defined therein disposed coaxial

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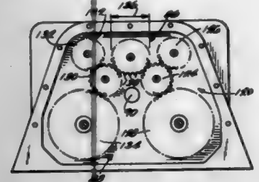
to said circumferential portion, said circumferential portion having alternating regions of magnetic permeability;
said rotor drivingly connected to said output shaft for relative rotation therewith by means of physical retention between said yoke and an inner race of a tapered roller bearing;
said rotor defines a central axially extending cylindrical portion which is telescopically reviewed by a corresponding portion of said yoke; and
said central opening corresponds in relative size with the diameter of said output shaft so as to telescopically receive said rotor and initially define a center position appropriate for subsequently reviewing said yoke.

5,293,788

ALTERNATE INPUT GEAR DRIVE

Eric C. Blom, Milwaukee, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Continuation of Ser. No. 608,916, Nov. 5, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 956,182
Int. Cl.[5] F16H *37/06*
U.S. Cl. 74—661 **5 Claims**



1. A gear drive connected between a power drive source and a driven device, comprising:
input gear means connected to the power drive source for being driven by the power drive source, the power drive source alternatively having a first input rotational drive speed and a different second input rotational drive speed, the input gear means having the same output circumferential drive velocity when driven at both the first and second input rotational drive speeds, the input gear means including an input gear connected to the power drive source and having alternative selectively locatable first and second positions, the input gear being located at the first position when the power drive source is at the first drive speed and located at the second position when the power drive source is at the second drive speed; and
output gear means connected to the driven device and engaging the input gear means for receiving circumferential drive from the input gear means at said same output circumferential drive velocity and rotating the driven device.

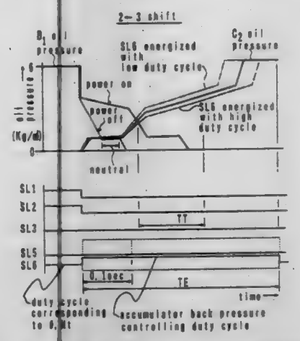
5,293,789

HYDRAULIC CONTROL SYSTEM WITH CONDITION RESPONSIVE ACCUMULATOR CONTROL FOR AUTOMATIC TRANSMISSION

Shigeki Goto, Kariya; Masato Shimei; Tetsuhiro Miyazawa, both of Nagoya; Yoshikami Saitou, Nishikamo, and Nobuyuki Isono, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 679,926, Apr. 3, 1991, Pat. No. 5,182,970. This application Sep. 14, 1992, Ser. No. 944,761
Claims priority, application Japan, Apr. 4, 1990, 2-89598; Apr. 4, 1990, 2-89599
Int. Cl.[5] B60K *41/10*
U.S. Cl. 74—866 **8 Claims**

1. A hydraulic control system for automatic transmission comprising:
a hydraulic circuit for selectively supplying an oil pressure to or selectively removing an oil pressure from brakes and clutches used in an automatic transmission which is disposed between an output shaft of an engine and a load driving shaft;
accumulators in the hydraulic circuit and connected to the brakes and clutches;
an electrically energized pressure control valve for regulating back pressure on each of the regulators;
accumulator pressure control means for controlling an energization level of the pressure control valve to control the back pressure on the accumulators during a shift operation of the automatic transmission;
shift time detecting means for determining a time interval



from a commencement to an end of a switching in a mechanical coupling in a forward drive of the automatic transmission during the shift operation; and
said accumulator pressure control means responsive to the time interval determined by the shift time detecting means to update the energization level of the pressure control valve in accordance with the determined time interval such that the energization of the pressure control valve is updated in a direction to reduce the time interval if the determined time interval is greater than a predetermined time interval and to increase the time interval if the determined time interval is less than said predetermined time interval.

5,293,790

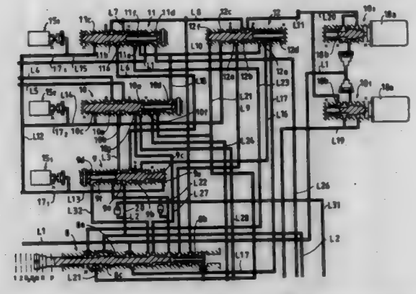
CONTROL APPARATUS FOR VEHICULAR AUTOMATIC TRANSMISSION

Tatsuyuki Ohashi, and Shouji Asatsuke, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1992, Ser. No. 889,855
Claims priority, application Japan, Jul. 31, 1991, 3-192298
Int. Cl.[5] B60K *41/06*; F16H *59/02*
U.S. Cl. 74—869 **6 Claims**

1. A control apparatus for a vehicular automatic transmission having transmission trains of five forward speeds or more, wherein said transmission trains are divided into two groups of a low-speed system consisting of relative low-speed transmission trains and a high-speed system consisting of relatively high-speed transmission trains, said control apparatus comprising:
a mainshaft valve provided for selectively supplying pressurized oil supplied from a manual valve through a first oil supply passage to an oil passage for said low-speed system and to an oil passage for said high-speed system;
a shift valve unit interposed in said oil passage for said low-speed system, further comprising one or a plurality of shift valves for selectively establishing transmission trains belonging to said low-speed system; and

a shift valve unit interposed in said oil passage for said high-speed system, further comprising one or a plurality of shift



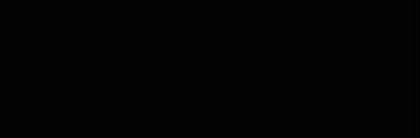
valves for selectively establishing transmission trains belonging to said high-speed system.

5,293,791

TOOL FOR STRIPPING ELECTRICAL HIGH VOLTAGE CABLE INSULATION

Eldon D. Allen, 12 Warren Dr., Little Rock, Ark. 72209, and Roy Pennington, Rte. 1, Box 151, Lonoke, Ark. 72086

Filed Oct. 1, 1992, Ser. No. 956,657
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.4 **6 Claims**



1. A tool for facilitating the cutting and stripping of high voltage insulation from an electrical cable to permit splicing with other electrical terminations, the tool comprising:
a) a body having a headed end and a handle extending from said headed end;
b) an element pivotally attached to said handle and having a slot formed therein to receive the cut insulation therein;
c) a cutting element positioned on said headed end of said body, said cutting element having a cutting edge projecting from said headed end in position to cut into the electrical cable insulation; and
d) cover means carried on said headed end to assume a position over said cutting element whereby said cutting element can be exposed more or less to form a slit in an electrical cable insulation for stripping the insulation.

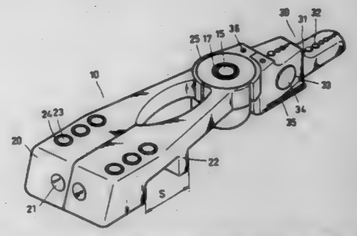
5,293,792

NAIL CLAMPING DEVICE

Vance Chiang, 5 Fl., No. 412-12, 2 Sec., Chung Shan Rd., Tai Peiping, Taichung, Taiwan

Filed Jun. 25, 1993, Ser. No. 81,233
Int. Cl.[5] B25C *3/00*
U.S. Cl. 81—44 **7 Claims**

1. A nail clamping device comprising two handles of a length and pivoted together, with each of said two handles having at a front end thereof a jaw made integrally with said each of said two handles, each said jaw being provided on an inner side surface thereof with a plurality of nail clamping grooves disposed longitudinally in relation to each said jaw; wherein said each of said two handle is provided with an arcuate guide slot having a bolt disposed therein axially and movably, so as to enable said two handles to be pivoted together; wherein said two handles are provided respectively with an axial hole located between said two arcuate guide slots and provided therein with a guide sleeve of a diameter, said axial hole having at a center thereof an opening forming an angle of 90 degrees; wherein said two handles are further



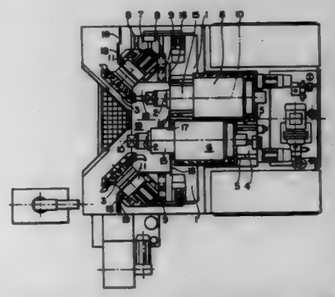
provided respectively with two locating holes distant equally from a circumference of said axial hole and provided therein respectively with a locating pin; and wherein said two handles are still further provided respectively and symmetrically with a 75-degree guide slant and a guide hole perpendicular to said guide slant so as to facilitate a 15-degree bevel drilling.

5,293,793

MACHINING APPARATUS WITH AT LEAST ONE BASE UNIT

Norbert Hessbrüggen, Escheabach; Hans J. Dey, Eislingen, and Heinz Steinbach, Ulm, all of Fed. Rep. of Germany, assignors to EMAG Maschinenfabrik GmbH, Salach, Fed. Rep. of Germany

Filed May 28, 1992, Ser. No. 890,275
Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117472
Int. Cl.[5] B23B *3/34, 3/00*
U.S. Cl. 82—121 **10 Claims**



1. A lathe having at least one base unit, the base unit including a tool turret and a drivable workpiece spindle having a spindle axis, the workpiece spindle being rotatably supported in a spindle box, the spindle box being displaceable on a first machine bed along the spindle axis, the spindle box comprising:
a) a defining wall extending parallel to the spindle axis; and
b) a projection for receiving the workpiece spindle,
the projection having a cross section and a length greater than or equal to the length of the displacement path, the projection penetrating through an opening in a dividing wall, the opening being adapted to the cross section of the projection, the dividing wall being positioned at an end of the displacement path and at a right angle to the workpiece spindle axis, and,
the tool turret having a switching axis and a first bed guide, the tool turret being arranged on a tool carrier slide which

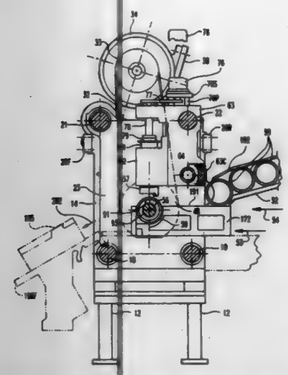
is displaceable on a second machine bed at a right angle relative to the spindle axis, the switching axis being arranged at an angle between 0° and 90° relative to the first bed guide.

5,293,794

TURNING AND BORING MACHINE FOR RINGS

George N. Mosey, 1912 Morrow Rd., Richmond, Ind. 47374

Filed Mar. 1, 1993, Ser. No. 24,623
Int. Cl.[5] B23B *5/26, 15/00*
U.S. Cl. 82—125 26 Claims



1. A machine for simultaneously removing material from the outer and inner cylindrical surfaces of a ring at a work station in the machine and comprising:
a first holder for a tool for treating the outer surface;
a second holder for a tool for treating the inner surface;
means coupled to said holders for driving the holders toward and away from a center of the work station;
a loader associated with the work station to receive rings from a supply and deliver them sequentially to the work station;
a ring rotater spindle having a rotational axis;
a positioner associated with the work station for engaging the delivered ring and moving it from the loader to a position against the end of the rotater spindle;
a ring locating spindle rotatable on the spindle axis; and
first linear drive means coupled to the rotater spindle for moving the rotater spindle and the delivered ring and positioner therewith toward the locating spindle to grip the delivered ring between the rotater spindle and the locating spindle to enable the rotater spindle to rotationally drive the ring for treatment thereof.

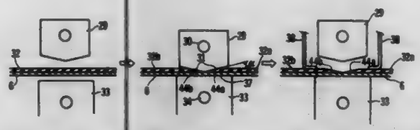
5,293,795

METHOD AND APPARATUS FOR CUTTING AND SHAPING BELT-LIKE MEMBERS

Masayaki Ozawa, and Shunichi Inoue, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 805,050, Dec. 11, 1991, abandoned.
This application Feb. 8, 1993, Ser. No. 15,292
Claims priority, application Japan, Dec. 21, 1990, 2-412614
Int. Cl.[5] B26D *7/10*
U.S. Cl. 83—16 16 Claims

9. A method for cutting and shaping belt-like members, wherein a raw material belt-like member is cut to obtain desired product belt-like members and jointing inclined surfaces at a predetermined angle are formed at cut end portions of said product belt-like members, said method comprising:
positioning a first die opposite to a face of said raw material belt-like member so as to extend in a widthwise direction of said raw material belt-like member, said first die including a die surface having a shape corresponding to said jointing inclined surfaces and being inclined with respect to said face in a lengthwise direction of said raw material belt-like member;
conveying said raw material belt-like member past said first die;
heating said first die;
pressing said first die against said raw material belt-like member perpendicularly to said face, said first die cooperating with a second die for cutting and shaping said raw material belt-like member; and



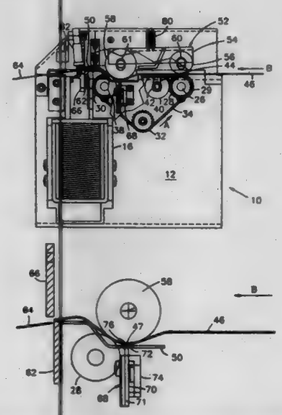
separating said first die and said belt-like members from each other,
wherein said die surface comprises a first inclined surface at a portion in a first direction from a centerline of said die surface and a second inclined surface at a portion in a second direction from said centerline, said first and second inclined surfaces intersecting with each other along said centerline,
said first and second inclined surfaces being inclined at an angle of no more than approximately 20° with respect to said face.

5,293,796

AUTOMATIC TICKET VENDING MACHINE

Richard J. Zober, Croydon, Pa., assignor to Zober Development Corporation, Croydon, Pa.

Filed Jan. 22, 1992, Ser. No. 823,878
Int. Cl.[5] B26D *5/20*
U.S. Cl. 83—42 13 Claims



1. A method of severing a continuous strip having a plurality of transversely arranged perforations defining a plurality of sequentially arranged segments into separate segments comprising the following steps for each of said perforations:
(a) advancing said strip along a predetermined path;
(b) deforming a portion of said strip at and proximal to said transversely arranged perforation;

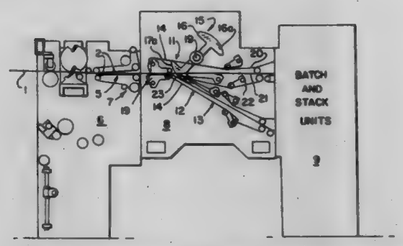
(c) sensing the location of said perforation by causing contact between a sensor and said deformed portion;
(d) advancing the sensed perforation a predetermined distance to a location directly in line with a severing knife;
(e) causing the knife to sever said deformed portion of said strip at said transversely arranged perforation to form a separate segment; and
(f) continuously repeating steps (a)–(e) for each of said segments.

5,293,797

MULTIPLE POINT DELIVERY APPARATUS FOR SEPARATING OF SHEET-LIKE ELEMENTS

Michael H. Spalding, De Pere; Frederick A. Benjamin, Howard, and Kenneth S. Mielcarek, Pulaski, all of Wis., assignors to John Brown, Inc., Oconto Falls, Wis.

Filed Dec. 22, 1989, Ser. No. 455,267
Int. Cl.[5] B65H *29/60*
U.S. Cl. 83—107 19 Claims



1. A separating apparatus for processing a series of sheet-like elements having a bottom surface and an upper surface and moving in a horizontal path, comprising
a horizontal conveyor unit having an input end and an output end and operable to transport said sheet-like elements in a substantially horizontal path from said input end and discharge said elements in a substantially horizontal plane at said output end, an angulated conveyor unit having an input end extending downstream in common with said horizontal conveyor unit to define a common input section and extending angularly downwardly from said common input section in an angulated path,
said horizontal conveyor unit including a top conveyor extending throughout the length of said horizontal conveyor unit, said horizontal conveyor unit including a bottom conveyor located downstream of said input section and defining a diverting gap and being aligned with the top conveyor to form a nip at the downstream end of said diverting gap, said diverting gap defining a completely unobstructed bottom opening in said horizontal conveyor unit between said input section and said bottom conveyor, said sheet-like element moving with said bottom surface of said element free of support across said unobstructed opening into the nip of said top conveyor and said bottom conveyor whereby said sheet-like element moves across said opening without support beneath said sheet-like element, and
a rotating diverter unit mounted above said horizontal conveyor unit and including at least one rotating cam member moving downwardly through said gap and operable to divert a sheet-like element from said horizontal path downwardly through said gap into said angulated conveyor unit.

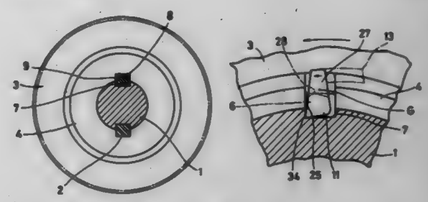
13. An apparatus for moving horizontally moving sheet-like elements in a planar path through a conveyor unit having a gap in the conveyor unit, comprising input means for feeding said sheet-like elements into said conveyor unit along the planar path of said conveyor unit, a rotating diverter element movable through said gap with a curved cam surface tangential to said path, said input means moving said sheet-like elements into and through said path at a predetermined and essentially constant linear speed, and said diverter element rotating at a constant velocity and with said curved cam surface moving at a linear speed through said gap on the order of at least ten percent greater than the linear speed of said sheet-like elements moving through said gap.

5,293,798

SAWING MACHINE

Kazuhiro Otani, Matsubara; Osamu Iguchi, Suminoe; Junji Tsuji, Sakai; Tetsuo Hiraga, Matsubara; Tadao Tanisaka, Osaka, and Tetsuji Bai, Izumi, all of Japan, assignors to Taibei Machinery Works, Inc., Komaki, Japan

Continuation of Ser. No. 852,344, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 490,703, Mar. 7, 1990, abandoned. This application Jun. 23, 1993, Ser. No. 80,096
Claims priority, application Japan, Mar. 7, 1989, 1-55397
Int. Cl.[5] B27B *5/34*
U.S. Cl. 83—504 6 Claims



1. A sawing machine comprising:
a spindle;
a plurality of saws on said spindle; a mounting member fixedly mounted on said spindle and engaging said plurality of saws and said spindle for mounting said circular saws on said spindle without relative rotation between the circular saws and said spindle and for transmitting rotation torque from said spindle to said circular saws, and for allowing said circular saws to be movable in an axial direction along said spindle; and
a joint member which is other than said mounting member and mounted loosely between said spindle and said circular saws so as to be movable independently of said saws and with a radial component of motion relative to said saws due to centrifugal force produced by rotation of said spindle and saws between a locking position in engagement between the saw and the spindle where said circular saws are coupled to said spindle through said joint member so as not to be axially movable and an unlocking position where said circular saws and said spindle are not coupled together so that said circular saws can move axially, said joint member being movable to said locking position by centrifugal force when said spindle rotates at high speed and movable to said unlocking position when said centrifugal force disappears.

5,293,799

PUNCHING AND PERFORATING UNIT WITH COMBINED PUNCHING AND PERFORATING CYLINDERS

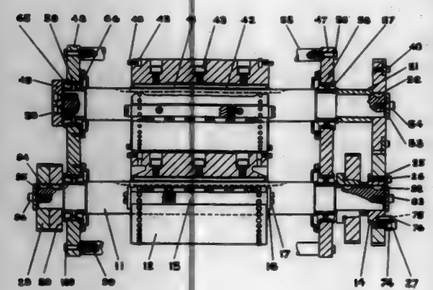
Frank Ury, 7326 Quill Dr., #133, Downey, Calif. 90242

Filed Jul. 21, 1992, Ser. No. 917,843
Int. Cl.[5] B26D *1/62*; B26F *1/00*
U.S. Cl. 83—345 1 Claim

1. A punching and perforating unit for punching and perforating a continuous web of paper, comprising:
left and right side plates;
tie bars secured to and located between said side plates;
an upper shaft; a punching and perforating cylinder mounted on said upper shaft;

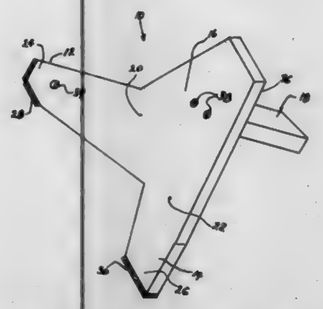
VOL 1160 ISS 3 MR 15 1994 UMI

a lower shaft; a die and anvil cylinder mounted on said lower shaft;
bearings mounted in each of the side plates for supporting the shafts;
an upper sloped key pair including a sloped key received in a slot in the upper shaft, a mating sloped key received in a through bore in the punching and perforating cylinder, and a screw located above the key pair for locking the key pair to the punching and perforating cylinder and the punching and perforating cylinder to the upper shaft;
a lower sloped key pair including a sloped key received in a slot in the lower shaft, a mating sloped key received in a through bore in the die and anvil cylinder, and a screw located above the lower sloped key pair for locking the lower key pair to the die and anvil cylinder and the die and anvil cylinder to the lower shaft;
said punching and perforating cylinder having a plurality of slots, a cross perforating clamping bar and a cross perforating blade received in each of said slots in said punching and perforating cylinder;
said punching and perforating cylinder having a plurality of punches adjacent each end thereof, each of said punches being received in either a hole formed in said punching and perforating cylinder or in a hole formed in said cross



perforating clamping bar, and screws for holding said punches in place on said punching and perforating cylinder;
said die and anvil cylinder having a plurality of slots and an anvil bar received in each of said slots in said die and anvil cylinder;
said die and anvil cylinder having a plurality of dies adjacent each end thereof, each of said dies being received in either a hole formed in the die and anvil cylinder or in a hole formed in the anvil bar;
means for setting the dies with respect to the punches and for setting the anvil bars with respect to the cross perforating blades, said setting means including a slip gear circumferentially adjustable on a gear hub mounted on the lower shaft, a yoke secured to the slip gear, a pin received in the gear hub for fine adjustment, and an anti-backlash gear mounted on the upper shaft;
upper locating plates secured to each end of the punching and perforating cylinder for holding the clamping bars in place; and
lower locating plates secured to each end of the die and anvil cylinder for holding the anvil bars in place;
whereby quick change and set up of the punching and perforating unit for production of different format sizes of folded continuous webs of paper is facilitated.

5,293,800
WORKPIECE MANIPULATING DEVICE
Woodrow W. Nunn, Jr., 15521 Vine Ave., Harvey, Ill. 60426-4324
Continuation of Ser. No. 856,406, Mar. 23, 1992, abandoned. This application Dec. 8, 1992, Ser. No. 987,582
Int. Cl.[5] B27B *5/29*
U.S. Cl. 83—437 **3 Claims**

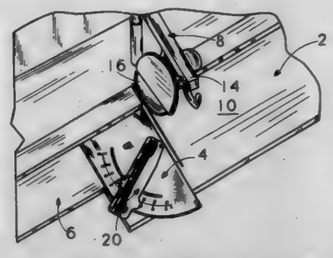


1. A workpiece manipulating device for use with a rotating workpiece altering mechanism in order to allow an operator to manually control the direction of the workpiece during alteration, said workpiece manipulating device comprising:
an upstanding planar body;
said body including a forwardly and downwardly extending front end portion coplanar with said body;
said forwardly and downwardly extending front end portion having a discrete terminus that provides a contact point with said workpiece;
said body including a rearwardly and downwardly extending rear end portion coplanar with said body;
said rearwardly and downwardly extending rear end portion having a discrete terminus that provides a contact point with said workpiece;
said rearwardly and downwardly extending rear end portion being spaced from said forwardly and downwardly extending front end portion;
said body having a ratched portion between said terminuses wherein said notched portion does not contact the workpiece, and
a handle projecting laterally generally perpendicularly from a planar side of said body at a location between said terminuses such that an operator's hand and fingers engaging said handle are remote and shielded by said body from the rotating workpiece altering mechanism.

5,293,801
SYSTEMS FOR PRODUCING TRUSS MEMBERS
Jack U. Drittenbas, 7985 Oslo Rd., Vero Beach, Fla. 32968
Filed Mar. 9, 1992, Ser. No. 848,068
Int. Cl.[5] B27B *5/18*
U.S. Cl. 83—468.3 **8 Claims**

1. A system for cutting ends of lumber to form chords and webs of building trusses which comprises:
a protractor unit,
horizontal table means having a first longitudinal axis and including an upper surface supporting said protractor unit and upon which said lumber is supported in use of said system, and
a radial arm saw including a horizontal arm having a second longitudinal axis and a circular saw blade carried by said arm to be manually moved along said second longitudinal axis above said upper surface, said horizontal arm being fixed so that said second longitudinal axis is normal to said first longitudinal axis,

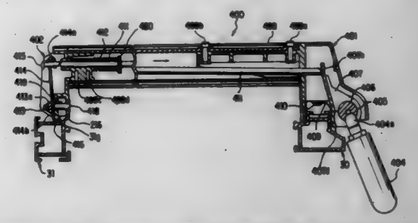
said protractor unit comprising:
a plate member defined by a top surface, a bottom surface, a longitudinal side, a second side opposed to said longitudinal side, a third normal to said longitudinal side and a fourth side opposed to said third side,
said plate member having a radial slot therein extending through its thickness with indices positioned adjacent said slot marking degrees of an arc substended by said radial slot,
a guide member comprising an arm portion and a stop portion,
said arm portion comprising an elongate plate having a major longitudinal axis and a mirror transverse axis, said plate defined by a top surface, a bottom surface, first and second opposed longitudinal edges and first and second opposed transverse edges, said plate having at least three straight slots extending through its thickness



spaced apart from and parallel with each other adjacent said first opposed longitudinal edge,
said arm portion plate being pivoted adjacent said first opposed transverse edge upon said plate member at a pivot point adjacent said longitudinal side of said plate member to permit said arm portion to swing across said top surface of said plate member,
lock means associated with said radial slot to enable said arm portion to be locked into selected positions relative to said indices, and
said stop portion comprising a right-angle, elongate fence member having a length substantially equal to the distance between said first and second transverse edges and a plurality of screw units disposed in and equal in number to said straight slots to enable said fence member to be moved along said minor transverse axis and be fixed at selected positions relative to said first transverse side.

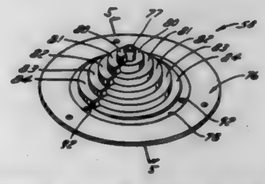
5,293,802
TABLE SAW
Takeshi Shiotani; Kouichi Miyamoto; Kunio Tsugami; Mitsumasa Sato, and Tatsuya Wada, all of Chiyoda, Japan, assignors to Ryobi Limited, Hiroshima, Japan
Division of Ser. No. 856,112, Mar. 23, 1992, Pat. No. 5,230,269, which is a division of Ser. No. 781,639, Oct. 25, 1991, Pat. No. 5,116,249, which is a continuation of Ser. No. 564,770, Aug. 9, 1990, abandoned. This application Jun. 16, 1993, Ser. No. 77,088
Claims priority, application Japan, Aug. 11, 1989, 1-209061; Aug. 28, 1989, 1-100291; Aug. 28, 1989, 1-100292; Aug. 30, 1989, 1-101646; Aug. 30, 1989, 1-101647; Dec. 8, 1989, 1-142196
Int. Cl.[5] B26D *7/01*
U.S. Cl. 83—468.7 **5 Claims**

1. A table saw comprising a circular saw for cutting a work, a working table supporting the circular saw, front and rear guide rails disposed laterally on front and rear sides of said working table, respectively, and a lip fence transverse to the front and rear guide rails and movable relative to the circular saw along the front and rear guide rails to determine a cutting length of said work, said lip fence comprising a main body and front and rear guide portions respectively provided at opposite ends of said main body adjacent the front and rear guide rails, said front guide portion having a movable means for laterally and slidably moving said lip fence along said guide rails and a fastening means for fastening said lip fence on said guide rails, said fastening means comprising: an eccentric cam mounted on a shaft, the eccentric cam having an apex point on an outer periphery of the eccentric cam most radially distant from a rotation center of the shaft; a handle means secured to the eccentric cam for rotating the eccentric cam; an operation member formed with a substantially circular hole into which the eccentric cam mounted on the shaft is rotatably engaged; and a connecting rod extending through the main body of the lip fence and translationally coupled with the rear guide rail by a fixing means for securing the rear guide portion to the rear guide rail; wherein, said operation member has a back wall with a lower end and an upper end such that the lower end of said operation member back wall abuts against said front guide rail, and the upper end of said operation member back wall



abuts against the connecting rod to push against one end of the connecting rod, so that when the handle is operated to rotate the eccentric cam in a first rotational direction toward the lower end of said operation member back wall from an initial position in which the apex point is most apart from the lower end of said operation member back wall, the lower end of the operation member back wall presses against the front guide rail to fasten the lip fence at a predetermined position with respect to the front guide rail, and when the eccentric cam is further rotated in said first rotational direction, the apex point continues to rotate toward the lower end of said operation member back wall, to thereby move the upper end of the operation member back wall obliquely upward in a second rotational direction opposite said first rotational direction to press against the one end of the connecting rod and cause the fixing means to engage the rear guide rail, whereby the lip fence is fastened to the predetermined position relative to the front and rear guide rails.

5,293,803
CUTTING ASSEMBLY
Clyde E. Foster, Pasco, Wash., assignor to Universal Frozen Foods Co., Twin Falls, Id.
Continuation of Ser. No. 682,653, Apr. 9, 1991, abandoned. This application May 12, 1992, Ser. No. 884,271
Int. Cl.[5] B26D *3/11*
U.S. Cl. 83—865 **16 Claims**



1. An apparatus for cutting articles into helical strips, said apparatus including means for aligning an article to be cut into helical strips, and a rotary cutter mounted adjacent the align-

VOL 1160 ISS 3 MR 15 1994 UMI

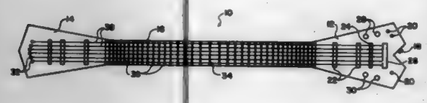
ing means, the cutter including a blade assembly having a rotational axis and comprising a base plate and a plurality of stacked, helical and sloped tier blades, a first tier blade being disposed about a rotational axis and each successive tier blade being located radially outwardly and axially offset from the preceding tier blade, each tier blade including a leading open cutting end defined in part by a pair of cutting walls arranged perpendicularly to one another.

5,293,804

MULTIPLE RESONANT MODE STRINGED MUSICAL APPARATUS AND METHOD UTILIZING PRIMARY AND SECONDARY BODIES

Curtis P. Myers, 253 Lakeside Beach, Spicewood, Tex. 78669

Filed Oct. 23, 1992, Ser. No. 965,730
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—291 **10 Claims**



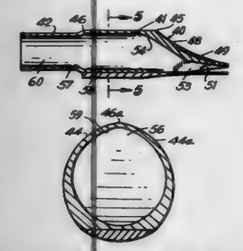
1. A double ended musical apparatus comprising:
(a) a primary body means for anchoring strings and containing electrical means for electrical operation including pickups, volume, and tone controls;
(b) a secondary body means for securing and tuning said strings and containing electrical means; and
(c) an interconnecting central body means between said primary and secondary body means for containing a plurality of hammer pad means for temporarily anchoring said strings against so that when a string is anchored against a hammer pad, two musical notes are produced, one each from said primary and secondary body means.

5,293,805

MOUTHPIECE FOR SINGLE REED MUSICAL INSTRUMENTS

David S. Guardala, and Jeffrey S. Powell, both of Hicksville, N.Y., assignors to Dave Guardala Mouthpieces, Inc., New York, N.Y.

Filed Jan. 9, 1992, Ser. No. 818,556
Int. Cl.[5] G10D *9/02*
U.S. Cl. 84—383 R **3 Claims**



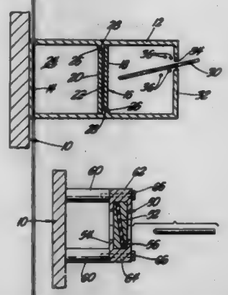
1. An improved mouthpiece for single reed musical instruments comprising a generally elliptically-shaped main body having a principal longitudinal axis and having proximal and distal ends; a hollow cylindrical shank extending from said distal end for engagement with the neck of a related musical instrument; said main body including a tapered member of triangular shape including an upper wall and a pair of opposed side walls for engagement between the lips of a user and terminating at said proximal end; said member including a planar lower surface for supporting a reed, said surface defining an elongated opening leading to a hollow interior of said mouthpiece; said upper wall and opposed side walls of said tapered member forming an inner surface defining a triangularly shaped recess above said opening which tapers toward said proximal end; said main body defining an elliptically-shaped longitudinally-oriented bore, said triangularly-shaped recess merging with a first end of said elliptically-shaped bore with absence of sharp edges to minimize turbulence; said cylindrical shank having an axially disposed cylindrical bore therein, a proximal end of which communicates with the distal end of said elliptically-shaped bore, said elliptically-shaped bore having a cross-sectional area greater than that of said bore in said shank, and forming a transitional surface at an area of communication therewith; whereby a vibrating column of air passing through said mouthpiece initiates in an area of relatively small cross-section, to facilitate generation of harmonic overtones, the column of air thereafter entering said elliptically-shaped bore without substantial turbulence, and flowing thereafter to said bore to said shank.

5,293,806

REACTIVE ARMOR

Rene G. Gonzalez, Southfield, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1992, Ser. No. 988,058
Int. Cl.[5] F41H *5/007*
U.S. Cl. 89—36.03 **5 Claims**



1. A reactive armor structure for protecting a military vehicle having a base armor mounted on the vehicle to be protected from a projective comprising, a housing enclosing a chamber, the housing having one side rigidly attached to the outer surface of the base armor, the rigid attachment serving to permanently mount the housing on the base armor; a reactive armor sandwich comprising an explosive layer mounted between two nonreactive rigid plates, the sandwich being mounted transversely across the chamber of the housing, the reactive armor sandwich being mounted so that when the explosive portion of the reactive armor sandwich is activated, the rigid plates will cause both of the plates to rotate each plate rotating separately as a unit the plates rotating in opposite directions and striking the penetrator.

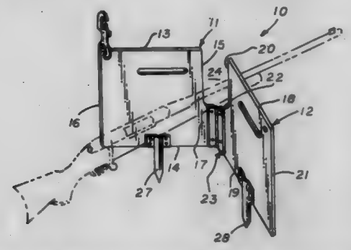
5,293,807

BULLET PROOF SHIELD ASSEMBLY

Sandor Hajdu, P.O. Box 37, Claverack, N.Y. 12513

Filed Aug. 24, 1992, Ser. No. 933,761
Int. Cl.[5] F41H *5/08*
U.S. Cl. 89—36.7 **2 Claims**

1. A bullet proof shield assembly, comprising,
a first rigid armor plate and a second rigid armor plate, a first rigid armor plate having a first plate top edge spaced from and parallel a first plate bottom edge, and a first plate first side edge spaced from the parallel a first plate second side edge, and
the first plate first side edge including a first plate first side edge projection plate coplanar with the first plate projecting beyond the first plate side edge intersecting the first plate bottom edge, and
the second plate having a second plate top edge spaced from and parallel a second plate bottom edge, and a second plate first side edge spaced from and parallel a second plate second side edge, and a second plate first side edge projection plate coplanar with the second plate intersecting the second plate bottom edge, wherein the first plate first side projection plate is coextensive with the second plate first side edge projection plate, and
the first plate first side projection plate mounted to a hinge, and
the second plate first side edge projection plate mounted to said hinge to pivotally mount the first plate to the second plate, with the hinge including a hinge axle and the hinge axle parallel to and oriented between the first plate first side edge and the second plate first side edge, and
the first plate first side projection plate includes a first abutment edge orthogonally intersecting the first plate first side edge, and the second plate first side edge projection plate including a second abutment edge orthogonally intersecting the second plate first side edge, with the first abutment edge and the second abutment edge oriented in a coplanar relationship and spaced parallel to and below the first plate top edge and the second plate top edge,



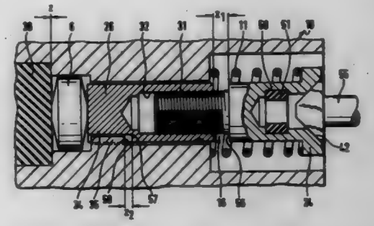
wherein the first plate top edge and the second plate top edge are coplanar relative to one another, and
a slot is oriented between the first abutment edge and the second abutment edge and the second plate first side edge, wherein the first plate first side edge and the second plate first side edge are arranged in a coextensive relationship relative to one another in a confronting relationship, and
a first spike mounted to the first plate orthogonally projecting below the first plate bottom edge, and a second spike mounted to the second plate orthogonally projecting below the second plate bottom edge, and
a first handle slot directed through the first plate, with the first handle slot parallel to and below the first plate top edge and above the first abutment edge, and a second handle slot directed through the second plate parallel to and below the second plate top edge and above the second abutment edge, wherein the first handle slot and the second handle slot are spaced below the respective first plate top edge and second plate top edge and equal predetermined spacing, and
a first aperture directed through the first plate in adjacency to the first plate second side edge, and a second aperture directed through the second plate in adjacency relative to the second plate second side edge, with the first aperture including a capture clip, the capture clip having a first loop pivotally mounted through the first aperture, and the capture clip including a second loop, the second loop having a slide bar, wherein the slide bar is reciprocatably mounted relative to the second loop to permit reception of the capture clip through the second aperture when the first plate is pivoted to the second plate in a confronting relationship.

5,293,808

VACUUM BRAKE POWER BOOSTER

Manfred Rueffer, Sulzbach; Ralf Jakobi, Liederbach; Jurgen Bauer, Wiesbaden, and Peter Kraft, Kassel-Wilhelmshohe, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/01899, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO91/08938, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 13, 1990, Ser. No. 859,486
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1989, 3941604
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—369.2 **24 Claims**



1. A vacuum brake power booster for increasing the force between an input piston rod and a power output push rod, said power booster including a booster housing which is sealingly divided into a vacuum chamber and a power chamber by an axially movable wall being adapted to be subjected to a pneumatic pressure differential, a control housing, a control valve including means which controls the pressure differential positioned within said control housing, said control valve actuatable by a valve piston, said valve piston slidable by means of engagement with said piston rod, transmission means causing said valve piston to have a force-transmitting connection with said push rod, said transmission means including a transmission ratio disc and an elastic reaction element, and wherein said valve piston includes means which in the assembled condition of the brake power booster enable a modification of the effective axial length thereof from said point of engagement with said piston rod to the point of engagement with said reaction disc;
said valve piston is constituted by an adjustment bushing abutted against said transmission ratio disc in an axial direction and by a front part engaged with said piston rod, said adjustment bushing and front part interconnected by mating threads; said adjustment bushing fixed against rotation and axially guided in said control housing.

5,293,809

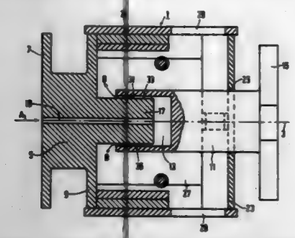
METHOD OF LIMITING A CONTACT FORCE

Franciscus J. M. Van Der Heijden, and Johan M. Bos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 686,864, Apr. 15, 1991, Pat. No. 5,197,371.
This application May 21, 1992, Ser. No. 886,678
Claims priority, application Netherlands, Apr. 28, 1988, 8800768
Int. Cl.[5] F15B *15/20*
U.S. Cl. 91—392 **1 Claim**

1. A method of limiting a constant force with which a first article displaceable by a motor drive is pressed against a second article, the motor drive switched into operation being switched off by means of the contact force with which the two articles come into contact with each other, whereby the contact force

causes a relative displacement between a holder and a control member of a pneumatic force limiter coupled to the first article as soon as a force of pre-stress of the force limiter, determined by gas pressure, is exceeded and in that said displacement is ascertained by means of a detector arranged in the force limiter, which detector supplies a stopping signal to the motor drive of the first article, the time required for stopping the motor drive being shorter than the time required for the relative displacement between the holder and the control member of the pneumatic force limiter, said force limiter comprises a



chamber whose volume is determined by the holder and the control member and which is located between a gas supply and a leakage control, the leakage control comprises a gap which is connected to the chamber, is located between at least one circular-cylindrical inner surface and at least one circular-cylindrical outer surface, is annular in sectional view transverse to the direction of displacement of the control member and has a gas resistance that is substantially constant upon relative displacement of the holder and the control member in the axial direction of said displacement.

5,293,810

VARIABLE DISPLACEMENT COMPRESSOR

Kazuya Kimura, and Hiroaki Kayukawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

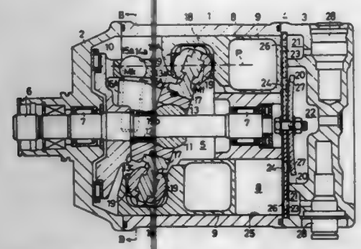
Continuation-in-part of Ser. No. 780,140, Oct. 21, 1991. This application Sep. 2, 1992, Ser. No. 939,116

Claims priority, application Japan, Sep. 20, 1991, 3-241998

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] F01B *3/02*

U.S. Cl. 92—12.2 **18 Claims**



1. A variable displacement compressor comprising:
a housing including a crank chamber and a cylinder block having a plurality of cylinders;
a plurality of pistons disposed in respective ones of said cylinders;
a drive shaft rotatably mounted in said housing;
a drive plate mounted on said drive shaft for rotating integrally with said drive shaft;
a supporting member mounted on said drive shaft for axial movement along said shaft;
a rotary journal pivotally mounted on said supporting member and pivotally coupled with said drive plate for rotating synchronously with said drive plate, said rotary journal being movable along said drive shaft together with said supporting member;
a swash plate, supported on said rotary journal, for driving said pistons in a reciprocal motion for compressing a fluid, the inclination angle of said swash plate being controlled in relation to the pressure in each of said cylinders and the internal pressure of the crank chamber; and
pin means, mounted pivotally on said drive plate, for coupling said drive plate with said rotary journal, said pin means being adapted to slide with respect to said rotary journal, and to pivot with respect to said drive plate, when said rotary journal pivots with respect to said drive plate while said rotary journal together with said supporting member slide along said drive shaft.

5,293,811

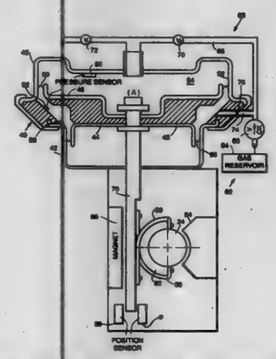
MISSILE CONTROL FIN ACTUATOR SYSTEM

Charles M. DeLair, and Russell B. Cline, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 2, 1991, Ser. No. 739,570

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—49 **15 Claims**



1. A missile control fin actuator that produces rotation of a control fin output shaft, comprising:
a pressure actuator, including
a housing,
a compound piston slidable within the housing, the compound piston having a first face piece and a second face piece slidable relative to each other,
a first rolling diaphragm seal between the first face piece and the housing wall, thereby defining a first pressure chamber of the pressure actuator between the first face piece and the housing,
a second rolling diaphragm seal between the second face piece and the housing wall, thereby defining a second pressure chamber of the pressure actuator between the second face piece and the housing,
a push rod connected to the first face piece and extending out of the housing, and
a push sleeve connected to the second face piece and extending out of the housing, the push sleeve overlying the push rod,
a third rolling diaphragm seal between the push sleeve and the housing, completing the seal of the second pressure chamber;
means for controllably pressurizing the first pressure chamber and the second pressure chamber to cause the first face piece and the second face piece to slide within the housing and relative to each other; and
means for connecting the push rod and the push sleeve to a control fin output shaft.

5,293,812

BRAKING APPARATUS FOR CYLINDER

Daiju Maki, Aichi; Kazutoshi Ito, Komaki; Kenji Matsuo, Gifu, and Junji Mutsuura, Konan, all of Japan, assignors to CKD Corporation, Aichi, Japan

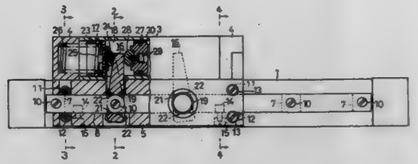
PCT No. PCT/JP91/01484, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/08057, PCT Pub. Date May 14, 1992

PCT Filed Oct. 31, 1991, Ser. No. 972,497

Claims priority, application Japan, Nov. 1, 1990, 2-297875

Int. Cl.[5] F15B *15/14, 15/26*

U.S. Cl. 92—27 **12 Claims**



1. A braking apparatus for a rod-less cylinder having a slidable piston in a cylinder body, the apparatus comprising:
a transfer body arranged outside the cylinder body, and coupled to the piston to be movable with the piston;
a brake rail laid along a moving direction of the piston, the brake rail having a pair of braking surfaces formed at its upper and lower portions and a fitting side surface facing the cylinder body, said brake rail being secured on the cylinder body in such a way that said fitting side surface contacts an outer side surface of the cylinder body over an entire length of said brake rail;
braking means provided in said transfer body, and having a pair of braking portions contactable to said braking surfaces in such a way as to sandwich said brake rail in line contact along a width direction of said brake rail, said braking means being selectively switched between a contact position where said braking portions are pressed against said brake rail and a release position where the forced abutment to the brake rail is released; and
operation means for switching said braking means between the contact position and the release position to perform braking and unbraking on said transfer member.

5,293,813

COOKING POT WITH IMPROVED LOCKING STRUCTURE

Horst Schultz, Am Dornbusch 23, D-6203 Hochheim 2, Fed. Rep. of Germany

PCT No. PCT/EP91/00965, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/18543, PCT Pub. Date Dec. 12, 1991

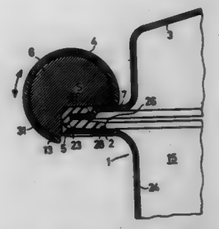
PCT Filed May 24, 1991, Ser. No. 952,517

Claims priority, application Fed. Rep. of Germany, May 26, 1990, 4017067

Int. Cl.[5] A47J *27/08, 27/09*; B65D *45/00, 45/34*

U.S. Cl. 99—337 **52 Claims**

1. In a cooking pot including a container having a wall and an outwardly extending peripheral container rim having an outwardly facing outer edge, a lid for closing said container and having an outwardly extending lid rim to be positioned over said container rim, and a closing mechanism for locking said lid on said container in a pressure tight manner, said closing mechanism including at least one closing element mounted on said lid for swivelling movement about a swivel axis, extending substantially parallel to said outer edge of said container rim or to a tangent to said outer edge when said lid rim is positioned over said container rim, between an open position, whereat said lid is released relative to said container, and a locking position, whereat said closing element extends beneath said container lid and locks said lid to said container, the improvement comprising:
a support body mounted on said lid;
said closing element comprising a hollow body defined by a peripheral wall that is interrupted circumferentially to define a circumferential end edge;



said hollow body being mounted on said support body and being supported thereby for said swivelling movement relative thereto between said open and locking positions and with said peripheral wall extending substantially parallel to said swivel axis; and
said circumferential end edge extending beneath said container rim when said hollow body is in said locking position and being spaced from said container rim when said body is in said open position.

5,293,814

APPARATUS FOR HYDRO-THERMICAL TREATMENT OF STARCHY PRODUCTS, IN PARTICULAR RICE

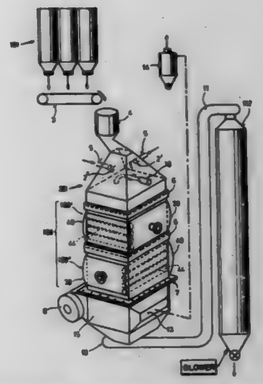
Karldietrich Vorwerck, Wolfenbüttel, and Uwe Brandt, Braunschweig, both of Fed. Rep. of Germany, assignors to Bühler GmbH, Braunschweig, Fed. Rep. of Germany

Division of Ser. No. 660,712, Feb. 22, 1991, abandoned. This application Jan. 9, 1992, Ser. No. 819,158

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1990, 4009157

Int. Cl.[5] A47J *27/04*

U.S. Cl. 99—355 **16 Claims**



1. An apparatus for hydro-thermically treating a starch containing product, comprising
boiling means for boiling said starch containing product, said

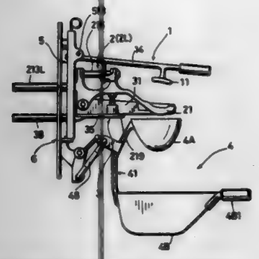
boiling means including boiling vessel means for holding said product,
heat supply means for supplying heat to said boiling vessel means, and being operative to bring the product up to boiling temperature,
heat retaining vessel means separate from said boiling means and operatively connected to said boiling means for receiving said product from said boiling means and for maintaining said product at boiling temperature during a predetermined period, said heat retaining vessel means including tubing through which a heat transfer medium can flow for conducting heat to said product while in the heat retaining vessel means, said heat retaining vessel means having an outlet region,
nozzles disposed in said boiling means for injecting steam into said product, and
drying means connected to the outlet region of said heat retaining vessel means for drying the product after boiling by said boiling means, said outlet region of said heat retaining vessel means being located adjacent said drying means.

5,293,815

EGG BREAKING MECHANISM

Shigeo Tomosue, Tsuyama, Japan, assignor to Kyowa Machinery Co., Ltd., Tsuyama, Japan

Filed Jul. 30, 1993, Ser. No. 99,829
Claims priority, application Japan, Aug. 28, 1992, 4-254052
Int. Cl.[5] A23J *1/09*; A47J *43/14*
U.S. Cl. 99—498 **9 Claims**



1. An egg breaking mechanism comprising:
a support;
an egg receiver mounted to the support for receiving an egg, the egg receiver including a pair of receiver members movable toward and away from each other, each of the receiver members having a knife mount;
an egg presser mounted to the support above the egg receiver for pressing the egg against the egg receiver;
a knife assembly including a pair of knife members each pivotally connected to the knife mount; and
a cup assembly mounted to the support below the egg receiver for receiving a discharged content of the egg;
wherein the knife mount of said each receiver member is integrally formed with a laterally extending pin support tube, each of the knife members is pivotally connected to the knife mount by means of a connecting pin inserted into the pin support tube.

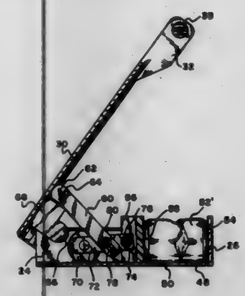
5,293,816

REDUCED HAND FORCE CAN CRUSHING APPARATUS

Joseph A. Musumeci, Sr., and Joseph A. Musumeci, Jr., both of 11 Lake Ave., Swedesboro, N.J. 08085

Filed Dec. 2, 1992, Ser. No. 984,691
Int. Cl.[5] B30B *1/02, 1/26, 9/32*
U.S. Cl. 100—245 **15 Claims**

1. A can crushing apparatus to crush empty cans comprising:
(a) a housing comprising:
(i) a front end with an inside surface,
(ii) a length from a rear end to the front end, and
(ii) an inside channel of sufficient size and shape to receive a can with one end of the can abutting the inside surface of the front end,
(b) a handle member comprising:
(i) a front end and a rear end,
(ii) hand grip means proximate the front end of the handle member to enable a person to grip and apply downward force on the front end of the handle member, and
(iii) pivot means pivotally connecting at a pivot connection axis the rear end of the handle member to the housing, the handle pivoting upwardly and downwardly toward a position aligned lengthwise above the length of the housing,
(c) a piston member adapted to slide lengthwise in the channel of the housing comprising a vertical surface facing frontwardly,



(d) a convex cam surface extending frontwardly from a position proximate the rear end of the handle member frontwardly of the pivot connection axis,
(e) cam follower means to abut the cam surface and thrust frontwardly as the handle member is pivoted downwardly,
(f) linkage means connecting the cam follower means to the piston member,
(g) a lever member comprising a front end and a rear end pivotally connected to a median position of the handle member, and
(h) connecting means to:
(i) connect the front end of the lever member to urge the piston member frontwardly when the handle is pivoted downwardly, and
(ii) to delay said urging until the cam follower means has moved frontwardly out of contact with the cam surface.

5,293,817

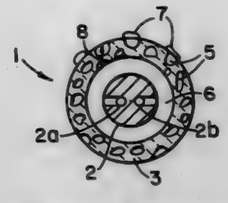
COMBINED DAMPENING AND LITHOGRAPHIC FORM CYLINDER AND METHOD OF IMAGING

Barbara Nissel, Friedberg-Stiitzing, and Josef Schneider, Diedorf-Lettenbach, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 11, 1992, Ser. No. 928,871
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130264
Int. Cl.[5] B41F *7/32*; B41N *1/08*
U.S. Cl. 101—168 **16 Claims**

1. Self-dampening erasable rotary lithographic printing form having
a cylindrical core (2);
a hollow cylindrical sleeve or jacket (3) fitted over the core (2), said cylindrical sleeve or jacket having an outer surface (4) which is hydrophilic,
in combination with

oleophilic or hydrophobic material (7) applied to said outer surface (4) of the sleeve or jacket (3) in accordance with image or printed subject matter information to permit inking of the oleophilic or hydrophobic material in accordance with the image or printed subject matter information,
wherein, in accordance with the invention,
the cylindrical sleeve or jacket is of essentially non-compressible material selected from the group consisting of ceramic, glass, and a metallic material, optionally sintered powder metals of bronze or chromium-nickel alloys, which sleeve or jacket is formed with a plurality of pores (5) essentially uniformly distributed over the surface (4) thereof,
said pores forming a connected pore fluid transfer network



between an inner surface at the interior of the sleeve and the outer surface (4) thereof; and
dampening fluid supply means (*2a*, *2b*, 6) are provided for supplying dampening fluid into the interior of the sleeve or jacket including a fluid supply chamber bounded at one side thereof by the interior of said sleeve or jacket (3), and exposed to said connected pore fluid transfer network, and fluid conduct means (*2a*, *2b*) leading to said chamber (6),
whereby dampening fluid will travel through the pore transfer network to the outer surface (4) of the sleeve or jacket through pores which are open at said outer surface and provide dampening fluid to said outer surface except at locations where said oleophilic or hydrophobic material is deposited on the outer surface and blocks the pores (5) at said outer surface.

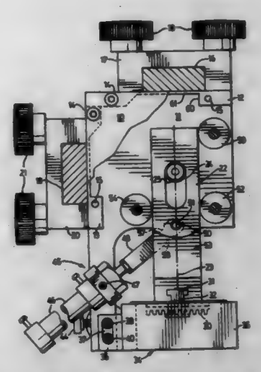
5,293,818

TRANSFER DEVICE, SUCH AS A PRINTER DEVICE

Raymond A. Mandzak, 28 Warbeck Place, Etobicoke, Ontario, Canada M9R 3C3

Filed May 6, 1993, Ser. No. 57,779
Int. Cl.[5] B41F *1/00*
U.S. Cl. 101—287 **13 Claims**

1. A transfer device comprising:
a body having a longitudinal axis and having one end on which a head is adapted to be mounted, the body being longitudinally movable along a pick-up stroke and being longitudinally movable along a deposit stroke, with the deposit stroke being angularly offset from the pick-up stroke, and with the body being pivotally movable through an intermediate pivot stroke between the pick-up stroke and the deposit stroke,
a power drive connected to the body for operatively causing advance movement of the body along the pick-up stroke, the pivot stroke and the deposit stroke, and return movement of the body along the deposit stroke, the pivot stroke and the pick-up stroke,
a longitudinally elongated slot in the body,
a fixed pivot pin disposed in the elongated slot in the body for guiding the body,
a first fixed abutment restraining the body against pivotal movement during advance movement of the body along the pick-up stroke under the influence of the power drive,
a channel in the body in alignment with the first abutment at termination of the advance movement of the body along the pick-up stroke whereby the body under the influence of the power drive undergoes advance movement along the pivot stroke during which the first abutment passes through the channel in the body,
a second fixed abutment terminating the advance movement of the body along the pivot stroke and restraining the body against pivotal movement during advance movement of the body along the deposit stroke under the influence of the power drive,
the first abutment restraining the body against pivotal movement during return movement of the body along the deposit stroke under the influence of the power drive,



at termination of the return movement of the body along the deposit stroke the body under the influence of the power drive undergoing return movement along the pivot stroke during which the first abutment passes through the channel in the body,
and the return movement of the body along the pivot stroke being terminated by a third fixed abutment, with the second abutment restraining the body against pivotal movement during return movement of the body along the pick-up stroke under the influence of the power drive.

5,293,819

INKING ARRANGEMENT

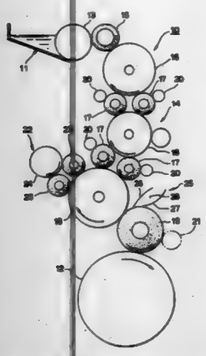
Manabu Fukuda, 122, Takano 1-Chome, Misato-Shi, Saitama-Ken, Japan

Filed May 26, 1992, Ser. No. 888,531
Claims priority, application Japan, Feb. 20, 1992, 4-033523
Int. Cl.[5] B41F *31/06, 31/32*
U.S. Cl. 101—350 **26 Claims**

1. In an inking arrangement in which a printing ink supplied from an inking source to an inking roller is transferred to an ink applying roller through an inking roller train including a plurality of inking rollers and in which the printing ink is then transferred to a plate cylinder from the ink applying roller, the improvement wherein a doctor device is disposed above and in direct contact with a top portion of an outer peripheral surface of the ink applying roller, said doctor device being circumscribed with the top portion of the outer peripheral surface of the ink applying roller at an acute angle with the rotating direction of the ink applying roller to scrape off ink remaining on the outer peripheral surface of the ink applying roller and to clean the surface, and wherein said ink applying roller is formed as a driving roller made of rubber circumscribing with the final stage inking roller of the inking roller train, and said doctor device comprises a doctor blade circumscribing at an acute angle with the outer peripheral surface of the ink applying roller at the top portion thereof and an ink counterflow check blade disposed opposite to the doctor blade with space

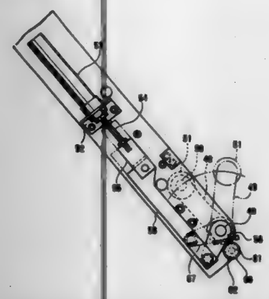
VOL 1160 ISS 3 MR 15 1994 UMI

at a portion upward from the portion of the doctor blade contacting the surface of the ink applying roller in a roller



counter-rotating direction so as to form an ink reservoir between the doctor blade and the ink counterflow check blade.

5,293,820
PLATE EXCHANGE APPARATUS FOR PRINTING PRESS
Kazuhiro Maejima, and Shoichi Ichimura, both of Ibaraki, Japan, assignors to Komori Corporation, Japan
Filed Jun. 23, 1992, Ser. No. 902,697
Claims priority, application Japan, Jun. 24, 1991, 3-055980[U]
Int. Cl.[5] B41F *27/12*
U.S. Cl. 101—415.1 **4 Claims**



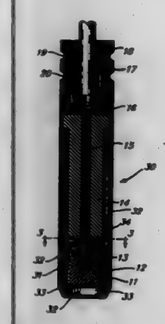
1. A plate exchange apparatus in combination with a printing press, said printing press comprising a frame including at least one plate cylinder for holding a printing plate, with said printing plate having two end portions and a disk-shaped bearer disposed on each of said end portions of said plate cylinder, said bearers each having a circular circumferential surface, said plate exchange apparatus comprising:

a plate holding unit having a proximate end and a distal end, said plate holding unit being movably supported on said frame of said printing press;

driving means for moving said distal end of said plate holding unit between an operative position where said distal end is moved adjacent to plate lockup devices disposed in a gap of said plate cylinder and a stored position where said distal end is retracted from said operative position; and

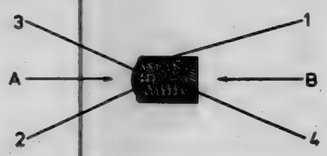
positioning members disposed on said distal end of said plate holding unit, said positioning members being urged into constant contact with said circumferential surfaces of said bearers when said plate holding unit is moved to said operative position and said plate cylinder is rotated.

5,293,821
DELAY INITIATOR FOR BLASTING
Donald C. True, and Raymond Carriere, both of Brownsburg, Canada, assignors to ICI Canada Inc., North York, Canada
Filed Jun. 22, 1990, Ser. No. 541,959
Int. Cl.[5] C06C *5/00*
U.S. Cl. 102—275.6 **7 Claims**



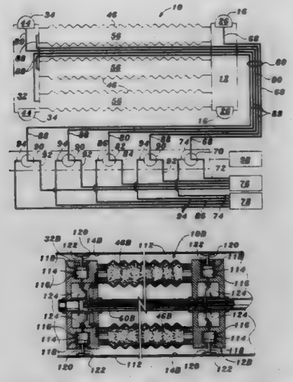
1. A time-delay blasting initiator comprising a principal tubular metal shell closed at one end, a base charge of explosive within said principal shell, a priming charge adjacent said base charge, a delay charge adjacent said priming charge and an ignition means adjacent said delay charge, characterized in that said initiator further comprises a secondary shell being of smaller diameter than said principal shell and so positioned within said principal shell as to provide a circumferential void space, and wherein at least one of said base charge, said priming charge and said delay charge is contained within said secondary shell.

5,293,822
DEFENSIVE SHOOTING PROJECTILE
David S. Peddie, 405 S. Princeton, Itasca, Ill. 60143
Filed Jul. 8, 1992, Ser. No. 910,741
Int. Cl.[5] F42B *12/00, 12/62*
U.S. Cl. 102—506 **3 Claims**



1. A projectile for firearms comprised of a main body in the form of a hollow cylinder, enclosing particles of lead shot with the projectiles front end closed, with a releasable front seal, to contain the lead shot and the projectiles back end closed, with a releasable back seal, to contain the lead shot assuring the projectile will travel completely together to a target, and upon impact with either an inanimate object or human tissue will break its front seal, back seal, or both seals releasing the lead shot.

5,293,823
ROBOTIC VEHICLE
W. Donald Box, 115 Newhaven Rd., Oak Ridge, Tenn. 37830
Filed Sep. 23, 1992, Ser. No. 949,898
Int. Cl.[5] B61B *13/00*
U.S. Cl. 104—138.2 **23 Claims**



10. A robotic vehicle for travel through a conduit, said robotic vehicle comprising:

a forward housing provided with surface engaging means for selectively engaging at least one wall of said conduit, whereby said forward housing is selectively held in a stationary position within said conduit by said surface engaging means, said surface engaging means including an expandable bladder surrounding the perimeter of said forward housing and defining an internal cavity;

a rear housing provided with surface engaging means for selectively engaging at least one wall of said conduit, whereby said rear housing is selectively held in a stationary position within said conduit by said surface engaging means, said surface engaging means including an expandable bladder surrounding the perimeter of said rear housing and defining an internal cavity;

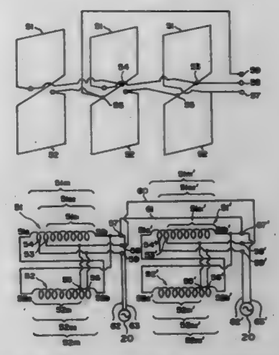
at least three selectively extendable tubular bellows members, each said tubular bellows member defining a cavity therein and defining a forward end portion secured to said forward housing and a rear end portion secured to said rear housing;

pressurizing means for selectively pressurizing gas into the cavity of a selected one of said expandable bladders so as to expand said one of said expandable bladders, whereby said one of said expandable bladders selectively engages walls of said conduit, and for selectively pressurizing gas into the cavity of a select one of said tubular bellows members for extending said one of said tubular bellows members and increasing the distance between said forward end portion of said one of said tubular bellows members and said rear end portion of said one of said tubular bellows members;

evacuating means for selectively evacuating gas from the cavity of a selected one of said tubular bellows members for retracting said one of said tubular bellows members and decreasing the distance between said forward end portion of said one of said tubular bellows members and said rear end portion of said one of said tubular bellows members; and

umbilical cable means for connecting said cavities of said expandable bladders of said forward housing and said rear housing, and said cavities of said tubular bellows members to said pressurizing means and said evacuating means.

5,293,824
GROUND COIL FOR MAGNETICALLY LEVITATED RAILWAY
Junji Fujie, Hino, and Hisamitsu Shibakawa, Toda, both of Japan, assignors to Railway Technical Research Institute, Japan
Filed Dec. 14, 1992, Ser. No. 990,347
Claims priority, application Japan, Feb. 6, 1992, 4-056398
Int. Cl.[5] H01F *5/00*
U.S. Cl. 104—282 **2 Claims**



1. Ground coils for a magnetically levitated railway in which superconducting coils are mounted on a vehicle and ground coils are arranged on left and right sides of a guideway for moving the vehicle by repulsion induced between the superconducting coils and the ground coils, wherein the ground coils are arranged in repeating units along the guideway, each unit comprising propulsion-levitation-guidance coils arranged on left and right sides of the guideway, said propulsion-levitation-guidance coils each comprising:

(i) an upper coil having a levitation main-winding portion, a first intermediate terminal forming a guidance shunt-winding portion of said levitation main-winding portion, and a second intermediate terminal forming a propulsion shunt-winding portion of said levitation main-winding portion;

(ii) a lower coil having a levitation main-winding portion, a first intermediate terminal forming a guidance shunt-winding portion of said levitation main-winding portion, and a second intermediate terminal forming a propulsion shunt-winding portion of said levitation main-winding portion, said upper coil and said lower coil being arranged one above the other and being null-flux connected at null-flex connection points;

(iii) a first lead terminal connected to one of the null-flex connection points;

(iv) a second lead terminal connected to the first intermediate terminal of said upper coil and the first intermediate terminal of said lower coil;

(v) a third lead terminal connected to the second intermediate terminal of said upper coil and the second intermediate terminal of said lower coil;

(vi) a first null-flux wiring line connecting the first lead terminals of the propulsion-levitation-guidance coils arranged on the left and right sides of the guideway;

(vii) a second null-flux wiring line connecting the second lead terminals of the propulsion-levitation-guidance coils on the left and right sides of the guideway; and

(viii) a propulsion wiring line led out individually from each of the first and third lead terminals on the left and right sides of the guideway, and connected to a propulsion power supply.

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5,293,825

TV TABLE

Ford B. Cauffiel, 4126 Nantucket Dr., Toledo, Ohio 43623

Filed Sep. 24, 1992, Ser. No. 950,142
Int. Cl.[5] A47B *23/00*
U.S. Cl. 108—49 10 Claims



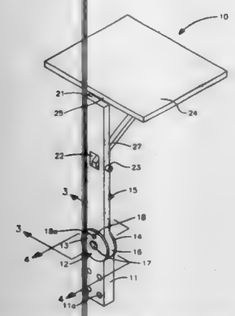
1. A table assembly for use with a chair, said assembly comprising stabilizing means defined by a base plate to be received under and held stationary by chair supports on at least one side of a chair for supporting said assembly, said base plate having a bottom surface for defining a floor engaging means contacting a floor under the chair, an upright post, a lower sleeve affixed to and extending upwardly from said base plate to receive a lower end of said post, said post being pivotal relative to said lower sleeve, a table having an upper flat surface, an upper sleeve extending downwardly from an end portion of said table, said upper sleeve receiving an upper end of said post so that said table is pivotable in a horizontal plane relative to said base plate.

5,293,826

BEDSIDE TABLE APPARATUS

Cheryl A. Perez, 2025 Lot 44 Northwind Dr., Junction City, Kans. 66441

Filed Nov. 30, 1992, Ser. No. 982,907
Int. Cl.[5] A47B *23/00*
U.S. Cl. 108—49 5 Claims



1. A bedside table apparatus for mounting to a bed, wherein the apparatus comprises,

a support base plate member, the support base member includes mounting means for mounting the support base member to the bed, and

the support base plate member having a first end spaced from a second end, the first end including a bifurcated mount, the bifurcated mounting having a first mounting plate spaced from a second mounting plate, and

a support plate, the support plate including a support plate lower end, wherein the support plate lower end includes a cylindrical hub received between the first mounting plate and the second mounting plate, and the hub having a hub axle orthogonally directed through the first mounting plate and the second mounting plate, and rotatably mounting the support plate to the bifurcated mount, the support plate mounted to be moved from a first position longitudinally aligned with the support base member to a second position angularly displaced relative to the support base member, and

the support plate having support plate upper end, and

a support table, the support table having a hinge hingedly mounting the support table to the support plate upper end, and the support table having a first side having the hinge secured thereto, the support table having a second side, and the support table having a top surface spaced from a bottom surface, the bottom surface having a lug fixedly mounted to the bottom surface in adjacency to the second side, the lug including a link member, the link having a first end pivotally mounted to the lug, and the support plate having a support plate bore, with the link including a link second end slidably received through the bore, and

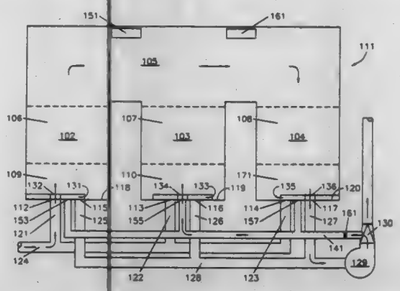
lock means mounted to the support plate for selectively locking the link within the bore.

5,293,827

REGENERATIVE THERMAL OXIDIZER WITH GATE MANIFOLDS INCLUDING PURGES

James L. Nester, 1601 Moyer Rd., Telford, Pa. 18969, and Richard G. Reimlinger, 24 Hunter Ave., Fanwood, N.J. 07023

Filed Jul. 15, 1993, Ser. No. 92,035
Int. Cl.[5] F27D *17/00*; F28D *17/02*
U.S. Cl. 110—304 20 Claims



1. A regenerative thermal oxidation apparatus for purifying gases by thermal oxidation and for exchange of heat between inleting and outleting gases, which comprises:

(a) an oxidizer having at least a first regenerative thermal chamber unit, a second such unit and a third such unit;

(b) each of the aforesaid regenerative thermal chamber units having at least an inlet opening, a purge gas opening, and an outlet opening located on a single base surface and with said inlet opening and said outlet opening being spaced apart a distance equal to or more than the width of a gate orifice described below;

(c) each of the aforesaid regenerative thermal chamber units further having a gate with at least one gate orifice and being movably located in a linear fashion against said base surface so as to have at least a first position, a second position and a third position against said base surface, said first position being with direct alignment of said gate orifice with the inlet opening, said second position being with said gate orifice located with direct alignment of said purge gas opening, and said third position being with direct alignment of said gate orifice with the outlet opening;

(d) means for moving the gate for each of the aforesaid regenerative thermal chamber units through a cycle which includes forward movement through a said first position, said second position and said third position and reverse movement back through said second and first positions; and,

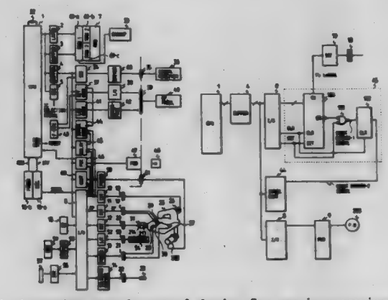
(e) inlet ducts connected to said inlet openings, purge gas ducts connected to said purge gas openings, and outlet ducts connected to said outlet openings.

5,293,828

AUTOMATIC SEWING MACHINE CONTROL DEVICE

Yoshifumi Nishizawa; Iwao Yamane, and Satoru Yamada, all of Aichi, Japan, assignaors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,290
Claims priority, application Japan, Jan. 23, 1991, 3-006531
Int. Cl.[5] D05B *19/00*
U.S. Cl. 112—121.11 11 Claims



1. A sewing speed control device for use in a sewing machine, comprising:

an operating speed detecting means for detecting an operating speed of said sewing machine to produce a current sewing speed level signal;

a comparison means for comparing the current sewing speed level signal detected by said operating speed detecting means with the next operating speed level to which the current operating speed is changed in response to a speed level instruction signal;

an instruction means for producing a speed level control signal corresponding to an operation speed level according to the comparison result of said comparison means; and

a control means for controlling the operating speed of said sewing machine in response to the speed level control signal,

the speed level control signal being determined as either a zero speed level or a positive speed level not higher than a level represented by the speed level instruction signal.

5,293,829

COMPACT HOME USE SEWING MACHINE WITH AN ADJUSTING MECHANISM FOR CONTROLLING THE STITCH LENGTH AND FEED DIRECTION

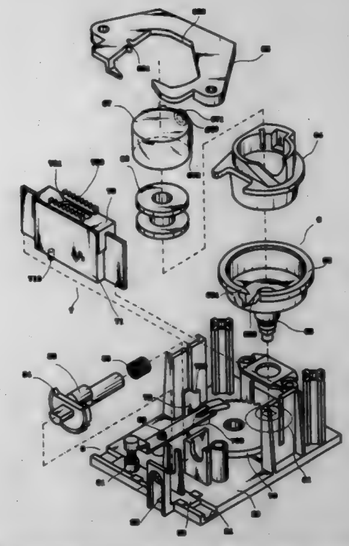
Chong-Ming Mu, 2 Fl., No. 6, Lane 8, Ming Feng Str., Hsi Chih Chen, Taipei Hsien, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,780
Int. Cl.[5] D05B *27/22*
U.S. Cl. 112—316 2 Claims

1. A sewing machine comprising a DC motor, a main shaft driven by said DC motor through a reduction gear to reciprocate a needle bar with a needle vertically, and a stitch making mechanism driven by said main shaft through a reciprocating mechanism and a transmission shaft to carry an under thread for making stitches on a workpiece with the upper thread being carried by the needle of said needle bar, wherein said stitch making mechanism comprises:

a shuttle/hook & bobbin assembly mounted on a base plate, said shuttle/hook & bobbin assembly comprising a revolving shaft coupled to said transmission shaft by bevel gears, a rotating shuttle integrally formed on said revolving shaft at the top, said rotating shuttle having a thread hook projected into a peripheral notch thereof, a bobbin case retained within said rotating shuttle by a pressure plate and spaced from said rotating shuttle by a gap, a bobbin cap disposed within said bobbin case, and an under thread bobbin revolvably received inside said bobbin cap, said pressure plate comprising a substantially C-shaped opening fitting over the periphery of said bobbin case and a projecting rod projected into said C-shaped opening to stop said bobbin case within said rotating shuttle;

a feed mechanism mounted on said base plate, said feed mechanism comprising a gear wheel alternatively turned back and forth by said revolving shaft of said shuttle/hook & bobbin assembly, a feed block having a driving pin at the bottom disposed in an elongated guide slot on said gear wheel and a feed dog at the top reciprocated by said feed block in a course tangent to said rotating shuttle for



feeding the workpiece in either direction, and a lifting bar driven by a bottom flange on said gear wheel to lift or lower said feed block, the movement track of said feed block being in tangent to the movement track of said thread hook, the tangent point between the movement track of said feed block and the movement track of said thread hook being intersected with the moving track of said needle so that said needle carries the upper thread to form loops one after another at said tangent point for letting each loop be carried by said thread hook in said gap and then fastened around the under thread to make a respective stitch; and

a micro-inch stitch adjusting device mounted on said base plate for controlling the stitch density and for controlling said feed dog to feed the workpiece in either direction or not to feed the workpiece, said micro-inch stitch adjusting device comprising a lever controlled by a spring and a slide to adjust the position of said driving pin in said guide slot, an eccentric shaft turned to move said slide in controlling the position of said driving pin.

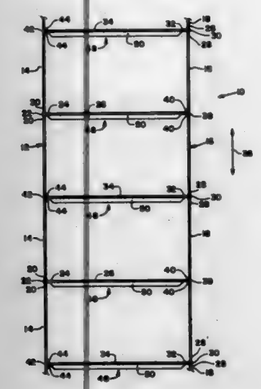
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5,293,830

DOUBLE-WALLED VESSEL HULL CONSTRUCTION UTILIZING T-SHAPED SUBCOMPONENTS

Robert D. Goldbach, Milford, Pa., assignor to Metro Machine Corp., Norfolk, Va.

Filed Mar. 18, 1993, Ser. No. 33,357
Int. Cl.[5] B63B *3/02*
U.S. Cl. 114—65 R 8 Claims



1. A subassembly for a double-walled vessel hull construction, comprising:

a plurality of subcomponents each of which is T-shaped in transverse cross-sectional shape;

each said T-shaped subcomponent comprising a faceplate having two opposite longitudinal edges, a longitudinal rib plate having two opposite longitudinal edges, and a two-plate longitudinal T-weld by which one said edge of each said longitudinal rib plate is welded to a respective said faceplate at a site which is disposed intermediate the respective said two opposite longitudinal edges of the respective said faceplate;

said T-shaped subcomponents being arranged adjacent one another girthwise of said vessel hull construction, with relative rotation through 180 degrees about respective longitudinal axes thereof, so that faceplates of successive ones of said subcomponents are arranged to provide respective portions of inner and outer hulls of said vessel hull construction;

said subcomponents being united into said subassembly by respective longitudinal three-plate, three-edge welds each formed between respective said longitudinal edges of two adjacent faceplates which are arranged to provide respective portions of a respective same one of said inner and outer hulls and a respective other said edge of a respective said longitudinal rib plate.

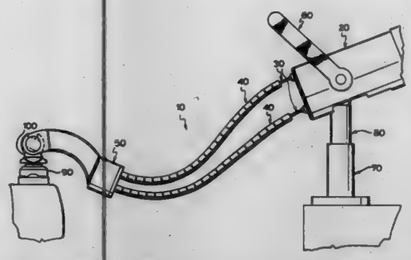
5,293,831

BOAT MOORING DEVICE

Nelson J. Whitehead, 294 Kingslynn Dr., P.O. Box 263, King City, Ontario, Canada L0G 1K0, assignor to Nelson J. Whitehead, King City, Canada

Filed Jun. 8, 1992, Ser. No. 895,048
Claims priority, application Canada, May 22, 1992, 2069205
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—230 20 Claims

1. A boat mooring device comprising a collapsible member comprising a tensioning means, resilient means to be tensioned, said resilient means being of a first predetermined length and being engaged with the tensioning means, rigidifying means being of a second collective predetermined length shorter than the first predetermined length located with said resilient means, and anchoring means to anchor an end of the resilient means to be tensioned, wherein moving said tensioning means to a first position provides sufficient tension of the resilient means wherein the rigidifying means and the resilient means result in an overall length of said collapsible member substantially equal to the second collective predetermined length, wherein moving said tensioning means to a second position



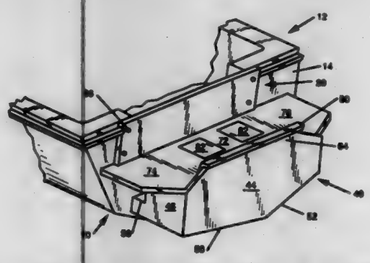
provides sufficient relief of tension of the resilient means wherein the rigidifying means is untensioned resulting in an overall length of said collapsible member substantially equal to the first predetermined length wherein in the tensioned position, the member cannot be manually bent or untensioned without moving said tensioning means to a second position.

5,293,832

OUTBOARD MOTOR MOUNTING SYSTEM

William S. Potter, Jr., 4235 Douglas Rd., Coconut Grove, Fla. 33133

Filed Sep. 15, 1992, Ser. No. 945,216
Int. Cl.[5] B63H *5/12*
U.S. Cl. 114—363 15 Claims



1. An outboard motor mounting system for mounting a motor on an outboard boat with a cutout transom, said system comprising:

a transom sealing means for sealing the cutout in said outboard boat's transom, said sealing means including a mounting flange which is adapted to be clamped to a horizontal motor well transom lip of said outboard boat to support and position said outboard motor mounting system;

an outboard motor mounting device which is attachable to the transom of the outboard boat, said outboard motor mounting device including a body and a swim platform which combine together to form a substantially sealed hollow interior to provide buoyancy to said mounting device; and

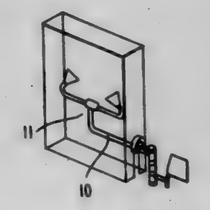
said body includes a rear wall, two opposed side walls spaced from each other attached to said rear wall, a bottom surface extending between said side walls and attached to said rear wall, a mating front face spaced from said rear wall and attached to said side walls and said bottom surface, and a mounting flange located at an uppermost portion of said rear wall wherein said swim platform is an integral, one-piece member adapted to abut against a top surface of said opposed side walls to form said sealed hollow interior, and said mounting flange of said uppermost portion of said rear wall positioned above said top surface of said opposed side walls; further including a first receiving indentation provided on said front face which cooperates with an attaching lip provided on a forwardmost portion of said swim platform to securely fasten said swim platform to said front face.

5,293,833

SPLASH CONTAINMENT TESTING DEVICE FOR EMEGENCY EYE WASH UNITS

Rebecca L. West, Lithonia; Douglas W. Kirby, Flowery Branch, and Duel Seymore, Jonesboro, all of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 28, 1992, Ser. No. 842,957
Int. Cl.[5] G01F *15/00*
U.S. Cl. 116—276 20 Claims



7. An apparatus for testing emergency wash units which comprises:

a transparent splash containment device including an inverted container for containing water flow emerging from an emergency wash unit and for diverting the water to a drain of the emergency wash unit; and

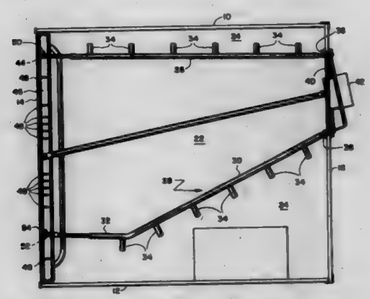
alignment indicator means attached to a surface portion of said transparent splash containment device for determining alignment of water flow from the emergency wash unit.

5,293,834

HOG FARROWING CRATE AND PEN

Dale H. Keuter, Earlville, Iowa, assignor to Eastern Iowa Pork Manufacturing, Inc., Earlville, Iowa

Filed Dec. 21, 1992, Ser. No. 995,707
Int. Cl.[5] A01K *1/02*
U.S. Cl. 119—20 4 Claims



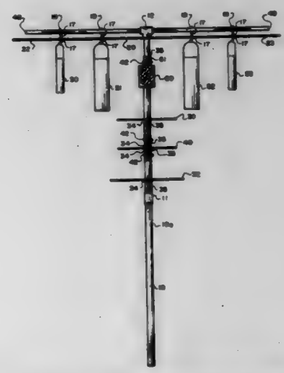
1. A farrowing stall for pigs comprising spaced-apart side walls, first and second end walls joined to the side walls to form a generally rectangular enclosure, a gate in one of the end walls to provide access to the enclosure, spaced-apart first and second side finger bars within the enclosure and dividing the enclosure into a farrowing area and at least one creep area, each of the side finger bars having a first end and a second end, the first side finger bar being substantially straight from the first end to the second end, and the second side finger bar having a first straight portion joined between its ends to a second straight portion at an angle to form an angled finger bar, the first end of each of the finger bars being pivotally mounted on a single fixed pivot on the first end wall, the second end wall having a plurality of pivot mounts along the wall with the second end of each of the finger bars being securable to a selected one of the pivot mounts, the first and second ends being pivotally mounted on the end walls to provide for swingable movement of the side finger bars relative to each other and relative to the side walls so as to selectively vary the relative sizes of the farrowing and creep areas, and fastening means for securing the side finger bars in selected positions on the end walls.

5,293,835

WILD BIRD FEEDING STATION WITH A CLUSTER OF BIRD FEEDERS AND BAFFLES WHICH PREVENT SQUIRRELS FROM REACHING THE FEEDERS

Paul B. Shagoury, 48 Fairmount Ave., P.O. Box 506, Hyde Park, Mass. 02136

Filed Apr. 27, 1993, Ser. No. 52,063
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—57.9 9 Claims



1. A support for squirrel-proof wild bird feeding station for a plurality of bird feeders comprising:

a vertical pole, one end of which is adapted to be anchored in the ground, the other end having a male end which is mated to an end of a dual female coupling,

a vertical extension having a proximal end coupled to the other end of said dual female coupling,

a distal end of said extension is joined to the bottom end of a T-coupling,

two horizontal poles of equal lengths, each pole having one end with a male end joined to the T-coupling causing said horizontal poles to be at right angles to the vertical pole and extension,

a plurality of small drilled holes positioned perpendicularly and at intermittent equal points along said horizontal poles to form a means for inserting and securing a heavy wire in each hole, each heavy wire having a hook on one end,

a flat sheet positioned below said horizontal poles and having a circular opening of a diameter slightly greater than the diameter of the vertical extension, said flat sheet positioned along said vertical extension and is flexible so as to

allow said flat sheet to waver and pivot about said vertical extension,

two additional flat sheets fastened to opposite ends of said flat sheet to form end baffles,

said end baffles and said flat sheet including a plurality of openings which correspond with said perpendicularly drilled holes, each opening receiving said heavy wire extending therethrough,

said heavy wires having a hook end about said other end attaching and supporting a respective bird feeder,

two flat circular disks including a center opening for receiving said vertical pole, and being flexible so as to allow said disks to waver or pivot about said vertical pole,

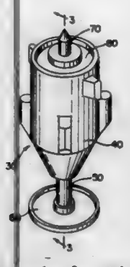
each circular disk having a plastic bushing for joining said disks to said vertical pole.

5,293,836

WATER RETAINING TRIGGER PIN

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Filed Jan. 15, 1993, Ser. No. 4,966
Int. Cl.[5] A01K *39/02*
U.S. Cl. 119—72 **21 Claims**



1. A valve actuating member for a trigger-type drinker, said member comprising:

a head portion;

a pin portion extending from said head portion; and

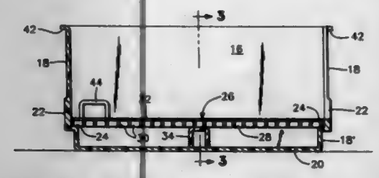
first means attached to said pin portion for retaining fluid and providing said fluid to a bird in response to actuation force applied to said valve actuating member from a side thereof and for hindering the dispersal of said fluid from a side other than the side of actuation.

5,293,837

LITTER BOX HAVING SHELF FORMED IN SIDE WALL THEREOF SUPPORTING FINE AND COARSE GRID ASSEMBLY

J. Dean Caldwell, 122-2 S. Main, Minot, N. Dak. 58701

Filed May 12, 1993, Ser. No. 59,677
Int. Cl.[5] A01K *23/00*
U.S. Cl. 119—166 **10 Claims**



1. A litter box for dogs, said box comprising an open top receptacle including peripherally continuous upstanding wall means having first height upper portions and lesser height lower portions and whose lower portions are interconnected by a bottom wall extending and secured between said lesser height lower portions of said wall means, said first height upper portions being outwardly offset relative to said lesser height lower portions with said receptacle defining an upwardly facing, generally horizontal shelf interconnecting corresponding upper and lower portions of said wall means, a first horizontal weight supporting coarse grid incorporating crossed, edge upstanding strips removably downwardly received within said receptacle and including major peripheral portions thereof removably supported from said shelf, and a second horizontal finer grid of considerably less vertical thickness than said first grid overlying and removably supported from said first grid, one portion of said side wall means including an upwardly opening entranceway notch formed therein opening upwardly through the upper margin of said one portion of said side wall means above said shelf, opposite marginal portions of said coarse grid including upwardly projecting handles for manually lifting said coarse grid and said finer grid from within said receptacle, said finer grid including openings formed therethrough upwardly through which said handles project.

5,293,838

METHOD AND APPARATUS FOR INCUBATING EGGS AND LARVAE OF FISH CRUSTACEANS AND SIMILAR ORGANISMS

Leif Jörgensen, N-7022, Trondheim, Norway, and Hans Grasdalen, N-7033, Troadheim, Norway

Continuation-in-part of Ser. No. 215,521, Jul. 6, 1988, abandoned. This application Jan. 31, 1991, Ser. No. 648,969
Claims priority, application Norway, Jul. 10, 1987, 872869
Int. Cl.[5] A01K *61/00, 63/00*
U.S. Cl. 119—205 **16 Claims**

1. In a process for incubating live eggs or larvae of fish or crustaceans in an aqueous environment for a predetermined time and at a predetermined temperature to obtain an incubated live organism,

the improvement comprising:

a) protecting said eggs or larvae from mechanical forces and infection by casting, using a mold, a plate of a predetermined shape and dimensions of an aqueous polymeric gel, said plate having at least one depression in a surface thereof for receiving said eggs or larvae, depositing at least one said live egg or larvae in said depression, and covering and sealing said surface and said depression with a porous gas and water permeable membrane;

b) exposing said plate with covered surface to a source of oxygen and at least intermittent flow of water externally of the membrane for a time and at a temperature sufficient to achieve incubation of said eggs or larvae with passage of oxygen through said membrane to said eggs, and passage of excretory matter through said membrane away from said eggs; and thereafter

c) removing an incubated live organism from said membrane and plate.

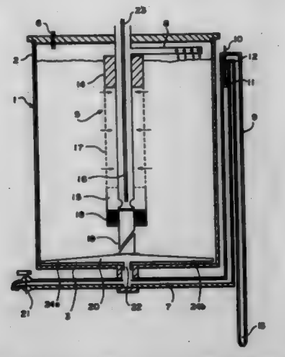
5,293,839

CULTIVATION TANK FOR AQUATIC ORGANISMS

Leif Jörgensen, Bockmans vei 91, N-7019 Trondheim, Norway

PCT No. PCT/NO90/00189, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/09517, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 17, 1990, Ser. No. 863,293
Claims priority, application Norway, Dec. 29, 1989, 895317
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—233 **5 Claims**

1. A device with a tank for the incubation or cultivation of aquatic organisms, said tank including a side wall and a bottom, a supply pipe into said tank for the introduction of water, outlet pipe means for water, excess feed, excrement, dead eggs and the like, a suction unit within said tank and connected to said outlet pipe means, said suction unit comprising at least one moveable suction arm operable adjacent said bottom, said at least one suction arm being positioned such that when in motion an area approximately corresponding to the shape and size of the bottom is covered, said outlet pipe means including air inlet means for controlling outflow of water through said outlet pipe means from said tank at intervals, said device also comprising a combined float and weight means in said tank above said suction unit and vertically moveable up and down in response to changes in the level of water in said tank, and



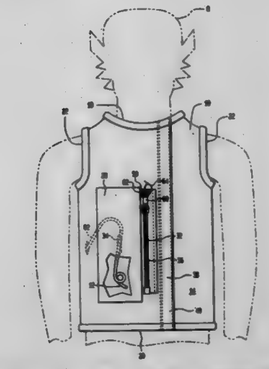
cooperating means on said suction unit and said float and weight means for transformation of downward movement of said weight and float means into movement of said at least one suction arm, said downward movement of said weight and float means being in response to downward movement of the water level in said tank as water and waste products are outwardly drawn through said at least one suction arm.

5,293,840

LABORATORY ANIMAL RESTRAINING JACKET WITH A SEALABLE MEDICAL DEVICE HOLDING POCKET

Susan Wedlick, 304 Dayton-Jamesburg Rd., Dayton, N.J. 08810

Filed Jan. 22, 1993, Ser. No. 7,681
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—850 **20 Claims**



1. An improved laboratory animal restraining jacket with a sealable medical device holding pocket which comprises:

A. a jacket member including a front section and a rear section, said front section and said rear section defining a neck opening means, an abdominal opening means and arm opening means therebetween, said rear section of said jacket member including a main opening slit means extending from said neck opening means to said abdominal opening means to facilitate placement and removal of said jacket member upon a laboratory animal;

B. a main fastening means positioned adjacent said main opening slit means of said rear section of said jacket member, said main fastening means adapted to selectively close and open said main opening slit means as desired in order to facilitate placement and removal of said jacket member upon a laboratory animal;

C. a flap means positioned on the exterior of said jacket member and defining a pocket means therebetween, said flap means and said jacket member defining a pocket opening means in communication with respect to said pocket means to facilitate access thereinto, said jacket member defining an access slot extending therethrough adjacent said flap means and within said pocket means to allow placement of a medical device from within said pocket means to extend through said access slot for direct access to a laboratory animal positioned within said jacket member, said access slot providing access from said pocket means to within said jacket member;

D. a pocket fastening means extending along said pocket opening means, said pocket fastening means being adapted to selectively close and open said pocket opening means as desired in order to facilitate access to said pocket means; and

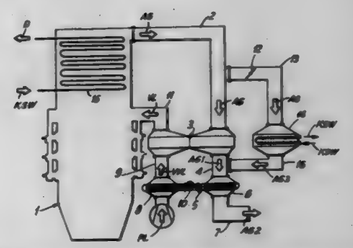
E. a main covering means positioned adjacent said main opening slit means and adjacent said main fastening means, said main covering means adapted to extend over said main fastening means and selectively engage said jacket member thereacross to prevent access to said main fastening means from the exterior of said jacket member.

5,293,841

ARRANGEMENT FOR UTILIZING THE HEAT CONTAINED IN THE EXHAUST GAS OF A COAL-FIRED BOILER

Ludwig Suhr, Essen, and Paul Paikert, Witten, both of Fed. Rep. of Germany, assignors to GEA Luftkuhler GmbH, Bochum, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 27,180
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207082; Apr. 13, 1992, 4212336
Int. Cl.[5] F22B *33/00*
U.S. Cl. 122—1 A **2 Claims**



1. An arrangement in a power plant for utilizing heat contained in exhaust gas from a coal-fired boiler for preheating feed water for the boiler and for preheating primary air, the arrangement comprising a rotating heat transfer unit and a heat shifting unit arranged in series to the heat transfer unit, an exhaust gas line for conducting the exhaust gas from the boiler to the heat transfer unit, a preheated combustion air line for conducting preheated combustion air from the heat shifting unit to the heat transfer unit, a cooled exhaust gas line for conducting cooled exhaust gas from the heat transfer unit to the heat shifting unit, and a primary air line for conducting primary air to the heat shifting unit, further comprising a bypass for bridging the heat transfer unit, the bypass being connected to the exhaust gas line and the cooled exhaust gas

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line, the bypass comprising at least one of a heat exchanger and a steam generator, and means for conducting the feed water through the at least one of the heat exchanger and the steam generator.

5,293,842

METHOD FOR OPERATING A SYSTEM FOR STEAM GENERATION, AND STEAM GENERATOR SYSTEM

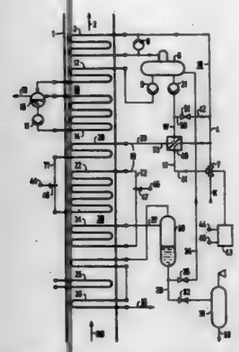
Georg Loessl, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 33,152

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1992, 4208397

Int. Cl.[5] F22D *1/00*

U.S. Cl. 122—7 R 8 Claims



1. In a method for operating a system for steam generation, which includes generating steam from water by indirect heat exchange with hot flue gas, by first preheating condensed water and then evaporating the preheated water at high pressure, the improvement which comprises cooling the preheated water which is already at high pressure, by heat exchange with at least one partial flow of the condensed water, at least in a partial-load range.

5,293,843

COMBUSTOR OR GASIFIER FOR APPLICATION IN PRESSURIZED SYSTEMS

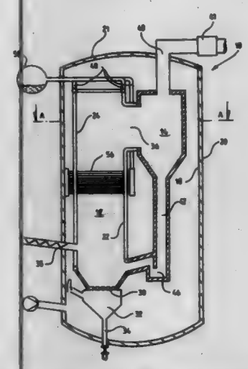
Steven J. Provol, and David Russell, both of San Diego, Calif., assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Dec. 9, 1992, Ser. No. 987,721

Int. Cl.[5] F22B *1/00*

U.S. Cl. 122—4 D 23 Claims

1. A fluidized bed combustor or gasifier for application in pressurized systems comprising: at least one upright combustion chamber and at least one particle separator connected thereto and enclosed in a common external upright pressure vessel; and said combustion chamber having a nonsymmetrical horizontal cross section, wherein at least two adjacent substantially straight walls of said combustion chamber form an angle >90°.



5,293,844

PROTECTIVE SHIELD FOR THE ELECTRICAL COMPONENTS OF A WATER HEATER

Gary S. Threatt, Kershaw, S.C., assignor to AOS Holding Company, Milwaukee, Wis.

Filed Jun. 4, 1993, Ser. No. 46,427

Int. Cl.[5] F22B *37/36*

U.S. Cl. 122—494 12 Claims



1. A water heater comprising:
a tank for holding water;
a jacket surrounding said tank;
foam insulation between said tank and said jacket;
heating means for heating water in said tank;
a thermostat mounted on said tank for controlling said heating means in response to the temperature of water in said tank, said thermostat including an electrically active terminal, a leadwire connected to said terminal, an electric circuit reset, and temperature adjustment means;
a protective shield for covering said terminal and preventing foam contact with said terminal, said shield including a face portion covering said thermostat in spaced relation to said tank, said face portion comprising first means for providing operator access to said circuit reset, and second means spaced from said first means for providing operator access to said temperature adjustment means, said shield also including a first sidewall portion extending between said face portion and said tank, said first sidewall portion having a rearward tapered surface sealingly engaging said tank, and said first sidewall portion having therein a leadwire access port which provides an opening for routing said leadwire and which provides strain relief for said leadwire, and said shield further including a second sidewall portion extending between said face portion and said tank, said second sidewall portion having a rearward tapered surface sealingly engaging said tank; and
means for releasably securing said shield to said tank.

5,293,845

CONTROL MECHANISM FOR ENGINE VALVE TIMING

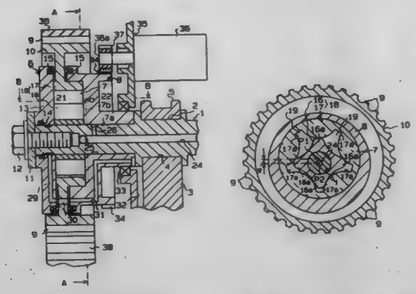
Masami Yamazaki, Okazaki; Atsushi Watanabe, Toyota; Yukiharu Ichinose, Toyota, and Tatsuo Iida, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Aug. 25, 1992, Ser. No. 934,252

Claims priority, application Japan, Sep. 2, 1991, 3-221889; May 13, 1992, 4-120796; May 13, 1992, 4-120797

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 18 Claims



1. A control mechanism for controlling the timing of at least one intake valve and at least one exhaust valve in an engine, the control mechanism comprising:
a camshaft for actuating said exhaust valves, the camshaft having a rotational center;
a timing pulley coupled to the engine and having a rotational center, whereby the rotational movement of the engine is transmitted to said timing pulley;
a first gear mechanism being driven by said timing pulley;
a second gear mechanism for engaging said first gear mechanism, and for generating a rotational phase shift of said timing pulley with respect to said camshaft;
a casing radially and rotatably mounted on the camshaft and concentric with the camshaft, wherein said first gear mechanism is disposed in the casing for integral rotation therewith; and
drive means, operably connected to said casing, for rotating the casing to change said rotational phase shift;
wherein the rotational center of the timing pulley revolves around the rotational center of the camshaft when the drive means rotates the casing.

5,293,846

TWO-CYCLE ENGINE FOR AN OUTBOARD MOTOR

Masanori Takahashi, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

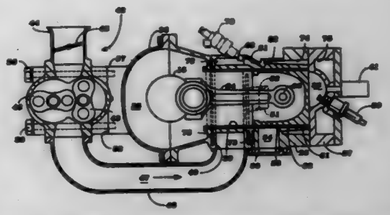
Continuation-in-part of Ser. No. 622,923, Dec. 6, 1990, Pat. No. 5,143,028. This application Aug. 31, 1992, Ser. No. 938,391

Claims priority, application Japan, Dec. 11, 1989, 1-320977; Nov. 16, 1991, 3-328060

Int. Cl.[5] F02B *33/38, 67/10*

U.S. Cl. 123—65 BA 32 Claims

1. An internal combustion engine of the two cycle type comprising a crankcase rotatably journalling a crankshaft, a cylinder extending from said crankcase on one side of a plane containing the axis of rotation of said crankshaft and perpendicular to said cylinder, a supercharger for delivering a pressurized air charge to a scavenge system of said engine, said supercharger being positioned on the other side of said plane, and means for driving said supercharger from said crankshaft.



5,293,847

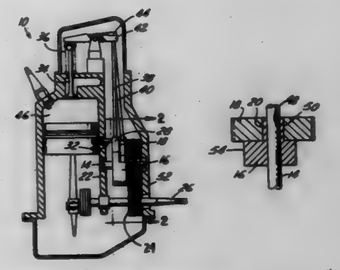
POWDERED METAL CAMSHAFT ASSEMBLY

Ronald J. Hoffman, 3216 E. Tanglewood, Phoenix, Ariz. 85044, and Jens K. Olsen, Ryohi Toshima Ryo, 5-2-8 Toshima, Kita-Ku, Tokyo 114, Japan

Filed Feb. 16, 1993, Ser. No. 18,079

Int. Cl.[5] F01L *1/04*

U.S. Cl. 123—90.6 13 Claims



1. A camshaft assembly comprising:
a shaft;
a lobe including a first powdered metal and having a first density;
a gear including a second powdered metal and having a second density; and
a boss portion formed on one of the lobe or gear, the boss portion having an aperture sized to cooperate with the shaft and a periphery cooperating with the other of the lobe or gear to fix the lobe against rotation relative to the gear, the boss portion having a third density less than the density of the lobe or gear on which the boss portion is formed.

5,293,848

SPRING RETAINER FOR A POPPET VALVE AND METHOD OF ASSEMBLING

Ronald J. Rick, Wickliffe, and Frank J. Savel, III, Munson Township, Lake County, both of Ohio, assignors to TRW Inc., Lyndhurst, Ohio

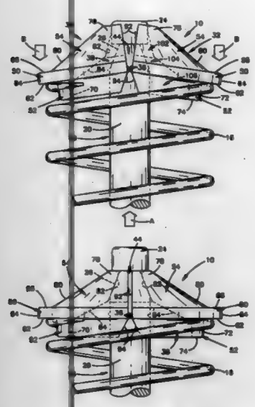
Filed Jun. 15, 1993, Ser. No. 78,005

Int. Cl.[5] F01L *3/10*

U.S. Cl. 123—90.67 21 Claims

1. An apparatus for use with a poppet valve having a valve stem, the valve stem having a groove, the poppet valve being biased by a valve spring, said apparatus comprising a spring retainer comprising:
first and second body portions, each of said first and second body portions having surface means for defining a central

opening extending through said spring retainer, said central opening having an axis, each of said first and second body portions having a spring engagement surface means for engaging the valve spring and for receiving a spring force from the valve spring, each of said first and second body portions having finger means for engaging the valve stem and for extending into the groove on the valve stem to lock said spring retainer to the valve stem; and



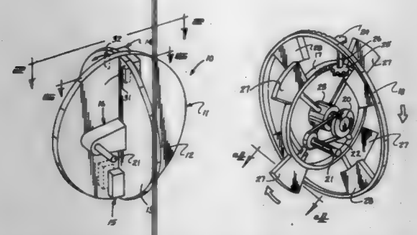
frangible means for retaining said first and second body portions together as a unitary part prior to installation of said spring retainer on the poppet valve and for breaking during installation of said spring retainer on the poppet valve to permit relative outward movement of said first and second body portions to permit passage of the valve stem between said first and second body portions during installation.

5,293,849

CONTINUOUSLY ROTATING ENGINE APPARATUS

Louie N. Huckert, 1807 Cora La., Bakersfield, Calif. 93306

Filed Nov. 24, 1992, Ser. No. 981,084
Int. Cl.[5] F02B *53/04*
U.S. Cl. 123—221 **3 Claims**



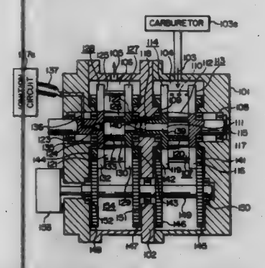
1. A continuously rotating engine apparatus, comprising,
a housing, the housing having a first cylindrical housing and a second cylindrical housing, the first cylindrical housing and the second cylindrical housing medially and orthogonally intersecting one another, and
the first housing having a first housing periphery, the second housing having a second housing periphery, with the first housing periphery and the second housing periphery intersecting at a first intersection and at a second intersection, with a first combustion chamber mounted to the first intersection, and the first combustion chamber including at least one spark plug, and
the first cylindrical housing including a first gear ring rotatably mounted within the first cylindrical housing, the second cylindrical housing having a second gear ring rotatably mounted within the second cylindrical housing, and
a first coupling gear in geared communication with the first gear ring, and
a second coupling gear in geared communication with the second gear ring, and
a shaft securing the first coupling gear to the second coupling gear to effect simultaneous rotation of the first gear ring by the second gear ring, with the first gear ring including at least one piston plate sector mounted thereon, and the second gear ring including at least one chamber plate sector mounted thereon, and
the combustion chamber having a combustion chamber slot to receive the piston plate sector therethrough, and the combustion chamber having a front wall and side walls, with the chamber plate sector arranged for sealing of a rear wall portion of the combustion chamber subsequent to positioning of the piston plate sector within the slot.

5,293,850

SCROLL TYPE ROTARY INTERNAL COMBUSTION ENGINE

Mitsuhiro Nishida, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,843
Claims priority, application Japan, Jul. 29, 1991, 3-188459; Jul. 30, 1991, 3-189859; Jul. 9, 1992, 4-182065
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—235 **7 Claims**



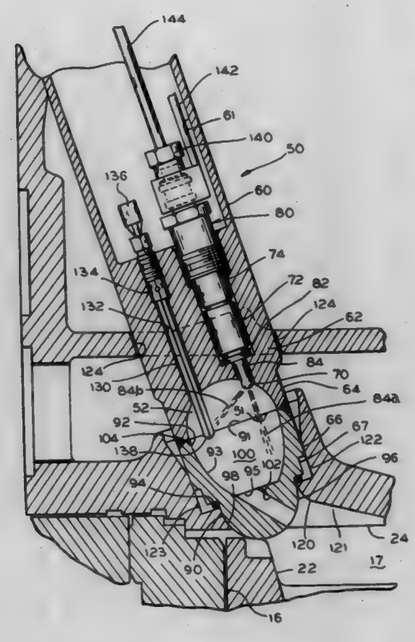
1. An internal combustion engine comprising:
a scroll compressor unit having a pair of scrolls interfitted to each other to define a compression chamber therebetween, each of said scrolls of said scroll compressor unit comprising a rotary shaft for rotatably mounting said pair of scrolls of said scroll compressor unit;
a scroll expansion unit having a pair of scrolls interfitted to each other to define an expansion chamber therebetween, a check valve for communicating said compression chamber to said expansion chamber and a burning unit for detonating in said expansion chamber a fuel together with a working fluid to expand it thereby driving said scroll expansion unit, each of said scrolls of said scroll expansion unit comprising a rotary shaft for rotatably mounting said pair of scrolls of said scroll expansion unit; and
an interconnecting unit for interconnecting said scroll compressor unit and said scroll expansion unit, wherein said interconnecting unit comprises a scroll gear secured to each of said scrolls of said scroll compressor unit and said scroll expansion unit, interconnecting gears engaging with said scroll gears, and a gear shaft connecting said interconnecting gears, thereby to synchronize rotation of all said scrolls.

5,293,851

COMBUSTION SYSTEM FOR GAS ENGINE OTHER THAN DUAL FUEL ENGINE

Frederick S. Schaub, Mt. Vernon, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 16, 1992, Ser. No. 869,759
Int. Cl.[5] F02B *19/10, 19/12*
U.S. Cl. 123—259 **13 Claims**



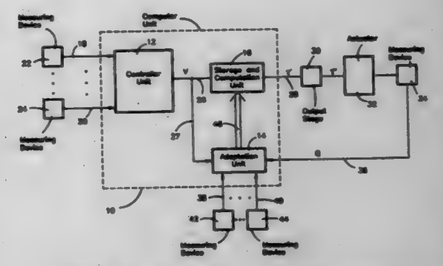
1. An improved combustion system for an internal combustion engine having at least one cylinder wherein said at least one cylinder has operatively connected thereto a piston, at least one inlet valve, at least one exhaust valve, a fuel torch cell, and a first fuel injector with said torch cell being adapted to be operatively connected to said at least one cylinder, said system including:
an auto-ignition chamber defined by said torch cell and having a torch cell nozzle at one end thereof and the other end having appropriate means to connect a fuel injector mounted in said torch cell, with said fuel injector being in operative communication with said auto-ignition chamber and having a plurality of orifices opening into said chamber, a glow plug extending into said torch cell and chordally spaced from and aligned with one of said orifices, and a torch nozzle passage connecting said auto-ignition chamber with said cylinder at a predetermined angle to a top inner portion of a cylinder head closing said cylinder, and wherein said fuel injector and said glow plug extend into said autoignition chamber in generally aligned but spaced relation, further, said fuel injector has one of said orifices adapted to inject fuel into said chamber in a generally axial direction while a second of said orifices is adapted to spray fuel in the direction of said glow plug, with said fuel injector being provided with means for controlling the direction of said second orifice.

5,293,852

METHOD AND ARRANGEMENT FOR THE OPEN-LOOP AND/OR CLOSE-LOOP CONTROL OF AN OPERATING VARIABLE OF AN INTERNAL COMBUSTION ENGINE

Vera Lehner, Eberdingen; Ernst Wild, Oberriexingen; Helmut Janetzke, Hemmingen, and Klemens Grieser, Langenfeld/-Rheinland, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00729, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/05354, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 14, 1991, Ser. No. 856,918
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029537
Int. Cl.[5] F02D *41/14, 41/16, 31/00*
U.S. Cl. 123—339 **19 Claims**



1. A method for controlling an operating variable of an internal combustion engine of a motor vehicle, via at least one transfer element, said transfer element fixing the relationship between input and output variables in the form of a characteristic curve or a characteristic field, said transfer element being an electrically actuable actuator, which influences said operating variable and which is driven by the control, said actuator fixing the relationship between drive variable (τ) and a variable representing this operating variable in the form of a characteristic curve or a characteristic field and said method carrying out an adaptation of the control to changing operating conditions in that the characteristic curve or characteristic field is adapted by adaptation to the changing conditions, the method comprising the step of:
performing the adaptation so as to cause at least one region, which is to be adapted, of the characteristic or characteristic field to rotate about a pregiven point (A, A') of rotation determined by said transfer element; and,
said point (A, A') of rotation representing an output variable (Q) which would result for said region for a characteristic value of said drive variable (τ).

5,293,853

SYSTEM FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

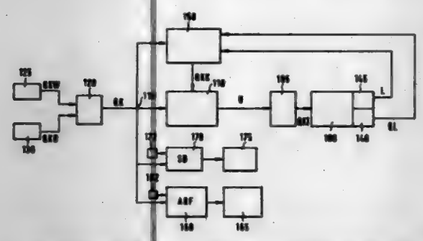
Joachim Berger, Winterbach; Manfred Birk, Oberriexingen, and Gerhard Engel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1993, Ser. No. 16,914
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208002
Int. Cl.[5] F02D *41/14*; F02M *39/00*
U.S. Cl. 123—357 **10 Claims**

1. A system for controlling an internal combustion engine, in particular a self-igniting internal combustion engine, comprising:
a performance-determining controlling element;
means for generating signals (U) for triggering the performance-determining controlling element;
a characteristic map for storing a value of a signal (U) for each of a corresponding fuel quantity (QK) to be injected

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into the engine, the stored values of the signal (U) being corrected based on a predetermined relationship between a value for the fuel quantity (QK) to be injected and a value for an actually injected fuel quantity (QKI); and



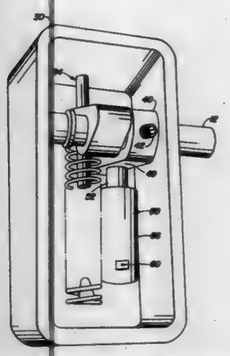
a first sensor adapted to measure a first engine parameter, the parameter corresponding to an air ratio lambda value (λ), with the actual injected fuel quantity (QKI) being determined as a function of an intake-air quantity (QL) and the air ratio lambda value (λ).

5,293,854

INJECTION PUMP THROTTLE DASHPOT FOR TRANSIENT SMOKE CONTROL

Lawrence P. Tracy, and Richard G. Norton, both of Hudson, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 14, 1993, Ser. No. 62,669
Int. Cl.[5] F02D *31/00*
U.S. Cl. 123—370 **11 Claims**



1. A damper for a fuel injection pump, the injection pump having:

a. a mounting structure;

b. a throttle shaft rotatably mounted to said mounting structure;

c. adjustable fuel pressurization means controlled by said throttle shaft for providing different fuel output volumes depending on the rotational position of said throttle shaft; and

d. a throttle control lever pivotally mounted to said throttle shaft to be pivotal between first and second positions relative to said shaft and for controlling the rotation of said throttle shaft, the damper comprising:

e. a cam mounted to said throttle shaft for rotation therewith;

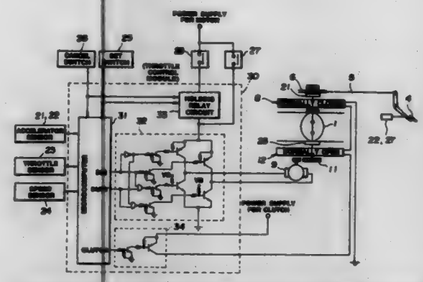
f. a dashpot mounted to said mounting structure and selectively abutting against said cam to dampen motion of said cam and said throttle shaft in at least one direction.

5,293,855

ELECTRONIC THROTTLE VALVE DRIVE UNIT

Hideo Nakamura, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 21, 1993, Ser. No. 7,279
Claims priority, application Japan, Feb. 5, 1992, 4-020275
Int. Cl.[5] F02D *9/02, 11/10*
U.S. Cl. 123—399 **5 Claims**



1. A drive unit for driving a throttle valve through an accelerator pedal and a motor, comprising:

a first electromagnetic clutch interposed between the accelerator pedal and the throttle valve, said first electromagnetic clutch being in engagement when no power is supplied, said first electromagnetic clutch being in disengagement when power is supplied, said first electromagnetic clutch including first and second clutch plates;

a second electromagnetic clutch interposed between the throttle valve and the motor, said second electromagnetic clutch being in disengagement when no power is supplied, said second electromagnetic clutch being in engagement when power is supplied; and

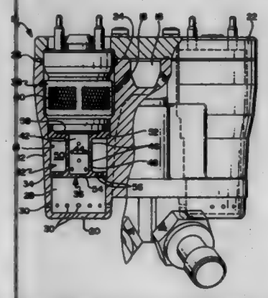
means for returning said first and second clutch plates of said first electromagnetic clutch to a predetermined relative rotation angle position when said first electromagnetic clutch is returned to engagement from disengagement by cutoff of power supply of said first and second electromagnetic clutches.

5,293,856

FUEL INJECTION

Roman J. Press, Rochester, and Kenneth P. Cianfichi, Walworth, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1993, Ser. No. 25,049
Int. Cl.[5] F02B *43/00;* **F02M** *21/04, 61/00*
U.S. Cl. 123—472 **1 Claim**



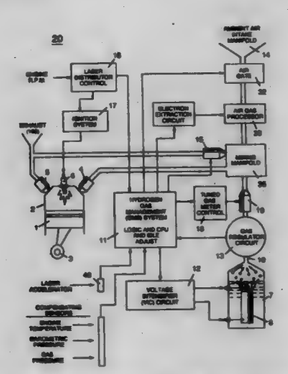
1. A gaseous fuel injection system comprising a fuel metering body having a tubular injector chamber with a stepped inner wall, a first, closed end and a second, open end, and in communication with a fuel supply through a fuel inlet, said injection system further comprising a fuel expansion chamber located within and adjacent to said closed end of said tubular injector chamber and having a plurality of openings extending to the exterior of said fuel metering body, silencing means located within said tubular injector chamber and having a first end adjacent to said expansion chamber, and a fuel injector enclosed within said tubular injector chamber by a cover, said injector located adjacent to a second end of said silencing means and operable to meter fuel into said silencing means, said silencing means comprising a hollow cylindrical central core having a fuel inlet communicating with the outlet end of said injector and openings therein for passage of fuel to an outer annular region-surrounding said core, said annular region having upper and lower walls, said upper wall operable to support said fuel injector within said tubular injector chamber and said lower wall having passages from said annular region surrounding said central core to said expansion chamber, wherein said central core, said annular region and said expansion chamber are in fluid communication and are operable to expand compressed gaseous fuel discharged from said injector and to limit acoustic noise created by the expansion prior to release of fuel from said expansion chamber through said plurality of openings.

5,293,857

HYDROGEN GAS FUEL AND MANAGEMENT SYSTEM FOR AN INTERNAL COMBUSTION ENGINE UTILIZING HYDROGEN GAS FUEL

Stanley Meyer, 3792 Broadway, Grove City, Ohio 43123

PCT No. PCT/US90/06513, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992
PCT Filed Nov. 2, 1990, Ser. No. 863,281
Int. Cl.[5] F02M *25/07, 21/02, 27/00*
U.S. Cl. 123—571 **7 Claims**



1. A management system for a fuel gas mixture containing hydrogen that is introduced as a fuel to an internal combustion engine consisting of:

means for monitoring the composition of a fuel gas mixture introduced into the engine such that the proportion of hydrogen to oxygen in the mixture is approximately 2:1; and

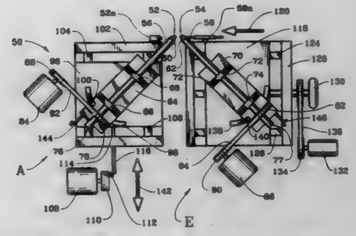
means for modulating the density of the hydrogen component of the introduced fuel gas mixture by the addition of other non-combustible gases to the mixture such that the burn rate of the fuel gas mixture approximates that of a fossil fuel.

5,293,858

APPARATUS AND METHOD FOR CONE SHAPING THE CROWN AND PAVILION OF GEMSTONES

Nizam U. Peters, 5718 NE. 17th Ave., Ft. Lauderdale, Fla. 33334

Filed Mar. 30, 1992, Ser. No. 860,036
Int. Cl.[5] B28D *5/00*
U.S. Cl. 125—30.01 **1 Claim**



1. An apparatus for shaping first and second diamonds, each having a girdle, comprising:

a first pair of fixed elongated guide tracks disposed in parallel relation to one another in a horizontal plane;

a plane base plate operatively associated with said first guide tracks having two side edges and two ends, the ends of said first base plate slidable between a first and a second position along said first guide tracks;

means for oscillating said first base plate between said first-pair of guide tracks;

at least one first elongated rotatable clamping device coupled to said first base plate, said first clamping device arcuately rotatable along a first arcuate guide track;

first means for locking said first clamping device about a first arcuate guide track for locking said first clamping device in a predetermined position;

at least one means for grasping the girdle of a first rough diamond operatively associated with said first clamping device;

a second pair of fixed elongated guide tracks disposed in parallel relation to one another in a horizontal plane perpendicular to said first pair of tracks;

a second base plate operatively associated with said second guide tracks having two side edges and two ends, the ends of said second base plate slidable between a first and a second position along said second guide tracks;

means for micro-adjustment of said second base plate between the first and second position of said second guide tracks;

at least one second elongated rotatable clamping device coupled to said second base plate, said second clamping device arcuately rotatable along a second arcuate guide track;

second means for locking said second clamping device about said second arcuate guide track for locking said second clamping device in a predetermined position; and

at least one second means for grasping the girdle of a second rough diamond operatively associated with said second clamping device; whereby said first and second diamonds are rotatably contacted together for purposes of simultaneous cone formation.

5,293,859

GRILL WITH FUEL MODULES

Mikhail Lisker, 201 W. End Ave., Brooklyn, N.Y. 11235

Filed Feb. 10, 1992, Ser. No. 833,295
Int. Cl.[5] A47J *37/07*
U.S. Cl. 126—26 **14 Claims**

1. A grill adapted to be used with a plurality of fuel modules each comprising a disposable non-flammable tray having a heat source disposed therein and having a lip extending outwardly

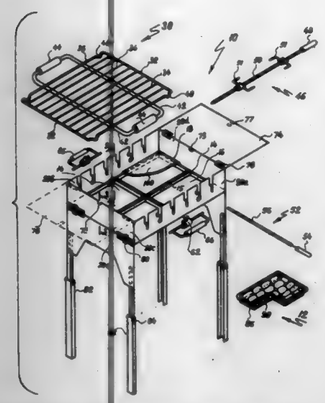
VOL 1160 ISS 3 MR 15 1994 UMI

from said tray about the periphery thereof, said grill comprising:

a housing having a top, bottom and a pair of opposing sides;

means adjacent the top of the housing for supporting an article of food above the bottom of the housing;

support means adjacent the bottom of the housing, said support means comprising a lattice structure defining a plurality of openings extending through the bottom of the



housing with each opening being bounded by a rim extending around the periphery thereof;

said openings of said lattice structure each being adapted to receive one of said fuel modules therein with the lip of each fuel module resting directly on the rim of a respective opening;

whereby any number of said fuel modules may be ignited to selectively apply heat to various portions of the food supporting means.

5,293,860

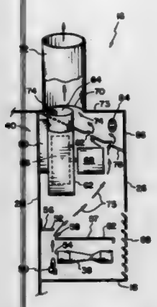
STANDING PILOT FURNACE WITH VENTED VESTIBULE

Ronald S. Tomlinson, Mount Juliet, and Steven W. McKinney, Manchester, both of Tenn., assignors to Inter-City Products Corporation (USA), Lavergne, Tenn.

Filed Sep. 4, 1992, Ser. No. 940,692

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R **26 Claims**



1. An induced draft, fuel-fired furnace having a heat exchanger with an inlet and an outlet, said furnace comprising:

a vent having an inlet;

a burner;

a vented vestibule in fluid communication with said vent;

a blower having an inlet in fluid communication with the heat exchanger outlet, and an outlet disposed at the inlet of said vent, said blower outlet having a cross-sectional area smaller than said vent inlet, said vent inlet and blower outlet defining a vent inlet opening; and

a standing pilot disposed in said furnace such that combustion products produced thereby are in fluid communication with said vent inlet opening, said standing pilot adapted to ignite fuel operably discharged from said burner.

5,293,861

DIRECT CONTACT WATER HEATER WITH HYBRID HEAT SOURCE

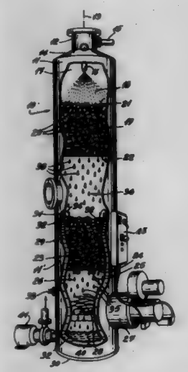
Luc Mandeville, Terrebonne, and Michel Dallaire, St-Bruno-De-Mon, both of Canada, assignors to Sofame Inc. and Gaz Metropolitain, both of Montreal, Canada

Filed Mar. 17, 1993, Ser. No. 32,279

Claims priority, application Canada, Jan. 25, 1993, 2088018

Int. Cl.[5] F24H *1/10*

U.S. Cl. 126—395 **15 Claims**



1. A direct contact water heater having a hybrid heat source, said water heater comprising an elongated vertical tubular housing having a water spray nozzle in an upper end thereof for spraying water downwardly on a top packing of heat exchange bodies held in a region of said housing by support means, an exhaust gas flue communicating with said upper end, an intermediate space in said housing below said top packing, a hot recovery gas inlet in a wall of said housing and communicating with said intermediate space to admit a flow of secondary heat in said housing, a burner chamber below said hot gas inlet, a burner connected to said burner chamber for generating a flame in said burner chamber to form a primary heat source and together with said secondary heat constituting said hybrid heat source, said water sprayed on said top packing being firstly heated by hot gases from said hybrid heat source rising from said top packing and then being further heated by said heat exchange bodies where water propagates and falls in droplets by gravity from a lower surface of said top packing and further heated by contact with said rising heat below said top packing and said flame in said burner chamber, said heated water accumulating in a lower reservoir where it is transferred by a pump circuit connected thereto.

5,293,862

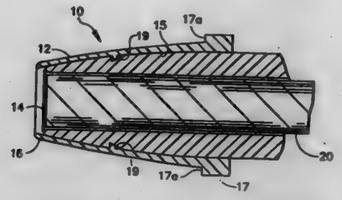
DISPOSABLE SPECULUM WITH BONDING RING

Gary J. O'Hara, Escondido, Calif.; David B. Phillips, Westford, Vt., and Kishan G. Hingorani, Irvine, Calif., assignors to Sherwood IMS, Inc., Carlsbad, Calif.

Division of Ser. No. 668,949, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 45,603, Apr. 30, 1987, Pat. No. 5,179,936, which is a continuation-in-part of Ser. No. 731,795, May 8, 1985, Pat. No. 4,662,360, which is a continuation-in-part of Ser. No. 663,769, Oct. 23, 1984, Pat. No. 4,602,642. This application Apr. 13, 1992, Ser. No. 867,874

Int. Cl.[5] A61B *1/22*; G01K *1/08*

U.S. Cl. 128—9 **14 Claims**



1. A speculum for a tympanic thermometer that rapidly senses infrared radiation in an external ear canal of a patient via a sensing probe, comprising:

a substantially rigid body portion configured and dimensioned for having the probe inserted therein in a longitudinal direction;

a thin film membrane connected to and extending across a forward end of the body portion;

the membrane being made of a material selected from the group consisting of polyethylene and polypropylene and;

means for establishing a predetermined longitudinal relationship between the body portion and the probe such that the film membrane is adapted to be stretched over a forward end of the probe.

5,293,863

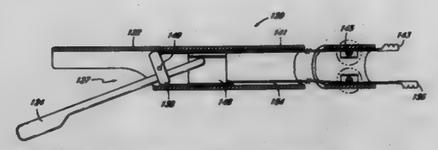
BLADED ENDOSCOPIC RETRACTOR

Yong H. Zhu, Loma Linda, and Wolff M. Kirsch, Redlands, both of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Filed May 8, 1992, Ser. No. 880,757

Int. Cl.[5] A61B *17/02*

U.S. Cl. 128—20 **30 Claims**



30. An endoscopic retractor, comprising:

a body having a distal end and a proximal end, said distal end being undercut and defining a terminal plane for said body;

at least one retracting member having distal and proximal ends, said proximal end mounted on said distal end of said body, and said distal end extending beyond the terminal plane of said body;

an actuator connected to said retracting member such that manipulation of said actuator causes said retracting member to assume a wide variety of angular positions with respect to the longitudinal axis of said body and achieve retraction in a wide variety of directions.

5,293,864

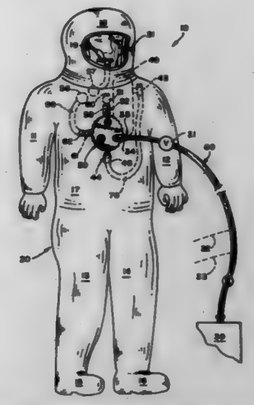
EMERGENCY BREATHING APPARATUS

James E. McFadden, Germantown, Md., assignor to GEOMET Technologies, Inc., Germantown, Md.

Filed Aug. 1, 1991, Ser. No. 739,066

Int. Cl.[5] A62B *17/00*

U.S. Cl. 128—201.29 **30 Claims**



1. A breathing apparatus comprising first and second sources of air; a protective suit having an interior, an inhalation port and valve means for controlling the flow of air relative to said first and second air sources, said protective suit and said inhalation port; first, second, third and fourth conduit means each connected to said valve means and respectively to said first air source, said second air source, said protective suit interior and said inhalation port; said valve means being constructed and arranged to conduct air from said first air source to said protective suit interior and said inhalation port while preventing air flow from said second air source in a first mode of operation; and said valve means being constructed and arranged to conduct air from said second air source to said inhalation port while preventing air flow into said protective suit interior and from said first air source beyond said valve means in a second mode of operation.

5,293,865

CODING FOR AN ANESTHETICS DEVICE

Ulrich Altner, Bad Segeberg; Claus-Dieter Brandt; Wilfried Buschke, Lubeck; Wolfgang Falb, Klein Wesenberg; Gotz Kullik, and Carl F. Wallroth, both of Lubeck, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 330,115, Mar. 29, 1989, abandoned. This application Sep. 28, 1990, Ser. No. 590,212

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1988, 3813520

Int. Cl.[5] A61M *15/00, 16/10*; F23D *11/00, 14/00*

U.S. Cl. 128—203.12 **11 Claims**

9. An anesthetic control device compriaing:

a container for anesthetic having a code identifying a predetermined type of anesthetic contained in said container;

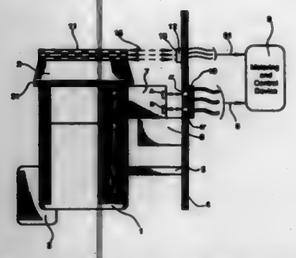
setting means connected to said container for setting and displaying a predetermined concentration ratio;

a support for supporting said container;

scanning means on said support for reading said code on said

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container and for reading said predetermined concentration ratio displayed on said setting means; and



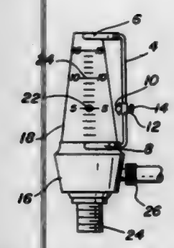
a metering and control device on said support, and receiving from said scanning means said anesthetic type and said predetermined concentration ratio.

5,293,866

OXYGEN FLOW METER INDICATOR

Joseph Padula, Bradley Beach, N.J., assignor to David Ellis, Toms River, N.J.

Filed May 12, 1992, Ser. No. 881,596
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.18 11 Claims



1. The combination of an oxygen flow meter and a flow rate indicating device, said flow rate indicating device providing a visual indication of a desired rate of flow of oxygen through said flow meter to a patient, said flow meter having a container with a float therein and being provided with oxygen under pressure from an external source, whereupon said float assumes a position within said container indicative of the rate of flow of oxygen through said container, said flow rate indicating device comprising:

(a) an elongated rod having an outer surface and a pair of ends and means secured thereto, said clamp means further including a pair of annular band clamps secured adjacent the respective ends of said elongated rod releasably securing said elongated rod to said flow meter along a portion of said container in which said float is located;

(b) an indicator means slidably mounted on said elongated rod for location at any position therealong so that said indicator means can be aligned with said float irrespective of the position of said float within said container; and

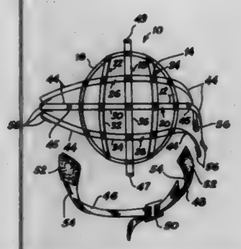
(c) means on said indicator means for engaging a portion of said outer surface of said elongated rod for selectably retaining said indicator means at any position along said elongated rod, said position corresponding to said desired rate of flow of oxygen.

5,293,867

METHOD AND APPARATUS FOR MARKING ELECTRODE LOCATIONS FOR ELECTROENCEPHALOGRAPHIC PROCEDURE

Kalarickal J. Oommen, 5459 E. Calle Bosque, Tucson, Ariz. 85718

Filed Sep. 24, 1992, Ser. No. 950,271
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—639 19 Claims



1. A templet cap for marking electrode positions on a scalp of a patient according to International 10/20 System specifications in preparation for an electroencephalographic procedure, comprising:

(a) a templet consisting of multiple segments of elastic straps joined to form a lattice wherein each point of intersection between pairs of segments corresponds to an electrode-positioning point according to International 10/20 System specifications;

(b) a grommet containing eyelet means for determining a position for marking the electrode positions, said grommet joining said each point of intersection between pairs of segments, whereby said straps are attached to one another; and

(c) two earpiece straps attached to said cap, each strap containing a tragus marker located according to said International 10/20 System specifications.

5,293,868

CARDIAC ABLATION CATHETER HAVING RESISTIVE MAPPING ELECTRODES

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Filed Jun. 30, 1992, Ser. No. 906,819
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 8 Claims



1. A catheter device for deployment within or adjacent to an internal organ, comprising:

a thin, elongate, flexible member having distal and proximal ends;

an energy delivering ablation electrode positioned on the member;

an electrical conductor for communicating ablating energy from a generator source to the energy delivering ablation electrode;

at least one sensing electrode disposed on the member;

an electrical conductor communicating with each sensing electrode; and

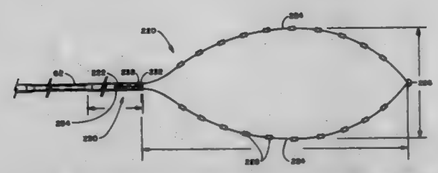
resistor means for reducing the density of electrical current exiting each sensing electrode upon delivery of ablating energy through the ablation electrode to adjacent tissue, the resistor means being disposed adjacent to each sensing electrode at a terminal end of the electrical conductor associated with each sensing electrode.

5,293,869

CARDIAC PROBE WITH DYNAMIC SUPPORT FOR MAINTAINING CONSTANT SURFACE CONTACT DURING HEART SYSTOLE AND DIASTOLE

Stuart D. Edwards, Los Altos, and Jerome Jackson, Sunnyvale, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Sep. 25, 1992, Ser. No. 951,160
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—642 9 Claims



1. An end assembly attachable to a catheter tube distal end comprising

an array of resilient electrode supports movable from a normal radially expanded position to a radially compressed position in response to an external compression force, and

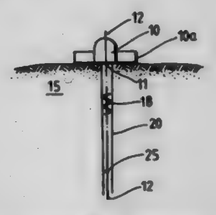
means for supporting the electrode supports at the distal end of the catheter tube including mounting means connected to the electrode supports and movable in a first direction in response to movement of the array from its expanded position toward its compressed position and movable in a second direction in response to movement of the array from its compressed position toward its expanded position, and biasing means for urging movement of the mounting means in its second direction and for opposing movement of the mounting means in its first direction.

5,293,870

METHOD AND APPARATUS FOR ELASTOGRAPHIC MEASUREMENT AND IMAGING

Jonathan Ophir; Ignacio Cespedes, and Hari Ponnekanti, all of Houston, Tex., assignors to Board of Regents The University of Texas System, Austin, Tex.

Division of Ser. No. 699,391, May 10, 1991, Pat. No. 5,178,147, which is a continuation-in-part of Ser. No. 535,312, Jun. 8, 1990, Pat. No. 5,107,837, which is a continuation-in-part of Ser. No. 438,695, Nov. 17, 1989, Pat. No. 5,143,070. This application Sep. 3, 1992, Ser. No. 940,182
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 12 Claims



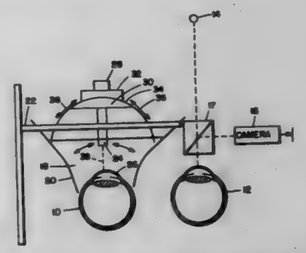
1. A method of correcting an elastogram of an elastically compressible target body wherein the elastogram comprises an array of records derived from a corresponding array of ultrasonic echo sequences received from a corresponding array of sonic travel paths and wherein at least at first one of the sequences traveled along its sonic path within the target body with substantially different travel times than other echo sequences in the array of echo sequences, and the stress within the target body along said travel path also varied substantially, which comprises: compensating the record of each said first sequence for the differences in its travel times; and compensating the record of each said first sequence for such stress variations, to form a corrected elastogram.

5,293,871

SYSTEM FOR ULTRASONICALLY DETERMINING CORNEAL LAYER THICKNESSES AND SHAPE

Dan Z. Reinstein, New York; Ronald H. Silverman, Brooklyn, both of N.Y.; Donald J. Coleman, Haworth, and Frederic L. Lizzi, Tenafly, both of N.J., assignors to Cornell Research Foundation Inc., Ithica and Riverside Research Institute, New York, both of N.Y.

Continuation-in-part of Ser. No. 59,083, May 5, 1993. This application Jul. 9, 1993, Ser. No. 89,781
Int. Cl.[5] A61B *8/10*
U.S. Cl. 128—660.06 9 Claims



1. Ultrasonic apparatus for enabling determination of layer contours and thicknesses of a multilayer organic body, said ultrasonic apparatus comprising:

transmitter/receiver means for obtaining a plurality of radio frequency signal traces, each radio frequency signal trace derived from echoes over a plurality of points on said organic body;

means for removing from each radio frequency signal trace, ultrasonic apparatus-generated artifacts to create a deconvolved signal trace;

filter means for modifying each said deconvolved signal trace to create an analytic signal trace that exhibits a magnitude related to an instantaneous rate of arrival of total echo energy received by said transmitter/receiver means; and

magnitude detection means for cross-correlating adjacent radio frequency analytic signal traces and shifting said radio frequency analytic signal traces to bring them into temporal alignment,

whereby energy peaks of said analytic signal traces are enhanced so as to enable accurate determination of echo producing surfaces of each layer of said multi-layer organic body, across said plurality points.

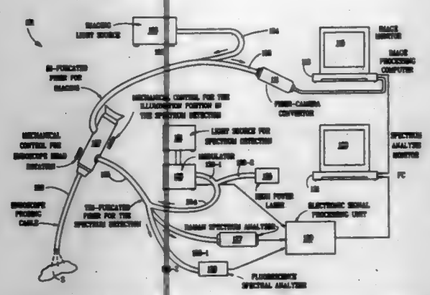
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,872

METHOD FOR DISTINGUISHING BETWEEN CALCIFIED ATHEROSCLEROTIC TISSUE AND FIBROUS ATHEROSCLEROTIC TISSUE OR NORMAL CARDIOVASCULAR TISSUE USING RAMAN SPECTROSCOPY

Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463, and Cheng H. Liu, 140-25 Ash Ave., Apt. 3A, Flushing, N.Y. 11355

Filed Apr. 3, 1991, Ser. No. 678,637
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—664 22 Claims



1. A method for distinguishing between calcified atherosclerotic tissue and fibrous atherosclerotic tissue or normal cardiovascular tissue comprising the steps of:

a) irradiating a cardiovascular tissue sample with a beam of monochromatic infrared light;

b) obtaining the infrared Raman spectrum for the cardiovascular tissue sample in the Raman spectral region from 700 to 1900 cm^{-1}; and

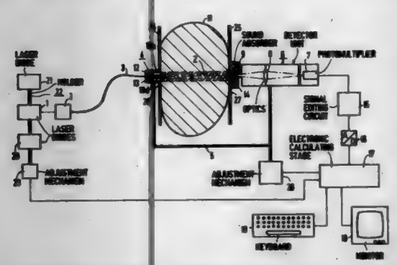
c) comparing the infrared Raman spectrum so obtained for the tissue sample with infrared Raman spectra correspondingly obtained from known samples of calcified atherosclerotic tissue and from either fibrous atherosclertoic tissue or normal cardiovascular tissue for the same type of tissue being tested.

5,293,873

MEASURING ARRANGEMENT FOR TISSUE-OPTICAL EXAMINATION OF A SUBJECT WITH VISIBLE, NIR OR IR LIGHT

Ming Fang, Plainsboro, N.J., assignor to Siemens Aktiengesellschaft, Munich

Filed Aug. 26, 1992, Ser. No. 935,281
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4128744
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—664 47 Claims



1. An arrangement for optically analyzing tissue comprising:

light source means for directing light, selected from the group consisting of visible light, infrared light and near-infrared light, along an optical axis at a tissuecontaining subject,

detector means for detecting light from said light source means emerging from said subject and for generating electrical signals corresponding thereto;

ultrasound source means for directing ultrasound at said subject along an acoustic axis, said ultrasound interacting with some of said tissue in said subject so that said subject has tissue charged with ultrasound and tissue not charged with ultrasound;

said light source means and said ultrasound source means being disposed so that said optical axis and said acoustic axis are substantially parallel in said subject; and

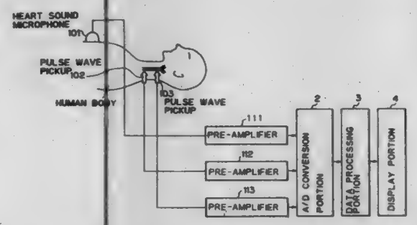
evaluation means supplied with said signals from said detector means for separately calculating each of the intensity of light emerging from said subject which has passed through said tissue charged with ultrasound and the intensity of light emerging from said subject which has passed through said tissue not charged with ultrasound.

5,293,874

MEASUREMENT OF TRANSMISSION VELOCITY OF PULSE WAVE

Masaaki Takahashi; Masatoshi Nishimura, and Nobuaki Nakatsubo, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 829,451
Claims priority, application Japan, Jan. 31, 1991, 3-031889
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—687 9 Claims



1. An apparatus for measuring a transmission velocity of a pulse wave comprising:

sensor means for sensing heart sounds, and pulse wave signals at upstream and downstream sides of a blood flow;

analog to digital conversion means, coupled to said sensor means, for converting signals from said sensor means from analog to digital form;

data processing means, coupled to said analog to digital conversion means, for processing data received from said analog to digital conversion means; and

display means, coupled to said data processing means, for displaying waveforms and numerical data received from said data processing means,

wherein said data processing means comprises:

first processor means, coupled to said analog to digital conversion means, for detecting a first heart sound and generating a marker signal;

second and third processor means, coupled to said analog to digital conversion means, for transforming digital signals received from said analog to digital conversion means into data for display;

fourth processor means, coupled to the first, second, and third processor means, for detecting the marker signal from the first processor means and obtaining predetermined data from the data received from said second and third processor means;

fifth processor means, coupled to the second and third processor means, for temporarily storing data received from said second and third processor means;

sixth processor means, coupled to said fourth processor means, for determining a transmission time of a pulse wave to derive a transmission velocity of the pulse wave; and

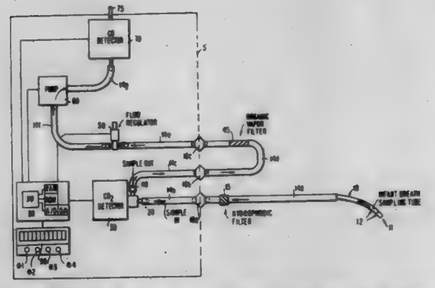
seventh processor means, coupled to said sixth processor means, for transforming signals from the sixth processor means for display.

5,293,875

IN-VIVO MEASUREMENT OF END-TIDAL CARBON MONOXIDE CONCENTRATION APPARATUS AND METHODS

Robert T. Stone, Sunnyvale, Calif., assignor to Natus Medical Incorporated, San Carlos, Calif.

Filed Jun. 16, 1992, Ser. No. 899,261
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—719 50 Claims



1. Apparatus for monitoring a patient's end-tidal gas flow during breathing comprising:

a first gas detector for monitoring the concentration of a first selected gas in a gas sample and having an output corresponding to the monitored first selected gas concentration;

a first means for monitoring a parameter corresponding to the patient's breathing and determining the ratio of said parameter corresponding to the patient's end-tidal breath portion to said parameter corresponding to inspired air as a duty cycle and having an output corresponding to the determined duty cycle;

first means for providing a sample of room air to the first gas detector for measuring a background concentration of the first gas;

second means for providing a sample of the patient's breath to the first gas detector for measuring a breath sample concentration of the first gas in the patient's breath; and

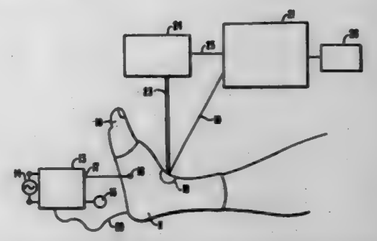
first means for receiving the output of the first gas detector and the first monitoring means for determining a end-tidal concentration of the first gas in response to the determined duty cycle, the determined background concentration of the first gas in room air, and the determined breath sample concentration of the first gas in the patient's breath.

5,293,876

METHOD AND APPARATUS FOR THE DIAGNOSIS OF POLYNEUROPATHY SYNDROMES

Peter Koltringer, Lortzingasse 20, Graz, Austria

Continuation of Ser. No. 445,724, Dec. 1, 1989, Pat. No. 5,191,895. This application Oct. 23, 1991, Ser. No. 781,786
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—736 13 Claims



1. A method of determining nerve damage (polyneuropathy) in a patient comprising the steps of:

(a) with a heating device increasing the temperature of a skin portion on an extremity of the patient from a first temperature to above a second temperature;

(b) monitoring the temperature of said skin portion;

(c) taking a first time measurement when said second temperature is reached;

(d) monitoring perfusion in the extremity at said skin portion while the temperature of said skin portion rises from the second temperature until a predetermined increase in perfusion is noted;

(e) taking a second time measurement when said predetermined increase in perfusion is noted;

(f) subtracting said first time measurement from said second time measurement to obtain a perfusion delay time; and

(g) comparing this perfusion delay time with a previously established reference perfusion delay time;

whereby a difference between the measured perfusion delay time in the patient and the previously established reference perfusion delay time is a measure of the presence and the extent of nerve damage in the patient.

5,293,877

BODY TEMPERATURE THERMOMETER AND METHOD FO MEASURING HUMAN BODY TEMPERATURE UTILIZING CALIBRATION MAPPING

Gary J. O'Hara, Escondido; John J. Korff, Oceanside, and Peter A. Crill, Leucadia, all of Calif., assignors to Sherwood IMS, Inc., Carlsbad, Calif.

PCT No. PCT/US91/09404, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992
PCT Filed Dec. 11, 1991, Ser. No. 842,129
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 26 Claims

1. A body temperature thermometer, comprising:

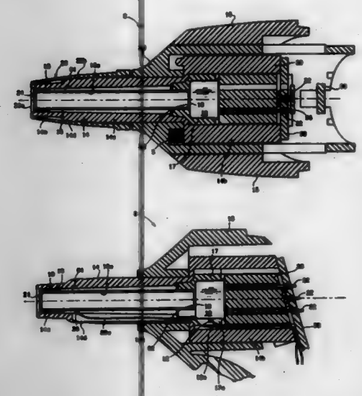
first sensor means for generating a first output signal representative of an amount of infrared radiation impinging thereon from a biological surface tissue of a patient;

second sensor means for generating a second output signal representative of a temperature of the first sensor means;

processor means connected to the sensor means for processing the output signals to determine a body temperature of

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the patient utilizing a calibration mapping of a plurality of target temperatures to corresponding output signals; and



means connected to the processing means for providing a user with an indication of the determined body temperature.

5,293,878

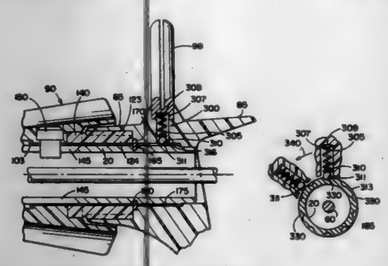
ENDOSCOPIC SURGICAL INSTRUMENTS HAVING STEPPED ROTATABLE END EFFECTORS

Thomas O. Bales, Coral Gables; Gregory J. Murphy, Sunrise; Frank A. Scarfone, Boca Raton; Charles R. Slater, Fort Lauderdale, and Kevin W. Smith, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 833,842, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 680,392, Apr. 4, 1991, Pat. No. 5,192,298, and a continuation-in-part of Ser. No. 780,014, Oct. 21, 1991, Pat. No. 5,171,258. This application Dec. 4, 1992, Ser. No. 989,984

Int. Cl.[5] A61B *17/00*

U.S. Cl. 128—751 **19 Claims**



1. A medical instrument, comprising:

a) a hollow outer tube having a proximal end, a distal end, and a longitudinal axis, said outer tube having an outer surface having a plurality of substantially identical peripherally radially spaced apart surface irregularities in a first proximally located portion of said outer tube;

b) a push rod extending through said outer tube and having proximal and distal ends;

c) an actuating means for imparting reciprocal axial motion to said push rod relative to said outer tube, said actuating means comprising grip means rotatably engaging said outer tube, and a lever means movably engaging said grip means and coupled to and rotatable about said proximal end of said push rod;

d) end effector means coupled to said push rod at said distal end of said push rod and pivotally coupled to said outer tube, whereby said reciprocal axial motion of said push rod is translated to pivotal movement of said end effector means; and

e) a fixing means having a compressed resilient member and a contact member for fixing said actuating means relative to said outer tube in any of a plurality of rotational settings, said resilient member having a first end fixedly coupled to said grip means and having a second end connected to said contact member, and said contact member being in contact with said outer tube, wherein said contact member is shaped to mate with said surface irregularities of said surface of said outer tube in a plurality of first positions to hold said actuating means rotationally fixed relative to said outer tube, and wherein application of substantial relative rotational force to said actuating means relative to said outer tube causes said resilient member to further compress such that said actuating means rotates relative to said outer tube with said contact member in a plurality of second positions, and wherein said fixing means is an electrode having a first electrically conductive portion extending from said resilient member through said grip means, said resilient member and said contact member being electrically conductive.

5,293,879

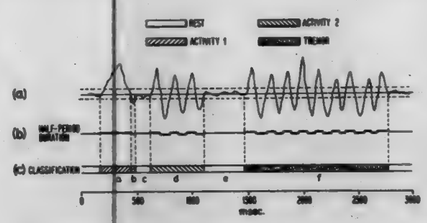
SYSTEM AN METHOD FOR DETECTING TREMORS SUCH AS THOSE WHICH RESULT FROM PARKINSON'S DISEASE

B. F. M. Vonk, Wehl, and Eugenio Johannes W. Van Someren, Amsterdam, both of Netherlands, assignors to Vitatron Medical, B.V., Netherlands

Filed Sep. 23, 1991, Ser. No. 763,621

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—782 **20 Claims**



1. A system for monitoring tremors in the limb of a patient, comprising

means for detecting limb movements and for generating signals representative of said limb movements,

analyzing means for analyzing said signals to determine signal periods,

storage means for storing signal period criteria, said criteria comprising data representing a range of signal periods within about 40–170 ms and characteristic of tremors, and a number greater than zero corresponding to a minimum number of consecutive signals with periods in said range which repeat uninterruptedly without intervening periods, and

determining means for determining when said signal periods of said signals are within said range and for determining when said signals with periods within said range repeat at least said minimum number of times without interruption, whereby tremor occurrences are detected.

5,293,880

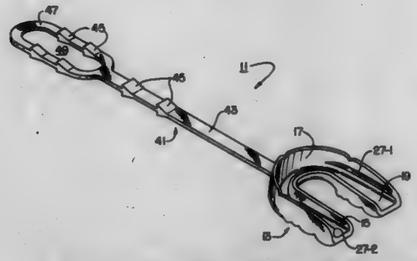
ATHLETIC MOUTHGUARD

Steven J. Levitt, 50 Brainard Rd., Ste. 213, Allston, Mass. 02134

Filed Oct. 2, 1991, Ser. No. 770,190

Int. Cl.[5] A61C *5/14*

U.S. Cl. 128—861 **6 Claims**



1. An athletic mouthguard comprising a unitary structure including a mouthpiece and a strap, said mouthpiece having an inner peripheral wall, an outer peripheral wall and a connecting wall, said inner peripheral wall, said outer peripheral wall, and said connecting wall together defining a channel, said channel being sized and shaped to surround the entire upper set of teeth of a wearer, the posterior portion of said connecting wall being thicker than the anterior portion thereof and having an outer surface shaped to define a series of convex sections disposed longitudinally along said posterior portion, each convex section being sized, shaped, and located to mate with a corresponding tooth on the lower jaw of the wearer, each convex section having at least one hole extending partially upward from said outer surface of said connecting wall, the number and positioning of said at least one hole in each said convex sections corresponding to the number and positioning of cusp tips formed on the tooth of the lower jaw adapted for contact therewith so that, when said unitary mouthpiece is worn on the upper set of teeth of a wearer, an upwardly directed blow will be delivered more to the posterior teeth than to the anterior teeth said strap including an elongated stem having a top surface and a bottom surface and terminating in a loop defining an elongated opening, said loop being sized and shaped to permit insertion of said mouthpiece therethrough so that said strap my be looped around and secure to the crossbar of a helmet, said elongated stem having a plurality of raised stops formed on said top and bottom surfaces of said stem, said raised stops being generally right-rectangular in shape and formed on said stem so that their respective hypotenuse face towards each other.

5,293,881

REDUCED MASS ABSORBABLE SURGICAL FASTENER AND RETAINER

David T. Green, Westport; Henry Bolanos, East Norwalk, and Robert J. Geiste, Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 684,677, Apr. 11, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 931,071

Int. Cl.[5] A61B *17/00*

U.S. Cl. 128—898 **10 Claims**

1. A method of repairing a wound achieving hemostasis while maintaining an amount of foreign material at the wound site to within a predetermined reduced range comprising:

A) providing a fastener member comprising:

a) a backspan defining a transverse axis; and

b) at least two substantially parallel prongs extending substantially perpendicularly from said backspan;

B) providing a retainer member having:

a) a base; and

at least two columnar members, each columnar member having an aperture adapted to receive a respective one of the fastener prongs; and

said fastener member and retainer member having a total mass of less than about 4 mg per 5.7 transverse millimeters of fastened tissue edge;

C) engaging said fastener member and said receive member with tissue to achieve hemostasis.

5,293,882

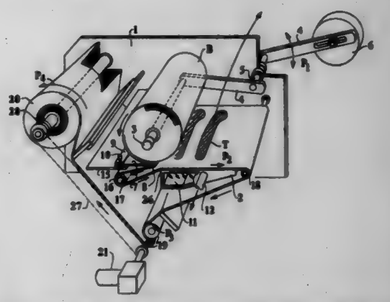
DEVICE FOR UNWINDING A BOBBIN

Johannes Verhappen, Veldhoven, Netherlands, assignor to P.M.B. Patent Machinebouw B.V., Eindhoven, Netherlands

Filed Dec. 28, 1992, Ser. No. 996,824

Int. Cl.[5] A24C *1/00*

U.S. Cl. 131—105 **11 Claims**



1. In a device for disengaging sheets of leaf material from a belt-shaped carrier, said device having

a frame having a winding-off reel and a winding-up reel operatively associated therewith,

a table with co-acting means, connected to said frame, for disengaging said sheets from said carrier, said disengaging means having

said winding-off reel supporting a coil of said carrier having said sheets held between windings of said coil,

said winding-up reel supporting an empty portion of said carrier from which said sheets have been disengaged, and

guide rollers situated such that said carrier is guided while stretched over said table, the improvement comprising:

a straight guide edge situated a short distance, relative to a length of said guide edge, from a front edge of said table so as to define a gap between said guide edge and said front edge;

means for holding said winding-off reel with a rotational axis thereof parallel to said guide edge;

one of said guide rollers being arranged on an opposite side of said guide edge from said winding-off reel, and

said guide edge being part of a plate attached to said frame by means for providing that said edge is movable toward and away from said coil.

5,293,883

NON-COMBUSTIBLE ANTI-SMOKING DEVICE WITH NICOTINE IMPREGNATED MOUTHPIECE

Patrica T. Edwards, P.O. Box 61194, San Angelo, Tex. 76906

Filed May 4, 1992, Ser. No. 877,971

Int. Cl.[5] A24F *47/00*; A63D *3/00*

U.S. Cl. 131—270 **15 Claims**

1. A smoking device comprising:

an elongated outer tube;

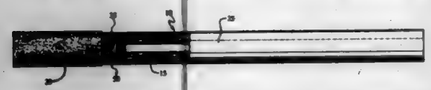
an internal passageway;

at least two chambers disposed within the outer tube;

the chambers communicating with the internal passageway;

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a filter located at one end of the outer tube;
one of said chambers containing pre-burned tobacco and



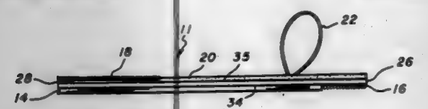
located towards the opposite end of the smoking device from the filter; and
means for delivering nicotine to a user.

5,293,884

LOOP STRAP HAIR TIE

R. David Chapman, Salt Lake City, Utah; David K. Hays, Bellevue, Wash.; Barry Levenson, Sherman Oaks, and Scott A. Miller, LaVerne, both of Calif., assignors to Full Moon Fashion Accessories, Inc., Boulder, Colo.

Filed Jan. 8, 1992, Ser. No. 818,691
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—200 **36 Claims**



1. A hair tie comprising:
a. a generally planar, elongated element having an inside face and an outside face;
b. an elastic loop secured to the inside face of the elongated element *for threading a lock of hair therethrough;*
c. a first fastening tape secured to the outside face of the elongated element;
d. a second fastening tape, made of material adapted to mate with the first fastening tape, secured to the inside face of the elongated element;
e. a stiffening element secured to the second fastening tape and sandwiched between the second fastening tape and the inside face of the elongated element;
the generally planar, elongated element being sufficiently flexible that the hair tie has a first position wherein the elongated element is extended and the second fastening tape is disengaged from the first fastening tape, and a second position wherein the hair tie encircles *the* lock of hair *held in place by said elastic loop* and the second fastening tape is detachably engaged at any of various selectable locations on the first fastening tape, therein retaining the encircled lock of hair.

5,293,885

HAIR RELAXER AND POST-RELAXER HAIR BRIGHTENER SYSTEM

Adu G. Darkwa, Chicago, and Apolonio Villanueva, III, Northbrook, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Filed Jul. 11, 1991, Ser. No. 728,572
Int. Cl.[5] A61K *7/06, 7/08*
U.S. Cl. 132—209 **42 Claims**

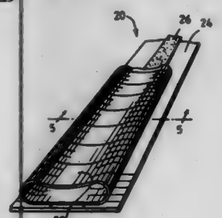
1. A method for the alkali-type relaxing of naturally curly hair and the post-relaxing brightening of said resulting alkali-relaxed hair whose tone is in need of brightening, the method comprising the steps of sequentially:
a) applying to said curly hair a highly-alkaline hair relaxer composition having a pH above about 12 and containing an effective hair-relaxing amount of strong base;
b) smoothing said applied composition physically through said hair periodically to facilitate relaxing and leaving said so-applied composition in contact with said hair until at least some of the natural curl in said hair is relaxed wherein said contact further visibly alters the tone of said hair, thereby to provide alkali-relaxed hair;
c) removing substantially all of said so-applied composition from said alkali-relaxed hair by rinsing said hair at least once with water;
d) applying to and distributing through said so-rinsed hair an effective amount of a non-alkaline, base-neutralizing composition to substantially neutralize and complete the removal of substantially all residual alkalinity therefrom in at least one application, and terminally rinsing the resulting hair at least once with water, thereby to provide substantially neutral alkali-relaxed hair whose tone is in need of brightening;
e) contacting said neutral alkali-relaxed hair with an aqueous post-relaxer, hair brightener composition comprising water having dissolved therein an effective amount of at least one active hair brightening agent and having a physiologically acceptable pH, and leaving said hair brightener in said hair contact for a time period at least sufficient to visibly brighten the tone of said neutral alkali-relaxed hair; and
f) removing said hair brightener composition from the so-brightened hair by rinsing said hair with water, thereby to provide alkali-relaxed and brightened hair,
whereby the tone of said alkali-relaxed and brightened hair is substantially enhanced or restored.

5,293,886

DENTAL STRIP

Henry Czapor, 11501 W. Pleasant Valley, Parma, Ohio 44130

Filed Feb. 18, 1993, Ser. No. 19,451
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—329 **10 Claims**



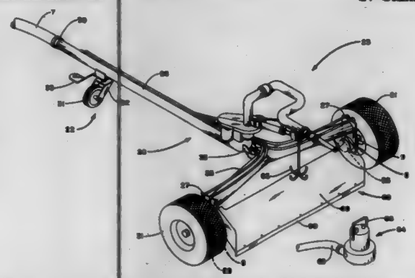
1. A dental strip comprising:
a latex rubber tube having a silicon layer with a flavoring compound atop said silicon layer,
said latex rubber tube being provided with a series of slits cut circumferentially, wherein
said flavoring compound is applied on an inner surface and an outer surface of said latex rubber tube.

5,293,887

ROBOTIC TANK CLEANING SYSTEM AND METHOD

Ray Thibodeaux, 23597 Joe May Rd., Denham Springs, La. 70726

Filed Mar. 9, 1992, Ser. No. 848,038
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—24 **27 Claims**



18. In a robotic cleaning system for hydrocarbon storage tanks, comprising:
(i) a light-weight, collapsible frame having robot articulation means mounted thereon for moving said frame within said tank, said tank having a floor;
(ii) nozzled articulatable washing means mounted on said frame for spraying a petroleum-based solvent on a surface to be cleaned;
(iii) waste removal means removably connectable to said frame for removing waste material comprising hydrocarbon sludge and expended solvent from said tank and transferring said waste material to waste fractioning means;
(iv) hoisting means operatively mounted on said frame for picking up, transporting and dropping off said waste removal means within said tank;
(v) hydraulic power means operatively connected with said robot articulation means, said waste removal means, and said articulatable washing means for articulating said frame and said washing means and for powering said waste removal means;
(vi) hydraulic control means operatively connected with said hydraulic power means for regulating the operation of said robot articulation means and said articulatable washing means;
(vii) solvent supply means operatively connected with said washing means for delivering said solvent to said washing means;
(viii) waste fractioning means operatively connected to said waste removal means and said solvent supply means for receiving said waste material from said waste removal means, allowing said hydrocarbon sludge to settle below said expended solvent, and delivering said expended solvent back to said solvent supply means; and
(ix) sludge return means operatively connected between said waste fractioning means and a refinery pipeline for returning said hydrocarbon sludge to said refinery for further refinement;
a method of cleaning said hydrocarbon storage tanks, comprising the steps of:
(a) placing said robotically controlled frame inside said tank;
(b) supplying hydraulic power from said hydraulic power means to said robot articulation means and said washing means and supplying said solvent from said solvent supply means to said washing means;
(c) spraying said surfaces with said washing means using said solvent to dislodge said sludge from said tank;
(d) controlling said robot articulation means and said washing means outside said tank with said hydraulic control means until said sludge is satisfactorily dislodged;
(e) removing waste material comprising said sludge and said solvent sprayed from said washing means for said tank using said waste removal means;
(f) transferring said waste material to said waste fractioning means to allow said sludge to settle below said solvent;
(g) delivering said solvent in said waste fractioning means back to said solvent supply means for further spraying by said washing means; and
(h) delivering settled sludge in said waste fractioning means to a refinery for further refinement.

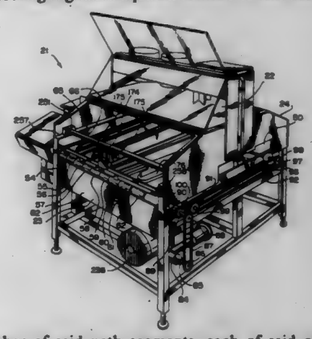
5,293,888

FLEXIBLE, COMPACT VIAL WASHER

Julian P. Avelis, Crete; Garrett W. McBrady, Homewood, and William J. McBrady, Frankfort, all of Ill., assignors to McBrady Engineering, Inc., East Hazel Crest, Ill.

Filed Aug. 16, 1991, Ser. No. 745,877
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—68 **94 Claims**

1. A washer for vials comprising:
(A) a frame;
(B) motive means coupled to said frame for moving said vials including a plurality of conveyor belts having a substantially horizontal orientation and upon which said vials sit and motor means, coupled to said plurality of belts, (1) for moving said plurality of belts and (2) for moving at least two of said belts simultaneously in substantially opposite directions and at different speeds from each other to accumulate and bunch said vials;
(C) guide means, coupled to said frame, for limiting the motion of said vials to a predetermined path, said path including (a) a plurality of path segments with substantially the entire length of each of said path segments being at a substantially constant distance to substantially the entire lengths of the others of said path segments and (b) connecting segments equal in number to one less than the



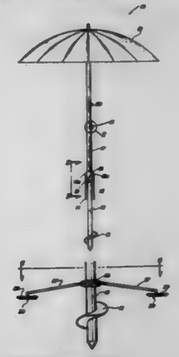
number of said path segments, each of said connecting segments connecting two of said path segments; and
(D) cleansing means, coupled to said frame, for removing material from the exterior of said vials.

5,293,889

BEACH UMBRELLA

Terrance A. Hall, and Susan A. Hall, both of Pitcher St., Montgomery, Mass. 01085

Filed Jun. 19, 1992, Ser. No. 901,569
Int. Cl.[5] A45B *11/00, 25/22*
U.S. Cl. 135—16 **4 Claims**



1. A beach umbrella, comprising,
a lower shaft having a lower shaft socket formed at an upper distal end of the lower shaft, with an outer screw thread formed about the lower shaft adjacent a lower distal end of the lower shaft, with the lower distal end of the lower shaft terminating in a conical projection, and
the lower shaft, the lower shaft socket, the lower shaft outer screw, and the lower shaft projection are coaxially aligned, and an intermediate shaft arranged for reception within the lower shaft socket, and
the intermediate shaft having an intermediate shaft upper end, and
an upper shaft, the upper shaft arranged for reception within the intermediate shaft upper end, with the upper shaft, the intermediate shaft, and the lower shaft coaxially aligned in an assembled configuration, and

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a first latch pin arranged for projection through the upper shaft and the intermediate shaft, and a second latch pin arranged for projection through the intermediate shaft and the upper shaft to secure the upper shaft, the intermediate shaft, and the lower shaft together, and

an umbrella canopy mounted to the upper shaft adjacent an upper end portion of the upper shaft, and

the lower shaft socket includes a first handle and a second handle pivotally mounted to the lower shaft socket, with the first handle having a first handle pivot axle and the second handle having a second handle pivot axle, wherein the first handle pivot axle and the second handle pivot axle are longitudinally aligned and diametrically directed on opposed sides of the lower shaft socket, and

a collar, the collar having a plurality of bifurcated collar supports mounted to the collar at equally spaced intervals thereabout, with each bifurcated collar including a support leg, each support leg including a support leg inner end pivotally mounted within a respective bifurcated collar support, and each support leg having a support leg outer end, each support leg outer end including an anchor plate pivotally mounted relative to the support leg outer end, each anchor plate having a matrix of pins projecting downwardly relative to a bottom surface of the anchor plate, and each bifurcated collar support including a fastener clamp directed through a respective bifurcated collar support and one of said support legs received within said respective bifurcated collar support to frictionally and angularly secure each support leg relative to the lower shaft, and

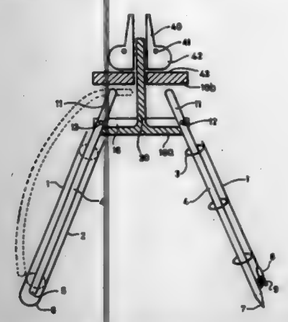
the upper shaft includes an upper shaft externally threaded upper end above the umbrella canopy, and an upper shaft cap threadedly removable relative to the externally threaded upper end, and an upper shaft upper cavity directed from the upper shaft externally threaded upper end and extending downwardly along the upper shaft to an apertured web, and an upper shaft lower cavity directed form the apertured web to a lower portion of the upper shaft, and the arrangement arranged for reception within the upper shaft cavity, and a fluid container mounted within the lower cavity.

5,293,890

DEVICE FOR TENSIONING STRUCTURES

Brian W. Park, and Wendy C. Park, both of Colchester, England, assignors to Relum Limited, Suffolk, United Kingdom

Filed Apr. 24, 1992, Ser. No. 873,397
Int. Cl.[5] E04H *15/28*
U.S. Cl. 135—98 **11 Claims**



1. A device for splaying a plurality of pole members from a generally axial orientation to one in which at least part of each of the pole members adopts a generally radial orientation, and for securing a first end of those members within the device to retain said radial orientation, which device comprises:

a. a pair of generally parallel disc-like transverse members journalled on an axial shaft member; said transverse members capable of axial movement relative to one another and of receiving first ends of the pole members between said transverse members whereby the said first ends extend radially over at least part of the transverse members;

b. means for pivotally connecting said pole members at or adjacent the said first ends thereof to one of said transverse members; and

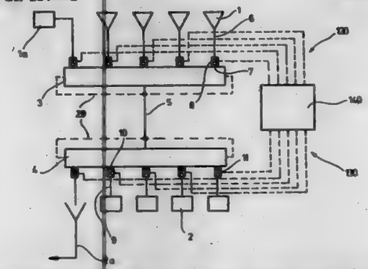
c. means for urging said transverse members axially together thereby to clamp the said first ends of said pole members between the opposed faces of said transverse members whereby the first ends of said pole members are caused to adopt a generally radial orientation between said transverse members said urging means comprising a lever and cam mechanism for moving the disc-like members axially upon said axial shaft member.

5,293,891

PROCEDURE AND FACILITY FOR DISPATCHING AGENT FROM AT LEAST ONE HOLDING POINT TO AT LEAST ONE PROCESSING POINT

Carl P. Cordes, Schwibisch Hall, and Victor Thamburaj, Michelbach/Bilz, both of Fed. Rep. of Germany, assignors to THEN-Maschinen- und Apparatebau GmbH, Hessental, Fed. Rep. of Germany

Filed Mar. 2, 1992, Ser. No. 844,798
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107478
Int. Cl.[5] F16K *11/20*
U.S. Cl. 137—1 **24 Claims**



1. A method for dispatching agent or agents from at least one of a plurality of holding points (1) to at least one of a plurality of processing points (2), each of said holding points communicating with at least one header (3) through respective header input branches, each of said header input branches having a controllable input flow regulator (8), said at least one header (3) communicating with at least one distributor (4) through at least one long trunk (5), said distributor or distributors (4) communicating with each of said processing points (2) through respective distributor output branches, and each of said distributor output branches having an output controllable flow regulator (11), said method comprising:

selectively opening and closing individual input flow regulators (8), one at a time for said header or for each of said headers (3) to selectively open and block respective header input branches to establish first portions of flow itineraries from at least one of said plurality of holding points (1) to said at least one header (3);

selectively opening and closing individual output flow regulators (11) to open and block respective distributor output branches to establish second portions of flow itineraries from said at least one distributor (4) to at least one of said plurality of processing points (2);

dispatching each type of said agent or agents over an individual itinerary comprising one of said first and one of said second portions and said at least one long trunk (5) from a holding point (1) to a selected processing point (2) and

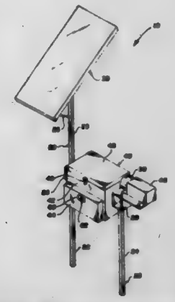
selectively introducing a rinse fluid into at least one of: said at least one header and said at least one distributor selectively, before or after, or before and after agent has traveled through them.

5,293,892

SOLAR POWERED INJECTION DEVICE AND METHOD

George E. Fourqurean, 1714 Cessna, Midland, Tex. 79705

Filed Oct. 20, 1992, Ser. No. 963,827
Int. Cl.[5] G05D *11/13*
U.S. Cl. 137—3 **29 Claims**



16. A method of injecting a metered amount of a fluid into a pipe comprising the steps of:

(a) supporting a solar panel in the vicinity of the pipeline location for converting solar energy to electrical current;

(b) electrically connecting the solar panel to an electrical storage battery through a voltage regulator that regulates the current generated by the solar panel to the battery for charging the battery;

(c) electrically connecting an electrically operable metering fluid pump to the battery through a selectively operable relay that controls electrical current from the battery;

(d) fluidly connecting a fluid inlet of the pump to a reservoir of a fluid and fluidly connecting a fluid outlet of the pump to a pipe;

(e) selectively controlling the relay to operate the pump; and

(f) selectively controlling the stroke length and stroke frequency of the pump, thereby metering fluid from the reservoir into the pipe.

5,293,893

EMPTY DRUM DETECTING APPARATUS

Kevin T. O'Dougherty, Minneapolis, Minn., assignor to FSI International, Inc., Chaska, Minn.

Filed Jan. 27, 1993, Ser. No. 9,725
Int. Cl.[5] G05D *7/06*
U.S. Cl. 137—113 **13 Claims**

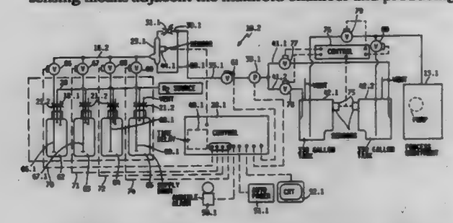
1. An empty drum detecting apparatus interposed between a liquid supply drum and process equipment utilizing the supplied liquid, comprising

a supply line to extend remotely from such a supply drum,

a liquid pump and an inlet line to the pump, the pump being adapted to supply liquid to such process equipment,

manifold means defining an elongate upright manifold chamber to contain a quantity of the liquid and comprising an upper portion and a lower portion below said upper portion,

sensing means adjacent the manifold chamber and producing



first and second indications when the liquid level in the manifold chamber respectively rises and lowers relative to the sensor,

the supply line being connected into the manifold chamber below the upper portion thereof,

an outlet line connected to the lower portion of the manifold chamber and also connected to the inlet line for supplying liquid to the pump,

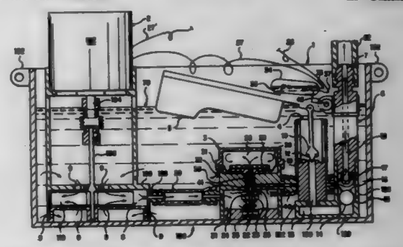
and a shunt line with a restriction to liquid flow therein, the shunt line being connected between the upper portion of the manifold chamber and the inlet line to allow the pump to draw gas and liquid from the upper portion manifold chamber as liquid is also being drawn by the pump from the lower portion of the manifold chamber.

5,293,894

AUTOMATIC PRIME AND FLUSH SIPHON CONDENSATE PUMP SYSTEM

Lewis W. Fleischmann, 8502 Alleaswood Rd., Randallstown, Md. 21133

Filed Feb. 11, 1993, Ser. No. 16,462
Int. Cl.[5] F04F *10/00*
U.S. Cl. 137—135 **19 Claims**



1. A system for displacing condensate from a reservoir to a fluid drain, comprising:

a. a housing defining a condensate reservoir, said housing being positionally located a predetermined distance above said fluid drain;

b. a condensate inlet in fluid communication with said condensate reservoir for supplying condensate thereto;

c. an outlet coupling in fluid communication with said fluid drain;

d. pump means disposed within said condensate reservoir and having a first output fluidly coupled to said outlet coupling for displacing said condensate responsive to a level of said condensate within said reservoir exceeding a first predetermined height dimension;

e. siphon means disposed within said reservoir and having a second output fluidly coupled to said outlet coupling for displacing said condensate responsive to said condensate level being between said first predetermined height dimension and a second predetermined height dimension, said first predetermined height dimension being greater than said second predetermined height dimension, said siphon means including first valve means having an inlet in fluid communication with said reservoir and an outlet fluidly coupled to said outlet coupling for (1) preventing condensate from flowing back from said outlet coupling into said reservoir, and (2) regulating flow of condensate from said reservoir proportional to said condensate level in said reservoir.

5,293,895

LIQUID MANAGEMENT APPARATUS FOR SPACECRAFT

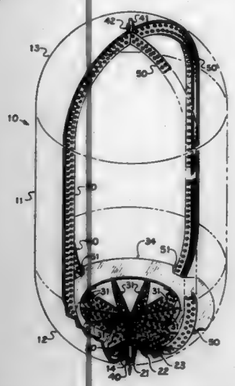
R. K. Grove, Los Altos; Ronald W. King, San Francisco, and Julie M. L'Heureux, Santa Clara, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 810,050, Dec. 19, 1991. This application May 20, 1993, Ser. No. 63,815
Int. Cl.[5] B64G *1/00*
U.S. Cl. 137—154 **6 Claims**

1. An apparatus comprising:

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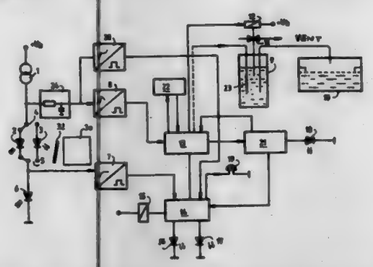
a) tank means defining a reservoir for a liquid, said tank means having an outlet conduit;
b) a bowl structure secured to an inner surface of said tank means adjacent said outlet conduit, said bowl structure having an outlet duct dimensioned to extend into said outlet conduit of said tank means;
c) liquid storage means disposed within said bowl structure, said liquid storage means being secured to an inner surface of said bowl structure, said liquid storage means comprising an array of panels, proximal edges on said panels being secured together along a common axis that is substantially aligned with said outlet duct of said bowl structure, said panels extending outward from said common axis to the inner surface of said bowl structure, distal edges on said panels being secured to the inner surface of said bowl structure;



d) capillary pumping means secured to the inner surface of said tank means, said capillary pumping means functioning in a low-gravity environment to gather liquid from a region of said tank means remote from said outlet conduit and to move liquid so gathered to said liquid storage means within said bowl structure by capillary action;
e) a screen secured to the inner surface of said bowl structure between said liquid storage means and said outlet duct of said bowl structure, said screen functioning as a gas barrier to prevent passage of gas into said outlet duct of said bowl structure when said screen is wetted by liquid in said bowl structure; and
f) a flow control plate secured to the inner surface of said bowl structure between said gas barrier screen and said outlet duct of said bowl structure, said flow control plate having perforations that are dimensioned and positioned so that liquid from said bowl structure can pass therethrough into said outlet duct for passage to said outlet conduit of said tank means at a substantially uniform rate of flow.

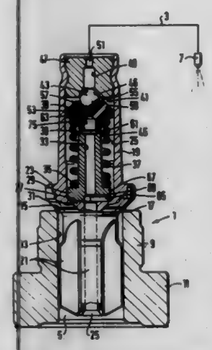
5,293,896
ARRANGEMENT FOR MEASURING THE LEVEL OF LIQUIFIED GASES
Lüder Gleichmann, Ilmenau, and Gerd Löbel, Berlin, both of German Democratic Rep., assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein
Filed Nov. 28, 1990, Ser. No. 619,230
Int. Cl.[5] G01F *23/22*; G05D *9/12*; F16K *37/00*
U.S. Cl. 137—392 **8 Claims**

1. An arrangement *in combination with cryogenic* liquified gas *for indicating when the cryogenic liquified gas* reaches a predetermined level within a container comprising:
at least one *light emitting* diode acting as a coil-free sensing element and having a pn structure on one of a GaP and a GaAsP base which is doped with nitrogen so that, because said at least one diode is doped with nitrogen, it has a characteristic *such* the temperature below −50°C *as the cryogenic liquified gas approaches the diode, causes* non-linearity of a forward voltage for the nitrogen doped diode said at least one diode being placed adjacent the predetermined level so that when the level of the liquified gas is rising *and approaches the diode,* said diode is exposed to a changing *low* temperature due to the rising liquified gas to generate *an indication* signal which is characteristic for said diode;



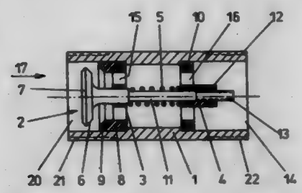
a *control logic* unit connected to said diode for *receiving and acting upon the indication* signal which is dependent on the temperature of said diode, said *indication* signal always being a forward voltage change greater than 1 Volt and the voltage change increasing continuously in a non-linar manner as temperature decreases continuously downwardly from −50°C, the relationship between forward voltage and dropping temperature being a non-linear relationship with continuously increasing slope for temperatures below −50°C.—

5,293,897
PRESSURE VALVE
Johann Warga, Bietigheim-Bissinges; Wolfgang Haydn, Stuttgart, and Uwe Kühn, Riederich, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 29, 1993, Ser. No. 10,717
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1992, 4202853
Int. Cl.[5] F16K *17/18*
U.S. Cl. 137—493.3 **9 Claims**



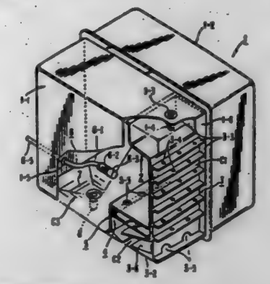
1. A pressure valve (1) to be secured into a supply line (3) between a pump work chamber (5) of a fuel injection pump and an injection location (7) of an internal combustion engine to be supplied by said pressure valve, a valve body (9) that is provided with a first valve seat (15), said valve body (9) has a through conduit (13) in which a pressure valve closing element (19) that opens toward the injection location counter to a spring force is guided, an interior of the pressure valve closing body is embodied as a stepped through conduit (25) and includes a check valve (41) that opens toward the pump work chamber (5), a valve closing element (43) is disposed between a second valve seat (46) formed by a liner (47) in the pressure valve closing element (19) and a spring plate (39) impinged upon by a compression spring (37), the compression spring (37) is supported on one end by a shoulder (35) of a filler piece (29) which includes an axial bore (33, 69) and guides the compression spring (37) that rests with a first face end (31) remote from the check valve (41) against a shoulder (27) of the through conduit (25), said filler piece (29) has a groove (65) in the first face end (31) that discharges into the axial bore (33, 69) that communicates with a portion of the through conduit (25) in the interior of the pressure valve closing element (19) which contains the compression spring (37), via a longitudinal conduit passage (80) between a face (67) and the valve closing element 19 and, with a second face end (45) which forms a stop (30) for the spring plate (39), the spring plate (39) has a through conduit (53) which connects a first chamber facing toward the valve closing element (43) to a second chamber facing away from the valve closing element (43).

5,293,898
SAFETY CUT-OUT
Peter Masloff, Traunsdorf, Austria, assignor to Pipelife Rohrsysteme Gesellschaft m.b.H., Krems, Austria
PCT No. PCT/AT91/00082, § 371 Date Mar. 2, 1992, § 102(e) Date Mar. 2, 1992, PCT Pub. No. WO92/01184, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 3, 1991, Ser. No. 836,275
Claims priority, application Austria, Jul. 6, 1990, 1442/90; Dec. 21, 1990, 2620/90.
Int. Cl.[5] F16K *17/30*
U.S. Cl. 137—517 **9 Claims**



1. A safety closing device for a gas pipe comprising: a disc valve including a stem and a valve head having a seating surface which is capable of being pressed against a fixed valve seat provided in a tubular housing having a longitudinal axis, wherein the disc valve is movable in an axial direction of the tubular housing and is movably supported against a force exerted by a spring, and further wherein the cross-section of the valve head is smaller than a corresponding cross-section of the tubular housing and is held at a distance from an internal wall of the tubular housing; gas supply connection means provided on a side of said valve head facing away from said spring for connection to a gas supply pipe; wherein a cross-sectional area of a region of said tubular housing following the valve seat in the direction opposite to the gas supply connection increases continuously along a conical surface, such that generatrices of said conical surface enclose, with said longitudinal axis, an angle of from 3° to 10°.

5,293,899
FUEL TANK OF OIL HEATER
Oh-Kyoung Kwon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Aug. 18, 1992, Ser. No. 931,337
Claims priority, application Rep. of Korea, Aug. 21, 1991, 91-13304
Int. Cl.[5] E03B *11/00*
U.S. Cl. 137—544 **22 Claims**



1. A fuel tank comprising:
a tank body having a liquid fuel intake port communicating with an interior of said tank at an upper portion of said interior, and
a wall arrangement dividing said tank interior into a fuel receiving area and a fuel storage area,
said fuel receiving area communicating with said fuel intake port and including means for conducting a downward flow of fuel from said intake port while decelerating the speed of such downward flow of fuel,
said fuel storage area communicating with a downstream end of said fuel receiving area at a location disposed below said fuel intake port, and
a fuel outlet port communicating with said fuel storage area for withdrawing fuel therefrom, said fuel outlet port disposed below said fuel inlet port.

5,293,900
JOYSTICK WITH CONTACTLESS DIRECT DRIVE DEVICE
Hassan Karbassi, Hartland, and Edward T. Heck, Waukesha, both of Wis., assignors to Hydro Electronic Devices Inc. (HED), Hartland, Wis.
Filed Sep. 30, 1992, Ser. No. 954,555
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—554 **22 Claims**

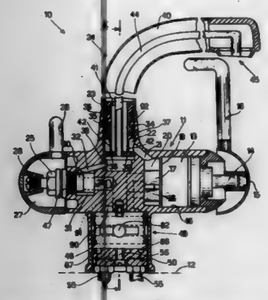


1. A method of actuating a proportional valve, comprising the steps of:

VOL 1160 ISS 3 MR 15 1994 UMI

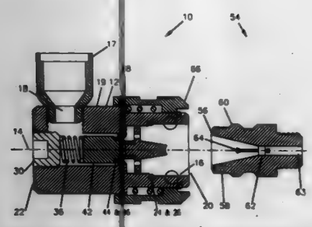
(A) moving a joystick actuating lever attached to a joystick housing;
(B) detecting the position of said actuating lever via a contactless detector and generating a detection signal representative of said position;
(C) generating, via a valve driver disposed within said housing, an actuating signal which is responsive to said detection signal generated by said detector; and
(D) transmitting said detection signal to said proportional valve.

5,293,901
DOUBLE-CONTROL TAP WITH SELECTOR
Mauro Guzzini, Recanati, Italy, assignor to Telma Guzzini s.r.l., Montelupone, Italy
Filed May 5, 1993, Ser. No. 56,893
Claims priority, application Italy, Jun. 2, 1992, MI92U000560
Int. Cl.[5] F16K *11/16, 11/20*
U.S. Cl. 137—595 **22 Claims**



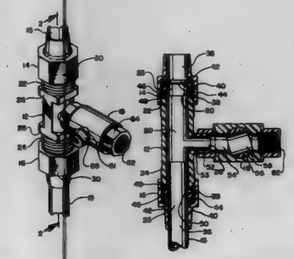
1. A water delivery device with at least one delivery mouth (45) comprises a body (11) containing first controlled means (13) for mixing and delivery from said mouth of water coming from two first sources and second controlled means (25) of delivery from said mouth (45) of water coming selectively from second sources and characterized in that it comprises a selector element (49) operated alternatively between a position of connection of the two first sources to mixing inlets (17,18) of the first control means (13) and selective connection positions of one of the second sources to an inlet (29) of the second control means (25).

5,293,902
QUICK-DISCONNECT FLUID COUPLING
George W. Lapierie, Ft. Lauderdale, Fla., assignor to TIF Instruments, Inc., Miami, Fla.
Filed Jun. 7, 1993, Ser. No. 73,334
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.04 **16 Claims**



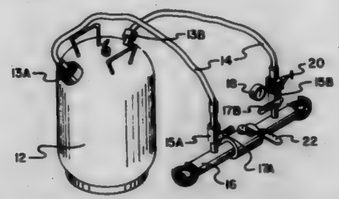
1. A quick disconnect coupling for connection to a fluid fitting, having a Schroeder valve, said coupling comprising:
a body formed with an axial bore and a passageway in communication with said bore, said bore formed with an open end to receive said fluid fitting therewithin and an annular shoulder;
an annular seal within said bore mounted in a groove formed in said body for sealingly engaging an outside diameter of said fluid fitting upon receipt of said fluid fitting;
a locking means for removably attaching said body to said fluid fitting and for maintaining contact of said annular seal with a ridge portion of said fluid fitting said locking means reciprocally attached to said body;
a single valve pin reciprocally mounted within said axial bore for movement between a closed position wherein said valve pin engages said annular shoulder of said bore to create a seal and prevent communication between said open end and said passageway, and an open position wherein communication is permitted, said valve pin being moveable in response to engagement with said fluid fitting, said valve pin including an extension for contacting and opening the Schroeder valve and a base portion for contacting said fluid fitting and for limiting penetration of said extension into said fluid fitting; and
a biasing means connected with said body and said valve pin for adjustably biasing said valve pin into said closed position.

5,293,903
T-CONNECTOR FOR USE IN PLUMBING
Brian E. Appelwick, Madison, S. Dak., assignor to G. A. Murdock, Inc., Madison, S. Dak.
Filed Aug. 27, 1992, Ser. No. 936,928
Int. Cl.[5] F16K *5/06*
U.S. Cl. 137—887 **1 Claim**



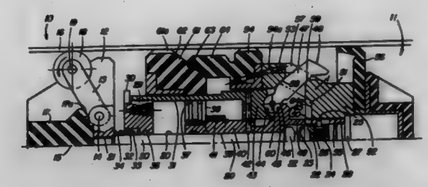
1. A plumbing T-connector, adapted for being readily installed in a fluid conveying conduit and for fluid coupling to a branch conduit, said connector having a T-shaped body defining an inlet and a main outlet being coaxial with the inlet, and a branch outlet having an axis transverse to the axis of the inlet and the main outlet, the T-shaped body being generally tubular in exterior shape, having an outside diameter, and a first set of gripping flats is formed adjacent the inlet and a second set of gripping flats is formed adjacent the main outlet, each set of gripping flats being four sided and each side being generally equal in length to the outside diameter of the body and defining a tangent of the generally tubular body, said body further defining a conduit fluidly coupling the inlet, the main outlet and the branch outlet, said T-connector further including first and second compression fittings threadedly carried by said body at said inlet and said main outlet for sealingly engaging the exterior of the fluid conveying conduit, and first gripping means formed integral to said body adapted for being gripped by an implement to oppose rotational forces applied to the compression fittings while said fittings are being rotated in threaded engagement with the body, said first gripping means further comprising at least one pair of opposed flats comprising opposed flat external surfaces integral to said body, each of said flats defining a plane that is oriented generally perpendicular to the axis of the inlet and the main outlet of the body.

5,293,904
TRAIN LINE DE-ICER
Dennis F. Wood, 3422 Chee Dodge, Gallup, N. Mex. 87301
Filed Mar. 11, 1993, Ser. No. 29,570
Int. Cl.[5] E03B *7/14*
U.S. Cl. 138—35 **1 Claim**



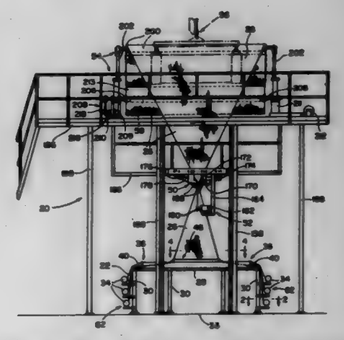
1. A pneumatic liquid injector de-icing system for use on air brake lines of a train comprising:
a portable alcohol storage tank, said storage tank having an input and an output, a manifold connected to said storage tank by first and second supply lines, said first supply line connected between said manifold and said input through a first tee connection, said second supply line connected between said manifold and said output through a second tee connection, a pressure gauge and a pressure regulator connected between said first tee connection on said manifold and said storage tank in said first supply line, said first supply line including a first shut-off valve between said manifold and said pressure regulator, said second supply line including a second shut-off valve between said storage tank output and said manifold, and said manifold further including a gate valve mounted between said first and second tee connections, said manifold having opposed end fittings for enabling said manifold to be connected in the air-brake line of a train by connection to said opposed end fittings whereby opening of said first and second shut-off valves and closing of said gate valve causes air under pressure in said brake line to flow into said storage tank thereby causing alcohol in said storage tank to be fed under pressure into said train air-brake line through said second supply line.

5,293,905
PIPELINE PLUG
Jaromir Friedrich, 10720-209 Street, Edmonton, Alberta, Canada T5S 1Z8
Filed Aug. 21, 1992, Ser. No. 932,190
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 **15 Claims**



1. A pipeline plug for use in temporarily plugging a section of a pipeline, said plug comprising, in combination:
(a) an elongated body having a front end and a rear end;
(b) front guide device and a rear guide device disposed one near each the front and rear end, respectively, for guiding the plug through a pipeline as the plug is propelled, the front end first, by fluid pressure generated by a medium flowing through the respective pipeline;
(c) a radially expandable elastomeric sealing device provided with a seal expanding mechanism, to expand the sealing device to thus plug the respective pipeline;
(d) a radially expandable locking mechanism adapted to engage, upon expansion, the inside wall of the respective pipeline to lock the body against movement relative to the pipeline;
(e) lock actuation member freely reciprocally movable along the body from a first position to a second position;
(f) said lock actuation member including a drag device comprising a friction inducing section and engagement device adapted to urge said friction inducing section in contact with the inside wall of the respective pipeline;
(g) transmission mechanism operatively disposed between the friction inducing section and the locking mechanism to cause expansion of the locking mechanism when the plug is subjected to a reversed flow of the fluid in the pipeline, directed against the front end of the body.

5,293,906
CIRCULAR LOOM FOR AND METHOD OF WEAVING RIBBON-SHAPED WEFT
Suresh K. Amin, Northborough, Mass., assignor to Quadrax Corporation, Portsmouth, R.I.
Continuation of Ser. No. 668,334, Mar. 14, 1991, abandoned, which is a continuation of Ser. No. 451,345, Dec. 18, 1989, abandoned. This application Dec. 14, 1992, Ser. No. 990,928
Int. Cl.[5] D03D *37/00*
U.S. Cl. 139—458 **91 Claims**



1. A circular loom for weaving warp and weft to form a fabric, which comprises:
a support table having a plurality of supplies of warp arranged around a periphery of the support table;
guide means for guiding warp ends from the warp supplies to a fabric-forming position;
warp shed-forming means arranged around the periphery of the support table for orienting the warp ends extending from the warp supplies to the fabric-forming position to form a series of successive warp sheds corresponding to a preselected weave pattern;
at least one shuttle assembly mounted for movement in a circular path on the support table through the warp sheds, the shuttle assembly comprising a supply of weft which is laid between the oriented warp ends in the fabric-forming position as the shuttle assembly travels about the table;
guide means for guiding the weft from the weft supply as the weft travels to the fabric-forming position;
drive means for rotating the shuttle assembly along the circular path; and
control means for detecting the position of the shuttle assembly at periodic points along its path of travel and sequentially presetting banks of warp setting devices of the warp shed-forming means in advance of the shuttle assembly for subsequent passage of the shuttle assembly therethrough.

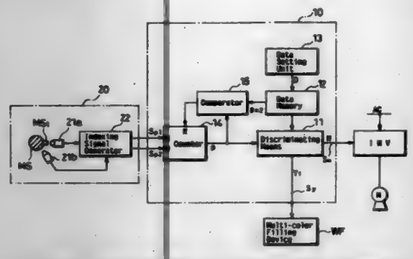
VOL 1160 ISS 3 MR 15 1994 UMI

5,293,907

LOOM SPEED CONTROLLER RESPONSIVE TO FILLING YARN CHARACTERISTICS

Zenji Tamura, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan

Filed Sep. 11, 1992, Ser. No. 943,562
Claims priority, application Japan, Sep. 19, 1991, 3-239766
Int. Cl.[5] D03D *51/34*
U.S. Cl. 139—1 E 7 Claims



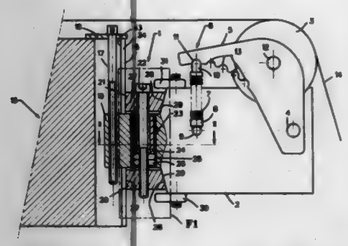
1. A loom speed controlling apparatus, which comprises:
a counter adapted to output a current pick number,
a data memory for storing the maximum allowable loom speed values depending on physical characteristics of various filing yarns in correlation with pick numbers, and
a discriminating means for determining a target rotational speed of a driving motor for a loom according to the current pick number supplied from said counter and data supplied from said data memory.

5,293,908

WEDGE CLAMP FOR ADJUSTABLY AFFIXING A SUPPORT BRACKET TO A WEAVING MACHINE

Bart Lefever, Ieper, and Roland Dewachter, Langemark, both of Belgium, assignors to Picanol, N.V., Belgium

Filed Feb. 24, 1993, Ser. No. 26,313
Claims priority, application Belgium, Feb. 27, 1992, 09200196
Int. Cl.[5] D03D *49/22*
U.S. Cl. 139—114 9 Claims



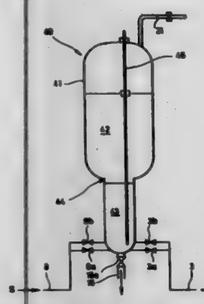
1. In an apparatus for adjustably affixing a support bracket to a machine frame, comprising means including an adjustment screw for adjusting a position of the support bracket, and means for fixing the support bracket in the adjusted position to the machine frame, the improvement comprising:
a guide having an undercut groove and a guide fitting provided between the support bracket and the machine frame part, wherein said fixing means includes at least one clamp element and means including a setting component mounted between the support bracket and the machine frame for driving the clamp element in order to press the guide fitting against a surface of the groove.

5,293,909

METHOD AND APPARATUS FOR MIXING BEVERAGE COMPONENTS

Wilhelm Weiss, Lappersdorf, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed May 5, 1992, Ser. No. 878,584
Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114673
Int. Cl.[5] B65B *1/04*
U.S. Cl. 141—9 20 Claims



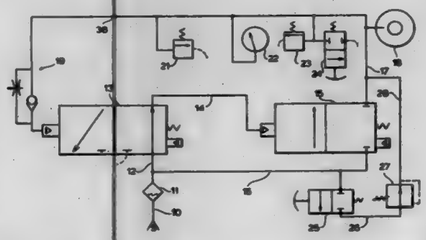
1. A method for mixing at least two beverage components in predetermined ratios comprising first filling a second chamber with a predetermined amount of one of said components, then flowing a predetermined amount of at least one other of said components directly into and through said second chamber and then into a first chamber in fluid communication therewith, whereby said one component in said second chamber is entrained in said other component to form a mixture thereof, said mixture passing through a transition portion located between said first and second chambers that has a cross-sectional area reduced in comparison with the cross-sectional area of the first chamber, and then discharging the mixture from both said chambers by flowing it out of said second chamber.

5,293,910

PNEUMATIC SAFETY CIRCUIT FOR AIR INFLATION DEVICES

Michael C. Mohs, London, Canada, assignor to Bruno Wessel Limited, Canada

PCT No. PCT/US89/05837, § 371 Date Oct. 25, 1991, § 102(e) Date Oct. 25, 1991
PCT Filed Dec. 18, 1989, Ser. No. 773,918
Claims priority, application Canada, May 1, 1989, 598396
Int. Cl.[5] B60C *23/00*
U.S. Cl. 141—38 15 Claims



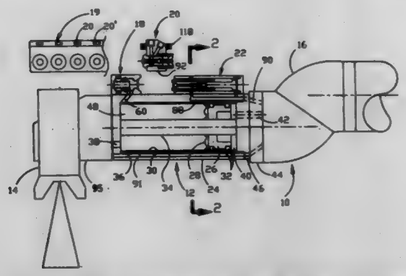
1. A pneumatic circuit for air inflation devices having a high pressure pneumatic supply line connected to an object to be inflated to a pressure significantly lower than the supply line pressure, through an operator controlled valve in said high pressure pneumatic supply line, said pneumatic circuit being operative for stopping inflation once a preselected pressure is equalled, said pneumatic circuit comprising:
1) a first pneumatic duct adapted for connecting high pressure air from the outlet of said operator controlled valve to the inlet of a two-position three-way pilot operated valve having non-adjustable biasing means for being normally biased to a first position in which air pressure to the said inlet is transmitted through the valve then, by a second pneumatic duct, directly to the pilot side of
2) a spring biased, normally closed, pilot opened, two-way valve, said three-way pilot operated valve being adapted to overcome its bias by pneumatic pressure in its first pilot which moves said three-way pilot operated valve to a second position in which air pressure in said second pneumatic duct is discharged back through said three-way valve to atmosphere,
3) a third pneumatic duct connecting high pressure air from the outlet of said operator controlled valve to the inlet of said spring biased two-way valve,
4) a fourth pneumatic duct adapted for connecting the outlet of said spring biased two-way valve to an object to be inflated, and
5) a pneumatic control duct connecting said fourth pneumatic duct through a pneumatic flow control to said first pilot on said two-position three-way pilot operated valve, the bias of said two-position three-way pilot operated valve being adapted to maintain said two-position three-way pilot operated valve in said first position when the pressure in said pneumatic control duct is below the pressure to which the object is to be inflated.

5,293,911

METHOD AND SYSTEM FOR FLUID TRANSFER AND NON-CONTACT SENSOR FOR USE THEREIN

Hadi A. Akeel, Rochester Hills, Mich., assignor to Fanuc Robotics North America, Inc., Auburn Hills, Mich.

Division of Ser. No. 771,436, Oct. 4, 1991, Pat. No. 5,238,029.
This application Mar. 17, 1993, Ser. No. 32,621
Int. Cl.[5] B05B *9/047*
U.S. Cl. 141—346 20 Claims



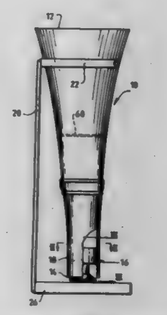
1. A system for robotically transferring fluid from a pressurized source of fluid, the system comprising:
an outlet valve having self-closing means and adapted for fluid communication with the pressurized source of fluid;
a robot having a wrist;
a delivery device for the fluid mounted on the wrist to move therewith;
a reservoir including an inlet valve having self-closing means and a filling port for the fluid, the reservoir being supported on the robot for fluid communication with the delivery device; and
actuating means independent of the inlet and outlet valves for sealingly mating and then opening the inlet and outlet valves to fluidly communicate the filling port of the reservoir with the fluid outlet of the pressurized source of fluid to permit the reservoir to be filled with fluid from the pressurized source of fluid.

5,293,912

WINE BREATHER

Timothy J. Wildash, Unit 3, 23 Glynden Ave, Brighton, Victoria, Australia 3186 , and Alun F. Bartsch, 21 Foote Street, Elwood, Victoria, Australia 3084

Filed Jul. 16, 1992, Ser. No. 913,730
Int. Cl.[5] B65B *39/00*
U.S. Cl. 141—344 1 Claim



1. A wine breather for breathing wine poured from a bottle, comprising:
a container for receiving the wine and for forming a reservoir for the wine;
an upper opening in the container for allowing the wine to be poured into the container;
a lower outlet in the container for allowing the wine to leave the container, the upper opening being larger than the lower outlet and the lower outlet having a bottom extremity; and
a valve element arranged in the outlet, the valve element having a cylindrical body section which is frictionally secured in the lower outlet, the cylindrical body section having a plurality of holes therethrough, a stem connected to and extending downwardly from the cylindrical body section and being of smaller diameter than the body section, a tapered foot section connected to the stem and having an inclined surface section, the inclined surface section extending to a position at least below the bottom extremity of the outlet, the inclined surface section and the bottom extremity of the outlet defining a substantially annular outlet passage such that the wine, when poured into said upper opening of the wine breather, flows through said plurality of holes and over said inclined surface section so as to balloon outwardly from the passage in a relatively thin sheet to expose a substantial area to air so that the wine breathes as it exits the container and passes to a receptacle.

5,293,913

BOTTLE KEYING SYSTEM

Duane A. Preszler, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

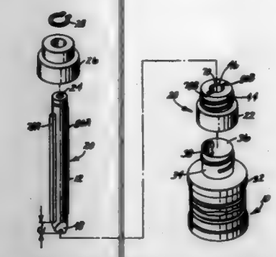
Continuation of Ser. No. 729,369, Jul. 12, 1991, abandoned. This application May 27, 1993, Ser. No. 71,219
Int. Cl.[5] G03G *15/00*
U.S. Cl. 141—367 6 Claims

1. A keying system for insuring the proper placement of inks into the proper respective plumbing system of printing apparatus which use differently colored inks, wherein the printing apparatus includes an ink tank; a plurality of similarly-shaped replenisher bottles each having a threaded neck, one for each color, which dispense ink into the tank; and a plurality of

replenisher tubes over which respective replenisher bottles are mounted which lead into the tank; the keying system comprising:

a key adapted to be formed on each replenisher tube;

a threaded keyed cover having a keyway adapted to be screw threaded on the neck of each replenisher bottle, where in the respective keys and keyways for each color



are complementarily-shaped and are shaped differently from the keys and the keyways on other tubes and keyed covers, and wherein the keyed cover has a neck;

a circular fitting adapted to be fixed on the replenisher tube wherein the fitting is screw threaded onto the keyed cover to secure together the bottle and tube; and

a standard cover adapted to be screw threaded onto the neck of the replenisher bottle keyed cover.

5,293,914

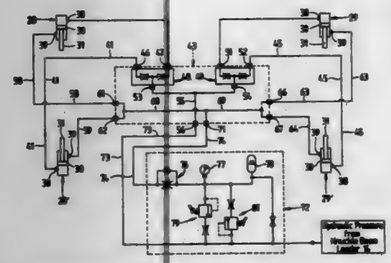
HYDRAULIC CONTROL CIRCUIT FOR A DELIMBING APPARATUS

Thomas H. Hudson, 2688 Virginia Dr., Hueytown, Ala. 35023

Filed Apr. 19, 1993, Ser. No. 47,912

Int. Cl.[5] A01G *23/00*; B27L *1/00*; B27B *1/00*

U.S. Cl. 144—2 Z **6 Claims**



1. Apparatus for delimbing felled trees comprising:

(a) a plurality of stripping arms and guide arms arranged in pairs in spaced relation, each pair being mounted for pivotal movement about parallel axes such that each arm of said pair moves between a closed position proximal the other arm of said pair and an open position distal the other arm of said pair;

(b) hydraulic means for selectively moving said arms of said pair to said open and closed positions; and

(c) means for controlling said moving means such that each of said arms of said pairs moves concomitantly with each other arm to simultaneously engage and disengage said felled trees disposed therebetween.

5,293,915

MANUAL MILLING MACHINE

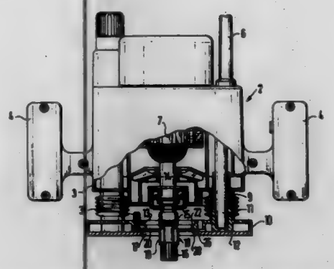
Rudolf Fuchs, Neuhausen; Cornelius Boeck, Leinfelden-Echterdingen, both of Fed. Rep. of Germany; Bruce Roberts, and David M. Martinez, both of New Bern, N.C., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,802

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1991, 4139344

Int. Cl.[5] B27M *1/00*; B27C *5/00*

U.S. Cl. 144—134 D **14 Claims**



1. A manual milling machine, comprising a motor housing; a foot plate adapted to be placed on a workpiece and having a central opening; a milling tool extending through said central opening; a tool receptacle provided on the lower side of said motor housing; a guiding sleeve which surrounds said milling tool and extends in the mounted condition beyond said foot plate; and means for connecting said guiding sleeve with said foot plate, said connecting means including a plug connection provided on said guiding sleeve and a bayonet lock connecting said plug connection with said foot plate.

5,293,916

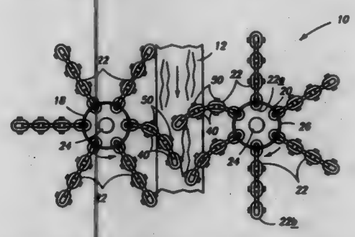
LOG DEBARKING CHAIN FLAIL AND APPARATUS

James D. Kucherry, Sr., HCR 61, Box 46, Bonners Ferry, Id. 83805

Filed Feb. 10, 1993, Ser. No. 15,815

Int. Cl.[5] B27L *1/00*

U.S. Cl. 144—208 J **17 Claims**



9. A log debarking chain flail apparatus for removing bark material from the exterior of a log, comprising:

opposing flail assemblies that are spaced apart a distance sufficient to permit the passage of the log therebetween;

each of the flail assemblies having a plurality of spaced chain flails extending therefrom into a path of the log as the log passes between the opposing flail assemblies;

each of the chain flails being formed by a plurality of interconnected chain links;

each chain link being formed of a continuous loop having transverse segments that extend through and interconnect with adjacent chain links and longitudinal segments that extend in the elongated direction of the flail between adjacent chain links;

a first tooth affixed on at least a first longitudinal link segment; and

a flail drive operatively connected to the flail assemblies for moving the assemblies with sufficient velocity to direct the chain flails with the tooth against the exterior of the log to remove bark material from the exterior of the log.

5,293,917

DISC CHIPPER FEEDING METHOD AND DISC CHIPPER

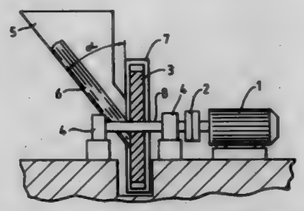
Alpo Kalliokoski, Pori, Finland, assignor to Suads Defibrator Woodhandling Oy, Pori, Finland

Filed Nov. 4, 1992, Ser. No. 971,207

Claims priority, application Finland, Nov. 11, 1991, 915321

Int. Cl.[5] B27L *11/00*; B27C *1/12*

U.S. Cl. 144—373 **7 Claims**



1. A method for feeding a long piece of wood into a disc chipper having a disc equipped with blades rotating around a horizontal axis, comprising:

feeding the piece of wood such the piece of wood encounters the disc at an input angle β, which is the angle between the piece of wood and a line in a plane in which the disc is located, wherein said line passes through a point in the plane where said piece of wood contacts said disc and which extends tangentially in a direction in which the disc is moving at that point;

said input angle β includes an angle ω, which is an angle between a projection of the piece of wood against the plane in which the disc is located and the horizon;

said angle ωbeing less than 90°;

said input angle β further includes an angle γ, which is an angle between a projection of the piece of wood against a floor surface and the plane of the disc;

said angle γ being less than 90°; and

said input angle β being no greater than 34°.

5,293,918

PNEUMATIC RADIAL TIRES

Toru Tsuda; Masayuki Tokutake, both of Tokyo; Misao Kawabata, Tokorozawa City, and Yutaka Yamaguchi, Urawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

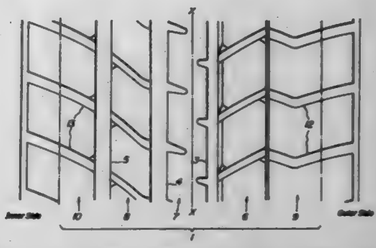
Continuation of Ser. No. 592,095, Oct. 3, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 908,805

Claims priority, application Japan, Oct. 12, 1989, 1-263952; Dec. 8, 1989, 1-317840; Dec. 22, 1989, 1-331077

Int. Cl.[5] B60C *11/03*

U.S. Cl. 152—209 R **9 Claims**

1. A high performance radial pneumatic tire for a passenger car, comprising: a tread provided with a plurality of substantially straight circumferential grooves extending in a circumferential direction of the tire, a plurality of inclined lateral grooves across the circumferential grooves, and plural rows of land portions defined among the circumferential grooves, the lateral grooves, and both edges of the tread, wherein at least the circumferential groove to be located nearest to an axially outer side edge of the tread on a treading surface thereof when the tire is fitted to the passenger car has an axially inner wall and an axially outer wall, and said axially outer wall is inclined more greatly with respect to a normal erected on the tread surface than said axially inner wall and the radially inner portion of the axially outer wall to gradually increase a width of



the groove to a surface of the tread from a position spaced from 10–70% of a depth H of the circumferential groove radially outwardly from a bottom thereof, and a width of an opening of the circumferential groove to the surface of the tread is in a range of 3–18 mm.

5,293,919

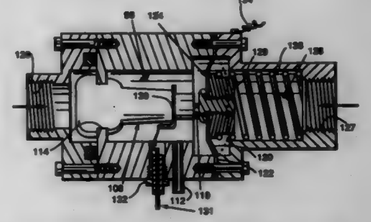
SELF-REGULATING TIRE PRESSURE SYSTEM AND METHOD

Ross D. Olney, West Hills, and John W. Reeds, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 18, 1991, Ser. No. 793,762

Int. Cl.[5] B60C *23/04*

U.S. Cl. 152—418 **17 Claims**



1. A self-regulating tire pressure system, comprising:

a wheel for seating a tire, said wheel including a reservoir for providing a high pressure air source, and

a bistable valve establishing an air flow communication between said reservoir and a tire seated on said wheel, said valve having a first stable position in which said valve opens an air flow passageway between said reservoir and said tire in response to the air pressure within the tire falling below a predetermined actuating pressure set point, and having a second stable position in which said valve closes said air flow passageway in response to the air pressure within the tire increasing to a predetermined closing pressure set point which is greater than said actuating pressure set point.

5,293,920

LOUVERED BASEMENT VENT

Michael Vagedes, 677 Sunnybrook Dr., Florence, Ky. 41042

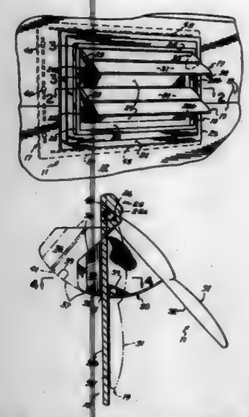
Filed Jul. 8, 1993, Ser. No. 88,781

Int. Cl.[5] F24F *7/00*

U.S. Cl. 160—89 **5 Claims**

1. A basement vent having a frame and a screened opening; a plurality of louvers covering said screened opening

wherein the louvers each include tabs which slide within slots which extend through said frame from a front of said frame to a back of said frame;
said tabs each include a detent section which engage said



slots to hold a louver in an open position for use in the summer months wherein said tabs can slide into said slots to permit the louvers to be closed during the winter months and wherein said louvers can freely rotate from a closed position to a partially opened position.

5,293,921

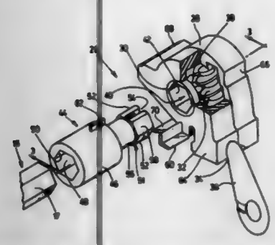
COUPLING AND TRANSMISSION MECHANISM FOR WINDOW COVERING ASSEMBLY

Norbert Marocco, 46 Pennycross Court, Woodbridge, Ontario, Canada L4L 3M6

Continuation-in-part of Ser. No. 733,652, Jul. 22, 1991, Pat. No. 5,139,072, which is a continuation-in-part of Ser. No. 475,734, Feb. 7, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,944

Int. Cl.[5] E06B *9/26*

U.S. Cl. 160—176.1 **8 Claims**



1. A manually operable window covering assembly comprising:
a headrail having window coverings suspended therefrom;
a shaft disposed in said headrail on manual rotation of which the positions of said window coverings may be adjusted, said shaft having a predetermined cross-sectional shape defining driven formations and a shaft axis;
a manual rotation transmission mechanism which in turn comprises:
a housing disposed in said headrail;
a drive gear supported by said housing and having a drive axis co-axial with said shaft axis and manual operating means for rotating said drive gear;
support means on said housing, engaging said headrail, and positioning said housing so that said drive gear is located co-axial with said shaft axis;
a rigid integral one-piece moulded coupling between said drive gear and said shaft for transmitting manually controlled rotational movement of said drive gear to said shaft;
a drive recess formed integrally in one end of said coupling having internal drive formations complementary to said shaft, for receiving said shaft therein;
an anti-rotation stop member formed integrally on said coupling and extending outwardly therefrom;
a fixed abutment member, of rigid inflexible construction integrally formed with said housing containing said drive gear whereby to project therefrom, adjacent said coupling and adapted to engage and stop said stop member on manually controlled rotation of said coupling to a predetermined rotational position thereby then to stop further manual rotation of said coupling beyond said predetermined position and being otherwise free of engagement therewith;
a gear recess in said drive gear defining a regular cross-section and having internal first drive surfaces of predetermined cross-sectional shape and,
resilient arm means integrally moulded with said coupling and extending therefrom in a direction opposite to said drive recess and aligned therewith, and with said drive shaft and slidable into said gear recess in said drive gear and adapted to be received therein and having second drive surfaces complementary to said first drive surfaces in said drive gear and being resiliently biassed to engage said first drive surfaces to transmit manual rotational movement therebetween for rotation of said shaft and whereby, upon manual rotation of said coupling to said predetermined rotational position and engagement of said stop member with said abutment member, further manual rotation of said coupling and said shaft is resisted by said abutment member, and, if excessive torque is then manually applied by continued manual rotation of said drive gear, said resilient arm means of said coupling will flex against said bassing thereby in turn permitting said drive gear to continue to be rotated in response to said further manual rotation, and said drive recess, and said resilient arm means being coaxial with one another and with said drive gear axis and said shaft axis.

5,293,922

PROCESS FOR MANUFACTURING GAS FLOW UNIT

Kiwamu Imai, Tanashi; Masami Sayama, Tokorozawa; Kazuyuki Higashino, Iruma; Kazuo Sano, Higashiyamato; Yasunori Omori, Ome; Hoshiro Tani, Kitakyushu, and Yukinori Matsushima, Yukuhashi, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo and Mishima Kosan Kabushiki Kaisha, Fukuoka, both of Japan

Filed Nov. 20, 1992, Ser. No. 979,787

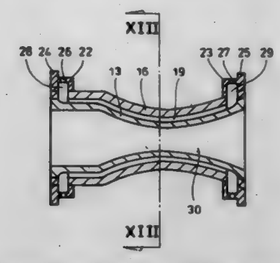
Claims priority, application Japan, Nov. 25, 1991, 3-335608

Int. Cl.[5] B22D *19/00*

U.S. Cl. 164—46 **1 Claim**

1. A process for manufacturing a gas flow unit comprising the steps of providing a passage-forming core made of metal with low melting point, attaching a metal on the passage-forming core by electrocasting to provide a primary metal layer, forming a plurality of longitudinally extending grooves on said primary metal layer, filling said grooves with low-melting-point filler, attaching a metal on said primary metal layer by electrocasting to provide a secondary metal layer, circumferentially machining said secondary metal layer adjacent to opposite ends thereof to provide openings communicating with said grooves, heating said filler to melt the same, discharging the melted filler out of the secondary metal layer through said openings to provide a plurality of coolant passages defined by said grooves and said secondary metal layer, filling each of said openings with a manifold-forming core made of low-melting-point filler, attaching a metal on said

manifold-forming cores and on said secondary metal layer adjacent to said manifold-forming cores by electrocasting to provide tertiary metal layers, forming a through hole on each of said tertiary metal layers so as to lead from outside to the corresponding manifold-forming core, dissolving said passage-forming core



out of the primary metal layer to provide a gas passage inside the primary metal layer, heating the manifold-forming cores to melt the same, discharging the melted manifold-forming cores out of the tertiary metal layers through said through holes to provide coolant manifolds defined by said openings and said tertiary metal layers.

5,293,923

PROCESS FOR METALLURGICALLY BONDING ALUMINUM-BASE INSERTS WITHIN AN ALUMINUM CASTING

Muftau M. Alabi, 100 Valleybrook La., East Amherst, N.Y. 14051

Filed Jul. 13, 1992, Ser. No. 912,342

Int. Cl.[5] B22D *19/00*

U.S. Cl. 164—102 **20 Claims**

1. A method for forming a metallurgical bond between an aluminum-base or magnesium-base insert having an oxide film formed thereon and an aluminum-base or magnesium-base cast member, wherein said method comprises the steps of:
providing a molten zinc-base alloy consisting essentially of about 2 to about 10 weight percent aluminum and about 0.1 to about 0.5 weight percent magnesium, with the balance being essentially zinc;
immersing said insert in said molten zinc-base alloy so as to form a zinc-base coating on said surface of said insert, said insert being immersed in said molten zinc-base alloy for a predetermined length of time which is sufficient to raise said insert to a temperature which is above the liquidus temperature of said molten zinc-base alloy and below the liquidus temperature of said insert;
placing said insert in a mold; and
introducing into said mold a molten casting material selected from the group consisting of aluminum-base and magnesium-base alloys, such that said zinc-base coating substantially remains between said insert and said molten casting material;
whereby said zinc-base coating sufficiently remains on said surface of said insert, such that said oxide film on said insert is weakened so as to promote a metallurgical bond between said insert, said zinc-base coating and said molten casting material.

5,293,924

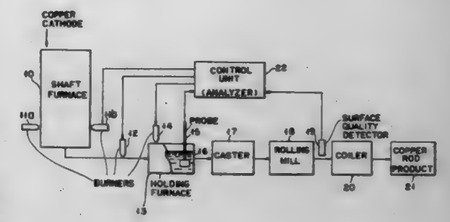
MANUFACTURE OF COPPER ROD

John R. Hugens, Jr., Salt Lake City; Stephen L. Ferrel, West Jordan, both of Utah, and Gary L. Spence, Amarillo, Tex., assignors to ASARCO Incorporated, New York, N.Y.

Continuation of Ser. No. 924,788, Aug. 5, 1992, abandoned, which is a continuation of Ser. No. 703,656, May 21, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 15,876

Int. Cl.[5] B22D *11/16*

U.S. Cl. 164—452 **6 Claims**



1. A method for making copper by continuous casting comprising:
(a) melting copper in a furnace employing burners;
(b) transferring the melted copper to a heated holding zone;
(c) inserting into the molten copper a probe body comprising a gas-permeable, liquid-metal-impervious material of sufficient heat resistance to withstand immersion in the molten copper, said prove having a gas inlet to its interior and a gas outlet therefrom, the gas inlet and gas outlet being spaced from one another so that a nitrogen carrier gas passing from the inlet to the outlet traverses a substantial portion of the probe body interior for entrainment of gas diffusing to the interior of the body from the molten metal;
(d) comparing with an analyzer instrument the entrained gas-nitrogen carrier gas mixture and the nitrogen carrier gas using electronic measuring means;
(e) adjusting, if necessary, the fuel/air ratio of one or more of the burners based on the analyzer readings obtained when the readings reach substantial equilibrium; and
(f) repeating steps (c)–(e) during the casting operation.

5,293,925

METHOD OF AND APPARATUS FOR WITHDRAWING STRAND IN HORIZONTAL CONTINUOUS CASTING INSTALLATION

Hatsuyoshi Kumashiro; Toshio Iida; Sadaaki Murakawa; Makoto Ueda, all of Kobe; Yoshikazu Nishi, Ikeda; Taizou Kiyosuke, Kobe; Hiroyuki Nakashima, Hikari; Yoji Ao, Kitakyushu; Hideo Kaneko, Kobe; Hiroshi Iwasaki; Kazuaki Sueoka, both of Hikari, and Kenichi Murai, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo and Nippon Steel Corporation, Tokyo, both of Japan

Filed Dec. 23, 1991, Ser. No. 811,964

Claims priority, application Japan, Dec. 26, 1990, 2-404942[U]; Jan. 7, 1991, 3-11436; Feb. 19, 1991, 3-47557; Mar. 12, 1991, 3-73803; Mar. 27, 1991, 3-89559

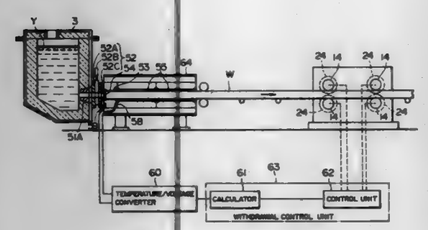
Int. Cl.[5] B22D *11/20*

U.S. Cl. 164—454 **18 Claims**

1. A method of withdrawing a strand in a horizontal continuous casting installation, wherein said strand is intermittently withdrawn by repeating a cycle of withdrawing the strand from within a mold connected to a tundish of the horizontal continuously casting installation, through a mold tube provided downstream of the mold, cover a predetermined stroke by means of strand withdrawing means, and retracting the withdrawn strand over a relatively short stroke, said method comprising the steps of:
presetting, in control means of said withdrawing means, one

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cycle of a strand withdrawing and retracting characteristic;
controlling said withdrawing means based on said strand withdrawing and retracting characteristic for each said cycle by said control means;
determining an instruction signal based on a comparison of a detection signal generated by detection means which detects an amount of withdrawal and retraction, with said strand withdrawing and retracting characteristic;
feedback controlling said withdrawing means in response to said instruction signal;
detecting a temperature at an exit end of said mold tube;
stopping temporarily withdrawing operation of said withdrawing means when said detected temperature exceeds a predetermined value;
causing said withdrawing operation of said withdrawing means to return to a control based on said strand withdrawing and retracting characteristic when said detected temperature returns to a normal value;
providing at least one temperature detecting means in a mold tube near a break ring provided between said tundish and said mold;
calculating a mean value of a periodic variation of the temperature detected by said temperature detecting means;



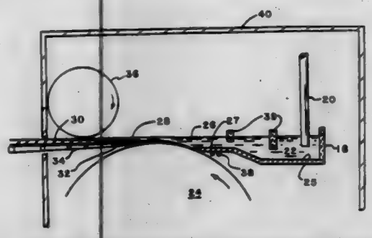
setting a first value obtained by subtracting a first set temperature from said mean value before a set time as a lower control temperature for changing said withdrawing speed;
setting a second value obtained by adding a second set temperature to said mean value before said set time as an upper control temperature for changing said withdrawing speed;
changing the withdrawing speed when a presently detected temperature detected by said temperature detecting means decreases below said lower control temperature or increases above said upper control temperature;
setting a value obtained by subtracting a third set temperature from said lower control temperature at a time of initiating changing of said withdrawing speed as a restoring temperature utilized for restoring said withdrawing speed;
restoring said withdrawing speed to the original speed when a presently detected temperature detected by said temperature detecting means exceeds said restoring temperature; and
restoring said withdrawing speed by an operator when said presently detected temperature exceeds said upper control temperature.

5,293,926

METHOD AND APPARATUS FOR DIRECT CASTING OF CONTINUOUS METAL STRIP

David B. Love, Natrona Heights; John D. Nauman, Pittsburgh, both of Pa., and Karl Schwaha, Linz, Austria, assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1992, Ser. No. 876,885
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—479 **16 Claims**



1. A method of directly casting molten metal to continuous strip of crystalline metal comprising:
controlling the supply of molten metal to a casting vessel for feeding molten metal of substantially uniform flow and temperature and having a free upper surface from an exit end of the vessel substantially horizontally to an adjacent noncontacting casting surface;
moving the casting surface generally upwardly past the exit end, the casting surface includes a single surface of a cylindrical roll rotating about its longitudinal axis aligned substantially horizontally to provide primary cooling for molten metal solidification;
providing the vessel adjacent the casting roll and maintaining the molten metal level in the exit end of the vessel near the crest of the casting roll and maintaining surface tension of the top, bottom, and sides of the molten metal exiting the vessel;
separating the cast strip substantially horizontally from near the crest of the casting roll surface while the strip is semi-solid having a non-solid upper surface; and
providing secondary cooling of the continuously cast strip to solidify the strip after removing it from the casting surface.

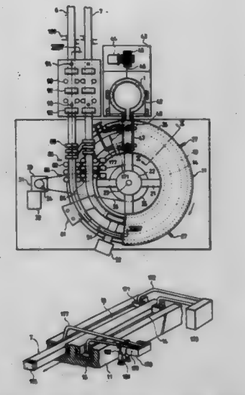
5,293,927

METHOD AND APPARATUS FOR MAKING STRIPS, BARS AND WIRE RODS

Einao Anzai; Hirobumi Maede; Ryuji Watanabe, and Masami Wajima, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 14, 1991, Ser. No. 654,673
Claims priority, application Japan, Feb. 15, 1990, 2-32387
Int. Cl.[5] B22D *11/10, 11/128*
U.S. Cl. 164—484 **16 Claims**

1. A method of manufacturing strips, bars and wire rods which comprises the steps of:
casting at least one section by providing an annular mold having at least one endless open-top casting groove, and rotatably supported about a vertical axis, continuously supplying molten metal into the at least one endless open-top casting groove, and rotating the mold about said vertical axis;
cooling the molten metal in the casting groove from outside by forcibly cooling the annular mold to facilitate the formation of a cast section in the groove;
carrying out said casting in such a manner that the cast section in the groove has a continuously varying thickness thereacross with a greater thickness on an inner side thereof, formed at the radially innermost side of the casting groove in the annular mold, than on an outer side thereof formed at the radially outermost side of the casting groove; and
continuously taking out the cast section from the casting groove at a point where a solidified shell has been formed at least throughout an entire circumferential portion of the molten metal in the casting groove;
depressing the cast section from the top thereof into contact with a surface of the mold defining the bottom of the casting groove with a roll disposed upstream, in a direction of travel of the cast section, of said point from which the cast section is taken out of the casting groove;
pushing the cast section downstream in the direction of travel by rotating said roll; and
sliding the cast section upward over a surface located in the casting groove downstream of the roll in the direction of travel of the cast section and inclined at an angle of 5 to 60 degrees relative to the surface defining the bottom of the casting groove.



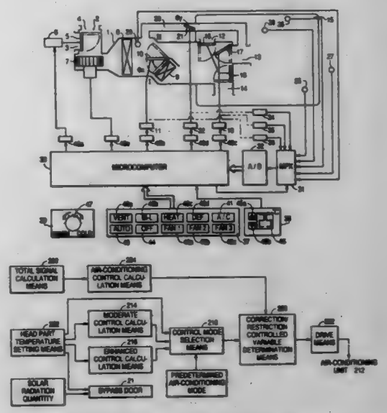
5,293,928

AIR-CONDITIONER FOR AUTOMOBILES

Katsumi Iida; Yoshihiko Sakurai; Akihiko Takano, all of Konan; Hideo Yamaguchi, and Teruaki Yano, both of Fuchu, all of Japan, assignors to Zexel Corporation, Tokyo and Mazda Motor Corporation, Hiroshima, both of Japan

Division of Ser. No. 640,631, Jan. 14, 1991, Pat. No. 5,244,035.
This application Jun. 4, 1993, Ser. No. 71,001
Claims priority, application Japan, Jan. 24, 1990, 2-14068; Jan. 24, 1990, 2-14069
Int. Cl.[5] F25D *17/08*; F25B *29/00*
U.S. Cl. 165—16 **2 Claims**

1. An air-conditioner for an automobile, comprising:
(a) an air-conditioning unit including an air-flow passage having upper and lower air outlets opening to a passenger compartment of the automobile, said upper air outlet being distinct from defrost outlets of the automobile, said air-conditioner unit having means for selectively heating and cooling air as the air flows downwardly through said air-flow passage so that the temperature of the air is regulated before the air is discharged from one of said upper and lower air outlets;
(b) a bypass passage for leading air to said upper outlet directly from a first portion of said air-flow passage which is located upstream of a second portion where the air is heated, said bypass passage having a bypass door for opening and closing said bypass passage;
(c) head part temperature setting means for setting a temperature of the head part of an occupant so as t control said opening of said bypass door;
(d) total signal calculation means for calculating a total signal corresponding to a thermal load in the passenger compartment based on at least temperature signals representing a vehicle passenger compartment temperature and a setting temperature;
(e) air-conditioning control calculation means for calculating various control modes of components of said air-conditioning unit by using said total signal as at least one factor;
(f) correction/restriction control calculation means responsive to a setting of said head part temperature setting means for calculating one of a correction variable and a restriction variable for correcting or restricting at least part of the control modes of said components of said air-conditioning unit which are calculated by said air-conditioning control calculation means, said correction/restriction control calculation means including, at least, enhanced control calculation means for calculating a relatively large correction variable or a relatively large restriction variable, and moderate control calculation means for calculating a relatively small correction variable or a relatively small restriction variable;



(g) control mode selection means for selecting an output from said enhanced control calculation means in place of an output from said moderate control calculation means when said head part temperature setting means operates after the control of said air-conditioner reaches to a substantially stable condition;
(h) correction/restriction controlled variable determination means responsive to the result of selection by said control mode selection means for determining a controlled variable through a correction or a restriction of said at least part of the various control modes of the components of said air-conditioning unit which are calculated by said air-conditioning control calculation means; and
(i) drive means for driving said air-conditioning unit based on the controlled variable obtained by said correction/restriction controlled variable determination means.

5,293,929

COOLING APPARATUS FOR MACHINE PARTS SUCH AS PUMP SEALS

Roger D. Smith, 15870 41st La., Loxahatchee, Fla. 33470

Filed Feb. 21, 1992, Ser. No. 841,670
Int. Cl.[5] F01D *5/00, 5/08*; F04D *13/08, 29/12*
U.S. Cl. 165—47 **18 Claims**

1. Cooling apparatus for removing heat generated by friction between machine parts located within a liquid confining enclosure, said enclosure having liquid inlet and outlet openings,

said outlet opening being located above said inlet opening, said apparatus providing, when filled with cooling liquid, closed circuit, automatically recirculating heat removal; said apparatus comprising:

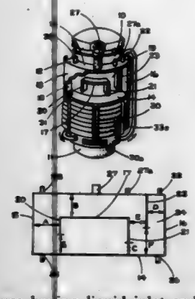
metal wall means including an upper wall and a bottom wall forming a closed, liquid receiving chamber for mounting above said enclosure,

liquid inlet means in an end portion of said upper wall for receiving heated cooling liquid from the liquid outlet opening of said enclosure, and liquid outlet means in an opposite end portion of said bottom wall,

baffle means within said chamber for directing the cooling liquid entering said inlet means into orbital movement within the chamber, and

heat exchanger means located below said chamber and comprising elongate means providing a liquid flow path, said elongate means having an inlet connected to said liquid outlet means, and an outlet for connection to the liquid inlet opening of said enclosure.

12. A closed, liquid receiving chamber structure for use in cooling apparatus for removing heat generated by friction between machine parts located within a liquid confining enclosure, said enclosure having liquid inlet and outlet openings, said outlet opening being located above said inlet opening, said apparatus providing, when filled with cooling liquid, closed circuit, automatically recirculating heat removal, said chamber structure comprising:



metal wall means including an upper wall and a bottom wall,

liquid inlet means in an end portion of said upper wall for receiving heated cooling liquid, and liquid outlet means in an opposite end portion of said bottom wall, and

baffle means within said chamber for directing the cooling liquid entering said inlet means into orbital movement within the chamber,

said baffle means comprising a first baffle extending transversely and longitudinally of said chamber and being located closer to said upper wall than to said bottom wall, the ends of said first baffle being spaced from the ends of said chamber, and

second and third baffles extending downwardly from the respective ends of said first baffle, said second baffle being near said liquid outlet means and being shorter than said third baffle, said third baffle being near said liquid inlet means.

5,293,930

SURFACE-TO-AIR HEAT EXCHANGER FOR ELECTRONIC DEVICES

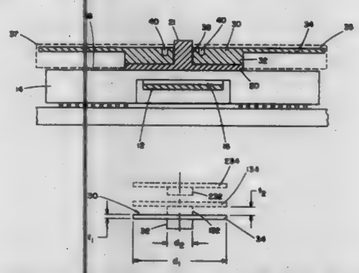
Martin J. Pitasi, Newbury, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 24, 1992, Ser. No. 950,207
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—80.3 **21 Claims**

1. A heat exchanger for cooling an electronic device comprising:

a high thermal conductivity spacer extending from a surface of the electronic device, the spacer having a diameter that is less than about 20 mm and a height S that is less than about 5 mm; and

a high thermal conductivity disk having a diameter d centered on the spacer having opposed surface-to-air heat exchanging surfaces extending radially from the spacer generally parallel to the surface of the device, the height S of the spacer and the diameter d of the disk being proportioned relative to each other such that the ratio of S/d is about 0.08



5,293,931

MODULAR, MULTI-LEVEL GROUNDWATER SAMPLER

Ralph L. Nichols, 812 Plantation Point Dr., N. Augusta, S.C. 29841; Mark A. Widdowson, 4204 Havana Ct., Columbia, S.C. 29206; Harry Mullinex, 10 Cardross La., Columbia, S.C. 29209; William H. Orne, 12 Martha Ct., Sumter, S.C. 29150, and Brian B. Looney, 1135 Ridgemont Dr., Aiken, S.C. 29803

Filed Oct. 26, 1992, Ser. No. 966,267
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—54.1 **10 Claims**



1. A device for use in taking samples of groundwater flowing into a hollow, cylindrical well casing, said well casing having an interior surface, and a plurality of perforations through which groundwater can pass, said samples being taken for analysis at a location remote from said device, said device comprising:

a hollow chamber having a first end and an opposing, second end, and an outside surface and an inside surface, said inside surface defining an interior space, said chamber dimensioned to fit coaxially within said well casing so as to form a gap between said inside surface of said well casing and said outside surface of said chamber and into which gap groundwater passing through said perforations of said well casing can flow, said chamber having a diameter and said first end having a second diameter smaller than said first diameter and said second end having a third diameter smaller than said second diameter;

means carried by said chamber on said exterior surface between said first end and said second for sealing said exterior surface of said chamber to said interior surface of said well casing, thereby defining the axial limits of said gap,

wherein said sealing means further comprises:

a first resilient, water-proof disk about said first end;

first means carried by said first end for supporting said first disk in sealing engagement with said interior surface of said well casing;

a second resilient, water-proof disk about said second end; and

second means carried by said second end for supporting said second disk in sealing engagement with said interior surface of said well casing;

a pump carried by said chamber and communicating with said gap, said pump adapted for pumping said sample of groundwater from said gap to said remote location;

a hose in operational connection with said pump and said remote location for conveying said sample from said pump to said remote location, said interior of said chamber dimensioned for carrying at least two of said hoses and said pump; and

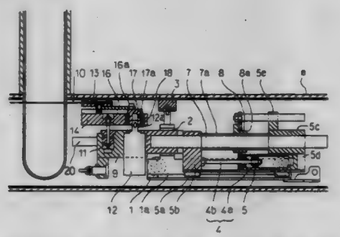
means formed on said first and second ends of said chamber for connecting said chamber to another chamber, said first end of said chamber connectable to said second end of said another chamber, so that several chambers can be attached and aligned axially in said well casing for taking samples at several axial locations, said sealing means defining a different axial location for taking a sample of groundwater by each of said several chambers.

5,293,932

APPARATUS FOR CUTTING OFF PROJECTIONS INSIDE PIPES

Yasuo Miyazaki, Osaka; Akira Kamide, Higashiosaka, and Shigeki Watari, Osaka, all of Japan, assignors to Osaka Bousui Construction Co., Ltd., Osaka, Japan

Filed Oct. 7, 1992, Ser. No. 957,386
Claims priority, application Japan, Oct. 9, 1991, 3-082129[U]
Int. Cl.[5] E21B *29/00*
U.S. Cl. 166—55.7 **2 Claims**



1. An apparatus for cutting off projections in the interior of pipes characterized in that the apparatus comprises:

a carrier movable through the pipe axially thereof under remote control,

a brake pad reciprocatingly movable as supported on the carrier radially of the pipe by the operation of a first drive device,

a movable base reciprocatingly movable as supported on the carrier axially of the pipe by the operation of a second drive device,

a rotary shaft rockingly rotatable about the axis of the pipe as supported on the movable base by the operation of a third drive device,

a rocking block rockingly rotatable with the rotary shaft,

a cutter blade projecting forward from a front end of the rocking block in parallel to the axis of the pipe and movable relative to the rocking block axially and radially of the pipe,

a fourth drive device for reciprocatingly moving the cutter blade radially of the pipe, and

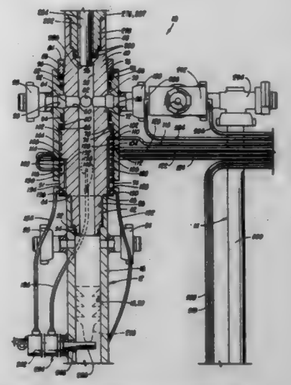
a fifth drive device for repeatedly reciprocatingly moving the cutter blade axially of the pipe over a suitable stroke length.

5,293,933

SWIVEL CEMENTING HEAD WITH MANIFOLD ASSEMBLY HAVING REMOTE CONTROL VALVES AND PLUG RELEASE PLUNGERS

David P. Brisco, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 13, 1992, Ser. No. 835,170
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—70 **18 Claims**



1. A cementing head apparatus comprising:

a body connectable to a tool string;

a cementing manifold connectable to a cement source;

mounting means for rotatably mounting said manifold on said body and providing continuous fluid communication between said manifold and body;

remote control valve means in said cementing manifold for controlling fluid flow from said manifold to said body;

plug means positionable in said body for moving downwardly through the tool string;

pressure actuated releasing means for releasing said plug means so that said plug means may be pumped down said tool string; and

connecting means for connecting said releasing means to a pressure supply for providing continuous communication between said pressure supply and said releasing means, said connecting means comprising a swivel connection between said body and manifold.

5,293,934

GROUND WATER SAMPLING UNIT HAVING A FLUID-OPERATED SEAL

Russell W. Burge, 21140 Covina Hills Rd., Covina, Calif. 91724, and Scott R. Burge, 8869 S. Myrtle, Tempe, Ariz. 85284

Filed Sep. 1, 1992, Ser. No. 937,715
Int. Cl.[5] E21B *23/04, 49/08*
U.S. Cl. 166—202 **12 Claims**

1. A ground water sampling device adapted for engagement with a well casing, comprising:

a water collection housing having a bottom wall,

a hollow water-extraction tube extending downwardly from said housing bottom wall,

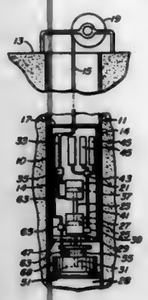
a deformable sealing element carried by said tube and extending laterally outwardly from the tube, said sealing element having a peripheral edge sealably engageable

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with the well casing to prevent exchange of atmospheric gases with the ground water,

remotely-controllable deforming means for selectively deforming the sealing element out of engagement with the well casing, whereby the water collection housing is then freely movable up or down within the well casing,

said deforming means comprising a piston carried by the tube, and a fluid cylinder encircling the piston, whereby pressurization of the cylinder interior on one side of the piston moves the cylinder vertically along the tube, said



cylinder having edge means facing the sealing element, and

means defining a chamber below the piston adapted to be pressurized to urge the cylinder downwardly along the tube to urge said edge out of engagement with the well casing.

3. A sampling device according to claim 1, wherein:

the sealing element comprises a circular disk disposed below the fluid cylinder, and

said disk has a frusto-conical configuration.

5,293,935

SINTERED METAL SUBSTITUTE FOR PREPACK SCREEN AGGREGATE

Bryant A. Arterbury, and James E. Spangler, both of Houston, Tex., assignors to Halliburton Company, Houston, Tex.

Continuation of Ser. No. 807,720, Dec. 16, 1991, Pat. No. 5,190,102, which is a continuation-in-part of Ser. No. 601,271, Oct. 22, 1990, Pat. No. 5,008,554. This application Feb. 23, 1993, Ser. No. 23,823

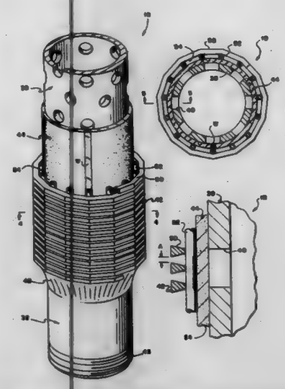
Int. Cl.[5] E21B *43/08*; B01D *39/10*

U.S. Cl. 166—228 **32 Claims**

19. A well screen for separating unconsolidated material out of inflowing well fluid in water, oil, gas and recovery wells, characterized by a tubular, porous body of sintered powdered metal, said sintered body having a multiplicity of first pores resulting from its formation and additional, substantially larger pores therein.

30. A method for making a well screen, comprising the steps of:

forming a porous tubular body of sintered powdered metal; and



increasing the pore size of the sintered body to increase the permeability of the body.

5,293,936

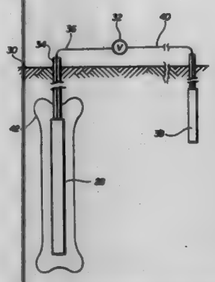
OPTIMUM ANTENNA-LIKE EXCITERS FOR HEATING EARTH MEDIA TO RECOVER THERMALLY RESPONSIVE CONSTITUENTS

Jack E. Bridges, Park Ridge, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Feb. 18, 1992, Ser. No. 837,315

Int. Cl.[5] E21B *43/24, 43/30*

U.S. Cl. 166—248 **22 Claims**



1. An apparatus for high frequency in situ heating of subsurface formations for recovery of thermally responsive constituents, comprising:

high frequency power supply means, and

an exciter emplaced in said subsurface formation disposed to radiate said high frequency power, said exciter comprising:

a first conducting cylinder having edges,

a second conducting cylinder having edges and being positioned coaxially to said first conducting cylinder so there remains a gap therebetween, and

gap insulation means for electrically insulating said gap between said first and second conducting cylinders for suppressing excessively heated regions near the edges and a power input point of said exciter and thereby providing substantially uniform heating of said subsurface formation.

5,293,937

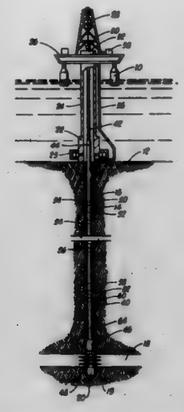
ACOUSTIC SYSTEM AND METHOD FOR PERFORMING OPERATIONS IN A WELL

Roger L. Schultz, Richardson, and Ricky M. Holloman, Lewisville, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 13, 1992, Ser. No. 977,309

Int. Cl.[5] E01B *43/00*

U.S. Cl. 166—250 **12 Claims**



1. A system for flow testing an oil or gas well, comprising:

a tester valve;

a circulating valve connected to said tester valve;

acoustic receiver means for receiving an acoustic command signal in the well; and

control means, connected to said acoustic receiver means, said tester valve and said circulating valve and responsive to said acoustic receiver means in the well, for generating control signals for said tester valve and said circulating valve to open and close said tester valve in the well and to at least open said circulating valve in the well.

5,293,938

WELL COMPLETION AND REMEDIAL METHODS UTILIZING CEMENT-LADENED RUBBER

David D. Onan, Lawton; Garland W. Davis, Comanche; Roger S. Cromwell, Walters, and Wendell D. Riley, Marlow, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 722,045, Jun. 27, 1991, Pat. No. 5,159,980. This application Oct. 13, 1992, Ser. No. 960,031

Int. Cl.[5] E21B *33/14*

U.S. Cl. 166—293 **16 Claims**

1. A method of forming a temporary or permanent plug or seal in a well bore or in one or more subterranean formations penetrated by the well bore comprising the steps of:

(a) placing a composition consisting essentially of a mixture of a slurry of a hydraulic cement and a vulcanizable rubber latex in said one or more subterranean formations or in said well bore at a desired location therein; and thereafter

(b) permitting said hydraulic cement to set and then causing said rubber latex to vulcanize and thereby form in said location a plug or seal which consists of a dual-state composite of a hardened cement and a solid rubber wherein said vulcanizable rubber latex is comprised of an aqueous suspension of rubber, a vulcanizing agent and a vulcanizing activator selected from the group consisting of fatty acids, metallic oxide compounds and mixtures of such compounds.

5,293,939

FORMATION TREATING METHODS

Billy W. Surles, Houston, and Philip D. Fader, Katy, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 31, 1992, Ser. No. 922,411

Int. Cl.[5] E21B *33/138*

U.S. Cl. 166—295 **37 Claims**

1. A method for treating a well penetrating a subsurface formation and in fluid communication with at least a portion of the subsurface formation, the temperature of the formation and the density of the formation fluid being known or determinable, comprising:

(a) providing a consolidating treating fluid comprising a resin capable of being acid catalyzed to polymerize in the formation, a polar organic diluent for the resin, a predetermined concentration of dense solvent whose density is greater than the density of the resin, and a predetermined concentration of an oil soluble acid catalyst capable of causing polymerization of the resin at formation temperatures in from 1 to 24 hours, said acid having a pK in the range of 0.4 to 6.0;

(b) injecting said fluid into the formation to enter and saturate at least a portion of the formation adjacent to the well; and

(c) allowing the injected fluids to remain in the formation for at least four hours to accomplish at least partial polymerization of the resin, forming a polymerized resin-sand mass around the wellbore.

5,293,940

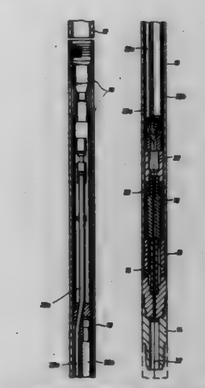
AUTOMATIC TUBING RELEASE

Joe C. Hromas, Sugar Land; Antoni K. L. Miszewski, Missouri City, and Klaus B. Huber, Sugar Land, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 858,400, Mar. 26, 1992, abandoned. This application Mar. 16, 1993, Ser. No. 32,817

Int. Cl.[5] E21B *43/116*

U.S. Cl. 166—297 **26 Claims**



1. Release apparatus adapted to be connected between a perforating apparatus and a tubing for releasing the perforation apparatus from the tubing, comprising:

a frangible breakup apparatus including a hollow interior;

a detonating cord adapted for conducting a detonation wave disposed within said hollow interior of said frangible breakup apparatus and connected to said perforating apparatus, said frangible breakup apparatus shattering in response to said detonation wave conducting in said detonating cord; and connection means for maintaining a connection between the perforating apparatus and the tubing before the frangible breakup apparatus shatters and

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disengaging said connection between the perforating apparatus and the tubing after the frangible breakup apparatus shatters.

7. A method of automatically releasing a perforating apparatus from a tubing, comprising the steps of:

conducting a detonation wave through a detonating cord, said detonating cord begin disposed within an interior of a frangible member and connected to said perforating apparatus;

directing the propagation of said detonation wave initially through said interior of said frangible member and subsequently toward said perforating apparatus;

shattering said frangible member in response to said detonation wave conducting through said detonating cord; and

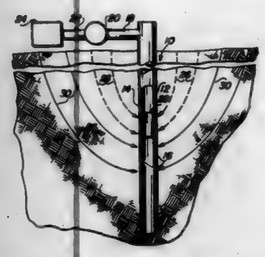
releasing said perforating apparatus from said tubing only after said frangible member shatters.

5,293,941

METHOD OF CONTROLLING FLOW IN A SOIL VENTING WELL

LaVaun S. Merrill, Jr., 9006 E. Fremont Ave., Englewood, Colo. 80112

Filed Nov. 20, 1992, Ser. No. 979,721
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—305.1 **10 Claims**



1. A method of controlling the flow of air in a soil venting well having a casing containing air passageways, comprising:

causing air to flow from the surface, through the soil and into the casing through a first group of passageways in the casing, whereby the air flows through soil which is relatively near the well;

preventing air from flowing through the first group of passageways; and

causing air to flow into the casing through a second group of passageways in the casing located beneath the first group, whereby air is drawn through soil located relatively far from the well.

5,293,942

OIL WELL ACIDIZING WITH IRON CHELATING DERIVATIVES OF ALDOHEXOSES AND ALDOPENTOSES SUCH AS A SALT OR ACID OF 2-KETOGLUCONATE

Herman L. Gewanter, Waterford; Sandra I. Graham, Mystic; Joseph M. Rashan, Jr., Waterford, and R. Larry Reitz, Salem, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,375
Int. Cl.[5] E21B *43/27*
U.S. Cl. 166—307 **34 Claims**

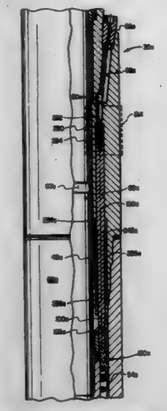
1. A method of preventing the precipitation of an iron (II) salt or iron (III) salt from an acid or acid solution containing said salt, comprising dissolving in said acid or acid solution a substance selected from the group consisting of 2-keto acids, salts of a 2-keto acid, esters of a 2-keto acid, 2,5-diketo acids, salts of a 2,5 diketo acid and esters of a 2,5-diketo acid, wherein said keto and diketo acids, salts and esters are derived from an aldohexose or an aldopentose.

5,293,943

SAFETY VALVE, SEALING RING AND SEAL ASSEMBLY

Jimmie R. Williamson, Jr., Carrollton, Tex., assignor to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 726,312, Jul. 5, 1991, Pat. No. 5,199,494. This application Nov. 20, 1992, Ser. No. 979,670
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—319 **17 Claims**



1. A safety valve for downhole use in a well, comprising:

a housing having top and bottom ends spaced apart along an axis, an axial bore opening outwardly through said top and bottom ends, and an interior fluid passageway laterally offset from and generally parallel to said bore;

valve closure means mounted in said housing for movement relative thereto between first and second positions respectively permitting and blocking fluid flow through said bore;

an operator tube disposed in said housing and being axially movable relative thereto to shift said valve closure means from said second position to said first position;

rod means generally coaxially disposed in said offset passageway for longitudinal movement therein relative to said housing for moving said operator tube from said second position to said first position in response to fluid control pressure exerted on the upper end of said rod means; and

sealing means for forming a fluid seal between upper and lower portions of said offset passageway, said sealing means including:

a hollow sleeve member coaxially anchored within said offset passageway and slidably receiving said rod means, said sleeve member having open top and bottom ends, said rod means having an upper end portion extending upwardly beyond said top end of said sleeve member and a longitudinal portion received within said sleeve member,

first cooperating means, formed on said longitudinal rod means portion and said open bottom end of said sleeve member, for engaging one another, and forming a first static seal therebetween that essentially precludes downward fluid flow through said sleeve member, in response to downward fluid-driven movement of said rod means relative to said sleeve member, and

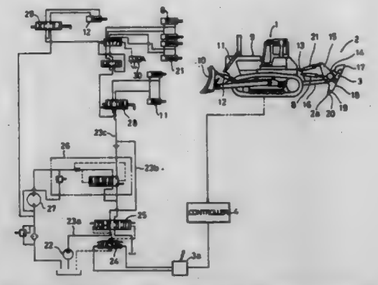
second cooperating means, disposed on said upper rod means end portion and an interior surface portion of said offset passageway above said upper rod means end portion, for engaging one another, and forming a second static seal therebetween that essentially precludes upward fluid flow through said sleeve member, in response to upward driven movement of said rod means relative to said sleeve member.

5,293,944

METHOD OF AUTOMATICALLY CONTROLLING IMPACT RIPPER

Norihisa Matsumoto, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/01732, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO91/10017, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 28, 1990, Ser. No. 867,197
Claims priority, application Japan, Dec. 28, 1989, 1-341376
Int. Cl.[5] A01B *63/112*
U.S. Cl. 172—2 **20 Claims**



1. In a digging apparatus comprising a vehicle body, a drive train mounted on said vehicle body for producing vehicle body tractive force and a vehicle speed, an impact ripper mounted on said vehicle body, said impact ripper having an end for digging and a vibrating mechanism, and an operator's lever for controlling said impact ripper, the improvement comprising:

a controller;

means for producing a first signal and for applying said first signal to said controller, said first signal being representative of the vehicle body tractive force;

means for producing a second signal and for applying said second signal to said controller, said second signal being representative of the vehicle speed;

an automatic strike switch having an on position and an off position;

whereby said controller includes means for providing an activating signal for said vibrating mechanism if said automatic strike switch is in its on position and said vehicle speed is less than a predetermined speed value, and wherein said controller includes means for providing an activating signal for said vibrating mechanism when said vehicle speed is at least as great as said predetermined speed value only if said automatic strike switch is in its on position and said vehicle body tractive force is at least as great as a predetermined tractive force value.

5,293,945

DOWNHOLE ADJUSTABLE STABILIZER

Irwin Rosenhauch, Kingwood, Tex., and Laurier E. Comeau, Alberta, Canada, assignors to Baroid Technology, Inc., Houston, Tex.

Continuation of Ser. No. 800,441, Nov. 27, 1991. This application Dec. 13, 1991, Ser. No. 808,028
Int. Cl.[5] E21B *17/10, 7/08*
U.S. Cl. 175—325.2 **20 Claims**

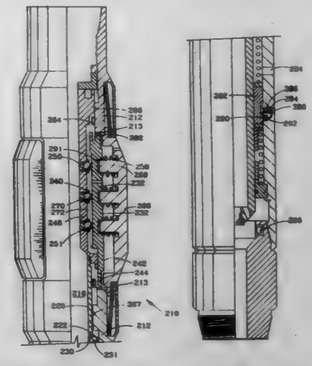
1. A downhole adjustable stabilizer for use in a well bore and along a drill string having a bit at the lower end thereof, the drill string having an interior flow path for passing pressurized fluid through the stabilizer and to the bit, the stabilizer comprising:

a stabilizer body having an interior passage for fluid communication with the drill string interior flow path, the stabilizer body including an upper end for interconnection with an upper portion of the drill string, a lower end for interconnection to a lower portion of the drill string between the stabilizer and the bit, and an intermediate portion including one or more cavities spaced about the stabilizer body, each cavity defined at least in part by stabilizer body sidewalls;

one or more stabilizer blades each received within a respective cavity in the stabilizer body, each stabilizer blade being radially movable with respect to the stabilizer body from a retracted position to an expanded position;

one or more radially movable pistons each positioned inwardly of a corresponding one of the one or more stabilizer blades, each piston being radially movable from an inward position to an outward position in response to pressure differential between the interior flow path within the stabilizer body and the well bore exterior of the stabilizer, the radial movement of the one or more pistons functionally controlling the radial movement of the corresponding stabilizer blade; and

a locking member carrying the one or more radially movable pistons, the locking member being in sealed engagement with the stabilizer body, and the one or more radially movable pistons being in sealed engagement with the locking member, the locking member being axially movable within the stabilizer body from an unlocked position to a locked and retracted position for limiting the radial outward movement of at least one of the one or more pistons when in the locked and retracted position, thereby maintaining the corresponding stabilizer blade in its retracted position.



5,293,946

DIVERGENT FLUID NOZZLE FOR DRILLING TOOL

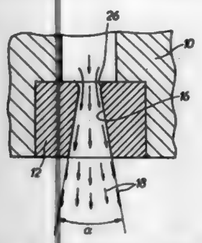
Alain Besson, Sartrouville, and Bernard Poitreau, Pau, both of France, assignors to Total, Puteaux, France and Diamant Boart Stratabit, Brussels, Belgium

Filed Sep. 16, 1992, Ser. No. 945,392
Claims priority, application France, Sep. 16, 1991, 91 11371
Int. Cl.[5] E21B *10/18*
U.S. Cl. 175—424 **4 Claims**

1. A drilling fluid nozzle adapted to be mounted in and for use with a one-piece borehole drilling bit (10), said nozzle comprising a drilling fluid flow channel defined by a surrounding wall (16), wherein said wall diverges from an entry end of the channel disposed in an interior of the bit to an exit end of

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the channel disposed at an exterior surface of the nozzle at an angle whereat the drilling fluid flows along in contact with the



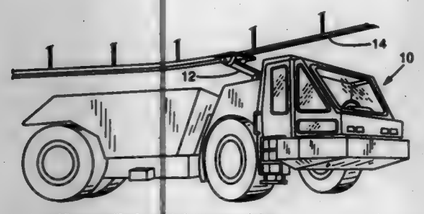
wall due to a Coanda effect, without the generation of any swirling counter-currents.

5,293,947

VARIABLE SPEED AC ELECTRIC DRIVE VEHICLE

Robert D. Stratton, Portland, Oreg., assignor to Wagner Mining and Construction Equipment Co., Portland, Oreg.

Filed Sep. 3, 1991, Ser. No. 753,719
Int. Cl.[5] B60L *9/16*
U.S. Cl. 180—2.1 **38 Claims**



1. A self-propelled vehicle comprising:

a driven ground-engaging means for forcibly acting on the ground to propel the vehicle;

a variable speed AC drive motor on the vehicle drivingly connected to the ground engaging means;

a motor controller having a variable frequency AC output connected to the drive motor;

a switch on the vehicle having first and second inputs, and a switch output connected to the motor controller, the switch having a first position in which the first input is connected to the switch output while the second input is disconnected from the switch output, the switch having a second position in which the second input is connected to the switch output while the first input is disconnected from the switch output;

an electrical conductor for engaging an external power source and for transmitting AC power from the external source to the first input;

an on-board source of AC power mounted on the vehicle and connected to the second input on the switch to provide power to the switch; and

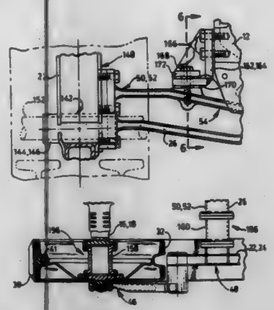
a switch controller operably connected to the switch and the on-board source, the switch controller being operable in response to a control signal to activate the on-board source, and thereafter to shift the switch from the first position to the second position.

5,293,948

UNDERCARRIAGE ASSEMBLY FOR A VEHICLE

Elmer R. Crabb, Aurora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 25, 1992, Ser. No. 950,547
Int. Cl.[5] B62D *55/084, 55/15*
U.S. Cl. 180—9.1 **20 Claims**



1. An undercarriage assembly for a vehicle, said vehicle having a main frame, an engine, and first and second drive axles powered by said engine, said undercarriage assembly comprising:

first and second roller frame assemblies, each having first and second end portions and a middle portion, said second end portions being releasably connected to a respective first and second drive axle;

a support beam having first and second end portions and a middle portion, said first and second end portions being releasably connected to a respective middle portion of said first and second roller frame assemblies, said support beam middle portion being releasably connected to said vehicle main frame;

first and second self-aligning idler wheel assemblies, each having a spindle and first and second spaced wheels rotatably supported on said spindle, said spindle being releasably connected to a first end portion of a respective roller frame assembly, each of said spindles having first and second radially extending ear portions;

first and second endless track assemblies encircling respectively said first and second roller frame assemblies and said first and second idler wheel assemblies;

first and second track tensioning mechanisms, each including a hydraulic ram assembly having a first end portion connected to a respective first spindle ear portion and a second end portion connected to a respective roller frame assembly; and

a first self-aligning mechanism connecting the first end portion of each track tensioning mechanism to said first ear portion of each spindle, and a second self-aligning mechanism connecting the first end portion of each roller frame assembly to said second ear portion of each spindle.

5,293,949

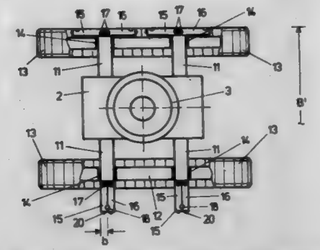
CHASSIS FOR ENDLESS TRACK TYPE VEHICLES

Horst Zimmermann, Bludenz, Austria, assignor to ECCON, Engineering, Computer, Consulting Gesellschaft m.b.H., Nonzing, Austria

Filed Oct. 26, 1992, Ser. No. 966,739
Claims priority, application Austria, Oct. 24, 1991, 2120/91
Int. Cl.[5] B62D *55/08*
U.S. Cl. 180—9.48 **8 Claims**

1. A chassis for endless track-type vehicles comprising at least a pair of support beams extending parallel to each other and projecting essentially horizontally from two sides of the chassis, a crawler track supports being provided on each side

of the chassis, the crawler track support being mounted on the support beams so as to be slidable relative to the support beams for adjusting the width of the vehicle, each support beam having free outer ends, at least one arm swingable about a vertical axis being attached to the free outer end, the at least



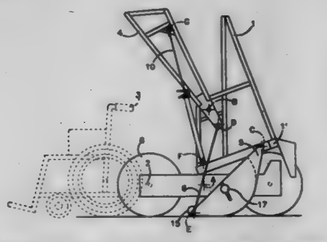
one arm having a circumferential contour and width which corresponds at least in one of an upper portion and a lower portion thereof to the support beam, further comprising locking means for locking the arm when the arm is swung into a position in which it extends in the same direction as the support beam.

5,293,950

OFF-HIGHWAY MOTOR VEHICLE FOR PARAPLEGIC HANDICAPPED PERSONS

Patrick Marliac, Courrance, Lacapelle-Biron 47150, France

Filed Jan. 13, 1992, Ser. No. 819,779
Claims priority, application France, Jan. 17, 1991, 91 00713
Int. Cl.[5] B62D *11/00*
U.S. Cl. 180—11 **9 Claims**



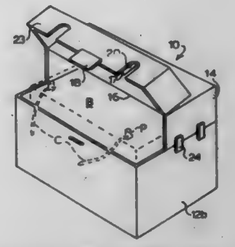
1. Off-highway vehicle for a paraplegic handicapped person seated on his wheelchair and enabling the wheelchair to be used without the need for external aid, wherein the vehicle includes a combination of: a chassis comprising first and second portions, said first portion being tubular and forming a vertical arch ended by a U-shaped base open toward a front of the chassis, the second portion comprising two box plate girders extending branches of the U-shaped base between which the person seated in his wheelchair is installed, a unit comprising two elements cooperating together for loading, stowing, and unloading of the wheelchair in the vehicle, one element being an arch-shaped tubular frame and the other element comprising two shoes, these two elements being rotary-joined to the chassis and interconnected by two rocker bars, an endless chain transmission transmitting movement from two outlets of a power drive train respectively, to two pairs of driving wheels, each pair of driving wheels being secured to one of the two box plate girders, control means to start, stop, and control the drive train and drive the vehicle, and a braking device comprising two levers which respectively operate on one of two disks, each of said disks being disposed at one of the two drive train outlets so that the vehicle turns in a direction corresponding to the pair of wheels braked by activation of the lever acting on this pair of wheels, braking of the vehicle being obtained by simultaneously activating the two levers.

5,293,951

BATTERY SAFETY UNIT AND METHOD

Ronald Scott, Rte. 3, Box 42, Lumberton, N.C. 28358

Division of Ser. No. 719,113, Jun. 21, 1991. This application May 6, 1993, Ser. No. 58,461
Int. Cl.[5] B60R *16/04*
U.S. Cl. 180—68.5 **2 Claims**



1. A method of improving the safety of a wet cell battery, comprising:

(a) providing a battery safety unit base with a bottom plate, four bottom walls and a battery stabilizer;

(b) attaching said battery safety unit base to a movable machine employing said battery;

(c) inserting said battery into said battery safety unit base such that said battery is securely held by said battery stabilizer; and

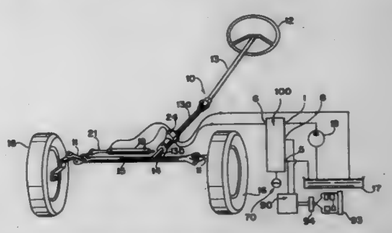
(d) releasably attaching a battery safety unit cover to said base, said cover having a top plate and four top walls and being divided by a hinge such that a front portion of said cover is upwardly articulable and having a plurality of catches for attachment to said base.

5,293,952

HYDRAULIC FLUID SUPPLY SYSTEM FOR AN INSTALLATION IN A MOTOR VEHICLE HAVING POWER ASSISTED STEERING WITH A PRESSURE REGULATION VALUE CONNECTED TO THE MAIN AND SECONDARY CIRCUITS

Claude Ledamoisel, Bessancourt; Robert Michel, Mery-Sur-Oise, and Vévé R. Randriazzanamparany, Rueil Malmaison, all of France, assignors to Valeo, Paris, France

Filed Dec. 9, 1991, Ser. No. 803,556
Claims priority, application France, Dec. 7, 1990, 90 15360
Int. Cl.[5] B63D *5/07*
U.S. Cl. 180—132 **13 Claims**



1. A fluid supply apparatus for a motor vehicle having steering control means, hydraulic steering assistance means for providing steering assistance to and associated with the steering control means and comprising a hydraulic fluid source, a

hydraulic distributor and means connecting the fluid source to the distributor for supplying the distributor with fluid under pressure, the vehicle also having a further hydraulically operated actuating mechanism, servo means associated with the actuating mechanism for assisting in operation of said actuating mechanism, and fluid supply apparatus connected between said fluid source, and both the hydraulic distributor and said servo means, the fluid supply apparatus comprising a hydraulic fluid distribution unit for selectively distributing fluid under pressure to the hydraulic distributor and the servo means, said distribution unit comprising a main circuit, a secondary circuit, flow distribution means connected between the fluid source and the main and secondary circuits for dividing the flow of fluid received from said source between the main circuit and the secondary circuit, the main circuit being connected with the hydraulic distributor whereby to supply the steering assistance means and the secondary circuit being connected with said servo means, the distribution unit further comprising a pressure regulating means connected to the main and secondary circuits for regulating the pressure of the fluid flow in said circuits in response to the demand of the steering assistance means,

wherein said pressure regulating means comprises bore means for defining a second bore, a second valve member being movable axially in the second bore, and means for connecting the second bore with the main circuit for connection to said fluid distributor.

5,293,953

REAR WHEEL STEERING SYSTEM FOR A VEHICLE

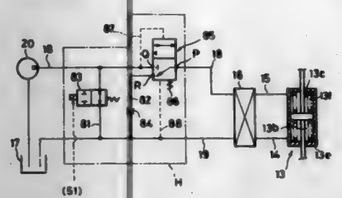
Takeshi Edahiro, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 784,109, Oct. 29, 1991, abandoned, which is a continuation of Ser. No. 545,588, Jun. 29, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 918,119

Claims priority, application Japan, Jun. 30, 1989, 1-169088

Int. Cl.[5] B62D *5/06*

U.S. Cl. 180—132 **15 Claims**



1. A rear wheel steering system for a vehicle comprising:

a power cylinder operatively connected to a rear wheel steering mechanism for generating a force for steering rear wheels in response to a liquid pressure, said power cylinder being connected through a high pressure passage to a pump which pumps a liquid as a source of generating liquid pressure and through a low pressure passage to a reservoir tank;

a first relief passage disposed between and adapted to connect the high pressure passage and the low pressure passage;

a second relief passage complete separate from said first relief passage along its length and disposed between and adapted to connect liquid from the power cylinder, and not the pump, with the low pressure passage; and

passage shifting means for opening each of the first relief passage and the second relief passage during abnormal operation which is when a control mechanism for controlling the rear wheel steering mechanism breaks down, for closing the first relief passage and the second relief passage during normal operation, and for directing liquid such that when the first relief passage and the second relief passage are open, liquid in the high pressure passage coming from said power cylinder is gradually released through a restrictor means to the reservoir tank as it is passed to the low pressure passage through the second relief passage while preventing liquid in the high pressure passage from pressurizing the power cylinder.

5,293,954

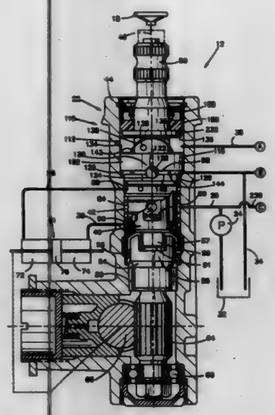
POWER STEERING SYSTEM

Richard W. Dymond, Rochester Hills, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Sep. 18, 1992, Ser. No. 947,347

Int. Cl.[5] B62D *5/083;* **F15B** *9/08*

U.S. Cl. 180—141 **15 Claims**



1. An apparatus comprising:

first and second valve members which are movable relative to each other to port fluid to a vehicle power steering motor;

means for increasing the resistance to relative movement between said first and second valve members as vehicle speed increases, including:

a force transmitting member connected with said first valve member and movable toward and away from said second valve member for applying a force to resist relative movement between said first and second valve members;

means defining a fluid pressure chamber for receiving fluid, the pressure of which acts on said force transmitting member, said first and second valve members including means for conducting fluid to said fluid pressure chamber; and

means for increasing the fluid pressure in said fluid pressure chamber as vehicle speed increases and there is relative movement between said first and second valve members; and

means for preventing an increase in the pressure in said fluid pressure chamber as vehicle speed increases when there is no relative movement between said first and second valve members.

5,293,955

OBSTACLE SENSING APPARATUS FOR A SELF-PROPELLED CLEANING ROBOT

Jang W. Lee, Busan, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 998,941

Claims priority, application Rep. of Korea, Dec. 30, 1991, 25531/1991

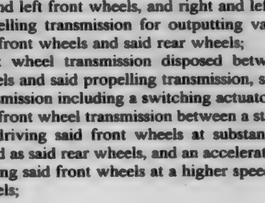
Int. Cl.[5] A47L *9/28*

U.S. Cl. 180—169 **3 Claims**

1. An obstacle sensing apparatus for a self-propelled cleaning robot which automatically carries out cleaning of a floor space while traveling on the surface, the apparatus comprising:

a body having a front wall, opposite sidewalls, and a rear wall;

mounting members disposed at both sides of the front portion of the body at the intersection of the front wall and the sidewalls, each mounting member being made of a three-sided plate comprising a central portion extending transversely to a central longitudinal axis of said body, a first side portion bent at an angle of ninety degrees relative to the central portion, said first side portion extending rearwardly from said central portion and parallel to a respective sidewall, and a second side portion inclined at



an angle of forty five degrees relative to the central portion and having an outer surface facing outwardly from the central longitudinal axis;

ultrasonic distance-measuring means including first, second and third ultrasonic elements disposed at respective ones of the three side portions of each said mounting member, each said ultrasonic element being mounted for directing ultrasonic waves in a direction extending perpendicular to a respective side portion, and an ultrasonic distance measuring circuit connected to the ultrasonic elements; and

control means for judging presence and absence of an obstacle on the basis of the output of said ultrasonic distance-measuring means, thereby controlling the direction of travel of said body.

5,293,956

FOUR WHEEL DRIVE WORKING VEHICLE

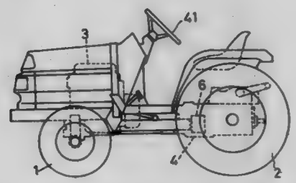
Naoki Onishi, Sakai, Japan, assignor to Kubota Corporation, Osaka, Japan

Filed Jul. 7, 1992, Ser. No. 909,623

Claims priority, application Japan, Jul. 11, 1991, 3-170773; Mar. 17, 1992, 4-0585594

Int. Cl.[5] B60K *17/34;* **B62D** *11/02*

U.S. Cl. 180—233 **6 Claims**



1. A four wheel drive working vehicle comprising:

right and left front wheels, and right and left rear wheels:

a propelling transmission for outputting variable drive to said front wheels and said rear wheels;

a front wheel transmission disposed between said front wheels and said propelling transmission, said front wheel transmission including a switching actuator for switching said front wheel transmission between a standard position for driving said front wheels at substantially the same speed as said rear wheels, and an accelerating position for driving said front wheels at a higher speed than said rear wheels;

right and left side brakes for acting on said right and left rear wheels, respectively;

right and left actuators for driving said right and left side brakes, respectively;

steering means for steering said front wheels;

a hydraulic control valve for controlling said switching actuator and said right and left actuators; and

interlock means for transmitting a displacement of said steering means to a spool of said hydraulic control valve;

wherein said control valve is operable, in response to a displacement of said steering means exceeding a first set angle, to switch said front wheel transmission from said standard position to said accelerating position, and in response to a further displacement of said steering means exceeding a second set angle, to control one of said right and left actuators to drive one of said right and left side brakes inwardly with respect to turning of said working vehicle.

5,293,957

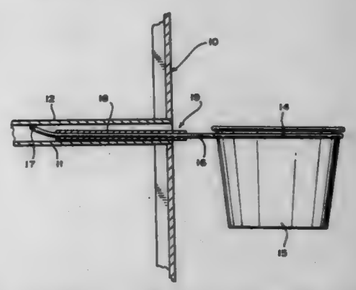
CONTAINER HOLDING ATTACHMENT INSERTABLE IN A TUBULAR LADDER RUNG

Charles K. Lunden, Jr., Box 4028, Union, Me. 04862

Continuation-in-part of Ser. No. 828,159, Jan. 30, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 51,971

Int. Cl.[5] E06C *7/14*

U.S. Cl. 182—129 **3 Claims**

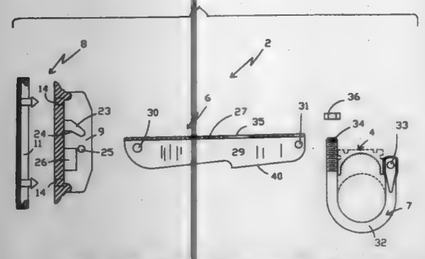


1. In combination, a ladder for use by painters and of the type provided with hollow rungs having tread surfaces and which are generally circular at least below the tread surfaces, and an attachment to be held by a selected rung of the ladder and to hold an open container which is circular in cross section and of maximum size adjacent the open end of the container, said attachment comprising a rigid, circular first portion dimensioned to receive an open container with the received container held adjacent the upper end thereof, a rigid U-shaped second portion of a width less than the inside diameter of the rungs, the end of the second portion permanently secured to the first portion with both portions in the same plane, the free end of the second portion curved away from said plane in a direction establishing the upper surface of the attachment and a flexible sleeve of circular section frictionally fitted on the rigid second portion and rendered oblate when thus fitted and of a length such that the ends thereof are close to the first portion and the upturned end of the second portion to provide a handle dimensioned both to be held by one hand of the painter and to be a free fit in a selected end of a rung, the extremity of the upturned end of the second portion exposed above the sleeve, whereby the handle, when thus held, can be inserted in the rung until the container holding first portion is close to one side of the ladder and when released, the weight of the attachment externally of the ladder causes the upturned end to frictionally engage the undersurface of the tread surface and that portion of the sleeve overlying the open end of the rung to come into holding contact therewith until lifted from

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such engagement and pulled by one hand until the handle is exposed to be gripped and held thereby.

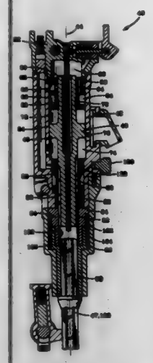
5,293,958
LADDER STAND-OFF ACCESSORY AND RUNG ADAPTER THEREFOR
Paul R. Swiderski, Scott County; Thomas J. Schmitt, and David L. Pringle, both of Jefferson County, all of Ky., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 12, 1992, Ser. No. 974,809
Int. Cl.[5] E06C *7/48*
U.S. Cl. 182—214 **15 Claims**



1. A ladder wall stand-off accessory for mounting on a ladder rung of a ladder including spaced ladder side rails, said stand-off accessory being positioned between and independent of said spaced ladder side rails comprising;
a longitudinally extending arm stand-off means having opposite ends with spaced rung gripping and embracing means at one end thereof and wall surface engaging pad means mounted thereon at the opposite end thereof, said rung gripping and embracing means including a pair of U-shaped swing bolts with each of said swing bolts having a free arm section and a pivotal arm section, said pivotal arm section being pivotally mounted on said arm stand-off means with each swing bolt being sized and configured to pivotally engage with and embrace a ladder rung between and independent of the side rails thereof to be in embracing relation with said rung; and,
fastening means cooperating with said free arm section of each of said swing bolts and said arm stand-off means to firmly clamp said swing bolts with said engaged and embraced ladder rung.

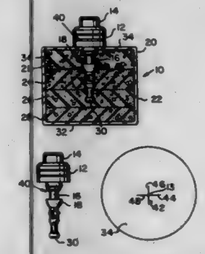
5,293,959
LOW PRESSURE SYSTEM LUBRICATION FOR A JACKHAMMER
Robert R. Kimberlin, Troutville, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Sep. 21, 1992, Ser. No. 947,622
Int. Cl.[5] F01M *9/00*
U.S. Cl. 184—6.14 **9 Claims**

1. A low pressure lubrication system for use in a percussive, fluid-activated jackhammer, said jackhammer having a housing forming a central bore, a drive chamber and a return chamber in said bore, to activate a reciprocal piston, and a front piston chamber in said bore between a drill steel chuck and a piston stem end, for exhausting a portion of said percussive fluid out said bore through said drill steel chuck, for debris removal, said low pressure lubrication system comprising:
a. lubricant chamber means in said bore, for storing a liquid lubricant;
b. means for introducing said liquid lubricant into said lubricant chamber means;
c. means for subjecting said lubricant chamber means to fluid pressure in said front piston chamber, including exhaust fluid pressure from said return chamber, but not to fluid pressure in said drive chamber; and



d. passageway means connecting said lubricant chamber means and said bore, for introducing said lubricant into said bore during reciprocation of said piston.

5,293,960
BUTTON LUBRICATOR
Frank G. Majerowicz, 667 Budleigh Cir., Timonium, Md. 21093, and Lloyd H. Shue, 633 Buckland Pl., Bel Air, Md. 21014
Filed Sep. 29, 1992, Ser. No. 953,010
Int. Cl.[5] F01M *1/00*
U.S. Cl. 184—13.1 **3 Claims**

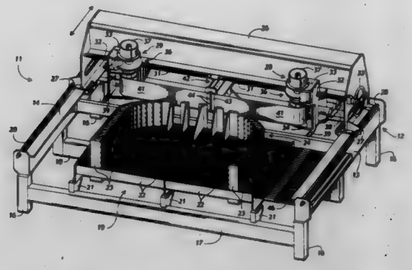


1. A button lubricator system, comprising, a closed structure defining a closed end cylindrical housing having a removable open end and forming an upright body of the button lubricator, amine and organo-silicone in said cylindrical housing, and an elongated button valve mechanism disposed in said removable open end, wherein said button valve mechanism has a round, depressable upper portion and a narrow lower portion, and whereby said removable open end of said cylindrical housing is made from a rigid rubber material.

5,293,961
METHOD AND APPARATUS FOR FABRICATING ARCUATE WOODEN STRUCTURES
Leonard F. Posteman, 830 Ranchwood Trail, Woodstock, Ga. 30188
Filed Aug. 20, 1992, Ser. No. 932,882
Int. Cl.[5] B27D *1/00*; B27N *1/00*
U.S. Cl. 144—349 **18 Claims**

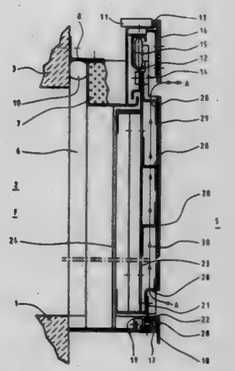
1. An apparatus for producing arcuate structural members comprising:
a frame;
a substantially planar bed secured to said frame;

means on said bed for forming a mandrel having an arcuate shape corresponding to the shape of arcuate structural members to be produced;
means for clamping the intermediate portion of an elongated work piece to said mandrel at a position intermediate the ends of the mandrel;
first means for applying and holding pressure on said work piece progressively from the clamped portion of the work



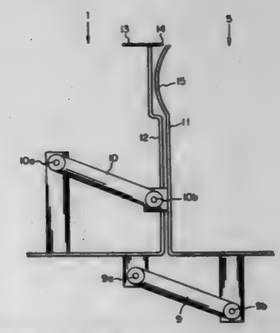
piece toward one end of said arcuate shaped mandrel to bend a first section of the work piece about and hold it firmly against the mandrel; and
second means for applying and holding pressure on said work piece progressively from the clamped portion of the work piece toward the other end of said arcuate shaped mandrel to bend a second section of the work piece about and hold it firmly against the mandrel.

5,293,962
FIREPROOF SHAFT DOOR FOR ELEVATORS
Jean-Claude Pelvilain, Ponthierry, France, assignor to Inventio AG, Hergiswil, Switzerland
Filed Dec. 23, 1992, Ser. No. 995,900
Claims priority, application Switzerland, Dec. 24, 1991, 03843/91-2
Int. Cl.[5] B66B *9/00*
U.S. Cl. 187—1 R **17 Claims**



15. A fireproof shaft door for an elevator installation, the shaft door being positioned at a floor in a shaft door opening in a wall of the shaft, the shaft door being suspended by a door suspension attached to a roller guide attached to the shaft wall, the shaft door being horizontally displaceable by movement of the roller along the roller guide, a lower edge of the shaft door being attached to and guided by a sliding guide in a threshold of the shaft door opening, comprising:
a framework having a floor side and a shaft side;
a door box positioned at said floor side of said frame work and having an interior filled with a first heat insulating space, a first heat insulating mat, a second heat insulating space and a second heat insulating mat in a layer sequence beginning at said floor side of said framework;
a plurality of spars attached to said door box at said shaft side framework;
a plurality of heat insulating plates attached to said spars at said shaft side of said framework whereby said heat insulating plates are spaced from and cooperate with said door box to form a first hollow space therebetween in which fresh air can circulate; and
wherein said door box has a vertically extending closing edge and including a vertically extending recess formed in said closing edge to form a second hollow space for circulating fresh air when the fireproof shaft door is in a closed position in the shaft door opening.

5,293,963
FORKLIFT TRUCK
Eric Moinean, Bordeaux-Cauerdan, France, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 23, 1993, Ser. No. 35,666
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 R **4 Claims**



1. A forklift truck having a drive section and a load section vertically movable relative to the drive section, a parallelogram hinge connecting said drive section to said load section, said load section having a front wall adjacent to said drive section perpendicular to the longitudinal axis of said truck, said drive section having a rear wall opposite said front wall of said load section, a top cover resting on said rear wall of said drive section and having an edge adjacent to said front wall of said load section, said front wall of said load section having an upper portion with a convex curve toward said drive section, whereby when said load section is raised and lowered on said parallelogram hinge an essentially constant distance is maintained between said edge of said top cover and the surface of said convex curve upper portion of said front wall of said load section.

5,293,964
BICYCLE BRAKE DEVICE
Jung-Hua Li, Changhua, Taiwan, assignor to Ah-Ping Lin, Changhua, Taiwan
Filed Jun. 15, 1993, Ser. No. 77,218
Int. Cl.[5] B62L *1/08*
U.S. Cl. 188—24.19 **1 Claim**

1. A bicycle brake device to be installed on a bicycle frame

VOL 1160 ISS 3 MR 15 1994 UMI

which has a bicycle wheel mounted rotatably thereto, comprising:

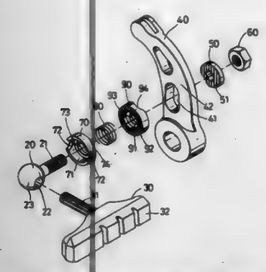
a curved brake arm formed with an elongated slot therethrough and adapted to be mounted pivotally on said bicycle frame;

a metal annular retaining seat confining a hollow space therein and having a front end which is formed with a pair of diametrically opposite retaining notches, a rear end which is formed with an annular inward flange, and a knurled rear end surface;

a metal annular support seat confining a hollow space therein and having a knurled front end surface, a rear end which is formed with an annular inward flange and a rear uneven friction face which abuts against one side of said brake arm;

a spring unit which is disposed in said hollow space of said support seat and which has two ends that abut respectively against said flange of said support seat and said flange of said retaining seat;

a washer provided with an uneven friction face that abuts against an opposite side of said brake arm;



a bolt having a spherical head and a threaded shank, said spherical head being formed with a diametrical through hole that is transverse to said threaded shank, said threaded shank extending through said retaining seat, said spring unit, said support seat, said elongated slot of said brake arm and said washer, a portion of said spherical head extending into said hollow space of said retaining seat;

a nut engaging a distal end of said threaded shank and being rotated relative to said threaded shank so as to retain said spring unit in a compressed state and permit said knurled end surfaces of said retaining seat and said support seat to engage one another; and

a brake block having a front face which is provided with a brake pad and a rear face which is provided with a shaft projection that extends through said through hole of said bolt and that engages said retaining notches of said retaining seat, said brake arm being pivoted so as to move said brake block to contact said bicycle wheel in order to brake said bicycle wheel.

5,293,965

BICYCLE BRAKE

Masashi Nagano, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Aug. 24, 1992, Ser. No. 933,731

Claims priority, application Japan, Aug. 28, 1991, 3-215738

Int. Cl.[5] B62L *1/14*

U.S. Cl. 188—24.21 **8 Claims**

1. A bicycle brake mechanism comprising:

a brake operating lever;

a first and a second brake caliper pivotably supported on a bicycle frame;

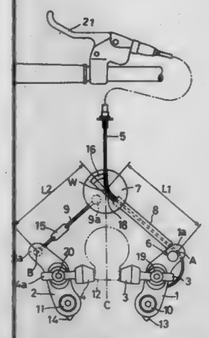
cable connecting means provided on said first brake caliper;

a control cable having one end thereof connected to said brake operating lever, and the other end connected to said first brake caliper at said cable connecting means;

a connecting element engageable with and slidable along said control cable;

a tension element for interconnecting said second brake caliper and said connecting element; and,

a supporter disposed between said connecting element and



said first brake caliper for maintaining a predetermined distance between said connecting element and a point at which said first brake caliper engages said control cable, said supporter including a hollow portion through which said control cable extends, said supporter maintaining said predetermined distance by contacting said first brake arm and engaging said conducting element and by counteracting a tension force exerted by said control cable.

5,293,966

MULTI-DISK BRAKING DEVICE

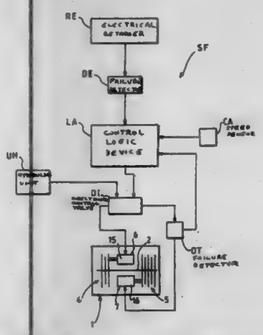
Jean-Louis Charriere, Levallois Perret, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 862,341, Apr. 2, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 93,459

Claims priority, application France, Apr. 19, 1991, 91 04849

Int. Cl.[5] F16D *55/08*; B60T *13/00*; B61H *13/00*

U.S. Cl. 188—72.1 **15 Claims**



1. A multi-disk braking device for a vehicle equipped with a braking retarder, which device comprises:

a first set of disks (4) made from a metallic material and of which at least some are integrally connected, in terms of rotation, to a rotary element (2) of said vehicle;

first pressure means (6) capable of acting on the first set of disks (4) and joined to a stationary element (3) of said vehicle;

a second set of disks (5) made from carbon and of which at least some are integrally connected, in terms of rotation, to said rotary element;

second pressure means (7) capable of acting on the second set of disks and joined to said stationary element of the vehicle, said second pressure means being normally inoperative while said braking retarder is operable;

means (CA, LA, DI, etc.) for controlling the actuation of said first pressure means (6) as soon as the vehicle, braked by said retarder, reaches a prescribed limiting speed; and

means (DE) for detecting an operational failure of said retarder and for actuating the second pressure means (7) to stop said vehicle using said second set of disks.

5,293,967

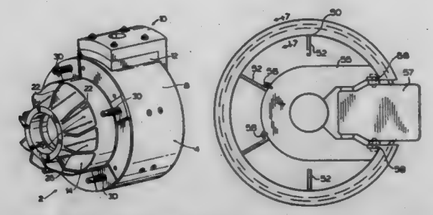
SHIELDED VEHICLE BRAKE

Eric Siegrist, R.R. #2, Wiarton, Ontario, Canada N0H 2T0

Continuation-in-part of Ser. No. 297,133, Jan. 17, 1989, Pat. No. 5,097,927. This application Mar. 17, 1992, Ser. No. 853,081

Int. Cl.[5] F16D *65/847*

U.S. Cl. 188—264 R **5 Claims**



1. A vehicle brake comprising

a ring braking member having braking surfaces to both the interior and exterior of said member,

a hub including a central port for mounting of bearings, said hub being connected to said ring braking member by means of radial members spaced about said hub and having air passages therebetween, said radial members being orientated to draw an air flow through the center of the brake, said air passages accommodating said air flow through said brake which passes over an exterior surface of a shield, which exterior surface is located radially inwardly of and adjacent to said ring braking member opposite said interior braking surface,

said shield cooperating with said interior braking surface to shield said interior braking surface from dirt and water contained in any air flow through the center of the brake and to transfer heat energy of said interior braking surface to said air flow via said shield, and

a brake calliper arrangement positioning braking pads either side of said braking surfaces which commonly brake said ring brake member when applied thereto by said brake caliper.

5,293,968

DUAL-TUBE SHOCK ABSORBER

Armin Schuelke, Schwieberdingen; Kurt Engelsdorf, Besigheim, and Karl-Heinz Haegele, Vaihingen/Enz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

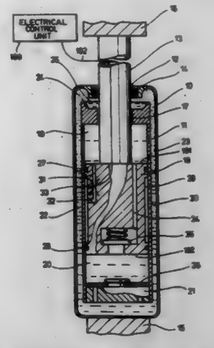
Filed Nov. 18, 1992, Ser. No. 977,991

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139821

Int. Cl.[5] F16F *9/18, 9/34*; B60G *15/08*

U.S. Cl. 188—282 **21 Claims**

1. A dual-tube shock absorber for a vehicle including a vehicle body and vehicle wheels with wheel supports, said dual-tube shock absorber includes an outer cylinder (10) and an inner cylinder (11), a piston rod (13) associated with the vehicle body; said outer cylinder (10) is associated with a vehicle wheel (15); said inner cylinder is retained in the outer cylinder; a damping piston is secured to the piston rod and guided axially displaceably in the inner cylinder, said damping piston separates a liquid-filled upper pressure chamber (19) from a liquid-filled lower pressure chamber (20), the upper pressure chamber (19) is penetrated by the piston rod (13); a partially liquid-filled compensation chamber (22) is located in a spacing between the inner and outer cylinders; a first check valve (26) is disposed in a bottom of the inner cylinder which enables a flow of liquid from the compensation chamber to the lower pressure chamber; a through conduit (34) is in the damping piston, in which



conduit a second check valve (35) is placed with a flow direction toward the upper pressure chamber; a connecting line is between the upper pressure chamber and the compensation chamber (22), which connecting line includes a damping device (33) that is definitive for a damping action, the connecting line (31, 32; 36, 37) is arranged in the damping piston (18), and the damping device (33) is disposed in the damping piston (18), the dual-tube shock absorber operates during a retraction stroke by an inward spring deflection, during a compression stage and during an extension stroke by an outward spring deflection, tension stage, the damping device (33) is definitive for the damping action during the retraction stroke and during the extension stroke.

5,293,969

ELECTROMAGNETIC SUSPENSION DEVICE

Fumiyuki Yamaoka, and Mitsuo Sasaki, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Atsugi, Japan

Filed Feb. 6, 1992, Ser. No. 831,811

Claims priority, application Japan, Feb. 14, 1991, 3-020630; Feb. 27, 1991, 3-031201

Int. Cl.[5] B60G *17/00*

U.S. Cl. 188—299 **11 Claims**

1. An electromagnetic suspension device for use between a vehicle body and a road wheel, comprising:

a body-connected structure connected to said vehicle body to move therewith;

a wheel-connected structure connected to said road wheel to move therewith, said body-connected and wheel-connected structures being arranged to carry out a relative movement therebetween;

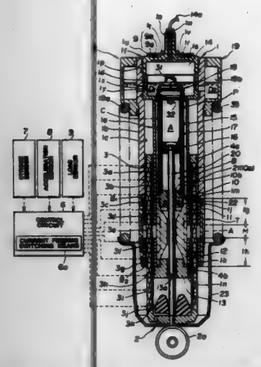
an electromagnetic actuator associated with said body-connected and wheel-connected structures to electromagnetically control said relative movement in accordance with electric power applied thereto; and

a hydraulic damper arranged in parallel with said electromagnetic actuator between said body-connected structure and said wheel-connected structure to produce a damping force in accordance with said relative movement, said hydraulic damper including:

first, second and third tubes constituting a part of said body-connected structure, said first, second and third tubes being coaxially combined to define bet' a first cylindrical space between said first and second tubes and a second cylindrical space between said second and third tubes;

means defining a larger space by an upper portion of said first tube, to which space an upper open part of said first cylindrical space is exposed, said larger space serving as a main reservoir chamber;

means providing a communication between lower ends of said first and second cylindrical spaces;



a fluid contained in said first and second cylindrical spaces, said main reservoir chamber and said third tube;

a piston slidably and sealingly disposed in said third tube to divide the interior of said third tube into upper and lower chambers, said piston being connected to said wheel-connected structure through a piston rod; and

a valve structure spacedly received in said main reservoir chamber and mounted on upper ends of said second and third tubes, said valve structure having a plurality of fluid control passages through which said upper chamber, said second cylindrical space and said main reservoir chamber are communicated in a controlled manner.

5,293,970

CYLINDER INCLUDING A CONTROL VALVE BETWEEN SEPARATE WORK CHAMBERS

Steffen Schneider, Tamm; Hohenstange, and Paul Nathan, Steinheim a.d. Murr, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

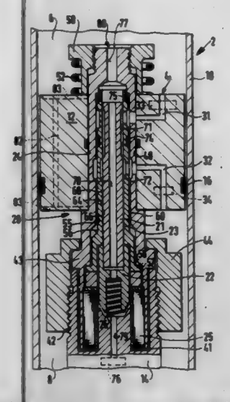
Filed Mar. 4, 1992, Ser. No. 845,884

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107600

Int. Cl.[5] F16F *9/46*; F16B *15/00*; B60G *17/08*

U.S. Cl. 188—299 **15 Claims**

1. A cylinder (2) having a cylinder tube (10) and having a piston (12) displaceably supported in the cylinder tube (10), and having a valve device (20) with an actuatable control slide (21) guided by a slide guide (23) having a longitudinal length, wherein the slide guide (23) is fixedly supported in a valve housing (24) against axial movement, and a play (60) formed by a radial spacing along at least substantially the longitudinal length of said slide guide is present between the slide guide (23) and the valve housing (24), which upon a deformation of the



valve housing (24) any place along said radial spacing keeps this deformation away from the slide guide (23).

5,293,971

SHOCK ABSORBER WITH DAMPING VALVE STRUCTURE HAVING WIDE RANGE VARIABLE DAMPING CHARACTERISTICS

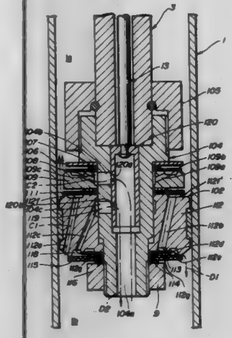
Issei Kanari, and Junichi Emura, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Continuation of Ser. No. 388,005, Aug. 1, 1989, abandoned. This application Jun. 1, 1993, Ser. No. 69,676

Claims priority, application Japan, Aug. 2, 1988, 63-103111[U]; Nov. 28, 1988, 63-154453[U]

Int. Cl.[5] F16F *9/34*

U.S. Cl. 188—319 **8 Claims**



1. In a damping valve assembly;

a cylinder tube with an internal space containing a working fluid;

a piston rod extending into said internal space and having a piston fixed thereto, said piston being disposed within said internal space to separate said internal space into a first fluid chamber and a second fluid chamber, said piston rod having an axial bore in fluid communication with said second fluid chamber and a radial opening in fluid communication with said axial bore;

said piston having a first end adjacent said first fluid chamber and a second end, opposite to said first end adjacent said second fluid chamber, said second end of said piston being formed with an outer annular groove and an inner annular groove which is separated from said outer annular groove by an annular land;

said piston having a communication path having one end in fluid communication with said first fluid chamber and an opposite end in fluid communication with said inner annular groove;

a first damping valve mounted to said piston and seated on said annular land to cover said inner annular groove;

a second damping valve mounted to said piston in spaced relationship with said first damping valve and cooperating with said first damping valve to define therebetween an annular space in fluid communication with said outer annular groove;

said first damping valve being operative to permit a fluid communication between said inner groove and said annular space during a piston stroke wherein said first fluid chamber is compressed and said second fluid chamber is expanded,

said second damping valve being operative to permit a fluid communication between said annular space and said second fluid chamber during said piston stroke;

said piston having a bypass passage having one end in fluid communication with said annular space and an opposite end in fluid communication with said radial opening of said piston rod; and

a cylindrical rotary valve rotatably disposed in said axial bore and having a position in which said cylindrical rotary valve covers said radial opening, said cylindrical rotary valve having an orifice, said cylindrical rotary valve having another position in which said orifice is in fluid communication with said radial opening to establish a fluid communication between said annular space and said axial bore of said piston rod.

5,293,972

HYDRAULICALLY OPERATED PRESS BRAKE

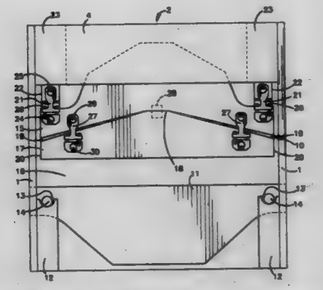
Waldemar Krumholz, Hinwil, Switzerland, assignor to M+S Brugg AG, Brugg, Switzerland

Filed Nov. 4, 1992, Ser. No. 971,294

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138286

Int. Cl.[5] B21D *5/01*

U.S. Cl. 188—371 **17 Claims**



1. A hydraulically operated press brake comprising:

a frame structure;

a pressure ram member mounted in said frame structure to be vertically movable;

a stationary ram member mounted in said frame structure;

said pressure ram member being divided into a first upper portion and a second lower portion along a plane essentially running perpendicular to the direction of motion of said pressure ram member;

both said upper portion and said lower portion of said pressure ram member comprising a centrally located contact area where they abut against each other, said upper portion and said lower portion being separated from each other by a gap running on each side from said contact area to lateral ends of said upper and lower portions of said pressure ram member with a continuously increasing gap width; and

at least two operating cylinders mounted in said frame structure and operatively connected to said upper portion of said pressure ram member in the region of the two lateral ends thereof for driving said pressure ram member to a motion against said stationary ram member and for retracting said pressure ram member vertically back from said stationary ram member.

5,293,973

DEFORMATION MEMBER HAVING AN EVERSION PORTION

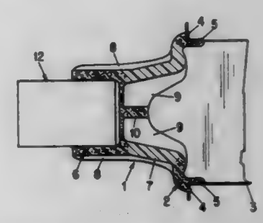
Holger M. Thum, Braunschweig, Fed. Rep. of Germany, assignor to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 985,590

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141433

Int. Cl.[5] F16F *7/12*

U.S. Cl. 188—377 **7 Claims**



1. A deformation member comprising a one-piece member having an outwardly projecting end portion made of fiber-reinforced synthetic thermoplastic material arranged for attachment to one end of an adjacent rigid tubular part, another end portion made of fiber-reinforced synthetic thermoplastic material at the other end arranged for attachment to another adjacent part, and a tubular deformation portion joining the end portions made of unreinforced synthetic thermoplastic material and arranged to reduce its length by eversion into the adjacent tubular part in response to a force of selected intensity directed essentially along the lengthwise axis of the member.

5,293,974

DEVICE FOR THE TRANSMISSION OF STATIC FORCES AND FOR THE FILTRATION OF VIBRATORY EXCITATIONS BETWEEN TWO COMPONENTS

Claude Bietenhader, Lambesc, and Maurice Blanc, Eguilles, both of France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Mar. 10, 1992, Ser. No. 848,739

Claims priority, application France, Mar. 25, 1991, 91 03582

Int. Cl.[5] F16F *7/10*

U.S. Cl. 188—379 **14 Claims**

1. A device for elastic connection between first and second components, for transmitting static forces from said first component to said second component along a vertical axis of the device and for filtering coaxial vibrations between said first and second components, said device comprising

elastic return means (4) connected between said first and said second components,

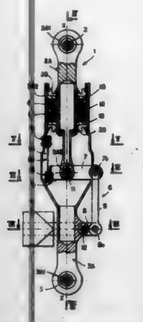
at least one swinging mass located at one end of a lever arm (6) said lever arm having another end pivotally connected to said first and second components,

a first elongate element (2A) directly connected to said first

component (2) and a second tubular elongate element (3A) directly connected to said second component (3),

said first (2A) and second (3A) elongate elements being arranged coaxially and being capable of sliding longitudinally relative to each other,

said lever arm (6) consisting of at least two portions (7,8) pivotally connected to one another, a first portion (7) of



said lever arm (6) being pivotally connected to said first and second elongate elements (2A,3A), said second portion (8) of said lever arm (6) being pivotally connected to said first and second elongate elements (2A,3A), said second portion (8) being pivotally connected to said first portion (7) of said lever arm at one end and carrying said swinging mass (8) at an opposite end (8*b*).

5,293,975

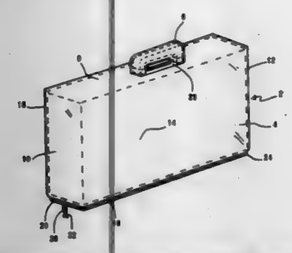
BRIEFCASE PROTECTOR WITH A HANDLE COVER PORTION

David J. Howorka, 1730 North Clark St., Suite 307, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 930,208, Aug. 13, 1992. This application Nov. 25, 1992, Ser. No. 981,231

Int. Cl.[5] A45C *13/00*

U.S. Cl. 190—26 5 Claims



4. A protector for a briefcase having an arched handle around which the fingers of a hand can be gripped, said protector comprising

a body of flexible material dimensioned to enclose the briefcase, the body comprising a top panel having opposing side edges and opposing end edges and a handle opening therein, first and second side panels and first and second end panels, each of said side and end panels having a top edge, a bottom edge and opposing side edges, wherein the tope edges of the side panels are joined to the side edges of the top panel, and the top edges of the end panels being joined to the end edges of the top panel, the adjacent side edges of the side and end panels being joined together, and the bottom edges of the side and end panels being unjoined so as to permit the body to be slipped downwardly over the briefcase with the handle of the briefcase extending through the handle opening; and

a handle cover comprising first and second legs that extend from the body on opposite sides of the handle opening and a bridging portion that connects the extended ends of the first and second legs, the legs and bridging portion of the handle cover being dimensioned so as to conform to the outer shape of the briefcase handle, while defining a grip opening through which the briefcase handle can be grasped as it protrudes through the handle opening in the body, the handle cover further comprising a protective flap that extends from the bridging portion of the handle cover and terminates at a free end, and means for releasably fastening the free end of the protective flap to the handle cover after the free end has been passed through a briefcase handle protruding through the handle opening.

5,293,976

BRAKE-AND ACCELERATOR PEDAL ASSEMBLY

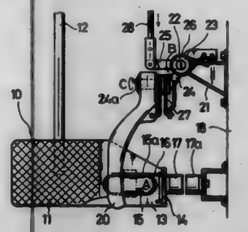
Masuyuki Naruse, 603, Noguchi, Taimei-machi, Tamana-gun, Kumamoto-ken, 869-02, Japan

Filed Jul. 2, 1992, Ser. No. 907,980

Claims priority, application Japan, Jul. 11, 1991, 3-196162; Nov. 1, 1991, 3-313145; Apr. 9, 1992, 4-115280

Int. Cl.[5] B60K *41/20*; E05B *65/06*

U.S. Cl. 192—1.57 9 Claims



1. A brake-and-accelerator pedal assembly for an automobile, comprising:

a brake pedal which is movable in a longitudinal direction, said brake pedal including an opening in a surface thereof, and a guide roller mounted thereto, wherein a portion of said guide roller projects through said opening, said roller being rotatable in opposite directions to cause a ball of a driver's foot to move smoothly leftward and rightward upon engagement of said portion of said roller and the driver's foot; and

an accelerator pedal which is pivotable in a lateral direction with respect to said longitudinal direction, said accelerator pedal being pivotably mounted to a selected stationary part of the automobile, and is resiliently urged toward a center of said brake pedal from one side thereof, wherein acceleration drive is controlled by rotating the driver's foot about a heel thereof to push said accelerator pedal laterally, said acceleration pedal also being pivotable in said longitudinal direction, and being resiliently urged in said longitudinal direction toward the surface of said brake pedal.

5,293,977

APPARATUS FOR TRANSMITTING TORQUE BETWEEN THE ENGINE AND THE TRANSMISSION OF A MOTOR VEHICLE

Oswald Friedmann, Lichtenau, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

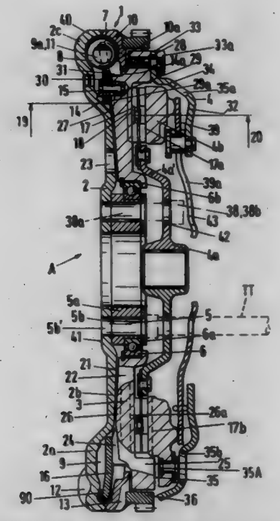
Division of Ser. No. 708,930, May 31, 1991, Pat. No. 5,150,777. This application Sep. 9, 1992, Ser. No. 942,435

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017519; Jun. 29, 1990, 4020759; Aug. 31, 1990, 4027542; Aug. 31, 1990, 4027593; Aug. 31, 1990, 4027614; Aug. 31, 1990, 4027629; Dec. 24, 1990, 4041709; Dec. 24, 1990, 4041722

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] F16F *15/12*

U.S. Cl. 192—70.17 12 Claims



1. Apparatus for transmitting torque in a motor vehicle, comprising a first rotary flywheel connectable with an engine of a vehicle; a second rotary flywheel connectable with a transmission of the vehicle by a clutch, each of said flywheels having a circumference; at least one antifriction bearing between said flywheels; at least one damper operative to oppose rotation of said flywheels relative to each other and disposed in an at least partly sealed annular chamber which is defined at least in part by at least one of said flywheels, said at least one damper having energy storing elements acting circumferentially of said flywheels and said clutch having a clutch plate adjacent an annular friction surface of one of said flywheels, said friction surface having a radially innermost portion and a radially outermost portion and said chamber having a radially inner portion extending radialy inwardly at most halfway between said innermost and outermost portions; and means for fastening said first flywheel to a rotary output element of the engine, said first flywheel having holes for said fastening means and said holes being located radially outwardly of said at least one bearing, said fastening means comprising discrete fasteners which are arranged to pass through said holes and to engage the output element of the engine, said second flywheel having openings in at least partial alignment with said holes to permit passage of a tool which is used to engage said fasteners with the output element of the engine.

5,293,978

APPARATUS FOR TRANSMITTING TORQUE IN THE POWER TRAINS OF MOTOR VEHICLES

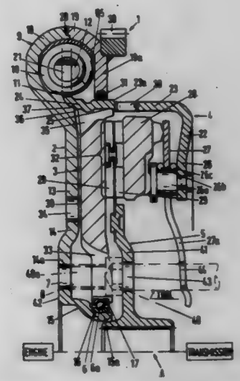
Wolfgang Reik, Bühl Baden, and Johann Jäckel, Baden-Baden, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Division of Ser. No. 708,934, May 31, 1991, Pat. No. 5,160,007. This application Sep. 16, 1992, Ser. No. 946,527

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017519; Jun. 29, 1990, 4020759; Aug. 31, 1990, 4027542; Aug. 31, 1990, 4027593; Aug. 31, 1990, 4027614; Aug. 31, 1990, 4027629; Dec. 24, 1990, 4041709; Dec. 24, 1990, 4041722

Int. Cl.[5] F16D *3/66, 3/14*

U.S. Cl. 192—70.17 24 Claims



1. A torque transmitting apparatus for use in motor vehicles, comprising a first rotary flywheel connectable with an engine of a vehicle; a second rotary flywheel connectable to a transmission of the vehicle by a friction clutch having a cover, a pressure plate on said cover, and a clutch plate between said pressure plate and a friction surface of said second flywheel; at least one damper operative to oppose rotation of said flywheels relative to each other and disposed in an annular chamber defined at least in part by said first flywheel; a supply of viscous fluid at least partially filling said chamber; and means for at least substantially sealing said chamber from the atmosphere, said friction surface having a radially innermost portion and a radially outermost portion and said chamber having a radially inner portion extending radially inwardly from the outermost portion toward the innermost portion of said friction surface and terminating at most midway between said innermost and outermost portions.

5,293,979

COIN DETECTION AND VALIDATION MEANS

Joseph L. Levasseur, Chesterfield, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

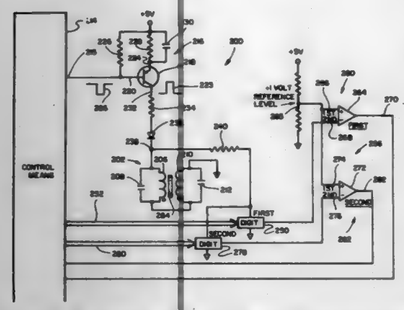
Filed Dec. 10, 1991, Ser. No. 804,441

Int. Cl.[5] G07D *5/08*

U.S. Cl. 194—317 29 Claims

1. A metal detector comprising a first tank circuit formed of discrete capacitive and inductive elements and a second tank circuit formed of discrete capacitive and inductive elements, means to charge the tank circuits including means to remove the charging means to cause a damped wave output signal to be produced the characteristics of which will be affected by the presence of a metallic specimen in the field thereof, the arrangement of the inductive elements of the first and second tank circuits being such as to have mutual inductance therebetween, whereby the output signal being affected by the charac-

teristics of the first and second tank circuits, and means for detecting a particular characteristic of the output signal includ-



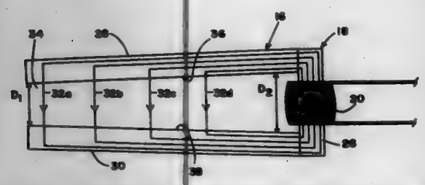
ing means to establish from the detected characteristic an identification for each different type of metallic specimen.

5,293,980

COIN ANALYZER SENSOR CONFIGURATION AND SYSTEM

Donald O. Parker, 987 3 Mile Rd., Grand Rapids, Mich. 49505

Filed Mar. 5, 1992, Ser. No. 847,773
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—317 **33 Claims**



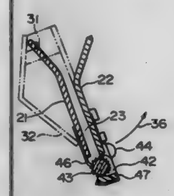
29. A coin detecting sensor adapted to detect whether a coin passing through a coin passageway is a particular one of a plurality of denominations having a range of diameters, comprising a body having spaced apart sides defining an air gap in said body, a coin passageway having a width larger than the diameter of the largest coin of the particular denominations to be detected defined in said air gap, a magnetic flux generator for generating a magnetic flux from one of said sides to the other one of said sides through said air gap and a return path in said body for conducting said magnetic flux to said one of said sides from said another one of said sides, wherein a uniform flux density extends across said width of said coin passageway substantially completely to thereby allow any of said plurality of denominations to be detected irrespective of position of the coin in the coin passageway.

5,293,981

COIN SORTING DEVICE IN WHICH UNNECESSARY MATERIAL CAN BE READILY REMOVED FROM A SORTING PASSAGE

Hiroshi Abe, Tokyo, and Yoshinobu Tanaka, Saitama, both of Japan, assignors to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 943,288
Claims priority, application Japan, Sep. 11, 1991, 3-095942; Sep. 11, 1991, 3-095943; Sep. 11, 1991, 3-095944; Nov. 27, 1991, 3-111531; Feb. 28, 1992, 4-023240
Int. Cl.[5] G07F *1/04*
U.S. Cl. 194—345 **8 Claims**



1. A coin sorting device comprising:

passage defining means for defining a sorting passage which extends in a predetermined direction and which is supplied with a coin having a coin peripheral surface, said passage defining means moving said coin along said sorting passage;

sorting means connected to said passage defining means for carrying out a sorting operation for said coin during movement of said coin;

removing means connected to said passage defining means for removing unnecessary material from said sorting passage;

said passage defining means comprising guiding means for guiding said coin in said predetermined direction, said removing means being connected to said guiding means, said guiding means comprising:

a bottom portion for defining a bottom of said sorting passage; and

a side portion connected to said bottom portion for defining one of sides of said sorting passage,

said removing means being connected to said bottom portion, said bottom portion having a bottom receiving surface extending in said predetermined direction for receiving said coin peripheral surface,

said removing means comprising a bottom roller member connected to said bottom portion,

said bottom roller member having a bottom roller axis extending in said predetermined direction and a bottom roller peripheral surface surrounding said bottom roller axis;

said bottom roller peripheral surface having an upper part flushing with said bottom receiving surface,

said coin sorting device further comprising rotating means connected to said bottom roller member for rotating said bottom roller member around said bottom roller axis.

5,293,982

STEP CHAIN PLUG-IN AXLE

Hermann W. Ahls, Obernkirchen, and Alfons Von Herz, Stadthagen, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jan. 12, 1993, Ser. No. 3,166
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—332 **4 Claims**

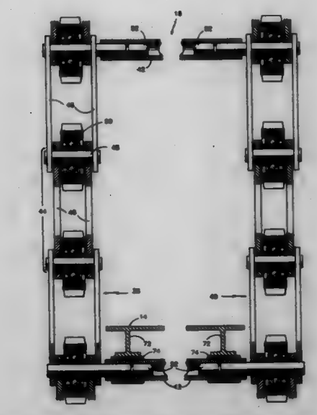
1. A step chain for a person conveying device having a plurality of tread plates drawn along a predetermined path by said step chain, comprising:

a first strand, having a plurality stub axles;

a second strand, having a plurality of stub axles;

a plurality of connecting axles, for supporting the tread plates which attach to the said connecting axles, wherein said stub axles of said first and second strands are received within and spaced apart by said connecting axles; and

a plurality of snap rings, for attaching said connecting axles to said stub axles of said first and second strands, wherein



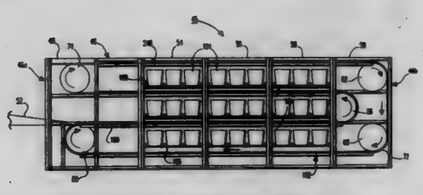
each snap ring is received within a first groove in either of said stub axle or said connecting axle, such that when said stub axle is received within said connecting axle, said snap ring is biased into said first groove until said first groove and a second groove in the other of said stub axle or said connecting axle are aligned, then said snap ring radially expands partially out of said first groove and into said second groove, thereby preventing axial movement of said stub axle relative to said connecting axle.

5,293,983

TRANSPORT/STACKER MODULE FOR MAIL PROCESSING SYSTEM

Thomas F. Grapes, Columbia; James A. Rew, Millersville, both of Md.; Charles M. Miller, Seven Valleys, Pa.; John J. Buckley, Jr., Hanover, Md.; Stanley K. Wakamiya, Ellicott City, Md.; David J. Tilles, Baltimore, Md., and William L. DeHaven, Millersville, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 9, 1991, Ser. No. 742,753
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—358 **15 Claims**



1. A transport/stacker module comprising:

a support frame having a front end and a rear end, the front end being adjacent a mail induction system;

a first pair of front sprockets mounted in the front end of the frame for rotation about a horizontal axis transverse the frame;

a first pair of rear sprockets mounted on the rear end of the frame for rotation about a horizontal axis transverse the frame;

an endless loop conveyor running between the first pairs of front and rear sprockets and defining a first run and a second run vertically above the first run;

a plurality of horizontally oriented carriers attached to the conveyor at spaced intervals, each carrier receiving a mail piece from the mail induction system;

a plurality of bins disposed between the first and second runs, each having an open top disposed below the second run;

drive means for rotating one of the first pairs of front and rear sprockets thus moving the carriers along a transport path; and

a plurality of rake mechanisms, one being disposed above each of the plurality of bins and above the second run, each rake mechanism being selectively actuated to rake a mail piece from a corresponding one of the carriers into a designated one of the bins as the drive means positions the corresponding carrier over the designated bin;

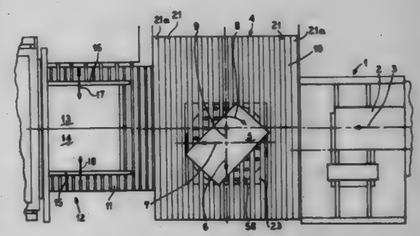
wherein each carrier has two opposite ends, a bottom, a pair of opposite sides extending upwardly from the bottom, and two openable and closable doors, one being disposed at each end.

5,293,984

DEVICE TO HANDLE AND TO ORIENT FLAT WORKPIECES ARRANGED IN BATCHES

Jean-Jacques Lucas, Prechac, France, assignor to Bobst SA, Switzerland

Filed Dec. 14, 1992, Ser. No. 989,718
Claims priority, application France, Dec. 13, 1991, 91 15756
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—414 **9 Claims**



1. In a device to handle and orient flat workpieces arranged in batches, said device having a carrier plane surface located between lateral walls of a support structure, said carrier plane surface being actuated by control means arranged therebeneath, the improvement comprising the carrier plane surface consisting of a first assembly and a second assembly, the first assembly being a series of driven rollers spaced one from another, the second assembly being a table equipped with driven balls, which are arranged between the rollers of the first assembly, said table including a circular element having an upper surface for engaging the balls, first means for rotating the circular element to drive the balls, second means for producing a relative vertical shifting between the upper surfaces of the balls of the table and the rollers of the first assembly between a position with the plane of the upper surface of the balls being below a contact surface of the rollers to a second position with the balls being above the plane of the contact surface of the rollers, and third means for relative lateral shifting of the second assembly with the balls relative to the first assembly in a direction extending parallel to the rollers so that a batch of flat workpieces transported onto the device can be rotated and shifted laterally as desired.

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5,293,985

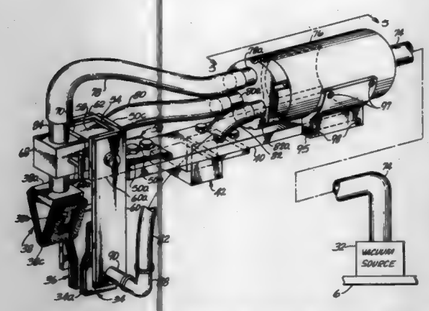
CLEANING DEVICE FOR DRY CLEANING CONVEYOR

Rick E. Alvarez, 8101 E. Torin St., Long Beach, Calif. 90808

Filed May 11, 1992, Ser. No. 881,098

Int. Cl.[5] B65G *45/00*

U.S. Cl. 198—496 12 Claims



1. A device for cleaning a rack and yoke assembly of a dry cleaning garment-carrying conveyor, the conveyor comprising a track for movement of the rack and yoke assembly, means for moving the rack and yoke, and a support for the track, the device comprising:

a plurality of brushes for contacting the rack and yoke assembly;

means for communicating a vacuum source with the brushes, the means for communicating comprising a hose for each brush;

supporting means for holding the brushes in position in contact with the rack and yoke assembly; and

means for fixing the supporting means to the support structure of the track.

wherein two of the brushes each comprise a plate and bristles, each plate having an aperture formed therein for receiving one of the houses, the bristles being formed around the aperture, so as to prevent dirt loosened by the bristles from falling onto garments below.

5,293,986

MATERIALS HANDLING APPARATUS

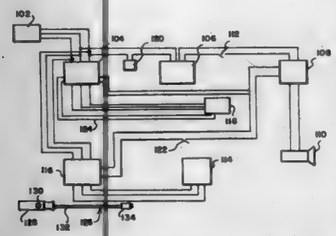
Digby H. Mouritzen, La Lucia; Kenneth H. Mouritzen, Umhlanga Rocks, both of South Africa, and Glenn L. Mouritzen, Arlington, Va., assignors to Greystones Enterprises Limited, Durban, South Africa

Filed Dec. 2, 1992, Ser. No. 984,484

Claims priority, application South Africa, Jul. 8, 1992, 92/5097

Int. Cl.[5] B65G *43/10*

U.S. Cl. 198—575 10 Claims



1. A conveyor system including first and second conveyors, each conveyor including a conveyor belt and an electric motor for driving the belt, said first conveyor having a power inlet and a power outlet, said power inlet being for connection to a power supply, power connecting means for connecting said motor of said first conveyor and said power outlet of the first conveyor to said power inlet of the first conveyor, said first conveyor further comprising a timer which commences a timing sequence when power is supplied to said power inlet of said first conveyor, said power connecting means being closed at the end of said timing sequence to supply power to said motor of said first conveyor and to said power outlet of said first conveyor, the second conveyor having a motor, a power inlet and a power outlet, the power inlet of the second conveyor being connected to the power outlet of the first conveyor whereby power reaches the power inlet of the second conveyor through the power outlet of the first conveyor after a delay the period of which is determined by said timer, and said second conveyor further comprising a timer which commences a further timing sequence when power is supplied to said power inlet of said second conveyor from the power outlet of the first conveyor, and power connecting means which closes at the end of said further timing sequence to connect said motor of said second conveyor and said power outlet of said second conveyor to the power inlet of the second conveyor.

5,293,987

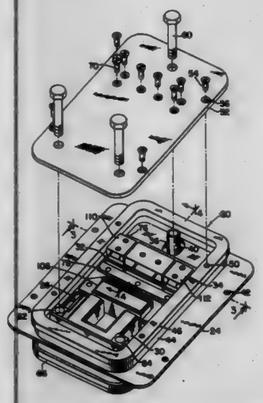
FEEDER DRIVE

Kenneth M. Marshall; Harold E. Patterson, both of Indiana; Paul I. Sleppy, Penn Run, and Arthur L. Dean, Indiana, all of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 21, 1992, Ser. No. 839,848

Int. Cl.[5] B65G *27/24*

U.S. Cl. 198—769 14 Claims



10. An electromagnetic drive for use in imparting vibratory motion to a host member, the drive comprising:

a center plate having a top surface and a bottom surface and having first and a second major apertures formed therein;

an armature supported by said center plate between said first and second major apertures;

a first elastomeric frame fixedly attached to said top surface of said center plate;

a second elastomeric frame fixedly attached to said bottom surface of said center plate;

top frame means fixedly attached to said first elastomeric frame;

bottom frame means fixedly attached to said second elastomeric frame;

top plate means attached to said top frame means;

bottom plate means attached to said bottom frame means;

an electromagnet fixedly located between said top and bottom plates in said first major aperture, said electromagnet secured for movement with said top and bottom plate means;

spring means fixedly located between said top and bottom plates in said second major aperture, secured for movement with said top and bottom plates and contactable with said center plate when said center plate moves relative to said top and bottom plates.

5,293,988

TWIST CORRECTION DEVICE FOR PIPE CONVEYOR

Shinichi Sumino, Yokohama, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

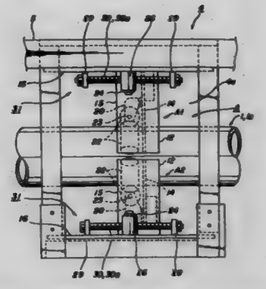
Continuation of Ser. No. 861,307, Mar. 31, 1992, Pat. No. 5,222,594. This application Feb. 26, 1993, Ser. No. 23,911

Claims priority, application Japan, Apr. 2, 1991, 3-94975; Oct. 17, 1991, 3-296690

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] B65G *39/16*

U.S. Cl. 198—808 13 Claims



1. A twist correction device for a pipe conveyor having an endless transfer belt whose at least part is rounded in a pipe shape enclosing therein a material to be transferred, wherein the device comprises a plurality of correction rollers obliquely inclined relative to the transfer direction of the transfer belt and in pressure contact with the outer circumferential surface of the pipe-shaped transfer belt to apply correcting force to the belt for correcting twisting of the belt, at least one roller support frame supporting the plurality of correction rollers, respectively, and pivotally connected to a stationary support frame rotatably about axes perpendicular to the transfer direction of the transfer belt, and angle adjusting means provided on the stationary support frame for adjusting rotated angles of the at least one roller support frame about the axes, thereby correcting twisting of the pipe-shaped transfer belt.

5,293,989

CHAIN CONVEYOR LINK PROVIDED WITH A PIN-LOCKING DEVICE

Carlo Garbagnati, Castello Brianza, Italy, assignor to Regina Sud S.p.A., Latina, Italy

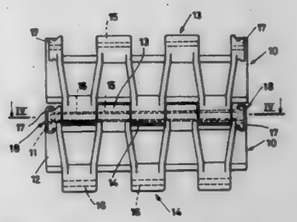
Filed Jun. 2, 1993, Ser. No. 70,678

Claims priority, application Italy, Jun. 10, 1992, MI 92 U 000592

Int. Cl.[5] B65G *17/06*

U.S. Cl. 198—853 5 Claims

1. Link (10) of a chain conveyor having a plane (12) region thereof terminating at at least one end with an enlarged articulation element (13) projecting downwardly from the plane (12) and passed through by a hole (15) parallel to the plane (12) for the introduction of a pivot pin (11), said enlarged element (13) having at least at one end (17) close to the hole (15), a plug (18) preventing the pivot pin (11) from slipping out of the hole itself, the plug (18) being provided with facing parallel resilient arms (20, 21) terminating with undercut teeth (22, 23) projecting towards each other for fitting in corresponding rectilinear undercuts (29, 30) disposed parallelly on opposite sides of the enlarged element (13) close to the hole (15), the plug (18) further comprising a projection (26) between said arms (21, 21)



that is designed to be fitted in the pin-receiving hole (15) for preventing the plug (18) from sliding in at least one direction normal to the pin on fitting of the teeth (22, 23) in the corresponding undercuts (29, 30).

5,293,990

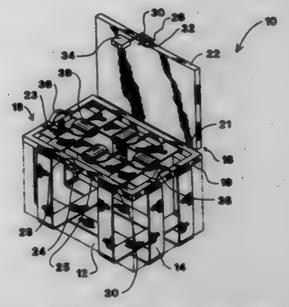
BOX PROTECTION APPARATUS

Jose P. S. Masakayan, 8611 Eagle Glen Ter., Fairfax Station, Va. 22039

Filed Feb. 26, 1993, Ser. No. 23,637

Int. Cl.[5] A45C *13/10*; E05G *5/00*; G08B *13/14*; B65D *43/14*

U.S. Cl. 206—1.5 14 Claims



1. Apparatus for protecting a box, comprising:

a plurality of flexible means for encompassing said box; and guide means, for receiving said flexible box encompassing means, and for orienting said flexible box encompassing means with respect to the box,

wherein said guide means includes a plurality of slots for receiving said flexible encompassing means,

further including a lid adapted to be closed relative to said guide means for covering said guide means,

wherein said encompassing means include locking means for locking said encompassing means under tension; and

said encompassing means locking means are covered by said lid when said lid is closed relative to said guide means.

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5,293,991

COMBINED SHIPPING AND PRESENTATION PACKAGE

Franz Neumann, Nörten-Hardenberg, and Rainer Schlicht, München, Fed. Rep. of Germany, assignors to Kraft General Foods R&D, Inc., Rye Brook, N.Y.

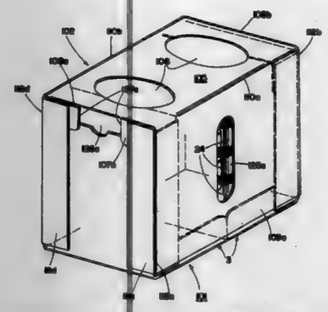
PCT No. PCT/EP91/00602, § 371 Date Sep. 24, 1992, § 102(e) Date Sep. 24, 1992, PCT Pub. No. WO91/15403, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 29, 1991, Ser. No. 927,413

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1990, 9003875

Int. Cl.[5] B65D *75/58*

U.S. Cl. 206—45.120 18 Claims



1. A combined shipping and presentation package; comprising:

(a) at least two presentation trays, each tray having a flat bottom section including upstanding sidewalls and end walls, one of said end walls being higher than the sidewalls and an opposite end wall so as to form an L-shaped tray with said flat bottom section, each tray adapted to have a plurality of packaged articles arranged on the flat bottom section so as to be supportable against the higher end wall, said at least two trays being contiguously positioned such that free edges of the higher end wall of each tray opposite the flat bottom section are contactingly arranged with the opposite end wall of each tray flat bottom section extending vertically upwardly in spaced apart relationship to jointly provide an inverted U-shaped configuration;

(b) a cover detachably mounted on said trays, said cover including a planar surface member, having opposed end edges and side edges, positioned on the end walls of said trays forming said inverted U-shaped configuration, and panels integrally formed with and articulated to opposite end edges of said planar surface member, said panels depending downwardly from said planar surface member in superimposed relationship with external surfaces of each tray so as to form a U-shaped enclosure over said trays.

5,293,992

UNITARY HOLDER FOR TWO CD BOXES WHICH CAN BE COMBINED WITH ONE OR MORE IDENTICAL HOLDERS FOR STORING A PLURALITY OF CD BOXES

Chad H. Warner, 366 S. Elizabeth St., Salt Lake City, Utah 84102

Filed Dec. 7, 1992, Ser. No. 986,496

Int. Cl.[5] B65D *85/57*

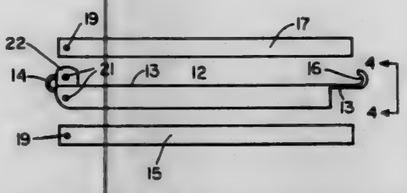
U.S. Cl. 206—309 7 Claims

1. A unitary holder device for holding two protective CD boxes in which compact discs are stored, wherein said device can be combined with one or more of the same devices to store a plurality of such protective CD boxes, with the CD boxes being positioned in a stack one upon the other such that hinges of the CD boxes are all located on one side of said stack and with the hinge on each respective CD box being in alignment with pivotable engagement means on the respective holder devices that hold the devices together in their operative position, and further wherein any individual box in the stack thereof can be pivoted open to gain access to a compact disc therein without removing that box from the stack of boxes and without opening any other boxes or removing any of the other boxes from the stack of boxes, said holder device comprising

a pair of side rails that are substantially parallel with each other;

means for spacing the side rails apart from each other such that a first CD box can be received and held between said side rails with the hinged end of said first CD box lying adjacent to a straight line between respective one ends of said pair of side rails;

a first lip or tab that projects upwardly from one end of said device, said first lip or tab being formed between said one



ends of said pair of side rails such that the first lip or tab extends away from a hinged end of a first CD box when said first CD box is received between said pair of side rails;

a second lip or tab that projects upwardly from a second end of said device opposite said one end such that said second lip or tab extends away from an opposite end of a first CD box when said first CD box is received between said pair of side rails;

said first and second lips or tabs being spaced such that a second CD box can be received and held between said first and second lips or tabs, with a hinged end of said second CD box lying above and next to the hinged end of a first CD box when said first CD box is received between said pair of side rails; and

engagement means at the one ends of said pair of side rails for pivotally attaching a second holder device to said first holder device such that said first holder device can pivot about said second holder device.

5,293,993

SYRINGE SEALING CONTAINER

Marvin P. Yates, Jr., St. Louis, Mo.; Richard C. Cochran, Cypress, Tex., and Ronnie H. Royston, Alexandria, La., assignors to Dynamic Bio-Apparatuses, Inc., Houston, Tex.

Filed Jun. 14, 1991, Ser. No. 715,365

Int. Cl.[5] B65D *85/20*

U.S. Cl. 206—365 3 Claims

1. A hypodermic syringe and needle disposal container for encasing a hypodermic syringe having a needle, a syringe body and a manipulation portion, comprising:

a syringe base having a cavity including containing means for receiving the hypodermic syringe;

a closure cover having a well and enclosing means for closing said containing means;

a hinge connected to said closure cover and said syringe base; and

a sealant on said closure cover having securing means for creating and maintaining a tight seal between said closure cover and said syringe base;;

wherein

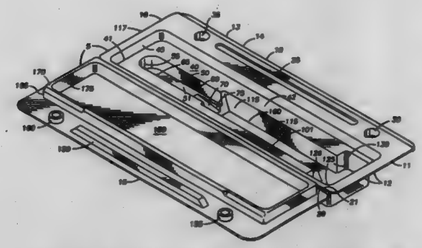
said closure cover includes

a cover base;

a built-up portion;

said syringe base includes

an indented portion;



said built-up portion has an outer wall and a top surface sized to form a fluid flow inhibitor between said built-up portion and said indented portion; and

said sealant being placed on said cover base.

5,293,994

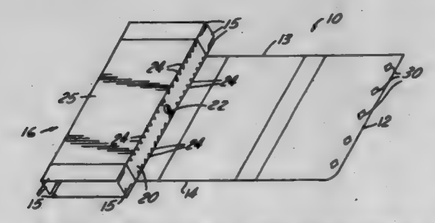
VIDEO CASSETTE PACKAGE

Alan L. Antik, Baltimore, Md., assignor to Producers Color Service, Inc., Southfield, Mich.

Continuation of Ser. No. 679,211, Apr. 2, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 51,009

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387 22 Claims



1. A package constructed of a single sheet of material for containing a cassette, said package comprising:

a rectangular compartment portion having a first wall, a second wall foldably connected to said first wall at a first edge, a third wall foldably connected to said second wall at a second edge, a fourth wall foldably connected to said third wall at a third edge, an end strip foldably connected to said first wall at a fourth edge, and a plurality of flaps foldably connected to at least some of said first, second, third and fourth walls,

said flaps being secured to each other and said end strip being secured to said fourth wall to form said rectangular compartment portion in which said first, second, third and fourth edges are parallel to each other, said first wall is parallel to said third wall, and said second wall is parallel to said fourth wall,

said compartment portion having a plurality of spaced-apart perforations along at least one of said first and fourth edges, and an opening extending through said first wall, and

a cover flap foldably connected to said fourth wall at a fifth edge parallel to said first, second, third and fourth edges, said cover flap having a plurality of fold lines parallel to said fifth edge, said cover flap being folded over at least said first wall and being unfoldable away from said first wall to expose said opening, said opening and said perforations being constructed and arranged for manually grasping said first wall through said opening and tearing said first wall away from said at least one of said first and fourth edges to expose and provide access to a cassette contained within said compartment portion of said package.

5,293,995

STORAGE CASE FOR DISC-SHAPED RECORDING MEDIA CONTAINED WITHIN SUBSTANTIALLY FLAT RECTANGULAR HOUSINGS

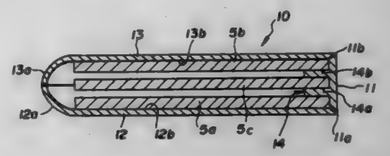
Yuji Iwaki; Shuichi Kikuchi; Mika Kaneko, all of Miyagi, and Toshiro Kobayashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,975

Claims priority, application Japan, Dec. 27, 1991, 03-346367

Int. Cl.[5] B65D *85/57*

U.S. Cl. 206—444 12 Claims



1. A storage case for disc-shaped recording media each contained within a respective substantially flat rectangular housing, said storage case comprising a one-piece molded plastic member including a central spine portion having opposed side edges from which flexible hinge portions extend, and a pair of rectangular cover portions having respective side edges joined to said hinge portions so that said cover portions are swingable relative to each other about said hinge portions between closed positions, in which said cover portions extend substantially parallel to each other from said spine portion with inner surfaces of said cover portions in confronting relation, and opened positions in which said cover portions are spread angularly apart, means on said cover portions for holding respective disc-shaped recording media in their rectangular housings against said inner surfaces of the respective cover portions, and holder means on said spine portion extending from the latter between said cover portions in said closed positions of the latter for embracing and holding at least one additional disc-shaped recording medium at an edge portion of its respective rectangular housing so as to accommodate said at least one additional disc-shaped recording medium in its respective housing between said disc-shaped recording media in their respective housings held against said inner surfaces of the cover portions, the respective housing of said at least one additional disc-shaped recording medium being in contact with said holder means only at said edge portion embraced and held by said holder means.

5,293,996

CONTAINER HAVING AN OBSERVATION WINDOW

William V. Duncan, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 14, 1992, Ser. No. 883,323

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—459.1 12 Claims

1. A container having an observation window, wherein the container serves as a barrier to moisture and provides electrostatic discharge protection, comprising:

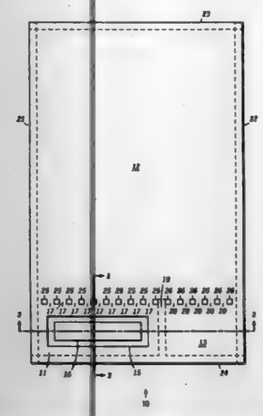
a container, the container comprised of a top sheet and a bottom sheet, wherein at least a first compartment and a second compartment are between the top sheet and the bottom sheet;

a plurality of channels coupling the first compartment with the second compartment;

a plurality of bonds interdigitated with the plurality of channels, wherein the plurality of bonds are comprised of a plurality of discrete portions of the top sheet bonded with corresponding discrete portions of the bottom sheet;

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an observation window, wherein the observation window exposes a portion of an interior of the first compartment; and



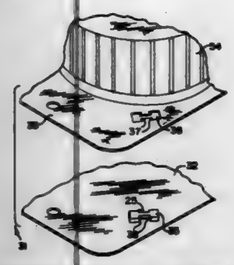
a moisture level monitoring material within the first compartment, the moisture level monitoring material being visible through the observation window.

5,293,997

RECLOSABLE FOOD PACKAGING HAVING SNAP CLOSURE AND METHOD OF MAKING SAME

Gerald O. Hustad, McFarland, and Paul E. Grindrod, Madison, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation of Ser. No. 673,845, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 434,921, Nov. 9, 1989, abandoned. This application Mar. 20, 1992, Ser. No. 855,157
Int. Cl.[5] B65D *13/00*
U.S. Cl. 206—467 **10 Claims**



1. A food packaging container, comprising:

a base member having a panel portion for supporting a food product and a peripheral flange portion generally surrounding said base member panel portion;

a body member having a bubble portion for cooperating with the base member panel portion to define a cavity to fully enclose the food produce therewithin, said body member further including a peripheral flange portion generally surrounding said body member bubble portion;

peelable sealing means to provide hermetic sealing of the base member peripheral flange portion to the body member peripheral flange portion after the food product is filled into the cavity, said peelable sealing means providing a perimeter that is generally closely spaced outside of said cavity;

locking means for snap locking said base member to said body member, said locking means including at least one closure assembly, said closure assembly including an insertion projection having a perimeter with a defined perimeter shape and an undersized opening having a perimeter shape which is generally the same as said defined perimeter shape of the insertion projection and which is undersized with respect to at least a part of said insertion projection perimeter, said insertion projection having been thermoformed into one of said base member peripheral flange or said body member peripheral flange, said thermoformed insertion projection having a surface spaced away from said peripheral flange and a sidewall joining said spaced surface and said peripheral flange, said undersized opening being in the other of said body member peripheral flange or said base member peripheral flange, said insertion projection and said undersized opening being in insertion interengagement registry with each other at a location outside of said peelable sealing means, and said undersized opening receives and enters into interference fit snapping engagement with said insertion projection;

said sidewall of the insertion projection includes a post-thermoformed crimped portion which was formed by crimping said sidewall of said insertion projection after said projection has been thermoformed, said post-thermoformed crimped portion being an indent within said sidewall of the insertion projection, said spaced away surface of said insertion projection has a peripheral size greater than the periphery of the undersized opening through which the spaced away surface passes during snap locking, whereby said spaced away surface and said periphery of the undersized opening interfere with each other during snap locking movement of the food packaging container, and said indent of the insertion projection sidewall has a peripheral size not greater than said periphery of the undersized opening, whereby said indent and said periphery of the undersized opening do not interfere with each other when said food packaging container is snap locked;

said undersized opening has a protruding wing portion which is generally perpendicular to said sidewall of the insertion projection and which engages said sidewall at a corresponding location thereof, said corresponding location being other than at said indent, said protruding wing portion deforms to provide pinching securement action when said closure assembly is joined together, said protruding wing portion providing an opening portion which is slightly narrower than said corresponding location of the insertion projection sidewall whereby said protruding wing portion and corresponding location of the sidewall slidably engage each other to deform said protruding wing portion or said corresponding location of the sidewall to provide said pinching securement action therebetween during movement of the insertion projection into the opening before snap locking and when said insertion projection is snap locked; and

said closure assembly provides for reclosure of the food packaging container, which reclosure is signalled by an audible snapping sound generated by reinsertion of said insertion projection into said undersized opening and engagement of said post-thermoformed crimped portion with said undersized opening.

5,293,998

CONTAINER WITH CHAIN RETAINING OPENING

Richard A. George, Winona, Minn., assignor to Peerless Chain Company, Winona, Minn.

Filed May 15, 1992, Ser. No. 883,525
Int. Cl.[5] B65D *83/00*
U.S. Cl. 206—525 **22 Claims**

1. A system for containing and dispensing chain comprising:

(a) a plurality of containers, each container including:

(i) a body with a bottom and a top;

(ii) a lid;

(iii) means for mounting said lid to said body to define an enclosed chamber for receiving a lengt of chain;

(iv) said lid including a first opening portion into said enclosed chamber, said first opening portion defining a passageway permitting dispeasing of the length of chain from the enclosed chamber;

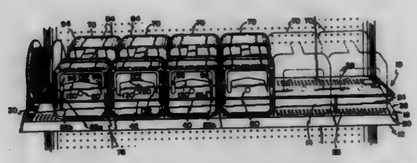
(v) said lid further including a second opening portion into said enclosed chamber, said first opening portion and said second opening portion connected with each other, said second opening portion defining a passageway sized to limit the flow of the length of chain from said enclosed chamber; and

(vi) said lid further including a third opening portion into said enclosed chamber, said third opening portion defining a passageway sized for limiting the flow of a second length of chain, said third opening portion connected with said first opening portion, and said third opening portion being disposed on an opposite side of said lid relative to said second opening portion, and said third opening being disposed vertically below said first opening portion, wherein said third opening portion defines a different shape than said second opening portion;

(b) a shelf having a generally planar portion with a top surface;

(c) a fence extending from said shelf and cooperating with said shelf to define a compartment for receiving said plurality of containers; and

(d) said containers positioned on said shelf in said compartment wherein said bottom surface of each of said containers rests on said top surface of said shelf, and said first opening portion is vertically disposed above said second opening portion.



16. A system for dispensing a length of chain, said system comprising:

a container having a sidewall defining an enclosure for receiving the length of chain; said sidewall having a front face, said front face having a plurality of interconnected edges defining an opening having a plurality of opening portions which combine to form said opening, each opening portion being at least partially defined by at least one of said plurality of interconnected edges, said opening having a first opening portion through which the length of chain can pass freely, and a second opening portion communicating with said first opening portion, wherein said second opening portion is at least partially defined by first and second edges, said first and second edges spaced apart to receive the length of chain and to restrain passage of the length of chain through said second opening portion when the length of chain is disposed between said first and second edges, wherein said first opening portion is vertically disposed above said second opening portion, said first opening portion including a first sloped edge interconnected to said first edge of said second opening portion, said first sloped edge sloping toward said second opening portion, said first sloped edge descending at a slower rate relative to said first edge; and

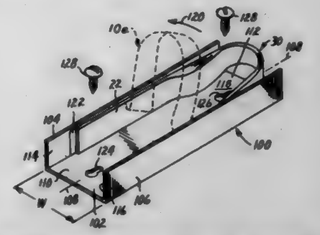
a length of chain having a width sized to pass freely through said first opening portion when said length of chain is positioned in said first opening portion, said width of said length of chain sized to be restrained by said second opening portion when said length of chain is disposed between said first and second edges.

5,293,999

DISPENSER FOR PADDED TAPE HANDLES

Leslie E. Lingren, Fridley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1993, Ser. No. 15,402
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—525 **8 Claims**



1. A dispenser for a pad for reciprocally releasably adhered tape handles extending from an uppermost tape handle to a lower most tape handle, each of the handles having an intermediate non-adhesive portion and pressure sensitive adhesive coated end portions on either side thereof, comprising:

(a) a body having a pair of aligned, opposing laterally spaced surfaces, each of said laterally spaced surfaces for receipt of one of the pressure sensitive adhesive coated end portions of the lowermost tape handle in the pad of tape handles to secure the pad of tape handles to the dispenser, with the intermediate non-adhesive portion of the tape handles in the pad extending to form a loop for manual engagement to facilitate sequential dispensing of individual tape handles form the pad; and

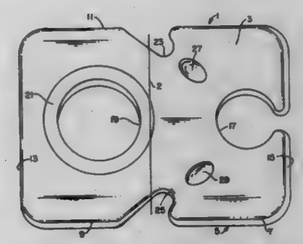
(b) a segment of target tape applied to said opposing aligned laterally spaced surfaces for controlling the strength of adhesion of the lowermost tape handle of the pad that is applied to said opposing laterally spaced surfaces.

5,294,000

FOOD AND BEVERAGE SUPPORT TRAY

Gerard Yanuzzi, Raritan Township, Hunterdon County, N.J., assignor to G'KA! International, Inc., Revere, Pa.

Filed Nov. 7, 1991, Ser. No. 788,887
Int. Cl.[5] A65D *1/34, 21/00*
U.S. Cl. 206—562 **12 Claims**



1. A tray for supporting food plates and beverage vessels, which comprises:

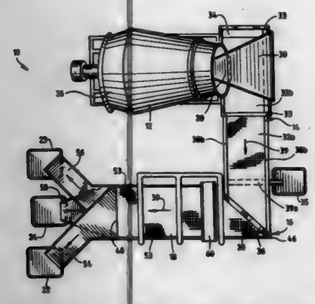
(a) a base structure being substantially flat and having a front and a back, a left side and a right side, and having a top and a bottom, and having an imaginary center line running from front to back and evenly distanced from said left side and right side;

(b) a first orifice through the top of said base being circular in shape and being biased to one side of said center line, said orifice adapted to receive a beverage vessel;

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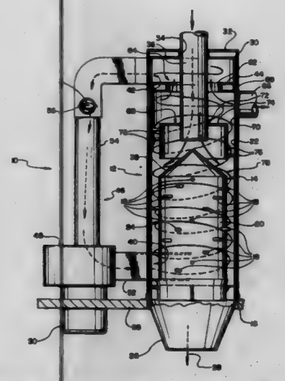
(c) a second orifice through the top of said base and being circular in shape and being biased toward one side of said center line opposite said first orifice, said second orifice being adapted to receive a food plate;
(d) a first notch located on the top of said base on the front of said base near said center line, sand notch being adapted to receive an area of a hand of a user between a thumb and a first finger when being held with the thumb on the top of said base and fingers on the bottom of said base; and,
(e) a second notch located on the top of said base on the back of said base near said center line, said notch being adapted to receive and area of a hand of a user between a thumb and a first finger when being held with the thumb on the top of said base and fingers on the bottom of said base;
wherein said first notch and said second notch are located opposite one another along said center line, and said first notch and said second notch include a tapering on the bottom of said tray for ease of holding.

5,294,001
APPARATUS FOR REMOVING OIL FROM OIL COVERED PARTS
Harvey S. Dulin, Calcago, Ill., assignor to Dulin Metals Co., Elk Grove Village, Ill.
Filed Oct. 28, 1991, Ser. No. 783,365
Int. Cl.[5] B03B *1/00*
U.S. Cl. 209—3 **10 Claims**



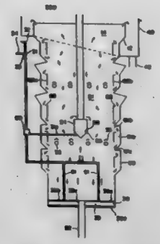
1. An apparatus for employing oil absorbing particulate to remove residual oil from oil covered parts, the apparatus comprising:
mixing means for mixing said parts and said particulate together to bring said particulate in contact with said oil covered parts, at least a portion of said particulate adhering to said oil covered parts upon contact therewith;
dispensing means for dispensing the particulate adhering parts and any excess particulate from said mixing means;
conveying means extending generally horizontally for receiving the particulate adhered parts and excess particulate dispensed by the dispensing means and conveying the particulate adhered parts and excess particulate from an area adjacent to said mixing means to an area at which the parts and particulate drop off the conveying means;
said conveying means including a vibrating surface to vibrate a portion of the adhering particulate off of the parts;
said vibrating surface being angled longitudinally with the area adjacent the mixing means being at a higher elevation than said area at which the parts and particulate drop off of the conveying means;
impact means situated below said conveying means for receiving and impacting the parts and particulate thereagainst falling from said conveying means to dislodge a portion of the adhering particulate; and
vibrating screen means, extending generally horizontally and having a load end and a terminal end, said vibrating screen means being angled downwardly from said load end to said terminal end to transfer parts and any excess particulate from said load end to said terminal end, said load end being positioned beneath said impact means to receive the parts and particulate on the screen means after impacting against said impacting means, said terminal end being spaced sufficiently from the load end such that substantially all adhering particulate is dislodged from the parts by the time the parts reach the terminal end, the vibrating screen means passing particulate therethrough while preventing the parts from passing therethrough to separate the removed and excess particulate from the parts.

5,294,002
AIR SEPARATOR WITH SPIRAL STAVES
Darcy Moses, Rush City, Minn., assignor to Crown Iron Works Company, Minneapolis, Minn.
Continuation of Ser. No. 887,342, May 21, 1992, abandoned, which is a continuation of Ser. No. 753,926, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 592,184, Oct. 3, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,540
Int. Cl.[5] B07B *4/00*
U.S. Cl. 209—135 **10 Claims**



1. Apparatus for separating intermixed particulate materials of two different weights, wherein some of the particulate material of both weights is adhered to each other, comprising:
(a) a generally cylindrical, vertically-oriented housing;
(b) a generally cylindrical core, substantially coaxial with said housing, received within said housing to define a generally annular space, said core having upper and lower ends;
(c) a plurality of generally radially extending staves extending across said generally annular space and between said core and a wall defining said housing, said staves arranged in a generally spiralling array;
(d) means, intermediate said upper and lower ends of said core, for introducing a gas flow tangentially into said generally annular space; and
(e) means for depositing the intermixed particulate material into said generally annular space proximate said upper end of said core;
(f) wherein particulate material of the two different weights passing through said generally annular space is contacted by said staves to effect separation of the adhered particulate material; and
(g) wherein the gas flow passes spirally upward within the generally annular space at a speed wherein heavier particulate material particles continue downward passage, under the influence of gravity, and lighter particulate material particles are blown upwardly by the gas flow.

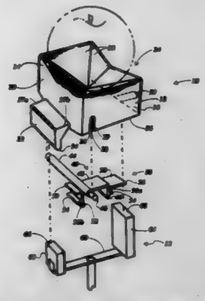
5,294,003
PROCESS FOR CONCENTRATION OF MINERALS
Clinton A. Hollingsworth, 2025 Sylvester Rd., Apt. 207, Lakeland, Fla. 33803
Continuation of Ser. No. 993,804, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 895,005, Jun. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 588,620, Sep. 26, 1990, Pat. No. 5,122,261. This application Mar. 8, 1993, Ser. No. 29,305
Int. Cl.[5] B03D *1/02, 1/24*
U.S. Cl. 209—164 **10 Claims**



1. A process for concentration of minerals by froth flotation of an aqueous pulp containing a mixture of mineral particles and gangue particles which comprises:
conditioning the aqueous pulp with at least one flotation reagent adapted to promote flotation of one of the types of particles present in the aqueous pulp when aerated;
introducing the conditioned pulp at a pulp infeed location into a flotation column;
introducing a gas into said flotation column through an aeration means disposed below the pulp infeed location and located within said flotation column to contact and separate the pulp into a floated fraction and a non-floated fraction;
recycling the aqueous pulp within a plurality of recycle chambers defining flotation zones and recycle zones, said recycle chambers being axially spaced along the wall of the flotation column and attached in series to form at least a portion of said flotation column, wherein at least two of said recycle chambers are disposed above the pulp infeed location through which the pulp is introduced and at least one of said recycle chambers is disposed below said infeed location;
withdrawing an overflow stream of the floated pulp fraction from the top of the body of aqueous pulp in said flotation column; and
withdrawing an underflow non-floated fraction of the pulp from the lower portion of said flotation column.

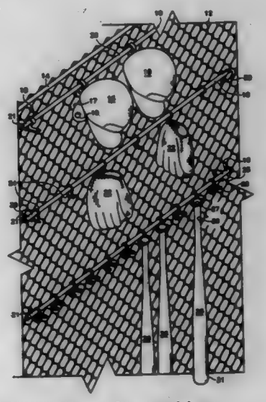
5,294,004
ARTICLE-HOLDING CUP AND SCALE FOR APPARATUS THAT SORTS ARTICLES BY WEIGHT
William H. Leverett, Greenville, Ga., assignor to Durand-Wayland, Inc., LaGrange, Ga.
Filed Aug. 19, 1991, Ser. No. 746,697
Int. Cl.[5] B07C *5/16*
U.S. Cl. 209—592 **6 Claims**

1. An article holding apparatus for an article weighing and sorting apparatus with two spaced-apart, parallel continuous conveyors which pass sequentially through a loading zone, a weighing zone with a scale having a weigh platform of unequal height, and a discharge zone, and a plurality of spaced-apart rods connected normal to said conveyors with a fabric flap attached to each rod for receiving an article discharged selectively in said discharge zone for packaging with other articles having such similar selectable weight, the apparatus comprising:
a cup having a cavity for holding an article received therein while said cup passes through said loading zone;
a first support surface and a second support surface operatively associated with the cup for supporting said cup on the weigh platform, said first support surface extending



downwardly from one side of said cup and said second support surface extending downwardly from another side of said cup; and
said first support surface being lower than said second support surface so that the cup is horizontal on the weigh platform as the cup passes through the weighing zone.

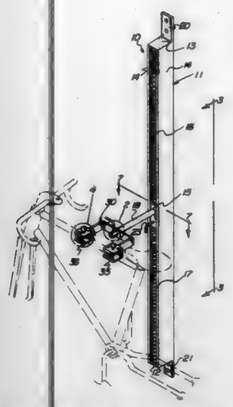
5,294,005
PORTABLE MODULAR SPORTS EQUIPMENT RACK ESPECIALLY SUITED FOR USE AT GAMES
Robert S. Hedges, 7310 E. 201st Ter., Belton, Mo. 64012
Filed Dec. 31, 1992, Ser. No. 999,140
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 **8 Claims**



1. A sports equipment rack comprising:
a. a support member, said member forming a frame and means for suspending said frame from a vertical surface;
b. a plurality of hooks specially adapted for hanging different types of sports equipment therefrom;
c. said frame member further comprises a plurality of nesting telescoping tubular support members including means for locking said tubular support members at a desired length; and
d. said suspending means further comprises a pair of aligned apertures through two side walls of said frame and a clevis pin inserted through said two apertures at each end of said

frame, said clevis pin further comprising a bail which is inserted through a chain link fence.

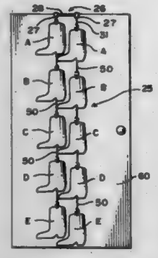
5,294,006
BICYCLE RACK APPARATUS
Robert M. Deschino, 1656 E. Hermosa Dr., Highlands Ranch, Colo. 80126
Filed Oct. 13, 1992, Ser. No. 959,646
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—18 **7 Claims**



1. A bicycle rack apparatus, comprising,
an elongate track member, the track member having a floor plate mounted at one end of the track member, and a roof plate mounted at a further end of the track member, with spaced side walls arranged in a parallel coextensive relationship relative to one another extending between the floor plate and the roof plate, the track member further including a rear wall between the floor plate, roof plate, and side walls, and a slide block mounted within the track member between the side walls in sliding relationship relative to the rear wall, and the slide block having a first spring member interposed between the slide block and the roof plate, and a second spring member interposed between the slide block and the floor plate, and
mounting means secured to the slide block for mounting a bicycle member thereto, and
lock means mounted to the slide block for selectively locking the slide block relative to the track member.

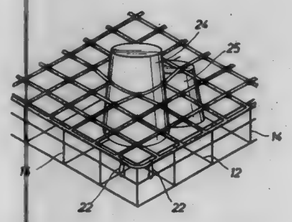
5,294,007
BOOT HANGER SYSTEMS
Michael T. Edmondson, 4314 S. Crockett, Amarillo, Tex. 79110
Filed Feb. 24, 1993, Ser. No. 21,981
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—34 **12 Claims**

1. A boot hanger system for hanging a plurality of pairs of western style boots which include pull tabs at the upper portion thereof, said boot hanger system comprising:
main hanger means including a first pair of spaced boot supporting members;
support means interconnected with said first pair of spaced boot supporting members;
first offset tier boot supporting means vertically offset relative to each other and connected to said first pair of spaced boot supporting members; and a plurality of subsequent offset tier boot supporting means operably connected to said first offset tier boot supporting means with subsequent offset tier boot supporting means after said first subsequent offset tier boot supporting means operably connected to the immediately preceeding subsequent offset tier boot supporting means whereby a plurality of



pairs of western style boots can be stored in neat overlappinhg vertical rows while occupying a minimum amount of storage space.

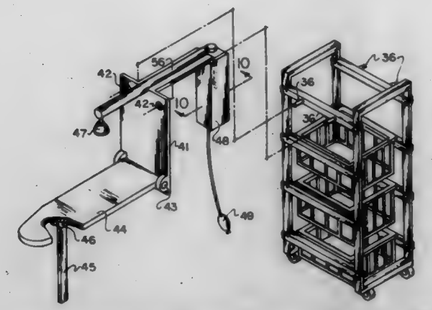
5,294,008
DISHWASHER NET
Jason Dunaway, 10250 Bissonnet, Suite 175, Houston, Tex. 77036
Filed Nov. 12, 1992, Ser. No. 974,605
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—41 **3 Claims**



1. An article for use in restraining movement of objects carried on the rack of a dishwasher, comprising
a net of elastic material having an outer periphery conforming substantially to that of the open top of the rack,
said net being sufficiently stiff that it will remain substantially flat above objects whose height does not exceed that of the rack, but sufficiently flexible to permit it to conform to the sides of other objects whose height does exceed that of the rack when fastened to the rack on opposite sides of the other objects, and
the openings between adjacent strands of the net being of such resiliency that the adjacent strands stretch around taller objects whose lateral dimensions exceed somewhat the lateral dimensions of the openings without lifting the net from above objects whose height does not exceed that of the rack.

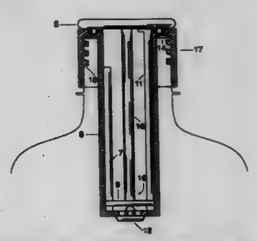
5,294,009
LAUNDRY CART APPARATUS
David A. Maurer, 2014 N. Rand Rd. #208, Palatine, Ill. 60074, and Raymond N. Maurer, 21771 Sunflower, Novi, Mich. 48375
Filed Jul. 20, 1992, Ser. No. 916,487
Int. Cl.[5] B62B *3/02;* A47B *5/04;* B25H *3/04*
U.S. Cl. 211—126 **5 Claims**

1. A laundry cart apparatus, comprising,
a rectilinear parallelepiped framework having a forward U-shaped base arranged parallel, coextensive to, and in a spaced relationship relative a rear U-shaped base, with each base having a first leg and a second leg, and
a first cross brace having a first cross brace forward bifurcated end and a first cross brace rear bifurcated end, with the first cross brace forward bifurcated end receiving the forward base first leg, and the first cross brace rear bifurcated end receiving the rear base first leg, and



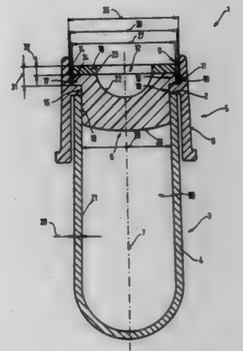
the second cross brace forward bifurcated end receiving the forward base second leg, and the second cross brace rear bifurcated end receiving the rear base second leg, and
a basket member having a basket perimeter flange slidably received on the first cross brace and the second cross brace.

5,294,010
PRESSURIZING APPARATUS AND CLOSURE FOR CARBONATED BEVERAGE CONTAINERS
Mark Tschida, 2697 E. County Road E, Suite 519, White Bear Lake, Minn. 55110
Filed Nov. 23, 1992, Ser. No. 980,624
Int. Cl.[5] B65D *39/08, 51/24;* B65B *31/00*
U.S. Cl. 215—228 **3 Claims**



1. A closure with repressurizing apparatus for a carbonated beverage container comprising:
(a) an internally threaded, reusable closure cap secured to seal a mouth of the carbonated beverage container,
(b) a top surface of the closure cap comprising an embedded internal screw thread,
(c) a pump cylinder molded with said closure cap comprising an opening at the top surface and a one-way valve coupled with the pump cylinder,
(d) at least one internal vertical ridge molded with said pump cylinder extending approximately three quarters the length of said pump cylinder,
(e) a hand operated air pump comprising a piston formed with at least one notch that interacts with the at least one vertical ridge of said pump cylinder to form a valve that regulates the movement of ambient air through said pump cylinder,
(f) an internal guide that extends the length of said pump cylinder and is utilized when the piston is above the at least one ridge on said pump cylinder which prevents said piston from rotating and from being removed from said pump cylinder,
(g) a pump handle connected to said piston where the pump handle is molded with an external screw thread for engagement with the complementary embedded internal threads on said closure cap,
(h) said pump handle comprising two barbed prongs for insertion into said piston allowing said pump handle to rotate freely while said piston does not rotate.

5,294,011
CLOSURE MEANS FOR A CYLINDRICAL HOUSING
Franz Konrad, Regau; Günther Pakanecz, and Manfred Lederer, both of Kremsmünster, all of Austria, assignors to C. A. Greiner & Sohne Gesellschaft m.g.H., Kremsmünster, Austria
Continuation of Ser. No. 665,011, Mar. 5, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 999,571
Claims priority, application Austria, Mar. 9, 1990, A 574/90
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—247 **13 Claims**



1. Closure means for use in closing an open end face of a cylindrical housing, said cylindrical housing having an interior with a surface, said closure means comprising:
an annular cap, said annular cap having a cylindrical inner surface, said cap having a cylindrical reception opening;
two extensions projecting toward a longitudinal axis of the annular cap along the cylindrical inner surface of said cap, a groove-shaped reception area defined by the inner surface between said extensions, said inner surface having a single diameter, said groove-shaped reception area having a substantially constant inner diameter;
a seal having a flange-like projection which engages within the groove-shaped reception area formed between said extensions, said flange-like projection being movably connected with said seal;
a retaining ring inserted between said seal and one of the two extensions;
said retaining ring having a greater external diameter than an internal diameter of at least one of said two extensions; and
wherein, in use, said annular cap, said seal, said retaining ring and said extensions provide a coupling device which comprises one extension of the cap which is remote from the cylindrical housing and the other extension of the cap which is proximate to said end face of the housing, said flange-like projection on the seal being received in said groove-shaped reception area adjacent to said other extension, and said retaining ring being received in said groove-shaped reception area between said one extension and said flange-like projection.

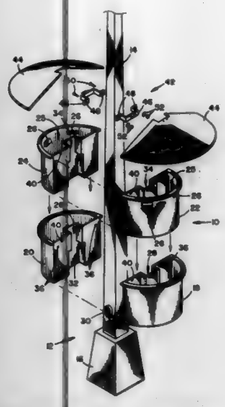
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,012

TRASH RECEPTACLE MOUNTABLE ON A COLUMNAR SUPPORT

Vernon W. Shott, and Tina L. Shott, both of P.O. Box 1755, Grants, N. Mex. 87020

Filed Mar. 15, 1993, Ser. No. 31,335
Int. Cl.[5] B65D *91/00*
U.S. Cl. 220—23.4 14 Claims



1. A trash collection apparatus, comprising:
a container;
said container having at least one inner wall;
a recessed mounting channel provided on said inner wall of said container;
said recessed mounting channel having a transverse dimension which varies along the length of said recessed mounting channel;
said container also having at least one outer wall;
at least one handle provided on said outer wall of said container;
a container cover; and
at least one placard chamber attached to said outer wall of said container; and
wherein said placard chamber further comprises:
a frame member attached to said outer wall of said chamber; and
a slot for the insertion and removal of a placard therefrom;
said placard being substantially visible in elevational view when disposed within said placard chamber.

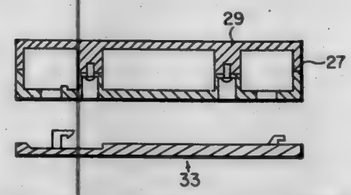
5,294,013

PORTABLE ELECTRONIC APPARATUS

Katumaru Sasaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 874,134, Apr. 27, 1992, abandoned, which is a division of Ser. No. 598,519, Oct. 17, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 18,393
Claims priority, application Japan, Oct. 20, 1989, 1-271722
Int. Cl.[5] B65D *39/00*
U.S. Cl. 220—241 25 Claims

1. A portable electronic apparatus comprising:
an outer case including a screw engaging portion;
an inner case, fixed to the outer case, including a screw cover storing portion having a bottom surface, a through hole, a cover engaging portion and a cover support portion;
a screw cover, stored on the screw cover storing portion, including a thick portion having a first inner surface, contacted on the bottom surface, having a support claw suppored on the cover support portion, and a thin portion having a second inner surface, being separated from the bottom surface when the cover is stored on the storing



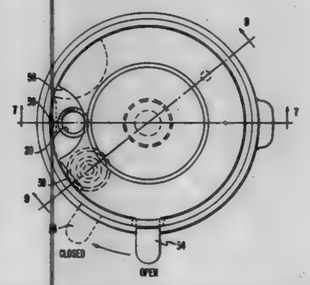
portion, having a engaging claw engaged with the cover engaging portion.

5,294,014

CONTAINER CLOSURE ARRANGEMENT

W. Burk Wyatt, Brentwood; Gary C. DeGrow, Antioch, and Jonathan H. Mueller, Hermitage, all of Tenn., assignors to Aladdin Synergetics, Inc., Nashville, Tenn.

Filed Oct. 16, 1992, Ser. No. 962,103
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—259 38 Claims



1. A closure device for sealing a container, comprising:
a body having a dispensing orifice;
a rotating member pivotally attached to said body and having sealing means for sealing said orifice such that said orifice is in a closed condition, said rotating member allowing flow through said dispensing orifice when said orifice is in an open condition; and
pressing means responsive to the rotation of said rotating member for pressing said sealing means at said orifice to ensure proper seal of said orifice, said pressing means applying a downward force to a top surface of said rotating member along a portion of a perimeter of said rotating member that is adjacent said dispensing orifice.

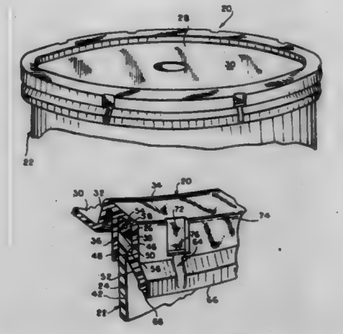
5,294,015

EASY-OPEN LID

H. Richard Landis, Oak Lawn, Ill., assignor to Landis Plastics, Inc., Chicago Ridge, Ill.

Filed May 22, 1992, Ser. No. 887,971
Int. Cl.[5] B65D *41/16*
U.S. Cl. 220—306 16 Claims

1. A resilient plastic lid for use with a container having a sidewall terminating at an upper rim with an adjacent locking bead, the lid comprising;
a circular body portion;
a peripheral flange extending downwardly from the body portion and terminating at a lower edge;
a locking ring on said flange extending radially inwardly for engagement with said container bead when said body portion is in sealing engagement with said container rim;
frangible lines of weakness in said peripheral flange for being severed to form the peripheral flange into a plurality of separate flange segments extending about the circumference of the lid; and
a hinge line on each of said separate flange segments for hinging its associated flange segment for pivoting radially outwardly away and upwardly from said container, following rupture of said flange along said frangible lines of weakness, to a release position allowing all of the separated flange segments and attached portions of the locking ring to be moved outwardly relative to the container bead to allow easy removal of the lid from the container;
each and every flange segment being pivotable upwardly to the release position leaving no flange segments engaging the container;



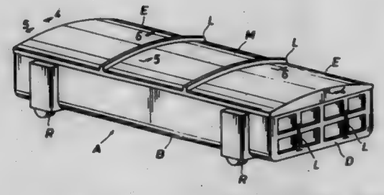
each hinge line comprising a thin hinge cross section in each of said flange segments positioned substantially above the locking ring to allow pivoting of the flange segments and portions of the locking ring thereon outwardly to the release position and, for resealing, pivoting downwardly into a retaining position to again engage the container bead to retain the lid on the container;
said frangible lines of weakness in said peripheral flange extending above the locking ring to adjacent the hinge lines to form separate flange segments hinged above the locking bead on the container; and
each hinge line comprising a rounded groove in the interior of the peripheral flange and a rounded lower corner on the rounded groove to assist in stripping the lid from a mold.

5,294,016

WASTE CONTAINER COVER

Will B. Crenshaw, Beaumont, Tex., assignor to The Modern Group, Inc., Beaumont, Tex.

Filed Sep. 29, 1992, Ser. No. 954,264
Int. Cl.[5] B65D *43/03;* B60J *7/08*
U.S. Cl. 220—380 11 Claims



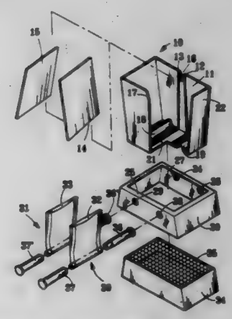
1. A cover for a waste container for preventing rain water from falling into the container, the cover comprising:
(i) at least two end cover sections, each end cover section having four edges and comprising:
a downwardly depending cover section on three of the four edges of the end cover section, the cover sections being for fitting over ends and sides of an end of the waste container;
an upwardly projecting tab on a fourth edge of the end cover section for engaging with a locking member to connect an end cover section to a center cover section;
a first covering portion disposed between the cover sections for covering an end portion of the waste container, the first covering portion shaped to induce rainwater impinging thereon to flow from the end cover section; and
(ii) at least one center cover section comprising:
raised locking members, with a cavity for receiving said tabs, at each of two edges of said center cover section, said locking members fitting over the engaging the upwardly projecting tabs of the end cover section in the cavity to provide a unitary cover; and
a second covering section, shaped to induce rain to flow off the center cover section, disposed between the locking members for covering a central portion of the waste container.

5,294,017

RECYCLE AND REFUSE CONTAINER WITH CONTINUOUS SUPPLY OF BAGS

Kuo - Chuan Li, No. 8, Lane 421, Chung Cheng Rd. Sec. 1, San Hsin Chen, Taipei Hsien, Taiwan

Filed Jul. 8, 1993, Ser. No. 87,418
Int. Cl.[5] B65F *1/06*
U.S. Cl. 220—407 3 Claims



1. A recycle and refuse container with continuous supply of trash bags comprises a refuse container, trash bag retainers and a base wherein:
said refuse container has two slots which are centrally located in its interior, said slots are designed for the insertion of two removable dividing plates which divide said refuse container into a recycle compartment and a trash compartment, in between the slots on the top edge of the refuse container is a notch which is designed for the convenience of hanging the trash bags, on the bottom of the refuse container are pairs of projecting boards, each pair located in the recycle compartment and the trash compartment respectively, and the projecting boards of each pair are angled inwardly towards each other at upper tips of the projecting boards and an elongated gap extending between the tips from which the trash bags are pulled through, the bottom of the refuse container is a surface having a net from which waste leakage from the trash bags are discharged, the refuse container are placed on top of said base which is of hollow structure, the hollow structure of said base forms a water absorbing chamber which has a sponge for absorbing the waste leakage, opposed sides of the base have two pairs of holes each through which the trash bag retainers are inserted, trash

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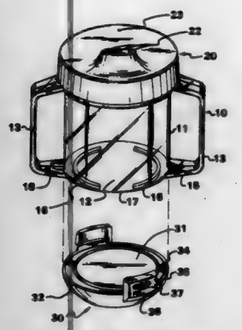
bags in a roll are attached to the trash bag housings so that they can be pulled up through the gap at the tips of the projecting boards and hung on the top edge of the refuse container.

5,294,018

SELF RIGHTING DRINKING CUP WITH TWIST ON BASE

Richard A. Boucher, Ashburnham, Mass., assignor to Sanitoy, Inc., Fitchburg, Mass.

Filed Jan. 21, 1993, Ser. No. 7,166
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—603 **11 Claims**



1. A self righting drinking cup comprising:

a hollow cup container having a substantially cylindrical vertical sidewall, a substantially planar horizontal bottom wall enclosing the bottom of said cup container, said bottom wall having a substantially planar lower surface,

a weighted base member having an upper surface, a rounded convex outer surface that tapers from said upper surface to a planar circular horizontal bottom surface upon which the cup stands when placed upon a flat surface, said convex outer surface and said bottom surface are concentric to a vertical axis which passes through the center of said cup,

at least one arcuate ridge concentric to said vertical axis and a circular groove concentric to said vertical axis, one of said ridge and said groove being on said lower surface of said cup container and the other of said ridge and said groove being on said upper surface of said base member, and said ridge and said groove being sized such that said ridge is received in said groove in a closely mating and rotatably sliding fashion in order to align said base member horizontally in place on said cup container,

two arcuate-shaped handles extending radially out from diametrically opposite sides of the sidewall of said cup container, said handles being substantially vertical and attached to said sidewall adjacent the top and bottom edges of the sidewall,

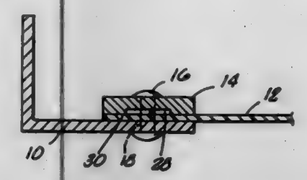
two resilient C-shaped clips extending upwards from diametrically opposite edges of said upper surface of said base member and extending along the sidewalls of said cup container, said C-shaped clips forming openings therein, said openings facing in the same circumferential direction around said base member and being sized to resiliently receive the lower ends of said handles upon rotation of said base member in order to secure said base member vertically and rotationally in relation to said cup container.

5,294,019

PLASTIC SHEET ATTACHMENT

Robert Looker, Carpinteria, Calif., assignor to Satco, Inc., El Segundo, Calif.

Division of Ser. No. 703,696, May 20, 1991, Pat. No. 5,180,078, which is a continuation of Ser. No. 527,042, May 22, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,399
Int. Cl.[5] B65D *7/32*
U.S. Cl. 220—683 **20 Claims**



1. An assembly comprising a metal structural member to which a polycarbonate sheet is attached by attachment means, said attachment means comprising:

a) said polycarbonate sheet overlapping said structural member along substantially the entire length of the polycarbonate sheet to create an attachment area;

b) an attachment strip having a width substantially the same as the width of said attachment area, and having a length substantially the same as the length of said attachment area;

c) said attachment strip having a channel formed therein on the side adjacent said polycarbonate sheet; and

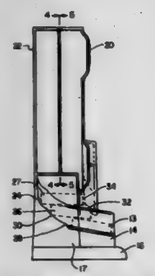
d) fasteners passing through said structural member, polycarbonate sheet and attachment strip for holding those elements rigidly together.

5,294,020

DISPENSING MECHANISM FOR CYLINDRICAL PRODUCTS

Steven A. Kunz, Pfafftown, N.C., assignor to Decision Point Marketing, Inc., Winston Salem, N.C.

Filed May 4, 1992, Ser. No. 878,390
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—131 **30 Claims**



1. An apparatus for displaying and dispensing cylindrical objects having a diameter and a length along an axis comprising

a base supporting a reservoir configured and arranged to hold a plurality of cylindrical objects to be dispensed, said reservoir communicating with a downwardly and forwardly extending chute for carrying the cylindrical objects forward of said reservoir and terminating in a forward display position on said base for a cylindrical object displayed such that cylindrical object in said display position is axially distended from the plurality of cylindrical objects held in said reservoir, said chute including a ramp having ripples contacted by a rear end of a cylindrical object as it moves forwardly from said reservoir to said display position,

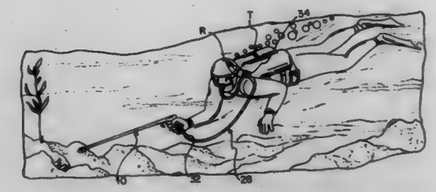
whereby upon loading a plurality of cylindrical objects into said reservoir, said chute and display position are filled with cylindrical objects and upon removal of a cylindrical object from said display position, cylindrical objects descend under the influence of gravity from said reservoir to said chute and from said chute to said display position.

5,294,021

UNDERWATER AIR DISCHARGE LOBSTER TICKLER AND METHOD

Andrew L. Ducker, III, 9604 NW. 28th St., Coral Springs, Fla. 33065, and Gary D. Dalton, 620 Aspen Rd., West Palm Beach, Fla. 33409

Filed Mar. 25, 1992, Ser. No. 856,242
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—3 **17 Claims**



1. An apparatus for exciting and driving lobsters from recesses and other hiding places under water, comprising:

an air source,

an air hose for delivering air from said air source,

an air gun comprising an air conduit having coupling means for attachment to said air hose and a valve for controlling air flow through said air conduit,

an air gun lobster exciting structure comprising a member containing an air passageway into which air from said air source is delivered through said air conduit when said air gun valve is opened, an outer surface and a plurality of exit ports extending from said air passageway to said outer surface, for insertion into a recess in which a lobster is located and discharging air to excite and drive said lobster out of said recess; wherein said air source is a scuba compressed air tank having a regulator with a first stage having a high pressure end and a low pressure end, and said air hose is coupled to said low pressure end for safer and more measured air discharge.

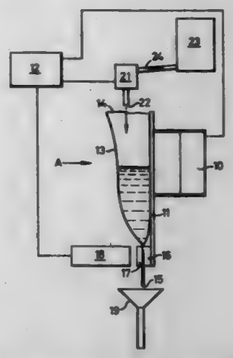
5,294,022

FLUID DISPENSER WITH A MAGNETICALLY OPERABLE DISCHARGE OPENING

Anthony Earle, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1993, Ser. No. 18,625
Claims priority, application United Kingdom, Feb. 20, 1992, 9203546
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—56 **7 Claims**

1. A fluid dispenser comprising a container having an inlet and a dispensing outlet, electromagnetically-operable actuating means which are operable by effecting a change in their state of magnetisation to effect opening of closure means to cause or allow discharge of fluid from the container through the dispensing outlet, characterised in that said closure means are mounted at said dispensing outlet and are magnetically operable by magnet means additional to said electromagnetically-operable actuating means so that they are normally closed by magnetic attraction to close said dispensing outlet, said electromagnetically-operable actuating means being physically spaced from said closure means when the latter are closed and being operable to effect opening of said closure means against the action of said magnetic attraction.

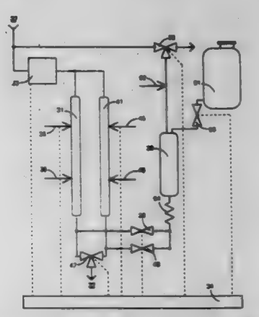


5,294,023

SYSTEM FOR DELIVERING LIQUID AT A CONTROLLED FLOW RATE

Antonis C. Ioannides, and Alan Pindar, both of Abingdon Oxon, United Kingdom, assignors to Oxford GlycoSystems Limited, Oxon, United Kingdom

Filed Sep. 25, 1991, Ser. No. 765,386
Claims priority, application United Kingdom, Sep. 27, 1990, 9021094
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—61 **13 Claims**



1. A system for delivering liquid at a controlled flow rate, the system comprising:

a vessel having an internal volume for containing a liquid and a pressurized gas and having an outlet for delivery of the liquid, under a gas pressure from the pressurized gas, out of said vessel;

measuring means, connected to said vessel, for measuring a rate of flow of the liquid out of said vessel, said measuring means comprising upper and lower detectors for detecting the liquid at upper and lower levels, respectively, in said vessel and producing a level signal;

refilling means, connected to the outlet of said vessel, for delivering an input liquid to said vessel while the liquid continues to be delivered out of said vessel in an uninterrupted, pulsation free stream; and

controller means, connected to said vessel, said measuring means, and said refilling means, for controlling the gas

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pressure of the pressurized gas by using the level signal from said measuring means to regulate the rate of flow of the liquid out of said vessel, and for controlling said refilling means by using the level signal from said measuring means to start said refilling means when the liquid is detected at the lower level by said lower detector, and to stop said refilling means when the liquid is detected at the upper level by said upper detector.

5,294,024

DISPENSING APPARATUS AND DISPENSING NOZZLE ATTACHMENT

Colin M. David, and Bernard J. David, both of London, United Kingdom, assignors to W. David & Sons Limited, London, United Kingdom

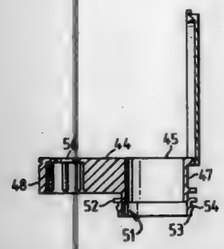
PCT No. PCT/GB90/01221, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/01812, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 3, 1990, Ser. No. 793,346

Claims priority, application United Kingdom, Aug. 4, 1989, 8917833.9; Nov. 15, 1989, 8925852.9

Int. Cl.[5] B67D 5/52

U.S. Cl. 222—137 14 Claims



1. A dispensing nozzle attachment for a generally cylindrical cartridge to be mounted in use to a dispensing apparatus, comprising:

a hollow primary nozzle section having a connection means at one end for connection to the cartridge and having a first dispensing exit aperture at another end;

a hollow secondary nozzle section having a connection means at one end for connection to a further cartridge and having a second dispensing exit aperture at another end;

a substantially rigid portion linking said primary nozzle section and said second nozzle section together, so that said first dispensing exit aperture and said second dispensing exit aperture are spaced a distance apart, and said first dispensing exit aperture and said second dispensing exit aperture define an uninterrupted dispensing exit plane, and said substantially rigid portion linking said primary nozzle section and said secondary nozzle section together comprises a planar section linking said first dispensing exit aperture and said second dispensing exit aperture to provide a substantially continuous surface as said uninterrupted dispensing exit plane; and

said primary nozzle section has a generally tubular body and said secondary nozzle section has a generally tubular body, the bodies being connected by said substantially rigid portion to be substantially parallel.

5,294,025

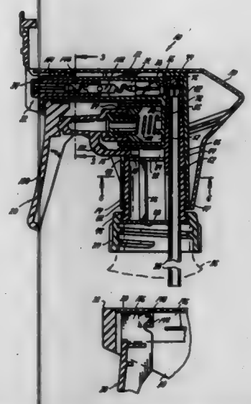
PUMP TRIGGER ASSEMBLY FOR A TRIGGER SPRAY

Donald D. Foster, St. Charles, Mo., assignor to Contico, St. Louis, Mo.

Division of Ser. No. 848,706, Mar. 9, 1992. This application Jun. 15, 1993, Ser. No. 77,025

Int. Cl.[5] B67D 5/42

U.S. Cl. 222—383 13 Claims



1. In a trigger sprayer apparatus for dispensing liquid from a container connected to the apparatus, an improvement comprising:

a trigger member pivotally connected to and suspended beneath an underside of the sprayer apparatus; the trigger member having opposite first and second ends; the first end having a handle surface formed thereon; the second end having a pair of laterally spaced, upwardly projecting flanges formed thereon, the flanges extending along opposite lateral sides of the sprayer apparatus, and a bar connected to and extending laterally between the pair of flanges, the bar spanning over a fluid channel of the sprayer apparatus.

5,294,026

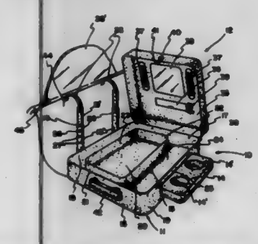
VEHICLE SUNDRIES ORGANIZER

Bobby D. McGirt, 801 Crawford St., Wilson, N.C. 27893

Filed Feb. 19, 1993, Ser. No. 20,847

Int. Cl.[5] B60R 7/04

U.S. Cl. 224—42.43 5 Claims



1. A vehicle sundry organizer comprising: a base portion having an open top with front, rear, and side walls disposed about the periphery of a bottom; a lid portion hingedly mounted by at least one friction type hinge on one of said walls for covering said open top; at least two support arms

pivotally mounted at one end to said base portion so that said arms can lie flat against said bottom during transport and can be pivoted to lie flat against one of said side walls when in use, the other end of said support arms terminating in a support hook; a cup holder hingedly mounted on one of said walls so that it can be pivotally disposed and used alternately interiorly of said base portion and exteriorly thereof; a vanity mirror mounted on the inside of said lid portion; and at least one illumination means operatively associated with said vanity mirror whereby said organizer can be transported in closed position and can be mounted on the interior of a vehicle through use of said support hooks and opened to give access to the interior thereof where the vanity mirror and the cup holder are provided.

5,294,027

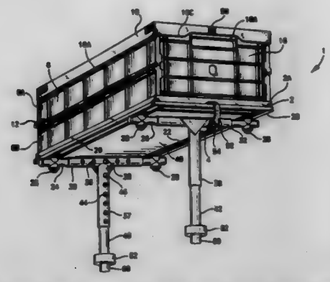
PORTABLE COMBINATION TABLE TOP/BASKET APPARATUS

Armando N. Plastina, Santa Cruz, Calif., assignor to Bel-Art Products, Inc., Pequannock, N.J.

Filed Feb. 25, 1993, Ser. No. 22,532

Int. Cl.[5] A61G 5/02; A47C 7/68

U.S. Cl. 224—42.45 R 6 Claims



1. Portable combination table top/basket apparatus, comprising:

a frame having top and bottom surfaces;

a base having top and bottom surfaces and mounted at its bottom surface to the top surface of the frame;

a rim above the base;

a pair of parallel, longitudinally extending foldable basket sides hingedly mounted to the top surface of the base and to the rim above the base and foldable away from and toward the top surface of the base;

a pair of basket ends hingedly mounted to the rim and displaceable away from and toward the top surface of the base;

the apparatus being in a basket configuration when the sides are folded to an upright position and the ends are displaced to an upright position to form in cooperation with the base and the rim a rigid basket;

the apparatus being in a portable and table top configuration when the sides are folded adjacent the top surface of the base and the ends are displaced parallel to the rim, whereby the rim is adjacent the top surface of the base;

the bottom surface of the frame supporting legs which are displaceable from a locked position adjacent the bottom surface of the base to a locked position normal to said base bottom surface, whereupon said legs are clampable to utilizing equipment;

a flat surface supported by the rim adjacent the displaced ends when the apparatus is in the table top configuration; and

means for securing the flat surface to the rim including the exposed sides of the folded ends each carrying a loop member or a pile member, and the underside of the flat surface carrying loop or pile members which engage the loop or pile members on the exposed sides of the folded ends to secure the flat surface to the rim.

5,294,028

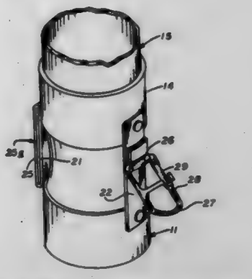
CONTAINER TRANSPORT ASSEMBLY

Barry P. Bankroff, 520 E. 9th St. Apt 1B, Lockport, Ill. 60441

Filed Mar. 15, 1993, Ser. No. 31,706

Int. Cl.[5] A45F 5/00; B62J 11/00

U.S. Cl. 224—148 4 Claims



1. A container transport assembly, comprising,

a flexible lower housing, having a lower housing cylindrical wall and a lower housing floor,

and

a flexible cylindrical upper housing, having a cylindrical upper housing wall, wherein the upper housing is spaced from the lower housing defining a gap therebetween,

and

the lower housing is coaxially aligned with the upper housing about a central axis,

and

a flexible first strap is secured to the lower housing cylindrical wall and the upper housing cylindrical wall, and a second strap is secured to the lower housing cylindrical wall and the upper housing cylindrical wall, wherein the first strap and second strap are arranged in a parallel coextensive relationship on diametrically opposed sides of the lower housing and the upper housing,

and

a container received within the lower housing and the upper housing,

and

the container includes a lower cylindrical portion geometrically, complementarily received within the lower housing, and the container further including a concave container central portion coextensive with the gap, and the container further including a container upper portion extending through the upper housing terminating in a container neck, with the container neck having a removable cap mounted thereto,

and

the first strap includes an outer strap, and the outer strap and the first strap define a loop, and a support strap, with the support strap received through the loop.

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5,294,029

DEVICE FOR LODGING A SUSPENDING STRAP FOR A PORTABLE OBJECT

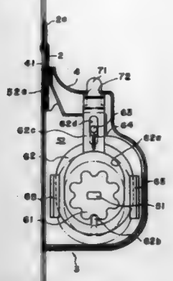
Nobuyoshi Shimura, Saitama, and Koji Kawano, Tokyo, both of Japan, assignors to Major Co., Ltd. and Super Collection Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 616,183, Nov. 20, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 908,852

Claims priority, application Japan, Nov. 21, 1989, 1-302538; May 18, 1990, 2-128855; Sep. 5, 1990, 2-235231

Int. Cl.[5] B65H *75/40*

U.S. Cl. 224—162 4 Claims



1. A carrying system, comprising:

a portable object;

a shoulder strap attachment and a lodging device for carrying the portable object by suspending the shoulder strap from a wearer's shoulder while attached to the portable object, the portable object having a handle at the center of a top surface thereof, wherein said shoulder strap attachment further comprises:

a case cover, in which said shoulder strap is lodged, attached to a side surface of the portable object;

an engaging member attached to the external end of said shoulder strap; and

a fastening means for detachably engaging said engaging member, said fastening means being attached to a side surface of the portable object opposite to the side surface containing said case cover; and

said lodging device comprises:

said case cover;

means for extracting and retracting said shoulder strap, so as to enable a portion of said shoulder strap to be lodged in said case cover, said means includes a winding shaft which rotates in a manner such that said shoulder strap is extracted and retracted in a direction perpendicular to a longitudinal direction of said shoulder strap rotatably arranged across two brackets which are integrally formed with a mounting surface section of said case cover, and a winding drum integrally and rotatably attached to said winding shaft and fixing one end of said shoulder strap;

a guide opening formed in said case cover for extracting and retracting the shoulder strap;

means for holding said winding shaft constantly biased in the winding direction, comprising a flat spiral spring; and

locking means for preventing said winding shaft from rotating, said locking means comprising a rotary body which has a toothed portion and integrally rotates in both extracting and retracting directions together with the winding shaft in a stepless manner, said toothed portion is formed along a periphery of said rotary body with complimentary U-shaped recesses in both the extracting and retracting directions, said locking means is adapted to integrally rotates with said winding shaft, and a ratch body comprising an annular section in which said rotary body is loosely arranged therebetween and a ratch-engagement section which protrudes from an inner periphery of said annular section toward said rotary body so as to engage with said toothed section, said ratch body being capable of moving from a position where said toothed portion is engaged to prevent said winding shaft from rotating in both the extracting and retracting directions to a position where said toothed portion is disengaged thereby releasing said winding shaft to rotate in both the extracting and retracting directions, a press spring biasing said ratch body to engage said toothed portion, said press spring arranged between a pin and said ratch body such that said ratch-engagement section is biased to engage with a one of the U-shaped recesses of said toothed section, guides are arranged on right and left sides of said annular section for guiding said ratch body slidably in a longitudinal direction, and an operating member for moving said ratch body to said disengaged position where said ratch body and said toothed portion disengage, having overcome said press spring biasing, said operating member adapted such that extraction and retraction of said shoulder strap is possibly only when said ratch body is moved to said disengaged position.

5,294,030

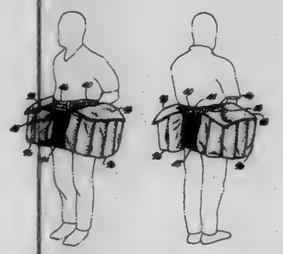
WAIST SUPPORTED CARRYING BAG

Earl E. Jollivette, 3520 W. 83rd St., Inglewood, Calif. 90305

Filed Aug. 13, 1992, Ser. No. 929,028

Int. Cl.[5] A45F *3/00*

U.S. Cl. 224—226 3 Claims



1. A waist encircling carrying bag for mail and other heavy matter comprising:

a) a pair of opposed open topped compartments having a back, a front, a bottom and a pair of sides also a strap attachment traversing the open top from front to back to hold the front and back together when the compartment is full where said strap, further comprises a band of flexible fibre webbing attached on a first end to the back of each compartment and a second end having linearly adjacent hook tape and loop tape, further, a structural loop attached to the front of each compartment with a connecting strip permitting the band of webbing to be inserted into the loop and pulled back over the loop with the hooks intermeshing with the loops on the tape creating an adjustable union therebetween,

b) a plurality of open topped pockets fixably joined to the front and sides of each compartment for carrying a stack of mail that has been pre-sorted,

c) a flap attached to the rear of each compartment covering both the open tops of the combined compartment and pockets for protecting contents stored within the carrying bag from adverse environmental conditions and accidental spilling,

d) a plurality of belt loops fixably joined to the back of each compartment adjacent to the flap interface for carrying weight therewith,

e) a back connecting girdle having a top, a bottom and a pair of sides with the sides permanently joined to each compartment where the sides and backs interface, further said girdle top having a plurality of belt loops affixed thereupon for supporting weight,

f) a belt having buckling means threadably inserted into the belt loops of the compartments and girdle for attachment to a wearer's waist for transmitting weight from mail and other heavy matter carried within the compartments and pockets to a supportive portion of a carrier, and

g) a detachable front coupler having a first side and a second side, with the first side permanently connected to one of the compartment sides and the second end removably attached to the remaining compartment side permitting the entire bag to encircle a carrier for evenly distributing weight of mail and other heavy matter over a comfortable area of a carrier's body.

5,294,031

DISCREET PISTOL POUCH

Mark D. Volpei, 135 Tuolomne Ave., Ventura, Calif. 93004, and Joe Evans, 495 S. La Luna, Ojai, Calif. 93023

Filed Dec. 5, 1991, Ser. No. 802,525

Int. Cl.[5] A45C *1/04*

U.S. Cl. 224—229 2 Claims



1. A lockable handgun pouch adapted to be worn on a person's abdomen, said pouch comprising:

a body panel having an upper edge, a lower edge, and two side edges,

a front panel having an upper edge, a lower edge and two side edges, a peripheral edge wall extending rearwardly from the upper and side edges of said front panel toward the corresponding edges of the body panel, a lower edge connector wall means hingedly joining the lower edge of the front panel to the lower edge of the body panel, whereby the front panel can be swung down to expose the body panel and pouch interior,

mating rows of interlockable plastic zipper teeth extending along said peripheral edge wall and the upper and side edges of said body panel,

two zipper slider elements movable along said mating zipper teeth, each slider element being movable along an entire side edge of the body panel and about halfway along the upper edge of the body panel, whereby the slider elements meet at a midpoint along the body panel upper edge, the slider elements being independently operable to expose selected areas of the body panel,

an elongated patch of fibrous hook and loop fastener material extending along said body panel for the entire distance between the body panel side edges, a gun holster having two spaced side walls to form a gun receiver pocket, said holster having a length extending parallel to a direction of insertion of the gun into the gun receiver pocket, a strip of fibrous hook and loop fastener material extending a substantial distance along each side wall of the holster parallel to the holster length dimension, each such strip of fastener material being attachable to said elongated patch of fibrous fastener material on the body panel, whereby the holster is mountable in a plurality of different positions on said body panel, and

retainer strap means attached to the body panel for extension about the mounted holster and attachment to said strips of hook and loop fastener material on said holster side walls, and wherein

said lower edge connector wall means comprising two spaced walls forming an elongated concealed pocket, said elongated concealed pocket having an access opening at one end thereof in near proximity to the endmost zipper teeth, whereby said elongated pocket is accessible only when one of said slider elements is moved to a fully open position relatively close to the pocket access opening.

5,294,032

NOTEPAD HOLDER FOR AUTOMOBILES

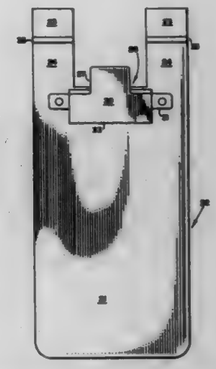
Erik Hagglund, New Canaan, Conn., assignor to Trettea, Inc., New Canaan, Conn.

Continuation of Ser. No. 336,889, Apr. 12, 1989, Pat. No. 4,962,874. This application Oct. 15, 1990, Ser. No. 597,579

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

Int. Cl.[5] B60R *7/00*

U.S. Cl. 224—277 2 Claims



1. A device for mounting writing material to an inner surface of a windshield of a motor vehicle, said device comprising:

a base having a top end portion, a bottom end portion, a front surface, and a rear surface,

clamp means mounted to the front surface of said base for removably retaining said writing material against said front surface of said base,

said base defining at least two separate longitudinally extending portions adapted to be mounted to said inner surface of said windshield of said motor vehicle at predetermined positions on said inner surface of said windshield of said motor vehicle, said at least two separate portions defined on said base being spaced a predetermined distance apart from each other,

at least two separate mounting elements adapted to being permanently affixed to said inner surface of said windshield of said motor vehicle for removably engaging said at least two separate portions of said base, said at least two separate mounting elements being oriented relative to each other such that the distance therebetween corresponds to said distance between said at least two separate portions defined on said base so that said at least two separate portions defined on said base are alignable with said at least two separate mounting elements permanently affixed to said inner surface of said windshield of said motor vehicle for mounting said base to said inner surface of said windshield,

each of said at least two separate portions having an inner and an outer surface and includes means on the inner surface thereof for mounting said base to said separate mounting elements on the inner surface of said windshield,

said at least two portions extending upwardly from said top end portions of said base, and

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means for pivoting said base relative to said at least two portions, said means for pivoting said base includes each of said two portions defining arms, each of said arms including a lower arm portion and an upper arm portion, said upper arm portion being adapted to be affixed to said inner surface of said windshield and said lower arm portion being joined to said base, and a flexible material connecting said upper and lower arm portions.

5,294,033

CROSS-SECTIONAL CONFIGURATION OF A ROOF LUGGAGE CARRIER OF A VEHICLE

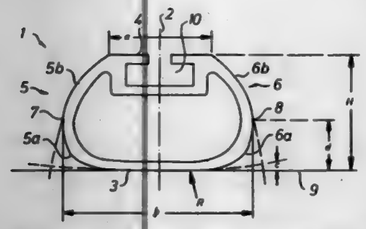
Stephan Duemmler, Im Jochert, Fed. Rep. of Germany, assignor to Votex, GmbH, Dreieich, Fed. Rep. of Germany

Filed Mar. 10, 1992, Ser. No. 848,760

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108059

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—316 **9 Claims**



1. A transverse girder for a roof luggage carrier of a vehicle having outer surfaces that are rounded as seen in cross-section providing improved aerodynamic characteristics and lower wind noise, wherein said transverse girder comprises:

a cross-sectional configuration that includes outer surfaces which are symmetrical in relation to a vertical longitudinal plane of said transverse girder;

an upper side and an underside of said transverse girder having a relatively flat horizontal surface;

said upper side and said underside of said transverse girder being connected by convexly curved and rounded lateral surfaces; and

said transverse girder having a width projection facing towards the vehicle roof which is greater than a width of said upper side of said transverse girder facing away from said vehicle roof;

said convexly curved lateral surfaces including a first arc with a relatively large curvature starting at said underside and extending to an outer side; and a second arc with a lesser curvature than said first arc which extends from said upper side laterally to said outer side;

said first arc and said second arc continuously merging into each other to define points of return at a transition point on either side of the transverse girder defining a transverse girder width; and

said points of return are located at a height (d) representing about 25% to 40% of a height (H) of the transverse girder measured from said underside of said transverse girder.

5,294,034

TICKET DISPENSER

Kjell Svensson, Ekerö , Sweden, assignor to Turn-O-Matic AB, Sundbyberg, Sweden

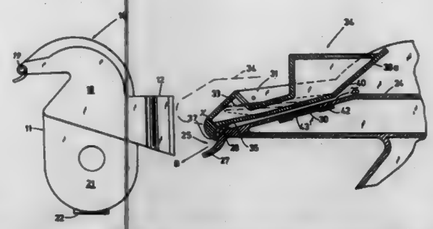
PCT No. PCT/SE90/00530, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/03802, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 16, 1990, Ser. No. 828,938

Claims priority, application Sweden, Sep. 1, 1989, 8902897

Int. Cl.[5] G07B *5/02*

U.S. Cl. 225—106 **13 Claims**



1. A ticket dispensing assembly comprising a ticket feeder for feeding a continuous, flexible ticket strip in roll form, said ticket feeder including a casing for accommodating the ticket roll, at least one cover part pivotally connected to said casing, a feed path for guiding said continuous ticket strip; an outfeed aperture formed in said casing; vertically spaced top and bottom guide surfaces, between which the continuous strip is guided, defining said feed path; and a separating means for separating strip parts which join two mutually adjacent tickets together wherein the continuous ticket strip has punched therein at regular intervals there along parting lines which form a plurality of tongue-shaped flaps and flap-openings, and the strip parts which join together two mutually adjacent tickets are located at the extremities of a punched parting line and extend approximately, transversely to the longitudinal axis of the ticket strip, said separating means including a first lip positioned externally of said outfeed aperture and merging with said bottom guide surface, an upper surface of said first lip being located on a plane lower than a plane formed by said bottom guide surface with respect to said top guide surface; an elongated bead extending laterally across the feed path, said bead having a length less than a width of the continuous ticket strip; and a second lip formed on said top guide surface, a top thereof being located in the proximity of a side of the bead that faces towards the outfeed aperture; said top guide surface further including a depression adjacent a base of said second lip wherein said depression accommodates at least a portion of said bead.

5,294,035

RATCHET DEVICE HAVING A STOPPER MEMBER FOR PREVENTING EXCESSIVE ROTATION OF RATCHET WHEEL, AND TAPE FEEDING APPARATUS USING THE RATCHET DEVICE

Koichi Asai, Nagoya; Mamoru Tsuda, Okazaki, and Shinsuke Suhara, Kariya, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Aichi, Japan

Filed May 5, 1992, Ser. No. 878,524

Claims priority, application Japan, May 11, 1991, 3-135626

Int. Cl.[5] B65H *20/00*

U.S. Cl. 226—157 **21 Claims**

1. An apparatus for feeding a carrier tape, which has electronic components spaced apart from each other in a longitudinal direction of the carrier tape, said carrier tape having equispaced feed holes arranged in said longitudinal direction, said apparatus comprising:

a body;

a sprocket wheel rotatably supported by said body and having a plurality of teeth engageable with said feed holes of said carrier tape;

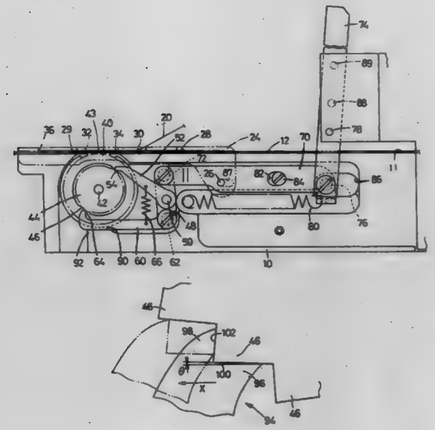
a ratchet wheel rotatably supported by said body and having a plurality of teeth, said ratchet wheel being connected to said sprocket wheel, for rotating said sprocket wheel;

a feed pawl having an engaging portion engageable with said teeth of said ratchet wheel;

a support member movably supported by said body, for movably holding said feed pawl such that said engaging portion is movable in a direction toward and away from said teeth of said ratchet wheel;

biasing means for biasing said feed pawl toward said teeth of said ratchet wheel for engagement of said engaging portion with said teeth;

drive means for moving said support member between a first portion for placing said feed pawl in a fully advanced position, and a second position for placing said feed pawl in a fully retracted position, said engaging portion of said feed pawl passing at least one of said teeth of said ratchet



wheel when said support member is moved from said second position to said first position, and rotating said ratchet wheel in one direction by a predetermined angle corresponding to the number of said at least one of said teeth, while engaging a last tooth of said at least one of said teeth which said feed pawl has passed last, when said support member is moved form said first position to said second position;

a stationary rigid stopper member formed integrally with said body, and having a stopper surface for contact with said feed pawl when said support member is moved to said second position, for preventing said engaging portion of said feed pawl from disengaging from said last tooth of said ratchet wheel; and

said engaging portion of said feed pawl being shaped so that the engaging portion engages mutually opposed tooth faces of said ratchet wheel when said feed pawl is held in contact with said stopper surface, to thereby lock said ratchet wheel against clockwise and counterclockwise rotations thereof.

5,294,036

SOLDERING DEVICE WITH SHIELD OF GAS SUBSTANTIALLY EXCLUDING OXYGEN

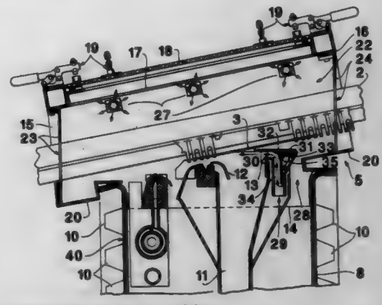
Rolf A. Den Dopper, Roosendaal, Netherlands, assignor to Soltec B.V., Oosterhout, Netherlands

Filed Aug. 12, 1992, Ser. No. 928,008

Claims priority, application Netherlands, Aug. 13, 1991, 9101383

Int. Cl.[5] B23K *1/00*

U.S. Cl. 228—37 **20 Claims**



1. Soldering device comprising:

at least one solder tower extending upwardly from a solder bath;

transporting means for carrying objects to be soldered along an upper end of said at least one solder tower;

means for causing a wave of solder to flow from said bath and out of said upper end of said solder tower and into contact with an underside of the objects to be soldered, said solder returning to said solder bath on a return route along at least one of a front side and back side of said tower;

supply means for supplying gas substantially excluding oxygen to a nozzle located in a vicinity of the solder wave;

characterized by:

at least one confining structure being located in said vicinity of said solder tower and surrounding said nozzle such that said gas injected by said nozzle is substantially confined to a space bordered by said confining structure, said solder wave and said solder bath;

said confining structure comprising:

means for channeling substantially all of said gas to flow into contact with an exposed surface of said returning solder along a pathway only counter to a direction of flow of said returning solder along generally an entire length of said return route.

5,294,037

METHOD OF ASSEMBLING A METAL GOLF CLUB HEAD

Gregory J. Schmidt, Tempe, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Filed Apr. 19, 1993, Ser. No. 47,917

Int. Cl.[5] B23K *31/10*; A63B *53/04*

U.S. Cl. 228—125 **10 Claims**

1. A method of assembling a metal golf club head comprising the steps of:

providing a main body formed of metal having a front wall with a face arranged for impacting a golf ball, a top wall, a bottom wall with an opening formed therein, and a rear wall, said main body having a ridge circumscribing the opening in said bottom wall, said ridge having a height projecting outwardly from said bottom wall;

providing a sole plate formed of metal for closing the opening in said bottom wall of said main body, said sole plate having a ridge extending around its periphery, said sole

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plate ridge having a height and projecting outwardly from said sole plate;

inserting said sole plate in the opening in said main body bottom wall so that said opening is closed by said sole

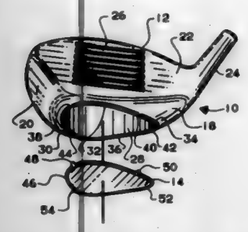


plate and so that said ridges on said main body and said sole plate are juxtaposed; and

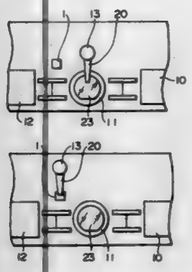
fusing said ridges together in order to affix said sole plate to said main body.

5,294,038

METHOD OF AND APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICE

Tosei Nakano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 972,991
Claims priority, application Japan, Nov. 12, 1991, 3-295352
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—179.1 **4 Claims**



1. A method of manufacturing a semiconductor device for forming a ball bump on an electrode on a semiconductor chip by using a ball bump bonding technique, comprising the steps of:

when a ball is to be formed on a distal end of a wire in order to form a ball bump, moving a bonding arm away from a wafer stage and above an auxiliary bonding stage near the wafer stage;

urging the wire against an upper surface of said auxiliary bonding stage by lowering a capillary in order to contact the wire onto said upper surface of said auxiliary bonding stage;

sequentially, removing said capillary from said auxiliary bonding stage and thereafter cutting the wire based on a position of said wire when urged against said auxiliary bonding stage;

forming a ball on a distal cut end of the wire by electric discharge; and

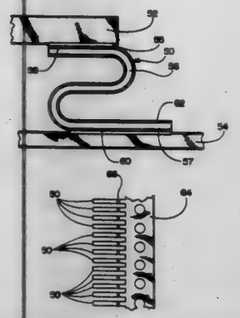
returning said bonding arm to a position relative to said wafer stage and performing a ball bump bonding on an electrode of a semiconductor chip formed on a wafer placed on a wafer stage.

5,294,039

PLATED COMPLIANT LEAD

Deepak K. Pai, Burnsville, and Terrance A. Krinke, Roseville, both of Minn., assignors to Ceridian Corporation, Minneapolis, Minn.

Division of Ser. No. 767,500, Sep. 30, 1991, Pat. No. 5,264,991.
This application May 14, 1993, Ser. No. 61,842
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—180.22 **12 Claims**



1. A method of mounting a chip carrier to a circuit board to provide electrical contact between a plurality of individual carrier contacts on the chip carrier with a plurality of individual board contacts on the circuit board, the method comprising:

providing a plurality of curved leads, each curved lead being substantially entirely plated with solder plating in a range of approximately 0.3 mils to 1.5 mils thick, and each curved lead having first and second leg portions connected by at least one curved portion wherein the first leg portion has a first surface for connection to one of the plurality of carrier contacts and the second leg portion has a second surface for connection to one of the plurality of board contacts, the plurality of curved leads being removable connected to a support strip;

positioning the plurality of leads with the support strip so that the first surfaces of the plurality of curved leads are substantially aligned with the plurality of carrier contacts;

temporarily connecting the first surfaces of the plurality of curved leads to the plurality of carrier contacts;

removing the support strip after the step of connecting the first surfaces;

positioning the second surfaces on the plurality of curved leads for alignment with the plurality of board contacts; and

causing the solder plating on both the first and second surfaces to flow, after removing the support strip, so that the first and second surfaces are substantially simultaneously soldered to the carrier contacts and the board contacts, respectively.

5,294,040

FOLDABLE CONTAINER WITH BELLOWS-TYPE COUPLING MEMBERS

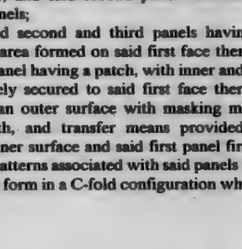
Laura L. Cohen, 556 Timbercreek Dr., Akron, Ohio 44313, and Roy M. Kay, 10060 Madison Ave., Montville, Ohio 44064

Continuation of Ser. No. 670,055, Mar. 15, 1991, Pat. No. 5,207,376, which is a continuation-in-part of Ser. No. 357,033, May 25, 1989, Pat. No. 5,033,668. This application May 3, 1993, Ser. No. 56,418
Int. Cl.[5] B65D *5/24, 5/42*
U.S. Cl. 229—8 **20 Claims**

1. A gift box constructed from a flat blank of material comprising;

a blank of material having first and second sides and having graphic material on at least said first side thereof, and having fold lines formed therein which define at least a bottom wall, four side walls coupled to said bottom wall by means of said fold lines, and bellows-type coupling members coupled to said side walls by means of said fold lines and adapted to couple adjacent ones of said side walls to one another, wherein each of the said bellows-type coupling members have fold lines formed therein which separate said bellows-type coupling members into at least two portions;

said bellows-type coupling members adapted to be folded inwardly by means of said fold lines which separate said bellows-type coupling members, wherein inward folding of said bellows-type coupling members acts to draw the



respective side walls to upstanding positions relative to said bottom wall, wherein said first side of said blank of material will be the exterior of said gift box, and said graphic material is provided at least upon said side walls and is registered in predetermined position and orientation with respect to the fold lines provided between said side walls and said bellows-type coupling members, such that upon assembly of said gift box and inward folding of said bellows-type coupling members, said graphic material on said side walls will be registered with graphic material on adjacent side walls when said side walls are in said upstanding positions relative to said bottom wall such that said graphic material will be matched and substantially continuous around the corner formed between said side walls.

5,294,041

CONTINUOUS BUSINESS FORMS AND MAILERS FORMED THEREFROM

Robert Whiteside, Leicestershire, Great Britain, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,836
Int. Cl.[5] B65D *27/10*
U.S. Cl. 229—69 **20 Claims**

1. A business form intermediate comprising:

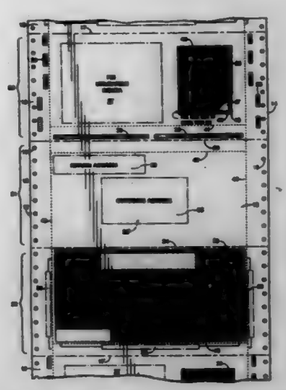
a sheet having first and second opposite faces, parallel first and second edges, and parallel third and fourth edges perpendicular to said first and second edges;

first and second fold lines parallel to said first and second edges, and dividing said sheet into first, second, and third panels, said first panel bordered by said first edge and first fold line, and said second panel between said first and third panels;

one of said second and third panels having an outgoing address area formed on said first face thereof;

said first panel having a patch, with inner and outer surfaces, adhesively secured to said first face thereof, said patch having an outer surface with masking means associated therewith, and transfer means provided between said patch inner surface and said first panel first face; and

adhesive patterns associated with said panels for holding said business form in a C-fold configuration when folded about said first fold line first, and then said second fold line, to provide said first panel first surface covered by said third



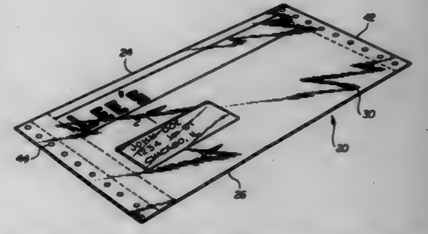
panel so that said patch is not visible from the exterior of a formed mailer.

5,294,042

EXTERIORLY CONTROLLED ADDRESSING SYSTEM FOR WINDOW MAILERS

Dennis R. Giordano, 220 Steven Dr., Cheektowaga, N.Y. 14227

Continuation of Ser. No. 840,567, Feb. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 732,904, Jul. 19, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,434
Int. Cl.[5] B65D *27/04*; B31B *1/90*
U.S. Cl. 229—71 **8 Claims**



1. A form for a mailer, said form comprising a sealed window envelope assembly adapted for use with computer printing techniques in the addressing of envelopes,

said assembly including an envelope having a top panel and a bottom panel,

joinder means for connecting said top panel and said bottom panel to one another along coextensive, circumscribing perimetric marginal edge zones of said panels for forming a closed envelope,

said top panel of said envelope being formed with a cut-out zone defining a window in said envelope,

a light-pervious web beneath said top panel and providing a see-through closure for said window,

a sheet disposed within said envelope for imprinting of information thereon, said sheet including an areal expanse in registration with and visible through said cut-out zone in said top panel of said envelope,

said sheet bearing on a top surface thereof a first coating component of an interaction printing system for producing visual indicia on said sheet upon mechanically-

impressed impact-contacting of said first coating component of said sheet against a cooperating, interacting second coating component,

said light-pervious web bearing on an undersurface thereof a second coating component of the interaction printing system for reacting with (the sheet-carried) said first coating component in selectable areas (contacting thereagainst) including areas in addition to an area demarked by said cut-out zone, to produce selectable imprinted indicia on said sheet,

imprinted indicia in registry with said cut-out zone being readily visible and clearly readable through said window, and any other indicia imprinted on said sheet being shielded from view by said top panel of said envelope,

said web being distinct from said sheet and comprising an insert within said envelope, said web having an areal expanse coextensive with said envelope, said second coating component of the interaction printing system covering said areal expanse of said web for facilitating the generation of imprinted indicia on said sheet.

5,294,043

PRODUCT CARTON

Ronald G. Platt, Harvard, Ill., assignor to The Packaging House, Inc., Chicago, Ill.

Filed Feb. 13, 1992, Ser. No. 835,762
Int. Cl.[5] B65D *5/28*
U.S. Cl. 229—143 **3 Claims**



1. A carton forming a tray of rectangular shape with a bottom wall, vertical end walls, and vertical side walls for receiving a product, the tray being able to be further folded to form a self-locking box-like structure for totally enclosing a product, said box being capable of being unfolded to form the tray and expose the product, the carton comprising:

a rectangular bottom center panel having sides and ends;

a rectangular end panel integrally formed on each end of the bottom center panel and hingedly connected to the center panel by a first score line;

a second score line separating said end panels into outer sections and inner sections;

a continuous side wall, including both a central side wall and end flaps, the central side wall being hingedly connected to each side of the bottom center panel with a third score line;

a side flap hingedly connected to each side of each outer section of each end panel by a fourth score line such that, when each said end panel outer section and its corresponding side flaps and aid continuous side walls are folded upwardly about their respective hinge connections to their vertical position, a rectangular tray is formed with a bottom wall, vertical side walls, and vertical end walls;

glue on one portion of each of said side flaps such that said side flaps may be folded inwardly and glued to the inside of each vertical end flap to form said tray to hold a product;

a corresponding one of said end flaps being hingedly connected by a fifth score line to and forming the outer end of each central side wall, each of said end flaps being hingedly connected by a sixth score line to a corresponding side of said inner section of said end panels, each end flap overlapping and being glued to the outside of a corresponding one of said side flaps to form said tray with vertical end walls and side walls;

a first diagonal score line on each of said central side walls extending upwardly and inwardly from a corresponding junction of said first and third score lines at one end of each of the central side walls to the top of each of said central side walls;

a second diagonal score line on each of said central side walls extending upwardly and inwardly from a corresponding junction of said first and third score lines at the other end of the central side walls to the top of each central side wall such that each rectangular end panel may be folded inwardly about the first score lines to allow the outer sections of the end panels to be folded about the second score lines and to overlap each other and form a box-like structure for enclosing a product;

a first triangular panel formed at one end of a corresponding one of each central side wall by said first diagonal score line and a corresponding one of said fifth score lines;

a second triangular panel formed at the other end of a corresponding one of each central side wall by said second diagonal score line and a corresponding one of said fifth score lines;

said first and second triangular panels being folded outwardly between said side flaps and said central side walls when the inner section and the outer section of each rectangular end panel are folded inwardly about the respective first and second score lines such that a closed box-like structure is formed and pressure against the central side walls by a product in said box-like structure forces said triangular panels toward their folded position, thus providing a box-like structure that self-locks in the closed configuration, the box remaining closed by interaction of the side walls with a product therein; and

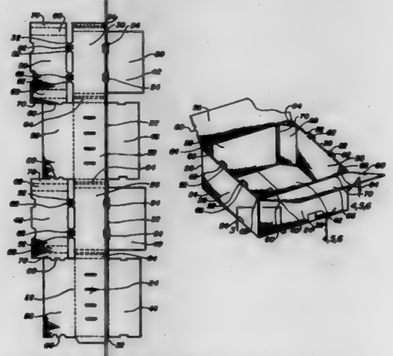
at least one inverted V-shaped score line in each central side wall between said triangular panels to allow said central side walls to fold around and over a product in said box-like structure.

5,294,044

FIBERBOARD BOX WITH REINFORCED CORNERS

Danny W. Clark, 4402 Southfield Dr., Baltimore, Md. 21236

Filed Mar. 22, 1993, Ser. No. 35,041
Int. Cl.[5] B65D *5/50*
U.S. Cl. 229—191 **18 Claims**



1. A fiberboard box with reinforced corners formed from a flat blank board, that is scored, slotted, and slitted, the box comprising:

a near side panel integrally formed from the blank folded upwardly at a right angle,

a left outer end panel integrally formed from the blank contiguous with the near side panel folded upwardly at a right angle,

a far side panel integrally formed from the blank contiguous with the left outer end panel folded upwardly at a right angle,

a right outer end panel integrally formed from the blank contiguous with the far side panel folded upwardly at a right angle,

closure means connecting said near side panel and said outer end panel into a rectangle,

a left inner bottom flap integrally formed from the blank contiguous with the left outer end panel folded inwardly toward the panels,

a right inner bottom flap integrally formed from the blank contiguous with the right outer end panel folded inwardly towards the panels,

a near outer bottom side flap integrally formed from the blank contiguous with the near side panel folded inwardly therefrom overlapping the inner bottom flaps,

a far outer bottom side flap integrally formed from the blank contiguous with the bar side panel folded inwardly therefrom overlapping the inner bottom flaps, the flaps jointly forming a bottom,

bottom attaching mean joining the bottom flaps together into a structural bottom,

a left inner overlap end panel integrally formed from the blank contiguous with the left outer end panel folded inside the left outer end panel producing a double thickness end,

a right inner overlap end panel integrally formed from the blank contiguous with the right outer end panel folded inside the right outer end panel producing a double thickness end,

a near top flap integrally formed from the blank contiguous with the near side panel folded inwardly to produce a first half of a top,

a far top flap integrally formed from the blank contiguous with the far side panel folded inwardly to produce a second half of a top,

joining means fastening the top flaps one with the other where they butt together forming a top,

a doubled corner vertical reinforcement formed integrally from the outer end panels and adjacent side panel, distending into the box at an equal bisecting angle from each right angle intersection of the panels forming a double wall corner structural reinforcement,

a plurality of diagonal corner reinforcements integrally formed from the overlap end panels further, each diagonal corner reinforcement having an inside overlapped fastening tab distal therewith, angularly bent to span between the end and side panels contiguous with the doubled corner vertical reinforcements and the fastening tab attached to the side panels with mounting means, the doubled reinforcements further forming triple structural reinforcing corners permitting additional boxes to be stacked thereon without corner crushing.

5,294,045

TEMPERATURE AND FLOW CONTROL VALVE

Kevin R. Harris, 833 E. Helen St., Tucson, Ariz. 85719

Filed May 10, 1993, Ser. No. 58,327
Int. Cl.[5] G05D *23/12*
U.S. Cl. 236—12.12 **14 Claims**

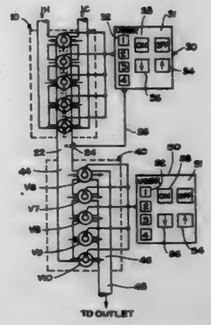
1. An apparatus for controlling the temperature of a discharge liquid stream resulting from the combination of a relatively hot liquid stream and a relatively cold liquid stream, comprising:

(a) a hot stream manifold for receiving a hot-stream input at a predetermined hot temperature;

(b) a cold stream manifold for receiving a cold-stream input at a predetermined cold temperature below said predetermined hot temperature;

(c) a plurality of three-port valves, each valve having one first and one second input port and one output port, said first input port being hydraulically connected to said hot-stream manifold, said second input port being hydraulically connected to said cold-stream manifold, and said output port of each of said valves being always open to either said first or said second input port;

(d) a discharge manifold hydraulically connected to said output port of each of said three-port valves for receiving an output stream from each of the three-port valves, thereby providing a mixing chamber for combining the output streams from all said three-port valves into a single discharge liquid stream;



(e) temperature-sensing means disposed in said discharge manifold for monitoring the temperature of said single discharge liquid stream; and

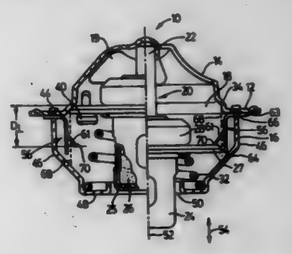
(f) means responsive to said temperature-sensing means for causing selected ones of said plurality of three-port valves to be open to said cold stream manifold and the remaining valves to be open to said hot stream manifold, such that said single discharge liquid stream has a temperature approximately equal to a predetermined temperature set-point.

5,294,046

FAIL-OPEN LOCKING ELEMENT AND THERMOSTAT INCORPORATION SAME

Joseph Fishman, 102 Teefy Avenue, Richmond Hill Ontario, Canada

Filed Feb. 23, 1993, Ser. No. 23,821
Int. Cl.[5] F01P *7/16*
U.S. Cl. 236—345 **14 Claims**



13. A thermostat for liquid-cooling systems, comprising:

(a) a flange having an opening;

(b) a valve for sealing said opening, said valve being displaceable from said opening for allowing the passage of liquid through said opening;

(c) an upper bridge and a lower bridge spanning said open-

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ing on opposed sides of said flange for supporting said valve in said opening;

(d) means for displacing said valve from said opening in response to a temperature variation, said displacing means including a pin contacting the underside of one of said bridges, at one end, and being extendibly housed within a body at the other end, said body containing a temperature sensitive means for extending said pin, and said body being rigidly attached to said valve for sealing said opening in said flange when said pin is retracted relative to said body;

(e) a spring located between said valve and the other of said bridges for urging said valve into sealing engagement with said opening; and

(f) at least one locking element having

(i) an end portion for attaching said locking element to said thermostat, said locking element being positioned to act between said displaceable valve and the remainder of said thermostat,

(ii) at least one body portion positioned generally parallel to a path of displacement of said valve, and

(iii) a tab rigidly connected to said body portion, said tab protruding into said path of displacement for locking said displaceable valve in an open position when said displaceable valve has been displaced a pre-determined amount, said pre-determined amount being located in the range that said displaceable valve is displaced when subjected to temperatures between the maximum normal working temperature of said thermostat and the failure temperature of said thermostat..

5,294,047

ELECTRONIC THERMOSTAT TIMER

Thomas Schwer, Triberg, and Bernd Maier, St. Georgen, Fed. Rep. of Germany, assignors to Grasslin KG, Fed. Rep. of Germany

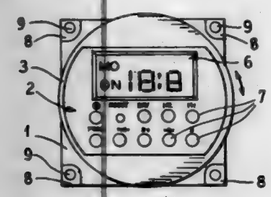
PCT No. PCT/DE92/00257, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992

PCT Filed Mar. 27, 1992, Ser. No. 940,891

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1991, 9104170

Int. Cl.[5] F23N *5/20*

U.S. Cl. 236—46 R **9 Claims**



1. An electronic thermostat timer having in a common housing a thermostat, an optoelectronic display means arranged at a front side of the temperatures, and a keyboard for manual input of the time of day, the switching times and the switching temperature, comprising: the housing having a quadratic cross section; a cylindrical clockface dial at the front side of the housing, an outer circumference of said cylindrical clockface dial partially projecting beyond sides of the housing; and a thermostat module, which is covered by a housing cover, at a back side of the housing.

5,294,048

APPARATUS FOR CONTROLLING VENTILATION FAN

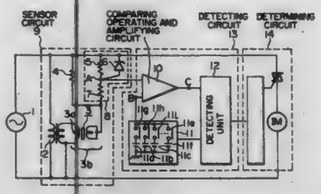
Masahiko Kawasaki, Komaki, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,062

Claims priority, application Japan, Oct. 18, 1991, 3-270755

Int. Cl.[5] B60H *1/24*

U.S. Cl. 236—49.3 **2 Claims**



1. A device for controlling a ventilation fan, comprising:

a sensor circuit for generating a signal voltage having an amplitude which oscillates at a predetermined period and changes depending upon an environmental change;

means for detecting the signal voltage by comparing the signal voltage from said sensor circuit with a reference voltage which is constant for a period of time longer than the predetermined period of the signal voltage and is momentarily and stepwise changed to assume a plurality of values; and

means for controlling the operation of a ventilation fan depending upon a change in the signal voltage which is detected by said detecting means.

5,294,049

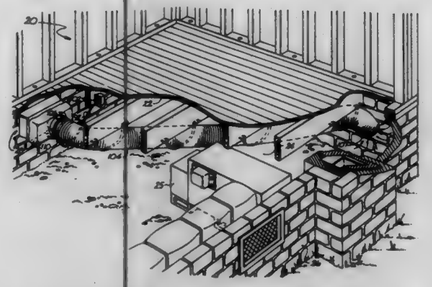
POWER TEMP VENT DUCT SYSTEM

Timothy J. Trunkle, Mt. Pleasant, S.C.; Paul M. Sarazen, Jr., and Dennis A. Beam, Jr., both of Shelby, N.C., assignors to Temp-Vent Corporation, Shelby, N.C.

Filed Feb. 22, 1993, Ser. No. 20,686

Int. Cl.[5] F24F *13/15*

U.S. Cl. 236—49.5 **9 Claims**



9. An adaptable, temperature-responsive, powdered-fan foundation ventilator system, comprising:

a fan housing defining an air passageway therethrough, said fan housing defining a front edge and a rear end disposed generally opposite said front edge;

an electric-powdered fan mounted to said fan housing;

a means for localizing the suction capability of said fan;

a means for connecting said suction localizing means and said fan housing, said connecting means including an adaptor having a front end disposed to be connected to said rear end of said fan housing, said adaptor having a rear end disposed to be connected to said localizing means;

a louver housing defining an air passageway therethrough, said louver housing defining a front edge and a rear edge opposite said front edge, said rear edge of said louver housing being disposed in opposition to said front edge of said fan housing;

a means for selectively opening and closing said louver housing air passageway depending upon the temperature of the surrounding atmosphere, said temperature dependent opening and closing means being disposed in said air passageway of said louver housing, wherein said front end of adaptor is formed of flexible material, wherein said means for selectively attaching said front end of said adaptor to said rear end of said fan housing includes an elastic member connected to said front end of said adaptor.

5,294,050

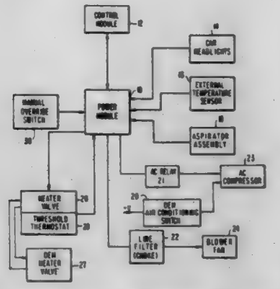
INSTALLER CLIMATE CONTROL SYSTEM

Jonathan H. Hoffman, Flanders, N.J., and Gilbert I. Starr, New Rochelle, N.Y., assignors to Interdynamics, Inc., Brooklyn, N.Y.

Filed Sep. 4, 1992, Ser. No. 940,431

Int. Cl.[5] G05D *23/00*

U.S. Cl. 237—2 A **18 Claims**



1. An aftermarket universal installer climate control system for installation in any of a variety of vehicles having air conditioning and heating systems and having a heater core into which coolant flows and a pre-existing control device to control heat in the passage compartment, said heater core being connected in a circulation path in which coolant flows thereto to control the temperature thereof, said climate control system comprising:

a control module adapted to be mounted in the passenger compartment to be accessible to a driver of the vehicle for easy operation,

an aspirator assembly located proximate to the passenger compartment to determine the temperature in the passenger compartment,

a power module electrically connected to the control module, said power module being connected to said aspirator assembly to receive electrical signals concerning the ambient temperature in the passenger compartments, said power module comprising a microprocessor to control the air conditioning and heating system to climate control the passenger compartment of the vehicle,

and at least one independent heater valve adapted to be connected in said recirculation path responsive to the microprocessor to regulate the flow of coolant to the heater core.

5,294,051

VALVE CONTROLLER FOR HOT WATER HEATING SYSTEM

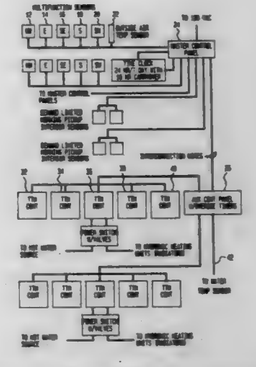
William A. Piegari, Westfield, N.J., assignor to General Electronic Engineering, Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 691,828, Apr. 26, 1991, Pat. No. 5,125,572. This application Jun. 25, 1992, Ser. No. 904,873

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] F24D *3/00*

U.S. Cl. 237—8 R **17 Claims**



1. A valve controller for a hot water heating system having water heating means, water circulating means, and heater means by operating a water control valve between an open and a closed position, said valve controller comprising:

flow timer means for variably establishing flow periodicity between a minimum flow time and a maximum flow time;

base cycle timer means for variably establishing base cycle periodicity between a minimum base time and a maximum base time; and,

selector means responsive to heat requirement for selecting flow time and base cycle time.

5,294,052

FLUID DISPENSING SYSTEM

Timothy S. Kukesh, Indianapolis, Ind., assignor to Glas-Craft, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 601,828, Nov. 7, 1990, Pat. No. 5,178,326, which is a continuation-in-part of Ser. No. 342,185, Apr. 24, 1989, Pat. No. 4,967,956, which is a continuation-in-part of Ser. No. 80,475, Jul. 31, 1987, Pat. No. 4,824,017, which is a continuation-in-part of Ser. No. 885,006, Jul. 14, 1986, abandoned. This application Sep. 4, 1992, Ser. No. 940,649

Int. Cl.[5] F16K *11/02;* **B05B** *7/04*

U.S. Cl. 239—112 **22 Claims**

1. An internal mix dispenser for plural component materials, comprising:

a dispenser body carrying a dispensing outlet for said plural component materials, said dispenser body also carrying a first component connection to receive a flow of a first component, a second component connection to receive a flow of a second component, a solvent connection to receive a flow of solvent and a flow control valve between said first component, second component and solvent connections and said dispensing outlet for controlling the flow of said first and second components and said solvent to said dispensing outlet, said flow control valve comprising:

a valve body forming a cavity;

a movable valve member carried within said cavity of said

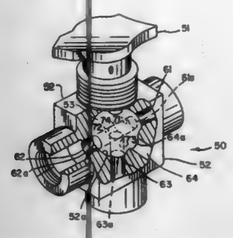
VOL 1160 ISS 3 MR 15 1994 UMI

valve body and movable between first and second positions,

said valve body having a first passageway between said first component connection and a first internal opening at the cavity of the valve body, a second passageway between said second component connection and a second internal opening at the cavity of the valve body, a third passageway between said dispensing outlet and a third internal opening at the cavity of the valve body and a fourth passageway between said solvent connection and a fourth internal opening at the cavity of the valve body;

said movable valve member being provided with a first valve passageway leading from a surface of the movable valve body to an internal passageway junction, a second valve passageway leading from a surface of the movable valve body to said internal passageway junction and a third valve passageway leading from a surface of the movable valve body to said internal passageway junction;

said internal openings of said valve body and said movable valve member passageways being located at the cavity of the valve body and the surface of the movable valve member so that:



in said first position of the movable valve member, said first valve passageway is aligned with said first passageway of said valve body, said second valve passageway is aligned with said second passageway of said valve body and said third valve passageway is aligned with said third passageway of said valve body, thereby permitting said first and second components to flow through the first and second passageways of the valve body and said movable valve member, to combine at the internal passageway junction of the movable valve member and to flow through the third passageways of the movable valve member and valve body to said dispensing outlet; and so that

in said second position, one of said first and second valve passageways is aligned with said fourth passageway of said valve body, the other of said first and second valve passageways being blocked by the valve body, and said third passageway of said valve body is aligned with said third valve passageway, thereby permitting solvent to flow through said fourth passageway of the valve body and said one of the first and second valve passageways to said internal passageway junction and to flow through the third passageways of the valve member and valve body to said dispensing outlet.

5,294,053

AIRLESS SPRAY HEAD WITH IMPROVED ORIFICE TIP MOUNTING

Robert J. Perret, Jr., 1828 Sequoia St., Orange, Calif. 92668

Filed Feb. 9, 1993, Ser. No. 15,232

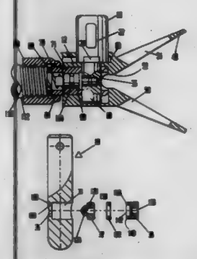
Int. Cl.[5] B05B *15/02*

U.S. Cl. 239—119 **9 Claims**

1. In a spray tip for airless spraying wherein an orifice tip member is positioned in a holder and said holder is mounted for rotational movement on a axis of rotation within said spray tip between spraying and cleaning positions, the improved subassembly of said holder and spray tip which comprises:

a. a transverse through bore through said holder orthogonal to the axis of rotation, said through bore having a major portion of a first diameter along a major portion of its length and a remaining portion of a second, substantially lesser diameter along the remaining portion of its length;

b. an orifice tip member having a generally cylindrical shape with a diameter closely conforming to said first diameter and an arcuately convex discharge face of a diameter less than said second diameter and received within said transverse through bore with its discharge face extending into said remaining portion; and



c. a sealing plug permanently received in said major portion of said through bore of said holder, said plug having a through passage with a small diameter and a counterbore of greater diameter and lesser length, and oriented in said subassembly with said counterbore adjacent to said orifice tip member, with the volume of said counterbore being from 16 to 36% the volume of said plug, whereby

the liquid discharged from the orifice tip in its cleaning position is dispersed and the pressure drop through the orifice tip in its spraying position is minimized.

5,294,054

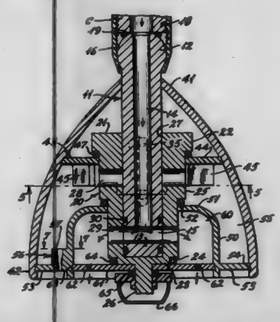
ADJUSTABLE SHOWERHEAD ASSEMBLIES

Charles E. Benedict; Thomas B. Middlebrooks; Robert G. Stampfli; Victor C. Cordiano, all of Tallahassee; Charles W. Belt, Homosassa, and Jay S. Tiedeberg, Tallahassee, all of Fla., assignors to Benedict Engineering Company, Inc., Tallahassee, Fla.

Continuation-in-part of Ser. No. 886,857, May 22, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,749

Int. Cl.[5] B05B *3/04*

U.S. Cl. 239—222.15 **35 Claims**



1. An adjustable showerhead assembly comprising, a central fluid supply shaft having upper and lower ends, an open elongated passageway extending axially of said shaft from said upper end and terminating in spaced relationship from said lower end thereof, a lateral passageway extending through said shaft and communicating with said elongated passageway, a sleeve means having upper and lower portions and a central

cavity extending between said upper and lower portions, spaced upper and lower openings in said sleeve means which communicate with said cavity, said shaft being received within said cavity, said sleeve means being axially shiftable relative to said shaft from a first position wherein said lateral passageway communicates with said upper opening to a second position wherein said lateral passageway communicates with said lower opening, an outer housing having upper and lower portions, an impeller means mounted within said housing, said impeller means being generally aligned with said upper opening in said sleeve means, an inner housing disposed within said outer housing, an outer chamber defined between said inner housing and said outer housing which encloses said impeller means and an inner chamber defined between said sleeve means and said inner housing which communicates with said lower opening in said sleeve means, face plate means for substantially closing said outer and inner chambers adjacent said lower portion of said outer housing, a plurality of first nozzle openings in said face plate means communicating with said outer chamber, a plurality of second openings in said face plate means communicating with said inner chamber, said inner and outer housings being shiftable with said sleeve means between said first and said second positions, whereby when said sleeve means is in said first position, fluid introduced through said elongated passageway in said shaft is directed through said upper opening in said sleeve means and toward said impeller mean to thereby discharge fluid through said first nozzle openings to thereby rotate said outer housing, and when said sleeve means is in said second position, fluid introduced through said elongated passageway will flow through said lower opening into said inner chamber so as to be discharged through said second openings.

5,294,055

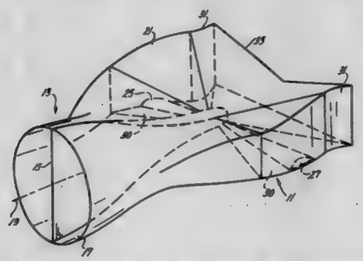
ROTATABLE ARMS FOR THRUST VECTORING AND CHANGING THE AREA OF A NOZZLE THROAT

Timothy M. Garrett, Florissant, and David E. Zilz, St. Peters, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 8, 1992, Ser. No. 941,919

Int. Cl.[5] B64C *15/02*

U.S. Cl. 239—265.19 **19 Claims**



1. A nozzle apparatus for vectoring thrust and changing nozzle throat area comprising:

a duct having an inner surface;

two arms;

each of said arms having a first and a second surface;

each of said first surfaces cooperating with said inner surface to form a respective throat;

said inner surface including an abutment section;

said abutment section including an abutment surface comprised of at least one surface of revolution, with said second surface of each arm slideably abutting said abutment section along said abutment surface;

said two arms being rotatable about at least one pivot axis; and

said at least one pivot axis intersecting said abutment section.

5,294,056

FUEL-GAS MIXTURE INJECTOR WITH A DOWNSTREAM MIXING CONDUIT

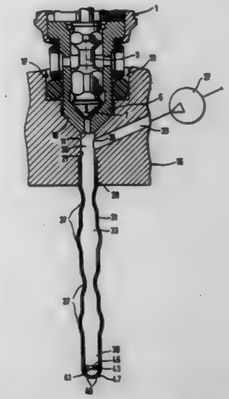
Juergen Buchholz, Lauffen, and Martin Maier, Moeglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 27, 1992, Ser. No. 935,710

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130351

Int. Cl.[5] F02M *61/18*

U.S. Cl. 239—408 **11 Claims**



1. An apparatus for injecting a fuel-gas mixture, having a fuel injection valve which has at least one injection port on one end, a mixing conduit downstream of said at least one injection port, said mixing conduit includes a first end into which fuel is injected through the at least one injection port of the fuel injection valve, a gas delivery conduit that communicates with the first end of said mixing conduit for injecting a gas directly into said mixing conduit downstream and spaced from said at least one port, which gas strikes the fuel admitted to said mixing conduit for mixing therewith, said mixing conduit (33), includes at least one cross-sectional constriction (37) downstream of said first end of said mixing conduit, and an adjoining section in a flow direction in which the cross section of the mixing conduit (33) widens.

5,294,057

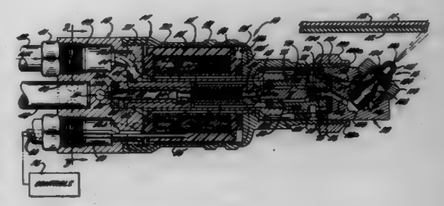
SOLENOID OPERATED LIQUID SPRAY GUN

Richard J. Hamilton, West Chicago, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Filed Apr. 21, 1992, Ser. No. 871,923

Int. Cl.[5] B05C *7/02*

U.S. Cl. 239—417.3 **39 Claims**



1. A liquid spray gun comprising a housing,

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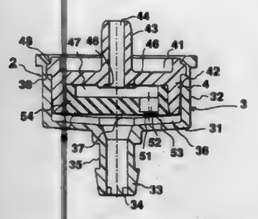
means defining a liquid inlet for connection to a pressurized liquid supply source,
a discharge nozzle,
a solenoid coil supported within said housing,
means for electrically coupling said solenoid coil to an electrical source,
a fluid control module disposed within said solenoid coil for controlling the flow of liquid from said liquid inlet defining means through said nozzle, said control module defining a liquid passage for communicating liquid from said liquid inlet defining means to said nozzle and including a valve plunger movable between a first position for preventing the flow of liquid through said nozzle and a second position for permitting the flow of liquid from said liquid inlet defining means and through said nozzle for direction from said gun,
said solenoid coil being selectively operable for moving said plunger between said first and second positions,
said control module being removable and replaceable in said housing,
a retaining member releasably engageable with said housing for securing said control module in said housing, and
said control module being removable from said housing upon disengagement of said retaining member from said housing.

5,294,058

REGULATED DRIP IRRIGATION EMITTER

Zvi Einav, Doar Gvat, Israel, assignor to Plastro-Gvat, Doar Gvat, Israel

Filed Jan. 11, 1993, Ser. No. 3,048
Claims priority, application Israel, Jan. 24, 1992, 100749
Int. Cl.[5] B05B *15/00*; F15D *1/02*
U.S. Cl. 239—533.1 **19 Claims**



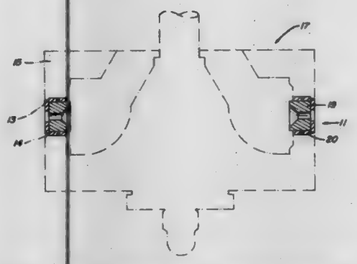
1. A drip irrigation emitter, comprising: a housing formed with an inlet opening and an outlet opening; and an elastomeric membrane located in said housing and defining an inlet chamber communicating with said inlet opening, and an outlet chamber communicating with said outlet opening; said elastomeric membrane being formed on one side with a recess partially through the membrane to define a thin wall section of substantially smaller thickness than the remainder of the elastomeric membrane; said elastomeric membrane being further formed with a flow-restrictor orifice through said thin wall section and of much smaller cross-sectional area than that of said recess to produce a pressure drop in the fluid flowing therethrough and through the outlet chamber to said outlet opening, said membrane being deformable such that a portion thereof, laterally of said recess and orifice and aligned with said outlet opening, is displaceable towards and away from said outlet opening to restrict or enlarge the flow thereto in response to changes in the inlet pressure and thereby to regulate the flow through said outlet opening.

5,294,059

DEVICE FOR DIRECTING THE FLOW OF AN ATOMIZED SLURRY

W. Craig Willan, P.O. Box 574, Hurst, Tex. 76053

Filed Jun. 9, 1992, Ser. No. 895,781
Int. Cl.[5] B05B *1/00*
U.S. Cl. 239—591 **6 Claims**



1. In an atomizer housing having a cylindrical wall containing at least one ejection orifice having an ejection orifice axis, the atomizer housing being rotatable about a rotational axis that is perpendicular to the ejection orifice axis, an improved nozzle for directing the flow of an atomized slurry through the ejection orifice, comprising in combination:
a liner bushing made from a wear-resistant material having an intake end, a discharge end, an outer sidewall, and an axial passage extending along the ejection orifice axis from the intake end to the discharge end;
a sleeve bushing mounted stationarily in the ejection orifice of the atomizer housing, the sleeve bushing having an outer diameter, an axial bore which closely receives the outer sidewall of the liner bushing, and a support wall with an axial aperture of a diameter greater than the discharge end of the axial passage of the liner bushing, the discharge end of the liner bushing bearing against the support wall of the sleeve bushing, and the greater diameter of the aperture of the support wall over the discharge end of the axial passage defining a recessed shoulder which causes slurry media to pack tightly thereon due to turbulent flow eddy currents caused by the operation of the atomizer;
seal means on the outer diameter of the sleeve bushing for sealing the sleeve bushing in the ejection orifice of the housing; and
wherein the liner bushing is secured within the sleeve bearing in preloaded axial compression directed along the ejection orifice axis.

5,294,060

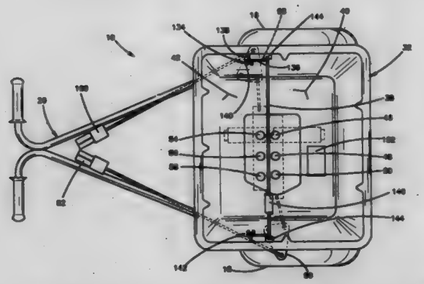
MATERIAL SPREADER

Peter G. Thomason, Avon Lake, Ohio, assignor to Lesco, Inc., Rocky River, Ohio

Filed Jun. 22, 1992, Ser. No. 901,793
Int. Cl.[5] A01C *7/16, 17/00*
U.S. Cl. 239—656 **19 Claims**

1. Apparatus for spreading material, comprising:
a support frame and a pair of ground engaging wheels for rollingly supporting said frame on the ground;
a hopper attached to said support frame and including first and second isolated chambers for holding first and second materials, respectively, to be spread;
a first series of discharge openings in the bottom of said first chamber to allow material to be discharged from said first chamber;
a second series of discharge openings in the bottom of said second chamber to allow material to be discharged from said second chamber;

an impeller driven for rotation by said wheels for distributing the material to be spread;
means for directing material from said first and second chambers onto said impeller, said means consisting of a series of passages interconnecting said first and second series of discharge openings, each passage having two inlets and one outlet and portions placing said two inlets in communication with said one outlet, one of said two inlets to each passage being in said first series of discharge openings and the other one of said two inlets to each passage being in said second series of discharge openings and wherein each of said passages is isolated from the other passages, and said outlets of said passages discharging the flowing material directly out and on spaced apart portions of a surface of said impeller; and
means mounting said impeller below said outlets and aligned with said outlets to receive material on said spaced apart portions of said surface of said impeller.

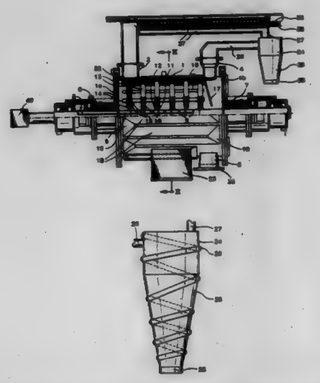


5,294,061

METHOD OF REDUCING THE OIL CONTENT OF CUTTINGS AND APPARATUS FOR THE APPLICATION OF SAID METHOD

Tom van Dijk, Heerhugowaard, Netherlands, assignor to SCS Environmental B.V., Den Helder, Netherlands

PCT No. PCT/NL90/00004, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO90/08177, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 11, 1990, Ser. No. 721,513
Int. Cl.[5] B02C *11/08, 13/06*
U.S. Cl. 241—23 **19 Claims**



1. In a method of reducing oil content of cuttings which have been removed from drilling mud by the steps of subjecting said cuttings to hammering treatment in a drum-shaped space wherein heat produced by said hammering treatment generates an autologous operating temperature sufficient to substantially convert oil and water present in said cuttings to mist and vapor for removal from said drum-shaped space and removing said cuttings from said space in substantially dry form, the improvement comprising the steps of:
adding external heat to said space to attain an elevated temperature throughout the interior thereof which is greater than said autologous operating temperature but below the cracking temperature of the oil in said cutting being treated; and
maintaining a pressure in said space during operation at a value of at least 0.3 bar gauge pressure.

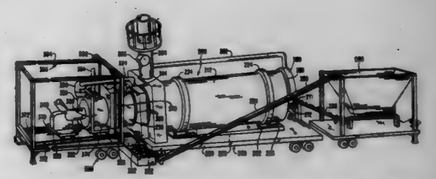
6. An apparatus including a hammer mill and a dust cyclone for reducing oil content of cuttings which have been removed from a drilling mud, the hammer mill comprising:
a stationary drum-shaped body having a cylindrical shaped continuous wall closed by lateral first and second side walls to provide an interior space having an interior wall surface, said drum-shaped body also having an inlet and a first outlet extending through a top portion of the drum-shaped body, the inlet for introducing into the interior space the cuttings and the first outlet for directing from the interior space of the drum-shaped body a mist containing oil, steam and dust formed during operation of the hammer mill, and a second outlet extending through a bottom portion of the drum-shaped body for extracting purified cuttings from the interior space of the drum-shaped body;
a rotary shaft passing through at least one of said side walls of the drum-shaped body and extending axially through the interior space of the drum-shaped body, said shaft being connected for rotary movement to driving means outside the drum-shaped body;
a plurality of hammers mounted to said rotary shaft and extending outwardly therefrom to a vicinity proximal said interior wall surface of said drum-shaped body;
said dust cyclone connected to said first outlet of the drum-shaped body, the dust cyclone for separating the dust, oil and water formed during operation of the hammer mill; and
means for heating the interior space of the drum-shaped body, said heating means positioned on an exterior surface of said continuous wall of said drum-shaped body.

5,294,062

APPARATUS FOR RECYCLING ASPHALT MATERIALS

Arthur N. Hendrickson, Coram, N.Y.; Lawrence C. Hanlon, South Portland, Me., and Russell W. Anderson, Mahwah, N.J., assignors to Rap Process Machinery Corp., Ramsey, N.J.

Continuation-in-part of Ser. No. 772,488, Oct. 7, 1991, Pat. No. 5,188,299. This application Feb. 17, 1993, Ser. No. 19,117
Int. Cl.[5] B02C *13/02*
U.S. Cl. 241—67 **16 Claims**



1. Apparatus for processing recyclable asphalt material received from the field in relatively large pieces for delivery in a mass containing desired smaller aggregate-sized pieces for reuse, the apparatus comprising:
an elongate drum having a generally cylindrical wall, a

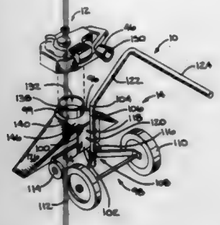
central axis, and an interior with an inlet end and an outlet end;
mounting means for mounting the drum for rotation about the central axis;
a heating chamber adjacent one end of the interior of the drum and extending along the drum toward the other end of the interior of the drum over a first axial portion of the drum, the heating chamber having an interior;
a plurality of breaker members connected to the heating chamber for the conduction of heat from the heating chamber to the breaker members, the breaker members being tubular and extending from the heating chamber along a second axial portion of the drum toward the other end of the drum, each breaker member having an interior extending along the axial length of the breaker member and each interior being in communication with the interior of the heating chamber;
heating means for supplying heat to the interior of the heating chamber, such that heat is conducted to the breaker members connected to the heating chamber;
feed means for feeding the large pieces of recyclable asphalt material received from the field into the drum, adjacent the inlet end of the interior of the drum;
rotational means for rotating the drum about the central axis so as to tumble the large pieces of recyclable asphalt along the drum and the breaker members, thereby simultaneously reducing the size of the relatively large pieces to the desired aggregate-sized pieces and heating the mass containing the desired aggregate-sized pieces, which mass proceeds toward the outlet end for delivery at the outlet end of the interior of the drum; and
selectively detachable coupling means coupling the heating means with the interior of the heating chamber.

5,294,063

DEBRIS VACUUM SELECTIVELY USABLE AS A HAND-HELD AND WHEELED UNIT

Scott J. Bote, Lindenhurst, Ill., assignor to Echo, Incorporated, Lake Zurich, Ill.

Filed Nov. 4, 1991, Ser. No. 787,373
Int. Cl.[5] B02C *18/06*
U.S. Cl. 241—101.7 **23 Claims**



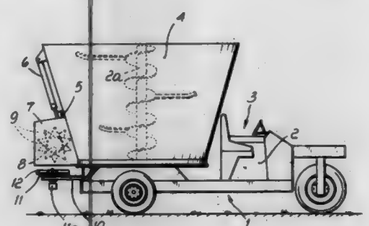
20. A vacuuming apparatus comprising:
a mobile support;
a hood/shroud having an inlet opening, an internal chamber in communication with the inlet opening, and an outlet opening;
means for mounting the hood/shroud to the mobile support so that the hood/shroud inlet opening is in close proximity to a subjacent surface on which the mobile support is carried;
means for developing suction at the inlet opening of the hood/shroud to cause debris picked up at the hood/-shroud inlet opening to be communicated through the hood/shroud chamber to the hood/shroud outlet opening;
means for connecting a tube to the hood/shroud and for establishing communication between the tube connected to the hood/shroud and internal hood/shroud chamber; and
means for selectively blocking the hood/shroud inlet opening to maximize suction developed in a tube connected to the hood/shroud in communication with the hood/shroud internal chamber.

5,294,064

MACHINE FOR PREPARING LITTERS FOR ANIMALS

Tiziano Faccia, Via Padova 102, 35026 Conselve (Province of Padova), Italy

Filed Jul. 31, 1992, Ser. No. 922,402
Claims priority, application Italy, Aug. 12, 1991, PD91A000145
Int. Cl.[5] B02L *19/00*
U.S. Cl. 241—101.7 **13 Claims**



1. Machine for preparing litters for animals comprising:
a container
a wheeled chassis supporting said container, said wheeled chassis being self-propelled or towed,
means for shredding and mixing fibrous products, such as straw and/or hay;
a discharge opening provided in said container;
bladed rotating means for spreading fibrous products arriving from said discharge opening, and;
a downwardly open box-like structure located at said discharge opening;
wherein said means for removing and discharging fibrous products comprise;
at least one motorized roller having a horizontal axis, said motorized roller being coupled to said box-like structure and arranged in front of said discharge opening,
radial wings provided on said roller, and;
piston means connected to said motorized roller for moving said roller horizontally to partially enter said container through said discharge opening.

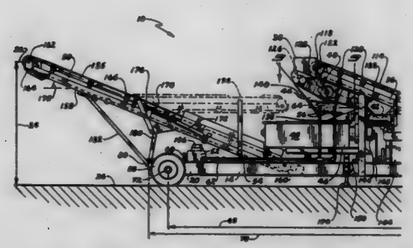
5,294,065

PORTABLE SCREENING/DOSING/MIXING PLANT

Timothy O. Harms, St. Helena, Nebr.; Daryl P. Jones, Yankton, S. Dak.; Richard D. Maska, Yankton, S. Dak., and Mark D. Mulloy, Yankton, S. Dak., assignors to Portec, Inc., Oak Brook, Ill.

Filed Jan. 29, 1993, Ser. No. 11,324
Int. Cl.[5] B02C *9/04*
U.S. Cl. 241—101.7 **18 Claims**

1. A portable unitary screening/dosing/mixing plant for treating particulate matter, comprising:
a transport trailer for over-the-road travel;
a screening/dosing/mixing train mounted on the trailer, said train comprising:
a coarse grizzly for receiving said particulate matter and removing oversize materials therefrom;
a hopper beneath said grizzly for receiving said grizzly-screened particulate matter through an upper inlet and discharging said grizzly-screened particulate matter through a lower outlet;
a generally horizontal conveyor belt feeder for receiving and transporting the grizzly passed particulate matter away from the hopper to a pulverizing shredder;
a pulverizing shredder for receiving grizzly passed particulate matter from the belt feeder, and continuously pulverizing and discharging said received particulate matter;
a primary belt conveyor for receiving and conveying said shredded particulate matter to a conveyor discharge hood;
a conveyor discharge hood for confining and directing said conveyed shredded particulate matter to a vibrating screen;
a vibrating single-deck screen mounted for receiving and screening said conveyed shredded particulate matter to remove oversize materials and discharge screened particulate matter, said screen mounted to move said screened particulate matter in a reverse direction;



a screen discharge chute for receiving said particulate matter passing through said screen, and for discharge thereof to a mixing means;
mixing means for receiving and continuously mixing screened particulate matter discharged from said screen discharge chute, and discharging the mixed particulate matter;
an end conveyor for receiving and conveying said discharged mixed particulate matter to an elevated location for end discharge into a transport vehicle, container, hopper or pile, said end conveyor having an inlet portion and a discharge portion, said discharge portion foldable over said inlet portion to a travel position; and
means for introducing an additive material to the particulate matter upstream of said mixing means for intimate contact therewith.

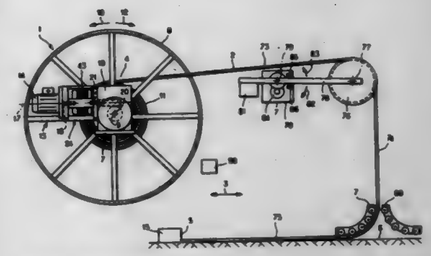
5,294,066

POWER CABLE SPOOLING/UNSPOOLING DEVICE

Gilles Lacour, Belley, France, assignor to Delachaux S.A., France

Filed Jan. 25, 1993, Ser. No. 8,176
Claims priority, application France, Jan. 27, 1992, 92 00838
Int. Cl.[5] B65H *75/34*
U.S. Cl. 242—54 R **13 Claims**

1. Device for spooling and unspooling a power cable or the like upon relative displacement of two areas connected to each other by the cable or the like, said device comprising:
a support disposed in one of said areas,
a drum mounted to rotate about a first axis relative to the support and adapted to receive the cable or the like,
drive means for rotating the drum about the first axis in a direction to spool the cable or the like and in a direction to unspool the cable or the like by applying traction to the cable between said areas, said drive means comprising an electric drive motor carried by the support and having a rotary output shaft and a kinematic linkage between the drive motor output shaft and the drum so as to associate with the spooling and unspooling directions respective directions of rotation of the drive motor output shaft, and
control means for said drive means comprising means for supplying electrical power to the drive motor, wherein:
the drive motor is of the asynchronous type, its electrical power supply means being alternating current supply means and its output shaft is in permanent slip-free engagement with the drum through the intermediary of the kinematic linkage,
the control means are adapted to cause the drive motor to be supplied with power by the means for supplying it with electrical power so as to rotate its output shaft either in a



direction corresponding the spooling direction or in a direction corresponding to the unspooling direction or to interrupt the supply of power to the drive motor and comprise variable frequency control means responsive to the cable tension to control the supply of power to the drive motor to maintain said tension at an approximately constant value on spooling and on unspooling the cable or the like, and
means are provided to exert calibrated unidirectional braking on the output shaft of the drive motor in the direction corresponding to the unspooling direction.

5,294,067

METHOD OF PREVENTING ROTATIONAL VIBRATIONS IN A THREAD STORAGE AND FEED DEVICE AND A THREAD STORAGE AND FEED DEVICE

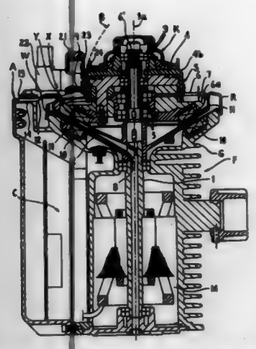
Lars H. G. Tholander, Ulricehamn, and Paer Josefsson, Boras, both of Sweden, assignors to IRO AB, Ulricehamn, Sweden

PCT No. PCT/EP90/01937, § 371 Date Jun. 22, 1992, § 102(e) Date Jun. 22, 1992, PCT Pub. No. WO91/06500, PCT Pub. Date May 16, 1991
PCT Filed Oct. 30, 1990, Ser. No. 867,101
Claims priority, application Sweden, Nov. 3, 1989, 8903704; Nov. 6, 1989, 8903711; Nov. 10, 1989, 8903786; Nov. 13, 1989, 8903807; Fed. Rep. of Germany, Nov. 21, 1989, 3938646
Int. Cl.[5] B65H *51/20*
U.S. Cl. 242—47.01 **10 Claims**

1. In a thread storage and feed device including a housing rotatably supporting a driven shaft having a thread winding-on member coupled thereto, a component group rotatably supported on said shaft and including at least one thread storage member defining a thread storage surface, a thread advance member extending obliquely relative to said shaft and driven such that it carries out a wobbling movement relative to the thread storage surface, said thread advance member projecting radially beyond said thread storage surface, and at least one magnet arranged within said component group and cooperating with at least one magnet fixedly secured to said housing to prevent said component group from rotating with said shaft, the improvement comprising: a support which is stationary relative to said component group; at least one rotational vibrational damping member coupled to said support, said damping member being of limited extent in a circumferential direction of said storage surface; an abutment disposed on said thread advance member which is in alignment with said damping

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member; and a motion drive means for temporarily bringing said abutment into vibration-damping engagement with said



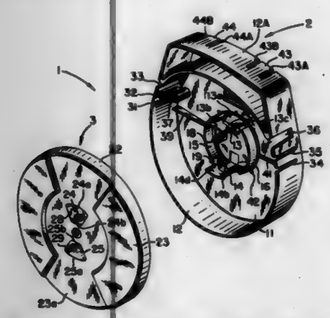
first damping member during only a portion of one complete rotation of said shaft.

5,294,068

DISPENSER FOR DIFFERENT WIDTH LABEL ROLLS AND METHOD OF USING

Anthony Baro, Boca Raton, and Hans Witzky, Pompano Beach, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Sep. 26, 1991, Ser. No. 766,414
Int. Cl.[5] B26F *3/02*; B65H *19/00*
U.S. Cl. 242—55.53 **30 Claims**



1. A dispenser for use in dispensing label rolls of different widths comprising:

a base member including a bottom wall, a side wall extending about the periphery of the bottom wall and a first latching means for cooperating with a second latching means of a cover member to attach said base member and cover member together, said first latching means including: first and second spaced walls extending from the bottom wall of said base member, said first wall including a first surface having first upper and lower spaced laterally extending ribs and said second wall including a second surface having second upper and lower spaced laterally extending ribs; and first and second fingers affixed to and extending from said first and second walls, said first and second walls being bendable toward each other such that forces on said first and second fingers can cause bending of said first and second walls toward each other to the extent of displacing the first upper and lower ribs and the second upper and lower ribs;

a cover member including: a top wall; aperture means for accessing said first latching means when said cover member is placed on said base member, said aperture means including spaced first and second apertures situated in said top wall so as to permit access to said first and second fingers when said cover member is placed on said base member; and second latching means for cooperating with said first latching means to attach said base member and said cover member together, said second latching means including: first and second spaced latching flange members extending from said top wall of said cover member and being arranged to engage said first and second surfaces of said first and second walls of said base member when said cover member is placed over and urged toward said base member, said first and second latching flange members bending said first and second walls of said base member so as to pass over and past said first and second upper ribs of said first and second walls and allowing said first and second walls of said base member to retract and become latched to said first and second latching flange members by said first and second upper ribs of said first and second walls at a first latching position and bending said first and second walls of said base member so as to pass over and past said first and second lower ribs of said first and second walls and allowing said first and second walls of said base member to retract and become latched to said first and second latching flange members by said first and second lower ribs of said first and second interior walls at a second latching position;

and forces on said first and second fingers of said base member accessible through said first and second apertures bringing said first and second fingers toward each other causing said first and second upper ribs of said first and second walls of said base member to be brought toward each other and said first and second lower ribs of said first and second walls of said base member to be brought toward each other to allow said first and second latching flange members of said cover member to move past said first and second upper and lower ribs and, thereby, unlatch said first and second latching flange members from said first and second upper and lower ribs of said first and second walls of said base member and said cover member from said base member.

5,294,069

MEDIA FEED AND ROLLER DEVICE FOR AN ELECTROGRAPHIC PRINTER

Jeffrey C. Blahnik, Gilroy, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1992, Ser. No. 871,875
Int. Cl.[5] B65H *19/20, 75/28*
U.S. Cl. 242—56 R **10 Claims**

1. An apparatus for automatically feeding and rolling output media from a printer, comprising:

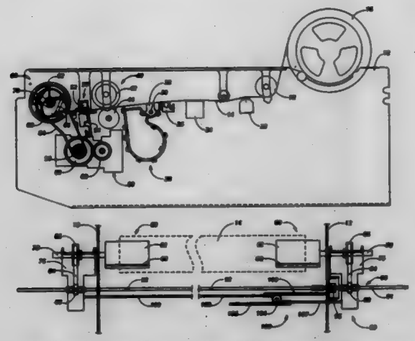
supplying mechanism for supplying a recording media having a leading edge;

clamping mechanism for clamping side portions of said leading edge of said recording media, said clamping mechanism securing said media when clamped and releasing said media when unclamped, said clamping mechanism having a first circumferential surface when said clamping mechanism is clamped and a second circumferential surface when said clamping mechanism is unclamped;

first driving mechanism for driving said leading edge of said recording media into the interior of said clamping mechanism;

second driving mechanism for driving said clamping mechanism to allow said recording media to be rolled onto said first circumferential surface of said clamping mechanism; and

retracting mechanism for removing said clamping mechanism from the interior of said recording media after said



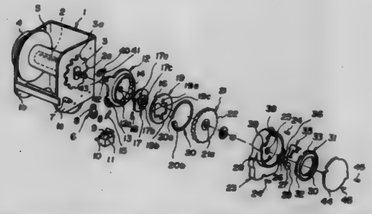
media has been rolled onto said clamping mechanism, causing said recording media to be unsupported.

5,294,070

SEAT BELT RETRACTOR

Shuichi Sugano; Shogo Hayashi, and Yoshinobu Kondoh, all of Shizuoka, Japan, assignors to Fuji Autolib Co., Ltd., Japan

Filed Dec. 4, 1992, Ser. No. 986,030
Claims priority, application Japan, Jan. 31, 1992, 4-003215[U]
Int. Cl.[5] B60R *22/38*
U.S. Cl. 242—107.4 A **7 Claims**



1. A seat belt retractor of a type having an emergency locking mode and an auto-locking mode, said retractor comprising:

a take-up shaft by which a webbing is to be retracted;

a ratchet wheel connected to said take-up shaft to rotate therewith;

an annular cam member connected to said take-up shaft through a speed reduction mechanism, said cam member having a first group of projections formed thereon;

a pivotal switching arm having a second group of projections formed thereon, said second group of projections being engageable with said first group of projections;

a toggle spring for biasing said switching arm in a given direction;

a cam wheel rotatably disposed about said take-up shaft;

a pivotal tooth member actuated by said switching arm and engageable with said ratchet wheel, said pivotal tooth member being pivotally connected to said cam wheel; and

biasing means for biasing said pivotal tooth member in a direction away from said ratchet wheel,

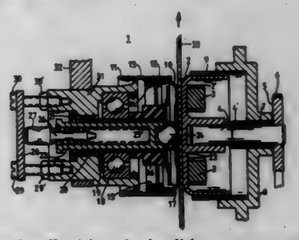
wherein said first and second groups of projections are arranged in such a manner that when, after full feeding of the webbing from said take-up shaft, the webbing is retracted by the take-up shaft by a given small length, the retractor is subjected to switching from the emergency locking mode to the auto-locking mode.

5,294,071

ROTATIONALLY DRIVEN BRAKE DISK ARRANGEMENT OF A YARN TENSIONING DEVICE

Robert Hartel, Aachen; Karl-Josef Hochne, Cologne; Ferdinand-Josef Hermanns, Erkelenz; Herbert Hexns, Monchen-Gladbach; Herbert Knors, Monchen-Gladbach; Dietmar Engelhardt, Monchen-Gladbach; Wilhelm Zitzen, Monchen-Gladbach; Manfred Veyen, Monchen-Gladbach; Herbert Merkens, Erkelenz; Wolfram Weissenfels, Monchen-Gladbach; Hermann Ruetten, Viersen; Dirk Jaegers, and Berndt Pommer, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,887
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130301
Int. Cl.[5] B65H *59/22*
U.S. Cl. 242—150 M **7 Claims**



1. A rotationally driven brake disk arrangement for a yarn tensioning device, comprising:

first and second brake disks arranged in opposed facing relation;

a first body of hysteresis material concentrically connected to the first brake disk and secured against relative rotation with respect to the first brake disk, said first body of hysteresis material comprising a magnet;

a second body of hysteresis material concentrically connected to the second brake disk and secured against relative rotation with respect to the second brake disk;

means for exerting a variable force for pressing one of the first and second brake disks toward the other of the first and second brake disks; and

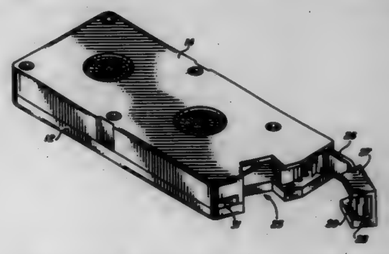
the one brake disk comprising a nonmagnetic material and being movable axially relative to the respective body of hysteresis material associated with the one brake disk.

5,294,072

TAPE CARTRIDGE DOOR WITH PSEUDO-HEAD FOR MAINTAINING TAPE TENSION

Don G. East; Steven L. Felde, and Guillermo S. Robles, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,345
Int. Cl.[5] G11B *23/08*
U.S. Cl. 242—199 **19 Claims**



11. A tape cartridge suitable for use in a tape drive including a tape head, the tape cartridge comprising:

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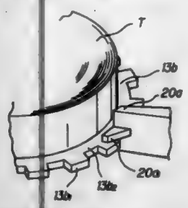
a housing;
a first reel inside the housing;
a second reel inside the housing;
a first tape guide;
a second tape guide;
a tape having a first end wound upon the first reel and a second end wound upon the second reel; and
a door on the housing, the door including a body having a first flange, a second flange, and a pseudo-head between the first flange and the second flange, the door movable between an open position and a closed position, the housing including openings in three adjacent walls thereof to permit the tape head to be mated with the tape, the body closing the opening in one of the adjacent walls of the housing when the door is in the closed position, the first flange closing the opening in a second one of the adjacent walls of the housing when the door is in the closed position, the second flange closing the opening in a third one of the adjacent walls of the housing when the door is in the closed position, the closed position causing the pseudo-head to occupy the space otherwise occupied by the tape head when the tape head is mated with the tape to prevent the tape from being drawn taut straight between the first tape guide and the second tape guide.

5,294,073

TAPE CASSETTE HAVING REEL LOCK MEMBERS WITH RESTRICTING PORTIONS PREVENTING VIBRATION OF REEL FLANGES

Takashi Oogi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,907
Claims priority, application Japan, Jan. 17, 1992, 4-025851
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—199 **1 Claim**



1. A tape cassette comprising:
a casing formed of upper and lower parts;
a pair of reel hubs which are disposed in the casing and rotatable about respective axes, having flanges provided at their radially outer peripheral surfaces with engagement portions, and carry a recording tape wound thereabout; and
reel lock members, each of which is provided at its tip end with an engaging portion and is biased towards the axis of the corresponding reel hub to engage at the engaging portion with the engagement portion of the corresponding flange for preventing rotation of the corresponding reel hub, each of the engaging portions of the reel lock members being provided with a restricting piece for restricting movement of the flange in a direction parallel to the thickness of the flange when the engaging portion is in contact with the engagement portion of the flange.

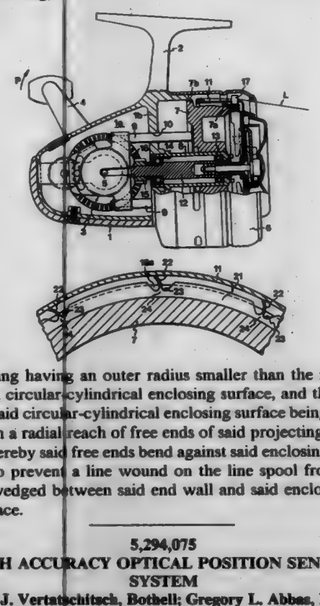
5,294,074

LINE-PROTECTING ELEMENT FOR USE IN A FISHING REEL

Bengt-Ake Henriksson, Svängsta, Sweden, assignor to ABU Garcia Produktion AB, Svangsta, Sweden

Filed Mar. 9, 1992, Ser. No. 848,462
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—319 **5 Claims**

1. A line-protecting element for use in a fishing reel with the fishing reel having a line spool with at least one circular end wall and a circular-cylindrical surface enclosing the end wall at a radial distance therefrom,
the line-protecting element comprising
a ring mounted on the end wall having means to bridge the distance between the end wall and the circular-cylindrical enclosing surface with said ring and said bridging means being of a low-friction material;
said bridging means including substantially radially projecting tongues distributed along the circumference of said ring and projecting therefrom;
said projecting tongues being flexible in a circumferential direction of said ring and rigid in an axial direction of said ring;



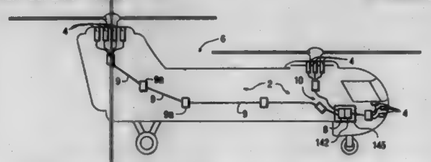
said ring having an outer radius smaller than the radius of said circular-cylindrical enclosing surface, and the radius of said circular-cylindrical enclosing surface being smaller than a radial reach of free ends of said projecting tongues whereby said free ends bend against said enclosing surface to prevent a line wound on the line spool from being wedged between said end wall and said enclosing surface.

5,294,075

HIGH ACCURACY OPTICAL POSITION SENSING SYSTEM

Edward J. Vertatschitsch, Bothell; Gregory L. Abbas, Fall City; Michael de La Chapelle, Bellevue, and J. Doyle McClure, Brier, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 28, 1991, Ser. No. 752,109
Int. Cl.[5] B64C *5/00*
U.S. Cl. 244—75 R **68 Claims**



1. An optical position sensing system for sensing the position of a displaceable element, comprising:
electro-optical means for outputting a modulated optical signal and a chirped radio frequency signal, an envelope of the modulated optical signal having a phase that has a known relation to the phase of the chirped radio frequency signal;
light guide means coupled to said electro-optical means for receiving and transmitting the modulated optical signal along an optical path for reflection off a surface of the displaceable element to provide a position sensing optical signal;

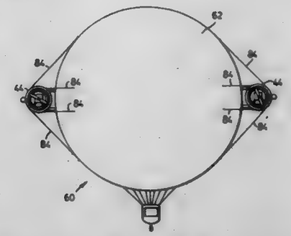
reference reflecting means disposed in the optical path upstream of the displaceable element for partially reflecting the transmitted modulated optical signal to provide a reference optical signal;
transducing means having an output and two inputs, one of the two inputs electrically coupled for receiving the chirped radio frequency signal and the other of the two inputs optically coupled for receiving the position sensing optical signal and the reference optical signal having, respectively, first and second time delays with respect to the chirped radio frequency signal, said transducing means producing at its output a multi-frequency electrical signal which includes first and second frequencies corresponding to the first and second time delays, respectively; and
position detecting means coupled to the output of said transducing means for processing the multi-frequency signal for determining a difference frequency corresponding to the difference between the first and second frequencies and representing the position of the displaceable element.

5,294,076

AIRSHIP AND METHOD FOR CONTROLLING ITS FLIGHT

Hakan Colting, 994 Stonehaven Avenue, Newmarket, Ontario, Canada L3X 1P2

Continuation of Ser. No. 588,774, Sep. 27, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,126
Int. Cl.[5] B64B *1/02*
U.S. Cl. 244—96 **10 Claims**



1. A method for controlling the flight of an airship having a flexible, self supporting gas envelope containing a buoyant gas and a pair of thrust producing propulsion units directly attached to said envelope and positioned on opposite sides thereof, each of said propulsion units providing a variable rearward horizontal airstream, said method including the steps of:
(1) controlling the altitude of said airship substantially exclusively by deflecting the rearward airstreams of said propulsion units away from the horizontal; and
(2) steering said airship substantially exclusively by varying the relative rearward airstreams of said propulsion units to rotate said airship about a vertical axis.

5,294,077

SHOCK-ABSORBING ACTUATOR FOR FITTING TO LANDING GEAR OF HEAVIER-THAN-AIR AIRCRAFT, IN PARTICULAR HELICOPTERS

Michel Derrien, Versailles, France, assignor to Messier-Bugatti, Velizy Villacoublay, France

Filed Mar. 26, 1993, Ser. No. 37,416
Claims priority, application France, Mar. 31, 1992, 92 03878
Int. Cl.[5] B64C *25/58*
U.S. Cl. 244—104 FP **14 Claims**

1. A shock-absorbing actuator for fitting to the landing gear of heavier-than-air aircraft, the actuator comprising a cylindrical body and an open-ended hollow rod forming an annular piston that slides in sealed manner inside the cylindrical body, together with hydraulic damping diaphragm means surmounted by a volume of hydraulic fluid delimiting a low-pressure gas chamber, and force peak-limiting means that come into play in the event of a crash landing, wherein the cylindrical body includes a separator piston that is movable between two associated abutments and delimiting two hydraulic fluid chambers, one of which communicates directly with the inside of the hollow rod in which the hydraulic damping diaphragm means is disposed, and the other of which is adapted to communicate via a first distributor valve with the hydraulic circuit of the aircraft, said first distributor valve being automatically



closed at the end of lowering the landing gear, said cylindrical body and said hollow rod also delimiting an annular chamber which is also adapted to communicate via a second distributor valve with said hydraulic circuit, said first and second distributor valves thus making it possible to cause the shock-absorbing actuator to extend or retract in order to lower or raise the landing gear, and wherein the force peak-limiting means is disposed in an extension body extending beyond an end wall of the cylindrical body forming one of the abutments of the separator piston.

5,294,078

INTEGRATED SYSTEM AND METHOD FOR ASSEMBLING, AND THEN TRANSPORTING AND SUPPORTING A LAUNCH VEHICLE

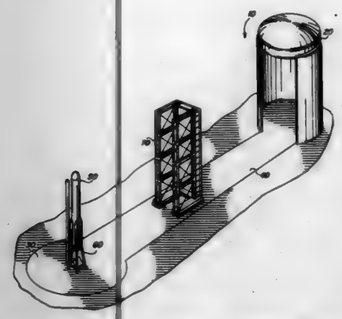
John W. Gurr, P.O. Box 291056, Port Orange, Fla. 32129

Filed Jul. 7, 1992, Ser. No. 909,966
Int. Cl.[5] B64F *1/04*
U.S. Cl. 244—116 **45 Claims**

1. A system for providing access, transportation and support for a launch vehicle, comprising:
a launch pedestal having:
ground support means,
a platform supported upon the ground support means,
means for supporting the launch vehicle in a vertical position upon the platform, and
interconnecting means for engagement with a lift and transport unit for lifting the platform and the launch vehicle vertically together; and
a lift and transport unit having:
means for engaging with the interconnecting means of the launch pedestal and for vertically supporting the entire weight of the pedestal and the launch vehicle;
means for transporting the unit horizontally; and

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means for reducing the vertical height of the lift and transport unit, to permit the ground support means to



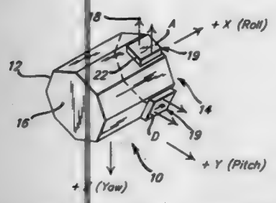
thereafter support the combined weight of the launch pedestal and the launch vehicle.

5,294,079

SPACE TRANSFER VEHICLE

Michael E. Draznin, Long Beach, and Roy K. Tsugawa, Gardena, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 1, 1992, Ser. No. 861,675
Int. Cl.[5] B64G 1/26
U.S. Cl. 244—169 19 Claims



1. A space transfer vehicle having a front end and an aft end and having pitch, roll, and yaw axes, and a longitudinal axis coincident with the roll axis, the pitch and yaw axes being generally symmetrical with the geometry of the space transfer vehicle, the space transfer vehicle being operative for maneuvering both with and without a payload and comprising:

means for maneuvering said space transfer vehicle negatively and positively about said pitch and yaw axes, said means for maneuvering being operative in a first mode when said space transfer vehicle is attached to a payload and a second mode when said space transfer vehicle is operated independently from a payload, said means for maneuvering comprising a plurality of substantially identical, non-throttable thrusters, said thrusters being operative to be fired in pairs to produce a desired torque; and

control means operable for selectively energizing a pair of said substantially identical thrusters simultaneously to selectively produce a pair of parallel axes of thrust, thereby resulting in said desired torques;

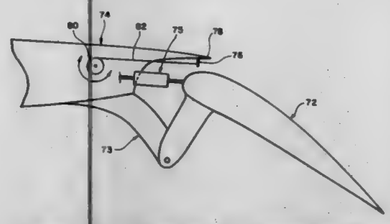
wherein said pair of parallel axes of thrust are spaced apart a first distance when said means for maneuvering is in said first mode, and a second distance when said means for maneuvering is in said second mode, said first distance being greater than said second distance.

5,294,080

LIFT ENHANCING TABS FOR AIRFOILS

James C. Ross, Oakland, Calif., assignor to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1993, Ser. No. 14,581
Int. Cl.[5] B64C 9/16
U.S. Cl. 244—215 13 Claims



1. A device for enhancing lift of an aircraft wing having a fixed main element which includes a leading edge, a trailing edge, and a cove formed under the trailing edge, and a flap deployable from the trailing edge, the trailing edges of the main element being positionally fixed with respect to the remainder of the main element, the device comprising:

a tab, deployable from the trailing edge of the fixed main element; and

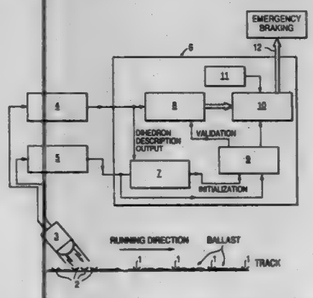
means for actuating the tab to move from a non-deployed position to a deployed position in which the tab extends into the cove and towards a leading edge of the flap, whereby the tab forces airflow leaving the trailing edge of the fixed main element to turn towards the flap.

5,294,081

AUTOMATIC CONTROL SYSTEM FOR A RAILWAY VEHICLE'S SPEED AND STOPPING

Jean-Pierre Malon, Savignac Les Eglises, France, assignor to Aigle Azur Concept, Paris, France

Filed Jan. 16, 1992, Ser. No. 821,776
Claims priority, application France, Jan. 24, 1991, 91 00812
Int. Cl.[5] B61L 3/02
U.S. Cl. 246—182 R 5 Claims



1. A device for automatic control of a railway vehicle, comprising:

a detection means to be carried onboard the railway vehicle for detecting markers along a railway track; and

processing means for processing signals supplied from said detection means for controlling the speed of the railway vehicle as a function of the railway vehicle's position and instantaneous speed on a track section of the railway track;

wherein the markers on a said track section comprise markers arranged at intervals at an entry portion of said track section and markers arranged to define a beacon that identifies said section; and

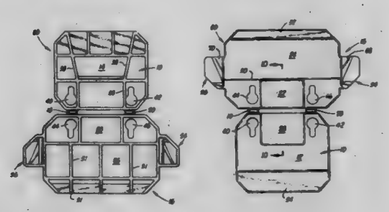
wherein said processing means comprises a memory storing a vehicle progress program in the form of codes associated with each said marker along the railway track, each code containing a data item relating to the type of said marker, a data item relating to a set-point speed for the railway vehicle at said marker and a data item relating an identifier number of said track section, coherence means for determining whether signals supplied from said detection means to said processing means relating to markers detected along the railway track and data items form said memory storing the vehicle progress program are contained in a spatial window of a predetermined value, and an overspeed device for commanding emergency braking of the railway vehicle if said coherence means determines that said signals from said detection means and said data items from said memory are not within said spatial window.

5,294,082

SPATULA HOLDER

Lloyd M. Finney, Oklahoma City, Okla., assignor to Continental Carlisle, Inc., Oklahoma City, Okla.

Filed Jul. 20, 1992, Ser. No. 915,518
Int. Cl.[5] A47G 29/00
U.S. Cl. 248—37.6 14 Claims



1. A spatula holder comprising:

a mounting part;

a fold-up part; and

a hinge subassembly interconnecting the mounting part and the fold-up part for pivotal relative movement from a status of operative juxtaposition through about 180° of pivotal movement to a status of folded out inoperative position, said fold-up part carrying a spatula blade-supporting ledge which projects toward and faces the mounting part when said mounting part and fold-up part are in a status of operative juxtaposition; and

fastener elements for releasably mounting said spatula holder on a vertical surface with said mounting part and said fold-up part in a status of operative juxtaposition.

5,294,083

COMBINED DRINK HOLDER & BEACH BLANKET HOLDER

Peter Roth, 1450 Lakeshore Dr., Massapequa Park, N.Y. 11762

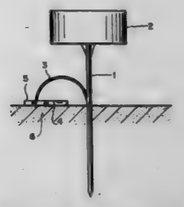
Filed Jun. 15, 1992, Ser. No. 898,489
Int. Cl.[5] A47G 23/02
U.S. Cl. 248—146 4 Claims

1. A combined drink and beach blanket holder comprising:

a stake having an upper end and a lower end, the latter of which is insertable into sand;

a drink holder mounted on said upper end of said stake; and

a hold-down member, mounted on the stake in between said upper and lower ends thereof, disposed generally normally to said stake and being spaced from said drink holder such that when said stake is inserted into sand, said hold-down member will engage and hold down a beach



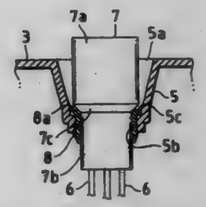
blanket disposed below and against the sand and thereby position said drink holder above and spaced from the sand.

5,294,084

HOLDING DEVICE FOR A CONNECTOR ASSOCIATED WITH AN ELECTRICALLY CONTROLLED AUTOMOTIVE MIRROR

Noriyasu Syamoto, and Masaki Fujita, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation of Ser. No. 735,887, Jul. 25, 1991, Pat. No. 5,238,214. This application Jun. 29, 1993, Ser. No. 63,559
Claims priority, application Japan, Jul. 26, 1990, 2-79546[U]; Sep. 25, 1990, 2-100464[U]
Int. Cl.[5] G02B 7/18
U.S. Cl. 248—544 5 Claims



1. A holding device for a connector associated with an electrically controlled automotive mirror, the connector being adapted for connection to a mated connector provided in an automotive vehicle body, the device comprising:

a mirror unit, adapted for connection to an automotive vehicle body, including a mirror, an electrical driving device for driving the mirror, and a housing for housing the mirror and the electrical driving device;

a member adapted to be mounted to a side of the housing adapted for connection to the automotive vehicle body, the member being integrally formed with a cylindrical portion;

a connector provided at an end of a wiring extending from the electrical driving device, the connector being adapted for insertion into and to be held by an inner surface of the cylindrical portion; and

a sealing member adapted to be disposed between the inner surface of the cylindrical portion and an outer surface of the connector.

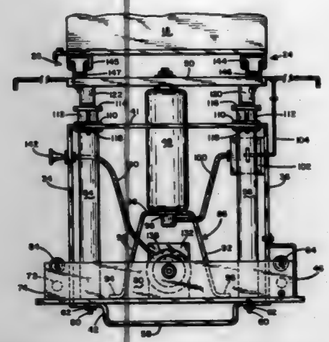
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,085

SHOCK AND VIBRATION ISOLATION APPARATUS FOR MOTOR VEHICLE SEATS

David Lloyd, Prescott, Wis., and Ronald J. Geiser, Hastings, Minn., assignors to Comfort Ridge USA, Inc., Bloomington, Minn.

Filed Nov. 10, 1992, Ser. No. 973,885
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—562 17 Claims



1. A seat assembly adapted to be mounted on the floor of a motor vehicle comprising, in combination:
(a) a base member attachable to the floor of a motor vehicle;
(b) a box-like housing slidingly mounted on said base member for movement in a fore and aft direction relative to said motor vehicle, said housing having a floor and four mutually perpendicular side walls;
(c) a vertically displaceable frame;
(d) a seat supporting frame;
(e) slide means for mounting said seat supporting frame to said vertically displaceable frame;
(f) first air spring means supported in said box-like housing and engaging said vertically displaceable frame for controlling vertical movement of said vertically displaceable frame and said seat supporting frame; and
(g) second air spring means operatively disposed between said base member and said box-like housing for controlling movement of said box-like housing in the fore and aft direction.

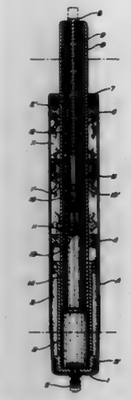
5,294,086

ADJUSTABLE OLEOPNEUMATIC AMORTIZED SUPPORT COLUMN, FOR CHAIRS AND ARMCHAIRS

Lucio Fantini, Viale Ungheria 7, 33100 Udine; Claudio De Sabbata, Via Pradamano 9, 33042 Buttrio (UD), and Renato De Sabbata, Via Drusin 11/A, 33044 Manzano (UD), all of Italy

Filed Oct. 1, 1991, Ser. No. 768,041
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—631 8 Claims

1. An oleopneumatic adjustable and deadened support column for a chair comprising:
i) a first cylindrical body, the base of which is adapted to be connected to the base of a chair and charged with compressed air;
ii) a second cylindrical body, co-axial with the first, and telescopically slidable therein, the upper end of said second body being adapted to be connected to the seat of a chair;
iii) a command bar co-axial with and inside said second body, operable by lever means under said chair seat,
iv) first slidable piston means between said first and second body, said first piston means being annularly fixed around said second body, and in sliding, sealing engagement with the inner surface of said first body;
v) annular upper and lower floating piston means, respectively above and below said first piston means, between said first and second bodies, in sliding sealing engagement with same, said first, upper, and lower pistons defining upper and lower oil chambers between said first and second bodies;



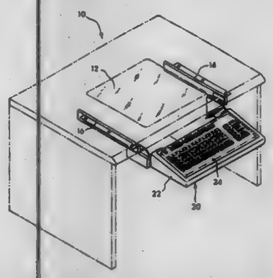
vi) valve means in said second body, at the level of said first piston, actuatable by said command bar to permit or interdict the flow of oil between said first and second oil chambers; whereby said first, upper, and lower pistons are displaceable as an ensemble when weight is placed on the seat of said chair.

5,294,087

ADJUSTABLE KEYBOARD HOLDER FOR COMPUTER WORKSTATION

Matthew P. Drabczyk, Westminster, and Daniel Starkey, Englewood, both of Colo., assignors to Engineered Data Products, Inc., Broomfield, Colo.

Continuation of Ser. No. 779,378, Oct. 18, 1991, abandoned.
This application Sep. 29, 1992, Ser. No. 953,453
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—639 43 Claims



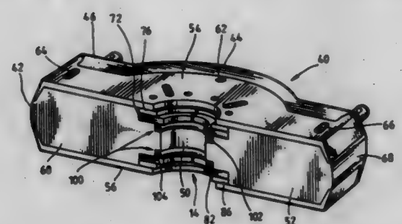
1. An adjustable keyboard holder for a computer workstation, said adjustable keyboard holder comprises:
a keyboard tray support;
means for mounting said keyboard support to a computer workstation;
means for independently and infinitely adjusting the angular position of said keyboard tray support relative to the computer workstation;
means for independently and infinitely adjusting the vertical position of said keyboard tray support relative to the computer workstation; and
a single actuator for releasing said angular adjusting means and said vertical adjusting means for adjustment and for locking said angular adjusting means and said vertical adjusting means in a selected angular and vertical position.

5,294,088

VARIABLE BORE PACKER FOR A RAM-TYPE BLOWOUT PREVENTER

David J. McWhorter, Magnolia, and Eric G. Childs, Katy, both of Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 13, 1992, Ser. No. 959,254
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.3 20 Claims



1. A variable bore packer in a ram-type blowout preventer for sealing different diameter tubular members, comprising:
first and second plates having a central arcuate opening and facing inner sides;
first and second smaller insert segments having a smaller central arcuate opening co-axial with said central arcuate opening for receiving the tubular members;
said first smaller insert segment being disposed adjacent said inner side of said first plate and said second smaller insert segment being disposed adjacent said inner side of said second plate;
first and second larger insert segments having a larger central arcuate opening co-axial with said central arcuate opening for receiving tubular members;
said first larger insert segment being disposed between said first plate and first smaller insert segment and said second larger insert segment being disposed between said second plate and second smaller insert segment;
a resilient packing material molded between said first and second plates and embedding said first and second plates and said first and second insert segments in said resilient packing material; and
said first and second smaller and larger insert segments seating respectively against a correspondingly sized tubular member to prevent extrusion of the resilient packing material between said first and second plates and the tubular member.

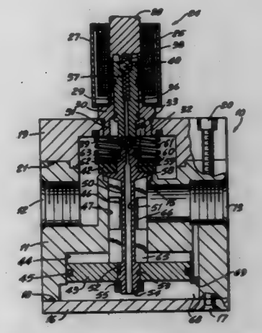
5,294,089

PROPORTIONAL FLOW VALVE

Drew P. LaMarca, Whippany, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

Filed Aug. 3, 1992, Ser. No. 923,818
Int. Cl.[5] F16K *31/122*
U.S. Cl. 251—30.02 10 Claims

1. A proportional flow valve comprising:
a valve body including an inlet port, an outlet port, and an orifice between the ports surrounded by a main valve seat,
a main valve member movable into and out of engagement with the main valve seat to close and open the valve, respectively, the pressure of fluid from the inlet port urging the valve member into engagement with the valve seat when the valve is closed,
a pressure member movable with respect to the main valve seat,
means for rigidly interconnecting the pressure member and the valve member so that they move together as a unit,
passageway means, within the interconnecting means, through which high pressure fluid from the inlet port can flow to the pressure member so as to create a force in opposition to the force created by the high pressure fluid on the valve member,
the area of the pressure member subjected to fluid pressure from the inlet port being substantially larger than the area of the main valve member subjected to the fluid pressure from the inlet port, so that when the pressure member is



pressurized a net force results on the pressure member and valve member unit which moves the main valve member away from the main valve seat to open the valve,
a pilot valve member located in the path of movement of the passageway means for controlling the flow of fluid from the inlet port through the passageway means, and
a solenoid actuator for positioning the pilot valve member to determine the spacing of the main valve member from the main valve set when the passageway is closed, the position of the pilot valve member, and hence the spacing of the main valve member from the main valve seat, being proportional to the amount of current applied to the actuator,
the valve being devoid of any mechanical interconnection between the main valve member and the solenoid actuator, so that movement of the solenoid actuator is not directly transmitted to the main valve member.

5,294,090

VALVE SNUBBER

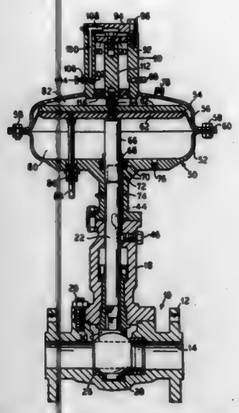
Don Winnike, Benton, Ark., assignor to Orbit Valve Company, Little Rock, Ark.

Filed Nov. 25, 1992, Ser. No. 981,404
Int. Cl.[5] F16K *31/128, 51/00*
U.S. Cl. 251—36 20 Claims

16. A diaphragm actuator and snubber comprising:
a hollow diaphragm housing having a movable diaphragm therein dividing said diaphragm housing into two separate chambers;
an actuator stem connected to said diaphragm to move in a linear fashion in response to means acting on said diaphragm;
a hollow cylindrical snubber housing secured to said diaphragm actuator and having an open interior space communicating through a communication path with a first one of said diaphragm chambers, said interior space having a pair of shoulder means;
a floating piston closing said interior space and movable between and into engagement with said shoulder means to

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limit movement within said space while varying the volume of said open interior space;
a first piston having piston head mounted to a connecting member, said piston head reciprocably movable within said snubber housing, said connecting member operably connected to said actuator stem to move in a linear fashion therewith;
said piston head being sized to seal with an interior surface of said space formed within said snubber housing to divide said space into two chambers, one on each side of said piston head;
a fluid pressure passage leading from one of said snubber chambers to the other to pressurize said each side of said piston head to dampening sudden movement of said movable diaphragm;



adjustable means positioned in said passage to vary the cross sectional area of at least a portion of said passage;
said floating piston having one side thereof in fluid pressure said communication path between said first piston and said first diaphragm chamber;
whereby, as said piston head reciprocates within said snubber space by said fluid pressure, said floating piston moves in an opposite direction to accommodate the changing volume within said space occasioned by the movement of said connecting member into and out of said snubber space, thereby maintaining an equalized pressure within said interior space and preventing sudden and abrupt movement of said movable diaphragm.

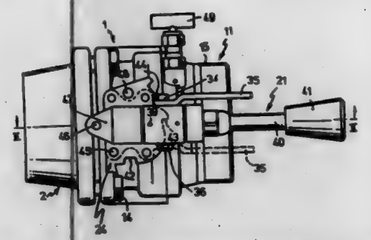
5,294,091

STOP COCK FOR A LIQUID CONTAINER

Alfred van Eck, Oosterhout, Netherlands, assignor to Keystone International Holdings Corp., Houston, Tex.

PCT No. PCT/US90/05407, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/05707, PCT Pub. Date May 2, 1991
PCT Filed Sep. 21, 1990, Ser. No. 844,641
Claims priority, application Netherlands, Oct. 6, 1989, 8902488
Int. Cl.[5] F16K *35/00*
U.S. Cl. 251—95 **18 Claims**

1. Stop cock for a liquid container, comprising:
a housing (1) having a longitudinal centerline;
a valve (3) rotatably supported about an axis within said housing substantially perpendicular to said longitudinal center line;
a seat (12) for sealing between said housing and said valve in a closed position;
a handle (21) mounted outside said housing on an operational shaft (7) for rotating said valve between said closed position and an open position; and
a plate (24) mounted outside said housing in a plane substantially parallel to a plane defined by the movement of said handle between said closed and open positions,
wherein said valve is eccentrically mounted with respect to the axis about which it rotates and has first and second



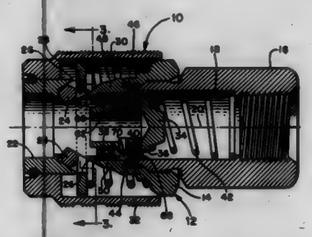
sides, said first side facing away from said liquid container in the closed position and said second side facing toward said liquid container in said closed position with both sides of said valve disposed on the same side of the axis about which said valve rotates and said second side further showing a cavity toward said liquid container in said closed position.

5,294,092

QUICK DISCONNECT COUPLER

Richard B. Wade, Laguna Beach, and David Chu, La Palma, both of Calif., assignors to Bridge Products, Northbrook, Ill.

Continuation of Ser. No. 652,853, Feb. 8, 1991, Pat. No. 5,167,398. This application Sep. 28, 1992, Ser. No. 951,908
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.6 **16 Claims**



1. In a quick disconnect coupler of the type comprising:
a housing which defines a central passageway which extends along an axis;
a plurality of retaining elements disposed on respective sides of the central passageway;
a retainer configured to hold the retaining elements radially inwardly, toward the central passageway, said retainer being manually movable to allow the retaining element to move radially outwardly;
the improvement comprising:
a seal retaining member movably mounted in the housing to move along the axis between first and second positions, wherein the first position is closer to the retaining elements than the second position, said seal retaining member having an opening aligned with the central passageway;
a biasing element operative to bias the seal retaining element toward a first position;
at least one seal mounted on the seal retaining member;

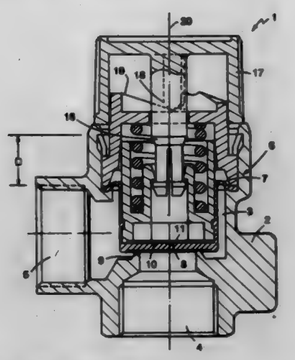
said opening comprising at least first and second positions, wherein said first portion is closer to the retaining elements than the second portion, wherein said first portion is operative to center a first, larger diameter plug and defines an effective diameter of about 0.37 inch, and wherein said second portion is operative to center a second, smaller diameter plug and defines an effective diameter of about 0.32 inch.

5,294,093

SAFETY VALVE

Jean L. Huveteau, and Gerard Line, both of Friville Escarbotin, France, assignors to Watts Investment Company, Wilmington, Del.

Filed Jan. 27, 1993, Ser. No. 9,687
Int. Cl.[5] F16K *7/16, 31/524*
U.S. Cl. 251—263 **11 Claims**



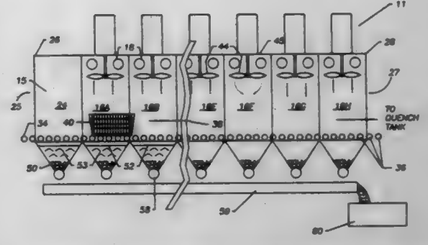
1. A safety valve comprising
a valve body having an inner wall defining a chamber;
an inlet conduit in fluid communication with said chamber;
an outlet conduit in fluid communication with said chamber and downstream of said inlet conduit;
a clapper, mounted in said chamber to be movable between a first position, in which said clapper seals against a seat to close said inlet conduit, and a second position, in which said clapper is spaced from said seat, allowing fluid flow from said inlet conduit through said chamber to said outlet conduit;
a spring, positioned to bias said clapper towards said first position and provide sufficient resistance to maintain said clapper in its first position until a predetermined fluid pressure is exerted on said clapper through said inlet conduit;
a thrust stop having a first surface against which said spring bears, said thrust stop being mounted to said valve body, interposed between said valve body and said clapper, with a second, inner wall surface disposed in a manner to guide movement of said clapper between its first and second positions;
an impervious membrane, positioned between said clapper and said seat, an outer edge of said membrane being fixed between a third surface of said thrust stop and a first inner surface of said valve body; and
an operating assembly connected with said clapper, said operating assembly comprising a handling member and a handling rod mounted on said handling member and operatively attached to said clapper, said handling member defining a first camming surface and said thrust stop defining an opposed, second complementary camming surface, relative rotation of said first and second camming surfaces causing axial displacement of said handling rod to move said clapper from said first position to said second position.

5,294,094

METHOD AND APPARATUS FOR HEAT TREATING METAL CASTINGS

Paul M. Crafton, Marietta, and Scott P. Crafton, Kennesaw, both of Ga., assignors to Consolidated Engineering Company, Kennesaw, Ga.

Continuation of Ser. No. 705,626, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 415,135, Sep. 29, 1989, abandoned. This application Nov. 20, 1992, Ser. No. 979,621
Int. Cl.[5] B22C *13/02*
U.S. Cl. 266—44 **30 Claims**



1. A method for heat treating a casting having a sand core, said sand core comprising sand particles bound together by a binder material, and said sand core defining a cavity within said casting, said method comprising the steps of:
introducing said metal casting with said sand core into a furnace heated to a temperature in excess of the combustion temperature of said binder material;
providing an oxygen-rich atmosphere within said heated furnace which comprises in excess of 10% oxygen;
containing said metal casting with said sand core within said heated furnace in said oxygen-rich atmosphere to permit said binder material to combust, whereby said sand particles comprising said sand core are loosened from said sand core;
removing said loosened sand particles from said cavity;
capturing clumps of sand core material which become dislodged from said casting prior to said binder material being combusted therefrom; and
retaining said dislodged clumps of sand core material within said furnace to permit said binder material to be combusted therefrom.

5,294,095

FLUIDIZED BED WITH SUBMERGED INFRARED LAMPS

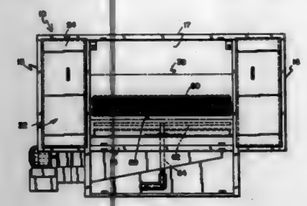
James E. Heath, Andover, and John R. Eppeland, St. James, both of Minn., assignors to BGK Finishing Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 535,468, Jun. 8, 1990, abandoned. This application Aug. 3, 1992, Ser. No. 924,399
Int. Cl.[5] F26B *17/00*
U.S. Cl. 266—87 **22 Claims**

1. Apparatus for heat treating a product comprising:
means defining a volume for receiving a bed of fluidized particles having a predetermined elevation within said volume;
a bed of fluidized particles, having a predetermined elevation, disposed within said volume;
a plurality of electrically powered infrared radiation generating lamps, for generating infrared radiation heat for heating said bed of fluidized particles, disposed within said bed with said particles surrounding each of said lamps for

said particles opposing said lamps to be exposed to infrared radiation generated by said lamps; and

said plurality of lamps divided into a plurality of separately



controllable zones of said lamps with lamps of each zone operable independent of others of said zones to permit varying infrared intensity between lamps of different zones.

5,294,096

POWER SUPPLY COIL FOR THE CERAMIC-FREE OUTLET OF A MELTING POT

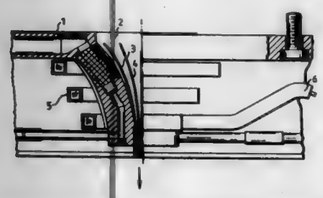
Felix Müller, Biebergemünd, Fed. Rep. of Germany, assignor to Leybold Durferrit GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,542

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140723

Int. Cl.[5] B22D *41/60*

U.S. Cl. 266—237 **6 Claims**



1. An electrical power supply coil for the ceramic free outlet of a melting pot, said coil comprising

a top end, a bottom end, and a central axis extending between said ends,

a coaxial power supply cable which provides a feed line and a return line at one of said top and bottom ends,

a plurality of electrically continuous first turn sections at successive levels between said ends, said first turn sections being supplied by said feed line,

connecting sections connecting said first turn sections between said successive levels,

a like plurality of electrically continuous second turn sections at successive levels between said ends, each second turn section being radially opposed to one of said first turn sections, said second turn sections being connected to said first turn sections only at the other of said first and second ends and connected to said return line at said one end, and

connecting sections connecting said second turn sections between said successive levels.

5,294,097

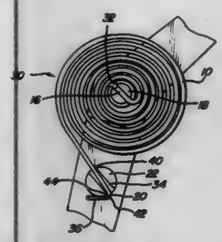
APPARATUS FOR MOUNTING A SPIRAL SPRING

H. Jay Thomsen, Detroit; William D. Belisle, Canton, and Christopher J. Walter, Ann Arbor, all of Mich., assignors to Hasco Industries, Inc., Southfield, Mich.

Filed Jul. 14, 1992, Ser. No. 914,207

Int. Cl.[5] F16F *1/10*

U.S. Cl. 267—156 **9 Claims**



1. A spiral spring assembly comprising:

a spiral spring having a plurality of convolutions all of which are generally concentric with one another when said spiral spring is unloaded; said spiral spring having an inside end located within said plurality of convolutions and an outside end located outside of said plurality of convolutions;

a rotatable shaft engaged with said inside end of said spiral spring; and

a fixed, non-rotatable sleeve engaged with said outside end of said spiral spring such that said fixed sleeve contacts said outside end of said spiral spring at two points, each point located on opposite sides of said outside end of said spiral spring, said two point contact inducing a torque to maintain said plurality of convolutions generally concentric with one another when said spiral spring is wound by rotation of said rotatable shaft.

5,294,098

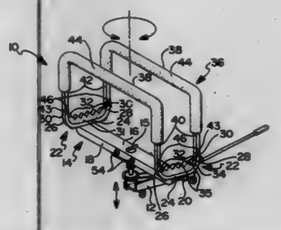
APPARATUS FOR MOUNTING A CAR DOOR

Douglas M. Bundy, P.O. Box 56, Naubinway, Mich. 49762

Filed Aug. 12, 1992, Ser. No. 930,084

Int. Cl.[5] B66F *3/00*

U.S. Cl. 269—17 **2 Claims**



1. An apparatus for hanging a door on a vehicle, the apparatus comprising:

(a) a base;

(b) a plurality of arm mounts fixedly attached to the base, each arm mount comprising a U-shaped member having two side parts and a bottom part formed integrally together, each side part having a recess formed therein;

(c) a plurality of arms attached to the mounts;

(d) means for releasably attaching the arms to the arm mounts, the means for releasably attaching comprising:

(1) a plurality of interconnecting members having a plurality of bores formed therethrough; and

(2) a plurality of fasteners;

wherein one end of the interconnecting members are received within the side parts of the arm mounts, each interconnecting member being secured by one fastener being deployed through one arm mount and one bore of the interconnecting member and by a second fastener being deployed through one arm and a second bore of the interconnecting member;

(e) a cross member fixedly attached to the base, the cross member having a central aperture formed therein;

(f) a bolt having a head and a stem, the bolt being deployed through the central aperture and the head resting against the cross member;

(g) a plurality of door rests formed of a strong resilient material and having a plurality of saw tooth ridges formed thereon being deployed on the arm mounts, and

(h) means for elevating the apparatus.

5,294,099

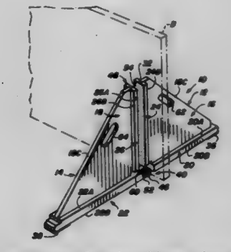
HOLDER ASSEMBLY FOR CLENCHING A DOOR IN AN UPRIGHT POSITION

Oronzo Dalfino, 118 E. 143rd Ave., Tampa, Fla. 33613

Filed Jan. 14, 1993, Ser. No. 4,461

Int. Cl.[5] B23Q *3/02*

U.S. Cl. 269—133 **19 Claims**



1. A holder assembly for clenching a door in upright position, comprising:

(a) a pair of jaws having respective generally horizontal base members and upright clamp members;

(b) a hinge interconnecting adjacent inner end portions of said horizontal base members of said jaws so as to establish a generally vertical door receiving slot between said upright clamp members of said jaws, said hinge including a pair of side-by-side hinge members and a removable pin pivotally coupling said hinge members together, said hinge members having widths less than the widths of said base members and being offset along opposite sides of a vertical plane through longitudinal centers of said base members thereby permitting said hinge members to assume the side-by-side positions; and

(c) a pair of support pads attached to and underlying opposite outer end portions of said horizontal base members of said jaws for holding said outer end portions of said base members in an elevated position above a support surface such that said base members of said jaws at said adjacent inner end portions thereof and said hinge members attached thereto are allowed to oppositely pivot upwardly away from the support surface to above the elevation of the outer end portions of the base members in order to place a door within the slot and to oppositely pivot downwardly toward the support surface to below the elevation of said outer end portions of said horizontal base members after a door is placed within said slot between said upright clamp members and the weight of the door is rested on said side-by-side hinge members, the opposite downward pivoting of said jaws at said inner end portions of said base members causing said upright clamp members to pivot toward one another and form a tight gripping hold on opposite sides of the door positioned in said slot between said clamp members.

5,294,100

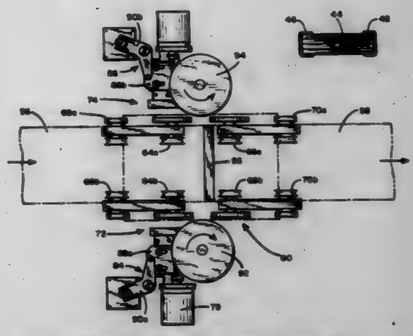
METHOD AND APPARATUS FOR SECURING PLURAL PRINTED MATERIAL WITH PEELABLE TABS

Mark Scheibelhut, Janesville, Minn., assignor to Brown Printing Company, Waseca, Minn.

Filed Jun. 22, 1992, Ser. No. 902,155

Int. Cl.[5] B65H *39/02*; B65B *11/00*, *1/30*

U.S. Cl. 270—54 **33 Claims**



1. An apparatus for securing plural printed documents in stacked relationship for handling and mailing comprising:

(a) an endless conveyor belt for conveying printed documents therealong;

(b) a stacking station fed by said endless conveyor belt for stacking said plural printed documents one atop the other; and

(c) a tabbing station downstream of said stacking station, said tabbing station including means for affixing selectively removable adhesive coated tab substrates to a stack of plural printed documents to thereby retain said documents in stacked relation during handling and mailing.

5,294,101

AUTOMATIC FILM-LOADING DEVICE FOR SHEET FILM CASSETTES

Gert Scheufler, Winnenden, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP88/00166, § 371 Date Sep. 1, 1989, § 102(e) Date Sep. 1, 1989, PCT Pub. No. WO88/06750, PCT Pub. Date Sep. 7, 1988

PCT Filed Mar. 4, 1988, Ser. No. 455,351

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707059

Int. Cl.[5] B65H *3/44*

U.S. Cl. 271—9 **3 Claims**

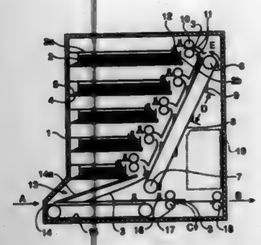
1. In a device for loading a sheet film into a cassette and comprising a cassette-loading station, at least two supply magazines each of differently sized sheet film disposed above said station, a conveyor belt disposed to one side of said magazines, and means disposed between said magazines and said conveyor belt for moving a sheet film from a side of its respective magazine onto said conveyor belt;

the improvement wherein said magazines are disposed one above the other so that their removal sides are offset from a vertical line, one to the other,

and wherein said conveyor belt is disposed adjacent said removal sides so it is inclined from the vertical by the

VOL 1160 ISS 3 MR 15 1994 UMI

amount of said offset, and includes a projection positioned to catch an edge of a sheet film moved from its magazine,



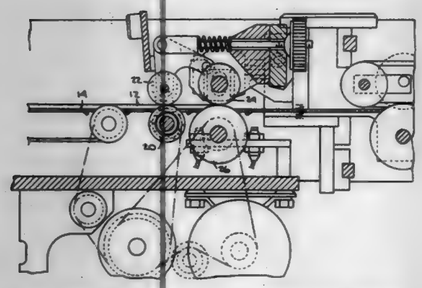
whereby sheet film from said magazines is carried by the conveyor belt rather than by gravity, in a non-vertical direction.

5,294,102

SHEET FEEDER SEPARATOR ROLLER

Edward M. Ifkovits, Jr.; Edward F. Ifkovits, both of New Fairfield, and Anthony M. Macelis, Watertown, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 13, 1993, Ser. No. 105,561
Int. Cl.[5] B65H *3/04*
U.S. Cl. 271—35 **4 Claims**



1. Apparatus for singulating paper sheets, comprising:
a deck for supporting a plurality of paper sheets;
means for feeding said plurality of paper sheets along said deck;
a retarding roller situated above said deck for retarding said plurality of paper sheets; and
a feeding roller situated below said retarding roller for feeding the lowermost of said paper sheets past said retarding roller, said feeding roller having a metal sleeve with a grit coating having a hardness on the Rockwell "C" scale of at least 60 and a grit size according to the U.S. Standard System between 10 and 320.

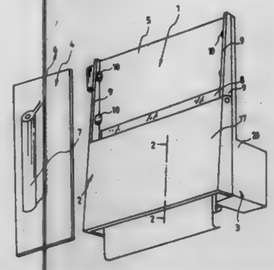
5,294,103

DOCUMENT AND DRAFT PAPER HOLDER FOR A COMPUTER

Shui-Lai Chou, No. 35-19, Hsia-Kuo La., Tai-Pin Rd., Ta-Li Hsiang, Taichung, Taiwan

Filed Jan. 5, 1993, Ser. No. 493
Int. Cl.[5] B65H *3/32, 3/06*
U.S. Cl. 271—113 **13 Claims**

1. A document and draft paper holder for a computer, comprising:
a main body including a base board and a main board, the main board including a transparent part for exposing a portion of the document;
means disposed on the base board for fixing the holder to a monitor of the computer;



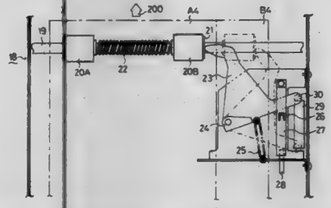
paper delivery means disposed on the main board for delivering the document to the transparent part of the main board, said paper delivery means including means for clamping the document to the main board; and
driving means for driving the paper delivery means.

5,294,104

PAPER FEEDING DEVICE HAVING AN ADJUSTABLE PAPER FEED ROLLER FOR DIFFERENT SIZED SHEETS

Hideo Nishigaki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 18, 1992, Ser. No. 978,382
Claims priority, application Japan, Jan. 31, 1992, 4-45934
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—117 **17 Claims**



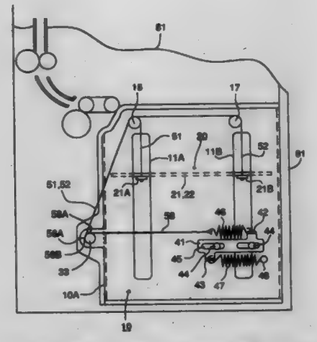
1. A paper feeding device for use with a removable paper feed cassette for feeding a sheet from the paper feed cassette to equipment, comprising:
a frame and a shaft supported by said frame;
a paper feed roller positionable in a first position and a second position on said shaft feeding first and second sized sheets respectively from the paper feed cassette;
a roller moving mechanism movable between a first and second position coupled to said frame moving said paper feed roller between said first position and said second position, said roller moving mechanism being in said first position when said paper feed roller is in said first position; and
a first elastic biasing member carried on said shaft that normally biases said paper feed roller into said first position;
a second elastic biasing member coupled to said roller moving mechanism coupled to said frame to normally bias said roller moving mechanism into said first position; and
a fixing mechanism coupled to said frame and fixing said roller moving mechanism in said second position upon removal of the paper feed cassette from the equipment.

5,294,105

SHEET FEEDING APPARATUS WITH AN ELEVATION TYPE BASE PLATE

Mitsuo Kaburagi, and Yasuhiro Matsui, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,359
Claims priority, application Japan, Mar. 4, 1992, 4-047146
Int. Cl.[5] B65H *1/26*
U.S. Cl. 271—157 **4 Claims**



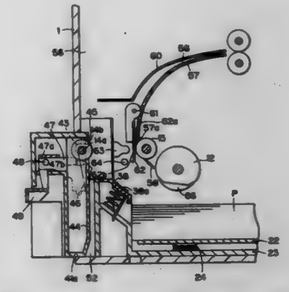
1. A recording sheet feeding apparatus for use in an image forming apparatus, comprising:
a tray frame having four vertical walls to surround an inner space;
four slit portions provided two by two in two opposite walls of the four vertical walls, each slit portion having a slit in the vertical direction;
a stacking plate provided in the inner space, for mounting thereon a stack of recording sheets, the stacking plate being movable in the vertical direction guided by the four vertical walls;
four protruded portions provided two by two in two opposite sides of the stacking plate, each protruded portion being protruded outside of the tray frame through a respective one of the slits;
four idling wheels, each mounted on the tray frame above a respective one of the slit portions;
a winding roller mounted on the two opposite walls of the tray frame;
four transmission wires for transmission of displacement between the winding roller and the stacking plate, wherein each transmission wire is connected with one end thereof to the peripheral surface of the winding roller, is wound around the winding roller, passes through at least one of the idling wheels and is connected with the other end of the transmission wire to a respective one of the protruded portions, so that the four transmission wires suspend the stacking plate in a horizontal disposition from the four idling wheels; and
balancing means for applying a counterweight torque to the winding roller, the counterweight torque corresponding in amount to a rotation angle of the winding roller and counteracting the weight of the stacking plate and the stack of recording sheets through the transmission means, wherein the balancing means comprises;
a wire wound around the winding roller, one end of the wire being connected to a peripheral surface of the winding roller, and
spring means connected between the tray frame and the other end of the wire, for pulling the wire with a force which corresponds in amount to a rotation angle of the winding roller.

5,294,106

IMAGE FORMING APPARATUS HAVING DETACHABLE SHEET CASSETTE

Kazuhiko Takagi; Eiji Yokota; Eiji Tanaka; Masaaki Tsukamoto, all of Nagoya; Mitsuaki Inoue, Tsu, and Mitsuyoshi Uehara, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 17, 1992, Ser. No. 931,270
Claims priority, application Japan, Sep. 13, 1991, 3-234770
Int. Cl.[5] B65H *1/22*
U.S. Cl. 271—164 **20 Claims**



1. An image forming apparatus for forming an image on a sheet comprising:
a main body portion provided with an image forming section;
a sheet cassette detachably provided to the main body portion for storing therein a stack of a plurality of cut sheets;
sheet supplying means for supplying each one of the sheets from the sheet cassette;
sheet feeding means for feeding the sheet supplied by the sheet supplying means to the image forming section, the sheet feeding means comprising a first sheet feed roller rotatably supported by the main body portion, and a second sheet feed roller supported by the sheet cassette at a position confrontable with the first sheet feed roller when the sheet cassette is fully attached to the main body portion;
sheet guide means including first and second guide plates provided at the main body portion for defining a sheet feed passage ridging between the sheet feeding means and the image forming section, the first guide plate being pivotally movable in a state of detachment of the sheet cassette from the main body portion for providing an open space at the sheet feed passage; and
biasing means provided in the sheet cassette for urging the second roller toward the first roller when the sheet cassette is attached to the main body portion.

5,294,107

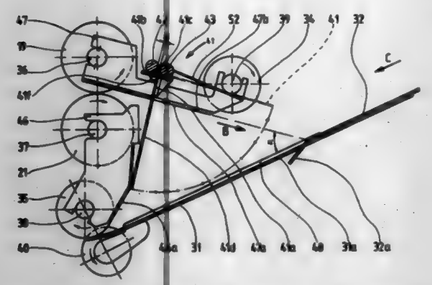
DEVICE FOR DIRECTING SHEETS ONTO A DEPOSITING SURFACE

Franz Allmendinger, Eichwald; Manfred Baumann, Neckartailfingen; Siegfried Garbe, Stuttgart, and Heinz Michels, Wolfschlugen, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1993, Ser. No. 24,003
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207069
Int. Cl.[5] B65H *31/26*
U.S. Cl. 271—220 **7 Claims**

1. A device for directing individually supplied sheets onto a sheet depositing surface, the directing device comprising:
(a) feeding means for feeding sheets individually along a path of sheet movement onto the depositing surface;
(b) a sheet directing element mounted pivotably about a

pivot axis above said path of sheet movement, said directing element having a raised position and a lowered position, and at least one arm extending across said path of sheet movement; and



(c) a first weight member for increasing the moment of inertia of said directing element when moving from said raised to said lowered position, said weight member being mounted to a portion of said directing element above said pivot axis thereof.

5,294,108

SHEET FEEDER

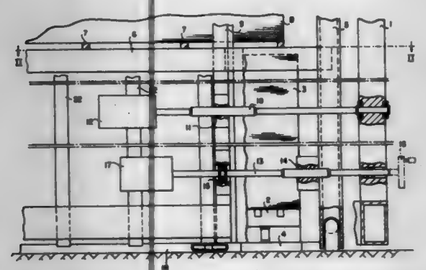
Gerhard Pollich, Heidelberg, and Ernst Czotscher, Neckargemünd, both of Fed. Rep. of Germany, assignors to Druckmaschinen AG Heidelberger, Heidelberg, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,063

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1991, 4129132

Int. Cl.[5] B65H *1/30*

U.S. Cl. 271—241 **6 Claims**



1. In a sheet feeder, an arrangement comprising first laterally adjustable guide means for guiding a vertically displaceable pile table, second laterally adjustable guide means for guiding a vertically displaceable auxiliary-pile carrying device, and means for adjusting said first guide means and said second guide means jointly and for adjusting said first and said second guide means relative to one another in a given direction of movement for effecting a lateral alignment.

5,294,109

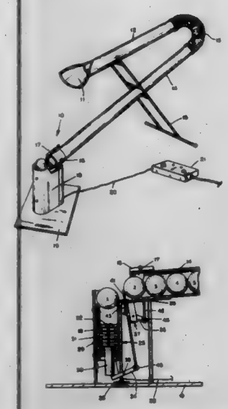
BALL TOSSING DEVICE FOR BASEBALL BATTING PRACTICE

John H. Meade, 3925 Colgate Ave., Los Angeles, Calif. 90036

Filed Nov. 25, 1992, Ser. No. 981,798

Int. Cl.[5] A63B *69/40*

U.S. Cl. 273—26 D **5 Claims**



1. A device for use in tossing upward a baseball for a hitter to hit, said device comprising:

a. a solenoid cylinder having an upper rim for supporting the baseball, said solenoid having a coil disposed in said cylinder, said upper rim being disposed in a substantially horizontal plane and having an internal diameter less than the diameter of a regulation baseball;

b. a plunger disposed in said cylinder and concentrically aligned with said coil and said upper rim, said plunger having a ball contact end space from said plane and a ball when placed on said rim and being electromagnetically coupled to said coil so that when said coil is electrically energized said coil moves said plunger upward to propel a baseball upward and said control unit further include electrical energy generating means and means for randomly selecting height and frequency patterns at which a ball is launched.

5,294,110

PORTABLE GOLF SHOT ANALYZER AND CLUB SELECTOR

James J. Jenkins, and Dean R. Jenkins, both of 4 Banook Ave., Darthmouth, N.S., Canada B3A 2L4

Filed Oct. 27, 1992, Ser. No. 966,882

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—32 H **11 Claims**

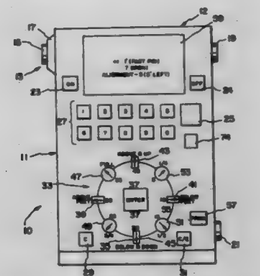
1. A portable golf shot analyzer and club selector, comprising:

a) a housing having a front face having a multiplicity of actuator buttons;

b) said housing containing first, second and third programmable memories and a central processing unit electrically connected thereto, said first memory being preprogrammed with statistics concerning optimal distance travelled by a golf ball struck by various golf clubs as well as statistics concerning effects of (1) various ambient conditions, (2) various lies and (3) various rough conditions on ball trajectory and distance, said second memory being preprogrammed with statistics concerning actual performance of a particular user using their golf clubs, said third memory being programmed, during play, with current ambient conditions, current ball position on a golf course, current distance to pin, lie angles, rough condition;

c) a display in said housing electrically connected to said central processing unit and displaying inputted data as well as shotmaking instructions;

d) said actuator buttons being electrically connected to said central processing unit and including buttons allowing inputting of information into said central processing unit



concerning current ambient conditions, current ball position, current lie angle, elevation with respect to said pin and rough conditions;

e) said central processing unit comparing contents of said first and second memories, analyzing data from said third memory and causing said display to display a preferred club selection as well as the predicted location of a golf ball with respect to said pin after being struck by said preferred club.

5,294,111

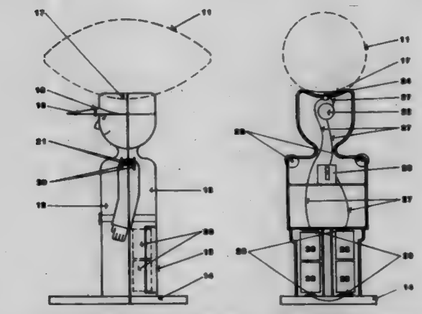
MULTI-PURPOSE FOOTBALL TIMING DEVICE ("RUSH REF")

David M. Bloch, 2032 Donald St., Fremont, Nebr. 68025

Filed Nov. 18, 1991, Ser. No. 793,992

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—55 R **5 Claims**



1. A football game timing device comprised of an upstanding frame having a top portion, a middle portion and a base support portion; said frame being in the form of a human figure wherein said top portion is substantially in the form of a human head, said middle portion is substantially in the form of a human torso and legs and said base portion is substantially in the form of human feet; said top portion having a curved upper surface, said curved upper surface having a radius such that a football may be cradles therein until removed by a player, said curved upper surface having a spring loaded switch means mounted therein, said switch means being operated upon a football being placed in and removed from said curved surface, said human figure having mounted therein means for producing an audible signal and means thereon for producing a visual signal, means in said human figure for activating said audible and visual signals when a football is removed from said curved upper surface; timing means having means for controlling the interval of time between removing a ball from said curved surface and actuation of said audio and visual signals; said time interval being a predetermined time set for college football play and a predetermined time set for professional football play, said predetermined time for professional football play being laser than said predetermined time for college football play; circuit means connecting said audible signal means, said visual signal means, said timing means and said activating means; means mounted on said torso for displaying the game score and the down numbers as used in regulation football games.

5,294,112

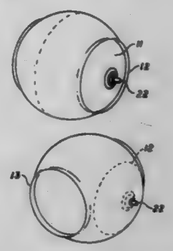
BLADDER FOR USE IN A SPORTSBALL

Eldon F. Smith, 5911 Princeton-Glendale Rd., Hamilton, Ohio 45011

Filed Apr. 26, 1993, Ser. No. 51,897

Int. Cl.[5] A63B *41/08*

U.S. Cl. 273—58 BA **18 Claims**



1. A bladder having good air retention and excellent durability for use in a sportsball, said bladder comprising:

(a) a hollow inner core for holding pressurized air having a shape and size when fully inflated which approximates that of the sportsball in which it is used and having an air valve permanently sealed into a wall of said inner core;

(b) a first band having a cylindrical shape and dimensioned to fit over the inner core when at least partially inflated and made of a material bondable to the inner core, said first band positioned directly over the inner core so as to substantially and evenly cover a major portion of the inner core when in an inflated state and permanently bonded thereto; and

(c) a second band having a cylindrical shape and dimensioned to fit over the inner core when at least partially inflated and made of a material bondable to the inner core and the first band, said second band positioned directly over the first band at about a 90 degree angle thereto so as to substantially and evenly cover a major portion of the first band and a minor portion of the inner core when in an inflated state and permanently bonded thereto to form the bladder.

5,294,113

HOCKEY STICK PROTECTOR

Eric Ladouceur, Alexandria; David Paavila, and Jack Paavila, both of Green Valley, all of Canada, assignors to Jake Searches Inc., Green Valley, Canada

Filed Jul. 22, 1992, Ser. No. 916,612

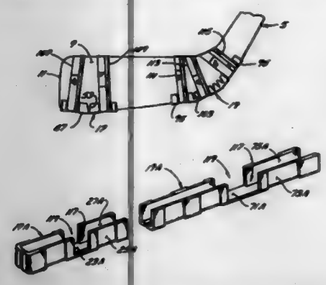
Int. Cl.[5] A63B *59/14*

U.S. Cl. 273—67 A **9 Claims**

1. Hockey stick protector means for protecting the bottom edge of the blade of the stick from wear when the stick is used

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on a play surface other than ice, the protector means comprising: at least one elongated, slotted member having a u-shaped cross-section defined by side walls and a bottom wall and adapted to cover at least one of the toe and heel areas of the bottom edge of the blade of a hockey stick; and connecting means integral with the member for use in detachably connecting the member to a blade of a hockey stick without damaging the blade, the connecting means comprising at least two wide, spaced-apart, shallow grooves formed in the outer surface of the bottom wall of the member, the grooves extending transversely across the bottom wall and being at least as wide as the width of hockey tape.

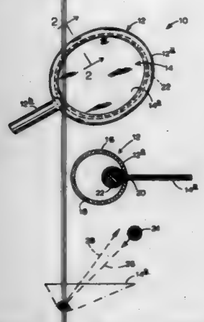


5,294,114

GAME PADDLE AND COMBINATION

Scott H. Stillinger, Los Gatos, Calif., assignor to OddzOn Products, Inc., Campbell, Calif.

Continuation of Ser. No. 632,956, Dec. 21, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 990,538
Int. Cl.[5] A63B *59/00*
U.S. Cl. 273—67 R 8 Claims



1. A game paddle for use with an aerial object such as a ball, comprising:

a frame including a hoop and a handle joined to the hoop, the hoop having an interior expanse extending thereabout and forming the perimeter of an opening encompassed by the hoop,

an elongate slot extending along said interior or expanse of the hoop, the slot having opposed sides,

a stretchable and resilient sheet spanning said opening in the hoop, said sheet having a marginal expanse lying within said slot between the opposed sides of the slot, and

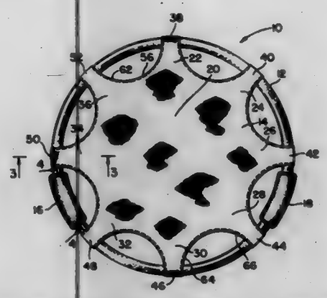
anchor structure anchoring the sheet to the hoop with the sheet extending inwardly from the slot as a substantially planar expanse over said opening, said anchor structure comprising an elongate rod extending along the hoop and positioned outwardly on the hoop from said slot, and a reversely turned portion of said sheet which fits about said rod.

5,294,115

GAME HOOP APPARATUS

Charles B. Phillips, 180 W. End Ave. (18-L), New York, N.Y. 10023, and Ronald A. Wiecek, 26430 127 St. SE., Monroe, Wash. 98272

Filed Feb. 5, 1993, Ser. No. 13,936
Int. Cl.[5] A63B *59/00*
U.S. Cl. 273—67 R 1 Claim



1. A game hoop apparatus comprising in combination:

a circular hoop member having a circumference and a diameter and made of a lightweight tubular plastic material and having at least eight connection locations spaced equally about the circumference thereof,

a membrane made of a resilient strong lightweight open mesh material and attached in tension to the hoop member at each of the connection locations by means of a loop portion which is formed as part of the membrane and extends around the hoop member whereby the hoop member passes through each of the loop portions so that the hoop member and the membrane coact as a single unit,

a pair of handles each comprising a resilient tubular member with a hollow portion and the hoop member passing therethrough, the handles mounted on the hoop member at handle locations which are spaced apart from each other a distance which is less than the diameter of the hoop member, the handles enabling a player to grasp the game hoop with both hands,

each of the handle locations situated between adjacents of the connection locations.

5,294,116

STRING TENSIONING SYSTEM FOR BALL RACKET

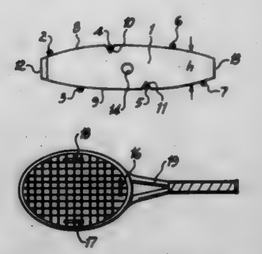
Karl Ahrens, Altenaner Weg 8, D-3000 Hannover 21, Fed. Rep. of Germany

Continuation of Ser. No. 427,184, Oct. 25, 1989, abandoned. This application Aug. 18, 1992, Ser. No. 931,357
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836752
Int. Cl.[5] A63B *51/12*
U.S. Cl. 273—73 R 1 Claim

1. A method for tensioning a stringed ball racket, comprising the steps of

at a handle end of said head of said stringed ball racket, inserting an elongated string tensioning member between several substantially parallel disposed strings such that the elongated tensioning member is alternatingly disposed above a longitudinal side of a first one of the several substantially parallel disposed strings and below the longitudinal side of a second one of the several substantially parallel disposed strings, and wherein the elongated string tensioning member includes a middle borehole;

inserting a pin of a tool into the borehole of the elongated string tensioning member; and



flipping the elongated string tensioning member with the aid of said tool by an angle of 90° around a center axis of the elongated string tensioning member.

5,294,117

RACQUET GRIP

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 972,146, Nov. 17, 1992. This application Jun. 7, 1993, Ser. No. 73,576
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—75 11 Claims



1. The combination of a handle of a ball-struck impact imparting device and a shock absorbing grip, wherein said shock absorbing grip comprises:

a resilient, compressible body which is adhered over said handle;

an inflatable tube interposed between the interior of the body and the handle; and

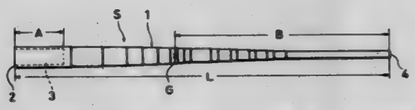
pump means on the body to selectively pressurize the tube and thereby expand the area of the body in a raised profile configuration adjacent the tube.

5,294,118

GOLF CLUB SHAFT

Takeshi Iwanaga, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Apr. 15, 1992, Ser. No. 868,526
Claims priority, application Japan, Apr. 16, 1991, 3-112529
Int. Cl.[5] A63B *53/12*
U.S. Cl. 273—80 A 1 Claim



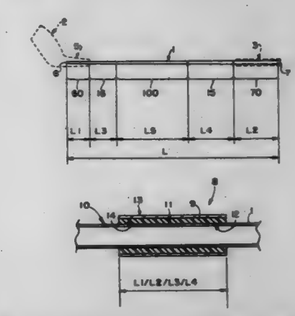
1. A golf club shaft comprising a metallic inner pipe having a length in the range of 50 mm to 350 mm and a weight in the range of 10 g to 50 g, and a metallic shaft body having a large diameter end and a small diameter end with a gravitational center located between said large and small diameter ends, the metallic inner pipe being inserted into the metallic shaft body from the large-diameter end thereof for positional adjustment of the gravitational center of the golf club shaft, the metallic inner pipe being secured in an internal area of the metallic shaft body which ranges between 0 mm and 350 mm as measured from the large diameter end of the metallic shaft body so that the gravitational center of said golf club shaft is located in a position ranging between 56% and 65% from the small diameter end of the metallic shaft body as calculated by the formula B/L×100, in which B is the distance from the small diameter end of the metallic shaft body to the position of the gravitational center of the shaft body and L is the overall length of the metallic shaft body.

5,294,119

VIBRATION-DAMPING DEVICE FOR A GOLF CLUB

Benoit Vincent, Annecy le Vieux, and Frederic de Fouchier, Annecy, both of France, assignors to Taylor Made Golf Company, inc., Carlsbad, Calif.

Filed Sep. 28, 1992, Ser. No. 951,792
Claims priority, application France, Sep. 27, 1991, 91 12152
Int. Cl.[5] A63B *53/10*
U.S. Cl. 273—80 B 26 Claims



1. Golf club shaft formed by a unitary tubular structure having a total length (L) and comprising an upper part (70) adapted to receive a club grip and extended downward by an upper intermediate section (15), followed by a central section (10), then a lower intermediate section (16), and finally, a lower part (60) adapted for insertion in a club head, and comprising at least one distinct vibration damping device (8, 8', 8'') positioned in at least one of said upper and lower intermediate sections (15, 16) and constituted by at least one rigid layer joined to a surface of said shaft by means of an intermediate layer of viscoelastic material.

5,294,120

VIDEO POKER

Phillip C. Schultz, West Bloomfield, Mich., assignor to MP Software, W. Bloomfield, Mich.

Filed May 8, 1992, Ser. No. 879,930
Int. Cl.[5] A63F *9/00, 1/00*
U.S. Cl. 273—85 CP 10 Claims

1. A method of playing a video poker game using a computer and a video screen comprising the steps of:

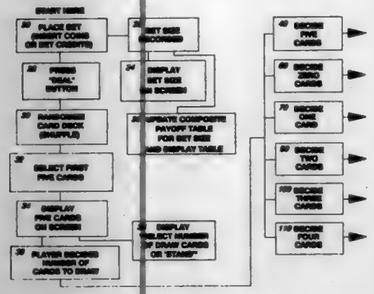
(a) receiving a bet value from a player;

(b) selecting and displaying a plurality of cards on the video screen;

(c) receiving at least one signal from the player, each signal corresponding to an election to select a draw card made by the player;

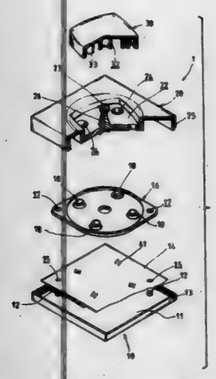
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(d) storing the total number of draw cards as a draw value;
(e) generating a final poker hand by replacing the draw cards selected by the player;
(f) determining a rank of the final poker hand;
(g) assigning a rank value to the rank of the final poker hand;



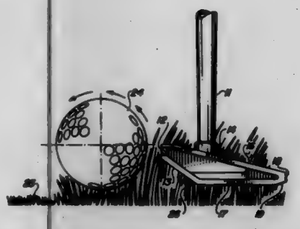
(h) selecting a payoff table from a plurality of payoff tables based on the draw value; and
(i) calculating a payoff using the rank value and the bet value as indices in the selected payoff table.

5,294,121
DIRECTION CONTROL KEY ASSEMBLY
Mao-Ting Chiang, Taoyuan, Taiwan, assignor to TXC Corporation, Taiwan
Filed Jun. 14, 1993, Ser. No. 76,576
Int. Cl.[5] H01H *25/04*; A63F *9/22*
U.S. Cl. 273—148 B **5 Claims**



1. A direction control key assembly comprising a casing having a base with a cover mounted thereon to provide an interior space to receive therein a circuit board having a number of switch units mounted thereon, said cover having a rod located on a central position thereof and extending therefrom with an expanded spherical portion formed on a remote end thereof, said cover further comprising a number of through holes, corresponding to the switch units, symmetrically disposed around said rod, and a button member having a recess formed on an underside thereof to receive the expanded end of said rod therein, forming a ball joint between said button member and said cover to allow said button member to be depressingly rotatable with respect to said cover, said button member further comprising a number of depending pins formed on the underside thereof, corresponding to the through holes formed on said cover so that when said button member is rotated with respect to said cover, a combination of the depending pins is allowed to engage and thus actuating the corresponding switch units provided on said circuit board through the through holes to generate direction signals corresponding to the actuated switch units.

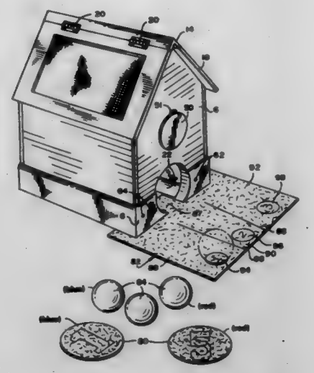
5,294,122
GOLF PUTTER
Paul F. Longo, 41-295 Woodhaven Dr., Palm Desert, Calif. 92260
Filed Nov. 25, 1992, Ser. No. 981,429
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—162 E **7 Claims**



1. A golf putter especially adapted for dual purpose use both on the putting green and on the fringe or higher grass areas surrounding a green, which comprises a club head having a polyhedral vertical transverse cross section, a rectangular horizontal configuration base surface for engagement with a playing surface, a forwardly upward tapering front surface extending upward from said base terminating in a relatively narrow upwardly extending horizontally elongated ball striking surface defining the upper edge of the club head, a top layer tapering downward from the ball striking surface to the rear edge of said club head, a centrally positioned shaft receiving socket in said top surface spaced from the top edge of said ball striking surface, and a shaft affixed within said socket, said shaft extending directly upward at an angle to the vertical.

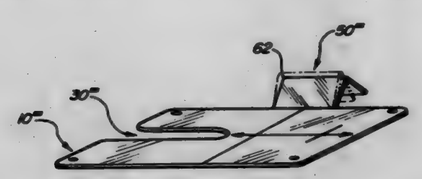
5,294,123
PORTABLE GOLF GAME
Brendan C. Black, 11502 Newport Mill Rd., Silver Spring, Md. 20902
Continuation of Ser. No. 719,496, Jun. 24, 1991, Pat. No. 5,154,426. This application Oct. 13, 1992, Ser. No. 959,375
Int. Cl.[5] A63B *67/02*
U.S. Cl. 273—175 E **6 Claims**

1. Portable apparatus for playing a golf game, comprising,
a housing having an access opening,
a hinged lid on the housing for covering said access opening,
ball-supporting means inside said housing for storing golf balls in fixed spaced-apart positions,
said housing having an upstanding front wall with a ball entrance opening formed in a lower portion thereof for receiving a golf ball which is putted into said entrance opening,
said housing having a rear wall provided with a ball exit opening, and



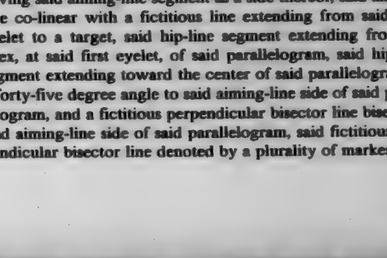
guide means in said housing for guiding a ball from said ball entrance opening to said ball exit opening.

5,294,124
GOLFER'S PUTTING PRACTICE DEVICE
Raymond J. Florian, 1440 Elwell Rd., Belleville, Mich. 48111
Filed Apr. 17, 1992, Ser. No. 870,142
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **7 Claims**



1. A practice mirror for improving golf putting skill, said mirror comprising:
a flat planar mirror member having a generally planar upper reflective surface and a lower planar support surface;
said upper and lower surfaces being generally parallel and providing a thin gauge structure, said flat planar member defining a substantially open, unrestricted putting surface for addressing and hitting the golf ball in practice putting;
a target line image on said upper surface, said target line substantially bisecting said upper surface; and
a positioning means for receiving a golf ball to be practice putted also bisected by said target line image;
said positioning means being a channel extending from approximately the mid-point of one edge of said planar member to a closed end generally toward the center of said planar member, in alignment with said target line image, said channel having parallel edges spaced to define a width dimension wide enough to accept a golf ball while providing a preselected clearance between said golf ball and said edges of said channel such that when said golf ball is putted away from said closed end of said channel at any angle other than substantially parallel to said edges of said channel said golf ball ricochets against said edges of said channel before traveling out of said channel;
said planar member adapted to be placed on the ground and supported on said support surface whereby said upper reflective surface is generally parallel to the ground, said upper reflective surface with said planar member on the ground adapted to provide a reflected image of the golfer and putter club whereby the golfer by viewing his reflection is able to detect and correct alignment errors that might otherwise go undetected, thereby improving his putting skill.

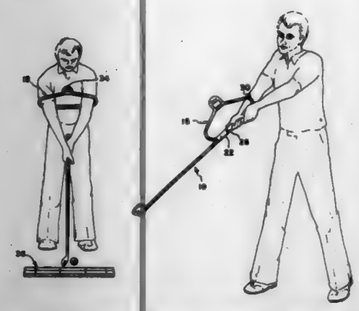
5,294,125
GOLF TRAINING AID
Dennis R. Mietz, 320 Julia Cir. North, Saint Petersburg Beach, Fla. 33706
Filed Jan. 28, 1993, Ser. No. 10,331
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 R **7 Claims**



1. A practice aid for a golfer including a plurality of segments and a plurality of eyelets, each said eyelet adapted for the insertion of an anchoring device therethrough, each said eyelet at an end of a said segment, said aid comprising
a first, aiming-line, segment having a first predetermined length, said aiming-line segment extending between a first eyelet and a second eyelet,
a second, front-line, segment having a second predetermined length, said front-line segment extending between said first eyelet and a third eyelet,
a third, back-line, segment having said second length, said back-line segment extending between said second eyelet and a fourth eyelet, and
a fourth, toe-line, segment having said first length, said toe-line segment extending between said third eyelet and said fourth eyelet,
a fifth, hip-line, segment having a third length approximately equal to the quotient formed by dividing said first predetermined length by the square root of two, said hip-line segment having a fifth eyelet at a first end thereof, wherein said fifth eyelet is adapted for the insertion of an anchoring device therethrough, said hip-line segment having attachment means at a second end thereof, said attachment means adapted to co-anchor said second end of said hip-line segment with said first eyelet,
a sixth segment having said third length, said sixth segment extending from said fifth eyelet to a sixth eyelet,
whereby said golf aid may be anchored to the ground to form a composite geometrical figure comprising a parallelogram having said aiming-line segment as a side thereof, said aiming-line co-linear with a fictitious line extending from said first eyelet to a target, said hip-line segment extending from an apex, at said first eyelet, of said parallelogram, said hip-line segment extending toward the center of said parallelogram at a forty-five degree angle to said aiming-line side of said parallelogram, and a fictitious perpendicular bisector line bisecting said aiming-line side of said parallelogram, said fictitious perpendicular bisector line denoted by a plurality of markers.

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5,294,126
GOLF SWING AID
Walter E. Armstrong, III, Maitland, Fla., assignor to Wally Armstrong Golf, Inc., Paoli, Pa.
Filed Nov. 12, 1992, Ser. No. 974,887
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—187.2 4 Claims



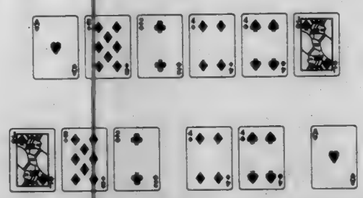
1. A golf swing aid for use in practicing golf with a golf club having a shaft with a circular cross section comprising:
an intermediate shank portion having a concave undersurface for positive engagement with said shaft;
first and second generally semi-circular curved portions being connected to each other and to opposed ends of said intermediate shank portion, and lying in a common plane passing through said shank portion;
an extending tab portion connected intermediate to said first and second curved portions and extending away from said intermediate shank portion wherein said extending tab portion lies in the same plane as said first and second curved portions and said intermediate shank portion; and
said first and second curved members having oppositely disposed ends extending inwardly to said extended tab portion and flaring outwardly from said intermediate shank portion to define an opening of sufficient size to receive a golfer's upper arms so that said curved portions engage snugly against and restrict movement of the outer sides of the golfer's upper arms while executing a golf putting stroke.

5,294,127
WEIGHTED GOLF CLUBS COVERS
Regis T. Keelan, 54 Lakefront, Irvine, Calif. 92714
Filed Mar. 11, 1993, Ser. No. 29,824
Int. Cl.[5] A63B 69/36, 57/00
U.S. Cl. 273—194 B 12 Claims



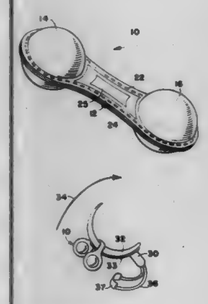
1. A weighted golf club cover for receiving a head of a golf club, said weighted cover comprising an exterior surface and an interior surface defining a cavity having an entrance thereto, said interior surface adapted to closely fit over the head of golf club, said weighted cover being composed of a mixture of a plastic and a filler for substantially increasing the density of said plastic so that said cover when fitted over the head of a golf club adds sufficient weight thereto to accelerate the development of golfing muscles in swinging said club with said cover fitted over the head thereof.

5,294,128
METHOD OF PLAYING HI-HI-LO POKER
Ruben L. Marquez, 5134 Pattijo Dr., Carmichael, Calif. 95608
Filed Apr. 7, 1993, Ser. No. 44,248
Int. Cl.[5] A63F 1/00
U.S. Cl. 273—292 20 Claims



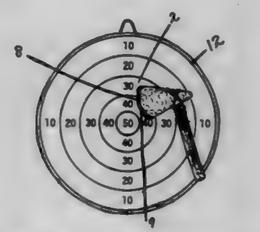
1. A method of playing a card game, comprising the steps of:
(a) providing a deck of playing cards;
(b) establishing a ranking hierarchy for individual cards and combinations of cards in said deck of playing cards;
(c) dealing a plurality of cards to a player and a bank player, each said player being dealt the same number of cards;
(d) each said player dividing its cards into first and second high ranking card hands and a low ranking card hand, each said card hand having a differing number of cards;
(e) each said player arranging the cards in its card hands according to said ranking hierarchy to maximize the chances of having winning card hands when said card hands are compared against a competing player's corresponding card hands;
(f) comparing said players' low ranking card hands to determine a lowest ranking card hand, said lowest ranking card hand being declared a winning card hand;
(g) comparing said players' first high ranking card hands to determine a highest ranking card hand, said highest ranking card hand being declared a winning card hand; and
(h) comparing said players' second high ranking card hands to determine a highest ranking card hand, said highest ranking card hand being declared a winning card hand.

5,294,129
THROW TOY WITH TWO SPONGY WEIGHTS AND ENERGY STORING STRETCHY WEB
Paul J. Brown, 38 Birchdale La., Port Washington, N.Y. 11050
Filed Nov. 16, 1992, Ser. No. 977,069
Int. Cl.[5] A63B 65/00, 67/00
U.S. Cl. 273—327 14 Claims



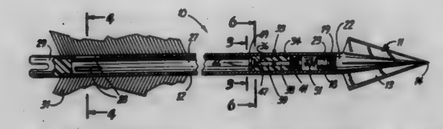
1. A throw toy comprising:
a pair of spaced apart spongy weights;
a flat stretchy and flexible web connected between the spongy weight;
a pair of hour-glass shaped flexible layers fastened above and below the pair of spaced apart spongy weights to enclose the weights and form the web, the layers having an outer border;
a seam around the outer border for connecting the layers to each other; and
at least one additional layer of material on the web for adding stretch and flexibility characteristics to the web.

5,294,130
TOMAHAWK BOARD GAME
Earnest Way Woods, and Annette A. Woods, both of 2410-B Huddersfield Wy., Norcross, Ga. 30071
Filed May 28, 1993, Ser. No. 68,001
Int. Cl.[5] A63B 67/00
U.S. Cl. 273—346 2 Claims



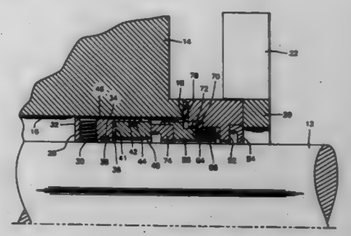
1. Apparatus for playing a game comprising;
a game board with target areas marked on the surface and a projectile in the shape of a tomahawk which is thrown at the board with the intention of the tomahawk making contact and staying within the target areas,
said target surface being covered with one component of hook-and-loop fastening means, and the blade of said tomahawk being covered with the other component of said hook-and-loop fastening means,
whereby when the blade and the target surface make contact the two components of the hook-and-loop fastening means will mesh together to hold the projectile to the target surface.

5,294,131
AUDIBLE ARROW
William D. Manske, 309 Robinson Dr., Algona, Iowa 50511
Filed Jan. 30, 1992, Ser. No. 828,160
Int. Cl.[5] F42B 6/04
U.S. Cl. 273—416 27 Claims



13. An arrow comprising: an elongated tubular shaft having an inner chamber, the shaft having a forward end and a rear end, an arrowhead mounted on the forward end, means for generating audible sound signals located within the chamber, the means for generating audible sound signals comprising a sleeve having a passage, battery means located within the passage, audible sound generator means mounted on one end of the sleeve adjacent the battery means, the sleeve being moveable from a first position to a second position when the arrowhead strikes an object with a predetermined force, the battery means providing electric power to the audible sound generator means when the sleeve is in the second position whereby the audible sound generator means is energized and generates the audible sound signals to facilitate tracking and retrieval of the arrow.

5,294,132
SEMI-CARTRIDGE SEAL
Henry S. K. Duffee, and James M. Downing, both of Florence, S.C., assignors to Five Star Seal Corporation, Florence, S.C.
Filed Jul. 24, 1992, Ser. No. 918,031
Int. Cl.[5] F16J 15/34
U.S. Cl. 277—9.5 9 Claims



1. In combination with a stationary housing portion defining an opening therethrough and a shaft rotatable relative to said housing portion and projecting loosely through said opening, a seal assembly including a first seal face holder sleeve slidably and rotatably mounted on said shaft in position recessed inwardly of the end of said opening facing outwardly of said housing portion, the outer axial end of said first holder sleeve facing outwardly of said opening defining a first seal cavity concentric with said sleeve and opening axially outwardly of said outer end, first annular seal face means loosely receiving said shaft therethrough and disposed in said first seal cavity with a first outer end thereof projecting outwardly of said first cavity and disposed normal to the axis of rotation of said shaft, first annular seal means establishing a fluid tight seal between said shaft and said first holder sleeve, second annular seal means establishing a fluid tight seal between said first annular seal face means and said first holder sleeve and centering said first annular seal face means radially in said cavity and frictionally resisting rotation in said cavity, an annular gland insert loosely disposed about said shaft outwardly of said opening and including inner and outer axial ends, said inner axial end facing toward said first seal face outer end and being spaced axially from said first seal face outer end and defining a second seal cavity concentric with said gland insert opening axially toward said first annular seal face means, a second annular seal face means loosely receiving said shaft therethrough and loosely disposed in said second seal cavity with a first end thereof slidably and nonrotatably disposed in said second seal cavity and a second end projecting outwardly of said second seal cavity toward said first outer end and disposed normal to the axis of rotation of said shaft and rotatably and sealing engaged with said first outer end, key means keying said second seal face means in said second seal cavity against rotation relative to said annular gland insert while allowing relative axial displacement between said second seal face means and said annular gland insert, biasing means operatively connected between said second seal face means and the annular gland insert yieldingly biasing said second seal face means outwardly of said second seal cavity, third annular seal means establishing a fluid tight seal between said annular gland insert and said second seal face means and centering said second seal face means relative to said annular gland insert, and an annular centering bushing interposed between said annular gland insert and said shaft disposed outwardly of said second annular seal means and centering said annular gland insert relative to said

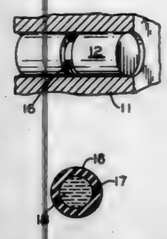
shaft, said annular gland insert and housing portion including respective seal surfaces extending about said shaft and registered with each other, and gland plate means disposed about said shaft outwardly of said annular gland insert for adjustable connection with said housing portion to shift said gland plate means along said shaft into operative position with said seal surfaces disposed in relative seated relation.

5,294,133

FLUID-FILLED O-RING FOR MAINTAINING A SEAL UNDER LOW TEMPERATURE CONDITIONS

Piyush K. Dutta, Lebanon, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 10, 1991, Ser. No. 757,400
Int. Cl.[5] F16J *15/46*
U.S. Cl. 277—26 **4 Claims**



1. A seal for sealing two concentric members comprising a hollow ring having an inside diameter substantially equal to the outside diameter of a groove in a first one of said members, and an outside diameter substantially equal to an inside diameter of a second one of said members, said hollow ring made of a material that will contract when exposed to changing temperatures, said hollow ring containing a fluid forming a liquid core which expands and contracts with temperature changes, thereby maintaining a seal between said concentric members under various temperature conditions, said fluid having a negative expansion coefficient greater than or equal to the contraction of said ring under low temperatures such that a seal is maintained.

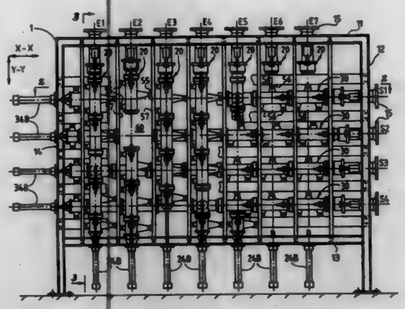
5,294,134

METALLIC GASKET

Shigeru Kawaguchi, Daitou; Kenji Kubouchi, Hirakata; Masahiko Miura, Kawachinagano, and Kunitoshi Inoue, Higashiosaka, all of Japan, assignors to Nippon Gasket Company, Ltd., Osaka, Japan

Continuation of Ser. No. 731,234, Jul. 17, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 17,419
Claims priority, application Japan, Jan. 10, 1991, 3-011692
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—180 **9 Claims**

1. A laminated metallic gasket for use in sealing a clearance between opposed surfaces of a cylinder head and a cylinder block of a multicylinder engine, said gasket consisting of:
- a bead base member which is formed out of an elastic metallic material and has a flat portion,
- an auxiliary member laminated on said bead base member and formed out of an elastic metallic material,
- said bead base member having first cylinder bore holes formed parallel with one another
- said auxiliary member having second cylinder bore holes formed parallel with one another in alignment with said first holes;
- said bead base member having a plurality of beads formed around the circumferential portions of said first cylinder bore holes in such a manner that one surface of each of said plurality of beads projects from said flat portion and another surface of each of said plurality of beads is recessed from a flat surface on the other side of said flat portion;
- folded portions formed at an edge of said auxiliary member by folding parts of said auxiliary member which correspond to circumferential edge portions of said second cylinder bore holes,
- said folded portions folded toward said bead base member so as to control all degrees of compression of said beads on said bead base member;
- said auxiliary member being laminated on a side of said bead base member from which said beads project,



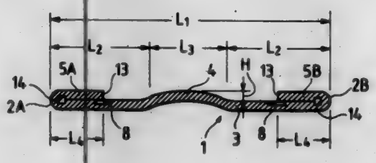
free end sections of said folded portions being spaced from said beads,
- said folded portions of said auxiliary member being spaced when in a no-load state from said flat surface of said bead base member,
- upon compression of said base member and said auxiliary member a first face-to-face pressure is developed due to contact between said folded portions and said surface, and a second face-to-face pressure is developed between the surface of said bead that projects from said flat surface and said auxiliary member; and
- said first face-to-face pressure and said second face-to-face pressure are substantially equal.

5,294,135

METAL GASKET AND PRODUCTION METHOD THEREOF

Kenji Kubouchi, Hirakata; Hiroshi Uemura, Higashiosaka; Shigeru Kawaguchi, Daitou, and Kunitoshi Inoue, Higashiosaka, all of Japan, assignors to Nippon Gasket Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 937,093
Claims priority, application Japan, Sep. 5, 1991, 3-252847
Int. Cl.[5] F16J *15/06*
U.S. Cl. 277—235 B **10 Claims**



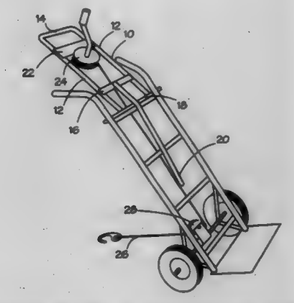
1. In a metal gasket having an elastic metal plate made of a metal material having elasticity and provided with holes for combustion chambers and folded portions each formed by turning the end of said elastic metal plate back against itself to form said hole; the improvement characterized in that:
- first annular grooves are so defined in an inner surface side of said folded portions of said elastic metal plate as to extend along said holes, said elastic metal plate is folded in such a manner as to define annular hollow portions on the inner surface side of said folded portions by said first annular grooves, and second annular grooves are defined in the surface of said elastic metal plate at portions at which folded free ends of said folded portions are positioned.

5,294,136

ONE PERSON FURNITURE OR APPLIANCE MOVER

Jerry E. Dick, and Susan J. Dick, both of 42 Ellesboro Drive, Mississauga, Ontario, Canada L4N 1C2

Filed Sep. 19, 1991, Ser. No. 762,347
Claims priority, application Canada, Sep. 25, 1990, 2026101
Int. Cl.[5] B62B *5/02*
U.S. Cl. 280—5.2 **2 Claims**



1. A portable furniture or appliance mover comprising:
- a frame means having rearward and forward ends;
- a handle means at the rearward end of said frame means;
- a laterally extending member positioned forwardly on said frame means to provide a means for lateral engagement with a load;
- a medial lateral member fastened to said frame means;
- a winch means operatively secured on said medial lateral member, including a flexible line member wound thereon for extension therefrom;
- a pulley means removably secured below the center of gravity of the load so that the flexible line member from said winch means trained around said pulley means can be used to apply motive force to the load until the center of gravity of the load is disposed above a horizontal surface at the top of an incline.

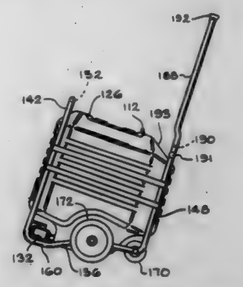
5,294,137

TRANSPORT CONTAINER WITH INTEGRAL DOLLY

George L. Barber, Mt. Vernon; Curtis P. Taylor, Chagrin Falls, and Richard A. Volker, N. Olmsted, all of Ohio, assignors to Hoover Group, Inc., Alpharetta, Ga.

Filed Apr. 20, 1992, Ser. No. 871,284
Int. Cl.[5] B62B *3/08*
U.S. Cl. 280—47.26 **25 Claims**

25. A transport container for shipping of bulk materials comprising:
- a tank having an upright wall including fore and aft spaced front and rear walls and laterally spaced opposing side walls, a top and a bottom;
- means forming front legs extending below said bottom adjacent said front wall for contact with a supporting surface;
- means forming rear legs extending below said bottom adjacent said rear wall, said rear legs being rotatably mounted to said tank for rotation relative to said tank between a lowered position forming rear legs for said tank and a raised position forming a handle above said tank; and
- wheel means rearward of said front leg means for supporting said tank when said rear leg means is in said raised position, said wheel means including a main wheel rotatable about a first axis of rotation rearward of the center of gravity of said container for supporting said container



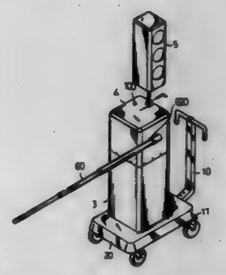
together with said front leg means with said upright wall extending substantially vertically and a secondary wheel spaced vertically higher than said main wheel and having a second axis of rotation rearward of said first axis of rotation and parallel thereto whereby said tank can be tilted rearward onto said main and secondary wheels when said rear leg means is in said raised position and said center of gravity of said container is passed over the first axis to a position between said first and second axes.

5,294,138

TRAFFIC CONTROL CART

Nan S. Yang, No. 16, Hsin Hsing St., Wu Wang Tsun, Yung Kang Hsiang, Tainan Hsien, Taiwan

Filed Apr. 5, 1993, Ser. No. 42,733
Int. Cl.[5] G08G *1/095*
U.S. Cl. 280—47.34 **7 Claims**



1. A traffic control cart comprising
- a light means (5) having at least a green, a yellow, and a red light formed thereon;
- a wheel assembly (11) including a pair of front rolling wheels (113) and a pair of rear rolling wheels (112);
- a casing-like base (20) having periphery walls extending downward being securely mounted on said wheel assembly (11);
- a column (3 and 4) having casing structure therein being firmly fixed on said base (20);
- a gear wheel means (62) transmitted by a motor-gear set being installed in said column (3 and 4) having a central shaft (620) extending from a center thereof penetrating

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through a periphery face of said column (3 and 4) and having one end protruding out of said column (3 and 4);
a plurality of micro-switches being firmly fixed inside said column (3 and 4) for responding to the reciprocating of said gear wheel means (62) and actuating one of said lights; and
an arm (60) connected to said protruding end of said central shaft (620) being transmitted by said central shaft (620) and reciprocating in a ninety-degree range.

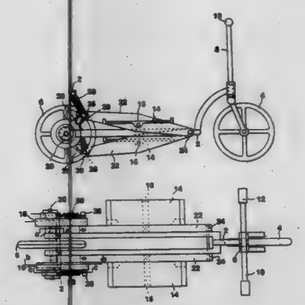
5,294,139
SKI
Jean-Mary Cazaillon, Crau Gevrier, and Bernard Chatellard, Veyrier du Lac, both of France, assignors to Salomon S.A., Annecy Cedex, France
Division of Ser. No. 608,648, Oct. 31, 1990, Pat. No. 5,173,226. This application Oct. 6, 1992, Ser. No. 956,991
Claims priority, application France, Nov. 22, 1989, 89 15664
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] A63C *5/12*
U.S. Cl. 280—610 **21 Claims**



1. A ski produced by a process comprising the steps of:
injecting constituents of a hardenable foam;
expanding and hardening the hardenable foam, between at least a first element and a second element, said first element being formed by a process comprising the steps of:
providing a solid polymer base film having good adhesion properties with the hardenable foam during the ultimate injection step;
providing said first element in the form of a substrate having an internal surface formed by a reinforcement, said reinforcement comprising a member selected from the group consisting of: (1) a textile reinforcement sheet pre-impregnated with a member selected from the group consisting of: thermosetting resin and thermoplastic resin; and (2) a metallic reinforcement;
positioning said solid film on said internal surface of said first element to cover said reinforcement;
hot forming under pressure said solid film and said first element, after said step of positioning said solid film on said internal surface of said first element, to make said film adhere to said first element; and
whereby during said injection step said solid film constitutes a screen between the hardenable foam and the reinforcement and, after injection and hardening said foam adheres perfectly to said film.

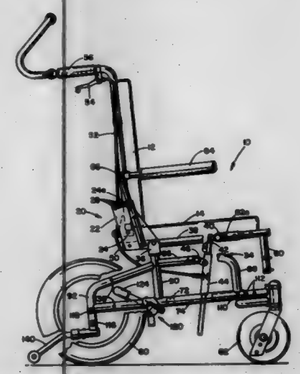
5,294,140
SELF-PROPELLED VEHICLE
Isaac Rinkewich, P.O. Box 1209, Hightstown, N.J. 08520
Continuation-in-part of Ser. No. 787,178, Nov. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,398, May 25, 1990, Pat. No. 5,066,031. This application Sep. 14, 1992, Ser. No. 944,769
Int. Cl.[5] B62M *1/04*
U.S. Cl. 280—221 **11 Claims**

1. A self-propelled vehicle, comprising:
a frame having a drive wheel at one end and another wheel at its opposite end;
a pair of foot treadles mounted to the frame in side-by-side relation and depressible with respect to the frame;
an overrunning clutch for each of said foot treadles and having a drive member coupled to its respective foot treadle and a driven member coupled to said drive wheel;
and a planetary gear assembly between each of said foot treadles and said drive wheels, and effective to multiply, by a factor of at least two, the displacement of said drive wheel by its respective foot treadle; each of said planetary gear assemblies including:



an internal gear fixed to the frame;
a plurality of planetary gears meshing with said internal gear and coupled to the respective foot treadle so as to be displaced angularly by the depression of the foot treadle with respect to the frame;
and a sun gear meshing with said planetary gears and coupled to said driven member of the respective overrunning clutch.

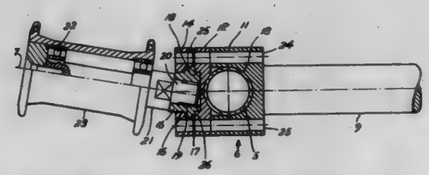
5,294,141
ATTENDED TO SELF PROPELLED CONVERTIBLE PIVOTING WHEELCHAIR
Roland A. Mentess, North Royalton; Allen J. Boris, Elyria, and Neal J. Curran, Lakewood, all of Ohio, assignors to Invacare Corporation, Elyria, Ohio
Continuation of Ser. No. 612,812, Nov. 14, 1990, abandoned. This application Aug. 31, 1992, Ser. No. 937,587
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—250.1 **20 Claims**



1. A convertible wheelchair adapted for conversion from an attended wheelchair arrangement to a self-propelled wheelchair arrangement, comprising:

a frame;
a seat received on the frame;
front wheels extending from the frame;
two pairs of rear wheels for alternate mounting on the frame, the first pair being substantially smaller in diameter than the second pair for use as an attended wheelchair and the second pair including hand rails for self propelling and alternative use as a self-propelled wheelchair;
means for pivoting the seat relative to the frame through a predetermined range of movement, the pivoting means including a rod slidably extending through a clamping member, the rod having a first end pivotally secured to one of the seat and the frame, the clamping member being pivotally secured to the other of the seat and the frame, and wire means connected between the clamping member and a control lever for selectively locking the rod against sliding movement relative to the clamping member; and
means for selectively limiting the range of pivoting movement of the seat relative to the frame, the limiting means including a stop member removably secured to a second end of the rod when the second pair of rear wheels are mounted to the frame.

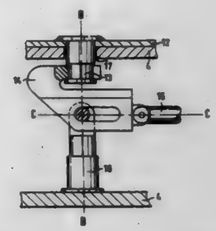
5,294,142
ADJUSTABLE WHEELCHAIR
Rolf-Dieter Weege, Kalletal, Fed. Rep. of Germany, assignor to Meyra Wilhelm Meyer GmbH & Co. KG, Kalldorf, Fed. Rep. of Germany
Filed Oct. 19, 1992, Ser. No. 962,880
Int. Cl.[5] B60R *9/00*; B62D *17/00*
U.S. Cl. 280—304.1 **9 Claims**



1. An adjustable wheelchair having a frame,
a mount for a drive wheel connected to said frame at each side thereof, each mount comprising,
a base,
a cylindrical axle support rotatably mounted on said base,
a bore in said axle support inclined at a fixed angle to the axis of said cylindrical axle support,
an axle fixed in said bore for one of said wheels, and
means for securing said cylindrical axle support in any rotational position for adjusting the camber of wheels mounted in said bores at each side of said frame.

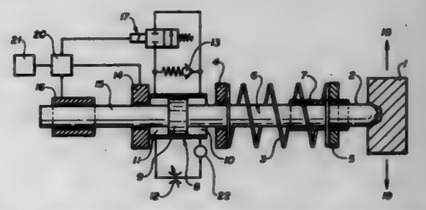
5,294,143
TRACTOR EQUIPPED WITH A FIFTH WHEEL
Pekka Järvinen, Nummels, Finland, assignor to Marita Jarvinen Oy, Finland
PCT No. PCT/FI90/00216, § 371 Date Mar. 19, 1992, § 102(e) Date Mar. 19, 1992, PCT Pub. No. WO91/04185, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 14, 1990, Ser. No. 842,397
Claims priority, application Finland, Sep. 25, 1989, 894504
Int. Cl.[5] B62D *53/08*
U.S. Cl. 280—425.1 **15 Claims**

1. A tractor equipped with a 5th wheel for coupling semi-trailers and devices to be transferred equipped with a kingpin coupling, comprising:
a tractor equipped with a power source with controls,
a vertically adjustable 5th wheel arranged in said tractor, said 5th wheel comprising gripping means for gripping the kingpin of the device being coupled,
movement means for moving said gripping means in a horizontal direction,



power mechanisms for moving said gripping means in a vertical direction to thereby press the kingpin of the device being coupled into contact with said 5th wheel.

5,294,144
HYDRAULIC SKI BINDING INCORPORATING ELECTRONICALLY-CONTROLLED BYPASS
Premek Stepanek, Garmisch-Partenkirchen, and Gerhard Sedlmair, Farchant, both of Fed. Rep. of Germany, assignors to Marker Deutschland GmbH, Eschenlohe, Fed. Rep. of Germany
Filed Sep. 10, 1992, Ser. No. 943,305
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 9111214[U]
Int. Cl.[5] A63C *9/088*
U.S. Cl. 280—612 **10 Claims**



1. A safety ski binding connectable to a ski, said ski binding having a closed position bar releasably holding a ski boot and an open position for releasing the ski boot, and comprising:
shock absorbing means comprising:
hydraulic circuit means for putting said ski binding in the open and closed position and for controlling the shock forces acting on said binding, said hydraulic circuit means including:
cylinder means having surfaces defining an interior bore;
piston means mounted for relative movement in said interior bore of said cylinder means, movement of said piston means by a predetermined amount enabling the opening of said ski binding;
choke means operatively connected to said cylinder means across said piston means for regulating the hydraulic resistance to the relative movement of said piston means;
check valve means operatively connected to said cylinder means across said piston means for selectively allowing the flow of the hydraulic fluid in one direction;
detection means for generating a signal when the ski

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binding receives a force of a predetermined amount; and

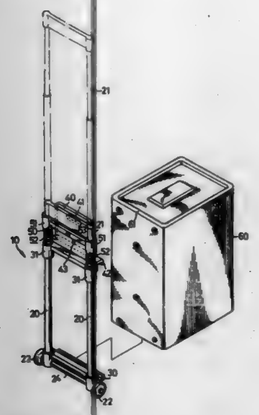
bypass means actuable to enable the hydraulic fluid to leave said cylinder means and for collapsing the hydraulic resistance to the movement of said piston means in response to the generation of said signal by said detection means.

5,294,145

HANDCART WITH MEANS FOR HOLDING A BAGGAGE CONTAINER

Shu-Yen Cheng, No. 20, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Apr. 27, 1993, Ser. No. 53,881
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—654 **3 Claims**



1. A handcart comprising:

a wheel means with an axle;

a pair of lower tubes mounted on said axle;

a pair of upper tubes telescopically received in said pair of lower tubes; and

a holding means comprising:

a lower holding member mounted to a lower portion of said pair of lower tubes;

a sleeve means mounted to a mediate portion of said pair of lower tubes and slidable along said lower tubes, an upper holding member extending from said sleeve means for holding an article between said lower and upper holding members, a handle means extending upwardly from said second holding member and having an elongate hole extending vertically;

a stop means mounted to an upper portion of said pair of lower tubes and having a pin extending outwardly into said elongate hole; and

a spring mounted around each of said lower tubes between said stop means and said sleeve means.

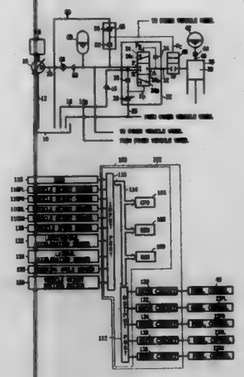
5,294,146

ACTIVE SUSPENSION OF VEHICLE HAVING SYSTEM OF COMPENSATION FOR CORNERING FORCE

Masaaki Tabata, Toyota, and Toshiaki Hamada, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Apr. 23, 1992, Ser. No. 872,897
Claims priority, application Japan, May 2, 1991, 3-130397
Int. Cl.[5] B60G *17/00*
U.S. Cl. 280—707 **7 Claims**

1. An active suspension of a vehicle suspending a vehicle body on vehicle wheels with a suspension force generated therein in combination with a suspension mechanism which converts cornering forces acting at the vehicle wheels during a turn of the vehicle to a vertical force exerted to the vehicle body, comprising actuators each provided for each of said vehicle wheels so as to generate said suspension force while increasing or decreasing the height of the vehicle body at a portion thereof corresponding to each of said vehicle wheels, vehicle height detection means each detecting the height of the vehicle body relative to each of said vehicle wheels at a portion thereof corresponding thereto, a lateral acceleration detection means for detecting lateral acceleration of the vehicle



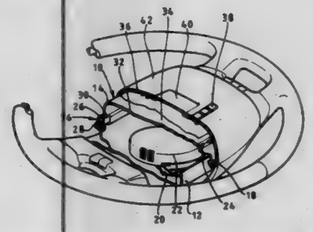
body, and a control means for controlling said actuators based upon the detected vehicle body heights and the detected lateral acceleration to obtain a desired attitude of the vehicle body with a modification of said suspension force generated by each of said actuators for compensating for a roll of the vehicle body due to the lateral acceleration thereof, wherein said control means further modifies said suspension force generated by each of said actuators according to the lateral acceleration of the vehicle body so as to change said suspension force generated by each of said actuators in compensation for said vertical force exerted to the vehicle body through said suspension mechanism due to the cornering forces.

5,294,147

CRASH PROTECTION DEVICE

Stanley J. Edge, Birmingham, England, assignor to Uta Clifford Limited, England

Filed Jul. 6, 1992, Ser. No. 909,025
Claims priority, application United Kingdom, Jul. 13, 1991, 9115187
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **8 Claims**



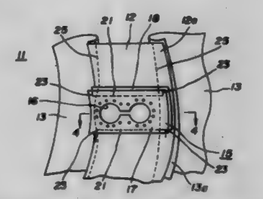
1. A crash protection device for use in a vehicle, said device comprising a housing including an opening, an inflatable bag, and inflator means contained within the housing and arranged such that, on activation of the device, said inflatable bag inflates and protrudes through the opening, said housing further including a pivot means pivotally attaching a flap to the remainder of the housing, flap retainment means for retaining said flap in a position overlying said opening such that (a) before activation of the device, said flap is held in a position in which it retains said bag within said housing and (b) upon activation of the device, said flap retainment means releases said flap to permit said flap to pivot about said pivot means so as to allow protrusion of said bag through the opening, a front cover overlying said housing, and fastening means securing said front cover solely to said flap so that said front cover moves with said flap when said flap is released by said flap retainment means.

5,294,148

REINFORCEMENT STRUCTURE FOR VEHICLE AIRBAG AND METHOD OF PRODUCING THE SAME

Hiroshi Imai, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jul. 27, 1992, Ser. No. 919,256
Claims priority, application Japan, Jul. 29, 1991, 3-211528
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—743 R **5 Claims**



1. A reinforcement structure for an airbag made of a sheet material and including a band-shaped main wall and side walls, comprising:

at least one substantially rectangular reinforcing member made of a sheet material and extending across a width of the main wall of the airbag, said reinforcing member having opposite end edges extending in a lateral direction of said main wall and opposite side edges extending in a longitudinal direction of said main wall;

first stitching rows formed on said reinforcing member and extending along the opposite end edges of said reinforcing member to join said reinforcing member with said main wall;

second stitching rows formed adjacent both ends of each of said first stitching rows on said reinforcing member and extending along the opposite side edges of said reinforcing member so as to join said main wall with said reinforcing member and with said side walls; and

fold-back preventing stitching rows extending outwardly from said both ends of said first stitching rows to thereby prevent the end edges of said reinforcing member from being folded back when said second stitching rows are formed.

5,294,149

STEERING COLUMN DEVICE FOR MOTOR VEHICLES

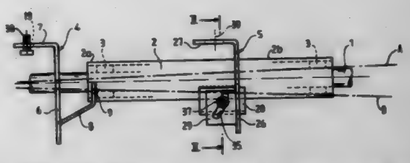
Bernard Haldric; Jacques Foulquier, and Jean R. Blais, all of Vendome, France, assignors to NACAM, Vendome, France

Filed Feb. 4, 1992, Ser. No. 831,059
Claims priority, application France, Feb. 15, 1991, 91 01841
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—775 **18 Claims**

1. In a steering column device for motor vehicles having a steering-wheel shaft mounted in a body tube by means of two bearings disposed substantially at each end of said body tube, which is supported by holding means near its front end and by holding means near its rear end, said holding means comprising

front support means which is flexible, angularly, in relation to a substantially horizontal transverse articulation axis transverse to said steering-wheel shaft, and

rear support means provided with a vertical movement



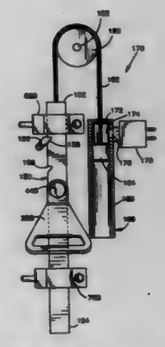
adjustment means for permitting pivoting of said body tube on said front support means, relative to the substantially horizontal transverse articulation axis, so that said steering-wheel shaft is placed in a desired vertical position, said adjustment means including locking means for locking said steering-wheel shaft in the desired vertical position.

5,294,150

PRETENSIONING SAFETY BELT APPARATUS

Charles E. Steffens, Jr., Washington, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 31, 1992, Ser. No. 939,939
Int. Cl.[5] B60R *21/20, 22/46*
U.S. Cl. 280—801 A **23 Claims**



1. An apparatus comprising:

a webbing guide for guiding a length of seat belt webbing relative to the body of a vehicle, said webbing guide having surfaces defining a webbing opening through which the webbing can extend;

a part connected with said webbing guide and movable with said webbing guide, said part having a surface at least partially defining an expansible chamber for receiving fluid;

means responsive to vehicle deceleration at a rate above a predetermined rate for directing fluid under pressure into the expansible chamber to move said webbing guide upward to tension webbing extending through the webbing opening in said webbing guide; and

energy absorbing means for absorbing energy of downward movement of said webbing guide subsequent to upward movement of said webbing guide, comprising fluid outlet means for enabling controlled flow of fluid out of the expansible chamber during downward movement of said webbing guide.

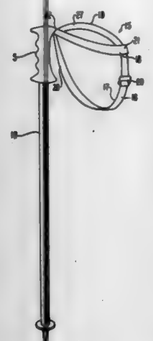
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,151
COMPOSITE SKI POLE
David P. Goode, 1997 Long Lake Shores Dr., Bloomfield Hills, Mich. 48013
Continuation of Ser. No. 448,306, Dec. 11, 1989, abandoned.
This application Apr. 2, 1992, Ser. No. 863,334
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—819 13 Claims



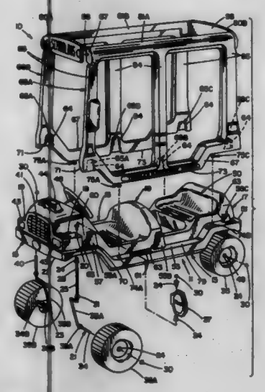
1. A high-tensile strength, lightweight ski pole comprising:
a shaft;
a basket mounted adjacent a first lower end of said shaft;
a tip mounted on said first lower end of said shaft; and
said shaft comprising a filament-reinforced, resin-matrix composite body having a polymeric coating on the outer surface thereof; wherein said outer surface coating comprises a sheath of a polymeric material covering said reinforcing filament and embedded in said resin-matrix.

5,294,152
SKI POLE STRAP
Thomas Jacobs, 630 Glen St., Queensbury, N.Y. 12804
Filed Feb. 27, 1992, Ser. No. 843,283
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—821 12 Claims



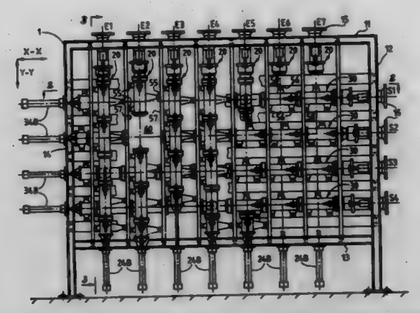
1. A ski pole handle strap for use in combination with a ski pole having a handle grip comprising:
a first retaining means which is gripped by a skier for retaining a skier's wrist in proximity of said ski pole so that the ski pole is not lost while skiing, wherein said first retaining means comprise a main wrist strap forming a main loop of a length to fit around the wrist of a skier, and wherein one end of said main loop is attached to said handle grip of said ski pole; and
a second retaining means for retaining the skier's thumb nearer to said ski pole than said first retaining means such that if said grasp on said first retaining means is lost, the second retaining means retains said ski pole within the grasp of the skier such that the skier can easily recover said grasp, wherein said second retaining means comprise a secondary thumb strap, one end of which is attached to said handle grip of said ski pole, the other end of which is attached to said main wrist strap so as divide said main loop into a first loop sized to fit around the wrist of a skier and a second loop smaller than said first loop sized to fit around the thumb of a skier, whereby the wrist of a skier is retained by the first loop and the thumb of a skier is retained by the second loop, said strap being structurally adapted to be worn on a gloved hand or on a bare hand, whereupon said second loop prevents said pole handle from traveling too far from a skier's grasp to recover a grip on said pole.

5,294,153
RIDING TOY FOR CHILDREN
Robert J. Nolan, Columbus, Miss., assignor to Flexible Flyer Acquisition Corp., Olney, Ill.
Filed Jan. 27, 1993, Ser. No. 9,890
Int. Cl.[5] A63H *17/00*
U.S. Cl. 280—827 11 Claims



1. A riding toy comprising:
an integral chassis having,
a longitudinal axis,
a pair of spaced side rails extending substantially parallel with the longitudinal axis,
front axle tie bar means formed integrally with an extending laterally between the side rails for interconnecting said side rails and providing spaced front lateral spaced vertically extending axle support means, rear axle tie bar means formed integrally with and extending laterally between said side rails for providing rear lateral axle support means,
front seat support means formed integral with and extending between said side rails intermediate said front and rear lateral axle tie bar means,
rear seat means formed integral with said rear tie bar means and said side rails;
each said side rails has spaced side wall support means formed integral with each said front tie bar means, said front seat support means and said rear tie bar means, a longitudinally extending side wall support platform and spaced side wall attaching means;
a pair of side wall means, each of which having chassis support rail means for supporting the side wall means on
the side wall support platform,
locating means formed integral with the side rail means and being complementary with the side wall support means on respective ones of said side rails for locating said side wall means thereon,
first dart means for engaging said side wall attaching means for securing said side wall means with respective ones of said side rails,
roof rail means defining the upper extend of the side wall means and support struts formed integral with and extending between said chassis support rail means and said roof rail means in substantial alignment with the locating means, and
second dart means extending form respective ends of the roof rail means;
a pair of support panel means, each of support panel means having attaching means formed integrally therewith for cooperating with said second dart means for securing the support panel means with said side wall means and for providing upper transverse support for said side wall means; and,
wheel and axle means disposed in said front and rear axle tie bar means for supporting the riding toy on a surface.

5,294,154
TEMPORARY SELECTIVE PIPE CONNECTION APPARATUS WITH MULTIPLE INLETS AND OUTLETS
Eugene Le Devehat, Saligny, France, assignor to FMC Corporation, Chicago, Ill.
Filed Jul. 20, 1992, Ser. No. 915,212
Claims priority, application France, Aug. 21, 1991, 91 10492
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—26 18 Claims



1. A temporary selective pipe connection apparatus with multiple fluid inlets and outlets comprising:
a generally parallelogram-shape frame comprising first and third sides parallel to a first direction, and second and fourth sides parallel to a second direction;
a first series of n coplanar equidistantly spaced parallel tubular lines extending between said first and said third sides parallel to said second direction; and
a second series of m coplanar equidistantly spaced parallel tubular lines extending between said second and said fourth sides parallel to said first direction;
said first and second series of tubular lines having the same inside diameter and being situated in parallel planes offset by a distance L along a third direction perpendicular to both of said first and said second directions;
each tubular line comprising
a string of identical modular sections of which there are at least m—1 modular sections for each line of said first series and at least n—1 modular sections for each line of said second series;
each string being connected at one end to a fixed tubular end section adapted to be connected to a fluid inlet or outlet; and
each string being connected at the other end to a blind end section fixed to a translation control unit;
the fixed end tubular sections of said first and second series being respectively fixed to first and second sides of said frame; and
the translation control units of said first and second series being respectively fixed to said third and fourth sides of said frame; coupling means for coupling each modular section of a string together and for coupling said strings to said fixed tubular end sections and said blind end sections;
said coupling means having a release position whereby the couplings between the modular section, or the couplings between said strings and said fixed tubular end sections or said blind end sections may be temporarily eliminated;
each modular section of one of said series having a length equal to the distance between the lines of the other of said series;
sealing members provided at each interface between modular sections and said fixed and blind end sections;
said modular sections and said blind end section of each line being individually slidably mounted on guide rails parallel to said line, whereby when the coupling between any two sections of a line is temporarily eliminated, movement of the blind end section of said line by its translation control unit away from the fixed end tubular section of said line produces a gap in the line between any of said modular sections or between a modular section and said blind end section;
at least one free connecting member adapted to simultaneously occupy a gap produced in each of said first and said second series;
said free connecting member comprises
a central section adapted to be aligned approximately parallel to said third direction, and two transverse sections respectively attached at opposite ends of said central section and separated by a distance equal to the distance between said first series and said second series of tubular lines, each of said transverse sections adapted to be aligned with one of said first and second directions respectively;
said transverse sections being temporarily fastened to said lines by movement of said blind end sections of said lines toward the fixed end sections of said lines.

5,294,155
CORED HOLE WATERPROOFING APPARATUS
Robert Southwick, 2563 Oakley Dr., Pennsauken, N.J. 08109
Filed Jul. 9, 1992, Ser. No. 910,218
Int. Cl.[5] F16L *3/00, 5/00*
U.S. Cl. 285—64 12 Claims



1. In a waterproofing system for waterproofing a cored hole formed through flooring through which a riser passes, comprising:
(a) a substantially cylindrically shaped and substantially vertically extending sleeve, said sleeve comprised of a body portion and a sealing flange, said body portion having an outside diameter slightly smaller than the diameter of said cored hole and adapted for fitting in said cored hole and extending above said flooring, said sealing flange being connected to said body portion, said sealing flange extending horizontally outward from the periphery of said body portion and having an outside diameter larger than said outside diameter of said body portion and larger than the diameter of said hole, said sealing flange being adapted for placement against said flooring for sealing of said cored hole from water; and
(b) a substantially cylindrically shaped support ring for

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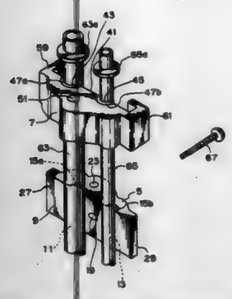
supporting the weight of a riser, said ring being constructed from a material which is more durable than said sleeve and having an inside diameter slightly larger than said outside diameter of said body portion and being adapted for placement around said body portion, said inside diameter of said ring being smaller than said outside diameter of said sealing flange, the lower end of said support ring being adapted for engagement with said sealing flange and the upper end of said support ring extending above the upper end of said sleeve, said support ring being formed from a material capable of withstanding the weight of said riser.

5,294,156

FLANGE COUPLING FOR CONNECTING PIPES FOR CARRYING REFRIGERANT DURING REFRIGERATING CYCLE

Kouzi Kumazaki, Okazaki; Kenji Ogura, Kariya; Hiroshi Imaida, and Tatsuhisa Hayashi, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 20, 1992, Ser. No. 838,100
Claims priority, application Japan, Feb. 20, 1991, 3-26325
Int. Cl.[5] F16L *3/22, 23/02*
U.S. Cl. 285—137.1 **8 Claims**



1. A pipe for carrying refrigerant and having a flange able to be connected to a body adjacent thereto, said body defining a connection surface extending at a right angle to a longitudinal axis of the pipe and an opening extending longitudinally up to said connection surface, said pipe being made from an aluminum material and said flange defining a connection surface arranged to be in face to face contact with the connection surface of the body when the flange is connected to the body, said flange being made of a non-conductive plastic material,

said flange comprising a pair of separate flange sections having end surfaces which are parallel with respect to the longitudinal axis of the pipe and a recess for receiving the pipe, the flange sections being arranged so as to contact with each other at said faced surfaces, while said pipe is fitted to the recess, and at least one screw member which extends substantially transverse to the longitudinal axis of the pipe, said screw member connecting the separate flange sections to each other in such a manner that the pipe is fixed securely between the two flange sections.

5,294,157

ADJUSTABLE SPRINGS FOR PRESSURE VESSEL CLOSURE

John D. Smith, and Joseph Frachtbaum, both of Houston, Tex., assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Mar. 23, 1992, Ser. No. 855,903
Int. Cl.[5] E05C *7/00*
U.S. Cl. 292—25 **5 Claims**

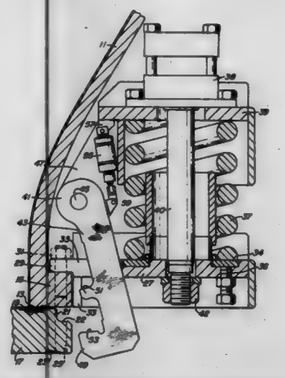
1. A closure device for an opening of a pressure member, the pressure member having an annular flange encircling the opening, comprising in combination:

an annular movable support encircling the pressure member;

retractor means connected to the movable support for moving the movable support axially relative to a longitudinal axis of the pressure member between an engaging position and a releasing position;

a plurality of coil springs spaced around the pressure member, each of the coil springs having one end in engagement with the movable support for axial movement therewith;

a stationary support on the flange for stationarily supporting an opposite end of each of the springs, each of the springs biasing the movable support away from the stationary



support and being further compressed when the retractor means moves the movable support to the releasing position;

a head having a mating surface on one side for abutment with the flange for closing the opening;

hook means spaced around and carried by the movable support for axial movement therewith for lifting the head into abutment with the flange for closing the opening when the movable support is in the engaging position; and

adjusting means for adjusting the bias of each of the springs independently of the other springs.

5,294,158

COLLAPSABLE HANDCART

Chiun J. Cheng, No. 20, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed May 5, 1993, Ser. No. 56,465
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—641 **4 Claims**



1. A collapsable handcart comprising:

a first axle (11) on which a first wheel means (12 and 13) is rotatably mounted;

a second axle (21) on which a second wheel means (22 and 23) is rotatably mounted;

a substantially inverted U-shaped slanted handle member (20) securely mounted on said second axle (21) at two distal ends thereof;

a collapsable basket means comprising:

a first frame member (10) adjacent to said first axle (11),

a second frame member (24) adjacent to and parallel to said first frame member (10),

two side frame members (25) pivotally disposed between said first and second frame members (10 and 24), and

a bottom frame member (26) for supporting articles, having a first side pivoted to a lower portion of said first frame member and a second side pivoted to a bottom portion of said second frame member,

a positioning member (60) extending laterally outward from a lower portion of said first frame member (10);

supporting member (64) extending between lower ends of said inverted U-shaped handle member (20) and above said second wheel means (22 and 23) and below said bottom frame member (26);

a first pair of pivotal members (30) each of which having a first end pivoted to said bottom portion of said second frame member (24) and a second end pivoted to a mediate portion of said handle member (20); and

a second pair of pivotal members (40) each of which having a first end pivoted to the mediate portion of said handle member (20) and a second end, and a rod (50) for connecting said second ends of said second pair of pivotal members (40), each said second pair of pivotal members (40) having a plurality of recessed portions at an upper side thereof;

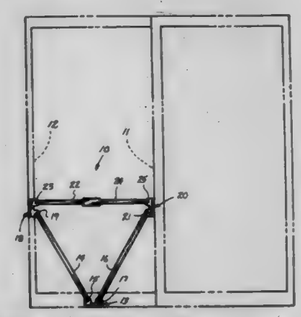
whereby when said positioning member respectively engages with a lowermost one of said plurality of recessed portions, mediate recessed portions, and uppermost one of said plurality of recessed portions in the second pair of pivotal members, the handcart is in a fully extended, partially collapsed, and fully collapsed status, respectively.

5,294,159

SLIDING DOOR LOCK APPARATUS

Gavin J. Corrigan, 2225 N. Broadway #F, Santa Ana, Calif. 92706

Filed Jun. 7, 1993, Ser. No. 72,076
Int. Cl.[5] E05C *17/32*
U.S. Cl. 292—258 **4 Claims**



1. A sliding door lock apparatus, comprising,

a base block, and

a first leg having a first leg first end and a first leg second end, a first leg first axle directed through the base block and the first leg first end and pivotally mounting the first leg relative to the base block, and

a second leg having a second leg first end and a second leg second end, with a second leg first axle directed through the second leg first end and pivotally mounting the second leg to the base block, wherein the first leg first axle and the second leg first axle are arranged in a parallel relationship within the base block, and

a first pivot block and a second pivot block, the first pivot block including a first leg second axle directed through the first leg second end pivotally mounting the first leg to the first pivot block, and a second leg second axle directed through the second leg second end pivotally mounting the second leg to the second pivot block, and

a third leg having a third leg axle positioned within the first pivot block in parallel adjacency to the first leg second axle, including the third leg axle directed through a third leg first end, with the third leg having a third leg second end, including a bifurcated head, and

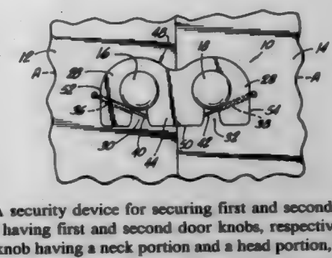
a fourth leg having a fourth leg first end, including a fourth leg axle pivotally mounting the fourth leg first end to the second pivot block, with the fourth leg second end having a projecting rib receivable within the bifurcated head.

5,294,160

SECURITY DEVICE FOR DUAL DOORS

Robert H. Arthur, 1665 Via Estrella, Pomona, Calif. 91768

Filed Jul. 15, 1993, Ser. No. 92,507
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—258 **14 Claims**



1. A security device for securing first and second adjacent doors having first and second door knobs, respectively, each door knob having a neck portion and a head portion, the security device comprising:

(a) a rigid plate disposed substantially between two parallel planes, the rigid plate having a bottom wall, a first side wall and a second side wall;

(b) first and second openings spaced apart from one another in the bottom wall of the plate, the first and second openings having first and second inside walls and first and second outside walls, respectively, contiguous with the bottom wall, the first and second openings being wider than the neck portions and narrower than the head portions of the first and second door knobs, respectively, so that the neck portions fit within the openings and the plate is held in place by the head portions when the plate is installed on the doors;

(c) first and second holes in the first and second side walls, respectively, the first and second holes extending substantially parallel to and between the two planes through the plate and through the first and second outside walls, respectively; and

(d) first and second locking pins slidably disposed within the first and second holes, respectively, the pins being sufficiently long so that, in locked positions of the pins, the first and second pins are capable of extending:

(i) through the first and second holes, respectively;

(ii) into the first and second openings, respectively; and

(iii) below the first and second neck portions, respectively, when the plate is installed,

so that, in their locked positions, the pins prevent the plate from being removed from the doors when the plate is installed on the doors, the first and second pins further having protruding portions extending out of the holes for gripping by a user of the security device.

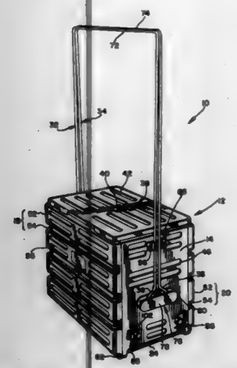
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,161

TENNIS BALL RETRIEVING AND STORING DEVICE

Jacob Stap, Deerfield, Ill., assignor to Ball Haus Products, Inc., Lake Forest, Ill.

Filed Aug. 31, 1992, Ser. No. 938,440
Int. Cl.[5] A63B 47/02
U.S. Cl. 294—19.2 13 Claims



1. A tennis ball retrieving and storing device, comprising:

a container for storing tennis balls, said container including side walls defining a top end and a bottom end, said bottom end including at least a pair of parallel rods spaced from each other a distance slightly less than the diameter of a tennis ball so as to define a ball entry space through which a tennis ball is squeezingly received into said container;

a pair of handles each pivotally connected and extending between opposite side walls of said container for pivotal movement between a handle position extending above said top end and a container supporting position extending below said bottom end, said pair of handles having opposing angular portions converging toward each other below said top end of said container when in said handle position so that said pair of handles extend upwardly from said top end of said container in a closely juxtaposed manner; and

upper locking means for locking said pair of handles in said handle position and lower locking means for locking said pair of handles in said container supporting position,

said upper locking means comprising a projected portion extending outwardly from said side wall defining a pair of laterally spaced locking cavities for receiving and releasably resiliently locking said pair of handles in said close and substantially juxtaposed manner, said projected portion comprising a center upright and a pair of side blocks disposed on opposite sides of said center block, said center block and side blocks being integrally and resiliently formed with said side wall and laterally spaced to each other to define said pair of locking cavities.

5,294,162

GRABBER APPARATUS

Gene Grimes, P.O. Box 102, Shaw, Miss. 38773

Filed Nov. 23, 1992, Ser. No. 980,341
Int. Cl.[5] B66C 1/42
U.S. Cl. 294—110.1 7 Claims

1. A grappler apparatus, comprising:

first and second clamping arms which include trigger-reception regions,

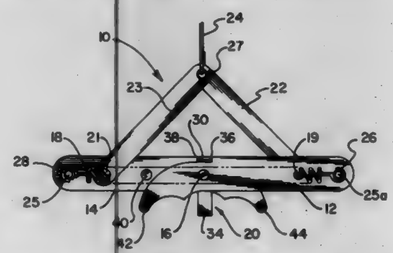
first pivot means, connected to said clamping arms, for permitting said clamping arms to be interchangeably oriented in an open position and a closed position,

spring means, including a first spring end and a second spring end, said first spring end connected to said first clamping arm and said second spring end connected to said second clamping arm, said spring means for providing a closing force for moving said clamping arms from the open position to the closed position,

trigger means, in contact with said trigger-reception regions of said clamping arms, for retaining said clamping arms in the open position and for releasing said clamping arms and permitting said clamping arms to move to the closed position,

wherein said trigger means includes a stop portion, a guide portion, and a trip portion, said trigger means having a first operating position and a second operating position with respect to said first and second clamping arms,

in said first operating position of said trigger means, said stop portion is in a first position which is engaged with said trigger-reception regions of said clamping arms and prevents said clamping arms from moving from the open position to the closed position, said guide portion is in contact with said first pivot means in a first position, and said trip portion is in an untripped first position extending away from said clamping arms, permitting said trip portion to contact an object below said clamping arms,



in said second operating position of said trigger means, obtained after said trip portion has been pushed up by an object below said clamping arms, said trip portion is in a tripped or second position which is out of engagement with said trigger-reception regions of said clamping arms whereby said clamping arms are permitted to close, said guide portion is in contact with said first pivot means in a second position, which is above said first contact position with said first pivot means, and said stop portion is in a second position which is disengaged from said trigger-reception regions of said clamping arms, whereby said clamping arms are permitted to move from the open position to the closed position by a closing force exerted by said spring means,

wherein said stop portion of said trigger means is engaged with topside portions of said clamping arms when said clamping arms are oriented in the closed position, such that said stop portion serves as a first limit stop member for closure of said clamping arms in the closed position, and

wherein one of said first and second clamping arms includes a second limit stop member adapted to engage the other of said clamping arms to limit the degree of openness when said clamping arms are in the open position.

5,294,163

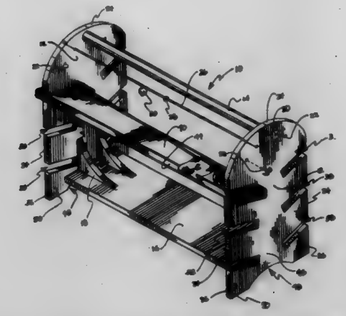
CARRIER DEVICE FOR ICE FISHING APPARATUS

Jeffrey J. Lang, 102A South Dr., Circle Pines, Minn. 55014

Filed Dec. 7, 1992, Ser. No. 986,350
Int. Cl.[5] A45F 5/00; A47F 7/00
U.S. Cl. 294—161 11 Claims

1. A carrier for transporting ice fishing "tip-up" apparatus, said carrier comprising:

(a) a pair of opposite side supports, each of said side supports having a top portion having a plurality of longitudinally aligned apertures, a pair of opposite edges having a plurality of rectangular slots, wherein said plurality of slots of each of said side supports are aligned to each other and said plurality of slots depend centrally inward and downward from said opposite edges, and a lower portion having a depression defining a pair of feet, where said depressions are centrally positioned between said opposite edges of each of said side supports, said feet being positioned proximal to said opposite edges of each of said side supports;



(b) a handle affixed to and traversing between said top portion of each of said side supports;

(c) a rectangular base affixed to each of said side supports above said depressions, said base being centrally positioned between each of said opposite edges of each of said side supports; and

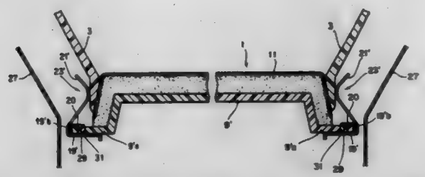
(d) at least two braces affixed to each of said side supports and said base.

5,294,164

INSTRUMENT PANEL MOUNTING STRUCTURE FOR AUTOMOBILE

Tetsuo Shimabara; Yoshikazu Kibayashi; Noriaki Igaki; Katsunari Ose, and Hirotsugu Kondo, all of Hiroshima, Japan, assignors to Nishikawa Kasei Co., Ltd., Japan

Filed Oct. 7, 1992, Ser. No. 957,739
Claims priority, application Japan, Oct. 14, 1991, 3-264867
Int. Cl.[5] B62D 25/14
U.S. Cl. 296—72 4 Claims



1. An instrument panel mounting structure for an automobile including a vehicle body having a pair of front pillar panels and a pair of front pillar trims mounted to said front pillar panels, respectively; said instrument panel mounting structure comprising:

an instrument panel mounted to said vehicle body; and

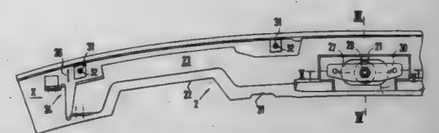
a pair of biasing means mounted to laterally opposite end portions of said instrument panel, respectively, for biasing lower end portions of said front pillar trims inwardly of a cabin of said automobile and urging said lower end portions of said front pillar trims against said laterally opposite end portions of said instrument panel.

5,294,165

DEVICE FOR DAMPING TORSIONAL VIBRATIONS

Hans-Heinrich Kohlmeier, Mönsheim, and Heinz Bayer, Ulm, both of Fed. Rep. of Germany, assignors to Porsche AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 769,367, Oct. 1, 1991. This application Oct. 19, 1992, Ser. No. 962,647
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4030990; Oct. 19, 1991, 4134674
Int. Cl.[5] B60J 1/20
U.S. Cl. 296—96.21 6 Claims



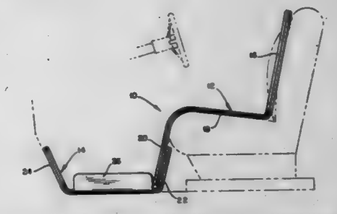
1. Device for damping torsional vibrations in the body of a convertible vehicle, comprising: a damper being mounted elastically on a frame of a windshield by slide bearings and mounted to be freely oscillating at a distance from the frame in the transverse direction of the vehicle, the damper having a frequency equal to the torsional natural frequency of the vehicle in the vicinity of the frame, and the bearings having a sliding resistance determined by their geometry, wherein the slide bearings include at least one central slide bearing on a frame element, with a damping weight having a leaf spring element mounted at each end and mounted to abut the frame element to permit movement of the damping weight in the transverse direction.

5,294,166

PROTECTIVE LINER FOR VEHICLE INTERIOR

Robert K. Shapland, 6033 34th St. W., #53, Bradenton, Fla. 34210

Filed Mar. 1, 1993, Ser. No. 24,515
Int. Cl.[5] B62D 25/00
U.S. Cl. 296—97.23 4 Claims



1. A protective liner for a vehicle interior, the liner having a length and a width and comprising a seat portion covering a vehicle seat, a floorboard portion covering a portion of a vehicle floor in front of the vehicle seat, and means for releasably connecting the seat portion to the floorboard portion.

5,294,167

AUTOMOBILE COVERING DEVICE

Ming-Hui Yu, 3F, No. 692-4, Chung-Cheng Rd., Hsin-Chuang City, Taipei Hsien, Taiwan

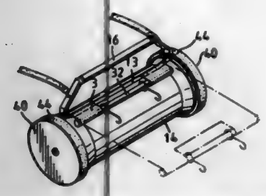
Filed Dec. 8, 1992, Ser. No. 986,981
Int. Cl.[5] B60J 11/00
U.S. Cl. 296—96 7 Claims

1. An automobile covering device comprising:

a hollow cylindrical member having two closed ends, an axial slot and a water outlet formed therein;

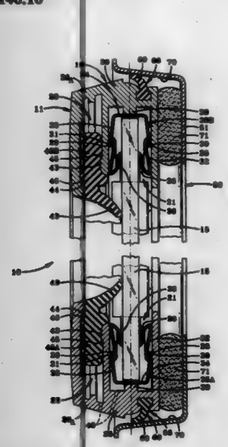
VOL 1160 ISS 3 MR 15 1994 UMI

a U-shaped handle having two ends connected pivotally to said two closed ends of said cylindrical member;
a cylinder with an axial shaft received coaxially and rotatably in said cylindrical member, said axial shaft having two free ends passing through said two closed ends of said cylindrical member, respectively;
two spiral torsional springs mounted respectively on said two closed ends of said cylindrical member, each of said spiral torsional springs having a first end connected to one of said free ends of said axial shaft and a second end connected to one of said closed ends of said cylindrical member;



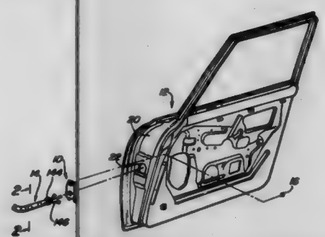
two caps mounted detachably on said two closed ends of said cylindrical member so as to cover said spiral springs;
a roll of cover cloth wound on said cylinder, said cover cloth having a pull end passing through said axial slot of said cylindrical member;
two rollers mounted rotatably on said two closed ends of said cylindrical member, respectively; and
means for fastening said pull end of said cover cloth and said cylindrical member on an automobile.

5,294,168
VEHICULAR WINDOW FRAME ASSEMBLY FOR OPPOSED, SLIDING WINDOW PANES
Clarence W. Kronbetter, St. Joseph, Mich., assignor to Chardon Rubber Company, Chardon, Ohio
Filed Aug. 7, 1992, Ser. No. 926,827
Int. Cl.[5] B60P *3/42*
U.S. Cl. 296—146.16 **6 Claims**



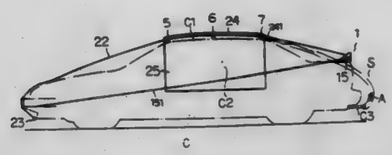
1. A frame assembly for mounting one or more sliding window means in an opening through a body panel of a vehicle, the frame assembly comprising:
a frame having an outer periphery, an inner periphery, an exposed face and a mounting face;
a continuous, first inwardly opening channel in said frame;
a continuous, second inwardly facing channel in said frame;
a continuous, outwardly opening channel in said frame;
a protecting support means having a body portion and a lip portion;
said body portion secured in said outwardly facing channel;
said lip portion extending only outwardly from said body portion prior to installation and engaging the body panel for centering the frame assembly relative to the opening in the body panel after installation;
sliding window means disposed in said continuous, first, inwardly facing channel for movement between closed and open positions;
seal means secured in said continuous, second, inwardly facing channel;
said seal means having lip means for sealingly engaging said sliding window means when said sliding window means is in the closed position; and,
fixed window means disposed in said second inwardly facing channel linearly adjacent said seal means for closing a portion of the frame and overlapping said sliding window means when said sliding window means is moved to the open position.

5,294,169
COVER PLATE
Dhirendra C. Roy, Canton, and Thomas C. Morgan, III, Berkley, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Jul. 30, 1993, Ser. No. 100,126
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—146.5 **8 Claims**



1. A cover plate for use in covering an automotive vehicle body panel having an opening therein defined by a first panel edge therearound with a hole adjacent thereto defined by a second and smaller panel edge therearound, said cover plate comprising:
a substantially flat base having an appearance face and a hidden face thereon bordered by a peripheral edge thereabout, said peripheral edge of said base having a tapered frame integral therewith along at least a majority thereof, said base further having a first portion and an overhanging portion centrally separated by a median portion therebetween;
a pair of somewhat flexible legs having a substantially L-shaped configuration thereto each being defined by a shortened member and an elongated member thereof, each of said shortened members having a distal end thereof affixed to said hidden face of said base thereto, each of said elongated members of said pair of legs having a distal end thereof extending beyond said peripheral edge of said base, a first predetermined portion of said elongated members adjacent to said shortened members being in offset relationship with said overhanging portion of said base so as to define cavities therewithin, said elongated members being angled in orientation toward a plane defined by said base with a second predetermined portion of said elongated members adjacent to said distal ends thereof being closest to said plane;
a wedge ramp having a triangular-shaped segment with a first side thereof being mounted upon said hidden face of said base, a hypotenuse of said wedge ramp intersecting said base near said first portion thereof, said first portion of said base being locationally displaced opposite from said pair of legs attached thereto;
a fastening post protruding from said first portion of said hidden face of said base in a direction substantially normal thereto;
an auxiliary fastener; and
said cover plate covering said opening of said body panel by engagement of said first panel edge between said elongated members of said pair of legs and said overhanging portion of said base therebetween, said cover plate further attaching upon said opening of said body panel by insertion of said fastening post within said hole of said body panel such that said auxiliary fastener can be secured thereto, said wedge ramp locating said cover plate into a desired relationship with said opening such that said pair of legs properly engages said first panel edge thereof.

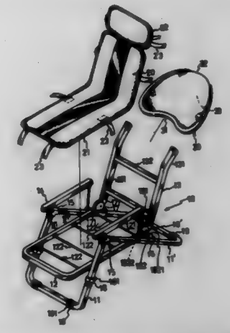
5,294,170
MULTI-PURPOSE AUTOMOBILE REAR SPOILER ASSEMBLY
Chin-Yung Hsueh, 430, Ping Ho Road, Sec. 1, Nan Chen Village, Tien Wei Hsiang, Changhua, Taiwan
Filed Jan. 29, 1993, Ser. No. 10,694
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—180.1 **12 Claims**



1. A multi-purpose automobile rear spoiler assembly, comprising:
a rear spoiler mounted on the tail of an automobile to hold a signal lamp assembly, wherein said rear spoiler comprises an inside chamber to hold a reversing sunshade roller and two automatic return straps with anchoring claw hooks for securing said reversing sunshade roller in an operative position, said reversing sunshade roller comprising a sunshade having one end coupled to a reversing roller inside said inside chamber and an opposite end inserted through an elongated slot on said spoiler and coupled with a slat stopped outside said elongated slot;
an air bag connected to said sunshade at the bottom;
two side panels bilaterally connected to said sunshade and extended out for covering over the door windows of said car; and
means for inflating the air bag.

5,294,171
SAFE MULTI-FUNCTIONAL FOLDABLE LEISURE CHAIR
Min-Liang Horng, No. 11 Minsheng East Road, Section 2, Taipei City, Taiwan
Filed Jul. 13, 1993, Ser. No. 90,239
Int. Cl.[5] A47C *4/00*
U.S. Cl. 297—38 **5 Claims**

1. A safe multi-functional foldable leisure chair comprising a chair frame body, a chair pad disposed on said chair frame body, and a water-guiding pad optionally detachably disposed on said chair frame body, wherein said chair frame body is composed of:
a U-shaped front support leg and a U-shaped rear support leg, said front and rear support legs respectively having upper open sides and lower close sides, said upper open sides being connected with each other while said lower close sides being extended forward and rearward in a stretched state;
a horizontally disposed U-shaped seat frame having an open side which faces rearward, a plurality of first beam members being disposed between two arms of said seat frame, and a second beam member being disposed across said open side of said seat frame, two ends of said second beam member laterally projecting from said open side of said seat frame;
an H-shaped back frame having two lateral column members upper ends of which being slightly bent rearward and lower ends thereof being connected with said open side of said seat frame by angle-adjusting means so that the angle contained by said back frame and said seat frame can be freely adjusted;
two rail members disposed on said connected open sides of said front and rear support legs;
two pivot seats pivotally connected with front ends of said rail members and said open sides of said front and rear support legs, permitting said rail members and said front and rear support legs to be pivoted toward one another through a certain angle;
two fixing sets each of which has a T-shaped fixing rod and a fixing plate, wherein said fixing plate is secured on an inner middle section of said rear support leg and formed with an L-shaped slot having a downward facing hook portion, lower end of said T-shaped fixing rod extending



downward to connect with the end of said second beam member which goes through said L-shaped slot , upper end of said fixing rod being pivotally connected under a rear end of said rail member, whereby when the end of said second beam member is engaged in said hook portion of said L-shaped slot, said chair frame body is prevented from being folded while when the end of said second beam member is slided within said L-shaped slot, said chair frame body can be folded into a small body; and
two front stopper blocks and two rear stopper blocks, wherein said front stopper blocks are disposed on a middle section of said front support leg and said rear stopper blocks are disposed between said fixing means and said rear support legs, whereby when said front and rear support legs are pivoted toward each other, said front and rear stopper blocks prevent the hands of the user that hold said front and rear support legs from being clamped and injured; and wherein
said chair pad is formed by a large cushion and a small cushion connected therewith, a plurality of loop-hook fasteners being disposed along a periphery of said chair pad, whereby the chair pad can be detachably fastened over said chair frame body by means of securing said fasteners with said seat frame and back frame; and wherein
said water-guiding pad is provided with two U-shaped clamping members disposed on a bottom surface of said water-guiding pad, whereby after said small cushion is

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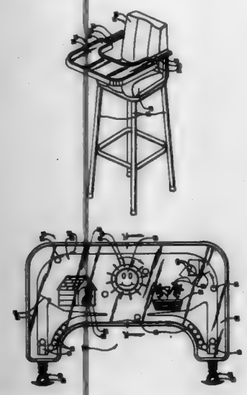
detached from said back frame , said clamping members can be secured on said column members of said back frame to fix said water-guiding pad on said back frame, forming a shampooing chair.

5,294,172

CHILD'S FOOD TRAY WITH SEE-THROUGH ENCLOSED INTERACTIVE ACTIVITY CHAMBER

Susan E. Dubus, R.R. 1, Box 79, Rolfe, Iowa 50581

Filed Sep. 12, 1991, Ser. No. 757,963
Int. Cl.[5] A47B *83/02*
U.S. Cl. 297—148 **18 Claims**



1. A child's seat, including,

a unitary food tray and see through activity chamber rigidly connected to said seat, said food tray having a base covered by a transparent food dish top and defining therebetween a fully enclosed entertainment activity chamber which is totally inaccessible to a child,

activity means in said chamber fully viewable by the child through said transparent food dish top, and

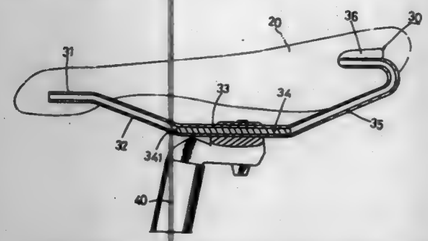
child actuated control means on said tray having a control element totally outside said chamber separably connected to said activity means in said chamber and said control element positioned to be readily accessible by a child in said seat.

5,294,173

SADDLE SUPPORT FOR A BICYCLE SADDLE

Tsai-Yun Yu, Taichung Hsien, Taiwan, assignor to Velo Enterprise Co., Ltd., Taichung Hsien, Taiwan

Filed Jun. 25, 1993, Ser. No. 82,614
Int. Cl.[5] B62J *1/00*
U.S. Cl. 297—195.1 **2 Claims**



1. A saddle support for a bicycle saddle, said saddle support being made of metal and being mounted to a bottom side of said bicycle saddle, wherein the improvement comprises:

said saddle support being a tubular body with a front section which has a substantially horizontal V-shaped portion connected securely to a front section of said bottom side of said bicycle saddle and a diverging portion that has two downwardly inclined arms which extend rearwardly and respectively from two ends of said horizontal V-shaped portion of said front section, a substantially horizontal intermediate section having two parallel arms which extend rearwardly and respectively from distal ends of said downwardly inclined arms, and a rear section having two upwardly inclined arms which extend rearwardly and respectively from distal ends of said parallel arms of said intermediate section, each of said upwardly inclined arms of said rear section having a rear end which supports a rear section of said bottom side of said bicycle saddle; and

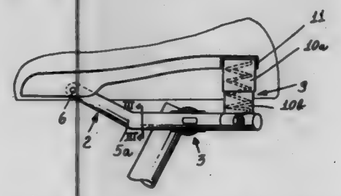
a solid metal reinforcing rod inserted fittingly into each of said parallel arms of said intermediate section, each said reinforcing rod extending between said front section and said rear section of said saddle support in a respective one of said parallel arms.

5,294,174

SAFETY SADDLE FOR BICYCLES, MOTORCYCLES OR THE LIKE

Giuseppe Bigolin, Via Salute 50 Rossano, Veneto, Italy

Filed Dec. 9, 1992, Ser. No. 987,667
Claims priority, application Italy, Dec. 13, 1991, MI91 U 001099
Int. Cl.[5] B62J *1/02*
U.S. Cl. 297—212 **1 Claim**



1. A safety saddle comprising a frame for application to a bicycle or the like, and supporting a framework forming a sitting portion of said saddle, as well as two coil springs arranged between said framework and frame, in order to prevent said framework and frame from moving towards one another, said saddle further comprising a covering element arranged between said frame and framework and covering said coil springs, said covering element comprising two hollow cylindrical bodies which can axially telescopically slide one within the other and coaxially house a respective said coil spring.

5,294,175

VEHICLE SEAT ASSEMBLY WITH A FRONT PANEL

Robert D. Elton, Ann Arbor, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

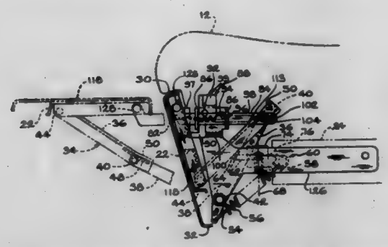
Filed Nov. 19, 1992, Ser. No. 978,746
Int. Cl.[5] B60N *2/42*
U.S. Cl. 297—216.1 **21 Claims**

1. A seat assembly for a vehicle comprising:

a generally horizontal seat cushion having a frame and a front end; and

support means mounted to said cushion for rotation from a stowed position to a generally horizontal support position

in response to a predetermined deceleration of said seat assembly for vertically supporting a seat occupant who



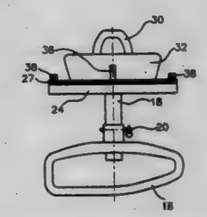
has moved forward off said seat cushion in response to said deceleration.

5,294,176

SEXUAL DEVICE FOR HANDICAPPED MEN

Ruven Asinovsky, 8/60 Habikurim Street, 28 000 Kiryat Ata, Israel

Filed Apr. 6, 1992, Ser. No. 863,885
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—245 **11 Claims**



1. A device for facilitating sexual intercourse of a man having limited mobility of the lower part of the trunk, comprising:

(a) a support characterized in that said support is capable of accommodating under said support the lower part of the trunk of the man, and further characterized in that the lower portion of said support is curvilinear so as to enable said support to rock; and

(b) a seating platform resting on said support, said seating platform being rotatable in the horizontal plane with respect to said support, said seating platform being annular in shape and having a substantially horizontal orientation, said seating platform being capable of accommodating a seated sexual partner of the man.

5,294,177

AUTOMATIC BLOCK FOR ROCKER CHAIRS

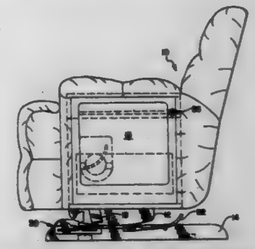
Glen L. Rasnick, and Ronald H. Cordover, both of Morristown, Tenn., assignors to The Berkline Corporation, Morristown, Tenn.

Continuation-in-part of Ser. No. 881,344, May 11, 1992, Pat. No. 5,217,277. This application Dec. 28, 1992, Ser. No. 997,572
Int. Cl.[5] A47C *3/03*
U.S. Cl. 297—270 **13 Claims**

1. In a rocker chair having a base member, rocker means cooperable with the base member and a table concealed in an arm of the chair and pivotable from a substantially vertical stored position to a substantially horizontal operative position,

a stop block slidably mounted on said base member and normally retained in an inoperative position by resilient means so that rocking motion of the chair is unimpeded; and

actuating means connected between said table and stop block whereby pivoting of said table into the operative position automatically slides said stop block into an operative position to arrest forward and backward rocking motion of the chair.

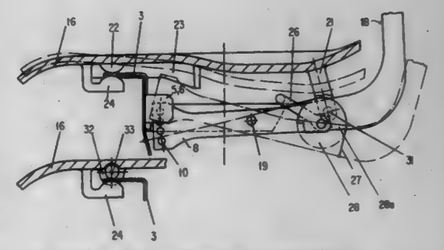


5,294,178

TILT DEVICE FOR SEAT FURNITURE

Dagobert Bögle, Laufenburg; Manfred Schlegel, Küssenberg-Reckingen, and Horst Ziegler, Albbruck, all of Fed. Rep. of Germany, assignors to Christof Stoll GmbH + CO KG, Waldshut-Tiengen, Fed. Rep. of Germany

Filed Nov. 21, 1991, Ser. No. 795,765
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 90124041
Int. Cl.[5] A47C *1/032*
U.S. Cl. 297—301 **9 Claims**



1. A tilt device for seat furniture, comprising:

(a) a base which can be fastened to an underframe of the seat furniture and which serves as a carrier for a seat and a backrest;

(b) an angular backrest carrier with a lower leg and an upper leg, said backrest carrier being rotatably mounted on the base in a middle region of its lower leg by means of a rotary bearing and consisting, at least in its lower leg, of two backrest cheeks arranged parallel to and at a distance from one another;

(c) a seat plate which is supported at least in its front region by the base; and

(d) at least one spring element having one end which is fastened to the base and another end which engages the backrest carrier behind the rotary bearing and exerts an upwardly directed force on the backrest carrier;

wherein:

(e) the base is designed as a narrow closed carrier box which is composed of a plurality of sheet-metal parts and which is arranged between the backrest cheeks; and

(f) the carrier box has on its front side a sheet-metal crossmember which projects laterally beyond the backrest cheeks and which carries the seat plate in its front region;

the tilt device further comprising:

(g) a locking device having a locking pin which can engage into a plurality of locking bores located at the front of the

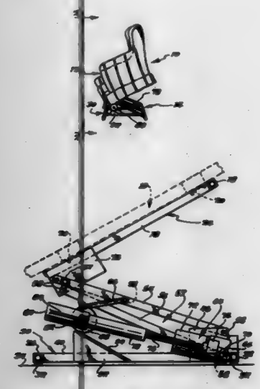
backrest carrier, the locking bores being made directly on the front end of one of the backrest cheeks, and the crossmember having on the side which projects beyond the backrest cheek equipped with the locking bores, two mutually spaced tabs which are perpendicular to the crossmember and in which the locking pin is guided.

5,294,179

RETROFITTABLE CHAIR LIFTING AND TILTING DEVICE

Arnold H. Rudes, Amherst, and Robert F. Hand, Grand Island, both of N.Y., assignors to Hand Machine Company, Inc., North Tonawanda, N.Y.

Filed May 11, 1992, Ser. No. 881,063
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—330 **19 Claims**



15. A retrofittable chair lifting and tilting device which comprises lower main frame means for resting on a support surface; upper supporting platform means for engaging with a chair, said lower main frame means and upper supporting platform means having front and rear sections corresponding respectively to the front and rear of said chair; right and left linking arm means pivotally connected to said lower main frame means and upper supporting platform means for forwardly tilting said upper supporting platform means as it is elevated relative to said lower main frame means; a plurality of cam pairs, each of said cam pairs comprising an upper cam and a lower cam, said upper and lower cams each having an inclined surface positioned opposite to the other between said upper supporting platform means and lower main frame means; roller means for engaging said inclined surfaces, and motor means for advancing said roller means and wedging apart each of said cam pairs to actuate said upper supporting platform.

5,294,180

ADJUSTABLE FOOT REST

Thomas M. Grimm, Robbinsdale, Minn., assignor to Ergodyne Corporation, St. Paul, Minn.

Filed Aug. 12, 1992, Ser. No. 928,977
Int. Cl.[5] A47C *9/12*
U.S. Cl. 297—423.44 **19 Claims**



1. A foot rest for supporting a user's feet, said foot rest being positioned on an generally planar surface, said foot rest comprising:

(a) a generally cylindrical sector support member having an outer surface and an inside surface;

(b) a generally cylindrical sector base member having an outside surface and an inner surface, said inside surface of said support member positioned proximate said outside surface of said base member, said members substantially concentric;

(c) a platform member operatively connected to said support member; and

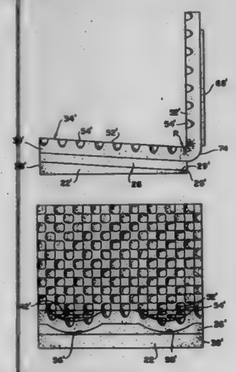
(d) means for locking said members in a plurality of relative positions after relative rotational movement between said members, thereby defining a plurality of heights of said foot rest with respect to the planar surface.

5,294,181

SEAT CUSHION

Robert J. Rose, Chesterfield, and Bruce Sleboda, Midlothian, both of Va., assignors to E. R. Carpenter Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 817,680, Jan. 7, 1992. This application Jan. 21, 1992, Ser. No. 823,536
Int. Cl.[5] A47C *7/18*
U.S. Cl. 297—452.25 **31 Claims**



25. A wheel chair cushion, comprising

a base layer having a front edge and a rear edge;

an intermediate layer secured to an upper surface of said base layer;

a top layer having a bottom surface partially supported by said intermediate layer, said to player including an extended portion extending out away from the intermediate layer, said extended portion being dimensioned and arranged for use as a wheel chair backrest cushion member

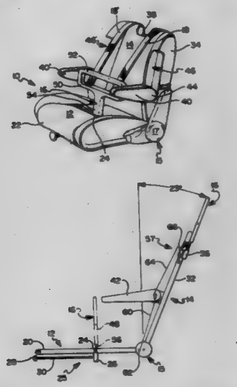
so as to provided a backrest support when said wheelchair cushion is supported by a wheelchair, and wherein said top layer is at least 35% longer in a front to rear direction than said intermediate layer.

5,294,182

CAR SEAT FOR ADULT OR CHILD PASSENGER

Arduino Colasanti, Eastpointe, Mich., assignor to Findlay Industries, Inc., Troy, Mich.

Filed Oct. 8, 1992, Ser. No. 957,993
Int. Cl.[5] A47C *15/00*; B60N *2/30, 2/26*; B60R *21/00*
U.S. Cl. 297—467 **7 Claims**



1. An automobile car seat capable of securing an adult or a child safely thereon, the seat comprising:

(a) a lower portion;

(b) an upper portion pivotally attached to the lower portion;

(c) a pair of spaced apart armrests pivotally attached to the upper section, the armrests being pivotal between an extended position and an upright position, the armrests restraining lateral movement of the child when extended;

(d) a headrest releasably attachable to the upper portion said headrest, in a child supporting configuration, being adapted to be releasably lockable to the lower portion of the chain in front of a sitting child, and

(e) means for restraining forward movement of the child connected between the headrest and the upper portion, whereby when the headrest is attached to the upper portion, the car seat is adapted to support and adult, and when the armrests are in the extended position and the headrest is attached to the lower portion, the car seat is adapted to securely support a child.

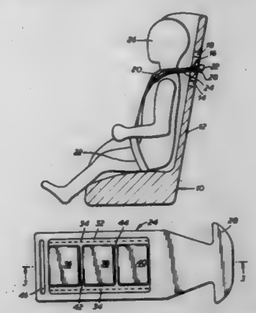
5,294,183

SHOCK ABSORBER FOR VEHICLE SEAT BELT

Hermann Wetter, Ulm, and Waldemar Czernakowski, Blaustein, both of Fed. Rep. of Germany, assignors to Britax Romer Kindersicherheit GmbH

Filed Feb. 14, 1992, Ser. No. 837,341
Claims priority, application United Kingdom, Feb. 23, 1991, 9103841
Int. Cl.[5] B60R *22/16*
U.S. Cl. 297—472 **2 Claims**

1. A shock absorber in combination with a child's safety seat having a shoulder strap projecting through a slot in the seat back, comprising a flexible crushable pad adapted to be positioned between the shoulder strap of a seat belt and the shoulder of a user, and a clip arranged to engage in said slot to secure the crushable pad in a predetermined position in relation to a seat back, the clip being adapted to become detached to permit movement of the pad further from said seat back on application of a predetermined force, wherein the pad is mounted on a flexible backing and the clip comprises an extension of the flexible backing having a T-shaped formation on its end which engages beyond the ends of the slot.

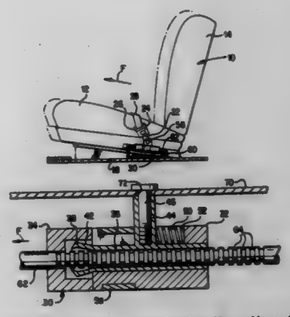


5,294,184

OMNI LOCKING ADJUSTABLE SEAT BELT LOAD TRANSFER MECHANISM

Thomas B. Blake, Mt. Clemens, and Reginald L. McDonald, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1992, Ser. No. 903,297
Int. Cl.[5] A62B *35/00*; A47C *31/00*
U.S. Cl. 297—473 **5 Claims**



1. In combination with a longitudinally adjustable vehicle seat mounted on a vehicle floor, a seat belt anchorage comprising:

a member connected to the vehicle floor and having a rod extending along the path of longitudinal seat adjusting movement, the rod being provided with a plurality of annular grooves along the length of the rod;

a locking device having a housing containing a sleeve member encircling the rod, the sleeve member being normally longitudinally slideable relative to the rod and having a plurality of slits at one end thereof forming a plurality of tooth members having a ramped outer surface, so that movement of the housing relative to the sleeve moves the tooth members into locking engagement with the rod to thereby lock the locking device against longitudinal movement relative to the rod of the member connected to the vehicle floor;

means operatively connecting the seat belt with the locking device so that an occupant restraint load imposed upon the seat belt induces longitudinal movement of the housing relative to the ramped outer surfaces of the tooth

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members of the sleeve to move the tooth members into locking engagement with a groove of the rod whereby the seat belt is fixed relative to the member connected to the vehicle floor and the occupant restraint load is transmitted through the member to the vehicle floor; and

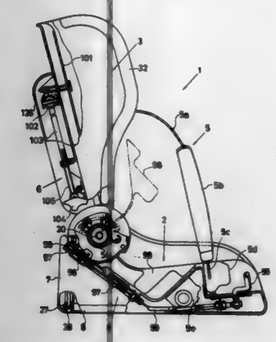
means operatively connecting the seat belt adjustment mechanism with the sleeve of the locking device so that adjusting movement of the seat in either direction will move the sleeve and housing longitudinally relative to the rod with tooth members of the sleeve in a non-locking position to enable free longitudinal adjusting movement of the locking device and the seat belt during adjustment of the seat relative to the vehicle floor.

5,294,185

RESTRAINING PROTECTIVE SEAT FOR INFANTS

Toshiro Koyanagi, and Shizutaka Matsuura, both of Hikone, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,204
Claims priority, application Japan, Dec. 5, 1991, 3-322097
Int. Cl.[5] B60R *21/00, 22/36*
U.S. Cl. 297—484 **1 Claim**



1. An infant-restraining protective seat comprising:

a set portion for seating an infant;

a seat back for supporting the back of the seated infant; and

an infant seat belt device for restraining and protecting the seated infant;

said seat back being provided with a shoulder-belt adjusting device, said shoulder-belt adjusting device having:

a belt guide for guiding shoulder belts of said infant seat belt device up and down;

a screw shaft disposed vertically in the belt guide and having at least its lower end supported for rotation but fixed axially for moving said belt guide up and down;

a torque link, which has one end connected to said screw shaft and its other end arranged so as to perpendicularly intersect the axial direction of said screw shaft, for transmitting rotational torque to said screw shaft; and

an operating knob provided on either the left or right side of said seat back and having the other end of said torque link connected thereto for applying the rotational torque to said torque link.

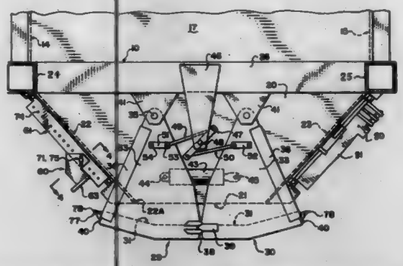
5,294,186

BOTTOM DUMP TRAILER

Camille DeCap, Box 535, Lafleche, Saskatchewan, Canada S0H 2K0

Filed Sep. 29, 1992, Ser. No. 952,986
Int. Cl.[5] B60P *1/56*
U.S. Cl. 298—35 M **13 Claims**

1. A bottom dump trailer comprising a trailer frame, ground wheels for transportation of the frame across the ground, a hopper mounted on the frame for transportation of a pourable solid material including hopper sidewalls converging downwardly and inwardly to an open bottom of the hopper for discharge of the material through the open bottom, a door for opening and closing the open bottom including a door surface and means mounting the door surface suspended from the frame so as to be pivotal about an axis of movement offset from the door surface to one side thereof and arranged above said open bottom, the door thus being pivotally movable from a first position, in which the door surface lies across an underside of the open bottom with a front edge of the door surface in contact with a closure member at a line of contact which is below the open bottom to a second position in which an opening is formed between said front edge and said closure member, drive means for moving said door outwardly from the first position toward one of two opposed sides of the hopper, and



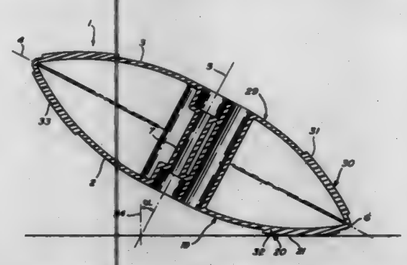
means for halting said movement at a required position, said halting means comprising an abutment member, mounting means mounting said abutment member on a frame member adjacent a respective one of said opposed sides of the hopper, said door having abutment means thereon for engaging said abutment member and movable in a path of movement as said door moves from the first position to the second position, said mounting means including means defining a plurality of selectable locations for the abutment member for engaging the abutment means at different points in its path of movement such that the amount of movement of the door from the first position can be adjusted for adjustment of the size of the opening and moving means for moving said mounting means such that the abutment member is moved out of the path of travel of the abutment means to allow the door to be moved to a maximum open position.

5,294,187

WHEEL USABLE ON GROUND, WATER, AND SNOW

Gérald Racicot, 5521, rue St Joseph, Valcourt, Québec, Canada J0E 2L0

Filed Aug. 31, 1992, Ser. No. 938,068
Int. Cl.[5] B60B *19/06*
U.S. Cl. 301—5.1 **14 Claims**



1. A wheel to be rotatively mounted on a movable object about an axis of rotation defining an acute angle with the vertical, comprising:

a plane of symmetry;

first and second opposite side faces symmetrical with respect to said plane of symmetry, said first and second side faces being both convex and defining respective circular and axially tapering treads centered on said axis of rotation and symmetrical with respect to said plane of symmetry; and

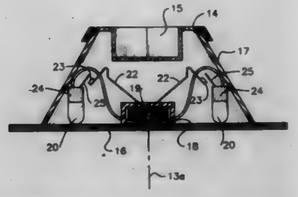
means for rotatively mounting said wheel on the movable object about said axis of rotation where one of said treads is capable of engaging a wheel-supporting surface.

5,294,188

ILLUMINATED ROLLER SKATE WHEEL

Joe F. Vancil, Jr., 3210 Alpha Dr., Paducah, Ky. 42003

Filed Dec. 21, 1992, Ser. No. 994,361
Int. Cl.[5] B60B *5/02*
U.S. Cl. 301—5.3 **2 Claims**



1. An illuminated roller skate wheel, comprising,

a roller skate wheel having a wheel conical cavity, and

an insert housing, the insert housing symmetrically oriented about a housing axis, and

further including an insert base plate, and a transparent forward plate spaced from the base plate, with the base plate mounted at a first end of the insert housing, and the forward plate mounted at a second end of the insert housing, with the base plate and the forward plate symmetrically oriented about the axis, the insert housing further including a truncated conical side wall extending between the base plate and the forward plate, and

illumination means mounted within the insert housing for illumination upon rotation of the wheel, and

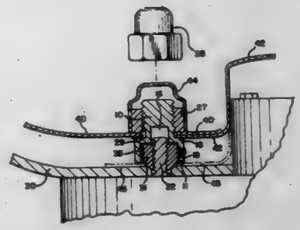
the illumination means includes a battery housing mounted fixedly within the insert housing and symmetrically about the axis, and a plurality of illumination bulbs mounted on opposed sides of the battery housing an equal distance relative to one another, with each illumination bulb including an electrical bulb socket, and each electrical bulb socket including a rigid electrical contact leg, and the battery housing including a battery therewithin, and the battery having a plurality of L-shaped electrical contact support legs positioned in adjacency in a spaced relationship relative to one of said electrical contact legs, and each of the support legs having a support leg free distal end, and each free distal end mounting a weighted electrical contact, whereupon rotation of the wheel effects projection of the weighted electrical contact into electrical communication with one of the rigid electrical contact legs.

5,294,189

WHEEL COVER ATTACHMENT SYSTEM

John A. Price, Syracuse, Ind., and Long C. Hsu, Tainan, Taiwan, assignors to Dicor Corporation, Elkhart, Ind.

Continuation-in-part of Ser. No. 406,680, Sep. 13, 1989, abandoned. This application Oct. 5, 1989, Ser. No. 417,379
Int. Cl.[5] B60B *7/14*
U.S. Cl. 301—37.37 **22 Claims**



1. A decorative wheel cover system comprising, in combination:

a wheel cover element; and

means for mounting the wheel cover element for rotation with a wheel of a vehicle,

said means for mounting comprising means for securely frictionally engaging at least a portion of the outer periphery of a standard vehicle wheel lug nut,

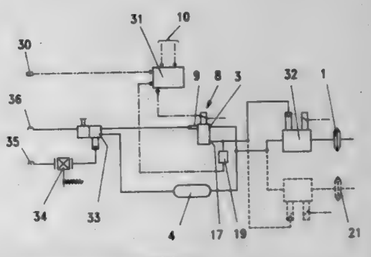
said frictional engaging means including means to selectively cause sufficient friction between said portion of the outer periphery of the lug nut and said frictional engaging means to cause said frictional engaging means to be removably secured to said lug nut.

5,294,190

BRAKE SYSTEM WITH AT LEAST ONE BRAKE CIRCUIT

Joachim Feldmann, Neustadt; Erwin Peterson, Wunstorf, and Manfred Schult, Garbsen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 5, 1991, Ser. No. 664,880
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1990, 4008601; May 22, 1990, 4016463
Int. Cl.[5] B60T *13/68, 8/38*
U.S. Cl. 303—3 **14 Claims**



1. A brake system comprising

a brake-value furnishing unit delivering an electrical actuation signal upon actuation by a driver;

at least one brake circuit having a pressure supply and actuated by feeding-in a brake pressure;

a brake-pressure sensor at said brake circuit;

a mechanical brake-pressure control device furnishing a redundant brake pressure;

an electrical brake-pressure control device comprising at least one brake-pressure modulator which is actuatable by

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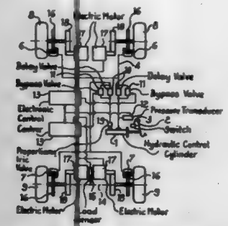
a magnet, wherein said brake-pressure modulator is associated with said brake circuit;
said electrical brake-pressure control device further comprising an electronic control device receiving a brake-pressure signal from said brake-pressure sensor and receiving said actuation signal delivered by said brake-value furnishing unit and transforming said actuation signal into a brake-pressure demand request signal and further controlling a magnetic current delivered to said magnet of said brake-pressure modulator;
said brake-pressure modulator having a first inlet, a second inlet and an outlet at which said brake-pressure modulator furnishes said brake pressure;
said first inlet of said brake-pressure modulator being connected with said pressure supply;
said second inlet of said brake-pressure modulator being connected with said mechanical brake-pressure control device;
said outlet of said brake-pressure modulator being connected with said brake circuit;
said brake-pressure modulator delivering a brake pressure which is composed of a component determined by said redundant brake pressure furnished by the mechanical brake-pressure control device and of a component determined by a value of said magnet current; and
said electronic control device being constructed such that it sets said magnet current to a value required for determining said component of said brake pressure delivered by said brake-pressure modulator determined by a value of said magnet current such that the brake-pressure signal received from said brake-pressure sensor at said brake circuit equalizes the momentary brake-pressure demand request signal.

5,294,191

BRAKING SYSTEM FOR ELECTRICALLY DRIVEN VEHICLES

Alberto Giorgetti; Luigi Cavestro, and Roberto Lavezzi, all of Curno, Italy, assignors to Brembo S.p.A., Curno, Italy

Filed Jul. 23, 1992, Ser. No. 919,365
Claims priority, application Italy, Aug. 2, 1991, BG91 A 000027
Int. Cl.[5] B60T *8/00*
U.S. Cl. 303—3 **10 Claims**



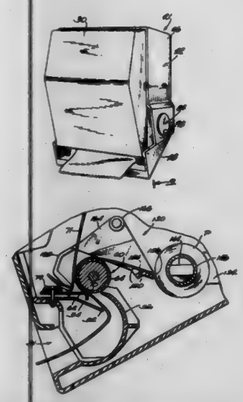
1. In an electrically driven vehicle equipped with a front and a rear axle (14), two front wheels (8), two rear wheels (9), an electric motor (17) on each wheel (8,9), a combined electric-hydraulic brake system for regulating a braking action which comprises: disc brakes (16) located on said front and rear axles, corresponding to each of said front and rear wheels, pads (6,7) located on each of said disc brakes, a hydraulic control cylinder (1), having a pedal (2) for activating said control cylinder, said pedal having a switch (3) for lighting stop lights; said hydraulic control cylinder (1) forming a hydraulical front brake circuit (4) and a rear brake circuit (5), each of said circuits (4) and (5) connecting said control cylinder (1) to said pads (6,7); a delay valve (10) located on each of said hydraulic circuits (4,5), said control cylinder (1) exerting pressure through said pedal (2) on side delay valve (10), an electric bypass valve (11) located on each of said hydraulic circuits (4,5), said electric bypass valve being connected to said delay valve (10), electronic control units (13) connected to said electric motors and operating said electric motors units, said electronic control units actuating said electric bypass valves (11), a pressure sensor (12) connected to said hydraulic control cylinder (1) for detecting the pressure applied to said pedal (2) and signaling said electronic control units (13) in proportion to the pressure sensed to control the electric motors (17) to act as brakes on said wheels (8,9), a proportioning valve (19) located on said rear hydraulic circuit (5), said proportioning valve reducing the pressure to said rear circuit (5) whereby said pressure on the rear hydraulic circuit (5) differs from the pressure applied to said front hydraulic circuit (4).

5,294,192

DISPENSER FOR ROLLED SHEET MATERIAL

Paul A. Omdoll, Waukesha, and Scott J. Collins, Brown Deer, both of Wis., assignors to San Jamar, Inc., Elkhorn, Wis.

Continuation of Ser. No. 668,247, Mar. 12, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 74,170
Int. Cl.[5] B65H *16/00*
U.S. Cl. 312—34.22 **25 Claims**



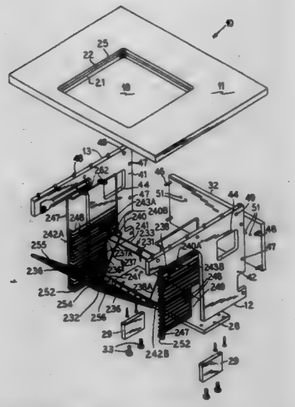
1. A device for dispensing a flexible sheet material having inner and outer surfaces from a roll including a roll core having an outer surface, said device comprising
a cabinet having a back portion, opposed side portions and a cover portion cooperating to define a storage compartment for at least one roll of sheet material, said cabinet including a dispensing opening through which the sheet material is dispensed;
holder means disposed in said storage compartment for supporting a roll of sheet material for rotation to permit the sheet material to be unwound from the roll; and
a feed mechanism disposed in said storage compartment for receiving the sheet material from the roll and dispensing it through said dispensing opening, said feed mechanism including
a drive roller rotatably supported in said cabinet and including a drive section having an outer surface,
drive means for rotating said drive roller in one direction,
a pressure element comprising a finger extending toward the drive section of said drive roller and having an end portion including a dispensing surface engageable with the inner surface of sheet material extending around a portion of said drive roller, and
means for urging the dispensing surface of said finger toward engagement with the outer surface of said drive section so that, when sheet material extends between the dispensing surface of said finger and said drive section, the outer surface of said drive section is in sufficient frictional engagement with the sheet material to cause the sheet material to be unwound from the roll and advanced through said dispensing opening in response to operation of said drive means.

5,294,193

MODULAR DESK WITH ADJUSTABLE MONITOR SUPPORT

Thomas Wegman, and John N. Lechman, both of Effingham, Ill., assignors to Nova Manufacturing & Assembly, Inc., Effingham, Ill.

Continuation-in-part of Ser. No. 693,392, Apr. 30, 1991, Pat. No. 5,125,727, which is a continuation-in-part of Ser. No. 595,864, Oct. 11, 1990, abandoned. This application Oct. 17, 1991, Ser. No. 778,333
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—223.3 **8 Claims**



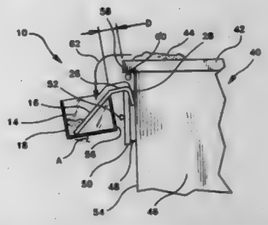
1. A desk comprising in combination
(a) structural components comprising:
(1) a top member having a transparent portion;
(2) a pair of side walls supporting said top member and defining therebetween a space for a monitor support assembly, each side wall having a bottom edge and a rear edge;
(3) a bottom shelf member extending laterally and rearwardly between said bottom edges of said side walls;
(4) a back brace member extending laterally across said rear edges of said side walls; and
(5) mounting means for securing said components together;
(b) a monitor support assembly located generally in said space under said top member and adjacent said side walls comprising:
(1) a shelf member which includes a bottom support portion and a back support portion and having lateral opposite ends;
(2) a pair of side supports, each one positioned adjacent a different one of said lateral opposite ends;
(3) fastening means for securing each one of said side supports to at least one of said structural components; and
(4) adjustable supporting means for engaging each one of said side supports to a different adjacent one of said lateral opposite ends of said shelf member; and
(c) the interrelationship between said structural components and said monitor support assembly additionally being such that each of said side supports is in contacting association with adjacent portions of a different one of said side walls, and also with said top member, said bottom shelf member, and said back brace member.

5,294,194

CATCH CONTAINER

Thomas Lombardo, 35 Burnside Ave., Staten Island, N.Y. 10302

Filed Jun. 1, 1992, Ser. No. 890,763
Int. Cl.[5] A47B *97/00*
U.S. Cl. 312—229 **13 Claims**



1. A catch container for collecting debris material displaced over an edge of a work surface, disposed on top of a cabinet structure containing at least one drawer, wherein an overhang exists between said edge of said work surface and said cabinet structure, said catch container comprising:
a receptacle capable of retaining said debris material without leakage;
attachment means for selectively attaching said receptacle to said drawer, wherein said receptacle is held in a set position relative said cabinet structure; and
a first sloped surface leading into said receptacle, said first sloped surface being disposed below said edge when said receptacle is at said set position, wherein said first sloped surface receives the debris material displaced over said edge and guides said material into said receptacle;
a second sloped surface formed at a different angle than said first sloped surface and coupled thereto, said second sloped surface being formed above said attachment means and positioned below said overhang between said edge and said cabinet structure when said receptacle is at said set position, wherein said second sloped surface receives the debris material that falls from said overhang and guides that material onto said first sloped surface.

5,294,195

COVER FOR THE OUTSIDE ENCLOSURE OF AN AIR CONDITIONING SYSTEM

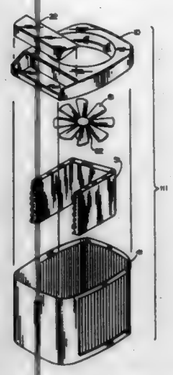
Yehia M. Amr, Manlius, N.Y., and W. Joseph Fallows, III, Windsor, Mass., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,445
Int. Cl.[5] F24F *13/20*
U.S. Cl. 312—236 **2 Claims**

1. An outside enclosure (111) for an air conditioning system comprising:
a side wall (41);
an air-to-refrigerant heat exchanger (51) positioned within said wall;
a fan (61) positioned so as to cause a flow of air through said heat exchanger and said wall; and
a top cover (10) positioned above said wall, said cover comprising
a main body having an outer perimeter (16),
compartment means (21) recessed into said main body,
means (23) for mounting electrical and other components of said air conditioning system in said compartment means,

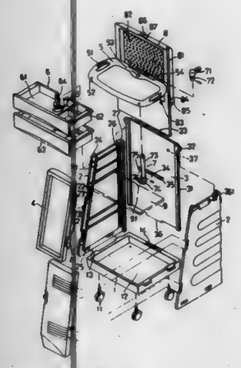
VOL 1160 ISS 3 MR 15 1994 UMI

a compartment closure member (22) adapted to making said compartment means weatherproof and



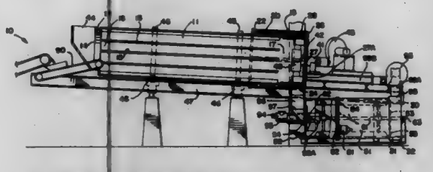
means (17) around said outer perimeter for attaching said cover to said wall.

5,294,196
TOOL CABINET
Chang Chen, Taichung Hsien, Taiwan, assignor to Tung I Enterprise Co., Ltd., Taiwan
Filed Jun. 15, 1993, Ser. No. 77,822
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—263 **8 Claims**



1. A tool cabinet including
a bottom wall having a bottom wall surface which has a plurality of casters fixed thereto, and two oppositely disposed peripheral sides,
two vertical opposed side panels, each of which having a horizontal lower edge connected securely to a respective one of said peripheral sides of said bottom wall, a horizontal upper edge, a front edge, and a column of block projections formed on an inner panel surface thereof, each two adjacent said block projections cooperatively defining a longitudinal groove therebetween,
a back panel interconnecting said two side panels,
two door panels mounted pivotally on said front edge of a respective one of said side panels,
a cover member mounted on said horizontal upper edges of said side panels,
a partition plate mounted on said side panels by engaging slidably selected aligned ones of said longitudinal grooves of said side panels, and
a plurality of drawers mounted on said side panels by engaging slidably remaining aligned ones of said longitudinal grooves,
characterized by:
each of said side panels further having a vertical rear edge which is opposite to said front edge, said inner panel surface of each of said side panels having a first engaging groove which extends downwardly from said upper edge to said lower edge thereof adjacent to said rear edge, and a second engaging groove which extends downwardly from said upper edge to said lower edge between said rear edge and said first engaging groove, said back panel having two opposed vertical edges which engage slidably and respectively said first engaging grooves, said tool cabinet further including a tool suspending panel which has a front surface that is formed with a recess and a tool suspending board on an innermost end of said recess, and two opposed vertical edges that engage slidably and respectively said second engaging grooves.

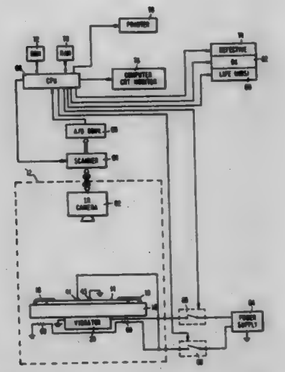
5,294,197
ASPHALT MANUFACTURING ASSEMBLY
Fredric W. Prill, North Aurora, and Robert E. Farnham, Naperville, both of Ill., assignors to Asphalt Product Technologies, Geneva, Ill.
Filed Oct. 29, 1990, Ser. No. 604,962
Int. Cl.[5] B28C *5/46*
U.S. Cl. 366—22 **21 Claims**



1. An asphalt manufacturing assembly comprising:
a rotatable cylindrical dryer drum having a first end and a second end including
a first materials passage means generally positioned at said first end for receiving aggregate, and
a second materials passage means generally positioned at said second end for discharging heated aggregate;
means for moving said aggregate within said dryer drum from said first end to said second end;
burner means generally positioned at said second end for introducing a flame and heat into said dryer drum;
air intake means generally positioned at said second end for introducing combustion air into said dryer drum for said burner means;
exhaust means for permitting the escape of steam and the products of combustion from said dryer drum;
a separate rotatable cylindrical mixer drum spaced externally apart from and separate from said dryer drum having a first end and a second end including
a first materials passage means generally positioned at said first end for introducing aggregate discharging from said dryer drum,
a second materials passage means generally positioned at said first end for introducing liquid asphalt into said mixer drum, and
a third materials passage means generally positioned at said first end for introducing fines into said mixer drum;
a discharge passage means generally positioned at said second end for permitting the discharge of the asphalt mix;
means for mixing and moving the contents within said mixer drum from said first end to said second end; and,

scavenger means for capturing smoke, steam and dust particles discharged from said mixer drum and for feeding said smoke, steam and dust particles into said dryer drum and said flame introduced by said burner.

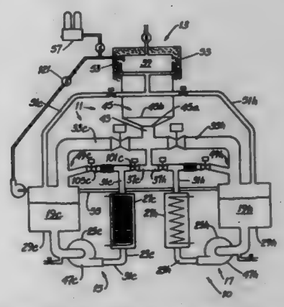
5,294,198
INFRARED INSPECTION SYSTEM AND METHOD EMPLOYING EMISSIVITY INDICATIONS
Jerry G. Schlagheck, West Chester, Ohio, assignor to Cincinnati Electronics Corporation, Mason, Ohio
Filed Oct. 1, 1991, Ser. No. 769,430
Int. Cl.[5] G01N *25/72*
U.S. Cl. 374—4 **19 Claims**



1. Apparatus for analyzing a unit in the form of a device or a structure having differing thermal emissivities at differing regions thereof comprising an infrared camera for monitoring infrared emission from the unit and for deriving a signal having magnitudes representing the infrared emission from multiple pixels in a field of view of the camera, a computer responsive to the signal including: means storing data representing emissivity and standard temperature of the unit at each of the pixels, the stored emissivity and standard temperature data for some of the pixels of the unit differing from the stored emissivity and standard temperature indication of others of the pixels of the unit, means for: (a) combining indications of the infrared emission from the pixels and the stored data representing emissivity of the pixels to derive an indication of monitored temperature of the pixels, (b) comparing the stored data representing standard temperature of each pixel and the indications of monitored temperature of the pixels, and (c) deriving an indication of the deviation between the magnitude of the standard temperature and monitored temperature at the pixels; and means responsive to the indication of the deviation at each pixel for indicating a property of the unit, the property being related to the deviations at the pixels.

5. A method of analyzing a unit in the form of a device or a structure having differing thermal emissivities at differing regions thereof comprising monitoring infrared emission from the unit with an infrared camera so the camera derives a signal having magnitudes representing the infrared emission from multiple pixels in a field of view of the camera, supplying the signal to a computer storing data representing emissivity and standard temperature of the unit at each of the pixels, the stored emissivity and standard temperature data for some of the pixels of the unit differing from the stored emissivity and standard temperature indication of others of the pixels of the unit, the computer responding to the signal and the stored data by (a) combining indications of the infrared emission from the pixels and the stored data representing emissivity of the pixels to derive an indication of monitored temperature of the pixels, (b) comparing the stored data representing standard temperature of each pixel and the indications of monitored temperature of the pixels, and (c) deriving an indication of the deviation between the magnitude of the standard temperature and monitored temperature at the pixels; responding to the indication of the deviation at the pixels for indicating a property of the unit that is related to the deviations at the pixels.

5,294,199
SYSTEM AND METHOD FOR THERMALLY STRESS SCREENING PRODUCTS
Harry D. Boersen; John M. Eldred, both of Holland; Robert K. Hayes, Fruitport; Vince J. Jasinski, Grand Rapids; Kim A. Pattee; Clinton A. Peterson, both of Holland, and David L. Walcott, Zeeland, all of Mich., assignors to Venturedyne, Ltd., Milwaukee, Wis.
Filed Oct. 29, 1992, Ser. No. 968,547
Int. Cl.[5] G01N *3/60*
U.S. Cl. 374—57 **22 Claims**



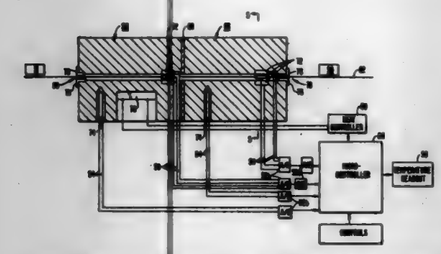
1. In a system having a chamber for stress screening products and tanks separate from the chamber for storing a hot and a cold thermal transfer liquid, respectively, the system using a single type of liquid for alternately transferring heat to and from the products, the improvement wherein the system includes:
a closed loop liquid flow path for circulating liquid across a heat exchanger and maintaining the temperature of the liquid substantially at a predetermined value during product test, the liquid flow path including the chamber and a chamber overflow port;
at least one conditioning loop having a closed flow path which excludes the chamber and around which liquid is circulated to maintain liquid temperature substantially at a predetermined value.

5,294,200
AUTOCALIBRATING DUAL SENSOR NON-CONTACT TEMPERATURE MEASURING DEVICE
Dieter L. Rall, Los Gatos, Calif., assignor to Luxtron Corporation, Mountain View, Calif.
Continuation-in-part of Ser. No. 429,983, Nov. 1, 1989, Pat. No. 5,216,625. This application Mar. 30, 1992, Ser. No. 859,819
Int. Cl.[5] G01K *13/06, 7/02*; G01L *5/04*
U.S. Cl. 374—120 **8 Claims**

1. Apparatus for non-contact measurement of the temperature of a moving filament that is traveling along a linear path comprising:
first and second thermally conductive reference bodies;
means for maintaining said first and second reference bodies at different temperatures;
first and second heat flow sensors carried by said first reference body so that said heat flow sensors are positioned on opposite sides of said filament, wherein said first and second heat flow sensors are substantially matched in

sensitivity and are connected in series, wherein said first and second heat flow sensors are reactive to heat flow to generate a first heat flow output signal that is proportional to the heat flow rate between the filament and the first reference body, and wherein each heat flow sensor has a plurality of heat flow sensitive elements that are linearly positioned so that the first heat flow sensor has a first row of sensitive elements that is not parallel to the path of said filament and the second heat flow sensor has a second row of sensitive elements that is not parallel to the path of said filament;

third and fourth heat flow sensors carried by said second reference body so that said heat flow sensors are positioned on opposite sides of said filament, wherein said third and fourth heat flow sensors are substantially matched in sensitivity and are connected in series, wherein said third and fourth heat flow sensors are reactive to heat flow to generate a second heat flow output signal that is proportional to the heat flow rate between the filament



and the second reference body, wherein the third and fourth heat flow sensors have a plurality of heat flow sensitive elements that are linearly positioned so that the third heat flow sensor has a third row of sensitive elements that is not parallel to the path of said filament and the fourth heat flow sensor has a fourth row of sensitive elements that is not parallel to the path of said filament;

first and second temperature sensors carried by said first and second reference bodies, respectively, wherein said first temperature sensor is in thermal communication with and adapted to generate a first temperature output signal that is proportional to the temperature of the first reference body, and wherein said second temperature sensor is in thermal communication with and adapted to generate a second temperature output signal that is proportional to the temperature of the second reference body; and

means responsive to said first and second heat flow output signals and said first and second temperature output signals for calculating the temperature of said filament.

5,294,201

LINEAR MOTION ROLLING CONTACT GUIDE UNIT USING A ROD RAIL

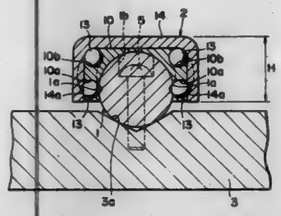
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,175
Claims priority, application Japan, Sep. 2, 1991, 3-246491
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **7 Claims**

1. A linear motion rolling contact guide unit, comprising:

a rod rail having a substantially circular cross section and a pair of inner guide grooves extending in parallel with a longitudinal axis of the rail and formed in a peripheral surface of said rod rail, one of said grooves located substantially diametrically opposite the other of said grooves in a substantially horizontal orientation;

a slider slidably mounted on said rod rail extending around only a part of a circumference of said rod rail and having a pair of guide grooves, each extending in parallel with and in an opposed relationship with a corresponding one of said inner guide grooves to thereby define a pair of guide channels, said slider including an inner sliding member substantially in sliding contact with a top half of the peripheral surface of said rod rail and an outer cover member covering said inner sliding member; and



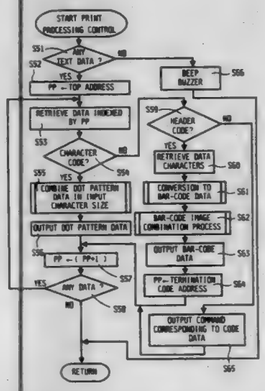
a plurality of rolling members provided in each of said guide channels to thereby provide a rolling contact between said rod rail and said slider.

5,294,202

BAR-CODE PRINTING DEVICE

Akihiro Sawada, Hideo Ueno, and Shoji Sakuragi, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 9, 1993, Ser. No. 28,263
Claims priority, application Japan, Jun. 5, 1992, 4-173845
Int. Cl.[5] B41J *5/00*
U.S. Cl. 400—103 **20 Claims**



1. A bar-code printing device for printing a bar-code having at least a minimum height and for selectively printing characters associated with the bar-code, the device comprising:

inputting means for inputting character data for characters associated with the bar-code including a size of the characters and bar-code data including a minimum height for the bar-code;

memory means for storing the input character data and the bar-code data;

bar-code height adjustment means for adjusting a net height of the bar-code so that the bar-code is printed with at least the minimum height, including total height calculating means for calculating a total height of the bar-code and associated characters, and determining means for determining whether the net height of the bar-code exceeds the minimum height based on the total height and the size of the characters; and

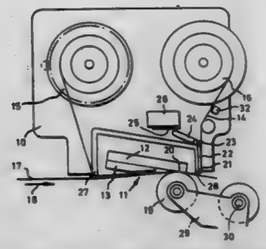
print means for printing the bar-code and for selectively printing the associated characters.

5,294,203

INK RIBBON FEED

Thomas D. Williams, Billericay, United Kingdom, assignor to Alcatel Business Systems Limited, Essex, United Kingdom

Filed Dec. 30, 1991, Ser. No. 814,452
Claims priority, application United Kingdom, Dec. 31, 1990, 9028226.0
Int. Cl.[5] B41J *2/325*
U.S. Cl. 400—120 **3 Claims**



1. Thermal printing apparatus including a print head comprising a plurality of selectively heatable thermal printing elements; means to feed a print receiving medium past the thermal printing elements; a thermal transfer ink ribbon and means to guide said thermal transfer ink ribbon between the thermal printing elements and the print receiving medium, said ribbon having an ink layer adjacent to the print receiving medium; pressure means to urge the print receiving medium into intimate contact with the ink layer of the ribbon and to urge the ribbon into heat transfer relationship with the thermal printing elements, said intimate contact between the ink layer and the print receiving medium being effective to feed the ribbon with the print receiving medium; driven take up means to draw used ribbon from the print head; a guide edge disposed between said print head and said take up means, drive means to drive said take up means to apply tension to said used ribbon in a direction at an angle from the surface of the print receiving medium such that the used ribbon wraps around the guide edge and is drawn from the surface of the print receiving medium; sensing means comprising a pivoted member having a free end engaged by the used ribbon when the ribbon is in a tensioned state to pivot the member to a first position with its free and adjacent said guide edge and means resiliently urging said pivoted member toward a second position in which said free end is spaced away from said guide edge, and said sensing means including means to generate an electrical signal when the member is in one of said positions to control energization of the drive means, said sensing means being responsive to the used ribbon being in a non-tensioned state to energize said drive means and responsive to the used ribbon being in a tensioned state to terminate energization of the drive means.

5,294,204

MULTI-LINE PRINTER FOR SLIPS OR THE LIKE

John G. Clary, 2850 Thorndike Rd., Pasadena, Calif. 91107

Filed Dec. 18, 1992, Ser. No. 993,354
Int. Cl.[5] B41J *13/03*
U.S. Cl. 400—636 **1 Claim**

1. A printer for slips or the like comprising

means forming a vertical guideway into which a slip may be dropped,

means forming a floor against which said slip may limit when dropped into said guideway,

a pair of spaced freely rotatable guide rollers on one side of said guideway,

a shaft on the side of said guideway opposite said guide rollers,

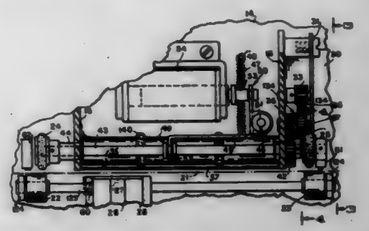
a pair of spaced feed rollers on said shaft opposite respective ones of said guide rollers,

said feed rollers having frictional drive surfaces thereon,

a drive gear,

means supporting said drive gear for rotation about an axis,

a driven gear on said shaft meshing with said drive gear, said drive gear being,



means for guiding said shaft about said axis of said drive gear,

a printing device intermediate said guide rollers for printing a line of print on said slip substantially in line with the line of contact between said feed rollers and said slip,

retainer means normally maintaining said shaft and said feed rollers away from said guide rollers, and

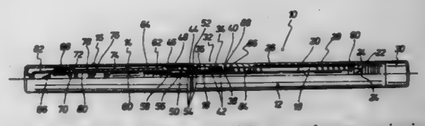
means other than said drive gear for thereafter rotating said shaft in a direction to further engage said feed rollers with said slip and to line feed said slip past said printing device.

5,294,205

APPLICATOR DEVICE

Gerhard Moeck, Kirchenehrenbach, and Robert Finkenauer, Nuremberg, both of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhausser GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 19, 1993, Ser. No. 93,480
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227560
Int. Cl.[5] A45D *40/14, 40/06*
U.S. Cl. 401—70 **12 Claims**



1. An applicator device comprising: an elongate gripping portion having a cavity therein; disposed in said cavity axially movably therein a screwthreaded spindle and an axially immovable nut means through which the screwthreaded spindle is screwable, the nut means having radially resilient screwthread claw means co-operable with the screwthread of the screwthreaded spindle; a casing front portion cooperable with the gripping portion in alignment therewith and having a rearward end part which is towards the gripping portion and said rearward end part having a coupling means for non-rotatable connection to said nut means, whereby said front portion is non-rotatably connected to said nut means and said front portion and said gripping portion are rotatable relative to each other in the assembled condition thereof in which said claw means engage into the screwthread of said screwthreaded spindle and are out of engagement therewith in the condition of the applicator device in which said front portion is removed from said gripping portion; a stick comprising a spreadable material which is disposed in said front portion and which is

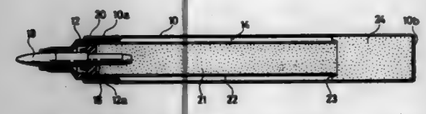
adapted to be moved out of said front portion by means of said screwthreaded spindle; a stick tube accommodating said stick and limitedly axially movable with respect to said front portion; a first spring means operatively disposed between said stick tube and said front portion and adapted to be mechanically stressed upon a forward feed movement of said screwthreaded spindle and mechanically relieved of stress upon a rearward movement of said screwthreaded spindle; and a second spring means disposed in said gripping portion between same and said screwthreaded spindle and adapted to be mechanically stressed upon a forward feed movement of said screwthreaded spindle and operable to move said screwthreaded spindle back into a starting position into said gripping portion when said front portion is removed from said gripping portion.

5,294,206

LIQUID APPLICATION WITH RESILIENT SUPPORT

Tadashi Mukunoki, Toyonaka, Japan, assignor to Kabushiki Kaisha Sakura Kurepasu, Osaka, Japan

Filed Oct. 22, 1992, Ser. No. 964,882
Claims priority, application Japan, Oct. 29, 1991, 3-88765[U]
Int. Cl.[5] B43K *8/02*
U.S. Cl. 401—206 **11 Claims**



1. A liquid applicator comprising:
a cylindrical casing having an opening defined at a lead end thereof and having a bottom wall at a bottom end thereof;
a liquid holding member which is contained in the casing; and
a polyhedral support member provided between a bottom end of the liquid holding member and the bottom wall of the casing, the support member having a modulus of elasticity smaller than that of the liquid holding member and being formed such that vertices of the support member are in pressing contact with an inner circumferential surface of the casing and that the support member is compressively deformable in an axial direction thereof while being held tightly between the liquid holding member and the bottom wall of the casing, wherein the support member is formed of an elastic material.

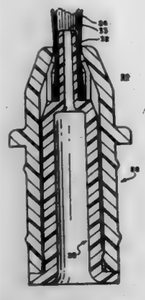
5,294,207

FLOW-THROUGH BRUSH LIQUID APPLICATOR

Richard J. Keating, Mahwah; Harley H. Matthels, Verona, both of N.J., and Jerald R. Melcher, Omaha, Nebr., assignors to Nagi Manufacturing Co., Omaha, Nebr.

Filed Aug. 3, 1992, Ser. No. 924,722
Int. Cl.[5] A46B *3/10, 7/00, 9/02*
U.S. Cl. 401—288 **3 Claims**

1. A flow-through brush applicator comprising:
an inner shell;
an outer shell;
said inner shell having means adapted to receive brushes and an outlet;
said outer shell having a substantially open bottom and an open top of smaller diameter than the open bottom;
said outer shell fitting conformingly over said inner shell with the outlet of said inner shell and brush extending beyond said outer shell, wherein fluid may flow from the interior of the inner shell through its outlet and around the brushes for application;
said brush being preformed as a cylinder with bristles forming an outer wall having a predetermined diameter and said inner shell having a groove with substantially the same diameter, wherein said brush fits within said groove;
clamp means for holding said bristles downwardly against said inner shell;



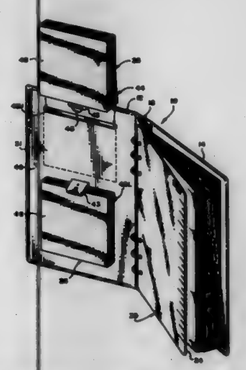
said clamp means including a plurality of segments of a truncated cone and said outer shell having a conical inner wall adjacent to said open top wherein said segments may be forced against said brush by said outer shell.

5,294,208

NOTEBOOK-TYPE PERSONAL ORGANIZER

Richard J. Tremmel, Jr., Secaucus, N.J., and Thomas W. Cushing, New York, N.Y., assignors to Insilco Corporation, Secaucus, N.J.

Filed Dec. 31, 1991, Ser. No. 814,790
Int. Cl.[5] B42F *5/00*
U.S. Cl. 402—70 **26 Claims**



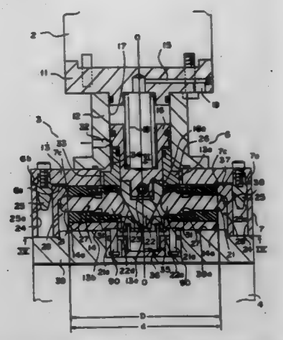
1. A notebook-type organizer comprising a binder having front and rear panels, a plurality of paper pages mounted in said binder upon which information can be inscribed by a user, at least one pad of removable paper sheets removably secured together by a releasable adhesive, said sheets being removable one-at-a-time from said pad, and supporting means for supporting said pad internally of said binder, and means to which the sheets can be attached by said adhesive once removed from said pad, said supporting means comprising a surface having a pocket formed therein, said pocket including a narrow slit which receives a bottom portion of said pad such that said pad bottom portion is covered and retained by a portion of said surface, and an upper portion of said pad lies above said portion of said surface so as to be exposed for being grasped by a user.

5,294,209

TOOL ATTACHING DEVICE

Hirokazu Naka, and Tadashi Hayasaka, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 22, 1992, Ser. No. 917,190
Claims priority, application Japan, Jul. 25, 1991, 3-205615; Jul. 25, 1991, 3-208616; Jul. 25, 1991, 3-208617; Jul. 25, 1991, 3-208618
Int. Cl.[5] B25J *17/00*
U.S. Cl. 403—24 **21 Claims**



1. An attaching device for attaching a tool to a tool manipulating arm comprising:
a) a first attachment member adapted to be affixed to one of the tool and the tool manipulating arm and defining a seating surface;
b) locking means located on the first attachment member
c) a second attachment member adapted to be affixed to the other of the tool and the tool manipulating arm, the second attachment member defining: a recessed portion adapted to receive the locking means therein; a mounting surface; and a cam surface adapted to contact the locking means so as to urge the seating surface and mounting surface into sealing contact so as to hermetically seal the locking means in the recessed portion;
d) non-contact type electrical coupler means operatively associated with the first and second attachment members, the non-contact electrical coupler means comprising a first unit located on the first attachment member adjacent to the seating surface and a second unit located on the second attachment member adjacent to the mounting surface such that the first and second units are adjacent to each other when the first and second attachment members are locked together; and,
e) positioning means operatively associated with the attachment members comprising: a positioning pin located on one of the first and second attachment members; and, a positioning hole defined by the other of the first and second attachment members adapted to receive therein the positioning pin.

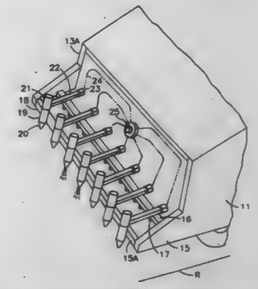
5,294,210

AUTOMATED POTHOLE SENSING AND FILLING APPARATUS

Jerome Lemelson, 868 Tyner Way, Call Box 14-286, Incline Village, Nev. 89450

Filed Jun. 19, 1992, Ser. No. 901,265
Int. Cl.[5] E01C *19/00, 19/18*
U.S. Cl. 404—84.1 **26 Claims**

1. Apparatus for repairing road surfaces and the like comprising:
a carriage;
means for propelling said carriage;
means movable with said carriage for storing filler material;
scanning means arranged on said carriage for scanning a road surface traversed by said carriage;
said scanning means including means for generating scanning signals representative of irregularities along said surface for detecting cavities needing repair;
computer means for receiving, processing and analyzing said scanning signals and for generating control signals responsive thereto;



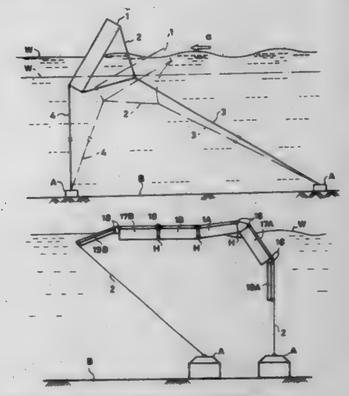
dispensing means coupled to said storing means for dispensing said filler material;
means responsive to said computer means control signals for controlling the flow of filler material to said dispensing means upon the detecting of a surface irregularity; and
means for moving an outlet of said dispensing means relative to said carriage and in a direction substantially parallel to a road surface.

5,294,211

FLOATING WAVE ABSORBER

Masateru Niimura, 6-6-4, Ohmor: Nishi, Ohta-ku Tokyo, Japan

Filed Jul. 7, 1992, Ser. No. 910,869
Claims priority, application Japan, Jul. 8, 1991, 3-263369; Jul. 31, 1991, 3-088182[U]; Aug. 8, 1991, 3-093810[U]; Mar. 19, 1992, 4-112041
Int. Cl.[5] E02B *3/06*
U.S. Cl. 405—27 **5 Claims**



1. A floating wave absorber, comprising:
a main wave-absorber body constructed for floating on the surface of water, said main wave-absorber body having a first end portion and a second end portion;

a first wire having one end connected to said first end portion of said main wave-absorber body and a second wire having one end thereof connected to said second end portion of said main wave-absorber body; said first wire and said second wire each having an opposite end portion;

a first traction member having one end thereof connected to said opposite end portion of each of said first wire and said second wire; said first traction member having another end thereof fixed to an anchor; and

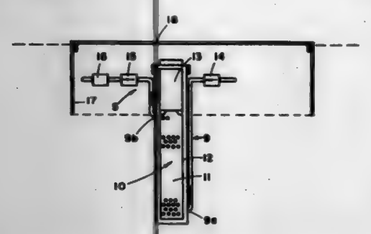
a second traction member having one end thereof connected to a bottom one of said first or second end portions of said main wave-absorber body; said second traction member having another end thereof fixed to another anchor.

5,294,212

IRRIGATION SYSTEMS

Raphael Mehoudar, Tel-Aviv, Israel, assignor to Hydroplan Engineering Ltd., Tel Aviv, Israel

Filed Apr. 8, 1992, Ser. No. 865,100
Int. Cl.[5] E02B *11/00*
U.S. Cl. 405—36 **12 Claims**



1. In an underground drip irrigation system including a drip irrigation line having successive spaced apart drip outlets, an installation for deterring root growth into said outlets comprising an irrigation supply conduit coupled to said drip irrigation line; a bypass having a bypass inlet flow-coupled to an upstream portion of the conduit, a bypass outlet flow-coupled to a downstream portion of the conduit upstream of said drip irrigation line; a single sealed container having a flow inlet flow-coupled to an upstream portion of the bypass, a flow outlet flow-coupled to a downstream portion of the bypass; a flowpath in the container provided between the flow inlet and the flow outlet thereof and extending through at least a major dimension of the container; and a slow release herbicide impregnated material selected for the group consisting of synthetic polymer and rubber and located within said container; said container and said bypass being arranged such that a portion of irrigation flow passes through said container and is controllably dosed with said herbicide and is reintroduced into said conduit to pass through and out of said outlet.

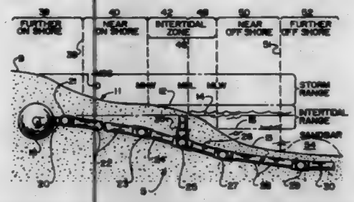
5,294,213

COASTAL STABILIZATION WITH MULTIPLE FLOW CONTROL

James M. Parks, 3509 Merrick Ct., #210, Lexington, Ky. 40502

Continuation-in-part of Ser. No. 696,044, May 6, 1991, Pat. No. 5,149,227, which is a continuation-in-part of Ser. No. 488,683, Mar. 5, 1990, Pat. No. 5,004,117. This application Sep. 21, 1992, Ser. No. 948,050
Int. Cl.[5] E02B *3/02*
U.S. Cl. 405—73 **16 Claims**

1. Coastal stabilization apparatus, comprising a substantially horizontal array of foraminous-walled piping means at or below the subsoil surface, including one such piping means at about maximum storm runup onshore as viewed in plan, each piping means in the array being oriented generally parallel to the shoreline, being adapted to interchange water via its foraminous wall openings with adjacent non-cohesive subsoil, being interconnected via valved non-foraminous piping means, and connected to pumping means whereby the respective foraminous means are adapted to dewater or to fluidize subsoil adjacent thereto and at least one such piping means offshore



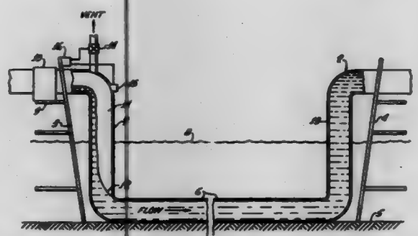
adapted to interchange water with the adjacent body of water via an interconnected valved inlet/outlet pipe directed further offshore.

5,294,214

GAS ELIMINATOR FOR OFFSHORE OIL TRANSFER PIPELINES

Stephen L. Conner, LaFayette, La., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 29, 1992, Ser. No. 891,230
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—158 **25 Claims**



16. An apparatus for transferring a fluid stream, wherein said fluid comprises a substantially liquid component and a less dense component which tends to separate from said liquid component when said stream is under a first set of conditions, which apparatus comprises:

a source of said fluid capable of supplying a stream of said fluid under a range of stream conditions which includes said first condition;

a conduit fluidly connected to said source, said conduit having a zone capable of accumulating mostly separated less-dense component when said stream is at said first set of conditions within said conduit, said conduit also being capable of preventing said accumulating of said less-dense component when said stream is at a second set of conditions within said source range;

a port located in said zone; and

means for removing said mostly less-dense component from said port when said zone is accumulating said less-dense component.

5,294,215

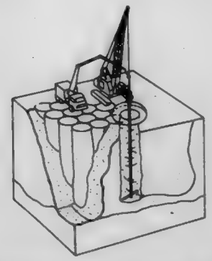
METHOD FOR CONSTRUCTING FOUNDATIONS AND PERIMETER WALLS

V. Dennis Millgard, Orchard Lake, Mich., assignor to The Millgard Corporation, Livonia, Mich.

Filed Dec. 17, 1992, Ser. No. 992,062
Int. Cl.[5] E02D *29/00*
U.S. Cl. 405—266 **1 Claim**

1. Method for constructing in-situ a solid substantial area

foundation characterized by successively sequentially drilling single overlapping equal diameter circular foundation holes within a range of four to sixteen feet in diameter successively filled with solidifying material in a pattern characterized by parallel rows of overlapping holes having centers equally spaced approximately 0.866 times drill diameter in an "X"



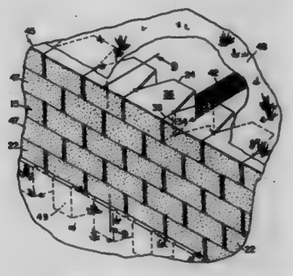
direction, approximately 0.75 times drill diameter in a "Y" direction, and with alternate rows having centers medianly offset from the center of adjacent rows to thereby provide coverage of said substantial area with a mathematically exact minimum number of individual single drill holes having no interstitial spaces.

5,294,216

COMPOSITE MASONRY BLOCK

Dick J. Sievert, New Richmond, Wis., assignor to Anchor Wall Systems, Inc., Brooklyn Park, Minn.

Division of Ser. No. 534,831, Jun. 7, 1990, Pat. No. 5,062,610, which is a continuation-in-part of Ser. No. 413,400, Sep. 28, 1989, abandoned, and a continuation-in-part of Ser. No. 413,050, Sep. 28, 1989, abandoned. This application Feb. 6, 1991, Ser. No. 651,322
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—286 **20 Claims**



1. A retaining wall comprising at least a first lower course and a second upper course, each of said courses comprising one or more composite masonry blocks, each of said masonry blocks comprising:

(a) a block body, said block body comprising a front surface and a back surface separated by a distance comprising the depth of the block, an upper surface and a lower surface separated by a distance comprising the height of the block, and first and second sidewall surfaces adjoining said block upper and lower surfaces—both said first and second sidewall surfaces each comprising a first and second part, said sidewall first part surfaces extending from said block front surface towards said block back surface at an angle of no greater than ninety degrees in relationship to said block front surface, said sidewall second part surface adjoining and lying between said sidewall first parts and said block back surface; and

(b) a flange affixed to the block adjacent said rear surface and extending downwardly from said block body, said flange comprising a locking surface adapted to nest with the next lowest course of blocks, said locking surface extending downwardly from the plane of said block lower surface;

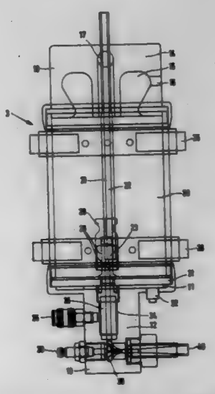
said wall further comprising at least one anchoring matrix interposed between a portion of at least said first course block and a portion of at least said second course block wherein the lower surface of said second course block is positioned on top of the upper surface of said first course block, the block flange of said second course block being positioned adjacent and behind the block back surface of said first course block, said anchoring matrix is distorted by said second course block flange and said matrix is fixed in position between the first and second courses by the distorted interposition of said matrix between said first and second course blocks and the weight of said second course.

5,294,217

APPARATUS FOR FEEDING POWDER COATING APPARATUS WITH A POWDER-AIR MIXTURE

Radovan Talacko, St. Gallen, and Maximilian Matt, Marbach, both of Switzerland, assignors to Wagner International AG, Switzerland

Filed Jun. 11, 1992, Ser. No. 897,086
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121455
Int. Cl.[5] B65G *53/18*
U.S. Cl. 406—91 **9 Claims**



1. An apparatus for feeding powder coating apparatus with a powder-air mixture, comprising a powder reservoir having first fluidization means for fluidizing powder and first conveying means for conveying the powder-air mixture thereby arising to the powder coating apparatus via an intermediate dosing container having separating means for separating the air from the incoming powder-air mixture, second fluidization means for fluidizing the remaining powder, dosing means for dosing the newly produced powder-air mixture and second conveying means for continuous delivery of the dosed powder-air mixture to said powder coating apparatus, said separating means comprising a cyclone formed in a cover of said intermediate dosing container, a powder supply passage for said powder-air mixture coming from the powder reservoir and an opening forming a communication path to the atmosphere for eliminating air constituents of the incoming powder-air mixture, said second fluidization means being accommodated in a floor region of said intermediate dosing container and comprising a fluidiza-

tion floor having a fluidization air entry extending through said floor, wherein said dosing means is downstream of said fluidization floor and comprises a powder dosing chamber wherein a dosing cartridge having dosing air input and finely distributed dosing air discharge is arranged for enriching said powder-air mixture with additional air.

5,294,218

CENTRIFUGAL DISCHARGER FOR WASTE MATERIALS HAVING A LOW WEIGHT/AREA RATIO

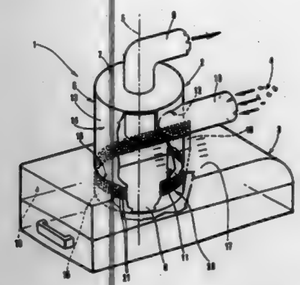
Mauro Fiorentini, Granarolo Emilia, and Bruno Belvederi, S. Martino Di Monte S. Pietro, both of Italy, assignors to G. D Societa' Per Azioni, Bologna, Italy

Filed Apr. 9, 1992, Ser. No. 865,989

Claims priority, application Italy, Apr. 29, 1991, BO91A 000138

Int. Cl.[5] B65G *53/60*

U.S. Cl. 406—173 **4 Claims**



1. A centrifugal discharger (1) for waste material (4) having a low weight/area ratio, said discharger comprising a centrifugal separator (2) having a discharge conduit (19); and a fluid-tight waste bin (3) communicating with said discharge conduit (19); characterized by the fact that the centrifugal separator (2) comprises a cylindrical lateral wall (6) having a vertical axis (5), penetrating in fluidtight manner inside said bin (3), and the centrifugal separator further comprising a bottom portion (15) inside the bin (3); said discharge conduit (19) extending tangentially from said bottom portion (15) of said lateral wall (6); and compensating means (21) being provided for mutually compensating the pressure inside the centrifugal separator (2) and the bin (3).

5,294,219

BALL END MILL

Hidehisa Shiratori; Tatsuo Arai, and Masayuki Okawa, all of Yuuki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

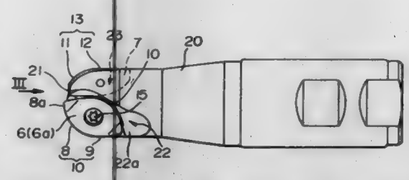
Continuation of Ser. No. 778,588, Oct. 17, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,534

Claims priority, application Japan, Oct. 18, 1990, 2-280109; Dec. 28, 1990, 2-409163

Int. Cl.[5] B23C *5/20*

U.S. Cl. 407—34 **13 Claims**

1. A ball end mill comprising:
a tool body rotatable about an axis,
said tool body having a plurality of tip mounting seats,
a first throw-away tip and a second throw-away tip being removably mounted in said tip mounting seats,
said first throw-away tip having a front face and a rear face being parallel to each other,
one of said front face and said rear face being employed as a cutting face having a main cutting edge disposed at radially outward edge lines thereof,
said second throw-away tip having a front face and a rear face parallel to each other,
one of said front face and said rear face of said second tip being employed as a cutting face having a second cutting edge disposed at radially outward edge lines thereof,
the axial rake angle of said main cutting edge being set at a negative angle,
said main cutting edge having a forward portion and a rearward portion, at least the forward portion being substantially arcuately shaped when viewed from the rotational direction of said tool body and extending so as to intersect with said axis,
said second cutting edge having a positive axial rake angle and a forward end, and being disposed circumferentially remote from said main cutting edge, the forward end being disposed radially outwardly remote from said axis.



5,294,220

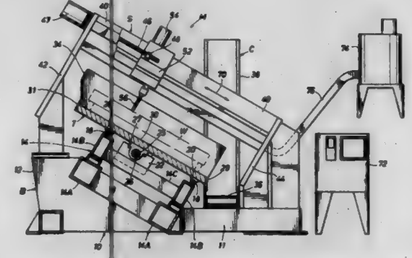
MACHINING APPARATUS

Robert L. Ohmstede, Beaumont; Wesley D. Cawley, Port Neches, and Clifton M. Cawley, Nederland, all of Tex., assignors to Ohmstede, Inc., Beaumont, Tex.

Filed Jun. 22, 1993, Ser. No. 81,817

Int. Cl.[5] B23B *39/00*; **B23C** *1/00*

U.S. Cl. 409—137 **14 Claims**



1. An improved machining apparatus for machining a workpiece, the machining apparatus comprising:
a base assembly;
a table having an upwardly facing work surface inclined at a fixed angle of approximately 30° with the horizontal, said table having an upper edge and a lower edge;
means for laterally displacing said table on said base assembly while fixedly maintaining said work surface at said angle of approximately 30° with the horizontal;
a cross member spanning said work surface, said cross member having a first end and a second end and said first and second ends are non-movably attached to said base assembly;
at least one spindle mounted on said cross member;
means for displacing said spindle along the longitudinal axis of said cross member; and
means for covering at least a portion of said base assembly as said table traverses said base assembly.

5,294,221

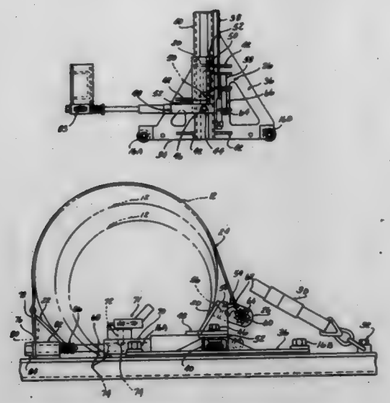
ADJUSTABLE VEHICLE WHEEL RESTRAINT

Donald G. Eller, 2455 Slattery, Attica, Mich. 48412, and Donald A. Eller, 47066 Stephanie, Mt. Clemens, Mich. 48044

Continuation of Ser. No. 905,113, Jun. 26, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 95,065

Int. Cl.[5] B60P *3/00*

U.S. Cl. 410—30 **8 Claims**



1. A vehicle wheel restraint device comprising:
a base plate;
anchor means for fixing said base plate to a supporting floor;
a single guide channel affixed to said base plate extending thereacross in a first transverse direction;
a wheel plate assembly including a pair of aligned wheel plates outwardly angled from each other, one of said wheel plates movable along said guide channel to be located at positions along said guide channel; means mounting the other of said wheel plates in said wheel plate assembly to be adjustably movable towards and away from said one wheel plate in a longitudinal direction normal to said direction in which said single guide channel extends; and,
means for fixing said one wheel plate at locations along said guide channel on said base plate, means for fixing said other wheel plate in any adjusted position relative said one wheel plate, whereby said wheel plates can be fixedly located on said base plate on said supporting floor by transverse adjustment of said one wheel plate along said guide channel on said base plate and the spacing of said wheel plates adjusted by said adjustment of said other wheel plate in said longitudinal direction.

5,294,222

METHOD OF PREVENTING DAMAGE TO PIPE JOINTS DURING SHIPMENT

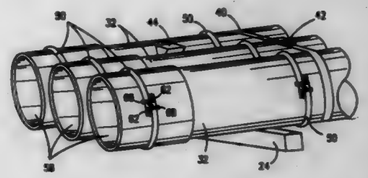
H. Bill Smith, Dallas, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 10, 1992, Ser. No. 849,789

Int. Cl.[5] B60D *7/00*

U.S. Cl. 410—36 **22 Claims**

1. Method of separating adjacent pipe joints from one another with rope rings during shipping, comprising the steps of:
cutting rope into lengths longer than the circumference of the corresponding pipe joints;
wrapping said lengths of rope around said pipe joints so that cut ends of each length of rope adjoin one another; and
securing said adjoining cut ends of each said length of rope to one another over said pipe joints to form rope rings



over said pipe joints, prior to placing said pipe joints in container means for shipment.

5,294,223

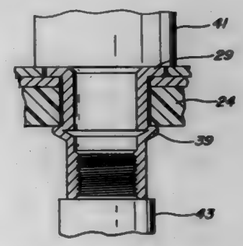
SELF-CLINCHING FASTENER FOR ELECTRICAL COMPONENTS

Ronald W. Phillips, II, Sellersville, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Dec. 23, 1992, Ser. No. 995,881

Int. Cl.[5] F16B *13/04, 37/04*

U.S. Cl. 411—34 **7 Claims**



1. An assembly of parts including a fastener having a head, an elongate shank, and a threaded through-bore, comprising:
a top portion along the length of the shank, including a head at the top and a shoulder extending axially along the shank;
a middle bulge portion of reduced outside diameter beginning at the end of said shoulder prior to deformation and having the least wall thickness of all remaining portions of the fastener;
a bottom portion which is internally threaded, the outer circumference of said bottom portion and said middle portion being equal prior to deformation, but less than the outer circumference of said shoulder;
a through-bore being of one diameter prior to deformation along said top and middle portions and having a smaller diameter in said threaded bottom portion, said bottom portion of said fastener has been diametrically compressed to distort the circularity of the threads, whereby said distorted threads provide a prevailing torque to a screw inserted into said threads;
a bulge caused by deformation of the shank at the end of the shoulder;
said fastener being inserted into aligned apertures of at least two parts and then axially compressed by external forces applied only to the top and bottom ends of said fastener, whereby said parts are held together between the head and said bulge, thus creating a united subassembly of parts.

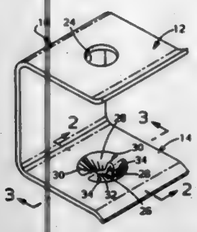
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,224

C-SHAPED FASTENING CLIP WITH IMPROVED STRENGTH

Scott E. Kent, Albion, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1993, Ser. No. 106,747
Int. Cl.[5] F16B *37/02, 37/04, 37/16*
U.S. Cl. 411—174 3 Claims



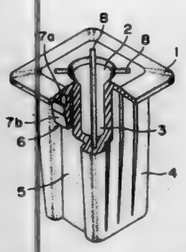
1. In a C-shaped fastening clip of the type having a first wall through which a threaded fastener having a tip and threads passes and an axially opposed, generally planar second wall through which the tip of the fastener extends and into which the threads of the fastener are threadably engaged to draw the two walls toward one another, the improvement comprising:
a hole through the second wall comprising a formed perimeter surface having a generally conical rim sloping down from the second wall to a semi-circular edge spaced from the second wall and also comprising at least one reinforcing corrugation in the conical rim having a generally inverted U-shaped edge continuous with the semi-circular edge and including a bight portion substantially coplanar to the second wall, whereby, when the threaded fastener tip contacts either the corrugation or conical rim, it is thereby funneled toward the circular edge, with threads thereof engaging both the circular edge and the corrugation bight portion so as to bias the walls toward one another.

5,294,225

SYNTHETIC RESIN GROMMET

Hiroshi Kazino; Masaaki Ide, both of Komaki, and Tomiyasu Kakeno, Konan, all of Japan, assignors to K.K. Aoyama Seisakusho, Nagoya, Japan

Filed Nov. 21, 1991, Ser. No. 874,548
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—182 2 Claims



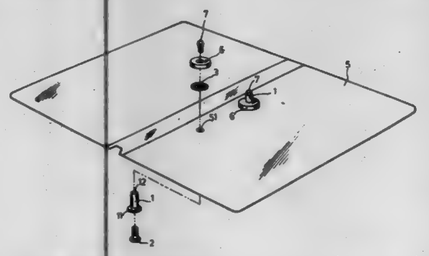
1. A synthetic resin grommet, comprising:
a head portion having a screw insert hole provided in a center thereof;
a bottom portion having a square exterior cross section being connected to a lower surface of the head portion, the bottom portion having a cylindrical hole aligned with the center of said head portion, the cylindrical hole being in communication with the screw insert hole, the bottom portion having a plurality of recessed portions on an exterior surface thereof; and
a plurality of discrete locking claws attached to the lower surface of the head portion, each said locking claw depending substantially freely from said head portion and independently of other locking claws, each locking claw comprising:
a locking step portion formed adjacent to the head portion,
a tapered outer surface portion at an end of the locking claw away from said head portion, and
an inside of each locking claw facing towards and being spaced from a respective recessed portion which receives the locking claw upon being deflected toward said bottom portion.

5,294,226

BOLT BINDER

Han C. Chow, No. 373, Nan Yeau Road, Chang Hwa City, Taiwan

Filed Feb. 26, 1993, Ser. No. 23,695
Int. Cl.[5] F16B *21/00;* B42F *13/12*
U.S. Cl. 411—338 3 Claims



1. A bolt binder comprising:
a bolt having an enlarged proximate end and a distal end, and including a hollow stem with female threads throughout the length of its interior, said bolt being insertable into an aperture punched at an appropriate position of a file;
a cap including a male threaded stud which is threadable into either end of the bolt;
a round head including a male stud which is threadable into the end of the bolt opposite the cap;
a press piece including a cover having a central hole, a recess having a corresponding central hole and a clamp spring received therein, a central clamp portion of said spring being aligned with said central holes of said cover and said recess, respectively so that said press piece readily fits over the bolt and may be moved simply by pushing or pulling the press piece.

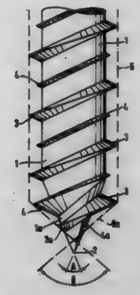
5,294,227

SELF-TAPPING SCREW

Hubert Forster, Moorenweis, and Armin Herb, Apfeldorf, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Liechtenstein

Filed Nov. 23, 1992, Ser. No. 980,006
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138555
Int. Cl.[5] F16B *25/00, 35/04*
U.S. Cl. 411—386 6 Claims

1. Self-tapping screw for use in hard receiving materials such as concrete, masonry, gas concrete and the like, said screw has an axially extending shank with an inwardly tapering leading end section terminating in a punctiform tip, cutting thread means for forming threads in the hard receiving material projects laterally outwardly from said shank and has a leading end located in the tapering leading end shank section and extending around said shank away from the shank tip, said cutting thread means having a thread tip spaced laterally and outwardly from and extending around said shank from the leading end of said cutting thread means, wherein the improvement comprises an imaginary enclosing envelope encircling and contacting said thread tip from the leading end of said cutting thread means and defines a radially outer boundary of



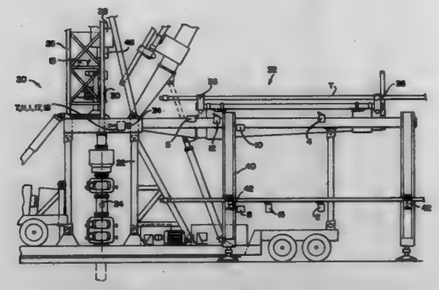
an axially extending annular space enclosing said shank with the envelope adjacent the shank tip comprising an axially extending section tapering inwardly toward the shank tip to the leading end of said cutting thread means and forms a punctiform tip within the tapering leading end shank section, and said cutting thread means comprises two separate threads (3, 4).

5,294,228

AUTOMATIC SEQUENCING SYSTEM FOR EARTH DRILLING MACHINE

Clyde A. Willis, and Jerry K. Lingafelter, both of Wichita Falls, Tex., assignors to W-N Apache Corporation, Wichita Falls, Tex.

Filed Aug. 28, 1991, Ser. No. 750,860
Int. Cl.[5] E21B *19/00*
U.S. Cl. 414—22.55 5 Claims



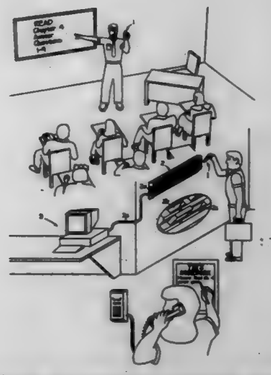
1. In an earth drilling machine of the type comprising a mast, a drive assembly movable along the mast, a boom mounted adjacent the mast to move between a lower boom position and an upper boom position, a plurality of boom clamps mounted to the boom to grip a length of down hole tubular, a tubular storage device at a lower level, and a lifter configured to move a length of down hole tubular between a lower lifter position aligned with the tubular storage device and an upper lifter position aligned with the lower boom position, the improvement comprising:
an automatic sequencing system comprising:
a plurality of position sensors responsive to position of at least the boom, the lifter, and a length of down hole tubular at selected positions;
means, responsive to the position sensors, for automatically coordinating movement of the lifter and the boom such that the boom raises a first tubular from the lower to the upper boom positions and the lifter raises a second tubular from the lower to the upper lifter positions, said boom and lifter being controlled such that movement of the boom overlaps movement of the lifter;
wherein said coordinating means controls the boom and the lifter such that upward movement of the first tubular in the boom overlaps upward movement of the second tubular in the lifter;
said position sensors comprising a plurality of pilot pressure control valves operative to control pilot pressure at least in part in response to position of the boom clamps and the lifter;
said movement coordinating means comprising a plurality of mechanically controlled hydraulic valves responsive to pilot pressure as controlled at least in part by the pilot pressure control valves to automatically open and close the boom clamps, raise and lower the lifter, and raise and lower the boom.

5,294,229

TEACHER AND PARENT INTERACTIVE COMMUNICATION SYSTEM INCORPORATING POCKET SIZED PORTABLE AUDIO NUMERIC TERMINALS

Jonathan Hartzell, 8760-A Research Blvd. #210, Austin, Tex. 78758, and Darrell R. Tenning, 4511-B Smooth Oak Dr., Austin, Tex. 78759

Filed Jan. 27, 1992, Ser. No. 826,475
Int. Cl.[5] G09B *3/00*
U.S. Cl. 434—336 6 Claims



1. An electronic communication method for telephonically relaying from teacher to parent information regarding student homework assignments, comprising in combination:
a plurality of remotely disposed audio-numeric terminals, henceforth referred to as remote terminals, each being self-powered and sufficiently compact in size as to be conveniently portable by way of pocket or purse, and each being assigned to a designated teacher and periodically interfaced with
a dedicated central computer by way of a
terminal storing means, centrally located, for physically storing said plurality of remote terminals and for electronically connecting the terminals to said central computer, each of the terminals being electronically encoded with a unique terminal identification number, and each of the terminals having:
a terminal audio recording and reproducing means for electronically recording and reproducing by way of digital

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representation voiced announcements made by the teacher regarding student homework assignments, said terminal audio recording and reproducing means functionally connected to and operated by

a terminal controlling means for issuing electronic commands to the audio recording and reproducing means, and for receiving, identifying, routing and retrieving various digital data strings provided by the audio recording and reproducing means, said terminal controlling means being responsive to

a terminal manual data entering means for enabling the teacher to enter an appropriate class period number that corresponds with a particular homework assignment to be voiced, and to

a mode selecting means for switching terminal operating power on and for selecting either audio recording mode or audio reproducing mode of said terminal audio recording and reproducing means, said operating power derived from

a self-contained power source for providing electrical power sufficient for all electrical operating power requirements of said terminal, said controlling means also being operatively connected to

a terminal visual display, for presenting visible alphanumeric verification of input-output data and functional status, as well as for presenting procedural instructions to the teacher, and to

a terminal data storing means of sufficient capacity and design to receive, maintain and furnish for retrieval all data directed thereto, as well as to maintain resident data disposed therein representing teacher procedural instructions to be supplied to said terminal visual display via said terminal controlling means, the controlling means also being responsive to

a daily assignment selecting means, for activating and terminating function of said terminal audio recording and reproducing means in the recording mode or reproducing mode designated by said mode selecting means, whereby

the teacher, having taken said remote terminal from said terminal storing means at the beginning of a school day, and now intending to announce a homework assignment to the students in a given class, can remove the terminal from pocket or purse and

engage the mode selecting means to select the recording mode of the audio recording and reproducing means, such engagement causing the mode selection means to also direct operating power to the audio recording and reproducing means as well as to the visual display such that the controlling means can then retrieve from said terminal data storing means the data required to operate the visual display, thereby

causing text to appear via the visual display in the form of a procedural prompt, in this case instructing the teacher to designate the specific class period for which the assignment is to be announced, so that

the teacher is then required to enter via the manual data entering means a single digit response corresponding to the appropriate class period, such response then causing the controlling means to command the visual display to present text that prompts the teacher to

engage said daily assignment selecting means and to begin voicing the intended homework assignment, upon which engagement such

voicing is electronically recorded by the audio recording and reproducing means, while the controlling means causes the visual display to indicate that a voiced homework assignment is being recorded for the class period designated until

the daily assignment selecting means is disengaged, causing termination of such recording process, and furthermore causing the controlling means to append an identifying code to the resulting data string, which has through such procedure been produced by the audio recording and reproducing means and which therefore represents such voicing and which the controlling means then routes to the data storing means for maintenance and subsequent retrieval, such retrieval being immediately executed in the event that

the teacher then selects via the mode selecting means the audio reproducing mode of the audio recording and reproducing means, thereby causing the controlling means to default to the most recently made recording and to retrive such recently stored data and direct such data to the audio recording and reproducing means, thereby causing

an audible reproduction of the voiced homework assignment to be presented for review by the teacher, the controlling means, having also caused the visual display to present textual verification of the class period associated with the voiced homework assignment currently being played, after which review, and after any remaining voiced homework assignment have been recorded for subsequent class periods, the terminal is then placed by the teacher into the centrally located terminal storing means, the storing means having

a data transferring means, for transferring data between said plurality of remote terminals and said central computer, the computer having:

a computer controlling means for receiving, identifying, time dating, routing and retrieving various digital data strings provided by a plurality of sources including said data transferring means, said computer controlling means operatively connected to

a computer time-keeping means, for providing a continuous time reference standard, and to

a computer data storing means of sufficient capacity and design to receive, maintain and furnish for retrieval all data directed thereto, the computer controlling means additionally being responsive to

a computer manual data entering means, for enabling a school administrative staff member operator to enter data representing school class schedules, teacher names, each name corresponding to said unique terminal identification number associated with a given terminal student names with associated student identification numbers, and parent access codes, the computer controlling means also being operatively connected to

a computer visual display, for presenting visual verification of input and output data and operational status as well as for presenting procedural instructions to the staff member operator, the computer controlling means also operatively connected to

a telephone interfacing means, for receiving incoming telephone calls arriving separately or simultaneously via a plurality of discrete paths, for translating tone digit signals thereby received into electronic commands, for directing such resulting commands to the computer controlling means, and for transmitting outgoing analog signals representative of voiced announcements, the computer controlling means also being, operatively connected to

a computer audio recording and reproducing means, including a plurality of submodules, each of said submodules being capable of performing similar yet discrete audio recording and reproduction tasks, for receiving commands from the computer controlling means, for extracting from said computer data storing means data strings specified by such commands, for converting such data strings into analog signals representative of voiced announcements, and for directing such signals to said telephone interfacing means for outbound transmission, the computer controlling means also being operatively connected to

a speech synthesizing means, for converting alpha-numeric data into audio representatives of human speech utterances of such data, whereby

at the end of a given school day each teacher in compliance with established school procedure can return his or her terminal to the terminal storing means, enabling the computer controlling means via the data transferring means to extract from the terminal data storing means all data received therein as a result of the day's operation, and whereby

at the beginning of a given school term, or at any other chosen time, the staff member operator can employ said computer manual data entering means to enter

a parent of a student can establish a telephonic connection to the communication system by using a tone digit dialing telephone and a designated telephone number arranged to establish contact with said telephone interfacing means, causing the computer controlling means to retrieve from the computer data storing means data representing a phonetically spelled greeting and to direct such data to said speech synthesizing means, causing transmission of a resulting synthesized voicing of such greeting that instructs the parent to enter by telephone a tone digit response representing said numeric parent access code, such response resulting in the computer controlling means then causing by similar procedure a synthetically voiced instruction to be transmitted, advising the parent to enter a subsequent tone digit response representing his or her student's student identification number, such response causing the computer controlling means to retrieve from the computer data storing means data relevant to the individual student associated with the student identification number, the computer controlling means then executing a comparsion of the student identification number to the numeric parent access code earlier received, such comparison yielding either compatibility or non-compatibility between both numeric codes, and such comparison procedure being for the purpose of deterring unauthorized telephone acquisition of a given student's class schedule and other student related information, such compatibility, however and therefore, being established, the computer controlling means then retrieves from the data storing means and directs to the speech synthesizing means data strings representing appropriate announcements and procedural instructions, the computer controling means also issuing appropriate commands to said audio recording and reproducing means, with the result that

the parent is telephonically presented with a synthesized voice indicating the student's first name and announcing that a summary of the individual student's homework assignments for the most recent school day, such day and date being cited, is to follow, at which point the synthesized voice continues by announcing the first class period number on the student's schedule, followed by the course title and teacher's name, upon which announcement follows an audio recording of the indicated teacher's voice announcing a homework assignment, such recording having been made via the teacher's remote terminal earlier in the most recent school day during the teacher's actual live announcement to the class, such that, after the audio recording has been presented, the synthesized voice continues by announcing the second class period number, course title and teacher's name, upon which announcement follows, an audio recording of the subsequently indicated teacher's voice announcing an additional assignment such procedure being excuted fully to the point at which all such homework assignments for the individual student have been presented, at which point the parent then terminates the telephone connection.

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5,294,230
METHOD FOR PERMANENT WAVING AND STRAIGHTENING OF HAIR

Maw-Sheng Wu, Lexington, and Mary A. Peace, Chestnut Hill, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 336,252, Apr. 11, 1989, abandoned, which is a continuation of Ser. No. 65,329, Jun. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,588, Apr. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 884,774, Jul. 11, 1986, abandoned. This application Feb. 6, 1992, Ser. No. 831,822

Int. Cl.[5] A61K *7/06, 7/09;* A45D *7/04*

U.S. Cl. 8—127.51 13 Claims

1. The method of waving or straightening human hair consisting essentially of maintaining the hair in curled or straightened configuration and in contact with a first aqueous lotion at pH 5.5 to 7.5 containing dissolved therein a water-soluble mercaptan at a concentration from 0.1 to 1.5 molar together with a member of the group consisting of water soluble sulfite, bisulfite or hydrosulfite at a concentration from 0.1 to 1.5 molar, to impart a curled or straightened configuration to the hair, the molar ratio of said member to said mercaptan being 2.5:1 to 1:2.5and rebuilding the curled or straightened hair by applying to it an aqueous rebuilding lotion at pH 7 to 12 comprising water or water containing an alkaline agent selected from the group consisting of ammonium hydroxide, alkali metal carbonates or bicarbonates, trialkanolamines, and mixtures thereof, said aqueous rebuilding lotion being free from crosslinking, oxidizing or reducing agents.

5,294,231
DYEING PROCESS

Francis Palacin, Riedisheim, France, assignor to Sandoz Ltd., Basle, Switzerland

Filed Dec. 10, 1992, Ser. No. 988,628

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141301

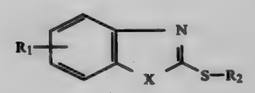
Int. Cl.[5] D06P *3/82*

U.S. Cl. 8—532 10 Claims

1. A process for dyeing a polyester/cellulose or polyamide/-cellulose substrate with at least one disperse dye and at least one metal complex dye selected from direct dyes and reactive dyes, characterized in that,

dyeing is carried out in the presence of a compound of formula I in the dye bath

(I)



in which

X is —S—, —O—, or —NH—;

R_1 is hydrogen, —OH, or C_{1-4}alkyl; and

R_2 is hydrogen, NH_4, or an alkali metal.

5,294,232
PROCESS OF PREPARING SOLID POLYMER ELECTROLYTE TYPE FUEL CELL

Koichi Sakairi, and Yumi Yamamoto, both of Hiratsuka, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan; Stonehart Associates Inc., Madison, Conn. and Masahiro Watanabe, Japan

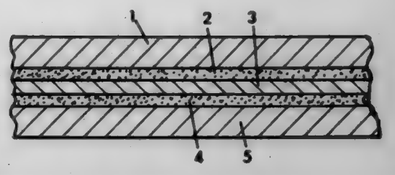
Filed Dec. 31, 1992, Ser. No. 999,303

Claims priority, application Japan, Dec. 31, 1991, 3-359944

Int. Cl.[5] H01M *4/88*

U.S. Cl. 29—623.5 2 Claims

1. A process of preparing a solid polymer electrolyte fuel cell formed by combining a cathode current collector, a cathode containing cathode particles, an ion exchange membrane, an anode containing anode particles and an anode current collector which comprises the steps of reducing a catalyst metal salt in an organic solution of the polymer of the solid polymer electrolyte; depositing the reduced catalyst metal in the solid polymer electrolyte to form the cathode and/or the



anode; interposing the cathode and/or the anode between the respective current collectors and the ion exchange membrane; and pressing the cathode and/or anode, respective current collectors and the ion exchange membrane, for assembling the fuel cell.

5,294,233
ADDITIVE FOR ORGANIC MEDIUM OR THERMOPLASTIC POLYMER

Shizuo Kitahara, Kawaguchi; Hiroyuki Watanabe, Yokohama; Takuji Kishimoto, Yokohama; Tetuya Toyoshima, Yokohama; Takafumi Kawanaka, Yokohama, and Kohkichi Noguchi, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 497,302, Mar. 22, 1990, abandoned, and a continuation-in-part of Ser. No. 477,558, Feb. 9, 1990, abandoned. This application Jul. 31, 1991, Ser. No. 738,603

Claims priority, application Japan, Feb. 10, 1989, 1-32198; Mar. 22, 1989, 1-69458; Apr. 28, 1989, 1-109499; Apr. 28, 1989, 1-109500; Jul. 31, 1989, 1-199113; Aug. 11, 1989, 1-206856; Dec. 28, 1989, 1-342197; Jan. 5, 1990, 2-101; Jan. 9, 1990, 2-2311; Feb. 2, 1990, 1-23775

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—334 13 Claims

1. A stabilized fuel oil dispersion comprising a particulate substance dispersed in a fuel oil and a dispersion stabilizing effective amount of an additive comprising at least one oligomeric or polymeric compound having a



bond in the molecule, said additive having a weight average molecular weight of 100 to 300,000 and being compatible with the fuel oil.

5,294,234
FUEL COMPOSITIONS OF NOVEL ETHYLENE ALPHA-OLEFIN POLYMERS SUBSTITUTED AMINE DISPERSANT ADDITIVES

Jacob Emert, Brooklyn, N.Y.; Alan M. Schilowitz, Highland Park; Antonio Gutierrez, Mercerville, N.J., and Wen R. Song, Short Hills, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 473,580, Feb. 1, 1990, Pat. No. 5,225,092. This application Feb. 25, 1993, Ser. No. 23,222

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—412 20 Claims

1. A fuel composition containing from about 0.001 to 0.5 wt% of an additive which comprises an ethylene alpha-olefin polymer substituted with at least one amine compound, wherein said amine compound is directly attached to the backbone of the polymer, wherein said polymer comprises monomer units derived from ethylene and at least one alpha-olefin of

the formula $H_2C{=}CHT^1$ wherein T^1 is an alkyl group of from 1 to 18 carbon atoms, wherein said polymer has a number average molecular weight of from about 300 to 20,000 and an average of at least about 30% of said polymer chains contain terminal ethenylidene unsaturation prior to being substituted with said amine compound, and wherein said additive is characterized by a VR value of less than about 4.1.

5,294,235

DEVICE FOR THE SUPPLY, DISTRIBUTION AND MOISTENING OF GAS IN A GAS-CLEANING OR DECOMPOSITION INSTALLATION

Hugo Stiltzle, Alte Strasse 26, W 7900 Ulm/Donau, Fed. Rep. of Germany

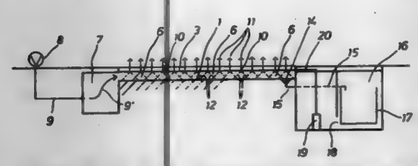
PCT No. PCT/DE92/00009, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO93/05863, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 21, 1992, Ser. No. 64,100

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131893

Int. Cl.[5] F26B *17/00*

U.S. Cl. 55—228 **11 Claims**



1. Device for the supply, distribution and moistening of gas in a gas-cleaning or decomposition installation, with at least one gas distribution plate (2) equipped to receive bulk material, which has gas outlet openings (10) distributed over the plate surface, further with one or more gas distribution chambers (6) provided on the bottom side of the gas distribution plate (2) in contact with the gas outlet openings (10), connected to one or more gas supply lines (9) and with spray nozzles to which water can be fed for moistening the gas, characterized in that the spray nozzles are distributed over the plate surface underneath the gas distribution plate (6) (sic) and abut directly into the gas distribution chambers (6).

5,294,236

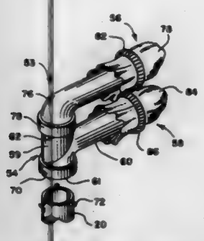
EFFLUENT METERING SYSTEM

Thomas E. Baird, Springfield, Ill., assignor to Baird Meter Inc., Springfield, Ill.

Filed Mar. 10, 1993, Ser. No. 32,828

Int. Cl.[5] B01D *35/02*

U.S. Cl. 55—270 **20 Claims**



1. In a vacuum cleaning appliance having a housing with an opening through which matter is a drawn by a vacuum and an outlet port through which matter drawn into the housing is discharged outwardly thereof into a collection receptacle, the improvement comprising an adapter interchangeable with the collection receptacle for connecting an effluent metering device and a supplemental effluent metering device to said air outlet port, said adapter comprising:

a tubular shell defining an inlet for receiving effluent carrying air discharged from the outlet port of said vacuum cleaning appliance,

a first outlet for exhausting air into said effluent metering device, and

a second outlet for exhausting air into said supplemental effluent metering device; and

means for connecting said first outlet to said effluent metering device and said second outlet to said supplemental effluent metering device externally of said housing to facilitate observation of effluent received in said effluent metering device and said supplemental effluent metering device.

5,294,237

PROCESS FOR PRODUCING FLAKES OF GLASS

Toshiaki Mizano; Takashi Yamagishi; Koji Yokoi, and Kazuhiro Doushita, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Division of Ser. No. 741,496, Jul. 31, 1991, Pat. No. 5,201,929. This application Nov. 5, 1992, Ser. No. 971,546

Claims priority, application Japan, Mar. 9, 1990, 2-58519; Jun. 4, 1990, 2-145959; Jun. 11, 1990, 2-152355; Jul. 2, 1990, 2-174937

Int. Cl.[5] C03B *19/12*

U.S. Cl. 65—21.1 **16 Claims**

1. A process for producing amorphous or crystalline flakes absorbing ultraviolet radiation, comprising,

preparing an organic silicon compound, an alcohol for solving the organic silicon compound, a compound effective in imparting capability to absorb ultraviolet radiation, said compound being soluble to the alcohol in which the organic silicon compound is solved and containing a material selected from the group consisting of iron, cerium, titanium, vanadium, chromium, uranium, lead and zinc, and water for hydrolysis of the organic silicon compound,

mixing the organic silicon compound, alcohol, compound for absorption of ultraviolet radiation and water together so that hydrolysis of the organic silicon compound occurs and polymers containing said material for absorption of ultraviolet radiation grow to thereby form a solution,

applying the solution onto a substrate,

drying the solution on the substrate to form a film containing the material for absorption of ultraviolet radiation and silicon, said film, while drying, shrinking and cracking on the substrate to thereby form flakes, and

heat-treating the flakes to form the amorphous or crystalline flakes, 0.1–70 wt % of an oxide with said material for absorption of ultraviolet radiation being included in the flakes.

5,294,238

GLASS SUBSTRATE FOR A SEMICONDUCTOR DEVICE AND METHOD FOR MAKING SAME

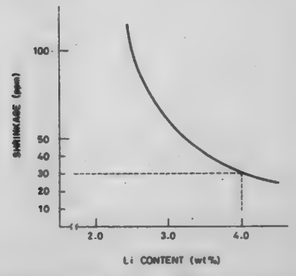
Takeshi Fukada, and Naoya Sakamoto, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 18, 1992, Ser. No. 852,518

Claims priority, application Japan, Mar. 27, 1991, 3-087773; Feb. 5, 1992, 4-054321

Int. Cl.[5] C03C *17/34;* **C03B** *25/00*

U.S. Cl. 65—60.2 **8 Claims**



1. A method of making a glass substrate for a semiconductor device, said method comprising:

adding more than 4% by weight of lithium to a molten glass material to form a lithium containing glass material;

forming a glass substrate from said lithium containing glass material;

thermal annealing said glass substrate in order to shrink said glass substrate prior to preparing said semiconductor device on said glass substrate; and

preparing said semiconductor device on said glass substrate.

5,294,239

NICKEL-BASE SUPERALLOY

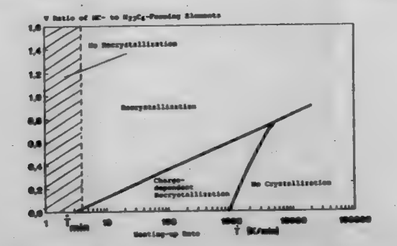
Klaus Zoltzer, Wollstadt; Klaus Lempenauer, and Hellmut Fischmeister, both of Stuttgart, all of Fed. Rep. of Germany, assignors to PM Hochtemperatur-Metall GmbH, Frankfurt, Fed. Rep. of Germany

Filed May 6, 1991, Ser. No. 695,855

Claims priority, application Fed. Rep. of Germany, May 7, 1990, 4014614

Int. Cl.[5] C22C *29/06*

U.S. Cl. 75—237 **4 Claims**



1. A nickel-base superalloy for use in making section bars and shaped bodies having a coarse structure which consists of columnar grains and has been produced by a heat treatment wherein the maximum heating-up rate $\dot{T}_{max}$ employed until the recrystallization temperature has been reached is selected from dependence on the ratio V of one or more of the metal carbide-forming elements (MC-forming elements) hafnium, niobium, tantalum, titanium and zirconium to one or both of the metal carbide-forming elements ($M_{23}C_6$) molybdenum and tungsten because the maximum heating rate $\dot{T}_{max}$ increases as the ratio V increases, the ratio V of MC-forming elements to $M_{23}C_6$-forming elements

$$\frac{2.4\ Hf + 1.4\ Nb + 1.3\ Ta + 1.0\ Ti + 0.5\ Zr\ (atom\ \%)}{Mo + W\ (atom\ \%)} \geq 0.4.$$

5,294,240

METHOD OF FORMING WAVEGUIDES WITH ION EXCHANGE OF HALOGEN IONS

Jasbinder S. Sanghera, Greenbelt, Md.; Pablo C. Pureza, Burke, and Ishwar D. Aggarwal, Fairfax Station, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1992, Ser. No. 937,765

Int. Cl.[5] C03C *21/00*

U.S. Cl. 65—3.14 **10 Claims**

3. A process for treating an article comprising halogen-containing glass containing glass containing halogen ions, comprising the steps of

heating the article to a temperature above a glass transition temperature of the halogen-containing glass but below a crystallization temperature of the halogen-containing glass;

contacting the article with a reactive medium containing halogen ions of higher electronegativity than the halogen ions in the glass for a sufficient duration to replace at least some of the halogen ions in the glass; and cooling the article.

5,294,241

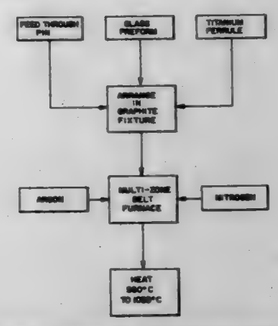
METHOD FOR MAKING GLASS TO METAL SEALS

William J. Taylor, Anoka; Joseph F. Lemar, Coon Rapids; Weiss J. Douglas, Plymouth, and Charles N. Wilson, Maple Grove, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 19, 1993, Ser. No. 19,946

Int. Cl.[5] C03C *27/04*

U.S. Cl. 65—59.31 **10 Claims**



1. A method for making a seal between a sealing glass material and a titanium article comprising the steps of:

a. forming a titanium nitride layer on a surface of the titanium article; and

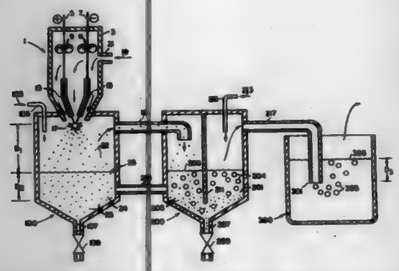
b. sealing the glass material to the titanium nitride layer on the surface of the titanium article.

5,294,242

METHOD FOR MAKING METAL POWDERS

Zbigniew Zurecki, Macungie; Kerry B. Berger, Lehighton, and Robert B. Swan, Bath, all of Pa., assignors to Air Products and Chemicals, Allentown, Pa.

Filed Sep. 30, 1991, Ser. No. 770,060
Int. Cl.[5] B22F 9/14
U.S. Cl. 75—345 18 Claims



15. A method for producing metal-containing powder comprising:

(a) forming an electric arc between two metal-containing wires in an electric arc spray gun, thereby causing said wires to melt;

(b) directing pressurized inert gas across said arc to form molten droplets which are discharged with said inert gas from said gun;

(c) passing said molten droplets and inert gas discharged from said gun into a first vessel containing a liquid cryogen, thereby solidifying said molten droplets to form solid particles, cooling said inert gas, vaporizing a portion of said liquid cryogen, and forming a mixture of liquid cryogen, vaporized cryogen, cooled inert gas, and said solid particles;

(d) withdrawing from said first vessel a stream of liquid cryogen and solid particles suspended therein, vaporizing the liquid cryogen, and recovering said solid particles to yield a first fraction of said metal-containing powder;

(e) withdrawing from said first vessel a mixture of cool inert gas, vaporized cryogen, entrained liquid cryogen, and entrained solid particles, and passing said mixture into a second vessel containing additional liquid cryogen wherein said entrained liquid cryogen and said entrained solid particles are separated from said vaporized cryogen and cool inert gas;

(f) withdrawing from said second vessel a stream of vaporized cryogen and cool inert gas essentially free of entrained material; and

(g) withdrawing from said second vessel a mixture of liquid cryogen and solid particles suspended therein, vaporizing the liquid cryogen in said mixture, and recovering said solid particles to yield a second fraction of said metal-containing powder.

5,294,243

METHOD OF OPERATING COKELESS CUPOLA

Richard T. Taft, Worcestershire; David R. Edwards, Dudley, both of England, and Reiner Graf, Hosbach, Fed. Rep. of Germany, assignors to Cokeless Cupolas Limited, Stourbridge, England

Filed Mar. 11, 1993, Ser. No. 29,873
Claims priority, application United Kingdom, Sep. 12, 1990, 9019894.6; PCT Int'l Appl., Sep. 5, 1991, PCT/GB91/01510
Int. Cl.[5] C22B 11/00
U.S. Cl. 75—376 19 Claims

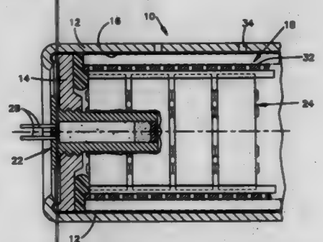
1. A method of operating a cokeless cupola metal-melting furnace, the furnace being a kind in which the charge is supported on a bed of heat-exchange bodies of a predominantly silica, alumina composition, comprising the steps of continually monitoring the composition and viscosity of the emerging slag and, as a consequence of the information obtained, adjusting the composition of the slag-forming fluxing agents which are incorporated in the charge along with the metal, the fluxing agents comprising largely limestone and/or dollastone and the adjustment being at least partially obtained by additions of glass or gravel or other silica-containing materials to alter the viscosity and/or volume of the resulting slag so as to keep them just sufficiently low to ensure continuous flow of the slag from the top of the bed of heat-exchange bodies down through the bed, and at the same time ensuring that the minimum amount of fluxing agents necessary to achieve this result are added so as to minimise consumption of the heat exchange bodies.

5,294,244

THERMAL RECLAMATION METHOD FOR THE RECOVERY OF METALS FROM AIR BAG INFLATORS

Hugh G. Allerton, III, Rochester Hills; James L. Coburn, Houghton; Bernie M. Thames, New Baltimore, and Dennis S. Bal, Tshpeming, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jul. 27, 1993, Ser. No. 97,661
Int. Cl.[5] C21B 13/14
U.S. Cl. 75—401 12 Claims



1. A method of recovering an aluminum alloy from an air bag inflator having aluminum alloy parts, including an aluminum alloy housing, and having other non-aluminum parts, including a non-aluminum gas filter in the housing, said other non-aluminum parts being made of a material having a higher melting temperature than aluminum, said method comprising the steps of:

placing the air bag inflator in a furnace;

heating the air bag inflator to the melting temperature of aluminum to melt the aluminum alloy parts;

removing the non-aluminum parts from the furnace before the higher melting temperature non-aluminum parts reach their melting temperature; and

collecting the molten aluminum alloy.

5,294,245

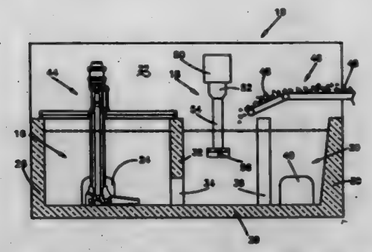
MELTING METAL PARTICLES AND DISPERSING GAS WITH VANED IMPELLER

Ronald E. Gilbert, 10999 Bridle Trail, Chardon, Ohio 44024, and George S. Mordue, 3023 Denny Rd., Ravenna, Ohio 44266

Continuation of Ser. No. 614,914, Nov. 19, 1990, Pat. No. 5,143,357. This application Mar. 25, 1992, Ser. No. 857,448
Int. Cl.[5] C21C 7/00
U.S. Cl. 75—571 21 Claims

1. Apparatus for melting metal particles in a bath of molten metal, comprising:

an impeller in the form of a rectangular prism having upper and lower faces, a width (A), a depth (B), and a height (C), and (A) being approximately equal to (B), the impeller being immersible in the bath of molten metal; and



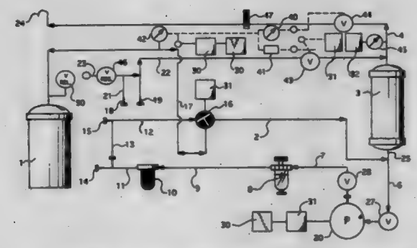
an elongate, rotatable shaft rigidly connected to the impeller and projecting from the upper face of the impeller, the shaft projecting from the upper surface of the bath.

5,294,246

EMISSION SUPPRESSION SYSTEM FOR STORED VOLATILE ORGANIC COMPOUNDS

Gary L. Gardner, Sr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1992, Ser. No. 994,391
Int. Cl.[5] B01D 53/04
U.S. Cl. 95—15 6 Claims



1. A method of preventing volative organic compound (VOC) emissions from a storage vessel, such method comprising

provided a single adsorber with a selectively openable and closable vent to the atmosphere (adsorber vent) and filled with an adsorbent that adsorbs VOCs and from which said VOCs are desorbed by applying vacuum and purging with inert gas;

providing a selectively openable and closable first line between the storage vessel and the adsorber;

opening the first line in response to a pressure rise within the storage vessel thereby directing a vapor containing VOCs to the adsorber wherein the VOCs are adsorbed;

opening the adsorber vent proportionally to a pressure rise within the storage vessel thereby directing vapor essentially free of VOCs to the atmosphere;

providing a source of selectively applicable vacuum;

providing a source of selectively applicable inert gas;

providing a selectively openable and closable second line between the inert gas source and the adsorber;

providing a selectively openable and closable third line between the vacuum source and the adsorber;

providing a selectively openable and closable fourth line between the vacuum source and the storage vessel's vapor space;

opening the second, third, and fourth lines in response to a pressure drop within the storage vessel below a predetermined pressure thereby directing the inert gas through the adsorber at a vacuum thus desorbing the VOC, said VOC and inert gas being directed to the storage vessel's vapor space through the third and fourth lines; and

providing a means for automatic control and monitoring of the method comprising means to start and stop the vacuum source, the open and close the first, second, third, and fourth lines, and to monitor the pressure, temperature and flow.

5,294,247

ADSORPTION PROCESS TO RECOVER HYDROGEN FROM LOW PRESSURE FEEDS

Eric W. Scharpf, Emmaus, and Ravi Kumar, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 26, 1993, Ser. No. 23,766
Int. Cl.[5] B01D 53/04
U.S. Cl. 95—101 27 Claims

1. A process for selectively separating at least one more strongly adsorbable component(s) from a less strongly adsorbable component of a feed gas mixture in a plurality of adsorption beds containing an adsorbent selective for the more strongly adsorbable component(s), comprising the steps of:

(a) introducing a feed gas mixture at elevated pressure containing said more strongly adsorbable component(s) and said less strongly adsorbable component into an inlet of a first adsorption bed containing said adsorbent selective for the more strongly adsorbable component(s) and adsorbing the more strongly adsorbable component(s) on the adsorbent while the less strongly adsorbable component passes through said first bed unadsorbed until the adsorption front of the more strongly adsorbable component(s) approaches an outlet of said first bed and terminating the introduction of the feed gas mixture;

(b) cocurrently depressurizing said first bed to a lower pressure to remove said gas mixture from said first bed and passing said gas mixture to an outlet of another bed of said plurality of adsorption beds at lower pressure to countercurrently purge said more strongly adsorbable component(s) from the other bed under the influence of a vacuum, while simultaneously countercurrently venting said first bed;

(c) countercurrently evacuating said first bed under vacuum conditions to further remove said more strongly adsorbable component(s) at the lowest pressure;

(d) countercurrently purging said first bed with cocurrently depressurizing gas mixture from another bed of said plurality of adsorption beds undergoing step (b) to remove additional more strongly adsorbable component(s) from said first bed under the influence of vacuum;

(e) repressurizing said first bed; and

(f) performing steps (a) through (e) in each of said plurality of adsorption beds in a phased sequence.

5,294,248

POLISHES FOR METAL SURFACES CONTAINING CATIONIC EMULSIFIERS, AND CATIONIC EMULSIFIERS CONTAINED THEREIN

Alba Chittofrati; Viviana Boselli, both of Milan; Giovanni Gavazzi, Cassano d'Adda; Ezio Strepparola, Treviglio; Renato Spiti, Sesto San Giovanni, and Silvia Tresoldi, Cornate d'Adda, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 19, 1993, Ser. No. 20,144
Claims priority, application Italy, Feb. 20, 1992, MI 92A 000360
Int. Cl.[5] C09G 1/04, 1/12
U.S. Cl. 106—10 7 Claims

1. Polishes for metal surfaces, based on dispersions, in organic solvents, of waxes and fluorinated materials selected from fluoroolefin copolymers and perfluoropolyoxyalkylene oils, wherein said polishes comprise a cationic emulsifier of general formula:

VOL 1160 ISS 3 MR 15 1994 UMI

$$R[-L-Q^+X^-]_t \quad (I)$$

where:

R is a chain of perfluorooxyalkylene units containing from 1 to 3 carbon atoms, having an average molecular weight ranging from 400 to 2,000;

L is a divalent organic group;

t=1 or 2;

Q=a polar organic group comprising N or P atoms as positive charge carriers, and having formula:



(II)

A^+=a N or P atom; R_1, R_2, R_3, like or different from one another, are alkyl groups containing from 1 to 12 carbon atoms, or, when A^+ is P, they can be also aryl groups, or Q is an aromatic or aliphatic ring, either saturated or unsaturated, containing N or P atoms as positive charge carrier directly bound to the L group, in which such ring can optionally contain alkyl substituents and other heteroatoms selected from O and S;

X^-=anion.

5,294,249

BLENDPOLYMERS

Pier L. Luisi, Institut für Polymere, ETH Zentrum, CH 8092 Zürich, Switzerland

Continuation of Ser. No. 710,556, Jun. 5, 1991, abandoned, which is a continuation of Ser. No. 286,950, Jan. 13, 1989, abandoned. This application Nov. 10, 1992, Ser. No. 974,337

Claims priority, application Switzerland, Mar. 27, 1987, 1173/87-2

Int. Cl.[5] C08L *3/04, 89/00*

U.S. Cl. 106—130 **20 Claims**

1. A homogenous, moldable blendpolymer of gelatin and starch, said blendpolymer obtained by (i) suspending gelatin and starch in water; (ii) heating the resulting suspension to a temperature of up to 50° C. for a period sufficient to dissolve at least 50% of the gelatin, (iii) adding to the heated suspension a hydrogen bridge-forming adjuvant in an amount effective to form an intermediate bridge between the gelatin and starch, and at least one biologically active material, while maintaining the resulting mixture in solution; and (iv) forming the blendpolymer by cooling the mixture to room temperature and evaporating the water.

5,294,250

SELF-FLUXING BINDER COMPOSITION FOR USE IN THE PELLETIZATION OF ORE CONCENTRATES

Serat C. Panigraphy, La Prairie; Pierre Legast, Sherbrooke, and Normand Lesmerises, Rock Forest, all of Canada, assignors to Ceram Sna Inc., Sherbrooke, Canada

Filed Mar. 2, 1992, Ser. No. 844,281

Int. Cl.[5] C04B *35/04, 35/06, 35/02;* C09D *103/02, 105/00*

U.S. Cl. 106—217 **4 Claims**

1. A self-fluxing clay free binder composition for use in the pelletization of an ore concentrate, comprising in admixture:

from 50 to 98% by weight of at least one carrier selected from the group consisting of synthetically produced, fibrous forsterite and finely ground natural magnesium and/or calcium bearing minerals natural and synthetic magnesium and/or calcium bearing minerals; and

from 2 to 50% by weight of at least one water soluble organic enhancer consisting of a natural polysaccharide of high viscosity.

5,294,251

MICROCRYSTALLINE WAX COATING COMPOSITION

Francisco A. J. Urena, Gabriel D'Annunzio, Mexico, assignor to Myriad Utile, Inc., Hereford, Tex.

Filed May 8, 1992, Ser. No. 879,912

Int. Cl.[5] C08L *91/08;* C09D *191/08*

U.S. Cl. 106—271 **18 Claims**

1. A liquid coating composition prepared by a process comprising the steps of:

heating microcrystalline paraffin wax above the melting point of said wax; and

admixing said microcrystalline paraffin wax with a solvent substantially at room temperature and dispersing said microcrystalline wax, said solvent consisting essentially of a mixture of a liquid aliphatic hydrocarbon and a xylene, said coating composition being stable without separation or solidification of said microcrystalline wax.

5,294,252

COMPOSITION FOR PRODUCING A MONOMOLECULAR FILM, ON SURFACES OF VARIOUS MATERIALS

Julio O. Gun, Buenos Aires, Argentina

Continuation-in-part of Ser. No. 606,760, Oct. 31, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 920,615

Int. Cl.[5] C09D *4/00*

U.S. Cl. 106—287.13 **12 Claims**

1. A composition for producing a substantially monomolecular film on a substrate comprising a non-aqueous solution comprised of at least 75 percent by volume of an organic compound selected from linear saturated hydrocarbons having 5 to 16 carbon atoms, benzene, dodecylbenzene, bicyclohexyl and linear chain monoamide having 7 to 18 carbon atoms and saturated isoparaffinic hydrocarbons, and between 5×10^{-5} and 3×10^{-2} moles/liter of an active organic trichlorosilane compound selected from CH_3—$(CH_2)_n$—$SiCl_3$, wherein n=12 to 17; CF_3—$(CF_2)_k$—$(CH_2)_2$—$SiCL_3$, wherein k=3, 5, 7 or 11; and CF_3—$(CF_2)_p$—$(CH_2)_2$—O—C(O)—$(CH_2)_q$—$SiCL_3$, wherein p=3 to 10 and q=4 to 10.

5,294,253

CARBON BLACK SYSTEM AND IMPROVED RUBBER STOCK

Douglas W. Carlson, Kingwood, and William D. Breach, Humble, both of Tex., assignors to Hydril Company, Houston, Tex.

Continuation-in-part of Ser. No. 972,623, Nov. 6, 1992, abandoned. This application May 3, 1993, Ser. No. 56,821

Int. Cl.[5] C09C *1/44*

U.S. Cl. 106—475 **13 Claims**

1. A carbon black system for rubber manufacture comprising a pair of carbon blacks;

one of said pair of carbon blacks having a low structure with a DBP No. of less than 110 with the other of said pair having a high structure with a DBP No. of greater than 110;

one of said pair of carbon blacks having a large particle size with an Iodine Adsorption No. of less than 110 and the other of said pair having a small particle size with an Iodine Adsorption No. of greater than 110;

a fumed silica; and

a silane coupler.

5,294,254

AQUEOUS FINE DISPERSION OF AN ORGANOPHILIC SHEET SILICATE

Guido Dessauer, Tutzing; Klaus Küber, Nürnberg, and Ute Horn, Dornburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 975,089

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137091

Int. Cl.[5] C04B *14/04;* C08K *5/00*

U.S. Cl. 106—487 **13 Claims**

1. An aqueous fine dispersion of an organophilic sheet silicate, consisting essentially of a sheet silicate which is capable of cation exchange and a quaternary organic onium salt reacted therewith, which dispersion contains 3 to 30% by weight, based on the organophilic sheet silicate, of polyvinyl alcohol, and said dispersion containing no pigments or organic solvents.

5,294,255

PUMPABLE BACKFILL GROUT

David A. Smetana; Richard J. Lenczewski, and Alfonzo L. Wilson, all of Cleveland, Ohio, assignors to Specrete-IP Incorporated, Cleveland, Ohio

Filed Sep. 23, 1992, Ser. No. 949,435

Int. Cl.[5] C04B *14/08, 14/18*

U.S. Cl. 106—698 **8 Claims**

1. An additive for a pumpable backfill grout consisting essentially of

Material	Parts by Weight
vesicular expanded perlite	500–1200
air entraining agent	100–200
diatomaceous earth	25–75
quick dispersing thixiotropic suspending agent	25–75
bentonite thickening agent	10–35
dispersant	10–35.

5,294,256

ADDITIVES FOR HYDRAULIC CEMENT COMPOSITIONS

Willis A. Weigand, Chelmsford, Mass.; Chiara F. Ferraris, Columbia, Md.; James M. Gaidis, Ellicott City, Md., and Ellis M. Gartner, Silver Spring, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 371,950, Jun. 27, 1989, abandoned. This application Jul. 28, 1992, Ser. No. 922,114

Int. Cl.[5] C04B *24/08*

U.S. Cl. 106—819 **18 Claims**

1. A stable oil-in-water emulsion cement additive comprising:

a) from about 50 to 95% by weight, based on the total solids, of a water-insoluble, water-repelling acid component selected from the group consisting of fatty acids, rosin acids, and mixtures thereof;

b) from about 3 to 35% by weight, based on the total solids, of a set retarding component;

c) from about 2 to 20% by weight, based on the total solids, of a low molecular weight workability-enhancing polymer component selected from the group consisting of polyvinyl alcohol; hydroxypropyl substituted polysaccharides; polyvinyl acetate; and mixtures thereof; wherein said workability-enhancing polymer is dissolved in said cement additive;

d) an amount of an emulsifier component effective to provide an emulsion; and

e) water.

5,294,257

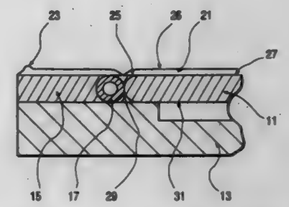
EDGE MASKING SPIN TOOL

Howard L. Kelly, Warrenton, Va.; Hans-George H. Kolan, Boca Raton, Fla.; James M. Leas, Burlington, Vt., and Teruhiro Nakasogi, Shiga, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1991, Ser. No. 783,753

Int. Cl.[5] B05C *11/02*

U.S. Cl. 118—52 **7 Claims**



1. An apparatus for spin coating a planar surface of a substrate having a periphery comprising:

a rotatable fixture for spinning the substrate having a conformable elastomeric ring for engagement to the periphery of the substrate, the ring when engaged forming a substantially continuous surface with the planar surface to allow a liquid material to flow unimpeded off the planar surface; and,

means for bringing the substrate and conformable elastomeric ring from a first position, where the ring is not engaged to the periphery of the substrate, to a second position, where the ring is engaged with the periphery of the substrate.

5,294,258

APPARATUS FOR PRODUCING AN INTEGRAL ADHESIVE MATRIX

Curt Jarrell, Duluth, Ga.; Manfred Kubo, Embsen, Fed. Rep. of Germany; Hans-Jurgen Meissner, Luneburg, Fed. Rep. of Germany; Gustav Rieckmann, Wittorf, Fed. Rep. of Germany, and Jurgen Benecke, Luneburg, Fed. Rep. of Germany, assignors to Nordson Corporation, Westlake, Ohio

Filed Apr. 8, 1992, Ser. No. 865,308

Int. Cl.[5] B05C *3/20*

U.S. Cl. 118—410 **5 Claims**

1. Apparatus for producing an integral adhesive matrix from adhesive material supplied under pressure to the apparatus, said apparatus comprising:

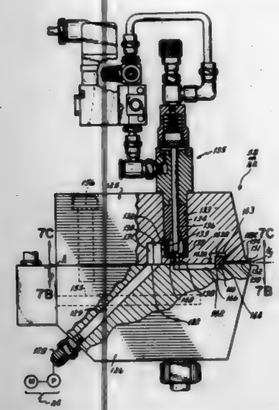
a die including an elongated die outlet extending across said die;

at least one land area in said die adjacent said die outlet;

at least one elongated adhesive distribution channel in said die operatively associated with said land area for receiving adhesive under pressure from supply and for distributing adhesive to said land area;

an adhesive distribution bar means disposed in said distribution channel for dividing said distribution channel into a

plurality of successive adhesive channels of progressively decreased cross-sectional adhesive flow areas for distributing adhesive uniformly across said land area to form said integral adhesive matrix.

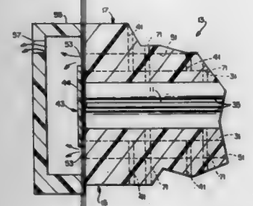


5,294,259

FLUID TREATMENT DEVICE

Michael J. Canestaro, Endicott; Donald G. McBride, Binghamton; Louis J. Konrad, III, Endicott, and Ronald J. Moore, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1992, Ser. No. 884,818
Int. Cl.[5] B05C *3/02*
U.S. Cl. 118—411 22 Claims



1. A device for applying fluid to a substrate, said device comprising:

a head member including first and second portions adapted for being fixedly positioned relative to each other and defining an opening therebetween adapted for having a substrate positioned therein, at least said first portion of said head member including a first channel therein located at a first, established distance from said substrate when said substrate is positioned within said opening and adapted for having a quantity of fluid therein for engaging a first surface of said substrate as said quantity moves at a first velocity, said first portion further including a weir therein located at a second, established distance from said substrate less than said first distance when said substrate is positioned within said opening and adapted for having a volume of fluid pass thereover and engage said first surface of said substrate as said volume moves at a second velocity greater than said first velocity;

fluid inlet means operatively connected to said first channel and said weir for supplying said quantity of fluid to said first channel and said volume of fluid to said weir at a predetermined pressure sufficient to cause said quantity and said volume to move at said first and second velocities, respectively; and

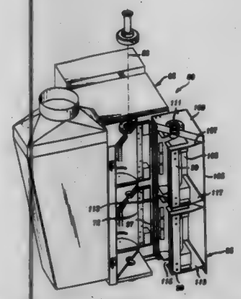
fluid blocking means located adjacent said first channel and said weir for substantially blocking said quantity of fluid and said volume of fluid and thereby maintain said fluids at established levels within said first portion such that said fluids will engage said first surface of said substrate when moving at said first and second velocities.

5,294,260

APPARATUS FOR CURING COATINGS ON DRAWN OPTICAL FIBER

Lisa M. Larsen-Moss, Stone Mountain, and Vernon W. Pidgeon, Jr., Suwanee, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 969,665
Int. Cl.[5] C03C *25/02*; B05B *5/025*
U.S. Cl. 118—620 13 Claims



1. Apparatus for curing drawn optical fiber, said apparatus including:

a housing which is closed on a top and bottom, sides and rear face thereof and which has openings in a front face thereof, said housing including a plurality of members extending from the front face thereof;

a pivotally moveable portion which is hingedly connected to said housing and adapted to be moved pivotally to expose an interior of said housing and an interior of said pivotally moveable portion;

an elliptical chamber which has a portion disposed in said housing and a separable portion disposed in said pivotally moveable portion;

a longitudinally extending bulb disposed at the focal point of the portion of the elliptical chamber which is disposed in said housing;

a longitudinally extending center tube disposed at the other focal point of the elliptical chamber such that the pivotal movement of the pivotally moveable portion facilitates lateral removal of the center tube from the elliptical chamber, the center tube adapted to have drawn optical fiber extend therethrough;

means disposed in said housing for exciting said bulb to cause said bulb to emit radiation to cure curable coating material which has been applied to the fiber; and

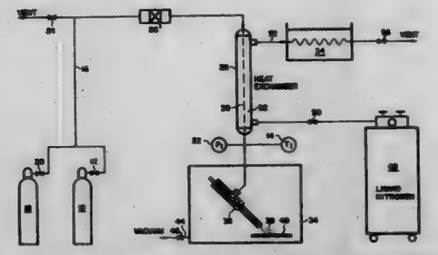
exhaust means attached to said housing for exhausting gases from within said housing.

5,294,261

SURFACE CLEANING USING AN ARGON OR NITROGEN AEROSOL

Wayne T. McDermott, Allentown; Richard C. Ockovic, Northampton, both of Pa.; Jin J. Wu, Ossining; Douglas W. Cooper, Millwood, both of N.Y.; Alexander Schwarz, Bethlehem, Pa., and Henry L. Wolfe, Pleasant Valley, N.Y., assignors to Air Products and Chemicals, Inc., Allentown, Pa. and International Business Machines Corporation, Hopewell Junction, N.Y.

Filed Nov. 2, 1992, Ser. No. 970,346
The portion of the term of this patent subsequent to Nov. 5, 2008, has been disclaimed.
Int. Cl.[5] B08B *5/00*
U.S. Cl. 134—7 17 Claims



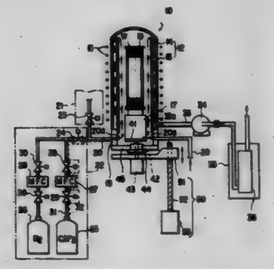
1. A method for removing contaminating particles and/or films from a particle and/or film-containing surface using an impinging stream of an at least substantially solid argon or nitrogen particle-containing aerosol, comprising: expanding a pressurized liquid argon or gaseous and/or liquid nitrogen-containing stream, which is at a temperature at the existing stream pressure prior to expansion so as to form at least substantially solid particles of argon or nitrogen in said stream by the cooling resulting from said expansion to form an at least substantially solid argon or nitrogen particle-containing aerosol, and directing said aerosol at said surface to remove said contaminating particles and/or film.

5,294,262

METHOD OF CLEANING A PROCESS TUBE WITH CLF_3 GAS AND CONTROLLING THE TEMPERATURE OF PROCESS

Toshiharu Nishimura, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 818,677, Jan. 9, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 80,588
Claims priority, application Japan, Jan. 31, 1991, 3-031852
Int. Cl.[5] B08B *9/00*
U.S. Cl. 134—22.1 19 Claims



1. A method of cleaning a process tube, comprising the steps of:

loading a process tube set at a film-forming temperature with a plurality of semiconductor wafers;

supplying a process gas into the process tube to form a silicon oxide-based film on each of said wafers;

taking the wafers out of the process tube;

controlling the temperature within the process tube to a temperature not higher than said film-forming temperature but higher than 450° C.;

supplying a cleaning gas containing ClF_3 into the process tube to carry out reactions between the cleaning gas and a silicon oxide-based film adhered to the inner wall of the process tube so as to remove said silicon oxide-based film; and

setting the temperature within the process tube at said film-forming temperature in preparation for the loading of the process tube with wafers which are to be processed.

5,294,263

NON-HAZARDOUS BLENDS OF PROPIONATES

Anthony Riso, Piermont, N.Y., assignor to Rossi Technology Corporation, Orangeburg, N.Y.

Filed Aug. 21, 1992, Ser. No. 933,246
Int. Cl.[5] C23G *5/00*
U.S. Cl. 134—40 3 Claims

1. A method of cleaning electronic equipment and parts, flux removal, and degreasing surfaces by using a solvent blend consisting of a mixture of 20 to 80 parts by weight of one propionate selected from the group consisting of methyl propionate, ethyl propionate, propyl propionate, butyl propionate and 20 to 80 parts by weight of one hydroxy propionate selected from the group consisting of methyl hydroxy propionate, ethyl hydroxy propionate.

5,294,264

METHOD OF NITRIDING REFRACTORY METAL ARTICLES

Terry N. Tiegs, Lenoir City; Cressie E. Holcombe, Knoxville; Norman L. Dykes, Oak Ridge, all of Tenn.; Ogbemi O. Omatete, Lagos, Nigeria, and Albert C. Young, Flushing, N.Y., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 512,306, Apr. 20, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 820,452
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] C21D *1/09*
U.S. Cl. 148—207 14 Claims

1. A method of nitriding a composite article of refractory-nitride-forming metal or metalloid and a reinforcing material comprising the following steps:

Step 1) providing a composite article of metal or metalloid containing a reinforcing material being intimately enwrapped with a ceramic aggregate of granular material within a microwave oven;

Step 2) introducing a nitrogen containing atmosphere within said microwave oven;

Step 3) heating said composite article in a nitrogen containing atmosphere within said microwave oven to a temperature sufficient to react with said metal or metalloid of said composite article with said nitrogen by applying a microwave energy within said microwave oven; and

Step 4) maintaining said composite article at said temperature for a period of time sufficient to convert said metal or metalloid of said composite article to a composite article of refractory nitride.

VOL 1160 ISS 3 MR 15 1994 UMI

5,294,265

NON-CHROME PASSIVATION FOR METAL SUBSTRATES

Ralph C. Gray, Butler; Michael J. Pawlik, Gleashaw; Paul J. Procsal, Pittsburgh, and Christopher J. Baldy, Warrendale, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 862,143, Apr. 2, 1992. This application Mar. 15, 1993, Ser. No. 31,508

Int. Cl.[5] C23C *22/02*

U.S. Cl. 148—250 20 Claims

1. An aqueous acidic solution for treating metal surfaces comprising:

a) a compound selected from the group consisting of epoxy esters of phosphoric acid, epoxy esters of a phosphonic acid and mixtures thereof,

b) and a halide ion selected from the group consisting of fluoride and chloride.

5,294,266

PROCESS FOR A PASSIVATING POSTRINSING OF CONVERSION LAYERS

Dieter Hauffe, Frankfurt am Main; Thomas Kolberg, Heppenheim; Gerhard Müller, Hanau am Main; Horst Gehmecker, Gross-Gerau; Werner Rausch, Oberursel; Peter Schubach, Schöneck-Oberdorfelden, and Thomas Wendel, Bad Homburg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 645,159, Jan. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 484,730, Feb. 23, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,193

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924984; May 29, 1990, 4017186; May 29, 1990, 4017187

Int. Cl.[5] C23C *22/83*

U.S. Cl. 148—247 18 Claims

1. A process for passivating postrinsing a phosphate conversion layer on a metal surface with a chromium-free aqueous rinsing solution before the application of a paint or adhesive, comprising rinsing the phosphated metal surface with an aqueous rinsing solution of an aluminum fluorozirconate having an Al:Zr:F mole ratio of (0.15 to 0.67):1:(5 to 7), the solution having a pH value of 3 to 5 and a total concentration of Al+Zr+F of 0.1 and 2.0 g/l.

5,294,267

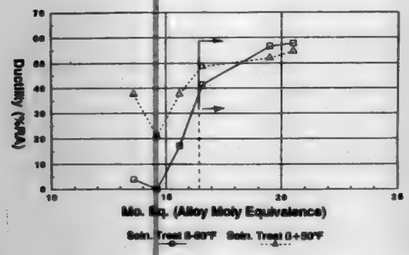
METASTABLE BETA TITANIUM-BASE ALLOY

Paul J. Bania, Boulder City, and Warren M. Parris, Las Vegas, both of Nev., assignors to Titanium Metals Corporation, Denver, Colo.

Filed Dec. 4, 1992, Ser. No. 986,086

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—421 18 Claims



1. A metastable beta titanium-base alloy consisting essentially of Ti-Fe-Mo-Al with Fe and Mo each being at least 4 weight percent, and with said alloy having a MoEq. greater than 16.

5,294,268

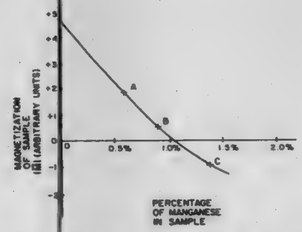
METHOD FOR MAKING A NON-MAGNETIC ALLOY

Joseph L. Abita, Boyds, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1992, Ser. No. 984,637

Int. Cl.[5] C22C *9/00*

U.S. Cl. 148—432 4 Claims



1. A method for making a non-magnetic alloy, comprising:

(a) mixing a first volume amount of a first material that has a first value of susceptibility with a second volume amount of a second material that has a second value of susceptibility, the sign of the second value of susceptibility being opposite to the sign of the first value of susceptibility, the product of the value of the first volume amount times the first value of susceptibility being equal to the value of the second volume amount times the second value of susceptibility;

(b) melting the mixture; and

(c) cooling the mixture so that a non-magnetic alloy is made.

5,294,269

REPEATED SINTERING OF TUNGSTEN BASED HEAVY ALLOYS FOR IMPROVED IMPACT TOUGHNESS

Young M. Lee; Kyung J. Park, both of Kyungsanbuk-do; Kil S. Churn, Taejon-si; Woon H. Baek, Taejon-si; Heung S. Song, Taejon-si; Joon W. Noh, Taejon-si; Moon L. Hong, Taejon-si; Seong Lee, Taejon-si, and Eun P. Kim, Taejon-si, all of Rep. of Korea, assignors to Poongsan Corporation, Inchon and Agency for Defense Development, Taejon-si, both of Rep. of Korea

Filed Apr. 23, 1993, Ser. No. 51,425

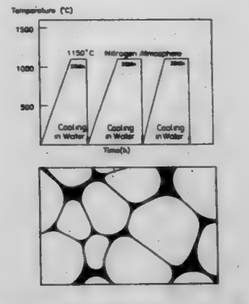
Claims priority, application Rep. of Korea, Aug. 6, 1992, 14130

Int. Cl.[5] C22C *27/00*

U.S. Cl. 148—514 8 Claims

1. A method for heat-treatment of a sintered tungsten based alloy exhibiting a high impact toughness and consisting of 86 weight % to 99 weight % tungsten and the balance at least one selected from a group consisting of nickel, iron, copper, cobalt and molybdenum, comprising the steps of:

maintaining the sintered alloy at temperatures ranged from 950° to 1,350° C. for one minute to 24 hours;



quenching the sintered alloy in water or in oil; and

repeating the maintaining and quenching steps.

5,294,270

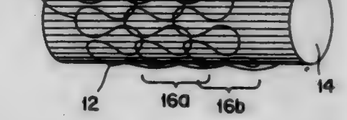
HEAT-TREATED WIRE-MESH EMI/RFI SHIELDING GASKET

Gary Fenical, East Stroudsburg, Pa., assignor to Instrument Specialties Company, Inc., Delaware Water Gap, Pa.

Division of Ser. No. 657,842, Feb. 20, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,549

Int. Cl.[5] C21D *9/52*

U.S. Cl. 148—576 17 Claims



1. A method of making a wire-mesh gasket structure comprising the steps of:

selecting a heat-treatable wire in a soft temper condition;

forming the heat-treatable wire into a tubular wire-mesh structure having a nominal dimension; and

heat treating the tubular structure to a high temper condition whereby hardening occurs and forming stresses are relieved.

5,294,271

HEAT TREATMENT FOR MANUFACTURING SPRING STEEL EXCELLENT IN HIGH-TEMPERATURE RELAXATION RESISTANCE

Tsunetoshi Suzuki; Tomoyoshi Iwao, both of Hiroshima; Teruo Tanaka, Tokyo, and Toshiro Yamada, Osaka, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 715,253, Jun. 14, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 3,745

Int. Cl.[5] C21D *9/02*

U.S. Cl. 148—580 12 Claims

1. A method of manufacturing a spring steel, which has excellent high-temperature relaxation resistance, which comprises the steps of:

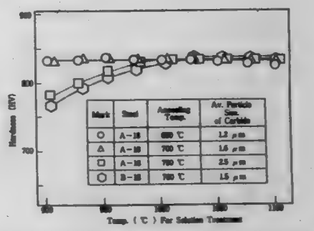
providing a steel consisting essentially of, each by weight, 0.4–0.8% C, 0.5–2.5% Si, 0.3–2.0% Mn, 0.1–1.5% Cr, 0.1–0.5% Mo, and the balance being Fe except inevitable impurities;

hot rolling said steel;

annealing said hot rolled steel sheet;

subjecting said annealed steel sheet to at least one cycle of cold rolling at a reduction of 10–80% and annealing said steel at a temperature below its Ac_1, transition point, to precipitate fine spheroidal carbide particles in said steel;

heating said annealed steel sheet, at a temperature above its



Ac_3 transition point, for a time sufficient to substantially dissolve said spheroidal carbides in an austenite matrix;

rapidly cooling said heated steel sheet at a lower critical cooling speed to a degree sufficient to substantially completely transform the steel matrix in said steel sheet to a martensite state oversaturated with carbon;

tempering said cooled steel sheet, at a temperature of about 450°–600° C. for a time sufficient to precipitate fine Mo2C particles in the martensite matrix; and then

cooling said tempered steel sheet to room temperature.

5,294,272

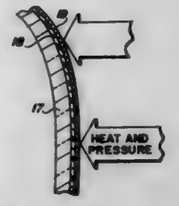
METHOD OF PREFORMING PLASTIC FILM FOR APPLICATION TO A CONTOURED CAR WINDOW

Curtis A. Peterson, and Eugene H. Smith, both of 506 W. 9th St., Mesa, Ariz. 85021

Continuation of Ser. No. 807,171, Dec. 13, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 982,840

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—85 7 Claims



1. A method for the application of a plastic film to the first curved surface of a flexible window having first and second opposing curved surfaces, said film having an adhesive layer and transfer coating thereon, the method comprising the steps of:

a) placing the film on the second surface of the window with the transfer coating forming the exposed surface;

b) selectively applying-heat by directing a heated air stream onto the transfer coating and film to selectively shrink said transfer coating and film to cause conformance thereof to the contour of the window;

c) removing the conformed film and transfer coating from the second surface of the window;

d) separating the transfer coating from the contoured film; and

e) adhering the contoured film to the first surface of the window.

5,294,273

METHOD OF MAKING A COMPOSITE BELT FROM USED TIRES

Benjamin A. Tripp, R. R. #2, Orangeville, Ontario, Canada L9W 2Y9

Filed Mar. 3, 1993, Ser. No. 25,787
Int. Cl.[5] B32B *7/08, 35/00*
U.S. Cl. 156—91 6 Claims



1. A method for joining a plurality of individual tire belts in end to end relation to form an elongate composite belt, the method comprising:

removing both sidewalls from used vehicle tires having reinforcing plies thereby forming annular tread bearing members;

severing said annular members thereby forming individual elongate belts having two ends, a tread surface and an inner surface;

tapering both ends of individual belts to be joined to form the composite belt, each taper proceeding outwardly to each belt end from the tread surface to the inner surface of the belt, thereby forming an outwardly declining tapered surface at each belt end;

removing a portion of the inner surface at one tapered end of each individual belt to provide an overlapping surface for joining individual belts in end to end relation;

forming joints between a plurality of individual tire belts arrayed in overlapping end to end relation, each said joint being formed by chemically bonding an overlapping surface of one tapered belt end to an outwardly declining tapered surface of another belt and so that an elongate composite belt is formed.

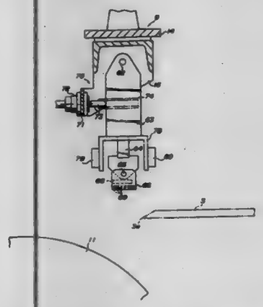
5,294,274

METHOD FOR WINDING BELT-SHAPED MEMBER

Hiroki Toya, c/o Technical Center, Bridgestone Corporation, 1-1, Ogawahigashi-Cho, 3-Chome, Kodaira City, Tokyo, Japan

Continuation of Ser. No. 446,752, Dec. 6, 1989, abandoned. This application Sep. 26, 1991, Ser. No. 765,503
Claims priority, application Japan, Apr. 18, 1989, 1-98570; Oct. 23, 1989, 1-275624
Int. Cl.[5] B29D *30/16*
U.S. Cl. 156—133 3 Claims

1. A method of winding a belt-shaped member around a forming drum comprising steps of: detecting a position of a leading end of a belt-shaped member in width directions to obtain a shifted distance between a predetermined reference position of a forming drum and the detected position of the leading end of the belt-shaped member, grasping opposite side edges of the leading end of the belt-shaped member by means of lower pawls and upper pawls of grasping units, transferring the leading end of the belt-shaped member grasped by means of the lower and upper pawls of the grasping units to the forming drum, carrying out a correction of the position of the leading end of the belt-shaped member in width direction to null the shifted distance by means of the rasping unit at any time and anywhere from the time when the grasping unit grips the leading end of the belt-shaped member to the time when the leading end of the member is pressed against the forming drum, pressing the leading end of the belt-shaped member against the forming drum after bringing the position of the leading end in the width directions into coincidence with the reference position of the forming drum, rotating the forming drum during which the belt-shaped member is supplied onto the forming drum to wind the belt-shaped member around a majority of the forming drum, detecting a position of a trailing end of the belt-shaped member in the width direction to obtain a shifted distance of the trailing end in the width directions relative to the reference position of the forming drum, supplying the trailing end of the belt-shaped member onto the rotating forming drum while moving the trailing end in a width direction to null the shifted distance of the trailing end before transfer to the trailing end to the forming drum is completed, thereby



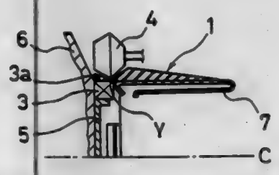
winding said belt-shaped member around the forming drum with the position of the trailing end in the width direction being in coincidence with the reference position of the forming drum, with resulting coincidence of the positions of the leading and trailing ends of the belt-shaped member in the width directions, elongating only both side edges of the trailing end of the belt-shaped member in the longitudinal direction by grasping the side edges by means of the lower and upper pawls of the grasping unit while restraining the center of the belt-shaped member by pressing it to the forming drum to correct shortage of the sides of the belt-shaped member, and joining the leading and trailing ends together over the whole width thereof to form a cylindrical tire constituting member.

5,294,275

METHOD OF ATTACHING A BEAD FILLER TO A BEAD CORE

Katsuhide Kawaguchi, Numazu, and Masahiro Iida, Shinshiro, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01760, § 371 Date Aug. 26, 1992, § 102(e) Date Aug. 26, 1992, PCT Pub. No. WO92/12002, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 25, 1991, Ser. No. 920,450
Claims priority, application Japan, Dec. 28, 1990, 2-408685
Int. Cl.[5] B29D *30/48*
U.S. Cl. 156—136 3 Claims



1. A tire bead manufacturing method comprising:

providing a tire bead filler composed of an unvulcanized rubber and including a triangular body part having a bottom surface comprising a tapered surface of length H and a triangular projection part having an upper surface comprising a tapered surface also of length H, said body part and projection part being integrally connected at an apex of each of the two triangular parts to form a connection point such that their tapered surfaces are arranged to form a V-shape and connected sides adjacent to the tapered surfaces being arranged to form a straight surface;

supplying an annular tire bead core with an outer, radially peripheral surface and attaching the projection part of the bead filler cylindrically to the annular bead core such that the body part projects in an axially direction relative to the annular bead core and the projection part covers the outer radially peripheral surface of the bead core; and

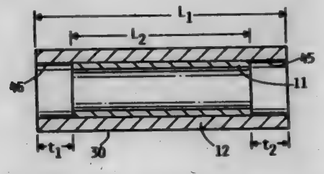
then turning the filler body part, with said point of connection as a turning and folding point, to attach the tapered surface of the body part onto the tapered surface of the projection part and thereby bringing the filler body part into a substantially perpendicular arrangement relative to said outer, radially peripheral surface of the bead core.

5,294,276

METHOD OF MAKING PAINT ROLLER

Richard A. Linn, Minneapolis, and Wade H. Krinke, St. Croix, both of Minn., assignors to Padco, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 943,414, Sep. 11, 1992, abandoned. This application May 28, 1993, Ser. No. 68,934
Int. Cl.[5] B05C *1/08*
U.S. Cl. 156—154 17 Claims



1. The process of making a paint roller with a foldable end comprising the steps:

wrapping a paint-roller pad around a master paint-roller support core having a central axis;

securing the paint-roller pad to the master support core to produce a continuous master paint roller;

cutting the master paint roller into multiple segments to create paint-roller segments having the cut end of the paint-roller pad and the cut end of the master paint-roller support core coextensive with each other; and

removing a portion of one end of the paint-roller support core of the cut segment without removing the paint-roller pad on top of said paint-roller support core to leave an unsupported free pad end that is foldable onto the cut end of the support core.

5,294,277

THERMAL TRANSFER PRINTING METHOD

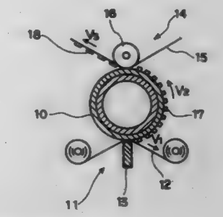
Yoshiyuki Obata, Osaka, Japan, assignor to Fujicopian Co. Ltd., Osaka, Japan

Filed Mar. 16, 1993, Ser. No. 32,029
Claims priority, application Japan, Mar. 19, 1992, 4-63558
Int. Cl.[5] B41M *5/025*
U.S. Cl. 156—235 10 Claims

1. A thermal transfer printing method comprising the steps of: forming first an image on an intermediate transfer drum by heating a meltable-type thermal transfer ink sheet with a thermal head; and transferring the image formed on the intermediate transfer drum onto an image receptor,

wherein the meltable-type thermal transfer ink sheet and the image receptor are fed at a velocity V_1 and a velocity V_3, respectively and the intermediate transfer drum rotates at a peripheral velocity V_2 the velocities V_1, V_2 and V_3 satisfying the equations (1), (2) and (3):

$$N_1 = V_2/V_1 = 1 \text{ to } 10 \quad (1)$$



$$N_2 = V_3/V_2 = 1 \text{ to } 10 \quad (2)$$

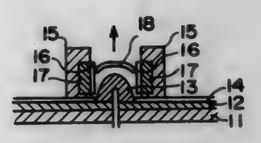
$$N_3 = V_3/V_1 \geq 2 \quad (3).$$

5,294,278

PROCESS FOR THE APPLICATION OF PROTECTIVE SELF-ADHESIVE FILM

Komaharu Matsui; Takeshi Eda, and Mitsuo Wakimoto, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Filed Feb. 23, 1993, Ser. No. 21,037
Claims priority, application Japan, Feb. 26, 1992, 4-076219; Feb. 28, 1992, 4-078985
Int. Cl.[5] B32B *31/00;* B60J *11/00;* B60R *27/00*
U.S. Cl. 156—248 4 Claims



1. A process for applying a protective self-adhesive film onto a coat-finished product having an object unnecessary to be protected by the protective self-adhesive film, which process comprises the following steps: applying a perforated self-adhesive film (a) having a perforation onto the surface of the coating of the coat-finished product so that an area occupied by the object unnecessary to be protected may be positioned within the perforation, applying a protective self-adhesive film onto the object, the perforated self-adhesive film (a) and such a part of the coating of the coat-finished product as not to be covered with the perforated self-adhesive film (a), and removing an unnecessary portion of the protective self-adhesive film over the perforation.

5,294,279

LOW MANUFACTURING COST PRESENTATION OR SECURITY FOLDER

Roger J. Kuhns, Tower Rd., Lincoln, Mass. 01773, and Robert L. Nathans, 36 Stag Dr., Billerica, Mass. 01821

Filed Oct. 22, 1992, Ser. No. 964,967
Int. Cl.[5] C09J *5/02*
U.S. Cl. 156—324.4 9 Claims

1. Method of producing a large substantially flat laminated product by lamination of a pair of plastic cover sheets to a core sheet comprising the steps of:

(a) providing an envelope to a user comprising a central core

sheet having a first face portion and a second face portion opposite said first face portion, and a first light transmissive plastic cover sheet affixed to minor portions of said first face portion and a second plastic cover sheet affixed to minor portions of said second face portion, said first and second plastic cover sheets having heat activatable adhesives thereon facing said core sheet, and wherein said plastic cover sheets have the same physical characteristics which would cause each plastic cover sheet to individually warp to an unacceptable degree when separately



laminated to the core sheet during lamination by heat and pressure thereto, and wherein said first and second plastic cover sheets have dimensions at least as great as a file folder when folded;

(b) inserting an indicia bearing sheet between said core sheet and at least one of said plastic cover sheets; and

(c) thereafter laminating the core sheet, the indicia bearing sheet(s), and the plastic cover sheets together by the application of heat and pressure thereto, thereby producing a substantially flat laminated product.

5,294,280

GAS MEASURING DEVICE AND PROCESSING APPARATUS PROVIDED WITH THE GAS MEASURING DEVICE

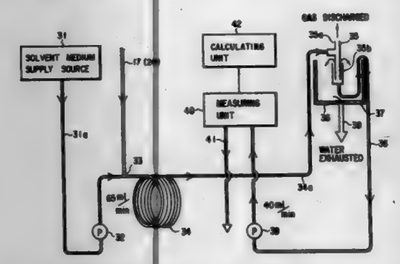
Tsuyoshi Wakabayashi; Takenobu Matsuo; Shuji Moriya, all of Tokyo, and Hidenobu Arimitsu, Kanagawa, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Ebara Research Co., Ltd., Fujisawa, both of Japan

Filed Jun. 25, 1992, Ser. No. 904,556

Claims priority, application Japan, Jun. 28, 1991, 3-183655; Jun. 28, 1991, 3-183656; Jun. 28, 1991, 3-183657

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—345 **10 Claims**



1. A processing apparatus comprising:

a process vessel in which process gas is applied to an object or objects to be processed;

a gas supply system through which the process gas is supplied into the process vessel;

an exhaust system through which gas is exhausted from the process vessel; and

a gas measuring device for measuring gas remaining in the apparatus;

wherein said gas measuring device includes means for dissolving gas to be measured in a solvent medium, means for measuring the amount of charged particles generated from the gas to be measured in the solvent medium, and calculating means for calculating the amount of the gas to be measured from the amount of charged particles measured by the measuring means.

5,294,281

APPARATUS FOR ADHERING TIRE COMPONENT MATERIAL

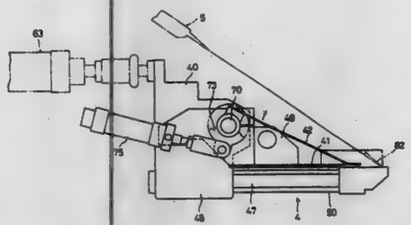
Shuichi Yamamori; Sadao Kurashima; Itsuo Tanihara, and Yasuhiko Kudou, all of Toyota, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 555,493, Sep. 7, 1990, Pat. No. 5,273,600. This application Dec. 9, 1992, Ser. No. 987,689

Claims priority, application Japan, Jan. 13, 1989, 1-6720

Int. Cl.[5] B29D *30/30*

U.S. Cl. 156—405.1 **8 Claims**



1. An apparatus for adhering tire component material, employing a chuck comprising a support plate held by a frame freely movable back and forth relative to a drum-shaped former, a press plate for grasping the tire component material in cooperation with the support plate, a lever for moving the support plate during the back and forth movement, the lever moving the support plate up and down along a predetermined path with a shaft of the support plate being slidingly in contact with a contour of the lever, and driving means for moving the press plate up and down relative to the support plate, said chuck grasping a front edge of the tire component material fed from a material feeder to lay the tire component material onto a carcass on a tire former from above relative to the former surface.

5,294,282

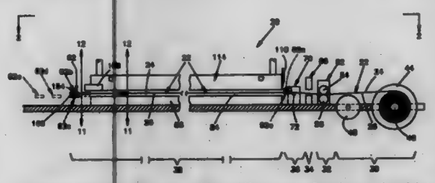
TAPE HANDLING APPARATUS

Reinhold Rock, Westlake, and Josef Schuessler, Brecksville, both of Ohio, assignors to Herd Manufacturing, Inc., Cleveland, Ohio

Filed Apr. 17, 1991, Ser. No. 686,673

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—516 **50 Claims**



1. An apparatus for use in handling tape having a backing side and a tacky side, said apparatus comprising first gripper means for gripping an end portion of the tape, a longitudinally extending tape support having an upwardly facing side, first gripper drive means for moving said first gripper means along said longitudinally extending tape support to withdraw at least a predetermined length of tape from a source of tape with the tacky side of the tape facing downwardly toward the upwardly facing side of said longitudinally extending tape support and with the backing side of the tape facing upwardly, cutter means for cutting the tape to separate at least the predetermined length of tape from tape at the source of tape, said cutter means being operable to cut the tape with the tacky side of the tape facing downwardly toward and engaging the upwardly facing side of said longitudinally extending tape support and with the backing side of the tape facing upwardly, second gripper means for gripping the predetermined length of tape while the tacky side of the predetermined length of tape is facing downwardly toward and engaging the upwardly facing side of said longitudinally extending tape support and while the backing side of the predetermined length of the tape is facing upwardly, and second gripper drive means for moving said second gripper means and the predetermined length of the tape away from said upwardly facing side of said longitudinally extending tape support.

5,294,283

AUTOMATIC LABELING MACHINE, FOR CONTAINERS IN THE FORM OF MESH BAGS OR THE LIKE

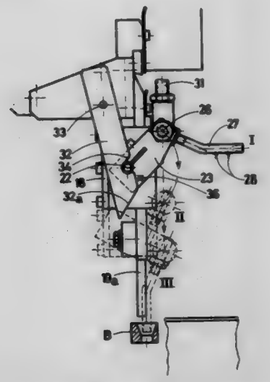
Agustin D. Guardiola, Badalona, Spain, assignor to Talleres Daumar S.A., Barcelona, Spain

Filed Nov. 5, 1992, Ser. No. 971,556

Claims priority, application Spain, Nov. 11, 1991, 9102494

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—566 **1 Claim**



1. An automatic labeling machine for containers in the form of bags of mesh or the like, of the type which comprises a bobbin joined to a frame and fed with a continuous strip of labels, in particular labels joined by very narrow appendices, guide means for guiding said strip, cutting means for separating labels from the strip, a regulation and control device, actuation means having an anti-slip surface roller for moving the strip traverse to the guide means of the strip of labels and in which is supported said strip to be dragged toward a discharge end of the machine, said roller revolving in response to power means and through corresponding transmission means, making available a printer mechanism, preferably printing heat-selectively at predetermined and programmable points, which is applied against a corresponding surface, preferably a heat-sensitive surface, of the strip of labels by elastic means and in the zone in which the opposite surface of said strip is supported above the aforementioned revolving roller, to which the printer mechanism is articulated along a longitudinal axis mounted in a transverse axis joined to the frame, and

means for separating the printer mechanism from the strip;

characterized in that said labeling machine includes

a carriage displaceable back and forth by an actuation device along a support plate projecting downward and fixed to the frame, the support plate holding guide means for guiding the displacement of the label of the strip and a central, longitudinal channel, with a shaped transverse profile, preferably staggered toward an interior, which extends forming an appendix facing downward and also provided with said shaped profile;

an axis passing through both sides of the carriage, to which are affixed connecting rods on each side, swivelling and contiguous, with respect to one another and on the outside, on each one of said sides, one end of the axis projecting out with respect to one of such connecting rods thus forming a stud, said stud being provided with a bushing fixed to the same, while the other end of the axis projects out from the other connecting rod and is joined to a lever;

a brace member securely joining free ends of the two connecting rods;

a finger provided in the middle of the brace with at least one small catch which can come face-to-face with the shaped profile and be introduced into the same with intercalation of the corresponding part of the label, already cut from the strip, to be dragged toward the discharge from the machine;

wherein the actuation means for the carriage are articulated to the brace in which is fixed the finger for presenting a retaining push rod, articulated to the frame and provided with a lateral groove into which is introduced the stud of the axis of revolution of the connecting rods, whereby when the carriage is in its position most proximate to the cutting means, and said push rod is being thrust against said stud by an elastic means, the retaining push rod presents its free end following a plane inclined to the inside, against which is slid the stud during part of the forward and return travel of the carriage;

wherein the connecting rod provided with the aforementioned stud also has a bumper situated in a forward position with respect to the stud wherein, when the carriage moves forward (toward the discharge from the machine), the bumper is displaced to the outside by the retaining push rod, freeing the stud from the groove of that member; and

wherein during the forward movement of the carriage, the lever of the axis of revolution of the connecting rods actuates the cutting means for the separation of the corresponding terminal label from the strip of labels across corresponding transmission means.

5,294,284

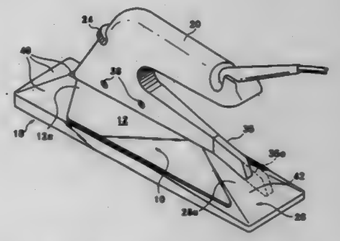
HEAT SHIELD FOR CARPET SEAMING IRON

Keith A. Papulski, Pleasanton, Calif., assignor to Roofing Equipment, Inc., San Leandro, Calif.

Filed Sep. 28, 1992, Ser. No. 952,294

Int. Cl.[5] D06F *75/08, 79/00*

U.S. Cl. 156—574 **8 Claims**



1. A heat shield for a carpet seaming tape iron which includes a body having a metal heat transferring surface forming the top surface of the body and a handle extending up from the

body, the heat shield being adapted to fit against the metal heat transferring surface of the iron, comprising:

a sheet of somewhat pliable, heat-resistant plastic material, having a generally flat central section as an upper surface and a pair of side flaps angling downwardly and outwardly from the central section, generally at a similar angle to that of corresponding surfaces on the metal heat transferring surface of the iron,

the length of the sheet of material being limited at front and back so as to extend less than the length of the metal heat transferring surface when installed between the handle and the body, leaving exposed a front portion as well as a rear portion of the metal heat transferring surface, with the side flaps of the heat shield angling back from the front of the iron's handle to expose an adequate portion of the metal heat transferring surface at the front of the iron, whereby the profile at the rear of the metal heat transferring surface is essentially not raised by the plastic heat shield, and whereby the metal heat transferring surface makes adequate contact with carpet backing to heat the carpet backing properly during a hot melt carpet seaming operation.

5,294,285

PROCESS FOR THE PRODUCTION OF FUNCTIONAL CRYSTALLINE FILM

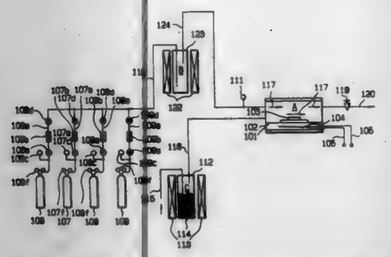
Masahiro Kanai; Shunri Oda, both of Tokyo, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 12,367, Feb. 9, 1987, abandoned. This application Jan. 22, 1990, Ser. No. 469,808

Claims priority, application Japan, Feb. 7, 1986, 61-23693; Feb. 13, 1986, 61-27903; Feb. 13, 1986, 61-27905

Int. Cl.[5] C30B *25/14*

U.S. Cl. 156—610 **55 Claims**



1. A process for forming a functional epitaxial film on a substrate having a surface formed of a single crystal material of specific crystal orientation in a film deposition chamber, comprising the steps of:

(i) generating an active species (A) by supplying an excitation energy to a raw material gas containing halogen and silicon or germanium in a chamber (A) for the generation of said active species (A);

(ii) generating an active species (B) by supplying an excitation energy to H_2 gas in a chamber (B) for the generation of said active species (B); and

(iii) separately introducing said active species (A) and said active species (B) into said film deposition chamber at a flow ratio of 20:1 to 1:20 to mix and chemically react in a space open to said surface of said substrate being maintained at a temperature of 250° to 800° C. and under reduced pressure and to thereby form a functional epitaxial film on said surface of said substrate, said epitaxial film having the same crystal orientation as said substrate.

5,294,286

PROCESS FOR FORMING A THIN FILM OF SILICON

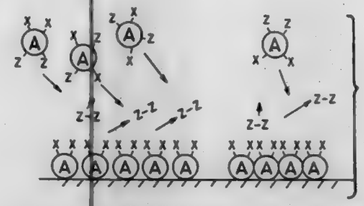
Junichi Nishizawa, 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi-ken; Hitoshi Abe, Sendai, and Soubei Suzuki, 1-3, Otamayashita, Sendai-shi, Miyagi-ken, all of Japan, assignors to Research Development Corporation of Japan, Tokyo; Junichi Nishizawa, Miyagi; Oki Electric Industry Co., Ltd., Tokyo and Soubei Suzuki, Miyagi, all of Japan

Continuation-in-part of Ser. No. 551,631, Jul. 10, 1990, abandoned, which is a continuation of Ser. No. 266,228, Oct. 28, 1988, abandoned, which is a continuation of Ser. No. 759,096, Jul. 25, 1985, abandoned. This application Jan. 12, 1993, Ser. No. 3,308

Claims priority, application Japan, Jul. 26, 1984, 59-153978

Int. Cl.[5] C30B *25/14*

U.S. Cl. 156—610 **34 Claims**



1. A process for forming a monocrystalline thin film of silicon on a silicon substrate located in a crystal growth vessel, comprising the steps of:

(a) evacuating the interior of the crystal growth vessel to an evacuation pressure;

(b) heating the substrate to, and maintaining the substrate at, a temperature within a range of from about 700 to 900 degrees C;

(c) introducing a first supply of gaseous molecules of SiH_2Cl_2 onto the substrate disposed in the growth vessel for a first period of time of from about 0.5 to 200 seconds while maintaining the internal pressure of the growth vessel under a saturation condition within the range of from about 3×10^{-3} to 10^{-1} Pascal to form a single molecular ad-layer of a second compound dissociated from the gaseous molecules of SiH_2Cl_2 on the substrate, said second compound containing silicon;

(d) evacuating the interior of said crystal growth vessel to remove molecules other than those which form said single molecular ad-layer;

(e) introducing a second supply of gaseous molecules reactable with said single molecular ad-layer for a second time period of from about 0.5 to 200 seconds, while maintaining the internal pressure of the growth vessel under the saturation condition within the range of from about 3×10^{-3} to 10^{-1} Pascal so as to chemically react with said single molecular ad-layer to form gaseous molecules of a reactant compound;

(f) evacuating said growth vessel to remove the gaseous molecules of said second supply and said reactant compound so as to leave a monocrystalline thin film with the thickness of a single molecular layer of silicon;

(g) cyclically repeating the sequence of steps (c) to (f) and maintaining the substrate at said temperature to grow the monocrystalline thin film of silicon on the substrate to a desired thickness which is dimensionally as precise as that for a single molecular layer, the desired thickness being attained by cycling the sequence of steps (c) to (f) by a plurality of times equivalent to an integral result of a division of the desired thickness of the monocrystalline thin film of silicon by a thickness of the single molecular monolayer of silicon; and

(h) continuously evacuating the crystal growth chamber during steps (c) to (g) at a substantially constant rate of evacuation, the gaseous molecules being introduced during steps (c) and (e) including a respective amount which is in excess of that necessary for forming just the single molecular layer of silicon during each cycle even taking into account a removal rate of the gaseous molecules caused by the evacuation taking place during steps (c) and (e).

5,294,287

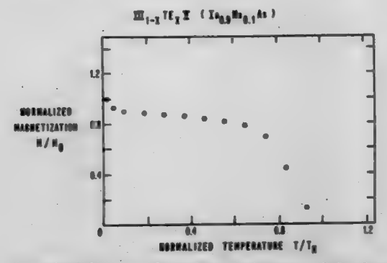
CLASS OF MAGNETIC MATERIALS FOR SOLID STATE DEVICES

Leroy L. Chang, Goldens Bridge; Leo Esaki, Katonah; Hiro Munekata, Mahopac; Hideo Ohno, and Stephan vonMolnar, both of Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 359,294, May 31, 1989, abandoned. This application Aug. 2, 1991, Ser. No. 739,949

Int. Cl.[5] C30B *25/02*

U.S. Cl. 156—611 **15 Claims**



1. A method for manufacturing a substance of the formula III-V or IV including as part of said substance a transition element or rare earth element present in an amount sufficient to change said substance from a paramagnetic state to a locally ordered magnetic state comprising depositing at least one element III and one element V, or at least one element IV and at least one transition element or at least one rare earth element onto a substrate at conditions such that said transition element or rare earth element that is deposited on said substrate is not in equilibrium with said substance wherein:

(a) III is at least one element of Group IIIA;

(b) V is at least one element of Group VA and

(c) IV is an elemental semiconductor from at least one element from Group IVA.

5,294,288

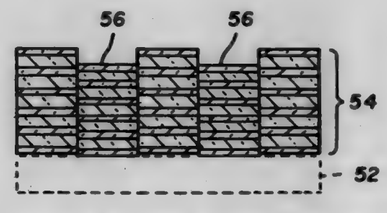
FORMING SOL-GEL DICHROIC COLOR FILTERS

Sharon M. Melpolder, Hilton; Michael J. Hanrahan, and Anne W. West, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 609,567, Nov. 5, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 794,687

Int. Cl.[5] C30B *7/02*

U.S. Cl. 156—621 **1 Claim**



1. In a process for forming an integral dichroic color filter array on an image sensor, comprising the steps of:

(a) coating a planarization layer on the image sensor;

(b) sequentially depositing a plurality of spin-on glass layers on the planarization layer, wherein two of such spin-on glass layers have different desired indices of refraction with one including a mixture of titania and silica partially hydrolyzed and condensed sol-gel polymer suspension and the other a partially hydrolyzed and condensed silica sol-gel polymer suspension, and after depositing each layer, heating such layer at a temperature less than 300° C. to remove residual solvent and to achieve a desired refractive index without causing a phase change of titania from amorphous to either crystalline anatase or rutile or a combination thereof; and exposing the layer containing titania to energy selected to cause titania to phase change from amorphous to either crystalline anatase or rutile or a combination thereof to change the spectral response characteristics of the filter.

5,294,289

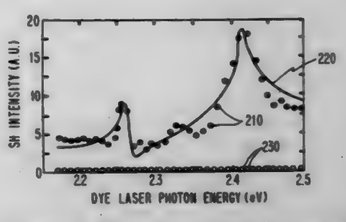
DETECTION OF INTERFACES WITH ATOMIC RESOLUTION DURING MATERIAL PROCESSING BY OPTICAL SECOND HARMONIC GENERATION

Tony F. Heinz, Chappaqua; Gary S. Selwyn; Syothi Singh, both of Hopewell Junction, and John A. Spinetti, Jr., Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 605,906, Oct. 30, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 903

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—626 **20 Claims**



1. A method of observing the surface of a material during processing of the material in the presence without control or limitation of ambient radiation produced by said processing, said method including the steps of

directing coherent radiation of a first frequency toward said surface of said material,

filtering said coherent radiation to pass substantially only radiation at said first frequency and to block substantially all radiation at a second frequency, said second frequency being twice said first frequency,

illuminating said surface with said coherent radiation for an interval of time,

observing radiation from said surface at said second frequency for a period of time beginning slightly subsequent to the beginning of said interval of time of said illuminating step, and

controlling said processing in response to a change in radiation from said surface at said second frequency.

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5,294,290

COMPUTER AND ELECTROMAGNETIC ENERGY BASED MASS PRODUCTION METHOD FOR THE CONTINUOUS FLOW MAKE OF PLANAR ELECTRICAL CIRCUITS

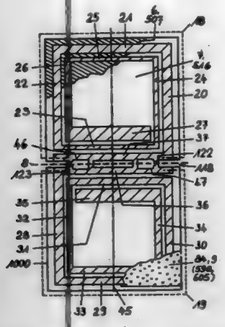
Max E. Reeb, Helfensteinstrasse 7, D-7336 Uhingen, Fed. Rep. of Germany

Continuation of Ser. No. 726,633, Jul. 1, 1991, abandoned, which is a continuation of Ser. No. 539,697, Jun. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 155,154, Feb. 11, 1988, Pat. No. 4,935,093, which is a continuation-in-part of Ser. No. 908,901, Sep. 18, 1986, Pat. No. 4,792,790, which is a continuation of Ser. No. 589,086, Jan. 31, 1984, abandoned. This application Sep. 30, 1992, Ser. No. 954,455

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1982, 3221500

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—630 72 Claims



4. A method of constructing planar electrical circuits of arbitrary design and flexible shape, comprising at least the steps of:

(a) continuously providing a flexible, insulative substrate having a first and a second face;

(b) continuously providing a continuous metal foil having a first and a second face, said first face being blank,

(c) continuously providing a sealing layer depositable at least on one of said first faces of said substrate and said metal foil;

(d) continuously bringing in an at least touching superposition said first faces of said substrate and metal foil and said sealing layer spaced therebetween, thereby forming a connectable combination;

(e) continuously connecting said combination, in a manner to form an at least tri-layered flexible sandwich construction having the sealing layer as its central component, by activating said sealing layer;

(f) continuously controlling light in at least one first light printer, for continuously positively shaping and depositing, under the influence of at least one of pressure and heat, from a meltable powder a plurality of planar insulative film paths on said second face of said metal foil of said at least tri-layered sandwich construction, said plurality of insulative film paths forming at least one repetitive etchant resistive film pattern (each of which) having an outline defining the outline of at least one repetitive conductor path pattern to be successively provided on said substrate;

(g) continuously etching the thus insulativley film-patternized sandwich construction;

(h) continuously drying the etched construction;

(i) repetitively providing severing cuts or perforations in the construction for facilitating its division into individual planar electrical circuits.

5,294,291

PROCESS FOR THE FORMATION OF A CONDUCTIVE CIRCUIT PATTERN

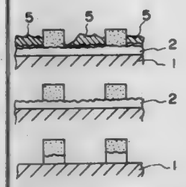
Haruo Akahoshi, Hitachi; Toshinari Takada, Hadano; Fujiko Yutani; Takeyuki Itabashi, both of Hitachi; Shin Nishimura, Katsuta; Satoru Amo, Hitachi; Akio Takahashi, Hitachiota; Rituji Toba, and Masashi Miyazaki, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,543

Claims priority, application Japan, Sep. 20, 1991, 3-241962

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—637 36 Claims



1. A process for the formation of a conductive circuit pattern on a base metal formed on a substrate, which comprises the following steps:

providing on the base metal a plating resist in a pattern corresponding to the circuit to be formed and then forming a circuit pattern by plating;

treating the plating resist with a stripper and then with a stripping residue remover to cut off chemical bonds in the resist by a dehydrating decomposition reaction; and

treating the base metal with an etchant for the base metal, whereby any resist residue still remaining after the treatment with the stripping residue remover is removed and the base metal is etched at areas which have been covered by the plating resist.

5,294,292

PLASMA ASHING METHOD

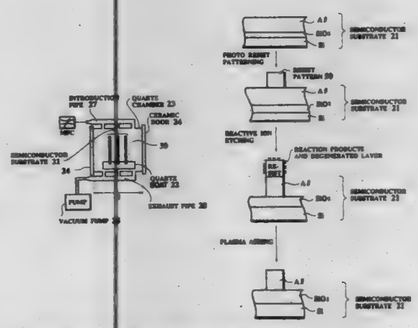
Eiji Yamashita, and Terumi Muguruma, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1990, Ser. No. 572,638

Claims priority, application Japan, Aug. 30, 1989, 1-221687

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—643 10 Claims



1. A plasma ashing method, comprising:

a step for installation of a substrate on which a photoresist material is formed in a chamber having an internal wall,

a step for drawing maintaining a vacuum in the chamber,

a step for filling a plasma ashing gas in the chamber, and

a step for supplying a high-frequency electric power to the plasma ashing gas in the chamber,

wherein the high-frequency electric power per area of the internal wall of the chamber is 0.10 [W/cm^2] or less.

5,294,293

TARGET DOMAIN PROFILING OF TARGET OPTICAL SURFACES USING EXCIMER LASER PHOTOABLATION

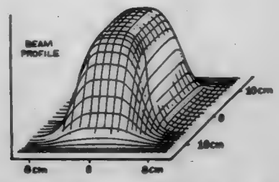
William F. Jones, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 525,515, May 18, 1990, Pat. No. 5,061,342. This application Oct. 28, 1991, Ser. No. 783,293

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.[5] B44C *1/22*; B29C *37/00*; G02C *7/04*

U.S. Cl. 156—643 6 Claims



4. A method of modifying the surface of a cornea comprising the steps of:

a) providing a cornea in situ to an apparatus capable of indexing the position of said cornea to the beam path of an energy beam capable of photoablating material from said cornea,

b) scanning the domain of the energy beam across the cornea along at least one axis, and controlling the product of the intensity of said beam with time in order to control the amount of ablation of said cornea along at least one axis of said corneal surface.

5,294,294

METHOD OF DRY ETCHING IN SEMICONDUCTOR DEVICE PROCESSING

Isamu Namose, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

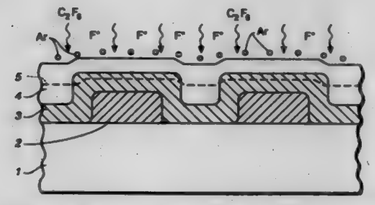
Continuation-in-part of Ser. No. 736,855, Jul. 29, 1991, Pat. No. 5,173,151. This application Dec. 21, 1992, Ser. No. 994,563

Claims priority, application Japan, Jul. 30, 1990, 2-201811; Apr. 5, 1991, 3-72811

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 19 Claims



1. A method of producing a semiconductor device including a step for simultaneously dry etching a deposited silicon oxide layer comprising the steps of:

providing an etching gas mixture comprising a carbon fluoride gas, C_nF_{2n+2}, wherein n is an integer, and an inert gas;

creating a plasma wherein fluorine radicals, F*, are liberated in the plasma;

providing an absorption layer comprising inert gas molecules on an etching surface of said silicon oxide layer; and

applying the fluorine radicals, F*, to the etching surface of said silicon oxide layer;

wherein the formed absorption layer on the etching surface provides a buffering effect on the application of the fluorine radicals, F*, to the etching surface thereby permitting enhancement of the etching rate while maintaining controlled etching uniformity.

5,294,295

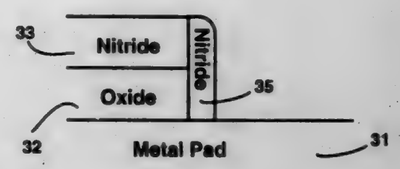
METHOD FOR MOISTURE SEALING INTEGRATED CIRCUITS USING SILICON NITRIDE SPACER PROTECTION OF OXIDE PASSIVATION EDGES

Calvin T. Gabriel, Pacifica, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Oct. 31, 1991, Ser. No. 786,322

Int. Cl.[5] B44C *1/22*

U.S. Cl. 156—657 2 Claims



1. A method for passivation of an integrated circuit device, the method comprising the steps of:

(a) depositing a film of silicon dioxide over the integrated circuit device;

(b) depositing a film of silicon nitride over the film of silicon dioxide,

(c) etching the film of silicon nitride and the film of silicon dioxide using a single passivation mask to expose bond pads of the integrated circuit device; and,

(d) placing spacer regions of silicon nitride over edges of the film of silicon dioxide exposed by the etching performed in step (c).

5,294,296

METHOD FOR MANUFACTURING A CONTACT HOLE OF A SEMICONDUCTOR DEVICE

Soo-Sik Yoon, Kyoungki-do; Jin-Woong Kim, Seoul; Jin-Seung Oh, Seoul; Il-Wook Kim, Seoul, and Hee-Kook Park, Seoul, all of Rep. of Korea, assignors to Hyundai Electronics Industries, Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Feb. 11, 1993, Ser. No. 16,597

Claims priority, application Rep. of Korea, Feb. 12, 1992, 92-2005

Int. Cl.[5] H01L *21/28, 21/3205*

U.S. Cl. 156—657 1 Claim

1. A method for manufacturing a contact hole of a semiconductor device comprising the steps of:

forming an insulating layer on a silicon substrate;

depositing a first polysilicon layer over said insulating layer;

forming a photoresist pattern with a window having a minimum line width by a lithographic technique on said first polysilicon layer;

forming a first polysilicon pattern by an anisotropic etching process employing said photoresist pattern until said insulating layer is exposed;

forming a concave portion in said insulating layer by isotropically etching a portion of said insulating layer exposed by the step forming said first polysilicon pattern;

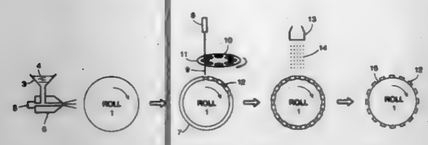
VOL 1160 ISS 3 MR 15 1994 UMI

removing said photoresist pattern;
depositing a second polysilicon layer over said concave portion and said first polysilicon pattern;
forming a second polysilicon spacer at a sidewall of said first polysilicon pattern and said concave portion by a blanket dry etching process; and



etching said insulating layer employing said first polysilicon pattern and said second polysilicon spacer as a mask until said silicon substrate is exposed, thereby forming a contact hole.

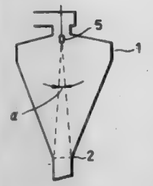
5,294,297
METHOD FOR PROCESSING SURFACE OF WORK ROLL
Tetsuya Nishiura; Motofumi Kurahashi; Masanori Takemoto, all of Tokai; Yoshihei Narita, Kyoto; Shigeru Hagio, Kyoto, and Shinichi Uehara, Kyoto, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP92/00954, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO93/03199, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 30, 1992, Ser. No. 39,015
Claims priority, application Japan, Jul. 30, 1991, 3-190397
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—659.1 **5 Claims**



1. A method for processing the surface of a work roll, comprising coating the surface of a work roll at a predetermined portion thereof with a cured product of a photosensitive resin composition to form a pattern and chemically etching the surface of the pressure roll at the remaining uncoated portions and peeling the cured product to process the surface of the pressure roll, wherein said composition comprises a visible light curable photosensitive resin composition and is cured by visible light irradiation.

5,294,298
SPRAY-DRYING GRANULATION APPARATUS
Munetoshi Maesaka, Yokohama; Takashi Itoh, Fujieda; Shizuo Aishima, and Masashi Ohkawara, both of Yokohama, all of Japan, assignors to Ohkawara Kakohki Co., Ltd., Yokohama, Japan
Filed Sep. 29, 1992, Ser. No. 953,094
Int. Cl.[5] B01D *1/18*
U.S. Cl. 159—4.01 **2 Claims**

1. A spray-drying granulation apparatus comprising:
a chamber;
a spray-drying section formed in said chamber at an upper portion thereof and including a nozzle for spraying a feed solution and means for supplying hot air to dry said feed solution to a powder, said nozzle using a two-fluid pressure nozzle comprising a centrifugal pressure nozzle for spraying a feed solution and a cylindrical pipe for blowing out a high-speed gas, provided around the centrifugal pressure nozzle;



a fluidized granulation section formed in a lower portion of said chamber for fluidizing powder discharged from said spray drying section; and
wherein the two-fluid pressure nozzle is constructed so as to form a feed solution spray having a cone angle of 8°–30°.

5,294,299
PAPER, CARDBOARD OR PAPERBOARD-LIKE MATERIAL AND A PROCESS FOR ITS PRODUCTION
Manfred Zeuner, and Peter Doblanzki, both of Frauenfeld 7, 8359 Ortenburg, Fed. Rep. of Germany
Continuation of Ser. No. 536,597, Jun. 28, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,131
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1988, 3837746
Int. Cl.[5] D21H *13/36*
U.S. Cl. 162—145 **30 Claims**

1. A paper, cardboard or paperboard material containing inorganic fibers, inorganic particulate additives and organic binder or flocculating agents, wherein
(A) the particulate inorganic additives constitute 40 to 80% by weight of the dry matter of the material, the inorganic particulate additives are composed of
(i) 35–75% by weight of the dry matter of the material of a base filler selected from the group consisting of SiO_2, kaolin, aluminum oxide, fuller's earth, calcium carbonate and gypsum, of which 35 to 99% by weight have a particle size of <2 μm and not more than 10% by weight have a particle size of >20 μm, and
(ii) 1 to 15% by weight of the dry matter of the material of an anionic flocculating active pigment of which at least 50% by weight have a primary particle size of <2 μm, selected from the group consisting of aluminum hydroxide, bentonite and colloidal amorphous SiO_2, and
(B) the organic flocculating agent is a cationic polymeric carbohydrate with an average molecular weight of 100,000 to 2,000,000 and a degree of substitution of 0.01 to 0.3 and is present in a quantity of 0.5 to 6% by weight, based on the dry matter of the material,
1000 g of base filler being unable to bind more than 0.1 mMol and 1000 g of anionic flocculating active pigment being able to bind at least 0.1 mMol cationic carbohydrate under flocculation prior to the attachment to the inorganic fiber.

5,294,300
PRODUCTION METHOD OF EXPANDED GRAPHITE SHEET AND EXPANDED GRAPHITE SHEET OBTAINED THEREBY
Toshiki Kusuyama, Wakayama, Japan, assignor to Toyo Tanso Co., Ltd., Osaka, Japan
Filed Jul. 20, 1992, Ser. No. 914,565
Claims priority, application Japan, Jun. 21, 1991, 3-177412
Int. Cl.[5] D21H *13/26*
U.S. Cl. 162—157.3 **5 Claims**

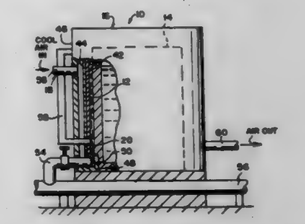
1. A method for producing an expanded graphite sheet for use as a gasket material, comprising the steps of:
preliminarily expanding graphite particles to not less than 50 times their average normal size;
compressing the graphite particles to obtain a bulk density between 0.02 g/cm^3 and 0.3 g/cm^3;
grinding the compressed graphite particles to a size not greater than 50 mesh;
suspending the ground graphite particles in water in the presence of a binder and a reinforcing fiber formed by fibrillating an aramid pulp fiber to have a specific surface area not less than 3.0 m^2/g to obtain a paper-making slurry; and
wet-processing the slurry into a sheet,
wherein the slurry consists of 60 to 95 parts by weight of the graphite particles, 3 to 25 parts by weight of the reinforcing fiber, and 1 to 20 parts by weight of the binder.

5,294,301
PROCESS FOR MANUFACTURE OF PAPER
Velayudhan N. G. Kumar, Bombay, India, and Patrick G. Jobe, West Fields, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.
Filed May 28, 1992, Ser. No. 889,861
Claims priority, application United Kingdom, May 30, 1991, 9111628
Int. Cl.[5] D21H *17/28*
U.S. Cl. 162—168.1 **9 Claims**

1. In a process for the manufacture of paper from an aqueous pulp furnish, the improvement comprising adding to the aqueous pulp furnish at least about 0.1% based on the weight of the pulp, of at least one graft copolymer of starch selected from the group consisting of starch graft-polymethacrylic acid, starch graft-polyacrylic acid, cationic starch graft-polymethacrylic acid and cationic starch graft-polyacrylic acid, wherein said graft copolymer has an add-on amount of polymethacrylic or polyacrylic acid of from 0.1 to 5% by weight of starch.

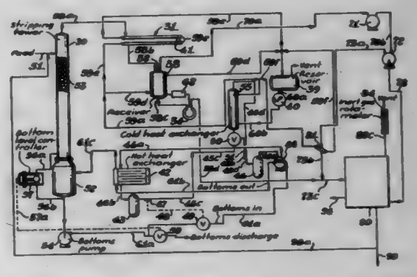
5,294,302
RECOVERY OF MATTER EVAPORATED FROM BARRELS
Raymond R. Colton; P.O. Box 216, New York, N.Y. 10023; Raymond R. Gamby, 873-A Heritage Village, Southbury, Conn. 06488, and George Spector, 233 Broadway-Room 702, New York City, N.Y. 10279
Filed Nov. 7, 1991, Ser. No. 788,841
Int. Cl.[5] B01D *3/00*
U.S. Cl. 202—164 **4 Claims**

1. An apparatus for collecting evaporated matter from a vat which comprises:
a) means for gathering the evaporated matter from the vat; and
b) means for condensing the evaporated matter into a liquid, so that the liquid can be recovered and recycled, wherein said gathering means includes:
c) an absorbent liquid collector which fits over and lines the vat for absorbing condensed liquid;
d) a shield having a bottom inwardly turned flange which fits over said absorbent collector;
e) a gasket which is placed between the flange of said shield and a bottom perimeter of the vat to seal said absorbent collector therein; and
f) a recovery conduit for re-cycling liquid fluidly connected through the bottom of said shield.
3. An apparatus for collecting evaporated matter from a vat which includes:
a) means for gathering the evaporated matter from the vat; and
b) means for condensing the evaporated matter into a liquid, so that the liquid can be recovered and recycled, wherein said gathering means further includes:
c) an inner shield which fits over the vat in a spaced relationship;
d) a glass coating over said inner shield;



e) an outer shield having a bottom inwardly turned flange which fits over said inner shield in a spaced relationship;
f) a gasket which is placed between the flange of said outer shield and a bottom perimeter of the vat to seal said inner shield and said glass coating therein;
g) a C-shaped glass sleeve extending through said outer shield and into said inner shield;
h) a faucet fluidly connected through the bottom of said outer shield and into said inner shield; and
i) a recovery conduit for recycling liquid fluidly connected to said faucet.

5,294,303
METHOD FOR REMOVING DISSOLVED IMMISCIBLE ORGANICS FROM AM AQUEOUS MEDIUM AT AMBIENT TEMPERATURES
Lanny A. Robbins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 8, 1992, Ser. No. 987,941
Int. Cl.[5] B01D *3/10, 19/00*
U.S. Cl. 203—10 **6 Claims**



1. A process for separating water-immiscible, volatile organic liquid present as a dissolved trace in an aqueous dispersion which comprises:
(a) Reducing the press on the aqueous dispersion within a stripping vessel at ambient temperature of the aqueous dispersion at a temperature within the range of 0°–60° C. sufficiently to cause boiling said water-immiscible, volatile organic liquid having a relative volatility to water of at

least 1000 and a density differentiated from water at 20° C. by at least 0.01,

(b) Contacting the vapor from said boiling dispersion counter-currently with an incoming feed stream of the aqueous dispersion, the contacting zone being of sufficient length to produce relative enrichment of the vapors in organic content,

(c) Cooling the vapor effluent from the contacting zone from step (b) in a condensing heat exchanger cooled directly or indirectly to below ambient temperature with an evaporative refrigerant in the cold loop of a heat pump,

(d) Heating the aqueous dispersion with a compressed evaporative refrigerant in the hot loop of the heat pump to enhance dispersion boiling,

(e) Collecting condensate of dispersion vapor,

(f) Coalescing aqueous and organic phases of the condensate,

(g) Separating immiscible organic and aqueous phases formed in step (f) to recover the organic liquid.

5,294,304

PROCESS FOR THE RECOVERY OF ABSOLUTE ETHANOL BY VAPOR COMPRESSION EXTRACTIVE DISTILLATION

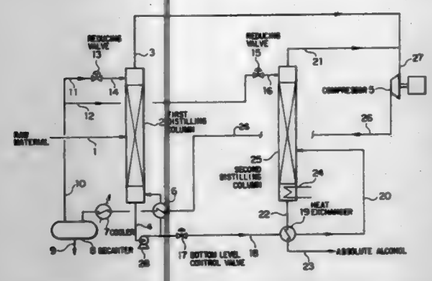
Yoshikazu Kano, Yokohama; Hirotoshi Horizoe, Hiroshima; Tetsuya Tanimoto, Hiroshima, and Itsuo Yamamoto, Hiroshima, all of Japan, assignors to Ministry of International Trade and Industry, Tokyo, Japan

Continuation of Ser. No. 721,568, Jul. 29, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 29,961

Claims priority, application Japan, Nov. 14, 1989, 1-294032

Int. Cl.[5] B01D *3/40*

U.S. Cl. 203—19 **1 Claim**



1. A process for the production of absolute ethanol, which comprises

feeding a raw material containing ethanol and water, as predominant components, to the middle part of a first distillation column,

feeding a hydrocarbon solvent to the upper part of the first distillation column, maintaining the hydrocarbon solvent at such a temperature and pressure that a liquid phase and a gas phase of the hydrocarbon solvent are simultaneously present in the first distillation column,

withdrawing a liquid mixture comprising ethanol and hydrocarbon solvent, substantially free from water content, from the bottom of the first distillation column,

withdrawing a first gas comprising water and hydrocarbon solvent, substantially free from ethanol, from the top of the first distillation column,

feeding the liquid mixture of ethanol and hydrocarbon solvent from the bottom of the first distillation column into a second distillation column,

stripping the hydrocarbon solvent from the ethanol in the second distillation column and withdrawing absolute ethanol from the bottom of the second distillation column;

withdrawing a second gas comprising hydrocarbon solvent from the top of the second distillation column and forming a gaseous mixture with the first gas from the top of the first distillation column,

compressing the gaseous mixture of the first and second gases and using at least some of the recompression heat thereby produced as a heat source for the first distillation column,

cooling and liquifying the gaseous mixture of the first and second gases,

separating the hydrocarbon solvent from the water in the liquified gaseous mixture, and

recycling the hydrocarbon solvent into the upper parts of the first and second distillation columns.

5,294,305

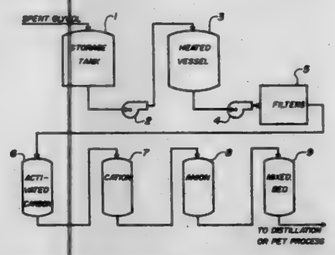
ETHYLENE GLYCOL RECOVERY PROCESS

Frank S. Craft, Sr., and Michael D. Kelly, both of Memphis, Tenn., assignors to Mobile Process Technology, Inc., Memphis, Tenn.

Filed May 6, 1993, Ser. No. 57,557

Int. Cl.[5] B01D *3/14, 15/04;* **C07C** *29/74*

U.S. Cl. 203—28 **31 Claims**



1. A process for the recovery of ethylene glycol from spent glycol formed in the manufacture of polyethylene terephthalate wherein terephthalic acid or dimethyl terephthalate is reacted with an excess of ethylene glycol to form dihydroxyethyl terephthalate and said dihydroxyethyl terephthalate is polymerized in the presence of a metal oxide catalyst to form polyethlene terephthalate and spent glycol containing metal oxide catalysts, cation impurities and anion impurities, low molecular weight terephthalate oligomers, ethylene glycol and diethylene glycol, comprising the steps of:

(a) raising the temperature of said spent glycol sufficiently to solubilize said low molecular weight terephthalate oligomers;

(b) passing said spent glycol at said raised temperature through an ion exchange medium capable of removing said metal oxide catalysts; and

(c) distilling said spent glycol to recover ethylene glycol, diethylene glycol and terephthalate oligomers.

5,294,306

ELECTROLYTIC REMOVAL OF MAGNESIUM FROM MOLTEN ALUMINUM

Norman E. Howard, Harbor Beach, and Basant L. Tiwari, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1992, Ser. No. 980,049

Int. Cl.[5] C25C *3/04, 3/20, 3/08*

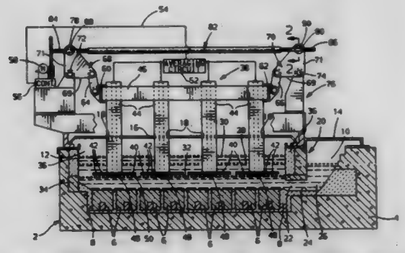
U.S. Cl. 204—70 **13 Claims**

11. A method for controlling the temperature of an aluminum demagging cell having a layer of molten salt electrolyte floating atop a layer of molten Mg-contaminated aluminum comprising the steps of:

positioning a non-consumable cathode in said electrolyte spaced from the interface between said aluminum and said salt by an interelectrode gap;

passing sufficient electrolyzing current through said aluminum, electrolyte and cathode to scavenge said magnesium from said aluminum and deposit it on said cathode;

measuring an operating condition of the cell; and



moving said cathode to and fro with respect to said interface in response to said measured condition to add more or less heat energy to said cell so as to maintain said cell in an optimal temperature range.

5,294,307

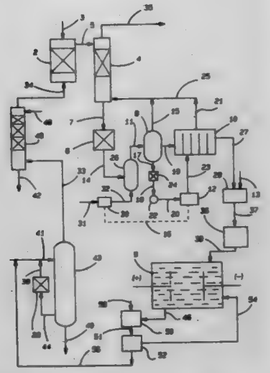
INTEGRATED PROCESS FOR THE PRODUCTION OF ALKALI AND ALKALINE EARTH METAL CHLORATES AND CHLORINE DIOXIDE

John R. Jackson, Wilmington, N.C., assignor to Huron Tech Corp, Delco, N.C.

Filed Jul. 31, 1992, Ser. No. 923,379

Int. Cl.[5] C25B *1/26*

U.S. Cl. 204—95 **20 Claims**



1. A process for producing chlorine dioxide comprising the steps of:

(A) charging an electrochemical cell having an anode and a cathode with an input solution containing chromate values and an alkali metal chloride or an alkaline earth metal chloride dissolved in water;

(B) electrolyzing the input solution in the cell to produce an output solution containing the chromate values and an alkali metal chlorate or an alkaline earth metal chlorate;

(C) removing the chromate values from the output solution to obtain a treated solution that is substantially free of chromate values containing about 10 parts per million or less of total chromium ions by reacting the output solution at an elevated temperature and a neutral or an acid pH with a reducing agent selected from the group consisting of hydroxylamine, an addition compound thereof, and a salt thereof;

(D) recycling the chromate values removed by inclusion in the input solution of step (A);

(E) passing the treated solution of step (C) to a chlorine dioxide generator and producing chlorine dioxide and by-products from the treated solution;

(F) converting the by-products to a substantially chlorine-free carbon dioxide and a reusable solution of an alkali metal chlorate or an alkaline earth metal chlorate, and

(G) venting the carbon dioxide and recycling the reusable solution by inclusion in the input solution of step (A).

5,294,308

METHOD OF PREDICTING A SHORT CIRCUIT IN AN ELECTROLYTIC FINISHING SYSTEM

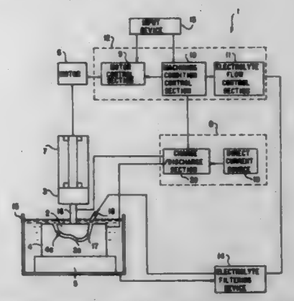
Teruo Asaoka; Haruki Sugiyama, and Shogo Yoshioka, all of Shizuoka, Japan, assignors to Shizuoka Seiko Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 966,665, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 624,852, Dec. 10, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 69,674

Claims priority, application Japan, Apr. 12, 1989, 1-92713; Apr. 14, 1989, 1-95652; Jul. 6, 1989, 1-175315

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—129.2 **8 Claims**



1. A method of predicting a short circuit in an electrolytic finishing system where a machining pulse is supplied between an electrode and a work disposed in electrolyte with a predetermined space there-between, so as to electrolytically finish the work, the method comprising the steps of:

detecting an abnormal increase of electrode-to-electrode voltage during supply of said machining pulse, said abnormal increase occurring independently of an increase of voltage at a short circuit between the electrode and the work at a time before the short circuit; and

cutting off the supply of said machining pulse in according with the detection of the abnormal increase.

5,294,309

ELECTRO-ABRASIVE POLISHING OF THE INNER SURFACE OF PIPES TO EXTRA-SMOOTH MIRROR FINISH

Kouichi Seimiya, Tsukuba, and Keiichirou Asagawa, Ayase, both of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Miracle Company Limited, Ayase, both of Japan

PCT No. PCT/JP90/01389, § 371 Date Jun. 28, 1991, § 102(e) Date Jun. 28, 1991, PCT Pub. No. WO91/06388, PCT Pub. Date May 16, 1991

PCT Filed Oct. 30, 1990, Ser. No. 691,012

Claims priority, application Japan, Nov. 1, 1989, 1-285259

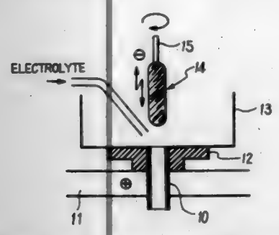
Int. Cl.[5] C25F *3/16*

U.S. Cl. 204—129.35 **4 Claims**

1. An electro-abrasive polishing process of the inner surface of a small-diameter pipe to an extra-smooth mirror finish which comprises:

VOL 1160 ISS 3 MR 15 1994 UMI

a preliminary-polishing process in which the roughness of the inner surface of the small-diameter pipe is reduced to at least 0.5 μm Rmax or under by electroabrasive polishing process of the inner surface of the small-diameter pipe by inserting a preliminary-polishing tool electrode comprising a core electrode wrapped with a non-woven nylon sheet comprising abrasive grains in the small-diameter pipe to be polished and passing a small amount of current through the electrolyte between the small-diameter pipe that serves as the anode and the tool electrode that serves as the cathode and, at the same time, by mechanically polishing the inner surface of the small-diameter pipe by rotating the tool electrode and axially reciprocating it or the small-diameter pipe relative to each other; and



a subsequent mirror finishing process in which the inner surface of the small-diameter pipe is polished to a mirror finish by electro-abrasive polishing process of the inner surface of the small-diameter pipe by inserting a mirror-finishing tool electrode comprising a core electrode wrapped with an urethane sheet in the small-diameter pipe to be polished and passing a small amount of current through the electrolyte containing free fine abrasive grains between the small-diameter pipe that serves as the anode and the tool electrolde that serves as the cathode and, at the same time, by mechanically polishing the inner surface of the small-diameter pipe by rotating the tool electrode and axially reciprocating it or the small-diameter pipe relative to each other, in conjunction with the action of the free fine grains contained in the electrolyte.

5,294,310

SURFACTANT RECOVERY PROCESS

James D. B. Smith, Monroeville; Karl F. Schoch, Jr., Penn Hills, and David C. Grant, Gibsonia, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 16, 1992, Ser. No. 913,658
Int. Cl.[5] C25F *5/00*; C02F *1/46*
U.S. Cl. 204—130 **11 Claims**

1. A process of recovering surfactants in an aqueous solution from organic compounds contaminating the solution, comprising the steps of:

passing an electrical current through an aqueous solution containing a surfactant which doe snot polymerize at about 2 volts and contaminated with a colloidal dispersion of organic compounds at a voltage between about 2 and 4 volts to breakup the dispersion of contaminating organic compounds in the aqueous solution without polymerizing the surfactant; and

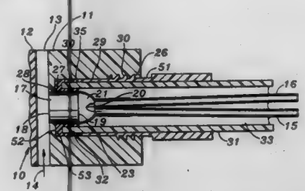
separating the contaminating organic compounds from the surfactant-containing aqueous solution.

5,294,311

SALT BRIDGE FOR ANALYTICAL CHEMISTRY SYSTEM

Jack D. McNeal, Long Beach; Delbert D. Jackson, Placentia, and Theodore R. Nichols, Fullerton, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 322,811, Mar. 13, 1989, Pat. No. 5,130,010. This application Apr. 2, 1992, Ser. No. 862,185
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] G01N *27/28*
U.S. Cl. 204—153.1 **13 Claims**



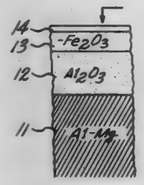
1. A salt bridge for a flow cell of a chemistry analyzer, the salt bridge being constituted by an integral arrangement comprising a porous bridge element for location in an aperture in a flow cell, the porous bridge element having a first portion for exposure to fluid flow through a path in the flow cell and a second portion for exposure to flow of a reference fluid through internal reference tubes, the second portion being adjacent to fluid flow through the internal reference tubes, the two portions being spaced to form between them a salt bridge, means for reference fluid to flow towards and from the second portion of the element, means for locating the porous bridge element between the fluid flow in the flow cell and the flow of the reference fluid, the locating means being for securing the porous bridge element in alignment in the aperture such that the first portion is exposed to flow through the path and the second portion is exposed to flow of the reference fluid, and the means for locating the bridge including an anchoring rube for removable location with the flow cell such that the removal of the tube removes the bridge from the aperture in the flow cell, and the means for reference fluid flow towards and from the element.

5,294,312

METHOD FOR PREPARING A MAGNETIC RECORDING MEDIUM

Tsung-Shune Chin, Wei-Der Chang, and Ming-Cheng Deng, all of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Apr. 28, 1993, Ser. No. 54,516
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—192.2 **20 Claims**



1. A method for preparing a magnetic recording medium comprising the steps of:

(a) providing a substrate;

(b) providing an Fe-Mn alloy target formed of manganese and iron having a purity of about 99.7% and attaching thereon Co and Fe pellets to modify a composition of said magnetic recording medium; and

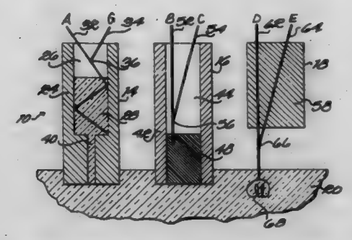
(c) depositing said target by one of an RF-reactive magnetron sputtering and a DC-reactive magnetron sputtering methods to form a magnetic recording medium thin film on said substrate under controlled conditions.

5,294,313

SENSORS FOR MONITORING WASTE GLASS QUALITY AND METHOD OF USING THE SAME

Dennis F. Bickford, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 25, 1992, Ser. No. 934,394
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.15 **12 Claims**



1. A probe system for determining oxygen and alkali activity of a glass melt, said system comprising:

a first probe having

a first conducting wire,

a second conducting wire,

a first quantity of oxygen, and

a first reference electrolyte adjacent said first quantity of oxygen,

said first wire in electrical connection with said first wire,

said first and second wires placed in said second quantity of oxygen and said first wire extending onto said first reference electrolyte;

a second probe having

a first wire,

a second wire,

a second quantity of oxygen, and

a second reference electrolyte adjacent to said second quantity of oxygen,

said first wire in electrical communication with said second wire,

said first and second wires placed in said second quantity of oxygen and said first wire extending into said second reference electrolyte; and

a third probe having

a first wire,

a second wire in electrical connection with said second wire,

said first wire extending beyond said second wire,

said first, second and third probes positioned in spaced relation in said melt, said first and said second reference electrolytes and said first wire of said third probe being in electrical connection with said melt so that a first electrical potential difference can be measured across said first wire of said first probe and said first wire of said second probe, and a second electrical potential difference can be measured across said first wire of said second probe and said first wire of said third probe,

said first measurement indicating alkali activity of said melt and said second measurement indicating oxygen activity of said melt.

5,294,314

METHOD OF CROSSLINKING AMINO ACID CONTAINING POLYMERS USING PHOTOACTIVATABLE CHEMICAL CROSSLINKERS

Anthony B. Nesburn, Malibu, Calif.; Michael Gorin, Rockville, Md.; Marvin Martinez, Glendale, Calif.; M. Cristina Kenney, Malibu, Calif., and Ezra Maguen, Los Angeles, Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Continuation of Ser. No. 159,603, Feb. 24, 1988. This application Feb. 22, 1991, Ser. No. 659,497
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] C07K *3/00*
U.S. Cl. 204—157.68 **3 Claims**

1. A method of preparing a superhydrated molecularly crosslinked collagen for use as a contact lens material comprising:

a. combining two or more collagen molecules with a photoactivatable heterobifunctional crosslinking agent having a conventional site and a photoactivatable site such that the conventional site on the crosslinking agent is bound to the collagen molecule, and the other photoactivatable site on the crosslinking agent is unbound, such that upon photoactivation, crosslinks are formed when the photoactivated site on the crosslinking agent binds to another collagen molecule;

b. photoactivating the collagen-crosslinking agent combination to form said crosslinks; and

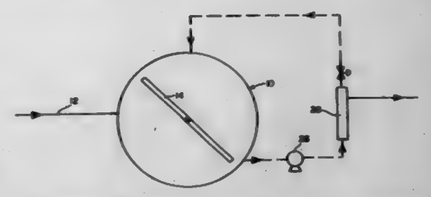
c. incorporating the said two or more collagen molecules into a contact lens.

5,294,315

METHOD OF DECONTAMINATING A CONTAMINATED FLUID BY USING PHOTOCATALYTIC PARTICLES

Gerald Cooper, Boulder, and Matthew A. Ratcliff, Lakewood, both of Colo., assignors to PhotoCatalytics, Inc., Boulder, Colo.

Division of Ser. No. 451,375, Dec. 15, 1989, Pat. No. 5,174,877, which is a continuation-in-part of Ser. No. 888,872, Jul. 24, 1986, Pat. No. 4,888,101. This application Oct. 9, 1992, Ser. No. 944,198
Int. Cl.[5] C07B *63/00*
U.S. Cl. 204—158.20 **9 Claims**



1. A method of decontaminating a contaminated fluid by using photocatalytic particles comprising the steps of:

suspending photocatalytic particles in a contaminated fluid to form a slurry;

illuminating the slurry with light to photocatalytically activate said photocatalytic particles and thereby substantially decontaminate said contaminated fluid;

filtering the decontaminated fluid and the photocatalytic particles suspended therein in a substantially continuous operation to segregate said decontaminated fluid substantially completely from the photocatalytic particles;

changing the direction of the fluid which has passed through the filter to cause the fluid to flow back through the filter and dislodge any photocatalytic particles from the filter which have become lodged therein;

collecting the dislodged photocatalytic particles; and

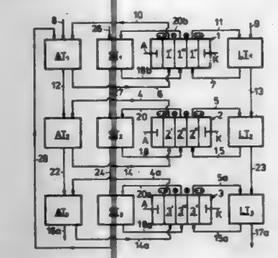
collecting the fluid which has passed through the filter.

5,294,316

PROCESS AND APPARATUS FOR ELECTRODIALYSIS OF AN ALKALI SULFATE CONTAINING AQUEOUS SOLUTION

Heinrich Schmidt, Vöcklabruck; Christoph Boxan, Lenzing; Arnold Verwanger, Schörfling; Reinhard Holzinger, Regau; Hans Kalleitner, Schörfling, and Jamal Salim, Timelkam, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Continuation of Ser. No. 809,840, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 598,239, Oct. 15, 1990, abandoned. This application Feb. 9, 1993, Ser. No. 15,322
Claims priority, application Austria, Oct. 31, 1989, 2507/89
Int. Cl.[5] B01D *61/44*
U.S. Cl. 204—182.4 3 Claims



1. A multistage process for the electrodialysis of a spent spin bath liquor incurred in the production of regenerated cellulose by way of the xanthogenate process, said liquor containing alkali sulfate and Ca^{++}, comprising the steps of

providing a plurality of electrodialytic three-compartment cell means operating in series, each cell means comprising acid and base compartments and two exclusively cationic exchange membranes in the cell interior, and being delimited by bipolar ion exchange membranes,

conducting said liquid exclusively through first acid compartments of said cell means in series, each of said first acid compartments being delimited by one of the bipolar ion exchange membranes and one of the exclusively cationic exchange membranes in its respective cell means,

simultaneously conducting concentrated aqueous Na_2SO_4 solution through second acid compartments of said cell means in series, each of said second acid compartments being delimited by two exclusively cationic exchange membranes in its respective cell means, thereby acidifying said Na_2SO_4 solution and thereby migrating Ca^{++} from said first acid compartment through one of said exclusively cationic exchange membranes into said concentrated aqueous Na_2SO_4 solution in said second acid compartment to a concentration of 3 ppm or less, and

feeding said acidified Na_2SO_4 solution containing Ca^{++} in a concentration of 3 ppm or less into said first acid compartment of the first of said series operating cell means.

5,294,317

OXYGEN GENERATING ELECTRODE

Hiroaki Saito, Chiba; Yukio Kawashima, Tokyo, and Kazuhide Ohe, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 28,805
Claims priority, application Japan, Mar. 11, 1992, 4-87621; Apr. 14, 1992, 4-120029
Int. Cl.[5] C25B *11/00*
U.S. Cl. 204—290 F 12 Claims

1. An oxygen generating electrode comprising

a conductive substrate,

a first layer on the substrate of metallic platinum and tantalum oxide containing 80 to 99 mol% of tantalum and 20 to 1 mol% of platinum calculated as metals, and

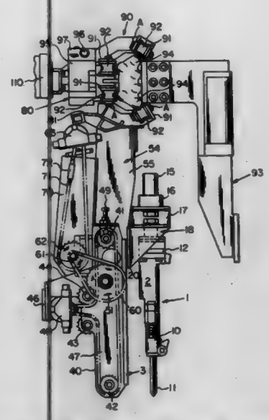
a second layer on the first layer of iridium oxide and tantalum oxide containing 80 to 99.9 mol% of iridium and 20 to 0.1 mol% of tantalum calculated as metals.

5,294,318

CRUSTBREAKING ASSEMBLY FOR ALUMINUM ELECTROLYSIS CELLS

Louis A. Grant, Jr., Pittsburgh, and Albert J. Kristoff, Allison Park, both of Pa., assignors to Louis A. Grant, Inc., Pittsburgh, Pa.

Filed Jul. 15, 1992, Ser. No. 914,863
Int. Cl.[5] C25C *3/14*
U.S. Cl. 204—245 20 Claims



1. A crustbreaking assembly for use in aluminum fusion electrolysis cells comprising:

a plurality of rails extending along a first axis;

a frame supporting said rails;

a carriage adapted to engage and be moveable along said plurality of rails in a direction substantially parallel to said first axis;

a slide assembly;

rotation means for said slide assembly pivotally mounting said slide assembly to said carriage for pivotally movement of said slide assembly about a second axis which is spaced from and substantially parallel to said first axis;

a hammer assembly having a longitudinal axis which is substantially perpendicular to said first and second axes;

means for mounting said hammer assembly on said slide assembly; and

means for reciprocating said hammer assembly in a rectilinear manner along said hammer assembly longitudinal axis.

5,294,319

HIGH SURFACE AREA ELECTRODE STRUCTURES FOR ELECTROCHEMICAL PROCESSES

Jerry J. Kaczur, and David W. Cawlfield, both of Cleveland, Tenn., assignors to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 739,041, Aug. 1, 1991, which is a continuation-in-part of Ser. No. 456,437, Dec. 26, 1989, Pat. No. 5,041,196. This application Jan. 27, 1993, Ser. No. 9,905
Int. Cl.[5] C25B *11/04*
U.S. Cl. 204—290 R 17 Claims

1. A porous, high surface area electrode structure comprising:

a) a substrate consisting essentially of fine metallic fibers or conductive ceramic fibers having a density of less than about 50% and a specific surface area to volume ratio of greater than about 30 cm^2/cm^3, the individual fibers having a length to diameter aspect ratio greater than 1000:1,

b) an electrocatalyst material coated on at least a portion of said substrate; and

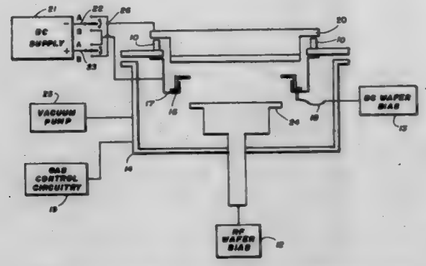
c) a current distributor electrically connected to said electrocatalyst coated substrate.

5,294,320

APPARATUS FOR CLEANING A SHIELD IN A PHYSICAL VAPOR DEPOSITION CHAMBER

Sasson Somekh, and Dan Maydan, both of Los Altos Hills, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 644,462, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 477,788, Feb. 9, 1990, abandoned. This application May 5, 1992, Ser. No. 878,938
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.11 6 Claims



1. An apparatus for physical vapor deposition comprising

a) a housing capable of sustaining a high vacuum,

b) a target within said housing of a material to be deposited, electrically connected to a DC power supply,

c) a specimen support means within said chamber and below said target for supporting a specimen upon which said target material is to be deposited,

d) a shield means surrounding said specimen support means and electrically connected to a DC power supply,

e) means for supplying DC power to establish a potential between the shield means and the target,

f) switch means for reversing the potential between the shield means and the target,

g) means for introducing a reactive gas into said chamber, said reactive gas being capable of reacting with said target material to form gaseous by-products, and

h) pumping means for removing said reactive gas and said by-products from said chamber.

5,294,321

SPUTTERING TARGET

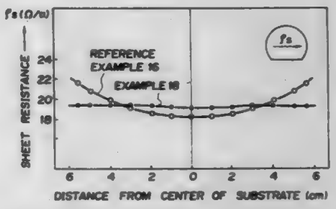
Michio Satou; Takashi Yamanobe; Mitsuo Kawai; Tatsuzo Kawaguchi, all of Yokohama; Kazuhiko Mitsuhashi, Chigasaki, and Toshiaki Mizutani, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 769,168, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 454,393, Dec. 21, 1989, abandoned. This application Nov. 10, 1993, Ser. No. 974,317
Claims priority, application Japan, Dec. 21, 1988, 63-322423; Dec. 23, 1988, 63-325310; Dec. 26, 1988, 63-328441; Jul. 28, 1989, 1-194344; Jul. 28, 1989, 1-194346
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.13 10 Claims

1. A sputtering target formed of refractory metallic silicide having a composition MSi_x, said MSi_x comprising:

an MSi_2 phase in the form of particles where M is at least one refractory metal selected from the group consisting of tungsten, molybdenum, titanium, zirconium, hafnium, niobium and tantalum;

an Si phase provided as a matrix phase; and



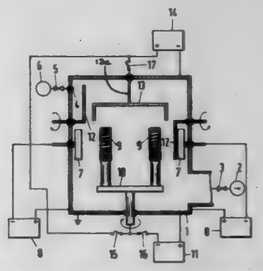
an interface layer, comprised of at least one element selected from the group consisting of B, P, Sb and As collected by diffusion from the Si phase and having a predetermined thickness of at least 100 Å, provided between the MSi_2 phase and the Si phase.

5,294,322

ELECTRIC ARC COATING DEVICE HAVING AN ADDITIONAL IONIZATION ANODE

Jörg Vetter, Bergisch Gladbach; Nikolaus Matentzoglu, Lohmar, and Manfred Schmidt-Mauer, Overath, all of Fed. Rep. of Germany, assignors to Multi-Arc Oberflachentechnik GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Jul. 30, 1992, Ser. No. 922,332
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125365
Int. Cl.[5] C23C *14/32*
U.S. Cl. 204—298.41 14 Claims



1. An electric arc coating device for coating substrates, said device comprising:

a chamber with a chamber wall for receiving the substrates to be coated, said chamber evacuatable and optionally controllably fillable with a gas selected from the group consisting of a reaction gas and an inert gas;

at least one first direct current source;

at least one cathode connected to said first direct current source and connected within said chamber so as to be electrically insulated, said cathodes consumable by the electric arc;

a second direct current source having a higher voltage than said first direct current source, the substrates to be coated connected to a negative pole of said second direct current source and electrically insulated from said chamber;

a third direct current source having a higher voltage than said first direct current source; and

a first anode and a second anode, said second anode electrically insulated from said first anode and connected to said third direct current source, and with positive poles of said

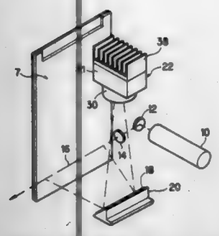
first and said second current sources connected to said first anode.

5,294,323

APPARATUS FOR GEL ELECTROPHORESIS

Teruo Togusari, Honjo; Kazuyuki Irisawa, Saitama, and Hideki Kambara, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Electronics Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,841
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—299 R 7 Claims



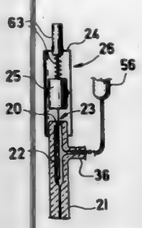
1. In an apparatus for gel electrophoresis in which a sample of fluorophore-labelled DNA fragments is caused to migrate by electrophoresis through a gel electrolyte layer in an electrophoresis plate in a first direction, thereby separating the sample into individual DNA fragments, and laser light is launched into a linear irradiation region of said gel electrolyte layer in a second direction which is generally perpendicular to said first direction with the emitted fluorescence being detected to determine the base sequence of the particular DNA, the improvement wherein a mirror for reflecting fluorescence is provided at the back of the electrophoresis plate in such a way that it is parallel to said linear irradiation region and the fluorescence reflected from said mirror is received by a separate fluorescence detector composed of a solid-state imaging device.

5,294,324

METHOD OF PREPARATION MINIATURIZED SENSORS ON BASIS OF FLUIDS AND ARRANGEMENT OF THE MEASURING SYSTEM

Ladislav Novotny, 3 Za pastou., Praha 10, Czechoslovakia

Division of Ser. No. 648,193, Jan. 31, 1991, Pat. No. 5,173,101.
This application Aug. 10, 1992, Ser. No. 927,600
Claims priority, application Czechoslovakia, Jan. 31, 1990, 456-90; Jan. 31, 1990, 457-90; Jan. 31, 1990, 458-90; Aug. 17, 1990, 4049-90
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—413 11 Claims



1. A measuring system arrangement for a miniaturized sensor for use with fluids, comprising:

a capillary (21) having a channel (59) extending therethrough, said capillary having a first upper funnel shaped inlet end (60) communicating with the channel at a capillary constriction (20), and an opposite second outlet orifice (61) communicating with the channel;

measuring electrode means connected to the capillary for controlling a flow of fluid through the capillary and a droplet formed at the outlet orifice;

said measuring electrode means includes a spike (22) for being received into the inlet end of the capillary and for constricting a passage of fluid through the capillary constriction, and movement control means (25) connected to the spike for moving the spike in the inlet end toward and away from the capillary constriction; and

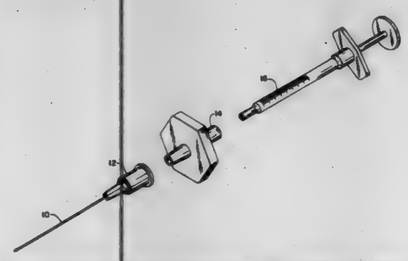
means forming an outer reservoir (56) communicating with the channel between the inlet end and the outlet orifice, for supplying fluid into the channel, the channel including at least one enlargement in the capillary between the inlet end and outlet orifice.

5,294,325

MINIATURIZED FLUID CONVEYING DEVICE AND METHODS OF USE THEREOF

Su Y. Liu, Sarasota, Fla., assignor to World Precision Instruments, Inc., Sarasota, Fla.

Filed Jul. 9, 1992, Ser. No. 911,156
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—418 17 Claims



1. Apparatus for transferring a minute quantity of liquid to a small receptacle comprising:

a flexible non-metallic capillary tube, said tube being comprised of a material selected from glass or a ceramic and having an external coating of a polymer; and

adaptor means affixed to a first end of said tube, said adaptor means establishing fluid communication between the interior of said tube and a source of liquid, said adaptor means defining a socket for coupling to a source of liquid.

5,294,326

FUNCTIONAL PLATING FROM SOLUTIONS CONTAINING TRIVALENT CHROMIUM ION

George E. Shahin, Clinton, N.J., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 815,108, Dec. 30, 1991, abandoned.
This application Oct. 13, 1992, Ser. No. 960,564
Int. Cl.[5] C25D *3/06, 3/56*
U.S. Cl. 205—287 13 Claims

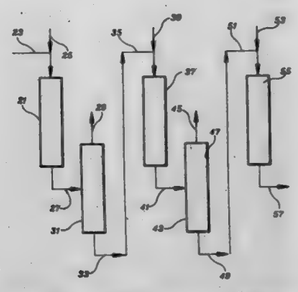
1. An improved solution for electroplating chromium and chromium alloy having trivalent chromium ion, formate and bromide ion, boric acid and a wetting agent, the improvement comprising the electroplating solution having from about 5 to about 60 g/l of trivalent chromium ion, from about 200 to about 300 g/l of potassium ion, from about 50 g/l saturation of boric acid, from about 30 to about 45 g/l of formate ion, from about 5 to about 30 g/l of bromide ion, and from about 75 to about 250 ppm of a wetting agent said solution being substantially free of ammonium ion.

5,294,327

METHOD OF PRODUCING FOOD GRADE QUALITY WHITE MINERAL OIL

Gary L. Everett, Kingswood, Tex., assignor to Atlantic Richfield Company, Plano, Tex.

Continuation of Ser. No. 730,667, Jul. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 491,511, Mar. 12, 1990, abandoned. This application Sep. 15, 1992, Ser. No. 945,029
Int. Cl.[5] C10G *45/00*
U.S. Cl. 208—57 6 Claims



1. A method of producing a food grade quality white mineral oil comprising the steps of:

a. subjecting a naphthenic, or cycloparaffinic, distillate containing a concentration of aromatic carbons in the range of 15–25 percent by weight to hydrogenation under relatively mild conditions of 1500–1800 psig partial pressure of hydrogen and 550–750 degrees Fahrenheit, by contacting the distillate with hydrogen in the presence of a hydrogenation catalyst, said hydrogenation catalyst comprising metal components from the group VIB class and being free of aluminum, silica or borea to prevent unwanted hydrocracking reactions, to produce a hydrogenated product in which the Viscosity Index (VI) increase is no greater than about 20 and in which the aromatic carbon concentration is reduced by about fifty percent;

b. separating the gaseous constituents of the hydrogenated product to prepare a liquid bottoms draw;

c. subjecting said liquid bottoms draw after said gaseous constituents have been separated therefrom to a second step of hydrogenation under severe hydrogenation conditions of 2500–3000 psig and about 575–750 degrees Fahrenheit to produce a second hydrogenated product;

d. separating the gaseous constituents of said second hydrogenated product to produce a second liquid bottoms stream; and

e. finally subjecting said second liquid bottoms stream to a final, less severe hydrotreating step to produce a food grade quality white mineral oil having a reduced amount of aromatics therewithin.

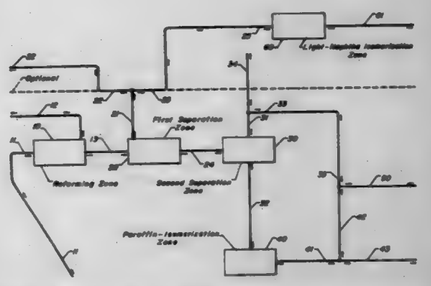
5,294,328

PRODUCTION OF REFORMULATED GASOLINE

Robert J. Schmidt, Barrington; Paula L. Bogdan; J. W. Adriaan Sachtler, both of Des Plaines, and Srikantiah Raghuram, Buffalo Grove, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 528,403, May 24, 1990, Pat. No. 5,135,639. This application Jul. 31, 1992, Ser. No. 922,935
Int. Cl.[5] C20G *37/10*
U.S. Cl. 208—66 20 Claims

1. A process for isomerizing a low-octane paraffin fraction substantially within the range of C_7 to C_{10} in a paraffin-isomerization zone at primary isomerization conditions with a paraffin-isomerizing catalyst at a substoichiometric hydrogen ratio



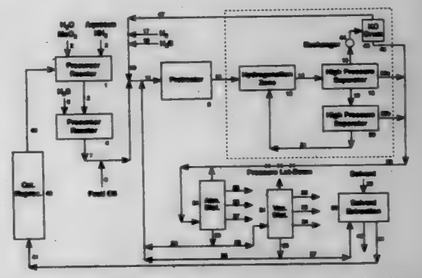
which is 90% or less of the stoichiometric ratio to produce an isomerized heavy-paraffin product.

5,294,329

PROCESS TO PREVENT CATALYST DEACTIVATION IN ACTIVATED SLURRY HYDROPROCESSING

David C. Kramer, San Anselmo, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 2, 1992, Ser. No. 892,465
Int. Cl.[5] C10G *47/26*
U.S. Cl. 208—108 16 Claims



1. In an improved catalytic slurry hydroprocess having at least a hydrogenation zone the improvement which comprises the following steps and conditions:

(1) concentrating at least a portion of recyclable active catalyst in the liquid hydrogenation product eluted from said hydrogenation zone of said hydroprocess;

(2) separating at least a portion of said concentrated catalyst from the liquid hydrogenation products; and

(3) recycling at least a portion of said separated active catalyst to said hydrogenation zone;

wherein said steps are carried out while maintaining said active catalyst in a reducing atmosphere under conditions which have been found to prevent deactivation caused by coking or asphaltene agglomeration.

VOL 1160 ISS 3 MR 15 1994 UMI

5,294,330

HYDROCRACKING PROCESS WITH A CATALYST COMPRISING MCM-36

Thomas F. Degnan, Moorestown, N.J.; Kathleen M. Keville, Beaumont, Tex.; Charles T. Kresge, West Chester, Pa.; David O. Marler, Deptford, N.J.; Brenda H. Rose, Rosemont, Pa.; Wieslaw J. Roth, Sewell, and Hye Kyung C. Timken, Woodbury, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Aug. 12, 1992, Ser. No. 929,065
Int. Cl.[5] C10G *47/00, 47/12, 47/16, 47/20*
U.S. Cl. 208—108 10 Claims

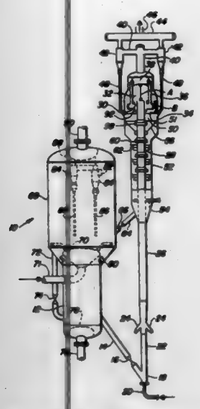
1. A hydrocracking process comprising the step of contacting a hydrocarbon stream boiling at a temperature above 150° C. under hydrocracking conditions and in the presence of hydrogen with a hydrocracking catalyst composition comprising a pillared layered material, designated MCM-36, wherein said hydrocracking conditions include a temperature of 260° C. to 450° C., a pressure of 2860 to 27680 kPa, an LHSV of 0.1 to 10 hr^{-1}, and a hydrogen circulation rate of 180 to 1780 Nm^3/m^3.

5,294,331

FCC PROCESS UTILIZING A VENTED RISER

David A. Lomas, Barrington; Edward C. Haun, Glendale Heights, and Paul A. Seehrist, Des Plaines, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 524,525, May 17, 1990, Pat. No. 5,104,517. This application Dec. 2, 1991, Ser. No. 801,208
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] C10G *11/18*
U.S. Cl. 208—113 11 Claims



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to a gaseous product stream and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;

b) discharging a first mixture of spent catalyst particles and gaseous products directly into the dilute phase of a reactor vessel in an upward direction from a discharge end of said riser located from about 1 to about 8 riser diameters below the upper end of said reactor vessel thereby providing an initial separation of the spent catalyst from the gaseous products;

c) passing separated catalyst downward through said vessel;

d) maintaining said separated catalyst in said reactor vessel as a dense catalyst bed and passing a stripping gas upward through the reactor vessel;

e) maintaining the upper surface of said dense catalyst bed a distance of between 3 to 16 feet below said riser outlet end;

f) passing said spent catalyst downwardly through said reactor vessel into a stripping zone and contacting said spent catalyst with said stripping gas;

g) passing spent catalyst from said stripping zone into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser; and,

h) withdrawing a second mixture of gaseous products, stripping fluid, and spent catalyst particles from said reactor vessel through a collector located in said reactor vessel above said dense catalyst bed about the periphery of the outlet end of the riser and transferring said mixture to a particle separator located outside of the reactor vessel, separating gaseous components from said spent catalyst in said separator, and returning said spent catalyst to said reactor vessel.

5,294,332

FCC CATALYST AND PROCESS

Marvin R. Klotz, Batavia, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Nov. 23, 1992, Ser. No. 980,388
Int. Cl.[5] C10G *11/05;* B01J *29/06*
U.S. Cl. 208—120 20 Claims

1. A process for the catalytic cracking of a hydrocarbon feedstock to catalytic cracking conversion products comprising the steps of contacting said hydrocarbon feedstock at catalytic cracking conditions with a catalytic cracking catalyst, said catalytic cracking catalyst being prepared by a method comprising the steps of

modifying a base catalyst comprising a crystalline molecular sieve and a binder by combining said base catalyst with an ion exchange solution comprising at least one trivalent cation, a trivalent cation complexing agent, and a hydroxide-producing component, wherein said ion exchange solution has a pH ranging from about 4 to about 8, and producing an ion exchanged catalyst and excess ion exchange solution; and

separating said modified catalyst from said excess ion exchange solution.

5,294,333

HYDROREFINING PROCESS EMPLOYING A NIOBIUM TRISULFIDE-CONTAINING CATALYST

Michèle Breysse, Caluire; Thierry Des Courieres, Lyons; Michèl Danot, Nantes; Christophe Geantet, Villeurbanne, and Jean-Louis Portefaix, Caluire, all of France, assignors to Elf France, Courbevoie, France

Division of Ser. No. 687,124, Apr. 18, 1991, Pat. No. 5,157,009. This application May 14, 1992, Ser. No. 882,883
Claims priority, application France, Apr. 20, 1990, 90 05048
Int. Cl.[5] C10G *45/04*
U.S. Cl. 208—215 6 Claims

1. In a catalytic hydrorefining process for hydrorefining hydrocarbon feedstocks the improvement which comprises employing a catalyst consisting of niobium trisulfide as a catalytically active component.

5,294,334

BENZENE REMOVAL AND CONVERSION FROM GASOLINE BOILING RANGE STREAMS

Bal K. Kaul, Randolph; Donald C. Runaldue, Watchung; Joseph T. O'Bara, Parsippany; Craig Y. Sabottke, Morris Township, Morris County, and Edward Niessen, Passaic, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 729,678, Jul. 15, 1991, Pat. No. 5,186,819. This application Feb. 16, 1993, Ser. No. 17,564
Int. Cl.[5] C10G *25/03;* C07C *7/13*
U.S. Cl. 208—310 Z 4 Claims

1. A process for selectively removing benzene from gasoline boiling range process streams, which process comprises:

(a) passing at least a portion of a gasoline boiling range hydrocarbonaceous process stream to an adsorption zone containing a solid adsorbent comprised of an aluminosilicate zeolite material having a silica to alumina ratio of less than about 10, and an average pore diameter greater than the size of the benzene molecule;

(b) passing a desorbent stream containing an effective amount of cyclohexane from a downstream hydrogenation zone, through the bed of benzene-containing adsorbent in the adsorption zone, thereby removing benzene from the adsorbent;

(c) passing the benzene-containing desorbent to a hydrogenation zone to hydrogenate benzene to cyclohexane; and

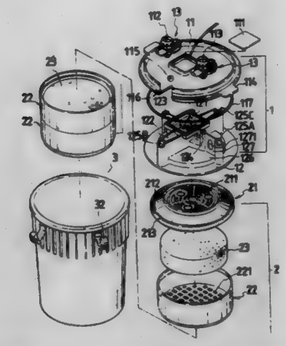
(d) recycling at least a portion of said cyclohexane to the adsorption zone.

5,294,335

FILTER DEVICE FOR AQUARIUM TANKS OR ARTIFICIAL PONDS

Michael Chiang, No. 16, Lane 112, Sy Yuan Road, Shin Chung City, Taipei Hsien, Taiwan

Filed Jul. 20, 1993, Ser. No. 93,827
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—169 7 Claims



1. An improved filtering device for an aquarium tank or an artificial pond mainly comprises:

a water injector which is made up of a top cover plate and a water injector base;

a multi-layered filtering member filled with filtering materials; and

an external shield cup which is used to contain the filtering member; wherein:

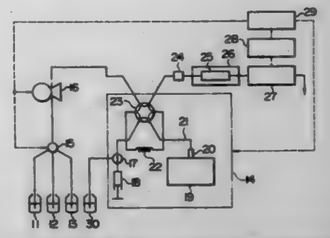
the top cover plate further comprises a water inlet switch unit and a water discharge switch unit for connection to the aquarium tank or artificial pond, a movable lid which is located on said top cover plate in a position above a motor housing, an air discharge valve in fluid communication with a first air discharge trough on the water injector base, a sealed motor chamber which forms with the top cover plate a one piece body which is located on the water injector base, attached to the sealed motor chamber is said first air discharge trough, a second air discharge trough, a main water inlet pipe and a main water discharge pipe, adjacent to the motor chamber are three auxiliary water inlet pipes having marked notches, in addition, the edge of the top cover plate has an annular slot for an "O" shaped seal washer to be placed in, when the top cover plate and the external shield cup are put together, the edge is covered up inside the external shield cup, allowing the "O" shaped seal washer to seal of an internal rim of the external shield cup; the multi-layered filtering member is made up of a diffusion plate and a plurality of filtering materials which are placed in different layers in a filtering cup, the center of the top layer of the diffusion plate is in a corresponding position with a U-shaped projecting portion of the water injector base having slotted holes arranged in an annular manner, on the bottom of the diffusion plate are water passage holes at the edges and a plate wall surrounding the diffusion plate.

5,294,336

APPARATUS FOR LIQUID CHROMATOGRAPHY FOR SEPARATING AIC COMPONENTS FROM HEMOGLOBIN IN BLOOD

Masako Mizuno, Mito; Kenji Tochigi, Hitachi; Yutaka Misawa, Katsuta; Hiroyuki Miyagi, Kokubunji; Yoshio Watanabe, Hitachi; Taro Nogami; Junkichi Miura, both of Katsuta, and Yoshinori Takata, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 578,214, Sep. 6, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 896,784
Claims priority, application Japan, Sep. 18, 1989, 1-240017
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 10 Claims



8. An apparatus for liquid chromatography for fractionating hemoglobin into a plurality of fractions by flowing stepwise two or more eluents into a separation column, comprising a separation column, means for calculating proportions of components separated by said separation column, processing means for processing data from the calculation means and means for varying the mixing ratio, switching times or flow rate of two or more eluents on the basis of signals from the processing means to enable the determination of the proportion of A_{Ic} components and the determination of the proportions of labile-A_{Ic} and stable-A_{Ic} in the same said separation column by using the same said two or more eluents.

5,294,337

WATER FILTRATION SYSTEM

Scott E. Johnson, 11427 Willet Ct. S., Jacksonville, Fla. 32225

Filed Mar. 4, 1993, Ser. No. 26,549
Int. Cl.[5] B01D *27/02, 27/08*
U.S. Cl. 210—266 10 Claims

1. A filtration system for the removal of solid particulates from water comprising:

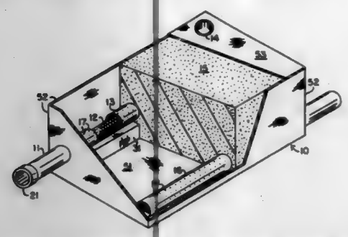
an ingress conduit to bring water containing solid particulates into the system;

a collection conduit to remove said water from the system after it has been filtered;

a primary filter means for removal of the majority of said solid particulates from said water, said primary filter means positioned between said ingress conduit and a secondary filter means, said primary filter means comprising a hollow, flexible material adapted to entrap said solid particulates while allowing said water to pass through;

secondary filter means for additional removal of said solid particulates from said water, said secondary filter means comprising a granular material positioned between said primary filter means and said collection conduit;

a primary filter carrier receptacle containing said primary filter means and separating said primary filter means from said secondary filter means, said primary filter carrier



receptacle comprising a rigid member having openings effectively sized to allow said water to pass from said primary filter means into said secondary filter means while preventing said granular material of said secondary filter means from passing through said primary filter carrier receptacle;

an access port connected to said primary filter carrier receptacle, said access port providing access to said primary filter means;

where all of said water brought into said system by said ingress conduit must pass first through said primary filter means and then through said secondary filter means; and

where said primary filter means can be removed from and returned to said primary filter carrier receptacle through said access port or said ingress conduit without disturbance of said secondary filter means.

5,294,338

POROUS POLYETHYLENE HOLLOW FIBER MEMBRANE OF LARGE PORE DIAMETER, PRODUCTION PROCESS THEREOF, AND HYDROPHILIZED POROUS POLYETHYLENE HOLLOW FIBER MEMBRANES

Jun Kamo; Takayuki Hirai; Hiroshi Takahashi, and Kenji Kondo, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01638, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO92/09359, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 28, 1991, Ser. No. 853,777

Claims priority, application Japan, Nov. 28, 1990, 2-327279; Jun. 7, 1991, 3-162354

Int. Cl.[5] B01D *69/08*

U.S. Cl. 210—321.8 **21 Claims**

1. A porous polyethylene hollow fiber membrane of large pore diameter which consists of polyethylene, the hollow fiber membrane having:

(a) rectangular pores formed by microfibrils that are oriented in the lengthwise direction of the fiber and joint portions that are composed of stacked lamellae, the pores being contiguous with each other from the inner wall surface to the outer wall surface of the hollow fiber membrane to form a stacked, multicellular structure;

(b) an average pore diameter ranging from greater than 2 μm up to 10 μm as measured with a mercury porosimeter;

(c) a porosity of 75 to 95%; and



(d) an air permeability of not less than 8×10^5 l/m^2-hr-0.5 atm.

5,294,339

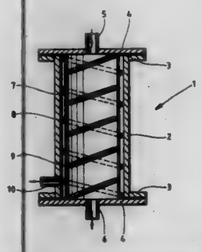
ULTRAFILTRATION SEPARATOR

Klaus Jorgens, Am Flöthen 98, D-5600 Wuppertal 1, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,368

Int. Cl.[5] B01D *61/18, 63/06*

U.S. Cl. 210—321.78 **26 Claims**



1. An ultrafiltration separator membrane for an ultrafiltration separator, the membrane consisting essentially a metal wire mesh wire a wire of less than 0.02 mm in diameter, exhibiting more than 2000 picks, i.e. more than 2000 pores per inch and with the size of the mesh openings less than 0.004 mm.

5,294,340

PROCESS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER USING MICROORGANISMS

Jochen Stog, Waltrop, Fed. Rep. of Germany, assignor to J. Stog Tec GmbH, Waltrop, Fed. Rep. of Germany

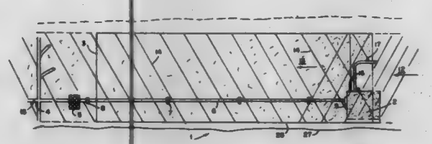
PCT No. PCT/DE90/00214, § 371 Date Nov. 15, 1991, § 102(e) Date Nov. 15, 1991, PCT Pub. No. WO90/11971, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 21, 1990, Ser. No. 768,191

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1989, 3911789

Int. Cl.[5] C02F *3/02*

U.S. Cl. 210—610 **12 Claims**



1. A process for the biological treatment of waste water using microorganisms whose living conditions are maintained by addition of oxygen into a contact path, the contact path being arranged at a slight upward angle towards a surface of the water and having an interior air-permeable and an exterior air-impermeable wall, comprising the steps of:

adding air and contaminated waste water into a beginning of the contact path for developing the microorganisms approximately parallel to the surface of the water;

trapping and suctioning a part of the microorganisms developed in the contaminated water at a predetermined distance near an end of the contact path by means of a telescopable fresh organism pipe;

recycling the trapped microorganisms to the beginning of the contact path and additionally introducing a partial stream of the contaminated waste water from a source of the waste water into a settlement area of the microorganisms in the beginning of the contact path to prepare the microorganisms for any change that would occur in the contamination of the waste water being flown to the contact path.

5,294,344

SEPARATION OF ALCOHOL FROM ALCOHOL/ETHER/OLEFIN/NON-LINEAR HYDROCARBON MIXTURES USING POLYESTER OR POLYESTER COPOLYMER MEMBRANES

Joseph L. Feimer, Sarnia, Canada; Charles P. Darnell, Baton Rouge, La., and W. S. Winston Ho, Annandale, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 2, 1992, Ser. No. 971,020

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—640 **8 Claims**

1. A method for separating alcohols from a feed mixture comprising alcohols/ethers/olefins/non-linear hydrocarbons, said method comprising contacting said feed mixture with a dense film non-porous polyimide/aliphatic polyester copolymer membrane, made from copolymers comprising polyimide segments and oligomeric aliphatic polyester segments, under pervaporation conditions and recovering alcohol as the permeate.

5,294,341

METHOD FOR SEPARATION OF β-AMYLASE

Chikafusa Fukazawa, Tsukuba, Japan, assignor to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,178

Claims priority, application Japan, Feb. 7, 1992, 4-56052

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **3 Claims**

1. A method of separating β-amylase from a solution containing β-amylase, which comprises treating said solution with an α-cyclodextrin fixed water-insoluble high polymer compound in the presence of ammonium sulfate to form an adsorbed composite of the high polymer compound and β-amylase and separating soluble impurities not adsorbed to the high polymer compound to remove the impurities.

5,294,342

COMPOSITE POROUS MEMBRANES

Karen A. Donato, Gaithersburg, Md., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 1, 1992, Ser. No. 955,561

Int. Cl.[5] B01D *71/54*

U.S. Cl. 210—639 **3 Claims**

1. An improved membrane delay process comprising the steps of (i) feeding a fluid to be delayed into a membrane containing apparatus and (ii) delaying the passage of the fluid across the membrane, the improvement comprising the use of a composite membrane having substantially no pore filling, said membrane comprising a microporous support and an aqueous dispersed polyeurethane coated thereon wherein the aqueous dispersed polyeurethane does not penetrate into said pores.

5,294,343

Patent Not Issued For This Number

5,294,345

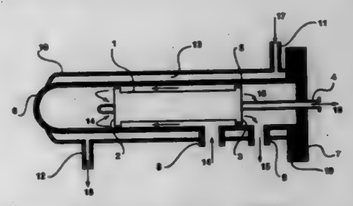
MEMBRANE MODULE ASSEMBLY

Jürgen Kaschemekat, Palo Alto, Calif., assignor to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Feb. 1, 1993, Ser. No. 12,012

Int. Cl.[5] B01D *61/36, 63/02*

U.S. Cl. 210—640 **20 Claims**



1. A membrane module assembly comprising:

(i) a membrane module, having a feed end for receiving a feed stream;

(ii) an inner housing having feed, residue and permeate ports, said membrane module being mounted in said inner housing such that said feed port is distal from said feed end;

(iii) a means, at least partially encasing said inner housing, for heating or cooling said housing.

7. A membrane separation process comprising:

(a) providing a membrane module assembly comprising;

(i) a membrane module, having a feed end for receiving a feed stream;

(ii) an inner housing having feed, residue and permeate ports, said membrane module being mounted in said inner housing such that said feed port is distal from said feed end;

(iii) a means, at least partially encasing said inner housing, for heating or cooling said housing;

(b) heating or cooling said housing;

(c) passing said feed stream into said assembly through said feed port and flowing it substantially along an inner surface of said membrane housing to said feed end;

(d) separating said feed stream into a residue stream and a permeate stream in said membrane module.

VOL 1160 ISS 3 MR 15 1994 UMI

5,294,346

COMPOSITE MICROPOROUS MEMBRANES

Karen A. Donato, Gaithersburg, Md., and Lessie C. Phillips, Huntersville, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 955,561, Oct. 1, 1992. This application Dec. 31, 1992, Ser. No. 999,622
Int. Cl.[5] A61K 9/00; A01N 25/12
U.S. Cl. 210—645 24 Claims

1. An adhesive and polymer coated microporous membrane comprising a microporous support characterized by having a crystallinity of at least 40%, an average pore width of from about 0.005 to about 0.5 microns, a void volume from about 30% to about 50%; said microporous polymeric film coated on at least one side with a polymer coating, and a contact adhesive layer; said coating being designed to substantially preclude filling of the pores of said membrane by said adhesive.

8. A composite membrane having reduced pore filling comprising a microporous support, a polymer coating coated thereon, and a contact adhesive layer adjacent said coating on at least one side that is permeable to a drug; said coating being designed to substantially preclude filling of the pores of said membrane by said adhesive.

15. An improved membrane delay process comprising the steps of (i) feeding a fluid to be delayed into a membrane containing apparatus and (ii) delaying the passage of the fluid across the membrane, the improvement comprising the use of a composite membrane having reduced pore filling, said membrane comprising a microporous support, a polymer coating and a contact adhesive layer adjacent said coating on at least one side that is permeable to said fluid; said coating being designed to substantially preclude filling of the pores of said membrane by said adhesive.

20. A process for making a composite membrane having reduced pore filling and suitable for use in fluid delay process comprising (i) coating a microporous support with coating polymer and (ii) coating said polymer with a contact adhesive layer; said coating being designed to substantially preclude filling of the pores of said membrane by said adhesive.

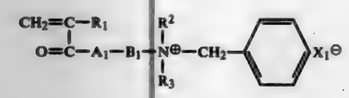
5,294,347

DISPERSION POLYMERS FOR ETHYLENE QUENCH WATER CLARIFICATION

Norman E. Byrne, Houston, Tex.; Belinda K. Williams, Hampton, S.C., and Sherri L. Fisher, Sugar Land, Tex., assignors to Nalco Chemical Company, Naperville, Ill.

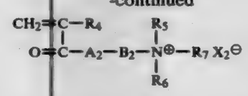
Filed Dec. 16, 1992, Ser. No. 992,276
Int. Cl.[5] C02F 1/56
U.S. Cl. 210—708 7 Claims

1. A method of removing emulsified oil from ethylene quench water, the method comprising the step of treating the oil-containing water with an effective amount of a dispersion of a water-soluble cationic polymer, said dispersion of the water-soluble cationic polymer being prepared by polymerizing a water-soluble monomer mixture containing a least 5 mole % of a cationic monomer represented by general formula (I) and at least 5 mole % of acrylamide or methacrylamide in an aqueous solution of a polyvalent anionic salt, said polymerization is carried out in an aqueous solution including from about 1 to about 10 percent by weight based on the total weight of the monomers a dispersant polymer, said dispersant polymer being a water-soluble cationic polymer which is soluble in said aqueous solution of the polyvalent anionic salt and which contains at least 20 mole % of cationic monomer units represented by a general formula (II):



(I)

-continued



(II)

wherein R_1 and R_4 are each H or CH_3; R_2, R_3, R_5 and R_6 are each an alkyl group having 1 to 2 carbon atoms; R_7 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; A_1 and A_2 are each an oxygen atom or NH; B_1 and B_2 are each 2 to 4 carbon atoms or a hydroxypropyl group and X_1- and X_2- are each a counter anion, once treated, the emulsified oil flocculates; and removing the flocculated emulsified oil from the treated ethylene quench water.

5,294,348

PROCESS FOR REMOVING AMMONIA FROM WASTE WATERS

Patrick Horny, Navarrenx, and Alain Ladousse, Pau, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR91/00932, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO92/09531, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 25, 1991, Ser. No. 915,816
Claims priority, application France, Nov. 26, 1990, 90 14748
Int. Cl.[5] C02F 1/58, 1/66
U.S. Cl. 210—724 15 Claims

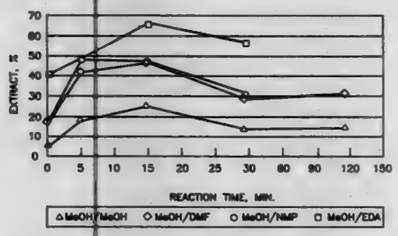
1. A process for removing ammoniacal nitrogen contained in waste waters having more than 1 g/l of nitrogen in the ammoniacal form by precipitation in the form of a magnesium ammonium phosphate, comprising the addition to the waste waters of a single liquid reactant containing sources of magnesium ions, phosphate ions and an acid, and then adjusting the pH to a value of between 9 and 11.

5,294,349

COAL DEPOLYMERIZATION AND HYDROPROCESSING

George M. Kramer, Berkeley Heights; Edwin R. Ernst, Belle Meade; Chang S. Hsu, Bridgewater, all of N.J.; Gopal H. Singhal, and Peter S. Man, both of Baton Rouge, La., assignors to Exxon Research and Enginnering Company, Florham Park, N.J.

Filed Aug. 4, 1992, Ser. No. 925,356
Int. Cl.[5] C10G 1/00, 1/06, 1/08
U.S. Cl. 208—400 8 Claims



1. A process for the hydroprocessing of coal to produce light hydrocarbon oils which comprises:

depolymerizing coal by mixing finely divided coal particles with a hard acid in the presence of a soft base at temperatures of from 0° to 100° C., said hard acid being characterized by a heat of reaction with dimethylsulfide of from 10 kcal/mol to 30 kcal/mol and said soft base being characterized by a heat of reaction with boron trifluoride of from 10 kcal/mol to 17 kcal/mol;

extracting the depolymerized coal with a polar solvent to remove hard acid and soft base;

forming a mixture of depolymerized coal and catalyst precursor containing a dihydrocarbyl substituted dithiocarbamate of a metal selected from any one of groups IV-B, V-A, VI-A, VII-A and VIII-A or mixtures thereof,

hydroprocessing the mixture in the presence of a hydrocarbon oil derived from coal processing or an intermediate product stream from petroleum processing at temperatures of from 250° C. to 550° C. and a hydrogen partial pressure of 2100 kPa to 35000 kPa; and

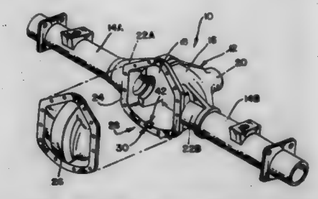
recovering hydrocarbon oil.

5,294,350

MAGNETIC PARTICLE SEPARATOR

Richard J. Murphy, Elma, N.Y., and Anthony J. Marlow, St. Catherines, Canada, assignors to General Motors Corporation, Detroit, Mich. and General Motors of Canada Limited, Oshawa, Canada

Filed Apr. 2, 1993, Ser. No. 42,186
Int. Cl.[5] B01D 35/06; F01M 1/10
U.S. Cl. 210—168 5 Claims



1. In a vehicle drive axle including a wall made of non-ferromagnetic material defining a gear chamber of said drive axle having an open side surrounded by a seal surface of said wall, and

a cover having an attached position on said drive axle seated against said seal surface and closing said open side of said gear chamber,

a magnetic particle separator comprising:

means defining a slot in said drive axle wall having a closed inboard end and an open outboard end and located relative to said gear chamber such that a side of said slot defines a window open to said gear chamber,

a magnet inserted in said slot through said open end thereof and disposed behind said window operative to attract through said window ferromagnetic particles entrained in fluid lubricant in said gear chamber,

abutment means operative to prevent dislodgement of said magnet into said gear chamber through said window, and

means on said cover for preventing dislodgement of said magnet from said slot through said open outboard end thereof in said attached position of said cover on said drive axle.

5,294,351

METHOD FOR CONTROLLING ZEBRA MUSSELS IN POWER AND WATER PLANTS

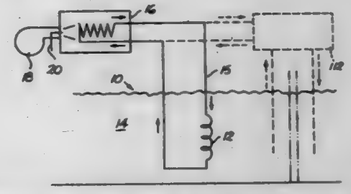
David N. Clum, Higdon, Ala.; Frederick Kroesser, Signal Mountain, and Jewel R. Leak, Jr., Hixson, both of Tenn., assignors to First Thermal Systems, Inc., Chattanooga, Tenn.

Filed Mar. 25, 1993, Ser. No. 37,349
Int. Cl.[5] C02F 1/02
U.S. Cl. 210—774 13 Claims

1. A method of controlling zebra mussels entering a utility plant having an inlet cell drawing water from a supply contaminated with zebra mussels and using said water in equipment within the plant downstream of the inlet cell so as to protect said equipment from damage by the zebra mussels, said method comprising:

(a) shutting the flow of water into and out of said inlet cell to isolate and contain a batch of water within said cell;

(b) heating the batch of isolated water within said cell to raise the temperature of said water to a temperature lethal to said zebra mussels;



(c) maintaining said batch of isolated water within said cell at said lethal temperature for a period of time sufficient to kill said zebra mussels; and

(d) thereafter feeding said batch of water out of said inlet cell to said equipment.

5,294,352

COMPOSITIONS FOR THE DETACKIFICATION OF PAINT SPRAY BOOTH WATER AND WASTE WATER

John J. Waldmann, 2129 Knickerbocker Dr., Charlotte, N.C. 28212

Continuation of Ser. No. 763,880, Sep. 20, 1991, abandoned, which is a continuation of Ser. No. 409,396, Sep. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 96,681, Sep. 15, 1987, abandoned, and a continuation-in-part of Ser. No. 749,343, Jun. 27, 1985, Pat. No. 4,891,422. This application Apr. 15, 1993, Ser. No. 47,624
Int. Cl.[5] B01D 21/01
U.S. Cl. 210—725 20 Claims

1. A composition for detackifying and coagulating paint or lacquer in a spray booth bath wherein the water bath traps excess plant and lacquer from a painting process, said composition made by adding to said water in acid or alkaline media sufficient amount of a water soluble product comprising:

an inorganic-organic adduct alloy polymer composition having the formula

$$(A)_r-(B^+)_x-(D^+)_w$$

wherein:

A is an inorganic material represented by the formula:

$$A=\{(SiO_2/Me^I_2O)_uMe_m^{II}Me_n^{III}(OH)_p(SO_4)_y(Aci)_{(2m+3)-p-2y}\}_r$$

where:

u is 0 to 10% by weight, r is 1 to 99% by weight $(SiO_2/Me_2^IO)_u$ ratio is 1.5 to 3.5 and Me^I=Na, K, Li,

$(SiO_2/Me_2^IO)_u$ is a silicate adduct or polymeric form of a compound selected from the group of hydroxy, polyhydroxy and oxy aluminum compound;

Me_m^{II} is selected from the divalent cation group of hydroxy, polyhydroxy aluminum and iron adduct complex consisting of:

Mg, Zn, Ca, and Fe^{II}; and m=0 to 5;

Me_n^{III} is a tri-or higher valent metal selected from the group consisting of the adduct of hydroxy, polyhydroxy, and oxy of Al, Fe, and Al-Zr complexes; and

n=1 to 20;

Aci is selected from the monovalent anionic group consisting of: I^-, Cl^-, Br^-, NO_3^-, $H_2PO_4^-$, CH_3COO^-, OH^-, and mixtures thereof;

p=0 to 75; y=0 to 1; $-(B^+)_x$

is a water soluble cationic polymer selected from the group consisting of protonized or quaternized polymers of melamine-glyoxal, melamine-formaldehyde, melamine-glyoxal-formaldehyde and its copolymer with cyanoguanidine, urea, cationic polyamine selected from the group of epichlorohydrin-dimethylamine polymers or copolymers thereof, (C_1–C_3) alkanol amine protonized by mineral acids or organic acids selected from the group consisting of hydrochloric, sulfuric, phosphoric, nitric, formic, acetic, propionic, glycolic, lactic, citric, glutaric, oxalic and mixtures thereof, and optionally quaternized with a compound selected from the group consisting of methyl halides and C_1–C_2 dialkyl sulfates, said polymer having a viscosity average molecular weight of from 200 to 500,000;

and x=0 to 100% by weight, and $-(D^+)_w$

is a water soluble cationic polymer or (co)polymer selected from the group consisting of homopolymers of cationic monomers selected from the group consisting of (meth)acrylamide, C_1–C_4 dialkylamino(meth)acrylate and their quaternized derivatives with methyl halides or C_1–C_2 dialkyl sulfates, salts of dialkylamino-(meth)acrylate with acids selected from the group of sulfuric, hydrochloric and phosphoric acids, methacrylamidopropyl trimethyl ammonium salt, N,N,N-trimethylallyl ammonium salts, diallyldimethyl ammonium halide, and copolymers thereof, amphoteric polymers selected from the group consisting of poly(DADMAC), (co)polymers of (DADMAC-acrylamide) in weight ratio of (50/50), and mixtures thereof, acrylamide manich (co)polymers, nonionic, anionic and cationic (co)polyacrylamide, blends of cationic (co)polyacrylamide and poly(DADMAC) with water soluble protonized and optionally quaternized polymers of melamine-glyoxal, melamine-formaldehyde, melamine-glyoxal-formaldehyde and (co)polymers with cyanoguanidine, urea, cationic polyamine selected from the group of epichlorohydrin-dimethylamine polymers or copolymers thereof, C_1–C_3 alkanol amine, and mixtures thereof, and

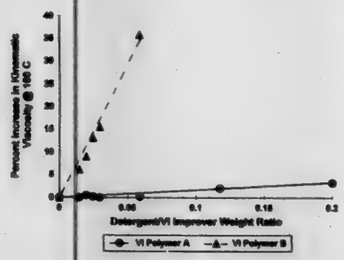
w=0.2 to 99% by weight

with the proviso that A is always positive and at least one of B^+ and/or D^+ is also positive.

5,294,353
METHODS OF PREPARING AND USING STABLE OIL EXTERNAL-AQUEOUS INTERNAL EMULSIONS
Walter R. Dill, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Jun. 27, 1991, Ser. No. 722,764
Int. Cl.[5] E21B *43/22*
U.S. Cl. 252—8.553 20 Claims

1. A method of preparing a stable oil external-aqueous internal emulsion comprising the steps of:
(a) mixing a particulated silica compound selected from the group consisting of hydrated silica and sodium silica aluminate having a particle size in the range of from about 5 microns to about 500 microns and having at least about 16% of the total particles of a size less than 20 microns with an aqueous liquid to form an aqueous slurry;
(b) mixing oil with a surface active agent which promotes the formation of an oil external-aqueous internal emulsion; and
(c) combining said aqueous slurry and said oil-surface active agent mixture to form said oil external-aqueous internal emulsion.

5,294,354
COMBINING DISPERSANT VISCOSITY INDEX IMPROVER AND DETERGENT ADDITIVES FOR LUBRICANTS
Brian L. Papke; Isaac D. Rubin, both of Wappingers Falls, and John Castrogiovanni, Jr., Milton, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Jun. 5, 1992, Ser. No. 893,627
Int. Cl.[5] C10M *135/10, 133/58*
U.S. Cl. 252—18 11 Claims



1. A process for making a lubricant composition by:
(1) combining:
(a) dispersant viscosity index improver, which is a polyolefin of ethylene, C_{3-20} α-monoolefin, and optionally polyene, having a number average molecular weight of at least about 10,000, which is grafted with ethylenically unsaturated, nitrogen-containing, heterocyclic compound, with;
(b) detergent, which is an overbased, oil-soluble, calcium sulfonate which interacts with the viscosity index improver to give increased lubricant viscosity at high temperatures; to make a premix, followed by;
(2) combining the premix with lubricating oil and dispersant package to make a lubricant composition with enhanced viscosification.

5,294,355
THERMALLY AND OXIDATIVELY STABLE SOLID LUBRICANTS
James P. King, Lansdale, and Harold G. Monsimer, Norristown, both of Pa., assignors to Desilube Technology, Inc., Lansdale, Pa.
Filed Dec. 28, 1992, Ser. No. 997,354
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] C10M *103/02*
U.S. Cl. 252—28 18 Claims

1. A solid lubricant having improved high oxidative stability comprising a solid lubricant selected from the group of molybdenum disulfide, graphite and graphite fluoride, wherein said solid lubricant is microencapsulated by spraying from an aqueous suspension of an alkali metal silicate containing a water soluble phosphate.

5,294,356
POLYCARBONATES, USES THEREOF, PROCESSES FOR PREPARING AND PURIFYING SAME
Masahide Tanaka; Yoshihisa Kiso; Kazunori Takahata; Tetsuo Hayashi; Kenji Shimamoto, all of Yamaguchi; Kinya Mizui, Ichihara; Tadaaki Fujimoto, and Koei Nakamura, both of Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
PCT No. PCT/JP91/01220, § 371 Date May 14, 1992, § 102(e) Date May 14, 1992, PCT Pub. No. WO92/05140, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 856,956
Claims priority, application Japan, Sep. 17, 1990, 2-246891; Sep. 27, 1990, 2-258179; Sep. 28, 1990, 2-261271; Oct. 2, 1990, 2-265528; Feb. 22, 1991, 3-28933; Aug. 5, 1991, 3-195557
Int. Cl.[5] C10M *129/02;* C09K *5/00*
U.S. Cl. 252—56 R 4 Claims

1. A polycarbonate represented by the following general formula [II]:

$$(R_1O)CH_2[CH(OR_1)]_mCH_2(OR_1) \quad [II]$$

wherein R_1 is a group represented by the following formula (E) or (F), and m is an integer of 1 to 6;

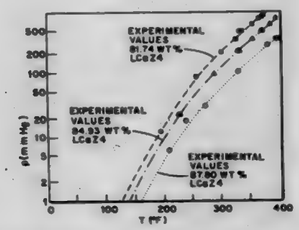
$$-(C_3H_6O)_nCOOR_2 \quad (E)$$

wherein each R_2 is independently a hydrocarbon group having not more than 30 carbon atoms or a hydrocarbon group containing an ether bond and having 2 to 30 carbon atoms, and n is an integer of 1 to 12,

$$-(C_3H_6O)_n(C_2H_4O)_pCOOR_2 \quad (F)$$

wherein each R_2 is independently a hydrocarbon group having not more than 30 carbon atoms or a hydrocarbon containing an ether bond and having 2 to 30 carbon atoms, n and p are an integer of 1 to 12.

5,294,357
METHOD FOR PREPARING SALT SOLUTIONS HAVING DESIRED PROPERTIES
Moonis R. Ally, Oak Ridge, Tenn., and Jerry Braunstein, Clinton, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Sep. 30, 1991, Ser. No. 768,500
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—67 13 Claims



1. A method of making a salt solution exhibiting a desired value of a selected thermodynamic property which comprises determining the water activity, a, in the solution at two different concentrations of the salt in solution at a reference temperature, T_r, wherein the water activity is related to the mole fraction of water, x_w, in the solution according to the general equation

$$\frac{a/x_w}{(1-a)/(1-x_w)} = 1/cr + (c-1)a/cr,$$

calculating the value of the left-hand side of the general equation at each value of a and x_w, plotting the values of the left-hand side of the general equation versus a to obtain a line, setting the value of the slope of the line equal to the (c−1)/cr portion of the right-hand side of the general equation and setting the value of the intercept of the line equal to the 1/cr portion of the general equation to provide slope and intercept equalities expressed in terms of c and r, calculating c and r from the slope and intercept equalities, calculating ϵ from the equation $c=\exp[\epsilon/TR_r]$, selecting a test condition of concentration x_x and test temperature T_x, calculating the value of c_x at T_x from $c_x=\exp[\epsilon/RT_x]$, calculating a at T_x and x_x from the general equation at r=r, $c=c_x$ and $x_w=1-x_x$, calculating the value of the thermodynamic property from the value of a at x_x and T_x according to a thermodynamic expression relating the value of a and the value of thermodynamic property at x_x and T_x, determining the extent of any variation between the desired value of the thermodynamic property and the calculated value and, to the extent of any variance between the calculated and desired values of the thermodynamic property in excess of the an acceptable maximum variation, adjusting the value of at least one of the test conditions to reduce the variance between the calculated and desired values of the thermodynamic property to at or below the accepted maximum variance to cause the solution to exhibit the desired value of the property within the accepted variance, and incorporating in water an amount of the salt which in its resulting concentration in the solution causes the thermodynamic property to be within the accepted variance based on the adjusted value of X_x or Tx which causes the solution to exhibit the desired property.

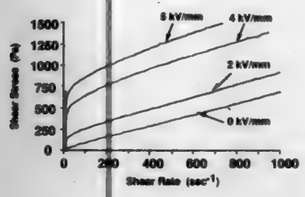
5,294,358
COMPOSITIONS CONTAINING 1,1,1,2-TETRAFLUOROETHANE AND METHYL CHLORIDE AND USE OF THESE COMPOSITIONS
Paul Dantinne, Brussels; Pierre Barthelemy, Jodoigne, and Dominique Balthasart, Brussels, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium
Filed Dec. 30, 1991, Ser. No. 814,456
Claims priority, application Belgium, Jan. 18, 1991, 09100039
Int. Cl.[5] C09K *5/04;* C08J *9/14*
U.S. Cl. 252—67 4 Claims

1. A composition consisting essentially of:
48 mol % of 1,1,1,2-tetrafluoroethane (±−1 mol %); and
52 mol % of methyl chloride, wherein the composition forms an azeotrope having a boiling point which rises to −28.5° C. (±−1° C.) at a pressure of 101.3 kPa.

5,294,359
REFRIGERANT COMPOSITIONS
Rajiv R. Singh, Williamsville; David P. Wilson, East Amherst; Earl A. E. Lund, West Seneca, and Ian R. Shankland, Williamsville, all of N.Y., assignors to AlliedSignal Inc., Morristownship, N.J.
Filed Feb. 3, 1992, Ser. No. 829,652
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 5 Claims

1. Compositions comprising from about 25 to about 60 mole percent difluoromethane, from about 40 to about 75 mole percent, 1,1,1,2-tetrafluoroethane and from about 1 to about 9 mole percent dimethyl ether, having a vapor pressure from about 12.2 psia to about 18.4 psia at −40° F.

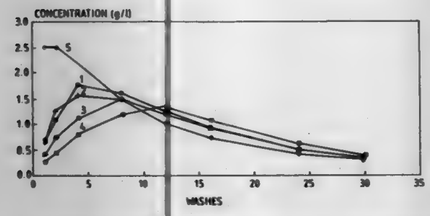
5,294,360
ATOMICALLY POLARIZABLE ELECTRORHEOLOGICAL MATERIAL
J. David Carlson, and Keith D. Weiss, both of Cary, N.C., assignors to Lord Corporation, Erie, Pa.
Filed Jan. 31, 1992, Ser. No. 829,137
Int. Cl.[5] C10M *169/04, 171/00*
U.S. Cl. 252—74 13 Claims



Flexible TiO₂-Based Electrorheological Material (Example 1)

1. An electrorheological material comprising from about 5 to 50 percent by volume of an atomically polarizable particle, from about 50 to 95 percent by volume of an electrically insulating liquid as a carrier fluid, and from about 0.1 to 10 percent by weight, relative to the weight of the atomically polarizable particle, of a particle-bound dispersing agent selected from the group consisting of titanate, zirconate, and aluminate coupling agents, and combinations thereof.

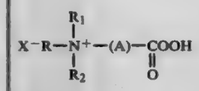
5,294,361
DETERGENT CONTAINING ARTICLE
Guido Van den Brom, Maarssen, Netherlands, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands
Filed Apr. 9, 1992, Ser. No. 862,645
Claims priority, application United Kingdom, Apr. 4, 1991, 9107100
Int. Cl.[5] C11D *17/00, 17/06*
U.S. Cl. 252—90 8 Claims



1. A sachet containing a synthetic automatic dishwashing detergent composition, wherein said detergent composition comprises 20–350 grams of both detergent powder and one or more solid detergent briquettes, the weight of each briquette being in the range 1–100 grams and the total weight of the briquettes being 10–200 grams, and wherein 0.1–10% by weight of a solubility modifier as calculated on the total mass of said detergent composition is incorporated in the material of the briquettes, said solubility modifier being selected from the group consisting of mixture of alkaline earth metal salts of fatty acids containing 12–24 C-atoms.

5,294,362
PEROXY CARBOXYLIC AMINO-DERIVATIVES
Carlo Venturello, Novara, and Claudio Cavallotti, Milan, both of Italy, assignors to Ausimont S.r.l., Italy
Division of Ser. No. 803,721, Dec. 9, 1991, Pat. No. 5,245,075, which is a continuation of Ser. No. 269,366, Nov. 10, 1988, abandoned. This application Apr. 13, 1993, Ser. No. 45,167
Claims priority, application Italy, Nov. 13, 1987, 22619 A/87
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[5] C07C *409/24;* C11D *3/39, 3/395;* D06L *3/02*
U.S. Cl. 252—102 16 Claims

1. A detergent formulation for medium-low temperature washing comprising, as an active bleaching agent, an amino peroxycarboxylic acid derivative having the following formula



where the symbols have the following meanings:
R, R_1 and R_2, which may be the same or different from each other, represent hydrogen atoms, alkyl groups or alkyl groups substituted by at least one substituent selected from the group consisting of F, Cl, OH, NO_2, lower alkoxy, carboxylic groups which may be equal to or different from each other; represents an alkylene group, cyclo-alkylene group, a cycloalkylene-alkylene or an alkylene-cycloalkylene group, which may be also fused with cycloaliphatic groups wherein said alkylene group is optionally interrupted by $CONR_3$ groups, wherein R_3 represents a hydrogen atom or an alkyl group or an aryl group; and
X represents HSO_4 or $CH_3SO_3^-$;
in combination with inert carriers or ingredients commonly employed in commercial detergent formulations.

5,294,363
MILD PERSONAL CLEANSING BAR COMPOSITION WITH BALANCED SURFACTANTS, FATTY ACIDS, AND PARAFFIN WAX
James R. Schwartz; Richard D. Farris, both of West Chester; Theresa A. Bakken, Cincinnati; Lawrence A. Gilbert, West Chester; Wayne E. Eccard, Cleves; James C. Dunbar, Cincinnati; William A. Cruz, Cincinnati; Neil W. Jordan, Cincinnati, and Martha O. Visscher, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 763,794, Sep. 23, 1991. This application Oct. 30, 1991, Ser. No. 784,863
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] C11D *9/00*
U.S. Cl. 252—108 19 Claims

1. A personal cleansing bar comprising:
A. from about 8% to about 32% of essentially saturated long chain (C_{15}–C_{22}) synthetic surfactant selected from the group consisting of: alkyl sulfate, alkyl sarcosinate, alkyl glyceryl ether sulfonate, and mixtures thereof;
B. from about 4% to about 30% of paraffin wax having a melting point of from about 130° F./54° C. to about 180° F./82° C.;
C. from about 20% to about 70% lathering mild synthetic surfactant selected from C_{12}–C_{14} acyl isethionate, C_{12}–C_{14} alkyl glyceryl ether sulfonate, C_{12}–C14 sodium acyl sarcosinate, and mixtures thereof; and wherein at least about 10% of said bar is said mild lathering C_{12}–C_{14} acyl isethionate;
D. from about 2% to about 30% free fatty acid; wherein said fatty acid is selected from the group consisting of stearic and lauric acids; said stearic and lauric acids having a ratio of from about 0:1 to about 2:1, and mixtures thereof;

E. from about 2% to about 15% soap;
F. from about 2% to about 8% sodium isethionate;
G. from 0% to about 2% sodium chloride;
H. from about 1.5% to about 10% water;
I. from 0% to about 5% of cationic polymer; and
wherein said bar has a pH of from about 4.0 to about 9.0.

5,294,364
SAFE ACIDIC HARD SURFACE CLEANER
Michel Thomas, Couthuin; Genevieve Blandiaux, Trooz, and Baudouin Valange, Gembloux, all of Belgium, assignors to Colgate Palmolive, New York, N.Y.
Continuation of Ser. No. 388,731, Jul. 31, 1989, Pat. No. 5,192,460, which is a continuation-in-part of Ser. No. 154,837, Feb. 10, 1988, abandoned. This application Aug. 3, 1992, Ser. No. 924,723
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] C11D *1/12, 1/34, 1/66*
U.S. Cl. 252—142 18 Claims

1. An acidic aqueous liquid cleaner for hard surfaced items which are acid resistant or are of zirconium white enamel and which removes lime scale, soap scum and greasy soil from surfaces of said hard surfaced items without damaging said surfaces, which comprises approximately by weight 1 to 6% of nonionic detergent(s), 2 to 8% of anionic detergent(s), organic detergent, 2 to 10% carbon atoms therein, which group of acids excludes oxalic and malonic acids, 0.01 to 2% of an aminoalkylenephosphonic acid(s) and 0.05 to 5% of phosphoric acid, with the balance being an aqueous medium, with the proportions of such aminoalkylenephosphonic, phosphoric and organic acid being in the range of 1:1–2,000:10–4,000, in which proportions the combination of aminoalkylenephosphonic and phosphoric acids prevents damage to zirconium white enamel surfaces of items to be cleaned of lime scale, soap scum and greasy soil by the detergent and organic acid.

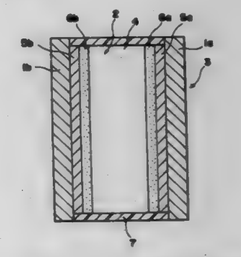
5,294,365
HYDROXYPOLYETHERS AS LOW-FOAM SURFACTANTS
Michael C. Welch, Woodhaven; Jay G. Otten, Flat Rock, and Glenis R. Scheuk, Wyandotte, all of Mich., assignors to BASF Corporation, Parsippany, N.J.
Filed Dec. 12, 1991, Ser. No. 806,028
Int. Cl.[5] C11D *1/72, 3/075*
U.S. Cl. 252—174.21 10 Claims

1. A compound of the formula

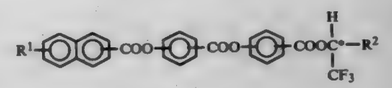


wherein
R^1, R^2 are the same or different and are a linear or branched C_1–to C_{18}–alkyl radical;
n is a number of from 15 to 45; and
m is a number of from 1 to 3.

5,294,366
CARBOXYLATE COMPOUNDS, LIQUID CRYSTAL COMPOSITIONS CONTAINING SAID COMPOUNDS AND LIQUID CRYSTAL ELEMENT
Toyozi Shimizu, Ichihara; Hideo Yamaoka, Kimitsu; Shinichi Nishiyama, Kimitsu; Shoichi Miyakoshi, Kimitsu; Tooru Yamanaka, Kimitsu, and Nobuyuki Doi, Kimitsu, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Continuation of Ser. No. 567,742, Aug. 15, 1990, abandoned. This application Sep. 4, 1991, Ser. No. 758,413
Claims priority, application Japan, Aug. 18, 1989, 1-212484; Oct. 17, 1989, 1-269310; Oct. 17, 1989, 1-269311; Oct. 17, 1989, 1-269312
Int. Cl.[5] C09K *19/32, 19/20;* C07C *69/76;* G02F *1/13*
U.S. Cl. 252—299.62 16 Claims



1. A liquid crystal compound which is a carboxylate compound represented by formula (A)


[A]

wherein
R^1 is an alkoxy group of from 6 to 18 carbon atoms;
R^2 represents a group of following formula (C):

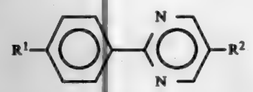
$$-(CH_2)_n-COOR^3 \quad (C)$$

n is an integer of 1 to 3, and R^3 represents an alkyl group having 1 to 10 carbon atoms or halogenated alkyl group having 1 to 10 carbon atoms.

5,294,367
FERROELECTRIC LIQUID CRYSTAL COMPOSITION AND LIGHT SWITCHING ELEMENT COMPRISING THE SAME
Kanetsugu Terashima, Ichihara; Makoto Kikuchi, Kisarazu, and Katsuyuki Murashiro, Ichihara, all of Japan, assignors to Chisso Corporation, Japan
Continuation of Ser. No. 505,154, Apr. 5, 1990, Pat. No. 5,188,761. This application May 12, 1992, Ser. No. 881,719
Claims priority, application Japan, Apr. 7, 1989, 1-86715
Int. Cl.[5] C09K *19/34, 19/12, 19/20;* G02F *1/13*
U.S. Cl. 252—299.61 19 Claims

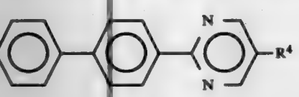
1. A ferroelectric liquid crystal composition comprising four components, A, B, C and D, in respective amounts of 75 to 95% by weight, 3 to 9% by weight, 3 to 12% by weight, and 2 to 5% by weight, based on the total amount of the components A, B and C and having a phase sequence series of an isotropic liquid, a cholesteric phase, a smectic A phase and a chiral smectic C phase, proceeding in that order from the high temperature side and a spontaneous polarization value of 30 nC/cm^2 or less,
said component A being at least one compound selected

from the group consisting of compounds represented by the general formula (I):



(I)

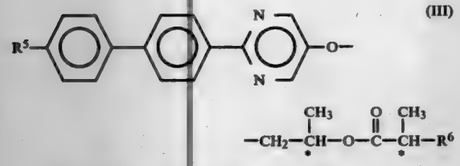
wherein R^1 and R^2 which may be the same or different are each a straight-chain or branched alkyl, alkoxy or alkanoyloxy group having 1 to 18 carbon atoms, and compounds represented by the general formula (II)



(II)

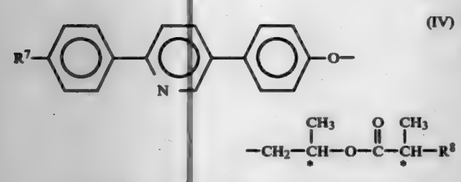
wherein R^3 and R^4 which may be the same or different, are each a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms,

said component B being at least one compound selected from the group consisting of compounds represented by the general formula (III):



(III)

wherein R^5 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^6 is a straight-chain or branched alkyl group having 2 to 18 carbon atoms or a straight-chain or branched alkoxy group having 1 to 18 carbon atoms and * represents an asymmetric carbon atom, and compounds represented by the general formula (IV):



(IV)

wherein R^7 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^8 is a straight-chain or branched alkyl group having 2 to 18 carbon atoms or a straight-chain or branched alkoxy group having 1 to 18 carbon atoms and * represents an asymmetric carbon atom,

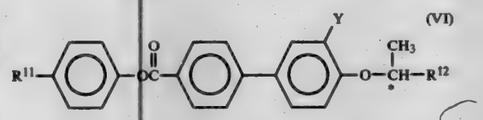
said component C being at least one compound selected from the group consisting of compounds represented by the general formula (V):



(V)

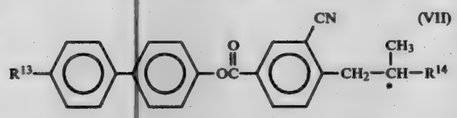
wherein R^9 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^{10} is a straight-chain or branched alkyl group having 2 to 18 atoms, X is $-OCH_2-$ or $-CH_2O-$, m and n are each 1 or 2, provided that m+n=3 and * represents an asymmetric carbon atom,

said component D being at least one compound selected from the group consisting of compounds represented by the general formula (VI):



(VI)

wherein R^{11} is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^{12} is a straight-chain or branched alkyl group having 2 to 18 carbon atoms, Y is a cyano group or a halogen atom and * represents as asymmetric carbon atom, and compounds represented by the general formula (VII):



(VII)

wherein R^{13} is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^{14} is a straight-chain or branched alkyl group having 2 to 18 carbon atoms and * represents an asymmetric carbon atom.

5,294,368

METHOD OF MAKING A COMPOSITE ELECTROLUMINESCENT PHOSPHOR

Ronald E. Karam, and Richard G. Gingerich, both of Towanda, Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 31, 1992, Ser. No. 999,243

Int. Cl.[5] C09K *11/64*

U.S. Cl. 252—301.4 F **7 Claims**

1. A method of making composite electroluminescent phosphor particles, comprising the steps of:

a) forming a composite layer on a substrate, said composite layer comprising at least one layer of a dielectric or conductive material having a thickness of between about 5 and 20 micrometers and at least one layer of an electroluminescent phosphor having a thickness of less than about 0.5 micrometers;

b) physically separating said composite layer from said substrate; and

c) pulverizing said composite layer to obtain composite electroluminescent phosphor particles.

5,294,369

LIGAND GOLD BONDING

Brian L. Shigekawa, Chapel Hill, and Yung-Ao Hsieh, Cary, both of N.C., assignors to AKZO N.V., Arnhem, Netherlands

Filed Dec. 5, 1990, Ser. No. 622,462

Int. Cl.[5] B01J *13/00*; G01N *33/553*, *33/532*

U.S. Cl. 252—313.1 **15 Claims**

1. Microparticles comprising gold sol coated with at least one compound selected from the group consisting of alkanethiol, di-thiol and tri-triol compounds.

5,294,370

SELENIUM OR TELLURIUM ELEMENTAL HYDROSOLS AND THEIR PREPARATION

Jan H. Wichers, Wageningen; Wilhelmus M. J. van Gelder, Zetten, and Albert W. J. van Doorn, Arnhem, all of Netherlands, assignors to HBT Holland Biotechnology B. V., Leiden and Agrotechnologisch Onderzoekinstituut (ATO), Wageningen, both of Netherlands

Continuation of Ser. No. 436,917, Nov. 15, 1989, abandoned. This application Feb. 19, 1992, Ser. No. 837,690

Claims priority, application Australia, Nov. 15, 1988, 25180/88

Int. Cl.[5] B01J *13/00*; G01N *33/543*

U.S. Cl. 252—313.1 **9 Claims**

1. A process for the preparation of a hydrosol of a non-metallic element selected from the group consisting of selenium and tellurium comprising treating an aqueous solution of a chemical compound containing said element with a reducing agent consisting of a borane compound.

5,294,371

CORROSION AND/OR SCALE INHIBITION

Brian G. Clubley, Wilmslow, and Jan Rideout, Horwich, both of United Kingdom, assignors to FMC Corporation, Philadelphia, Pa.

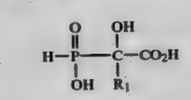
Filed Oct. 21, 1992, Ser. No. 964,584

Claims priority, application United Kingdom, Nov. 23, 1991, 9125115

Int. Cl.[5] C23F *11/16*

U.S. Cl. 252—389.23 **15 Claims**

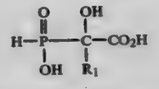
1. A corrosion- and/or scale inhibitor composition comprising: A) a corrosion- and/or scale inhibitor; and B) a compound having the formula (I):



I

or a water-soluble salt thereof, in which R_1 is hydrogen or methyl the weight ratio of component A) to component B) ranging from 10:90 to 90:10.

15. A compound having the formula I



I

or a water-soluble salt thereof, in which R is hydrogen or methyl.

5,294,372

AQUEOUS DISPERSION OF INTRINSICALLY ELECTROCONDUCTIVE POLYALKOXYTHIOPHENES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Karl-Heinz Kochem, Taunusstein, and Michael Schmidt, Oestrich-Winkel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 18, 1992, Ser. No. 853,297

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110263

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **16 Claims**

1. An aqueous dispersion comprising electroconductive, polyalkoxythiophene which is soluble in aprotic organic solvents, said dispersion having a residual organic solvent content of at least about 5% by weight and less than or equal to 25% by weight, based on the total weight of the dispersion.

5,294,373

CONDUCTIVE SILICONE RUBBER COMPOSITION AND CONDUCTIVE SILICONE RUBBER

Masaharu Takahashi; Tomiyoshi Tsuchida, and Tsutomu Nakamura, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 812,285

Claims priority, application Japan, Dec. 28, 1990, 2-416974; Dec. 28, 1990, 2-416975

Int. Cl.[5] H01B *1/00*, *1/20*, *1/24*

U.S. Cl. 252—502 **2 Claims**

1. A cured conductive silicone rubber which is produced by subjecting a conductive silicone rubber composition to a normal-pressure hot-air vulcanization method, wherein said conductive silicone rubber composition comprises:

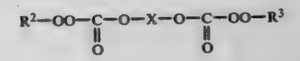
(a) an organopolysiloxane of the following general formula (1):

$$R_a^1SiO_{(4-a)/2}$$

wherein R^1 is an unsubstituted or substituted monovalent hydrocarbon group having 1 to 10 carbon atoms and "a" is a positive number of 1.90 to 2.05,

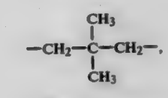
(b) conductive carbon black, and

(c) an organic peroxide of the following general formula



(2)

wherein X is $-(CH_2)_n-$ in which "n" is an integer of 2 to 8 or



and R^2 and R^3 are independently selected from monovalent hydrocarbon groups having 3 to 10 carbon atoms and $-SiR_3^4$ in which R^4 is a methyl, ethyl or phenyl group, wherein said composition is capable of being fully cured by normal-pressure, hot-air vulcanization.

5,294,374

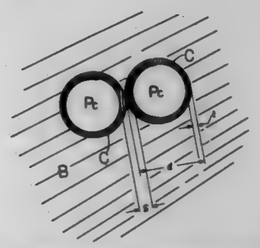
ELECTRICAL OVERSTRESS MATERIALS AND METHOD OF MANUFACTURE

Henry Martinez; Joann Yastine, both of Torrance, and Steven Chen, Pasadena, all of Calif., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Mar. 20, 1992, Ser. No. 855,325

Int. Cl.[5] H01B *1/00*, *1/14*, *1/20*

U.S. Cl. 252—518 **20 Claims**



1. A method of preparing a nonlinear electrical resistance material useful for protecting electrical equipment against transient surges which method comprises the steps of:

composing a mixture comprising a curable adhesive fluid binder of substantially insulative electrical resistivity, and electrical filler material comprising conductor particles having an applied coating of not less than 70 Angstroms nor more than 1 Micron, and semiconductor particles having no applied coating, wherein the electrical filler material is present in an amount from 15 to 97 volume percent of said mixture;

mixing said mixture until a uniform consistency is obtained of said particles in said binder and the particles are substantially all coated with said binder;

molding said mixture under pressure into a shaped, coherent self-supporting material to pack the particles closely together with interparticle spaces filled with binder and substantially free of voids to provide a material having a clamping voltage such that it presents substantially an open circuit to voltage surges below said clamping voltage, said material being capable of maintaining said clamping voltage after repeated surges in excess of said clamping voltage, and said material being capable of repeatedly conducting said surges in excess of said clamping voltage by electron transport.

5,294,375

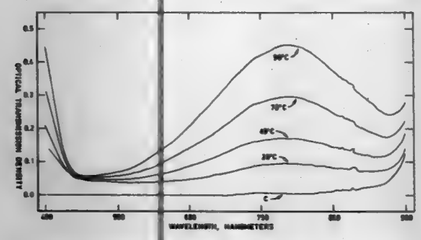
THERMOCHROMIC MATERIALS

Marcia M. Kampe, Brookline; David P. Waller, Lexington, and David C. Whritenour, Franklin, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 20, 1991, Ser. No. 747,643

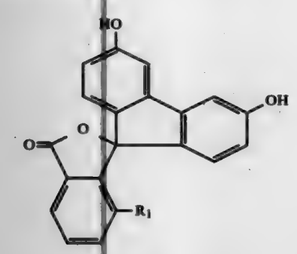
Int. Cl.[5] G02F *1/00*; C07D *333/50, 333/62, 305/14*

U.S. Cl. 252—583 **18 Claims**



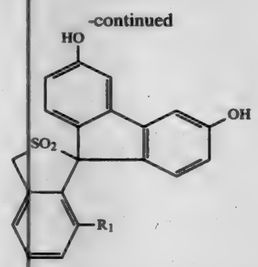
1. A thermochromic material, comprising:

(a) a compound containing the thermochromic system represented by the formula



or

-continued



wherein R_1 represents a group which exerts a steric influence such that the lactone or sulfone would remain closed at room temperature but upon the application of heat would overcome said steric influence so that ring opening could occur; and

(b) a basic component providing a pH at or above the pka of said compound;

said thermochromic material being characterized in that it goes from a substantially colorless state at room temperature to a more intensely colored state upon heating to an elevated temperature and returns to its substantially colorless state upon subsequent cooling to room temperature.

5,294,376

BIPYRIDINIUM SALT SOLUTIONS

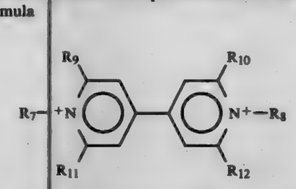
Harlan J. Byker, Zeeland, Mich., assignor to Gentex Corporation, Zeeland, Mich.

Filed Jun. 25, 1991, Ser. No. 720,170

Int. Cl.[5] C07D *401/04*; C09K *9/00*; G02B *5/30*; G02F *1/01, 1/137*

U.S. Cl. 252—600 **57 Claims**

1. A solution which comprises a solvent; an anodic electrochromic compound which, upon oxidation of its zero-potential equilibrium state, undergoes an increase in molar extinction coefficient at at least one wavelength in the visible range; and a cathodic electrochromic compound which is a salt of a cation of the formula



wherein R_7 and R_8 are independently selected from the group consisting of an alkyl group with 1–20 carbon atoms and benzyl; and R_9, R_{10}, R_{11}, and R_{12} are independently selected from the group consisting of hydrogen and an alkyl group with 1–4 carbon atoms, provided that at least three of R_9, R_{10}, R_{11}, and R_{12} are alkyl groups.

36. A solution which is liquid at room temperature and comprises a solvent and a BF_4^-, PF_6^-, or ClO_4^- salt of a cation of Formula XVII



XVII

wherein R_{36} and R_{37} independently selected from the group consisting of benzyl and alkyl of 1–20 carbon atoms; and R_{34}, R_{35}, R_{38} and R_{39} are independently selected from the group consisting of hydrogen and alkyl groups of 1–4 carbon atoms, provided that at least three of R_{34}, R_{35}, R_{38} and R_{39} are alkyl.

5,294,377

PROCESS FOR RESTORATION OF CHEMICAL LIGHTING POTENTIAL OF A CHEMILUMINESCENT LIGHTING SYSTEM

Vilas M. Chopdekar, 24 Adele Ct., Edison, N.J. 08817, and James R. Schleck, 39 Westlake Ct., Somerset, N.J. 08873

Filed Jan. 27, 1993, Ser. No. 9,892

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—700 **10 Claims**

1. A process for the restoration of the initial chemical lighting potential of the oxalate component of a chemiluminescent lighting system, said oxalate component comprising an oxalate diester in a first liquid solution which prior to restoration exhibits a failure to produce initial high intensity luminosity upon mixture of the oxalate component with a liquid activator component comprising a peroxide in a second liquid solution, which comprises contacting the oxalate component with a solid comprising magnesium silicate for a period of time sufficient to correct said failure and thereafter separating the oxalate component from said solid.

5,294,378

CALIBRATING APPARATUS FOR ISOTHERMALLY INTRODUCING MOISTURE INTO A STREAM OF DRY GAS AT A VERY SLOW RATE

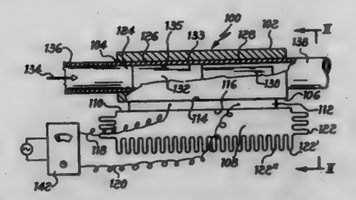
Marco Succi; Carolina Solcia, and Antonio Coppola, all of Milan, Italy, assignors to S.A.E.S. Getters SpA, Milano, Italy

Filed Feb. 16, 1993, Ser. No. 18,226

Claims priority, application Italy, May 26, 1992, MI 92 A 001299

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—130 **10 Claims**



1. A calibrating apparatus for isothermally introducing, into a stream of dry gas, calibrated amounts of moisture, lower than 1000 and even 1 ppb, said apparatus comprising:

A. a moist gas generating unit, comprising in its turn:

i) a cylindrical shell, having an inside surface and having too an inlet opening (for said stream of dry gas) and an out let opening (for the corresponding desired stream of moist gas);

ii) a permeation module, inside said cylindrical shell, containing water and comprising a peripheral membrane, made from a polymeric fluorinated material, which is tangentially lapped by the dry gas to be moistened;

iii) a thermal conditioner, arranged too inside said cylindrical shell, upstream of said permeation module;

B. an isothermal heat sink, thermally connected to the outside surface of said cylindrical shell, wherein said heat sink has a cylindrical recess therein, as well as a planar heat conducting surface, and wherein said moist gas generating unit, under item A), is lodged in said recess of said heat sink;

C) a heat radiator;

D) a Peltier heater-cooler, thermally arranged between said isothermal heat sink (under item B) and said heat radiator (under item C), wherein said Peltier heater cooler does transfer heat from said isothermal heat sink to said heat radiator or viceversa.

5,294,379

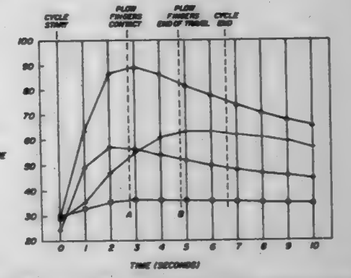
LASER ASSISTED DEMOLDING OF OPHTHALMIC LENSES

Denwood F. Ross, Green Cove Springs; Craig W. Walker; Olin W. Calvin, both of Jacksonville, all of Fla., and Thomas G. Davis, Princeton, N.J., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed Sep. 18, 1992, Ser. No. 947,218

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.4 **4 Claims**



1. A method for separating the portions of a mold comprised of at least two mold portions, a first mold portion and a second mold portion, containing therein an ophthalmic lens, said method comprising:

holding either or both mold portions in a fixture, thereby holding the mold portions containing the ophthalmic lens therebetween,

directing a source of intense electromagnetic radiation to which the material of at least one of the mold portions is sufficiently absorptive to cause an increase in temperature of said material,

impinging the outer surface of either or both mold portions with said electromagnetic radiation,

controlling the duration of said radiation impingement to cause during said duration of radiation impingement, a rise in the temperature of the surface of the mold portion impinged by the intense electromagnetic radiation, but essentially no rise in the temperature of the ophthalmic lens,

separating the mold portions after being so impinged.

5,294,380

METHOD FOR PRODUCTION OF PLATE DENTURE

Kenji Okamoto, 333-5, Takashiro, Shiga-cho, Shiga-gun, Shiga-ken, Japan

Filed Oct. 2, 1992, Ser. No. 955,972

Int. Cl.[5] A61C *13/10*; B29C *45/00*

U.S. Cl. 264—16 **3 Claims**

1. A method for producing a plate denture, comprising the steps of:

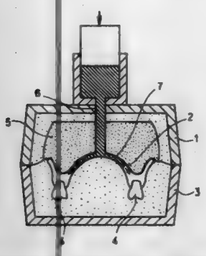
heating a flask to a temperature level in a range of temperature for polymerizing a heat-curable resin, the flask being an assembly including a first half shell having a plaster cast with a corresponding mucosal surface and a second half shell having a plaster cast with artificial teeth embedded therein;

placing the heat-curable resin into the heated flask for polymerization while the flask is at the temperature level for polymerizing the heat-curable resin caused by the heating of the flask; and

polymerizing the heat-curable resin in the heated flask to form the plate denture;

wherein during the step of heating the flask the first half

shell is heated to a higher temperature level in the range of temperature for polymerizing the heat-curable resin than



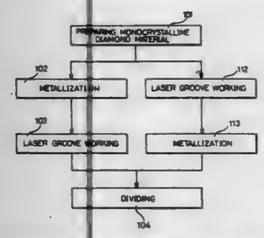
the second half shell, which second half shell is heated to a lower temperature level in the range of temperature for polymerizing the heat-curable resin.

5,294,381

METHOD OF MANUFACTURING A DIAMOND HEAT SINK

Takahisa Iguchi; Tsutomu Nakamura, and Tetsuo Nakai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 29, 1992, Ser. No. 964,390
Claims priority, application Japan, Oct. 21, 1991, 3-272830
Int. Cl.[5] H01L *21/302*
U.S. Cl. 264—25 **10 Claims**



1. A method of manufacturing diamond heat sinks made of a diamond synthesized by chemical vapor deposition, said diamond having a pair of main surfaces positioned opposite each other and electrically insulated from each other, said method comprising the following steps:

(a) preparing said diamond in the form of a polycrystalline diamond;

(b) forming grooves in surfaces of said polycrystalline diamond;

(c) forming a metallized film on at least one surface of said pair of main surfaces; and

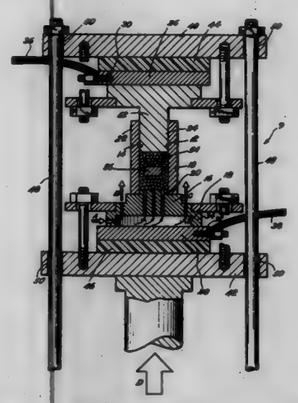
(d) mechanically dividing said polycrystalline diamond along said groove to form simultaneously a plurality of individual diamond heat sinks each having at least one solderable surface.

5,294,382

METHOD FOR CONTROL OF RESISTIVITY IN ELECTROCONSOLIDATION OF A PREFORMED PARTICULATE WORKPIECE

William M. Goldberger, Columbus, Ohio, assignor to Superior Graphite Co., Chicago, Ill.

Continuation-in-part of Ser. No. 286,980, Dec. 20, 1988, abandoned. This application Dec. 14, 1990, Ser. No. 544,046
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—27 **20 Claims**



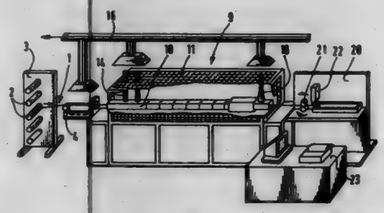
1. In a method of consolidating a preformed workpiece within a bed of a first substance constituting electrically conductive, flowable particles by applying electrical energy to said particles to heat said particles and said workpiece and pressurizing said bed to compact said workpiece, the improvement comprising the step of: controlling the electrical resistivity of such electrically conductive, flowable particles by modifying the particle contact characteristics thereof by incorporation onto such particles a second substance having different characteristics from those of such particles, and wherein the electrically conductive, flowable particles comprise a carbonaceous material.

5,294,383

PROCESS OF MAKING SHAPED MEMBERS LENGTH MADE FROM CARBON-CARBON COMPOSITE MATERIALS

Jean-Marc Donzac; Gérard Rousseau, and Pierre Terrade, all of Saint Medard en Jalles, France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Nov. 18, 1992, Ser. No. 978,013
Claims priority, application France, Nov. 21, 1991, 91 14352
Int. Cl.[5] D01F *9/12*
U.S. Cl. 264—29.2 **2 Claims**



1. A process for the continuous manufacture of shaped members of small cross-section and long length made from carbon-carbon composite materials comprising the steps of:

impregnating carbon threads in molten pitch to form a soft shaped member before shaping by a short die;

subjecting the so-impregnated thread to a thermal treatment to form a rigid shaped member by progressive heating while continuously passing through a tunnel furnace, in a controlled atmosphere, and while being supported between first and second support points located outside the tunnel furnace so that displacement of said thread inside the tunnel furnace is effected without contact within said tunnel furnace and without the use of tools within the tunnel furnace, an advance of the soft shaped member in the tunnel furnace being effected by traction of the rigid shaped member on the second support point located at an outlet of the tunnel furnace, wherein the first support point is said short die; and

cutting the rigid shaped member upon leaving the tunnel furnace to produce shaped member elements of a required length.

5,294,384

THERMOPLASTIC COMPOSITION AND METHOD FOR PRODUCING THERMOPLASTIC COMPOSITION BY MELT BLENDING CARPET

Donald J. David, Amherst, Mass.; Jerauld L. Dickerson, Pensacola, Fla., and Thomas F. Sincock, Weatogue, Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1993, Ser. No. 37,140
Int. Cl.[5] B29B *17/00, 47/00*
U.S. Cl. 264—37 **7 Claims**

1. A process for forming a thermoplastic composition from at least one carpet sample comprising a plurality of polymeric components, said sample including a plurality of nylon tufts, at least one polyolefin backing and styrene-butadiene rubber adhesive, said process comprising the steps of:

(a) providing at least one unseparated carpet sample; and

(b) melt blending said unseparated carpet sample under conditions of temperature, pressure and intensive mixing sufficient to produce a thermoplastic composition wherein all of said polymeric components are reduced to a flowable liquid form.

5,294,385

METHOD OF FORMING THICK-WALLED FRONT CABINET FOR IMAGE DISPLAY DEVICE

Kashichi Hirota, Hachioji, Japan, assignor to Kyowa Electric & Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 534,369, Jun. 6, 1990, abandoned, which is a continuation of Ser. No. 328,131, Mar. 22, 1989, abandoned. This application Apr. 22, 1992, Ser. No. 873,615
Claims priority, application Japan, Mar. 25, 1988, 63-71311
Int. Cl.[5] B29C *67/22, 45/16*
U.S. Cl. 264—45.1 **5 Claims**

1. A method of injecting molten synthetic resin into a mold to form a thick-walled front cabinet which has a front frame panel and a cabinet portion integral with each other and which is used for an image display device containing a cathode ray tube therein, comprising the steps of:

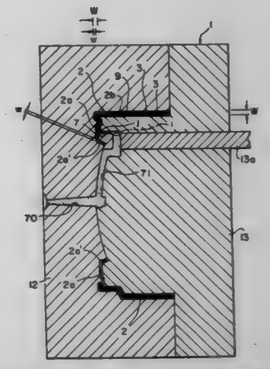
(a) providing an injection mold defining a cavity composed of a large depth portion of a first volume for forming a thick-walled portion of the front frame panel and the cabinet portion, and a reduced depth portion of a second volume for forming at least an edge of the front frame panel contactable with the cathode ray tube, the second volume being smaller than said first volume;

(b) providing a sandwich injection molding machine having a first cylinder for injecting a first molten synthetic resin, and a second cylinder for injecting a second molten synthetic resin containing a blowing agent;

(c) injecting, by actuating the first cylinder, the first molten synthetic resin into the cavity at an injection location in the vicinity of a junction between the large depth portion and the reduced depth portion of a front frame panel forming portion of said mold cavity, and continuing to inject the first molten synthetic resin until the second volume is completely filled, while a portion of the first volume not adjacent to said injection location remains unfilled; and

(d) after completion of step (c), injecting at the injection location (i) the first and second molten synthetic resin with the second molten synthetic resin surrounded by the first molten synthetic resin by actuating the first and second cylinders, and (ii) then the first molten synthetic resin by actuating the first cylinder, and continuing injecting step (ii) until the large depth portion is filled with the first and second molten synthetic resin;

whereby said at least an edge of the front frame panel of the front cabinet is formed with only the first molten synthetic resin, and other portions of the front cabinet are formed with the first and second molten synthetic resin.

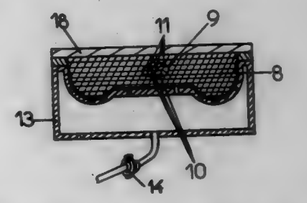


5,294,386

PROCESS FOR THE PRODUCTION OF PADDING OF POLYURETHANE FOAM CAST IN SITU IN A TEXTILE COVERING

Jacques Roth, Strasbourg; Manigold Alain, Romanswiller, and Daniel Schmitt, Berstett, all of France, assignors to Roth Freres, S.A., Strasbourg, France

Filed Jun. 24, 1991, Ser. No. 719,915
Claims priority, application France, Jun. 29, 1990, 90 08439
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—46.6 **4 Claims**



1. Process for the production of padding of polyurethane foam cast in situ in a textile covering, which comprises: disposing successively in a mold a textile overlaid by a foam sheet with cells that are open and communicating, then a fluid-tight film of glue so as to form a composite, said fluid-tight film of glue being of polyurethane base and having a softening temperatures between 60° and 80° C. and a thickness between 30 and 60 microns, holding by suction the composite thus obtained against an internal wall of the mold, said composite adapted to constitute the covering of a cushion, then casting in said mold

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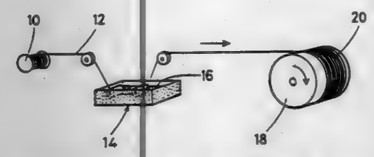
a foaming mixture of polyurethane which expands and hardens after closing of said mold, and thereafter, effecting a microperforation of said fluid-tight film of glue by heating until softening and by the effect of suction to confer on it good permeability to water vapor and generating, by the effect of suction, an underpressure in the foam in the course of hardening, such that the resulting padding of foam will have, after polymerization and demolding, constituent cells that are open and communicating.

5,294,387

METHOD OF PRODUCING FIBER-REINFORCED AND PARTICLE-DISPERSION REINFORCED MULLITE COMPOSITE MATERIAL

Kikuo Nakano, Kasugai; Kenji Oshima, Nagoya; Misao Iwata, Nagoya, and Takao Yamada, Nishikamo, all of Japan, assignors to Noritake Co., Limited, Nagoya, Japan

Division of Ser. No. 668,676, Mar. 7, 1991, Pat. No. 5,077,243, which is a continuation of Ser. No. 373,061, Jun. 29, 1989, abandoned. This application Sep. 18, 1991, Ser. No. 761,657
Claims priority, application Japan, Jul. 2, 1988, 63-165352; Jul. 2, 1988, 63-165353
Int. Cl.[5] C04B *33/34, 33/36*
U.S. Cl. 264—60 **28 Claims**



1. A method of producing a fiber-reinforced ceramic composite material reinforced by a particle dispersion comprising:
(a) dispersing ceramic particles as a matrix in a solution comprising an organometallic macromolecular substance to form an impregnating solution,
(b) uniformly impregnating fibers with said impregnating solution,
(c) laminating the impregnated fibers to provide a laminated body,
(d) converting the organometallic macromolecular substance impregnated on said fibers of said laminated body into a nonmeltable state, and
(e) sintering said laminated body in a pressurized or a normal-pressure inert gas and/or nitrogen gas atmosphere.

5,294,388

HEAT CONDUCTIVE COLORED ALUMINUM NITRIDE SINTERED BODY AND METHOD OF PREPARING THE SAME

Kouhei Shimoda; Takao Maeda; Kouichi Sogabe, and Masaya Miyake, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 686,618, Apr. 17, 1991, abandoned. This application Jul. 29, 1992, Ser. No. 922,682
Claims priority, application Japan, Apr. 17, 1990, 2-101396
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] F27B *9/04;* **C04B** *35/58*
U.S. Cl. 264—65 **1 Claim**

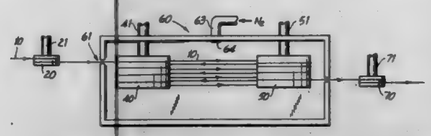
1. A method of preparing a heat conductive colored aluminum nitride sintered body, comprising the steps of: mixing at least 0.01 parts by weight and not more than 15 parts by weight of an oxide of a rare earth element in terms of the simple substance of said rare earth element, and at least 0.01 parts by weight and not more than 15 parts by weight of at least one element selected from a group consisting of oxides, carbides and nitrides of elements belonging to the groups IVB, VB and VIB of the periodic table in terms of the simple substance of said element and 100 parts by weight of aluminum nitride, thereby obtaining a mixture; shaping said mixture into a compact; and firing said compact in a non-oxidizing atmosphere containing at least 10 volume percent and not more than 100 volume percent of hydrocarbon gas selected from the group consisting of methane gas, ethylene gas, acetylene gas, propane gas and butane gas under a temperature of at least 1500° C. and not more than 2100° C., said hydrocarbon gas eliminating oxygen by chemical reaction, whereby said aluminum nitride sintered body has a uniformly distributed dark color within the range of gray to black and simultaneously a thermal conductivity within the range of 100 W/m-K to 270 W/m-K.

5,294,389

DYNAMIC TREATMENT OF SUTURE STRAND

Matthew E. Hain, New Haven; Michael P. Chesterfield, Norwalk, and Ilya Koyfman, Orange, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 715,333, Jun. 14, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,799
Int. Cl.[5] D01D *10/02, 10/04, 10/06*
U.S. Cl. 264—85 **20 Claims**



1. A method for treating surgical suture strand, comprising:
continuously passing the strand with multiple turns around at least two spaced apart rotatable bodies located within an at least partially enclosed heating zone and in a flowing inert gas atmosphere to effect treatment of said strand.

5,294,390

METHOD FOR RAPID SPINNING OF A POLYBENZAZOLE FIBER

Steven Rosenberg; George J. Quarderer, Jr.; Ashish Sen, all of Midland, Mich.; Masaru Nakagawa, Ohtsu City, Japan; Timothy L. Faley; Myrna Serrano, both of Midland, Mich.; Yoshihiko Teramoto, Ohtsu City, Japan, and Chieh-Chun Chau, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,078
Int. Cl.[5] D01D *5/04;* **D01F** *6/26;* **D02G** *3/02*
U.S. Cl. 264—103 **4 Claims**

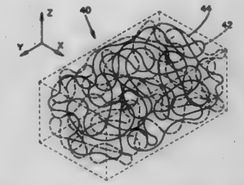
1. A process for making a fiber made up of more than one filament from a liquid-crystalline dope that contains a solvent and a polybenzazole polymer which is polybenzoxazole, polybenzothiazole or a copolymer thereof, said process comprising the steps of:
(1) spinning the dope at a temperature greater than 100° C. through a spinneret that contains a plurality of orifices, wherein the density of orifices in the spinneret is at least 2.0 per cm^2, whereby a plurality of dope filaments is formed;
(2) drawing the dope filaments across an air gap that contains a gas at a temperature of 50° C. to 100° C., wherein the gas flows through the air gap at a rate sufficient to uniformly reduce the temperature of the dope filaments;
(3) contacting the drawn dope filaments with a fluid such that the solvent is removed from the filaments, and;
(4) conducting the process such that the filaments are combined into one or more fibers before, during or after the time said filaments are contacted with said fluid.

5,294,391

METHOD OF MAKING A FIBER REINFORCED COMPOSITE STRUCTURE INCLUDING RANDOMIZING THE REINFORCING FIBERS

Carl R. McMillin, Brecksville, Ohio, assignor to AcroMed Corporation, Cleveland, Ohio

Division of Ser. No. 709,379, Jun. 3, 1991. This application Jan. 26, 1993, Ser. No. 9,292
Int. Cl.[5] B29C *67/14*
U.S. Cl. 264—103 **17 Claims**



1. A method of forming a fiber reinforced composite structure comprising the steps of:
providing one-piece of yarn having a length and two ends and made of a plurality of continuous reinforcing fibers and other material which other material is to become a matrix, each of the plurality of reinforcing fibers having a length equal to the length of the one piece of yarn;
randomizing the reinforcing fibers and the other material to extend randomly in substantially equal proportion in three dimensions throughout a mass of the yarn to intertwine and interlock the reinforcing fibers and the other material;
forming the randomized yarn into a preform;
consolidating the preform in a Z direction which is perpendicular to X and Y directions and causing a majority proportion of the reinforcing fibers to lie randomly in substantially two dimensions defined by a plane extending in X and Y directions and a minority proportion of the reinforcing fibers to weave through the plane in the Z direction; and
melting the other material to form a matrix containing the continuous reinforcing fibers extending randomly in X, Y and Z directions throughout the matrix and have a length equal to the length of the one piece of yarn.

5,294,392

METHOD OF MAKING BONDED NON-WOVEN POLYESTER FIBER STRUCTURES USING FIBERBALLS

Ilan Marcus, Versoix, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 714,874, Jun. 13, 1991, Pat. No. 5,169,580, which is a continuation-in-part of Ser. No. 549,847, Jul. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 290,385, Dec. 27, 1988, Pat. No. 4,940,502, which is a continuation-in-part of Ser. No. 921,644, Oct. 21, 1986, Pat. No. 4,794,038, which is a continuation-in-part of Ser. No. 734,423, May 15, 1985, Pat. No. 4,618,531. This application Nov. 30, 1992, Ser. No. 983,985
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—118 **4 Claims**

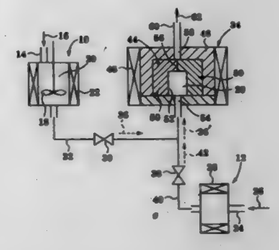
1. A batch process for molding cushions from a feed consisting of fiberballs of blends of load-bearing fibers and binder fibers, said fiberballs, if desired, being blended with free fibers, including a step of continuously filling a succession of molds by laying down said feed, via a chute, into the bottom of the molds, and cutting the feed so-laid into the molds to separate to feed between individual molds, followed by closing the molds, heating the molds in an oven to heat-activate the binder fibers, and cooling the molds in a cooling zone.

5,294,393

METHOD OF FORMING SHAPED BODY FROM FINE PARTICLES

Kazuyuki Toki; Mikio Murachi, and Norio Taguchi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 4, 1992, Ser. No. 941,308
Claims priority, application Japan, Sep. 5, 1991, 3-254619
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—121 **8 Claims**



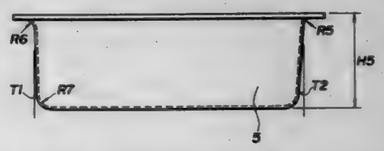
1. A method of forming a shaped body from fine particles, comprising the steps of providing a mold having a mold cavity to form the shaped body and inlet and outlet passages communicating with said cavity, preparing a slurry consisting of fine particles and a fluid maintained in the supercritical state and containing a binder dissolved therein, introducing said slurry into said cavity through said inlet passage, depositing said particles in said cavity while precipitating said binder on the surfaces of said particles, and discharging said fluid in its normal gas state from said outlet passage.

5,294,394

PROCESS FOR PREPARATION OF FIBER-REINFORCED THERMOPLASTIC MOLDED ARTICLES INCLUDING SPECIAL REINFORCEMENT

Hideo Sakai, Toshiyuki Nakakura, Tomohito Koba, Misao Mazuda, Chiaki Maruko, Satoru Kishi, all of Kanagawa, Japan

Filed Sep. 18, 1990, Ser. No. 584,167
Claims priority, application Japan, Oct. 3, 1989, 2-57072
Int. Cl.[5] B29C *67/14*
U.S. Cl. 264—135 **8 Claims**



1. A process for preparing a molded article of fiber-reinforced plastic using a plate material comprising a fibrous reinforcement material and a thermoplastic resin, said process comprising the steps of (i) setting-up a sheet prepreg either on the plate material, in a mold, or on the plate material and in a mold, in areas where the fibrous reinforcement would not follow the flow of the resin with substantial uniformity, or in areas where special reinforcement is required, wherein the sheet prepreg is obtained by impregnating a unidirectionally arranged fiber or woven cloth with a thermoplastic resin, and the fibrous reinforcement material in the plate material is from

30 to 70 wt. %, and (ii) maintaining the plate material above the flow temperature of the thermoplastic resin of the plate material and maintaining the sheet prepreg above the flow temperature of the thermoplastic resin of the sheet prepreg, and compressing them in the mold to integrally mold to obtain said molded article.

5,294,395

THERMAL TREATMENT OF THERAPLASTIC FILAMENTS FOR THE PREPARATION OF SURGICAL SUTURES

Ephraim Broyer, Murray Hill, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 690,140, Apr. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 402,092, Sep. 1, 1989, abandoned. This application May 12, 1993, Ser. No. 60,881

Int. Cl.[5] D01D *5/08, 10/02*

U.S. Cl. 264—178 F **14 Claims**



1. In a method for producing a monofilament suture composed of a thermoplastic polymeric composition, said thermoplastic polymeric composition selected from the group consisting of poly(p-dioxanone), polyethylene, polypropylene, polyvinylidene fluoride, poly(glycolide, cotrimethyl carbonate), homopolymers and copolymers of lactide and glycolide and copolymers of p-dioxanone with lactide, glycolide and ϵ-caprolactone, comprising the steps of melt extruding and quenching the polymer to form a continuous suture filament, drawing the suture filament to achieve molecular orientation, relaxing or annealing the drawn suture filament to relieve internal stresses, and thereafter sterilizing the filament to render the filament suitable for use as a surgical suture, the improvement comprising exposing the suture filament to a temperature in excess of the melting temperature of the polymeric composition during or subsequent to drawing the said suture filament and prior to the relaxation or annealing of said drawn suture filament, said exposure being for a time and at a temperature effective to obtain a suture filament having a lower order of crystallinity in the outer core area and a higher order of crystallinity in the inner core area.

5,294,396

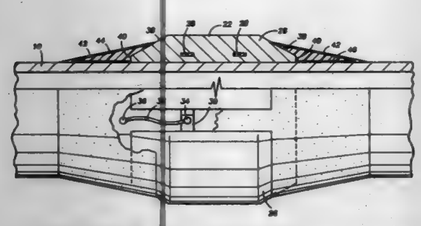
METHOD OF MAKIKNG ANODE PROTECTOR

David C. Dressel, Friendswood; James H. McBrien, Houston, and Richard L. Wyke, Missouri City, all of Tex., assignors to Foam Enterprises, Inc., Minneapolis, Minn.

Division of Ser. No. 715,363, Jun. 14, 1991, Pat. No. 5,164,058. This application Nov. 3, 1992, Ser. No. 970,634

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—240 **8 Claims**



1. A method for forming a protector for a segmented anode encircling a pipeline with gaps between the anode segments which comprises

placing a mold having a frusto-conical shape on each end of the anode with the base of the frustum around the end of the anode and the frustum terminating at the outside surface of the pipeline at a plane spaced away from the end of the anode;

clamping the base end of each mold around the anode and clamping the other end of each mole around the pipeline to form a cavity between the mold and the pipeline at each end of the anode;

enclosing all but one of the gaps to form cavities between the anode segments;

positioning the one gap so it faces upward with the pipeline substantially horizontal,

injecting a mixture of unreacted liquid components of a rapid setting elastomeric polymer into the one gap until all the cavities and the one gap are filled,

allowing the components to react until the polymer sets up, and

removing the mold.

5,294,397

HEAT EXCHANGER FOR MEDICAL TREATMENT

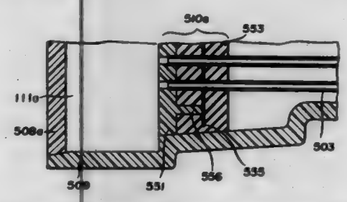
Hiroaki Oshiyama, and Atsuhiko Nogawa, both of Fuji, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 726,623, Jun. 27, 1991, which is a continuation of Ser. No. 492,299, Feb. 28, 1990, abandoned, which is a division of Ser. No. 211,976, Jun. 27, 1988, abandoned. This application Apr. 29, 1992, Ser. No. 876,899

Claims priority, application Japan, Jun. 28, 1987, 1-60094; Jul. 27, 1987, 1-87040; Jul. 31, 1987, 1-16765[U]; Jul. 31, 1987, 1-16766[U]; Sep. 16, 1987, 1-40073[U]

Int. Cl.[5] B29C *39/10*

U.S. Cl. 264—251 **25 Claims**



1. A method for manufacturing a heat exchanger for blood, said method comprising the steps of:

preparing a housing having first and second open ends, and first and second blood ports on a peripheral wall of said housing;

separately preparing an arranging member having a plurality of through openings for receiving therein heat-exchanging tubes so that said heat-exchanging tubes are arranged to be substantially parallel to each other;

arranging a first provisionally closing member in said housing near said first open end thereof;

inserting said arranging member into said housing so as to be separated from said first provisionally closing member by a predetermined distance to form a space therebetween;

inserting said heat-exchanging tubes into said through openings of said arranging member so that one ends of said heat-exchanging tubes come into contact with said first provisionally closing member;

arranging a second provisionally closing member in said housing near said second open end thereof so as to come into contact with other ends of said heat-exchanging tubes;

forming a first partition wall for supporting said one ends of said heat-exchanging tubes by injecting a potting compound into said space through one of said first and second blood ports and allowing the potting compound to solidify;

removing said second provisionally closing member and said arranging member from said housing;

rearranging said second provisionally closing member in said housing so as to come into contact with said other ends of said heat-exchanging tubes;

forming a second partition wall for supporting said other ends of said heat-exchanging tubes by injecting a potting compound into said housing through the other of said first and second blood ports and allowing the potting compound to solidify;

then removing said first and second provisionally closing members from said housing; and

then forming a pair of heat-exchanging medium chambers at opposite end portions of said housing so as to communicate with each other through said heat exchanging tubes.

5,294,398

LOW TEMPERATURE HEAT SHRINKABLE FILM AND PROCESS FOR PRODUCING THE SAME

Toshio Taka, Fujisawa; Kihachi Shishido, and Takuo Ohkubo, both of Yokohama, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 447,939, Dec. 8, 1989, Pat. No. 5,110,686, which is a division of Ser. No. 306,228, Feb. 3, 1989, Pat. No. 4,913,977, which is a continuation of Ser. No. 897,691, Aug. 11, 1986, abandoned. This application Jan. 6, 1992, Ser. No. 817,354

Int. Cl.[5] B29C *49/00*

U.S. Cl. 264—288.4 **4 Claims**

1. A process for producing a low temperature heat shrinkage film, comprising: drawing a linear low density polyethylene resin film having a short branched chain and a density of 0.935 g/cm^3 or less between two rolls having a diameter of 200 nm or less at an air gap of 10 mm or less at a draw ratio of 3.0 to 6.0.

5,294,399

PREPARATION OF CATHODE STRUCTURES FOR IMPREGNATED CATHODES

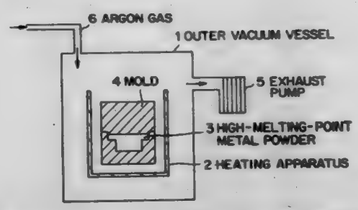
Yasuhiro Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 915,304

Claims priority, application Japan, Jul. 25, 1991, 3-186005

Int. Cl.[5] B22F *3/26*

U.S. Cl. 419—27 **12 Claims**



1. A process for preparing a cathode structure for impregnated cathodes, comprising the steps of:

introducing a high-melting-point metal powder into a mold;

performing an isostatic hot press molding process on the mold containing the high melting point metal powder thus forming a cathode structure covered with a thin film of high melting point metal;

removing a portion of the thin film from an electron emitting surface of the cathode structure; and

impregnating the electron surface of the cathode structure with a barium based compound.

5,294,400

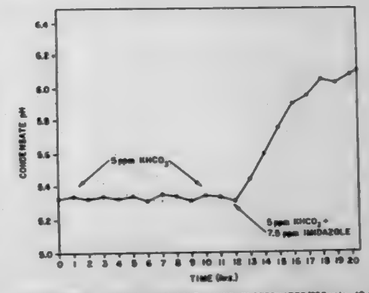
CORROSION PREVENTION IN BOILERS USING 1,3-IMIDAZOLE

Richard A. Peterson, and Robert J. Webb, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 30, 1993, Ser. No. 39,617

Int. Cl.[5] C23G *26/00*

U.S. Cl. 422—16 **4 Claims**



CONDENSATE pH vs TIME: IMIDAZOLE + $KHCO_3$ IN FEEDWATER(250 psig, 10 CYCLES)

1. A method of inhibiting the corrosion of ferrous metal surfaces in contact with boiler waters and the condensate produced therefrom which comprises adding to the boiler waters or the condensate with a corrosion inhibiting amount of a composition consisting essentially of 1,3-imidazole.

5,294,401

MEMBRANE TYPE OF OXYGENATOR AND METHOD FOR PRODUCTION THEREOF

Kazuhiko Hagiwara, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

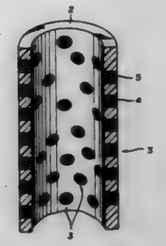
PCT No. PCT/JP88/00276, § 371 Date Sep. 15, 1989, § 102(e) Date Sep. 15, 1989, PCT Pub. No. WO88/06898, PCT Pub. Date Sep. 22, 1988

Continuation of Ser. No. 415,321, Sep. 15, 1989, abandoned. This PCT application Mar. 17, 1988, Ser. No. 966,573

Claims priority, application Japan, Mar. 18, 1987, 62-63621

Int. Cl.[5] A61M *1/18*

U.S. Cl. 422—48 **16 Claims**



1. A membrane type oxygenator for effecting exchange of gases comprising:

a porous gas-exchange membrane possessing minute through-pores for passage of gas,

minute particles retained within said minute through-pores in said porous gas-exchange membrane to decrease the cross-sectional area thereof, and

a blood anticoagulant retained by said minute particles or between adjacent ones of said minute particles.

VOL 1160 ISS 3 MR 15 1994 UMI

5,294,402

CHEMICAL SENSORS

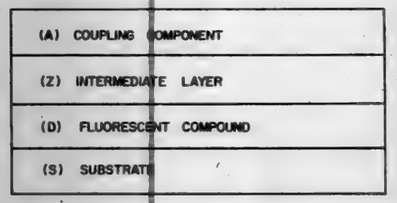
Wolfgang Schrepp, Heidelberg; Ramesh C. Ahuja; Wolfgang Budach, both of Goettingen, and Dietmar Moebius, Waake, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 26, 1992, Ser. No. 904,629

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121426

Int. Cl.[5] G01N *21/17*

U.S. Cl. 422—57 12 Claims



1. A chemical sensor to be used in a solvent containing an analyte consisting of

(a) a solid substrate,

(b) a layer (D) which is applied to the substrate and consists essentially of one or more fluorescent compounds and

(c) a layer (A) which is applied to the layer (D) and consists essentially of one or more coupling components (K) which, as a result of reacting with the analyte, give rise to one or more specific absorption bands, some or all of which overlap in the spectrum with the emission of the fluorescent compound of layer (D).

5,294,403

KIT FOR THE DETERMINATION OF BILIRUBIN IN URINE

Franco Meiattini, Siena, Italy, assignor to Diesse Diagnostica Senese S.R.L., Milan, Italy

Division of Ser. No. 544,599, Jun. 27, 1990, Pat. No. 5,183,762. This application Oct. 13, 1992, Ser. No. 959,791

Claims priority, application Italy, Sep. 21, 1989, 21789 A/89

Int. Cl.[5] G01N *33/72*

U.S. Cl. 422—61 9 Claims

1. A reagent kit for determining the concentration of bilirubin in urine, consisting essentially of, in two separate containers:

(A) a first aqueous reagent consisting essentially of 10–5,000 mmol/l of a buffer suitable to maintain the pH of said reagent between 3–7 and inert to cupric ions, 5–200 mmol/l of an aromatic compound selected from the group consisting of sulfanilic acid and sulfanilamide, 1–30 mmol/l of a soluble cupric salt, and 0–10% w/v of an anionic or non-ionic surfactant; and

(B) a second aqueous reagent consisting essentially of 10–1,000 mmol/l of an alkaline metal nitrite and 0–100% w/v dimethylsulfoxide.

5,294,404

REAGENT PACK FOR IMMUNOASSAYS

Cass J. Grandone, Lake Forest; Gary L. Zuck, Prospect Heights; Stephen L. Herchenbach, Grayslake; James T. Tyranski, Oakwood Hills, and Robert J. Nelson, Highland Park, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 709,726, Jun. 3, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,178

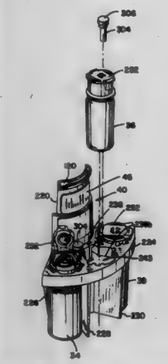
Int. Cl.[5] G01N *35/00*

U.S. Cl. 422—64 5 Claims

1. A reagent pack utilized in a reagent pack receiving bucket of a carousel of an immunoassay apparatus wherein the carousel is configured to receive and positively retain multiple reaction cells and at least one reagent pack and the bucket is circular and located between a center spindle and reaction cell receiving wells, said reagent pack comprising:

an arcuate, free standing, vertical support framework comprising carousel engaging means configured to engage a cooperating means on the carousel and releasably secure the pack to the carousel;

a vertical ridge extending radially inwardly from said support framework and terminating in an inclined surface,



said ridge positively engaging a positioning slot and locking elements within said carousel bucket for accurately aligning and locking said framework within said bucket;

a support surface attached to and extending outwardly from said framework; and

a plurality of visible reagent containers releasably secured to and carried by said support surface, said support surface comprising means for accurately positioning the reagent containers relative to the framework.

5,294,405

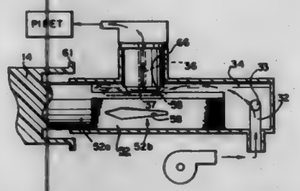
ADJUSTABLE VALVE FOR PIPETTE GUN

James W. Kenney, Broomall, Pa., assignor to Drummond Scientific Company, Broomall, Pa.

Filed Apr. 9, 1992, Ser. No. 866,001

Int. Cl.[5] B01L *3/02*; B65B *3/18*

U.S. Cl. 422—100 20 Claims



1. A valve for use in a pipette gun for variably controlling the flow of liquid samples into and out of a pipette, comprising:

a housing;

a first conduit located in said housing constructed and arranged to be connected to a fluid pressure source;

a second conduit located in said housing constructed and arranged to be connected to a pipette and to contain a volume of fluid;

an elongated valve chamber within said housing having a length, an inner diameter, a longitudinal axis, and a peripheral surface, said chamber having one opening connecting said first conduit with said chamber, and port means extending inwardly from the peripheral surface connecting said second conduit with said chamber;

an elongated valve element having a length, an outer surface, and an outer dimension constructed and arranged to slide along said longitudinal axis within said chamber with said outer surface in confronting sealing engagement with said port means, said valve element having an axial, longitudinal groove in the outer surface shorter than the length of said valve element and operable to register with said port means;

an operator connected to said valve element at one end for moving said groove of said valve element into and out of registry with said port means, said groove providing a fluid passage through said sealing engagement of said outer surface with said port means connecting said first and second conduits when said groove is in registry with said port means, and said valve element isolating said second conduit when said groove is out of registry with said port means,

whereby the port means separates the second conduit from the chamber so that the volume of fluid in said second conduit remains substantially unchanged while said groove is moving into and out of registry with said port means.

5,294,406

WASTE SOLUTION TREATMENT APPARATUS

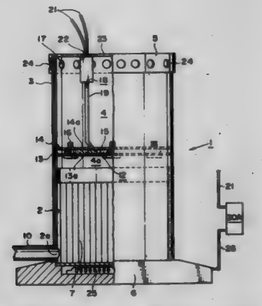
Masayasu Sekido, Osaka, and Akira Yoda, Kaisei, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 430,553, Nov. 1, 1989, abandoned. This application Aug. 27, 1992, Ser. No. 933,912

Claims priority, application Japan, Nov. 2, 1988, 63-279146; Nov. 24, 1988, 63-297370

Int. Cl.[5] B01J *8/02*

U.S. Cl. 422—109 18 Claims



1. A waste solution treatment apparatus comprising:

a waste solution container and mans for supplying a waste solution to said container;

heating means provided below said container for vaporizing a portion of said waste solution supplied to said container;

a catalyst for catalyzing said vaporized portion of said waste solution;

an igniter for igniting said vaporized waste solution and having a portion adjacent to said catalyst;

guide means comprising a plurality of hollow, elongated, open ended chamber located within said container and partially immersed in said waste solution, said guide means being disposed vertically between said heating means and said catalyst, for guiding said vaporized waste solution to said catalyst and for transmitting heat generated at said catalyst to said waste solution thereby maintaining the temperature of said waste solution; and

an air intake means provided for said waste solution container, above said catalyst, for supplying air to said catalyst.

5,294,407

GAS PURIFIER HAVING PRESSURE RESPONSIVE SWITCH AS END OF LIFE DETECTOR

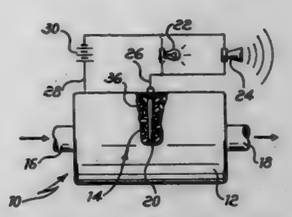
Marco Succi, and Carolina Solcia, both of Milan, Italy, assignors to SAES Getters SpA, Milan, Italy

Filed Oct. 3, 1991, Ser. No. 770,328

Claims priority, application Italy, Nov. 23, 1990, 22166 A/90

Int. Cl.[5] G01D *11/26*; B01D *50/00*

U.S. Cl. 422—119 11 Claims



1. A gas purifier for impurity-containing gas having an end of life detector, said gas purifier comprising:

A. a housing; and

B. an impurity-sorbing material packed within the housing wherein said impurity-sorbing material has the property of reacting with impurities in an impurity-containing gas wherein the reacting causes expansion of the impurity-sorbing material; and

C. an impurity-containing gas inlet; and

D. a purified gas outlet; and

E. a pressure responsive electrical switch within the housing, wherein the position of said switch is responsive to expansion of the impurity-sorbing material; and

F. means outside the housing to determine the position of the switch.

5,294,408

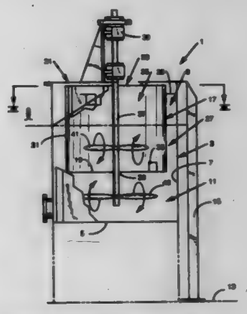
COMPACT LIME SLAKER

Charles J. Muzik, McKees Rocks, and Kenneth L. Yoest, Pittsburgh, both of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Filed Apr. 16, 1993, Ser. No. 48,736

Int. Cl.[5] B01D *43/00*; B01F *7/16*; B01J *8/08*; B07B *1/20*

U.S. Cl. 422—162 11 Claims



1. A lime slaking apparatus comprising:

an outer vessel having a bottom wall, upwardly extending tubular side wall and an open top forming a final slaking chamber;

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an inner vessel having a bottom wall, upwardly extending tubular side wall and an open top forming an initial slaking chamber, said inner vessel disposed within said outer vessel with an annular gap between the sidewalls of said inner vessel and said outer vessel and with said bottom walls in spaced relationship;

said inner vessel having a shaft bore through the bottom wall thereof, and a discharge opening in a wall thereof such that said initial slaking chamber of said inner vessel communicates with said final slaking chamber of said outer vessel;

a source of lime and water, and means disposed at the top of said inner vessel for charging said lime and water into said initial slaking chamber;

a rotatable shaft extending from above said inner vessel and through said shaft bore into said outer vessel, and terminating adjacent said bottom wall of said outer vessel, said shaft having agitators thereon in both said initial and final slaking chambers;

means for rotating said shaft;

a collection trough for slaked lime;

means for discharging slaked lime from said outer vessel to said collection trough;

means for recycling at least a portion of discharged slaked lime from said collection trough back to said final slaking chamber; and

means for discharging a slaked lime product from said collection trough.

5,294,409

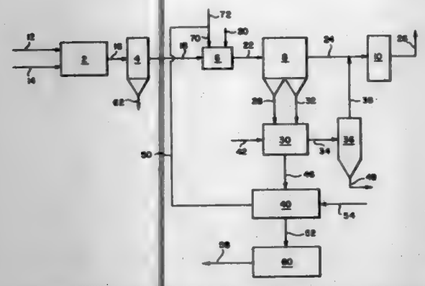
REGENERATIVE SYSTEM FOR THE SIMULTANEOUS REMOVAL OF PARTICULATES AND THE OXIDES OF SULFUR AND NITROGEN FROM A GAS STREAM

Mitchell R. Cohen, Troy, N.Y., and Eli Gal, Lititz, Pa., assignors to General Electric Environmental Services, Incorporated, Lebanon, Pa.

Division of Ser. No. 905,133, Jun. 23, 1992, Pat. No. 5,202,101. This application Dec. 22, 1992, Ser. No. 994,961

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—169 **13 Claims**



1. A regenerative system for simultaneously removing time a combustion exhaust gas stream, particulate matter by means of a filter, oxides of nitrogen by means of ammonia gas and sulfur oxides by means of a solid sorbent on a porous carrier, and for regenerating spent solid absorbent on a porous carrier, comprising:

(a) an entrained bed solid sorbent reactor in a combustion exhaust gas stream;

(b) means for providing a solid sulfur oxide acceptor sorbent in the reactor to form an entrained bed therein, said solid sulfur oxide acceptor sorbent being dispersed on a finely-divided porous carrier material wherein the carrier material has an average particle size up to about 200 microns when said reactor is preceded with a particulate removal device and an average particle size of 20 microns to 200 microns when the reactor is not preceded with a particulate removal device;

(c) means for injecting ammonia gas or a precursor of ammonia gas into the exhaust gas stream;

(d) a filter to separate solid sorbent, particulate matter, or a mixture of solid sorbent and particulate matter from the exhaust stream to provide a clean gas stream;

(e) a clean gas stream exit from the system;

(f) means for passing the combustion exhaust gas stream from a combustion exhaust gas source, in sequence, to the reactor, to the filter and thereafter to the clean gas stream exit;

(g) a regenerator for regenerating the solid sorbent dispersed on a porous carrier material and containing no particulate matter from filter (d) whereby a sulfur oxide-rich gas and regenerated solid sorbent are formed;

(h) means for passing the solid sorbent dispersed on a porous carrier material from the filter to the regenerator; and

(i) means for passing the regenerated solid sorbent dispersed on a porous carrier material from the regenerator directly to the reactor.

5,294,410

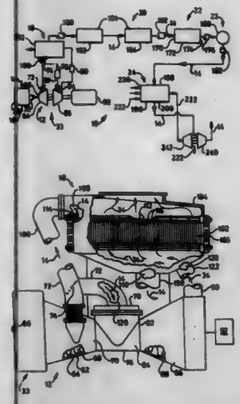
GAS PURIFICATION AND CONDITIONING SYSTEM

David J. White, San Diego, Calif., assignor to Solar Turbine Incorporated, San Diego, Calif.

Filed Jun. 1, 1992, Ser. No. 891,251

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—171 **15 Claims**



1. A gas purification and thermal conditioning system for removal of an objectionable impurity generally not acceptable for public consumption and temperature control of said purified gas for future use in a confined area, said gas purification and thermal conditioning system comprising:

a gas turbine engine including a compressor section in which a gas is compressed, a combustor section being interconnected with the compressor section;

a condensed phase gas filtering/separating apparatus being positioned upstream of said compressor section, in fluid communication with the compressor section and wherein said gas is at least partially purified;

a first heat exchanger being positioned downstream of said compressor section and in fluid communication with the compressor section;

means for further purifying the gas being positioned downstream of said first heat exchanger and in fluid communication with the first heat exchanger, said means for further purifying the gas including a reactor system;

means for polishing being positioned downstream of said first heat exchanger and in fluid communication with the first heat exchanger, said means for polishing having a solids filter and an alkaline absorber therein; and

a second heat exchanger being positioned downstream of said means for further purifying and said means for polishing and in fluid communication with said means for polishing.

5,294,411

HONEYCOMB BODY WITH HEATABLE CATALYTIC ACTIVE COATING

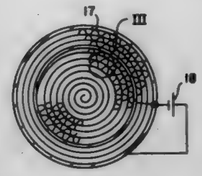
Hans-Jürgen Breuer, and Rolf Brück, both of Overath, Fed. Rep. of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 779,365, Oct. 17, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 18,725

Claims priority, application European Pat. Off., Apr. 17, 1989, 89904535.5

Int. Cl.[5] F01N *3/10*; B01D *53/36*

U.S. Cl. 422—174 **4 Claims**



1. A catalyst carrier body, comprising a honeycomb element formed of ceramic material having walls defining a multiplicity of channels through which a gas can flow, an electrical auxiliary heater in the form of a catalytically active surface layer disposed on said walls of said honeycomb element, and means connected to said auxiliary heater for electrically heating said catalytically active surface layer.

5,294,412

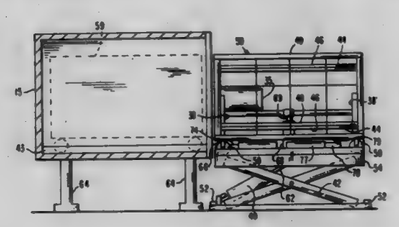
STEAM AUTOCLAVE UNIT FOR DELIVERING STERILIZED MEDICAL WASTE TO A PORTABLE CARRIER

Joseph A. Orlando, Pleasantville, N.Y., assignor to Health Care Waste Services Corp., Bronx, N.Y.

Division of Ser. No. 678,445, Apr. 1, 1991, Pat. No. 5,186,397. This application Sep. 30, 1992, Ser. No. 954,163

Int. Cl.[5] A61L *2/06*; B02C *19/12*

U.S. Cl. 422—295 **9 Claims**



1. An autoclave for sterilizing medical waste comprising:

a) A housing having a bottom, side-walls and a top cover opening to receive bagged medical waste;

b) A basket adapted to fit and supported by the housing containing the bagged medical waste;

c) A platform in said housing for supporting the basket containing the bagged medical waste;

d) Means within the housing for sterilizing the bagged medical waste;

e) Means within the housing to move the platform upwardly and out of the housing with the basket of the sterilized medical waste thereon and to deposit the sterilized waste into a separate disposal container.

5,294,413

STERILIZATION AND STORAGE CASSETTE

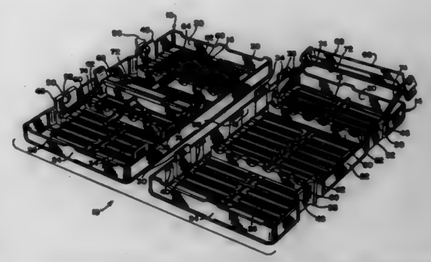
Roy E. Rilhimaki, Libertyville, and James M. Kudla, Mt. Prospect, both of Ill., assignors to Hu-Friedy Mfg. Co., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 731,422, Jul. 17, 1991, Pat. No. 5,215,726. This application Dec. 24, 1992, Ser. No. 996,722

The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] A61L *2/06*

U.S. Cl. 422—297 **19 Claims**



1. An instrument sterilization and storage cassette comprising:

first and second substantially identical, trays, each of said trays being formed of heat resistant plastic, each of said trays defining a plurality of sterilization openings, wherein said trays are connectable to each other to form a bounded sterilization region; least one of said trays; and

a rotatable retaining member located within said at least one tray, said retaining member being rotatably connected to opposite said sides of tray so as to be rotatable about an axis of rotation between an open position and an instrument retaining position.

5,294,414

GAS GENERATOR, IN PARTICULAR, A TUBULAR GAS GENERATOR FOR AN AIR BAG

Uwe Brede, Fürth; Josef Kraft, Berg, and Gerrit Scheiderer, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 800,005

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037767

Int. Cl.[5] B01J *7/00*

U.S. Cl. 422—305 **12 Claims**

1. A tubular gas generator for an air bag comprising

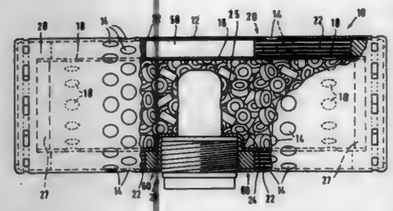
an outer tube;

an inner tube for accepting gas-producing material, said inner tube forming an annular intermediate chamber and being arranged within and radially spaced from the outer tube;

closure covers for closing open front ends of both the outer and the inner tubes; and

an ignition device for igniting the gas-producing material; the ignition device being arranged in a central region of the axial extent of the outer and inner tubes; peripheral opening arranged in both tubes, said peripheral openings being aligned with each other, said ignition device extending through the aligned peripheral openings; and the

intermediate chamber between the inner tube and the outer tuber being occupied in the region of the peripheral openings by a substantially annular segment-shaped holding body which has an installation through-hole aligning with the peripheral openings for holding the ignition



device; said holding body being tubular shaped and occupying the annular intermediate chamber over substantially its whole periphery, the tubular holding body having a slot extending over its whole axial length, and said slot being arranged diametrically opposite the installation through-hole of said body.

5,294,415

PROCESS FOR THE SEPARATION AND RECOVERY OF RHODIUM FROM THE PRODUCTS OF THE OXO SYNTHESIS

Peter Lappe, Dinslaken, Ludger Bexten, Hünxe, and Dieter Kupies, Duisburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

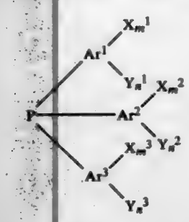
Continuation of Ser. No. 676,891, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 372,050, Jun. 27, 1989, abandoned. This application Jun. 23, 1992, Ser. No. 903,010

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3822037

Int. Cl.[5] C01G *55/00*; C22B *11/00*; B01J *38/48*, *38/64*

U.S. Cl. 423—22 **28 Claims**

1. A process for the recovery of a rhodium or a rhodium-containing catalyst from a distillation residue of a mixture of oxo synthesis products consisting essentially of reacting the distillation residue with an oxidizing agent to form a mixture, reacting the mixture in the presence of carbon monoxide or a carbon monoxide forming compound with an aqueous solution of a reagent which forms a more stable water soluble but organic media insoluble complex with rhodium than a complex with carbon monoxide, said reagent having the formula



wherein Ar^1, Ar^2 and Ar^3 are each a phenyl or naphthyl group; Y^1,Y^2,Y^3 each denote a straight or branched chain alkyl group with 1 to 4 carbon atoms, a straight or branched chain alkoxy group with 1 to 4 carbon atoms, a halogen atom, or an OH, —CN, —NO_2, or R^1R^2N— group in which R^1 and R^2 each stand for a straight or branched chain alkyl group with 1 to 4 carbon atoms, X^1, X^2 and X^3 are each a carboxylate (COO—) or a sulfonate (SO_3—) group; m_1, m_2, m_3 are individually integers from 0 to 3, at least one m_1, m_2 or m_3 being equal to or greater than 1; and n_1, n_2, n_3 are individually integers from 0 to 5, treating the mixture with an inert organic solvent, recovering the aqueous phase containing the water soluble complex of rhodium and reusing the same as a hydroformylation catalyst.

5,294,416

PROCESS FOR THE PREPARATION OF HBN

Abram Becker, Paris, France, and Hyman Stollar, Beer Sheva, Israel, assignors to Bromine Compounds Limited, Israel

Division of Ser. No. 621,350, Dec. 3, 1990, Pat. No. 5,169,972. This application Sep. 11, 1992, Ser. No. 943,768

Claims priority, application Israel, Dec. 14, 1989, 92705

Int. Cl.[5] C01G *3/00*

U.S. Cl. 423—24 **14 Claims**

1. A method for recovering CuCN from a reaction mixture containing cuprous halide and p-hydroxybenzonitrile (HBN) in an organic solvent, comprising the steps of:

(a) contacting said reaction mixture with an aqueous solution comprising about 30 percent by weight to saturation of a bromide salt, so that an organic phase comprising HBN and an aqueous phase comprising cuprous ions are formed;

(b) separating said aqueous and organic phases;

(c) adding an alkali metal cyanide to said aqueous phase, so that a precipitate of said CuCN is formed; and

(d) separating said CuCN precipitate from said aqueous phase.

5,294,417

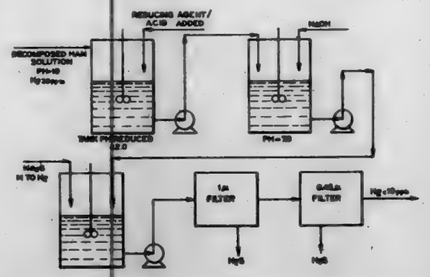
PROCESS FOR REMOVAL OF MERCURY FROM HYDROXYLAMMONIUM NITRATE SOLUTIONS

Sanders H. Moore; James F. Pickering; Ronald L. Dotson; Carey O. Burgar, all of Cleveland; Jeffery D. Casteel; Phillip J. Reed, both of Englewood, and Richard E. Mellor, Charleston, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Apr. 6, 1992, Ser. No. 864,244

Int. Cl.[5] C02F *1/76*

U.S. Cl. 423—101 **10 Claims**



1. A process for the removal of mercury from an aqueous solution containing a hydroxylammonium nitrate comprising:

(a) adjusting the pH of the solution to above 8;

(b) reacting the alkaline solution with a source of hypochlorite ions sufficient to decompose the hydroxylammonium nitrate;

(c) reducing the hypochlorite;

(d) adjusting the pH of the solution to less than about 7.0;

(e) adding a soluble precipitating agent to the solution in an effective amount to cause mercury to precipitate out as an insoluble mercury compound; and

(f) removing the precipitated insoluble mercury compound.

5,294,418

PROCESS FOR REVERSIBLY BINDING OXYGEN

Dorai Ramprasad, Allentown, Pa.; Ingrid K. Meier, Asbury, N.J.; Ronald M. Pearlstein, Macungie, and Guido P. Pez, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 890,065, May 27, 1992, Pat. No. 5,208,335, which is a continuation-in-part of Ser. No. 672,711, Mar. 19, 1991, Pat. No. 5,126,466. This application Oct. 13, 1992, Ser. No. 960,497

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] C01B *13/00*

U.S. Cl. 423—219 **18 Claims**

1. A process for removing oxygen from a fluid stream containing oxygen and at least one other component, said process comprising bringing said fluid stream into contact with a solid state composition comprising one or more cyanocobaltate complexes comprising a cobalt(II)-containing anion having from 3 to 5 cyanide ligands wherein at least one cyanide stretching mode, as measured by infrared spectroscopy, is between 2074 cm^{-1} and 2140 cm^{-1}, and which complex further comprises a charge-balancing cation having a molecular volume in excess of 40$Å^3$, such that said complex selectively and reversibly binds oxygen thereby removing oxygen from the fluid stream.

5,294,419

METHOD FOR REMOVING NITROGEN OXIDES AND ORGANIC CHLORINE COMPOUNDS FROM COMBUSTION WASTE GAS

Masakatsu Hiraoka, 39-763, Kohata Okurayama, Uji-shi, Kyoto; Toshihiko Iwasaki, Tokyo; Haruhito Tsuboi, Tokyo; Takashi Noto, Tokyo; Miki Yamagishi, Tokyo; Takashi Yokoyama, Tokyo; Yasuo Suzuki, Tokyo; Yoshinori Imoto, Nagoya; Osamu Ishikawa, and Katsuhiro Tokura, both of Handa, all of Japan, assignors to Masakatsu Hiraoka, Kyoto; NKK Corporation, Tokyo and NGK Insulators, Nagoya, all of Japan

Filed Nov. 12, 1991, Ser. No. 791,571

Claims priority, application Japan, Nov. 30, 1990, 2-339678; Nov. 30, 1990, 2-339679; Feb. 18, 1991, 3-045730

Int. Cl.[5] B01J *8/00*; C01B *21/00*; C10H *23/00*

U.S. Cl. 423—239.1 **6 Claims**



1. In a method for removing nitrogen oxides and organic chlorine compounds from a combustion waste gas, which comprises the steps of:

adding ammonia (NH_3) as a reducing agent to a combustion waste gas containing nitrogen oxides and organic chlorine compounds; and

contacting said combustion waste gas containing said ammonia as the reducing agent, while keeping the temperature of said combustion waste gas within a range of from 150° to 340° C., with a catalyst in an effective amount to achieve a catalytic function, said catalyst comprising at least one selected from the group consisting of platinum (Pt), palladium (Pd), ruthenium (Ru), manganese (Mn), copper (Cu), chromium (Cr) and iron (Fe) and oxides thereof, supported on the surface of a carrier, to reduce said nitrogen oxides contained in said combustion waste gas so as to decompose said nitrogen oxides, and at the same time to oxidize said organic chlorine compounds contained in said combustion waste gas so as to decompose said organic chlorine compounds, thereby removing said nitrogen oxides and said organic chlorine compounds from said combustion waste gas;

wherein the improvement comprises:

said carrier comprises a substrate comprising mullite ($3Al_2O_3.SiO_2$) and a layer comprising titanium oxide (TiO_2) formed on the surface of said substrate.

5,294,420

PROCESS FOR THE DESULFURIZATION AND DENITRIFICATION OF A WASTE GAS CONTAINING HALOGEN-CONTAINING MATERIALS

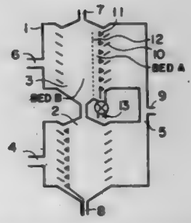
Yoshiro Ito, Tokyo, Japan, assignor to Mitsui Mining Company, Limited, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,829

Claims priority, application Japan, Sep. 18, 1991, 3-265371; Apr. 3, 1992, 4-109038

Int. Cl.[5] C01B *21/00*, *7/00*, *17/00*; B01J *8/00*

U.S. Cl. 423—239.1 **4 Claims**



1. A process for the desulfurization and denitrification of a waste gas containing halogen-containing materials in addition to SO_x and NO_x, using a gas-processing apparatus having a first moving bed and a second moving bed in which a carbonaceous adsorbent is moved from an upper part to a lower part of the apparatus, and a gas permeable partition plate provided in parallel with the flow of the carbonaceous adsorbent in the second moving bed to divide the second moving bed of the adsorbent into an inlet side bed and an outlet side bed, which process comprises:

feeding the waste gas to the first moving bed,

passing the waste gas transversely through the carbonaceous adsorbent in the first moving bed where desulfurization is mainly carried out,

adding ammonia to the waste gas having passed through the first moving bed,

feeding the resultant gas to the inlet side bed,

passing the waste gas transversely through the carbonaceous adsorbent and gas permeable partition plate in the second moving bed where denitrification is mainly carried out,

whereby the carbonaceous adsorbent is firstly fed to the second moving bed where the carbonaceous adsorbent is subjected to catalytic reduction of nitrogen oxides, then the carbonaceous adsorbent is fed to the first moving bed where the carbonaceous adsorbent is subjected to adsorption of sulfur oxides, and then the carbonaceous adsorbent is subjected to regeneration, the carbonaceous adsorbent having moved downward in the outlet side bed in the second moving bed to the first moving bed as it is, and the carbonaceous adsorbent having moved downward in the inlet side bed in the second moving bed to adsorb ammonium halides being taken out of the system and subjected to regeneration.

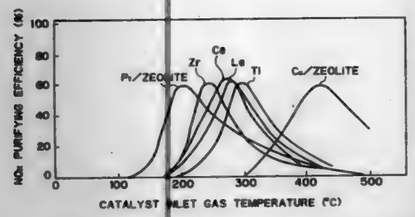
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5,294,421

METHOD FOR CATALYTICALLY PURIFYING EXHAUST GAS

Hideaki Muraki, Nagoya; Tokuta Inoue, Mishima; Kiyohiko Oishi, Toyota, and Kenji Katoh, Sunto, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 27, 1991, Ser. No. 799,315
Claims priority, application Japan, Nov. 28, 1990, 2-322638
Int. Cl.[5] B01J *8/00*; C01B *21/00, 23/00*
U.S. Cl. 423—239.1 4 Claims



1. A method for purifying an oxygen rich exhaust gas by catalytically reducing nitrogen oxides with carbon monoxide and hydrocarbons contained therein which comprises the step of:

bringing an exhaust gas containing nitrogen oxides into contact with a series of catalysts arranged in the order of, from an upstream side of the exhaust gas to a downstream side,

(i) Pt supported on TiO_2 having a Pt/Ti atomic ratio of 0.001/1 to 1/1,

(ii) Pt supported CeO_2 having a Pt/Ce atomic ratio of 0.001/1 to 1/1,

(iii) Pt supported on ZrO_2 having a Pt/Zr atomic ratio of 0.001/1 to 1/1, and

(iv) Pt supported on Al_2O_3 having a Pt/Al_2O_3 weight ratio of 0.001/1 to 0.1/1

wherein the temperature of said series of catalysts is from 250° C. to 500° C.

5,294,422

PROCESS FOR PURIFICATION OF RARE GAS

Koichi Kitahara; Kenji Ohtsuka; Noboru Takemasa, and Shinobu Kamiyama, all of Hiratsuka, all of Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 754,462, Sep. 3, 1991, Pat. No. 5,194,233. This application Oct. 5, 1992, Ser. No. 956,619
Claims priority, application Japan, Sep. 14, 1990, 2-242586; Nov. 29, 1990, 2-325484; May 17, 1991, 3-210523
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] B01D *53/04*
U.S. Cl. 423—245.1 4 Claims

1. A process for purifying a rare gas containing impurities which comprises contacting the rare gas at a temperature of 350° C. to 700° C. with an alloy getter selected from the group consisting of (a) an alloy consisting essentially of vanadium, zirconium and chromium and (b) an alloy consisting essentially of vanadium, zirconium, chromium and cobalt,

said chromium in said alloy (a) or the total of said chromium and cobalt in said alloy (b) being in an amount of 0.5 to 20 parts by weight per 100 parts based on the total weight of the vanadium and the zirconium,

said vanadium being in an amount of 5 to 90% by weight based on the weight of the vanadium and the zirconium, to remove at least one of nitrogen, hydrocarbons, carbon monoxide, carbon dioxide, oxygen, hydrogen and water, as impurities contained in the rare gas.

5,294,423

PROCESS FOR THE PREPARATION OF AN ALKALI BOROHYDRIDE SUCH AS LITHIUM BOROHYDRIDE

Stéphane Lorthioir, Savigny-sur-Orge; Claude Humbert-Droz, Brie s/Forges, and Serge Tresnoy, Neuilly sur Marne, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 24, 1992, Ser. No. 873,462
Claims priority, application France, May 2, 1991, 91 05402
Int. Cl.[5] C01B *6/17*
U.S. Cl. 423—286 11 Claims

1. A process for the preparation of an alkali metal borohydride which comprises catalytically hydrogenating boric anhydride with alkali metal hydride in the presence of hydrogen and a hydrogenation catalyst.

5,294,424

PROCESS FOR PREPARING HIGH ABSORPTIVITY GRANULAR SODIUM PHOSPHATES

Louis A. Highfill, Union, Mo., and Kent P. Lannert, Freeburg, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 20, 1990, Ser. No. 540,993
Int. Cl.[5] C01B *25/30, 25/40*
U.S. Cl. 423—305 9 Claims

1. A method of preparing high absorptivity granular sodium phosphates which comprises fully hydrating a mixture of phosphates comprising greater than 80% by weight granular sodium tripolyphosphate, dehydrating the hydrated mixture at a temperature in the range of from about 100° C. to about 300° C. and recovering the sodium phosphates comprising less than 80% by weight sodium tripolyphosphate.

5,294,425

POLYSILAZANE PRECURSORS FOR SILICON NITRIDE AND RESULTANT PRODUCTS

Stuart T. Schwab, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 24, 1991, Ser. No. 764,793
Int. Cl.[5] C01B *33/04*
U.S. Cl. 423—324 6 Claims



1. A method of making a perhydropolysilazane in a single reaction comprising forming a reaction medium comprising a mixture of at least one, dichlorosilane and at least one trichlorosilane, an ammonium compound, and an organic solvent for said mixture of silanes, carrying out the reaction between said mixture of silanes and said ammonium compound in the absence of any catalyst, oxygen, and moisture at atmospheric pressure and at a temperature of about −80° C. to 20° C. for a time sufficient to form said perhydrosilazane, and separating said perhydrosilazane from said reaction medium.

5,294,426

ELECTRORHEOLOGICAL FLUID COMPOSITIONS

Masahiro Sekine, Kitakyushu; Yasufumi Otsubo, Chiba, and Shingo Katayama, Kitakyushu, all of Japan, assignors to Colloid Research Institute, Kitakyushu, Japan

Filed Jul. 22, 1991, Ser. No. 733,544
Claims priority, application Japan, Aug. 2, 1990, 2-203831
Int. Cl.[5] C01B *33/08, 33/12*; C10M *125/26*
U.S. Cl. 423—335 5 Claims

1. An electrorheological fluid composition consisting essentially of an electrically nonconducting liquid and 10 to 50 vol. % silica particles dispersed therein,

wherein the nonconducting liquid being at least one member selected from the group consisting of petroleum-derived lubricants, transformer oils, silicone oils, dibutyl sebacate, chlorinated paraffins, alkyl bromides, aromatic polycarboxylic acid alkyl esters, aromatic polycarboxylic acid halophenylalkyl esters, halophenyl alkyl ethers, and fluorine-containing oils and

the silica particles being spherical particles formed by hydrolyzing a silicon alkoxide in a reaction mother liquor, the silicon alkoxide being of the following general formula (1)

$$Si(OR)_4 \quad (1)$$

in which R is an alkyl group in the presence of an alkali catalyst, and drying at or below 500° C. and

the silica particles:

have an average diameter of 0.1–2.0 μm,

have a BET nitrogen specific absorption area of ≦100 m^2/g,

have a carbon content of ≦3% and

have a weight lose of 2–12% when heated up to 200° C. in thermogravimetric analysis and a weight lose of 2–10% when heated to 200° C. to 1000° C. in thermogravimetric analysis.

5,294,427

CONTINUOUS PROCESS FOR PREPARING SODIUM PERCARBONATE

Hiromi Sasaki; Hiroshi Ueda; Yasushi Muneno; Hirokazu Kusunoki, and Sunao Yamamoto, all of Yamaguchi, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Continuation of Ser. No. 826,531, Jan. 27, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 15,052
Claims priority, application Japan, Jan. 25, 1991, 3-007412; Sep. 18, 1991, 3-238368
Int. Cl.[5] C01B *15/10, 31/00*
U.S. Cl. 423—415.2 9 Claims

1. In a process of continuously crystallizing sodium percarbonate by the reaction of sodium carbonate with hydrogen peroxide using first and second reaction vessels, the process comprising the steps of:

(a) continuously feeding a first fed solution comprising sodium carbonate and hydrogen peroxide and a hydrogen peroxide solution into the first reaction vessel, thereby to form therein a first slurry containing seed crystals of sodium percarbonate;

(b) continuously discharging the first slurry from the first reaction vessel into the second reaction vessel while step (a) is performed wherein residence time of said first slurry in said first reaction vessel is not longer than 5 minutes;

(c) continuously feeding at least one of hydrogen peroxide and sodium carbonate into the second reaction vessel while steps (a) and (b) are performed thereby to form therein a second slurry containing final sodium percarbonate crystals grown from the seed crystals, the final sodium percarbonate crystals having a particle size of less than 100 μm;

(d) continuously discharging the second slurry from the second reaction vessel while steps (a), (b) and (c) are performed;

(e) continuously separating the second slurry into the final sodium percarbonate crystals and a mother liquor while steps (a), (b), (c) and (d) are performed;

(f) continuously recirculating said mother liquor into the first reaction vessel while steps (a)–(e) are performed; and

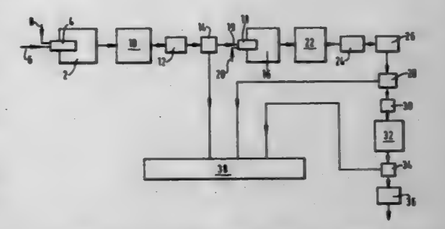
(g) granulating the final sodium percarbonate crystals thereby to form a final product of sodium percarbonate.

5,294,428

DOUBLE COMBUSTION OXYGEN ENHANCED SULFUR RECOVERY PROCESS

Richard W. Watson, Ilkley, England, assignor to The BOC Group, plc, Surrey, England

Filed Mar. 2, 1987, Ser. No. 20,625
Claims priority, application United Kingdom, Mar. 7, 1986, 8605650; Jan. 30, 1987, 8702134
Int. Cl.[5] C01B *17/04*; B01D *53/36*
U.S. Cl. 423—574.1 19 Claims



1. A method of recovering sulphur from a feed gas stream comprising at least 60% by volume of hydrogen sulphide, including burning less than 33 mole percent of the hydrogen sulphide content of the feed gas stream in a first combustion region to form water vapour and sulphur dioxide, introducing oxygen into the combustion region to support the combustion of the hydrogen sulphide, reacting unburnt hydrogen sulphide with said sulphur dioxide in the thermal reaction region associated with the first combustion region to form sulphur vapour and water vapour, the mole ratio of hydrogen sulphide to oxygen entering the combustion region per unit time being greater than 2:1, and the mole ratio of hydrogen sulphide to fluids, if any, other than oxygen being introduced into the combustion region per unit time being greater than 3:2, taking a resultant gas mixture comprising water vapour, sulphur dioxide, hydrogen sulphide, and sulphur vapour, from said thermal reaction region, extracting the sulphur vapour from the resultant mixture, reacting in at least one catalytic region hydrogen sulphide contained in the resulting gas mixture with sulphur dioxide contained in the resultant gas mixture to form further sulphur vapour and water vapour, and extracting said further sulphur vapour from the gas mixture, wherein the mole ratio of said hydrogen sulphide to sulphur dioxide is adjusted upstream of said at least one catalytic region by burning a further portion of the hydrogen sulphide content of the resulting gas mixture in a second combustion region to bring the mole ratio to the stoichiometric value or one approximating thereto, wherein there is never gas recycle to said first combustion region from downstream of said thermal reaction region.

5,294,429

CRYSTALLINE ALUMINOPHOSPHATES

Bettina Kraushaar-Czarnetzki; Hermanus Joagkind, and Ronald J. Dogterom, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1992, Ser. No. 956,239
Claims priority, application European Pat. Off., Oct. 24, 1991, 91202772.9
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—708 22 Claims

1. Crystalline aluminophosphates having in the as-synthesized anhydrous form the chemical composition $mR(X_nY_rAl_qP_z)O_2$ wherein R is a diamine, X comprises one or more elements which substitute for P, Y comprises one or more elements which substitute for Al, m=0.03–0.2, n=0–0.4, r=0–0.4, q=0.3–0.6, x=0.3–0.6, n+r+q+x=1, and display-

ing an X-ray diffraction pattern containing at least the lines given in Table A

TABLE A

d (Å)	Intensity (I/I_0)
17.5 ± 0.2	vs
8.45 ± 0.2	s/vs
5.35 ± 0.1	w/m
4.62 ± 0.1	w/m
3.70 ± 0.05	m
3.52 ± 0.03	m
3.41 ± 0.03	m/s

wherein w=weak, m=moderate, (v)s=(very) strong, d(Å)=d_{hkl} spacing in Angstrom (10^{-10} m) and Intensity (I/I_0)=intensity of peaks in X-ray diffraction pattern relative to the strongest peak.

5,294,430

USE OF DITHIOCARBAMATES TO TREAT MYELOSUPPRESSION

Richard F. Borch, Pittsford, N.Y., and Therese K. Schmalbach, Newton, Mass., assignors to University of Rochester, Rochester, N.Y.

Continuation-in-part of Ser. No. 700,218, May 13, 1991, abandoned, which is a division of Ser. No. 418,549, Oct. 10, 1989, Pat. No. 5,035,878, and a continuation-in-part of Ser. No. 665,975, Mar. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,305, Sep. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 418,549, Oct. 10, 1989, Pat. No. 5,035,878, which is a continuation-in-part of Ser. No. 243,405, Sep. 12, 1988, Pat. No. 4,938,949. This application Jul. 30, 1992, Ser. No. 922,688

The portion of the term of this patent subsequent to Jul. 30, 2010, has been disclaimed.

Int. Cl.[5] A61K *39/00, 31/27*

U.S. Cl. 424—10 **17 Claims**

1. A method for the treatment of myelosuppression resulting from a toxic side effect of a platinum-free cytotoxic drug selected from the group consisting of an antimetabolite, and a DNA synthesis inhibitor, administered to a human, said process comprising administering to said human an effective dosage of about 0.001 to 10 mg/kg of the body weight of said human, of a compound of the formula (I):



(I)

wherein R^1 and R^2 are the same or different (C_1–C_6) alkyl groups, (C_3–C_6) cycloalkyl groups or (C_5–C_6) heterocycloalkyl groups, or one of R^1 and R^2, but not both, can be H, or R and R^2, taken together with the N atom, can be a 5–6 membered N-heterocyclic ring which is aliphatic or aliphatic interrupted by a ring oxygen or second ring nitrogen, and M is H or one equivalent of a pharmaceutically acceptable cation, in which case the rest of the molecule is negatively charged, or M is



wherein R^3 and R^4 are defined in the same manner as R^1 and R^2.

5,294,431

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION MOUTHWASH OR LIQUID DENTIFRICE

Abdul Gaffar, Princeton; Nuran Nabi, Brunswick; John Afflitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Co., New York, N.Y.

Division of Ser. No. 398,592, Aug. 28, 1989, Pat. No. 5,188,821, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, said Ser. No. 291,712, is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1987, abandoned, said Ser. No. 346,258, is a continuation of Ser. No. 8,901, Jan. 30, 1987. This application Oct. 16, 1992, Ser. No. 961,976

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—49 **25 Claims**

1. Oral composition mouthwash or liquid dentifrice comprising an aqueous vehicle, an effective antiplaque amount of a substantially water insoluble noncationic antibacterial agent, said oral composition comprising at least one of a surface active agent, a flavoring oil and a non-toxic alcohol and about 0.005–4% by weight of an antibacterial-enhancing agent which contains at least one delivery-enhancing functional group and at leas tone organic retention-enhancing group, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent or oral tooth and gum surfaces, wherein said oral composition mouthwash or liquid dentifrice is free of polyphosphate anticalculus agent in an effective anticalculus amount.

5,294,432

ANTICALCULUS DENTIFRICES

Anthony E. Winston, East Brunswick; Regina M. Miskewitz, Hillsborough; Darlene R. Walley, Princeton, and John R. Berschied, Lawrenceville, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 753,340, Aug. 30, 1991, Pat. No. 5,180,576. This application Dec. 7, 1992, Ser. No. 986,267

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 **11 Claims**

1. A tooth powder consisting essentially of,
   a. from 50 to 95% by weight of sodium bicarbonate having a mean particle size of about 5 to 200μ in diameter as an anticalculus adjuvant and as a principal abrasive;
   b. from 2.5 to 15% by weight of one or more alkali metal pyrohposphate salts having a mean particle size of about 5 to 200μ in diameter; and
   c. a soluble fluoride ion source sufficient to supply about 25 to 5,000 ppm fluoride ion, said tooth powder being applied to the teeth, being effective to inhibit calculus formation, and being free of noticeably undesirably gritty solid pyrophosphate particles, objectionably tasting tetrapotassium pyrophosphate, and unpleasant slick mouth feeling polymeric polycarboxylate salts.

5,294,433

USE OF H-2 ANTAGONISTS FOR TREATMENT OF GINGIVITIS

Robert E. Singer, Fairfield, and James P. Ebel, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 868,805, Apr. 15, 1992. This application Mar. 5, 1993, Ser. No. 19,782

Int. Cl.[5] A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—52 **13 Claims**

1. A method for prevention or treatment of gingivitis or soft tissue aspects of periodontitis comprising topical administration, to gingival tissues of the oral cavity, of a fluoride toothpaste of a composition comprising a safe and effective amount of a selective H-2 antagonist.

5,294,434

ALOE VERA GEL TOOTHPASTE

Ronald M. King, 2623 Wesleyan Park Dr., Owensboro, Ky. 42301, and Thomas F. Carroll, 2031 Barberry La., Bowling Green, Ky. 42104

Continuation-in-part of Ser. No. 791,408, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 688,444, Apr. 22, 1991, abandoned. This application Feb. 22, 1993, Ser. No. 20,623

Int. Cl.[5] A61K *7/16, 7/26, 31/40, 35/78*

U.S. Cl. 424—58 **11 Claims**

1. An additive for a dentifrice composition comprising a mixture of aloe vera and chlorophyll, the aloe vera-chlorophyll mixture being at least 1.5% by weight of the total composition mixture and the chlorophyll in the total composition mixture being at least 0.09% by weight.

5,294,435

STABILIZATION OF EMULSION ADDITIVES TO NAIL POLISH REMOVERS

Harvey Remz, Huntington; John Cunningham, Madison; John Russo, Westport, and John Wooster, Stratford, all of Conn., assignors to Chesebrough-Pond's USA Co. Division of Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 370,493, Jun. 23, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 945,428

Int. Cl.[5] A61K *7/04*

U.S. Cl. 424—61 **6 Claims**

1. A polish-lacquer removing composition comprising:
   (i) from about 70% to about 99.5% of volatile organic solvent which is acetone, the remainder of the solvent being water;
   (ii) from about 0.01% to about 5% of a conditioning agent selected from the group consisting of stearic acid, sodium stearate, triethanolamine stearate and mixtures thereof; and
   (iii) from about 0.2% to about 7% of a suspending polymer which is a styrene/(meth)acrylic copolymer selected from the group consisting of non-crosslinked styrene/(meth)acrylate and styrene/(meth)acrylate divinylbenzene copolymers,

   and wherein any precipitate formation in said composition is reduced or avoided.

5,294,436

METHOD OF HIGHLIGHTING HAIR AND COMPOSITION THEREFOR

Gary M. Cope, Texarkana, Tex., and Michael S. DeGeorge, Toms River, N.J., assignors to Hairnetwork, Inc., Texarkana, Tex.

Continuation-in-part of Ser. No. 823,888, Jan. 22, 1992, abandoned. This application Aug. 26, 1992, Ser. No. 935,826

Int. Cl.[5] A61K *7/135, 33/40*

U.S. Cl. 424—62 **10 Claims**

1. The method of highlighting the natural color of human hair comprising the steps of
   a. moistening the hair with water and towel drying it,
   b. teasing the hair lightly,
   c. sprinkling a dry powder bleach mixture uniformly onto the hair permitting some of the mixture to sift downward through the hair, said bleach mixture comprising at least one oxidizing agent, an activator to change the pH of the oxidizing agent from acidic to alkaline, a drying agent for absorbing moisture present in the mixture, and a thickening agent,
   d. applying a mist of a solution of hydrogen peroxide to the hair to contact the mixture, said hydrogen peroxide having a strength in the range of 30 to 50 volume, and
   e. rinsing and shampooing the hair within five (5) minutes after application of the hydrogen peroxide.

5,294,437

HAIR SPRAY

Snehal M. Shah, Artesia, and Candelario A. Fernandez, Jr., Torrance, both of Calif., assignors to Neutrogena Corporation, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 975,787

Int. Cl.[5] A61K *7/09, 7/11*

U.S. Cl. 424—71 **1 Claim**

1. A crystal clear hand pumpable hair spray composition comprising, in weight percent: from about 75 to about 80 percent of alcohol; from about eight to about 23 percent water; from about 1.9 to about 9 percent of a fixative resin selected from the group consisting of octylacrylamide/acrylates/-butylaminoethyl methacrylate copolymer, octylacrylamide/acrylates copolymers or a mixture thereof; from about 0.2 to about 0.7 percent of silicone plasticizer; in which said silicone plasticizer consist of a blend of polyphenymethyl siloxane and diomethicone/glycol copolymer in a ratio of about 1:3 to about 4:1 respectively; from about 0.2 to about 1.72 percent of potassium hydroxide neutralizer, said resin, said silicone plasticizer and said potassium hydroxide being dispeered throughout said water and said alcohol.

5,294,438

LUBRICATING AND MOISTURIZING SHAVING PREPARATIONS

Robert W. H. Chang, Roseville; Wayne K. Dunshee, Maplewood, and Jeffrey F. Andrews, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 651,330, Feb. 5, 1991, abandoned. This application Apr. 13, 1992, Ser. No. 867,574

Int. Cl.[5] A61K *7/06, 9/107*

U.S. Cl. 424—73 **18 Claims**

1. A shaving preparation suitable for application to human or animal skin comprising at least 5% by weight of an emollient oil, a water insoluble thermoplastic polymeric elastomer additive in a weight ratio of emollient oil to additive of between about 5:1 and 20:1, and at least 5% by weight of soap, detergent or a combination thereof.

5,294,439

STABILIZED BENZIMIDAZOLE DERIVATIVE AND COMPOSITION

Heinojo Yamasaka, Ushiku; Hiroyasu Uchiyama, Koshigaya; Hirotaka Masuda, Sakura; Yoshiomi Sakamoto, Oyama; Yoshimi Nakamigawa, Sekijo; Mitsuko Yoshioka, Yoshikawa, and Terumasa Moriga, Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

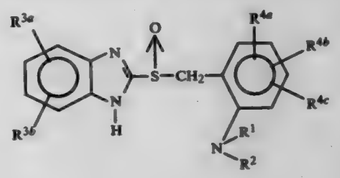
Continuation of Ser. No. 56,757, Jun. 2, 1987, abandoned. This application Jul. 13, 1989, Ser. No. 379,256

Claims priority, application Japan, Jun. 2, 1986, 61-128988; Jun. 2, 1986, 61-128989; Jul. 8, 1986, 61-160612

Int. Cl.[5] A61K *31/41, 31/415, 31/74*

U.S. Cl. 424—78.01 **5 Claims**

1. A composition containing a physiologically active amorphous benzimidazole derivative having the formula (I):



(I)

wherein R^1 is hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a fluoroalkyl group having 1 to 6 carbon atoms, a cyclohexyl group, phenyl group or a benzyl group, R^2 is hydrogen atom or a lower alkyl group, or R^1 and R^2 together with the adjacent nitrogen atom form a piperidine, and each of R^{3a}, R^{3b}, R^{4a}, R^{4b} and R^{4c} independently is hydrogen atom, a halogen atom, a flouroalkyl group having 1 to 6 carbon atoms, a lower alkyl group, a lower alkoxy group, a lower alkoxycarbonyl group or an amino group, dispersed in an organic polymer wherein the organic polymer is selected from the group consisting of hydroxypropylcellulose, hydroxypropylmethylcellulose, methylcellulose, ethylcellulose, carboxymethylcellulose sodium, poly(vinylpyrrolidone), poly(vinyl alcohol), poly(sodium acrylate), sodium alginate, gelatin, gum arabic, α-starch, oxidized starch, heat-treated starch, enzyme-treated starch and agar and is contained in an amount of not less than 0.5 time as much as a weight of the benzimidazole derivative.

5,294,440

COMPOSITION FOR TREATMENT OF COLD SORES

Bruce A. Jack, and B. Thomas White, both of Albuquerque, N. Mex., assignors to Professional Pharmaceutical Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 715,410, Jun. 14, 1991, abandoned. This application May 21, 1992, Ser. No. 886,304

Int. Cl.[5] A61K *31/13*

U.S. Cl. 424—78.05 **4 Claims**

3. A method of treating herpes labialis lesions, comprising the steps of blending approximately 0.00325 to 0.0067 percent by weight 1-H-imidazole-4-ethanamine, phosphate (IEP) uniformly with water soluble vinyl polymer gel, and topically applying the resulting blended composition to the lesions.

5,294,441

AVIRULENT MICROBES AND USES THEREFOR: SALMONELLA TYPHI

Roy Curtiss, III, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 612,001, Nov. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 200,934, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,360, Jun. 4, 1987, abandoned, said Ser. No. 612,001, is a continuation-in-part of Ser. No. 251,304, Oct. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 106,072, Oct. 7, 1987, abandoned. This application Nov. 7, 1991, Ser. No. 785,748

Int. Cl.[5] A61K *39/112*; C12N *1/21*

U.S. Cl. 424—93 A **12 Claims**

1. An immunogenic composition for the immunization of an individual comprising a live avirulent *S. typhi* obtained from a pathogenic *S. typhi* strain, said avirulent *S. typhi* made avirulent by of an inactivating mutation in the structural cya gene and an inactivating mutation in the structural crp gene.

5,294,442

METHOD FOR THE CONTROL OR PREVENTION OF AFLATOXIN CONTAMINATION USING A NON-TOXIGENIC STRAIN OF *ASPERGILLUS FLAVUS*

Peter J. Cotty, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 442,585, Nov. 29, 1989, Pat. No. 5,171,686. This application Dec. 16, 1991, Ser. No. 807,333

Int. Cl.[5] A01N *63/00*, *25/32*; C12N *1/14*; C07G *17/00*

U.S. Cl. 424—93 Q **2 Claims**

1. A method for the control of prevention of aflatoxin contamination in agricultural commodities comprising:

a) spraying or delivering to an agricultural commodity, soil and/or crop a non-toxigenic strain of *Aspergillus flavus*, which has been selected for its ability to inhibit aflatoxin producing strains of *Aspergillus flavus*, in an amount effective to inhibit subsequent aflatoxin production by toxigenic strains of *Aspergillus flavus*.

5,294,443

TRIPTERYGIUM WILFORD II HOOK F EXTRACTS AND COMPONENTS THEREOF FOR IMMUNOSUPPRESSION

Peter E. Lipsky, and Xue-Lian Tao, both of Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 494,113, Mar. 14, 1990, abandoned. This application Apr. 3, 1992, Ser. No. 862,836

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 **10 Claims**

1. A method for inhibiting interleukin-2-mediated immunosuppression comprising administering a preparation consisting essentially of a *Tripterygium Wilfordii Hook F* root extract in a therapeutically effective amount to a patient in need of such treatment; and inhibiting interleukin-2 mediated immunosuppression in the patient.

5,294,444

TRANSPARENT OR SEMI-TRANSPARENT COSMETIC COMPOSITION

Mami Nakamura, Kanagawa, and Seiji Honma, Chiba, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,685

Claims priority, application Japan, Nov. 26, 1990, 2-322081

Int. Cl.[5] A61K *7/06*, *7/09*, *7/11*, *31/74*

U.S. Cl. 424—401 **20 Claims**

1. A cosmetic composition comprising:

(A) 0.05–30% by weight of an amphipathic lipid selected from the group consisting of a ceramide, a derivative of a ceramide, a glycolipid, a derivative of a glycolipid, and a mixture thereof,

(B) 0.05–30% by weight of a nonionic surfactant,

(C) 1–50% by weight, based on (B), of an ionic surfactant, and

(D) 40–99% by weight of an aqueous medium,

wherein said composition is transparent or semi-transparent, and wherein the ratio of (A)/[(B) (C)] is 0.2–10.

5,294,445

PESTICIDAL SHAPED ARTICLES

Hans-Ulrich Sieveking, Leverkusen; Wilhelm Stendel, Wuppertal, and Herbert Voege, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 931,174

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127649; May 19, 1992, 4216535

Int. Cl.[5] A61K *9/58*; A01N *25/34*

U.S. Cl. 424—411 **6 Claims**

1. A pesticidal article of manufacture consisting essentially of a polymeric material and from 0.1 to 30% by weight of beta-cyfluthrin, the beta-cyfluthrin providing an acute action of at least about 95 per cent against fleas and ticks.

5,294,446

COMPOSITION AND METHOD OF PROMOTING HARD TISSUE HEALING

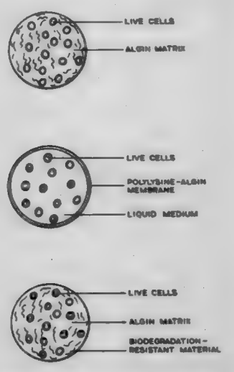
Herman W. Schlameus; William C. Fox; Donald J. Mangold, all of San Antonio; Robert G. Triplett, Dallas; George R. Holt, San Antonio, and Thomas B. Aufdemorte, Lakeway, all of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 389,455, Aug. 7, 1989, abandoned. This application Jan. 2, 1992, Ser. No. 815,997

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 **9 Claims**

1. A composition of matter useful in facilitating osseous healing comprising osteoprogenitor cells and a bone inductive growth factor encapsulated in a biocompatible microcapsule made from a biodegradable polymer selected from the group consisting of alginate, poly-L-lysine and alginate coated with poly-L-lysine.



5,294,447

ANHYDROUS TOPICAL COMPOSITIONS WHICH DRY RAPIDLY ON CONTACT

Leonard Mackles, 311 E. 23rd St., New York, N.Y. 10010, and Leonard Chavkin, R.R. 1, Box 90, Bloomsbury, N.J. 08804

Division of Ser. No. 684,246, Apr. 12, 1991, Pat. No. 5,178,881. This application Aug. 24, 1992, Ser. No. 933,788

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 **5 Claims**

1. A liquid or semisolid anhydrous composition suitable for topical application, comprising an inactive carrier consisting essentially of:

a) 10–80% by weight of an anhydrous pharmaceutically accepted topically applicable carrier composition which is liquid or semi-solid at room temperature; and

b) 15–50% by weight of polyolefin microspherical particles having an average diameter of less than 25 microns and having a density of greater than 0.915 g/ml, where the amount of microspherical particles constitutes at least 30% by weight of the said anhydrous pharmaceutically acceptable carrier; and further

5 to 50% by weight of the total composition of an antiperspirant compound.

5,294,448

DELAYED RELEASE FORMULATIONS

Stephen G. Ring; David B. Archer, both of Norwich; Michael C. Allwood, Derby, and John M. Newton, London, all of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB90/01803, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO91/07949, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 22, 1990, Ser. No. 867,696

Claims priority, application United Kingdom, Nov. 24, 1989, 8926639

Int. Cl.[5] A61K *9/32*, *9/36*, *9/58*, *9/62*

U.S. Cl. 424—497 **12 Claims**

1. A delayed release composition comprising an active compound and amorphous amylose, having an outer coating comprising a film forming cellulose or acrylic polymer material in an amount sufficient to control the rate of release of the active compound.

5,294,449

COMPOSITION OF ANTI-CAVITY CHEWING GUM AND METHOD OF FIGHTING TOOTH DECAY BY USING ERYTHROSE AS ANTICARIES AGENT

Michael J. Greenberg, Northbrook, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Apr. 9, 1992, Ser. No. 866,999

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **10 Claims**

1. A chewing gum formulation comprising

(a) a water soluble bulk portion, which comprises from about 5 to about 90% by weight of the gum of bulk sweeteners, and from about 0.01 to about 15% softeners;

(b) from about 5 to about 95% by weight of the gum of a water insoluble chewing gum base portion; and

(c) from about 0.1 to about 15% by weight of the gum of water insoluble flavor ingredients;

the water soluble bulk portion comprising sufficient erythrose to give the chewing gum anticaries properties.

5,294,450

COLORLESS FLAVORED MALT BEVERAGE AND METHOD FOR MAKING THE SAME

Kathryn M. Word, Golden; Richard L. Pflugfelder, Lakewood; John A. Neu; Gregory P. Head, both of Denver, and Hugo Patino, Lakewood, all of Colo., assignors to Coors Brewing Company, Golden, Colo.

Filed Feb. 9, 1993, Ser. No. 15,391

Int. Cl.[5] C12G *3/00*; C12H *1/00*

U.S. Cl. 426—11 **27 Claims**

1. A colorless, flavored malt beverage product comprising:

a clear and colorless alcohol-containing malt beverage base produced from the fermentation of an ingredient mixture comprising malt, yeast, a fermentable carbohydrate, and water;

a sweetening agent;

about 0.05–0.25% by weight tartaric acid;

a flavoring agent; and

a carbonation level of about 0.48–0.57% by weight CO_2 in said malt beverage product, said malt beverage product being clear and colorless, having an alcohol : real extract weight % ratio of about 1 : 0.40 to 1 : 1.5, and having a calorie content of about 8 –15 calories per ounce of said malt beverage product, said carbonation level, said calorie content, said alcohol : real extract weight % ratio, and said tartaric acid cooperating to minimize sensations of fullness experienced by consumers of said malt beverage product and to minimize sensations of excess tartness, excess sweetness, and astringency experienced by said consumers.

5,294,451

FAT SUBSTITUTE COMPOSITIONS HAVING REDUCED LAXATIVE EFFECTS

Richard S. Meyer, Federal Way, and Michael L. Campbell, Kent, both of Wash., assignors to Curtice-Burns, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 677,553, Mar. 29, 1991, abandoned. This application Mar. 24, 1992, Ser. No. 857,063

Int. Cl.[5] A23D *9/00*

U.S. Cl. 426—611 **39 Claims**

1. A fat substitute composition, comprising: an edible, substantially non-digestible fat substitute material having a melting point of about 37° C. or less, in combination with an emulsifier as an anti-laxative agent selected from the group consisting of: non-liquid polyglyceryl esters of at least one C_1–C_{18} fatty acid; non-liquid C_1–C_{18} fatty acid mono- and di-glycerides; ethoxylated mono- and di-glycerides; sorbitan esters of at least one C_1–C_{18} fatty acid; glyceryl-lacto esters of at least one C_1–C_{18} fatty acid; acetylated monoglycerides; poly glycerol lactic acid ester; propylene glycol mono stearate; xanthan gum; and mixtures thereof, said anti-laxative agent being contained in said

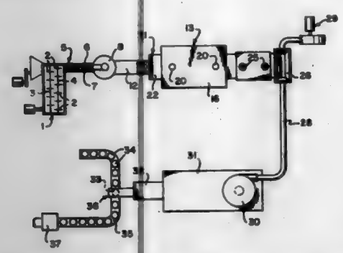
composition at a level of at least 10% by weight of said fat substitute material to reduce leakage of said non-digestible fat substitute material through the anal sphincter of a mammal.

5,294,452

STEAMING PROCESS FOR SHORT CUT PASTA

Leonard De Francisci, Manhasset, N.Y., assignor to DeFrancisci Machine Corp., Ridgewood, N.Y.

Continuation of Ser. No. 405,045, Sep. 12, 1989, abandoned. This application Aug. 17, 1992, Ser. No. 931,657
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—496 4 Claims



1. A method of steam treating and packaging a short cut pasta product comprising:
providing short cut green pasta product;
exposing the short cut green pasta product to live steam for a time sufficient to partially gelatinize the surface of the product without substantially drying the same, while permitting the pasta to otherwise remain in a green state, whereby stickiness of said pasta is eliminated and strength is added to said pasta so that said pasta can be handled by automatic conveying and weighing equipment;
cooling the product using ambient air; and
packaging metered amounts of the partially surface-gelatinized, green product after cooling.

5,294,453

METHOD OF REMOVING OFF-FLAVOR COMPONENTS FROM HYDROXYPROPYL STARCH HYDROLYZATE PRODUCTS

James M. Quarles, and Duane Tackaberry, both of Cedar Rapids, Iowa, assignors to Penwest, Ltd., Bellevue, Wash.

Continuation-in-part of Ser. No. 577,691, Sep. 4, 1990, Pat. No. 5,110,612. This application May 5, 1992, Ser. No. 878,826
Int. Cl.[5] A23L *1/236, 1/187, 1/06;* A21D *8/00*
U.S. Cl. 426—548 17 Claims

1. A method of treating a hydrolyzate product of hydroxypropyl starch to produce a low calorie bulking agent with improved flavor comprising the steps of:
(a) obtaining a hydrolyzate product of hydroxypropyl starch; and
(b) removing low molecular weight off-flavor components characterized by molecular weights of from about 200 to about 350 daltons from said hydroxypropyl starch hydrolyzate product.

5,294,454

METHOD OF DRYING PASTA CONTAINING INGREDIENTS OF MARKED COLORATION

Roberto Guarneri, Parma, Italy, assignor to Barilla G. eR. F.lli - Societa Per Azioni, Parma, Italy

Filed Jun. 9, 1992, Ser. No. 896,821
Int. Cl.[5] A23L *1/16*
U.S. Cl. 426—557 2 Claims

1. A method of drying pasta which includes ingredients which impart colour to it, comprising treating fresh pasta with saturated steam at 75°–80° C. followed by a drying phase at temperatures of from 50° to 60° C. until a moisture content of 11–12% is attained.

5,294,455

FOOD PRODUCT

Theresa O'Brien; Seamus McLoughlin; Liam Doyle; Eugene Corcoran, all of Tralee, and Michael Browne, Listowel, all of Ireland, assignors to Petrella Limited, Sutton, Ireland

Filed Apr. 8, 1992, Ser. No. 865,138
Claims priority, application Ireland, Apr. 8, 1991, 1156/91; Jan. 24, 1992, 92 0212
Int. Cl.[5] A23L *1/05*
U.S. Cl. 426—573 25 Claims

1. An edible spread comprising:
(a) water;
(b) from 2% to 20% by weight of a water soluble starch;
(c) a water binding system comprising from 0.05% to 1.5% by weight of alginate and from 0.1% to 5% by weight of gelatin; and
(d) a food compatible divalent metal ion source material which stabilizes the water binding system,
wherein the spread is formed by blending, pasteurizing, cooling, and setting the resulting blend to form a desired consistency.

5,294,456

DIETARY FIBER COMPOSITIONS FOR USE IN COMMINUTED MEATS

Ronald K. Jenkins, and James L. Wild, both of Washington, Pa., assignors to Rhone-Poulenc Inc., Monmouth Junction, N.J.

Filed Jun. 19, 1992, Ser. No. 901,331
Int. Cl.[5] A23L *1/105, 1/04, 1/317*
U.S. Cl. 426—573 30 Claims

1. A cereal hydrolysate containing composition for use as a fat mimic in foods comprising:
A. a cereal hydrolysate composition prepared by hydrolyzing an aqueous dispersion of a cereal substrate with an amylase enzyme under conditions which will hydrolyse the starch without appreciable solubilization of the substrate protein to yield a water soluble fraction, and a water insoluble fraction, and selected from the group consisting of a) a water soluble fraction, b) a water insoluble fraction, c) a water soluble dietary fiber solids isolated from said soluble fraction, and d) a combination of a) and b), and
B. a hydrocolloid gum effective and in an amount sufficient to provide a fat reduced product having the texture and mouth feel comparable to a full fat product.

5,294,457

THERMO-IRREVERSIBLE GEL PARTICLES FOR USE IN FOODS

Ronald K. Jenkins, and James L. Wild, both of Washington, Pa., assignors to Rhone-Poulenc Inc., Monmouth Junction, N.J.

Filed Jun. 19, 1992, Ser. No. 901,464
Int. Cl.[5] A23L *1/103, 1/04, 1/317*
U.S. Cl. 426—573 29 Claims

1. A thermo-irreversible gel comprising
A. a water soluble dietary fiber material from cereals prepared by hydrolyzing an aqueous dispersion of a cereal substrate with an amylase enzyme under conditions which will hydrolyse the starch without appreciable solubilization of the substrate protein to yield water soluble and insoluble fractions, isolating the soluble fraction, and separating the water soluble dietary fiber from said soluble fraction, and
B. a hydrocolloid effective and in an amount sufficient to form a thermo-irreversible gel with said water soluble dietary fiber.

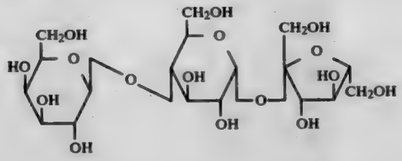
5,294,458

PET FOOD

Isao Fujimori, Tsukuba, Japan, assignor to Maruha Corporation and Ensuiko Sugar Refining Co., Ltd., both of Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,111
Int. Cl.[5] A23L *1/30*
U.S. Cl. 426—635 3 Claims

1. Pet food comprising a meal, and lactosucrose substantially uniformly mixed in the meal in a range of 0.025 to 3.0% by weight of the meal as calculated on a dry basis thereof so that odor of feces and urine of an animal eating the pet food is reduced, said lactosucrose being represented by a chemical formula:

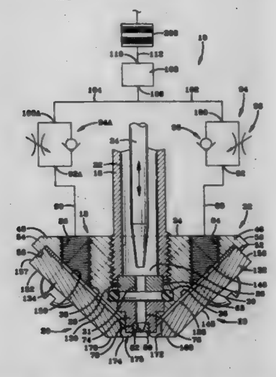


5,294,459

AIR ASSISTED APPARATUS AND METHOD FOR SELECTIVE COATING

Patrick T. Hogan, Lorain, Ohio; Bernard J. McHugh, Bloomsburg, Pa.; James J. Turner, Amherst, Ohio; Takaji Shimada, Saitama; Tsuyoshi Nishimura, Tokyo, both of Japan, and Bradley N. Stoops, Bay Village, Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Aug. 27, 1992, Ser. No. 935,943
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—96 19 Claims



1. A mask-free method of coating selected areas of a circuit board with a liquid coating material without coating regions of said circuit board to be left uncoated, comprising the steps of:
emitting said liquid coating material as a nonatomized liquid from a liquid spray device;
operating in a first mode by directing jets of air into impinging relation with said liquid coating material emitted from said liquid spray device as a stream of liquid coating material to transform said stream of liquid coating material into an atomized, shaped spray pattern adapted for coating certain of said selected areas of said circuit board; and
operating in a second mode wherein said liquid coating material is emitted from said liquid spray device as a nonatomized, liquid film having a shaped film pattern adapted for coating certain of said selected areas with said liquid film without coating said regions of said circuit board to be left uncoated.

5,294,460

METHOD FOR THE PREPARATION OF SILICON CARBIDE-CARBON FIBER COMPOSITE

Eiji Tani; Kazuhisa Shobu, and Tadahiko Watanabe, all of Tosu, Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,311
Claims priority, application Japan, Nov. 20, 1991, 3-332520
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—228 7 Claims

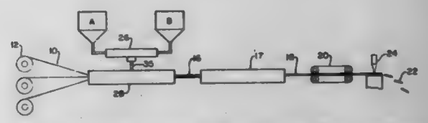
1. A method for the preparation of a silicon carbide-based composite ceramic body reinforced with carbon fibers which comprises the steps of:
(a) mixing particles of elementary silicon and a thermosetting resin in such a proportion that the molar ratio of the silicon and the carbon in the thermosetting resin is in the range from 0.3 to 1.2 to form a mixture;
(b) impregnating carbon fibers with the mixture prepared in step (a) to form a green carbon fiber compact impregnated with the mixture of the silicon particles and the thermosetting resin; and
(c) heating the green carbon fiber compact at a temperature in the range from 1300° C. to 1500° C. in an atmosphere of an inert gas to effect thermal decomposition of the thermosetting resin forming free carbon and to effect the reaction of the silicon particles with the free carbon produced from the thermosetting resin to form silicon carbide.

5,294,461

PULTRUSION PROCESS FOR PREPARING COMPOSITES

Hatsuo Ishida, Cleveland, Ohio, assignor to Edison Polymer Innovation Corporation, Brecksville, Ohio

Continuation of Ser. No. 303,919, Jan. 30, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 861,346
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—293 19 Claims



1. A pultrusion process for preparing a fiber reinforced polymer composite, which comprises:
(a) continuously pulling a roving or tow of continuous longitudinally aligned filaments successively through an impregnation chamber and a die;
(b) continuously mixing the components required to form a polymer, said components including a reactive monomer, thereby forming a liquid precursor mixture including said reactive monomer and having a substantially lower viscosity than that of said polymer, and feeding the resulting precursor mixture to said impregnation chamber;
(c) contacting said filaments with said precursor mixture in said impregnation chamber, thereby forming a coating of said precursor mixture on said filaments in said impregnation chamber, the conditions in said impregnation chamber being such that substantially complete wetting of said filaments by said precursor mixture takes place and such that substantially no polymerization takes place;
(d) directing the coated filaments from step (c) through a die and heating the coated filaments in said die to reaction temperature, thereby causing polymerization to take place in said die, wherein a solid composite comprising filaments coated with a solid polymer is formed; and

(e) drawing said composite from said die.

5,294,462

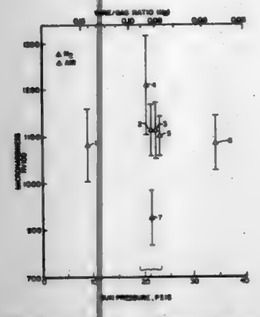
ELECTRIC ARC SPRAY COATING WITH CORED WIRE

John J. Kaiser, Whitehall; Zbigniew Zurecki, Macungie; Kerry R. Berger, Lehighton; Robert B. Swan, Bath, and Edward A. Hayduk, Jr., Blandon, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 611,199, Nov. 8, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,034

Int. Cl.[5] B05P *1/08*

U.S. Cl. 427—446 **15 Claims**



1. A method for applying a metallic coating to a substrate by electric arc spraying of cored wire comprising:

(a) forming an electric arc between two metallic wires in an arc spray gun, wherein at least one of said wires is a cored wire comprising a powder-filled metallic sheath, thereby forming molten material; and

(b) directing inert gas across said arc to form molten droplets and propel said droplets onto said substrate to solidify and form said metallic coating, wherein the mass ratio of the wire feed rate to the inert gas feed rate is between about 0.055 and about 0.15;

whereby the operation of said arc spray gun at said mass ratio between about 0.055 and about 0.15 maximizes the microhardness of said metallic coating.

5,294,463

THERMALLY RETICULATED MATERIALS FOR NON-LINEAR OPTICAL APPLICATIONS

Pierre Le Barny, Orsay; Evelyne Chastaing, Saulx les Chartreux; Jean-Claude Dubois, Saint Remy les Chevreuses; Sophie Muller, Palaiseau, and Francoise Soyer, Villebon Sur Yvette, all of France, assignors to Thompson-CSF, Puteaux, France

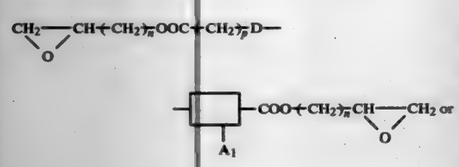
Filed Jun. 12, 1992, Ser. No. 898,098

Claims priority, application France, Jul. 2, 1991, 91 08233

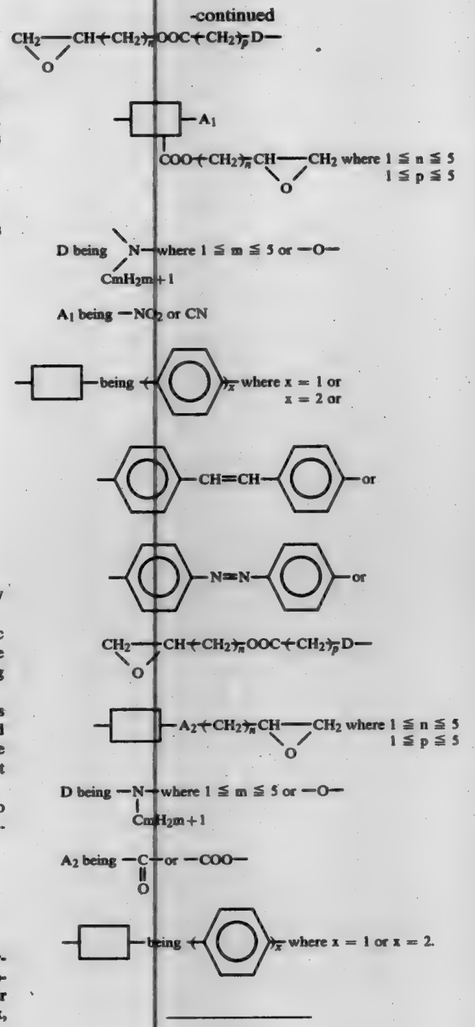
Int. Cl.[5] C07D *303/12, 303/32;* C08G *63/06, 63/66*

U.S. Cl. 427—488 **5 Claims**

1. Molecules with active non-linear optical properties which can be reticulated thermally, having the following chemical formuli:



-continued



5,294,464

METHOD FOR PRODUCING A REFLECTIVE SURFACE ON A SUBSTRATE

Michael Geisler, Waechtersbach; Rudolf Koetter-Faulhaber, Hanau, and Susanne Wuerz, Neuberg, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,428

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204082

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—489 **19 Claims**

1. Method for producing a reflective surface on a substrate, said method comprising the steps of

placing a plastic substrate to be coated in a vacuum chamber,

evacuating said chamber,

introducing into said chamber a process gas atmosphere which consists essentially of one of (a) organosiloxanes plus helium, (b) pure silane, and (c) silane plus helium,

generating a plasma from said process gas atmosphere, thereby producing an adhesion promoting layer on said substrate, and

applying a reflective layer on said adhesion promoting layer.

5,294,465

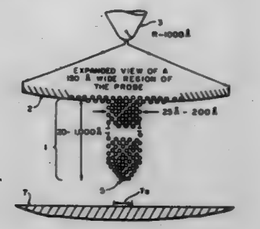
MICROTIP-CONTROLLED NANOSTRUCTURE FABRICATION AND MULTI-TIPPED FIELD EMISSION TOOL FOR PARALLEL-PROCESS NANOSTRUCTURE FABRICATION

Alan C. Gallagher, Louisville, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Division of Ser. No. 640,715, Jan. 14, 1991, Pat. No. 5,126,574, which is a division of Ser. No. 419,164, Oct. 10, 1989, Pat. No. 5,015,323. This application May 4, 1992, Ser. No. 877,783

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—523 **26 Claims**



1. A method for the fabrication of molecular or crystalline nanostructures on a substrate surface comprising the steps of:

1) providing a field-emitting probe of size sufficiently small so as to produce a current impact zone on said substrate surface of approximately 5Å;

2) positioning said field-emitting probe above a site on said substrate surface;

3) applying a voltage to said probe sufficient to induce an electron current and desorb passivating atoms on said substrate surface at said impact zone thereby creating an activated atomic site;

4) introducing molecular gases between said probe and said substrate surface, a molecular of said gasses being adsorbed on said activated atomic site of said substrate surface; and

5) applying a voltage to said probe sufficient to induce decomposing of said molecule and bonding of at least one component of said decomposed molecule to said substrate surface at said activated atomic site of said impact zone.

5,294,466

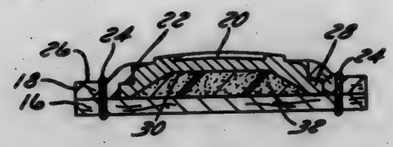
LEATHER SURROUND FOR DECORATIVE ARTICLE

Daniel G. Baughman, Rte. 1, Box 624, Fontana, Wis. 53125

Filed Aug. 12, 1992, Ser. No. 929,346

Int. Cl.[5] B32B *3/06, 3/10*

U.S. Cl. 428—14 **9 Claims**



1. A decorative article and a surround therefor comprising:

a decorative article having an outer perimeter, a rear surface and a front decorative surface and a single flange extending outwardly from at least a portion of the periphery;

a first sheet larger than the article including the flange and having a first planar opposing surface;

a second sheet larger than the article including the flange, the second sheet including a second planar opposing surface and an opening therethrough corresponding in size to the outer perimeter of the decorative article;

the rear surface of the decorative article being placed on the first opposing surface of the first sheet, the second sheet being placed over the decorative article so that the first and second opposing sheets are adjacent one another and the decorative surface is located in the opening; and

stitching securing the first sheet to the second sheet closely adjoining and around the outside of the flange of the decorative article.

5,294,467

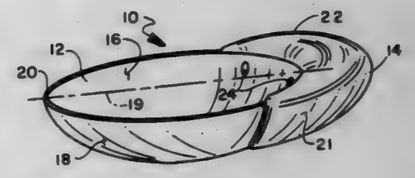
HAND HELD UTENSIL

Peter Hoodes, Salt Lake City, Utah, assignor to Scoop Corporation, Salt Lake City, Utah

Filed Mar. 11, 1992, Ser. No. 849,531

Int. Cl.[5] A01B *1/02;* B28B *1/00*

U.S. Cl. 428—34.1 **19 Claims**



1. A hand held utensil comprising:

a blade having a planar arcuate edge and a longitudinal axis lying in the plane defined by said edge; and

a grip spaced axially from the arcuate edge and having a convex surface which is grasped by the hand of a user for manipulating the blade,

the blade having a convex surface which is bounded by the arcuate edge and the grip,

the convex surfaces of the blade and grip being spaced apart along said longitudinal axis and having congruent curvature.

5,294,468

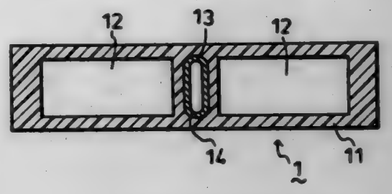
APPARATUS FOR MAKING FURNITURE

Chao-Lee Chang, Chiayi Hsien, Taiwan, assignor to Taiwan Shin Yeh Enterprise Co., Ltd., Chiayi Hsien, Taiwan

Continuation-in-part of Ser. No. 576,217, Aug. 31, 1990, Pat. No. 5,079,053. This application Jan. 13, 1992, Ser. No. 819,841

Int. Cl.[5] B32B *3/20*

U.S. Cl. 428—35.8 **1 Claim**



1. An apparatus for making furniture comprising:

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an elongated flexible tube member having an oblong rectangular shape in cross section, said tube member being made from a plastic material;
said elongated tube member having two opposed long sides and at least one elongated partition wall extending between said two opposed long sides;
said partition wall having a slot therein; and
a metal plate which has a wall thickness smaller than the thickness of said slot and adapted to fit into said slot, being inserted into said slot to strengthen said elongate flexible tube member;
characterized in that said metal plate is an elongated hollow plate having a substantially elliptical shape in cross section.

5,294,469

INDUSTRIAL WOVEN FABRIC AND COMPOSITE SHEET COMPRISING SAME

Kazuhika Suzuki; Takayuki Watanabe; Yasuhiro Kitahara, and Masanobu Ajioka, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 77,679
Claims priority, application Japan, Jun. 17, 1992, 4-158000; Jun. 17, 1992, 4-158001; Jun. 17, 1992, 4-158002; Jun. 17, 1992, 4-158006
Int. Cl.[5] B32B *1/02, 1/08, 1/10, 27/02, 33/00*
U.S. Cl. 428—36.1 **8 Claims**

1. An industrial fabric prepared from a thermoplastic polymer composition primarily comprising polylactic acid or a copolymer of lactic acids and other hydroxycarboxylic acids than lactic acids.

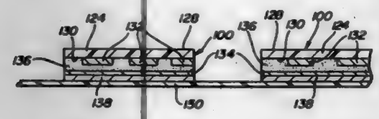
5. A composite sheet obtained by the process comprising laminating a film prepared from a thermoplastic polymer composition primarily comprising polylactic acid or a copolymer of lactic acids and other hydroxycarboxylic acids than lactic acids on one or both sides of the industrial fabric of claim 1, or impregnating the industrial fabric of claim 1 with the thermoplastic polymer composition.

5,294,470

TAMPER INDICATING CONTAINERS AND SEALS

Frederick R. Ewan, 145 Spinnaker Way, Neptune, N.J. 07753

Continuation of Ser. No. 662,446, Dec. 12, 1990, abandoned, which is a division of Ser. No. 334,084, Mar. 31, 1989, Pat. No. 4,998,666, which is a continuation-in-part of Ser. No. 193,799, May 13, 1988, abandoned. This application Aug. 17, 1992, Ser. No. 929,478
Int. Cl.[5] B65D *41/00;* **B42D** *15/00;* **B32B** *7/12*
U.S. Cl. 428—40 **10 Claims**



1. A seal comprising:
(a) a transparent or translucent substrate sheet having an outer surface and an inner surface;
(b) a layer of adhesive on the inner surface of the substrate sheet; and
(c) tamper indicating means disposed between the inner surface of the substrate sheet and the layer of adhesive, the tamper indicating means comprising:
(i) a transparent masking material disposed on the inner surface of the substrate sheet in indicia-defining pattern; and
(ii) a layer of at least one colorant extending beyond the indicia-defining pattern of the masking material,
said masking material where present reducing the strength of the bond between the colorant and the substrate sheet to below the strength of the bond between the colorant and the adhesive; whereby upon attempted removal of the seal from a surface to which it has been applied, said colorant is dislodged from the substrate sheet within the area defined by the masking material to create a permanent but previously nonevident tamper indicating indicia visible through the transparent or translucent substrate sheet and corresponding to the area defined by the masking material.

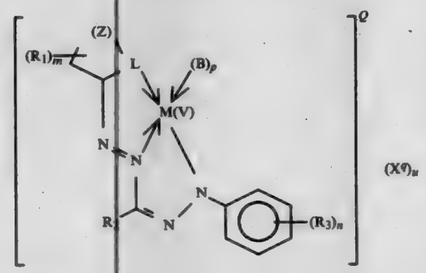
5,294,471

OPTICAL INFORMATION RECORDING MEDIUM USING METALLIZED FORMAZAN DYES

Steven Evans, and Csaba A. Kovacs, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,606
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **17 Claims**

1. A recordable optical element having a transparent substrate and on the surface of said substrate, a dye containing recording layer and a light reflecting layer, the improvement wherein said dye is a metallized formazan dye of the general structure:



wherein:
Z are the atoms necessary to complete a 5 or 6 membered carbocyclic or heterocyclic ring;
each R_1 independently is a group selected from the group consisting of alkyl having about 1 to 20 carbon atoms; aryl having from about 6 to 10 carbon atoms; heteroaryl; alkenyl having from about 2 to 20 carbon atoms; halogen; thiocyano; cyano; nitro; sulfo; carboxy; hydroxy; alkoxy; aryloxy; hetaryloxy; alkylsulfonyl; arylsulfonyl; hetarylsulfonyl; arylazo; hetarylazo; alkoxycarbonyl; aryloxycarbonyl; alkoxycarbonylamino; aryloxycarbonylamino; alkoxycarbonyloxy; aryloxycarbonyloxy; alkylcarbonylamino; arylcarbonyloxy; hetarylcarbonyloxy; alkylcarbonylamino; arylcarbonylamino; hetarylcarbonylamino; mono- or di-alkylaminocarbonyloxy; mono- or di-arylaminocarbonyloxy; mono- or di-hetarylaminocarbonyloxy; mono- or di-alkylaminocarbonylamino; mono- or di-arylaminocarbonylamino; mono- or di-hetarylaminocarbonylamino; mono or di arylcarbamoyl; alkyl or aryl carbamoyl; mono- or di-alkylsulfamoyl; mono- or di-arylsulfamoyl; and alkylarylsulfamoyl;
R_2 represents an alkyl group having from 1 to about 20 carbon atoms; a heterocyclic group having from 1 to about 10 carbon atoms, an aromatic ring with H or R_1 substituents; CN; alkoxycarbonyl; NO_2; alkylsulfonyl; arylsulfonyl; carbamoyl; sulfamoyl;
each R_3 independently represents H or R_1 with the proviso that one of the R_3 groups may serve as a fourth ligand to the metal center, if located ortho to the azo linkage and chosen from O—, N—SO_2R_4 where R_4 can be an alkyl

group with one to ten carbon atoms or aryl group with five to ten carbon atoms, CO_2—, SO_3— or —N=CH—;
m and n independently represent integers from 0 to 4;
L represents nitrogen or C—Y where Y represents a group capable of coordination to the metal ion such as O—, N—SO_2R_4 (where R_4 can be an alkyl group with one to ten carbon atoms or aryl group with five to ten carbon atoms) CO_2—, SO_3—, or N=CH—,
M represents a complexing metal such as Ni, Pd, Zn, Cu, etc.
V is the charge (valence) of the coordinating metal ion;
X is a counter ion group balancing the charge Q on the metal complex such as a sodium ion, chloride ion, tetraalkylammonium, tetrafluoroborate, hexafluorophosphate etc.
u is the number of counter ions required to balance the charge on the complex;
Q is the charge on the metal complex representing the difference between the metal valence (V) and the total anionic charge provided by the formazan dye and auxiliary ligand (B)p;
B is a ligand or ligands necessary to complete the coordination sphere of the metal ion and p is an integer from 0 to 3.

5,294,472

OBLIQUE WEB MULTIPLE SURFACE PANELS FABRICATED OF AROMATIC POLYCARBONATES

Norbert Arnold, Waldachtal, and Wolfgang Wiebel, Haibach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 2, 1992, Ser. No. 939,599
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1991, 9110957[U]
Int. Cl.[5] B32B *7/00, 1/00;* **E04C** *2/34*
U.S. Cl. 428—120 **5 Claims**



1. A surface panel board made of aromatic polycarbonates, consisting of at least two surface boards arranged parallel to one another at a predetermined distance apart and joined together by a plurality of webs arranged between them, one portion of said webs being oblique in relation to said boards and connecting said boards in zigzag formation, viewed in cross-section, while the remaining portion of said webs are vertical with respect to said board and are attached to said boards at the junctions of said oblique webs and said boards and extend perpendicularly between said boards, said oblique webs having a greater thickness then said vertical webs, the vertical webs being located alternatingly with said oblique webs.

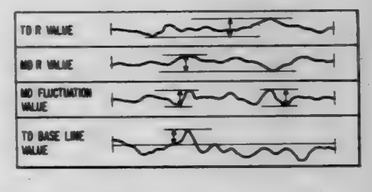
5,294,473

PHOTOGRAPHIC POLYESTER SUPPORT

Fumio Kawamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1993, Ser. No. 105,627
Claims priority, application Japan, Aug. 18, 1992, 4-240122
Int. Cl.[5] G03C *1/76*
U.S. Cl. 428—141 **13 Claims**

1. A photographic polyester support which has a thickness pattern having a TD R value, an MD R value, an MD fluctuation and a TD base line value as follows:
(1) TD R value: 8 μm or less



(2) MD R value: 10 μm or less
(3) MD fluctuation: 8 μm or less
(4) TD base line value: 5 μm or less.

5,294,474

COMPOSITE POLYESTER FILMS AND THEIR USE AS PROTECTIVE LAYERS FOR PHOTOPOLYMER PLATES, AND PHOTOPOLYMER PLATES COMPRISING SAID FILMS

Jean-Pierre Assante, Villeurbenne; Philippe Corsi, Lyons, and Didier Veyrat, S.-Cyr-au-Mont-d'Or, all of France, assignors to Rhone-Poulenc Films, Courbevoie, France

PCT No. PCT/FR90/00530, § 371 Date Feb. 26, 1992, § 102(e) Date Feb. 26, 1992, PCT Pub. No. WO91/01881, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 13, 1990, Ser. No. 820,694
Claims priority, application France, Jul. 27, 1989, 89 10389
Int. Cl.[5] B32B *27/36;* **G03F** *7/11*
U.S. Cl. 428—143 **14 Claims**

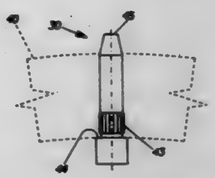
1. Semicrystalline biaxially oriented composite polyester film comprising a filled or unfilled polyester layer (A) and, on at least one of the faces of the layer (A), a coextruded polyester layer (B) whose thickness is less than that of the layer A, wherein the layer (B) has the following surface characteristics:
(a) total roughness Rt≦3 μm;
(b) peak density Rt/Ra≦10 where Ra is the mean deviation roughness, and contains from 5 to 35% by weight of a filler having the following characteristics:
(i) mean diameter D 50=1.5 to 2.5 μm
(ii) monodispersity I≦1.2 μm.

5,294,475

DUAL PLY CELLULOSIC FIBROUS STRUCTURE LAMINATE

Kevin B. McNeil, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 12, 1992, Ser. No. 898,041
Int. Cl.[5] B32B *29/00, 3/12*
U.S. Cl. 428—154 **5 Claims**



1. A cellulosic fibrous structure having opposed outer faces, said cellulosic fibrous structure comprising two laminae joined in face-to-face relationship, each of said laminae having an inner face oriented towards said opposite lamina and an opposed outer face oriented away from the center of said cellu-

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losic fibrous structure, each said lamina comprising a nonembossed region and embossed sites oriented towards, compressed against and adhesively joined to the other said lamina at its nonembossed region.

5,294,476

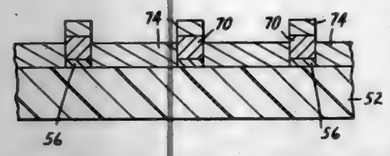
PATTERNING PROCESS AND MICROPARTICLES OF SUBSTANTIALLY THE SAME GEOMETRY AND SHAPE

Clyde D. Calhoun, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 556,405, Jul. 20, 1990, abandoned, which is a division of Ser. No. 281,655, Dec. 9, 1988, Pat. No. 4,964,945. This application Sep. 14, 1992, Ser. No. 944,716

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 12 Claims



1. A particulate composition consisting essentially of a population of particles having a non-random distribution of shape, volume and composition, each of said particles comprising two or more distinct layers consisting essentially of inorganic materials, said layers distributed along a first dimension of each of said particles, said first dimension of all particles within the population being substantially the same, each of said layers having exposed edges with said edges being substantially coextensive with the edges of an adjacent layer and remaining physically outside the plane of any adjacent layer, and said particles have shapes and sizes determined by the configuration of a deposition mask.

5,294,477

FUNCTIONALLY GRADIENT CIRCUIT BOARD

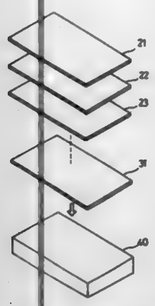
Seiji Kanbe; Nobuyuki Wada; Harumobu Sano, and Hiroshi Takagi, all of Nagaokakyo, Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Nov. 22, 1991, Ser. No. 796,309

Claims priority, application Japan, Nov. 30, 1990, 3-339278

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—212 15 Claims



1. A functionally gradient circuit board having electrical and thermal insulation properties that change as a function of position in the direction of thickness of the board, the circuit board comprising a mixture of a metal and an electrically insulating ceramic compound having a coefficient of thermal conductivity lower than said metal, wherein said mixture of said metal and said electrically insulating ceramic compound contains said metal and said electrically insulating ceramic compound in a ratio that changes in the direction of thickness of the board so that the electrical and thermal insulation properties of said circuit board correspondingly change as a function of position in the direction of the thickness of the board.

5,294,478

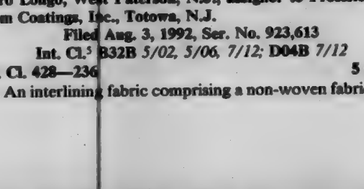
MULTI-LAYER ABSORBENT COMPOSITE

Mary C. Wanek, Marietta; Billie J. Matthews, Woodstock; Lawrence H. Sawyer, Roswell; Frank P. Abuto, Alpharetta, all of Ga.; Edward E. Werner, Oshkosh; Thomas W. Van Den Bogart, Appleton, both of Wis.; William A. Georger, Dunwoody, Ga., and Brendon F. Ribble, Menasha, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 18, 1992, Ser. No. 993,245

Int. Cl.[5] A41B *13/02*; B32B *5/26, 7/02*

U.S. Cl. 428—218 23 Claims



1. An absorbent structure, said absorbent structure comprising:

a first surge management layer comprising a fibrous web, said web comprising synthetic polymeric fibers, said first surge management layer having a basis weight of from about 20 to about 200 grams per square meter, and a density of from about 0.01 to about 0.12 gram per cubic centimeter;

a second surge management layer comprising a fibrous web, said web comprising hydrophilic fibers, said second surge management layer having a basis weight of from about 20 to about 200 grams per square meter and a density of from about 0.04 to about 0.2 gram per cubic centimeter; and

an absorbent layer located between and in liquid communication with said first and second surge management layers, said absorbent layer comprising means for containing a high-absorbency material and from about 50 to about 100 weight percent, based on total weight of said absorbent layer, of a high-absorbency material contained by said means for containing a high-absorbency material, said absorbent layer having a basis weight of from about 200 to about 1000 grams per square meter and a density of from about 0.06 to about 0.4 gram per cubic centimeter wherein the density of said absorbent layer is greater than the density of said first and second surge management layers and the density of the first surge management layer is different than the density of said second surge management layer.

5,294,479

NON-WOVEN INTERLINING

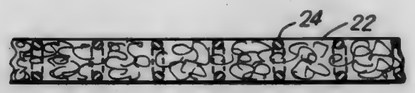
Pietro Longo, West Paterson, N.J., assignor to Precision Custom Coatings, Inc., Totowa, N.J.

Filed Aug. 3, 1992, Ser. No. 923,613

Int. Cl.[5] B32B *5/02, 5/06, 7/12*; D04B *7/12*

U.S. Cl. 428—236 5 Claims

1. An interlining fabric comprising a non-woven fabric and a single or double bar ripple weft stitch knitted therethrough wherein said non-woven fabric is selected from the group



consisting of 100% polyester; polyester and rayon; polyester and rayon and nylon; and polyester and nylon fabrics.

5,294,480

MOLDINGS OR SHEETS MADE FROM SILICA AEROGELS

Manfred Mielke, Heidelberg, and Guenther Seybold, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,605

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1992, 4201306

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—240 16 Claims

1. A molding based on supercritically dried silica aerogel parts in the form of spherical particles having a diameter of from 0.1 to 10 mm or sheet-like pieces having a thickness of from 2 to 30 mm and a diameter of from 1 to 5 cm, wherein the molding is produced by pressing at from 500° to 100° C. and at from 0.5 to 10 bar, without the additional of binders.

5,294,481

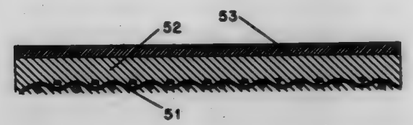
PRINTING BLANKET AND METHOD OF MANUFACTURING THE SAME

Takato Nakamura; Takao Kawata; Tsukasa Fukuma, and Yasunobu Kobayashi, all of Saitama, Japan, assignors to Fujikura Rubber Ltd., Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 815,321

Int. Cl.[5] B32B *27/08, 33/00*; B05D *5/00*

U.S. Cl. 428—245 33 Claims



1. A printing blanket including a surface layer on a base fabric with a compressible layer placed on said base fabric, wherein a surface modifier containing a perfluoroalkyl group and a functional group having affinity for a rubber constituting said surface layer is applied to said surface layer while exhibiting affinity to the surface of said surface layer such that a critical surface tension ranging from 10 to 16 dyn/cm appears on the surface of said surface layer.

5,294,482

STRONG NONWOVEN FABRIC LAMINATES FROM ENGINEERED MULTICONSTITUENT FIBERS

Scott L. Gessner, Greenville, S.C., assignor to Fiberweb North America, Inc., Simpsonville, S.C.

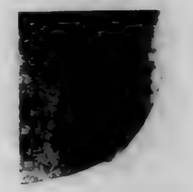
Continuation of Ser. No. 344,744, Apr. 28, 1989, Pat. No. 5,108,827. This application Oct. 30, 1991, Ser. No. 784,967

The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.

Int. Cl.[5] B32B *27/34, 27/36*; D04H *1/04*; D02G *3/00*

U.S. Cl. 428—287 44 Claims

17. A nonwoven fabric laminate comprising a first layer of thermoplastic filaments formed from a first thermoplastic polymer and a second layer of discrete thermoplastic fibers formed from a second thermoplastic polymer, wherein the layers are positioned in laminar surface-to-surface relationship, wherein the layers are heat bonded in discrete areas, and wherein the thermoplastic polymer in at least one of the layers is a highly dispersed blend of olefin polymers which are present as a dominant continuous phase and at least one noncontinuous phase dispersed therein, with the polymer of said noncontinuous phase or phases having a Polymer Melting Temperature (PMT) of at least 30° C. below the PMT of said continuous phase, and with the dispersed noncontinuous phase or phases occupying a substantial portion of the fiber surfaces.



5,294,483

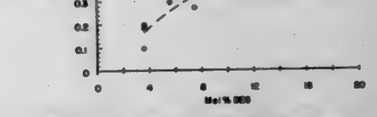
COATING PAPER WITH COPOLYESTER

Randy S. Beavers; Sara S. Wells, and James C. Williams, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 23, 1992, Ser. No. 980,080

Int. Cl.[5] B32B *5/16, 27/10*; B65D *11/02*

U.S. Cl. 428—336 4 Claims



1. An article of manufacture comprising paper sheet material having a copolyester coating thereon, said coating having a thickness of about 0.75 to about 2.0 mils and a peel strength of at least 0.25 lb/in., and said copolyester consisting essentially of repeat units from terephthalic acid, ethylene glycol, about 1.5–20 mol % of an aliphatic or cycloaliphatic glycol having 2 to 10 carbon atoms, and 0 to about 1.0 mol % of a polyfunctional branching agent, said copolyester having an inherent viscosity of about 0.55 to about 0.85 and a melting temperature of greater than 215° C.

5,294,484

POLYVINYL AROMATIC CARBOXYLIC ACID ESTER AND VIDEO PRINTING PAPER

Rikio Kobayashi, and Masanobu Hida, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP92/00979, § 371 Date Mar. 31, 1993, § 102(e) Date Mar. 31, 1993

PCT Filed Jul. 31, 1992, Ser. No. 30,380

Claims priority, application Japan, Aug. 3, 1991, 3-217816; Aug. 3, 1991, 3-217818

Int. Cl.[5] B32B *23/08*

U.S. Cl. 428—511 5 Claims

1. Video printing paper having a receiving layer to which a

dyestuff melted or sublimated by heating is transferred, and on which an image is formed by the dyestuff transferred to said receiving layer, said video printing paper comprising said receiving layer containing polyvinyl aromatic carboxylic acid ester or copolymer thereof.

5,294,485

ORGANIC COMPOSITE COATED STEEL STRIP HAVING IMPROVED CORROSION RESISTANCE AND WELDABILITY

Kenji Takao; Hideo Ohgishi; Hajime Kimura, and Shuichi Sakaguchi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Oct. 16, 1990, Ser. No. 598,839
Claims priority, application Japan, Oct. 16, 1989, 1-268478; Feb. 19, 1990, 2-37956
Int. Cl.[5] B32B *15/08, 15/00*
U.S. Cl. 428—626 16 Claims

6. An organic composite coated steel strip having improved corrosion resistance and weldability, comprising

zinc or zinc base alloy plated steel substrate,

a chromate layer on the substrate containing up to 70% by weight of Cr^{6+} based on a total chromium quantity, said chromate layer being coated in a weight of 5 to 500 mg/m^2 of elemental chromium, and

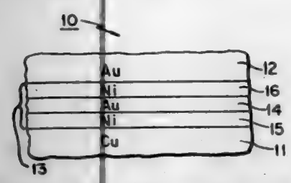
an organic composite layer coated on said chromate layer, said organic composite layer being made from a coating composition comprising (A) a silica sol having silica dispersed in an organic solvent with a water content of up to 3.0% by weight, the silica having an organic deposit on a surface thereof in an amount of up to 5.0% by weight, calculated as elemental carbon, based on the total weight of the silica, the silica having a specific surface area of 50 to 800 m^2/g, and (B) an organic resin composition having a number average molecular weight of at least 2,000, said organic composite layer being coated in a dry weight of 0.2 to 3.0 g/m^2.

5,294,486

BARRIER IMPROVEMENT IN THIN FILMS

Milan Paunovic, Port Washington, and King-Ning Tu, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 601,492, Oct. 22, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 37,742
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—672 4 Claims



1. An electronic device contact structure on an electronic device body having therein a barrier for prevention of atomic interaction between a first thin film layer of Au and a second thin film layer of Cu,

said barrier being positioned between said first and said second thin film layers, and,

said barrier consisting of:

a third thin film layer of Au having one surface thereof contiguous with one surface of said first thin film layer,

a fourth thin film layer of Au having one surface thereof contiguous with the remaining surface of said third thin film layer, and,

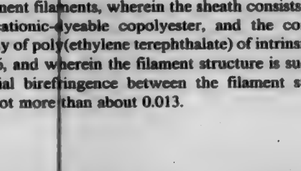
a fifth thin film layer of Ni having one surface thereof contiguous with the remaining surface of said fourth thin film layer and having the remaining surface thereof contiguous with one surface of said second thin film layer.

5,294,487

COMPOSITE LAYERED MATERIAL CONTAINING A SILICONE RESIN SUBSTRATE

Kazuhiko Ohashi, Akatokiwa, and Sunao Fukutake, Okayama, both of Japan, assignors to Japan Gore-Tex, Inc., Tokyo, Japan

Division of Ser. No. 952,116, Sep. 28, 1992, abandoned. This application Feb. 10, 1993, Ser. No. 16,481
Claims priority, application Japan, Sep. 30, 1991, 3-251961
Int. Cl.[5] B32B *5/18, 27/00*
U.S. Cl. 428—308.4 3 Claims



1. A composite material comprising a layer of porous polymeric material having pores extending through the thickness of the layer, and being bonded to a layer of a silicone resin substrate by means of a silicone-based adhesive agent, wherein only part of the pores of said porous material in the thickness direction thereof contain said silicone-based adhesive agent; said layer or porous polymeric material having on its surface opposite the silicone resin substrate, a resin coating selected from the group consisting of fluororesin, epoxy resin, urethane resin and acrylic resin.

5,294,488

PREPARING CATIONIC-DYEABLE TEXTURED YARNS

Michael D. Butler, Kinston, N.C.; Jerry T. Charles, Columbia; Lawrence S. Shea, Camden, both of S.C., and George L. Sivils, Jr., Chattanooga, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 793,030, Nov. 15, 1991, Pat. No. 5,242,640, which is a continuation-in-part of Ser. No. 248,733, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 34,429, Apr. 3, 1987, abandoned. This application Jun. 2, 1993, Ser. No. 70,743
Int. Cl.[5] B32B *27/02;* D02G *3/00*
U.S. Cl. 428—373 2 Claims

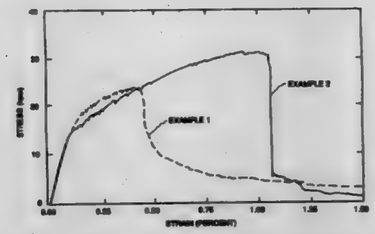
1. An improved draw-texturing feed yarn, consisting of spin-oriented cationic-dyeable copolyester filaments, wherein the cationic-dyeable copolyester consists essentially of poly-[ethylene terephthalate/5-(sodium sulfo)isophthalate] containing about 2 mole % of the 5-(sodium sulfo)isophthalate groups in the polymer chain, the feed yarn is a substantially amorphous spin-oriented multi-filament yarn prepared by spinning the filaments at a withdrawal speed of the order of about 3 Km/min or more, and the filaments are concentric sheath/core bicomponent filaments, wherein the sheath consists essentially of the cationic-dyeable copolyester, and the core consists essentially of poly(ethylene terephthalate) of intrinsic viscosity about 0.6, and wherein the filament structure is such that the differential birefringence between the filament surface and core is not more than about 0.013.

5,294,489

PROTECTIVE COATING WITH REACTIVE INTERLAYER ON REINFORCEMENT IN SILICON CARBIDE COMPOSITE

Krishan L. Luthra, Schenectady; Milivoj K. Brun, and Gregory S. Corman, both of Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1992, Ser. No. 862,034
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—379 9 Claims



1. A composite comprised of a reinforcement phase in a matrix of molten silicon infiltration formed silicon carbide, the reinforcement phase having a protective coating comprised of an inner layer on the reinforcement phase, an interlayer on the inner layer, and an outer layer on the interlayer, the inner and outer layer being materials resistant to reaction with molten silicon, and the interlayer being a molten silicon reactive material which forms compounds having a melting temperature higher than silicon.

5,294,490

ENCAPSULATED TONER FOR HEAT-AND-PRESSURE FIXING

Mitsuhiro Sasaki, and Kuniyasu Kawabe, both of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,968
Claims priority, application Japan, May 20, 1991, 3-114623; May 20, 1991, 3-114624
Int. Cl.[5] G03G *9/14*
U.S. Cl. 428—402.21 6 Claims

1. An encapsulated toner for heat-and-pressure fixing which comprises

a heat-fusible core containing a coloring material, a thermoplastic resin binder having a glass transition point between 10° and 50° C. and 0.1% to 8.0% by weight of an electric charge control agent selected from the group consisting of a positive electric charge control agent, a negative electric charge control agent and a mixture thereof at a weight ratio of one to the other ranging from 1:0 to 1:0.5, and

a shell formed so as to cover the surface of said core, wherein a main component of said shell is a resin prepared by reacting (A) an iso(thio) cyanate compound comprising

(1) 0 to 30 mole % monovalent isocyanate and/or isothiocyanate compounds, and

(2) 100 to 70 mole % of at least divalent isocyanate and/or isothiocyanate compounds,

with (B) an active hydrogen compound comprising

(3) 0 to 30 mole % of a compound having one active hydrogen atom reactive with isocyanate and/or isothiocyanate groups, and

(4) 100 to 70 mole % of a compound having at least two active hydrogen atoms reactive with isocyanate and/or isothiocyanate groups,

at a molar ratio of component (A) to component (B) of between 1:1 and 1:20, and wherein at least 30% of all of the linkages in which an isocyanate and/or isothiocyanate group participates are thermally dissociable linkages said encapsulated toner having a softening point between 80° C. and 150° C.

5,294,491

CROSSLINKED, ACTIVATABLE, HYDROPHILIC CARRIER BEADS

Ernst Goeldner, Darmstadt; Dieter Kraemer, Mainz; Ursula Artmann, Bickenbach, and Dieter Zwara, Reinheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 759,447, Sep. 13, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,824
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 9013137
Int. Cl.[5] B32B *27/30;* C08F *216/20, 236/00*
U.S. Cl. 428—402 4 Claims

1. A highly crosslinked, alkali-resistant, hydrophilic activatable carrier consisting of beads of a copolymer consisting of (A) 10–90 percent by weight of an allylic monomer of the formula

$$CH_2{=}CH{-}CH_2{-}O{-}R{-}X_n$$

wherein n is 0 and R is hydrogen or n is a whole number from 1 to 5 and R is an (n+1)-valent aliphatic hydrocarbon having 1 to (n+4) carbon atoms, and X is the same or different and is selected from the group consisting of hydroxy and —(O—R′-)$_m$—OH, wherein R′ is ethylene or propylene and m is a whole number from 1 to 45, and (B) 90 to 10 percent by weight of a crosslinking polyfunctional monomer having at least two ethylenically unsaturated, radically polymerizable groups linked by a chain containing a carbonamide or ether group, said beads having an average particle size of 3 microns to 1000 microns and being prepared by bead polymerization in inverted phase by dispersing an aqueous or aqueous-alcohol solution of the monomer as droplets in an organic liquid which is not totally miscible with water and initiating polymerization by addition of an initiator forming free radicals.

5,294,492

ACICULAR MAGNETIC IRON OXIDE PARTICLES

Hiroshi Oka, Hiroshima; Kazuaki Kouziro; Toshitada Shigemura, both of Ube; Tomohisa Moriya, Hiroshima; Katsumi Yamashita, Hiroshima; Kazushi Takama, Hiroshima; Takanobu Uemoto, Hiroshima, and Kazuhiro Fujita, Hiroshima, all of Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Jul. 2, 1991, Ser. No. 722,472
Claims priority, application Japan, Oct. 31, 1990, 296834/90
Int. Cl.[5] B32B *15/02*
U.S. Cl. 428—403 1 Claim

1. Acicular magnetic iron particles having an average major axial diameter of 0.05 to 1.0 μm, an aspect ratio (major axial diameter/minor axial diameter) of 3 to 15, a BET specific surface area of 10 to 80 m^2/g, and an erasing characteristic of not less than 46.5 dB, which particles contain Co or Co and Fe(II); Sr, Ba, or both Sr and Ba; and at least one of Si, Al, Zn or Mg, said particles produced by the process of

(a) mixing an aqueous dispersion of acicular magnetic iron oxide particles with an aqueous solution of a Co salt and an alkaline aqueous solution, or an aqueous solution of a Co salt, an aqueous solution of an Fe(II) salt and an alkaline aqueous solution to produce an alkaline suspension solution;

(b) heat-treating the alkaline suspension solution thus obtained at a temperature of 50° to 100° C.

wherein a Sr salt, a Ba salt or both a Sr salt and a Ba salt are added to said alkaline suspension solution before heat-treatment, and wherein one or more of a Si compound, an Al compound, a Zn compound or a Mg compound is added to said alkaline suspension solution before heat-treatment or during heat-treatment; provided the amount of aqueous solution of a Co salt added is 0.1 to 15 wt % calculated as Co based on said acicular magnetic iron oxide particles, the amount of aqueous solution of an Fe(II) salt added is 0.1 to 15 wt % calculated as Fe(II)

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based on said acicular magnetic iron oxide particles, the OH-group content in said alkaline suspension solution after addition of said alkaline aqueous solution is 0.05 to 3.0 mol/l, the amount of Sr salt, Ba salt or both Sr salt and Ba salt added is 0.05 to 10 wt % calculated as Ba or Sr or both Ba and Sr based on said acicular magnetic iron oxide particles, and the Si compound, Al compound, Zn compound or Mg compound added is 0.1 to 5 wt % calculated as Si, Al, Zn or Mg based on said acicular magnetic iron oxide particles.

5,294,493

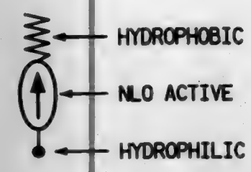
POLYMERIC FILMS FOR SECOND ORDER NONLINEAR OPTICS

Richard Beckerbauer; Hui Hsiung; Mureo Kaku; Jose M. Rodriguez Parada, all of Wilmington, Del., and Wilson Tam, Boothwyn, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 623,586, Dec. 7, 1990, abandoned. This application Jul. 11, 1991, Ser. No. 728,400

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—411.1 **10 Claims**



1. A film comprising at least ten adjacent monolayers of amphiphilic polymers, said film having second order optical nonlinearity which increases with the number of said monolayers which are nonlinear optically active,

wherein at least every third monolayer comprises a polymer having substituent groups each containing a second order nonlinearly polarizable chromophore, and each terminated by a hydrophobic moiety comprising a branched or linear fluorocarbon group;

wherein the remaining monolayers each comprise a polymer having substituent groups with weak or no nonlinear polarizability, and

wherein one or more of the polymers have a hydrophilic backbone.

5,294,494

PRINTED GLASS GRATING DECORATIVE PLATE

Desing Yang, Guangdong, China, assignor to Zhuhai S.E.Z. Optics Enterprise Ltd., Guangong, China

Filed Oct. 27, 1992, Ser. No. 966,955

Claims priority, application China, Oct. 29, 1991, 91108448.7

Int. Cl.[5] B32B *9/00*

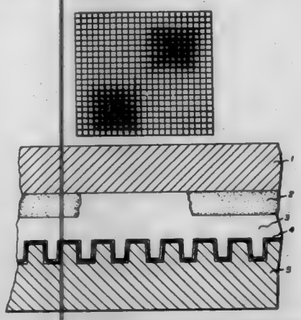
U.S. Cl. 428—426 **22 Claims**

1. A printed glass grating decorative plate comprising:

a transparent plate glass,

a layer of adhered resin,

a protective resin layer in grating or holographic pattern relief with a metal reflecting film layer,



and a layer of pattern in coloured printing ink or of vitreous enamel on said glass plate.

5,294,495

MAGNETIC RECORDING MEDIUM

Kazuhiro Kuroda, Chiba; Yasushi Ishikawa, Saku, and Kazushi Tanaka, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 3, 1992, Ser. No. 816,999

Claims priority, application Japan, Jan. 8, 1991, 3-11532; Jan. 8, 1991, 3-11533

Int. Cl.[5] G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—694 B **4 Claims**

1. A magnetic recording medium including a support and a magnetic layer supported on one surface of the support, said magnetic layer comprising a magnetic powder dispersed in a binder resin, wherein said magnetic layer contains 0.5–1.5 wt % of a powder of Ti-containing Al_2O_3 based on the weight of said magnetic powder, and wherein said Ti-containing Al_2O_3 contains 2–10 wt % of Ti based on the weight of the Al_2O_3.

5,294,496

TERMINAL PROTECTION STRUCTURE FOR A BATTERY PACK AND AN ELECTRONIC APPARATUS TO BE LOADED THEREWITH

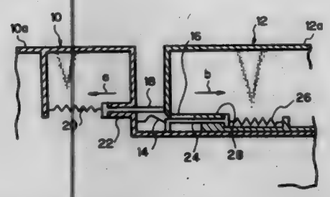
Yasuharu Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,992

Claims priority, application Japan, May 31, 1991, 3-040048[U]

Int. Cl.[5] H01M *2/06*

U.S. Cl. 429—65 **4 Claims**



1. A structure for protecting connection terminals of an electronic apparatus and connection terminals of a battery pack to be removably mounted on said electronic apparatus, said structure comprising:

a casing included in said electronic apparatus;

a casing included in said battery pack;

a connection terminal affixed to said casing of said electronic apparatus;

a connection terminal affixed to said casing of said battery pack;

a cover included in said electronic apparatus for protecting said electronic apparatus connection terminal when said battery pack is not mounted to said electronic apparatus; and

a cover included in said battery pack for protecting said battery pack connection terminal when said battery pack is not mounted to said electronic apparatus.

5,294,497

BATTERY BOX USING A MINIATURE-MOTOR PACKAGE

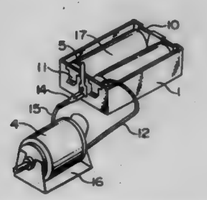
Shinichi Muramatsu; Hiromichi Kaneko; Shinichi Nakayama, and Takeshi Akiyama, all of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Sep. 29, 1992, Ser. No. 953,650

Claims priority, application Japan, Oct. 21, 1991, 3-085603[U]

Int. Cl.[5] H01M *2/10*

U.S. Cl. 429—97 **7 Claims**



1. A battery box formed of a miniature motor package, comprising:

an upper package part including walls forming an upper portion of a housing and including wall edges defining a lower opening;

a lower package part including walls forming a lower portion of a housing and including wall edges defining an upper opening, said upper housing part being joined with said lower housing part at said edges to form the battery box;

indented portions formed in edges in at least one of said upper housing part and said lower housing part to define terminal mounting means with terminal mounts for receiving battery-connecting terminals, said battery-connecting terminals being formed of electrically conductive material, one of said upper part and said lower part having two terminal mounts and another of said upper part and said lower parts having four terminal mounts;

a switch formed of an electrically conductive material, said switch being rotatably mounted adjacent to one of said terminal mounts on said upper part;

an additional switch made of electrically conductive material, said additional switch being rotatably mounted adjacent to one of said terminal mounts on said lower part.

5,294,498

ANODE MATERIAL, METHOD FOR PRODUCING IT AND NON-AQUEOUS ELECTROLYTE CELL EMPLOYING SUCH ANODE MATERIALS

Atsuo Omaru; Hideo Azuma, and Yoshio Nishi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP92/00238, § 371 Date Nov. 2, 1992, § 102(e) Date Nov. 2, 1992, PCT Pub. No. WO92/16026, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 28, 1992, Ser. No. 940,949

Claims priority, application Japan, Mar. 2, 1991, 3-077447

Int. Cl.[5] H01M *6/14*

U.S. Cl. 429—122 **4 Claims**

4. A non-aqueous liquid electrolyte cell comprising:

an anode material mainly composed of coke compound consisting essentially of carbon, phosphorous and oxygen, said coke compound containing phosphorous in an amount of 0.2 to 9.0 wt % and exhibiting a peak in a ^{31}P solid NMR spectrum in a range of ±100 ppm based on orthophosphoric acid, said coke compound exhibiting a peak in a 2p orbital spectrum of a phosphorous atom of not more than 135 eV in X-ray photoelectron spectroscopy for a carbon-carbon linkage energy in the 1s orbital spectrum of a carbon atom of 284.6 eV,

a cathode containing Li, and

a non-aqueous liquid electrolyte.

5,294,499

NON-AQUEOUS SECONDARY CELL

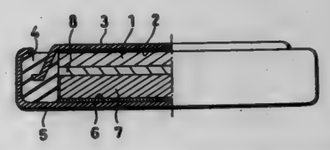
Nobuhiro Furukawa, Hirakata; Toshiyuki Nohma, Kadoma, and Yuji Yamamoto, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Continuation of Ser. No. 564,003, Aug. 7, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,217

Claims priority, application Japan, Aug. 15, 1989, 1-210477; Jan. 18, 1990, 2-10196

Int. Cl.[5] H01M *2/02, 6/08*

U.S. Cl. 429—164 **7 Claims**



1. A rechargeable non-aqueous secondary cell comprising:

a negative electrode;

a positive electrode comprising a lithium containing manganese oxide as its active material, said positive electrode having a specific surface area measured by the BET method of 9.0 m^2/g to 41.6 m^2/g; and

a separator interposed between said positive and said negative electrodes and impregnated with a non-aqueous electrolyte.

5,294,500

LEAD ACID STORAGE BATTERY

Koji Miyata, and Toshiaki Hosoya, both of Imaichi, Japan, assignors to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Nov. 17, 1992, Ser. No. 977,711

Claims priority, application Japan, Nov. 22, 1991, 3-111382[U]

Int. Cl.[5] H01M *4/73, 2/36*

U.S. Cl. 429—186 **5 Claims**

1. A lead acid storage battery, comprising:

a plurality of negative and positive grid plates assembled together into a plate assembly provided with a separator between negative and positive electrodes, said grid plates

having legs wherein the legs of the negative electrode grid plate are larger in width than the legs of the positive electrode grid plate, and

a battery container for holding the plate assembly, said container being provided with a saddle for mounting and supporting the legs of the grid plates in a manner to absorb an extension of the positive electrode plates.

5,294,501

SILANE ACRYLATE MONOMER AND SOLID ELECTROLYTE DERIVED BY THE POLYMERIZATION THEREOF

Benjamin Chaloner-Gill, Santa Clara, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,211
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **20 Claims**

12. An electrolytic cell which comprises:

(i) an anode comprising a compatible anodic material;

(ii) a cathode comprising a compatible cathodic material; and

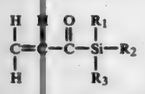
(iii) interposed therebetween a single phase, solid, solvent-containing electrolyte which comprises:

a solid polymeric matrix;

an inorganic ion salt; and

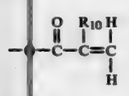
a solvent;

wherein said solid polymeric matrix is obtained by polymerizing an organic monomer represented by the Formula I:



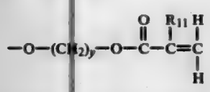
(I)

where R_1, R_2, and R_3 are independently selected from the group consisting of (a) $-(-Y-CH_2CH_2-)_x-H$ where x is an integer of 1 to 20, Y is O, S, NH, or NR where R is an alkyl group having 1 to 10 carbon atoms, (b) an alkyl substituent having 1 to 6 carbon atoms, (c) an alkoxy group having 1 to 6 carbon atoms, (d) $-O-R_4-(-O-)_p-R_5$ where R_4 is an alkylene group having 1 to 4 carbon atoms, R_5 is an alkyl substituent having from 1 to 4 carbon atoms, and p is an integer from 1 to 4, (e) $-SR_6$ where R_6 is an alkyl substituent having from 1 to 6 carbon atoms, (f) $-NH_2$, (g) $-NHR_7$ where R_7 is an alkyl substituent having 1 to 6 carbon atoms, (h) $-NR_8R_9$ where R_8 and R_9 are independently chosen from alkyl substituents having 1 to 6 carbon atoms,



(i)

where R_{10} is H or CH_3, and



(j)

where y is 3 to 10, and R_{11} is H or CH_3.

5,294,502

CYCLIC ETHERS, SOLID ELECTROLYTES CONTAINING SUCH ETHERS AND ELECTROLYTIC CELLS PRODUCED THEREFROM

Dale R. Shackle, Morgan Hill; Milton N. Golovin, San Jose; Joseph T. Lundquist, Gilroy, and Benjamin Chaloner-Gill, Santa Clara, all of Calif., assignors to Valence Technology, Inc., San Jose, Calif.

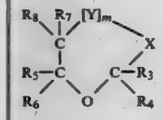
Filed Apr. 2, 1993, Ser. No. 42,325
Int. Cl.[5] H01M *6/18*
U.S. Cl. 429—192 **28 Claims**

1. A solid electrolyte comprising:

a solid polymeric matrix;

an inorganic salt; and

a solvent represented by Formula I:



I

wherein m is an integer from 0 to 1; wherein X is selected from the group consisting of oxygen and $-(CR_1R_2)-$;

wherein Y is selected from the group consisting of oxygen and $-(CR_9R_{10})-$, but when Y is oxygen, X is $-(CR_1R_2)-$;

wherein R_1, R_2, R_5, R_7 and R_9 are hydrogen, and R_2, R_6, R_8 and R_{10} are independently selected from the group consisting of hydrogen, alkyl and alkyloxy of from 1 to 4 carbon atoms; and

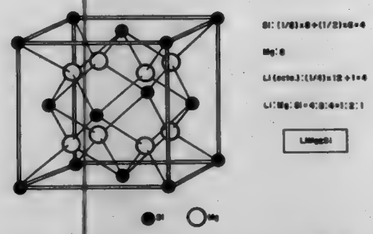
wherein R_4 is selected from the group consisting of hydrogen, alkyl and alkoxy of from 1 to 4 carbon atoms, and $-CH_2O[CH_2CH_2O]_nCH_3$ where n is an integer from 0 to 3, with the proviso that when m=0, at least one of R_2, R_4, R_6 and R_8 is higher alkyl when R_4 is not $-CH_2O[CH_2CH_2O]_nCH_3$.

5,294,503

ANODE FOR RECHARGEABLE AMBIENT TEMPERATURE LITHIUM CELLS

Chen-Kuo Huang, South Pasadena; Subbarao Surampudi, Glendora, both of Calif.; Alan I. Attia, Needham, Mass., and Gerald Halpert, Pasadena, Calif., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1992, Ser. No. 959,858
Int. Cl.[5] H01M *4/58*
U.S. Cl. 429—194 **14 Claims**



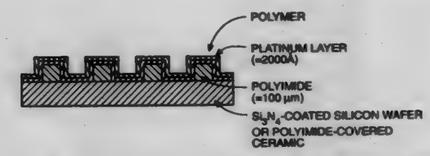
7. A secondary battery comprising a positive electrode, an organic electrolyte comprising a solution of a lithium salt in a polar organic solvent and a Li_xMg_2Si electrode in which x is from 0.1 to 2.0.

5,294,504

THREE-DIMENSIONAL MICROSTRUCTURE AS A SUBSTRATE FOR A BATTERY ELECTRODE

Takaaki Otagawa, Fremont; Arvind N. Jina, Redwood City, and Marc J. Madou, Palo Alto, all of Calif., assignors to Osaka Gas Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 334,680, Apr. 6, 1989, Pat. No. 5,002,700, and a continuation-in-part of Ser. No. 599,002, Oct. 17, 1990, abandoned, and a continuation-in-part of Ser. No. 675,091, Mar. 25, 1991, Pat. No. 5,187,034, and a continuation-in-part of Ser. No. 828,414, Jan. 31, 1992. This application Mar. 31, 1992, Ser. No. 861,368
Int. Cl.[5] H01M *4/60*
U.S. Cl. 429—213 **12 Claims**



10. A three-dimensional organic electrically conducting polymeric battery electrode having multiple microprotrusions obtained by a process to produce the three-dimensional microstructure surface device, which is useful as a battery electrode, which process comprises:

(a) fabricating on a suitable smooth substrate a regular or irregular array of surface microprotrusions having a relative height of between about 5 and 200 microns,

(b) contacting the surface of the protrusions with a solution containing an electropolymerizable organic monomer which is capable of being electropolymerized and polymerizes to fabricate a thin layer of an electrically conductive polymer on the surface of the micro protrusions,

wherein the three-dimensional electropolymer has a thickness of between about 0.001 and 1 micron, and

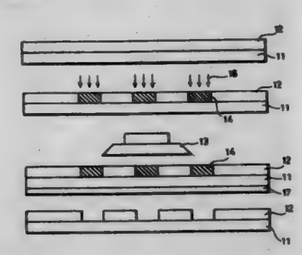
(c) obtaining the composite device which is useful as a battery electrode.

5,294,505

PATTERN FORMING METHOD

Kazuya Kamon, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,863
Claims priority, application Japan, Nov. 28, 1990, 2-332171
Int. Cl.[5] G03F *7/38*
U.S. Cl. 430—3 **7 Claims**



1. A method of forming a thin film pattern on a semiconductor substrate, comprising the steps of:

forming a photosensitive thin film on said semiconductor substrate;

exposing a predetermined region on said photosensitive thin film to exposure beams;

performing ultrasonic treatment on said thin film to attain vibration only in a vertical direction using a medium of liquid while floating said thin film on the surface of said liquid; and thereafter

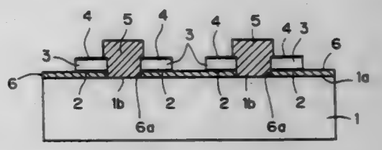
developing said thin film for forming a fine pattern corresponding to said exposed predetermined region by removing said exposed predetermined region.

5,294,506

PHOTOMASK

Tadayoshi Imai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,809
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **8 Claims**



1. A photomask comprising:

a transparent glass substrate having one major surface;

an attenuating film formed on the major surface of said transparent glass substrate for decaying incident light, said attenuating film having an opening;

a phase-shifting film formed on a portion of the major surface, the portion corresponding to said opening of said attenuating film; and

a non-transparent film for shutting out incident light, said non-transparent film being formed on a portion of said attenuating film while being contiguous with said phase-shifting film;

said attenuating film having an amount of attenuation such that light transmitted through said attenuating film has an intensity corresponding to light passing through said phase-shifting film.

5,294,507

ELECTROPHOTOGRAPHIC LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiichi Kato, and Seishi Kasai, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1992, Ser. No. 990,338
Claims priority, application Japan, Apr. 12, 1991, 3-106511; Jun. 11, 1991, 3-165249; Jun. 11, 1991, 3-165250; Jul. 25, 1991, 3-207237
Int. Cl.[5] G03G *5/087, 5/09*
U.S. Cl. 430—49 **8 Claims**

1. An electrophotographic lithographic printing plate precursor comprising a conductive support having provided thereon at least one photoconductive layer containing photoconductive zinc oxide, a spectral sensitizing dye and a binder resin, characterized in that the binder resin of the photoconductive layer comprises at least one resin (A) described below and the photoconductive layer further contains at least one non-aqueous solvent dispersed resin grain (L) described below having an average grain diameter equivalent to or smaller than the maximum grain diameter of the photoconductive zinc oxide grain:

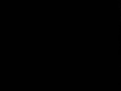
Resin (A):

resin having a weight average molecular weight of from 1×10^3 to 2×10^4 and containing not less than 30% by weight of a polymer component corresponding to a repeating unit represented by general formula (I) described below and from 0.5 to 15% by weight of a polymer component having at least one polar group selected from the group consisting of $-PO_3H_2$, $-SO_3H$, $-COOH$,



(wherein R_{01} represents a hydrocarbon group or —OR_{02} (wherein R_{02} represents a hydrocarbon group)) and a cyclic acid anhydride-containing group,

(I)



wherein a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; and R_{03} represents a hydrocarbon group;

Non-aqueous solvent dispersed resin grain (L):

polymer resin grain obtained by subjecting, to a dispersion polymerization reaction in a non-aqueous solvent, a monofunctional monomer (C) which is soluble in the non-aqueous solvent but becomes insoluble in the non-aqueous solvent by being polymerized and contains at least one functional group capable of forming at least one group selected from a thiol group, a sulfo group, an amino group and a



group (wherein Z_0 represents an oxygen atom or a sulfur atom; and R_1' represents —Z_0—H, a hydrocarbon group or —Z_0—R_2' (wherein R_2' represents a hydrocarbon group)) upon decomposition, in the presence of a dispersion stabilizing resin which is soluble in the non-aqueous solvent, wherein the dispersion polymerization reaction is conducted under a condition that the dispersion stabilizing resin contains a repeating unit having a silicon and/or fluorine atom-containing substituent and/or that a monofunctional monomer (D) which is copolymerizable with the monofunctional monomer (C) and which has a silicon and/or fluorine atom-containing substituent is additionally coexistent.

5,294,508

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH POLYETHER POLYOLS-POLYISOCYANATE INTERMEDIATE LAYER AND APPARATUS

Takashi Koyama; Naoto Fujimura, both of Yokohama; Yuichi Hashimoto, Tokyo; Tetsuo Shiraiwa, Ikoma, and Shigeo Mori, Kyoto, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1991, Ser. No. 803,607

Claims priority, application Japan, Dec. 7, 1990, 2-407349

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—58 **13 Claims**

1. An electrophotographic photosensitive member, comprising: an electroconductive support, and an intermediate layer and a photosensitive layer disposed in this order on the support, wherein said intermediate layer comprises a reaction product of a mixture including a polyol compound [I], a polyol compound [II] having an OH equivalent different from that of the polyol compound [I] and a polyisocyanate compound; said polyol compound [I] is a polyether polyol compound having an OH equivalent of at least 500 and 2–60 OH groups per molecule; and said polyol compound [II] is a polyol compound having an OH equivalent of at most 300.

5,294,509

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH IONIZATION POTENTIAL RELATIONSHIPS

Seiji Ashiya; Takahiro Suzuki, and Masanori Murase, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 4,259

Claims priority, application Japan, Jan. 20, 1992, 4-027452

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—58 **2 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate having thereon a charge generating layer comprising a binder resin having dispersed therein a charge generating material and a charge transporting layer containing a charge transporting material, wherein the ionization potential of the binder resin, I_{pb}, the ionization potential of the charge generating material, I_{pg}, and the ionization potential of the charge transporting material, I_{pt}, satisfy the following relationship:

$$I_{pg} \leqq I_{pb} < I_{pt} \text{ or}$$

$$I_{pt} < I_{pb} \leqq I_{pg}$$

5,294,510

PHOTOSENSITIVE MEMBER CONTAINING SPECIFIC COUMARIN FLUORESCENT BLEACHING AGENT

Hideaki Ueda, Kawanishi; Shigeaki Tokutake, Takatsuki; Kimiyuki Ito, Kawanishi, and Yuki Shimada, Suita, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 13, 1991, Ser. No. 714,716

Claims priority, application Japan, Jun. 14, 1990, 2-155853; Jun. 14, 1990, 2-155854; Jun. 14, 1990, 2-155855; Jun. 14, 1990, 2-155857

Int. Cl.[5] G03G *5/09*

U.S. Cl. 430—58 **5 Claims**

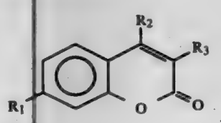
1. A photosensitive member comprising a photosensitive layer which comprises a charge generating layer and a charge transporting layer, the charge transporting layer comprising

a binder resin,

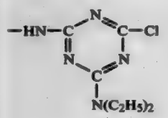
a charge transporting material of 0.01–2 parts by weight on the basis of the binder resin of 1 part by weight, and

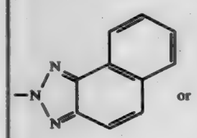
a coumarin compound of 0.1–40 percent by weight on the basis of the charge transporting material and represented by the formula (I) below:

(I)



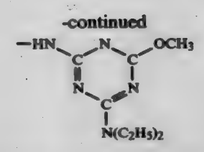
in which R_1 is





or

-continued



R_2 is a hydrogen atom or a fluoroalkyl group; and R_3 is a hydrogen atom, an alkyl group or an aryl group.

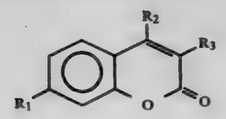
4. A photosensitive member comprising a photosensitive layer which comprises a charge generating layer and a charge transporting layer, the charge generating layer comprising

a binder resin,

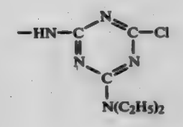
a charge generating material, and

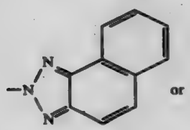
a coumarin compound of 0.01–3 parts by weight on the basis of the charge generating material of 1 part by weight and represented by the formula (I) below:

(I)

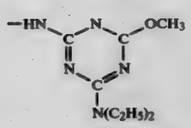


in which R_1 is

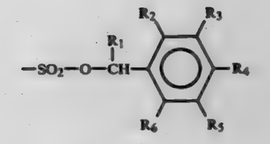




or



; R_2 is a hydrogen atom or a p7 fluoroalkyl group; and R_3 is a hydrogen atom, an alkyl group or an aryl group.



(II)

wherein

R_1 represents hydrogen, an alkyl group, or an aryl group; and

R_2 to R_6 may be the same or different and each represents hydrogen, a halogen, an alkoxyl group, an aryloxyl group, cyano group, or an alkyl group, provided that at least one of R_2 to R_6 represents an alkoxyl or aryloxyl group and two of R_2 to R_6 may link to form a ring.

5,294,511

PHOTOSENSITIVE COMPOSITION

Toshiaki Aoai, and Mitsunori Ono, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 641,834, Jan. 16, 1991, Pat. No. 5,204,217. This application Dec. 29, 1992, Ser. No. 998,129

Claims priority, application Japan, Jan. 16, 1990, 2-6806; Jan. 16, 1990, 2-6807

Int. Cl.[5] G03F *7/039*

U.S. Cl. 430—270 **16 Claims**

1. A photosensitive composition containing a compound having a group represented by formula (II), said group, when irradiated with actinic radiation, forming a sulfonic acid:

5,294,512

PYRENE COMPOUND, MANUFACTURING METHOD THEREFOR AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING THE PYRENE COMPOUND

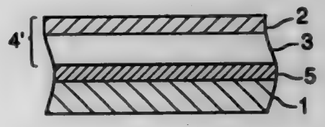
Tomoko Suzuki, and Akira Kinoshita, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,379

Claims priority, application Japan, Feb. 25, 1992, 4-038032

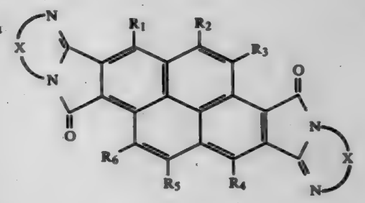
Int. Cl.[5] G03G *5/00*

U.S. Cl. 430—78 **9 Claims**

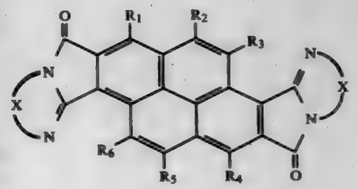


1. A photoreceptor, comprising at least one of pyrene compounds represented by following general formula (1), (2), (3), (4) and (5):

Formula (1)

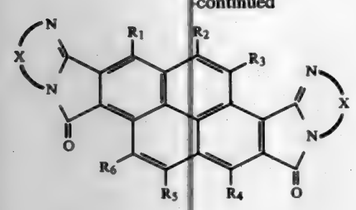


Formula (2)

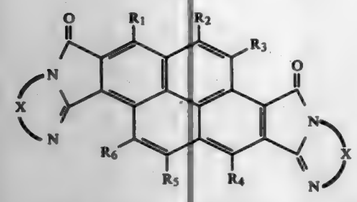


-continued

Formula (3)

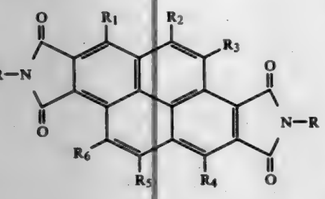


Formula (4)



wherein X represents a substituted or unsubstituted divalent aromatic ring, and R_1–R_6 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, or a substituted or unsubstituted aromatic group,

Formula (5)



wherein R represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aromatic residue, and R_1–R_6 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryloxy group, an aralkyl group, or a substituted or unsubstituted aromatic group.

5,294,513

ENCAPSULATED ELECTROSTATOGRAPHIC TONER PARTICLES AND A PROCESS FOR PRODUCING SUCH TONERS

Nancy G. Mitchell, Grand Island, and Gary R. Wilger, Tonawanda, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 344,690, Apr. 28, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 829,588

Int. Cl.[5] G03G *9/00, 5/00;* **G03C** *1/72*

U.S. Cl. 430—109 **11 Claims**

1. A process for preparing dry free-flowing encapsulated electrostatographic toner particles without spray drying comprising:

preparing a pressure fixable core material containing a colorant, a binder and at least one oil;

encapsulating discrete portions of the core material in shells by interfacial polymerization of reactive components in an aqueous dispersion to form an aqueous slurry of microcapsules;

adding at least one thermosetting resin to said aqueous slurry of microcapsules;

precipitating said at least one thermosetting resin onto said microcapsule shell outer surfaces to render said microcapsules hydrophobic;

filtering said microcapsules; and

heating said microcapsules, without spray drying, to a temperature and for a time sufficient to dry said microcapsules.

5,294,514

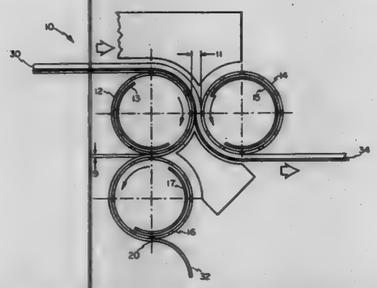
VACUUM ROLL SEPARATION SYSTEM FOR PHOTOGRAPHIC PAPER

William P. Lynch, Honeoye Falls, and John Texter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1992, Ser. No. 858,726

Int. Cl.[5] G03C *8/32, 8/50*

U.S. Cl. 430—203 **21 Claims**



1. A method of delaminating silver halide imaging materials comprising providing an integral composite imaging material comprising donor and receiver elements, heating said imaging material, applying opposed forces to said donor and receiver elements to separate said imaging material into donor and receiver elements, and accumulating the separated donor element, wherein at least one said opposed forces is vacuum.

11. Apparatus for delamination of silver halide integral composite imaging materials comprising donor and receiver elements, said apparatus comprising means for applying heat and pressure to said imaging material, means to apply a separating force to at least one of said donor element and receiver element forming said imaging material and means to separate said donor element and said receiver element, wherein said separating force comprises a vacuum force.

5,294,515

PHOTOPOLYMERIZABLE, NEGATIVE WORKING, PEEL DEVELOPABLE, SINGLE SHEET COLOR PROOFING SYSTEM

Wojciech A. Wilczak, Jersey City, and Timothy Hannigan, Basking Ridge, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 17, 1991, Ser. No. 703,424

Int. Cl.[5] G03F *7/34;* **G03C** *3/00*

U.S. Cl. 430—253 **31 Claims**

1. A method for forming a colored image which comprises, in order:

(A) providing a photosensitive element which comprises, in order:

(i) a transparent support having a release surface; and

(ii) a photosensitive composition layer on said release surface, which photosensitive layer comprises an organic binding resin, a colorant, a photoinitiator, and a free radical polymerizable acrylate or methacrylate component having at least two ethylenically unsaturated groups, wherein said binding resin is present in sufficient amount to bind the composition components into a uniform film, and wherein said colorant is present in sufficient amount to uniformly color the composition, and wherein said photoinitiator is present in sufficient amount to initiate the free radical polymerization of said polymerizable component upon exposure to sufficient actinic radiation, and wherein said polymerizable component is present in sufficient amount to provide image differentiation when the composition is imagewise exposed to actinic radiation; and

(iii) an thermoplastic adhesive layer adhered to said colored, photosensitive layer, which adhesive layer comprises a thermoplastic resin which has a T_g in the range of from about 25° C. to about 100° C.; and

(B) providing a receiver base to which said adhesive layer is laminated at elevated temperature and pressure; and then imagewise exposing said photosensitive composition through the transparent support to actinic radiation; and

(C) stripping away said transparent support and said release layer from said photosensitive composition layer thereby transferring the adhesive layer and the entire colored, photosensitive composition layer to the receiver base; and

(D) providing a transparent cover sheet having an adhesion promoted surface, and laminating said transparent cover sheet with heat and pressure, to said photosensitive composition layer with the adhesion promoted surface between the transparent cover sheet and said photosensitive composition layer; and

(E) overall exposing said photosensitive composition through the transparent cover sheet to actinic radiation; and

(F) peeling apart said transparent cover sheet with its adhesion promoted surface and said receiver base, thereby transferring the imagewise exposed portions of the colored, photosensitive composition from step (B) to the receiver base while the imagewise nonexposed portions of the colored, photosensitive composition from step (B) are transferred to the adhesion promoted surface of the transparent cover sheet.

5,294,516

LIGHT-SENSITIVE TRANSFER MATERIAL

Morimasa Sato; Koji Inoue; Masayuki Iwasaki, and Fumiaki Shinozaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 24, 1992, Ser. No. 903,158

Claims priority, application Japan, Jun. 25, 1991, 3-153227; Mar. 23, 1992, 4-64870

Int. Cl.[5] G03C *1/805*

U.S. Cl. 430—262 **4 Claims**

1. A light-sensitive transfer material, comprising a peel-off support and an alkali-soluble thermoplastic resin layer having a thickness of 6 μm to about 100 μm, a water or aqueous alkali-soluble or dispersible interlayer having a low oxygen permeability, and a light sensitive resin layer arranged in the order of increasing distance from the peel-off support, wherein the adhesion between the peel-off support and the thermoplastic resin layer is the smallest.

5,294,517

ENERGY-CURABLE CYANATE COMPOSITIONS

Fred B. McCormick, Maplewood; Katherine A. Brown-Wensley, Lake Elmo, and Robert J. DeVoe, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 234,464, Aug. 19, 1988, Pat. No. 5,215,860. This application Jan. 27, 1993, Ser. No. 9,888

Int. Cl.[5] C08G *73/00, 73/06;* **G03F** *7/004, 7/30*

U.S. Cl. 430—270 **24 Claims**

1. An energy oligomerizable composition consisting essentially of at least one cyanate monomer or oligomer comprising an organic radical bonded through a carbon atom to one-OCN group and as curing agent a transition metal-containing organometallic compound in which at least one carbon atom of an organic group is bonded to the metal atom.

5,294,518

AMORPHOUS WRITE-READ OPTICAL STORAGE MEMORY

Michael J. Brady, Brewster; Bodil E. Braren, Hartsdale; Richard J. Gambino, Yorktown Heights; Alfred Grill, White Plains, and Vishnubhai V. Patel, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1992, Ser. No. 877,334

Int. Cl.[5] G11B *7/00*

U.S. Cl. 430—290 **15 Claims**

1. A method for storing data comprising the steps of:

selecting an amorphous solid from the group consisting of diamond-like carbon, boron carbide and boron nitride having a first index of refraction, and

heating said amorphous solid in predetermined areas without melting or crystallizing said amorphous solid to change the index of refraction in said areas to a second index of refraction.

5,294,519

PROCESS FOR PREPARING PRINTED-CIRCUIT BOARD

Kiici Mori; Kiyotake Fukawa, and Tsutomu Maruyama, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 724,817, Jul. 2, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 22,755

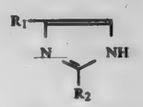
Claims priority, application Japan, Jul. 5, 1990, 2-178359

Int. Cl.[5] G03F *7/26;* **C23F** *11/00*

U.S. Cl. 430—313 **10 Claims**

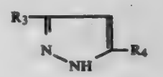
1. A process for preparing a printed circuit board, which comprises successive steps of subjecting a printed-circuit copper-clad, laminated base plate to a corrosion-preventing treatment after cladding or laminating, coating a photosensitive electrodeposition coating composition onto the resulting printed-circuit copper-clad, laminated base plate to form a photosensitive resist film, applying a pattern mask onto the photosensitive resist film, exposing the photosensitive resist film through the pattern mask to an actinic ray, developing the resulting photosensitive resist film, etching away a deposited copper foil in the non-circuit area and removing the resulting film on the circuit pattern, said corrosion-preventing treatment being carried out by a process which comprises contacting the printed-circuit copper-clad, laminated base plate with at least one nitrogen-containing heterocyclic compound selected from a group consisting of the compounds represented by the following general formulas (A) to (D):

(A)

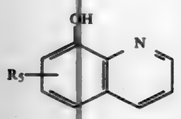


wherein R_1 and R_2 each represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms;

(B)

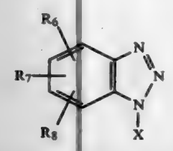


wherein R_3 and R_4 each represents hydrogen atom, a hydroxyl group or an alkyl group having 1 to 6 carbon atoms;



(C)

wherein R_5 represents a hydrogen atom, a chlorine atom or an alkyl group having 1 to 6 carbon atoms; and



(D)

wherein X represents a hydrogen atom or a hydroxyl group, and R_6, R_7 and R_8 each represents a hydrogen atom, a chlorine atom or an alkyl group having 1 to 6 carbon atoms.

5,294,520

ZERO UNDERCUT ETCH PROCESS

Thomas A. DeMercurio, Beacon; Richard J. Hetherington, Pine Plains; Robert A. Meyer, Salt Point, and Scott A. Sands, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1992, Ser. No. 934,993
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—314 **7 Claims**

1. A process for forming metal wiring patterns on substrates used to package electronic circuits and components comprising the steps of:

applying a first photoresist to a predetermined thickness over a substrate;

exposing and developing said first photoresist to define a desired metallization pattern;

applying a metal blanket over said developed first photoresist to a thickness less than said predetermined thickness forming said metallization pattern on the substrate;

applying a second photoresist over the metal blanket;

exposing and developing said second photoresist to provide a pattern image that covers that portion of the metal blanket which forms the metallization pattern on the substrate and partially overlaps the pattern image formed in said first photoresist so that the second photoresist protects the top of a metal feature desired and the first photoresist protects the edges of the metal feature;

etching the metal blanket exposed by said second photoresist; and

removing the remaining first and second photoresists to produce a metal pattern having no lateral shrinkage from an original photo mask dimensions because there is no undercut and therefore an optimum cross-section is achieved.

5,294,521

POSITIVE PHOTORESISTS EMPLOYING AN ISOMERIC MIXTURE OF TWO HEXAHYDROXYBENZOPHENONE ESTERS OF DIAZONAPHTHOQUINONE SENSITIZERS

Elaine C. Jacovich, Middlebury, and Wells C. Cunningham, New Hartford, both of Conn., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 919,357, Jul. 23, 1992, Pat. No. 5,206,348.
This application Jan. 12, 1993, Ser. No. 3,206
Int. Cl.[5] G03F *7/30, 7/023*; C07C *245/12*
U.S. Cl. 430—326 **6 Claims**

1. A method for forming a resist pattern on a substrate comprising:

(1) coating said substrate with a layer of a positive photoresist composition comprising, in admixture

(a) a bindingly effective amount of an alkali soluble novolak resin and

(b) a light sensitive effective amount of a photosensitizer, said photosensitizer comprising an isomeric mixture of a 1,2-diazonaphthoquinone-4- or -5-sulfonate ester product or 2,3,4,3',4',5'-hexahydroxybenzophenone which produces by reverse phase HPLC analysis two major isomer peaks, said two major isomers comprising at least about 70 by weight of the ester product and wherein the least polar isomer of said two major isomers comprises only about 37 to 44% by weight of the product;

(2) exposing said layer patternwise to actinic radiation; and

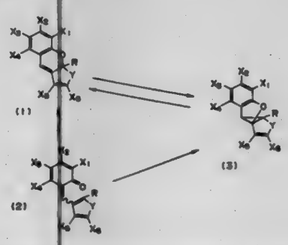
(3) removing the exposed portion of the layer with an aqueous alkaline developer for the exposed resist composition to uncover the areas of the substrate beneath the exposed portions.

5,294,522

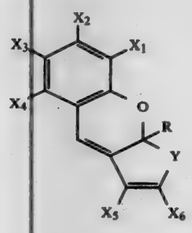
PHOTOCHROMIC COMPOUND

Manabu Uchida, Onojoshi, and Masahiro Irie, Kasugashi, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 2, 1993, Ser. No. 25,133
Claims priority, application Japan, Mar. 5, 1992, 4-083379
Int. Cl.[5] G03C *1/73*; C07D *333/50*
U.S. Cl. 430—345 **2 Claims**



1. A photochromic compound expressed by the formula (1)



(1)

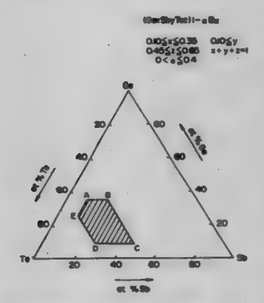
wherein R represents alkyl group, alkoxy group, perfluoroalkyl group or cyano group and X_1, X_2, X_3, X_4, X_5 and X_6 each independently represent hydrogen atom, halogen atom, alkyl group, alkoxy group, cyano group, alkanoyloxy group or alkyloxycarbonyl group, a substituted or unsubstituted benzene ring is formed by condensation between at X_1 and X_2, or/and between at X_3 and X_4, or/and between at X_5 and X_6; and Y represents $Y_1C{=}CY_2$, O, S, SO, SO_2, or NY_3 wherein Y_1 and Y_2 each independently represent hydrogen atom, halogen atom, alkyl group, alkoxy group, alkanoyloxy group or alkyloxycarbonyl group, or a substituted or unsubstituted benzene ring is formed by condensation between at Y_1 and Y_2 and Y_3 represents hydrogen atom, alkyl group, alkanoyl group, alkyloxycarbonyl group or aryl group.

5,294,523

OPTICAL INFORMATION RECORDING MEDIUM

Ken'ichi Nagata, Neyagawa; Susumu Sanai, Osaka; Noboru Yamada, Hirakata, and Masatoshi Takao, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 935,473, Aug. 26, 1992, abandoned, which is a continuation of Ser. No. 385,361, Jul. 27, 1989, abandoned. This application May 6, 1993, Ser. No. 57,419
Claims priority, application Japan, Aug. 1, 1988, 63-192498
Int. Cl.[5] G11B *7/24*; G03C *3/00*
U.S. Cl. 430—495 **4 Claims**



1. An optical information recording medium comprising, at least, a substrate and a recording film composition on said substrate, which recording film composition transforms repetitively from amorphous phase into crystalline phase or vice versa to make it possible to effect repetition of recording and erasing, wherein the recording film composition is expressed by $(Ge_xSb_yTe_z)_{1-\alpha}B_\alpha$ meeting the following conditions:

$0.10 \leqq x \leqq 0.35$

$0.10 \leqq y$

$0.45 \leqq z \leqq 0.65$

$x+y+z=1$

$0.05 \leqq \alpha \leqq 0.4$

such optical information recording medium exhibiting excellent performance against repeated recording and erasing while widening a range of fluctuation of recording power thereof.

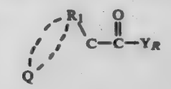
5,294,524

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yoshio Ishii; Yasuhiro Yoshioka, and Hidetoshi Kobayashi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

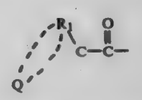
Filed Mar. 11, 1992, Ser. No. 849,588
Claims priority, application Japan, Mar. 13, 1991, 3-73841
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—503 **43 Claims**

1. A silver halide color photographic material having at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, and at least one blue-sensitive silver halide emulsion layer on a support, which comprises, in at least one of said blue-sensitive silver halide emulsion layer, at least one coupler selected from an acylacetamide yellow dye-forming coupler represented by the following formula (I) and, in at least one of said red-sensitive silver halide emulsion layer, at least one coupler selected from the group consisting of cyan dye-forming couplers represented by the following formula (II) or (III):

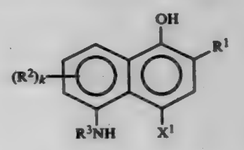


Formula (I)

wherein R_1 represents a monovalent group, Q represents a group of non-metallic atoms required to form together with the C a substituted or unsubstituted 3- to 5-membered cyclic hydrocarbon group or a substituted or unsubstituted 3- to 5-membered heterocyclic group having therein at least one heteroatom selected from a group consisting of N, O, S, and P, and Y_R represents a residue remaining after removing the acyl group

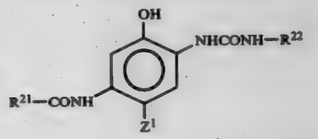


from the acylacetamide yellow dye-forming coupler represented by formula (I), provided that R_1 is not a hydrogen atom and does not bond to Q to form a ring,



Formula (II)

wherein R^1 represents $-CONR^4R^5$, $-SO_2NR^4R^5$, $-NHCOR^4$, $-NHCOOR^6$, $-NHSO_2R^6$, $-NHCONR^4R^5$, or $-NHSO_2NR^4R^5$; R^2 represents a group capable of substitution on a naphthalene ring; k is an integer of 0 to 3; R^3 represents a substituent, X^1 represents a hydrogen atom or a group capable of being released upon a coupling reaction thereof with the oxidized product of an aromatic primary amine developing agent; R^4 and R^5, which may be the same or different, each independently represent a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group; R^6 represents an alkyl group, an aryl group, or a heterocyclic group; when k is 2 or more, the R^2 groups may be the same or different and may bond together to form a ring; and the compound may form a dimer or higher polymer formed by bonding through a divalent group or higher polyvalent group at R^1, R^2, R^3, or X^1,



Formula (III)

wherein R^{21} represents an alkyl group, an aryl group, or a heterocyclic group, R^{22} represents an aryl group, and Z^1 represents a hydrogen atom or a group capable of being released upon a coupling reaction thereof with the oxidized product of an aromatic primary amine developing agent.

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5,294,525

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CAPABLE OF MAGNETIC-RECORDING

Yasuhisa Yamauchi; Yoshitaka Yasufuku, and Eiichi Ueda, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Apr. 21, 1992, Ser. No. 871,954
Claims priority, application Japan, Apr. 30, 1991, 3-99015
Int. Cl.[5] G03C *1/76, 1/85*
U.S. Cl. 430—523 **9 Claims**

1. A silver halide photographic light-sensitive material comprising;

a support having a first side and a second side which is opposite to said first side;

a silver halide emulsion layer provided on said first side; and

a recording medium provided on said second side, said recording medium comprising a magnetic layer having a magnetic powder and a first binder, and a conductive layer which contains conductive particles and a second binder,

at least one of said first binder and at least one of said second binder each having a polar functional group selected from the group consisting of $—SO_2M$, $—OSO_3M$ and $—P(=O)(OM_1)(OM_2)$, wherein M is hydrogen, sodium, potassium, or lithium; M_1 and M_2 are the same or different and represent hydrogen, sodium, potassium, lithium, or an alkyl group.

said conductive particles essentially consisting of one crystalline metal oxide selected from the group consisting of ZnO, TiO_2, SnO_2, Al_2O_3, In_2O_3, and SiO_2, and a complex oxides thereof.

5,294,526

METHOD FOR THE MANUFACTURE OF A THERMALLY PROCESSABLE IMAGING ELEMENT

Wojciech M. Przedziecki, Pittsford, and Jean Z. DeRuyter, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1993, Ser. No. 20,911
Int. Cl.[5] G03C *1/04*
U.S. Cl. 430—536 **16 Claims**

1. A method for the manufacture of a thermographic or photothermographic element, said method comprising the steps of:

(1) preparing a thermographic or photothermographic imaging composition;

(2) hydrolyzing a polyalkoxysilane with a stoichiometric amount of water in an organic solvent,

(3) adding the product of step (2) to said thermographic or photothermographic imaging composition;

(4) applying to a support a layer of the product of step (3);

(5) drying said layer; and

(6) overcoating said layer with a protective overcoat composition.

5,294,527

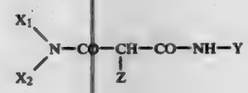
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yasuaki Deguchi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

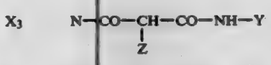
Filed Jun. 24, 1992, Ser. No. 903,479
Claims priority, application Japan, Jun. 24, 1991, 3-177775
Int. Cl.[5] G03C *7/36, 7/396*
U.S. Cl. 430—545 **12 Claims**

1. A silver halide color photographic material having at least one silver halide emulsion layer on a base, which comprises in said silver halide emulsion layer a dispersion including at least one yellow coupler represented by the following formula (1) or (2) and at least one water-insoluble homopolymer or copolymer:

Formula (1)



Formula (2)



wherein X_1 and X_2 each represent an alkyl group, an aryl group, or a heterocyclic group, X_3 represents an organic residue required to form a nitrogen-containing heterocyclic group together with the >N-, Y represents an aryl group or a heterocyclic group, and Z represents a non-photographically useful group capable of being released upon a coupling reaction of the coupler represented by said formula with the oxidized product of a developing agent.

5,294,528

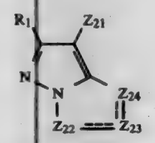
SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A MAGENTA COUPLER AND A COMPOUND THAT CAN BREAK THE AGGREGATION OF AN AZOMETHINE DYE

Nobuo Furutachi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 415,631, Oct. 2, 1989, abandoned. This application Mar. 13, 1992, Ser. No. 850,165
Claims priority, application Japan, Oct. 7, 1988, 63-253480
Int. Cl.[5] G03C *7/38, 1/34, 1/38*
U.S. Cl. 430—546 **12 Claims**

1. A silver halide color photographic material having at least one silver halide emulsion layer on a base, wherein said emulsion layer comprises at least one magenta coupler in the green-sensitive emulsion layer represented by the following formula (I):

Formula (I)



wherein R_1 represents a hydrogen atom or a substituent, Z_{21} represents a hydrogen atom, or a group capable of being released upon a coupling reaction with the oxidized product of an aromatic primary amine color developing agent, Z_{22}, Z_{23}, and Z_{24} each represent



—N=, or —NH—, one of the Z_{24}—Z_{23} bond and the Z_{23}—Z_{22} bond is a double bond and the other is a single bond, and when the Z_{23}—Z_{22} bond is a carbon-carbon double bond it may be part of the aromatic ring, and at least one compound in the green-sensitive emulsion layer that can break the aggregation of an azomethine dye formed from said magenta coupler and the oxidized product of the color developing agent, said compound being selected from the group consisting of:

(A) acetylene alcohols,

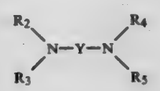
(B) large hetero-ring compounds and large carbon-ring compounds,

(C) cyclodextrin inclusion compounds,

(D) amphipatic compounds that form Langmuir-Blodgett films,

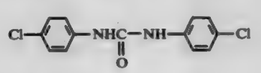
(E) BINAP-series compounds,

(F) hydrogen breaking agents having the following formula:



wherein R_2 and R_4 each represent a hydrogen atom and R_3 and R_5 each represent a hydrogen atom or an alkyl group, R_2, R_3, R_4 and R_5 do not represent hydrogen atoms respectively at the same time, R_3 and R_5 may together form a ring, when R_3 and R_5 together form a ring, R_2 and R_4 each represent a hydrogen atom or an alkyl group but at least one of R_2 and R_4 represents a hydrogen atom, and Y represents a carbonyl group or a sulfonyl group, or the hydrogen breaking agents are selected from the group consisting of (F-1)–(F-9), F-13), and (F-14):

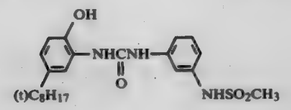
(F-1)



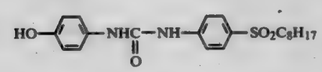
(F-2)



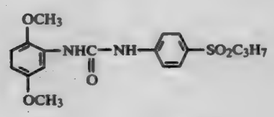
(F-3)



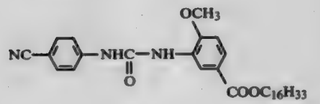
(F-4)



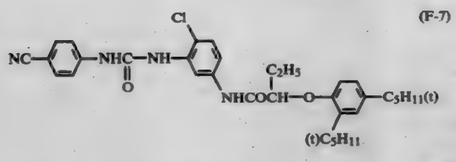
(F-5)



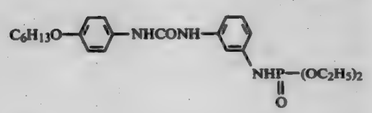
(F-6)



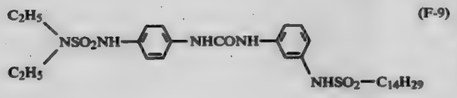
(F-7)



(F-8)

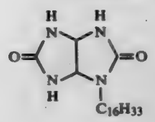


(F-9)

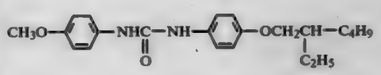


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(F-13)



(F-14)



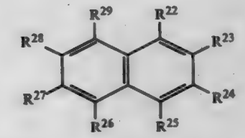
(G) a compound that can break aggregation of photographic sensitizing dyes having a skeleton represented by formulas (V) or (VII):

Formula (V)



wherein A_1, and B_1, which may be the same or different, each is selected from the group consisting of a furyl group, a thienyl group, a pyrrolyl group, a triazinyl group, a triazolyl group, an imidazolyl group, a pyridyl group, a pyrimidyl group, a pyrazinyl group, a quinazolinyl group/ a purinyl group, a qunolinyl group, an acridinyl group, an indolyl group, a thiazolyl group, an oxazolyl group, and a furazanyl group, L is selected from the group consisting of a methylene group, an ethylene group, a phenylene group, a propylene group, a 1-oxo-2-butenyl-1,3-ene group, a p-xylene-α,α'-diyl group, an ethylenedioxy group, a succinyl group, and a malonyl group, and n is 0 or 1 and the total number of carbon atoms of A_1, B_1, and L is 15 or over,

Formula (VII)



wherein R^{22}, R^{23}, R^{24}, R^{25}, R^{26}, R^{27}, R^{28}, and R^{29}, which may be the same or different, each represent a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted amino group, a mercapto group, a cyano group, a carboxyl group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted sulfonamido group, a substituted or unsubstituted acyl group, a substituted or unsubstituted sulfamoyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted alkoxycarbonyl group, or a substituted or unsubstituted aryloxycarbonyl group, and the total number of carbon atoms of R^{22} through R^{29} is 10 or over, with the exception that R^{21}, R^{25}, R^{26}, or R^{29} is not a hydroxyl group.

5,294,529

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING MAGENTA COUPLER, IMAGE-DYE STABILIZER AND HIGH BOILING COUPLER SOLVENT

Yoko Idogaki, and Osamu Takahashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 603,005, Oct. 25, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 875,607

Claims priority, application Japan, Oct. 30, 1989, 64-282314

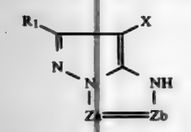
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] G03C *7/388, 7/38*

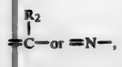
U.S. Cl. 430—546 **22 Claims**

1. A silver halide color photographic material having at least one silver halide emulsion layer on a base, which comprises, in said silver halide emulsion layer, at least one magenta coupler represented by the following formula (I):

Formula (I)



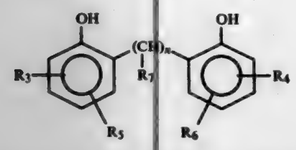
wherein Za and Zb each represent



R_1 and R_2 each represent a hydrogen atom or a substituent, X represents a hydrogen atom or a group or an atom capable of being released upon the coupling reaction with the oxidized product of an aromatic primary amine developing-agent, when Za and Zb together form a carbon-carbon double bond, Za and Zb may be part of the aromatic ring, and the compound may form a dimer or higher polymer through R_1, R_2, or X,

at least one compound represented by the following formula (II):

Formula (II)



wherein R_3 and R_4 are each a methyl group, R_5 and R_6 each represent an alkyl group having 1 to 18 carbon atoms, R_7 represents a hydrogen atom or an alkyl group have 3 to 12 carbon atoms, n is an integer of 1 to 3, and when n is 2 to 3, R_7 may be the same or different, and when n is 1, R_7 represents the above-mentioned alkyl group, and a high-boiling coupler solvent incompatible with water, and the weight ratio of said high-boiling coupler solvent to the coupler is 3.5 to 10.0.

5,294,530

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Nobuo Seto, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 14, 1992, Ser. No. 883,269

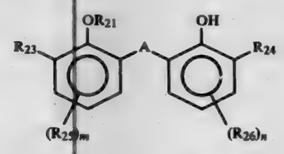
Claims priority, application Japan, May 17, 1991, 3-140738

Int. Cl.[5] G03C *7/34, 7/36, 7/392*

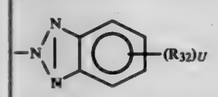
U.S. Cl. 430—551 **15 Claims**

1. A silver halide color photographic material comprising a support having thereon one or more hydrophilic colloid layers, at least one layer of which is a light-sensitive silver halide emulsion layer containing in the same layer a color coupler selected from the group consisting of a yellow coupler and a cyan coupler and at least one compound represented by formula (I-A):

(I-A)



wherein A represents a single bond, —O—, —$S(O)_p$—, —$N(R_{27})$— or —$(C(R_{28})(R_{29}))_T$—; R_{21} represents a hydrogen atom, an aliphatic group, —C(O)—R_{33}, —$S(O)_2$—R_{33}, —$P(R_{33})(R_{34})$ or —$P(O)(R_{33})(R_{34})$; R_{23} and R_{24} each represents an aliphatic acylamino group, an aromatic acylamino group, an aliphatic carbamoylamino group, an aromatic carbamoylamino group, an aliphatic sulfamoylamino group, an aromatic sulfamoylamino group, an imido group, an aliphatic oxycarbonylamino group, an N-alkylated aliphatic sulfonamido group or an N-alkylated aromatic sulfonamido group; R_{25} and R_{26} each represents an aromatic group, a heterocyclic group, an aromatic oxy group, an aromatic thio group, an aliphatic acyl group, an aromatic acyl group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, an aliphatic acylamino group, an aromatic acylamino group, an aliphatic sulfonamido group, an aromatic sulfonamido group, an imido group, an aliphatic acyloxy group, an aromatic acyloxy group, an aliphatic sulfonyl group, an aromatic sulfonyl group, an aliphatic sulfonyloxy group, an aromatic sulfonyloxy group, an aliphatic oxycarbonylamino group, an aromatic oxycarbonylamino group, a carbamoylamino group, a sulfamoylamino group, a carbamoyl group, a sulfamoyl group, a group represented by the following formula:



or an aliphatic group, m and n each represents an integer of 1 to 3 and when any of m and n are 2 or 3, the two or three R_{25} and R_{26} groups may be the same or different; R_{21} and R_{23}, R_{23} and R_{25} or R_{24} and R_{26} may be combined together to form a five-membered to eight-membered ring; R_{27} represents hydrogen atom, an aliphatic group, an aliphatic acyl group, an aromatic acyl group, an aliphatic sulfonyl group, an aromatic sulfonyl group, an aliphatic oxycarbonyl group or an aromatic oxycarbonyl group; R_{28} and R_{29} each represents a hydrogen atom, an aliphatic group or an aromatic group; R_{32} has the same meaning as R_{25}; R_{33} and R_{34} each represents an aliphatic group, an aromatic group, an aliphatic oxy group or an aromatic oxy group; p and U each represents 0, 1 or 2; and T represents 1 or 2 and when T is 2, the two R_{28} and R_{29} groups may be the same or different.

5,294,531

YELLOW DYE-FORMING COUPLER AND SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING THE SAME

Hidetoshi Kobayashi; Yasuhiro Yoshioka, and Yoshio Shimura, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 16, 1992, Ser. No. 945,609

Claims priority, application Japan, Sep. 18, 1991, 3-265538

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—556 **19 Claims**

1. A silver halide color photographic light-sensitive material containing at least one of bicylo[m.n.0]alkane-1-ylcarbonylacetamide-based yellow dye-forming coupler wherein m

represents an integer of 2 to 5, n represents an integer of 1 to 3, the sum of m and n is an integer of 3 to 7, and 0 represents zero.

5,294,532

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THE SAME

Tadashi Ito; Takanori Hioki, and Akihiko Ikegawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1992, Ser. No. 945,922

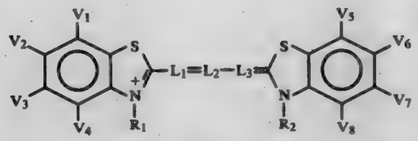
Claims priority, application Japan, Sep. 19, 1991, 3-266934; Sep. 19, 1991, 3-266959

Int. Cl.[5] G03C *1/09, 1/18*

U.S. Cl. 430—588 **3 Claims**

1. A silver halide photographic material comprising a transparent support having on at least one surface thereof a light-sensitive silver halide emulsion layer, wherein the silver halide emulsion contains an iridium compound in an amount of 10^{-8} mol or more per mol of silver in the silver halide therein and has been spectrally-sensitized with a sensitizing dye of formula (III):

(III)



$(M_1)m_1$

wherein

V_1, V_2, V_4, V_5, V_6, and V_8 each represent a hydrogen atom or a monovalent substituent,

each of V_3 and V_7 represents a fluorine atom, and

V_1, V_2, V_3, V_4, V_5, V_6, V_7 and V_8 satisfy the following conditions:

assuming that the f value of Vk (k=1 to 8) is Vkf,

$A_1=V_1f+V_2f+V_3f+V_4f$, and

$A_2=V_5f+V_6f+V_7f+V_8f$;

then $A_1<1.63$, or $A_2<1.63$;

R_1 and R_2 each represent a substituted or unsubstituted alkyl group;

L_1, L_2 and L_3 each represent a substituted or unsubstituted methine

M_1 represents a charge neutralizing pair ion; and m_1 is a number of 0 or more, which is necessary for neutralizing the charge of the molecule.

5,294,533

ANTISENSE OLIGONUCLEOTIDE ANTIBIOTICS COMPLEMENTARY TO THE MACROMOLECULAR SYNTHESIS OPERON, METHODS OF TREATING BACTERIAL INFECTIONS AND METHODS FOR IDENTIFICATION OF BACTERIA

James R. Lupski, Houston, Tex., and Leonard Katz, Waukegan, Ill., assignors to Baylor College of Medicine, Houston, Tex. and Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 215,135, Jul. 5, 1988, abandoned. This application Aug. 23, 1990, Ser. No. 572,191

Int. Cl.[5] C21Q *1/68*; C12N *15/00, 15/11*

U.S. Cl. 435—6 **25 Claims**

1. A method of identifying the presence or absence of a specific bacteria in a specimen, comprising the steps of:

hybridizing a unique intergenic antisense oligonucleotide of about 10 to 29 mer to a mRNA transcribed from a macromolecular synthesis (MMS) operon; and

measuring the amount of said hybridization; wherein hybridization indicates the presence of said specific bacteria, and a lack of hybridization indicates said specific bacteria is not present, and wherein each unique intergenic antisense oligonucleotide only hybridizes to the mRNA transcribed from the MMS operon of a specific bacteria.

5,294,534

AMPLIFICATION METHOD FOR POLYNUCLEOTIDE ASSAYS

Nanibhushan Dattagupta, Orange, and Elizabeth C. Sullivan, Stamford, both of Conn., assignors to Miles, Inc., Elkhart, Ind.

Filed Aug. 13, 1991, Ser. No. 744,548

Int. Cl.[5] C12Q *1/44, 1/68*

U.S. Cl. 435—6 **1 Claim**

1. A process for detecting a nucleic acid sequence in a sample comprising:

(1) treating said sample under hybridization conditions with an oligonucleotide that lacks the sequence AGCT;

(2) extending the hybridization product from step (1) by adding polymerase and NTP's to create on the oligonucleotide strand the sequence AGCT;

(3) treating the product of step (2) with labeled probe which is immobilized or immobilizable and which contains a recognition site for enzyme digestion that is completely or partially complementary to sequence AGCT on the oligonucleotide strand, under conditions that the oligonucleotide strand becomes hybridized to the labeled probe;

(4) digesting the hybridization product of step (3) with Alu I restriction endonuclease; and

(5) detecting the separated label which is released in solution,

the conditions being such that process step (4) automatically repeats itself.

5,294,535

METHOD FOR SUPPRESSING PARTIAL COLORATION IN IMMUNOASSAYS UTILIZING PEROXIDASE LABELS

Thomas C. J. Gribnau, Heesch; Leonardus P. C. Ku pers, Teeffelen, and Petrus A. L. Geoussens, Oss, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 627,570, Dec. 11, 1990, abandoned, which is a continuation of Ser. No. 334,020, Apr. 5, 1989, abandoned. This application Sep. 14, 1992, Ser. No. 944,760

Claims priority, application Netherlands, Apr. 6, 1988, 88.00874

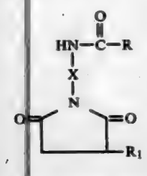
Int. Cl.[5] C12N *9/96*; C12Q *1/28*; G01N *33/535*

U.S. Cl. 435—7.9 **2 Claims**

1. In an enzyme immunoassay that quantitatively and/or qualitatively detects, through the measurement of a peroxidase label, an analyte in a blood sample or a fraction thereof, comprising contacting the blood sample with reagents comprising specific binding agents for the analyte and a peroxidase label conjugated to one of said reagents, in a reaction mixture to form an immune complex, and thereafter detecting the presence or amount of analyte by determining the extent of the peroxidase activity in said reaction mixture, by incubating the peroxidase-label with a peroxidase-substrate/chromogen mixture, wherein the improvement comprises carrying out said incubating step in the presence of a quaternary ammonium salt, wherein said quaternary ammonium salt is present in an amount sufficient to suppress partial coloration at least 50% over that of said enzyme immunoassays not containing the quaternary ammonium salt.

5,294,536
CONJUGATES
Paul S. Palumbo, West Newton, Mass., assignor to PB Diagnostic Systems, Inc., Westwood, Mass.
Filed Apr. 23, 1992, Ser. No. 872,539
Int. Cl.[5] G01N *33/543*; C12N *9/96*; C07K *17/06*
U.S. Cl. 435—7.93 14 Claims

13. A solid support for use in immunoassays comprising a conjugate represented by the formula



where X is alkylene, an aromatic carbocyclic moiety or a saturated carbocyclic moiety;

—R is the residue of a protein having an alcohol and/or an amine group, where R is linked to the carbonyl group through an oxygen atom or a nitrogen atom; and

R_1 is the residue of a solid support material having a thiol group, where R_1 is linked to the maleiimide moiety through a sulfur atom.

5,294,537
MONOCLONAL ANTIBODY ASSAY FOR *LISTERIA MONOCYTOGENES*
Carl A. Batt, Groton, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Continuation of Ser. No. 317,580, Mar. 1, 1989, abandoned. This application Sep. 23, 1991, Ser. No. 763,950
Int. Cl.[5] G01N *33/569*; C12N *5/18*; C07K *15/28*
U.S. Cl. 435—7.32 14 Claims

7. An immunoassay for screening for the presence or absence of *Listeria monocytogenes* in a clinical sample which comprises:

providing a solid support having adsorbed thereon a monoclonal antibody that specifically binds to *L. monocytogenes*, wherein the monoclonal antibody is produced by a hybridoma selected from the group consisting of ATCC HB9947, ATCC HB9948, and ATCC HB9949;

providing a clinical sample suspected of having *L. monocytogenes* present therein;

contacting the solid support with the clinical sample;

allowing the monoclonal antibody to specifically bind to any *L. monocytogenes* in the sample, thereby forming an immune complex on the solid support; and

detecting the presence or absence of the immune complex on the solid support; wherein the presence of the immune complex on the solid support is indicative of the presence of *Listeria monocytogenes* in the clinical sample.

5,294,538
METHOD OF SCREENING FOR ANTIMITOTIC COMPOUNDS USING THE CDC25 TYROSINE PHOSPHATASE
David H. Beach, Huntington Bay, N.Y., assignor to Cold Spring Harbor Labs., Cold Spring Harbor, N.Y.
Continuation-in-part of Ser. No. 793,601, Nov. 18, 1991. This application May 5, 1992, Ser. No. 878,640
Int. Cl.[5] C12Q *1/42*; C12P *21/06*; C07H *19/00, 21/00*
U.S. Cl. 435—21 4 Claims

1. A method of identifying a compound which is an inhibitor of human CDC25 tyrosine phosphatase activity, comprising the steps of:

a) combining:

1) a compound to be assessed;

2) CDC25 from a human source; and

3) p-nitrophenyl phosphate;

b) maintaining the combination produced in (a) under conditions appropriate for CDC25 to act upon p-nitrophenyl phosphate; and

c) determining the extent of action of said CDC25 upon p-nitrophenyl phosphate relative to a control, said control comprising human CDC25 and p-nitrophenyl phosphate in the absence of said compound to be assessed;

wherein if human CDC25 present in the combination produced in acts upon p-nitrophenyl phosphate to an extend less by at least 5–10% than human CDC25 present in the control, the compound is an inhibitor of human CDC25 tyrosine phosphatase activity.

5,294,539
NITRATE REDUCTASE FROM YEASTS, THE PREPARATION AND USE THEREOF
Walther Johannsen, Reinheim; Harry Schwartz, Hofheim-Diedenb.; Reiner Gromes, Gross-Umstadt., and Martin Heinrich, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany
PCT No. PCT/EP91/00199, § 371 Date Oct. 16, 1991, § 102(e) Date Oct. 16, 1991, PCT Pub. No. WO91/12319, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 2, 1991, Ser. No. 781,165
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004900
Int. Cl.[5] C12Q *1/26, 1/12*; C12N *9/02*; C12R *1/72*
U.S. Cl. 435—25 11 Claims

1. An isolated NAD(P)H-dependent nitrate reductase, having a molecular weight in the native state of about 350,000 D, as measured by gel permeation chromatography, of the E. C. 1.6.6.2 type, obtained by a process comprising:

cultivating yeast cells in a synthetic medium comprising nitrate as the sole nitrogen source wherein the yeast cells are of the genera Candida or Hansenula;

disrupting said cells in a phosphate buffer having a pH of about 6.5 to about 8.5, in the presence of a complexing agent, mercaptoethanol, FAD, potassium hexacyanoferrate and a protease inhibitor, to form a cell extract;

removing cell debris from said cell extract by centrifugation, the debris produced by said disrupting;

chromatographing said cell extract on an anion exchange material to obtain fractions comprising nitrate reductase;

mixing said fractions with about 10% to about 50% protein;

concentrating said fractions by ultrafiltration; and

drying said concentrated fractions by fluidized bed granulation.

5,294,540
ETHANOL ANALYTICAL ELEMENT
Daniel S. Daniel, Rochester; Karen L. Warren, Rush, and James R. Schaeffer, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 556,640, Jul. 5, 1990, abandoned. This application Feb. 3, 1992, Ser. No. 829,663
Int. Cl.[5] C12Q *1/26*; G01N *33/00*
U.S. Cl. 435—25 8 Claims

7. A multilayer element for the quantitative assay of ethanol in aqueous fluids, comprising a combination reagent/spreading layer and a reagent layer comprising a first and second zone, wherein the reagent/spreading layer comprises from 1 to 8 g/m^2 of a tetrazolium salt and from 2 to 8 g/m^2 of NAD$^+$; the first reagent zone comprises from 5,000 to 20,000 U/m^2 of alcohol dehydrogenase; and the second reagent zone comprises from 0.01 to 0.2 g/m^2 of phenothiazine methosulfate and from 0.1 to 4 g/m^2 poly(methyl acrylate-co-2-sulfo-1,1-dimethylethyl acrylamide-co-2-acetoacetoxyethyl methacrylate).

5,294,541
REAL-TIME MONITORING OF OXIDATIVE PRODUCTS FROM IN VITRO CELL-BIOMATERIAL INTERACTION USING CHEMILUMINESCENCE
David S. Kaplan, Fairfax, Va.; Grace L. Picciolo, Fort Washington, and Edward P. Mueller, Bayridge, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
Continuation of Ser. No. 410,626, Sep. 21, 1989, abandoned. This application Jul. 13, 1992, Ser. No. 912,590
Int. Cl.[5] C12Q *1/02, 1/06*
U.S. Cl. 435—29 21 Claims

1. A method for analyzing in real time in vitro interactions between biological cells and biomaterial proposed for implantation which comprises:

introducing biological cells and biomaterial proposed for implantation into an environment for interaction, wherein said environment includes chemiluminescent probes which emit chemiluminescent light in the presence of oxidative products produced by said cells;

monitoring over real time the amount of chemiluminescent light produced by oxidative products of said cells in the presence of said biomaterial as a first measurement;

introducing a biological activator into said environment, wherein said biological activator causes the production of oxidative products;

monitoring over real time the amount of chemiluminescent light produced by oxidative products of said cells as a second measurement;

repeating the above steps under the same conditions except without the introduction of said biomaterial; and

measuring the amount of said oxidative products produced by the interaction between said biological cells and said biomaterial in said environment over real time based on a comparison of each of the first chemiluminescence measurements, respectively, and each of the second chemiluminescence measurements, respectively.

5,294,542
RESIDUAL PROTEASE-III
Alan Sloma, Watertown; Gerald A. Rufo, Jr., Burlington, and Janice Pero, Lexington, all of Mass., assignors to Omnigene, Inc., Cambridge, Mass.
Filed Mar. 19, 1991, Ser. No. 671,376
Int. Cl.[5] C12P *21/06*
U.S. Cl. 435—69.1 19 Claims

1. An isolated and purified Bacillus cell containing a mutation in the rp-III gene resulting in inhibition of the production by said cell of proteolytically active RP-III.

5,294,543
INHIBITOR OF PLATELET AGGREGATION
Ethan A. Lerner, Brookline, Mass., and Michael R. Lerner, Hamden, Conn., assignors to The General Hospital Corporation, Boston, Mass.
Filed Apr. 8, 1992, Ser. No. 865,166
Int. Cl.[5] C12N *15/11, 15/63*; C07K *7/10, 15/12*
U.S. Cl. 435—69.1 28 Claims

1. Purified DNA comprising a sequence that hybridizes under high stringency to a naturally occurring Chrysops nucleic acid encoding the amino acid sequence of Val-Ser-Tyr-Cys-Ser-Leu-Pro-Cys-Arg-Gly-Asp-Ser-His-Val-Gly-Cys-Gly-Glu-Ala-Ala-Tyr-Gly-Val-Glu-Cys-Gly-Gln-Ser-Pro-Arg (Seq. ID No. 1), the amino acid sequence Phe-Trp-Leu-Pro-Gly-Gln-Leu-Asn-Phe-Glu-Tyr-Thr-Gly-Asp-Lys-Leu-Pro-Arg (Seq. ID No. 2), the amino acid sequence Ala-Leu-Leu-Thr-Cys-Asn-Phe-Ser-Ser-Asp-Asn-Ile-Tyr-Gly-Arg-Pro-Val-Tyr-Lys (Seq. ID No. 3), or the amino acid sequence Thr-Cys-Asn-Phe-Ser-Ser-Asp-Asn-Asp-Tyr-Asn-Arg-Pro-Val-Try-Lys-Thr-Gly-Ser-Ser-Pro-Ala-Glu-Lys-Cys-Ile-Lys-Lys- Asp-Lys-Thr-Phe-Lys-Asn-Leu-Cys-Ser-Ala-Glu-Glu-Pro-Ile-Asp-Pro-Asn-Gln-His-Asn-Phe (Seq. ID No. 6).

5,294,544
BIOLOGICALLY ACTIVE FACTOR
Patrick S. Gentile, Louisville, Ky.; Charlie R. Mantel, Plainfield, and Hal E. Broxmeyer, Indianapolis, both of Ind., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.
Division of Ser. No. 436,164, Nov. 13, 1989, Pat. No. 5,149,544. This application May 22, 1992, Ser. No. 887,681
Int. Cl.[5] C12P *21/00*; C12N *5/06*
U.S. Cl. 435—70.4 6 Claims

1. A method of making a biologically active protein factor comprising:

injecting a mouse with iron-saturated, endotoxin-depleted lactoferrin or with acidic isoferritin; and

conditioning a culture medium from a sufficient time with bone marrow or spleen cells removed from the mouse a sufficient time after the injection of the mouse with lactoferrin or acidic isoferritin to effect production of the factor; and

purifying the factor which:

a) inhibits granulocyte-macrophage colony and cluster formation;

b) has a molecular weight of about 8 kDa as determined by SDS-PAGE;

c) has a weak anionic charge at pH 7.4 as shown by anion exchange chromatography; and

d) has a flattened isoelectric titration curve as shown by anion exchange chromatography.

5,294,545
CONCATEMERIC DNA LENGTH STANDARDS
Marjatta Sou, and Philip Serwer, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.
Continuation of Ser. No. 293,235, Jan. 4, 1989, Pat. No. 5,030,566. This application Jul. 3, 1991, Ser. No. 725,048
Int. Cl.[5] C12P *19/34*; G01N *27/26*
U.S. Cl. 435—91.53 20 Claims

1. A method for sizing nucleic acid polymers of unknown length comprising the steps of:

a) loading into one well of a gel matrix a quantity of a concatemeric DNA standard prepared by

i) separately infecting at least two T7 infectable bacterial cell cultures each with a different T7 bacteriophage where the infecting bacteriophage is selected so that functional T7 gene 6 is present in at least one of the bacteriophage;

ii) allowing the cells to synthesize bacteriophage proteins;

iii) preparing extracts of the separately infected cells by lysing them in a buffered solution;

iv) mixing the extracts;

v) adding substrate DNA to the mixture and allowing enzymatic concatemerization of the substrate DNA to proceed for a selected time while limiting the packaging of the concatemeric DNA into bacteriophage head assemblies;

vi) stopping enzymatic concatemerization by inactivating the enzymes of the extract which mediate concatemerization of the DNA concatemers; and,

vii) treating the concatemers with a protease to enable their use as a concatemeric DNA size standard;

b) loading into a separate well of the same gel matrix a quantity of a selected nucleic acid polymer;

c) electrophoresing the standard and the selected nucleic acid polymer through the gel matrix under conditions and for a time sufficient to resolve the concatemeric standard into a series of discrete bands where each band contains either monomeric substrate DNA or concatemers thereof; and,

d) determining the size of the nucleic acid polymer by detecting its position in the gel after electrophoresis relative to the position of at least one of the bands of the concatemeric standard.

5,294,546

METHOD FOR PRODUCTION OF A GROWTH FACTOR FOR BIFIDOBACTERIUM SP.

Munehiko Dombou; Isao Tomioka; Ryoichi Tsurutani; Seuji Kitabatake, and Hiroshi Nakajima, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 101,603, Sep. 28, 1987, abandoned. This application Nov. 29, 1991, Ser. No. 799,881

Claims priority, application Japan, Sep. 27, 1986, 61-229223; Jun. 4, 1987, 62-142106

Int. Cl.[5] C12P *19/04*

U.S. Cl. 435—101 **14 Claims**

1. A method of producing a growth promoting factor for Bifidobacterium species from lactose which comprises contacting lactose with resting cells of a lactose-utilizing yeast strain having activity to rearrange lactose to galacto-oligosaccharides and which is a member selected from the group consisting of Rhodotorula lactosa, Pichia polymorpha, Kluyveromyces lactis, Debaryomyces cantarellii, Candida curvata, Torulopsis candida, Trichosporon pullulans, Lipomyces lipofer, Bullera alba, and Brettanomyces anomalus.

5,294,547

PROCESS FOR PRODUCING L-AMINO ACIDS BY FERMENTATION EMPLOYING A MICROORGANISM WITH RESISTANCE TO A DIPEPTIDE

Takayasu Tsuchida; Haruo Uchibori; Hiroshi Takeuchi, and Mitsuyoshi Seki, all of Kawasaki, Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Continuation of Ser. No. 464,385, Jan. 12, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 758,509

Claims priority, application Japan, Jan. 13, 1989, 1-6955

Int. Cl.[5] C12P *13/04, 13/06, 13/10*; C12N *1/20*

U.S. Cl. 435—106 **2 Claims**

1. A process for producing an L-amino acid, which comprises culturing an L-amino acid-producing microorganism belonging to a genus selected from Brevibacterium and Corynebacterium and having a resistance to a dipeptide containing glutamic acid or aspartic acid in a liquid medium for a time sufficient to product said L-amino acid, wherein said L-amino acid is selected from the group consisting of L-glutamic acid, L-glutamine, L-lysine, L-arginine, L-isoleucine, L-histidine, and L-proline, and said L-amino acid producing microorganism is *Brevibacterium flavum* AJ 12418 or *Corynebacterium acetoacidophilum* AJ 12419 when said L-amino acid is L-glutamine, said L-amino acid producing microorganism is *Brevibacterium lactofermentum* AJ 12420 or *Corynebacterium glutamicum* AJ 12421 when said L-amino acid is L-lysine, said L-amino acid producing microorganism is *Brevibacterium flavum* AJ 12422 when said L-amino acid is L-arginine, said L-amino acid producing microorganism is *Brevibacterium lactofermentum* AJ 12423 or *Corynebacterium glutamicum* AJ 12424 when said L-amino acid is L-glutamic acid, said L-amino acid producing microorganism is *Brevibacterium flavum* ADJ 12425 or *Corynebacterium glutamicum* AJ 12426 when said L-amino acid is L-histidine, said L-amino acid producing microorganism is *Brevibacterium flavum* AJ 12427 when said L-amino acid is L-proline, and said L-amino acid producing microorganism is *Brevibacterium flavum* AJ 12428 when said L-amino acid is L-isoleucine; and recovering the L-amino acid produced.

5,294,548

RECOMBIANANT HEPATITIS A VIRUS

James H. McLinden, Mishawaka; Elliot D. Rosen, South Bend, both of Ind.; Patricia L. Winokur, Chevy Chase, Md., and Jack T. Stapleton, Iowa City, Iowa, assignors to American Biogenetic Sciences, Inc, Copiague, N.Y. and University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 502,900, Apr. 2, 1990, abandoned. This application Jul. 3, 1991, Ser. No. 725,178

Int. Cl.[5] A61K *39/29*; C12N *7/01, 15/86*

U.S. Cl. 435—235.1 **9 Claims**

1. A recombinant baculovirus, the genome of which contains all coding regions of Hepatitis A Virus polyprotein controlled by regulatory elements that direct expression of the Hepatitis A Virus coding regions in a host cell infected with the recombinant baculovirus, so that the Hepatitis A Virus polyprotein is expressed and processed into pentamers or non-infectious capsid particles.

5,294,549

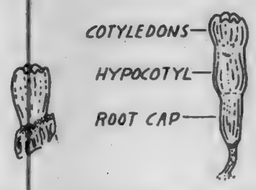
METHOD FOR REPRODUCING CONIFERS BY SOMATIC EMBRYOGENESIS USING MIXED GROWTH HORMONES FOR EMBRYO CULTURE

Gerald S. Pullman, Renton, and Pramod K. Gupta, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 705,681, May 24, 1991, Pat. No. 5,236,841, which is a continuation-in-part of Ser. No. 499,151, Mar. 26, 1990, Pat. No. 5,036,007, which is a continuation-in-part of Ser. No. 321,035, Mar. 9, 1989, Pat. No. 4,957,866, and Ser. No. 426,331, Oct. 23, 1989, Pat. No. 5,034,326. This application Dec. 23, 1991, Ser. No. 814,976

Int. Cl.[5] A01H *4/00, 1/00*

U.S. Cl. 435—240.45 **20 Claims**



1. A method of reproducing coniferous plants by somatic embryogenesis which comprises:

placing an explant on an initiation culture medium and growing a culture containing early stage proembryos;

transferring the proembryos to a cotyledonary embryo development medium containing plant growth hormones comprising at least one active gibberellin in an amount of 0.5–50 mg/L of medium and abscisic acid in an amount of about 1–50 mg/L and growing cotyledonary embryos.

5,294,550

METHOD OF CULTURING MISHIMA-SAIKO

Ken Kusakari; Mineyuki Yokoyama, and Mitsuo Yanagi, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed Jul. 17, 1992, Ser. No. 913,884

Claims priority, application Japan, Jul. 19, 1991, 3-179591

Int. Cl.[5] C12N *5/00, 5/02*

U.S. Cl. 435—240.45 **5 Claims**

1. A process for producing saponin comprising the steps of:

a) culturing Mishima-saiko root as an explant in a medium having a carbohydrate concentration less than 2% by weight of the total medium for a time sufficient to effect a maximum number of lateral roots and produce saponin;

b) further culturing the Mishima-saiko root in a medium regulated at a carbohydrate concentration of at least 2% by weight of the total medium to produce saponin; and

c) recovering the saponin.

5,294,551

CELL CULTURE SUBSTRATE COATED WITH POLYPEPTIDES HAVING FIBRONECTIN ACTIVITY

Leo T. Furcht, and James B. McCarthy, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 662,360, Feb. 28, 1991, Pat. No. 5,171,360, which is a division of Ser. No. 225,045, Jul. 27, 1988, Pat. No. 5,019,646, which is a continuation-in-part of Ser. No. 89,073, Aug. 25, 1987, Pat. No. 4,839,464. This application Sep. 9, 1992, Ser. No. 942,597

Int. Cl.[5] C12N *5/00, 11/08, 11/06*; C07K *7/00*

U.S. Cl. 435—240.243 **5 Claims**

1. A cell culture substrate adapted for in vitro cell culture having a surface coated with a polypeptide of the formula:

lys-asn-asn-gln-lys-ser-glu-pro-leu-ile-gly-arg-lys-lys-thr,

leu-ile-gly-arg-lys-lys-thr,

tyr-arg-val-arg-val-thr-pro-lys-glu-lys-thr-gly-pro-met-lys-glu,

ser-pro-pro-arg-arg-ala-arg-val-thr,

trp-gln-pro-pro-arg-ala-arg-ile,

or mixtures thereof.

5,294,552

STRAIN MASS-PRODUCING ε-POLY-L-LYSINE

Jun Hiraki, and Hiroshi Morita, both of Yokohama, Japan, assignors to Chisso Corp., Osaka, Japan

Continuation-in-part of Ser. No. 568,658, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 81,405, Jul. 31, 1987, abandoned. This application Apr. 3, 1992, Ser. No. 864,183

Claims priority, application Japan, Aug. 19, 1986, 61-192157; Aug. 19, 1986, 61-192158

Int. Cl.[5] C12N *1/20, 15/00*

U.S. Cl. 435—252.3 **2 Claims**

1. A biologically pure culture, capable of mass-producing epsilon-poly-L-lysine in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances, having all of the identifying characteristics of *Streptomyces albulus* subsp. lysinopolymerus 50833 FERM BP-1110.

5,294,553

METHOD FOR THE GRAVIMETRIC DETERMINATION OF OIL AND GREASE

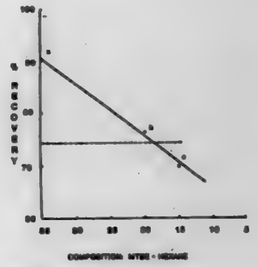
Fred K. Kawahara, Burlington, Ky., assignor to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 43,385, Apr. 6, 1993, abandoned. This application May 26, 1993, Ser. No. 66,474

Int. Cl.[5] G01N *31/00, 33/03, 33/20*

U.S. Cl. 436—60 **8 Claims**

1. A method of dissolving grease and oil using a replacement solvent for 1,1,2-trichloro-1,2,2 trifluoroethane in the gravimetric determination of oil and grease in an aqueous matrix or solid matrix comprising the steps of dissolving said oil or grease using an effective amount of a solvent comprising a mixture of n-hexane and methyl tertiary-butyl ether present in



a volume to volume ratio of 80% to 20% respectively to substantially dissolve said oil and grease.

5,294,554

ANALYSIS OF TIN, LEAD OR TIN-LEAD ALLOY PLATING SOLUTION

Hiroki Uchida; Motonobu Kubo; Masayuki Kiso; Teruyuki Hotta, and Tohru Kamitamari, all of Hirakata, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,199

Claims priority, application Japan, Mar. 1, 1991, 3-59643; Nov. 11, 1991, 3-322535; Nov. 11, 1991, 3-322536; Nov. 11, 1991, 3-322537

Int. Cl.[5] G01N *33/20*

U.S. Cl. 436—73 **25 Claims**

1. A method for analyzing a tin, lead or tin-lead alloy plating solution having copper dissolved therein as a complex with thiourea or its derivative in the plating solution comprising the steps of:

taking a sample from the solution,

adding an oxidizing agent to said sample, thereby simultaneously decomposing thiourea or its derivative and oxidizing a monovalent copper ion in the sample to a divalent copper ion,

adjusting the pH of said sample to between pH 4 and pH 11,

adding a color developing agent to said sample, thereby causing the divalent copper ion to develop its color, and

quantitatively determining the concentration of divalent copper ion by colorimetry.

5,294,555

METHOD OF MANUFACTURING THIN FILM TRANSISTOR AND ACTIVE MATRIX ASSEMBLY INCLUDING SAME

Tishihiko Mano; Toshimoto Kodaira, and Hiroyuki Ohshima, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 203,548, May 31, 1988, Pat. No. 5,124,768, which is a continuation of Ser. No. 862,151, May 12, 1986, abandoned, which is a continuation of Ser. No. 484,046, Apr. 11, 1983, abandoned. This application Jan. 30, 1992, Ser. No. 828,548

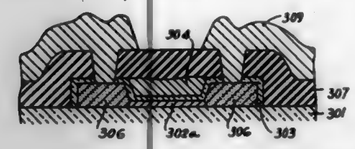
Claims priority, application Japan, Apr. 13, 1982, 57-61440; Apr. 19, 1982, 57-64892; Apr. 19, 1982, 57-143786

Int. Cl.[5] H01L *21/336, 21/84*

U.S. Cl. 437—21 **23 Claims**

1. A method of manufacturing a metal-oxide-semiconductor transistor including a source region, a drain region and a channel region between the source and drain regions formed from a thin film of non-monocrystalline silicon, a gate electrode opposing the channel region and an insulating film between the channel region and gate electrode, comprising the steps of:

forming the channel region to be less than 2500 Å thick and forming the source and drain regions thicker than the



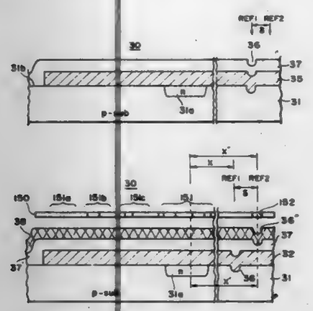
channel region, at least at the junction of the channel region with the source and drain regions.

5,294,556

METHOD FOR FABRICATING AN SOI DEVICE IN ALIGNMENT WITH A DEVICE REGION FORMED IN A SEMICONDUCTOR SUBSTRATE

Seiichiro Kawamura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 19, 1991, Ser. No. 733,119
Claims priority, application Japan, Jul. 20, 1990, 2-192276
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—21 **7 Claims**



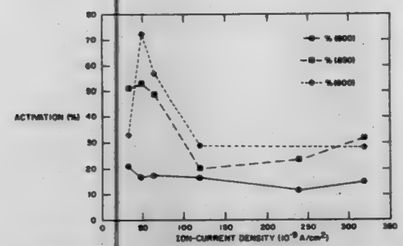
1. A method of forming a semiconductor-on-insulator device, comprising the steps of:
forming a first alignment mark on an upper major surface of a semiconductor substrate at a first reference position;
forming a device region in the semiconductor substrate at a position located a selected distance from the first alignment mark, said device region including a diffusion region having an impurity element;
providing an insulator layer on the upper major surface of the semiconductor substrate, said insulator layer having an upper major surface with a depression therein at the first reference position in correspondence with the first alignment mark, said insulator layer being configured so as to expose a part of the upper major surface of the semiconductor substrate;
providing a semiconductor layer having corresponding first and second portions respectively on the upper major surface of the insulator layer and on, and in contact with, the exposed part of the upper major surface of the semiconductor substrate, said semiconductor layer having an upper major surface with a first depression therein at the first reference position in correspondence with the first alignment mark;
recrystallizing the semiconductor layer by heating same to a first temperature, above the melting point temperature of the semiconductor layer, and cooling same subsequently to a second temperature, below the melting point temperature and less than the first temperature, starting from the second portion of the semiconductor layer in contact with the exposed part of the upper major surface of the semiconductor substrate and moving therefrom, laterally along the semiconductor layer, thereby to form a single crystal semiconductor layer having an upper major surface with a second depression therein at a second, different reference position; and
patterning the single crystal semiconductor layer using the second depression in the upper major surface of the semiconductor layer as a second alignment mark and thereby to form a semiconductor device in alignment with the device region in the semiconductor substrate, the first reference position of said first alignment mark being offset from the second reference position of the second alignment mark by an amount corresponding to, and thereby cancelling out, the expansion of the single crystal semiconductor layer caused by the recrystallizing step.

5,294,557

IMPLANTING IMPURITIES IN SEMICONDUCTORS AND SEMICONDUCTOR IMPLANTED WITH IMPURITIES

Frederick G. Moore, Wala Wala, Wash., and Harry B. Dietrich, Fairfax, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1991, Ser. No. 749,825
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—22 **13 Claims**



1. A method of doping substrate to produce a doped semiconductor material having enhanced carrier activation, comprising the steps of:
selecting a dopant species for ion-implantation into said substrate;
determining a maximum implantation dose rate of said dopant species, at which percent activation of said dopant species after an annealing step, as a function of ion-implantation dose rate, is at a maximum;
implanting a dopant species into said substrate at about said maximum dose rate and at a fluence of at least 10^{13} cm^2; and
annealing said dopant implanted semiconductor material.

5,294,558

METHOD OF MAKING DOUBLE-SELF-ALIGNED BIPOLAR TRANSISTOR STRUCTURE

Seshadri Subbanna, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,337
Int. Cl.[5] H01L *21/265, 29/70*
U.S. Cl. 437—31 **2 Claims**

1. A method of fabricating an improved bipolar transistor comprising the steps of:
a) providing a silicon substrate of a first conductivity type, said substrate having a planar surface, a subcollector region of a second conductivity type formed in said substrate, an epitaxial layer of said second conductivity type formed on said planar surface of said substrate, and first and second spaced apart isolation regions extending through said epitaxial layer into said substrate, and further having an intermediate region extending through at least said epitaxial layer and further being located between and spaced apart from the first and second regions;
b) forming a collector reach through region of a second conductivity type between the intermediate and second spaced apart regions;
c) forming a field oxide layer upon said planar surface;
d) forming a device active area window in a portion of said field oxide layer to expose said planar surface, said device active area window being positioned between the first and intermediate spaced apart regions;
e) depositing a polysilicon layer upon said field oxide layer and the device active area window;
f) depositing a oxide/nitride passivation layer upon said polysilicon layer;
g) removing a portion of said passivation layer, said portion being that which is positioned over the field oxide layer, thereby leaving a remainder of said passivation layer over the device active area window and further exposing said polysilicon layer outside the device active area window;
h) growing a passivating oxide layer exposed polysilicon layer, wherein said passivating oxide does not grow over the remainder of said oxide/nitride passivation layer and wherein a vertical bird's beak is formed on each side of the remainder of said oxide/nitride passivation layer;
i) forming an extrinsic base contact in said polysilicon and said passivating oxide layer;

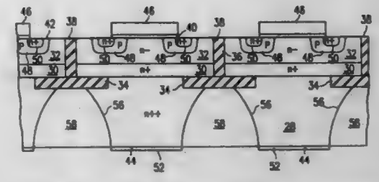
j) stripping the remainder of said oxide/nitride passivating layer thereby exposing said polysilicon layer in the region of the device active area window;
k) etching the exposed polysilicon layer down to said epitaxial layer underneath, thereby forming an emitter window having polysilicon sidewalls;
l) annealing the substrate to form an extrinsic base of a prescribed depth in said epitaxial layer;
m) implanting ions of the first conductivity type through the emitter window to form an intrinsic base in said epitaxial layer, the polysilicon sidewalls acting as a mask for implanting the ions;
n) exposing the substrate to a prescribed pressure and temperature to form a base oxide in the emitter window, said base oxide comprising a polysilicon oxide adjacent to an active device region in the emitter window;
o) forming sidewall spacers in the emitter window;
p) forming an emitter polysilicon layer containing a dopant of the second conductivity type in the emitter window;
q) implanting ions of the second conductivity type into said emitter polysilicon layer;
r) annealing the substrate to diffuse the dopant into the epitaxial layer to form an emitter;
s) forming an emitter polysilicon region; and
t) opening up base and collector contact regions.

5,294,559

METHOD OF FORMING A VERTICAL TRANSISTOR

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 30, 1990, Ser. No. 559,756
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **7 Claims**



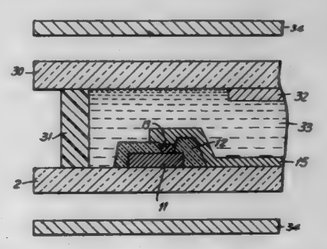
1. A method of forming a transistor comprising the steps of:
forming an isolation layer overlying a semiconductor substrate;
forming a semiconductor layer of a first conductivity type overlying the isolation layer;
forming a first doped region of a second conductivity type in the semiconductor layer;
forming a second doped region of said first conductivity type in said first doped region;
etching trenches through the semiconductor substrate using the isolation layer as an etch stop; and
filling the trenches with an insulating material.

5,294,560

BIDIRECTIONAL NONLINEAR RESISTOR, ACTIVE MATRIX LIQUID CRYSTAL PANEL USING BIDIRECTIONAL NONLINEAR RESISTOR, AND METHOD FOR PRODUCTION THEREOF

Yoshihiro Ono; Fumiaki Matsushima; Kuniyasu Matsui, all of Suwa, and Tetsuya Osaka, Tanashi, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 463,761, Jan. 12, 1990, Pat. No. 5,175,114. This application Mar. 26, 1991, Ser. No. 674,855
Claims priority, application Japan, Jan. 13, 1989, 1-6446; Apr. 4, 1989, 1-85371; Apr. 4, 1989, 1-85372; Apr. 4, 1989, 1-85373; Apr. 4, 1989, 1-85374; Nov. 6, 1989, 1-288402; Mar. 27, 1990, 2-78509
Int. Cl.[5] H01L *21/47*
U.S. Cl. 437—47 **19 Claims**



1. A method for preparation of an active matrix substrate, comprising:
a) forming a first electrode in a designated pattern on a first transparent substrate;
b) depositing a highly insulating electrolytic polymer film on the electrode by electrolytic polymerization of an electrolytic solution; and
c) selectively depositing a transparent electrode on the first substrate with at least a portion thereof opposed to a

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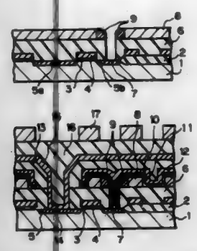
portion of the first electrode to form a conductor-insulator-conductor structure which functions as a nonlinear resistor.

5,294,561

METHOD FOR MANUFACTURING HIGHLY-INTEGRATED STACKED CAPACITOR

Takahe Tanigawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 111,460
Claims priority, application Japan, Aug. 25, 1992, 4-225997
Int. Cl.[5] H01L *21/72*
U.S. Cl. 437—60 **6 Claims**



1. A method for manufacturing a stacked capacitor, comprising the steps of:

forming an impurity doped region within a semiconductor substrate, the conductivity type of said impurity doped region being opposite to that of said semiconductor substrate;

forming an insulating layer on said semiconductor substrate;

forming a conductive layer on said insulating layer;

patterning said conductive layer to create an opening therein, said opening being located over said impurity doped region;

forming a conductive sidewall along the inside of the opening of said conductive layer;

patterning said insulating layer with a mask of said conductive layer and said conductive sidewall to create a contact hole leading to said impurity doped region;

forming a capacitor lower electrode layer, said conductive lower electrode layer being electrically connected to said impurity doped region, said conductive layer and said conductive sidewall;

forming a capacitor insulating layer on said capacitor lower electrode layer; and

forming a capacitor upper electrode layer on said capacitor insulating layer.

5,294,562

TRENCH ISOLATION WITH GLOBAL PLANARIZATION USING FLOOD EXPOSURE

Water Lur, Taipei; Nien-Tsu Peng, Hsin Chu, and Paul P. W. Yen, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 27, 1993, Ser. No. 127,054
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **27 Claims**

15. The method of planarizing wide dielectric filled device isolation regions of an integrated circuit by using flood exposure comprising:

providing a pad silicon oxide layer over the surface of a silicon substrate;

depositing a silicon nitride layer overlying said pad silicon oxide layer;

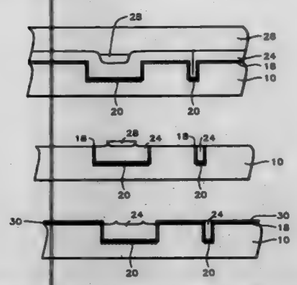
etching through portions of said silicon nitride, and said pad silicon oxide layers and into said silicon substrate not covered by a mask pattern so as to provide a plurality of wide and narrow trenches within said silicon substrate that will form the said device isolation regions;

selectively ion implanting channel-stops through openings in said patterned silicon nitride and pad silicon oxide layers into said substrate underneath said trenches;

removing said silicon nitride and said pad silicon oxide layers;

growing a thin silicon oxide layer on all surfaces of said substrate;

depositing a thick layer of silicon oxide over the surface of said substrate and within said trenches wherein said trenches are completely filled by said thick silicon oxide layer and wherein said thick silicon oxide layer is planarized over said narrow trenches but is not planarized over said wide trenches;



planarizing said wide trenches by first coating said substrate with a thick layer of photoresist;

subjecting said substrate to a low dose flood exposure wherein the upper portion of said photoresist is developed but the lower portion of said photoresist over said wide trenches is not developed;

removing said upper portion of said photoresist layer;

anisotropically etching back said thick silicon oxide layer to the surface of said substrate wherein said lower portion of said photoresist acts as a mask to prevent etching into the portion of said thick silicon oxide filling said wide trenches; and

removing said lower portion of said photoresist completing said planarization of said wide trenches.

5,294,563

SIDEWALL-SEALED AND SANDWICHED POLY-BUFFERED LOCOS ISOLATION METHODS

Kalipatnam V. Rao, Avezzano, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 693,821, Apr. 30, 1991, abandoned.
This application Sep. 29, 1992, Ser. No. 954,409
Int. Cl.[5] H01C *21/76*
U.S. Cl. 437—69 **7 Claims**

1. A method for forming a semiconductor device, comprising the steps of:

(a) providing a semiconductor body;

(b) forming a pad oxide layer over said semiconductor body;

(c) forming a first silicon nitride layer over said pad oxide layer;

(d) forming a polysilicon layer over said first silicon nitride layer;

(e) forming a second silicon nitride layer over said polysilicon layer;

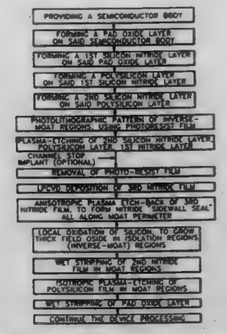
(f) coating a masking material over said second silicon nitride layer;

(g) placing a mask over said second silicon nitride layer, wherein said mask shields certain portions of said masking material;

(h) removing said masking material not shielded by said mask, thereby defining a plurality of inverse moat regions and a plurality active moat regions, said plurality of inverse moat regions lacking said masking material over said second silicon nitride layer and said plurality of active moat regions having said masking material over said second silicon nitride layer;

(i) plasma etching to remove said second silicon nitride layer, said polysilicon layer, and said first silicon nitride layer in said plurality of inverse moat regions, leaving said pad oxide layer in said plurality of inverse moat regions;

(j) stripping said masking material from said second nitride layer in said plurality of active moat regions;



(k) forming by low-pressure chemical vapor deposition a conformal silicon nitride layer over said pad oxide layer over said semiconductor body in said plurality of inverse moat regions;

(l) anisotropically etching said conformal silicon nitride layer, leaving a plurality of silicon nitride sidewalls; and, thereafter,

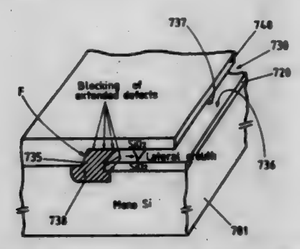
(m) growing a field oxide in said inverse moat region.

5,294,564

METHOD FOR THE DIRECTED MODULATION OF THE COMPOSITION OR DOPING OF SEMICONDUCTORS, NOTABLY FOR THE MAKING OF PLANAR TYPE MONOLITHIC ELECTRONIC COMPONENTS, USE OF THE METHOD AND CORRESPONDING PRODUCTS

Leonidas Kárapiperis, Bourg la Reine, and Didier Pribat, Paris, both of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 496,965, Mar. 21, 1990, abandoned.
This application Mar. 8, 1993, Ser. No. 28,607
Claims priority, application France, Mar. 31, 1989, 89 04257
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—81 **30 Claims**



1. A method for fabrication of a thin monocrystalline layer of a semiconducting material, through growth by gas phase deposition, comprising:

a first step of growing the semiconducting material from a seed crystal,

wherein said crystal growth is confined within a space located between opposing confining surfaces of two substantially horizontal confinement layers,

wherein each confinement layer is made of materials that are different from the semiconducting materials of the thin monocrystalline layer so that nucleation or deposition of the semiconducting material onto exposed surfaces of either of the two confinement layers does not occur,

wherein growth during the first step occurs along a substantially vertical direction toward one of said confinement layers,

wherein the space between the two confinement layers defines the thickness of the thin monocrystalline layer; then

a second step of growth along a substantially horizontal direction, wherein the second step further comprises varying the gas mixture in the gas phase to thereby modulate at least one of the composition and the doping of the thin monocrystalline layer along a substantially horizontal direction; and

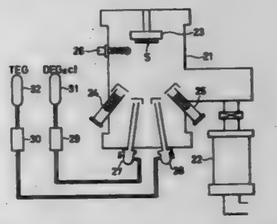
whereby the thin monocrystalline layer is formed with a modulation of one of the composition or doping along a direction which is parallel to the confining surfaces of the confinement layers.

5,294,565

CRYSTAL GROWTH METHOD OF III - V COMPOUND SEMICONDUCTOR

Yasushi Shiraishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,689
Claims priority, application Japan, Jul. 23, 1991, 3-182636
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—105 **23 Claims**



1. An epitaxial growth method of a III-V compound semiconductor in which a molecular beam of a group III source material and a molecular beam of a group V source material are supplied onto a surface of a semiconductor substrate having a mask thereon in a chamber held in vacuum thereby to epitaxially grow a single-crystalline III-V compound semiconductor selectively on said surface of said substrate exposed from said mask, said molecular beams comprising:

a molecular beam of a first group III source material composed of an organic metal compound of a group III element not having a halogen;

a molecular beam of a second group III source material having a halogen chemically bonded to the atoms of said group III element; and

a molecular beam of a group V source material making a compound semiconductor with the group III element of said first source material;

wherein said first group III source material is mainly used for growing said III-V compound semiconductor, and said second group III source material suppresses growth of said III-V compound semiconductor on a surface of said mask.

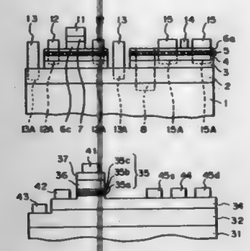
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5,294,566

METHOD OF PRODUCING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE COMPOSED OF A NEGATIVE DIFFERENTIAL RESISTANCE ELEMENT AND A FET TRANSISTOR

Toshihiko Mori, Isehara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 696,265, Apr. 30, 1991, Pat. No. 5,162,877, which is a continuation of Ser. No. 148,528, Jan. 26, 1988, abandoned. This application Jul. 21, 1992, Ser. No. 915,621
Claims priority, application Japan, Jan. 27, 1987, 62-016715
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—184 5 Claims



1. A method of producing a semiconductor integrated circuit device composed of a negative differential resistance element and a field effect transistor which are formed on the same semiconductor substrate, a base layer of said negative differential resistance element and a channel layer of said field effect transistor being formed as the same epitaxial layer, said method comprising the steps of:

epitaxially growing semiconductor layers on said semiconductor substrate;

selectively removing portions of said semiconductor layers;

using the same conductive material to simultaneously form emitter electrode of said negative differential resistance element being in ohmic contact with the top layer of said semiconductor layers in the unremoved region and a gate electrode of said field effect transistor being in Schottky contact with one of said semiconductor layers exposed by said selective removal; and

using another same conductive material to simultaneously form a base electrode of said negative differential resistance element and a source electrode and a drain electrode of said field effect transistor being in electrical connection with said exposed layer of said semiconductor layers.

5,294,567

METHOD FOR FORMING VIA HOLES IN MULTILAYER CIRCUITS

Jay R. Dorfman, Durham; Richard R. Draudt, Pittsboro; Thomas D. Lantzer, Fuquay-Varina; Arthur H. Mones, Cary, and David L. Sutton, Raleigh, all of N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 8, 1993, Ser. No. 2,247
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—187 13 Claims

1. A method for rapidly forming a high density patterned array of via holes of predetermined size in an unfired layer comprising finely divided particles of dielectric solids dispersed in an ablatable organic medium containing substantially no volatile organic solvents, the layer having a thickness of 1–1,000 micrometers, comprising the sequential steps of:

(a) providing a beam dividing device which splits a single excimer laser light beam into a plurality of smaller beams of predetermined size arranged in the pattern of a selected segment of the patterned array of via holes;

(b) adjusting the relative position of the beam dividing device between the upper exposed surface of the unfired layer and a source of excimer laser light to enable directing the plurality of smaller excimer laser light beams in a patterned array from the beam dividing device onto a preselected area of the surface of the unfired layer;

(c) directing the plurality of smaller excimer laser light beams onto the surface of the dielectric layer at (1) a power level of 0.1–10 J/cm^2 and (2) a drilling rate of 0.2–2 micrometer per pulse to effect complete ablation of the organic medium from the areas of the dielectric layer exposed to the laser beams without incurring densification of the dielectric solids therein; and

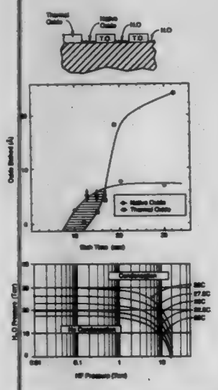
(d) repeating steps (b) and (c) in further preselected areas of the unfired layer until the patterned array of via holes in the unfired layer has been completed.

5,294,568

METHOD OF SELECTIVE ETCHING NATIVE OXIDE

Michael A. McNeilly; Bruce E. Deal; Dah-Bin Kao, and John de Larios, all of Palo Alto, Calif., assignors to Genus, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 596,222, Oct. 12, 1990, abandoned. This application Apr. 10, 1992, Ser. No. 867,299
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—235 17 Claims



1. The method for processing semiconductor wafers comprising the steps of:

positioning a substrate in a treatment chamber;

exposing the substrate to a mixture of hydrogen halide vapor and water vapor to etch native oxide from a surface of the substrate; and

controlling the partial pressure of at least one of the vapors to delay condensation of water vapor on other oxide surface while native oxides are being etched.

5,294,569

ENDOTHELIN DNA AND USE THEREOF

Tomoh Masaki; Masashi Yanagisawa, and Akihiro Inoue, all of Ibaraki, Japan, assignors to 501 Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 422,132, Oct. 16, 1989, Pat. No. 5,231,166. This application Jan. 27, 1993, Ser. No. 9,764
Claims priority, application Japan, Oct. 25, 1988, 63-267149; May 29, 1989, 1-132705
Int. Cl.[5] C07H *15/12*; C12P *21/06*; C12N *1/22*
U.S. Cl. 536—23.5 4 Claims

1. A DNA molecule comprising a DNA sequence which encodes a endothelin-2 protein having the amino acid sequence:

Cys Ser Cys Ser Ser Trp Leu Asp Lys Glu Cys Val Tyr Phe Cys

His Leu Asp Ile Ile Trp.

5,294,570

REDUCTION OF FOREIGN PARTICULATE MATTER ON SEMICONDUCTOR WAFERS

Marshall J. Fleming, Jr., Underhill; William A. Syverson, Colchester, and Eric J. White, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 588,228, Sep. 26, 1990, abandoned. This application Jan. 29, 1992, Ser. No. 827,846
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—239 15 Claims

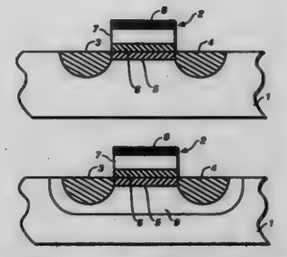
1. A method of reducing foreign particulate matter concentration on a surface, which comprises contacting said surface with a solution comprising a strong acid and a very small amount of a fluorine-containing compound, which is effective in reducing foreign particulate matter contamination, without significant etching, of said surface, wherein said amount of said fluorine-containing compound is sufficient to establish a chemophobic surface, and said surface is etched at a rate of less than about 20 Å/min.

5,294,571

RAPID THERMAL OXIDATION OF SILICON IN AN OZONE AMBIENT

Felix Fujishiro; Chung-Ou Lee, both of San Antonio, Tex., and Landon Vines, Boise, Id., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 22, 1992, Ser. No. 918,815
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—239 17 Claims



1. A method for preparing a SiO_2 layer on a semiconductor device which method comprises the steps of:

(a) placing a semiconductor device having a surface layer containing silicon in at least a part thereof, into a chamber; and

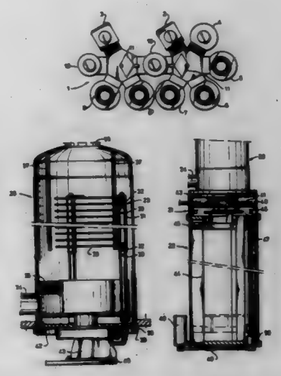
(b) oxidizing the silicon on the surface of the device to SiO_2 by rapid thermal oxidation under conditions wherein at least a portion of surface of the semiconductor device is oxidized to SiO_2 wherein the oxidation is conducted in an atmosphere comprising oxygen and form about 4 to about 15 volume percent ozone at a temperature from about 850° C. to about 1050° C.

5,294,572

METHOD AND APPARATUS FOR DEPOSITING A LAYER ON A SUBSTRATE

Ernst H. A. Granneman, Hilversum; Hans W. Piekaar, Utrecht; Hubertus A. Corsius, Nieuwegein, and Boudewijn G. Sluijk, Bilthoven, all of Netherlands, assignors to ASM International N.V., Bilthoven, Netherlands

PCT No. PCT/NL90/00027, § 371 Date Nov. 1, 1991, § 102(e) Date Nov. 1, 1991, PCT Pub. No. WO90/10949, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 6, 1990, Ser. No. 752,487
Claims priority, application Netherlands, Mar. 6, 1989, 8900544
Int. Cl.[5] B08B *3/12*; C23C *16/00*
U.S. Cl. 437—225 7 Claims



1. Method for the simultaneous deposition of a layer on a plurality of substrates by receiving said substrates in a processing system, having several subsystems which can each and together be sealed with respect to the environment, comprising: introducing the substrates into said processing system, depositing a layer on the substrates in a subsystem, said depositing comprising the batchwise simultaneous treatment of several substrates by chemical vapor deposition of a layer of material at elevated temperature, and removing the substrates from said system, wherein during said depositing the substrates are vertically stacked above each other, and wherein the substrates are individually or batchwise subjected to a cleaning treatment with exposure to plasmas of energy less than 50 eV in a further subsystem before said depositing in the processing system.

5,294,573

SOL-GEL PROCESS OF MAKING GRADIENT-INDEX GLASS

Niels Haun, Rochester, N.Y., assignor to University of Rochester, Rochester, N.Y.

Filed Jun. 25, 1993, Ser. No. 83,031
Int. Cl.[5] C03C *3/04*
U.S. Cl. 501—12 34 Claims

1. A process for making a gradient-index glass comprising:

forming a mixture of a silicon alkoxide and an alcohol in a solution sufficiently acidic to partially hydrolyze the silicon alkoxide;

adding to the mixture an index modifying metal alkoxide selected from the group consisting of alkoxides of titanium and zirconium;

adding water to the mixture to convert the metal alkoxides to a network of corresponding metal oxides suitable for gelation;

containing the mixture containing the network of metal oxides for sufficient time to form a gel;
acid leaching the contained gel for sufficient time to remove some of the index modifying metal oxide;
fixing the gel in acetone or a mixture of water and acetone;
drying the fixed gel; and
sintering the dried gel into a transparent gradient-index glass.

5,294,574
PRODUCTION OF NONOXIDE MONOLITHIC CERAMIC SHAPED ARTICLES
Ralf Riedel, Leinf.-Echterd; Gerd Passing, Wermelskirchen; Richard J. Brook, Stuttgart, all of Fed. Rep. of Germany; Christian Colombier, Lyons, France; Maurice Gonon, Saint-Priest, France, and Gilbert Fantozzi, Meyzieu, France, assignors to Elf Atochem S.A., Puteaux, France and Max-Planck-Institut fur Metallforschung, Stuttgart, Fed. Rep. of Germany
Filed Apr. 3, 1992, Ser. No. 863,099
Claims priority, application France, Apr. 5, 1991, 91 04167
Int. Cl.[5] C04B *35/54*
U.S. Cl. 501—88 18 Claims

1. A process for the production of a crack-free, dense and amorphous, nonoxide monolithic ceramic shaped article, comprising shaping a powder (P) of an infusible, organometallic ceramic precursor polymer (Pi) into a green body having a relative density of at least 65%, and thence pyrolyzing said shaped green body.

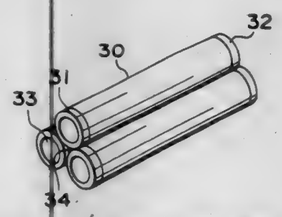
5,294,575
SILICON NITRIDE CERAMICS CONTAINING CRYSTALLIZED GRAIN BOUNDARY PHASES
Roger L. K. Matsumoto, 2 Ranch Ct., Paper Mill Farms, Newark, Del. 19711
Division of Ser. No. 828,541, Jan. 27, 1992, Pat. No. 5234,643. This application Aug. 9, 1993, Ser. No. 104,464
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 21 Claims

1. A product prepared by the process comprising heating a composition comprising (1) from about 20% to about 98% silicon nitride, (2) from about 0.5% to about 20% of a silicate glass-forming sintering aid, and (3) from about 0.001% to about 80% of a high metal content transition metal silicide, all percentages being by weight based on the total weight of the composition, to a temperature of about 1300° C. to about 1800° C. under vacuum until silicate glass forms, oxygen is removed from the silicate glass as SiO gas, and the glass crystallizes.

5,294,576
MULLITE CERAMIC COMPOUND
Kihon Mizushima, Nagano, and Michio Horiuchi, Koshoku, both of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan
Continuation-in-part of Ser. No. 728,017, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 299,547, Jan. 11, 1989, abandoned. This application Dec. 15, 1992, Ser. No. 990,375
Claims priority, application Japan, Jan. 13, 1988, 63-5374
Int. Cl.[5] C04B *35/19*
U.S. Cl. 501—128 10 Claims

1. A sintered homogenous mullite ceramic composition, consisting essentially of:
mullite powder;
at least one rare earth element compound and alkaline earth metal element compound, wherein said rare earth element compound is selected from the group consisting of Y_2O_3, YF_3, YCl_3, La_2O_3, $Ce_2(CO_3)_3$, $La_2(CO_3)_3$, CeO_2 and CeF_3; and
at least one vanadium compound, niobium compound and tantalum compound in an amount between 0.1–3 wt%.

5,294,577
SEMICONDUCTOR CERAMIC COMPOSITION FOR SECONDARY ELECTRON MULTIPLIERS
Hiroshi Yamamoto, Kyoto, Junichi Nomura, Shiga, Hideaki Niimi, Shiga, Yasunobu Yoneda, Tekefu, all of Japan
Filed Jun. 24, 1993, Ser. No. 82,048
Claims priority, application Japan, Jun. 25, 1992, 4-167400
Int. Cl.[5] C04B *35/49*
U.S. Cl. 501—134 2 Claims



1. A semiconducting ceramic composition for secondary electron multipliers, consisting essentially of 55 to 80 mol % of zinc oxide, 12 to 30 mol % of titanium oxide, and 0.2 to 20 mol % of nickel oxide.

5,294,578
SUPPORTED ACID CATALYSTS, THEIR PREPARATION AND USE IN ORGANIC COMPOUND CONVERSION
Suzzy C. Ho, Plainsboro, and margaret M. Wu, Skillman, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.
Filed Dec. 23, 1992, Ser. No. 996,385
Int. Cl.[5] B01J *29/04*
U.S. Cl. 502—62 15 Claims

1. A method of preparing a catalyst composition consisting essentially of halides of a single metal component anchored on an adsorbent solid by an oxygen-metal bond which comprises contacting an adsorbent inorganic oxide support containing surface hydroxyl groups with organic metal halide, under conditions sufficient for said organic metal halide to react with at least a portion of said surface hydroxyl groups wherein said metal is aluminum, and said adsorbent inorganic oxide support is selected from the group consisting of silica, silica-alumina, clay, crystalline porous silicates, silicoaluminophosphates, titania, vanadia, and rare earth oxides.

5,294,579
L-TYPE ZEOLITE AND CATALYST FOR THE PRODUCTION OF AROMATIC HYDROCARBONS
Hiroshi Ohashi; Hisashi Katsuno, and Michio Sugimoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 810,698, Dec. 19, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,262
Claims priority, application Japan, Feb. 5, 1991, 3-035254; Nov. 12, 1991, 3-295922; Jul. 24, 1992, 4-198194
Int. Cl.[5] B01J *29/32*
U.S. Cl. 502—64 14 Claims

1. A L-type zeolite comprising both a platinum-containing compound and a halogen-containing compound each supported on said zeolite, said zeolite simultaneously satisfies the conditions that (i) said platinum-containing compound supported on said zeolite has a peak intensity of 0.4 or less as determined by X-ray absorption near edge structure (XANES) analysis and (ii) the amount of dealuminization in said zeolite is 3% by weight or less based on the total amount of aluminum therein.

5,294,580
METHOD FOR MAKING ALLOYED CATALYSTS
Bryan F. Dufner, Hartford, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.
PCT No. PCT/US91/04398, § 371 Date Aug. 8, 1991, § 102(e) Date Aug. 8, 1991
Continuation-in-part of Ser. No. 541,869, Jun. 21, 1990, abandoned. This PCT application Jun. 21, 1991, Ser. No. 743,331
Int. Cl.[5] H01M *4/88*
U.S. Cl. 502—101 10 Claims

1. A method for making a noble metal alloyed catalyst using a noble metal having a catalytic activity, and at least one alloying metal, wherein at least one of the alloying metals has at least two valence states with the alloying metal in a low valence state having a solubility in a liquid and having a higher valence state with a higher solubility in the liquid, which comprises:
a. intimately contacting a supporting and a noble metal compound in the liquid;
b. precipitating the noble metal, wherein said noble metal precipitate adsorbs onto said support;
c. reducing the catalytic activity of the noble metal precipitate to inhibit said noble metal precipitate from converting the valence state of the alloying metal to the higher valence state;
d. introducing the soluble alloying metal compound into said liquid to form an alloying metal solution;
e. precipitating said alloying metal, wherein said alloying metal precipitate adsorbs onto said support; and
f. calcining said support with the noble metal and alloying metal precipitates to form an alloyed catalyst;
whereby said soluble alloying metal compounds introduced to said liquid subsequent to the reduction of the catalytic activity of the noble metal precipitate.

5,294,581
PROCESS AND CATALYST FOR PRODUCING MILDLY ELASTOMERIC PRIMARILY ISOTACTIC POLYMERS
Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Division of Ser. No. 484,724, Feb. 26, 1990, Pat. No. 5,118,767. This application Feb. 19, 1992, Ser. No. 837,385
Int. Cl.[5] C08F *4/654*
U.S. Cl. 502—124 6 Claims

1. A catalyst for use in the polymerization to mildly elastomeric primarily isotactic polypropylene or poly-1-butene characterized by intermediate average block lengths which comprises:
(a) The reaction product of a magnesium alkoxide or a magnesium aryl oxide an a tetravalent titanium halide wherein the reaction takes place in the presence of an electron donor,
(b) An organoaluminum compound, and
(c) A selectivity control agent which is selected from the group consisting of pyrazine, 3,4,5-trichloropyridazine, 1,3,5-triazine, phenazine, pyridine, 2,6-dimethylpyriazine, quinazoline, 4,6-dichloropyrimidine, 2-picoline, 2,3,5-trimethylpyrazine, acridine, 2-methylpyrazine, 2,5-dimethylpyrazine, 2,3-dimethylpyrazine, 2,3-dichloroquinoxaline, quinoline, pyridazine, 1,10-phenantholine, 2,4-dichloropyrimidine, 2,6-diphenylpyridine.

5,294,582
UREA-SUPERACID SALTS AND THEIR USE AS A CURING CATALYST OF EPOXY RESINS
Tadafumi Miyazono, Mino, and Koji Tabuchi, Takatsuki, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Division of Ser. No. 872,699, Apr. 24, 1992. This application Jun. 14, 1993, Ser. No. 75,938
Claims priority, application Japan, Apr. 25, 1991, 3-125055
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—164 9 Claims

1. A superacid salt of an N,N'-di- or; N,N,N'-trisubstituted urea produced by reacting an organic isocyanate and a primary or secondary amine, at least one of said isocyanate or said amine being monofunctional.

5,294,583
USE OF COLLOIDAL SILICA SOL AS AN AUXILIARY FOR CATALYSTS
Joachim Pohl, Duesseldorf; Gerd Goebel, Cologne, and Franz-Josef Carduck, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
PCT No. PCT/EP90/02289, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/10509, PCT Pub. Date Jul. 25, 1991
PCT Filed Dec. 21, 1990, Ser. No. 890,603
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1990, 4000692
Int. Cl.[5] B01J *21/08*
U.S. Cl. 502—232 16 Claims

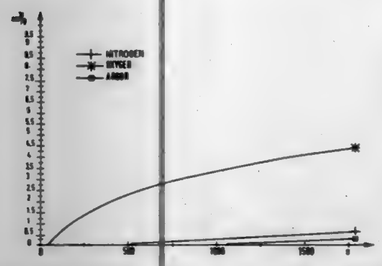
1. A process for the production of catalysts to be exposed to high temperatures of 700° C. to 1,200° C., wherein colloidal silica sols of which the silicon dioxide particles partly contain bound foreign metals are incorporated into a catalyst-forming mass in quantities below 15% by weight, expressed as silicon dioxide and based on the final catalyst, as an additive during production of the catalyst before the catalyst-forming mass is exposed to temperatures which lead to sintering.

5,294,584
PROCESS FOR PRODUCING A DENITRATION CATALYST
Naomi Yoshida; Hitoshi Yamasaki; Ikuhisa Hamada; Yasuyoshi Kato; Kunihiko Konishi; Toshiaki Matsuda, and Yuji Fukuda, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 525,535, May 18, 1990, Pat. No. 5,155,083. This application Oct. 2, 1991, Ser. No. 771,403
Claims priority, application Japan, May 19, 1989, 1-126456; Aug. 1, 1989, 1-200070
Int. Cl.[5] B01J *37/02, 21/06, 21/08, 23/16*
U.S. Cl. 502—242 3 Claims

1. A process for producing a denitration catalyst, comprising the steps of:
(a) immersing a base material comprised of an inorganic fiber cloth in an aqueous slurry containing 5 to 20% by weight of at least one sol-form substance selected from the group consisting of silica sol, titania sol and zirconia sol, as a first component, 20 to 70% by weight of at least one inorganic oxide fine powder selected from the group consisting of titania, zirconia and cordierite, as a second component, and 1 to 3% by weight of at least one organic binder selected from the group consisting of polyvinyl alcohol, polyvinyl acetate and carboxymethyl cellulose, as a third component;
(b) removing superfluous liquid from the resulting base material;
(c) drying the base material;

(d) coating a catalyst paste onto the surface of the dried base material by means of press rollers; and
(e) drying and calcining the resulting material.

5,294,585
PREPARATION OF PARTICULATE COMPOSITE MATERIAL WITH CARBON MATRIX
Serge Moreau, Velizy Villacoublay; Bernard Sardan, Le Chesnay, and Pierre Ehrburger, Didenheim, all of France, assignors to L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Jul. 3, 1991, Ser. No. 725,469
Claims priority, application France, Jul. 17, 1990, 90 09090
Int. Cl.[5] B01J *20/10, 20/08, 20/04, 20/20*
U.S. Cl. 502—413 7 Claims

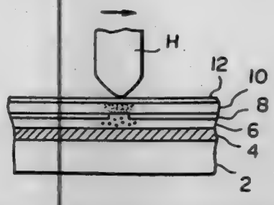


1. Process for the preparation of composite particulate material, which comprises contacting an essentially carbon microporous particulate matrix with a volatile gaseous precursor, said precursor comprising silicon, aluminum, titanium or magnesium, and heat treating the matrix to decompose the precursor on the matrix in situ at the temperature of decomposition of the volatile precursor and form said material, wherein said material includes an essentially carbon microporous phase having a microporous volume between 0.1 and 1 cm^3/g, associated with an amorphous mineral dispersed phase essentially containing a mineral oxide selected from the group consisting of silicon, aluminum, titanium and magnesium oxides, disposed on the carbon phase to a thickness of less than 10 nm.

5,294,586
HYDROGEN-WATER VAPOR PRETREATMENT OF FE-CR-AL ALLOYS
David R. Sigler, Shelby Township, Macomb County, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 25, 1992, Ser. No. 904,289
Int. Cl.[5] B01J *21/04; C23C 8/10*
U.S. Cl. 502—439 20 Claims

1. A method for forming an aluminum oxide film on a substrate formed from a material selected from the group consisting of a steel comprising from about 1.5 weight percent to less than about five weight percent aluminum and an aluminum-coated steel having an average aluminum content of less than about 10 weight percent, said method comprising the steps of:
exposing said substrate to an atmosphere having as its reactive portion a mixture consisting essentially of hydrogen and greater than about 11 ppm water vapor such that said atmosphere has a H_2/H_2O ratio productive of an oxygen partial pressure sufficient to oxidize aluminum present at the surface of said substrate, wherein said H_2/H_2O ratio is less than about 4500;
whereby said step of exposing is a pretreatment step to promote subsequent whisker formation during oxidation of said substrate.

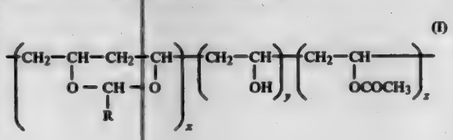
5,294,587
THERMAL RECORDING MEDIUM
Shigeru Nakagami; Haruhiko Ohsawa; Yutaka Takagi; Tadahide Sugimoto; Minoru Fujita, and Yoshihiko Nakahara, all of Tokyo, Japan, assignors to Kyodo Printing Co., Ltd., Tokyo, Japan
PCT No. PCT/JP90/00047, § 371 Date Sep. 17, 1990, § 102(e) Date Sep. 17, 1990, PCT Pub. No. WO90/08042, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 18, 1990, Ser. No. 573,126
Claims priority, application Japan, Jan. 20, 1989, 1-9944
Int. Cl.[5] B41M *5/30, 5/40*
U.S. Cl. 503—204 23 Claims



1. A thermal recording medium comprising (1) a contrasting layer, a heat sensitive softening layer disposed on said contrasting layer and a thin metal layer disposed on said heat sensitive softening layer, said thin metal layer having a thickness of 100 to 2000 Å, for effecting a first thermal recording, said thin metal layer being composed of low-melting metals or low-melting alloys and said contrasting layer having a visual contrast to said thin metal layer; and (2) a heat sensitive color forming layer disposed on said thin metal layer, for effecting a second thermal recording; said first thermal recording being effected by destroying said thin metal layer in defined pattern to disperse fine particles of the melted metal in softened heat sensitive softening layer; and said first and second thermal recordings being effected simultaneously in the same pattern by means of the same heat source, thereby forming a visual pattern with a contrast between (a) a first color of {the undestroyed thin metal layer+the uncolored heat sensitive color forming layer}, and (b) a second color of {the contrasting layer as viewed through the destroyed area of said thin metal layer+the colored heat sensitive color forming layer}.

5,294,588
SHEET FOR SUBLIMATION TRANSFER
Masukuni Mori, and Osamu Sakurai, both of Bisai, Japan, assignors to Tsuyakin Co., Ltd., Aichi, Japan
Filed Jun. 8, 1992, Ser. No. 896,046
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 10 Claims

1. A sheet for sublimation transfer, having a lubricative heat resisting layer on one side of a material sheet and an ink layer formed on the other side of the material sheet, which ink layer is formed by coating a sublimation transfer ink containing binder consisting of polyvinyl acetal resin composed of 80% or more of vinyl acetal group X, 15–20% of vinyl alcohol group Y, and less than 2% of vinyl acetate group Z with respect to a total amount of 100% of said resin, wherein said vinyl acetal group X, vinyl alcohol group Y, and vinyl acetate group Z are expressed by the following formula (I):

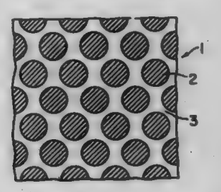

(I)

wherein R is an alkyl group of the formula C_nH_{2n+1}, where n is a positive integer of greater than or equal to 2.

5,294,589
HEAT TRANSFER SHEET
Noritaka N. E. Egashira, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Division of Ser. No. 863,865, Apr. 6, 1992, Pat. No. 5,173,473, which is a division of Ser. No. 500,124, Mar. 28, 1990, Pat. No. 5,124,309. This application Aug. 31, 1992, Ser. No. 937,155
Claims priority, application Japan, Mar. 28, 1989, 1-73745; Jul. 31, 1989, 196774; Oct. 26, 1989, 277106
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 4 Claims

1. A heat transfer sheet comprising:
substrate film;
a dye layer provided on said substrate film, said dye layer comprising a dye, a binder and a sensitizer present in an amount of 1 to 100 parts by weight per 100 parts by weight of said binder, said sensitizer comprising a low molecular weight substance having a melting point from 50° to 150° C.;
wherein said sensitizer and said binder have functional groups substantially bonded to each other.

5,294,590
HEAT TRANSFER IMAGE-RECEIVING SHEETS
Noritaka Egashira; Yoshinori Nakamura, and Ryohei Takiguchi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Division of Ser. No. 609,640, Nov. 6, 1990, Pat. No. 5,185,316. This application Oct. 28, 1992, Ser. No. 967,418
Claims priority, application Japan, Nov. 7, 1989, 1-287963; Dec. 29, 1989, 1-342975
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 9 Claims



1. A heat transfer image-receiving sheet comprising:
a substrate sheet; and
a dye-receiving layer formed on at least one surface of said substrate sheet, said dye-receiving layer comprising a curable resin and a sensitizer distributed to microscopically separated phases in the dye-receiving layer, said sensitizer comprising at least one member selected from the group consisting of a polyurethane oligomer, a polystyrene oligomer, a polyester oligomer, a polyacrylic oligomer, a polyethylene oligomer, a polyvinyl chloride oligomer, a polyvinyl acetate oligomer, an ethylene/vinyl acetate copolymer oligomer, an ethylene/acrylic copolymer oligomer, a fatty acid, a fatty acid amide, a fatty acid ester, an aromatic compound and a wax.

5,294,591
IMAGE-RECEIVING SHEET
Noritaka Egashira, Ichikawa; Yoshikazu Ito, Setagaya; Tatsuya Kita, Shinjuku; Masahisa Yamaguchi, Nerima; Masaki Kutsukake, Fujimi, and Kazunobu Imoto, Kita, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
Continuation of Ser. No. 798,354, Nov. 21, 1991, Pat. No. 5,210,068, which is a continuation of Ser. No. 612,994, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 168,908, Mar. 16, 1988, Pat. No. 5,001,105. This application Jan. 19, 1993, Ser. No. 5,804
Claims priority, application Japan, Mar. 20, 1987, 62-66879; Mar. 20, 1987, 62-66880
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 24 Claims



1. An image-receiving sheet for use in heat transfer recording, comprising:
a base sheet comprising an oriented a film having a porous structure or foamed structure; and
a receiving layer provided on one surface of said base sheet for receiving a dye or a pigment migrating from a heat transfer sheet during said heat transfer recording, the receiving layer comprising a resin for receiving the thus migrated dye or pigment from the heat transfer sheet.

5,294,592
THERMAL-TRANSFER RECORDING SHEET
Michiko Noguchi, Hachioji; Toshifumi Ishikawa, Sagamihara, and Takashi Yamagishi, Yokohama, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Mar. 15, 1993, Ser. No. 31,479
Claims priority, application Japan, Jun. 18, 1992, 4-159463
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 17 Claims

1. A thermal-transfer recording sheet of an aromatic polyester film, wherein at least one surface of said sheet has, as a thermal-transfer ink receiving layer, a coating of a composition comprising (1) a copolyester, (2) a polyolefin fine particle filler and (3) at antistatic compound selected from the group consisting of organic titanate and organic zirconate.

5,294,593
INDUCING DORMANCY IN NON DORMANT SEEDS
Anwar A. Khan, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed May 14, 1992, Ser. No. 882,962
Int. Cl.[5] A01N *43/54, 43/64, 43/647*
U.S. Cl. 504—100 23 Claims

1. A method of inducing releasable dormancy in non-dormant plant seeds for which gibberellin synthesis is necessary for germination, comprising the steps of
(a) soaking said seeds in a solution of a gibberellin synthesis inhibitor of concentration such and at a temperature such and for a time such as to induce dormancy therein, said gibberellin synthesis inhibitor being one that inhibits the gibberellin biosynthesis pathway from ent-kaurene to ent-kaurenoic acid,
(b) washing to remove the gibberellin synthesis inhibitor from the seeds, and
(c) drying the seeds to their weight prior to soaking in step (a).

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5,294,594

WATER DISPERSIBLE GRANULAR HERBICIDAL COMPOSITIONS COMPRISING DINITROANILINE HERBICIDES, MONTMORILLONITE CARRIER AND WATER-SWELLABLE POLYMER

Joseph Kimler, Yardville, and Robert Kubisch, Martinsville, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 23, 1992, Ser. No. 996,221

Int. Cl.[5] A01N *25/08, 33/18*

U.S. Cl. 504—116 **14 Claims**

1. A water dispersible granular composition comprising on a weight to weight basis upon 20% to 90% of a dinitroaniline herbicide; about 5% to 25% of a montmorillonite carrier; about 1.0% to 7.5% of a wetting agent; about 2% to 10% of a suspension agent; and about 0.5% to 20% of a water swellable polymer.

5,294,595

HERBICIDAL ARYL TRIAZOLINONES

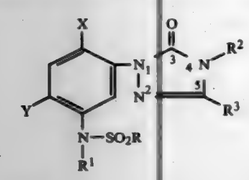
George Theodoridis, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 942,095, Sep. 9, 1992, Pat. No. 5,214,154, which is a division of Ser. No. 708,966, May 31, 1991, Pat. No. 5,174,809, which is a division of Ser. No. 455,894, Dec. 28, 1989, Pat. No. 5,041,155, which is a continuation-in-part of Ser. No. 332,835, Apr. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 946,667, Dec. 31, 1986, Pat. No. 4,818,275, which is a continuation-in-part of Ser. No. 811,615, Dec. 20, 1985, abandoned. This application Mar. 22, 1993, Ser. No. 34,044

Int. Cl.[5] A01N *43/80, 43/653, 37/18, 33/06*

U.S. Cl. 504—139 **7 Claims**

1. An herbicidal composition comprising an herbicidally effective amount of a mixture of a compound of the formula



in which

X is Br, Cl, F or haloalkyl;

Y is Br, Cl, F, methyl, haloalkyl, nitro, or a radical of the formula R^8OCH_2—, R^8SCH_2—, R^8SOCH_2, or $R^8SO_2CH_2$— where R^8 is C_1–C_3alkyl, $C_2$1∝C_5alkenyl, C_3–C_5alkynyl, phenyl, or halogen-, alkyl-, or haloalkyl-substituted phenyl;

R^3 is halogen, alkyl, haloalkyl, cyanoalkyl, phenylalkyl, alkoxyalky, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylthioalkyl, alkylsulfinylalkyl or alkylsulfonylalkyl;

R^2 is alkyl, alkoxy, haloalkyl, alkenyl, alkynyl, cyanoalky, thiocyanoalkyl, or a group of the formula -alkylene-Y'-R^5 in which said alkylene group has 1 to 5 carbon atoms, Y' is oxygen or $S(O)_r$ in which r is 0 to 2, and R^5 is alkyl, alkenyl or alkynyl;

R is dialkylamino, carboxymethyl, hydroxy, haloalkyl, phenyl, substituted phenyl, or benzyl, wherein the phenyl substituents are halogen, alkyl, alkoxy, cyano, cyanomethyl, nitro, amino, phenylamino, mono- or dialkylamino, carboxy, alkoxycarbonyl, alkoxyalkyl, alkoxycarbonylalkyl, alkoxyalkyl, benzyl, or hydroxy;

R^1 is hydrogen, an alkali or alkaline-earth metal, ammonium sulfonium or sulfoxonium salt-forming group, alkyl, benzyl, haloalkyl, alkoxy, SO_2R, alkynyl, alkenyl, a group of the formula -alkylene-SO_2R or alkoxymethyl, wherein the alkyl, alkenyl, alkynyl and alkylene radicals of X, Y, R, R^1, R^2, R^3, and R^5 have no more than 10 carbon atoms and an additional herbicide in admixture with a suitable carrier.

5,294,596

HETEROCYCLYLTRIAZOLINONES AND HERBICIDAL USE

Wilhelm Haas, Pulheim; Kurt Findeisen; Karl-Heinz Linker, both of Leverkusen; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

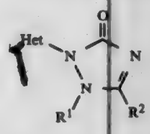
Filed Jul. 21, 1993, Ser. No. 95,628

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1992, 4224929

Int. Cl.[5] A01N *43/653, 43/84;* **C07D** *413/04, 417/04*

U.S. Cl. 504—225 **15 Claims**

1. A heterocyclyltriazolinone of the general formula (I)



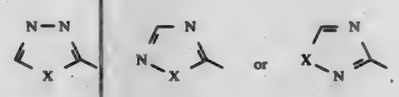
(I)

wherein

R^1 represents hydrogen, or represents alkyl or cycloalkyl, each of which is optionally substituted,

R^2 represents hydrogen, hydroxyl, mercapto or halogen or represents alkyl, alkenyl, alkinyl, cycloalkyl, alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, arylalkyl, amino or heterocyclyl, each of which is optionally substituted, and

Het represents an optionally substituted heterocycle of the formula



in which

X in each case represents oxygen, sulphur, an NH group or an N-alkyl group.

5,294,597

HERBICIDAL CARBOXAMIDE DERIVATIVES

Christopher J. Foster, Faversham; Terence Gilkerson, Canterbury, and Richard Stocker, Rochester, all of England, assignors to Shell Research Limited, United Kingdom

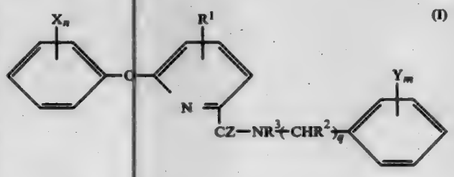
Filed Mar. 4, 1991, Ser. No. 663,722

Claims priority, application United Kingdom, Mar. 16, 1990, 90059650

Int. Cl.[5] A01N *43/40;* **C07D** *213/64*

U.S. Cl. 504—255 **12 Claims**

1. A compound of the formula I



(I)

in which

Z represents an oxygen or sulphur atom;

R^1 represents a hydrogen or halogen atom or C_{1-6} alkyl or halo (C_{1-6}) alkyl group;

R^2 represents a hydrogen atom or a C_{1-6} alkyl group;

q is 0 or 1;

R^3 represents a hydrogen atom or a C_{1-6} alkyl or C_{2-6} alkenyl group;

X independently represents a halogen atom or an optionally substituted C_{1-6} alkyl or C_{1-6} alkoxy group, or a C_{2-6} alkenyloxy, C_{2-6} alkynyloxy, cyano, carboxy, (C_{1-6} alkoxy) carbonyl, (C_{1-6} alkylthio) carbonyl, (C_{1-6} alkyl) carbonyl, amido, (C_{1-6} alkyl) amido, nitro, C_{1-6} alkylthio, halo (C_{1-6} alkyl) thio, C_{2-6} alkenylthio, C_{2-6} alkynylthio, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, (C_{1-6} alkyl) oximino (C_{1-6} alkyl) or (C_{2-6} alkenyl) oximino (C_{1-6} alkyl) group;

n is 0 or an integer from 1 to 5;

Y independently represents a halogen atom or a C_{1-6} alkyl, nitro, cyano, halo (C_{1-6}) alkyl, C_{1-6} alkoxy or halo (C_{1-6}) alkoxy group;

and m is 0 or an integer from 1 to 5,

said optional substituents being selected from halogen, phenyl, cyano, amino, hydroxy, C_{1-6} alkoxy, and (C_{1-6} alkyl) amino.

5,294,598

HERBICIDAL 3-SUBSTITUTEDBENZOYL-BICYCLO[4,1,0]HEPTANE-2,4-DIONE DERIVATIVES

Hiroyuki Adachi; Katsunori Tanaka; Takashi Kawana, and Hideo Hosaka, all of Odawara, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

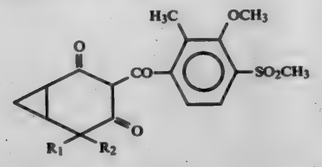
Continuation-in-part of Ser. No. 651,266, Jun. 29, 1990, Pat. No. 5,228,898. This application Jan. 9, 1992, Ser. No. 819,150

Claims priority, application Japan, Jun. 4, 1991, 3-159689; Jul. 9, 1991, 3-193595

Int. Cl.[5] A01N *41/00;* **C07C** *317/14*

U.S. Cl. 504—315 **16 Claims**

1. Compound of the formula



or an optical isomer or a salt thereof, wherein one of R_1 or R_2 represents methyl and the other represents hydrogen or lower alkoxycarbonyl.

5,294,599

PROCESSES FOR PREPARING OXIDE POWDERS AND SUPERCONDUCTING OXIDES

Shuichi Shibata; Takeshi Kitagawa; Hisaki Okazaki; Takao Kimura, all of Mito, and Masaharu Horiguchi, Naka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

PCT No. PCT/JP88/00585, § 371 Date Feb. 15, 1989, § 102(e) Date Feb. 15, 1989, PCT Pub. No. WO88/10233, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 16, 1988, Ser. No. 313,965

Claims priority, application Japan, Jun. 17, 1987, 62-150784; Nov. 24, 1987, 62-293950; Jan. 20, 1988, 63-8473; Feb. 8, 1988, 63-25605; Jun. 3, 1988, 63-135653; Jun. 3, 1988, 63-135654; Jun. 3, 1988, 63-135655

Int. Cl.[5] H01B *12/06;* **H01L** *39/12;* **C01G** *3/00;* **C04B** *41/89*

U.S. Cl. 505—1 **14 Claims**

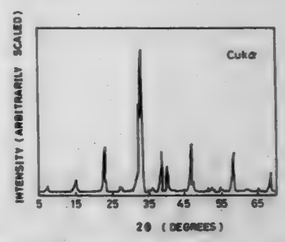
1. A process for preparing a superconducting oxide, comprising the steps of:

a. separately dissolving in respective solvents alkoxides of a plurality of elements which constitute the superconducting oxide to provide respective alkoxide solutions;

b. mixing the respective alkoxide solutions together to provide a mixed solution;

c. subjecting the mixed solution to hydrolysis to provide a sol;

d. evaporating the respective solvents from the sol to provide a concentrate;



e. heating the concentrate at a temperature effective to provide an oxide powder;

f. mixing the oxide powder with at least one of at least one additional oxide and at least one carbonate of elements which constitute the superconducting oxide to provide a mixed oxide powder;

g. forming the mixed oxide powder into a continuous body; and

h. sintering the continuous body.

5,294,600

SUPERCONDUCTING MATERIAL COMPRISING $RB_xCS_yC_{60}$.

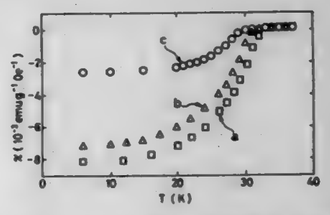
Katsumi Tanigaki; Thomas Ebbesen; Sadanori Kuroshima, and Junichiro Mizuki, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,627

Claims priority, application Japan, Jul. 3, 1991, 3-163058; Jul. 3, 1991, 3-163059

Int. Cl.[5] C01B *31/00;* **H01L** *39/12*

U.S. Cl. 505—1 **13 Claims**



1. A superconducting material consisting essentially of a fullerene whose chemical composition is C_{60} and rubidium (Rb) and cesium (Cs) doped with said fullerene, the superconducting composition having a chemical composition of $Rb_xCs_yC_{60}$, where x and y are positive integers and the sum of x+y is approximately 3.

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5,294,601

HIGH-TEMPERATURE SUPERCONDUCTOR COMPRISING BARIUM SULFATE, STRONTIUM SULFATE OR MIXTURES THEREOF AND A PROCESS FOR ITS PREPARATION

Joachim Bock, and Eberhard Preisler, both of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Filed Jul. 10, 1992, Ser. No. 911,466

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124823

Int. Cl.[5] **C01F** *11/02;* **C01G** *3/02, 29/00;* **H01L** *39/12*

U.S. Cl. 505—1 **13 Claims**

1. A composition comprising (1) a high-temperature superconductor composed of the oxides of bismuth, strontium, calcium, copper and lead, having the composition $Bi_{2-a+b+c}Pb_a(Sr,Ca)_{3-b-c}Cu_{2+d}O_x$ where a=O to 0.7; b+c=O to 0.5; d=−0.1 to 0.1 and x=7 to 10, and a Sr:Ca ratio of 2.8:1 to 1:2.8, and (2) sulfates selected from the group consisting of strontium sulfate, barium sulfate and mixtures thereof, wherein the strontium sulfate content is 3 to 30% by weight when present in the composition and wherein its barium sulfate content is 3 to 20% by weight when present in the composition.

5,294,602

3-(HEXENYLOXY)-PROPANE-NITRILE, ITS PRODUCTION AND USE

Ernst-Joachim Brunke, Pippingsbusch 3, 3450 Holzminden, and Karl-Georg Fahlbusch, Allenbergstr. 40, 3470 Hoexter 1, both of Fed. Rep. of Germany

Filed Nov. 20, 1991, Ser. No. 795,108

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1990, 4037345

Int. Cl.[5] **A61K** *7/46;* **C07C** *255/13*

U.S. Cl. 512—6 **2 Claims**

1. A composition having an odor with leafy green notes comprising an amorphous mass uniformity mixed with an odor-producing amount of 3-(hexenyloxy)-propane-nitrile of the general formula

$$R^3—O—CHR^1—CHR^2—CN$$

in which R^3 is an unbranched hexenyl residue and R^1 and R^2 are selected from the group consisting of H and CH_3.

5,294,603

PHARMACEUTICAL COMPOSITIONS CONTAINING DIDEMNINS

Kenneth L. Rinehart, Urbana, Ill., assignor to The Board of Trustees of The University of Illinois, Urbana, Ill.

Continuation-in-part of Ser. No. 482,372, Feb. 20, 1990, Pat. No. 5,137,870, which is a division of Ser. No. 137,484, Dec. 23, 1987, Pat. No. 4,950,649, which is a continuation-in-part of Ser. No. 894,442, Jul. 31, 1986, abandoned, which is a continuation of Ser. No. 663,824, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 449,296, Dec. 13, 1982, abandoned, which is a continuation of Ser. No. 299,894, Sep. 8, 1981, abandoned, which is a division of Ser. No. 217,768, Dec. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 186,932, Sep. 12, 1980, abandoned. This application Feb. 18, 1992, Ser. No. 837,803

The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.

Int. Cl.[5] **C07K** *5/12;* **A61K** *37/00*

U.S. Cl. 514—10 **7 Claims**

1. A pharmaceutical composition comprising a didemnin, in combination with a pharmaceutically acceptable carrier, excipient or diluent.

5,294,604

METHOD OF TREATING OCULAR DISEASES BY PERIOCULAR ADMINISTRATION OF CYCLOSPORINE A OR G

Robert B. Nussenblatt, Bethesda, and Alan G. Palestine, Potomac, both of Md., assignors to The Government of the United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Dec. 20, 1989, Ser. No. 453,793

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/06, 5/12*

U.S. Cl. 514—11 **16 Claims**

1. A method for treating ocular disease which comprises administering to a patient by periocular injection cyclosporine G in a pharmaceutically acceptable carrier in an amount effective for treating ocular disease.

5,294,605

AMPHIPHILIC PEPTIDE COMPOSITIONS AND ANALOGUES THEREOF

Richard A. Houghten, Solana Beach, and Sylvie Blondelle, La Jolla, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 554,422, Jul. 19, 1990, abandoned. This application Jul. 8, 1991, Ser. No. 725,331

Int. Cl.[5] **A61K** *37/02;* **C07K** *7/08, 7/10*

U.S. Cl. 514—13 **31 Claims**

1. A process for inhibiting growth of a target cell comprising:

administering to a host a biologically active amphiphilic peptide, said peptide including the following structural formula:

$$R_1\text{-}R_1\text{-}R_2\text{-}R_1\text{-}R_1\text{-}R_2\text{-}R_2\text{-}R_1\text{-}R_1\text{-}R_2\text{-}R_2\text{-}R_1\text{-}R_2\text{-}R_2,$$

wherein $-R_1$ is a hydrophobic amino acid, and $-R_2$ is a basic hydrophilic or neutral hydrophilic amino acid, said peptide being administered in an amount effective to inhibit growth of a target cell in a host, wherein said hydrophobic amino acids are selected from the group consisting of Ala, Cys, Phe, Gly, Ile, Leu, Met, methionine sulfoxide, Val, Trp, and Tyr; said basic hydrophilic amino acids are selected from the group consisting of Lys, Arg, His, orn, homoarginine 2,4-diaminobutyric acid, and p-aminophenylalanine; and said neutral hydrophilic amino acids are selected from the group consisting of Asn, Gln, Ser, and Thr.

5,294,606

ISOTONIC ENERGY COMPOSITION AND METHOD TO USE SAME

Carl Hastings, Glencoe, Mo., assignor to Reliv' International Inc., Chesterfield, Mo.

Filed Nov. 24, 1992, Ser. No. 981,747

Int. Cl.[5] **A61K** *31/715, 31/34, 31/19, 31/07*

U.S. Cl. 514—53 **10 Claims**

1. An isotonic energy composition comprising per serving:

a) carbohydrates ranging from about 15.3 g to 18.1 g, said carbohydrates consisting of about 80% by weight fructose and about 20% by weight maltodextrin; and

b) zinc monomethionine ranging from about 2–15 mg, as zinc, niacin bound chromium ranging from about 25 to 200 μgm as chromium, calcium ranging from about 10 to 500 mg, potassium ranging from about 25 to 300 mg, magnesium ranging from about 10 to 100 mg and sodium ranging from about 10–200 mg.

c) Vitamin C ranging from 10 to 200 mg, Beta carotene ranging from 0.1 to 1000 mg and citric acid ranging from 0.5 g to 1.0 g.

5,294,607

DRY EYE TREATMENT PROCESS AND SOLUTION

Thomas Glonek, Oak Park, Ill.; Jack V. Greiner, Winchester, and Donald R. Korb, Boston, both of Mass., assignors to Ocular Research of Boston, Inc., Boston, Mass.

Continuation of Ser. No. 638,215, Jan. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 529,657, May 29, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 898,375

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[5] **A61K** *31/685, 31/66, 31/20*

U.S. Cl. 514—76 **46 Claims**

1. An artificial tear film over the aqueous layer of the eye comprising a complex phospholipid having a net charge over said aqueous layer and a layer of an essentially non-polar oil over said layers, said oil layer being present in an amount sufficient to form a tear film over the ocular surface and in a volume that does not exceed about 25 microliters.

5,294,608

GUANIDINOALKYL-1,1-BISPHOSPHONIC ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Hans-Jochen Lang, Hofheim am Taunus; Christoph Naumann, Niedernhausen, both of Fed. Rep. of Germany; Denis Carniato, Clamart; Anne-Marie Moura, Moura, both of France; Ryoichi Satoh, and Masakazu Katoh, both of Saitama, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

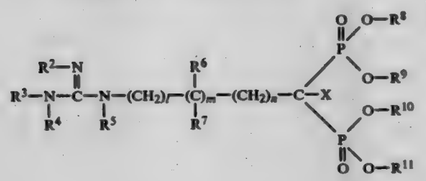
Filed Dec. 10, 1992, Ser. No. 988,890

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1991, 4140908; Apr. 9, 1992, 4211976

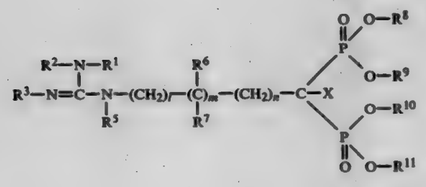
Int. Cl.[5] **A61K** *31/66, 31/675;* **C07F** *9/40, 9/38, 9/6506*

U.S. Cl. 514—108 **9 Claims**

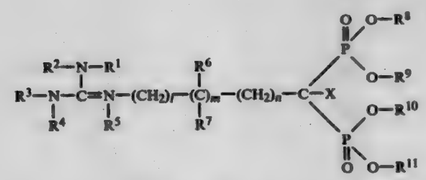
1. A compound of the formula Ia, Ib or Ic



(Ia)



(Ib)



(Ic)

or a physiologically tolerable salt of the compound of the formula Ia, Ib or Ic, in which R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are identical or different and independently of one another have the meaning below

a) a hydrogen atom,

b) $(C_1–C_7)$-alkyl, straight-chain or branched,

c) $(C_1–C_7)$-alkyl, straight-chain or branched, mono- or polysubstituted by

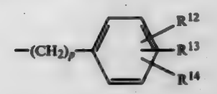
1) a halogen atom,

d) $(C_3–C_{10})$-cycloalkyl,

e) $(C_3–C_{10})$-cycloalkyl, mono- or polysubstituted by

1) $(C_1–C_4)$-alkyl, straight-chain or branched,

f) a radical of the formula II



(II)

in which R^{12}, R^{13} and R^{14} are identical or different and independently of one another have the meaning below

1) a hydrogen atom,

2) a halogen atom,

3) $(C_1–C_5)$-alkyl, straight-chain or branched,

4) $(C_1–C_5)$-alkyl, straight-chain or branched, mono- or polysubstituted by

4.1 a halogen atom,

5) $—(SO_2)—CH_3$ or

6) $—O—CH_3$,

and p is zero, 1, 2, 3 or 4

g) R^2 and R^3, R^2 and R^5 or R^4 and R^5, together with the two nitrogen atoms to which they are bonded, form

1) a monocyclic 5-, 6- or 7-membered heterocyclic ring, where the said ring is saturated or unsaturated and mono- or polysubstituted by

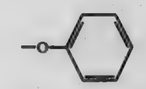
1.1 a hydrogen atom,

1.2 a halogen atom,

1.3 $—O—(C_1–C_5)$-alkyl,

1.4 oxo or

1.5

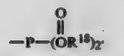


2) a bicyclic 9- or 10-membered heterocyclic ring system, where this ring system is unsaturated and mono- or polysubstituted as defined in g) 1.1 to g) 1.5 or 2 carbon atoms in this ring system are replaced by nitrogen atoms, or

h) R^1 and R^2 or R^3 and R^4, together with the nitrogen atoms to which they are bonded, form a mono- or bicyclic 3- to 10-membered ring, where the ring is saturated or unsaturated and mono- or polysubstituted as defined in g) 1.1 to g) 1.5,

i) R^1, R^2, R^3 or R^4 is a mono- or bicyclic 3- to 10-membered ring, where the ring is saturated or unsaturated and mono- or polysubstituted as defined in g) 1.1 to g) 1.5, or

j) R^2 is



where R^{18} is

a) a hydrogen atom,

b) $(C_1–C_5)$-alkyl, straight-chain or branched, or

c) phenyl,

l is an integer from 0 to 7,

m is zero, 1 or 2,

n is an integer from 0 to 7,

the sum of the numbers l, m and n is equal to 10 or less than 10,

R^8, R^9, R^{10} and R^{11} are identical or different and independently of one another have the meaning below

a) a hydrogen atom,

b) (C_1–C_5)-alkyl, straight-chain or branched, or
c) phenyl,
X is
a) a hydrogen atom,
b) hydroxyl,
c) a halogen atom, or
d) (C_1–C_4)-alkyl, in the case in which l, m and n are zero, excluding the compound tetraethyl 1-((aminoiminomethyl-)amino)methane-1,1-bisphosphonate.

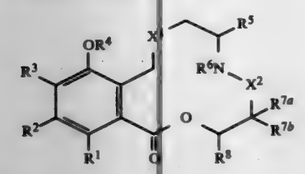
5,294,609

DNA GYRASE INHIBITORS AND PHARMACEUTICAL PREPARATIONS THEREFOR

Mikio Arisawa, Kamakura, Japan; Erwin Götschi; Paul Hebeisen, both of Reinach, Switzerland; Tsutomu Kamiyama, Yokohama, Japan; Helmut Link; Raffaello Masciadri, both of Basel, Switzerland; Hisao Shimada, Fujisawa, and Junko Watanabe, Yokohama, both of Japan, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

PCT No. PCT/EP92/00809, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO92/18490, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 9, 1992, Ser. No. 952,537
Claims priority, application European Pat. Off., Apr. 17, 1991, 91106105.9
Int. Cl.[5] C07D *291/08;* A61K *31/395*
U.S. Cl. 514—183 **23 Claims**

1. Bicyclic derivatives of the formula



I

wherein
X^1 is —S— or —SO—;
X^2 is —CO— or —CS—;
R^1 is hydrogen, halogen or lower alkyl optionally substituted by halogen or lower alkoxy;
R^2 and R^3 are each independently hydrogen, lower alkyl, halogen, amino, lower alkylamino, di-lower alkylamino, acylamino, lower alkoxy, lower alkoxymethoxy or a group OR^4;
R^4 is hydrogen or an easily hydrolyzable group;
R^5 is hydrogen, optionally esterified carboxy or amidated (thio)carboxy, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted acyl or heterocyclyl;
R^6 and R^{7a} are each independently hydrogen or lower alkyl;
R^{7b} is hydrogen, optionally substituted hydroxy, —NR—A or —N=B, in which R is hydrogen or lower alkyl, A is hydrogen, optionally substituted alkyl, lower cycloalkyl, iminoyl, (thio)acyl, esterified carboxy or amidated (thio)-carboxy and B is lower alkylidene;
R^{7a} and R^{7b} together represent oxo, lower alkoxycarbonyl-methylidene or optionally substituted hydroxyimino; and
R^8 is hydrogen, optionally substituted alkyl, optionally esterified carboxy or amidated (thio)carboxy; provided that no more than two of R^1–R^3 are nitrogen-containing groups; no more than two of R^1–R_3 are oxygen containing groups and no more than two of R^1–R^3 are either nitrogen containing or oxygen containing groups;
and pharmaceutically acceptable salts of the compounds of formula I carrying an acidic and/or basic substituent.

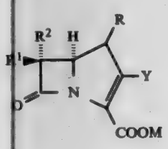
5,294,610

2-(AZA-9-FLUORENONYL)CARBAPENEM ANTIBACTERIAL AGENTS

Frank P. DiNinno, Old Bridge, and Ravindra N. Guthikonda, Edison, both of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

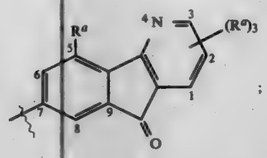
Filed Oct. 15, 1992, Ser. No. 961,571
Int. Cl.[5] C07D *487/00;* A01N *43/00;* A01K *31/395*
U.S. Cl. 514—210 **16 Claims**

1. A compound of the formula:

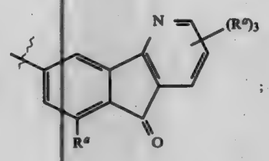


I

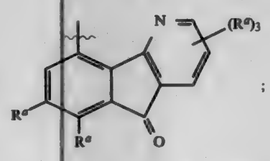
wherein:
Y is:



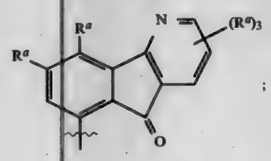
a)



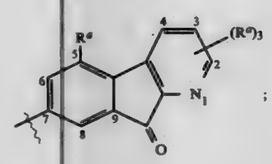
b)



c)

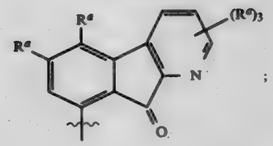


d)

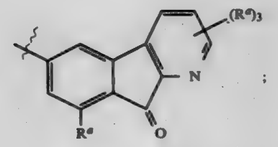


e)

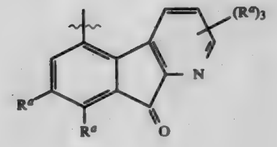
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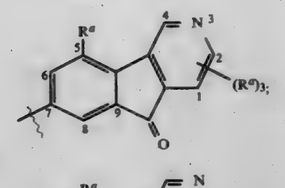
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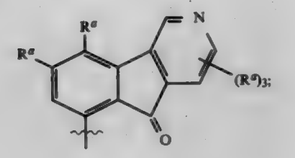
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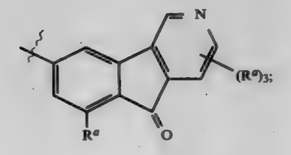
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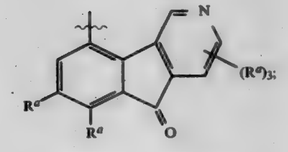
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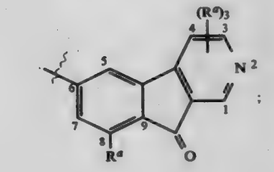
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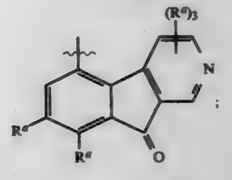
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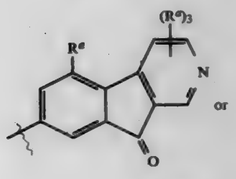
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f)



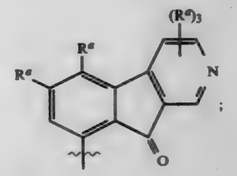
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g)



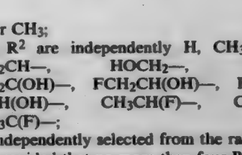
or

h)



;

i)



;

n)

;

o)

or

p)

;

R is H or CH_3;
R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_3C(F)$—;

j) R^a are independently selected from the radicals set out below, provided that no more than four R^a substituents are other than hydrogen:
a) hydrogen;
b) a trifluoromethyl group: —CF_3;
c) a halogen atom: —Br, —Cl, —F, or —I;
d) C_1–C_4 alkoxy radical: —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

k) R^q is a member selected from the group consisting of —OH, —OCH_3, —CN, —$C(O)NH_2$, —$OC(O)NH_2$, —CHO, —$OC(O)N(CH_3)_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$, (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen or an alkali metal);

l) e) a hydroxy group: —OH;
f) a carbonyloxy radical of formula —$O(C{=}O)R^z$, where R^z is C_1–C_4 alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;
g) a carbamoyloxy radical of formula —$O(C{=}O)N(R^y)R^z$ where R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form

m) a ring (optionally substituted with R^q as defined above) or together form a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or —$S(O)_2$— to form a ring (where the ring is optionally mono-substituted with R^q as defined above);
h) a sulfur radical: —$S(O)_n$—R^z where n=0–2, and R^z is defined above;
i) a sulfamoyl group; —$SO_2N(R^y)R^z$ where R^y and R^z are as defined above;
j) azido: N_3;

VOL 1160 ISS 3 MR 15 1994 UMI

k) a formamido group: —N(R^f)(C=O)H, where R^f is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;
l) a (C_1–C_4 alkyl)carbonylamino radical: —N(R^f)(C=O)C_{1-4} alkyl, where R^f is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
m) a (C_1–C_4 alkoxy)carbonylamino radical: —N(R^f)(C=O)OC_{1-4} alkyl, where R^f is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
n) a ureido group: —N(R^f)(C=O)N(R^j)R^z where R^f, R^j and R^z are as defined above;
o) a sulfonamido group: —N(R^f)SO_2R^z, where R^z and R^f are as defined above;
p) a cyano group: —CN;
q) a formyl or acetalized formyl radical: —(C=O)H or —$CH(OCH_3)_2$;
r) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: —$C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
s) carbonyl radical: —(C=O)R^z, where R^z is as defined above;
t) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: —(C=NOR^j)R^j where R^j and R^z are as defined above, except they may not be joined together to form a ring;
u) a (C_1–C_4 alkoxy)carbonyl radical: —(C=O)OC_{1-4} alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
v) a carbamyl radical: —(C=O)N(R^j)R^z where R^j and R^z are defined above;
w) an N-hydroxycarbamoyl or N(C_{1-4} alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: —(C=O)-N(OR^j)R^z where R^j and R^z are as defined above, except they may not be joined together to form a ring;
x) a thiocarbamoyl group: —(C=S)N(R^j)R^z where R^j and R^z are as defined above;
y) carboxyl: —$COOM^b$, where M^b is as defined above;
z) thiocyanate: —SCN;
aa) trifluoromethylthio: —SCF_3;
ab) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;
ac) an anionic function selected from the group consisting of:
phosphono [P=O(OM^b)$_2$;
alkylphosphono {P=O(OM^b)-[O(C_1–C_4 alkyl)]};
alkylphosphinyl [P=O(OM^b)-(C_1–C_4 alkyl)];
phosphoramido [P=O(OM^b)N(R^j)R^z and P=O-(OM^b)NHR^z];
sulfino (SO_2M^b);
sulfo (SO_3M^b);
acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^j)R^z$, $SO_2NM^bCON(R^j)R^z$; and SO_2NM^bCN, where
R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^j and R^z are as defined above;
ad) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH, or N(C_1–C_4 alkyl) and in which one additional carbon may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;
ae) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents b) to ad) above and phenyl which is optionally substituted by R^q as defined above;
af) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents b) to ad) above;
ag) C_1–C_4 alkyl radical;
ah) C_1–C_4 alkyl mono-substituted by one of the substituents b)–ad) above; or
ai) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from S and NR^f (where R^f is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents b) to ah) above;
M is:
i) hydrogen;
ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group; or
iii) an alkali metal or other pharmaceutically acceptable cation.

5,294,611

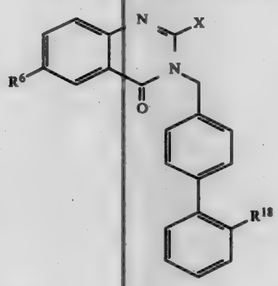
ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

Aranapakam M. Venkatesan, Elmhurst, and Jeremy I. Levin, Nanuet, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

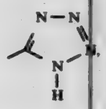
Filed Apr. 23, 1993, Ser. No. 52,942
Int. Cl.[5] A61K *31/55, 31/505;* **C07D** *498/04, 498/08*
U.S. Cl. 514—211 **49 Claims**

1. A quinazolinone compound having the formula:

FORMULA I

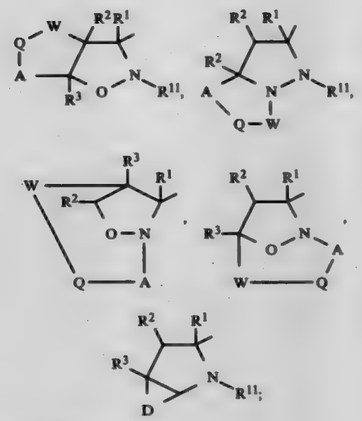


wherein
R^{18} is



—CO_2H, OR —$NHSO_2CF_3$;

X is lower alkyl of 3 to 5 carbon atoms;
R^6 is:



A is —$(CH_2)_n$—;
n is 1, 2, 3, or 4;
W is —CH_2— or



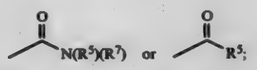
or A and W are each



and are connected by a —$(CH_2)_s$— bridge, wherein S=1, 2 or 3;
Q is —O—, —CH_2— or



D is —$(CH_2)_m$—;
m is 3 or 4;
R^1 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^5, —CO_2R^5, —CN, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), pyridinyl, thienyl, furyl, —CHO, —CO_2R^5, —CN,



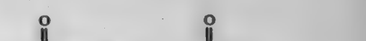
R^2 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR_5, —CO_2R^5, —CN, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), pyridinyl, thienyl, furyl, —CHO, —CO_2R^5, —CN,



R^3 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl, —OR^5, —$N(R^5)(R^7)$, —CO_2R^5, —CH_2OR^5, —CN, —CHO



R^5 is H, lower alkyl of 1 to 4 carbon atoms;
R^{11} is H, lower alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, P, Cl, or Br), pyridinyl, thienyl, furyl, benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), —CO_2R^5, —SO_2R^{10},



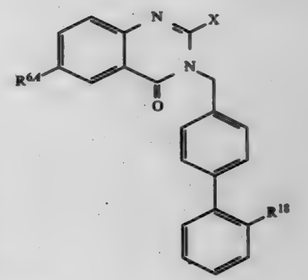
R^7 is H, lower alkyl of 1 to 4 carbon atoms;
$R^8$is H, —CO_2R^5, —SO_2R^{10},



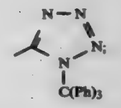
R^{10} is lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br); or pharmaceutically acceptable salts thereof.

41. A quinazolinone compound having the formula:

FORMULA I

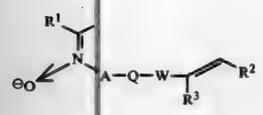


wherein:
R^{18} is —CN or



X is straight or branched alkyl of 3 to 5 carbon atoms;

$R^{6\beta}$ is:



A is $-(CH_2)_n-$;
n is 1, 2, 3 or 4;
W is $-CH_2-$ or



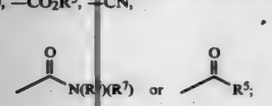
or A and W are each



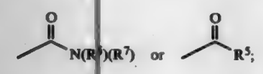
and are connected by a $-(CH_2)_s-$ bridge, where s=1, 2 or 3;
Q is —O—, $-CH_2-$ or



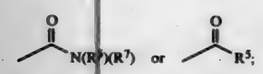
R^1 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with $-OR^5$, $-CO_2R^5$, —CN, phenyl, substituted phenyl (substituted selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl, —CHO, $-CO_2R^5$, —CN,



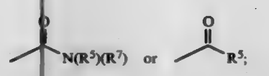
R^2 is H, lower alkyl of 1 to 4 carbon atoms, (optionally substituted with $-OR^5$, $-CO_2R^5$, —CN, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), pyridinyl, thienyl, furyl, —CHO, $-CO_2R^5$, —CN or



R^3 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl, $-OR^5$, $-N(R^5)(R^7)$, $-CO_2R^5$, $-CH_2OR^5$, —CN, —CHO,

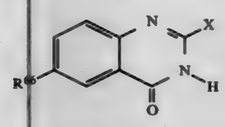


R^5 is H, lower alkyl of 1 to 4 carbon atoms;
R^7 is H, lower alkyl of 1 to 4 carbon atoms;
R^8 is H, $-CO_2R^5$, $-SO_2R^{10}$,

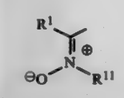


R^{10} is lower alkyl of 1 to 4 carbon atoms phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl or Br).

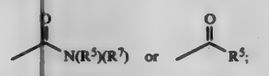
42. A quinazolinone compound having the formula



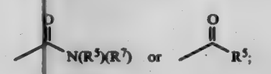
X is straight or branched alkyl of 3 to 5 carbon atoms;
R^{66} is:



R^1 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with $-OR^5$, $-CO_2R^5$, —CN, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furyl, —CHO, $-CO_2R^5$, —CN



R^5 is H, lower alkyl of 1 to 4 carbon atoms;
R^7 is H, lower alkyl of 1 to 4 carbon atoms;
R^{11} is H, lower alkyl of 1 to 4 carbon atoms, cyclo alkyl of 5 or 6 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl or Br), pyridinyl, thienyl, furyl, benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl or Br), $-CO_2R^5$, $-SO_2R^{10}$,



R^{10} is lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoro methyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl or Br).

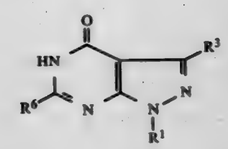
5,294,612

6-HETEROCYCLYL PYRAZOLO [3,4-D]PYRIMIDIN-4-ONES AND COMPOSITIONS AND METHOD OF USE THEREOF

Edward R. Bacon; Baldev Singh, both of East Greenbush, and George Y. Lesher, deceased, late of Schodack, all of N.Y. by Louise E. Lesher, executrix , assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Mar. 30, 1992, Ser. No. 859,770
Int. Cl.[5] A61K *31/505*
U.S. Cl. 514—234.2 **15 Claims**

1. A compound of the formula



wherein:
R^1 is hydrogen, alkyl, C_4 to C_7 cycloalkyl, C_4 to C_7 cycloalkyl substituted by C_1 to C_{10} alkyl or hydroxyl, 2- or 3-tetrahydrofuranyl, 3-tetrahydrothienyl 1,1, -dioxide, C_4 to C_7 cycloalkyl-C_1 to C_{10} alkyl, carboxy-C_1 to C_{10} alkyl, carbo-C_1 to C_4 lower-alkoxy-C_1 to C_{10} alkyl, dialkylamino C_1 to C_{10} alkyl, phenyl-C_1 to C_4 lower-alkyl, phenyl-C_1 to C_4 lower-alkyl in which the phenyl ring is substituted in the 2, 3, or 4-position by one or two substituents, the same or different, selected from the group consisting of amino, halogen, C_1 to C_{10} alkyl, carboxyl, carbo-C_1 to C_4 lower-alkoxy, carbamoyl, $NHSO_2$-(quinolinyl), nitro and cyano:
R^3 is, C_1 to C_4 lower-alkyl, phenyl-C_1 to C_4 lower-alkyl, lower-alkoxyphenyl-C_1 to C_4 lower-alkyl, diC_1 to C_4 lower-alkoxy-phenyl-C_1 to C_4 lower-alkyl, pyridyl-C_1 to C_4 lower-alkyl, C_4 to C_7 cycloalkyl-C_1 to C_4 lower-alkyl, phenylamino, diC_1 to C_{10} alkylamino, halogen, trifluoromethyl, C_1 to C_4 lower-alkylthio, cyano or nitro; and
R^6 is a nine or ten membered bicyclic ring having carbon and from one to two nitrogen atoms, and the heterocycle is made up of fused 5 or 6 membered rings or such ring substituted at any available carbon atom by one or two substituents, the same or different, selected from the group consisting of C_1 to C_4 lower-alkyl, halogen, C_1 to C_4 lower-alkoxy, C_4 to C_7 cycloalkyloxy, 4-morpholinyl, C_1 to C_4 lower-alkoxy-C_1 to C_4 lower-alkoxy, hydroxy, imidazolyl, oxo and 4-morpholinyl-C_1 to C_4 lower-alkoxy, or at any available nitrogen atom by C_1 to C_4 lower-alkyl, C_2 to C_4 lower-alkanoyl, or trifluoroacetyl; or a pharmaceutically acceptable acid-addition salt thereof.

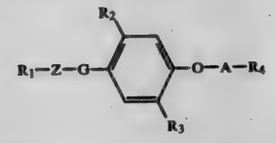
5,294,613

METHOD OF TREATING ENDOTOXIC SHOCK IN MAMMALS

Nancy G. Bollinger; Theodore Goodson, Jr., and David K. Herron, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

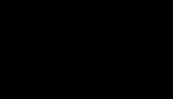
Continuation of Ser. No. 551,221, Jul. 11, 1990, Pat. No. 5,098,613, which is a division of Ser. No. 361,873, Jun. 5, 1989, Pat. No. 4,945,099, which is a continuation-in-part of Ser. No. 2,542, Jan. 12, 1987, abandoned. This application Feb. 7, 1992, Ser. No. 834,181
Claims priority, application United Kingdom, Jul. 11, 1988, 8816433
Int. Cl.[5] A61K *31/41*
U.S. Cl. 514—242 **5 Claims**

1. A method of treating endotoxic shock in a mammal which comprises administering to said mammal an effective amount of a compound having the formula



or a pharmaceutically acceptable base addition salt thereof, wherein
R_1 is hydrogen or R'OOC—;
Z is $-(CH_2)_n-$ or phenylene;
n is 1–8;

R_2 is hydroxy, halo, or $-O-(CH_2)_m-Y$;
R_3 is C_1–C_6 alkyl, C_1–C_6 alkanoyl, C_2–C_4 alkenyl, C_1–C_4 alkoxy, hydroxy-substituted C_1–C_3 alkyl, or $-CH_2-D$;
A is a bond or straight or branched chain C1–C10 alkylidene;
R_4 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, 1,2,4-triazol-1-yl, hydroxy, —CN, halo, $-N_3$, $-NR_5R_6$, $-COR_7$, $-S(O)_p-(C_1-C_4$ alkyl), 5-tetrazolyl optionally substituted with a C_1–C_4 alkyl group or $-(CH_2)_q-COOR'$, or phenyl optionally substituted with one or two groups selected from halo, cyano, C_1–C_3 alkyl, trifluoromethyl, $-CH_2CH$, $-CH_2Br$, C_1–C_4 alkoxy, $-S(O)_p-$ (C_1–C_4 alkyl), acetenyl, —COOR', 5-tetrazolyl, or 5-tetrazolyl substituted with C_1–C_4 alkyl or $-(CH_2)_q-COOR'$;
where each R' is independently hydrogen or C_1–C_4 alkyl;
m is 1–4;
q is 1–4
Y is hydrogen or —CN;
D is halo, C_1–C_4 alkoxy, or —S—(C_1–C_4 alkyl);
R_5 and R_6 are independently hydrogen, C_1–C_3 alkyl, or C_2–C_4 alkanoyl, or when taken together with the nitrogen atom to which they are attached from a morpholino ring;
R_7 is hydroxy, C_1–C_4 alkoxy, halo, $-NR_5R_6$, —NHOH, $-N(CH_3)OH$,



or C_1–C_3 alkyl; and
each p is 0, 1, or 2,
provided that when A is a bond, R_4 must be C_1–C_6 alkyl or an optionally substituted phenyl group, and further provided that when one of R_5 and R_6 is C_2–C_4 alkanoyl, the other of R_5 and R_6 is hydrogen.

5,294,614

SYNERGISTIC MICROBICIDAL COMPOSITION COMPRISING 3-ISOTHIAZOLONES AND 1-METHYL-3,5,7-TRIAZA-1-AZONIATRICYCLO(3.3.1.1)-DECANE CHLORIDE

Jenin C. Hsu, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 13, 1993, Ser. No. 3,712
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/53, 31/425*
U.S. Cl. 514—244 **5 Claims**

1. A synergistic microbicidal composition comprising 1-methyl-3,5,7-triaza-1-azoniatricyclo(3.3.1.1)decane chloride and a 3-isothiazolone compound selected from the group consisting of 2-n-octyl-3-isothiazolone, 5-chloro-2-methyl-3-isothiazolone, 2-methyl-3-isothiazolone, and mixtures of two or more thereof; in a weight ratio of about 1:2 to about 1:2000.

VOL 1160 ISS 3 MR 15 1994 UMI

VOL 1160 ISS 3 MR 15 1994 UMI

5,294,615

TERAZOSIN POLYMORPH AND PHARMACEUTICAL COMPOSITION

Glenn A. Meyer, Waukegan, and John F. Bauer, Lake Bluff, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 54,917, Apr. 29, 1993, abandoned. This application Jul. 13, 1993, Ser. No. 90,721

Int. Cl.[5] **A61K** *31/505;* **C07D** *405/14*

U.S. Cl. 514—254 **8 Claims**

1. A crystalline polymorph of 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(2-tetrahydrofuroyl)piperazine monohydrochloride characterized by peaks in the powder X-ray diffraction pattern at values of 2 theta of 5.5°±0.2°, 10.6°±0.2°, 11.1°±0.2°, 16.7°±0.2°, 19.4°±0.2°, 21.3°±0.2°, 22.0°±0.2°, 22.7°±0.2°, 23.1°±0.2°, 24.4°±0.2°, 24.9°±0.2°, 25.5°±0.2°, and 27.8°±0.2°.

5,294,616

FIBRINOGEN RECEPTOR ANTAGONISTS

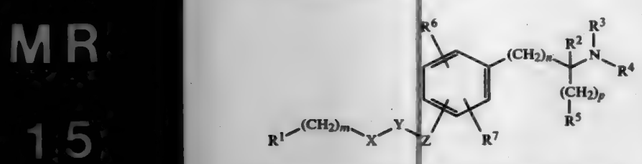
Mark E. Duggan, Narberth; Melissa S. Egbertson, Ambler; Wasyl Halczenko, Hatfield; George D. Hartman, Lansdale; Laura M. Turchi, Broomall, and William L. Laswell, Perkasie, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 750,645, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 589,299, Sep. 27, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 857,528

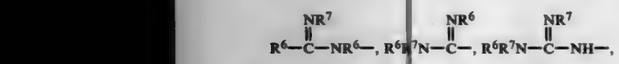
Int. Cl.[5] **A61K** *31/495, 31/675, 31/445;* **C07D** *295/00, 211/22, 211/30, 277/62, 307/02*

U.S. Cl. 514—255 **16 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein R^1 is



NR^6R^7 wherein R^6 and R^7 are independently
hydrogen,
C_{1-10} alkoxycarbonyl or unsubstituted or substituted C_{1-10} alkyl and cycloalkyl wherein said substituents are
C_{1-10} alkoxy,
C_{1-10} alkoxyalkyl,
C_{1-10} alkoxyalkyloxy,
C_{1-10} alkoxycarbonyl,
C_{1-10} alkylcarbonyl,
C_{1-6} alkylaminocarbonyl,
C_{1-10} aralkylcarbonyl,
C_{1-10} alkylthiocarbonyl,
C_{4-10} aralkylthiocarbonyl,
thiocarbonyl,
C_{1-10} alkoxythiocarbonyl,
phenyl,
C_{1-4} alkanoylamino,
C_{1-6} alkoxycarbonyl-C_{1-6} alkylamino,
C_{1-10} alkylsulfonylamino,
C_{4-10} arlkylsulfonylamino,
C_{4-10} aralkyl,
C_{1-10} alkylthio,
C_{4-10} aralkylthio,
C_{1-10} alkylsulfinyl,
C_{4-10} aralkylsulfinyl,
C_{1-10} alkylsulfonyl,
C_{4-10} aralkylsulfonyl,
aminosulfonyl,
C_{1-10} alkylaminosulfonyl,
C_{4-10} aralkylsulfonylamino,
oxo,
unsubstituted or mono- or di-substituted 1-ethenyl, 2-ethenyl or 3-propenyl wherein said substituents are selected from the group consisting of hydrogen, C_{1-10} alkyl and C_{7-10} aralkyl,
carboxy,
hydroxy,
amino,
C_{1-6} alkylamino
C_{1-6} dialkylamino
halogen, where halogen is defined as Cl, F, Br, or I,
nitro, or
cyano,
and further wherein said N can additionally be substituted to form a quaternary ammonium ion wherein said substituent is as previously defined for R^6 and R^7;

R^2 and R^3 are independently hydrogen, phenyl, naphthyl unsubstituted or substituted C_{1-10} alkyl or cycloalkyl wherein said substituent is
C_{1-10} alkoxyalkyl,
phenyl
C_{4-10} aralkyl,
carboxy,
C_{1-10} alkylcarbonyl,
C_{1-10} alkylthiocarbonyl,
C_{4-10} aralkylcarbonyl,
C_{4-10} aralkylthiocarbonyl,
C_{1-6} alkoxycarbonyl,
C_{1-6} alkoxycarbonyl,
C_{4-10} aralkoxycarbonyl,
C_{1-6} alkoxy,
C_{4-10} aralkoxy,
C_{1-6} alkylamino,
C_{1-12} dialkylamino,
C_{1-6} alkanoylamino,
C_{4-12} aralkanoylamino,
C_{4-10} aralkylamino;

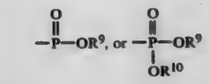
R^4 is
hydrogen,
phenyl
C_{1-10} alkyl or cycloalkyl
C_{4-10} aralkyl,
arylcarbonyl, aminocarbonyl,
C_{1-10} alkylcarbonyl, C_{1-6}alkylaminocarbonyl,
C_{1-10} alkylthiocarbonyl, C_{1-6} dialkylaminocarbonyl,
C_{1-10} alkylthiocarbonyl,
arylC_{1-6}alkylaminocarbonyl,
C_{1-10} alkoxycarbonyl,
C_{4-10} aralkylcarbonyl,
C_{4-10} aralkoxycarbonyl,
C_{1-10} carboxyalkyl and
further wherein any of the substitutents for R^4 may be substituted by one or more substituents selected from the group as defined for R^6, or an L- or D-amino acid joined by an amide linkage;

R^5 is

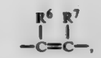


wherein R^8 is
hydroxy,
C_{1-10} alkyloxy,
C_{4-10} aralkyloxy,
C_{4-10} aralkylcarbonyloxy,
C_{1-10} alkoxyalkyloxy,
C_{1-10} alkoxylalkylcarbonyloxy,
C_{1-10} alkoxycarbonyloxyalkyl,

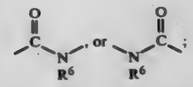
C_{1-10} alkylcarbonyloxyalkyloxy,
an L- or D-amino acid joined by an amide linkage, and wherein the carboxylic acid moiety of said amino acid is as the free acid or is esterified by C_{1-6}alkyl,



wherein R^9 and R^{10} are selected from the group consisting of hydrogen, C_{1-10} alkyl and C_{4-10} aralkyl;
X and Y are independently
NR^6,
O,



—C≡C—,
unsubstituted or substituted C_{1-15} alkyl or cycloalkyl wherein said substituents are independently R^6 and R^7,



Z is an optional substituent that, when present, is independently chosen as defined by X and Y;
m is an integer of from zero to ten;
n is an integer of from zero to ten; and
p is an integer of from zero to three;
wherein aryl is phenyl or naphthyl.

5,294,617

ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6 SUBSTITUTED QUINAZOLINONES

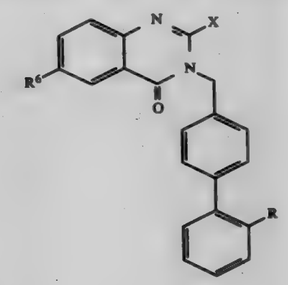
Aranapakam M. Venkatesan, Elmhurst, and Jeremy I, Levin, Nanuet, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,932

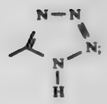
Int. Cl.[5] **A61K** *31/505;* **C07D** *239/90, 239/91*

U.S. Cl. 514—259 **21 Claims**

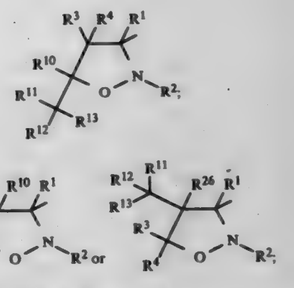
1. A quinazolinone compound having the formula:



wherein:
R is



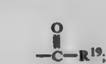
X is straight or branched chain lower alkyl of 3 to 5 carbon atoms;
R^6 is



R^1 is H, straight chain lower alkyl of 1 to 4 atoms, —CF_3, —CN,
phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene or furan;
R^2 is straight or branched chain lower alkyl of 1 to 4 carbon atoms, cycloalkyl (rings of 3 to 8 carbon atoms), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms), —CF_3 , nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms);
R^3 is H, straight or branched lower alky of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, —CHO, —OR^{19}, —CO_2R^{19} or



R^4 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, —CHO, —OR^{19}, —CO_2R^{19} or



R^9 is hydrogen, straight chain or branched chain lower alkyl of 1 to 4 carbon atoms;
R^{10} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, or furan;
R^{11} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, —CF_3, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, —CF_3, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, benzyl, subsituted benzyl(substitution se-

VOL 1160 ISS 3 MR 15 1994 UMI

lected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), $—OR^9$, O-phenyl, O-substituted phenyl(substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), O-pyridine, O-thiophene, O-furan, $—NH_2$, $—NHR^{19}$, $—NR^{19}R^{19}$, $—CO_2R^{19}$, or $—CONR^9R^9$;

R^{12} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, $—CF_3$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, benzyl, substituted benzyl(substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), $—OR^9$, O-phenyl, O-substituted phenyl(substitution selected from mono lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), O-pyridine, O-thiophene, O-furan, $—NH_2$, $—NHR^{19}$, $—NR^{19}R^{19}$, $—CO_2R^{19}$, or $—CONR^9R^9$;

R^{13} is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms, $—CF_3$, phenyl, substituted phenyl(substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), pyridine, thiophene, furan, benzyl, substituted benzyl(substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), $—OR^9$, O-phenyl, O-substituted phenyl(substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, $—CF_3$, nitro, O-alkyl of 1 to 3 carbon atoms), O-pyridine, O-thiophene, O-furan, $—NH_2$, $—NHR^{19}$, $—NR^{19}R^{19}$, $—CO_2R^{19}$, or $—CONR^9R^9$;

R^{19} is straight or branched chain lower alkyl of 1 to 4 carbon atoms;

R^{26} is —CHO, $—OR^{19}$, $—CO_2R^{19}$ or



and pharmaceutically acceptable salts thereof.

5,294,618

OCTAHYDROBENZISOQUINOLINE DERIVATIVES AS ANTIPSYCHOTIC AGENTS

David C. Billington, Bishops Stortford, and Michael G. N. Russell, Welwyn Garden City, both of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, United Kingdom

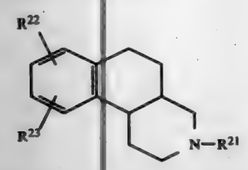
Continuation of Ser. No. 914,653, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 774,659, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 555,708, Jul. 23, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 17,367

Claims priority, application United Kingdom, Jul. 28, 1989, 8917333

Int. Cl.[5] C07D *217/04*; A61K *31/47*

U.S. Cl. 514—290 **13 Claims**

1. A compound of formula II:



(II)

wherein R^{21} is selected from the group consisting of C_{3-6} alkyl, C_{2-6} alkenyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, or aryl(C_{1-6})alkyl, any of which groups may be optionally substituted with a substituent selected from the group consisting of C_{1-6} alkyl, adamantyl, phenyl, halogen, C_{1-6} haloalkyl, trifluoromethyl, hydroxy, C_{1-6} alkoxy, aryloxy, C_{1-3} alkylenedioxy, nitro, cyano, carboxy, C_{2-6} alkoxycarbonyl, C_{2-6} alkoxycarbonyl(C_{1-6})alkyl, C_{2-6} alkylcarbonyloxy, C_{1-6} alkylthio, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, amino, mono- or di(C_{1-6})alkylamino, C_{2-6} alkylcarbonylamino and C_{2-6} alkoxycarbonylamino; and R^{22} and R^{23} are hydrogen; or a pharmaceutically acceptable salt thereof.

5,294,619

ARYLPIPERIDINE DERIVATIVES

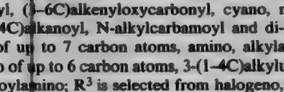
Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 566,435, Jul. 26, 1990, Pat. No. 5,153,206. This application Jul. 29, 1992, Ser. No. 921,878

Int. Cl.[5] C07D *239/70, 221/00*; A61K *31/44, 31/505*

U.S. Cl. 514—299 **15 Claims**

1. An N-substituted arylpiperidine compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein

Ar is phenyl, fluorophenyl, chlorophenyl, trifluoromethylphenyl, methoxyphenyl, tolyl, or naphthyl optionally substituted with fluorine, chlorine, trifluoromethyl or methoxy;

n is an integer of from two to four, inclusive;

X is oxygen, sulfur or a direct link; and

R is 5-oxindolyl[,2-methyl-4-oxo-4H-pyrido[1,2a]pyrimidin-3-yl, 7,9-dioxo-8-azaspiro[4.5]decan-8-yl] or 1,8,8-trimethyl-2,4-dioxo-3-azabicyclo-[3.2.1]octan-3-yl.

5,294,620

1,6-NAPHTHYRIDINONE DERIVATIVES HAVING ANGIOTENSION II ANTAGONIST ACTIVITY

Arnold H. Ratcliffe, Poynton; Robert J. Pearce, Wilmslow; Keith H. Gibson, Macclesfield; Robin Wood, Stockport, all of England, and Brian B. Masek, West Grove, Pa., assignors to Imperial Chemical Industries PLC, London, England

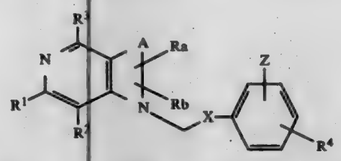
Division of Ser. No. 890,453, May 29, 1992, Pat. No. 5,217,976. This application Apr. 2, 1993, Ser. No. 42,321

Claims priority, application United Kingdom, May 31, 1991, 9111759; Jul. 29, 1991, 9116309

Int. Cl.[5] A61K *31/435*; C07D *471/04*

U.S. Cl. 514—300 **10 Claims**

1. A heterocyclic derivative of the formula I



I

wherein R^1 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, phenyl or substituted (1–4C)alkyl, the latter containing one or more fluoro substituents or bearing a (3–8C)cycloalkyl, (1–4C-)alkoxy or phenyl substituent; R^2 is hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, carboxy, (1–4C)alkoxycarbonyl, (3–6C)alkenyloxycarbonyl, cyano, nitro, carbamoyl, (1–4C)alkanoyl, N-alkylcarbamoyl and di-(N-alkyl)-carbamoyl of up to 7 carbon atoms, amino, alkylamino and dialkylamino of up to 6 carbon atoms, 3-(1–4C)alkylureido and (1–4C)alkanoylamino; R^3 is selected from halogeno, (1–4C)alkoxy, hydroxy, amino, alkylamino and dialkylamino of up to 6 carbon atoms, and any of the values defined for R^1; A is a linking group of the formula —CH=CH—CO—, —CO—CH=CH—, —CO—CH_2—CH_2— or —CH_2—CH-2—CO—; each of Ra and Rb is independently an indicated hydrogen or an optional substituent on linking group A independently selected from (1–4C)alkyl, substituted (1–4C)alkyl containing one or more fluoro substituents or bearing a (3–8C-)cycloalkyl, (1–4C)alkoxy or phenyl substituent, (3–8C)cycloalkyl, phenyl, pyridyl, (1–4C)alkoxy, halogeno, carboxy, (1–4C)alkoxycarbonyl, (3–6C)alkenyloxycarbonyl, carbamoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, cyano, nitro, (1–4C)alkanoyl, (1–4C)alkylthio, (1–4C-)alkylsulphinyl, (1–4C)alkylsulphonyl, phenylthio, phenylsulphinyl or phenylsulphonyl; R^4 is selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro; X is a direct bond between the adjacent phenyl and methylene groups; Z is 1H-tetrazol-5-yl, —CO.NH.(1H-tetrazol-5-yl), $—NHSO_2CF_3$ or a group of the formula —CO-.OR^5, —CO.NH.SO_2.R^6 or $—SO_2$.NHR^7 in which R^5 is hydrogen or a non-toxic, biodegradable residue of a physiologically acceptable alcohol or phenol, R^6 is (1–6C)alkyl, (3–8C-)cycloalkyl or phenyl, and R^7 is hydrogen, (1–4C)alkyl, (1–4-C)alkanoyl or —CO.NH.(1–4C)alkyl; or Z is a 2-carboxybenzamido, 2-sulfobenzamido or 2-carboxybenzyloxy group, the benzene ring of which last three groups may optionally bear 1 or 2 additional substituents independently selected from (1–4-C)alkyl, (1–4C)alkoxy and halogeno; and wherein any of said phenyl moieties may be unsubstituted or bear one or two substituents independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, cyano and trifluoromethyl; or an N-oxide thereof; or a non-toxic salt thereof.

5,294,621

THIENO TETRAHYDROPYRIDINES USEFUL AS CLASS III ANTIARRHYTHMIC AGENTS

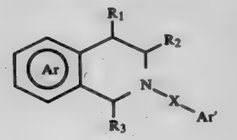
Ronald K. Russell, Titusville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Oct. 7, 1992, Ser. No. 958,197

Int. Cl.[5] A61K *31/435*; C07D *495/04*

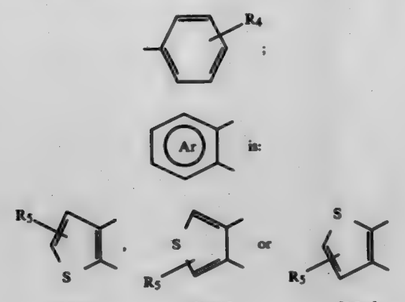
U.S. Cl. 514—301 **17 Claims**

1. A compound of the following formula:



where

Ar' is selected from the group consisting of pyridine, thiophene, furan, pyrrole or



[2,3-c] [3,4-c] [3,2-c] ;

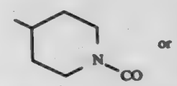
R_1 is hydrogen or C_1–C_3 alkyl;

R_2 is hydrogen, C_1–C_6 alkyl, C_3–C_7 branched chain alkyl;

R_3 is hydrogen, C_1–C_6 alkyl, C_3–C_7 branched chain alkyl, aryl or substituted aryl wherein the aryl substituents are C_1–C_6 alkyl or C_1–C_6 alkoxy;

R_4 is hydrogen, C_1–C_5 alkyl, C_3–C_7 branched chain alkyl, halogen, C_1–C_3 alkoxy, nitro, amino, imidazole, cyano, CO_2R_1, SO_2R_1, CF_3, $NHCOR_8$, $NR_7SO_2R_8$, $CH_2SO_2R_1$, $CH_2PO(OR_1)_2$ or CH_2-imidazole;

X is $(CH_2)_mNR_7CO$, $(CH_2)_mNR_7SO_2$ or $(CH_2)_mNHCH_2$;



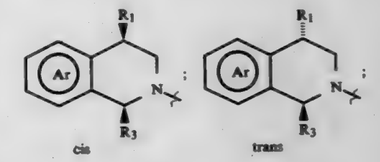
R_5 is hydrogen, halogen or nitro;

R_7 is hydrogen or C_1–C_3 alkyl;

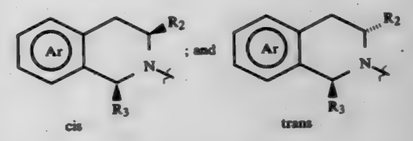
R_8 is hydrogen, CF_3, C_1–C_4alkyl, C_3–C_5 branched chain alkyl, aryl or substituted aryl;

m is 2–4; and

when R_1 is alkyl and R_2 is hydrogen and when R_1/R_3 or R_2/R_3 are both alkyl; R_1/R_3 is cis or trans and R_2/R_3 is cis or trans



cis trans



cis trans

5,294,622

SUBSTITUTED QUINOLINES AND CINNOLINES

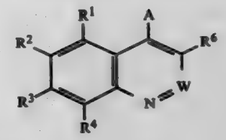
Barry A. Dreikorn, Lawrence; Glen P. Jourdan, Morristown, and Robert G. Suhr, Greenfield, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Division of Ser. No. 324,058, Mar. 16, 1989, Pat. No. 5,114,939, which is a continuation-in-part of Ser. No. 150,366, Jan. 29, 1988, abandoned. This application Mar. 24, 1992, Ser. No. 839,514

Int. Cl.[5] C07D *401/12, 215/04, 215/16*; A01N *43/42*

U.S. Cl. 514—311 **18 Claims**

1. A compound of the formula (1)



(1)

wherein:

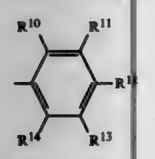
R^1 to R^4 are independently

H, halo, (C_1–C_4) alkyl, branched (C_3–C_4) alkyl, halo (C_1–C_4) alkyl, (C_1–C_4) alkoxy, NO_2, or NH_2, at least two of R^1 to R^4 being H,

W is CR^5;

R^5 is H, CH_3, or Cl,:

R^6 is H, CH_3, Cl, or Br;
A is $—O—(CH_2)_2—Ar$, $—NR^7—(CH_2)_2—Ar$, or $—CR^8R^9—(CH_2)_2—Ar$;
R^7 is H, $(C_1–C_4)$ alkyl, or acetyl;
R^8 and R^9 are independently H, $(C_1–C_4)$ alkyl, halo, or OH, or R^8 and R^9 combine to form a saturated or unsaturated carbocyclic ring comprising three to seven carbon atoms; and
Ar is
1,3-benzodioxolyl
fluorenyl,
pyridyl,
substituted pyridyl,
indolyl,
furanyl,
substituted furanyl,
thienyl, optionally substituted with CH_3 or Cl,
thiazolyl,
cyclopentyl,
1-methylcyclopentyl,
cyclohexenyl (tetrahydrophenyl),
cyclohexyl (hexahydrophenyl),
naphthyl,
substituted naphthyl,
dihydronaphthyl,
tetrahydronaphthyl,
decahydronaphthyl, or
a group of formula (2):



(2)

where
R^{10} to R^{14} are independently H, halo, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, substituted phenoxy, phenylthio, substituted phenylthio, phenyl, substituted phenyl, NO_2, NH_2, acetoxy, OH, CN, $SiR^{15}R^{16}R^{17}$, or $OSiR^{15}R^{16}R^{17}$, where R^{15}, R^{16}, and R^{17} are independently $(C_1–C_4)$ alkyl or $(C_3–C_4)$ branched alkyl, phenyl, or substituted phenyl, provided that unless each of R^{10} to R^{14} is F or CH_3, then at least two of R^{10} to R^{14} are H;
or an acid addition salt of a compound of formula (1) or an N-oxide of a compound of formula (1) when W is CR^5
where, in the foregoing definitions, the term substituted phenyl refers to phenyl substituted with up to three groups selected from halo $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1–C_4)$ alkanoyloxy, or benzyloxy;
the term substituted phenoxy refers to a phenoxy group substituted with up to three groups selected from halo, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN $(C_1–C_4)$ alkanoyloxy, or benzyloxy;
the term substituted phenylthio refers to a phenylthio group substituted with up to three groups selected from halo, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN $(C_1–C_4)$ alkanoyloxy, or benzyloxy;
the term substituted phenylsulfonyl refers to a phenylsulfonyl group substituted with up to three groups selected from halo $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN $(C_1–C_4)$ alkanoyloxy, or benzyloxy; and
the terms substituted naphthyl, substituted pyridyl, and substituted furanyl refer to these ring systems substituted with halo, halo $(C_1–C_4)$, CN, NO_2, $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, $(C_1–C_4)$ alkoxy, or halo $(C_1–C_4)$ alkoxy;
provided that if A is $NR^7—(CH_2)_2—Ar$ then Ar is a group of formula (2) wherein four of R^{10} to R^{14} are H and one of R^{10} to R^{14} is Cl, $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkyl, branched $(C_3–C_6)$ alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkoxy, phenyl, substituted phenyl, phenoxy, or substituted phenoxy.

5,294,623

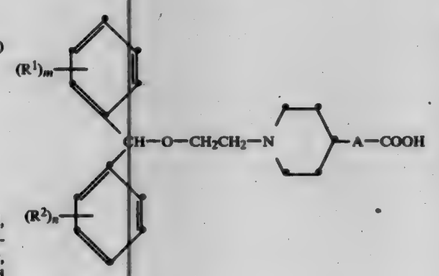
(BENZHYDRYLOXYETHYLPIPERIDYL) ALIPHATIC ACID DERIVATIVES AND THEIR USE IN THE TREATMENT OF ALLERGIES AND ASTHMA

Hiroshi Fukami; Toshiaki Sakamoto; Mitsuo Sugiyama; Yoshio Iizuka, and Takeshi Yamaguchi, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 668,133, Mar. 12, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,547
Claims priority, application Japan, Aug. 9, 1990, 2-212752
Int. Cl.[5] A01N *41/02*; C07D *211/18*
U.S. Cl. 514—317 55 Claims

1. A compound of formula (I):

(I)



in which:
each of the groups or atoms represented by R^1 and R^2 is independently selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms and halogen atoms;
A represents a straight or branched chain aliphatic hydrocarbon group having from 2 to 8 carbon atoms whose chain contains at least 2 carbon atoms in a linear chain between the piperidine group and —COOH, said group being saturated or including at least one double or triple carbon-carbon bond; and
m and n are independently 0, 1, 2 or 3;
and pharmaceutically acceptable salts and esters thereof.

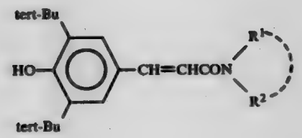
5,294,624

ANTIHYPERLIPIDEMIC CINNAMIDE DERIVATIVES

Yoshihide Fuse; Kenji Fujii, both of Takasago; Keiji Kameyama, Mihara; Taizo Kawabe, Takasago; Toshiaki Miwa, and Ikuo Katsumi, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 548,121, Jul. 5, 1990. This application Jul. 15, 1992, Ser. No. 914,298
Claims priority, application Japan, Jul. 5, 1989, 1-174820; Jul. 5, 1989, 1-174821; Jul. 5, 1989, 1-174822; Jan. 18, 1990, 2-9528; Jan. 18, 1990, 2-9529; Jan. 18, 1990, 2-9530
Int. Cl.[5] A61K *31/44*; C07D *213/70, 213/79, 213/81*
U.S. Cl. 514—330 8 Claims

1. A cinnamamide derivative of formula I or the salts thereof:

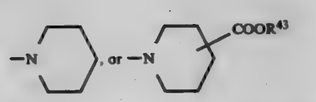


(I)

Wherein
R^1 is selected from the group consisting of
$—(CH_2)_n7OR^{12}$,
wherein
R^{12} is $—COR^{14}$ (R^{14} is pyridyl), and n^7 is an integer of 1 to 3;
$—(CH_2)_n8SR^{15}$
wherein R^{15} is $—(CH_2)_n11R^{18}$ (R^{18} is pyridyl, and n^{11} is an integer of 0 to 3), and n^8 is an integer of 1 to 3;
$—(CH_2)_n12NHR^{19}$,
wherein
R^{19} is $—COR^{21}$ (R^{21} is pyridyl), and n^{12} is an integer of 1 to 3;
R^2 is selected from the group consisting of hydrogen, alkyl having 1 to 5 carbon atoms, and $—(CH_2)_n19-C_6H_5$ (n^{19} is an integer of 1 to 3); or
R^1 and R^2 may be linked together with the amide nitrogen to form a ring of



which is



(R^{43} is hydrogen or alkyl having 1 to 3 carbon atoms).

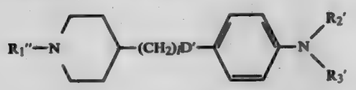
5,294,625

BENZYLPIPERIDINE COMPOUNDS AND THEIR USE

Giichi Goto, Toyono; Hidefumi Yukimasa, Nara, and Tetsuji Imamoto, Katsuragi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 461,114, Jan. 4, 1990, Pat. No. 5,177,087. This application Dec. 18, 1992, Ser. No. 964,851
Claims priority, application Japan, Jan. 13, 1989, 1-6651; Jul. 12, 1989, 1-179495; Sep. 28, 1989, 1-253162
Int. Cl.[5] A61K *31/443*; C07D *211/26*
U.S. Cl. 514—330 9 Claims

1. A compound of the formula



wherein R_1" is a benzyl group wherein the phenyl radical is optionally substituted with one to three substituents selected from the group consisting of a C_{1-3} alkoxy, C_{1-3} alkyl, cyano, hydroxy, nitro and halogen, l is an integer of 0 to 4 and D' is a group of the formula



and R_2' and R_3' are independently a C_{1-6} alkyl group or a physiologically acceptable salt thereof.

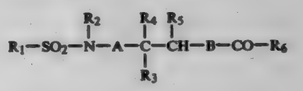
5,294,626

ARYLSULPHONAMIDES PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Armin Heckel, Biberach; Josef Nickl, deceased, late of Biberach by Ema Nickl, heir; Rainer Soyka, Biberach; Wolfgang Eisert, Biberach; Thomas Muller, Biberach; Johannes Weisenberger, Biberach; Christopher Meade, Biogen-Boudewijn, and Gojko Muacevic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomas GmbH, Biberach an der Riss, Fed. Rep. of Germany

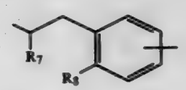
Filed May 14, 1990, Ser. No. 523,167
Claims priority, application Fed. Rep. of Germany, May 12, 1989, 3915506; Sep. 28, 1989, 3932403
Int. Cl.[5] C07D *213/56*; A61K *31/44*
U.S. Cl. 514—357 7 Claims

1. Arylsulphonamides of formula



(I)

wherein
R_1 is a phenylalkyl, trialklphenyl, tetramethylphenyl or pentamethylphenyl group, a thienyl group optionally substituted by a halogen atom or an alkyl group, or a phenyl group which may be mono-substituted by a nitro group or mono- or disubstituted by a halogen atom or by an alkyl, trifluoromethyl or alkoxy group, the substituents being identical or different,
R_2, R_4 and R_5, which may be identical or different, are hydrogen or alkyl or
R_2 is a hydrogen atom or an alkyl group and R_4 and R_5 together represent a carbon-carbon bond,
R_3 is a 2-, 3- or 4- pyridyl group optionally substituted by an alkyl group,
R_6 is a hydroxy, alkoxy, amino, alkylamino or dialkylamino group,
A is a group of formula



wherein
R_7 and R_8 together are a methylene or ethylene group, and
B is a carbon-carbon bond or a straight-chained $C_1–C_4$ alkylene group optionally substituted by one or two alkyl groups,
the alkyl and alkoxy moieties may each contain 1 to 3 carbon atoms,
the enantiomers thereof, the cis and trans isomers thereof, where R_4 and R_5 together represent a carbon-carbon bond, and the pharmaceutically acceptable addition salts thereof.

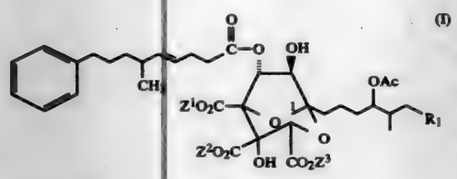
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,627
DIRECTED BIOSYNTHESIS OF BIOLOGICALLY ACTIVE COMPOUNDS

Bryon H. Arison, Watchung; Shieh-Shung T. Chen, Morganville; Raymond F. White, Palmyra, Va., and Brian R. Petsch, Florence, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

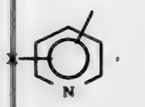
Filed Aug. 27, 1992, Ser. No. 936,708
Int. Cl.[5] H61K *31/335, 31/38;* C07D *493/08*
U.S. Cl. 514—338 14 Claims

1. A compound of structural formula (I)

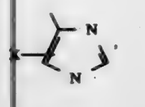


(I)

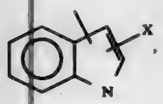
wherein R^1 is



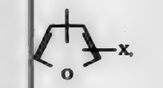
(a)



(b)



(c)



(d)

or



(e)

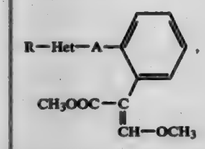
wherein X is:
(a) hydrogen,
(b) halogen,
(c) hydroxy, or
(d) methyl;
wherein Z_1, Z_2 and Z_3 are each independently:
(a) hydrogen,
(b) C_{1-5}alkyl,
(c) C_{1-5}alkyl substituted with
(i) phenyl,
(ii) phenyl substituted with methyl, methoxy, halogen or hydroxy,
(iii) C_{1-5}alkylcarbonyloxy, or
(iv) C_{1-5}alkoxycarbonyloxy, or
(d) a pharmaceutically acceptable cation;
and wherein halogen is Cl, Br, I, or F.

5,294,628
METHYL α-ARYLACRYLATES SUBSTITUTED BY A HETEROCYCLIC RADICAL AND THEIR USE

Franz Schuetz, Ludwigshafen; Hans-Juergen Neubauer, Muenster-Hiltrup; Thomas Knekenboehmer, Frankenthal; Ulrich Schirmer, Heidelberg; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt, and Uwe Kardorff, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 921,765, Jul. 30, 1992, Pat. No. 5,250,553, which is a division of Ser. No. 701,019, May 19, 1991, Pat. No. 5,166,216, which is a continuation of Ser. No. 418,664, Oct. 10, 1989, abandoned. This application Jul. 16, 1993, Ser. No. 94,580
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836581
Int. Cl.[5] A01N *43/82;* C07D *271/06*
U.S. Cl. 514—364 5 Claims

1. Methyl α-arylacrylates substituted by a heterocyclic radical and having the general formula



(I)

where R is C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, halogen or aryl, the aromatic ring being unsubstituted or substituted by C_1–C_8-alkyl, C_3–C_6-cycloalkyl, C_1–C_2-haloalkyl, C_1–C_4-alkoxy, halogen, cyano or nitro, Het is oxadiazolyl which is unsubstituted or substituted by methyl at a nitrogen atom and is bonded to A via a carbon atom, and A is ethenylene, ethylene, methyleneoxy or methylenethio.

5,294,629
BENZOTHIAZOLE AND BENZIMIDAZOLE DERIVATIVES AND ANTIULCER AGENT CONTAINING THE SAME

Tomoya Machinami; Kazue Yasufuku; Seiji Shibahara; Fumiya Hirano; Yasukatsu Yuda; Motohiro Nishio; Yuji Matsuhashi; Takashi Tsuruoka; Kiyoaki Katano, and Shigeharu Inoye, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 799,023, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 440,067, Nov. 22, 1989, abandoned. This application Mar. 25, 1993, Ser. No. 37,671
Claims priority, application Japan, Nov. 22, 1988, 63-293689; May 10, 1989, 1-115184
Int. Cl.[5] C07D *235/28, 277/76;* A61K *31/415, 31/425*
U.S. Cl. 514—366 7 Claims

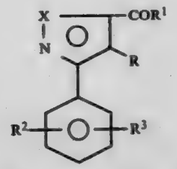
3. 5-Chloro-2-[(2-ethoxyethyl)sulfinyl]benzothiazole.
4. 2-[(2-Ethoxyethyl)sulfinyl]benzothiazole.
5. 5-Chloro-2-[(2-hydroxyethyl)sulfinyl]benzothiazole.
6. 5-Chloro-2-{2-(2-hydroxyethoxy)ethoxy}ethylsulfinyl]-benzothiazole.
7. 2-[2-Ethoxyethyl)sulfinyl]benzimidazole.

5,294,630
TREATMENT OF INFLAMMATORY BOWEL DISEASE

David Blake, Droitwich, United Kingdom; Peter P. K. Ho, Carmel; Jill A. Panetta, Zionsville, both of Ind.; David Rampton, and Nicola Simmonds, both of London, United Kingdom, assignors to Eli Lilly and Company, Indianapolis, Ind. and London Hospital Medical College, London, England

Filed Jul. 7, 1992, Ser. No. 909,852
Int. Cl.[5] A61K *31/425*
U.S. Cl. 514—372 19 Claims

1. A method for treating or preventing the recurrence of inflammatory bowel disease comprising administering to a patient in need thereof an effective dose of a compound of the formula



I

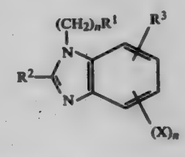
wherein X is a sulfur atom, a nitrogen atom, or a methyl-substituted nitrogen atom;
R is hydrogen, amino, C_1–C_3 alkylamino, or hydroxy;
R^1 is hydroxy, or OM;
M is a nontoxic cation;
R^2 and R^3 independently represent hydrogen, halo, C_1–C_3 alkyl, trifluoromethyl, or C_1–C_3 alkoxy.

5,294,631
SUBSTITUTED BENZIMIDAZOLES USEFUL AS ANGIOTENSION II RECEPTOR ANTAGONISTS

Robert G. Franz, Plymouth Meeting, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 509,268, Apr. 13, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 937,885
Int. Cl.[5] A61K *31/41, 31/415;* C07D *235/08, 403/10*
U.S. Cl. 514—381 20 Claims

1. A compound of the formula:



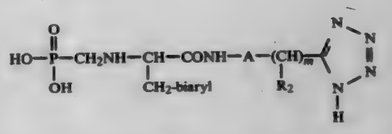
in which:
R^1 is —C(O)NH—CH(Y)—$(CH_2)_n$-aryl, —C(O)NH—CH(Y)—$(CH_2)_n$-heteroaryl, or phenyl unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_{1-6}alkyl, C_{1-6}alkoxy, OH, CN, NO_2, CO_2R^4, tetrazol-5-yl, $CONR^4R^4$, SO_3H, C_mF_{2m+1}, SC_{1-6}alkyl, or SO_2C_{1-6}alkyl;
R^2 is hydrogen, C_{2-10}alkyl, C_{3-10}alkenyl, C_{3-6}-cycloalkyl, C_mF_{2m+1}, or $(CH_2)_{0-5}$phenyl unsubstituted or substituted by one to three substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, Cl, Br, F, I, OH, NO_2, C_mF_{2m+1}, CO_2R^4, or NR^4R^4;
R^3 is —$(CH_2)_n$—Y, —CH=CY—$(CH_2)_n$-aryl, —CH=CY—$(CH_2)_n$-heteroaryl, —$(CH_2)_n$—C(O)—NH—CH(Y)—$(CH_2)_n$-aryl, —$(CH_2)_2$—C(O)—NH—CH(Y)—$(CH_2)_n$heteroaryl, —$(CH_2)_m$—NH—CH(Y)—$(CH_2)_n$-aryl or —$(CH_2)_m$—NH—CH(Y)—$(CH_2)_n$-heteroaryl, when R^1 is an optionally substituted phenyl group; or H when R^1 is —C(O)NH—CH(Y)—$(CH_2)_n$-aryl or —C(O)NH—CH(Y)—$(CH_2)_n$-heteroaryl;
Y is CO_2R^4 or tetrazol-5-yl;
X is Cl, Br, F, I, C_mF_{2m+1}, C_{1-6}alkyl, C_{1-6}alkoxy, OH, O-phenyl, CO_2R^4, tetrazol-5-yl, CN, or $(CH_2)_{0-4}$phenyl unsubstituted or substituted by Cl, Br, F, I, C_{1-6}alkyl, C_{1-6}alkoxy, OH, C_mF_{2m+1}, CN, CO_2R^4, NO_2, or NR^4R^4;
aryl is phenyl, biphenyl, or naphthyl wherein each aryl group is unsubstituted or substituted by C_{1-6}alkyl, C_{1-6}alkoxy, Cl, Br, F, I, OH, NO_2, CF_3, CO_2R^4, or NR^4R^4;
heteroaryl is 2- or 3-thienyl, 2-, or 3-furanyl, 2-, 3-, or 4-pyridyl, pyrimidyl, imidazolyl, thiazolyl, triazolyl, or tetrazolyl wherein each heteroaryl group is unsubstituted or substituted by C_{1-6}alkyl, C_{1-6}alkoxy, Cl, Br, F, I, OH, NO_2, CF_3, CO_2R^4, or NR^4R^4;
each m independently is 1–3;
each n independently is 0–2; and
each R^4 independently is H or C_{1-4} alkyl; or a pharmaceutically acceptable salt thereof.

5,294,632
PHOSPHONO/BIARYL SUBSTITUTED DIPETIDE DERIVATIVES

Mark D. Erion, Del-Mar, Calif., and Stéphane De Lombaert, Bernardsville, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 694,533, May 1, 1991, Pat. No. 5,155,100. This application Oct. 9, 1992, Ser. No. 958,891
Int. Cl.[5] A61K *31/41, 31/44;* C07F *9/06*
U.S. Cl. 514—381 10 Claims

1. A compound of the formula Ia



(Ia)

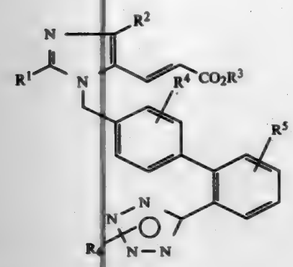
wherein A represents a direct bond, lower alkylene, phenylene or cyclohexylene; m represents 1 or zero, provided than m represents 1 when A is a direct bond; R_2 represents hydrogen, hydroxy, lower alkyl, aryl-lower alkyl, C_5–C_7-cycloalkyl-lower alkyl, amino-lower alkyl, hydroxy-lower alkyl, lower alkylthio-lower alkyl, lower alkoxy-lower alkyl, aryl-lower alkylthio-lower alkyl or aryl-lower alkoxy-lower alkyl; biaryl represents phenyl substituted by carbocyclic or heterocyclic aryl; heterocyclic aryl represents thienyl, furanyl, pyridyl, pyrrolyl or N-lower alkylpyrrolyl; a pharmaceutically acceptable mono- or di-ester derivative thereof in which one or two of the acidic hydroxy groups of the phosphono functional group are esterified in form of a mono- or di-pharmaceutically acceptable ester; or a pharmaceutically acceptable salt thereof.

5,294,633
IMIDAZOLYL-PROPENOIC ACID DERIVATIVES

Thomas Krämer; Jürgen Dressel, both of Wuppertal; Rudolf Hanko, Essen; Walter Hübsch, Wuppertal; Ulrich Müller, Wuppertal; Matthias Müller-Gliemann, Wuppertal; Martin Beuck, Erkrath; Stanislav Kazda; Johannes-Peter Stasch, both of Wuppertal; Andreas Knorr, Erkrath, and Stefan Wohlfeil, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 947,869
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132631
Int. Cl.[5] C07D *25/04;* A61K *31/41*
U.S. Cl. 514—381 9 Claims

1. An imidazolyl-propenoic acid derivative of the formula



in which
R^1 represents straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, each of which is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or represents cycloalkyl having 3 to 8 carbon atoms,
R^2 represents hydrogen, halogen, hydroxyl, nitro, cyano, trifluoromethyl, trifluoromethoxy or pentafluoroethyl, or represents straight-chain or branched alkyl having up to 6 carbon atoms, or represents aryl having 6 to 10 carbon atoms,
R^3 represents hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl,
R^4 and R^5 are identical or different and represent hydrogen, halogen, cyano, nitro, trifluoromethyl, hydroxyl, trifluoromethoxy or straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms,
R^6 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,
or a pharmaceutically acceptable salt thereof.

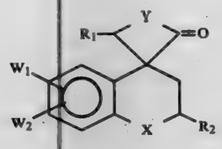
5,294,634
OSTEOGENESIS PROMOTER
Masayoshi Yamaguchi, Shizuoka, Japan, assignor to Zeria Pharmaceutical Co., Ltd., Tokyo and Hamari Chemicals Co., Ltd., Osaka, both of Japan
PCT No. PCT/JP90/01255, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO91/04737, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 28, 1990, Ser. No. 842,174
Claims priority, application Japan, Oct. 2, 1989, 1-255325
Int. Cl.[5] A61K *31/415;* **C07F** *3/06*
U.S. Cl. 514—400 **8 Claims**

1. An osteogenesis promoter comprising, as an active ingredient, a zinc salt or complex of L-carnosine.

5,294,635
HETEROCYCLIC COMPOUNDS AS ALDOSE REDUCTASE INHIBITORS
James F. Eggler, Stonington, and Eric R. Larson, Mystic, both of Conn., assignors to Pfizer, Inc., New York, N.Y.
PCT No. PCT/US91/01521, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/15491, PCT Pub. Date Oct. 17, 1991
Division of Ser. No. 505,304, Apr. 5, 1990, Pat. No. 5,039,672. This PCT application Mar. 6, 1991, Ser. No. 934,688
Int. Cl.[5] C07D *493/10;* **A61K** *31/40*
U.S. Cl. 514—409 **13 Claims**

1. A compound of the formula

Formula I



wherein
Y is



X is —O— or



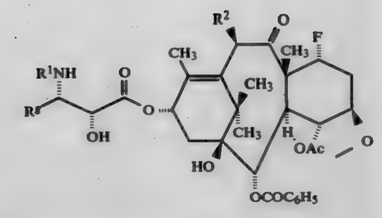
R_1 and R_2 are each independently H, alkyl C_1–C_6, aryl or arylalkyl (C_1–C_6);
W_1 and W_2 are each independently hydrogen, halogen or nitro; and
the pharmaceutically acceptable cationic salts thereof.

5,294,636
CRYSTALLINE FORM OF INDOLE DERIVATIVE AND PHARMACEUTICAL METHOD THEREOF
Martin P. Edwards, Bollington, and John D. Sherwood, Congleton, both of England, assignors to Imperial Chemical Industries plc, London, England
Filed Dec. 11, 1991, Ser. No. 805,426
Claims priority, application United Kingdom, Dec. 12, 1990, 9027018
Int. Cl.[5] A61K *31/40;* **C07D** *209/14*
U.S. Cl. 514—415 **6 Claims**

1. A physical form of N-[4-[5-(cyclopentyloxycarbonyl-)amino-1-methyl-indol-3-ylmethyl]-3-methoxybenzoyl]-2-methylbenzenesulphonamide, which form is crystalline, has an X-ray powder diffraction pattern with specific peaks occuring at $2\theta = 8.1°$, 13.7°, 16.4°, 20.5° and 23.7°; an infra-red spectrum (0.5% in KBr) having sharp peaks at 3370, 1670, 1525, 1490, 1280, 890, 870 and 550 cm^{-}; and a melting point in the range of 190° to 200° C.

5,294,637
FLUORO TAXOLS
Shu-Hui Chen, Hamden; Vittorio Farina, West Hartford; Joydeep Kant, South Meriden, and Dolatrai M. Vyas, Madison, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.
Continuation-in-part of Ser. No. 6,423, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 907,261, Jul. 1, 1992, abandoned, and a continuation-in-part of Ser. No. 996,455, Dec. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 29,819, Mar. 11, 1993, Pat. No. 5,254,580. This application May 20, 1993, Ser. No. 62,687
Int. Cl.[5] A01N *43/02;* **C07D** *305/00*
U.S. Cl. 514—469 **13 Claims**

1. A compound of formula I

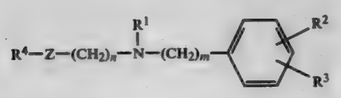


I

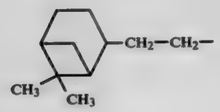
in which
R^1 is $—COR^z$ in which R^z is RO— or R;
R^x is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-6} cycloalkyl, or a radical of the formula —W—R^x in which W is a bond, C_{2-6} alkenediyl, or $—(CH_2)_t—$, in which t is one to six; and R^x is naphthyl, furyl, thienyl or phenyl, and furthermore R^x can be optionally substituted with one to three same or different C_{1-6} alkyl, C_{1-6} alkoxy, halogen or $—CF_3$ groups;
R^2 is —OCOR, H, OH, —OR, $—OSO_2R$, —OCONR^{e}R, —O-CONHR, $—OCOO(CH_2)_tR$, or —OCOOR; and
R and R^e are independently C_{1-6} alkyl, C_{2-6} alkenyl, C_{3-6} cycloalkyl, C_{2-6} alkynyl, or phenyl, optionally substituted with one to three same or different C_{1-6} alkyl, C_{1-6} alkoxy, halogen or $—CF_3$ groups.

5,294,638
PHENYALKYLAMINOALKYL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM
Insa Hell, Hannover; Ulf Preuschoff, Laatzen; Hermann Krahling, Sehnde; Samuel David; Ivan Ban, both of Hannover, all of Fed. Rep. of Germany, and Marie-Odile Christen, Sureanes Cedex, France, assignors to Kali-Chemie Pharma GmbH, Hannover, Fed. Rep. of Germany
Continuation of Ser. No. 806,302, Dec. 13, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,457
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1990, 4040632
Int. Cl.[5] A61K *31/135, 31/36;* **C07C** *211/19;* **C07D** *317/58*
U.S. Cl. 514—452 **16 Claims**

1. A compound corresponding to the formula I:

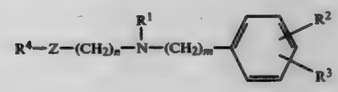


wherein
m represents 1–4,
n represents 2–5,
R^1 is hydrogen or lower alkyl,
R^2 is hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl, and
R^3 is hydrogen, lower alkyl, lower alkoxy or halogen, or
R^2 and R^3 are linked to adjacent carbon atoms and together form an alkylenedioxy group with 1–2 carbon atoms,
R^4 represents a saturated monocyclic or bicyclic terpene hydrocarbon radical with 10 carbon atoms, or a bicyclic hydrocarbon radical with 11 carbon atoms corresponding to the formula a:

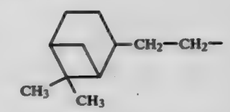


and
Z represents oxygen, an N—R^5 group in which R^5 is lower alkyl, or if R^4 is a group of formula a, Z also may be sulfur,
and physiologically acceptable acid addition salts thereof.

7. A method of inhibiting ulceration of the gastrointestinal mucosa of a mammal comprising administering to said mammal an effective ulcer-inhibiting amount of a compound corresponding to the formula I:



wherein
m represents 1–4,
n represents 2–5,
R^1 is hydrogen or lower alkyl,
R^2 is hydrogen, lower alkyl, lower alkoxy, halogen or trifluoromethyl, and
R^3 is hydrogen, lower alkyl, lower alkoxy or halogen, or
R^2 and R^3 are linked to adjacent carbon atoms and together form an alkylenedioxy group with 1–2 carbon atoms,
R^4 represents a saturated monocyclic or bicyclic terpene hydrocarbon radical with 10 carbon atoms, or a bicyclic hydrocarbon radical with 11 carbon atoms corresponding to the formula a:

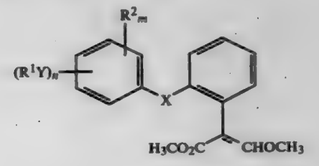


and
Z represents oxygen, an N—R^5 group in which R^5 is lower alkyl, or if R^4 is a group of formula a, Z also may be sulfur,
or a physiologically acceptable acid addition salt thereof.

5,294,639
α-ARYLACRYLIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING PESTS AND FUNGI
Reinhard Kirstgen, Neustadt; Albrecht Harreus, Ludwigshafen; Uwe Kardorff, Mannheim; Thomas Kuekenhoehner, Frankenthal; Harald Rang, Ludwigshafen; Gisela Lorenz, Neustadt; Eberhard Ammermann, Ludwigshafen, and Christoph Kuenast, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Sep. 4, 1991, Ser. No. 754,850
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028391
Int. Cl.[5] C07C *69/612, 69/618;* **A01N** *37/10, 37/34*
U.S. Cl. 514—522 **4 Claims**

1. An α- arylacrylic acid derivative of the formula

(I)



where

X is ethylene or ethylene;
Y is a direct bond or oxygen;
R^1 is a mononuclear or dinuclear aromatic system which is bonded via a carbon atom, and this aromatic system is optionally substituted by from one to seven halogen atoms or from one to four of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_3–C_6-cycloalkyl, C_5–C_6-cycloalkenyl, C_2–C_4-alkenyl or C_2–C_4-alkynyl or from one to three cyano or nitro substituents; R^2 is cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, or C_1–C_4-haloalkylthio; n is 1 or 2, and the substituents are identical or different if n is 2, and
m is 1, 1 or 2, and the substituents are identical or different if
m is 2, with the proviso that R^1 is not phenyl or alkylphenyl when
n is 1 and m is 0.

5,294,640

FUNGICIDAL SOLUTION

Hans Theo Leines; Gerhard Schachtlbauer, both of Duesseldorf, and Wolfgang Gress, Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 25, 1993, Ser. No. 64,180
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1990, 4037504
Int. Cl.[5] A01N *37/34, 43/50*
U.S. Cl. 514—525 **4 Claims**

1. A fungicidal composition comprising 1,3-dimethyl-2-imidazolidinone and 2,4,5,6-tetrachloroisophthalodinitrile in a weight ratio of from 19:1 to 7.3:1.

5,294,641

METHOD FOR TREATING A MEDICAL PATIENT FOR CARDIAC TRAUMA

Ronald T. Staako, Pittsburgh, Pa., assignor to Montefiore - University Hospital, Pittsburgh, Pa.

Filed Nov. 27, 1991, Ser. No. 802,062
Int. Cl.[5] A61K *31/24, 31/19*
U.S. Cl. 514—540 **9 Claims**

1. A method for increasing the cardiac output of a human, in need thereof without concurrently increasing the cardiac oxygen demand of said human which comprises feeding said human, orally or intravenously, an effective dosage of pyruvate.

5,294,642

METHOD FOR IMPROVING VENTILATION DURING SLEEP AND TREATING SLEEP RELATED VENTILATION ABNORMALITIES

Jeffrey Askanazi, Haworth, N.J., and Susan Trimbo, Evanston, Ill., assignors to Clintec Nutrition Co., Deerfield, Ill.

Continuation-in-part of Ser. No. 443,765, Nov. 30, 1989, Pat. No. 5,017,616. This application Sep. 14, 1990, Ser. No. 582,527
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/195*
U.S. Cl. 514—561 **12 Claims**

1. A method of treating sleep apnea in a chronic renal failure patient comprising:
administering to a patient a therapeutically effective amount of an amino acid solution comprising branched-chain amino acids.

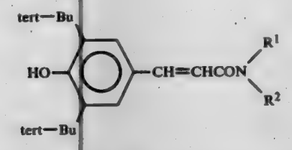
5,294,643

CINNAMAMIDE DERIVATIVE

Yoshihide Fuse, Kenji Fujii, both of Takasago; Keiji Kameyama, Mihara; Taizo Kawabe, Takasago; Toshiaki Miwa, and Ikuo Katsumi, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki, Osaka, Japan

Filed Jul. 5, 1990, Ser. No. 548,121
Claims priority, application Japan, Jul. 5, 1989, 1-174820; Jul. 5, 1989, 1-174821; Jul. 5, 1989, 1-174822; Jan. 18, 1990, 2-9528; Jan. 18, 1990, 2-9529; Jan. 18, 1990, 2-9530
Int. Cl.[5] A61K *31/165;* **C07C** *233/11*
U.S. Cl. 514—622 **2 Claims**

1. A cinnamamide derivative of formula I or the salts thereof:



(I)

wherein R^1 is selected from the group consisting of alkyl having 1 to 8 carbon atoms;
$-(CN_2)_{n1}COR^3$,
wherein R^3 is —OH, $—OR^4$ (R^4 is alkyl having 1 to 3 carbon atoms, $—NHR^5$ (R^5 is alkyl having 1 to 3 carbon atoms), $—NH(CH_2)_{n2}—C_6H_5$ (n^2 is an integer of 0 to 3), or —NHNH—C_6H_5, and n^1 is an integer of 1 to 3;

$$-CHCOR^9,$$
$$\quad\quad|$$
$$\quad R^8$$

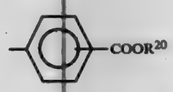
wherein R^8 is alkyl having 1 to 5 carbon atoms, $-(CH_2)_{n4}COOR^{10}$ (R^{10} is hydrogen or alkyl having 1 to 3 carbon atoms, and n^4 is an integer of 1 to 3), phenyl or hydroxyphenyl, and R^9 is —OH, or $—OR^{11}$ (R^{11} is an alkyl having 1 to 3 carbon atoms);
$-(CH_2)_{n7}OR^{12}$,
wherein R^{12} is hydrogen, alkyl having 1 to 3 carbon atoms, —CONHR^{13} (R^{13} is alkyl having 1 to 5 carbon atoms), or $—COR^{14}$ (R^{14} is phenyl, halogen-substituted phenyl), and n^7 is an integer of 1 to 3;

$-(CH_2)_{n8}SR^{15}$,

wherein R^{15} is hydrogen, $-(CH_2)_{n9}COOR^{17}$ (R^{17} is alkyl having 1 to 3 carbon atoms and n^9 is an integer of 0 to 3), or $-(CH_2)_{n11}R^{18}$ (R^{18} is phenyl, and n^{11} is an integer of 0 to 3), and n^8 is an integer of 1 to 3;

$-(CH_2)_{n12}NHR^{19}$,

wherein R^{19} is



(R^{20} is hydrogen or alkyl having 1 to 3 carbon atoms), and n^{12} is an integer of 1 to 3;

$$-CH(CH_2)_{n13}OH,$$
$$\quad\quad|$$
$$\quad R^{22}$$

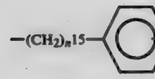
wherein R^{22} is phenyl, hydroxyphenyl, and n^{13} is an integer of 1 to 3

$$-(CH_2)_{n14}CHCH_2OH,$$
$$\quad\quad\quad|$$
$$\quad\quad R^{23}$$

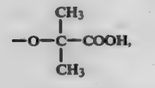
wherein R^{23} is —OH or phenyl, and n^{14} is an integer of 1 to 3;

$$-CH—C_6H_5,$$
$$\quad|$$
$$R^{24}$$

wherein R^{24} is alkyl having 1 to 3 carbon atoms, phenyl, or —CN;



wherein R^{25} is



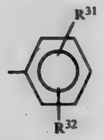
and n^{15} is an integer of 0 to 3;

$-(CH_2)_{n18}R^{28}$,

wherein R^{28} is —CN,

$$-CHOR^{29}$$
$$\quad|$$
$$OR^{30}$$

(R^{29} and R^{30} are independently alkyl having 1 to 3 carbon atoms),



wherein R^{31} is hydrogen, halogen, $—NO_2$, —COOH, $COOR^3$ wherein R^{33} is alkyl containing 1 to 3 carbon atoms, or $—OR^{34}$ wherein R^{34} is alkyl containing 1 to 3 carbon atoms and R^{32} is hydrogen or OR^{35} wherein R^{35} is alkyl containing 1 to 3 carbon atoms,

$$-NR^{36}$$
$$\quad|$$
$$R^{37}$$

(R^{36} and R^{37} are independently alkyl having 1 to 3 carbon atoms), and n^{18} is an integer of 0 to 3;

$$-C(R^{39})(R^{40})-COOR^{41},$$

wherein R^{39}, R^{40} and R^{41} are independently alkyl having 1 to 3 carbon atoms;



naphthyl;
indanyl;
tetralinyl; and
$—COR^{42}$,
wherein R^{42} is alkyl having 1 to 3 carbon atoms; and
when R^1 is an alkyl group, R^2 is $—(CH_2)_{n19}—C_6H_5$ (n^{19} is an integer of 1 to 3);
or when R^1 is not an alkyl group, R^2 is selected from the group consisting of hydrogen, alkyl having 1 to 5 carbon atoms, and $—(CH_2)_{n19}—C_6H_5$ (n^{19} is an integer of 1 to 3).

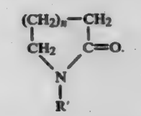
5,294,644

SURFACE ACTIVE LACTAMS

Robert B. Login, Oakland; Ratan K. Chaudhuri, Butler; Rama K. Haldar, Randolph; Mohamed M. Hashem, Robbinsville; Michael W. Helioff, Westfield, and David J. Tracy, Plainsboro, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation of Ser. No. 257,596, Oct. 14, 1988, Pat. No. 5,093,031, which is a continuation-in-part of Ser. No. 879,776, Jun. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 13,760, Feb. 12, 1987, abandoned. This application Feb. 12, 1991, Ser. No. 654,359
Int. Cl.[5] B01F *17/78;* **H01N** *37/00*
U.S. Cl. 514—698 **6 Claims**

1. An emulsion concentrate which comprises an N-hydrocarbon substituted lactam surfactant having the formula



A

wherein n is an integer having a value of from 1 to 3 and R' is a hydrophobic radical consisting of a linear, branched chain or cyclic alkyl radical containing from 7 to 22 carbon atoms; a naphthyl or alkyl substituted naphthyl radical containing from 10 to 26 carbon atoms and an alkylphenyl or phenylalkyl radical containing from 9 to 26 carbon atoms; which lactams are capable of forming micelles in neutral, basic or acidic aqueous media and have a critical micelle concentration of between about 1×10^{-3} and about 5×10^{-5} moles per liter, and a water insoluble agricultural chemical in an agriculturally effective amount.

5,294,645

USING MENTH-1-EN-9-OL TO KILL BACTERIA, YEAST, AND FUNGI

Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; W. Eugene Sanders, and Christine C. Sanders, both of Omaha, Nebr., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Jun. 14, 1993, Ser. No. 75,788
Int. Cl.[5] A01N *31/00;* **A61K** *31/045*
U.S. Cl. 514—729 **4 Claims**

1. A method of killing bacteria and fungi comprising treating bacteria and fungi in their habitat with bactericidal and fungicidal concentrations of menth-1-en-9-ol.

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5,294,646

N-ALKYL-N-(METH)ACRYLOYLOXYALKYLCARBOXAMIDES OF AROMATIC CARBOXYLIC ACIDS AND AROMATIC CARBOXYLIC ACID ANHYDRIDES, AND ADHESIVES CONTAINING THESE COMPOUNDS

Michael Müller, Bergisch Gladbach; Wolfgang Podszun, Koeln; Werner Finger, Dormagen, and Jens Winkel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 743,535, Aug. 9, 1991, Pat. No. 5,241,081. This application Jun. 25, 1992, Ser. No. 906,202

Claims priority, application Fed. Rep. of Germany, Aug. 15, 1990, 4025784; Dec. 11, 1990, 4039440

Int. Cl.[5] A61K *6/00*; C08F *222/16*; C07D *493/00*; C07C *69/34*

U.S. Cl. 523—120 **8 Claims**

1. A method of treating dentine or dentine enamel which comprises applying thereto an N-alkyl-N-(meth)acryloyloxyalkyl-carboxamide of the formula



(I)

in which

X represents an N-alkyl-N-(meth)acryloyloxyalkyl-carboxamide of the formula



wherein

R_1 denotes hydrogen or methyl,

R_2 denotes a divalent aliphatic radical (C_2–C_6) and

R_3 denotes a monovalent aliphatic radical (C_1–C_4),

Y represents COOH, or the two Y groups togetehr form a —CO—O—CO— radical,

Z represents H, X or, if Y denotes COOH, Y, and

Ph represents a tri- or tetrasubstituted benzene ring (1,2,3-/1,2,4,- or 1,2,4,5-substitution) or a tri- or tetrasubstituted naphthalene ring (1,2,6-/1,4,5-/2,3,6-/1,4,5,8- or 2,3,6,7-substitution).

5,294,647

METHOD OF PRODUCING RIGID FOAMS AND PRODUCTS PRODUCED THEREFROM

Robert H. Blanpied; Robert J. Butkus; Andy I. McLaughlin, and Richard L. Donald, all of Meridian, Miss., assignors to Atlas Roofing Corporation, Meridian, Miss.

Continuation-in-part of Ser. No. 720,735, Jun. 25, 1991, and a continuation-in-part of Ser. No. 851,889, Mar. 16, 1992. This application Feb. 16, 1993, Ser. No. 18,304

The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—125 **20 Claims**

1. A method of producing a rigid thermosetting foam, the method comprising the steps of:

(1) preparing a first of two foam forming blends using polymeric polymethylene polyphenylisocyanate;

(2) preparing a second of two foam forming blends by mixing together:

(a) a polyol;

(b) water in an amount less than 1% by weight of the total foam;

(c) a tertiary amine catalyst having at least two hydrogen bonding sites for one water molecule, wherein both the hydrogen segment and the hydroxyl segment of water are attracted by both of the hydrogen bonding sites on the catalyst molecule essentially simultaneously;

(d) an alkali metal organo-salt catalyst comprising a preblending of water, potassium hydroxide, and carboxylic acid;

(3) mixing a first blowing agent with one of the two foam forming blends;

(4) mixing together the first and second foam forming blends whereby the following occurs:

(a) the tertiary amine catalyst initiates a reaction between the water and the polymeric polymethylene polyphenylisocyanate whereby prior to a gel point of the

i) a second blowing agent is produced for forming closed cells in the blends and for causing expansion in the liquid blends;

ii) sufficient exothermic heat is produced to initiate boiling of the first blowing agent; followed by

(b) the alkali metal organo-salt catalyst induces rapid vaporizing of the first blowing agent due to a high level of exothermic heat, whereby expansion of the mixed blends is substantially completed prior to the effective conversion of the mixed liquid blends to a rigid solid, the alkali metal organo-salt catalyst being present in an amount sufficient to cause a sufficiently complete trimerization reaction.

5,294,648

ALKALINE RESOL PHENOL-ALDEHYDE RESIN BINDER COMPOSITION

Garry Smith, Sutton Coldfield, and Martin Bradley, Solihull, both of England, assignors to Foseco International Limited, Birmingham, England

Continuation of Ser. No. 833,695, Feb. 11, 1992, abandoned. This application Jan. 4, 1993, Ser. No. 565

Claims priority, application United Kingdom, Mar. 13, 1991, 9105312

Int. Cl.[5] C08J *5/14*; B22C *1/16*

U.S. Cl. 523—145 **14 Claims**

1. A binder composition for forming foundry molds or cores comprising an alkaline aqueous solution of a resol phenol-aldehyde resin and an oxyanion which can form a stable complex with the resin, the amount of alkali present in the solution being sufficient to solubilize the resin and to substantially prevent stable complex formation between the resin and the oxyanion wherein the molar ratio of alkali to phenol is from 1.5:1 to 2.5:1 and the binder composition also contains an ethylene glycol monoalkyl ether in an amount sufficient to improve foundry mold or core strength immediately after gassing with carbon dioxide and after storage.

5,294,649

ACCELERATORS FOR CURING PHENOLIC RESOLE RESINS

Arthur H. Gerber, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 995,968, Dec. 23, 1992, Pat. No. 5,223,554, which is a division of Ser. No. 943,065, Sep. 10, 1992, Pat. No. 5,214,079, which is a division of Ser. No. 616,879, Nov. 21, 1990, Pat. No. 5,182,306, which is a continuation-in-part of Ser. No. 562,206, Aug. 2, 1990, Pat. No. 5,096,983. This application Apr. 2, 1993, Ser. No. 41,561

Int. Cl.[5] B22C *1/22*

U.S. Cl. 523—145 **20 Claims**

1. A raw batch composition comprising a mixture of:

A. an aggregate material;

B. a hardenable phenolic resole resin having a pH of about 5 to 9, a resin solids content of about 50% to 90% by weight of said resin, and a viscosity of about 100 to 4,000 cps at 25° C.;

C. from about 5% to 40% by weight of the resin of a magnesium hardening agent selected from the group consisting of magnesium hydroxide and lightburned magnesium oxide, said magnesium oxide having a surface area of at least 10 square meters per gram;

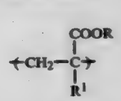
D. an accelerator in an amount sufficient to accelerate the hardening of said mixture, said accelerator selected from the group consisting of:

(a) a 2,4-di(dialkylaminomethyl)phenol, a 2,6-di(dialkylaminomethyl)phenol, or a 2,4,6-tris(dialkylaminomethyl)phenol wherein each alkyl group has from 1 to 3 carbon atoms;

(b) a 1,3,5-tri(lower alkyl)hexahydro-1,3,5-triazine wherein each alkyl group has from 1 to 3 carbon atoms;

(c) 1,4-diazabicyclo[2.2.2]octane; and

(d) a compound of the formula:



wherein:

each of R^1 and R^2 is a member selected from the group consisting of alkyl having 1 to 3 carbon atoms, and R^1 and R^2 when taken together with the nitrogen to which they are attached, represent a member selected from the group consisting of piperidino, piperazino, morpholino, thiomorpholino, and pyrrolidino;

X is a member selected from the group consisting of $(—CH_2—)_n$ wherein n is an integer of 1 to 6, —CH=CH—CH_2—, —CH_2—CH=CH—CH_2—,



and

each of R^3 and R^4 is a member selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, and R^3 and R^4 when taken together with the nitrogen to which they are attached represent a member selected from the group consisting of piperazino, morpholino, thiomorpholino, piperidino, and pyrrolidino.

5,294,650

PROCESS FOR PREPARING SULFO-POLYESTER/ACRYLIC RESIN BLENDS WITHOUT VOLATILE ORGANIC COMPOUNDS

Mahendra K. Sharma, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Feb. 8, 1993, Ser. No. 14,602

Int. Cl.[5] C08K *5/42*; C08L *67/02*

U.S. Cl. 523—523 **19 Claims**

1. A process for preparing aqueous sulfo-polyester/acrylic resin blends without volatile organic compounds, said process comprising the following steps:

(A) contacting a solid acrylic resin having a weight average molecular weight of 1,000 to 9,000 and an acid number of 140 to 250 with a solubilizing amount of an alkaline solution comprising an amine or ammonium compound dissolved in water so as to achieve an acrylic resin solution having a pH of at least 8, said acrylic resin comprising repeating units of the formula

wherein R is selected from the group consisting of hydrogen and an alkyl group having 1 to 20 carbon atoms, and R^1 is selected from the group consisting of hydrogen and methyl, provided that the molecular weight and acid number of the acrylic resin is inversely related;

(B) heating the acrylic resin solution of step (A) at a temperature of 60° C. to 99° C. to result in an acrylic resin solution having a pH of 7.5 to 9;

(C) contacting the acrylic resin solution of step (B) with a water dispersible polyester consisting essentially of repeat units from:

(a) a dicarboxylic acid selected from the group consisting of aromatic dicarboxylic acids, saturated aliphatic dicarboxylic acids, cycloaliphatic dicarboxylic acids, and combinations thereof;

(b) a diol; and

(c) a difunctional sulfomonomer containing at least one sulfonate group attached to an aromatic nucleus wherein the functional groups are hydroxy, carboxy or amino, provided the difunctional sulfomonomer is present in an amount from 12 to 25 mole percent based on 100 mole percent dicarboxylic acid and 100 mole percent diol;

said contacting occurring under agitation and at a temperature of 60° C. to 99° C. to result in a polymer blend wherein the sulfo-polyester is dispersed in the acrylic resin solution, and the weight ratio of acrylic resin to sulfo-polyester is 10:90 to 90:10; and

(D) cooling the polymer blend while applying agitation.

5,294,651

FLUID LOSS ADDITIVES FOR WELL CEMENTING COMPOSITIONS

Michael Stephens, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 620,974, Nov. 30, 1990, abandoned, which is a division of Ser. No. 414,961, Sep. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 29,029, Mar. 23, 1987, abandoned. This application Sep. 25, 1992, Ser. No. 951,258

Int. Cl.[5] C08K *3/00*

U.S. Cl. 524—3 **6 Claims**

1. A composition comprising:

(a) water,

(b) cement,

(c) tetrapolymer wherein said tetrapolymer is the polymerization product of a monomeric mixture containing:

(i) about 30 weight percent to about 45 weight percent of component A which is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonic acid and salts of 2-acrylamido-2-methylpropane sulfonic acid;

(ii) about 20 weight percent to about 28 weight percent of component B which is N-vinyl-2-pyrrolidone;

(iii) about 15 weight percent to about 35 weight percent of component C which is acrylamide; and

(iv) at least 10 weight percent to about 16 weight percent of component D which is selected from the group consisting of acrylic acid and salts of acrylic acid;

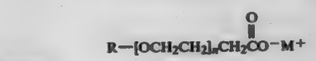
(d) an electrolyte selected from the group consisting of the sodium, potassium, or ammonium salt of chlorine, bromine, iodine, fluorine, or nitrate;

(e) a base selected from the group consisting of K^+OH^-, Na^+OH^-, or $NH_4^+OH^-$;

(f) a surfactant selected from the group consisting of

(i) carboxylates of the formula $RCOO^-M^+$ wherein R is selected from the group consisting of alkyl groups containing from 9 to 21 carbon atoms and M is selected from the group consisting of sodium, potassium, and lithium;

(ii) polyalkoxycarboxylates represented by the formula



wherein R is selected from the group consisting of alkyl and alkylaryl groups containing from 10 to 21 carbon atoms; M is selected from the group consisting of sodium, lithium, or potassium, and n is an integer from 5 to 21;

(iii) sulfonates of the formula $RSO_3^-M^+$ wherein R is selected from the group consisting of alkyl groups containing from 10 to 20 carbon atoms; M is selected from the groups consisting of sodium, lithium or potassium;
(iv) alkylbenzene sulfonates represented by the formula

$$RC_6H_4SO_3^-M^+$$

wherein R is selected from the group consisting of alkyl groups containing from 10 to 20 carbon atoms and M is selected from the group consisting of sodium, lithium, or potassium;
(v) lignosulfonates;
(vi) naphthalene sulfonates of the formula

$$RC_{10}H_6SO_3^-M^+$$

wherein R is selected from the group consisting of alkyl groups containing from 30 to 10 carbon atoms, and M is selected from the group consisting of sodium, lithium, calcium or potassium;
(vii) naphthalene sulfonates which have condensed with formaldehyde;
(viii) alpha-olefin sulfonates of the formula

$$RC{=}CHSO_3^-M^+$$

wherein R is selected from the group consisting of alkyl groups containing from 10 to 20 carbon atoms and M is selected from the group consisting of sodium, lithium or potassium;
(ix) poly(ethylene glycol) monomethyl ethers of the formula

$$HO{-}(CH_2CH_2{-}O)_xCH_3$$

wherein x can vary from about 20 to about 225,000;
(x) polyethylene glycols of the formula

$$HO(CH_2CH_2{-}O)_x{-}H$$

wherein x can vary from about 20 to about 225,000; and
(xi) alcohol exthoxylates of the formula

$$R[OCH_2CH_2]_n{-}OH$$

wherein R is selected from the group consisting of alkyl groups containing from 60 to 20 carbon atoms and n is an integer from 2 to 100; and
(g) a preservative.

5,294,652

PROCESS FOR RECOVERING SILVER FROM PHOTOGRAPHIC CHEMICAL EFFLUENT

Norman B. Rainer, 2000 Fondulac Rd., Richmond, Va. 23229

Continuation-in-part of Ser. No. 808,884, Dec. 18, 1991, Pat. No. 5,187,200. This application Feb. 18, 1993, Ser. No. 19,287
Int. Cl.[5] C08L *11/00*; C08J *5/20*; B01D *15/00*; C08C *69/26*
U.S. Cl. 524—30 **8 Claims**

1. A process for removing silver from a photoprocessing hypo solution comprising:
a) passing said solution through a bed of open celled sponge product containing a gel form of a polymer produced by the thermal interaction of polyethyleneimine (PEI) with a polycarboxylic acid, said polymer containing chemically bonded thereto a substantially saturation amount of an activating multivalent metal cation and containing between 90% and 300% of water based upon the dry weight of the polymer, the rate of passage of said solution through said bed being between 0.05 and 2.0 bed volumes/minute (bvm);
b) eluting silver from said bed by passing through said bed an aqueous solution of a complexing agent selected from the group consisting of ammonium compounds and cyanide compounds, and
c) washing said bed with water, thereby removing said complexing agent and preparing said bed for re-use, beginning at step a.

5,294,653

THREE-COMPONENT WATER-BASED VARNISH FOR GLASS FOR INTERIOR USE

Mauricio Colucci, Buenos Aires, Argentina, assignor to Oece Industrie Chimiche SpA, Cavezzo, Italy

Filed Mar. 22, 1993, Ser. No. 35,369
Claims priority, application Italy, Mar. 23, 1992, MI92A000670
Int. Cl.[5] C08K *5/15, 5/38*; C08L *83/00*
U.S. Cl. 524—114 **4 Claims**

1. Water-based varnish for glass obtained by mixing, just before use, the following essential components:
Component A: aqueous dispersion of acrylic polymer containing hydroxy functional groups (0.8 to 1.2 wt.-% on dry polymer basis), mixed with a lower amount of polyurethane resin produced from aliphatic polyisocyanate as well as with the conventional additives selected from: surfactants, antifoam and thickening agents, pigments, extenders, the acrylic polymer concentration ranging from 15% and 18% by weight of the total.
Component B: trialkoxysilane containing epoxy functional groups.
Component C: zirconium and ammonium double carbonate containing $ZrO_2(+HfO_2)$ (19% to 20% by weight) in the form of an aqueous solution,
components B and C amounting to 3 and 2 parts by weight, respectively, per 100 parts by weight of component A.

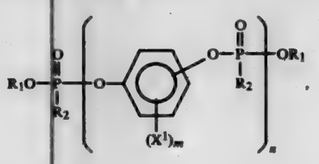
5,294,654

FLAME-RETARDED, CONDUCTIVE COMPOSITIONS WHICH INCLUDE POLYPHENYLENE ETHER AND POLYSTYRENE RESINS

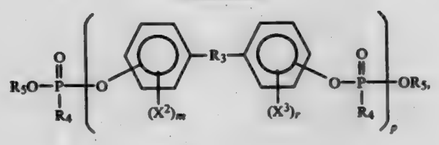
Ann M. Hellstern-Burnell, and Kim G. Balfour, both of Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

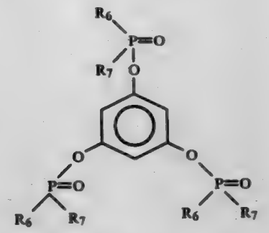
Continuation of Ser. No. 743,849, Aug. 12, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,524
Int. Cl.[5] C08J *5/10*; C08K *5/52*; C08L *71/12*
U.S. Cl. 524—127 **30 Claims**

1. An improved thermoplastic composition, comprising:
a) polyphenylene ether resin;
b) at least one polystyrene resin;
c) about 3% by weight to about 30% by weight glass fibers, based on the weight of the entire composition;
d) an effective amount of at least one inorganic, nonfibrous agent which dimensionally-stabilizes molded or extruded parts formed from the composition;
e) about 5% by weight to about 15% by weight, based on the weight of the entire composition, of a carbon-based material selected from the group consisting of carbon fibers and metal-coated graphite fibers; and
f) about 9% by weight to about 22% by weight, based on the weight of the entire composition, of a flame retardant composition which itself comprises as its major component a diphosphate or polyphosphate compound having one of the following formulae:



-continued





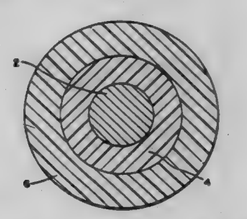
, or mixtures thereof, wherein R_1, R_3 and R_5 are, independently, hydrocarbon; R_2, R_5, R_6 and R_7 are, independently, hydrocarbon or hydrocarbonoxy; X^1, X^2 and X^3 are either hydrogen, methyl, methoxy, or halogen, m and r are integers from 1 to 4; and n and p are integers from 1 to about 30.

5,294,655

POLYPHENYLENE ETHER ELECTRICAL INSULATION COMPOSITIONS

Glm F. Lee, Jr., Albany, N.Y., and Kevin M. Snow, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed May 15, 1992, Ser. No. 883,446
Int. Cl.[5] C08J *5/10*; C08K *5/24*; C08L *71/12*
U.S. Cl. 524—265 **16 Claims**



1. An electrically insulative, flame retardant, thermoplastic, flexible, halogen-free composition, which comprises;
(i) 100 parts by weight of a thermoplastic polyphenylene ether resin;
(ii) 5 to 50 parts by weight of a phenylsiloxane fluid, said phenylsiloxane having a weight average molecular weight within the range of from about 800 to 100,000, said phenylsiloxane consisting essentially of chemically combined units of the formulae:

$(C_6H_5)_2SiO$ (a)

$CH_3(C_6H_5)SiO$ and (b)

$(CH_3)_2SiO$ (c)

where there is present in the phenylsiloxane fluid from 20 to 40 mole % of (a), or 40 to 80 mole % of (b), and 21 to 79 mole % of the sum of (a)+(b), based on the total moles of (a), (b), and (c); and
(iii) a flexibilizing proportion of an elastomeric block copolymer having a hydrogenated A-B-A′ structure, wherein A and A′ are polymerized vinyl aromatic hydrocarbon blocks, and B is an ethylene-butylene bock, and wherein the block copolymer has a wight average molecular weight of from about 40,000 to 100,00 and the average molecular weight of each block A and ′ is independently in the range of about 4,000 to about 15,000, and the weight average molecular weight of the B block is in the range of about 25,000 to about 90,000.

5,294,656

RUBBER MODIFIED STYRENE BASED RESIN COMPOSITION

Yasushi Okamoto, Chiba; Shuji Yoshimi, Ichihara, and Yoshinori Kanno, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 26,590
Claims priority, application Japan, Mar. 10, 1992, 4-051364
Int. Cl.[5] C08L *51/04*
U.S. Cl. 524—269 **9 Claims**

1. A rubber modified styrene based resin composition comprising a styrene based resin forming a matrix and a rubbery elastomer-containing soft component dispersed in the form of particles in the matrix, wherein said soft component dispersed in the composition consists of a small-sized particulate component having a core/shell structure and an average particle size of 0.1 to 0.4 μm and a large-sized particulate component having a cell structure and an average particle size of 0.8 to 2.0 μm, wherein a ratio by weight of said small-sized component to said large-sized component is in the range of 90:10 to 99:1, and said resin composition contains 0.01 to 0.5% by weight of methyl phenyl silicone oil, wherein said methyl phenyl silicone oil has an index of refraction in the range of 1.410 to 1.500.

5,294,657

ADHESIVE COMPOSITION WITH DECORATIVE GLITTER

Peter S. Melendy, and Dennis J. Fitzmeyer, both of 3 Merrill Industrial Dr., Hampton, N.H. 03842

Filed May 15, 1992, Ser. No. 883,770
Int. Cl.[5] C08K *5/24*
U.S. Cl. 524—270 **12 Claims**

1. A low temperature hot-melt article having decorative glitter dispersed therein for being melted and then applied to a substrate in a liquid state, said article being made of a composition comprising a heat-meltable adhesive capable of being applied at a temperature of less than about 350° F. and said decorative glitter, wherein said decorative glitter comprises a synthetic material having a specific gravity approximately that of said heat-meltable adhesive in the liquid state.

5,294,658

PROCESS FOR THE PREPARATION OF LARGE-PARTICLE, AQUEOUS PLASTIC DISPERSIONS

Bernhard-Peter Scholz, Oer-Erkenschwick; Klaus Walther, Marl, and Heinz Riemer, Bottrop, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,367
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 4141942.1
Int. Cl.[5] C08J *3/05*
U.S. Cl. 524—457 **11 Claims**

1. A process for the preparation of a large-particle, aqueous plastic dispersion by emulsion polymerization of monomers which are polymerizable by free radicals, in an aqueous phase as dispersion medium, comprising the step of polymerizing said monomers in the presence of
an anionic emulsifier;
an nonionic, water-soluble polymer auxiliary;
a polymerization initiator forming free radicals;
water-soluble salt; and
conventional polymerization auxiliaries, wherein the poly-

mer auxiliary is added before polymerization, wherein the water-soluble salt is at least one member selected from the group consisting of alkali metal salt and ammonium salt and is present at the start of the polymerization in an amount of 1 to 250 mmol of alkali metal ions or ammonium ions which are not bonded to emulsifier in the aqueous phase per liter of aqueous phase, wherein the polymer auxiliary is a polyethylene oxide block-containing polymer having an AB block structure, in which A is either a branched or non-branched hydrophobic alkyl or (alkyl)aryl radical comprising 15 to 70 C atoms or oleyl or distyrylphenyl radical, and B is a non-branched hydrophilic radical comprising at least 50 ethylene oxide units, and wherein the amount of the polymer auxiliary, based on 100 parts by weight of the monomer, is 0.0001 to 0.05 parts by weight, wherein the polymerization is carried out by batch procedure or is started in a batch procedure and, after particle formation phase, is continued and completed under conditions for graft polymerization preventing the formation of new particles.

5,294,659

METHOD FOR PREPARING EMULSION POLYMERIZED POLYBUTADIENE OF INCREASED PARTICLE SIZE

Kevin R. Kidder, Parkersburg, W. Va., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1989, Ser. No. 454,544
Int. Cl.[5] C08K *3/20*
U.S. Cl. 524—458 **10 Claims**

1. A method for emulsion polymerization of butadiene in an emulsion polymerization medium, comprising providing an emulsion polymerization medium containing monomer consisting essentially of butadiene and up to about 50% by weight of an aryl olefin comonomer, and a soap, and adding an acrylic latex to the emulsion polymerization medium during the polymerization reaction in an amount of from about 0.1 to about 10 parts by weight, on a dry basis, per 100 parts by weight of butadiene included in the emulsion polymerization medium.

5,294,660

POLYPHENYLENE SULFIDE FILM AND PROCESS OF MANUFACTURING THE SAME

Yukichi Deguchi, Otsu; Yukio Noguchi, Shiga; Masaaki Sudo, Kyoto, and Kiyohiko Ito, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 897,582, Jun. 11, 1992, abandoned, which is a continuation of Ser. No. 445,634, Dec. 26, 1989, abandoned. This application Mar. 11, 1993, Ser. No. 29,925
Claims priority, application Japan, Mar. 7, 1988, 63-54530
Int. Cl.[5] C08J *5/18*; C08K *3/34, 5/03*
U.S. Cl. 524—492 **5 Claims**

1. A polyphenylene sulfide film which consists essentially of a resin composition containing polyphenylene sulfide as major constituent, in which fine particles having an average particle size of 0.05–3 μm are dispersed, the fine particles having a single particle index as defined herein of not less than 0.5.

5,294,661

WEATHER-RESISTANT POLYOXYMETHYLENE COMPOSITION AND MOLDED ARTICLE THEREOF

Katsuhiko Takaya, and Shuichiro Kono, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 728,382, Jul. 11, 1991, abandoned, which is a continuation of Ser. No. 622,274, Dec. 6, 1990, abandoned, which is a continuation of Ser. No. 218,899, Jul. 14, 1988, abandoned. This application Dec. 7, 1992, Ser. No. 987,076
Claims priority, application Japan, Jul. 15, 1987, 62-174897
Int. Cl.[5] C08L *51/00*
U.S. Cl. 524—504 **12 Claims**

1. A polyoxymethylene molded article having methacrylic acid ester polymer particles finely dispersed in a polyoxymethylene matrix, wherein the shape of said particles changes gradually into lamellas as the position of said particles approaches the surface of said article, the molded article being obtained by molding a weather-resistant polyoxymethylene composition



comprising 60–95% by weight of a polyoxymethylene and 5–40% by weight of a methacrylic acid ester polymer and 0.5–4% by weight of a pigment, a dye or a mixture thereof, through a die at a shear rate of 10^2–10^5 sec^{-1}.

5,294,662

AQUEOUS FLUOROCHEMICAL COMPOSITIONS AND COATINGS THEREFROM

George G. I. Moore, Afton, and Dong-Wei Zhu, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 15, 1993, Ser. No. 47,782
Int. Cl.[5] C08L *39/00*
U.S. Cl. 524—516 **8 Claims**

1. A water-based composition comprising an aqueous solution, emulsion, or dispersion of

(a) a water-soluble or water-dispersible polymer or oligomer having at least one fluoroaliphatic moiety and at least one anionic moiety which is capable of reacting with an oxazoline or oxazine moiety, and

(b) a water-soluble or water-dispersible polymer or oligomer having at least one fluoroaliphatic moiety and at least one oxazoline or oxazine moiety.

5,294,663

TIRE TREAD COMPOSITIONS OF ISOPRENE-STYRENE/BUTADIENE EMULSION POLYMERS WITH 1,4 CIS-POLYISOPRENE RUBBER

Hubert J. Fabris, Akron; Ivan G. Hargis, Tallmadge; Russell A. Livigni, Akron, and Richard M. Wise, Uniontown, all of Ohio, assignors to General Tire, Inc., Akron, Ohio

Filed Aug. 28, 1992, Ser. No. 936,790
Int. Cl.[5] C08L *7/00, 9/00, 9/06*
U.S. Cl. 524—526 **15 Claims**

1. A rubber composition for use as a tire tread comprising a mixture of 30% to 70% 1,4 cis-polyisoprene and 70%–30% of an emulsion co-polymer rubber comprised of an isoprene monomer, a styrene monomer, and a butadiene monomer there being between about 4% to 17% of the styrene monomer, and between about 8% and about 85% of the butadiene monomer in the emulsion copolymer.

5,294,664

AQUEOUS DISPERSIONS OF FLUORESCENT PIGMENTS

Robert G. Morrison, Jr., Cleveland; Steven G. Streitel, Brecksville, both of Ohio, and Jeffrey R. Cramm, Winfield, Ill., assignors to Day-Glo Color Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 850,227, Mar. 12, 1992, which is a continuation of Ser. No. 645,364, Jan. 24, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,651
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] C08L *33/10, 31/02, 81/00*; C09K *11/06*
U.S. Cl. 524—560 **9 Claims**

1. An aqueous dispersion of a fluorescent pigment comprising:

A. a fluorescent pigment comprising:

1. water insoluble polymer comprising at least four monomers, at least one monomer selected from each of the following groups (1) through (4):

a. from about 40% to about 78.5% total polymer weight of water insoluble vinyl monomer free of polar groups;

b. from about 15% to about 35% by total polymer weight of vinyl nitrile;

c. from about 1.5% to about 5% by total polymer weight of vinyl monomer containing at least one sulfonate group; and

d. from about 5% to about 20% total polymer weight of polar vinyl monomer selected from the group consisting of:

(1) polar acrylate esters;

(2) polar methacrylate esters;

(3) vinyl acetate;

(4) a substituted acrylamide containing hydroxyl or carboxylic ester groups; and

(5) mixtures thereof;

2. fluorescent dye in an amount sufficient to impart fluorescent color to the pigment;

B. water in an amount to provide a total solids content of from about 0.5% to less than 100%.

5,294,665

WATER SOLUBLE OR WATER DISPERSIBLE POLYISOCYANATE MIXTURES AND THEIR USE IN STOVING COMPOSITIONS

Josef Pedain, Köln; Heino Müller; Dieter Mager, both of Leverkusen; Harald Blum, Wachtendonk, and Holger Casselmann, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 24, 1993, Ser. No. 82,224
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1992, 4221924
Int. Cl.[5] C08G *18/80*
U.S. Cl. 524—591 **12 Claims**

1. A polyisocyanate mixture which has blocked isocyanate groups and an average NCO-functionality, based on reversibly blocked isocyanate groups, of 2.0 to 2.6, and comprises the reaction product, converted into the salt form by the at least partial neutralization of the incorporated carboxyl groups, of

i) at least one organic diisocyanate having a molecular weight of 168 to 300 with

ii) at least one monofunctional blocking agent for isocyanate groups,

iii) at least one monobasic or dibasic hydroxycarboxylic acid,

iv) 1 to 15 wt. %, based on the weight of component i), of at least one dihydric to hexahydric alcohol having a molecular weight of 62 to 182 and

v) 50 to 500 wt. %, based on the weight of component i), of at least one diol having a molecular weight of 350 to 950 and containing ester groups.

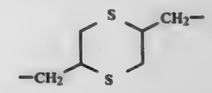
5,294,666

POLYMER FOR OPTICAL PRODUCTS AND PROCESS FOR PREPARATION THEREOF

Reisuke Okada, Hinodemachi; Tsuyoshi Ohkubo, Hachioji, and Masahisa Kosaka, Hinodemachi, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

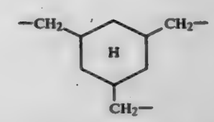
Filed Aug. 28, 1992, Ser. No. 936,302
Claims priority, application Japan, Sep. 3, 1991, 3-250494
Int. Cl.[5] C08J *3/00*
U.S. Cl. 524—609 **20 Claims**

1. A polymer used for optical products wherein the polymer comprises 2,5-dimethyl-1,4-dithiane skeletons represented by formula (1):



(1)

and 1,3,5-trimethylcyclohexane skeletons represented by formula (2):



(2)

and a part of or all of bonds between the 2,5-dimethyl-1,4-dithiane skeleton and the 1,3,5-trimethylcyclohexane skeleton are thiourethane bonds.

5,294,667

PREPARATION OF THERMOPLASTIC MOLDING MATERIALS BASED ON PULVERULENT POLYPHENYLENE ETHERS AND AROMATIC VINYL POLYMERS

Robert Weiss; Axel Gottschalk, both of Ludwigshafen; Klaus Muehlbach, Gruenstadt; Carola Hedtmann-Rein, Hirschberg, and Robert Heinz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,635
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142578
Int. Cl.[5] C08L *71/12, 25/04*
U.S. Cl. 525—68 **4 Claims**

1. A process for preparing a thermoplastic molding material based on pulverulent polyphenylene ethers and aromatic vinyl polymers by melt extrusion at from about 200° C. to about 350° C., comprising compacting and sintering the pulverulent polyphenylene ether under pressure, with the optional application of heat, to form a porous compact, feeding the latter in the form of agglomerates having a particle size of from about 0.5 mm to about 20 mm into an extruder, mixing and melting the agglomerates with the aromatic vinyl polymer and optionally with additives and then extruding the molten mixture.

5,294,668

POLYOLEFIN PRESSURE-SENSITIVE ADHESIVE COMPOSITIONS CONTAINING MACROMONOMERS

Gaddam N. Babu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1990, Ser. No. 614,251
Int. Cl.[5] C08L *51/06*
U.S. Cl. 525—80 **17 Claims**

1. A pressure-sensitive adhesive composition comprising a mixture of:

a) 40–99% by weight of a ZN graft copolymer comprising

1) 0.1 to 25% by weight of a macromonomer comprising the polymerized product of at least one of an ethenylarene and a conjugated diene monomer, said product having a terminal ω-alkenyl group of at least 4 carbon atoms and;
2) 99.9 to 75% by weight of an alpha-olefin having 2 to 18 carbon atoms of which 60 to 100% of the total α-olefins are α-olefins having 6 to 14 carbon atoms; and

b) 60-1 weight % of one or more tackifying resins.

5,294,669

URETHANE ELASTOMER BASED THERMOPLASTIC RESIN COMPOSITION SUITABLE FOR EXTRUSION

Chikashi Kawashima, Tokyo; Sunao Koga, Kamifukuoka, and Katanori Kawamura, Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Jun. 19, 1992, Ser. No. 901,146
Claims priority, application Japan, Jun. 24, 1991, 3-151761
Int. Cl.[5] C08L *27/16, 75/04*
U.S. Cl. 525—129 **7 Claims**

1. A thermoplastic resin composition having improved extrudability compared with thermoplastic urethane elastomer, comprising a blend of (A) 100 parts by weight of a thermoplastic urethane elastomer and (B) 1-100 parts by weight of a thermoplastic fluorine-containing graft copolymer which is obtained by graft polymerization of vinylidene fluoride with an elastomeric copolymer of at least two principal monomers including at least one fluorine-containing monomer and a subsidiary monomer which has at least one double bond and peroxy group, said elastomeric copolymer having a glass transition temperature below room temperature.

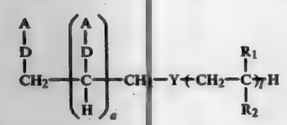
5,294,670

POLYACETAL COPOLYMER AND COMPOSITION THEREOF

Tadashige Hata, and Kazuhiko Matsuzaki, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP90/00748, § 371 Date Feb. 7, 1991, § 102(e) Date Feb. 7, 1991, PCT Pub. No. WO90/15088, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 8, 1990, Ser. No. 640,439
Claims priority, application Japan, Jun. 8, 1989, 1-144259; Jul. 6, 1989, 1-172918; Oct. 31, 1989, 1-281898; Nov. 24, 1989, 1-303405; Dec. 8, 1989, 1-317609
Int. Cl.[5] C08F *8/28*
U.S. Cl. 525—154 **7 Claims**

1. A polyacetal copolymer having a number average molecular weight of 10,000 to 500,000 of the formula



wherein

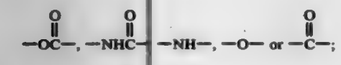
R_1 is hydrogen or alkyl;

R_2 is phenyl, cyano, chloro, acetyl or alkyl ester;

l is 10 to 5,000;

A is polyoxymethylene;

D is



Y is oxygen or sulfur;

and a is 0 to 3.

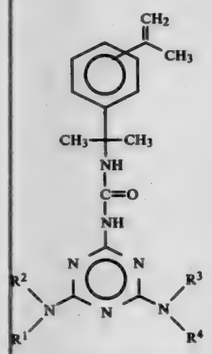
5,294,671

MONOMERIC AMINOPLAST CROSSLINKING AGENTS

Jeno G. Szita, Norwalk, and Robert G. Lees, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 13, 1993, Ser. No. 60,135
Int. Cl.[5] C08G *12/32*
U.S. Cl. 525—187 **36 Claims**

1. A composition of matter represented by the formula:



wherein the point of attachment of the isopropenyl group is meta-, para-, or a mixture thereof, and wherein each of R^1, R^2, R^3, and R^4 is independently selected from the group consisting of hydrogen, hydroxymethyl, an alkoxymethyl, an aminoplast-containing group derived from condensation thereof, and mixtures of any of the preceding moieties.

5,294,672

POLYETHYLENE REINFORCED ELASTOMERIC BLEND COMPOSITIONS

Dennis G. Peiffer, Annandale, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 8, 1990, Ser. No. 564,210
Int. Cl.[5] C08L *23/08, 33/10, 33/02*
U.S. Cl. 525—227 **5 Claims**

1. A composition comprising a binary blend of a metal neutralized sulfonated polymer and about 1 to about 40 weight percent of a metal neutralized copolymer of ethylene and methacrylate, the blend of sulfonated polymer and metal neutralized copolymer associating together into microphase separated regions.

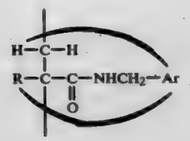
5,294,673

MODIFIED POLYOLEFIN POLYMER, ITS MANUFACTURING METHOD AND RESIN COMPOSITION CONTAINING IT

Yoshikuni Deguchi, and Kazuya Yonezawa, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP91/00552, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO91/17192, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 24, 1991, Ser. No. 778,144
Claims priority, application Japan, Apr. 28, 1990, 2-114462; May 18, 1990, 2-129473
Int. Cl.[5] C08F *269/00*
U.S. Cl. 525—286 **5 Claims**

1. A modified polyolefin type polymer having one structural unit of glycidyl group represented by the following general formula (I) grafted onto a polyolefin per 2–1,000 repeating units of olefin:



(I)

where, in the formula, Ar represents an aromatic hydrocarbon group 6–23 in carbon number having at least one glycidyloxy group, and R represents hydrogen atom or methyl group.

5,294,674

HEAT-RESISTANT MALEIMIDO POLYMERS/BLOCK COPOLYMERS

Sunil K. Varshney, Liege; Philippe Teyssie, Neuville en Condroz, and Roger Fayt, Neupre, all of Belgium, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 618,637, Nov. 27, 1990, abandoned. This application Dec. 10, 1991, Ser. No. 804,674
Claims priority, application France, Nov. 27, 1989, 89 15581
Int. Cl.[5] C08F *267/10, 271/02*
U.S. Cl. 525—282 **15 Claims**

1. A block copolymer comprising at least one block of an N-substituted maleimide homopolymer having a number average molecular weight ranging from 12,000 to 100,000.

5,294,675

FUNCTIONALIZED POLYMERS

Denis Forster, Ladue; Samuel J. Tremont, Manchester; Martin P. McGrath, Maryland Heights, and Erik D. Sall, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 663,998, Mar. 4, 1991, Pat. No. 5,232,989. This application Apr. 12, 1993, Ser. No. 43,965
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—292 **21 Claims**

1. Composition comprising a polymer prepared by reacting a polyol having, per polymer molecule, at least one repeat unit of the formula:

said polyol further having repeat units containing residual carbon-carbon double bonds; wherein A is absent or represents a radical derived from a pendant unsaturated hydrocarbon portion of a monomer of the polymer molecule and B represents hydrogen or together with A represents a radical derived from a pendant portion of an unsaturated monocyclic, bicyclic or tricyclic hydrocarbon, and wherein said polyol is derived from a hydroformylated polyolefin wherein said polyolefin has a level of unsaturation of from one C=C per polymer molecule to about one C=C per 4 carbon atoms prior to hydroformylation of said polyolefin, with a compound selected from the group consisting of dicarbonates, dicarboxylic acids, derivatives of dicarboxylic acids, and mixtures thereof, under suitable reaction conditions in the presence of a suitable catalyst wherein said derivatives of dicarboxylic acids are selected from the group consisting of dicarboxylic acid chlorides and anhydrides.

5,294,676

METHACRYLIC RESIN COMPOSITIONS WITH IMPROVED TACKY ADHESION AND METHOD FOR PREPARATION THEREOF

Michio Chatani; Tadayuki Touchiya; Kazuo Ohse, and Akio Hara, all of Nakajo, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 30, 1990, Ser. No. 516,927
Claims priority, application Japan, May 9, 1989, 1-115634; May 9, 1989, 1-115635
Int. Cl.[5] C08F *265/06*
U.S. Cl. 525—305 **8 Claims**

1. A methacrylic resin composition having a tacky adhesion of 30 to 900 g/cm^2 and comprising:

100 parts by weight of a partially crosslinked polymer gel obtained by partially polymerizing a mixture comprising:

(A) 40 to 99% by weight of an unsaturated monomer consisting essentially of an alkyl methacrylate and

(B) 60 to 1% by weight of a crosslinking agent containing at least two (meth)acryloyl groups in the molecule thereof,

the total polymer content of said polymer gel being kept from exceeding 80% by weight and increased by 4 to 62% by weight over the polymer content of said mixture, and

1 to 100 parts by weight of a syrup that principally contains an alkyl methacrylate and contains its polymer dissolved therein.

8. A molding material comprising said composition according to claim 1.

5,294,677

HOUSEWARES

Deborah I. Hauser, Lowell, Mass.; Michael B. Colella, Plantsville, Conn., and William G. Blasius, Jr., Charlton, Mass., assignors to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Filed Sep. 12, 1991, Ser. No. 758,802
Int. Cl.[5] C08F *265/06*
U.S. Cl. 525—308 **31 Claims**

1. A small household article having good environmental stress crack resistance to cleaners said article comprising:

from 80 to 100% of a polymer alloy consisting essentially of:

(i) from 30 to 82 weight % of a brittle polymer comprising:

(a) from 80 to 40 weight percent of one or more C_{8-12} vinyl aromatic monomers which are unsubstituted or substituted by a C_{1-4} alkyl radical;

(b) from 20 to 60 weight percent of one or more C_{1-6} alkyl esters of C_{3-6} ethylenically unsaturated carboxylic acids; and

(c) from 0 to 5 weight percent of one or more C_{3-6} ethylenically unsaturated carboxylic acids;

(ii) from 3 to 50 weight % of a rubbery polymer comprising:

(a) from 40 to 45 weight percent of one or more C_{8-12} vinyl aromatic monomers; and

(b) from 60 to 55 weight percent of one or more C_{4-6} conjugated diolefins; and

(iii) from 15 to 67 weight percent of a ductile polymer comprising:

(a) from 70 to 80 weight percent of one or more C_{8-12} vinyl aromatic monomers; and

(b) from 30 to 20 weight percent of one or more C_{4-6} conjugated diolefins.

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5,294,678

ENTANGLEMENT-INHIBITED MACROMOLECULES

Mun-Fu Tse, Seabrook; Anthony J. Dias, Houston; Prasadarao Meka, Seabrook, all of Tex., and Kenneth O. McElrath, Waterloo, Belgium, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 634,846, Dec. 27, 1990, Pat. No. 5,206,303. This application Jan. 27, 1993, Ser. No. 9,692
Int. Cl.[5] C08F *255/08, 257/02*
U.S. Cl. 525—319 62 Claims

1. A polymer, comprising:

macromolecules having an entanglement-inhibiting architecture including a main chain and a plurality of side chains distributed along said main chain;

wherein an average molecular weight of segments of said main chain between adjacent side chains (M_{MCS}) is in a range of from about 0.02 M_e^A to about 2 M_e^A, wherein M_e^A is the entanglement molecular weight of said main chain; and

wherein said side chains have an average molecular weight (M_{SC}) in a range of from about 0.02 M_e^B to about 2 M_e^B, wherein M_e^B is the entanglement molecular weight of said side chains.

54. A method for producing an entanglement inhibited grafted polymer, comprising the steps of:

(a) preparing a copolymer main chain of an isoolefin having from about 4 to about 7 carbon atoms and a para-alkylstyrene having a substantially homogeneous compositional distribution;

(b) halogenating said para-alkylstyrene in said polymer, said halide radicals being substantially alkylhalide radicals attached to the pendant para-alkylstyrene and primarily alkylmonohalide radicals;

(c) introducing side chains attached to said para-alkyl groups by contacting said halogenated copolymer with a mononucleophilically terminated macromonomer to nucleophilically substitute said macromonomer as said side chains at said halogenated para-alkylstyrene groups, wherein an average molecular weight of segments of said copolymer main chain between said side chains is from about 0.02 M_e^A to about 2 M_e^A, wherein M_e^A is an entanglement molecular weight of the main chain, and wherein said macromonomer side chains have an average molecular weight of from about 0.02 M_e^B to about 2 M_e^B, wherein M_e^B is an entanglement molecular weight of said mononucleophilically terminated macromonomer; and

(d) optionally attaching additional functionality to said para-alkyl groups by contacting said halogenated copolymer with a nucleophilic reagent containing oxygen, sulfur, silicon nitrogen, carbon, phosphorus or a metal selected from sodium, potassium, lithium and magnesium.

5,294,679

INCORPORATION OF FUNCTIONAL GROUPS IN POLYMERS

Andrew J. Sivak, Edgewood Borough, and Leonard A. Cullo, Hempfield Township, Westmoreland County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 532,850, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 257,895, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,960, May 8, 1987, abandoned. This application Mar. 18, 1993, Ser. No. 33,212
Int. Cl.[5] L08F *8/12*
U.S. Cl. 525—326.5 8 Claims

1. A functionalized polymer of an alpha olefin made by (a) polymerizing, in the presence of a Ziegler-Natta catalyst comprising a titanium chloride on a magnesium chloride support, monomers including at least one alpha-olefin and at least about 0.01 mole percent silyl-containing monomers of the general formula

$$[CH_2{=}CHCH_2]_y(X)[O_{0.5}SiR_{4-w}]_z$$

where y, w, and z are independently 1 or 2, (X) is a connecting hydrocarbyl fragment other than an unsaturated non-cyclic hydrocarbyl, and other than an unsaturated cyclic non-aromatic hydrocarbyl, having from 1 to about 20 carbon atoms, and each R is independently selected from alkyl alkoxy, alicyclic, aryloxy, alkaryl and aryl groups having from 1 to about 20 carbon atoms, provided that the total of carbon atoms in all R's together with all carbons directly attached to the carbon in X connected to and O is at least 5, and (b) hydrolyzing or alcoholyzing the resulting stereoregular polymeric product.

5,294,680

POLYMERIC DYES FOR ANTIREFLECTIVE COATINGS

Christopher J. Knors, Bound Brook, N.J.; Elwood H. Macy, Hughsonville, and Martin Moreau, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1992, Ser. No. 919,467
Int. Cl.[5] C08F *8/32, 22/04*
U.S. Cl. 525—327.4 2 Claims

1. A film forming composition comprising the N,N-disubstituted amide reaction product of at least one aminoaromatic chromophore with a polymer comprising an anhydride.

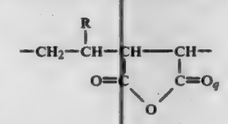
5,294,681

WATER INSOLUBLE CROSS-LINKED ACID COMPOSITIONS

John Krupey, Glen Rock, N.J., assignor to Affinity Technology, Inc., New Brunswick, N.J.

Filed Mar. 20, 1992, Ser. No. 854,302
Int. Cl.[5] C08F *8/30, 8/12*
U.S. Cl. 525—327.6 3 Claims

1. A water insoluble cross-linked polyhydroxy polycarboxylic acid obtained by cross-linking a polymer of the formula:



wherein

R is hydrogen or lower alkylene or lower alkoxy of 1–4 carbon atoms, or phenyl,

q is an integer of 7 to 10,000,

with an alpha, omega diaminohydroxy alkane of the formula:

$$H_2N.[(H)_p(CH)_z(OH)_m].NH_2$$

wherein

z is an integer of 1–4,

p is 0 or an integer up to z−1,

m is 1 or an integer up to z,

and hydrolyzing the unreacted anhydride groups, wherein the ratio of the initially charged diaminohydroxyalkane to the initially charged poly (alkylene maleic anhydride) is between about 1 and about 200 to 1 mol/mol.

5,294,682

POLYESTER RESIN AND TONER BINDER EMPLOYED THE SAME

Masao Fukuda, and Takemi Nitta, both of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jul. 15, 1992, Ser. No. 913,365
Claims priority, application Japan, Jul. 18, 1991, 3-203201
Int. Cl.[5] C08F *20/00*; G03G *9/087*
U.S. Cl. 525—442 19 Claims

1. A polyester resin having a hydroxyl value ranging from 10

to 100, obtained from a reaction employing a polycarboxylic acid or its derivative, and a polyol comprising a phenolic resin possessing an oxyalkylene unit, wherein said phenolic resin has a nuclide number of 3 to 20.

5,294,683

SOLID COMPOSITIONS OF POLYGLYCIDYL COMPOUNDS HAVING A MOLECULAR WEIGHT OF LESS THAN 1500

Jacques-Alain Cotting, Bonnefontaine, Switzerland, and Philippe-Guilhaume Gottis, Mulhouse, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 28, 1992, Ser. No. 952,123
Claims priority, application Switzerland, Oct. 3, 1991, 2921/91-2
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—524 13 Claims

1. A solid polyglycidyl composition which is substantially free of inert components comprising:

(a) at least one polyglycidyl compound having a molecular weight of less than about 1500 that is solid at ambient temperature; and

(b) at least about 5% by weight based on the total amount of polyglycidyl compounds in the composition of:

(i) at least one polyglycidyl compound having a molecular weight of less than about 1500 that is liquid at said ambient temperature; or

(ii) a mixture of polyglycidyl compounds, each compound having a molecular weight of less than about 1500, which mixture is liquid at said ambient temperature;

wherein the polyglycidyl component (a) that is solid at ambient temperature is chemically different from the polyglycidyl component (b) that is liquid at said ambient temperature; and

wherein at least a portion of the polyglycidyl component (a) is present in the composition in the form of one solid mixed phase or a mixture of more than one solid mixed phase, which solid mixed phase or mixture of more than one solid mixed phase contains substantially the total amount of the polyglycidyl component (b) that is present in the composition.

5,294,684

PROCESS FOR PRODUCING VINYL CHLORIDE RESIN

Ichiro Kaneko, Hazaki; Makoto Fujiwara, and Tatsuya Fujimoto, both of Kamisu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 703,857, May 21, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,570
Claims priority, application Japan, May 22, 1990, 2-132246
Int. Cl.[5] C08F *2/18*
U.S. Cl. 526—62 15 Claims

1. A process for producing a vinyl chloride polymer having an average particle diameter of 200–600 μm by polymerizing a monomer having an ethylenic double bond and comprising vinyl chloride as an essential component in an aqueous medium by suspension polymerization in a polymerize vessel on the inner wall surface of which a coating of a polymer scale preventive agent has been previously formed, comprising the steps of previously applying a high-speed shearing force to a mixture comprising water, said monomer, a polymerization initiator, and (A) a dispersant comprising a partially saponified polyvinyl alcohol having an average degree of polymerization of 1,1500 to 2,500 and a degree of saponification of 70 to 99 mol % plus (B) a dispersant comprising a hydroxypropylmethylcellulose which has a methoxyl substitution degree of 15 to 35 wt. % and a hydroxypropoxyl substitution degree of 4 to 15 wt. % and the 2 wt. % aqueous solution of which has a viscosity of 5 to 4,000 cP at 20° C. with the weight ratio (A)/(B) of the dispersant (A) to (B) being from 1/20 to 4/6 and the combined amount of the dispersant (A) and the dispersant (B) being 0.01 to 0.05 part by weight per 100 parts by weight of said monomer, and then subjecting the mixture to said suspension polymerization in said polymerization vessel under an agitation power of 50 to 200 kg.m/sec.ton.

5,294,685

PROCESS FOR PRODUCING A STYRENIC POLYMER HAVING A HIGH DEGREE OF SYNDIOTACTICITY

Masami Watanabe; Shoji Nagasuma, both of Sodegaura, and Norio Tomotsu, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 842,997, Feb. 28, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 79,860
Claims priority, application Japan, Mar. 26, 1991, 3-084373
Int. Cl.[5] C08F *4/649, 12/08*
U.S. Cl. 526—134 5 Claims

1. A process for producing a styrene polymer having a high degree of syndiotacticity which consists essentially of polymerizing at least one styrenic monomer selected from the group consisting of styrene, alkylstyrene, alkoxystyrene, halogenated styrene and vinylbenzoate in the presence of a catalyst consisting essentially of (A) a titanium compound represented by the formula: TiRXYZ, wherein R represents a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group, a substituted indenyl group or a fluorenyl group; X, Y and Z are independently a hydrogen atom, an alkyl group having one to 12 carbon atoms, an alkoxy group having one to 12 carbon atoms, an aryl group having 6 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an arylalkyl group having 7 to 20 carbon atoms or a halogen atom, (B) a coordination complex compound comprising a tetra(pentafluorophenyl)borate anion and a nitrogen containing cation having an acid dissociation constant at 25° C. of 7 or less, and optionally (C) an organoaluminum compound, an organomagnesium compound or an organo zinc compound.

5,294,686

PROCESS FOR EFFICIENT UTILIZATION OF CHAIN TRANSFER AGENT

Irwin S. Fiarman, Willingboro, N.J.; Thomas F. McCallum, III, Philadelphia, and Barry Weinstein, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 29, 1993, Ser. No. 38,429
Int. Cl.[5] C08F *2/38, 122/04*
U.S. Cl. 526—233 10 Claims

1. A process for utilizing hypophosphorous acid or salts thereof as a chain transfer agent, comprising:

polymerizing one or more monomers wherein at least 20 percent by weight of the one or more monomers are monoethylenically unsaturated acids, or salts thereof, in the presence of

(a) water

(b) one or more water-soluble initiators, and

(c) hypophosphorous acid or a salt thereof,

wherein from about 80 to 100 percent of the monoethylenically unsaturated acids, or salts thereof, are metered into a polymerization reactor containing

water,

from 0 to 100 percent of the hypophosphorous acid or salts thereof to provide a final polymer solids level of at least about 50 percent by weight.

5,294,687

LOW MOLECULAR WEIGHT MONOALKYL SUBSTITUTED PHOSPHINATE AND PHOSPHONATE COPOLYMERS

Robert M. Blankenship, Harleysville, and Scott L. Egolf, Lansdale, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 691,260, Apr. 25, 1991, Pat. No. 5,256,746. This application Aug. 2, 1993, Ser. No. 100,862
Int. Cl.[5] C08F *2/38, 30/02*
U.S. Cl. 526—233 3 Claims

1. A water soluble polymer mixture containing polymeric

monoalkyl phosphinates, polymeric monoalkyl phosphonates and polymeric dialkyl phosphinates wherein at least 40 percent of the incorporated phosphorus is present as polymeric monoalkyl phosphinate and polymeric monoalkyl phosphonate.

5,294,688

UV-CROSSLINKABLE COPOLYMERS

Gerd Rehmer, Beindersheim; Gerhard Auchter, Bad Duerkheim; Andreas Boettcher, Nussloch; Lothar Franz, Mutterstadt, and Helmut Jaeger, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 578,774, Sep. 7, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 974,818

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930097

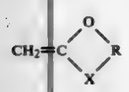
Int. Cl.[5] C08F *224/00, 226/06, 228/06;* C08J *3/28*

U.S. Cl. 526—260 15 Claims

1. A UV-crosslinkable copolymer comprising

A) from 99.5 to 75% by weight of one or more monomers selected from the group consisting of monoolefinically unsaturated monocarboxylic acid esters containing from 4 to 21 carbon atoms and vinyl esters,

B) from 0.5 to 25% by weight of one or more unsaturated compounds of he formula I



I

and

C) from 0.01 to 10% by weight of one or more copolymerizable, olefinically unsaturated acetophenone and/or benzophenone derivatives containing no phenyl group having a free hydroxyl group in the ortho-position to the carbonyl group, where

X is O, S or NR^1 and

R is unsubstituted or substituted C_2- to C_6-alkylene, and

R^1 is C_1- to C_8-alkyl or phenyl.

5,294,689

AQUEOUS PROCESS FOR PREPARING WATER-SOLUBLE ADDITION COPOLYMERS OF CYCLOHEXENE ANHYDRIDES

Thomas F. McCallum, III, Philadelphia, and Barry Weinstein, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 12, 1993, Ser. No. 3,374

Int. Cl.[5] C08F *222/04, 230/04, 222/02*

U.S. Cl. 526—271 9 Claims

1. An aqueous process for preparing water-soluble polymers comprising: polymerizing a monomer mixture in the presence of water and one or more polymerization initiators at an elevated temperature, wherein the monomer mixture comprises

(a) from about 3 to about 95 percent by weight of one or more cyclohexene anhydrides or the alkali metal or ammonium salts thereof; and

(b) from about 5 to about 97 percent by weight of one or more monomers selected from the group consisting of C_4–C_6 monoethylenically unsaturated dicarboxylic acids and the alkali metal and ammonium salts thereof, and the anhydrides of the cis-dicarboxylic acids.

5,294,690

THIOL METHACRYLATE OR ACRYLATE RESIN

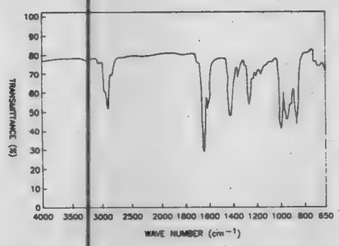
Yuichiro Iguchi; Michio Kimura, both of Otsu, and Koichiro Oka, Ibaraki, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 844,477, Mar. 2, 1992, Pat. No. 5,247,041, which is a continuation of Ser. No. 482,285, Feb. 20, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 1,075

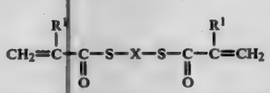
Claims priority, application Japan, Feb. 22, 1989, 1-42822; Apr. 18, 1989, 1-09372

Int. Cl.[5] C08F *28/02*

U.S. Cl. 526—286 6 Claims

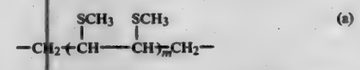


1. A thiol methacrylate or acrylate resin obtained by polymerizing a thiol methacrylate or acrylate compound represented by the following formula (1):



(1)

wherein R^1 represents a hydrogen atom or a methyl group and X represents



(a)

wherein m is an integer of from 1 to 4, or a monomer mixture comprising at least 10% by weight of the thiol methacrylate or acrylate compound of the formula (1).

5,294,691

COPOLYMERS OF AMPHYTIC ION PAIRS CONTAINING VINYLIC TERTIARY AMINE AND PROCESS THEREWITH

Iqbal Ahmed, Bartlesville, Okla., and Hsieh, Henry L., Pittsboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 886,215, May 20, 1992, Pat. No. 5,250,642. This application Jun. 21, 1993, Ser. No. 78,342

Int. Cl.[5] C08F *228/00;* A61F *13/00*

U.S. Cl. 526—287 24 Claims

1. A process for absorbing an aqueous solution comprising contacting a composition having repeat units of: (a) an ampholytic ion pair which is prepared from a polymerizable vinylic tertiary amine-contacting monomer and an acid having an ethylenic moiety; (b) at least one olefinic comonomer with amide, nitrile, carboxylic acid, or sulfonic acid functionalities; with said aqueous solution wherein said acid having an ethylenic moiety is selected from the group consisting of vinylic carboxylic acid, phosphoric acid, alkali salts thereof, and mixtures thereof.

5,294,692

ASSOCIATIVE MONOMERS AND POLYMERS

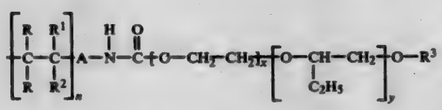
Milagros C. Barron, Hixson; John M. Wilkerson, III, Hixson; Daniel W. Verstrat, Ooltewah, all of Tenn., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 30, 1993, Ser. No. 85,851

Int. Cl.[5] C08F *220/34*

U.S. Cl. 526—301 14 Claims

1. A polymer of a non-ionic urethane monomer comprising at least two repeating units of the structure:



wherein R, R^1 and R^2 are, independently, H, $—CH_3$ or $—CH_2CH_3$; R^3 is a C_1–C_4 linear or branched alkyl group; y is an integer from 1 to 50; x is an integer from 1 to 50; the sum of x+y is less than or equal to 100; A is a C_2–C_{20} alkyl, aryl or alkaryl alkylene group; and n is at least 1.

5,294,693

ACRYLIC COPOLYMER WHICH IS WATER-SOLUBLE OR MODERATELY WATER-SOLUBLE AND MAY BE CROSSLINKED; AND ITS USE

Jean-Bernard Egraz, Ecully; Henri Grondin, and Jean-Marc Suau, both of Lyons, all of France, assignors to Coatex S.A., Genay, France

Filed Jun. 29, 1993, Ser. No. 83,257

Claims priority, application France, Jul. 1, 1992, 92 08399

Int. Cl.[5] C08F *20/26*

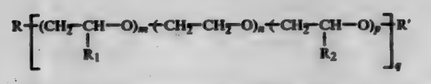
U.S. Cl. 526—310 12 Claims

1. A copolymer which is water-soluble or moderately water-soluble and which may be crosslinked, comprising:

(a) units of at least one monomer having ethylenic unsaturation and having at least one carboxylic acid group, which monomer is selected from the group consisting of monoacids, diacids, the anhydrides of carboxylic acids, and the hemiesters of diacids;

(b) optionally, unit(s) of at least one monomer having ethylenic unsaturation and not having a carboxylic acid group selected from the group consisting of the esters, amides, and nitriles of (meth)acrylic acid, or selected from the group consisting of vinyl acetate, styrene, methylstyrene, diisobutylene, vinylpyrrolidone, and vinylcaprolactam;

(c) units of at least one monomer having an oxyalkylated moiety, which monomer has ethylenic unsaturation and is terminated by a hydrophobic fatty chain, said monomer having formula I:



(I)

where m and p represent numbers of oxyalkylene groups each ≦100;

n represents the number of oxyethylene groups ≦100;

q represents a number at least equal to 1 such that q(n+m+p)≦100;

R_1 represents hydrogen or a methyl group;

R_2 represents hydrogen or a methyl group;

R′ represents hydrophobic fatty hydrocarbon chain of at least 26 carbon atoms; and

R represents an unsaturated polymerizable group selected from the group consisting of vinyl group containing moieties, methacryloyl, maleoyl, itaconoyl, crotonyl, an unsaturated urethane moiety, hemiester maleoyl, hemiester itaconoyl, CH_2=$CHCH_2$—O—, methacrylamido and substituted methacrylamido; and

(d) optionally, unit(s) of at least one monomer having at least two sites of ethylenic unsaturation selected from the group consisting of ethylene glycol dimethacrylate, 2,2-dihydroxymethylbutanol triacrylate, allyl acrylate, methylenebis(meth)acrylamide, tetraallyloxyethane, triallyl cyanurate, and allyl ethers obtained from polyols.

5,294,694

ELECTROMAGNETIC RADIATION ABSORBERS AND MODULATORS COMPRISING POLYANILINE

Arthur J. Epstein, Bexley; John M. Ginder, Columbus; Mitchell G. Ree, Columbus, and Hamid Hajiseyedjavdi, Columbus, all of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Division of Ser. No. 764,236, Sep. 23, 1991, Pat. No. 5,147,968, which is a division of Ser. No. 193,964, May 13, 1988, Pat. No. 5,079,334. This application Jul. 27, 1992, Ser. No. 918,709

Int. Cl.[5] C08G *65/38, 73/00;* B05D *3/02, 3/06*

U.S. Cl. 528—210 7 Claims

1. A method of absorbing electromagnetic radiation comprising supporting a polyaniline composition in a position to expose the composition to a source of electromagnetic radiation, whereby the electromagnetic radiation is absorbed by the polyaniline composition.

5,294,695

PROCESS FOR PREPARING POLYETHYLENE NAPHTHALATE

Kwan-Kyung Lee; Byeong-Ho Cho, and Yong-Won Kim, all of Suwon, Rep. of Korea, assignors to SKC Limited, Suwon, Rep. of Korea

Filed Mar. 15, 1993, Ser. No. 31,626

Int. Cl.[5] C08G *63/78*

U.S. Cl. 528—279 4 Claims

1. A process for preparing polyethylene naphthalate from an esterification reaction product of naphthalene di-carboxylic acid or an alkyl ester thereof and a diol, which comprises polycondensing the esterification reaction product in the presence of a polycondensation catalyst in two steps wherein the first step is carried out at a pressure ranging from 500 to 30 torr and the second step is carried out at a pressure ranging from 10 to 0.1 torr under a controlled differential increase in the intrinsic viscosity of said polycondensation reaction mixture to satisfy the inequality relationship of:

$$IV(t_1)-IV(t_0)<0.4 \text{ dl/g and}$$

$$IV(t_2)-IV(t_0)>0.3 \text{ dl/g}$$

wherein:

$IV(t_0)$ represents the intrinsic viscosity at the beginning of the second step;

$IV(t_1)$ represents the intrinsic viscosity at the 90th minute after the beginning of the second step; and

$IV(t_2)$ represents the intrinsic viscosity at the 180th minute after the beginning of the second step; and

wherein the intrinsic viscosity of said polycondensation reaction mixture during the second step lies within a range from 0.3 to 0.4 dl/g during a period between the 100th and the 150th minutes after the beginning of the second step.

5,294,696

PROCESS FOR PRODUCING POLYISOIMIDE

Hirotoshi Maeda, Kanagawa, and Kouichi Kunisawa, Chiba, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 11, 1991, Ser. No. 804,710

Claims priority, application Japan, Dec. 14, 1990, 2-410396

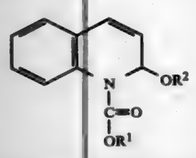
Int. Cl.[5] C08G *73/10, 69/26*

U.S. Cl. 528—353 18 Claims

1. A process for producing a polyisoimide comprising dehy-

VOL 1160 ISS 3 MR 15 1994 UMI

drating a polyamic acid by using a dihydroquinoline derivative represented by the formula



(I)

wherein each R^1 and R^2 is independently a monovalent organic group having 1 to 8 carbon atoms as dehydrating agent in producing the polyisoimide

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5,294,697

PROCEDURE FOR THE PREPARATION OF COLORLESS HYDROCARBON RESINS

Ambrogio Magni; Attilio Sioli; Claudia Andena, and Mario Ponzinibbi, all of Milan, Italy, assignors to Enichem Anic S.R.L., Palermo, Italy

Filed Feb. 11, 1992, Ser. No. 833,515

Claims priority, application Italy, Feb. 11, 1991, MI91-A000346

Int. Cl.[5] C08F *6/28*

U.S. Cl. 528—488 12 Claims

1. Method for decoloring polymeric resins obtained by polymerizing mixtures of ethylenically unsaturated hydrocarbons in the presence of Friedel-Crafts catalyst, comprising

a) treating polymeric mixtures obtained by polymerizing mixtures of ethylenically unsaturated hydrocarbons in the presence of Friedel-Crafts catalyst with an organometallic compound of lithium and/or magnesium;

b) treating the resulting mixture with water or an acid or base aqueous solution;

c) separating and recovering the organic phase.

5,294,698

HUMAN PHOSPHOLIPASE ACTIVATING PROTEIN AND METHODS FOR DIAGNOSIS OF RHEUMATOID ARTHRITIS

John S. Bomalaski, 11 Chestnut La., Wayne, Pa. 19087; Michael A. Clark, 15 Wetmore Dr., Deaville, N.J. 07835, and Robert Shorr, 36 Overbrook Pkwy., Wynnewood, Pa. 19096

Filed Dec. 6, 1990, Ser. No. 626,589

Int. Cl.[5] C07K *7/06, 7/08;* C12N *9/20*

U.S. Cl. 530—324 4 Claims

3. A fragment of human phospholipase A_2 activating protein wherein said fragment is from about six to about thirty amino acids in length, exhibits phospholipase A_2 stimulating activity, and wherein said fragment comprises at least one of amino acids 131, 132, 192, 192, 193, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279 and 280 of said phospholipase A_2 activating protein, and the remainder of the amino acids of said fragment are selected from the amino acid sequence of phospholipase A_2 activating protein contiguous with said at least one amino acid in the direction of the amino terminus of phospholipase A_2 activating protein, the carboxy terminus of phospholipase A_2, or both.

5,294,699

INHIBITION OF COLORATION OF HUMAN SERUM ALBUMIN

Takao Ohmura; Akinori Sumi; Wataru Ohtani; Naoto Fuluhata; Kaoru Kobayashi; Shinobu Kuwae; Hirotoshi Fukutsuka; Tomoshi Ohya, and Hiroshi Morise, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jan. 24, 1991, Ser. No. 719,443

Claims priority, application Japan, Jun. 25, 1990, 2-166091

Int. Cl.[5] C07K *3/28;* C12N *15/14;* A61K *45/02*

U.S. Cl. 530—364 10 Claims

1. A process of inhibiting the coloration of recombinant human serum albumin produced by tranformed cells propagated in a liquid culture medium, comprising culturing said cells in said medium in the presence of an absorbent which binds coloring contaminants so as to separate said coloring contaminants from said albumin.

5,294,700

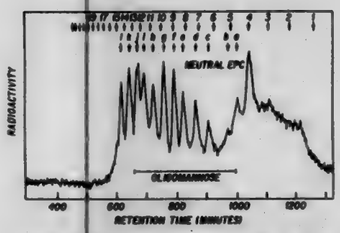
IMMUNOSUPPRESSIVE AGENTS

Peter D. Arkwright; Raymond A. Dwek; Christopher W. G. Redman, all of Oxford; Graham A. W. Rook, London, and thomas W. Rademacher, Oxford, all of United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 804,303, Dec. 9, 1991, Pat. No. 5,198,536, which is a division of Ser. No. 384,233, Jul. 24, 1989, Pat. No. 5,109,116. This application Jan. 4, 1993, Ser. No. 158

Int. Cl.[5] C07K *3/00, 13/00, 15/00;* A61K *37/10*

U.S. Cl. 530—395 1 Claim



1. An immunosuppressive agent obtained by the process comprising minutely subdividing and solubilizing syncytiotrophoblast microvilli membranes, releasing the unreduced N-linked oligosaccharides from the resulting solubilized preparation, digesting the released oligosaccharides with sialidase, fractionating the oligosaccharides into neutral and acidic fractions as shown in FIG. 5(*a*) and FIG. 5(*b*), respectively and recovering the neutral fraction.

5,294,701

ANTHRACYCLINE COMPOUNDS AND INTERMEDIATES

Johan W. Scheeren, Malden; Joannes F. M. de Bie, Nijmegen, and Dirk de Vos, Oegstgeest, all of Netherlands, assignors to Pharmachemie B.V., Haarlem, Netherlands

Division of Ser. No. 746,453, Aug. 16, 1991, abandoned. This application May 6, 1992, Ser. No. 879,737

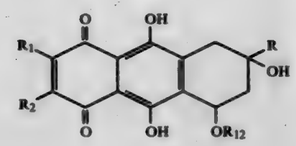
Claims priority, application Netherlands, Aug. 16, 1990, 9001834

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] C07H *15/24;* C07D *221/18*

U.S. Cl. 536—6.4 15 Claims

1. A compound of formula (1):



(I)

wherein

R is $-COCH_3$ or $-C{\equiv}C-R_4$;

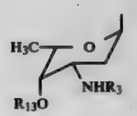
R_4 is H or $-Si(CH_3)_3$;

R_1 and R_2 represent H or together form a group $-CR_5{=}C-R_6-CR_7{=}CR_8-$, $-CR_9{=}CR_{10}-CR_{11}{=}N-$ or $-N{=}CR_9-CR_{10}{=}CR_{11}$;

each of the symbols R_5, R_6, R_7, and R_8 represents H or a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group or an —OH group;

each of the symbols R_9, R_{10} and R_{11} represents H or a C_1–C_3 alkyl group;

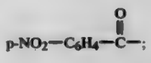
R_{12} is H or



;

R_3 is H or $-COCF_3$;

R_{13} is H or



;

or a pharmaceutically acceptable acid addition salt thereof; with the exclusion of compounds where

R is $-COCH_3$ or $-C{\equiv}CH$ and R_1 and R_2 form a group $-CR_5{=}CR_6-CR_7{=}CR_8-$, or an acid addition salt of an excluded compound.

5,294,702

WATER-SOLUBLE POLYMERIZABLE 3-ALLYLOXY-2-HYDROXYPROPYLETHER OF CELLULOSE

Jörn Breckwoldt, Rotenburg, and Klaus Szablikowski, Walsrode, both of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,636

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 4133677

Int. Cl.[5] C08B *11/193*

U.S. Cl. 536—84 4 Claims

1. Water-soluble polymerisable 3-allyloxy-2-hydroxypropylether of cellulose.

5,294,703

PROCESS FOR PREPARING α-D-CELLOBIOSE OCTAACETATE

John A. Hyatt, Kingsport, Tenn.; Tony L. Sander, Batesville, Ark.; D. Mark Naylor, Kingsport, and Bobby L. Bernard, Rogersville, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 877,634, May 1, 1992, abandoned. This application Apr. 7, 1993, Ser. No. 44,344

Int. Cl.[5] C07H *1/00, 15/24;* C08B *3/06, 15/00*

U.S. Cl. 536—119 22 Claims

1. A process for preparing α-D-cellobiose octaacetate which comprises the steps:

(a) treating cellulose with a mixture of acetic anhydride, acetic acid, and a strong acid, while maintaining the mixture at a temperature of below about 80° C.;

(b) heating the mixture at about 35° to 65° C. for about 8 to 36 hours; and

(c) adding at least a sufficient amount of a C_1–C_5 alcohol to quench any remaining unreacted acetic anhydride; followed by

(d) isolation of α-D-cellobiose octaacetate.

5,294,704

4,9(11),17(20)-PREGNATRIENE-3-ONES

Francis Brion, Gagny; Jean Bucendia, Le Perreux Sur Marne; Christian Diolez, Palaiseau, and Michel Vivat, Lagny Sur Marne, all of France, assignors to Roussel-Uclaf, France

Division of Ser. No. 885,150, May 18, 1992, Pat. No. 5,187,273. This application Nov. 4, 1992, Ser. No. 971,189

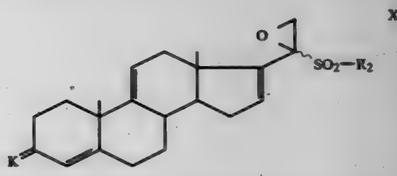
Claims priority, application France, May 23, 1991, 91 06202

Int. Cl.[5] C07J *7/00, 75/00, 33/00*

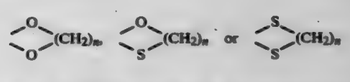
U.S. Cl. 540—30 7 Claims

1. A process for the preparation of a compound of the formula

XI

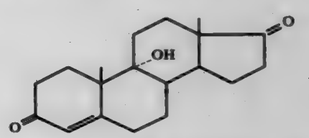


wherein K is a protective group selected from the group consisting



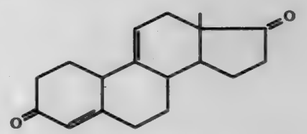
n is 2 or 3, the wavy line means the group may have either isomeric form or is a mixture thereof and R_2 is selected from the group consisting of methyl, phenyl, tolyl and xylyl, comprising reacting a compound of the formula

II



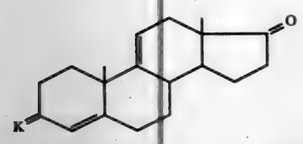
with acetic anhydride in the presence of a strong acid, then with an acid hydrolysis agent to obtain a compound of the formula

III



selectively blocking the 3-oxo function with a diol, a thiol or a dithiol of the formula $HO-(CH_2)_n-OH$, $HO-(CH_2)_n-SH$ or $HS-(CH_2)_n-SH$,

wherein n is defined as above to obtain a compound of the formula

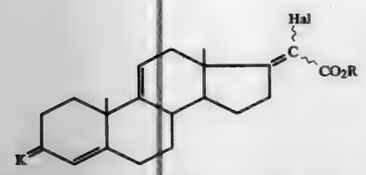


IV

wherein K is defined as above, reacting the latter with a compound of the formula

$Hal_3C—CO_2R$

wherein Hal is chlorine or bromine and R is selected from the group consisting of alkyl of 1 to 6 carbon atoms, aralkyl or 7 to 15 carbon atoms and a silylated group, in the presence of zinc and a Lewis acid, to obtain a compound of the formula

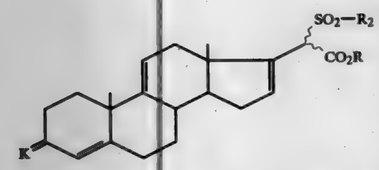


I

reacting the latter in the presence of a base with an alkali metal sulfinate of the formula

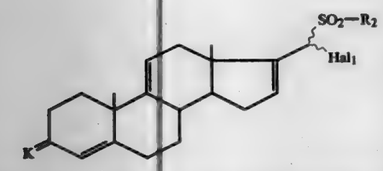
R_2SO_2Q

wherein R_2 is defined as above and Q is an alkali metal, to obtain a compound of the formula



XIII

in which R, R_2 and K are defined as above, reacting the latter with a halogenation agent in the presence of a base, saponifying and decarboxylating the product to obtain a compound of the formula



XIV

in which Hal_1 is halogen, reacting the latter with formaldehyde in the presence of a base to obtain the compound of formula XI.

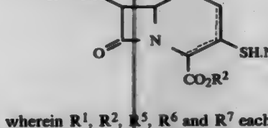
5,294,705

PROCESS FOR THE PREPARATION OF A 3-SUBSTITUTED THIO-3-CEPHEM COMPOUND

Yuichi Yamamoto; Tsuneo Okonogi; Seiji Shibahara, and Shigeharu Inoue, all of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Japan

PCT No. PCT/JP90/01599, § 371 Date Jun. 3, 1992, § 102(e) Date Jun. 3, 1992, PCT Pub. No. WO91/09037, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 7, 1990, Ser. No. 853,730
Claims priority, application Japan, Dec. 7, 1989, 1-316424
Int. Cl.[5] C07D *501/04*
U.S. Cl. 540—226 **4 Claims**

1. A process for the preparation of a 3-substituted thio-3-cephem compound of structure (5)



(5)

wherein R^1 is an acyl group; R^2 is a carboxyl-protecting group; and R^4 is a lower alkyl group, a cycloalkyl group or a heterocyclic group or a heterocyclic group-substituted methyl group, which comprises the steps of reacting a 3-acylthio-cephem compound of structure (1)



(1)

wherein R^1 and R^2 each have the meaning as defined above; R^3 is a lower alkyl group containing up to 6 carbon atoms, an aryl group or a substituted aryl group, said alkyl or aryl group being such that the acyl group —COR^3 containing said alkyl or aryl group as R^3 is reactable with tertiary amine (2) and secondary amine as defined below; and the dotted line given in the formula (1) represents that the compound of formula (1) is either a compound having a Δ^2 double bond present in the 6-membered ring or a compound having a Δ^3 double bond present in the 6-membered ring or a mixture of the compounds of these two types, with a tertiary amine of structure (2)



(2)

wherein R^5, R^6 and R^7 are the same or different and individually represents lower alkyl group; or R^5 is a lower alkyl group and R^6 and R^7 taken together with a nitrogen atom to which R^6 and R^7 are attached form a nitrogen-containing heterocyclic ring having or not having an oxygen atom as a hetero atom, and also with a secondary amine to give a compound of structure (3)

(3)

wherein R^1, R^2, R^5, R^6 and R^7 each having the meanings as defined above; and the dotted line given in the formula (3) also has the meaning as defined above; and then reacting the compound of structure (3) thus formed with a compound of structure (4)

$R^4—X$ (4)

wherein R^4 has the meaning as defined above; and X is selected from the group consisting of halogen, methanesulfonyloxy, p-toluenesulfonyloxy, trifluoromethanesulfonlyloxy and alkoxysulfonyloxy, to form the 3-substituted thio-3-cephem compound of structure (5) above.

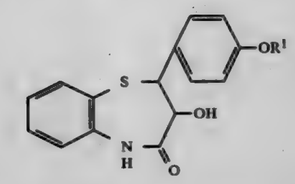
5,294,706

PROCESS FOR PREPARING 1,5-BENZOTHIAZEPINE DERIVATIVES

Tadayuki Koumoto, Osaka; Hironori Hayashi, Toyonaka; Toshiya Kadowaki, Osaka; Masahiko Seto, Kobe, and Toyonari Oine, Nara, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

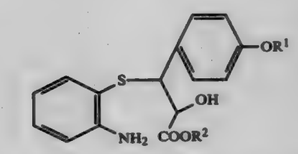
Continuation of Ser. No. 659,663, Feb. 25, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 979,417
Claims priority, application Japan, Mar. 8, 1990, 2-57798
Int. Cl.[5] C07D *281/10*
U.S. Cl. 540—491 **8 Claims**

1. A process for preparing 1,5-benzothiazepine derivatives of the formula:



(I)

wherein R^1 is a lower alkyl group, or a salt thereof which comprises subjecting a propionate derivative of the formula:



(II)

wherein R^2 is a lower alkyl group and R^1 is the same as defined above, to intramolecular cyclization in the presence of a sulfonic acid compound of the formula:

R^3SO_3H (III)

wherein R^3 is a lower alkyl group or a substituted or unsubstituted phenyl group, in a non-halogenated aromatic solvent and, optionally converting the product to a salt thereof.

5,294,707

SEMI-CONTINUOUS DEPOLYMERIZATION OF NYLON 6 POLYMER

Richard Kotek, Arden, N.C., assignor to BASF Corporation, Parsippany, N.J.

Filed Feb. 25, 1993, Ser. No. 23,030
Int. Cl.[5] C07D *201/12*
U.S. Cl. 540—540 **8 Claims**

1. A process for the semi-continuous depolymerization of nylon 6 comprising:

(a) charging nylon 6 to a depolymerization reactor containing 5 to 50% by weight of unpolymerized catalyst;

(b) melting the nylon 6 and subjecting the resultant melt to a flow of superheated steam to obtain a stream distillate;

(c) separating caprolactam monomers in the distillate from other volatiles therein;

(d) when conversion to caprolactam is 40 to 90% complete, recharging nylon 6 to the depolymerization reactor; and

(e) repeating steps (a)–(d) until a desired amount of nylon 6 is converted to caprolactam.

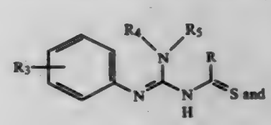
5,294,708

GUANIDINE DERIVATIVES

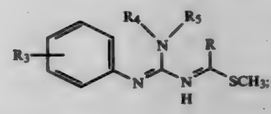
Henry J. Breslin, Lansdale; Michael J. Kukla, Maple Glen; Chris R. Rasmussen, Lansdale, and Robert W. Tuman, Chalfont, all of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Division of Ser. No. 921,543, Jul. 28, 1992. This application Jul. 20, 1993, Ser. No. 94,821
Int. Cl.[5] C07C *323/41, 381/00*; C07D *295/125, 295/14*
U.S. Cl. 544—159 **3 Claims**

1. A compound selected from the group consisting of the formulae:



S and



SCH_3;

wherein:

R is selected from the group consisting of H, alkyl (C_1–C_8), branched alkyl (C_3–C_5), cycloalkyl (C_3–C_7), aryl and aralkyl wherein the aryl portion is phenyl or naphthyl and the alkyl portion is C_1–C_5;

R_3 is selected from the group consisting of alkyl (C_1–C_5), alkoxy (C_1–C_4) and halogen; and

R_4 and R_5 are independently selected from the group consisting of alkyl (C_1–C_5), branched alkyl (C_3–C_5), cyclohexyl, cyclopentyl or R_4R_5N may be taken together to form a heterocyclic ring containing 3–5 carbon atoms or said ring additionally contains one or more heteroatoms such as O, or S to form a heterocyclic ring selected from the group consisting of piperidino, morpholino, pyrrolidino and thiamorpholino; and

pharmaceutically acceptable salts thereof.

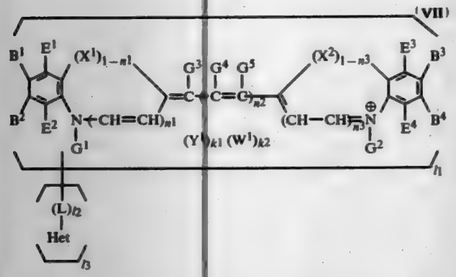
5,294,709

METHINE COMPOUNDS AND METHINE DYES

Toshinao Ukai, and Yoshio Inagaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 793,298, Nov. 14, 1991, abandoned, which is a continuation of Ser. No. 486,623, Feb. 28, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,497
Claims priority, application Japan, Feb. 28, 1989, 1-46843; Feb. 28, 1989, 1-46845
Int. Cl.[5] C07D *487/02, 277.62, 263/58, 209/12*
U.S. Cl. 544—263 **2 Claims**

1. Methine compounds represented by the formula (VII):



(VII)

wherein

X^1 and S^2, which may be the same or different, each represents a sulfur atom, an oxygen atom, a selenium atom,



or $-CH=CH-$;

G^1, G^2 and R^o, which may be the same or different, each represents an alkyl group, an aryl group, a divalent linkage group L, or a single bond;

G^3 represents a hydrogen atom or a lower alkyl group containing up to 8 carbon atoms or a divalent linkage group L or a single bond;

G^4 and G^5 each represents a hydrogen atom, a lower alkyl group containing up to 8 carbon atoms, or, when n^2 represents 2 or more, G^3 and the nearest G^5, and/or G^4 and another G^4, and/or G^4 and another G^5 are linked to each other to form a 5- or 6-membered ring optionally containing an oxygen atom, a sulfur atom and/or a nitrogen atom as a ring-constituting atom, or may represent a linkage group L or a single bond;

n^1 and n^3, which may be the same or different, each represents 0 or 1;

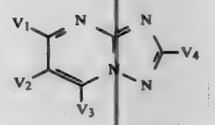
n^2 represents 0, 1, 2, 3, or 4;

Y^1 represents a cationic group, W^1 represents an anionic group, and k^1 and k^2 each represents 0 or 1 as necessary to form a salt depending upon the valence of the ionic group;

B^1, B^2, B^3, B^4, E^1, E^2, E^3 and E^4 each represents a hydrogen atom, a halogen atom, a hydroxy group, a cyano group, a trifluoromethyl group, a nitro group, a methylenedioxy group, a carboxyl group, a sulfo group, a substituted or unsubstituted alkyl group containing up to 10 carbon atoms, a substituted or unsubstituted aryl group containing up to 10 carbon atoms, a substituted or unsubstituted alkoxy group containing up to 10 carbon atoms, an alkylthio group containing up to 8 carbon atoms, an arylthio group containing up to 8 carbon atoms, an acylamino group containing up to 8 carbon atoms, an alkoxycarbonyl group containing up to 8 carbon atoms or an acyl group containing up to 10 carbon atoms, or represents a divalent linkage group L or a single bond, wherein at least one of B^1, B^2, B^3, B^4, E^1, E^2, E^3, E^4, G^1, G^2, G^3, G^4 and R^0 is chemically bound to at least one of V_1, V_2, V_3 and V_4 of the compound represented by general formula (II) through a divalent linkage group L or a single bond;

L represents a divalent group composed of an atom or atoms containing at least one atom selected from a carbon atom, a nitrogen atom, a sulfur atom and an oxygen atom; l_1 represents 1 or 2, l_2 represents 0 or 1, and l_3 represents 1, 2 or 3;

Het is represented by the following formula (II):



(II)

wherein V_1, V_2, V_3 and V_4 each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a halogen atom or a mercapto group.

5,294,710

N-5-PROTECTED 2,5-DIAMINO-4,6-DICHLOROPYRIMIDINES AND PROCESS FOR THEIR PRODUCTION

Gerhard Stucky, and Felix Previdoli, both of Brig-Glis, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

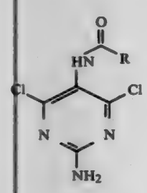
Filed Jan. 21, 1993, Ser. No. 6,525

Claims priority, application Switzerland, Jan. 22, 1992, 179/92

Int. Cl.[5] C07D *239/42, 239/52, 239/30*

U.S. Cl. 544—320 **6 Claims**

1. A N-5-protected 2,5-diamino-4,6-dichloropyrimidine of formula:



I

wherein R is a C_1–C_4-alkoxy group or a trifluoromethyl group.

5,294,711

3,6-DIAMINO-2,5-PYRAZINEDICARBONITRILE

Seiji Tazaki; Tomio Yagihara, both of Kurashiki; Nobuo Matsui, Odawara; Atsushi Yanagisawa, Odawara, and Takakazu Kojima, Odawara, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01092, § 371 Date Apr. 29, 1991, § 102(e) Date Apr. 29, 1991, PCT Pub. No. WO91/03469, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 29, 1990, Ser. No. 689,052

Claims priority, application Japan, Aug. 31, 1989, 1-22315; Dec. 3, 1990, 2-59935

Int. Cl.[5] C07D *241/26*

U.S. Cl. 544—336 **1 Claim**

1. 3,6-diamino-2,5-pyrazinedicarbonitrile.

5,294,712

PROCESS FOR THE PREPARATION OF QUINOLINE CARBOXYLIC ACIDS

István Hermecz; Géza Keresturi; Lelle V. Debreczy; Agnes Horváth, all of Budapest; Mária Balogh, Dunakeszi; Gábor Kovács, Budapest; Tamás Szüts, Budapest; Péter Ritli, Budapest; Judit Sipos, Budapest, and Anikó Pajor, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation of Ser. No. 295,439, Jan. 10, 1989, Pat. No. 4,981,966, which is a division of Ser. No. 104,053, Oct. 8, 1987, abandoned. This application Sep. 14, 1990, Ser. No. 583,296

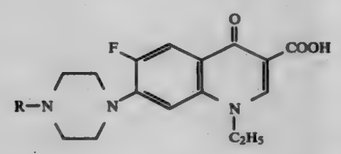
Claims priority, application Hungary, Dec. 9, 1985, 4694/85; Dec. 9, 1985, 4695/85

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] C07D *401/04*

U.S. Cl. 544—363 **5 Claims**

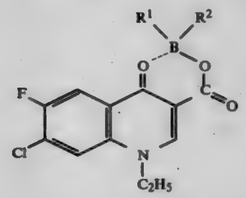
1. A process for the preparation of a compound of the Formula (I)



(I)

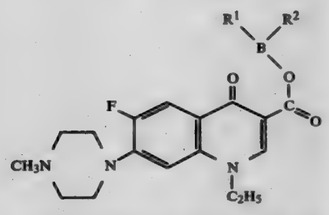
or a pharmaceutically acceptable salt thereof, which comprises the steps of:

(a) aminating a compound of the Formula (V)



(V)

or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 are each C_2 to C_6 aliphatic acyloxy, unsubstituted or substituted by halogen, or are each C_7 to C_{11} aromatic acyloxy, with N-methyl-piperazine or a pharmaceutically acceptable salt thereof in an inert organic solvent at a temperature of 0° to 110° C. for 1 to 3 hours to yield a compound of the Formula (VII)



(VII)

or a pharmaceutically acceptable salt thereof; and

(b) hydrolyzing the compound of the Formula (VII) or a pharmaceutically acceptable salt thereof, after or without isolation, to obtain a compound of the Formula (I), and if desired, converting the compound of the Formula (I) into a pharmaceutically acceptable salt thereof, or setting free the compound of the Formula (I) from its pharmaceutically acceptable salt.

5,294,713

2-PIPERAZINONE COMPOUNDS AND THEIR USE

Hirosada Sugihara, Mishima, and Zenichi Terashita, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

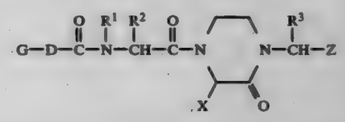
Filed Aug. 7, 1992, Ser. No. 926,171

Claims priority, application Japan, Aug. 23, 1991, 2-212397; May 15, 1992, 3-123146

Int. Cl.[5] C07D *241/04*

U.S. Cl. 544—384 **25 Claims**

1. A compound represented by the formula



wherein G is an amidino group or an optionally cyclic amino group each of which may be substituted; D is a spacer having 2 to 6 atomic chain optionally bonded through a hetero-atom and/or a 5- to 6-membered ring provided that the 5- to 6-membered ring is, depending on its bonding position, counted as 2 to 3 atomic chains; R^1 is hydrogen, benzyl group or a lower alkyl group; R^2 and R^3 are independently a residual group formed by removing $-CH(NH_2)COOH$ from an α-amino acid, or R^1 and R^2 may form a 5- to 6-membered ring taken together with the adjacent N and C; X is hydrogen or an optionally substituted lower alkyl group; and Z is a group capable of forming an anion or a group convertible into an anion in a living body, or a physiologically acceptable salt thereof.

5,294,714

2,5-DIOXOPIPERAZINE COMPOUNDS AND METHOD FOR PREPARING α-ASPARTYL-L-PHENYLALANINE METHYL ESTER DERIVATIVES

Tadashi Takemoto, and Ryoichiro Nakamura, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,857

Claims priority, application Japan, Oct. 23, 1991, 3-275695

Int. Cl.[5] C07D *241/04*; C07C *229/00*

U.S. Cl. 544—385 **18 Claims**

1. A method for preparing 3-benzyl-6-cyanomethyl-2,5-dioxopiperazine (I), comprising:

reacting 2,5-dioxopiperazine-3-acetamide (II) with acetic anhydride to provide N,N'-diacetyl-6-cyanomethyl-2,5-dioxopiperazine (III),

condensing (III) with benzaldehyde in the presence of a strong base to provide 1-acetyl-3-benzylidene-6-cyanomethyl-2,5-dioxopiperazine (IV),

treating (IV) with hydrazine to provide 3-benzylidene-6-cyanomethyl-2,5-dioxopiperazine (V); and

reducing (V) to give (I).

5,294,715

ACRIDINE-INTERCALATOR BASED HYPOXIA SELECTIVE CYTOTOXINS

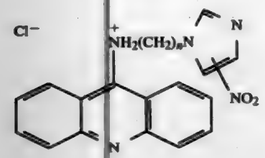
Maria Papadopoulou-Rosenzweig; William D. Bloomer, both of Pittsburgh, Pa., and William D. Bloomer, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Feb. 1, 1991, Ser. No. 649,703

Int. Cl.[5] C07D *233/91*

U.S. Cl. 546—106 **4 Claims**

1. A hypoxia selective cytotoxin of the formula



wherein n is from 1 to 5, and NO_2 is in the 2, 4 or 5-position of the imidazole.

5,294,716

CHEMICAL PROCESS FOR MAKING ANGIOTESIN II ANTAGONIST COMPOUNDS

Andrew P. Thomas, Congleton; David M. G. Martin, Stockport; Stanley A. Lee, and Lyn Powell, both of Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

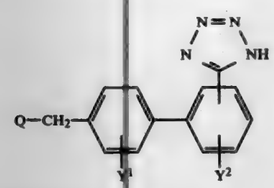
Filed Jan. 17, 1992, Ser. No. 822,395

Claims priority, application United Kingdom, Jan. 17, 1991, 9101026; Apr. 2, 1991, 9105876; Oct. 14, 1991, 9121726

Int. Cl.[5] C07D *257/06, 401/08*

U.S. Cl. 546—135 **9 Claims**

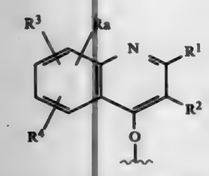
1. A process for the manufacture of a compound of the formula IV



IV

or a non-toxic salt thereof, wherein Q is selected from

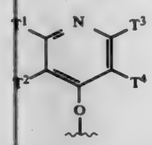
(1) a 4-quinolyloxy moiety of the formula Va



Va

in which R^1 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, phenyl or substituted (1–4C)alkyl, the latter containing one or more fluoro substituents or bearing a (3–8C)cycloalkyl, hydroxy, (1–4C)alkoxy or phenyl substituent; R^2 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, carboxy, (1–4C)alkoxycarbonyl, cyano, nitro, phenyl or phenyl(1–4C)alkyl; R^3 and R^4 are independently selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, fluoro(1–4C)alkoxy, halogeno, hydroxy, trifluoromethyl, cyano, nitro, amino, (1–4C)alkanoylamino, alkylamino and dialkylamino of up to 6 carbon atoms, dialkylamino-alkyl of 3 to 8 carbon atoms, (1–4C)alkanoyl, carbamoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, carboxy, (1–4C)alkoxycarbonyl, (1–6C)alkylthio, (1–6C)alkylsulphinyl, (1–6C)alkylsulphonyl, and substituted (1–4C)alkyl, the latter bearing an amino, hydroxy or (1–4C)alkoxy substituent; or R^3 and R^4 together form (1–4C)alkylenedioxy attached to adjacent carbon atoms of the benzene moiety of formula I; and Ra is selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano or nitro;

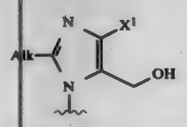
(2) a 4-pyridyloxy moiety of the formula Vb



Vb

in which T^1 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, phenyl or substituted (1–4C)alkyl, the latter containing one or more fluoro substituents or bearing a (3–8C)cycloalkyl, (1–4C)alkoxy or phenyl substituent; T^2 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl-(1–4C)alkyl, carboxy, (1–4C)alkoxycarbonyl, (3–6C)alkenyloxycarbonyl, cyano, nitro, phenyl or phenyl(1–4C)alkyl; T^3 is selected from halogeno, (1–4C)alkoxy, amino, alkylamino and dialkylamino of up to 6 carbon atoms, and any of the values defined above for T^1; T^4 is selected from hydrogen, (1–4C)alkyl optionally bearing an amino, (1–4C)alkanoylamino, phenylcarbonylamino, hydroxy or (1–4C)alkoxy substituent, carboxy, (1–4C)alkoxycarbonyl, (3–6C)alkenyloxycarbonyl, cyano, nitro, carbamoyl, (1–4C)alkanoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, formyl, halogeno, amino, alkylamino and dialkylamino of up to 6 carbon atoms, 3-(1–4C)alkylureido and (1–4C)alkanoylamino; or T^4 is a group of the formula $—A^1.A^2.E$ wherein A^1 is carbonyloxy, A^2 is (1–6C)alkylene and E is selected from hydroxy, (1–4C)alkoxy, phenyloxy, phenyl(1–4C)alkoxy, pyridyl(1–4C)alkoxy, 4-morpholino(-1–4C)alkoxy, phenylamino, amino, alkylamino and dialkylamino of up to 6 carbon atoms, (1–4C)alkanoylamino, (1–4C)alkylsulphonylamino, phenylsulphonylamino, sulphamoylamino (—$NH.SO_2.NH_2$), carboxamidomethylamino (—$NH.CH_2.CO.NH_2$), (1–4C)alkanoyloxy, phenylcarbonyloxy, aminocarbonyloxy (—$O.CO.NH_2$), (1–4C)alkylaminocarbonyloxy, carboxy, (1–4C)alkoxycarbonyl, carbamoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, (1–4C)alkanoyl, 4-morpholino, 1-imidazolyl and succinimido group; or E is a group of the formula $—A^3.E^1$ wherein A^3 is oxy, oxycarbonyl or imino and E^1 is a 5 or 6-membered saturated or unsaturated heterocyclic ring containing 1 or 2 nitrogen atoms and linked to A^3 by a ring carbon atom; or A^3 is oxycarbonyl and E^1 is a 4-morpholino group or a 5 or 6-membered saturated heterocyclic ring containing 1 or 2 nitrogen atoms, optionally bearing a (1–4C)alkyl group and linked to A^3 by a ring nitrogen atom; and wherein E^1 the remainder of the ring atoms are carbon; or T^3 and T^4 together form (3–6C)alkylene, one of the methylene groups of which may optionally be replaced by a carbonyl group, or (3–6C)alkenylene; and

(3) an 1-imidazolyl moiety of the formula Vc



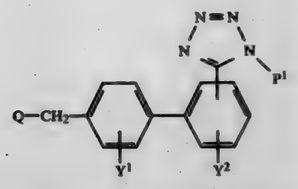
Vc

in which Alk is a (3–10C)alkyl group and X^1 is selected from hydrogen, fluoro, chloro, bromo, iodo, nitro, trifluoromethyl and cyano;

Y^1 is selected from hydrogen, 91–4C)alkyl, (1–4C)alkoxy, halogeno, (1–4C)alkanoyl, trifluoromethyl, cyano and nitro; and

Y^2 is selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro;

which is characterised in that a compound of the formula VI



VI

wherein P^1 is an electron-deficient phenyl group or is a pyridyl or pyrimidyl group, and Q, Y^1 and Y^2 have any of the meanings defined hereinbefore, is reacted with a base selected from an alkali metal hydroxide, (1–12C)alkanolate, (1–12C)alkanethiolate, phenolate, thiophenolate and diphenylphosphide, wherein any phenyl ring of the latter three groups may optionally bear a (1–4C)alkyl, (1–4C)alkoxy or halogeno substituent;

whereafter: when a non-toxic salt of a compound of formula IV is desired, it is obtained by reaction with the appropriate acid or base affording a physiologically acceptable ion, or by any other conventional salt formation procedure; and

when an optically active form of a compound of formula IV is desired the process is carried out with an optically active starting material, or a racemic form of a compound of formula IV is resolved by reaction with an optically active form of a suitable organic base followed by conventional separation of the diastereomeric mixture of salts thus obtained, and liberation of the desired optically active form of said compound of formula IV by conventional treatment with acid; and wherein Q, Y^1 and Y^2 have any of the meanings defined above.

5,294,717

BIFUNCTIONAL CHELATING AGENTS, THEIR CHELATES AND PROCESS OF PREPARATION

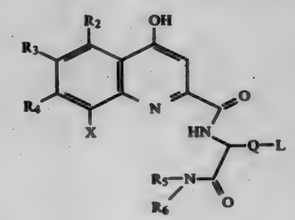
Spyros Theodoropulos, 2964 Hickory St., Yorktown Heights, N.Y. 10598

Filed Oct. 24, 1991, Ser. No. 782,061

Int. Cl.[5] C07D *215/22, 215/24*

U.S. Cl. 546—156 **7 Claims**

1. An 8-substituted-2-carboxamidoquinoline compound having the structure:



wherein:

R_2, R_3 and R_4 are identical or different, and are selected from the group consisting of hydrogen, hydroxyl, halogen, C_1–C_5 alkyl, nitro, nitroso, $—SO_3H$, $—PO_3H$, and an aryl up to C_{18};

X is selected from the group consisting of OH and SH;

R_5 and R_6 are identical or different, and are selected from the group consisting of hydrogen, a C_1–C_{18} alkyl group which may be unsubstituted or substituted with a member selected from the group consisting of mercapto, carboxy, hydroxy and dialkylamino; an aryl up to C_{18} which may be substituted with at least one member selected from the group consisting of hydroxy, carboxy amino and mercapto groups; and a pyridyl or 8-quinolyl group which may be substituted with a member selected from the group consisting of hydroxy and carboxy;

the group Q-L represents a substrate coupling moiety, wherein Q is hydrogen, a C_1–C_{18} alkyl group which may be unsubstituted or substituted with the same substituents as R_5 and R_6 above, an aryl and aralkyl up to C_{18} pyridyl or 8-quinolyl; with the proviso that when Q is hydrogen, L is nonexistent;

L is a nitro, or an amino group.

5,294,718

PIPERIDINO-3,4-DIHYDROCARBOSTYRIL COMPOUNDS

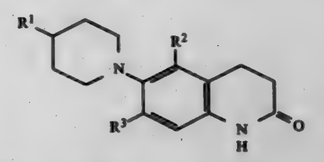
Arao Ujiie; Hiromu Harada; Akira Iyobe; Masahiko Uchida, and Koji Komata, all of Nagano, Japan, assignors to Kissei Pharmaceutical Co., Ltd., Nagano, Japan

Filed Aug. 3, 1993, Ser. No. 101,006

Int. Cl.[5] C07D *401/10*; A61K *31/47, 31/445*

U.S. Cl. 546—158 **5 Claims**

1. A piperidino-3,4-dihydrocarbostyril compound represented by the formula:



wherein R^1 represents a hydroxy group or an acyloxy group having 2 to 11 carbon atoms; one of R^2 and R^3 represents a nitro group, a cyano group, an alkoxycarbonyl group having 2 to 7 carbon atoms, an alkyl group having 1 to 4 carbon atoms, a haloalkyl group having 1 to 3 carbon atoms, or a halogen atom, and the other represents a hydrogen atom; and a pharmaceutically acceptable salt thereof.

5,294,719

CYCLOHEXYLAMINE COMPOUNDS USEFUL AS A STABILIZER FOR ORGANIC MATERIALS

Hideki Kurokawa; Mitsumasa Kaitoh, and Akiyoshi Ohnishi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

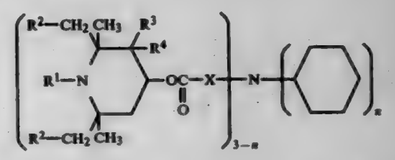
Filed Dec. 23, 1992, Ser. No. 996,026

Claims priority, application Japan, Dec. 26, 1991, 3-357513

Int. Cl.[5] C07D *211/46, 401/12*

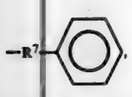
U.S. Cl. 546—188 **15 Claims**

1. A cyclohexylamine compound represented by the general formula:



wherein R^1 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an acyl group of the formula —C(=O)—R^6, in which R^6 represents a C_1–C_6 alkyl group or a phenyl group, or an phenylalkyl group of the formula

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in which R^7 represents a C_1–C_4 alkylene group, and R^2 each represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

R^3 and R^4 both represent a hydrogen atom, or one of R^3 and R^4 represents a hydrogen atom and the other represents a group $—CH_2—R^5$, or R^3 and R^4 together form a group $=CH—R^5$, in which R^5 represents an unsubstituted or C_1–C_4 alkyl substituted phenyl group, a 2-furyl group, a cyclohexyl group or a 2-tetrahydrofuryl group,

X represents an alkylene group having 1 to 3 carbon atoms, and

n denotes 1 or 2.

5,294,720

1,4-DIAMINO-2,3-DIHYDROXYBUTANES

Prabhakar K. Jadhav, Wilmington, Del.; Lawrence R. McGee, Pacifica, Calif.; Ashok Sheuvi, and Carl N. Hodge, both of Wilmington, Del., assignors to The DuPont Merck Pharmaceutical Co., Wilmington, Del.

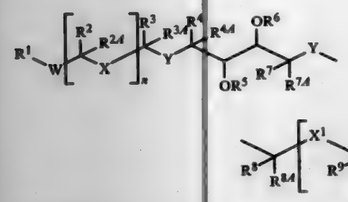
Continuation-in-part of Ser. No. 531,971, Jun. 1, 1990, abandoned. This application May 31, 1991, Ser. No. 714,042

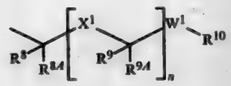
Int. Cl.[5] A61K *31/44*; C07D *213/40*

U.S. Cl. 546—265 **43 Claims**

1. There is provided by this invention a compound of the formula:

(I)





wherein:

R^1 through R^7 through R^{10} are independently selected from the following groups:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{11};

C_2–C_8 alkenyl substituted with 0–3 R^{11};

C_3–C_8 alkynyl substituted with 0–3 R^{11};

C_3–C_8 cycloalkyl substituted with 0–3 R^{11};

C_6–C_{10} bicycloalkyl substituted with 0–3 R^{11};

aryl substituted with 0–3 R^{12};

a C_6–C^{14} carbocyclic residue substituted with 0–3 R^{12};

a heterocyclic ring system substituted with 0–2 R^{12} selected from pyridyl, pyrimidinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, tetrazolyl, benzofuranyl, benzothiophenyl, indolyl, indolenyl, quinolinyl, isoquinolinyl, benzimidazolyl, piperidinyl, pyrrolidinyl, tetrahydrofuranyl, tetrahydroquinolinyl, tetrahydroisoquinolinyl, or decahydroisoquinolinyl;

R^{2A} through R^{4A} and R^{7A} are independently selected from the following groups:

hydrogen;

C_1–C_4 alkyl substituted with halogen or C_1–C_2 alkoxy;

benzyl substituted with halogen or C_1–C_2 alkoxy;

R^5 and R^6 are independently selected from the following groups:

hydrogen:

C_1–C_6 alkoxycarbonyl;

C_1–C_6 alkylcarbonyl

benzoyl;

phenoxycarbonyl; or

phenylaminocarbony; wherein said alkyl residues are substituted with 0–3 R^{11}, and said aryl residues are substituted with 0–3 R^{12}; or any other group that, when administered to a mammalian subject, cleaves to form the original diol in which R^5 and R^6 are hydrogen;

R^{11} is selected from one or more of the following:

keto, halogen, cyano, $—NR^{13}R^{14}$, $—CO_2R^{13}$, $—OC(=O)R^{13}$, $—OR^{13}$, C_2–C_6 alkoxyalkyl, $—S(O)_mR^{13}$, $—NHC(=NH)NHR^{13}$, $—C(=NH)NHR^{13}$, $—C(=O)NR^{13}R^{14}$, $—NR^{14}C(=O)R^{13}$—, $NR^{14}C(=O)OR^{14}$, $OC(=O)NR^{13}R^{14}$, $—NR^{13}C(=O)NR^{13}R^{14}$, $—NR^{14}SO_2NR^{13}R^{14}$, $—NR^{14}SO_2R^{13}$, $—SO_2NR^{13}R^{14}$, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl;

a C_5–C_{14} carbocyclic residue substituted with 0–3 R^{12};

aryl substituted with 0–3 R^{12};

or a heterocyclic ring system substituted with 0–2 R^{12} selected from pyridyl, pyrimidinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, tetrazolyl, benzofuranyl, benzothiophenyl, indolyl, indolenyl, quinolinyl, isoquinolinyl, benzimidazolyl, piperidinyl, pyrrolidinyl, tetrahydrofuranyl, tetrahydroquinolinyl, tetrahydroisoquinolinyl, or decahydroisoquinolinyl;

R^{12}, when a substituent on carbon, is selected from one or more of the following:

phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, alkoxy, $—NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C1–C4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, $—S(O)_mR^{13}$, $—SO_2NR^{13}R^{14}$, $—NHSO_2R^{14}$;

or R^{12} may be a 3- or 4-carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6-membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or $NR^{13}R^{14}$; or, when R^{12} is attached to a saturated carbon atom it may be carbonyl or thiocarbonyl;

and R^{12}, when a substituent on nitrogen, is selected from one or more of the following:

phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, $—NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl,

R^{13} is H, phenyl, benzyl or C_1–C_6 alkyl;

R^{14} is H or C_1–C_4 alkyl;

or $R^{13}R^{14}$ can join to form $(CH_2)_4$, $(CH_2)_5$, $(CH_2CH_2N(R^{15})CH_2CH_2)$, or $(CH_2CH_2OCH_2CH_2)$;

R^{15} is H or CH_3;

m is 0, 1 or 2;

n and n^1 are independently 0 or 1;

W and W1 are independently selected from the following:

$—NR^{16}C(=Q)NR^{16}$,

$—C(=Q)NR^{16}—$;

$—C(=Q)O—$;

$—NR^{16}C(=Q)O—$;

$—OC(=Q)NR^{16}—$;

$—NR^{16}C(=Q)—$;

$—C(=Q)—$;

$—C(=Q)CH_2—$;

$—NR^{16}SO_2NR^{16}—$

$—NR^{16}SO_2—$

$—SO_2NR^{16}—$

$—SO_2—$;

$—QCH_2—$;

$—Q—$;

$—(CH_2)_pNR^{16}—$;

$—CH_2CH_2—$

$—CH=CH—$;

$—CH(OH)CH(OH)—$;

$—CH(OH)CH_2—$;

$—CH_2CH(OH)—$;

$—CH(OH)—$;

$—NH—NH—$;

$—C(=O)NH—NH—$;

$—C(Cl)=N—$;

$—C(—OR^{16})=N—$;

$—C(—NR^{16}R^{17})=N—$;

$—OP(=O)(Q^1R^{16})O—$;

$—P(=O)(Q^1R^{16})O—$;

$—SO_2NHC(=O)NH—$;

X and X^1 are independently selected from the following:

$—C(=Q)NR^{16}—$;

$—C(=Q)O—$;

$—C(=Q)—$;

$—CH_2C(=Q)—$;

$—CH_2C(=Q)CH_2—$;

$—C(=Q)CH_2—$;

$—SO_2NR^{16}—$

$—SO_2—$;

$—CH_2QCH_2—$;

$—CH_2Q—$;

$—CH_2NR^{16}—$;

$—CH_2CH_2—$;

$—CH=CH—$;

$—CH(OH)CH(OH)—$;

$—CH(OH)CH2—$;

$—CH_2CH(OH)—$;

$—CH(OH)—$;

$—C(=O)NH—NH—$;

$—C(—OR^{16})=N—$;

$—C(—NR^{16}R^{17})=N—$;

$—C(L)=N—$;

Y and Y^1 are independently selected from the following:

$—C(=Q)NR^{16}—$;

$—(CH_2)_pC(=Q)NR^{16}—$;

$—SO_2NR^{16}—$;

$—CH2NR^{16}—$;

$—C(L)=N—$;

$—C(—OR^{16})=N—$;

$—C(—NR^{16}R^{17})=N—$;

$—NR12C(=O)NR^{16}—$;

$—(CH_2)_pNR12C(=O)NR^{16}$;

$—OC(=O)NR^{16}—$;

$—(CH_2)_pOC(=O)NR^{16}—$;

R^{16} is H, benzyl or C_1–C_4 alkyl;

R^{17} is H or C_1–C_4 alkyl;

p is 1 or 2;

Q is selected from oxygen or sulfur;

Q^1 is selected from oxygen, sulfur, NR^{14} or a direct bond;

and pharmaceutically acceptable salts and prodrugs thereof.

5,294,721

PROCESS FOR THE PREPARATION OF PYRIDINIUM INTERMEDIATES

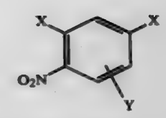
Xin C. Wang, Park City, Ill.; Panos Kalaritis, New Providence, N.J., and Michelle L. Chang, Vernon Hills, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 21, 1992, Ser. No. 934,061

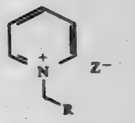
Int. Cl.[5] C07D *213/90*

U.S. Cl. 546—347 **11 Claims**

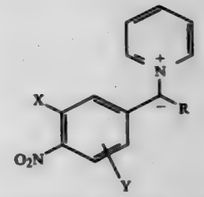
1. A process for the preparation of pyridinium intermediates comprising the step of reacting a halonitrobenzene of the formula



with a pyridinium salt of the formula



to form a pyridinium intermediate of the formula



wherein R is selected from the group consisting of hydrogen, C_1-to-C_{10} alkyl, C_2-to-C_{10} alkenyl, C_2-to-C_{10} alkynyl, phenyl, naphthyl, —CN, —COOR', and —COR' where R' is C_1-to-C_{10} alkyl, pheayl or naphthyl; X is chloro or fluoro; Y is hydrogen, chloro or fluoro; and Z is chloro, bromo or iodo.

5,294,722

PROCESS FOR THE PREPARATION OF IMIDAZOLES USEFUL IN ANGIOTENSIN II ANTAGONISM

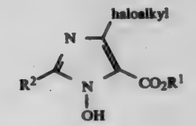
Kyoung S. Kim, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 16, 1992, Ser. No. 869,971

Int. Cl.[5] C07D *235/30, 235/04, 233/54, 233/00*

U.S. Cl. 548—251 **19 Claims**

1. A process for preparing a product of the formula



wherein:

R^1 is hydrogen, alkyl, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl;

R^2 is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkylalkynyl or $—(CH_2)_mZ(CH_2)_nR^3$, each of which is unsubstituted or substituted with 1 or 2 groups selected from halo and $—CO_2R^1$; or aryl or aralkyl, each of which is unsubstituted or substituted with 1 or 2 groups selected from halogen, lower alkoxy, lower alkyl and nitro;

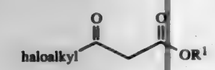
R^3 is hydrogen, alkyl, cycloalkyl, lower alkenyl or lower alkynyl;

Z is O, NR^4 or S;

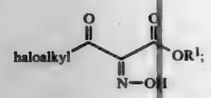
R^4 is hydrogen, alkyl, cycloalkyl, aryl, cycloalkylalkyl or aralkyl;

m is an integer from 0 to 5; and

n is an integer from 1 to 5;
and wherein the process comprises:
(a) reacting a ketone of the formula



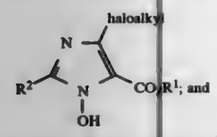
with a nitrogenic acid, nitrite or nitrate in the presence of an acid to form a hydroxyimino compound of the formula



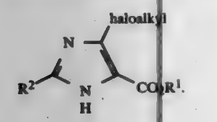
(b) reacting the hydroxyimino compound with an aldehyde of the formula

R^2—CHO

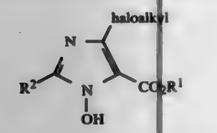
and an ammonium compound selected from ammonia, ammonium halide and ammonium hydroxide to form an N-hydroxyimidazole of the formula



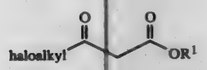
(c) reacting the N-hydroxyimidazole with a reducing agent selected
from titanium trichloride and zinc in the presence of a buffer to
form a product of the formula



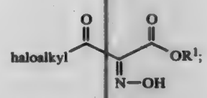
14. A process for preparing a product of the formula



wherein:
R^1 is hydrogen, alkyl, haloalkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl;
R^2 is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkenyl, cycloalkylalkynyl or $—(CH_2)_mZ(CH_2)_nR^3$, each of which is unsubstituted or substituted with 1 or 2 groups selected from halo and $—CO_2R^1$; or aryl or aralkyl, each of which is unsubstituted or substituted with 1 or 2 groups selected from halogen, lower alkoxy, lower alkyl and nitro;
R^3 is hydrogen, alkyl, cycloalkyl, lower alkenyl or lower alkynyl;
Z is O, NR^4 or S;
R^4 is hydrogen, alkyl, cycloalkyl, aryl, cycloalkylalkyl or aralkyl;
m is an integer from 0 to 5; and
n is an integer from 1 to 5;
and wherein the process comprises:
step (a) reacting a ketone of the formula



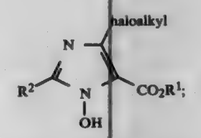
with a nitrogenic acid, nitrite or nitrate in the presence of an acid to form a hydroxyimino compound of the formula



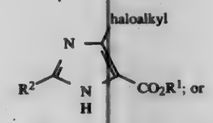
step (b) reacting the hydroxyimino compound with an aldehyde of the formula

R^2—CHO

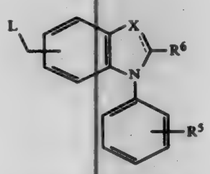
and an ammonium compound selected from ammonia, ammonium halide and ammonium hydroxide to form an N-hydroxyimidazole of the formula



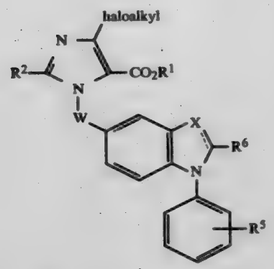
and further comprising
step (c) reacting the N-hydroxyimidazole from step (b) with a reducing agent selected from titanium trichloride and zinc in the presence of a buffer to form a product of the formula



step (d) reacting the N-hydroxyimidazole from step (b) with



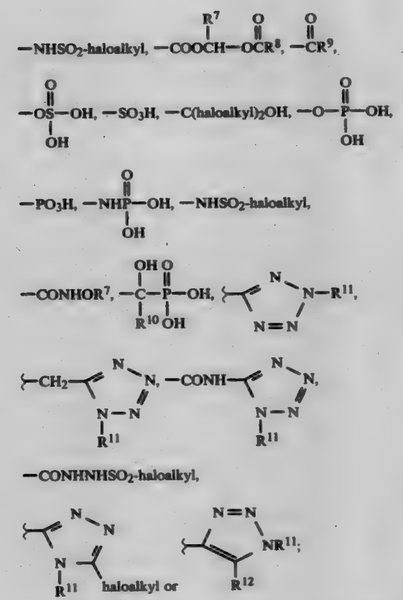
in the presence of a coupling agent in an organic solvent to form a product of the formula



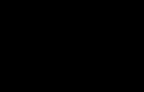
wherein:
L is halogen;
W is $—CH_2—$ or $—O—CH_2—$;
X is N,



R^5 is hydrogen



wherein:
R^{12} is —CN, $—NO_2$ or $—CO_2R^1$;
R^{13} and R^{14} are independently hydrogen, benzyl or together are alkylene or alkenylene, forming a 4- to 7-membered saturated, unsaturated or aromatic ring with the nitrogen atom to which they are attached;
R^{15} and R^{16} independently are hydrogen, alkyl, phenyl, benzyl, α-methylbenzyl or together with the nitrogen atom to which they are attached form a ring of the formula



Q is NR^7, O or CH_2;
R^{17} is hydrogen, alkyl, cycloalkyl, aryl or arylalkyl and R^{18} is hydrogen, alkyl, cycloalkyl, aryl, arylalkyl or alkoxy, or together R^{17} and R^{18} are $—(CH_2)_2—$, $—(CH_2)_3—$, —CH═CH— or



and
t is 0 or 1; or
step (c) and step (d);
and "coupling agent" refers to an alkali metal disilazane, carbonate or bicarbonate.

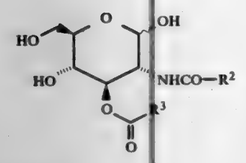
5,294,723

SALTS OF GLUCOPYRANOSE DERIVATIVES AND ITS INTERMEDIATE

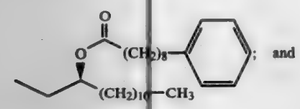
Katsuhiro Imaki; Shinsuke Hashimoto, and Hirohisa Wakatsuka, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 28, 1993, Ser. No. 10,163
Claims priority, application Japan, Jan. 31, 1992, 4-42185; May 22, 1992, 4-155913
Int. Cl.[5] C07D *309/10*
U.S. Cl. 549—417 1 Claim

1. A glucopyranose derivative of the formula (II)

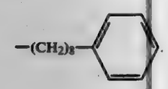


wherein R^2 is



; and

wherein R^3 is



.

5,294,724

4-HYDROXYTETRAHYDROPYRAN-2-ONES AND THE CORRESPONDING DIHYDROXYCARBOXYLIC ACID DERIVATIVES, SALTS AND ESTERS AND A PROCESS FOR THEIR PREPARATION

Heiner Jendralla, Frankfurt am Main; Günther Wess, Erlensee; Kurt Kesseler, Bad Soden, and Gerhard Beck, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

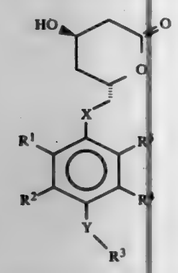
Filed Sep. 6, 1990, Ser. No. 578,240

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3929913

Int. Cl.[5] **C07D** *309/30*; **C07C** *69/612, 321/04, 321/26*

U.S. Cl. 549—292 **3 Claims**

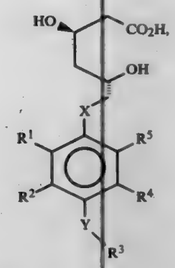
1. A 4-hydroxytetrahydropyran-2-one of formula I



I

or the corresponding open-chain dihydroxycarboxylic acid of formula II

(II)



II

wherein

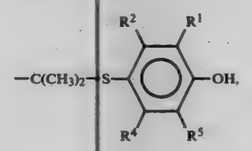
X is oxygen;

Y is oxygen or sulfur;

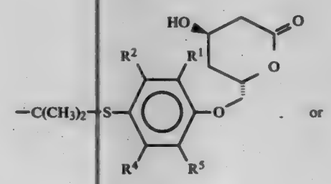
R^1 is isopropyl or cyclopropyl;

R^2 is hydrogen, isopropyl or p-fluorophenyl;

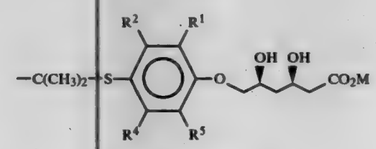
R^3 is hydrogen, acetyl, isopropyl, p-fluorophenyl, or one of the radicals



,



or



wherein M is hydrogen or sodium;

R^4 is hydrogen, isopropyl or p-fluorophenyl; and

R^5 is isopropyl or p-fluorophenyl;

and pharmaceutically acceptable salt or pharmaceutically acceptable ester thereof.

5,294,725

SCOPULARIN

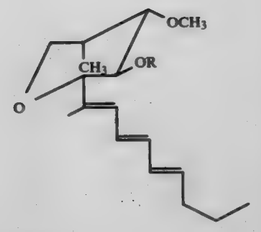
Donald R. Kirsch, Princeton; Joseph O'Sullivan, Belle Mead, and Douglas W. Phillipson, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 31, 1989, Ser. No. 305,338

Int. Cl.[5] **C07D** *309/10*

U.S. Cl. 549—417 **1 Claim**

1. A compound of the formula



wherein R is hydrogen.

5,294,726

PROCESS FOR THE PREPARATION OF LIGHT-COLORED OLEIC ACID SULFONATES

Ansgar Behler, Bottrop; Hermann Anzinger, and Michael Vogt, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01248, § 371 Date Feb. 10, 1992, § 102(e) Date Feb. 10, 1992, PCT Pub. No. WO91/01972, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 31, 1990, Ser. No. 834,252

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926344

Int. Cl.[5] **C11D** *1/28*

U.S. Cl. 554—98 **19 Claims**

1. A process for the preparation of oleic acid sulfonate having a Klett color number of not more than 100 from oleic acid containing relatively large quantities of linoleic acid comprising the steps of

A. continuously sulfonating crude oleic acid having an oleic acid content in the range of from about 65 to about 85% by weight, a linoleic acid content of from about 4 to about 13% by weight, and wherein the remainder of the crude oleic acid is comprised predominantly of other saturated and/or unsaturated fatty acids having from 10 to 22 carbon atoms, and wherein the crude oleic acid is distilled industrial oleic acid which has not been stored in air following distillation for more than one month, with gaseous sulfur trioxide in a molar ratio of olefinic double bonds present in the crude oleic acid to sulfur trioxide of about 1:0.8 to 1.0 to form an acid sulfonation product;

B. neutralizing and hydrolyzing the acid sulfonation product from step A with at least one aqueous base; and

C. bleaching the resulting aqueous solution of oleic acid sulfonate with a bleaching agent to produce oleic acid sulfonate having a Klett color number of not more than 100.

5,294,727

METHOD FOR PREPARING TERTIARY HYDROCARBON-SILYL COMPOUNDS

Tohru Kubota; Toshinobu Ishihara, and Mikio Endo, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Nov. 12, 1992, Ser. No. 974,989

Claims priority, application Japan, Nov. 13, 1991, 3-297434; Aug. 25, 1992, 4-225382

Int. Cl.[5] **C07F** *7/08*

U.S. Cl. 556—480 **3 Claims**

1. A method for preparing a tertiary hydrocarbon-silyl compound of the formula

$$X_{m-1}R^1R^2SiH_{4-m-n}$$

wherein

X is a halogen atom;

R^1 is a tertiary hydrocarbon group;

R^2 is a monovalent hydrocarbon group;

m is 1, 2, or 3; and

n is 0, 1, or 2, with the provisos that m+n is not more than 3 and if n is 2, the two R^2s may be the same or different, the method comprising

reacting a Grignard reagent of the formula

$$R^1MgX^1$$

wherein

R^1 is as previously defined and

X^1 is a halogen atom which may be the same as or different from X with a silicon-atom containing compound of the formula

$$X_mR^2_nSiH_{4-m-n}$$

wherein X, R^2, m and n are as previously defined

in an aprotic solvent

in the presence of a catalytic amount of a catalyst selected from the group consisting of a copper compound and a quaternary ammonium salt.

5,294,728

LATENT THIOL MERCAPTAN CHAIN TRANSFER AGENTS AND THEIR USE IN THE SYNTHESIS OF POLYMERS

William D. Emmons, Huntingdon Valley, and Andrew W. Gross, Hatboro, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 4, 1991, Ser. No. 787,280

Int. Cl.[5] **C07C** *67/02*; **C08F** *8/00, 12/30*

U.S. Cl. 558—255 **3 Claims**

1. A latent thiol mercaptan chain transfer agent having the general formula;

$$[HS(CH_2)_mCO]_yA[OC(CH_2)_nSB]_x$$

wherein

A is a polyvalent organic radical;

x and y are positive integers such that x+y equals the valence of A;

B is an organic acyl radical; and

n and m are integers from 1 to 6.

5,294,729

PROCESS FOR THE PREPARATION OF A BLOCK OLIGOCARBONATE

Douglas A. Wicks, Mt. Lebanon, Pa.; Dittmar K. Nerger, Krefeld, Fed. Rep. of Germany; Rick L. Archey, Pleasant Hills, Pa., and Gary W. Munko, Coraopolis, Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation of Ser. No. 965,128, Oct. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,677, Dec. 4, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,743

Int. Cl.[5] **C07C** *69/96, 68/06*

U.S. Cl. 558—268 **12 Claims**

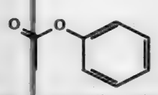
1. A process for preparing a block oligocarbonate selected from the group consisting of

$$R—A—B—A—R$$

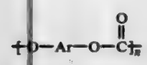
and

$$R—A—B—A—\overset{O}{\overset{\|}{C}}—A—B—A—R$$

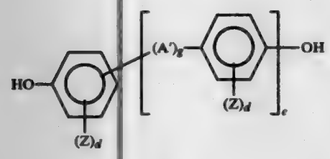
where R denotes



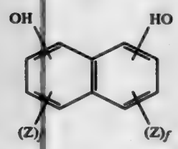
and where A denotes an aromatic carbonate structure conforming to



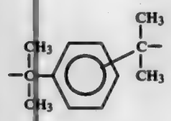
where n is 2–6, B is the residue of an aliphatic polyol, with the proviso that said B is bonded to said A through the terminal carboxyl in said A, and where Ar denotes an aromatic radical derived from the group consisting of



and



where A' denotes an C_{1-8} alkylene group, C_{2-8} alkylidene group, C_{5-15} cycloalkylene group, C_{5-15} cycloalkylidene group, carbonyl group, an oxygen atom, a sulfur atom, -SO-, $-SO_2-$ or a radical conforming to



e and g denote 0 or 1, Z independently denotes F, Cl, Br or C_{1-4} -alkyl, d is an integer of 0 to 4 and f is an integer of 0 to 3, comprising

a) reacting an aromatic polycarbonate with an aliphatic polyol and

b) reacting the product of said a) with diphenyl carbonate, characterized in that said a) is carried out in the melt at a temperature of 180°–230° C. in the presence of a transesterification catalyst and said polycarbonate having a weight average molecular weight of about 10,000 to 20,000, and where said aliphatic polyol has a molecular weight of up to about 30,000 and a functionality of 1 to 6.

5,294,730

CALCIUM INDEPENDENT CAMP PHOSPHODIESTERASE INHIBITOR ANTIDEPRESSANT

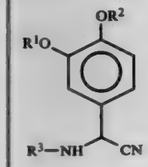
Nicholas A. Saccomano, Ledyard, and Fredric J. Vinick, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 854,136, Mar. 19, 1992, Pat. No. 5,196,426, which is a division of Ser. No. 696,690, May 30, 1991, Pat. No. 5,128,538, which is a division of Ser. No. 155,932, Jan. 19, 1988. This application Nov. 20, 1992, Ser. No. 984,190

Int. Cl.[5] C07C *255/37*

U.S. Cl. 558—409 **1 Claim**

1. A compound having the formula



(IV)

wherein

R^1 is a polycycloalkyl group having from 7 to 10 carbon atoms;

R^2 is methyl or ethyl; and

R^3 is hydrogen, (C_{1-5})alkyl, (C_{2-5})alkenyl, benzyl or phenethyl.

5,294,731

PREPARATION OF β-HYDROXYCARBOXYLATES

Joachim Paust, Neuhofen, and Wolfgang Siegel, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

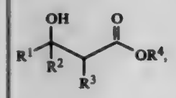
Filed Mar. 23, 1993, Ser. No. 36,023

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209616

Int. Cl.[5] C07C *69/76, 69/66*

U.S. Cl. 560—60 **1 Claim**

1. A process for the preparation of β-hydroxycarboxylates of the general formula I



(I)

in which

R^1 and R^2 and individually denote

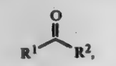
C_1–C_{20} alkyl optionally substituted by C_1–C_8 alkoxy and/or halogen, C_1–C_{20} alkoxycarbonylalkyl, C_2–C_{20} alkenyl, C_5–C_{30} acetalalkenyl, aryl optionally mono- to penta-substituted by C_1–C_8 alkyl, C_1–C_8 alkoxy, and/or halogen, C_7–C_{20} aralkyl, C_7–C_{20} aralkenyl, hetaryl, C_3–C_{20} cycloalkyl, or C_4–C_{20} cycloalkylalkyl,

or together denote a C_2–C_8 alkylene chain

and one or other of R^1 and R^2 denotes hydrogen, and

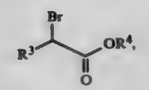
R^3 denotes hydrogen, C_1–C_{20} alkyl, C_2–C_{20} alkenyl, aryl optionally mono- to penta-substituted by C_1–C_8 alkyl, C_1–C_8 alkoxy, and/or halogen, C_7–C_{20} aralkyl, C_3–C_{20} cycloalkyl, or C_4–C_{20} cycloalkylalkyl, and

R^4 denotes C_1–C_{20} alkyl, C_4–C_{20} alkenyl, C_7–C_{20} aralkyl, C_3–C_{20} cycloalkyl, or C_4–C_{20} cycloalkylalkyl,



(II)

in which R^1 and R^2 have the meanings stated above, with α-bromocarboxylates of the general formula III



(III)

in which R^3 and R^4 have the meanings stated above, and with zinc in the presence of methylene chloride at a temperature ranging from 0° to 50° C.

5,294,732

POLYSUBSTITUTED FULLERENES AND THEIR PREPARATION

Long Y. Chiang, Somerset; Ravindra B. Upasani, Flemington, both of N.J., and John W. Swirczewski, Kintnersville, Pa., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 783,292, Oct. 28, 1991, Pat. No. 5,177,248. This application Dec. 23, 1992, Ser. No. 996,207

Int. Cl.[5] C07C *39/23, 235/40*

U.S. Cl. 560—86 **8 Claims**

1. A composition of a polysubstituted fullerene moiety having a plurality of substituents thereon, wherein said substituents are selected from the group consisting of hydroxy in combination with hydroxy, amino, oxide, nitro, organocarboxy, amide, and mixtures thereof.

5,294,733

ORGANIC COMPOSITIONS AND THEIR MANUFACTURE

Charles A. McCombs, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 829,640, Feb. 3, 1992, Pat. No. 5,225,589, which is a division of Ser. No. 681,281, Apr. 8, 1991, abandoned, which is a division of Ser. No. 399,790, Aug. 28, 1989, Pat. No. 5,041,613. This application May 20, 1993, Ser. No. 63,825

Int. Cl.[5] C07C *321/00*

U.S. Cl. 560—152 **2 Claims**

1. A compound of the formula

$$R—CH(OH)CH(R_1)—COOR_3$$

wherein

R is selected from alkylthio, alkylthioalkyl, cycloalkyl, alkyl substituted cycloalkyl, alkoxy, alkanoyloxy, alkoxycarbonyl, aryl, substituted aryl, heterocyclic, or substituted heterocyclic, wherein each group or moiety has up to 20 carbons; and

R_1 and R_3 are each selected from is hydrogen, alkyl or cycloalkyl having up to 20 carbons.

5,294,734

4-SUBSTITUTED 2-AMINOALK-3-ENOIC ACIDS

Christof Angst, Möhlin, Switzerland; Hans Allgeier, Lörrach-Haagen, Fed. Rep. of Germany; Roland Heckendorn, Arlesheim, and Daniel Wallach, Basel, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

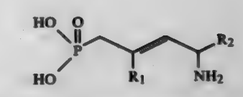
Continuation-in-part of Ser. No. 586,352, Sep. 21, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 851,437

Claims priority, application Switzerland, Sep. 26, 1989, 3479/89-6

Int. Cl.[5] C07F *9/38*; A61K *31/66*

U.S. Cl. 562—11 **11 Claims**

1. A compound of formula I,



(I)

wherein R_1 is lower alkanoyloxy-lower alkyl or benzoyloxy-lower alkyl, lower alkoxy-lower alkyl or phenyl-lower alkoxy-lower alkyl, 6-aminohexyl, lower alkyl 6-aminohexyl or di-lower alkyl 6-aminohexyl and R_2 is carboxy, lower alkoxycarbonyl, 4- up to and including 7-membered cycloalkoxycarbonyl or phenyl-lower alkoxycarbonyl, any phenyl radicals in R_1 and/or R_2 being unsubstituted or mono-, di- or tri-substituted by lower alkyl, lower alkoxy, halogen, cyano and/or by trifluoromethyl, or a salt thereof.

5,294,735

SEMICARBAZIDES AND THE USE THEREOF FOR STABILIZING POLYAMIDE FIBRE MATERIALS AND THE DYEINGS PRODUCED THEREON

Jürgen Kaschig, Frieburg, Fed. Rep. of Germany; Gerhard Reinert, Allschwil, Switzerland, and Georges Metzer, Moernach, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

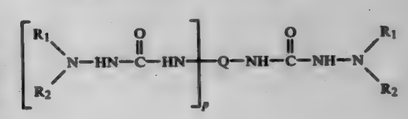
Filed Feb. 20, 1992, Ser. No. 839,461

Claims priority, application Switzerland, Mar. 4, 1991, 637/91

Int. Cl.[5] C07C *309/29*

U.S. Cl. 562—52 **5 Claims**

1. A semicarbazide of general formula



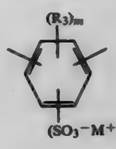
(I)

wherein

R_1 and R_2, each independently of the other, are C_1–C_5alkyl, C_2–C_5alkenyl, C_1–C_5alkoxy or phenyl,

p is 0 or 1,

when p=1, Q is a radical of formula



(2)

wherein

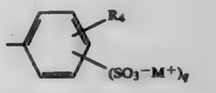
R_3 is hydrogen, C_1–C_5alkyl or halogen,

m is 0,1,2 or 3,

q=1

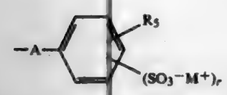
or, when p=0,

Q is a radical of formula



(3)

wherein R_4 is hydrogen, C_1–C_5alkyl, halogen or a radical of formula



(3a)

wherein R_5 is hydrogen, C_1–C_5alkyl or halogen,
M is hydrogen or alkali, and
A is —NH—, —O— or —SO_2—, and q and r are 0 or 1, but are not simultaneously 0.

5,294,736

L-BUTHIONINE-S-SULFOXIMINE AND METHODS OF MAKING

Owen W. Griffith, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 907,624, Jul. 2, 1992, Pat. No. 5,245,077, which is a division of Ser. No. 715,898, Jun. 19, 1991, Pat. No. 5,171,885, which is a continuation of Ser. No. 359,886, Jun. 1, 1989, abandoned. This application May 5, 1993, Ser. No. 56,464

Int. Cl.[5] **C07C** *315/00;* **C07B** *55/00*

U.S. Cl. 562—401 **1 Claim**

1. A method for separating the isomers of L-buthionine-SR-sulfoximine, said method comprising the steps of
(a) preparing an aqueous solution of L-buthionine-SR-sulfoximine,
(b) applying said solution to a reverse phase C-18 silica column previously equilibrated with D-proline and cupric salt,
(c) eluting with D-proline and cupric salt and collecting fractions,
(d) analyzing said fractions for isomer content,
(e) combining fractions to obtain a pool containing substantially one isomer,
(f) removing cupric salt and D-proline.

5,294,737

PROCESS FOR THE PRODUCTION OF CHIRAL HYDROXY-β-LACTAMS AND HYDROXYAMINO ACIDS DERIVED THEREFROM

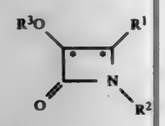
Iwao Ojima, Stony Brook, N.Y., assignor to The Research Foundation State University of New York, Albany, N.Y.

Filed Feb. 27, 1992, Ser. No. 842,444

Int. Cl.[5] **C07C** *229/00*

U.S. Cl. 562—444 **15 Claims**

1. A process for the production of a hydroxyamino acid with high enantiomeric purity from a chiral β-lactam of the formula:



wherein
R^1 is as defined below in an imine;
R^2 is selected from the group consisting of hydrogen, and the groups for R^7 defined below in the imine;
R^3 is hydrogen or an oxygen protecting group R^4;
comprising reacting an O-protected hydroxyacetic acid derivative of the formula

$R^4OCH_2C(O)Xc$

wherein
R^4 is an oxygen protecting group;
Xc is a chiral auxiliary,
with a base of the formula

MNR^5R^6

wherein
M is an alkali metal;
R^5 and R^6 are independently selected from the group consisting of C_1–C_{10} branched or straight chain alkyl, C_3–C_{10} cycloalkyl and trialkylsilyl of C_3–C_{18};
followed by cyclocondensing with an imine having the formula

$R^1CH{=}NR^7$

wherein
R^1 is selected from a group consisting of C_1–C_{20} branched or straight chain alkyl, C_3–C_{10} cycloalkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_6–C_{20} substituted aryl, C_3–C_{20} heteroaromatic and C_3–C_{20} substituted heteroaromatic; R^7 is selected from the group consisting of C_1–C_{20} branched or straight chain alkyl, C_3–C_{20} cycloalkyl, C_2–C_{20} alkenyl, C_2–C_{20} alkynyl, C_6–C_{20} aryl, C_6–C_{20} substituted aryl, C_3–C_{20} heteroaromatic, C_3–C_{20} substituted heteroaromatic and trisubstituted silyl of C_3–C_{20} and hydrolyzing the β-lactam to produce the corresponding hydroxyamino acid.

5,294,738

PROCESS FOR SELECTIVE HYDRODEFLUORINATION

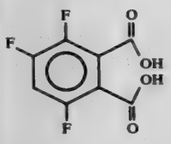
Jeffrey S. Stults, Grand Island; Lawrence R. Fertel, Williamsville, and William S. Derwin, Buffalo, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 3, 1992, Ser. No. 863,264

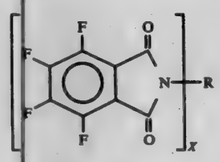
Int. Cl.[5] **C07C** *51/06*

U.S. Cl. 562—483 **22 Claims**

1. A process for the preparation of 3,4,6-trifluorophthalic acid of the formula



which comprises
(A) treating tetrafluorophthalimide of the formula



where X is 1 or 2; and when X is 1, R is a monovalent organo group; and when X is 2, R is a divalent organo group, with zinc in the presence of aqueous alkali metal hydroxide to form a selectively defluorinated reaction product, and
(B) hydrolyzing the reaction product.

5,294,739

CATALYTTIC OXIDATION OF HYDROCARBONS

Bettina Kraushaar-Czarnetzki, and Willemina G. M. Hoogervorst, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 11, 1992, Ser. No. 897,151

Claims priority, application United Kingdom, Jun. 20, 1991, 9113343

Int. Cl.[5] **C07C** *15/10, 27/12, 45/33, 29/50*

U.S. Cl. 562—543 **17 Claims**

1. A process for the catalytic oxidation of hydrocarbons to produce products comprising alcohols, aldehydes, ketones and carboxylic acids wherein the hydrocarbons are contacts with a source of molecular oxygen and a cobalt-containing catalyst wherein the cobalt-containing catalyst is a molecular sieve material comprising a crystal lattice having cobalt ions incorporated in the crystal lattice.

5,294,740

PREPARATION OF FORMIC ACID BY THERMAL CLEAVAGE OF QUATERNARY AMMONIUM FORMATES

Hans Kiefer, Neustadt; Leopold Hupfer, Friedelsheim, and Ferdinand Lippert, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

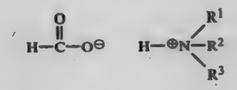
Filed Mar. 31, 1993, Ser. No. 41,048

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211141

Int. Cl.[5] **C07C** *51/09, 51/44*

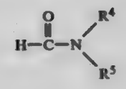
U.S. Cl. 562—609 **5 Claims**

1. A process for preparing formic acid by thermal cleavage of quarternary ammonium formates of the general formula I



(I)

where
R^1, R^2 and R^3 are C_1- to C_{14}-alkyl, C_3- to C_8-cycloalkyl, aryl or C_7- to C_{16}-aralkyl, or together are 1,4- or 1,5-alkylene which is unsubstituted or substituted one to four times by C_1- to C_4-alkyl, with the proviso that the sum of the carbon atoms of R^1, R^2 and R^3 in the quaternary ammonium formates I is 7 to 40,
which comprises carrying out the cleavage in the presence of secondary formamides of the general formula II



(II)

where
R^4 and R^5 are C_2- to C_{10}-alkyl, C_3- to C_8-cycloalkyl, aryl or C_7- to C_{16}-aralkyl, or together are 1,4- or 1,5-alkylene which is unsubstituted or substituted one to four times by C_1- to C_4-alkyl, which formamides boil 30° to 150° C. lower than the tertiary amine of the general formula III



(III)

where R^1, R^2 and R^3 have the abovementioned meanings, contained in the formate I.

5,294,741

CONTINUOUS PROCESS FOR THE PREPARATION OF SULFONYLISOCYANATES

Günter Schlegel, Liederbach; Stephen Lachhein, Hofheim am Taunus, and Harald Berger, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1992, Ser. No. 839,790

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 4105823

Int. Cl.[5] **C07C** *311/65*

U.S. Cl. 562—870 **20 Claims**

1. A process for the preparation of a compound of the formula I

$R^1{-}X{-}SO_2{-}N{=}C{=}O$ (I)

in which
X is O or NR^2,
R^1 is (C_1–C_4) alkylsulfonyl or phenyl which is unsubstituted or monosubstituted or polysubstituted by radicals selected from the group consisting of halogen, (C_1–C_4) alkyl and (C_1–C_4)-alkoxy, and
R^2 is (C_1–C_4) alkyl,
by reacting a compound of the formula II

$R^1{-}X{-}H$ (II)

in which X and R^1 have the meanings given in formula I, with the chlorosulfonyl isocyanate of the formula III

$Cl{-}SO_2{-}N{=}C{=}O$ (III)

to give a compound of the formula IV

$R^1{-}X{-}CO{-}NH{-}SO_2{-}Cl$ (IV)

in which R^1 and X have the meaning given in formula I, and the subsequent rearrangement of the compound of the formula IV to give the compound of the formula I, which comprises carrying out the process continuously, wherein the temperature during said rearrangement is from 90° C. to 165° C. and the reactor residence time during said rearrangement is from 30 to 90 minutes, without a solvent or in the presence of an inert organic solvent.

5,294,742

PROCESS FOR PREPARING 3,5-DIFLUOROANILINE

Thomas Schach, Hofheim am Taunus, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Atkiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 32,986

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1992, 4209208

Int. Cl.[5] **C07C** *209/36*

U.S. Cl. 564—417 **20 Claims**

1. A process for preparing 3,5-difluoroaniline, comprising the following stages:
(1) reacting 2,4,5-trichloronitrobenzene with an alkali metal fluoride in the presence or absence of a polar aprotic solvent at a temperature in the range of about 100° to about 250° C., and, after filtering off precipitated salt or salts and, if a solvent is present, fractional distillation of the resulting crude solution, or chlorinating 2,4-difluoronitrobenzene, to obtain 5-chloro-2,4-difluoronitrobenzene,
(2) denitrating with chlorination the resulting 5-chloro-2,4-difluoronitrobenzene to give 1,3-dichloro-4,6-difluorobenzene, said stage 2 being carried out in the absence of a Lewis acid or of another chlorination catalyst, using anhydrous chlorine gas at a temperature in the range of about 80° to 250° C., and
(3) nitrating the resulting 1,3-dichloro-4,6-difluorobenzene

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to give 2,6-dichloro-3,5-difluoronitrobenzene, said stage 3 being carried out in oleum with sulfuric acid/nitric acid at a temperature in the range of about 15° to about 80° C., and

(4) reducing, with elimination of chlorine, the resulting 2,6-dichloro-3,5-difluoronitrobenzene with hydrogen or a hydrogen-supplying compound in the presence of palladium as catalyst and in the presence of an inorganic or organic base at a temperature in the range of about 40° to about 250° C.

5,294,743

PROCESS FOR THE TRANSFER OF ALKYL GROUPS IN DIALKYL TRISULFIDES AND MERCAPTANS

Stanley R. Sandler, Springfield, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Mar. 9, 1993, Ser. No. 28,477

Int. Cl.[5] C07C *319/22*

U.S. Cl. 568—26 **14 Claims**

1. A process for the transfer of alkyl groups comprising reacting a tertiary di-C_{4-12} alkyltrisulfide with a C_{5-20} alkyl mercaptan where the mercaptan contains a greater number of carbon atoms than an alkyl group on said trisulfide, in the presence of an effective amount of an acidic type catalyst at a temperature and for a time sufficient to produce a dialkyl trisulfide having at least one transferred alkyl group from said mercaptan.

5,294,744

FORMYLATION PROCESS FOR AROMATIC ALDEHYDES

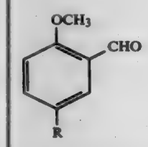
Dennis M. Godek, Glastonbury; William M. Synder, New London, and Andrew M. Stewart, North Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 20, 1993, Ser. No. 49,904

Int. Cl.[5] C07C *47/575*

U.S. Cl. 568—442 **10 Claims**

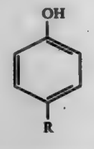
1. A process for preparing a 5-substituted 2-methoxybenzaldehyde compound having the formula:



(I)

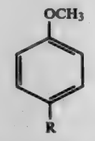
wherein R is isopropyl or trifluoromethoxy, which comprises the steps of

(a) reacting a corresponding 4-substituted phenol compound of the formula:



(II)

wherein R is as hereinbefore defined, with dimethyl carbonate in the presence of a tertiary-amine base and in the presence or absence of a reaction-inert polar organic solvent, with the proviso that said solvent is always present when R is isopropyl, said reaction being conducted at a temperature that is in the range of from about 120° C. up to about 170° C. until the O-methylation reaction to form the corresponding 4-substituted anisole compound of the formula:



(III)

wherein R is as previously defined, is substantially complete; and

(b) thereafter subjecting the intermediate 4-substituted anisole compound of the formula III obtained in step (a) to aromatic C-formylation on the ring by initially reacting said anisole compound at the desired ortho-position with hexamethylenetetramine in the presence of trifluoroacetic acid at a temperature that ranges from between about 65° C. and the reflux temperature of the reaction mixture until the ortho-substitution reaction is substantially complete, followed by hydrolysis of the resulting mixture at ambient temperatures by addition of water thereto to ultimately yield the desired aldehyde compound of structural formula I.

5,294,745

INFORMATION STORAGE MEDIUM AND APPARATUS FOR REPRODUCING INFORMATION THEREFROM

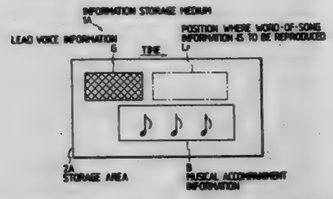
Keiichi Yamauchi; Toshihiko Shimizu, and Satomi Sudo, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 725,862

Claims priority, application Japan, Jul. 6, 1990, 2-179791; Jul. 6, 1990, 2-179796

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—601 **16 Claims**



1. An information storage medium comprising first storing means for storing musical accompaniment information and second storing means for storing lead voice information including word-of-song information to be reproduced in relation to said musical accompaniment information being pronounced, said lead voice information being stored in a first position which precedes, with respect to time of reproduction, a second position from which said word-to-song information is to be reproduced.

5,294,746

BACKING CHORUS MIXING DEVICE AND KARAOKE SYSTEM INCORPORATING SAID DEVICE

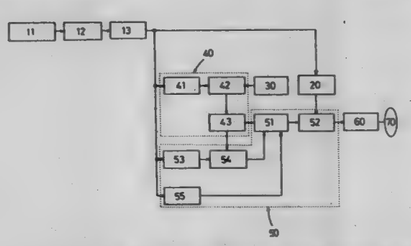
Mihoji Tsumura, and Shinnosuke Taniguchi, both of Osaka, Japan, assignors to Ricos Co., Ltd., Osaka, Japan

Filed Feb. 27, 1992, Ser. No. 842,440

Claims priority, application Japan, Feb. 27, 1991, 3-058031

Int. Cl.[5] G10H *1/36*

U.S. Cl. 84—631 **4 Claims**



1. A karaoke system which generates music having a backing chorus including instrumental and vocal music comprising:

a backing chorus mixing device having music reproduction means for inputting music data created in accordance with the MIDI standard and generating reproduction music data in accordance with said music data,

means for breaking backing chorus vocal data into segments, and organizing said segments into a plurality of backing chorus patterns,

means for converting each of said backing chorus patterns to control data form not on the MIDI standard,

memory means for storing a plurality of converted backing chorus patterns, such that duplicate patterns are not stored,

chorus data reading means for inputting the reproduction music data and control data, and subsequently reading all the control data for the piece of music corresponding to said music data out of the memory means,

chorus data mixing means for accepting the output of the chorus data reading means, synchronizing said chorus data with the music reproduction data, and selecting the specified chorus patterns one by one and mixing them into the music;

a center and a plurality of terminals connected to said center through the medium of a telephone line;

said center including a modem connected to the telephone line, a host computer connected to said modem, and a main memory device which is connected to the host computer and which stores said reproduction music data and said control data; and

each of said terminals including a modem connected to the telephone line, a main reading device connected to said modem and which reads the music data and control data, and a decoder connected to said main reading device and to said backing chorus mixing device and which decodes said music data and control data.

5,294,747

AUTOMATIC CHORD GENERATING DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT

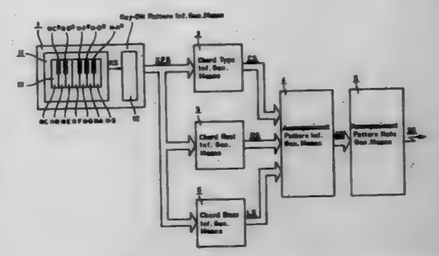
Luigi Bruti, Pedaso, and Demetrio Cuccu, Fermo, both of Italy, assignors to Roland Europe S.p.A., Teramo, Italy

Filed Feb. 28, 1992, Ser. No. 843,718

Claims priority, application Italy, Mar. 1, 1991, MI91 A 000539

Int. Cl.[5] G10H *1/38*

U.S. Cl. 84—669 **3 Claims**



1. An automatic accompaniment device for an electronic musical instrument, comprising:

chord type information generating means having an output, said means for generating chord type information indicating one of the types of chords being produced;

chord root information generating means having an output, said means for generating chord root information indicating the pitch name of a root note of said one chord type;

chord bass information generating means having an output, said means for generating chord bass information indicating the pitch name of the lowest note of said chord type; and

accompaniment pattern information generating means connected to the outputs of said chord type information generating means, said chord root information generating means and said chord bass information generating means for generating accompaniment pattern information of the contents corresponding to said chord type information, said chord root information and said chord bass information;

wherein said accompaniment pattern information includes chord tone information indicating, for each tone of the said pattern information, a chord tone of the pitch name of a note constituting said chord, and non-chord-tone information indicating a non-chord-tone of the pitch name of a note other than said note constituting said chord; and

VOL 1160 ISS 3 MR 15 1994 UMI

accompaniment pattern note generating means operationally coupled to said information accompaniment pattern means and receiving the information from said accompaniment pattern information generating means, for changing the pitch name of each chord tone, in said chord tone information, with a pitch name of the tones of the chord and in relation to the pitch name of the lowest note of said chord, while maintaining unchanged said non-chord-tone information.

5,294,748

EQUIPMENT CABINET

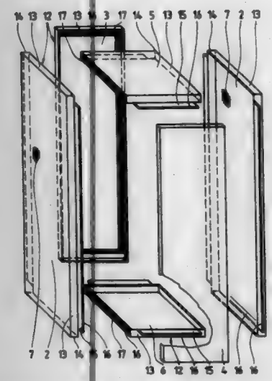
Hans M. Schwenk, Straubenhardt; Kurt Pohl, München, and Gerhard Hüller, Reichersbeuren, all of Fed. Rep. of Germany, assignors to Schroff GmbH, Straubenhardt, Fed. Rep. of Germany

Filed Aug. 19, 1992, Ser. No. 931,474

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1991, 4127468

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 R **10 Claims**



1. An equipment cabinet for electronic and electrical insertable units, the cabinet including a self-supporting rack for holding the insertable units, and metal casing components, including side walls, a rear wall, a door, a top and a bottom mounted on said rack; and wherein, for the purpose of providing a shield against electromagnetic radiation, said casing components are provided along their edges with electrically well conducting contact faces which matingly engage facing ones of said edges of adjacent ones of said casing components, and spring-elastic contact strips, that are composed of an electrically well conducting material, are disposed between matingly engaged ones of said contact faces.

5,294,749

SURFACE MOUNTABLE MOLDED ELECTRONIC COMPONENT

James V. Lauder, Ft. Lauderdale, and Leng H. Ooi, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1991, Ser. No. 763,785

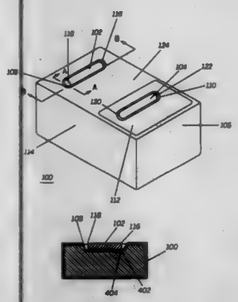
Int. Cl.[5] H01L *23/28;* **H05K** *9/00;* **H01F** *27/02*

U.S. Cl. 174—52.2 **15 Claims**

1. A surface mountable molded electronic component, comprising:

a formed element having a main portion and first and second end portions each having an outer surface, the first and second end portions are electrically connected to the main portion; and

a dielectric portion molded about the main portion and having an outer surface which includes a surface mount surface, the dielectric portion including first and second recess areas located on the surface mount surface, the first and second end portions protrude through the surface



mount surface and are bent one each into the first and second recess areas such that the outer surfaces of the first and second end portions form surface mount contacts.

5,294,750

CERAMIC PACKAGES AND CERAMIC WIRING BOARD

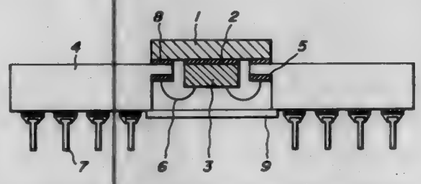
Hiroaki Sakai; Shinsuke Yano, both of Nagoya; Takao Soma, Nishikamo, and Manabu Isomura, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Sep. 16, 1991, Ser. No. 760,145

Claims priority, application Japan, Sep. 18, 1990, 2-246022; Sep. 18, 1990, 2-246023; Sep. 18, 1990, 2-246024; Feb. 28, 1991, 3-055579

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 **7 Claims**



1. A ceramic package for containing a semiconductor chip, comprising:

a wiring board comprising a first wire distribution for transferring electrical signals and a second wire distribution for power supply; and

a heat radiating plate for mounting a semiconductor chip thereon, said heat radiating plate being coupled to said wiring board and comprising silicon nitride, wherein said heat radiating plate has not more than 20 grain boundaries per a 10 μm straight line extending along an arbitrary section of said heat radiating plate.

5,294,751

HIGH FREQUENCY SIGNAL TRANSMISSION LINE STRUCTURE HAVING SHIELDING CONDUCTOR UNIT

Chiyoshi Kamada, Kokubunji, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Nov. 13, 1991, Ser. No. 791,291

Claims priority, application Japan, Nov. 15, 1990, 2-309258

Int. Cl.[5] H01L *23/02*

U.S. Cl. 174—52.4 **11 Claims**

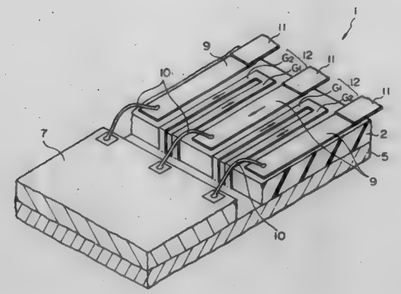
1. A high frequency signal transmission line structure comprising:

at least one reference potential plane conductor layer;

a plurality of strip line conductors, each for carrying a signal current;

at least one dielectric material layer interposed between said reference potential plane conductor layer and said strip line conductors; and

a shielding conductor unit for shielding said strip line conductors provided between adjacent two strip line conductors, said shielding conductor unit including first and second slender conductor portions extending substantially in a direction parallel with a lengthwise direction of said strip line conductors and connected to be integral with each other at their first ends, second ends of said first and second slender conductor portions being electrically connected with said reference potential plane conductor layer.



5,294,752

MULTI-LAYER ELASTIC SLEEVES FOR ELECTRIC POWER CABLE JOINTS AND JOINTS THEREWITH

Ubaldo Vallauri, Monza; Bruno Parmigiani, Milan, and Francesco Portas, Quattordio, all of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Filed Jan. 12, 1990, Ser. No. 464,370

Claims priority, application Italy, Jan. 16, 1989, 19102A/89

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] H02G *15/08, 15/18*

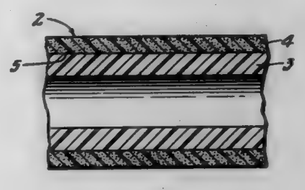
U.S. Cl. 174—73.1 **45 Claims**

1. An electric cable joint sleeve device comprising:

a rigid tubular support having a predetermined exterior cross-sectional size;

a first elastic sleeve formed form a compound of a cross-linked polymeric material, said first elastic sleeve having an unstretched cross-sectional interior size less than said predetermined cross-sectional size of said support and being mounted on and encircling said support in elastically radially expanded condition, said first sleeve being electrically insulating for at least part of its radial thickness and said compound having a residual deformation, with an imposed elongation applied for a period of time, of a first predetermined value to which it returns elastically and without heating; and

a second elastic sleeve formed from a compound of a cross-linked polymeric material encircling said first sleeve, and said second elastic sleeve having an unstretched cross-sectional interior size such that when said first sleeve is mounted on said support and said second elastic sleeve encircles said first sleeve, said second sleeve is in radially expanded condition and said compound from which said second sleeve is formed having a residual deformation, with an imposed elongation applied for a period of time, of a second predetermined value to which it returns elastically and without heating and which is less than said first predetermined value and which causes said first sleeve to reduce in internal diameter to a size less than said first predetermined value.



5,294,753

Patent Not Issued For This Number

5,294,754

DIRECT WRITE EC SINGLE METAL LAYER

Leon L. Wu, Hopewell Junction, N.Y., assignor to Iternational Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,461

Int. Cl.[5] H05K *1/11*

U.S. Cl. 174—255 **5 Claims**

1. An engineering change network for a multi-chip, multilayer module, comprising in combination:

a top surface metal layer including plurality of C4 pads for connecting a chip to said multi-chip module and a satellite pad located adjacent each of said plurality of C4 pads and connected to a C4 pad by a short deleteable line segment;

said top surface metal layer including a plurality of interrupted line segments arranged in rows and columns so that at least one of said interrupted line segments passes in

close proximity to each C4 pad of said plurality of C4 pads, said row and columns of said interrupted line segments extending beyond a chip boundary and terminating within a chip pitch boundary;

a global engineering change wiring pattern comprised of parallel X directed interrupted segments on a buried layer in said multi-layer module connected to top surface metal X direction global segments that connect said interrupted segments, said top surface metal X direction global segments disposed between said chip boundary and said chip pitch boundary; and

a global engineering change wiring pattern comprised of parallel Y directed interrupted segments on a buried layer in said multi-layer module connected to top surface metal Y direction global segments that connect said interrupted segments, said top surface metal Y direction global segments disposed between said chip boundary and said chip pitch boundary.

5,294,755

PRINTED WIRING BOARD HAVING SHIELDING LAYER

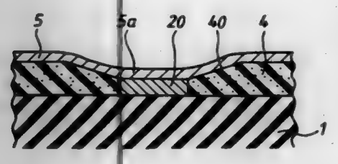
Shin Kawakami; Satoshi Haruyama, and Hirotaka Okonogi, all of Saitama, Japan, assignors to Nippon CMK Corp., Japan

Continuation of Ser. No. 494,166, Mar. 15, 1990. This application Oct. 4, 1991, Ser. No. 772,111

Claims priority, application Japan, Mar. 15, 1989, 1-62688

Int. Cl.[5] H05U *01/00*

U.S. Cl. 174—264 **16 Claims**



1. A printed wiring board comprising: an insulating sheet having a connecting through hole portion, a printed wiring circuit provided on at least one surface of the insulating sheet and having at least one connecting land having an upper peripheral edge portion spaced from the insulating sheet, an insulating layer provided on the printed wiring circuit, the insulating layer forming a cup-shaped relief angle portion with the upper peripheral edge portion of the at least one connecting land, and an electromagnetic shielding layer provided on the insulating layer and on the at least one connecting land.

5,294,756

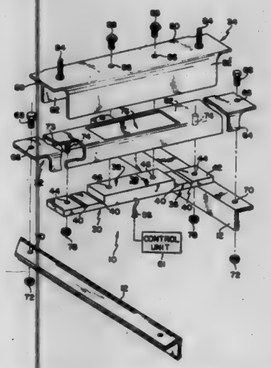
CONVEYOR BELT SCALE APPARATUS

Jurgen Lauber, Karlsdorf, and Eric Wainwright, Hausen, both of Fed. Rep. of Germany, assignors to Endress+Hauser Inc., Greenwood, Ind.

Filed May 5, 1992, Ser. No. 878,836

Int. Cl.[5] G01G *13/02, 3/14*

U.S. Cl. 177—119 **9 Claims**



1. A scale apparatus for weighing material moving on a conveyor belt supported by an idler assembly, the apparatus comprising:

a load cell support formed to include an aperture therein;

a load cell including a base and a contact portion extending upwardly away from the base, the base of the load cell being configured to bend in response to a force being applied to the contact portion to generate an output signal proportional to the force;

means for coupling the load cell to the load cell support so the contact portion of the load cell extends upwardly through the aperture formed in the load cell support;

means for coupling the load cell support to a conveyor frame to suspend the load cell below the conveyor belt;

an idler support for supporting the idler assembly; and

means for coupling the idler support to the contact portion of the load cell, the idler support applying a downwardly directed force to the contact portion of the load cell to bend the base of the load cell in response to material moving on the conveyor belt over the idler support to change the output signal generated by the load cell in proportion to the weight of the material.

5,294,757

ACTIVE VIBRATION CONTROL SYSTEM FOR AN ELEVATOR, WHICH REDUCES HORIZONTAL AND ROTATIONAL FORCES ACTING ON THE CAR

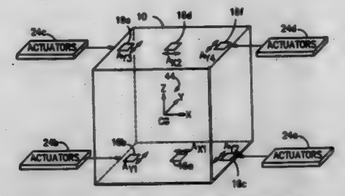
Clement A. Skalski, Avon; John K. Salmon, South Windsor; Boris G. Traktovenko, West Hartford, and Richard L. Hollowell, Amston, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 555,133, Jul. 18, 1990, abandoned. This application Jul. 16, 1991, Ser. No. 731,308

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] B66B *7/02, 1/44*

U.S. Cl. 187—115 **26 Claims**



1. A method for reducing acceleration of an elevator car, comprising the steps of:

sensing horizontal accelerations of the car's bottom and providing sensed bottom acceleration signals having magnitudes indicative thereof and applying horizontal forces at the bottom of the car in proportion to the magnitudes of the sensed bottom acceleration signals but opposite to the directions thereof; and

sensing horizontal accelerations of the car's top and providing sensed top acceleration signals having magnitudes indicative thereof and applying horizontal forces at the top of the car in proportion to the magnitudes of the sensed top acceleration signals but opposite to the directions thereof.

5,294,758

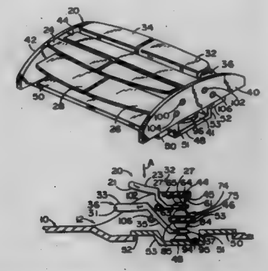
ELECTRICAL SWITCH ASSEMBLY

Jay M. Frankhouse, Holland, and Scott S. Bainbridge, Byron Center, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 6, 1992, Ser. No. 865,044

Int. Cl.[5] H01H *9/00, 21/80*

U.S. Cl. 200—5 R **41 Claims**



1. An electrical switch assembly comprising:

a switch housing including at least a pair of facing switch mounting surfaces extending between end walls of said housing;

a plurality of switch units mounted in spaced relationship on each of said facing surfaces, and aligned with corresponding switches on an opposed facing surface; and

switch actuator means pivotally mounted between said end walls of said switch housing and including a plurality of switch actuating levers each one extending between a pair of switch units such that either of two associated aligned switch units can be actuated by the selective actuating of one of said actuating levers.

5,294,759

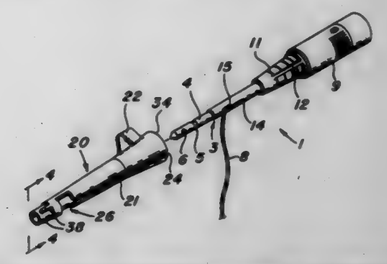
REPLACEMENT WINDSHIELD WASHER SWITCH ACTUATOR LEVER FOR A TURN SIGNAL ARM ASSEMBLY

Michael E. Krehnovi, 214 Summerfield Dr., Baden, Pa. 15005

Filed Aug. 26, 1992, Ser. No. 937,296

Int. Cl.[5] H01H *9/08*

U.S. Cl. 200—61.27 **10 Claims**



1. A replacement windshield washer switch actuator lever for a motor vehicle turn signal arm assembly having an arm and a control housing, the control housing secured on a free end of the arm and having windshield washer, wiper and cruise controls located thereon, a cruise control wire harness protruding from an aperture located at a medial point in the arm which is connected to a motor vehicle electrical system, wherein the replacement washer switch actuator lever comprises:

a hollow sleeve for mounting about the arm having a first end selectively configured to complementarily abut the control housing;

an aperture defined in said sleeve such that said sleeve aperture is in alignment with the arm aperture when said first sleeve end abuts said housing;

said first end of the sleeve being further selectively configured for manual operation;

a second end of the sleeve having washer switch activation means; and

said sleeve being configured with a slot extending from said sleeve aperture to said first sleeve end such that said actuator lever is slidably installable without disconnecting the wire harness by aligning said slot with the wire harness and axially displacing said lever until said first end abuts the housing whereby the wire harness extends through said sleeve aperture.

5,294,760

DIGITAL PRESSURE SWITCH AND METHOD OF FABRICATION

Robert W. Bower, Davis, and Mohd S. Ismail, West Sacramento, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 23, 1992, Ser. No. 903,830

Int. Cl.[5] H01H *35/40*

U.S. Cl. 200—83 N **18 Claims**

1. A solid state pressure switch, comprising:

(a) a resilient membrane formed on a first substrate;

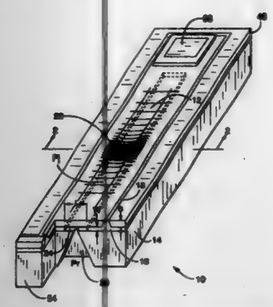
(b) an electrode formed on a second substrate;

(c) an isolation pad, said isolation pad bonded to said membrane and said first substrate, said isolation pad electrically isolating said membrane from said first substrate, said

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isolation pad separating said membrane from said electrode;

(d) a well region disposed between said membrane and said electrode; and



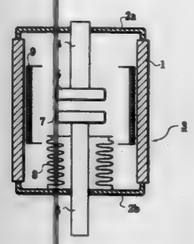
(e) a vent extending through said second substrate and into said well region.

5,294,761

VACUUM INTERRUPTER

Tsutomu Okutomi, Kanagawa; Tsuneyo Seki, Tokyo; Hideo Suzuki, Kanagawa; Shinzo Sugai, Kanagawa; Kazuya Tujimoto, Kanagawa; Hiroshi Watanabe, Tokyo; Kiyoshi Osabe, Tokyo; Atsushi Yamamoto, Tokyo, and Hiroshi Yamazoe, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1992, Ser. No. 979,280
Claims priority, application Japan, Nov. 11, 1991, 3-307879
Int. Cl.[5] H01H *33/53, 33/00*
U.S. Cl. 200—144 B 4 Claims



1. A vacuum interrupter comprising:

a vacuum container which includes an insulation tube made of ceramics and having openings at both ends thereof, and sealing metals for hermetically sealing said openings respectively; and

a pair of contacts which are disposed in said vacuum container so that these contacts can contact detachably to each other;

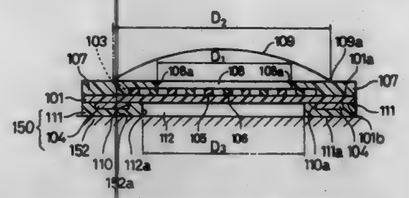
wherein the composition of the material constituting at least one of said sealing metals comprises 25 to 55 wt % of Ni, 0.02 to 1.0 wt % of Si and substantially the residual content of Cu.

5,294,762

CLICK-ACTION MEMBRANE SWITCH UNIT

Masahiro Kaiza, Narita, and Atsuhiro Horii, Sakura, both of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 935,538
Claims priority, application Japan, Sep. 10, 1991, 3-258534; Feb. 7, 1992, 4-022999
Int. Cl.[5] H01H *1/10*
U.S. Cl. 200—513 10 Claims



1. A click-action membrane switch unit comprising:

a flexible base film having a surface;

circuits formed on said surface of the base film and having interdigitating electrode contacts extending parallel with each other and with said flexible base;

a resist film formed on said circuits and having a window in a region of said electrode contacts;

a dome-shaped click spring made of electrically conducting metal and having an edge placed on said resist film; and

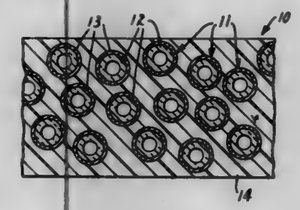
a layer fixed to the other surface of said base film and having an opening formed in a portion of said layer which aligns with said click spring, said opening being dimensioned such that said click spring depresses said base film into said opening when said click spring is depressed.

5,294,763

MICROWAVE HEATABLE COMPOSITES

Craig S. Chamberlain, Woodbury; Glen Connell, White Bear Lake; Pierre H. LePere, Cottage Grove; Chris A. Minick, Stillwater; Charlotte M. Palmgren, Lake Elmo; William C. Tait, Oak Park Heights, all of Minn.; George F. Vesley, Hudson, Wis., and Patrick G. Zimmerman, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 335,044, Apr. 7, 1989. This application Sep. 26, 1990, Ser. No. 588,591
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—729 31 Claims



1. Composition comprising:

(a) a plurality of susceptors, each of said susceptors comprising a particle substantially non-reflective of microwave energy, said particle bearing a coating capable of absorbing microwave energy and converting said energy to heat, said susceptors being dispersed in

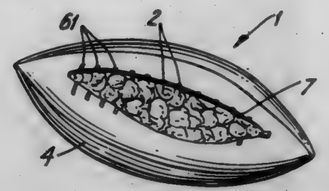
(b) a matrix substantially non-reflective of microwave energy.

5,294,764

REUSABLE MICROWAVE POPCORN CONTAINER FOR POPPING AND DISPENSING CORN KERNELS AND RECREATIONAL USE

Lawrence Mass, 14 Lincoln Ave., Rye Brook, N.Y. 10573

Filed Feb. 24, 1992, Ser. No. 840,497
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—727 8 Claims



1. A reusable microwave popcorn container for popping and dispensing popcorn and recreational use, which comprises:

(a) a flexible outer casing substantially transparent to microwave radiation and having an exterior surface and an interior surface for defining a vacant expandable interior space therein, said flexible outer casing being formed from a washable material and having a non-expanded configuration prior to said vacant expandable interior space being filled with popped corn kernels; and

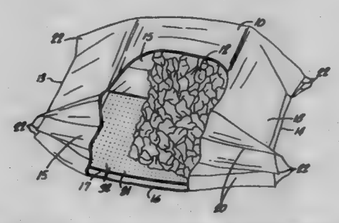
(b) a reclosable opening in said flexible outer casing for permitting reclosable access into said vacant expandable interior space for introducing corn kernels within said vacant expandable interior space, said flexible outer casing being positionable within a microwave oven in order to expose said corn kernels to microwave radiation and cause said corn kernels to burst into popped corn kernels within said vacant expandable interior space and expand said flexible outer casing into a playball configuration, whereby said reusable microwave popcorn container is usable in play activities when filled with said popped corn kernels and wherefrom said popped corn kernels are dispensable through said reclosable opening for consumption.

5,294,765

PERFORATED SUSCEPTOR FOR MICROWAVE COOKING

William E. Archibald, Fullerton, and Cynthia G. Scrimager, Anaheim, both of Calif., assignors to Hunt-Wesson, Inc., Fullerton, Calif.

Filed Jun. 26, 1991, Ser. No. 721,827
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—727 34 Claims



1. For use in microwave heating of food products, a susceptor comprising:

a substrate; and

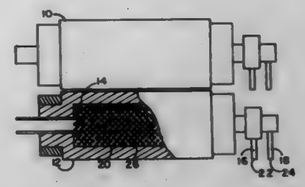
a thin layer of microwave-interactive material deposited on said substrate having a coefficient of thermal expansion different from that of said substrate, said layer having a plurality of perforations distributed over the surface thereof without corresponding openings in said substrate, said perforations are substantially round and between about 0.025 to 0.060 inches in diameter, said perforations inhibiting the breakup of said susceptor when said susceptor is subjected to microwave energy.

5,294,766

STRUCTURE FOR HIGH-TEMPERATURE MILL ROLLING OF COMPOUNDS

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 437,072, Nov. 15, 1989, Pat. No. 5,101,087. This application Jan. 16, 1992, Ser. No. 821,687
Int. Cl.[5] H05B *6/14*
U.S. Cl. 219—619 4 Claims



1. A mill roll comprising:

a pair of rollers made of refractory ceramic material, said rollers having walls having a thickness;

a hollow chamber defined in at least one of said rollers, said walls being in the range of wall thickness: diameter of said hollow chamber in the range of 1:0.5 to 1:0.75; and

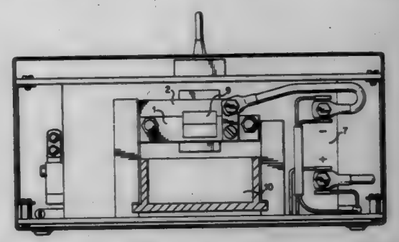
means to heat said rollers to incandescent temperatures of at least 1200 degrees C.

5,294,767

DEVICE FOR DESTROYING HYPODERMIC NEEDLES

Antonio Cantarero, Incisa Valdarno, Italy, assignor to Libo-Medical S.r.l., Florence, Italy

Filed Jan. 23, 1992, Ser. No. 827,693
Claims priority, application Italy, Jan. 31, 1991, MI 91 A 000235
Int. Cl.[5] B23H *9/00*
U.S. Cl. 219—68 19 Claims



1. A portable device for the complete destruction of hypodermic needles between two contacts through an electrical short-circuit, comprising:

a first contact wherein said first contact is connected to a battery supplying current, is attached to a frame of the device with two fastenings incorporating springs which allow movement along a longitudinal axis, and comprises two metal parts which present, one in correspondence with the other, a recess, said parts being connected by a metal plate attached to the parts by fastenings and connected to one of the parts by one of the fastenings which allows said one of the parts to rotate with respect to the other of the parts, and;

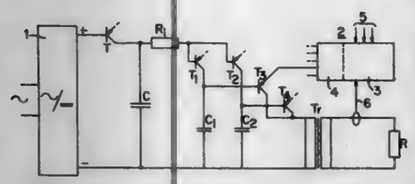
a second contact, the second contact comprising a ground plate located behind the recess.

5,294,768

ELECTRICAL SUPPLY CIRCUIT FOR THE GENERATION OF SEPARATELY CONTROLLABLE CURRENT PULSES

Max Breitmeier, Höhenstrasse 89, CH-8115 Hüttikon, Switzerland

Filed Mar. 5, 1993, Ser. No. 26,985
Claims priority, application Switzerland, Mar. 9, 1992, 00 742/92-0
Int. Cl.[5] B23K *11/26*
U.S. Cl. 219—113 14 Claims



1. Electrical supply circuit for the generation of separately controlled current pulses (K), particularly for resistance welding, comprising a transformer (Tr) which has on its primary side a storage capacitor (C) supplied with direct current and charged and discharged in a controlled manner, a load (R) being connected in the secondary circuit of said transformer, wherein

two ancillary capacitors (C_1, C_2) of the same capacitance are connected between said storage capacitor and said transformer;

each said ancillary capacitor is connected to the storage capacitor via a charge-control element (T_1, T_2) and to the primary side of the transformer via a discharge-control element (T_3, T_4) respectively, the transformer thus forming part of a discharge circuit for said ancillary capacitors;

the capacitance of the storage capacitor is a multiple of the capacitance of the ancillary capacitors;

each ancillary capacitor together with the inductance of said discharge circuit forms a parallel resonant circuit;

and wherein control means (2) connected to said charge- and discharge-control elements are provided for alternately and cyclically charging and discharging said two ancillary capacitors in a controlled manner, thus generating dense sequences of partial pulses (k), each such sequence, transmitted via the transformer, forming one of the current pulses (K) to be generated;

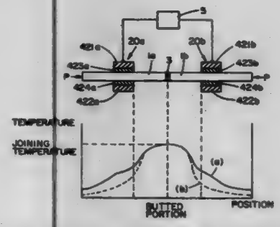
whereby said control means (2) are so designed that the cycle frequency (f_k) of the partial pulses determined by the control means corresponds to the natural frequency of the aforesaid parallel resonant circuits.

5,294,769

ELECTRIC JOINING METHOD OF MATERIAL INCLUDING CERAMICS

Tokumitsu Nishi, Osaka; Kouji Okuda, Kobe; Hiroshi Takai, Nishinomiya; Hisakiyo Hoshino, Settsu; Masashi Numano, Takatsuki, and Natsumi Miyake, Toyonaka, all of Japan, assignors to Daihen Corporation, Japan

PCT No. PCT/JP91/01322, § 371 Date Jun. 3, 1992, § 102(e) Date Jun. 3, 1992, PCT Pub. No. WO92/06054, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 2, 1991, Ser. No. 867,224
Claims priority, application Japan, Oct. 3, 1990, 2-267403; Oct. 3, 1990, 2-267404; Apr. 16, 1991, 3-84109
Int. Cl.[5] C04B *37/00, 37/02*
U.S. Cl. 219—117.1 10 Claims



1. An electric joining method of a body to be jointed including at least one the butted portion between electroconductive ceramics elements to be jointed or/and between a electroconductive ceramics element and a metal element to be jointed, which comprises the steps of:

arranging a pair of electrodes in pressed contact with said elements to be jointed in a manner to hold said butted portion therebetween, with a joining agent interposed at said butted portion, thereby forming a first heating means;

heating said elements to be jointed between said electrodes by Joule heat through impression of a voltage between said electrodes;

heating a part and its vicinity of said elements to be jointed where a large temperature gradient is formed through heating by said first heating means by use of a second heating means so that the thermal stress generated at said elements to be jointed becomes smaller than the breaking stress of said elements to be jointed; and

raising the temperature of said butted portion to a joining temperature while using said first and second heating means together.

5,294,770

LASER TABLET TREATMENT SYSTEM WITH DUAL ACCESS TO TABLET

Thomas A. Riddle, San Francisco; Johan H. Geerke, Los Altos, and Keith P. Minton, San Jose, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jan. 14, 1992, Ser. No. 820,704
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.7 25 Claims

1. A tablet treating system for treating pharmaceutical tablets with pulses of laser energy within at least one predetermined treatment site on each tablet, comprising:

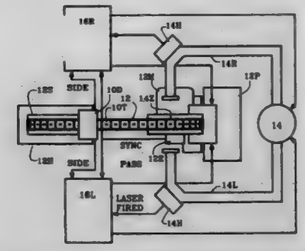
conveyer means for continuously moving a series of individual tablets along a tablet path having a supply end for receiving untreated tablets and having a collection end;

laser means for providing the pulses of laser energy along a stationary laser path which crosses the tablet path defining a stationary intersection zone common to both paths;

periodic treatment windows in the tablet path during which the treatment sites on the moving tablets pass through the stationary intersection zone;

periodic laser ready windows in the operation of the laser means during which the laser means may be fired;

controller means responsive to the movement of the tablet conveyer means and to the operation of the laser means for activating the laser means and treating a tablet when the tablet is passing through the intersection zone and the



tablet treatment window coincides with the laser ready window, and for not activating the laser means and rejecting the tablet when the tablet treatment window does not coincide with the laser ready window; and

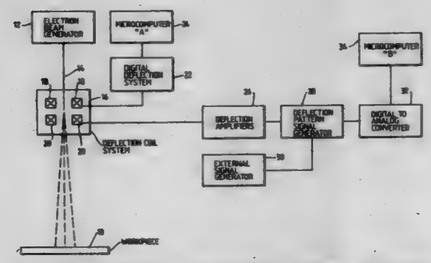
abort means proximate the collection end of the tablet path and responsive to the controller means for separating the treated tablets from the rejected tablets.

5,294,771

ELECTRON BEAM WELDING

Anthony L. Pratt, Pucklechurch, England, assignor to Rolls-Royce plc, London, England

Filed Dec. 17, 1992, Ser. No. 992,533
Claims priority, application United Kingdom, Dec. 17, 1991, 9126765; Dec. 8, 1992, 9225604
Int. Cl.[5] B23K *15/00*
U.S. Cl. 219—121.14 3 Claims



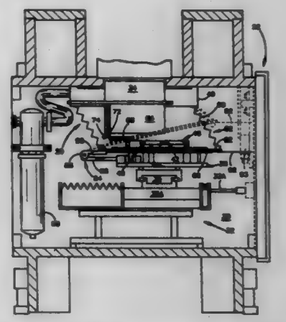
1. A method of electron beam welding a workpiece comprising making a weld by means of an electron beam, subsequently progressively reducing the power of the beam to the welded region and simultaneously transferring beam power to a raster pattern surrounding the welded region so as to reduce the weld penetration gradually and to cause a controlled cool-down rate of the weld near to the workpiece surface.

5,294,772

DEBRIS CONTROL SYSTEM

Michael E. Brown, Greensburgh, Pa.; William T. Grant, Pleasant Valley, N.Y.; Nabil A. Rizk; Nirmal S. Sandhu, both of Hopewell Junction, N.Y., and You-Wen Yau, Poughkeepsie, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Apr. 28, 1992, Ser. No. 874,915
Int. Cl.[5] B23K *15/00*
U.S. Cl. 219—121.19 14 Claims



1. A debris control system for a beam drilling apparatus, said system comprising:

a calibration-area shielding assembly which shields a calibration area on a movable support member of such apparatus from drilling-generated debris and wherein said calibration area includes a calibration device alignable with the beam of the apparatus;

said calibration-area shielding assembly comprising a movable cover, and a reaction member;

said cover being coupled to said shielding assembly in such a manner that is movable between an open position in which said calibration device is uncovered and a closed position in which said calibration device is covered;

said cover being normally biased into said closed position;

said reaction member causing said cover to move to said open position when such calibration area is in a given orientation with respect to the beam.

5,294,773

SYSTEM FOR CONTROLLING A HIGH PLASMA TORCH WITH HIGH FLOW RATES OF PLASMA-GENERATING GAS

Jean-Marie Lambert, Saint Medard en Jalles, France, assignor to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 2, 1993, Ser. No. 42,482
Claims priority, application France, Apr. 10, 1992, 92 04438
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.54 4 Claims

1. A system, for controlling a power plasma torch (1) having electrodes, said system comprising:

a rectifier (4) fed by an electrical mains (5) and supplying a DC supply voltage to said electrodes (2, 3) of said torch;

a circuit (8) feeding said torch with plasma-generating gas, the flow rate of said gas being controlled by a regulating valve (9);

means (14) for controlling said rectifier and said valve in order to control the arc current and a plasma-generating-gas flow rate;

first means (19) for continuously measuring the arc voltage; and

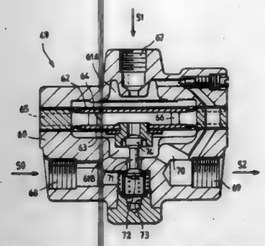
second means (20) for continuously measuring the art current,

said valve (9) for regulating the flow of plasma-generating

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gas being of the pneumatic-actuation type and being actuated by an electropneumatic positioner (44) associated with a pneumatic flow amplifier (49);

said control means (14) receiving the arc-voltage and arc-current measurements delivered respectively by said first



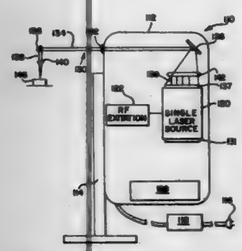
and second measuring means (19,20) and delivering to said rectifier (4) and to said electro-pneumatic positioner (49) respectively, arc-current and plasma-generating-gas flow rate reference values adapted to produce a desired electrical reference power.

5,294,774

LASER MARKER SYSTEM

J. James Stone, Northbrook, Ill., assignor to Videojet Systems International, Inc., New Prague, Minn.

Filed Aug. 3, 1993, Ser. No. 103,061
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.77 21 Claims



1. A laser marker system for marking indicia onto a substrate, comprising:

an exit lens having a focal length, the surface of the substrate to be marked being positioned generally at the focal plane of the lens;

a single laser source arranged so that its energy output beams are oriented in a generally parallel relationship; and

said single laser source including segmented reflecting means for generating a plurality of output energy beams to create a column of spots on the substrate with a higher resolution.

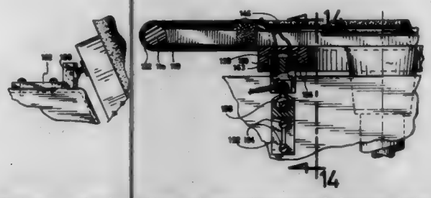
5,294,775

THERMOSTATICALLY CONTROLLED ELECTRICALLY HEATED STEERING WHEEL COVER ASSEMBLY

Claude Carrier, 122 Arsene, Longueuil, Quebec, J4G 1N2, Canada

Filed Mar. 9, 1992, Ser. No. 848,343
Int. Cl.[5] H05B *1/02, 3/54;* B62D *1/06*
U.S. Cl. 219—204 12 Claims

1. An assembly for the heating of a steering wheel of a vehicle comprising a cover member, means for securing said cover member to a steering wheel, said cover member having electrical resistance heating means associated therewith, a first structural element adapted to be secured to a rotatable portion of a steering wheel assembly, electrical contact means associated with said first structural element, a second structural element securable to a non-rotatable portion of the vehicle and in a rotatable mating relationship with the first structural element, said second structural element also having electric contact means, said first and second elements being juxtaposed such that said electrical contact means of said first and second structural elements are in slidable electrical communication at



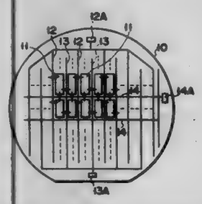
all times, each of said first and second structural elements being formed of at least two members secured together by mechanical fastening means to permit easy assembly and removal of said structural elements, means for electrically connecting said electric contact means of said second structural element to a power supply means, and electric circuit means including, in series, switch means and thermostat means for sensing the temperature of the steering wheel operatively connected to said electrical resistance heating means and said electrical contact means of said first structural element.

5,294,776

METHOD OF BURNING IN A SEMICONDUCTOR DEVICE

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 547,036, Jul. 2, 1990, Pat. No. 5,138,427.
This application Aug. 10, 1992, Ser. No. 926,432
Claims priority, application Japan, Jan. 30, 1989, 1-169659
Int. Cl.[5] G01R *31/00*
U.S. Cl. 219—209 40 Claims



1. A method for burning in a semiconductor wafer during a test mode, said semiconductor wafer including chip regions and first wirings connected to said chip regions, each chip region including a circuit, a first circuit line, and a first switch responsive to a first switch voltage for electrically connecting the first circuit line and at least a first one of said first wirings during the test mode, the method comprising the steps of:

applying a stress voltage to the first one of said first wirings from a voltage source external to said semiconductor wafer; and

applying the first switch voltage to at least a second one of said first wirings from a voltage source external to said semiconductor wafer in order to electrically connect the first one of said first wirings to the first circuit lines of said circuits and thereby stress said circuits.

5,294,777

HAIR CLIP FOR HEATING AND SHAPING ROOT-AREA HAIR PERPENDICULAR TO THE SCALP AND AN ELECTRIC HEATING UNIT FOR HEATING THE CLIPS

Paul Denhup, Stratford, Conn., assignor to Clairol, Incorporated, New York, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,626
Int. Cl.[5] A45D *1/02, 2/36, 4/00;* H05B *3/00*
U.S. Cl. 219—225 15 Claims



1. A hair clip for heating and styling clasped hair into a linear configuration in the scalp area of a user, comprising, in combination,

a pair of jaws,

said pair of jaws including a pair of plates having a generally flat relationship therebetween for storing heat and releasing such heat for styling clasped hair held between said pair of plates into a linear configuration,

said pair of jaws further including means connected to said pair of plates for housing said pair of plates,

hinge means for providing connection between said pair of jaws for movement between open and closed positions,

biasing means for providing biased movement between a biased mode wherein said pair of jaws are in the open position and an unbiased mode wherein said pair of jaws are in the closed position,

handle means connected to said pair of jaws for providing a grip to the user for pressuring said pair of jaws from the closed position to the open position, and

support means integral with said clip for maintaining a generally perpendicular position of said clip upon the scalp of the user when said pair of jaws are gripping the hair of the user.

5,294,778

CVD PLATEN HEATER SYSTEM UTILIZING CONCENTRIC ELECTRIC HEATING ELEMENTS

Justice Carman, Valley Center; Mark A. Logan, Pleasanton, and Joseph Monkowski, Danville, all of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Sep. 11, 1991, Ser. No. 757,921
Int. Cl.[5] H01L *21/306, 21/31*
U.S. Cl. 219—385 9 Claims

1. A heating system for heating a chemical vapor deposition reaction chamber support platen, comprising:

a) first and second heating means for heating first and second portions of said platen;

b) first and second temperature sensing means for sensing the temperature of said first and second portions of said platen respectively;

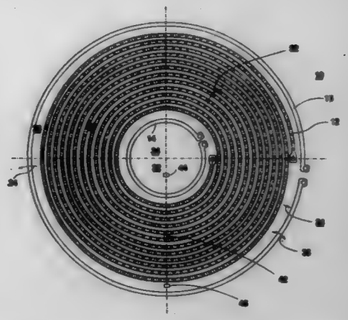
c) first and second power control means responsive respectively to said first and second temperature sensing means for varying the power input to said first and second heating means to provide individual temperature control of said first and second portions of said platen;

d) a third heating means for heating a third portion of the platen;

e) a third temperature sensing means for sensing the temperature of said third portion of the platen; and

f) a third power control means for varying the power input to said third heating means to provide individual temperature control of said third portion of the platen;

wherein the first heating means has a spiral shape defining both an inner diameter and an outer diameter, the second heating means has a single turn circular shape and the third heating means has a single turn circular shape, the second heating means has a diameter less than the inner



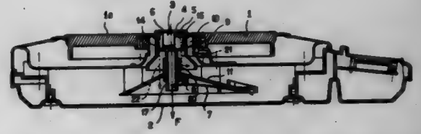
diameter of the first heating means and is located within the inner diameter of the first heating means, the third heating means as a diameter greater than the outer diameter of the first heating means and is located outside the outer diameter of the first heating means.

5,294,779

ELECTRIC HOTPLATE WITH RECEPTACLE PRESENCE DETECTING AND TEMPERATURE MEASURING MEANS

Gilles Miquelot, Rumilly, France, assignor to SEB S.A., Selongey, France

Filed Dec. 29, 1992, Ser. No. 997,938
Claims priority, application France, Jan. 8, 1992, 92 00126
Int. Cl.[5] F24C *7/08;* H05B *1/02, 3/68*
U.S. Cl. 219—450 9 Claims



1. Electric hotplate (1) comprising a temperature sensor (3) which includes a temperature-sensitive surface (4) projecting with respect to the surface of the hotplate intended to receive a cooking receptacle, wherein said sensor (3) comprises in combination:

means (5) for measuring the temperature of said temperature-sensitive surface (4);

means (7, 8) for detecting the presence of the receptacle on said hotplate; and

means (6, 23) forming a fuse comprising a thermal safety element in contact with said temperature-sensitive surface (4) for cutting off the electrical supply to the hotplate (1) when the temperature reaches a predetermined maximum value.

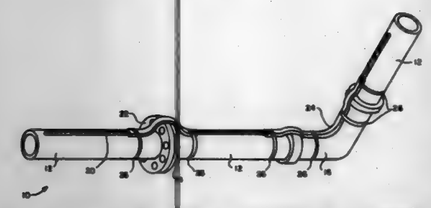
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,780

HEATING AND INSULATION ARRANGEMENT FOR A NETWORK OF INSTALLED PIPES AND METHOD

Garry L. Montierth, Newark; Robert O. Bylin, Belmont, and Raymond J. Scott, Redwood City, all of Calif., assignors to Bylin Heating Systems, Inc., El Dorado Hills, Calif.

Continuation of Ser. No. 12,444, Feb. 9, 1987, Pat. No. 4,791,277. This application Sep. 9, 1988, Ser. No. 242,480
The portion of the term of this patent subsequent to Dec. 13, 2005, has been disclaimed.
Int. Cl.[5] H05B *3/58*
U.S. Cl. 219—535 17 Claims



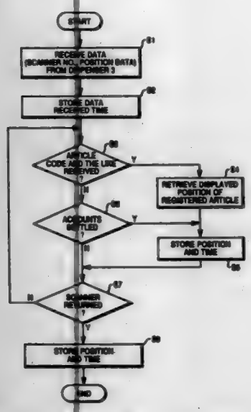
1. A heating and insulating arrangement for a network of installed pipes including a straight pipe section, the heating and insulating arrangement comprising:
segments of electrical heating cable adjacent to the pipe section for heating the pipe section;
a plurality of guide channel members placed over lengthwise segments of the heat-tracing cable,
thermal insulation placed over the pipe section, and
means for pressing the heating cable into good thermal contact with the pipe.

5,294,781

MOVING COURSE DATA COLLECTION SYSTEM

Mitsuo Takahashi, Odawara; Ichiro Shimizu, Hiratsuka, and Takashi Shima, Hadano, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed May 27, 1992, Ser. No. 889,228
Claims priority, application Japan, Jun. 21, 1991, 3-175871
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—376 31 Claims



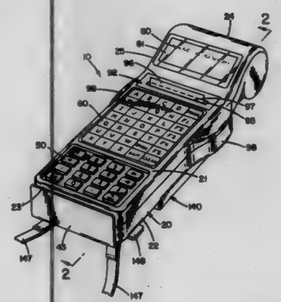
1. A moving course data collection system for tracking the movement of customers through a store, comprising:
a portable scanner adapted to read and transmit article code data;
a central control unit adapted to receive said article code data transmitted by said portable scanner;
said portable scanner being provided to said customers such that said customers input said article code data for articles purchased by said customers into said portable scanner; and
said central control unit includes processing means for storing the display location of said articles in said store such that said article code data of said articles purchased by said customers and transmitted by said portable scanner to said central control unit corresponds to an approximation of the position of said customers in said store, said processing means sequentially recording said article code data in the order in which said article code data is read by said portable scanner, thus collecting moving course data for said customers.

5,294,782

INTEGRATED PORTABLE DEVICE FOR POINT OF SALE TRANSACTIONS

Rajendra Kumar, Akron, Ohio, assignor to Khyber Technologies Corporation, Fairlawn, Ohio

Filed Sep. 27, 1991, Ser. No. 767,270
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 21 Claims



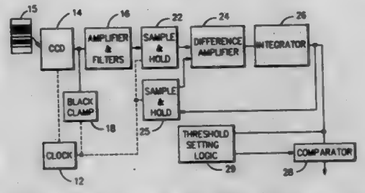
1. A portable device for processing point of sale transactions by a user, comprising:
a housing for carrying by the user having an operational orientation which when carried by the user is handsfree, said housing including a top surface, a bottom surface, a first end and a second end;
reader means for reading credit card information, said reader means carried within said housing substantially adjacent to said first end of said housing;
first data entry means for entering customer information, said first data entry means carried by said housing;
scanner means for scanning product identification information, said scanner means carried within said housing substantially adjacent said second end of said housing such that when said housing is in said operational orientation the device is operable handsfree;
display means for displaying selected of said credit card information, said customer information and said product identification information, said display means carried within said housing so as to allow display at said top surface of said housing substantially adjacent said scanner means;
printer means for printing a customer receipt, said printer means carried within said housing closer to said second end of said housing than said first end of said housing;
means for furnishing at least selected of said credit card information, said customer information and said product identification information to obtain transaction approval, said means for furnishing carried within said housing; and,
processor means within said housing for receiving said credit card information, said customer information and said product identification information, and controlling said display means, said printer means and said means for furnishing.

5,294,783

ANALOG RECONSTRUCTION CIRCUIT AND BAR CODE READING APPARATUS EMPLOYING SAME

Charles M. Hammond, Jr.; Andrew Longacre, Jr., and William H. Havens, all of Skaneateles, N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 10, 1992, Ser. No. 819,448
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 11 Claims



1. A reconstruction circuit that accepts as input a sampled analog signal and produces a continuous piecewise output signal, comprising:
input means for periodically accepting samples of said analog signal;
first storage means, coupled to said input means, for holding a first sample, said first sample being taken from said analog signal;
second storage means for holding a second sample;
difference amplifier means, coupled to said first and said second storage means, having an output that is responsive to the difference of the amplitudes of said first sample and said second sample;
integrator means for producing an output signal that changes at a rate that is responsive to said difference amplifier means; and
feedback means coupled to said integrator means and said second storage means for bringing the amplitude of the signal that is stored in said second storage means substantially to the amplitude of said first sample in said first storage means when said first storage means is ready to accept a sample from said input means.

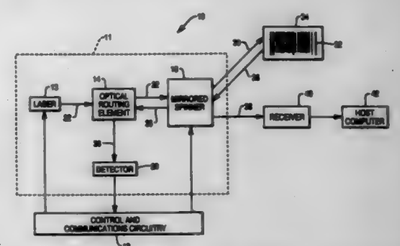
5,294,784

APPARATUS FOR SCANNING AND DOWNLOADING DATA

Thomas P. Tooley, Alpharetta, and Andrew C. Zeik, Duluth, both of Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 16, 1992, Ser. No. 852,423
Int. Cl.[5] G08L *7/10*
U.S. Cl. 235—462 20 Claims

1. An apparatus for scanning and downloading bar code data read from inventory items comprising:
an optical scanner including a laser for producing an outgoing laser beam;
switching means within the scanner for selecting between scanning bar codes on inventory items and downloading inventory item bar code data;
modulating means within the scanner for modulating the outgoing laser beam with the inventory item bar code data during data downloading;
control means within the scanner for processing and storing the inventory item bar code data, and for controlling



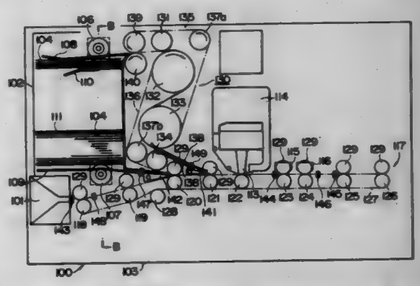
operation of the scanner, the switching means, and the modulating means.

5,294,785

CARDS PROCESSOR

Kazumi Fukuda; Hideo Urata, and Koichi Kanehara, all of Kobe, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 752,362
Claims priority, application Japan, Aug. 31, 1990, 2-228098
Jan. 31, 1991, 3-029220
Int. Cl.[5] G06K *13/08*; G07B *3/04*
U.S. Cl. 235—477 3 Claims



1. A cards processor on terminal equipment for a toll road receiver or the like system comprising:
a gateway on one end side of a cabinet forming part of said equipment and through which used cards are inserted and used and new cards are discharged;
a standby portion on another end side of said cabinet for maintaining said cards in a standby condition temporarily;
a hopper stacker on said one end side of said cabinet for storing said cards;
transport means operatively mounted in said cabinet for moving said cards reciprocatingly in transport directions along a transport line connecting said standby portion with said gateway;
reproducing and recording means disposed between said gateway and said standby portion on said transport line for reading and writing information on said cards;
a change-over flapper mounted in said cabinet on said transport line between said gateway and said reproducing and recording means movable between a first position and a second position for guiding said cards transported from said standby portion toward said gateway when in said first position and toward said hopper stacker when in said second position; and
feed-out means for feeding new cards stored in said hopper stacker individually onto said transport line at a position

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between said gateway and said reproducing and recording means.

5,294,786

OPTICAL DATA CARD FOR AN EXERCISER

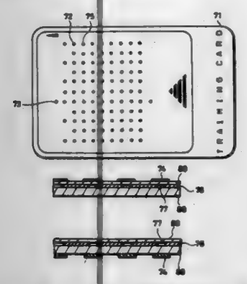
Hachiro Maeyama, Kitakatsuragi; Takashi Ueda, Izumi, and Masaaki Matsumoto, Sakai, all of Japan, assignors to Cat Eye Co., Ltd., Osaka, Japan

Division of Ser. No. 663,243, Mar. 1, 1991. This application Feb. 12, 1993, Ser. No. 17,646

Claims priority, application Japan, Mar. 9, 1990, 2-024075

Int. Cl.[5] G06K *19/02*

U.S. Cl. 235—488 **5 Claims**



1. A data card for storing individual data of a user of an exerciser, comprising:

a card base having a transparent plate and a photo intercepting film formed on said plate for intercepting light except a plurality of portions;

a plurality of removable light stopping films each formed at least on one surface of said card base at a position corresponding to each of said portions for stopping passage of light through each of said portions; wherein

individual data is stored by removing the light stopping film on a portion corresponding to the individual data.

5,294,787

IMAGE SENSOR WITH PLURAL CENTRALLY LOCATED SENSOR MASKS

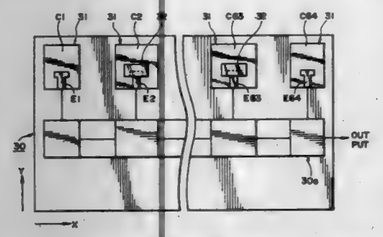
Osamu Kihara, and Kensuke Sawase, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 5, 1992, Ser. No. 956,785

Claims priority, application Japan, Oct. 7, 1991, 3-258838

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **14 Claims**



1. An image sensor for applying light to an objective and receiving reflective light from the objective to obtain an image of the objective as electrical signals, comprising:

a. a frame having in its top portion an opening;

b. a transparent cover mounted on said top portion of said frame for supporting the objective;

c. a light emitter mounted in said frame for applying light to the objective via said transparent cover to produce reflected light;

d. a condenser lens mounted in said frame for receiving the reflected light from the objective via said transparent cover and for condensing the received light; and

e. a light receptor mounted in said frame for receiving the light from said condenser lens and converting the received light into electrical signals, said light receptor including an array of sensor ICs, each of said sensor ICs having a plurality of light receiving devices, each of which has a light receiving area; and

f. shield means positioned centrally in the light receiving area of each of a subplurality of the individual light receiving devices.

5,294,788

LOW LIGHT LEVEL, HIGH RESOLUTION IMAGER USING PHOSPHOR SCREEN PROVIDED WITH A METAL LAYER FOR CONTROLLING INTEGRATION CYCLE OF PHOTOSENSITIVE MATRIX ARRAY

Yves Charon, Gif; Jean-Marc Gaillard, Gex; Michel Leblanc, Antony; Roland Mastrippolito, Plaisir; Hervé Tricoire, Palaiseau; Luc Valentin, Bures, and Philippe Laniece, Paris, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), France

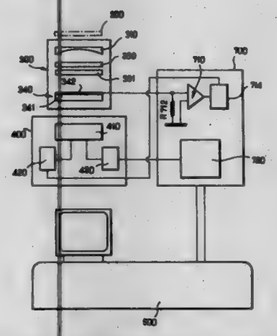
PCT No. PCT/FR91/00680, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/03836, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 21, 1991, Ser. No. 975,930

Claims priority, application France, Aug. 23, 1990, 90 10593

Int. Cl.[5] H01J *31/50*

U.S. Cl. 250—214 VT **12 Claims**



1. A low light level, high resolution imager of the type comprising:

a light-amplifying tube (**300**) comprising:

a photocathode (**310**);

at least one microchannel slab (**330, 331**) serving as an electron amplifier; and

a light emitting phosphor screen (**340**) provided with a metal layer (**342**);

an electron camera (**400**) comprising a photo-sensitive matrix array (**410**) suitable for transforming a received photon into an electron; and

control means (**700**) for controlling the electron camera (**400**);

the imager being characterized by the fact that the control means (**700**) comprise an amplifier (**710**) responsive to the electrons collected on the metal layer (**342**) of the light-emitting phosphor screen (**340**) to control integration cycles of the photosensitive matrix array (**410**) in repetitive one-shot mode synchronized on the appearance of photons at the inlet to the light-amplifying tube (**300**).

5,294,789

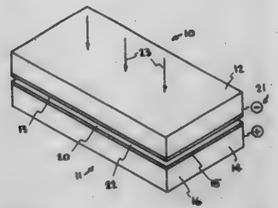
GAMMA-INSENSITIVE OPTICAL SENSOR

Hans W. Kruger, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 11,639

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214.1 **22 Claims**



1. A gamma-insensitive sensor comprising:

a cathode;

an anode;

said cathode and said anode being separated to form a gap there between;

said anode including a plurality of anode pads defining a pattern;

said gap containing a gas;

means for applying an electric potential between the anode and the cathode for producing an electric field in said gap; and

means for detecting electron avalanche charges on said anode pads.

5,294,790

PROBE UNIT FOR NEAR-FIELD OPTICAL SCANNING MICROSCOPE

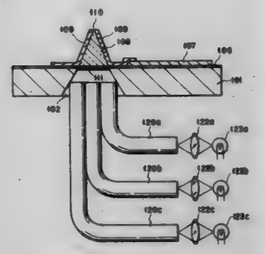
Yoshinori Ohta; Hiroshi Kajimura; Akitoshi Toda, and Tsugiko Takase, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,404

Claims priority, application Japan, Oct. 9, 1991, 3-262235

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—216 **19 Claims**



1. A probe unit for a near-field optical scanning microscope comprising:

an optically-transparent probe; and

a base member having a through-hole and supporting the probe;

wherein said probe is coupled to said base member to be optically aligned with said through-hole therein.

5,294,791

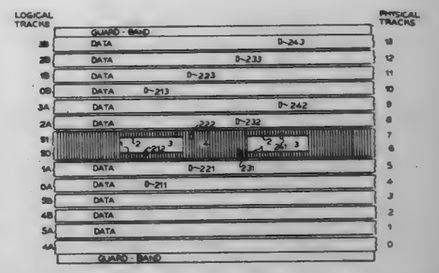
SYSTEM AND A METHOD FOR CONTROLLING POSITION OF A MAGNETIC HEAD RELATIVE TO A SERVO TRACK OF A TAPE BY OPTICAL DETECTION OF AN EDGE OF THE TAPE

Per O. Pahr, Lier, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Continuation-in-part of Ser. No. 815,163, Dec. 30, 1991. This application Feb. 13, 1992, Ser. No. 834,856

Int. Cl.[5] G01N *21/86*; G11B *5/596*

U.S. Cl. 250—548 **19 Claims**



10. A method for controlling the position of a magnetic head relative to the detection of a servo track of a tape, said tape comprising a format with at least one dedicated servo track, said at least one servo track correlated with respect to an edge of said tape, comprising:

disposing said tape in front of a matrix of photodetectors in an integrated circuit chip, the position of each photodetector in said matrix being known from the manufacture of said chip, wherein each photodetector generates an electrical signal corresponding to the intensity of light incident thereon;

illuminating said tape and said matrix so that said tape casts a shadow on said matrix, said shadow having a transition region at the tape edges from light to dark covering a plurality of photodetectors in said matrix;

analyzing the signals from said photodetectors in said transition region to determine the location, relative to said known photodetector positions, of a sharpest light-to-dark transition;

using the location of said sharpest light-to-dark transition as the location of a servo track of said tape; and

positioning said magnetic head relative to said servo track of said tape.

5,294,792

WRITING TIP POSITION SENSING AND PROCESSING APPARATUS

Russell F. Lewis, Dallas, Tex.; Floyd H. Hollister, Pittsburgh, Pa., and Dale A. Cone, Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1991, Ser. No. 816,330

Int. Cl.[5] G01V *9/04*; G09G *3/02*; G06K *9/00*

U.S. Cl. 250—221 **20 Claims**

1. A writing apparatus, comprising:

at least one detector for sensing a position of a writing tip of said writing apparatus and for generating data representative of said position;

at least one processor for processing said data and providing processed data as an output;

a memory for storing said processed data outputted by said processor;

a transmitter for transmitting said processed data stored in

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said memory said transmitter including a mode switch to control the transmission of said processed data; and



a power source for providing operating power to said at least one detector, said at least one processor, said memory, and said transmitter.

5,294,793

SYSTEM FOR MEASURING LENGTHS OR ANGLES WITH A HIGH-VELOCITY MOVABLE SCANNING UNIT

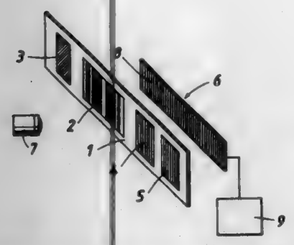
Max Schwaiger, Ostermiething, and Rieder Heinz, Oberndorf, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Aug. 17, 1992, Ser. No. 931,012

Claims priority, application Austria, Aug. 23, 1991, 1661/91; Nov. 22, 1991, 2322/91; Mar. 5, 1992, 418/92; Jul. 13, 1992, 1429/92

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.16 **13 Claims**



1. A system for measuring lengths and angles, which comprises

(a) a scale member provided with

(1) coded scale segments successively spaced apart in a scanning direction, the coded scale segments consisting of different serially coded code words, and

(2) incremental scale segments,

(b) a scanning unit mounted for movement relative to the scale member in the scanning direction and generating measuring signals responsive to reading respective ones of the scale segments in any position of the scanning unit relative to the scale member, the scanning unit comprising

(1) multiline detector means reading at least one entire one of said code words and

(2) means for reading the incremental scale segments, and

(c) an evaluating unit determining an absolute position of the scanning unit relative to the scale member in response to the measuring signals, the evaluating unit comprising

(1) means operative for detecting the absolute position in coarse steps by detecting the position of the beginning of the read code word relative to the detector means and the subsequent reading of the code word, and in fine steps by detecting the measuring signals generated by the means for reading the incremental scale segments,

(2) means for controlling the absolute position detecting means to operate only when the scanning unit movement proceeds at less than a predetermined velocity, and

(3) means for processing only the measuring signals generated by the means for reading the incremental scale segments after the absolute position has been detected.

5,294,794

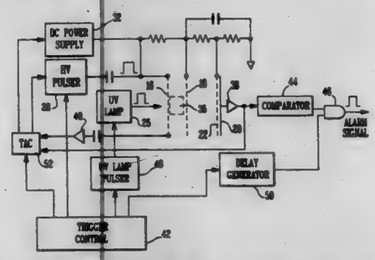
AUTOMATIC COMPENSATION FOR ION MOBILITY SENSOR

David K. Davies, Churchill Borough, Pa., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 18, 1993, Ser. No. 18,974

Int. Cl.[5] H01V *49/40*

U.S. Cl. 250—287 **20 Claims**



1. A system for compensating for changes in pressure and temperature in an ion mobility sensor, the sensor having an ionization region being connected to a drift region, the sensor comprising:

(a) a boundary grid electrode providing a boundary between the ionization region and the drift region;

(b) a second electrode provided at an end of the drift region opposite to the boundary electrode, wherein a voltage potential is applied to the electrodes creating a unidirectional electric field between the electrodes;

(c) an ionization source located in the ionization region proximate the boundary electrode for generating ions in the sensor;

(d) a trigger controller connected to at least one of the boundary electrode and the ionization source for allowing ions to enter the drift region proximate to the boundary electrode at a time t_1;

(e) means connected to the second electrode for measuring a time t_2 at which a selected ion species travels from the boundary electrode to the second electrode;

(f) a time to amplitude converter for generating a voltage signal proportional to a difference between t_1 and t_2, the voltage signal representing the actual travel time of the selected ion species from the boundary electrode to the second electrode; and

(g) a feedback control circuit connected to the time to amplitude converter for adjusting the electrode voltage potential by an amount proportional to a difference between the actual travel time voltage and a voltage proportional to the reference travel time of the selected ion species between the boundary and second electrodes at a known pressure and temperature.

5,294,795

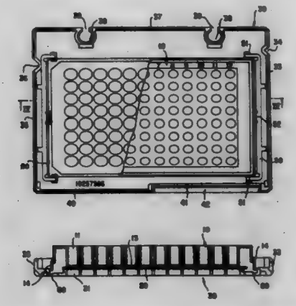
ARRANGEMENT FOR COUNTING LIQUID SCINTILLATION SAMPLES ON MULTI-WELL FILTRATION PLATES

Kauko Lehtinen, Raisio; Timo Oikari, and Tapio Yrjönen, Both of Turku, all of Finland, assignors to Wallac Oy, Turku, Finland

Filed Nov. 12, 1992, Ser. No. 974,626

Int. Cl.[5] G01T *1/203, 1/204*

U.S. Cl. 250—328 **5 Claims**



1. An arrangement for counting of liquid scintillation samples comprising in combination

(a) a liquid scintillation counter comprising at least one photomultiplier tube,

(b) a sample plate comprising (i) a plurality of open-bottomed wells and (ii) a filtration membrane which covers the bottoms of said wells and is impregnated by a solid meltable scintillator so as to seal said wells,

(c) an adapter having a first adaptation means for compensating for variations in the size of said sample plate and a second adaptation means for adapting said sample plate for transportation.

5,294,796

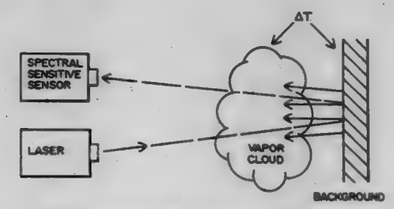
REMOTE VAPOR DETECTION SYSTEM AND METHOD THEREOF

Maurice L. Fee, Anaheim, Calif., assignor to Aerojet-General Corporation, Rancho Cordova, Calif.

Filed Mar. 2, 1992, Ser. No. 844,524

Int. Cl.[5] G01N *21/35*

U.S. Cl. 250—338.5 **8 Claims**



1. A system for remotely detecting at least one constituent of a vapor or gas located adjacent to a background surface; the system comprising:

a laser generating a beam of energy directed to said surface for heating said surface to a temperature higher than the temperature of said vapor or gas, said higher temperature causing said surface to radiate infrared energy through said vapor or gas; and

a spectrally sensitive receiver positioned for receiving said infrared energy after said infrared energy has passed through said vapor or gas, a portion of said infrared energy having been absorbed at certain wavelengths, said certain wavelengths of absorption, identifying said at least one constituent.

5,294,797

METHOD AND APPARATUS FOR GENERATING IONS FROM THERMALLY UNSTABLE, NON-VOLATILE, LARGE MOLECULES, PARTICULARLY FOR A MASS SPECTROMETER SUCH AS A TIME-OF-FLIGHT MASS SPECTROMETER

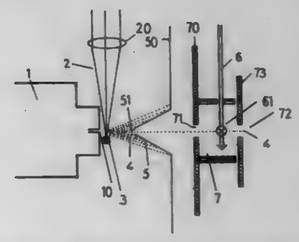
Ruediger Frey, Weyhe; Armin Holle, Oyten, and Gerhard Weiss, Weyhe, all of Fed. Rep. of Germany, assignors to Bruker-Franzen Analytik GmbH, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 849,886

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108462; Mar. 13, 1991, 4108463

Int. Cl.[5] H01J *49/14*

U.S. Cl. 250—427 **27 Claims**



1. Method for generating ions from thermally unstable, non-volatile, large molecules, for a mass spectrometer, comprising the steps of:

exposing a specimen substance comprising the molecules to energy pulses by which some of the molecules are released from the specimen substance;

entraining the released molecules by a jet of a carrier gas and cooling the released molecules by expansion of the carrier gas;

ionizing the molecules by electron impact from an electron beam, focused onto a path of the molecules at a focus, in an ionization chamber;

selecting the power per unit area of the electrons employed for the ionization such that a potential trough is produced in the focus of the electron beam, the depth thereof being greater than the translational energy of the molecule ions in the carrier gas stream;

collecting the molecule ions generated by the electron impact ionization for a respectively defined time span in the potential trough; and

accelerating the molecule ions respectively collected in the potential trough out of the ionization chamber in pulsed fashion.

5,294,798

METHOD AND APPARATUS FOR PAINTING HIGHWAY MARKINGS

William H. Hartman, Sacramento, Calif., assignor to Research Derivatives, Inc., Sacramento, Calif.

Division of Ser. No. 618,674, Nov. 27, 1990, Pat. No. 5,203,923. This application Feb. 23, 1993, Ser. No. 999,718

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **2 Claims**

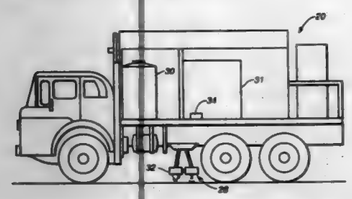
1. For use on a traffic paint pavement marking vehicle, a device for detecting the presence of old paint markings, comprising:

illuminating means capable of stimulating a return spectrum of fluorescent emissions from the pavement;

focusing means for forming a real image of an area of the pavement at a principal focus plane,

spectroscope means having an optical path through said principal focus plane and an entrance slit located at said principal focus plane, and having dividing means for separating the spectral components of said return emissions;

masking means for masking all but a desired one or more wavelengths emitted by a specific chemical contained in said old paint markings, thereby selecting only one or more desired spectral components from the total spectrum being received from the pavement;



photodetector means responsive to the selected one or more spectral components and having an electrical signal output proportional to the intensity of said one or more spectral components;

threshold setting means for establishing a minimum detection level and means for producing an output voltage above said detection level that is a measure of said specific chemical in said old paint markings on the surface of the pavement area in view.

5,294,799

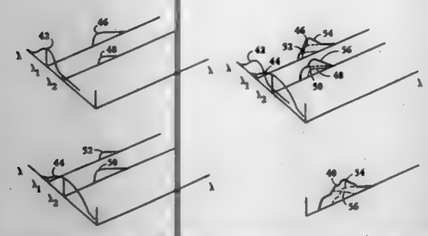
APPARATUS FOR QUANTITATIVE IMAGING OF MULTIPLE FLUOROPHORES

Nils R. D. Aslund, Skonterpsvägen 126, 9 tr, S-121 65 Johanneshov, and Kjell S. Carlsson, Malmbodavägen 17, S-186 42 Vallentuna, both of Sweden

Filed Feb. 1, 1993, Ser. No. 11,881

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **23 Claims**



1. A device for quantifying one or more fluorescent targets by excitation with electromagnetic radiation of multiple discrete wavelengths comprising:

means for directing dual beams of continuous electromagnetic radiation, each beam having a discrete wavelength, said beams impinging on a single location where fluorescent targets are present causing excitation thereof;

means for modulating the intensity of each of said beams at separate modulation frequencies to give each of said beams a specific time modulated waveform;

means for detecting the combined fluorescent emission from said targets in response to said excitation; and

demodulation means for extracting the contributions corresponding to each of said targets from said detected combined fluorescent emission, thereby quantifying said targets.

5,294,800

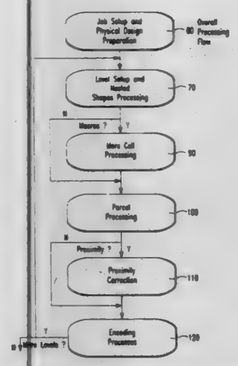
E-BEAM CONTROL DATA COMPACTION SYSTEM AND METHOD

Virginia M. Chung, Pleasant Valley; Gregory J. Dick, Beacon, both of N.Y.; Abigail S. Ganong, Sherman, Conn., and Edward J. Stashluk, Jr., Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 922,923

Int. Cl.[5] H01J *37/302*

U.S. Cl. 250—492.22 **39 Claims**



1. A system for post processing a design containing a plurality of design shapes, said post processed design shapes being converted into control for controlling a particle beam tool said system comprising:

parcelling means for dividing said design into one or more parcels, each said parcel having a plurality of said design shapes;

grouping means for grouping said plurality of design shapes into a plurality of groups;

filling means for filling said design shapes with one or more fill shapes having the same said fill shapes having a common basic shape;

correcting means for selectively applying an exposure level adjustment to said fill shapes; and

cutting means for cutting at least one said fill shape into at least two smaller fill shapes.

5,294,801

EXTENDED SOURCE E-BEAM MASK IMAGING SYSTEM INCLUDING A LIGHT SOURCE AND A PHOTOEMISSIVE SOURCE

Thomas J. Aton, Dallas, Tex., and Denis F. Spicer, Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 378,116, Jul. 11, 1989, Pat. No. 5,156,942. This application Aug. 11, 1992, Ser. No. 928,258

Int. Cl.[5] H01J *37/22*

U.S. Cl. 250—492.22 **9 Claims**

1. An electron beam mask imaging system for use in electron lithographic patterning a device under fabrication comprising:

a light source for generating an optical image beam;

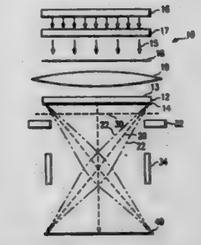
a photolithographic mask that defines a pattern to be used in fabricating the device;

a substantially planar photoemissive source responsive to the image beam from said light source for emitting electrons;

said light source directing the image beam through said mask onto said photoemissive source, thereby imaging onto said photoemissive source the pattern defined by said mask;

said photoemissive source emitting a spatially extended electron beam carrying the mask-image defined by the unmasked portions of the incident image beam;

electron beam focusing means for focusing said extended-source electron beam onto the device thereby providing a pattern on the device corresponding to the mask-image carried by said extended-source electron beam, and



wherein said light source generates an optical image beam with photon energy substantially identical to the work function of said photoemissive source.

5,294,802

DIGITALLY ACTIVE DISTANCE MEASUREMENT APPARATUS FOR CAMERA OR THE LIKE

Keiji Kunishige, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,688

Claims priority, application Japan, Nov. 25, 1991, 3-309073; Mar. 23, 1992, 4-065352

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **24 Claims**



1. A distance measurement apparatus for a camera, comprising:

an infrared-emitting diode for projecting an infrared-ray on a distance measurement object a plurality of number of times;

an optical position detection element for receiving light reflected by the distance measurement object upon incidence of the infrared-ray thereon and outputting a photocurrent corresponding to an irradiated position of the light and an ordinary photocurrent;

a first A/D converter for detecting the ordinary photocurrent of said optical position detection element prior to projection operations performed by said infrared-emitting diode the plurality of number of times, and converting a detected ordinary photocurrent into a digital signal;

a first digital memory circuit for storing the digital signal converted by said first A/D converter;

a current extraction circuit for setting a current having a value corresponding to a storage value of said first digital memory circuit in the projection operations, and extracting a set current from the photocurrents output by said optical position detection element;

an analog arithmetic circuit for outputting an analog distance signal corresponding to a distance to the distance measurement object, using an output current of said optical position detection element from which the set current corresponding to the ordinary photocurrent is extracted by said current extraction circuit;

a second A/D converter for converting the analog distance signal into a digital distance signal;

a second digital memory circuit in which latest outputs from said second A/D converter are sequentially added and accumulated every time the projection operation is performed; and

a processing circuit for performing digital processing corresponding to arithmetic averaging of data accumulated in said second digital memory circuit upon completion of the projection operations performed the plurality of number of times.

5,294,803

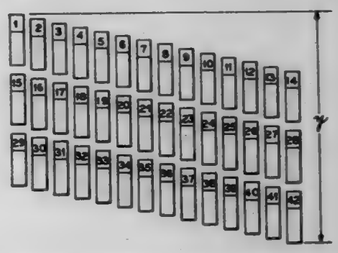
SYSTEM AND A METHOD FOR OPTICALLY DETECTING AN EDGE OF A TAPE

Per O. Pahr, Lier, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Dec. 31, 1991, Ser. No. 815,163

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **57 Claims**



1. A method for detecting an edge of a tape comprising the steps of:

disposing said tape in front of a matrix of photodetectors in an integrated circuit chip, the position of each photodetector in said matrix being known from the manufacture of said chip, wherein each photodetector generates an electrical signal corresponding to the intensity of light incident thereon;

illuminating said tape and said matrix so that said tape casts a shadow on said matrix, said shadow having a transition region from light to dark covering a plurality of photodetectors in said matrix;

analyzing the signals from said photodetectors in said transition region to determine the location, relative to said known photodetector positions, of a sharpest light-to-dark transition; and

using the location of said sharpest light-to-dark transition as the location of the edge of said tape.

5,294,804

CANTILEVER DISPLACEMENT DETECTION APPARATUS

Hiroshi Kajimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,989

Claims priority, application Japan, Mar. 11, 1992, 4-52615

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **10 Claims**

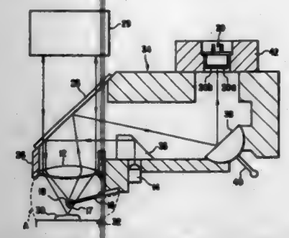
1. A cantilever displacement detection apparatus for detecting a displacement of a cantilever of an atomic force microscope or the like provided with an observation optical system including an image formation optical system and an objective lens, said apparatus comprising:

a light source for emitting a light beam; and

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a position sensor for detecting a position of reception of the light beam,

wherein the light source and the position sensor are arranged such that the light beam is passed through the objective lens and made incident obliquely on a reflection surface of



a free-end portion of the cantilever and the laser beam reflected by the reflection surface is passed through the objective lens and made incident on the position sensor, thereby detecting the displacement of the cantilever on the basis of the position of reception of the beam on the position sensor.

5,294,805

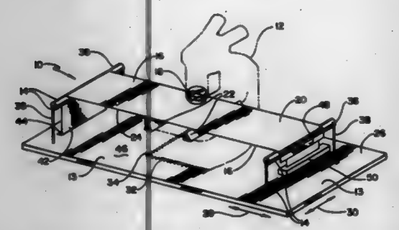
METHOD AND APPARATUS FOR ANALYZING TRACKING ERROR IN MAGNETIC TAPES

Valentin M. Izraelev, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 877,830, May 1, 1992, Pat. No. 5,212,388. This application Jan. 15, 1993, Ser. No. 5,373

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—572 **5 Claims**



1. A method for distinguishing rotational from non-rotational errors in the measured tracks of a magnetic tape, said tape having a longitudinal axis, said tape interacting with a rotating head wheel having n heads angularly spaced along the circumference of said head wheel, each of said n heads inscribing one of said tracks on said tape as said head wheel is moved through one cycle of rotation, adjacent heads on said head wheel inscribing adjacent tracks on said tape, a set of n sequential tracks on said tape defining said one cycle, the spatial relationship between said tracks being measurable by reference to corresponding fixed locations within each of said tracks, and wherein the sum of rotational errors in said set of n sequential tracks is generally equal to zero and the difference between said non-rotational errors in any two adjacent tracks is generally equal to zero, comprising the steps of:

(1) treating said tape for identifying measurement points along said tracks;

(2) determining corrected distances between corresponding ones of said points on all of n sequential tracks along a straight line intersecting said n tracks;

(3) determining the nominal distance between said corresponding ones of said points on all of said n sequential tracks along said straight line; and

(4) comparing said corrected distances with said nominal distance to distinguish said rotational error from said non-rotational error.

5,294,806

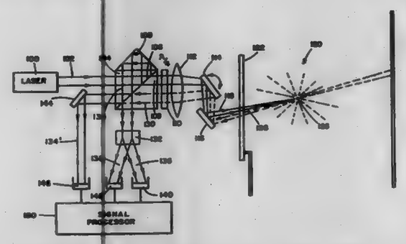
OPTICAL SUBMICRON AEROSOL PARTICLE DETECTOR

John S. Batchelder, Somers; Donald M. DeCain, New York, and Philip C. D. Hobbs, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 820,709, Jan. 14, 1992, Pat. No. 5,192,870. This application Feb. 12, 1993, Ser. No. 17,214

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—574 **13 Claims**



1. A particle detector for detecting particles within an enclosed volume, said detector comprising:

laser means for producing an optical beam and directing it along a path;

beam splitting means in said path for dividing said optical beam into first and second beams;

means for directing said first beam into said volume to interact with a particle and acquiring resultant back scattered optical energy from said first beam interacting with said particle, and directing said back scattered optical energy to said beam splitting means for being combined with said second beam such that said back scattered optical energy and said second beam overlap in a region and in the overlap region said back scattered optical energy and said second beam are in substantially the same state of focus, of substantially the same polarization and are substantially parallel; and

optical detection means disposed at said overlap region for detecting the presence of a particle in said enclosed volume from said combined back scattered optical energy and said second signal.

5,294,807

QUANTUM EFFECT DEVICE IN WHICH CONDUCTION BETWEEN A PLURALITY OF QUANTUM DOTS OR WIRES IS ACHIEVED BY TUNNEL TRANSITION

Ryuichi Ugajin, and Kenji Funato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,580

Claims priority, application Japan, Jun. 7, 1991, 3-162519

Int. Cl.[5] H01L *29/161, 29/205*

U.S. Cl. 257—14 **12 Claims**

1. A quantum effect structure comprising, a semiconductor substrate:

a plurality of quantum dots arrayed on said semiconductor substrate;

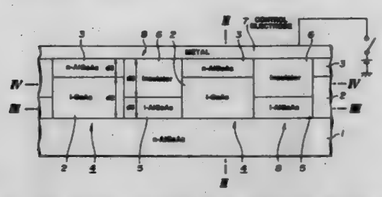
a potential barrier surrounding said quantum dots;

an electron supply layer on said quantum dots; and

an electrode on said electron supply layer;

wherein said potential barrier is divided into two regions which have different potential barrier heights;

each of said plurality of quantum dots having two channels connecting with each region of said potential barrier; and



said semiconductor substrate and said electron supply layer supplying electrons to said quantum dots.

5,294,808

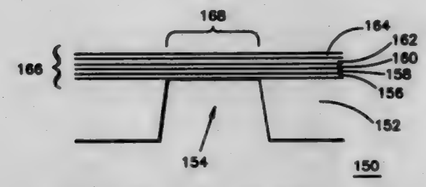
PSEUDOMORPHIC AND DISLOCATION FREE HETEROEPITAXIAL STRUCTURES

Yu-Hwa Lo, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 23, 1992, Ser. No. 964,638

Int. Cl.[5] H01L *27/12*

U.S. Cl. 257—17 **5 Claims**



1. A semiconductor structure comprising:

a) a semiconductor substrate layer having a thickness; and

b) a heteroepitaxial layer disposed on said substrate layer formed from a material which is lattice mismatched with said substrate layer;

wherein, said thickness of said substrate layer is chosen to be approximately less than or equal to a critical thickness above which dislocations will form between said substrate layer and said heteroepitaxial layer, whereby said heteroepitaxial layer can be formed having any arbitrary thickness without formation of dislocations between said substrate layer and said heteroepitaxial layer, thereby resulting in a pseudomorphic structure.

5,294,809

RESONANT TUNNELING DIODE WITH REDUCED VALLEY CURRENT

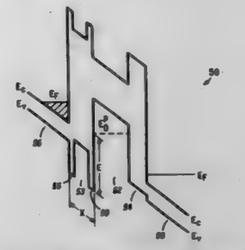
Herbert Goronkin, Tempe; Saied N. Tehrani, Scottsdale; Jun Shen, Phoenix, and Xiaodong T. Zhu, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1993, Ser. No. 65,338

Int. Cl.[5] H01L *29/88*

U.S. Cl. 257—17 **14 Claims**

1. In a resonant tunneling diode having a quantum well sandwiched between first and second tunnel barrier layers and the quantum well and tunnel barrier layers sandwiched between an injection layer and a collector layer, the improvement comprising a relatively thin layer of semiconductor material sandwiched between the first tunnel barrier layer and the



injection layer and having a bandgap which is large relative to a bandgap of the first tunnel barrier layer.

5,294,810

ORGANIC ELECTROLUMINESCENT DEVICE

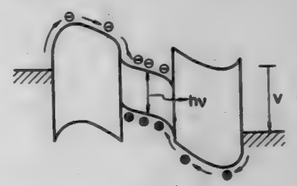
Syun Egusa, and Nobuhiro Gemma, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 501,251, Mar. 29, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 921,379

Claims priority, application Japan, Mar. 31, 1989, 1-83568; Sep. 29, 1989, 1-254960; Feb. 6, 1990, 2-25100; Feb. 6, 1990, 2-25101

Int. Cl.[5] H01L *29/28, 33/00*

U.S. Cl. 257—40 **7 Claims**



1. An organic electroluminescent device comprising:

a multi-layered body including first and second organic semiconductor layers having a junction interface therebetween, at least one of said first and second organic semiconductor layers serving as a light-emitting layer;

a first electrode electrically coupled to said first organic semiconductor layer, for injecting a first kind of change carrier into said first organic semiconductor layer;

a second electrode electrically coupled to said second organic semiconductor layer, for injecting a second kind of charge carrier into said second organic semiconductor layer; and

carrier-recombination accelerator means for forming blocking barriers in the junction interface of said first and second organic semiconductor layers, and for causing the first and second kinds of charge carriers to be blocked by the blocking barriers in said junction interface, whereby the first and second charge carriers are facilitated to be recombined with each other.

5,294,811

THIN FILM SEMICONDUCTOR DEVICE HAVING INVERTED STAGGER STRUCTURE, AND DEVICE HAVING SUCH SEMICONDUCTOR DEVICE

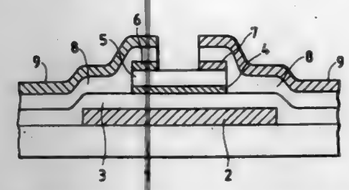
Takashi Aoyama, Ibaraki; Kazuhiro Ogawa, Hitachi; Yasuhiro Mochizuki, Katsuta; Naohiro Momma, and Katsuhisa Usami, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,350

Claims priority, application Japan, Nov. 30, 1990, 2-329054; Mar. 15, 1991, 3-051270

Int. Cl.[5] H01L *29/04, 27/01, 31/036*

U.S. Cl. 257—59 **24 Claims**



13. A thin film semiconductor device having an inverted stagger structure, comprising:

a polycrystalline silicon layer formed on a gate insulation film;

an amorphous silicon layer formed on said polycrystalline silicon layer; and

a source drain and a drain region, separated from each other, on a top surface of said amorphous silicon layer, electrically connected with each other by way of said amorphous silicon layer.

5,294,812

SEMICONDUCTOR DEVICE HAVING IDENTIFICATION REGION FOR CARRYING OUT FAILURE ANALYSIS

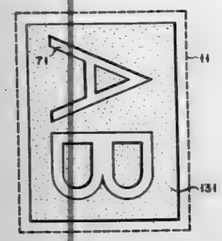
Kazuhiko Hashimoto; Masataka Matsui, both of Tokyo, and Syoichi Asoh, Ooita, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 757,814, Sep. 11, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,063

Claims priority, application Japan, Sep. 14, 1990, 2-242464

Int. Cl.[5] H01L *29/34*

U.S. Cl. 257—65 **21 Claims**



1. A semiconductor device including a semiconductor substrate having a plurality of circuit elements, an insulating film covering a surface of the semiconductor substrate, and a passivation film covering the insulating film, the semiconductor device further comprising:

an identification region, located at a corner of the semiconductor substrate, including a plurality of pattern segments provided on the insulating film, the plurality of pattern segments being covered with the passivation film, wherein

a portion of at least one of the plurality of pattern segments is removed along with the insulating film and the passivation film to provide an identification pattern for providing identification information regarding the semiconductor device.

5,294,813

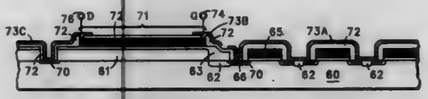
SEMICONDUCTOR DEVICE HAVING HIGH ENERGY SUSTAINING CAPABILITY AND A TEMPERATURE COMPENSATED SUSTAINING VOLTAGE

John P. Phipps, Phoenix; Stephen P. Robb, Tempe; Judy L. Sutor, Chandler, and Lewis E. Terry, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 278,988, Dec. 2, 1988, abandoned. This application Mar. 24, 1993, Ser. No. 37,501

Int. Cl.[5] H01L *29/10*

U.S. Cl. 257—76 **21 Claims**



4. A semiconductor device having a gate region, a source region, and a drain region, comprising:

a plurality of diodes formed back-to-back in a polysilicon layer electrically connected to the gate region and the drain region of the semiconductor device and monolithically integrated with the semiconductor device;

a resistor electrically connected to the gate region and the source region, wherein the plurality of diodes provide a temperature compensated sustaining voltage of the semiconductor device.

5,294,814

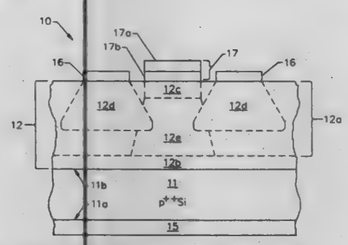
VERTICAL DIAMOND FIELD EFFECT TRANSISTOR

Kalyankumar Das, Raleigh, N.C., assignor to Kobe Steel USA, Research Triangle Park, N.C.

Filed Jun. 9, 1992, Ser. No. 896,538

Int. Cl.[5] H01L *31/0312, 29/80, 29/76, 29/12*

U.S. Cl. 257—77 **43 Claims**



1. A vertical field effect transistor comprising:

a nondiamond substrate;

a diamond layer on said nondiamond substrate;

a drain contact on said nondiamond substrate, opposite said diamond layer;

a source contact on said diamond layer, said source and drain contacts defining therebetween a vertical channel through said diamond layer; and

a gate on said diamond layer, adjacent said source contact.

5,294,815

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH TERRACED STRUCTURE

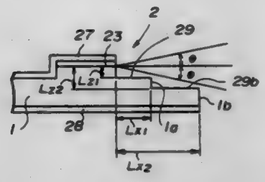
Hiroyuki Iechi, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Filed Jul. 21, 1992, Ser. No. 917,851

Claims priority, application Japan, Jul. 29, 1991, 3-188995

Int. Cl.[5] H01L *33/00;* **H01S** *3/19*

U.S. Cl. 257—95 **4 Claims**



1. A semiconductor light emitting device which comprises:

a substrate on which a light emitting diode is formed;

said light emitting diode having at least a light emitting layer and electrodes positioned on both sides of the light emitting layer, and having a light emitting edge surface perpendicular to a plane of the light emitting layer; and

a plurality of grooves separating said light emitting diode into a plurality of light emitting diode elements;

said substrate including a first surface parallel to a center axis of a light beam emitted from said light emitting diode element, a second surface having a step and formed to be parallel to said first surface, a first terrace edge formed between the first and second surfaces, and a second terrace edge formed on the edge of said substrate;

said first and second surfaces are formed so as to satisfy the following two equations;

$$Lx_1 < Lz_1/\tan\theta$$

$$Lx_2 < Lz_2/\tan\theta$$

where:

Lx_1 is a distance between said light emitting edge surface and said first terrace edge;

Lx_2 is a distance between said light emitting edge surface and said second terrace edge;

Lz_1 is a distance between said light emitting layer and said first surface;

Lz_2 is a distance between said light emitting layer and said second surface;

θ is a diverging angle of the light beam emitted from said light emitting diode elements from the center axis towards the surface of said substrate.

5,294,816

UNIT CELL ARRANGEMENT FOR EMITTER SWITCHED THYRISTOR WITH BASE RESISTANCE CONTROL

Mallikarjunaswamy S. Shekar; Mahalingam Nandakumar, and Bantval J. Baliga, all of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Jun. 10, 1992, Ser. No. 897,456

Int. Cl.[5] H01L *23/48, 29/74, 29/76*

U.S. Cl. 257—163 **12 Claims**

1. A semiconductor switching device comprising:

a semiconductor substrate having a face;

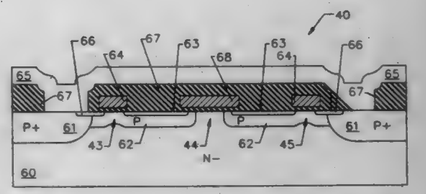
a first thyristor in said semiconductor substrate, said first thyristor comprising an anode, a first base region of first conductivity type on said anode and extending to said face, a second base region of second conductivity type, opposite said first conductivity type, in said first base region at said face, and a first floating emitter region of first conductivity type in said second base region at said face;

a first emitter region of first conductivity type in said semiconductor substrate at said face, adjacent said first floating emitter region;

a second thyristor in said semiconductor substrate, adjacent said first thyristor, said second thyristor comprising said anode, said first base region, a third base region of second conductivity type in said first base region at said face and adjacent said second base region, and a second floating emitter region of first conductivity type in said third base region at said face;

a second emitter region of first conductivity type in said semiconductor substrate at said face, adjacent said second floating emitter region;

first gating means at said face, between said second base region and said third base region, for electrically connecting said first floating emitter region and said second floating emitter region to said first base region in response to a first bias signal;



second gating means at said face, between said first floating emitter region and said first emitter region, for electrically connecting said first emitter region to said first floating emitter region, to thereby provide electron conduction between said first emitter region and said first floating emitter region in a first direction, in response to said first bias signal;

third gating means at said face, between said second floating emitter region and said second emitter region, for electrically connecting said second emitter region to said second floating emitter region, to thereby provide electron conduction between said second emitter region and said second floating emitter region in a second direction, opposite said first direction, in response to said first bias signal;

a diverter region of second conductivity type in said semiconductor substrate at said face;

diverting means for electrically connecting said second base region and said third base region to said diverter region in response to a second bias signal, to thereby provide hole conduction between said second and third base regions and said diverter region in a third direction, orthogonal to said first and said second directions.

5,294,817

OUTPUT CIRCUIT FOR CHARGED TRANSFER DEVICE AND HAVING A HIGH DETECTION SENSITIVITY

Hiromasa Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 41,965

Claims priority, application Japan, Apr. 2, 1992, 4-080155

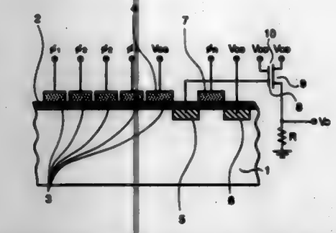
Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—239 **4 Claims**

1. A charge transfer device associated with an output circuit, comprising a semiconductor substrate of a first conductivity type, a charge transfer section formed on said semiconductor substrate for transferring a signal charge, a floating diffusion formed in said semiconductor substrate adjacent to one end of said charge transfer section and for receiving said signal charge transferred through said charge transfer section, said floating diffusion being of a second conductivity type opposite to said

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first conductivity type, and a read-out double-gate field effect transistor having a source side gate electrode electrically con-



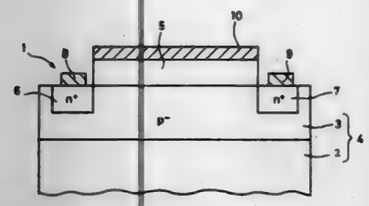
nected to said floating diffusion and a drain side gate electrode formed separately from said source side gate electrode and connected to a drain of said field effect transistor itself.

5,294,818

MISFET INCLUDING GAAS SUBSTRATE AND A GROUP II-VI GATE INSULATOR

Shigeo Fujita, Kyoto; Shizuo Fujita, Osaka, and Susumu Fukuda, Kyoto, all of Japan, assignors to Murata Manufacturing Co. Ltd., Japan

Filed Jul. 8, 1992, Ser. No. 910,657
Claims priority, application Japan, Jul. 8, 1991, 3-194927
Int. Cl.[5] H01L *29/161, 29/205, 29/80, 29/20*
U.S. Cl. 257—289 **4 Claims**



1. A MISFET comprising:
GaAs substrate,
a gate insulating film of a II-VI group compound including Zn, Mg, S, and Se, epitaxially grown on said substrate, and
a gate electrode formed on said gate insulating film.

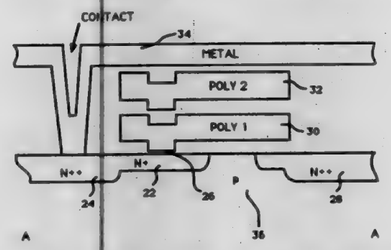
5,294,819

SINGLE-TRANSISTOR CELL EEPROM ARRAY FOR ANALOG OR DIGITAL STORAGE

Richard T. Simko, Los Altos, Calif., assignor to Information Storage Devices, San Jose, Calif.

Filed Nov. 25, 1992, Ser. No. 981,610
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—314 **44 Claims**

1. An electrically erasable and programmable ROM (EEPROM) storage array comprising:
a plurality of EEPROM transistors fabricated on a substrate, said EEPROM transistors being arranged in a plurality of rows and columns, each of said EEPROM transistors having spaced-apart drain and source regions in said substrate, and each of said EEPROM transistors having a floating gate and a control gate;
said source region of each of said EEPROM transistors being in common with said source region of an EEPROM transistor of an adjacent row of said array;
said control gate of each of said EEPROM transistors being electrically connected to said control gates of all other EEPROM transistors of the same respective row of said array;
said drain region of each of said EEPROM transistors being electrically connected to said drain regions of all other EEPROM transistors of the same respective column of said array by a single patterned layer of metalization;
said control gates, sources, and drains of said EEPROM transistors being means for receiving a plurality of operating voltages for driving said control gates, said sources, and said drains of said EEPROM transistors, respectively, and for erasing, programming or reading from an addressed EEPROM transistor, each of said plurality of operating voltages always having a voltage above the substrate voltage, said floating gate of said addressed EEPROM transistor having a net negative charge after erasing, programming, or reading from said addressed EEPROM transistor, thereby causing said addressed EEPROM transistor to have a threshold voltage greater than approximately one volt after erasing, programming, or reading of said addressed EEPROM transistor.

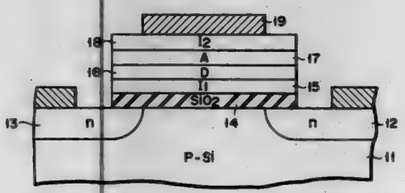


5,294,820

FIELD-EFFECT TRANSISTOR

Nobuhiro Gemma, Yokohama; Koichi Mizushima, Kamakura; Akira Miura, Toride; Makoto Azuma, Yokohama, and Toshio Nakayama, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 518,236, May 7, 1990, abandoned, which is a continuation of Ser. No. 318,485, Mar. 3, 1989, abandoned, which is a continuation of Ser. No. 29,968, Mar. 25, 1987, abandoned. This application Feb. 7, 1992, Ser. No. 832,371
Claims priority, application Japan, Mar. 25, 1986, 61-66278
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—328 **13 Claims**



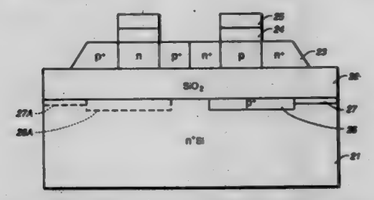
1. A field-effect transistor comprising a silicon substrate having a source region and a drain region, and a gate electrode, wherein a thin organic film including donor and acceptor molecules is provided between said silicon substrate and said gate electrode.

5,294,821

THIN-FILM SOI SEMICONDUCTOR DEVICE HAVING HEAVILY DOPED DIFFUSION REGIONS BENEATH THE CHANNELS OF TRANSISTORS

Seiichi Iwamatsu, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 773,162
Claims priority, application Japan, Oct. 9, 1990, 2-271262; Oct. 9, 1990, 2-271263; Oct. 9, 1990, 2-271264; Nov. 26, 1990, 2-321805; Nov. 28, 1990, 2-328090
Int. Cl.[5] H01L *27/01, 27/12, 29/76*
U.S. Cl. 257—351 **6 Claims**



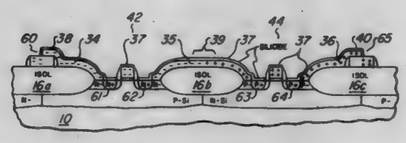
3. A thin-film SOI semiconductor device, comprising:
an n^+-type semiconductor substrate having a high concentration of n-type impurity for maintaining the threshold voltage of the device constant;
an insulating film formed on a surface of said substrate; and
a thin silicon film doped with impurities and forming an n-channel transistor and a p-channel transistor on said insulating film.

5,294,822

POLYCIDE LOCAL INTERCONNECT METHOD AND STRUCTURE

Douglas P. Verrett, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 590,543, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 377,696, Jul. 10, 1989, abandoned. This application Mar. 17, 1993, Ser. No. 36,124
Int. Cl.[5] H01L *27/01, 27/02, 29/04, 23/48*
U.S. Cl. 257—368 **20 Claims**



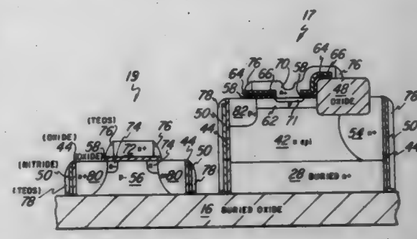
1. A semiconductor device, comprising:
a first transistor with first and second terminals and an insulated gate for controlling current between the first and second terminals;
an isolation region adjoining one of said terminals;
a second gate disposed on said isolation region;
a layer of non-monocrystalline silicon above and adjacent an upper surface of said isolation region, said one of said terminals and said second gate; and
a silicide layer above and adjacent said layer of non-monocrystalline silicon.

5,294,823

SOI BICMOS PROCESS

Robert H. Eklund, Plano, and Ravishankar Sundaresan, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 595,505, Oct. 11, 1990, Pat. No. 5,102,809.
This application Apr. 9, 1992, Ser. No. 820,838
Int. Cl.[5] H01L *27/02, 27/12*
U.S. Cl. 257—370 **5 Claims**



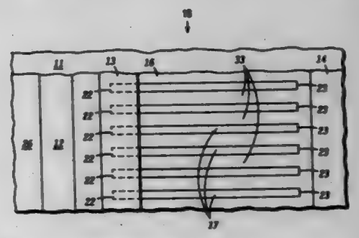
1. A bipolar transistor and a complementary metal-oxide-semiconductor (CMOS) transistor on an semiconductor-on-insulator (SOI) substrate, said transistors comprising:
a. a buried oxide substrate;
b. an CMOS epitaxial mesa;
c. a stepped epitaxial bipolar mesa on said substrate, said stepped epitaxial bipolar mesa having a lower buried collector portion at essentially the same height as said CMOS mesas and also having an upper portion;
d. a poly gate on said CMOS mesa; and
e. a poly emitter contact on said bipolar mesa upper portion.

5,294,824

HIGH VOLTAGE TRANSISTOR HAVING REDUCED ON-RESISTANCE

David N. Okada, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 31, 1992, Ser. No. 922,718
Int. Cl.[5] H01L *29/82, 29/76, 29/94, 31/062*
U.S. Cl. 257—409 **15 Claims**



9. A transistor comprising:
a first conductive region of a first conductivity type;
a second conductive region of a second conductivity type formed in said first conductive region, said second conductive region provides a conductive path when the transistor is enabled; and
a plurality of areas of said first conductivity type formed in said second conductive region, said plurality of areas are spaced a predetermined distance from one another and area of said second conductive region between said plurality of areas form a plurality of surface conduction paths for conducting current when the transistor is enabled, said plurality of areas are separate from one another and contained within said second conductive region.

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5,294,825

HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE

Akio Nakagawa, Hiratsuka, and Norio Yasuhara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

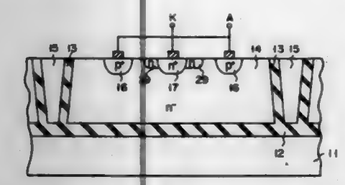
Continuation-in-part of Ser. No. 397,874, Aug. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 236,746, Aug. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,102, Feb. 26, 1988, abandoned. This application Aug. 30, 1991, Ser. No. 753,433

Claims priority, application Japan, Feb. 26, 1987, 62-43564; Jul. 29, 1987, 62-189420; Jul. 4, 1988, 63-166403; Jan. 31, 1991, 3-31720; Mar. 28, 1991, 3-90068

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.[5] H01L *29/74*

U.S. Cl. 257—487 35 Claims



1. A high breakdown voltage semiconductor device comprising:

a first semiconductor substrate;

a first insulating layer formed on the first semiconductor substrate;

a second semiconductor substrate bonded to the first semiconductor substrate with the first insulating layer therebetween;

a first semiconductor region formed in the second semiconductor substrate and isolated at its side by a second insulating layer;

a second semiconductor region of an n-type formed in a surface portion of the first semiconductor region and having a higher impurity concentration than that of the first semiconductor region; and

a third semiconductor region of a p-type formed in the surface region of the first semiconductor region such that it is located between the second semiconductor region and the second insulating layer in a manner to be spaced apart from the second semiconductor region, the third semiconductor region having a higher impurity concentration than that of the first semiconductor region, wherein when a predetermined voltage is applied to the second semiconductor region, a region between the third semiconductor region and the first insulating layer is filled with a depletion region.

5,294,826

INTEGRATED CIRCUIT PACKAGE AND ASSEMBLY THEREOF FOR THERMAL AND EMI MANAGEMENT

Gabriel Marcantonio, and Khanh Nguyen, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 16, 1993, Ser. No. 47,084

Int. Cl.[5] H01L *25/04*

U.S. Cl. 257—659 19 Claims

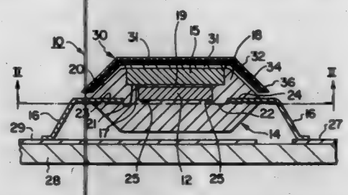
1. An integrated circuit package, comprising:

a body comprising a dielectric portion cooperable with a substrate portion for enclosing the integrated circuit with electrically conductive members extending from the integrated circuit through the dielectric portion of the body to an exterior of the body;

the body also comprising a combined electromagnetic shielding and heat dissipation means comprising a plurality of layers forming a laminate structure overlying the dielectric portion and including:

a layer of a thermally conductive material;

a layer of a magnetic material having a high magnetic permeability to electromagnetic radiation generated by the integrated circuit;



at least one of said plurality of layers comprising an electrically conductive material and having conductive grounding means.

5,294,827

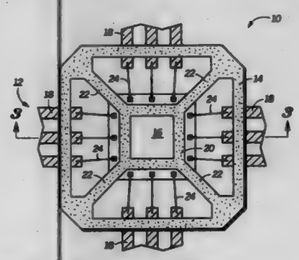
SEMICONDUCTOR DEVICE HAVING THIN PACKAGE BODY AND METHOD FOR MAKING THE SAME

Michael B. McShane, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1992, Ser. No. 991,548

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 14 Claims



1. A semiconductor device comprising:

a leadframe having a surface and plurality of leads, each lead having a length and a surface;

an electrically nonconductive support tape attached to a portion of the surface of the leadframe, the electrically nonconductive support tape having a die support surface;

a semiconductor die having an active surface with a plurality of bonding pads thereon and an inactive surface, wherein the semiconductor die is attached to the die support surface of the electrically nonconductive support tape in a manner that positions the active surface of the semiconductor die substantially coplanar with the surface of the plurality of leads, the active surface of the semiconductor die being larger than the die support surface so that the plurality of bonding pads are exposed; wherein an inner portion of the plurality of leads extend toward and terminate proximally to a perimeter of the semiconductor die:

a plurality of wire bonds electrically connecting the plurality of bonding pads on the active surface of the semiconductor die to the surface of the plurality of leads of the leadframe; and

a resin package body protecting the plurality of wire bonds, the active surface of the semiconductor die and a portion of the length of the plurality of leads, wherein the portion of the length is completely encapsulated by the resin package body.

5,294,828

PLATE FOR SUPPORTING A PUNCHED LEADFRAME

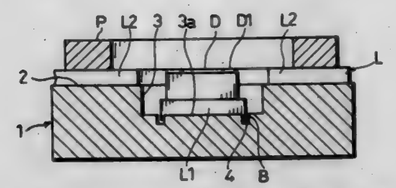
Hiroshi Okumura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 12, 1993, Ser. No. 31,131

Claims priority, application Japan, Mar. 17, 1992, 4-91943

Int. Cl.[5] H01L *23/40, 29/14, 29/52, 29/60*

U.S. Cl. 257—676 6 Claims



1. A leadframe support plate for directly supporting a punched leadframe at the time of wire bonding, the support plate comprising a frame supporting face, and a die-pad supporting face for supporting a die pad of the leadframe, the die pad having marginal burrs along a marginal contour of the die pad,

wherein the die-pad supporting face is formed with at least one burr receiving groove extending along the marginal contour of the die pad for receiving the marginal burrs.

5,294,829

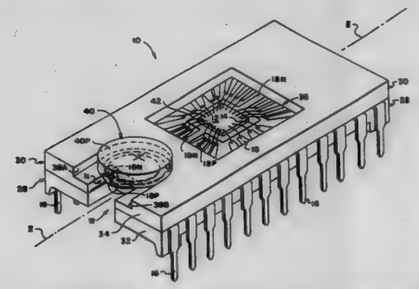
IC PACKAGE HAVING DIRECT ATTACH BACKUP BATTERY

Michael J. Hundt, Lewisville, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 669,348, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 470,939, Jan. 26, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,550

Int. Cl.[5] H01L *23/48, 23/02, 23/12;* G11C *7/00*

U.S. Cl. 257—678 11 Claims



1. A package for containing a semiconductor integrated circuit comprising:

a first nonconductive body;

a lead assembly carried on said first nonconductive body, said lead assembly including a plurality of conductive finger leads, one of said finger leads providing a positive power lead and another of said finger leads providing a negative power lead, said positive and negative power leads having resilient terminal lead portions;

a semiconductor integrated circuit carried on said nonconductive body, said electronic circuit device having positive and negative power nodes electrically coupled to said positive and negative power leads, respectively; and,

a second nonconductive body mounted onto said first nonconductive body and sealing a portion of said lead frame between said first and second nonconductive bodies, said second nonconductive body having a socket for receiving a user replaceable backup battery, said positive and negative resilient terminal lead portions being exposed within said socket for directly electrically engaging positive and negative power terminals of a backup battery when the backup battery is loaded into said socket;

whereby when the backup battery is inserted into said socket, said backup battery can supply backup electrical power to said electronic circuit device.

5,294,830

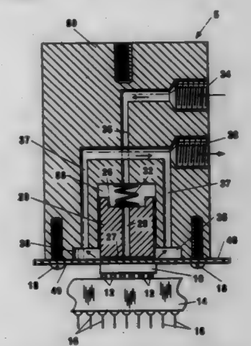
APPARATUS FOR INDIRECT IMPINGEMENT COOLING OF INTEGRATED CIRCUIT CHIPS

Steven P. Young, LaGrangeville; John Acocella, Hopewell Junction; Albert J. Fahey, Pleasant Valley; Gaetano P. Messina, Hopewell Junction, and Seaho Song, Highland, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1991, Ser. No. 703,614

Int. Cl.[5] H01L *23/02, 25/04*

U.S. Cl. 257—714 22 Claims



1. A thermal conduction module comprising:

a substrate having a chip-carrying surface;

at least one integrated circuit chip on said substrate;

a deformable, liquid-impermeable, thermally conductive film extending over an upper surface of said chip; and

a piston having a lower surface for urging said film against said chip upper surface, the piston lower surface containing at least one open channel permitting coolant passage and wherein said coolant contacts said film for conveying heat from said chip without direct contact between said coolant and chip.

5,294,831

CIRCUIT PACK LAYOUT WITH IMPROVED DISSIPATION OF HEAT PRODUCED BY HIGH POWER ELECTRONIC COMPONENTS

Kaveh Azar, Westwood, Mass., and Richard E. Caron, Salem, N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 16, 1991, Ser. No. 807,688

Int. Cl.[5] H01L *23/02, 25/04*

U.S. Cl. 257—722 24 Claims

1. A circuit pack, comprising:

a housing;

an inlet for receiving cooling fluid into the housing;

an outlet for exhausting cooling fluid out of the housing;

the inlet and outlet defining a cooling fluid flow path through the housing;

at least one heat producing electronic device located in the housing; and

a heat sink attached to the at least one heat producing electronic device;

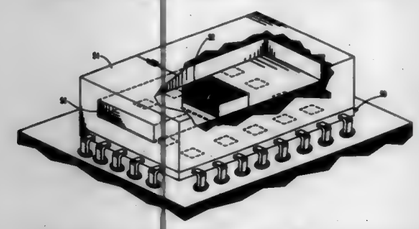
the heat sink comprising:

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a block of heat conductive material having a front surface, a back surface, a top surface, and a unitary bottom surface; and

a plurality of substantially continuous fins of predetermined thickness and predetermined height formed in the top surface of the heat sink, the fins defining a plurality of continuous elongated channels each having a predetermined width continuously extending from the front surface to the back surface, the channels being oriented so that fluid flows through the heat sink along a path substantially parallel to the fluid flow path through the housing between the inlet and the outlet;

the ratio of the predetermined thickness to the predetermined height falling in the range of about 0.005 to about 0.055 and the ratio of the predetermined width to the predetermined height falling in the range of about 0.03 to about 0.13.



5,294,832

Patent Not Issued For This Number

5,294,833

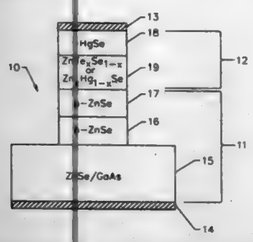
INTEGRATED HETEROSTRUCTURE OF GROUP II-VI SEMICONDUCTOR MATERIALS INCLUDING EPITAXIAL OHMIC CONTACT AND METHOD OF FABRICATING SAME

Jan F. Schetzina, Cary, N.C., assignor to North Carolina State University, Raleigh, N.C.

Continuation-in-part of Ser. No. 881,599, May 12, 1992. This application Aug. 21, 1992, Ser. No. 934,190

Int. Cl.[5] H01L *33/00, 29/161, 29/205, 29/225*

U.S. Cl. 257—741 **30 Claims**



1. An ohmic contact for a semiconductor device formed of Group II-VI compound semiconductor materials and including a layer of at least one of p-type zinc selenide (ZnSe) and an alloy thereof, said ohmic contact comprising:

a zinc telluride selenide ($ZnTe_xSe_{1-x}$) layer on said layer of at least one of p-type ZnSe and an alloy thereof, where $0<x<1$;

a mercury selenide (HgSe) layer on said $ZnTe_xSe_{1-x}$ layer; and

a conductor layer on said HgSe layer.

5,294,834

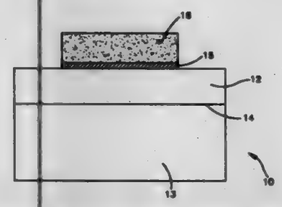
LOW RESISTANCE CONTACTS FOR SHALLOW JUNCTION SEMICONDUCTORS

Navid S. Fatemi, University Heights, and Victor G. Weizer, Cleveland Heights, both of Ohio, assignors to Sverdrup Technology, Inc., Tullahoma, Tenn.

Filed Jun. 1, 1992, Ser. No. 891,797

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—745 **14 Claims**



1. In a shallow junction multilayer indium phosphide semiconductor device comprising first and second layers of indium phosphide, one of said layers being n-type InP and the other of said layers being p-type InP so as to form a semiconductor junction therebetween, and current carrying contact metallization disposed on a surface of said first layer, the improvement wherein a layer of Au_2P_3 is disposed between said overlying contact metallization and said surface of said first layer of indium phosphide prior to the deposition of said overlying contact metallization, and wherein said first layer of the indium phosphide is devoid of pits that breach said shallow semiconductor junction caused by a depletion of phosphorus from said first layer to form said Au_2P_3, whereby low specific contact resistivities are obtained.

5,294,835

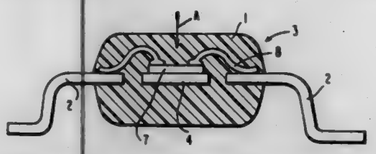
EPOXY RESIN COMPOSITION FOR SEMICONDUCTOR ENCAPSULATION AND SEMICONDUCTOR DEVICE USING THE SAME

Kazumasa Igarashi; Hideto Kimura; Megumu Nagasawa; Tsutomu Nishioka; Kazuhiro Ikemura; Hideyuki Usui; Michio Komoto; Haruo Tabata, and Satoshi Ito, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

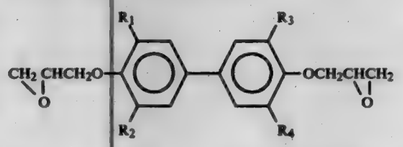
Filed Jul. 28, 1992, Ser. No. 920,657

Int. Cl.[5] H01L *23/28*

U.S. Cl. 257—793 **8 Claims**



1. A semiconductor device in which a semiconductor chip is encapsulated in an epoxy resin composition comprising (A) an epoxy resin represented by formula (I):



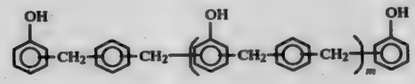
(I)

wherein R_1, R_2, R_3, and R_4 each represents an alkyl group having from 1 to 4 carbon atoms, and (B) a reaction product

obtained by preliminarily reacting a silane compound represented by formula (II):

$$(X)_{n+1}Si(Y)_{3-n} \quad \text{(II)}$$

wherein X represents a monovalent organic group having at least one functional group selected from the group consisting of a glycidyl group, an amino group, and a mercapto group; Y represents an alkoxy group having from 1 to 4 carbon atoms; and n represents 0, 1 or 2, with a phenol aralkyl resin represented by formula (III):



(III)

wherein m represents 0 or a positive integer.

5,294,836

SEMICONDUCTOR DEVICE HAVING A WIRING STRIP OF NOBLE METAL AND PROCESS OF FABRICATING THE SEMICONDUCTOR DEVICE

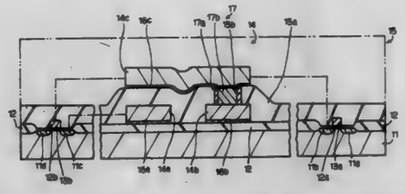
Shuji Kishi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,607

Claims priority, application Japan, Nov. 30, 1991, 3-342346

Int. Cl.[5] H01L *23/48, 29/46, 29/54, 29/62*

U.S. Cl. 257—750 **8 Claims**


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a switching member in electrical communication with the control means, and

a thermostat control mounted to the primary housing front wall, and

a first selector switch in electrical communication between the at least one electrical outlet member and the housing plug member selectively above or below a predetermined temperature directed by the thermostatic control, and

a voltage reducer in operative communication with the housing plug member and in electrical communication with the control means for providing continuous electrical energy input into the control means, and

a second selector switch mounted into the primary housing in operative communication with the switching member to effect direct electrical communication between the housing plug member and the electrical outlet, and

a slide adapter, the slide adapter including spaced slide adapter side walls, each slide adapter side wall including a locking rod projecting orthogonally and exteriorly of the side wall, and the slide adapter including a slide adapter electrical outlet directed through a slide adapter front wall, and the slide adapter including a slide adapter rear wall, the slide adapter rear wall including respective first, second, and third electrical contact heads mounted to the slide adapter rear wall, with each contact head including a contact post extending from the electrical contact head to the slide adapter rear wall, with each electrical contact head defined by a predetermined thickness and each of the respective first, second, and third electrical contact heads in electrical communication with the slide adapter electrical outlet, and an adapter receiving housing arranged for reception of the slide adapter therewithin, and

the adapter receiving housing includes spaced parallel adapter receiving housing side walls and an adapter receiving housing rear wall, with the adapter receiving housing of a generally U-shaped configuration, and each of the adapter receiving housing side walls includes a side wall slot extending from an upper distal end of each adapter receiving housing side wall and spaced above an adapter receiving housing side wall lower distal end of each adapter receiving housing side wall, and each side wall slot arranged for receiving a locking rod of the slide adapter therethrough, and each locking rod including a fastener securable to each locking rod and fastened to each locking rod exteriorly of one of said adapter receiving housing side walls, and the adapter receiving housing rear wall includes a respective first, second, and third contact plate arranged for electrical communication with the respective first, second, and third electrical contact heads, and

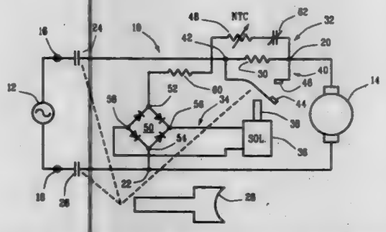
a first and second T-shaped guide plate mounted to the adapter receiving housing rear wall extending forwardly thereof between the adapter receiving housing side walls defining a second control slot therebetween, and a first L-shaped end plate positioned adjacent the first T-shaped guide plate defining a first control slot between the first T-shaped guide plate and the first L-shaped end plate, and a second L-shaped end plate positioned adjacent the second T-shaped guide plate to define a third control slot between the second L-shaped end plate and the second T-shaped guide plate, and the first, second, and third control slots spaced from the respective first, second, and third electrical contact plates a predetermined spacing equal to the predetermined thickness of each of said first, second, and third electrical control heads to effect electrical communication between each of said respective first, second, and third electrical control heads and each respective first, second, and third electrical contact plates.

5,294,839

SOFT START AC TOOL HANDLE TRIGGER SWITCH CIRCUIT

James R. Jaeschke, Waukesha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 29, 1992, Ser. No. 905,855
Int. Cl.[5] H01H *47/22*
U.S. Cl. 307—127 **11 Claims**



1. A soft start tool handle trigger switch circuit for applying voltage from an AC source to a portable tool electric motor, and having a user operated trigger movable between an on position connecting said motor to said AC source, and an off position disconnecting said motor from said Ac source, comprising:

a current limiter connected in series between said AC source and said motor;

a first sub-circuit in parallel with said motor and comprising actuator circuitry responsive to a given parameter to trip an actuator to move from a first position to a second position;

a second sub-circuit in parallel with said current limiter and in series with said motor and comprising a pair of contacts actuated from an open condition to a closed condition upon movement of said actuator from said first position to said second position,

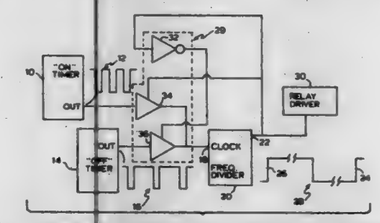
said second sub-circuit and said current limiter being connected at a common node, said node being connected in series with said motor, and such that when said trigger is moved from said off position to said on position, AC current from said AC source is continuously supplied to said motor through said node, first through said current limiter and then through said second sub-circuit.

5,294,840

ADJUSTABLE CYCLE TIMER FOR LIVEWELL BAIT PUMPS AND SUCH

David G. Vellenga, 7124 Mill Ridge Rd., Raleigh, N.C. 27613, and John K. Standish, 6023 Grandale Dr., Durham, N.C. 27713

Filed Nov. 2, 1992, Ser. No. 969,997
Int. Cl.[5] C02F *11/02*; F04B *49/02*; A01K *97/00*
U.S. Cl. 307—141 **1 Claim**



1. An adjustable cycle timer for cycling on and off of livewell pumps and other switchable devices in which the on time length and off time length of the on and off cycle are independently adjustable, comprising:

(a) a frequency divider means with an output which controls an on and off switching means;

(b) a feedback switching means, by which the input to said frequency divider means is switched when the output waveform of said frequency divider means changes state;

(c) a first means for frequency generation and control with an output which is switched by said feedback switching means to the input of said frequency divider means when the output waveform of said frequency divider means is in a high or on state;

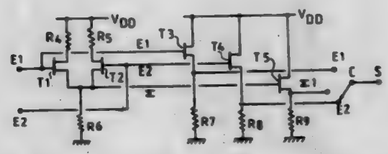
(d) a second means for frequency generation and control, the output of which is switched to the input of said frequency divider means by said feedback switching means when the output waveform of said frequency divider means is in a low or off state.

5,294,841

METHOD OF SHIFTING THE PHASE OF AN ELECTRICAL SIGNAL AND A PHASE-SHIFTER BASED ON THIS METHOD

John Magarshack, Rueil Malmaison, France, assignor to Thomson Composants Microondes, Puteaux, France

Filed Dec. 27, 1991, Ser. No. 813,781
Claims priority, application France, Dec. 28, 1990, 90 16434
Int. Cl.[5] H03F *3/68*; G01R *25/04*
U.S. Cl. 307—262 **5 Claims**



1. A method for phase-shifting electrical signals, comprising the steps of:

vertically adding a first electrical signal having a given amplitude and phase angle to a second electrical signal having an amplitude equal to that of said first electrical signal and a phase angle different from that of said first electrical signal by inputting said first and second electrical signals to the gate regions of a pair of first and second field-effect transistors, respectively, in order to thereby produce a third electrical signal having a phase angle mid-way between the phase angles of said first and second electrical signals and an amplitude which is different from said first and second electrical signals;

forming a fourth electrical signal by correcting the amplitude of said third electrical signal by presenting said first, second and third electrical signals as the inputs to the gate regions of third, fourth and fifth field-effect transistors, respectively, wherein the outputs of said third, fourth and fifth field-effect transistors represent the first, second and fourth electrical signals, respectively, such that the amplitude of said fourth electrical signal is made equal to that of said first and second electrical signals;

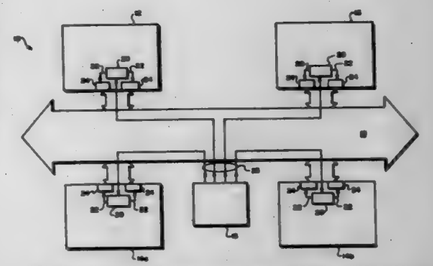
selecting one of said first, second and fourth electrical signals as an output signal.

5,294,842

UPDATE SYNCHRONIZER

Russell Iknaian, Groton, and Richard B. Watson, Jr., Harvard, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Filed Sep. 23, 1991, Ser. No. 763,795
Int. Cl.[5] H03L *7/00*
U.S. Cl. 307—269 **6 Claims**



1. A synchronizer for generating complementary selection enable signals for enabling a multiplexer to select an output signal from among multiple input clock signals with differing phases, said input clock signals having mostly overlapping assertion levels, said synchronizer comprising:

means for conditioning said input clock signals to generate a conditioned output signal having an assertion level equal to the combined assertion levels of said input clock signals;

means for transforming an asynchronous control signal into complementary synchronous control signals in response to said conditioned signal, said asynchronous control signal having a phase different from that of said input clock signals; and

means for transforming said complementary synchronous control signals into said complementary selection enable signals in response to said input clock signals, said complementary selection enable signals having phases within the domains of said input clock signals,

whereby said complementary selection enable signals for enabling the multiplexer to select said output signal from among said input signals in a manner that avoids interruption of said output signal.

5,294,843

FREEWHEELING DIODE CIRCUIT

Werner Tursky, Schwabach, and Josef Lutz, Nürnberg, both of Fed. Rep. of Germany, assignors to Semikron Elektronik GmbH, Nürnberg, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,696
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135259
Int. Cl.[5] H03K *19/12*
U.S. Cl. 307—317.1 **24 Claims**

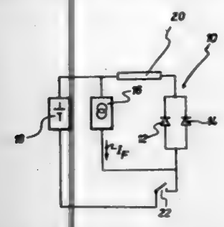
1. A freewheeling diode device for a commutation branch comprising

a common anode terminal;

a first freewheeling diode with a soft recovery behavior and having a first anode and having a first cathode wherein the first anode is connected to the common anode terminal;

a second freewheeling diode with a snappy recovery behavior and having a second anode and a second cathode, wherein the second anode is connected to the common anode terminal;

a common cathode terminal connected to the first cathode and connected to the second cathode such that the second



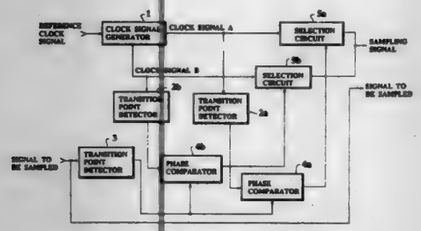
freewheeling diode is connected in parallel to the first freewheeling diode.

5,294,844

SAMPLING SIGNAL GENERATION CIRCUIT

Koichi Motoike, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 19, 1992, Ser. No. 854,538
Claims priority, application Japan, Mar. 27, 1991, 3-063452
Int. Cl.[5] H03K *5/13, 5/135, 5/153*
U.S. Cl. 307—352 **9 Claims**



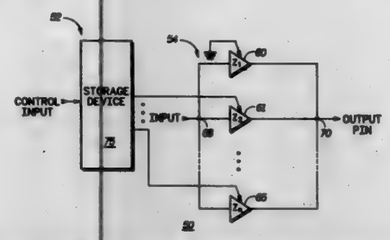
1. A sampling signal generation circuit, comprising:
first means for detecting transition points of a signal to be sampled;
means to generate a plurality of clock signals, each of which has a different phase relation against a reference clock signal;
second means for detecting transition points of said clock signals which are generated by said generation means;
means for comparing said transition points, which are obtained from the signal to be sampled and detected by said first detecting means, with said transition points, which are obtained from a plurality of said clock signals and detected by said second detecting means, and to generate selection signals according to the comparison; and
means for selecting one of said clock signals to be a sampling signal which is used to carry out a sampling of said signal to be sampled, according to said selection signals produced by said comparing means.

5,294,845

DATA PROCESSOR HAVING AN OUTPUT TERMINAL WITH SELECTABLE OUTPUT IMPEDANCES

Steven C. McMahan, Richardson; Kenneth C. Scheuer, Austin; William B. Ledbetter, Jr., Austin; Michael G. Gallup, Austin, and James G. Gay, Pflugerville, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 632,901, Dec. 24, 1990, Pat. No. 5,162,672. This application Aug. 17, 1992, Ser. No. 931,187
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—443 **14 Claims**



1. In an integrated circuit, a circuit having an output terminal, comprising:
a storage device having an input for receiving a user controllable signal having a value which is controlled and may be varied by a user of the integrated circuit only during a reset mode of operation of the integrated circuit, the user controllable signal being varied in response to an impedance selection input being asserted by the user at an input pin of the integrated circuit, the storage device providing a control signal; and
a plurality of output buffers, each output buffer having a predetermined buffer output impedance, an input coupled to a buffer information input terminal of the circuit, and an output directly connected to a common node which is coupled to the output terminal of the circuit, at least one of the plurality of output buffers being electrically coupled between the information input terminal and the output terminal in response to the control signal, the user being able to select predetermined discrete, output impedances of the circuit by controlling the value of the impedance selection input.

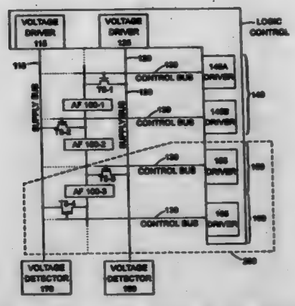
5,294,846

METHOD AND APPARATUS FOR PROGRAMMING ANTI-FUSE DEVICES

John O. Paivinen, 5976 Post Oak Cir., San Jose, Calif. 95120

Filed Aug. 17, 1992, Ser. No. 931,048
Int. Cl.[5] H03K *19/173, 19/082*
U.S. Cl. 307—465 **94 Claims**

13. A circuit for programming an anti-fuse device comprising:
a first anti-fuse device having a first end and a second end and a threshold programming voltage;
a first transistor and a second transistor respectively connected to the first and second ends of the first anti-fuse device in series, each transistor having an ON and OFF condition;
a first voltage supply bus for receiving a first voltage and a second voltage supply bus for receiving a second voltage, wherein the first transistor, first antifuse device and second transistor form a series connection between the first voltage supply bus and the second supply bus; and



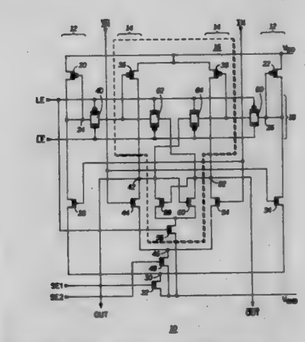
a control bus network connected to the first and second transistors for turning ON and OFF the first and second transistors.

5,294,847

LATCHING SENSE AMPLIFIER

Anita S. Grossman, and Paul A. Reed, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1992, Ser. No. 937,091
Int. Cl.[5] G11C *7/00;* **H03F** *3/45*
U.S. Cl. 307—530 **15 Claims**



1. A latching sense amplifier comprising:
a first circuit generating a first pair of outputs, the first pair of outputs at a first and a second node representative of a voltage differential between a first and a second input voltage, wherein the first circuit comprises:
the first, the second, a third and a fourth node, the third and fourth nodes receiving a first and second supply voltage, respectively;
a first transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the third node, the second current electrode and the control electrode coupled to the first node:
a second transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the first node, the second current electrode coupled to the fourth node and the control electrode coupled to the first input voltage;
a third transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the third node, the second current electrode and the control electrode coupled to the second node:
a fourth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the second node, the second current electrode coupled to the fourth node and the control electrode coupled to the second input voltage:
a second circuit coupled to the first circuit generating a second pair of outputs, the second pair of outputs representative of a voltage differential between the first and the second input voltages, wherein the second circuit comprises:
a fifth, a sixth, a seventh, an eighth and a ninth node, the ninth node receiving the second supply voltage wherein the seventh and eighth nodes forming outputs of the latching sense amplifier;
a fifth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the third node, the second current electrode coupled to the seventh node and the control electrode coupled to the fifth node;
a sixth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the seventh node, the second current electrode coupled to the ninth node and the control electrode coupled to the second input voltage;
a seventh transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the third node, the second current electrode coupled to the eighth node and the control electrode coupled to the sixth node;
an eighth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the eighth node, the second current electrode coupled to the ninth node and the control electrode coupled to the first input voltage;
latching circuitry generating a third pair of outputs, the third pair of outputs representative of the voltage differential between the first and the second input voltages, wherein the latching circuitry comprises:
a tenth node;
a ninth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the seventh node, the second current electrode coupled to the tenth node and the control electrode coupled to the eighth node; and
a tenth transistor comprising a first and a second current electrode and a control electrode, the first current electrode coupled to the eighth node, the second current electrode coupled to the tenth node and the control electrode coupled to the seventh node; and
switching circuitry coupled to the first circuit, to the second circuit and to the latching circuitry configuring the second circuit to operate in conjunction with the latching circuitry to form a latch.

5,294,848

WIDE VARIATION TIMED DELAYED DIGITAL SIGNAL PRODUCING CIRCUIT

Ram Kanegundla, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,646
Int. Cl.[5] H03K *5/13, 17/28*
U.S. Cl. 307—602 **1 Claim**

1. A wide variation time delayed signal producing circuit responsive to an input signal for providing a series of precisely timed delay pulses each having a predetermined pulse width, comprising:
(a) first, second and third circuits each responsive to an input signal and producing an output square wave signal, the first circuit receiving the input square wave signal and providing an output square wave signal to the second and

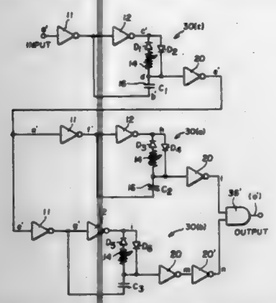
VOL 1160 ISS 3 MR 15 1994 UMI

third circuits which are coupled in parallel, each such circuit including:

(i) first and second inverters connected in series and responsive to the input digital signal for respectively providing complementary output square wave signals shifted in phase by 180°;

(ii) a first resistor and a capacitor serially coupled between the output of the second inverter and the first inverter; and

(iii) threshold means responsive to the voltage at the electrical junction of the first resistor and the capacitor which when one such capacitor charges to produce a voltage



above a first level provides one edge of an output square wave signal and when the capacitor discharges below a second level provides the other edge of the output square wave signal, the time constants of each circuit being selected to be different;

(b) means for inverting the output square wave signal from the third circuit threshold means; and

(c) AND gate means responsive to the inverted square wave signal from the means for inverting and the output square wave signal from the second circuit for producing a series of precisely timed delayed pulses, with each pulse having a predetermined pulse width.

5,294,849

REFLEXIVE CIRCUIT

Bronson Potter, R.F.D. 1, Greenville, N.H. 03048

Continuation of Ser. No. 762,070, Sep. 18, 1991, abandoned, which is a continuation of Ser. No. 789,631, Oct. 21, 1985, abandoned, which is a continuation-in-part of Ser. No. 550,293, Nov. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 470,913, Mar. 1, 1983, abandoned, which is a continuation-in-part of Ser. No. 372,978, Apr. 29, 1982, abandoned. This application Apr. 23, 1992, Ser. No. 873,649

Int. Cl.[5] H03K *17/13, 17/51*

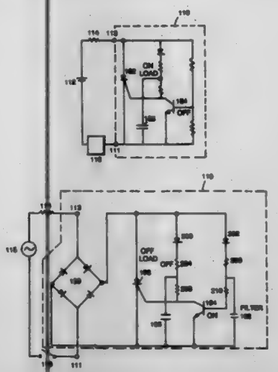
U.S. Cl. 307—647 **18 Claims**

1. A two-terminal device for connection by its two terminals into an electrical circuit having a power source or signal connected to an electrical load or signal receiver and a means for causing selected brief interruptions of the circuit, comprising:

a bi-stable circuit comprising two electrical valves, said circuit connected to receive power or a signal from said source via said two terminals and to change from a first state to a second state in response to said interruptions, said state change being dependent on the brevity of said interrutpions, an opposite one of said valves being in its conductive state in each of said electrical states, said valves being coupled to each other such that current conducted through one of said valves prevents conduction by the other of said valves,

one of said valves connected to permit no more than a low level of current or signal to reach the load or the signal receiver through said valve, when the bi-stable circuit is in a particular one of the states and the electrical circuit is not being interrupted,

the other of said valves connected to conduct power to said load or to deliver a signal to said signal receiver when the bi-stable circuit is in its other state, said power being only either DC power or integral half-cycles or full-cycles of AC power, and



energy storage means coupled to another of said valves that is adapted to transmit power or signals to said load, said energy storage means directly causing that valve to conduct in response to a circuit interruption signal when said bi-stable circuit is in said state which prevents said power or said signal from reaching said load.

5,294,850

ELECTROMAGNETIC ACCELERATOR IN FLAT COIL ARRANGEMENT

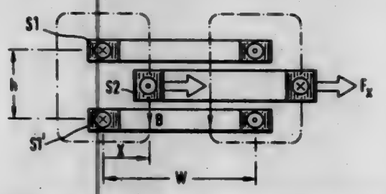
Herbert Weh; Haido May, both of Braunschweig, and Markus Löffler, Unterlüss, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 17, 1992, Ser. No. 945,917

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1991, 4131595

Int. Cl.[5] F41F *7/00*; F41B *6/00*

U.S. Cl. 310—13 **12 Claims**



1. An electromagnetic accelerator arrangement comprising:

a stationary arrangement including at least one stationary primary coil; and

a movable arrangement including at least one moveable secondary coil,

wherein the planes of the stationary and the moveable coils are parallel to a direction of movement of the moveable arrangement;

wherein the coils of the stationary and the movable arrangements have approximately the same coil width in the direction of movement of the moveable arrangement and transversely thereto; and

wherein the at least one stationary primary coil comprises at least two layers between which the at least one secondary coil of the movable arrangement is movably disposed, the distance between the layers being kept small transversely to the direction of movement of the moveable arrangement.

5,294,851

SMALL-SIZED DC MOTOR

Kazuo Tajima; Keisuke Nakahara; Toshio Hinami; Hiromichi Saito, and Yoko Okano, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

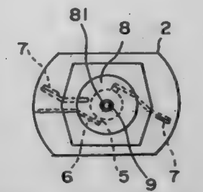
PCT No. PCT/JP90/01449, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/09135, PCT Pub. Date May 29, 1992

PCT Filed Nov. 8, 1990, Ser. No. 859,477

Claims priority, application Japan, Nov. 2, 1990, 2-295220

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—68 C **10 Claims**



1. A small-sized DC motor having a PTC thermistor as an over-load protective element comprising:

said small-sized DC motor having a shaft and a motor casing;

a plate-like PTC thermistor having an opening formed in a center thereof for increasing withstand voltage of said PTC thermistor, said thermistor being inserted over said shaft and mounted onto said motor casing;

means for electrically connecting said plate-like PTC thermistor between an input terminal and a phosphorus bronze plate connected to a brush of said small-sized DC motor.

5,294,852

THERMALLY PROTECTED ELECTRIC MOTOR

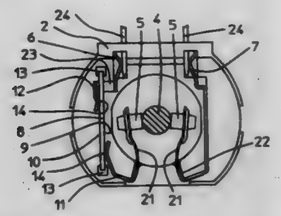
Gary Straker, Hong Kong, Hong Kong, assignor to Johnson Electric S.A., Switzerland

Filed Apr. 27, 1992, Ser. No. 874,005

Claims priority, application United Kingdom, Apr. 29, 1991, 9109194

Int. Cl.[5] H02K *11/00, 5/14*

U.S. Cl. 310—68 C **9 Claims**



1. A thermally protected electric motor, comprising:

a housing having an end cap;

a rotor, incorporating a commutator, mounted within the housing;

brushes engaging the commutator, and two terminals for connecting the brushes to an external electrical supply, mounted within the end cap;

a laminated, metal-polymer-metal PTC resistor mounted within the end cap and having two substantially parallel opposed surfaces;

two electrically conductive contact members connected, respectively, to one of the brushes and to one of the terminals and respectively engaging the two substantially parallel opposed surfaces, both contact members having a limited area of contact with the PTC resistor and making substantial electrical contact with the PTC resistor; and exerting a sufficiently low contact pressure on the PTC resistor such that the contact members do not change the electrical characteristics of the PTC resistor, and such that at least one of the contact members provides substantially no support for the PTC resistor against movement perpendicular to said opposed surfaces; and

thermally insulating supporting means, in the end cap, which engage and directly support the PTC resistor against movement perpendicular to the substantially parallel opposed surfaces, at least in one direction.

5,294,853

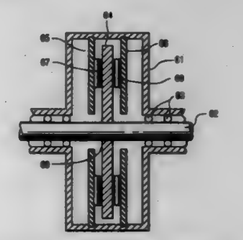
ELECTRICAL POWERPLANT FOR VEHICLES

Gerd Schlüter, Joachimstaler Weg 13, 2300 Kiel 14; Gerd Knippschild, Helsinkistr. 1, 2300 Kell 1, and Hans-Jürgen Lipski, Bahrenfelder Marktplatz 4, 2000 Hamburg 50, all of Fed. Rep. of Germany, assignors to Norman Schloske; Gerd Schlüter; Gerd Knippschild, all of Kiel and Hans-Jürgen Lipski, Hamburg, all of Fed. Rep. of Germany

Filed Jun. 10, 1992, Ser. No. 896,001

Int. Cl.[5] H02K *11/00*; H02P *1/00*

U.S. Cl. 310—68 R **5 Claims**



1. An electrical power plant for a vehicle, particularly an automobile, comprising

a battery (1);

at least one 12- or 24-pole three-phase disk-rotor motor (6) with a shaft operatively coupled to a wheel, said motor comprising

a disk-rotor with conducting strips mounted on the motor shaft, and

circularly arrayed magnets of alternating polarities on either side of the rotor equipped with iron returns outside the rotor periphery; and

means for controlling said motor including a power supply having variable amplitude and frequency, said power supply comprising

a three-phase DC-AC inverter (16) connected to receive DC voltage from said battery and to generate a high-amplitude three phase voltage;

an AC-DC rectifier (17) and a smoothing circuit (18) connected to the output of said inverter to receive and rectify said three-phase voltage into DC voltage;

a pulse-width control (19) connected to receive the output of said smoothing circuit and having an output variable in pulse width and pulse repetition rate; and

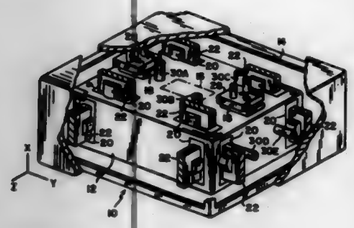
circuit means connecting said output of said pulse width control to a three-phase winding of said disk-rotor motor.

5,294,854

BEARING FOR USE IN HIGH RESOLUTION PRECISION CONTROL DEVICE

David L. Trumper, Concord, N.C., assignor to Massachusetts Institute of Tech., Cambridge, Mass.

Division of Ser. No. 632,965, Dec. 20, 1990, Pat. No. 5,157,296.
This application Apr. 22, 1992, Ser. No. 871,924
Int. Cl.[5] H02K *7/09*; G05B *13/02*
U.S. Cl. 310—90.5 30 Claims



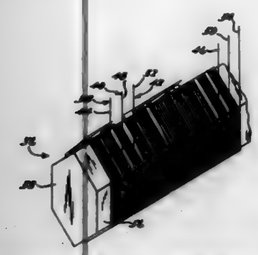
1. A bearing comprising:
a platen having a predetermined effective weight;
a frame in which said platen is positioned; and means for suspending said platen in a predetermined position in said frame, said suspending means including permanent magnet means having a first gap for carrying the effective weight of the platen, electromagnet means having a second gap for controlling the position of the platen in the frame with N degrees of freedom, where N is an integer of at least one, said first gap being larger than said second gap, means for detecting the position of the platen in the frame in said N degrees of freedom, and means responsive to the detection by the detecting means of a movement by the platen from the predetermined position for selectively energizing said electromagnet means to restore the platen to the predetermined position.

5,294,855

ELECTROMOTIVE DEVICE

Emil S. Mihalko, Lansdale, Pa., assignor to Faraday Energy Foundation, Inc., Atlanta, Ga.

Division of Ser. No. 759,228, Sep. 13, 1991, Pat. No. 5,197,180.
This application Oct. 23, 1992, Ser. No. 965,234
Int. Cl.[5] H02K *1/00, 1/22*
U.S. Cl. 310—180 6 Claims



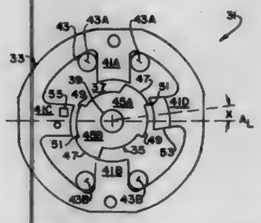
1. An electric motor, generator of alternator comprising:
a rotor; and
a slotless stator, said stator having a wound field which comprises at least one continuous insulated conductor, said at least one conductor having a first plurality of individual windings wound in a first winding direction about a mandrel to form a first coil unit in a first winding group, and a second plurality of windings wound in a second winding direction about the mandrel opposite the first direction to form a second coil unit in a second winding group which is adjacent to the first group, an insert being located within said first and second winding groups in place of said mandrel, and said first and second winding groups being flattened to obtain a substantially flat, two-layered web having a first end and a second end, wherein a peripheral section of said first coil unit overlies a corresponding diametrically-opposite peripheral section of said second coil unit, and the first end of said web is joined to the second end.

5,294,856

SHIFTED POLE SINGLE PHASE VARIABLE RELUCTANCE MOTOR

Gary E. Horst, Manchester, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 516,280, Apr. 30, 1990, Pat. No. 5,122,697. This application Aug. 20, 1991, Ser. No. 747,855
Int. Cl.[5] H02K *21/38*
U.S. Cl. 310—181 18 Claims



1. A hybrid single-phase variable reluctance motor comprising:
a stator having at least two pair of inwardly salient teeth terminating at a central bore, the teeth being arranged in diametrically opposed pairs of teeth which are evenly spaced around said central bore;
a phase winding operatively associated with a first pair of said stator teeth and which, when energized, causes a temporary magnetization of the stator teeth;
a rotor disposed for rotation in the central bore and having at least one pair of outwardly salient teeth diametrically opposed to each other;
a permanent magnet positioned at an end of one tooth of a second pair of said stator teeth, one tooth of said second pair of stator teeth being offset with respect to a longitudinal axis of said second pair of teeth; and, the offset acting to eliminate a stable detent position in which the rotor could stop when the motor stops running, stopping in such a position making it difficult to restart the motor.

5,294,857

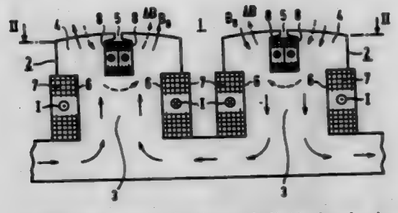
SYNCHRONOUS MACHINE HAVING CONTROL COILS FOR COMPENSATING MECHANICAL OSCILLATIONS OF THE ROTOR

Herbert Auinger, Nürnberg, and Hermann Waldmann, Weiher, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP90/01987, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/10278, PCT Pub. Date Jul. 11, 1991
PCT Filed Nov. 20, 1990, Ser. No. 859,694
Claims priority, application European Pat. Off., Dec. 22, 1989, 89123789.3
Int. Cl.[5] H02K *1/24*
U.S. Cl. 310—269 16 Claims

1. A synchronous machine, comprising:
a salient pole rotor including a plurality of individual poles, each pole comprising a pole body, and a pole shoe, each pole shoe comprising first and second halves;

a plurality of exciting coils, each of said exciting coils encircling one of said individual poles in said salient pole rotor, each of said exciting coils capable of conducting electric current and generating a controllable direct-axis magnetic field, and
a plurality of control coils, each of said control coils coupled



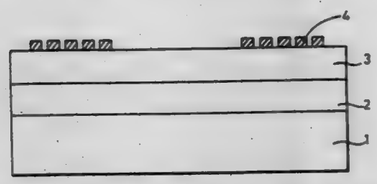
within poles shoes of adjacent individual poles in said salient pole rotor, each of said control coils capable of conducting electric current and generating a controllable quadrature-axis magnetic field, quadrature-axis and direct-axis magnetic fields flow in equivalent directions over the first half of each of said pole shoes and in opposite directions over the second half of each of said pole shoes.

5,294,858

SURFACE ACOUSTIC WAVE DEVICE

Hideaki Nakahata; Akihiro Hachigo; Shinichi Shikata, and Naoji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 19,136
Claims priority, application Japan, Feb. 21, 1992, 4-034754
Int. Cl.[5] H01L *41/04, 41/08, 41/18*; H02N *2/00*
U.S. Cl. 310—313 A 4 Claims



1. A surface acoustic wave device comprising a substrate, a diamond layer being formed on said substrate, a ZnO layer being formed on said diamond layer and interdigital electrodes being formed on said ZnO layer,
said surface acoustic wave device utilizing a second order mode of a surface acoustic wave being excited in a structure satisfying $(2\pi \cdot H/\lambda)=0.9$ to 2.3, where H represents the thickness of said ZnO layer and λ represents the wavelength of said surface acoustic wave.

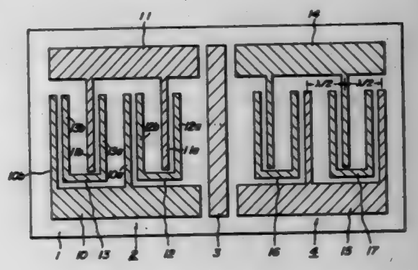
5,294,859

SURFACE ACOUSTIC WAVE FILTER DEVICE

Kazuhiko Yamanouchi, 37-13, Matsugaoka, Sendai, City, Miyagi Pref.; Mitsuhiro Tanaka, Chita; Masahiko Sugiyama, Nagoya; Yasufumi Horio, Nagoya; Masatsugu Oshima, Nagoya, and Kenji Suzuki, Nagoya, all of Japan, assignors to Kazuhiko Yamanouchi and NGK Insulators, Ltd., Japan

Filed Mar. 26, 1993, Ser. No. 37,106
Claims priority, application Japan, Mar. 26, 1992, 4-068233; Mar. 5, 1993, 5-045368
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B 9 Claims

1. A surface acoustic wave filter device comprising:
a substrate comprising a piezoelectric material and having a surface; an interdigital-type input side transducer applied on said surface of the substrate and including an input side positive electrode having a plurality of electrode fingers, an input side negative electrode having a plurality of electrode fingers each arranged between successive electrode fingers of said input side positive electrode, and an input side floating electrode having a plurality of electrode fingers arranged between successive electrode fingers of said input side negative and positive electrodes; an interdigital-type output side transducer applied on said surface of the substrate and including an output side positive electrode having a plurality of electrode fingers, an output side negative electrode having a plurality of electrode fingers each arranged between successive electrode fingers of said output side positive electrode, and an output side floating electrode having a plurality of electrode fingers arranged between successive electrode fingers of said output side negative and positive electrode, said electrode fingers of positive and negative electrodes of each of said input side and output side transducers being spaced from each other by a center distance of $\lambda/2$ in a propagation direction of a surface acoustic wave which propagates on said surface of the substrate, wherein λ is a wavelength of a fundamental surface acoustic wave, and;
said piezoelectric material of the substrate comprises quartz



or a material having an electromechanical coupling factor which is substantially on the same order as that of quartz;
said floating electrodes of said input side and output side transducers are short-circuited floating electrodes;
each electrode finger of said positive electrodes, negative electrodes and floating electrodes of said input side and output side transducers has a width "d" as defined in the propagation direction of the surface acoustic wave, said width "d" satisfying a condition $0.8\times\lambda/12\leqq d\leqq 1.3\times\lambda/12$;
each electrode finger of the floating electrode of the input side transducer has an edge on its propagation direction-side of the surface acoustic wave, said edge being spaced from an intermediate position between an adjacent electrode finger of the positive electrode and an adjacent electrode finger of the negative electrode, in a direction which is opposite to the propagation direction of the surface acoustic wave; and
each electrode finger of the floating electrode of the output side transducer has an edge on its side opposite to the propagation direction of the surface acoustic wave, said edge being spaced from an intermediate position between an adjacent electrode finger of the positive electrode and an adjacent electrode finger of the negative electrode, in the propagation direction of the surface acoustic wave.

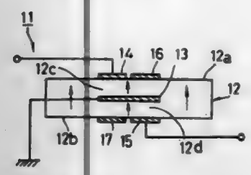
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,860

PIEZOELECTRIC FILTER

Masao Gamo, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 25, 1992, Ser. No. 951,580
Claims priority, application Japan, Sep. 26, 1991, 3-247474
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—320 10 Claims



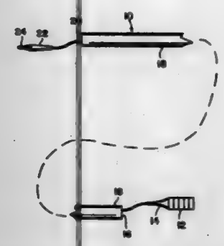
1. A piezoelectric filter of an energy-trapped type utilizing a thickness-extensional vibration mode, comprising:
a piezoelectric substrate having a first and a second major surface defining a thickness of said piezoelectric substrate therebetween;
an earth electrode formed in said piezoelectric substrate so as to be in the center of said piezoelectric substrate along the direction of said thickness;
an input electrode formed on said first major surface of said piezoelectric substrate so as to be opposed to one part of said earth electrode through a layer of said piezoelectric substrate;
an output electrode formed on said second major surface of said piezoelectric substrate so as to be opposed to another part of said earth electrode other than said one part through a layer of said piezoelectric substrate; and
a dummy electrode formed on at least one of said first and second major surface of said piezoelectric substrate so as to overlap with at least one of said output electrode and said input electrode through said piezoelectric substrate.

5,294,861

ULTRASONIC PROBE

Kurt Nattermann, Ingelheim, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Feb. 3, 1992, Ser. No. 830,157
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1991, 103145
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 22 Claims



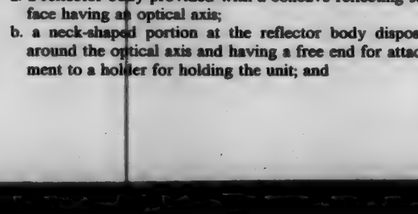
1. An ultrasonic probe having proximal and distal ends, comprising at least one ultrasonic directional element in the probe head at the distal end of the probe, at least one ultrasonic transducer located in the operating unit at the proximal end of the probe, and at least one ultrasonic waveguide means capable of transmitting ultrasonic waves in torsional or axial modes having a carrier frequency f_0 between 450 kHz and 28 MHz disposed between the ultrasonic transducer and ultrasonic directional element, wherein the sonic waveguide has a cross-section with a diameter ranging between 20 μm and 1000 μm and wherein the maximum value of the product $D \cdot f_0$ of the diameter D and the carrier frequency f_0 of the ultrasonic waves is less than 5100 m/s for torsional waves and less than 4200 m/s for axial waves in the waveguide.

5,294,862

LADDER-TYPE PIEZO-ELECTRIC FILTER

Hisao Banno, and Yasuhiko Nakagawa, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jul. 16, 1992, Ser. No. 913,702
Claims priority, application Japan, Jul. 18, 1991, 3-204022
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] H03H *9/205;* H01L *41/08*
U.S. Cl. 310—366 10 Claims



1. A ladder-type piezo-electric filter circuit, comprising:
a first set of piezo-resonators connected to each other in series, each of the first set of piezo-resonators including:
a rectangular piezo-electric element having an oscillation mode in a longitudinal direction and having a first surface and an opposing second surface and including at least two regions each polarized in the same direction transverse to the first surface;
a first electrode on the first surface;
a second electrode on the second surface and divided into divisional electrodes by at least one slit;
a second set of piezo-resonators connected to each other in parallel, each of the second set of piezo-resonators including:
a rectangular piezo-electric element having an oscillation mode in a longitudinal direction and having a first surface and an opposing second surface and including at least two regions each polarized in alternately opposite directions transverse to the first surface;
a first electrode on the first surface;
a second electrode on the second surface and divided into divisional electrodes by at least one slit; and
conductors bridging the divisional electrodes of the second set of piezo-resonators.

5,294,863

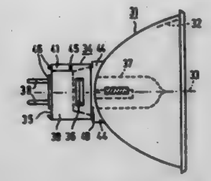
LAMP/REFLECTOR UNIT WITH IMPROVED MOUNTING MEANS

Jaak M. J. Geboers, Aachen, Fed. Rep. of Germany, and Josephus F. Rijcksaert, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1989, Ser. No. 422,471
Claims priority, application Netherlands, Oct. 18, 1988, 8802557; Feb. 6, 1989, 8900281
Int. Cl.[5] H01K *1/46*
U.S. Cl. 313—318 11 Claims

1. A lamp/reflector unit comprising:
a. a reflector body provided with a concave reflecting surface having an optical axis;
b. a neck-shaped portion at the reflector body disposed around the optical axis and having a free end for attachment to a holder for holding the unit; and

c. an electric lamp mounted in the reflector body, said lamp having contact pins extending from said free end for making electrical contact with the holder;
characterized in that the neck-shaped portion includes:
(1) an integral part which is an integral portion of the reflector body; and



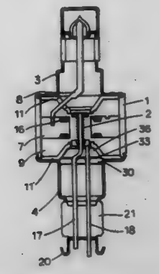
(2) a separate part which at least partly surrounds and is affixed to the integral part, said separate part including a relief extending transversely to the optical axis for facilitating clamping of the neck-shaped portion to the holder, said separate part, said integral part, and said lamp being joined together by means of cement.

5,294,864

MAGNETRON FOR MICROWAVE OVEN

Gi I. Do, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Jun. 24, 1992, Ser. No. 903,362
Claims priority, application Rep. of Korea, Jun. 25, 1991, 9541/1991; Nov. 20, 1991, 19974/1991
Int. Cl.[5] H01J *25/50*
U.S. Cl. 315—39.51 6 Claims



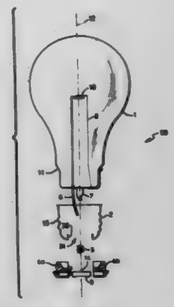
1. A magnetron for a microwave oven comprising:
a shield body;
a center lead and a side lead both extending throughout said shield body;
upper and lower pole pieces coupled to upper and lower portions of the shield body, respectively, and defining an interaction space therebetween;
an F-seal for supporting said lower pole piece;
a spacer fitted in a mounting area defined between said F-seal and the lower pole piece and provided with a pair of lead holes through which said center lead and said side lead extend, respectively; and
a metal coating provided at the upper surface of said spacer and adapted to define an attenuation cavity, together with the lower pole piece.

5,294,865

LAMP WITH INTEGRATED ELECTRONIC MODULE

Thomas Haraden, Hamilton, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Sep. 18, 1992, Ser. No. 947,192
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 15 Claims



1. A lamp assembly comprising:
a lamp envelope enclosing a filament and including electrical leads extending from the filament through the lamp envelope;
a lamp base attached to the lamp envelope;
an electronic module mounted in the lamp base, said module including circuitry for controlling the filament; and
a conductive spring compressed between an upper portion of the electronic module and a lower portion of the lamp envelope, said lower portion of the lamp envelope includes an exhaust tube and wherein said spring engages said exhaust tube, one electrical lead being coupled to said spring for electrical connection to said electronic module.

5,294,866

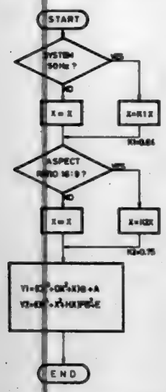
RASTER DISTORTION CORRECTING SIGNAL SYNTHESIZER

Shinichiro Miyazaki, and Kyoichi Murakami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

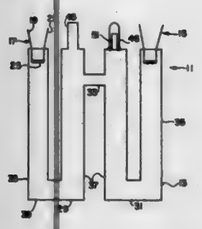
Filed Mar. 9, 1992, Ser. No. 848,227
Claims priority, application Japan, Mar. 12, 1991, 3-046856
Int. Cl.[5] G09G *1/04;* H01J *29/70*
U.S. Cl. 315—367 3 Claims

1. A raster distortion correcting signal synthesizer, comprising:
a bus line;
a multiplier connected to said bus line;
an adder connected to an output of said multiplier;
a memory connected to said bus line for storing data and predetermined coefficients; and
control means for controlling said multiplier, said adder and said memory in accordance with a count value of a horizontal sync. signal, wherein said control means includes means for calculating a high-order raster distortion correcting signal by utilizing said multiplier and adder on the

basis of the count value, and said control means controls said multiplier to multiply to count value by a predetermined coefficient from the memory to obtain a new count value.

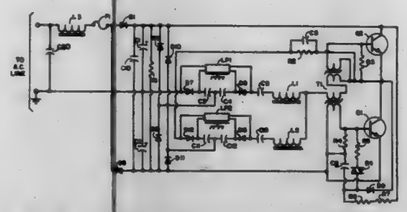


5,294,867
LOW PRESSURE MERCURY VAPOR DISCHARGE LAMP CONTAINING AN AMALGAM
Mark W. Grossman, Belmont, Mass., assignor to GTE Products Corporation, Danvers, Mass.
Filed Mar. 13, 1992, Ser. No. 850,763
Int. Cl.[5] H01J *17/22*
U.S. Cl. 313—490 **16 Claims**



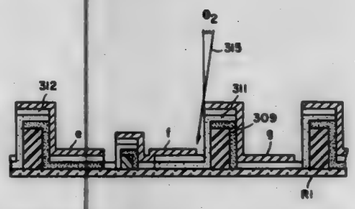
1. In a low pressure mercury vapor discharge lamp of the type having an amalgam for absorbing mercury vapor by contacting an exposed surface portion of the amalgam, a sealed glass envelope having disposed therein ingredients comprising mercury for forming an electric arc sustaining gas within the interior of the glass envelope, a pair of electrodes mounted in sealing relationship with said glass envelope, a tubulation positioned at a location spaced from said electrodes, said tubulation having one end in communication with said arc sustaining gas and the other end being closed, and a container confined within said tubulation and adapted for retention of liquified amalgam within said tubulation wherein mercury vapor from said electric arc sustaining gas is in communication with said amalgam for absorption, wherein the improvement comprises a restriction at the other end of said tubulation wherein said container holds the amalgam confined within the tubulation when said lamp is mounted with said electrodes in an upward position.

5,294,868
DUAL LAMP ELECTRONIC BALLAST WITH INDEPENDENT CONTROL MEANS
William H. Jones, Villa Park, and John R. Nelson, Franklin Park, both of Ill., assignors to Appliance Control Technology, Inc., Addison, Ill.
Filed Sep. 8, 1992, Ser. No. 941,704
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—205 **8 Claims**



1. An electronic ballast for first and second fluorescent lamps, said ballast comprising:
- a rectifier circuit connected to a source of alternating current, operated to produce direct current;
- a switching type inverter circuit connected to said rectifier circuit, operated to generate a high frequency alternating current;
- first and second parallel connected resonant circuits each connected to said inverter circuit by means of a common coupling means;
- said first resonant circuit operated to conduct said high frequency alternating current to said first fluorescent lamp whereby said lamp is operated;
- said second resonant circuit operated to conduct said high frequency alternating current to said second fluorescent lamp whereby said lamp is operated;
- said first and second resonant circuits each including an LC circuit comprising an inductor in series with a capacitance, said capacitance connected in parallel with an associated one of said fluorescent lamps; and
- said capacitance comprising first and second capacitors in series including a center tap between said capacitors connected to said rectifier circuit by means of first and second diodes.

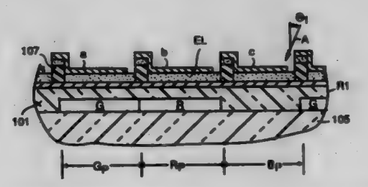
5,294,869
ORGANIC ELECTROLUMINESCENT MULTICOLOR IMAGE DISPLAY DEVICE
Ching W. Tang, Rochester, and Jon E. Littman, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 30, 1991, Ser. No. 814,163
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] H05B *33/14*
U.S. Cl. 313—504 **15 Claims**



8. A multicolor image display device comprised of an array consisting of

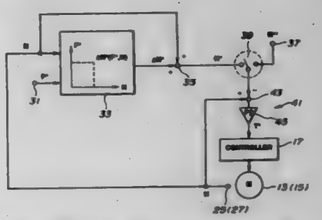
a plurality of light emitting pixels arranged in two intersecting sets of parallel files, the pixels in a first set of parallel files forming columns and the pixels in a second set of parallel files forming rows on a common electrically insulative light transmissive support,
the pixels in each file of one of said first set or said second set of parallel files containing and being joined by a common light transmissive first electrode means overlying said support,
the first electrode means in adjacent files being laterally spaced on said support,
an organic electroluminescent medium overlying the first electrode means and said support,
the pixels in each file of the other of said first set or said second set of parallel files containing and being joined by a common second electrode means overlying said organic electroluminescent medium, and
the second electrode means in adjacent files being laterally spaced on said organic electroluminescent medium,
characterized in that the light emitting device is capable of producing full color image display,
each pixel in said first set of parallel files of pixels is divided into three sub-pixels,
said organic electroluminescent medium in each pixel in said first set forms three areas, each within one sub-pixel of each pixel in said first set and each capable of emitting light of a different primary hue,
a set of walls is positioned between adjacent files of pixels and between one of the sub-pixels in each of the pixels in each of the files and the two remaining sub-pixels in each of the pixels in each of the files, the walls each being of a height exceeding the thickness of the organic electroluminescent medium and capable of shadowing adjacent sub-pixels, and
each electrode means of one of said first set or said second set of parallel files being divided into three laterally spaced electrode elements each joining one sub-pixels of each of the pixels in said first set or said second set of parallel files.

5,294,870
ORGANIC ELECTROLUMINESCENT MULTICOLOR IMAGE DISPLAY DEVICE
Ching W. Tang, Rochester; David J. Williams, Fairport, and Jack C. Chang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 30, 1991, Ser. No. 814,553
Int. Cl.[5] H05B *33/14*
U.S. Cl. 313—504 **11 Claims**



7. An image display device comprised of an array consisting of
- a plurality of light emitting pixels arranged in two intersecting sets of parallel files, the pixels in a first set of parallel files forming columns and the pixels in a second set of parallel files forming rows on an electrically insulative support, the pixels in each file of said first set of parallel files containing and being joined by a common light transmissive first electrode means overlying said support,
- the first electrode means in adjacent files of said first set being laterally spaced on said support,
- an organic electroluminescent medium overlying the first electrode means and said support,
- the pixels in each file of said second set of parallel files containing and being joined by a common second electrode means overlying said organic electroluminescent medium, and
- the second electrode means in adjacent files of said second set being laterally spaced on said organic electroluminescent medium,
- characterized in that the device is capable of producing full color image display,
- said organic electroluminescent medium emits in the blue region of the spectrum and has a peak emission at a wavelength of less than 480 nm,
- each pixel in said first set of parallel files of pixels is divided into three sub-pixels,
- in said first set one of said first and second electrode means that is contained in and joins the pixels in each file of said first set is divided into three laterally spaced electrode elements, each one of the electrode elements joining and forming a part of one sub-pixel of each of the pixels in a file,
- one fluorescent medium located on the upper surface of said support and underlying the first electrode means, and capable of absorbing light emitted by said organic electroluminescent medium and emitting green light is positioned to receive emitted light from said organic electroluminescent medium transmitted through the first electrode means and is confined to one sub-pixel of each of the pixels in a file,
- a second fluorescent medium located on the upper surface of said support and underlying the first electrode means, and capable of absorbing light emitted by said organic electroluminescent medium and emitting red light is positioned to receive emitted light from said organic electroluminescent medium transmitted through the first electrode means and is confined to a second sub-pixel in each of the pixels in the same file, and
- a set of parallel walls overlying the first electrode means and separating adjacent second electrode means.

5,294,871
ELECTRIC MOTOR CONTROL SYSTEM
Takashi Imaseki, Zushi, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Aug. 10, 1992, Ser. No. 926,670
Claims priority, application Japan, Aug. 9, 1991, 3-200818
Int. Cl.[5] H02P *7/68*
U.S. Cl. 318—139 **8 Claims**



1. A control system for a motor of an electric motor vehicle, comprising:
- means for detecting motor speed and outputting a motor speed signal indicative thereof;
- means for detecting a demand for acceleration and outputting an acceleration signal indicative thereof;
- means for calculating a motor speed error based on said motor speed signal and said acceleration signal and outputting a motor speed error signal;
- means for generating a motor speed command based on said motor speed error signal and said motor speed signal and

outputting a motor speed command signal indicative thereof;

feedback control means calculating a torque command value based on said motor speed command signal and said motor speed signal and outputting a torque command signal indicative thereof; and

control means, controlling said motor on the basis of said torque command signal from said motor speed feedback control means.

5,294,872

METHOD AND APPARATUS FOR OPERATING VACUUM CLEANER

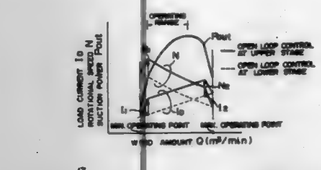
Haruo Koharagi, Ibaraki; Kazuo Tahara, Hitachi; Tsunehiro Endo, Hitachiota; Kunio Miyashita, Hitachi; Yoshitaro Ishii, Hitachi; Fumio Jyoraku, Hitachi; Syuji Watanabe, Ibaraki; Hisanori Toyoshima, Hitachi; Kohichi Saito, Kitaibaraki; Wakichiro Hishi, Nagareyama, and Koujirou Yamashita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

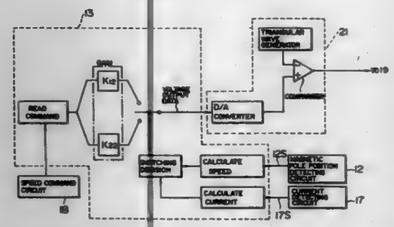
Division of Ser. No. 365,491, Jun. 13, 1989, which is a division of Ser. No. 105,598, Oct. 8, 1987, Pat. No. 4,880,474. This application Oct. 4, 1990, Ser. No. 592,662

Claims priority, application Japan, Oct. 8, 1986, 61-237942; Oct. 8, 1986, 61-237943; Mar. 6, 1987, 62-50073; Mar. 23, 1987, 62-65608; Apr. 3, 1987, 62-80950; Apr. 3, 1987, 62-80951; Oct. 8, 1987, 62-237938

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 **7 Claims**





1. An apparatus for operating a vacuum cleaner, comprising:

a speed control unit including a brushless DC motor and an inverter control unit for controlling the supply of power to said brushless DC motor; and

a control 36 circuit for controlling said inverter control unit including a microcomputer, a load current detecting circuit, a magnetic pole position detecting circuit, and a speed command circuit, said microcomputer providing means for calculating a load state of a cleaner from a load current of said brushless DC motor detected by said current detecting circuit and a rotational speed of said brushless DC motor determined from an output of said magnetic pole position detecting circuit, and means for controlling said inverter control unit to control a voltage or a current which is applied to the brushless DC motor so as to reduce the supply of electric power in at least one of a heavy load state and a light load state of the brushless DC motor on the basis of the result of the calculated load state.

5,294,873

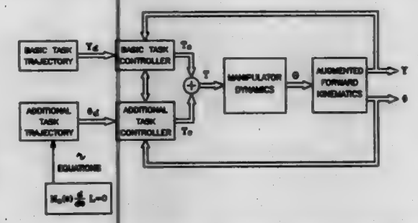
KINEMATIC FUNCTIONS FOR REDUNDANCY RESOLUTION USING CONFIGURATION CONTROL

Homayoun Seraji, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 27, 1992, Ser. No. 967,083

Int. Cl.[5] G05B *19/42*

U.S. Cl. 318—568.1 **15 Claims**



1. A method of controlling a redundant robot having n joints operating in m-dimensional task space with redundancy r=n-m, and having an end effector, said method comprising:

first defining a basic task motion of said robot within a set of end-effector coordinates, corresponding to m constraints on movement of said n joints;

second defining not more than r constraints on said basic task motion corresponding to a minimization of gravity loading on said joints, wherein said second defining comprises,

defining an n-by-r matrix operator, N_e, spanning a null space of a Jacobian operator of said end-effector,

defining an n-by-1 vector which is a partial derivative of a gravity loading function with respect to angles of said joints, and

setting the product of said matrix operator and said vector to zero as a minimization condition; and,

controlling said joints so as to simultaneously fulfill the m constraints of said basic task motion and the r constraints of said minimization of gravity loading.

5,294,874

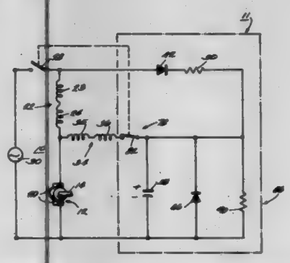
DYNAMIC BRAKE CIRCUIT FOR AN ELECTRIC MOTOR

Jeffrey C. Heessenberger, Waukesha, and Michael R. West, Hartland, both of Wis., assignors to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Aug. 13, 1992, Ser. No. 929,791

Int. Cl.[5] H02P *3/00*

U.S. Cl. 318—759 **11 Claims**



1. An electric motor including an arbor mounted on a rotating armature means, a stator iron, run winding means mounted on the stator iron for generating a magnetic field for rotating the arbor, first switching means for connecting the run wind-

ing means to a power source, brake winding means which is separate from said run winding means and which generates a counter magnetic field opposed, with respect to the armature, to that field generated by the run winding means, the brake winding means operating when energized to stop rotation of the arbor, and a control circuit for generating residual magnetism in the stator iron, the circuit comprising:

energy storage means for providing current to said brake winding means for generating the residual magnetism in the stator iron whereby generating said counter magnetic field;

second switching means for connecting said energy storage means to said brake winding means when said first switching means disconnects said run winding means from the power source; and

alternate discharge means for providing an alternate discharge path for said energy storage means whenever said run winding means is disconnected from said power source.

5,294,875

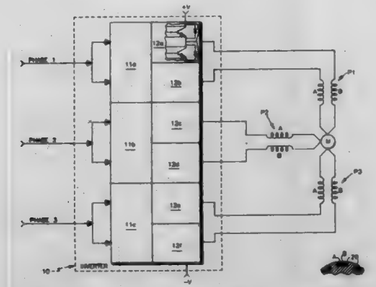
ENHANCED POLYPHASE MOTOR OPERATION USING A SOLID STATE INVERTER

Narasimha K. Reddy, Bolton, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 356,806, May 25, 1989, abandoned. This application Feb. 15, 1991, Ser. No. 657,932

Int. Cl.[5] H02H *7/122;* H02K *1/00*

U.S. Cl. 318—801 **3 Claims**



1. A polyphase motor drive including an inverter and a polyphase motor, comprising:

a plurality of phase drives, each phase drive responsive to a phase drive input signal, each phase drive for providing a current signal;

a motor having a plurality of phase windings, each winding comprising at least two electrically insulated, electromagnetically coupled conductors wound together, each conductor corresponding to one of said phase drives, each of said conductors being responsive to a corresponding one of said current signals for providing current to said motor.

5,294,876

METHOD AND APPARATUS FOR CONTROLLING AN AC INDUCTION MOTOR BY INDIRECT MEASUREMENT OF THE AIR-GAP VOLTAGE

Ragnar Jönsson, Kyrkobacksvägen 5, S-271 95 Ystad, Sweden

PCT No. PCT/SE91/00086, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO91/12656, PCT Pub. Date Aug. 22, 1991

PCT Filed Aug. 2, 1991, Ser. No. 920,310

Claims priority, application Sweden, Feb. 12, 1990, 9000497

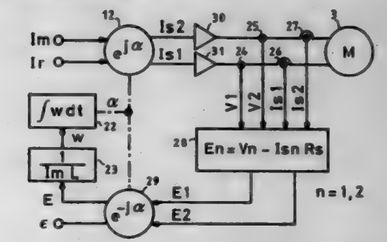
Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—803 **20 Claims**

1. A control system for an AC induction motor (M) for field oriented control, comprising a stator (3), a rotor (4), at least two stator windings (1, 2) and rotor windings (5, 6), said control system comprising control signals (Sm, Sr), a first vector rotator (12) for rotating said control signals with a first angle (α) for conversion from field coordinates to stator coordinates for providing output signals (V1, V2) connected to frequency inverters (19, 20) for providing drive signals to each stator winding (1, 2) of the motor, said first angle (α) being obtained by integrating a rotation frequency (w) by means of an integrating means (22), said rotation frequency (w) being controlled essentially for maintaining a magnetizing current (Im) of each stator winding (1, 2) constant,

characterized by

a means (24, 25, 26, 27) for measuring at least one of voltages of said drive signals, currents of said drive signals, and an airgap voltage (E);



at least a second vector rotator (29, 32, 33) for counterrotating said measured voltages, currents, and airgap voltage (E) with a second angle ($-\alpha$) which is the inverse of said first angle (α) for conversion from stator coordinates to field coordinates,

a means for determining an estimated air-gap voltage (E*) on the basis of said counterrotated measured voltages, currents, and airgap voltage (E);

a means (23) for determining said rotation frequency (w) on the basis of said estimated air-gap voltage (E*) essentially for maintaining the amplitude of said magnetizing current (Im) of each stator winding constant.

5,294,877

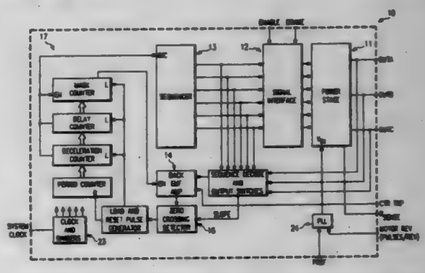
CIRCUIT AND METHOD FOR DETECTING DECELERATION RATES OF A POLYPHASE DC MOTOR

Scott W. Cameron, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 770,576, Oct. 3, 1991. This application Apr. 30, 1992, Ser. No. 876,871

Int. Cl.[5] H02P *5/28*

U.S. Cl. 318—809 **22 Claims**



1. A circuit for determining if a deceleration rate of a polyphase de motor having a plurality of driving coils and a moving rotor exceeds a predetermined threshold, comprising:

a back emf detector to selectively produce a back emf signal from said driving coils when said driving coils are sequentially switched into a floating state;

a reference voltage crossing detector to determine when said

back emf signal produced by said back emf detector crosses a reference voltage;
a pulse generator for producing first and second non-overlapping pulses when said reference voltage crossing detector determines that said back emf has crossed the reference voltage, said second pulse occurring after said first pulse;
an up counter connected to be reset by the second pulse produced by said pulse generator;
a down counter connected to be loaded with the count existent in said up counter by said first pulse from said pulse generator;
first and second clock pulse sources, the frequency of the first clock pulses being less than the frequency of said second clock pulses, the first and second clock pulses being delivered respectively to said up and down counters to be counted thereby;
a circuit connected to said down counter to determine if the down counter has reached a predetermined count prior to the occurrence of another reference voltage crossing subsequent to the reference voltage crossing that loaded the count of said up counter into said down counter.

5,294,878

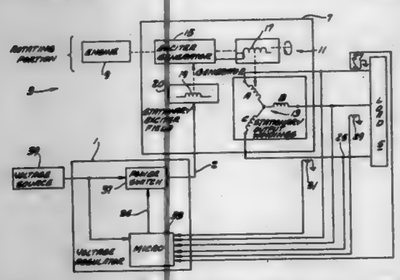
Patent Not Issued For This Number

5,294,879

MICROPROCESSOR-CONTROLLED REGULATOR

Richard A. Freeman, St. Louis, and David C. Massey, Kirkwood, both of Mo., assignors to Basler Electric Company, Highland, Ill.

Filed Nov. 1, 1991, Ser. No. 786,528
Int. Cl.[5] H02P 9/00
U.S. Cl. 322—23 **22 Claims**



1. A regulator providing a control signal for controlling a generator providing an electrical output including an output voltage and an output current applied to a load, said regulator comprising:
means for sensing a parameter of the electrical output applied to the load;
a first memory for storing at least one predetermined parameter corresponding to the sensed parameter;
a microprocessor for comparing the sensed parameter to the corresponding predetermined parameter stored in said first memory, said microprocessor generating an output signal representative of the comparison;
a second memory for storing instructions for controlling operation of said microprocessor; and
means for generating the control signal as a function of the output signal from said microprocessor.

5,294,880

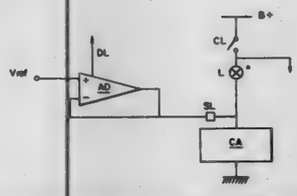
Patent Not Issued For This Number

5,294,881

CIRCUIT FOR DETECTING THE STATE OF A SWITCH, IN PARTICULAR A CAR KEY CONTACT IN A VOLTAGE REGULATOR OF AN ALTERNATOR

Jean-Marie Pierret, Paris, and Didier Canitrot, Saint-Maur des Fosses, France, assignors to Valeo Equipements Electriques Moteur, Creteil, France

Filed Mar. 10, 1992, Ser. No. 849,296
Claims priority, application France, Mar. 12, 1991, 91 02959
Int. Cl.[5] H02J 7/14, 9/06
U.S. Cl. 322—28 **5 Claims**



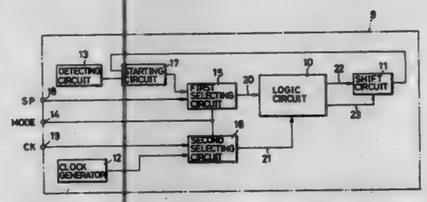
1. In a circuit for regulating the voltage at which a battery is charged by an alternator, said circuit being capable of activation by a key switch wherein a first terminal of the key switch is connected to a DC source and a second terminal of the key switch is connected to said regulator circuit through a load such as a warning lamp, and a component having a voltage drop being provided for switching said load ON and OFF, a circuit for detecting the open or closed state of said key switch including:
amplifier means receiving on a first terminal a fixed reference voltage and on a second terminal the voltage present on the terminal of the load opposite to its terminal connected to said key switch, said amplifier means being adapted for regulating said voltage drop to the value of the reference voltage as long as said key switch and said component having a voltage drop are conductive, and
means for generating a first signal on a key switch detection output whenever said voltage present on the terminal of the load opposite to its terminal connected to said key switch is less than the reference voltage, and for generating a second signal on said detection output whenever said voltage present on the terminal of the load opposite to its terminal connected to said key switch is greater than the reference voltage, or whenever said amplifier means is in the course of regulating said voltage drop.

5,294,882

INTEGRATED CIRCUIT CAPABLE OF TESTING RELIABILITY

Junji Tanaka, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,659
Int. Cl.[5] G01R 15/12
U.S. Cl. 324—158 R **7 Claims**



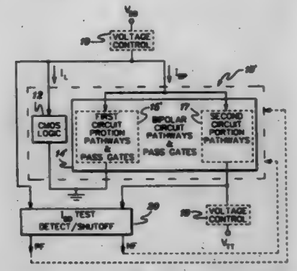
1. An integrated circuit adapted to perform a predetermined reliability test, comprising:
a signal generating circuit for generating a signal for performing said predetermined reliability test in said integrated circuit;
a detecting circuit for outputting a signal which indicates a detection at a time when a rise of a supply voltage to said integrated circuit is detected; and
a control circuit connected to both said signal generating circuit and said detecting circuit and having a test mode setting terminal for controlling an operation of said predetermined reliability test of said integrated circuit,
said integrated circuit being arranged to execute said predetermined reliability test thereof in accordance with said control circuit which is adapted to use said signal output from said signal generating circuit in case that a predetermined selection signal is applied to said test mode setting terminal in response to said signal output from said detecting circuit at a time of a rise of said supply voltage,
said integrated circuit being further arranged to perform a normal operation in case that no predetermined selection signal is applied to said test mode setting terminal.

5,294,883

TEST DETECTOR/SHUTOFF AND METHOD FOR BICMOS INTEGRATED CIRCUIT

Jeanine F. Akiki, P.O. Box 962, Williston, Vt. 05495, and Charles W. Hanson, 247 Poor Farm Rd., Milton, Vt. 05468

Filed Aug. 4, 1992, Ser. No. 925,348
Int. Cl.[5] G01R 31/28
U.S. Cl. 324—158 R **14 Claims**



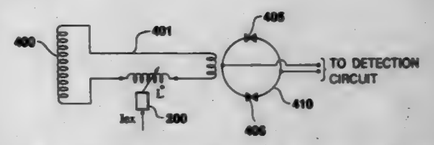
1. A test detect and shut off circuit for facilitating testing of a BiCMOS integrated circuit having a single first power rail supplying operating circuit voltage V_{DD} and a second power rail supplying intermediate voltage V_{TT} (wherein under normal integrated circuit operation $V_{DD} > V_{TT}$), said BiCMOS integrated circuit including a logic portion connected between the first power rail supplying voltage V_{DD} and a ground voltage GND, and a bipolar transistor circuit having multiple current pathways, at least one of said current pathways being connected in parallel with the logic portion between the first power rail supplying voltage V_{DD} and the ground voltage GND, and at least one of said current pathways being connected between the first power rail supplying voltage V_{DD} and the second power rail supplying intermediate voltage V_{TT}, said test detect and shut off circuitry comprising:
a detect circuit electrically coupled to said BiCMOS integrated circuit for detecting the presence of a predetermined test condition in said BiCMOS integrated circuit and for generating in response thereto a test detect signal; and
a shut off circuit electrically coupled to said BiCMOS integrated circuit and to said detect circuit for opening the at least one bipolar transistor circuit current pathway connected between the first power rail supplying voltage V_{DD} and ground voltage GND in response to generation of said test detect signal by said detect circuit such that bias current in said at least one bipolar transistor circuit current pathway is eliminated, thereby facilitating testing of the logic portion of said BiCMOS integrated circuit.

5,294,884

HIGH SENSITIVE AND HIGH RESPONSE MAGNETOMETER BY THE USE OF LOW INDUCTANCE SUPERCONDUCTING LOOP INCLUDING A NEGATIVE INDUCTANCE GENERATING MEANS

Eiichi Goto, Fujisawa, and Yutaka Harada, Tokyo, both of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 988,392, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 684,957, May 13, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 95,474
Claims priority, application Japan, Sep. 14, 1989, 1-239219
Int. Cl.[5] G01R 33/035
U.S. Cl. 324—248 **5 Claims**



1. In a magnetometer comprising a superconducting loop including a magnetic flux detecting coil and a SQUID connected to the superconducting loop via magnetic flux,
negative inductance generating means having two terminals for generating a negative inductance between said terminals being provided in the superconducting loop, said negative inductance generating means comprising at least one of a Josephson device and a direct current source of applying a direct current bias magnetic flux to the Josephson device and said negative inductance being defined by that the value of the derivative of generalized magnetic flux between said two terminals with current flowing between the terminals, that is, $(d\phi,dI)$ is negative, whereby the inductance of the superconducting loop is decreased by said negative inductance generating means and input signals intensified by said negative inductance generating means are detected by the SQUID.

5,294,885

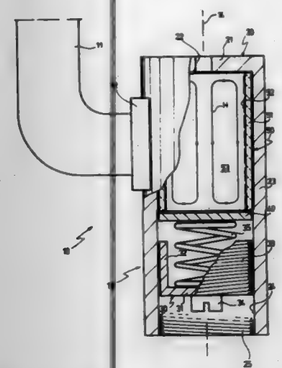
RESONATOR FOR ELECTRON SPIN RESONANCE SPECTROSCOPY

Ekkehard Gentsch, Karlsruhe, and Dieter Schmalbein, Marxzell-Burbach, both of Fed. Rep. of Germany, assignors to Bruker Analytische Messtechnik GmbH, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,491
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107631
Int. Cl.[5] G01R 33/20
U.S. Cl. 324—316 **3 Claims**

1. A resonator for electron spin resonance spectroscopy, comprising:
a cup-shaped element having a cylindrical wall with a bottom at one end thereof and first threads formed on said wall proximate an opposite end thereof;
a tube having openings at both ends and being received within said cup-shaped element, said tube being provided with a conductive coating, a first of said openings of said tube adjoining said cup-shaped element bottom;
a plate received within said cup-shaped element and adjoining a second of said openings of said tube opposite said cup-shaped element bottom;
an insert fitted into said cup-shaped element opposite end

and having second threads mating with said first threads; and



a spring means arranged between said insert and said plate for urging said plate and said tube against said cup-shaped element bottom.

5,294,886

ANTENNA SYSTEM FOR A MAGNETIC RESONANCE IMAGING TOMOGRAPHY APPARATUS

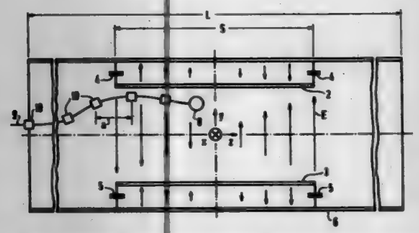
Wilhelm Duerr, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 872,100

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1991, 4113120

Int. Cl.[5] G01R *33/00*

U.S. Cl. 324—318 9 Claims



1. In a magnetic resonance imaging tomography apparatus having a transmission antenna for exciting nuclear spins in an examination subject and a reception antenna for receiving signals of excited nuclei in said examination subject in the form of a local coil, the improvement comprising:

a feeder for said local coil having a plurality of decoupling elements connected therein and disposed at predetermined intervals along a length of said feeder and dividing said feeder into a plurality of individual conductor elements which are decoupled from each other.

5,294,887

DEVICE FOR GENERATING A TRIGGER SIGNAL FROM IGNITION PULSES IN AN IGNITION SYSTEM

Peter Etzold, Ebersbach-Rosswaelden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

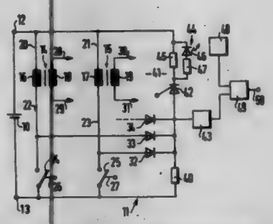
PCT No. PCT/DE91/00259, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO91/15678, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 23, 1991, Ser. No. 938,133

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1990, 4010839

Int. Cl.[5] F02P *17/00*

U.S. Cl. 324—388 8 Claims



1. A device connected to an ignition system for generating a trigger signal from ignition pulses of the ignition system, wherein the ignition system includes at least one ignition coil having a primary winding and at least one secondary winding, wherein a first terminal of the primary winding is connected with a first terminal of a voltage source and a second terminal of the primary winding is connected by a controllable switch with a second terminal of the voltage source, the device comprising:

a first detection means coupled to the second terminal of the primary winding for detecting ignition pulses and providing corresponding output signals,

a controllable short-circuiting means, connected in parallel with the primary winding, for short-circuiting the primary winding, said controllable short-circuiting means including a second detection means for detecting ignition pulses occurring if ignition processes are suppressed, the second detection means including a current sensor for sensing short-circuit current of the primary winding and a comparator connected to the current sensor for providing output signals when the sensed short-circuit current exceeds a predetermined value, and

a combining means for combining the output signals of the first and the second detection means in order to produce the trigger signal as an output.

5,294,888

DEVICE FOR DETECTING MISFIRE OF AN INTERNAL COMBUSTION ENGINE BY COMPARING VOLTAGE WAVEFORMS ASSOCIATED WITH IGNITION SYSTEM

Shigeru Miyata; Takashi Suzuki; Yoshihiro Matsubara, all of Nagoya; Yuuichi Shimasaki, and Takashi Hisaki, both of Wako, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya and Honda Gikeu Kogyo K.K., Wako, both of Japan

Filed Apr. 9, 1992, Ser. No. 865,909

Claims priority, application Japan, Apr. 12, 1991, 3-080158

Int. Cl.[5] F02P *17/00*

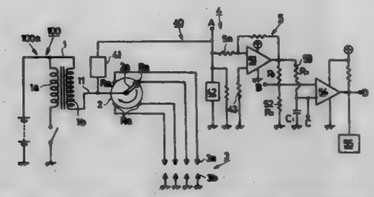
U.S. Cl. 324—393 2 Claims

1. Apparatus for recognizing misfire in an internal combustion engine equipped with an ignition circuit (**100***a*) having a primary coil (**1***a*) and a secondary coil (**1***b*), means for sending a primary current flowing through the primary coil (**1***a*) to induce a secondary voltage across the secondary coil (**1***b*), and a distributor (**2**) for applying the secondary voltage across electrodes (**3***a*, **3***b*) of a spark plug (**3**) so as to establish a spark

between the electrodes (**3***a*, **3B**) of the spark plug (**3**), comprising:

(a) a secondary voltage detector (**40**) electrically connected between the secondary coil of the ignition circuit and the spark plug (**3**) so as to detect a secondary voltage value based on a spark in which the spark plug (**3**) is discharged by the ignition circuit;

(b) an integration means (**53**) which is electrically connected to the secondary voltage detector (**40**) to integrate the secondary voltage value so as to produce an integration voltage;



(c) a comparator means (**54**) electrically connected to the secondary voltage detector (**40**) and the integration means (**53**) so as to compare the secondary voltage value with the integration voltage, and producing an output pulse when the secondary voltage value exceeds the integration voltage;

(d) a microcomputer means (**55**) electrically connected to the comparator means (**54**) to detect a width of the output pulse from the comparator means (**54**) so as to determine a misfire due to an abnormal ignition of an air-fuel mixture in the internal combustion engine when the width of the output pulse of the comparator means (**54**) exceeds a predetermined level.

5,294,889

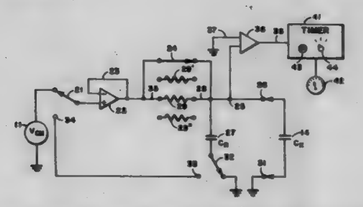
BATTERY OPERATED CAPACITANCE MEASUREMENT CIRCUIT

Jerry J. Heep, Weatherford, Tex., and Douglas R. Curtis, Los Gatos, Calif., assignors to Tandy Corporation, Fort Worth, Tex.

Filed Mar. 27, 1992, Ser. No. 858,857

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—678 25 Claims



1. Apparatus for measuring a capacitance value of a capacitor, said apparatus comprising:

A) a voltage source;

B) means for charging said capacitor from said voltage source, whereby a voltage is impressed across said capacitor, said voltage having an initial value;

C) means for discharging said capacitor with a current having a magnitude proportional to said voltage, whereby said voltage across said capacitor decreases substantially linearly from said initial value to a predetermined final value; and

D) timing means connected to said capacitor for measuring a time interval taken by said capacitor to discharge to said final voltage value, said time interval indicating said capacitance value.

5,294,890

EXAMINATION CIRCUIT FOR A SENSOR

Hermann Hemminger, Markgroeningen, and Stephan Johne, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

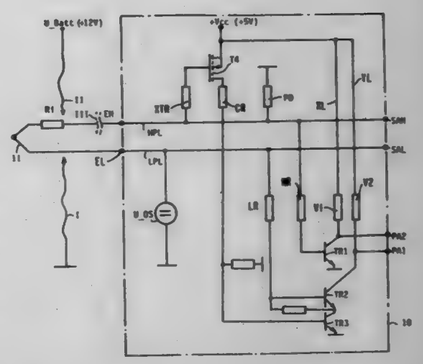
PCT No. PCT/DE92/00327, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/21985, PCT Pub. Date Dec. 10, 1992

PCT Filed Apr. 24, 1992, Ser. No. 971,867

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118718

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—549 5 Claims



1. Monitoring circuit for a sensor comprising

a high-potential line and a low-potential line, each of said lines being connected to said sensor;

an offset voltage source (U_OS) connected to the low-potential line and producing an offset voltage relative to ground higher than a minimum transistor control voltage;

a pulldown resistor connected between said high-potential line and said ground;

a first testing transistor having a control electrode connected via a resistor arrangement with said high-potential line and said first testing transistor switching to a blocking state when a potential on the high-potential line drops below the minimum transistor control voltage due to one of a short circuit of the sensor to ground and an interruption of said lines;

a second testing transistor having a control electrode connected with said low-potential line via another resistor arrangement and switching to a blocking state when the low-potential line is grounded as a result of a short circuit to ground; and

a third testing transistor having a control electrode and a p-type transistor having a control electrode and an output connected with the control electrode of the third testing transistor, said control electrode of the p-type transistor being connected with one of said lines so that said p-type transistor is in a blocking state when said lines have a potential corresponding at least to a potential of an electron receiving electrode relative to the minimum control voltage, so that said third testing transistor enters a blocking state;

wherein said three testing transistors have switching states and a combination of said switching states indicate one of a plurality of operating states of said sensor, said operating states including short circuit to ground, short circuit to supply voltage, normal operation and line interruption.

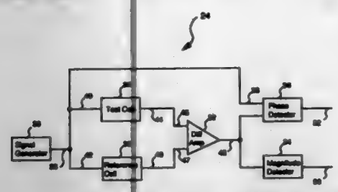
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5,294,891

METHOD AND APPARATUS FOR DETERMINING THE QUALITY OF A COLLOIDAL SUSPENSION

Arvind R. Saklikar, Sunnyvale, and William A. Lloyd, Plymouth, both of Calif., assignors to PowerPrint Technologies, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1993, Ser. No. 32,374
Int. Cl.[5] G01R 27/14
U.S. Cl. 324—705 24 Claims



1. For a colloidal suspension having colloidal particles dispersed throughout a continuous medium, a method for determining the quality of said colloidal suspension, comprising the steps of:

applying an oscillating input electrical signal to said colloidal suspension, and extracting a first output current from said colloidal suspension, and applying said input signal to a reference solution which is substantially identical to said colloidal suspension except that said colloidal particles are removed, and extracting a second output current from said reference solution;

deriving a differential output current by subtracting said second output current from said first output current;

measuring the magnitude of said differential output current; and

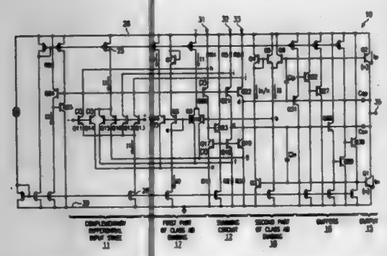
comparing the phase of said differential output current to the phase of said input signal to determine the difference in phase between said differential output current and said input signal.

5,294,892

TWO-STAGE RAIL-TO-RAIL CLASS AB OPERATIONAL AMPLIFIER

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 17, 1992, Ser. No. 946,765
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—253 21 Claims



1. An operational amplifier having a differential signal input and an output, comprising:

a. an input stage comprising a differential amplifier having a differential signal input and a differential signal output, said differential amplifier including:

i. a first pair of transistors of opposite conductivity type having control elements connected to receive one side of the differential signal input;

ii. second and third pairs of transistors of opposite conductivity type having control elements connected to receive another side of the differential signal input, the differential output of said differential amplifier being developed by outputs of said second and third pairs of transistors;

b. and a high-swing output section connected to receive said differential signal output directly from said input stage.

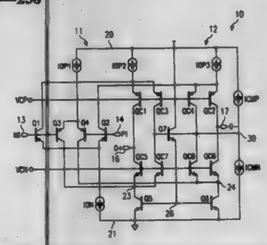
c. said differential amplifier further comprising first and second current sources connected respectively between transistors of said first, second and third transistor pairs of a first conductivity type and a voltage supply, and between transistors of said first, second and third transistor pairs of a second conductivity type and a reference potential.

5,294,893

DIFFERENTIAL OUTPUT AMPLIFIER INPUT STAGE WITH RAIL-TO-RAIL COMMON MODE INPUT RANGE

Marc H. Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 30, 1992, Ser. No. 968,886
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—258 20 Claims



1. An amplifier having a rail-to-rail common mode input range, comprising:

a differential input stage;

a differential output stage having first and second current paths;

first and second output duplicating circuits respectively connected in parallel with said first and second current paths in said differential output stage to duplicate the differential output of said differential output stage;

a circuit for detecting a common-mode voltage difference between nodes of said first and second output duplicating circuits for developing a current related to said common-mode voltage difference; and

a current mirror circuit connected to receive said current related to said common-mode voltage difference for controlling the current in said first and second current paths in said differential output stage.

5,294,894

METHOD OF AND APPARATUS FOR STARTUP OF A DIGITAL COMPUTER SYSTEM CLOCK

Ghassan R. Gebara, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 2, 1992, Ser. No. 956,652
Int. Cl.[5] H03L 7/095
U.S. Cl. 331—1 A 8 Claims

1. A method of starting a local clock signal in a digital computer system having a master clock signal, comprising the steps of:

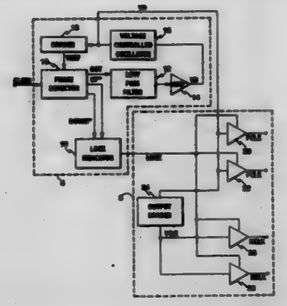
receiving the master clock signal;

driving the input of a phase-locked loop with said received master clock signal, said phase-locked loop including a voltage controlled oscillator and a phase comparator;

driving the input of an output buffer with the output of said voltage controlled oscillator;

detecting when said phase-locked loop has locked onto said received master clock signal; and

enabling said output buffer in response to detecting when



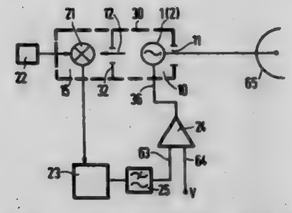
said phase-locked loop has locked onto said received master clock signal.

5,294,895

MICROWAVE OSCILLATORS AND TRANSMITTERS WITH FREQUENCY STABILIZATION

Stuart M. Feeney, Campbell, Calif.; David H. Evans, and Kenneth Holford, both of Crawley, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,727
Claims priority, application United Kingdom, Oct. 9, 1991, 9121415
Int. Cl.[5] H03B 7/14
U.S. Cl. 331—9 11 Claims



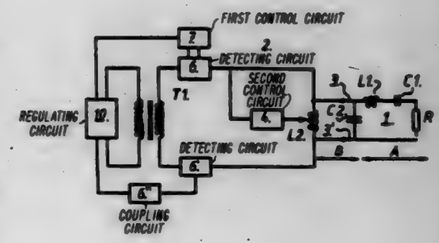
1. A microwave oscillator comprising a waveguide forming a source cavity separated from a detector section by a reflective wall, an oscillator device mounted in the source cavity for generating power of a desired microwave frequency, the wall being present at one end of the source cavity for reflecting the microwave power generated by the oscillator device, a first opening being present in another wall portion of the source cavity to provide a primary output of the microwave power, a coupling aperture being present in the reflective wall to provide as a secondary output a sample of the microwave power from the source cavity to the detector section, detector means associated with the detector section for generating from the sample a signal indicative of whether the desired microwave frequency is being generated in the source cavity, and a bias terminal to the source cavity for applying a bias signal for controlling the microwave power generated in the source cavity, which oscillator is characterised in that the detector means is a mixer mounted in the detector section of the waveguide for mixing a stable reference with the sample from the coupling aperture and thereby generating a frequency signal which comprises any error in the oscillator frequency from the desired frequency, and a frequency discriminator is coupled in a feed-back loop between the mixer and the bias terminal for providing a corrective bias signal regulating the frequency of the oscillator in accordance with the frequency signal generated by the mixer.

5,294,896

DEVICE FOR FEEDING A HIGH FREQUENCY OSCILLATING TOOL

Jan Kjellander, deceased, late of Älta by Elisabeth von Malmborg-Kjellander, legal representative; Thord Nilsson, Järna, and Jan Lundberg, Enskede, all of Sweden, assignors to Diprofil AB, Hagersten, Sweden

PCT No. PCT/SE90/00730, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/07237, PCT Pub. Date May 30, 1991
PCT Filed Nov. 12, 1990, Ser. No. 856,079
Claims priority, application Sweden, Nov. 13, 1989, 8903804-6
Int. Cl.[5] B06B 1/02; H03L 7/00
U.S. Cl. 331—158 5 Claims



1. A system for driving a high-frequency oscillating tool arrangement (1), which includes; inter alia, a device (1*a*), such as a piezoelectric crystal, whose form will change when subjected to changes in voltage; an electric drive circuit (2), adapted to generate an alternating voltage, which can be applied to said device (1*a*), the frequency of which is given, through a first control circuit (7), a value which momentarily corresponds to the resonance frequency of a first oscillating circuit (C1,L1 and R), representing said device (1*a*) in an equivalent, simplified electrical circuit diagram, in which the reactive elements (L1,C1) vary during a working operation; a second oscillating circuit (C2,L2), wherein the capacitive component (C2) thereof is representing said device (1*a*) in an equivalent, simplified electrical circuit diagram, in which said capacitive component (C2) does not vary appreciable with prevailing tool operating conditions (can be considered to have a constant capacitance value of the crystal structure), and the inductive component thereof is, via a second control circuit (4), given different inductance (L2) values, wherein said first oscillating circuit (C1,LL and R) and said second oscillating circuit (C2,L2) consitute two parallel-connected circuits, said first and said second oscillating circuits are operating in a common resonance frequency mode, characterized in that the inductive component (L2) of said second oscillating circuit (C2,L2) is parallel-connected to its capacitive component (C2), that a required frequency adjustment of the generated alternating voltage towards resonance frequency for the first oscillating circuit (C1,L1) is effectivated by utilizing the positive value of the derivative at an intersection point (150), applicable at said resonance of an argument curve as a function of the frequency, where minimum impedance frequencies and real impedance frequencies coincide, and that the difference (time distance at zero-crossing) between momentary phase values of the voltage and the current constitutes required frequency change control magnitude, for changing the frequency of the generated alternating voltage towards resonance for said first oscillating circuit.

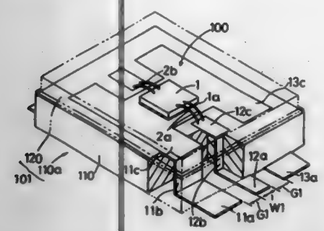
VOL 1160 ISS 3 MR 15 1994

5,294,897

MICROWAVE IC PACKAGE

Yoshihiro Notani, and Takayuki Katoh, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,619
Claims priority, application Japan, Jul. 20, 1992, 4-215623
Int. Cl.[5] H01P 5/00
U.S. Cl. 333—33 9 Claims



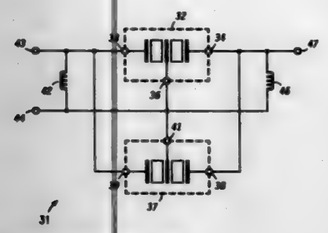
1. A surface mountable microwave IC package comprising:
a dielectric substrate having opposed front and rear surfaces;
a ground conductor disposed on the front surface of said dielectric substrate to which a microwave IC chip may be mounted and grounded; and
a transmission line for connecting a microwave IC chip mounted on said ground conductor to a coplanar line on an external package substrate outside the microwave IC package wherein said transmission line has a coplanar line structure including a signal conductor and a ground conductor disposed on said dielectric substrate and comprising:
an upper coplanar line disposed on the front surface of said dielectric substrate including said ground conductor;
a lower coplanar line disposed on the rear surface of said dielectric substrate; and
an intermediate coplanar line penetrating through said dielectric substrate and connecting said upper coplanar line to said lower coplanar line.

5,294,898

WIDE BANDWIDTH BANDPASS FILTER COMPRISING PARALLEL CONNECTED PIEZOELECTRIC RESONATORS

Lawrence Dworsky, Scottsdale, and Luke C. Bor Mang, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1992, Ser. No. 827,311
Int. Cl.[5] H03H 9/58
U.S. Cl. 333—187 18 Claims



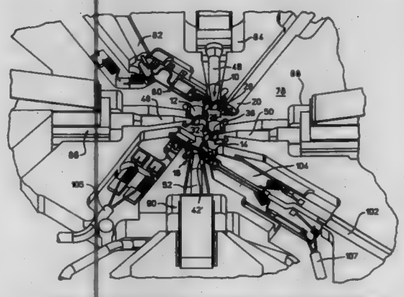
9. A bandpass filter comprising:
an input terminal;
an output terminal;
a common terminal;
a first piezoelectric resonator having a first input coupled to the input terminal, a first output coupled to the output terminal, and a first common electrode coupled to the common terminal wherein the first piezoelectic resonator has a fundamental frequency that is within a passband of the bandpass filter; and
a second piezoelectric resonator having a second input coupled to the input terminal, a second common electrode coupled to the common terminal, and a second output coupled to the output terminal wherein the second piezoelectric resonator has an odd overtone frequency that is within a percentage value of the fundamental frequency.

5,294,899

YIG-TUNED CIRCUIT WITH ROTATABLE MAGNETIC POLEPIECE

Hassan Tanbakuchi, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 29, 1992, Ser. No. 921,877
Int. Cl.[5] H01P 7/00
U.S. Cl. 333—235 19 Claims



1. A tunable ferrimagnetic resonator circuit comprising:
magnetic means for producing a magnetic field in a gap, said magnetic means including a rotatable magnetic polepiece; and
a plurality of ferrimagnetic resonators connected in series and located in the magnetic field, including an initial resonator having an input port, a final resonator having an output port and one or more intermediate resonators, for receiving an RF signal at the input port and coupling the input signal to the output port when the frequency of the RF input signal is substantially the same as the resonance frequency produced in the ferrimagnetic resonators by the magnetic field;
said rotatable polepiece having a poleface including a surface region adjacent to each of said resonators, one or more of said surface regions having a first contour that causes a variable magnetic field to be applied to the adjacent resonator as said polepiece is rotated and one or more of said surface regions having a second contour that causes a constant magnetic field to be applied to the adjacent resonator as said polepiece is rotated, such that said polepiece can be rotated to a position wherein each of said resonators is tuned to substantially the same resonance frequency.

5,294,900

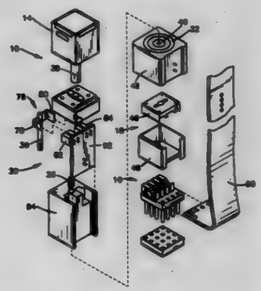
SWITCH ASSEMBLY

Akbar Mohabbatizadeh, and Ali Malekzadeh, both of Huntington Beach, Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 25, 1992, Ser. No. 951,669
Int. Cl.[5] H01H 83/00
U.S. Cl. 335—20 30 Claims

1. A switch assembly comprising a switch housing, switch contacts at least partially disposed in said switch housing and

operable between a first condition and a second condition, actuator means disposed in said switch housing and actuatable between an unactuated condition in which said switch contacts are in the first condition and an actuated condition in which said switch contacts are in the second condition, manually actuatable means at least partially disposed in said switch housing and movable relative to said switch housing for effecting actuation of said actuator means between the unactuated and actuated conditions, electromagnetic means disposed in said switch housing, said electromagnetic means having an energized condition and a de-energized condition, said actuator means being maintained in the actuated condition by said electromagnetic means when said electromagnetic means is in the energized condition, and control means disposed in said switch housing for energizing said electromagnetic means upon actuation of said actuator means to the actuated condition by movement of said manually actuatable means and for de-energizing said electromagnetic means upon actuation of a remote switch connected with said control means when said electromagnetic means is energized, said control means including means for de-energizing said electromagnetic means upon actuation of said actuator means to the actuated condition by movement of said manually actuatable means with said electromagnetic means energized, said control means including means for providing light, photocell means responsive to light from said means for providing light, and shutter means which is movable between a blocking condition blocking the transmission of light from said means for providing light to said photocell means and a nonblocking condition enabling light to be transmitted from said means for providing light to said photocells, means, said manually actuatable means including means for moving said shutter means upon movement of said manually actuatable means.



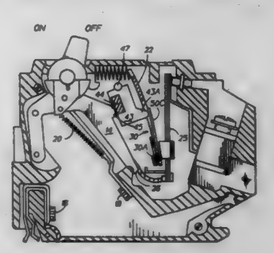
5,294,901

MOLDED CASE CIRCUIT BREAKER INSULATED ARMATURE LATCH ARRANGEMENT

Mario A. Tacinelli, Plainville; Joseph M. Palmieri, Southington; Joseph B. Kelaita, Jr., Bristol, all of Conn., and Eva E. Matias, Mayaguez, P.R., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 940,944, Oct. 28, 1992. This application Jun. 7, 1993, Ser. No. 72,023
Int. Cl.[5] H01H 75/12
U.S. Cl. 335—35 9 Claims

1. A molded case circuit breaker having an integrated armature latch assembly comprising:
a molded plastic case attached to a molded plastic cover;
an operating mechanism arranged within said case for interrupting current through a protected circuit upon the occurrence of an overcurrent condition;
a pivotally-mounted operating cradle interacting with said operating mechanism by means of a shaped end; and
a magnetically-responsive armature latch comprising a metal plate including a first rectangular opening, an insulative plate including a second rectangular opening fastened to said metal plate and a tolerance take-up spring having a top part within said first rectangular opening interacting with a trip bar carrier and a bottom part within said second rectangular opening supporting said shaped end of said operating cradle.

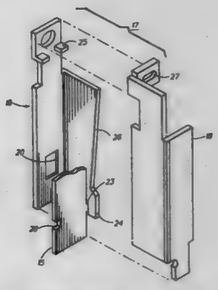


5,294,902

FAIL-SAFE RESIDENTIAL CIRCUIT BREAKER

Erich J. Panneborg; Joseph M. Palmieri, both of Southington, and Raymond K. Seymour, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,439
Int. Cl.[5] H01H 75/12, 71/16
U.S. Cl. 335—35 7 Claims



1. A molded case circuit breaker having a fail safe thermal-magnetic trip unit comprising:
a molded plastic case attached to a molded plastic cover;
an operating mechanism arranged within said case for interrupting current through a protected circuit upon the occurrence of an overcurrent condition;
a pivotally-mounted operating cradle interacting with said operating mechanism by means of a shaped end;
a magnetically-responsive armature latch having an opening receiving said shaped end and retaining said operating mechanism from interrupting current under quiescent current conditions;
a thermal-magnetic trip unit within said case arranged for articulating said operating mechanism by moving said cradle away from said latch opening upon occurrence of an overcurrent condition within a range of predetermined values; and
a combined bimetal-fuse element within said trip unit, said element having a reduced dimension to provide a region of increased current density whereby said element melts to interrupt current when said overcurrent condition exceeds a range of predetermined values.

1994 UMI

5,294,903

ELECTRIC SWITCH, IN PARTICULAR A LOAD SWITCH OR ELECTRIC CIRCUIT BREAKER

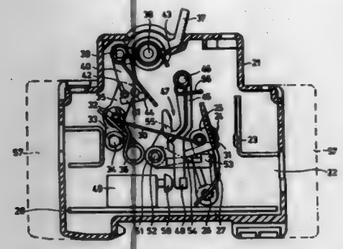
Hendrik A. Bosch, Hengelo, and Soedjimat F. Darmohoetomo, Halle, both of Netherlands, assignors to Holec Systemen en Componenten B.V., Hengelo, Netherlands

Filed Dec. 18, 1992, Ser. No. 993,001

Claims priority, application Netherlands, Dec. 20, 1991, 9102154

Int. Cl.[5] H01H *9/00*

U.S. Cl. 335—172 11 Claims



1. An electric switch, comprising a housing, at least one pair of contacts consisting of a fixed and a movable contact; a spring system, having a rigid arm and a leaf spring, which leaf spring is hinged by one end to the arm, in such a manner that an arm-leaf spring assembly in the form of a toggle mechanism with a first and second end is formed, in which the first end is hinged to a movably supported element which bears the movable contact, and in which the second end is disposed hingedly supported at a distance from and opposite the fixed contact; control means acting upon the arm-leaf spring assembly for taking the movable element into a first position, in which the leaf spring is released, and for taking the movable element into a second position, in which the leaf spring is tensioned; and latching means for locking the movable element in the first and second position, wherein the hingedly disposed second end of the arm-leaf spring assembly, the fixed contact and the movable element are positioned in such a manner relative to each other that the arm and leaf spring both in the first and in the second position of the movable element assume a relatively deflected position compared to an imaginary connecting line between the hingedly supported second end of the arm-leaf spring assembly and the fixed contact.

5,294,904

VALVE BLOCK, IN PARTICULAR FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS

Peter Volz, In den Wingerten 14, 6100 Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/01149, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO91/01907, PCT Pub. Date Feb. 21, 1991

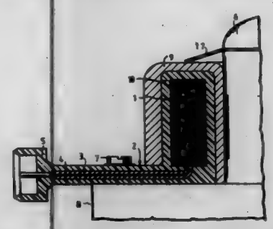
PCT Filed Jul. 13, 1990, Ser. No. 671,778

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1989, 3926454

Int. Cl.[5] H01F *5/00*; F16K *31/02*

U.S. Cl. 335—299 14 Claims

1. A valve block for slip-controlled hydraulic brake systems comprising: a plurality of valve domes incorporating magnet coils with insulating material cast around the magnet coils; and a contract carrier containing a plurality of electric conductors, wherein the insulating material encompassing the magnet coils forms an integral unit with the contact carrier wherein the contact carrier is interconnected with the insulating material of the magnet coils by at least one elastic linkage whereby said



interconnection is substantially independent of fit tolerances and temperature variations.

5,294,905

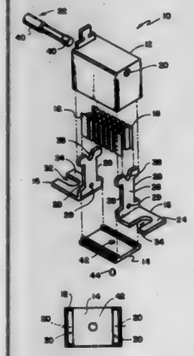
CURRENT LIMITING FUSE

Robert M. Pimpis, Dover, N.H., assignor to Gould Inc., Eastlake, Ohio

Filed Apr. 23, 1993, Ser. No. 52,580

Int. Cl.[5] H01H *85/04, 85/43*

U.S. Cl. 337—158 23 Claims



1. A fuse comprising an insulative housing, said housing comprising

a box having four sides, a closed top, and an open bottom, and

a lid for closing said box, said lid being smaller than said open bottom of said box,

said housing having two gaps formed between the box and the lid at opposite ends of said bottom;

terminals extending through said gaps, each of said terminals having an internal portion inside said housing and an external portion outside of said housing; and

a fusible element having ends connected to respective internal portions of said terminals.

5,294,906

FUSIBLE LINK

Mitsuhiko Totsuka, and Toshiharu Kudo, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 29,052

Claims priority, application Japan, Mar. 25, 1992, 4-097353

Int. Cl.[5] H01H *85/24*

U.S. Cl. 337—260 8 Claims

1. A fusible link assembly comprising:

a fuse element including:

a pair of connecting plates disposed in parallel and interconnected through a fusible member, said connecting plates being planar and defined by outer edge portions; and

engaging means for positioning said connecting plates in a predetermined position so that said connecting plates



are restricted from moving in an insertion direction, said engaging means being provided only on said edge portions; and

a housing including:

a receiving device for receiving said engaging means to fix said fuse element thereon, said receiving device being mounted on a bottom portion of said housing.

5,294,907

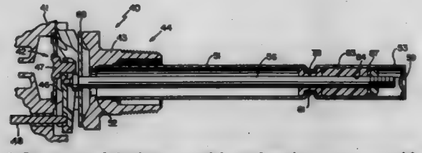
CONTROL DEVICE, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 22, 1993, Ser. No. 81,082

Int. Cl.[5] H01H *37/48*

U.S. Cl. 337—394 24 Claims



1. In a control device comprising a housing means provided with actuator means therein, and a temperature sensing unit carried by said housing means for operating said actuator means in response to temperature sensed by said unit, said unit comprising a tubular member having an open end secured to said housing means and having another end disposed remote from said housing means, said unit comprising a rod means disposed in said tubular member and having a first end projecting out of said open end of said tubular member and engaging said actuator means, said rod means having a second end disposed adjacent said other end of said tubular member, said tubular member having abutment means disposed between said ends thereof, said unit comprising a heat expandable and contractible polymeric member disposed between said second end of said rod means and said abutment means to tend to cause said first end of said rod means to move toward said actuator means upon said unit sensing decreasing temperature and to tend to cause said first end of said rod means to move away from said actuator means upon said unit sensing increasing temperature, the improvement comprising means operatively interconnected to said unit to continuously place said tubular member under compression between said open end thereof and said abutment means thereof and to continuously place said rod means under tension between said ends thereof.

5,294,908

ZINC OXIDE VARISTOR, A METHOD OF PREPARING THE SAME, AND A CRYSTALLIZED GLASS COMPOSITION FOR COATING

Masaaki Katsumata, Neyagawa; Osamu Kanaya, Chitose; Nobuharu Katsuki, Neyagawa, and Akihiro Takami, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

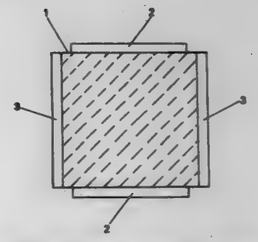
PCT No. PCT/JP90/01442, § 371 Date Jun. 26, 1991, § 102(e) Date Jun. 26, 1991, PCT Pub. No. WO91/07763, PCT Pub. Date May 30, 1991

PCT Filed Nov. 7, 1990, Ser. No. 689,948

Claims priority, application Japan, Nov. 8, 1989, 1-290190; Nov. 8, 1989, 1-290191; Jan. 10, 1990, 2-3033; Jan. 10, 1990, 2-3037; Feb. 15, 1990, 2-35129

Int. Cl.[5] H01C *7/10*

U.S. Cl. 338—21 16 Claims



1. A zinc oxide varistor comprising a sintered body containing zinc oxide as a main component and having varistor characteristics, and a high resistive side layer formed on the sides of the sintered body, the side layer consisting of crystallized glass consisting of 50.0 to 75.0 percent by weight of PbO, 10.0 to 10.0 percent by weight of ZnO, 5.0 to 10.0 percent by weight of B_2O_3, and 6.0 to 15.0 percent by weight of SiO_2.

5,294,909

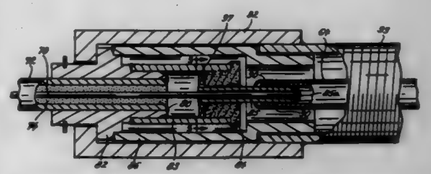
RESISTIVE SENSOR FOR POSITION DETECTION OF MANIFOLD FAILURES

Glenn E. Frazier, Roscoe, Ill., assignor to Barber-Colman Company, Loves Park, Ill.

Filed Jan. 7, 1993, Ser. No. 1,365

Int. Cl.[5] H01C *3/04, 3/06*

U.S. Cl. 338—26 12 Claims



1. A sensor for determining the location of overtemperature conditions, the sensor comprising, in combination:

an elongate coaxial sensor cable having a conductive metallic sheath and a conductive metallic core both made of metals capable of withstanding, without failure, the heat of the overtemperature condition, the core being positioned within and coaxial with the sheath, the elongate

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cable being sufficiently flexible to be routed in proximity to a system to be monitored,

a eutectic salt insulator interposed between the core and sheath for preventing contact therebetween, the eutectic salt having a melting point related to a design temperature at which the overtemperature condition is to be detected,

at least one of the core or sheath having a predetermined and measurable resistance per unit length sufficiently high to allow differential drive and sensing from the respective cable ends to isolate the position of a core-to-sheath short,

the eutectic salt insulator being constructed such that when heated to the design temperature at a point of overtemperature condition it provides a core-to-sheath short at said position rendering the core-tosheath resistance determined by differential driving and sensing the cable from its respective ends an indication of the position of the short along the cable.

5,294,910

PLATINUM TEMPERATURE SENSOR

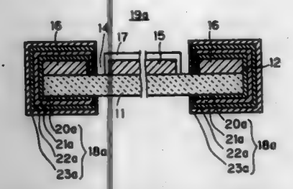
Hiroji Tani; Teppei Kubota; Tohru Kasanami, and Kazuto Miyagawa, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 19, 1992, Ser. No. 901,264

Claims priority, application Japan, Jul. 1, 1991, 3-160362; Jul. 17, 1991, 3-176771

Int. Cl.[5] H01C *1/012, 1/148*

U.S. Cl. 338—306 **7 Claims**



1. A platinum temperature sensor comprising:

an insulating substrate;

a meandering pattern portion, and outlet portions which are continuously connected to respective ends of said meandering pattern portion, provided on end portions of said insulating substrate, said meandering pattern portion and said outlet portions being defined by a platinum film formed on said insulating substrate; and

external electrodes formed to cover at least parts of said outlet portions and at least parts of said end portions of said insulating substrate which are provided with said outlet portions, wherein each of said external electrodes comprises a first layer, which is made of a metal that contains silver, in contact with said outlet portion, a second layer containing nickel formed on said first layer, and a third layer containing tin or solder formed on said second layer.

5,294,911

DATA COMPARATOR

Masanori Uchida, Yokohama, and Takayasu Sakurai, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1992, Ser. No. 841,638

Claims priority, application Japan, Feb. 28, 1991, 3-034631

Int. Cl.[5] G05B *1/03;* **G06F** *7/02*

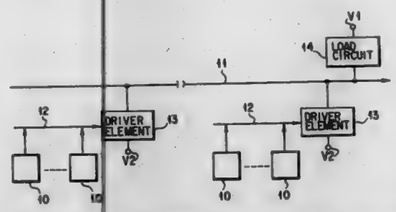
U.S. Cl. 340—146.2 **30 Claims**

1. A data comparator comprising:

bit data comparing means having a plurality of groups, each of said groups having a plurality of bit comparators, and each of said bit comparators comprising bit data input to said each of said bit comparators with bit data stored in said each of said bit comparators in advance and outputting a comparison result;

output data coupling means having a plurality of subsense lines, each of said subsense lines arranged in a respective one of said plurality of groups, said each of said subsense lines unifying output data from bit comparators of said respective one of said groups to which said each of said subsense lines belongs;

switching means having a plurality of switching elements, each of said switching elements arranged in a respective one of said plurality of subsense lines, said each of said switching elements having a control terminal, a first terminal, and a second terminal and performing a switching operation in accordance with a potential of said respective one of said subsense lines connected to said control terminal, and said first terminal receiving a first potential, wherein each of said plurality of subsense lines is directly connected to a control terminal of one of said switching elements;



a main sense line connected to said second terminals of said plurality of switching elements; and

a load circuit having a third terminal and a fourth terminal, said third terminal being connected to said main sense line, and said fourth terminal receiving a second potential.

5,294,912

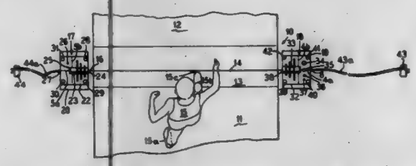
LONG JUMP AND TRIPLE JUMP FOUL DETECTOR SYSTEM

John Bednarz; John Hoagland, both of Elmhurst; Roger L. Rosenberg, Arlington Heights; Lula P. Taylor, Bolingbrook, all of Ill., and Michael C. Taylor, late of Bolingbrook, Ill. by Lula P. Taylor, legal representative, assignors to Lumi Sport Products, Inc., Bensenville, Ill.

Filed Jul. 22, 1991, Ser. No. 733,841

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—323 R **58 Claims**



1. A long or triple jump foul detector system for detecting a foul by an athlete when a portion of an athlete's shoe crosses over a long or triple jump foul line when beginning the jump, comprising:

a laser light beam emitting means for projecting a laser light beam;

positioning means for aligning the light beam parallel to the long or triple-jump foul line and directly above the foul line such that a tip of the athlete's shoe will interrupt the beam if the tip of the shoe crosses the foul line as the athlete begins the jump;

light beam detecting means for detecting the interruption of the laser light beam by the tip of the athlete's shoe as the athlete is beginning his take-off for the long or triple jump; and

foul detecting means for determining when the light beam has been interrupted by the athlete's shoe and for providing a foul indication of the long or triple jump.

5,294,913

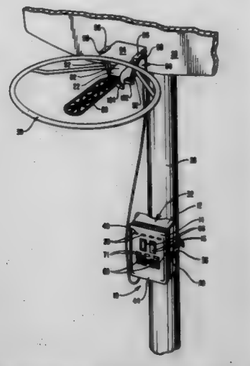
INDOOR/OUTDOOR PORTABLE BASKETBALL SCOREBOARD

Barry D. Mower, Layton; Loany R. Matherne, Pleasant View, and Robert W. Adams, Kaysville, all of Utah, assignors to Lifetime Products, Inc., Clearfield, Utah

Filed Jan. 31, 1992, Ser. No. 829,455

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—323 R **26 Claims**



1. A portable electronic scoreboard apparatus comprising:

a housing with a display face;

an electronic mechanism disposed within said housing, said electronic mechanism being capable of receiving input information, processing such input information according to a mode of operation, and displaying output information; and

a score registering assembly in electronic signal communication with said electronic mechanism, said score registering assembly capable of placement in a position remote from said electronic mechanism and adjacent to a basketball goal and capable of detecting the successful passage of a basketball through the basketball goal and signaling said electronic mechanism thereof and capable of distinguishing mere contact of a basketball with the inner portion of a basketball goal from successful passage of a basketball through the basketball goal; and

a random electronic coin toss selector in communication with said electronic mechanism which if actuated randomly selects between two teams and displays the team selected.

5,294,914

VEHICLE HELMET WARNING SYSTEM

Robert S. Dallas, 75 Acorn Rd., Watchung, N.J. 07060

Filed Feb. 24, 1993, Ser. No. 22,733

Int. Cl.[5] B62J *3/00*

U.S. Cl. 340—432 **11 Claims**

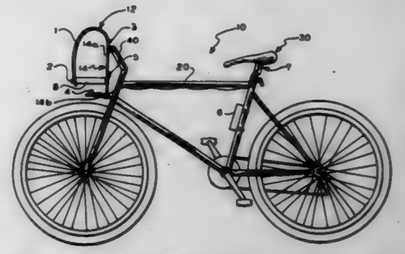
1. An alert system for warning a rider of a vehicle that a safety helmet is not being worn, comprising:

a helmet holding means mounted to said vehicle;

a first switch means mounted to said vehicle for producing a first output when the helmet is held in said helmet holding means, and for producing a second output when the helmet is not held in said helmet holding means;

a second switch means mounted to said vehicle for producing a first signal when a rider is mounted on a seat of the vehicle, and for producing a second signal when said rider is not mounted on the seat;

an energizing means mounted to said vehicle, said energizing means responsive to the simultaneous occurrence of said first output and said first signal for producing an energizing output and for producing no output otherwise; and



an alert means mounted to said vehicle, said alert means responsive to said energizing output for giving the rider a sensory warning, whereby removal of the helmet from said helmet holding means prior to the wearing thereof terminates said sensory alert.

5,294,915

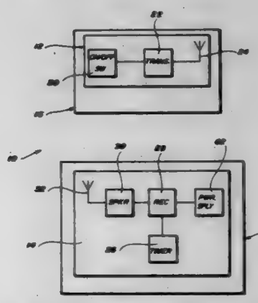
MEANS FOR LOCATING A REMOTE CONTROL DEVICE

C. Randal Owen, Rte. 2, Box 28, Bragg City, Mo. 63827

Continuation of Ser. No. 813,650, Dec. 27, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 85,669

Int. Cl.[5] G08B *1/08*

U.S. Cl. 340—539 **10 Claims**



1. A means for locating a remote control device which is capable of controlling an electronic device, the electronic device being stationary and the remote control device being capable of controlling the electronic device from a remote location, said locating means comprising means located within the electronic device for selectively generating FM signals for transmission over an antenna, means located within the remote control device for receiving the FM signals, means responsive to the reception of the FM signals for generating audible signals for a period of time that indicate the FM signals have been received, and means for selectively adjusting the period of time that the generating means are generating audible signals, the selectively adjusting means comprising a variable capacitor for selectively adjusting the period of time, and upon expiration of the selectively adjustable period of time for deactivating the generating means.

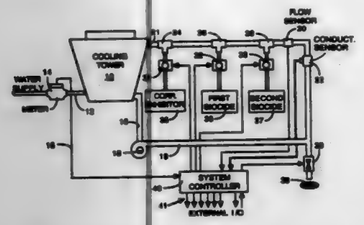
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,916

WATER TREATMENT CONTROLLER FOR AN EVAPORATIVE CONDENSER

Michael P. Bolton, Fox Point; James A. Rodrian, Grafton, and Donald R. Janke, Milwaukee, all of Wis., assignors to Autotrol Corp., Milwaukee, Wis.

Filed Jan. 23, 1992, Ser. No. 824,636
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—606 **14 Claims**



1. A water treatment controller, for an evaporative condenser system which includes a drain valve, a mechanism for replenishing water lost through evaporation and drainage and a chemical application device for adding at least one chemical to the water, said controller comprising:

means for sensing the conductivity of water in the evaporative condenser system;

valve control means, coupled to said means for sensing, for opening the drain valve when the conductivity is greater than a defined threshold level, and closing the drain valve when the conductivity is less than the defined threshold level;

means for measuring the volume of water that is added to the evaporative condenser system by the mechanism;

means for operating the chemical application device to add a first chemical to water in the evaporative condenser system in response to an indication received from said means for measuring that a first predefined volume of water has been added by the mechanism; and

means for inhibiting said valve control means from opening the drain valve during a given period of time after the chemical has been added, which opening of the drain valve might otherwise occur from erroneous sensing of conductivity due to chemical addition.

5,294,917

LIQUID LEVEL SENSOR USING FLOAT AND MAGNETIC MEANS

Larry C. Wilkins, 1601 Heddon Ct., New Albany, Ind. 47150

Filed Apr. 6, 1992, Ser. No. 863,003
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—625 **18 Claims**

2. A float-operated switch assembly comprising;

a first support mountable at an opening in the top of a tank;

a float mount connected to the first support;

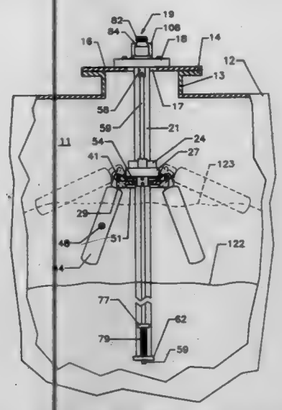
a float pivotally mounted to the float mount to pivot relative tot he mount about a horizontal axis upward from a normal rest position;

a switch;

a switch controller associated with the float and normally holding the switch in one switched condition when the float is down, but operable to change the switch condition when the float has floatably pivoted upward;

a switch operator support magnet;

the controller including a control magnet associated with the float and normally in a position proximate the support magnet when the float is down and establishing a magnetic field between the control magnet and the support



magnet to normally hold the support magnet in a set position keeping the switch in the one switched condition.

5,294,918

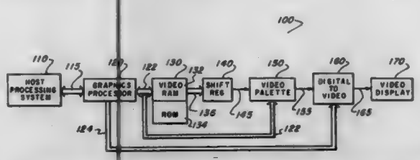
GRAPHICS PROCESSING APPARATUS HAVING COLOR EXPAND OPERATION FOR DRAWING COLOR GRAPHICS FROM MONOCHROME DATA

Thomas Preston, Thurleigh, United Kingdom; Karl M. Guttag, Houston; Michael D. Asal, Sugarland, both of Tex., and Mark F. Novak, Colorado Springs, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 506,506, Apr. 6, 1990, Pat. No. 5,095,301, which is a continuation of Ser. No. 361,747, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 178,798, Mar. 31, 1988, abandoned, which is a continuation of Ser. No. 795,383, Nov. 6, 1985, abandoned. This application Aug. 21, 1991, Ser. No. 748,115

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] G09G *1/28, 5/04*
U.S. Cl. 345—155 **5 Claims**



1. A process of moving an array of pixel data representing an image to be displayed from a source memory space to a destination memory space, said array of pixel data being arranged in words containing a plurality of individual pixel datum, said process comprising:

a. reading the address of a word in said source memory space;

b. fetching said word from said source memory space;

c. transforming each pixel datum in said word fetched from said source memory space to a colorized pixel datum by individually attaching color information to each said pixel datum, said transforming occurring substantially in parallel on all of the pixel data in each word;

d. reading the address of a word location in said destination memory space;

e. writing said word of colorized pixel data to said address of said word location in said destination memory space; and

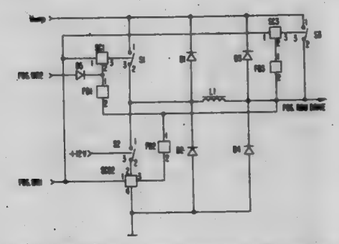
f. repeating said steps a–e for each individual pixel datum of said array.

5,294,919

PULSE GENERATION CIRCUIT FOR ROW SELECTION PULSES AND METHOD FOR GENERATING SAID PULSES

Terho Harju, Lohja, Finland, assignor to Planar International Oy, Espoo, Finland

Filed Jun. 4, 1991, Ser. No. 710,118
Claims priority, application Finland, Jun. 4, 1990, 902755
Int. Cl.[5] G09G *3/30*
U.S. Cl. 345—79 **12 Claims**



1. A pulse generation circuit for row selection pulses in a symmetric control scheme of an AC-excited thin-film electroluminescent display, the circuit comprising a supply voltage source for the circuit, a circuit ground to establish ground potential, first and second control inputs for controlling the circuit, an output for coupling the row selection pulses to the display as a capacitive load, and an essentially symmetric circuit with respect to the circuit ground, one-half of the symmetric circuit generating positive-voltage row selection pulses and the other half of the symmetric circuit generating negative-voltage row selection pulses; the circuit for generating the positive-voltage row selection pulses comprising:

a first inductor (L1) having an input terminal and an output terminal and being placed in series with the capacitive load, the first inductor (L1) being resonant with the load capacitance so that the cycle time of resonant oscillations is 100–200% longer than an added duration of time periods reserved for positive row selection pulse rise and fall phases:

a positive supply voltage source (V_{wrp}) having a voltage level;

a first switch (S1) having an input terminal and an output terminal, said first switch output terminal being connected to the input terminal of the first inductor (L1) and said input terminal of the first switch being coupled to the positive supply voltage source (V_{wrp}) for charging the load capacitance via the first inductor;

a second switch (S3) placed between the positive supply voltage source (V_{wrp}) and the output terminal of the first inductor (L1) for the purpose of elevating the amplitude of the positive row selection pulses to the voltage level of the positive supply voltage source (V_{wrp}) and preventing backward oscillation;

a third switch (S2) having first and second terminals and being coupled between the input terminal of the first inductor (L1) and ground potential for discharging energy stored in the load capacitance;

a first reverse biased clamp diode (D1) being connected from the input terminal of the first inductor (L1) to the positive supply voltage source (V_{wrp}), a second reverse biased clamp diode (D2) being connected from the input terminal of the first inductor (L1) to ground potential, a third reverse biased clamp diode (D3) being connected from the output terminal of the first inductor (L1) to the positive supply voltage source (V_{wrp}) and a fourth reverse biased clamp diode (D4) being connected from the output terminal of the first inductor (L1) to ground for recovering energy stored in the first inductor (L1) during the charging phase of the load and for limiting the output voltage; and

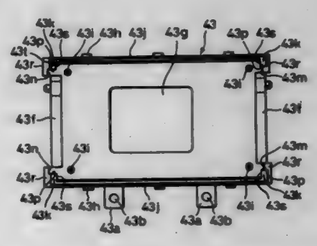
a first feedback circuit (FB1) coupling the output terminal of the first inductor (L1) to the first switch (S1) for turning the first switch to an ON or an OFF state.

5,294,920

LIQUID CRYSTAL PANEL POSITIONING DEVICE

Tomoaki Itabashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 944,932
Claims priority, application Japan, Sep. 20, 1991, 3-097636[U]
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—102 **6 Claims**



1. A liquid crystal panel positioning device comprising:

at least two stopper portions, each stopper portion having a first stopper surface and a second stopper surface, said first stopper surface and said second stopper surface forming a corner having a predetermined angle;

a liquid crystal panel;

a light emitting panel provided for supplying back light to said liquid crystal panel, said light emitting panel being disposed under said liquid crystal panel, so that a first side of said liquid crystal panel and a first side of said light emitting panel form a corner, said first side of said liquid crystal panel engaging a said first stopper surface to be fixed at a predetermined position, and said first side of said light emitting panel engaging a said second stopper surface to be fixed at a predetermined position;

each said stopper portion further including a third stopper surface forming a predetermined angle with a said first stopper surface and a fourth stopper surface forming a predetermined angle with a said second stopper surface, said liquid crystal panel having a second side forming a predetermined angle with said first side of said liquid crystal panel, said light emitting panel having a second side forming a predetermined angle with said first side of said light emitting panel, said second side of said liquid crystal panel engaging a said third stopper surface, whereby said liquid crystal panel is fixed at a predetermined position, and said second side of said light emitting panel engages a said fourth stopper surface, whereby said light emitting panel is fixed at a predetermined position, said stopper portions being diagonally located with respect to said liquid crystal panel.

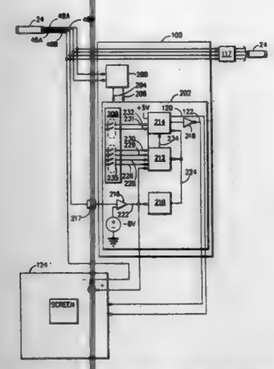
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,921

ELEVATOR COMMUNICATIONS BUS ANALYZER

Charles E. Hotka, McCordsville, Ind., and Robert D. Moore, Naperville, Ill., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 12, 1991, Ser. No. 790,044
Int. Cl.[5] G05B 23/02
U.S. Cl. 340—825.17 6 Claims



4. An elevator communications bus analyzer for obtaining information frames form an elevator communications bus, said elevator communications bus providing and receiving power, return, clock and data signals by means of and in respect of a power line, return line, clock line, and data line, said analyzer comprising:

pulse generating means, responsive to a synchronization frame in said clock signal, for providing a missing pulse signal, thereby indicating the absence of a data frame;

address means for providing an address and a base address;

counting means, for loading the sum of said base address and said address in response to said missing pulse signal, said counting means being operable to count down from said address to said base address for providing a trigger signal;

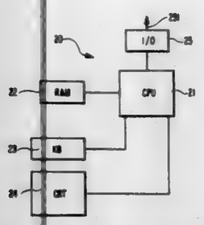
an oscilloscope responsive to said trigger signal for displaying the difference between said data signal and said clock signal.

5,294,922

DATA DISPLAY RADIO PAGER

Masaaki Akahori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,463
Claims priority, application Japan, Dec. 29, 1990, 2-418501
Int. Cl.[5] H04Q 1/00
U.S. Cl. 340—825.44 3 Claims



1. A method for rewriting data registered in a data display radio pager, the pager comprising:

means for receiving an RF signal modulated by a digital paging signal including an address codeword made up of at least one address bit group which designates said pager and at least two function bits following said address bit group, and at least one message codeword following said address codeword and sent from a central station, said means separating said digital paging signal in the form of a received address codeword and a received message codeword;

a rewritable memory storing an assigned codeword assigned to said pager and a plurality of alert mode designation codes each designating respective one of a plurality of alert modes which are designated by said function bits; and

control means for feeding predetermined alert start signals to sounding means and data displaying means on detecting the coincidence of said received codeword and said assigned codeword;

said method comprising the steps of:

(a) connecting a data rewriting device to the radio pager by a connector means;

(b) reading a content of said rewritable memory in response to a read command inputted from said data rewriting device;

(c) displaying the read content of said rewritable memory at said data rewriting device;

(d) inputting a new data by said data rewriting device for replacing the content of said rewritable memory;

(e) storing said new data in a memory of said data rewriting device;

(f) rewriting the content of said rewritable memory by storing the new data into said rewritable memory;

(g) reading new content of said rewritable memory in response to a read command inputted from said data rewriting device; and

(h) displaying the read new content of said rewritable memory and the new data stored in said memory of the data rewriting device at said data rewriting device to compare the new content of said rewritable memory with the data stored in the memory of said data rewriting device.

5,294,923

METHOD AND APPARATUS FOR RELAYING DOWNHOLE DATA TO THE SURFACE

Rainer Juergens, Celle, Fed. Rep. of Germany; Leslie T. Shale, Houston, and Frank C. Forest, Richmond, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

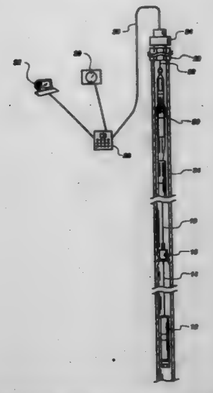
Filed Jan. 31, 1992, Ser. No. 828,402
Int. Cl.[5] G01V 1/00
U.S. Cl. 340—854.9 35 Claims

1. An apparatus for the transmission of information between downhole and surface locations, comprising:

a first wireline extending upwardly from a location proximate the lower end of a rotatable drillstring in a borehole to a location intermediate said lower end and said surface location;

clamp-off means for mechanically securing the upper end of said first wireline at said intermediate location, for electrically connecting said upper end of said first wireline to the lower end of a cable means extending upwardly toward said surface location from said clamp-off means, and for mechanically securing said cable means lower end at said intermediate location; and

packoff assembly means for maintaining a pressure-tight electrical connection at said surface location between the upper end of said cable means within said drillstring dur-



ing rotation thereof and a non-rotating surface cable exterior to said drillstring.

5,294,924

FLASHING WARNING LIGHT FOR A TRAFFIC CONTROL DEVICE

Dmytro Dydzyk, Anaheim, Calif., assignor to CADS Electronic Systems, Inc., Irvine, Calif.

Filed Jan. 23, 1992, Ser. No. 824,074
Int. Cl.[5] B60Q 7/00
U.S. Cl. 340—908.1 17 Claims



1. For attachment to a traffic control device, a warning light for alerting on-coming motorists and pedestrians to a roadway condition and comprising:

a base above which a light bulb is supported;

a source of supply voltage supported by said base and electrically connected to the light bulb to cause said bulb to be illuminated;

a lens surrounding the light bulb above said base so that light is transmitted through said lens when the light bulb is illuminated;

an attachment leg having a first end connected to said base and an opposite end to be connected to the traffic control device; and

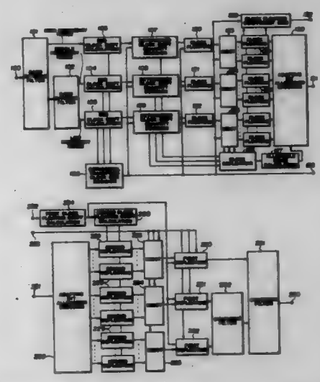
switch means electrically connected between said source of supply voltage and said light bulb, the first end of said attachment leg moving into physical contact with said switch means to control the operation thereof and the illumination of said light bulb when said first end is connected to said base.

5,294,925

DATA COMPRESSING AND EXPANDING APPARATUS WITH TIME DOMAIN AND FREQUENCY DOMAIN BLOCK FLOATING

Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 934,004
Claims priority, application Japan, Aug. 23, 1991, 3-235613
Int. Cl.[5] H03M 7/30
U.S. Cl. 341—50 20 Claims



1. Apparatus for applying data compression to an input digital signal comprising plural samples to provide an output signal, the apparatus comprising:

a first dividing means for dividing the input digital signal into blocks, each block including plural samples;

a first block floating means for applying first block floating to each block to provide a first block floating processed block;

an orthogonal transform means for orthogonally transforming each first block floating processed block to provide spectral coefficients;

a second dividing means for dividing the spectral coefficients into bands, each band including at least one spectral coefficient;

a second block floating means for applying second block floating to each band to provide a second block floating processed band; and

a means for adaptively quantizing each second block floating processed band to provide a quantized band, and for providing the quantized bands as the output signal.

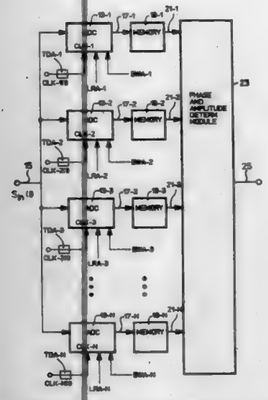
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,926

TIMING AND AMPLITUDE ERROR ESTIMATION FOR TIME-INTERLEAVED ANALOG-TO-DIGITAL CONVERTERS

John J. Corcoran, Portola Valley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 9, 1992, Ser. No. 960,478
Int. Cl.[5] H03M 1/10
U.S. Cl. 341—120 17 Claims



1. A method for calibrating a plurality of J analog-to-digital converters for any integer $J \geq 2$, the method comprising the steps of:

providing J analog-to-digital converters, numbered j=1, 2, . . . , J, each converter having the same clock frequency f_c and period $T_c=1/f_c$ and having an input terminal, a clock input terminal and an output terminal, with analog-to-digital converter number j receiving clock pulse sequence number j at the clock input terminal thereof and each clock pulse sequence having an independently adjustable time delay;

generating a sinusoidal input signal of frequency $f_{in}=(R+s)f_c$, where s is a non-zero fractional number satisfying $-0.5<s<0.5$ and R is a positive integer, and delivering this input signal to the input terminal of each of the converters;

for a predetermined time interval that includes at least $1/|s|$ consecutive clock pulses from each clock pulse sequence numbered j=1, 2, . . . , J, storing a sequence of output signal values, denoted D_{ij} (i=1, 2, . . . , K), appearing at the output terminal of converter number j, where K is a positive integer satisfying $K \geq 1/|s|$, and storing a time index $t_i=iT_c$ associated with each value D_{ij};

expressing each set of ordered pairs $\{t_i, D_{ij}\}_{i}$ with j fixed, approximately as a sine wave $V_j(t)=A_j \sin[2\pi s f_c t+\phi_j]$, and determining an amplitude A_j and a phase angle ϕ_j associated with converter number j for the set of values $\{t_i, D_{ij}\}_{i}$ and

comparing the phase differences $\Delta\phi_{j2,j1}=\phi_{j2}-\phi_{j1}$ for $1 \leq j1 < j2 \leq J$ with a corresponding desired phase difference number $\Delta\Phi_{j2,j1}=2\pi R(j2-j1)/J$ and, when the absolute difference $|\Delta\Phi_{j2,j1}-\Delta\phi_{j2,j1}|$ is larger than a selected positive phase angle error number $\Delta\Phi$, determining that at least one of the converters number j1 and j2 has a phase err and

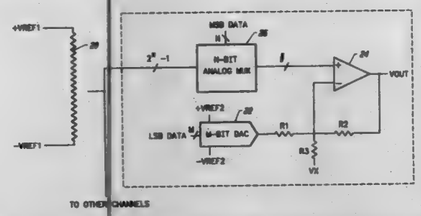
when a phase error occurs in at least one of the converters number j1 and j2, adjusting a time delay of at least one clock pulse sequence so that the absolute difference $|\Delta\Phi_{j2,j1}-\Delta\phi_{j2,j1}|$ is no greater than $\Delta\Phi$.

5,294,927

MULTI-CHANNEL DIGITAL TO ANALOG CONVERTER

Roger A. Levinson, San Francisco; John M. Caruso, Fremont, and Ali Tasdighi, San Jose, all of Calif., assignors to Micro Power Systems, Inc., San Jose, Calif.

Filed Apr. 13, 1992, Ser. No. 868,070
Int. Cl.[5] H03M 1/68
U.S. Cl. 341—141 4 Claims



1. A multi-channel digital-to-analog converter (DAC) comprising:

a first network producing 2^N precision first analog voltages for N most significant bits (MSB) of a digital value,

a plurality of second networks, independent from said first network, each receiving least significant bits (LSB) and providing a second analog voltage in response thereto,

a plurality of operational amplifiers each having a positive non-inverting input terminal, a negative inverting input terminal, and an output terminal,

means including a plurality of N bit MUXs receiving N most significant bits of a digital value and connecting one voltage of said first network to said positive non-inverting input terminal of said plurality of operational amplifiers,

means including first resistors connecting said second analog voltages to said negative inverting input terminals, and

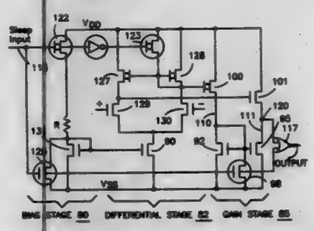
means including second resistors connecting said output terminals to said negative inverting input

5,294,928

A/D CONVERTER WITH ZERO POWER MODE

Russ Cooper, Chandler, and Sumit Mitra, Tempe, both of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Aug. 31, 1992, Ser. No. 938,908
Int. Cl.[5] H03K 3/01
U.S. Cl. 341—142 14 Claims



1. A microcontroller, microprocessor, digital signal processor or other semiconductor chip device having intelligent control logic and a system clock, and adapted to perform analog to digital conversions of a predetermined analog input signal, comprising:

means for sampling the analog input signal to generate samples thereof,

analog to digital conversion means for performing conversions on the samples of the analog input signal as part of the device operation, said analog to digital conversion means including its own clock independent of said system clock,

means for selectively deactivating the semiconductor chip device by generating an electrical deactivating signal to place it in a sleep mode,

means responsive to a deactivating signal, for preventing deactivation of the semiconductor chip device while sampling of the analog input signal is taking place, and

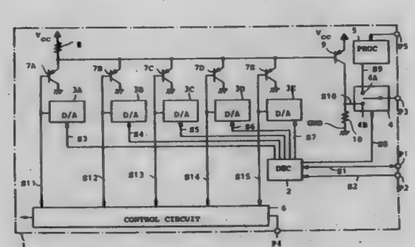
means for deactivating the analog to digital conversion means at selected times except when the analog to digital conversion means is performing its conversions.

5,294,929

CONTROL SYSTEM FOR PERIPHERAL DEVICES

Hiroshi Numata, and Seiichi Nishiyama, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jul. 9, 1992, Ser. No. 910,540
Claims priority, application Japan, Jul. 18, 1991, 3-203501
Int. Cl.[5] H03M 1/66
U.S. Cl. 341—144 15 Claims



1. A control system which supplies control signals to peripheral devices for controlling said peripheral devices, comprising:

a plurality of digital-to-analogue conversion means, each having a respective output, for receiving digital signals, for converting said digital signals to analogue signals, and for outputting said analogue signals as said control signals for controlling said peripheral devices; and

output switching means connected to the outputs of said plurality of digital-to-analogue conversion means;

wherein when only a specific digital-to-analogue conversion means is paced in an evaluating mode, an output signal of said specific digital-to-analogue conversion means is supplied to said output of said control system as an evaluation signal and output signals of the other of said digital-to-analogue conversion means are not supplied to said output of said control system.

5,294,930

OPTICAL RF STEREO

Ming-Chiang Li, 11415 Bayard Dr., Mitchellville, Md. 20721

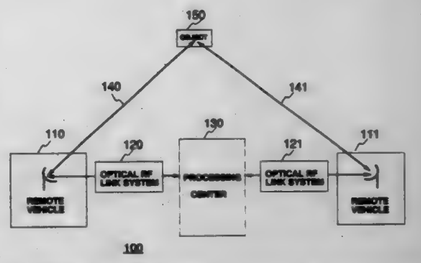
Filed May 1, 1992, Ser. No. 877,419
Int. Cl.[5] H04K 3/00; G01S 7/48
U.S. Cl. 342—13 20 Claims

1. An optical RF stereo systems comprising:

two widely separated antenna subsystems;

a processing center; and

two optical RF link systems linking the antenna subsystems to the processing center; wherein the optical RF stereo systems comprises means for forming a triangle among an object and two antenna subsystems; wherein the antenna subsystems comprise means for transmitting concurrent RF signals to or receiving from the object; wherein the optical RF link systems comprise: (a) means for receiving RF signals from one end; (b) means for up-converting the RF signals to an optical signal; (c) means for transiting the optical signal from one end to a second end; (d) means for down-converting the optical signal at the second end to an RF signal; and (e) means for transiting the RF signals



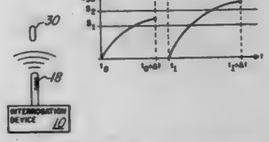
between the antenna subsystems and the processing center.

5,294,931

METHOD OF INTERROGATING A PLURALITY OF TRANSPONDERS ARRANGED IN THE TRANSMISSION RANGE OF AN INTERROGATING DEVICE AND TRANSPONDERS FOR USE IN THE SAID METHOD

Herbert Meier, Moosburg, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Apr. 29, 1992, Ser. No. 875,518
Int. Cl.[5] G01S 13/80
U.S. Cl. 342—44 4 Claims



1. A method for interrogating and identifying a plurality of batteryless transponders arranged in the transmission range of an interrogation device wherein only those transponders which have stored an amount of voltage which falls within their predetermined window respond, comprising the steps of:

transmitting interrogation pulses with intervals of time between them, whose energy changes from pulse to pulse;

receiving said interrogation pulses;

rectifying said received interrogation pulses;

storing said rectified interrogation pulses as a charge voltage at an energy storage element;

detecting the termination of said interrogation pulses;

comparing the amount of charge voltage stored at said energy storage element to a predetermined voltage range, said predetermined voltage range having an upper voltage limit and a lower voltage limit, beyond which said transponder could respond but-for said comparing the amount of charge voltage to said predetermined voltage range;

transmitting an answer signal in response to the termination of said interrogation pulses and in response to said charge voltage falling within said predetermined voltage range.

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5,294,932

METHOD FOR THE SIMULTANEOUS DETERMINATION OF THE DISTANCE AND THE SPEED OF A TARGET IN A RADAR SYSTEM

Dieter Nagel, Erbach, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, Munich, Fed. Rep. of Germany

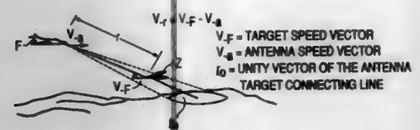
PCT No. PCT/EP92/01310, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/22826, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 11, 1992, Ser. No. 971,780

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119509

Int. Cl.[5] G01S *13/58*

U.S. Cl. 342—109 4 Claims



1. A method for simultaneously determining the distance and speed of a target in a radar system operating according to the high pulse repetition frequency method, comprising:

if a target is reported, determining the group delay of a target spectrum in the Doppler domain; and

determining the distance of the target from the group delay; wherein:

a transmitted signal is employed which contains pulses that include an alternating voltage signal component at a transmitting frequency;

a predetermined number of pulses are combined into a burst;

bursts are transmitted at a burst repetition duration;

a demodulated signal is sampled precisely once within a pulse repetition duration so that a sampled signal results;

the sampled signal is processed with a fast Fourier transformation operation;

the Fourier transform is formed in each case from a reflected burst and thus from a burst that is shifted in time relative to the transmitted signal;

a phase curve of the Fourier transform is determined at a frequency point equal to a Doppler frequency; the phase curve is differentiated according to the frequency and the group delay at the frequency point; and

the distance of the target is determined from the group delay.

5,294,933

WIDEBAND RADAR SYSTEM UTILIZING ADAPTIVE INTERFERENCE CANCELER

Henry E. Lee, Ellicott City, and James H. Mims, Millersville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1993, Ser. No. 10,938

Int. Cl.[5] G01S *13/536*

U.S. Cl. 342—159 15 Claims

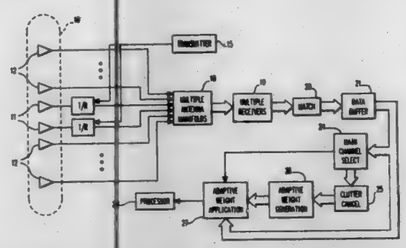
1. A wideband radar apparatus having improved interference suppression capability, said apparatus comprising:

an array of antenna elements combined to form a plurality of primary and secondary channels;

transmitter means for transmitting a long pulse radio frequency signal having a wide bandwidth;

receiver means for receiving a swath echo signal from each of said plurality of primary and auxiliary channels and respectively producing intermediate frequency signals each having a total bandwidth less than said wide bandwidth of said long pulse radio frequency signal;

interference suppression means for effecting a multiplicity of adaptive interference suppressing adjustments to a swath echo signal in a selected one of said primary channels, said interference suppression means including a systolic array; and



processing means for processing swath echo signals received form said interference cancellation means.

5,294,934

PHASE MEASURING CIRCUIT OF PHASED ARRAY ANTENNA

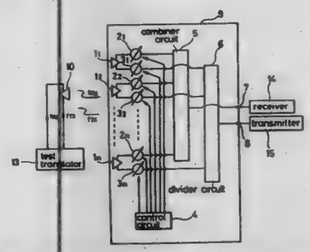
Soichi Matsumoto, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,930

Claims priority, application Japan, Nov. 13, 1991, 3-327102

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—173 3 Claims



1. A phase measurement circuit of a phased array antenna having both transmitting and receiving functions and having a transmission frequency band and a reception frequency band of different frequencies, comprising:

a plurality of antenna elements arranged in an array;

phase shifters disposed corresponding to said antenna elements, respectively, for shifting phases of signals to form a beam in a desired direction by changing the phase value;

a control circuit for controlling the phase shift quantity of said phase shifter;

a test antenna for receiving electromagnetic waves in the transmission frequency band from the phased array antenna and transmitting a test signal for measuring an excitation phase to each element of the phased array antenna; and

a test translator for converting the frequency of the signal of the transmission frequency band received by the test antenna to that of the signal of the reception frequency band and outputting the converted signal as a test signal to the test antenna.

5,294,935

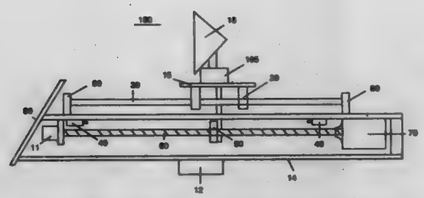
REMOTE RADAR PHASE CALIBRATOR

Donald G. Bauerle, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 23,838

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—174 7 Claims



1. A remote radar phase calibrator system comprising:

antenna means connected to a radar system under test for illuminating a reflector,

computer means connected to said radar system for measuring and recording I and Q phase outputs of said radar system,

translational means for moving said reflector a controlled distance with respect to said antenna,

controller means connected to said translational means for operating said translational means,

optical signal link means connected to said controller means and said computer means for controlling said translational means, wherein said I and Q phase outputs are recorded for various positions of said reflector with respect to said antenna means thereby calibrating said radar system under test.

5,294,936

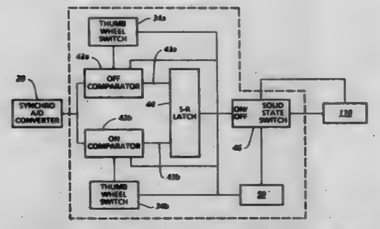
RADAR SECTOR BLANKER

Roger B. Hall, Falmouth, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 7, 1993, Ser. No. 74,100

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—175 9 Claims



1. A system for blanking transmission of a radar system having an analog synchro voltage, comprising:

a portable housing;

means, connected to said portable housing, for converting the analog synchro voltage into binary-coded decimal information;

first means, electrically connected in series to said means for converting and positioned within said portable housing, for comparing the binary-coded decimal information to a predetermined rotational positioning of a radar antenna;

second means, electrically connected in series to said means for converting and in parallel to said first means for comparing, for comparing the binary-coded decimal information to a second predetermined rotational positioning of the radar antenna;

means, electrically connected in series to said first and second means for comparing, for latching outputs of said first and second means for comparing; and

means, electrically connected to said means for latching and to the radar system, for switching off and on the transmission of the radar system.

5,294,937

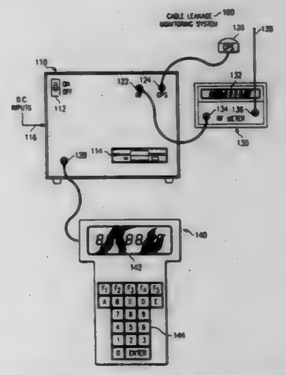
CABLE LEAKAGE MONITORING SYSTEM

Michael E. Ostteen, Rowlett, and Kenneth J. Eckenroth, Garland, both of Tex., assignors to Cable Leakage Technologies, Richardson, Tex.

Filed May 20, 1992, Ser. No. 886,687

Int. Cl.[5] G01S *5/08*; G01V *3/12*

U.S. Cl. 342—459 22 Claims



1. A cable leakage monitoring system comprising:

means for determining the geographic location of said monitoring system;

means for measuring the signal strength of radio frequency signals;

means, electrically connected to said determining means and said measuring means, for reading said geographic location from said determining means, and said signal strength from said measuring means, and storing said read geographic location and said strength in a data file; and

a keypad electrically connected to said reading and storing means for sending information to said reading and storing means, wherein said information comprises the distance between said measuring means and a source of said radio frequency signals.

5,294,938

CONCEALEDLY MOUNTED TOP LOADED VEHICULAR ANTENNA UNIT

Masayuki Matsuo, Neyagawa; Kazuhiro Matsumoto, Hirakata, and Kazunori Matsumoto, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 16, 1992, Ser. No. 851,508

Claims priority, application Japan, Mar. 15, 1991, 3-014967; Mar. 15, 1991, 3-050032; Jun. 25, 1991, 3-15279

Int. Cl.[5] H01Q *9/40*

U.S. Cl. 343—829 2 Claims

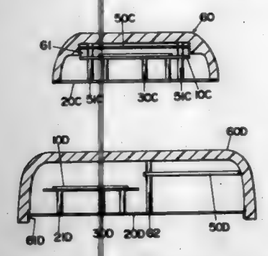
1. A top loaded antenna apparatus adapted to be mounted within a vehicle in a concealed manner, said antenna apparatus comprising:

a top load plate;

a ground plate disposed in a spaced relation to said top load

plate and electrically coupled thereto through a matching element;

a dielectric member disposed in an adjacent relation to said top load plate for shifting a resonance frequency of said antenna by a predetermined extent, said top load plate,



said ground plate, and said dielectric member being assembled into a unitary structure; and

adjustor means, operatively associated with said dielectric member, for varying a distance between said top load plate and said dielectric member.

5,294,939

ELECTRONICALLY RECONFIGURABLE ANTENNA

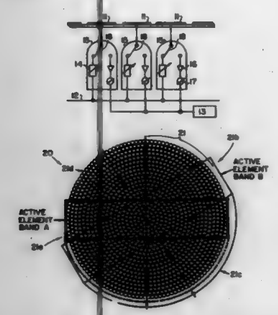
Gary G. Sanford, and Patrick M. Westfeldt, Jr., both of Boulder, Colo., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 780,334, Jul. 15, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,692

The portion of the term of this patent subsequent to Sep. 26, 2010, has been disclaimed.

Int. Cl.[5] H01Q *3/240, 3/300, 1/380*

U.S. Cl. 343—836 **13 Claims**



1. An electronically reconfigurable antenna, comprising:

an array of a plurality of antenna elements extending several wavelengths over an area, the number of such antenna elements being sufficient to form a subset of active antenna elements and an associated subset of passive parasitic antenna elements; and

an antenna element feed system providing connections to each one of said plurality of antenna elements that include connections to electronically variable reactances and connections to a source or receiver of electromagnetic energy,

said feed system being controllable to provide connections between said subset of active antenna elements and said source or receiver of electromagnetic radiation providing wave propagation in one mode over the array and to provide connections between said associated subset of passive parasitic antenna elements and an adjacent ground plane through said electronically variable reactances to assist the propagation of the wave in said one mode from said subset of active antenna elements.

5,294,940

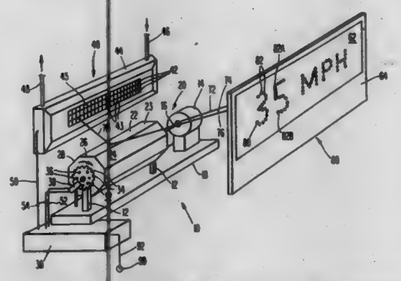
PULSED LASER OPTICAL DISPLAY DEVICE

Dale A. Wennagel, c/o Philadelphia Electric Company, 2301 Market St., Philadelphia, Pa. 19101, and Michael D. Tulloch, Philadelphia, Pa., assignors to Dale A. Wennagel, Philadelphia, Pa.

Filed Feb. 6, 1991, Ser. No. 651,464

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—31 **25 Claims**



1. A pulsed laser optical display device for displaying a projected image, the display device comprising:

a source of an image bit map;

means for generating a plurality of activation signals from the image bit map;

at least one light source bank including a plurality of solid state laser diodes oriented in a common direction, each diode adapted to produce a light beam;

a plurality of diode driver means, each diode driver means activating a respective laser diode in response to an activation signal;

at least one projection surface;

polygonal mirror reflection means for reflecting each beam to impinge on a projection surface;

drive means for rotating the polygonal mirror reflection means to sweep the light beams over the projection surface;

synchronization means for synchronizing the activation signal to each diode drive means with the rotation of the reflection means whereby a projected image is displayed on at least one projection surface that is perceived by an observer as a single, instantaneous image.

5,294,941

RECORDING APPARATUS

Masakatsu Yamada, and Minoru Yokoyama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,483

Claims priority, application Japan, Jul. 29, 1991, 3-188496

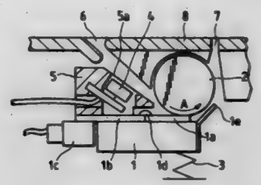
Int. Cl.[5] B41J *2/32*

U.S. Cl. 346—76 PH **14 Claims**

1. A recording apparatus for recording by a recording head on a recording medium which is conveyed through a conveyance route, comprising:

a guide member for guiding said recording medium through

the conveyance route, said guide member forming a protective cover for said recording head; and



detection means provided on said guide member to detect a presence and absence of said recording medium in said conveyance route.

5,294,942

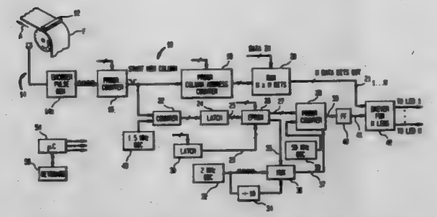
NON-IMPACT PRINTER APPARATUS AND METHOD FOR RECORDING ON A MOVING MEDIUM

Kenneth H. Loewenthal, Rochester; Steven M. Bryant, Holley, and Thomas F. Powers, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,478

Int. Cl.[5] A41J *2/45*

U.S. Cl. 346—107 R **8 Claims**



1. A non-impact printer apparatus for recording on a moving recording medium, which apparatus comprises:

a plurality of recording elements;

first means for generating a first signal having information representing a speed of movement of the recording medium;

second means for generating an image data signal representing a pixel to be recorded by one of said plural recording elements during a pixel recording period;

third means, responsive to said first signal, for generating a plural number of first pulses used to enable the said one recording element during recording of the pixel; and

fourth means, responsive to said first pulses and said image data signal, for energizing the said one recording element to record the pixel in a series of spaced sub-pixel recording periods with a duration of one of said sub-pixel recording periods being dependent upon the information in said first signal; and

wherein said first means includes

(a) fifth means for generating a series of second signals representing equal increments in displacement of the recording medium;

(b) sixth means for counting said second signals to generate third signals, each third signal providing synchronization for recording a new column of pixels by the recording elements;

(c) seventh means for providing a series of second pulses at a first predetermined clock frequency; and

(d) eighth means responsive to each third signal for counting said second pulses to generate said first signal as a count of a number of second pulses counted between two adjacent third signals.

5,294,943

METHOD AND APPARATUS FOR ALIGNMENT OF SCAN LINE OPTICS WITH TARGET MEDIUM

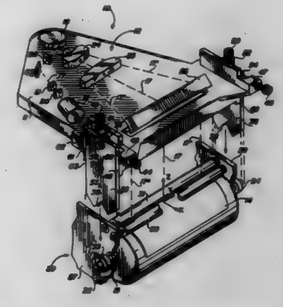
Douglass L. Blanding, Rochester; Michael E. Harrigan, Webster, and David Kessler, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,346

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] H04N *1/21;* **G01D** *15/16*

U.S. Cl. 346—108 **20 Claims**



1. A printer, having a body member; means, mounted on the body member, for supporting a recording medium for movement in an x (cross-scan) direction; a frame; means, mounted on the frame, for generating a beam along a z (beam path) direction and scanning the beam in a y (scan) direction along a scan line; and means, mechanically connecting the frame to the body member, for positioning the scan line onto the recording medium; characterized in that:

the means for supporting the recording medium has two curved surfaces spaced in the y direction; and

the means for positioning the scan line comprises two blocks mounted on the frame and having upwardly-directed, inverted V-notches, respectively received in two-point tangential abutment over the curved surfaces; means for enabling selective independent adjustments of the positions of the blocks in x and z directions relative to the frame; and means for releasably locking the blocks in their selectively adjusted positions relative to the frame.

5,294,944

COLOR IMAGE FORMING APPARATUS HAVING MEANS FOR PROPERLY SUPERIMPOSING IMAGE COLORS ON EACH OTHER

Yoshinobu Takeyama, Kawasaki; Nobuaki Kubo, Urawa; Susumu Imakawa, Yokohama, and Norio Michiie, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 842,526

Claims priority, application Japan, Mar. 6, 1991, 3-39679; Mar. 8, 1991, 3-43056; Mar. 8, 1991, 3-43057

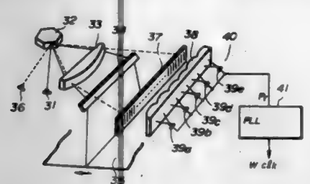
Int. Cl.[5] H04N *1/21*

U.S. Cl. 346—108 **8 Claims**

1. An image forming apparatus comprising:

scanner means, using a plurality of laser beams having the same characteristic, for scanning a predetermined color image, each of the laser beams representing the predetermined color image and being shifted with respect to each other in a vertical scanning direction by a first pitch, the first pitch being defined by dividing a diameter of each of the laser beams by the number of the laser beams;

an optical recording system including a rotating polygon mirror which deflects each of the laser beams;
a body system including a rotating photosensitive body onto which each laser beam deflected by the rotating polygon mirror is radiated so as to form a latent image corresponding to the predetermined color image; and
selecting means for selecting one of the laser beams of the



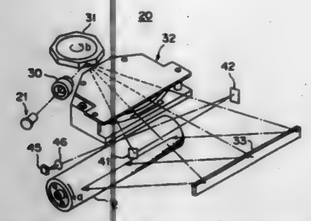
scanner means based on a time difference between a position detecting signal and a position signal, the position detecting signal indicating that each laser beam is ready to be radiated onto the photosensitive body of the body system, the position signal indicating that the photosensitive body is located at a position where each laser beam can be properly radiated thereon, and the position detecting signal being asynchronous with the position signal.

5,294,945

LASER BEAM OPTICAL SCANNING SYSTEM AND LASER PRINTING PROVIDED WITH THE LASER BEAM OPTICAL SCANNING SYSTEM

Kunihiko Omura; Akiyoshi Hamada; Satoru Ono, and Hiromu Nakamura, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed May 24, 1993, Ser. No. 66,504
Claims priority, application Japan, May 26, 1992, 4-133659
Int. Cl.[5] B41J *2/435;* H04N *1/21*
U.S. Cl. 346—408 **20 Claims**



1. A laser beam optical scanning system comprising:
a laser diode;
a diffracting member for diffracting and converging a laser beam emitted from the laser diode;
scanning means for scanning the laser beam converged by the diffracting member on a light receiving surface periodically; and
driving means for driving the laser diode at a duty factor γ;
wherein the laser beam optical scanning system meets a condition indicated by the following expression:

$$K\Delta\gamma < \frac{f_{co}\sqrt{(D_1/D_o)^2 - 1}}{4f_H^2/\pi D_o^2}$$

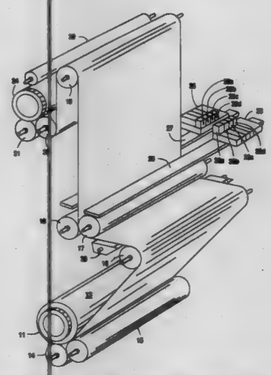
in which expression, $\Delta\gamma$ is a variation in the duty factor γ, K is a natural constant of the laser diode, f_{CO} is a focal length of the diffracting member, D_1 is a tolerable maximum diameter of a beam spot on the light receiving surface, D_0 is a diameter of a beam spot on the light receiving surface when the laser diode emits a laser beam with a designed wavelength, and f_H is a focal length of the scanning means.

5,294,946

INK JET PRINTER

James Gandy, San Antonio; Myles F. Clauser, New Braunfels, and Donald Mickish, San Antonio, all of Tex., assignors to Signtech USA, Ltd., San Antonio, Tex.

Filed Jun. 8, 1992, Ser. No. 894,245
Int. Cl.[5] B41J *2/04, 2/165;* H04N *1/21*
U.S. Cl. 346—140 R **17 Claims**



1. An apparatus for reproducing an image comprising:
means for generating control signals representative of said image to be reproduced;
a substrate;
spray means in fluid communication with an ink source, said spray means operable to reproduce said image on both sides of said substrate;
means for supporting said spray means and for driving said spray means relative to said substrate;
a first pressurized air source communicating with said spray means, wherein the flow of air from said first pressurized air source around said spray means carries said ink to both sides of said substrate;
means for modulating the length of time said first air source flows around said spray means in response to said control signals; and
a second pressurized air source in continuous communication with said spray means for supplying a continuous flow of air around said spray means to prevent ink build-up on on said spray means.

5,294,947

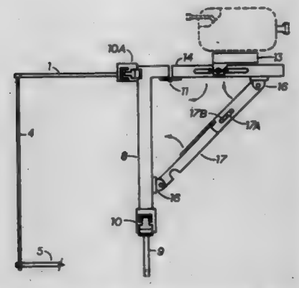
BODY MOUNTED CAMERA SUPPORT

Paul B. Harrington, 52 Rural La., Levittown, N.Y. 11756

Filed Dec. 30, 1991, Ser. No. 814,620
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—82 **1 Claim**

1. A camera support comprising:
a telescopic shoulder yoke, a neck pad attached to said yolk, adjustable back support straps, with each strap having one end attached to said yoke and another end attached to an adjustable waist belt, said belt having ends terminated with a buckle, and two pockets for carrying accessories loosely attached to said waist belt;
a vertical weight support attached to said yoke and resting on said waist belt by an inverted "v" cut into an inside piece of said vertical weight support;

a camera support arm attached to said vertical weight support by a hinge, said arm having a slot for securing a camera rest, said camera rest attached to said slot in said arm, said rest having a screw adapted to match a screw hole in a camera base;
said camera support arm also being attached to interlocking means comprising portions having a collapsed and an extended position, said portions loosely secured together by a rivet which is slidable in a slot in one of said portions,



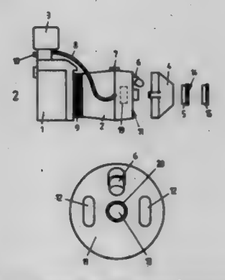
said portions rotatably secured to said vertical weight support and to said support arm;
when said portions are in the extended position said arm is at a right angle to said weight support, and when said portions are in the collapsed position said arm is parallel to said weight support;
said camera support adapted to support a camera hands-free when said portions are in the extended position and when said portions are in the collapsed position.

5,294,948

DEVICE FOR MACROPHOTOGRAPHY

Norbert Merkt; Otto H. Schmidt, both of Herrsching, and Anton Schneider, Geisenbrunn, all of Fed. Rep. of Germany, assignors to Heine Optotechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 30, 1991, Ser. No. 738,167
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 9104808
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—62 **1 Claim**



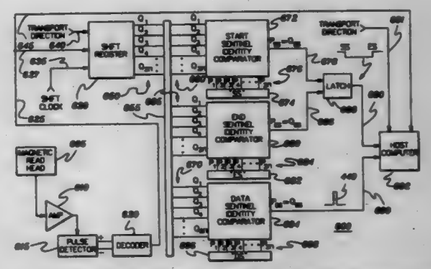
1. A camera apparatus for macrophotography, having a camera with a fixed focus lens, said lens being in a fixed position within said attachment, said attachment having a subject-side positioned toward the subject to be photographed, and further characterized by having a contact element arranged on the subject-side end of said camera attachment, said contact element having a subject side surface defining a fixed focal plane corresponding to the fixed focus of said fixed focus lens, said camera apparatus further being characterized by comprising two elongate windows arranged substantially parallel to one another on said subject-side end of said camera attachment, said windows being arranged on respective sides of said lens, and further having a flash tube positioned behind said windows.

5,294,949

METHOD AND APPARATUS FOR MAGNETIC COMMUNICATION VIA A PHOTOGRAPHIC FILMSTRIP USING TRAPPABLE DATA SENTINELS

Gary L. Robison, and Fernando G. Silva, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,564
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 **24 Claims**



1. Apparatus for use in a stage of film use and processing wherein the film comprises an elongate photographic film strip having successive frames and wherein data is transferred between stages via a magnetic layer of the film strip, comprising:
first means for reading data magnetically recorded in a track in said magnetic layer, said track including a data field comprising a trappable data sentinel and one or more data characters;
second means for unambiguously identifying the trappable data sentinel in the read data; and
third means for: determining, in response to identification of said data sentinel, a character boundary for said data field; parsing the data field into characters beginning at said character boundary; and interpreting so parsed data characters of said field based upon reading of said data sentinel.

5,294,950

IDENTIFICATION SYSTEM FOR AUTOMATED FILM AND ORDER PROCESSING INCLUDING MACHINE AND HUMAN READABLE CODE

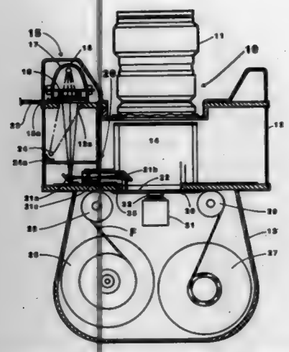
Dale R. DuVall, Keller, Tex.; Jerry W. Lindenfelser, Brooklyn Park, Minn.; Larry D. McClelland, New Hope, Minn.; Patrick J. Gilligan, Bloomington, Minn.; Roger M. Johnson, Brooklyn Center, Minn., and Charles Swanson, Woodbury, Minn., assignors to Photo Control Corporation, Minneapolis, Minn.

Filed Mar. 16, 1992, Ser. No. 851,734
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—109 **14 Claims**

14. A camera comprising:
a camera body (12) defining a film plane (22);
a lens (11), mounted to said camera body (12);
a film magazine (13) for transporting film to said film plane (22), said film magazine (13) containing film (F);
said film (F) and said film plane (22) defining an image area (51);
registration marking means (35), located proximate said image area (51) for exposing an index mark (40) on said film (F);
identification generator (15), having an encoder device (18);

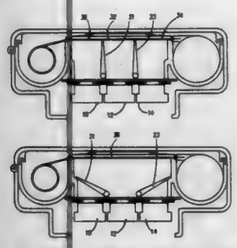
VOL 1160 ISS 3 MR 15 1994 UMI

said encoder device (18) for placing an alphanumeric data image on said film;
a periscope (20) for transferring said data image from said



encoder device (18) onto said film (F) adjacent said image area (51);
whereby said index mark (40) marks the location on said film of said data image.

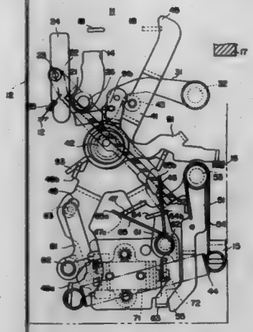
5,294,951
DUAL-MODE 3-D AND 2-D CAMERA WITH MOVABLE BAFFLES
Allen K. W. Lo, Dunwoody, Ga., assignor to Image Technology International, Inc., Norcross, Ga.
Filed Dec. 10, 1992, Ser. No. 988,677
Int. Cl.[5] G03B *35/10, 03/06, 13/10*
U.S. Cl. 354—111 **12 Claims**



1. A camera for taking both two-dimensional and three-dimensional pictures, comprising a plurality of picture-taking lenses, a film plane behind each lens, a moveable light barrier baffle positioned when taking three-dimensional pictures so as to prevent the light entering one lens from exposing the film in the film plane behind any of the other lenses, means for moving the baffle into position to block light from entering all lenses except one so that light entering such lens exposes the film in the film planes behind all of the lenses in order to take a wider two-dimensional picture.

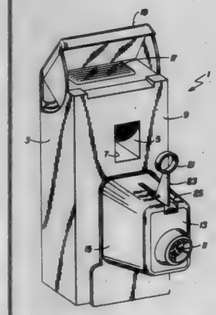
5,294,952
APPARATUS FOR DRIVING MIRROR OF CAMERA
Masayuki Misawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,155
Claims priority, application Japan, Sep. 9, 1991, 3-95965[U]
Int. Cl.[5] G03B *19/12*
U.S. Cl. 354—152 **15 Claims**

1. A mirror driving apparatus for a camera which drives a mirror, the mirror being rotatably movable between two predetermined positions, by an elastic restoring force stored in a mirror biasing member, said mirror driving apparatus comprising:
an engaging means for retaining the elastic restoring force in the mirror biasing member; and
a disengaging and shock absorbing means for elastically biasing the engaging means in a disengaging direction



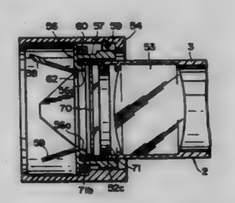
thereof when the mirror is in one of the predetermined positions, and for biasing the mirror in a direction to stop the mirror immediately before the movement of the mirror is completed when the mirror is moved to the other of the predetermined positions by the elastic restoring force of the mirror biasing member.

5,294,953
CAMERA-TO SUBJECT DISTANCE DETERMINING APPARATUS AND METHOD
Alan V. VanDeMoere, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 13, 1993, Ser. No. 3,033
Int. Cl.[5] G03B *13/02*
U.S. Cl. 354—219 **3 Claims**



1. A method of bringing a portrait camera having a fixed-focus taking lens into coincidence with an optimum camera-to-subject distance appropriate for the fixed-focus taking lens regardless of differences in the size of a person's head to be photographed, said method comprising:
setting a finder frame through which a person's head may be viewed to one of several alternative settings corresponding to respective head sizes, for example small, medium and large, to select the particular setting that best matches the size of a person's head to be photographed at the optimum camera-to-subject distance; and
adjusting the specific distance between the portrait camera and a person's head to be photographed until the person's head, when viewed through the finder frame, appears to fill the finder frame to thereby bring the portrait camera into coincidence with the optimum camera-to subject distance.

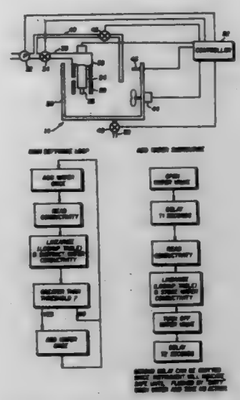
5,294,954
ROTATABLY CONTROLLABLE LENS HOOD AND COVER UNIT
Hiroshi Nomura, Tokyo, and Tomoaki Kobayashi, Saitama, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 800,161, Nov. 27, 1991, abandoned. This application Dec. 20, 1991, Ser. No. 811,695
Claims priority, application Japan, Dec. 20, 1990, 2-403799
Int. Cl.[5] G03B *11/04;* **G02B** *7/00*
U.S. Cl. 354—287 **40 Claims**



1. A cover unit for a lens unit having a lens barrel, said cover unit comprising:
a cylindrical support member to be coupled to an end of said lens barrel, said support member having at least one engaging pin member provided at a predetermined position on an outer circumferential surface thereof;
a cylindrical hood member superposed on said lens barrel;
at least one spiral shaped cam groove formed on an inner circumferential surface of said hood member, said at least one engagement pin member engaging said at least one cam groove whereby the engagement of said at-least-one engaging pin member with said at-least-one cam groove causes said hood member to move in its axial direction relative to said support member in response to rotation of said hood member relative to said support member;
lens barrier means supported by said support member for covering said end of said lens barrel, said lens barrier means being openable; and
drive means for driving said lens barrier means in accordance with the movement of said hood member.

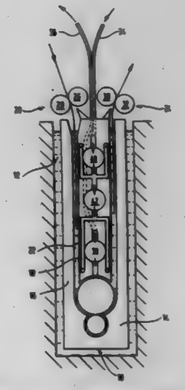
5,294,955
APPARATUS AND METHOD FOR WASHING LIGHT SENSITIVE MATERIAL
Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 18, 1992, Ser. No. 884,577
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **12 Claims**

1. A method for washing web material with a washing fluid after a chemical treatment process and for replenishing the washing fluid, said method including the steps of:
flooding a sensor with replenishment fluid to determine the ionic conductivity of the replenishment fluid;
mixing the replenishment fluid with the washing fluid;
contacting the sensor with the washing fluid to determine the conductivity of the washing fluid;
comparing the ionic conductivity of the washing fluid with the ionic conductivity of the replenishment fluid to determine the difference in conductivity; and



adding replenishment fluid to the washing fluid according to the difference in conductivity.

5,294,956
PHOTOGRAPHIC PROCESSING APPARATUS
Anthony Earle, Middlesex, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/EP92/00631, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO92/17818, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 23, 1992, Ser. No. 949,848
Claims priority, application United Kingdom, Mar. 26, 1991, 9106439
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **6 Claims**



1. Photographic processing apparatus for processing photographic material comprising:
at least one processing tank,
a water bath surrounding the processing tank,
guide rollers for guiding material to be processed into and out of the processing tank, and
transport means for transporting the photographic material through the apparatus;

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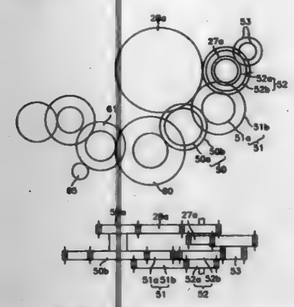
characterized in that the processing tank comprises a self-contained rack;
and in that at least one pump is mounted so as to be integral with the rack.

5,294,957

DRIVE MEANS OF AN ELECTRO-PHOTOGRAPHY PROCESS UNIT

Byung-Seon Ahn, Suwon, Rep. of Korea, assignor to Samsung Electronics Co, Ltd.

Filed Nov. 13, 1992, Ser. No. 975,725
Claims priority, application Rep. of Korea, Nov. 26, 1991, 1991-21267
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—200 **6 Claims**



1. A drive apparatus of an electro-photography process unit comprising:
first idle gear means comprising two gears coaxially arranged and spaced apart from each other, for transmitting the power of a motor to a drum drive gear mounted on a shaft of a photo-sensitive drum and to a second idle gear means with a different pitch for transmitting said power to a developer, said developer being arranged on one side of said drum;
a magnet roll provided in said developer for transferring a toner to said drum;
a first speedup gear with a different pitch engaged with said second idle gear means for driving said magnet roll; and
a second speedup gear with a different pitch engaged with said first speedup gear and with a gear of said magnet roll.

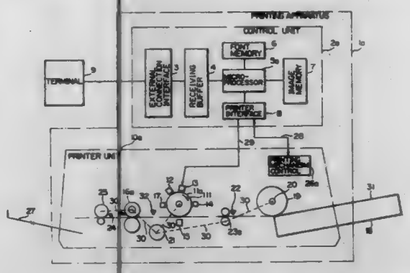
5,294,958

IMAGE FORMING APPARATUS HAVING PHOTOCONDUCTOR DRUM AND FUSER INDEPENDENTLY OPERABLE IN TIMING

Minoru Isobe, and Eisho Sudoh, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,537
Claims priority, application Japan, Jan. 23, 1990, 2-11692
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **20 Claims**

1. An image forming apparatus comprising:
electrostatic latent image forming means for illuminating an electrically charged photoconductor drum with a light source to form an electrostatic latent image on a surface of said photoconductor drum;
developing means for providing adhesion of a toner to the electrostatic latent image to form a toner visible image;
transfer means for transferring the toner image to a printing sheet transferred from a printing sheet feed unit;
fuser means for heating and fusing the transferred toner image onto the printing sheet;
printing sheet feeder means for feeding the printing sheet and delivering a printed sheet;
printing sheet sensing means, including a printing sheet feed sensor, a platen sensor and a printed sheet output sensor disposed at respective positions along said printing sheet feeder means, for detecting a presence or absence of the printing sheet at said respective positions;
means for driving said photoconductor drum, said fuser means and said printing sheet feeder means, said means for driving including a common driving motor for at least said photoconductor drum and said fuser means, and coupling means, including respective clutches for at least said photoconductor drum and said fuser means, for selectively



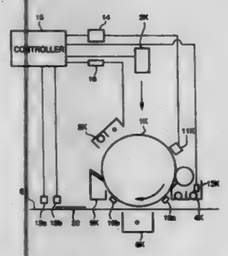
coupling said common driving motor to a respective rotary member of at least said photoconductor drum and of said fuser means when the respective clutch is engaged; and
control means, responsive to output signals from said printing sheet sensing means in accordance with a sensed position of the printing sheet, for selectively controlling engagement and disengagement of the respective said clutches to cause at least said photoconductor drum and said fuser means to operate independently of each other.

5,294,959

IMAGE FORMING APPARATUS WITH IMAGE DENSITY DETECTION MEANS FOR CONTROLLING IMAGE FORMING CONDITIONS

Yoshinori Nagao, Yokohama; Hisashi Fukushima, Kawasaki; Masami Izumizaki, Yokohama, and Nobuatsu Sasanuma, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,836
Claims priority, application Japan, Oct. 3, 1991, 3-283568; Oct. 24, 1991, 3-305427
Int. Cl.[5] G03G *15/00, 15/16*
U.S. Cl. 355—208 **39 Claims**



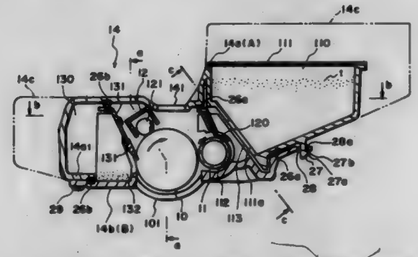
1. An image forming apparatus, comprising:
image forming means for forming an image on an image receiver member, said image forming means including an image bearing member on which a toner image can be born, latent image forming means for forming a latent image on said image bearing member by modulating a signal in accordance with data of said image, and transfer means for transferring said toner image onto said image receiver member;
first detection means for detecting a density of said toner image on said image bearing member before an image transferring operation;
second detection means for detecting a density of said toner image on said image receiver member after an image transferring operation; and
control means for controlling a transferring condition of said transfer means on the basis of detection results from said first and second detection means, and for controlling a latent image forming condition of said latent image forming means on the basis of detection results from said first and second detection means.

5,294,960

DETACHABLE TWO-FRAME PROCESS CARTRIDGE FOR AN IMAGE FORMING APPARATUS

Yoshiya Nomura, Tokyo; Tadayuki Tsuda, Kawasaki; Shinichi Sasaki, Fujisawa; Isao Ikemoto, Kawasaki; Kazushi Watanabe, Yokohama; Hiroyuki Shirai, and Toshiyuki Karkama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,401, Oct. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 689,517, Apr. 23, 1991, Pat. No. 5,208,634. This application May 28, 1993, Ser. No. 68,287
Claims priority, application Japan, Nov. 6, 1990, 2-301779; Mar. 19, 1991, 3-054446
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—210 **56 Claims**



1. A process cartridge detachably mountable to a main assembly of an image forming apparatus, comprising:
process means for acting on said image bearing member;
a first frame having an image bearing member, and developing means for developing with a developer an electrostatic latent image formed on said image bearing member; and
a second frame, separable from said first frame, for covering an upper part of said image bearing member, said second frame having developer accommodating means fixed thereto, for accommodating developer to be supplied to said developing means.

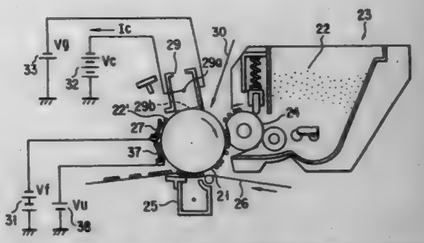
33. A method for assembling a process cartridge detachably mountable to a main assembly of an image forming apparatus, comprising:
preparing a first frame having an image bearing member and process means for acting on the image bearing member;
preparing a second frame, separably engageable with said first frame; and
coupling the first frame and second frame with each other with an elastic sealing member therebetween.

5,294,961

RECORDING APPARATUS WITH TWO CHARGING UNITS FOR ACHIEVING UNIFORM AFTER-TRANSFER ZONES DISTRIBUTION

Yoshimitsu Ohtaka; Ryozo Akiyama, both of Shizuoka, and Tomoyuki Kato, Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 960,560
Claims priority, application Japan, Oct. 21, 1991, 3-272551
Int. Cl.[5] G03G *15/02, 15/06, 21/00*
U.S. Cl. 355—219 **3 Claims**



1. A recording apparatus for performing an image recording based on an electrophotographic system, comprising:
electrostatic latent image carrier means having a photosensitive surface and being rotatable in one direction;
exposure means for producing a partial decline in a charged area on the surface of the electrostatic latent image carrier means to provide an electrostatic latent image on the electrostatic latent image carrier means;
developing means for depositing a toner on the electrostatic latent image provided by the exposure means to form a toner image, while attractively collecting a toner remaining, as a residual toner, on the surface of the electrostatic latent image carrier means after a transfer step;
image recording means for having the toner image recorded thereon;
transfer means for transferring the toner image which has been formed by the developing means to the image recording means for recording the toner image on the image recording means;
residual the toner image uniformalizing/charging means for uniformalizing a residual toner distribution on the surface of the electrostatic latent image carrier means which is left after the transferring of toner by the transfer means, while charging the surface of the electrostatic latent image carrier means; and
auxiliary charging means, including a corona charger, located on a downstream side of the residual toner image uniformalizing/charging means, but on an upstream side of the exposure means, with the rotational direction of the electrostatic latent image carrier means as a reference, and operable in conjunction with said residual toner image uniformalizing/charging means for assisting in charging of the surface of the electrostatic latent image carrier means by the residual toner image uniformalizing/charging means, said auxiliary charging means producing a discharge current;
wherein a relation $|Ia| < |Ico|$ is satisfied, where
Ia: a discharge current in the auxiliary charging means when a charger potential on the surface of the electrostatic latent image carrier means necessary for toner image formation is given by V0; and
Ico: a discharge current in the auxiliary charging means when the surface of the electrostatic latent image carrier means is charged to a potential V0 by the auxiliary charging means alone.

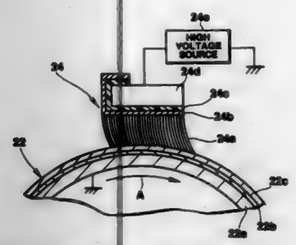
VOL 1160 ISS 3 MR 15 1994 UMI

5,294,962

CONTACT-TYPE ELECTROCONDUCTIVE BRUSH FOR ELECTRICALLY CHARGING AN IMAGE CARRIER OF AN IMAGE FORMING APPARATUS

Masaru Sato, Kodaira, and Tetsuya Abe, Tama, both of Japan, assignors to Casio Electronics Manufacturing Co., Ltd. and Casio Computer Co., Ltd., both of Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,576
Claims priority, application Japan, Nov. 8, 1991, 3-091731[U]
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **4 Claims**



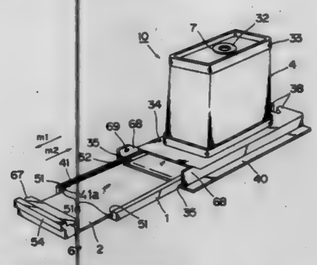
1. An image forming apparatus comprising:
a charging device;
an image carrier rotatable in a predetermined direction for charging a surface of the image carrier;
a printing means for forming an electrostatic latent image on the charged surface of the image carrier in accordance with image information supplied thereto;
developing means for developing the electrostatic latent image with a toner; and
transfer means for transferring a toner image from the surface of the image carrier onto a transfer medium supplied thereto;
said charging device has a contact-type electroconductive brush;
said image carrier including a conductive main body, an undercoat layer having a predetermined electric resistance higher than that of said conductive main body, the predetermined electric resistance being in a range from about 10^9 Ω to about 10^{10} Ω, and a conductive layer or a photosensitive layer, which is formed on said undercoat layer, and on which an electrostatic latent image is formed by the printing means after charging is performed by said charging device;
said contact-type electroconductive brush including a brush main body constituted by brush bristles consisting of conductive fibers having electric resistance within a range from about 10^6 Ω/cm to about 10^9 Ω/cm, a conductive base cloth, which has an electric resistance lower than that of each of said brush bristles, and on which said brush bristles are furnished, and a base member to which said conductive base cloth is fixed, and voltage applying means for applying a predetermined voltage to said conductive base cloth, the predetermined voltage being a DC voltage of about 1,000 volts;
said brush bristles of said contact-type electroconductive brush being brought into contact with the conductive layer or the photosensitive layer of the image carrier along a predetermined length thereof; and
each said brush bristle having a thickness of about 5 denier to about 10 denier, a length of about 5.0 mm to about 9.0 mm, the predetermined length by which said brush bristles are brought into contact with the conductive layer or the photosensitive layer of the image carrier being about 1.0 mm to about 3.0 mm, said brush bristles having a density on said conductive base cloth of about 80,000 bristles/-square inch to about 150,000 bristles/square inch.

5,294,963

TONER CARTRIDGE HAVING OPENING FOR DISCHARGING TONER SEALED WITH SEALING MEMBER AND METHOD OF STRIPPING SEALING MEMBER

Kuniaki Nakano, Nara; Yasuyuki Hirai, Yao; Masahiro Higashitani; Yasuhiro Matsuo, both of Osaka; Shingo Mori, Nara; Hiromi Sakata, Suita; Masahiro Sako, Hirakata, and Minoru Kishigami, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 8, 1992, Ser. No. 865,098
Claims priority, application Japan, Apr. 19, 1991, 3-088776; Jun. 18, 1991, 3-174419
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **40 Claims**



1. A toner cartridge comprising:
a cartridge body for containing toner, said cartridge body having an opening for discharging toner;
a sealing member disposed so as to close the opening and having its periphery strippably affixed to a peripheral edge part of said opening;
first sliding means slidably provided along said opening; and
second sliding means slidably provided along said opening and being provided with a through hole on the side of a starting position where stripping is started of the sealing member, said sealing member being inserted through said through hole to make it possible to tow the sealing member;
said sealing member having an extended part extended from said starting position, the extended part being inserted through said through hole formed in said second sliding means and being fixed in said first sliding means with no significant slack in the extended part.

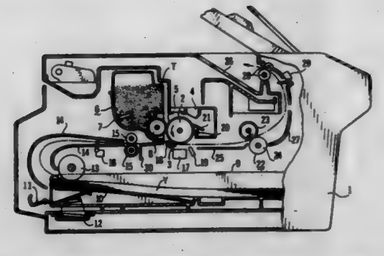
5,294,964

CLEANERLESS IMAGE FORMING APPARATUS

Koichiro Oshiumi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 4, 1992, Ser. No. 986,147
Claims priority, application Japan, Dec. 17, 1991, 3-333658
Int. Cl.[5] G03G *15/06, 15/24*
U.S. Cl. 355—270 **12 Claims**

1. An image forming apparatus, comprising:
a photosensitive drum adapted to hold a toner image,
a transfer unit for applying a transfer unit voltage to a recording sheet such that the toner image is transferred from the photosensitive drum to the recording sheet,
a memory removing member having a voltage applied thereto by a voltage source,
control means, operable at a predetermined time after an image forming operation, for charging the photosensitive drum to a predetermined voltage with the transfer unit and for adjusting the voltage applied to the memory removing member to a voltage lower than the predetermined voltage, whereby toner remaining on the memory



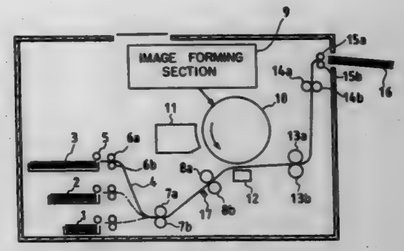
removing member after the image forming operation is transferred to the photosensitive drum.

5,294,966

IMAGE FORMING SYSTEM HAVING FIRST AND SECOND PRINT MODES WHICH CONTROL SHEET AT TRANSFER REGISTRATION ROLLERS

Masami Shiokawa, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1991, Ser. No. 761,506
Claims priority, application Japan, Sep. 21, 1990, 2-253210
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—317 **6 Claims**



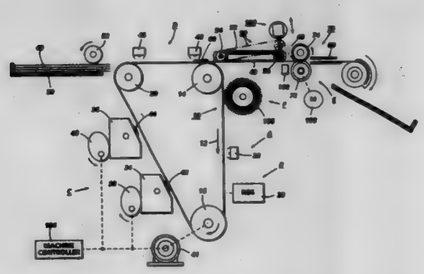
1. An image forming system, comprising:
a sheet supply section for supplying a sheet of paper;
an image forming section for forming an image on the sheet of paper;
a transfer path for transferring the sheet of paper from said sheet supply section to said image forming section, said transfer path including a sync transfer section which properly times the transfer of the sheet of paper to said image forming section;
detecting means for detecting the arrival of the sheet of paper at said sync transfer section;
transfer command check means for checking if a sheet transfer command is present;
first print control means for transferring the sheet of paper from said sheet supply section to said sheet transfer path and, when said detecting means detects arrival of the sheet of paper at said sync transfer section, for placing the sheet of paper on standby in said sync transfer section, said first print control means thereafter causing the sheet of paper being on standby to move to said image forming section and causing the printing operation of received image data in response to a first print command, said first print control means being operated when said transfer command check means determines that the sheet transfer command is present; and
second print control means for transferring the sheet of paper from said sheet supply section to said sheet transfer path and for producing an image data request signal when the sheet of paper reaches said sync transfer section without stopping the sheet of paper at said sync transfer section, in order to cause the printing operation of the received image data in response to a second print command, said second print control means being operated when said transfer command check means determines that the sheet transfer command is not present,
wherein when said image is to be printed on a predetermined number of sheets, said first control means operates on a first sheet and said second control means operates on the remaining sheets of said predetermined number of sheets.

5,294,965

OSCILLATING PREFUSER TRANSPORT

Joseph N. May, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,383
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—312 **11 Claims**



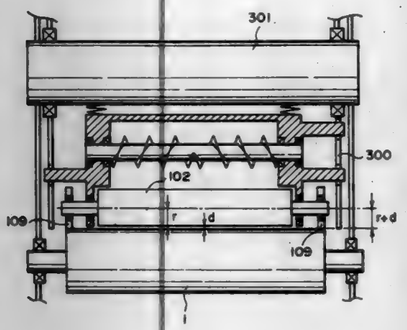
1. An apparatus that compensates for velocity mismatches in transporting image substrates along a predetermined path, including:
an image receiver;
a fuser for fixing powder images to said image substrates;
a transport disposed intermediate said image receiver and said fuser for positively conveying image substrates from said image receiver to said fuser;
means for operating said fuser at a slower speed than said image receiver whereby said image substrates tend to form a buckle adjacent said fuser;
means for adjusting the operating position of one end of said substrate transport for effecting formation of a buckle in said image substrate until said image substrates separate from said image receiver.

5,294,967

IMAGE FORMING APPARATUS WITH A PLURITY OF ADJUSTABLE DEVELOPING UNITS

Atsushi Munakata; Masahiro Itoh; Akira Watanabe, and Yuji Sakemi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1990, Ser. No. 485,476
Claims priority, application Japan, Feb. 28, 1989, 1-047585; May 31, 1989, 1-138782
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 12 Claims



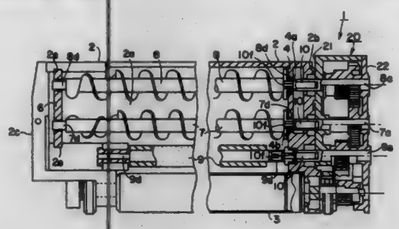
1. An image forming apparatus, comprising:
an image bearing member;
latent image forming means for forming an electrostatic latent image on said image bearing member; and
developing means for developing the latent image, said developing means including;
a plurality of developing units for supplying to said image bearing member developers of different colors, each of said developing units including a container for containing one of the developers and a developer carrying roller for carrying the developer from said container to a developing position, said developer carrying roller having a shaft portion at an end thereof;
supporting means for supporting said plurality of developing units and movable along a predetermined path to present a selected one of said developing units to an operating position for developing the latent image, said supporting means including a movable supporting frame movable along the path, a plurality of positioning members fixed on said movable supporting frame, each of said positioning members having an engaging portion for engaging the shaft portion of the developer carrying roller of a respective developing unit, and adjusting means for adjusting positions where said positioning members are fixed on said supporting frame, wherein the shaft portion of each of said developer carrying rollers is engaged to and positioned by a respective one of said positioning members, whereby each of said developing units is disposed in facing relationship with said image bearing member at the operating position without contact with said image bearing member, and whereby each of said developer carrying rollers is disposed in facing relationship with said image bearing member at the developing position with a predetermined distance therebetween for supplying the developer to the image bearing member to develop the latent image.

5,294,968

DEVELOPING UNIT AND DRIVE TRANSMISSION ATTACHMENT

Kiyoshi Ueda; Mitsuyoshi Nagashita, and Toshio Hagiwara, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Jun. 24, 1992, Ser. No. 903,380
Claims priority, application Japan, Jul. 9, 1991, 3-168273; Jul. 10, 1991, 3-169910; Jul. 11, 1991, 3-171180; Jul. 19, 1991, 3-179581
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 6 Claims



1. A developing apparatus for use with a photoreceptor to form a toner image, said apparatus comprising
a housing wherein toner is stored;
a plurality of toner handlers, each of said toner handlers including shaft member, and a handling member which rotates or swings about said shaft member, each said handling member disposed within said housing;
a transmission dismountably mounted on said housing, said transmission including a plurality of output shafts, each of said output shafts transmitting driving force to one said shaft member;
a plurality of coupling members each including an insertable shaft having a circumferential surface and an axis, and a receiving member having an axial hole therein to receive said insertable shaft;
a plurality of grooves in said circumferential surface, said grooves extending in an axial direction parallel to said axis, adjacent said grooves being spaced apart circumferentially at substantially equal distances to form a plurality of teeth; an inside wall of said axial hole being grooved in said axial direction and being complementary to said teeth, whereby said insertable shaft can be inserted into said receiving member in an arbitrary rotational relationship with said receiving member;
each said shaft member being provided with either said insertable shaft or said receiving member, and each output shaft is provided with the other of said insertable shaft and said receiving member, so that each said shaft member and each of said output shafts are engaged or disengaged simultaneously by mounting or dismounting said transmission.

5,294,969

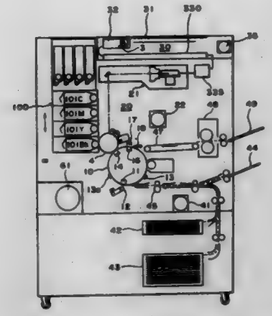
IMAGE FORMING APPARATUS HAVING A PLURALITY OF DEVELOPING DEVICES

Hideo Ito, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 17, 1992, Ser. No. 946,535
Claims priority, application Japan, Sep. 18, 1991, 03-268435
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R 16 Claims

1. In an image forming apparatus comprising a movable developing unit on which a plurality of developing devices are mounted, a motor which drives the developing unit, and a driving circuit which controls an operation of the motor in accordance with a driving signal, a method of adjusting the driving signal comprising the steps of:
feeding a predetermined driving signal to the driving circuit;

driving the motor in accordance with the predetermined signal to position a designated one of the developing devices at a developing position;



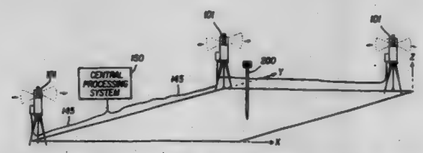
measuring a movement of the developing unit driven by the motor and generating an adjusting coefficient based on a result of the measurement; and
adjusting the driving signal by use of the adjusting coefficient.

5,294,970

SPATIAL POSITIONING SYSTEM

Andrew W. Dornbusch; Eric J. Lundberg; Yvan J. Beliveau, and Timothy Pratt, all of Blacksburg, Va., assignors to Spatial Positioning Systems, Inc., Blacksburg, Va.

Continuation-in-part of Ser. No. 636,459, Dec. 31, 1990, Pat. No. 5,110,202. This application Sep. 6, 1991, Ser. No. 755,780
Int. Cl.[5] G01B *11/26*; G01C *3/00*
U.S. Cl. 356—152 16 Claims



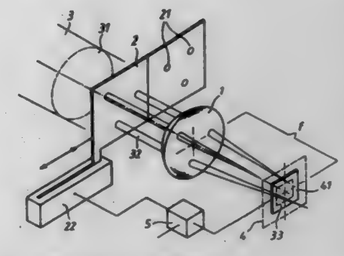
1. A spatial positioning and measurement system for determining the instantaneous x-y-z position of an object in a three-dimensional Cartesian coordinate system, said system comprising:
a plurality of fixed referent stations located at known locations within a local coordinate system, each said referent station including emitter means for emitting at least two sweeping radiation beams which are divergent in a plane perpendicular to the plane in which they are swept;
a portable reflector means for reflecting said beams toward said fixed referent stations;
detecting means for detecting said beams, said detecting means generating a signal each time one of said beams is detected; and
determination means for determining the x-y-z position of said portable reflector means and each of said other fixed referent stations relative to each other within said local coordinate system based upon said signals generated by said detecting means.

5,294,971

WAVE FRONT SENSOR

Bernhard Braunecker, Rebstein; Bernhard Gaechter, Balgach, and André Huiser, deceased, late of Luchingen, all of Switzerland by Christiane Huiser-Simonin, heiress, assignors to Leica Heerbrugg AG, Heerbrugg, Switzerland

PCT No. PCT/EP91/00194, § 371 Date Oct. 7, 1991, § 102(e) Date Oct. 7, 1991, PCT Pub. No. WO91/12502, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 2, 1991, Ser. No. 768,845
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1990, 4003698
Int. Cl.[5] G01J *1/00*
U.S. Cl. 356—121 15 Claims



1. A wave front sensor comprising:
a focusing optical system (1),
a diaphragm (2) with a plurality of perforations (21), situated simultaneously in a beam path (3), the perforations positioned in an encoded arrangement,
a device (22) for advancing the perforated diaphragm (2), so that a multiplicity of different encoded arrangements of perforations (21) are situated successively in the beam path (3) and the entire cross section of the beam path (3) is scanned overall repeatedly with different encoded arrangements of perforations (21),
a space-resolving light detector (41), which is disposed close to the focal plane (4) of the optical system (1) and which determines in each instance a position and intensity of a light spot (33) which results from a superposition of the plurality of beams (32) generated by the perforations (21), and
a storage and computing unit (5), which reconverts the position and intensity values determined by the light detector (41), using the code of the arrangement of the perforations (21), into a phase and amplitude of a wave front.

5,294,972

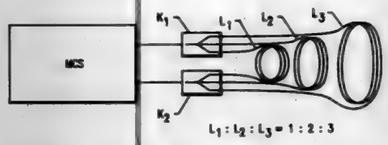
MULTI-AXIS FIBER OPTIC ROTATION RATE SENSOR WITH PARALLEL SENSING COILS

Manfred Kemmler, Vörstetten, Fed. Rep. of Germany, assignor to Litef GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 850,870
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1991, 4108807
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 3 Claims

1. In a multi-axis fiber-optic rotation rate sensor of the type that includes a light source followed in sequence by a fist beam splitter, a polarizer, a second beam splitter and a single phase modulator; a photodetector that accepts a second output of the first beam splitter, and an analog-to-digital converter, coupled to the photodetector, that feeds a closed loop, which resets the rotational rates through a digital-to-analog converter connected to a reset input of the phase modulator, the improvement comprising, in combination:
a) a coupler connected to each of the two outputs of said single phase modulator for dividing the tow modulated

output light beams from said second beamsplitter into an equal plurality of pairs of light beams, and radiating said beam pairs in parallel into the respective two ends of a correspond plurality of fiber coils L_1, L_2, L_3, . . . , L_n arranged in parallel, said coils having light path lengths in the ratio $L_1:L_2:L_3$ . . . $:L_n = 1:2:$ . . . $:n$; and



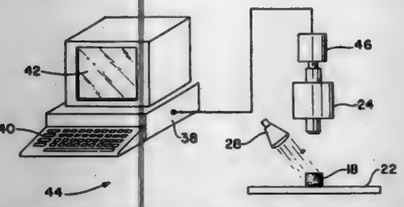
b) means for switching said light source ON/OFF with a pulse-duty factor whose ON duration corresponds to the transit time of light through the shortest fiber coil and whose OFF duration is at least equal to the transit time of light through the longest of the fiber coils L_n.

5,294,973

METHOD AND APPARATUS FOR DETERMINING BODY PLY CORD DISTRIBUTION

Francis J. Byrne, Olmsted Twp., Ohio, assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Nov. 27, 1992, Ser. No. 982,353
Int. Cl.[5] G01B *11/00*; G01N *21/88*
U.S. Cl. 356—372 **20 Claims**



1. Apparatus for determining body ply cord distribution in a calendered fabric sheet, comprising:
first means for receiving a sample of said calendered sheet, said sample having an end exposing ends of the cords in spaced apart cross section;
second means for casting light upon said cross sectional ends of said cords;
third means for generating a digitized image of said sample end illuminated by said second means; and
fourth means for receiving said digitized image, determining a location of each of said ends of the cords within the sample end and determining therefrom a spacing between adjacent cords within said sample.

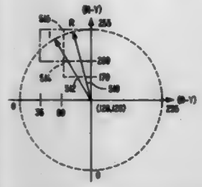
5,294,974

HIGH-DEFINITION VIDEO ENCODING SYSTEM HAVING COLOR-SENSITIVE QUANTIZATION

Satpraad V. Naimpally, Langhorne; Siu-Leong Iu, Bensalem, both of Pa., and Hee-Yong Kim, Plainsboro, N.J., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Jul. 24, 1992, Ser. No. 920,184
Int. Cl.[5] H04N *7/133*, *11/04*
U.S. Cl. 348—395 **11 Claims**

1. Apparatus for use in a video signal encoding system which digitally encodes data values representing color image information the system includes quantization apparatus responsive to a control signal for quantizing the color information to be encoded according to a variable step size, the apparatus comprising:
a color detector, responsive to the data values representing color image information, to analyze the color image information and to provide an output signal when the color image information represents colors within a predetermined range of hues and a predetermined range of saturation;



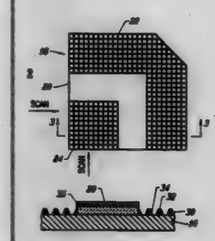
scaling means, responsive to the output signal of the color detector, for changing the control signal to cause the quantization apparatus to selectively change the quantization step size used to encode the color information data values.

5,294,975

LASER ALIGNMENT TARGET FOR SEMICONDUCTOR INTEGRATED CIRCUITS

Kevin A. Norman, Belmont, and Kamlapati Khalsa, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Oct. 15, 1992, Ser. No. 961,598
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 **16 Claims**



1. An alignment target for use in aligning a semiconductor wafer using a scanning light beam comprising a light reflective surface of a first material defining an alignment pattern, and a light scattering surface of a second material abutting said light reflecting surface, said light scattering surface including a raised pattern of generally orthogonal lines formed in said second material, each line having inclined sidewalls which scatter impinging light.

5,294,976

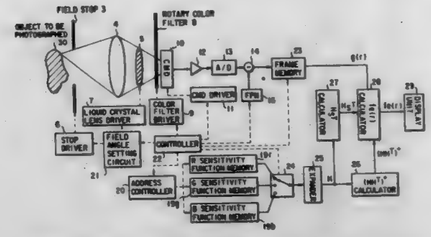
IMAGE PICKUP SYSTEM FOR REPRODUCING IMAGE DATA USING SENSITIVITY FUNCTION

Nagaaki Ohyama, Yokohama, and Yasuhiro Komiya, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 37,094
Claims priority, application Japan, Apr. 28, 1992, 4-136183; Mar. 8, 1993, 5-46751
Int. Cl.[5] H04N *9/04*
U.S. Cl. 348—229 **5 Claims**

1. An image pickup apparatus comprising:
a photographic optical system directed to an object to be photographed;

image pickup means for outputting image data corresponding to an image of said object which is incident through said photographic optical system;
sensitivity function storing means for prestoring sensitivity function data representing a light sensitivity in an object



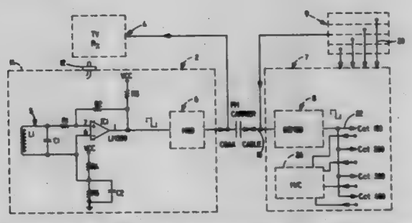
space at each pixel included in said image pickup means; and
image reproducing means for reproducing the image data output from said image pickup means by using the sensitivity function data stored in said sensitivity function storing means.

5,294,977

TELEVISION SIGNAL DETECTION APPARATUS

David Fisher, and Lawrence Tyson, both of 32 Biggin Way, Upper Norwood, London, Great Britain SE19 3XF

PCT No. PCT/GB90/00687, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO90/13974, PCT Pub. Date Nov. 15, 1990
PCT Filed May 3, 1990, Ser. No. 775,938
Claims priority, application United Kingdom, May 3, 1989, 8910071
Int. Cl.[5] H04N *7/10*
U.S. Cl. 348—4 **6 Claims**



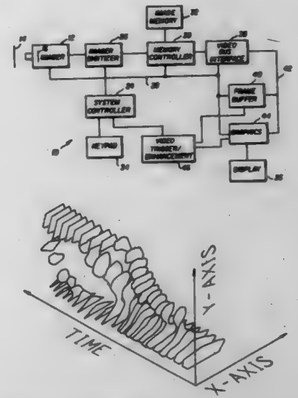
1. Television signal detection apparatus comprising a remote unit locatable in or in proximity to a television receiver and a central control unit locatable at a position remote from the remote unit, the remote unit having a resonant tuned circuit tuned to a horizontal synchronization signal frequency of the receiver, a detector circuit for converting the output of the tuned circuit to a modulating signal, and a modulator for frequency modulating a carrier signal with said modulating signal the central control unit having a demodulator arranged to receive the modulated carrier signal and demodulate the carrier signal to produce a signal corresponding to the phase of the horizontal synchronization signal of said receiver, the central control unit further having a means to detect a phase of a line synchronization signal of each of a plurality of video tape players selectively connectable to said receiver, a comparator to compare the phase of said horizontal synchronization signal of said receiver with the phase of each of said line synchronization signals to determine whether both signals are matched and a microprocessor to log matched signals, wherein a header code is joined with the signal corresponding to the phase of said receiver synchronization signal whereby the signal is uniquely identified as characteristic of said television receiver.

5,294,978

VISUALIZATION TECHNIQUES FOR TEMPORALLY ACQUIRED SEQUENCES OF IMAGES

Andrew S. Katayama, Cardiff by the Sea, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1991, Ser. No. 809,190
Int. Cl.[5] H04N *7/18*, *5/262*
U.S. Cl. 348—416 **7 Claims**



1. A method for visualizing a sequence of recorded images of an event by a single spatio-temporal image, comprising:
recording a sequence of image frames of an event;
defining a series of pixels which is similar for each said recorded image frame; and
constructing a spatio-temporal image frame having spatial and temporal axes, wherein each said series of pixels of a recorded image frame constitutes at least one line of pixels of said spatio-temporal image frame along the spatial axis, and sequential lines of pixels along the temporal axis are derived from sequential recorded image frames of said event.

5,294,979

ESTIMATION OF NOISE USING BURST GATE RESPONSE TO VIDEO SIGNAL

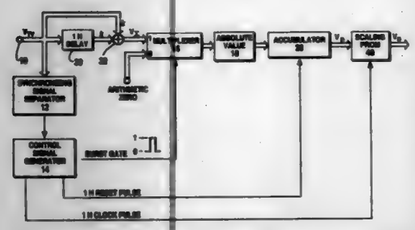
Chandrakant B. Patel, Hopewell, Pa.; Hermann J. Weckenbrock, Bordentown, N.J.; Werner F. Wedam, Lawrenceville, N.J., and Ted N. Altman, East Windsor, N.J., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 713,258, Jun. 13, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 73,478
Int. Cl.[5] H04N *17/00*, *9/64*, *5/213*, *5/08*
U.S. Cl. 348—624 **59 Claims**

1. A process for monitoring noise components of a video signal, said video signal including horizontal synchronizing pulses that recur at a horizontal line scan rate and a respective backporch interval after each horizontal synchronizing pulse in which may occur a respective burst of a subcarrier signal, said process comprising the steps of:
receiving said video signal for a plurality of horizontal lines within a field;
combining corresponding samples of said video signal for each currently scanned one of said horizontal lines and for at least one other of said horizontal lines of said video signal just previously scanned, to generate an intermediate

signal in which bursts of said subcarrier signal are suppressed by their combining out-of-phase;

transmitting components of said intermediate signal during each of said backporch intervals, to provide a respective succession of noise samples, as selected from among other samples of said intermediate signal; and



generating a representation of the noise level in the horizontal lines of said video signal combined to generate each horizontal line of said intermediate signal, by accumulating the absolute values of the noise samples in said respective succession of noise samples, as selected from among other samples of said intermediate signal.

5,294,980

POSITIONING DETECTING METHOD AND APPARATUS

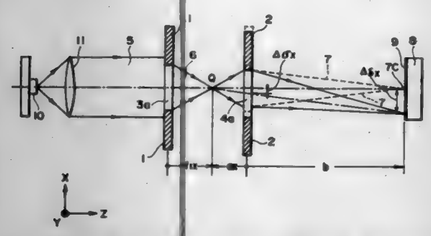
Masakazu Matsugu, Atsugi; Kenji Saitoh, Yokohama; Yukichi Niwa, Narashino; Noriyuki Nose, Machida; Ryo Kuroda, Atsugi, and Shigeyuki Soda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 875,583, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 798,048, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 327,705, Mar. 23, 1989, abandoned. This application May 10, 1993, Ser. No. 58,662

Claims priority, application Japan, Mar. 24, 1988, 63-070494

Int. Cl.[5] G01B *11/00*; G01N *21/85*

U.S. Cl. 356—401 **110 Claims**



2. A device for detecting a relative positional relationship between first and second objects with respect to a predetermined direction, comprising:

illuminating means for irradiating the first object with light;

wherein the first and second objects are provided with first and second physical optic elements, respectively, each having a light converging or diverging function in said predetermined direction and wherein said illumination means illuminates the first physical optic element; and

photodetecting means for detecting light passing through the first object and emanating from the second object, wherein said photodetecting means is operable to detect light convergently or divergently influenced by both of the first and second physical optic elements, such that the relative positional relationship between the first and second objects can be detected on the basis of the detection by said photodetecting means;

wherein one of the first and second physical optic elements has a light converging or diverging function also in a direction perpendicular to said predetermined direction and has different focal lengths in said perpendicular direction and in said predetermined direction, and wherein the other of the first and second physical optic elements has no light converging function and no light diverging function in a direction perpendicular to said predetermined direction.

5,294,981

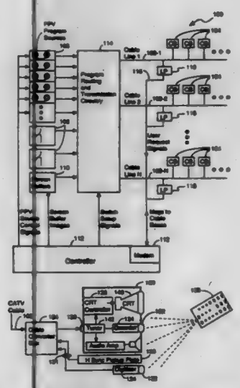
TELEVISION VIDEO SYNCHRONIZATION SIGNAL MONITORING SYSTEM AND METHOD FOR CABLE TELEVISION SYSTEM

Lauren F. Yazolino, Orinda, and John L. Goodell, Sunnyvale, both of Calif., assignors to Pacific Pay Video Limited, Mountain View, Calif.

Filed Jul. 13, 1993, Ser. No. 90,508

Int. Cl.[5] H04N *7/10, 17/00*

U.S. Cl. 348—4 **3 Claims**



1. Status monitoring apparatus for monitoring a television, wherein the monitored television includes:

a tuner for receiving a television signal on a selected frequency channel;

circuitry that generates periodic synchronization signals from said received television signal;

said status monitoring apparatus comprising:

an antenna suitable for positioning proximate the monitored television;

a television signal source that supplies a selected television signal having a horizontal synchronization component;

a horizontal synchronization filter that passes the horizontal synchronization component of said selected television signal;

a synchronization signal comparator coupled to antenna and said horizontal synchronization filter that compares (A) said passed horizontal synchronization component of said selected television signal with (B) signals, if any, received from said antenna, and outputs a result signal indicating whether said comparator is receiving signals from said antenna that match said horizontal synchronization component of said selected television signal;

wherein said result signal indicates whether said monitored television is both turned on and tuned so as to receive said selected television signal.

5,294,982

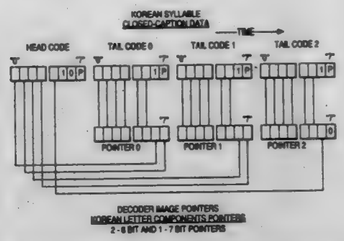
METHOD AND APPARATUS FOR PROVIDING DUAL LANGUAGE CAPTIONING OF A TELEVISION PROGRAM

Amnon M. Salomon, Springfield, Va., and Anthony M. Faust, Mundelein, Ill., assignors to National Captioning Institute, Inc., Falls Church, Va.

Filed Dec. 24, 1991, Ser. No. 813,021

Int. Cl.[5] H04N *7/087*

U.S. Cl. 348—461 **28 Claims**



1. In decoder apparatus for decoding data encoded on particular horizontal lines of a vertical blanking interval of a composite video signal, a method for decoding the encoded data characterized by the steps of

receiving the encoded data as a serial data stream of data frames, each data frame comprising a synchronization field and two data bytes.

retrieving data packets from the data frames,

decoding the data packets, each data packet comprising a plurality of data bytes, the data packets indicated by particular bit indications appearing in one of the plurality of bytes of each data packet,

storing a plurality of letter components in memory for at least two languages, a first language having the Roman alphabet and a second language having a syllabic alphabet,

determining if the data packet represents a non-printable character, and

mapping remaining bit positions of the data packet for a printable character into a number of letter component pointer bytes less than or equal to the number of bytes comprising the data packets, the letter component pointer bytes for pointing to one of a Roman alphabet letter or a syllabic alphabet letter component in memory for display.

5,294,983

FIELD SYNCHRONIZATION SYSTEM WITH WRITE/READ POINTER CONTROL

Nataniel H. Ersoz, Brownsburg, and Barth A. Canfield, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US91/03745, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992

PCT Filed May 29, 1991, Ser. No. 938,223

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *5/06, 5/14, 5/262*

U.S. Cl. 348—521 **15 Claims**

1. A synchronization system, comprising:

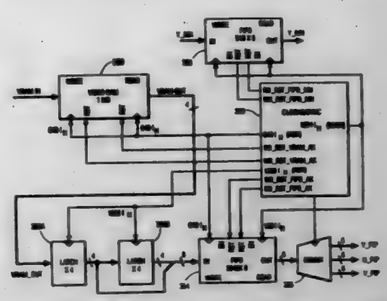
video display means synchronized with a first video signal having a first line rate component and a first field rate component;

a field memory for a second video signal having a second line rate component;

a multiple line memory having independently resettable write and read pointers;

means operative synchronously with said second line rate component for subsampling said second video signal, for writing and reading said subsampled video signal into and out of said field memory respectively and for writing said subsampled video signal into said multiple line memory;

means operative synchronously with said first line rate component for reading said subsampled video signal out of said multiple line memory;



means for resetting said write pointer by sampling said first field rate component with said second line rate component; and,

means for resetting said read pointer by sampling said first field rate component with said first line rate component.

5,294,984

VIDEO SIGNAL PROCESSING SYSTEM FOR PRODUCING INTERMEDIATE PIXEL DATA FROM NEIGHBORING PIXEL DATA TO IMPROVE IMAGE QUALITY

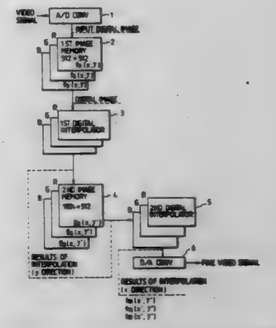
Ryoichi Mori, c/o Institute of Information Sciences and Electronics University of Tsukuba, 1-1, Tennodai, 1-chome, Tsukuba-shi, Ibaragi-ken; Kazuo Toraichi, Sayama, and Masaru Kamada, Tsukuba, all of Japan, assignors to Ryoichi Mori, Tokyo, Japan

Continuation-in-part of Ser. No. 383,358, Jul. 20, 1989, abandoned. This application Jan. 13, 1992, Ser. No. 819,812

Claims priority, application Japan, Jul. 23, 1988, 63-183874

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—160 **2 Claims**



1. A video processing system for processing a video signal to produce pixel data corresponding to an intermediate position between two neighboring pixels from pixel data of two neighboring pixels, each of said pixels being characterized by luminescence data, said system comprising: an input terminal for receiving said video signals, image memory means coupled to said input terminal for storing the video signal, and interpolation means connected to said memory means for receiving said video signal from said image memory means, said interpolation

VOL 1160 ISS 3 MR 15 1994 UMI

means comprising means for performing a convolution operation with respect to said luminescence data of the pixels contained in the video signal and with respect to an impulse response signal, said interpolation means producing pixel data corresponding to said intermediate position between two neighboring pixels.

5,294,985

SIGNAL LIMITING APPARATUS HAVING IMPROVED SPURIOUS SIGNAL PERFORMANCE AND METHODS

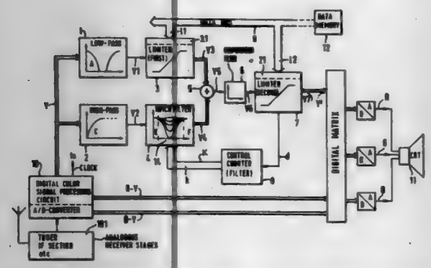
Hans-Juergen Desor, Deutlingen, and Heinrich Koehne, Voerstetten, both of Fed. Rep. of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 934,067

Claims priority, application European Pat. Off., Aug. 29, 1991, 91114523.3

Int. Cl.[5] H04N *5/14*

U.S. Cl. 348—607 19 Claims



1. A limiter apparatus for amplitude limiting an input information signal having a plurality of frequency components, comprising:

means for filtering said input signal, said means having a low pass frequency response for providing at a first output selected low frequency components in said input signal and having a high pass frequency response for providing at a second output selected higher frequency components present in said input signal;

controllable attenuating means coupled to said second output for selectively attenuating said high frequency components according to the value of a control signal applied thereto;

combining means responsive to an output of said attenuating means and said first output of said filtering means for providing at an output a combined signal; and

limiting means responsive to said combined signal to limit the magnitude of said combined signal according to a first threshold value and for providing said control signal for said attenuating means for controlling said attenuation of said high frequency components according to the extent of limiting whereby said limiter apparatus operates to provide reduced spurious frequencies for those higher frequencies contained within said input signal as compared to said lower frequency components.

5,294,986

VIDEO SIGNAL GRADATION CORRECTOR WHICH PREVENTS EXCESSIVE EXTENSION OF THE DYNAMIC RANGE

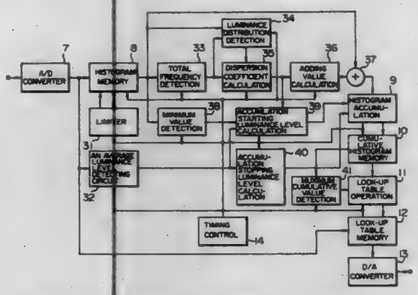
Toshiaki Tsuji, Takatsuki, and Atsuhisa Kageyama, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 22, 1992, Ser. No. 886,927

Claims priority, application Japan, May 28, 1991, 3-123646

Int. Cl.[5] H04N *5/14*

U.S. Cl. 348—672 4 Claims



1. A gradation corrector comprising:

a histogram memory device for storing the luminance histogram of a video luminance signal;

a limiter circuit connected with said histogram memory, for limiting the data supplied from said histogram memory in accordance with a threshold level;

a total frequency detecting circuit for detecting the total frequency of the luminance histogram on the basis of the output signal from said histogram memory;

a luminance distribution detecting circuit for detecting the luminance distribution of said luminance histogram on the basis of the output signal from said total frequency detecting circuit and that from said histogram memory;

a dispersion coefficient calculating circuit for calculating the expanse of said luminance histogram on the basis of the output signal from said luminance distribution detecting circuit and that from said total frequency detecting circuit;

an adding value calculating circuit for calculating a fixed value to be added when a cumulative histogram is acquired on the basis of the calculation result supplied from said dispersion coefficient calculating circuit;

an adder for adding the calculation result from said adding value calculating circuit to the output signal from said histogram memory;

a minimum value detecting circuit for detecting the minimum luminance level of said luminance histogram on the basis of the output signal from said histogram memory;

an average luminance level detecting circuit for detecting the average luminance level of the video signal inputted to said histogram memory;

an accumulation starting luminance level calculating circuit for calculating the luminance level where accumulation should be started when the cumulative histogram is to be acquired, on the basis of the output signals from said average luminance level detecting circuit, said minimum value detecting circuit and said dispersion coefficient calculating circuit;

an accumulation stopping luminance level calculating circuit for calculating the luminance level where accumulation should be started when the cumulative histogram is to be acquired, on the basis of the output signal from said average luminance level detecting circuit;

a histogram accumulation circuit for accumulating the outputs from said adder while they are controlled by the

output signals from said accumulation starting luminance level calculating circuit and said accumulation stopping luminance level calculating circuit;

a cumulative histogram memory device for storing the accumulation result;

a maximum cumulative value detecting circuit for detecting the maximum value of the cumulative histogram on the basis of the output signal from said cumulative histogram memory;

a look-up table operating circuit for normalizing the output signal from said cumulative histogram memory on the basis of the output signal from said maximum cumulative value detecting circuit;

a look-up table memory device for storing the operation result in said look-up table operating circuit to convert the inputted video luminance signal on the basis of the corresponding data and outputting the converted signal; and

a timing control circuit for controlling the operation of each of said circuits.

5,294,987

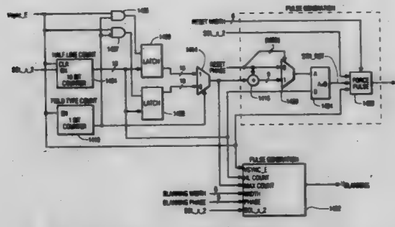
FIELD TO FIELD VERTICAL PANNING SYSTEM

Timothy W. Saeger, and David J. Duffield, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 10, 1992, Ser. No. 911,648

Int. Cl.[5] H04N *3/227*

U.S. Cl. 348—536 26 Claims



1. A television apparatus, comprising:

means for displaying a video signal representing a picture and having a vertical synchronizing component defining successive vertical scanning intervals;

means for measuring the lengths of said successive vertical scanning intervals;

means for generating a vertical reset signal which is phase shifted relative to said vertical synchronizing component of said video signal for vertically panning said picture on said video display means; and,

means for adjusting said phase shift in accordance with variable lengths of said vertical scanning intervals.

5,294,988

ELECTRONIC APPARATUS WITH A WATERTIGHT HOUSING

Manabu Wakabayashi, and Kenji Ogiro, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1991, Ser. No. 765,910

Claims priority, application Japan, Sep. 21, 1990, 02-250194; Feb. 7, 1991, 03-016338

Int. Cl.[5] H04N *5/30*

U.S. Cl. 348—373 2 Claims

1. A video camera recorder of the type comprising:

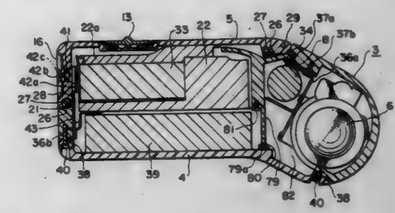
a housing having opening defining means,

a video camera and a video deck placed within the housing,

a partition wall provided within said housing, and

first and second chambers defined by said housing and said partition wall, said first chamber not being provided with said opening defining means and having said video camera placed therein, said second chamber being provided with said opening defining means and having said video placed therein,

wherein said first and second chambers are watertightly enclosed and are watertightly separated from each other,



the partition wall including injection hole defining means for defining a through injection hole in the partition wall, and

wherein a plug member is provided for sealing the injection hole.

5,294,989

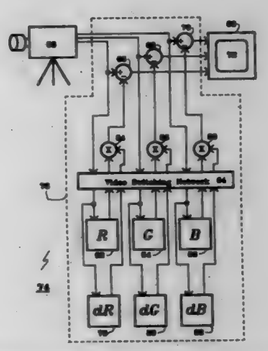
SATURABLE SMOOTHING GRID FOR IMAGE PROCESSING

Andrew J. Moore, and John Allman, both of Pasadena, Calif., assignors to Moore Color, Inc., Pasadena, Calif.

Filed Sep. 17, 1991, Ser. No. 761,427

Int. Cl.[5] H04N *5/213, 5/335;* G06K *9/40*

U.S. Cl. 348—241 14 Claims



1. A method of image processing, comprising the steps of:

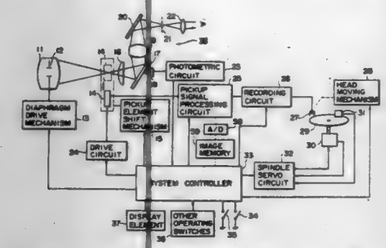
applying points of a spectral component of an image to spatially related points in an analog smoothing grid;

spatially weighting said spatially related points to form a corresponding spectral component mask, said spatial weighting being simultaneously applied in a linear manner for portions of such differences in image intensity between neighboring points in the spectral component below a predetermined level and in a non-linear manner for any portions of such differences above said predetermined level;

forming a second, differently scaled, spectral component mask; and

subtracting said spectral component masks from said image to form a composite image in which the maximum image intensity difference is within the dynamic range of an image utilization device responsive thereto.

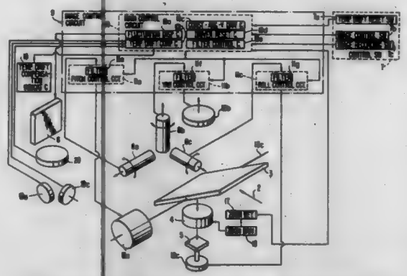
5,294,990
ELECTRONIC STILL CAMERA
Harumi Aoki, Iruma, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 11, 1990, Ser. No. 551,168
Claims priority, application Japan, Jul. 14, 1989, 1-182158; Jul. 25, 1989, 1-191984; Jul. 25, 1989, 1-191985; Jul. 25, 1989, 1-191986; Jul. 25, 1989, 1-191987; Jul. 25, 1989, 1-191988
Int. Cl.[5] H04N *3/14*
U.S. Cl. 348—363 39 Claims



1. An electronic still camera for recording image data onto a recording medium, comprising:
a photographing optical system that passes light from an object to be photographed and forms an image of said object;
a pickup device that receives said light passed through said photographing optical system and outputs an image signal corresponding to said image, said image being formed on a light receiving surface of said pickup device;
a driver that drives said pickup device to be shiftable between at least a first position where said light passing through said photographing optical system is incident to said pickup device, and a second position where said pickup device is located out of an optical path of said photographing optical system; and
a recorder that records said image signal outputted from said pickup onto said recording medium.

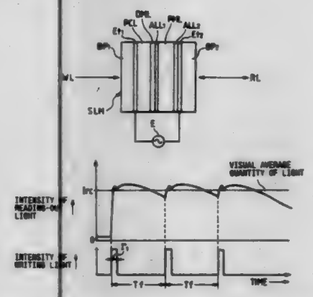
5,294,991
CAMERA APPARATUS
Mitsuaki Oshima, Moriguchi; Masataka Izaki, Yawata; Jirou Kajino, Neyagawa; Yoshiaki Igarashi, Ikoma, and Hiroshi Mitani, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 312,057, Feb. 17, 1989, Pat. No. 5,062,696, which is a division of Ser. No. 886,424, Jul. 17, 1986, Pat. No. 4,856,882, which is a division of Ser. No. 688,154, Dec. 31, 1984, Pat. No. 4,623,930. This application Aug. 30, 1991, Ser. No. 753,449
Claims priority, application Japan, Dec. 29, 1983, 58-251306
Int. Cl.[5] H04N *5/228*
U.S. Cl. 348—208 4 Claims

1. A camera apparatus comprising:
imaging means for converting an optical image formed thereon into electric or physiochemical information and issuing or recording said information as an image;
focusing means for optically focusing a light beam from and object to form the optical image on said imaging means;
a zoom detector for determining a focal length of the focusing means;
means for detecting a fluctuation of said camera apparatus and issuing a fluctuation detecting signal indicative of the detected fluctuation of said camera apparatus;
means responsive to said fluctuation detecting signal for issuing an image fluctuation control signal; and
image fluctuation control means responsive to said image fluctuation control signal for mechanically moving one of said focusing means and said imaging means relative to the other so as to move the optical image formed on said imaging means by substantially $f\times\tan\theta$ to thereby suppress a fluctuation of the image due to the fluctuation of



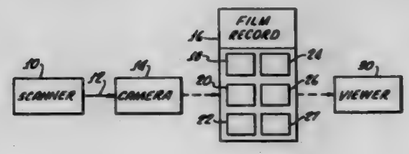
said apparatus, where θ is an angle of fluctuation of said camera apparatus and f is the focal length of said focusing means determined by said zoom detector.

5,294,992
DRIVING METHOD FOR PHOTOCONDUCTIVE-TYPE SLM
Toshio Konno, Tokyo; Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, and Keiichi Maeno, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed May 4, 1992, Ser. No. 878,080
Claims priority, application Japan, May 8, 1991, 3-132009
Int. Cl.[5] H04N *5/74*
U.S. Cl. 348—767 5 Claims



1. A light-light transfer method using a spatial light modulator (SLM) which includes a photoconductive layer member (PCL), a photo-modulation layer member (PML) used in a birefringence operating mode, and two electrodes (Et1, Et2) sandwiching said two members (PCL, PML), comprising steps of:
applying a predetermined operation voltage (E) between said two electrodes (Et1, Et2);
generating a writing light (WL) having a light quantity varying from a predetermined minimum value to a predetermined maximum value ($IW\times\Gamma$) in accordance with image information to be displayed;
guiding said writing light (WL) into said photoconductive layer member (PCL) so as to cause a voltage drop in said photoconductive layer member (PCL) due to electric resistance change in response to entrance of said writing light (WL), thereby applying a voltage (Vp) between both ends of said photo-modulation layer member (PML), said voltage (Vp) being identical with a value obtained by subtracting said voltage drop from said predetermined operation voltage (E);
adjusting said voltage (Vp) to be larger than a reference voltage when said writing light (WL) having said predetermined maximum value ($Iw\times\Gamma$) enters into said photoconductive layer member (PCL), said reference voltage being a voltage at which intensity of a reading-out light (RL) takes an extreme value in a characteristic curve ($E_0\rightarrow A\rightarrow B\rightarrow C$) showing a relationship between said voltage (Vp) and the intensity of the reading-out light (RL) outputting from said photo-modulation layer member (PML);
introducing the reading-out light (RL) into said spatial light modulator (SLM) so that said reading-out light (RL) is modulated in said spatial light modulator (SLM); and
projecting said reading-out light (RL) having been modulated in said spatial light modulator (SLM) on a screen (S).

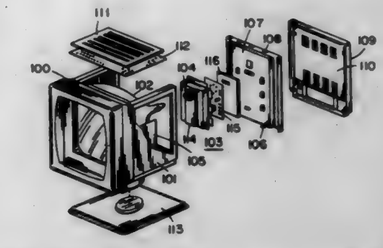
5,294,993
METHOD AND APPARATUS FOR USING MONOCHROME IMAGES TO FORM A COLOR IMAGE
Arthur J. Sable, Boulder, Colo., assignor to Opton Corporation, Boulder, Colo.
Filed Apr. 10, 1992, Ser. No. 866,741
Int. Cl.[5] G03F *3/00*
U.S. Cl. 358—350 63 Claims



1. A color imaging system for use with a plurality of electrical signals respectively representing different monochromatic color components of a subject, said imaging system comprising:
a piece of monochromatic film,
camera means responsive to said signals for forming on said monochromatic film a plurality of mutually spaced monochromatic image components respectively representing said different monochromatic color components,
means for processing said film to fix said monochromatic image components thereon, and
viewer means having a screen and including means for projecting images of said fixed monochromatic film image components on said screen in mutual superposition and each with a different spectral content, whereby projected monochromatic images of different spectral content are combined on the screen to form a single multi-color image of the subject.

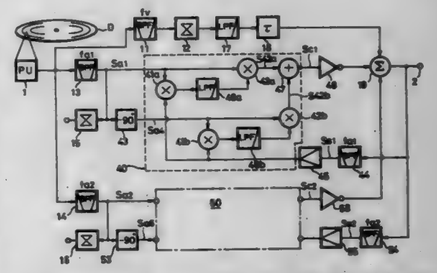
5,294,994
INTEGRATED COMPUTER ASSEMBLY
Dennis C. Robinson, Marlboro; Jeffrey P. Copeland, Holden; Ricardo L. Fernandez, Beverly; Steve D. Venditti, Newton, and Daniel J. J. Velasco, Hudson, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 6, 1992, Ser. No. 863,612
Int. Cl.[5] H04N *5/30*; H05K *5/00, 9/00*; H01J *1/52*
U.S. Cl. 348—825 12 Claims

1. An integrated computer assembly, comprising:
an enclosure;
a safety wall within said enclosure separating the interior of said enclosure into a high-voltage region and a low-voltage region;
a video display within said high-voltage region;
means fixed within said low-voltage region for producing low-voltage video signals;
means for transferring said low-voltage video signals from said low-voltage region into said high-voltage region; and



means within said high-voltage region for producing high-voltage video signals from said low-voltage video signals and for supplying said high-voltage video signals to said video display.

5,294,995
VIDEO DISC REPRODUCING APPARATUS WITH PHASE SHIFTER TO ELIMINATE INTER-MODULATION DISTORTION BETWEEN REPRODUCED AUDIO AND VIDEO SIGNALS
Noriyuki Yamashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 22, 1992, Ser. No. 948,442
Claims priority, application Japan, Sep. 30, 1991, 3-251982
Int. Cl.[5] H04N *5/76, 5/91*
U.S. Cl. 358—342 8 Claims



1. A reproducing apparats for a video disc in which a frequency modulated video signal and a frequency modulated audio signal recorded on a disc in frequency multiplication are reproduced and demodulated, and in which an inter-modulation distortion component is present in a reproduced video signal, said reproducing apparatus comprising:
a phase shifting circuit for shifting a phase of a reproduced frequency modulated audio signal by a predetermined amount;
a first multiplier for receiving an inter-modulation distortion component present in a reproduced video signal and the reproduced frequency modulated audio signal;
a second multiplier for receiving the inter-modulation distortion component present in the reproduced video signal and an output of said phase shifting circuit;
first means for controlling a signal level of the reproduced frequency modulated audio signal in accordance with an output of said first multiplier;
second means for controlling a signal level of the output of said phase shifting circuit in accordance with an output of said second multiplier; and

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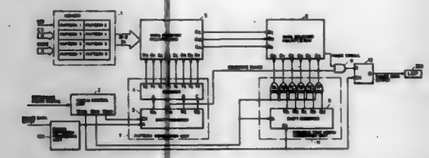
adding means for adding outputs of said first and second means to the reproduced video signal to produce an output signal.

5,294,996

IMAGE PROCESSING APPARATUS ADAPTABLE FOR USE AT VARIABLE RESOLUTION

Ikuo Sobue, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1990, Ser. No. 599,507
Claims priority, application Japan, Oct. 18, 1989, 1-269225
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—298 **8 Claims**



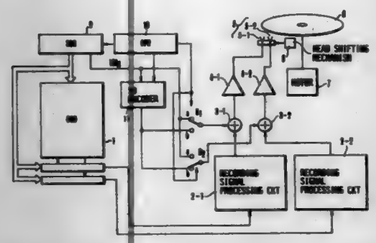
1. An image processing apparatus comprising:
input means for inputting data image processed by an error diffusion method;
recording dot size control signal generating means for generating a recording dot size control signal in accordance with a pattern of the image data; and
resolution converting means for recording plural lines of the image data for each line of the image data input by said input means on the basis of the recording dot size control signal, and for converting the image data to be recorded to data of a higher pixel resolution than a pixel resolution of the input image data.

5,294,997

IMAGE SIGNAL WITH PILOT SIGNAL RECORDING APPARATUS

Tokihiko Ogura; Kazuhito Ohashi; Ryo Fujimoto, and Takao Sasakura, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 457,275, Dec. 27, 1989, abandoned. This application Oct. 30, 1992, Ser. No. 969,559
Claims priority, application Japan, Dec. 28, 1988, 63-329418
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—342 **7 Claims**



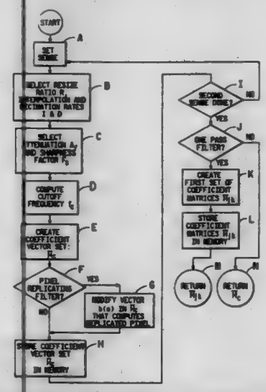
1. An image signal recording apparatus for recording, on recording medium, one picture amount of an image signal composed of a plurality of field image signals different from each other, comprising:
a) pilot signal generating means for generating a pilot signal for correcting time base variations, which is different from a horizontal synchronizing signal;
b) modulated carrier signal generating means for generating a modulated carrier signal modulated with an information signal other than an image signal; and
c) recording means, arranged to input the plurality of field image signals, for recording the plurality of field image signals in different areas on the recording medium respectively, said recording means recording the modulated carrier signal generated by said modulated carrier signal generating means in a state of being multiplexed with one part of the plurality of field image signals and recording the pilot signal generated by said pilot signal generating means in a state of being multiplexed with the other part of the plurality of field image signals.

5,294,998

METHOD FOR DESIGNING AND APPLYING A KAISER WINDOW FILTER FOR ENLARGING OR REDUCING AN IMAGE

Michael J. Piovoso, Newark; Mark D. Wetzel, Bear, and James A. Whitcomb, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 636,647, Dec. 31, 1990, abandoned. This application Jan. 8, 1993, Ser. No. 1,932
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—428 **43 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 50 Pages)



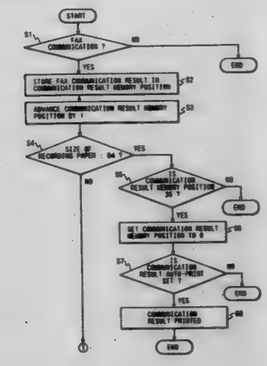
1. A method of designing a filter for resizing an input image comprising a plurality of input pixels to generate a resized image comprising a plurality of corresponding output pixels while preserving the information content of the image, comprising the steps of:
(a) selecting a first interpolation rate and a first decimation rate for a first sense;
(b) selecting a second interpolation rate and a second decimation rate for a second sense;
(c) selecting a first stopband attenuation and a a first sharpness factor for the first sense and a second stopband attenuation and a second sharpness factor for the second sense;
(d) computing a first cutoff frequency for the first sense and a second cutoff frequency for the second sense;
(e) establishing an input kernel having a first number of elements in the first sense and a second number of elements in the second sense;
(f) generating a first low-pass filter for the first sense, the first low-pass filter comprising a first filter vector including a plurality of first coefficients;
(g) modifying the first low-pass filter, comprising the steps of:
(1) creating a first vector comprising a plurality of elements each having a value equal to unity, the first vector having a dimensionality equal to the first interpolation rate, and
(2) convolving the first filter vector with the first vector to create a modified first filter vector comprising a plurality of the first coefficients;
(h) generating a second low-pass filter for the second sense, the second low-pass filter comprising a second filter vector including a plurality of second coefficients;
(i) modifying the second low-pass filter, comprising the steps of:
(1) creating a second vector comprising a plurality of elements each having a value equal to unity and the second vector having a dimensionality equal to the second interpolation rate, and
(2) convolving the second filter vector with the second vector to create a modified second filter vector comprising a plurality of the second coefficients;
(j) creating a first set of coefficient vectors by selecting a plurality of the coefficients of the modified first filter vector as a function of the first interpolation rate, the first decimation rate and the first number of elements;
(k) creating a second set of coefficient vectors by selecting a plurality of the coefficients of the modified second filter vector as a function of the second interpolation rate, the second decimation rate and the second number of elements;
(l) applying the first and second sets of coefficient vectors to a neighborhood of the values of input pixels adjacent each output pixel to compute the value of each output pixel and assigning the computed values to the corresponding output pixels, thereby producing the resized image; and
(m) storing the resized image in an output memory device.

5,294,999

METHOD AND APPARATUS FOR RECORDING A PLURALITY OF FACSIMILE COMMUNICATION RESULTS ON PAPER

Tetsuya Kuwahara, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 5, 1991, Ser. No. 710,701
Claims priority, application Japan, Jun. 7, 1990, 2-149507
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—441 **5 Claims**



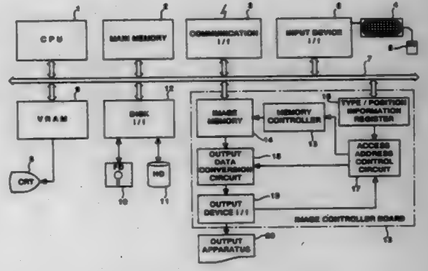
1. A facsimile device, comprising:
recording means for recording a plurality of communication results on paper, the paper having a size,
sensing means for sensing the size of the paper,
activation means for activating the recording means when the plurality of communication results is equal to a predetermined number, and
selection means for selecting the predetermined number based upon the size of the paper sensed by the sensing means,
whereby the plurality of communication results are recordable on the paper without unwanted blank spaces regardless of the size of the paper.

5,295,000

IMAGE PROCESSING APPARATUS WITH FLEXIBLE USE OF MEMORY AND VARIABLE NUMBER OF BITS PER PIXEL

Hiroshi Nonoshita, Fujisawa; Yasuhisa Ishizawa, Yokohama; Yoshitsugu Yamanashi, Kawasaki, and Kenjiro Cho, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 560,752, Jul. 31, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 93,038
Claims priority, application Japan, Aug. 2, 1989, 1-199348; Jan. 10, 1990, 2-1490
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—444 **17 Claims**



1. An image processing apparatus comprising:
first storage means for storing image data having a plurality of areas, at least two of the plurality of areas being respectively filled with different pixel data represented by different quantities of information;
second storage means for storing area information of the image data including quantity-data defined as a quantity of information representing one pixel and area-data defined as an output position data of each storage area with one area information per each of the plurality of areas;
means for determining an outputting order of a pixel data in accordance with the output position data and a predetermined outputting sequence of the image data;
reading means for reading pixel data from said first storage means in accordance with the outputting order determined by said determining means and the quantity-data; and
output means for converting the pixel data read by said reading means in the outputting order into output data predetermined in accordance with the quantity-data and for outputting the output data.

5,295,001

IMAGE SENSING APPARATUS HAVING TONE CONTROL FUNCTION

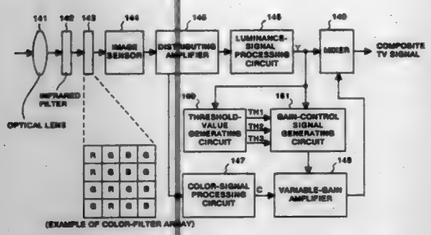
Koji Takahashi, Yokohama, Canon Kabushiki Kaisha Japan, assignor to Tokyo, Japan

Filed Oct. 28, 1991, Ser. No. 783,354
Claims priority, application Japan, Nov. 1, 1990, 2-293668; Nov. 1, 1990, 2-293669; Nov. 1, 1990, 2-293670; Nov. 1, 1990, 2-293671; Nov. 1, 1990, 2-293672; Nov. 1, 1990, 2-293673
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—482 **12 Claims**

1. An image sensing apparatus comprising:
sensing means for receiving a light signal, performing a

photoelectric conversion on said light signal, and storing information corresponding to the converted light signal; and

control means for changing a saturation level of an electric charge in said sensing means;



said control means changing the saturation level of the electric charge during a unit light-storage interval that is for forming one picture.

5,295,002

IMAGE COMMUNICATION DEVICE

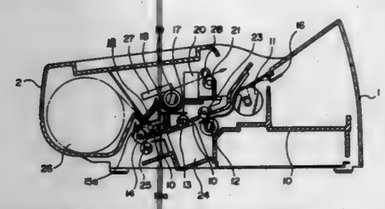
Yuji Ishii; Toshihiro Kumano, both of Chiisagata; Shiro Takamizawa, Saku; Hiroyuki Yamada, and Masanori Sato, both of Chiisagata, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Continuation of Ser. No. 626,289, Dec. 12, 1990, abandoned. This application Jan. 16, 1992, Ser. No. 899,038

Claims priority, application Japan, Dec. 18, 1989, 1-327917

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—498 **9 Claims**



1. An image communication device comprising:

a lower chassis;

a document transport means mounted on said lower chassis and defining a document transport path extending from an upper portion of one end of said device to a lower portion of the other end of the device, whereby a space is left above said lower portion and below a level corresponding to the top of said device;

a document reading means mounted under a middle portion of said document transport path for reading images on a downwardly facing document being transported therealong;

an upper chassis mounted on the upper part of said lower chassis;

a recording paper transport means mounted in said upper chassis and defining a recording paper transport path extending from the other end of said device toward said one end of said device generally parallel to said document transport path and above said document transport path and ending short of said one end of said device;

a recording means mounted above said recording paper transport path for recording data on an upwardly facing surface of recording paper being transported along said recording paper transport path;

a recording paper cutting means on said upper chassis at an end of said recording paper transport path toward said one end of said device; and

a recording paper holder at the other end of said device in said space above the document transport path for holding a roll of recording paper and for feeding recording paper from said roll into said recording paper transport means.

5,295,003

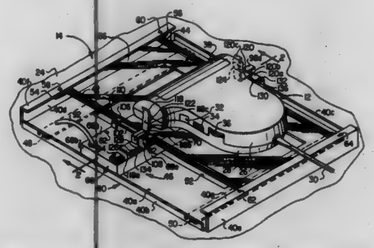
COLOR CONVERSION SYSTEM FOR MONOCHROMATIC OPTICAL SCANNER

Aldric K. Lee, 4163 Cochran Chapel, Dallas, Tex. 75209

Filed Mar. 13, 1991, Ser. No. 668,669

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—509 **9 Claims**



1. Apparatus for optically scanning a target utilizing a monochromatic scanner connected to a computer comprising:

a light source for illuminating said target comprising at least one fluorescent tube;

means for supporting said light source relative to said target comprising:

a base defining an opening, said target appearing in said opening;

a carriage containing said light source said carriage supported for movement between the ends of said base over said opening;

means for supporting said scanner for movement relative to said base; and

means for securing said scanner to said carriage such that said scanner and said carriage move together relative to said base; and

means for filtering light from said light source to direct red, green or blue frequency light to said scanner, said filter means comprising red, green and blue filter elements and positioned between said light source and said scanner.

5,295,004

OPTICAL BEAM SCANNING APPARATUS

Shinya Hasegawa; Fumio Yamagishi; Youji Houki; Shigetake Iwata; Shigeo Kayashima, and Satoshi Maeda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 6, 1992, Ser. No. 972,520

Claims priority, application Japan, Nov. 8, 1991, 3-293140; Nov. 8, 1991, 3-293141

Int. Cl.[5] G02B *5/32, 26/10*

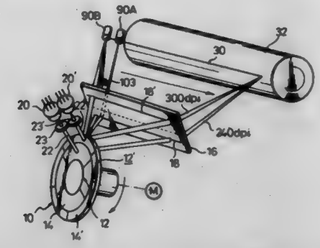
U.S. Cl. 359—17 **18 Claims**

1. An optical beam scanning apparatus including one rotatable hologram which is rotatable about an axis, comprising:

at least two laser beam sources which emit respective laser beams;

said rotatable hologram having at least two hologram areas, the number of hologram areas corresponding to the number of laser beam sources and the respective laser beams emitted from the at least two laser beam sources being incident on the respective, at least two hologram areas, and

said at least two hologram areas, each having a plurality of hologram facets, being concentrically arranged with respect to the axis of rotation of the rotatable hologram thereby to emit the respective laser beams having the same



F number; and having respective, different numbers of hologram facets having respective, different F numbers.

5,295,005

LIQUID CRYSTAL DISPLAY DEVICE WITH IMPROVED CONVERGENCE EFFICIENCY AND CONVERTING REFLECTOR OF THE SAME

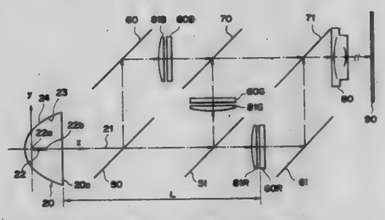
Masami Nishida; Masataka Izawa, and Kunimoto Tsuchiya, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 771,000

Claims priority, application Japan, Dec. 19, 1990, 2-403601; Dec. 19, 1990, 2-403602

Int. Cl.[5] G02F *1/13;* G03B *21/14;* G02B *5/08*

U.S. Cl. 359—41 **7 Claims**



1. A liquid crystal display device comprising:

a converging reflector provided with a linear light source positioned at a central axis of the converging reflector and a plane of reflection formed by a reflecting mirror of paraboloid of revolution;

a liquid crystal panel for selectively passing a light reflected from the converging reflector;

a condenser lens arranged between the converging reflector and the liquid crystal panel for transmitting a ray of the light from the converging reflector to the liquid crystal panel; and

a projection lens for projecting the ray of the light from the liquid crystal panel on an irradiation plane,

wherein a curvature of the paraboloid of the converging reflector is about 0.015 ± 0.0025 mm^{-1}, a length of the linear light source is about 5 to 7 mm, an aperture of the converging reflector is about 100 ± 20 mm, and an effective display size of the liquid crystal panel is about 2.8 to 3.3 inches.

5,295,006

OPTICAL EXPOSURE SYSTEM FOR COLOR VIDEO PRINTER WITH LIGHT SOURCE MOVING ALONG ROD BEHIND THREE COLOR LIQUID CRYSTAL PANELS

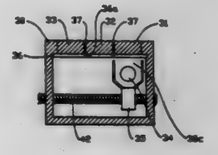
Kwang J. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

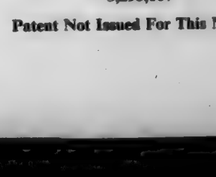
Filed Jun. 8, 1992, Ser. No. 894,831

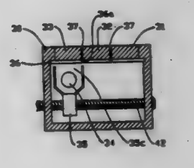
Claims priority, application Rep. of Korea, Jun. 7, 1991, 9404/1991

Int. Cl.[5] G02F *1/1335, 1/1333;* G03B *27/80;* G01D *9/00*

U.S. Cl. 359—49 **6 Claims**







1. An optical exposure system for a color video printer, comprising:

a casing;

liquid crystal display panels each for red, green and blue colors disposed at an upper portion of the casing so that lights incident thereupon do not interfere with each other;

a light source disposed below said liquid crystal display panels;

a light source supporting and light-reflecting member disposed in a movable manner within the casing for supporting said light source and focusing and reflecting a light from the light source to one of the liquid crystal display panels; and

driving means for moving said light source supporting and light-reflecting member.

5,295,007

Patent Not Issued For This Number

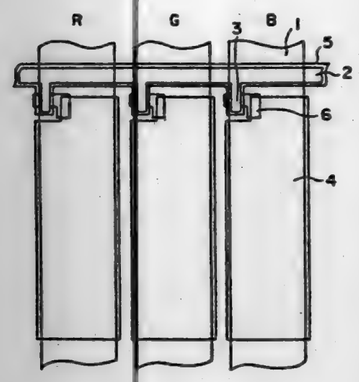
VOL 1160 ISS 3 MR 15 1994 UMI

5,295,008

COLOR LCD PANEL

Eishi Mizobata, and Yoshihiko Hirai, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 926,157
Claims priority, application Japan, Aug. 7, 1991, 3-196910
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—58 4 Claims



1: TRANSPARENT COUNTER ELECTRODE (UPPER SUBSTRATE)
2: SCAN DRIVER LINE (LOWER SUBSTRATE)
3: NONLINEAR RESISTANCE ELEMENT (LOWER SUBSTRATE)
4: PIXEL ELECTRODE (LOWER SUBSTRATE)
5: LAYER OF SILICON NITRIDE (LOWER SUBSTRATE)
6: CONNECTING TERMINAL (LOWER SUBSTRATE)

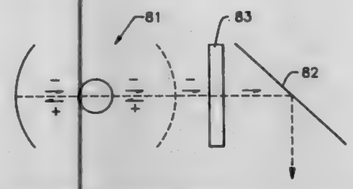
1. A color LCD panel comprising a lower substrate, an upper substrate, a liquid crystal sealed between said lower substrate and said upper substrate, a plurality of pixels formed on said lower substrate in a matrix of a plurality of rows and columns, each of said pixels including a pixel electrode and a nonlinear resistance element having a first terminal connected to said pixel electrode and a second terminal, said pixel electrode being of a rectangular shape and defined by a pair of shorter sides and a pair of longer sides perpendicular to said shorter sides, a plurality of scan driver lines formed on said lower substrate in rows of said matrix, each of said scan driver lines being elongated in a direction parallel to the shorter sides of the pixel electrodes of the pixels arranged in a corresponding row and connected in common to second terminals of nonlinear resistance elements of the pixels arranged in said corresponding row, and a plurality of data driver lines made of a transparent conductor and formed on said upper substrate in columns of said matrix, each of said data driver lines being elongated in a direction parallel to the longer sides of the pixel electrodes of the pixels arranged in a corresponding column and having portions facing respectively, via said liquid crystal, the pixel electrodes of the pixels arranged in the corresponding column, said data driver lines being classified into a first group supplied with first information representative of a red color, a second group supplied with second information representative of a blue color and a third group supplied with third information representative of a green color so that three consecutive ones of said pixels arranged in one row constitute one color pixel.

5,295,009

POLARIZER DEVICE

Mikhail L. Barnik; Seraey V. Belyaev, both of Dolgoprudny, Russian Federatio; Jürg Fünfschilling, Basel, Switzerland; Nikolai Malimonenko, Lobnya, Russian Federatio; Martin Schadt, Seltisberg, Switzerland, and Klaus Schmitt, Lörrach, Fed. Rep. of Germany, assignors to Hoffmann-La Roche, Nutley, N.J. and Niopic Moscow Research and Production Association, Russian Federatio

Division of Ser. No. 841,252, Feb. 24, 1992, Pat. No. 5,235,443, which is a continuation of Ser. No. 547,900, Jul. 3, 1990, abandoned. This application May 7, 1993, Ser. No. 59,037
Claims priority, application Switzerland, Jul. 10, 1989, 2562/89; Nov. 1, 1989, 3948/89; May 15, 1990, 1641/90
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—65 7 Claims



1. A projection system comprising:
a) polarizer means for producing circular polarized light from natural light comprising
i) light source means for producing a light path of natural light;
ii) liquid crystal means having a layer of cholesteric liquid crystal with a Grandjean structure and a cholesteric helix pitch with a defined value, the liquid crystal means being disposed in the light path of the natural light so that a portion of the light path having a wavelength which is about equal to the defined value of the cholesteric helix pitch is transmitted through the liquid crystal means and another portion of the light path having a wavelength which is about opposite in value to the defined value of the cholesteric helix pitch is rotated and reflected by the liquid-crystal means as circular polarized light, and
iii) mirror means disposed in a path of the circular polarized light for reversing a direction of rotation of the circular polarized light so that the polarized light with a reversed direction is transmitted through the liquid crystal means.
b) analyzer means having a liquid crystal layer with cholesteric liquid having a defined value of a cholesteric helix pitch so that the layer transmits or reflects the portions of the light path of the natural light; and
c) liquid crystal display cell means disposed between the polarizer means and the analyzer means for modulating intensity of the polarized light which is transmitted through the liquid crystal means.

5,295,010

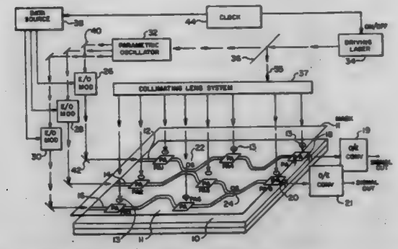
AMPLIFYING AND SYNCHRONIZING SIGNALS IN OPTICAL COMPUTING SYSTEM

Frank S. Barnes, Boulder, and Harry F. Jordan, Jamestown, both of Colo., assignors to The Regents of the University of Colorado, Boulder, Colo.

Filed Oct. 2, 1992, Ser. No. 955,812
Int. Cl.[5] G02F *3/00*; G02B *6/26, 6/28*
U.S. Cl. 359—107 20 Claims

1. An optical computing apparatus for performing logical operations on data photon pulses in precise spatial/time dimensions, said apparatus comprising:
an optical computing chip having light conducting paths for the data pulses;

logic means in said paths for logically operating on one or more data pulses;
amplifying means other than said logic means in said paths for amplifying data pulses with pumping light pulses;
source means for providing synchronized data and pumping light pulses, said data pulses being directed to said paths and said pumping light pulses being directed to said amplifying means and not to said logic means;



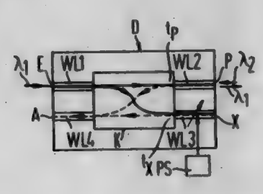
said logic means being spatially located within said paths and relative to said source so that interacting data pulses arrive at said logic means in synchronism; and
said amplifying means being spatially located within said paths and relative to said source so that data pulses to be amplified arrive at said amplifying means in synchronism with said pumping light pulses.

5,295,011

OPTICAL DUPLEXER FOR BIDIRECTIONAL OPTICAL INFORMATION TRANSMISSION

Gerhard Heise, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich

Continuation of Ser. No. 717,516, Jun. 19, 1991, abandoned. This application May 3, 1993, Ser. No. 56,824
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1990, 4020214
Int. Cl.[5] H04B *10/24, 10/00*
U.S. Cl. 359—114 29 Claims



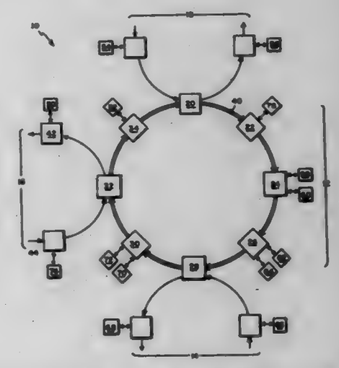
1. An optical duplexer for bidirectional optical information transmission, having a wavelength-selective optical coupler having first, second, third and fourth ports, the first port being provided for input of a first optical wavelength and the second port being provided for input of a second optical wavelength, said coupler being fashioned such that an optical wave of the first optical wavelength input through the first port is conducted partially to the second port and partially to the third port, such that an optical wave of the second optical wavelength input through the second port is at least partially conducted to the fourth port, such that each of said second and third ports have a reflection coefficient that respectively produces a first reflected optical wave of the first optical wavelength returning to the coupler from the second port and supplied to the coupler on a first path and a second reflected optical wave of the first optical wavelength returning to the coupler from the third port and supplied to the coupler on a second path, and such that the first and second reflected optical waves of the first optical wavelength returning to the coupler on the first and second paths, respectively, are brought to interference in the coupler and the combined first and second reflected optical waves of the first optical wavelength are at least partially supplied to the fourth port, comprising: means for controlling the phase of one of the first and second reflected optical waves of the first optical wavelength returning to the coupler on the respective path of the first and second paths to a predetermined value in a predetermined value range such that a resulting phase difference between the first and second reflected optical waves of the first optical wavelength has a value that reduces near-end crosstalk of the coupler to a predetermined level.

5,295,012

RING-TYPE COMMUNICATION NETWORK

Philip D. Wilson, Sudbury; Richard D. Serafin, Westboro; Paul W. Kelley, Hopkinton, and Tadeusz Witkowicz, Millbury, all of Mass., assignors to Artel Communications Corp., Hudson, Mass.

Division of Ser. No. 726,497, Apr. 24, 1985, Pat. No. 5,107,490. This application Apr. 17, 1992, Ser. No. 870,541
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—135 10 Claims



1. A network for carrying digital data among a plurality of data generating devices and data using devices, comprising:
a plurality of nodes, each said device being associated with one of said nodes,
a plurality of optical fiber links interconnecting said nodes to form a continuous ring,
said optical fiber links being arranged to carry light modulated in accordance with bit values corresponding to said digital data,
said nodes being arranged to cause said bit values to appear on said links in a succession of bit intervals, one bit value per bit interval, said nodes being further arranged to cause said bit intervals to define a plurality of available independent communication bands for carrying said digital data, each said band being represented by a series of spaced apart individual said bit intervals, wherein said nodes are further arranged to organize said bit intervals into a series of frames, each said frame comprising a plurality of successive said bit intervals, no more than one said bit interval for each said band appearing in any said frame, and wherein said nodes are further arranged to group said frames into blocks, each said band comprising one said bit interval in each of more than one said frame of each said block, said different bit intervals of each said band representing different available independent communication channels.

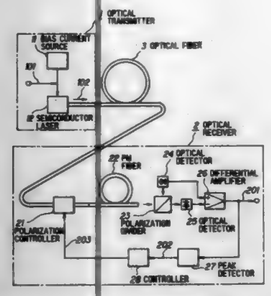
VOL 1160 ISS 3 MR 15 1994 UMI

5,295,013

OPTICAL RECEIVER OF DIRECT DETECTION TYPE

Takashi Ono, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,167
Claims priority, application Japan, Mar. 23, 1992, 4-064325
Int. Cl.[5] H04B *10/06*
U.S. Cl. 359—192 9 Claims



1. An optical receiver of direct detection type, comprising:
a polarization controller for controlling polarizations of an input signal light modulated by an optical FSK (frequency shift keying) method;
a PM (polarization-maintaining) fiber for discriminating a frequency of an output light of said polarization controller;
a polarization divider for dividing an output light of said PM fiber into two orthogonal lights in polarization, said polarization divider being structured to have an optical axis having forty five degrees to the two intrinsic optical axes of said output light of said PM fiber;
means for demodulating at least one of two output lights of said polarization divider to provide said signal light;
means for detecting amplitude of said demodulated signal light; and
a controller for controlling said polarization controller in accordance with an output of said amplitude detecting means so that said output of said amplitude detecting means is controlled to have maximum value.

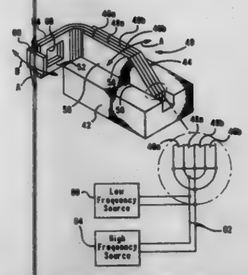
5,295,014

TWO-DIMENSIONAL LASER BEAM SCANNER USING PVDF BIMORPH

Minora Toda, Lawrenceville, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 12, 1992, Ser. No. 975,396
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—202 5 Claims

1. A two-dimensional laser beam scanning device comprising:
a support base;
a piezoelectric bimorph structure comprising four consecutively bonded piezoelectric layers disposed in said support base, each layer having a length in a longitudinal direction of said support base, a width in a direction perpendicular to said support base, and a thickness in a width direction of said support base, two outer layers of said bimorph structure having a shorter length than two inner layers and being bonded to the inner two layers such that the bonded inner and outer layers form a four-layer bimorph portion and the inner two layers extend lengthwise in one direction past the ends of the outer two layers to form a two-layer bimorph portion having a free end, the four-layer portion being affixed along a first lengthwise edge thereof to the support base, a second lengthwise edge of the four-layer portion defining a free edge thereof, and the free end of the two-layer portion being bent substantially ninety-degrees such that the free end of the two-layer portion extends in the width direction of said support base;
a mirror attached to the free end of the two-layer bimorph portion for reflecting light incident thereon; and
electrode means connected to the four piezoelectric layers for applying an electrical signal to said bimorph structure to produce vibration of the free edge of the four-layer portion in said width direction of said support base and to produce vibration of the free end of the bent two-layer portion in a direction orthogonal to the direction of vibration of the free edge of said four-layer portion, the orthogonal vibrations of the free edge of the four-layer portion and the free end of the two-layer portion being mechanically transmitted to the mirror, whereby light incident upon the mirror is simultaneously scanned in two orthogonal directions.

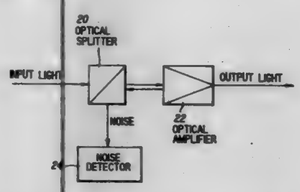


5,295,015

OPTICAL AMPLIFYING APPARATUS

Kenichi Yoneyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,225
Claims priority, application Japan, Feb. 27, 1992, 4-76278
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—333 11 Claims



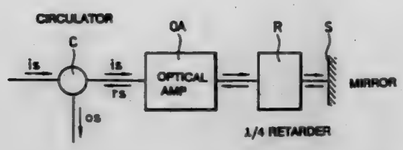
1. An optical amplifying apparatus, comprising:
an optical amplifier for directly amplifying an input light to provide an output light, said optical amplifier generating forward and backward noise lights, said output light containing said forward noise light;
means for detecting said backward noise light; and
means for calculating the forward noise light contained in said output light based on the backward noise light detected by said detecting means.

5,295,016

POLARIZATION INSENSITIVE AMPLIFICATION DEVICE

Mattijs O. Van Deventer, Leidschendam, Netherlands, assignor to Koninklijke Ptt Nederland, N.V., Groningen, Netherlands

Filed May 29, 1992, Ser. No. 891,640
Claims priority, application Netherlands, Jul. 15, 1991, 9101244
Int. Cl.[5] G02B *5/30*; H01S *3/02*
U.S. Cl. 359—347 15 Claims



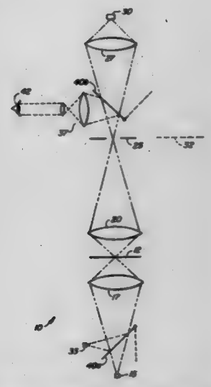
1. Polarization-independent amplification device comprising an optical semiconductor amplifier to a first side of which the amplification device input signal is fed and at a second side of which a reflector combination of a polarization modifying means and a reflector is provided, the amplification device output signal, formed by the amplification device input signal reflected by said reflector combination and amplified by said amplifier, being taken off at the first side of the amplifier, said amplifier having a principal axis, characterized in that said reflector combination is constituted by a retarder and a reflector, said retarder and said reflector being implemented in a reciprocal optical transmission medium, and wherein a signal or signal component which is fed to said reflector combination and has a polarization perpendicular to the principal axis of said amplifier is reflected as a reflection signal having a polarization substantially parallel to said principal axis and vice versa.

5,295,017

SAMPLE MASKING USING WAVELENGTH-SELECTIVE MATERIAL

David C. Brown, Boston, Mass., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Aug. 27, 1992, Ser. No. 937,328
Int. Cl.[5] G02B *5/20, 21/06*
U.S. Cl. 359—350 19 Claims



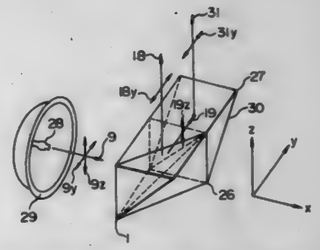
12. An optical instrument for analyzing a sample using analytical radiation, comprising:
an optical train, including a source of analytical radiation, for exposing the sample to a beam of analytical radiation and for collecting analytical radiation emanating from the sample for detection, said optical train having a particular plane in which the analytical radiation is focused;
a viewing system, including a source of viewing radiation, for exposing the sample to a beam of viewing radiation, said viewing system operating to focus said viewing radiation in said particular plane;
a support structure having an aperture, the support structure being mounted in the optical instrument so that the beam of analytical radiation and the beam of viewing radiation pass through the aperture; and
an element mounted to said support structure for movement in said particular plane between a first position wherein said element intercepts a minimum area of said aperture and a second position wherein said element intercepts a maximum area of said aperture, said element being substantially opaque to the analytical radiation and at least partially transmissive to at least a portion of the spectral range of the viewing radiation.

5,295,018

POLARIZATION TRANSFORMING OPTICS, POLARIZING BEAM SPLITTER AND LIQUID CRYSTAL DISPLAY

Nobuhiro Konuma; Hiroshi Jitsukata, both of Yokohama; Tetsu Ohishi, Hiratsuka, and Kyohei Fukuda, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 845,647
Claims priority, application Japan, Mar. 4, 1991, 3-037141
Int. Cl.[5] G02B *5/30, 27/28*; G02F *1/1335*
U.S. Cl. 359—487 11 Claims



1. A polarization transforming optics comprising:
a polarizing beam splitter (PBS) for splitting incident light flux from a light source into a first split light flux beam and a second split light flux beam, said PBS including a first PBS film for separating said first split light flux beam into a first linearly polarized transmission light flux beam and a first linearly polarized reflection light flux beam, said first transmission and reflection light flux beams having polarizing directions which are orthogonal to each other, a second PBS film for separating said second split light flux beam into a second linearly polarized transmission light flux beam and a second linearly polarized reflection light flux beam, said second transmission and reflection light flux beams having polarizing directions which are orthogonal to each other, a first mirror surface for deflecting said first transmission light flux beam in the same heading direction as that of said second reflection light flux beam, and a second mirror surface for deflecting said second transmission light flux beam in the same heading direction as that of said first reflection light flux beam; and
a third mirror surface for deflecting a first outgoing light flux beam in the form of synthesized light flux of said first transmission light flux beam deflected by said first mirror surface and said second reflection light flux beam in the same heading direction as that of a second outgoing light

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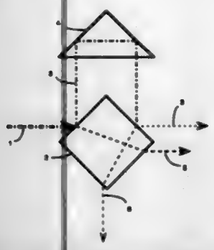
flux beam in the form of synthesized light flux of said second transmission light flux beam deflected by said second mirror and said first reflection light flux beam.

5,295,019

METHOD AND APPARATUS FOR COLOR SEPARATION WITH AN OPTICAL SLAB AND ROOF PRISM

William R. Rapoport, Bridgewater, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jan. 17, 1992, Ser. No. 822,223
Int. Cl.[5] G02B *27/10, 5/04*
U.S. Cl. 359—634 10 Claims



1. The method of separating a mixed light beam comprising a first and a second spectral component into its spectral components, comprising:

(a) impinging said mixed light beam against the first surface of an optical slab having first and second reflective surfaces on adjacent sides, said surfaces being provided with a coating which is reflecting the first spectral component, but transmitting the second spectral component;

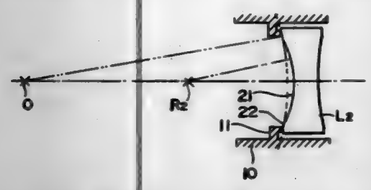
(b) passing the reflected first spectral component through a roof prism to reverse its direction and to impinge it against the second reflective surface of said optical slab, so that it is reflected therefrom co-directional with the mixed light beam.

5,295,020

LENS ASSEMBLING STRUCTURE

Takashi Iizaka, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 519,589, May 7, 1990. This application Nov. 12, 1991, Ser. No. 789,819
Claims priority, application Japan, May 8, 1989, 1-113629
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—811 6 Claims



1. A lens assembling structure including a lens system and a holding member for holding each lens element of said lens system, said structure comprising:

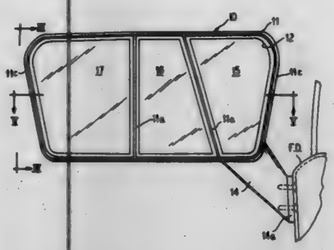
a lens element in said lens system including a curved lens function surface that allows light to pass therethrough, and a curved abutting surface for abutting against said holding member, said abutting surface being designed such that an inclination center of said lens element is located on an optical axis of said lens system and at a point where aberration deterioration due to inclination and decentering of said lens element is reduced, and said abutting surface having a different radius of curvature from that of said lens function surface.

5,295,021

TRIPLE EXTERIOR REARVIEW VEHICLE MIRROR

Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025, assignor to Arthur P. Swanson and Jean M. Swanson, both of Rosemont, Ill., as Trustees of the Arthur S. Swanson Loving Trust

Filed Apr. 19, 1993, Ser. No. 47,997
Int. Cl.[5] B60R *1/06*; G02B *5/08, 7/18*
U.S. Cl. 359—850 6 Claims



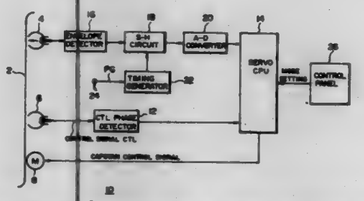
1. A rearview mirror for extending laterally outward from the sides of a vehicle adjacent the windshield zone in front of the driver which comprises a cup-shaped housing with a rearwardly facing open mouth, three side-by-side upright flat mirrors spanning said mouth of the housing sized and shaped to substantially close said mouth and providing a central mirror between an inboard and an outboard mirror, a ball and socket joint mounting each mirror in the housing, means for frictionally resisting movement of each joint, said mirrors cooperating together to provide the driver with clear undistorted unobstructed views of oncoming traffic both to the rear and sides of the vehicle all the way up to the driver, said cup-shaped housing having two dividing walls in the housing dividing the interior and mouth of the housing into three side-by-side compartments, the dividing wall between the inboard and central mirror being inclined from the vertical, and the adjacent mirrors having mating sides on both sides of said dividing wall between the inboard and central mirror.

5,295,022

TRACKING CONTROL CIRCUIT

Norio Tanaka, and Takato Narita, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Apr. 7, 1992, Ser. No. 864,938
Claims priority, application Japan, Apr. 11, 1991, 079001
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—14.2 16 Claims



1. An improved tracking control circuit for precise tracking during edit mode operation of a recording device having a recording head, a playback head, and a capstan motor, and operable to play from and record on a magnetic tape, said circuit comprising:

means for detecting the phase of a signal from said playback head;

a detector, responsive to a signal from said record head, for reproducing an envelope signal indicative of recorded content on said magnetic tape;

means, responsive to a timing signal, for sampling said envelope signal during a predetermined interval having low correlativity to said recorded content and producing a comparison signal therefrom;

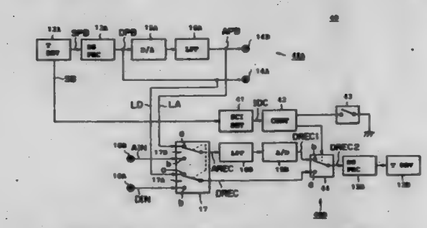
means, responsive to said phase signal and said comparison signal, for producing a control signal for controlling said capstan motor during edit mode of said recording device.

5,295,023

DIGITAL SIGNAL RECORDING APPARATUS FOR ANALOG/DIGITAL INPUT

Yasuaki Sekii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,510
Claims priority, application Japan, Feb. 28, 1991, 3-58152; Feb. 28, 1991, 3-58154
Int. Cl.[5] G11B *5/86*
U.S. Cl. 360—32 4 Claims



1. A digital signal recording apparatus comprising:

means for receiving analog signals;

means for receiving digital signals;

means for converting said analog signals into converted digital signals;

signal selection means for selecting said received digital signals or said converted digital signals;

means for extracting from said received digital signals a signal indicating the volume level of said received digital signals;

volume level adjustment means receiving, from said means for extracting, said signal indicating the volume level of said received digital signals;

volume level control means responsive to said volume level adjustment means for controlling the volume level of said analog signals; and

digital signal recording means for recording digital signals outputted from said signal selection means on a signal recording medium;

wherein said digital signal recording apparatus further comprises:

means for detecting a signal for specifying whether or not the recording of said received digital signals is authorized; and

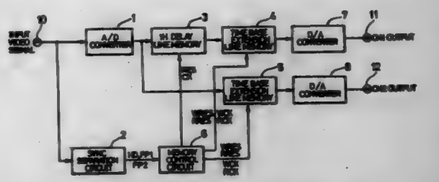
means for generating a changeover control signal for controlling said signal selection means to select said received digital signals for recording if the recording of said received digital signals is authorized.

5,295,024

METHOD AND APPARATUS FOR TWO-CHANNEL RECORDING OF VIDEO SIGNALS

Makoto Adachi, Nikko, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1991, Ser. No. 704,385
Claims priority, application Japan, Nov. 21, 1990, 2-319374
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—36.2 2 Claims



1. A video signal recording apparatus comprising:

A/D conversion means for converting an input video signal into digital data;

sync separation means for separating a horizontal synchronizing signal from the input video signal and generating a first frame pulse having a cycle of one frame and a second frame pulse having a cycle of two frames;

line memory control means for outputting first, second and third control signals based on the horizontal synchronizing signal, the first frame pulse and the second frame pulse;

first line memory means for delaying an output of said A/D conversion means one horizontal scanning period according to the first control signal;

second line memory means for extending a time base of an output of said first line memory means according to the second control signal;

third line memory means for extending a time base of an output of said A/D conversion means according to the third control signal;

first D/A conversion means for converting an output of said second line memory means into first analog data; and

second D/A conversion means for converting an output of said third line memory means into second analog data,

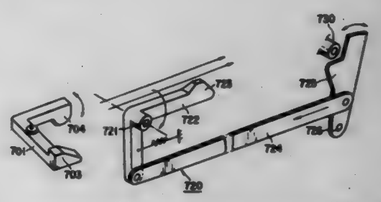
the input video signal being recorded in two channels on a recording medium based on the first and second analog data.

5,295,025

CASSETTE DATA DETECTING APPARATUS OF SYSTEM FOR MOUNTING A PLURALITY OF CASSETTES

Naoki Eguchi, and Akira Kawamura, both of Kumagaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 6, 1992, Ser. No. 847,688
Claims priority, application Japan, Mar. 8, 1991, 3-043771; Mar. 8, 1991, 3-043772
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—71 6 Claims

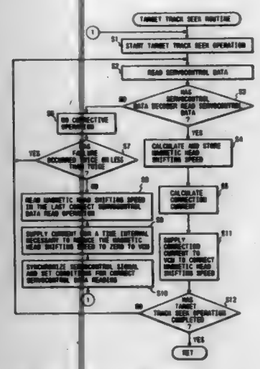


6. A cassette data detecting apparatus of a system for loading a plurality of cassettes, said apparatus comprising:

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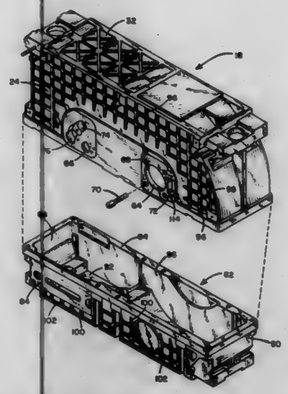
a housing which incorporated a recording and reproducing unit including a tape driving section;
an opening portion region defining an opening in a front wall of said housing;
a carrying unit having a first cassette housing section for receiving a first cassette and a second cassette housing section for receiving a second cassette;
a driving unit of said carrying unit for moving said carrying unit between a first position where said first and second housing sections are disposed to receive said first and second cassettes, respectively, through said opening and a second position where said cassettes can be transported to said tape driving section;
a cassette driving unit for transporting a cassette, which is moved by said driving unit of said carrying unit to a position at which said cassette is disposed to be transported to said tape driving section, between the position and said tape driving section; and
detecting means for detecting whether a cassette is placed in said housing section when said carrying unit is located between the first and second positions.

5,295,026
MAGNETIC DISK DRIVE
Takeshi Chishima, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1992, Ser. No. 874,938
Claims priority, application Japan, May 10, 1991, 3-133176
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.08 **2 Claims**



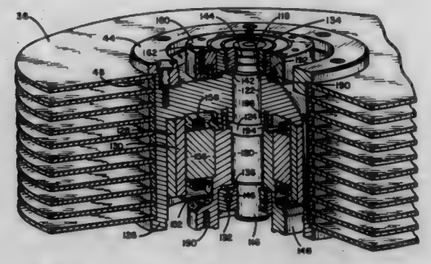
1. A magnetic disk drive comprising:
a magnetic disk having a data zone in which data is recorded on recording tracks and a servo zone in which servocontrol data is recorded;
a spindle motor for rotating the magnetic disk;
a magnetic head unit for recording data on and reproducing recorded data from the magnetic disk, and for reproducing servocontrol data from the magnetic disk, and generating a corresponding servocontrol data signal;
a magnetic head shifting device for shifting the magnetic head unit radially with respect to the magnetic disk;
a voice coil motor for driving the magnetic head shifting device; and
a control means comprising:
means for receiving the servocontrol data signal from the magnetic head unit,
means for determining if the magnetic head unit failed to read the servocontrol data correctly based on the received servocontrol data signal,
means for counting a number of successive determined failures of the magnetic head unit to read the servocontrol data, and
means for transmitting a stop signal to the voice coil motor so as to decelerate the magnetic head shifting device to a stop when the counted number of successive determined failures to read the servocontrol data exceeds a predetermined number.

5,295,027
DISK DRIVE WITH SOCKET AND PLUG INTERCONNECTION TO SPINDLE MOTOR
John W. Elsing, Edina, Minn., and Leon J. Valley, Piedmont, Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Continuation of Ser. No. 941,629, Sep. 8, 1992, abandoned, which is a division of Ser. No. 560,747, Jul. 31, 1990. This application Aug. 3, 1993, Ser. No. 101,813
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—97.01 **14 Claims**



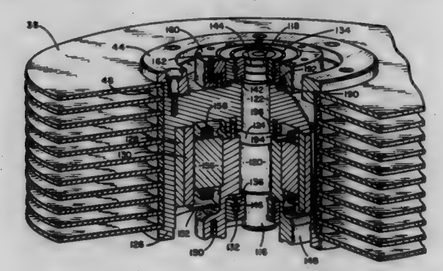
1. A data storage apparatus including:
a substantially rigid deck including first and second opposed support walls and an intermediate peripheral wall means cooperating with the support walls to define a chamber within the deck;
a spindle assembly for mounting at least one data storage disk in the chamber for rotation about a spidle axis with respect to the deck, said spindle assembly including an elongate spindle shaft and means for mounting the shaft with respect to the deck;
said spindle assembly further including a substantially rigid printed circuit mounted in the chamber to remain fixed relative to the deck for conducting electrical current to the spindle assembly to rotate the at least one disk, and a receiving means in the chamber, fixed relative to the deck, electrically and mechanically coupled to the printed circuit and disposed proximate a slot in said first support wall; and
a substantially rigid electrical connector removably plugged into said receiving means and extending through the slot in the first support wall to conduct electrical current to the printed circuit from outside of the chamber, said receiving means and electrical connector providing substantially the entire electrical path from outside of the chamber to the printed circuit.

5,295,028
SPINDLE ASSEMBLY WITH LABYRINTH SEALS AND HUB/BACK IRON SPACERS
John W. Elsing, Edina, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Continuation of Ser. No. 936,478, Aug. 28, 1992, abandoned, which is a division of Ser. No. 560,747, Jul. 31, 1990. This application Aug. 25, 1993, Ser. No. 112,861
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—97.01 **14 Claims**



1. A spindle assembly for supporting data storage disks for rotation relative to a fixed housing, including:
an elongate spindle shaft having a spindle axis;
a generally cup-shaped spindle hub having a first portion secured to the spindle shaft and an annular wall extended axially from the first portion for supporting at least one data storage disk for rotation about the spindle axis, said annular wall surrounding the spindle shaft and substantially concentric on the spindle axis;
an annular back iron having an annular edge, and a plurality of fasteners extended through the first portion and into the back iron through the annular edge, for securing the back iron integrally with respect to the hub and substantially concentric on the spindle axis; and
a plurality of spacers between the annular edge of the back iron and the hub, each spacer proximate an associated one of the fasteners, for maintaining the hub and annular edge of the back iron in axially spaced apart relation.

5,295,029
DISK DRIVE INCLUDING UNITARY DECK FOR ALIGNING AND SUPPORTING AXIALLY RETRACTABLE SPINDLE ASSEMBLY
John W. Elsing, Edina; William C. Bright, Eden Prairie, and William J. Kostecka, Jordan, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Jul. 31, 1990, Ser. No. 560,747
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.08 **19 Claims**



1. In a data storage apparatus, an enclosure for supporting a data storage disk and spindle assembly for rotation of the disks inside of the enclosure, said enclosure including:
a unitary, substantially rigid deck including first and second opposed support walls, and an intermediate peripheral wall means cooperating with the support walls to define a chamber within the deck, with one end of the deck open to allow insertion of a spindle assembly into the chamber, wherein the spindle assembly includes an elongate spindle shaft and first and second bushing means rotatably mounted to opposite ends of the shaft, at least one of the bushing means further being movable axially on the spindle shaft;
first and second precision bores formed in the first and second support walls, respectively and open to the chamber, each of the precision bores conforming to an associated one of and second bushing means, to permit a press fit engagement of each of the bushing means into its associated one of the bores, said engagement securing the spindle shaft rotatably with respect to the deck; and
a fastening means for moving the first and second bushing means axially away from one another and into the press fit engagement with the first and second bores, respectively, thus to simultaneously align a rotation axis of the spindle shaft relative to the deck and integrally secure the first and second bushing means with respect to the deck.

5,295,030
LOW PROFILE DISC CLAMP
Shahriar A. Tafreshi, Capitola, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Jun. 5, 1992, Ser. No. 893,490
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—99.12 **1 Claim**

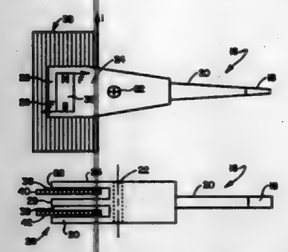


1. In a disc drive spindle having a circular leaf spring disc clamp,
a plurality of oval-shaped screw apertures each having a wider section, said apertures being substantially symmetrical about respective disc clamp radii drawn through the centers of respective apertures, the wider section of the oval lying radially outermost on said disc clamp; and
a corresponding plurality of screws having circular contact flanges extending through said apertures and clamping said disc clamp to said spindle by said flanges abutting the disc clamp; the size of each screw flange and the location of each screw being so arranged on the spindle that each screw flange contacts the disc clamp only at its radially innermost edge, such that the outermost edge of the screw flange does not interfere with the disc clamp, but rather lies within the edge of the oval screw aperture.

5,295,031
ROTARY POSITIONING APPARATUS
Ken G. Wasson, P.O. Box 8027, Foster City, Calif. 94404
Filed Aug. 29, 1991, Ser. No. 750,091
Int. Cl.[5] G11B *5/55, 21/08*
U.S. Cl. 360—106 **24 Claims**

1. Rotary positioning apparatus comprising;
an actuator body having a given mass characteristic, first and second longitudinally spaced apart end portions, and a center of gravity;
a pivot member for rotatably supporting said actuator body at a location between said first and second end portions;

couple means for applying a torque to said actuator body at a location remote from said pivot member, said torque being applied without substantial reaction forces on said pivot member by the application of torque defining, oppo-



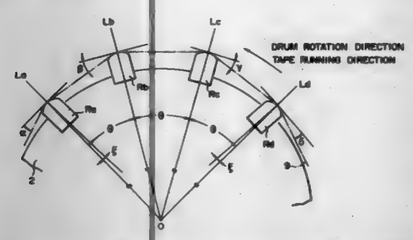
sitely directed and spaced apart forces thereto generated by current i, within a coil of active length, l, and a magnetic field of value, B, under the relationship; F=Bl, to effect a predetermined pivotal movement of said actuator body about said pivot member.

5,295,032

ROTARY MAGNETIC HEAD DEVICE

Hirohisa Kogo; Kenji Kobayashi, and Takayuki Kurahara, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 855,094
Claims priority, application Japan, Mar. 20, 1991, 3-056868
Int. Cl.[5] G11B *5/53, 21/18*
U.S. Cl. 360—107 **1 Claim**



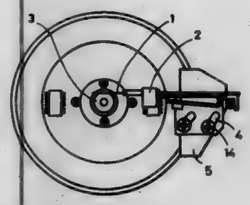
1. In a rotary magnetic head device comprising, a plurality of side-by-side magnetic heads which have recording gaps and said heads are each mounted on a radius of curvature in a plane and each of said plurality of heads mounted opposite to a magnetic tape at a pre-determined positions on a rotary body wherein, a plurality of radial lines L respectively, extend through the center of the gap of each of said magnetic heads and each extend to the center of said rotary body and the angles between said plurality of lines L are equal so that the angular intervals between said magnetic heads are equal, and where the forward-most magnetic head and the rearward-most magnetic head relative to the advancing direction of tape are at angles ϵ relative to the respective radial line L which extends through them and wherein ϵ is not zero so that their recording gaps project outwardly, respectively, in forward and reverse directions of movement of the tape and wherein said plurality of heads includes additional magnetic heads mounted between said forward-most and rearward-most heads which are mounted so that their recording gaps are on the respective radial lines L which extend through them, and wherein said forward-most and rearward-most heads are at distances from the center of said rotary body which are equal and the additional magnetic heads between said forward-most and rearward-most heads are at distances from the center of said rotary body which are greater than the distances of said forward-most and rearward-most magnetic heads from the center of said rotary body.

5,295,033

ROTARY DRUM DEVICE

Shoichi Ibaraki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,327
Claims priority, application Japan, Nov. 14, 1990, 2-306012
Int. Cl.[5] G11B *21/04*; H01K *39/38*
U.S. Cl. 360—108 **19 Claims**



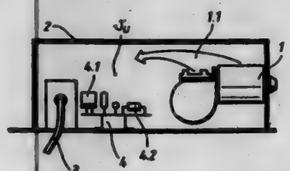
1. A rotary drum device comprising:
a fixed portion;
a rotary portion rotatably provided on said fixed portion;
a brush unit including a brush and a brush holding portion for holding said brush, said brush unit supplying a current or signal to said rotary portion by contact of said brush with said rotary portion, and a contact force of said brush at the contact point between said rotary portion and said brush being caused by bending of said brush; and
a guide portion along which said brush unit can move in the direction where the bending of said brush becomes smaller in quantity when said brush unit moves toward said contact point such that said contact force can be maintained substantially constant.

5,295,034

METHOD FOR THE OVERLOAD PROTECTION OF DEVICES WHICH CANNOT ENDURE CONTINOUS RUNNING ON ACCOUNT OF HEAT LOSS

Armin Kleinmaier, Haigerloch, and Josef Schumacher, Reutlingen, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Oct. 2, 1991, Ser. No. 769,795
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1990, 4032612
Int. Cl.[5] H02H *7/08*
U.S. Cl. 361—23 **6 Claims**



1. Method for the overload protection of devices which cannot endure continuous running on account of heat loss, having a temperature-dependent resistor measuring the inside temperature of the device and having an evaluation circuit, comprising:
measuring by means of the resistor arranged outside the device and remote from its device parts producing heat loss the inside temperature ν_u inside a housing enclosing the device;

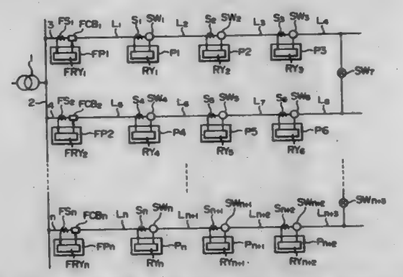
reading out a temperature difference ΔT assigned to the inside temperature ν_u from a device-specific characteristic stored in the evaluation circuit;
forming a difference $T_u=\nu_u-\Delta T$ in a subtracter of the evaluation circuit;
reading out from a further device-specific characteristic stored in the evaluation circuit a permissible operating period of the device, said permissible operating period being assigned to the temperature difference;
determining a preset operation period cycle time using said permissible operating period as the basis for a preset operating period cycle time; and
after reaching the permissible operating period, turning off the device by the evaluation circuit during the operating period cycle time.

5,295,035

POWER DISTRIBUTION LINE PROTECTION SYSTEM

Kazuo Nishijima, Katsuta; Terunobu Miyazaki, Ibaraki, and Mitsuru Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,320
Claims priority, application Japan, Oct. 21, 1991, 3-272329
Int. Cl.[5] H02H *3/16*
U.S. Cl. 361—63 **5 Claims**



1. A power distribution line protection system comprising:
a distribution line connected to a power distribution substation;
a plurality of switches arranged distributively on said distribution line; and
a plurality of protection equipments including a plurality of fault detection relays, respectively, each of said fault detection relays being connected to each of said plurality of switches, for on/off control thereof,
wherein each of said fault detection relays includes memory means for holding a voltage resulting from a ground fault on said distribution line;
wherein time constants of said memory means are set to become greater in an ascending order from the power outlet of said distribution line; and
wherein according to different holding voltages at the memory means resulting from intermittent ground faults prior to a full ground fault, a switch is opened which is closest to the full ground fault as viewed from said power outlet.

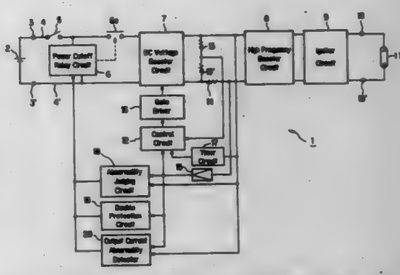
5,295,036

LIGHTING CIRCUIT FOR VEHICULAR DISCHARGE LAMP

Soichi Yagi; Atsushi Toda; Akiyoshi Ozaki, and Akihiro Matsumoto, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 748,113
Claims priority, application Japan, Sep. 25, 1990, 2-254953
Int. Cl.[5] H02H *3/28*
U.S. Cl. 361—79 **18 Claims**

2. A lighting circuit for a vehicular discharge lamp having a DC voltage booster circuit for boosting an input voltage from a DC voltage input terminal, comprising:
a detector for acquiring a detecting signal directly representative of an output current or output voltage of the DC voltage booster circuit;
an abnormality judging circuit for detecting the output voltage or output current of the DC voltage booster circuit, acquiring a reference value directly representative of



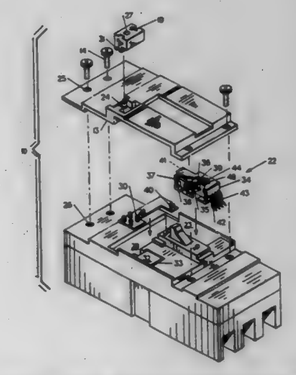
a corresponding output current or output voltage of the DC voltage booster circuit, and comparing the reference value with the level of the detection signal from the detector with each other to determine whether or not the lighting circuit is in an abnormal status; and
a power cutoff circuit for inhibiting supply of a DC voltage to the DC voltage booster circuit upon reception of a signal from the abnormality judging circuit representing an abnormality in the lighting circuit.

5,295,037

MOLDED CASE CIRCUIT BREAKER-PROCESS LOOP UNIT

John J. Dougherty, Avon, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 27, 1992, Ser. No. 826,505
Int. Cl.[5] H02H *3/24*
U.S. Cl. 361—93 **19 Claims**



1. A combined circuit breaker-process loop controller unit comprising:
a circuit breaker cover attached to a circuit breaker case;
an accessory cover attached to said circuit breaker cover over a recess formed within said circuit breaker cover;
a pair of contacts within said circuit breaker case controlled by an operating mechanism within said circuit breaker case for manual and automatic separation;

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a trip unit within said cover activating said operating mechanism upon occurrence of an overcurrent condition within an associated electric circuit; and

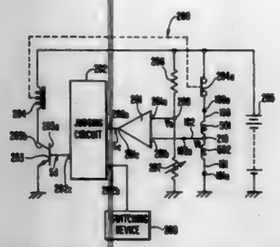
a trip actuator-process loop control unit within said recess connecting with remote electric equipment activating said operating mechanism to interrupt supply current to said equipment, said trip actuator-process loop control unit including a trip coil interacting with said operating mechanism to place said operating mechanism in both active and inactive conditions.

5,295,038

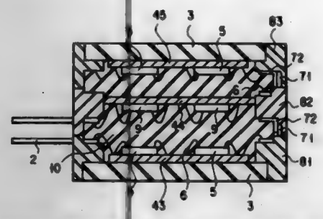
ELECTROMAGNETIC CLUTCH

Takashi Matsushita; Yoshitaka Sunaga, both of Isesaki; Kouki Yoshizawa, and Seiichi Hoshino, both of Gunma, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Apr. 1, 1991, Ser. No. 678,246
Claims priority, application Japan, Mar. 30, 1990, 2-81301
Int. Cl.[5] H01H *47/00*
U.S. Cl. 361—152 **9 Claims**



board on which non-power semiconductor elements are mounted and a second heat sink, having a second peripheral frame portion, for radiating heat generated by said non-power semiconductor elements, said second peripheral frame portion of said second circuit board assembly being stacked on said first peripheral frame portion of said first circuit board assembly so as to oppose said first circuit board to said second circuit board;



first electrical connection means formed on said first peripheral frame portion and electrically connected to said first circuit board; and

second electrical connection means formed on said second peripheral frame portion, electrically connected to said second circuit board and electrically connected to said first electrical connection means by stacking said first and second peripheral frame portions on each other.

5,295,045

PLASTIC-MOLDED-TYPE SEMICONDUCTOR DEVICE AND PRODUCING METHOD THEREFOR

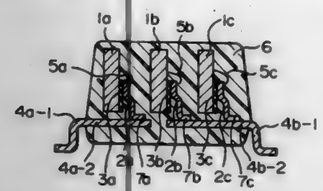
Makoto Kitano, Tsuchiura; Asao Nishimura, Ushiku; Akihiro Yaguchi; Nae Yoneda, both of Ibaraki; Maya Obata, Ishioka; Ryuji Kohno, and Mitsuaki Haneda, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1991, Ser. No. 791,551

Claims priority, application Japan, Nov. 14, 1990, 2-306305

Int. Cl.[5] H05K *5/02*

U.S. Cl. 361—813 **48 Claims**



1. A plastic-molded-type semiconductor device including a plurality of semiconductor chips, lead frames having outside lead groups and inside lead groups, and connecting members for electrically connecting said semiconductor chips with said lead frames, a part of said lead frames, said semiconductor chips and said electrical connecting members being plastic-molded in a package unit, wherein

said plurality of semiconductor chips are arranged in directions intersecting a substrate for mounting the semiconductor device thereon; a first lead frame group is connected with circuit formed surfaces of said plurality of semiconductor chips by using electrically insulating material interposed therebetween; said first lead frame group is electrically connected with said semiconductor chips; and said first lead frame group is connected with a second lead frame group continuing from said outside lead group.

5,295,046

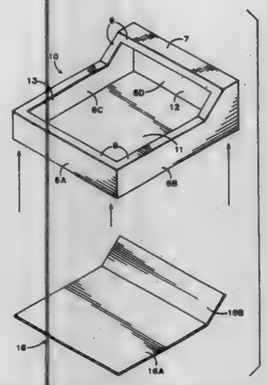
CONTROL PANEL WITH EMI SCREEN

Steven K. Knauber, and John D. Pechin, both of Grass Valley, Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Jun. 11, 1992, Ser. No. 897,125

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—816 **6 Claims**



1. A control panel for an electronic instrument comprising:

a shroud of an insulating material having a metallic conductive coating substantially covering an interior surface, the shroud defining a key panel aperture; and

a key panel sub-assembly, said key panel sub-assembly comprising a stiff key panel plate, an overlay sheet of which the size and shape approximate the size and shape of the key panel plate, and an EMI screen of conductive, resilient material, the EMI screen having a major portion of which the size and shape approximate the size and shape of the key panel plate and also having fingers projecting from the periphery of the major portion,

the key panel plate, the EMI screen and the overlay sheet being arranged as a sandwich structure with the EMI screen between the key panel plate and the overlay sheet, and the key panel sub-assembly being positioned inside the shroud with the overlay sheet exposed through the key panel aperture and the fingers of the EMI screen flexed and in electrically conductive contact with the conductive coating of the interior of the shroud.

5,295,047

LINE-OF-LIGHT ILLUMINATING DEVICE

Gene R. Windross, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1992, Ser. No. 863,888

Int. Cl.[5] G01D *11/28*

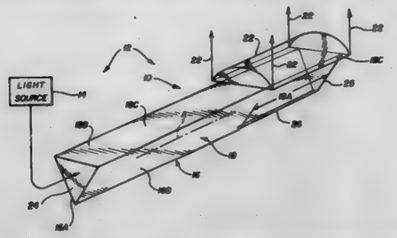
U.S. Cl. 362—26 **19 Claims**

1. A line-of-light illuminating device, comprising:

a light source;

an elongated optical lightpipe which receives light from said light source and transmits said light through internal reflection, said lightpipe being isosceles triangular in cross-section with an apex at the point at which the equilateral sides of the isosceles triangle join, said lightpipe having an emission portion; and

an integral optical lens, located at one side of said emission portion of said lightpipe and extending substantially parallel to said emission portion for receiving and focusing said internally-reflected light into a collimated line-of-light beam, said emission portion of said lightpipe having a reflective surface formed at the apex thereof being opposite from said one side thereof for receiving said internally-reflected light striking said reflective surface and reflecting said light in a substantially perpendicular direction therefrom to said integral optical lens.


LIGHT SOURCE
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planes which intersect at an apex adjacent to said energizeable means and which receive light from said energizeable means when said energizeable means is energized, said prism having a light emitting face through which light which enters said prism through said light receiving faces is emitted, said light emitting face having a series of parallel V-shaped grooves formed therein, said V-shaped grooves having side surfaces which intersect to form a series of parallel ridges extending across said light emitting face of said prism to disperse rays of light transmitted from said light receiving faces through said prism to said light emitting face of said prism, and a display panel disposed in said housing adjacent to said light emitting face of said prism, said display panel having a major side surface forming at least a portion of an outer side of said housing and extending parallel to said light emitting face of said prism, said display panel having indicia thereon which is exposed to light transmitted from said light emitting face of said prism and which is observable when said energizeable means is energized even when said display panel is exposed to bright sunlight, the indicia on said display panel being obscured when said energizeable means is not energized and said display panel is exposed to bright sunlight.

5,295,051

ILLUMINATING APPARATUS

Ian R. Cowling, Queensland, Australia, assignor to Queensland University of Technology, Brisbane, Australia

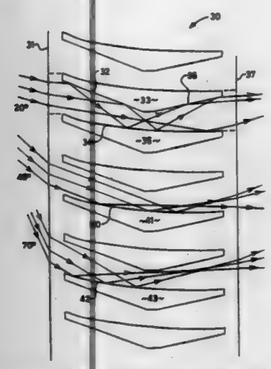
PCT No. PCT/AU90/00408, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO91/03682, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 7, 1990, Ser. No. 838,216

Claims priority, application Australia, Sep. 8, 1989, PJ6274

Int. Cl.[5] F21V *7/04*

U.S. Cl. 362—32 **9 Claims**



1. Illuminating apparatus for transmitting incident light including a body member comprising:

(A) an incident surface such that light incident thereon is refracted into the body member,

(B) an emergent surface, and

(C) a pair of substantially opposed air boundary surfaces disposed between and terminating adjacent said incident and emergent surfaces, said air boundary surfaces being configured such that substantially all light passing through said incident surface and impinging on one or more of the boundary surfaces is totally internally reflected therefrom to issue from said emergent surface in a direction inclined upwardly from the horizontal.

5,295,052

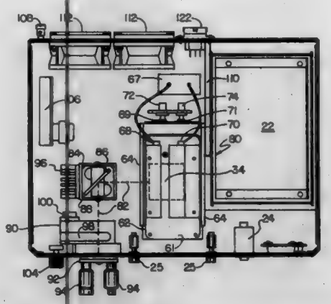
LIGHT SOURCE ASSEMBLY

Noelle S. Chin, Shrewsbury, and Ernest E. Beland, Jr., Hudson, both of Mass., assignors to Luxtec Corporation, Worcester, Mass.

Filed Oct. 9, 1992, Ser. No. 959,935

Int. Cl.[5] F21V *8/00*

U.S. Cl. 362—32 **9 Claims**



1. A light source for applying a high intensity cooled light to a fiber optic connection comprising:

a chassis having thereon a lamp assembly and positioner defining one end of a light path;

an optical fiber cable connector defining another end of said light path; and

cooling filters in said light path intermediate said one and other ends;

said positioner comprising at least first and second rails, each having first and second ends with respective stops, said first and second rails adapted to receive a support plate of said lamp assembly;

said lamp assembly including, on said support plate, first and second lamp mounts, each lamp mount having cooling fins thereon;

said chassis further including an electrical interconnect block having first and second electrical interconnect plugs, said support plate having thereon mating plugs;

a cover surrounding said chassis and having a front plate thereon;

a removable access plate in said front plate adapted to permit sliding of said lamp assembly support plate on said rails through an aperture in said front plate normally covered by said access plate to permit rapid replacement of said lamp assembly.

5,295,053

MOTOR VEHICLE HEADLIGHT INCLUDING DEVICE FOR MEASURING DEVIATION AND ADJUSTING DIRECTION OF ORIENTATION OF HEADLIGHT BEAM

Katutada Shirai, and Hideharu Mochizuki, both of Shizuoka, Japan, assignors to Koito Manufacturing Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 894,348, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 370,949, Jun. 23, 1989, Pat. No. 5,121,303. This application Jul. 22, 1993, Ser. No. 94,930

Claims priority, application Japan, Jun. 24, 1988, 63-154630; Jul. 19, 1988, 63-178033

Int. Cl.[5] F21M *3/20*

U.S. Cl. 362—66 **9 Claims**

1. A motor vehicle headlight incorporating a device for measuring an amount of deviation of a beam of said headlight from a predetermined axis, comprising:

an outer body;

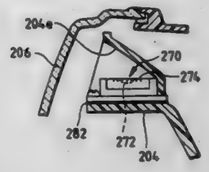
a front lens covering a front opening of said outer body;

a reflector positioned within said body;

means for mounting said reflector to said body so that said reflector is pivotally adjustable in position in horizontal and vertical directions;

first deviation measuring means for measuring an amount of deviation of said beam from said predetermined axis in said horizontal direction;

second deviation measuring means for measuring an amount of deviation of said beam from said predetermined axis in said vertical direction, said second deviation measuring means comprising a level secured to said reflector, said



level having a graduation means associated therewith for measuring an amount of upward or downward deviation of said beam from said predetermined axis, said second deviation measuring means being located at an upper portion of said reflector; and

a mirror means disposed above said graduation means, said front lens being free of lens steps in a region forward of said mirror means, said mirror means allowing said graduation means to be observed through said region of said front lens free of lens steps from outside of said front lens.

5,295,054

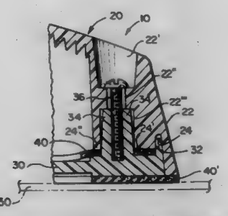
SMOOTH LENS AND SEALED HOUSING FOR SIGNAL LIGHT

Edward J. Baader, 232 Stephen La., and Joseph E. Baader, 333 Holiday Dr., both of Springfield, Ohio 45505

Filed Apr. 20, 1993, Ser. No. 48,175

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 362—80 **2 Claims**



1. A smooth lens and housing assembly 10 for a warning light source, adapted to anchorage on a vehicle wall, comprising in interfitting relationship:

a) a flat circular housing 30 for a vehicular light source said housing forming an annular projection 32 thereon and plural fastener seats 34, which are concentrically disposed radially and inwardly of the projection 32, both the annular projection and the seats being integral parts of the housing;

b) a circular lens cover 20 superposed upon the housing 30, said lens cover defining an inwardly projecting skirt 22, with a circular recess 24 which fits into contiguous external overlapping relation with respect to the annular projection 32 of the housing; plural lens cover cavities 22' in circular array peripherally about the cover, said cavities passing through the lens cover and being parallel to a vertical axis of the assembly, at least one of said cavities 22' forming a lowermost expanded void 22''' encompassing and contacting at least one fastener seat 34 of the housing and at least one other of said cavities 22' providing a fastener channel to and through the housing;

c) a first compressible circular seal 40, interposed in inward extension of the housing 30, between the housing and lens cover 20 and a second compressible circular seal 40' set upon and in co-extension of the housing exterior, both seals 40-40' impinging upon the housing 30, compressing the seals 40-40' therebetween, securing the lens cover upon the housing and likewise securing the housing upon the vehicle wall in sealing relation thereto and in opposition to lateral displacement;

d) fasteners 36 engaging lens cover cavities 22' and housing 30 to seal them together and to seal both lens cover and housing to the vehicle wall.

5,295,055

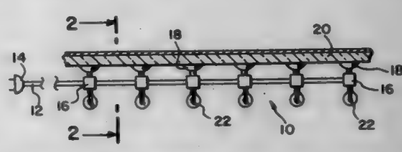
PORTABLE ELECTRIC CORD LIGHTING

Allen L. Brock, 3227 Whittle Way, Midland, Tex. 79707, and George Spector, 233 Broadway RM 702, New York, N.Y. 10279

Filed Dec. 16, 1992, Ser. No. 991,423

Int. Cl.[5] F21V *21/14*

U.S. Cl. 362—249 **1 Claim**



1. A portable auxiliary illumination device which comprises:

a) an elongated power cord;

b) a plug at one end of said power cord for engagement with an outlet to receive electrical current therefrom;

c) a plurality of sockets located in series along the length of said power cord

d) a plurality of suction cups, each connected to one of said sockets, so that said sockets can be removably attached to a flat surface of a mirror;

e) a plurality of light bulbs, each removably disposed within each said socket to produce additional light for dimly lit areas adjacent the mirror; and

f) a plurality of connectors, each having a threaded aperture and affixed to one of said sockets;

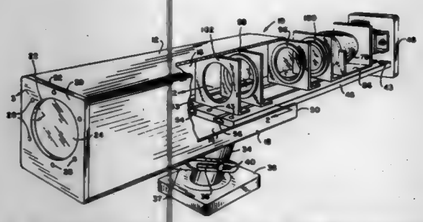
g) each said suction cup having a threaded shank to removably engage with the threaded aperture in one of said connectors, so that said suction cups can be removed and replaced when needed; further including means on said power cord for allowing each said socket to slide to a different position, so as to place the additional light at specific dimly lit areas adjacent the mirror; wherein said socket sliding means includes;

h) a flexible track mounted on said power cord;

i) a pair of recessed electrical contact strips spaced apart in a parallel longitudinal relationship on said flexible track; and

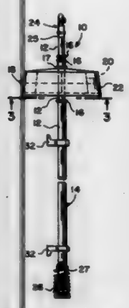
j) each said socket having a transverse aperture therethrough, with a pair of spaced apart electrical contact pins within said transverse aperture, so that each said socket can ride on said flexible track through said transverse aperture with said contact pins riding on said recessed electrical contact strips.

5,295,056
EXTERIOR FRAMING PROJECTOR
Martin J. Peck, N140 W13943 Cedar La., Germantown, Wis. 53022
Filed May 29, 1992, Ser. No. 891,420
Int. Cl.[5] F21V *13/12, 31/02*
U.S. Cl. 362—267 28 Claims



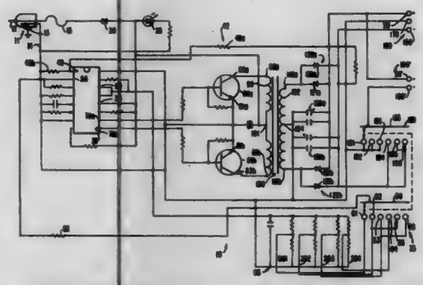
1. An exterior framing projector for projecting a framed light image in an outside environment, the projector comprising:
a. a housing having top, bottom, and opposite side walls and opposite ends, at least one of which is open;
b. a clear cover over said one open end;
c. a seal between the cover and the housing for hermetically sealing the housing;
d. a base carried in the housing;
e. a lamp mounted on the base and in axial alignment with the cover;
f. a reflector mounted on the base and substantially surrounding the lamp;
g. a lens system mounted on the base between reflector and the cover; and
h. a template/shutter system mounted on the base in juxtaposition with the lens system and the reflector.

5,295,057
LIGHT ON A STICK
John J. Buonsante, 17 New Haven St., Harrison, N.Y. 10528, and George Spector, 230 Broadway Rm 702, New York, N.Y. 10279
Filed Dec. 16, 1992, Ser. No. 991,424
Int. Cl.[5] F21S *1/10*
U.S. Cl. 362—431 2 Claims



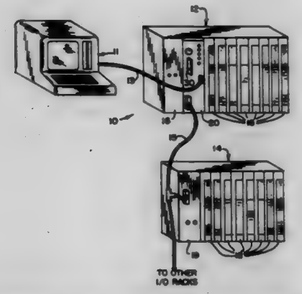
1. A utility pole lamp comprising:
a) a plurality of elongated adjustably telescoped sections including top and bottom sections forming an adjustable support shaft;
b) a plurality of locking devices each located between adjacent sections so that a desired shaft length may be maintained; and
c) a lighting fixture mounted on one of said sections;
d) a member having a hook at one end and a flat surface at an opposite end, wherein said member is pivotly mounted on said top section with means for securing said member in one position with the hook upper most and in another position with the flat surface upper most; and
e) a spring secured to said bottom section.

5,295,058
UNIVERSAL DC TO DC POWER CONVERTER
William T. McGreevy, Babylon, N.Y., assignor to Recoton Corporation, Long Island City, N.Y.
Filed Oct. 13, 1992, Ser. No. 959,760
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—26 8 Claims



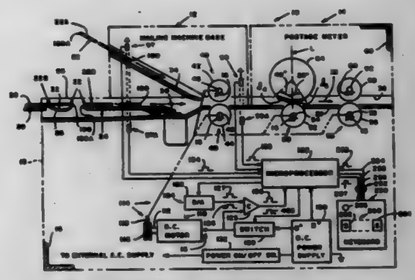
1. A DC to DC voltage converter for producing selectable differential output voltages at a nominally positive output terminal and a nominally negative output terminal comprising:
means for connecting to a source of DC supply voltage;
means for producing a feedback voltage proportional to the voltage at said nominally positive output terminal,
means for producing a selectable error voltage having a plurality of predetermined values,
a pulse width modulation controller having means for producing first and second complementary and non-overlapping square wave signals at respective first and second signal outputs each having a substantially constant peak voltage and a pulse width controlled by the difference between said feedback voltage and said selectable error voltage to increase said pulse width as said difference increases and to decrease said pulse width as said difference decreases,
first power switch means having one grounded terminal operable in response to said first square wave signal and second power switch means having one grounded terminal operable in response to said second square wave signal,
a transformer having
a center-tapped primary winding having a center-tap connected to said source of DC power, a first terminal connected to said first power switch and a second terminal connected to said second power switch;
a center-tapped secondary winding having first and second output terminals each producing an alternating output voltage and a center tap connected to a grounded bus;
means for rectifying and filtering said alternating output voltage from said first output into a positive DC voltage at a positive bus;
means for rectifying and filtering said alternating output voltage from said second output into a negative DC voltage at a negative bus;
means for connecting said nominally positive output terminal to said positive bus;
first switching means having a plurality of positions for selectively connecting said nominally negative output terminal to either said grounded bus or said negative bus; and
second switching means having a plurality of positions for selectively setting said error voltage to one of said plurality of predetermined values thereby to change the values of said positive DC voltage at said positive bus and said negative DC voltage at said negative bus to predetermined values;
said first and second switching means being mechanically ganged to operate together thereby to provide a plurality of predetermined differential voltages between said nominally positive output terminal and said nominally negative output terminal.

5,295,059
PROGRAMMABLE CONTROLLER WITH LADDER DIAGRAM MACRO INSTRUCTIONS
Jeffery W. Brooks, Mentor-on-the-Lake; Michael D. Yoke, and John J. Kolat, Jr., both of Mentor, all of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.
Filed Sep. 9, 1992, Ser. No. 942,254
Int. Cl.[5] G06F *15/46;* G05B *19/00*
U.S. Cl. 364—147 11 Claims



1. A programmable controller for operating a machine comprising:
a first means for storing a ladder logic control program having a plurality of ladder logic instructions, one of said instructions being a macro instruction which specifies an operation code, a first file containing data to be processed by the macro instruction, a second file containing control data, and a storage location for a result produced by execution of the macro instruction;
a ladder logic processor for executing a subset of the plurality of ladder logic instructions, which subset includes the macro instruction;
microprocessor for executing ladder logic instructions which said ladder logic processor is unable to execute;
a second means for storing the first and second files and the result produced by execution of the macro instruction;
a third means for storing a macro instruction routine having a plurality of ladder logic instructions which are executed by said ladder logic processor in response to execution of the macro instruction; and
means which connects said ladder logic processor, microprocessor and first, second and third means for storing for the exchange of data and program instructions.

5,295,060
MAILING MACHINE INCLUDING SHEET FEEDING CONTROL MEANS
Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 19, 1991, Ser. No. 810,255
Int. Cl.[5] H02P *5/00*
U.S. Cl. 364—148 25 Claims



1. A mailing machine base comprising:
a. means for feeding a sheet in a downstream path of travel, the feeding means including opposed upper and lower rollers for feeding a sheet into the path of travel, the feeding means including a d.c. motor connected for driving the rollers,
b. means for controlling the feeding means, the controlling means including a microprocessor, the controlling means including means for comparing the back e.m.f. voltage of the d.c. motor to a reference voltage and providing the microprocessor with a comparison signal, and the microprocessor programmed for controlling the d.c. motor to drive the rollers at a substantially constant sheet feeding speed in response to the comparison signal.

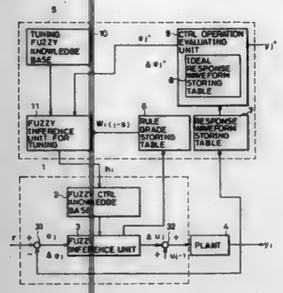
5,295,061
CONTROL PARAMETER TUNING UNIT AND A METHOD OF TUNING PARAMETERS FOR A CONTROL UNIT
Ryu Katayama, and Yuji Kajitani, both of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 19, 1991, Ser. No. 688,057
Claims priority, application Japan, Apr. 20, 1990, 2-106258; Jul. 9, 1990, 2-181311; Jul. 19, 1990, 2-191540; Oct. 17, 1990, 2-279965; Nov. 21, 1990, 2-319980
Int. Cl.[5] G05B *13/02*
U.S. Cl. 364—157 48 Claims

1. A tuning unit for a fuzzy control unit controlling a plant to be controlled based on fuzzy control knowledge including membership functions and fuzzy control rules such that a control response value applied to said plant is made equal to a predetermined target value, said tuning unit being for correcting said fuzzy control knowledge and comprising:
ideal response waveform storing means for storing a sequence of ideal response values which are desired outputs of said plant to be controlled;
response waveform storing means for storing a sequence of control response values from said plant to be controlled;
rule grade storing means for storing a grade value of the fuzzy control rules included in said fuzzy control knowledge with respect to each said control response value from said plant to be controlled;
control evaluating means for calculating from an ideal response valued stored in said ideal response waveform storing means and from a control response value stored in

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said response waveform storing means, a response deviation indicating a difference between said ideal response value and a corresponding control response value, and an amount of change of a response deviation indicating magnitude of change of the response deviation in a predetermined period;

means for storing tuning fuzzy knowledge including membership functions and fuzzy rules for correcting the membership function in a consequent portion of said fuzzy control rules in said fuzzy control knowledge, according



to respective magnitudes of said response deviation and the amount of change in said response deviation; and

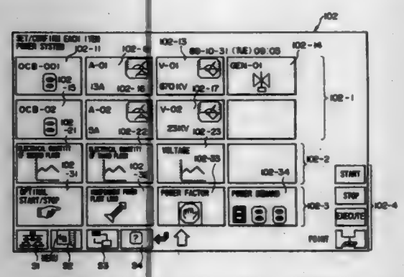
correcting means responsive to the response deviation information and the amount of change of the response deviation calculated by said control evaluating means and to rule grade information from said rule grade storing means, for correcting the membership functions of said consequent portion of said fuzzy control rules of effecting a predetermined calculation in accordance with said tuning fuzzy knowledge.

5,295,062

FACILITY MANAGEMENT APPARATUS HAVING TOUCH RESPONSIVE DISPLAY SCREENS

Hiroki Fukushima, Kanagawa, Japan, assignor to Yamatake-Honeywell Co., Ltd., Japan

Filed Jan. 18, 1991, Ser. No. 643,542
Claims priority, application Japan, Jan. 19, 1990, 2-9903
Int. Cl.[5] G05B *15/02*
U.S. Cl. 364—188 **11 Claims**



1. A facility management apparatus for allowing operator control of a facility having a plurality of individual facility systems, said apparatus comprising:

a computer means for receiving input from, and transmitting control signals to, said individual facility systems;

said computer means having a touch-responsive display means for displaying a facility overview screen having icons representing said individual facility systems, and for displaying an individual facility system screen upon touch selection of one of said individual facility system icons;

said individual facility system screens including,

a single point display portion displaying icons representative of control monitor points associated with said selected individual facility system, wherein a corresponding single point information screen is displayed on said display upon touch selection of one of said control monitor point icons;

a first associated screen portion displaying icons representative of a plurality of graphic displays associated with said selected individual facility system, wherein a corresponding graphic display screen is displayed on said display upon touch selection of one of said graphic display; and

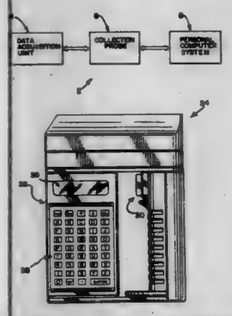
a second associated screen portion displaying icons representative of a plurality of control point menu displays associated with said selected individual facility system, wherein a corresponding control point screen is displayed on said display upon touch selection of one of said control point menu icons.

5,295,063

DATA ACQUISITION SYSTEM HAVING SETUP DUPLICATION CAPABILITY

Brent A. England, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa

Filed Apr. 22, 1992, Ser. No. 872,914
Int. Cl.[5] G05B *19/42;* **G06F** *15/46*
U.S. Cl. 364—188 **15 Claims**



1. A method of effecting a setup record change throughout a plurality of appliances, each appliance having a memory storing an original setup record, the setup record including a plurality of setup parameters, comprising the steps of:

providing an interrogator having a memory including a first and a second buffer register, the first buffer register storing the new setup parameters;

interrogating a first of the plurality of appliances with the interrogator wherein the appliance transmits to the interrogator its original setup record stored in the appliance's memory;

storing the original setup record transmitted by the appliance in the second buffer register of the interrogator's memory;

replacing the original setup parameters of the original setup record stored in the second buffer register with the new setup parameters stored in the first buffer register to create a new setup record in the second buffer register;

transmitting the new setup record stored in the second buffer register to the appliance wherein the original setup record stored in the memory of the appliance is replaced by the new setup record; and

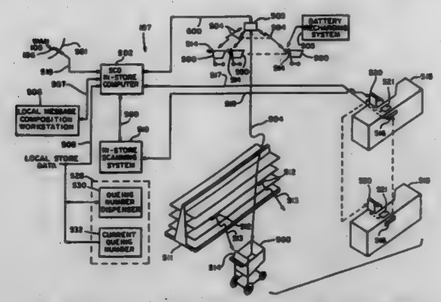
repeating the above steps with respect to each of the plurality of appliances.

5,295,064

INTELLIGENT SHOPPING CART SYSTEM HAVING CART POSITION DETERMINING AND SERVICE QUEUE POSITION SECURING CAPABILITY

John Malec, Chicago, and Joseph P. Moser, Glendale Heights, both of Ill., assignors to VideOcart, Inc., Chicago, Ill.

PCT No. PCT/US88/03259, § 371 Date Jul. 13, 1989, § 102(e) Date Jul. 13, 1989, PCT Pub. No. WO89/02628, PCT Pub. Date Mar. 23, 1989
Continuation-in-part of Ser. No. 99,288, Jan. 21, 1987, Pat. No. 4,973,952. This PCT application Sep. 21, 1988, Ser. No. 435,500
Int. Cl.[5] G06F *13/00, 15/21*
U.S. Cl. 364—401 **2 Claims**



1. A system for a prospective customer in a retail store to secure a position in a service queue from locations in the store remote from the queue, said system comprising:

a queuing number dispenser for generating successive electronic queuing number signals corresponding to positions in a service queue in response to a queue number request signal,

a shopping cart movable by a prospective customer about the retail store,

means on said cart and operable by said prospective customer for generating an electronic queue number request signal from substantially any location in the store,

electronic communications means providing electronic communication between said cart and said queuing number dispenser,

means for applying said electronic queue number request signal by way of said electronic communications means to said queuing number dispenser,

means for selectively addressing the cart from which a respective electronic queue request signal originated and applying the electronic queuing number signal currently generated by said queuing number dispenser to said cart by way of said electronic communications means, and

indicator means at said cart for indicating to said prospective customer the position in the queue corresponding to said applied electronic queuing number signal.

5,295,065

RESOURCE-LOT ASSOCIATION COORDINATOR

William Chapman, Scottsdale; DiAnn Fox, Gilbert, and Christopher Handorf, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1990, Ser. No. 531,818
Int. Cl.[5] G06F *15/22, 15/46*
U.S. Cl. 364—401 **41 Claims**

1. A method for efficiently coordinating the association of a plurality of resources with a plurality of lots, said method comprising the steps of:

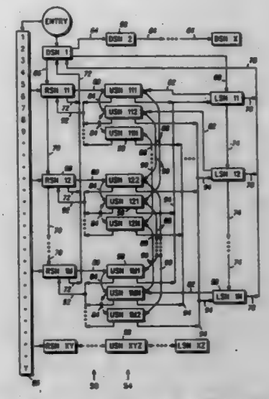
providing a plurality of lots which comprise articles of manufacture;

providing a plurality of resources which comprise a process and the relates assets for fabricating said articles of manufacture;

first identifying lots selected from said plurality of lots and a plurality of individual resources selected from said plurality of resources which share a first single dependency;

associating said lots and resources identified in said first identifying step with a first dependency-structure node (DSN) DSN;

second identifying a plurality of individual lots selected from



said plurality of lots and a plurality of individual resources selected from said plurality of resources which share a second single dependency, said first and second dependencies having no common lots and no common resources therebetween;

associating said lots and resources identified in said second identifying step with a second DSN; and

linking said first and second DSNs together; and

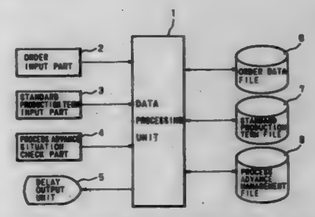
coordinating the fabrication of said articles of manufacture in accordance with a plan derived from said linked DSNs.

5,295,066

METHOD OF AND APPARATUS FOR CONTROLLING PRODUCTION PROCESS

Toshiaki Aoki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1991, Ser. No. 695,047
Claims priority, application Japan, May 18, 1990, 2-130000
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—401 **4 Claims**



1. A computer implemented method of monitoring production processing for a product to be processed successively by a plurality of processes comprising the steps of:

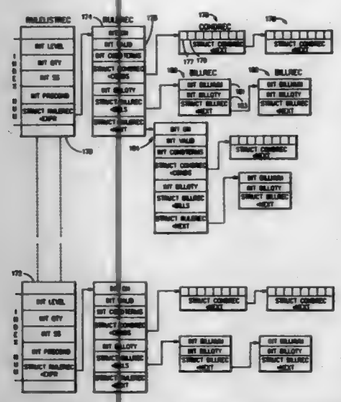
setting a processing term for each process of the plurality of processes;

calculating and storing a scheduled completion real time for each process of the plurality of processes based on said processing term;

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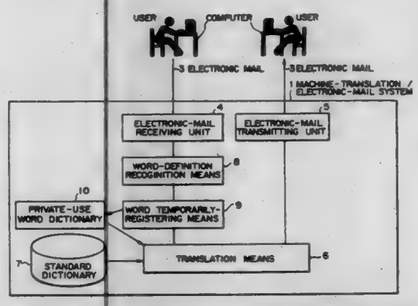
detecting and storing an actual completion real time for each process of the plurality of processes;
collating, in real-time, said scheduled completion real time with said actual completion real time; and
detecting, in real-time, a delay over the production processing according to a result of said collation of said scheduled completion real time and said actual completion real time.

5,295,067
ORDER PLANNING SYSTEM WHICH TRANSFORMS EXISTING ENGINEERING RELATIONSHIPS INTO AN ORDER PLANNING KNOWLEDGE BASE
Howard H. Cho, Middletown, N.J., and Denis L. Collet, Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 516,483, Apr. 30, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 55,946
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—401 **12 Claims**



1. A method for determining component requirements for a assembly said method operating in an computer system having storage means for storing computer readable data, wherein component specifications and relationships for a finished assembly are specified in a first logical form having terms and operators on those terms, the method comprising the steps of:
transforming said specifications and relationships from said first logical form to an unambiguous second logical form having the same terms;
encoding each term in said second logical form by assigning a unique identifier to each distinct term;
transforming said specifications and relationships in said second logical form into rules in an encoded knowledge base by replacing each term with its respective encoded term; encoding said proposed assembly configuration using said encoded terms;
generating a list of said component requirements by:
generating satisfied rule indicators by comparing said encoded proposed assembly configuration to said encoded knowledge base; and
assigning a component requirement to said list of component requirements by evaluating said satisfied rule indicators using said encoded knowledge base.

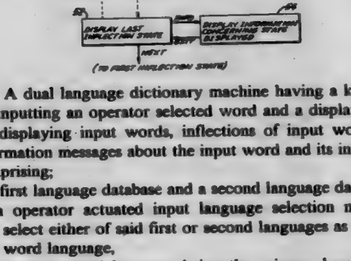
5,295,068
APPARATUS FOR REGISTERING PRIVATE-USE WORDS IN MACHINE-TRANSLATION/ELECTRONIC-MAIL SYSTEM
Fumihito Nishino, Tokyo; Jun Ibuki, Kawasaki; Naohito Nakamura, Yokohama, and Masatoshi Shiouchi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 19, 1991, Ser. No. 671,958
Claims priority, application Japan, Mar. 19, 1990, 2-66848
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.02 **12 Claims**



1. In a machine-translation electronic-mail system having an electronic-mail receiving unit, an electronic-mail transmitting unit and a standard dictionary used in a machine translation process, the improvement comprising
the machine-translation electronic-mail system being a private-use-word registering apparatus, comprising:
word-definition recognition means for recognizing a word-definition command for defining a private-use word used by a specific user, and extracting a particular word to be registered as said private-use word, said word-definition command existing in an electronic mail containing a document comprising said particular word to be translated, said electronic mail being produced by said specified user and being received by said electronic-mail receiving unit;
temporarily-registering means for temporarily storing in a private-use word dictionary said private-use word having been extracted by said word-definition recognition means, said private-use word dictionary being temporarily used in the translation as the private-use word dictionary; and
translation means for performing the translation by using said private-use-word dictionary having private-use words registered in it by said temporarily-registering means together with said standard dictionary, to obtain a translation result which is issued to said electronic-mail transmitting unit from which said translation result is delivered to designated users through said electronic mail.

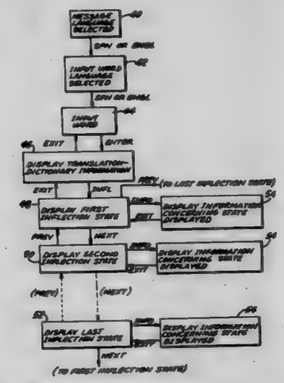
5,295,069
COMPUTER METHOD FOR RANKED HYPHENATION OF MULTILINGUAL TEXT
Ian L. Hersey, Bethesda; Richard L. Stephens, Gaithersburg, and Anthony Zamora, Chevy Chase, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 5, 1991, Ser. No. 710,638
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.17 **8 Claims**

1. A computer method for performing a ranked preferred hyphenation of words, comprising the steps of:
storing a word in a computer memory, having at least a pair of adjacent syllables and a pair of adjacent morphemes;
storing a first location value in said memory for a first type hyphenation location between said pair of syllables;
storing a second location value in said memory for a second type hyphenation location between said pair of morphemes;
storing a right margin value in said memory for defining a right margin of a document to be generated with a text processing program in said computer;
storing a preferred zone value in said memory for defining a preferred hyphenation area left of said right margin of said document;



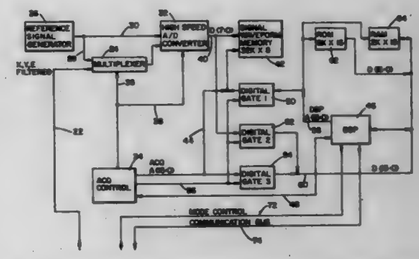
hyphenating said word between said pair of morphemes when said second type hyphenation location is in said preferred hyphenation area;
hyphenating said word between said pair of syllables when said first type hyphenation location is in said preferred hyphenation area and said second type hyphenation location is not in said preferred hyphenation area.

5,295,070
ELECTRONIC DUAL LANGUAGE DICTIONARY
David Justice, Princeton, N.J., assignor to Franklin Electronic Publishers Incorporated, Mt. Holly, N.J.
Filed May 31, 1991, Ser. No. 708,734
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.02 **19 Claims**



1. A dual language dictionary machine having a keyboard for inputting an operator selected word and a display screen for displaying input words, inflections of input words and information messages about the input word and its inflections comprising;
a first language database and a second language database,
an operator actuated input language selection means to select either of said first or second languages as an input word language,
said input word language being the primary language selected and the other of said first and second languages being the translation language,
first processing means responsive to an input word in said primary language to provide a set of inflection words for said input word in said primary language,
operator actuated sequencing means to sequence through said inflection words,
second processing means responsive to said input word in said primary language to provide a translation of said input word and of its inflections into said translation language, and
operator actuated message language selection means to select either of said first or second languages as a message language, and
third processing means to provide information concerning said input word and said inflection in said message language.

5,295,071
SAMPLED DATA LIGHTNING STRIKE DETECTION AND MAPPING SYSTEM CAPABLE OF GENERATING FREQUENCY SPECTRUM OF INPUT SIGNAL WAVEFORMS AND DISPLAYING SUCH ON THE MAPPING DISPLAY
Joseph G. Kuzma, Dublin, and Billie M. Stevens, Jr., Westerville, both of Ohio, assignors to B. F. Goodrich FlightSystems, Inc., Columbus, Ohio
Filed Apr. 29, 1992, Ser. No. 876,007
Int. Cl.[5] G06F *15/31*; G01S *3/02*; G01W *1/16*
U.S. Cl. 364—420 **20 Claims**



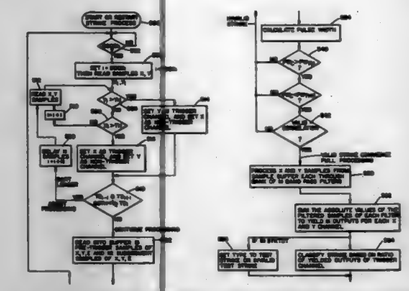
1. A sampled data lightning strike detection and mapping system including frequency spectrum measurement and display capabilities, said system comprising:
means for receiving a signal waveform comprising components representative of a lightning strike and other electrical activity;
means for sampling said received signal waveform to generate a train of data samples representative of the signal waveform;
first means for processing the data samples of the train to detect the lightning strike and estimate a location thereof;
display means, said first means operative to drive said display means to display an indication of the lightning strike based on the estimated location thereof; and
second means for processing a predetermined number of data samples of the train to generate a plurality of frequency signals representative of a frequency spectrum of the processed data samples, said second means operative to drive said display means to display a representation of said frequency spectrum.

5,295,072

SAMPLED DATA LIGHTNING STRIKE DETECTION AND MAPPING SYSTEM CAPABLE OF RECOVERING A PRE THRESHOLD SAMPLE HISTORY FOR DETECTION AND MAPPING PROCESSING

Billie M. Stevens, Jr., Westerville, and Joseph G. Kuzma, Dublin, both of Ohio, assignors to BFGoodrich FlightSystems, Inc., Columbus, Ohio

Filed Apr. 29, 1992, Ser. No. 876,011
Int. Cl.[5] G06F *15/31*; G01S *3/02*; G01N *1/16*
U.S. Cl. 364—420 20 Claims



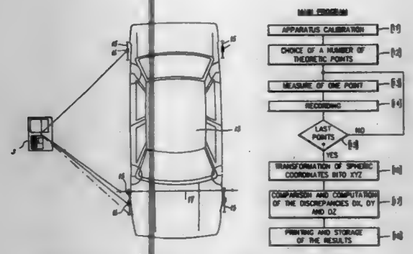
1. A sampled data lightning strike detection and mapping system comprising:
receiving means for receiving a signal waveform representative of a lightning strike;
sampling means for sampling said signal waveform to generate a train of data samples representative thereof;
identifying means for identifying a data sample of said train which exceeds a predetermined threshold level as a trigger sample;
recovering means for recovering a predetermined number of data samples, preceeding said trigger sample, of said train based upon said trigger sample; and
means for processing the recovered predetermined number of data samples to detect and map the lightning strike.

5,295,073

DEVICE FOR CHECKING THE POSITION OF VARIOUS POINTS OF A VEHICLE

Germain Celette, Vienne, France, assignor to Celette S.A., France

Continuation-in-part of Ser. No. 497,235, Mar. 22, 1990, Pat. No. 5,140,533. This application Oct. 3, 1991, Ser. No. 770,451
Claims priority, application France, Mar. 24, 1989, 89 04210
Int. Cl.[5] G06F *7/70*; G01B *11/14*
U.S. Cl. 364—424.01 14 Claims



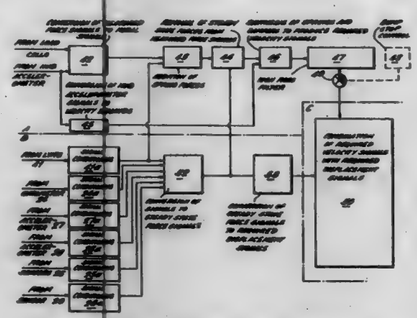
1. Apparatus for checking the relative positions of two or more predetermined points on a vehicle, comprising:
a laser telemeter for measuring distance therefrom to a respective target positioned at each of said predetermined points, including means for producing a beam which is reflected back to the telemeter,
first and second stepper motor assemblies for orienting the telemeter about first and second mutually perpendicular axes by steps,
a computer that includes means for storing in memory the respective number of steps about each said axis from a reference orientation to the orientation of the telemeter at which the beam is centered on the target, means for calculating distance from the telemeter to each said target and based on the respective stored number of steps an angle of rotation about each said axis corresponding to the position of the respective target, means for calculating from the distance from the telemeter to each said target and from the respective angles of rotation about each said axis respective XYZ coordinates for the position of each said target, and means for calculating from said XYZ coordinates relative positions of said targets from one another, comparing said relative positions with predetermined standard values for producing discrepancy values DX, DY, DZ; and
means for printing or displaying the discrepancy values for each said target position.

5,295,074

VEHICLE SUSPENSION CONTROL SYSTEM

David A. Williams, Milton Keynes, United Kingdom, assignor to Group Lotus plc, Norfolk, United Kingdom

Filed Dec. 19, 1991, Ser. No. 777,231
Claims priority, application United Kingdom, May 5, 1989, 8910392
Int. Cl.[5] B60G *17/01*
U.S. Cl. 364—424.05 12 Claims



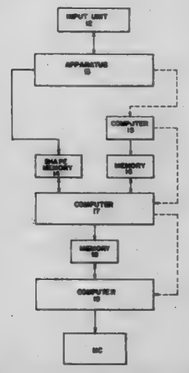
1. A vehicle suspension control system comprising:
actuator means for connection between a sprung mass of a vehicle and unsprung masses of the vehicle;
means for determining forces acting between the sprung mass and the unsprung masses and for producing signals proportional to said forces, the means for determining forces comprising first sensor means operable to produce a first set of signals comprising signals indicative of the loads in load paths between the unsprung masses and the sprung mass and second sensor means operable to produce a second set of signals which includes signals indicative of the lateral acceleration of the vehicle, the longitudinal acceleration of the vehicle, and the yaw rate of the vehicle;
means for processing the second set of signals to produce steady state force signals indicative of steady state input loads on the vehicle including loads arising from concerning and acceleration/deceleration of the vehicle and loads carried by the vehicle, means for combining the steady state force signals with the first set of signals to produce dynamic force signals indicative of dynamic inputs to the vehicle, the dynamic inputs including forces arising due to perturbations on a road below the vehicle;
first means for processing the steady state force signals to produce first control signals for controlling the actuator means, whereby the first control signals act to control the actuator means to maintain the orientation of the sprung mass relative to a reference plane constant throughout vehicle cornering and acceleration/deceleration and constant with changing interior loads; and
second means for processing the dynamic force signals to produce second control signals for controlling the actuator means, whereby the second control signals act to control the actuator means to substantially eliminate the transmission of dynamic forces from the unsprung masses to the sprung mass.

5,295,075

METHOD AND APPARATUS FOR MACHINING WORKPIECES WITH NUMERICALLY CONTROLLED MACHINES

Klaus-Dieter Korner, Traunstein, and Norbert Vollmayr, Traunwalchen, both of Fed. Rep. of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 25, 1991, Ser. No. 765,562
Claims priority, application European Pat. Off., Sep. 25, 1990, 90118385.5
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.28 15 Claims



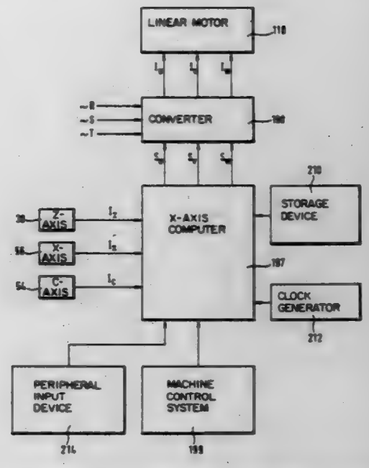
1. A method for machining workpieces by linking workpiece blank data with tool path data comprising the steps of:
a) providing two-dimensional contour data;
b) providing tool radius data representing the radius of a tool used to machine the workpiece;
c) correcting two-dimensional contour data with tool radius data to create corrected two-dimensional contour data;
d) generating three-dimensional contour data from said corrected two-dimensional contour data;
e) linking said corrected three-dimensional contour data by a set theory equation to define a desired part data;
f) creating intersection contour data by intersecting said desired part data with a series of machining plane data, the intersection contour data defining a cutter path; and
g) machining said workpiece along said cutter path.

5,295,076

MACHINE FOR THE NON-CIRCULAR MACHINING OF WORKPIECES

Guenther Gruener, Bad Ueberkingen; Werner Philipp, Pfaedernhausen, and Hans Pikisch, Eislingen, all of Fed. Rep. of Germany, assignors to Ex-Cell-O GmbH, Eislingen, Fed. Rep. of Germany

Filed Sep. 27, 1991, Ser. No. 766,752
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1990, 4031079
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.29 30 Claims



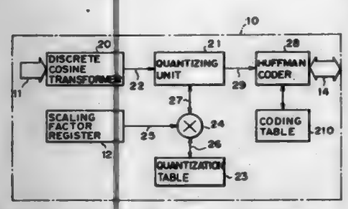
1. A machine for the non-circular machining of workpieces comprising:
a machine frame;
a workpiece spindle held on said machine frame for receiving a workpiece;
a C-axis sensor for determining rotary positions of said workpiece spindle;
a Z-slide arranged on said machine frame for displacement in a Z-direction parallel to said workpiece spindle and having a Z-axis drive;
a Z-axis sensor for determining a position of said Z-slide;
an X-axis drive arranged on said Z-slide for advancing a tool in an X-direction towards said workpiece;
an X-axis sensor for determining a position of said tool; and
a control device for activating said X-axis drive to produce a predetermined non-circular workpiece shape;
said control device comprising a numerical machine control system for activating said workpiece spindle and said Z-axis drive;
said control device further comprising a numerical X-axis control system for activating said X-axis drive independently of said numerical machine control system via successive actuating variables;
said numerical X-axis control system calculating said successive actuating variables in successive calculation routines on the basis of (i) actual position values measured by said C-axis sensor, (ii) actual position values measured by said X-axis sensor, and (iii) stored data defining said predetermined non-circular shape;
said numerical machine control system and said numerical X-axis control system being coordinated after a predetermined number of calculation routines.

5,295,077

DIGITAL ELECTRONIC STILL CAMERA

Hiroki Fukuoka, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,225
Claims priority, application Japan, Jan. 23, 1991, 3-6477
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—479 **9 Claims**



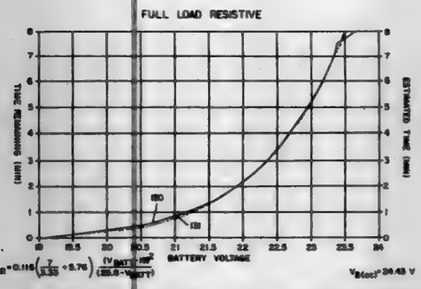
1. A digital electronic still camera, comprising:
image pickup means for picking up an image of a field to be photographed;
block-dividing means for dividing the image into a plurality of blocks which are respectively made up of a plurality of pixels;
transforming means for executing an adaptive discrete cosine transformation of each block of the image to generate a corresponding block of image data;
quantizing means for quantizing the image data of each block with reference to a quantization table selected as an optimum one from a plurality of quantization tables having different quantization step sizes;
image attributable judging means for judging an image attribute based on a spectrum distribution of the image data selected as membership functions of fuzzy decision;
quantization table setting means for selecting a quantization table as the optimum one based on the image attribute obtained;
coding means for coding the image data quantized; and
recording means for recording the coded image data into a memory.

5,295,078

METHOD AND APPARATUS FOR DETERMINATION OF BATTERY RUN-TIME IN UNINTERRUPTIBLE POWER SYSTEM

Frederick A. Stich, Wisconsin Rapids, and Edward G. Beistle, Appleton, both of Wis., assignors to Best Power Technology Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 702,733, May 17, 1991. This application May 15, 1992, Ser. No. 883,501
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—483 **34 Claims**



1. A method of determining the run-time during which power can be supplied from a battery through an inverter of an uninterruptible power supply to a load while such power is being supplied to the load, comprising the steps of:
(a) determining the current supplied to the load;
(b) measuring the battery voltage while the battery supplies power to the load;
(c) determining the remaining run-time t_R(INV) available during which the battery can supply power to the load in accordance with the expression

$$t_R(INV) = \left[K_1 + \frac{K_2}{I_o(INV)}\right] \frac{(V_B - V_{LL})^2}{(V_{FC} - V_B)}$$

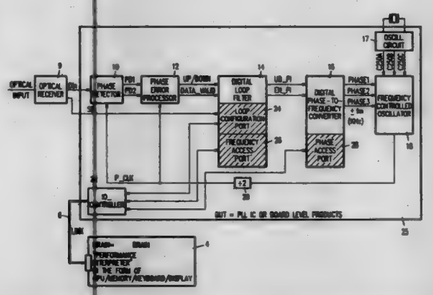
where:
K_1 and K_2 are predetermined constants,
V_{LL} is the lower limit of battery voltage below which the battery should not supply power,
V_{FC} is the full charge voltage of the battery,
V_B the measured battery voltage while the battery supplies power to the load, and
I_o(INV) is the RMS current supplied to the load.

5,295,079

DIGITAL TESTING TECHNIQUES FOR VERY HIGH FREQUENCY PHASE-LOCKED LOOPS

Hee Wong, and Tsun-Kit Chiu, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 18, 1991, Ser. No. 731,963
Int. Cl.[5] G01R *23/02*
U.S. Cl. 364—484 **20 Claims**



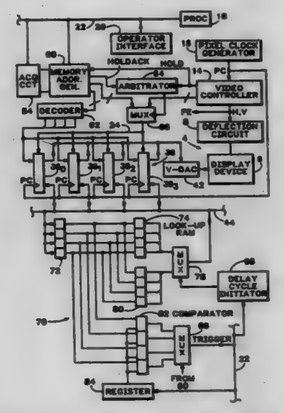
1. A digital testing system for testing of very high frequency dynamic phase-locked loop (PLL) performance parameters comprising:
a PLL with interface means to facilitate communication of a plurality of internal test information;
a controller means for configuring said PLL as well as extracting and interpreting data from said PLL;
a communication means for connecting said PLL to said controller means; and
a pattern generator and monitoring means, coupled to said PLL, for generating a plurality of test patterns inputted into said PLL and for monitoring test results outputted from said PLL.

5,295,080

METHOD OF OPERATING A BUFFER MEMORY TO PROVIDE A TRIGGER PATTERN BY STORING A TRIGGER CODE IN PRESELECTED AREAS OF THE BUFFER MEMORY

Edward E. Averill, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Aug. 6, 1990, Ser. No. 563,592
Int. Cl.[5] G01R *13/00*
U.S. Cl. 364—487 **7 Claims**



1. A method of operating a buffer memory to generate a trigger when a waveform in the form of pairs of data words falls outside a defined region, the buffer memory having an array of memory locations defined by first and second address words, each memory location storing a numerical value, said method comprising the steps of:
(a) loading selected memory locations of the buffer memory corresponding to the defined region with a trigger code,
(b) receiving a first data word and a second data word from each pair of data words,
(c) reading from the buffer memory the numerical value stored at the memory location whose first and second address words are defined by the first and second data words, and
(d) generating the trigger when the numerical value read in step (c) bears a predetermined relationship to said trigger code.

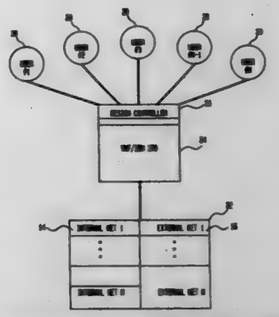
5,295,081

CONCURRENT INTERACTIVE WIRE EDITING

Rafik R. Habra, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,709
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—489 **13 Claims**

8. A computer aided system for allowing a plurality of users to edit integrated circuit wiring, comprising:
a database means for storing data related to a circuit design;
a multi-user computing means for coordinating editing activities between said plurality of users and said database means, said multi-user computer means further for dividing said data into a plurality of parcels and for identifying external wiring networks shared by more than one of said parcels; and



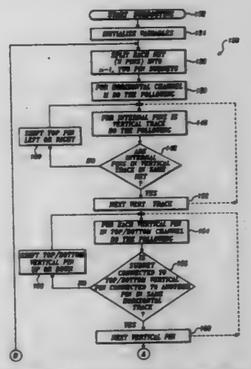
a design controller means, associated with said multi-user computing means, for permitting only one user at a time to edit any one of said external wiring networks.

5,295,082

EFFICIENT METHOD FOR MULTICHIP MODULE INTERCONNECT

Kou-Chuan Chang, Renton, and Christopher A. Young, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 438,325, Nov. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 314,817, Feb. 22, 1989, abandoned. This application May 30, 1991, Ser. No. 708,055
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **21 Claims**



1. A method for interconnecting a plurality of integrated circuits that are mounted on a substrate to form a multichip module so as to maximize a density of the integrated circuits on the substrate, terminals on each integrated circuit being electrically connected to a plurality of pads disposed in a spaced apart array within routing channels defined between boundaries of adjacent integrated circuits, each routing channel including a central routing channel defined between the pads of the adjacent integrated circuits, and side routing channels defined between the pads and the adjacent boundaries of the integrated circuits, crossover regions being defined where the routing channels transversely cross each other, the pads including a plurality of pins that must be interconnected, the method comprising the steps of:

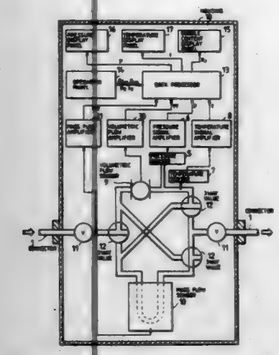
a. defining a plurality of two pin subnets that must be interconnected;
b. assigning each subnet to a track within the routing channels so as to maximize the use of the side routing channels and minimize the use of the central routing channels, subject to a plurality of constraints, including:
i. subnets are not assigned to a track if such assignment would cause overlap with subnets that are not to be interconnected;
ii. jogged interconnection of pins in each subnets is accomplished with a minimum number of jogs; and
c. additional tracks are added to the central routing channel only if required to interconnect pins in any subnet remaining unconnected after step (b).

5,295,083

DEVICE FOR DYNAMICALLY MEASURING BUBBLE CONTENT OF FLOWING LIQUID

Hisashi Yano; Mitulu Fujioka, both of Kanagawa; Koji Tsuchimoto, Chiba, and Junsuke Yabumoto, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,606
Claims priority, application Japan, Nov. 5, 1990, 2-297151
Int. Cl.[5] G01N *29/00*
U.S. Cl. 364—510 **4 Claims**



1. A device for dynamically measuring a bubble content of a flowing liquid and a bubble quantity of the dissolved gas in said liquid during the flowing thereof, comprising:
means for measuring a pressure, a temperature and volumetric flow rate of a liquid in a conveyance passage or a bypass passage for said conveyance passage for said liquid at high and low pressure points and a mass flow rate of said liquid between said high and low pressure points; and
means for calculating the bubble content and the bubble quantity of the dissolved gas in said liquid in accordance with the measured values of said pressures, said temperatures, said volumetric flow rate and said mass flow rate.

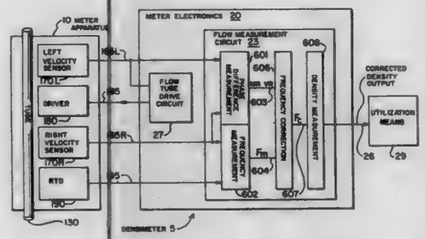
5,295,084

VIBRATING TUBE DENSIMETER

Palani Arunachalam; Robert Bruck; David S. McCollum, all of Boulder, Colo., and Joseph D. Titlow, Palos Verdes Estates, Calif., assignors to MicroMotion, Inc., Boulder, Colo.

Filed Oct. 8, 1991, Ser. No. 773,200
Int. Cl.[5] G01N *9/00*
U.S. Cl. 364—558 **54 Claims**

1. A method of operating an apparatus for ascertaining the density of material flowing through a meter having at least one vibrating tube whose natural frequency decreases as the mass flow rate of material through said tube increases, said method comprising the steps of:
measuring the natural frequency of said vibrating tube as said material flows therethrough,
generating a signal representing a corrected natural frequency of said tube in response to said measurement of said natural frequency, wherein said corrected natural frequency is greater than said measured natural frequency



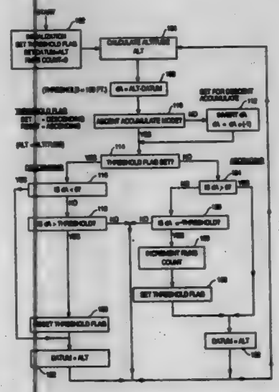
by the amount by which said measured natural frequency is decreased from said corrected natural frequency by said material mass flow rate through said tube, and
generating an output signal specifying the density of said material flowing through said tube in response to the generation of said signal representing said corrected natural frequency.

5,295,085

PRESSURE MEASUREMENT DEVICE WITH SELECTIVE PRESSURE THRESHOLD CROSSINGS ACCUMULATOR

Bud Hoffacker, Woodside, Calif., assignor to Avocet, Inc., Palo Alto, Calif.

Filed Feb. 25, 1992, Ser. No. 840,842
Int. Cl.[5] G01L *7/00, 9/00*
U.S. Cl. 364—558 **36 Claims**



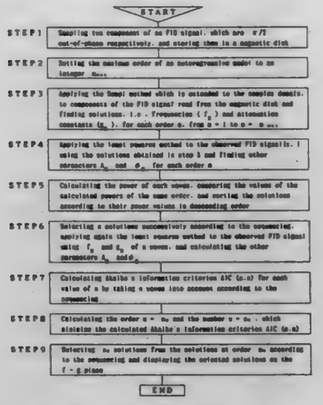
16. An altitude threshold crossings accumulation method for selectively accumulating relative altitude threshold crossings, comprising the steps of:
receiving a first plurality of pressure signals representing a second plurality of atmospheric pressures and in accordance therewith computing a third plurality of altitudes;
selectively assigning a threshold flag value which both corresponds to a first altitude vector direction and indicates that a first altitude vector magnitude exceeds a first threshold, wherein said first altitude vector direction and magnitude represent a first direction and magnitude, respectively, of a first altitude differential from a first altitude to a second altitude to a second altitude of said third plurality of altitudes;
providing a unit count when both a second altitude vector magnitude exceeds a second threshold and a second altitude vector direction opposes said first altitude vector direction, wherein said second altitude vector direction and magnitude represent a second direction and magnitude, respectively, of a second altitude differential from a third altitude to a fourth altitude of said third plurality of altitudes; and
receiving and accumulating said unit count.

5,295,086

METHOD OF PRODUCING NOISE FREE FREQUENCY SPECTRUM SIGNALS

Mineo Kumazawa; Yuichi Imanishi, and Toshio Matsuura, all of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Mar. 14, 1990, Ser. No. 493,160
Claims priority, application Japan, Dec. 7, 1989, 1-317969
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—572 **10 Claims**



1. A spectroscopy method comprising:
(a) producing an output signal being the output of a spectrometer, said signal comprising the summation of signals of multiple frequencies;
(b) digitizing and sampling the two components of the output signal which are $\pi/2$ radians out-of-phase at spaced time intervals to produce time series data;
(c) converting the time series data to a frequency spectrum while enhancing the data by applying the Sompi method utilizing an autoregressive model to the data values, the Sompi method being extended to the complex time domain; and
(d) displaying a substantially noise free frequency spectrum.

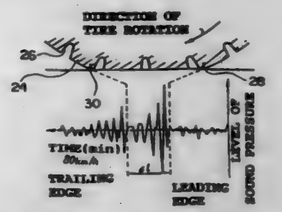
5,295,087

METHOD OF SIMULATING TIRE TREAD NOISE AND SIMULATOR THEREFOR

Masahiro Yoshida, Kodaira, and Masahiro Takayama, Nishitama, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 4, 1991, Ser. No. 771,213
Claims priority, application Japan, Oct. 11, 1990, 2-272718
Int. Cl.[5] G06G *3/08*; G06F *15/20*
U.S. Cl. 364—578 **10 Claims**

1. A method of generating simulated tire tread noise which occurs during the rotation of a tire which has a plurality of load-supporting portions on a tread, said method comprising the steps of:
representing the tread so as to distinguish between a leading edge which is the edge of the load-supporting portion of the tread which first comes in contact with the road surface when the tire rotates, and a trailing edge which is the opposite edge of the load supporting portion and last comes in contact with the road surface when the tire rotates;
determining a contour of a front edge of a contact portion of the tread, which comes in contact with the road surface, which is located at the forward portion of the contact portion which has not yet contacted the road surface and contacts the road surface when the tire rotates, and a contour of a rear edge of the contact portion which is located at the rearward portion of the contact portion which is in contact with the road surface and separates from the road surface when the tire rotates;



calculating a length of a portion of a leading edge which crosses the contour of the front edge of the contact portion during a predetermined period of time, and a length of a portion of a trailing edge which crosses the contour of the rear edge of the contact portion during the predetermined time when the contours of the front edge and rear edge of the contact portion and the tread are relatively moved so as to move the contours of the front edge and rear edge of the contact portion in the direction of circumference of the tread, and further calculating a phase difference between said leading edge portion and said trailing edge portion;
determining waveforms of sounds, considering said phase difference, originating at said leading edge portion and said trailing edge portion calculated in said calculating step;
integrating the so-determined waveforms of the sound extended over the entire surface of the tread; and
generating audible sound on the basis of the integrated waveforms.

5,295,088

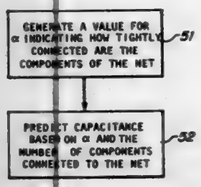
METHOD FOR PREDICTING CAPACITANCE OF CONNECTION NETS ON AN INTEGRATED CIRCUIT

Mark R. Hartoog, Los Gatos, and Robert D. Shur, Los Altos, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 630,462, Dec. 19, 1990, abandoned. This application Jul. 9, 1993, Ser. No. 89,385
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **11 Claims**

1. A method for use in producing an integrated circuit, the method comprising the steps of:
(a) placing components and connection nets to form the integrated circuit; and,
(b) estimating the interconnect capacitance of a first net in the integrated circuit, including the substeps of
(b.1) generating a value which indicates how tightly connected to one another are components connected to the first net, and

(b.2) predicting interconnect capacitance of the first net based on the value generated in step (b.1) and a number



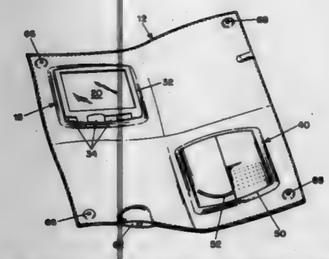
representing how many components are connected to the first net.

5,295,089

SOFT, FOLDABLE CONSUMER ELECTRONIC PRODUCTS

Emilio Ambasz, 295 Central Park West, New York, N.Y. 10024

Filed May 28, 1992, Ser. No. 890,630
Int. Cl.[5] G06F *15/02*
U.S. Cl. 364—708.1 13 Claims



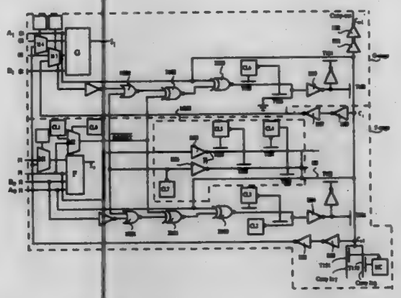
1. A soft foldable consumer electronic product comprising an envelope having a top member and a bottom member joined to each other along at least portions of their perimeters, each member being of soft flexible sheet material, a first unit of the electronic product received within a first portion of the envelope and affixed solely to one of the members thereof in said portion, leaving the other member unattached in said first portion so that said other member retains its softness and flexibility, the first unit including an audio speaker, a rigid housing member containing the speaker and received in the envelope and having a portion positioned in an opening in one of the envelope members, and a cover having openings through which sound from the speaker is emitted, the cover being disposed in the opening and located outside of the envelope, the housing member and cover being affixed to the envelope member along the perimeter of the opening in clamping relation and thereby affixing the first unit to the envelope member, a second unit of the electronic product received in a second portion of the envelope and affixed solely to one of the members thereof in said second portion, leaving the other member unattached in such portion so that said other member retains its softness and flexibility, and at least one conductor within the envelope extending from the first to the second portion and connecting the first and second units to electrically connect them for operation of the product, the envelope being foldable such that the positions of the first and second portions relative to each other can be changed selectively.

5,295,090

LOGIC STRUCTURE AND CIRCUIT FOR FAST CARRY

Hung-Cheng Hsieh, Sunnyvale; William S. Carter, Santa Clara; Charles S. Erickson, Fremont, and Edmond Y. Cheung, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 944,002, Sep. 11, 1992, which is a continuation of Ser. No. 522,336, May 10, 1992, abandoned. This application May 24, 1993, Ser. No. 66,674
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—784 1 Claim



1. A programmable logic device comprising an array of logic blocks, each logic block having at least one circuit comprising:
a first input terminal and a second input terminal;
a carry-in terminal and a carry-out terminal;
first switching means for connecting said first input terminal to said carry-out terminal;
second switching means for connecting said carry-in terminal to said carry-out terminal;
control means for causing said first switching means to connect said first input terminal to said carry-out terminal and for causing said second switching means to connect said carry-in terminal to said carry-out terminal;
said control means causing said first switching means to connect said first input terminal to said carry-out terminal when and only when the logic value of a signal on said first input terminal is equal to the logic value of a signal on said second input terminal, and said control means causing said second switching means to connect said carry-in terminal to said carry-out terminal when and only when said logic value of said signal on said first input terminal does not equal said logic value of said signal on said second input terminal;
said logic block further having a memory for providing at an output terminal one of a plurality of stored values in response to a given set of inputs, at least one of said first and second input terminal further providing at least one of said inputs.

5,295,091

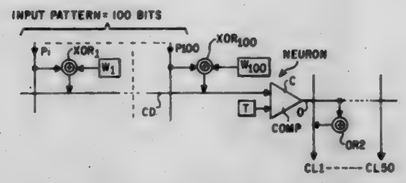
ANALOG IMPLEMENTATION OF A PATTERN CLASSIFIER

Michiel DeWit, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 22, 1991, Ser. No. 748,605
Int. Cl.[5] G06G *7/00*
U.S. Cl. 364—807 16 Claims

9. A system for classifying a pattern comprising:
(a) a node;
(b) circuitry for applying the negative of a predetermined threshold signal to said node;
(c) circuitry for providing a plurality of digital signals in parallel;

(d) circuitry for converting said digital signals to analog signals;
(e) circuitry for applying said analog signals to said node to



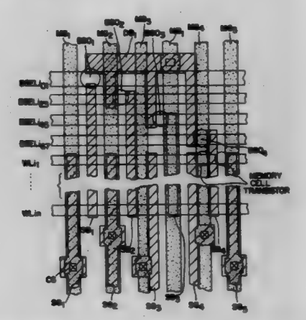
provide a summation of said signals and said threshold signal on said node; and
(f) circuitry for providing a predetermined output if the signal at said node is above a predetermined value.

5,295,092

SEMICONDUCTOR READ ONLY MEMORY

Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 7,197
Claims priority, application Japan, Jan. 21, 1992, 4-8743
Int. Cl.[5] G11C *13/00, 11/40*
U.S. Cl. 365—51 3 Claims



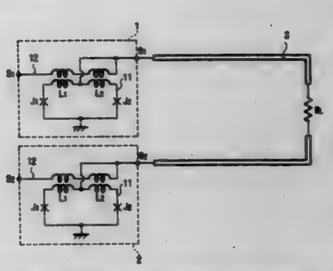
1. A semiconductor read only memory including a plurality of word lines disposed in parallel, said read only memory having a plurality of units, each of said plurality of units comprising:
a first bit line which crosses said word lines;
a plurality of first virtual ground lines disposed substantially in parallel with said first bit line, each of said plurality of first virtual ground lines having a first end and a second end;
a plurality of second virtual ground lines corresponding to said plurality of first virtual ground line, each of said plurality of second virtual ground lines having a first end and a second end;
second bit lines, each provided between two adjacent ones of said plurality of second virtual ground lines, each of said second bit lines having a first end and a second end;
memory cell columns, each constituted by a plurality of memory cells connected in parallel between one of said second virtual ground lines and one of said second bit lines adjacent thereto; and
bank select switching elements for selecting one of said memory cell columns,
wherein said second ends of said plurality of first virtual ground lines are respectively connected to said second ends of said second virtual ground lines, and said first ends of said second bit lines are respectively connected to said bank select switching elements.

5,295,093

POLARITY-CONVERTIBLE JOSEPHSON DRIVER CIRCUIT

Shuichi Nagasawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,897
Claims priority, application Japan, Jan. 10, 1992, 4-3259; Jan. 10, 1992, 4-3275
Int. Cl.[5] G11C *11/44*
U.S. Cl. 365—162 6 Claims



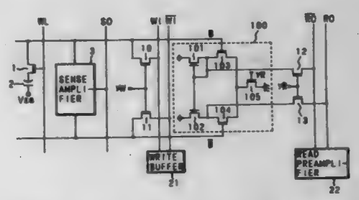
1. A polarity-convertible Josephson driver circuit comprising:
first and second driving voltage generating circuits each having a loop circuit for forming at least one loop, said loop circuit being constituted by elements having inductances and Josephson junctions such that a plurality of series-connected circuits each constituted by said elements having inductances and said Josephson junctions are connected in parallel between an output point and a reference point, and a control line which has one terminal connected to an input point and the other terminal connected to the output point and is arranged to be magnetically coupled to said loop circuit;
a driven line for connecting the output points of said first and second driving voltage generating circuits to each other; and
a load resistor inserted in said driven line.

5,295,094

MEMORY CIRCUIT

Hideshi Miyatake, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1991, Ser. No. 794,268
Claims priority, application Japan, Nov. 22, 1990, 2-318095
Int. Cl.[5] G11C *7/06*
U.S. Cl. 365—182 17 Claims

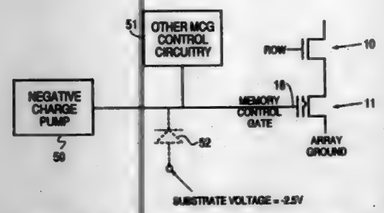


1. A memory circuit having a memory cell which is connected to a bit line and a word line comprising:
a read-only signal line for transmitting a signal read out from said memory cell; and

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a current-mirror type amplifier disposed between said bit line and said read-only signal line;
activating means for simultaneously activating said word line and said current-mirror type amplifier.

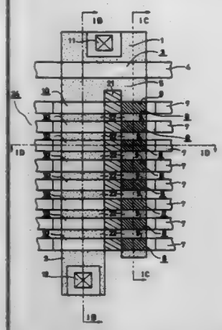
5,295,095
METHOD OF PROGRAMMING ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY USING PARTICULAR SUBSTRATE BIAS
Gregg R. Josephson, Aloha, Oreg., assignor to Lattice Semiconductor Corporation, Hillsboro, Oreg.
Filed Aug. 22, 1991, Ser. No. 748,374
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **8 Claims**



1. A method of programming an EEPROM cell which includes a sense transistor, said sense transistor being formed in a substrate of a first conductivity type and comprising a first region of a second conductivity type, a second region of said second conductivity type, a floating gate, and a memory control gate, said floating gate being separated from said first region by a layer of dielectric material, the method comprising the steps of:
biasing said first region to a positive voltage;
biasing said memory control gate to a negative voltage, thereby causing electrons to tunnel through said layer of dielectric material from said floating gate to said first region; and
lowering the voltage of said substrate to a level less than or equal to the voltage of said memory control gate plus 0.7 volts.

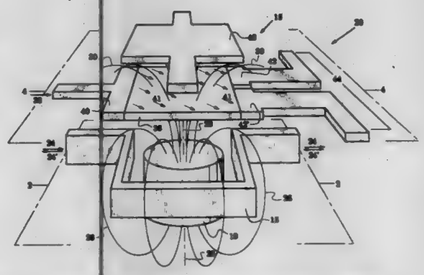
5,295,096
NAND TYPE EEPROM AND OPERATING METHOD THEREFOR
Moriyoshi Nakajima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 638,153, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 377,935, Jul. 11, 1989, abandoned. This application Jun. 26, 1992, Ser. No. 905,191
Claims priority, application Japan, Jul. 11, 1988, 63-173402
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—185 **9 Claims**

1. A NAND type electrically erasable programmable read only memory, comprising:
a semiconductor substrate having a main surface;
a first plurality of memory cell means connected in series on the main surface of said semiconductor substrate, each memory cell means having a floating gate for storing charges representing information; and
selecting means for selecting a group of said memory cell means from said first plurality of memory cell means;
wherein each said memory cell means includes
(a) floating gate state changing means for changing a state of said floating gate between a first state and a second state, said floating gate state changing means comprising
a tunnelling structure having Fowler-Nordheim tunnelling phenomenon formed in a first portion of the main surface of said semiconductor substrate, an independently addressable control gate formed n said floating gate with an insulating film disposed therebetween, and a tunnel insulating film between said tunnelling structure and said floating gate said floating gate being substantially aligned with said control gate, and
(b) floating gate state determining means for determining whether said floating gate is in the first charge state or the second charge state said floating gate state determining means comprising:



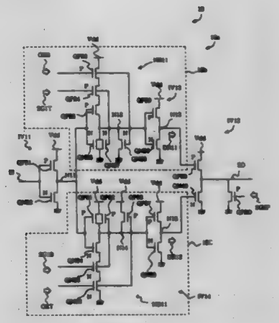
said control gate, said flating gate, a gate oxide silicon film between said floating gate and the main surface of said substrate isolated from said tunnel insulating film, a memory connecting impurity diffused layer in a second portion of the main surface of said substrate, and a read transistor region formed in said second portion of said semiconductor substrate, said second portion of said substrate being non-overlapping with said first portion of said substrate.

5,295,097
NONVOLATILE RANDOM ACCESS MEMORY
Richard M. Lienau, 1236 Wellesely Ave. #1, Los Angeles, Calif. 90025
Filed Aug. 5, 1992, Ser. No. 925,986
Int. Cl.[5] G11C *11/18, 11/155*
U.S. Cl. 365—170 **12 Claims**



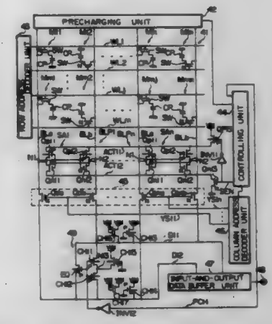
1. A nonvolatile random access memory, comprising:
a substrate;
a plurality of separate magnetically polarizable domains carried by said substrate, each domain having its axis oriented substantially normal to the surface of said substrate;
a plurality of word write lines carried by said substrate;
a plurality of bit write lines carried by said substrate;
a plurality of conductive loop members carried by said substrate, each loop member substantially surrounding and being coupled to a different one of said domains and defining a plane oriented substantially normal to the axis of said different one of said domains, each of said loop members uniquely connected between one of said word write lines and one of said bit write lines;
means connected to said word write lines and said bit write lines for driving either a first or second oppositely directed current through a selected loop member of sufficient magnitude to switch the residual magnetic field direction of the domain couple thereto; and
a plurality of sensors, each located proximate a different one of said domains for passively sensing the residual magnetic field direction of that domain.

5,295,098
SEMICONDUCTOR MEMORY DEVICE HAVING HIGH-SPEED THREE-STATE DATA OUTPUT BUFFER CIRCUIT WITHOUT VOLTAGE FLUCTUATION ON POWER VOLTAGE LINES
Takaki Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 13, 1992, Ser. No. 867,356
Claims priority, application Japan, Apr. 30, 1991, 3-126650
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—189.05 **6 Claims**



1. A semiconductor memory device fabricated on a single semiconductor chip, comprising:
a) a memory cell array having a plurality of memory cells arranged in rows and columns, and respectively storing data bits;
b) a plurality of word lines respectively associated with the row of said memory cell array, and responsive to an address signal for selectively reading out said data bits from said memory cell array;
c) a data selecting means coupled with said memory cell array, and responsive to said address signal for selectively transferring said data bits read out from said memory cell array;
d) a control means responsive to variation of said address signal, and producing a high-impedance state control signal and a preceding signal indicative of an instruction to vary a preceding voltage level to a predetermined point between high and low voltage levels; and
e) a data buffer circuit operative to drive a data pin for supplying a data signal to the outside thereof, and comprising:
e-1) an output inverter coupled with said data pin,
e-2) driving means responsive to a data bit on said data selecting means, in the absence of said high-impedance state control signal, for controlling said output inverter in a second phase, said driving means being further operative to cause said output inverter to enter high-impedance state in the presence of said high-impedance state control signal in a first phase before said second phase, and
e-3) a switching means coupled between said data pin and constant voltage source, and responsive to said preceding signal in said first phase, for coupling said data pin with said constant voltage source so that said data pin is shifted to said predetermined point before said driving means control said output inverter with said data bit.

5,295,099
DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING STATIC COLUMN MODE OF OPERATION WITHOUT DESTRUCTION OF DATA BIT
Akihiko Kagami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 658,896, Feb. 22, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,057
Claims priority, application Japan, Mar. 2, 1990, 2-50892
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.06 **5 Claims**



1. A dynamic random access memory device having a static column mode of operation, comprising:
a) a plurality of memory cells arranged in rows and columns and storing data bits, respectively;
b) a plurality of bit lines respectively coupled to said columns of said memory cells for propagating said data bits read out from said memory cells, every two bit lines being paired with one another so as to form bit line pairs;
c) a plurality of word lines respectively coupled to said rows of said memory cells and allowing said data bits stored in one of said rows of said memory cells to be read out to said bit line pairs, one of said bit lines of each bit line pair propagating said data bit read out from said memory cell therethrough;
d) a plurality of sense amplifier circuits provided in association with said bit line pairs, each of said sense amplifier circuits selectively coupling the bit lines of said associated bit line pair to first and second sources of voltage level depending upon the logic level of said data bit on said associated bit line pair, said first and second sources of voltage level supplying a positive power voltage level and a ground voltage level, respectively;
e) a pair of data signal lines coupled to an output data buffer circuit;
f) a column selector unit coupled between said bit line pairs and said data signal lines and sequentially transferring data bits from said bit line pairs to said data signal lines in said static column mode of operation after one of said word lines allows said data bits to be read out from one of said rows of said memory cells to said bit line pairs; and
g) a precharging unit coupled to said data signal lines and having current paths from said first source of voltage level to said data signal lines, and a limiter implemented by first and second field effect transistors having respective gate electrodes coupled with said first source of voltage level and coupled between said first source of voltage level and

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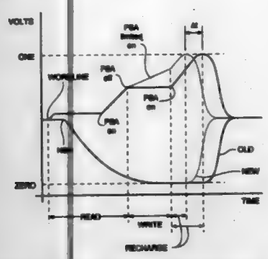
said data signal lines for prohibiting said data signal lines from an excess variation in voltage level when said column selector unit simultaneously couples more than one bit line pair selected from said bit line pairs with said pair of data signal lines in said static column mode of operation, which prevents data bits on said bit line pairs from a change in logic level.

5,295,100

METHOD FOR PROVIDING A FASTER ONES VOLTAGE LEVEL RESTORE OPERATION IN A DRAM

Michael W. Starkweather, and Stephen L. Casper, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Aug. 14, 1992, Ser. No. 931,095
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.11 **5 Claims**



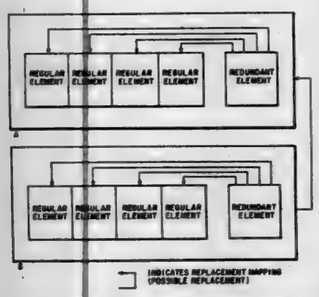
1. A method of operation for a DRAM device, comprising:
providing digit line voltage pull-up amplifying circuitry (PSA 20);
reading a selected DRAM memory cell;
performing a write operation, for writing a signal back to the selected cell; and
maintaining current to the pull-up circuitry (20) during the write operation at a lower current than during the reading of the memory cell.

5,295,101

ARRAY BLOCK LEVEL REDUNDANCY WITH STEERING LOGIC

Michael C. Stephens, Jr.; Scott E. Smith; Charles J. Plich, all of Sugar Land; Duy-Loan T. Le, Missouri City; Terry T. Tsai, Houston, and Arthur R. Piejko, Sugar Land, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1992, Ser. No. 829,124
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **17 Claims**



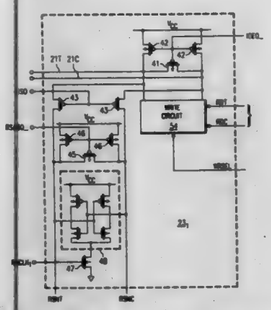
1. A memory device with one or more data blocks each having individual input-output paths, at least one data block comprising:
an array of memory cells arranged along row lines and column lines and configured in sub-blocks each comprising a plurality of memory cells arranged in rows and columns; and
support circuitry to read information from the memory cells and to write information into the memory cells, the support circuitry including redundancy circuitry for replacing at least one defective sub-block of memory cells with a like number of functional sub-blocks of memory cells, each sub-block of memory cells including redundant elements for replacing defective elements.

5,295,102

SEMICONDUCTOR MEMORY WITH IMPROVED REDUNDANT SENSE AMPLIFIER CONTROL

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 31, 1992, Ser. No. 830,237
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **14 Claims**



1. An integrated circuit comprising a memory, said integrated circuit comprising:
a plurality of primary memory cells, arranged in a primary array;
means for accessing a primary memory cell responsive to an address signal presented thereto;
a redundant memory array comprising a plurality of redundant memory cells;
a redundant decoder, for selecting a reductant memory cell responsive to an address signal presented thereto corresponding to a programmed value in said redundant decoder;
redundant read means for sensing the state of a selected redundant memory cell and communicating the same to an output of the memory, said redundant read means having a control input coupled to receive an enable signal; and
an enable circuit for generating said enable signal responsive to the initiation of a memory access cycle, said enable circuit responsively coupled to said redundant decoder so that, responsive to said redundant decoder indicating that no redundant memory cell is selected, said enable signal is terminated.

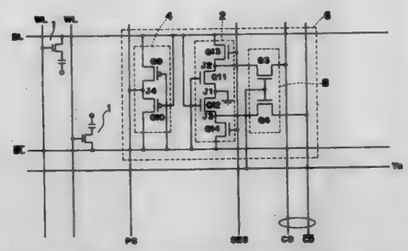
5,295,103

READ/WRITE CIRCUIT INCLUDING SENSE AMPLIFIERS FOR USE IN A DYNAMIC RAM

Hiroyuki Yamauchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1993, Ser. No. 871,185
Claims priority, application Japan, Apr. 19, 1991, 3-088196; Jul. 5, 1991, 3-165446
Int. Cl.[5] G11C *7/00, 7/02, 11/00*
U.S. Cl. 365—205 **11 Claims**

1. A read/write circuit for use in a dynamic RAM having a plurality of cells connected to a first and second bit lines, and for transferring data from said cells to first and second data bus, or vice versa, said read/write circuit comprising:
first sense amplifier means comprising first, second, third and fourth transistors connected in series between said first and second bit lines, a gate of said second transistor connected to said second bit line, a gate of said third transistor connected to said first bit line;
a first junction defined by the connection of said first transistor to said second transistor;
a second junction defined by the connection of said third transistor to said fourth transistor;
a gate circuit means connected between said first data bus and said first junction and also connected between said second data bus and said second junction;



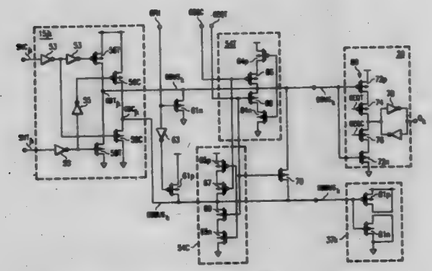
a gate control signal source for providing a gate control signal which opens and closes said gate circuit means; and
a write control signal source for providing a write control signal to a gate of each of said first and fourth transistors,
whereby during a writing cycle, said gate control signal opens said gate circuit means, and then said write control signal enables said first and fourth transistors to enable access from said first and second data buses to said first and second bit lines, and during a reading cycle, said write control signal disables said first and fourth transistors to produce an amplified bit line data between said first and second junctions, and then said gate control signal opens said gate circuit means to supply said amplified bit line data to said first and second data buses.

5,295,104

INTEGRATED CIRCUIT WITH PRECHARGED INTERNAL DATA BUS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 17, 1991, Ser. No. 809,735
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—210 **16 Claims**



1. An integrated circuit, comprising:
an array of memory cells;

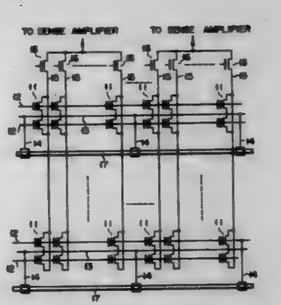
address terminals;
means for selecting a memory cell responsive to an address signal received at said address terminals; and
a sense amplifier, for sensing the data state of said selected memory cell;
a data bus having a data conductor and a dummy data conductor;
a data driver, having an input coupled to the output of said sense amplifier for receiving information therefrom, said data driver having a first output for driving said data conductor with a digital value corresponding to said information, and having a second output for driving said dummy data conductor with a complementary digital value, relative to said digital value;
a output stage coupled to said data conductor for receiving said digital value from said data conductor;
a termination coupled to said dummy data conductor, said termination presenting a load to said dummy data conductor which is substantially similar to the load presented by said output stage to said data conductor;
means for generating a control signal; and
a transistor having a conduction path connected between said data conductor and said dummy data conductor, and having a control terminal receiving said control signal, for connecting said data conductor and said dummy data conductor together responsive to said control signal.

5,295,105

SEMICONDUCTOR MEMORY DEVICE

Shigeru Atsumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

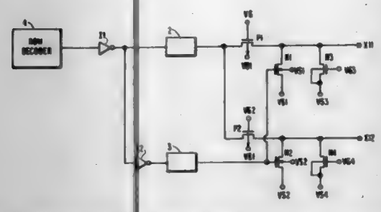
Filed Sep. 24, 1991, Ser. No. 764,633
Claims priority, application Japan, Sep. 28, 1990, 2-259041
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **21 Claims**



1. A semiconductor memory device comprising:
a plurality of memory cells having a common source diffused region extending in a specified direction;
a word line that extends in parallel with said common source diffused region and is connected to each gate of said plurality of memory cells;
a first source interconnection composed of a first metal interconnection layer electrically connected to said common source diffused region; and
a second source interconnection that extends in parallel with said word line and is composed of a second metal interconnection layer electrically connected to said first source interconnection.

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5,295,106
ROW DECODING CIRCUIT
Toshikatsu Jinbo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 20, 1992, Ser. No. 979,796
Claims priority, application Japan, Nov. 20, 1991, 3-303695
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 11 Claims



10. A row decoding circuit for performing erase operation on at least one word line of a plurality of word lines, comprising first transfer gate means connected to each word line of said plurality of word lines to transfer a prescribed negative dc voltage to word lines selected for an erase operation, second transfer gate means connected to each word line of said plurality of word lines to transfer a first voltage signal to said word lines, third transfer gate means connected to each word line of said plurality of word lines to transfer a prescribed voltage level to said word lines,

a row decoder for providing a decode signal to select said plurality of word lines,

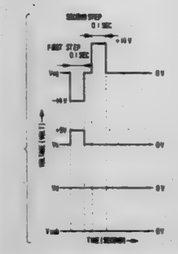
a first level shift means for generating said first voltage signal in response to said decode signal, said first voltage signal equaling a read voltage when said plurality of word lines is selected during a read operation, equaling a write voltage when said plurality of word lines is selected during a write operation and equaling said prescribed voltage level when said word lines are not selected during a read operation and during a write operation, said read voltage and said write voltages being the voltages to be applied to a word line to effect the reading and writing processes, and

a second level shift means for generating a second voltage signal to control switching of said first transfer gate means in response to said decode signal, said second voltage signal equaling a first control voltage capable of causing said first transfer gate means to be turned off when said plurality of word lines is not selected during an erase operation, and equaling a second control voltage capable of causing said first transfer gate means to be turned on when said plurality of word lines is selected during an erase operation, and

when the reading operating and the writing operation are effected, the gate voltages of said second transfer gate means being set so that second transfer gate means connected to selected word lines is turned on and second transfer gate means connected to unselected word lines is turned off, the gate voltages of said third transfer gate are set so that third transfer gate means connected to selected word lines is turned off and third transfer gate means connected to unselected word lines is turned on to conduct said prescribed voltage level, and

when an erasing process is effected, the gate voltages of said second and third transfer gate means being set so that second and third transfer gate means are turned off, and said prescribed negative dc voltage for said first transfer gate means connected to selected word lines being set at an erasure voltage and said prescribed negative dc voltages for first transfer gate means connected to unselected word lines being set at said prescribed voltage level, said erasure voltage being a voltage to be applied to a word line said erasing process is to be effected on.

5,295,107
METHOD OF ERASING DATA STORED IN FLASH TYPE NONVOLATILE MEMORY CELL
Takeshi Okazawa; Ken-Ichi Oyama, and Hiroki Shirai, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 1, 1993, Ser. No. 24,074
Claims priority, application Japan, Mar. 2, 1992, 4-044708
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 15 Claims



1. A method for electrically erasing contents of a plurality of memory cells to shift threshold voltages thereof to an erased threshold value, each of said memory cells including a substrate region of one conductivity type, source and drain regions of the opposite conductivity type formed in the substrate region, a first gate insulating film formed on a channel region of said substrate region between said source and drain regions, a floating gate electrode formed on said first gate insulating film, a second gate insulating film formed on said floating gate electrode, and a control gate electrode formed on said second gate insulating film, said method comprising the steps of:

applying a first voltage between said source region and said control gate so that a first Fowler-Nordheim tunneling current flows through said first gate insulating film to bring each of said memory cells into an over-erased condition in which a center value in distribution of the threshold voltage of each of said memory cells is shifted to an over-erased threshold value beyond said erased threshold value; and

applying a second voltage between said substrate region and said control gate so that a second Fowler-Nordheim tunneling current flows through said first gate insulating film in a direction opposite to said first Fowler-Nordheim tunneling current to shift the center value in distribution of the threshold voltage of each of said memory cells to said erased threshold value from said over-erased threshold value.

5,295,108
ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY DEVICE WITH SIMPLE CONTROLLER FOR SELECTING OPERATIONAL SEQUENCES AFTER CONFIRMATION
Tomoko Higa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 8, 1993, Ser. No. 44,167
Claims priority, application Japan, Apr. 8, 1992, 4-115423
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—218 6 Claims

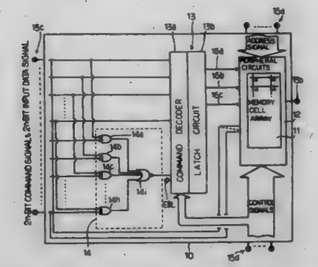
1. An electrically erasable and programmable read only memory device fabricated on a semiconductor chip, comprising:

a) a plurality of electrically erasable and programmable memory cells for storing data bits each either first or second logic level;

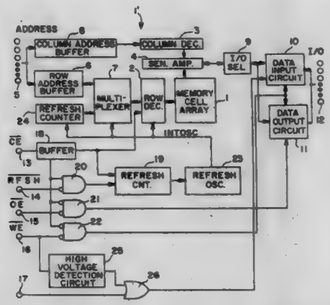
b) peripheral circuits for selectively carrying out an erasing operation for shifting data bit stored in the electrically erasable and programmable memory cells to said first logic level, a write-in operation for shifting data bits stored in the electrically erasable and programmable read only memory cells to said second logic level and a verifying operation for checking the data bits to see whether the data bits are in the first logic level or in the second logic level;

c) a comparator operative to compare first bits of an external command signal with second bits of said external command signal to see whether or not a command indicated by said first bits is consistent with a command indicated by said second bits, and producing an enable signal when said first bits are consistent with said second bits; and

d) a controller enabled with said enable signal, and selectively producing internal control signals from said external command signal for said erasing operation, said write-in operation and said verifying operation.



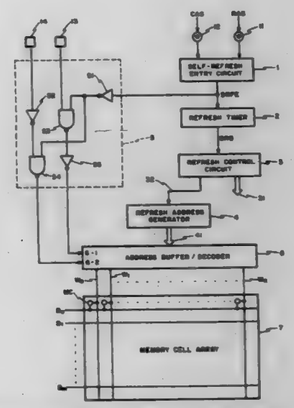
5,295,109
SEMICONDUCTOR MEMORY
Masaru Nawaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 18, 1992, Ser. No. 838,104
Claims priority, application Japan, Jun. 21, 1991, 3-150551
Int. Cl.[5] G11C *11/401*
U.S. Cl. 365—222 7 Claims



4. A dynamic semiconductor memory in which self-refresh is performed during the active period of a refresh control signal by using addresses sequentially generated by an internal refresh oscillator and address counter, comprising:

refresh-write means for enabling input of write data through a data input circuit during said self-refresh, wherein said refresh-write means is activated by an external signal applied during said self-refresh, and wherein said refresh-write means comprise high voltage detection means for detecting when said external signal is raised to a higher than normal voltage state and, upon said detection, providing a write enable signal to said data input circuit.

5,295,110
SEMICONDUCTOR MEMORY DEVICE INCORPORATED WITH SELF-REFRESH CIRCUIT
Kenichi Sakakibara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 29, 1993, Ser. No. 11,261
Claims priority, application Japan, Jan. 30, 1992, 3-040325
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 6 Claims



1. A semiconductor memory comprising at least one terminal taking one of first and second potential levels, a memory cell array including a plurality of memory cells and a plurality of word lines, a word line energizing circuit having an input node coupled to said terminal to receive a potential level of said terminal and energizing in a refresh operation a first number of said word lines when said input node is at said first potential level and a second number of said word lines when said input node is at said second potential level with respect to one refresh address, a refresh timer activated in a self-refresh mode and generating a refresh request signal in a predetermined cycle, a gate circuit inserted between said terminal and said input node of said word line energizing circuit and activated in said self-refresh mode to hold said input note at said first potential level irrespective of the potential level of said terminal, and a refresh controller responding to said refresh request signal and refreshing the memory cells connected to the energized first number of word lines.

5,295,111
DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH IMPROVED POWER SUPPLY SYSTEM FOR SPEED-UP OF REWRITING OPERATION ON DATA BITS READ-OUT FROM MEMORY CELLS
Akira Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 29, 1991, Ser. No. 692,832
Claims priority, application Japan, Apr. 27, 1990, 2-112402
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—226 7 Claims

1. A random access memory device comprising

a) a plurality of dynamic memory cells arranged in rows and columns and storing data bits in the form of electric charges, respectively,

b) a plurality of bit line pairs respectively coupled to the columns of said dynamic memory cells, and propagating small differences in voltage level corresponding to data bits,

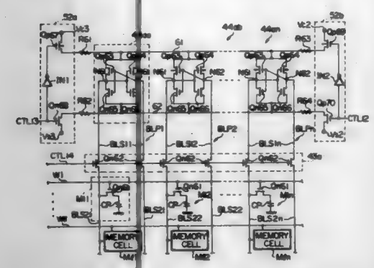
c) a plurality of sense amplifier circuits coupled to said bit line pairs, respectively, and selectively providing first

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current paths for charging current and second current paths for discharging current, thereby increasing said small differences in voltage level on said bit line pairs,

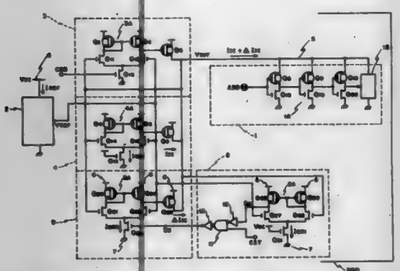
d) a first controlling unit provided in association with row address bits and supporting propagation of data bits for a row of said dynamic random access memory cells, said first controlling unit having a first driving sub-unit for driving said plurality of sense amplifier circuits,

e) a second controlling unit provided in association with column address bits and supporting propagation of one of said data bits for said row of said dynamic random access



memory cells, said second controlling unit having a second driving sub-unit for driving said plurality of sense amplifier circuits, said first and second driving sub-units being coupled in parallel between a first pad supplied with a first voltage level and a second pad supplied with a second voltage level, wherein said first current paths and said second current paths of said sense amplifier circuits are electrically coupled to said first and second pads, respectively, through said first and second driving sub-units arranged in parallel between said first and second pads.

5,295,112
SEMICONDUCTOR MEMORY
Kazutaka Tsuiguchi, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 964,848
Claims priority, application Japan, Oct. 30, 1991, 3-284330
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—227 **6 Claims**

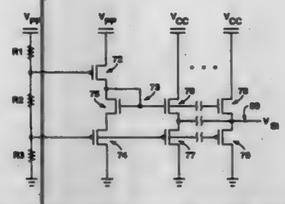


1. A single chip semiconductor memory operable in either active mode or stand-by mode in response to an external control signal, said semiconductor memory comprising:

a voltage drop circuit formed on said semiconductor memory chip for stepping an external power source voltage down to a predetermined voltage and supplying the predetermined voltage to an internal circuit as an internal power source voltage for said memory; and

a control circuit formed on said semiconductor memory chip and responsive to a result of a comparison between said internal power source voltage and said predetermined voltage for controlling an amount of current supply of said voltage drop circuit to said internal circuit in stand-by mode so that said internal power source voltage becomes equal to said predetermined voltage.

5,295,113
FLASH MEMORY SOURCE INHIBIT GENERATOR
Patricia L. Dix, San Jose, and Steven E. Wells, Citrus Height, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed May 9, 1991, Ser. No. 697,716
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—228 **22 Claims**



1. An electrically erasable and electrically programmable read-only memory fabricated on a silicon substrate and employing a plurality of memory cells arranged in blocks each memory cell having a floating gate, an improvement for maintaining the state of said cells in blocks not presently being programmed comprising:

first and second bias potentials, said first bias potential being lower than a programming potential and said second bias potential being lower than said first potential;

first, second and third transistors coupled in series between said programming potential and ground, said first and third transistors being matched one to another, the gate of said first transistor being coupled to said first bias potential, the gate of the third transistor being coupled to said second bias potential and the gate of said second transistor being coupled to a first node disposed between said first and second transistors, said first and third transistors providing a first potential at said first node disposed between said first and said second transistor;

fourth and fifth matched transistors coupled in series between a reading potential and ground, the gate of said fourth transistor coupled to said first node and the gate of said fifth transistor coupled to the gate of said third transistor such that the gate of said fourth transistor is approximately at said first potential and the gate of said fifth transistor is at said second bias potential, said fourth and fifth transistors providing a second potential at a second node disposed between said fourth and fifth transistors,

switch means for switching the source of said cells in blocks not presently being programmed to said second potential if cells in other blocks are presently being programmed.

5,295,114
SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANT CIRCUIT FOR RESCUING FROM REJECTION DUE TO LARGE CURRENT CONSUMPTION
Yasuo Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 15, 1991, Ser. No. 792,623
Claims priority, application Japan, Nov. 16, 1990, 2-312044
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—230.06 **6 Claims**

1. A semiconductor memory device fabricated on a single semiconductor memory chip, comprising:

a) a regular memory cell array having a plurality of regular memory cells arranged in rows and columns and respectively storing data bits;

b) a plurality of first power voltage lines associated with said rows of said memory cells for distributing a first powder voltage level;

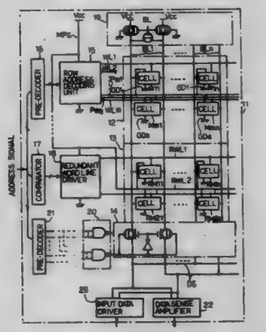
c) a plurality of second powder voltage lines associated with said rows of said memory cells for distributing a second power voltage level different from said first power voltage level;

d) a plurality of regular word lines respectively associated with said rows of said regular memory cells, and selectively driven to an active level for allowing data bits to be read out from a row of said regular memory cells;

e) a redundant memory cell array arranged in rows and columns, having a plurality of redundant memory cells respectively storing data bits, and coupled with redundant word lines;

f) a redundant word line driving unit selectively driving said redundant word lines to said active level for allowing data bits to be read out from redundant memory cells selected from said plurality of redundant memory cells when one of said plurality of regular memory cells to be accessed is defective;

g) a row address decoding means having g-1) a plurality of regular driver circuits respectively associated with said regular word lines and coupled in parallel between a first



source line of said active level and a second source line of an inactive level for selectively coupling said associated regular word lines with said first and second source lines, g-2) a plurality of activation circuits associated with said plurality of regular word lines and responsive to row address bits for allowing said regular driver circuits to selectively couple the associated regular word lines to said first and second source lines, and g-3) a plurality of first cut-off means associated with said plurality of activation circuits and with said first power voltage lines, and coupled between a main power supply line and said associated first power voltage lines, said plurality of first cut-off means being selectively broken for isolating said associated first power voltage lines from said main power supply line when one of said regular memory cells in said associated rows is defective, said plurality of activation circuits causing the associated regular driver circuits to forcibly shift said associated regular word lines to said inactive level when said associated first cut-off means are broken; and

h) a plurality of bit line pairs associated with said regular memory cell array and said redundant memory cell array, and shared between said columns of said regular memory cells and said columns of said redundant memory cells for propagating data bits to a column selector unit; wherein

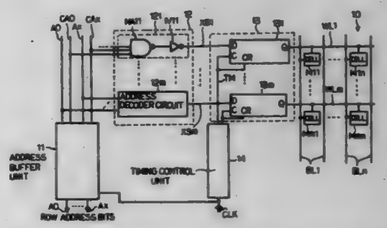
each of said regular memory cells and said redundant memory cells is implemented by a flip flop circuit coupled between said associated first and second power voltage lines, said flip flop circuit comprising a series combination of a first resistor and a first transistor of a first channel conductivity type coupled between said associated first and second power voltage lines, a series combination of a second resistor and a second transistor of said first channel conductivity type coupled between said associated first and second power voltage lines, and a pair of third transistors coupled between the drain nodes of said first and second transistors and said associated bit line pair and gated by one of said plurality of regular word lines or by one of said redundant word lines, said first and second transistors being gated by said drain nodes of said second and first transistors, respectively;

each of said plurality of activation circuits comprises a plurality of fourth transistors of a second channel conductivity type and a fifth transistor of said second channel conductivity type coupled in parallel between a third source line of power voltage level and a control line and respectively gated by row address bits selected from said row address bits, and a plurality of sixth transistors of said first channel conductivity type and a seventh transistor of said first channel conductivity type coupled in series between said control line and a fourth source line of power voltage level different from said third source line and respectively gated by said selected row address bits, said fifth and seventh transistors being gated by said associated first power voltage line;

each of said plurality of regular driving circuits comprises a series combination of an eighth transistor of said second channel conductivity type and a ninth transistor of said second channel conductivity type coupled between said first source line and said associated regular word line, a parallel combination of a tenth transistor of said first channel conductivity type and an eleventh transistor of said first channel conductivity type coupled between said associated regular word line and said second source line, said eighth and eleventh transistors being gated by one of a row address bit selected from said row address bits and a complementary row address bit thereof said ninth and tenth transistors being gated by said control line; and

each of said plurality of first cut-off means comprises a first fuse element coupled between said main power line and said associated first power voltage line, and a third resistor coupled between said associated first power voltage line and said second power voltage line.

5,295,115
ADDRESSING SYSTEM FREE FROM MULTI-SELECTION OF WORD LINES
Nobuo Furuya, and Kei Sude, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 945,610
Claims priority, application Japan, Sep. 17, 1991, 3-235776
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **5 Claims**



1. An addressing system associated with a plurality of address lines respectively assigned addresses, comprising:

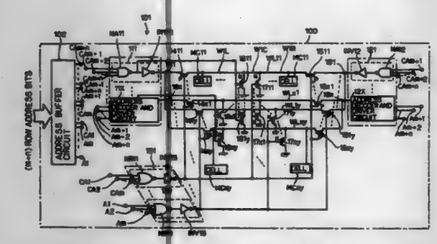
a) an address buffer unit responsive to a clock signal of a first level for latching an address signal indicative of one of said addresses, and storing said address signal when said clock signal is shifted from said first level to a second level, said address buffer unit maintaining said address signal until said clock signal is shifted to the first level again;
b) an address decoder unit coupled with said address buffer unit for selectively driving decoded signal lines;
c) a timing control unit responsive to said clock signal for producing an in-phase timing signal alternating between said first level to said second level in synchronism with said clock signal; and
d) a driver unit having a plurality of driver circuits respectively coupled between said decoded signal lines and said plurality of address lines for selectively driving said plurality of address lines, and coupled with said timing control unit so as to determine a timing for selectively driving said plurality of address lines, said plurality of driver circuits being operative to respectively latch logic levels on the associated decoded signal lines when said in-phase timing signal is shifted from said first level to said second level so as to selectively drive said plurality of address lines to active level, said plurality of driver circuits maintaining all of said address lines in inactive level while said in-phase timing signal remains in said first level.

5,295,116

ROW ADDRESS DECODER AND WORD LINE DRIVER UNIT WITH PULL-DOWN TRANSISTORS OPERABLE IN SATURATION REGION FOR RAPIDLY DRIVING WORD LINES

Shinichi Iwashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,221
Claims priority, application Japan, May 1, 1992, 4-112775
Int. Cl.[5] G11C *11/407*
U.S. Cl. 365—230.06 **5 Claims**



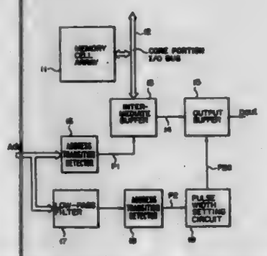
1. A row address decoder and word line driver unit for selectively driving a plurality sets of word lines, word lines respectively selected from said plurality sets of word lines forming in combination a group of word lines so that said plurality sets of word lines being rearranged into a plurality groups of word lines, comprising:
a) a plurality of row address decoder and word line driver sub-units respectively associated with said plurality sets of word lines, and having
a-1) a plurality of first address decoder and driver circuits respectively coupled with first common nodes each shared between one of said plurality sets of word lines, and
a-2) a plurality of second address decoder and driver circuits respectively paired with said plurality of first address decoder and driver circuits, and respectively coupled with second common nodes each shared between one of said plurality sets of word lines at the opposite ends to said first common nodes, said plurality of first address decoder and driver circuits and said plurality of second address decoder and driver circuits being responsive to first address predecoded signals for supplying a word line driving signal to one of said first common nodes and one of said second common nodes, a complementary signal of said word line driving signal being produced by one of said plurality of first address decoder and driver circuits;
b) a plurality of row address decoder sub-units respectively associated with said plurality groups of word lines, and responsive to second address predecoded signals for producing a gate control signal;
c) a plurality groups of first transfer transistors of one channel conductivity type respectively associated with said plurality of row address decoder sub-units, and respectively coupled between said first common nodes and said plurality groups of word lines, one of said plurality groups of first transfer transistors indicated by said second address predecoded signals being responsive to said gate control signal for coupling said first common nodes with the associated group of word lines;
d) a plurality groups of second transfer transistors of said one channel conductivity type respectively associated with said plurality of row address decoder sub-units, and respectively coupled between said second common nodes and said plurality groups of word lines, one of said plurality groups of second transfer transistors indicated by said second address predecoded signals being responsive to said gate control signal for coupling said second common nodes with the associated group of word lines;
e) a plurality sets of first switching transistors of the opposite channel conductivity type respectively associated with said plurality of first address decoder and driver circuits, and respectively coupled between said plurality sets of word lines and a constant voltage line, one of said plurality sets of first switching transistors being responsive to said complementary signal of said word line driving signal for coupling the associated set of word lines with said constant voltage line; and
f) a plurality groups of second switching transistors of said opposite channel conductivity type respectively associated with said plurality of address decoder sub-units, and respectively coupled between said plurality groups of word lines and said constant voltage line, one of said plurality groups of second switching transistors being responsive to said gate control signal for coupling the associated group of word lines with said constant voltage line.

5,295,117

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR CONTROLLING AN OUTPUT BUFFER UTILIZING AN ADDRESS TRANSITION DETECTOR

Yoshio Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 579,024, May 4, 1990, abandoned. This application May 13, 1992, Ser. No. 884,276
Claims priority, application Japan, Jun. 8, 1989, 1-146518
Int. Cl.[5] G11C *7/02, 11/34*
U.S. Cl. 365—233.5 **9 Claims**



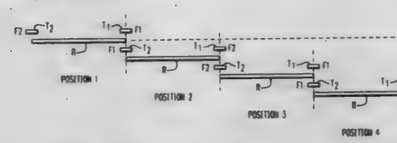
1. A semiconductor device for controlling transmission of data over an output signal path, the data being read from a memory cell array and output to an external device, the output signal path being between the memory cell array and an output buffer, the device comprising:
first pulse generating means for receiving an address signal for addressing memory cells in the memory cell array, and for generating a first signal pulse in response to a change in the address signal;
filter means for receiving the address signal, and for outputting a filtered address signal;
second pulse generating means, coupled to the filter means, for generating a second signal pulse in response to a change in the filtered address signal; and
control means, coupled to the first and-second pulse generating means, for controlling the transmission of the data over the output signal path from the memory cell array to the output buffer in response to the first signal pulse, and for controlling the output of the data from the output buffer to the external device in response to the second signal pulse.

5,295,118

SYNTHETIC APERTURE SIDE-LOOKING SONAR APPARATUS

George A. Gilmour, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1993, Ser. No. 19,382
Int. Cl.[5] G01S *15/89*
U.S. Cl. 367—88 **8 Claims**



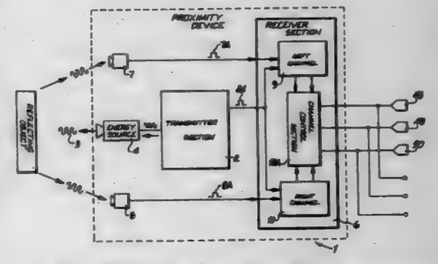
1. Synthetic aperture side looking sonar apparatus comprising:
a) an elongated side looking sonar receiver transducer having a forward end and an aft end and being of a length L;
b) said receiver transducer being made up of a plurality of elements, arranged end to end and each providing a respective output signal in response to reflected acoustic energy from a target area sonified by repetitive acoustic transmissions during travel over said target area;
c) first and second transmitter transducers each of a length <L, respectively positioned proximate said forward and aft ends of said receiver transducer and separated by a distance t;
d) transmitter means operable to provide a first transmitter signal of frequency F1 and a second transmitter signal of frequency F2 and to simultaneously apply said F1 signal to said first transmitter transducer and said F2 signal to said second transmitter transducer for propagation of acoustic energy, when said apparatus is at a position along said course of travel;
e) said transmitter means being additionally operable, when said apparatus is at a next subsequent position to reverse the application of said F1 and F2 signals so as to apply said F1 signal to said second transmitter transducer and said F2 signal to said first transmitter transducer, and thereafter at each next subsequent position to reverse said application of said F1 and F2 signals from that of the previous position;
f) receiver means operable to receive reflected acoustic energy resulting from said acoustic transmissions and to store the output signals of said elements from one transmission and combine them with the output signals resulting from a next transmission to form a plurality of receiver beams, characterized by respective beam signals; and
g) means for utilizing said beam signals.

5,295,119

PROXIMITY DEVICE

Vinko Sarac, 2 Kelly Ridge Rd., Carmel, N.Y. 10512

Filed Aug. 24, 1992, Ser. No. 933,757
Int. Cl.[5] G01S *15/42, 13/42*
U.S. Cl. 367—99 **27 Claims**



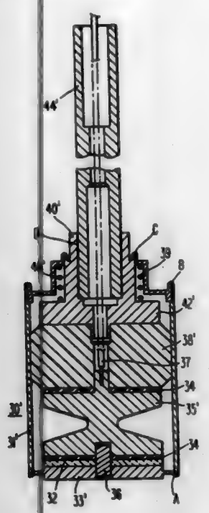
1. A proximity device for determining a distance to and angular displacement from an object or nearest surface of an object, comprising:
(A) a first energy transmitting device for radiating an energy signal;
(B) a transmitter section coupled to the first energy transmitting device responsive to a first and second speed sensor signal, the transmitter section including:
a frequency-scaler section coupled to said energy transmitting device, the frequency-scaler section including a signal energy source for outputting an energy signal thereto;
means for controlling system timing coupled to said frequency-scaler section wherein a plurality of timing control signals are defined;
a sequence generator electrically coupled to the frequency-scaler section wherein a plurality of control signals are formed for use in accordance with a variety of distances of operation between the object or nearest surface of the object and said proximity device;
an audio control section electrically coupled to the frequency-scaler section;
a control selection switch coupled at a first input to the sequence generator and at a first output to means for controlling system timing;
means for sensing a relative change in speed between the object or nearest surface of the object and said proximity device and generating a first speed sensor signal therefrom, said speed sensing means electrically coupled at an output to the control selection switch;
means for sensing a change in speed of the proximity device and generating a second speed sensor signal therefrom; and
a transmitter-driver section electrically coupled at a first input to the frequency-scaler section, and at a second input to the cascade timer section including means for outputting said energy signal wherein said cascade-timer section defines the duration of said energy signal output in accordance with said plurality of control signals formed within said sequence generator;
(C) a plurality of energy sensors for detecting said energy signal reflected from the object or nearest surface of the object;
(D) a receiver section, the receiver section comprising a first and second channel for receiving the reflected energy signal detected by the energy sensors; and
(E) a channel control section electrically coupled to the first and second channels to determine the distance to an angular displacement from the object or nearest surface of the object.

5,295,120

HERMETICALLY SEALED ULTRASONIC TRANSDUCER SYSTEM

James L. McShane, Churchill Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 633,917, Dec. 26, 1990, abandoned. This application Mar. 27, 1991, Ser. No. 676,059
Int. Cl.[5] G01S *15/08*; H04R *1/00*
U.S. Cl. 367—188 9 Claims



1. A hermetically sealed, dry-coupled transducer system for measuring liquid level in a liquid carrying container, said system comprising:

a shell having at least a forward aperture;

an acoustic window covering and forming a hermetic seal of said forward aperture;

a transducer element, disposed inside said shell adjacent said acoustic window, having front and back surfaces and positioned to transmit acoustic signals from said front surface, through said acoustic window, to said container, and to receive reflections back from a liquid level in said container, the time between transmitting and receiving being indicative of said liquid level;

insert means, positioned adjacent to said transducer back surface, for providing reflecting means for blocking acoustic transmissions from said transducer element from further rearward transmission;

means for dry-coupling said transducer to said container and having a force means rearward of said transducer element to apply a force to the back surface of said transducer element, said coupling means comprising a flat solid member for exerting force against said transducer element back surface;

wherein said shell further comprises a rearward aperture and said force means comprises a push rod; and

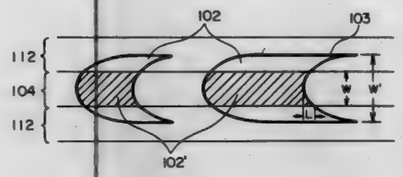
wherein said coupling means further includes an insulating spacer situated between said push rod and said insert means, said insulating spacer has an outer diameter approximately equal to the inner diameter of said shell, and said insert means, transducer element, and push rod each have an outer diameter smaller than the inner diameter of said shell.

5,295,121

MAGNETO-OPTIC RECORDING/REPRODUCING METHOD AND DEVICE AND MAGNETO-OPTIC RECORDING MEDIUM USED FOR THEM

Hirofumi Sukeda, Kokubunji, and Keizo Kato, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1989, Ser. No. 304,203
Claims priority, application Japan, Feb. 3, 1988, 63-21953
Int. Cl.[5] G11B *11/10*
U.S. Cl. 369—13 4 Claims



1. A magneto-optic recording/reproducing method comprising the steps of:

on a magneto-optic recording medium having a recording track where at least a vertically magnetized film is provided and structure bands provided on both sides of the recording track, recording magnetized domains by scanning a light beam having a diameter larger than the width of the recording track along the recording track so as to heat an area larger than the width of the recording track to a temperature exceeding the Curie temperature of the vertically magnetized film and applying a magnetic field in a predetermined direction to the area irradiated with the light beam, whereby said magnetized domains are recorded in accordance with the direction of the applied magnetic field, and

reading out the magnetization state of the magnetized domains only from an area limited by the width of the recording track through a magneto-optic effect;

wherein the magnetized domains are recorded in such a manner that the direction of applying said magnetic field is changed in accordance with a signal to be recorded; and

wherein the area of said magnetized domains limited by the width of said recording track is a feather shape having forked projections extending in the direction of scanning said light beam, and the length of said projections along said recording track is smaller than ½ of the width of said recording track.

5,295,122

FLYING HEAD OF A MAGNETO-OPTICAL RECORDING APPARATUS

Akemi Murakami; Hideo Kobayashi, and Kiichi Ueyanagi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

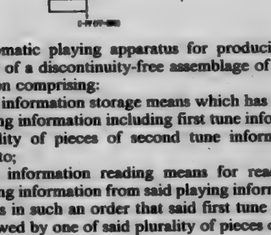
Filed Jul. 8, 1992, Ser. No. 910,495
Claims priority, application Japan, Jul. 9, 1991, 3-194952
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 6 Claims

1. A flying head of a magneto-optical recording apparatus, comprising:

a flying head body provided in the vicinity of a revolving magneto-optical recording medium so as to float on an air stream caused by said revolving magneto-optical recording medium, said flying head body including a light path aperture portion having a side wall;

a lens provided in said light path aperture portion of said flying head body for focusing a light beam from a light source onto a recording surface of said magneto-optical recording medium; and

a magnetic field generating means provided in said flying head body for forming a magnetic field directed toward said recording surface of said magneto-optical recording medium;



wherein said flying head body is formed of a non-magnetic material, said magnetic field generating means is comprises a thin film magnetic head, and said thin film magnetic head being attached to said wall surface of said light path aperture portion in proximity to the light beam.

5,295,123

AUTOMATIC PLAYING APPARATUS

Kazuyuki Seri; Mineyuki Noda, and Toshio Yamabata, all of Osaka, Japan, assignors to Roland Corporation, Osaka, Japan

Filed Nov. 14, 1991, Ser. No. 791,677
Claims priority, application Japan, Nov. 14, 1990, 2-308337
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 4 Claims

1. Automatic playing apparatus for producing an output composed of a discontinuity-free assemblage of multiple tune information comprising:

playing information storage means which has stored therein playing information including first tune information and a plurality of pieces of second tune information related thereto;

playing information reading means for reading out said playing information from said playing information storage means in such an order that said first tune information is followed by one of said plurality of pieces of second tune information as a discontinuity-free assemblage therewith; and

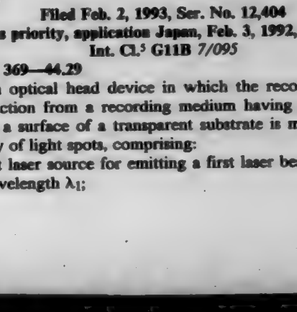
playing information reading control means whereby said playing information reading means is controlled so that when said first tune information of said playing information has been read out of said playing information storage means to an extent that it has reached a selected one of predetermined data positions of said first tune information corresponding to triggering of playing of tune information from said plurality of pieces of second tune information, one of said plurality of pieces of second tune information corresponding to said selected position is automatically read out of said playing information storage means in proper timed relationship to playing of said first tune information.

5,295,124

OPTICAL RECORDING APPARATUS

Yukio Shirako, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 901,856
Claims priority, application Japan, Jun. 24, 1991, 3-178825
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—32 24 Claims



1. An apparatus for recording additional information with a record signal on a recording medium, the apparatus comprising:

receiving means for receiving the record signal;

first generating means for generating first additional information;

a first memory for storing at least a remaining portion of the first additional information obtained from the first generating means;

recording means for recording the first additional information and the record signal on the recording medium; and

control means for controlling operations of the first generating means, the recording means and the first memory, the control means controlling the first generating means and the recording means to stop operation of the recording means after a first portion of the first additional information obtained from the first generating means is recorded on the recording medium, the control means further controlling the recording means and the first memory to restart operation of the recording means so that the remaining portion of the first additional information from the first memory can be recorded in succession to the first portion of the first additional information.

5,295,125

OPTICAL HEAD DEVICE FOR RECORDING/REPRODUCTION FOR RECORDING MEDIUM USING PLURAL LIGHT SPOTS

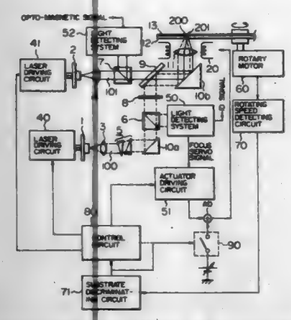
Kunikazu Oonishi, Chigasaki; Tohru Sasaki; Masayuki Inoue, both of Yokohama; Yasuo Kitada, and Akira Saito, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,404
Claims priority, application Japan, Feb. 3, 1992, 4-046360
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.29 9 Claims

1. An optical head device in which the recording on or reproduction from a recording medium having a recording film on a surface of a transparent substrate is made using a plurality of light spots, comprising:

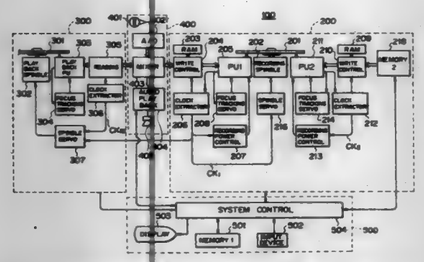
a first laser source for emitting a first laser beam having a wavelength λ_1;

a second laser source for emitting a second laser beam having a wavelength λ_2 different from the wavelength λ_1;
one objective lens used commonly to said first and second laser beams to converge said first and second laser beams on a recording surface of the recording film of said recording medium through said transparent substrate;
a focusing control system for moving said objective lens in the direction of an optical direction to focus said first laser beam as a light spot on said recording surface;
recording medium discriminating means for discriminating plural kinds of recording mediums having transparent



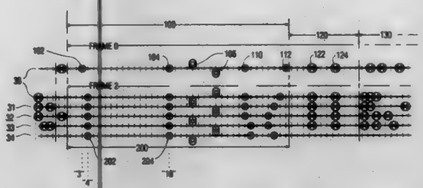
substrates which have different refractive indices, respectively; and
light spot displacing means for displacing, when at least one of said plural kinds of recording mediums is discriminated by said recording medium discriminating means, a light spot position of said second laser beam in a direction in which the amount of deviation of the light spot position of said second laser beam on the recording surface in the optical-axis direction caused by a difference of the refractive index of the discriminated recording medium from that of another recording medium is cancelled.

5,295,126
INFORMATION RECORDING APPARATUS FOR RECORDABLE OPTICAL DISC
Makoto Okano, and Shuichi Yanagisawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 3, 1992, Ser. No. 985,125
Claims priority, application Japan, Dec. 17, 1991, 3-333706
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—47 **8 Claims**



1. An information recording apparatus for receiving recording information and index information with respect to said recording information, and recording said recording information on a recordable disc medium, comprising:
memory means for storing said index information as first index information;
first recording means for recording said recording information on said disc recording medium in accordance with said first index information;
control means for producing second index information on the basis of said first information; and
second recording means for recording said second index information on said disc recording medium in parallel with the recording by said first recording means.

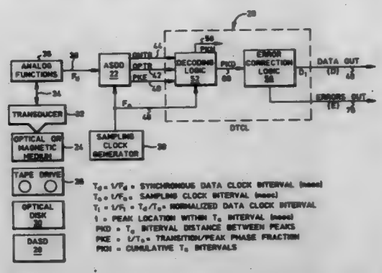
5,295,127
OPTICAL DATA RECORDER WITH SEGMENT SYNCHRONIZATION MARKS
Johannes J. Verboom, Black Forest, and Fred N. Wamble, Colorado Springs, both of Colo., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 22, 1992, Ser. No. 994,574
Int. Cl.[5] G11B *3/90, 27/36, 7/00, 3/70*
U.S. Cl. 369—58 **14 Claims**



5. An apparatus for reading data recorded on a record carrier in a pattern of marks arranged in parallel tracks, each track being divided into a plurality of segments, each segment being subdivided into a plurality of frames; at least some of said frames having data recorded therein in patterns of marks formed at bit positions, and each frame having a control field at least adjacent the first bit position containing control marks defining the location of the track and identifying the frame; and two of said control marks in each control field being spaced a distance free of other marks, greater than the distance between any other adjoining marks in that control field or in any of said patterns,
said apparatus comprising means for scanning marks in at least one of said control fields, and
means, responsive to said scanning, for determining the location of the first frame in the segment containing said at least one of said control fields,
characterized in that, for reading such a carrier in which the first frame in each segment comprises a control mark in a given position, all other frames in each segment being free from a control mark in said given position, said means for determining comprises means for detecting the presence of said control mark in said given position.

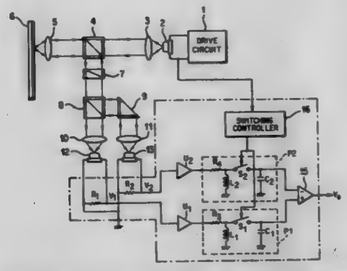
5,295,128
CLOCK CONTROLLER EMPLOYING A DISCRETE TIME CONTROL LOOP METHOD FOR CLOCKING DATA IN AN ASYNCHRONOUS CHANNEL
Robert A. Hutchins, Tucson, Ariz.; Constantin M. Melas, Los Gatos, and Pantas Sutardja, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 28, 1992, Ser. No. 967,588
Int. Cl.[5] H04N *5/76;* **G11B** *5/09*
U.S. Cl. 369—59 **18 Claims**

1. In a Direct Access Storage Device (DASD) having a recording channel for recovering data (D) stored as a plurality of signal transitions in said DASD, an asynchronous discrete clock controller having an asynchronous sampling clock frequency F_s, where a normalized clock frequency F_i is defined as the ratio of a synchronous data clock frequency F_d to said sampling clock frequency F_s, where i is a non-zero positive integer and $0 \leqq a,b \leqq 1$, said clock controller comprising:
output bus means for delivering said recovered data (D);
input means for receiving a first digital word representing the detection time P_i of an ith said signal transition;
first multiplier means coupled to said input means for multiplying said first digital word P_i by a second digital word representing said normalized clock frequency F_i to create a third digital word representing a normalized transition detection value $P'_i = P_i F_i$;
phase error correction means coupled to said first multiplier means for adding said third digital word P'_i to a fourth



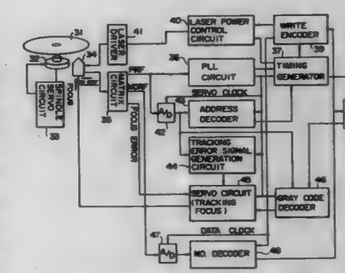
digital word representing a once-delayed value of a weighted phase error aE'_{i-1} to create a fifth digital word representing a corrected transition detection value $Z'_i = P'_i + aE'_{i-1}$, said fifth digital word having a rounded integral value representing an ith said datum $D_i = RND(Z'_i)$, wherein the fractional difference between said fifth digital word and said rounded integral value represents a normalized phase error $E'_i = Z'_i - D_i$ of said normalized transition detection value P_i; and
output means coupled to said phase error correction means for rounding said fifth digital word Z'_i to create said datum $D_i = RND(Z'_i)$ and for presenting said datum D_i to said output bus means.

5,295,129
LIGHT SIGNAL DETECTING CIRCUIT
Chul-woo Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea
Filed Aug. 30, 1991, Ser. No. 753,640
Claims priority, application Rep. of Korea, Aug. 31, 1990, 90-13716
Int. Cl.[5] G11B *7/13*
U.S. Cl. 369—122 **6 Claims**



1. A light signal detecting circuit for use in an optical disk player having a laser diode oscillated in a multi-mode by a high-frequency driving signal, the laser diode radiating light which is reflected from the surface of an optical disk, said detecting circuit comprising:
a pair of light detector means, each for respectively converting light reflected from the optical disk into a detecting signal proportional to the amount of light received;
a pair of phase-sensitive detector means each for filtering a respective one of said detecting signals of said light detector means according to the high-frequency driving signal and each outputting a filtered signal having the same frequency and phase as the high-frequency driving signal; and
a differential amplifier means for outputting a differential signal representing the difference between said filtered signals of said phase-sensitive detector means.

5,295,130
APPARATUS AND METHOD FOR SIGNAL REPRODUCTION
Minoru Tobita, Tokyo, and Kunio Kawaguchi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 4, 1991, Ser. No. 803,645
Claims priority, application Japan, Dec. 17, 1990, 2-411124
Int. Cl.[5] G11B *20/10*
U.S. Cl. 369—124 **6 Claims**



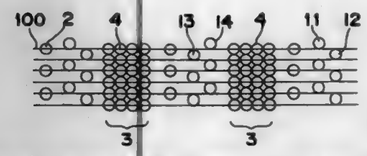
1. A signal reproducing apparatus for reproducing signals from a recording medium, said apparatus comprising:
analog-to-digital converting means for converting from analog to digital format the signals reproduced from said recording medium; and
decoding means made of a neural network having learned coefficients beforehand for decoding signals output by said analog-to-digital converting means.

5,295,131
OPTICAL INFORMATION RECORDING DISK HAVING EMBOSSED CLOCK MARK PITS AND EMBOSSED INFORMATION RECORDING PITS
Hiromichi Ishibashi, Toyonaka, and Mitsuro Moriya, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 2, 1991, Ser. No. 769,823
Claims priority, application Japan, Oct. 2, 1990, 2-265644; Apr. 19, 1991, 3-088484
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—275.3 **19 Claims**

1. An optical disk, wherein a plurality of bit information record cells composed of embossed pits or bumps are formed along a track line on a disk substrate, a bit of information is recorded on one of said bit information record cells using a laser optical head, and said bit of information is read by said laser optical head, comprising:
sets of bit information record cells, wherein bit information record cells are arranged along a track line, a mutual distance of every two adjacent bit information record cells being smaller than a diffraction limit of a laser beam emit-

ted from said laser optical head, said diffraction limit being defined by an aperture and a wavelength of said laser beam;

a recording film at least being formed on each of said bit information record cells; and



clock marks for providing a scanning position of said laser beam, composed of embossed pits or bumps, formed on said track line, each of said clock marks being located remote from said bit information record cells at a distance larger than said diffraction limit.

5,295,132

MULTIPLEX TRANSMISSION APPARATUS WITH TRANSMISSION LINE FAULT DETECTION

Kyosuke Hashimoto; Kiyoshi Inoue, and Yuichi Watanabe, all of Hiratsuka, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 935,536

Claims priority, application Japan, Aug. 27, 1991, 3-214982; Aug. 30, 1991, 3-220105, Nov. 29, 1991, 3-316660

Int. Cl.[5] H04J *1/16, 3/14*

U.S. Cl. 370—13 **14 Claims**

1. A multiplex transmission apparatus which is interconnected to other multiplex transmission apparatuses via at least first and second common transmission lines, said multiplex transmission apparatus comprising:

converting means for converting signals of said transmission lines into corresponding voltages;

first comparing means for comparing the converted voltages of said transmission lines with each other;

second comparing means for comparing the converted voltage of said first transmission line with a predetermined reference voltage;

third comparing means for comparing the converted voltage of said second transmission line with a predetermined reference voltage;

first output means comprising first counter means for outputting a low-level signal when an output level of a comparison result of said first comparing means remains at a high level for a predetermined time, and for outputting a high-level signal when an output level of the comparison result of said first comparing means is other than this level, and first logic gate means for outputting a low-level signal as an output when an output level of said first counter means is at a low level, and for outputting an output level from said first comparing means as an output when an output level of said first counter means is at a high level;

second output means comprising second counter means for outputting a low-level signal when an output level of a comparison result of said second comparing means remains at a high level for a predetermined time, and for outputting a high-level signal when an output level of the comparison result of said second comparing means is other than this level, and second logic gate means for outputting a low-level signal as an output when an output level of said second counter means is at a low level, and for outputting an output level from said second comparing means as an output when an output level of said second counter means is at a high level;

third output means comprising counter means for outputting a low-level signal when an output level of a comparison result of said third comparing means remains at a high level for a predetermined time, and for outputting a high-level signal when an output level of the comparison result of said third comparing means is other than this level, and third logic gate means for outputting a low-level signal as an output when an output level of said third counter means is at a low level, and for outputting an output level from said third comparing means as an output when an output level of said third counter means is at a high level; and

logical synthesizing means for outputting an output level of the first logic gate means as a received signal when outputs of said second and third counter means are at a high level, and for outputting logical results of the second and third logic gate means as a received signal when either output of said second and third counter means is at a low level.

5,295,133

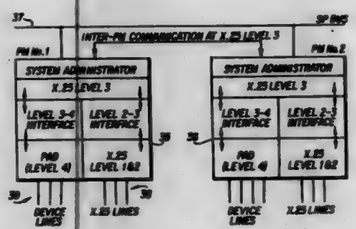
SYSTEM ADMINISTRATION IN A FLAT DISTRIBUTED PACKET SWITCH ARCHITECTURE

Mark Jurkevich, Burtonsville, Md., assignor to Sprint International Communications Corp., Reston, Va.

Filed Feb. 12, 1992, Ser. No. 834,213

Int. Cl.[5] H04J *3/14;* **H04L** *12/56*

U.S. Cl. 370—16 **14 Claims**



1. A flat, distributed architecture for a packet switch for use in a packet switching network, comprising:

at least two switching/line processing modules (PMs),

an interconnection fabric for communication between the PMs,

each PM including:

a plurality of input and output ports for transmission links between the packet switch and the network,

means for implementing at least three layers of the ISO/OSI seven-layer protocol including level 1 physical layer which converts packets to and from the transmission signals of a transmission link, level 2 link layer which transmits and receives packets across the transmission link, and level 3 network layer which switches packets through the packet switch between an input transmission link at a source side and an output transmission link at a destination side of the packet switch for packet transmission, with reply communication from the destination side to the source side of the packet switch, the implementing means of each PM including:

system administration processing means responsive to system initialization and to the absence of designated control of system administration to any of the other PMs, for assuming complete control of the system administration of the packet switch, including uploading and downloading of software to and from the other PMs of the witch and performing other administrative tasks, to the exclusion of all other switches in the array.

5,295,134

IN-SERVICE ACTIVATOR FOR A BROADBAND EXCHANGER

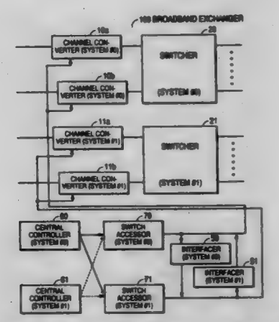
Shuji Yoshimura; Satoshi Kakuma; Shiro Uriu, and Naoyuki Izawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 18, 1992, Ser. No. 853,257

Claims priority, application Japan, Mar. 19, 1991, 3-055110

Int. Cl.[5] H04L *12/26*

U.S. Cl. 370—16 **12 Claims**



1. An in-service activator for a broadband exchanger, comprising:

a dual pair of systems comprising a first system and a second system, wherein one of the first and second systems is an active system and the other system is a to-be-activated standby system and wherein each system comprises:

channel converter means, in which channel setting information is stored, for receiving a cell from an input line, storing in the cell channel setting information and transmitting the cell containing the channel setting information, and

switcher means for receiving the cell from the channel converter means analyzing the channel setting information and switching path of the cell based on the channel setting information; and

interfacer means for storing, in the channel converter means of the to-be-activated standby system of the dual pair, the channel setting information read from the corresponding channel converter means of the active system of the dual pair.

5,295,135

ARRANGEMENT FOR MONITORING THE BIT RATE IN ATM NETWORKS

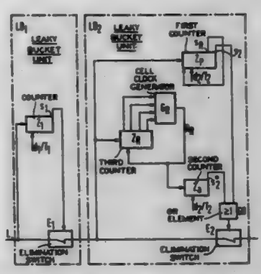
Anton Kammerl, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,561

Claims priority, application European Pat. Off., Aug. 27, 1991, 91114393.1

Int. Cl.[5] H04L *12/56;* **H04J** *3/14*

U.S. Cl. 370—17 **12 Claims**



1. A system for bit rate monitoring in an ATM network, comprising:

first leaky bucket means for monitoring a constant bit rate r_c or a peak bit rate $r_p=B_z\cdot d_1/T_1$, where B_z=plurality of bits per ATM cell, d_1=deincrementation value ant T_1=deincrementation period of the first leaky bucket means, and defining for a fullrate burst a maximum possible plurality $n_{max}=s_1+kd_1$ of ATM cells up to a response of the first leaky bucket means, where $k=1+\top(s_1-d_1)/((T_1/t_z)-d_1)\perp$, s_1=response threshold of the first leaky bucket means, and t_z=duration of an ATM cell at a maximum transmission rate;

second leaky bucket means for monitoring an average bit rate $r_a=B_z\cdot d_2/T_2$, where d_2=deincrementation value and T_2=deincrementation period of the second leaky bucket means, and defining a maximum duration $t_{max}\approx s_2\cdot B_z/(r_p-r_a)$ of a peak rate burst where s_2=response threshold of the second leaky bucket means;

said second leaky bucket means having first, second, and third counter means;

said first counter means having said response threshold s_2 and also a reset threshold s_R for resetting the first counter means to zero upon a downward transgression thereof, said reset threshold s_R lying just before said response threshold S_2, said response threshold s_2 having a counter reading which is incremented with ATM cells arriving in said second leaky bucket means, and being deincremented by said deincrementation value d_2 with said deincrementation period T_2;

said third counter means also being connected to be incremented with said ATM cells fed to said second leaky bucket means and being deincremented by means for providing a respective counting step with a cell clock rate R_R dependent on a degree of filling of said third counter means;

said second counter means also being connected to be deincremented by said deincrementation value d_2 with said deincrementation period T_2, and also being connected for being simultaneously incremented with said deincrementation of said third counter means; and

said second counter means having a response threshold s_2^* which is lower than the response threshold s_2 of said first counter means, either of said s_2^* or s_2 response thresholds when reached resulting in an elimination or marking of excess ATM cells.

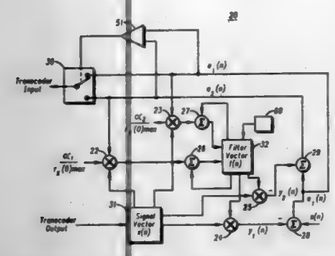
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5,295,136

METHOD OF PERFORMING CONVERGENCE IN A LEAST MEAN SQUARE, ADAPTIVE FILTER, ECHO CANCELLER

James P. Ashley, Downers Grove, and Quoc Nguyen, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1992, Ser. No. 867,555
Int. Cl.[5] H04B *3/23*
U.S. Cl. 370—32.1 **4 Claims**



1. A method of converging an adaptive echo canceller, the method comprising the steps of: locating a representation of a primary echo within a filter vector of a received signal based upon a comparison of relative magnitues of a plurality of taps of the filter vector; dividing the filter vector into a narrowed filter vector proximate the primary echo and a secondary filter vector; estimating a primary error by vector multiplying the narrowed filter vector by a correlative origin signal vector of the narrowed filter vector and subtracting the product from a return signal; estimating a secondary error by vector multiplying the secondary filter vector by a correlative origin signal vector of the secondary filter vector and subtracting the product from the primary error; generating a primary adaptation vector by multiplying the estimated primary error by the correlative origin signal vector of the narrowed filter vector and a narrow vector adaptation factor; generating a secondary adaptation vector by multiplying the estimated secondary error by the correlative origin signal vector of the secondary filter vector and secondary vector adaptation factor; and updating the filter vector by summing with the filter vector within an area defined by the narrowed filter vector the primary adaptation vector and summing with the filter vector within an area defined by the secondary vector the secondary adaptation vector.

5,295,137

CONNECTION ESTABLISHMENT IN A FLAT DISTRIBUTED PACKET SWITCH ARCHITECTURE

Mark Jurkevich, Burtonsville, Md., assignor to Sprint International Communications Corp., Reston, Va.

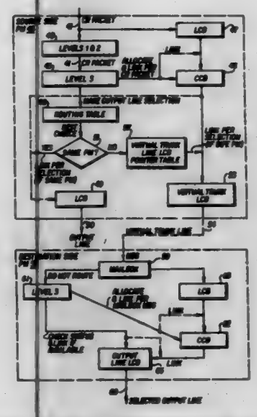
Filed Feb. 12, 1992, Ser. No. 834,209
Int. Cl.[5] H04L *12/56*; H04Q *11/04*
U.S. Cl. 370—54 **17 Claims**

10. A method for implementing a flat distributed architecture in a packet switch to establish a requested call connection therethrough from one among a multiplicity of input transmission lines at which the call request is received to any one among a multiplicity of output transmission lines to the network of which the packet switch is a part, and wherein the packet switch includes a plurality of individual processing modules (PMs) interconnected by a shared transmission medium between said one input line and said one output line, each of said PMs capable of controlling the routing of call request (CR) packets between any input line of the respective PM and any output line of any of the same PM or any other PM to the exclusion of the packet routing capability of said other PMs, for the purpose of establishing a call path through the network, the method comprising:

designating as the source PM that PM at which a CR packet is received,

delivering the CR packet to a processor within the source PM to build a message containing information from the CR packet and identifying the output line selected by the routing process for the requested call connection through the switch,

sharing information regarding the status of usage and operativeness of each of the output lines of the packet switch among all of the PMs,



selecting from the shared information at the processor of the source PM the best available output line from among all of the output lines of the packet switch to which to route the requested call connection, and designating the PM having that output line as the destination PM, and

establishing at the processor of the source PM the requested call connection between the input line of the source PM at which the CR packet was received and the selected output line of the destination PM.

5,295,138

APPARATUS AND METHOD FOR OPTIMAL FREQUENCY PLANNING IN FREQUENCY DIVISION MULTIPLEXING TRANSMISSIONS

A. Frederick Greenberg, New York, N.Y.; G. Stephen Hatcher, Reston, and Gosson Gu, Seattle, both of Wash., assignors to Northwest Starscon Limited Partnership, Krit, Wash.

Filed Apr. 21, 1992, Ser. No. 871,893
Int. Cl.[5] H04J *1/12, 1/16*; H04Q *11/02*
U.S. Cl. 370—57 **8 Claims**

1. A method for operating a frequency division multiplexing (FDM) transmitter within a common communication channel, wherein a plurality of signals are transmitted through separate channels via a plurality of modulators having corresponding carrier frequencies, by adjusting each carrier frequency through the steps comprising:

(a) randomly allocating each separate channel within the available bandwidth to provide an initial set of separate channel allocation and corresponding carrier frequencies;

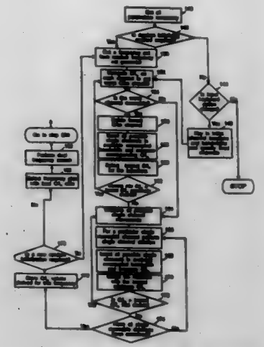
(b) measuring carrier to intermodulation ratio(C/IM) on each channel;

(c) removing the worst channel with the lowest carrier to intermodulation ratio (C/IM) when said worst channel can be moved or removing a movable channel previously nonremoved when said worst channel cannot be moved;

(d) examining all possible single-channel insertions in available unoccupied bandwidth and selecting an insertion which produces the largest minimum carrier to intermodulation ratio (C/IM);

(e) repeating steps (b) through (d) until no improvement in minimum carrier intermodulation ratio (C/IM) can be achieved for said random allocation of separate channels;

(f) repeating steps (a)–(e) for plurality of initial random channel allocations, to achieve a set of separate channel allocations among said initial random channel allocations



with largest minimum carrier to intermodulation ratio (C/IM); and

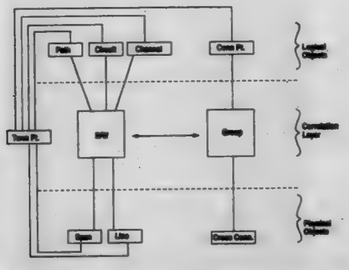
(g) tuning the modulators corresponding to each carrier frequency in said frequency division multiplexing (FDM) transmitter according to said set of separate channel allocation.

5,295,139

MANAGEMENT SYSTEM FOR PARTITIONED MULTI-BANDWIDTH COMMUNICATIONS NETWORK

Craig A. Palmer, The Colony, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Nov. 15, 1991, Ser. No. 792,410
Int. Cl.[5] H04L *12/56, 12/12*
U.S. Cl. 370—60 **22 Claims**



1. A management system for a partitioned multi-bandwidth communications network, comprising:

a management computer programmed to establish virtual networks of said communications network, wherein said computer is further programmed with correlation programming that correlates logical objects representing classes of network elements to physical objects representing said network elements, such that it may translate virtual circuit definitions in terms of said logical objects to representations of physical objects to appropriate cross connect elements of said network;

communications links between said management computer and said cross connect elements of said communications network for delivering said representations of physical objects;

at least one terminal accessible to a user of virtual network for receiving virtual circuit requests from said user, wherein said requests are in terms of said logical objects; and

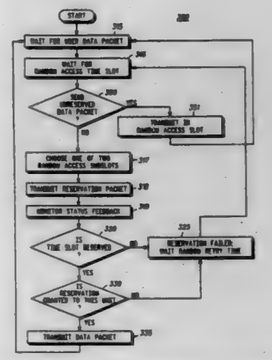
communication means between said computer and said terminal for communicating said request to said computer.

5,295,140

METHOD FOR MULTI-PURPOSE UTILIZATION OF RESOURCES IN A COMMUNICATION SYSTEM

Kenneth J. Crisler, Wheaton, and Michael L. Needham, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1991, Ser. No. 676,924
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—94.1 **8 Claims**



1. A method for using a communication resource, comprising the steps of:

A) subdividing the communication resource as a function, at least in part, of time, to provide a plurality of time slots;

B) non-periodically subdividing at least one of the plurality of time slots into at least two random access sub-slots;

C) upon receiving a request from a requesting communication unit, during any one of the random access sub-slots, for at least one reserved time slot providing at least one of the plurality of time slots as a reserved time slot to the requesting communication unit when available;

D) upon receiving data from a non-requesting communication unit, during any one of the random access sub-slots, processing the data and not providing a reserved time slot to the non-requesting communication unit.

5,295,141

SENSING AND RESPONDING TO INVALID STATES IN LOGIC CIRCUITRY

George A. Person, Phoenix, Ariz., assignor to Bull HN Information Systems Inc., Phoenix, Ariz.

Filed Dec. 19, 1990, Ser. No. 629,802
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.1 **6 Claims**

1. A logic circuit comprising:

A) a multi-stage temporary storage array having both valid and invalid states;

B) each stage of said multi-stage temporary storage array including a temporary storage element having both clocked inputs and preset and preclear inputs;

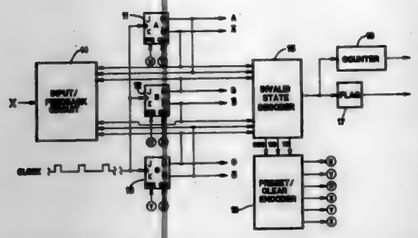
C) a source of clock pulses;

D) decoder means for sensing if said temporary storage

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array has entered into an invalid state and for issuing an output signal if an invalid state is sensed; and

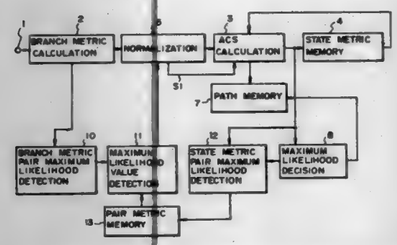
E) encoder means coupled to said decoder means and to said preset and clear inputs of said multi-stage temporary storage array, said encoder means being responsive to said output signal from said decoder means to issue forcing signals to said preset and clear inputs of said multi-stage temporary storage array whereby said multi-stage temporary storage array is forced to a predetermined valid state.



5,295,142
VITERBI DECODER

Izumi Hatakeyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 4, 1990, Ser. No. 533,106
Claims priority, application Japan, Jul. 18, 1989, 1-186380; Jul. 18, 1989, 1-186381; Jul. 18, 1989, 1-186382; Jul. 18, 1989, 1-186383
Int. Cl.[5] H03M *13/12*
U.S. Cl. 371—43 **7 Claims**



1. A Viterbi decoder for decoding a convolution code comprising:

branch metric calculating means for calculating a branch metric of an input signal;

ACS calculating means for selecting a surviving path and calculating a state metric;

branch metric pair detecting means connected to an output of the branch metric calculating means for receiving branch metrics from the branch metric calculating means and detecting a maximum likelihood branch metric pair before ACS calculation from said branch metrics from the branch metric calculating means;

state metric pair detecting means for receiving state metrics from the ACS calculating means and detecting a preceding maximum likelihood state metric pair from said state metrics;

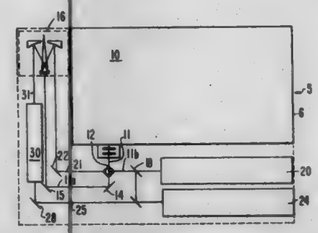
maximum likelihood value detecting means connected to an output of the branch metric pair detecting means, for receiving the preceding maximum likelihood state metric pair, and detecting a maximum likelihood value of a present state metric from the maximum likelihood branch metric pair before the ACS calculation and the preceding maximum likelihood state metric pair, and

a metric normalization means, connected to an output of the maximum likelihood value detecting means, for normalizing metrics by using a maximum likelihood value obtained by said maximum likelihood value detecting means.

5,295,143
THREE COLOR LASER

Rama Rao, Shoreham; Victor Garkavy, Brooklyn, both of N.Y.; Max W. Eagleson, Keota, Okla., and Richard C. Sam, Agoura Hills, Calif., assignors to Excel Quantronix, Hauppauge, N.Y.

Filed May 6, 1992, Ser. No. 880,214
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **16 Claims**



1. Apparatus for producing three-color laser output, comprising:

first means for producing a first beam of coherent light in the infrared wavelength range;

second means for frequency doubling a fractional amount, up to one hundred percent, of the first beam to produce a second beam of coherent light in the visible wavelength range;

third means for directing a fractional amount of the second beam out of the apparatus as a first output beam having a first output beam wavelength in the visible wavelength range;

fourth means for using a fractional amount of one of said first and second beams to produce a second output beam for direction out of the apparatus, the second output beam having a second output beam wavelength in the visible wavelength range; and

fifth means for using a fractional amount of the second beam to produce a third output beam for direction out of the apparatus, the third output beam having a third output beam wavelength in the visible wavelength range.

5,295,144
LASER

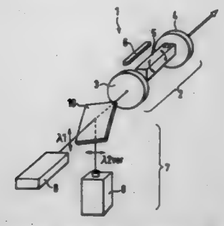
Jörg Lawrenz-Stolz; Fedder Petersen, and Dörte Wedekind, all of Lübeck, Fed. Rep. of Germany, assignors to ADLAS GmbH & Co. KG, Lubeck, Fed. Rep. of Germany

Filed Jun. 1, 1992, Ser. No. 891,635
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118819
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **9 Claims**

1. A laser having a resonator containing only one crystal between two mirrors and having a pumped light source, wherein the improvement comprises:

(a) said crystal is a birefringent, nonlinear crystal, for example $Al_3(BO_3)_4$ or $LiNbO_3$, and contains as a laser-active medium a material such as, for example Nd, Er, Ho, Tm;

(b) said pumped light and said laser-active medium contained in said crystal are coordinated with the length of said crystal in such a way that said pumped light is almost but not completely absorbed; and

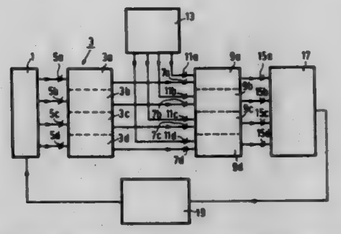


(c) phase matching mans are provided for mixing the frequencies of the fundamental wave of the laser and of said pumped light in said crystal.

5,295,145
POWER SUPPLY WITH MULTI-PARAMETER CONTROL

Henricus J. M. van der Laak, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1992, Ser. No. 856,782
Claims priority, application European Pat. Off., Mar. 25, 1991, 91200658.2
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **17 Claims**

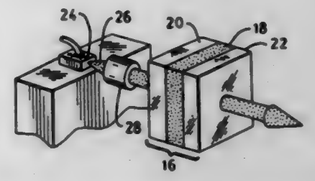


1. A power supply apparatus for supplying a multi-variable device with electric energy, comprising: at least one test input for receiving a test signal which is dependent on a variable which itself is dependent on the power applied to the device, said test input being connected to a first input of a comparator circuit, means connecting a second input of the comparator circuit to a generator which is adapted to generate a reference signal which is a measure of a desired value of said variable, an output of the comparator circuit being connected to a control member which is adapted to control the power applied to the device by the power supply apparatus, at least two test inputs for test signals dependent on device variables and with associated comparator circuits for the test inputs, the generator being adapted to generate a number of reference signals which corresponds to the number of test inputs, the control member being adapted to control the power applied to the device by the power supply apparatus so that at least one of the variables corresponding to one of the test signals is essentially equal to the value desired for the relevant variable, the other variables, corresponding to other test signals, deviating from their associated desired values in a predetermined sense only.

5,295,146
SOLID STATE GAIN MEDIUMS FOR OPTICALLY PUMPED MONOLITHIC LASER

Pavle Gavrilovic, Brockton, and Shobha Singh, Chestnut Hill, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 866,444, Apr. 10, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,861
Int. Cl.[5] H01S *3/16*
U.S. Cl. 372—41 **19 Claims**

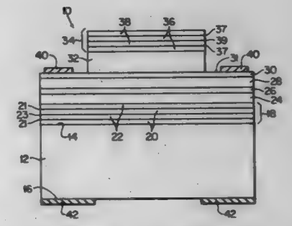


1. A solid state gain medium for a microlaser, said solid state gain medium comprising a host crystal-ion combination having one of the atomic formulas: $Y_{1-x}R_xVO_4$ where R is a dopant comprising at least one of cerium, praseodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium and ytterbium, where X is a value ranging from 0.005 to 0.07; $Y_{3(1-x)}R_{3x}Al_5O_{12}$ where R is a dopant comprising at least one of cerium, praseodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium and ytterbium, where X is a value ranging from 0.005 to 1.0; $La_{2(1-x)}R_{2x}O_2S$ where R is a dopant comprising at least one of cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium and ytterbium, and X is a value ranging from 0.005 to 0.10; and $La_{1-x}R_xZ_3$ where R is a dopant comprising at least one of cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium and ytterbium, where Z is a halogen selected from the group consisting of chlorine and bromine, and X is a value ranging from 0.005 to 1.0.

5,295,147
VERTICAL CAVITY, SURFACE-EMITTING LASER WITH EXPANDED CAVITY

Jack L. Jewell, and Greg R. Olbright, both of Boulder, Colo., assignors to Photonics Research Incorporated, Longmont, Colo.

Filed Dec. 22, 1992, Ser. No. 994,976
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **52 Claims**



1. A vertical-cavity, surface-emitting diode laser comprising:

a body of a semiconductor material having opposed surfaces and an active region therein which is adapted to generate light and emit the light from one of the surfaces thereof;

a separate reflecting mirror at opposite sides of the active region, at least one of the mirrors comprising alternating layers of at least two materials having different indices of refraction, at least one of the mirrors being partially transparent to the generated light to allow the light generated in the active region to be emitted therethrough; and

optically passive means for expanding the optical cavity of the body and thereby emit a light beam of larger diameter.

5,295,148

SURFACE EMISSION TYPE SEMICONDUCTOR LASER

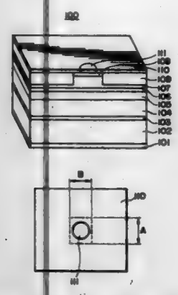
Katsumi Mori; Tatsuya Asaka; Hideaki Iwano, and Takayuki Kondo, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 997,177, Dec. 28, 1992, which is a continuation-in-part of Ser. No. 756,979, Sep. 9, 1991, Pat. No. 5,181,219, and Ser. No. 756,980, Sep. 9, 1991, Pat. No. 5,181,221, and Ser. No. 756,981, Sep. 9, 1991, Pat. No. 5,182,757. This application Feb. 2, 1993, Ser. No. 13,024

Claims priority, application Japan, Sep. 12, 1990, 2-242000

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **26 Claims**



1. A surface emission type semiconductor laser for emitting a beam in a direction perpendicular to a semiconductor substrate in which said laser is formed, comprising:

an optical resonator means including a pair of reflecting mirrors having different reflectivities and a plurality of semiconductor layers between said reflecting mirrors, the semiconductor layers including at least a cladding layer in said semiconductor layers being formed into at least one column-like portion;

a II–VI group compound semiconductor epitaxial layer surrounding said at least one column-like portion; and

a light emission side electrode being in contact with the surface of said at least one column-like portion and having a light emitting port formed therein at an area opposite to said at least one column-like portion, one of said pairs of reflecting mirrors on the light emitting side being formed at least in said light emitting port.

said at least one column-like portion being of rectangular cross-section in a plane parallel to said semiconductor substrate and having longer and shorter sides, whereby the polarization plane of said emitted laser beam being parallel to the direction of said shorter sides.

5,295,149

GAS LASER DEVICE

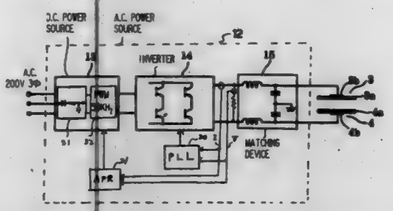
Kiyohisa Terai, Kanagawa; Tohru Tamagawa, Tokyo; Takeaki Murata, Mie; Shinji Kobayashi, Kanagawa; Akira Moriguchi, Mie, and Hirokatsu Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 19, 1993, Ser. No. 34,867

Claims priority, application Japan, Apr. 10, 1992, 4-090693; May 6, 1992, 4-112944

Int. Cl.[5] H01S *3/09*

U.S. Cl. 372—69 **10 Claims**



1. A gas laser device, comprising:

a.c. power source means for generating a.c. output voltage; and

a pair of electrodes positioned sandwiching a discharge gap through which laser gas circulates;

said pair of electrodes being connected to said a.c. power source means for applying said a.c. voltage across said electrodes to achieve discharge in said discharge gap such as to generate a positive column region and boundary layer regions, thereby to generate laser light;

said positive column region being generated in said discharge gap and a.c. power injected therein contributing to laser excitation;

said boundary layer regions being generated in a vicinity of one of said pair of electrodes, respectively and a.c. power injected therein not contributing to laser excitation;

a frequency of said a.c. power source means being set to at least 700 kHz; and

an a.c. output voltage of said a.c. power source means being set at a level such that a voltage in said positive column region is larger than a load voltage in said boundary layer regions, whereby the efficiency of the gas laser device is increased.

5,295,150

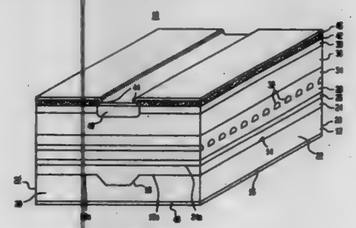
DISTRIBUTED FEEDBACK-CHANNELED SUBSTRATE PLANAR SEMICONDUCTOR LASER

Edward A. Vangieson, Lawrenceville; Pamela K. York, Trenton, and John C. Connolly, Monmouth Junction, all of N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 11, 1992, Ser. No. 989,273

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—96 **25 Claims**



1. A semiconductor diode laser comprising:

a substrate of a semiconductor material of one conductivity type having first and second opposed surfaces and a channel extending along the first surface;

a first clad layer of a semiconductor material of the one conductivity type on the first surface of the substrate, said first clad layer filling said channel and having a planar surface;

an active layer of a semiconductor material on the first clad layer;

a first spacer layer of a semiconductor material of the opposite conductivity type on the active layer;

a grating layer of a semiconductor material of the opposite conductivity type over the spacer layer and having a grating therein which extends transversely across at least the channel in the substrate;

a second spacer layer of a semiconductor material of the opposite conductivity type on the grating layer;

a second clad layer of a semiconductor material of the opposite conductivity type on the second spacer layer;

the thicknesses and composition of the active layer, spacer layers, and grating layer being such as to provide a beam divergence of the light beam emitted by the diode laser in the range of about 25° to 29°, and the second clad layer having an index of refraction which at the second spacer layer is greater than the index of refraction of the second spacer layer and which decreases through the thickness of the second clad layer to a value equal to the index of refraction of the second spacer layer.

5,295,151

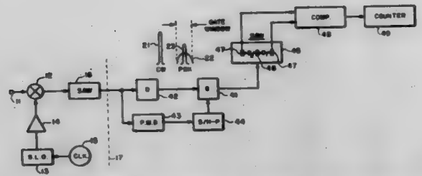
TRANSITION DETECTION CIRCUIT FOR PSK SIGNALS USING THE SAW CHIRP-Z ALGORITHM (U)

William J. Skudera, Jr., Manasquan, N.J., and Charles E. Konig, Staten Island, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1985, Ser. No. 820,394

Int. Cl.[5] H04L *27/22*

U.S. Cl. 375—1 **8 Claims**



8. Phase transition apparatus for detecting and counting the phase transitions in a low level PSK signal in the presence of a stronger CW signal comprising a mixer to which said PSK and accompanying CW signals are coupled, oscillator means for producing a linear sweep signal having a predetermined frequency-vs-time characteristic, said sweep signal having a sweep duration which is less than or equal to a PSK bit duration, means for coupling said sweep signal to said mixer for modulating said PSK and CW signals, a SAW delay device coupled to the output of said mixer, said SAW device having a frequency-vs.-time characteristic which is similar to yet opposite from that of the oscillator means, the output from said SAW delay device being a Chirp-Z transformation of the input PSK and CW signals with the transformed PSK and CW signals separated in the time domain, a gating circuit coupled to the output of said SAW device, a pulse width discrimator means also coupled to the output of said SAW device and serving to reject all signals except transformed phase transitions of the input PSK signal, pulser means coupled to the output of said discriminator means for producing enabling pulses which serve to periodically enable the gating circuit for short durations to selectively pass the transformed PSK signal including transformed phase transitions thereof, a dual channel SAW differential delay line coupled to the output of said gating circuit, the two channels of said SAW differential delay line being of different lengths to provide a predetermined amount of delay therebetween which is equal to said sweep duration, a comparator for comparing the output signals from the two channels of said SAW differential delay line and providing an output pulse when they differ, and a counter for counting the output pulses from the comparator.

5,295,152

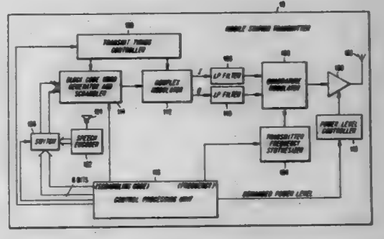
TDMA FOR MOBILE ACCESS IN A CDMA SYSTEM

Bjorn Gudmundson, Sollentuna, and Bengt Persson, Djursholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 10, 1992, Ser. No. 866,579

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **17 Claims**



1. A CDMA radio communication system comprising:

a base station for transmitting CDMA signals within a cell;

remote transmitting means for transmitting on uplink CDMA channels to said base station having means for interrupting data communication at a beginning of said access slots and means for selectively transmitting access bursts during said access state, wherein said uplink CDMA channels comprise access slots during which random access bursts can be transmitted to initiate communication with said base station.

5,295,153

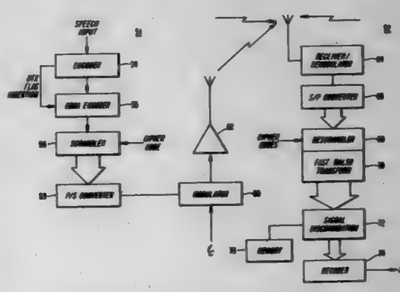
CDMA FREQUENCY ALLOCATION

Bjorn Gudmundson, Sollentuna, Sweden, assignee to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 13, 1992, Ser. No. 868,038

Int. Cl.[5] H04B *7/216, 10/22*

U.S. Cl. 375—1 **12 Claims**



1. A method of communication in a code division multiple

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access system containing a plurality of base stations and a plurality of mobile stations comprising the steps of:

dividing said plurality of base stations into separate groups of base stations based upon their transmission power levels;

assigning each group of base stations a set of frequencies to transmit on, wherein base stations of different groups do not share frequencies for traffic communication;

transmitting a pilot sequence from each base station on all frequencies assigned to each base station and at least one of the frequencies not assigned to each individual base stations;

receiving pilot sequences from neighboring base stations at each mobile station;

measuring the signal strength of each received pilot-sequence; and

storing the measured signal strengths for the neighboring base stations.

5,295,154

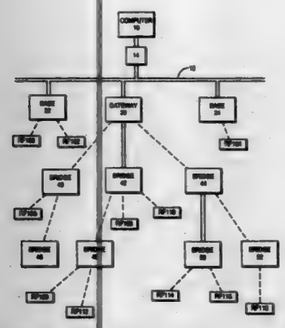
RADIO FREQUENCY LOCAL AREA NETWORK

Robert C. Meier; Marvin L. Sojka, and Ronald E. Luse, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 769,425, Oct. 1, 1991. This application May 3, 1993, Ser. No. 56,827

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **7 Claims**



1. In a multi-hop data communication system having a host computer node, a plurality of bridging nodes, and a plurality of mobile transceiver nodes, all communicative with a gateway root node, a local area network comprising:

said plurality of bridging nodes organized to control the flow of data along communication pathways between said bridging nodes and said gateway root node by periodically broadcasting messages indicating the logical distance to said gateway root node so that said bridging nodes may communicatively attach to nodes logically closest to said gateway root node.

5,295,155

MULTI-LEVEL DIGITAL DATA REGENERATION SYSTEM

John E. Gersbach, Burlington; Ilya I. Novof, Essex Junction, both of Vt., and Joseph K. Lee, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,716

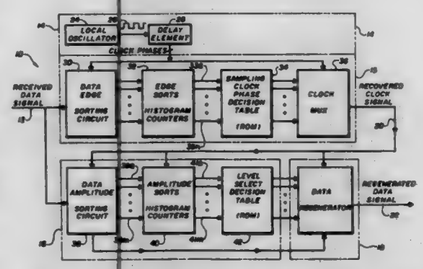
Int. Cl.[5] H04L *25/60*

U.S. Cl. 375—4 **15 Claims**

2. An adaptive regeneration system for reconstructing a signal received in the form of a multi-level composite data and clock signal which has been degraded with respect to amplitude and timing, said adaptive regeneration system comprising:

a local clock circuit comprising a local oscillator for outputting a local clock signal and a delay element electrically connected to said local oscillator for establishing a plurality of phase-delayed local clock signals;

a clock recovery circuit for receiving said received multi-level signal and said plurality of phase-delayed clock signals and extracting a selected phase-delayed local clock signal which most accurately represents the least phase shift between the received multi-level signal and said selected phase-delayed local clock signal;



a threshold level selection circuit for receiving said selected phase-delayed local clock signal and said received multi-level signal and outputting, in real time, (i) a data amplitude reading corresponding to the instantaneous amplitude of the received multi-level signal, and (ii) a plurality of multi-level threshold levels corresponding to changing amplitude levels of the received multi-level signal; and

a data regenerator for receiving said data amplitude reading, said plurality of multi-level threshold levels and said selected phase-delayed signal and for reconstructing said received multi-level signal.

5,295,156

MODEM

Jerry J. Heep, 111 Wildflower Trail, Weatherford, Tex. 76087, and Stephen S. Mosher, 2804 Ryan Place Dr., Fort Worth, Tex. 76110

Filed Aug. 14, 1991, Ser. No. 745,014

Int. Cl.[5] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—8 **23 Claims**

13. A method for effecting mode switching in a modem operatively coupled to a digital data device and a telephone line, said modem operating at least in a transmission mode in which said modem provides modulated signals to said line in response to data signals from said device, and in a command mode in which said modem responds to said data signals from said device as command instructions to said modem, the method comprising:

detecting receipt of each of said data signals from said device;

resetting a timer in response to receipt of each of said data signals from said device;

terminating said transmission mode upon the elapse of a predetermined time interval measured by said timer in which no said data signals are received from said device;

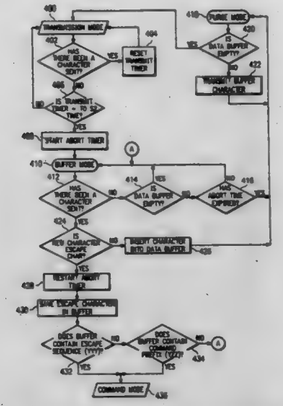
initializing an abort timer upon elapse of said predetermined time interval;

buffering said data signals received after the elapse of said predetermined time interval;

determining whether each of said buffered data signals is a defined escape character;

resetting said abort timer upon receipt of each said escape character prior to elapse of a predetermined abort time;

switching operation of said modem to said command mode when said buffered data signals define a predetermined sequence of said escape characters received prior to elapse of said abort timer; and



purging said buffered data signals as modulated signals when said buffered data signals are other than said predetermined sequence of said escape characters.

5,295,157

EQUALIZATION METHOD UTILIZING A DELAY CIRCUIT

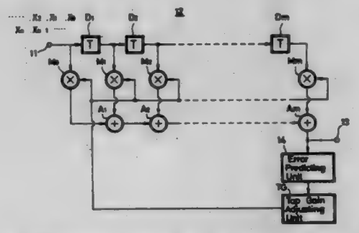
Mitsuhiro Suzaki, and Takushi Kunihiro, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Filed May 27, 1992, Ser. No. 888,498

Claims priority, application Japan, Jun. 4, 1991, 3-133007; Jun. 7, 1991, 3-136601

Int. Cl.[5] H03H *7/30, 7/40;* **H03K** *5/159*

U.S. Cl. 375—11 **6 Claims**



1. An equalization method for supplying an input signal composed of a predetermined total number of symbols to a series circuit of plural delay means, multiplying the input signal and delayed output signals from the delay means by coefficients, and adding the products into an equalized output signal, said equalization method comprising the steps of:

supplying the input signal to the series circuit;

transmitting the input signal in a first direction through a predetermined number of delay means corresponding to a unit number of symbols which is smaller than said predetermined total number of symbols to delay the input signal successively with the delay means;

transmitting again the input signal in a second direction opposite to the first direction through said predetermined number of delay means to delay the input signal successively with the delay means;

transmitting again the input signal in the first direction through said predetermined number of delay means to delay the input signal successively with the delay means;

detecting an amplitude error of the equalized output signal each time the input signal is transmitted in the series circuit in the first direction or second direction; and

calculating said coefficients multiplied with the input signal and the delayed output signals from the respective delay means according to the detected amplitude error whereby the amplitude error is minimized.

5,295,158

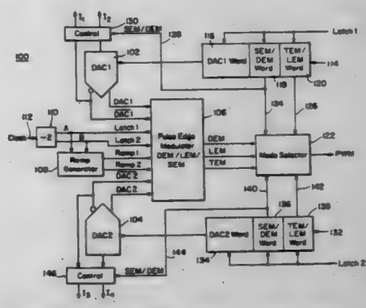
DYNAMICALLY SELECTABLE MULTIMODE PLUSE WIDTH MODULATION SYSTEM

Edward P. Jordan, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 29, 1992, Ser. No. 889,821

Int. Cl.[5] H03K *7/08, 9/08, 5/22;* **H04J** *15/00*

U.S. Cl. 375—22 **15 Claims**



1. A dynamically selectable multimode pulse width modulation system comprising:

ramp generator means for generating a ramp;

pulse edge modulation means responsive to said ramp generator means for defining a leading edge modulated pulse, a trailing edge modulated pulse, and a dual edge modulated pulse; and

mode selection means, responsive to said pulse edge modulation means, for selecting one of said leading edge modulation said, trailing edge modulation and said dual edge modulation modes of pulse width modulation.

5,295,159

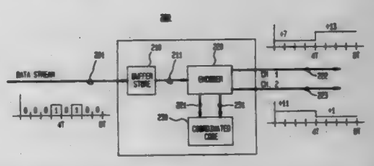
COORDINATED CODING FOR DIGITAL TRANSMISSION

Kenneth J. Kerpez, Pottersville, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 17, 1992, Ser. No. 870,579

Int. Cl.[5] H04K *1/10;* **H04L** *27/28, 1/02;* **H04B** *7/02*

U.S. Cl. 375—38 **21 Claims**



1. A method for coding an input digital data stream comprising the steps of

receiving the input data stream and grouping the stream into data segments for coding, and

VOL 1160 ISS 3 MR 15 1994 UMI

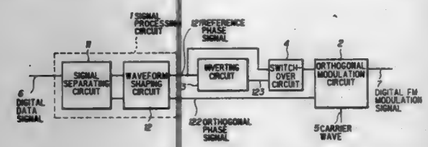
encoding each of said data segments with reference to a predetermined multi-point, multi-dimensional coordinated code constellation to produce encoded signals for each of said data segments, wherein said encoded signals for each of said data segments represent coordinates of one of said points in said coordinated code constellation and wherein at most one of said points is located at each coordinate of each of said dimensions and at least one of said coordinates of at least one of said points is different from other of said coordinates.

5,295,160

APPARATUS FOR FM-MODULATION OF DIGITAL SIGNALS

Hiroyuki Shimizu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 29, 1992, Ser. No. 891,413
Claims priority, application Japan, May 30, 1991, 3-127657
Int. Cl.[5] H04L *27/10, 27/12;* H03C *3/00;* H03K *7/06*
U.S. Cl. 375—47 **4 Claims**



1. An apparatus for FM-modulation of digital data signals, comprising:

means for supplying reference and orthogonal phase signals by receiving an input digital data signal;

means for inverting said reference phase signal to provide an inverted reference phase signal;

means for selecting one signal from said reference phase signal and said inverted reference phase signal; and

means for FM-modulating a carrier wave signal by said one signal and said orthogonal phase signal to provide an FM-modulated digital data signal;

wherein said one signal is said reference phase signal in case where an arrangement of a local frequency is the same between transmitting and receiving sides, and said one signal is said inverter reference phase signal in case where said arrangement is different between said transmitting and receiving sides.

5,295,161

FIBER OPTIC AMPLIFIER WITH ACTIVE ELEMENTS FEEDBACK CIRCUIT

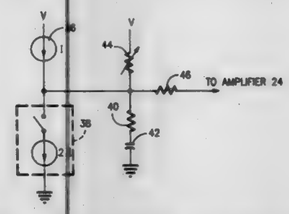
Daniel M. Dreps, Endicott, and Raymond P. Rizzo, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1991, Ser. No. 698,626
Int. Cl.[5] H04L *25/06*
U.S. Cl. 375—76 **14 Claims**

1. A receiver for recovering multibit binary digital messages from transmitted balanced code, comprising:

a differential amplifier for amplifying received balanced code and supplying high and low digital output signals; and

an active elements level restore circuit coupled to the digital output of the amplifier, said active elements level restore circuit comprising means for determining a pulse width difference between the high and low digital signals provided by said amplifier and means for integrating the pulse width difference and supplying said integrated pulse width difference to one of said inputs of said differential amplifier, so that a balanced digital output from said amplifier is achieved.

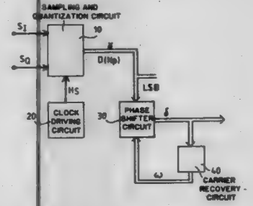


5,295,162

DIGITAL DEMODULATOR WHICH QUANTIZES SIGNAL COMPONENTS ACCORDING TO DIFFERENT THRESHOLDS

Alain Zarembowitch, Katwijk, Netherlands, assignor to Agence Spatiale Europeenne, Paris, France

Filed May 22, 1991, Ser. No. 704,275
Claims priority, application France, May 29, 1990, 90 06646
Int. Cl.[5] H03D *3/00;* H04L *27/22*
U.S. Cl. 375—83 **8 Claims**



1. A digital receiver apparatus for the demodulation of a multi-state phase shift keying modulated signal comprising:

first sampling and quantizing means having a plurality of first quantization elements connected and arranged to receive the in-phase component of a modulated analog input signal and to produce quantized samples of said in-phase component according to different quantization thresholds,

second sampling and quantizing means having a plurality of second quantization elements connected and arranged to receive the in-quadrature component of said modulated analog input signal and t produce quantized samples of said in quadrature component according to said different quantization thresholds,

said first and second sampling and quantizing means being constructed and arranged to produce quantized samples of the phase of the received signal, and

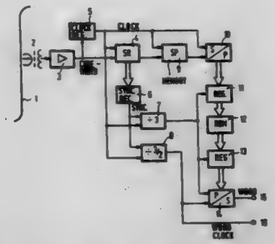
a carrier recovery circuit connected to receive signals corresponding to the quantized samples of the phase of the received signal to reconstruct the carrier for demodulating the received signal.

5,295,163

SYNCHRONIZATION METHOD FOR A RUN LENGTH-LIMITED (1,7)-CODE, AND CIRCUIT ARRANGEMENT FOR SAID METHOD

Ewald Fehlauer, Weiterstadt; Wolfram Zirngibl, Schwalbach, and Jens Lehmann, Riedstadt, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1992, Ser. No. 929,935
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4127984
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—114 **10 Claims**



1. A synchronization method for a run length-limited (1.7)-code with a code rate of $\frac{1}{2}$, said code data bits of a serial data stream being subdivided into two-bit wide data words and transcoded into three-bit wide code words, a sequence of the three-bit wide code words between adjacent ones ("1") comprising at least one zero ("0") but at most seven zeros ("0") and for the phase-correct decoding of the three-bit wide code words, a given synchronization bit sequence is inserted in the data stream of the code words, characterized in that said method comprises the steps:

generating a synchronization sequence comprising at least three consecutive three-bit wide code words as the synchronization bit sequence to be inserted, said sequence having at least six zeros ("0") between two ones ("1"); and

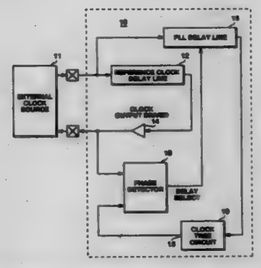
defining the temporal position of the inserted synchronization sequence by determining the number of zeros ("0") between two ones ("1") so as to recognize word limits of serially transmitted code words.

5,295,164

APPARATUS FOR PROVIDING A SYSTEM CLOCK LOCKED TO AN EXTERNAL CLOCK OVER A WIDE RANGE OF FREQUENCIES

Michael Yamamura, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 23, 1991, Ser. No. 816,394
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 **9 Claims**



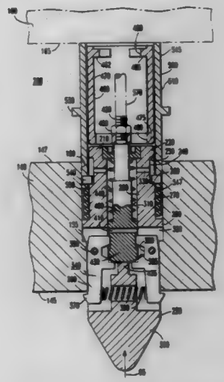
1. A digital phase lock loop circuit for synchronizing a phase of clock signals delivered to devices through clock tree circuitry with a phase of input clock signals comprising a first delay line, a second delay line, a phase detector circuit, means for transferring the input clock signals through the first delay line to the phase detector circuit, means for simultaneously transferring the input clock signals through the second delay line and the clock tree circuitry to the phase detector circuit, and said phase detector circuit being responsive to the difference in phase detected between the clock signals transferred through the first and second delay lines and varying the delay of one of the delay lines to bring the clock signals transferred through the first and second delay lines into exact phase with one another.

5,295,165

SELF-LOCKING PLUG FOR PLUGGING A HOLE DEFINED BY A SURROUNDING STRUCTURE

Michael F. Hunkinson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1993, Ser. No. 23,015
Int. Cl.[5] G21C *13/067*
U.S. Cl. 376—203 **2 Claims**



2. In a nuclear reactor pressure vessel having a core barrel disposed therein, the core barrel having a flange therearound having a bottom surface thereon and a counter-bored access hole therethrough capable of allowing fluid flow through the hole, a self-locking plug for plugging the hole to substantially reduce fluid flow through the hole, the plug comprising:

(a) a plug body matingly disposed in the hole, said plug body having a longitudinal bore terminating in a transverse slot;

(b) a locking mechanism connected to said plug body, said locking mechanism including:

(i) a plurality of spaced-apart parallel pins disposed in the slot and attached to said plug body; and

(ii) a plurality of catches disposed in the slot, each catch pivotally connected to a respective one of said pins, each catch having a contoured cam surface thereon and a hook portion integrally formed therewith;

(c) an elongate cam slidably extending through the bore and having an end portion of predetermined contour for matingly engaging the cam surface of each catch;

(d) a piston connected to said cam for driving said cam into engagement with the cam surface of each catch;

(e) a ram connected to said plug body for ramming said plug body into the hole to seat said plug body in the hole to substantially reduce fluid flow through the hole whereby said plug body seats in the hole as said ram rams said plug body into the hole, whereby the contoured end portion of said cam matingly engages the contoured cam surface of each catch as said piston drives said cam, whereby each

catch pivots in the slot about its respective pin as the end portion of said cam engages the cam surface of each catch, whereby said plug body is locked to the structure as each catch pivots about its respective pin to position the hook portion adjacent the bottom surface of the flange;

(f) a first coiled spring interposed between said catches for outwardly biasing said catches toward the flange, said first coiled spring having ends thereof connected to respective ones of said catches;

(g) a second coiled spring surrounding said cam and interposed between the end portion of said cam and said plug body for biasing said cam into engagement with said catch; and

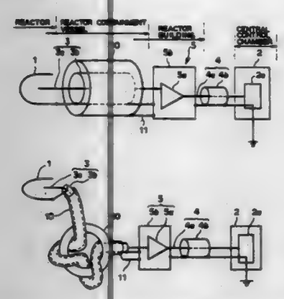
(h) a third coiled spring surrounding said plug body and interposed between said ram and said plug body for biasing said plug body into the hole.

5,295,166

START-UP RANGE NEUTRON MONITOR SYSTEM

Naotaka Oda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1993, Ser. No. 39,799
Claims priority, application Japan, Mar. 30, 1992, 4-074327
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—255 **9 Claims**



9. A start-up range neutron monitor system for monitoring neutrons generated from a neutron source, comprising:

a neutron detector disposed in a non-earthed state and adapted to detect neutrons generated from the neutron source;

a coaxial cable means for externally transmitting a detection signal from the neutron detector, said coaxial cable means being composed of a core and an outer sheath surrounding the core;

a preamplifier means incorporated on a way of the coaxial cable means for amplifying the detection signal;

a signal processing unit operably connected to the preamplifier means through the coaxial cable means to process the detection signal amplified by the preamplifier means, said coaxial cable means being composed of a first cable portion connecting the neutron detector and the preamplifier means on an input side of the preamplifier means and a second cable portion connecting the preamplifier means and the signal processing unit on an output side of the preamplifier means;

a cable shield means disposed so as to cover the first cable portion of the coaxial cable means, wherein an earth side circuit on the signal processing unit is earthed and said cable shield means is connected to an earth side circuit of the preamplifier means to thereby constitute the entire system as one point earth structure; and

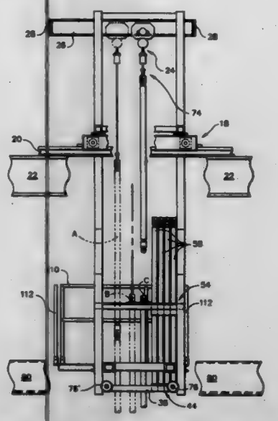
a coil means including first and second coils incorporated in said core and outer sheath of the first cable portion of the coaxial cable means respectively, said first and second coils having same inductance and being arranged so as to generate magnetic fluxes in directions reverse to each other.

5,295,167

SERVICE POLE CADDY SYSTEM

James E. Burner, Downingtown, Pa., assignor to General Electric Company, San Jose, Calif.

Filed Feb. 16, 1993, Ser. No. 18,141
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **19 Claims**



19. A service pole caddy system for servicing a nuclear reactor using a plurality of service poles which can be coupled in series to form a multi-pole assembly having a lower end adapted for carrying a tool, each of said service poles having a neck portion of first diameter and a seating portion of second diameter greater than said first diameter, said seating portion being joined to said neck portion, comprising:

pole assembly means for holding a first service pole generally upright at an assembly position during connection of a bottom end of a second service pole to a top end of said first service pole; and

rigid support means for supporting said pole assembly means in a position over said nuclear reactor,

wherein said pole assembly means comprises a keyway plate having a slot with a pole seat at said assembly position for receiving said neck portion and supporting said seating portion of said first service pole, said pole seat comprising an arc-shaped chamfered surface having a radius greater than the radius of said neck portion of said first service pole, and said seating portion on said first service pole comprising a circular chamfered surface which abuts said arc-shaped chamfered surface in a form-fitting relationship when said first service pole is supported by said keyway plate at said assembly position.

5,295,168

PRESSURE SUPPRESSION CONTAINMENT SYSTEM

Douglas M. Gluntz, and Harold E. Townsend, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

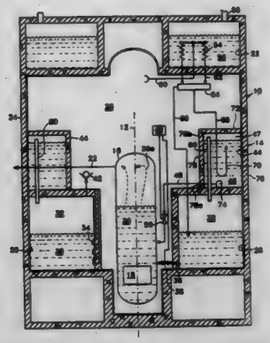
Filed Apr. 15, 1993, Ser. No. 46,317
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—283 **13 Claims**

1. A pressure suppression containment system comprising:

a reactor pressure vessel containing a reactor core therein submerged in reactor water, said core being effective for heating said reactor water to generate steam;

a containment vessel spaced outwardly from said pressure vessel to define a drywell containing a non-condensable gas;

an enclosed wetwell pool disposed in said containment vessel and partially filled with water to define a wetwell plenum thereabove, said wetwell pool having a drywell-to-wetwell vent disposed in flow communication with said drywell for venting from said drywell to said wetwell pool steam released into said drywell following a loss-of-coolant-accident (LOCA) along with said non-condensable gas carried therewith;



a gravity driven cooling system (GDCS) pool disposed in said containment vessel at an elevation above said reactor core and said wetwell pool, and partially filled with water to define a GDCS plenum thereabove;

means for selectively channeling by gravity said GDCS pool water into said pressure vessel following said LOCA; and

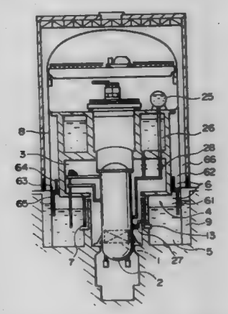
means for venting said wetwell plenum to said GDCS plenum for channeling said non-condensable gas thereto.

5,295,169

REACTOR CONTAINMENT FACILITIES

Kenji Tominaga; Tetsuo Horiuchi; Tsuyoshi Niino; Shouichiro Kinoshita; Shozo Yamanari; Masanori Naitoh; Tohru Fukui, all of Hitachi; Michio Murase, Mito; Yoshiyuki Kataoka, Ibaraki; Masataka Hidaka, Katsuta, and Isao Sumida, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,850
Claims priority, application Japan, Oct. 15, 1990, 2-273351; Oct. 19, 1990, 2-279042; Nov. 30, 1990, 2-333599; Mar. 20, 1991, 3-56300
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—293 **36 Claims**



1. A reactor containment facility comprising: a reactor pressure vessel containing a core; a dry well in which said reactor pressure vessel is arranged; a containment vessel housing said dry well; means defining a suppression chamber holding a suppression-pool water and forming above the suppression-pool water a first wet well; and passage means allowing said dry well to communicate with said suppression-pool water; wherein said facility further comprises:

(a) means for defining a second wet well communicating with said first wet well; and

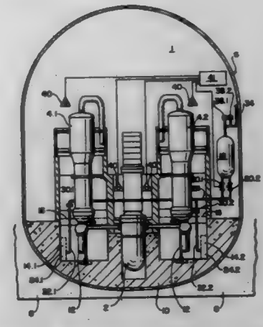
(b) cooling means for keeping said second wet well at a temperature lower than that of said first wet well at the time of a loss-of-coolant accident.

5,295,170

NUCLEAR REACTOR WITH PASSIVE MEANS OF ADJUSTING THE PH OF POST ACCIDENT WATER

Terry L. Schulz, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 7, 1993, Ser. No. 72,375
Int. Cl.[5] G21C *9/00*
U.S. Cl. 376—309 **19 Claims**



19. A method of adjusting the pH of post accident water in a nuclear reactor, the nuclear reactor being characterized by a containment vessel that is capable of being flooded to a maximum post accident water level and a reactor core located within the containment vessel at an elevation below the maximum post accident water level, comprising the steps of:

storing a basic liquid in the containment vessel at an elevation above the maximum post accident water level;

monitoring the radiation level within the containment vessel; and

draining the basic liquid by gravity to a location in the containment vessel below the maximum post accident water level when the monitored radiation level exceeds a predetermined radiation level.

5,295,171

COMBINED JET PUMP AND INTERNAL PUMP RERCIRCULATION SYSTEM

Momtaz M. Aburomia, Palo Alto, and Larry E. Fennern, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 15, 1993, Ser. No. 46,322
Int. Cl.[5] G21C *15/24*
U.S. Cl. 376—372 **7 Claims**

1. A recirculation system for driving reactor coolant water contained in an annular downcomer defined between a reactor pressure vessel and a reactor core spaced radially inwardly therefrom comprising:

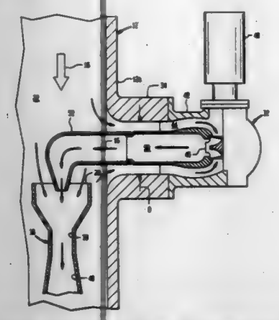
a jet pump disposed in said downcomer and having a suction inlet at a top end thereof for directly receiving from said downcomer a first portion of said coolant water, and an

outlet at a bottom end thereof for discharging said coolant water pressurized by said jet pump;

a reactor internal pump joined directly to said pressure vessel at an access nozzle thereof, said internal pump including:

a housing sealingly joined to said access nozzle for containing said coolant water;

an inlet channel extending through said housing in flow communication with said access nozzle for receiving from said pressure vessel a second portion of said coolant water;



an impeller disposed in flow communication with said inlet channel for receiving and pressurizing said coolant water second portion;

an outlet channel disposed in flow communication with said impeller for receiving therefrom said pressurized coolant water second portion; and

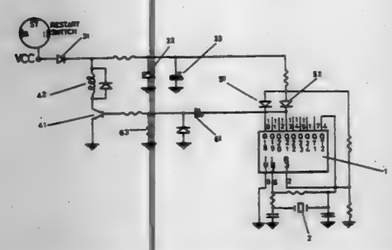
an injector nozzle disposed in flow communication with said outlet channel and positioned above said jet pump inlet for injecting therein said pressurized coolant water second portion to drive said jet pump for effecting suction at said jet pump inlet for drawing said coolant water first portion therein.

5,295,172

ENGINE LIFE COUNTER

Paul Liu, Room 1004, No. 600, Ming Chuan E. Road, Taipei, Taiwan

Filed Jan. 10, 1992, Ser. No. 818,956
Int. Cl.[5] G06M *3/12, 1/08*
U.S. Cl. 377—15 **1 Claim**



1. An engine life counter electrically connected to an engine restart switch through a power source of an engine, said counter comprising:

a mechanical type counter having a coil (42);

a quartz crystal (2) oscillating at a stable frequency;

a frequency demultiplier (1) having an output terminal and a reset input terminal;

said frequency demultiplier being connected to said quartz crystal (2) to produce a standard frequency output;

a stabilizing circuit connected between said power source and said reset input terminal, for stabilizing and filtering power from said power source,

transistor means connected to an input of said coil (42) and said output terminal of said frequency demultiplier for producing a series of pulses in cooperation with said frequency demultiplier which magnetizes said coil at predetermined intervals,

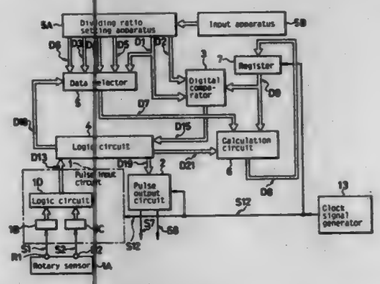
wherein, when said restart switch is actuated to start said engine an output from said output terminal of said frequency demultiplier produces a first pulse through said transistor means after 32 seconds to magnetize said coil and thereafter produces a pulse through said transistor means which magnetizes said coil every 36 seconds until said engine is switched off, said first pulse thereby increasing the accuracy of said counter when said engine is restarted.

5,295,173

FREQUENCY DIVIDER FOR DIVIDING TWO INPUT PULSES

Kazuyuki Takada, Hirakata, and Yoshihiro Matsui, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 7, 1992, Ser. No. 925,786
Claims priority, application Japan, Nov. 1, 1991, 3-287526
Int. Cl.[5] H03K *23/66*
U.S. Cl. 377—47 **2 Claims**



1. A frequency divider comprising:

clock signal generating means for generating a clock pulse signal of a predetermined period,

a pulse input circuit comprising memory means for storing an input pulse signal and a first logic circuit for generating a predetermined digital data based on said input pulse signal, and outputting respective digital data corresponding to presence or absence of said input pulse signal in synchronism with said clock pulse signal,

an input apparatus for setting numerator data (M) and denominator data (N) for designating a dividing ratio (M/N),

a dividing ratio setting apparatus for generating respective digital data representing said numerator data (M), said denominator data (N), negative denominator data (−N), data of sum of said denominator data (M) and numerator data (N), data of difference subtracted said denominator data (N) from said numerator data (M) and data of zero on the basis of said denominator data (M) and said numerator data (N) inputted from said input apparatus,

memory means for storing output data of a calculation circuit, and outputting said stored data in synchronism with said clock signal,

a digital comparator for comparing output data of said memory means, said denominator data (N) and said negative

denominator data (−N), and for outputting comparison resultant data corresponding to one of a predetermined number of comparison conditions,

a second logic circuit for outputting:

selection data for selecting one data from among said digital data generated by said dividing ratio setting apparatus,

calculation instruction data for instructing either one of addition operation, subtraction operation and addition-or-subtraction operation, and

output instruction data for instructing output or interception of an output signal corresponding to said input pulse signal, and said selection data, calculation instruction data and output instruction data are predetermined in correspondence to combinations of said digital data representing presence or absence of said input pulse signal and said comparison resultant data,

a data selector for selecting one digital data designated by said selection data given from said second logic circuit from among said digital data inputted from said dividing ratio setting apparatus,

a calculation circuit for applying calculation based on said calculation instruction data inputted from said second logic circuit to said digital data output from said data selector and output data of said memory means for storing said output data, and inputting resultant output data to said memory means, and

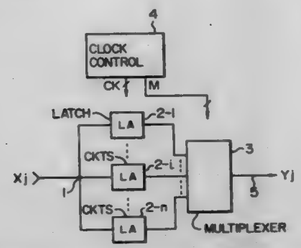
a pulse output circuit for outputting an output pulse signal in compliance with said output instruction data output from said second logic circuit.

5,295,174

SHIFTING CIRCUIT AND SHIFT REGISTER

Shin Shimizu, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,501
Claims priority, application Japan, Nov. 21, 1990, 2-319518
Int. Cl.[5] G11C *19/00*
U.S. Cl. 377—76 **7 Claims**



1. A shifting circuit for delaying time series signals inputted thereto by a predetermined timing, comprising:

an input line for receiving input signals;

an output line; a clock control circuit for generating latch clocks and selection clocks;

a plurality of latch circuits each having an output terminal and an input terminal connected in parallel with the input line and for latching the input signals in sequence synchronistically with the respective latch clocks and providing output signals; and

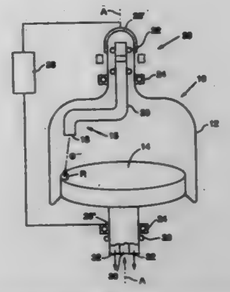
a multiplexer having input terminals connected to respective output terminals of the latch circuits, for receiving said output signals the multiplexer serving to select the outputs of the latch circuits in sequence synchronistically with the respective selection clocks to provide selected signals to the output line in sequence, wherein the clock control circuit delays the selection clock used for selecting the output of a certain latch circuit by a predetermined timing with respect to a corresponding latch clock with which the certain latch circuit latches the input signal.

5,295,175

METHOD AND APPARATUS FOR GENERATING HIGH INTENSITY RADIATION

Norman Pond, 11635 Jessica La., Los Altos Hills, Calif. 94024

Continuation of Ser. No. 787,258, Nov. 4, 1991, Pat. No. 5,173,931. This application Oct. 26, 1992, Ser. No. 966,308
The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.
Int. Cl.[5] H01J *35/24*
U.S. Cl. 378—130 **5 Claims**



1. In apparatus for generating high intensity radiation having an evacuated housing, means for directing an electron beam from a cathode within said housing for impingement on different parts of an anode within said housing, the improvement comprising:

means for conducting heat from said anode through an elongate conductor;

means for transferring substantially equal amounts of heat from different locations along the length of said elongate conductor to a cooling surface, and

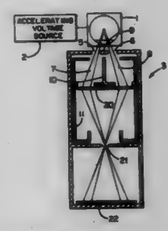
means for directing a cooling fluid over said cooling surface to cool said surface and thus said anode.

5,295,176

METHOD AND APPARATUS FOR PRECISELY MEASURING ACCELERATING VOLTAGES APPLIED TO X-RAY SOURCES

Richard D. Deslattes, Rockville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 21,232
Int. Cl.[5] G01D *18/00*
U.S. Cl. 378—207 **12 Claims**



1. A method of measuring an accelerating voltage applied to an x-ray source to produce x-rays comprising:

applying an accelerating voltage to an x-ray source to produce x-ray radiation;

VOL 1160 ISS 3 MR 15 1994 UMI

diffracting portions of the x-ray radiation that are symmetrically disposed relative to an axis with a single crystal material to produce two spectra of the x-ray radiation, each spectrum including continuous x-ray radiation having an end point energy at the maximum energy of the x-ray radiation;

forming an image of the spectra of the x-ray radiation including respective end point energies; and

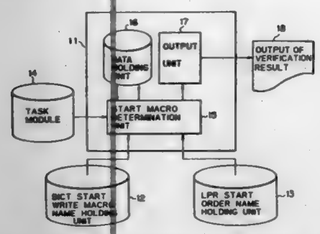
measuring the separation of the respective end point energies of the spectra of the image and, thereby, determining the accelerating voltage applied to the x-ray source.

5,295,177

AUTOMATIC TERMINAL START/STOP VERIFICATION SYSTEM USING CALL PROCESSING SIMULATOR

Mitsuaki Kakemizu; Yasuo Iwami, both of Kawasaki, Japan; Junichi Yamazaki, Red Bank, N.J., and Yoshiharu Sato, Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,021
Claims priority, application Japan, Mar. 15, 1991, 3-074459
Int. Cl.[5] H04M *3/22*
U.S. Cl. 379—17 **2 Claims**



1. An automatic terminal start/stop verification system using a call processing simulator, comprising:

a terminal start/stop simulation unit which simulates a task module of a call processing program for an exchange having terminals, call processors which proces and control calls, line processors controlled by said call processors to control said terminals, and a terminal management data file which stores data on the busy/idle states of said terminals;

a start/stop write macro name holding unit which holds the names of macros for the writing of start or stop into said terminal management data file;

a start/stop order name holding unit which holds the names of orders, for start or stop, to said line processors; and

said terminal start/stop simulation unit automatically detects errors in said task module, by referring to said start/stop write macro name holding unit and to said start/stop order name holding unit, an omission of the writing of start or stop into said terminal management data file for start or stop of a terminal as well as of a start or a stop order to said line processors.

5,295,178

DIGITAL SIGNAL PROCESSOR FOR RADIO BASE STATION

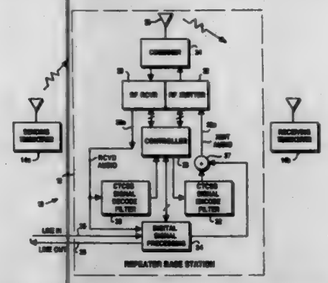
Rodney L. Nickel; Daniel I. Schwed, both of Lynchburg, and Claude L. Vignali, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Dec. 3, 1990, Ser. No. 620,421
Int. Cl.[5] H04M *11/06*; H04J *3/12*
U.S. Cl. 379—58 **6 Claims**

5. In an RF base station of the type including an RF transmitter, an RF receiver, and a digital controller operatively connected to control said RF transmitter and RF receiver, a digital signal processing module operatively coupled to receive RF tones from said receiver, send tones for transmission by said transmitter and communicate with said controller, said digital signal processing module also coupled to audio signal lines, said digital signal processing module comprising:

a digital signal processor programmed to detect tones superimposed on audio signals received from said RF receiver and signal lines, and to synthesize tones to be superimposed on audio signals transmitted by said RF transmitter and sent from said lines;

conversion means for converting analog signals from said RF receiver and lines to digital signals sent to said digital signal processor, and for converting digital signals from said digital signal processor to analog signals sent to said RF receiver and lines, said conversion means operatively coupled to said digital signal processor;



a memory device operatively coupled to said digital signal processor and said controller, said digital signal processor writing messages indicative of said detected tones in said memory device and said controller reading the messages written by said processor, and said controller writing control messages in said memory device and said processor reading the control messages, said digital signal processor acting in response to said messages, and

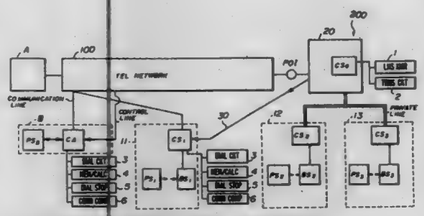
a line cancellation circuit for accepting audio signals from 2-wire and 4-wire lines, said cancellation circuit having a programmable electronic potentiometer for attenuating signals received over said lines and for leveling signals in the 2-wire mode.

5,295,179

PORTABLE TELEPHONE SYSTEM HAVING SELECTABLE BYPASS LINE

Masaru Asahara; Shunroku Sasaki, and Takuro Oguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 20, 1992, Ser. No. 871,055
Claims priority, application Japan, Apr. 18, 1991, 3-086433
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **10 Claims**



1. A portable telephone system comprising:

a first telephone network including a terminal station;

a first telephone set connected to the first telephone network via the terminal station;

a second telephone network including a communication center which is connected to the first telephone network at a connection point; and

at least one second telephone set registered in the communication center and connected to the first telephone network via the terminal station, said second telephone set being a portable telephone set comprising a base station part and a portable station;

said communication center comprising first means for sending a line hold signal to the first telephone set via the first telephone network when a call to the portable station of the second telephone set is received via the first telephone network, and second means for sending control information to the base station part of the second telephone set, said control information including a notification that a call is being placed to the portable station of the second telephone set by the first telephone set and a telephone number of the first telephone set,

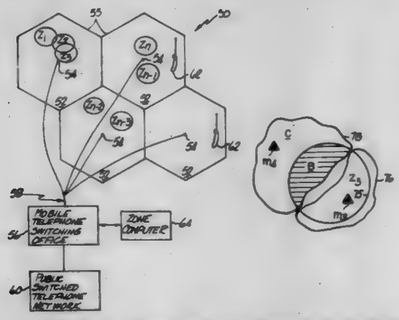
said base station part of the second telephone set comprising third means for dialing the telephone number of the first telephone set in response to the control information received from the communication center, so that a service connection, after the third means dials the telephone number of the first telephone set, is made between the first and second telephone sets via the terminal station of the first telephone network.

5,295,180

CELLULAR TELEPHONE ZONE SYSTEM

Dino J. Vendetti, Issaquah, Wash.; Don H. Atherly, Beaverton, Oreg.; Ching Chuang, Issaquah, Wash.; Elliott H. Drucker, Kirkland, Wash.; Michael J. Dunn, Issaquah, Wash.; Ronald E. Foerster, Bellevue, Wash., and David G. Schoenmaker, Carnation, Wash., assignors to U S West NewVector Group, Inc., Bellevue, Wash.

Filed Apr. 8, 1992, Ser. No. 865,090
Int. Cl.[5] H04M *11/00*; H04Q *7/00*
U.S. Cl. 379—59 **34 Claims**



1. A method for marking a predefined zone independent of a cellular telephone system and for determining if a mobile unit is located within the predefined zone, said cellular telephone system including a cell site transceiver that transmits and receives signals to and from a mobile unit on one or more control channels in a cell site, the method comprising the steps of:

transmitting a zone identification signal on a marker channel that identifies said predefined zone said zone identification signal being transmitted from a first marker transmitter having a radio frequency coverage area that includes at least part of the cell site;

shaping the radio frequency coverage area of the first marker transmitter so that said zone identification signal can be received by said mobile unit in an area that substantially corresponds to the boundaries of said predefined zone said step of shaping including transmitting a jamming signal from a second marker transmitter at substantially the same time as said zone identification signal is being transmitted from said first marker transmitter to thereby reduce or enlarge the radio frequency coverage area in which the zone identification signal can be received by said mobile unit;

monitoring said marker channel at said mobile unit; and

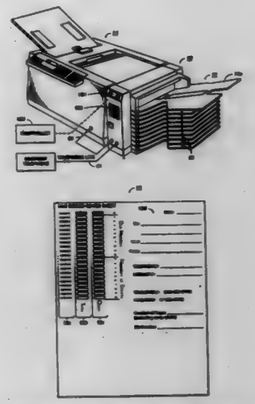
detecting said zone identification signal at said mobile unit.

5,295,181

AUTOMATIC FACSIMILE OUTPUT RECIPIENT TELEPHONING SYSTEM

Youti Kuo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1992, Ser. No. 933,831
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **12 Claims**



1. A system for separating outputted jobs of plural physical sheets from the output of an electronically shared users job printer comprising, but not limited to, a facsimile receiver printer, into separate jobs sets for separate designated recipients of documents jobs electronically transmitted to said printer, comprising:

a variably encoded physical job cover sheet outputted by said printer at said same output in advance of said printer output jobs, said job cover sheet being variably encoded with marked areas indicative of a bin number and a sheet count number for said printer output jobs; and

a printer output job sorting and remote recipient notifying accessory unit, said accessory unit including;

sheet input means at said output of said job printer to sequentially receive said sheets of said outputted jobs therefrom and feed them in a sheet feeding path into said sheet input means;

plural discrete job output sheet collection bins;

control means for electronically assigning discrete bin numbers to respective said job output sheet collection bins, and for electronically assigning different said bin numbers to different shared users of said job printer;

optical sensing means in said sheet input means and operatively connecting with said control means for detecting said marked areas encoded on a said job cover sheet and determining if it corresponds to one of said assigned bin numbers;

and sheet bin selection and feeding means, controlled by said determination of said optical sensing means and said control means, for selectively feeding said job sheets from said sheet input means to a designated said output sheet collec-

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tion bin subsequent to a said determination by said optical sensing means and said control means of said cover sheet with said marked areas encoding corresponding to one of said assigned bin numbers for a said assigned shared user, for said job sorting;

further including automatic telephone dialing means connecting with said control means;

said control means being adapted for inputting and non-volitilely storing preprogrammed telephone numbers electronically assigned to respective said assigned bin numbers;

said automatic telephone dialing means being automatically actuated by said optical sensing means and said control means in response to a said determining of at least one uniquely marked area of a said job cover sheet corresponding to one of said assigned bins numbers when there is at least one said preprogrammed telephone number assigned to that bin number;

said automatic telephone dialing means automatically dialing said preprogrammed telephone number or numbers for said assigned bin number upon said automatic actuation; and

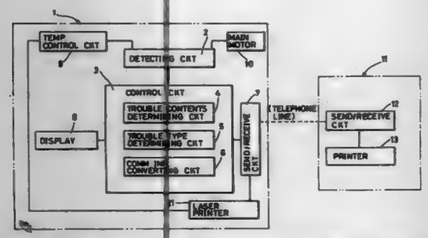
further including receipt messaging means for electronically transmitting a pre-recorded message indicating that a said printer output job has been received by said accessory unit, said receipt messaging means being actuated in coordination with said actuation of said automatic telephone dialing means by said control means to automatically transmit said pre-recorded message to said telephone number or numbers preprogrammed for said assigned bin number for said bin into which said job sheets have been fed by said sheet bin selection and feeding means.

5,295,182

FACSIMILE DEVICE HAVING SELF-DIAGNOSTIC FUNCTION AND MAINTENANCE AND CONTROL METHOD THEREOF

Yoshiharu Fujii, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 14, 1990, Ser. No. 612,678
Claims priority, application Japan, Nov. 20, 1989, 1-302742; Nov. 20, 1989, 1-302743; Nov. 20, 1989, 1-302749
Int. Cl.[5] H04M *11/00*; H04N *1/00*
U.S. Cl. 379—100 **21 Claims**



1. A facsimile device for sending information through a telephone line by a sending device, comprising:

detecting means for detecting problems which hinder adequate operation of the facsimile device;

trouble determining means for determining, when said detecting means detects occurrence of a problem, whether or not the problem can be handled by an operator of the facsimile device; and

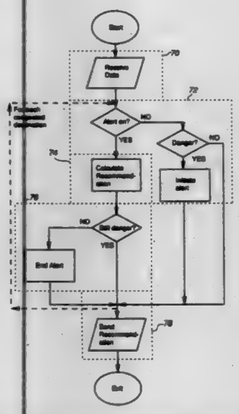
control means for controlling the sending device, in response to said trouble determining means determining that the problem cannot be handled by the operator, to automatically send contents of the problem as communication information to a predetermined communication destination.

5,295,183

CONGESTION CONTROL SYSTEM FOR TELECOMMUNICATIONS

Francis Langlois, Outremont, Canada; France Caron, Madrid, Spain, and Jean M. Regnier, Laval, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 21, 1991, Ser. No. 795,601
Int. Cl.[5] H04M *3/36, 7/06*
U.S. Cl. 379—113 **12 Claims**



1. In a telecommunications network having a plurality of switching offices interconnected by trunks and connected to a central processor for periodically exchanging data, with the central processor during an update cycle, to effect dynamic call routing, a method of congestion control comprising the steps of:

at the beginning of an update cycle, receiving data, from the switching offices, indicative of occupancy of network resources for updating data of the central processor;

determining from the data whether there are destinations within the network to which access is to be restricted;

establishing an alert status for each of the restricted destinations;

calculating, for each of the restricted destinations, an interval of time to be left between calls entering the network that are directed thereto and referred to as a call interarrival time; and

the central processor, during the update cycle, sending, to the switching offices, an identification for each of the restricted destinations, together with the alert status and the call interarrival time therefor for updating data of the switching offices for dynamic call routing and congestion control.

5,295,184

DYNAMICALLY ADJUSTABLE CALL PACING SYSTEM

B. Scott Smith, Londonderry; Gerry L. Pearson, and Frederick P. Kneipp, both of Nashua, all of N.H., assignors to Davox Corporation, Billerica, Mass.

Filed May 30, 1991, Ser. No. 708,050
Int. Cl.[5] H04M *3/46*; H04Q *3/64*
U.S. Cl. 379—215 **16 Claims**

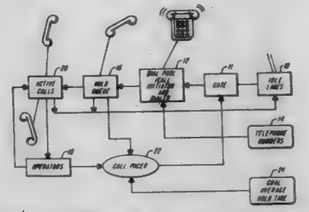
1. A dynamically adjustable call pacing system, for regulating the frequency at which idle telephone lines are coupled to a telephone call initiator of an automated telephone system, comprising:

a telephone call initiator, to which is sequentially coupled idle telephone lines, for initiating a telephone call over each of said idle telephone lines, and for providing a plurality of connected calls requiring operator assistance,

each of said connected calls including a corresponding connected call record;

telephone line gating means, responsive to a selectable frequency adjustment signal, for coupling idle telephone lines to said telephone call initiator at a selectably adjustable frequency;

a connected call hold queue, coupled to said telephone call initiator, for storing a plurality of connected call records, each of said connected call records including indicia identifying a corresponding connected call, and providing an indication of how long said connected call record has been stored in said hold queue; and



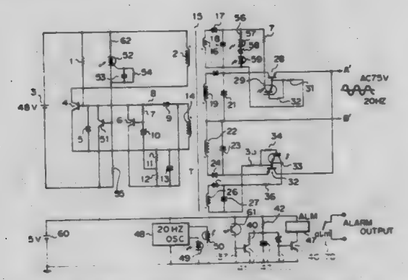
a call pacer, responsive to said connected call hold queue call record indication of how long each of said corresponding call records has been stored in said hold queue, to historical on hold time data, to excess on hold time data, and to at least one previous telephone line gating means selectable frequency adjustment, for determining a current Average Hold Time, and responsive to said current Average Hold Time and to a goal Average Hold Time, for providing an adjustment to the selectably adjustable frequency at which said idle telephone lines are coupled to said telephone call initiator by said telephone line gating means.

5,295,185

RINGING SIGNAL GENERATION CIRCUIT WITH PROTECTION AGAINST OVERVOLTAGE

Toshihumi Washio, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 6, 1990, Ser. No. 533,854
Claims priority, application Japan, Jun. 8, 1989, 1-145963
Int. Cl.[5] H04M *3/04*
U.S. Cl. 379—331 **10 Claims**



1. A ringing signal generation circuit, comprising:

a direct current power source for generating a direct current voltage;

a transformer, comprising a primary winding and a base-driving winding in a primary side, a secondary winding in a secondary side, and an additional winding;

a control transistor, connected in series to said primary winding and said direct current power source, for controlling a current flowing in said primary winding;

rectifying and smoothing means for rectifying and smoothing a current generated in said secondary winding;

an additional rectifying and smoothing means for rectifying and smoothing a current generated in said additional winding;

inverter means for converting a direct current output of said rectifying and smoothing means into an alternating current;

inverter controlling means for controlling said inverter means;

overvoltage detecting means for detecting an overvoltage in said secondary winding, said overvoltage detecting means including means for detecting an overvoltage in the output of said additional winding to indirectly detect said overvoltage in said secondary winding; and

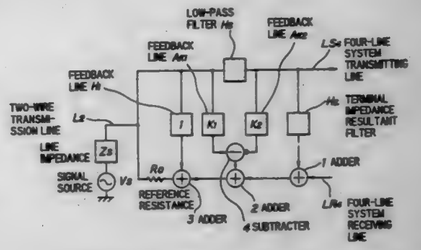
current supply stopping means for stopping a supply of the current to said primary winding in response to the detecting of the overvoltage by said overvoltage detecting means.

5,295,186

TERMINATION CIRCUIT FOR A TWO-WIRE TRANSMISSION LINE

Toshiyuki Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 13, 1990, Ser. No. 509,021
Claims priority, application Japan, Apr. 18, 1989, 1-99513
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—402 **3 Claims**



1. A termination circuit for a two-wire transmission line, comprising:

a low-pass filter connected in series to a four-wire transmitting line for transmitting a signal supplied from a two-wire transmission line;

a serial connection of first to third adders and a reference resistance connected to a four-wire receiving line for supplying a receipt signal to said two-wire transmission line;

a terminal impedance resultant filter including a switched capacitor and having an input terminal connected to an output terminal of said low-pass filter and an output terminal connected to an input terminal of said first adder;

first and second feedback lines having first and second feedback amounts and connected to an input terminal and an output terminal of said low-pass filter, respectively;

a subtractor having first and second input terminals connected to said first and second feedback lines, respectively and an output terminal connected to said second adder; and

a third feedback line having one end connected to said input terminal of said low-pass filter.

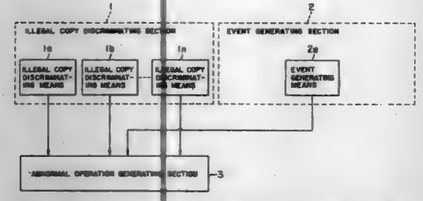
VOL 1160 ISS 3 MR 15 1994 UMI

5,295,187

ILLEGAL COPY PREVENTION APPARATUS

Akio Miyoshi, Oume, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 568,886, Aug. 17, 1990. This application Dec. 5, 1991, Ser. No. 801,608
Claims priority, application Japan, Aug. 18, 1989, 1-212173
Int. Cl.[5] G11B *23/28*; G05B *9/02*
U.S. Cl. 380—4 6 Claims



1. An illegal copy prevention apparatus, comprising:

(a) an illegal copy discriminating section including a plurality of illegal copy discriminating means for separately discriminating whether an object has been illegally copied,

(b) an event generating section for generating an event which occurs according to a predetermined occurrence probability;

(c) an abnormal operation generating section for generating an abnormal operation to halt illegal copying in response to the event generated by said generating section when any one of said illegal copy discriminating means discriminates an illegal copy;

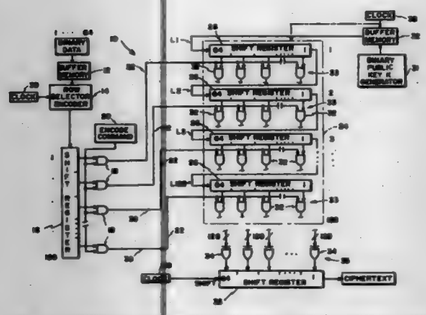
(d) thereby preventing an illegal copier from predicting the generation of an abnormal operation.

5,295,188

PUBLIC KEY ENCRYPTION AND DECRYPTION CIRCUITRY AND METHOD

William J. Wilson, 1239 Blevins Gap Rd., Huntsville, Ala. 35802, and Charles L. Craig, 2610 Rita La., Huntsville, Ala. 35816

Filed Apr. 4, 1991, Ser. No. 680,331
Int. Cl.[5] H04L *9/30*
U.S. Cl. 380—30 47 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 59 Pages)



34. A circuit for encrypting and decrypting plaintext data and including encryption circuitry comprising:

encoder circuitry for converting said plaintext data into a row selector code having discrete segments with a row selector in each said segment;

a first memory storage register having a plurality of first memory locations disposed for storing said row selector code;

a plurality of first AND gate logic means, one of each responsive to one of each said first memory locations and to a control signal, for selectively passing said row selectors;

a plurality of first AND gate logic means, one of each responsive to one of each said first memory locations and to a control signal, for selectively passing said row selectors stored in certain ones of said first memory locations as enabling signals;

a public key storage register containing a public key matrix K and having a plurality of like ordered row and columns of second memory locations corresponding to digit positions of said matrix K, said matrix K generated by combining a nonsingular matrix M with a rectangular matrix T having a row identifier in each discrete row thereof so that matrix K embodies a said row identifier in each discrete row thereof;

a plurality of second AND gate logic means, one of each responsive to one of each said second memory locations having a said row selector stored therein and to said plurality of first AND gate logic means and arranged in like ordered rows and columns such that discrete rows of said second AND gate logic means associated with said rows of said second memory locations are selectively enabled by said row selectors from said first AND gate logic means, for passing logic levels of rows of said second memory locations to participate in the encryption process;

a first plurality of X-OR logic means, one of each responsive to one of each of said columns of said second AND gate logic means, for adding said columns of said rows selected by said row selectors modulo-2, producing a binary ciphertext wherein each discrete segment thereof contains a said row identifier, and further including decryption circuitry comprising:

a second memory storage register having a plurality of third memory locations disposed for storing said ciphertext;

a plurality of third AND gate logic means, one of each responsive to one of each said memory locations having a said row identifier stored therein and to a control input, for selectively passing each said row identifier as an enabling signal,

a first private key memory storage register containing a private key matrix M^{-1} and having a plurality of like ordered rows and columns of third memory locations corresponding to digit positions of said matrix M^{-1},

a plurality of fourth AND gate logic means arranged in like ordered rows and columns as said third memory locations and responsive to one of each said third memory locations and to one of each said row identifiers from said third AND gate logic means such that each said fourth AND gate logic means are enabled by said row identifiers from said second AND gate logic means, for passing logic levels of selected rows of said third memory locations to participate in the decryption process;

a second plurality of X-OR logic means, one of each responsive to one of each of said columns of said fourth AND gate logic means, for adding columns of said selected rows of said private key memory storage register modulo-2, producing a first intermediate block of data wherein first two most significant digits thereof are first most significant digits of said plaintext data and further containing a first said row identifier;

a first decoder responsive to said first two most significant digits of said first intermediate block, for decoding said first row identifier therein and providing a selecting output on one of a first plurality of outputs,

a second private key memory storage register containing said matrix T and having like ordered plurality of rows of fifth memory storage locations corresponding to rows of said matrix T,

a plurality of fifth AND gate logic means configured in a plurality of like ordered rows as said rows of said fourth memory storage locations, with each discrete AND gate logic means of said rows of said fifth AND gate logic means each having a first input coupled to one of each said fourth memory storage locations exclusive of two most significant digits thereof, for passing logic levels of a first row of said fifth memory storage locations, exclusive of two most significant digits thereof, selected by said first decoder to participate in the decryption process;

a third plurality of X-OR logic means, one of each responsive to said first row of said fifth memory storage locations selected by said first decoder and to digit positions of said first intermediate block exclusive of said first two most significant digits thereof, for adding columnwise logic states of said selected first row and said digit positions of said first intermediate block to produce a second intermediate block wherein at least two most significant digit positions of said second intermediate block are second most significant digits of said plaintext data and contain a second row identifier therein;

a second decoder responsive to said two most significant digit positions of said second intermediate block, for decoding said second row identifier therein and providing a selecting output of one of a second plurality of outputs, one of each of said second plurality of outputs coupled to selected ones of said rows of said plurality of fifth AND gate logic means other than said rows coupled to said first decoder, for selecting a second row of said fifth memory locations;

a fourth plurality of X-OR logic means, one of each responsive to said second intermediate block exclusive of four most significant digit positions thereof and not coupled to said second decoder, for adding columnwise logic states of said second row, exclusive of said four most significant digits thereof not coupled to said second decoder, for adding columnwise logic states of said second row, exclusive of said second row identifier therein to produce a third intermediate block wherein at least two most significant digit positions thereof are third most significant digits of said plaintext data and contain a third row identifier therein, whereby:

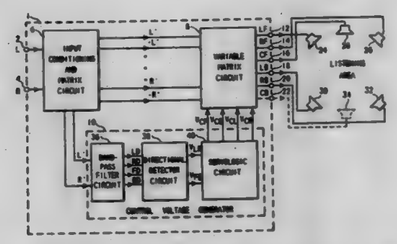
the above-described process of iteratively adding portions of the intermediate blocks, exclusive of the row identifier therein, modulo-2 with corresponding least significant digit positions of rows of said fifth memory locations each selected in accordance with a decoded said row identifier of corresponding said intermediate blocks is repeated until the plaintext is recovered.

5,295,189

CONTROL VOLTAGE GENERATOR FOR SURROUND SOUND PROCESSOR

James W. Fosgate, 4750 E. 1200 South, Heber City, Utah 84032

Continuation-in-part of Ser. No. 533,091, Jun. 8, 1990, Pat. No. 5,192,415. This application Dec. 1, 1992, Ser. No. 984,863
Int. Cl.[5] H04S *3/00*
U.S. Cl. 381—22 10 Claims



1. A surround sound processor for reproduction of a stereophonic audio signal on a plurality of loudspeakers surrounding a listening area, said processor including at least an input conditioning and matrix circuit, a directional detector circuit, a servologic circuit and a variable matrixing circuit, the said servologic circuit comprising:

means for receiving at least one directional information signal derived from said directional detector circuit;

means for smoothing said at least one directional information signal with a variable time constant to produce at least one corresponding smoothed directional information signal;

means for buffering each of said at least one smoothed directional information signals to provide at least one control voltage signal;

means for inverting each said at least one control voltage signal to provide a second control voltage signal corresponding thereto but of opposite polarity;

means for combining each said at least one directional information signal with an equal proportion of said at least one second control voltage signal and full-wave rectifying the combination thereof to produce at least one absolute value signal;

means for summing each of said at least one absolute value signals to produce a summed absolute value signal;

means for extending the duration of peak values of said summed absolute value signal to provide a resistance control signal; and

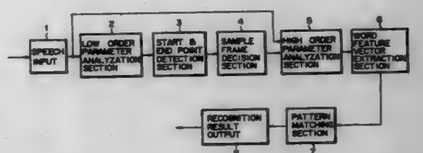
means for varying the variable time constant of said smoothing means in response to the value of said resistance control signal, such that the variable time constant is reduced whenever said resistance control signal increases in magnitude, and vice versa.

5,295,190

METHOD AND APPARATUS FOR SPEECH RECOGNITION USING BOTH LOW-ORDER AND HIGH-ORDER PARAMETER ANALYZATION

Yasuki Yamashita, and Yoichi Takebayashi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 6, 1991, Ser. No. 755,840
Claims priority, application Japan, Sep. 7, 1990, 2-235697
Int. Cl.[5] G10L *5/06*
U.S. Cl. 381—43 23 Claims



1. A speech recognition apparatus comprising:

low-order parameter analyzation means for analyzing input speech and deriving a low-order parameter time series of the input speech;

start and end point detection means for detecting start and end points of the input speech from the parameter time series derived by said low-order parameter analyzation means;

high-order parameter analyzation means for analyzing the input speech and intermittently deriving high order parameters at preset time intervals along a time axis within a range of the input speech, extending from the start point to the end point after the start and end points are detected by said start and end point detection means; and

pattern matching means for matching feature parameters corresponding to the high order parameters derived by said high-order parameter analyzation means with reference parameters previously registered to recognize the input speech according to a result of a collation process.

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5,295,191

HEARING AID INTENDED FOR BEING MOUNTED WITHIN THE EAR CANAL

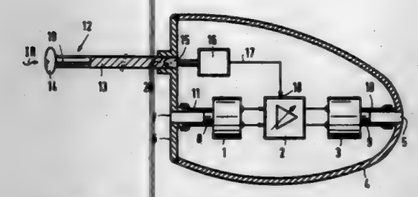
Petrus A. W. H. Van Vroenhoven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1992, Ser. No. 893,876

Claims priority, application European Pat. Off., Jun. 7, 1991, 91201411.5

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.6 **7 Claims**



1. A hearing aid to be mounted within an ear canal, comprising: a microphone, an amplifier and an electromechanical transducer accommodated in a housing, an extraction means for extracting the hearing aid from the ear canal, the input to the microphone being acoustically coupled to a sound entrance in the housing, the hearing aid further comprising a detector accommodated in the housing, said detector being arranged to receive infrared signals and for converting the infrared signals into electric signals and for supplying said electric signals to an output, and a signal processing means with an input coupled to the output of the detector for processing the electric signals supplied by the detector, wherein the extraction means comprises an elongated radiation conductive element for conducting the infrared signals, and an end of the radiation conductive element is mechanically coupled to the housing in the area of the detector so that the detector is optically coupled to said end of the radiator conductive element.

5,295,192

ELECTRONIC NOISE ATTENUATION METHOD AND APPARATUS FOR USE IN EFFECTING SUCH METHOD

Hareo Hamada, 1-30-7 Nishi-Kubo, Musashino-shi, Tokyo; Tanetoshi Miura, 1-11-20 Minami-cho, Kokubunji-shi, Tokyo; Akio Kinoshita, Fujisawa; Noriharu Sato, Katsuta; Keiichiro Mizuno, and Minoru Takahashi, both of Tokyo, all of Japan, assignors to Hareo Hamada; Tanetoshi Miura; Nissan Motor Co., Ltd.; Hitachi Ltd.; Bridgestone Corporation and Hitachi Plant Engineering & Construction Co., Ltd., Japan

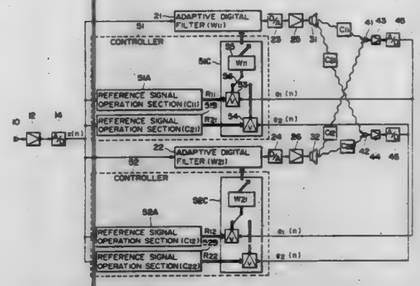
Continuation of Ser. No. 670,908, Mar. 18, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,068

Claims priority, application Japan, Mar. 23, 1990, 2-74069

Int. Cl.[5] A61F *11/06*; H04R *3/02*

U.S. Cl. 381—71 **28 Claims**

15. An electronic noise attenuation apparatus comprising:
- a sensor detecting a noise from a noise source and generating a digital noise signal;
- a plurality of sound wave generating means each outputting an attenuating wave for attenuating the noise, said plurality of sound wave generating means includes a plurality of speakers;
- a plurality of error sensing groups each containing at least one error sensor, each error sensor group generating an error signal in response to the detection of interference between the noise and outputs from the plurality of speakers;
- a plurality of adaptive digital filters, each outputting a speaker signal to one of the plurality of speakers based on the digital noise signal and adaptive filter coefficients; and
- a controller generating the adaptive filter coefficients for each one of the plurality of speakers based on the error signal from one of the plurality of error sensor groups and a reference signal, wherein the reference signal is generated from the digital noise signal and predetermined filter coefficients, and the error signal selected from generating



current adaptive filter coefficients is from a different error sensor group than the error sensor group used to generate the previous adaptive filter coefficients.

5,295,193

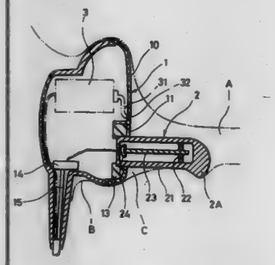
DEVICE FOR PICKING UP BONE-CONDUCTED SOUND IN EXTERNAL AUDITORY MEATUS AND COMMUNICATION DEVICE USING THE SAME

Hiroshi Ono, No. 10-15, Koyama 7-chome, Shinagawa-ku, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 824,104

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—151 **3 Claims**



1. A device for picking up bone-conducted sound in the external auditory meatus, comprising:
- a fitting portion having an outer peripheral portion which is shaped and sized to be accommodated in use in a navicular cavity formed between a tragus cartilage portion and the entrance portion of the external auditory meatus, the outer peripheral portion in use contacting a wall of the navicular cavity to support the fitting portion in the navicular cavity;
- a bone conduction microphone unit, having a contact portion which in use is brought into contact with a wall of the external auditory meatus for picking up bone-conducted sound; and
- a resilient member between the bone conduction microphone unit and the fitting portion, by which the fitting portion holds said bone conduction microphone unit, said resilient member in use resiliently applying a force to the contact portion of the microphone unit to urge the contact portion into contact with the wall of the external auditory meatus substantially orthogonally to said wall, the contact portion contacting said wall along an arc comprising less than the entire circumference of the external auditory meatus.

5,295,194

MULTI-DRIVER LOUDSPEAKER ASSEMBLY

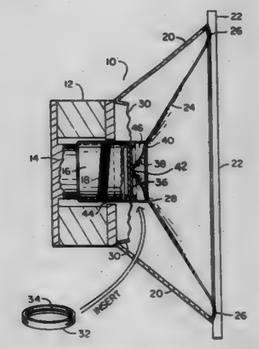
Eugene J. Christensen, P.O. Box 4563, Queensbury, N.Y. 12804

Continuation-in-part of Ser. No. 361,351, Jun. 5, 1989, Pat. No. 5,062,139. This application May 29, 1991, Ser. No. 706,965

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—192 **9 Claims**



1. A multi-driver loudspeaker system comprising:
- a first driver including a voice coil former;
- a second driver having a planar driving element, said planar driving element having first and second opposing planar sides and an edge portion joining said first and second planar sides; and
- means for fixedly attaching said edge portion of said planar driving element to said voice coil former.

5,295,195

MAGNETIC CIRCUIT IN A LOUDSPEAKER

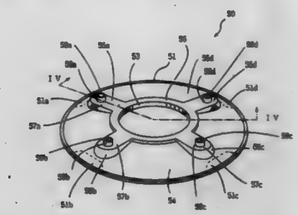
Kunio Mitobe, and Yutaka Moriyama, both of Yamagata, Japan, assignors to Tohoku Pioneer Electronic Corp., Tendo and Pioneer Electronic Corp., Tokyo, both of Japan

Filed Jun. 24, 1992, Ser. No. 903,382

Claims priority, application Japan, Jan. 30, 1992, 4-42189

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—199 **6 Claims**



1. A magnetic circuit for a loudspeaker having a yoke base, a pole formed on the yoke base, an annular magnet mounted on the yoke base, an annular plate having an inclined surface and a flat underside and mounted on the magnet so as to form a gap between an inside wall thereof and an outer wall of the pole, the annular plate having an inwardly downwardly curved sectional shape toward a periphery, and a frame for a conical diaphragm to be secured to the plate, characterized in that
- a plurality of branch platform supports each having a flat surface are integrally formed on the inclined surface, the flat surface being parallel with the flat underside;
- a plurality of staking projections are each formed on the flat surfaces of the platforms; and
- the frame is secured to the plate by staking the staking projections.

5,295,196

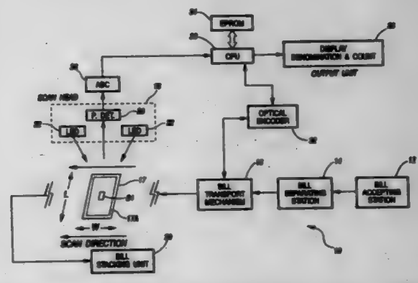
METHOD AND APPARATUS FOR CURRENCY DISCRIMINATION AND COUNTING

Donald E. Raterman, Deerfield; Bradford T. Graves; Lars R. Stromme, both of Arlington Heights, all of Ill., and Aaron M. Bauch, Boxborrow, Mass., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Continuation-in-part of Ser. No. 475,111, Feb. 5, 1990, abandoned. This application May 19, 1992, Ser. No. 885,648

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—7 **18 Claims**



1. A currency counting and evaluation device for receiving a stack of currency bills, rapidly counting and evaluating all the bills in the stack, and then re-stacking the bills, said device comprising
- a feed mechanism for receiving a stack of currency bills and feeding said bills in the direction of the narrow dimension of the bills, one at a time, to a feed station,
- a bill transport mechanism for transporting bills, in the direction of the narrow dimension of the bills, from said feed station to a stacking station, at a rate in excess of about 800 bills per minute,
- a stationary optical scanning head located between said feed and stacking stations for scanning a preselected segment of a central portion of each bill transported between said stations by said transport mechanism, said scanning head including at least one light source for illuminating a strip of said preselected segment of a bill, and at least one detector for receiving reflected light from the illuminated strip on the bill and producing an output signal representing variations in the intensity of the reflected light,
- means for sampling said output signal at preselected intervals as a bill is moved across said scanning head in the direction of the narrow dimension of the bill, each of said output signal samples being proportional to the intensity of the light reflected from a different strip of said preselected segment of a bill,
- a memory for storing characteristic signal samples produced by scanning said preselected segments of bills of different denominations with said scanning head and sampling said output signal at said preselected intervals, each of said stored signal samples being proportional to the intensity of the light reflected from a different strip of said preselected segment of a bill, and
- signal processing means for receiving said signal samples and

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(1) determining the denomination of each scanned bill by comparing said stored signal samples with said output signal samples produced by the scanning of each bill with said scanning head, (2) counting the number of scanned bills of each denomination, and (3) accumulating the cumulative value of the scanned bills of each denomination.

5,295,197

INFORMATION PROCESSING SYSTEM USING NEURAL NETWORK LEARNING FUNCTION

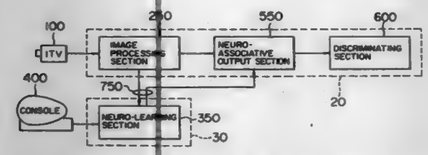
Hiroshi Takenaga, Ibaraki; Yoshiyuki Okuyama, Hitachi; Masao Takatoo, Katsuta; Kazuyoshi Asada, Hitachi; Norio Tanaka, Hitachi; Tadaaki Kitamura, Hitachi, and Kuniyuki Kikuchi, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 544,870, Jun. 28, 1990, Pat. No. 5,086,479. This application Oct. 11, 1991, Ser. No. 774,887

Claims priority, application Japan, Jun. 30, 1989, 1-166675; Feb. 21, 1990, 2-038376

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—14 **5 Claims**



1. An apparatus for inspecting an object, said apparatus comprising an image input section for detecting an image of an object; an image processing section for extracting image data from the detected image, the image data being indicative of the inspected object; a neuro-learning section, including a first neural network, for receiving the extracted image data and learning data for the first neural network, and for determining weights in the first neural network; a neuro-associative output section, including a second neural network, for constructing said second neural network on the basis of the weights determined by the neuro-learning section, and for producing an associative output for the image data applied thereto; and a discriminator section for determining the degree of perfection or imperfection of the object on the basis of the output from the neuro-associative output section.

5,295,198

PATTERN IDENTIFICATION BY ANALYSIS OF DIGITAL WORDS

John J. Maney, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 14, 1988, Ser. No. 257,688

Int. Cl.[5] G10L *7/02*

U.S. Cl. 382—38 **29 Claims**

1. A method of analyzing a multi-bit digital word to identify a known pattern in the word or a known signal or object on which parameters represented by the word were measured, said method comprising:

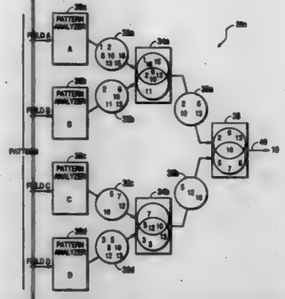
(a) dividing the digital word into a plurality of multi-bit fields of digital bits, each field representative of at least one parameter of the known pattern, signal, or object;

(b) analyzing each multi-bit field within the plurality of multi-bit fields to generate from each analyzed field an additional multi-bit field indicative of possible patterns, signals or objects each having a value for the associated parameter matching the value of the parameter represented by the analyzed multi-bit field;

(c) grouping the multi-bit fields resulting from the previous step into at least one group of multi-bit fields;

(d) analyzing each group of multi-bit fields resulting from the previous step to generate from each such group a further multi-bit field indicative of common patterns, signals, or objects among the possible patterns, signals, or objects indicated by the multi-bit fields of said each group;

(e) repeating steps (c) and (d) until a single group of multi-bit fields is obtained; and



(f) analyzing the single group of multi-bit fields to generate from the single group a final multi-bit field indicative of a common pattern, signal, or object among the possible patterns, signals, or objects indicated by the multi-bit fields of said single group, thereby identifying the known pattern, signal, or object.

5,295,199

IMAGE TRANSFORMING APPARATUS AND METHOD

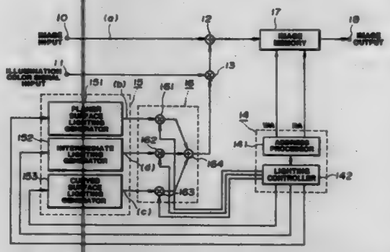
Masaaki Shino, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,394

Claims priority, application Japan, Nov. 15, 1991, 3-326736

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—41 **6 Claims**



1. An image transforming apparatus for transforming an input video signal representing a two-dimensional image into a transformed video signal representing a three-dimensional surface and for depicting illumination thereof, comprising:

means receiving data including said input video signal representing a two-dimensional image and light source position data for defining a shape of said three-dimensional surface based upon said input video signal representing a two-dimensional image and for providing a mapping data signal for transforming said input video signal representing a two-dimensional image into a signal representing said defined three-dimensional surface;

means for transforming said input video signal representing a two-dimensional image in accordance with said mapping data signal so as to generate said signal representing said defined three-dimensional surface;

controller means for producing a plurality of illumination pattern data signals based upon said signal representing said defined three-dimensional surface and said light source position data;

generator means for receiving the plurality of illumination pattern data signals from said controller means for producing for generating a plurality of illumination pattern signals, each of which depicts differential illumination of said defined three-dimensional surface; and

means for mixing said plurality of illumination pattern signals in accordance with said mapping data signal so that the mixing ratio of said plurality of illumination pattern signals is varied thereby.

5,295,200

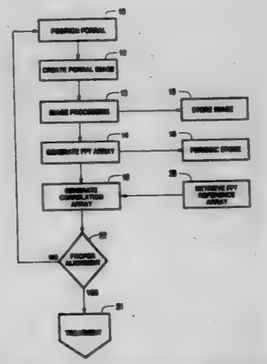
METHOD AND APPARATUS FOR DETERMINING THE ALIGNMENT OF AN OBJECT

Arthur L. Boyer, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 638,895, Jan. 9, 1991, abandoned. This application Dec. 3, 1992, Ser. No. 985,367

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—43 **7 Claims**



1. A method for quantifying the similarity between two images, comprising:

providing a portal field of view;

positioning a portion of an object within said portal field of view;

radiating said object to create a portal image corresponding to said portal field of view with respect to said object;

generating an FFT array of the image by fast Fourier transforming said portal image;

performing a Fourier correlation of said FFT array with a previously stored reference array to yield a correlation array;

preparing an inverse FFT of said correlation array;

calculating a universal scale as a function of said inverse FFT;

setting alignment tolerances using said universal scale;

comparing said alignment tolerances with the normalized Fourier correlation of each said array with a previously stored reference array to determine an alignment criteria between each said image array and said reference array; and

repositioning said object with respect to said portal image if said alignment criteria exceeds said alignment tolerances.

5,295,201

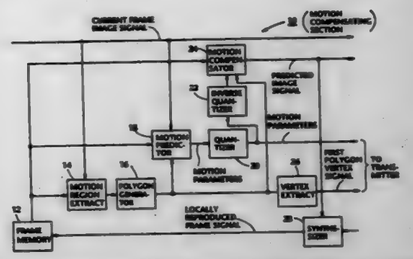
ARRANGEMENT OF ENCODING MOTION IMAGE SIGNALS USING MOTION COMPENSATION AND ORTHOGONAL TRANSFORMATION

Yutaka Yokohama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,406

Int. Cl.[5] G06K *9/20*

U.S. Cl. 382—48 **4 Claims**



1. An arrangement of encoding a plurality of image signals successively applied thereto, said arrangement comprising:

first means for storing a first image signal;

second means which is coupled to said first means and extracts a motion region included in a second image signal by comparing said first and second image signals, said second image signal having been applied to said arrangement immediately after said first image signal;

third means which is coupled to said second means and approximates in shape said motion region to a first polygon and extracting vertices of said first polygon and calculating coordinate values of said vertices, said third means generator first information indicative of said coordinates values from said arrangement;

fourth means which is arranged to receive said first and second image signals and a signal indicative of said first polygon, said fourth means generating motion parameters and a predicted image signal, said motion parameters being derived from said arrangement;

fifth means which is arranged to compare said predicted image signal and said second image signal, said fifth means extracting, from said second signal, a first region which is required to be orthogonally transformed;

sixth means which is arranged to receive said first region and said second image signal, said sixth means dividing said first region into a plurality of second regions;

seventh means, coupled to said sixth means, for approximating in shape each of said second regions to second polygons and extracting vertices of each of said second polygons and calculating coordinate values of said vertices of each of said second polygons, said seventh means generating second information indicating said coordinate values of said vertices of each of said second polygons, said second information being derived from said arrangement.

5,295,202

METHOD AND APPARATUS FOR REPLICATING A TWO-COLOR ORIGINAL IMAGE WITH FOREGROUND AND BACKGROUND COLORS EXCHANGED

James J. Steinkirchner, Brockport, and Lawrence B. Telle, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1991, Ser. No. 747,171

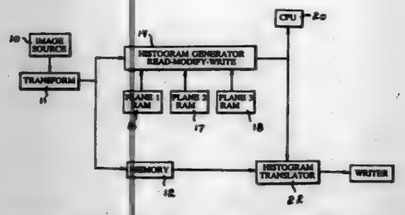
Int. Cl.[5] H04N *9/46, 1/46*

U.S. Cl. 382—51 **4 Claims**

1. Apparatus for replicating a two-color original image with foreground and background colors exchanged, said apparatus comprising:

an image source for generating a signal representing the

color information of each successive pixel of a two-color original image, said signal being separated into a plurality of tristimulus-value color planes represented in a three dimensional color coordinate system such that the planes of the received signal specify the color of pixels of the original image in a color space that describes the gamut of color, each color plane having a characteristic color data distribution;



a histogram generator which produces a histogram of the color data distribution of each color plane of a two-color original image;

a semiconductor storage device for storing the histograms;

means for determining a translation point within each histogram; and

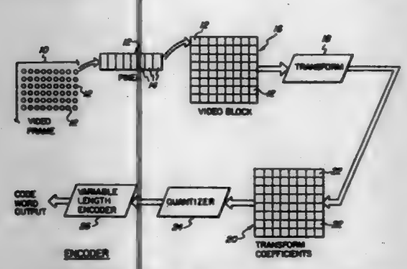
means for translating the three color plane image data about the translation point.

5,295,203

METHOD AND APPARATUS FOR VECTOR CODING OF VIDEO TRANSFORM COEFFICIENTS

Edward A. Krause, San Diego; Adam Tom, La Jolla, and Vincent Liu, San Gabriel, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Mar. 26, 1992, Ser. No. 858,102
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 27 Claims



1. A method for coding video transform coefficients for communication comprising the steps of:

providing a block of transform coefficients;

generating a vector to identify locations of a group of coefficients from said block that qualify for transmission according to predetermined criteria;

encoding said vector to provide a vector code word for transmission; and

encoding the coefficients from said group to provide coefficient code words for transmission;

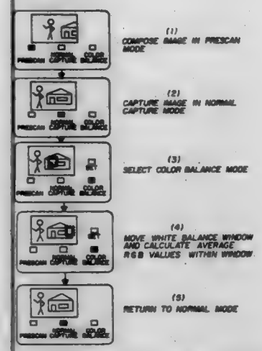
wherein said vector code word correlates the coefficient code words to coefficient locations in said block.

5,295,204

METHOD FOR COLOR BALANCING A COMPUTER INPUT SCANNER INCORPORATING MULTIPLE SCANNING MODES

Kenneth A. Parulski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 18, 1991, Ser. No. 731,967
Int. Cl.[5] G06K 9/00; H04N 1/04
U.S. Cl. 382—63 9 Claims



1. A color balance method for use with a scanner that generates scan values from a sensor sequentially exposed to a fixed color image for a plurality of initial exposure times corresponding to a plurality of color separations, the scanner inputting the scan values to a computer for display on a screen included therewith, said color balance method comprising the steps of:

generating scan values representative of color separations by sequentially exposing the sensor to the fixed color image for respective initial exposure times;

displaying a color image on the screen from the combination of the scan values of the several color separations;

establishing a window overlaying the displayed color image in an area where color balance is to be calculated;

executing color balance calculations upon the scan values within the window in order to generate color correction factors;

generating new exposure times for one or more of the color separations based on the color correction factors; and

using the new exposure times to generate new scan values from the fixed color image by exposing the sensor to the fixed color image to create new scan values.

5,295,205

ENVIRONMENTALLY STABLE MONOLITHIC MACH-ZEHNDER DEVICE

William J. Miller and Daniel A. Nolan, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 29, 1993, Ser. No. 38,244
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—1 19 Claims

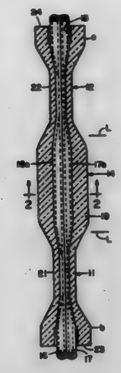
1. A Mach-Zehnder device comprising

an elongated body of matrix glass,

first and second dissimilar optical fibers extending longitudinally through said body,

a phase shift region in said body in which said fibers have different propagation constants, and whereby optical signals propagate through said optical fibers at different velocities in said phase shift region,

two spaced coupler regions in said body at opposite ends of said phase shift region, the diameter of said body and the



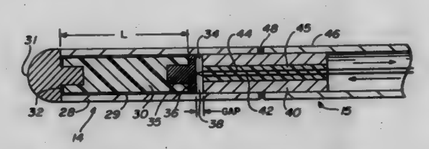
diameters of said fibers being smaller in said coupler regions than in said phase shift region.

5,295,206

FIBEROPTIC TEMPERATURE TRANSDUCER

Peter S. Mischenko, Mount Prospect, Ill., assignor to Metatech Corporation, Lake Forest, Ill.

Filed Oct. 5, 1992, Ser. No. 956,678
Int. Cl.[5] G02B 6/02
U.S. Cl. 385—12 17 Claims



1. A fiberoptic temperature transducer comprising:

a tubular member formed of a material having a first thermal coefficient of expansion;

a cylindrical rod-like expansion member formed of a material having a second coefficient of expansion;

at least a portion of said expansion member being inserted in and attached at only one end to the tubular member for expansion within the tubular member;

a reflective surface positioned at the other end of the expansion member distal from said attached end; and

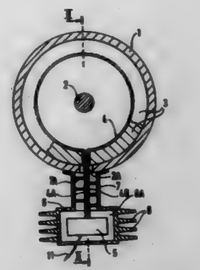
at least one fiberoptic rod associated with the tubular member and positioned a predetermined distance from the reflective surface with a gap therebetween such that a change in temperature of both the tubular member and the cylindrical rod-like member causes the gap to change in length so as to change the amount of light reflected from said reflective surface and received by said at least one fiberoptic rod, the change of received reflected light representing the change in temperature.

5,295,207

OPTICAL APPARATUS FOR MEASURING CURRENT IN A GROUNDED METAL-CLAD INSTALLATION

Jean-Pierre Dupraz, Lyons, and Edmond Thuries, Meyzieu, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Nov. 16, 1992, Ser. No. 977,296
Claims priority, application France, Nov. 18, 1991, 91 14174
Int. Cl.[5] G01R 31/00
U.S. Cl. 385—12 10 Claims



1. In a current transformer designed to equip an electrical installation of the grounded metal-clad type including at least one cylindrical metal cladding filled with dielectric gas and containing at least one conductor disposed parallel to the axis of the cladding, the transformer being of the Faraday-effect type and including, for each conductor, an optical fiber surrounding the conductor, said fiber being connected to an auxiliary optical interface for injecting at least one input light wave into the fiber, and for processing the output light waves, wherein said current transformer includes a support in the form of a disk having its plane perpendicular to said axis and having a periphery in contact with a cross-section inside the cladding, said disk having at least one opening, said at least one conductor passing through, said disk opening including a groove inside said opening, said optical fiber being placed in said groove with, the optical fiber going at least once around said conductor, and having two ends thereof connected to aid associated optical interface disposed outside said cladding, the improvement comprising, a gastight passage extending exteriorly of the cladding, and an enclosure coupled to an end of said gastight passage means remote from said cladding, said optical interface being placed in an enclosure, and communicating via said gastight passage to the interior of said cladding and about said two optical fiber ends passing through said gastight passage and being connected to said optical interface within said enclosure, and wherein said gastight passage includes means within said gastight passage, between said enclosure and said cladding, for limiting heat exchange by conduction and by convection.

5,295,208

MULTIMODE WAVEGUIDE HOLOGRAMS CAPABLE OF USING NON-COHERENT LIGHT

H. John Caulfield; Qiang Huang, both of Huntsville, Ala.; Andrei Putilin, Moscow, U.S.S.R., and Valentin Morozov, Boulder, Colo., assignors to The University of Alabama in Huntsville, Huntsville, Ala.

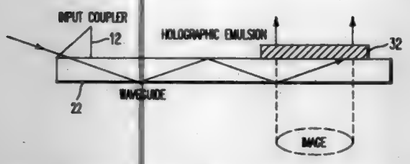
Filed Feb. 26, 1992, Ser. No. 841,576
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—27 11 Claims

1. A multitude waveguide structure comprising:

a dielectric waveguide for supporting multimode propagation of light wherein said waveguide has two main side surfaces defining a thickness therebetween and a length substantially greater than width with the ends of the lengthwise each extent of the waveguide being defined by a respective edge;

input coupling means for coupling a light beam of a fre-

quency λ into one of said main side surfaces in the vicinity of a first one of said edges to thereby provide a spatially continuous pattern of totally internally reflected light within said waveguide, wherein said thickness is greater than said frequency,



further including an holographic emulsion placed on said one surface in the vicinity of said second edge wherein said holographic emulsion contains a previously recorded holographic image.

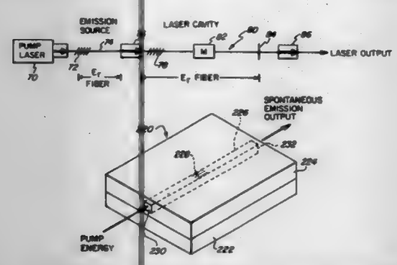
5,295,209

SPONTANEOUS EMISSION SOURCE HAVING HIGH SPECTRAL DENSITY AT A DESIRED WAVELENGTH

David R. Huber, Warrington, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Continuation-in-part of Ser. No. 821,004, Jan. 15, 1992, Pat. No. 5,200,964, which is a continuation-in-part of Ser. No. 668,027, Mar. 12, 1991, Pat. No. 5,166,821. This application Nov. 10, 1992, Ser. No. 974,185
Int. Cl.[5] G02B *6/34*

U.S. Cl. 385—37 **16 Claims**



1. An optical source for providing an output signal with a broad linewidth comprising:

a laser for outputting an optical signal having a longitudinal mode;

a spontaneous emission source for generating spontaneous emissions at or near the wavelength of said longitudinal mode, said spontaneous emission source including:

an integrated guided wave optical path formed in a semiconductor substrate,

a grating within said optical path,

an active medium within said optical path, and

means for passing optical energy across said grating and active medium within said optical path, said optical energy exciting said active medium without lasing to output spontaneous emissions from said optical path at a wavelength established by said grating; and

means external of said laser for inputting spontaneous emissions output from said spontaneous emission source to said laser;

wherein the spontaneous emissions input to said laser increase the effective linewidth of said mode.

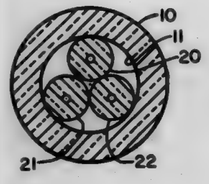
5,295,210

OPTICAL WAVEGUIDE FIBER ACHROMATIC COUPLER

Daniel A. Nolan, and David L. Weidman, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,296
Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—43 **17 Claims**



1. A 1×N achromatic coupler, wherein N is 2 or 3, said coupler comprising

an elongated body of matrix glass, and

three optical waveguide paths extending through said body, each of said paths comprising a core region surrounded by a cladding region of refractive index less than that of said core region, the lowest refractive index of said cladding regions being n_2, a portion of said cladding regions disposed in contact with said body,

said optical waveguide paths extending in sufficiently close proximity for a sufficiently long distance to form a coupling region where a portion of the optical power propagating in one of said paths couples to the other of said paths,

said core regions being disposed in a triangular array in said coupling region when viewed in a plane perpendicular to the longitudinal axis of said body,

the refractive index of at least that region of said body adjacent said paths being n_3, where n_3 is lower than n_2 by such an amount that the value of $\Delta_{2\text{-}3}$ is less than 0.125%, wherein $\Delta_{2\text{-}3}$ equals $(n_2^2-n_3^2)/2n_2^2$.

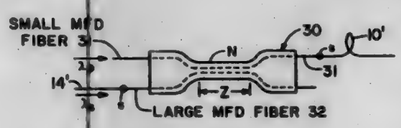
5,295,211

FIBER AMPLIFIER COUPLER

David L. Weidman, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Jan. 7, 1993, Ser. No. 1,337
Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—43 **20 Claims**



1. A fiber optic coupler comprising

a first single-mode optical fiber having a biconical taper section and a second single-mode optical fiber having a biconical taper section, each of said fibers having a core surrounded by a cladding of refractive index n_2, said taper sections being fused together to form a coupling region,

said coupling region being surrounded by a medium having a refractive index n_3 that is lower than n_2,

said first fiber having first means for modifying the propagation constant of the fundamental mode in the coupling region to such an extent that the difference between the propagation constants of said first and second fibers in said coupling region would, in the absence of the following second propagation constant modifying means, differ by such an amount that less than a given percent of light power of a wavelength λ_S would normally couple from said second fiber to said first fiber, and

second means for modifying the propagation constant of one of said fibers by such an extent that more than said given percentage of the light power of wavelength λ_S couples from said second fiber to said first fiber, the spectral propagation constant curves of those portions of said fibers that are in said coupling region being substantially parallel to each other in the wavelength region where maximum coupling occurs.

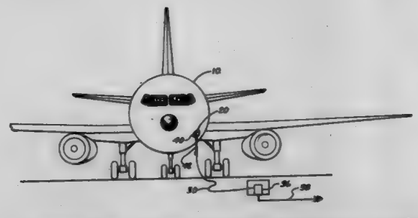
5,295,212

SYSTEM FOR TRANSMITTING SIGNALS BETWEEN OPTICAL TRANSCEIVERS

Randall E. Morton, Redmond; William R. Little, and David L. Brodeur, both of Seattle, all of Wash., assignors to Eldec Corporation, Lynnwood, Wash.

Filed Oct. 29, 1992, Ser. No. 969,878
Int. Cl.[5] G02B *6/24*

U.S. Cl. 385—57 **19 Claims**



1. A system for carrying optical signals between an optical transceiver disposed on an aircraft for receiving and transmitting free-space optical signals, and a ground-based computer system, the system comprising:

a fiber optic cable that can be coupled to the ground-based computer system for carrying the optical signals produced by the optical transceiver disposed on the aircraft; and

means for coupling the fiber optic cable to the aircraft and for aligning the fiber optic cable with the optical transceiver so that the fiber optic cable carries the optical signals produced by the optical transceiver from the optical transceiver to the ground-based computer system.

5,295,213

OPTICAL CONNECTOR WITH ION EXCHANGE HARDENING

Tetsuji Ueda; Kazuhiko Kurata, both of Tokyo; Nobuo Funabiki, and Masayo Hada, both of Shiga, all of Japan, assignors to NEC Corporation and Nippon Electric Glass Co., Ltd., both of Japan

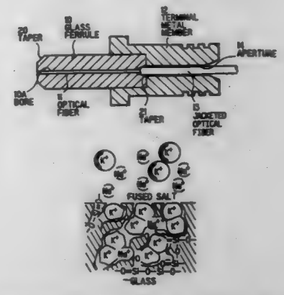
Filed Jul. 13, 1992, Ser. No. 912,500
Claims priority, application Japan, Jul. 11, 1991, 3-171231
Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—78 **5 Claims**

1. An optical connector, comprising:

a glass ferrule having a center bore into which an optical fiber is inserted to be fixed;

wherein said glass ferrule is constructed of a glass material containing alkali metal and has been subjected to a low temperature type ion-exchange treatment at a temperature



of approximately 400° C. to increase its mechanical strength.

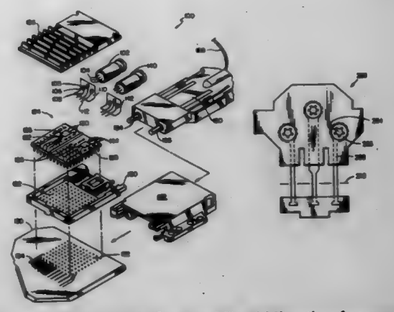
5,295,214

OPTICAL MODULE WITH TOLERANT WAVE SOLDERED JOINTS

Duane F. Card, Whitney Point, N.Y.; Eberhard S. Dittman, Quebec, Canada, and Mukund K. Sarsiya, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,632
Int. Cl.[5] G02B *6/42*

U.S. Cl. 385—92 **7 Claims**



1. An optical module for providing bidirectional communication with fiber optic means, comprising:

a housing including a first and second receptacle for connection to said fiber optic means;

a first optical sub-assembly having multiple solder-wettable conductive leads for receiving electrical signals, for converting the electrical signals into optical signals and positioned to communicate with said fiber optic means connected in the first receptacle for transmitting the optical signals to said fiber optic means;

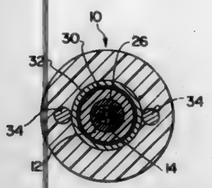
a second optical sub-assembly positioned for receiving a optical signals from said fiber optic means connected in the second receptacle for converting the optical signals into electrical signals and having multiple solder-wettable conductive leads for transmitting the electrical signals;

electronic circuit means for processing the electrical signals transmitted by the second optical sub-assembly and for transmitting electrical signals to the first optical sub-assembly;

an electrical interconnection member located within said housing adjacent said first and second optical sub-assemblies on a side of the optical sub-assembly from which the

leads extend, for electrical interconnection between said optical sub-assemblies and said electronic circuit means;
a flexible ribbon cable for each said optical sub-assembly for transmitting signals between the optical sub-assembly and said electronic circuit means, each said cable including:
at least two passages at one end of each cable through each of which a respective lead of the respective optical sub-assembly is inserted;
solder wettable lands proximate said passages and connected to conductors of the flexible ribbon cable for soldered connection between the lands and the leads;
soldering bridge means communicating with the lands and the leads for establishing a desired solder joint configuration;
solder joints connecting between said leads and said lands and enclosing said soldering bridge means; and
cable connection means at a distal end of each cable for connecting the conductors of the cable to conductors of the electrical interconnection member for said signal transmission.

5,295,215
OPTICAL CABLE
Michael S. Fedoroff, and Johannes I. Greveling, both of Saskatoon, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 25, 1993, Ser. No. 38,319
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—109 **6 Claims**



1. An optical cable formed with a longitudinally extending passage and an optical fiber unit loosely located within and extending along the passage;
the optical fiber unit comprising at least one optical fiber loosely contained within a flexible tubular member which is capable of being split under internal pressure and a swellable water blocking means also disposed within the flexible tubular member, the swellable water blocking means operable upon swelling to pressurize and split the flexible tubular member;
and the passage containing a water blocking grease or gel material surrounding the optical fiber unit, the water blocking grease or gel material being pressurized upon swelling of the swellable water blocking means so as to be forced into the split flexible tubular member and into surrounding contact with the fiber.

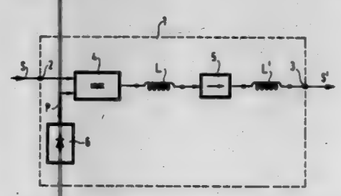
5,295,216
FIBER OPTIC PANEL PROVIDING AN ARBITRARY PATTERN OF ILLUMINATION AND METHOD OF MAKING SAME
Roger F. Halter, Santa Ana, Calif., assignor to Poly-Optical Products, Ltd., Irvine, Calif.
Filed Nov. 17, 1992, Ser. No. 977,484
Int. Cl.[5] G02B *6/00*; F21V *7/04*; G09F *13/18*; B65H *69/02*
U.S. Cl. 385—120 **10 Claims**

1. A method of making a fiber optic panel having a predetermined illumination pattern, comprising the steps:
forming at least two partial panels, each comprising:
a loosely spaced array of parallel fibers with a predetermined spacing between centers; and
a plurality of adjacent ramp sections, with the lengths of the fibers in each ramp section incremented by a predetermined increment $n\times\sqrt{L}\times n.n(d)$, in which L represents the length of the array in the direction of the fiber, d represents the nominal fiber diameter, and n represents the number of partial panels;
completely terminating each of the fibers at a respective termination point by removing any tail portion of the fiber upstream from the termination point; and
assembling the thus terminated fibers of the at least two partial panels into a complete panel with at least one fiber



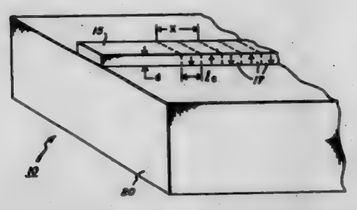
termination point of a first partial panel lying immediately adjacent the illuminated portions of two fibers of a second partial panel.
7. A fiber optic panel having a predetermined and uniform illumination pattern comprising a closely packed parallel array of fully terminated optical fibers of at least two different lengths in which a fully terminated shorter fiber is intermeshed between two long fibers wherein the array of optical fibers forms a pattern that resembles a regular mosaic of slightly tilted diamonds.

5,295,217
AMPLIFIER HAVING AN AMPLIFYING OPTICAL FIBER
Jean-Francois Marcerou, Courcouronnes, and Hervé Fevrier, Massy, both of France, assignors to Alcatel N. V., Amsterdam, Netherlands
Filed Jul. 1, 1992, Ser. No. 907,716
Claims priority, application France, Jul. 2, 1991, 91 08226
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—122 **3 Claims**



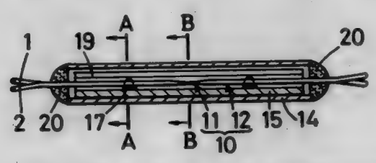
1. An optical amplifier comprising an amplifying optical fiber having a first end and a
second end and a length between said first and second ends substantially equal to an optimum length producing a maximum gain,
means for coupling an optical signal and a pumping signal to said first end, and
an optical isolator inserted in said amplifying optical fiber between said first and second ends, for transmitting said optical and pumping signals in a forward direction from said first end to said second end and for attenuating amplified spontaneous emissions travelling in a return direction opposite said forward direction,
wherein said optical isolator is inserted at about the halfway point of said optimum length to thereby maximize said maximum gain by minimizing the accumulated effects of said amplified spontaneous emissions.

5,295,218
FREQUENCY CONVERSION IN INORGANIC THIN FILM WAVEGUIDES BY QUASI-PHASE-MATCHING
John A. Agostinelli, Rochester; Mool C. Gupta, and Jose M. Mir, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 29, 1992, Ser. No. 953,926
Int. Cl.[5] G02B *6/10*; G02F *2/02*
U.S. Cl. 385—122 **22 Claims**



1. A device for producing an output signal having frequency f_{out} from at least one input signal having a frequency $f_{in\ n}$, wherein $f_{in\ n}$ is different from f_{out}, comprising: a crystalline substrate having an index of refraction, n_s; and a noncentrosymmetric optically nonlinear inorganic thin film having an index of refraction n_f; wherein n_f is greater than n_s, comprising an active region of characteristic length, L, attached to the substrate at an interface and crystallographically aligned in at least one dimension with the substrate for quasiphase-matched frequency converting the input and output signals.

5,295,219
SUPPORTING MEMBER FOR OPTICAL FIBER COUPLER
Kazuo Koya; Tsuneo Mori, and Yukio Fujimaki, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,087
Claims priority, application Japan, Nov. 6, 1991, 3-289603
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—134 **2 Claims**

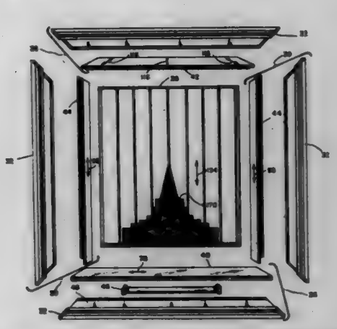


1. A support member for supporting an optical fiber coupler formed by arranging a plurality of optical glass fibers parallel to one another, then welding together and drawing a first portion of the plurality of optical glass fibers, the support member comprising:
a long and thin tubular quartz reinforcing material having a wall with an inner surface forming a channel, an external surface and a notch which communicates with the channel; and
a cylindrical metal case for receiving the reinforcing material, an inner wall of the case contacting the external surface;
the optical fiber coupler being inserted through the notch and positioned within the channel of the reinforcing material, a second portion of the optical fiber coupler which is not welded and drawn contacting the reinforcing material, and an area of the second portion being fixed to the reinforcing material with an adhesive.

5,295,220
PROCESS FOR THE PRODUCTION OF A THIN FILM OPTICAL WAVEGUIDE OF TiO_2
Martin Heming, Saulheim; Roland Hochhaus, Mainz; Jürgen Otto, Mainz, and Volker Paquet, Mainz, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany
Filed Nov. 16, 1992, Ser. No. 975,356
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1991, 4137606
Int. Cl.[5] G02B *6/00*; B05D *3/06*
U.S. Cl. 385—142 **15 Claims**

1. A process for the production of an optical waveguide comprising a planar inorganic substrate coated with a TiO_2 film, said process comprising coating said planar inorganic substrate with said TiO_2 film by a microwave plasma CVD process (PCVD), wherein the resultant optical waveguide exhibits an attenuation of <5 dB/cm.

5,295,221
COMPACT, LIGHT EFFICIENT, ILLUMINATED TRANSPARENCY FRAME
Thomas W. Roslan, Van Nuys, Calif., assignor to Light Quest Corporation, Malibu, Calif.
Filed Dec. 1, 1992, Ser. No. 985,166
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—147 **22 Claims**



1. A compact, light efficient, illuminated transparency frame for illuminating a depiction, comprising:
a plurality of panels provided with light guides, said panels including a bottom lens panel, a top panel, a front panel, a back panel, two side panels and a frame for holding and securing said panels into an enclosure having a parallelepiped configuration bounding an open interior;
a source of light positioned behind said bottom lens panel, and separated from the open interior thereby;
said light guides in said bottom lens panel being disposed to direct the light towards both said side panels;
said light guides in said side panels respectively being disposed to direct the light towards said top panel;
said light guides in said top panel being disposed to redirect the light towards said front and back panels;
said front panel including a clear cover for sandwiching the depiction to be illuminated between said cover and said front panel light guides;
said light guides in said back panel being disposed for receiving the light from said light source and from said top panel light guides; and
a light blocking arrangement in said back panel and cooperating with said light guides therein for conditioning the light directed on the depiction into one of full illumination and of any combination of highlighting, shadowing and dramatic illumination thereof.

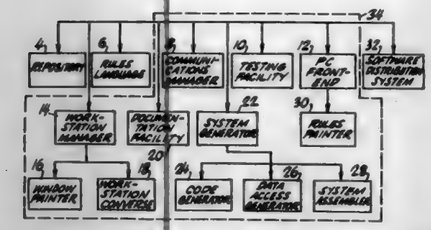
VOL 1160 ISS 3 MR 15 1994 UMI

5,295,222

COMPUTER-AIDED SOFTWARE ENGINEERING FACILITY

Vivek K. Wadhwa, Paramus, N.J.; Faraz Atnic, Brooklyn, N.Y.; Vincent P. Aubrun, New York, N.Y.; Leonid Erlikh, Brooklyn, N.Y.; Michael Fischer, Passaic, N.J.; Michael Fochler; Craig B. Hayman, both of New York, N.Y.; Daniel Hildebrand, Stamford, Conn.; James Hughes, Hartsdale, N.Y.; Jeffrey L. Lambert, East Brunswick, N.J.; Douglas E. Lee, White Plains, N.Y.; Nicholas R. Lim, London, England; Rajan S. Modi, New York, N.Y.; Richard W. Mosebach, Hicksville, N.Y.; Joel M. Moskowitz, New York, N.Y.; Tayo Olowu, New York, N.Y.; Elaine C. Power, New York, N.Y., and Norman Shing, New Hyde Park, N.Y., assignors to Seer Technologies, Inc., New York, N.Y.

Continuation of Ser. No. 444,060, Nov. 30, 1989, abandoned.
This application May 18, 1992, Ser. No. 885,924
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—1 **30 Claims**



1. A method of operating a data processor to generate and distribute a computer program in a computer system, the computer system comprising a plurality of hardware components coupled to form an interconnected computer network, the method comprising the steps of:

A. creating a set of entities, said set of entities comprising a subset of data entities and a subset of process entities;

B. creating a set of relationships, said set of relationships comprising a first predetermined subset and a second predetermined subset;

C. creating and storing a data entity model by performing the steps of

i. accepting as input to the data processor data relating to a task to be performed by the computer program, the input data characterized according to the sub-set of data entities, said data entities comprising pre-selected organizational categories;

ii. accepting as input to the data processor information to link the data entities according to the first pre-determined sub-set, said first predetermined subset comprising pre-selected identifying characteristics between data entities;

iii. operating the data processor to link the input data entities to each other according to the input first determined subset;

iv. operating the data processor to store the linked set of input data entities and input first predetermined subset in a storage area;

D. creating and storing a hierarchical process model by performing the steps of

i. accepting as input to the data processor information relating to a procedure for accomplishing the task to be performed by the computer program, the input information characterized according to the subset of process entities, said process entities comprising pre-selected process organizational categories;

ii. said input process entities forming a first part of the hierarchical process model, said hierarchical process model comprising a representation which divides the function of the computer program into discrete sub-tasks, said discrete sub-tasks comprising descriptions of the functions of pre-selected sections of the computer program and the processing requirements for implementing those functions, said descriptions forming said input process entities;

iii. accepting as input to the data processor information to link said input process entities to each other and to selected ones of the input data entities according to the second predetermined subset, said second predetermined subset forming a second part of said hierarchical process model and comprising descriptions to identify dependencies between the set of entities;

iv. operating the data processor to link the input set of entities identified by the input information of (D)(iii) according to the input second predetermined subset to create the hierarchical process module;

v. operating the data processor to store the linked entities, which form the hierarchical process model, in the storage area;

E. creating and storing a hardware configuration model by performing the steps of

i. accepting as input to the data processor information specifying connectivity data for the computer network and operational requirements for the operating environments of pre-selected ones of the hardware components;

ii. operating the data processor to store the connectivity data and operational requirement information in the storage area;

F. creating a link between the information contained in the hardware configuration model and the input process entities contained in the hierarchical process model, by performing the steps of

i. accepting as input to the data processor information to link the connectivity data and operational requirements information of the hardware components to pre-selected ones of the input process entities to specify an operating environment for execution of the preselected ones of the input process entities;

ii. operating the data processor to link the connectivity data and operational requirements information of the hardware components to the pre-selected ones of the input process entities;

G. creating and storing a logic module, the logic module containing a plurality of logic constructs, each of said plurality of logic constructs corresponding to a predetermined one of the input process entities, the creating and storing of said logic module accomplished by performing the steps of

i. accepting as input to the data processor information comprising logic constructs in a first programming language, each of said logic constructs comprising statements in the first computer programming language that will enable the computer hardware components to perform the discrete tasks specified in a pre-selected one of the input process entities, said logic constructs in the first programming language comprising statements that reference certain ones of the input entities;

ii. accepting as input to the data processor information that relates each logic construct to a pre-selected corresponding process entity, the logic construct being designed to perform the function specified by its corresponding process entity;

iii. operating the data processor to link each logic constant to a corresponding process entity according to the relating information;

iv. operating the data processor to store the linked logic constructs and the corresponding input which relates each logic construct to the corresponding process entity in the storage area;

H. operating the data processor to generate, for each logic construct, a computer program module, by utilizing the logic constructs, the corresponding input process entities, the linked set of entities and second predetermined subset the linked set of input data entities and first predetermined subset, and the input information that specifies the connectivity data of the hardware components linked to the preselected corresponding ones of the process entities, said computer program modules each comprising computer code that is supported by the operating environment of the hardware component linked to the corresponding pre-selected one of the process entities;

I. operating the data processor to scan the storage area to associate with each generated computer program module the linked ones of the hardware components; and

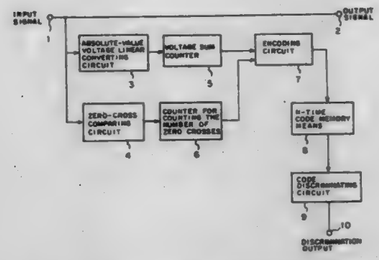
J. operating the data processor to distribute each generated computer program module to the linked ones of the hardware components.

5,295,223

VOICE/VOICE BAND DATA DISCRIMINATION APPARATUS

Kazuo Saito, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1991, Ser. No. 706,204
Claims priority, application Japan, Oct. 9, 1990, 2-271640
Int. Cl.[5] G10L *5/00*
U.S. Cl. 395—2.23 **8 Claims**



1. A voice/voice band data discrimination apparatus for discriminating voice and/or voice band data transmitted over a telephone line in combination of an audible sound, a signaling used with a sine wave of a single frequency or sine waves of a plurality of frequencies, and voice band data used with a modulated wave, said apparatus comprising:

zero-cross comparing means having a predetermined width of a dead zone represented by preselected signal magnitude values above and below the zero signal level with respect to the voltage of an input signal to said zero-cross comparing means and for comparing the width of the dead zone and the amplitude of the input signal so as to count only how many times the input signal crosses the width of the dead zone, as the number of the zero crosses;

zero-cross number counting means for counting the number of zero crosses in response to the output of said zero-cross comparing means;

absolute-value voltage linear converting circuit means for converting absolute-value voltages from said input signal;

absolute-value voltage sum counting means for counting the sum of absolute-value voltages of the input signal;

encoding means for producing codes based on values counted by said zero-cross number counting means and said absolute-value voltage sum counting means in response to the outputs of said zero-class number counting means and said absolute-value voltage sum counting means;

memory means for storing the output of said encoding means therein; and

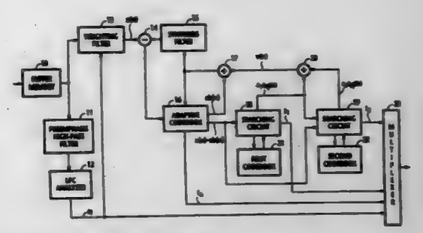
code discriminating means responsive to the output of said memory means for outputting a discrimination signal therefrom while observing the contents of the codes during a selected reference time period as set for measurement.

5,295,224

LINEAR PREDICTION SPEECH CODING WITH HIGH-FREQUENCY PREEMPHASIS

Makio Makamura, and Yoshihiro Unno, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,737
Claims priority, application Japan, Sep. 26, 1990, 2-256493
Int. Cl.[5] G10L *3/02*; H04B *1/66*
U.S. Cl. 315—2.32 **4 Claims**



1. A speech encoder comprising:

preemphasis means for receiving input digital speech samples of an underlying analog speech signal and emphasizing higher frequency components of the speech samples according to a predefined frequency response characteristic;

linear prediction analyzer means for receiving said preemphasized speech samples and deriving therefrom at frame intervals a spectral parameter representing a spectrum envelope of said preemphasized speech samples;

weighting means for weighting said input digital speech samples according to a characteristic inverse to the characteristic of said preemphasis means as a function of said spectral parameter;

a subtractor for detecting a difference between the weighted speech samples and synthesized speech samples;

codebook means for storing data representing fricatives;

search means for detecting optimum data from said codebook means as a function of a pitch parameter representing a pitch interval of said input speech samples so that said difference is reduced to a minimum and generating a codebook index signal representing said optimum data at frame intervals;

adaptive codebook means for deriving said pitch parameter at subframe intervals from said difference and said optimum data and generating a pitch parameter index signal at frame intervals;

speech synthesis means for deriving said synthesized speech samples from said pitch parameter and said optimum data; and

means for multiplexing said spectral parameter, said pitch parameter index signal and said codebook index signal into a single data stream.

5,295,225

NOISE SIGNAL PREDICTION SYSTEM

Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1991, Ser. No. 706,572
Claims priority, application Japan, May 28, 1990, 2-138051; May 28, 1990, 2-138052
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.35 **4 Claims**

1. A noise signal prediction system comprising:

a signal detection means for receiving a mixed signal consisting of a wanted signal and a background noise signal and for detecting the presence and absence of said wanted signal contained in said mixed signal;

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a noise level detecting means for detecting an actual noise level at each sampling cycle during the absence of said wanted signal;

a storing means for storing the noise levels for a predetermined number of past sampling cycles, said storing means receiving and storing said actual noise levels during the absence of said wanted signal;

a predicting means for predicting a noise level of a next sampling cycle based on said stored noise levels in said storing means;

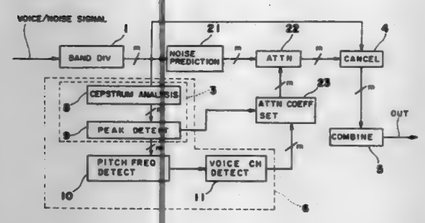
wherein said storing means stores said predicted noise levels during the presence of said wanted signal;

further comprising:

an attenuation means for attenuating said predicted noise level during the presence of said wanted signal, said attenuation means comprising:

an attenuation coefficient setting means for setting an attenuation coefficient to a predetermined value in response to the detection of the presence of said wanted signal; and

an attenuator connected to said prediction means for attenuating the predicted noise level in accordance with said attenuation coefficient;



said noise signal prediction system further comprising a band dividing means for dividing said mixed signal into a plurality of bands of frequency ranges and for supplying said divided signals through a plurality of channels;

said signal detection means comprising:

a cepstrum analysis means for cepstrum-analyzing the signal in each channel from said band dividing means;

a peak detection means for detecting a cepstrum peak in the cepstrum analysis output of said cepstrum analysis means, whereby a wanted signal is detected as being present when a cepstrum peak is greater than a first predetermined threshold; and

an average calculation means for calculating the average of the cepstrum analysis output of said cepstrum analysis means, whereby a wanted signal is detected as present when said average is greater than a second predetermined threshold; and

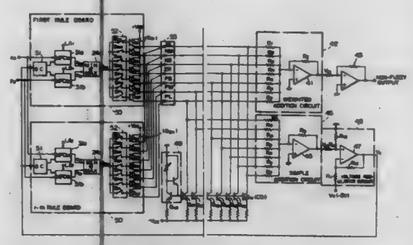
said noise signal prediction system further comprising a vowel/consonant detection means for detecting vowels based on the peak detection information from said peak detection means and for detecting consonants based on the average information from said average value calculation means.

5,295,226

FUZZY COMPUTER

Takeshi Yamakawa, Iizuka, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Division of Ser. No. 392,405, Aug. 11, 1989, Pat. No. 5,167,005.
This application Sep. 2, 1992, Ser. No. 939,007
Claims priority, application Japan, Aug. 19, 1988, 63-206007; Aug. 19, 1988, 63-206008; Aug. 19, 1988, 63-206009; May 24, 1989, 1-130648
Int. Cl.[5] G06F *7/70, 9/44*
U.S. Cl. 395—3 **12 Claims**



1. A fuzzy processor comprising:

at least one membership function circuit which provides output of signals which represent membership functions in response to input signals,

a plurality of implication circuits,

a plurality of switches connected to the output side of said membership function circuits in parallel to each other, said plurality of switches being provided in a number corresponding to one switch for each implication circuit, and

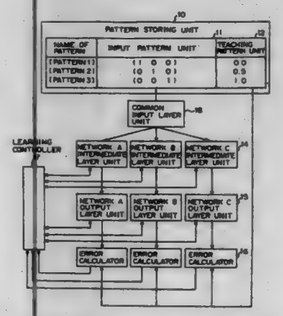
weighting circuits which apply weighting to each of the switches.

5,295,227

NEURAL NETWORK LEARNING SYSTEM

Masayuki Yokono, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 9, 1992, Ser. No. 911,067
Claims priority, application Japan, Jul. 9, 1991, 3-167901
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—11 **6 Claims**



1. A neural network learning system having a plurality of hierarchical neural networks each having an input layer, at least one intermediate layer and an output layer, said learning system comprising:

a common input layer unit commonly used by the hierarchical neural networks as the input layer;

at least one intermediate layer unit, coupled to said common input layer unit, to provide the at least one intermediate layer of the hierarchical neural networks;

output layer units coupled to said intermediate layer unit, each providing an output of the output layer of one of the hierarchical neural networks;

a learning control unit, coupled to said intermediate and output layer units, for controlling a learning process performed by the hierarchical neural networks;

a pattern storing unit, coupled to said common input layer unit, for storing at least one input pattern for said common input layer unit used during the learning process, and at least one teaching pattern corresponding to a desired output from a corresponding neural network in response to the at least one input pattern; and

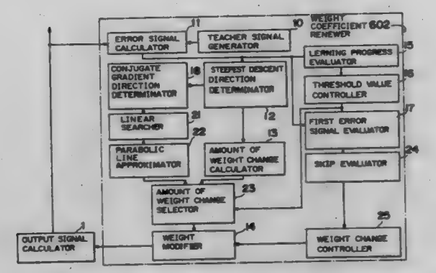
a plurality of error calculating units, each coupled to said pattern storing unit, a corresponding output layer unit and said learning control unit, for calculating an error between the output of each output layer unit and the teaching pattern corresponding thereto, and for outputting the error to said learning control unit.

5,295,228

LEARNING MACHINE WITH A HIERARCHIAL STRUCTURE WITHOUT MUTUAL CONNECTIONS WITHIN LEVELS THEREOF

Toshiyuki Koda, Takatsuki; Yasuharu Shimeki, Suita; Shigeo Sakaue, Takarazuka, and Hiroshi Yamamoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 4, 1991, Ser. No. 754,517
Claims priority, application Japan, Sep. 4, 1990, 2-234287
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—23 **6 Claims**



6. A learning machine having an output signal calculation means comprising plural multiple-input single-output signal processors network connected in a hierarchical structure without mutual connections within levels in such a manner that signals propagate only to a higher level, and a weight coefficient renewing means which renews values of weight coefficients of the output signal calculation means based on output signals obtained by the output signal calculation means;

each multiple-input single-output signal processor comprising a memory to store plural weight coefficients, an input section for inputting plural data, multiplying means to weight the input data from the input section by the weight coefficients stored in the memory, an adding means to add the plural data weighted by the multiplying means, and a threshold value processor to limit an output of the adding means to a value within a predetermined range; and

the weight coefficient renewing means comprising a teacher signal generator to produce as a teacher signal a desirable value for the output signal of the output signal calculation means, an error signal calculation means to obtain an error between the output signal and the teacher signal, a steepest descent direction determination means to obtain a direction of steepest descent from an output of the error signal calculation means;

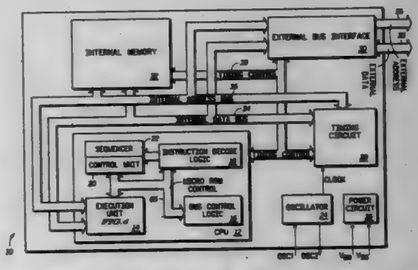
the weight coefficient renewing means further comprising an amount of weight change calculation means which calculates an amount . of change in the weight coefficient from the direction of steepest descent, a conjugate gradient direction determination means to obtain a direction of the conjugate gradient from the direction of steepest descent, a linear search means which outputs amounts of weight change to plural learning rates for the direction of the conjugate gradient, a parabolic line approximation means which determines an amount of weight change by parabolic line approximation method from the plural weight change amounts output from the linear search means, a learning progress evaluation means which evaluates progress of learning from the error output by the error signal calculation means, a threshold value control means which gradually reduces a threshold value as learning progresses according to an evaluation result of the learning progress evaluation means, a first error signal evaluation means which evaluates whether the output of the error signal calculation means is less than the threshold value, a skip evaluation means which counts outputs of the first error signal evaluation means and outputs a skip signal when all output signals are less than the threshold value, an amount of weight change selection means which selects either an output of the amount of weight change calculation means or an output of the parabolic line approximation means according to the level of the threshold value, a weight modification means which changes the value of the weight coefficient stored in the memory according to an amount of weight change selected by the amount of weight change selection means, and a weight change control means which causes the weight modification means to skip a weight change operation according to the skip signal.

5,295,229

CIRCUIT AND METHOD FOR DETERMINING MEMBERSHIP IN A SET DURING A FUZZY LOGIC OPERATION

J. Greg Viot, Austin; James M. Sibigtroth, Round Rock, and James L. Broseghini, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 17, 1992, Ser. No. 899,975
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—51 **17 Claims**



1. A method for performing a fuzzy logic operation in a data processing system, the fuzzy logic operation determining membership of an input value in a predetermined membership set which is defined by a plurality of boundary values, the method comprising the steps of:

inputting a membership evaluation instruction to a decoder in the data processing system, initiating execution of the

fuzzy logic operation in the data procesisng system based on the membership evaluation instruction being;

decoding the membership evaluation instruction to provide a plurality of control signals, the membership evaluation instruction being decoded by the decoder;

subtracting a first one of the plurality of boundary values from the input value to produce a first delta value in response to a first one of the plurality of control signals, an arithmetic logic means being coupled to the decoder for receiving the first one of the plurality of control signals, the arithmetic logic means being used to substract the first one of the plurality of boundary values from the input value;

concurrently substracting the input value from a second one of the plurality of boundary values to produce a second delta value in response to a second one of the plurality of control signals, the arithmetic logic means being coupled to the decoder for receiving the second one of the plurality of control signals, the arithmetic logic means being used to subtract the input value from the second one of the plurality of boundary values;

multiplying the first delta value and a third one of the plurality of boundary values to provide a first result in response to a third one of the plurality of control signals, the arithmetic logic means being coupled to the decoder for receiving the third one of the plurality of control signals, the arithmetic logic means multiplying the first delta value and the third one of the plurality of boundary values;

concurrently multiplying the second delta value and a fourth one of the plurality of boundary values to provide a second result in response to a fourth one of the plurality of control signals, the arithmetic logic means being coupled to the decoder for receiving the fourth one of the plurality of control signals, the arithmetic logic means multiplying the second delta value and the fourth one of the plurality of boundary values; and

inputting a degree of membership signal using a select logic means, the degree of membership signal indicating that the input value is not included in the predetermined membership set when one of the first delta value and the second delta value is less than zero, the degree of membership signal being equal to a minimum value of one of the first result, the second result, and a fifth one of the plurality of boundary values if neither the first delta value nor the second delta value is less than zero, the select logic means being coupled to the arithmetic logic means for receiving the first delta value, the second delta value, the first result, and the second result.

5,295,230

KNOWLEDGE REPRESENTATION FOR EXPERT SYSTEM

Ching Y. Kung, Fort Lauderdale, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.

Division of Ser. No. 5,159,685, Oct. 27, 1992. This application Dec. 4, 1991, Ser. No. 802,113
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—75 **16 Claims**

1. A method for entering expert information into an expert system residing on a computer, the method comprising in combination the steps of:

said expert system providing to a user a template for entering a plurality of attributes for a hypothesis tree node;

said user defining said hypothesis tree node by entering said attributes of said hypothesis tree node into said template, said attributes including a first identifier for identifying said hypothesis tree node and a second identifier for identifying a second node connected to said hypothesis tree node by a branch of a hypothesis tree;

said expert system automatically adding said first identifier to a list of defined nodes, each of said defined nodes having said attributes defined therefor;

said expert system automatically determining whether or not said second identifier is on said list of defined nodes;

said expert system automatically determining whether or not said second identifier is not on a list of undefined nodes if said second identifier is not on said list of defined nodes, each of said unidentified nodes not having said attributed defined therefor;

said expert system automatically adding said second identifier to said list of undefined nodes if said second identifier is not already on said list of undefined nodes;

said expert system automatically determining whether or not said first identifier is on said list of undefined nodes;

if said first identifier is on said list of undefined nodes, removing said first identifier from said list of undefined nodes; and

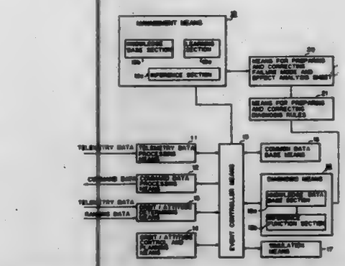
said expert system displaying said list of undefined nodes and said list of defined nodes on a screen of said computer.

5,295,231

OPERATIONS CONTROL APPARATUS

Toru Ogino, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,220
Claims priority, application Japan, Feb. 22, 1990, 2-41472
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—77 **5 Claims**



1. An operations control apparatus including a data processing unit for processing data for operations control of an object, said data processing unit including an event controller means, a common data base means and a simulation means, and a data diagnosis unit connected to said processing unit, for diagnosing said data for operations control, said data diagnosis unit including a diagnosis means, said operations control apparatus further comprising:

a management means for checking the processing order of the respective means in response to the state of said object which is varying with respect to time, to prepare the optimum processing order of the respective means, and for instructing the same to said event controller means;

a failure mode and effect analysis sheet preparing and correcting means for predictively analyzing a failure mode and effect of said object, and for preparing and correcting a sheet representing the results of analysis; and

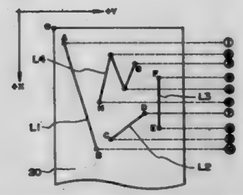
a means for preparing and correcting diagnosis rules in accordance with said sheet of the analysis results.

5,295,232

VECTOR-SORT DRAFTING METHOD FOR AN AUTOMATIC DRAFTING MACHINE

Isao Karasawa, Tokyo, Japan, assignor to Mutoh Industries, Ltd., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,123
Claims priority, application Japan, Nov. 16, 1990, 2-310629
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—105 **5 Claims**



1. In an automatic drafting machine comprising a line drawing head operative to move along X- and Y- axis directions relative to a paper sheet, and a writing instrument held by the line drawing head and operative to draft a pattern on the paper sheet,

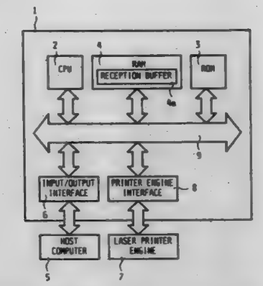
a vector sort drafting method comprising the steps of sorting vector segment data; and drafting in sequence starting from a terminal point of a vector segment closest to the origin along the X-axis direction.

5,295,233

CONTROLLER FOR PRINTING APPARATUS

Yuichi Ota, Anjo, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 18, 1992, Ser. No. 993,027
Claims priority, application Japan, Dec. 26, 1991, 3-358984
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—115 **9 Claims**



1. A controller for a printing apparatus, comprising:

an input/output interface connected to at least one host computer;

a printer engine interface connected to at least one print engine;

first memory means for storing a plurality of sets of control codes, each set of control codes corresponding to one of a plurality of operation modes;

second memory means for storing printing information input from the at least one host computer and including a storage means having a first capacity storing a variable amount of printing information, a current quantity of printing information being stored in the storage means;

control code detection means for detecting control codes included in the current quantity of printing information stored in the storage means;

operation mode determining means for determining an operation mode according to the one of the plurality of sets of control codes which is most compatible with the control codes detected by the detecting means; and

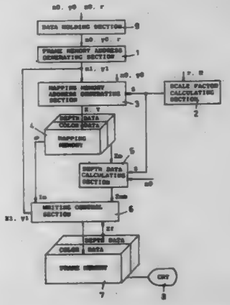
adding means for adding a further quantity of printing information to the current quantity of printing information stored in the storage means only when said operation mode detecting means fails to determine exactly one operation mode.

5,295,234

APPARATUS FOR DISPLAYING A THREE DIMENSIONAL OBJECT WHICH APPEARS SUBSTANTIALLY THE SAME IN DIFFERENT DISPLAY DIRECTIONS BY MODIFYING STORED IMAGE DATA BY A SCALE FACTOR

Koichi Ishida, Otsu, and Nobutake Watanabe, Matsudo, both of Japan, assignors to Daikin Industries, Ltd., Japan

Continuation of Ser. No. 458,299, Dec. 28, 1989, abandoned. This application Jan. 15, 1993, Ser. No. 5,172
Claims priority, application Japan, Dec. 29, 1988, 331480
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—121 **1 Claim**



1. An apparatus for displaying three dimensional objects on a display screen, comprising:

frame memory means for holding destination image data to be displayed, the destination image data including destination color data and destination depth data;

mapping memory means for holding source image data on a pixel basis, the source image data representing a three dimensional object which is not substantially influenced by display direction and including source color data and source depth data;

data holding means for storing first data which designate an area in said frame memory means, the area in said frame memory means being an area in which the source image data are to be displayed;

first address generation means for generating first addresses which belong to the area, based upon the first data;

scale factor obtaining means for obtaining a scale factor based upon the first data and upon source image data size;

second address generation means for generating second addresses based upon the first address, the first data and

the scale factor, the second address being applied to said mapping memory means as a reading address;

depth data generation means for generating first depth data based upon the first data, the source depth data and the scale factor; and

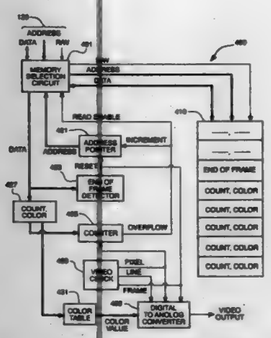
write control means for reading the source color data, for performing hidden surface removal based upon the first depth data and the destination depth data, and for writing the source color data in said frame memory means based upon the first address, depending upon hidden surface removal performance.

5,295,235

POLYGON ENGINE FOR UPDATING COMPUTER GRAPHIC DISPLAY EMPLOYING COMPRESSED BIT MAP DATA

Steve Newman, 1520 Sand Hill Rd. #210, Palo Alto, Calif. 94304

Filed Feb. 14, 1992, Ser. No. 835,548
Int. Cl.[5] G06F *5/01*
U.S. Cl. 395—133 **13 Claims**



1. A method of rendering a plurality of objects which form a computer graphic display into a frame buffer having a plurality of scan lines comprising the steps of:

specifying the objects into a list for the next frame of the display, each object comprising a plurality of pixels, each pixel of the object having an identical color;

converting each object of said list of objects into a list of spans, each span corresponding to a horizontal line of the display for the next frame, each span defining a group of horizontally adjacent pixels of a corresponding single object in terms of horizontal offset, pixel count, depth, and color;

merging said list of spans for all objects of said list of objects into a single master list of spans, whereby each span for each object for a particular horizontal line appears in said master list of spans for that horizontal line;

resolving the depth of said spans in said master list by choosing the color for each span of overlap from the overlapping span having the least depth value;

converting said master list of spans into a set of run-length-encoded bit map lines for the next frame, each run-length-encoded bit map line defining all sets of horizontally adjacent pixels having the same color, each set including the number of pixels and the color for that set; and

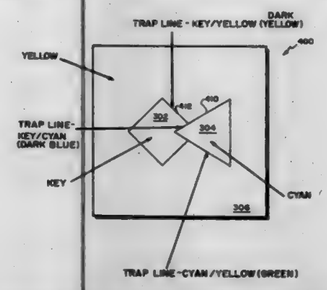
updating the frame buffer by writing each run-length-encoded bit map line into a corresponding scan line of the plurality of scan lines in the frame buffer.

5,295,236

APPLYING TRAPS TO A PRINTED PAGE SPECIFIED IN A PAGE DESCRIPTION LANGUAGE FORMAT

Per H. Bjorge, Hollis; Alan Blannin, and Keith R. Deutsch, both of Amherst, all of N.H., assignors to Aldus Corporation, Seattle, Wash.

Filed Mar. 4, 1991, Ser. No. 664,064
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—134 **18 Claims**



1. A process for electronically trapping a printed color page including a plurality of color regions, the color page being expressed in a page description language format, comprising the steps of:

(a) reading an input data file which represents the color page expressed in the page description language format;

(b) translating the page description language instructions comprising the input data file into a format suitable for detection and analysis of color edges between color regions;

(c) analyzing the translated input data file to identify color edges between the color regions, and creating, according to a set of trapping rules, a set of traps for one or more of the identified color edges; and

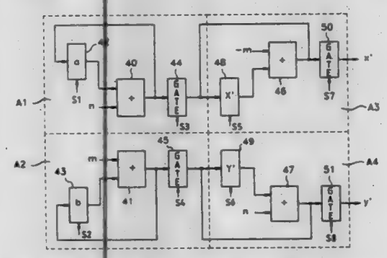
(d) producing a trapped output file including the traps, with the traps being expressed in the page description language format.

5,295,237

IMAGE ROTATION METHOD AND IMAGE ROTATION PROCESSING APPARATUS

You-keun Park, Seoul, Rep. of Koren, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Aug. 5, 1991, Ser. No. 740,137
Claims priority, application Rep. of Korea, Dec. 31, 1990, 90-22757
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—137 **6 Claims**



6. An image rotation processing circuit which rotates on M×N image through a rotation angle θ, said circuit comprising:

a first adder having first and second inputs and an output;

a first register connected to the output of said adder which stores the output from said first adder;

means for supplying a cosine value (n) of the rotation angle θ as the first input to said first adder;

feedback means interconnecting said first register and said adder for supplying the contents of said first register as the second input to said first adder;

a first transmitting gate connected to said first adder which transmits the output of said first adder;

a second adder having first and second inputs and an output;

means for supplying a negative sine value (−m) of the rotation angle θ to the adder as the first input;

a second register connected to said first transmission gate and the output of said second adder;

feedback means interconnecting said second adder and said second register for supplying the contents of said second register as the second input to said second adder;

a second transmitting gate connected to said second adder which transmits the output of said second adder responsive to a control signal to produce a rotational coordinate x';

a third adder having first and second inputs and an output;

a third register connected to the output of said adder which stores the output from said third adder;

means for supplying a sine value (m) of the rotation angle θ as the first input to said third adder;

feedback means interconnecting said third register and said third adder for supplying the contents of said third register as the second input to said third adder;

a third transmitting gate connected to said third adder which transmits the output of said third adder;

a fourth adder having first and second inputs and an output;

means for supplying the negative sine value (−m) to the adder as the first input;

a fourth register connected to said first transmission gate and the output of said fourth adder;

feedback means interconnecting said fourth adder and said fourth register for supplying the contents of said fourth register as the second input to said fourth adder;

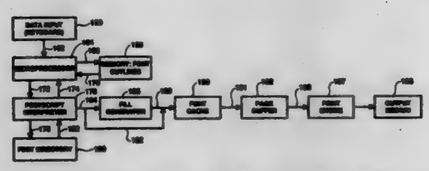
a fourth transmitting gate connected to said fourth adder which transmits the output of said fourth adder responsive to a second control signal to produce a rotational coordinate y'.

5,295,238

SYSTEM, METHOD, AND FONT FOR PRINTING CURSIVE CHARACTER STRINGS

Nathan A. Dickson, Powell, Ohio, assignor to Highlights for Children, Inc., Columbus, Ohio

Filed Apr. 30, 1991, Ser. No. 693,385
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—150 **22 Claims**



1. A system for forming a visually perceptible context sensitive cursively concatinated sequence of font characters from a string of input characters, comprising:

an electronically accessible computer employable memory, including:

a first memory component retaining definitions for printed formation of base letter forms,

a second memory component retaining definitions for printed formation of connector forms,

a third memory component retaining a first family of character groups associated with respect to common said connector forms in adjacency with and to the left of another character; and

a fourth memory component retaining a second family of character groups associated with respect to common said connector forms in adjacency with and to the right of another character;

an input providing a sequence of input signals identifying a said string of input characters;

a processor responsive to said input signals for accessing said third and fourth memory components to locate data representing the presence of mutually adjacent ones of said input characters within said first and second families of character groups, for accessing said second memory component to derive a said definition of a said connector form corresponding with said located data, for accessing said first memory component to derive a definition of a said base letter form for each of said mutually adjacent ones of said input characters, and for deriving output signals corresponding with a cursively concatenated sequence of said derived definitions of said base letter forms and said derived definition of said connector form; and

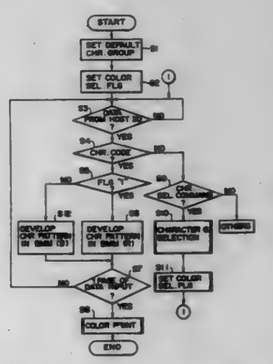
an output responsive to said output signals for providing a cursively concatenated visual representation corresponding with said mutually adjacent ones of said input characters.

5,295,239

PRINTING COLOR CONTROL IN COLOR PRINTING APPARATUS

Yutaka Murakami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 666,438, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 264,895, Oct. 31, 1988, abandoned. This application Oct. 23, 1992, Ser. No. 965,573
Claims priority, application Japan, Nov. 5, 1987, 62-278307
Int. Cl.[5] G06F *15/66*
U.S. Cl. 395—151 **24 Claims**



1. A color printing apparatus comprising:

first input means for inputting a plurality of pairs of color information and group information;

memory means for storing the plurality of pairs of color information and group information input by said first input means;

second input means for inputting character data and group discrimination data;

character pattern memory means for storing character patterns corresponding to character data input by said second input means;

selection means for selecting one of the plurality of pairs of color information and group information stored in said

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memory means in response to the input group discrimination data; and

color data setting means for setting color data for the character pattern stored in said character pattern memory means specified by the input group discrimination data, wherein the color data is set in response to the color information included in the one pair selected by said selection means.

5,295,240

APPARATUS AND METHOD FOR GENERATING CHARACTER PATTERN DATA

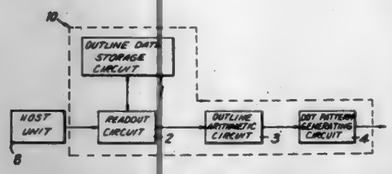
Kazuhiro Kajimoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 491,387, Mar. 9, 1990, abandoned. This application Jun. 23, 1993, Ser. No. 80,147

Claims priority, application Japan, Mar. 10, 1989, 1-58120

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—151 **18 Claims**



1. An apparatus for generating different sizes of a dot pattern having an outline being generated based on a code signal representing a selected dot pattern and corresponding multiplying factor, comprising:

outline data storage means for storing outline data representing the outline of at least one dot pattern and correction data, the outline having a predetermined size and including at least line segments or subcurves;

readout means for receiving the code signal and selecting from the outline data storage means outline data and correction data in response to the code signal;

arithmetic means for computing display coordinates for the selected dot pattern and multiplying factor, wherein the multiplying factor is used in the computations to determine calculated display coordinates from selected outline data, the arithmetic means modifying the calculated display coordinates in accordance with a value represented by the selected correction data to correct errors within the outline in spacing between line segments or subcurves when the multiplying factor is less than one, the arithmetic means producing display coordinates for the selected size of the selected dot pattern in integer form when the magnification factor is less than one, said selected outline data and selected correction data being read out by the readout means from the outline data storage means; and

dot pattern generating means for producing the selected dot pattern represented by the code signal and defining a region enclosed therein and by filling in with dots the region enclosed by the corrected calculated display coordinates.

5,295,241

METHOD AND APPARATUS FOR LOCAL FUNCTION KEY CONTROL OF SCROLLING ON CERTAIN COMPUTER WORKSTATIONS

Stephen T. Eagen; Harvey G. Kiel, both of Rochester; Nelson A. Martel, Jr., Stewartville; William C. Rapp, and Schuman M. Shao, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,032

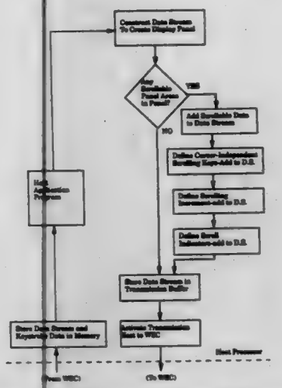
Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—157 **4 Claims**

1. In a computer system having a host processor with means for executing applications programs, and a plurality of workstations connected to said host processor through a workstation control interface, each of said workstations having means for activating cursor-independent scrolling, the improvement in distributive processing of cursor-independent scrolling comprising:

a) transmitting means for transmitting a data stream from said host processor to said workstation control interface, said data stream including scrollable panel data, definition of cursor-independent scrolling keys, definition of scrolling increment and definition of scroll indicators;

b) constructing means in said workstation control interface for constructing a scrollable data panel, said constructing



means utilizing said definition of scroll indicators, to calculate and transmit the physical position of said data panel from said workstation control interface to said workstation;

c) receiving means in said workstation control interface for receiving from said workstation said means for activating cursor independent scrolling; and

d) responding means responsive to said means for activating cursor independent scrolling, said responding means utilizing said definition of cursor-independent scrolling keys and said definition of scrolling increment to create a new data panel and to transmit said new data panel to said workstation.

5,295,242

APPARATUS AND METHOD FOR VIEWING RELATIONSHIPS IN A FACTORY MANAGEMENT SYSTEM

Rajesh U. Mashruwala; Richard L. Hess, both of Palo Alto, and William L. Verplank, Menlo Park, all of Calif., assignors to Consilium, Inc., Mountain View, Calif.

Filed Nov. 2, 1990, Ser. No. 608,310

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 **8 Claims**

1. A method of displaying relationships of objects on a computer system display in a factory floor management system comprising a first class of objects which is related to a second class of objects in said factory floor management system, comprising the following steps:

a. on a first portion of said computer system display, displaying a first icon, the first icon representing said first class of factory objects, said first icon being displayed in a state available for selection;

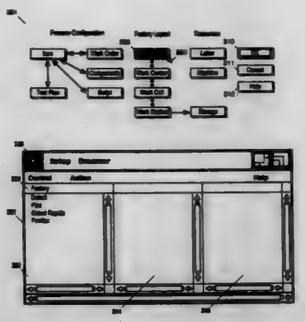
b. on said first portion of said computer system display, displaying a second icon, the second icon representing said second class of factory objects, said second icon being displayed in a state available for selection;

c. displaying a first connector connecting the first icon and the second icon, the first connector representing a relationship between the first class and the second class of factory objects;

d. selecting the first icon;

e. on a second portion of said computer system display, displaying a first list of names of all objects comprising the first class of factory objects;

f. selecting a first name from the first list of names;



g. on said second portion of said computer system display, displaying a second list of names of all objects in the second class of factory objects associated with the object from the first class having the first name; and

h. re displaying said first icon and second icons on the first portion of said computer system display in states indicating whether they are available for selection according to said relationship between said first and said second classes of factory objects.

5,295,243

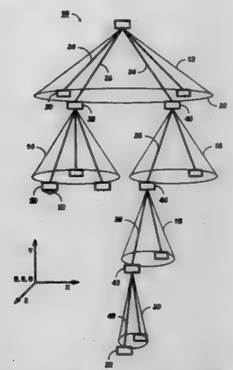
DISPLAY OF HIERARCHICAL THREE-DIMENSIONAL STRUCTURES WITH ROTATING SUBSTRUCTURES

George G. Robertson; Jock Mackinlay, both of Palo Alto, and Stuart K. Card, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 795,238, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 454,010, Dec. 29, 1989, abandoned. This application May 21, 1993, Ser. No. 66,311

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—160 **22 Claims**



1. A method of operating a processor connected for providing image data to an image output device that includes a display, the image output device presenting images on the display in response to the image data, the processor further being connected for accessing a first level data structure, the method comprising steps of:

providing first image data so that the image output device presents a first image, the first image including a first hierarchical structure that is perceptible as three-dimensional; the first structure including a first plurality of nodes and a first plurality of links, each of the first plurality of links being perceptible as connecting one of the first plurality of nodes to another of the first plurality of nodes, the first structure further including a plurality of levels, a subset of the first plurality of nodes and the first plurality of links forming a first cone-like substructure at a first one of the levels of the first structure, the step of providing the first image data comprising a substep of determining a position of the first cone-like substructure and including in the first level data structure position data indicating the position of the first cone-like substructure; and

providing second image data so that the image output device presents a second image, the second image including a second hierarchical structure that is perceptible as three-dimensional and that is perceptible different than the first structure; the second structure including a second plurality of nodes and a second plurality of links, each of the second plurality of links being perceptible as connecting one of the second plurality of nodes to another of the second plurality of nodes; the second structure further including a plurality of levels, each of the second plurality of nodes being perceptible as a continuation of a respective one of the first plurality of nodes, each of the second plurality of links being perceptible as a continuation of a respective one of the first plurality of links, so that the levels of the second structure are perceptible as continuations of the levels of the first structure; a subset of the second plurality of nodes and the second plurality of links forming a second cone-like substructure, the step of providing the second image data comprising the substep of accessing the first level data structure and determining the position of the second cone-like substructure using the position data.

5,295,244

NETWORK MANAGEMENT SYSTEM USING INTERCONNECTED HIERARCHIES TO REPRESENT DIFFERENT NETWORK DIMENSIONS IN MULTIPLE DISPLAY VIEWS

Roger H. Dev, Durham, N.H.; Dale H. Emery, Berwick, Me.; Eric S. Rustici, Londonderry, N.H.; Walter P. Scott, Salem, N.H., and Dwayne S. Wiggin, Rochester, N.H., assignors to Cabletron Systems, Inc., Rochester, N.H.

Continuation of Ser. No. 790,408, Nov. 7, 1991, abandoned, which is a division of Ser. No. 583,509, Sep. 17, 1990. This application Aug. 3, 1993, Ser. No. 101,777

Int. Cl.[5] G06F *15/20, 3/14*

U.S. Cl. 395—161 **14 Claims**

10. A system for displaying information relating to a computer network, comprising:

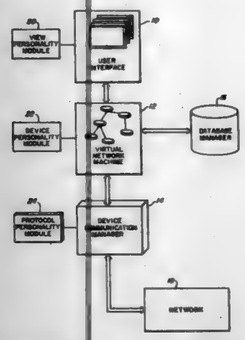
a digital computer, a video display unit connected to the computer and storage means connected to the computer;

means for maintaining and updating information relating to a computer network in the storage means;

means for generating on said video display unit a first set of user selectable views showing selected portions of said information relating to said computer network, said first set of views comprising at least a first view and one or more second views selectable from said first view, said first and second views having a first hierarchical relationship representative of a first dimension of the computer network and being displayed at different times on a video display unit;

means for generating on said video display unit a second set of user selectable views showing selected portions of said information relating to said computer network, said sec-

ond set of views comprising at least a third view and one or more fourth views selectable from said third view, said third and fourth views having a second hierarchical relationship representative of a second dimension of the computer network and being displayed at different times on said video display unit; and



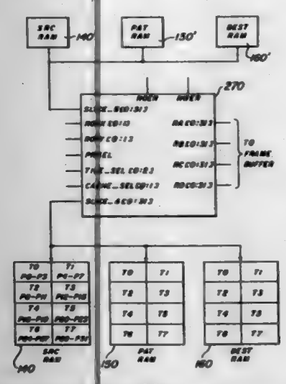
means for traversing between the views of said first set of views and the views of said second set of views in response to user selections, said first set of views and said second set of views having at least one common element such that a user can traverse upwardly or downwardly through said first set of views from said common element and can traverse upwardly or downwardly through said second set of views from said common element.

5,295,245

DATA ROTATOR FOR ROTATING PIXEL DATA IN THREE DIMENSIONS

Byron A. Alcorn, Fort Collins; Robert W. Cherry, Loveland; Mark D. Coleman, and Brian D. Rauchfuss, both of Ft. Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1991, Ser. No. 669,801
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **21 Claims**



1. A memory means, comprising:
(a) first input means for reading a first input data set;
(b) second input means for reading a second input data set;
(c) first rotating means, coupled to said first and second input means, for receiving a first control signal and rotating in a first direction the connects of at least one of said first and second input means in response to said first control signal; and
(d) second rotating means, coupled to said first and second input means, for receiving a second control signal and rotating in a second direction the contents of said first and second input means in response to said second control signal, the contents of said first input means, after being rotated, defining a first output data set, and the contents of said second input means, after being rotated, defining a second output data set;
wherein said first input means is adapted to read data stored in a first tile T_A, said second input means is adapted to read data stored in a second tile T_B, each tile representing at least one pixel, said first tile T_A comprises data representing four pixels $P0_A$, $P1_A$, $P2_A$, $P3_A$, and said second tile T_B comprises data representing four pixels PO_B, $P1_B$, $P2_B$, $P3_B$; and
wherein said first and second rotating means are adapted to rotate said first output data set and second output data set in response to said first control signal and said second control signal in accordance with the following table, wherein RA, RB, ROTX, and ROTY refer to said first output data set, second output data set, first control signal, and second control signal, respectively:

ROTX	ROTY	RA	RB
RX0	RY0	$P0_A$ $P1_A$ $P2_A$ $P3_A$	$P0_B$ $P1_B$ $P2_B$ $P3_B$
RX1	RY0	$P1_A$ $P2_A$ $P3_A$ $P0_A$	$P1_B$ $P2_B$ $P3_B$ $P0_B$
RX2	RY0	$P2_A$ $P3_A$ $P0_A$ $P1_A$	$P2_B$ $P3_B$ $P0_B$ $P1_B$
RX3	RY0	$P3_A$ $P0_A$ $P1_A$ $P2_A$	$P3_B$ $P0_B$ $P1_B$ $P2_B$
RX0	RY1	$P0_B$ $P1_B$ $P2_B$ $P3_B$	$P0_A$ $P1_A$ $P2_A$ $P3_A$
RX1	RY1	$P1_B$ $P2_B$ $P3_B$ $P0_B$	$P1_A$ $P2_A$ $P3_A$ $P0_A$
RX2	RY1	$P2_B$ $P3_B$ $P0_B$ $P1_B$	$P2_A$ $P3_A$ $P0_A$ $P1_A$
RX3	RY1	$P3_B$ $P0_B$ $P1_B$ $P2_B$	$P3_A$ $P0_A$ $P1_A$ $P2_A$

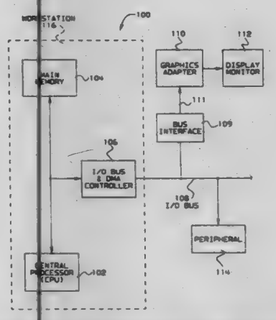
wherein RX0, RX1, RX2 and RX3 represents four different states of ROTX, and RYO and TY1 represent two different states of ROTY.

5,295,246

BIDIRECTIONAL FIFO BUFFER FOR INTERFACING BETWEEN TWO BUSES OF A MULTITASKING SYSTEM

Gary Bischoff; Paul J. Milot, both of Saugerties; Marc Segre, Rhinebeck; Jeffrey S. Spencer, Lake Katrine, and Leslie R. Wilson, Clinton Corners, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 621,128, Nov. 30, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,075
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—250 **14 Claims**



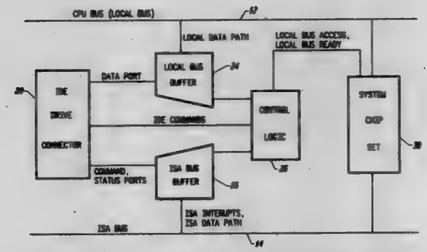
1. Apparatus for controlling a FIFO buffer to transfer data in a selected direction between a first line and a second line, said buffer having a first transfer mode in which data is transferred from said first line to said second line and a second transfer mode in which data is transferred from said second line to said first line, comprising:
means for storing a buffer count indicating the amount of data in said buffer, said count ranging between a minimum count and a maximum count;
means for initializing said buffer count in accordance with said transfer mode, said buffer count being initialized at said minimum count in said first transfer mode and being initialized at said maximum count in said second transfer mode;
means for incrementing said count in either of said modes in response to the transfer of data between said first line and said buffer; and
means for decrementing said count in either of said modes in response to the transfer of data between said second line and said buffer.

5,295,247

LOCAL IDE (INTEGRATED DRIVE ELECTRONICS) BUS ARCHITECTURE

Wen L. Chang, Fremont; Justin S. Wang, Saratoga, and Dean Chang, Los Altos Hills, all of Calif., assignors to Micronics Computers, Inc., Fremont, Calif.

Filed Apr. 17, 1992, Ser. No. 870,623
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **4 Claims**



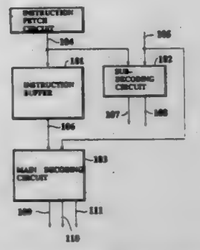
1. A local bus integrated drive electronics (IDE) architecture comprising:
an IDE interface, said IDE interface including a data port with an address for transferring data, a first command port with addresses for transferring a first set of commands, and a second command port for receiving a second set of commands;
a hard disk drive coupled to said IDE interface;
control means coupled to said second command port;
a CPU coupled to a local bus, said local bus for transmitting data and commands operating at a first clock rate;
an industry standard architecture (ISA) bus for transmitting data and commands operating at a second clock rate;
means for interfacing said ISA bus to said local bus of said CPU;
means for coupling said data port of said IDE interface to said local bus of said CPU;
means for coupling said first command port of said IDE interface to said ISA bus;
means for transferring said data and said second set of commands between said hard disk drive and said CPU in proportion to said first clock rate; and
means for transferring said first set of commands between said CPU and said hard disk drive in proportion to said second clock rate.

5,295,248

BRANCH CONTROL CIRCUIT

Takashi Miyamori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 15, 1990, Ser. No. 597,319
Claims priority, application Japan, Oct. 16, 1989, 1-266158
Int. Cl.[5] G06F *9/22, 9/42*
U.S. Cl. 395—375 **4 Claims**



1. A branch prediction control circuit comprising:
an instruction fetch circuit for holding a fetch address and fetching an instruction together with branch information about branch prediction;
a sub-decoding circuit connected to said instruction fetch circuit for receiving the fetch address and the instruction corresponding to the fetch address together with the branch information, said sub-decoding circuit comprising a first adder for generating a branch address by adding a displacement included in the instruction to said fetch address and a branch instruction decoder for outputting a first branch address valid signal indicative that said branch address is valid if the instruction is a short format relative branch instruction and predicted to be taken;
an instruction buffer for holding the fetch address and fetching the instruction together with the branch information at the same time as said sub-decoding circuit; and
a main decoding circuit comprising a decoder for receiving the instruction together with the branch information and decoding the instruction in order to enable execution of the instruction, a first selector for selecting a field corresponding to the displacement of the instruction, a second adder for generating a branch address by adding the displacement outputted from said selector to the address of the instruction, said main decoding circuit outputting a second branch address valid signal indicative that the branch address is valid if the instruction is a general format relative branch instruction and predicted to be taken.

5,295,249

COMPOUNDING PREPROCESSOR FOR CACHE FOR IDENTIFYING MULTIPLE INSTRUCTIONS WHICH MAY BE EXECUTED IN PARALLEL

Bartholomew Blaner, Newark Valley, and Stamatis Vassiliadis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 519,384, May 4, 1990, abandoned, and a continuation-in-part of Ser. No. 522,291, May 10, 1990, Pat. No. 5,214,763. This application Jan. 15, 1991, Ser. No. 642,011
Int. Cl.[5] G06F *9/38, 13/00, 15/16*
U.S. Cl. 395—375 **26 Claims**

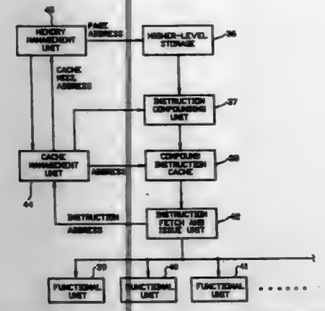
1. In a digital computer system operably disposed to process two or more instructions in parallel, the combination comprising:
an instruction processing unit;
a main memory for storing object code instructions;
an instruction compounding unit coupled to said main memory for pre-processing a sequence of instructions selected from said main memory as a scalar instruction sequence;

a cache memory for storing said scalar instruction sequence of said object code instructions;

a fetch and issue mechanism for fetching and decoding needed object code instructions and for issuing them for execution by said instruction processing unit of the digital computer system during execution of a program by said digital computer system;

said instruction processing unit including a plurality of execution units which operate in parallel and in a concurrent manner for supporting parallel execution of a group of up to N instructions from a sequence of instructions to be executed by the digital computer system;

said instruction compounding unit having means for compounding of instructions for execution by said plurality of instruction units for grouping a plurality of instructions in said scalar instruction sequence wherein the size of the grouping is scalable from 1 to N and whereby the compounding of instructions leaves the object code of compounded instructions unaltered and takes a stream of instructions and selectively categorizes adjacent scalar instructions which would otherwise be executed singly for parallel execution and generates a compounded instruction stream as a sequence of tagged instructions and tag information associated with each of the instructions which indicates whether the scalar instruction can be executed singly or executed in parallel by said plurality of execution units as a group of object code instructions when the



group of instructions is presented to said instruction processing unit after a fetch and issue of the group of instructions to said instruction processing unit by said fetch and issue mechanism;

said cache memory being a high speed cache memory coupled to said main memory by said instruction compounding unit for storing into the high speed cache memory said scalar instruction sequence as a compounded stream of categorized and tagged instructions and the associated tag information for the tagged instructions after pre-processing by the instruction compounding unit;

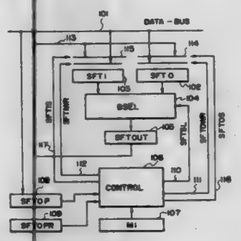
said fetch and issue unit mechanism being coupled to the cache memory for fetching from the cache memory said scalar instruction sequence as a sequence of adjacent tagged instructions stored therein as needed for program execution along with their associated tag information and for issuing the instructions to the appropriate instruction execution units when an examination of the tag information associated with an instruction fetched from the cache indicates that the tagged instruction may be processed concurrently, and also for issuing instructions to individual functional units when their associated tag information indicates that parallel execution is not possible, the fetch and issue mechanism examining the tag information and decoding instruction operation code fields of an instruction, and based upon such examination and decoding determining which of available functional units is most appropriate for their processing, and sending the instructions to appropriate ones of the functional units for execution.

5,295,250

MICROPROCESSOR HAVING BARREL SHIFTER AND DIRECT PATH FOR DIRECTLY REWRITING OUTPUT DATA OF BARREL SHIFTER TO ITS INPUT

Yasuhiko Komoto, and Hiroaki Kaneko, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1991, Ser. No. 659,606
Claims priority, application Japan, Feb. 26, 1990, 2-46086
Int. Cl.[5] G06F *7/00, 9/22, 9/40*
U.S. Cl. 395—375 **3 Claims**



1. A microprocessor comprising:

a first register for holding data input thereto, said first register is constituted by a pair of registers;

a selector for selecting a portion of the data held in said first register;

a second register for holding output data from said selector;

a third register for holding a shift amount to be supplied to said selector;

a fourth register for holding a type of shift operation in said selector;

a multiplexer for switching the data input to said first register between input data from a data bus and the data held in said second register, and supplying the switched data to said first register; and

control means for controlling an operation of said selector in accordance with the shift amount and the type of shift reapectively held in said third and fourth registers and controlling a switching operation of said multiplexer while designating a shift type with respect to said selector, said control means includes means for independently controlling rewrite operations of said pair of registers of said first register by directly rewriting output data from said second register into input of said first register.

5,295,251

METHOD OF ACCESSING MULTIPLE VIRTUAL ADDRESS SPACES AND COMPUTER SYSTEM

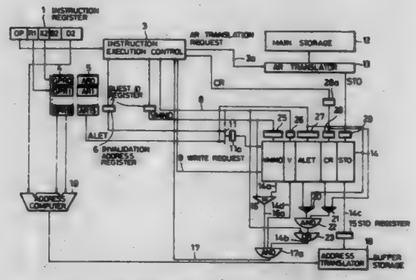
Fujio Wakui; Takahiro Onitsuka, both of Hadano; Izumi Nozaki, Zama, and Toshinori Kuwabara, Hadano, all of Japan, assignors to Hitachi, Ltd., Chiyoda and Hitachi Computer Engineering Co., Ltd., Hadando, both of Japan

Filed Sep. 21, 1990, Ser. No. 585,973
Claims priority, application Japan, Sep. 21, 1989, 1-245453
Int. Cl.[5] G06F *12/00, 12/10*
U.S. Cl. 395—400 **10 Claims**

1. A method of accessing multiple virtual address spaces in a computer system including a plurality of access registers each for retaining a space identifier in association with a general register usable as a base register; access register translation means for translating a space identifier, which is retained in an access register, into an origin address for address translation; and a translation pair memory for storing translation pairs each including a space identifier, which was subjected to translation by the access register translation means, and an origin address obtained from said access register translation means, and for

supplying said origin address, in response to a space identifier received from an access register, to a virtual-physical address translator, the method comprising the steps of:

(a) providing a field for storing a machine identifier in each entry of the translation pair memory;



(b) storing a translated machine identifier of a guest virtual machine in the field in association with a translation pair of a space identifier and an origin address; and

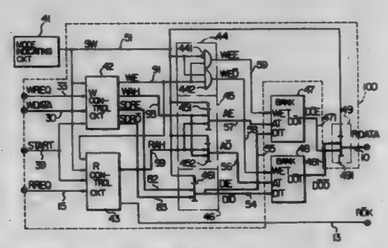
(c) making reference to said translation pair memory for each guest virtual machine to access a translation pair associated with the guest virtual machine using a space identifier obtained, from an access register.

5,295,252

DATA STORAGE DEVICE

Shunichi Torii, Musashino; Shigeo Nagashima, Hachioji, and Koichiro Omoda, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 799,018, Nov. 18, 1985, Pat. No. 4,809,161, which is a division of Ser. No. 581,077, Feb. 17, 1984, Pat. No. 4,734,850, which is a division of Ser. No. 303,186, Sep. 17, 1981, Pat. No. 4,433,394. This application Jan. 13, 1989, Ser. No. 296,827
Claims priority, application Japan, Sep. 19, 1980, 55-129326
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **24 Claims**



1. A data processor, comprising:

(a) a plurality of storage means, each storage means being capable of holding a set of data signals in sequentially ordered storage locations within each storage means and each storage means being capable of having data signals concurrently read from and written into different storage locations therein;

(b) a plurality of operation means connected to said plurality of storage means, each operation means performing an arithmetic or logical operation on a respective set of operand data signals of a predetermined total number provided from at least one of said plurality of storage means so as to sequentially provide another one of said plurality of storage means with a set of result data signals of a predetermined total number corresponding to a result of said operation on said set of operand data signals in such a manner that a result data signal is provided in parallel to receipt of a new operand data signal; and

(c) read/write control means connected to said plurality of storage means for controlling reading and writing of a set of data signals of a predetermined total number for each of said plurality of storage means, said read/write control means including write control means and read control means provided for each one of said plurality of storage means, the write control means for each one of said plurality of storage means including means for sequentially writing a set of data signals of a predetermined total number, provided by one of the plurality of operation means, into storage locations within said one storage means according to the predetermined order of the storage locations, said read control means controlling said one storage means to perform sequential reading of data signals of the set of data signals from said one storage means according to the order of the storage locations and in such a manner that, when said one storage means is engaged in sequential writing, reading of an already written part of the set of data signals is started before all of the set of data signals are written and occurs in parallel to writing of data signals of the set of data signals into said one storage means;

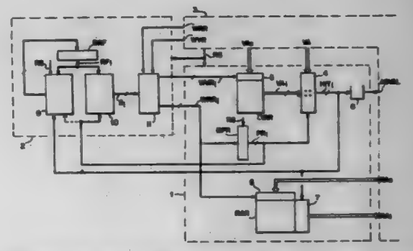
wherein said read control means includes means for starting the sequential reading when the set of data signals are being written into said one storage means on either intermittent or successive clock periods.

5,295,253

CACHE MEMORY UTILIZING A TWO-PHASE SYNCHRONIZATION SIGNAL FOR CONTROLLING SATURATION CONDITIONS OF THE CACHE

Laurent Daconsso, Paris, and Philippe Vallet, Lardy both of France, assignors to Bull S.A., Paris, France

Filed Apr. 12, 1990, Ser. No. 508,965
Claims priority, application France, Apr. 13, 1989, 89 04883
Int. Cl.[5] G06F *12/12*
U.S. Cl. 395—425 **17 Claims**



1. A device for accessing information stored in a main memory of a computer system, said device comprising:

an associative memory having a plurality of memory locations, each of said memory locations for storing an extract, wherein said associative memory includes a like plurality of presence flip-flops each of said memory locations coupled to a corresponding one of said plurality of presence flip-flops;

a plurality of reference flip-flops, each of said presence flip-flops and said reference flip-flops being initially set to logic value 0, wherein a particular one of said plurality of presence flip-flops is set to logic value 1 in response to an extract being stored in a particular one of said plurality of memory locations;

wherein said associative memory includes a comparison circuit for comparing a virtual address of an information item sought to a virtual address of the extract stored in

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said particular memory location and for providing for each memory location a coincidence signal having a logic value 1 in response to a virtual address of an information item sought matching a virtual address of the extract stored in said particular memory location and wherein access to information in the main memory is accelerated by accessing information from the associative memory in the case of a match and wherein in the case of no match, information is accessed from the main memory and duplicated into the associative memory as an information portion of an extract; and

wherein the device is adapted to receive a two-phase synchronization signal and each of said coincidence signals is evaluated during a first phase of said two-phase synchronization signal;

a plurality of latching flip-flops, coupled to said associative memory, each of said latching flip-flops for receiving a corresponding coincidence signal from said comparison circuit, wherein said latching flip-flops are responsive to the first phase of said two-phase synchronization signal and wherein each of said latching flip-flops provides a latched coincidence signal in response to the first phase of the synchronization signal;

a plurality of management circuits, each of said management circuits coupled to a corresponding one of said latching flip-flops, each of said management circuits for receiving said latched coincidence signal from the corresponding latching flip-flop and for providing a control signal to a corresponding one of said reference flips-flops;

a common control circuit coupled to said reference flip-flops, said common control circuit for receiving a reference indicator signal from each of said reference flip-flops, for receiving each coincidence signal from said comparison circuit and for generating, during the first phase of said two-phase synchronization signal, an evaluation signal having a value determined by a logic state of said reference flip-flops and said coincidence signals, said evaluation signal having a first value when said associative memory is in a saturation state and having a second different value when said associative memory is not in a saturation state and wherein the evaluation signal indicates a saturation state in response to the following conditions being concurrently met;

(a) each of the reference flip-flops but a last reference flips-flop have a logic value of 1; and

(b) a coincidence signal corresponding to the last reference flip-flop and having a logic value of 0 is about to be set to 1;

and wherein when such conditions are detected during the first phase of the two-phase synchronization signal, each of the reference flip-flops except for the last reference flip-flop are reset to 0 and during the second phase of the two-phase synchronization signal the last reference flip-flop is set to 1 and wherein said common control circuit comprises:

an evaluation circuit including an evaluation line wherein a state of said evaluation line is defined during the first phase of the two-phase synchronization signal and wherein said evaluation line is precharged during the second phase of said two-phase synchronization signal; and

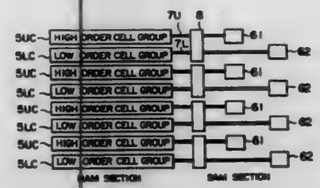
a second latching flip-flop for storing, said evaluation signal, wherein said second latching flip-flop is responsive to the first phase of said two-phase synchronization signal and wherein said second latching flip-flop provides a latched evaluation signal during the first phase of said two-phase synchronization signal.

5,295,254

SEMICONDUCTOR MEMORY DEVICE CELL ARRAY DIVIDED INTO A PLURALITY OF BLOCKS

Yoshinori Ogawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1991, Ser. No. 767,898
Claims priority, application Japan, Sep. 29, 1990, 2-260718
Int. Cl.[5] G05F *12/06*
U.S. Cl. 395—425 **6 Claims**



1. A semiconductor memory device comprising:

a RAM section in which the memory area is halved into a first cell array and a second cell array by the value of a specific bit constituting a portion of a column address,

a SAM section comprised of first and second registers,

a first data transfer path for carrying out data transfer from said first cell array to said first register,

a first transfer control means inserted into said first data transfer path,

a second data transfer path for carrying out data transfer from said second cell array to said second register,

a second transfer control means inserted into said second data transfer path,

a third data transfer path for shifting data from said first cell array to said second data transfer path,

a third transfer control means inserted into said third data transfer path,

a fourth data transfer path for shifting data from said second cell array to said first data transfer path, and

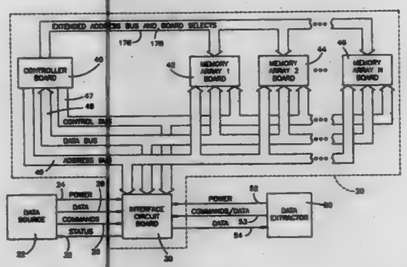
a fourth transfer control means inserted into said fourth data transfer path.

5,295,255

METHOD AND APPARATUS FOR PROGRAMMING A SOLID STATE PROCESSOR WITH OVERLEAVED ARRAY MEMORY MODULES

Kenneth A. Malecek, Willoughby Hills; Timothy F. Powell, Mentor, and Jeffrey A. Dobos, Cleveland, all of Ohio, assignors to Electronic Professional Services, Inc., Cleveland, Ohio

Filed Feb. 22, 1991, Ser. No. 661,049
Int. Cl.[5] G06F *12/06*
U.S. Cl. 395—425 **15 Claims**



1. A data recorder comprising:

an interface board having means for connecting said data recorder to a data source, said interface board including a plurality of receiver circuits and a plurality of driver circuits for respectively inputting and outputting data from and to said data source;

a controller broad operatively connected to said interface board, said controller board including a controller for controlling recording of data from said data source, said controller board further including a temporary memory buffer, a nonvolatile memory, a data bus, an address bus, and a control bus connected to said controller, data first received from said data source being initially stored in said temporary memory buffer by said controller;

a flash memory board including a plurality of flash memory devices, each of said flash memory devices being divided into a plurality of word rows, each word row of each of said flash memory devices having a row address with corresponding rows of said plurality of said flash memory devices having a same row address, each of said flash memory devices defining a word column, said flash memory board further including flash memory device address decoder means operatively connected to said controller for decoding an address output from said controller for selecting a desired one of said flash memory devices and row address decoder means for addressing a word row in a selected one of said flash memory devices, each of said flash memory devices having an internal state machine that is responsive to a plurality of programming steps output from said controller including write command and write word, each of said internal state machines requiring a minimum predetermined time period to process said programming steps;

said controller including processor means for (a) providing said write command step to a first of said plurality of said flash memory devices, (b) providing said write command step to a second of said plurality of flash memory devices while said write command step is being process by said first of said plurality of said flash memory devices, (c) addressing a first of said word rows of said first of said plurality of flash memory devices and providing a first data word for recording in said first word row of said first of said plurality of flash memory devices while said write command step is being process by said second of said plurality of said flash memory devices, and (d) addressing a first of said word rows of said second of said plurality of flash memory devices and providing a second data word for recording in said first word row of said second of said plurality of said flash memory devices while said first data word is being processed by said first of said plurality of said flash memory devices.

5,295,256

AUTOMATIC STORAGE OF PERSISTENT OBJECTS IN A RELATIONAL SCHEMA

Subodh Bapat, Fort Lauderdale, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.

Filed Dec. 14, 1990, Ser. No. 628,258
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] G06F *7/20, 15/40, 15/419*
U.S. Cl. 395—500 **27 Claims**

1. A method for a computer to translate an object class hierarchy into a relational schema, comprising in combination the steps of:

providing said computer with a computer memory;

providing in said computer memory a first computer program having at least one class hierarchy organization of object-oriented information and being in source code form, said class hierarchy organization comprising at least one parent class of objects having a first attribute and one derived class including at least one of said objects of said parent class, said derived class having a second attribute, said derived class inheriting said first attribute from said parent class;

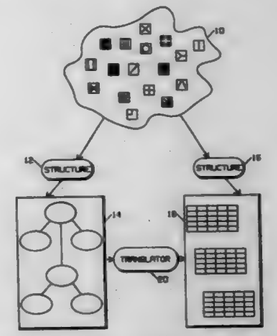
analyzing said first computer program with a second computer program to locate automatically said class hierarchy organization;

using said second computer program to create automatically from said located class hierarchy organization a first source code routine in said computer memory for defining a first table structure, corresponding to said parent class, including a first table name, said first table structure including:

a first instance identifier field for storing a unique first instance identifier for each particular object instance of one of said objects, and

a first attribute field for storing an attribute instance of said first attribute for said each perpendicular object instance,

said first instance identifier field and said first attribute field composing a record of said first table structure;



using said second computer program to create automatically from said located class hierarchy organization a second source code routine for defining a second table structure, corresponding to said derived class, including a second table name, said second table structure including:

a second instance identifier field for storing a second instance identifier which identifies said particular object instance of said one of said objects included said derived class,

and a second attribute field for storing an attribute instance of said second attribute for said particular object instance of said one of said objects included in said derived class,

said second instance identifier field and said second attribute field composing a record of said second table structure; and

referencing said second identifier field to said first identifier field.

5,295,257

DISTRIBUTED MULTIPLE CLOCK SYSTEM AND A METHOD FOR THE SYNCHRONIZATION OF A DISTRIBUTED MULTIPLE SYSTEM

Simon Y. Berkovich, Rockville; Steven A. Hauser; Henry C. Yee, both of Columbia, and Chris J. Walter, Ellicott City, all of Md., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed May 24, 1991, Ser. No. 705,460
Int. Cl.[5] G06F *1/12*
U.S. Cl. 395—550 **25 Claims**

1. A distributed multiple clock system wherein each clock comprises:

means for generating clock pulses;

means for generating a polling request signal sent to each clock in said multiple clock system in response to receiving a first predetermined number of clock pulses;

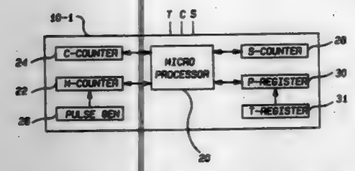
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means for generating a difference number equal to a difference between said first predetermined number of clock pulses and a number of clock pulses generated by said means for generating clock pulses in response to any one of said clocks in said distributed multiple clock system generating said polling request signal;

means for generating a polling result signal sent to each clock in said distributed multiple clock system in response to said different number exceeding a first reference number;

first means for placing said clock that generated said polling request signal rom an active state to an inactive state in response to said difference number being equal to zero and more than one clock in said distributed clock system generating a polling result signal, said clock in said inactive state being temporarily removed from participating in determining an end of a clock period;

second means for placing said clock from said active state to said inactive state in response to said difference number



being greater than said first reference number and said clock being an only clock that generated a polling result signal;

means for detecting said difference number being less than said first reference number and at least one clock of said distributed multiple clock system having generated said polling request signal to cancel said polling request signal and said polling results signal in each clock in said active state;

means for generating a synchronization interrupt signal sent to all of the clocks in said distributed clock system signifying an end of said clock period in response to said clock being in said active state and said means for generating clock pulses generates a second predetermined number of clock pulses; and

start means for initializing said clock for a beginning of a new clock period in response to receiving said synchronization interrupt signal generated by any clock in said distributed multiple clock system.

5,295,258

FAULT-TOLERANT COMPUTER SYSTEM WITH ONLINE RECOVERY AND REINTEGRATION OF REDUNDANT COMPONENTS

Douglas E. Jewett; Tom Bereiter; Brian Vetter; Randall G. Banton, all of Austin; Richard W. Cutts, Jr., Georgetown; Donald C. Westbrook, deceased, late of Austin by Ben D. Friend, administrator; Kyran W. Fey, Jr., Pflugerville; John Pondro, Austin; Kenneth C. Debacker, Austin, and Nikhil A. Mehta, Austin, all of Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation-in-part of Ser. No. 455,218, Dec. 22, 1989, abandoned. This application Jan. 5, 1990, Ser. No. 461,250

Int. Cl.[5] G06F *11/18, 11/20, 12/16*

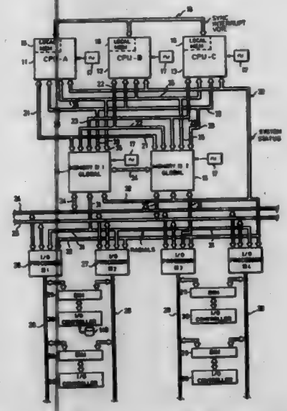
U.S. Cl. 395—575 **29 Claims**

1. A method of operating a computer system having multiple CPUs executing the same instruction stream, the CPUs each having local memory and also each accessing multiple global memory units storing identical data, comprising the steps of:

a) detecting an error in one of said CPUs;

b) isolating said one CPU from the system and continuing to execute said instruction stream and accessing said global memory units by the other ones of said CPUs;

c) reintegrating said one CPU after rendering said CPU operative by first bringing said one CPU into sync with said other ones of said CPUs by soft-resetting all of said



multiple CPUs prior to continuing normal operation of said multiple CPUs, said soft-resetting non-destructively preserving the current state and the local memory of each said multiple CPU, then restoring the state and the local memory of said one CPU to be identical to the state and the local memory of the said other ones of the CPUs.

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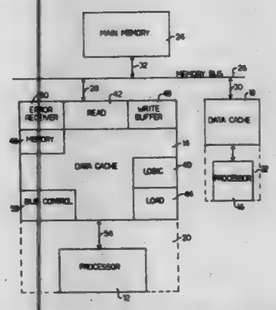
DATA CACHE AND METHOD FOR HANDLING MEMORY ERRORS DURING COPY-BACK

Stephen C. Horne, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 5, 1991, Ser. No. 650,681

Int. Cl.[5] G06F *1/00*

U.S. Cl. 395—575 **4 Claims**



1. A data cache for use in a processing system of the type including a processor implemented in an integrated circuit, an external memory for storing data, and a memory bus coupling said processor to said external memory, said data cache being integrated with said processor within said integrated circuit, said data cache comprising:

storage means, including a plurality of addressable storage locations, for storing data;

a write buffer for temporarily storing data;

logic means coupled to said processor and being responsive

to a load request generated by said processor, said load request identifying requested data required by said processor, said load request including a storage location address designating one of said plurality of storage locations of said storage means, said designated storage location containing presently stored data, said logic means determining whether said presently stored data is said requested data and causing said presently stored data to be stored in said write buffer as transferred data when said presently stored data is valid and modified, and is not said requested data;

read means, responsive to said logic means, for fetching said requested data from said memory bus when said presently stored data is not said requested data, and for storing said requested data in said designated storage location; and

load means for conveying said requested data to said processor;

said logic means being further arranged to cause said transferred data to be conveyed from said write buffer to said external memory over said memory bus; said logic means being responsive to an error signal indicating unsuccessful conveyance of said transferred data from said write buffer to said external memory to cause said transferred data to be written back into said designated storage location.

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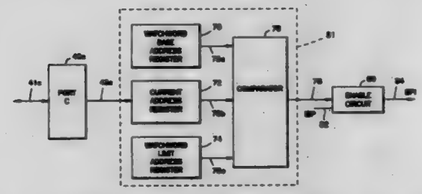
MEMORY RANGE MONITORING APPARATUS FOR A MULTIPROCESSOR COMPUTER SYSTEM

Richard D. Pribnow, Chippewa Falls, Wis., assignor to Cray Research Systems, Inc., Minneapolis, Minn.

Filed May 31, 1991, Ser. No. 708,461

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **17 Claims**



7. An apparatus for isolating faulty program code in a multitasking multiprocessing system, comprising:

means for determining a watchword range of addresses defined by a watchword lower address and a watchword upper address;

a plurality of watchword circuitries, each connected to a different one of the plurality of processors, each watchword circuitry including:

first register means for storing the watchword lower address;

second register means for storing the watchword upper address;

third register means for receiving and for storing a processor memory reference address;

comparator means connected to the first, second and third register means, for comparing the processor reference address with the watchword lower address and with the watchword upper address; and

interrupt means, connected to the comparator means, for interrupting the associated processor if the processor reference address is greater than or equal to the watchword lower address and the processor reference address is less than the watchword upper address.

5,295,261

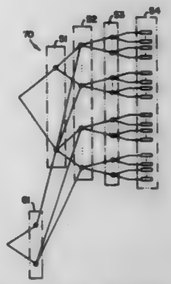
HYBRID DATABASE STRUCTURE LINKING NAVIGATIONAL FIELDS HAVING A HIERARCHIAL DATABASE STRUCTURE TO INFORMATIONAL FIELDS HAVING A RELATIONAL DATABASE STRUCTURE

Charles T. Simonetti, Citrus Heights, Calif., assignor to Pacific Bell Corporation, San Francisco, Calif.

Filed Jul. 27, 1990, Ser. No. 558,618

Int. Cl.[5] G06F *15/40, 15/419*

U.S. Cl. 395—600 **4 Claims**



1. A method for converting organized data from a data record structure into a hybrid structure which allows for efficient storage and retrieval of the organized data by a digital computer, where the data record structure includes a plurality of records each divided into a plurality of fields, where each field of the plurality of fields stores data of a field type associated with the field and where the organized data in the data record structure is encompassed in the plurality of fields of the plurality of records, the method comprising the steps of:

separating the plurality of fields into navigational fields and informational fields, where geographic values encompassed in each navigational field of the data records are of a geographical class defined by the field type of said navigational field, wherein said separating step further comprises the steps of assigning to each said record of the plurality of fields a unique identifier, and adding a unique identifier field to the navigational fields and to the informational fields where each said record of said unique identifier field encompasses the unique identifier assigned to that record;

ordering said navigational fields into a plurality of distinct hierarchical data structures each comprising a plurality of node classes and links therebetween, where each said node class corresponds to a specific geographical class and each node in said node class corresponds to a distinct geographic value of said geographical class, where a node class lower in said hierarchical data structure represents a geographical class that is hierarchically subordinate to and wholly encompassed in the geographical classes represented by node classes higher in said hierarchical data structure, and where said links between said node classes indicate which geographic values listed in a lower node class are geographically encompassed in a geographic value listed in a higher node class immediately adjacent to and above said lower node class in said hierarchical data structure;

identifying among the plurality of distinct hierarchical data structures one of said distinct hierarchical data structures having at least one geographical class in common, where a distinct hierarchical data structure is one which is hierarchically independent from all other hierarchical data structures and which has at least one geographic class that is unique to that hierarchical data structure;

merging portions of said distinct hierarchical data structures having one or more geographic classes in common by

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linking said structures to a single node class for each said geographical class said structures have in command; and

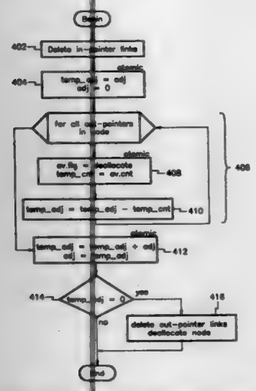
creating for each said node class in the merged hierarchical data structure a table comprising an identifier describing the geographical class represented by the node class, an enumeration list encompassing the geographical values of said node class, and a plurality of linkage structures, where each linkage structure comprises an adjacent class identifier describing a geographical class immediately adjacent to and above said node class in said merged hierarchical data structure, and an adjacent link list, specifying for each first geographic value in said enumeration list, a second geographic value in an adjacent node class in which said first geographic value is geographically encompassed, and wherein the navigational field of a lowest geographical class includes said unique identifier thereby pointing to a corresponding one of said informational fields containing said same unique identifier.

5,295,262

READ-ONLY ACCESS WITHOUT BLOCKING VIA ACCESS VECTORS

Joseph W. Seigh, II, Lake Katrine, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1991, Ser. No. 701,253
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **10 Claims**



1. A computer implemented method for maintaining a linked data structure stored in a computer system capable of processing the stored data as addressable object nodes, such hat any node may be modified prior to the completion of outstanding read only accesses to said any node, comprising the steps of:

maintaining an access vector for each of the nodes, each access vector including an access counter for maintaining an access count value corresponding to how many processes have read access to a first node, and a link for maintaining a pointer to a next node;

adding one or more links to the data structure, wherein when a link associated with an access vector is added to point to a second node, the value of the access count of the second node and the value of the access counts of all nodes indirectly pointed to by the added link are incremented by the value of the access count of the access vector associated with the added link;

deleting links from the data structure, wherein when a link associated with an access vector is deleted from a third node, the value of the access count of the third node and the value of the access counts of all nodes previously indirectly pointed to by the deleted link are decreased by the value of the access count of the access vector associated with the deleted link; and

deleting nodes by:

deleting all links to a fourth node,

waiting until an access count for said fourth node becomes zero, said access count becoming zero as readers complete their respective read operations at said fourth node,

deleting all links from said fourth node to further nodes, and

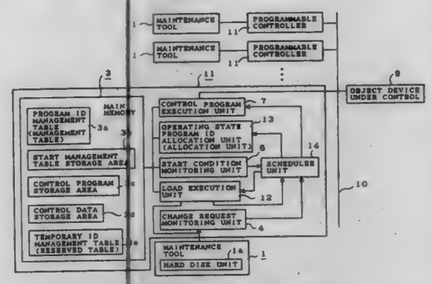
deallocating said fourth node.

5,295,263

PROGRAMMABLE CONTROLLER WHICH ALLOWS CONTROL IN FORMATION TO BE UPDATED DURING EXECUTION

Kenji Kojima, and Akio Toda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 823,965
Claims priority, application Japan, May 7, 1991, 3-130250
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—650 **6 Claims**



1. A programmable controller comprising:

a management table for storing addresses designating an area for accommodating management information about execution states of programs and such control information as data and programs necessary for executing said programs;

a reserved table for storing addresses designating a reserved area so allocated as to differ from the area for accommodating said control information, said reserved area accommodating new control information intended to replace said control information;

a load execution unit for checking, upon receipt of said new control information, the execution state of a program to be changed based on management information held in said management table; said load execution unit loading said new control information into an area designated by addresses held in said management table if said program to be changed is in non-executing or non-executable state; said load execution unit loading said new control information into a reserved area designated by addresses held in said reserved table if said program to be changed is in executing or executable state; and

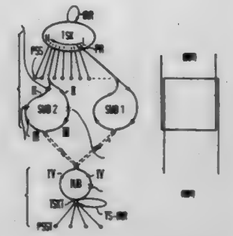
an allocation unit for replacing the content of the addresses held in said management table with the content of the addresses held in said reserved table after said load execution unit has loaded said new control information into said reserved area.

5,295,264

MODULARLY STRUCTURED INTEGRATED SERVICES DIGITAL NETWORK (ISDN) COMMUNICATION SYSTEM

Bernhard Werres, Graefelfing, and Dietmar Weber, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 13, 1992, Ser. No. 835,194
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1991, 4104365
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—650 **6 Claims**



1. A modularly-structured integrated services digital network communication system comprising at least one switching unit including a switching network to which apparatus and networks can be connected via peripheral modules, and of the type comprising a memory-programmed system processor, that comprises a real-time operating system for controlling subsystems provided for execution of communication technology-associated functions and for control of an idle task subsystem that is fashioned as a branch subsystem for a transition to a time sharing operating system, a system memory that comprises memory segments addressable via descriptors, a system table memory that contains system table descriptors referring to memory segments of the real-time operating system, a further system table memory that contains real-time interrupt descriptors for events pertaining to the real-time operating system, a module table memory that can be selected alternatively to the system table memory and that contains module table descriptors referring to memory segments of the time sharing operating system, and further contains communication descriptors referring to intercommunication segments of the real-time operating system that can be interpreted identically with the system table descriptors contained in the system table memory and referring to the intercommunication segments and among which, at least one code segment descriptor for access onto the code segment of the branch subsystem, and one status segment descriptor for access onto a status segment assigned to the branch subsystem in the real-time operating system, and one data segment descriptor for access onto an intercommunication data segment storing input information required by each of the two operating systems, when a transition to the other respective operating system is given, a further module table that can be selected alternatively to the further system table memory and that contains interrupt descriptors for events pertaining to the time sharing operating system, control elements in the branch subsystem that, when activation of the branch subsystem is given, trigger an allocation change of the system processor from the system table memories to the module table memories and, calling of a status segment descriptor, subsequently effects a process change into the interrupt transition routine that is subsequently ended, and control statements in the interrupt transition routine that, when activation of the interrupt transition routine is given, initiate a process change into the branch subsystem upon calling the communication status segment descriptor, and further control statements in the branch subsystem that effect an allocation change of the system processor from the module table memories to the system table memories, the improvement wherein:

a subsystem having comparatively high priority is constructed in the real-time operating system as a further branch subsystem;

said further branch subsystem when an arrival of a first periodic event is given, assumes a ready status in order to be assigned to the system processor in the real-time operating system for execution;

said further module table memory contains a further interrupt descriptor for at least a second periodic event following said first periodic event, said further interrupt descriptor contains address information for execution of the interrupt transition routine;

said further module table memory contains interrupt descriptors for events pertaining to the real-time operating system, said interrupt descriptors each containing address information for execution of an interrupt rescue routine in the time sharing operating system; and

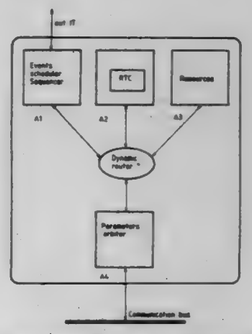
following the allocation change of the system processor from the module table memories to the system table memories, said further branch subsystem assumes a dormant condition which is provided as a non-ready task status in the real-time operating system.

5,295,265

DEVICE FOR ENHANCING THE PERFORMANCE OF A REAL TIME EXECUTIVE KERNEL ASSOCIATED WITH A MULTIPROCESSOR STRUCTURE THAT CAN INCLUDE A LARGE NUMBER OF PROCESSORS

Michel Ducateau, Nogent Le Roi, and Jean-Marie Sers, Velizy, both of France, assignors to Sextant Avionique, Meudon La Foret, France

Filed Jun. 4, 1992, Ser. No. 894,378
Claims priority, application France, Jun. 4, 1991, 91 06900
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—650 **15 Claims**



1. Device for optimizing the performance of a real time executive kernel in a multiprocessor structure comprising one or more processors, said device comprising a real time operator behaving, as seen from a processor of said structure, as a memory area and comprising means for sending and for receiving data to be processed, means for generating communication control signals, means for associating with objects managed by a kernel, especially tasks, each having a state, hardware and software events, resources and time, a series of primitives one primitive at a time to manage a clock resource and active resources, means for managing a real time context of said processors of said structure on the basis of a predetermined strategy by means of a scheduler, said scheduler being adapted in particular to activate the tasks cyclically, means for marking waits on timers, means for activating tasks after timers, and means for deciding to change the state of a task to another state

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on the basis of the primitives of the real time context, wherein said real time operator is organized in a plurality of identical hardwired real time operator circuits, accessible simultaneously by said processors of said structure but each associated with one only of said processors, said circuits being interconnected by a link adapted to transmit an "AGREED" signal ensuring that said real time operator executes only one primitive at a time, each real time operator circuit comprising a scheduler which manages the tasks of only the processor associated with it and global resources and events of the real time operator, said scheduler comprising means for activating the tasks cyclically, means for marking waits on timers and means activitating tasks after timers, said real time operator deciding to change the task state on the basis of primitives of the real time context, said device comprising means for commuting each real time operator circuit in one of the following three functioning modes:

a) a first mode in which it processes a primitive requested by one of said processors of said structure,

b) a second mode in which it processes a local request internal to the circuit concerning only tasks for which it is responsible,

c) a third mode in which it is awaiting processing.

5,295,266

PROGRAM ATTRIBUTE CONTROL IN A COMPUTER SYSTEM

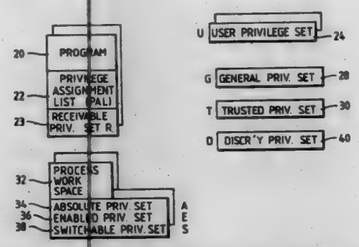
Stewart R. Hinsley, Stoke-On-Trent, and Christopher D. Hughes, Crewe, both of Great Britain, assignors to International Computers Limited, London, England

Filed Oct. 7, 1992, Ser. No. 958,035

Claims priority, application United Kingdom, Dec. 20, 1991, 9127026; Jun. 10, 1992, 9212337

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—650 **4 Claims**



1. A computer system having a plurality of programs and comprising: means for creating a program attribute list for each of said programs, for associating different aggregates of program attributes with each of a number of invocation contexts in relation to that program, and means for creating a process and for giving that process attributes depending on the context/-program combination, as determined by the program attribute list for that program, said program attribute list being unmodified by performance of said process.

DESIGN PATENTS

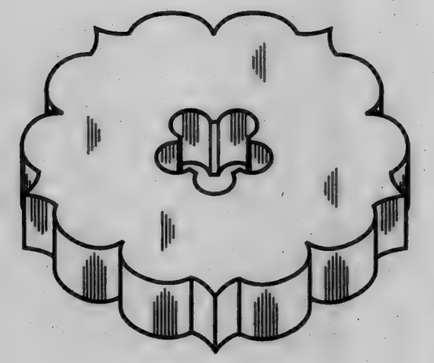
GRANTED MAR. 15, 1994

ERRATA

For CLASS	See PATENT NO.
012-221	D 345,050

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345,043
EDIBLE FOOD PRODUCT
Kyle E. Dayley, Rigby, and Crystal B. Schweiger, Idaho Falls, both of Id., assignors to Miles J. Willard, Idaho Falls, Id.
Filed Aug. 28, 1992, Ser. No. 938,466
Term of patent 14 years
U.S. Cl. D1—120



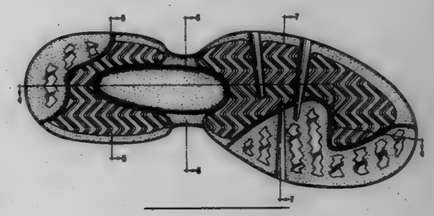
345,044
TENNIS SHOE BOOT
Michael A. Mudd, 23946 Oswego, Lake Forest, Calif. 92630
Filed Apr. 8, 1992, Ser. No. 866,231
Term of patent 14 years
U.S. Cl. D2—911



345,045
PEDICURE SLIPPER
Helen I. Atkins, 1700 Kassabian Ave., Las Vegas, Nev. 89104, and Lucia B. Coito, 3120 Clamdigger La., Las Vegas, Nev. 89117
Filed Jun. 29, 1992, Ser. No. 906,133
Term of patent 14 years
U.S. Cl. D2—916



345,046
OUTSOLE OF A SHOE
Eric P. Avar, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Dec. 11, 1992, Ser. No. 2,397
Term of patent 14 years
U.S. Cl. D2—953

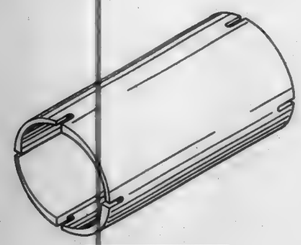


345,047
SHOE UPPER
Thomas V. DiSilvio, Somerville, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Sep. 14, 1993, Ser. No. 12,973
Term of patent 14 years
U.S. Cl. D2—969



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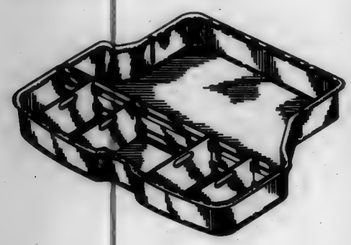
345,048
FRICTION YARN CARRIER
Glenn E. Randolph, 2360 Dunavant St., Charlotte, N.C. 28203
Filed Jul. 30, 1991, Ser. No. 738,279
Term of patent 14 years
U.S. Cl. D3—23



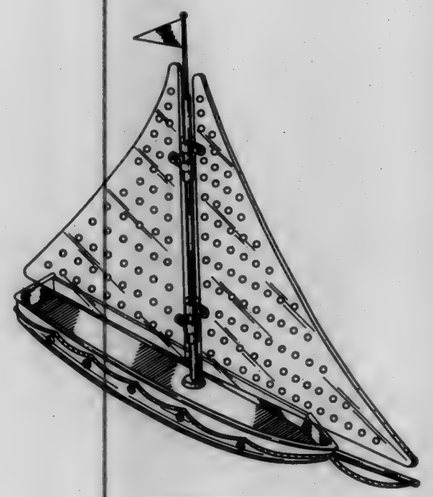
345,049
BASEBALL BACKPACK
Peggy L. Pollack, Los Angeles, Calif., assignor to Angel-Etts of California, Los Angeles, Calif.
Filed Aug. 31, 1992, Ser. No. 938,469
Term of patent 14 years
U.S. Cl. D3—217



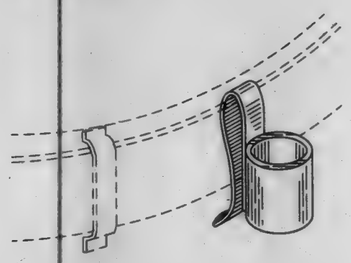
345,050
TRUNK LINER
Patrick T. Ryan, Lower Sackville, Canada, assignor to NeoCon International Inc., Halifax, Canada
Filed Aug. 26, 1991, Ser. No. 750,019
Term of patent 14 years
U.S. Cl. D12—221



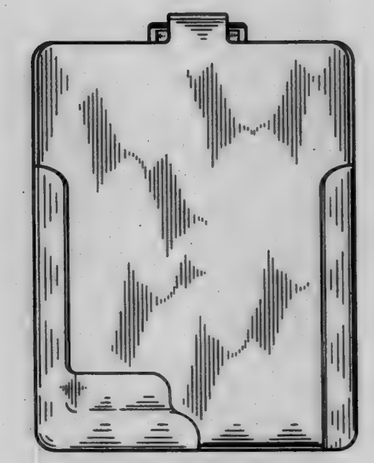
345,051
NOVELTY EARRING HOLDER
Karen K. Wills, 190 W. Willow, Coal City, Ill. 60416
Filed Jun. 3, 1992, Ser. No. 892,012
Term of patent 14 years
U.S. Cl. 3—271



345,052
TOOL CLIP
John C. Stokke, 5059 Maple St., Omaha, Nebr. 68104; Steven D. Sacco, 6705 N. 24th St., Omaha, Nebr. 68112, and Vincent A. Cheek, 4724 Grant, Omaha, Nebr. 68104
Filed Aug. 3, 1992, Ser. No. 923,440
Term of patent 14 years
U.S. Cl. D3—228



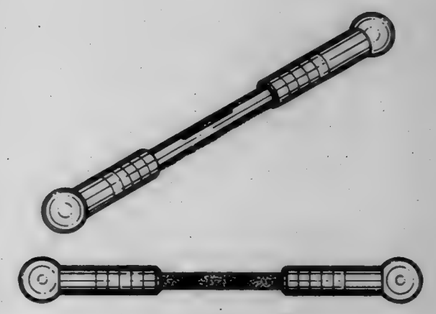
345,053
PAGER HOLSTER
Fernando Gomez, West Palm Beach, and Jeffrey King, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 26, 1992, Ser. No. 841,448
Term of patent 14 years
U.S. Cl. D3—218



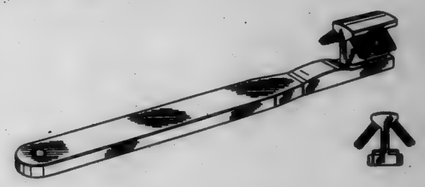
345,054
INFANT MASSAGER TOOTHBRUSH
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Linco, Inc., Tampa, Fla.
Filed May 13, 1992, Ser. No. 883,704
Term of patent 14 years
U.S. Cl. D4—104



345,055
TONGUE AND TOOTH CLEANING BRUSH
Terry Boodhram, 4180 Trellis Crescent, Mississauga, Ont., Canada L5L-2M2
Filed Jun. 9, 1992, Ser. No. 895,866
Term of patent 14 years
U.S. Cl. D4—104

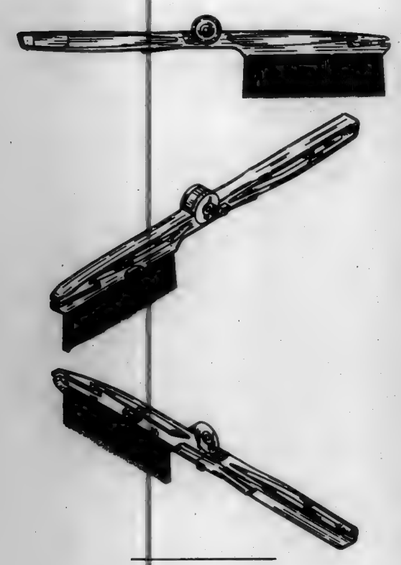


345,056
ANGLED BRISTLE TOOTHBRUSH
Gould P. Groves, 20 E. Whitney St., Chula Vista, Calif. 91910
Filed Nov. 12, 1991, Ser. No. 790,719
Term of patent 14 years
U.S. Cl. D4—106

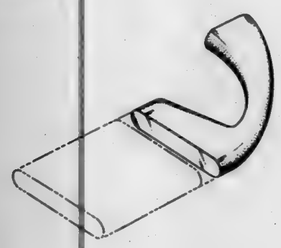


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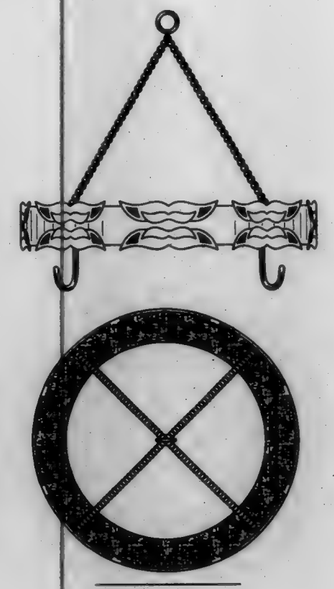
345,057
SNOW BRUSH
Kenneth L. Hopkins; Samuel B. Kemple, and Michael D. Swan, all of Emporia, Kans., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.
Continuation of Ser. No. 715,373, Jun. 14, 1991, Pat. No. Des. 336,783, which is a continuation-in-part of Ser. No. 574,928, Aug. 30, 1990, Pat. No. Des. 337,436. This application Mar. 23, 1993, Ser. No. 6,074
Term of patent 14 years
U.S. Cl. D4—121



345,058
PAINTBRUSH HANDLE
Mark A. Merritt, 7818 Stillbrook La., Knoxville, Tenn. 37938
Filed Jun. 17, 1992, Ser. No. 900,108
Term of patent 14 years
U.S. Cl. D4—138



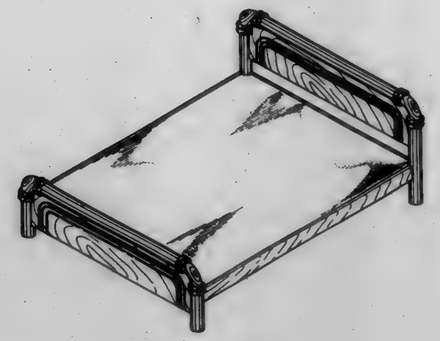
345,059
GARMENT SUPPORT
Mae D. Rogers, 1005 Elm St., LaGrange, Ga. 30240
Filed Sep. 28, 1992, Ser. No. 952,190
Term of patent 14 years
U.S. Cl. D6—316



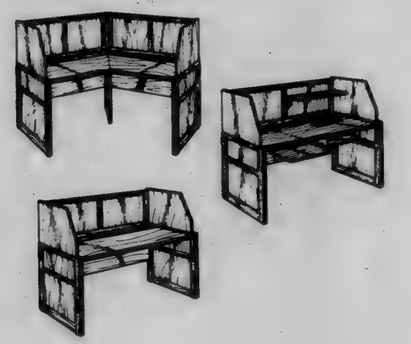
345,060
CHAIR
Terence M. Duncan, Kentwood, Mich., assignor to JSJ Seating Corporation, Belton, Tex.
Filed Jan. 16, 1992, Ser. No. 822,557
Term of patent 14 years
U.S. Cl. D6—346



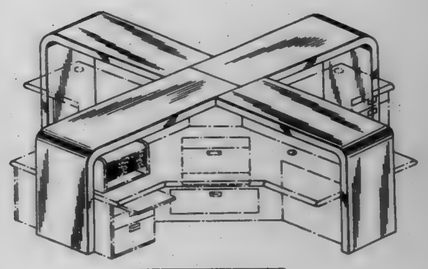
345,061
BED
Lin Y. Tyng, Tsy Shan Village, Taiwan, assignor to Chynan Ji Enterprise Co., Ltd., Taipei, Taiwan
Filed Aug. 7, 1992, Ser. No. 926,542
Term of patent 14 years
U.S. Cl. D6—393



345,062
WORKSTATION
John B. Brandon, Attica, N.Y., assignor to The Croydon Company, Inc., Liverpool, N.Y.
Filed Sep. 11, 1991, Ser. No. 757,493
Term of patent 14 years
U.S. Cl. D6—421



345,063
MODULAR COMPUTER TERMINAL DESK
Edward Golod, Glen Head; Robert Larson, East Hills, and Martin J. Anderson, Northport, all of N.Y., assignors to Infra-Structures, Inc., Brentwood, N.Y.
Filed May 31, 1991, Ser. No. 708,640
Term of patent 14 years
U.S. Cl. D6—449

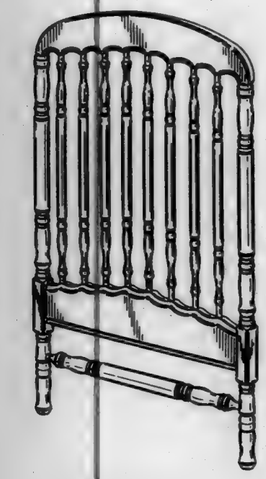


345,064
WORK STATION
Joseph E. Adams, Jr., McKern Rd., Rome, N.Y. 13440
Filed May 4, 1992, Ser. No. 878,879
Term of patent 14 years
U.S. Cl. D6—474

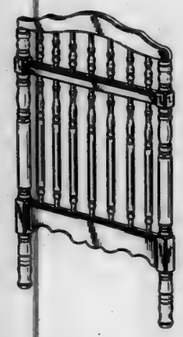


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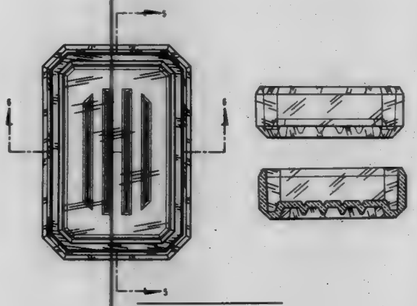
345,065
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Jan. 15, 1993, Ser. No. 3,794
Term of patent 14 years
U.S. Cl. D6—508



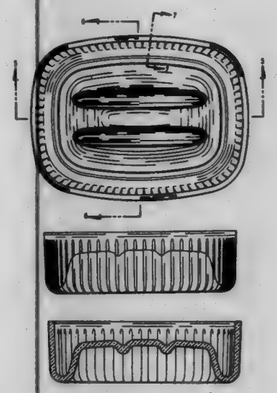
345,066
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Jan. 15, 1993, Ser. No. 3,796
Term of patent 14 years
U.S. Cl. D6—508



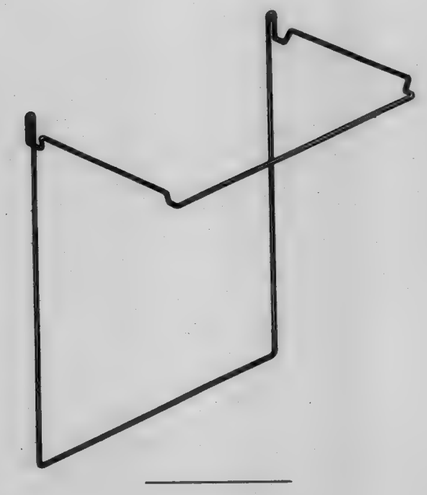
345,067
SOAP DISH
Mary A. Shafer, Indianapolis, Ind., assignor to Franklin Plastic Products, Inc., Franklin, Ind.
Filed Feb. 11, 1992, Ser. No. 833,893
Term of patent 14 years
U.S. Cl. D6—536



345,068
SOAP DISH
Mary A. Shafer, Indianapolis, Ind., assignor to Franklin Plastic Products, Inc., Franklin, Ind.
Filed Feb. 11, 1992, Ser. No. 834,503
Term of patent 14 years
U.S. Cl. D6—536



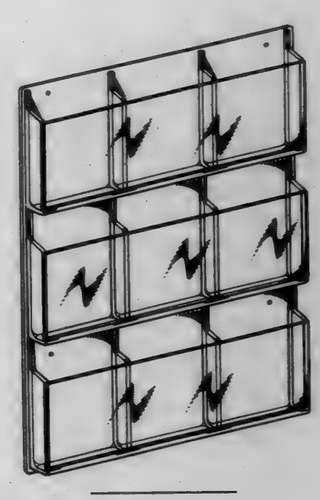
345,069
CABINET DOOR MOUNTED RACK FOR PLASTIC GROCERY BAG
Robert L. Green, 7902 E. Bonita Dr., Scottsdale, Ariz. 85250
Filed Sep. 11, 1992, Ser. No. 943,208
Term of patent 14 years
U.S. Cl. D6—566



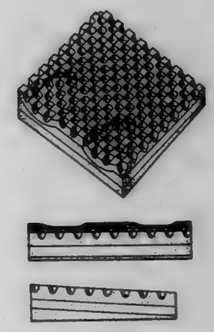
345,070
SHELF ASSEMBLY
Nancy Warren, Greensboro, N.C., assignor to Marko, Inc., Salisbury, N.C.
Filed Oct. 9, 1992, Ser. No. 275
Term of patent 14 years
U.S. Cl. D6—570



345,071
POCKET DISPLAY UNIT
David S. Gould, Duluth, Ga., assignor to Gould Plastics, Inc., Lawrenceville, Ga.
Filed Nov. 24, 1992, Ser. No. 1,830
Term of patent 14 years
U.S. Cl. D6—571

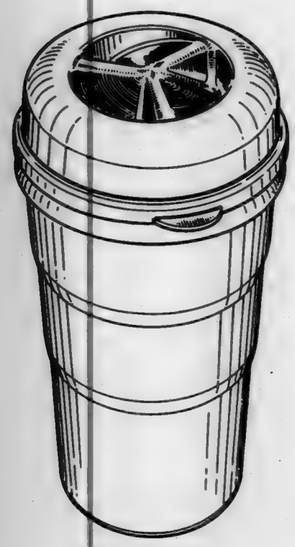


345,072
SEAT CUSHION
Robert J. Rose, Chesterfield, and Bruce Sieboda, Midlothian, both of Va., assignors to E. R. Carpenter Company, Inc., Richmond, Va.
Filed Jan. 7, 1992, Ser. No. 817,680
Term of patent 14 years
U.S. Cl. D6—601

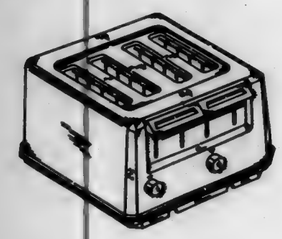


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345,073
SHAKER
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation Pty., Ltd., Victoria, Australia
Filed Jun. 28, 1991, Ser. No. 723,501
Term of patent 14 years
U.S. Cl. D7—300.1



345,074
TOASTER
Terry L. Myers, Richmond, Va.; R. Scott Myerly, Alpharetta, Ga.; Stanley T. Greenes, Homewood, and James C. Hand, Glen Ellyn, both of Ill., assignors to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.
Filed Dec. 9, 1992, Ser. No. 2,437
Term of patent 14 years
U.S. Cl. D7—330



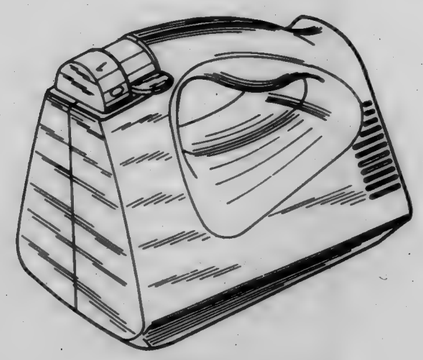
345,075
HAND-HELD ELECTRIC MIXER
Philippe Saltet, Chateaufort, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Oct. 22, 1992, Ser. No. 687
Claims priority, application France, Apr. 27, 1992, 922668
Term of patent 14 years
U.S. Cl. D7—376



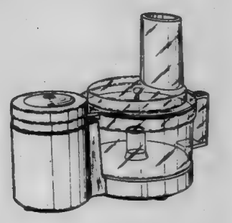
345,076
HAND-HELD BATTERY OPERATED MIXER
Philippe Saltet, Chateaufort, France, assignor to Robert Krups GmbH & Co. KG, Solingen, Fed. Rep. of Germany
Filed Dec. 11, 1992, Ser. No. 2,394
Claims priority, application France, Jan. 15, 1992, 923655
Term of patent 14 years
U.S. Cl. D7—376



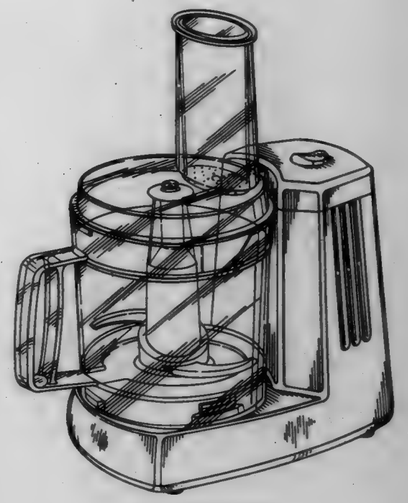
345,077
HAND MIXER
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH & Co., KG, Solingen, Fed. Rep. of Germany
Filed Apr. 18, 1991, Ser. No. 688,081
The portion of the term of this patent subsequent to Aug. 24, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—379



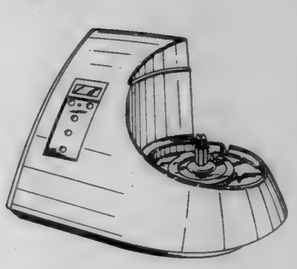
345,078
FOOD PROCESSOR
Josina H. J. Gotzsch, La Buisse, France, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 526,802, May 21, 1990, abandoned.
This application Nov. 10, 1992, Ser. No. 974,372
Claims priority, application World Int. Prop. O., Dec. 14, 1989, DM015.346
Term of patent 14 years
U.S. Cl. D7—384



345,079
FOOD PROCESSOR
Marshall B. Johnson, Mechanicsville, Va., assignor to Hamilton Beach/Proctor-Silex, Glen Allen, Va.
Filed Dec. 18, 1992, Ser. No. 2,735
Term of patent 14 years
U.S. Cl. D7—384



345,080
BASE FOR AN ELECTRICALLY-DRIVEN ROTARY KITCHEN APPLIANCE
Philippe Piret, Ifs, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Aug. 10, 1992, Ser. No. 926,407
Claims priority, application France, Feb. 17, 1992, 920955
Term of patent 14 years
U.S. Cl. D7—386



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345,081
COMBINED SPLASH GUARD LID AND CARRIER FOR MULTIPLE MICROWAVABLE FOOD CONTAINERS
Arthur E. Adami, Andover, Mass., and Christopher P. Amberg, Owings Mills, Md., assignors to Sweetheart Cup Company Inc., Owings Mills, Md.
Filed Jun. 9, 1992, Ser. No. 896,007
Term of patent 14 years
U.S. Cl. D7—391



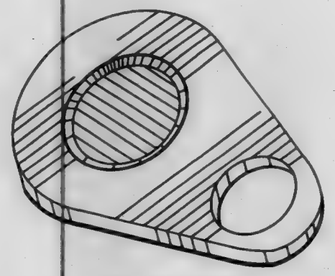
345,082
STEM AND FOOT FOR A DRINKING GLASS
Walter Wenzl, Regen, Fed. Rep. of Germany, assignor to Inn Crystal Glass Ges m.b.H., Braunau am Inn, Fed. Rep. of Germany
Filed Nov. 14, 1991, Ser. No. 791,635
Claims priority, application Fed. Rep. of Germany, May 17, 1991, M 91 03 662.3
Term of patent 14 years
U.S. Cl. D7—396.2



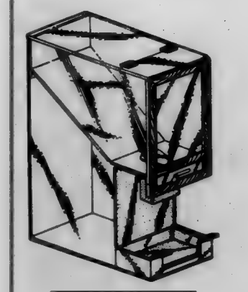
345,083
TRAY FOR FOOD AND BEVERAGE
Leonard Rosenfield, 59 Brewster Rd., West Hartford, Conn. 06117
Filed Jun. 9, 1992, Ser. No. 895,861
Term of patent 14 years
U.S. Cl. D7—553



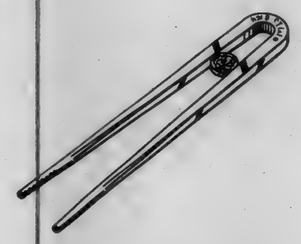
345,084
SERVING TRAY
Thaddeus T. Williams, 3900 Lakepoint Rd., Suffolk, Va. 23434
Filed Mar. 2, 1992, Ser. No. 843,102
Term of patent 14 years
U.S. Cl. D7—554



345,085
DISPENSER BIN
Richard Sewell, 3201 Haggerty Rd., Walled Lake, Mich. 48390
Filed Jul. 10, 1992, Ser. No. 911,307
Term of patent 14 years
U.S. Cl. D7—589



345,086
EATING UTENSIL
Sidney Shapiro, 6065 Roswell Rd., Ste. 420, Atlanta, Ga. 30328
Filed May 13, 1993, Ser. No. 8,310
Term of patent 14 years
U.S. Cl. D7—662



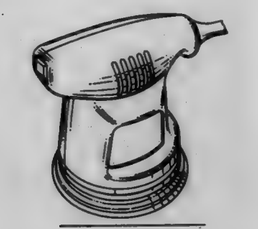
345,087
COMBINED HOOK KNIFE AND SPATULA
R. E. Adams, 2849 S. Jefferson, Lebanon, Mo. 65536
Filed Aug. 17, 1992, Ser. No. 930,907
Term of patent 14 years
U.S. Cl. D7—693



345,088
MULTI-PURPOSE TOOL
Luis Otero, 136 Bowden St., #109, Lowell, Mass. 01852
Filed Mar. 6, 1992, Ser. No. 846,440
Term of patent 14 years
U.S. Cl. D8—55



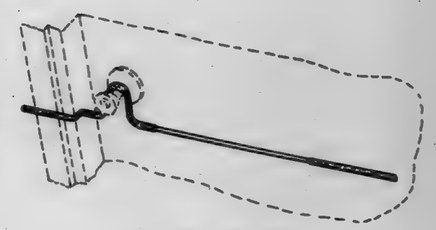
345,089
RANDOM ORBITAL SANDER
Naoki Kikuchi, Chandler, Ariz., and Wade Greer, Greenville, S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.
Filed Oct. 15, 1992, Ser. No. 460
Term of patent 14 years
U.S. Cl. D8—62



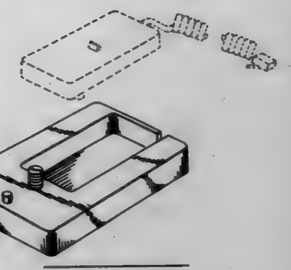
345,090
PORTABLE ELECTRIC SCREWDRIVER
Michio Okumura, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Feb. 19, 1993, Ser. No. 5,116
Term of patent 14 years
U.S. Cl. D8—68



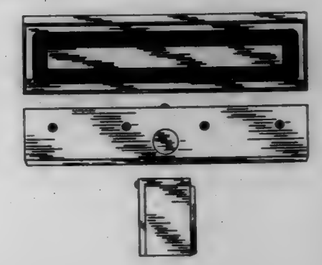
345,091
DOOR SECURITY BRACE
Anthony Malone, 2884 Highway 594, Monroe, La. 71203
Filed Apr. 28, 1992, Ser. No. 875,153
Term of patent 14 years
U.S. Cl. D8—331



345,092
CONSUMER ARTICLE ATTACHABLE RECEPTABLE FOR MAINTAINING A SENSOR IN AN OPERATIVE POSITION ON THE ARTICLE
Roger J. Leyden, 11303 German Church Rd., Willow Springs, Ill. 60480; Terrance Surma, 165 Oxford, Bloomingdale, Ill. 60108, and William R. DeCuzzi, 234 Elmer Ave., Runnemeade, N.J. 08078
Filed May 20, 1992, Ser. No. 886,015
Term of patent 14 years
U.S. Cl. D8—332

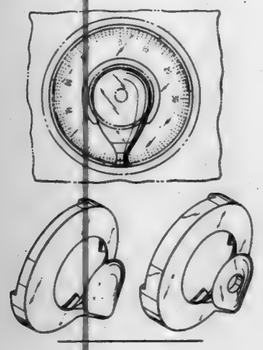


345,093
ELECTROMAGNETIC DOOR LOCK
Frederick F. Fischbach, 657 Liberty Pointe Dr., Ann Arbor, Mich. 48103
Filed Jun. 19, 1992, Ser. No. 901,581
Term of patent 14 years
U.S. Cl. D8—343

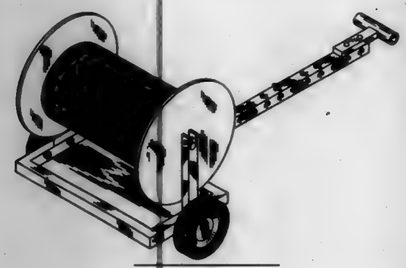


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345,094
PROTECTIVE COVER FOR A COMBINATION LOCK DIAL
J. Clayton Miller, 5085 Danville Rd., Nicholasville, Ky. 40356
Filed May 19, 1992, Ser. No. 886,442
Term of patent 14 years
U.S. Cl. D8—346



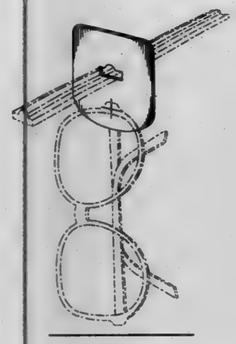
345,095
REEL FOR BARBWIRE
Harold L. Hanway, Rte. 4 Box 393, St. Joseph, Mo. 64507
Filed Oct. 19, 1990, Ser. No. 600,120
Term of patent 14 years
U.S. Cl. D8—358



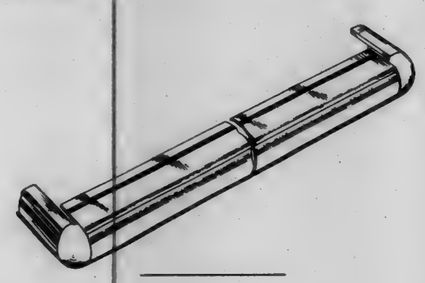
345,096
HANGER FOR A PARTITION WALL
Aaron L. Shapiro, 1514 Jaques Dr., Lebanon, Ind. 46052
Filed Jul. 20, 1992, Ser. No. 917,200
Term of patent 14 years
U.S. Cl. D8—373



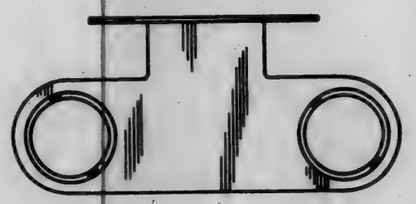
345,097
EYEGLASS DISPLAY HANGER
Daniel A. Triangolo, Cranston, R.I., assignor to Accessories Associates, Inc., North Providence, R.I.
Filed Dec. 28, 1992, Ser. No. 3,096
Term of patent 14 years
U.S. Cl. D8—373



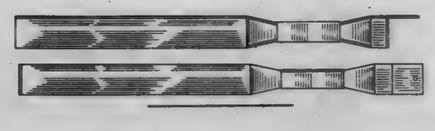
345,098
VALENCE FOR VERTICAL BLINDS
Harout Ohanesian, Northridge, Calif., assignor to U.S. Polymers, Inc., Commerce, Calif.
Filed Oct. 27, 1992, Ser. No. 874
Term of patent 14 years
U.S. Cl. D8—377



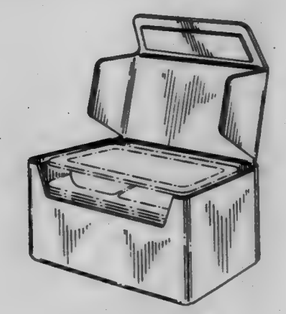
345,099
PIPE HANGAR
Donald M. Oakes, Kitchener, Canada, assignor to Valley Metal Products Ltd., Kitchener, Canada
Filed Jun. 11, 1992, Ser. No. 897,348
Term of patent 14 years
U.S. Cl. D8—380



345,100
PACKAGE IN THE SHAPE OF A BASEBALL BAT
Tino Antonacci, 6705 N. Oshkosh, Chicago, Ill. 60068
Filed Apr. 17, 1992, Ser. No. 870,711
Term of patent 14 years
U.S. Cl. D9—307



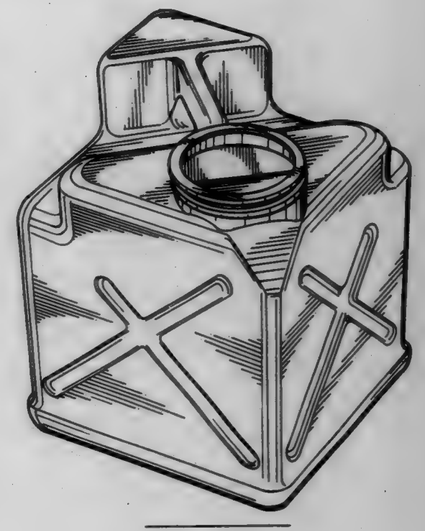
345,101
PACKAGE FOR CONTACT LENS CONTAINERS
Richard Abrams, Jacksonville, Fla., assignor to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.
Filed Jan. 21, 1992, Ser. No. 823,642
Term of patent 14 years
U.S. Cl. D9—423



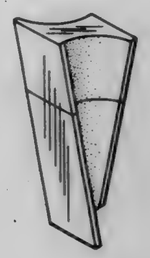
345,102
SOLUTION BOTTLE
Mark T. Bruzzi, Coudersport, Pa.; Leila T. Chioros, Webster, N.Y.; Raymond G. Eichmann, Hilton, N.Y.; Donna M. Henophy; Peter C. Sherer, both of Rochester, N.Y.; Anne M. Turberg, Webster, N.Y., and Kevin C. Whelehan, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 13, 1992, Ser. No. 400
Term of patent 14 years
U.S. Cl. D9—520



345,103
DRINK CONTAINER
Penny Welsch, Hawaiian Gardens; Salvador Roxas, Rancho Santa Margarita; Phillip Buck, Aliso Viejo; Carol J. Conner, Irvine, and Gregory A. Marko, Costa Mesa, all of Calif., assignors to Strottman International, Irvine, Calif.
Filed Oct. 26, 1992, Ser. No. 819
Term of patent 14 years
U.S. Cl. D9—528

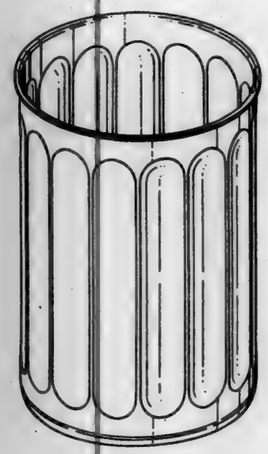


345,104
COMBINED BOTTLE AND CAP
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,620
Term of patent 14 years
U.S. Cl. D9—529



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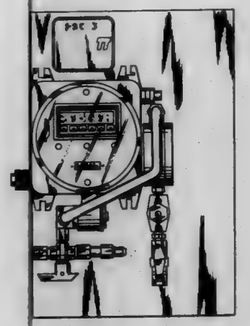
345,105
CAN BODY
Christopher P. Ramsey, Uffington, United Kingdom, assignor to CarnaudMetalbox plc, United Kingdom
Filed Apr. 16, 1991, Ser. No. 683,376
Claims priority, application United Kingdom, Oct. 10, 1990, 2010150
Term of patent 14 years
U.S. Cl. D9—551



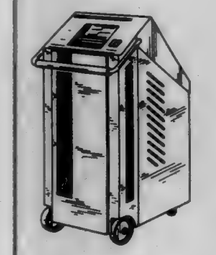
345,106
WALL CLOCK
I-Hwa Wang, No. 13, Alley 79, Kuo-Hsiao Lane, Pei-Tun Dist., Taichung, Taiwan, Taiwan
Filed Aug. 15, 1991, Ser. No. 745,799
Term of patent 14 years
U.S. Cl. D10—1



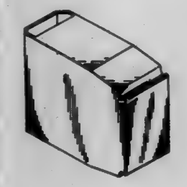
345,107
PROGRAMMABLE ADDITIVE CONTROLLER
Gary E. Williams, Atlanta, Ga., assignor to Titan Industries, Inc., Atlanta, Ga.
Filed Jun. 1, 1992, Ser. No. 890,791
Term of patent 14 years
U.S. Cl. D10—46



345,108
MOLD TEMPERATURE CONTROLLER
Matsui Osamu, Osaka, Japan, assignor to Matsui Manufacturing Co., Ltd., Osaka, Japan
Filed Jun. 28, 1991, Ser. No. 723,519
Claims priority, application Japan, Mar. 29, 1991, 3-9097
Term of patent 14 years
U.S. Cl. D10—49



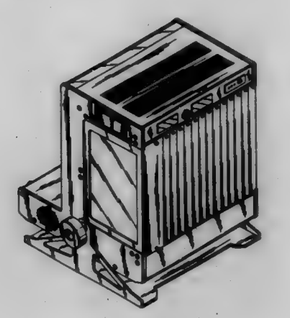
345,109
TEMPERATURE TRANSMITTER HOUSING
Ahmad A. Kian, Minneapolis, and Paul R. Bedney, Jr., Eagan, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Apr. 13, 1992, Ser. No. 867,930
Term of patent 14 years
U.S. Cl. D10—50



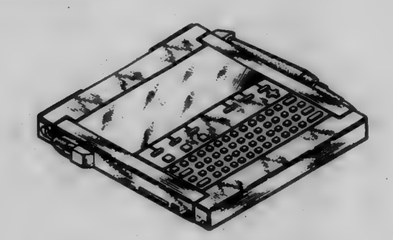
345,110
ANEMOMETER
Michael G. Lannie, Kibworth Beauchamp, England, assignor to Invicta Plastics Ltd.
Filed Apr. 9, 1992, Ser. No. 866,250
Term of patent 14 years
U.S. Cl. D10—59



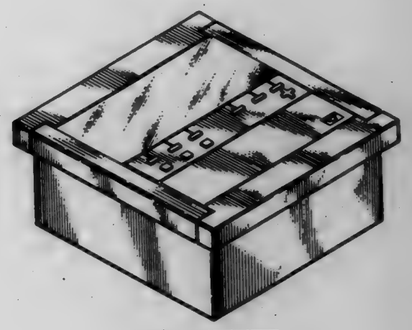
345,111
ENCLOSURE FOR TESTING CIRCUIT BOARDS
Larry L. Tracewell, 8653 Finlarig Dr., Dublin, Ohio 43017
Filed Sep. 21, 1992, Ser. No. 949,012
Term of patent 14 years
U.S. Cl. D10—75



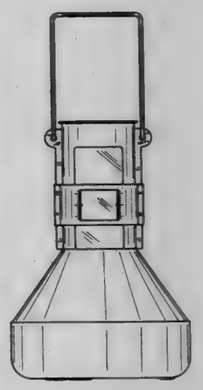
345,112
PORTABLE INTERFACE CONSOLE FOR MONITORING OF GAS DELIVERY SYSTEMS
Jagadisan Krishnamurthy, Sunnyvale, and Blake R. Wharton, Menlo Park, both of Calif., assignors to Semi-Gas Systems, Inc., San Jose, Calif.
Filed Jun. 12, 1992, Ser. No. 897,960
Term of patent 14 years
U.S. Cl. D10—81



345,113
REMOTE INTERFACE CONSOLE FOR MONITORING GAS DELIVERY SYSTEMS
Jagadisan Krishnamurthy, Sunnyvale, and Blake R. Wharton, Menlo Park, both of Calif., assignors to Semi-Gas Systems, Inc., San Jose, Calif.
Filed Jun. 12, 1992, Ser. No. 897,961
Term of patent 14 years
U.S. Cl. D10—81

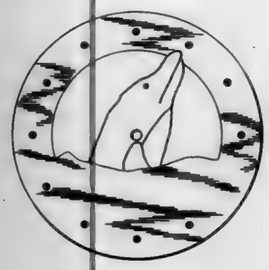


345,114
LIQUID CALIBRATION CONTAINER
William M. Puls, Wichita, Kans., assignor to Great Plains Industries, Inc., Wichita, Kans.
Filed Oct. 1, 1991, Ser. No. 781,482
Term of patent 14 years
U.S. Cl. D10—101

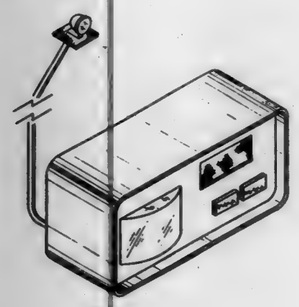


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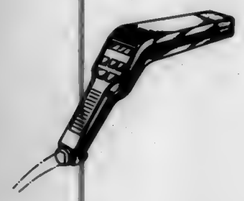
345,115
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,125
Term of patent 14 years
U.S. Cl. D10—126



345,116
EMERGENCY VEHICLE PROXIMITY WARNING SIGNAL
Julia A. Cardinalli, 1530 W. Highsmith Dr., Tucson, Ariz. 85746
Filed Feb. 1, 1993, Ser. No. 4,322
Term of patent 14 years
U.S. Cl. D10—106



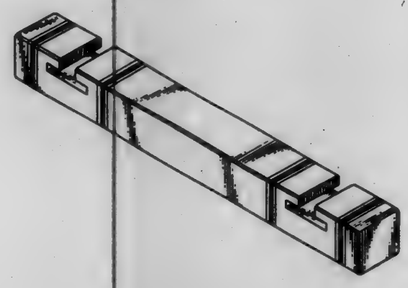
345,117
TIMING LIGHT
Larry D. Pacetti; Dave R. Ellingen, both of Kenosha; Austin Munson, Waunakee, and Thomas J. Green, West Bend, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.
Filed Mar. 9, 1992, Ser. No. 847,249
Term of patent 14 years
U.S. Cl. D10—112



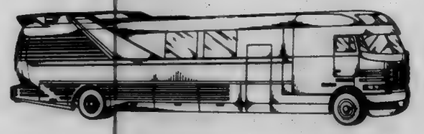
345,118
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,127
Term of patent 14 years
U.S. Cl. D10—126



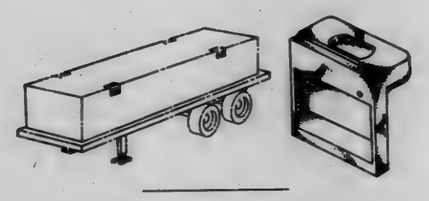
345,119
RAILROAD TIE WITH QUICK LOCK SOCKETS
Jay Cox, 22 W. Hill St., Newcastle, Wyo. 82701
Filed Oct. 26, 1992, Ser. No. 1,886
Term of patent 14 years
U.S. Cl. D12—51



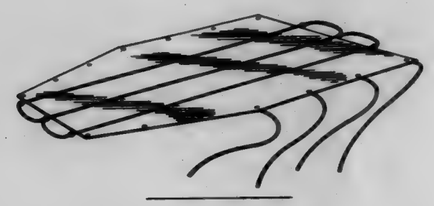
345,120
BUS
Louis J. Normand, Jr., Metarie, La.; Guy W. Cassaday, Riverside, and Donald DeLuca, Barrington, both of R.I., assignors to American Coach International Inc., Boulder City, Nev.
Filed Jul. 15, 1991, Ser. No. 731,719
Term of patent 14 years
U.S. Cl. D12—84



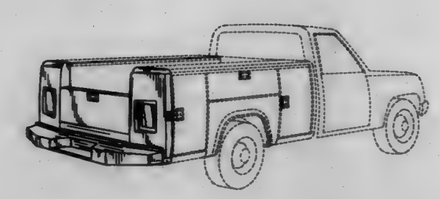
345,121
HOISTING FITTING FOR REMOVABLE TRUCK CONTAINERS
James A. Baumann, 16413 Grant Ave., Orland Park, Ill. 60462
Filed Oct. 15, 1992, Ser. No. 467
Term of patent 14 years
U.S. Cl. D12—97



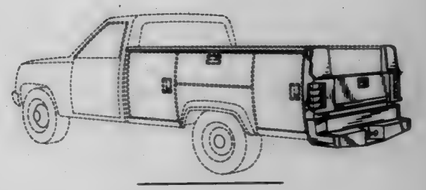
345,122
MATERIAL CARRIER AND COVER FOR A TRUCK BED
Carlton W. Lloyd, 4225 Sleeping Indian Rd., Fallbrook, Calif. 92028
Filed Jun. 15, 1992, Ser. No. 898,759
Term of patent 14 years
U.S. Cl. D12—403



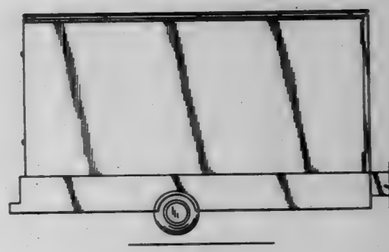
345,123
TRUCK BODY REAR END UNIT
Richard Lewelles; George Kalis, Jr., and Robert M. Lapsley, all of Wooster, Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Filed Jul. 16, 1992, Ser. No. 915,378
Term of patent 14 years
U.S. Cl. D12—98



345,124
TRUCK BODY REAR END UNIT
Richard Lewelles; George Kalis, Jr., and Robert M. Lapsley, all of Wooster, Ohio, assignors to The Scott Fetzer Company, Westlake, Ohio
Filed Jul. 17, 1992, Ser. No. 916,174
Term of patent 14 years
U.S. Cl. D12—98



345,125
MOBILE PROMOTIONAL TRAILER
Marcus R. McCrary, 18711 Fertson Ave., Dallas, Tex. 75252
Filed Sep. 9, 1992, Ser. No. 941,638
Term of patent 14 years
U.S. Cl. D12—101

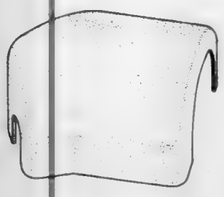


345,126
BICYCLE
Lin Y. Tsun, No. 160, Sec. 1 Chang Hai Road, Tainan, Taiwan
Filed Oct. 26, 1992, Ser. No. 851
Term of patent 14 years
U.S. Cl. D12—108



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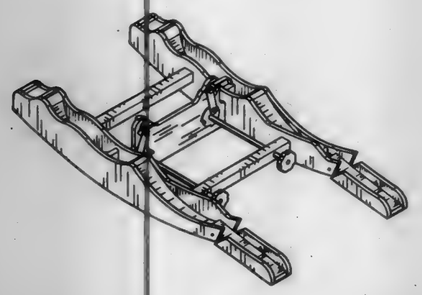
345,127
SEAL PROTECTOR AND JOINT RETAINER FOR INSTALLATION OF FRONT WHEEL DRIVE ASSEMBLY IN A MOTOR VEHICLE
Paul R. Steuglein, Frankenmuth; Robin J. Sich, and William P. Skvarla, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1992, Ser. No. 935,216
Term of patent 14 years
U.S. Cl. D12—126



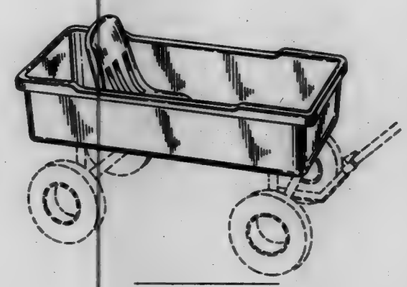
345,128
BABY CARRIAGE
Kenzou Kasai, Osaka, Japan, assignor to Aprica Kasai Kabushikikaisha, Osaka, Japan
Filed Sep. 30, 1992, Ser. No. 954,984
Claims priority, application Japan, Apr. 1, 1992, 4-9819
Term of patent 14 years
U.S. Cl. 12—129



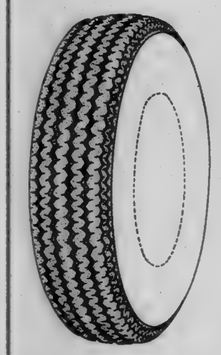
345,129
WHEELCHAIR ROCKER
Harold E. Buffum, 1061 W. 400 South, Kokomo, Ind. 46902, and Paul E. McGaffney, Box 243, Amboy, Ind. 46911
Filed Jul. 30, 1992, Ser. No. 922,954
Term of patent 14 years
U.S. Cl. D12—133



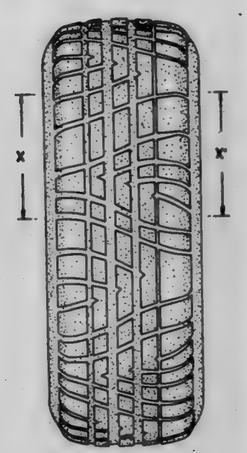
345,130
PEDIATRIC TRANSPORTER
Robert L. Schantner, Cherry Hill, N.J., assignor to Omnimed, Inc., Maple Shade, N.J.
Filed Oct. 6, 1992, Ser. No. 216
Term of patent 14 years
U.S. Cl. D12—133



345,131
TIRE TREAD
Andre E. J. Baas, Bettembourg, and Ronald Els, Cruchten, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 936,542
Claims priority, application Benelux, Mar. 25, 1991, 67514-00
Term of patent 14 years
U.S. Cl. D12—143



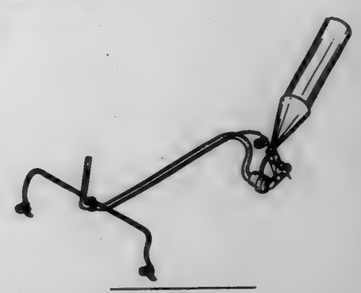
345,132
AUTOMOBILE TIRE
Izumi Kuramochi, Tokyo; Aiko Ameda, Hiratsuka; Kohtaroh Iwabuchi, Tokyo, and Susumu Watanabe, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jun. 26, 1991, Ser. No. 721,015
Claims priority, application Japan, Feb. 6, 1991, 3-2683
The portion of the term of this patent subsequent to Nov. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—146



345,133
AUTOMOBILE TIRE
Yasuo Himuro, and Nobuyuki Watanabe, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jul. 6, 1992, Ser. No. 912,592
Claims priority, application Japan, Jan. 9, 1992, 4-63
Term of patent 14 years
U.S. Cl. D12—147



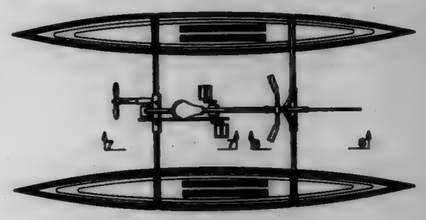
345,134
SYSTEM FOR SUPPLYING WATER TO A BICYCLE RIDER
Mark R. Meaker, Unisea Inn, Pouch 503, Dutch Harbor, Ak. 99692
Filed Dec. 11, 1992, Ser. No. 2,386
Term of patent 14 years
U.S. Cl. D12—114



345,135
AUTOMOBILE REAR DECK AIR DEFLECTOR
Daiya Kaku, Tokyo, Japan; Gordon G. Sked, Kenilworth, Warwickshire, England; Geoffrey Upex, Solihull, W. Midlands, England, and Richard Woolley, Eastern Green, Coventry, England, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1992, Ser. No. 1,315
Claims priority, application Japan, May 7, 1992, 4-13372
Term of patent 14 years
U.S. Cl. D12—181

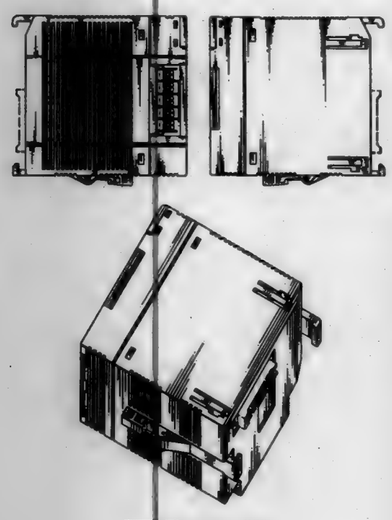


345,136
PERSONALIZED WATERCRAFT
Phillip E. Schlangen, and Raymond J. Bursch, both of Minneapolis, Minn., assignors to Hydro-Bikes, Inc., Minneapolis, Minn.
Filed Jul. 31, 1992, Ser. No. 922,097
Term of patent 14 years
U.S. Cl. D12—306



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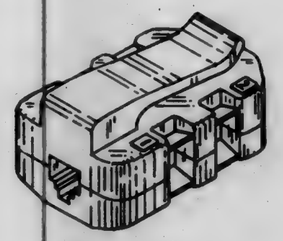
345,137
POWER SUPPLY FOR A PROGRAMMABLE CONTROLLER
Sherman G. Thomas, Earlysville, Va., assignor to GE Fanuc Automation North America, Inc., Charlottesville, Va.
Filed Jan. 11, 1991, Ser. No. 639,996
Term of patent 14 years
U.S. Cl. D13—110



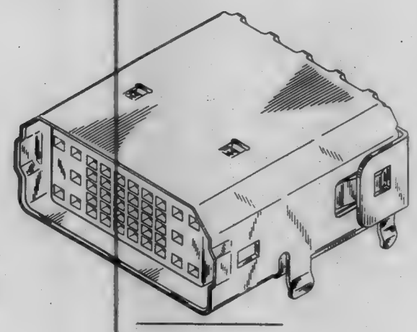
345,138
AIR MOTOR
Frederick A. Powers, Maple Grove, and Harold D. Johnson, Buffalo, both of Minn., assignors to Graco Inc., Minneapolis, Minn.
Filed Jul. 31, 1992, Ser. No. 922,970
Term of patent 14 years
U.S. Cl. D13—112



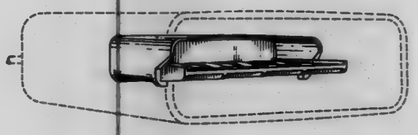
345,139
MODULAR ADAPTER FOR TESTING TELEPHONE CIRCUITS
Donald L. Gregson, Paradise, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Jun. 13, 1990, Ser. No. 547,342
Term of patent 14 years
U.S. Cl. D13—146



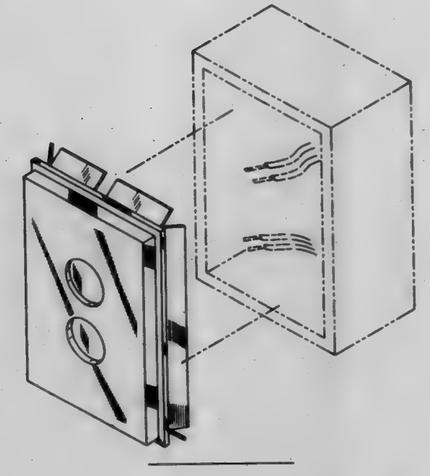
345,140
ELECTRICAL CONNECTING SOCKET
Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan
Filed Feb. 27, 1992, Ser. No. 842,590
Claims priority, application Japan, Sep. 3, 1991, 3-26655
Term of patent 14 years
U.S. Cl. D13—147



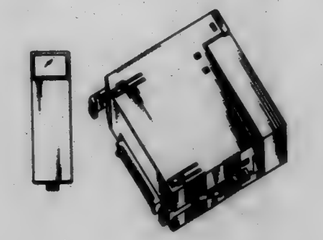
345,141
INSIDE CONNECTOR FOR A COMMUNICATION HEADSET SYSTEM
Robert E. Lucey, Sudbury, and Robert M. Kelly, Burlington, both of Mass., assignors to Unax Corporation, Chelmsford, Mass.
Filed Sep. 9, 1991, Ser. No. 756,383
Term of patent 14 years
U.S. Cl. D13—154



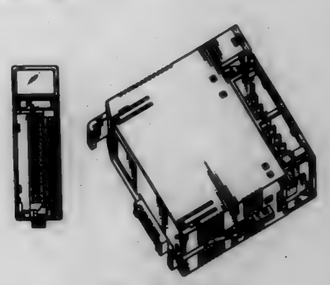
345,142
TEMPORARY PROTECTIVE COVER FOR AN ELECTRICAL OUTLET BOX
Douglas F. Porter, 1025 Gladway Rd., Baltimore, Md. 21220
Filed Jul. 9, 1992, Ser. No. 910,987
Term of patent 14 years
U.S. Cl. D13—156



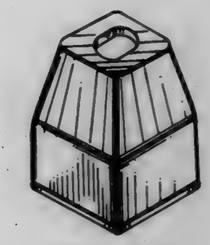
345,143
CENTRAL PROCESSING UNIT MODULE FOR A PROGRAMMABLE CONTROLLER
Sherman G. Thomas, Earlysville, Va., assignor to GE Fanuc Automation North America, Inc., Charlottesville, Va.
Filed Jan. 11, 1991, Ser. No. 639,998
Term of patent 14 years
U.S. Cl. D13—162



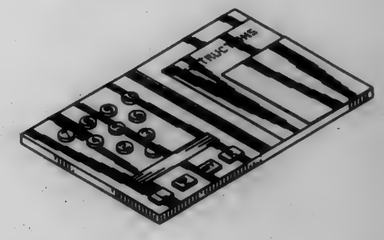
345,144
INPUT/OUTPUT MODULE FOR A PROGRAMMABLE CONTROLLER
Sherman G. Thomas, Earlysville, Va., assignor to GE Fanuc Automation North America, Inc., Charlottesville, Va.
Filed Jan. 11, 1991, Ser. No. 640,001
Term of patent 14 years
U.S. Cl. D13—162



345,145
INSTRUMENT HOUSING
Harold T. Fogg, Aurora; Paul B. Sutfin, Denver, and David W. Wells, Littleton, all of Colo., assignors to Fogg System Company, Inc., Aurora, Colo.
Filed Apr. 8, 1992, Ser. No. 866,240
Term of patent 14 years
U.S. Cl. D13—184

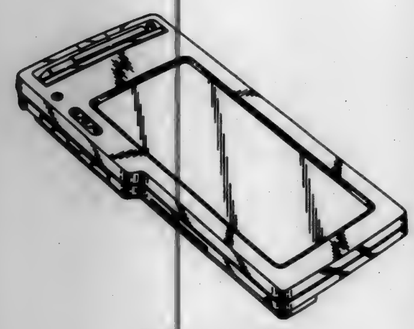


345,146
PORTABLE ELECTRONIC COMPUTER FOR BOWLING
Robert F. Lane, 5599 NW. 5th St. #9, Miami, Fla. 33126
Filed Feb. 8, 1990, Ser. No. 476,633
Term of patent 14 years
U.S. Cl. D14—100

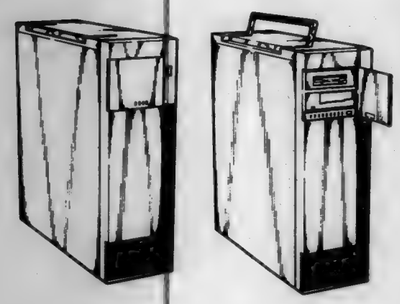


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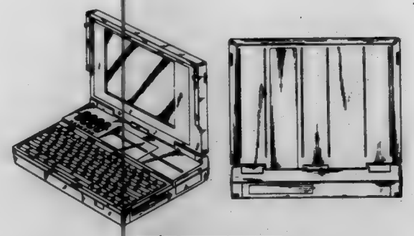
345,147
PEN-BASED PERSONAL COMPUTER
Katsuyuki Fukutake; Yoshihiro Ueda; Masaharu Kasahara; Shigeru Hideawa, all of Kawasaki, Japan; Mark A. Schiebl, Fremont, Calif.; Neil R. Taylor, Alameda, Calif., and Robin W. Chu, San Francisco, Calif., assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 22, 1992, Ser. No. 917,442
Term of patent 14 years
U.S. Cl. D14—100



345,148
COMPUTER
Yun-ki Hong, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Jul. 27, 1992, Ser. No. 919,576
Claims priority, application Rep. of Korea, May 16, 1992, 92-7886
Term of patent 14 years
U.S. Cl. D14—100

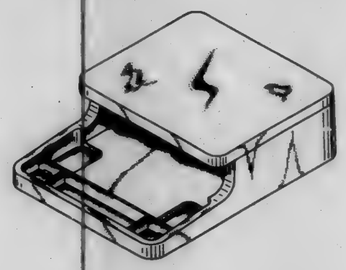


345,149
COMPUTER
Peter K. Toedter, Trabuco Canyon; Kevin D. Simmons, San Diego, and Charles S. Curbbun, Leucadia, all of Calif., assignors to AST Research, Inc., Irvine, Calif.
Filed Aug. 18, 1992, Ser. No. 932,041
Term of patent 14 years
U.S. Cl. D14—106

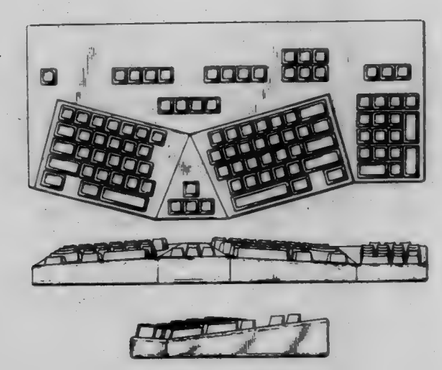


345,150
HARD DISK DRIVE HOUSING FOR A MICRO DATA PROCESSOR
Pierre Fournier, Paris, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France
Filed Jun. 22, 1992, Ser. No. 902,600
Claims priority, application France, Dec. 24, 1991, 918-131
Term of patent 14 years
U.S. Cl. D14—109

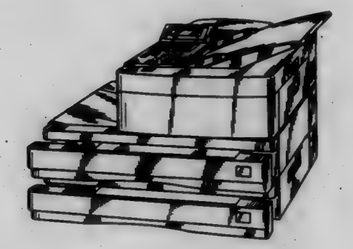
345,151
PLATFORM FOR VIDEO DISPLAY TERMINAL
H. Charles Hassel, Los Angeles, Calif., assignor to MicroComputer Accessories, Inc., Inglewood, Calif.
Filed Jun. 4, 1992, Ser. No. 894,217
Term of patent 14 years
U.S. Cl. D14—114



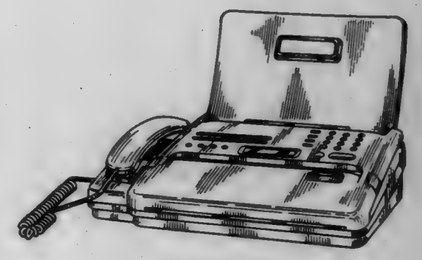
345,152
ERGONOMIC COMPUTER KEYBOARD
Leonard V. Mermod, Jr., 3408 S. 256th St., Kent, Wash. 98032
Filed Oct. 28, 1991, Ser. No. 784,037
Term of patent 14 years
U.S. Cl. D14—115



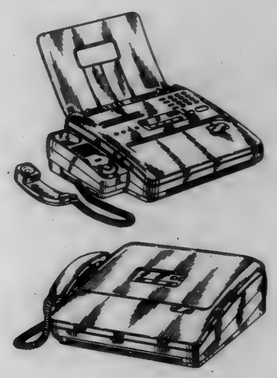
345,153
FACSIMILE TRANSCEIVER
Shin-ichi Hiroki, and Kimiko Kageyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 18, 1992, Ser. No. 1,548
Claims priority, application Japan, May 21, 1992, 4-14550; May 21, 1992, 4-14551
Term of patent 14 years
U.S. Cl. D14—118



345,154
FACSIMILE TRANSCEIVER
Masahiko Kashiwahara, Yokohama, and Shin-ichi Hiroki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 8, 1992, Ser. No. 2,299
Claims priority, application Japan, Jun. 8, 1992, 4-16643
Term of patent 14 years
U.S. Cl. D14—118

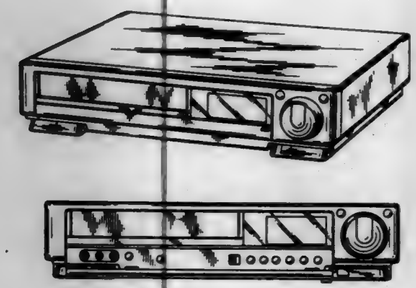


345,155
FACSIMILE TRANSCEIVER
Shin-ichi Hiroki, Tokyo, and Masahiko Kashiwahara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 12, 1993, Ser. No. 5,920
Claims priority, application Japan, Sep. 14, 1992, 4-26829
Term of patent 14 years
U.S. Cl. D14—118

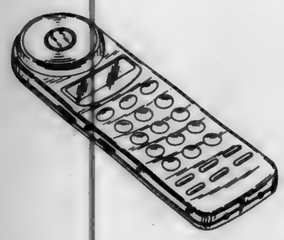


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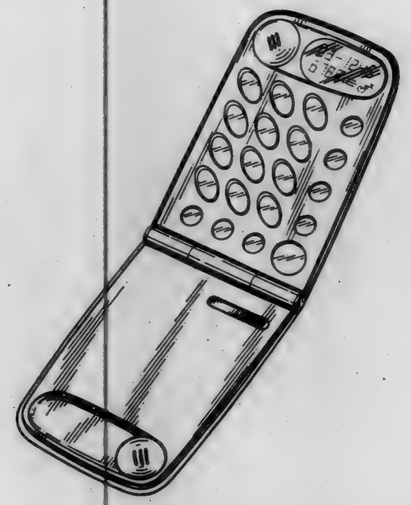
345,156
VIDEO TAPE RECORDER
Atsushi Ishibashi; Makoto Fukatsu, both of Kokubunji; Tadashi Sube, Kodaira; Nobue Fukuda, Machida, and Hideo Sasajima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 30, 1992, Ser. No. 953,600
Claims priority, application Japan, May 15, 1992, 4-13911
Term of patent 14 years
U.S. Cl. D14—135



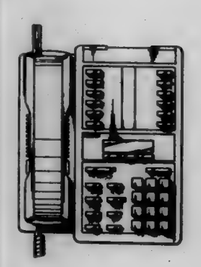
345,157
PORTABLE RADIO TELEPHONE
Masahiko Happo; Tomiaki Shirakawa, both of Tokyo; Tadao Nakamura, Yokohama, and Takato Yokouchi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,938
Term of patent 14 years
U.S. Cl. D14—138



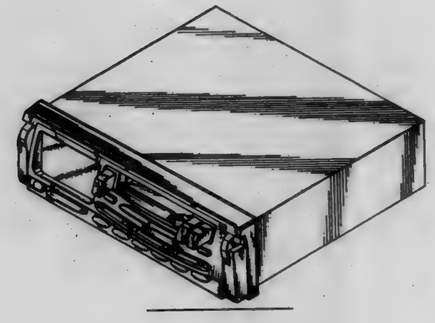
345,158
PORTABLE RADIO TELEPHONE
Seiji Namba, Inzai; Takashi Kajita, Tokyo; Akihiko Konno, Tokyo, and Tomiaki Shirakawa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,937
Term of patent 14 years
U.S. Cl. D14—138



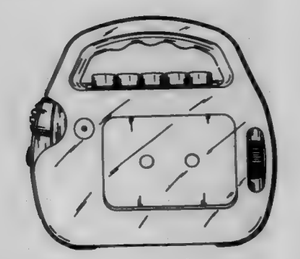
345,159
TELEPHONE SET
Michael Langlois, Kanata, Canada, assignor to Mitel Corporation, Kanata, Canada
Filed Sep. 22, 1992, Ser. No. 949,081
Claims priority, application Canada, Mar. 23, 1992, 2303922
Term of patent 14 years
U.S. Cl. D14—151



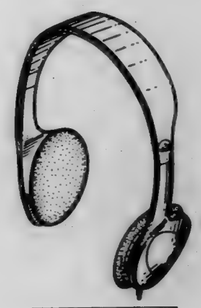
345,160
COMBINED CASSETTE TAPE PLAYER AND RADIO FOR AUTOMOBILES
Shigemoto Yamane, Yokohama, Japan, assignor to Shintom Co., Ltd., Yokohama, Japan
Filed Apr. 30, 1992, Ser. No. 875,157
Term of patent 14 years
U.S. Cl. D14—157



345,161
COMBINED TAPE RECORDER, PLAYER AND MICROPHONE
Patrick J. Murphy, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed May 22, 1992, Ser. No. 887,309
Term of patent 14 years
U.S. Cl. D14—165



345,162
HEADPHONE
Katsumi Yamatogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 741,828, Aug. 7, 1991, Pat. No. D. 338,010. This application Oct. 13, 1992, Ser. No. 280
Claims priority, application Japan, Mar. 9, 1991, 3-9187
Term of patent 14 years
U.S. Cl. D14—205



345,163
HEADPHONE
Katsumi Yamatogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 741,828, Aug. 7, 1991, Pat. No. Des. 338,010. This application Oct. 13, 1992, Ser. No. 282
Claims priority, application Japan, Mar. 9, 1991, 3-9187
Term of patent 14 years
U.S. Cl. D14—205



345,164
HAND CONTROLLER FOR MULTIMEDIA VIDEO SYSTEM
Bernard A. Grae, 5011 Ledgestone Dr., Fort Worth, Tex. 76132
Filed Dec. 30, 1991, Ser. No. 814,664
Term of patent 14 years
U.S. Cl. D14—218

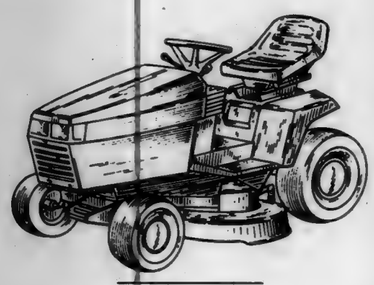


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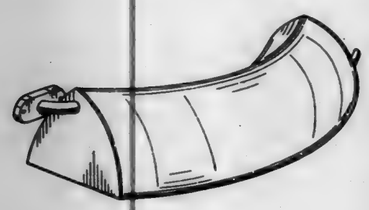
345,165
MOBILE ANTENNA
Glenn L. Cota, Piqua, and Harold E. Longfellow, Greenville, both of Ohio, assignors to Valor Enterprises, Inc., West Milton, Ohio
Filed Apr. 17, 1992, Ser. No. 869,720
Term of patent 14 years
U.S. Cl. D14—230



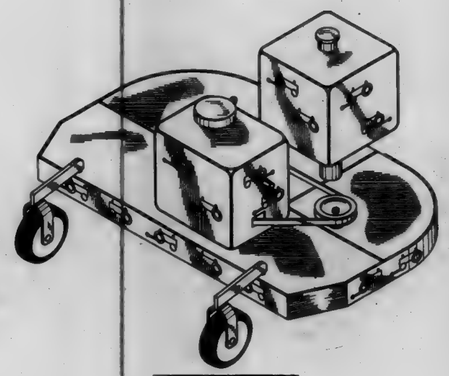
345,166
MOWING TRACTOR
Igor Kamlukin; John F. Brackin, both of Mequon, and Edward Freier, Jr., Port Washington, all of Wis., assignors to Simplicity, Port Washington, Wis.
Filed Sep. 25, 1990, Ser. No. 587,905
Term of patent 14 years
U.S. Cl. D15—15



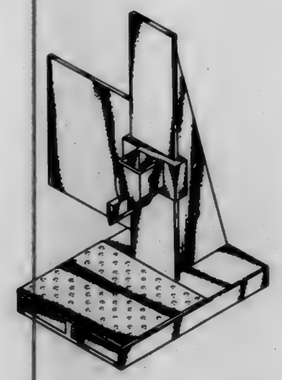
345,167
SOUND MUFFLER FOR LAWN MOWER
Jung W. Lee, 7305 Foxe Pl., Springfield, Va. 22151
Filed Jul. 25, 1991, Ser. No. 735,471
Term of patent 14 years
U.S. Cl. D15—17



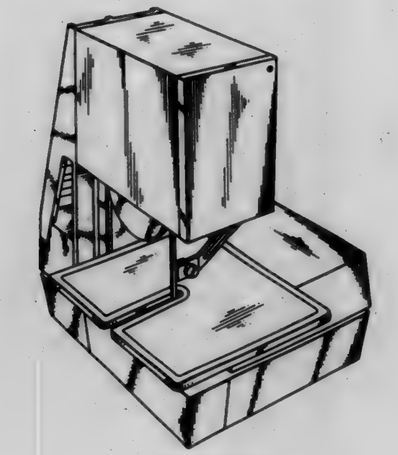
345,168
GRASS CHOPPER
Telford F. Cook, and Daniel H. McGhee, Jr., both of R.R. 1, Cave-In-Rock, Ill. 62919
Filed Apr. 22, 1991, Ser. No. 688,878
Term of patent 14 years
U.S. Cl. D15—27



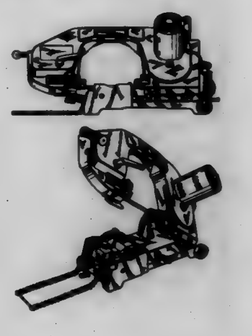
345,169
WOOD SPLITTER FOR USE WITH A BACKHOE
H. G. Swain, Jr., 7860 Misty Mountain Rd., Germantown, N.C. 27019
Filed Feb. 21, 1992, Ser. No. 839,235
Term of patent 14 years
U.S. Cl. D15—28



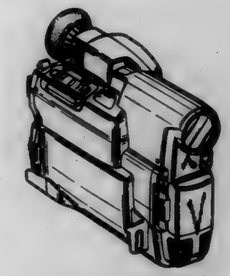
345,170
BANDSAW
Robert W. Baumbach, Los Angeles, and Lester B. Nizia, Woodland Hills, both of Calif., assignors to Gryphon Corporation, Burbank, Calif.
Filed Jul. 9, 1992, Ser. No. 911,134
Term of patent 14 years
U.S. Cl. D15—134



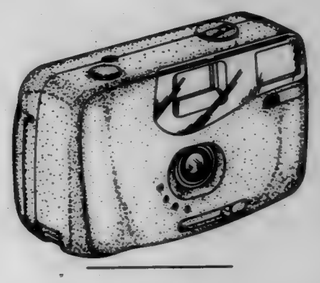
345,171
BAND SAW
Satoru Watanabe, and Masakazu Sakamoto, both of Tokyo, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Aug. 19, 1992, Ser. No. 931,526
Claims priority, application Japan, Feb. 21, 1992, 4-4869
Term of patent 14 years
U.S. Cl. D15—134



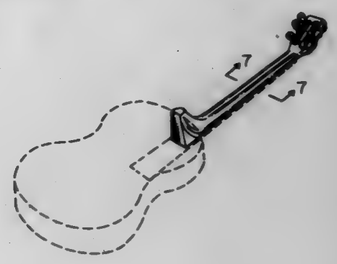
345,172
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Yoshifumi Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 948,847
Claims priority, application Japan, Mar. 24, 1992, 4-8238
Term of patent 14 years
U.S. Cl. D16—202



345,173
STILL CAMERA
Samuel F. Swayze, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 16, 1992, Ser. No. 948,963
Term of patent 14 years
U.S. Cl. D16—209



345,174
NECK OF A MUSICAL INSTRUMENT
James Attias, 19470 NW. 59th Ave., Miami, Fla. 33015
Filed Jan. 17, 1991, Ser. No. 645,667
Term of patent 14 years
U.S. Cl. D17—20

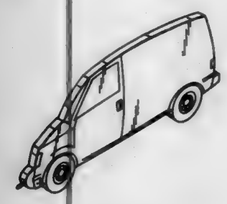


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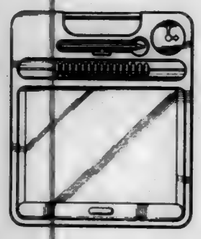
345,175
WRITING INSTRUMENT
Jules Giralt, 14, rue Paul Lacombe, 11000 Carcassonne, France
Division of Ser. No. 894,815, Oct. 9, 1990, Pat. No. Des. 333,667. This application Oct. 16, 1992, Ser. No. 580
Claims priority, application France, Apr. 10, 1990, 902,945
Term of patent 14 years
U.S. Cl. D19—42



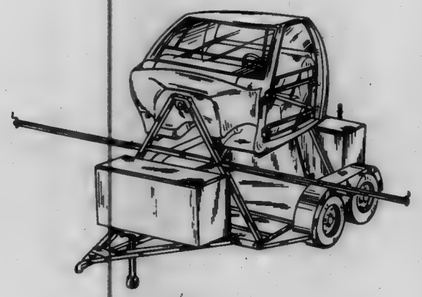
345,176
WRITING PEN
Ronald F. Moszyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,936
Term of patent 14 years
U.S. Cl. D19—42



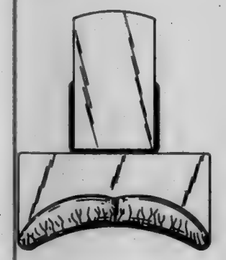
345,177
DRAWING BOARD
Kai-Shun Mak, Kwai Chung, Hong Kong, assignor to Hop Lee Cheong Industrial Co Ltd, Hong Kong
Filed Oct. 20, 1992, Ser. No. 654
Claims priority, application United Kingdom, Apr. 21, 1992, 2022415
Term of patent 14 years
U.S. Cl. D19—52



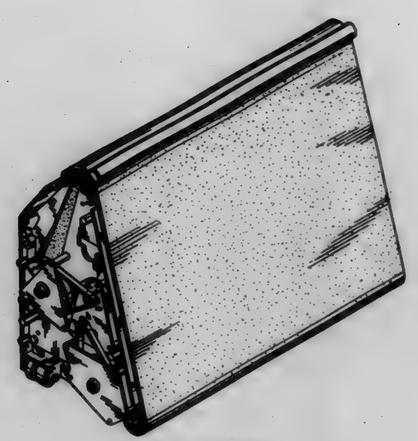
345,178
ROLL-OVER SIMULATOR
Frank J. Peterson, 3000 S. Rooney Rd., Morrison, Colo. 80465
Filed Jul. 6, 1992, Ser. No. 909,468
Term of patent 14 years
U.S. Cl. D19—63



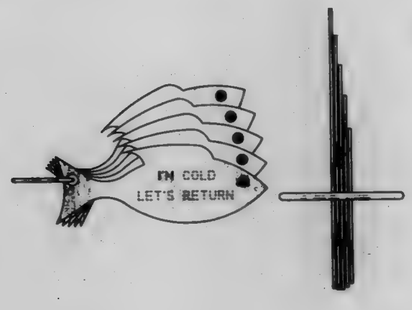
345,179
NOVELTY CLIP
Garth Carefoot, 790 Millbank, Vancouver, B.C., Canada V5Z 3Z3
Filed Jan. 29, 1992, Ser. No. 827,964
Term of patent 14 years
U.S. Cl. D19—65



345,180
SUPPORT MODULE FOR MOBILE ADVERTISING DISPLAYS FOR SPORTING ARENAS
D. Jose M. G. Martin, Madrid, Spain, assignor to Dorna U.S.A., Inc., New York, N.Y.
Filed Sep. 26, 1990, Ser. No. 589,475
The portion of the term of this patent subsequent to Sep. 15, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—10



345,181
SET OF UNDERWATER COMMUNICATION CARDS
Joann J. Skinsnes, 939 S. Tantau Ave., Cupertino, Calif. 95014
Filed Aug. 12, 1992, Ser. No. 928,233
Term of patent 14 years
U.S. Cl. D20—40



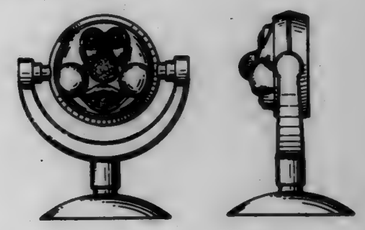
345,182
IRREGULARLY SHAPED DICE
Joseph Fjelstad, 142092 Moscow Reg. g. Troitsk, ul. Centralnay, d.20 kw.122, U.S.S.R.
Filed Jul. 15, 1992, Ser. No. 913,548
Term of patent 14 years
U.S. Cl. D21—41



345,183
TOY FETAL LIFE SOUNDS MONITOR
Gregory J. Emmel, Marina Del Rey; Michael E. Henley, Pasadena, both of Calif.; Clive L. Smith, Englewood, Colo., and Michael J. Vaught, South Salem, assignors to BLK, Inc., Portland, Oreg.
Continuation-in-part of Ser. No. 464,751, Jan. 12, 1990, Pat. No. Des. 328,617. This application Aug. 11, 1992, Ser. No. 930,195
Term of patent 14 years
U.S. Cl. D21—59



345,184
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,716
Term of patent 14 years
U.S. Cl. D21—65



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345,185
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,836
Term of patent 14 years
U.S. Cl. D21—65



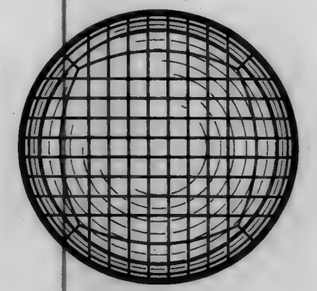
345,186
TOY AIRPLANE
Andrew T. Donovan, P.O. Box 239, Woodstock, New Brunswick, Canada E0J 2B0
Filed Mar. 11, 1991, Ser. No. 669,291
Term of patent 14 years
U.S. Cl. D21—82



345,187
BALLOON
Gary W. Smith, Fresno, Calif., assignor to Randy T. Smith, Clovis, Calif., a part interest
Filed Sep. 2, 1992, Ser. No. 938,643
Term of patent 14 years
U.S. Cl. D21—84



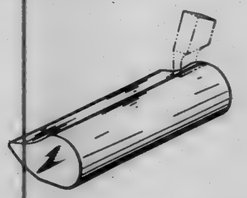
345,188
PUZZLE
Lei Wen, 7 Ferret La., East Setauket, N.Y. 11733; Jinchun Wen, and Quan Wen, both of Bldg 14, #74 Yard, Lugu Road, Shijingsan Area, Beijing, China 100039
Filed Feb. 12, 1992, Ser. No. 834,726
Term of patent 14 years
U.S. Cl. D21—107



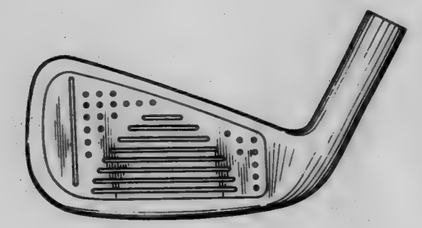
345,189
TOY VEHICLE
Timothy J. Smith, 47 Lowther Road, Bournemouth, Dorset, BH8 8NG, Great Britain
Filed Oct. 7, 1992, Ser. No. 211
Claims priority, application United Kingdom, Apr. 9, 1992, 2022254
Term of patent 14 years
U.S. Cl. D21—136



345,190
PUTTER HEAD
Wayne R. Wooten, Hazlehurst, Ga., assignor to The Teardrop Putter Corporation, Hilton Head, S.C.
Filed Feb. 18, 1992, Ser. No. 837,430
Term of patent 14 years
U.S. Cl. D21—217



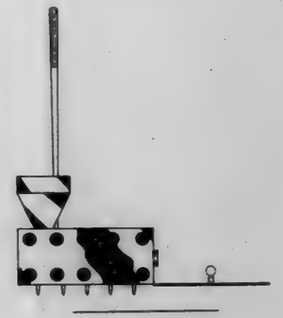
345,191
GOLF CLUB HEAD
Kanji Iinuma, Musashino, and Magoichi Yamada, Higashikurume, both of Japan, assignors to Daiwa Golf Co., Ltd., Higashikurume, Japan
Filed Jun. 24, 1992, Ser. No. 903,618
Claims priority, application Japan, Dec. 24, 1991, 3-38819
Term of patent 14 years
U.S. Cl. D21—220



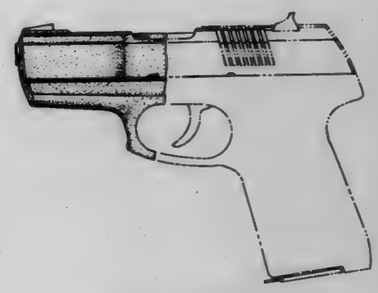
345,192
PUTTER GRIP
Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jan. 21, 1992, Ser. No. 823,548
Term of patent 14 years
U.S. Cl. D21—222



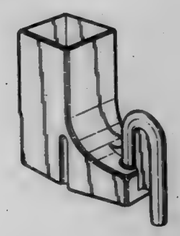
345,193
GOLF BALL DISPENSER
Shefford L. Keene, Sr., 517 Wine St., Hampton, Va. 23669
Filed Jul. 22, 1991, Ser. No. 733,274
Term of patent 14 years
U.S. Cl. D21—234



345,194
PISTOL BARREL
William B. Ruger, Croydon, N.H.
Filed May 6, 1992, Ser. No. 880,320
Term of patent 14 years
U.S. Cl. D22—104

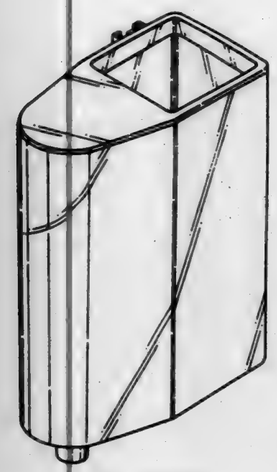


345,195
TOILET TANK CHEMICAL DISPENSER
Graham Kelly, Norwich, England, assignor to Jeyes Group plc, England
Filed Aug. 28, 1992, Ser. No. 937,245
Claims priority, application United Kingdom, Feb. 28, 1992, 2021493
Term of patent 14 years
U.S. Cl. D23—208



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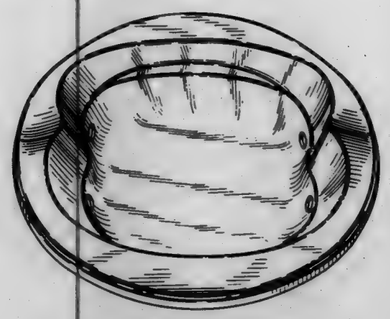
345,196
TOILET TANK CHEMICAL DISPENSER
Graham Kelly, Norwich, England, assignor to Jeyes Group plc, England
Filed Sep. 1, 1992, Ser. No. 938,479
Claims priority, application United Kingdom, May 11, 1992, 2022820
Term of patent 14 years
U.S. Cl. D23—208



345,197
PIPE
Thomas L. Potter, P.O. Box 1661, Apple Valley, Calif. 92307
Filed May 20, 1991, Ser. No. 702,697
Term of patent 14 years
U.S. Cl. D23—266



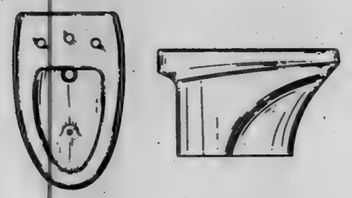
345,198
WHIRLPOOL BATHTUB
Remo Jacuzzi, Little Rock, Ark., assignor to Jason International, Inc., North Little Rock, Ark.
Filed Mar. 31, 1992, Ser. No. 861,496
Term of patent 14 years
U.S. Cl. D23—280



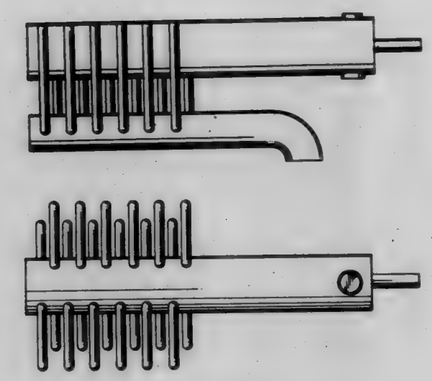
345,199
LAVATORY
John Laughton, Bedminster, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Dec. 31, 1991, Ser. No. 817,129
Term of patent 14 years
U.S. Cl. D23—294



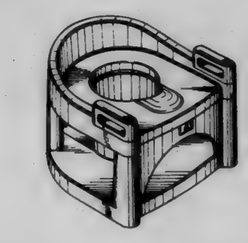
345,200
BIDET
Seijiro Kawamura, and Noriko Yoshii, both of Fukuoka, Japan, assignors to Toto Ltd., Kitakyushu, Japan
Filed Mar. 31, 1992, Ser. No. 864,910
Claims priority, application Japan, Oct. 4, 1991, 3-30015
Term of patent 14 years
U.S. Cl. D23—295



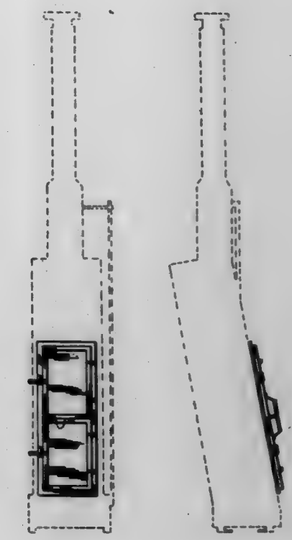
345,201
HORIZONTAL PULSE COMBUSTION BOILER
Peter Kardos, Longmeadow, Mass., and Masoud Tamjidi, Liverpool, N.Y., assignors to Fulton Thermatec Corporation, Pulaski, N.Y.
Continuation-in-part of Ser. No. 643,663, Jan. 18, 1991, abandoned. This application Apr. 22, 1991, Ser. No. 689,321
Term of patent 14 years
U.S. Cl. D23—319



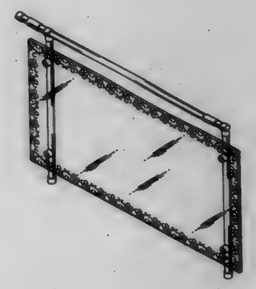
345,202
TOILET TRAINING UNIT FOR A CHILD
David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Boston, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Jul. 2, 1992, Ser. No. 908,026
Term of patent 14 years
U.S. Cl. D23—296



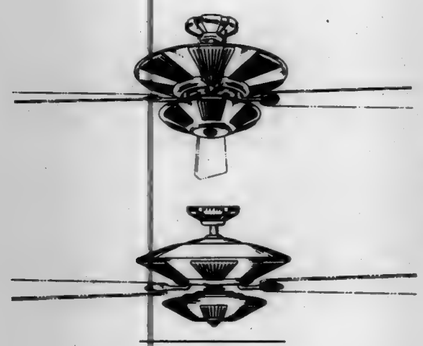
345,203
DOUBLE DOOR UNIT FOR A FIREBOX
Leslie Blevins, Jr., R.R. #1, Lawrence, Kans. 66044
Filed Jul. 2, 1991, Ser. No. 724,781
Term of patent 14 years
U.S. Cl. D23—329



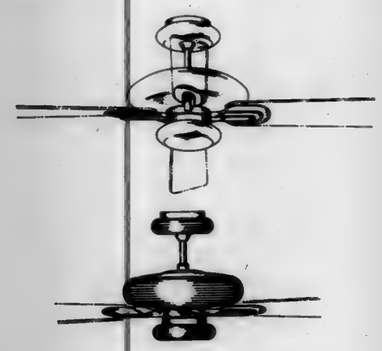
345,204
BURN GUARD FOR A FIREPLACE
Joseph D. Boka, 3128 Unit B, Turner Road, Windsor Ontario, Canada N8W 3L8
Filed Oct. 28, 1991, Ser. No. 784,011
Term of patent 14 years
U.S. Cl. D23—406



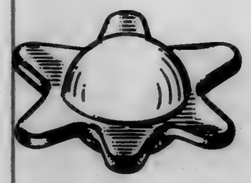
345,205
COMBINED CEILING FAN MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT
Charles J. DiPasquale, Carrollton, Tex., assignor to Smartel, Inc., Carrollton, Tex.
Filed Mar. 11, 1993, Ser. No. 5,752
Term of patent 14 years
U.S. Cl. D23—411



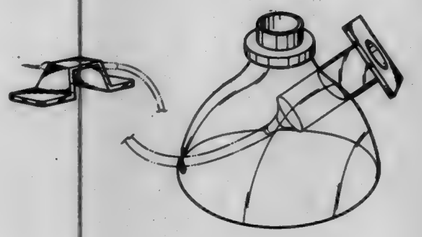
345,206
COMBINED MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT FOR A CEILING FAN
Charles J. DiPasquale, Carrollton, Tex., assignor to Smartel, Inc., Carrollton, Tex.
Filed Mar. 11, 1993, Ser. No. 5,760
Term of patent 14 years
U.S. Cl. D23—411



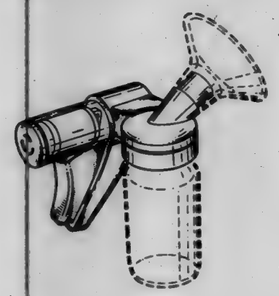
345,207
SOFTGEL CAPSULE
Keith A. Bennell, 2 Mardale Close, Nine Elms, Swindon, Wiltshire SN5 9UT; Keith E. S. Tanner, 42 Tryon Close, Lidea, Swindon, Wiltshire SN3 6HG, and Judith E. Charles, 40 Charlton Gardens, Westbury-on-Tryn, Bristol BS10 6LX, all of United Kingdom
Filed Sep. 11, 1992, Ser. No. 943,468
Term of patent 14 years
U.S. Cl. D24—104



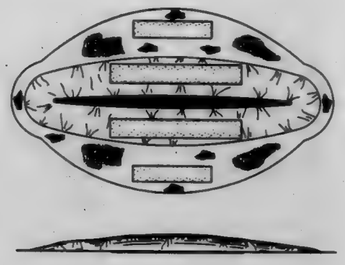
345,208
PHLEBOTOMY UNIT FOR BLOOD SAMPLING
Ramon G. Faulo, 13910 Baton Rouge Ct., Centerville, Va. 22020
Filed Jan. 14, 1992, Ser. No. 820,970
Term of patent 14 years
U.S. Cl. D24—108



345,209
BREAST PUMP
Thomas Shoda, Foster City, and Dallas Grove, Boulder Creek, both of Calif., assignors to Palo Alto Design Group, Inc., Palo Alto, Calif.
Filed May 19, 1992, Ser. No. 885,950
Term of patent 14 years
U.S. Cl. D24—109



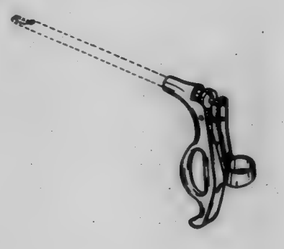
345,210
FEMININE NAPKIN WITH ATTACHED DISPOSABLE BAG
Roxann M. Thomas, 5801 W. Sun Forest, Houston, Tex. 77092
Filed Feb. 8, 1993, Ser. No. 4,521
Term of patent 14 years
U.S. Cl. D24—125



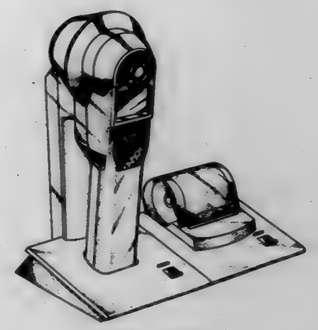
345,211
DISPENSING VIAL FOR FEMININE HYGIENE PRODUCTS
William J. Bologna, New York, N.Y., assignor to Columbia Laboratories, Inc., Coconut Grove, Fla.
Filed Apr. 6, 1992, Ser. No. 863,879
Term of patent 14 years
U.S. Cl. D24—141



345,212
BIOPSY FORCEPS HANDLE
Dale H. Brancel, Colleyville, and Clarence D. Zierhut, Garland, both of Tex., assignors to Dexide, Inc., Fort Worth, Tex.
Filed Sep. 9, 1991, Ser. No. 756,756
Term of patent 14 years
U.S. Cl. D24—143



345,213
AUTOMATED HAND-HELD KERATOMETER
Tadmor Shalon, 35 York Dr., Brentwood, Mo. 63144, and Bryce Rutter, 644 Vassar, University City, Mo. 63130
Continuation-in-part of Ser. No. 775,194, Oct. 11, 1991. This application Mar. 16, 1993, Ser. No. 5,996
Term of patent 14 years
U.S. Cl. D24—172



345,214
TEETHER
David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Boston, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 20, 1992, Ser. No. 886,446
Term of patent 14 years
U.S. Cl. D24—195

345,215
TEETHER
David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Boston, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 20, 1992, Ser. No. 886,449
Term of patent 14 years
U.S. Cl. D24—195

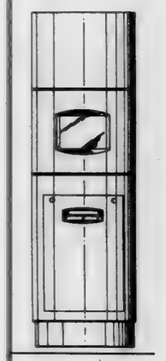


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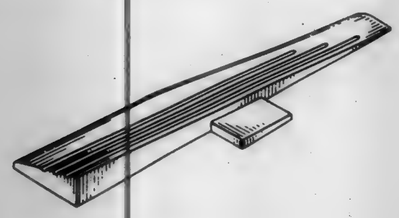
345,216
TEETHER
David W. Crossley, Woonsocket, R.I.; Michael S. Bernstein, Natick, and Michael I. Lerner, Boston, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed May 20, 1992, Ser. No. 886,450
Term of patent 14 years
U.S. Cl. D24—195



345,217
KIOSK
Douglas L. Pearlson, P.O. Box 56000U, Miami, Fla. 33256-0106
Filed Dec. 7, 1992, Ser. No. 2,250
Term of patent 14 years
U.S. Cl. D25—16



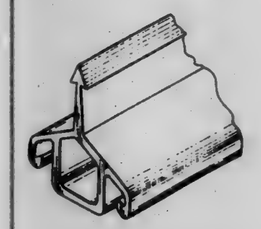
345,218
THRESHOLD SKIRT
Craig A. Haskins, Ventura, Calif., assignor to Pemko Manufacturing Company, Ventura, Calif.
Filed Sep. 8, 1992, Ser. No. 941,990
Term of patent 14 years
U.S. Cl. D25—60



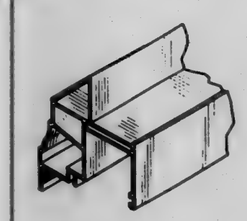
345,219
WINDOW
Denis Granda, and Steven R. Wilkening, both of Grand Rapids, Mich., assignors to ODL, Incorporated, Zeeland, Mich.
Division of Ser. No. 615,651, Nov. 19, 1990. This application Jul. 20, 1992, Ser. No. 915,190
Term of patent 14 years
U.S. Cl. D25—103



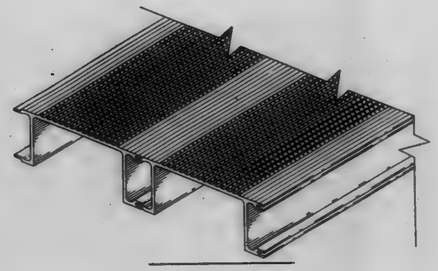
345,220
SUPPORT FOR POULTRY WATERER
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed Sep. 17, 1991, Ser. No. 761,029
Term of patent 14 years
U.S. Cl. D25—122



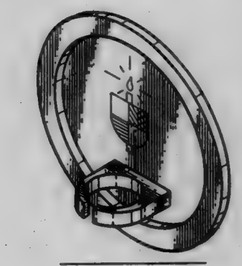
345,221
FRAME HEAD
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,820
Term of patent 14 years
U.S. Cl. D25—124



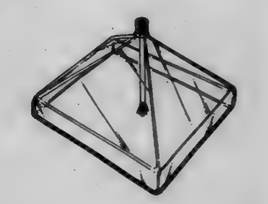
345,222
EXTRUDED METAL PLANK FOR AN INTERLOCKING FIELD-ERECTABLE DECK OR COVER STRUCTURE
Jeffrey A. Hallsten, and John Hallsten, both of Sacramento, Calif., assignors to Hallsten Supply Co., North Highlands, Calif.
Filed Aug. 21, 1992, Ser. No. 933,464
Term of patent 14 years
U.S. Cl. D25—138



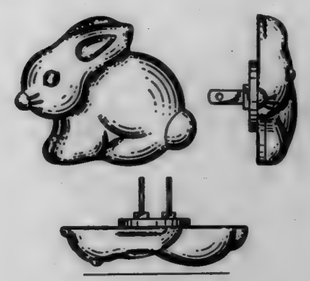
345,223
COMBINED SHIELD AND HOLDER FOR CHRISTMAS CANDLES
Carmen D. Annette, and Carol A. Annette, both of 2207 Andover Rd., Cinnaminson, N.J. 08077
Filed Oct. 29, 1992, Ser. No. 930
Term of patent 14 years
U.S. Cl. D26—10



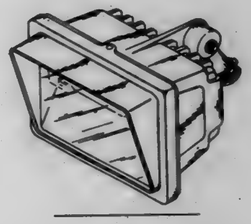
345,224
OIL CANDLE
Karen Boss, 34 Shady La., Ross, Calif. 94956-1946
Filed Dec. 17, 1991, Ser. No. 809,642
Term of patent 14 years
U.S. Cl. D26—11



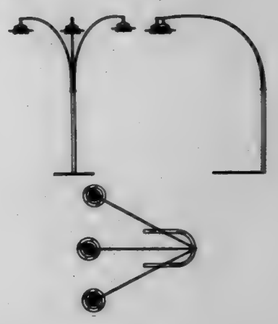
345,225
NIGHT LIGHT
Bruce Ancona; Jane Ancona, and Jose Padron, all of New York, N.Y., assignors to American Tack & Hardware Co., Inc., Monsey, N.Y.
Filed Feb. 26, 1992, Ser. No. 842,577
Term of patent 14 years
U.S. Cl. D26—26



345,226
MINI HALOGEN FLOODLIGHT
Frank Tsao, Taipei Hsien, Taiwan, assignor to Caster Lighting Inc., San Chung, Taiwan
Filed Jun. 25, 1992, Ser. No. 903,176
Term of patent 14 years
U.S. Cl. D26—63

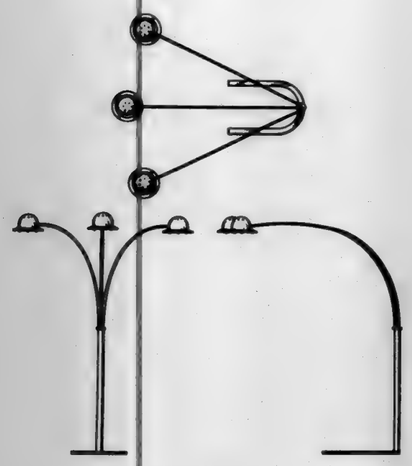


345,227
MULTI-SHADE ARC BOOM LAMP
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Division of Ser. No. 884,959, May 18, 1992, Pat. No. Des. 341,000. This application Jun. 24, 1993, Ser. No. 9,771
Term of patent 14 years
U.S. Cl. D26—102

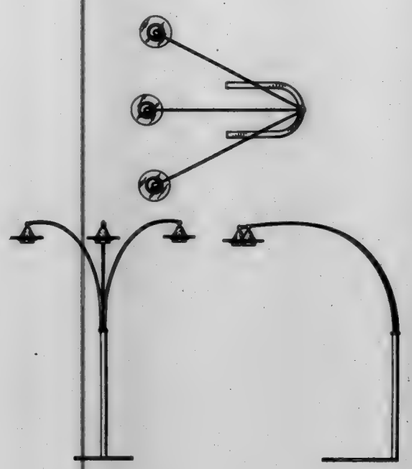


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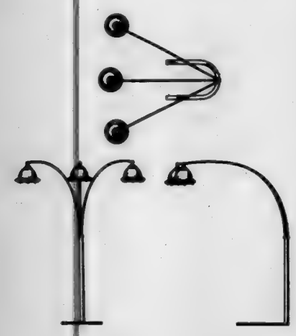
345,228
MULTI-SHADE ARC BOOM LAMP
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Division of Ser. No. 884,959, May 18, 1992, Pat. No. D. 341,000. This application Jun. 24, 1993, Ser. No. 9,773
Term of patent 14 years
U.S. Cl. D26—102



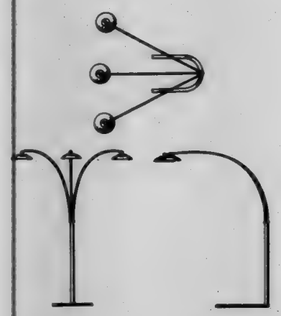
345,230
MULTI-SHADE ARC BOOM LAMP
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Division of Ser. No. 884,959, May 18, 1992, Pat. No. D 341,000. This application Jun. 24, 1993, Ser. No. 9,775
Term of patent 14 years
U.S. Cl. D26—102



345,229
MULTI-SHADE ARC BOOM LAMP
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Division of Ser. No. 884,959, May 18, 1992, Pat. No. D. 341,000. This application Jun. 24, 1993, Ser. No. 9,774
Term of patent 14 years
U.S. Cl. D26—102



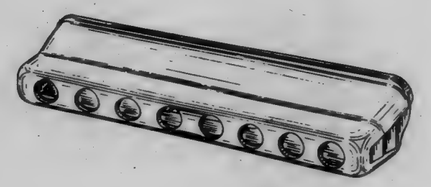
345,231
MULTI-SHADE ARC BOOM LAMP
Barry L. Kramer, 6180 S. St. Andrews Pl., Los Angeles, Calif. 90047
Continuation of Ser. No. 884,959, May 18, 1992, Pat. No. D 341,000. This application Jun. 24, 1993, Ser. No. 9,776
Term of patent 14 years
U.S. Cl. D26—102



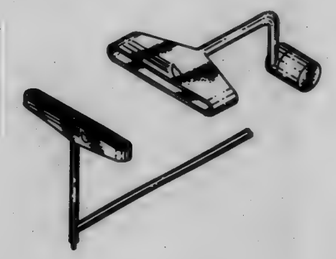
345,232
RAZOR
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 8, 1992, Ser. No. 333
Term of patent 14 years
U.S. Cl. D28—46



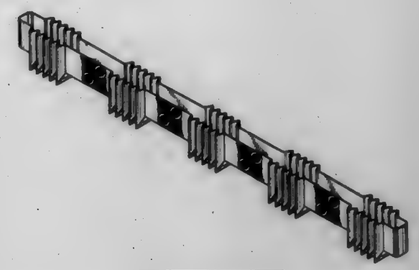
345,233
PROTECTIVE OVERCAP FOR A SHAVING HEAD
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 8, 1992, Ser. No. 237
Term of patent 14 years
U.S. Cl. D28—47



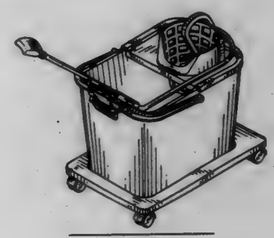
345,234
SET OF ELEMENTS FOR CLEANING WINDSHIELDS
Dino Iorli, 35 Evelyn Rd., Forestville, Conn. 06010
Filed Mar. 4, 1991, Ser. No. 663,649
Term of patent 14 years
U.S. Cl. D32—31



345,235
WINDOW BLIND CLEANING TUB
Laura D. Lewis, 9009 W. Mall Dr. Unit 1315, Everett, Wash. 98201
Continuation-in-part of Ser. No. 486,300, Feb. 28, 1990, abandoned. This application Jun. 24, 1991, Ser. No. 719,585
Term of patent 14 years
U.S. Cl. D32—53



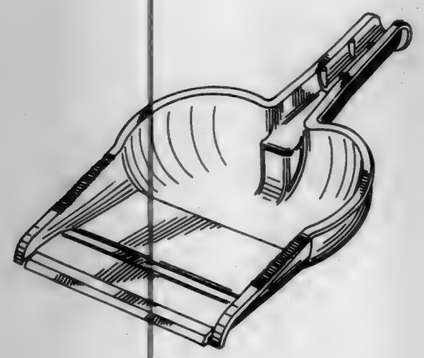
345,236
MOPS WRINGER
Sin-Hsiung Chen, No. 26-1, Lane 737, Jong-Jeag N. Road, Yung-Kang Shiang, Tainan Hsien, Taiwan
Filed Jun. 29, 1992, Ser. No. 907,120
Term of patent 14 years
U.S. Cl. D32—53



345,237
TOOL POUCH FOR BUCKET
Harvey L. Stein, 22 Eastern Ave., Annapolis, Md. 21403
Filed Aug. 19, 1992, Ser. No. 932,020
Term of patent 14 years
U.S. Cl. D32—53



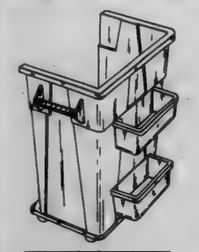
345,238
DUST PAN
Enzo Berti, Dolo, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Jan. 24, 1992, Ser. No. 825,168
Term of patent 14 years
U.S. Cl. D32—74



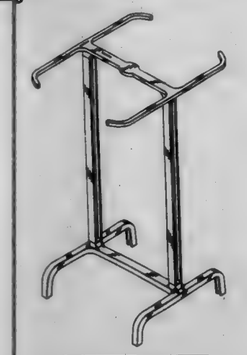
345,239
DUMP BIN
Alan D. Cooper, Winston-Salem, N.C., assignor to CB Displays, Inc., Rural Hall, N.C.
Filed Dec. 7, 1992, Ser. No. 2,244
Term of patent 14 years
U.S. Cl. D34—1



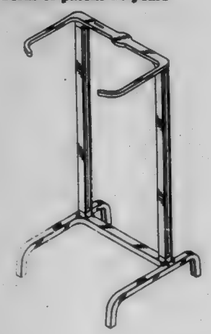
345,240
3-SIDED REFUSE CONTAINER
John A. Celentani, 1243 Norton, Rochester, N.Y. 14621, and Ralph Celentani, 123 Brisee St., East Rochester, N.Y. 14445
Filed Jun. 29, 1992, Ser. No. 905,864
Term of patent 14 years
U.S. Cl. D34—5



345,241
FREESTANDING RACK FOR SUPPORTING A PAIR OF RECYCLING BAGS
Robert W. Bunn, Dundee, Oreg., assignor to The Bag Connection, Inc., Newberg, Oreg.
Filed Oct. 27, 1992, Ser. No. 877
Term of patent 14 years
U.S. Cl. D34—5



345,242
FREESTANDING RACK FOR SUPPORTING A RECYCLING BAG
Robert W. Bunn, Dundee, Oreg., assignor to The Bag Connection, Inc., Newberg, Oreg.
Filed Oct. 27, 1992, Ser. No. 879
Term of patent 14 years
U.S. Cl. D34—5



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MARCH, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Provol, Steven J.; and Russell, David, 5,293,843, Cl. 122-4.00D.
ABB Vetco Gray Inc.: *See*—
Smith, John D.; and Fruchtbaum, Joseph, 5,294,157, Cl. 292-25.000.
Abbas, Gregory L.: *See*—
Vertatschitsch, Edward J.; Abbas, Gregory L.; de La Chapelle, Michael; and McClure, J. Doyle, 5,294,075, Cl. 244-75.00R.
Abbott Laboratories: *See*—
Lupski, James R.; and Katz, Leonard, 5,294,533, Cl. 435-6.000.
Meyer, Glenn A.; and Bauer, John F., 5,294,615, Cl. 514-254.000.
Wang, Xiu C.; Kalaritis, Panos; and Chang, Michelle L., 5,294,721, Cl. 546-347.000.
Zuck, Gary L.; Herchenbach, Stephen L.; Tyranski, James T.; and Nelson, Robert J., 5,294,404, Cl. 422-64.000.
Abe, Hiroshi; and Tanaka, Yoshinobu, to Asahi Seiko Kabushiki Kaisha. Coin sorting device in which unnecessary material can be readily removed from a sorting passage. 5,293,981, Cl. 194-345.000.
Abe, Hitoshi: *See*—
Nishizawa, Junichi; Abe, Hitoshi; and Suzuki, Soubei, 5,294,286, Cl. 156-610.000.
Abe, Tetsuya: *See*—
Sato, Masaru; and Abe, Tetsuya, 5,294,962, Cl. 355-219.000.
Abita, Joseph L., to United States of America, Navy. Method for making a non-magnetic alloy. 5,294,268, Cl. 148-432.000.
ABU Garcia Produktion AB: *See*—
Henriksson, Bengt-Ake, 5,294,074, Cl. 242-319.000.
Aburomia, Momtaz M.; and Fennern, Larry E., to General Electric Company. Combined jet pump and internal pump recirculation system. 5,295,171, Cl. 376-372.000.
Abuto, Frank P.: *See*—
Wanek, Mary C.; Matthews, Billie J.; Sawyer, Lawrence H.; Abuto, Frank P.; Werner, Edward E.; Van Den Bogart, Thomas W.; Georger, William A.; and Ribble, Brendon F., 5,294,478, Cl. 428-218.000.
Acocella, John: *See*—
Young, Steven P.; Acocella, John; Fahey, Albert J.; Messina, Gaetano P.; and Song, Seaho, 5,294,830, Cl. 257-714.000.
AcroMed Corporation: *See*—
McMillin, Carl R., 5,294,391, Cl. 264-103.000.
Adachi, Hiroyuki; Tanaka, Katsunori; Kawana, Takashi; and Hosaka, Hideo, to Nippon Soda Co., Ltd. Herbicidal 3-substitutedbenzoylbicyclo[4,1,0]heptane-2, 4-dione derivatives. 5,294,598, Cl. 504-315.000.
Adachi, Makoto, to Sharp Kabushiki Kaisha. Method and apparatus for two-channel recording of video signals. 5,295,024, Cl. 360-36.200.
Adams, Robert W.: *See*—
Mower, Barry D.; Matherne, Lonny R.; and Adams, Robert W., 5,294,913, Cl. 340-323.00R.
ADLAS GmbH & Co. KG: *See*—
Lawrenz-Stolz, Jorg; Petersen, Fedder; and Wedekind, Dorte, 5,295,144, Cl. 372-22.000.
Advanced Micro Devices, Inc.: *See*—
Horne, Stephen C., 5,295,259, Cl. 395-575.000.
Aerojet-General Corporation: *See*—
Fee, Maurice L., 5,294,796, Cl. 250-338.500.
Aerospatiale Societe Nationale Industrielle: *See*—
Chareire, Jean-Louis, 5,293,966, Cl. 188-72.100.
Donzac, Jean-Marc; Rousseau, Gerard; and Terrade, Pierre, 5,294,383, Cl. 264-29.200.
Affinity Technology, Inc.: *See*—
Krupey, John, 5,294,681, Cl. 525-327.600.
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Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,294,431, Cl. 424-49.000.
Agari, Norimasa, to Nippon Thompson Co., Ltd. Linear motion rolling contact guide unit using a rod rail. 5,294,201, Cl. 384-45.000.
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Zarembowitch, Alain, 5,295,162, Cl. 375-83.000.
Agency for Defense Development: *See*—
Lee, Young M.; Park, Kyung J.; Churn, Kil S.; Back, Woon H.; Song, Heung S.; Noh, Joon W.; Hong, Moon L.; Lee, Seong; and Kim, Eun P., 5,294,269, Cl. 148-514.000.
Agency of Industrial Science and Technology: *See*—
Seimiya, Kouichi; and Asagawa, Keiichirou, 5,294,309, Cl. 204-129.350.
Aggarwal, Ishwar D.: *See*—
Sanghera, Jasbinder S.; Pureza, Pablo C.; and Aggarwal, Ishwar D., 5,294,240, Cl. 65-3.140.
Agostinelli, John A.; Gupta, Mool C.; and Mir, Jose M., to Eastman Kodak Company. Frequency conversion in inorganic thin film waveguides by quasi-phase-matching. 5,295,218, Cl. 385-122.000.
Agrotechnologiach Onderzoekinstituut (ATO): *See*—
Wichers, Jan H.helmus M. J.; van Gelder, Wilhelmus M. J.; and van Doorn, Albert W. J., 5,294,370, Cl. 252-313.100.
Ahls, Hermann W.; and Von Herz, Alfons, to Otis Elevator Company. Step chain plug-in axle. 5,293,982, Cl. 198-332.000.
Ahmed, Hassen J. Device for supporting cut flowers. 5,293,713, Cl. 47-55.000.
Ahmed, Iqbal; and Hsieh, Henry L., to Phillips Petroleum Company. Copolymers of amphytic ion pairs containing vinylic tertiary amine and process therewith. 5,294,691, Cl. 526-287.000.
Ahn, Byung-Seoa, to Samsung Electronics Co, Ltd. Drive means of an electro-photography process unit. 5,294,957, Cl. 355-200.000.
Ahrens, Karl. String tensioning system for ball racket. 5,294,116, Cl. 273-73.00R.
Ahuja, Ramesh C.: *See*—
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Zurecki, Zbigniew; Berger, Kerry B.; and Swan, Robert B., 5,294,242, Cl. 75-345.000.
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Kaiser, John J.; Zurecki, Zbigniew; Berger, Kerry R.; Swan, Robert B.; and Hayduk, Edward A., Jr., 5,294,462, Cl. 427-446.000.
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Ramprasad, Dorai; Meier, Ingrid K.; Pearlstein, Ronald M.; and Pez, Guido P., 5,294,418, Cl. 423-219.000.
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Aishima, Shizuo: *See*—
Maesaka, Munetoshi; Itch, Takashi; Aishima, Shizuo; and Ohkawara, Masaaki, 5,294,298, Cl. 159-4.010.
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Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,293,789, Cl. 74-866.000.
Tabata, Masaaki; and Hamada, Toshiaki, 5,294,146, Cl. 280-707.000.
Aisin Takaoka Kabushiki Kaisha: *See*—
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Ajinomoto Co., Inc.: *See*—
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Tsuchida, Takayasu; Uchibori, Haruo; Takeuchi, Hiroshi; and Seki, Mitsuyoshi, 5,294,547, Cl. 435-106.000.
Ajioka, Masanobu: *See*—
Suzuki, Kazuhika; Watanabe, Takayuki; Kitahara, Yasuhiro; and Ajioka, Masanobu, 5,294,469, Cl. 428-36.100.
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Akahori, Masaaki, to NEC Corporation. Data display radio pager. 5,294,922, Cl. 340-825.440.
Akahoshi, Haruo; Takada, Toshinari; Yutani, Fujiko; Itabashi, Takeyuki; Nishimura, Shin; Amo, Satoru; Takahashi, Akio; Toba, Rituji; and Miyazaki, Masashi, to Hitachi, Ltd. Process for the formation of a conductive circuit pattern. 5,294,291, Cl. 156-637.000.
Akeel, Hadi A., to Fanuc Robotics North America, Inc. Method and system for fluid transfer and non-contact sensor for use therein. 5,293,911, Cl. 141-346.000.
Akeno, Mitsuru: *See*—
Tominaga, Yutaka; and Akeno, Mitsuru, 5,293,672, Cl. 24-587.000.
Akiki, Jeanine F.; and Hanson, Charles W. Test detector/shutoff and method for BiCMOS integrated circuit. 5,294,883, Cl. 324-158.00R.
Akiyama, Ryozo: *See*—
Ohtaka, Yoshimitsu; Akiyama, Ryozo; and Kato, Tomoyuki, 5,294,961, Cl. 355-219.000.
Akiyama, Tadashi: *See*—
Yoshimoto, Kenichi; Sakamoto, Kazuhiro; Akiyama, Tadashi; Takai, Hirofumi; Nagano, Tomomi; Hashimoto, Mitsuji; and Tamamura, Kozo, 5,293,727, Cl. 52-560.000.
Akiyama, Takeshi: *See*—
Muramatsu, Shinichi; Kaneko, Hiromichi; Nakayama, Shinichi; and Akiyama, Takeshi, 5,294,497, Cl. 429-97.000.
Akiyama, Yasuhiro, to NEC Corporation. Preparation of cathode structures for impregnated cathodes. 5,294,399, Cl. 419-27.000.
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Coste, Jerome C. D.; Aksas, Salah; Ginot, Frederic; and Cohen, Daniel, 5,293,703, Cl. 38-102.400.

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Shigekawa, Brian L.; and Hsieh, Yung-Ao, 5,294,369, Cl. 252-313.100.

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Aladdin Synergetics, Inc.: *See—*
Wyatt, W. Burt; DeGrow, Gary C.; and Mueller, Jonathan H., 5,294,014, Cl. 220-253.000.

Alain, Manigold: *See—*
Roth, Jacques; Alain, Manigold; and Schmitt, Daniel, 5,294,386, Cl. 264-46.600.

Alcatel Business Systems Limited: *See—*
Williams, Thomas D., 5,294,203, Cl. 400-120.000.

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Marcerou, Jean-Francois; and Fevrier, Herve , 5,295,217, Cl. 385-122.000.

Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., to Hewlett-Packard Company. Data rotator for rotating pixel data in three dimensions. 5,295,245, Cl. 395-164.000.

Aldus Corporation: *See—*
Bjorge, Per H.; Blanain, Alan; and Deutsch, Keith R., 5,295,236, Cl. 395-134.000.

Alfano, Robert R.; and Liu, Cheng H. Method for distinguishing between calcified atherosclerotic tissue and fibrous atherosclerotic tissue or normal cardiovascular tissue using Raman spectroscopy. 5,293,872, Cl. 128-664.000.

Alfred Teves GmbH: *See—*
Rueffer, Manfred; Jakobi, Ralf; Bauer, Jurgen; and Kraft, Peter, 5,293,808, Cl. 91-369.200.

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Allen-Bradley Company, Inc.: *See—*
Brooks, Jeffery W.; Yoke, Michael D.; and Kolat, John J., Jr., 5,295,059, Cl. 364-147.000.

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Yamanouchi, Kazuhiko; Tanaka, Mitsuhiro; Sugiyama, Masahiko; Horio, Yasufumi; Oshima, Masatsugu; and Suzuki, Kenji, 5,294,859, Cl. 310-313.00B.

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Hermecz, Istvan; Keresturi, Geza; Debreczy, Lelle V.; Horvath, Agnes; Balogh, Maria; Kovacs, Gabor; Szuts, Tamas; Ritli, Peter; Sipos, Judit; and Pajor, Aniko, 5,294,712, Cl. 544-363.000.

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Butler, Michael D.; Charles, Jerry T.; Shea, Lawrence S.; and Sivils, George L., Jr., 5,294,488, Cl. 428-373.000.

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Granneman, Ernst H. A.; Piekaar, Hans W.; Corsius, Hubertus A.; and Sluijk, Boudewijn G., 5,294,572, Cl. 437-225.000.

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Smith, H. Bill, to Mobil Oil Corporation. Method of preventing damage to pipe joints during shipment. 5,294,222, Cl. 410-36.000.

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Smith, Roger D. Cooling apparatus for machine parts such as pump seals. 5,293,929, Cl. 165-47.000.

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SmithKline Beecham Corporation: *See*—
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SMS Hasenclever GmbH: *See*—
Schubert, Peter, 5,293,769, Cl. 72-402.000.

Snow, Kevin M.: *See*—
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Bietenhader, Claude; and Blanc, Maurice, 5,293,974, Cl. 188-379.000.
Lambert, Jean-Marie, 5,294,773, Cl. 219-121.540.

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Horny, Patrick; and Ladousse, Alain, 5,294,348, Cl. 210-724.000.

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Mandeville, Luc; and Dallaire, Michel, 5,293,861, Cl. 126-355.000.

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Shimoda, Kouhei; Maeda, Takao; Sogahe, Kouichi; and Miyake, Masaya, 5,294,388, Cl. 264-65.000.

Sojka, Marvin L.: *See*—
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Solar Turbine Incorporated: *See*—
White, David J., 5,294,410, Cl. 422-171.000.

Solcia, Carolina: *See*—
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Solminger, Jan: *See*—
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Den Dopper, Rolf A., 5,294,036, Cl. 228-37.000.

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Young, Steven P.; Acocella, John; Fahey, Albert J.; Messina, Gaetano P.; and Song, Seaho, 5,294,830, Cl. 257-714.000.

Song, Won R.: *See*—
Emert, Jacob; Schilowtiz, Alan M.; Gutierrez, Antonio; and Song, Won R., 5,294,234, Cl. 44-412.000.

Sony Corporation: *See*—
Akagiri, Kenzo, 5,294,925, Cl. 341-50.000.
Hatakeyama, Izumi, 5,295,142, Cl. 371-43.000.
Iwaki, Yuji; Kikuchi, Shuichi; Kaneko, Mika; and Kobayashi, Toshiro, 5,293,995, Cl. 206-444.000.
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Koga, Hirohisa; Kobayashi, Kenji; and Kurahara, Takayuki, 5,295,032, Cl. 360-107.000.
Miyazaki, Shinichirou; and Murakami, Kyoichi, 5,294,866, Cl. 315-367.000.
Numata, Hiroshi; and Nishiyama, Seiichi, 5,294,929, Cl. 341-144.000.
Omaru, Atsuo; Azuma, Hideo; and Nishi, Yoshio, 5,294,498, Cl. 429-122.000.
Oogi, Takashi, 5,294,073, Cl. 242-199.000.
Sekii, Yasuaki, 5,295,023, Cl. 360-32.000.
Shino, Masaaki, 5,295,199, Cl. 382-41.000.
Shirako, Yukio, 5,295,124, Cl. 369-32.000.

Suzuki, Mitsuhiro; and Kunihiro, Takushi, 5,295,157, Cl. 375-11.000.
Tanaka, Norio; and Narita, Takato, 5,295,022, Cl. 360-14.200.
Tobita, Minoru; and Kawaguchi, Kunio, 5,295,130, Cl. 369-124.000.
Ugajin, Ryuichi; and Funato, Kenji, 5,294,807, Cl. 257-14.000.
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Hansen, Steffen T.; and Sorensen, Poul R., 5,293,770, Cl. 73-1.00R.
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Schlameus, Herman W.; Fox, William C.; Mangold, Donald J.; Triplett, Robert G.; Holt, George R.; and Aufdemorte, Thomas B., 5,294,446, Cl. 424-489.000.
Schwab, Stuart T., 5,294,425, Cl. 423-324.000.
Southwick, Robert. Cored hole waterproofing apparatus. 5,294,155, Cl. 285-64.000.
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Soyka, Rainer: *See*—
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Spalding, Michael H.; Benjamin, Frederick A.; and Mielcarek, Kenneth S., to John Brown, Inc. Multiple point delivery apparatus for separating of sheet-like elements. 5,293,797, Cl. 83-107.000.
Spangler, James E.: *See*—
Arterbury, Bryant A.; Spangler, James E.; and Malorzo, Thomas V., 5,293,935, Cl. 166-228.000.
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Specrete-IP Incorporated: *See*—
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Spector, George: *See*—
Brock, Allen L.; and Spector, George, 5,295,055, Cl. 362-249.000.
Buonsante, John J.; and Spector, George, 5,295,057, Cl. 362-431.000.
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Spence, Gary L.: *See*—
Hugens, John R., Jr.; Ferrel, Stephen L.; and Spence, Gary L., 5,293,924, Cl. 164-452.000.
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Spicer, Denis F.: *See*—
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Spinetti, John A., Jr.: *See*—
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Sprint International Communications Corp.: *See*—
Jurkevich, Mark, 5,295,137, Cl. 370-54.000.
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Stahlecker, Fritz; and Stahlecker, Hans. Spinning machine. 5,293,736, Cl. 57-90.000.
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Stanko, Ronald T., to Montefiore - University Hospital. Method for treating a medical patient for cardiac trauma. 5,294,641, Cl. 514-540.000.
Stanley Electric Co., Ltd.: *See*—
Terada, Toshiyuki, 5,295,049, Cl. 362-27.000.
Stap, Jacob, to Ball Hass Products, Inc. Tennis ball retrieving and storing device. 5,294,101, Cl. 294-19.200.
Stapleton, Jack T.: *See*—
McLinden, James H.; Rosen, Elliot D.; Winokur, Patricia L.; and Stapleton, Jack T., 5,294,548, Cl. 435-235.100.
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Starkweather, Michael W.; and Casper, Stephen L., to Micron Semiconductor, Inc. Method for providing a faster ones voltage level restore operation in a DRAM. 5,295,100, Cl. 365-189.110.
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Stasch, Johannes-Peter: *See*—
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Steffens, Charles E., Jr., to TRW Vehicle Safety Systems Inc. Pretensioning safety belt apparatus. 5,294,150, Cl. 280-801.00A.
Steinbach, Heinz: *See*—
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Steinkirchner, James J.; and Telle, Lawrence B., to Eastman Kodak Company. Method and apparatus for replicating a two-color original image with foreground and background colors exchanged. 5,295,202, Cl. 382-51.000.
Stendel, Wilhelm: *See*—
Sieveking, Hans-Ulrich; Stendel, Wilhelm; and Voege, Herbert, 5,294,445, Cl. 424-411.000.
Stepanek, Premek; and Sedlmair, Gerhard, to Marker Deutschland GmbH. Hydraulic ski binding incorporating electronically-controlled bypass. 5,294,144, Cl. 280-612.000.
Stephens, Michael, to Phillips Petroleum Company. Fluid loss additives for well cementing compositions. 5,294,651, Cl. 524-3.000.
Stephens, Michael C., Jr.; Smith, Scott E.; Pilch, Charles J.; Le, Duy-Loan T.; Tsai, Terry T.; and Piejko, Arthur R., to Texas Instruments Incorporated. Array block level redundancy with steering logic. 5,295,101, Cl. 365-200.000.
Stephens, Richard L.: *See*—
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Sterling Winthrop Inc.: *See*—
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Stevens, Billie M., Jr.; and Kuzma, Joseph G., to BFGoodrich Flight-Systems, Inc. Sampled data lightning strike detection and mapping system capable of recovering a pre threshold sample history for detection and mapping processing. 5,295,072, Cl. 364-420.000.
Stevens, Billie M., Jr.: *See*—
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Stewart, Andrew M.: *See*—
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Stich, Frederick A.; and Beistle, Edward G., to Best Power Technology Corporation. Method and apparatus for determination of battery run-time in uninterruptible power system. 5,295,078, Cl. 364-483.000.
Stillinger, Scott H., to OddzOn Products, Inc. Game paddle and combination. 5,294,114, Cl. 273-67.00R.
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Foster, Christopher J.; Gilkerson, Terence; and Stocker, Richard, 5,294,597, Cl. 504-255.000.
Stog, Jochen, to J. Stog Tec GmbH. Process for the biological treatment of waste water using microorganisms. 5,294,340, Cl. 210-610.000.
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Stone, J. James, to Videojet Systems International, Inc. Laser marker system. 5,294,774, Cl. 219-121.770.
Stone, Robert T., to Natus Medical Incorporated. In-vivo measurement of end-tidal carbon monoxide concentration apparatus and methods. 5,293,875, Cl. 128-719.000.
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Stoops, Bradley N.: *See*—
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Story, Christopher A.: *See*—
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Straker, Gary, to Johnson Electric S.A. Thermally protected electric motor. 5,294,852, Cl. 310-68.00C.
Stratton, Robert D., to Wagner Mining and Construction Equipment Co. Variable speed AC electric drive vehicle. 5,293,947, Cl. 180-2.100.
Strayer, Sandy L.; and Tripp, Virgil P. Frame/handgrip assembly for autoloading handgun. 5,293,708, Cl. 42-75.030.
Streitel, Steven G.: *See*—
Morrison, Robert G., Jr.; Streitel, Steven G.; and Cramm, Jeffrey R., 5,294,864, Cl. 524-560.000.
Strepparola, Ezio: *See*—
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Stroszynski, Joachim: *See*—
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Stuber, Axel: *See*—
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Stucky, Gerhard; and Previdoli, Felix, to Lonza Ltd. N-5-protected 2,5-diamino-4,6-dichloropyrimidines and process for their production. 5,294,710, Cl. 544-320.000.

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Stutzle, Hugo. Device for the supply, distribution and moistening of gas in a gas-cleaning or decomposition installation. 5,294,235, Cl. 55-228.000.
Suau, Jean-Marc: *See*—
Egraz, Jean-Bernard; Grondin, Henri; and Suau, Jean-Marc, 5,294,693, Cl. 526-310.000.
Subbanna, Seshadri, to International Business Machines Corporation. Method of making double-self-aligned bipolar transistor structure. 5,294,558, Cl. 437-31.000.
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Succi, Marco; and Solcia, Carolina, to SAES Getters SpA. Gas purifier having pressure responsive switch as end of life detector. 5,294,407, Cl. 422-119.000.
Suda, Kei: *See*—
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Sudo, Masaaki: *See*—
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Yamauchi, Keiichi; Shimizu, Toshihiko; and Sudo, Satomi, 5,294,745, Cl. 84-601.000.
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Sueoka, Kazuaki: *See*—
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Sugano, Shuichi; Hayashi, Shogo; and Kondoh, Yoshinobu, to Fuji Autolib Co., Ltd. Seat belt retractor. 5,294,070, Cl. 242-107.40A.
Sugda, Peter J. Sewer chimney coupling. 5,293,719, Cl. 52-21.000.
Sugihara, Hideo; and Tomita, Hajime, to Diatop Corporation. Cutting head for a cord type mower. 5,293,691, Cl. 30-276.000.
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Sugimoto, Michio: *See*—
Ohashi, Hiroshi; Katsuno, Hisashi; and Sugimoto, Michio, 5,294,579, Cl. 502-66.000.
Sugimoto, Tadahide: *See*—
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Sugiyama, Masahiko: *See*—
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Sugiyama, Mitsuo: *See*—
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Suhara, Shinsuke: *See*—
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Suhr, Ludwig; and Paikert, Paul, to GEA Luftkuhler GmbH. Arrangement for utilizing the heat contained in the exhaust gas of a coal-fired boiler. 5,293,841, Cl. 122-1.00A.
Suhr, Robert G.: *See*—
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Sukeda, Hirofumi; and Kato, Keizo, to Hitachi, Ltd. Magneto-optic recording/reproducing method and device and magneto-optic recording medium used for them. 5,295,121, Cl. 369-13.000.
Sullivan, Elizabeth C.: *See*—
Dattagupta, Nanibhushan; and Sullivan, Elizabeth C., 5,294,534, Cl. 435-6.000.
Sullivan, William W. Convertible footwear. 5,293,701, Cl. 36-59.00R.
Sumi, Akinori: *See*—
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Sumino, Shinichi, to Bridgestone Corporation. Twist correction device for pipe conveyor. 5,293,988, Cl. 198-808.000.
Sumitomo Chemical Company, Limited: *See*—
Okamoto, Yasushi; Yoshimi, Shuji; and Kanno, Yoshinori, 5,294,656, Cl. 524-269.000.
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LIST OF PLANT PATENTEES

Ackerman, Stephen M., to Plant Sciences, Inc. Raspberry plant named PSI 744. 8,638, 3-15-94, Cl. 46.200.

Ackerman, Stephen M., to Plant Sciences, Inc. Raspberry plant named PSI 737. 8,639, 3-15-94, Cl. 46.200.

Aromatics, Inc.: *See*—
Sturtz, George D., 8,640, Cl. 100.000.

Button, Richard J.; and Lamb, Ann E., to Button, Richard J. Anthurium plant named Pink Frost. 8,644, 3-15-94, Cl. 88.100.

Chrysanthemum Breeders Association, N.V.: *See*—
Van der Jagt, Martinus, 8,642, Cl. 82.400.

Fides Beheer B.V.: *See*—
van der Knaap, Jacques C. M., 8,641, Cl. 74.100.

Hosage, Daniel A., Jr. Texas redbud tree named Traveller. 8,640, 3-15-94, Cl. 51.100.

Lamb, Ann E.: *See*—
Button, Richard J.; and Lamb, Ann E., 8,644, Cl. 88.100.

Neuroth, Michael R. Alstroemeria plant named Inca Koya. 8,643, 3-15-94, Cl. 87.100.

Plant Sciences, Inc.: *See*—
Ackerman, Stephen M., 8,638, Cl. 46.200.
Ackerman, Stephen M., 8,639, Cl. 46.200.

Sturtz, George D., to Aromatics, Inc. Low menthol mint plant *Mentha spicata* L. 'Erospicata'. 8,645, 3-15-94, Cl. 100.000.

Van der Jagt, Martinus, to Chrysanthemum Breeders Association, N.V. Chrysanthemum named Reagan. 8,642, 3-15-94, Cl. 82.400.

van der Knaap, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant—Glasnost cultivar. 8,641, 3-15-94, Cl. 74.100.

CLASSIFICATION OF PATENTS

ISSUED MARCH 15, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
88 5,293,646
209 5,293,647
243.1 5,293,648
424 5,293,649

CLASS 4
378 5,293,650
420 5,293,651
498 5,293,652
524 5,293,653
598 5,293,654

CLASS 5
95 5,293,655
99.1 5,293,656
127 5,293,657

CLASS 8
127.51 5,294,230
532 5,294,231

CLASS 14
2.4 5,293,658

CLASS 15
1.7 5,293,659
160 5,293,660
167.1 5,293,661
210.1 5,293,662
318.1 5,293,663
326 5,293,664
387 5,293,665

CLASS 16
66 5,293,666

CLASS 19
262 5,293,667

CLASS 24
16 PB 5,293,668
5,293,669
90 R 5,293,670
429 5,293,671
587 5,293,672
600.4 5,293,673
704.1 5,293,674
712.1 5,293,675

CLASS 28
271 5,293,676

CLASS 29
163.6 5,293,677
401.1 5,293,678
523 5,293,679
559 5,293,680
623.5 5,294,232
700 5,293,681
727 5,293,682
825 5,293,683
888.08 5,293,684
890.124 5,293,685
893.1 5,293,686
894.35 5,293,687
898.041 5,293,688

CLASS 30
35 5,293,689
161 5,293,690
276 5,293,691
5,293,692

CLASS 33
1 R 5,293,693
527 5,293,694
783 5,293,695

CLASS 34
76 5,293,696
92 5,293,697
149 5,293,698
156 5,293,699
225 5,293,700

CLASS 36
59 R 5,293,701
117 5,293,702

CLASS 38
102.4 5,293,703
102.9 5,293,704

CLASS 40
124.1 5,293,705
5,293,706
412 5,293,707

CLASS 42
75.03 5,293,708

CLASS 43
3 5,293,709
17 5,293,710
26 5,293,711
26.1 5,293,712

CLASS 44
334 5,294,233
412 5,294,234

CLASS 47
55 5,293,713
56 5,293,714
72 5,293,715

CLASS 49
49 5,293,716

CLASS 51
165.71 5,293,717
165.87 5,293,718

CLASS 52
21 5,293,719
36.1 5,293,720
101 5,293,721
182 5,293,722
213 5,293,723
220.8 5,293,724
271 5,293,725
455 5,293,726
560 5,293,727
588.1 5,293,728

CLASS 55
228 5,294,235
270 5,294,236

CLASS 56
7 5,293,729
10.2 5,293,730
11.3 5,293,731
16.4 5,293,732
27.5 5,293,733
249 5,293,734
255 5,293,735

CLASS 57
90 5,293,736
236 5,293,737
261 5,293,738
263 5,293,739

CLASS 60
274 5,293,740
284 5,293,741
288 5,293,742
299 5,293,743
302 5,293,744
419 5,293,745
435 5,293,746
493 5,293,747

CLASS 62
6 5,293,748
5,293,749
47.1 5,293,750
51.1 5,293,752
53.1 5,293,751
78 5,293,753
185 5,293,754
208 5,293,755
292 5,293,756
344 5,293,757
428 5,293,758
476 5,293,759

CLASS 65
3.14 5,294,240
21.1 5,294,237
59.31 5,294,241
60.2 5,294,238

CLASS 68
12.02 5,293,760
15 5,293,761

CLASS 70
238 5,293,762
248 5,293,763
365 5,293,764

CLASS 72
42 5,293,765
283 5,293,766
311 5,293,767
5,293,768
402 5,293,769

CLASS 73
1 R 5,293,770
40 5,293,771
64.41 5,293,772
64.48 5,293,773
116 5,293,774
5,293,775
119 R 5,293,776
121 5,293,777
198 5,293,778
505 5,293,779
706 5,293,780
862.625 5,293,781

CLASS 74
25 5,293,782
405 5,293,783
425 5,293,784
500.5 5,293,785
564 5,293,786
572 5,293,787
661 5,293,788
866 5,293,789
869 5,293,790

CLASS 75
237 5,294,239
345 5,294,242
376 5,294,243
401 5,294,244
571 5,294,245
623 B1 4,504,310

CLASS 81
9.4 5,293,791
44 5,293,792

CLASS 82
121 5,293,793
125 5,293,794

CLASS 83
16 5,293,795
42 5,293,796
107 5,293,797
345 5,293,799
437 5,293,800
468.3 5,293,801
468.7 5,293,802
504 5,293,798
865 5,293,803

CLASS 84
291 5,293,804
383 R 5,293,805
601 5,294,745
631 5,294,746
669 5,294,747

CLASS 89
36.03 5,293,806
36.7 5,293,807

CLASS 91
369.2 5,293,808
392 5,293,809

CLASS 92
12.2 5,293,810
27 5,293,812
49 5,293,811

CLASS 95
15 5,294,246
101 5,294,247

CLASS 99
337 5,293,813
355 5,293,814
498 5,293,815

CLASS 100
245 5,293,816

CLASS 101
148 5,293,817
287 5,293,818
350 5,293,819
415.1 5,293,820

CLASS 102
275.6 5,293,821
306 5,293,822

CLASS 104
138.2 5,293,823
282 5,293,824

CLASS 106
10 5,294,248
130 5,294,249
217 5,294,250
271 5,294,251
287.13 5,294,252
475 5,294,253
487 5,294,254
698 5,294,255
819 5,294,256

CLASS 108
49 5,293,825
5,293,826

CLASS 110
304 5,293,827

CLASS 112
121.11 5,293,828
316 5,293,829

CLASS 114
65 R 5,293,830
230 5,293,831
364 5,293,832

CLASS 116
276 5,293,833

CLASS 118
52 5,294,257
410 5,294,258
411 5,294,259
620 5,294,260
667 Re.34,561

CLASS 119
20 5,293,834
57.9 5,293,835
72 5,293,836
166 5,293,837
205 5,293,838
232 5,293,839
850 5,293,840

CLASS 122
1 A 5,293,841
4 D 5,293,843
7 R 5,293,842
494 5,293,844

CLASS 123
65 BA 5,293,846
90.17 5,293,845
90.6 5,293,847
90.67 5,293,848
221 5,293,849
235 5,293,850
259 5,293,851
339 5,293,852
357 5,293,853
370 5,293,854
399 5,293,855
472 5,293,856
571 5,293,857

CLASS 125
30.01 5,293,858

CLASS 126
26 5,293,859
110 R 5,293,860
355 5,293,861

CLASS 128
9 5,293,862
20 5,293,863
201.29 5,293,864
203.12 5,293,865
204.18 5,293,866
630 5,293,867
642 5,293,868
5,293,869
660.01 5,293,870
660.06 5,293,871
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687 5,293,874
719 5,293,875
736 5,293,876
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751 5,293,878
782 5,293,879
861 5,293,880
898 5,293,881

CLASS 131
105 5,293,882
270 5,293,883

CLASS 132
200 5,293,884
209 5,293,885
329 5,293,886

CLASS 134
7 5,294,261
22.1 5,294,262
24 5,293,887
40 5,294,263
68 5,293,888

CLASS 138
16 5,293,889
98 5,293,890

CLASS 137
1 5,293,891
3 5,293,892
113 5,293,893
135 5,293,894
154 5,293,895
392 5,293,896
493.3 5,293,897
517 5,293,898
544 5,293,899
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595 5,293,901
614.04 5,293,902
887 5,293,903

CLASS 138
35 5,293,904
89 5,293,905

CLASS 139
1 E 5,293,907
114 5,293,908
458 5,293,906

CLASS 141
9 5,293,909
38 5,293,910
344 5,293,912
346 5,293,911
367 5,293,913

CLASS 144
2 Z 5,293,914
134 D 5,293,915
208 J 5,293,916
349 5,293,961
373 5,293,917

CLASS 148
207 5,294,264
247 5,294,266
250 5,294,265
421 5,294,267
432 5,294,268
514 5,294,269
576 5,294,270
580 5,294,271

CLASS 152
209 R 5,293,918
418 5,293,919

CLASS 156
85 5,294,272
91 5,294,273
133 5,294,274
136 5,294,275
154 5,294,276
235 5,294,277
248 5,294,278
324.4 5,294,279
345 5,294,280
405.1 5,294,281
516 5,294,282
566 5,294,283
574 5,294,284
610 5,294,285
5,294,286
611 5,294,287
621 5,294,288
626 5,294,289
630 5,294,290
637 5,294,291
643 5,294,292
5,294,293
5,294,294
657 5,294,295
5,294,296
659.1 5,294,297

CLASS 159
4.01 5,294,298

CLASS 160
99 5,293,920
176.1 5,293,921

CLASS 162
145 5,294,299
157.3 5,294,300
168.1 5,294,301

CLASS 164
46 5,293,922
102 5,293,923
452 5,293,924
454 5,293,925
479 5,293,926
484 5,293,927

CLASS 165
16 5,293,928
47 5,293,929
80.3 5,293,930

CLASS 166
54.1 5,293,931
55.7 5,293,932
70 5,293,933
202 5,293,934
228 5,293,935
248 5,293,936
250 5,293,937
293 5,293,938
295 5,293,939
297 5,293,940
305.1 5,293,941
307 5,293,942
319 5,293,943

CLASS 172
2 5,293,944

CLASS 174
35 R 5,294,748
52.2 5,294,749
52.4 5,294,750
5,294,751
73.1 5,294,752
250 5,294,753
255 5,294,754
264 5,294,755

CLASS 175
325.2 5,293,945
424 5,293,946

CLASS 177
119 5,294,756

CLASS 180
2.1 5,293,947
9.1 5,293,948
9.48 5,293,949
11 5,293,950
68.5 5,293,951
132 5,293,952
5,293,953
141 5,293,954

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CLASS 182

129 5,293,957
214 5,293,958

CLASS 184

6.14 5,293,959
13.1 5,293,960

CLASS 187

1 R 5,293,962
9 R 5,293,963
115 5,294,757

CLASS 188

24.19 5,293,964
24.21 5,293,965
72.1 5,293,966
264 R 5,293,967
282 5,293,968
299 5,293,969
5,293,970
319 5,293,971
371 5,293,972
377 5,293,973
379 5,293,974

CLASS 190

26 5,293,975

CLASS 192

1.57 5,293,976
70.17 5,293,977
5,293,978

CLASS 194

317 5,293,979
5,293,980
345 5,293,981

CLASS 196

332 5,293,982
358 5,293,983
414 5,293,984
496 5,293,985
575 5,293,986
769 5,293,987
808 5,293,988
853 5,293,989

CLASS 200

5 R 5,294,758
61.27 5,294,759
83 N 5,294,760
144 B 5,294,761
513 5,294,762

CLASS 202

164 5,294,302

CLASS 203

10 5,294,303
19 5,294,304
28 5,294,305

CLASS 204

70 5,294,306
95 5,294,307
129.2 5,294,308
129.35 5,294,309
130 5,294,310
153.1 5,294,311
153.15 5,294,313
157.68 5,294,314
158.20 5,294,315
182.4 5,294,316
192.2 5,294,312
245 5,294,318
290 F 5,294,317
290 R 5,294,319
298.11 5,294,320
298.13 5,294,321
298.41 5,294,322
299 R 5,294,323
413 5,294,324
418 5,294,325

CLASS 205

287 5,294,326

CLASS 206

1.5 5,293,990
45.120 5,293,991
309 5,293,992
365 5,293,993
387 5,293,994
444 5,293,995
459.1 5,293,996
467 5,293,997
525 5,293,998
5,293,999
562 5,294,000

CLASS 208

57 5,294,327
66 5,294,328
108 5,294,329
113 5,294,330
120 5,294,331
215 5,294,332
310 2 5,294,333
400 5,294,334
5,294,349

CLASS 209

3 5,294,001
135 5,294,002
.64 5,294,003
592 5,294,004

CLASS 210

168 5,294,330
169 5,294,335
198.2 5,294,336
266 5,294,337
321.78 5,294,339
321.8 5,294,338
610 5,294,340
635 5,294,341
639 5,294,342
640 5,294,343
5,294,344
645 5,294,345
708 5,294,346
724 5,294,347
725 5,294,348
774 5,294,352
5,294,351

CLASS 211

13 5,294,005
18 5,294,006
34 5,294,007
41 5,294,008
126 5,294,009

CLASS 215

228 5,294,010
247 5,294,011

CLASS 219

68 5,294,767
113 5,294,768
117.1 5,294,769
121.14 5,294,771
121.19 5,294,772
121.34 5,294,773
121.7 5,294,770
121.77 5,294,774
204 5,294,775
209 5,294,776
225 5,294,777
385 5,294,778
450 5,294,779
535 5,294,780
619 5,294,766
727 5,294,764
5,294,765
729 5,294,763

CLASS 220

23.4 5,294,012
241 5,294,013
253 5,294,014
306 5,294,015
380 5,294,016
407 5,294,017
603 5,294,018
683 5,294,019

CLASS 221

131 5,294,020

CLASS 222

3 5,294,021
56 5,294,022
61 5,294,023
137 5,294,024
383 5,294,025

CLASS 224

42.83 5,294,026
42.85 R 5,294,027
148 5,294,028
162 5,294,029
226 5,294,030
229 5,294,031
277 5,294,032
316 5,294,033

CLASS 225

5,294,034
106 5,294,035

CLASS 226

157 5,294,035

CLASS 228

37 5,294,036
125 5,294,037
179.1 5,294,038
180.22 5,294,039

CLASS 229

5,294,040
69 5,294,041
71 5,294,042
143 5,294,043
191 5,294,044

CLASS 235

376 5,294,781
462 5,294,782
5,294,783
5,294,784
477 5,294,785
488 5,294,786

CLASS 236

12.12 5,294,045
46 R 5,294,047
49.3 5,294,048
49.5 5,294,049
345 5,294,046

CLASS 237

2 A 5,294,050
8 R 5,294,051

CLASS 239

112 5,294,052
119 5,294,053
222.15 5,294,054
265.19 5,294,055
408 5,294,056
417.3 5,294,057
533.1 5,294,058
591 5,294,059
656 5,294,060

CLASS 241

23 5,294,061
67 5,294,062
101.7 5,294,063
5,294,064
5,294,065

CLASS 242

47.01 5,294,067
54 R 5,294,066
55.53 5,294,068
56 R 5,294,069
107.4 A 5,294,070
150 M 5,294,071
199 5,294,072
5,294,073
319 5,294,074

CLASS 244

75 R 5,294,075
96 5,294,076
104 FP 5,294,077
116 5,294,078
169 5,294,079
215 5,294,080

CLASS 246

182 R 5,294,081

CLASS 248

37.6 5,294,082
146 5,294,083
544 5,294,084
562 5,294,085
631 5,294,086
639 5,294,087

CLASS 250

208.1 5,294,787
214 VT 5,294,788
214.1 5,294,789
216 5,294,790
221 5,294,792
231.16 5,294,793
287 5,294,794
328 5,294,795
338.5 5,294,796
427 5,294,797
458.1 5,294,798
5,294,799
492.22 5,294,800
5,294,801
548 5,294,791
561 5,294,802
5,294,803
5,294,804
572 5,294,805
574 5,294,806

CLASS 251

1.3 5,294,088
30.02 5,294,089
36 5,294,090
95 5,294,091
149.6 5,294,092
263 5,294,093

CLASS 252

8.553 5,294,353
18 5,294,354
28 5,294,355
56 R 5,294,356
67 5,294,357
5,294,358
5,294,359
74 5,294,360
90 5,294,361
102 5,294,362
108 5,294,363
142 5,294,364
174.21 5,294,365
299.61 5,294,367
299.62 5,294,366
301.4 F 5,294,368
313.1 5,294,369
5,294,370
389.23 5,294,371
500 5,294,372
502 5,294,373
518 5,294,374
583 5,294,375
600 5,294,376
700 5,294,377

CLASS 257

14 5,294,807
17 5,294,808
5,294,809
40 5,294,810
59 5,294,811
65 5,294,812
76 5,294,813
77 5,294,814
95 5,294,815
163 5,294,816
239 5,294,817
289 5,294,818
314 5,294,819
324 5,294,820
351 5,294,821
368 5,294,822
370 5,294,823
409 5,294,824
487 5,294,825
659 5,294,826
666 5,294,827
676 5,294,828
678 5,294,829
714 5,294,830
722 5,294,831
741 5,294,833
745 5,294,834
750 5,294,836
774 5,294,837
793 5,294,835

CLASS 261

130 5,294,378

CLASS 264

1.4 5,294,379
18 5,294,380
25 5,294,381
27 5,294,382
29.2 5,294,383
37 5,294,384
45.1 5,294,385
46.6 5,294,386
60 5,294,387
65 5,294,388
85 5,294,389
103 5,294,390
5,294,391
118 5,294,392
121 5,294,393
135 5,294,394
178 F 5,294,395
240 5,294,396
251 5,294,397
288.4 5,294,398

CLASS 266

44 5,294,094
87 5,294,095
237 5,294,096

CLASS 267

156 5,294,097

CLASS 269

17 5,294,098
133 5,294,099

CLASS 270

54 5,294,100

CLASS 271

9 5,294,101
35 5,294,102
113 5,294,103
117 5,294,104
157 5,294,105
164 5,294,106
220 5,294,107
241 5,294,108

CLASS 273

26 D 5,294,109
32 H 5,294,110
55 R 5,294,111
58 BA 5,294,112
67 A 5,294,113
67 R 5,294,114
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73 R 5,294,116
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162 E 5,294,122
176 E 5,294,123
186.1 5,294,124
187 R 5,294,125
187.2 5,294,126
194 B 5,294,127
292 5,294,128
327 5,294,129
346 5,294,130
416 5,294,131

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9.5 5,294,132
26 5,294,133
180 5,294,134
235 B 5,294,135

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5.2 5,294,136
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47.34 5,294,138
221 5,294,140
250.1 5,294,141
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612 5,294,144
641 5,294,158
654 5,294,145
707 5,294,146
728 B 5,294,147
743 R 5,294,148
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801 A 5,294,150
819 5,294,151
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827 5,294,153

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258 5,294,159
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161 5,294,163

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96.21 5,294,165
97.23 5,294,166
98 5,294,167
146.16 5,294,168
146.5 5,294,169
180.1 5,294,170

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148 5,294,172
195.1 5,294,173
212 5,294,174
216.1 5,294,175
245 5,294,176
270 5,294,177
301 5,294,178
330 5,294,179
423.44 5,294,180
452.25 5,294,181
467 5,294,182
472 5,294,183
473 5,294,184
484 5,294,185

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CLASS 301

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37.37 5,294,189

CLASS 303

3 5,294,190
5,294,191

CLASS 307

117 5,294,838
127 5,294,839
141 5,294,840
262 5,294,841
269 5,294,842
317.1 5,294,843
352 5,294,844
443 5,294,845
448 B1 5,021,686
465 5,294,846
530 5,294,847
602 5,294,848
647 5,294,849

CLASS 310

13 5,294,850
68 C 5,294,851
5,294,852
68 R 5,294,853
90.5 5,294,854
160 5,294,855
181 5,294,856
269 5,294,857
313 A 5,294,858
313 B 5,294,859
320 5,294,860
334 5,294,861
366 5,294,862

CLASS 312

34.22 5,294,192
223.3 5,294,193
229 5,294,194
236 5,294,195
263 5,294,196

CLASS 313

318 5,294,863
490 5,294,867
504 5,294,869
5,294,870

CLASS 315

2.32 5,295,224
39.51 5,294,864
58 5,294,865
205 5,294,868
367 5,294,866

CLASS 318

139 5,294,871
254 5,294,872
568.1 5,294,873
759 5,294,874
801 5,294,875
803 5,294,876
809 5,294,877

CLASS 322

23 5,294,879
28 5,294,881

CLASS 324

158 R 5,294,882
5,294,883
248 5,294,884
316 5,294,885
318 5,294,886
388 5,294,887
393 5,294,888
549 5,294,890
678 5,294,889
705 5,294,891

CLASS 330

253 5,294,892
258 5,294,893

CLASS 331

1 A 5,294,894
9 5,294,895
158 5,294,896

CLASS 333

33 5,294,897
187 5,294,898
235 5,294,899

CLASS 335

20 5,294,900
35 5,294,901
5,294,902
172 5,294,903
299 5,294,904

CLASS 337

158 5,294,905
260 5,294,906
394 5,294,907

CLASS 338

21 5,294,908
26 5,294,909
306 5,294,910

CLASS 340

146.2 5,294,911
323 R 5,294,912
5,294,913
432 5,294,914
539 5,294,915
606 5,294,916
625 5,294,917
825.17 5,294,921
825.44 5,294,922

854.9 5,294,923
908.1 5,294,924

CLASS 341

50 5,294,925
120 5,294,926
141 5,294,927
142 5,294,928
144 5,294,929

CLASS 342

13 5,294,930
44 5,294,931
109 5,294,932
159 5,294,933
173 5,294,934
174 5,294,935
175 5,294,936
459 5,294,937

CLASS 343

829 5,294,938
836 5,294,939

CLASS 345

31 5,294,940
79 5,294,919
102 5,294,920
155 5,294,918

CLASS 346

76 PH 5,294,941
107 R 5,294,942
108 5,294,943
5,294,944
140 R 5,294,946
408 5,294,945

CLASS 348

4 5,294,977
5,294,981
200 5,294,991
229 5,294,976
241 5,294,989
363 5,294,990
373 5,294,988
395 5,294,974
416 5,294,978
461 5,294,982
521 5,294,983
536 5,294,987
607 5,294,985
624 5,294,979
672 5,294,986
767 5,294,992
825 5,294,994

CLASS 354

62 5,294,948
82 5,294,947
106 5,294,949
109 5,294,950
111 5,294,951
152 5,294,952
219 5,294,953
287 5,294,954
324 5,294,955
5,294,956

CLASS 355

200 5,294,957
208 5,294,958
5,294,959
210 5,294,960
219 5,294,961
5,294,962
245 5,294,968
260 5,294,963
270 5,294,964
312 5,294,965
317 5,294,966
326 R 5,294,967
5,294,969

CLASS 356

121 5,294,971
152 5,294,970
350 5,294,972
372 5,294,973
401 5,294,975
5,294,980

CLASS 358

160 5,294,984
298 5,294,996
342 5,294,995
5,294,997
350 5,294,993
428 5,294,998
441 5,294,999
444 5,295,000
479 5,295,077
482 5,295,001
498 5,295,002
509 5,295,003

CLASS 359

17 5,295,004
41 5,295,005
49 5,295,006
54 5,295,007
58 5,295,008
65 5,295,009
107 5,295,010
114 5,295,011
135 5,295,012
192 5,295,013
202 5,295,014
333 5,295,015
347 5,295,016
350 5,295,017
487 5,295,018
634 5,295,019
811 5,295,020
850 5,295,021

CLASS 360

14.2 5,295,022
32 5,295,023
36.2 5,295,024
71 5,295,025
77.08 5,295,026
97.01 5,295,027
5,295,028
99.08 5,295,029
99.12 5,295,030
106 5,295,031
107 5,295,032
108 5,295,033

CLASS 361

25 5,295,034
63 5,295,035
79 5,295,036
93 5,295,037
152 5,295,038
225 5,295,039
323 5,295,040
622 5,295,041
634 5,295,042
704 5,295,043
709 5,295,044
813 5,295,045
816 5,295,046

CLASS 362

26 5,295,047
5,295,048
27 5,295,049
5,295,050
32 5,295,051
5,295,052
66 5,295,053
80 5,295,054
249 5,295,055
267 5,295,056
431 5,295,057

CLASS 363

26 5,295,058

CLASS 364

147 5,295,059
148 5,295,060
157 5,295,061
188 5,295,062
5,295,063
401 5,295,064
5,295,065
5,295,066
5,295,067
419.02 5,295,068
5,295,070
419.17 5,295,069
420 5,295,071
5,295,072
424.01 5,295,073
424.05 5,295,074
474.28 5,295,075
474.29 5,295,076
483 5,295,078
484 5,295,079
487 5,295,080
489 5,295,081
490 5,295,082
510 5,295,083
558 5,295,085
5,295,086
572 5,295,086
578 5,295,087
5,295,088
708.1 5,295,089
784 5,295,090
807 5,295,091

CLASS 365

51 5,295,092
162 5,295,093
170 5,295,097
182 5,295,094
185 5,295,095
5,295,096
189.05 5,295,098
189.06 5,295,099
189.11 5,295,100
200 5,295,101
5,295,102
205 5,295,103
210 5,295,104
218 5,295,105
5,295,106
5,295,107
222 5,295,108
5,295,109
5,295,110
226 5,295,111
227 5,295,112
228 5,295,113
230.06 5,295,114
5,295,115
5,295,116
233.5 5,295,117

CLASS 366

22 5,294,197

CLASS 367

88 5,295,118
99 5,295,119
188 5,295,120

CLASS 369

13 5,295,121
5,295,122
32 5,295,123
5,295,124
44.29 5,295,125
47 5,295,126
58 5,295,127
59 5,295,128
122 5,295,129
124 5,295,130
275.3 5,295,131

CLASS 370

13 5,295,132
16 5,295,133
5,295,134
17 5,295,135
32.1 5,295,136
54 5,295,137
57 5,295,138
60 5,295,139
94.1 5,295,140

CLASS 371

22.1 5,295,141
43 5,295,142

CLASS 372

22 5,295,143
5,295,144
38 5,295,145
41 5,295,146
45 5,295,147
46 5,295,148
69 5,295,149
96 5,295,150

CLASS 374

4 5,294,198
57 5,294,199
120 5,294,200

CLASS 375

1 5,295,151
5,295,152
5,295,153
157 5,295,154
159 5,295,155
160 5,295,156
161 5,295,157
164 5,295,158
250 5,295,246
325 5,295,247
375 5,295,248
5,295,249
5,295,250
400 5,295,251
425 5,295,252
5,295,253
5,295,254
5,295,255
500 5,295,256
550 5,295,257
575 5,295,258
5,295,259
5,295,260
600 5,295,261
5,295,262
650 5,295,263
5,295,264
5,295,265
5,295,266

CLASS 380

4 5,295,187
30 5,295,188

CLASS 381

22 5,295,189
43 5,295,190
68.6 5,295,191
71 5,295,192
151 5,295,193
192 5,295,194
199 5,295,195

CLASS 382

7 5,295,196
14 5,295,197
38 5,295,198
41 5,295,199
43 5,295,200
48 5,295,201
51 5,295,202
56 5,295,203
63 5,295,204

CLASS 384

45 5,294,201

CLASS 385

1 5,295,205
12 5,295,206
5,295,207
27 5,295,208
37 5,295,209
43 5,295,210
5,295,211
57 5,295,212
78 5,295,213
92 5,295,214
109 5,295,215
120 5,295,216
122 5,295,217
5,295,218
134 5,295,219
142 5,295,220
147 5,295,221

CLASS 395

1 5,295,222
2.23 5,295,223
2.35 5,295,225
3 5,295,226
11 5,295,227
23 5,295,228
51 5,295,229
75 5,295,230
77 5,295,231
105 5,295,232
115 5,295,233
121 5,295,234
133 5,295,235
134 5,295,236
137 5,295,237
150 5,295,238
151 5,295,239
5,295,240
305 5,295,241
324 5,295,242
335 5,295,243
415.2 5,295,244
574.1 5,295,245
708 5,295,246

CLASS 396

10 5,294,430
49 5,294,431
52 5,294,432
5,294,433
5,294,434
61 5,294,435
62 5,294,436
71 5,294,437
73 5,294,438
78.01 5,294,439
78.05 5,294,440
93 A 5,294,441
93 Q 5,294,442
195.1 5,294,443
401 5,294,444
411 5,294,445
489 5,294,446
5,294,447
497 5,294,448

CLASS 400

103 5,294,202
120 5,294,203
636 5,294,204

CLASS 401

70 5,294,205
206 5,294,206
288 5,294,207

CLASS 402

70 5,294,208

CLASS 403

24 5,294,209

CLASS 404

84.1 5,294,210

CLASS 405

27 5,294,211
36 5,294,212
73 5,294,213
158 5,294,214
266 5,294,215
286 5,294,216

CLASS 406

91 5,294,217
173 5,294,218

CLASS 407

34 5,294,219

CLASS 409

137 5,294,220

CLASS 410

30 5,294,221
36 5,294,222

CLASS 411

34 5,294,223
174 5,294,224
182 5,294,225
338 5,294,226
386 5,294,227

CLASS 414

22.55 5,294,228

CLASS 419

27 5,294,399

CLASS 422

16 5,294,400
48 5,294,401
57 5,294,402
61 5,294,403
64 5,294,404
103 5,294,405
109 5,294,406
119 5,294,407
162 5,294,408
169 5,294,409
171 5,294,410
174 5,294,411
295 5,294,412
297 5,294,413
305 5,294,414

CLASS 423

22 5,294,415
24 5,294,416
101 5,294,417
219 5,294,418
239.1 5,294,419
5,294,420
5,294,421
245.1 5,294,422
286 5,294,423
305 5,294,424
324 5,294,425
335 5,294,426
415.2 5,294,427
574.1 5,294,428
708 5,294,429

CLASS 424

10 5,294,430
49 5,294,431
52 5,294,432
5,294,433
58 5,294,434
61 5,294,435
62 5,294,436
71 5,294,437
73 5,294,438
78.01 5,294,439
78.05 5,294,440
93 A 5,294,441
93 Q 5,294,442
195.1 5,294,443
401 5,294,444
411 5,294,445
489 5,294,446
5,294,447
497 5,294,448

CLASS 426

3 5,294,449
11 5,294,450
496 5,294,452
548 5,294,453
557 5,294,454
573 5,294,455
5,294,456
5,294,457
611 5,294,451
635 5,294,458

CLASS 427

96 5,294,459
228 5,294,460
293 5,294,461
446 5,294,462
488 5,294,463
489 5,294,464
523 5,294,465

CLASS 428

14 5,294,466
34.1 5,294,467
35.8 5,294,468
36.1 5,294,469
40 5,294,470
64 5,294,471
120 5,294,472
141 5,294,473
143 5,294,474
154 5,294,475
195 5,294,476
212 5,294,477
218 5,294,478
236 5,294,479
240 5,294,480
245 5,294,481
287 5,294,482
308.4 5,294,487
336 5,294,483
373 5,294,488
379 5,294,489
402 5,294,491
402.21 5,294,490
403 5,294,492
411.1 5,294,493
426 5,294,494
511 5,294,484
626 5,294,485
672 5,294,486
694 B 5,294,495

CLASS 429

65 5,294,496
97 5,294,497
122 5,294,498
164 5,294,499
186 5,294,500
192 5,294,501
5,294,502
194 5,294,503
213 5,294,504

CLASS 430

3 5,294,505
5 5,294,506
49 5,294,507
58 5,294,508
5,294,509
5,294,510
78 5,294,512
109 5,294,513
203 5,294,514
253 5,294,515
262 5,294,516
270 5,294,511
5,294,517
280 B1 5,009,982
290 5,294,518
313 5,294,519
314 5,294,520
326 5,294,521
345 5,294,522
495 5,294,523
503 5,294,524
523 5,294,525
536 5,294,526
545 5,294,527
546 5,294,528
5,294,529
551 5,294,530
556 5,294,531
588 5,294,532

CLASS 434

336 5,294,229

CLASS 435

6 5,294,533
5,294,534
7.32 5,294,537
7.9 5,294,535
7.93 5,294,536
21 5,294,538
25 5,294,539
5,294,540
29 5,294,541
69.1 5,294,542
5,294,543
70.4 5,294,544
91.53 5,294,545
101 5,294,546

VOL 11.60 ISS 3 MR 15 1994 UMI

106	5,294,547	232	5,294,583	259	5,294,617	127	5,294,654	310	5,294,693	CLASS 548	
235.1	5,294,548	242	5,294,584	290	5,294,618	265	5,294,655	CLASS 528		251	5,294,722
	B1 5,037,753	413	5,294,585	299	5,294,619	269	5,294,656	171	Re.34,563	CLASS 549	
240.243	5,294,551	439	5,294,586	300	5,294,620	270	5,294,657	210	5,294,694	292	5,294,724
240.45	5,294,549	CLASS 503		301	5,294,621	457	5,294,658	279	5,294,695	417	5,294,723
	5,294,550			311	5,294,622	458	5,294,659	353	5,294,696		5,294,725
252.3	5,294,552	204	5,294,587	317	5,294,623	492	5,294,660	488	5,294,697	CLASS 554	
CLASS 436		227	5,294,588	330	5,294,624	504	5,294,661	CLASS 530		98	5,294,726
			5,294,589		5,294,625	516	5,294,662			CLASS 556	
60	5,294,553		5,294,590	338	5,294,627	526	5,294,663				
73	5,294,554		5,294,591	357	5,294,626	560	5,294,664	324	5,294,698	480	5,294,727
CLASS 437			5,294,592	364	5,294,628	591	5,294,665	364	5,294,699		
		CLASS 504		366	5,294,629	609	5,294,666	395	5,294,700	CLASS 558	
21	5,294,555			372	5,294,630	CLASS 525		CLASS 536			
	5,294,556	100	5,294,593	381	5,294,631					255	5,294,728
22	5,294,557	116	5,294,594		5,294,632	68	5,294,667	6.4	5,294,701	268	5,294,729
31	5,294,558	139	5,294,595		5,294,633	80	5,294,668	23.5	5,294,569	408	5,294,730
40	5,294,559	225	5,294,596	400	5,294,634	129	5,294,669	84	5,294,702	CLASS 560	
47	5,294,560	255	5,294,597	409	5,294,635	154	5,294,670	119	5,294,703		
60	5,294,561	315	5,294,598	415	5,294,636	187	5,294,671	CLASS 540		60	5,294,731
67	5,294,562	CLASS 505		449	5,294,637	227	5,294,672			86	5,294,732
69	5,294,563			452	5,294,638	282	5,294,674	30	5,294,704	152	5,294,733
81	5,294,564	1	5,294,599	522	5,294,639	286	5,294,673	226	5,294,705	CLASS 562	
105	5,294,565		5,294,600	525	5,294,640	292	5,294,675	491	5,294,706		
184	5,294,566		5,294,601	540	5,294,641	305	5,294,676	540	5,294,707	11	5,294,734
187	5,294,567	CLASS 512		561	5,294,642	308	5,294,677	CLASS 544		52	5,294,735
225	5,294,572			622	5,294,643	319	5,294,678			401	5,294,736
235	5,294,568		5,294,602	698	5,294,644	326.5	5,294,679	159	5,294,708	444	5,294,737
239	5,294,570	CLASS 514		729	5,294,645	327.4	5,294,680	263	5,294,709	483	5,294,738
	5,294,571		5,294,603			327.6	5,294,681	320	5,294,710	543	5,294,739
CLASS 501			5,294,604	CLASS 521		442	5,294,682	336	5,294,711	609	5,294,740
12	5,294,573		5,294,605	125	5,294,647	524	5,294,683	363	5,294,712	870	5,294,741
88	5,294,574		5,294,606	CLASS 523		CLASS 526		384	5,294,713		
97	5,294,575		5,294,607					385	5,294,714	CLASS 564	
128	5,294,576		5,294,608	120	5,294,646	62	5,294,684	CLASS 546		417	5,294,742
134	5,294,577		5,294,609	145	5,294,648	134	5,294,685			CLASS 568	
CLASS 502			5,294,610		5,294,649	233	5,294,686	106	5,294,715		
			5,294,611	523	5,294,650		5,294,687	135	5,294,716	26	5,294,743
62	5,294,578	234.2	5,294,612			260	5,294,688	156	5,294,717	442	5,294,744
66	5,294,579	242	5,294,613	CLASS 524		271	5,294,689	158	5,294,718		
101	5,294,580	244	5,294,614	3	5,294,651	286	5,294,690	188	5,294,719	CLASS 604	
124	5,294,581	254	5,294,615	30	5,294,652	287	5,294,691	265	5,294,720		
164	5,294,582	255	5,294,616	114	5,294,653	301	5,294,692	347	5,294,721	96	Re.34,564

CLASSIFICATION OF DESIGNS

3—	271	345,051		384	345,078	75	345,111		345,144	52	345,177	125	345,210
D1—	120	345,043			345,079	81	345,112	184	345,145	63	345,178	141	345,211
D2—	911	345,044		386	345,080		345,113	D14— 100	345,146	65	345,179	143	345,212
	916	345,045		391	345,081	101	345,114		345,147	D20— 10	345,180	172	345,213
	953	345,046		396.2	345,082	106	345,116		345,148	40	345,181	195	345,214
	969	345,047		553	345,083	112	345,117	106	345,149	D21— 41	345,182		345,215
D3—	23	345,048		554	345,084	126	345,115	109	345,150	59	345,183		345,216
	217	345,049		589	345,085		345,118	114	345,151	65	345,184	D25— 16	345,217
	218	345,053		642	345,086	D12— 51	345,119	115	345,152		345,185	60	345,218
	228	345,052		693	345,087	84	345,120	118	345,153	82	345,186	103	345,219
D4—	104	345,054	D8—	55	345,088	97	345,121		345,154	84	345,187	122	345,220
		345,055		62	345,089	98	345,123		345,155	107	345,188	124	345,221
	106	345,056		68	345,090		345,124	135	345,156	136	345,189	138	345,222
	121	345,057		331	345,091	101	345,125	138	345,157	217	345,190	D26— 10	345,223
	138	345,058		332	345,092	108	345,126		345,158	220	345,191	11	345,224
D6—	316	345,059		343	345,093	114	345,134	151	345,159	222	345,192	26	345,225
	366	345,060		346	345,094	126	345,127	157	345,160	234	345,193	63	345,226
	393	345,061		358	345,095	133	345,129	165	345,161	D22— 104	345,194	102	345,227
	421	345,062		373	345,096		345,130	205	345,162	D23— 208	345,195		345,228
	449	345,063			345,097	143	345,131		345,163		345,196		345,229
	474	345,064		377	345,098	146	345,132	218	345,164	266	345,197		345,230
	508	345,065		380	345,099	147	345,133	230	345,165	280	345,198		345,231
		345,066	D9—	307	345,100	181	345,135	D15— 15	345,166	294	345,199	D28— 46	345,232
	536	345,067		423	345,101	221	345,050	17	345,167	295	345,200	47	345,233
		345,068		520	345,102	306	345,136	27	345,168	296	345,202	D32— 31	345,234
	566	345,069		528	345,103	403	345,122	28	345,169	319	345,201	53	345,235
	570	345,070		529	345,104	110	345,137	134	345,170	329	345,203		345,236
	571	345,071		551	345,105	112	345,138		345,171	406	345,204		345,237
	601	345,072	12—	129	345,128	146	345,139	D16— 202	345,172	411	345,205	74	345,238
D7—	300.1	345,073	D10—	1	345,106	147	345,140	209	345,173		345,206	D34— 1	345,239
	330	345,074		46	345,107	154	345,141	D17— 20	345,174	D24— 104	345,207	5	345,240
	376	345,075		49	345,108	156	345,142	D19— 42	345,175	108	345,208		345,241
		345,076		50	345,109	162	345,143		345,176	109	345,209		345,242
	379	345,077		59	345,110								

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P.—	46.2	8,638		51.1	8,640						
		8,639		74.1	8,641	82.4	8,642	87.1	8,643	88.1	8,644	100	8,645

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01 :	5,293,914		5,294,092		5,295,030		5,294,730		5,295,100		5,294,983
	5,294,351		5,294,109		5,295,031		5,294,744	17 :	5,293,669		5,294,987
	5,295,188		5,294,114		5,295,043		5,294,757		5,293,746	19 :	5,293,834
	5,295,208		5,294,117		5,295,046		5,294,777		5,293,800		5,293,854
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	5,293,847		5,294,127		5,295,079		5,294,901		5,293,885		5,294,172
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	5,294,898		5,294,329		5,295,216		5,293,801		5,294,063		5,294,553
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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 22, 1994



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1153 O.G. 3, on Aug. 3, 1993.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct., 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 13, 1993

BRUCE A. LEHMAN,
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 19, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,999,845 through 5,001,780
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 17, 1987 for which maintenance fees due at 7 years and six

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months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,649,571 through 4,651,344
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 15, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,376,312 through 4,377,006
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees on patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 9, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,162	07/141,304	2/13/90
(4,563,746)	(06/439,908)	(01/07/86)
Re 33,504	07/216,764	12/25/90
(4,563,592)	(06/541,368)	(01/07/86)
Re 33,849	07/559,220	03/17/92
(4,893,229)	(07/242,725)	(01/09/90)
Re 34,429	07/817,733	11/02/93
(4,893,333)	(07/323,282)	(01/09/90)
Re 34,519	07/815,235	01/25/94
(4,892,244)	(07/267,907)	(01/09/90)
Re 34,554	07/804,979	03/01/94
(4,892,414)	(07/308,932)	(01/09/90)
4,309,956	06/218,906	01/12/82
4,309,985	06/224,585	01/12/82
4,310,414	06/248,513	01/12/82
4,310,419	06/229,629	01/12/82
4,310,422	06/233,103	01/12/82
4,310,494	06/216,788	01/12/82
4,310,661	06/219,586	01/12/82
4,310,694	06/244,982	01/12/82
4,562,598	06/448,914	01/07/86
4,562,601	06/672,468	01/07/86
4,562,603	06/523,845	01/07/86
4,562,605	06/599,953	01/07/86
4,562,607	06/663,422	01/07/86
4,562,608	06/625,874	01/07/86
4,562,610	06/359,695	01/07/86
4,562,611	06/635,602	01/07/86
4,562,613	06/604,897	01/07/86
4,562,616	06/581,111	01/07/86
4,562,617	06/481,301	01/07/86
4,562,628	06/646,679	01/07/86
4,562,631	06/657,882	01/07/86
4,562,633	06/585,228	01/07/86
4,562,634	06/550,787	01/07/86
4,562,635	06/636,352	01/07/86
4,562,638	06/662,446	01/07/86
4,562,640	06/592,402	01/07/86
4,562,641	06/523,924	01/07/86
4,562,642	06/526,792	01/07/86
4,562,647	06/592,022	01/07/86
4,562,656	06/440,004	01/07/86
4,562,657	06/610,964	01/07/86
4,562,659	06/535,999	01/07/86
4,562,660	06/694,119	01/07/86
4,562,661	06/690,209	01/07/86
4,562,665	06/537,272	01/07/86
4,562,667	06/589,555	01/07/86
4,562,668	06/617,539	01/07/86
4,562,670	06/564,247	01/07/86
4,562,673	06/566,956	01/07/86
4,562,679	06/413,345	01/07/86
4,562,680	06/598,264	01/07/86
4,562,688	06/506,018	01/07/86
4,562,697	06/679,918	01/07/86
4,562,700	06/621,372	01/07/86
4,562,704	06/610,967	01/07/86
4,562,706	06/577,100	01/07/86
4,562,708	06/686,099	01/07/86
4,562,712	06/576,997	01/07/86
4,562,716	06/573,680	01/07/86
4,562,718	06/587,480	01/07/86
4,562,720	06/658,848	01/07/86
4,562,724	06/628,065	01/07/86
4,562,733	06/620,851	01/07/86

Patent Number	Serial Number	Issue Date
4,562,736	06/591,498	01/07/86
4,562,741	06/602,393	01/07/86
4,562,742	06/738,539	01/07/86
4,562,743	06/612,325	01/07/86
4,562,744	06/607,280	01/07/86
4,562,748	06/641,223	01/07/86
4,562,749	06/416,947	01/07/86
4,562,752	06/414,480	01/07/86
4,562,753	06/528,008	01/07/86
4,562,755	06/596,227	01/07/86
4,562,757	06/700,727	01/07/86
4,562,761	06/640,683	01/07/86
4,562,762	06/454,097	01/07/86
4,562,768	06/588,126	01/07/86
4,562,771	06/652,339	01/07/86
4,562,772	06/671,974	01/07/86
4,562,774	06/561,232	01/07/86
4,562,777	06/605,691	01/07/86
4,562,778	06/612,541	01/07/86
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4,562,780	06/491,743	01/07/86
4,562,782	06/535,714	01/07/86
4,562,784	06/630,851	01/07/86
4,562,785	06/438,900	01/07/86
4,562,786	06/593,904	01/07/86
4,562,797	06/643,644	01/07/86
4,562,798	06/563,579	01/07/86
4,562,806	06/594,914	01/07/86
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4,562,809	06/762,016	01/07/86
4,562,810	06/622,236	01/07/86
4,562,813	06/556,118	01/07/86
4,562,820	06/588,910	01/07/86
4,562,821	06/609,184	01/07/86
4,562,825	06/600,865	01/07/86
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4,562,979	06/477,482	01/07/86
4,562,981	06/505,937	01/07/86
4,562,988	06/625,258	01/07/86
4,562,993	06/614,292	01/07/86
4,562,998	06/485,852	01/07/86
4,563,000	06/665,050	01/07/86
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4,563,008	06/631,341	01/07/86
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4,563,243	06/624,195	01/07/86
4,563,244	06/554,696	01/07/86
4,563,245	06/609,187	01/07/86
4,563,247	06/608,846	01/07/86
4,563,248	06/572,881	01/07/86
4,563,253	06/548,970	01/07/86
4,563,254	06/699,521	01/07/86
4,563,262	06/626,472	01/07/86
4,563,270	06/314,095	01/07/86
4,563,273	06/248,046	01/07/86
4,563,274	06/642,193	01/07/86
4,563,283	06/580,443	01/07/86
4,563,284	06/638,154	01/07/86
4,563,285	06/639,253	01/07/86
4,563,286	06/678,635	01/07/86
4,563,294	06/478,698	01/07/86
4,563,299	06/656,295	01/07/86
4,563,300	06/451,408	01/07/86
4,563,301	06/449,419	01/07/86
4,563,302	06/556,968	01/07/86
4,563,306	06/641,978	01/07/86
4,563,307	06/513,454	01/07/86
4,563,319	06/471,740	01/07/86
4,563,320	06/674,599	01/07/86
4,563,322	06/564,025	01/07/86
4,563,324	06/549,636	01/07/86
4,563,327	06/620,308	01/07/86
4,563,330	06/538,026	01/07/86
4,563,332	06/480,030	01/07/86
4,563,333	06/643,413	01/07/86
4,563,334	06/557,551	01/07/86
4,563,337	06/407,963	01/07/86
4,563,338	06/509,037	01/07/86
4,563,341	06/385,816	01/07/86
4,563,342	06/541,016	01/07/86
4,563,346	06/589,283	01/07/86
4,563,351	06/617,977	01/07/86
4,563,353	06/445,713	01/07/86
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4,563,364	06/619,280	01/07/86
4,563,374	06/613,515	01/07/86
4,563,375	06/640,966	01/07/86
4,563,378	06/587,802	01/07/86
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4,563,382	06/575,150	01/07/86
4,563,383	06/595,557	01/07/86
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4,563,391	06/552,267	01/07/86
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4,563,422	06/380,804	01/07/86
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4,563,442	06/653,259	01/07/86
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4,563,639	06/542,971	01/07/86
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4,892,456	07/152,105	01/09/90
4,892,460	07/303,938	01/09/90
4,892,463	07/242,220	01/09/90
4,892,474	07/312,467	01/09/90
4,892,477	07/102,605	01/09/90

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4,892,479	07/255,495	01/09/90
4,892,483	07/231,959	01/09/90
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4,892,541	07/008,207	01/09/90
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4,892,595	06/858,213	01/09/90
4,892,620	07/230,934	01/09/90
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4,892,880	07/004,743	01/09/90
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4,892,896	07/179,398	01/09/90
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4,892,957	07/232,043	01/09/90
4,892,958	07/282,225	01/09/90
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4,892,969	07/203,553	01/09/90
4,892,971	07/257,715	01/09/90
4,892,975	07/101,632	01/09/90
4,892,979	07/203,083	01/09/90
4,892,988	07/153,675	01/09/90
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4,892,996	07/220,409	01/09/90
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4,893,017	07/260,425	01/09/90
4,893,027	07/219,065	01/09/90
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4,893,037	07/182,893	01/09/90
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4,893,080	07/230,630	01/09/90
4,893,083	07/233,308	01/09/90
4,893,084	07/196,164	01/09/90
4,893,090	07/241,689	01/09/90
4,893,112	07/123,772	01/09/90
4,893,148	07/199,041	01/09/90
4,893,152	07/243,797	01/09/90
4,893,156	07/165,077	01/09/90
4,893,169	07/181,881	01/09/90
4,893,177	06/937,510	01/09/90
4,893,202	07/169,052	01/09/90
4,893,210	07/217,618	01/09/90
4,893,217	07/276,367	01/09/90
4,893,225	07/163,742	01/09/90
4,893,226	07/300,326	01/09/90
4,893,237	07/361,832	01/09/90
4,893,238	07/157,448	01/09/90
4,893,240	07/320,793	01/09/90
4,893,241	07/036,952	01/09/90
4,893,242	07/137,686	01/09/90
4,893,247	07/253,942	01/09/90
4,893,251	07/171,870	01/09/90
4,893,255	07/200,604	01/09/90
4,893,294	07/253,473	01/09/90
4,893,312	07/185,793	01/09/90
4,893,323	07/221,437	01/09/90
4,893,332	07/188,496	01/09/90
4,893,334	07/090,741	01/09/90
4,893,337	07/204,226	01/09/90
4,893,351	07/092,092	01/09/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,394,252	06/335,447	7/19/83	12/29/81	1/31/94
4,404,687	06/438,963	9/20/83	9/24/82	12/21/93
4,443,851	06/403,037	4/17/84	7/29/82	1/31/94
4,465,284	06/533,565	8/14/84	9/19/83	11/23/93
4,486,847	06/577,121	12/04/84	1/27/84	12/16/93
4,488,137	06/527,003	12/11/84	8/29/83	1/31/94
4,502,331	06/532,159	3/05/85	9/14/83	1/31/94
4,512,493	06/519,253	4/23/85	8/01/83	9/22/93
4,528,643	06/456,730	7/09/85	1/10/83	1/25/94
4,533,053	06/498,129	8/06/85	5/25/83	1/21/94
4,534,555	06/549,272	8/13/85	11/03/83	1/31/94
4,541,727	06/591,709	9/17/85	3/21/84	1/21/94
4,543,478	06/448,089	9/24/85	12/09/82	12/21/93
4,562,962	06/496,431	1/07/86	5/20/83	1/21/94
4,757,717	06/934,767	7/19/88	11/25/86	11/23/93
4,796,738	07/050,791	1/10/89	5/13/87	1/31/94
4,804,323	06/932,168	2/14/89	11/18/86	1/27/94
4,804,944	07/091,848	2/14/89	9/01/87	1/24/94
4,807,600	06/919,031	2/28/89	10/15/86	1/31/94
4,824,132	07/145,105	4/25/89	1/19/88	11/30/93
4,826,251	07/097,454	5/02/89	9/16/87	1/31/94
4,839,093	06/828,832	6/13/89	2/12/86	1/26/94
4,842,130	06/757,852	6/27/89	7/22/85	12/21/93
4,843,641	07/178,384	7/04/89	4/06/88	10/26/93
4,843,973	07/125,768	7/04/89	11/23/87	12/17/93
4,853,514	06/921,268	8/01/89	10/21/86	10/26/93
4,864,335	07/243,517	9/05/89	9/12/88	1/21/94
4,864,660	07/215,647	9/12/89	7/06/88	1/31/94

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

5,078,242, Re. S.N. 08/178,047, Cl. 192/4, SOLENOID SYSTEM FOR, FOR EXAMPLE, A BRAKE/SHIFT INTERLOCK FOR VEHICULAR TRANSMISSION CONTROL, Richard Ratke, et. al., Owner of Record: *United Technologies Automotive Inc., Dearborn, Mich.*, Attorney or Agent: C. Emmit Pugh, Ex. Gp.: 3502

5,083,053, Re. S.N. 08/181,053, Jan. 14, 1994, Cl. 310/90, HIGH-FRICTION BACK-UP BEARING FOR MAGNETIC BEARINGS, Nigel H. New, Owner of Record: *Glacier Metal Company Limited, Northwood Hills, London*, Attorney or Agent: Michael J. Keenan, Ex. Gp.: 2102

5,128,088, Re. S.N. 08/181,569, Jan. 11, 1994, Cl. 264/305, CONTINUOUS METHOD FOR MAKING ADHESIVE LINED MALE EXTERNAL CATHETERS, Gary T. Shimomura, et. al., Owner of Record: *Hollister Incorporated, Libertyville, Ill.*, Attorney or Agent: John B. Lungmus, Ex. Gp.: 1307

Erratum

In the Reissue Applications Filed, at 1154 OG 80 (September 28, 1993), the Serial Number for patent number 4,237,584 should be 08/087,118.

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re 29,599, Reexam. No. 90/003,004, Mar. 9, 1993, Cl. 354/023, CONTROL CIRCUIT FOR PHOTOGRAPHIC APPARATUS, Francis T. Ogawa, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.*, Attorney or Agent: Office of General Counsel, Attn.: Edward Grayson, Honeywell, Inc., Minneapolis, Minn., Ex. Gp.: 2110, Requester: DB & S International, Manchester, N.H.

3,860,952, Reexam. No. 90/002,802, July 29, 1992, Cl. 358/019, VIDEO TIME BASE CORRECTOR, Michael W. Tallent, et. al., Owner of Record: *Video Patents, Ltd., San Jose, Calif.*, Attorney or Agent: Warren Kujawa, Townsend & Townsend, San Francisco, Calif., Ex. Gp.: 2615, Requester: Matsushita Electric Industrial Co., Ltd., Osaka, Japan

4,064,112, Reexam. No. 90/003,223, Oct. 15, 1993, Cl. 260/075, PROCESS FOR THE CONTINUOUS PRODUCTION OF HIGH MOLECULAR WEIGHT POLYETHYLENE TEREPHTHALATE, Joachim Rothe, et. al., Owner of Record: *Davy McKie Aktiengesellschaft, Frankfurt, Germany*, Attorney or Agent: William P. Heath, Eastman Chemical Co., Kingsport, Tenn., Ex. Gp.: 1307, Requester: Leonard P. Miller, c/o Shell Oil Co., Houston, Tex.

4,177,136, Reexam. No. 90/002,798, July 24, 1992, Cl. 208/215, HYDROTREATING PROCESS UTILIZING ELEMENTAL SULFUR FOR PRESULFIDING THE CATALYST, Daniel R. Herrington, Owner of Record: *Standard Oil Co., Cleveland, Ohio*, Attorney or Agent: BP America, Inc., Cleveland, Ohio, Ex. Gp.: 1109, Requester: Scott A. McCollister, Cleveland, Ohio

4,399,407, Reexam. No. 90/003,244, Nov. 5, 1993, Cl. 324/379, ENGINE ANALYZER WITH CONSTANT WIDTH DIGITAL WAVEFORM DISPLAY, Michael J. Kling, et. al., Owner of Record: *Bear Automative Service Equipment Co., Milwaukee, Wis.*, Attorney or Agent: David D. Brush, Kinney & Lange, Minneapolis, Minn., Ex. Gp.: 2607, Requester: Owner

4,421,574, Reexam. No. 90/003,228, Oct. 26, 1993, Cl. 148/111, METHOD FOR SUPPRESSING INTERNAL OXIDATION IN STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Co., Chicago, Ill.*, Attorney or Agent: Alvin D. Shulman, Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill., Ex. Gp.: 1101, Requester: LTV Steel Co., Inc., Cleveland, Ohio

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4,473,722, Reexam. No. 90/003,167, Aug. 19, 1993, Cl. 381/200, ELECTROACOUSTIC TRANSDUCER, Raymond J. Wilton, Owner of Record: *Knowles Electronics Co., Sussex, Great Brittain*, Attorney or Agent: Thomas K. Stine, Wallenstein, Wagner & Hattis, Chicago, Ill., Ex. Gp.: 2608, Requester: Owner

4,483,723, Reexam. No. 90/003,229, Oct. 26, 1993, Cl. 148/031.500, STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Co., Chicago, Ill.*, Attorney or Agent: Alvin D. Shulman, Marshall, O'Toole, Gerstein, Murray & Borlun, Chicago, Ill., Ex. Gp.: 1101, Requester: LTV Steel Co., Inc., Cleveland, Ohio

4,527,896, Reexam. No. 90/002,840, Sept. 22, 1992, Cl. 356/043, INFARED TRANSDUCER TRANSMITTER FOR NON CONTACT TEMPERATURE MEASUREMENT, Keikhosrow Irani, et. al., Owner of Record: *Mikron Instrument Co., Inc., Wyckoff, N.J.*, Attorney or Agent: Robert C. Podwill, Reed, Smith, Shaw & McKay, Philadelphia, Pa., Ex. Gp.: 2505, Requester: Howson & Howson; Land Instruments International, Inc., Bristol, Pa

4,553,314, Reexam. No. 90/003,240, Nov. 1, 1993, Cl. 338/021, METHOD FOR MAKING A SEMICONDUCTOR DEVICE, Tsiu C. Chan, et. al., Owner of Record: *SGS Thomson Microelectronics, Inc., Carrollton, Tex.*, Attorney or Agent: Lisa K. Jorgenson, SGS Microelectronics, Inc., Carrollton, Tex., Ex. Gp.: 2103, Requester: International Rectifier Corp., El Selgundo, Calif.

4,708,258, Reexam. No. 90/003,006, Mar. 24, 1993, Cl. 220/288, SALVAGE DRUM, Mark D. Shaw, et. al., Owner of Record: *Essef Corp., Chardon, Ohio*, Attorney or Agent: George C. Meyers, Wigman & Cohen, Arlington, Va., Ex. Gp.: 2401, Requester: Lobo Containers, Inc., Eldorado, Ak.

4,798,729, Reexam. No. 90/003,104, June 23, 1993, Cl. 426/326, METHOD FOR DELAYING CLOSTRIDIUM BOTULINUM GROWTH IN FISH & POULTRY, Robert J. Anders, et. al., Owner of Record: *Oscar Meyer Foods Corp., Madison, Wis.*, Attorney or Agent: Joseph J. Harcarik, General Foods Corp., White Plains, N.Y., Ex. Gp.: 1302, Requester: Pretty, Schroeder, Brueggemann & Clark, Los Angeles, Calif.

4,803,445, Reexam. No. 90/003,160, Aug. 13, 1993, Cl. 331/177, VARIABLE FREQUENCY OSCILLATOR, Richard Yamasaki, Owner of Record: *Silicon Systems, Tustin, Calif.*, Attorney or Agent: Gary A. Hecker, Hecker & Harrison, Los Angeles, Calif., Ex. Gp.: 2502, Requester: David M. Simon, Spensley, Horn, Jubas & Lubitz, Los Angeles, Calif.

4,806,774, Reexam. No. 90/002,803, July 29, 1992, Cl. 250/550, INSPECTION SYSTEM FOR ARRAY OF MICROCIRCUIT DIES HAVING REDUNDANT CIRCUIT PATTERNS, Lawrence H. Lin, et. al., Owner of Record: *Insytems, Inc., San Jose, Calif.*, Attorney or Agent: Paul S. Angelo, Stoel, Rives, Boley, Jones & Grey, Portland, Oreg., Ex. Gp.: 2509, Requester: KLA Instruments Corp.

4,855,702, Reexam. No. 90/002,799, July 27, 1992, Cl. 335/261, LINEAR ELECTROMAGNETIC ACTUATOR, Thomas K. Swanson, et. al., Owner of Record: *Thomas K. Swanson and Elwood J. Meyers, Rockford, Ill.*, Attorney or Agent: Rockey & Rifkin, Chicago, Ill., Ex. Gp.: 2103, Requester: Thomas K. Haverstock, Haverstock, Medlen & Carroll, San Francisco, Calif.

4,915,618, Reexam. No. 90/003,022, April 12, 1993, Cl. 166/250, MULTIPLE WELL TOOL CONTROL SYSTEM IN A MULTI-VALVE WELL TESTING SYSTEM, James M. Upchurch, Owner of Record: *Schlumberger Technology Corp., Houston, Tex.*, Attorney or Agent: John Bochard, Schlumberger Technology Corp., Houston, Tex., Ex. Gp.: 3500, Requester: Halliburton, Co., c/c Lucian, Wayne, Beavers, Daugherty, Hessin, Beavers & Gilbert, Oklahoma City, Okla.

4,925,541, Reexam. No. 90/003,087, June 7, 1993, Cl. 204/182.5, ELECTRODEIONNZATION APPARATUS AND METHOD, Anthony J. Giuffrida, et. al., Owner of Record: *Millipore Investment Holdings, Ltd., Bedford, Mass.*, Attorney or Agent: Andrew T. Karanakis, Millipore Corp., Bedford, Mass., Ex. Gp.: 1102, Requester: William Chapin, Huntington Beach, Calif.

4,973,476, Reexam. No. 90/003,161, Aug. 16, 1993, Cl. 424/071, HAIR CONDITIONERS, Duane G. Krzvsik, Owner of Record: *Dow Corning Corp., Midland, Mich.*, Attorney or Agent: Patent Dept., Dow Corning Corp., Midland, Mich., Ex. Gp.: 1502, Requester: Owner

4,977,929, Reexam. No. 90/003,251, Nov. 9, 1993, Cl. 137/863, WEIR VALVE SAMPLING INJECTION, Robert T. Chinnock, et. al., Owner of Record: *Fluoroware, Inc., Chaska, Minn.*, Attorney or Agent: H. Dale Palmatier, Palma tier & Sjoquist, Minneapolis, Minn., Ex. Gp.: 3407, Requester: Ronald R. Snider, Washington, D.C.

5,015,777, Reexam. No. 90/003,159, Aug. 10, 1993, Cl. 568/314, PROCESS FOR THE PREPARATION OF AROMATIC BETADIKETONES, Daniel Chisholm, et. al., Owner of Record: *Witco Corp., New York, N.Y.*, Attorney or Agent: Lockwood, Alex, Fitzgibbon & Cummings, Chicago, Ill., Ex. Gp.: 1206, Requester: Rhone-Poulenc Chimie, c/o Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C.

5,114,777, Reexam. No. 90/003,215, Oct. 6, 1993, Cl. 428/137, WOVEN MULTILAYER PAPERMAKING FABRIC HAVING INCREASED STABILITY AND PERMEABILITY AND METHOD, Hermann Gaiser, Owner of Record: *Wangner Systems, Greenville, S.C.*, Attorney or Agent: Cort Flint, Federal Station, Greenville, S.C., Ex. Gp.: 1504, Requester: Asten Group, Inc., Charleston, S.C.

5,150,940, Reexam. No. 90/003,009, Mar. 31, 1993, Cl. 296/39.200, FASTENER FOR TRUCK BED LINER, John W. Kennedy, Owner of Record: *York Products, Inc., Hanover, Pa.*, Attorney or Agent: Clifford A. Poff, Pittsburgh, Pa., Ex. Gp.: 3102, Requester: LRV Acquisition Corp., Wapakoneta, Ohio

5,156,576, Reexam. No. 90/003,181, Aug. 23, 1993, Cl. 475/072, COMPACT INTEGRATED TRANSAXLE, Alan W. Johnson, Owner of Record: *Sauer, Inc., Ames, Iowa*, Attorney or Agent: Zarley, McKie, Thomte, Vorhees & Sease, Des Moines, Iowa, Ex. Gp.: 3502, Requester: Tuff Torq Corp., Morristown, Tenn.

5,199,098, Reexam. No. 90/003,196, Sept. 16, 1993, Cl. 385/128, MOISTURE RESISTANT OPTICAL FIBER COATINGS WITH IMPROVED STABILITY, Kelly J. Nolan, et. al., Owner of Record: *Corning, Inc., Corning, N.Y.*, Attorney or Agent: Kees Van Der Sterre, Corning, Inc., Corning, N.Y., Ex. Gp.: 2501, Requester: Julie R. Keller, Venable, Baetier, Howard & Civiletti, Washington, D.C.

5,213,581, Reexam. No. 90/003,195, Cl. 008/401, COMPOSITIONS AND METHODS THAT INTRODUCE VARIATIONS IN COLOR DENSITY INTO CELLULOSIC FABRICS, PARTICULARLY INDIGO DYED DENIM, Lynne A. Olson, et. al., Owner of Record: *Ecolabs, Inc., St. Paul, Minn.*, Attorney or Agent: Merchant & Gould, Minneapolis, Minn, Ex. Gp.: 1105, Requester: Jerold A. Jacover & Ralph J. Gabric, Willian Brinks, Olds, Hofer, Gilson & Lione, Chicago, Ill.

5,224,775, Reexam. No. 90/003,241, Nov. 8, 1993, Cl. 374/011, METHOD AND APPARATUS FOR MODULATED DIFFERENTIAL ANALYSIS, Michael Reading, et. al., Owner of Record: *TA Instruments, Inc., New Castle, Del.*, Attorney or Agent: Kirkland & Ellis, Washington, D.C., Ex. Gp.: 2406, Requester: Stuart Lubitz, Spensley, Horn, Jubas & Lubitz, Los Angeles, Calif.

5,235,979, Reexam. No. 90/003,242, Nov. 3, 1993, Cl. 128/419, DUAL BATTERY SYSTEM FOR IMPLANTABLE DEFIBRILLATOR, Theodore P. Adams, Owner of Record: *Angelion Corp., Plymouth, Minn.*, Attorney or Agent: Patterson & Keough, Minneapolis, Minn., Ex. Gp.: 3305, Requester: Owner

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 31, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
91,362	71/066,645	4/29/1913
91,394	71/067,287	4/29/1913
91,430	71/066,781	4/29/1913
91,433	71/068,195	4/29/1913
302,520	71/330,521	4/25/1933
302,525	71/330,219	4/25/1933
302,546	71/333,572	4/25/1933
302,558	71/333,325	4/25/1933
302,583	71/328,345	4/25/1933
302,617	71/331,897	4/25/1933
302,627	71/331,556	4/25/1933
302,640	71/332,527	4/25/1933
302,701	71/333,323	4/25/1933
302,707	71/333,056	4/25/1933
302,711	71/326,363	4/25/1933
302,738	71/330,716	4/25/1933
302,739	71/329,145	4/25/1933
302,751	71/332,066	4/25/1933
302,768	71/333,185	4/25/1933
302,786	71/321,198	4/25/1933
302,793	71/323,436	4/25/1933
312,434	71/344,760	4/24/1933
573,607	71/512,375	4/28/1953
573,709	71/532,893	4/28/1953
573,611	71/538,374	4/28/1953
573,615	71/571,698	4/28/1953
573,623	71/585,851	4/28/1953
573,625	71/588,290	4/28/1953
573,639	71/602,451	4/28/1953
573,641	71/603,240	4/28/1953
573,652	71/610,392	4/28/1953
573,659	71/612,596	4/28/1953
573,664	71/614,434	4/28/1953
573,669	71/615,327	4/28/1953
573,670	71/615,659	4/28/1953
573,673	71/617,356	4/28/1953
573,698	71/622,209	4/28/1953
573,704	71/622,907	4/28/1953
573,705	71/623,291	4/28/1953
573,706	71/623,425	4/28/1953
573,707	71/623,596	4/28/1953
573,717	71/624,318	4/28/1953
573,720	71/624,523	4/28/1953
573,728	71/625,391	4/28/1953
573,731	71/625,853	4/28/1953
573,732	71/625,897	4/28/1953
573,734	71/626,042	4/28/1953
573,737	71/626,270	4/28/1953
573,748	71/626,597	4/28/1953
573,752	71/627,107	4/28/1953
573,753	71/627,113	4/28/1953
573,764	71/628,201	4/28/1953
573,767	71/628,402	4/28/1953
573,768	71/628,450	4/28/1953
573,772	71/628,620	4/28/1953
573,773	71/628,648	4/28/1953
573,788	71/629,229	4/28/1953
573,792	71/629,369	4/28/1953
573,796	71/629,430	4/28/1953
573,798	71/629,545	4/28/1953
573,799	71/629,546	4/28/1953
573,800	71/629,548	4/28/1953
573,801	71/629,549	4/28/1953
573,802	71/629,550	4/28/1953
573,805	71/629,553	4/28/1953
573,823	71/630,929	4/28/1953
573,826	71/631,177	4/28/1953
573,832	71/631,366	4/28/1953
573,836	71/631,553	4/28/1953
573,845	71/631,833	4/28/1953
573,853	71/632,136	4/28/1953
573,862	71/632,935	4/28/1953
573,883	71/592,153	4/28/1953
573,901	71/624,160	4/28/1953
573,904	71/625,335	4/28/1953
573,906	71/626,193	4/28/1953
573,907	71/626,601	4/28/1953
573,609	71/628,863	4/28/1953
574,374	71/632,176	5/12/1953
934,471	72/359,146	5/23/1972
936,464	72/365,602	6/27/1972
946,319	72/397,980	10/31/1972
951,678	72/384,449	1/30/1973
957,515	72/405,054	4/24/1973
957,517	72/408,716	4/24/1973
957,518	72/415,704	4/24/1973
957,520	72/419,910	4/24/1973
957,522	72/420,757	4/24/1973
957,525	72/414,189	4/24/1973
957,528	72/409,761	4/24/1973
957,530	72/430,385	4/24/1973
957,531	72/347,785	4/24/1973
957,533	72/414,937	4/24/1973
957,534	72/357,163	4/24/1973
957,535	72/395,980	4/24/1973
957,538	72/396,724	4/24/1973
957,541	72/414,363	4/24/1973
957,542	72/414,421	4/24/1973
957,544	72/421,877	4/24/1973
957,549	72/382,380	4/24/1973
957,551	72/419,200	4/24/1973
957,557	72/376,553	4/24/1973
957,561	72/393,665	4/24/1973
957,562	72/395,851	4/24/1973
957,563	72/398,682	4/24/1973
957,564	72/400,866	4/24/1973
957,565	72/401,475	4/24/1973
957,566	72/421,369	4/24/1973
957,567	72/329,479	4/24/1973
957,573	72/425,133	4/24/1973
957,575	72/416,849	4/24/1973
957,576	72/416,850	4/24/1973
957,584	72/403,766	4/24/1973
957,585	72/409,107	4/24/1973
957,588	72/412,663	4/24/1973
957,590	72/413,802	4/24/1973
957,594	72/397,272	4/24/1973
957,595	72/408,180	4/24/1973
957,598	72/410,576	4/24/1973
957,601	72/414,328	4/24/1973
957,604	72/419,892	4/24/1973
957,610	72/420,690	4/24/1973
957,619	72/398,036	4/24/1973
957,625	72/422,504	4/24/1973
957,637	72/402,913	4/24/1973
957,644	72/341,395	4/24/1973
957,645	72/403,995	4/24/1973
957,647	72/412,666	4/24/1973
957,650	72/413,813	4/24/1973
957,652	72/415,908	4/24/1973
957,653	72/415,936	4/24/1973
957,658	72/421,127	4/24/1973
957,662	72/422,213	4/24/1973
957,663	72/422,217	4/24/1973
957,665	72/422,215	4/24/1973
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Reg. No.	Serial Number	Reg. Date
957,669	72/423,277	4/24/1973
957,670	72/423,465	4/24/1973
957,671	72/423,557	4/24/1973
957,672	72/423,714	4/24/1973
957,674	72/423,808	4/24/1973
957,678	72/378,085	4/24/1973
957,679	72/388,825	4/24/1973
957,680	72/389,134	4/24/1973
957,684	72/392,808	4/24/1973
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957,686	72/396,869	4/24/1973
957,697	72/408,878	4/24/1973
957,699	72/414,412	4/24/1973
957,702	72/439,182	4/24/1973
957,705	72/353,836	4/24/1973
957,706	72/381,131	4/24/1973
957,708	72/385,468	4/24/1973
957,709	72/381,410	4/24/1973
957,713	72/389,277	4/24/1973
957,716	72/394,815	4/24/1973
957,717	72/397,856	4/24/1973
957,718	72/399,500	4/24/1973
957,720	72/402,501	4/24/1973
957,722	72/406,803	4/24/1973
957,723	72/406,108	4/24/1973
957,729	72/408,531	4/24/1973
957,730	72/408,532	4/24/1973
957,731	72/409,608	4/24/1973
957,732	72/410,199	4/24/1973
957,733	72/411,002	4/24/1973
957,743	72/375,077	4/24/1973
957,746	72/415,111	4/24/1973
957,749	72/422,001	4/24/1973
957,752	72/382,621	4/24/1973
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957,758	72/385,202	4/24/1973
957,761	72/392,998	4/24/1973
957,762	72/394,656	4/24/1973
957,763	72/394,891	4/24/1973
957,764	72/413,062	4/24/1973
957,765	72/415,307	4/24/1973
957,766	72/423,165	4/24/1973
957,769	72/424,344	4/24/1973
957,771	72/424,411	4/24/1973
957,776	72/406,047	4/24/1973
957,781	72/399,888	4/24/1973
957,783	72/389,981	4/24/1973
957,784	72/390,923	4/24/1973
957,785	72/409,243	4/24/1973
957,788	72/413,678	4/24/1973
957,789	72/415,609	4/24/1973
957,793	72/383,378	4/24/1973
957,795	72/395,689	4/24/1973
957,797	72/397,759	4/24/1973
957,802	72/407,766	4/24/1973
957,817	72/416,204	4/24/1973
957,818	72/416,241	4/24/1973
957,822	72/418,136	4/24/1973
957,826	72/418,807	4/24/1973
957,827	72/419,001	4/24/1973
957,830	72/374,855	4/24/1973
957,835	72/394,207	4/24/1973
957,837	72/399,350	4/24/1973
957,840	72/400,991	4/24/1973
957,844	72/402,353	4/24/1973
957,846	72/402,758	4/24/1973
957,847	72/407,294	4/24/1973
957,849	72/408,501	4/24/1973
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957,853	72/410,566	4/24/1973
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957,887	72/415,021	4/24/1973
957,889	72/419,515	4/24/1973
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957,892	72/420,674	4/24/1973
957,893	72/420,676	4/24/1973
957,894	72/420,677	4/24/1973
957,895	72/421,069	4/24/1973
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957,898	72/419,960	4/24/1973
957,899	72/332,810	4/24/1973
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957,908	72/405,179	4/24/1973
957,909	72/408,899	4/24/1973
957,910	72/409,431	4/24/1973
957,911	72/409,701	4/24/1973
957,914	72/366,480	4/24/1973
957,917	72/391,793	4/24/1973
957,918	72/392,931	4/24/1973
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957,942	72/374,945	4/24/1973
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957,944	72/405,710	4/24/1973
957,945	72/412,004	4/24/1973
957,946	72/412,427	4/24/1973
957,950	72/392,347	4/24/1973
957,955	72/402,795	4/24/1973
957,958	72/407,829	4/24/1973
957,960	72/414,257	4/24/1973
957,961	72/416,070	4/24/1973
957,971	72/412,176	4/24/1973
957,972	72/412,179	4/24/1973
957,977	72/417,760	4/24/1973
957,987	72/330,849	4/24/1973
957,989	72/398,732	4/24/1973
957,992	72/338,844	4/24/1973
957,993	72/359,856	4/24/1973
958,012	72/392,138	4/24/1973
958,014	72/414,810	4/24/1973
958,015	72/401,001	4/24/1973
958,016	72/401,002	4/24/1973
958,022	72/386,028	4/24/1973
958,025	72/402,553	4/24/1973
958,026	72/419,440	4/24/1973
958,029	72/398,413	4/24/1973
958,031	72/399,903	4/24/1973

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed.** To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for + patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993

STEPHEN G. KUNIN
Acting Assistant Commissioner for Patents

Certificate of Correction Issue for March 22, 1994

Bl-4,500,777	5,063,308	5,138,091	5,167,693
D.296,043	5,063,312	5,140,087	5,167,793
D.324,836	5,068,314	5,142,118	5,167,930
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D.335,656	5,070,466	5,142,282	5,169,842
D.335,864	5,074,891	5,143,985	5,169,994
D.336,770	5,075,055	5,144,226	5,170,784
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5,206,952	5,224,522	5,239,284	5,248,998
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5,210,616	5,226,232	5,240,293	5,250,743
5,210,904	5,226,470	5,240,478	5,250,750
5,212,317	5,226,735	5,240,595	5,251,213
5,212,433	5,226,861	5,240,619	5,251,902
5,212,546	5,226,879	5,240,760	5,251,948
5,212,577	5,227,233	5,240,857	5,251,988
5,212,595	5,227,235	5,240,885	5,252,179
5,212,630	5,227,251	5,240,988	5,252,261
5,212,659	5,227,526	5,240,992	5,252,338

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5,252,424 5,253,814 5,254,981 5,255,971
5,252,451 5,253,876

Disclaimers

4,551,347-*Jan Karwowski,* Franklin Lakes, N.J. PROCESS OF PREPARING INSTANT, FLAKED, WHEAT FARINA. Patent dated November 5, 1985. Disclaimer filed April 19, 1993 by the assignee, Nabisco, Inc.

Hereby enters this disclaimer to the remaining term of said patent.

4,782,625-*Steven L. Gerken; Brian M. Bell; John P. Isley,* all of Valparaiso, Ind. METHOD OF CONTAMINATED SOIL REMEDIATION AND APPARATUS THEREFOR. Patent dated Nov. 8, 1988. Disclaimer filed Aug. 16, 1993 by the assignee, Canonie Environmental Services, Corp.

The term of this patent subsequent to Nov. 8, 1988 has been disclaimed.

4,790,767-*Ronald P. Sturdevan,* Tifton, Ga.; *Michael E. LaCanne,* Marysville, Mich. ELECTRICAL CONNECTOR FOR A DISTRIBUTORLESS IGNITION SYSTEM. Patent dated Dec. 13, 1988. Disclaimer filed Oct. 22, 1993 by the assignee, Prestolite Wire Corporation.

Hereby enters this disclaimer to claims 1-6, 9-11, 16-22, 25 and 27 of said patent.

4,890,828-*Jack Hou,* Taipei, Taiwan. ORNAMENTAL DISPLAY ASSEMBLY. Patent dated January 2, 1990. Disclaimer filed Nov. 9, 1993, by the assignee, Giftec, Ltd.

Hereby enters this disclaimer to claims 1-3 and 6-15 of said patent.

4,988,342-*Steve A. Herweck,* Nashua; *Theodore Karwoski,* Hollis, both of N.H. IMPROVED FLUID RECOVERY SYSTEM. Patent dated January 29, 1991. Disclaimer filed Aug. 17, 1993, by the assignee, Atrium Medical Corporation.

Hereby enters this disclaimer to claims 1-2 and 10-15 of said patent.

5,228,636-*Masato Tanaka,* Tokyo, Japan. TAPE CASSETTE. Patent dated July 20, 1993. Disclaimer filed Dec. 13, 1993, by the assignee, Sony Corporation.

Hereby enters this disclaimer to claims 6 and 7 of said patent.

Disclaimers and Dedications

4,057,829-*Robert M. Moorehead,* Richardson, Tex. COMMUNICATIONS TV MONITORING AND CONTROL SYSTEM. Patent dated Nov. 8, 1977. Disclaimer and Dedication filed Sept. 3, 1993 by the assignee, Spectradyne, Inc.

Hereby disclaims and dedicates to the Public all claims of said patent.

4,962,832-*Jeffrey H. Maney,* Rockford, Ill. VEHICLE LIFT WITH LIFT LIMIT CONTROL. Patent dated Oct. 16, 1990. Disclaimer and Dedication filed Aug. 11, 1993 by the assignee, Mechanical Tool & Engineering Co.

Hereby disclaims and dedicates to the Public the entire term of said patent.

5,064,720-*Tsutomu Kempo; Atsuko Matsuda; Narito Goto,* all of Tokyo, Japan. MAGNETIC RECORDING MEDIUM CONTAINING A POLYURETHANE BINDER RESIN HAVING A BETAINE GROUP IN THE FORM OF AN INTERMOLECULAR SALT. Patent dated Nov. 12, 1991. Disclaimer and Dedication filed Nov. 5, 1993, by the assignee, Konica Corporation.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 24-28, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication	TTAB Decision
1-24	OPP	82,783	Apparel Business Systems, Inc. v. American Business Systems, Inc.	2(d)	"ABS APPAREL BUSINESS SYSTEMS" (and design) [business and distributing computer software to companies in the apparel, jewelry, and other mfg. industries]	"ABS" (and design) [microcomputer software to implement accounting functions for hand goods distributors]		No	Opposition Dismissed
1-24	EX	74/095,506	Mana Products, Inc.	2(d)		"USA WOMAN" [skin moisturizing lotion, eye makeup, lipstick, flam powder]	"AMERICAN WOMAN" (and design) [perfume]	No	Refusal Affirmed
1-24	EX	74/232,029	Rolfe Accessories, Inc.	2(d)		"CHEZ ROFFE" [men's neckties]	ROFFE [jackets, pants, shirts, vests, ski clothing, etc.] et al.	No	Refusal Affirmed
1-25	EX	74/130,587	Constantino Congiu Cecchi	2(e)(3); 2(d)		"GALLI" [neckties and shirts]	"GALLI" (and design) [shoes and slippers]	No	Refusal Affirmed (on 2(e)(3) ground only)
1-26	EX	74/126,315	Walkham Corp.	2(d)		"STERLING BANK" (stylized letters) [banking services]	"STERLING SAVINGS BANK" [banking services]	No	Refusal Affirmed
1-26	EX	74/104,891	Brooklyn Bottling Corp.	2(d)		"TROPICAL FANTASY" [soft drinks]	"FANTASY" [soft drink concentrates]	No	Refusal Reversed

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= RECD. FOR RECONSIDERATION

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Washington, D.C. 20231

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Box 15	Mail for the Advisory Commission on Patent Law Reform.
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Box 17	Invoices directed to the Office of Finance.
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Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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Alaska	Anchorage: Z. J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette: Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Jersey	Newark Public Library	(201) 733-7782
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247
Wyoming	Casper: Naprona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — EDWARD E. KUBASIEWICZ, Director	308-0661	3/13/93
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	1/14/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 — RICHARD V. FISHER, Director	308-0651	11/13/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	11/13/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	5/27/93
ELECTRICAL EXAMINING GROUPS		
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SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/31/92
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300 — GERALD GOLDBERG, Director	305-9600	3/16/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	7/08/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	6/24/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	7/25/92
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MECHANICAL EXAMINING GROUPS		
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	10/30/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/22/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/04/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	4/22/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Feb. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,005,494 to 4,009,493 inclusive
Plant Patents ..... 4,013 to 4,018

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of February 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/27/93	12/23/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment. Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	12/23/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/25/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/21/93	11/24/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	9/29/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	11/05/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/14/93	12/20/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/01/93	11/19/93
Law Office 11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/03/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/17/93	12/13/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/28/93	12/07/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	12/15/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	11/24/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	11/15/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

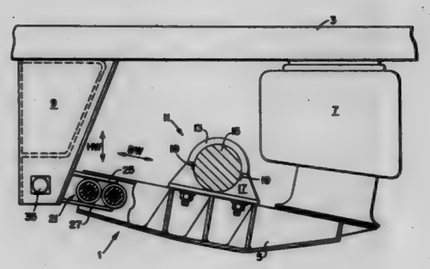
1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

MARCH 22, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,166,640 (2246th)
AXLE SUSPENSION FOR WHEELED VEHICLES
Ervin K. Van Denberg, Muskegon, Mich., assignor to Boler Company, Inc.
Reexamination Request No. 90/002,823, Aug. 26, 1992.
Reexamination Certificate for Patent No. 4,166,640, issued Sep. 4, 1979, Ser. No. 896,129, Apr. 14, 1978.
Int. Cl.[5] B60G *13/02*
U.S. Cl. 280—711



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is cancelled.

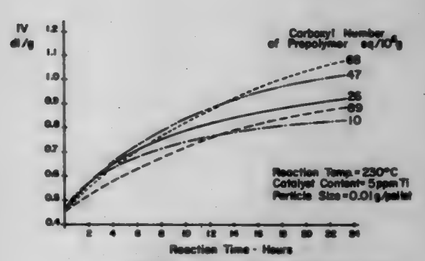
Claims 2, 6, 8, 10, 11 are determined to be patentable as amended.

Claims 3–5, 7, 9, 12–24 dependent on an amended claim, are determined to be patentable.

New claim 25 is added and determined to be patentable.

1. In an axle suspension system comprising an elongated, substantially rigid beam, a pneumatic bellows located at one end of the beam, a hanger bracket located at the other end of the beam, means for pivotally connecting the hanger bracket to the beam and means for connecting an axle to the beam located intermediate the ends of the beam, the improvement comprising, means for rigidly connecting said axle connecting means to said beam, said axle connecting means being capable of being rigidly connected to the axle thereby forming a rigid axle to beam connection, and an elastic means having a different degree of deflection beamwise than hangerwise, said elastic means being located at a spaced distance from said axle connecting means in the path of articulation forces between the beam and hanger bracket and being sufficiently resilient to allow operative deflections in response to said articulation forces and at the same time restrain longitudinal movement sufficiently to maintain substantially constant the distance between the hanger bracket and the axle connecting means.

B1 4,238,593 (2247th)
METHOD FOR THE PRODUCTION OF A HIGH MOLECULAR WEIGHT POLYESTER PREPARED FROM A PREPOLYMER POLYESTER HAVING AN OPTIONAL CARBOXYL CONTENT
Ben Duh, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Reexamination Request No. 90/002,391, Jul. 25, 1991.
Reexamination Certificate for Patent No. 4,238,593, issued Dec. 9, 1980, Ser. No. 47,849, Jun. 12, 1979.
Int. Cl.[5] C08G *63/26*
U.S. Cl. 528—272



STATIC BED SOLID POLYMERIZATION RATES OF 0.45 dl/g IV PET PREPOLYMERS

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

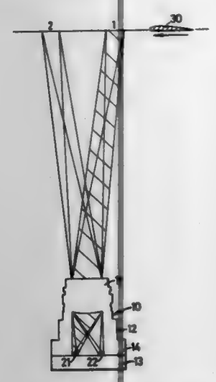
The patentability of claims 1–24 and 46–51 is confirmed.

Claims 25–45 were previously disclaimed.

1. A method for the production of a high molecular weight, high purity polyester comprising the steps of
(a) reacting a glycol and a dicarboxylic compound selected from the group consisting of dicarboxylic acids and dicarboxylic esters to form a polyester prepolymer having an intrinsic viscosity from about 0.40 dl/g to about 0.62 dl/g and having a carboxyl end group content from about 18% to about 40% of total end groups,
said dicarboxylic acids selected from the group consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, and aryl dicarboxylic acids containing a total of from 8 to 16 carbon atoms,
said dicarboxylic esters selected from the group consisting of alkyl esters having from 2 to 20 carbon atoms and an alkyl substituted aryl ester having from 10 to 20 carbon atoms,
said glycol selected from the group consisting of glycols having 2 to 10 carbon atoms, and
(b) polymerizing in a solid state in a static bed, said polyester prepolymer so that a high molecular weight, high purity polycondensed polyester is formed, said polycondensed polyester having an intrinsic viscosity of at least 0.70 dl/g and having an acetaldehyde impurity concentration less than about 3.0 parts per million.

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B1 4,812,643 (2248th)
DETECTOR DEVICE FOR A BLADE TRACKING SYSTEM HAVING TWO SENSORS
Richard Talbot, Romsey, United Kingdom, assignor to Stewart Hughes, Ltd., Southampton, United Kingdom
Reexamination Request No. 90/003,190, Sep. 8, 1993.
Reexamination Certificate for Patent No. 4,812,643, issued Mar. 14, 1989, Ser. No. 170,533, Mar. 16, 1988.
Claims priority, application United Kingdom, May 16, 1985, 8512443
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–14 is confirmed.

1. A detector for a blade tracking system, said detector comprising: a housing; a single lens supported in said housing for focusing in a plane a bundle of radiation passing therethrough; at least two radiation sensors being fixed within said plane and having optical axes inclined at a known angle, each sensor receiving radiation focussed by said lens and being located within said housing so that a blade passing through and interfering with said radiation bundle is sensed separately and sequentially by each of said sensors; and means for comparing the difference in timing between independent signals generated by each of said sensors in response to interference of radiation sensed by each of said sensors to calculate by triangulation a track of the blade regardless of relative positioning between the blade and the optical axis of each sensor.

B1 4,828,483 (2249th)
METHOD AND APPARATUS FOR SUPPRESSING NOX FORMATION IN REGENERATIVE BURNERS
Harry P. Finke, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.
Reexamination Request No. 90/002,830, Sep. 4, 1992.
Reexamination Certificate for Patent No. 4,828,483, issued May 9, 1989, Ser. No. 198,739, May 25, 1988.
Int. Cl.[5] F23D *11/44;* **F23L** *15/00;* **F27D** *17/00*
U.S. Cl. 431—11

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

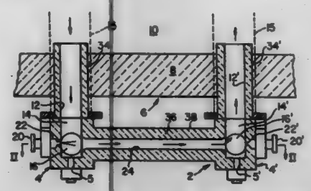
Claims 1, 3–12 and 14–19 are cancelled.

Claims 2 and 13 are determined to be patentable as amended.

New claims 20–28 are added and determined to be patentable.

28. A method of repressing NOx formation in a twinned pair of regenerative burners of the type having heat regeneration beds associated therewith for alternately withdrawing heat from a flue gas exiting a furnace and heating a combustion air stream being fed therethrough, comprising the steps of:

withdrawing a stream of hot flue gas from the furnace;



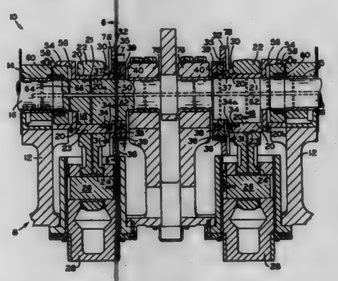
injecting a stream of gas separate from the combustion air stream into said flue gas stream, said injected gas stream being one selected from the group consisting of flue gas containing products of combustion, gaseous fuel, and mixtures thereof;

entraining a portion of said hot flue gas within said injected gas stream;

passing said stream of injected gas and said entrained portion of hot flue gas to a burner chamber; and

vitiating a combustion process in said burner chamber with said portion of hot flue gas whereby NOx formation is repressed.

B1 5,109,766 (2250th)
ADJUSTABLE STROKE PUNCH PRESS
Patrick H. Ontrop; Robert L. Schockman, both of St. Henry, and Frederick C. Bergman, Coldwater, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio
Reexamination Request No. 90/003,036, Apr. 26, 1993.
Reexamination Certificate for Patent No. 5,109,766, issued May 5, 1992, Ser. No. 606,489, Oct. 31, 1990.
Int. Cl.[5] B30B *5/00, 1/06*
U.S. Cl. 100—257



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 6 is cancelled.

Claims 1 and 8–14 are determined to be patentable as amended.

Claims 2–5 and 7, dependent on an amended claim, are determined to be patentable.

New claim 15 is added and determined to be patentable.

1. An adjustable stroke press comprising:

a crankshaft rotatably supported on a frame, said crankshaft including an eccentric portion;

an eccentric sleeve radially disposed on said eccentric portion and rotatable relative to said eccentric portion during stroke length adjustment, said eccentric sleeve always fixed to said crankshaft during normal press operation, *said eccentric sleeve being moveable in an axial direction;*

a connection arm connected to a slide, said arm radially and rotatably disposed on said eccentric sleeve during normal press operation; and

means for locking said eccentric sleeve to said crankshaft during normal press operation and for selectively unlocking said eccentric sleeve from said crankshaft and locking said sleeve to said connection arm during stroke length adjustment, whereby the stroke length can be changed by rotating said crankshaft relative to said eccentric sleeve, said eccentric sleeve capable of being locked to said crankshaft in a plurality of discrete different rotational positions relative to said crankshaft *to change said stroke length.*

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,565

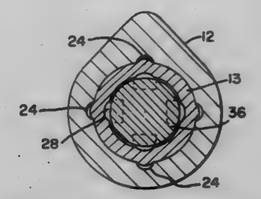
CAMSHAFT FOR RECIPROCATING PISTON ENGINES

Michael J. Hartnett, Woodbury; Robert Lugosi, Canton; James Rollins, Winsted; John P. Cook, Simsbury, and Jeffrey A. Clark, Harwinton, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Original No. 4,781,076, dated Nov. 1, 1988, Ser. No. 819,837, Jan. 17, 1986. Continuation of Ser. No. 609,304, Nov. 1, 1990, abandoned. Application for reissue Jun. 24, 1992, Ser. No. 905,068

Int. Cl.[5] F16H *53/00;* B21D *39/00;* B23P *11/00*

U.S. Cl. 74—567 3 Claims



1. A camshaft for reciprocal piston engines comprising: a rotatable *and expandable* tube having an axis and an annular wall; *and* axially spaced members [including axially spaced cams and bearing rings] mounted about the tube, the rotatable tube *and the axially spaced members* [, cams, and bearings] having the same axis; the rotatable tube having a plurality of circumferentially spaced projections *spaced around its entire circumference and* extending axially through and from one longitudinally outermost member to and through the other longitudinally outermost member, said circumferentially spaced projections being spaced apart from each other, the projections being formed by expanding circumferentially spaced portions of the wall of the tube away from the axis of the tube, each [cam and each bearing ring] *axially spaced member* having *a plurality of* circumferentially spaced axially extending grooves on [their] *its* inner [surfaces] ; surface , said circumferentially spaced grooves being spaced apart from each other, each projection of the tube extending *only partially* into a groove of each *axially spaced member,* [cam and a groove of each bearing ring to permanently secure the cams and bearing rings on the tube]

the annular wall of the tube characterized by expansion into contact with the inner surface of the axially spaced member, each projection of the tube characterized by expansion greater than the expansion of the annular wall of the tube between projections.

Re. 34,566

THREE-DIMENSIONAL IMAGING SYSTEM

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Original No. 4,747,411, dated May 31, 1988, Ser. No. 594,277, Mar. 28, 1984. Application for reissue Nov. 1, 1989, Ser. No. 430,210

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 36 Claims

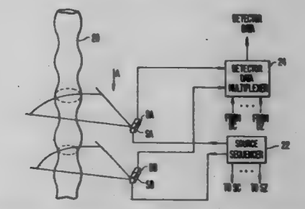
1. A three-dimensional imaging system for obtaining a three-dimensional image of an object, comprising:

source means for sequentially transmitting ultrasonic energy toward said object in successive directions in a first scanning plane, said successive directions having increasing angular orientations with respect to a reference direction, and for repeating the sequential transmission of ultrasonic energy toward said object in said successive directions in successive scanning planes parallel to said first scanning plane;

detector means for receiving reflected energy reflected from material of said object, and for converting said reflected energy to electrical signals; and

processing means connected to said detector means for receiving said electrical signals, and for processing said electrical signals to develop reconstructed image data of said object;

wherein said detector means is disposed in an image plane displaced from said object and divided into a left image



plane and a right image plane, said detector means comprising [a plurality of] *at least one* ultrasonic [transducers] *transducer* arranged [in] *on* a line in said image plane, said line forming a boundary between said left image plane and said right image plane, said reconstructed image data comprising forward projections of said object into a first image in said left image plane and a second image in said right image plane, said first and second images forming a stereo pair;

said system further comprising display means for displaying said first and second images compositely, whereby to display said three-dimensional image of said object.

Re. 34,567

DEVICE FOR JOINING BY CALENDERING AT LEAST ONE SHEET OF GLASS AND AT LEAST ONE FILM OF PLASTIC MATERIAL

Johannes Kraemer, Bietigheim-Bisa, Fed. Rep. of Germany; Klemens Leclere, Neu Moresnet, Belgium; Werner Nuding, Bietigheim-Bisa, and Heinz-Josef Schilde, Wuerselen, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Cedex, France

Original No. 4,701,240, dated Oct. 20, 1987, Ser. No. 819,256, Jan. 16, 1986. Continuation of Ser. No. 794,661, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 425,310, Oct. 20, 1989, abandoned. Application for reissue Jul. 24, 1992, Ser. No. 918,144

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501631

Int. Cl.[5] B30B *3/04;* B32B *31/20*

U.S. Cl. 156—555 2 Claims

1. A calendering device comprising:

a frame;

a plurality of pressure rollers mounted side-by-side in first direction;

a plurality of counterpressure rollers mounted side-by-side in said first direction, each of said counterpressure rollers being positioned for cooperation with one of said pressure [rollres] *rollers* to form a plurality of pairs of cooperating pressure and counterpressure rollers;

piston rod means for separately supporting each of said pressure rollers and counterpressure rollers;

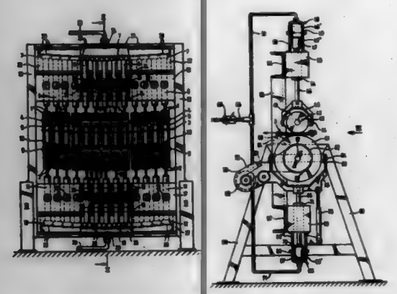
means for moving each said piston rod means in a second direction so that said rollers of each said pair of rollers move toward one another to calender a product therebetween, said means for moving comprising:

(a) *at least one pair of* first and second fixed fluid tight casings fixed to said frame,

(b) an elastic diaphragm for each said fixed casing tightly dividing each said fixed casing into two portions,

(c) means for supplying pressurized fluid to one of said two portions of each said fixed casing,

(d) [a plurality of pistons] *at least one piston* in the other of said two portions of each said fixed casing, [all of said pistons] *said at least one piston* in *each* said first fixed casing being fixed to said piston rod means of said pressure rollers and engaging said diaphragm in said first fixed casing such that movement of said diaphragm due to fluid pressure in said one of said two portions of said first fixed casing presses [all of said pistons] *said at least one piston* in *each* said first fixed casing to move a corresponding pressure roller in said second direction,



wherein [all of said pistons] *said at least one piston* in *each* said second fixed casing [are] *is* fixed to said piston rod means of said counterpressure rollers and [engage] *engages* said diaphragm in said second fixed casing such that movement of said diaphragm due to fluid pressure in said one of said portions of said second fixed casing presses [all of said pistons] *said at least one piston* in *each* said second fixed casing to move a corresponding counterpressure roller in said second direction,

wherein said [piston] *pistons* are spaced from any walls of said *at least one* fixed casing; [and]

means for compensating for movements of said rollers and piston rod means due to the weight thereof,

means for equalizing the pressure between said diaphragms, *and*

ball guide sleeve means for guiding movement of said at least one piston with low friction,

wherein said pressure rollers are positioned above said counterpressure rollers, and wherein for said pressure rollers the means for supplying pressurized fluid supplies the pressurized fluid to only an upper one of said portions of each said casings.

Re. 34,568

VOLATILE FOAMING AGENT COMPOSITION

Hiromitsu Fukazawa, and Motosake Ogawa, both of Shimuzu, Japan, assignors to Du Pont-Mitsui Fluorochemicals Company, Ltd., Tokyo, Japan

Original No. 5,006,568, dated Apr. 9, 1991, Ser. No. 562,410, Aug. 2, 1990. Continuation of Ser. No. 291,584, Dec. 29, 1988, abandoned. Application for reissue Oct. 28, 1992, Ser. No. 967,887

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—98 **4 Claims**

1. A method of blowing a thermoplastic polymer comprising mixing a volatile blowing agent into the molten polymer and blowing the polymer; wherein said blowing agent comprises a mixture of 1,1,1,2 tetrafluoroethane with other volatile blowing agents having a permeability higher than air in the thermoplastic polymer and where the ratio of the 1,1,1,2 tetrafluoroethane to the other volatile blowing agents is regulated so that the overall gas permeability of the volatile mixture in the thermoplastic polymer is comparable to that of air; and wherein the thermoplastic polymer is selected from polyethylene, *or* polypropylene, [polybutadiene, or polystyrene].

PLANT PATENTS

GRANTED MARCH 22, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,646

HYBRID TEA ROSE PLANT NAMED 'JACPOW'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 15, 1992, Ser. No. 991,089

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright growth, its good production as a greenhouse cut flower, its long straight stems, and its attractive white-with-delicate-pink-blush flower and quick cycle time.

8,647

ROSE PLANT — MEIGORMON VARIETY

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Feb. 18, 1993, Ser. No. 19,625

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive fully double blossoms which are Guardsman Red on the upper surface and Cardinal Red on the under surface,

(b) forms buds which exhibit an excellent configuration,

(c) forms blossoms which exhibit an excellent life when cut and placed in a vase,

(d) exhibits vigorous vegetation,

(e) exhibits an upright growth habit,

(f) is particularly suited for cut flower production, and

(g) is not particularly affected by cryptogamic diseases;

substantially as herein shown and described.

8,648

APPLE TREE 'NJ 55'

Joseph C. Goffreda, Kendall Park, and Anna M. Voordeckers, East Windsor, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Jun. 18, 1992, Ser. No. 903,244

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct Apple Tree cultivar, substantially as herein shown and described, characterized particularly as to novelty by the vigorous, medium upright growth habit of the tree, on standard rootstock, good crop production borne on short axillary branches, excellent keeping and dessert quality of the fruit, which is of medium coarse, flesh-texture, and large round-conic shape, with slight stem russetting, 0–40% blush.

8,649

STRAWBERRY PLANT CALLED 'KEY LARGO'

Thomas M. Sjulin, Watsonville; Amado Q. Amorao, Camarillo, and Joseph I. Espejo, Jr., Watsonville, all of Calif., assignors to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Mar. 2, 1993, Ser. No. 26,312

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—48 **1 Claim**

1. A new and distinct variety of strawberry plant described and illustrated and identified by the characteristics enumerated above.

8,650

HEATH PLANT NAMED HAPPY

Bruno L. Imazio, Watsonville, Calif., assignor to Bay City Flower Co., Half Moon Bay, Calif.

Filed Oct. 21, 1992, Ser. No. 964,521

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct hybrid plant variety of the Heath family substantially as herein shown and described.

8,651

GYPSOPHILA PLANT NAMED FESTIVAL

Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Beit Dagan, Israel

Filed Nov. 5, 1992, Ser. No. 971,568

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of gypsophila plant named Festival, as illustrated and described.

8,652

GYPSOPHILA PLANT NAMED WHITE FESTIVAL

Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Beit Dagan, Israel

Filed Nov. 5, 1992, Ser. No. 971,569

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of gypsophila plant named White Festival, as illustrated and described.

8,653

CARNATION NAMED REDDYPOT

Gijsbertus van Leeuwen, CN S Gravezande, Netherlands, assignor to West Stek b.v., Netherlands

Filed Dec. 3, 1992, Ser. No. 985,014

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.7 **1 Claim**

1. A new and distinctive pot carnation plant, substantially as herein shown and described, characterized by its profuse, continuous production of small sized light violet flowers with light green base with slightly serrated edge, said flowers being borne singly on strong, upright pedicels, with one flower spaced vertically at the top of the stem.

8,654

CHRYSANTHEMUM PLANT NAMED YELLOW COQUETA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 27, 1992, Ser. No. 935,269

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Coqueta, as described and illustrated.

8,655

SPATHIPHYLLUM PLANT NAMED DANIEL

Daniel Cornelis, Oosterzele, Belgium, assignor to Reginald Deroose, Evergem, Belgium

Filed Nov. 10, 1992, Ser. No. 974,172

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Daniel, as illustrated and described.

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8,656
GUZMANIA PLANT NAMED TRIUMPH
Hendrik De Meyer, Destelbergen, Belgium, assignor to H. De Meyer - De Rouck, Laarne, Belgium
Filed Dec. 31, 1992, Ser. No. 999,201
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.8 1 Claim

1. A new and distinct cultivar of Guzmania plant named Triumph, as illustrated and described.

8,657
VRIESEA PLANT NAMED JUNE
Herbert Hill, Jr., 1040 Jameson Rd., Lithia, Fla. 33547
Filed Jan. 4, 1993, Ser. No. 444
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.8 1 Claim

1. A new and distinct cultivar of Vriesea plant named June, as illustrated and described.

PATENTS

GRANTED MAR. 22, 1994

ERRATA

For CLASS	See PATENT NO.
601-043	5,295,481
229-138	5,295,630
229-150	5,295,631
229-198	5,295,632
248-027	5,295,644
473-042	5,295,682
296-121	5,295,722
384-536	5,295,744
402-079	5,295,758
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425-141	5,295,803
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425-373	5,295,805
425-547	5,295,806
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118-500	5,296,030
118-631	5,296,031
424-049	5,296,209
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521-047	5,296,515
521-131	5,296,516
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524-128	5,296,520
524-135	5,296,521
524-300	5,296,522
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525-063	5,296,538
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526-114	5,296,565
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526-172	5,296,567
528-025	5,296,574

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530-324	5,296,581
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536-023	5,296,590
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562-593	5,296,639
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345-161	5,296,846
345-092	5,296,847
348-568	5,296,918
348-675	5,296,919
348-675	5,296,920
348-711	5,296,921
348-779	5,296,922
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348-144	5,296,926
348-415	5,296,927
348-529	5,296,928
348-607	5,296,929
348-607	5,296,930
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348-751	5,296,932
358-498	5,296,966
346-001	5,297,017
346-134	5,297,018
360-067	5,297,024
361-704	5,297,025
365-238	5,297,029
361-778	5,297,107
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368-047	5,297,120
368-228	5,297,121
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375-119	5,297,181
376-260	5,297,182
375-098	5,297,184
375-116	5,297,185
375-121	5,297,186
376-203	5,297,187
378-162	5,297,188
385-052	5,297,218
395-002	5,297,231
395-024	5,295,232

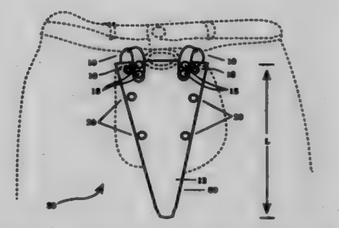
PATENTS

GRANTED MARCH 22, 1994

GENERAL AND MECHANICAL

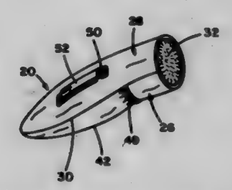
5,295,267
PROTECTIVE LOINCLOTH GARMENT FOR MOTORCYCLE RIDERS
Stephanie D. Galindo, 120 Barranca -B, Santa Barbara, Calif. 93109

Filed Jan. 19, 1993, Ser. No. 6,033
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 5 Claims



1. A protective loincloth shield for motorcycle riders of a generally triangular shape to cover and conform to the frontal area of a wearer's body below the waist and between the legs of a wearer; said shield having an upper edge, a left side edge and a right side edge; said shield being constructed of outer, intermediate and inner layers of material said outer layer being flexible water resistant and wind-breaking material; said inner layer being insulating material for contact with the wearer's outer garment and said intermediate layer being a water resistant adhesive layer bonding said inner and outer layers together; a plurality of suspensory means located along an upper edge of the shield and from which the shield depends; and a plurality of fastening means on the suspensory means for the suspension of the shield from a wearer's outer garment; at least one fastener located on each of the left and right side edges for structural strength and for the attachment of appendages for providing additional shielding to the wearer's body and wherein the entire shield is covered with a water resisting substance to protect the material shield from inclement weather.

5,295,268
HANDSCOCK FOR COLD WEATHER GOLFING
Edward M. Pociask, 408 W. Walnut, Mt. Prospect, Ill. 60056
Filed Dec. 4, 1992, Ser. No. 986,121
Int. Cl.[5] A41D *13/10*
U.S. Cl. 2—17 2 Claims



1. A handsock for cold weather golfing, comprising the combination of two adjacent flexible durable cloth layers secured together in adjacent overlapping relationship at two opposed side edge portions and one end edge portion and separated at another end edge portion, defining therebetween an elongated and generally tubular hand pocket with the only opening thereto at the other end edge portion;

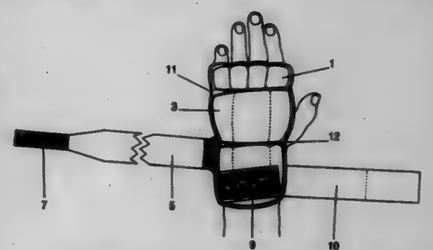
the two layers forming respectively back and front layers of the handsock;

the hand pocket being sized to easily receive a hand including the thumb, fingers and palm thereof, to a depth with the open other end edge portion beyond the wrist, whereupon the palm will lie against an inside of the front layer defining a palm region of the front layer;

each of the overlapping layers being formed of material providing thermal insulation; and

a pair of tabs, each having two ends, secured on said palm region of the front layer by one of said two ends, with the secured ends of the tabs spaced apart along a line formed in the direction between the end edge portions, the other of the two ends of the tabs being non secured and mating releasable hook-loop fastener means thereon, and the tabs being sized to overlap the fastener means to releasably secure the tabs together and further to fit around several different structures of varying size and shape, operable to releasably and selectively secure the handsock to any of these several different structures and allow the wearer to grip a selected structure through the handsock and to readily insert the hand into and remove the hand from the handsock while yet having the handsock attached to said selected structure.

5,295,269
PORTABLE HAND WRAP
Willie L. Ballard, 5616 Old Mission Rd., Chattanooga, Tenn. 37411
Filed Jul. 20, 1992, Ser. No. 827,619
Int. Cl.[5] A41D *13/10*
U.S. Cl. 2—18 6 Claims



1. A protective glove which can be worn in all sports, whether worn by itself or under another glove, comprising in combination:

a casing having a finger portion, a hand portion, and a wrist portion and made of tough, pliable material for covering the back of a wearer's hand and wrist and extending from the first finger knuckles to a location on a wearer's wrist, the casing having a first side in contact with the back of a wearer's hand, an exposed back side, and two lateral edges;

a plurality of individual elastic finger loops attached to the finger portion of the casing and extending from the first side of the casing for engagement by a wearer's fingers;

an elastic band attached to each lateral edge of the hand portion for securing the glove at the wearer's palm and leaving the palm unrestricted;

a plurality of finger pads individually stitched in said casing and extending over the first finger knuckles of a wearer;

a hand pad in said casing extending over the back of a wearer's hand;

a wrist pad in said casing and extending over a wearer's wrist;

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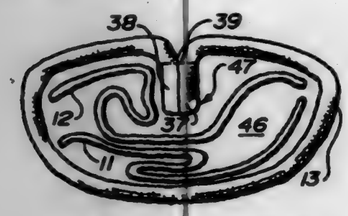
two flexible hinge points, one at the juncture between the finger pads and the hand pad and the other at the juncture between the hand pad and the wrist pad, to accommodate finger flexing and wrist flexing;
a wrist strap extending from one lateral edge of the wrist portion of said casing and having quick connect means thereon;
quick connect means on the back of the wrist portion of said casing for connecting with said quick connect means on said wrist strap;
a two inch wide strip of hook and loop fastener material attached to one lateral edge of the wrist portion of said casing; and
an 85 inch long handwrap having a quick connect means thereon for connection to the two inch wide hook and loop fastener strip and for wrapping about the wearer's hand and wrist to secure the thumb and stabilize the wrist.

5,295,270

NECKTIE WITH PRE-FORMED KNOT

Jane Phillips, 2160 Canyon Lakes Dr., San Ramon, Calif. 94583, and Judy Perchonock, Oakland, Calif., assignors to Jane Phillips, San Ramon, Calif.

Filed Dec. 9, 1992, Ser. No. 987,646
Int. Cl.[5] A41D *25/02, 25/16*
U.S. Cl. 2—150 **8 Claims**



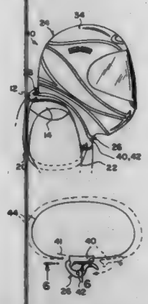
1. A necktie with pre-formed knot comprising:
a fabric necktie body having a front section, a neck section, and a bottom section, wherein said neck section is narrower than said front section and has at least one longitudinal pleat pre-formed therein and positioned so that an end of said pleat forms a fabric dimple extending to said front section beneath the pre-formed knot when worn around a user's neck; and
said pre-formed knot having a central opening for receiving said necktie body when worn around a wearer's neck and having a wing portion protruding into said central opening for frictionally engaging said necktie body, said pre-formed knot being formed by the process of turning inside out a knot assembly forming a closed band, said knot assembly comprising:
a foundation member of elastomeric material;
fabric material wrapped around said foundation member to form a generally trapezoidal shape having two generally parallel edges and two angled ends;
said fabric-wrapped foundation member being folded over so that said angled ends overlie one another;
wherein said overlying angled ends are secured to one another along a seam to form said closed band; said seam having a central portion and other portions; and
wherein at least said central portion of said seam is spaced apart from the edges of said overlying angled ends and wherein a distance of the seam from said ends at said central portion is different than a distance of the seam from said ends at said other portions of said seam; so as to define said wing portion, wherein said central portion of said seam is spaced apart from said edges of said overlying angled ends by a distance causing said wing portion to protrude sufficiently into said central opening of said knot when said knot assembly is turned inside out and to frictionally engage said necktie body sufficiently to maintain said pre-formed knot in position on said necktie body when subjected to the dislodging forces normally encountered when worn around the user's neck.

5,295,271

SHOULDER REST HELMET

James N. Butterfield, 1661 W. Mission Blvd. #12, Pomona, Calif. 91766, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Jan. 25, 1993, Ser. No. 8,539
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—410 **2 Claims**



1. A head and neck protection device which comprises:
a) a collar pad to sit upon the shoulders and large enough for the neck of a wearer to pass through;
b) a pair of straps affixed to said collar pad to extend under the arm pits of the wearer and retain said collar pad to the shoulders;
c) a head protector; and
d) a means for mounting said head protector onto said collar pad, so that said head protector does not touch, rest and depend on the head, face and neck of the wearer, thereby giving better versatility and protection to the wearer since said head protector is supported by said collar pad on the shoulders; wherein said mounting means includes:
e) a hinge between a rear portion of said head protector and a rear portion of said collar pad;
f) a latch on a front neck portion of said head protector;
g) a lever on a front portion of said collar pad which engages with said latch;
h) an elastic band in the neck portion having one end connected to said latch and another end connected to said neck portion, so that when said lever engages with said latch said band will tighten about said neck portion; and
i) co-acting cam surfaces between said latch and said lever to force said latch downward upon closure.

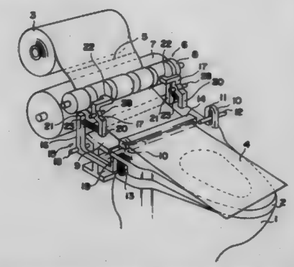
5,295,272

LAID-ON PAPER CUT-OFF SYSTEM FOR TOILET SEAT

Hiroyuki Junshi, Nagatoro, Japan, assignor to Nihon-Issed Co., Ltd., Saitama, Japan

Filed Jun. 24, 1992, Ser. No. 903,321
Claims priority, application Japan, Dec. 17, 1991, 3-104011[U]
Int. Cl.[5] A47K *13/20*
U.S. Cl. 4—243.3 **12 Claims**

1. An apparatus for a toilet, comprising:
a toilet seat having a front end and a rear end, said seat being positioned on a generally horizontal surface of a toilet;
a paper roll having a roll of paper thereon which paper is to be dispensed onto said toilet seat, the roll of paper having perforated lines extending transverse to said roll such that individual toilet seat covers can be removed from the paper roll;
a delivery roller mechanism clamping the paper from said paper roll and arranged so as to deliver and individual cover onto said toilet seat upon rotation of said roller mechanism;
wherein said rear end of said seat is vertically movably mounted between a raised and a lowered position and supported on said toilet by springs upwardly biasing said rear end above said horizontal surface with said front end resting on said horizontal surface;



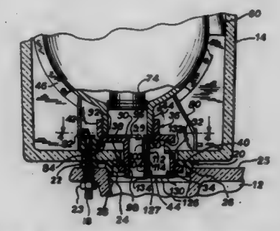
a brake mechanism mounted adjacent said rear end of said seat and being engageable with said delivery roller mechanism; said brake mechanism being operably connected to said toilet seat such that a lowering motion of the rear end of said toilet seat from said raised position to said lowered position causes said brake mechanism to engage with said delivery roller mechanism and stop said rotation thereof, such that when a user sits on said cover overlying said seat, downward movement of said seat and cover with said cover clamped between the user and said seat at one location and said paper roll being engaged by said braking mechanism said cover will be separated from said roll.

5,295,273

PRESSURIZED FLUSH TOILET COUPLING

Jason D. Unger, Plymouth, and John M. Bloemer, Sheboygan, both of Wis., assignors to Kohler Company, Kohler, Wis.

Filed Jan. 22, 1992, Ser. No. 823,902
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—417 **17 Claims**



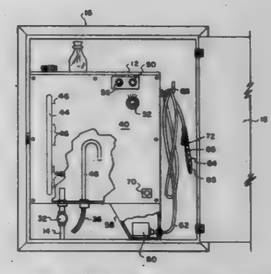
1. A coupling for providing communication between a pressurized flush water supply for a toilet and a toilet bowl, comprising:
a housing having an inlet portion for connection to an outlet of said pressurized flush water supply, an outlet portion for connection to an inlet of said toilet bowl and a passageway providing communication between said inlet portion and said outlet portion for providing communication between said outlet of said pressurized flush water supply and said inlet of said toilet bowl;
a chamber in said housing adjacent to said passageway; and
an opening in said housing defining an inlet to said chamber for collecting drainage from outside of said chamber and admitting said drainage into said chamber; and
a valve in said housing having a port between said chamber and said passageway and means for opening and closing said port for controlling fluid communication between said chamber and said passageway such that liquid drainage accumulated in said chamber can pass through said valve to said passageway and substantial fluid communication from said passageway to said chamber is prevented.

5,295,274

LIQUID DISPENSING APPARATUS

Rickey A. Daniels, 2621 Dinah, and Thomas R. Daniels, 11413 Oak Tree, both of Balch Springs, Tex. 75180

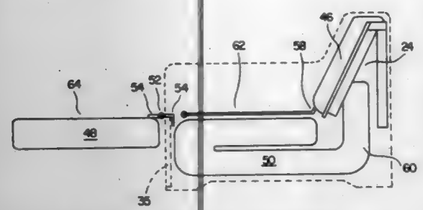
Filed Feb. 19, 1992, Ser. No. 838,534
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—443 **5 Claims**



2. Apparatus for dispensing liquid, comprising:
a tank for storing liquid to be dispensed, said tank having a sump portion defining a lowermost portion of said tank;
a liquid fill line communicating with an interior of said tank and adapted to be connected to a source of the liquid;
first user operable valve means for controlling the flow of liquid through said fill line into said tank;
sight gauge means located on said tank to allow visual monitoring of the level of liquid in said tank;
an electrically-operable heating element located in said tank for heating the liquid stored therein;
thermostat means controllable by the user for controlling said heating element to heat the liquid stored in said tank to a user-selected predetermined temperature;
first manually operable switch means for controlling the operation of said heating element;
illumination means f or providing a visual indication when the temperature of the liquid in said tank corresponds to the user-selected predetermined temperature;
electrically-operable pump means located in said sump portion for discharging liquid from said sump portion;
second manually operable switch means for controlling the operation of said pump means;
a flexible conduit connectable to a discharge side of said pump means for conducting the liquid discharged by said pump means;
nozzle means located on a distal end of said flexible conduit; and
second manually operable valve means for controlling the flow of liquid through said nozzle means.

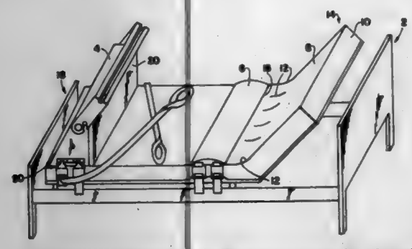
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,275
CONVERTIBLE SOFA BED SYSTEM
Ronald K. Sherman, 941 Crystal Lake, #305, Pompano Beach, Fla. 33064
Continuation-in-part of Ser. No. 464,138, Jan. 16, 1990, abandoned. This application May 20, 1991, Ser. No. 702,910
Int. Cl.[5] A47C *17/22*
U.S. Cl. 5—14 **5 Claims**



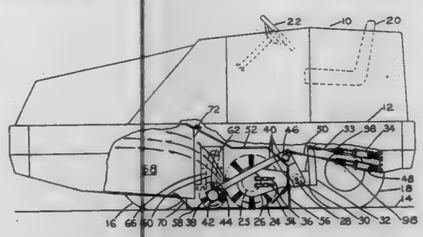
1. A convertible sofa bed system, comprising:
(a) a sofa structure including a back section, side panels, and a rigid front panel;
(b) seat means removably placed within said sofa structure between said side panels and above said front panel, said seat means including a rigid bottom surface;
(c) fixed hinge means having rotationally related first and second surfaces, said first surface secured to an upper edge of said front panel and said second surface secured to said rigid bottom surface of said seat means; and
(d) a convertible sofa bed and sofa bed mechanism positioned within said sofa structure for selectable extension over said seat means after said seat means has been rotated away from said sofa structure,
whereby said sofa bed and mechanism may be opened and closed without requirement to store or retrieve said seat means respectively before and after use of the bed system.

5,295,276
PATIENT POSITIONING AND ALIGNMENT SYSTEM
Constance E. Richards, and William D. Richards, both of 167 Holliston St., Medway, Mass. 02053
Filed May 13, 1992, Ser. No. 882,270
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—648 **15 Claims**



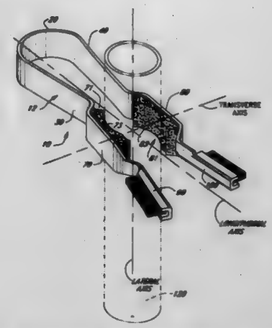
1. A patient positioning and alignment system for elevating head type beds of the type including a head end, a foot end, an articulating frame member and a mattress having a bottom surface and an upper patient support surface located on said articulating frame, said system comprising:
a footboard member and a chock member;
said footboard member and a said chock member both being adapted for removable attachment to said patient support surface of said mattress, said footboard at a selected location substantially adjacent and parallel to said foot end of said bed, and said chock at a selected located substantially parallel to said ends of said bed chosen such that the buttocks of said patient will fit between said chock and the location of the upward slant of the head end of said bed from the horizontal when said head end is in its elevated position:
said footboard member comprising:
a first wedge of resilient material, said first wedge having a length substantially equal to the width of said mattress and a truncated, substantially right triangular, cross-section such that said first wedge includes (1) a base surface having a forward edge, a rear edge, a pair of opposing side edges, (2) a forward surface substantially normal to said base surface at said forward edge and (3) a rear surface extending at an acute angle to said base surface from said rear edge;
rigid first support means attached to said first wedge, said first support means including first and second substantially planar wall members, each said wall member having a length substantially equal to the length of said first wedge, said first and second wall members being disposed at an acute angle to each other such that said first wall member is located adjacent said rear surface of said first wedge;
flexible attachment means secured to said support means and adapted to extend between said opposing side edges of said base surface of said first wedge around said mattress/-frame structure.

5,295,277
CONVERTIBLE SWEEPER
Philip E. Koenigs, New Hope, and Michael T. Basham, Maple Grove, both of Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Dec. 14, 1992, Ser. No. 989,758
Int. Cl.[5] E01H *1/04*
U.S. Cl. 15—83 **18 Claims**



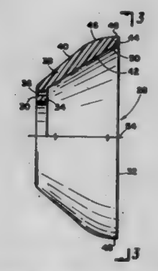
1. A sweeper movable over a surface to be swept, including a frame having a longitudinal axis parallel to the direction of sweeper movement, a debris hopper mounted on a front portion of the frame, an opening in the rear of the debris hopper to admit debris therein, a first tool comprising a rotatable cylindrical brush having an axis transverse to the longitudinal axis of the frame, said first tool being located behind the debris hopper, in the direction of movement of the sweeper, means for rotating said first tool to move debris through a particular trajectory into said debris hopper,
a second tool comprising a rotatable cylindrical means having an axis transverse to the longitudinal axis of the frame, said second tool being movable between a sweeping position in which it is located between said first tool and said hopper and is adjacent the surface to be swept, and a non-sweeping position in which said second tool is located away from the surface to be swept and above the trajectory of debris moved by said rotatable cylindrical brush while said second tool is in said non-sweeping position,
means for moving said second tool between said sweeping and non-sweeping positions, and means for rotating said second tool when in said sweeping position.

5,295,278
ADJUSTABLE TUBE AND FITTING CLEANING BRUSH
Duane R. Condon, Ramona, and Larry D. Brown, San Diego, both of Calif., assignors to Securus, Inc., San Marcos, Calif.
Filed Mar. 4, 1993, Ser. No. 26,435
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—104.04 **20 Claims**



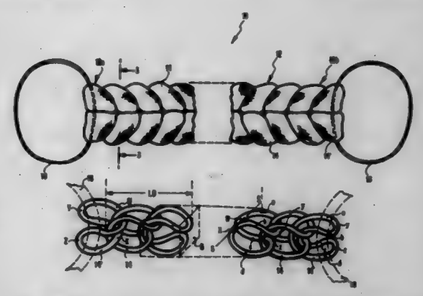
17. A tool for cleaning pipes and fittings comprising:
a flexible body being configured to deflect from a first position to a second position, said body defining a longitudinal axis;
a pair of opposing abrasive elements disposed within said flexible body and positioned to contact an exterior surface of the pipe or fitting with said flexible body deflected in said first position; and
a pair of exterior cleaning elements disposed on an exterior of said flexible body and positioned to contact an interior surface of the pipe or fitting, said exterior cleaning elements being laterally offset from each other such that with said flexible body deflected in said second position, said exterior cleaning elements generally lie adjacent to each other.

5,295,279
CUP FOR USE ON A PIPELINE
Andrew J. Cooper. Swindon, England, assignor to TDW Delaware, Inc., Wilmington, Del.
Filed Jan. 13, 1993, Ser. No. 975,638
Int. Cl.[5] B08B *9/04*
U.S. Cl. 15—104.061 **18 Claims**



1. An improved cup for use on pipeline pigs, such as a caliper pig or the like in which a pig body having one or more cups thereon is moved through the interior of a pipeline, the improved cup comprising:
a unitary cup of resilient material having a central axis and having a forward end and a rearward end;
the cup having at said forward end an integral radially extending circumferential flange portion with an axial opening therethrough, the flange portion providing means of securing the cup on a pipeline pig;
the cup having rearwardly of said flange portion, an integral intermediate portion of generally frustro-conical configuration with an interior frustro-conical surfaces and an exterior frustro-conical surface, the interior and exterior frustro-conical surfaces of said intermediate portion diverge away from each other in the direction towards said cup rearward end, the cup intermediate portion being thereby thicker towards said rearward end; and
the cup having a rearward portion of increased diameter adjacent said rearward end, the rearward portion having an external surface and an internal surface, the internal surface merging with said intermediate portion interior frustro-conical surface, and the external surface taken in planes of said central axis arching from said intermediate portion external frustro-conical surface to substantially a cylindrical surface at said rearward end.

5,295,280
WASHING DEVICE FOR SCRUBBING THE BODY
William Hudson, and Angela K. Samli, both of New York, N.Y., assignors to Bilange, Inc., New York, N.Y.
Filed Jul. 2, 1992, Ser. No. 907,819
Int. Cl.[5] A47K *7/02*
U.S. Cl. 15—222 **18 Claims**



1. Washing device for scrubbing the body comprising an elongate washing member having two opposing ends; and gripping means at each end for facilitating gripping thereof by a user while washing, said washing member being flexible and having a mild abrasive surface for gently scrubbing different portions of the body while substantially conforming to the contours of the body portions being washed and said washing member having a substantially uniform cross-section along the length of said washing member and having a substantially porous interior below said abrasive surface to allow water and soap to permeate said surface and interior thereof, said washing member being formed of a plurality of similar interlooped endless and continuous closed loop links each folded back upon itself,and each folded link defining a substantially cubical three-dimensional space of box-shaped form.

5,295,281
GUIDING SYSTEM HAVING A TROLLEY FOR MOVING SUSPENDED DOOR PANELS AND THE TROLLEY
Herbert Kordes, Bad Salzuflen, Fed. Rep. of Germany, assignor to Dorma GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 886,959
Continuation-in-part of International Application No. PCT/DE91/00817, filed Oct. 18, 1992
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1990, 4041925
Int. Cl.[5] A47H *11/04, 15/00*; E05D *15/06*
U.S. Cl. 16—95 R **20 Claims**

1. A guiding system for moving suspended panels, the panels being fixedly connected to a trolley and said trolley running on

a track, the track having a first track portion, a second track portion transverse to and intersecting the first track portion, and the track having a running surface and an opening disposed in a bottom portion of the track, the opening having a width, said guiding system further comprising:

four support rollers disposed on said trolley;

said trolley comprising a roller cage for supporting said four support rollers and having at least one side surface with sides, said sides comprising two sets of opposite sides;

said four support rollers being mounted on said at least one side surface of said roller cage, wherein each of said four support rollers is disposed on a corresponding horizontal axle for rotating freely about said corresponding horizontal axle;

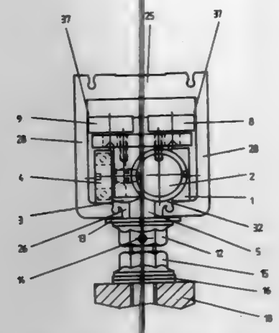
said four support rollers comprising two pairs of support rollers wherein one pair of said two pairs of support rollers is disposed on said opposite sides of each said set of opposite sides of said roller cage;

each said side having a corresponding vertical edge portion;

each of said four support rollers being mounted on a corresponding one of said sides;

each said support roller of each said pair of support rollers being configured for rotating about an axis of rotation;

a substantial portion of each of said four support rollers projecting, in a radial direction of each said support roller, beyond the corresponding vertical edge portion of its



corresponding side, the radial direction being defined in a direction perpendicular to said axis of rotation of each said support roller and perpendicular to the corresponding vertical edge portion;

another portion of each of said four support rollers diametrically opposed to said substantial portion intersects with a plane which is coaxial with a vertical center axis of said roller cage and normal to said corresponding one of said sides;

said axes of rotation of each said pair of support rollers being parallel and displaced a substantial distance from one another; and

each said pair of support rollers being configured for making contact with and running on the running surface of the track.

8. A trolley for a guiding system for moving suspended panels fixedly connected to said trolley running on a track having a first track portion, a second track portion transverse to and intersecting the first track portion, a running surface and an opening disposed in a bottom portion of the track, the opening having a width, said trolley further comprising:

four support rollers;

a roller cage for supporting said four support rollers and having at least one side surface with sides, said sides comprising two sets of opposite sides;

said four support rollers being mounted on said at least one side surface of said roller cage, wherein each of said four support rollers is disposed on a corresponding axle for rotating freely about said corresponding axle;

said four support rollers comprising two pairs of support rollers wherein one pair of said two pairs of support rollers is disposed on said opposite sides of each said set of opposite sides of said roller cage;

each said side having a corresponding vertical edge portion;

each of said four support rollers being mounted on a corresponding one of said sides;

each said support roller of each said pair of support rollers being configured for rotating about an axis of rotation;

a substantial portion of each of said four support rollers projecting, in a radial direction of each said support roller, beyond the corresponding vertical edge portion of its corresponding side, the radial direction being defined in a direction perpendicular to said axis of rotation of each said support roller and perpendicular to the corresponding vertical edge portion;

another portion of each of said four support rollers diametrically opposed to said substantial portion intersects with a plane which is coaxial with a vertical center axis of said roller cage and normal to said corresponding one of said sides;

said axes of rotation of each said pair of support rollers being parallel and displaced a substantial distance from one another; and

each said pair of support rollers being configured for making contact with and running on the running surface of the track.

5,295,282

MOUNTING PLATE FOR FURNITURE HINGES

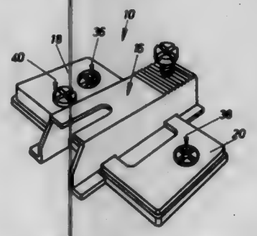
Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to MEPLA-Werke Lautenschlager GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 961,434

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1991, 4134828

Int. Cl.[5] E05D *7/04*

U.S. Cl. 16—237 **11 Claims**



1. A mounting plate, said mounting plate being suited for adjustably fastening a supporting wall part, shaped as a supporting arm, of a furniture hinge on a cabinet carcase, said mounting plate comprising:

a bottom part to be placed directly on the supporting wall of the carcase;

an upper part being displacable on said bottom part in a direction parallel to a hinge pivot axis by means of guiding means adapted to one another, and can be selectively locked thereon;

said upper part having an elongated middle section provided with fastening means for the supporting arm of the furniture hinge, said middle section having opposite sides, from one of which said opposite sides a first wing projection forming an integral part of said upper part extends, having at least one slot running in the direction of displacement,

a set screw having a threaded shaft which passes through said at least one slot and is threaded into a tap in said bottom part;

said first wing projection having a bottom portion facing the supporting wall of the carcase, said bottom portion having a recess which is open to said middle section;

a second wing projection forms a projection of said bottom part which has a side opposite said first wing porting that extends from the upper part, said bottom of said second wing portion passes through said middle section into said open recess of said first wing projection integral with said upper part, and said bottom of said second wing portion has lateral boundary surfaces displaceably guided on correspondingly associated lateral boundary surfaces of said recess;

a shorter projection extends integrally on a side of said middle portion opposite said upper part provided with said first integral wing projection, said shorter projection extending integrally in the direction of displacement and reaching through a cut-out in an upper side of said second wing projection into a recess formed in the support wall facing bottom of said second wing projection, said cut-out being parallel to longitudinal direction of said middle section and having a length corresponding to the length of said shorter projection of said upper part measured in said longitudinal direction, and at right angles thereto, as measured in the direction of displacement, said cut-out has a width corresponding substantially to a maximum amount of displacement of said mounting plate, said shorter projection protruding from said middle section, as measured in the direction of displacement, has a width by an amount which is greater than the maximum amount of displacement.

5,295,283

FIBER CLEANING

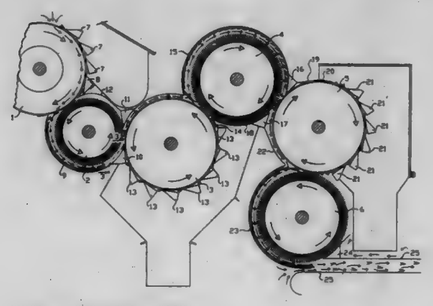
Marvis N. Gillum, and Sidney E. Hughs, both of Las Cruces, N. Mex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 820,473, Jan. 14, 1992, Pat. No. 5,173,994. This application Dec. 28, 1992, Ser. No. 997,478

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] D01B *1/02*

U.S. Cl. 19—55 R **20 Claims**



1. An apparatus comprising:

(a) first ginning means for separating fiber and seed, said first ginning means including a first gin saw cylinder;

(b) first fiber cleaning means including a first fiber cleaning saw cylinder having a toothed outer peripheral surface;

(c) first fiber transporting means including a first doffing brush cylinder having an outer peripheral surface, operably associated with both said first gin saw cylinder and said first fiber cleaning saw cylinder, for mechanically removing ginned fiber from said first gin saw cylinder and for transferring said ginned fiber to said first fiber cleaning saw cylinder, said first doffing brush cylinder rotating in the same angular direction as said first fiber cleaning saw cylinder;

(d) second fiber transporting means including a second doffing brush cylinder having an outer peripheral surface, operably associated with said first fiber cleaning saw cylinder, for mechanically removing said fiber from said first fiber cleaning saw cylinder;

(e) guiding means for guiding transfer of said ginned fiber from said first doffing brush cylinder to said first fiber cleaning saw cylinder, said guiding means including a first feed control bar having an arcuate surface which is parallel to said outer peripheral surface of said first doffing brush cylinder adjacent to a pinch point where said ginned fiber is transferred from said first doffing brush cylinder to said first fiber cleaning saw cylinder.

5,295,284

ULTRA-HIGH PERFORMANCE CARDING MACHINE

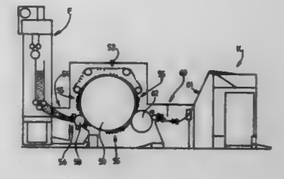
Robert Demuth, Nurensdorf; Paul Staheli, Wilen b. Wil; Kurt Weber, Elgg, and Peter Fritzsche, Winterthur, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

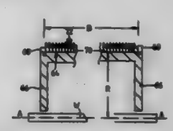
Filed Mar. 15, 1991, Ser. No. 669,953

Claims priority, application Switzerland, Mar. 16, 1990, 00877/90

Int. Cl.[5] D01G *15/02*

U.S. Cl. 19—102 **13 Claims**





1. A carding machine comprising:

at least one carding cylinder having a substantially cylindrical surface, the carding cylinder having a diameter which amounts to between 400 mm and 600 mm;

clothing provided for the cylindrical surface of the carding cylinder and defining a predetermined working width of the carding machine;

a feeding system for substantially uniformly feeding the carding cylinder with fibers to be processed over the entire predetermined working width;

a revolving flat arrangement for the substantially uniform carding of fibers on the carding cylinder over the entire predetermined working width;

a doffing system for the collection of carded fibers over the entire predetermined working width; and

the predetermined working width amounts to less than 800 mm.

5,295,285

CABLE TIE

William W. Shely, St. Charles, Ill., assignor to All-States Inc., Chicago, Ill.

Filed Jan. 19, 1993, Ser. No. 5,609

Int. Cl.[5] B65D *63/00*

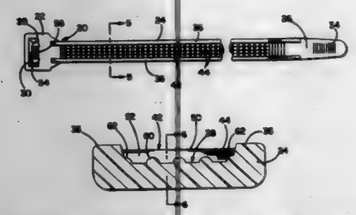
U.S. Cl. 24—16 PB **20 Claims**

1. A cable tie comprising in combination,

a head and an elongated integrally connected strap terminat-

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ing in a tail, said head having an opening for progressive insertion of said tail and strap,
said strap being formed with elongated side rails defining a longitudinally extending channel having a channel floor,
said channel containing a rack formed of a plurality of successive, longitudinally spaced, transversely extending rack teeth each having a portion merging integrally into said channel floor to define a root section, a ramp portion inclined upwardly and outwardly from said root section to a sharp crest, and an engagement face extending from said crest to said channel floor and disposed substantially perpendicularly thereto,
a pawl integrally hinged to said head in said head opening for engaging and gripping said strap, said pawl having a plurality of transversely extending pawl teeth each having a shape complementary to the shape of said rack teeth,
said integrally merged portions of said rack teeth root sections and said channel floor defining a plurality of stress



lines extending transversely across said channel between said side rails, said strap having its minimum material thickness substantially coincident with said transverse stress lines,
and at least one longitudinally extending bead disposed in said channel between and substantially parallel to said side rails, said bead being formed integrally with said channel floor and having a generally rounded outer surface,
said bead integrally connecting and longitudinally tying said rack teeth successively together from said engagement face of one rack tooth to said ramp portion of the next adjacent tooth,
and said bead forming an elongation of said transverse stress lines and a diversion of said stress lines in a non-linear direction up and over said rounded outer surface thereof to thereby increase the fracture resistance of said strap adjacent said rack teeth root sections where said strap has its minimum material thickness.

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Patent Not Issued For This Number

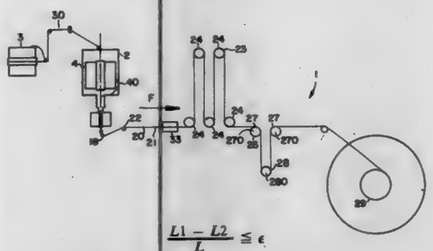
5,295,287

METHOD AND INSTALLATION FOR THE ON-LINE PRODUCTION OF A PLY OF ASSEMBLIES AND THE WINDING THEREOF ON A BEAM

Fernard Chateau, Pont Du Chateau, France, assignor to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

Continuation of Ser. No. 775,718, Oct. 11, 1991, abandoned.
This application May 5, 1993, Ser. No. 59,174
Claims priority, application France, Oct. 29, 1990, 90 13503
Int. Cl.[5] D02H *5/00*
U.S. Cl. 28—187 **4 Claims**

1. A method permitting the on-line production of a ply of thread assemblies and the winding of said ply on a beam, the method comprising:
a. producing a ply of assemblies using a plurality of rotary devices, each of which permits the production of an assembly from a plurality of threads combined by twisting at least one of the threads, the assemblies being produced such that in transitory operation, that is to say, when the speed of rotation of each device varies in time between a value of zero and a value corresponding to continuous operation, the relationship



$$\frac{L1 - L2}{L} \leq \epsilon$$

is satisfied, L1 being the length of the longest thread of the assembly and L2 being the length of the shortest thread of the assembly, L1 and L2 being determined in untwisted condition and under tension for an arbitrary length L of the assembly produced by this device, L being determined in twisted condition under tension, L1 and L2 being measured under a tension which corresponds tot he weight of 500 meters of the thread and L being measured under a tension which corresponds to the weight of 500 meters of the assembly, and ϵ being at most 5%;
b. driving the ply of assemblies by pulling means which are common to all the assemblies and act thereon upstream of the beam to help implement the said relationship;
c. synchronizing the speeds of rotation of the devices with each other so as to have a common speed for these devices and synchronizing the speeds of the devices and the speed of the pulling means;
d. winding the ply of assemblies on the beam;
e. detecting a possible defect on at least any one thread or at least any one assembly; and
f. stopping the production of the ply and the winding of the ply on the beam when such a defect is detected, this stopping being effected in such a manner that upon the stopping the defect is located in the ply in advance of the beam.

5,295,288

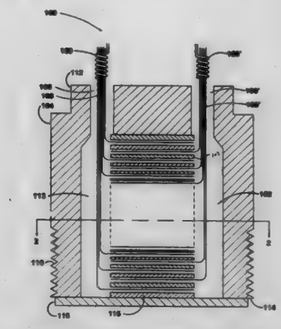
METHOD OF MAKING COATING SURROUNDING A PIEZOELECTRIC SOLID STATE MOTOR STACK

Chuong Q. Dam, Peoria, and Kurtis C. Kelley, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 836,476, Feb. 18, 1992, Pat. No. 5,218,259.
This application Dec. 14, 1992, Ser. No. 996,536
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **7 Claims**

1. A method for encapsulating a piezoelectric solid state motor having a plurality of elements assembled in a stack interleaved with electrodes, comprising the steps of:
adding a plurality of ceramic particles to a low viscosity silicone adhesive having high thermal conductivity characteristics, wherein the grain size of said ceramic particles is substantially equal to the grain size of the piezoelectric material of said piezoelectric elements;
encapsulating said stack with said low viscosity silicone adhesive;
curing the silicone adhesive at a first temperature for a first predetermined amount of time for setting said silicone adhesive; and thereafter

curing the silicone adhesive at a second temperature for a second predetermined amount of time for further establishing adhesion between said piezoelectric elements and said silicone adhesive.

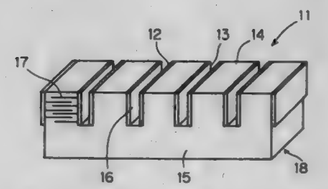


5,295,289

METHOD OF MANUFACTURING ELECTRONIC COMPONENTS

Yasuto Inagaki, and Yoshiaki Kohno, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 2, 1992, Ser. No. 955,838
Claims priority, application Japan, Oct. 3, 1991, 3-255640
Int. Cl.[5] H01G *4/30*
U.S. Cl. 29—25.42 **11 Claims**



1. A method of manufacturing chip electronic components comprising the steps of:
preparing a block, said block being capable of providing a plurality of chip electronic components, each of said chip electronic components having end surfaces;
forming cutting grooves in said block, said cutting grooves being formed along said end surfaces of said chip electronic components;
applying metal paste for forming external electrodes, said metal paste being applied into each of said cutting grooves to fill up said cutting grooves; and
cutting said metal paste filling up each of said cutting grooves so as to divide said metal paste in each of said cutting groove into two parts, whereby external electrodes are provided on each of said end surfaces of each of said chip electronic components.

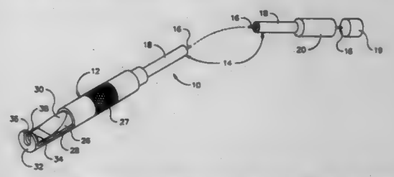
5,295,290

ADAPTER FOR PLASTIC BLIND FASTENER TOOL

Harry R. Johnston, Coatesville, Pa., assignor to One Twelve, Inc., Coatesville, Pa.

Filed Jul. 14, 1992, Ser. No. 913,020
Int. Cl.[5] B21D *9/05*; B21J *15/16*
U.S. Cl. 29—243.527 **29 Claims**

1. An adapter for a tool for installing a plastic blind fastener in a hard-to-reach location, the fastener having a shaft with a head at one end thereof, a sleeve surrounding a portion of the shaft with a collar at one end thereof, the other ends of the shaft and sleeve being fixed to each other, and the tool having spreadable claws for applying opposed forces to the fastener between the head and the collar for deforming the sleeve radially outward; said adapter comprising:
a cylindrical housing having a radial slot in one end for receiving a portion of the shaft of the fastener between the head and collar thereof;
a pull rod slidable axially in said housing and having a radial slot in one end aligned with said slot of said housing for



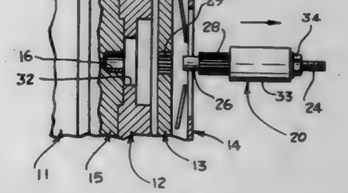
receiving another portion of the shaft of the fastener between the head and collar thereof;
a cable having a flexible sheath and spring wire slidable therein, said sheath and said wire fixed respectively at adjacent one ends thereof to said housing and said pull rod; and
first and second bushings fixed respectively to adjacent other ends opposite from said one ends of said wire and said sheath for engaging the claws of the tool in their closed position.

5,295,291

CLUTCH INSTALLER AND REMOVER TOOL

Earl C. Harris, 9009 Greiner Rd., Clarence, N.Y. 14031

Filed Jul. 21, 1993, Ser. No. 94,776
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—274 **2 Claims**



1. A tool for centering and aligning a clutch assembly of a motor vehicle during clutch installation and removal, comprising:
a tripartite elongated cylindrical shaft having a threaded section at a first end of said shaft, a generally smooth cylindrical section at a second end of said shaft for mating with a pilot bearing of a crankshaft of said vehicle, and a splined section therebetween for mating with a splined throughbore of a clutch disc; and,
a hollow cylindrical housing, open at one end, and having a flat circular plate at its other end, said plate having a throughbore therein to receive said threaded section of said shaft, said housing operatively arranged to surround said splined section of said shaft when said threaded section passes through said throughbore, with said open end in position to contact a surface of said clutch disc; and,
a nut operatively arranged to be threaded onto said threaded section and into contact with said flat circular plate to force said open end of said housing into contact with said surface of said clutch disc, and thereafter to force said

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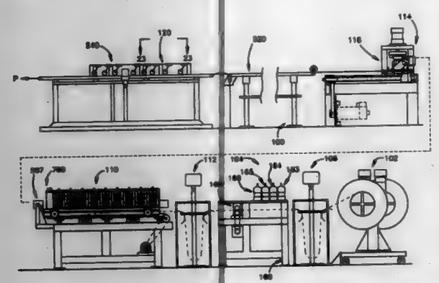
smooth cylindrical section out of mating engagement with said pilot bearing to facilitate removal of said tool from said clutch assembly.

5,295,292

METHOD OF MAKING A SPACER FRAME ASSEMBLY

Edmund A. Leopold, Hudson, Ohio, assignor to Glass Equipment Development, Inc., Twinsburg, Ohio

Filed Aug. 13, 1992, Ser. No. 929,330
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—417 **25 Claims**



19. A method of making a spacer frame assembly comprising:

a) providing a supply of thin relatively narrow sheet metal stock;

b) feeding the stock endwise to a first forming station;

c) forming spacer frame corner structures in said stock at said first forming station;

d) feeding said stock to a second forming station;

e) forming the stock at said second forming station to define a rigid linearly extending frame element having opposite side walls and a base wall, said corner structures disposed at least in part in said opposite side walls;

f) applying sealant material to external surface areas of said frame element; and

g) bending the assembled frame element and sealant material by deforming the spacer frame corner structures.

5,295,293

ARRANGEMENT AND METHOD FOR CLOSING OFF FLUID PASSAGES

Bernd Pfeiffer, Gross-Bieberau, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

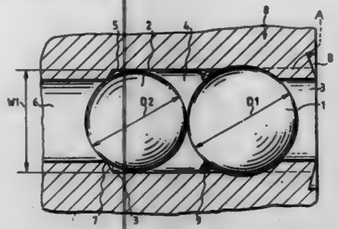
Continuation of Ser. No. 781,152, Oct. 31, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,414
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006368
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—525 **3 Claims**

1. A method of permanently sealing a fluid passage formed in a housing comprising the steps of:

forming an enlarged portion of said passage so as to create a shoulder at a transition between said fluid passage and said enlarged portion thereof;

inserting one closure member into said enlarged passage portion, said closure member being slidably fit therein, configured to have a sealing engagement with said shoulder;

thereafter pressing a metal closure member of a larger diameter than said enlarged portion of said passage into said enlarged passage portion and against said one closure member so as to press fit and permanently fix said metal closure member in said enlarged portion of said fluid passage, press fitting of said metal closure member abrading particles which are released into said enlarged portion of said passage, and engaging said one closure member with one side of said metal closure member as said press fitting thereof is carried out to force and fixedly hold said one closure member against said shoulder to establish said sealing engagement, whereby said sealing engagement of



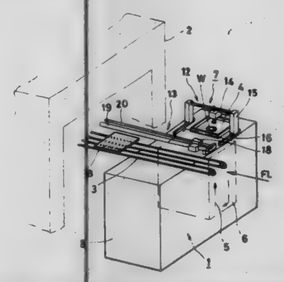
said one closure member with said shoulder prevents abraded particles produced by press fitting of said metal closure member moving past said transition and into said fluid passage.

5,295,294

TRAY AND ELECTRONIC PARTS SUPPLYING APPARATUS

Hiroshi Ito, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan

Filed Jul. 7, 1992, Ser. No. 909,734
Claims priority, application Japan, Jul. 10, 1991, 3-169560
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—740 **6 Claims**



1. A tray and electronic parts supplying apparatus to be used in combination with a chip mounter for mounting electronic parts onto a board, comprising:

a tray feeder for feeding a tray containing electronic parts; and

an electronic parts feeder for conveying and supplying said electronic parts in the tray; said tray feeder and said electronic parts feeder being adjacent to the chip mounter and arranged along a board feeding line;

said electronic parts feeding device comprising a first supplying portion for picking up an electronic part in said tray and for carrying it in the direction perpendicular to said board feeding line; and

a second supplying portion for supplying said electronic part into said chip mounter in the same direction as said board feeding line, and said electronic parts feeder being arranged on the side of said board feeding line; and

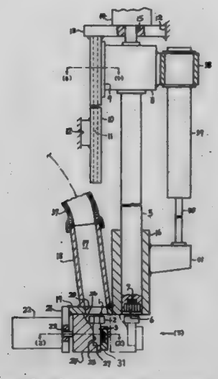
said tray feeder being positioned under the electronic parts feeder and within said tray and electronic parts supplying apparatus.

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APPARATUS FOR FEEDING AND TIGHTENING THREADED PARTS

Yoshitaka Aoyama, 20-11, Makitsukadai 2-cho, Sakai-shi, Osaka 590-01, Japan

Filed Nov. 2, 1992, Ser. No. 970,035
Claims priority, application Japan, Nov. 2, 1991, 3-349379; Nov. 18, 1991, 3-354183; Dec. 7, 1991, 3-360771
Int. Cl.[5] B23Q *7/10*; B25B *23/02*
U.S. Cl. 29—813 **7 Claims**



1. An apparatus for feeding and fastening a threaded part comprising:

a rotatable feed rod having a socket hole at a front end thereof for receiving a ferromagnetic part;

a holding member having a groove for receiving and holding the part fed from a part feed passage, the holding member being movable between a first position remote from the feed rod and a second position in which the held part is coaxial with the feed rod;

driving means for moving the holding member between the first and second positions; and

a reciprocating plate for selectively closing the groove thereby releasably restraining the part held by the holding member, the plate having a magnet embedded therein for fixing the position of the part against the plate when the part is received in the groove.

5,295,296

METHOD AND APPARATUS FOR WORKING A CLAD MATERIAL

Katsumi Hagiwara; Akihiro Tanaka; Kou Sasaki; Kiyohito Nagasawa, all of Tanashi; Shin Nemoto, and Kazuhiro Yamamoto, both of Suita, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo and Sumitomo Special Metals Co., Ltd., Osaka, both of Japan

PCT No. PCT/JP91/00141, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO91/12109, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 6, 1991, Ser. No. 768,278
Claims priority, application Japan, Feb. 6, 1990, 2-25271; Feb. 6, 1990, 2-25272; Feb. 6, 1990, 2-25273
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **10 Claims**

1. A method for producing a clad material by spot cladding a metal foil on a strip-like material comprising,

a material feeding step for feeding said strip-like material to a working position by predetermined lengths,

a metal foil feeding step for sucking said metal foil by a movable suction member and feeding the metal foil to said working position,

a metal foil positioning step of re-sucking said metal foil by a fixed suction member and setting the metal foil in position on a surface of said strip-like material,

a cutting step of cutting said metal foil to a predetermined size to form metal foil pieces,

a tacking step of tacking said metal foil pieces on said material, and

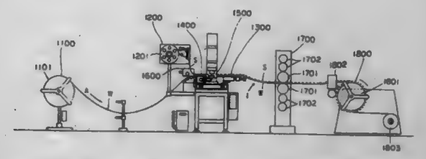
a rolling step of pressure contacting and rolling the tacked metal foils and the material.

5. An apparatus for working a clad material comprising,

material supplying means for supplying a trip-like material,

material feeding means operatively associated with said material supplying means for feeding the material from said material supplying means by a predetermined length,

metal foil supplying means for supplying a strip-like metal foil,



metal foil feeding means operatively associated with said meal foil supplying means for feeding a metal foil from said metal foil supplying means by a predetermined length, said metal foil being located above the strip-like material,

cutting and tacking means for cutting the metal foil transferred by the metal foil feeding means to produce metal foil pieces, said cutting and tacking means placing the metal foil pieces on an upper surface of the material and tacking said metal foils on said upper surface, and

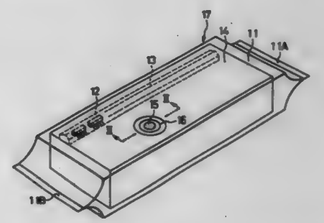
rolling means situated near the cutting and tacking means for pressure contacting and rolling the tacked metal foil pieces over said material.

5,295,297

METHOD OF PRODUCING SEMICONDUCTOR MEMORY

Wahei Kitamura, Kodaira; Gen Murakami, Machida, and Kunihiko Nishi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 791,539, Nov. 14, 1991, which is a continuation of Ser. No. 392,029, Aug. 10, 1989, Pat. No. 5,095,626, which is a division of Ser. No. 124,925, Nov. 23, 1987, abandoned. This application Jul. 20, 1992, Ser. No. 915,496
Claims priority, application Japan, Nov. 25, 1986, 61-278610; Aug. 21, 1987, 62-206290
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **27 Claims**



1. A method of mounting at least one surface-mount resin molded semiconductor device, having leads, on a mounting substrate, comprising the steps of:

taking out a surface-mount resin molded semiconductor device from a sealed moisture-proofing bag member, said moisture-proofing bag member having said semiconduc-

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tor device and a desiccant therein, said moisture-proofing bag member being made of a multi-layered film; and

mounting said semiconductor device to said mounting substrate by soldering leads to said mounting substrate under such a condition where the semiconductor device has heat applied thereto,

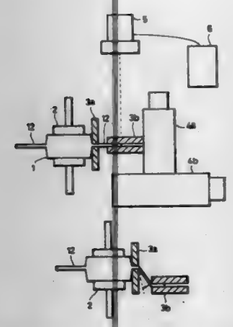
wherein said mounting said semiconductor device to said mounting substrate is performed sufficiently rapidly after taking out said semiconductor device from the moisture-proofing bag member such that cracking of the semiconductor device after said mounting, due to moisture absorbed in the resin molded semiconductor device after taking out the semiconductor device from the sealed moisture-proofing bag member, is avoided.

5,295,298

METHOD OF FORMING LEADS OF SEMICONDUCTOR DEVICE TO SHAPE

Hideo Sakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,678
Claims priority, application Japan, Apr. 27, 1992, 4-107205
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **7 Claims**



1. A method of forming an array of leads of a semiconductor device packaged on a lead frame and separated individually to a predetermined shape, comprising the steps of:

(a) feeding a semiconductor device along a feed path into a lead-forming position;

(b) holding the semiconductor device in said lead-forming position;

(c) recognizing the actual position of distal ends of leads arrayed on one side of the semiconductor device;

(d) correcting the positional error, if any, of said actual position with respect to the position to start forming the leads, thereby accurately positioning the semiconductor device in said lead-forming position;

(e) holding lead bases of the leads with a lead-fixing finger assembly and distal end portions of the leads with a lead-forming finger assembly based on data corresponding to the type of the semiconductor device;

(f) moving the distal end portions of the leads arcuately about the lead bases thereof with the lead-forming finger assembly thereby bending the leads to shape;

(g) thereafter turning the semiconductor device about the central axis thereof in the lead-forming position to position the distal ends of leads arrayed on another side of the semiconductor device in the position to start forming the leads;

(h) repeating steps (e) and (f) to bend the leads arrayed on the side of the semiconductor device to shape; and

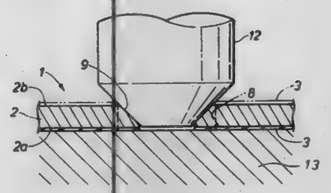
(i) repeating steps (g), (e), and (f) until the leads on all sides of the semiconductor device are bent to shape.

5,295,299

METHOD FOR FORMING A MOUNTING HOLE IN A METHOD FOR FORMING A METALLIC PRINTED CIRCUIT BOARD

Hayao Takahashi, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Japan

Division of Ser. No. 716,873, Jun. 17, 1991, Pat. No. 5,237/132.
This application Jun. 24, 1993, Ser. No. 82,135
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—853 **14 Claims**



1. A method for forming a mounting hole in a metallic printed circuit board comprising a metallic plate, an insulating layer formed on said metallic plate, and a printed circuit pattern formed on said insulating layer, comprising the steps of:

forming a substantially straight hole through said metallic printed circuit board, said hole having a central main opening and a plurality of spaced radial openings each radial opening extending radially from said central main part into a peripheral region of said metallic printed circuit board surrounding said central main opening; and

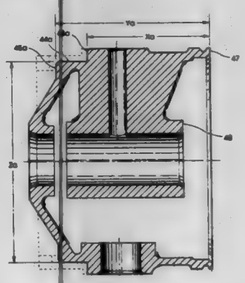
plastically deforming those parts of said metallic printed circuit board located between said radial openings and immediately around said central main opening of said hole to form a countersunk portion around said central main opening of said hole.

5,295,300

SALVAGE METHOD FOR TURBOCHARGER BEARING HOUSING

James J. Garrick, Jr., Cordova, Tenn., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jul. 13, 1992, Ser. No. 912,797
Int. Cl.[5] B23P *6/00*
U.S. Cl. 29—88.021 **1 Claim**



1. A method of salvaging a turbocharger bearing housing which has damaged portions, the method comprising the steps of:

(a) disassembling the bearing housing out of the turbocharger, said bearing housing having an outer end face surface, an inner end face surface and an outside diameter surface extending therebetween;

(b) setting up the bearing housing on a lathe in order to machine the damaged portions;

(c) machining the bearing housing to remove metal from the damaged portions of the bearing housing, said damaged portions including part of said outside diameter surface and said outer end face surface;

(d) machining the bearing housing to remove metal from portions of the bearing housing which are not damaged, said portions including the remainder of said outside diameter surface and said inner end face surface;

(e) providing a salvage sleeve having a hollow, generally cylindrical shape, an outside diameter surface, an outer end surface, an inner end surface and an inside diameter dimension adjacent said inner end surface which is slightly smaller than the machined outside diameter surface of the bearing housing;

(f) heating said salvage sleeve so as to expand its inside diameter dimension to a dimension larger than that of the machined outside diameter surface of the bearing housing;

(g) pressing said heated salvage sleeve onto the machined outside diameter surface of said bearing housing; and

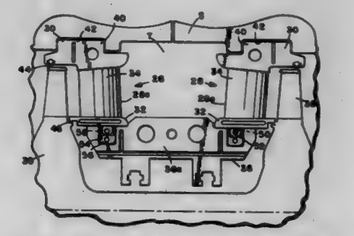
(h) machining the assembled salvaged sleeve in order to reestablish the original dimensions of said bearing housing by turning down at least part of the outside diameter surface of the salvage sleeve and cleaning off the outer end surface of the salvage sleeve.

5,295,301

METHOD FOR MINIMIZING OR ELIMINATING SOLID PARTICLE EROSION IN DOUBLE-FLOW STEAM TURBINES

Victor J. Knorowski, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 814,887, Dec. 31, 1991, Pat. No. 5,249,918.
This application Apr. 6, 1993, Ser. No. 43,765
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.021 **9 Claims**



1. In a double-flow steam turbine having first-stage rotors and a damaged double-flow reheat tub including a plurality of axially spaced diaphragm portions and an inner cylindrical portion spanning between the diaphragm portions, a method of retrofitting a reheat tub with increased setback of the diaphragms relative to the first-stage rotors comprising the steps of:

removing the damaged reheat tub from the turbine;

providing a reheat tub with increased setback having at least three discrete parts including (i) first and second arcuate diaphragm segments each having inner and outer ring portions and a plurality of circumferentially spaced nozzles therebetween and (ii) an inner segment; and

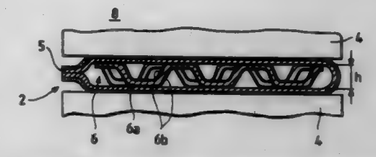
assembling said reheat tub with increased setback in said turbine by securing said diaphragm segments and said inner segment one to the other with said diaphragm segments spaced axially one from the other along said inner segment thereby affording increased setback relative to the respective axially adjacent first-stage rotors.

5,295,302

METHOD OF MANUFACTURING AN ALUMINUM HEAT EXCHANGER

Toru Takai; Toshio Koshizuka, both of Tochigi; Tutomu Sunaga, and Makoto Negishi, both of Gunma, all of Japan, assignors to Calsonic Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 968,510, Oct. 29, 1992, abandoned. This application Apr. 21, 1993, Ser. No. 49,656
Claims priority, application Japan, Oct. 29, 1991, 3-283153; Sep. 4, 1992, 4-237342
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.039 **7 Claims**



1. A method for manufacturing an aluminum heat exchanger comprising the steps of:

providing a thin aluminum sheet material;

coating a brazing material on one surface of the sheet material but not on an opposite surface;

forming a plurality of flat tubes from the thin aluminum sheet material so that each of the tubes has adjacent engaging side projections, is open at both ends, and has the brazing material on an outer surface but not an inner surface thereof;

assembling the plurality of flat tubes and a plurality of aluminum heat transfer fins in alternate engaging relation to each other to form the core of a heat exchanger;

providing at least two spaced aluminum header tanks made of thicker material than the flat tubes and heat transfer fins and disposed in facing relation at a selected distance from each other;

assembling the header tanks with the core of the heat exchanger so that the ends of the flat tubes are received in the tanks;

providing the header tanks with brazing material to braze the ends of the flat tubes to the tanks; and

integration brazing the assembly of the heat exchanger core and the tanks in a furnace so that the flat tubes, heat-transfer fins and header tanks are joined together and so that the engaging surfaces of the side projections of the flat tubes are brazed to each other, without any previous welding of the side projections, by brazing material from the header tanks to which the ends of the tubes are joined during brazing.

5,295,303

METHOD OF MAKING A CORRUGATED FIN

Yuji Ogawa, Handa; Yoshitaka Kuroda, Anjo, and Yasuo Abe, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 8, 1992, Ser. No. 865,281
Int. Cl.[5] B21D *5/14, 13/04*
U.S. Cl. 29—890.049 **12 Claims**

1. A method of forming corrugated fins, comprising the steps of:

inserting a strip between a pair of forming dies having a line of protrusions; and

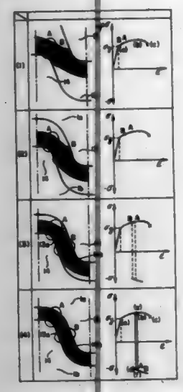
forming corrugated fins including a first convex bent portion, a second concave bent portion and a straight portion which continuously connects said first and second bent portions, said forming step including:

first pressing portions of said strip using said protrusions of said forming dies to form depressions at said portions which causes said strip to become thicker at said straight

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portions and thinner at portions other than the straight portions; and

second pressing, using side face portions of the forming dies, said straight portion in a direction of its thickness with a stress amount between yield point and maximum stress of said strips, to reduce a thickness at said straight portion



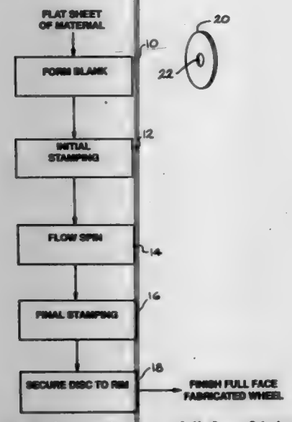
and make uniform the thickness throughout a whole of said corrugated fin so that said straight portion is plastically deformed toward both first and second bent portion and said corrugated fins have the same cross-sectional area per unit length of cross section, before and after forming said corrugated fins.

5,295,304

METHOD FOR PRODUCING A FULL FACE FABRICATED WHEEL

Walter L. Ashley, Jr., Detroit, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Apr. 28, 1993, Ser. No. 54,373
Int. Cl.[5] B21K *1/28*
U.S. Cl. 29—894.325 **4 Claims**



1. A method for producing a full face fabricated wheel comprising the steps of:

(a) providing a generally circular rim defining an axis and including a generally axially extending well and a pair of opposed ends, one of the ends including an inboard tire bead seat retaining flange and an inboard tire bead seat, and the other end including an outboard tire bead seat;

(b) providing a generally circular disc blank including an inner annular portion defining a wheel mounting surface;

(c) flow spinning the disc blank to form an intermediate annular portion having a predetermined contour and an outer annular portion;

(d) stamping the outer annular portion of the disc to form an outboard tire bead seat retaining flange of the full face wheel;

(e) positioning the outboard tire bead seat retaining flange of the disc adjacent the outboard tire bead seat of the rim; and

(f) securing the rim and disc together to produce the full face fabricated wheel.

5,295,305

RAZOR BLADE TECHNOLOGY

Steve S. Hahn, Wellesley Hills, and John Madeira, Assonet, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 835,251, Feb. 13, 1992, abandoned. This application Jan. 25, 1993, Ser. No. 8,396
Int. Cl.[5] B26B *21/00, 21/54*
U.S. Cl. 30—50 **24 Claims**



1. A process for forming a razor blade comprising the steps of

providing a substrate,

forming a wedge-shaped sharpened edge on said substrate that has an included angle of less than thirty degrees and a tip radius of less than twelve hundred angstroms;

depositing an interlayer of material selected from the group consisting of silicon, silicon carbide, vanadium, tantalum, niobium, and niobium-molybdenum alloy and alloys of such materials on said sharpened edge; and depositing a layer of diamond or diamond-like carbon (DLC) material on said interlayer.

5,295,306

CUTTING HEAD FOR A CORD TYPE MOWER

Hideo Sugihara, and Hajime Tomita, both of Gifu, Japan, assignors to Diatop Corporation, Gifu, Japan

Division of Ser. No. 792,788, Nov. 15, 1991. This application Dec. 30, 1992, Ser. No. 998,420
Claims priority, application Japan, Nov. 16, 1990, 2-312500
Int. Cl.[5] A01G *3/06*
U.S. Cl. 30—276 **6 Claims**

1. A cutting head for a cord-type mower having a motor for driving the cutting head, the cutting head being capable of automatic and manual cord feeding, the cutting head comprising:

a casing driven by the motor to rotate about an axis;

a bobbin mounted in said casing, and adapted to rotate around said axis relative to said casing; said bobbin being movable along said axis relative to said casing, between a first position and a second position;

a spring disposed within said casing for urging said bobbin toward said first position from said second position, said bobbin being switched from said first position to said second position against the action of said spring, in response to a tapping operation;

a cord having a distal end wound about said bobbin;

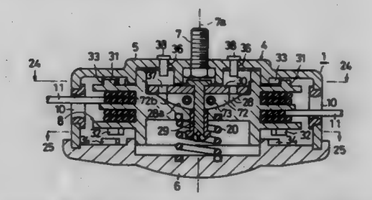
a cord feed slot provided on the outer periphery of said casing, for permitting the distal end of said cord to extend outside said casing, to a suitable cutting position;

mutual linkage means provided in said bobbin and said casing, for coupling said bobbin in said first position to said casing, in order to cause them to rotate simultaneously;

rotation control means provided in said bobbin and said casing, for permitting said bobbin, already in said second position, to rotate by a predetermined angle, relative to said casing;

switching means for automatically switching said bobbin between said first and second positions, in accordance with a rotational speed of said casing, which varies as a function of the length of the cord that is extended from said cord feed slot,

said switching means including:



a tapered surface formed on said bobbin, in a radial direction relative to said axis, said tapered surface forming an aperture at the center of said bobbin;

a plurality of drive links provided in said casing, for reciprocating relative to said axis, along said tapered surface, each drive link being capable of moving between an operational position for pressing said bobbin toward said second position against the action of said urging means, and a retracted position for permitting said bobbin to remain in said first position, without pressing said bobbin, each drive link moving to said operational position from said retracted position, according to centrifugal force of each drive link depending on the rotational speed of said casing, thereby causing said bobbin to be switched to said second position; and

bias means for urging said drive links toward said retracted position from said operational position, said bias means including a plurality of springs for connecting adjacent drive links, whereby, when the rotational speed of said casing decreases as a function of the cord feeding, said bias means causes said drive links to return to said retracted position from said operational position, thereby permitting said bobbin to return to said first position.

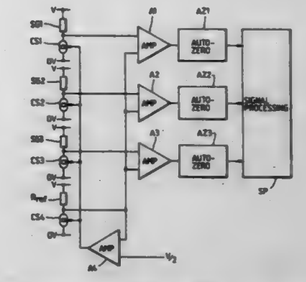
5,295,307

SENSING CIRCUIT FOR POSITION-SENSING PROBE

Clifford W. Archer, Dursley, United Kingdom, assignor to Renishaw Metrology Limited, Gloucestershire, United Kingdom

Filed Jul. 20, 1992, Ser. No. 915,138
Claims priority, application United Kingdom, Jul. 27, 1991, 9116245
Int. Cl.[5] G01B *7/18*
U.S. Cl. 33—561 **12 Claims**

1. An apparatus for use on a positioning machine, comprising a position-sensing probe having a stylus for contacting a workpiece and sensing means for producing a signal when the stylus is brought into contact with the workpiece, the sensing means being mounted in the position-sensing probe and comprising at least one sensor with a resistance that changes upon attainment of the contact, mans for detecting variations in the resistance, and a constant current source for supplying a constant current through the sensor, the current remaining constant though the sensor despite changes in sensor resistance upon attainment of contact with the workpiece.

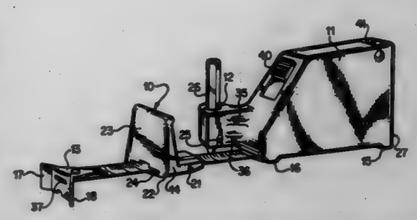


5,295,308

MEASURING, MARKING AND CUTTING TOOL

Mark D. Stevens, Main St., East Brookfield, Mass. 01515, and Frank N. Mosher, 70 Quaboag St., Brookfield, Mass. 01506

Filed May 30, 1991, Ser. No. 707,858
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—770 **3 Claims**



1. A measuring, marking, and cutting tool incorporating a measuring tape having a bound and coiled end, a free end, and measurement indicia comprising:

(a) a main case adapted to store and dispense said tape, the case having a bottom and provided with means to lock said tape in a chosen extended position,

(b) a device holder for holding a device, said holder integral with the case and associated with the measurement indicia on the tape via an accurate integral indicator means,

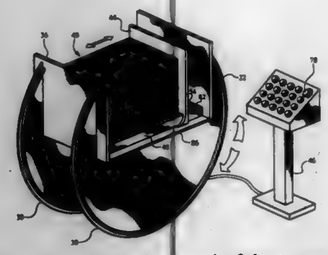
(c) friction reducing means on the bottom of the main case configured to provide stable support for the main case to stand vertically,

(d) an end clip attached to the free end of the tape and having a horizontal portion attached to the tape and a vertical portion adapted to extend over an edge of a workpiece, and

(e) friction reducing rollers on the vertical portion of the end clip for engaging the workpiece.

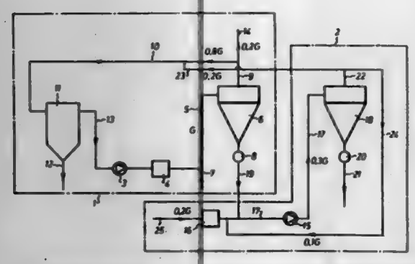
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5,295,309
JOGGER/AERATOR
Brian J. Kozlowski, Stevens Point; Anthony J. Trzebiatowski, Amherst, and Perry J. Jewell, Stevens Point, all of Wis., assignors to A.F. Machining Specialties, Inc., Plover, Wis.
Filed Dec. 9, 1992, Ser. No. 988,239
Int. Cl.[5] F26B *5/00*
U.S. Cl. 34—23 13 Claims



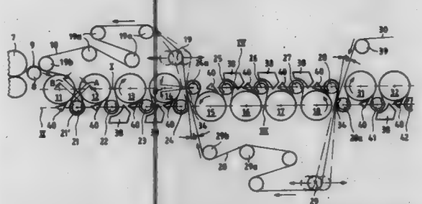
5. An apparatus for aerating a stack of sheets, comprising:
a) a base;
b) a frame mounted to the base for rotatable movement between a vertical and a horizontal position;
c) a first platen plate fixed to the frame;
d) a second platen plate mounted to the frame and variably positionable on the frame in substantially parallel relation to the first platen plate to clamp a stack of sheets therebetween;
e) an air table having a surface having portions defining a plurality of openings therein, the openings being directed toward the stack of sheets;
f) a means for producing a flow of air through the air table surface, wherein the means is adjustable by an operator to selectably produce a desired flow of air, the means being adapted to produce any desired quantity of air flow between zero and an upper limit of air flow, such variable air flow allowing the aeration of a variety of sheet materials on the apparatus.

5,295,310
METHOD FOR DRYING A PARTICULATE MATERIAL
Lennart Eriksson, Växjö, Sweden, assignor to ABB Fläkt AB, Nacka, Sweden
PCT No. PCT/SE91/00774, § 371 Date Nov. 20, 1990, § 102(e) Date Nov. 20, 1990, PCT Pub. No. WO92/08938, PCT Pub. Date May 29, 1992
PCT Filed Nov. 14, 1991, Ser. No. 50,339
Claims priority, application Sweden, Nov. 20, 1990, 9003687
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—32 16 Claims



1. Method for drying a particulate material in which method the material is transported through a two-stage drying plant by means of drying gas, the material being supplied, in a first stage (1), into a first drying conduit (5) where it is dried in a first drying gas flow transporting the material to a first cyclone (6) in which it is separated from the drying gas which is discharged from the first cyclone, and the material separated in the first cyclone (6) being supplied, in a second stage (2), into a second drying conduit (17) where it is dried in a second drying gas flow transporting the material to a second cyclone (18) in which it is separated from the drying gas which is discharged from the second cyclone, characterised in that the major part of the drying gas discharged from the first cyclone (6) is conveyed to a condenser (11) so as to be subsequently recirculated in the first stage (1), that the remainder of the drying gas discharged from the first cyclone (6) is emitted from the plant, that an amount of the drying gas discharged from the second cyclone (18), which corresponds to said remainder of the drying gas discharged from the first cyclone (6), is conveyed to the condenser (11) to be circulated in the first stage (1), that the remainder of the drying gas discharged from the second cyclone (18) is recirculated in said second stage (2), and that an amount of fresh drying gas, which corresponds to said remainder of the drying gas discharged from the first cyclone (6), is supplied to the second stage (2).

5,295,311
DRYER SECTION
Gerhard Kotitschke, Steinheim; Georg Kugler, Heidenheim; Wolfgang Mayer, Heidenheim, and Ludwig Hauser, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 467,788, Jan. 19, 1990, Pat. No. 5,184,408. This application Jan. 28, 1993, Ser. No. 10,419
Int. Cl.[5] F26B *13/16*
U.S. Cl. 34—117 20 Claims



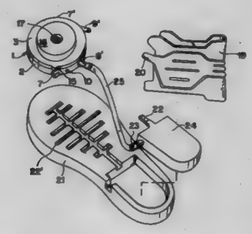
1. A dryer section of a machine for manufacturing fiber webs, wherein:
(a) the dryer section comprises a plurality of heatable drying cylinders arranged to form at least a first dryer group and a second dryer group, and arranged in horizontal cylinder rows, and including a plurality of suction rolls each being disposed between two adjacent cylinders;
(b) each dryer group has a respective one of first and second endless support belts for supporting a fiber web, with the support belt and the fiber web traveling alternately over the drying cylinders and over the suction rolls so that the fiber web comes into direct contact with the drying cylinders and the support belt comes into direct contact with the suction rolls;
(c) in the first dryer group, a first side of the web contacts the drying cylinders, and a second side of the web contacts the support belt;
(d) in the second dryer group, following the first dryer group, the second side of the web contacts the drying cylinders, and the first side of the web contacts the support belt; and
(e) the cylinders of the first group have axes disposed in a first plane I, the suction rolls of the first group have axes disposed in a second plane II, the cylinders of the second group have axes disposed in a third plane III, and the suction rolls of the second group have axes disposed in a fourth plane IV, and at least planes I and IV are coplanar.

5,295,312
VENTILATED BOOT WITH WATERPROOF LAYER
Stanley Blumberg, 600 Reisterstown Rd., Baltimore, Md. 21208, and Anthony R. Wells, P.O. Box 219, The Plains, Va. 22171
Filed Nov. 16, 1992, Ser. No. 976,837
Int. Cl.[5] A43B *7/06*
U.S. Cl. 36—3 B 11 Claims



1. A ventilated boot or shoe comprising:
a boot or shoe having a sole, a toe, an instep, sides, and a heel and having an open top;
an insole having sides and upper and lower surfaces disposed in said shoe, resting on the sole, formed of an open-celled compressible, resilient sponge material extending substantially from the heel to the toe, the sides thereof being covered with a water impervious material, the sides being spaced away from the sides of the boot or shoe, said insole having an upper layer and a lower layer of said sponge material and an intermediate layer sandwiched therebetween of water impervious material, and opposed, mutually spaced channels extending into the sides of the lower layer of said insole below the intermediate layer, said channels being adjacent the instep and heel portions of said boot or shoe; and
a plurality of mutually spaced, opposed ventilation pipes extending down the sides of said boot or shoe each terminating in one of said channels.

5,295,313
SELF-VENTILATING SHOE HAVING AN AIR-CONTROLLING DEVICE
Kuyn C. Lee, Taepyungyang Apt. 6-405, 1774-1 Daeyun 6-Dong, Nam-Ku, Pusan, Rep. of Korea
Filed Dec. 18, 1992, Ser. No. 992,698
Claims priority, application Rep. of Korea, Dec. 19, 1991, 9123379[U]
Int. Cl.[5] A43B *7/06, 13/20*
U.S. Cl. 36—3 R 4 Claims



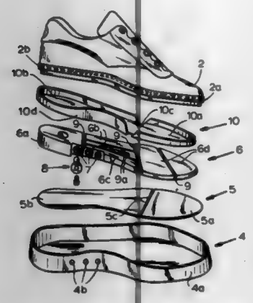
1. A ventilation system for a shoe, which comprises:
an insole provided in said shoe, said insole including a toe portion and a heel portion;
an upper formed above said insole of said shoe;
an air-pumping member disposed in the heel portion of the insole of said shoe, said air-pumping member including a one-way air discharging opening and a one-way air suction opening connected to a plurality of air-discharging channels disposed in the toe portion of said insole;
an ankle-protecting air bag built in an ankle portion of the upper of said shoe, said ankle-protecting air bag including an air inlet/outlet opening; and
an automatic air-controlling member disposed on an outer and upper portion of the upper, said automatic air-controlling member including:
a lower base member having an air passage disposed therein, a spring housed in the air passage, first and second dial indicating members disposed on an outer periphery of said lower base member, an air inlet and an air inlet/outlet disposed in a peripheral wall of said air passage and between said first and second dial indicating members with the inlet connecting to said one-way air discharging opening of the air-pumping member and the air inlet/outlet connecting to said air inlet/outlet opening of said ankle-protecting air bag, respectively, and an air outlet disposed on the peripheral wall of said air passage and between said first dial indicating member and said air inlet opening,
an upper cap member rotatably assembled with said lower base member,
an air controlling partition attached to a first raised ring extending from said upper cap member, and
a position indicating member disposed on an outer periphery of said upper cap, whereby upon adjusting the position indicating member to the first dial indicating member and applying pressure to the insole, air is discharged into the ankle-protecting member through the air passage and when the ankle-protecting air bag is filled with air, the one-way air outlet is opened and the air is expelled to the atmosphere, and absent the use of the ankle-protecting air bag, upon adjusting the position indicating member to the second dial indicating member, when pressure is applied to the insole, air is discharged to the atmosphere through the air passage and the air outlet and the air in the ankle-protecting air bag is also expelled to the atmosphere when the shoe is removed.

5,295,314
SHOE WITH SOLE INCLUDING HOLLOW SPACE INFLATABLE THROUGH REMOVABLE BLADDER
Armenak Moumdjian, Nor Marash Street, Bourj-Hammud, Beirut, Lebanon
Continuation-in-part of Ser. No. 710,769, Jun. 4, 1991, Pat. No. 5,199,191, which is a continuation-in-part of Ser. No. 608,570, Nov. 2, 1990, Pat. No. 5,112,560, which is a division of Ser. No. 295,438, Jan. 10, 1989, abandoned, which is a division of Ser. No. 74,765, Jul. 17, 1987, Pat. No. 4,845,861. This application Sep. 22, 1992, Ser. No. 949,166
Claims priority, application European Pat. Off., May 23, 1992, 92201478.2
Int. Cl.[5] A43B *13/18, 13/20, 13/00*
U.S. Cl. 36—29 6 Claims

1. A shoe comprising:
a flat sole formed with a raised perimetral edge having at least one opening;
a rigid layer in said sole;
a compartmented air chamber received in said sole above said rigid layer and having a valve extending through said opening and allowing variable inflation of said air chamber;
a rigid countersole connected to said edge and disposed above said air chamber, said rigid countersole comprising a front part, a rear part, a transverse hinge articulating said

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front part and said rear part, and a raised edge extending all around said countersole but interrupted at said transverse hinge and being connected to said perimetral edge; and



an upper received within said raised edges and secured thereto.

5,295,315

SHOE FASTENING DEVICE AND PLATE-SHAPED MEMBER THEREOF

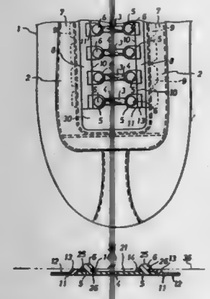
Hajime Osawa, Nishinomiya, and Yasuhiro Komori, Hiratsuka, both of Japan, assignors to Asics Corporation, Hyogo, Japan

Continuation of Ser. No. 305,757, Feb. 3, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 576,192

Claims priority, application Japan, Feb. 23, 1988, 63-23358[U]; Nov. 10, 1988, 63-284754

Int. Cl.[5] A43C *7/06, 9/00*

U.S. Cl. 36—50.1 **11 Claims**



1. A shoe fastening device comprising:

a plurality of first projecting members spaced apart from one another on one part of an opening edge portion defining an opening portion of an upper cover of said shoe along a longitudinal direction of said shoe, each of said first projecting members projecting at a distal end thereof into said opening portion;

a plurality of second projecting members spaced apart from one another on the other part of said opening edge portion along said longitudinal direction, each of said second projecting members projecting at a distal end thereof into said opening portion and facing each of said first projecting members respectively, said other part being opposite to said one part; and

a plurality of band members each disposed between one of said first projecting members and one of said second projecting members corresponding to said one of said first projecting members;

each of said first projecting members comprising a first proximal end portion fixed to said one part, a first intermediate portion connected at one end thereof to one end of said first proximal end portion and projecting upwardly from an outer surface of said first proximal end portion, a first distal end portion connected at one end thereof to the other end of said first intermediate portion and extending horizontally from said other end of said first intermediate portion to said opening portion, and a first through hole disposed in said first distal end potion of each of said first projecting members;

each of said second projecting members comprising a second proximal end portion fixed to said other part, a second intermediate portion connected at one end thereof to one end of said second proximal end portion and projecting upwardly from an outer surface of said second proximal end portion, a second distal end portion connected at one end thereof to the other end of said second intermediate portion and extending horizontally from said other end of said second intermediate portion to said opening portion, and a second through hole disposed in said second distal end portion of each of said second projecting members;

each of said band members being formed of a stretchable and flexible material at at least a central portion thereof with respect to a longitudinal direction thereof and having end portions on either side of said central portion, each of said band members comprising a first protruding member disposed integrally to one of said end portions of each of said band members and adapted to be inserted into said first through hole from an inner surface of said first distal end portion toward an outer surface of said first distal end portion, and a second protruding member disposed integrally to the other of said end portions of each of said band members and adapted to be inserted into said second through hole from an inner surface of said second distal end portion toward an outer surface of said second distal end portion;

a thickness of each of said band members and an amount of projection of each of said first intermediate portions and each of said second intermediate portions being set so that said first distal end portions, said second distal end portions and said band members become respectively coplanar at inner surfaces thereof, whereby said upper cover is fastened to wearer's foot through said band members.

5,295,316

SKI BOOT WITH OVERLAPPING SHAFT MEMBERS

Mirco Bergamin, Venice, Italy, assignor to Lange International, S.A., Fribourg, Switzerland

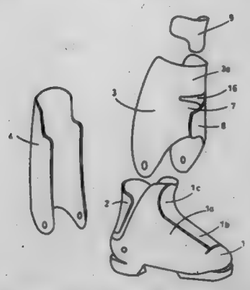
Continuation of Ser. No. 739,789, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 558,195, Jul. 24, 1990, abandoned. This application Apr. 20, 1993, Ser. No. 49,626

Claims priority, application Switzerland, Sep. 12, 1989, 3328/89

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—118 **3 Claims**

1. A ski boot comprising: a shell (**1**; **21**) of variable volume surrounding the foot and the heel; a shaft consisting of a front (**3**; **25**) and a rear (**4**; **26**), said front and rear being separate from each other and independently articulated on the shell to provide rear entry; and means of closing and of tightening said shell and said shaft, wherein the front has an opening (**16**; **27**) which exposes a zone (**1c**; **21c**) of the shell over the instep, at least in the closed position of the boot, one of said front and rear having a pair of opposite tongues (**7,8**; **30,31**) extending forwardly to overlap in and cover said exposed zone, the means of closing and of tightening (**9**, **10**; **34**) of the shaft being arranged so as to exert a traction towards the rear on at least one of said tongues, wherein the tongues (**30,31**) form one piece with the rear part (**26**) of the shaft, and the means of



closing and of tightening (**34**) of the shaft are situated on said tongues.

5,295,317

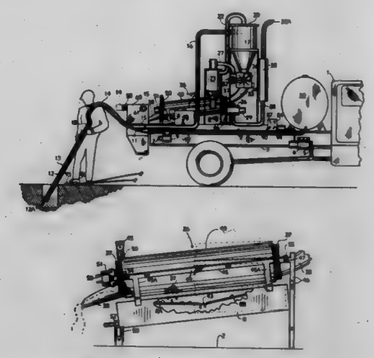
APPARATUS FOR EXCAVATING EARTHEN MATERIAL BY EVACUATION OF SAME

Kenneth W. Perrott, P.O. Box 70345, Eugene, Oreg. 97401

Filed Sep. 17, 1992, Ser. No. 945,913

Int. Cl.[5] E21B *21/06;* **E02F** *3/88*

U.S. Cl. 37—348 **15 Claims**



1. An apparatus for excavating earthen material by evacuation and comprising,

a mobile base including a power source and a hydraulic pump powered thereby water conduit means for the delivery of a pressurized water stream to an excavation site for the dislodgement of earthen material, suction conduit means for applying suction to the site for the removal of the water and dislodged earthen material,

an air separator in receiving communication with said suction conduit means,

a vacuum source in communication with said air separator,

discharge means for controlling a discharge of earthen material and water from said separator while restricting a flow of air into said air separator,

a powered screen assembly receiving earthen material and water discharged from said discharge means and serving to at least partially separate said earthen material and water, pivot means supporting said screen assembly,

a primary water tank into which water is received from said powered screen assembly,

a supplemental water tank,

valve and conduit means for providing a water flow from said supplemental water tank to said primary water tank to compensate for water not recovered by the apparatus at the excavation site, and

water pump means normally in upstream communication with said primary water tank and having an outlet port in downstream communication with said water conduit means.

5,295,318

BACKHOE-LOADER

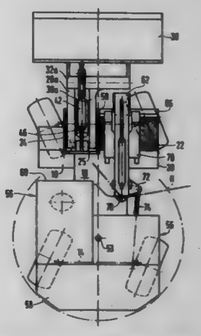
Hans Schaeff, Langenburg, Fed. Rep. of Germany, assignor to Karl Schaeff GmbH & Co., Langenburg, Fed. Rep. of Germany

Filed Jul. 21, 1992, Ser. No. 916,435

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 4124461

Int. Cl.[5] E02F *3/76*

U.S. Cl. 37—379 **18 Claims**



11. An earthworking machine comprising:

a) a mobile undercarriage adapted for movement over the ground, said undercarriage having a central longitudinal axis;

b) a superstructure having first and second sides, said superstructure pivotally supported on said undercarriage for rotation relative thereto about a vertical axis;

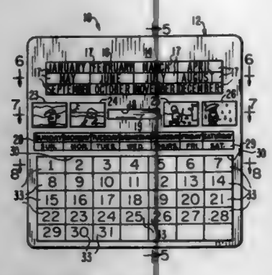
c) a loader assembly operable in a vertical plane, said loader assembly including a support frame having a central longitudinal axis, said loader assembly asymmetrically mounted to said undercarriage so that the central longitudinal axis of said support frame is substantially offset from the central longitudinal axis of said undercarriage towards said superstructure first side;

d) a backhoe assembly mounted to a pivot means associated with said superstructure second side and adjacent said cab, said backhoe assembly including an extensible, articulating boom carrying an earthworking implement, said boom being personable into a stored position so that said boom and implement are positioned above said undercarriage and substantially out of the field of view of said cab; and

e) rest means secured to said undercarriage and longitudinally aligned forward of said backhoe assembly, said rest means providing a storage area for said implement when said boom is in the stored position.

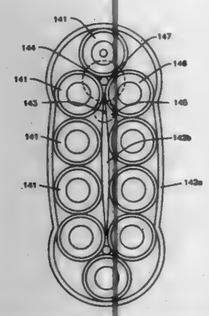
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,319
EDUCATIONAL CALENDAR UNIT
Najat Jabbar, Atherton, Calif., assignor to Unlimited International Education, Inc., Menlo Park, Calif.
Filed Jul. 9, 1992, Ser. No. 910,946
Int. Cl.[5] G09D *3/00*
U.S. Cl. 40—107 **19 Claims**



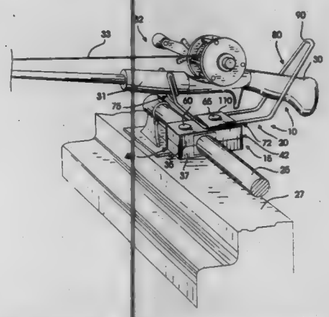
1. A calendar unit comprising:
a support panel having a pair of opposed flat faces, one of the faces having recess means defining a first recess and means defining a second recess, each of the first and second recesses having an innermost boundary, the innermost boundary of each of the recesses being substantially flat;
a plurality of bars for placement in the first recess, each bar having a particular month of the year affixed thereon;
a plurality of individual pieces for insertion in the second recess, each of certain of the pieces being affixed with a number representing a particular day of the month, the pieces being arranged in a number of rows and a group of columns;
means on the panel face for defining the names of the days of the week; and
a third recess on the same face as the first and second recess for receiving one of the bars of the first recess, said third recess being above the second recess.

5,295,320
MAGAZINE FOR RAPID SHOT FIREARM AND FIREARM
Sten M. C. Svensson, 180 N. Woodland St., Englewood, N.J. 07631
Filed Jun. 9, 1992, Ser. No. 895,789
Int. Cl.[5] F41A *9/79*
U.S. Cl. 42—49.01 **7 Claims**



1. A magazine for use in a firearm comprised of:
a casing having an inner surface and an outer surface;
an inner wall attached to the casing;
a belt rotatably mounted in said magazine between the inner surface of said casing and the inner wall, said belt being comprised of a plurality of segments, wherein the segments are pivotally attached to adjacent segments to form said belt, with one segment being in a position, relative to said firearm, when used with said firearm, for firing thereof; and wherein said one segment is in contact with adjacent segments during said firing, with said one segment and adjacent segments being sculpted, whereby said one segment intermeshes with the adjacent segments when said one segment is in the position, relative to said firearm, for firing thereof, and whereby said intermeshing prevents relative movement between said segments.

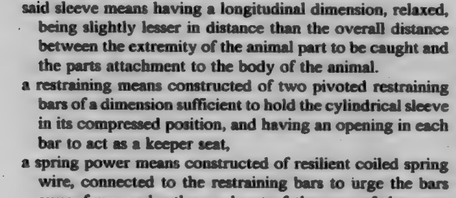
5,295,321
SELF-GRIPPING, SELF-BALANCING FISHING ROD HOLDER
Albert J. Matura, Rte. 1, Box 1636, Chandler, Tex. 75758
Filed Jan. 8, 1993, Ser. No. 2,280
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **18 Claims**



1. A self-balancing fishing rod holder comprising:
a mounting block adapted to be secured to a portion of a boat or the like, said block comprising:
a forward end, a rear end, a center, and a longitudinal axis extending generally through said ends;
a bore perpendicular to said longitudinal axis for receiving said portion of said boat, said bore offset from said center a preselected distance toward said forward end of said block;
plural fastener means perpendicularly extending though said block for securing said rod holder;
a receiver for holding the fishing rod, said receiver comprising an angled cradle extending toward said forward end adapted to support a portion of said rod and an integral, spaced-apart angled notch extending toward said rear end adapted to frictionally, wedgably receive the rod butt; and,
bracket means penetrated by one of said fastener means for clamping said receiver to said block.

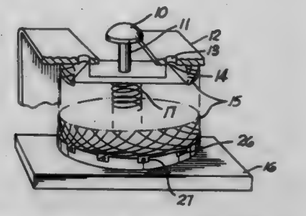
5,295,322
TELESCOPIC FISHING ROD WITH INTEGRALLY FORMED BUTT RING MEMBER
Isamu Tokuda, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Continuation of Ser. No. 745,873, Aug. 16, 1992, abandoned. This application Jan. 5, 1993, Ser. No. 809
Claims priority, application Japan, Aug. 28, 1990, 2-90305[U]
Int. Cl.[5] A01K *87/08, 87/04*
U.S. Cl. 43—23 **5 Claims**

1. A telescopic fishing rod, comprising:
a butt section (1) which includes a rod portion (1A) and a butt ring body (3), said rod portion having a rear end with a circumferential surface, and wherein said butt ring body includes a first butt ring portion integrally formed on said circumferential surface by a resin injection molding process, and wherein said butt ring body further includes a second butt ring portion which extends rearwardly of said first butt ring portion, said second butt ring portion having a rear end;



a retractable section (2) located within said rod portion (1A); and
a butt cap (4) engaged with said rear end of said second butt ring portion.

5,295,323
HUMANE ANIMAL TRAP
Robert H. Fasulkey, and John Gerding, both of P.O. Box 20411, Towson, Md. 21284
Filed Mar. 19, 1993, Ser. No. 34,767
Int. Cl.[5] A01M *23/34*
U.S. Cl. 43—85 **12 Claims**

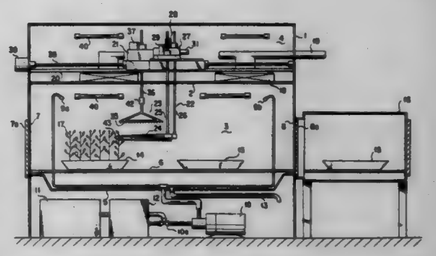


1. A humane animal trap device comprising
a base mounted vertical cylindrical sleeve means constructed of multiple arcuate clockwise and counter clockwise elements of looped resilient material positioned substantially parallel to a single axis and interwoven at an acute angle to form in the relaxed position a hollow double conical cylindrical sleeve, capable of being compressed to form a shorter cylinder of larger diameter than that of the relaxed sleeve,
said sleeve means having a longitudinal dimension, relaxed, being slightly lesser in distance than the overall distance between the extremity of the animal part to be caught and the parts attachment to the body of the animal.
a restraining means constructed of two pivoted restraining bars of a dimension sufficient to hold the cylindrical sleeve in its compressed position, and having an opening in each bar to act as a keeper seat,
a spring power means constructed of resilient coiled spring wire, connected to the restraining bars to urge the bars away from each other and out of the way of the compressed sleeve,
a trigger means constructed with at least two keeper points constructed to selectively, hold the sleeve in the compressed condition until the trigger is depressed, operating to release the bars which in turn release the sleeve, allowing the sleeve to automatically elongate and constrict around retaining the object actuating the trigger.

5,295,324
METHOD OF ENHANCING THE QUALITY OF PRODUCE USING AN AGRICULTURAL SHEET MATERIAL
Shigeru Baba, Chiba; Takafumi Sakurai, Osaka, and Taisaburo Yokota, Chiba, all of Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 840,934, Feb. 25, 1992, abandoned. This application Jul. 21, 1992, Ser. No. 920,033
Claims priority, application Japan, Feb. 25, 1991, 3-015789[U]; Feb. 25, 1992, 4-008306[U]
Int. Cl.[5] A01G *13/00, 7/00*
U.S. Cl. 47—281 **8 Claims**

1. A method of enhancing the quality of produce grown on plants and trees comprising covering a substantial portion of the soil surrounding the plant or tree over which the roots of the plant or tree pass with a spunbonded nonwoven film-fibril sheet material that has been produced through a flash-spinning process, said sheet having a moisture permeability of between 3,000 and 7,000 $g/m^2/24$ hours and a resistance to water pressure of between 500–3,000 mm.

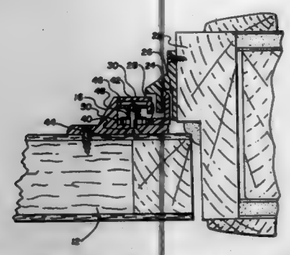
5,295,325
PLANT CUTTING AND TRANSPLANTING APPARATUS FOR CULTURING A PLANT TISSUE
Shigeru Honda; Masahiro Sei; Hitoshi Uemura; Tatsuya Mori; Chikaya Sakai; Ruriko Oda; Chiyoko Shimada, and Yusaku Sekino, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jan. 14, 1991, Ser. No. 640,705
Int. Cl.[5] A01G *7/00*
U.S. Cl. 47—1.01 **8 Claims**



1. A plant cutting and transplanting apparatus for culturing a plant tissue comprising: a plant cutting and transplantation room accommodating in a spaced-apart relationship a first culture box in which a group of multiplied plants to be cut are planted, and a second culture box in which nodular pieces made by cutting the plants are transplanted; a cutting device having a cutter adapted to cut, in one lot, the group of the plants planted in the first culture box to the form of individual nodular pieces and configured to allow the nodular pieces to rest on said cutter, said cutting device being provided in said plant cutting and transplantation room in such a way as to be moved vertically and transversely above the space where both of said first and second culture boxes are accommodated; and a blade device having a blade adapted to shake down the nodular pieces which rest on said cutter and which have been moved to a position above said second culture box for transplantation purposes.

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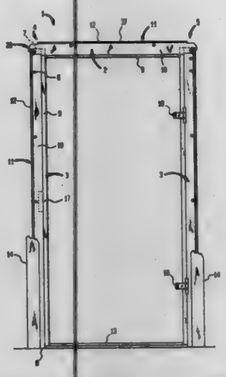
5,295,326
SELF-ADJUSTING WEATHER-PROOF SEAL
John W. Dickey, Rte. 1, Box 22A, Donnelly, Minn. 56235
Continuation of Ser. No. 765,678, Sep. 26, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 22,775
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—482.1 8 Claims



1. A self-adjusting weather stripping system for a closure member carried within a closure member frame, said closure member frame defining an opening, said closure member being shiftable between an open position clearing said opening and a closed position blocking said opening, comprising;
a first sealing element adapted for coupling to said closure member;
a second sealing element adapted for coupling to said closure member frame;
means for guiding said first and second sealing elements into operable weather sealing engagement with each other when said closure member is shifted from said open position to said closed position, said means for guiding said first and second sealing elements comprising a self-adjusting, essentially rigid lip member operably coupled to said first or second sealing element and an essentially rigid receptacle member operably coupled to the corresponding other of said first or second sealing element, said receptacle member being adapted to receive said self-adjusting lip member in weather sealing engagement with said self-adjusting lip member when said closure member is shifted from said open position to said closed position, and said means for guiding including an adjustment member operably coupled to said lip member, said adjustment member comprising means for providing frictionally restricted movement of said lip member including vertical movement, horizontal movement and longitudinal bending movement, said movements being driven by progressive engagement of said lip member with said receptacle member as said closure member is shifted from said open position to said closed position, for selectively orienting said lip member in engageable juxtaposition with said receptacle member; and
housing means for slidably enclosing said adjustment member whereby said adjustment member is isolated from direct exposure to the elements and interfering debris.

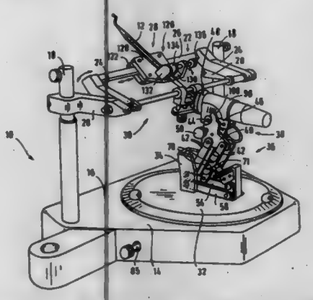
5,295,327
SHEET METAL DOOR FRAME AND A METHOD FOR INSTALLING THE SAME IN A DOORWAY
Stefan Dubois, Helsingborg, Sweden, assignor to Swedoor AB, Sweden
PCT No. PCT/EP90/02198, § 371 Date Jun. 4, 1992, § 102(e) Date Jun. 4, 1992, PCT Pub. No. WO91/09168, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 14, 1990, Ser. No. 853,756
Claims priority, application Sweden, Dec. 15, 1989, 89850435
Int. Cl.[5] E06B *1/04*
U.S. Cl. 49—504 9 Claims

1. A sheet metal door frame comprising a substantially horizontally arranged U-shaped head piece including first and second ends including cut-out portions, and a pair of substantially vertically arranged U-shaped jambs, said U-shaped jambs including square-cut ends extending into said cut-out portions at said first and second ends of said head piece, said head piece including head piece side walls and said jambs including jamb side walls, each of said jamb side walls terminating in a free longitudinal end including an outwardly bent flange for the



attachment of architraves, said head piece further including hook-shaped end portions formed in said head piece side walls at said first and second ends thereof, said head piece side walls being arranged to overlap said jamb side walls whereby said hook-shaped end portions engage said outwardly bent flanges of said jambs.

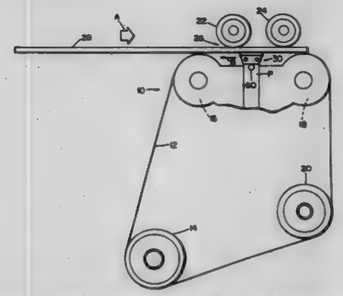
5,295,328
DEVICE FOR THE SHARPENING, GRINDING AND POLISHING OF DENTAL, PARODENTAL AND/OR SURGICAL INSTRUMENTS
Kurt Olbrich, Mossautal, Fed. Rep. of Germany, assignor to Roswitha Quetin, Fed. Rep. of Germany
PCT No. PCT/EP91/02237, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/09403, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 877,169
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1990, 4037591; Feb. 16, 1991, 4104824; May 25, 1991, 4117147
Int. Cl.[5] B24B *3/36*
U.S. Cl. 51—122 23 Claims



1. A device for the sharpening, grinding and polishing of dental, parodental or surgical instruments, comprising
clamping means (28) for clamping the instrument (12) to be ground,
grinding body (48) provided with a grinding surface (68) and

being rotatably supported on a bearing block (38), a base housing (14) having a rotatably supported support structure (36) projecting therefrom for holding said bearing block (38), said support structure (36) comprising at least two support arms (42) respectively articulated to the bearing clock (38), and at least one connecting member (54) additionally connecting said support arms (42),
control member (74) having the support structure (36) abutting thereon and by which the support structure (36) and, through the support structure (36), the bearing block (38) holding the grinding body (48) is pivoted by pivot means (44, 52, 56) for changing the inclination of the grinding surface (68),
said support structure (36) is rotatably arranged and the control member (74) is rigidly arranged on a common holding element (76) supported by the base housing (14) for longitudinal displacement along at least one axis extending perpendicularly to a rotational axis of the support structure (26), and
fixing means (85) for fixing the holding element (76) and for releasing the fixed holding element (76).

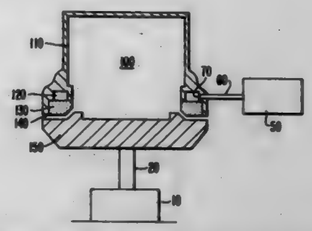
5,295,329
CERAMIC, AIR-COOLED SMOOTHING BAR
John A. Rothlisberger, Portland, Oreg., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 23, 1992, Ser. No. 979,920
Int. Cl.[5] B24B *21/08, 21/10*
U.S. Cl. 51—141 16 Claims



1. A smoothing bar for use in a sanding apparatus comprising:
an elongated metal bar formed to include a belt face, a mounting face and a pair of opposite side faces; a pair of cooling passages formed in said bar and extending lengthwise from one end of the bar to the other in substantially parallel relationship; and a plurality of air holes extending from each cooling passage and opening on an adjacent one of said opposite side faces.

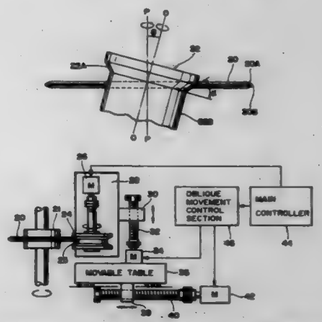
5,295,330
FLUID THRUST BEARING CENTRIFUGAL DISK FINISHER
Steve E. Hoffman, 6 Maple St., Englewood Cliffs, N.J. 07632
Filed Sep. 8, 1992, Ser. No. 941,568
Int. Cl.[5] B24B *31/10*
U.S. Cl. 51—163.1 33 Claims

1. In a centrifugal finisher for finishing at least one object comprising:
a containment vessel having a base and at least one vertical wall for containing said at least one object and for containing a plurality of abrasive pieces,
a disk at the base of said containment vessel for imparting motion to said abrasive pieces and said at least one object, and
means for rotating said disk relative to said containment vessel, the improvement comprising:
a plenum at a lower portion of said at least one vertical wall of said containment vessel for receiving a fluid, and
a porous layer of a porous material between said plenum and said disk for passing said fluid from said plenum towards said disk,



and wherein said containment vessel is operative for movement in a predetermined direction, and said fluid passed from said plenum moves said containment vessel in said predetermined direction so as to produce a boundary region between said porous layer and said disk as a bearing for said containment vessel.

5,295,331
METHOD OF CHAMFERING SEMICONDUCTOR WAFER
Katsuo Honda; Yoshio Kamoshita; Shinji Shibaoka, and Katsuhiro Tago, all of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan
Filed Nov. 18, 1992, Ser. No. 977,889
Claims priority, application Japan, Nov. 28, 1991, 3-314755; Dec. 12, 1991, 3-329141
Int. Cl.[5] B24B *9/06, 1/00*
U.S. Cl. 51—283 E 4 Claims



1. A method of chamfering a semiconductor wafer, wherein a rotating grindstone is abutted against a peripheral edge of the rotating semiconductor wafer for grinding the peripheral edge of the semiconductor wafer, characterized in that the peripheral edge of the semiconductor wafer is ground with a rotary axis of the grindstone being inclined in a direction of a line tangent to a cylindrical peripheral edge of the semiconductor wafer in a plane perpendicular to a rotary axis of the semiconductor wafer, the rotary axis of the grindstone and the rotary axis of the semiconductor wafer being located in different planes.

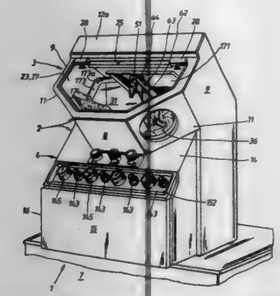
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,332
PERFORATED STRIP ABRADING ELEMENT AND ABRADING TOOL AND METHOD USING SUCH STRIP ELEMENT
James B. Tyler, Westlake; Alfred F. Scheider, Orange, and R. Brown Warner, Westlake, all of Ohio, assignors to Jason, Inc., Cleveland, Ohio
Division of Ser. No. 670,566, Mar. 18, 1991, Pat. No. 5,170,593.
This application Aug. 14, 1992, Ser. No. 908,981
Int. Cl.[5] B24D *11/04*
U.S. Cl. 51—397 10 Claims



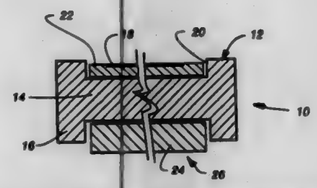
1. A rotary wheel tool comprising a hub having an annular channel and an axis of rotation, an array of abrasive plastic elements secured in said channel and projecting radially, said elements being secured in said channel by cured adhesive, said elements being strips of plastic having abrasive embedded homogeneously therein throughout, each element being scored radially of said axis of rotation of the hub, and said scoring including perforations to facilitate fracture along the scoring as the tool is used.

5,295,333
MACHINING DEVICE FOR MACHINING PRECISION WORKPIECES IN A CHAMBER
Georg Püschner, Leutkirch, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany
Filed Jul. 8, 1992, Ser. No. 910,663
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122979
Int. Cl.[5] B24C *7/00, 9/00*
U.S. Cl. 51—437 22 Claims



22. A device for machining workpieces in a chamber surrounded by a housing, the housing having an inspection window with first and second spaced gripping holes, the improvement comprising:
said housing having a plurality of walls including laterally spaced side walls, the plurality of walls defining a hollow space with the housing having a top and bottom;
a blasting nozzle;
means for mounting the nozzle to the housing so that the blasting nozzle can blast workpieces in the chamber;
a blasting medium container having a vertically extending peripheral wall bounding an interior space for containing blasting medium, there being a filling opening in the container;
a supply line for delivering blasting medium in the container to the blasting nozzle;
wall means for separating the chamber from the hollow space of the housing;
means in the hollow space for carrying the blasting medium container, the device including guide rail means for moving the carrying means, the carrying means further comprising a drawer;
a loading opening defined by the housing walls;
means for closing the loading opening in the housing wall, the closing means comprising a front wall of the drawer;
wherein the supply line has a flexible portion in the hollow space of the housing and the carrying means together with the blasting medium container can be moved between a working position located within the housing through the loading opening into a loading position in which the blasting medium container is arranged so that the filling opening is external of the housing.

5,295,334
SASH SENSOR BASE PLATE ASSEMBLY
William B. Haraden, McHenry, Ill., assignor to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.
Filed Sep. 10, 1991, Ser. No. 760,757
Int. Cl.[5] E05D *15/06;* B08B *15/02*
U.S. Cl. 52—1 2 Claims



1. An apparatus for mounting a sensing means in the stationary track of a sliding door or window, the sensing means being adapted to determine the position of the sliding door or window as it moves in the track, said apparatus comprising:
an elongated polyvinylchloride base having a front and a back surface, with a first recess located in said front surface thereof for receiving the sensing means; and a second recess located in said back surface thereof wherein each of said recesses is substantially rectangular, and said base has a generally "I" shaped transverse cross section along its length, said "I" shaped cross section being defined by a middle portion and two end portions, said end portions having two edges, said edges extending transversely in opposite directions from each side of said middle portion;
a first adhesive means for securing the sensing means in said first recess of said base wherein the combined thickness of said first adhesive means and of the sensing means is less than the distance each of said ends extend beyond said middle; and,
a second adhesive means located in said second recess for securing said base to the stationary track.

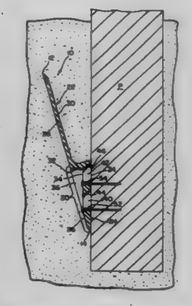
5,295,335
PREFRABRICATED SHELTER
Leroy H. Collier, 716 Gay St., Portsmouth, Ohio 45662
Filed Sep. 28, 1992, Ser. No. 952,597
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—86 8 Claims

1. A prefabricated shelter which comprises:
a) an arched framework having open opposite ends and a plurality of arcuate ribs, said arched framework includes a pair of slide bottom rails, each said bottom rail is an elongated L-shaped angle member having a first leg which sits upon the ground and a second leg which extends upwardly next to the bottom portions of one side of said arcuate ribs, each said arcuate rib is of a unity construction and is fabricated out of an elongated hollow tubular member, each said arcuate rib includes a pair of upright column segments, a pair of eaves corner segments, and a pair of rafter segments terminating at a peak, each said arcuate rib includes a pair of first bend segments, each located between a top of one said column segment and a bottom of one said eaves corner segment, a pair of second bend segments, each located between a top of one said eaves



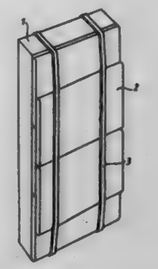
corner segment and a bottom of one said rafter segment, and a center bend segment located between the tops of said rafter segments, which is the peak, and means for retaining the bottom portions of said arcuate ribs to said side bottom rails, in which said arcuate ribs will be in spaced apart relationships to each other to form said arched framework in a generally lightweight and strong configuration, each said retaining means includes a rectangular plate attached onto the first leg of one of the L-shaped angle members, and a short cylindrical post mounted onto and extending upwardly from said rectangular plate, the bottom end of one of said upright column segments fits thereon.

5,295,336
RELEASABLE POST ANCHORING DEVICE
Roy B. Egaas, 11330 Madison Ave. NE., Bainbridge Island, Wash. 98110
Filed May 12, 1987, Ser. No. 48,796
Int. Cl.[5] E02O *5/74*
U.S. Cl. 52—166 11 Claims



1. A detachable anchoring device for posts and the like, comprising:
a) an elongated, generally rectangular body member having upper and lower ends and side edges and including a lower post attachment section and an upper anchor section extending upwardly away from said attachment section,
b) said lower post attachment section including an abutment wall having a post contacting inner surface and outer surface and further including an offset release surface extending from said said post contacting inner surface to said upper anchor section such that a striking surface is defined which extends generally outwardly away from said post, said lower post attachment section also including at least one opening through said abutment wall and having a nail hole spaced in close proximity to the lower edge of said opening to define a breakable web portion of predetermined thickness between said opening and said nail hole whereby at least one nail is used to hold said anchor device against said post, and
c) said upper anchor section extends upwardly and outwardly away from said post and from said lower post attachment section at a predetermined angle such that said offset striking surface is presented to be struck from above by bar means to force said device down and break said web portion and bend said nail head so that said post is separated from and may be lifted free of said anchoring device.

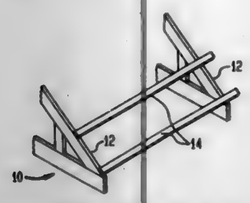
5,295,337
ISOLATION ELEMENT AND THE USE THEREOF AT AN ISOLATION ARRANGEMENT
Karl R. Massarsch, Ferievägen 25, S-161 51 Bromma, Sweden
PCT No. PCT/SE91/00324, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO91/19862, PCT Pub. Date Dec. 26, 1991
PCT Filed May 13, 1991, Ser. No. 955,900
Claims priority, application Sweden, Jun. 12, 1990, 9002095-9
Int. Cl.[5] E04B *1/92*
U.S. Cl. 52—169.11 21 Claims



1. Isolation element for isolation of vibrations and thermal energy comprising:
a plate-shaped block manufactured of a high density material and having side surfaces;
guiding means connected with the block for connecting the block to guide rods;
several cushion-shaped bodies manufactured of a low density material attached edge to edge to each other thereby forming joints therebetween and attached to at least one of the side surfaces of the block, the cushion-shaped bodies on the at least one of the side surfaces of the block being attached in first and second layers to the block, the first layer being located along the block with a lateral displacement relative to the second layer so joints formed between the cushion-shaped bodies in the first layer are located midway between joints formed between the cushion-shaped bodies of the second layer.

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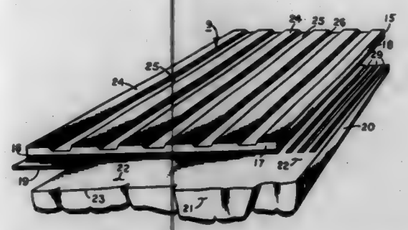
5,295,338
BUILDING PANEL ASSEMBLY
Kenneth J. Guffey, Manheim; Meredith W. Croucher, Jr., Landisville; Michael A. Huizinga, Columbia, and Russell H. Henk, Millersville, all of Pa., assignors to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Jan. 8, 1992, Ser. No. 817,787
Int. Cl.[5] E06B *3/54*
U.S. Cl. 52—478 5 Claims



1. A panel assembly for buildings and the like comprising in combination with structure supporting the assembly,
an array of elongated metal panels affixed directly to rafters in the support structure, each panel including a lower edge, an upper flange, and a web including (1) at least one outwardly protruding longitudinally extending stiffening rib, the stiffening rib adjacent the upper flange having an elongated longitudinally extending groove; and (2) an extended bearing portion for contacting the structure when the panel is fastened thereto,
a plurality of fasteners for attaching the panel assembly to the structure which pierce the extended bearing portion and hold the bearing portion in contact with the structure so that when panels are affixed to the structure with the lower edge of one panel overlapping the upper flange of another panel, the groove forms a space between overlapping panels to prevent water from flowing around the stiffening rib adjacent the upper flange, and
first and second flashings covering an eave defined by downward ends of a plurality of rafters included in the structure supporting the assembly, each flashing having a bend conforming the flashing to the eave, and an outwardly extending recurved lip at an edge of the first and second flashings, wherein the array of elongated metal panels are affixed directly to rafters in the support structure, without the need for sheathing or longitudinally extending purlins, and that braces the rafters or truss top chords and transfers horizontal loads such as wind and the like to the endwalls and sidewalls of the building by diaphragm action.

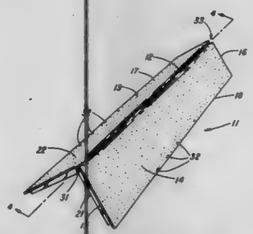
5,295,339
SIMULATED INDIVIDUAL SELF-VENTING OVERLAPPING PLASTIC SHAKE
Warren R. Manner, Omaha, Nebr., assignor to Manner Value Plastic, Inc., Omaha, Nebr.
Filed Aug. 10, 1992, Ser. No. 926,946
Int. Cl.[5] E04D *1/08, 1/18*
U.S. Cl. 52—518 10 Claims

1. A simulated shake shingle for replicating the random appearance of natural wood shakes, said shingle comprising;
a generally rectangular top plate having forward and rearward ends, said top plate being rearwardly tapered;
a generally rectangular bottom plate secured to and partially underlying said top plate and being rearwardly and transversely offset therefrom; and
said bottom plate being of size and shape for flush engagement against a flat roof surface and adapted for side to side engagement with bottom plates of six identical adjoining



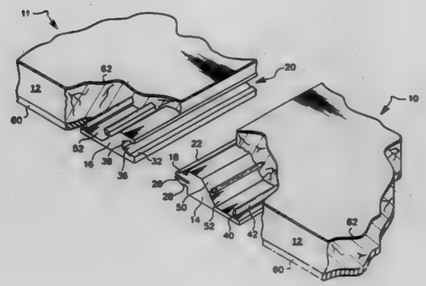
shingles positioned with the top plates thereof in adjacent nonoverlapping relation.

5,295,340
DIMENSIONAL SHINGLE FOR HIP, RIDGE AND RAKE PORTIONS OF A ROOF
Kenneth E. Collins, Quarts Hill, Calif., assignor to Pacific Coast Building Products, Inc., Sacramento, Calif.
Filed Apr. 5, 1993, Ser. No. 43,947
Int. Cl.[5] E04D *1/00*
U.S. Cl. 52—518 13 Claims



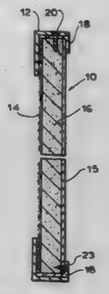
1. A hip, ridge and rake shingle comprising:
a. a top cover sheet, substantially rectangular in top plan, said top cover sheet being preformed into an inverted V-shape in cross-section and having a pair of side panels extending from a bendable median longitudinal peak to longitudinal bottom lateral edges, said side panels of said top cover sheet including a front end portion, a rear end portion, an upper surface and a lower surface; and,
b. a flexible and resilient substrate, substantially rectangular in bottom plan, said substrate being mounted on said lower surface of said top cover, said substrate having a leading end portion, located adjacent said front end portion of said side panels of said top cover sheet, a trailing end portion, located adjacent said rear end portion of said side panels of said top cover sheet, and a bottom surface, said substrate being preformed so as to have an inverted, V-shaped cross-section with a median longitudinal peak and bottom lateral edges and having a length and width less than the respective length and width of said top cover, so that said top cover sheet extends beyond the perimeter of said substrate to form an overhang around said perimeter, said leading end portion of said substrate being of substantially greater thickness than the thickness of said top cover, said substrate having a thickness tapering from said leading end portion of said substrate along the length thereof toward said trailing end portion, whereby said side panels of said cover sheet and said substrate are adapted to be bent around respective to conform to the configuration of an underlying hip, ridge, or rake.

5,295,341
SNAP-TOGETHER FLOORING SYSTEM
Matsuji Kajiwara, Bellevue, Wash., assignor to Nikken Seattle, Inc., Tukwila, Wash.
Filed Jul. 10, 1992, Ser. No. 911,986
Int. Cl.[5] E04C *1/30*
U.S. Cl. 52—586.2 9 Claims



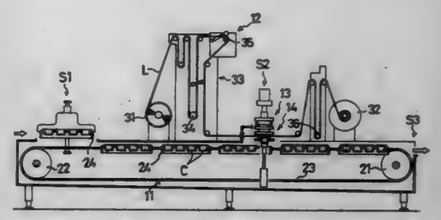
7. A flooring having a base member having four peripheral outer edges, a top side, and an underside, a first connector attached to one outer edge and having an elongated elastically compressible tongue, the tongue having a first transverse width when in its normal condition and a second smaller transverse width when compressed, another of said outer edges having a groove, said groove having an inner opening and an outer opening greater in transverse width than said inner opening, said tongue normal width in its normal condition being greater than said groove outer opening but smaller than said groove outer opening when the tongue is compressed;
said tongue having a forward end with forwardly converging sidewalls separated by a slot, the sidewalls terminating rearwardly in rear locking surfaces substantially transverse to said tongue and at least ninety degrees at its forward angle to the path of insertion between the tongue and the groove, said groove having a forward end with forwardly diverging sidewalls, said groove sidewalls terminating rearwardly in intermediate locking surfaces substantially transverse to said groove and also at least ninety degrees at its forward angle to the path of insertion between the tongue and the groove, said tongue slot lying along the path of insertion between the tongue sidewalls to allow the tongue sidewalls to elastically bend toward one another, wherein said tongue sidewalls bend toward one another to reduce the space between the tongue sidewalls so that the tongue sidewalls pass inwardly in the groove until the tongue rear locking surfaces pass the groove intermediate locking surfaces and then the tongue expands so that the tongue rear locking surfaces overlap and abut said groove intermediate locking surfaces, said mating tongues and grooves extending for substantially the entire width and length of said surface sheets, said groove having an outer opening with inwardly and forwardly converging sidewalls, and said tongue having rearward sidewalls also converging inwardly and forwardly and mating with said groove outer opening sidewalls.

5,295,342
DISPLAY PANEL HAVING DUAL SECUREMENT MEANS
Bonnie Roche, 17 W. 54th St., New York, N.Y. 10019, and Samuel Farber, New York, N.Y., assignors to Bonnie Roche, New York, N.Y.
Filed Nov. 22, 1989, Ser. No. 491,661
Int. Cl.[5] E04B *1/61*
U.S. Cl. 52—764 20 Claims



1. A display panel comprising:
a penetrating object permeable panel; and
a magnet attractive apertured mesh material disposed on a surface of said permeable panel, said apertured material being exposed to view and being adapted to receive magnetic means for securing an item to be displayed on the display panel and further having an aperture size such that the permeable panel is adapted to receive a penetrating object for securing an item to be displayed on the display panel through an aperture of the apertured material, said apertured material being such that a penetrating object will be directed into an aperture of the apertured material regardless of the position of said penetrating object over the apertured material.

5,295,343
APPARATUS FOR SEALING CONTAINERS
Michio Ueda; Tetsuya Iuchi; Masao Nobuta; Tadashi Mifune, and Seiji Hashimoto, all of Itano, Japan, assignors to Shikoku Kakoki Co., Ltd., Itano, Japan
Filed Mar. 5, 1993, Ser. No. 27,491
Claims priority, application Japan, Mar. 6, 1992, 4-011440[U]
Int. Cl.[5] B65B *7/28, 61/06*
U.S. Cl. 53—329.5 5 Claims



1. An apparatus for sealing containers comprising:
conveyor means for transporting the containers,
sealing means for sealing an opening edge portion of each of the containers with a closure material supplied adjacent to the container during transport by the conveyor means, and
trimming means for blanking out a closure from the closure material affixed to the container, along the container opening edge portion, the trimming means having a lifter

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for lifting the container from a path of transport of the container, a holder having a support for supporting the opening edge portion of the container lifted by the lifter and a cutter clearance groove formed externally of the support, and a cutter movable upward and downward so as to bring a cutting edge thereof into and out of the cutter clearance groove.

5,295,344

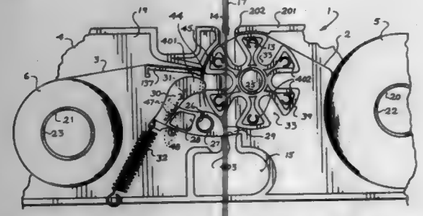
Patent Not Issued For This Number

5,295,345

BAG SEALER

Herman W. J. Ter Haar, Bodegraven, Netherlands, assignor to Henkel Nederland B.V., Netherlands

Filed Nov. 19, 1991, Ser. No. 794,470
Int. Cl.[5] B65B *51/06*
U.S. Cl. 53—583 **10 Claims**



1. An apparatus for binding an article with adhesive tape comprising:
- a housing having a cavity bounded by a front wall and a rear wall for accommodating a supply of adhesive material;
- means for guiding said adhesive material;
- mans for transporting an article at least along and against said adhesive material;
- rotatable star wheel, said star wheel having a number of substantially radial recesses disposed at mutually equal angular distances, and a peripheral surface, said star wheel mounted to said housing between two mutually registered open channels in the front wall and rear wall of said housing, such that an article for binding may be transported from the top to the bottom of the housing through said channels;
- a tilt member, said tilt member located adjacent said star wheel and extending between said channels, said tilt member having an actuating part movably pivotal about a pivot axis towards and away from said star wheel, said tilt member having a spring means for releasably urging said tilt member to a rest position from which the tilt member may be pivoted to an active position;
- cutting means actuable by a through-fed article engaging said actuating part for cutting said adhesive material as said article is passed through said channels, said cutting means affixed to said tilt member and adjacent to said star wheel such that said cutting means is in an extreme cutting position for cutting said adhesive material when said tilt member is pivoted to an active position by a through-fed article engaging said actuating part;
- stop means configured to limit the displacement of said tilt member such that said cutting means is out of engagement with said peripheral surface of said star wheel when said tilt member is pivoted to an active position, said stop means comprising a first stopper cam affixed to said tilt member and at least one second stopper cam affixed to said star wheel, such that the first and second stopper cams contact as said tilt member is pivoted to an active position to limit the displacement of the tilt member and cutting means;
- wherein said adhesive material is guided over the star wheel and said star wheel is positioned such that an article for binding engages in a recess opening of said star wheel, the opening of the recess being situated between the channels such that as the star wheel is rotated, the article is bound with the adhesive material and the actuating part of said tilt member releases the tilt member from a rest position to an active position such that the cutting means engages the adhesive material and said stop means limits the displacements of the cutting means such that the cutting means is out of engagement with said peripheral surface of said star wheel as said adhesive material binds the article.

5,295,346

METAL CORDS FOR RUBBER REINFORCEMENT AND TIRES USING THE SAME

Motonori Bundo, Higashimurayama, and Kazuma Morotomi, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,131
Claims priority, application Japan, Mar. 6, 1991, 3-65540
Int. Cl.[5] D02G *3/48*
U.S. Cl. 57—236 **3 Claims**



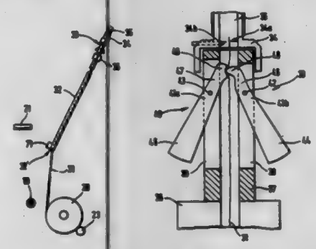
1. A metal cord formed by twisting two metal filaments at the same pitch, characterized in that a twisting angle α_1 is represented by an equation (1) of $75° \leqq \alpha_1 \leqq 84.5°$ and said filaments are contacted with each other at two positions per one twisting pitch.

5,295,347

PROCESS AND AN ARRANGEMENT FOR THE STRENGHTENING OF AN END PORTION OF A YARN

Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Suessen, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 871,121
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1991, 4114069
Int. Cl.[5] D01H *1/20, 15/00, 13/18*
U.S. Cl. 57—278 **34 Claims**



16. An arrangement for strengthening of an end portion of a yarn which is produced at a spinning station of a spinning machine comprising a plurality of such spinning stations and which, after the interruption of the spinning operation, extends between a stopped spool package and a suction withdrawal device assigned to the spinning station, said arrangement comprising:

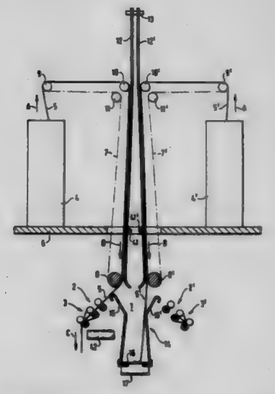
a suction withdrawal pipe which is connected downstream of the suction withdrawal device of the spinning station;
- spool package drive uncoupling devices for uncoupling a drive of a spool package receiving the spun yarn;
- a controllable gripping element selectively grippingly engageable with the yarn projecting into the withdrawal pipe;
- guiding devices for guiding the yarn away from the withdrawal pipe; and
- a twisting device for twisting the yarn end portion of the yarn which leads onto the spool package to thereby strengthen the yarn end portion by applying a true twist to said yarn end portion while it is in an essentially stationary position.

5,295,348

PROCESS AND APPARATUS FOR START SPINNING AT A MULTI-SPINNING STATION SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,867
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4111000
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—279 **24 Claims**



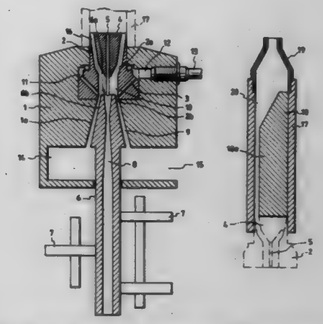
1. A spinning machine comprising:
- a plurality of spinning stations for spinning sliver into yarn, each spinning station including a drafting unit,
- transport devices for transporting sliver from silver supply cans to the spinning stations, and
- receiving devices disposed downstream of the transport devices for receiving the slivers, said receiving devices being arranged outside the normal traveling path of the sliver from the transport devices to the drafting units of the spinning stations, said receiving devices including apparatus for removal of sliver deposited therein,
- whereby start spinning of the spinning machine is facilitated with removal of the slivers from the receiving devices and placement thereof in the spinning stations at a position upstream of the spinning station drafting units.

5,295,349

INTRODUCTION DEVICE FOR A SPINNING APPARATUS

Akira Okamoto, Jyoyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 28, 1992, Ser. No. 920,789
Claims priority, application Japan, Jul. 30, 1991, 3-212748
Int. Cl.[5] D01H *5/28, 1/115*
U.S. Cl. 57—333 **10 Claims**



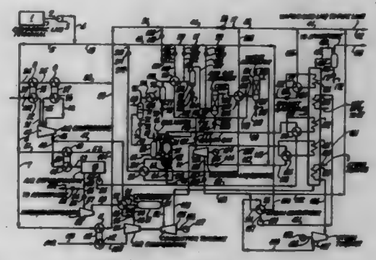
1. In a spinning system having a draft device for feeding a fiber bundle, a spinning apparatus comprising:
- a nozzle block having a nozzle for directing a whirling air stream toward the fiber bundle fed from the draft device,
- a spindle defining an inlet and a first fiber bundle passage,
- a guide member having a forward end protruding into the inlet of the spindle, and
- an introduction device for guiding and separating the fiber bundle fed from the draft device, the introduction device being positioned at a inlet side of the nozzle block and defining a longitudinal axis and a second fiber bundle passage divided into a plurality of sub-passages that are substantially parallel to the longitudinal axis.

5,295,350

COMBINED POWER CYCLE WITH LIQUEFIED NATURAL GAS (LNG) AND SYNTHESIS OR FUEL GAS

Edward T. Child, Tarrytown; William L. Lafferty, Jr., Hopewell Junction; Robert M. Suggitt, Wappingers Falls, and Frederick C. Jahnke, Rye, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

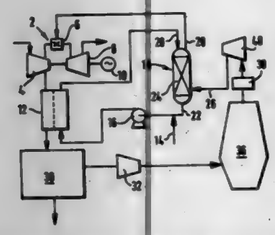
Filed Jun. 26, 1992, Ser. No. 904,635
Int. Cl.[5] F02C *1/00;* **F02G** *3/00*
U.S. Cl. 60—39.02 **18 Claims**



1. A process for the generation of power comprising:
(1) cooling air in the pre, inter, and after coolers of an air compressor for an air separation unit by indirect heat exchange with liquefied natural gas (LNG), thereby warming said LNG;

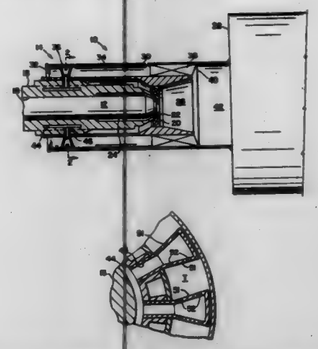
(2) separating the cooled air from (1) in an air separation unit into a liquid stream of oxygen and a gaseous stream of nitrogen;
(3) heating and gasifying said oxygen stream by indirect heat exchange with a heat transfer fluid; wherein said heat transfer fluid is heated by indirect heat exchange with the exhaust gas from a gas turbine;
(4) reacting said gaseous stream of oxygen from (3) with a fuel feedstock selected from the group consisting of liquid hydrocarbonaceous fuel, solid carbonaceous fuel, gaseous hydrocarbon fuel, and mixtures thereof in the reaction zone of a partial oxidation gas generator with a temperature moderator to produce a hot effluent stream of fuel gas, and cooling, cleaning, purifying, and saturating with water said effluent stream of fuel gas; and
(5) burning said effluent stream of fuel gas from (4) or said effluent stream of fuel gas in admixture with LNG from (1) with compressed air in the combustor of a gas turbine, and discharging the resulting exhaust gas through an expansion turbine for the production of mechanical power and/or electrical energy.

5,295,351
AIR SEPARATION
Thomas Rathbone, Farnham, England, assignor to The BOC Group, plc, England
Filed Apr. 6, 1993, Ser. No. 43,430
Claims priority, application United Kingdom, Apr. 22, 1992, 9208646
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.05 **15 Claims**



1. An integrated method of separating air and generating power, comprising:
a) compressing air without removing at least part of the heat of compression thereby generated;
b) dividing the compressed air flow into a major stream and a minor stream;
c) cooling the compressed minor air stream by heat exchange with a pressurized stream of water;
d) separating the minor air stream into oxygen and nitrogen;
e) moisturizing a stream of compressed low grade fuel gas by introducing it into said pressurized stream of water downstream of the heat exchange between the stream of water and the minor air stream;
f) burning said stream of compressed low grade fuel gas utilizing said major air stream to support its combustion; and
g) expanding with the performance of external work the combustion gases from the burning of the gaseous fuel stream, the work performed comprising the generation of said power.

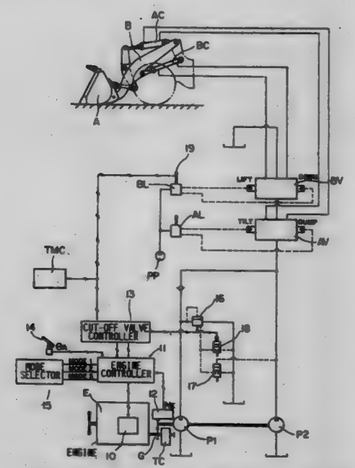
5,295,352
DUAL FUEL INJECTOR WITH PREMIXING CAPABILITY FOR LOW EMISSIONS COMBUSTION
Kenneth W. Beebe, Galway, N.Y., and Victor R. Gardy, Shelburne, Vt., assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 4, 1992, Ser. No. 924,507
Int. Cl.[5] F02C *7/26*
U.S. Cl. 60—39.06 **19 Claims**



1. A fuel/air injector for a combustor of a gas turbine comprising:
a fuel/air nozzle including a plenum having a predetermined cross-sectional flow area, an inlet to said plenum for receiving air under pressure, a pre-mixing chamber downstream of said air inlet, a fuel inlet intermediate said pre-mixing chamber and said inlet and an outlet downstream of said pre-mixing chamber, for flowing air through said air inlet and pre-mixed fuel and air through said plenum and said outlet into the combustor;
said fuel inlet comprising a plurality of tubes within said plenum and disposed in a plane extending substantially normal to the direction of flow through sad plenum, said tubes being spaced substantially uniformly one from the other in said plane to define a plurality of throat areas between the tubes in said plenum;
means for supplying fuel to said tubes;
said tubes being apertures for flowing fuel from said tubes into said throat areas of said plenum and in a direction substantially in the plane of said tubes, the throat areas defined between said tubes in said plenum defining in the aggregate a minimum throat area of said plenum so that a substantially uniform fuel/air mixture strength distribution obtains substantially at said throat areas and in said plane for flow through said pre-mixing chamber and said outlet into the combustor.

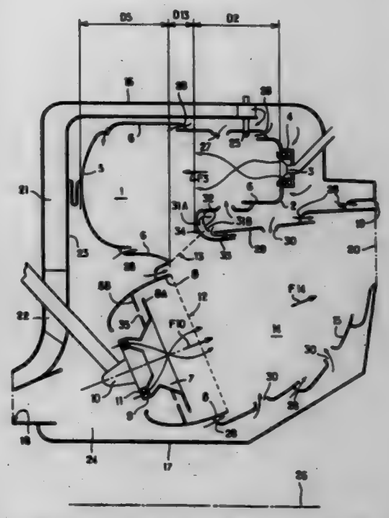
5,295,353
CONTROLLING ARRANGEMENT FOR TRAVELLING WORK VEHICLE
Masanori Ikari, Kawagoe, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho and Komatsu MEC Kabushiki Kaisha, both of Tokyo, Japan
PCT No. PCT/JP91/00760, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/19100, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 5, 1991, Ser. No. 941,440
Claims priority, application Japan, Jun. 6, 1990, 2-146167
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—431 **5 Claims**

1. A control system for a vehicle having an engine which simultaneously supplies power to a drive system and a hydraulic working system via an output shaft, said control system comprising:
an electronic governor coupled to said engine for selectively controlling output characteristics thereof;
a governor controller coupled to said governor for controlling the governor in accordance with a plurality of input signals;
first and second fixed capacity hydraulic pumps mechanically coupled to said output shaft for supplying pressurized hydraulic oil to said hydraulic working system;
a torque converter for mechanically coupling said output shaft to said drive system;
a user operable selection switch means cooperating with said controller for manually selecting first, second and third operational modes which respectively represent desired engine output characteristics;
a pilot-type pressure relief valve means serially coupled between a discharge side of said first pump and a sump;
a first changeover valve means coupled to a pilot line of said pressure relief valve means for permitting said pressure relief valve means to communicate said discharge side of said first pump with said sump when said pressurized



hydraulic oil at a discharge side of said second pump exceeds a predetermined value;
a second changeover valve means coupled to said pilot line of said pressure relief valve means for permitting said pressure relief valve means to communicate said discharge side of said first pump with said sump when said second changeover valve means is activated;
speed selection switch means defining first and second speed positions;
controlling means responsive to signals received from said governor controller and said speed selection switch means for sending signals to and effecting activation of said second changeover valve means, said controlling means effecting activation of said second changeover valve means upon receiving a signal from the governor controller that the selection switch means is in said third mode, and said controlling means sending a signal to said second changeover valve means to cause activation thereof upon receiving both a signal from said governor controller that the selection switch means is in said second mode and a signal from the speed selection switch means that the latter is in a selected said speed position.

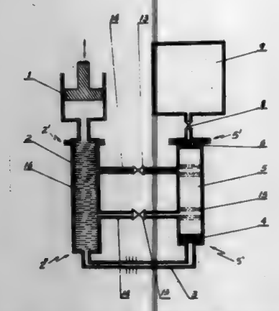
5,295,354
LOW POLLUTION COMBUSTION CHAMBER FOR A TURBOJET ENGINE
Gérard Y. G. Barbier, Morangis; Xavier, M. H. Bardey, Chartrettes; Michel A. A. Desaulty, Vert Saint Denis, and Serge M. Meunier, Le Chatelet en Brie, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.), Valin, France
Filed Feb. 13, 1992, Ser. No. 834,820
Claims priority, application France, Feb. 13, 1991, 91 01640
Int. Cl.[5] F02C *3/14*
U.S. Cl. 60—731 **13 Claims**



1. A low pollution combustion chamber assembly for a gas turbine engine comprising:
a) first wall means bounding a first combustion chamber for low power operation having first fuel injector means, a first primary oxidizer intake located so as to mix injected fuel with the oxidizer in the first combustion chamber, ignition means to ignite the fuel/oxidizer mixture, and defining a first exhaust orifice, the first wall means defining a plurality of first dilution oxidizer intake orifices to allow oxidizer to pass therethrough into the first combustion chamber;
b) second wall means bounding a second combustion chamber for full power operation arranged in a generally parallel, counter-flow arrangement with respect to the first combustion chamber, the second combustion chamber having second fuel injection means, a second primary oxidizer intake located so as to mix injected fuel with the oxidizer in the second combustion chamber, and defining a second exhaust orifice such that exhaust gases from one combustion chamber do not communicate with the other combustion chamber, the second wall means defining no dilution intake orifices; and,
c) an exhaust chamber communicating directly with both of the first and second exhaust orifices and defining a third exhaust orifice to exhaust burned combustion gases from the combustion chamber assembly, the third wall means defining a plurality of second dilution oxidizer intake orifices to allow oxidizer to pass therethrough into the exhaust chamber.

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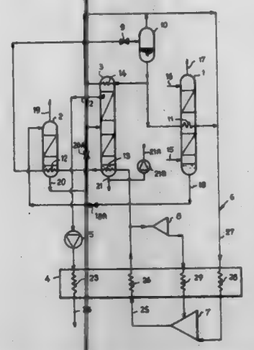
5,295,355
MULTI-BYPASS PULSE TUBE REFRIGERATOR
Yuan Zhou; Junjie Wang; Wenxin Zhu, and Jinghui Cai, all of Beijing, China, assignors to Cryogenic Laboratory of Chinese Academy of Sciences, Beijing, China
Filed Dec. 29, 1992, Ser. No. 998,806
Claims priority, application China, Jan. 4, 1992, 92100011
Int. Cl.[5] F25B 9/00
U.S. Cl. 62—6 29 Claims



1. A multi-bypass pulse tube refrigerator comprising a pressure wave generator, a regenerator, a heat exchanger of cold ends (cold finger), a pulse tube, an orifice means and a reservoir volume, connecting in serial; matrix material made of material of high heat capacity is packed in the regenerator; rectifying means are arranged at the ends of the pulse tube; the outlet of the pressure wave generator is connected with the hot end of the regenerator; the connection between the cold ends of the regenerator and the pulse tube forms the heat exchanger of cold ends; the reservoir volume is connected with the hot end of the pulse tube through the orifice means; wherein,
resistance means are properly arranged in the pulse tube, so as to for gas to pass through the pulse tube uniformly and smoothly;
at least one bypass with a throttling means is provided to connect the regenerator and the pulse tube at the middle portions of the regenerator and the pulse tube.

5,295,356
PROCESS AND APPARATUS FOR THE PRODUCTION OF CARBON MONOXIDE AND HYDROGEN
Jean Billy, Le Plessis Trevise, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Filed Sep. 8, 1992, Ser. No. 942,148
Claims priority, application France, Sep. 11, 1991, 91 11197
Int. Cl.[5] F25J 3/00
U.S. Cl. 62—20 4 Claims

1. Process for the production of carbon monoxide and hydrogen from a gaseous mixture comprising these two substances and methane comprising the steps of:
washing an initial gaseous mixture of carbon monoxide and hydrogen with liquid methane in a first column to obtain gaseous hydrogen and a washing liquid;
separating hydrogen dissolved in the washing liquid in a second column to obtain a remaining liquid comprising carbon monoxide and methane;
separating the remaining liquid by distillation in a third column to withdraw carbon monoxide in liquid form for production at a top section of said third column;
pressurizing the liquid carbon monoxide to a predetermined pressure of utilization by pumping means;
heating the liquid carbon monoxide under said utilization pressure; and



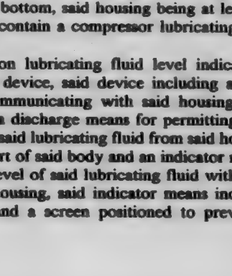
heating and/or cooling each of said columns by means of a closed refrigerating cycle.

5,295,357
METHOD FOR LUBRICATING COMPRESSION TYPE REFRIGERATING SYSTEM
Masato Kaneko, Ichihara, Japan, assignor to Idemitsu Kosan Co, Ltd., Tokyo, Japan
Filed Sep. 17, 1992, Ser. No. 945,924
Claims priority, application Japan, Oct. 31, 1991, 3-286810; Nov. 25, 1991, 3-308137
Int. Cl.[5] C09K 5/04
U.S. Cl. 62—84 10 Claims

1. A method for lubricating a compression type refrigerating system comprising a compressor, a condensor, an expansion valve or a capillary tube and an evaporator, which method comprises using a mixed refrigerant comprising 40 to 95% by weight of 1,1,1,2-tetrafluoroethane and 60 to 5% by weight of 1,1-dichloro-2,2,2-trifluoroethane as the essential component, in combination with a hydrocarbon compound as a lubricant having a kinematic viscosity of 5 to 500 cSt at 40° C. and an interfacial tension of 20 dyne/cm or above in said system.

5,295,358
CONTINUOUS CONSTANT PRESSURE SYSTEM FOR STAGING SOLID-VAPOR COMPOUNDS
Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.
Division of Ser. No. 716,065, Jun. 17, 1991, Pat. No. 5,241,831, which is a continuation-in-part of Ser. No. 436,431, Nov. 14, 1989, Pat. No. 5,025,635. This application May 27, 1993, Ser. No. 68,655
Int. Cl.[5] F25B 17/00
U.S. Cl. 62—106 9 Claims

9. A process for staging solid-vapor compounds comprising:
alternately adsorbing and desorbing a gaseous reactant from first and second reactors, respectively, each reactor containing a plurality of two or more different compounds comprising a solid reactant and a gaseous reactant adsorbed thereon or desorbed therefrom, wherein each of said compounds has a different gaseous reactant vapor pressure, substantially independent of the concentration of gaseous reactant, said compounds arranged in successive order of gaseous reactant vapor pressure,
supplying a heat transfer fluid at a first temperature along one of said reactors in successive thermal communication with said first set of compounds resulting in a first pressure, whereby said compounds desorb said gaseous reactant in endothermic reactions, and directing desorbed gaseous reactant from the desorbing reactor to a condenser,
supplying a heat transfer fluid at a second temperature, lower than said first temperature, along the other of said reactors in successive thermal communication with said second set of compounds, directing gaseous reactant from an evaporator to said other reactor, and operating said other reactor at a second pressure whereby said compounds therein adsorb said gaseous reactant in exothermic reactions, and
directing a liquid flow of condensed gaseous reactant from said condenser to said evaporator and concurrently directing a gaseous flow of gaseous reactant from said evaporator to said adsorbing reactor through a heat exchanger and exchanging heat between said liquid stream and said gaseous stream.

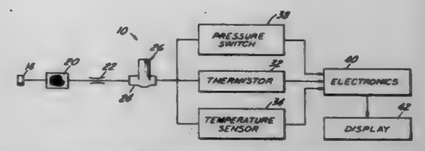


5,295,359
COMBINATION FLUID LEVEL INDICATOR AND DISCHARGE DEVICE
John H. Reilly, Jr., Rosemont, Pa.; Michel J. Maniez, Flemington, N.J., and Bryan M. Peckjian, Philadelphia, Pa., assignors to National Refrigeration Products, Bensalem, Pa.
Filed Sep. 21, 1992, Ser. No. 948,369
Int. Cl.[5] F25B 49/02
U.S. Cl. 62—125 20 Claims



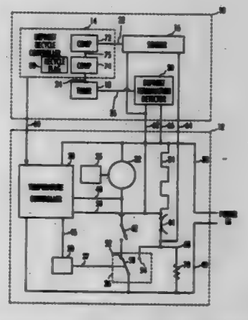
3. A compressor for receiving a gas at a first pressure and expelling said gas at a second pressure higher than said first pressure, said compressor comprising:
a housing having a top, a bottom, and at least one side including an aperture extending therethrough located proximate said bottom, said housing being at least sufficiently sealed to contain a compressor lubricating fluid therein; and
a combination lubricating fluid level indicator and fluid discharge device, said device including a tubular body fluidly communicating with said housing through said aperture, a discharge means for permitting selective discharge of said lubricating fluid from said housing through at least part of said body and an indicator means for indicating a level of said lubricating fluid within said fluidly coupled housing, said indicator means including a float member and a screen positioned to prevent said float member from being discharged through said discharge means.

5,295,360
APPARATUS FOR IDENTIFYING AND DISTINGUISHING DIFFERENT REFRIGERANTS
Daniel L. Olds, and Sandra Snyder, both of Bryan, Ohio, assignors to SPX Corporation, Muskegon, Mich.
Filed Apr. 12, 1993, Ser. No. 47,263
Int. Cl.[5] G01N 25/00
U.S. Cl. 62—127 13 Claims



1. Apparatus for identifying and distinguishing between at least two types of refrigerant comprising:
means for containing a refrigerant sample at controlled vapor pressure,
first means for providing a first electrical signal as a function of combined effect of thermal conductivity and temperature of a refrigerant sample in said sample-containing means,
second means for providing a second electrical signal as a function of temperature of the refrigerant sample in said sample-containing means, and
means for indicating type of refrigerant in said containing means as a function of said first and second signals.

5,295,361
DEFROST RECYCLE DEVICE
Robert M. Novak, Manitowoc, and Gary D. Fredell, Two Rivers, both of Wis., assignors to Paragon Electric Company, Inc., Two Rivers, Wis.
Filed Apr. 8, 1993, Ser. No. 45,048
Int. Cl.[5] F25B 47/02
U.S. Cl. 62—128 38 Claims



1. An apparatus for use with a defrost control device for indicating an occurrence of a premature termination of a defrost operation, said defrost control device generating a termination indication when said defrost operation terminates, the apparatus comprising:
a sensing means operatively connected with said defrost control device for sensing said termination indication;
a first measuring means for measuring one of a first or a

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second parameter associated with said defrost operation as a first measured parameter;

a second measuring means for measuring the other of said first or second parameters associated with said defrost operation as a second measured parameter;

said first measuring means, said second measuring means, and said sensing means being operatively connected; said second measuring means generating a measured second parameter value indicating said second measured parameter as measured substantially when said first measured parameter substantially equals a first predetermined value;

a comparing means operatively connected with said second measuring means for comparing said measured second parameter value with a second predetermined value; and

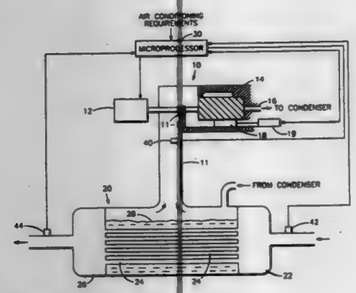
a signal generating means operatively connected with said comparing means for generating a premature termination signal when said measured second parameter value has a particular relationship with said second predetermined value.

5,295,362

ELECTRONIC SLIDE VALVE BLOCK

David N. Shaw, Glastonbury, Conn., and Edward A. Huenniger, Liverpool, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 6, 1993, Ser. No. 43,415
Int. Cl.[5] F25B *43/02*
U.S. Cl. 62—193 **8 Claims**



1. A refrigeration system including:

evaporator means containing liquid refrigerant and including means for supplying liquid refrigerant to said evaporator means;

screw compressor means including a suction line connected to said evaporator means for supplying gaseous refrigerant to said screw compressor means;

electronic slide valve means for controlling capacity of said screw compressor means;

means for supplying heated fluid to said evaporator means to cause boiling of said liquid refrigerant and thereby cooling said heated fluid;

means for withdrawing said cooled fluid from said evaporator means;

means for providing a signal representative of a condition representing oil feeding back from said compressor means to said evaporator means;

means for providing a signal representative of the temperature of said gaseous refrigerant;

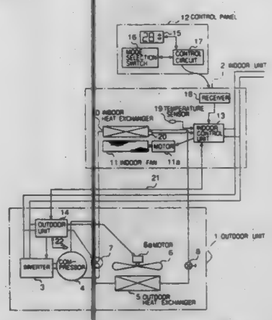
means for comparing said signals representative of the feeding back of oil and the temperature of said gaseous refrigerant and for blocking further unloading of said screw compressor means by said electronic slide valve means when said compared signals exceed of a predetermined value.

5,295,363

METHOD AND APPARATUS OF CONTROLLING A COMPRESSOR OF AN AIR CONDITIONER

Naoki Oomura, Fuji, and Atsushi Nagasawa, Mishima, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 9, 1992, Ser. No. 959,097
Claims priority, application Japan, Oct. 11, 1991, 3-263992
Int. Cl.[5] G05D *23/19*
U.S. Cl. 62—227 **9 Claims**



1. A method of controlling an air conditioner, comprising the steps of:

(a) detecting a temperature of an indoor heat exchanger and providing a temperature signal representing the detected temperature of the indoor heat exchanger;

(b) on the basis of the temperature signal, judging as to in which temperature zone among at least four temperature zones the detected temperature of the indoor heat exchanger is;

(c) when the detected temperature of the indoor heat exchanger is in the lowest temperature zone, providing an inverter with a first frequency control signal for increasing an output frequency of the inverter at a first predetermined speed;

(d) when the detected temperature of the indoor heat exchanger is in a lower intermediate temperature zone, providing the inverter with a second frequency control signal for increasing an output frequency of the inverter at a speed slower than the first predetermined speed;

(e) when the detected temperature of the indoor heat exchanger is in an upper intermediate temperature zone below a set temperature, providing the inverter with a third frequency control signal for maintaining a current output frequency of the inverter; and

(f) when the detected temperature of the indoor heat exchanger is in the highest temperature zone above the set temperature, providing the inverter with a fourth frequency control signal for decreasing the output frequency of the inverter at a second predetermined speed, whereby hunting of the output frequency is suppressed and the temperature of the indoor heat exchanger is controlled to the set temperature as close as possible.

5,295,364

REFRIGERATION PULL-DOWN TECHNIQUE

Greg Truckenbrod, Fridley, Paul C. Wacker, Plymouth, both of Minn., assignor to Thermo King Corporation and Honeywell, Inc., both of Minneapolis, Minn.

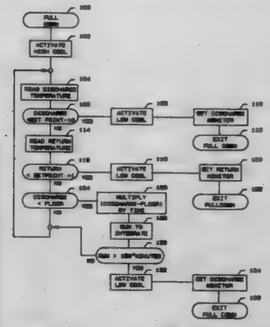
Continuation of Ser. No. 861,244, Mar. 31, 1992, abandoned, which is a continuation of Ser. No. 641,293, Jan. 15, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 91,465
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—209 **15 Claims**

1. A refrigeration system control apparatus comprising:

a. means for initiating a pull down mode of operation;

b. a plurality of sensors for monitority a plurality of parameters during said pull down mode wherein said plurality of sensors includes a discharge air temperature sensor;

c. means for comparing each of said plurality of parameters to a different predetermined standard to produce a plurality of comparisons including second means for determining whether discharge air temperature is less than a predetermined set point minus ten degrees and including second



means coupled to said second determining means for deactivating said pull down mode whenever said second determining means indicates that said discharge air temperature is less than a predetermined set point minus ten degrees; and

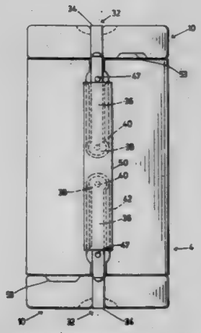
means responsively coupled to said comparing means for terminating said pull down mode in response to a one of said plurality of comparisons.

5,295,365

INVERTIBLE COOLER

Thomas A. Redford, 139 Munro Crescent, Uxbridge, Ontario, Canada L9P 1L6

Filed Oct. 27, 1992, Ser. No. 967,024
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—265 **10 Claims**



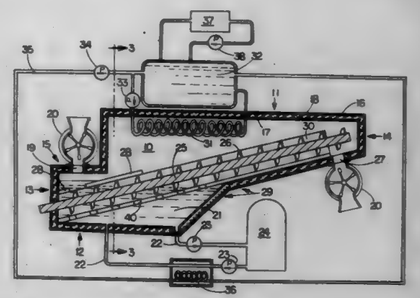
1. A portable cooler for food and beverage articles to be cooled, having a generally tubular open ended body defining a chamber extending from end to end within the cooler for the reception in sequence of both ice and articles to be cooled, said chamber providing a continuous passage for ice water from end to end within the cooler, the body having inner and outer side walls, and a layer of thermal insulation between said inner and outer side walls, closures for the chamber with inner and outer closure walls and a layer of insulation between said closure walls, peripheral sealing components at each end of the tubular body engageable with peripheral sealing components on said closures to form a watertight seal, carrier means connected to the body to support the latter with either end closure upward, and means to secure said closures with their peripheral sealing components in sealing engagement with the sealing components on the body, each closure being configured to act either as a base retaining ice, ice water and articles to be cooled within the body or as a lid of the cooler according to whether the end of the body to which it is applied is downward or upward, the cooler being convertible, by inversion to place a different end of the body downward, between a cooling mode in which ice overlays articles to be cooled and ice water drained from the ice, and an access mode in which the articles overlay the ice and ice water.

5,295,366

SEALED REFRIGERATION IMMERSION VESSEL

Gaudencio Lopez; Raul A. Arroyo; Darrell C. Nugent, and Charles B. Lovett, all of 1465 Ellerd Dr., Turlock, Calif. 95380

Filed Jan. 19, 1993, Ser. No. 5,447
Int. Cl.[5] F25D *25/04*
U.S. Cl. 62—266 **7 Claims**



1. An apparatus for rapidly freezing solid materials by direct immersion into liquid refrigerants, said apparatus comprising in combination:

a. a sealed elongated vessel of generally cross-sectional inverted "U" configuration, having a horizontally linear top, essentially vertical sides, entrance and exit ends, a bottom with inclined base rising diagonally towards its exit end, a plateau region of said entrance end;

b. an entrance port in said plateau region through which solid materials enter said vessel by gravity;

c. a reservoir located in the vessel's interior bottom beneath the entrance port for containing liquid refrigerant into which the solid materials fall;

d. a linear auger, with auger blades, diagonally inclined upwardly parallel with the vessel's inclined base, the lower end of said auger positioned near the bottom of said reservoir within liquid refrigerant and beneath said entrance port;

e. a shroud covering a top portion of said auger blades positioned in the reservoir to trap and immerse less dense solid materials between said blades which would otherwise float in the liquid refrigerant;

f. a casing of cross-sectional "U" configuration but longitudinally linear surrounding but not in direct contact with linear sides and bottom of said auger blades, but not its linear top thereby allowing vaporization of refrigerant vapors into said vessel while partially enclosing and providing a channel for solid materials as they are advanced through the vessel by rotating auger blades while also providing a means for draining excess liquid refrigerant from the solid materials into the vessel's reservoir;

g. condensers in the vessel's upper interior for recondensing

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refrigerant vapors in the vessel, said condensers having hollow interior structures being supplied by a source external from the vessel with a liquid refrigerant of lower boiling point than the liquid refrigerant in the vessel's reservoir;

h. an exit port positioned in said inclined vessel bottom for discharging through which by gravity solid materials from said casing and auger blades into a rotary vane valve;

i. rotary vane valves, one connected externally to the entrance port and one connected externally to the exit port, for respectively receiving into and discharging from said vessel solid materials, said valves employing a means for preventing escape of refrigerant vapors from the vessel nor allowing atmospheric air into the vessel;

j. means in external communication with the reservoir of the vessel for filling, draining, storing and maintaining the temperature of the vessel's liquid refrigerant;

k. means for maintaining the temperature of liquid refrigerant in the vessel's reservoir at approximate minus 20 degrees Fahrenheit.

5,295,367

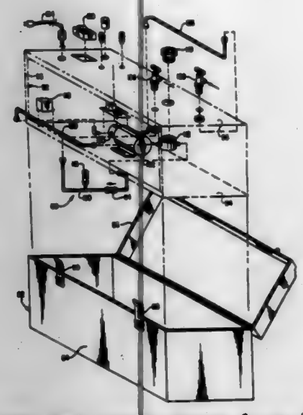
PORTABLE REFRIGERANT HANDLING APPARATUS AND ASSOCIATED METHODS

Robert L. Keltner, Scurry, Tex., assignor to Technical Chemical Company, Dallas, Tex.

Continuation-in-part of Ser. No. 715,429, Jun. 14, 1991, Pat. No. 5,168,720, which is a continuation-in-part of Ser. No. 588,561, Sep. 26, 1990, Pat. No. 5,117,641. This application Mar. 30, 1992, Ser. No. 860,088

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—292 **3 Claims**



1. Portable, hand carryable apparatus for use in flushing impurities from the interior of an air conditioning circuit having refrigerant inlet and outlet fittings, said apparatus comprising:

a housing having an open-topped base portion, a lid portion hingedly secured to the upper end of said base portion and having a carrying handle secured thereto, and latch means for releasably securing said lid portion to said base portion in a closed orientation over the open top of said base portion;

a drop-in tray structure removably insertable into said housing base portion through the open top thereof, said drop-in tray structure having a top wall, and a bottom wall spaced from and parallel to said top wall;

a refrigerant inlet valve secured to and projecting upwardly from said tray structure top wall, said inlet valve having an inlet and an outlet for respectively receiving and discharging a flow of refrigerant;

a refrigerant outlet valve secured to and projecting upwardly from said tray structure top wall, said outlet valve having an in inlet and an outlet for respectively receiving and discharging a flow of refrigerant,

whereby, with said drop-in tray structure operatively inserted into said housing base portion, said refrigerant inlet and outlet valves are made easily and rapidly accessible, for connection to the air conditioning circuit refrigerant inlet and outlet fittings, simply by opening said lid portion of said housing;

a liquid refrigerant pump mounted on said tray structure bottom wall and having an electric drive motor, an inlet, and an outlet; and

conduit means for essentially directly connecting said pump outlet to the inlet of said refrigerant outlet valve, and for essentially directly connecting said pump inlet to the outlet of said refrigerant inlet valve.

5,295,368

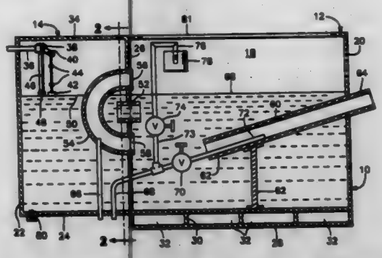
COLD LIQUID AND SLUSH ICE PRODUCER

Paul R. Franklin, P.O. Box 37978, Jacksonville, Fla. 32236-7978

Filed Nov. 10, 1992, Ser. No. 974,300

Int. Cl.[5] F25D *3/12*

U.S. Cl. 62—307 **8 Claims**



6. An apparatus for producing slush ice, said apparatus including tank means defining first and second tank areas having water inlet means in said second tank area operative to admit water, as needed, into said second tank area to maintain the water therein at least substantially to a predetermined level, communicating means communicating the interiors of said tank areas below said level for the free flow of water from said second tank area into said first tank area, a slush ice projection pipe including an upstream end opening within said first tank area below said level and a downstream end opening outwardly of said first tank area and elevated relative to said upstream end at least to said predetermined level, first pressurized liquid CO_2 discharge means operative to discharge pressurized liquid CO_2 into said projection pipe in a downstream direction, circulation conduit means including inlet and outlet ends opening into said first tank area with at least said inlet end disposed below said level and an intermediate length portion of said circulation conduit means disposed in said second tank area below said level, and second pressurized liquid CO_2 discharge means operative to discharge liquid CO_2 into said circulation conduit means in a downstream direction to effect water circulation from said first tank area, into and through said circulation conduit means and back into said first tank area while simultaneously cooling the water being circulated through said circulation conduit means, said first pressurized liquid CO_2 discharge means being operative to discharge liquid CO_2 into said pipe with sufficient volume and force to propel water and slush ice outwardly from the downstream end of said slush ice projection pipe.

5,295,369

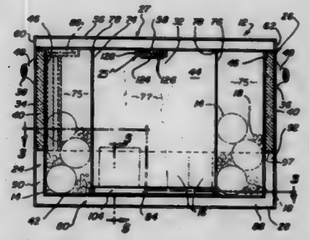
WATER AND ICE COOLER COMBINATION

Kenneth M. Garcia, 931 Riverview, Pueblo, Colo. 81006

Filed Jun. 15, 1992, Ser. No. 898,545

Int. Cl.[5] B67D *5/62*

U.S. Cl. 62—389 **18 Claims**



1. A water and ice cooler combination operable to provide wet and dry storage areas plus receiving, storing, cooling, and dispensing a fluid therefrom, comprising:

a) a main cooler container assembly having a primary housing assembly comprising a pair of oppositely opposed end wall members and side wall members with a storage cavity comprising two separator wall members, each spaced from and parallel to said opposing end wall members, thereby defining a dry storage area, between said separator wall members, and two wet storage areas defined between each of said separator wall members and one of said end wall members, said wet and dry storage areas being further bound by a bottom wall, said main cooler container further comprising an enclosure lid assembly pivotally connected thereto;

b) said primary housing assembly having a wall member cooperating with said bottom wall thereby defining a fluid container compartment;

c) a fluid supply assembly mounted in said primary housing assembly in contact with said storage cavity to be cooled therefrom; and

d) said fluid supply assembly having a fluid discharge assembly to selectively remove fluid therefrom.

5,295,370

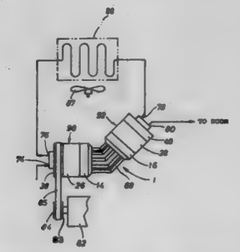
AIR CONDITIONER

Bobby D. Morris, 103 Lake Forest Dr., Greer, S.C. 29651

Filed Nov. 6, 1992, Ser. No. 972,818

Int. Cl.[5] F25D *9/00*

U.S. Cl. 62—403 **13 Claims**



1. An air conditioner including a compressing and expanding apparatus, comprising:

a fixed element defining first and second axes intersecting at a central region and including a first shaft projecting from said element along said first axis away from said region and a second shaft projecting from said element along said second axis away from said region;

a first cylinder block rotatably supported on said first shaft and a second cylinder block rotatably supported on said second shaft; each said cylinder block defining a plurality of cylinders each defining a longitudinal axis parallel to the axis of the associated shaft;

a plurality of pistons disposed one in each said cylinder for reciprocation therein;

a plurality of chambers defined in said plurality of cylinders by said plurality of pistons and said cylinder blocks;

a plurality of piston rods defining intersecting axes parallel to said elements intersecting axes and interconnecting pairs of said pistons one in each of said first and second cylinder blocks;

a compressing system, for taking gas into the plurality of chambers of said first cylinder block, and discharging compressed gas from an outlet aperture of said first cylinder block; and

an expanding system, for taking the compressed gas into the plurality of chambers of said second cylinder block, and for expanding said compressed gas, wherein

said compressed system and said expanding system operate as a result of reciprocation of said pistons in said cylinders resulting from rotation of said first and second cylinder blocks about said shafts.

5,295,371

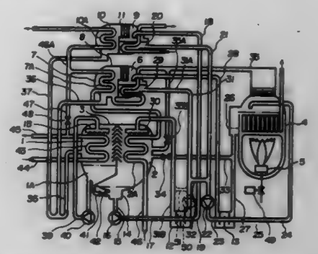
SINGLE-AND DOUBLE-EFFECT ABSORPTION REFRIGERATOR

Masayuki Oonou, and Kazuhiro Yoshii, both of Ora, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 6, 1992, Ser. No. 926,360

Int. Cl.[5] F25B *13/00*

U.S. Cl. 62—476 **7 Claims**



1. In an absorption refrigerator having: a first drum including an evaporator and an absorber; a high-temperature regenerator; a second drum including a low-temperature regenerator having a heat source which is vaporized liquid absorbent derived from the high-temperature regenerator and a condenser; a low-temperature heat exchanger; and a pump for circulating low-concentration liquid absorbent,

means for effecting a single-and double-effect absorption refrigerator comprising:

a third drum, including a preliminary low-temperature regenerator having a low-temperature heat source and a condenser;

a piping for low-concentration liquid absorbent extending from the absorber to the preliminary low-temperature regenerator through the pump for low-concentration liquid absorbent;

a piping for intermediate-concentration liquid absorbent having a pump for intermediate-concentration liquid absorbent and extending from the preliminary low-temperature regenerator to the high-temperature regenerator;

a pipe for high concentration liquid absorbent extending

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from said low temperature regenerator to said low-temperature heat exchanger; and

a pipe for liquid absorbent connecting a part of said piping for intermediate-concentration liquid absorbent provided on a drawing side of the pump for intermediate-concentration liquid absorbent to said pipe for high-concentration liquid absorbent.

5,295,372

WARP KNITTING MACHINE WITH A COMPENSATED GUIDE BAR

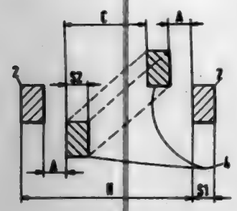
Rainer Kemper, and Karl Winter, both of Obertshausen, Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 928,778

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1991, 4127344

Int. Cl.[5] D04B *27/26*

U.S. Cl. 66—87 13 Claims



1. A warp knitting machine comprising:

a machine frame;

a plurality of needles arranged in a row and spaced from each other to form a plurality of needle spaces;

guide bar means including at least one guide bar having a longitudinal axis and a plurality of spaced guides, said guide bar means including means for (a) mounting said guide bar in said machine frame (b) allowing said guide bar to swing about an axis parallel to said longitudinal axis and (c) permitting shogging and longitudinal positioning of said guide bar to allow said plurality of guides to pass through said plurality of needle spaces as said guide bar swings; and

a drive arrangement for shogging said guide bar to perform underlaps and overlaps, said drive arrangement including:

a push rod means including a push rod coupled to said guide bar for shogging it, said push rod means including means for mounting said push rod with a degree of freedom including more than axial translation; and

a drive member means coupled to said push rod means at a joint for axially moving the joint along a joint path with a predetermined path time trajectory, said joint path with said predetermined path time trajectory having a component of axial motion while said plurality of guides pass through said plurality of needle spaces when the guides are at a position between adjacent ones of the needles, said drive member means comprising, in combination, (a) means for imparting to said predetermined path time trajectory a compensating component for compensating for non-axial motion of said push rod means, and for mislap of said guide bar tending to cause said needles and said guides to touch, and (b) means for imparting to said predetermined path time trajectory a ground component that represents the net axial motion of the guide bar during the passage of said guides through the needle gaps, the ground component of said predetermined path time trajectory having segments of substantially constant acceleration.

5,295,373

WASHING MACHINE WITH A BUBBLE GENERATOR

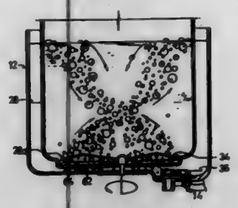
Moo-Seung Lim, Seoul; Seung-Ki Min, Inchon; Soon-Chur Se; Hae-Sang Yoo, both of Inchon, and Jang-Sub Han, Seoul, all of Rep. of Korea, assignors to Daewood Electronics Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 785,546, Oct. 31, 1991. This application Apr. 27, 1993, Ser. No. 53,014

Claims priority, application Rep. of Korea, Jan. 12, 1991, 91-409; Aug. 14, 1991, 91-14066

Int. Cl.[5] D06F *17/12*

U.S. Cl. 68—12.05 8 Claims



1. A washing machine which comprises:

a washer tub capable of containing a level of washing fluid;

a pulsator rotatably mounted on the bottom of said washer tub for creating a vortex flow within said washer tub;

means for causing said pulsator to rotate in a foward or reverse direction; and

means for supplying a predetermined amount of air bubbles into said washer tub in a batchwise manner at such a time interval as to allow said amount of air bubbles supplied in a given batch to be substantially collapsed before a next supply of said air bubbles commences, wherein said bubble supply means includes an air pump for producing a volume of pressurized air, a bubble generator associated with said air pump for converting the pressurized air into Said air bubbles, and means for controlling the operation of said air pump so that no air bubbles may be supplied until said amount of air bubbles supplied in a preceding batch is substantially collapsed.

5,295,374

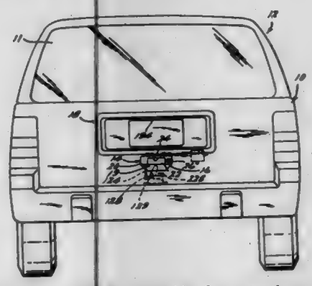
TAILGATE HANDLE ASSEMBLY WITH WINDOW RELEASE SWITCH

Frederick F. Bender, South Lyon, Mich., and Ralph G. Nedbal, St. Charles, Ill., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 23, 1992, Ser. No. 980,039

Int. Cl.[5] E05B *65/19*

U.S. Cl. 70—208 4 Claims



1. In a tailgate handle assembly for actuating a remotely mounted tailgate latch and a pivotally mounted tailgate window latch, said tailgate handle assembly including a housing having a handle pivotally mounted therein, a key cylinder rotatably mounted therein, a lever slidably and pivotally mounted thereon and operably connected to said handle and said key cylinder, and a rod connected between said lever and said tailgate latch, said lever adapted to being reciprocally slidably actuated between a locked and an unlocked mode by rotation of said key cylinder and pivotally actuated by manual lifting of said handle to move said rod to thereby operate said tailgate latch, the improvement in combination therewith comprising a limit switch integrally mounted on said handle assembly and operatively connected to said window latch, said limit switch adapted to being closed by the reciprocal sliding movement of said lever to thereby unlatch said window latch.

5,295,375

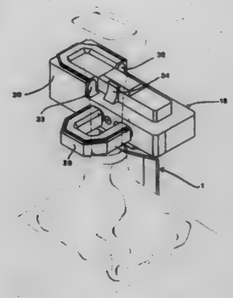
ANTITHEFT GEAR LEVER LOCK FOR CARS

Elia Jonas, Via Antonio Arcioni No. 3, 00152 Rome, Italy

Filed Oct. 14, 1992, Ser. No. 960,857

Int. Cl.[5] B60R *25/06*

U.S. Cl. 70—247 11 Claims



1. A universally adaptable gear lever lock for cars comprising a bracket forged in one piece from manganese steel of about 220 Kg/mm^2 Brinell hardness, said bracket having

a vertical head section provided with a means for attaching to the vertical head section an anti-theft locking mechanism for locking a gear lever to the bracket;

an intermediate section extending downwards at an angle from the vertical head section; and

a tail section extending vertically downward from the intermediate section, provided with a means for securing the bracket to a car;

said head and intermediate sections having been surface hardened so that the tail section remains bendable allowing in situ custom-fitting of the gear lever lock to the car and the anti-theft locking mechanism attached to said vertical head section.

5,295,376

ZERO CLEARANCE LOCK

Gary L. Myers, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Filed Apr. 22, 1993, Ser. No. 52,576

Int. Cl.[5] E05B *27/00*

U.S. Cl. 70—369 13 Claims

1. A zero-clearance lock, comprising in combination:

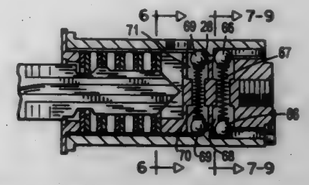
a mounting shell having a substantially smooth cylindrical surface, a central throughbore including a front section having a first, greater diameter, a rear section having a second, smaller diameter, and a tapered transition section between said front and rear sections, the front section including longitudinal locking grooves, and the rear section including longitudinal stopping grooves;

a lock plug for selective rotation within said mounting shell, said lock plug having a substantially smooth cylindrical outer surface, a front section with a diameter substantially equal to said first diameter, a rear section with a diameter substantially equal to said second diameter and a tapered transition section between said front and rear sections;

said lock plug front section including a tumbler-receiving opening, and a circular flange including a centrally located keyslot;

said lock plug rear section including a cam-receiving means and a first radial throughbore;

said lock plug including a second radial throughbore between said front section and said tapered transition section;



a tumbler means disposed in said tumbler-receiving opening for selective engagement with said longitudinal locking grooves, said tumbler means including coding for actuation by a properly coded key for disengagement from said locking grooves to allow for said selective rotation of said lock plug;

a spring-loaded stop means disposed within said first radial throughbore for selective engagement with said stopping grooves upon rotation of said lock plug; and

a spring-loaded bearing means disposed within said second radial throughbore for maintaining clearance between the first and transition sections of said lock plug and said mounting shell during rotation of said lock plug.

5,295,377

BURGLAR PROOF LOCK, ESPECIALLY LOCK FOR CARS

Ferenc Moricz, and Zoltan Moricz, both of Atlasgatan 1, S-113 20 Stockholm, Sweden

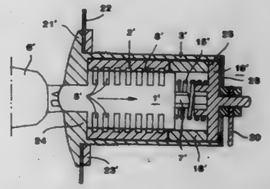
PCT No. PCT/SE90/00884, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO91/11579, PCT Pub. Date Aug. 8, 1991

PCT Filed Dec. 28, 1990, Ser. No. 915,801

Claims priority, application Sweden, Jan. 26, 1990, 9000281-7

Int. Cl.[5] E05B *29/00*

U.S. Cl. 70—379 R 5 Claims



1. A burglar proof lock for an element comprising:

a lock cylinder having a longitudinal axis;

a plurality of latch plates mounted in said lock cylinder for radial movement relative to said longitudinal axis between a withdrawn position in which said latch plates are withdrawn radially into said lock cylinder when a matching key is introduced into said lock cylinder and an expelled position in which said latch plates are partly expelled from said lock cylinder when the key is withdrawn from said lock cylinder;

a latch sleeve in which said lock cylinder is located for free

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rotation about the longitudinal axis thereof and for longitudinal movement only when the key is received therein, said latch sleeve including a plurality of inner circumferential grooves defined by radially extending opposed circumferential walls (a) in which respective ones of said latch plates are received when said latch plates are in the expelled positions whereby said circumferential walls engage respective said latch plates in the expelled position and thus prevent said lock cylinder from moving longitudinally relative to said latch sleeve while allowing free rotation of said lock cylinder and (b) from which said latch plates are withdrawn when said latch plates are in the withdrawn position whereby said lock cylinder is movable longitudinally relative to said latch sleeve;

a lock housing which is stationary relative to the element and in which said latch sleeve is located for free rotation about the longitudinal axis of said lock cylinder so that said lock cylinder is also freely rotatable relative to both said latch sleeve and said lock housing;

a coupling member attached to said lock cylinder which is axially displaceable therewith; and

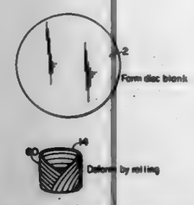
a receiver member attached to said lock housing which cooperates with said coupling member after an axial displacement of said lock cylinder to unlock the element.

5,295,378

METHOD FOR MAKING A PRECISELY MACHINED PART

Donald Favell, Stamford, Conn., assignor to Mark Industries, Torrington, Conn.

Filed Aug. 5, 1992, Ser. No. 925,523
Int. Cl.[5] B21D *22/26*
U.S. Cl. 72—68 **16 Claims**



1. A method of manufacturing a precisely machine shaped part comprising the steps of:

forming a circular blank from a sheet of stock material having a given thickness;

forming a cup-shaped blank having a first given diameter and a first given length;

drawing said cup-shaped blank at least one time to form a generally right cylindrical part having a continuous sidewall and an open end defined by a leading edge such that said generally right cylindrical part has a finish diameter;

cutting a portion of the generally right cylindrical part below the leading open edge and above the base to create a desired edge shape configuration therein;

deforming the sidewall of said part by rotating it between juxtaposed tools, each of which rotating tools having corresponding mating surfaces which deform the sidewall of the part such that a design pattern is made therein;

said cup-shaped blank undergoing successive drawing steps to transform said cup-shaped blank into said generally elongate right cylindrical part with the last of said drawing steps including the simultaneous cutting of said edge shape configuration below the opened edge of said generally elongate right cylindrical shaped part; and wherein

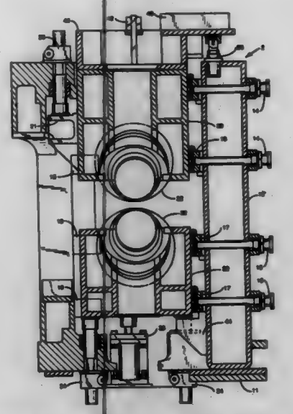
said step of cutting said edge shape configuration is preceded by a precut drawing step wherein the finish diameter is established for said generally elongate right cylindrically-shaped part and a preform shoulder is simultaneously formed in the sidewall of said generally cylindrically-shaped part simultaneously with establishing of the finish diameter.

5,295,379

VERTICAL PIERCER MILL

Rudy M. Trbovich, Midland; William Rozmus, Pittsburgh, and Mario Ricci, Coraopolis, all of Pa., assignors to Italimpianti of America, Inc., Coraopolis, Pa.

Filed Mar. 5, 1993, Ser. No. 27,109
Int. Cl.[5] B21B *19/04*
U.S. Cl. 72—97 **21 Claims**



1. A vertical piercer/elongator mill for the manufacture of seamless tubing, comprising:

a mill housing having an open interior and an open top, defined by a plurality of vertically extending mill posts;

a bottom roll cradle having a bottom roll rotatably supported therein, said bottom roll cradle adapted to be operably positioned within the interior of the mill housing through the open top thereof;

a top roll cradle having a top roll rotatably supported therein, said top roll cradle adapted to be operably positioned within the interior of the mill housing through the open top thereof;

feed angle adjustment means associated with the mill housing and the top and bottom roll cradles for rotatively moving the roll cradles to establish a selected feed angle between the top and bottom rolls;

roll gorge adjustment means associated with the mill housing and the top and bottom roll cradles for vertically moving the roll cradles to establish a selected roll gorge spacing between the top and bottom rolls; and

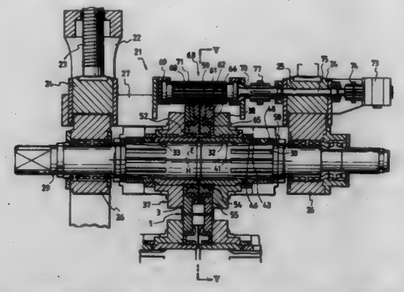
clamping means associated with the mill housing to fixedly secure said top and bottom roll cradles within the mill housing when the selected feed angle and roll spacing have been established.

5,295,380

EDGING MILL FOR SECTION ROLLING

Takeshi Hioki; Toru Ikezaki, both of Kitakyushu; Yasushi Horiuchi; Kazufumi Hirose, both of Sakai; Yoshun Yamamoto, and Masanori Fujiwara, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,435
Claims priority, application Japan, Aug. 15, 1991, 3-228558; Sep. 19, 1991, 3-239187; May 26, 1992, 4-133907
Int. Cl.[5] B21B *27/02, 31/16*
U.S. Cl. 72—224 **20 Claims**



1. An apparatus in an edging mill for section rolling, comprising:

a horizontal roll for rolling flange edges of a metal section being rolled, said horizontal roll comprising a pair of horizontal roll segments supported by a driven horizontal roll shaft, said horizontal roll segments being axially separated from each other;

an eccentric ring having a hub rotatably fitted over said horizontal roll shaft between said horizontal roll segments, said eccentric ring being eccentric to said horizontal roll on said horizontal shaft on which said eccentric ring is rotatably fitted;

a web-restraining ring roll rotatably fitted over said hub of said eccentric ring, said web restraining ring roll comprising a pair of web-restraining ring roll segments concentric with said eccentric ring and disposed between respective said horizontal roll segments and said eccentric ring and adapted to restrain the web of a metal section being rolled; and

means for adjusting the position of said web-restraining ring roll by rotating said eccentric ring such that the position of the said web-restraining ring roll with respect to said horizontal roll changes with an angle of rotation of said eccentric ring, wherein said eccentric ring has a part for transmitting rotation to said eccentric ring disposed outside a periphery of said web-restraining ring roll.

5,295,381

TWIST-FORMING PRESS FOR CRANK SHAFT OR THE LIKE

Junji Nishikawa; Hiromichi Konishi; Masashi Tado, and Yasumasa Sato, all of Niihama, Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,585
Int. Cl.[5] B21D *11/16;* **B21K** *1/08*
U.S. Cl. 72—299 **11 Claims**

1. A twist-forming press for a crank shaft, comprising:

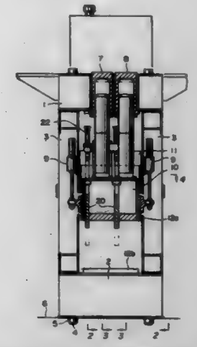
a press frame including a bed and first and second main cylinders each having a ram disposed in said press frame;

a slide connected with tip portions of each of the rams;

upper and lower twist-forming dies arranged between said slide and the bed of said press frame, said upper and lower twist-forming dies being operatively connected to said slide so as to clamp a workpiece in conjunction with sliding movement of said slide, said upper and lower twist-forming dies having opposed twist-forming surfaces with the opposed surfaces having a centerline;

means for rotating said upper and lower twist-forming dies to twist said workpiece clamped therebetween; and

upper and lower coining dies arranged between said slide and the bed of said press frame, said upper and lower coining dies being operatively connected to said slide so as to pressingly close with each other in conjunction with the sliding movement of said slide, said upper and lower coining dies having opposed coining surfaces with the opposed surfaces having a centerline, said centerline of said upper and lower twist-forming dies being positioned to be in line with an axial centerline of the first main cylinder and said centerline of said upper and lower coining dies being positioned to be in line with an axial centerline of the second main cylinder.

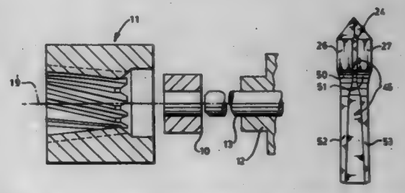


5,295,382

COLD EXTRUSION OF EXTERNALLY TOOTHED HELICAL MEMBERS

William J. Fuhrman, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 11, 1992, Ser. No. 880,919
Int. Cl.[5] B21K *1/30*
U.S. Cl. 72—343 **13 Claims**



1. A die for forming helical externally toothed gears, comprising:

a body having a cylindrical inner surface provided with generally longitudinally extending, helically arranged die teeth circumferentially indexed apart, each tooth having (i) a leading ramp portion, (ii) a profile forming region, and (iii) a downstream tooth region, said profile forming region having an aspect ration greater than 1.5, said downstream tooth region having involuted side flanks joined by a tooth crest, said crest following the helix and being radially inwardly and curvilinearly relieved with respect to said profile forming region to eliminate concentrated bending stresses while maintaining helical workpiece guidance, dimensional control, and surface integrity.

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5,295,383

HYDRAULIC CUSHIONING SYSTEM FOR PRESS, HAVING SHUT-OFF VALVE FOR DISCONNECTION OF PRESSURE-PIN CYLINDERS FROM POWER SUPPLY UPON CONTACT OF MOVABLE DIE WITH WORKPIECE

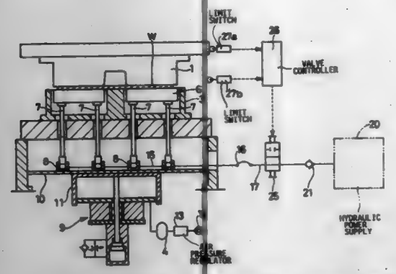
Kazunari Kirii, Aichi; Tsutomu Ono, and Seiki Minami, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 3, 1992, Ser. No. 940,369

Claims priority, application Japan, Sep. 4, 1991, 3-254823; Apr. 7, 1992, 4-114087

Int. Cl.[5] B21D *24/02*

U.S. Cl. 72—351 **13 Claims**



1. A hydraulic cushioning apparatus for a press having a movable die, comprising a pressure pin associated with a workpiece, a hydraulic cylinder linked with said pressure pin, a cushioning device linked with said hydraulic cylinder, a hydraulic power supply for supplying a pressurized fluid at a preset pressure level to said hydraulic cylinder, and fluid passage means for hydraulically connecting said hydraulic power supply and said hydraulic cylinder, said apparatus comprising:

a check valve disposed in said fluid passage means, said check valve permitting a flow of said pressurized fluid from said hydraulic power supply to said hydraulic cylinder;

a shut-off valve disposed in said fluid passage means, in series connection with said check valve, and having an open position and a closed position for connection and disconnection of said hydraulic power supply to and from said hydraulic cylinder, respectively; and

control means connected to said shut-off valve, for controlling said shut-off valve such that said shut-off valve is operated from said open position to said closed position to inhibit a flow of the fluid from said hydraulic power supply into said hydraulic cylinder before said movable die comes into pressing contact with said workpiece, and is held in said closed position for at least a period until a fluid pressure in said hydraulic cylinder rises to said preset pressure level.

5,295,384

SHEET-METAL BENDING DEVICE

Otto Schubert, Vienna, Austria, assignor to Lift Verkaufsgerate Gesellschaft M.b.H., Austria

Continuation-in-part of Ser. No. 772,376, Nov. 12, 1991. This application Mar. 5, 1992, Ser. No. 847,749

Claims priority, application Australia, Sep. 18, 1991, 1878/91

Int. Cl.[5] B21D *5/02*

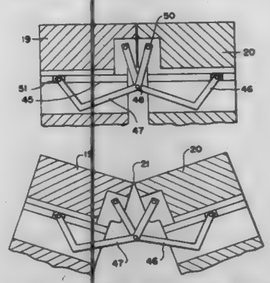
U.S. Cl. 72—389 **16 Claims**

1. A sheet bending device comprising:

three punches, the first and second of said three punches being bending punches which are disposed adjacent to one another and have sheet contact zones, each of said two bending punches including removable tool segments disposed adjacent to one another in an aligned relationship and defining, with their respective sheet contact portions, said sheet contact zones, the third of said three punches being a counter-punch which is positioned opposite to said two bending punches;

means for linearly moving said counter-punch between a retracted inoperative position away from said two bending punches and an operative position adjacent said two bending punches, in which operative position a sheet may be bent around said counter-punch;

pivoting drive means respectively coupled to the first and second of said three punches for pivoting the first and second bending punches to provide a bending force for bending the sheet around said counter-punch; and



hinge means for pivotally connecting said two bending punches for relative movement about a hinge axis from a first position in which their sheet contact zones are aligned one to another and define a sheet bearing plane, to a second position in which their sheet contact zones define an angle therebetween;

wherein respective tool segments of said two bending punches are connected to each other in pairs by hinge connections which together form said hinge means connecting said two bending punches, said hinge axis being offset from said sheet bearing plane, a depression being provided in each of said tool segments between the respective hinge connection and the respective sheet contact portion.

5,295,385

BENDING APPARATUS

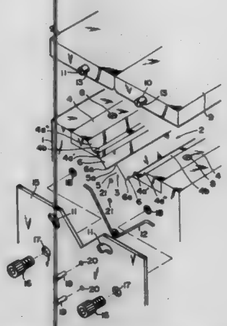
Shouichi Murai, Yamato, Japan, assignor to Murai Industrial Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,589

Claims priority, application Japan, Apr. 23, 1992, 4-130056

Int. Cl.[5] B21D *5/02*

U.S. Cl. 72—389 **8 Claims**



1. A bending apparatus comprising:

(a) a die having a top, a central triangular ridge and triangular valleys each defined on a respective side of said central triangular ridge in the top of the die, said ridge and said valleys together defining a groove in the top of the die having a W-shaped sectional profile;

(b) a pair of blades each of which blades has opposite ends and ears extending from the opposite ends, said blades being disposed on top of said die such that they extend along said groove;

(c) a pair of mounting plates mounted to said die on opposite ends of said die, respectively, each of said mounting plates having a pair of elongate slots, each of said slots having one end remote from said central triangular ridge and extending from said one end downward and along a curved path toward a central portion of the mounting plate adjacent said triangular ridge, the ears of said blades being received in and guided by said slots, respectively, such that said blades are allowed to rotate and move from horizontal positions to seated positions in which the blades together have a V-shaped configuration while seated in said groove against said die;

(d) means for restoring said blades to the horizontal positions; and

(e) a punch disposed over the top of said die and movable toward said die to cause said blades to move from said horizontal to said seated positions thereof.

5,295,386

APPARATUS FOR DETECTING ACCELERATION AND METHOD FOR TESTING THIS APPARATUS

Kazuhiro Okada, 73, Sugaya 4-Chome, Ageo-Shi, Saitama 362, Japan

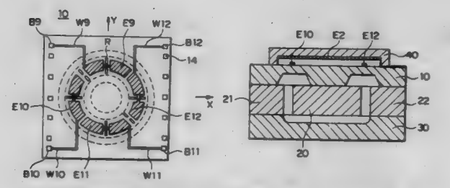
PCT No. PCT/JP90/01688, § 371 Date Aug. 14, 1991, § 102(e) Date Aug. 14, 1991, PCT Pub. No. WO91/10118, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 26, 1990, Ser. No. 761,771

Claims priority, application Japan, Dec. 28, 1989, 1-343354; Mar. 27, 1990, 2-77397; Jul. 27, 1990, 2-200449

Int. Cl.[5] G01P *21/00*

U.S. Cl. 73—1 D **9 Claims**



1. An acceleration sensor to detect a first component along an X-axis and a second component along a Y-axis of an acceleration in an XYZ three-dimensional coordinate system, the sensor comprising:

a first substrate having a first plane surface which is parallel with an XY-plane of said coordinate system, said first substrate including a working portion to which a force is applied, a fixed portion fixed to a sensor body, and a flexible portion having flexibility formed between said working portion and said fixed portion;

a second substrate having a second plane surface which is opposite to said first plane surface with a predetermined distance and is fixed to said fixed portion;

a weight body attached to said working portion to transmit a force produced by an acceleration to said working portion so that said first substrate produces a mechanical deformation;

eight resistance elements formed on said first plane surface, said elements having a property that a resistance value varies in dependency upon a mechanical deformation in said first substrate, wherein four of said resistance elements are arranged along X-axis of said coordinate system and four of said resistance elements are arranged along Y-axis of said coordinate system;

a first set of four electrode layers formed on said first plane surface, wherein a first layer is located in a positive field of the X-axis and substantially has a symmetrical shape with respect to the X-axis, a second layer is located in a negative field of the X-axis and substantially has a symmetrical shape with respect to the X-axis, a third layer is located in a positive field of the Y-axis and substantially has a symmetrical shape with respect to the Y-axis, and a fourth layer is located in a negative field of the Y-axis and substantially has a symmetrical shape with respect to the Y-axis;

a second set of four electrode layers formed on said second plane surface, wherein first to fourth layers of the second set are opposite to said first to fourth layers of the first set, respectively;

detecting means for detecting said first component of the acceleration applied to said weight body based on the resistance values of the resistance elements arranged along the X-axis, and detecting said second component of the acceleration applied to said weight body based on the resistance values of the resistance elements arranged along the Y-axis; and

testing means for applying predetermined voltages to said first set of electrodes and said second set of electrodes to exert a coulomb force therebetween, thereby permitting said first substrate to produce a mechanical deformation even in a state where no acceleration is applied.

5,295,387

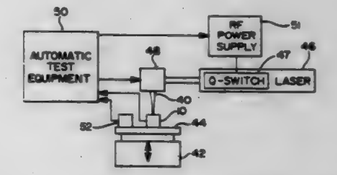
ACTIVE RESISTOR TRIMMING OF ACCELEROMETER CIRCUIT

Jack V. Buie, and Gerald R. Yost, both of Kokomo, Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Mar. 23, 1992, Ser. No. 855,967

Int. Cl.[5] G01P *21/00*

U.S. Cl. 73—1 D **11 Claims**



1. The method of calibrating an accelerometer circuit of a package that incorporates an accelerometer for sensing acceleration along an axis, the accelerometer circuit having a substrate normal to the axis and thick film resistors on the substrate for calibrating an output signal corresponding to the sensed acceleration, comprising the steps of:

inducing a known acceleration on the accelerometer by cyclically displacing the package in a direction parallel to said axis;

supplying power to the circuit;

measuring the output signal of the accelerometer circuit;

trimming said thick film resistors while the package is being cyclically displaced by directing a laser beam in the direction of said displacement to cut portions of said thick film resistors; and

controlling the laser beam to trim said thick film resistors in accordance with the measured output signal.

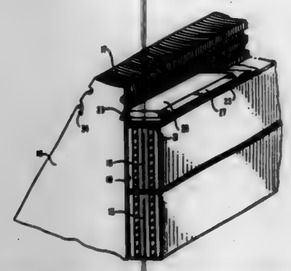
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,388

APPARATUS AND METHOD FOR INPACT TESTING FOR ELECTRIC GENERATOR STATOR WEDGE TIGHTNESS

Mark W. Fischer; James W. Alford, both of Pittsburgh; George F. Dailey, Plum Borough, and John E. Noll, Jr., Port Vue, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1992, Ser. No. 828,099
Int. Cl.[5] G01M *7/00*
U.S. Cl. 73—12.09 5 Claims



1. A method of measuring the tightness of stator wedges in the stator of an electric generator without removing the rotor, the method comprising the steps of:

i. providing a calibration test stand comprising a section of coils and wedges similar to that of the electric generator to be measured;

ii. preloading said section of coils and wedges of the calibration test stand with a first predetermined force and generating a plurality of force-displacement curves obtained by impacting said wedges of the calibration test stand with a second predetermined force and measuring the displacement caused thereby;

iii. calculating a plurality of curve equations from said plurality of force-displacement curves;

iv. striking one of said stator wedges to cause a displacement thereof;

v. measuring the force used to strike the one stator wedge to generate force data;

vi. measuring displacement of the one stator wedge in response to being struck to generate displacement data;

vii. comparing said generated force and displacement data with said plurality of forcedisplacement curves to determine the tightness of the one wedge in said stator.

5,295,389

THERMAL CONDUCTIVITY DETECTOR

Mitsuhiko Nagata; Shoji Kamiunten, both of Kanagawa; Tatsuyuki Uchida, and Misako Seita, both of Tokyo, all of Japan, assignors to Yamatake-Honeywell Co., Ltd., Japan

Filed Jul. 31, 1992, Ser. No. 923,138
Claims priority, application Japan, Aug. 21, 1991, 3-232461
Int. Cl.[5] G01N *31/00*; H01C *7/10*
U.S. Cl. 73—25.03 15 Claims

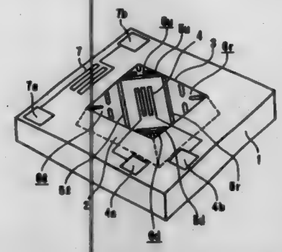
1. A thermal conductivity detector comprising in combination:

a substrate base with a cavity in said substrate base;

a thin diaphragm extending over said cavity;

a heater element formed on a central portion of said diaphragm, said heater element exhibiting a characteristic change in its electrical impedance as a function of the thermal conductivity of a fluid flow passing over said heater element;

a plurality of boundary holes in said thin diaphragm, said boundary holes framing said heater element at a predetermined distance from said heater element to provide thermal isolation between the heater element and said base; and



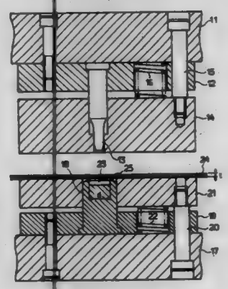
said predetermined distance being sufficient that particles adhering to said boundary holes have a minimal effect on fluid flow in the vicinity of said heater element.

5,295,390

METHOD OF BURRING

Yukihito Hosono, Gifu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 704,311, May 22, 1991, abandoned.
This application Feb. 1, 1993, Ser. No. 13,151
Claims priority, application Japan, May 25, 1990, 2-136407
Int. Cl.[5] B21D *22/00*
U.S. Cl. 72—334 4 Claims



1. A method of burring comprising:

a first step of forming, in a metal plate, a bottomed sleeve portion expanded into a die hole of a die by means of a punch which is inserted into the die hole, the die hole being formed such that a predetermined gap is formed between an inner peripheral face of the die hole and an outer peripheral face of the punch so that the gap has a width larger than the thickness of the metal plate, the die hole having a peripheral circular projected edge having a projected edge face whose width is smaller than the thickness of the metal plate, and

a second step of

i) swaging the bottom of the sleeve portion of the metal plate between the punch and the bottom face of the die hole to render the bottom of the sleeve portion thinner such that the material of the sleeve portion bottom is caused to flow to a peripheral wall portion of the sleeve portion positioned in the gap between the inner peripheral face of the die hole and the outer peripheral face of the punch, thereby thickening the peripheral wall portion of the sleeve portion, and

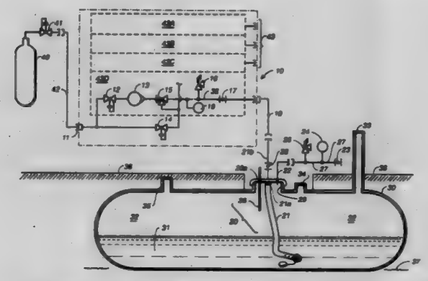
ii) swaging the metal plate at the top peripheral portion of the sleeve portion adjacent to the rising peripheral wall of the sleeve portion, between the circular projected edge of the die hole and a holder moved together with the punch, such that the material of the metal plate swaged therebetween is allowed to flow to the peripheral wall portion of the sleeve portion positioned in the gap between the inner peripheral face of the die hole and the outer peripheral wall portion of the punch.

5,295,391

METHOD AND APPARATUS FOR DETECTING LEAKS IN THE ULLAGE OF A LIQUID STORAGE TANK

John R. Mastandrea, Redondo Beach; Stewart H. Wells, North Hills; David B. Peck, Torrance, and Steven T. Jersey, Redondo Beach, all of Calif., assignors to NDE Environmental Corporation, Torrance, Calif.

Filed Feb. 11, 1992, Ser. No. 833,681
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 18 Claims



1. An apparatus for detecting and measuring leaks in a closed partially filled or empty tank comprising:

pressure control means for regulating pressure of gas supplied at an inlet of said pressure control means to a pre-set value and including means for monitoring flow of gas through said pressure control means to an outlet of said pressure control means;

test cap means for sealing an opening of the tank, said test cap means having an opening therethrough,

first connecting means for connecting said outlet of said pressure control means to a first side of said opening of said test cap means, said first connecting means having insulation substantially covering said first connecting means; and

injection means having a first end connected to a second side of said opening in said test cap means extending into and to a point substantially adjacent to the bottom of said partially filled or empty tank, said injection means having a first aperture at or near said first end of said injection means, said injection means having a set of one or more second apertures at or near a second end of said injection means, for injecting said gas into the tank through said first and second apertures, wherein a cross sectional area of said first aperture is substantially less than a cross sectional area of said set of second apertures.

5,295,392

PIPE TESTING EQUIPMENT

Frederick W. Hensel; Mark F. Hensel, both of Butler, Pa.; Steve D. Sandstrum, Kingwood, Tex.; John Coleman, Sugarland, Tex.; John H. Parnell, Houston, Tex., and Stephen J. Boros, Friendswood, Tex., assignors to Tech Team, Inc., Butler, Pa.

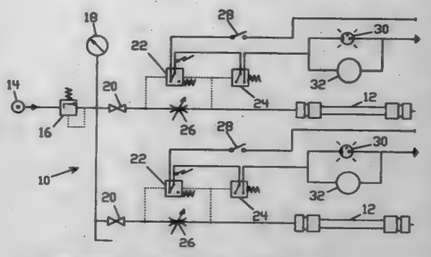
Filed Mar. 26, 1992, Ser. No. 858,068
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—49.5 8 Claims

1. A hydrostatic test system for pressure testing a workpiece, comprising:

a pressure sensing means for sensing a differential pressure condition occurring within the test system;

a calibration means for regulating and varying the flow rate to the pressure sensing means;

an indicator means for visually signaling to an operator that



no differential condition exists within the test system and also for signaling when a differential pressure condition occurs within the test system; and

means for supplying fluid pressure to the test system.

5,295,393

FRACTURING METHOD AND APPARATUS

Marc J. Thiercelin, Cambridge, England, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 1, 1992, Ser. No. 907,427
Claims priority, application United Kingdom, Jul. 1, 1991, 9114972
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—155 14 Claims

1. A method of fracturing an underground formation traversed by a borehole, the method comprising:

a) suspending a fracturing apparatus in a borehole so as to position an inflatable member on said fracturing apparatus adjacent to an underground formation to be fractured;

b) inflating the inflatable member with a pressurizing fluid so as to contact the underground formation and exert stress thereon;

c) increasing the pressure of the pressurizing fluid in the inflatable member until a fracture is initiated in the underground formation;

d) monitoring the pressure of the pressurizing fluid in the inflatable member so as to determine the pressure at which the fracture is initiated;

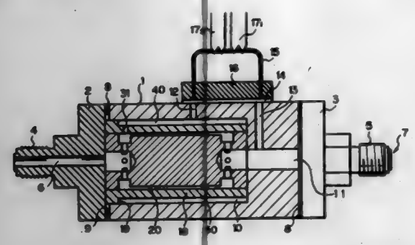
e) isolating an interval of the borehole containing the fracture;

f) further fracturing the underground formation by pumping a fracturing fluid into the interval; and

g) monitoring the pressure of fracturing fluid pumped into the interval during the further fracturing.

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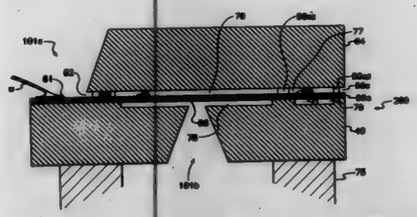
5,295,394
BYPASS UNIT FOR A FLOWMETER SENSOR
Isao Suzuki, Tokyo, Japan, assignor to MKS Japan Inc., Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,797
Claims priority, application Japan, Jun. 13, 1991, 3-181517
Int. Cl.[5] G01F 5/00
U.S. Cl. 73—202 3 Claims



1. A bypass unit of a flowmeter sensor, said unit comprising:
a substantially cylindrical sensor tube through which a fluid is to flow;
elements of a flowmeter cooperating with said sensor tube;
a housing having a peripheral wall defining a chamber therein, said housing also defining an inlet path communicating with said chamber, an outlet path communicating with said chamber, an upstream bypass path through which a portion of the fluid in said chamber will be diverted to said sensor tube, and a downstream bypass path through which fluid flowing from said sensor tube will be returned to said chamber; and
a bypass member disposed in said chamber and spaced from the peripheral wall of said housing such that a space is defined in said chamber between said bypass member and said peripheral wall, said bypass member defining an inlet port extending coaxially to and communicating with said inlet path, an outlet port extending coaxially to and communicating with said outlet path, first and second annular recesses in the outer periphery of the bypass member, and a plurality of radial ports extending radially outwardly from said inlet and said outlet ports, each said radial port extending radially outwardly from said inlet port being open to said first annular recess, and each said radial port extending radially outwardly from said outlet port being open to said second annular recess such that each of said radial ports communicates with said space.

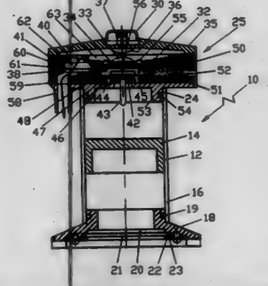
5,295,395
DIAPHRAGM-BASED-SENSORS
G. Benjamin Hocker, 5730 Covington Cir., Minnetonka, Minn. 55345; David W. Burns, 5537 1st Ave. South, Minneapolis, Minn. 55419; Akintunde I. Akinwande, 9968 Nord Rd., Bloomington, Minn. 55437; Robert D. Horning, 4 Oak Shore Dr., Burnsville, Minn. 55337; Amir R. Mirza, 2125 Aquila Ave., Golden Valley, Minn. 55427; Thomas G. Stratton, 3000 Sandy Hook Dr., Roseville, Minn. 55113; Deidrich J. Saathoff, 205 Woodland Dr., Burnsville, Minn. 55337; James K. Carney, 7310 Paulsen Dr., Eden Prairie, Minn. 55346, and Scott A. McPherson, 837 Curry Trail, Eagan, Minn. 55123
Filed Feb. 7, 1991, Ser. No. 652,148
Int. Cl.[5] G01L 13/02
U.S. Cl. 73—721 4 Claims

1. A diaphragm transducer responsive to changes in a relevant fluid or fluids, comprising:
a diaphragm layer bonded on one side by an A surface and bounded on the opposite side by a B surface, an area extending between the A and B surfaces constituting a flexible diaphragm;
an A wafer bounded on one side by an inner surface and bounded on the opposite side by an outer surface, said inner surface bonded to the A surface of the diaphragm layer, said A wafer containing an A cavity, said A cavity being located adjacent and opening to the diaphragm;
a B wafer bounded on one side by an inner surface and bounded on the opposite side by an outer surface, said inner surface bonded to the B surface of the diaphragm layer, said B wafer containing a B cavity, said B cavity being and located in the bonded structure adjacent and opening to the diaphragm, and on the opposite side thereof from said A cavity;



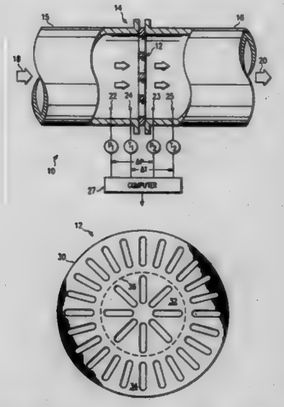
and wherein an A access passage connects the A cavity to an outer surface of either wafer A or wafer B and a B access passageway connects the B cavity to the outer surface of either wafer A or wafer B, and wherein each access passageway is sufficiently large to allow for communication of a relevant fluid there through;
and wherein said diaphragm layer contains a second diaphragm and wherein said A wafer further contains a second A cavity adjacent and opening to said second diaphragm.

5,295,396
POSITIVE DISPLACEMENT PISTON FLOW METER FOR AIR FLOW MEASUREMENT
Hill S. Lalin, Wayne, N.J., and William T. Fleming, Jr., Marietta, Ga., assignors to Gilian Instrument Corporation, West Caldwell, N.J.
Continuation-in-part of Ser. No. 32,754, Mar. 17, 1993, which is a continuation of Ser. No. 707,094, May 29, 1991, abandoned.
This application Jul. 28, 1993, Ser. No. 98,067
Int. Cl.[5] G01F 3/00
U.S. Cl. 73—861 8 Claims



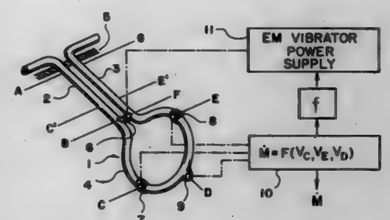
1. A positive piston flow meter for use in measuring air flow comprising:
(a) a hollow flowtube vertically oriented to form a top end and a bottom end, and having a movable piston disposed therein for movement between said top and bottom end, respectively;
(b) inlet means for connecting one end of said flowtube to an external pump, with said flowtube having ingress and egress to the ambient atmosphere from at least one end thereof;
(c) means for detecting said piston as it moves past at least two predetermined positions along said flowtube from which air flow through said flowtube can be measured; and
(d) a pressure relief control assembly for controlling the ascent and descent of the piston in said flowtube, said pressure relief control assembly comprising: a housing, a chamber within the interior of said housing, and a poppet valve for interconnecting said said flowtube to said chamber, with said poppet valve having a first position for providing a first flow path to said inlet means from said top end of said flowtube to cause said piston to rise, and a second position for providing a second flow path from said chamber to said inlet means to cause said piston to fall; and with said poppet valve, including a valve stem extending into said flowtube for engaging said piston when said piston reaches a fixed position adjacent the top end of the flowtube, whereby said poppet valve is automatically switched into said second position to permit said piston to descend by gravity from the top end of said flowtube; latching means for holding said poppet valve in a fixed position after said piston and said valve stem have disengaged, and means for resetting the poppet valve into said first position.

5,295,397
SLOTTED ORIFICE FLOWMETER
Kenneth R. Hall; Gerald L. Morrison, both of College Station, and James C. Holste, Bryan, all of Tex., assignors to The Texas A & M University System, College Station, Tex.
Filed Jul. 15, 1991, Ser. No. 729,934
Int. Cl.[5] G01F 1/42, 15/02
U.S. Cl. 73—861.02 30 Claims



21. A method for measuring the flow rate of a fluid in a conduit, comprising the steps of:
creating a flow impedance in the conduit by forcing the fluid to flow through a plurality of narrow openings defined by a plate, a first set of the openings distributed within an inner circle, a second set of the openings distributed within a ring concentric to the inner circle, wherein a ratio of the combined area of the first set to the area of the inner circle is substantially the same as a ratio of the combined area of the second set to the area of the ring;
measuring the pressure and temperature of the fluid;
measuring the pressure differential of the fluid across the flow impedance; and
computing the flow rate from the measurements.

5,295,398
METHOD FOR MEASURING CONVECTIVE INERTIA FORCE
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Filed Jan. 22, 1991, Ser. No. 643,420
Int. Cl.[5] G01F 1/84
U.S. Cl. 73—861.38 4 Claims



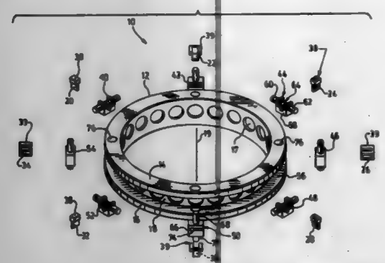
1. A method for determining mass flow rate of media moving through a conduit with two extremities restrained from experiencing lateral displacement, comprising in combination:
a) generating a primary flexural vibration of the conduit in one of a symmetric and antisymmetric mode with respect to a midsection of the conduit by exerting a force laterally thereon, said primary flexural vibration of the conduit creating a secondary flexural vibration of the conduit out of phase relative to the primary flexural vibration of the conduit as a result of dynamic interaction between the primary flexural vibration of the conduit and motion of media moving through the conduit;
b) detecting resultant flexural vibration of the conduit at the midsection thereof by using a first motion sensor providing a first alternating electrical signal generated by the resultant flexural vibration of the conduit at the midsection thereof, and resultant flexural vibration of the conduit at another section thereof intermediate the midsection and one of the two extremities of the conduit by using a second motion sensor providing a second alternating electrical signal generating by the resultant flexural vibration of the conduit at said another section thereof;
c) taking a first numerical value of said second alternating electrical signal at an instant when numerical value of said first alternating electrical signal is equal to zero;
d) taking a second numerical value of said second alternating electrical signal at an instant when numerical value said first alternating electrical signal reaches a peak value; and
e) determining mass flow rate of media moving through the conduit as a function of ratio between said first and second numerical values of the second alternating electrical signal.

5,295,399
FORCE MOMENT SENSOR
Andris P. Grant, Toronto, and William J. Ballantyne, Aurora, both of Canada, assignors to Spar Aerospace Limited, Brampton, Canada
Filed Feb. 28, 1992, Ser. No. 843,176
Int. Cl.[5] G01L 1/22
U.S. Cl. 73—862.043 13 Claims

1. A force moment sensor for interjection in a load path comprising the following:
a rigid first reference member;
a rigid second reference member spaced from said first reference member;
a resilient member interconnecting said first and second reference members such that the spacing between said first and second reference members may vary with flexing of said resilient member;
at least six targets, each of said at least six targets for attachment to one of said first and second reference members;

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for each of said at least six targets, a target proximity sensing means for attachment proximate said each target to the other of said first and second reference members so as to form a target-sensing means pair;
each said target-sensing means pair being oriented and positioned so as to provide an indication of a displacement of said first reference member with respect to said second reference member in each of the three-spatial dimensions and an indication of any pivoting of said first reference member with respect to said second reference member in each of the three-spatial dimensions.

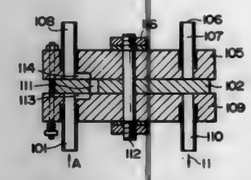


5,295,400

SLURRY SAMPLING DEVICE AND METHOD

Atsushi Tatani; Naohiko Ukawa; Susumu Okino; Toru Takashina; Tsumoru Nakamura, all of Hiroshima; Tokuma Arai, Tokyo, and Yoshihiro Shiraishi, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 779,189
Claims priority, application Japan, Oct. 24, 1990, 2-110481
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—863.73 **14 Claims**



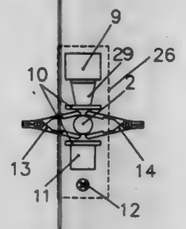
1. A slurry sampling device for sampling a slurry in which solid particles are dispersed, comprising:
an upper block and a lower block in relative spaced relationship to provide a space therebetween;
a rotator for collecting samples rotatably mounted in said space between said blocks;
a plurality of through holes in said rotator each having a volume corresponding to the amount of sample to be collected;
slurry conduit means in said upper and lower blocks having inner ends contacting said rotator for selective communication with said through holes to facilitate flow of slurry through said slurry conduit means;
carrier fluid conduit means in said upper and lower blocks having inner ends contacting said rotator for selective communication with said through holes to facilitate flow of carrier fluid through said carrier fluid conduit means; and
arc-shaped grooves on portions of said upper and lower blocks communicating with said slurry conduit means where said inner ends of said slurry conduit means contact said rotator so that rotation of said rotator alternately connects at least one of said through holes with said slurry conduit means through said arc-shaped grooves and with said inner ends of said carrier fluid conduit means for transferring a sample from said slurry conduit means to said carrier fluid conduit means, and at all times at least one of said through holes is in contact with said grooves.

5,295,401

TEXTILE ON-LINE SAMPLING INSPECTION

Sergej Toedtli, Wollerau, Switzerland, assignor to Siegfried Peyer AG, Wollerau, Switzerland

PCT No. PCT/CH91/00093, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO91/16625, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 22, 1991, Ser. No. 784,406
Claims priority, application Switzerland, Apr. 26, 1990, 1436/90-5
Int. Cl.[5] G01N *33/36*
U.S. Cl. 73—863.92 **16 Claims**



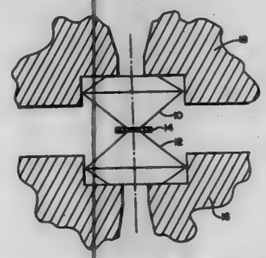
1. A method for non-destructively analyzing samples of a textile fiber strand comprising the steps of
continuously moving an elongated fiber strand longitudinally to a testing location;
temporarily stopping a selected segment of the strand at the testing location;
flattening the selected segment while it is stopped;
analyzing the flattened segment while it is stopped; and
resuming the longitudinal motion of the selected segment.

5,295,402

METHOD FOR ACHIEVING HIGH PRESSURE USING ISOTOPICALLY-PURE DIAMOND ANVILS

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Oct. 15, 1991, Ser. No. 775,863
Int. Cl.[5] G01N *1/28*
U.S. Cl. 73—864.91 **4 Claims**



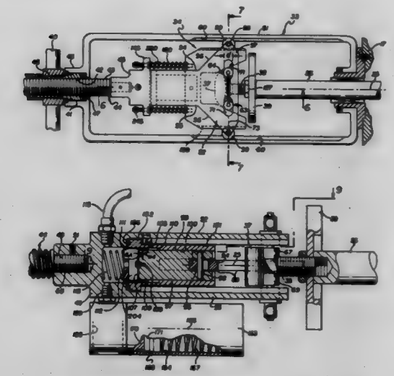
1. In a method for achieving high pressure wherein a sample is placed between a pair of single crystal diamond anvils compressed, the improvement which comprises forming said anvils from isotopically-enriched ^{13}C diamond wherein said diamond has ^{13}C enrichment greater than about 5 weight percent.

5,295,403

MECHANICAL ACTUATOR

Richard D. Sibley, Anaheim, and William F. Keller, San Dimas, both of Calif., assignors to Koso International, Inc., Lancaster, Calif.

Filed Jan. 29, 1993, Ser. No. 11,137
Int. Cl.[5] G05G *17/00*; F16K *31/53*
U.S. Cl. 74—2 **36 Claims**



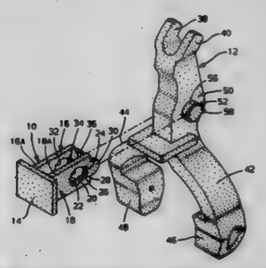
1. An actuator comprising:
a member operable by movement in opposite directions to actuate a controlled unit between different positions;
means yieldingly urging said member in one of said directions;
a latching mechanism urged by the pressure of a body of fluid to an active condition releasably retaining said member against movement in said one direction by said yielding means; and
shock responsive means operable automatically when subjected to shock forces to relieve the pressure of said body of fluid and thereby release said latching mechanism and permit actuation of said member in said one direction by said yielding means.

5,295,404

SHIFT LEVER MECHANISM FOR ENGINE STARTING APPARATUS

James A. Spellman, Noblesville; Ross A. Gresley, and Lee A. Finley, both of Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1992, Ser. No. 985,706
Int. Cl.[5] G05G *3/00, 1/04*; F02N *15/06*
U.S. Cl. 74—7 A **4 Claims**



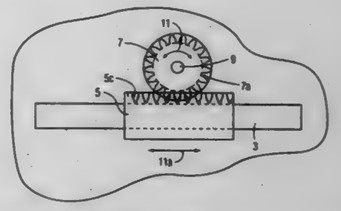
1. A shift lever mechanism comprising, a retainer having first and second axially extending spaced arms, a first opening in said first arm, said first opening being defined by a first circular surface and surfaces that form a first radially extending slot, a second opening in said second arm, said second opening being defined by a second circular surface and surfaces that form a second radially extending slot, a shift lever pivotally supported by said retainer, said shift lever having a first and second outwardly extending opposed bosses, said first boss located in said first opening, said first boss having a cylindrical surface and a radially extending rib that is located in said first slot, said second boss located in said second opening, said second boss having a cylindrical surface and a radially extending rib that is located in said second slot, said slots and ribs operative to allow said shift lever to be assembled to said retainer in only one proper orientation of said shift lever relative to the retainer.

5,295,405

DEVICE HAVING A PLATE WITH MULTIPLE COOPERATING MOVING PARTS INJECTION MOLDED THEREON

Hans Gumbert, Sinn; Norbert Kunze, Ehringshausen, and Georg Weber, Lohra-Weipoltshausen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

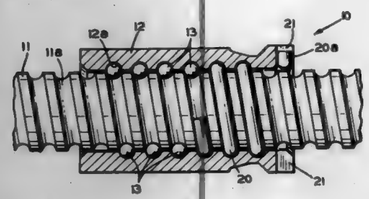
Continuation-in-part of Ser. No. 895,573, Jun. 8, 1992, Pat. No. 5,179,358, which is a division of Ser. No. 573,430, Aug. 23, 1990, which is a continuation-in-part of Ser. No. 507,947, Apr. 10, 1990, abandoned. This application May 5, 1992, Ser. No. 878,653
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116143
Int. Cl.[5] F16H *21/44, 1/04*
U.S. Cl. 74—99 R **5 Claims**



1. A technical device, comprising:
a metallic carrier plate having opposite faces and including a pair of spaced openings extending through said plate, said plate being integral and continuous about each of said openings, and
a pair of functional parts each movable in a respective one of said openings and functionally engageable with each other, each functional part comprising a connection bridge extending through the respective said plate opening and a pair of opposing retaining pieces each overlying a respective plate face, said retaining pieces being spaced from said plate faces for non-removably retaining said functional part in said opening and such that said functional part is freely movable within said opening, said connection bridge and retaining pieces being comprised of an integrally molded synthetic resin material,
one of said plate openings being shaped such that its respective functional part is moveable between a clearance position, in which said respective functional part has physical clearance with the other functional part, and another position in which the functional parts are continuously engageable with each other.

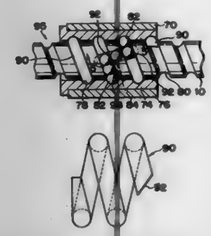
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,406
LOAD LOCK FOR BALL NUT AND SCREW MECHANISM
Don C. Alfano, Rockford, Ill., assignor to Dana Corporation, Toledo, Ohio
Filed Sep. 23, 1992, Ser. No. 949,710
Int. Cl.[5] F16H *1/16, 55/17*
U.S. Cl. 74—424.8 R 6 Claims



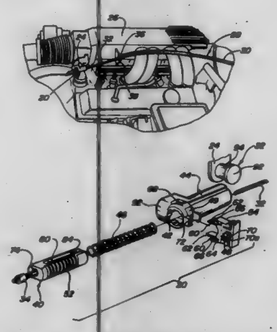
1. A ball screw and nut assembly comprising:
a screw including an outer surface which is formed having a thread;
a nut including an opening formed therethrough defining a longitudinal axis and an interior surface which is formed having a thread, said nut thread being complementary to said screw thread, said nut further including an axially facing exterior end surface having a recess formed therein;
a plurality of balls disposed between said screw and said nut, each of said balls extending partially into both of said screw thread and said nut thread; and
a wire member including a first portion and a second portion, said first portion being disposed between said screw and said nut and extending partially into both of said screw thread and said nut thread, said second portion being disposed within said recess of said exterior end surface.

5,295,407
ELECTRIC LINEAR ACTUATOR
Goro Hirose, Higoshi; Masahito Sato, Maebashi; Daisaku Kawada, Yoshioka, and Akio Sakai, Maebashi, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Aug. 31, 1992, Ser. No. 937,288
Claims priority, application Japan, Sep. 4, 1991, 3-78759[U]; Dec. 24, 1991, 3-111573[U]
Int. Cl.[5] F16H *25/22*
U.S. Cl. 74—459 9 Claims



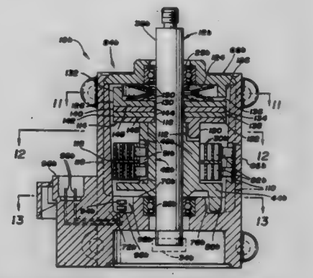
1. An electric linear actuator comprising:
an output shaft which is displaceable in an axial direction and non-rotatable about its axis and which has one end thereof coupled to a driven device;
a cylindrical member arranged coaxially with said output shaft and rotatably about said output shaft, and driven in rotation by an electric motor; and
a feed screw mechanism arranged between said output shaft and said cylindrical member for converting a rotating motion of said cylindrical member to a linear motion of said output shaft,
said feed screw mechanism including:
a male spiral groove formed in an outer peripheral surface of said output shaft;
a nut cylinder secured on an inner peripheral surface side of said cylindrical member and having a female spiral groove formed in an inner peripheral surface thereof, and formed with a communicating path extending in a direction orthogonal to said female spiral groove and communicating between two adjacent portions of said female spiral groove spaced in the axial direction;
a plurality of balls accommodated between both spiral grooves; and
a pair of deflectors respectively secured toward opposite end portions of said female spiral groove for returning moving balls from each of said adjacent portions to the other through said communicating path.

5,295,408
ADJUSTABLE CABLE STRAND END FITTING
James J. Nagle, Birmingham, and David A. Van Zanten, Clawson, both of Mich., assignors to Nagle Industries, Inc., Clawson, Mich.
Filed Oct. 9, 1992, Ser. No. 959,075
Int. Cl.[5] F16C *1/22*
U.S. Cl. 74—502.6 7 Claims



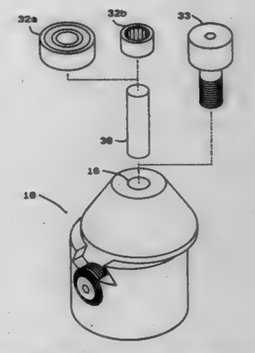
1. A cable strand end fitting operative to cooperate with a retaining member staked to an end of a cable strand comprising:
a housing having a passageway, said housing having an attachment portion for attachment to a mounting pin located on a moveable member;
a longitudinal member telescopingly disposed within said passageway, said longitudinal member having an aperture therethrough for receiving a cable strand wherein the cable strand extends through said housing and said longitudinal member;
bias means acting between said housing and said longitudinal member for urging said longitudinal member against said retaining member;
locking means for preventing relative movement between said longitudinal member and said housing, said locking means operable to move between a first, disengaged position and a second, engaged position;
detent means for retaining the locking means in the engaged positions;
said housing having a slot transverse said passageway;
said longitudinal member including a plurality of serrations located on a surface thereof;
said locking means including a locking clip having a plurality of serrations complementary to the serrations on said longitudinal member positioned in said slot and operable to move between a first, disengaged position and a second, engaged position wherein when said locking clip is placed in the second, engaged position the plurality of said complementary serrations on said locking clip engage the plurality of serrations on said longitudinal member and retain said member in a fixed position;
said passageway is substantially cylindrical, and includes a plurality of channels located therein; and
said longitudinal member including a plurality of rib members, said rib members slidably positioned within said channels when said longitudinal member is disposed in said passageway; and
a first set of deflectable resilient fingers including locking projections thereon that coact with said rib members to retain the locking clip in the transverse slot.

5,295,409
REMOTE CONTROL LEVER MODULE
Robert J. Byram, Grand Blanc; Daniel A. Crawford, Burton; Steven A. Kornburger, Waterford, all of Mich.; Kevin R. Keegan, Hilton, N.Y.; Daniel F. Smith, Conesus, N.Y., and Donald G. Witzel, Fairport, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 692,375, Apr. 26, 1991, Pat. No. 5,233,882, which is a continuation-in-part of Ser. No. 552,173, Jul. 12, 1990, abandoned. This application Apr. 19, 1993, Ser. No. 47,899
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—514 3 Claims



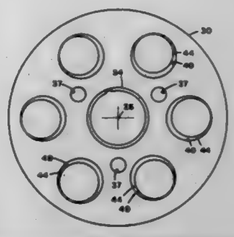
1. A remote control lever module comprising:
a support member having an opening;
a rotating structure having a shaft axle portion extending through said opening and adapted to rotate with respect to said support member;
a return spring biasing said structure toward rotation in one direction with respect to said support member;
a sensor mounted on said support member for producing an electrical signal indicative of rotation of said structure;
and a resistance pad disposed between said structure and said support member, said pad having a first surface engaging said structure to resist rotation of said structure relative to said pad;
wherein said pad is adapted to rotate about the axis of said shaft axle portion with respect to both said structure and said support member, and wherein said pad has a second surface engaging said support member to resist rotation of said pad relative to said support member, whereby said return spring causes said shaft to rotate in said one direction despite excessive resistance to rotation of said structure relative to said pad or of said pad relative to said support member.

5,295,410
USE OF BORING HEADS AS ADJUSTABLE THROW ECCENTRIC SHAFTS
Duane Schow, 11531 Hidden Valley Blvd., Sandy, Utah 84092
Filed Aug. 24, 1992, Ser. No. 934,191
Int. Cl.[5] F16H *35/08*
U.S. Cl. 74—571 L 12 Claims



1. An adjustable throw eccentric shaft comprising:
(a) a boring head comprising a body, a slide, and means for moving said slide relative to said body;
(b) a bearing means;
(c) an attachment means for attaching said bearing means to said slide of said boring head;
(d) an attachment means for attaching said boring head to a rotating member of a mechanical device.

5,295,411
TORSIONAL VIBRATION ABSORBER SYSTEM
Frank H. Speckhart, 3411 Kingston Pike, Knoxville, Tenn. 37919
Filed Jun. 22, 1993, Ser. No. 80,757
Int. Cl.[5] F16F *15/10;* F16C *3/04*
U.S. Cl. 74—574 20 Claims



1. A system for absorbing torsional vibration in a shaft which is drivingly rotated about an axis and wherein the shaft is exposed to torsional disturbances which tend to cyclically increase and decrease the rotational speed of the shaft, the system comprising:
means defining at least one elongated cavity for rotating with a rotating shaft as the shaft rotates about its axis of shaft rotation, the elongated cavity arranged in such a relation to the shaft so that the longitudinal axis of the cavity is substantially parallel with the axis of shaft rotation;
a rolling element positioned within the one elongated cavity so as to be free to roll forwardly and rearwardly with respect to the direction of rotation of the shaft along the interior wall of the one cavity in a pendulum action upon

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exposure of the shaft to torsional disturbances during rotation; and

wherein the rolling element is related to the one elongated cavity and to the torsional disturbances desired to be absorbed by the system in accordance with the equation:

$$N^2 = r_w^2 r_3 / [r_g^2 + r_w^2][r_1 - r_w]$$

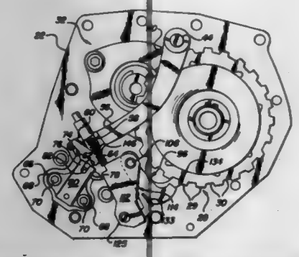
wherein N is within about ±15% of the number of torsional disturbances per revolution of the shaft, r_w is the radius of the rolling element, r_g is the radius of gyration of the rolling element, r_1 is the radius of the one cavity, and r_3 is the radial distance of the one cavity from the axis of rotation of the shaft.

5,295,412

PARK LOCKING MECHANISM

John M. Donato, Wixom, Mich.; Robert S. McKee, Palatine, and Peter M. Giannis, Arlington Heights, both of Ill., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 9, 1992, Ser. No. 88,718
Int. Cl.[5] G05G *1/00*, B60K *41/26, 20/00*
U.S. Cl. 74—577 R **6 Claims**



1. A park locking mechanism for a selected gear of a vehicle transmission, including manually actuatable shift rod, a pivotally mounted pawl lever for selectively engaging the gear, and a rod assembly operatively connected to said pawl lever, the improvement comprising a rotatable rod operatively connected to said shift rod, a locking lever secured to said rotatable rod for rotation therewith, a pair of recesses formed in the distal end of said locking lever, spring-loaded lug means for alternately engaging said recesses, and connector means between said locking lever and said rod assembly for pivoting said pawl lever into and out of engagement with said selected gear.

5,295,413

ONE-PIECE POWER TRANSMISSION CASING AND A METHOD OF ASSEMBLING A TRANSMISSION MECHANISM THEREIN

James F. Sherman, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1992, Ser. No. 960,638
Int. Cl.[5] F16H *1/12*
U.S. Cl. 74—606 R **7 Claims**

1. A method for assembling a transmission within a one-piece casing comprising the steps of:

fabricating a hollow transmission casing having axially spaced front and rear faces cojoined by an axially extending peripheral boundary wall, a first major opening penetrating the front face, a second major opening penetrating the rear face, an idler shaft access aperture penetrating the rear face and an aperture penetrating the front face in substantial alignment with the second major opening;

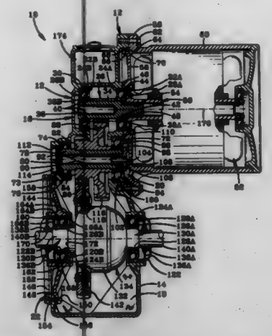
machining axially spaced front and rear drive gear bearing supports located in general proximity to the respective front and rear faces;

machining axially spaced front and rear idler gear bearing supports that are also located in general proximity to the front and rear faces but in laterally displaced relation relative to the front and rear drive gear bearing supports;

machining a final drive front bearing support through said front face;

inserting a drive gear, a drive gear shaft and drive gear bearings through the first major opening to be supported by the front and rear drive gear bearing supports;

inserting front and rear idler bearings through the first major opening;



positioning the front and rear idler bearings on the respective front and rear idler gear bearing supports;

inserting an idler gear through the second major opening;

manipulating the idler gear into engagement with the drive gear;

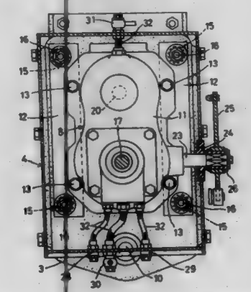
inserting an idler gear support shaft through the idler gear shaft access opening operatively to engage the idler gear and the idler gear bearings to support the idler gear for rotation in response to rotation of the drive gear.

5,295,414

VIBRATION AND NOISE PROOFING SYSTEM FOR A HYDROSTATIC STEPLESS TRANSMISSION ATTACHED TO A TRANSMISSION CASE

Tadashi Nakamura; Kenzo Ushiro; Hirofumi Iritani, and Eiishi Ishida, all of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Dec. 26, 1991, Ser. No. 813,982
Claims priority, application Japan, Apr. 15, 1991, 3-81082; Jul. 10, 1991, 3-169528; Jul. 11, 1991, 3-170777
Int. Cl.[5] F16H *47/00*
U.S. Cl. 74—655 **4 Claims**



1. A vibration and noise-reducing apparatus for a working vehicle, comprising:

a hydrostatic stepless transmission having a housing;

an input shaft extending from a first end of said hydrostatic stepless transmission to a main clutch case;

an output shaft extending from a second end of said hydrostatic stepless transmission and to a gear transmission case;

a vibration proofing unit connecting said hydrostatic stepless transmission to said transmission case, said vibration proofing unit including:

an intermediate mounting member integrally molded with said housing of said hydrostatic stepless transmission, said intermediate mounting member having at least one mounting bore extending parallel to said output shaft;

a metallic outer tube inserted into said mounting bore;

a metallic inner tube disposed concentrically with respect to said outer tube;

a rubber element filling an annular space defined between said outer tube and said inner tube;

a spacer extending from said gear transmission case to a point adjacent said inner tube so as to define a space between said hydrostatic stepless transmission and said transmission case;

a bolt insertable through said inner tube and said spacer so as to mount said intermediate mounting member to said transmission case; and

vibration absorbing means mounted to said input shaft and said output shaft;

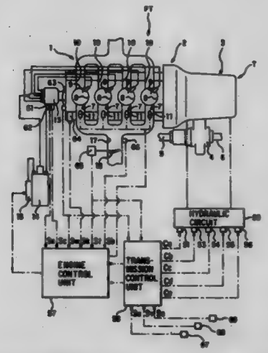
whereby noise and vibrations of said hydrostatic stepless transmission through said input and output shaft are substantially suppressed.

5,295,415

TORQUE CONTROL APPARATUS FOR ENGINE AND AUTOMATIC TRANSMISSION

Mitsutoshi Abe; Kazuo Sasaki; Hiroshi Yoshimura; Masahito Kitada; Kanji Okamoto, and Toshihisa Marusue, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 27, 1992, Ser. No. 859,569
Claims priority, application Japan, Mar. 29, 1991, 3-065872; Jun. 26, 1991, 3-154485; Jun. 26, 1991, 3-154491
Int. Cl.[5] B60K *41/08*
U.S. Cl. 74—859 **5 Claims**



1. A control apparatus for controlling an engine and an automatic transmission for an automotive vehicle so that output torque of said engine is reduced in a torque reduction period during gear shifting, said control apparatus comprising:

shift control means for shifting said automatic transmission in response to a load of said engine;

torque reduction timing means for changing a time from which said torque reduction period starts in response to compliance of variations in an input torque of said automatic transmission with variations in said load of said engine; and

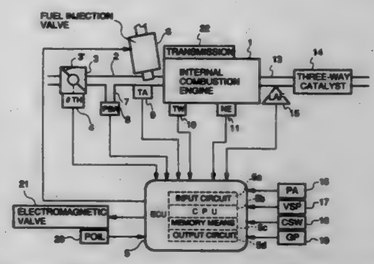
reduction control means for controlling said output torque of said engine so that said output torque is reduced during said torque reduction period after said time is changed by said torque reduction timing means.

5,295,416

AIR-FUEL RATIO CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Yukio Miyashita; Hiroshi Mifune; Kunio Noguchi, and Hironao Fukuchi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 761,149
Claims priority, application Japan, Sep. 17, 1990, 2-246723
Int. Cl.[5] F16H *59/68*
U.S. Cl. 74—860 **9 Claims**



1. An air-fuel ratio control method for an internal combustion engine having an exhaust passage, an exhaust gas ingredient concentration sensor arranged in said exhaust passage for sensing the concentration of an ingredient in exhaust gases from said engine, and a transmission, wherein the air-fuel ratio of an air-fuel mixture supplied to said engine is feedback-controlled in response to output from said exhaust gas ingredient concentration sensor to a desired air-fuel ratio dependent on operating conditions of said engine, the method comprising the steps of:

(1) determining whether or not said transmission is being shifted;

(2) determining whether or not a predetermined time period has elapsed after shifting of said transmission, if said transmission is not being shifted; and

(3) when said transmission is being shifted or before said predetermined time period elapses after the shifting, holding said desired air-fuel ratio at a value assumed immediately before the shifting of said transmission.

5,295,417

MULTISTEP FINISHING PROCESS FOR SAW BLADE TEETH AND A SAW FINISHING MACHINE TO CARRY OUT THE PROCESS

Ernst Beck, Maselheim, and Erich Pokorny, Schemmerhofen, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach/Riss, Fed. Rep. of Germany

PCT No. PCT/EP92/00986, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992
PCT Filed May 6, 1992, Ser. No. 952,520
Claims priority, application Fed. Rep. of Germany, May 7, 1991, 4114942
Int. Cl.[5] B23D *63/20, 65/00*; C21D *9/24*
U.S. Cl. 76—25.1 **10 Claims**

1. A multistep finishing process carried out on saw blade teeth, wherein

saw blade (10) is moved step by step through a first station (20) and a second station (40) for complementary finishing operations,

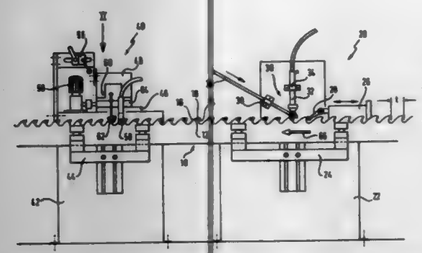
VOL 1160 ISS 4 MR 22 1994 UMI

the saw blade (10) motion is stopped whenever a tooth (12) has reached a desired position in the first station (20), that tooth (12) is finished during standstill of the saw blade (10) at the first station (20), and

the same tooth (12) later on is finished also at the second station (40),

characterized in that

to begin with, a starting point (A) is set which will be located remote from a predetermined edge (14) of the tooth (12) which is stopped at the second station (40) whenever the saw blade (10) has come to a halt, no matter what the tooth pitch error is,



prior to each finishing operation of a tooth (12) at the second station (40), a sensor (50) is moved in longitudinal direction of the saw blade (10), starting from the starting point (A), to a reference point (B) which depends on the position of the edge (14) of that tooth (12),

a finishing device (60), in each instance, is moved from an inoperative position into an operative position by a distance (z) which depends on the path (x) of the sensor (50) from the starting point (A) to the reference point (B) to finish the tooth (12) which is located at the second station (40), and

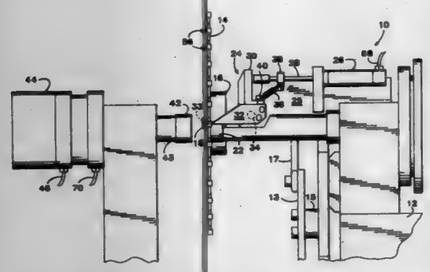
following each finishing operation, the sensor (50) is returned to the starting point (A) and the finishing device (60) to the inoperative position.

5,295,418

INDEXING SYSTEM FOR A SAW REGRINDING MACHINE

James Enter, 2007 NW. 267th Cir., Ridgefield, Wash. 98642

Filed Aug. 4, 1992, Ser. No. 924,858
Int. Cl.[5] B23D *63/14*
U.S. Cl. 76—37 9 Claims



1. In a saw regrinder for sharpening the teeth of a circular saw including a rotary spindle having the saw mounted thereon for rotating the saw to position each tooth thereof in turn for sharpening, an indexing system comprising:

(a) a pneumatic source;

(b) a side clamp assembly responsive to the pneumatic source for engaging the saw to prevent its movement during sharpening; and

(c) a stop assembly comprising a single action air cylinder responsive to the pneumatic source for halting rotation of the saw at predetermined positions by pushing an indexing finger into the plane of the saw, said stop assembly having retracting spring means for retracting the finger away from the plane of the saw blade when the side clamp assembly engages the saw.

5,295,419

PRY DEVICE ADAPTED FOR REMOVING CONTAINER LIDS

Donald L. Denning, 6730 Indiana St., Golden, Colo. 80403

Filed Dec. 3, 1992, Ser. No. 985,597
Int. Cl.[5] B67B *7/14*
U.S. Cl. 81—3.37 22 Claims



1. A pry device adapted for removing a lid from a container of a type having an upright wall terminating in an upper rim on which a collar of the lid is releasably secured, the upright wall having a flange extending outwardly therefrom at a location proximate to the upper rim, comprising:

(a) a first lever member having a first handle portion and a first lip portion opposite said first handle portion, said first lip portion extending transversely with respect to said first handle portion so that said first lip portion projects laterally on either side of said first handle portion, said first lip portion being sized and configured to engage an edge portion of the collar when the lid is secured to the container;

(b) a second lever member having a second handle portion and a second lip portion opposite said second handle portion, said second lip portion extending transversely with respect to said second handle portion so that said second lip portion projects laterally on either side of said second handle portion, said second lip portion being sized and configured to engage the flange on the container; and

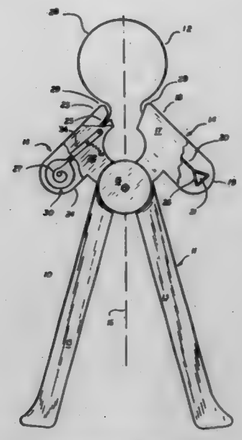
(c) a fulcrum element interconnecting said first and second lever members for relative pivotal movement therebetween so that said first and second lip portions are movable between a contracted position wherein said first and second lip portions are alongside one another yet separated a first distance sufficient to respectively engage the edge portion of the collar of the lid and the flange and an expanded portion wherein said first and second lip portions are separated a second distance greater than said first distance, said first and second lip portions operative to exert a prying force between the edge portion of the lid and the flange thereby removing the edge portion of the collar of the lid from the rim of the container when the first and second lip portions are moved from said contracted position to said expanded position.

5,295,420

MULTI-PURPOSE OPENER

James C. Grimes, Box 9, Lowland, N.C. 28552

Filed Apr. 5, 1993, Ser. No. 42,710
Int. Cl.[5] B67B *7/14*
U.S. Cl. 81—3.43 1 Claim



1. A cap gripping device comprised of:

a) first and second levers, each elongated between a handle extremity and opposed head extremity and interengaged adjacent said head extremity by pivotal attaching means in plier-like configuration, permitting coplanar movement of said levers in opposite directions about a center line of symmetry,

b) a first jaw block associated with the head extremity of said first lever and elongated between inwardly directed and outwardly directed extremities, a first interior passage directed between said extremities, and an anchoring feature associated with said outwardly directed extremity,

c) a second jaw block associated with the head extremity of said second lever and elongated between forward and rear extremities, and a second interior passage extending between said extremities, said forward extremity facing the inwardly directed extremity of said first jaw block,

d) a compliant inelastic cap-engaging strap having a fixed extremity secured by said anchoring feature and an adjustable extremity adapted to travel longitudinally within said second interior passage, said strap forming a loop of adjustable size disposed forwardly of said jaw blocks, and

e) a flanged spool upon which said strap is spirally wound, said spool associated with the rear extremity of said second jaw block and adapted to permit motion of said strap through said second passage in the direction of said rear extremity, thereby controlling the size of said loop,

f) a ratchet wheel associated with one flange, and a releasable pawl positioned to engage said ratchet wheel,

g) a knob associated with said spool in a manner to turn said spool in one direction to wind said strap upon said spool, thereby shortening said loop, and

h) tensioning tips associated with said jaw blocks and configured to abut against said strap, whereby

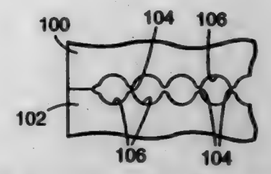
i) when the size of the loop is adjusted to make a close fit upon a particular cap, the lever handle extremities may be manually drawn together to cause said strap to tightly embrace said cap, and rotational force may be manually exerted upon the handle extremities, thereby loosening or tightening said cap.

5,295,421

BLADE FOR FIBER RIBBON STRIPPING

Charles M. Mansfield, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 23, 1992, Ser. No. 899,812
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.4 6 Claims



1. An article for use in a fiber optic ribbon stripping tool, the article comprising:

a first blade member having a cutting edge, said cutting edge having first and second borders, and having a plurality of semicircular cutouts located between said borders, said cutouts defining tips between adjacent ones of said cutouts;

a second blade member having a cutting edge, said cutting edge having first and second borders, and having a plurality of semicircular cutouts located between said borders, said cutouts defining tips between adjacent ones of said cutouts, said tips of said second blade member being aligned with said tips of said first blade member, forming pairs of opposing tips; and

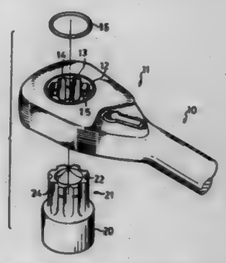
said tips of said first blade member being recessed from a line defined by said borders of said cutting edge of said first blade member, and said tips of said second blade member being recessed from a line defined by said borders of said cutting edge of said second blade member whereby, when said borders of said first blade member are in contact with said borders of said second blade member, there is a gap between each of said pairs of opposing tips.

5,295,422

WRENCH HAVING A GREATER DRIVING STRENGTH

Jessie Chow, No. 18, Houchuang Rd., Pei Twen Dist., Taichung, Taiwan

Filed Apr. 23, 1993, Ser. No. 51,239
Int. Cl.[5] B25B *23/16*
U.S. Cl. 81—124.3 2 Claims



1. A ratchet wrench assembly for driving a headed fastener, comprising:

a) a wrench having a handle portion and a head portion located at one end of the handle portion, the head portion defining an opening;

b) a sleeve located in the opening such that the sleeve may rotate with respect to the head portion in one direction and may rotate with the head portion in an opposite direction, the sleeve defining an inner, substantially cylindrical engaging surface having a plurality of substantially semi-

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cylindrical ribs projecting radially inwardly from the inner cylindrical engaging surface; and,

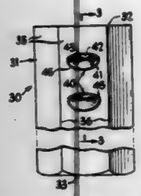
c) a socket having a protion for engaging a headed fastener and a barrel portion defining a plurality of depressions each having a substantially semi-circular cross-sectional configuration to receive the semi-cylindrical ribs therein, whereby the semi-cylindrical ribs and the semi-cylindrical depressions from contact surfaces when the barrel portion of the socket is inserted into the sleeve to be driven by the wrench.

5,295,423

BIT WITH FRICTIONAL RETENTION IN DRIVE SOCKET

Frank Mikic, Kenosha, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Nov. 2, 1992, Ser. No. 970,110
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—438 **20 Claims**



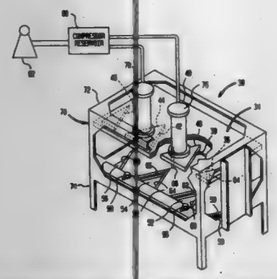
1. A bit comprising: an elongated solid body substantially polygonal in transverse cross section, said body having a plurality of substantially flat planar surfaces intersecting at a plurality of corners, a recess formed in at least one of said flat surfaces, and a raised ridge of material displaced from said recess and projecting from the associated one of said flat surfaces around substantially the entire perimeter of said recess.

5,295,424

PORTABLE MULTIPLE SHINGLE ROOF-CAP CUTTER AND METHOD OF USING SAME

Charles J. Aulicky, 7 Humphrey Rd., Annandale, N.J. 08801

Filed Jul. 16, 1992, Ser. No. 915,461
Int. Cl.[5] B26D *1/09*
U.S. Cl. 83—56 **8 Claims**



1. A method of cutting a plurality of multi-tabbed shingles into portions suitable for use as roof-cap comprising in combination;

(a) positioning a plurality of multi-tabbed shingles provided with slots on a stationary base-plate such that said slots of said shingles are disposed about two positioning posts affixed to said stationary base plate, which posts limit the lateral and longitudinal motion of said plurality of multi-tabbed shingles, said base plate being further provided with a first plurality of cutting edges, and

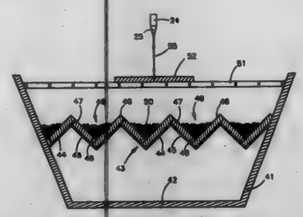
(b) cutting said multi-tabbed shingles by way of a movable cutting plate having a second plurality of cutting edges positioned, configured and dimensioned to cooperate with said first plurality of cutting edges to cut said shingles into portions suitable for use as roof-cap.

5,295,425

FLUID JET CUTTING APPARATUS

Peter Hediger, Fabrikweg 15, CH-5033 Buchs, Switzerland

Continuation-in-part of Ser. No. 771,309, Oct. 2, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,245
Claims priority, application European Pat. Off., Oct. 10, 1990, 90810780-8
Int. Cl.[5] B26F *3/00*; B26D *7/00*
U.S. Cl. 83—177 **7 Claims**



1. An apparatus for cutting a plain, curved or arched workpiece by a fluid cutting medium ejected under high pressure, said apparatus comprising:

a tube-like member having an end portion and an inlet for receiving the fluid cutting medium, said tube-like member having an axis and being displaceable along said axis;

nozzle means connected at said end portion of said tube-like member;

means for ejecting the fluid cutting medium to provide a high pressure fluid jet escaping from said nozzle means to cut the workpiece;

guiding means including a guiding member adjustable in two directions extending perpendicular to each other for enabling said tube-like member to displace along said axis;

supporting means for supporting for pivotal movement said end portion of said tube-like member at which said nozzle means is connected;

a tub assembly for supporting the workpiece to be cut by the high pressure fluid jet escaping from said nozzle means and for collecting the fluid cutting medium;

said tub assembly comprising a tub including a bottom wall portion and side wall portions extending from said bottom wall portion to define an interior space of said tub and an opening of said tub;

said tub assembly comprising a fluid permeable supporting surface for supporting the workpiece to be cut, said fluid permeable supporting surface being mounted between said side wall portions of said tub and in the vicinity of said opening of said tub;

said tub assembly comprising a grating assembly mounted between said side wall portions of said tub and in the interior space of said tub, said grating assembly being disposed between said fluid permeable supporting surface and said bottom wall portion of said tub;

said grating assembly including a plurality of strip portions and for receiving the fluid cutting medium from said nozzle means, said plurality of strip portions including a first series of parallel strip portions lying in different planes and extending in a first direction and a second series of parallel strip portions lying in different planes and extending in a second direction which is transverse to said first direction, the strip portions of said first series of parallel strip portions being disposed alternately between the strip portions of said second series of parallel strip portions;

each of the strip portions of said first series of parallel strip portions and an adjacent strip portion of said second series of parallel strip portions forming a channel having a predetermined angle between the adjacent strip portions, at least one of the adjacent strip portions forming the channel having an aperture for allowing the fluid cutting medium to pass therethrough and thereby to collect in the interior space of said tub; and

a protective layer disposed between said fluid permeable supporting surface and said strip portions and for protecting said strip portions when said grating assembly receives the fluid cutting medium.

5,295,426

SLOT STARTING SAWING METHOD AND APPARATUS

Paul O. Planchon, 2580 Melody La., Reno, Nev. 89512

Filed Jun. 15, 1992, Ser. No. 898,478
Int. Cl.[5] B27B *33/02*
U.S. Cl. 83—846 **3 Claims**



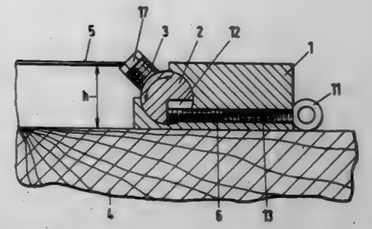
1. A saw blade comprising: an elongate member of suitable saw blade material having a width, length, thickness, a first leading edge, a second trailing edge, a first end and a second end; said first end being provided with means to connect to a reciprocating mechanism; said first leading edge having saw teeth extending from said second end to a first position adjacent the means to connect to a reciprocating mechanism, wherein said saw teeth are of uniform size from said first position to a second position intermediate the first position and the second end; said saw teeth gradually diminish in size from said second position to the second end; said second trailing edge being stepped so the width of the saw blade is decreased at a third position intermediate the first and second ends, said decreased width being continued to a fourth position intermediate the third position and the second end; the width of the saw blade being tapered from the fourth position to the second end in such manner as to create a sharp point at the second end; said second trailing edge being tapered to a knife edge along its length from the third position to the sharp point; and the first leading edge and the saw teeth thereon being tapered to a knife edge from the second position to the sharp point.

5,295,427

BRIDGE FOR STRING INSTRUMENTS

Jens Johnsen, Tarpenbekstrasse 48,, D-2000 Hamburg 20, Fed. Rep. of Germany, and

Filed Jan. 21, 1993, Ser. No. 7,321
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1992, 4201438
Int. Cl.[5] G10D *3/04*
U.S. Cl. 84—307 **8 Claims**



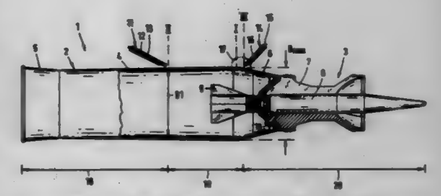
1. A bridge for stringed instruments for fastening the strings of the instrument to a body of the instrument, the bridge comprising a solid base body, a bearing cylinder for each string mounted in the base body, the bearing cylinder being rotatable for effecting a vertical adjustment of the string relative to the instrument body, the bearing cylinder having an axis extending perpendicularly to a string axis, the bearing cylinder defining a string throughbore having an axis and extending perpendicularly to the bearing cylinder axis, the base body defining a throughbore positioned in the base body, the throughbore being in alignment with the string throughbore of the bearing cylinder, an intonation tube mounted in the string throughbore, the intonation tube being adjustable in axial direction of the string throughbore, the string extending through the intonation tube, such that a length adjustment of the string is effected by an adjustment of the intonation tube in axial direction of the string throughbore of the bearing cylinder.

5,295,428

METHOD OF DISASSEMBLING LARGE-CALIBER COMBAT CARTRIDGES AND USE OF THE CARTRIDGE COMPONENTS OBTAINED BY THE METHOD FOR THE PRODUCTION OF NEW CARTRIDGES

Thomas Heitmann; Klaus Unterstein, both of Düsseldorf; Walter Simon, Herzogenrath, and Dieter Jungblath, Herschbach, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 6,853
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1992, 4201862
Int. Cl.[5] F42B *33/06*
U.S. Cl. 86—49 **4 Claims**



1. A method of dismantling a large-caliber cartridge composed of

a propelling charge casing having a casing jacket, a casing bottom at one end of the casing jacket and a forwardly

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conically tapering casing cover at another, opposite end of the casing jacket; the casing jacket conically widening toward the casing cover, whereby the casing jacket has a maximum diameter at a location of transition to the casing cover; and

a sub-caliber projectile fastened to the casing cover and composed of a penetrator and a sabot surrounding the penetrator;

the method comprising the following steps:

(a) severing the casing jacket in a first region at a casing jacket diameter that is less than said maximum diameter;

(b) severing the casing cover at a second region at a casing cover diameter that is the same as the casing jacket diameter in said first region;

(c) discarding the large-caliber cartridge part severed between the first and second regions; and

(d) reusing the large caliber cartridge part extending from said first region to a rearward end of the cartridge and the large-caliber cartridge part extending from said second region to a forward end of the cartridge.

5,295,429

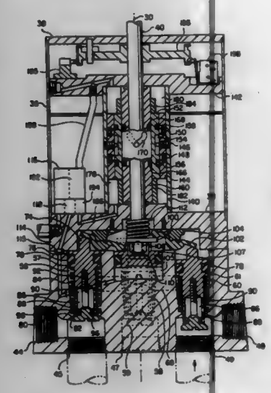
PRESSURIZED FLUID DIRECTIONAL FLOW CONTROL VALVE ASSEMBLY

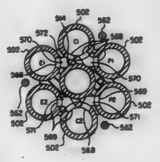
Robert J. Monk, Cedar Hill, Tex., assignor to Joe Harris Monk, Midlothian, Tex.

Continuation-in-part of Ser. No. 651,150, Feb. 6, 1991, abandoned. This application Sep. 8, 1992, Ser. No. 941,748

Int. Cl.[5] F15B *13/04*

U.S. Cl. 91—445 **22 Claims**





1. A valve assembly for selectively controlling pressurized fluid flow to operate a fluid operated working cylinder and piston comprising:

a) a valve body;

b) a pair of bore groups with each group defining at least three bores in said body;

c) biased plunger valves operably interposed in each of said bores;

d) a pair of separated flow passages on one side of said interposed valves, one of said passages being in continuously open flow communication commonly inter-connecting in parallel between the at least three bores of one bore group and the other of said passages being in continuously open flow communication commonly inter-connecting in parallel between the at least three bores of the other bore group;

e) pressure connection means leading to a first one of said bores in each bore group on the other side of said interposed valves;

f) first side cylinder connection means leading to a second one of said bores in one of each pair of bore groups;

g) second side cylinder connection means leading to a second one of the other one of each pair of bore groups;

h) exhaust connection means leading to a third one of said bores in each of said bore groups; and

i) control means operably associated with said valves for selectably actuating said interposed valves in a predetermined sequence for effecting selected inter-connection between the flow passage thereat, said valves and corresponding cylinder connection means to provide either contraction, extension or a neutral condition for said working piston and cylinder.

5,295,430

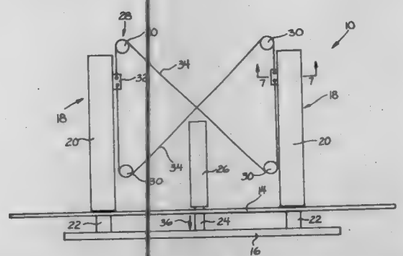
EQUALIZER FOR SLIDING TUBULAR MEMBERS

James E. Dewald, Jr., Mishawaka, and Patrick W. McManus, both of 1023 W. 8, P.O. Box 703, Mishawaka, Ind. 46544

Filed Jul. 13, 1992, Ser. No. 912,733

Int. Cl.[5] F16J *15/18*

U.S. Cl. 92—165 R **5 Claims**



1. In a power driven system including a stationary frame and a movable frame, a sliding member of said movable frame connected to each of a plurality of slide tubes, each slide tube slidably fitted in a stationary guide tube, and power assist means for effecting sliding movement of said slide tubes relative to said guide tubes between a full extended position and a full retracted position, the improvement comprising an equalizer means connecting said equalizer between said slide tubes and said stationary frame, said equalizer constituting means for synchronizing movement of said slide tubes as the slide tubes are shifted between said extended and retracted positions.

5,295,431

CAPPUCCINO ACCESSORY

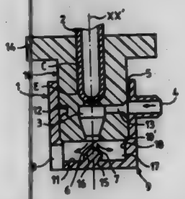
Patrice J. C. Schiettecatte, and Justinus T. A. C. Paquay, both of Alencon, France, assignors to Moulinex (Societe Anonyme), Bagnolet, France

Filed Feb. 10, 1993, Ser. No. 15,862

Claims priority, application France, Feb. 10, 1992, 92 01445

Int. Cl.[5] A47J *31/40*

U.S. Cl. 99—293 **9 Claims**



1. In an accessory for the preparation of a creamy air-milk-steam emulsion to produce cappuccino, adapted to be mounted on the end of an outlet pipe for steam (2) of an espresso coffee machine and comprising an aspiration chamber (3) communicating with the steam outlet pipe (2), a first lateral opening (4) adapted to communicate with a receptacle containing milk, a second lateral opening (5) communicating with the atmosphere, and a third opening (6) through which leaves a first mixture which flows into an emulsion chamber (7) comprising a first flow means (8) through which escapes said creamy emulsion; the improvement wherein the accessory further comprises a first rigid tubular member (9) having an upper end, a base (11), an internal wall (18), the first opening (4) and the first flow means (8), and in which is partially sunk a second flexible tubular member (10) having an upper end and a lower end, said second flexible tubular member adapted to be connected at its upper end to said steam outlet pipe (2) and comprising the aspiration chamber (3) which thus becomes connected to the first opening (4) and the second opening (5), the space remaining between the lower end of the second flexible tubular member (10) and the base (11) of the first rigid tubular member (9) comprising said emulsion chamber (7).

5,295,432

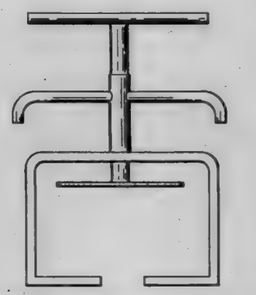
CAN DRAINER INCLUDING MAGNETIZED PLATE AND SPLASH GUARD

Patricia M. Keville, 235 17th St. SE., Washington, D.C. 20003, and Thomas J. Murphy, Jr., 7207 Patton Dr., Woodbine, Md. 21797

Continuation-in-part of Ser. No. 947,547, Sep. 21, 1992. This application Feb. 22, 1993, Ser. No. 21,278

Int. Cl.[5] B30B *9/04*

U.S. Cl. 100—110 **2 Claims**



1. A can draining device for draining an opened can with a detached lid comprising:

(a) a base with first and second ends;

(b) a first upright with first and second ends connected to the first end of the base at the first end of the first upright;

(c) a second upright with first and second ends connected to the second end of the base at the first end of the second upright;

(d) a crosspiece connected to the first and second uprights at the second end of the first and second uprights with a hole extending through the crosspiece;

(e) a hollow tubular member which houses a groove inside the hollow shaft extending from the crosspiece in a direction opposite the base;

(f) a first handle means connected to the tubular member;

(g) a shaft having first and second ends extending through the hollow tubular member and the hole in the crosspiece which has a guide tongue that fits into the groove in the hollow tubular member;

(h) a second handle means connected to the shaft at the first end of the shaft;

(i) a splash guard mounted to the tubular member; and

(j) an enclosed magnet mounted to a plate which magnetizes the plate, the magnetized plate attached to the second end of the shaft whereby a can positioned between the magnetized plate and base may be drained when the lid, magnetically held by the magnetized plate, is squeezed by pressing the shaft through the tubular member and compressing the lid of the can, thereby draining the can's liquids which are directed out of the can against the splash guard.

5,295,433

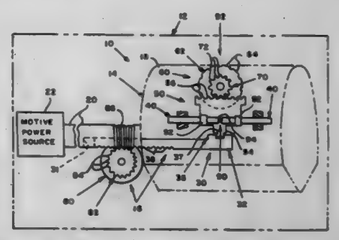
VALUE SELECTION MECHANISM INCLUDING MEANS FOR WEAKENING A SHAFT THEREOF

Richard A. Malin, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 2, 1993, Ser. No. 85,365

Int. Cl.[5] B41L *47/46*

U.S. Cl. 101—91 **7 Claims**



1. Value selection and printing apparatus comprising:

a. means for printing a value, the printing means including a rotatable device and a drive shaft therefor;

b. means for selecting the value, the value selecting means including a first rack gear slidably movably connected to the drive shaft, the first rack gear including a first portion of the length thereof movable internally of the device and a second portion of the length thereof movable externally of the device, the internally movable portion including a driven element, the externally movable portion including a plurality of first gear teeth formed therein;

c. the value selecting means including a rigid guide shaft fixedly mounted within the device and an elongate second rack gear slidably connected to the guide shaft for movement therealong, the second rack gear including a driving element therefor, the first rack gear's driven element and the second rack gear's driving element disposed in engagement, the second rack gear including a plurality of second gear teeth;

d. the value selecting means including a value printing wheel, the printing wheel including a circumferentially-extending periphery and a plurality of printing elements located at spaced intervals thereabout, the value selecting means including a pinion gear coaxially fixedly attached to the printing wheel for rotation thereof, the pinion gear disposed in meshing engagement with the second rack gear teeth for rotation of the pinion gear and thus the print wheel in response to movement of the second rack gear; and

e. means for weakening the rigidity of the guide shaft against a force exerted against the printing wheel which is sufficient to disassociate the printing wheel and second rack gear to permit the guide shaft to bend in response to the force.

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5,295,434

PROCESS FOR MAKING PRELIMINARILY PRINTED FORMED BODY

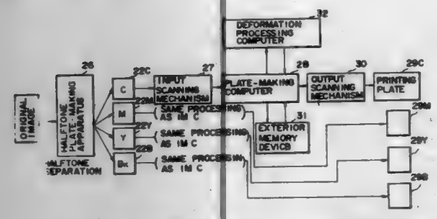
Akihiko Machii; Atsuo Masaki; Yutaka Okunishi, all of Yokohama; Masao Ishinabe, Atsugi, and Katsuhiro Imazu, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 580,981, Sep. 12, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 987,541

Claims priority, application Japan, Sep. 12, 1989, 1-234695

Int. Cl.[5] B41M *3/00, 1/14*

U.S. Cl. 101—211 **7 Claims**



1. A process for making a printed draw-formed body having a printed image on the side wall portion thereof by draw-forming a preliminarily printed blank, which comprises:

separating an image on an original to be printed into halftone dots;

converting each of the halftone dots into an aggregate of picture element signals with rectangular coordinates, said elements being finer than the halftone dots;

developing the respective halftone dots by units of picture element signals onto an annular plane corresponding to the rectangular coordinates and transforming the halftone dots of the rectangular coordinates into deformed halftone dots on the annular plane comprising an aggregate of the picture element signals and having an expanded size in the circumferential direction and a contracted size in the radial direction so that a compression in the circumferential direction and an elongation in the radial direction due to the plastic flow of the blank caused at the draw-forming step are compensated;

making a printing halftone plate based on picture element signals with the transformed coordinates; and

printing a blank using the obtained printing plate.

5,295,435

PLATE LOCKUP APPARATUS FOR PRINTING PRESS

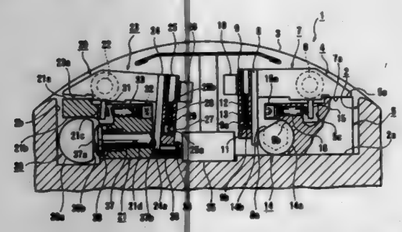
Yutake Fuchi, Ibaraki, Japan, assignor to Komori Corporation, Japan

Filed Nov. 10, 1992, Ser. No. 974,061

Claims priority, application Japan, Nov. 13, 1991, 3-101070[U]

Int. Cl.[5] B41F *1/28*

U.S. Cl. 101—415.1 **4 Claims**



1. A plate lockup apparatus for a printing press, comprising:

a lockup table supported on a bottom surface of a gap in a circumferential surface of a cylinder, the lockup table being movable forward and backward in a direction perpendicular to an axial direction of said cylinder, the lockup table extending in the axial direction of said cylinder;

a gripper plate swingably and pivotally supported on said lockup table such that a gripper surface thereof opposes said lockup table, said gripper plate having a substantially L-shaped section constituted by a horizontal member extending in a circumferential direction of said cylinder and a vertical member extending in a radial direction of said cylinder;

a cam shaft, disposed between said lockup table and a side wall surface of the gap corresponding to said lockup table, the cam shaft extending in the axial direction of said cylinder, the cam shaft being rotatable for closing the gripper surface of said gripper plate;

a transmission pin, supported in a pin hole with a step portion formed in said lockup table, the transmission pin having a head portion contacting a cam surface of said cam shaft and a distal end portion contacting said vertical member of said gripper plate, the transmission pin moving forward and backward in accordance with rotation of said cam shaft;

a first spring member for biasing said transmission pin toward said cam shaft; and

a second spring member for biasing said lockup table toward said cam shaft,

wherein:

a first partial rotation of the cam shaft causes the transmission pin to move forward in said pin hole, the distal end portion of the transmission pin acting on the vertical member of the gripper plate causing the gripper surface of the gripper plate to close, the first partial rotation of the cam shaft lasting from a time when the gripper surface of the gripper plate is at least partially open until the transmission pin is moved forward by a predetermined distance and the head portion of the transmission pin abuts the step portion of the pin hole;

a second partial rotation of the cam shaft causes the transmission pin to initially move the lockup plate forward and subsequently to allow the lockup plate to be moved backward, the lockup table being biased by the second spring member, the second partial rotation of the cam shaft lasting from the time of the end of the first partial rotation and as long as the head portion of the transmission pin abuts the step portion of the pin hole; and

a third partial rotation of the cam shaft allows the transmission pin to move backward in said pin hole, the transmission pin being biased by the first spring member, the distal end portion of the transmission pin allowing the gripper plate to open at least partially.

5,295,436

INNER BLANKET SECUREMENT ASSEMBLY

Hans-Jürgen Kittsteiner, Ruhpolding; Kurt G. Nagler, and Erich G. Wieland, both of Würzburg, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,577

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1992, 4203148

Int. Cl.[5] B41F *21/00*

U.S. Cl. 101—415.1 **6 Claims**

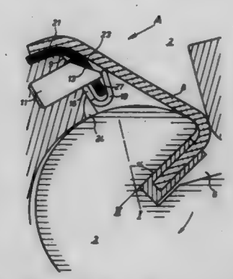
1. An inner blanket securement assembly usable to secure an inner blanket of a multiple layer blanket arrangement to a cylinder, said inner blank securement assembly comprising:

a rotatable cylinder having a peripheral, axially extending cylinder channel;

a front wall surface in said cylinder channel;

a plurality of inner blanket leading edge securement pins spaced axially along said front wall surface and having leading edge portions extending into said cylinder channel from said front wall surface;

at least a first inner blanket hold-down device positioned on said front wall surface between spaced ones of said plurality of pins, said inner blanket hold-down device having a generally hook-shaped holding nose which forms a generally U-shaped channel that is sized to receive a portion of a leading edge of an inner blanket intermediate said securement pins; and



spaced recesses at a radially inner portion of said front wall surface of said channel, said recesses facilitating removal of a leading edge of an inner blanket from said inner blanket securement assembly.

5,295,437

OFFSET PRINTING PROCESS AND CORRESPONDING APPARATUS

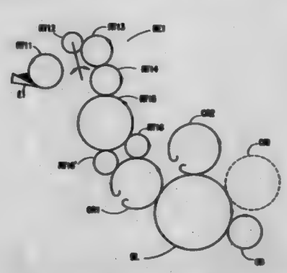
Michel Philippe, Vienne, France, assignor to Pechiney Emballage Alimentaire, Clichy, France

Filed Mar. 25, 1993, Ser. No. 36,872

Claims priority, application France, Mar. 26, 1992, 92 04258

Int. Cl.[5] B41F *23/04*

U.S. Cl. 101—487 **8 Claims**



1. A dry offset printing process using a dry offset printing apparatus including a) at least one inker block for transferring ink to a relief plate corresponding to one color of a final motif to be reproduced on an object and including an inker and a succession of transfer rollers, b) a central rubber blanket mounted on a rotatable drum and in contact with a relief plate in such a way that upon each rotation of the blanket, one complete decoration is transferred to the blanket, c) means for placing the central blanket into contact with a drum bearing an object to be decorated, and d) means for transferring the objects before and after decoration, comprising the steps of:

1) regulating ink temperature in the inker to a predetermined temperature between 15° and 30° C.; and

2) using an ink with tackiness adapted to a job on the offset apparatus, the tackiness at the predetermined temperature of 15° to 30° C., corresponding to the temperature of the ink in the inker, being 3–5 times greater than the tackiness of the same ink after a temperature increase by 15° to 25° C., corresponding to a temperature increase of this ink in passing from the inker to the blanket.

5,295,438

SINGLE INITIATE COMMAND SYSTEM AND METHOD FOR A MULTI-SHOT BLAST

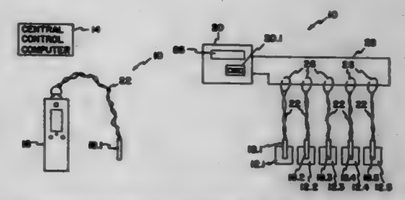
Trevor R. Hill, Cape Town, South Africa; Antony J. Surtees, Hobart, Australia; Mark D. Chewins, Cape Town, South Africa; Andrew J. Houliston, Cape Town, South Africa, and Ari Zagnoev, Cape Town, South Africa, assignors to Plessey Tellumat South Africa Limited, Cape Town, South Africa

Filed Dec. 3, 1992, Ser. No. 985,560

Claims priority, application South Africa, Dec. 3, 1991, 91/9508

Int. Cl.[5] F23Q *21/00*

U.S. Cl. 102—217 **26 Claims**



1. A method of timing and initiating a multi-shot blast using apparatus comprising a transportable electronic programming tool including data processing circuitry and memory circuitry; and a plurality of explosive charges, each said charge including an electronic detonator arrangement comprising timing means, memory circuitry and data processing circuitry; the programming tool and each said electronic detonator arrangement being provided with means via which a data communication path can be established between the programming tool and any one selected electronic detonator arrangement of said electronic detonator arrangements at a time, the method comprising the steps of:

preparing and positioning said plurality of explosive charges at a blast site;

loading into and storing in the memory circuitry to the programming tool data regarding a desired explosion time for each charge of said plurality of charges, the data regarding a desired explosion time comprising data regarding a delay time relative to an initiate command signal;

physically transporting the programming tool to each said charge;

establishing a data communication path between the programming tool and each said detonator arrangement individually, one after the other;

while the data communication path is established between the programming tool and a selected electronic detonator arrangement of said electronic detonator arrangements, programming the selected electronic detonator arrangement by loading time data comprising data regarding a delay time relative to the initiate command signal that will cause the electronic detonator arrangement to detonate the charge at the desired explosion time associated with that charge from the programming tool into the electronic detonator arrangement and storing said time data in the memory circuitry of the electronic detonator arrangement;

communicating a common initiate command signal to all of said electronic detonator arrangements; and

causing each of said electronic detonator arrangements, in response to said initiate command signal, to commence processing the delay time data relative to the initiate command signal stored in its memory circuitry and to cause its associated charge to explode when, according to the electronic detonator arrangement's timing means and the delay time data the charge must explode.

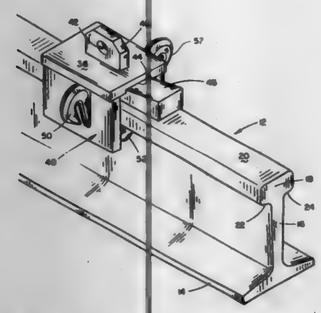
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,439
INCAPACITATING NON-LETHAL MULTIPLE PROJECTILE BALLISTIC ROUND
Alfred Carbone, Boscawen, N.H., assignor to Academy of Applied Science, Concord, N.H., a part interest
Filed Jul. 7, 1992, Ser. No. 909,785
Int. Cl.[5] F42B *5/03*
U.S. Cl. 102—438 10 Claims



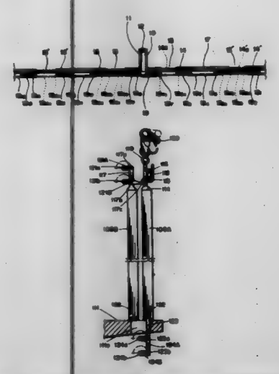
1. An incapacitating, generally non-lethal multiple projectile powder-driven ammunition round having, in combination, a cylindrical casing containing a powder charge disposed behind a plurality of successive abutting substantially virgin lead slugs of similar solid longitudinally cylindrical shape closely fitting within the casing, and each having flat planar surfaces at the opposing transverse ends of the cylindrical slug, the outermost slug extending beyond the open end of the casing to which it is crimped to expose its flat planar outer surface, the slugs each being of weight in the range of from about 56.5 grains to about 125 grains, and the powder charge being adjusted to achieve a slug velocity of about 700 to 900 feet per second in order to provide non-lethal stopping power.

5,295,440
RAIL PULLER, WITH WEDGE CLAMP
Robert K. Cleveland, 2625 Angel Dr., Stockton, Calif. 95209
Filed Apr. 29, 1993, Ser. No. 54,692
Int. Cl.[5] E01B *29/04*
U.S. Cl. 104—7.2 12 Claims



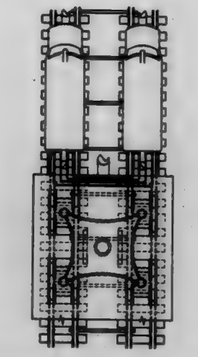
1. A rail puller for attachment to the end of a rail having a base, a web extending upwardly therefrom, and a head at the upper end thereof, comprising,
- a generally flat top plate having opposite ends, opposite sides, a top surface and a bottom surface;
- a first side plate secured to one side of said top plate and extending downwardly therefrom, and first side plate having opposite ends, and inner and outer surfaces;
- a second side plate secured to the other side of said top place extending downwardly therefrom in a horizontally spaced relationship with respect to said first side plate, said second side plate having opposite ends and inner and outer surface,
- a first member secured to the inside surface of said first side plate and protruding inwardly therefrom;
- a second member secured to the inside surface of said second side plate and protruding inwardly therefrom;
- said first and second side plates being spaced so that the end of a rail may be positioned therebetween with the head of the rail being positioned below said top plate;
- a wedge member having a width less than the distance between the upper ends of said first and second side plates so that said wedge member may be inserted and wedged between the upper surface of the said head of said rail and said top plate to force said first and second members into engagement with the underside of said head; and lift engaging means for engaging a lifting means for lifting the rail.

5,295,441
SLIDING DOOR APPARATUS FOR PLATFORM
Isamu Kawanishi, and Yukio Uozumi, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan
Filed Jul. 24, 1992, Ser. No. 917,954
Claims priority, application Japan, Jul. 31, 1991, 3-60405[U]; Jul. 31, 1991, 3-191750; Jul. 31, 1991, 3-191751
Int. Cl.[5] B61B *1/02*
U.S. Cl. 104—28 1 Claim



1. A sliding door apparatus for a railway platform, comprising:
- a plurality of sliding doors provided along an edge of a railway platform, the plurality of sliding doors being, in a closed position, arranged continuously aligned with the edge of the railway platform;
- a sliding door shifting apparatus for selectively shifting selected sliding doors to be opened and closed into shifted positions parallel to the closed position of the plurality of sliding doors;
- opening/closing apparatus for opening and closing the sliding doors disposed at the shifted positions, the opening/-closing apparatus being capable of opening and closing the sliding doors by moving the doors in varying directions and amounts; and
- a logic apparatus for analyzing information regarding the positions and widths of entrances of a railway vehicle stopped at the platform, selecting the selected sliding doors to be shifted, and controlling the shifting and opening/closing of the sliding doors such that the sliding doors are opened and closed in conformity with the entrances of the railway vehicle.

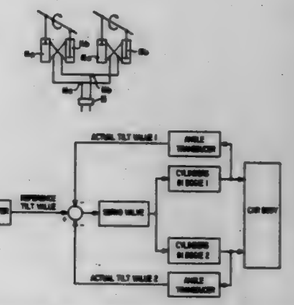
5,295,442
MULTIPLE TRACK RAIL SYSTEM
Jack H. Carpenter, 715 15th St., Ashland, Ky. 41101
Filed Apr. 1, 1993, Ser. No. 41,660
Int. Cl.[5] B61F *5/50*
U.S. Cl. 105—176 19 Claims



1. A multiple track rail transportation system for use with adjacent parallel continuous tracks with the tracks having a distance therebetween and each track comprising two continuous rails having a distance therebetween, said system including:
- at least one car having a width spanning the total of each distance between the adjacent parallel continuous tracks and each distance between the rails comprised of the tracks;
- at least two bolsters providing support for each said car;
- each of said bolsters including a central attachment receptacle pivotally engaging a cooperating pin extending beneath said car and providing support for said car, and a plurality of wheel truck attachment means comprising pins extending beneath said each of said bolsters, with each of said pins of said each of said bolsters having a spatially fixed relationship relative to one another and pivotally engaging cooperating said wheel truck attachment means.
- a plurality of wheel trucks providing support for said each of said bolsters by means of said wheel truck attachment means, with an equal number of said wheel trucks supported by each of the tracks and held in a spatially fixed relationship relative to one another by said wheel truck attachment means on said each of said bolsters; whereby said car is supported by said bolsters and said wheel trucks on each of the adjacent parallel continuous tracks.

5,295,443
ARRANGEMENT FOR TILTING A RAILBOUND VEHICLE IN TRACK CURVES
Hans Bängtsson, Enköping; Nils G. Nilstam, and Rickard Persson, both of Västerås, Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden
PCT No. PCT/SE90/00467, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO91/00815, PCT Pub. Date Jan. 24, 1991
PCT Filed Jun. 29, 1990, Ser. No. 778,115
Claims priority, application Sweden, Jul. 13, 1989, 8902526
Int. Cl.[5] B61F *5/02*
U.S. Cl. 105—199.2 5 Claims

1. Arrangement on a railbound vehicle comprising a car body, at least first and second bogies and at least one hydraulic cylinder mounted at each side of each bogie, each said cylinder including a lower working space and an upper working space and each said cylinder being attached at its lower end to the bogie side and at its upper end to the car body for tilting the car body in track curves, and includes
- first interconnection means for communicating the lower working spaces of left-handed cylinders of the respective first and second bogies and second interconnection means for communicating said lower working spaces of said left-hand cylinders with the upper working spaces of right-hand cylinders of the respective first and second bogies, said first and second interconnection means forming a first freely communicating conduit system,
- third interconnection means for communicating the lower

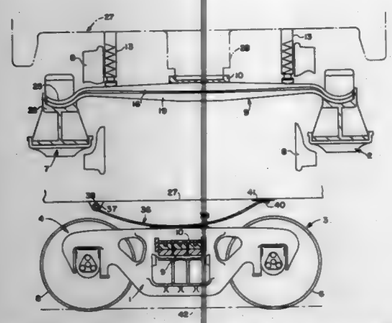


working spaces of said right-hand cylinders of the respective first and second bogies and fourth interconnection means for communicating said lower working spaces of said right-hand cylinders with the upper working spaces of said left-hand cylinders of the respective first and second bogies, said third and fourth interconnection means forming a second communicating conduit system, and
- a single servo valve connected to said first and second communicating conduit systems to control the tilt of the car body by forcing all of said hydraulic cylinders of the vehicle to cooperate in order to tilt the car body through a coordinated rotational movement.

5,295,444
MULTI-AXLE RUNNING CARRIAGE
Rudolf Irle, Plettenberg, Fed. Rep. of Germany, assignor to Krupp Brüninghaus GmbH, Werdohl, Fed. Rep. of Germany
Filed Oct. 2, 1992, Ser. No. 955,659
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134597
Int. Cl.[5] B61F *5/52*
U.S. Cl. 105—453 11 Claims

1. A multi-axle running carriage for supporting a vehicle frame of a rail vehicle, consisting essentially of
- first and second cast side walls extending in a longitudinal direction,
- first and second axles mounted in said side walls and extending in an axial direction which is transverse to said longitudinal direction, and
- a transverse leaf spring assemblage disposed between said first and second axles and extending in aid axial direction, said leaf spring assemblage comprising a plurality of individual leaf springs, each of said leaf springs having a central zone which is connected to a lower part of a bogie

pivot of said vehicle frame and first and second ends which are mounted in said first and second side walls,



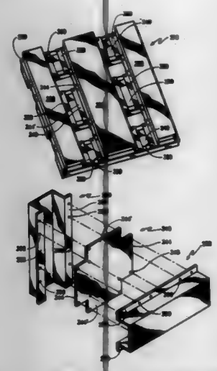
said first and second walls and said transverse leaf spring assemblage constituting a running carriage frame in which only said leaf springs bear said vehicle frame.

5,295,445

SPACER DEVICE FOR USE IN COOLING CONTAINERS SUPPORTED THEREON TO THE TEMPERATURE OF THE SURROUNDING ENVIRONMENT

William J. Locke, 1 Ponderosa Way, Evergreen, Colo. 80439, and Thomas G. Jensen, Littleton, Colo., assignors to William J. Locke, Golden, Colo.

Filed May 24, 1991, Ser. No. 705,281
Int. Cl.[5] B65D *19/38*
U.S. Cl. 108—57.1 **13 Claims**



1. A spacer device adapted to support containers having a first temperature in an environment having a second temperature and operative to rapidly allow thermal transfer of heat between the containers and the environment comprising:

a plurality of individual discrete elongated U-shaped first channel members each having a longitudinal axis and formed by a planar first bottom wall and a pair of first sidewalls connected to said bottom wall to form a U-shaped first channel, said first sidewalls each projecting upwardly from said first bottom wall and each terminating in a laterally projecting first flange with said first flanges oppositely projecting from one another in substantially parallel spaced apart relation to said first bottom wall, said first channel members organized as a first set with each of said first channel members in said first set being positioned in an equal spaced apart parallel relation to one another with the U-shaped first channels thereof opening in a common first direction;

a plurality of individual discrete elongated U-shaped second channel members each having a longitudinal axis and formed by a planar second bottom wall and a pair of second sidewalls connected to said second bottom wall to form a U-shaped second channel, said second sidewalls each projecting upwardly from said second bottom wall and each terminating in a laterally projecting second flange with said second flanges oppositely projecting from one another in substantially parallel spaced apart relation to said second bottom wall, said second channel members organized as a second set and with said second channel members in the second set being positioned in an equal spaced apart parallel relation to one another with the U-shaped channels thereof opening in a common spaced direction opposite the first direction and with each of said second channel members oriented transversely to said first channel members so that said first and second channel members cross one another at intersections so that said first and second flanges are in contact with one another at the intersection, at least some of said first and second flanges attached to one another at respective intersections in a manner sufficient to rigidly interconnected the first set of first channel members and the second set of second channel members so that said first and second bottom walls may be positioned in operation to contact and support said containers; and

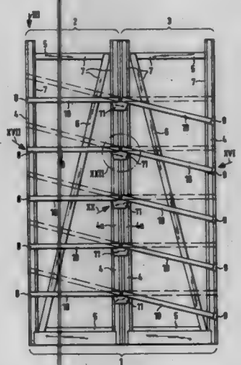
strengthening plates disposed between at least one of said first and at least one of said second channel members proximate said intersection of said first and second members.

5,295,446

VARIABLE SHELF ASSEMBLY

Gerhard Schäfer, Neunkirchen, Fed. Rep. of Germany, assignor to Fritz Schäfer Gesellschaft, Mit beschränkter Haftung, Fed. Rep. of Germany

Filed Nov. 22, 1991, Ser. No. 797,460
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 9015885
Int. Cl.[5] A47B *47/00*
U.S. Cl. 108—167 **15 Claims**



7. A variable shelf assembly comprising at least two basic shelf elements, each basic shelf element including:

two side frames;

a plurality of shelf members mounted between said two side frames; and

a plurality of support members for horizontal alignment of the shelf members and stop members for inclined alignment of the shelf members, both members extending transverse to said side frames;

wherein each of said side frames comprises:

two posts;

two transverse members for connecting said two posts to each other, and

a diagonal strut extending between said two posts;

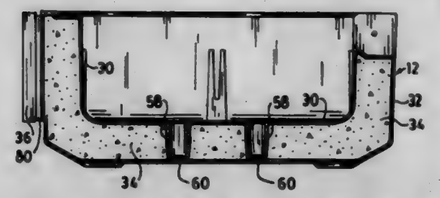
wherein the two basic shelf elements are arranged immediately one behind the other, the shelf assembly further comprising shelf member carriers for coupling the two basic shelf elements which, on one hand, engage immediately adjacent posts of respective side frames of the two basic shelf elements and, on the other hand, support ends of adjacent longitudinal edges of the shelf members of the two basic shelf elements.

5,295,447

HOLLOW REINFORCEMENTS FOR FIRE-RESISTANT SAFES

Richard C. Robbins; Andrew L. Oliveri, both of Rochester, and Mary P. DiGiambattista, Penfield, all of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Continuation of Ser. No. 811,019, Dec. 20, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 78,515
Int. Cl.[5] E05G *1/024*
U.S. Cl. 109—65 **13 Claims**



1. In a fire-resistant safe for protecting contents from fire constructed with internal and external resin shells that define a space between them filled with an insulation material, the improvement in which:

a plurality of holes are formed through said insulation material; and

said holes being formed by a plurality of recesses in said internal shell having bottom portions attached to said external shell for maintaining seals that prevent hot gases generated by a fire from entering the safe through said holes after said external shell has been burned away by the fire.

5,295,448

ORGANIC COMPOUND INCINERATOR

Earl C. Vickery, San Jose, Calif., assignor to On-Demand Environmental Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 623,351, Dec. 7, 1990, abandoned. This application Jul. 5, 1991, Ser. No. 726,298
Int. Cl.[5] F23G *7/06*
U.S. Cl. 110—214 **24 Claims**

1. A volatile organic compound (VOC) incinerator comprising:

an incineration chamber having an intake end and an exhaust end and a combustion chamber disposed therebetween;

said intake end being pneumatically engaged to a device that generates a VOC plus air mixture, and said exhaust end being pneumatically connected to an air drawing device, whereby said VOC plus air mixture is drawn through said combustion chamber;

a fuel injection means being disposed proximate said intake end and functioning to inject fuel into said VOC plus air mixture;

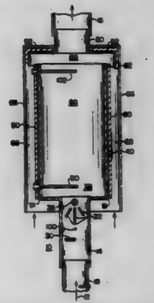
a fuel control means being engaged to said fuel injection means and operable to control the quantity of fuel supplied to said fuel injection means;

an ignition means being disposed proximate said fuel injection means and operable to ignite said fuel for burning within a combustion zone within said combustion chamber;

a baffle means being disposed within said combustion zone to cause increased mixing of said VOC's with said air within said combustion zone;

a temperature sensing means being disposed in said combustion zone and operative to generate temperature signals representative of the temperature of said burning fuel within said combustion zone;

an air flow rate detector means being disposed in said intake end to measure the flow rate of said VOC plus air mixture through said intake end and to provide air flow rate signals representative thereof;



a controller means having predetermined temperature control parameters installed therewithin and being operative to receive said temperature signals from said temperature sensing means and to generate control signals in response to said temperature signals that are transmitted to said fuel control means, such that said fuel control means is controlled by said control signals from said controller means;

said controller means having predetermined air flow rate parameters installed therewithin and being operative to receive said air flow rate signals and to generate said control signals in response thereto;

whereby the quantity of fuel injected into said VOC plus air mixture is controlled by the temperature of the burning fuel within the combustion zone, and whereby the quantity of fuel injected into said VOC plus air mixture is also controlled by the air flow rate of the VOC plus air mixture passing through said intake end.

5,295,449

DRY DISTILLATION GASIFICATION COMBUSTION EQUIPMENT, DRY DISTILLATION GAS GENERATOR, AND COMBUSTION GAS BURNER UNIT

Naomi Maeda, Sakata, and Seiichiro Sasahara, Yamagata, both of Japan, assignors to Ebara Doo-Aru Co., Ltd., Sakata, Japan

Filed Aug. 17, 1992, Ser. No. 931,274
Int. Cl.[5] F23G *5/12*
U.S. Cl. 110—229 **17 Claims**

1. A dry distillation gasification combustion equipment comprising:

a dry distillation gas generator;

said dry distillation gas generator including a tank furnace;

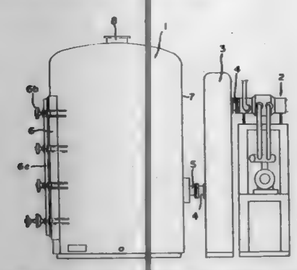
an air chamber in a bottom of said tank furnace;

an air blowoff section communicating from said the air chamber to a bottom portion of said tank furnace;

said air blowoff section including an air vent recessed portion bored in a bottom surface of said tank furnace, an air

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duct allowing for permitting air from said air chamber to pass to a center of said air vent recessed portion;
an air dispersion cap fitted into an opening of said air duct;
an upper surface of said air dispersion cap forming a portion of a bottom surface of said tank furnace;
a blowoff opening about a circumference of said air dispersion cap;
said blowoff opening supplying air from said air duct in a decelerated and dispersed state substantially uniformly into the tank furnace from said circumference of said blowoff opening;
said air softly and evenly spreading over the entire bottom surface of said tank furnace;
a fuel door in said tank furnace, effective for permitting entry of a dry fuel into said tank furnace;
said fuel door being openable and closeable;
a dry distillation gas outlet from said tank furnace;
a combustion gas burner unit;
a gas conduit conducting dry distillation gas from said dry distillation gas outlet to said combustion gas burner unit;
said combustion gas burner unit including a burner body;
a combustion chamber in said combustion gas burner unit receiving gas from said gas conduit;



said combustion chamber including a preheat burner section for igniting a pilot at a position close to an upstream end of said combustion chamber;
an air storage layer surrounding an outer circumferential surface of an intermediate portion of said combustion chamber;
a first air supply section skewed an angle for injecting air rotating in a spiral from the outside through a side wall of said combustion chamber;
a second air supply section skewed at an angle for injecting air in a spiral from said air storage layer through said side wall;
said air injected by said second air supply section being preheated in said air storage layer and injected in said combustion chamber at a position downstream of the injection of air by said first air supply section; and
an impurity separation tank in said gas conduit at a position intermediate said tank furnace and said combustion gas burner unit for separating impurities from said dry distillation gas before applying it to said combustion gas burner unit.

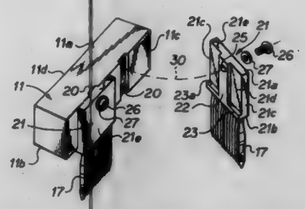
5,295,450

TUFTING MACHINE WITH SELF-ALIGNING GAUGING MODULES

Marshall A. Neely, Soddy-Daisy, Tenn., assignor to Card-Monroe Corp., Chattanooga, Tenn.

Filed May 1, 1992, Ser. No. 877,827
Int. Cl.[5] D05C *15/24, 15/12*
U.S. Cl. 112—80.45 **6 Claims**

1. A gauging module assembly for a tufting machine comprising:
(a) an elongated gauge bar having an axis and a flat side, and a front edge generally perpendicular to said flat side, said gauge bar being provided with a plurality of equally spaced, sidewise opening, parallel recesses transversely across said gauge bar, each recess being open throughout its length and being defined by opposed parallel side edges extending throughout such length;
(b) a plurality of juxtaposed unitary modular blocks, each having a rear surface for abutting the flat side of said gauge bar;
(c) a plurality of equally spaced, parallel, tufting machine gauging elements protruding from each of said blocks, each of said tufting machine gauging elements having a proximal end and a distal end, the proximal end of each of said elements being embedded and permanently fixed in its block, said elements of each block being parallel to each other and protruding outwardly beyond said front edge in equally spaced transverse alignment with each other, away from said block in a direction generally parallel to and spaced from the flat surface of said block and said flat side of said gauge bar;
(d) a guide tab fixed on the rear surface of said block for being received sidewise into one of a plurality of said spaced recesses in said gauge bar, when said rear surface



of said block is moved sidewise into a positioned flat against said side surface of said gauge bar, said guide tab having opposed straight side edges for engaging the side edges, defining its recess for, thereby centering each of said blocks on said gauge bar when said rear surface is moved sidewise against said flat side of said gauge bar and its guide tab is received in one of said recesses; and
(e) detents respectively passing through said blocks and into said guide bar for securing said blocks to the side of said guide bar at a prescribed position, and with its tab urged into its recess, each of said blocks when attached to the side of said guide bar, holding said spaced elements of that block in a fixed position protruded beyond said front edge toward a tufting zone of said tufting machine with said distal ends of said spaced elements being generally in said tufting zone;
said tufting machine gauging elements being reeds having upper surfaces in a common plane, each of said modular blocks having an outer surface in a common plane, and said reeds having upper surfaces generally in said common plane with said outer surfaces of said blocks.

5,295,451

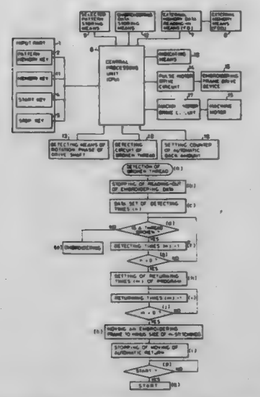
AUTOMATIC EMBROIDERING MACHINE HAVING THREAD BREAK DETECTION MEANS

Hideaki Takenoya, Tokyo, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 635,474, Dec. 28, 1990, abandoned, which is a continuation of Ser. No. 506,554, Apr. 6, 1990, abandoned, which is a continuation of Ser. No. 360,786, Jun. 2, 1989, abandoned. This application Sep. 9, 1991, Ser. No. 756,828
Int. Cl.[5] D05B *21/00, 69/36*
U.S. Cl. 112—121.12 **2 Claims**

1. An automatic embroidering machine which is composed of a stitch forming means including a needle thread catching means cooperating with a vertically reciprocating needle, and an embroidering frame for expanding a fabric thereover and moving relatively with respect to the stitch forming means in accordance with a predetermined program, comprising:

a thread breaking detection means which, upon a detection of a broken thread during embroidering, stops reading-out of embroidering data from a memory, stops moving of the embroidering frame at a position where the thread is broken, repeats the detection n times, wherein n is greater



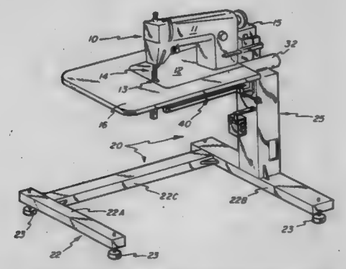
than zero at the stopping position of the embroidering frame, and determines actual thread breaking only when it repeatedly detects the thread breaking; and
a means which, upon the actual determination of the thread breaking, automatically returns the embroidering frame at least one stitch apart from the stopping position.

5,295,452

ADJUSTABLE STAND FOR SEWING MACHINES

Ricky J. Frye, Miamisburg, and Robert N. Landis, New Lebanon, both of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Continuation-in-part of Ser. No. 694,931, May 2, 1991, Pat. No. 5,174,227. This application Sep. 20, 1991, Ser. No. 763,286
Int. Cl.[5] D05B *75/00*; A47B *29/00*
U.S. Cl. 112—217.1 **5 Claims**



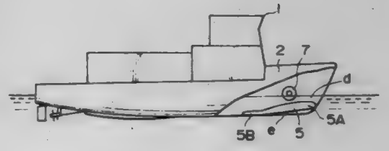
1. An adjustable stand for sewing machines, comprising an open base accessible to users and to accessory equipment related to the handling of materials for use with the sewing machine,
said base having a front, a rear, and opposites sides, and including spaced apart horizontally extending side legs and a cross member of substantially greater length than said side legs and connecting said side legs at said rear of said base,
a vertically adjustable pedestal extending upward from one side of said base,
a rotary support sleeve fixed to the top of said pedestal,
a support shaft rotatably received in said sleeve,
a plate extending transversely to and fixed to said support shaft,
a platform extending from said plate over said base for holding a variety of sewing machines over said base and providing adjustment of an orientation of the machine with respect to said base about a horizontally extending axis extending out above said base,
means for rotating said support shaft to adjust the orientation of said platform about a longitudinal axis extending over said base,
said platform including a framework extending outward from said plate above and parallel to said base,
mounting mechanisms fitted to said platform and slidable longitudinally thereof for receiving fittings found at the base of different types of sewing machines, to adapt and retain each type selectively to said platform, and
a bracket attached to said support shaft and extending in spaced relation parallel to said sleeve, said bracket providing a motor mount for a driving motor connected to the sewing machine, whereby a rotating motion of the support shaft does not affect a motor to sewing machine drive connection.

5,295,453

CATAMARAN HAVING A SUBMERGED AIRFOIL

Junichi Inoue, Yokosuka, Japan, assignor to Hikari Industry Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1992, Ser. No. 829,787
Claims priority, application Japan, May 21, 1991, 3-67983[U]
Int. Cl.[5] B63B *1/24*
U.S. Cl. 114—61 **6 Claims**



1. A water vessel having a bow and a stern, comprising:
a pair of floats spaced apart from each other over a predetermined distance and arranged in parallel;
first connecting means for connecting said pair of floats, said first connecting means extending between said pair of floats in the air when said vessel is afloat on a horizontal water surface; and
second connecting means for connecting said pair of floats, said second connecting means extending between said pair of floats and fixedly attached thereto at a location to be submerged in the water when said vessel in afloat, said second connecting means including an airfoil-shaped section for providing a lift to the bow of said vessel when cruising and a substantially flat tail section which extends continuously in a downstream direction from a downstream end portion of said airfoil-shaped section for guiding a flow of the water after the flow of water has past over said airfoil-shaped section in a predetermined direction, said airfoil-shaped section consisting essentially of a smooth top convexly curved surface extending from an upstream end of said airfoil-shaped section to a hypothetical downstream end thereof and a bottom convexly curved surface extending from said upstream end to said downstream end, whereby a base line is defined as a hypothetical straight line drawn between said upstream and downstream ends of the airfoil-shaped section, said top and bottom curved surfaces being asymmetrical with respect to said base line, said airfoil-shaped section being

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inclined such that an attack angle defined between the horizontal water surface and said base line is in a range between 15° and 25°;

wherein said second connecting means tail section extends continuously from a trailing edge of said airfoil-shaped section in a predetermined downstream direction; and

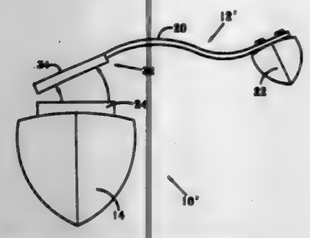
further comprising rotating means disposed above said second connecting means and partly submerged in the water at its bottom portion for positively guiding any material floating on the water surface into a downstream section of a space defined between the pair of floats.

5,295,454

SAFETY RELEASE OUTRIGGER ATTACHMENT FOR AN OUTRIGGER CANOE

Donald A. Streck, Kailua, Hi., assignor to Showa Hatsumei Kaisha, Ltd., Kailua, Hi.

Filed Mar. 18, 1993, Ser. No. 33,584
Int. Cl.[5] B63B *43/14*
U.S. Cl. 114—123 **16 Claims**



1. A safety outrigger canoe comprising:

a) a hull for carrying a paddler seated thereon;

b) a pair of yakus disposed perpendicular to said hull each having an inner end and an outer end;

c) an ama carried parallel to said hull by said outer end of each of said pair of yakus; and,

d) safety release means for attaching and holding said inner end of each of said pair of yakus to said hull under normal conditions and for releasing said inner end of each of said pair of yakus from said hull when said ama is subjected to a force which would otherwise break said yakus.

5,295,455

BIRD EXCLUDING TECHNIQUE

Ron J. Johnson, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Nov. 30, 1992, Ser. No. 984,203
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—57.9 **14 Claims**

1. The combination of a bird feeder and bird excluder comprising:

a bird feeder compartment;

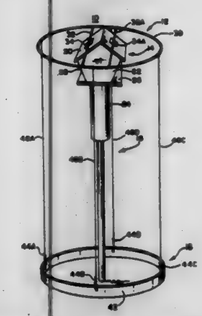
a support means for supporting the bird feeder compartment above ground;

the bird feeder compartment including side members, roof members and at least one access opening for access to feed therein by birds;

said access opening having a top and a bottom and an access-opening height between the top and the bottom;

an excluder means for physically permitting certain species of birds to enter from the top and from the sides while causing other species not to enter mounted at a location to be within a distance extending from below the top of the at least one access opening a distance of 10 percent of the access-opening height to two feet above the top of the access opening of the feeder;

said excluder having at least one thin elongated member extending beyond the at least one access opening at an elevation at least five inches from the bottom of the at least one access opening;



said at least one thin elongated member overhanging said at least one access opening and being spaced to physically permit birds to enter and take food.

5,295,456

DEODORIZING ADDITIVES FOR ANIMAL LITTERS

Frederick W. Lawson, Somerset, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed May 3, 1993, Ser. No. 56,511
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—172 **13 Claims**

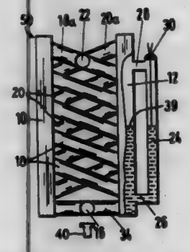
1. A solid particulate deodorizing additive composition for a water-absorbent animal litter comprising a salt selected from the group consisting of sodium bicarbonate (SBC) and potassium bicarbonate (KBC), the particles of which are substantially coated with a mineral oil, mixed with a powdered siliceous material having a bulk density significantly lower than the density of said salt, said coated particles of said salt being stably adhered t and agglomerated with said particles of siliceous material.

5,295,457

HEAT EXCHANGER

Gerd Gumlenny, Landsberg a. Lech; Jaroslav Klouda, Fuerstenfeldbruck, and Franz Koch, Untermeitingen, all of Fed. Rep. of Germany, assignors to Rational Grosskuechentechnik Service GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1991, Ser. No. 808,741
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120251
Int. Cl.[5] F22B *17/04, 37/10*
U.S. Cl. 122—255 **6 Claims**



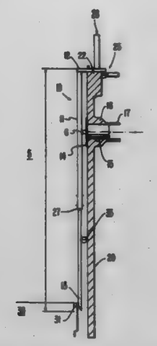
1. A method of utilizing a heat exhanger comprising a housing composed of at least two essentially cuboid chambers that lie opposite one another and are connected to one another by a plurality of inclined pipes divided into groups with the inclined pipes of one group being inclined at an opposite direction to the incline pipes of the other group, said housing having means for filling the housing with a vaporizable liquid, said method including providing a vaporizable liquid to a level less than the maximum height of said housing, maintaining the output of each group of pipes separate from the intake of the other group of pipes, and heating said liquid to create steam and further heating the housing in the areas above the level of liquid to superheat steam in contact with surfaces thereof.

5,295,458

STEAM LINE PLUG SUPPORT TOOL

Bengt I. Baversten, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1992, Ser. No. 997,782
Int. Cl.[5] F22B *37/42*
U.S. Cl. 122—504 **25 Claims**



1. A steam line plug support tool for maintaining steam line plugs in the steam line nozzle of a boiling water reactor vessel comprising:

an elongated beam of a length to fit along the length of a reactor vessel wall between a flange on the top of the vessel wall and an internal vessel within the reactor vessel, wherein said beam has a first end and a second end;

an attachment section connected to said beam first end for attachment to the vessel wall, wherein said elongated beam when attached to the vessel wall is supported at its first end from said flange of said vessel wall and extends to its second end, said second end being supported by the internal vessel of the reactor vessel; and

a support piece attached at a point along the length of said elongated beam to coincide with a steam line plug in a steam line nozzle in the reactor vessel which is adapted to support the steam line plug against pressure in the steam line.

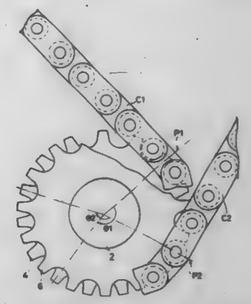
5,295,459

CAMSHAFT DRIVE FOR V-TYPE OR HORIZONTALLY OPPOSED ENGINE

Tadasu Suzuki, Chicopee, and Morikazu Asada, South Hadley, both of Mass., assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Aug. 30, 1993, Ser. No. 114,195
Claims priority, application Japan, Aug. 31, 1992, 4-066168[U]
Int. Cl.[5] F01L *1/02*
U.S. Cl. 123—90.31 **1 Claim**

1. In a camshaft driving device comprising a crankshaft, first and second camshafts, first and second crankshaft sprockets on the crankshaft and a pair of camshaft sprockets, one on each of said camshafts, and means for driving the camshafts from the crankshaft, said driving means comprising first and second endless, flexible, toothed drive elements, the first of said drive elements being disposed on the first crankshaft sprocket and the camshaft sprocket on the first camshaft to drive the first camshaft, and the second of said drive elements being disposed on the second crankshaft sprocket and the camshaft sprocket on the second camshaft for driving the second camshaft, whereby each of said endless, flexible, toothed drive elements has a tension side and a slack side, wherein the crankshaft



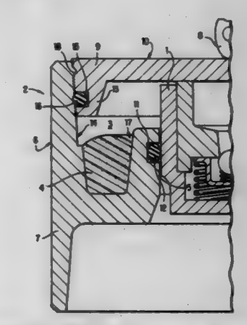
sprockets are toothed sprockets having top and bottom lands, and are mounted on the crankshaft in relation to each other such that, when a meshing starting point of said first crankshaft sprocket and the tension side of said first drive element is at a top land of said first crankshaft sprocket, a meshing starting point of said second crankshaft sprocket and the tension side of said second drive element is at a bottom land of said second crankshaft sprocket.

5,295,460

HYDRAULIC VALVE PLAY EQUALIZATION ELEMENT

Klaus Döhring, Heidelberg, and Wolfgang Krause, Walbstadt, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr, Fed. Rep. of Germany

Filed Feb. 3, 1993, Ser. No. 12,687
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1992, 4203897
Int. Cl.[5] F01L *1/24*
U.S. Cl. 123—90.58 **11 Claims**



1. A hydraulic valve play equalization element for a valve drive of an internal combustion engine, comprising:

an inner tappet;

an outer tappet; said inner tappet and said outer tappet being arranged to move relative to one another in an axial direction, the outer tappet being formed in a cup shape with a flattened surface, the inner tappet and the outer tappet delimiting an oil-filled storage space which is sealed

towards the outside and which can change in volume, wherein the outer tappet comprises a tube-shaped mantle with inside and outside slide surfaces and a disk closing off said mantle in a fluid-tight manner, the inner tappet sliding in said inside slide surface and forming a fluid seal therewith; and

a displacement element to equalize volume changes in the storage space, said displacement element being enclosed in the storage space;

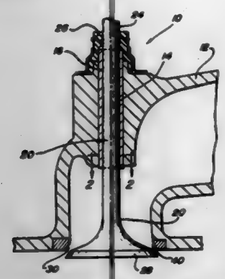
wherein the disk has a collar projecting axially in the direction of the storage space along the circumference of the disk, and wherein a surface of the collar contacts an inside surface of the mantle, forming a seal.

5,295,461

OIL-STARVED VALVE ASSEMBLY

V. Durga N. Rao, Bloomfield Township, Oakland County, and Gary M. Crosbie, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 13, 1992, Ser. No. 869,291
Int. Cl.[5] F01L *3/02*
U.S. Cl. 123—188.009 **11 Claims**



1. A valve assembly for use in an engine comprising:

a tubular valve stem guide mounted within the engine, the tubular valve stem guide being provided with an internal bore having a solid film lubricant including a composite of a solid lubricant impregnated into an oxide-metal material within the bore; and

a valve reciprocatingly received within the internal bore of the tubular valve stem guide, the valve including an axially extending valve stem which is received by the solid film lubricant, thereby reducing friction therebetween,

the valve stem and the valve stem guide being formed so as to cooperate within narrowly defined dimensional tolerances in a manner which has the characteristics of reduced friction, and diminished passage of oil to the exhaust system of the engine.

5,295,462

COIN INSERT FOR THE FIRING DECK IN AN INTERNAL COMBUSTION ENGINE

Steve G. Barnes, Columbus, Ind., and Kurt W. Schoenegge, Sheboygan, Wis., assignors to Cummins Engine Co., Inc., Columbus, Ind.

Filed Oct. 16, 1992, Ser. No. 962,258
Int. Cl.[5] F02F *1/18*
U.S. Cl. 123—193.5 **12 Claims**

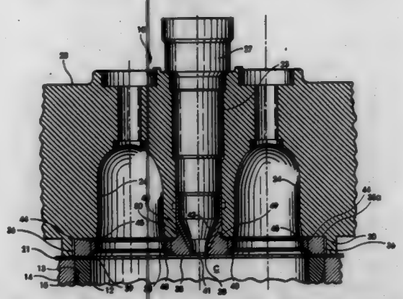
1. A cylinder assembly for an internal combustion engine comprising:

an engine block defining a cylindrical bore;

a cylinder liner disposed within said cylindrical bore for receiving a reciprocating piston therein;

a cylinder head mounted at one end of said engine block covering said cylindrical bore, said cylinder head having a firing deck surface, said surface defining a cylindrical recess concentric with said cylindrical bore, said cylinder head further having a number of valve bores and an injector bore defined therethrough; and

a disc-shaped coin insert disposed within said cylindrical recess, said coin insert being formed of a thermal insulative material and together with said cylinder line defining a combustion chamber, said coin insert having a number of valve openings and an injector opening defined there-



through disposed in corresponding alignment with said number of valve bores and said injector bore, said coin insert further having a boss formed around said injector opening and sized to fit within said injector bore of said cylinder head;

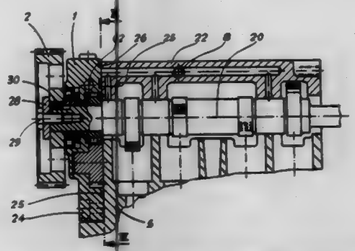
wherein said boss of said coin insert is welded to said cylinder head at said injector bore.

5,295,463

INTERNAL COMBUSTION ENGINE WITH OIL PUMP MOUNTED ON THE CAMSHAFT

Urs Wenger; Hans R. Jenni, both of Langenthal, and Hans P. Goetti, Zetzwil, all of Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Nov. 6, 1992, Ser. No. 973,817
Claims priority, application France, Nov. 6, 1991, 91 13769
Int. Cl.[5] F01M *1/00*
U.S. Cl. 123—196 R **10 Claims**



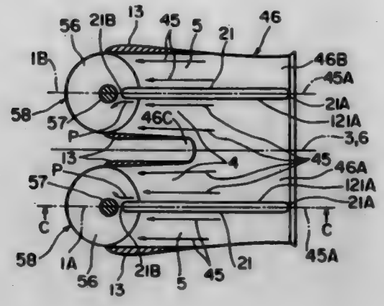
1. An internal combustion engine having a camshaft, a cylinder head and an oil circulation circuit which circuit includes a pressure pump for circulating oil in the engine, said pump having an open housing said housing and said cylinder head having mating surface for mounting said pump on said cylinder head thereby closing said housing, said pump including a moving element and an axial abutment for fixing said moving element to said camshaft for being directly driven thereby.

5,295,464

STRATIFIED BURNING INTERNAL COMBUSTION ENGINE

Hiromitsu Ando; Osamu Hirako; Shogo Omori, all of Okazaki; Jun Takemura, Toyota; Taizo Kitada, Okazaki; Katsuo Akishino, Okazaki; Yasuki Tamura, Okazaki; Michihiro Hata, Okazaki; Kinichi Iwachido, Nagoya; Masayuki Motomochi, Toyota; Syunsuke Matsuo, Kyoto; Nobuaki Murakami, Kyoto, and Keizo Furukawa, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 25,409
Claims priority, application Japan, Feb. 28, 1992, 4-044007; Sep. 22, 1992, 4-253285; Sep. 24, 1992, 4-255118; Sep. 25, 1992, 4-256797; Sep. 25, 1992, 4-256798; Sep. 25, 1992, 4-256799; Sep. 25, 1992, 4-257046
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—308 **6 Claims**



1. A stratified burning internal combustion engine comprising:

a combustion chamber defined by an inner wall of a cylinder, a top wall of a piston fitted in the cylinder and a lower wall of a cylinder head,

ignition means centrally disposed on the lower wall of the cylinder head,

two intake ports having intake openings in the lower wall of the cylinder head, respectively, said intake openings being arranged on one side of an imaginary plane containing an axis of the cylinder, whereby air is inducted from the respective intake openings toward an opposite side of the imaginary plane along the lower wall of the cylinder head to form mutually-parallel tumble flows in the same direction within substantially the entirety of the combustion chamber,

intake valves having a valve stem extending across the respective ports, whereby the corresponding intake openings are selectively opened or closed,

longitudinal partitions disposed inside the respective intake ports so that an interior of each of the intake ports is divided into a central passage on a side of said ignition means and a side passage, and

fuel feed means for feeding fuel into the central passages of the intake ports, whereby stratified tumble flows are formed in the combustion chamber during an intake stroke,

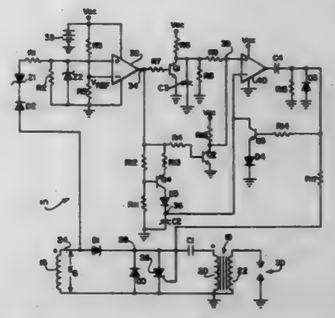
wherein a surface of the valve stem of each intake valve, said surface facing the corresponding central passage, is offset toward a longitudinal central axis of the corresponding central passage than a surface of the corresponding longitudinal partition, said surface of the longitudinal partition facing the corresponding central passage.

5,295,465

APPARATUS AND METHOD FOR CONTROLLING IGNITION OF AN INTERNAL COMBUSTION ENGINE

William T. Volmary, Naperville, Ill., and Jeffrey S. Stueven, Howards Grove, Wis., assignors to Kohler Company, Kohler, Wis.

Filed Oct. 1, 1992, Ser. No. 955,098
Int. Cl.[5] F02P *5/155*
U.S. Cl. 123—418 **10 Claims**



1. An ignition system for an engine which rotates a member comprising:

a spark discharge device;

a position detector which generates a signal pulse while a segment of the member passes nearby;

a first circuit, connected to said position detector, for producing a first voltage having a magnitude proportional to a duration of the signal pulse;

a second circuit connected to said position detector and upon termination of the pulse produces a second voltage having a magnitude which varies exponentially with time;

a third circuit, connected to said position detector, for producing an offset voltage only during the absence of the signal pulse;

a node at which the second voltage and the offset voltage are summed to provide combined voltage;

a comparator having inputs coupled to said node and to said first circuit and which produces an ignition signal when the combined voltage is at least equal to the first voltage; and

a supply coupled to said comparator and which applies a voltage to said spark discharge device to generate a spark in response to the ignition signal.

5,295,466

KNOCK SUPPRESSION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,096
Claims priority, application Japan, Jun. 15, 1992, 4-154999
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—425 **11 Claims**

1. A knock suppression apparatus for an internal combustion engine comprising:

knock sensing means for sensing knocking of an engine;

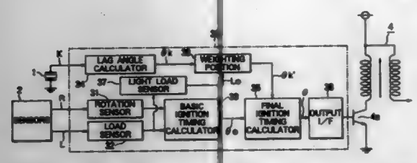
load sensing means for sensing a transition of a load of the engine between a light load region and a heavy load region;

basic ignition timing calculating means for calculating a basic ignition timing based on an operating condition of the engine;

lag angle calculating means responsive to the knock sensing means for calculating a lag angle when knocking is sensed;

weighting means responsive to the load sensing means for

producing a weighting factor and multiplying the lag angle by the weighting factor to obtain a corrected lag angle and for changing the weighting factor, when the load sensing means senses a transition of the load, from its value prior to the transition to a new value in a plurality of steps;



final ignition timing calculating means for calculating a final ignition timing for the engine based on the basic ignition timing and the corrected lag angle; and

means for controlling the engine according to the final ignition timing.

5,295,467

FUEL DISTRIBUTOR

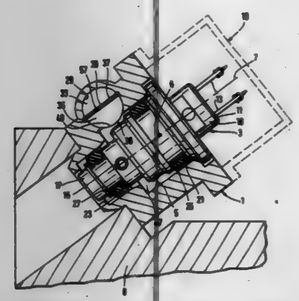
Udo Hafner, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 8, 1992, Ser. No. 880,457

Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115039

Int. Cl.[5] F02M *41/00*

U.S. Cl. 123—456 **15 Claims**



1. A fuel distributor for fuel injection systems of internal combustion engines for supplying fuel to at least two fuel injection valves, having a number of stepped valve receptacle openings, corresponding to the number of fuel injection valves and passing through the fuel distributor, into which openings the fuel injection valves can be inserted such that the stepped valve receptacle openings at least partially surround the fuel injection valves, and having a fuel supply line that communicates with the valve receptacle openings, a tube 31 is disposed in the fuel supply line (29) which forms a partition (37) that divides the fuel supply line into a first conduit (33) and a second conduit (35), the first conduit (33) has fuel flowing through it, and the second conduit (35), forms a fuel reservoir which communicates with the first conduit (33) through at least one through opening (39) that passes through the partition (37) and which communicates with the valve receptacle openings (5).

5,295,468

CONTROL STRIP WITH A COMPACT PLASTIC CONSTRUCTION

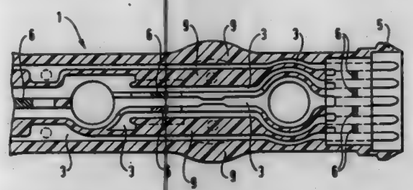
Heinz Blessing, Weissach; Manfred Mueller, Frieberg, and Joachim Schraudolf, Heilbronn, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 883,453

Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116326; Jul. 20, 1991, 4124201

Int. Cl.[5] F02M *55/02, 69/00, 61/14*

U.S. Cl. 123—456 **15 Claims**



1. A method of manufacturing a control strip for injection valves in plastic fuel lines of an internal combustion engine, comprising forming a conductive preform defining at least two conductive elements initially connected by removable bridges formed of the same material as the conductive elements for controlling said injection valves; embedding said preform in an insulating plastic; removing the bridges between the conductive elements to electrically isolate the conductive elements from each other; and thereafter casting the plastic-embedded and electrically isolated conductive elements into a one-piece control strip which serves as a housing and electrical control strip for the injection valves.

5,295,469

SAFETY VALVE FOR FUEL INJECTION APPARATUS

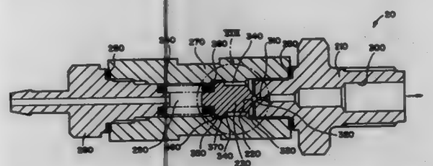
Yasuhiro Kariya, Hino, and Kenji Funai, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 724,339, Jul. 5, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 935,109

Claims priority, application Japan, Jul. 9, 1990, 2-182410

Int. Cl.[5] F02M *41/00*

U.S. Cl. 123—456 **14 Claims**



1. A safety valve for a fuel injection apparatus, said safety valve being provided in an accumulator in which pressurized fuel is accumulated and the pressurized fuel in said accumulator flows to a low-pressure side thereof, said safety valve comprising:

first valve means opened and closed by receiving the pressurized fuel pressure in said accumulator and for flowing out the fuel in said accumulator by opening said valve means when the fuel pressure in said accumulator reaches a pressure more than a predetermined pressure of the fuel in said accumulator, and

second valve means having a valve body moved from a first position by pressure of the fuel from said first valve means, said second valve means discharging the fuel from said first valve means to said low-pressure side by opening said second valve means when said valve body has moved a distance from said first position more than a predetermined stroke thereof.

5,295,470

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

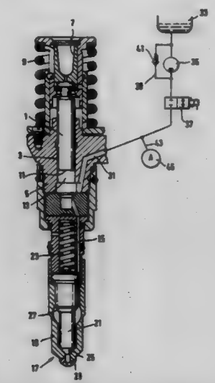
Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1993, Ser. No. 31,305

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211651

Int. Cl.[5] F02M *41/00*

U.S. Cl. 123—458 **19 Claims**



1. A fuel injection apparatus for internal combustion engines having a pump piston (1) guided in a cylinder bore (3) disposed in a pump housing (5) which is driven to axially reciprocate by a cam drive (7) and which with a face end (11) remote from the cam drive (7) defines a pump work chamber (13) which communicates via a pressure conduit (15) with an injection valve (17) which is supplied with fuel during an intake stroke of the pump piston (1) via a fuel line (31), a feed pump (35) which communicates with a fuel supply vessel (33) and said fuel line (31), a bypass line (39) which bypasses said feed pump, a control valve (37) in said fuel line (31) pump work chamber (13) for controlling a high-pressure fuel feed phase of the pump piston (1), a branch line (43) that branches off from said fuel line (31) on the pump work chamber side of the control valve (37), a fuel tapping device (45) disposed in said branch line (43) which opens at a fixed pressure corresponding to an upper engine speed range.

5,295,471

ELECTRONIC ENGINE CONTROL INTERFACE

Robert W. Ridgway, Royal Oak, Mich., and Keith Z. Doorenbos, Hiroshima, Japan, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 23, 1992, Ser. No. 824,620

Int. Cl.[5] F02D *41/22*

U.S. Cl. 123—479 **3 Claims**

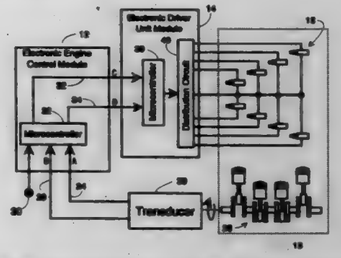
1. The method of reliably actuating the fuel injectors in an electronically controlled fuel injection system for an internal combustion engine which comprises, in combination, the steps of:

generating a cylinder identification waveform which exhibits signal excursions at predetermined positions of the pistons during each operating cycle of said engine,

generating a fuel demand control signal which is synchronized with said cylinder identification waveform and which exhibits identifiable signal excursions which are delayed from corresponding signal excursions in said cylinder identification waveform by a predetermined delay interval,

transmitting said cylinder identification signal and said fuel demand control signal to a driver module,

generating within said driver module an actuation signal to be sequentially applied to said fuel injectors in response to said cylinder identification signal and said fuel demand control signal,



measuring within said driver module the time duration by which signal excursions in said fuel demand control signal as received are delayed from corresponding excursions in said cylinder identification signal as received, and

indicating a trouble condition whenever said time duration as measured differs substantially from said predetermined delay interval.

5,295,472

APPARATUS FOR DETECTING MALFUNCTION IN EVAPORATED FUEL PURGE SYSTEM USED IN INTERNAL COMBUSTION ENGINE

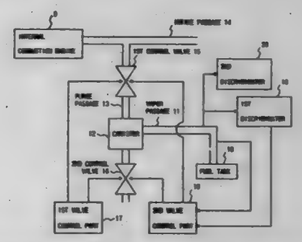
Takayuki Otsuka; Kouichi Osawa, both of Susono; Tatsunasa Sugiyama, Kariya; Katsuhiko Teraoka, Aichi; Nobuyuki Kobayashi, and Koji Okawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 29, 1992, Ser. No. 998,191

Claims priority, application Japan, Jan. 6, 1992, 4-000288; Jan. 6, 1992, 4-000289; Jan. 6, 1992, 4-000290; Feb. 10, 1992, 4-023952; Feb. 14, 1992, 4-028281; Mar. 5, 1992, 4-048892; Jul. 9, 1992, 4-182549; Jul. 23, 1992, 4-197221; Aug. 31, 1992, 4-232189; Aug. 31, 1992, 4-232195; Sep. 28, 1992, 4-258330; Sep. 28, 1992, 4-258331; Dec. 25, 1992, 4-346958

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **32 Claims**



1. An apparatus for detecting a malfunction in an evaporated fuel purge system, said evaporated fuel purge system including a vapor passage, a canister for absorbing fuel vapor fed from a fuel tank to the canister via the vapor passage, a purge passage for connecting the canister to an intake passage of an internal combustion engine, and a first control valve being opened to feed the fuel vapor from the canister to the intake passage via the purge passage when the engine is operating under a prescribed operating condition, said apparatus comprising:

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pressure detection means for sensing a pressure of an evaporated fuel passage portion of said system to be diagnosed by said apparatus;

first control means for turning OFF a second control valve provided in the canister to close an air inlet opening of the canister, and for simultaneously turning ON the first control valve to open the purge passage, so that said evaporated fuel passage portion is subjected to a negative pressure of the intake passage during a first time period;

first discrimination means for detecting whether a malfunction has occurred in said system in accordance with a pressure change rate derived from the pressure of said evaporated fuel passage portion sensed by said pressure detection means at a start of a the first time period and from the pressure sensed by said pressure detection means at an end of the first time period;

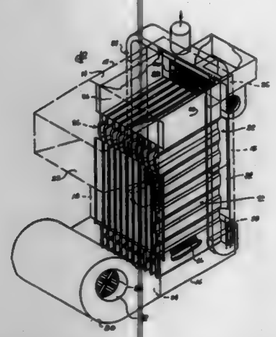
second control means for detecting whether a pressure of said evaporated fuel passage portion sensed by said pressure detection means reaches a prescribed negative pressure after said first discrimination means detects that no malfunction has occurred in said system, and for turning OFF both the first control valve and the second control valve during a second time period after the prescribed negative pressure is reached in said system; and

second discrimination means for detecting whether a malfunction has occurred in said system in accordance with a pressure change rate derived from the pressure of said evaporated fuel passage portion sensed by said pressure detection means at a start of the second time period and at an end of the second time period.

5,295,473
FURNACE

Jacob J. Neufeldt, 1212 - 22nd Avenue, Coaldale, Alberta, Canada

Filed Mar. 18, 1992, Ser. No. 853,391
Int. Cl.[5] F24H *3/10*
U.S. Cl. 126—103 **4 Claims**



1. A furnace comprising:

a housing having a top, a bottom and sides defining a firebox chamber and a heat exchange chamber, a fresh air intake opening adjacent said bottom, a heated fresh air discharge opening adjacent said top, a combustion air inlet opening adjacent said top, and a combustion product discharge opening adjacent said bottom;

a burner assembly secured to said housing for delivering heated air to said combustion air inlet opening;

a firebox mounted in said firebox chamber having an opening communicating with said combustion air inlet opening;

a modular, counterflow heat exchanger mounted in said heat exchange chamber and secured to the underside of said firebox and defining a plurality of alternating combustion product downflow channels and fresh air upflow channels, said channels being defined by a plurality of relatively thin-walled flue members each having:

an elongated slot-like combustion product inlet opening at one end thereof,

a combustion product discharge opening in said member adjacent the other end thereof,

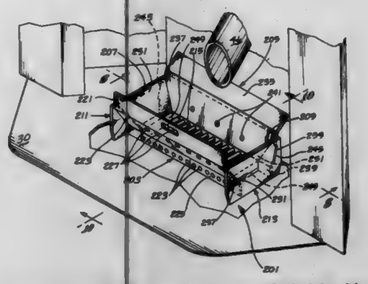
flange means extending laterally from each side of said slot-like intake opening for securing adjacent flue members together in predetermined spaced relation so at to define said upflow channels therebetween,

spacer means at the other end of said flue members for securing adjacent flue members together in said predetermined spaced relation to permit entrance of the fresh air therebetween into said up flow channels from the fresh air intake opening, the upper ends of said upflow channels communicating with said heated air discharge opening.

5,295,474
COMBUSTION GRATE WITH RODS FOR PELLET FUELED STOVE

Oliver J. Whitfield, Bow; Phillip W. Robertson, Mount Vernon; Abbas Dadkhah-Nikoo, Burlington, and Craig G. Wright, Bellingham, all of Wash., assignors to Pyro Industries, Inc., Burlington, Wash.

Continuation-in-part of Ser. No. 745,204, Aug. 14, 1991, Pat. No. 5,137,010. This application Dec. 11, 1991, Ser. No. 805,495
Int. Cl.[5] F23H *13/00*
U.S. Cl. 126—152 R **14 Claims**



1. A grate assembly for use in a stove fueled by biomass pellets, the grate assembly comprising:

a plurality of elongate rods positioned in a parallel arrangement, the plurality of rods comprising subsets of two adjacent rods, the distance between the rods of a first subset being unequal to the distance between rods of a second subset adjacent to the first subset, the distance between the rods of the first subset and the rods of the second subset being sufficient to prevent unburned biomass pellets from falling between adjacent rods.

5,295,475
HEATING DEVICE

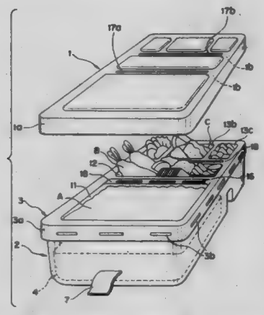
Gentoku Kaneko, Takarazuka, Japan, assignor to Japan Warmer Inc., Kobe, Japan

PCT No. PCT/JP88/00947, § 371 Date May 24, 1991, § 102(e) Date May 24, 1991, PCT Pub. No. WO89/02240, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 17, 1988, Ser. No. 465,242
Claims priority, application Japan, Sep. 17, 1987, 62-141919; Dec. 10, 1987, 62-188624; Jan. 21, 1988, 63-122205
Int. Cl.[5] F24J *1/00*
U.S. Cl. 126—263 R **16 Claims**

1. A steam direct heating device comprising:

a heating container for generating a hot steam by an exothermic reaction sufficient to heat a cooked food and a food container housing the cooked food to be heated, having apertures in a portion of a bottom wall thereof for passing the hot steam and being positioned over the heating container, wherein the heating container has an opening on an upper side thereof;

a first bag containing calcium oxide as exothermic materials and a second bag containing water, the first and second bags being located in the container and the first bag being positioned over the second bag;



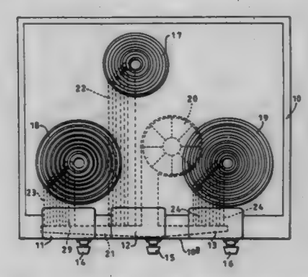
a sheet-type filter provided over the opening of the container, the filter preventing exothermic materials from leaving the container; and

means for exposing the exothermic materials in the first bag to water in the second bag to thereby start an exothermic reaction releasing a high temperature steam, the steam passing through the sheet-type filter but the exothermic materials being prevented from passing through the filter even when the exothermic materials are conveyed by water splashing in the exothermic reaction.

5,295,476
GAS HOB

Eric D. Herbert, Cheshire, Great Britain, assignor to Blue Circle Domestic Appliances Limited, Warwickshire, United Kingdom

PCT No. PCT/GB90/00503, § 371 Date Oct. 8, 1991, § 102(e) Date Oct. 8, 1991, PCT Pub. No. WO90/12255, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 4, 1990, Ser. No. 768,851
Claims priority, application United Kingdom, Apr. 8, 1989, 8907946; Sep. 6, 1989, 8920153
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 G **15 Claims**

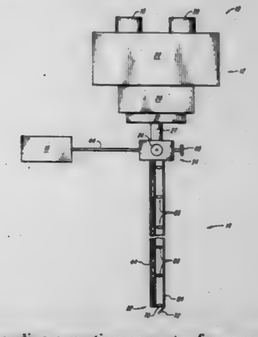


1. A gas hob comprising a glass ceramic top plate, at least one gas-fired heat radiating burner unit arranged closely below said top plate, the or each unit having a multiplicity of chambers over which is disposed a ceramic burner plate perforated to match the pattern of said chambers, the chambers of each burner unit being in communication with respective associated air supply passages, an inlet to each passage having an orifice of a predetermined size to govern the amount of air entering the passage, in use, gas supply means to each air supply passage, fan means arranged to supply air through said air supply passage inlets to all the chambers of a burner unit at all times when gas is supplied to at least one chamber of said burner unit, supplied gas and air mixing prior to entering one or more of said chambers and thereafter one or more of said burner plate perforations, and means for independently controlling the supply of gas to each air supply passage.

5,295,477
ENDOSCOPIC OPERATING MICROSCOPE

Parviz Janfaza, 3 Liberty St., Natick, Mass. 01760

Filed May 8, 1992, Ser. No. 880,530
Int. Cl.[5] A61B *1/06*
U.S. Cl. 126—6 **20 Claims**



1. A freestanding operating apparatus for presenting a stereo image of an internal area of biological specimen under observation, said operating apparatus comprising:

an endoscope sized and shaped to be insertable into and retractable from a cavity or incision in a biological specimen said endoscope having an observation end and an insertion end, said endoscope including a first lens image transmission means for non-electronically transmitting an optical image from said insertion end of said endoscope to said observation end of said endoscope and an illuminating means for transmitting light to said insertion end; and

an operating stereomicroscope operatively connected to said observation end of said endoscope, said operating stereomicroscope including an optical viewing means for presenting a stereo image of said optical image optically transmitted by said first lens image transmission means.

5,295,478
MOUTH-TO-MASK RESUSCITATOR

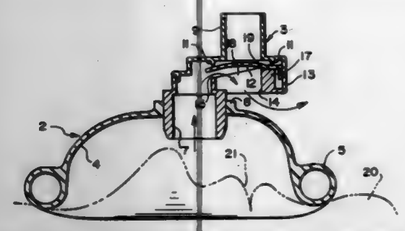
Gene R. Baldwin, 324 N. Gardiner Ave., Rockford, Ill. 61107

Filed Feb. 16, 1993, Ser. No. 18,194
Int. Cl.[5] A61M *16/20, 16/00*
U.S. Cl. 128—203.11 **6 Claims**

5. A check valve assembly for use in a mouth-to-mask resuscitator comprising, a base portion and a tubular inlet integral with said base portion, a depending annular edge formed on said base portion, a housing, a tubular portion being integral with said housing, the base portion of said tubular inlet being integrally connected to said housing, a through bore provided in said housing communicating the interior of the housing with the atmosphere, one end of said bore having a peripheral edge, a resilient valve disc positioned between the base portion of said tubular inlet and said housing, a post having a top surface integral with the exterior surface of said bore, said depending annular edge pressing the peripheral portion of said disc

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against the top surface of said post to thereby secure the valve disc at one place within its periphery between the base portion of the tubular inlet and the housing, whereby the annular edge on the base portion of said tubular inlet and the peripheral edge



on said one end of the bore provide seats for the valve disc, the portion of the peripheral edge adjacent said post being higher than the top surface of the post, to thereby form a hinge for biasing the disc valve against the depending annular edge.

5,295,479

DEVICE INTENDED FOR MEASURING A DOSE OF POWDERED MEDICAMENT FOR INHALATION

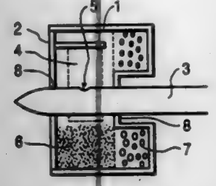
Tapio Lankinen, Turku, Finland, assignor to Leiras Oy, Turku, Finland

PCT No. PCT/FI91/00113, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/18188, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 15, 1991, Ser. No. 955,743

Int. Cl.[5] A61M *15/00*

U.S. Cl. 128—203.15 **9 Claims**



1. A device intended for measuring a dose of powdered medicament for inhalation, comprising a medicament container (1), through which extends a shaft (3) provided with at least one dosage recess (5), characterized in that said container (1) is provided with at least one flap-shaped sweeper element (4) having opposite ends, resting on shaft (3) in alignment with the dosage recess and having one of its ends rotatable around said shaft (3), the other end of the flap dragging along the shaft surface, said shaft (3) being displaceable in its longitudinal direction relative to said container (1) so as to bring said dosage recess (5) along with its dose of medicament outside said container (1).

5,295,480

TRACHEAL TUBE SUPPORT MECHANISM

Harry Zemo, 6910 Forman Way, Sacramento, Calif. 95828

Filed Jun. 4, 1992, Ser. No. 894,293

Int. Cl.[5] A61M *16/00*

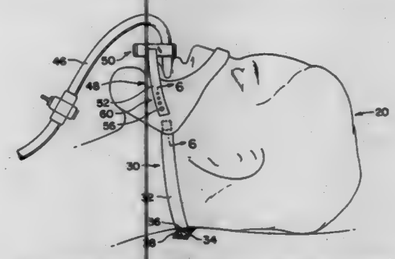
U.S. Cl. 128—207.17 **4 Claims**

1. A tracheal tube support and retention device for holding a tracheal tube within the mouth of a user, which device comprises:

a) a facial cover including a first portion extending over the nasal bridge of a user, a second portion extending over the chin of a user, said first portion being connected to said second portion, said facial cover also having an opening therein between said first and second portions to permit access to the nostrils of the nose and to the mouth of said user;

b) retaining means for positioning the tracheal tube within the mouth of a user to resist the removal of the tracheal tube therefrom; said means comprising a fastener held in position in front of the mouth of the user, said fastener having a pair of spaced resilient flanges each of which flanges has an aligned slot therethrough, one of which flanges is releaseably engageable with the other,

said fastener having a constrictable opening in communication with the space between said flanges, for receipt of said tracheal tube



whereby when said flanges are engaged, the constrictable opening is constricted to thereby retain the tracheal tube, and when said flanges are disengaged, the tracheal tube is axially moveable within said constrictable opening;

c) holding means for holding said facial cover to the head of a user, said holding means being secured to said facial cover and passing through said aligned slots of the fastener, such that said holding means is held normal to said fastener.

5,295,481

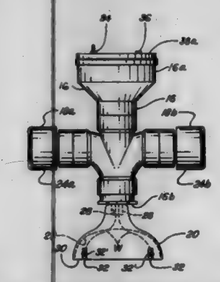
CARDIOPULMONARY RESUSCITATION ASSIST DEVICE

Calvin T. Geeham, 12761 138th Ln. N., Largo, Fla. 34644

Filed Nov. 1, 1991, Ser. No. 786,380

Int. Cl.[5] A61H *31/02*; A61N *1/00*

U.S. Cl. 601—43 **10 Claims**



1. A cardiopulmonary resuscitation assist device for providing cardiopulmonary resuscitation to the chest of a cardiac patient by an aid giver, comprising:

a column member having an upper end and a lower end;

a suction cup member connected with said lower end of said column member, said suction cup member having an internal substantially concave surface facing away from said column member, said internal substantially concave surface being defined by a peripheral rim, said suction cup member being constructed of a resilient material;

defibrillation means connected with said column member for supplying defibrillating electrical shock to the chest of the cardiac patient; and

handle means connected to said column member between said upper end and said lower end thereof for providing a handhold substantially perpendicular with respect to said column member;

wherein the aid giver places said peripheral rim of said suction cup member upon the chest of the cardiac patient, then subsequently applies forces at said handle means alternately toward and away from the chest of the cardiac patient so as to provide cardiopulmonary resuscitation, the application of force away from the chest of the cardiac patient causing the chest of the cardiac patient to move with the suction cup member due to a suction effect between the suction cup member and the chest of the cardiac patient.

10. A method for providing cardiopulmonary resuscitation (CPR) to the chest of a cardiac patient by an aid giver, for use with a CPR assist device comprising a column member, a suction cup member connected to said column member, and a defibrillation means connected to said column member for supplying defibrillating electrical shock, comprising the steps of:

placing said suction cup member upon the chest of the cardiac patient;

applying forces on said suction cup member alternately toward and away from the chest of the cardiac patient with a predetermined timing therebetween so as to provide cardiopulmonary resuscitation, the application of force away from the chest of the cardiac patient causing the chest of the cardiac patient to move with the suction cup member due to a suction effect between the suction cup member and the chest of the cardiac patient; and

activating said defibrillating means to selectively apply a defibrillating shock to the chest of the cardiac patient while said suction cup member is adjacent to the chest during said period of predetermined timing between application of forces.

5,295,482

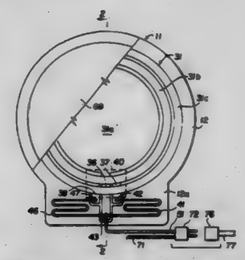
LARGE SURFACE AREA ELECTRODE

Christopher R. Clare, Los Altos Hills; Mir A. Imran, Palo Alto; Donald E. Barnett, Jr., Sunnyvale, and Albert J. Highe, Redwood City, all of Calif., assignors to Physiometrix, Inc., Sunnyvale, Calif.

Filed Oct. 22, 1992, Ser. No. 964,917

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—639 **31 Claims**



1. A large surface area electrode, for use with a power supply having a more uniform current density distribution for contacting an exposed surface of skin of a living body having a contour, comprising a layer of flexible conductive material of a predetermined geometrical shape and having first and second surfaces, said layer of flexible conductive material being normally relatively flat but being capable of assuming the contour of the skin of the body when the electrode is placed in contact with the body with the first surface of the layer engaging the exposed surface of the skin of the body, said layer of flexible conductive material having a central portion and a surrounding ring portion, said central portion and said surrounding ring portion having outer edges, means forming a flexible carrier layer having a first surface secured to the second surface of the layer of flexible conductive material and serving to support said central portion and said surrounding ring portion so that the surrounding ring portion is spaced from and insulated from the central portion and coupling means adapted to couple said central portion and said surrounding ring portion to said power supply for controlling the current densities at said edges so that the current densities at said edges do not exceed predetermined values, said coupling means forming a direct connection to the central portion and including a resistor connected to said surrounding ring portion.

5,295,483

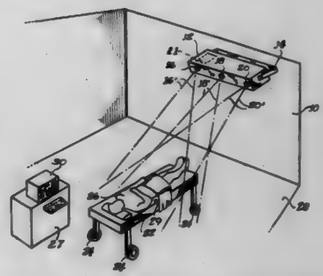
LOCATING TARGET IN HUMAN BODY

Christopher Nowacki, 1552 Chickamauga, Long Grove, Ill. 60047, and Mark T. Horbal, 2 S. 530 Iroquois Courts West, Warrenville, Ill. 60555

Continuation of Ser. No. 522,597, May 11, 1990, abandoned. This application Oct. 11, 1991, Ser. No. 777,433

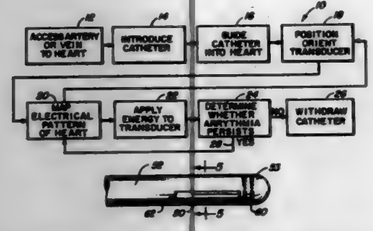
Int. Cl.[5] A61B *8/00, 17/22*

U.S. Cl. 128—660.03 **8 Claims**



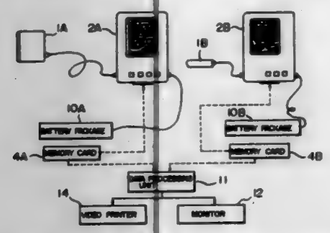
1. Apparatus for locating a target in a human body comprising a three dimensional viewing camera unit including a housing, three cameras mounted in said housing in fixed relation to one another, and an auxiliary computer mounted in said housing, means for supporting said camera unit at an elevated location, a patient examining table disposed within respective aspects seen by said three cameras, said patient examining table being adapted to support a human patient having therein a target an ultrasound probe and an ultrasound scan screen apparatus, said probe having a plurality of radiation sources capable of being seen by said cameras, and a main computer, said auxiliary computer being electrically connected to said three cameras and to said main computer, said ultrasound probe being connected to said scan screen apparatus, said probe radiation sources being electrically connected to and strobed by said auxiliary computer, said ultrasound scan screen apparatus having three displays of X-Y, X-Z and Y-Z planes and being electrically connected to said probe to shown the relation of said probe to said target, and said ultrasound scan screen apparatus respectively having said three displays indicating a desired amount of movement of said patient examining table to position said target at a desired location.

5,295,484
APPARATUS AND METHOD FOR INTRA-CARDIAC ABLATION OF ARRHYTHMIAS
Frank I. Marcus, and Kullervo H. Hyvanen, both of Tucson, Ariz., assignors to Arizona Board of Regents for and on Behalf of the University of Arizona, Tucson, Ariz.
Filed May 19, 1992, Ser. No. 885,190
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.03 31 Claims



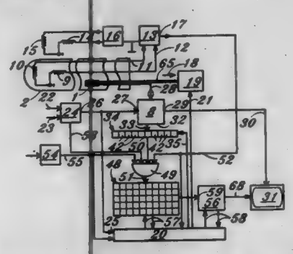
1. A method for intra-cardiac ablation of arrhythmias in a subject in need thereof, comprising the steps of:
A. Guiding a catheter, having an ultrasonic transducer mounted on a distal end thereof and means for sensing electrical cardiac signals, into a heart of the subject;
B. sensing electrical cardiac signals in the subject with said sensing means;
C. positioning the catheter to place the ultrasonic transducer in close proximity to a cardiac tissue region to be treated in response to sensed cardiac signals;
D. activating the ultrasonic transducer to direct ultrasonic energy at the cardiac tissue region to be treated, thereby generating thermal energy in the cardiac tissue; and
E. heating the cardiac tissue to a temperature and depth sufficient to ablate the cardiac tissue, thereby ablating the arrhythmia.

5,295,485
ULTRASONIC DIAGNOSTIC SYSTEM
Ryuichi Shinomura, Higashimatsuyama; Wasao Takasugi, Higashiyamato; Yoshikuni Matsunaga, Hachioji, and Kageyoshi Katakura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 8, 1992, Ser. No. 986,905
Claims priority, application Japan, Dec. 13, 1991, 3-330265
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.07 20 Claims



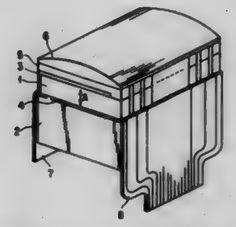
1. An ultrasonic diagnostic system for transmitting and receiving an ultrasonic wave to display a sectional image of a body to be examined, comprising:
a main system composed of a signal processing part utilized in a specific ultrasonic beam scanning mode for processing received signal data to acquire an image, a display utilized in a specific ultrasonic beam scanning mode for displaying the image acquired, a data I/O port for sending at least a main system code representing a specific ultrasonic beam scanning mode and the received signal data to an external memory device for storing time;
a probe connected with said main system and having a transducer array for transmitting and receiving the ultrasonic wave;
a data processing unit provided separately from said main system, said processing unit for reading at least said main system code and said received signal data from said external memory device to perform data processing for obtaining diagnosis information; and
a monitor for displaying said diagnosis information.

5,295,486
TRANSESOPHAGEAL ECHOCARDIOGRAPHY DEVICE
Helmut Wollschläger, Karläuserstrasse 134; Susanna Wollschläger, Laufenerstraße 15; Andreas Zeiher, Klarastrasse 55, all of D-7800 Freiburg, and Hans-Peter Klein, An der Weinleite 12b, D-8017 Ebersberg, all of Fed. Rep. of Germany
PCT No. PCT/DE89/00550, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO90/13259, PCT Pub. Date Nov. 15, 1990
PCT Filed Aug. 23, 1989, Ser. No. 768,897
Claims priority, application Fed. Rep. of Germany, May 3, 1989, 3914619
Int. Cl.[5] A61B 8/12
U.S. Cl. 128—661.01 10 Claims



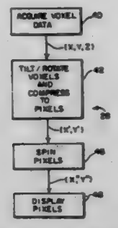
1. An ultrasound endoscopy device for transesophageal echocardiography, comprising;
an ultrasound transducer, for scanning a series of parallel section planes of the heart with ultrasonic energy, converting ultrasound scans into electrical signals, the electrical signals being analogs of the scanned series of parallel section planes, and transmitting the electrical signals, the ultrasound transducer being slidably mounted upon a sliding rail situated in the interior of the device, such that the transducer may be linearly moved along the sliding rail of the device;
ultrasound diagnostic means for receiving analog signals of said series of parallel section planes, converting the analog signals into signals in the form of tomograms and transmitting the signals; and
an image processing system for receiving the signals in the form of tomograms from the diagnostic means, the image processing system comprising,
a memory storage buffer capable of storing at least one said tomogram in synchronization with the cardiac phases when scanning each said section plane;
a main memory for storiong at least one three-dimensional image composed of a series of parallel ones of said tomograms;
data selection and transmission means interconnecting a data output port of said memory storage buffer to a data entry port of said main memory, said data selection and transmission means selecting individual ones of said tomograms assigned to consecutive cardiac cycles and transmitting such to said main memory only in those instances where said individual tomograms correspond to cardiac cycles having the same duration; and
means for preventing the movement of the ultrasound transducer to the next one of said section planes until a successful transfer of data from said memory storage buffer to said main memory.

5,295,487
ULTRASONIC PROBE
Shiroh Saitoh, Yokohama; Mamoru Izumi, Tokyo; Seuji Shimanuki, Atsugi; Shinichi Hashimoto, Kawasaki, and Yohachi Yamashita, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 9, 1993, Ser. No. 15,425
Claims priority, application Japan, Feb. 12, 1992, 4-25134; May 22, 1992, 4-130303
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—662.03 19 Claims



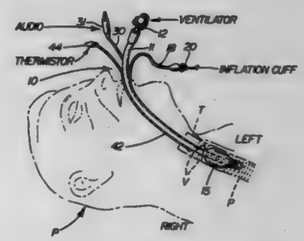
1. An ultrasonic probe comprising an ultrasonic transmitting/receiving element having a piezoelectric member consisting of a solid-solution based single crystal of zinc lead niobate-lead titanate, and a pair of electrodes formed on an ultrasonic transmitting/receiving flat surface of said piezoelectric member and a surface opposite to said transmitting/receiving flat surface, respectively.

5,295,488
METHOD AND APPARATUS FOR PROJECTING DIAGNOSTIC IMAGES FROM VOLUMED DIAGNOSTIC DATA
Robert F. Lloyd, Muskego, and Christopher J. Wilbricht, Madison, both of Wis., assignors to General Electric Company, Milwaukee, Wis.
Filed Aug. 5, 1992, Ser. No. 925,544
Int. Cl.[5] A61B 6/00
U.S. Cl. 128—653.1 12 Claims



1. A method of generating a diagnostic image of a body comprising the steps of:
directing a radiated energy through a region of interest of the body;
detecting the interaction of the energy with the body to acquire data at a plurality of voxels, the voxels having spatial coordinates located within the region of interest wherein the value of the datum of each voxel corresponds to a physical property of the body at the spatial coordinate;
transforming the spatial coordinates of each voxel by a rotation about a first and second perpendicular axis;
compressing the voxels along a third axis orthogonal to the first and second axis to produce data of pixels in a plane, the pixels having first and second image coordinates orthogonal to the third axis;
transforming the image coordinates of each pixel by rotation about the third orthogonal axis; and
displaying the pixel data by mapping each pixel to a point on a display with display coordinates corresponding to the image coordinates.

5,295,489
ENDOTRACHEAL TUBE/STETHOSCOPE/THERMISTOR COMBINATION
Floyd R. Bell, Portsmouth, Ohio, and Thomas H. McKay, Versailles, Ky., assignors to Medi-Tube Corporation, Lexington, Ky.
Filed Dec. 20, 1991, Ser. No. 811,531
Int. Cl.[5] A61B 5/02
U.S. Cl. 128—715 15 Claims



1. An assembly for providing endotracheal ventilation, vital sound monitoring by stethoscope, and body core temperature monitoring in a patient comprising:
a. a tracheal tube having a preformed bow for matching the curvature of the trachea and a distal end for positioning in the trachea of the patient;
b. means for substantially peripherally sealing the assembly against the tracheal wall adjacent the distal end of the tube inserted in the trachea;
c. means for providing ventilation to the trachea through said tube;
d. audio means extending along the tube at least partially coextensive with said sealing means and having sufficient resiliency to vibrate in response to patient vital sounds to permit monitoring during ventilation; and
e. a temperature transducer on said tube positioned and exposed to the outside of said tube along the outside of the bow of the tube to be substantially in contact with the mucous membrane of the trachea toward the back of the patient to permit monitoring of the patient body core temperature during ventilation.

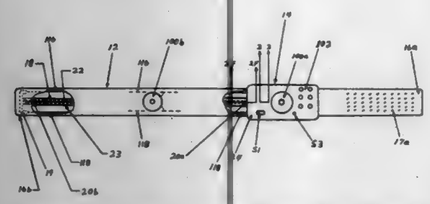
5,295,490
SELF-CONTAINED APNEA MONITOR
Wayne S. Dodakian, 77 Oakland Ave., New Britain, Conn. 06053
Filed Jan. 21, 1993, Ser. No. 6,829
Int. Cl.[5] A61B 5/113
U.S. Cl. 128—721 44 Claims

1. A monitor for monitoring a patient to detect one of an apnea event and shallow breathing and for providing an indication responsive thereto, the monitor comprising:
belt means for substantially encircling a portion of the body of a patient and for expanding and contracting in response to respiration of the patient, said belt means including a flexible material;

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detection means connecting first and second ends of the belt means for detecting expansion and contraction of the belt means;

the belt means including a substantially inextensible biased wire extending along at least a portion thereof, the wire having a first end displaceably connected to the detection means and a second end fixedly connected to the belt means at a location intermediate the first and second ends of the belt means, the wire being displaced from the detection means upon an expansion of the belt means, the wire being biased to return to a predisplaced configuration upon contraction of the belt means, with the detection



means detecting respiration by detecting displacement of the wire;

a housing member enclosing the wire, said housing members insulating the sire from the flexible material and ensuring free and smooth displacement of the wire so that detection of respiration is not impeded;

measurement means for measuring a time interval between displacements of the wire; and

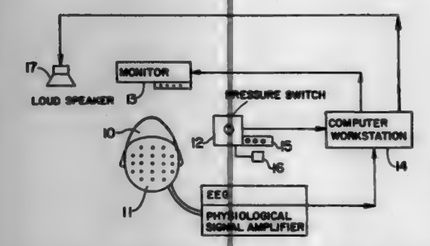
determination means and indication means for, respectively, determining and indicating whether said time interval exceeds a minimum threshold time interval such that an indication is provided of a prolonged period without any detected respiration.

5,295,491

NON-INVASIVE HUMAN NEUROCOGNITIVE PERFORMANCE CAPABILITY TESTING METHOD AND SYSTEM

Alan S. Gevins, San Francisco, Calif., assignor to Sam Technology, Inc., San Francisco, Calif.

Filed Sep. 26, 1991, Ser. No. 766,826
Int. Cl.[5] A61B *5/0482*
U.S. Cl. 128—731 **22 Claims**



1. A method to determine the mental performance capacity of a human subject to perform a work assignment, including the steps of:

(a) testing the subject in a test of performance of a task, while the subject is sober, alert and healthy, to obtain a normative test score for the subject and recording said normative test score;

(b) simultaneously with (a) detecting and analyzing the brain waves of the subject with an EEG (electroencephalograph) device having a plurality of electrodes removably connected to the scalp of the subject to determine a normative neurocognitive capacity score for the subject which is the normal neurocognitive capacity utilized by the subject to obtain the normative test score, and recording the normative neurocognitive capacity score; and subsequently

(c) testing the subject in a test of performance of a task to obtain a test score and comparing the test score with the normative test score;

(d) simultaneously with (c) detecting and analyzing the brain waves of the subject with an EEG (electroencephalograph) device having a plurality of electrodes removably connected to the scalp of the subject to determine the neurocognitive capacity the subject used to pass the test of (c), and comparing said neurocognitive capacity used by the subject with the normative neurocognitive capacity score; and

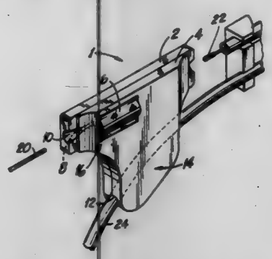
(e) rejecting the subject so that the subject does not perform the work assignment if the subject's test score of (c) is a predetermined passing score below the normative test score or if the subject's test score of (c) is above said passing score but the subject requires excessive neurocognitive capacity as determined in (d) to obtain the passing score.

5,295,492

DEVICE FOR CONNECTING A GUIDEWIRE TO AN EXTENSION GUIDEWIRE

James M. Sellers, Haverhill, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 9, 1992, Ser. No. 959,045
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **25 Claims**



1. A device for connecting by an axial movement a small diameter wire and an extension wire, having a male connection member on the one wire and a female connection member on the other wire comprising:

(a) a first body member having a channel extending along an outer surface of said first body member, said channel having a width only slightly greater than the largest wire diameter;

(b) a second body member in abutting relationship with said first body member and positioned so as to avoid interference with the wire, including axial movement thereof within said channel; and

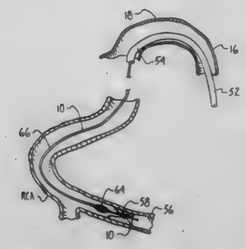
(c) a transparent magnifying means positioned on one of said body members in a position to permit viewing of said channel for positioning and manipulating the wires, to permit an interconnection between said male and female connectors of the wires.

5,295,493

ANATOMICAL GUIDE WIRE

Herbert R. Radisch, Jr., San Diego, Calif., assignor to Interventional Technologies, Inc., Calif.

Division of Ser. No. 853,916, Mar. 19, 1992. This application Nov. 10, 1992, Ser. No. 974,246
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **15 Claims**



1. An apparatus for introducing a medical cutter into a coronary artery, to incise a stenosis in the artery, which comprises:

a guide wire having an anatomically shaped distal non-straight portion, said distal portion being shaped to conform to a segment of an arterial pathway when in an unstressed state;

a guiding catheter engageable with said guide wire, said distal portion of said guide wire being extendable from said guiding catheter to position and maintain said distal portion of said guide wire in said segment of said pathway of the coronary artery in said unstressed state; and

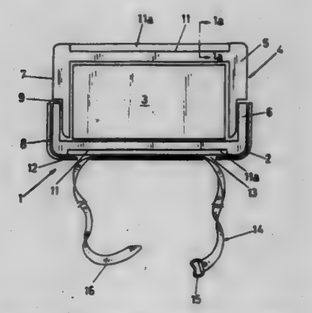
an atherectomy cutter slidingly engageable with said guide wire for advancement along said guide wire and into contact with said stenosis.

5,295,494

SUPPORT FOR A THERAPEUTIC MAGNET

Andres C. Rodriguez, Parque Residencial Nuestra senora de la Merced, Bloque 5-3°-C, 11406 Jerez de la Frontera, Cadiz, Spain

Filed May 15, 1992, Ser. No. 883,649
Claims priority, application Spain, May 17, 1991, 9101529
Int. Cl.[5] A61G *15/00*; A61B *17/52*
U.S. Cl. 128—845 **15 Claims**



1. A support for a therapeutic magnet, the support comprising:

a box with an interior for containing the magnet, the box being comprised of two open, inverted and facing box parts, the box parts each having respective sets of upstanding walls; a stop in one of the sets of upstanding walls for defining a stopping position for the two parts with respect to each other; a coupling arrangement between the box parts at the edges thereof for releasably joining the two box parts together;

each box part having a base, at least one of the box part bases having a central hollow region defined therein on a side away from the interior of the box;

a transparent sheet having the same thickness as the hollow region being attached in the hollow region, the sheet having a bottom face on a side facing the interior of the box;

a printed film with information text on it applied to the bottom face of the sheet so that the information text is readable by a user of the support, the printed film having two opposite surfaces; the printed film having adhesive on both the surface toward the box interior and the surface toward the transparent sheet for attaching the printed film to respective opposing surfaces of the box and the transparent sheet, the printed film being between the hollow region in the respective box part and the bottom face of the transparent sheet; and

a passage through one of the box parts; a band passing through the passage; and means for fastening the band to a part of a body to which the support and a magnet therein is to be applied.

5,295,495

GLAUCOMA TESTING FROM OBSERVATIONS OF OPTOKINETIC NYSTAGMUS

Teddy L. Maddess, Kaleen, Australia, assignor to The Australian National University, Australia

Filed May 13, 1992, Ser. No. 882,111
Claims priority, application Australia, May 13, 1991, PK 6087
Int. Cl.[5] A61F *9/00*
U.S. Cl. 128—898 **13 Claims**

1. A method for diagnosing the occurrence of glaucoma in a subject, said method comprising the steps of:

(1) presenting to the subject a regular pattern, having distinct vertical features, and causing the pattern to move laterally to either the left or the right, at a constant rate; said distinct vertical features comprising a relatively low spatial frequency, or a collection of relatively low spatial frequencies, and having a contrast which is modulated at a relatively high temporal frequency, said modulation being effected by a translation of the pattern image across the subject's retina and/or by direct contrast modulation of the pattern features, at a frequency which is sufficient, or nearly sufficient, for a frequency doubled visual illusion to be perceived by a person of normal vision who observes said pattern;

(2) monitoring an optokinetic nystagmus of the subject during the movement of the pattern and determining at least one of the parameters in the group consisting of

(a) standard deviation of optokinetic nystagmus slow phase velocity;

(b) standard deviation of an optokinetic beat duration;

(c) mean optokinetic nystagmus beat duration for optokinetic nystagmus beats having a slow phase which is well represented in a graphical display by a straight line;

(d) standard deviation of the optokinetic nystagmus beat duration for optokinetic nystagmus beats having a slow phase which is well represented in a graphical display by a straight line;

(e) 95 percent confidence limit in a mean duration of optokinetic nystagmus beats for beats which have a slow phase eye position with time which is well represented in a graphical display by a straight line;

(f) standard deviation of optokinetic nystagmus beats which occur within contiguous clusters of beats;

(g) mean rate of optokinetic nystagmus beats which occur within contiguous clusters of beats;

(h) mean eye deflection per optokinetic nystagmus beat of

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optokinetic nystagmus beats which occur within contiguous clusters of beats; and

(i) relative total variation in optokinetic nystagmus beat velocity for optokinetic nystagmus beats which have a slow phase that is well represented by a straight line; and

(3) comparing each of the determined parameters with a value of that parameter expected for a person with normal, healthy vision.

5,295,496

COMPACT FOR COSMETIC PREPARATIONS

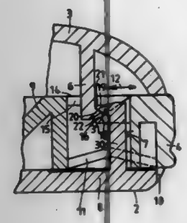
Dietrich Machelett, Meinerzhagen, Fed. Rep. of Germany, assignor to Wilhelm Koopman KG, Meinerzhagen, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,847

Claims priority, application European Pat. Off., Sep. 24, 1992, 92116310.1

Int. Cl.[5] A45D *42/02*

U.S. Cl. 132—293 **6 Claims**



1. A compact for cosmetic preparations, comprising:

a housing part;

a powder tray being contained within said housing part;

a lid for said housing part being coupled to said housing part by hinge means;

a first catch and a second catch, said first catch being integrally formed on said lid and cooperating with said second catch, said second catch being seated in the region of said housing part;

a presser movable in said housing part for releasing said first and second catches from one another;

an insert containing said power tray which is contained within said housing part; and,

an elastically deformable carrier for said insert for holding said presser in a flexible manner.

5,295,497

ELECTRIC FUEL INJECTOR CLEANER APPARATUS

Alan Skovron, Sydney, Australia, assignor to High Tech Auto Tools Pty. Ltd., Sydney, Australia

Continuation of Ser. No. 479,449, Feb. 14, 1990, Pat. No. 5,147,464. This application Apr. 16, 1992, Ser. No. 869,770

Claims priority, application Australia, Feb. 14, 1989, PJ2727

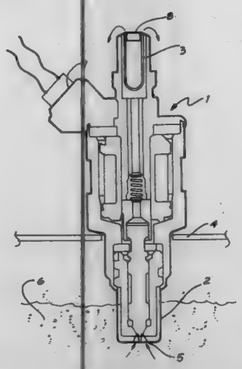
Int. Cl.[5] B08B *3/12, 9/00*

U.S. Cl. 134—169 A **2 Claims**

1. In an apparatus for cleaning an electronic fuel injector having an inlet tip and an outlet tip, the apparatus being of the type including means for supporting the electronic fuel injector in an ultrasonic bath of cleaning fluid such that at least the outlet tip is immersed in the fluid, means for resonating the bath with ultrasonic energy, a controller comprising:

means for generating an electrical signal for pulsing said injector when free of any connection to a source of pressurized fluid, at a rate which causes the cleaning fluid to flow in a direction from the bath, into the injector outlet tip, through said injector, and to of the injector inlet tip, as a result of the interaction of the ultrasonic resonance and said pulsing action of said injector, and

means for coupling said signal to said fuel injector so as to pulse the same, and



said apparatus being free of a fluid connection between the injector inlet and a source of pressurized fluid when said fuel injector is pulsed by said generating means.

5,295,498

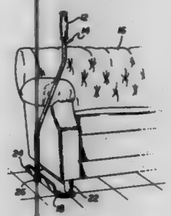
DEVICE TO AID PERSONS RISING FORM A SEATED POSITION

Larry E. Van Meter, 901 Latham St., Colton, Calif. 92324, and Leonard B. Van Meter, 31813 Tennessee St., Yucaipa, Calif. 92399

Filed Feb. 19, 1993, Ser. No. 20,046

Int. Cl.[5] A45B *7/00*

U.S. Cl. 135—65 **3 Claims**



1. A device to aid persons rising from a seated position comprising:

an elongated generally vertically positioned arm having a lower end and an upper free end;

an elongated horizontal support base positionable under the legs of a seat;

a vertically formed planar brace having an outer surface, said planar brace being secured to an edge of said support base in a plane perpendicular to said support base;

a sleeve secured to said vertically formed planar brace along said outer surface for securing the lower end of said arm thereto; the upper free end of said arm having a grip section enabling a seated person to grasp said arm grip and put themself to an upright position.

5,295,499

DEVICE FOR REMOVABLY JOINING TWO CRUTCHES

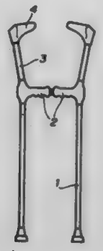
Joseph Stutz, Chatel-Deasous, Givrins, Switzerland

Continuation of Ser. No. 731,877, Jul. 18, 1991, abandoned. This application Jun. 25, 1992, Ser. No. 904,901

Claims priority, application Switzerland, Jul. 20, 1990, 02409/90; Feb. 1, 1991, 00324/91

Int. Cl.[5] A61H *3/02*

U.S. Cl. 135—68 **10 Claims**



2. A pair of crutches comprising a first crutch having predetermined length and a first hand-grip projecting to one side of said first crutch and having a distal end, and a second crutch having a predetermined length and a second hand-grip projecting to one side of said second crutch and having a distal end, a first coupling element provided on the first hand-grip and having a coupling axis transverse to the length of the first crutch, said first coupling element being formed on the distal end of said first hand-grip, a second coupling element provided on said second hand-grip and having a coupling axis transverse to the length of the second crutch, said second coupling element being formed on the distal end of said second hand-grip, the first and second coupling elements being positioned at substantially identical levels along the first and second crutches, respectively, the first and second coupling elements having mutually inter-engageable portions of circular cross-section at the distal ends of said hand-grips, respectively, and coaxial with said axes thereof respectively, one element being receivable within the other element such that the first and second crutches can be joined to one another by inter-engagement of the said first and second coupling elements one within the other at their distal ends with the respective coupling axes thereof colinear, and the crutches when so joined being rotatable about the common colinear coupling axis.

5,295,500

TIRE ANCHORED POLE SUPPORT SYSTEM

James M. Leu, 159 Thornhurst, Bolingbrook, Ill. 60439

Continuation-in-part of Ser. No. 560,561, Jul. 30, 1990, Pat. No. 5,158,103. This application Aug. 21, 1992, Ser. No. 934,124

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

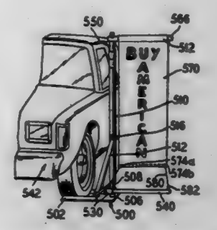
Int. Cl.[5] E04H *15/06*

U.S. Cl. 135—88 **23 Claims**

1. A base assembly for erecting a structure comprising:

a base plate having a bottom surface for bearing upon a datum, and a top surface area for receiving a pressing weight of a vehicle through a tire mounted to said vehicle rolled onto said base plate;

a vertical receiving means for holding upright a column of the structure, said vertical receiving means attached to said base plate and providing structure for mounting said column;



a horizontal receiving means connected to said vertical receiving means, for holding a beam of the structure.

5,295,501

CIRCUS TENT

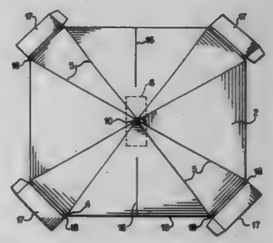
Jean-Leonard Vigne, 14 route de Lyon, 01360 Balan, France

Filed Aug. 17, 1992, Ser. No. 930,798

Claims priority, application France, Aug. 20, 1991, 9110613

Int. Cl.[5] E04H *15/00, 15/06*

U.S. Cl. 135—99 **10 Claims**



1. A tent raisable between a lowered position and a raised position comprising:

at least one pole;

a flexible fabric mounted on said at least one pole, said fabric having a perimetric edge that includes a plurality of corners, said fabric further containing substantially non-stretching cables affixed thereto for supporting said fabric, each of said cables extending from said pole to a vicinity of the perimetric edge near one of the plurality of corners of said fabric, said perimetric edge being at a predetermined height when the tent is in the raised position;

a support provided at each of said corners at a height at least equal to the predetermined height of said perimetric edge of said fabric when the tent is in the raised position; and

a plurality of winches located at or higher than the predetermined height of the perimetric edge, one winch being associated with each of said corners and each winch being connected to at least one of said cables in the vicinity of one of said corners for tensioning said cables to support and raise said fabric.

5,295,502

NON-REFILLABLE VALVE

Joseph A. Lane, Taunton, Mass., assignor to Amtrol Inc., West Warwick, R.I.

Filed Aug. 3, 1993, Ser. No. 101,014

Int. Cl.[5] B65D *47/02*

U.S. Cl. 137—315 **10 Claims**

1. Non-refillable valve for a pressure container, comprising:

(a) a housing, having a central passageway which has a lower

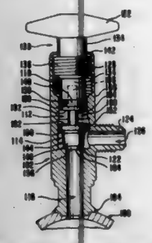
VOL 1160 ISS 4 MR 22 1994 UMI

portion that is narrower than the middle portion of said central passageway and which has an upper portion that is narrower than middle portion of said central passageway, and having a side port which communicates with the lower region of said middle portion of said central passageway, the lower end of said housing being adapted to sealingly engage said pressure container in a manner which provides communication between said pressure container and said lower portion of said central passageway;

(b) an outlet nozzle, having a bore lengthwise therethrough, said outlet nozzle being positioned on the side of said housing and being in communication with said middle portion of said central passageway via said side port in said housing;

(c) valve stem means positioned in said upper portion of said central passageway in a rotatable manner which advances the valve stem means back and/or forth in said central passageway, there being a central bore in the internal end of said valve stem means, said internal end extending into said middle portion of said central passageway, and said central bore not extending through the top of the valve stem;

(d) a resilient valve sealing member which has a body portion, an upper flange that extends upwardly and outwardly from



said body, and a vertical post positioned in the middle of the top surface of the upper flange, said vertical post slidingly and rotatably engaging said central bore in the bottom of said valve stem means; and

(e) a washer-shaped member having a central hole being located between said vertical post of said valve sealing member and the bottom surface of said valve stem means, said vertical post being located in a slidable manner in said central hole,

said flange portion of said sealing member being compressingly positioned in said upper portion of said central passageway, when said valve is inactive or being filled, said valve sealing member being pushed into said middle portion by means of said valve stem means when said valve is placed in the active position, said valve sealing member being seated against the interface between said middle and lower portions of said central passageway when said valve is closed and said sealing member being positioned in said middle chamber above the seating interface when the valve is used for discharge of said container, and said sealing member sealingly engaging said seating interface when refill of container with pressurized fluid is attempted.

5,295,503

MODULAR VALVE FOR A BUILDING STANDPIPE

George G. Meyer; Stephen J. Meyer, both of Malvern, and William J. Reilly, Langhorne, all of Pa., assignors to Central Sprinkler Corporation, Lansdale, Pa.

Filed Oct. 2, 1992, Ser. No. 955,617

Int. Cl.[5] F16K *37/00, 15/18*; A62C *35/58*

U.S. Cl. 137—556 **21 Claims**

1. A valve comprising:

a valve body including an inlet for being in fluid communication with a fluid source and an outlet for being in fluid communication with an outlet conduit;

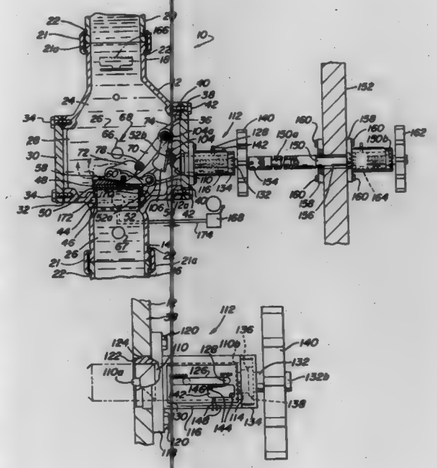
a passage within said valve body interconnecting said inlet and said outlet for allowing fluid to flow through said valve body between said inlet and said outlet;

a valve seat positioned within said valve body in alignment with said passage for allowing fluid to flow therethrough;

a clapper positioned within said passage;

hinge means interconnected between said valve body and said clapper for allowing said clapper to pivot between a first position wherein said clapper is sealingly engaged with said valve seat to prevent fluid from flowing between said inlet and outlet and a second position wherein said clapper is spaced from said valve seat to allow fluid to flow from said inlet toward said outlet; and,

operator means for controlling the position of said clapper with respect to said valve seat, said operator means securely retaining said clapper in said first position in a first mode of operation and allowing said clapper to freely move between said first and second positions in a second mode of operation, said operator means comprising linkage within said passage, said linkage being interconnected



between said clapper and said valve body and, said operator means further comprising actuator means slideably engaged with said linkage for moving said linkage with respect to said clapper and valve body to thereby move said clapper with respect to said valve seat, said linkage comprising a first linkage member having a first end and a second end and a second linkage member having a first end and a second end, said first end of said first linkage member being pivotally mounted to said valve body, said second end of said first linkage member being pivotally mounted to said first end of said second linkage member, said second end of said second linkage member being pivotally mounted to said clapper, said actuator means being slideably engaged with at least one of said first and second linkage members, whereby when operating in said second mode said clapper moves to said first position when fluid flows through said passage from said outlet toward said inlet, and said clapper moves to said second position when fluid flows through said passage from said inlet toward said outlet.

5,295,504

DEVICE FOR CONTROLLING DISCHARGE FROM A PNEUMATIC ENCLOSURE UNDER PRESSURE, IN PARTICULAR FOR RAPID AND CONTROLLED DEFLATION OF A TIRE

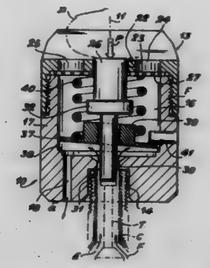
Didier Riquier, Persan, and Alain Lelievre, Le-Mesnil-En Thelle, both of France, assignors to Hutchinson, Paris, France

Filed Jul. 16, 1992, Ser. No. 913,910

Claims priority, application France, Jul. 17, 1991, 91 09042

Int. Cl.[5] F16K *15/20*

U.S. Cl. 137—233 **7 Claims**



1. A device for controlling discharge from a pneumatic enclosure under pressure, to a predetermined pressure value after the device has been assembled to a valve fitted to the enclosure, the valve including a deflation pin, said device comprising

a case which provides a chamber, a pushbutton slidably mounted within said case, a striker adapted to cooperate with the deflation pin of the valve when said pushbutton is pressed, at least one vent hole in said case for exhausting the gaseous fluid contained in the enclosure to be deflated and a piston-washer received in said chamber wherein said striker is slidably mounted in said piston-washer, biasing means for maintaining said piston-washer in a first position when said device is in a non-use mode, said piston-washer being adapted to cooperate with the striker by a wedging action of said piston-washer in a second position to hold the striker in a location against the action of said biasing means during usage of said device when said pushbutton is pressed and when the pressure within the enclosure exceeds said predetermined value, which second position allows escape of the gaseous fluid contained in the enclosure to be deflated until the predetermined pressure value is reached.

5,295,505

APPARATUS FOR PREPARATION OF A MEDICINAL SOLUTION

Hans-Dietrich Polaschegg, Oberursel, and Claus Walter, Bad Homburg, both of Fed. Rep. of Germany, assignors to Fresenius Ag, Bad Homburg, Fed. Rep. of Germany

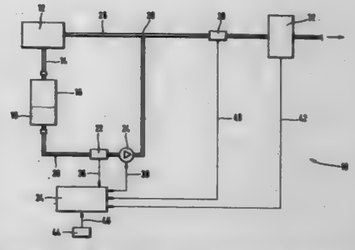
Filed Oct. 27, 1992, Ser. No. 967,000

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139165

Int. Cl.[5] A61M *1/14*

U.S. Cl. 137—93 **8 Claims**

1. Apparatus for preparing a medicinal solution, in particular dialysis solution, from a pulverulent concentrate and water, comprising a water source, a first conduit from the water source to a container containing the pulverulent concentrate, a second conduit extending from the container to a mixing point which is located in a third conduit originating from the water source, a means for controlling the flow of the concentrate solution connected into the second conduit, a solution conveying means in the third conduit downstream of the mixing point, a first measuring cell in the conduit system, a control unit controlling the means for controlling the flow of the concentrate solution in predetermined manner in response to the signal of the first measuring cell such that the dialysis solution generated at the mixing point corresponds to a predetermined composition, and a protective system which comprises a second measuring cell and which is arranged downstream of the mixing point and switches off the apparatus in the event of an incorrect composition of the dialysis solution, characterized in that the first measuring cell (22) is connected into the second conduit (20).



5,295,506

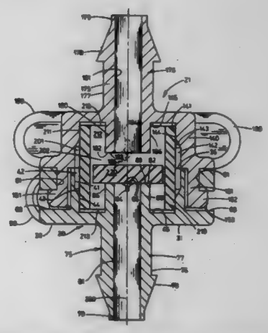
FLOW CONTROL APPARATUS

Allan L. Smith, 30747 Rd. 212, Exeter, Calif. 93221

Filed Dec. 14, 1992, Ser. No. 990,073

Int. Cl.[5] F16K *15/14*

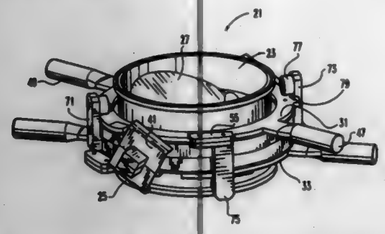
U.S. Cl. 137—271 **8 Claims**



1. A flow control apparatus comprising a pair of housings, each having a path for fluid passage therethrough; means for controlling fluid passage; and an assembly including substantially identical portions borne by the housings releasably engageable to interlock the housings in substantially fluid tight relation with said controlling means therewithin between said paths and including at least one projection and at least one receptacle borne by each housing and being individually engageable respectively with one receptacle and one projection of the other housing to interlock the housings.

VOL 1160 ISS 4 MR 22 1994 UMI

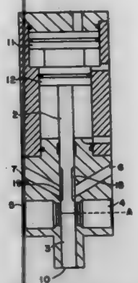
5,295,507
CONTAINMENT VALVE THAT ALLOWS CONTAMINATION FREE TRANSFER
Michael J. Bandy, Greenwood; Roy H. Byerly, and Robert T. Spoonmore, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of Ser. No. 827,357, Jan. 29, 1992, Pat. No. 5,150,735. This application Sep. 29, 1992, Ser. No. 954,402
Int. Cl.[5] F15L *37/28*
U.S. Cl. 137—614.06 7 Claims



1. A valve system, comprising:
a first container port and a second container port which are uncoupleable and coupleable with respect to each other between an uncoupled mode and a coupled mode respectively, wherein said ports in said coupled mode collectively define a transverse Y-axis and a transverse X-axis defining an X-Y plane;
a first valve body pivotable about said X-axis, wherein said first valve body in a closed position seals the first port against flow of material therethrough;
a second valve body pivotable about said X-axis, wherein said second valve body in a closed position seals the second port against flow of material therethrough, wherein in said coupled mode said first and second valve bodies are immediately adjacent each other and are simultaneously pivotable about said X-axis to an open position to allow flow of material through the first and second ports;
wherein said first container port and said second container port are hermaphroditically interfittable with respect to each other;
and wherein said container ports have a set of male protrusions and a set of female recess which deviate from the X-Y plane, wherein a given male protrusion has a first interfitting recess symmetrically across said X-axis and a second interfitting recess symmetrically across said Y-axis to allow hermaphroditic mating of said ports both about said X-axis and about said Y-axis.

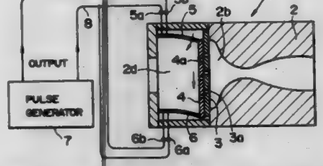
5,295,508
MIXING APPARATUS FOR PROCESSING LIQUID MULTI-COMPONENT PLASTICS, IN PARTICULAR POLYURETHANE
Gerhard Reisinger, Egling, Fed. Rep. of Germany, assignor to Elastogran Polyurethane GmbH, Lemforde, Fed. Rep. of Germany
Filed Feb. 10, 1992, Ser. No. 833,174
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1991, 4104647
Int. Cl.[5] F16K *11/07*
U.S. Cl. 137—625.4 2 Claims

1. Mixing apparatus for processing liquid multi-component plastics, having a mixing chamber which has inlet openings for the individual components and an outlet opening for the component mixture, having a control piston arranged in the mixing chamber and adapted to its cross section, which control piston can be moved back and forth out of a position leaving the inlet openings open until in the region of the outlet opening, shutting off the inlet openings with respect to the mixing chamber, and having a return groove for each component, provided in the circumferential surface of the control piston, through which return groove the inlet openings can be connected to corresponding return openings simultaneously with their shutting-off from the mixing chamber, wherein the return grooves are of a length which is equal to the distance between the outermost edges of corresponding inlet and return openings to



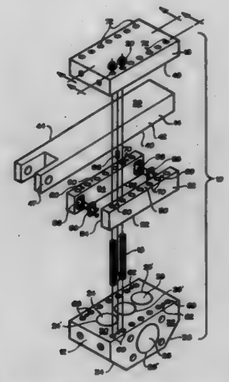
be connected by them, and wherein the control piston can be moved into an intermediate position, in which the return grooves connect the inlet openings to the corresponding return openings, and into an advanced clearing position, in which the return grooves are no longer connected to the inlet openings and corresponding return openings.

5,295,509
PULSE NOZZLE
Osamu Suto; Eiji Suzuki; Norifumi Uehara, all of Ibaraki; Keiji Yoshimura, and Masakazu Kuwabara, both of Hiroshima, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1993, Ser. No. 7,955
Claims priority, application Japan, Feb. 10, 1992, 4-004839[U]
Int. Cl.[5] F16K *31/02, 3/316*
U.S. Cl. 137—625.33 2 Claims



1. A pulse nozzle of a reaction apparatus which obtains a very low temperature by expanding high-pressure and normal-temperature gas in heat insulation manner, comprising:
a fixed slit member disposed in an inlet side of said pulse nozzle and including a plurality of slit openings, a movable slit member disposed to be slidably moved with respect to said fixed slit member and including a plurality of similar slit openings positioned to coincide with said plurality of slit openings of said fixed slit member when said pulse nozzle is opened, and two piezoelectric-crystal elements supporting both sides of said movable slit member for driving to slidably move said movable slit member from the both sides;
said two piezoelectric-crystal elements being driven by an external pulse signal in cooperative manner in the same direction so that said pulse nozzle is opened when said plurality of slit openings of said movable slit member being slidably moved coincide with said plurality of slit openings of said fixed slit member and said pulse nozzle is closed when said openings of said members do not coincide.

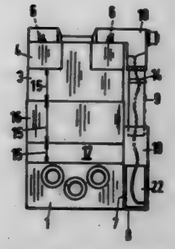
5,295,510
DIVERTER VALVE
Michael G. Bolling, Charlotte, N.C.; Robert S. French, Lagoff, S.C., and R. Steven Rivenbark, Leland, N.C., assignors to LCI Corporation, Charlotte, N.C.
Filed Aug. 21, 1992, Ser. No. 934,128
Int. Cl.[5] F16K *11/065, 3/316*
U.S. Cl. 137—625.48 16 Claims



1. In a slide plate diverter valve of the type comprising a manifold having a sealing face and defining inlet and outlet fluid flow passages opening through respective inlet and outlet ports at said sealing face of said manifold, a slide plate having a sealing face and defining a fluid flow passageway at said sealing face of said slide plate, a backing plate, said slide plate being sandwiched between said backing plate and said manifold with the respective said sealing faces of said manifold and said slide plate in facing relation, and means for clamping said manifold and said backing plate together to urge the respective said sealing faces of said manifold and said slide plate into sealing engagement while permitting sliding movement of said slide plate for selectively communicating said inlet and outlet fluid flow passages of said manifold, the improvement comprising means for rigidifying said manifold and said backing plate relative to said manifold in response to sliding movement of said slide plate, said rigidifying means comprising a pair of shear plates disposed between said manifold and said backing plate at opposite lateral sides of said slide plate and means connecting each said shear plate to each of said manifold and said backing plate against relative movement thereof longitudinally and transversely of the direction of sliding movement of said slide plate.

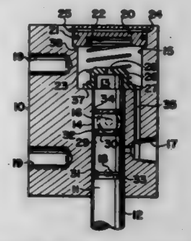
5,295,511
VALVE MODULE FOR FLUIDIC CONNECTOR STRIP
Hermann-Josef Schleinhege; Jens-Olaf Hartig, both of Hanover, and Ernst A. Meyer, Wenningsen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Jan. 12, 1993, Ser. No. 3,307
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1992, 4200894
Int. Cl.[5] F15B *13/043, 13/08*
U.S. Cl. 137—625.64 28 Claims

1. A valve module comprising
a base plate having a narrow side front face;
a plurality of parallel disposed fluidic connector channels placed in the base plate;
a main valve having a valve member and a control channel and communicating with the plurality of connector channels, wherein the base plate is immediately connectable to the main valve;
a precontrol pilot valve connected to the main valve and controlling the motion of the valve member based on a passage flow through the control channel, wherein the



precontrol pilot valve includes an electromagnet with electrical plug contacts, which are protected against humidity, wherein the electromagnet actuates the precontrol pilot valve;
a hollow cable casing disposed at the narrow side front face of the base plate;
a plug-in structure guided telescopically adjustable in the hollow cable casing, wherein the plug-in structure includes an electrical connector socket for the plug contacts of the electromagnet in the precontrol pilot valve.

5,295,512
FLUID CONTROL SPOOL VALVE
Madison B. Adams, Jacksonville, Fla., assignor to M. B. Adams and Associates, Inc., Jacksonville, Fla.
Filed Feb. 24, 1992, Ser. No. 840,021
Int. Cl.[5] F15B *13/02, 13/14*
U.S. Cl. 137—625.69 13 Claims



1. A fluid control spool valve comprising a valve block having a valve spool bore extending through said block, a valve stem slidable lengthwise in said bore and having an upper cylindrical inlet port, a central cylindrical outlet port, and a lower cylindrical exhaust port wherein each of said ports has predetermined cross-sectional dimensions and includes a conduit extending from said bore outwardly of said valve block, said valve spool having a lengthwise portion of reduced diameter to provide fluid communication between two of said three ports at selected axial positions of said spool, said spool having three spaced O-ring seals mounted thereon to prevent leakage of said fluid between said bore and said spool and to selectively direct flow of said fluid between two of said ports, means to equalize fluid pressure in said outlet port with fluid pressure exerted axially on said spool tending to move said spool to a closed position with no fluid flow between said inlet and outlet

ports, said means to equalize including a conduit within said valve block and communicating said outlet port with a drop of said spool being generally perpendicular to its lengthwise axis, said spool portion of reduced diameter being a right cylindrical shape having an upper end adjacent said inlet port and a lower end adjacent said exhaust port with two of said O-ring seals spaced, respectively, above and below said outlet port and associated with respective said inlet and exhaust ports, means for throttling the fluid as said spool moves axially with respect to said inlet and exhaust ports during initial opening and closing thereof, said means for throttling including small lands of predetermined lengths less than the cross-sectional dimensions of respective said inlet and exhaust ports.

5,295,513

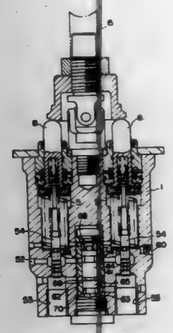
PILOT VALVE APPARATUS

Shuji Hori, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seidakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 768,329, Oct. 17, 1991, Pat. No. 5,209,263. This application Oct. 5, 1992, Ser. No. 957,412

Int. Cl.[5] F15B *13/02*

U.S. Cl. 137—636.2 **17 Claims**



13. In a pilot valve apparatus wherein a valve body has an inlet port, at least a first pair of outlet ports, and at least a first pair of valve spools, each valve spool of said first pair of valve spools being associated with a respective one of said first pair of outlet ports and being selectively operable by pivoting a lever in a selected direction of movement of the lever for outputting oil from the inlet port to one of the first pair of outlet ports by a stroke of the associated one of said first pair of valve spools within the valve body;

the improvement characterized in that said valve body has a pressure detecting port, and a pressure detecting directional control valve is provided within said valve body between said pressure detecting port and said inlet port to connect said pressure detecting port to said inlet port in a connecting position of said pressure detecting directional control valve and to disconnect said pressure detecting port from said inlet port in a disconnecting position of said pressure detecting directional control valve;

wherein said pressure detecting directional control valve comprises a first spool and a second spool positioned in a pressure detecting directional control valve chamber in said valve body to form first and second pressure receiving chambers, with said first pressure receiving chamber being between said first and second spools, with said second pressure receiving chamber being at the end of the said second spool which is remote from said first spool, said first pressure receiving chamber being in communication with one outlet port of said first pair of outlet ports, and with said second pressure receiving chamber always being in communication with the other outlet port of said first pair of outlet ports.

5,295,514

CELLULOSE AMINOMETHANATE SAUSAGE CASINGS

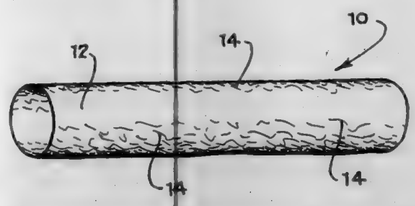
Douglas J. Bridgeford, and Matiur Rahman, both of Champaign, Ill., assignors to Teepak, Inc., Westchester, Ill.

Continuation of Ser. No. 25,454, Mar. 13, 1987, Pat. No. 4,789,006. This application Nov. 18, 1988, Ser. No. 273,292

The portion of the term of this patent subsequent to Aug. 9, 2003, has been disclaimed.

Int. Cl.[5] A22C *13/00*

U.S. Cl. 138—118.1 **1 Claim**



1. A tubular film fiber reinforced sausage casing comprising an at least partially regenerated polymeric cellulose aminomethanate having from 0.5 to 30 numerical percent of hydroxy groups in the cellulose substituted with aminomethanate groups prior to being regenerated.

5,295,515

APPARATUS FOR CONTROLLING WEFT INSERTION IN JET LOOM

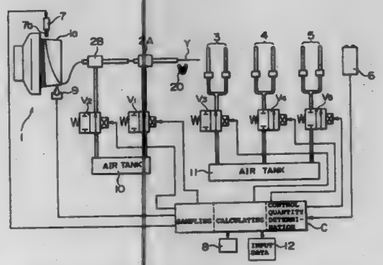
Masahiko Kato, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 19, 1992, Ser. No. 838,059

Claims priority, application Japan, Feb. 25, 1991, 3-030471

Int. Cl.[5] D03D *47/30*

U.S. Cl. 139—435.1 **4 Claims**



1. Apparatus for controlling weft insertion in a jet loom, comprising:

data input means for inputting: a first group of sequential arrayed data resulting from orderly classification of data for at least weft insertion start timing and weft leading end arrival timing in accordance with a first sequencing rule, and a second group consisting of sequential control elements resulting from orderly classification of control elements relating to control quantities for weft insertion devices including a weft cutter in accordance with a second sequencing rule;

control quantity determining means for (a) determining specific data for said weft insertion start timing and said weft leading end arrival timing in said first group as well as likelihood values of said data on the basis of values predetermined for said weft insertion start timing and said weft leading end arrival timing, (b) selecting from said second group those of said control elements which bear specific correspondence relations to said determined specific data, and (c) determining for said weft insertion devices control quantities including operation start and stop timings of said weft insertion devices and weft cut timing for said weft cutter on the basis of said likelihood selected control elements and said determined likelihood values; and

means for utilizing said control quantities to effect control of said weft insertion devices and weft cutter.

5,295,516

METHOD OF OPERATING A DIRECT WEAVING APPARATUS

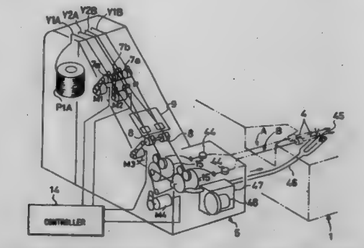
Tadashi Tanaka, Ohtsu; Yasuhiro Inoue, Settsu; Hirohiko Iida, Kobe; Morio Sakurai, Fukui, and Kazuro Tokuda, Nagaokakyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 7, 1992, Ser. No. 909,618

Claims priority, application Japan, Jul. 8, 1991, 3-194748; Sep. 17, 1991, 3-267295

Int. Cl.[5] D03D *47/34*

U.S. Cl. 139—452 **5 Claims**



1. A method of operating a direct weaving apparatus, the apparatus including a loom and a weft yarn processing machine having a yarn storage drum, the weft yarn processing machine producing incompletely processed yarn during a start up period between a start of the weft yarn processing machine and a time when the weft yarn processing machine reaches a steady state, the method comprising the steps of:

starting the weft yarn processing machine,

passing the incompletely processed weft yarn through the yarn storage drum to remove the incompletely processed weft yarn,

winding the weft yarn on the yarn storage drum for storage in response to the weft yarn processing machine reaching the steady state, and

starting the loom in response to a necessary length of the weft yarn being stored on the yarn storage drum.

5,295,517

PROCESS AND DEVICE FOR THE FILLING OF A VESSEL WITH A LIQUID

Egon Ahlers, Neutraubling, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

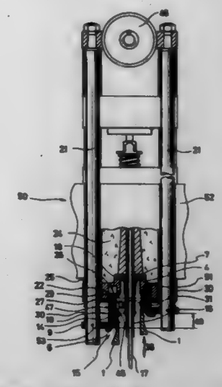
Filed Oct. 7, 1992, Ser. No. 957,391

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 4133713

Int. Cl.[5] B65B *3/26*

U.S. Cl. 141—1 **22 Claims**

1. A method for controlling the total volume of a liquid fed to vessels of varying height in a filling machine for filling the vessels with a liquid, said vessels having a base at a bottom end, an opening at a top end and a mean height as measured from said bottom end, said filling machine having a fixed filler spout for receiving the opening of the vessel in a sealed filling position and a liquid flow valve for controlling the flow of liquid through said spout into said vessel, said method comprising lifting each vessel up toward said filler spout so that its base is a constant distance from the filler spout and its opening is in said sealed filling position below the filler spout, opening the liquid control valve and filling the vessel with the liquid to a predetermined filling level in the vessel measured from its base, thereafter closing the liquid control valve to terminate the flow of liquid to the vessel, an afterflow volume of liquid remaining



between said filling level and the valve after the valve is closed, and controlling said afterflow volume of the liquid as a function of the height of the vessel such that the afterflow volume of a vessel having a height more than said mean height is smaller than the afterflow volume for said mean height vessel and for a vessel having a height less than said mean height, the afterflow volume is greater than the afterflow volume for said mean height vessel.

5,295,518

TWO-PIECE HYGIENIC CAP WITH RESEALABLE PLUG AND TEARABLE SKIRT WITH PULL TAB

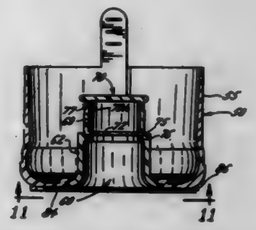
Henry E. Baker; John B. Baker; David H. Baker, all of Litchfield; Peter K. Baker, Bethlehem, all of Conn.; Edward H. Donselman, Freeport, and Ronald C. Katz, Willowbrook, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Continuation of Ser. No. 684,597, Apr. 12, 1991, Pat. No. 5,222,530, which is a continuation-in-part of Ser. No. 257,627, Oct. 14, 1988, abandoned. This application May 6, 1993, Ser. No. 58,564

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] B65B *3/04*

U.S. Cl. 141—18 **10 Claims**



1. A hygienic cap for enclosing drinking water or other potable liquid within a substantially rigid liquid dispensing container during storage and transportation thereof and for

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cooperating with an upstanding feed tube to drain liquid from and admit replacement air into said container when inverted, said container having a substantially cylindrical neck defining a discharge opening, said cap comprising, in combination,

a lid portion adapted to overlie and sealingly close said discharge opening and an annular skirt portion extending axially away from said lid portion and adapted to surround and engage an outer axial portion of said container neck,

said lid portion having an axially inwardly extending recess formed therein including a first annular sleeve portion located generally centrally in said lid portion and integrally connected thereto and a second annular plug and recess sealing portion connected to the inner end of said sleeve portion and extending axially inwardly therefrom,

said plug and recess sealing portion having a substantially centrally disposed internal cavity with a closed inner end for normally closing said recess and being adapted to be axially separated from said sleeve portion upon the forcible insertion of said upstanding feed tube into said recess to drain liquid from and admit replacement air into said substantially rigid liquid dispensing container,

said centrally disposed cavity of said plug and recess sealing portion being formed with internal gripping means therein for temporarily securing said plug and recess sealing portion on said upstanding feed tube when said feed tube is inserted in said recess and said plug and recess sealing portion is separated from said sleeve portion by said upstanding feed tube,

said plug and recess sealing portion being formed with an annular surface including sealing means dimensioned for engaging complementary sleeve sealing means formed on an annular surface of said sleeve portion for resealing said recess when said plug and recess sealing portion is drawn into interfitting engagement with said sleeve portion as said upstanding feed tube is withdrawn from said recess,

and said skirt portion being formed with a line of weakness extending toward said lid portion and including a pull tab extending axially away from said skirt portion to facilitate manually tearing said skirt portion along said line of weakness when said cap is removed from said container.

5,295,519

HYGIENIC LIQUID DISPENSING SYSTEM INCLUDING FEED TUBE OR PROBE FOR OPENING AND RESEALING COAXIAL CAP

Henry E. Baker; John B. Baker; David H. Baker, all of Litchfield; Peter K. Baker, Bethlehem, all of Conn.; Edward H. Donselman, Freeport, and Ronald C. Katz, Willowbrook, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Continuation of Ser. No. 898,570, Jun. 15, 1992, Pat. No. 5,222,531, which is a continuation of Ser. No. 684,642, Apr. 12, 1991, Pat. No. 5,121,778, which is a continuation-in-part of Ser. No. 257,627, Oct. 14, 1988, abandoned. This application May 6, 1993, Ser. No. 58,637

The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] B65B *3/04*

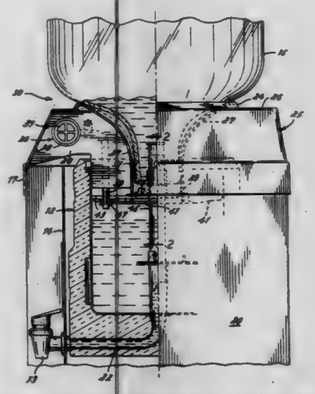
U.S. Cl. 141—18 **17 Claims**

1. A liquid container support and hygienic delivery system for dispensing drinking water or other potable liquid into a dischargeable reservoir open at its upper end and housed within a cabinet from an inverted container having a substantially rigid body with a radially directed shoulder portion merging into a generally cylindrical depending neck defining an opening comprising, in combination,

mounting means adapted to fit on the upper portion of said cabinet and defining an annular ring for supporting said shoulder portion of said inverted container thereon, said mounting means also defining a tapered entry portion having a substantially closed inner wall extending downwardly and inwardly from said annular ring for receiving said inverted container neck therein, said entry portion having a lower end and a length greater than that of said container neck when said inverted container shoulder portion is supported on said annular ring,

means coupled to said entry portion for sealingly closing said open upper end of said reservoir and for supporting an upstanding probe dimensioned to penetrate into said container neck to provide a hygienic flow path for delivering liquid from said inverted container into said reservoir,

said liquid container being provided with a coaxial cap circumferentially surrounding at least an outer axial portion of said neck and having an internal recess therein



including a sleeve portion and a sealing plug portion connected thereto, said sleeve portion and said plug portion being integrally formed with a frangible connection therebetween including an area of reduced wall thickness, said upstanding probe being disposed for entry into said recess to separate said plug from said sleeve when said container is inverted and lowered onto said support ring, said frangible connection being adapted to be ruptured and said plug portion axially separated from said sleeve portion upon the forcible insertion of said probe into said recess in order to permit the discharge of liquid from said container.

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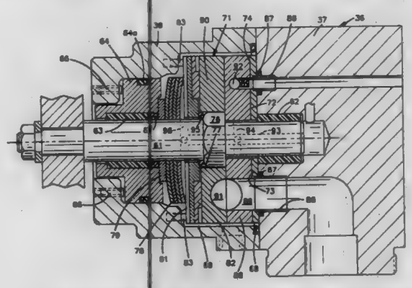
VALVE SYSTEM FOR BEVERAGE FILLING MACHINES

Richard C. Acker, Chagrin Falls, Ohio, assignor to Teledyne Industries, Inc., Cleveland, Ohio

Division of Ser. No. 859,114, Mar. 18, 1992. This application Jun. 16, 1993, Ser. No. 78,755

Int. Cl.[5] B65B *31/00*

U.S. Cl. 141—39 **4 Claims**



1. A beverage filling machine for containers of carbonated beverage comprising a plurality of fill stations where individual containers are filled with carbonated beverage from a supply of beverage at a first predetermined pressure, each fill station having a valve associated therewith and being operable to connect a container at said associated fill station to said supply of beverage, said valves each being provided with a rotor journaled for rotation within a valve chamber maintained at a second predetermined pressure, between a plurality of selected positions to control the filling of said containers, and drive means responsive to eccentric loads applied thereto for causing rotation of said rotor to said selected positions, said drive means including a shaft extending from said chamber through said rotor and being journaled in spaced bearings with one bearing on each side of said rotor, thereby isolating said rotor from said eccentric loads.

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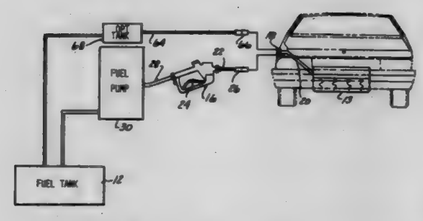
SELF-CONTAINED FUEL FILLER SYSTEM

Ram D. Bedi, Birmingham, Mich., assignor to K.J. Manufacturing Co., Wixom, Mich.

Filed Feb. 12, 1993, Ser. No. 17,653

Int. Cl.[5] B67D *5/54*; B65B *3/18*

U.S. Cl. 141—59 **15 Claims**



1. An apparatus for introducing fuel into an on-board fuel storage tank of an automotive vehicle, the automotive vehicle having a fuel filler line with a fuel receiving opening and vapor escape baffles located in the interior of the fuel line, the volatile fuel introductions occurring with reduced discharge of organic vapors and fuel into the surrounding atmosphere, the apparatus comprising:

means for receiving fuel into the on-board storage tank of the automotive vehicle, the fuel receiving means including a fuel filler cap matingly engagable in the fuel receiving opening of the automotive vehicle, the cap having:

a) an essentially flat planar surface member overlaying the fuel receiving means, the flat planar surface of the fuel filler cap having an inner face oriented toward the fuel filler line of the automotive vehicle, an opposed upper face, ad at least one fuel receiving aperture extending therethrough;

b) at least one fitting for effecting positive closure of the fuel receiving aperture between refueling operations, the fuel receiving aperture fitting permanently positioned int he upper face of the flat planar surface of the fuel filler cap;

c) means for maintaining vapor escape baffles located in the fuel filer line of the automotive vehicle in an open position during the introduction of fuel therethrough; and

d) means for maintaining the cap in sealing engagement with the fuel receiving opening of the fuel filler line;

means for dispensing fuel from a fuel storage site remote from the automotive vehicle into the on-board fuel storage tank of he automotive vehicle, the fuel dispensing means comprising:

a) a fuel filler nozzle device releasably engagable with the fuel receiving means of the automotive vehicle, the fuel filler nozzle device having a fuel directing conduit and means for regulating and interrupting fuel flow through the fuel directing conduit, the fuel directing conduit of the fuel filler nozzle having a fuel inlet orifice and an opposed fuel outlet orifice, ad a fitting for effecting positive closure of the fuel outlet orifice between refueling operations, the fitting mounted on the fuel directing conduit of the fuel filler nozzle proximate to the fuel outlet orifice, the fitting having means for releasably mating with the fitting located in the fuel receiving aperture located in the fuel filler cap and establishing closed-loop fluid communication between the fuel dispensing means and the fuel receiving means located on the automotive vehicle; and

b) means for conveying fuel from the remote storage tank to the fuel dispensing closed loop matingly positive closure fitting inlet orifice of the fuel filler nozzle.

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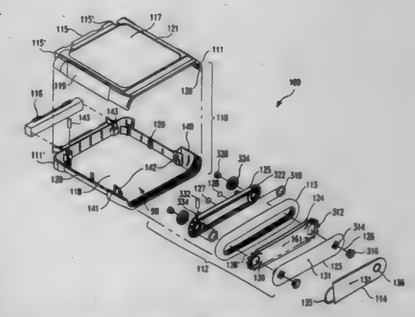
GAS PURGE SYSTEM FOR ISOLATION ENCLOSURE FOR CONTAMINATION SENSITIVE ITEMS

Robert L. DeAngelis, Yorktown Heights, and Gary M. Gallagher, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1992, Ser. No. 949,959

Int. Cl.[5] B65B *1/04*; H05K *1/00*

U.S. Cl. 141—98 **12 Claims**



1. An isolation structure including

a) a shell having an opening,

b) a closure member dimensioned to be received within said opening, said closure member including

i) a closure member body having an outer periphery and a resilient seal on said outer periphery of said closure member body, and

ii) a gas exchange system for said structure including

(1) a gas inlet port for said structure having an inlet filter membrane, and

(2) a gas outlet port for said structure having an outlet filter membrane,

c) quick connection supply means for supplying a source of gas to be introduced to purge said chamber by means of a quick mechanical connection,

f) said supply means including

i) a spring actuated inlet valve with a self-sealing interface, and

ii) a spring actuated outlet valve with a self-sealing interface for providing quick connection to said gas inlet port and said gas outlet port respectively.

5,295,523

ADJUSTABLE STROKE MULTIPLE PACKAGE FILLING APPARATUS

Aliseo Gentile, 8011 Schneider, Manchester, Mich. 48158

Filed Apr. 9, 1992, Ser. No. 865,924

Int. Cl.[5] B67C *3/02*; B65B *43/56*

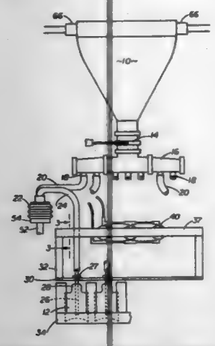
U.S. Cl. 141—244 **10 Claims**

1. Apparatus to fill open top packages comprising a hopper

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and a manifold in communication with the hopper, a plurality of orifice tubes extending from the manifold,

a first plurality of flexible tubes each slideably attached to one of the orifice tubes, a plurality of corresponding dosing pumps each having an inlet and an outlet, the inlets thereof each slideably attached to each of the corresponding first plurality of flexible tubes, a second plurality of flexible tubes each slideably attached to the corresponding outlets of the plurality of dosing pumps, and a corresponding plurality of vertical filling tubes each slideably attached to the second plurality of flexible tubes,



brackets attachable to a stationary supporting frame and adapted to gravitationally support the hopper, a frame movable relative to the stationary supporting frame and adapted to support the filling tubes, said filling tubes adapted to gravitationally rest in the movable frame, and releasable means to disconnect the manifold from the hopper,

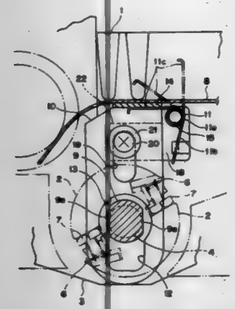
whereby the hopper, manifold, orifice tubes, flexible tubes, filling tube and dosing pumps comprising the product contacting elements of the apparatus can be disassembled and removed from the frames for cleaning or replacement, and reassembled, absent tools.

5,295,524

LOCKING MECHANISM FOR PLANING BLOCK OF PLANING MACHINE

Tatsuya Wada; Mitsumasa Saito, and Kouichi Miyamoto, all of Tokyo, Japan, assignors to Ryobi Limited, Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,806
Claims priority, application Japan, Oct. 25, 1991, 3-087811[U]
Int. Cl.[5] B27C *1/00*
U.S. Cl. 144—114 R **5 Claims**



1. A locking mechanism for locking a planing block of a planing machine comprising a locking part formed on an axle of the planing block; a locking plate which has a combined hole including a hole for locking said locking part on said axle thereby preventing the rotation of the planing block and a hole for unlocking said locking part thereby allowing the planing block to rotate; a cover to press down said locking plate when it covers said planing block so that said hole for unlocking is engaged with said locking part and also to release the locking plate when it uncovers the planing block, an urging member for urging said locking plate so that said hole for locking is engaged with the locking part when said cover releases said locking plate, and a guiding unit along which said locking plate travels when the locking plate is moved in association with opening and closing of said cover.

5,295,525

PUNCTURE SEALANT FORMULATION

Joseph C. Sanda, Jr., Taylors, S.C., assignor to Michelin Recherche et Technique S.A., Fribourg, Switzerland

Filed Jun. 22, 1992, Ser. No. 902,200
Int. Cl.[5] B60C *19/12*; B29C *73/16*
U.S. Cl. 152—503 **14 Claims**

1. A sealant for a pressurized article comprising:

a high molecular weight elastomer;

a low molecular weight liquid elastomer; and

a cross-linking agent

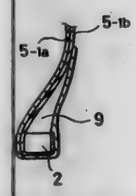
said low molecular weight liquid elastomer being substantially free of iron.

5,295,526

RUN-FLAT PNEUMATIC RADIAL TIRE

Akinori Tokieda, Fujisawa; Kazuyoshi Saneto, Hadano, and Hiroaki Matsuzaki, Kawasaki, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 564,527, Aug. 9, 1990, Pat. No. 5,131,445.
This application Apr. 8, 1992, Ser. No. 864,719
Claims priority, application Japan, Sep. 8, 1989, 1-231674; Jun. 29, 1990, 2-170129
Int. Cl.[5] B60C *17/00, 15/06*
U.S. Cl. 152—517 **4 Claims**



1. In a radial tire having an aspect ratio of up to 50%, a run-flat pneumatic radial tire characterized in that:

a reinforcing lining layer having a complex modulus at 20°, (E^*_{20}), of at least 16 MPa, a ratio of a complex modulus at 100°, (E^*_{100}), to said complex modulus at 20° (E^*_{20}), that is, E^*_{100}/E^*_{20} of at least 0.80, a 100% modulus of at least 60 kg/cm^2 and a loss tangent (tangent δ) at 100° C. of up to 0.35 said E^*_{20}, E^*_{100}, and loss tangent at 100° C. being measured under conditions of a frequency of 20 Hz, an initial strain of 5% and a dynamic strain of 1% elongation, and having a crescent sectional shape is disposed inside a carcass layer at sidewall portions in such a manner that one of its end portions overlaps with the end portion of a belt layer of a tread portion and the other end portion overlaps with a bead filler of said bead portion;

said bead filler of said bead portion being made of rubber having a JIS - A hardness of from 60 to 80 and has a height h of from 28 to 33 mm from a base adjacent a rim of said tire in a direction vertical to the axis of rotation of said tire; and

said carcass layer consisting of inner and outer two layers, said inner carcass layer is turned up from inside to outside said tire around said bead core so that its end is positioned at a position higher than the height h of said bead filler and an end of said outer carcass layer is disposed axially outward of said bead core; wherein said outer carcass layer is also turned up around said bead core from inside to outside said tire so that said outer carcass layer is on an outer side of said bead core with said end of said outer carcass layer disposed directly adjacent said bead core.

5,295,527

FOLDING DOOR SYSTEM

Floyd D. West, Galena, Ill., assignor to Rite-Hite Corporation, Milwaukee, Wis.

Continuation of Ser. No. 490,335, Mar. 8, 1990, Pat. No. 5,143,137. This application Aug. 28, 1992, Ser. No. 937,535
Int. Cl.[5] E05D *15/26*
U.S. Cl. 160—199 **7 Claims**



1. A folding door system for a doorway in a wall, wherein a header means and first and second side means disposed between a floor and the header means define an aperture adjacent the doorway, said door system comprising:

track means extending horizontally between said side means along said header means;

a plurality of trolley means supported from and movable independently along said track means from each of said side means;

support means extending downwardly from each trolley means;

pivotal means extending along each of said side means;

a plurality of vertically extending panel means, including side panel means and inner panel means, each of said side panel means being pivotally connected along one edge to said pivotal means, said inner panel means each having a front face, a rear face, an inner edge portion and a portion operatively connected to one of said support means;

coupling means for interconnecting proximate vertical edges of adjacent panel means;

means for moving a first lead trolley means and a depending first inner panel means along said track means between a doorway open position adjacent said first side means and doorway closed position;

means for moving a second lead trolley means and a depending second inner panel means along said track means between a doorway open position adjacent said second side means and a doorway closed position; and

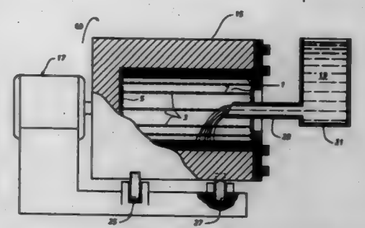
breakaway double interlocking seal means disposed on overlapping portions of the first and second inner two panel means, said seal means comprising a collapsible nose strip on each of said inner panel means, the collapsible nose strip on the first inner panel means being disposed adjacent said inner edge portion and on the face of the first inner panel means overlapping the second inner panel means when the door is closed, the collapsible nose strip on the second inner panel means being disposed adjacent said inner edge portion and on the face of the second inner panel means overlapping the first inner panel means when the door is closed, said collapsible nose strips of each inner panel means extending toward and contacting the other inner panel means for connecting the first inner panel means to the second inner panel means in a sealed manner when the door is closed while allowing for separation of the inner two panel means when the door is opened.

5,295,528

CENTRIFUGAL CASTING OF REINFORCED ARTICLES

Amarnath P. Diyecha, Falls Church; Subhash D. Karmarkar, Great Falls; William A. Ferrando, Arlington, all of Va., and Scott M. Hoover, Burtonsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1991, Ser. No. 704,563
Int. Cl.[5] B22D *13/02, 19/02*
U.S. Cl. 164—75 **22 Claims**



1. A process of forming a hollow composite metallic article having a nonwoven reinforcement comprising a composite rod or tube having a metal component therein by a centrifugal casting operation in a rotating mold, including the steps of:

positioning the reinforcement inside the mold;

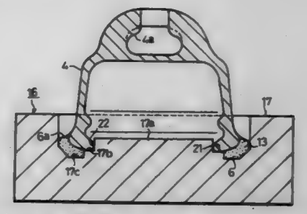
introducing molten matrix metal into the rotating mold to encapsulate the reinforcement therein; and cooling the matrix metal with the reinforcement therein to complete the casting operation.

5,295,529

METHOD OF FORMING ZINC COLLAR ON INSULATOR METAL CAP AND MOLD THEREFOR

Hiroto Matsuo, Nagoya; Takashi Imakomu, Aichi; Seiichi Kondo, and Iwaji Kawamoto, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 493,609, Mar. 15, 1990, abandoned.
This application Oct. 22, 1991, Ser. No. 782,765
Claims priority, application Japan, Mar. 20, 1989, 1-69005
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] B22D *19/08*
U.S. Cl. 164—100 **4 Claims**



1. A method of forming a zinc collar on an external periphery of an insulator metal cap comprising the steps of:

galvanizing half of the insulator metal cap;

immersing upright the galvanized insulator metal cap in a molten zinc so that the lower half of the metal cap is soaked with the molten zinc;

setting upright the partially soaked metal cap on a preheated top pouring type mold; and

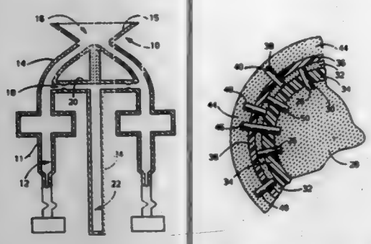
pouring a molten zinc from an upper opening of the mold into a zinc collar molding cavity, and then solidifying the molten zinc to form a zinc collar around the periphery of the metal cap.

5,295,530

SINGLE-CAST, HIGH-TEMPERATURE, THIN WALL STRUCTURES AND METHODS OF MAKING THE SAME

Kurt F. O'Connor, Carmel; James P. Hoff, Greenfield; Donald J. Frasier, Greenwood; Ralph E. Peeler, Reelsville; Heidi Mueller-Largent, Indianapolis; Floyd F. Trees, Bloomington; James R. Whetstone, Indianapolis; John H. Lane, Indianapolis, and Ralph E. Jeffries, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1992, Ser. No. 838,154
Int. Cl.[5] B22C *9/00*, *9/04*; B22D *39/06*
U.S. Cl. 164—516 30 Claims



1. A process of casting a molten alloy into a mold cavity having a thickness of less than about 0.03 inches, defined at least partially by a ceramic shell, so that said shell is not substantially distorted and said mold cavity is not substantially expanded during the casting step comprising;

charging molten alloy into a mold reservoir which communicates with a charge line and a mold cavity defined by a ceramic shell and having a thickness less than about 0.03 inches, wherein the amount of molten alloy charged into the reservoir is sufficient for the molten alloy to flow by gravity from the reservoir through the charge line and to completely fill the mold cavity having a thickness less than about 0.03 inches;

bleeding off molten alloy at a location above the mold cavity having a thickness less than about 0.03 inches so that the alloy pressure in the mold cavity is decreased over time and so that the ceramic shell is not substantially distorted and the mold cavity is not substantially expanded during the casting process; and

solidifying the molten alloy to produce a solid metal part having a portion with a thickness less than about 0.03 inches corresponding to the mold cavity.

5,295,531

AIR CONDITIONER WITH OUTSIDE AIR INTRODUCTION PATH

Shoji Tsunekawa, Nitta; Koji Mori; Yoshiki Ikari, both of Ashikaga; Fujio Suzuki, Ota; Toshiyuki Komuro, Oura, and Toshimasa Tsukui, Sakai, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 2, 1992, Ser. No. 939,685
Claims priority, application Japan, Sep. 2, 1991, 3-221448; Sep. 13, 1991, 2-235171; Sep. 13, 1991, 3-235172
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—48.1 6 Claims

1. An air conditioner comprising:

a housing;

a bottom plate having a partition fitted into said housing and partitioning the inside of said housing into an indoor section and an outdoor section,

an indoor heat exchanger and an indoor disposed in said indoor section,

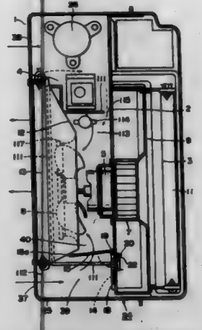
an outdoor heat exchanger disposed at a back center portion of said outdoor section,

an outdoor blower disposed opposite to said outdoor heat exchanger,

suction ports on the back of said outdoor section,

an outdoor fan case for guiding outdoor air drawn into said suction ports by said outdoor blower to said outdoor heat exchanger,

an intake port disposed on said partition for guiding outdoor air sucked from one of said suction ports on the back of said outdoor section into said indoor section, p1 an outdoor air introduction path defined in said housing as extended from one of said suction ports to said intake port of said partition,



an outdoor air discharge path defined in said housing as extending from said outdoor air introduction path to said outdoor heat exchanger, and

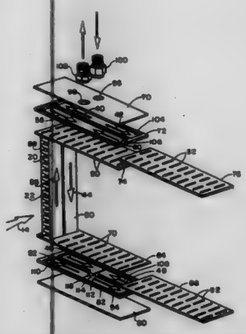
a damper means disposed in said intake port of said partition for stopping substantially all air flow from said one of said suction ports to said outdoor heat exchanger by cutting off said outdoor air introduction path from said outdoor air discharge path when said intake port of said partition is opened and for providing substantially all of said air flow direct communication from said one of said suction ports to said intake port.

5,295,532

HIGH EFFICIENCY EVAPORATOR

Gregory G. Hughes, Milwaukee, Wis., assignor to Modine Manufacturing Co., Racine, Wis.

Division of Ser. No. 861,118, Mar. 31, 1992, Pat. No. 5,205,347.
This application Mar. 24, 1993, Ser. No. 36,520
Int. Cl.[5] F28F *9/04*
U.S. Cl. 165—76 7 Claims



1. In a heat exchanger having at least one laminated header including a header plate having a header passage therein, a cover plate abutting said header plate on one side thereof and

sealed thereto, and a tube plate on the other side of said header plate and sealed thereto, said tube plate having a plurality of tube receiving openings aligned with and in fluid communication with said header passage, and a plurality of tubes having open ends, the ends of said tubes being received in said openings in sealed relation therewith, the improvement comprising stop means at the interface of said tube plate and said header plate including stop surfaces engageable with tubes in each of said openings for preventing the associated tube from extending through its associated opening in the tube plate into said header passage.

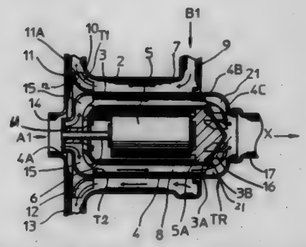
5. In a heat exchanger having at least one laminated header including a header plate at least in part defining a header passage and a tube plate sealed to the header plate and having a plurality of tube receiving openings aligned with and in fluid communication with the header passage, and a plurality of tubes having open ends, the ends of the tubes being received in the openings in sealed relation therewith, the improvement comprising stop means at the interface of said tube plate and said header plate including stop surfaces engagable with tubes in each of said openings for preventing the associated tube from extending through its associated opening in the tube plate to enter into said header passage, said stop surfaces being defined by a stop plate interposed between said header plate and said tube plate.

5,295,533

HEAT EXCHANGER

Yasuo Ueno, Kawasaki, Japan, assignor to Kokusai Gijutsu Kaihatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,228
Claims priority, application Japan, Mar. 29, 1991, 3-092775; Jun. 24, 1991, 3-178804
Int. Cl.[5] F28F *5/00*
U.S. Cl. 165—88 6 Claims



1. A heat exchanger for exchanging heat between a first fluid and a second fluid, the heat exchanger comprising:

a moving partition member for heat transmission between the first fluid and the second fluid,

a housing partitioned by the moving partition member into one chamber for passing the first fluid in a first direction and another chamber for passing the second fluid in a second direction substantially opposite from the first direction, and

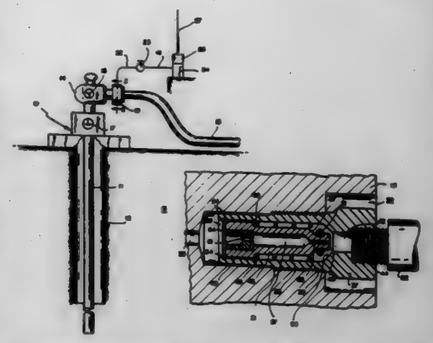
a power source for rotating the moving partition member, wherein at least the first fluid is compressible, further comprising means for adiabatically compressing the first fluid in the one chamber, wherein the compression means comprises an upstream centrifugal turbine provided at the upstream end of the one chamber for imparting a forward thrust of a prescribed magnitude to the first fluid for forcing it into the one chamber and a downstream centrifugal turbine provided at the downstream end of the one chamber for imparting a backward thrust of a prescribed magnitude smaller than the magnitude of the forward thrust to the first fluid for forcing it in the upstream direction.

5,295,534

PRESSURE MONITORING OF A PRODUCING WELL

Joseph L. Porter, New Iberia, La., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 685,573, Apr. 15, 1991, abandoned.
This application Jun. 29, 1992, Ser. No. 906,075
Int. Cl.[5] E21B *34/08*
U.S. Cl. 166—75.1 2 Claims



1. A bleed valve for a pressure monitoring system associated with a well head communicated with a pressurized subterranean source of a hydrocarbon fluid, which bleed valve includes

(a) an elongated body (36) having inlet means at one end for communicating with said source of pressurized fluid;

(b) a composite discharge port at said elongated body other end having a cylindrical segment (42), and peripheral shoulder (53) adjacent thereto;

(c) means forming an elongated chamber (34) in said elongated body (36) communicating said inlet means with said composite discharge port;

(d) a valve actuator (43) longitudinally adjustable between open and closed positions and operably retained in said means forming said elongated chamber (34), having a nose section (46) at one end engageable to slidably register in said cylindrical segment (42);

(e) said valve actuator (43) including a valve body having a composite valve seat at one end engageable with said composite discharge port and including a resilient ring (51) which sealably engages said peripheral shoulder (53) to define a substantially fluid-tight annular seal when said valve actuator is urged into the closed position;

(f) biasing means (48) engaging said valve actuator (43) to urge said composite valve seat out of closed engagement with said composite discharge port; and

(g) means forming an axial bypass channel in said valve actuator (43) defining a passage communicating said inlet means with said composite discharge port when said valve actuator composite valve seat is adjusted to closed position with said composite discharge port.

5,295,535

COVER FOR AN OBSERVATION WELL

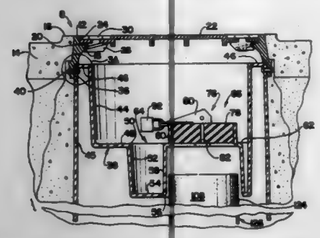
Claude C. Boles, Winnetka, and Lester D. Boles, Chicago, both of Ill., assignors to The Boles Company, Inc., Northfield, Ill.

Filed Apr. 13, 1992, Ser. No. 867,364
Int. Cl.[5] E21B *33/02*; E03F *5/08*
U.S. Cl. 166—81 15 Claims

1. In an observation well for detecting leakage from an underground storage tank, the well having a tubular perforate liner extending downwardly from the ground surface, the ground surface being covered with a layer of paving material, a well cover comprising:

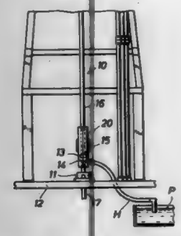
VOL 1160 ISS 4 MR 22 1994 UMI

a manhole ring set in said paving layer above the upper end of said liner;
a manhole cover received in said ring; and
a liner cover secured to said ring and having a depending wall telescopically overlapped with the upper end of said



liner, said liner cover having a trap to collect surface contamination whereby said well cover can accommodate axial, radial and tilt movement, between said cover and said liner while the trap prevents surface contamination from entering said observation well.

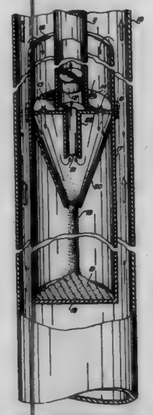
5,295,536
DRILLING MUD CONTAINER APPARATUS
Robert E. Bode, 14306 Reissen La., Houston, Tex. 77069
Filed Nov. 23, 1992, Ser. No. 980,248
Int. Cl.[5] E21B *33/08*
U.S. Cl. 166—81 **9 Claims**



1. Container means for use in preventing the spilling of drilling mud onto the rig floor upon disconnection of a threaded joint between sections of drill pipe, comprising: an elongated, generally tubular housing assembly having an upper portion and a lower portion; lower seal means on said lower portion arranged to engage outer surfaces of the drill pipe below the threaded joint, said housing assembly including guide means on said upper portion; and upper seal means movable longitudinally relative to said guide means and adapted to provide a static seal against outer surfaces of the drill pipe above the threaded joint, said housing assembly, lower seal means, guide means and upper seal means being formed in semicircular halves which are hinged together to enable said halves to be opened and positioned around the drill pipe and then closed and latched to contain drilling mud that is dumped when the connection is disengaged.

5,295,537
SAND SEPARATING, PRODUCING-WELL ACCESSORY
C. W. Trainer, 8090 E. Kalil Dr., Scottsdale, Ariz. 85260
Filed Aug. 4, 1992, Ser. No. 924,836
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—105.1 **18 Claims**

1. A sand separator for use in separating sand and other particulates from fluids being extracted from a well comprising:
tubing for raising liquids from a well;
a sand trapping casing coupled to said tubing;
means coupled to said sand trapping casing for extracting liquid therefrom for passage up said tubing;
said sand trapping casing including a high velocity orifice through which liquids are drawn from said well, said liquids and any sand and particulate matter carried by said liquids being accelerated in passing through said high velocity orifice;
whereby any said sand and particulate matter carried by said



liquid is propelled into said sand trapping casing and said liquid passes up said tubing; and
said sand trapping casing further includes means coupled therein for directing any said sand and particulate matter exiting said high speed orifice toward the bottom of said sand trapping casing, said means for directing said sand and particulate matter comprising a conic-shaped vessel open at a first end to receive said sand and particulate matter, and open at a second end to allow egress of said sand and particulate matter from said vessel.

5,295,538
SINTERED SCREEN COMPLETION
Henry L. Restarick, Plano, Tex., assignor to Halliburton Company, Houston, Tex.
Filed Jul. 29, 1992, Ser. No. 921,922
Int. Cl.[5] E21B *43/08, 43/10, 43/12*
U.S. Cl. 166—205 **13 Claims**

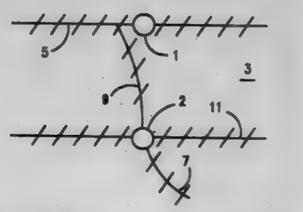
1. Well completion apparatus comprising, in combination:
a packer including a body mandrel having a longitudinal bore defining a production flow passage, anchor slips movably mounted on said packer body mandrel for radial expansion into set engagement against a well casing, and an annular seal element mounted on said body mandrel for radial expansion into set engagement against a well casing, thereby providing a fluid seal across the annulus between the body mandrel and a well casing in the radially expanded, set condition;
a landing nipple attached to said packer body mandrel, said landing nipple having tubular mandrel intersected by a longitudinal bore disposed in flow communication with said packer mandrel bore;
a locking mandrel disposed in releasable interlocking engagement with said landing nipple, said locking mandrel being intersected by a longitudinal bore defining a flow passage in flow communication with said packer mandrel bore;
a sand screen coupled to said locking mandrel, said sand screen having a tubular, porous body composed of sintered powdered metal, and a longitudinal flow passage

disposed in flow communication with said packer mandrel bore; and,
a circulation sub having a tubular mandrel intersected by a radial circulation port and by a longitudinal bore defining a flow passage, and having a tubular sleeve mounted



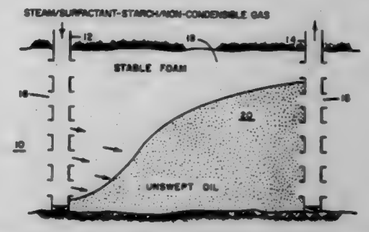
within the bore of said circulation mandrel for opening and closing the circulation port, the mandrel of said circulation sub being suspended from said landing nipple, and said sand screen being concentrically disposed within the bore of said circulation sub.

5,295,539
TWO WELL HYDROCARBON PRODUCING METHOD USING MULTIPLE FRACTURES
Alfred R. Jennings, Jr., Plano, and Malcolm K. Strubhar, Irving, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Sep. 17, 1992, Ser. No. 946,217
Int. Cl.[5] E21B *43/26*
U.S. Cl. 166—263 **10 Claims**



1. A method of fracturing a subterranean formation comprising:
(a) providing a first well that extends from the surface of the earth and is completed to communicate with said formation;
(b) providing a second well that is spaced horizontally apart from said first well, said second well being completed to communicate with said formation;
(c) applying fluid pressure in said first well sufficient to initiate and propagate a first vertical fracture from said first well into said formation from said first well;
(d) subsequent to step (c) maintaining said fluid pressure in said first well at a pressure that will mitigate the propagation of said vertical fracture from said first well;
(e) applying fluid pressure in said second well sufficient to initiate and propagate a second vertical fracture into said formation from said second well in a direction away from and transverse to said first fracture;
(f) shutting-in said first well and allowing the fluid pressure therein to lessen;
(g) continuing to apply fluid pressure in said second well sufficient to initiate and propagate a third fracture from said second well to communicate with said first well;
(h) shutting in said second well for a time period sufficiently long to allow the in-situ pressures in the formation to equilibrate;
(i) flowing back fluids from said formation through said fractures and into said wells to clean said fractures;
(j) shutting in said first well; and
(k) applying fluid pressure in said second well sufficient to initiate and propagate a fourth fracture from said second well which fracture is propagated into said formation in a direction essentially parallel to said first fracture formed from said first well.

5,295,540
FOAM MIXTURE FOR STEAM AND CARBON DIOXIDE DRIVE OIL RECOVERY METHOD
Nizar F. Djabbarah, Richardson, and Ralph V. Garling, Irving, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Nov. 16, 1992, Ser. No. 976,638
Int. Cl.[5] E21B *43/22, 43/24*
U.S. Cl. 166—272 **50 Claims**



35. In a steamflood in a subterranean, oil-containing formation, the improvement which comprises:
(a) injecting into an injection well a mixture of steam, a noncondensible gas and an aqueous surfactant-starch solution which will foam and reduces the permeability of swept zones, forcing steam into unswept areas of the formation; and
(b) injecting steam into the injection well.

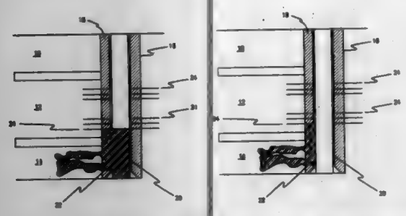
44. In a carbon dioxide flood in a subterranean, viscous oil-containing formation, the improvement which comprises:
(a) injecting into an injection well a mixture of carbon dioxide and an aqueous surfactant-starch solution which will foam and reduce the permeability of swept zones, forcing carbon dioxide into unswept areas of the formation; and
(b) injecting carbon dioxide into the injection well.

5,295,541
CASING REPAIR USING A PLASTIC RESIN
Ricky C. Ng, Dallas, Tex.; Thurman W. McPherson, II, Cortez, Colo., and Myung K. Hwang, Duncanville, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Dec. 22, 1992, Ser. No. 994,853
Int. Cl.[5] E21B *29/10, 33/138, 43/24*
U.S. Cl. 166—277 **28 Claims**

10. A met hod for replacing a damaged or corroded wellbore casing located within a borehole comprising:
a) removing a damaged or corroded casing section from the wellbore thereby making a damage or corrosion free site;
b) making the borehole a desired size at the site from which said section has been removed;
c) flowing a solidifiable mixture into said wellbore and site until the site and wellbore adjacent thereto are filled with the mixture;

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d) allowing the mixture to remain in said site and wellbore for a time sufficient to form a thick solid casing able to withstand environmental conditions at said site while precluding fluid flow therethrough; and



e) removing excess solid material from the wellbore so as to form a solid wall bonded to and having a diameter substantially similar to said casing.

5,295,542

WELL GRAVEL PACKING METHODS

R. Clay Cole, and John A. Knox, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 5, 1992, Ser. No. 956,512

Int. Cl.[5] E21B *43/04*

U.S. Cl. 166—278 **20 Claims**

1. An improved method of placing a gravel pack in a wellbore and in one or more perforations extending from the wellbore into a producing zone comprising the steps of:

injecting a low viscosity slurry of a carrier liquid having a particulate solid pack material suspended therein into the portion of said wellbore containing said perforations whereby a gravel pack of high efficiency of said pack material is separated out of said slurry and formed in said perforations and said wellbore, said pack material having a specific gravity substantially the same as the specific gravity of said carrier liquid and at least a portion of said slurry comprises said carrier liquid in a volume in the range of from about 101 to about 120% of the available void space between touching particulate material present in said slurry; and recovering said carrier liquid.

5,295,543

CONVERTING DRILLING FLUIDS TO CEMENTITIOUS COMPOSITIONS

Dralen T. Terry, Duncan; David D. Onan, Lawton; Patty L. Totten, and Bobby J. King, both of Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 998,279, Dec. 30, 1992. This application Apr. 16, 1993, Ser. No. 49,056

Int. Cl.[5] C04B *7/12, 7/28;* E21B *33/14*

U.S. Cl. 166—293 **20 Claims**

1. A method of drilling a well bore utilizing a circulating drilling fluid and subsequently disposing of the drilling fluid comprising the steps of:

(a) forming said drilling fluid with an aqueous suspension of condensed silica fume in an amount whereby the weight ratio of aqueous suspension of condensed silica fume to the total of other drilling fluid components therein is in the range of from about 25:75 to about 100:0, said aqueous suspension comprising condensed silica fume particles having diameters less than about 1 micrometer and water in a weight ratio of condensed silica fume to water in the range of from about 2:3 to about 3:2;

(b) drilling said well bore using said drilling fluid;

(c) converting said drilling fluid into a cementitious composition whereby it will subsequently set into a hard cementitious mass by combining a set activator selected from the group consisting of alkaline earth metal hydroxides and oxides and mixtures thereof therewith; and

(d) placing said set activated cementitious drilling fluid composition in one or more desired locations whereby it sets into hard environmentally safe cementitious masses therein.

5,295,544

DECENTRALIZED CASING HOLE PUNCHER

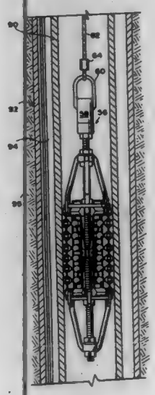
Donald V. Umphries, New Iberia, La., assignor to Directional Wireline Services, Inc., Houma, La.

Continuation-in-part of Ser. No. 598,932, Oct. 17, 1990, Pat. No. 5,111,885. This application Apr. 30, 1992, Ser. No. 876,485

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[5] E21B *43/117*

U.S. Cl. 166—297 **21 Claims**



1. A decentralized casing hole puncher for forming holes through a pipe string, comprising:

(a) a centrally located solid shaft extending the entire length of said hole puncher;

(b) a plurality of spaced apart hanger means sleeved on said shaft;

(c) at least one elongated relatively rigid charge mounting means having its respective longitudinal ends affixed to a pair of said hanger means and extending therebetween for mounting explosive charges;

(d) a biasing means mounted on and extending from said shaft for biasing said mounting means radially outwardly thereby moving said explosive charges mounted in said charge mounting means in relation to the inner surface of said pipe string; and

(e) an adjusting means to adjust the biasing force exerted by said biasing means.

5,295,545

METHOD OF FRACTURING WELLS USING PROPELLANTS

Richard S. Passamaneck, Littleton, Colo., assignor to University of Colorado Foundation Inc., Boulder, Colo.

Filed Apr. 14, 1992, Ser. No. 868,627

Int. Cl.[5] E21B *43/263*

U.S. Cl. 166—299 **13 Claims**

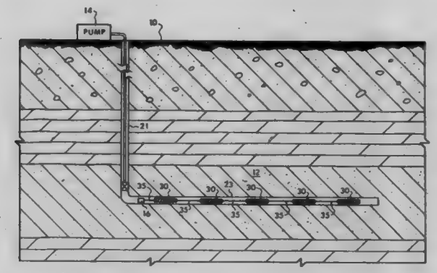
1. A method of creating multiple fractures in the formation surrounding at least a portion of the length of a horizontal well, said method comprising the steps of:

selecting a combination of a fuel and an oxidizer for use in a solid propellant having a predetermined outer surface configuration and means to ignite said outer surface;

modeling the burn rate of said outer surface of said propellant within said well to predict the resulting generation of combustion gases and fracture propagation, and thereby determine a suitable amount of said propellant to cause propagation of multiple fractures into said surrounding formation from said well;

introducing said propellant into said well adjacent to the portion of said formation to be fractured; and

igniting said outer surface of said propellant to cause the propellant to burn in a radially inward direction to rapidly produce combustion gases to generate pressure within said well exceeding the fracture extension pressure of said formation for a period of time, with said combustion gases being generated at a rate greater than can be absorbed into any single resulting fracture, thereby causing propagation of multiple fractures into said surrounding formation from said well.



5,295,546

INSTALLATION AND METHOD FOR THE OFFSHORE EXPLOITATION OF SMALL FIELDS

Jean-Francois Giannesini, Saint-Cloud, and Jean Falcimaigne, Bois-Colombes, both of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 743,762, Aug. 12, 1991, Pat. No. 5,226,482. This application Jul. 8, 1993, Ser. No. 87,411

Claims priority, application France, Aug. 10, 1990, 10 273; Apr. 4, 1991, 04 223

Int. Cl.[5] E21B *43/01, 43/017*

U.S. Cl. 166—353 **23 Claims**

1. A method of extending the working range of a main platform installation for oil deposits at sea, which comprises:

(1) positioning a temporary floating station at a location distance from said main platform installation and near to an oil deposit having small individual production capacity;

(2) connecting the floating station with at least one well head of said oil deposit;

(3) bringing up multi-component effluents from the at least one well head and pumping the effluents to the main platform installation;

(4) when production of the effluents from said deposit ends, removing the floating station; and then

(5) repositioning the floating station at at least one other oil deposit located at a distant location from said main platform installation to work the at least one other deposit.

4. A facility designed for working oil deposits under a layer of water (or offshore) and communicating with the bottom of the layer of water via producing wells, which comprises in combination, a main working platform equipped with production means designed to work offshore deposits, at least one floating structure, anchoring means to connect the floating structure to the sea bed so that the structure is in the vicinity of producing wells communicating with one of said deposits, first transfer means for allowing the transfer of multi-component effluents from at least one production well to the floating structure, pumping means allowing transfer of oil effluents without separation of their various components or phases on said structure, and second transfer means for transferring the effluents from the pumping means on the floating structure to the main platform.

5,295,547

MULTIPLEXED ELECTROHYDRAULIC TYPE OF CONTROL SYSTEM FOR USE IN UNDERSEA PRODUCTION SYSTEM

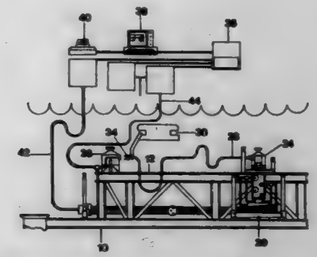
Eduardo J. de Jesus Coelho; Mauro Laiz L. Euphemio; Ricardo M. Freitas, and Fábio K. P. Conti, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. Petrobras, Rio De Janeiro, Brazil

Filed Nov. 2, 1992, Ser. No. 970,200

Claims priority, application Brazil, Nov. 1, 1991, PI 9104764

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—368 **7 Claims**



1. Multiplexed electrohydraulic type of control system for use in undersea production system consisting of ten undersea control modules (U.C.M's), (24), arranged and installed as one for each local wet Xmas tree, (14), and satellite tree module (S.T.M.), (18) wherein aforesaid control system links up with stationary production unit by means of hydraulic umbilicals, (42) and electric umbilicals, (44) and by means of an electric distribution module (E.D.M.), (26), while electric jumper connection, (84) of aforesaid undersea control module (U.C.M), (24) and of aforesaid electric distribution module (E.D.M.), (26) is done by means of a remotely controlled vehicle (R.O.V.), (30).

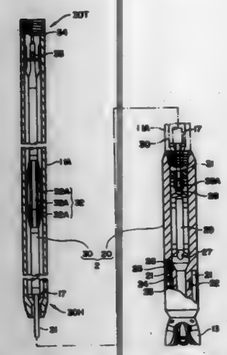
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5,295,548

BOTTOM-HOLE INFORMATION COLLECTING EQUIPMENT

Hajime Yuasa, and Kazuho Hosono, both of Akishima, Japan, assignors to Akishima Laboratories(Mitsui Zosen) Inc., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 966,113
Claims priority, application Japan, Oct. 25, 1991, 3-307037
Int. Cl.[5] E21B *49/00*
U.S. Cl. 175—40 **11 Claims**



1. An information collecting apparatus for collecting a plurality of drilling data signals from a bottom of an earthen shaft being drilled excavating equipment including a plurality of hollow digging pipes coupled end to end, a rotatable drilling bit which scrapes away earthen rock and sand to form said shaft, and a connecting pipe for coupling said drilling bit to a first pipe of said plurality of drilling pipes, said drilling bit discharging a muddy water from a free end thereof, said muddy water being transported to said drilling bit from within said plurality of digging pipes and said connecting pipe, said information collecting apparatus comprising:
a sonde disposed within said first pipe and having a first end thereof being mechanically engageable with said connecting pipe;
a plurality of sensors provided in said connecting pipe, each said sensor collecting one of said plurality of data signals from said bottom of the shaft; and
means for coupling said plurality of sensors to said sonde.

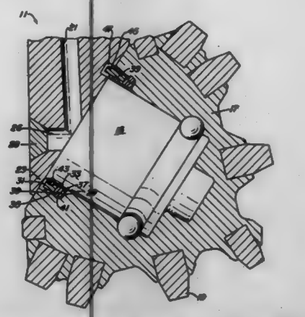
5,295,549

MECHANICAL LOCK TO PREVENT SEAL RING ROTATION

George E. Dolezal, Friendswood; Douglas J. Clinkscales, Spring; Anton F. Zabradnik, Sugarland, and Turlach P. Boylan, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Dec. 14, 1992, Ser. No. 990,485
Int. Cl.[5] E21B *10/22*
U.S. Cl. 175—371 **8 Claims**

1. An earth boring bit adapted for removable attachment to a drill string member, with an improved pressure compensating face seal assembly, the bit comprising:
a body having a hydrostatic pressure compensator adapted for attachment to a drill string member;
a cantilevered bearing shaft forming a portion of and extending obliquely inwardly and downwardly of the body;
a cutter secured for rotation about the bearing shaft and including an annular seal groove;
a rigid ring positioned in the seal groove with a first sealing face;
a resilient ring partially compressed between the bearing shaft and the rigid ring;
a second sealing face sealingly secured to the cutter to oppose and engage the first sealing face of said rigid ring;
the rigid ring being adapted to move axially in the seal groove to permit pressure compensating movement when the cutter moves relative to the bearing shaft;
an aperture formed in the body;



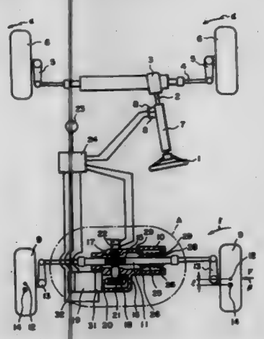
a protuberance extending from the rigid ring into the aperture with clearance to prevent rotation of the rigid ring and resilient ring when the cutter rotates on the bearing shaft during drilling, while permitting axial, pressure compensating movement of the seal assembly.

5,295,550

FOUR-WHEEL STEERING APPARATUS

Izuru Chikuma, Machashi, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,738
Claims priority, application Japan, Sep. 7, 1990, 2-235553[U]; Oct. 1, 1990, 2-102240[U]; Oct. 17, 1990, 2-107998[U]; Oct. 17, 1990, 2-107999
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **13 Claims**



1. A four-wheel steering apparatus of a vehicle having front and rear wheels, comprising:
a steering angle sensor for detecting the steering angle provided for the front wheels;
a rear-wheel output shaft for providing the rear wheels with a steering angle by displacement in an axial direction;
an electric motor for displacing said rear-wheel output shaft in the axial direction through a speed-reducing mechanism;
a vehicle velocity sensor for detecting the velocity of the vehicle; and
a controller for controlling said electric motor on the basis of signals from said steering angle sensor and said vehicle velocity sensor; and wherein
said controller energizes said electric motor to effect steering of said rear wheels through said rear-wheel output shaft only when the vehicle velocity detected by said vehicle velocity sensor is lower than a predetermined velocity; said speed-reducing mechanism is reversible; and the steering centers of said rear wheels are positioned rearwardly from respective points of force applied to the rear wheels at the ground, with said rear-wheel output shaft being supported resiliently with respect to a body of the vehicle with a slight freedom of displacement in the axial direction, such that said rear wheels effect compliance steering when the vehicle velocity is above said predetermined velocity.

5,295,551

SYSTEM FOR THE COOPERATIVE DRIVING OF TWO OR MORE VEHICLES

Josef Sukonick, 14774 Live Oak La., Saratoga, Calif. 95070

Continuation of Ser. No. 390,485, Jul. 31, 1989, abandoned, which is a continuation of Ser. No. 279,322, Dec. 1, 1988, abandoned, which is a continuation of Ser. No. 836,834, Mar. 6, 1986, abandoned. This application Aug. 21, 1990, Ser. No. 569,742
Int. Cl.[5] B62D *13/00*
U.S. Cl. 180—167 **9 Claims**



1. A system for the cooperative driving of two vehicles, a leading vehicle and a trailing vehicle, said trailing vehicle behind said leading vehicle but not physically connected thereto, comprising
data acquisition means, in said trailing vehicle, for acquiring performance capabilities from said leading vehicle, and
cooperative driving means, in said trailing vehicle, for driving said trailing vehicle in response to said acquired performance capabilities.

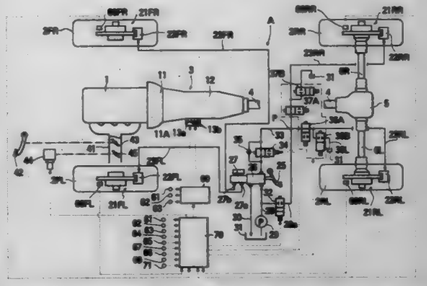
5,295,552

SLIP CONTROL SYSTEM FOR MOTOR VEHICLE

Fumio Kageyama; Makoto Kawamura, both of Hiroshima; Toshiaki Tsuyama, Higashi-Hiroshima, and Haruki Okazaki, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 31, 1993, Ser. No. 40,962
Claims priority, application Japan, Mar. 31, 1992, 4-078000; Mar. 31, 1992, 4-078001
Int. Cl.[5] B60T *8/32*; B60K *28/16*
U.S. Cl. 180—197 **10 Claims**

1. A slip control system for a motor vehicle controlling respective braking forces in right and left driven wheels and controlling an engine output by controlling a throttle opening of a throttle valve so that a slip value of the driven wheel becomes less than a target slip value, said system comprising:
means for providing a basic control amount of the throttle opening based on the slip value of the driven wheel and the target slip value;
means for detecting respective brake fluid pressures in the right and left driven wheels;
means for converting the detected brake fluid pressure into an engine output;
means for providing a correction control amount of the throttle opening by subtracting an amount of the throttle opening corresponding to the converted engine output from the basic control amount of the throttle opening; and
means for driving the throttle valve by the basic control amount of the throttle opening when the brake fluid pressures in the right and left driven wheels are increased or increased rapidly, and driving the throttle valve by the



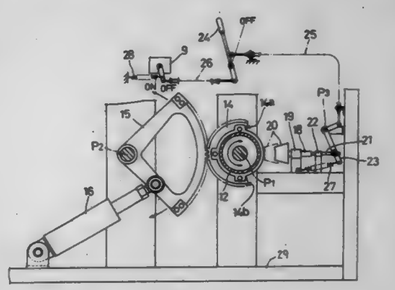
correction control amount of the throttle opening when the brake fluid pressures in the right and left driven wheels are not increased or increased rapidly.

5,295,553

REAR WHEEL STEERABLE WORKING VEHICLE

Shigeru Morita; Yoshihiro Kawahara; Yoshikazu Togoshi, and Terutaka Takei, all of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Oct. 11, 1990, Ser. No. 596,136
Claims priority, application Japan, Apr. 21, 1990, 2-105620
Int. Cl.[5] B60K *17/30*
U.S. Cl. 180—212 **7 Claims**

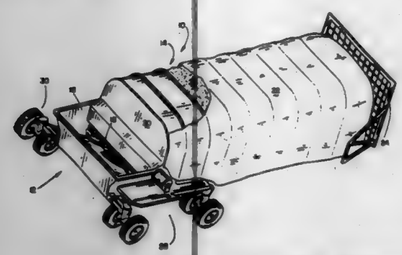


1. A working vehicle comprising:
drivable, non-steerable front wheels,
drivable rear wheels, said rear wheels being steerable up to a minimum radius turning region lying in a transverse direction substantially perpendicular to a longitudinal direction of a vehicle body,
rear wheel control means for responding to steering of the rear wheels, the rear wheel control means including a pivotable member which pivots in proportion to an angle in which the rear wheels are being steered, said pivotable member being pivotable along a pivotal locus area corresponding to the minimum radius turning region of the rear wheels and having defined therein an engaging portion,
restraining means for restraining the rear wheel control means, said restraining means including a restraining member movable into said pivotal locus area to engage said engaging portion to thereby prevent the rear wheels from being steered to the minimum radius region,
means for remotely operating the restraining means, and
a propelling transmission device for preventing transmission

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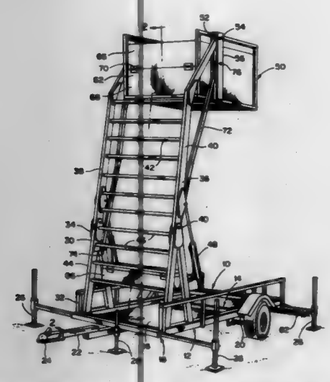
of driving force to the front wheels while the rear wheels are steered to the minimum radius turning region.

5,295,554
STEERING SYSTEM FOR AN AGRICULTURAL BAGGING MACHINE
Steven R. Cullen, P.O. Box 642, Astoria, Oreg. 97103
Filed Dec. 31, 1991, Ser. No. 815,702
Int. Cl.[5] B62D 9/00
U.S. Cl. 180—236 12 Claims



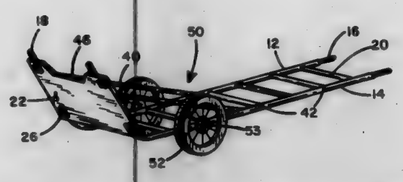
1. An agricultural bag loading apparatus for loading agricultural feed stock into an agricultural bag comprising,
a wheeled frame means,
means on said frame means for receiving feed stock and for forcing the feed stock into an agricultural bag,
said wheeled frame means including at least a first front wheel and a second front wheel pivotally mounted, about a vertical axis, between bagging and towing positions, and at least a third back wheel and fourth back wheel pivotally mounted thereon, about a vertical axis, between bagging and towing positions,
and a first, second, third and fourth hydraulic cylinder operatively connected to said first and second front wheel and said third and fourth back wheels respectively, for pivotally moving the wheels between their towing and bagging positions.

5,295,555
HYDRAULIC DEER STAND
R. Burt Strange, Rte. 2, Box 22A, Ellaville, Ga. 31806
Filed Jun. 1, 1992, Ser. No. 891,738
Int. Cl.[5] E06C 5/00
U.S. Cl. 182—63 12 Claims



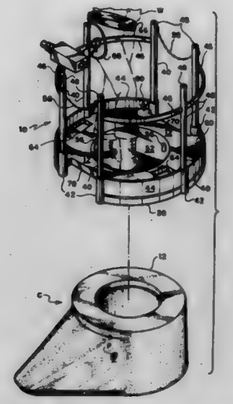
1. A lift, said lift including an elongated horizontal base having front and rear portions, a first elongated, upstanding upright having upper and lower ends, said lower end being mounted from said front portion of said base, a lift boom having base and free ends, means pivotally mounting said base end from said upper end for angular displacement of said lift boom relative to said upright about a first horizontal transverse axis between a first raised position with said boom comprising an upward extension of said upright and a second lowered position with said free end depressed relative to said base end and swung toward said rear portion, said free end including an object support including an upright position thereof and pivotally supported therefrom for angular displacement relative to said free end about a second horizontal transverse axis substantially paralleling the first axis, said object support including a horizontal bottom wall depressed below and disposed to the rear of said rear portion when said boom is in said second position, elongated link means operatively connected between said upright and object support operative to retain said object support in at least substantially said upright position thereof during angular displacement of said lift boom between said lowered and raised positions, and power means operatively connected between said upright and lift boom for controllably angularly displacing said lift boom between said raised and lowered positions.

5,295,556
MULTIPURPOSE HUNTING CART
Daniel J. Mullin, 10400 Hage Dr., Rogers, Minn. 55374
Filed Aug. 3, 1992, Ser. No. 923,652
Int. Cl.[5] A45F 3/26
U.S. Cl. 182—187 12 Claims



1. A selectively convertible hunter's apparatus, comprising:
(a) a frame defined by a first and second elongated member each having a bent portion to form an L-shape and of approximately equal length and disposed substantially parallel to one another, said frame having longitudinally spaced cross bars secured to and extending between each said member, said first and second members each extending between a respective first end nearest the respective bent portion and a second end, said first and second members each having a first segment defined between said respective first end and said bent portion and a second segment defined between said bent portion and said second end, wherein said second segment is substantially longer than said respective first segment;
(b) first brace member selectively connectable in a first position to said frame and extending generally linearly between a portion of said frame at said first end of said first member and a portion of said frame at said second end of said first member; and
(c) detachable wheel means rotatably connected to said frame closely proximate said bent portions of said elongated members to form a cart.

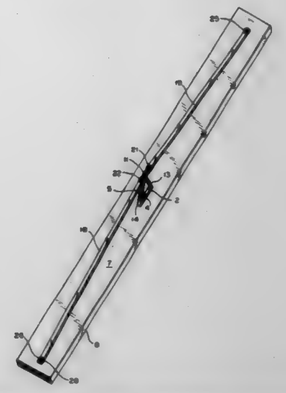
5,295,557
UTILITY CONSTRUCTION SAFETY AND WORK PLATFORM
George E. Taylor, P.O. Box 3633, Capitol Heights, Md. 20791
Filed Feb. 18, 1992, Ser. No. 836,564
Int. Cl.[5] E04G 3/14
U.S. Cl. 182—222 14 Claims



1. A temporarily installable and removable safety and work platform for use with a manhole casing having an upper rim, an interior, and an outer surface,
said platform including a floor having an outer perimeter,
said floor including an opening for access to the interior of the casing,
said platform including at least three attachment points disposed in a non-linear array beneath said floor with said at least three attachment points thereby defining a plane,
said attachment points providing inwardly gripping attachment of said platform to the casing outer surface with at least one of said attachment points being adjustable, whereby
said platform is placed upon the casing upper rim and attached to the casing outer surface by means of said inwardly gripping attachment points, thereby providing a work area atop the casing and access to the casing interior by means of said opening.

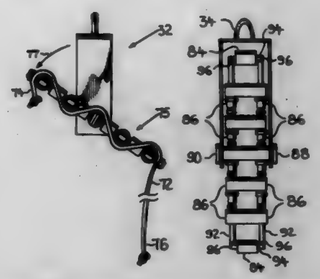
5,295,558
SCAFFOLD PLATFORM BRACE
Stephen M. Cooperman, P.O. Box 617, Stockbridge, Mass. 01262
Filed Jul. 31, 1992, Ser. No. 922,509
Int. Cl.[5] E04G 5/00
U.S. Cl. 182—222 2 Claims

1. A brace for each plank in a scaffold platform, which brace is mounted on each plank undersurface, comprising a central pedestal with an opening to attach said pedestal to said plank undersurface, a pair of opposing tension straps, each said strap having an opening in each end thereof, a tension strap mounting plate having end portions and secured to one end of said pedestal, said plate end portions each having an opening therethrough to receive a bolt to secure one end of each strap to the respective plate end portions, said plate end portions further having a nut for said bolt welded to said end portion inner surface about said plate opening, each said strap opposite end portion being deformed to seat said end portion into surface to



surface contact with said plank undersurface and means to pass through said openings to secure said brace to said plank.

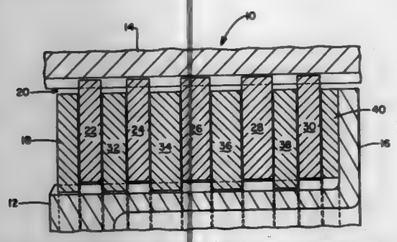
5,295,559
REVERSIBLE FRICTIONAL BRAKE FOR USE WITH ROPE OR THE LIKE
Larry L. Nutkins, 71 York Ct., Kissimmee, Fla. 34758
Filed May 22, 1992, Ser. No. 886,826
Int. Cl.[5] B65H 59/14
U.S. Cl. 188—65.4 14 Claims



1. A reversible frictional brake comprising a housing and a brake section rotatably attached to said housing, said brake section comprising:
an axle,
a pair of parallel rods passing through said axle by means of axle holes, one axle hole being disposed at each end of said axle diametrical to said axle,
an end link slideably attached to each pair of rod ends,
a plurality of snap links disposed between said end links, each said snap link having snap link holes at one end through which one said parallel rod passes, and a snap link slot at the other end through which the other said parallel rod passes, and
spacers between said end links, snap links and axle.

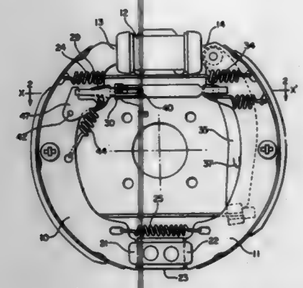
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,560
THERMALLY BALANCED BRAKE STACK
Douglas D. Moseley, Uniontown, Ohio, assignor to Aircraft Braking Systems Corporation, Akron, Ohio
Continuation of Ser. No. 724,615, Jul. 2, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 84,082
Int. Cl.[5] F16D *55/02*
U.S. Cl. 188—71.5 **13 Claims**



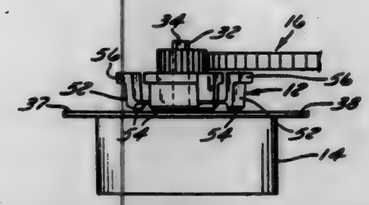
1. A thermally balanced brake disc stack, comprising:
a plurality of stator discs;
a plurality of rotor discs interleaved with said stator discs;
a pressure plate at a first end of the stack;
an end plate at a second end of the stack; and
wherein a stator disc and a rotor disc at each of said first and second ends are thinner than said stator and rotor discs at a center portion of the stack such that, during braking operations employing the brake disc stack, said stator and rotor disc at each of said first and second ends will rise to higher temperatures and cool more quickly than said stator and rotor discs at said center portion of the stack.

5,295,561
DEVICE FOR AUTOMATICALLY TAKING UP PLAY FOR A BRAKING MECHANISM
Daniel Le Moigne, Le Plessis Grammoire, France, assignor to Bendix Europe Services Techniques, Drancy, France
Filed Aug. 25, 1992, Ser. No. 934,397
Claims priority, application France, Sep. 5, 1991, 91 11129
Int. Cl.[5] F16D *71/00, 51/06*
U.S. Cl. 188—79.52 **2 Claims**



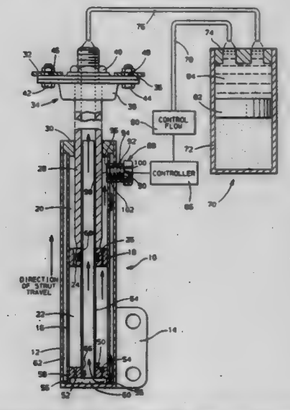
1. A device for automatically taking up play in a drum brake comprising a pair of shoes in the shape of a circular arc capable of moving away from each other under the action of control means, and in which the shoes are stressed toward each other by a return spring, the device comprising:
a strut of variable length, on which the shoes come to bear, and which comprises a threaded rod guided in a tubular part and bearing on the tubular part by the intermediary of a cylindrical piece, an increase in length of the strut being obtained by rotation of the cylindrical piece and taking up the play; and
a pivoting control member driven pivotably alternately in a first direction and in a second direction opposite to the first direction, the control member acting on the cylindrical piece by the intermediary of a spring-wire rolled around the piece, the pivoting of the control member in the first direction effecting a tightening of the spring-wire on the cylindrical piece and correspondingly a driving of the cylindrical piece by friction, while pivoting of the control member in the second direction effects a release of the spring-wire and correspondingly disengagement with respect to the cylindrical piece,
characterized in that said pivoting control member is an elbowed lever with two arms, which is articulated at an elbowed zone on one of said shoes, one of the arms of the lever acting on the spring-wire and the other arm bearing on one end of said strut, elastic means stressing permanently the elbowed lever so that the lever applies against the end, the force of said elastic means not permitting the action of said return spring to be countered but being sufficient to drive the cylindrical piece, one end of said control member having a slit in which one end of the spring-wire is engaged and radially bent over toward the outside, the slit extending longitudinally in parallel with an axis of the cylindrical piece, which allows axial translation of the piece, and said slit constituted by an opening separating two edges of a curved bimetallic strip carried by the elbowed lever and shaped so that the width of the slit increases under the effect of heat, thus providing, in the transmission of movement between the lever and the spring-wire, a play which increases as a function of temperature.

5,295,562
CENTRIFUGAL BRAKE
Roger V. Hajny, Cedarburg, and Robert J. Pirkey, Germantown, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Aug. 14, 1992, Ser. No. 930,766
Int. Cl.[5] F16D *55/00*
U.S. Cl. 188—187 **18 Claims**



1. A centrifugal brake which can be mounted on a rotatable shaft for cooperation with a stationary braking surface, comprising:
a center hub configured for attachment to the rotatable shaft;
at least one flex member having a proximal end and a radially distal end, wherein said proximal end is coupled to said hub and said distal end is disposed a spaced distance from said hub;
a tab extending at an angle from said radially distal end of each of said flex members and generally away from said stationary braking surface; and
a friction portion affixed to said tab and disposed proximate the braking surface, wherein when said centrifugal brake rotates at sufficient speed, the centrifugal force acting on said tab causes said flex member to bend towards the braking surface, bringing said friction portion into contact with the braking surface, thereby creating a resistance to rotation of said centrifugal brake.

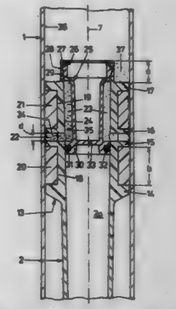
5,295,563
ACTIVE SUSPENSION ACTUATOR WITH CONTROL FLOW THROUGH THE PISTON ROD
Jack C. Bennett, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 1, 1993, Ser. No. 24,053
Int. Cl.[5] F16F *9/46*; B60G *17/00*
U.S. Cl. 188—299 **13 Claims**



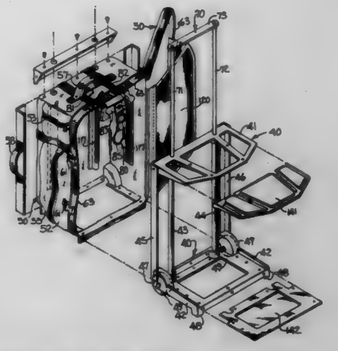
1. An active suspension hydraulic actuator comprising:
(a) a reservoir tube closed at a first end;
(b) an inner cylinder concentrically mounted in the reservoir tube;
(c) a fluid reservoir formed between the inner cylinder and the reservoir tube;
(d) end cap means closing a first end of the inner cylinder;
(e) a piston, slidably mounted in the inner cylinder, dividing an interior of the inner cylinder into first and second chambers;
(f) a hollow piston rod secured at an inner end to the piston and projecting through a second end of the inner cylinder;
(g) a separator tube mounted on the end cap means and extending through the piston and into the piston rod, providing a fluid conduit from a chamber adjacent the end cap means and in communication with the reservoir to the hollow piston rod; and
(h) a damping control valve mounted on the actuator providing a selectively controllable fluid passage from the first chamber of the inner cylinder to the reservoir.

5,295,564
FRICTIONAL DAMPER
Ludwig Stadelmann, Altdorf, Fed. Rep. of Germany, assignor to Suspa Compart AG, Altdorf, Fed. Rep. of Germany
Filed Sep. 20, 1991, Ser. No. 762,976
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1990, 4030869
Int. Cl.[5] F16F *11/00*
U.S. Cl. 188—381 **9 Claims**

1. A frictional damper comprising a substantially circular cylindrical housing (1) and a tappet (2) which is coaxially displaceable inside the housing (1) and extends out of it with one end, another end being provided with an approximately cylindrical friction piston (13), the friction piston (13) having at least one approximately circular cylindrical support segment (18, 19) and bracing flanges (14 to 17) radially extending beyond the support segment (18, 19) and axially limiting the support segment (18, 19) at fixed distances, a friction coating (20, 21) made of an elastically resilient material being disposed on the support segment (18, 19) and between the bracing flanges (14 to 17) and being elastically pressed against an inner wall (36) of the housing (1), and a grease storage chamber (23, 23') being formed on the friction piston (13), wherein the grease storage chamber (23, 23') is formed internally of the friction piston (13) and is connected by way of at least one grease channel (34) axially spaced apart from the friction coating (20, 21) and the support segment (18, 19) with a grease chamber (22) formed at the outer circumference of the friction piston (13) at a location spaced apart from the friction coating (20, 21) by at least one of the bracing flanges (14 to 17) and open towards the inner wall (36) of the housing (1).



5,295,565
WHEELED LUGGAGE
Ricky Latshaw, Republic, Mo., assignor to Purdy Neat Things Company, Republic, Mo.
Filed Dec. 15, 1992, Ser. No. 990,523
Int. Cl.[5] A45C *13/36*
U.S. Cl. 190—18 A **18 Claims**



1. Wheeled luggage, comprising:
respective upper and lower cast skeletal frame members;
substantially parallel tubular members interconnecting said upper and lower cast skeletal frame members and maintaining the skeletal frame members in a predetermined spaced apart relation so as to define a body cavity therebetween;
a covering connected to said skeletal frame members and enclosing said body cavity;
openable fastener means on said covering for providing access to the interior of said body cavity;
a retractable handle having elongate substantially parallel side members telescopically received in said tubular mem-

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bers and being in an extended position when the luggage is being transported;

spaced apart wheel mounting members extending from rear portions of said lower cast skeletal frame member and cast integral therewith;

wheels mounted on said wheel mounting members for facilitating the transporting of the luggage; and

feet means extending downwardly from front portions of said lower cast skeletal frame member and cast integral therewith for providing front support for the luggage when in an upright position, the lower end of said feet means being in a common plane with the lower portions of said wheels so that the luggage may be positioned in an upright position.

5,295,566

CLUTCH RELEASE BEARING ASSEMBLY, ESPECIALLY FOR A MOTOR VEHICLE

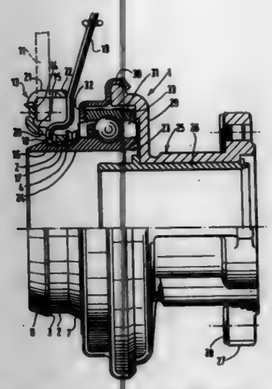
Jacques Feigler, St. Brice sur Foret, and Bernard Bulot, Ferrieres, both of France, assignors to VALEO, Paris, France

Filed Feb. 25, 1993, Ser. No. 22,273

Claims priority, application France, Feb. 28, 1992, 92 02338; Jun. 26, 1992, 92 07876

Int. Cl.[5] F16D *23/14*

U.S. Cl. 192—98 **22 Claims**



1. A clutch release bearing assembly, for a motor vehicle clutch having a declutching member defining an inner face of the declutching member, the assembly comprising a clutch release bearing including an actuating element and defining an axis of the assembly, and a connecting piece carried on the declutching member, the actuating element defining an actuating nose for acting in traction, through the connecting piece, on the inner face of the declutching member whereby to disengage the clutch, the connecting piece having a sleeve portion with an internal bore defining a drive surface, the assembly further including a coupling member which is resiliently deformable radially, the connecting piece carrying the coupling member internally for coupling the latter in traction to the actuating element, the actuating nose penetrating into the said sleeve portion of the connecting piece and being formed with a generally circumferential groove having an inner flank and an outer flank, the outer flank defining a thrust shoulder of the actuating element, wherein the coupling member is carried in the groove, the assembly further including resilient retaining means carried in the groove for acting axially between the actuating element and the connecting piece, so as to hold the coupling member permanently between the drive surface and the thrust shoulder, wherein the groove is elongated axially away from the thrust shoulder, the resilient retaining means comprising at least one axially acting resilient retaining ring prefitted in the groove, and the thrust shoulder constituting an abutment for the said resilient retaining ring before the clutch release bearing is fitted to the connecting piece.

5,295,567

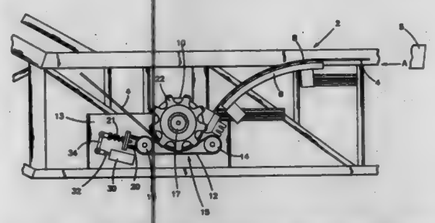
SYSTEM FOR EMERGENCY STOPPING OF ESCALATOR HANDRAIL

Vlad Zaharia, Rocky Hill, and Gerald E. Johnson, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 30, 1992, Ser. No. 998,481

Int. Cl.[5] B65G *43/00*

U.S. Cl. 198—323 **6 Claims**



1. A system for providing emergency stopping of an escalator or moving walkway handrail, said system comprising:

a) a reentry housing through which said handrail passes at the commencement of a handrail return path of travel;

b) sensor means disposed at said reentry housing for detecting foreign objects on the handrail, said sensor means being operable to generate an obstruction signal when an object is detected on the handrail;

c) drive means including tensioned means contacting said handrail for applying a driving force to said handrail to move the latter along its path of travel; and

d) means for immediately relaxing said tensioned means to disable said drive means from applying said driving force to said handrail upon generation of said obstruction signal whereby said handrail will stop moving when a foreign object is detected on said handrail.

5,295,568

PASSENGER CONVEYOR AND TREADBOARD CONSTRUCTION FOR PASSENGER CONVEYOR

Chuichi Saito, Katsuta; Kazuhira Ojima, Kasama, and Masao Nakazato, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 670,198, Mar. 15, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 29,350

Claims priority, application Japan, Mar. 19, 1990, 2-67401

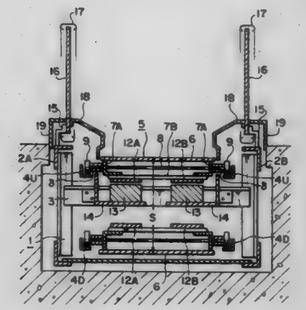
Int. Cl.[5] B66B *21/00*

U.S. Cl. 198—330 **19 Claims**

1. In a passenger conveyor comprising a plurality of treadboards interconnected in a endless manner and being movable along an advance-travel path and a return-travel path disposed below said advance-travel path; and a linear motor for driving said treadboards;

the improvement wherein stators and moving members of said linear motor are formed such that surfaces thereof facing each other are located in horizontal planes;

said stators being disposed between said advance-travel path and said return-travel path; and said moving members are mounted on reverse sides of said treadboards, respectively, and wherein each of said treadboards are provided with a spacer formed on at least one of the opposed ends



of any two adjacent ones of said treadboards so as to maintain a gap between said adjacent treadboards.

5,295,569

ESCALATOR DEVICE

Masao Kubota, 22-7, Narimasu 2-chome, Itabashi-ku, Tokyo, 175, Japan

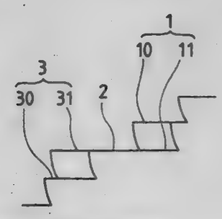
PCT No. PCT/JP91/01679, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/09519, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 30, 1991, Ser. No. 915,723

Claims priority, application Japan, Nov. 30, 1990, 2-330367

Int. Cl.[5] B66B *23/12*

U.S. Cl. 198—333 **4 Claims**



1. An escalator device comprising:

a set of three serial steps consisting of an intermediate step, a front step and rear step, of which each of the front step and the rear step is divided into a fixed step and floating step;

a first coupling means for coupling the intermediate step to each of the floating steps,

a second coupling means for coupling the floating steps and the corresponding fixed steps; and

a means for associating the first coupling means and the second coupling means with each other, wherein the second coupling means functions as a changing means for releasing the coupling of the respective floating steps and the corresponding fixed steps when the intermediate step is coupled with the respective floating steps by the first coupling means.

5,295,570

MAGNETIC GUIDING ASSEMBLY FOR YARN PACKAGES TRANSPORTED ON A TEXTILE MACHINE

Hans Grecksch; Rolf Mayer, both of Monchen-Gladbach; Michael Lys, Neuss; Helmut Kohlen, Erkelenz, and Gerhard Radziejewski, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Fed. Rep. of Germany

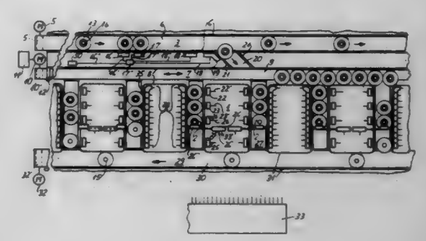
Division of Ser. No. 535,884, Jun. 11, 1990, Pat. No. 5,190,136. This application Jul. 27, 1992, Ser. No. 921,040

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1989, 3919106; Dec. 4, 1989, 4011797

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—465.1 **16 Claims**

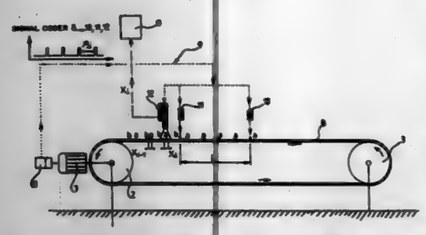


1. An assembly for transporting tubes in association with a textile machine, the tubes being of the type on which yarn is wound, comprising:

a plurality of tube support members for supporting tube for transport along a predetermined travel path, each said tube support member having an annular periphery and a ferromagnetic component disposed around its annular periphery; means for guiding said tube support members during the travel thereof along said predetermined travel path, said guiding means including an endless member assembly having an endless member and means for driving said endless member, said endless member frictionally engaging said tube support members to advance said tube support members along said predetermined travel path in correspondence with the driving operation of said endless member, and magnetic means, including a first magnet selectively operable to interact with said ferromagnetic components of said tube support members and a cooperating member spaced from said first magnet at a spacing less than the diameter of the annular periphery of a tube support member, said first magnet and said cooperating member cooperating together to engage a tube support member at circumferentially spaced locations thereon to selectively retain said engaged tube support member at a predetermined location along said predetermined travel path until deactivation of said first magnet; and

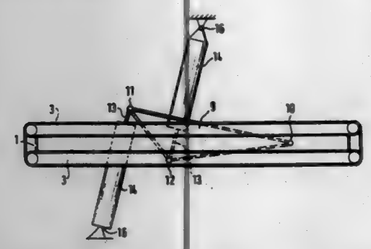
means for selectively operating said magnetic means to magnetically interact with the ferromagnetic component of a tube support member to oppose frictional engagement of the tube support member by said endless member and thereby retain the tube support member at said predetermined location along said predetermined travel path.

5,295,571
METHOD FOR CONTINUOUSLY CONTROLLING AN ENDLESS BAND AND MACHINE FOR CARRYING OUT THIS METHOD
Jean-Francois X. A. Van Den Bogaert; Pierre P. Pascolo, and Gerard X. Ringenbach, all of Cernay, France, assignors to Rollin S.A., Cernay, France
Filed Jan. 9, 1992, Ser. No. 820,456
Claims priority, application France, Feb. 20, 1991, 91 02041
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—802.1 19 Claims



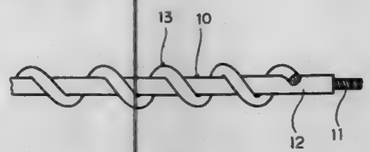
1. A method for controlling a continuous belt upon which fabrics are mounted to receive successive printings, comprising the steps of:
driving a tensioned continuous belt at a constant rate around at least two rollers spaced apart from each other;
marking the belt while it is being driven to obtain successive marks; and
measuring distances between said successive marks while said belt is being driven.

5,295,572
DEVICE FOR PIVOTING A PIVOTABLE MODULE OUT OF THE PATH OF A CONVEYOR BELT
Siegmar Malow, Constance, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany
PCT No. PCT/EP92/00228, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO92/13784, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 4, 1992, Ser. No. 930,613
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1991, 4103849
Int. Cl.[5] B65G *15/14*
U.S. Cl. 198—626.1 6 Claims



1. A device for pivoting a pivotable conveyor belt module comprising: a coupling triangle having three corner points arranged to be pivotable such that one corner point is arranged to be pivotable at the pivotable module and the other two corner points are arranged to be pivotable at respective piston rods of respective actuation cylinders, with each of the actuation cylinders having a respective housing which forms a respective fixing point for the pivoting movement of the coupling triangle; and springs disposed on the piston rods of the respective actuating cylinders such that, during the pivoting movement, the springs of one cylinder provide support for the pivoting movement while the springs of the other cylinder provide for attenuation in an end position of the respective piston rod.

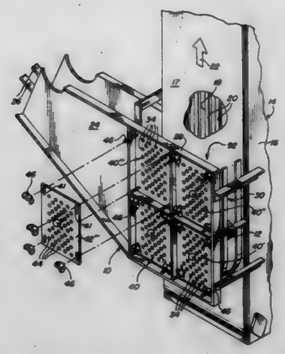
5,295,573
FLEXIBLE SCREW AND TRANSPORT APPARATUS COMPRISING SAME
Masaaki Ohtsuji, Takarazuka; Naoki Ohmori, Amagasaki; Kenjiro Ishihara, Itami; Shigeo Mori; Isao Yokoyama, both of Yokohama; Kazushi Miyake, Ibaraki, and Keiichi Maeda, Tokyo, all of Japan, assignors to Mitsubishi Cable Industries, Ltd., Amagasaki, Japan
PCT No. PCT/JP90/01379, § 371 Date Aug. 26, 1991, § 102(e) Date Aug. 26, 1991
PCT Filed Jul. 16, 1991, Ser. No. 720,484
Claims priority, application Japan, Oct. 26, 1989, 1-277074; Feb. 1, 1990, 2-22710; Feb. 1, 1990, 2-27709; Feb. 9, 1990, 2-30502; Feb. 9, 1990, 2-30503; Feb. 9, 1990, 2-30504; Apr. 6, 1990, 2-90138; Apr. 28, 1990, 2-113050; Apr. 28, 1990, 2-113051; Apr. 28, 1990, 2-113052; Apr. 28, 1990, 2-113053; Apr. 30, 1990, 2-112359; Apr. 30, 1990, 2-112360; Apr. 30, 1990, 2-112361; Apr. 30, 1990, 2-112362; Apr. 30, 1990, 2-112363; Jul. 19, 1990, 2-191990; Jul. 19, 1990, 2-191991; Aug. 1, 1990, 2-205482; Aug. 2, 1990, 2-205594; Aug. 2, 1990, 2-205595
Int. Cl.[5] B65G *33/26*
U.S. Cl. 198—659 17 Claims



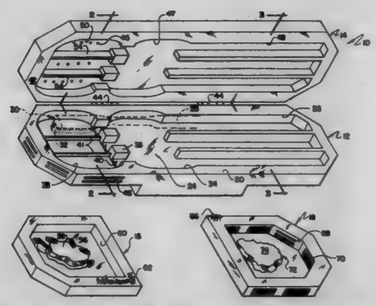
6. A transport apparatus comprising a rotatable screw having a flexible rod and a cord-shaped element helically set on said rod, and a guide, said screw and said guide extending in parallel along the entire length of said screw and at a specified distance from each other to define a transport path therebetween having a width for holding a container to be transported between and in contact with the screw and the guide for transporting said container along the transport path by rotating the screw.

5,295,574
INFEED BOOT AND METHOD OF LOADING ARTICLES FOR A VACUUM CONVEYOR
Michael R. Overstreet, Rustburg; Quentin L. Wilson, Big Island, and George H. Dawson, III, Lynchburg, all of Va., assignors to Simplimatic Engineering Company, Lynchburg, Va.
Filed Mar. 3, 1993, Ser. No. 25,847
Int. Cl.[5] B65G *17/46*
U.S. Cl. 198—689.1 22 Claims

1. An infeed boot for loading articles on a vacuum conveyor comprising:
a vacuum conveyor belt for holding articles thereagainst by vacuum pressure and for conveying the articles along a conveyor path;
an article-retaining surface at least a portion of which is mounted adjacent said vacuum conveyor belt to define a loading zone therebetween, said article retaining surface spaced apart from said vacuum conveyor belt a distance sufficient to prevent articles introduced into the loading zone from tipping over as they are loaded onto said vacuum conveyor belt; and
a plurality of perforations in said article retaining surface permitting air to be drawn into the loading zone in a direction substantially perpendicular to said vacuum conveyor belt to aid said vacuum conveyor belt in loading the articles.

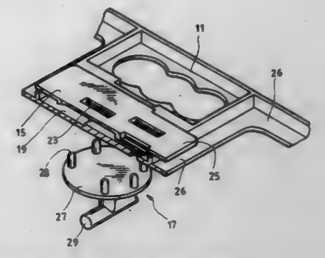


5,295,575
TOOTHBRUSH HOLDER AND ROOM ODORIZER
Santos O. Gonzalez, 1223-A Chris Cir., Edinburg, Tex. 78539
Filed May 20, 1993, Ser. No. 78,450
Int. Cl.[5] A45D *44/18*
U.S. Cl. 206—204 11 Claims



1. A holder for toothbrushes comprising an elongate handle and a multiplicity of parallel bristles extending away from one end of the handle, comprising
a base having first and second parallel sides, a plurality of elongate parallel recesses therein open to the first side of the base for receiving a plurality of toothbrushes and a plurality of openings therethrough communicating between the first side and the second side of the base, the handles being receivable in the recesses and the bristles being receivable in the openings;
a lid and means for movably mounting the lid on the base for closing the first side of the base; and
a closure for the second side of the base and means for detachably connecting the closure on the base for closing the second side of the base, the closure including a desiccant and a sorptive mass aligned with the openings, the sorptive mass being between the desiccant and the openings.

5,295,576
ANTI-THEFT CD CARTRIDGE
Chuan-Chung Wang, 256, Yuantung Road, Chungho City, Taipei, Taiwan
Filed Jan. 25, 1993, Ser. No. 8,134
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—309 1 Claim



1. An anti-theft cartridge comprising:
(a) an extended cartridge housing a handle opening formed through one end and a compact disc containment chamber formed within an opposing end thereof;
(b) a buckling member formed within a central section of said cartridge housing defining a substantially buckling planar member having a plurality of buckle holes passing therethrough, said buckling planar member having formed thereon a plurality of stopper flange members extending internal said cartridge housing, said buckling member forming a recess in said central section of said cartridge housing;
(c) a stopper member for slidable insert over said recess, said stopper member having an extension portion extending over said compact disc containment chamber, said stopper member having a plurality of buckle slots aligned with said buckle holes, each of said buckle slots having a buckle member depending therefrom for releasable coupling to a respective stopper flange member; and,
(d) an opening member defining an opening planar member having a plurality of boss members extending from a surface thereof, said boss members being alignable with said buckle holes for insert therethrough of said boss members for contact with and displacement of respective buckle members whereby said buckle members are released from engagement with said stopper flange members.

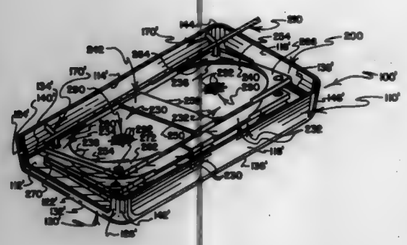
5,295,577
STORAGE SYSTEM FOR COMPACT DISCS
Theodore M. Minter, 3887 Martin Luther King Dr., Cleveland, Ohio 44105
Filed Mar. 26, 1993, Ser. No. 37,928
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—309 25 Claims

1. A system for organizing, releasably retaining and protectively storing a plurality of compact discs comprising:
a) tray means for defining a tray having a substantially flat, generally rectangular bottom wall for extending substantially horizontally 1) between left and right peripheral portions of the bottom wall, and 2) between front and rear peripheral portions of the bottom wall, with the tray also 1) having upstanding left and right side walls that join smoothly with the left and right peripheral portions of the bottom wall, respectively, and 2) having upstanding front and rear side walls that join smoothly with the front and rear peripheral portions of the bottom wall, respectively, and with the bottom wall cooperating with said upstanding side walls to define an upwardly opening tray of generally rectangular shape;
b) disc holder means for defining a plurality of substantially

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identical disc holders that are stackable one atop another for extending in juxtaposed relationship to define a stack of disc holders that can be received by the tray and can be supported therein by being positioned atop the bottom wall, with each of the disc holders being relatively thin, substantially flat and generally rectangular in shape, with the peripheries of each disc holder being defined by left, right, front and rear edge surfaces, with adjacent ones of the left, right, front and rear edge surfaces of each disc holder joining to define four corner regions, with each of the disc holders defining a pair of disc receiving formations that each provides an upwardly opening recess that is configured to receive and releasably retain therein a separate compact disc, and with the disc receiving formations being configured such that, when the plurality of disc holders are stacked one atop another in juxtaposed relationship, compact discs carried by a lower of two adjacent disc holders are not contacted by portions of the upper of the two adjacent disc holders; and,

c) interengaging guide means for permitting the disc holders to be moved relative to each other while being connected to the tray so that compact discs can be positioned in and removed from the disc receiving formations defined by the disc holders, and for facilitating the orderly stacking one atop another of the disc holders within the tray, including:



i) holes formed through the four corner regions of each of the disc holders, with corresponding ones of the holes being positioned to align when the disc holders are stacked one atop another in juxtaposed relationship, whereby four sets of aligned holes are defined when the disc holders are stacked within the tray;

ii) guide means for defining four elongate guide formations with each being connected to the bottom wall at a separate location that positions it to extend into a separate one of the four sets of aligned holes when the disc holders are stacked one atop another in juxtaposed relationship, and when the resulting stack is positioned atop the bottom wall so as to be supported by and contained within the tray; and,

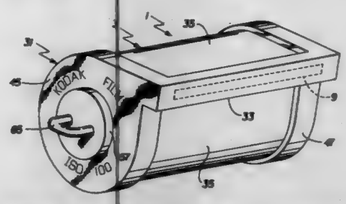
iii) two of the guide formations include hook-shaped guide members that have transversely extending upper portions that overlie portions of the bottom wall and that extend in substantially parallel relationship toward a selected one of the upstanding side walls for establishing a connection between each of the disc holders and the tray that permits the disc holders to be raised and pivoted relatively to each other and relative to the tray without defeating the connection between the disc holders and the tray so that compact discs can be selectively inserted into and withdrawn from the disc receiving formations while the disc holders remain connected to the tray.

5,295,578

SINGLE-PIECE PROTECTIVE PACKAGE FOR A FILM CASSETTE

John J. Neidospial, Jr., Prrinceton Junction, N.J.; Mark D. Fraser, Hamlin, and Christopher P. McCormick, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,945
Int. Cl.[5] B65D *85/671, 81/30*
U.S. Cl. 206—408 **8 Claims**



1. A single-piece protective package for a film cassette provided with a substantially cylindrical housing having an extending pair of lips slightly spaced apart to define a film egress/ingress mouth and with a rotatable film spool for a coiled filmstrip inside the housing having a protruding end that protrudes at least to an outside end face of the housing to permit its engagement to rotate the film spool, is characterized by:

a mouth cap configured to fit over the extending pair of lips of the housing including the film egress/ingress mouth to seal the film egress/ingress mouth, but not to fit over a cylindrical portion of the housing to leave the cylindrical portion visible; and

spool locking means integrally formed with said mouth cap for engaging the protruding end of the film spool to prevent rotation of the film spool when said mouth cap is fit over the extending pair of lips of the housing.

5,295,579

PAPER TISSUE PACK, ESPECIALLY PAPER HANDKERCHIEF PACK

Heinz Focke, and Harald Gosebruch, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co (GmbH & Co), Verden, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,724
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1991, 4138775
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—494 **11 Claims**

1. A paper tissue pack having a wrapper of foil or paper which surrounds a stack of folded paper tissues,

wherein the wrapper comprises a withdrawal opening for the paper tissues in a large-surfaced front wall of the pack, thereby permitting withdrawal of the paper tissues in a direction from the pack,

wherein each paper tissue has an outer folding layer with a free edge portion, wherein the free edge portion of the outer folding layer facing the withdrawal opening is exposed in a region of the withdrawal opening,

wherein the paper tissues are folded in a zig-zag fold with Z-folding lines (**26, 27, 28; 51, 52**) extending transverse to the direction of withdrawal;

wherein, for grasping a paper tissue, each paper tissue is provided with a grip tab (**34**) in a region of the withdrawal opening (**15**) at the free edge of the outer folding layer which faces the withdrawal opening (**15**); and

wherein a recess (**35**) is formed on a side of each paper tissue by punching out a grip tab of an adjacent paper tissue, said side being located opposite the grip tab (**34**).

10. A paper tissue pack wherein:

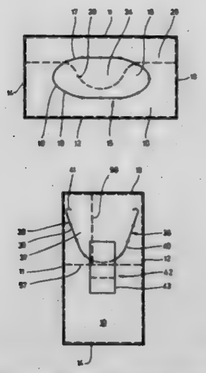
the pack is of cuboid shape and has a wrapper of foil or paper which surrounds a stack of folded individual paper tissues;

in a large-surfaced front wall (**10**), the pack has a withdrawal opening (**36**) which is formed in a region which is directed toward an end wall (**13**) of the pack, but at a distance from said end wall (**13**);

the withdrawal opening (**36**) is associated with a tear flap (**37**) for the reclosure of the pack after a withdrawal of paper tissues;

the paper tissues have longitudinal folding lines (**44, 45, 46**) and, transversely thereto, transverse folding lines (**51, 52**) of which at least the transverse folding lines (**51, 52**) are Z-type folding lines, such that the paper tissues are folded in a zigzag form in the transverse direction;

each paper tissue is first folded, at the longitudinal folding



lines (**21, 22**) and, thereafter, second folded at the transverse folding lines in the zigzag form in such a way that folding legs (**54, 55, 56**) of the paper tissues can be pulled out of the pack in succession when the paper tissues are withdrawn; and

an outer folding layer (**59**) which is directed toward the withdrawal opening (**36**) is shorter than other folding layers located under the outer folding layer and extends with a transversely directed end edge (**57**) outside the withdrawal opening (**36**) and the tear flap (**37**) at a small distance therefrom, such that only a side edge (**58**) of the folding layer (**59**) extends in the longitudinal direction of the front wall (**10**) and is exposed in a region of the withdrawal opening (**36**).

5,295,580

CONTAINER WITH OVERLAPPING FLAP CLOSURE AND NESTING SPACER

Stewart W. Hicks, 423 Linda Dr., San Antonio, Tex. 78216

Filed Oct. 19, 1992, Ser. No. 962,945
Int. Cl.[5] B65D *75/00*
U.S. Cl. 206—588 **2 Claims**

1. A container comprising:

a shaped, foldable cover consisting of a back, first and second sides and first and second ends integrally formed with said back, a front integrally formed with said first side, and a flap integral with said front,

a spacer approximately conforming to said back in length and width and secured thereto,

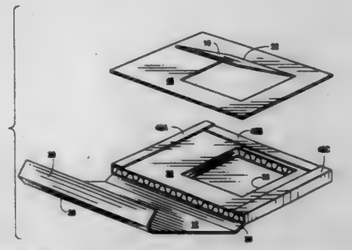
a shaped opening in said spacer adapted to accommodate an article carried therein,

sheet material approximately conforming to said spacer in length and width and secured thereto,

a flap-covered opening in said sheet material conforming to and overlying said shaped opening in said spacer,

said first and second ends of said cover adapted to at least partially overlie said sheet material,

said second side of said cover adapted to at least partially overlie said sheet material,



an adhesive on said flap of said cover whereby in folded condition said flap is adapted to pass outwardly of said second side of said cover and secured thereto.

5,295,581

PROCESS FOR PREPARING DRY SODIUM ALUMINUM HYDRIDE

Sanjeev Lahoti, Houston, Tex., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 5, 1992, Ser. No. 972,761
Int. Cl.[5] B03B *1/00*
U.S. Cl. 209—3 **3 Claims**

1. A process for recovering storable and shippable dry sodium aluminum hydride solids from a slurry comprised of sodium aluminum hydride, aluminum, sodium aluminum hexahydride, sodium aluminum diethyldihydride and toluene, the process comprising:

a. feeding the slurry to a nutsche filter;

b. pressurizing the nutsche filter with an inert gas so as to obtain a pressure differential over the filter septum within the range of from about 30 to about 50 psi;

c. filtering the fed slurry in the absence of agitation to yield a first filter cake;

d. feeding a sufficient amount of toluene to the nutsche filter to form a wash slurry to effect a washing of the first filter cake;

e. filtering the fed slurry in the absence of agitation to yield a second filter cake;

f. heating the second filter cake to a temperature within the range of from about 35° C. to about 75° C. until the second filter cake reaches the desired degree of dryness; and

g. recovering the dried filter cake from the nutsche filter.

5,295,582

RECYCLING POST CONSUMER PLASTIC PRODUCTS

Ervin R. Dan, Lexington, Mass., assignor to Novacor Chemicals (International) S.A., Fribourg, Switzerland

Filed Jan. 22, 1993, Ser. No. 7,499
Int. Cl.[5] B03B *1/00*
U.S. Cl. 209—3 **39 Claims**

1. A process for removing at least one contaminant from one or more rigid plastic wastes comprising:

i) submersing at least a portion of said rigid plastic waste in a liquid at atmospheric pressure and a temperature from 0° to 35° C., which liquid contains from 0 to 1 weight % of one or more cleaning agents;

ii) subjecting said liquid to a transducer to generate waves through said liquid at a frequency from 20 to 60 KHz for a time sufficient to remove said at least one contaminant from said rigid plastic waste;

iii) separating said rigid plastic waste from said liquid; and

iv) recycling said liquid.

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5,295,583

PROCESS FOR CLEANING SHORT MINERAL FIBERS

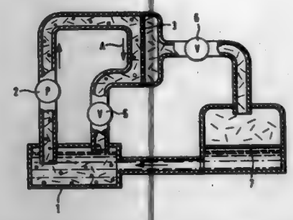
Ulrich Bischofberger, Stuttgart; Dieter Muller-Schwelling, Fellbach, and Ernst Pfleiderer, Backnang, all of Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 21, 1992, Ser. No. 933,999

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 4128127

Int. Cl.[5] B03B *7/00*; B07B *9/00*

U.S. Cl. 209—17 14 Claims



1. A process for cleaning short mineral fibers, in which the fibers contaminated with foreign bodies are separated from the foreign bodies which have at least a starting size, comprising:

(a) adding a contaminated fiber material to a carrier medium and setting the carrier medium in a flowing motion; and

(b) circulating the carrier medium through a separation apparatus having an upstream side and a downstream side with at least one slot-like recess between the upstream and the downstream in the direction of a longitudinal extension of the recess;

whereby at least a part stream of the carrier medium passes from the upstream side through the recess together with the fibers, forming a fiber filtrate at the downstream side of which the degree of purity is solely determined by the width of the recess.

5,295,584

PROCESS FOR SELECTIVE FLOTATION OF PHOSPHORUS MINERALS

Jens M. Krause, Hofheim am Taunus, and Kurt Bauer, Kelsterbach, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

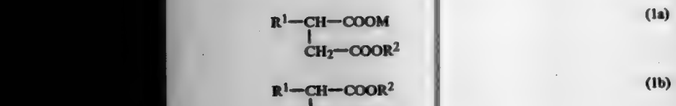
Filed Aug. 13, 1992, Ser. No. 929,670

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127151

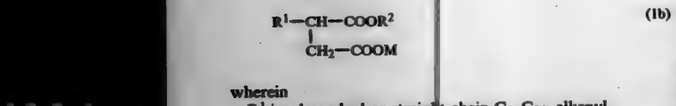
Int. Cl.[5] B09D *1/01, 1/02*

U.S. Cl. 209—166 12 Claims

1. A process for the selective flotation of phosphorus minerals, which comprises subjecting a suspension containing said phosphorus minerals to flotation in the presence of at least one flotation collector, in which process the flotation collectors used are one or more compounds of the formula 1a and/or 1b



(1a)



(1b)

wherein

R^1 is a branched or straight-chain C_8–C_{24} -alkenyl,

R^2 is a branched, straight-chain or cyclic alkyl having, independently, in each occurrence, 5 or 6 carbon atoms and

M is hydrogen, an alkali metal or alkaline earth metal, ammonium or $NR^3R^4R^5$ where R^3, $R^4$and R^5 independently of one another are hydrogen, C_1–C_{20}-alkyl or C_1–C_{20}-hydroxyalkyl,

optionally as a mixture or combination with co-collectors.

5,295,585

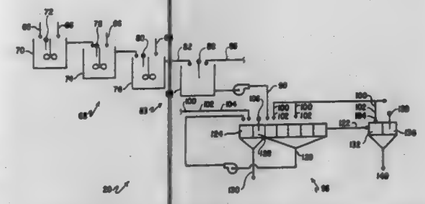
METHOD FOR ACHIEVING ENHANCED COPPER-CONTAINING MINERAL CONCENTRATE GRADE BY OXIDATION AND FLOTATION

Richard O. Huch, Tucson, Ariz., assignor to Cyprus Mineral Company, Englewood, Colo.

Continuation-in-part of Ser. No. 626,825, Dec. 13, 1990, Pat. No. 5,110,455. This application May 4, 1992, Ser. No. 878,444

Int. Cl.[5] B03D *1/002, 1/06*

U.S. Cl. 209—167 20 Claims



1. A method for concentrating enargite from a slurry containing enargite and chalcocite, said method comprising:

(a) conditioning the slurry with an effective amount of an oxidizing agent to depress said chalcocite; and

(b) subjecting the slurry to a froth flotation process to float an enargite concentrate from said slurry, resulting in an enargite concentrate as a flotation product separate from a chalcocite concentrate as an underflow product.

5,295,586

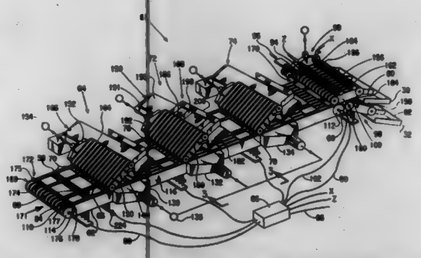
APPARATUS FOR SEPARATING A SHEET FROM AN ARRAY OF SHEETS

Doyle D. Chesnutt, Williamsville; James A. Holler, Tonawanda, both of N.Y.; William J. Hommes, Hockessin, Del., and Arnold C. Sheldon, II, Hendersonville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1991, Ser. No. 809,150

Int. Cl.[5] B07C *5/00*

U.S. Cl. 209—552 8 Claims



1. An apparatus for separating a selected sheet from a spaced array of sheets substantially aligned on a first conveyor in rows transversely across said first conveyor and in lanes longitudinally along the movement direction of said first conveyor comprising:

the first conveyor having a plurality of belts moveable from an entrance end to an exit end of said first conveyor, each of said belts having perforations in a top surface thereof in fluid communication with a vacuum source for retaining said sheets, said belts positioned with spaces therebetween such that at least two belts are adapted to support each sheet;

a controller for determining when a sheet from the array of rows and lanes is to be separated therefrom based upon preselected criteria;

a plurality of diverters aligned transversely to said first conveyor and positioned in the spaces between said belts, at least one diverter aligned with each sheet in a row, said diverters connected to said controller so as to be individually responsive to said controller for diverting only the selected sheet in a row away from the top surface of said belts in a direction that separates the selected sheet from the array; and

a second conveyor having a belt moveable from an entrance end to an exit end thereof, said entrance end of said second conveyor spaced near the first conveyor and adjacent the aligned diverters such that said diverters are disposed directly beneath a bottom surface of said belt, the belt of said second conveyor having perforations in the bottom surface in fluid communication with a vacuum source for retaining said selected sheet, said bottom surface facing the top surface of said first conveyor so as to receive the selected sheet, when diverted away from said first conveyor, and transport said selected sheet away from said first conveyor to the exit end of said second conveyor.

5,295,587

EARRING AND BROOCH ORGANIZER

Glenn W. Downes, and Peggy W. Downes, both of 507 S. 46th St., Baltimore, Md. 21224

Filed Jan. 8, 1993, Ser. No. 3,443

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—13 5 Claims



1. A device for organizing earrings and brooches, comprising, a strip of fabric folded to form a front layer and a rear layer, at least one strip of eyelet lace joined to said fabric, and means for suspending said device on to another object, wherein said fabric is folded and formed in such a manner to result in two over-lapping layers with open left and right sides and a closed bottom, and whereby said strip of eyelet lace is stitched to the outer face of either of said two layers of said fabric.

5,295,588

DISPLAY RACK FOR CAPS

Thomas R. Neirinckx, 1504 Willow La., Mount Prospect, Ill. 60056

Filed Mar. 25, 1993, Ser. No. 36,960

Int. Cl.[5] A47G *25/10*

U.S. Cl. 211—32 7 Claims

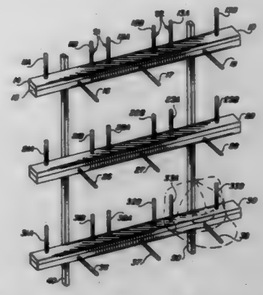
1. A cap rack in combination with and for supporting and displaying caps of the type having a body and a bill, said rack comprising:

at least two cap supporting sections each including;

a horizontally positioned linear base unit;

at least two pairs of spaced apart vertical members extending upward from said base unit positioned toward a front edge of said horizontally positioned linear base unit and having upper free ends;

said vertical members in each of said pairs spaced apart a predetermined distance to facilitate placement of the body of the cap over said members to support said body of said cap, with said pairs of vertical members spaced apart a predetermined distance to facilitate placement of the bodies of caps over each of said pair of members whereby said caps may be positioned adjacent to each other;



said vertical members each extending upward a predetermined distance to facilitate placement of the body of the cap over said members while maintaining said body of said cap in both horizontal and upright positions;

at least one horizontal member having a free end and extending forward from said base unit at a right angle to each of said vertical member pairs to facilitate the support of the bill of a cap on said horizontal support member;

vertical support means supporting said cap support sections a predetermined distance apart from each other; and

means for securing said rack in an upright position.

5,295,589

GRATE FOR RECEIVING DISHWARE

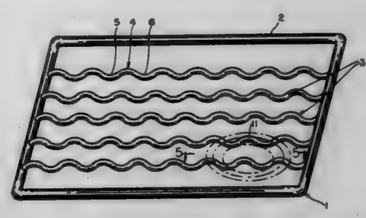
Alfons Riepl, Uffing, Fed. Rep. of Germany, assignor to Convotherm Elektrogeräte GmbH, Untereglfing, Fed. Rep. of Germany

Filed May 1, 1992, Ser. No. 877,298

Claims priority, application Fed. Rep. of Germany, May 2, 1991, 4114352

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—41 9 Claims



1. A grate for receiving dishware, for use in movable racks and rack carts, the dishware having a base rim on an underside, said grate comprising:

(a) a base frame and

(b) a plurality of grate bars connected to said base frame, said bars being constructed in an undulating manner having crests and valleys, said valleys receiving the base rim of the dishware to prevent the dishware from slipping while horizontally positioned on said grate.

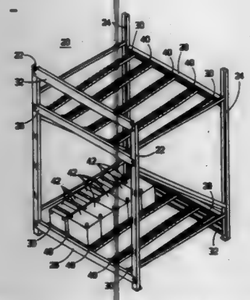
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,590
NAPKIN HOLDER
David L. Feer, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 23, 1992, Ser. No. 996,778
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—50 10 Claims



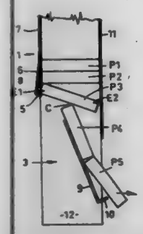
1. A napkin holder, of the type comprising a freestanding base and spaced apart, generally vertical opposed wall members extending upward from the base and defining a channel therebetween for receipt of a vertical stack of napkins, the improvement comprising:
each of the wall members comprising intersecting first and second wall panels and the channel having channel portions which intersect to form an obtuse angle defined by the wall panels;
one of the wall members having opposite ends which lie in a vertical plane extending through said channel, with a median portion of the vertical plane being spaced apart a lateral distance from the intersection of the first and second wall panels of the opposite said wall member; and
a vertical sided channel portion, open at opposite ends and with a width equivalent to said lateral distance extends between said opposite ends of the one wall member.

5,295,591
STORAGE OR DISPLAY RACK
Robert C. Slater, 854 Spring Cove, Schaumburg, Ill. 60193
Filed Sep. 4, 1992, Ser. No. 941,211
Int. Cl.[5] A47F *1/04*
U.S. Cl. 211—59.2 8 Claims



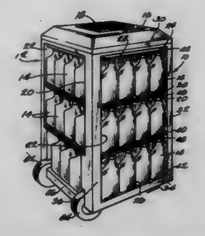
1. The improvement in a display rack for storage batteries and the like of the type having a frame and a plurality of battery shelves, said improvement comprising:
a front beam secured to said frame, said front beam being generally C-shaped and opening rearwardly and having a lower support element and an upper notched support element, said upper and lower support elements being connected by web portions, said notches defining an array of equally spaced downwardly extending projections;
a rear beam secured to said frame, said rear beam being generally C-shaped opening forwardly toward said front beam and having a lower support element and an upper notched support element, said upper and lower support elements being connected by web portions, said notches defining an array of equally spaced projections laterally aligned with the notches and projections of the front beam;
a plurality of shelf assemblies supported between said beams, each of said shelf assemblies having a generally U-shaped shelf channel defined by a pair of upright legs connected at their lower edge by a web;
The front end of each shelf channel being positioned into the open end of said front beam with the web of the shelf channel resting on the lower support element of the front beam and the upright legs positioned in the notches of its upper notched support element whereby the front end of said support assembly is positioned against lateral and forward longitudingal displacement;
the rear end of each shelf channel having its web notched and positioned to rest on the lower support element of the rear beam with its upright legs positioned in the notches of the rear beam notched support element whereby the shelf assembly is secured against lateral and rearward longitudintal displacement; and
a plurality of rollers mounted between the upright legs of said shelf channel and extending upwardly above the upper ends of the upright legs.

5,295,592
ARTICLE DISPENSER
Ross T. Thorne, 60 Marigold Street, Revesby, New South Wales 2212, Australia
Filed Sep. 10, 1992, Ser. No. 942,928
Claims priority, application Australia, Sep. 11, 1991, PK8296
Int. Cl.[5] A47F *1/00*
U.S. Cl. 211—59.2 9 Claims



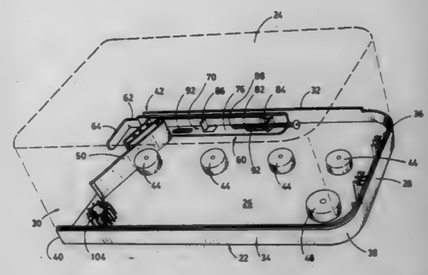
1. A dispenser for similarly-shaped articles, said articles being at least semi-rigid and including six surfaces comprising a pair of faces, a pair of ends and a pair of edges, said dispenser comprising:
a storage zone having an upper filling end and a lower discharge end, said storage zone further including a front and a back terminating at said discharge end;
guide means in said storage zone for aligning the ends and the edges of said articles in said storage zone, said guide means including front guide means extending beyond said discharge end of said storage zone;
a resilient arm at the back of said storage zone;
an extension on said resilient arm for providing a first abutment located beyond said discharge end of said storage zone projecting across said discharge end for supporting a back edge of a lowermost article housed in said storage zone;
a dispensing zone including an elongated inclined article support surface with an upper end located below said discharge end of said storage zone;
stop means on the elongated inclined article support surface spaced from said first abutment in a length direction of said article support surface by a distance sufficient for accommodating an article group comprising at least two articles with corresponding faces on said article support surface and with edges of adjacent articles abutting and with distal edges of article group respectively abutting said stop means and providing a further abutment disposed between said first abutment and said front guide means for also supporting a lowermost article housed in said storage zone, said resilient arm being deflectable on removal of said further abutment for allowing the lowermost article in said storage zone to rotate from a horizontal condition to an inclined condition, wherein the lowermost article rests on said support surface while the back edge of the lowermost article is supported by said first abutment and a front edge of the lowermost article is held in contact with and said front guide means by said resilient arm.

5,295,593
STORAGE AND DISPENSING UNIT
Michael R. Sturm, Mequon, Wis., assignor to DCI Marketing, Milwaukee, Wis.
Filed Dec. 31, 1991, Ser. No. 816,492
Int. Cl.[5] A47F *1/04*
U.S. Cl. 211—59.4 10 Claims



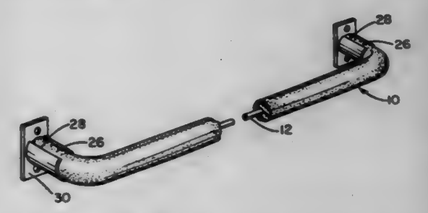
1. Storage and dispensing unit comprising, in combination,
wall means defining an enclosure having a wall,
holding means for supporting one or more containers in generally exposed condition on said wall, said holding means including
a first generally horizontal surface connected to said wall and offset laterally outwardly therefrom to define a shelf,
a second generally horizontal surface in opposed relation to and spaced vertically from said first surface,
means defining at least an aperture in said second surface,
guide means connecting said second surface to said wall for movement relative to said first surface and relative to a container placed on said first surface, said guide means providing a confined path of movement so that said second surface is movable toward and away from said first surface and said container, said confined path of movement has a generally horizontal and a generally vertical component, and when said second surface is moved away from said first surface, said second surface is displaceable horizontally relative to the first surface, and
whereby said container placed on said first surface extends upward into said aperture when said second surface is in its lowermost position and said container is free of said aperture when said second surface is in its uppermost position.

5,295,594
WALL PANEL MOUNTING APPARATUS
John Melzian, Rancho Palos Verdes, and Mel Evenson, San Pedro, both of Calif., assignors to Rubbermaid Office Products Group, Inc., Inglewood, Calif.
Filed Jun. 18, 1992, Ser. No. 900,856
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—87 14 Claims



1. An apparatus for mounting an accessory to a wall panel comprising:
left and right vertical support panels wherein the vertical support panels each include a housing having a horizontal top wall and left and right vertical side walls;
wall panel mounting means, provided with each support panel, for mounting a rear edge of a respective support panel to a front surface of a vertical wall panel, the vertical support panels being mounted in spaced relation from each other wherein the wall panel mounting means for securing the support panel to the wall panel comprises:
a mounting bracket having a base portion held along a lower inside surface of the top wall and a free end portion mountable over a top edge of the wall panel; and
a means for sliding the base portion with respect to the top wall of the support panel to secure the free end of the bracket over the top of the wall panel; and
accessory mounting means, provided on each support panel, for receiving and holding one end of a pair of opposing ends of the accessory.

5,295,595
REINFORCED FOAM DRAPERY HARDWARE
Raphael A. Gobidas, and Natalie C. Salvatore, both of Cleveland, Ohio, assignors to Artizana Drapery Hardware, Inc., Cleveland, Ohio
Filed Jun. 14, 1991, Ser. No. 715,476
Int. Cl.[5] A47H *1/02*
U.S. Cl. 211—105.1 11 Claims



1. A drapery rod for hanging draperies therefrom, the draperies hung from said rod via pins, the pins having a length, said drapery rod comprising:
a ductile wire, said wire being plastically deformable by manually generated stresses while having sufficient rigid-

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ity to support the draperies, said wire having an outer surface, a length, and a longitudinal axis; and

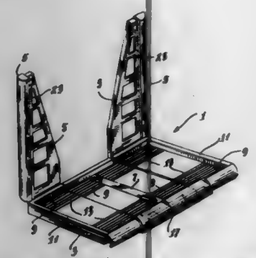
a body member made of resilient foam, said body member having an inner and an outer surface, said inner surface of said body member surrounding and affixed to said wire so that said inner surface of said body member is coincident with said outer surface of said wire along its entire length, said body member being generally coaxial with said wire, said body member being generally cylindrical and having a diameter, said diameter being at least 1.5 inches, said body member being resiliently deformable, said rod and body member further comprising first and second ends, said ends selectively bent at right angles to said axis of said drapery rod to form returns, said first and second ends adapted to affix said drapery rod a certain distance from a wall.

5,295,596

IN-STORE DISPLAY HAVING VARIABLE WIDTH

Anthony C. Squitieri, Norwalk, Conn., assignor to Mechtronics Corporation, Stamford, Conn.

Filed Jun. 5, 1992, Ser. No. 894,456
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—175 **8 Claims**



2. An expandable merchandise display including

a first base member and a second base member,

a plurality of first spaced fingers on said first base member projecting towards said second base member, a plurality of second spaced fingers on said second base member projecting towards said first base member, said first spaced fingers being slidingly interfitted between said second spaced fingers, said first spaced fingers alternating with said second spaced fingers, and

a back hingedly mounted along the rear edge of at least one of said base members,

whereby said base members can provide a merchandise display of variable width.

5,295,597

INFANT'S BOTTLE WITH VALVED CAP

Richard D. Green, 12979 Culver Blvd., Los Angeles, Calif. 90066

Filed Jan. 21, 1993, Ser. No. 6,789
Int. Cl.[5] A61J *9/00, 11/04*
U.S. Cl. 215—11.4 **13 Claims**

5. A valved cap for use with a beverage container, comprising:

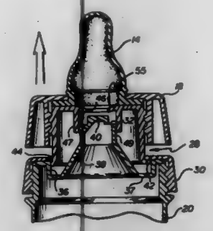
a first valve member having at least one flow port formed therein;

a second valve member;

means for mounting said second valve member on said first valve member for movement between a first position closing said flow port and a second position opening said flow port;

means for mounting said first and second valve members onto the beverage container, whereby movement of said first valve member between said first and second positions respectively prevents and permits flow of a beverage from the beverage container through said flow port; and

a plurality of different mouthpieces interchangeable for mounting one at a time onto said second valve member; and



means for removably mounting a selected one of said mouthpieces on said second valve member;

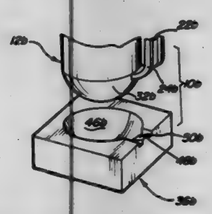
said plurality of different mouthpieces comprising a nursing nipple for an infant and a ported spout.

5,295,598

DRINKING VESSEL AND RETAINER THEREFOR

David D. Gerlach, 31699 S. River, Apt. F, Mt. Clemens, Mich. 48045, and Michael V. Badalamente, 70441 Dutchess, Romeo, Mich. 48065

Filed Jun. 24, 1992, Ser. No. 903,561
Int. Cl.[5] B63B *35/02*
U.S. Cl. 215—100 R **11 Claims**



7. A container assembly comprising:

a drinking vessel having a body which includes an upper portion having inner and outer surfaces and an open first end, a bottom having a substantially arcuate outer surface and a handle projecting from the outer surface of said upper portion, said handle including at a gripping portion and a projecting portion extending from said gripping portion; and

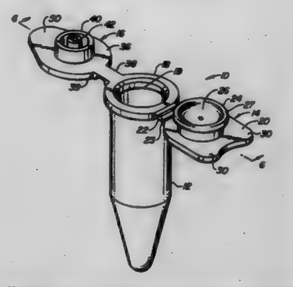
coaster means for detachably securing said drinking vessel in an upright position, said coaster means including a bottom surface, a top surface and at least one side wall, extending into said top surface is a recessed area for fittingly engaging the bottom said drinking vessel, said coaster means including a groove extending below said top surface for receiving at least a portion of said handle, said groove including at least one slot for receiving the projecting portion of said handle to preclude lateral movement of said drinking vessel relative to said coaster means.

5,295,599

MULTIPLE CAP SEAL FOR CONTAINERS

James C. Smith, Hayward, Calif., assignor to Innervision, Inc., Hayward, Calif.

Filed Jul. 20, 1992, Ser. No. 918,527
Int. Cl.[5] A61J *1/00*; B65D *55/16*
U.S. Cl. 215—204 **15 Claims**



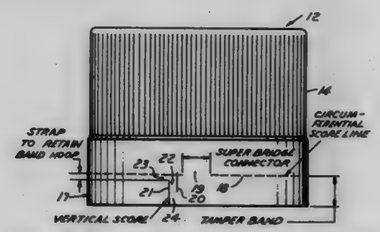
3. The sealing device of claim 2 wherein said retaining means is formed on said first and third members.

5,295,600

TAMPER INDICATING CLOSURE

Timothy B. Kowal, Maumee, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Feb. 25, 1993, Ser. No. 22,240
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **7 Claims**



1. A plastic tamper indicating closure comprising a base wall,

a peripheral skirt having an inner surface with thread means adapted to engage cooperating thread means on a container such that said closure is removed by relative rotation,

an interrupted score line extending circumferentially about the skirt defining a weakened line by interrupted scores which form bridges and define a wider connecting portion,

said score line defining a tamper indicating band having interengaging means thereon for engaging means on a container to inhibit removal to said closure such that the weakened line must be broken to remove said closure,

a first axial score line on said tamper indicating band adjacent said connecting portion and having an upper end intersecting said interrupted score line and a lower end spaced from the lower edge of said tamper indicating band,

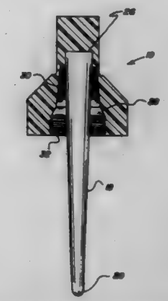
a second axial score line on said tamper indicating band spaced circumferentially from said first axial score line and extending from the lower edge of said tamper indicating band and having an upper edge spaced from the upper end of said band to form a strap such that said band successively expands at said second score and first score line as the closure is applied to a container and as the closure is removed, said strap yields and the weakened line is broken and the strap is severed from the tamper indicating band leaving the tamper indicating band attached to said closure by said connecting portion.

5,295,601

CAULK CARTRIDGE CAP

Richard F. Bostelman, 22381 Banner School Rd., Rte. 2, Defiance, Ohio 43512

Filed Apr. 14, 1992, Ser. No. 868,248
Int. Cl.[5] B65D *51/00*
U.S. Cl. 220—287 **6 Claims**



1. A new and improved caulk cartridge closure comprising:

a plug member;

first thread means having a diameter formed upon a first interior surface of said plug member and being selectively threadably engagable with an open end of an applicator tube for coupling said plug member to said applicator tube;

second thread means of a greater diameter than said diameter of said first thread means formed upon a second interior surface of said plug member and being selectively threadably engagable with an applicator tube of greater diameter than said applicable tube for coupling said plug member to said applicable tube of greater diameter;

an orifice retainment rod attached to said plug member and being positionable within an orifice of said applicator tube forming a part of a caulk cartridge, said orifice retainment rod being of a tapered construction to thereby facilitate a more easy insertion of said orifice retainment rod into said applicator tube with a frictional engagement occurring between an interior surface of said applicator tube and an exterior surface of said orifice retainment rod as said orifice retainment rod is moved inwardly into said applicable tube; and

gripping means coupled to said plug member for facilitating a manual rotation of said plug means, thereby to effect a secure engagement between said caulk cartridge closure and said applicator tube to thus effectively seal said caulk cartridge.

5,295,602

HOUSING WITH SNAP LATCH CLOSURE

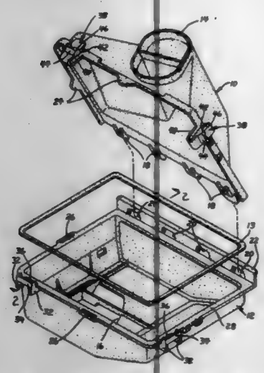
John S. Swanson, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 17, 1993, Ser. No. 33,297
Int. Cl.[5] B65D *45/16*
U.S. Cl. 220—306 **2 Claims**

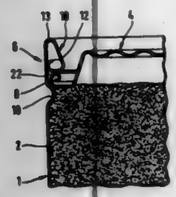
1. A housing with a snap latch closure comprising

a base having a depending retaining wall, a pair of lateral projections at opposite ends of the retaining wall, and a cross bar interconnecting the lateral projections, the re-

taining wall, lateral projections and cross bar defining a rectangular opening,
and a cover having a U-shaped tongue received in the opening, the tongue including a firm leg depending adjacent the retaining wall, a flexing leg adjacent the cross bar, a cam surface formed on the flexing leg and engaging the cross bar to deflect the flexing leg as the tongue is received in the opening, and a barb that snaps into engagement with the cross bar after the tongue is fully received in the opening, engagement of the barb with the cross bar serving to retain the tongue in the opening,
and wherein engagement between the depending wall and the firm leg prevents pivotal motion of the tongue within the opening that might otherwise release the barb from the cross bar.

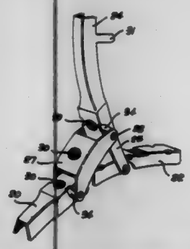


5,295,603
PRESSURE LID CONTAINER
Eckart Schormair, Otersen; Bernard De Turckheim, Bremen, and Rolf Hornig, Kirchlinteln-Luttum, all of Fed. Rep. of Germany, assignors to Effem GmbH, Verden/Aller, Fed. Rep. of Germany
PCT No. PCT/DE91/00911, § 371 Date Sep. 28, 1992, § 102(e) Date Sep. 28, 1992, PCT Pub. No. WO92/09495, PCT Pub. Date Jun. 11, 1992
Continuation-in-part of Ser. No. 856,057, May 8, 1992. This PCT application Nov. 15, 1991, Ser. No. 917,067
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 4038870
Int. Cl.[5] B65D *39/00*
U.S. Cl. 220—307 **3 Claims**



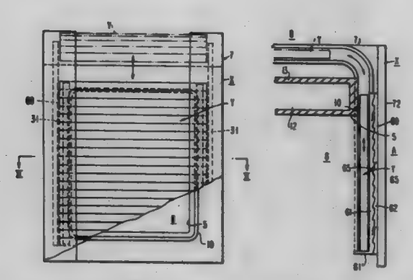
1. A pressure lid container comprising
a body member and a lid member,
said lid member having an all-around, resilient engagement lip for engagement with said body member from the inside under pretension and being insertable into a closure-side end of said body member to form a tight closure therewith, said engagement lip having an axial thickness,
said lid member including a portion spaced radially inwardly from said closure-side end of said body member to define a lever gap between said body member and said lid member for the engagement of a lever to permit said lid member to be levered up,
said closure-side end of said body member including an inwardly rolled, upper circumferential edge bead and an inwardly impressed crease, said upper circumferential edge bead having an exposed end so that said lever may be levered against it as a fulcrum,
said inwardly impressed crease being below said inwardly rolled, upper circumferential edge bead at a distance essentially corresponding to the axial thickness of said engagement lip so that, when said lid member is inserted, said engagement lip is engaged between said inwardly impressed crease and said inwardly rolled, upper circumferential edge bead.

5,295,604
TOGGLE LATCH
Henricus J. Van Ryswyk, 34 View Street, Annandale, New South Wales 2038, Australia
PCT No. PCT/AU91/00213, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/00890, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 1, 1991, Ser. No. 961,922
Claims priority, application Australia, Jul. 13, 1990, PK1185
Int. Cl.[5] B65D *45/34*
U.S. Cl. 220—321 **13 Claims**



1. A toggle latch for releasably fastening and tensioning a closure band said latch comprising, a first member for connection to an end of said band, a second member for connection with the other end of said band, a lever hingedly connected adjacent a proximal end with said second member and a link member hingedly interconnecting said first member and said lever and being joined to said lever at a point spaced apart from said proximal end, said lever being movable between a first open position in which the extent of said lever diverges from said band and a second closed position in which said lever and link member nestably overlay said first and second members to draw said first member toward said second member, said members being hingedly connected by means of integrally formed inwardly directed flared projections on one member, said flared projections being captively retained in slots formed in the corresponding member, said slots including constrictions to captively retain the projections between the respective constriction and closed end of each slot.

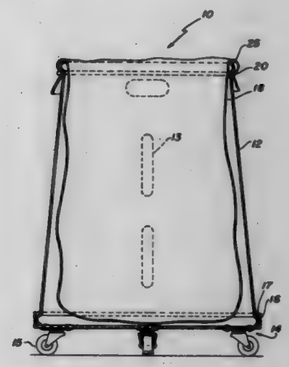
5,295,605
SHUTTER DEVICE FOR PRESSURE CONTAINER
Akiyoshi Kawahito; Kazuei Hondo; Takashi Nishimura, and Takeshi Akune, all of Matsuyama, Japan, assignors to Miura Research Co., Ehime, Japan
PCT No. PCT/JP90/01375, § 371 Date Apr. 21, 1992, § 102(e) Date Apr. 21, 1992, PCT Pub. No. WO91/06792, PCT Pub. Date May 16, 1991
PCT Filed Oct. 25, 1990, Ser. No. 849,035
Claims priority, application Japan, Oct. 25, 1989, 1-278928; Jan. 31, 1990, 2-9055[U]; Mar. 20, 1990, 2-28788[U]; Mar. 20, 1990, 2-28792[U]; Mar. 22, 1990, 2-29680[U]; Mar. 20, 1990, 2-28791[U]
Int. Cl.[5] B65D *43/20*
U.S. Cl. 220—345 **10 Claims**



1. A shutter device for a pressure container having a pressurized state and a depressurized state, the shutter comprising:
a lid assembly including a flexible seal plate having an outer surface, and a number of widthwise extending beam members applied to the outer surface of the seal plate;
a stationary guide track for guiding the seal plate for sliding movement between a closed position in which the seal plate overlies an opening of the container, and a stored position in which the seal plate is remote from the opening, said guide track having at least one bend between the closed position and the stored position;
moving means for moving the lid assembly along the guide track between said positions; and
pressing means for sealingly pressing the lid assembly against the opening of the container in the closed position to maintain an fluid-tight seal in the pressurized and depressurized states.

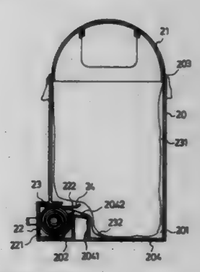
5,295,606
TRASH CONTAINER
Alexander Karwoski, 53 Francis Myers Rd., New Britain, Pa. 18901
Filed Mar. 29, 1993, Ser. No. 38,825
Int. Cl.[5] B65D *7/04*
U.S. Cl. 220—403 **9 Claims**

1. A two-unit trash container apparatus comprising,
a.) a movable means;
b.) a rigid drum means having a shape of a truncated cone and including a small and large opening wherein the larger opening is adapted to be positioned upon said movable means;
c.) means circumferentially surrounding said movable means and rigid drum means positioned to provide a snug fitting arrangement for semi-permanent attachment to one another.
d.) said circumferential surrounding means of said movable means also being dimensioned to locate additional movable means when a plurality are stacked one above another;
e.) means located at approximately each quadrant of said rigid drum for providing air passages to allow atmospheric pressure to penetrate;
f.) means having an entrance positioned within said drum means and upon said movable means for receiving disposable matter, and said air passages eliminating a partial vacuum that is created between said rigid drum means and said receiving means when filled with disposable matter, and
g.) said circumferential surrounding means acting as a basin for retaining spillage in the event that said receiving means is damaged.



h.) means for semi-permanently attaching said receiving means to said drum means,
i.) whereby when said receiving means is filled and said attaching means is removed, said two-unit container may be transferred to a site by said movable means where said drum means is easily separated by the elimination of said partial vacuum and by operation of said snug fitting, such that said receiving means may be lifted from said movable means for discarding purposes.

5,295,607
TRASH TANK
Der-Feng Chang, Ping-Tung Hsien, Taiwan, assignor to Chin-Chiao Chou, Ping-Tung Hsien, Taiwan
Filed Jul. 29, 1993, Ser. No. 98,987
Int. Cl.[5] B65F *1/06*
U.S. Cl. 220—407 **7 Claims**



1. A trash tank comprising:
a tank body having an open top, a closed bottom, a sidewall, a horizontally extending slot in said sidewall, and a receiving space that is adapted to receive a garbage sack with a mouth disposed on a periphery of said open top of said tank body; and
a hollow casing connected detachably to said tank body

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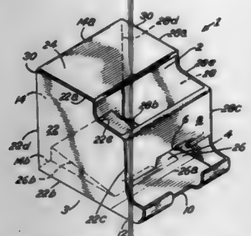
adjacent to said horizontally extending slot of said tank body, said hollow casing being adapted to receive a rolled-up strip of garbage sacks and having a slit which is parallel and juxtaposed with said horizontally extending slot of said tank body.

5,295,608

CARTON FOR STORING AND DISPENSING SUBSTANTIALLY CYLINDRICAL ARTICLES

John Blasko, Mentor, and Mark Longo, Gates Mills, both of Ohio, assignors to Laporte Construction Chemicals North America, Inc., Mentor, Ohio

Continuation of Ser. No. 752,823, Aug. 30, 1991, Pat. No. 5,228,590. This application Nov. 30, 1992, Ser. No. 982,880
The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.
Int. Cl.[5] B65D *85/00*
U.S. Cl. 220—501 **14 Claims**



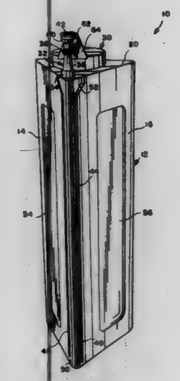
1. A stackable carton for storing, dispensing, and displaying substantially cylindrical articles of a predetermined length comprising:
a rear wall of a predetermined length that is longer than the predetermined length of the articles to be dispensed from the carton;
a first side wall and a second side wall, each of the side walls parallel to the other side wall and each having an upper edge (**22*a*** and **28*a***), a lower edge (**22*b*** and **28*b***), a front edge (**22*c*** and **28*c***), and a back edge (**22*d*** and **28*d***), each of the side walls having a cut-out located between the upper edge and the front edge of each side wall, the first side wall connected to the rear wall at the back edge (**22*d***) and the second side wall connected to the rear wall at the back edge (**28*d***);
a top wall connected to the first side wall and to the second side wall at their respective upper edges (**22*a*** and **28*a***), the top wall also connected to the rear wall forming a back edge of the top wall (**14*a***), wherein the top wall has a length that does not cover any portions of the cut-outs of the first and second walls;
a bottom wall having a back edge (**14*b***) and a front edge (**26*a***), the bottom wall connected to the rear wall at the back edge of the bottom wall (**14*b***) and connected to the lower edges of the first side wall and second side wall (**22*b*** and **28*b***), respectively;
a front wall parallel to the rear wall and having a height substantially shorter than the height of the rear wall, the front wall connected to the first side wall at the front edge of the first side wall (**22*c***) below the cut-out (**22*e***), the front wall also connected to the second side wall at the front edge of the second side wall (**28*c***) below the cut-out (**28*e***), forming an upper aperture between the front wall and the top wall and forming a lower aperture between the front wall and the bottom wall, the lower aperture and the upper aperture each being sufficiently large so as to allow articles to be placed into said carton through the upper aperture and to be removed from said carton through the lower aperture;
an incline associated with the bottom wall that is capable of gravitationally dispensing the cylindrical articles towards the lower aperture;
a trough for receiving the articles to be dispensed from the carton, the trough connected to the bottom wall at edge (**26*a***) and to the first and second side walls at their front edges (**22*c*** and **28*c***), respectively, and
whereby the substantially cylindrical articles are capable of being placed in the carton through the upper aperture when said stackable carton is in the stacked position.

5,295,609

CONTAINER WITH INTEGRAL STRAW

Edward S. Robbins, III, 459 North Ct., Florence, Ala. 35630

Filed Apr. 23, 1993, Ser. No. 51,681
Int. Cl.[5] B65D *47/00*
U.S. Cl. 210—710 **20 Claims**



1. A plastic container comprising:
a body portion having a peripheral side wall having a cross section with a regular polygon shape, a bottom wall and a top wall;
a fill opening in said top wall;
a closure removably securable over said fill opening;
an integral straw formed in said body portion and including an internal portion and an external upper portion extending above said top wall, said external portion having a dispensing opening at an upper end thereof; and
a straw cap attached to said closure for engaging and closing said dispensing opening of said external upper portion of the straw.

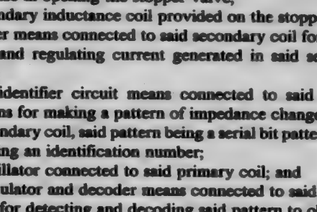
5,295,610

MIXING CAN HAVING A HINGED CAP WITH AN INTEGRAL MEASURING CUP

Philip W. Levison, 1343 Park Ave. West, Mansfield, Ohio 44906

Filed Nov. 21, 1991, Ser. No. 795,759
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—26 **8 Claims**

1. A gas and oil mixing can for mixing gas and oil in measured ratios comprising in combination:
a plastic gas can having;
a top surface with a can handle having an air release port and an oppositely located nozzle having a threaded tip for dispensing a gas and oil mixture, a sealable can hole, and a can latch saddle;
a side surface with molded graduations for measuring desired quantities of gasoline, and a molded gas and oil ratio reference chart; and,
a bottom surface;
a non-removable hinged cap attached by a hinge to said plastic gas can covering said sealable can hole, said hinged cap having;
a top surface with a sliding latch housed in a cap latch saddle adapted to be received within said can latch saddle, said top surface having a thumb tabbed pointer secured thereto and engraved ratio graduations for denoting the gas and oil mixture in said plastic gas can; and,



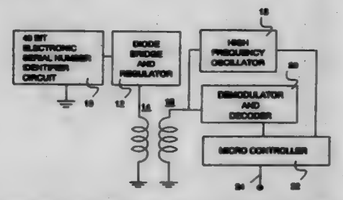
a bottom surface with an integral measuring cup for measuring desired quantities of oil;
said sliding latch integrating said hinged cap with said plastic gas can when said hinged cap is pivoted about the hinge into a sealed position in which said integral measuring cup is within the plastic gas can.

5,295,611

BEVERAGE DISPENSER CODING DEVICE

Gilbert Simard, Beauport, Canada, assignor to Axbar, Inc., Quebec, Canada

Filed Jun. 8, 1992, Ser. No. 895,084
Int. Cl.[5] B67D *5/30*
U.S. Cl. 222—129.3 **10 Claims**



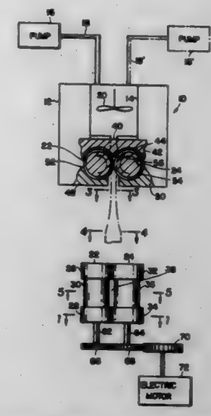
1. A beverage dispenser coding device for use with a magnetically activated bottle stopper valve, the device comprising:
a primary inductance coil provided on an activator coil unit for use in opening the stopper valve;
a secondary inductance coil provided on the stopper valve;
rectifier means connected to said secondary coil for rectifying and regulating current generated in said secondary coil;
serial identifier circuit means connected to said rectifier means for making a pattern of impedance changes in said secondary coil, said pattern being a serial bit pattern representing an identification number;
an oscillator connected to said primary coil; and
demodulator and decoder means connected to said primary coil for detecting and decoding said pattern to obtain the identification number.

5,295,612

ROLLER NOZZLE FOR DISPENSING FAST HARDENING FLUIDS

James Tagge, Great Barrington, Mass., and Carl Stigberg, Schenectady, N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Feb. 25, 1993, Ser. No. 23,215
Int. Cl.[5] B05B *15/02*
U.S. Cl. 222—135 **20 Claims**



1. An apparatus for dispensing liquids comprising:
a housing;
a pair of rollers rotatably mounted on said housing, said rollers having opposed roller surfaces each said surfaces having a first surface portion and a second surface portion, said second surface portion having a smaller diameter than said first surface portion, said second surface portions being spaced apart from each other to define a nozzle having a preselected cross-section;
liquid supply means for providing a liquid flow through said nozzle; and
drive means for rotating said rollers with said roller surfaces moving in a direction opposite said liquid flow.

5,295,613

TUBULAR CARTRIDGE FOR STORING AND APPLYING A NON-SOLID PRODUCT, AND A DRIVE AND THRUST ASSEMBLY FOR THE CARTRIDGE

Jean-Paul Barthomeuf, Bourg de Peage, and Alain Gauthier, Tournon, both of France, assignors to Societe de Prospection et d'Inventions Techniques (S.P.I.T.), Bourg Les Valence, France

Filed Jul. 9, 1992, Ser. No. 910,795
Claims priority, application France, Jul. 10, 1991, 91 08689
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—137 **20 Claims**

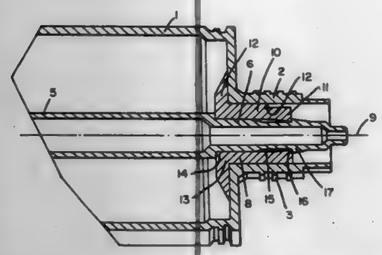
1. A tubular cartridge for storing and dispensing a plurality of materials, comprising:
an outer casing for housing a first one of said plurality of materials to be stored and dispensed;
means defined upon a front end portion of said outer casing for supporting a dispensing nozzle for dispensing said first one of said plurality of materials;
plunger means movably disposed within said outer casing between a rearward position and a forward position for causing said first one of said plurality of materials to be dispensed outwardly from said outer casing and through said dispensing nozzle as said plunger means is moved within said outer casing from said rearward position to said forward position;

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an inner casing disposed within said outer casing for housing a second one of said plurality of materials to be stored and dispensed;

means defines upon a front end portion of said inner casing for supporting a dispensing nozzle for dispensing said second one of said plurality of materials;

plunger means movably disposed within said inner casing between a rearward position and a forward position for causing said second one of said plurality of materials to be disposed outwardly from said inner casing and through said dispensing nozzle of said inner casing as said plunger means of said inner casing is moved within said inner casing from said rearward position to said forward position;



support means, having front and rear support surfaces, fixedly mounted within said front end portion of said outer casing; and

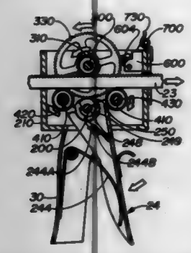
axially spaced front and rear shoulder means, defining an annular recess therebetween, provided upon said front end portion of said inner casing, said rear shoulder means abutting said rear support surface of said support means of said outer casing while said support means of said outer casing is accommodated within said annular recess of said inner casing, and said front shoulder means snap-fittingly engaging said front support surface of said support means of said outer casing so as to fixedly mount said front end portion of said inner casing within said front end portion of said outer casing.

5,295,614

DOUBLE REDUCTION GEAR FOR DISPENSING GUN

Peter J. Y. Chang, 11001 Petersborough Dr., Rockville, Md. 20852

Filed Dec. 22, 1992, Ser. No. 994,936
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—137 **25 Claims**



1. A double-reduction drive assembly for a dispensing gun comprising:

an elongate plunger traversing said housing, said plunger being formed with a toothed rack along a length;

a trigger connected to said housing at a pivoting axis, said trigger being manually contractible for driving said plunger;

a double-reduction gear assembly carried in said housing for mechanically converting manual contractions of said trigger into incremental axial movement of said plunger, said double-reduction gear assembly further comprising,

a spur gear connected to said trigger and rotatable therewith about said pivoting axis,

a main drive gear rotatably carried in said housing, said main drive gear being engagable with said spur gear and driven thereby, and said main drive gear having a larger diameter than said spur gear, and

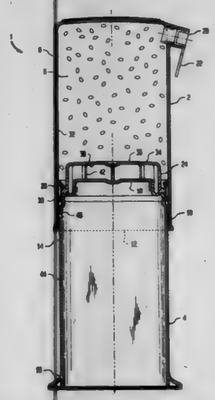
a pinion gear carried in said housing and mounted coaxially with said main drive gear for rotation therewith, said pinion gear having a smaller diameter than said main drive gear, and said pinion gear being engagable with said toothed rack of said plunger to advance said plunger in axial increments.

5,295,615

REFILLABLE PUMP DISPENSING CONTAINER

James L. Gentile, Orange, Conn., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Sep. 30, 1992, Ser. No. 954,849
Int. Cl.[5] G01F *11/04*
U.S. Cl. 222—327 **5 Claims**



1. A dispensing container for flowable material comprising:

(a) a cylindrical upper body for containing the flowable material and having a first and second end opposite one another, the second end having an open mouth;

(b) a cylindrical lower body having a first and second end opposite one another, the first end being telescopically mounted within the upper body, and the first end having a boss portion of a smaller diameter than a cross-sectional diameter of the lower body;

(c) an orifice for allowing egress of the flowable material, the orifice being formed on the first end of the upper body; and

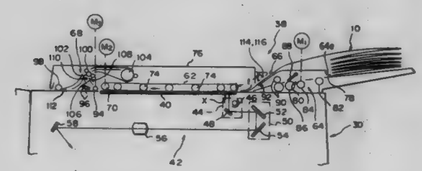
(d) a piston sealingly slidable within the upper body, the piston being formed by a diaphragm having an upper and lower surface and a skirt surrounding the diaphragm, the upper surface facing the first end of the upper body, the flowable material being restricted to an area between the upper surface and the orifice, the lower surface in combination with the skirt defining a cavity consisting of a straight cylindrical wall along a length thereof, the boss portion of the lower body extending into the cavity, the cylindrical wall being formed with a plurality of ribs on an inner surface thereof projecting radially inward in a direction perpendicular to the lower surface of the diaphragm and frictionally engaging the boss portion of the lower body to establish a snug, frictional fit.

5,295,616

SWITCHABLE AUTOMATIC DOCUMENT FEEDER CAPABLE OF FEEDING CONTINUOUS FORM DOCUMENTS OR SINGLE SHEET DOCUMENTS

Shirou Saeki, Yokohama; Yukitaka Nakazato; Kenji Hashimoto, both of Tokyo, and Tadashi Ikoma, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 356,452, May 24, 1989, abandoned.
This application May 21, 1991, Ser. No. 704,854
Claims priority, application Japan, May 24, 1988, 63-126494; Jun. 25, 1988, 63-83438; Jul. 6, 1988, 63-89070
Int. Cl.[5] B65H *45/06*
U.S. Cl. 226—110 **9 Claims**



1. An automatic document feeder for an image recorder having a top open platen comprising:

sheet-like document feeding means for feeding to said platen sheet-like documents having a predetermined size;

a separate inlet provided independent of said sheet-like document feeding means for feeding to the platen continuous documents, constituted by a sequence of continuous pages and having a plurality of equally spaced holes;

document transporting means located to face the platen for transporting any of the sheet-like or continuous documents placed on and along said platen;

document discharging means for discharging said document from said platen;

first sensor means located upstream of the platen with respect to an intended direction of transport of the continuous document for generating pulses by sensing the holes of the continuous document;

second sensor means located upstream of the platen with respect to the intended direction of transport of the continuous document for sensing transport of the continuous document; and

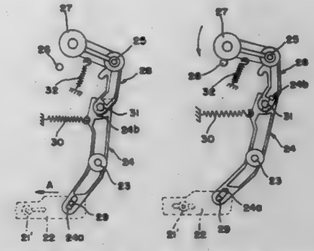
control means for controlling said document transporting means and said document discharging means such that after said second sensor means has stopped sensing the continuous document, said continuous document is transported to and then brought to a halt at the predetermined position of the platen, wherein said control means includes speed reduction means for reducing a driving speed of said document transporting means and said document discharging means in response to a determination that said second sensor means has stopped sensing said continuous document such that said driving speed is reduced during a period of time after said second sensor means has stopped sensing the continuous document and before said continuous document is brought to a halt.

5,295,617

PRESSURE DEVICE FOR A PINCH ROLLER OF A VIDEO CASSETTE RECORDER

Il Mo Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 23, 1992, Ser. No. 855,673
Claims priority, application Rep. of Korea, Mar. 23, 1991, 91-3916
Int. Cl.[5] B65H *20/02*
U.S. Cl. 226—181 **2 Claims**



1. A pressure device for a pinch roller in a video cassette recorder consisting essentially of:

a linearly movable function plate,

a pinch lever rotatably movable together with said function plate

a first spring connected to said pinch lever, consisting said pinch roller to separate from a capstan shaft,

a pinch arm having said pinch roller rotatable together with the rotation of said pinch lever, and

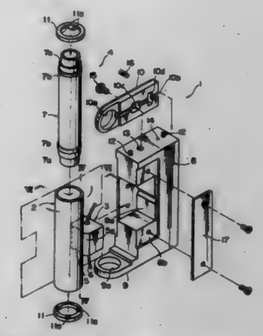
a second spring connected to said pinch arm, causing said pinch arm to press against said capstan shaft so that the movement of said function plate is directly transmitted to said pinch arm through said pinch lever.

5,295,618

TAPE GUIDE DEVICE HAVING VIBRATOR WITH FREE END PORTION

Etsuro Saito, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 687,512, Apr. 19, 1991, abandoned.
This application Feb. 18, 1993, Ser. No. 20,026
Claims priority, application Japan, Apr. 19, 1990, 2-103627
Int. Cl.[5] B65H *27/00*
U.S. Cl. 226—196 **11 Claims**



1. A tape guide device for guiding a moving tape in a predetermined state with reduction of the friction between the tape and a guide member by generating standing-wave vibration in the guide member, the tape guide device comprising:

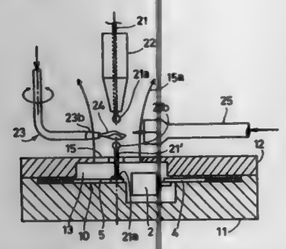
guide means shaped into a pipe and serving to guide the moving tape in a predetermined state while retaining the tape in sliding contact with the peripheral surface thereof;
freestanding vibratory means having first and second spaced-apart end portions, the first end portion being unrestrained and the second end portion being shaped with a concave curve corresponding to a peripheral surface of said guide means and attached fixedly to the center of a vibrational loop (P) on the peripheral surface of said guide means, so as to induce standing-wave vibration defining a plurality of nodes in said guide means; and
support means for holding said guide means at said nodes and leaving said guide means elsewhere free to vibrate.

5,295,619

METHOD AND APPARATUS FOR PERFORMING WIRE BONDING BY USING SOLDER WIRE

Hiroyuki Takahashi; Shinichi Fujino; Kazuhiro Sakamoto, all of Kyoto, and Tomoyasu Hirano, Yanagawa, all of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed May 20, 1993, Ser. No. 63,667
Claims priority, application Japan, May 22, 1992, 4-130746; Feb. 16, 1993, 5-26800
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—180.5 **17 Claims**



1. A wire bonding method for electrically connecting between a first and a second bonding portions of a workpiece by a solder wire, the method comprising the steps of:
forming an upward stream of an oxygen-free gas from below a vertically movable capillary tool, the capillary tool being capable of continuously supplying a material solder wire which has a lower ball end projecting from the capillary tool;
lowering and then raising the capillary tool for bonding the lower ball end of the material solder wire to the first bonding portion of the workpiece in the oxygen-free gas stream;
bringing a thermal melting means to a first limit position located closest to the material solder wire for thermally cutting the material solder wire in the oxygen-free gas stream to provide a solder wire segment held bonded to the first bonding portion of the workpiece and having an upper ball end, the thermal melting means being movable also to a second limit position located farthest from the material solder wire;
forming a new lower ball end of the material solder wire in the oxygen-free gas stream while the thermal melting means is positioned between the first and second limit positions; and
bonding the upper ball end of the solder wire segment to the second bonding portion of the workpiece.

5,295,620

EXTENDABLE ARM FOR POWER AND IMPACT TOOLS

B. Robert Cousineau, P.O. Box 8341 Station T, Ottawa Ontario, Canada K1G 3H8 , and Mark W. Forest, 3196 Olympic Way, Gloucester, Ontario, Canada K1P 1Z1

Filed Oct. 13, 1992, Ser. No. 960,492
Int. Cl.[5] B23B *45/14*
U.S. Cl. 227—156 **12 Claims**



1. An extendable arm for use by a worker for bringing a tool proximate a ceiling while standing on a floor below said ceiling, said arm comprising:
a telescopic pole having a locking means to hold said pole at a predetermined length;
a tool cradle detachably connected to an upper end of said telescopic pole,
said tool cradle having locking means to hold said tool cradle in relative position to said telescopic pole;
securing means to hold a tool in position in said tool cradle; and
a foot actuated lever pivoted to a lower end of said telescopic pole, said lever having a leg portion pivoted to said lower end of said telescopic pole, a fulcrum portion bearing directly on the floor, and a pedal portion, said fulcrum portion being positioned between said leg and pedal portions,
whereby when said pedal portion is depressed, said telescopic pole and said tool cradle are raised to bring said tool proximate said ceiling.

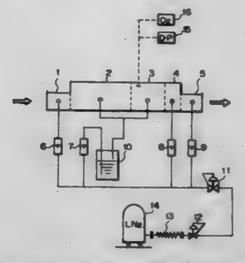
5,295,621

METHOD OF SOLDERING USING A SPECIAL ATMOSPHERIC GAS

Yoshiharu Tsujimoto, Sanda; Iku Takenaka, Otsu; Hiromitsu Onishi, Itami, all of Japan, and Edward K. Chang, Gillette, N.J., assignors to Osaka Sanso Kogyo Ltd., Osaka, Japan

Filed Dec. 10, 1992, Ser. No. 988,565
Claims priority, application Japan, Dec. 20, 1991, 3-338422
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—219 **3 Claims**

1. A method of soldering a packaged printed circuit board, which comprises performing reflow soldering with a rosin-based cream solder in a special atmosphere gas comprising an inert gas and containing no more than about 10,000 ppm of oxygen and 0.5–3.0% of moisture.

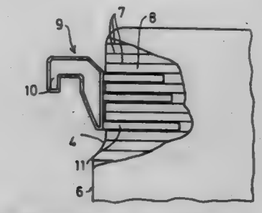


5,295,622

FOLDER OR THE LIKE

Kurt Lorber, Schurwaldstrasse 114, D-7307 Aichwald 2, Fed. Rep. of Germany

Filed Feb. 12, 1992, Ser. No. 834,476
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1991, 4104673; Oct. 29, 1991, 4135567
Int. Cl.[5] B65D *27/00*
U.S. Cl. 229—1.5 R **12 Claims**



1. Folder for hanging on rails, comprising:
a front cover and a back cover connected thereto, wherein the front cover and the back cover are punched from and formed from a blank, said blank including opposite lateral terminal edges, two spaced side sheets, and webs extending between said side sheets cover so as to form at least two gaps opening along each lateral terminal edge of at least one of the front cover and the back cover,
and hook elements are provided for holding at least one of:
the front cover and
the back cover on said rails,
said hook elements each having at least two pins for lateral insertion into at least two of said gaps formed along a respective one of the opposite lateral terminal edges; and
means for holding up another one of the front cover and the back cover with respect to the rails.

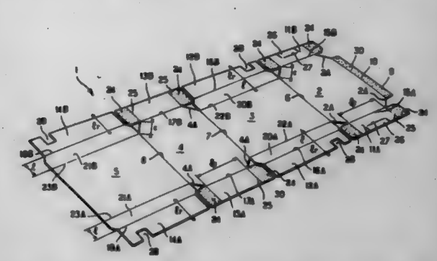
5,295,623

METHOD AND A BLANK FOR MAKING A BOX AROUND A LOAD, AND A BOX OBTAINED IN THIS WAY

Jean-Yves Bacques, Paris, and Guy Coalier, Nece, both of France, assignors to Otor, Paris, France

Filed Jan. 28, 1993, Ser. No. 10,174
Claims priority, application France, Feb. 20, 1992, 92 01915
Int. Cl.[5] B65D *5/06*
U.S. Cl. 229—109 **7 Claims**

1. A blank for making a polygonal section box made of sheet material, comprising a sequence of at least four panels connected to one another via fold lines and having lateral flaps connected respectively to said panels via fold lines perpendicular to the fold lines interconnecting said panels, at least two of said panels which constitute a spaced-apart pair have cut-off corners, each of said cut-off corners have at least one edge, and which respectively are the bottom and the top of said box, and intermediate panels are provided between the other at least two panels that constitute a spaced-apart pair and the lateral flaps thereof, which intermediate panels have fold lines with



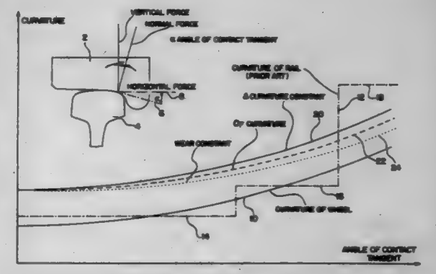
said panels which are parallel to the fold lines of said at least two panels having said flaps, said lateral flaps extending from said panels having cut-off corners are provided with lateral tongues situated respectively on either side of each of them and hinged about fold lines perpendicular to those connecting said lateral flaps to said at least two panels having cut-off corners, said tongues being adapted for fixing against said intermediate panels after said blank has been folded.

5,295,624

CONTACT SURFACES OF A TRACK PART AND RAILWAY WHEEL

Ruediger Ziethen, Geranienweg; Erich Nuding, Lindea, and Sebastian Benenowski, Butzbach, all of Fed. Rep. of Germany, assignors to BWG, Butzbacher Weichenbau GmbH, Butzbach, Fed. Rep. of Germany

Filed Feb. 18, 1992, Ser. No. 836,656
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 9109278
Int. Cl.[5] B60B *17/00*; E01B *5/00*
U.S. Cl. 238—125 **13 Claims**



1. A track part and a railway wheel combination comprising:
a railway wheel having a pre-wear contact surface with a continually changing curvature across a width thereof;
a track part having a pre-wear contact surface adapted for contact with the continually changing curvature of said railway wheel so as to form an angle of contact at contacting points of said contact surfaces, each said angle of contact being defined by an angle that forms between a normal force vector and a vertical force vector of a contact force that develops at the contacting point of said contact surface of said track part;
said contact surface of said track part having a width-wise

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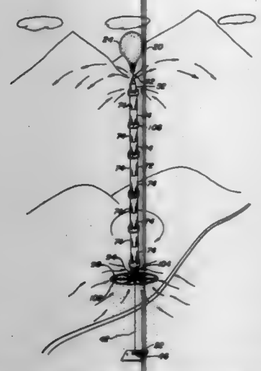
continually changing curvature, and said contact surfaces being dimensioned such that a constant curvature difference is maintained between said contacting surfaces as a function of the angles of contact along the width-wise continually changing curvature of the rail contact surface, and wherein said constant curvature difference is equal to a value other than zero.

5,295,625

MICROCLIMATE CONTROL APPARATUS

Daniel S. Redford, 5270 Elvira Rd., Woodland Hills, Calif. 91364

Filed Dec. 14, 1992, Ser. No. 990,293
Int. Cl.[5] A01G *15/00*
U.S. Cl. 239—14.1 9 Claims



1. A microclimate control apparatus utilizing the water vapor present in the earth's atmosphere as a neutral energy source for promoting ascending air movement inside the apparatus, to gather, transport and distribute condensed water, as a way to control the climate of a geographic area, the apparatus comprising:

a) a suspending means for holding the apparatus in the atmosphere.

b) a water vapor condensation means, for creating and maintaining conditions for condensation of water vapor present in the ascending air inside said apparatus,

c) a hollow, cylindrical convective lifting column, attached beneath said water vapor condensation means, promoting convective air movement inside said apparatus, while thermally isolating the ascending air therewithin from the outside ambient air, and

d) an altitude control means for controlling the position of the apparatus in the atmosphere.

5,295,626

SPRAY APPARATUS FOR AN AIRLESS SPRAY SYSTEM

Rick Mirabito, 2601 Alvord La., Redondo Beach, Calif. 90278

Filed May 5, 1993, Ser. No. 57,360
Int. Cl.[5] B05B *7/02, 1/14*
U.S. Cl. 239—526 12 Claims

1. In a spray apparatus including an airless spray system, a spray gun having an on and off control, and center spray means coupled to said spray gun for providing a spray, the improvement which comprises:

center valve means coupled to said center spray means for turning said center spray means on and off;

first extension means coupled to said spray gun for providing an extension from said spray gun;

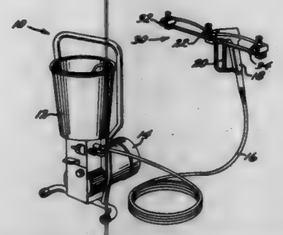
first spray means for providing a spray attached to said first extension means;

first means for directing pressurized liquid from said spray gun to said first spray means coupled to said first spray means;

first valve means for turning said first spray means on and off coupled to said first spray means;

first swivel means for swiveling said first spray means relative to said first extension means coupled to said first spray means;

first adjustment means for adjusting distance between said



first spray means and said spray gun coupled to said first extension means and said first spray means;

first rotation means coupled to said first extension means and to said spray gun for angularly positioning said first extension means relative to said spray gun; and

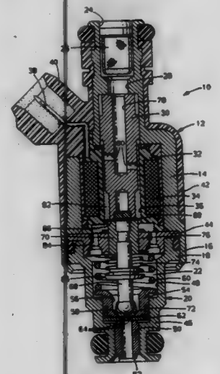
first retaining means for retaining said first extension means in a plurality of angular positions relative to said spray gun coupled to said first extension means and to said spray gun.

5,295,627

FUEL INJECTOR STROKE CALIBRATION THROUGH DISSOLVING SHIM

Brent J. Wahba, Honeoye Falls, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1993, Ser. No. 109,063
Int. Cl.[5] B05B *1/30;* F02M *51/06*
U.S. Cl. 239—585.4 3 Claims



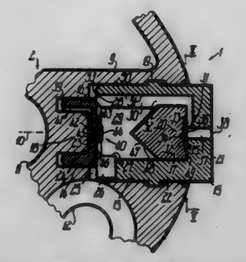
1. An electromagnetic fuel injector having a valve assembly moveable between open and closed positions with respect to a valve seat to establish fuel flow through said injector, a valve actuator comprising a solenoid assembly having a center pole piece with a working surface, and a shim disposed between said working surface and said valve assembly, and dissolvable by introduction of a solvent into said injector to define a working air gap between said valve assembly and said working surface.

5,295,628

DISCHARGE NOZZLE FOR MEDIA

Fritz Zuckschwerdt, Radolfzell, Fed. Rep. of Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. KG, Radolfzell, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 828,775
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 4102632
Int. Cl.[5] B05B *1/34, 7/00*
U.S. Cl. 239—590.5 24 Claims



1. A discharge nozzle for discharging at least one medium, comprising:

at least one nozzle duct having duct sections;

a nozzle outlet, and

at least one distributing section for finely distributing a first medium of said at least one medium to an expanded volume;

wherein said at least one distributing section comprises a distributing chamber for receiving the finely distributed first medium;

a supply opening issuing into said distributing chamber for distributing the first medium from said supply opening into said distributing chamber;

flow generating means for generating the finely distributed first medium out of said distributing chamber and for distributing the first medium to a higher degree of atomization inside said distributing chamber, and flow varying means including at least one guiding face in said distributing chamber for varying the flow direction of the medium by a deflection angle between 45° and 360°.

5,295,629

VERTICAL TYPE GRAIN-MILLING MACHINE

Toshihiko Satake; Satoru Satake, Tokyo; Nobuhiro Matsumoto, and Hiroyuki Fukumitsu, both of Hiroshima, all of Japan, assignors to Satake Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,497
Claims priority, application Japan, Jun. 16, 1992, 4-182985
Int. Cl.[5] B02C *23/38*
U.S. Cl. 241—57 5 Claims

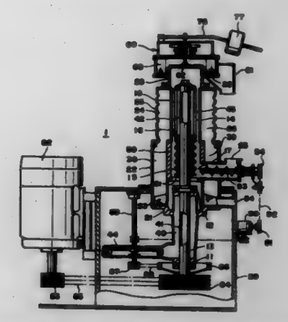
1. A vertical type grain-milling machine comprising:

a perforated bran removing cylinder arranged vertically with respect to a machine frame;

a main shaft which is rotatably provided within said perforated bran removing cylinder;

a milling roll and a screw roll which are in abutment with each other and which are mounted on said main shaft, said milling roll being associated with a grain discharging section and said screw roll being associated with a grain supplying section; and

an air in-take frame which has a large number of through-holes for causing in-flowing air to have a downward component of orientation and which surrounds said perforated bran removing cylinder with a predetermined space



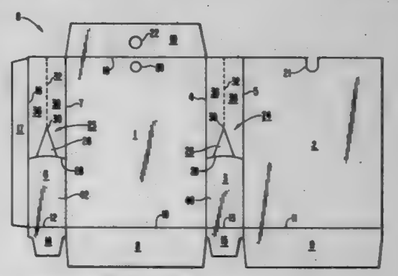
being provided between said air in-take frame and said perforated bran removing cylinder.

5,295,630

GABLE-TOP TYPE CARTON AND BLANK FOR FORMING THE SAME

Marlene A. Pariah, Green Bay, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Jan. 29, 1992, Ser. No. 827,398
Int. Cl.[5] B65D *5/08*
U.S. Cl. 229—138 23 Claims



1. A carton comprising:

a front panel;

a back panel;

a bottom panel; and

first and second sidewalls extending between said front panel and said back panel, at least one of said sidewalls including a gusset forming means for permitting said front and back panels to converge toward one another from a substantially transverse line of inception formed along a length of said one of said sidewalls to an edge of said front and back panels opposite said bottom panel;

said gusset forming means including at least one cut-out section in said one of said sidewalls and spaced from said bottom panel and a line of weakness extending from said cut-out section to an upper limit of said one of said sidewalls wherein a base of said cut-out section is substantially positioned on said line of inception.

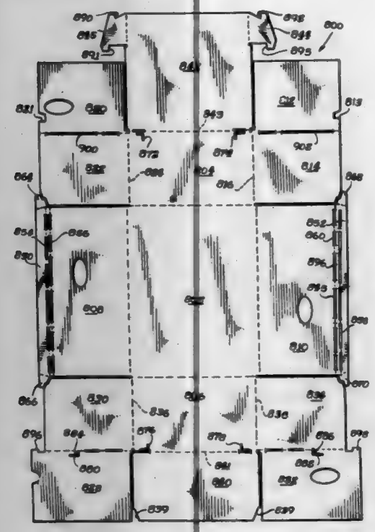
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,631

CONTAINER MADE FROM ONE-PIECE BLANK

Jack A. McClure, Garden City, Kans., assignor to Inland Container Corporation, Indianapolis, Ind.

Division of Ser. No. 615,703, Nov. 20, 1990, Pat. No. 5,125,567.
This application Dec. 5, 1991, Ser. No. 803,160
Int. Cl.[5] B65D 5/20
U.S. Cl. 229—150 6 Claims



1. Carton apparatus having triple layer sidewalls formed from a one-piece blank, comprising:

a floor panel having two pairs of opposed sides;

a pair of opposed endwall panels hingedly connected to one pair of opposed sides of said floor panel, the endwall panels each having opposed sides;

lid panels in serial succession with said end wall panels and said floor panel and hingedly connected to respective endwall panels along hinge lines so as to have free end portions with free edges remote from the respective endwall panels;

a pair of outer sidewall panels hingedly connected to the remaining pair of opposed sides of said floor panel;

reinforcing beams hingedly connected to said outer sidewall panels, extending between opposed sides of each said endwall panel, to reinforce the upper edges thereof; and

a sidewall subassembly coupled to each side of said endwall panels, each sidewall subassembly comprising hingedly connected inner and intermediate side wall panels, with one of said inner and said intermediate side wall panels of each subassembly hingedly connected to a respective end wall panel side;

a pair of locking tabs depending from the overlying lid panel free end portion and having lower edges extending at an acute angle from the overlying lid panel toward the overlying panel free edge; and

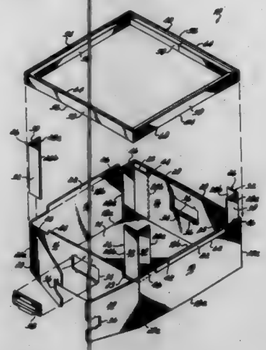
locking tab engaging means on at least one of said inner, intermediate and outer sidewall panels, for engaging said locking tabs to hold said lid panels in a closed position enclosing the carton interior, said locking tab engaging means comprising slots formed in the reinforcing beams for receiving the locking tabs and for guiding the locking tabs between the outer and intermediate sidewalls.

5,295,632

TOTE BOX WITH SELF LOCKING TOP RAIL

Robert M. Zink, Grand Haven; Judson A. Bradford, Holland, and Donald J. Bazany, Grand Haven, all of Mich., assignors to Bradford Company, Holland, Mich.

Filed Dec. 18, 1992, Ser. No. 992,562
Int. Cl.[5] B65D 5/44
U.S. Cl. 229—198 34 Claims



1. A tote box with self-locking top rail comprising:

a box formed from a uniform thickness foldable box blank and having a bottom, two upstanding end walls, two upstanding side walls, and four end flaps which are extensions of said side walls, said side walls and end walls having upper edges which form a top edge of said box, said side walls having tabs on said upper edges thereof which are downwardly folded on said side walls; and

a unitary top rail extending around the top edge of said box, said top rail having a downwardly open channel formed between a pair of channel side walls, said channel being fitted over said upper edge of each said side wall, each said end wall, and each of said end flaps, said open channel having a width of approximately twice the thickness of said box blank so as to fit over said end walls and said end flaps and said side walls and said downwardly folded tabs, said open channel having at least one inwardly extending hook on a bottom edge of at least one of said channel side walls, each said hook engaging one of said tabs and locking said top rail onto said top edge of said erected end and side walls.

5,295,633

DOCUMENT SHREDDING MACHINE WITH STRIPPER AND CUTTING MECHANISM THEREFORE

C. David Kimbro, Schaumburg, and David E. May, Geneva, both of Ill., assignors to Fellowes Manufacturing Company, Itasca, Ill.

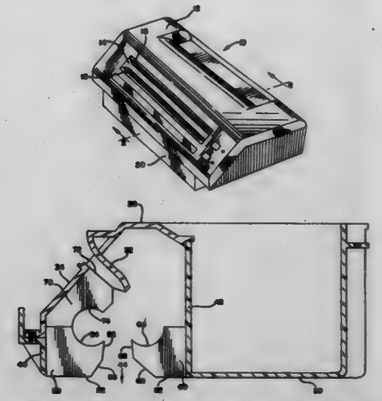
Filed Jan. 13, 1992, Ser. No. 820,209
Int. Cl.[5] B02C 18/16
U.S. Cl. 241—166 13 Claims

1. A shredding machine comprising:

a. a bottom base having a front wall extending upward and rear wall extending upward parallel to and spaced from the front wall, the space between the front wall and the rear wall defining a discharge opening;

b. a cutting mechanism comprising two parallel cutting cylinders, each cylinder having a plurality of spaced apart cutting disk with the cutting disks of the first cutting cylinder interleaved with the cutting disks of the second cutting cylinder; and,

c. a plurality of spaced apart lower strippers integrally formed on and extending from the front wall, a portion of the top of the strippers being arcuately shaped at angle greater than about 120 degrees to fit in and partially surround the rear and lower portion of the space between the cutting disks on the first cutting cylinder, the strippers further having a width substantially the same as the width



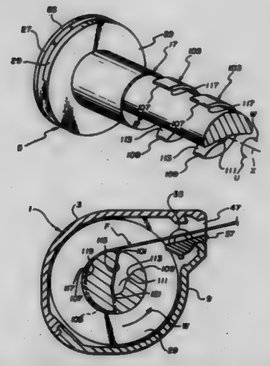
of the space between adjacent cutting disks on the first cutting cylinder with a lower portion of the strippers comprising a base that extends toward the discharge opening and lies in the same plane as the bottom base to further support the shredding machine.

5,295,634

FILM CASSETTE WITH SPOOL CORE HAVING FASTENING HOOK

Dennis R. Zander, Penfield, and Douglas M. Cesazar, Williamson, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1991, Ser. No. 793,980
Int. Cl.[5] B65H 75/18
U.S. Cl. 242—71.1 3 Claims



1. A film cassette comprising interior means, including a spool core about which a filmstrip is coiled, for thrusting a leading end portion of said filmstrip from inside to outside said cassette responsive to rotation of said spool core in an unwinding direction and permitting the filmstrip to be wound onto the spool core when the spool core is rotated in a winding direction, in characterized in that:

said filmstrip has a trailing end portion with a hole in it; and

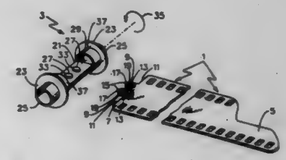
said spool core includes a double-hook piece having first hook means projecting through the hole in the unwinding direction to slightly overlie said trailing end portion to engage the trailing end portion for pushing the filmstrip off the spool core to thrust said leading end portion outside said cassette when the spool core is rotated in the unwinding direction, but which will exit the hole as the trailing end portion begins to separate from the spool core when the spool core is rotated in the unwinding direction, and second hook means, relatively longer than first hook means, projecting through the hole int he winding direction to substantially overlie the trailing end portion to engage the trailing end portion for preventing the trailing end portion from completely separating from the spool core when the first hook means is removed from the hole, but which can be backed out of the hole by rotating the spool core relative to the trailing end portion in the unwinding direction after the first hook means is removed from the hole.

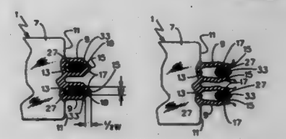
5,295,635

SPOOL TO FILM ATTACHMENT

John J. Niedospial, Jr., Princeton Junction, N.J.; Russell J. Butler, Dansville, and Christopher P. McCormick, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 28, 1992, Ser. No. 936,476
Int. Cl.[5] B65H 75/28
U.S. Cl. 242—74 6 Claims





1. A spool for a filmstrip comprising an engagement projection adapted to be received in an engagement film hole formed in a rear end of the filmstrip to attach the rear end to said spool, is characterized in that:

said projection has a pointed side oriented to face a rearmost edge of the filmstrip from within the film hole, when the projection is received in the film hole, to be able to tear at a predetermined point through a relatively narrow film section between the film hole and the rearmost film edge in response to pulling the rear end of the filmstrip away from the projection.

5,295,636

CASSETTE TAPE WITH SUBJECTIVELY DETERMINED STOP POSITION

Masaru Sugita, Tokyo, Japan, assignor to TDK Corporation, Tokyo, Japan

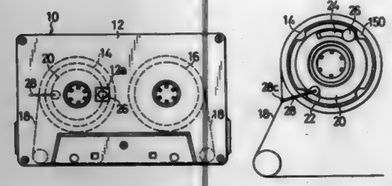
Filed Jul. 5, 1991, Ser. No. 725,977
Claims priority, application Japan, Jul. 7, 1990, 2-72496[U]; Nov. 9, 1990, 2-118055[U]; Nov. 30, 1990, 2-130780[U]
Int. Cl.[5] B65H 23/02; G11B 15/22
U.S. Cl. 242—197 10 Claims

1. A tape cassette for playing in a tape player that can determine a position along a length of tape comprising:

means for transporting tape for recording and reproducing

information, including a rotatable reef or storing the tape, and

means for creating a sufficient tension force on the tape to activate the tape player to stop movement of the tape at a position determined by an operator intermediate the beginning and end of a length of tape whereby the operator



can limit the playing of a tape to a predetermined length of tape play, including an interlocking plate member that can releasably rotate with the reel, means for engaging the interlocking plate member to rotate with the reel and a tape control member movably mounted on the interlocking plate member to engage the tape and define an arbitrary position when the means for engaging is activated.

5,295,637

CASSETTE LID-LOCKING ELEMENT WITH SHUTTER PORTION FOR CLOSING A LIGHT PASSAGE WINDOW

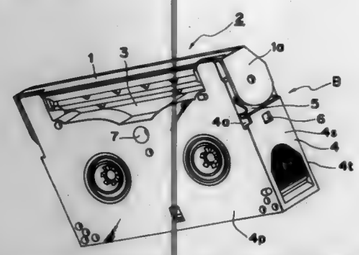
Hidekazu Takeda, Fujisawa; Nobuyuki Kaku, Naka; Yoshimi Maehara, Ootsu, and Mikihisa Inoue, Otokuni, all of Japan, assignors to Hitachi Maxwell, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of Japan

Filed Sep. 23, 1992, Ser. No. 948,654

Claims priority, application Japan, Sep. 24, 1991, 3-243119

Int. Cl.[5] G11B *23/04*

U.S. Cl. 242—199 **3 Claims**



1. A magnetic tape cassette, which comprises a tape cassette housing, a lid provided at a front face of said tape cassette housing pivotally supported by side walls of said tape cassette housing for selectively opening and closing an opening portion of said magnetic tape cassette to draw out a magnetic tape incorporated therein, and a lid-locking stopper member for retaining said lid in a closed state pivotally supported by at least one of said side walls of said magnetic tape cassette, whereby said opening portion is closed thereby;

said tape cassette housing having detecting windows for tape end detection in said side walls thereof, said lid-locking stopper member including a stopper portion for maintaining said lid in said closed state to close said opening portion, a releasing operating portion for releasing said lid from said closed state, and a detecting window open/close portion for protecting said tape end detecting windows from the environment when in said closed state and retaining said tape end detecting windows open upon release of said lid from said closed state.

5,295,638

REEL DRIVING APPARATUS FOR A VIDEOCASSETTE RECORDER

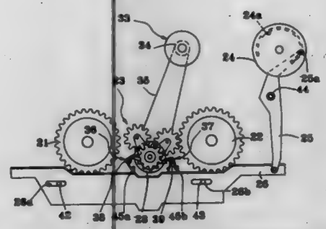
Hyun-Moo Lee, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 29, 1993, Ser. No. 38,016

Claims priority, application Rep. of Korea, Mar. 31, 1992, 92-5400

Int. Cl.[5] B65H *20/38*; G11B *15/44, 15/18*

U.S. Cl. 242—201 **3 Claims**



1. In a reel driving apparatus for a videocassette recorder comprising a base plate, a supply reel and a take-up reel rotatably mounted on the base plate, and an idler disposed between the supply reel and the take-up reel for transmitting selectively its driving force to either the supply reel or the take-up reel, the idler including a pulley driven by a driving pulley of a capstan motor via a belt, a driving gear coupled to a shaft of the driven pulley, a first and a second driven gears meshed with the driving gear and to be selectively engaged with the supply reel and the take-up reel, respectively, and an idler bracket for supporting the first and second gears, the improvement comprising:

a first and a second swing arms rotatably pivoted at respective first and a second pins of the base plate and associated with the idler bracket for selectively shifting the idler counterclockwise and clockwise to thereby cause the first driven gear to engage with the supply reel and the second driven gear to engage with the take-up reel, respectively;

means for biasing the second swing arm counterclockwise to cause the idler to be shifted clockwise;

a slide plate slidably mounted at guide pins of the base plate for actuating the first and the second swing arms; and

a cam gear for moving the slide plate in the forward and backward directions through an actuating lever, wherein the actuating lever is rotatably mounted at a pivot pin of the base plate at a middle portion thereof, one end of the lever being pivoted to one end of the slide plate and the other end being located in a cam groove of the cam gear.

5,295,639

MECHANISM FOR TRANSMITTING DRIVING FORCE TO RECORDING AND/OR REPRODUCING APPARATUS

Toshiya Kurokawa, Chiba, and Toshiyuki Yamazaki, Tokyo, both of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 506,082, Apr. 9, 1990, abandoned. This application Feb. 3, 1992, Ser. No. 829,577

Claims priority, application Japan, Apr. 28, 1989, 1-109542; Apr. 28, 1989, 1-109545

Int. Cl.[5] G11B *15/18*

U.S. Cl. 242—201 **25 Claims**

1. A system for supplying a driving force to a recording and/or reproducing apparatus which has a first reel table onto which a tape traveling in a first direction is wound, and a second reel table onto which the tape traveling in a second direction, opposite to the first direction, is wound, said system comprising;

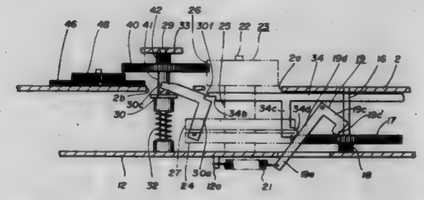
driving means for producing driving force;

a first gear train for selectively transmitting the driving force produced by the driving means to one of the first and second reel tables in a first operation mode so as to cause the selected first or second reel table to rotate at a first speed;

a second gear train for transmitting the driving force produced by the driving means to the first reel table in a second operation mode so as to cause the first reel table to rotate at a second speed higher than the first speed;

switching means for selecting one of said first and second operation modes to cause the selected first or second gear train to transmit the driving force to the corresponding reel table; and

tape feeding means for causing the tape to selectively travel in the first or second direction when the tape, which is drawn out of a cassette loaded in the recording and/or reproducing apparatus, is positioned in a tape loaded position;



wherein said driving means produces a rotational force which is selectively transmitted to one of the first and second gear trains;

wherein said first gear train includes a driving gear arranged between the first and second reel tables, a pendulum gear engaging the driving gear, and first and second idler gears which engage corresponding gear portions of the first and second reel tables, said pendulum gear being movable for engaging one of the first and second idler gears depending upon the rotation of the driving gear in said first operation mode, and wherein said second gear train includes the driving gear, an intermediate gear engaging the driving gear, and the first idler gear, said intermediate gear being axially movable along an axis about which it is rotatable for selectively engaging the first idler gear in the second operation mode.

5,295,640

SPINNING REEL WHICH PREVENTS INADVERTENT BAIL CLOSING DURING CASTING

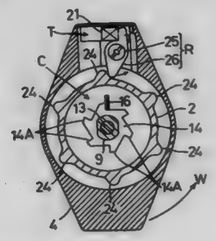
Yuzo Kawabe, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Oct. 31, 1991, Ser. No. 786,069

Claims priority, application Japan, Nov. 7, 1990, 2-116792[U]

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—248 **5 Claims**



1. A spinning reel comprising:

a reel body;

a rotor for winding a fishing line on a spool mounted on a spool shaft;

a bail arm pivotably supported on said rotor, said bail arm having a take-up position to take-up the fishing line and a release position to release fishing line, said bail arm being urged by a toggle mechanism provided on said rotor either toward said take-up position or toward said release position;

a bail mounted on said bail arm;

a control piece provided on said rotor, said control piece being pivotable between a first position and a second position, said control piece contacting said toggle mechanism to switch said bail arm when in said release position to said take-up position when said control piece pivots from said first position to said second position;

a plurality of operating portions provided on said reel body, said plurality of operating portions contacting said control piece to switch said control piece, when in said first position into said second position in association with a rotation of said rotor in a line winding direction;

an anti-reversing mechanism disposed between said reel body and said rotor, said anti-reversing mechanism including a ratchet wheel mounted on said spool shaft, said ratchet wheel having a plurality of engaging teeth, said ratchet wheel being non-rotatable relative to said rotor, and a ratchet pawl supported on said reel body, said ratchet pawl being pivotable to engage with one of said engaging teeth of said ratchet wheel, said anti-reversing mechanism being arranged such that said ratchet pawl prevents said ratchet wheel from rotating in a line releasing direction, and thereby prevents said rotor from rotating in said line winding releasing direction, when said ratchet pawl is engaged with said one of said engaging teeth of said ratchet wheel;

wherein the portion of said teeth of said ratchet wheel relative to rotational position of said rotor is determined so that said ratchet pawl substantially simultaneously contacts a tooth of said ratchet wheel when said control piece is contacted by one of said operating portions.

5,295,641

PROPELLER BLADE POSITION CONTROLLER

Dick Kaptein, Alphen A/D Rijn, Netherlands, assignor to Fokker Aircraft B.V., Schiphol, Netherlands

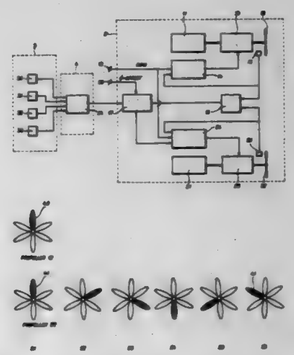
Division of Ser. No. 600,445, Oct. 19, 1990, Pat. No. 5,150,855. This application Apr. 10, 1992, Ser. No. 866,563

Claims priority, application United Kingdom, Oct. 20, 1989, 8923643

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] B64D *31/12*

U.S. Cl. 244—1 N **13 Claims**



1. A system for reducing vibrations in the cabin of an aircraft

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driven by a plurality of propellers each propeller having n blades n being a plural integer said system comprising:

a) synchrophase means to adjust the rotation of said propellers to maintain a predetermined relative phase angle;

b) vibration-measurement means to measure the vibration level at one or more positions within the cabin and generate a vibration level signal corresponding thereto;

c) a control unit responsive to said vibration level signal to generate an error signal to control said synchrophase means said control unit comprising:

means to shift said propellers relatively from said predetermined relative phase angle through m.(2"/n) radians where "m" is an integer to a new relative phase angle where said propellers are substantially in phase and have new relative blade positions; and

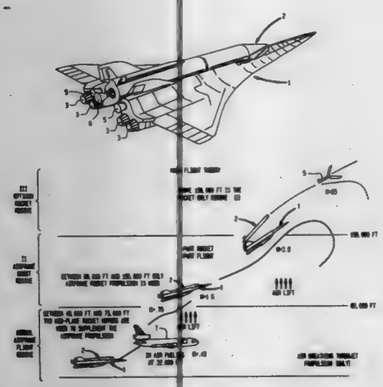
means to select between said predetermined and said new relative phase angles for an improved cabin vibration level.

5,295,642

HIGH ALTITUDE LAUNCH PLATFORM PAYLOAD LAUNCHING APPARATUS AND METHOD

William R. Palmer, Melbourne, Fla., assignor to Spread Spectrum, Inc., Melbourne, Fla.

Filed Nov. 8, 1991, Ser. No. 789,672
Int. Cl.[5] B64G 1/14
U.S. Cl. 244—2 **37 Claims**



1. A method of launching a payload into earth orbit with a payload launch system having a payload launching rocket with an engine carried by a high altitude launch platform which uses one or more engines having fuel tanks associated therewith, said method comprising the steps of:

providing a first amount of fuel to the fuel tanks of the engines for the launch platform while the launch platform is on the ground, wherein said first amount is substantially less than a capacity of the fuel tanks;

flying said launch platform to a first altitude; and

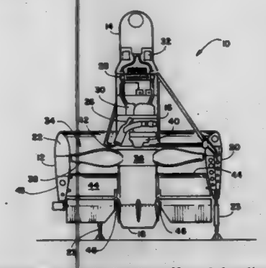
providing a second amount of fuel to the fuel tanks while said high altitude launch platform is at said first altitude, wherein addition of said second amount of fuel is sufficient to allow the payload to be launched into orbit.

5,295,643

UNMANNED VERTICAL TAKE-OFF AND LANDING, HORIZONTAL CRUISE, AIR VEHICLE

Marvin D. Ebbert, San Diego; Russell G. Gustin, Jamul; Edward G. Horbett, San Diego; Jack J. Edwards, El Cajon, and Clifton L. Adcock, San Diego, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Dec. 28, 1992, Ser. No. 997,007
Int. Cl.[5] B64C 27/22, 29/02
U.S. Cl. 244—7 B **21 Claims**



1. An unmanned vertical take-off and landing, horizontal high-speed cruise, air vehicle which comprises:

a forward centerbody;

an engine housed within said forward centerbody;

a single rotor assembly mounted on said forward centerbody and connected to said engine for rotation thereby;

a plurality of spaced propellers extending outwardly from the rotor assembly;

an aft centerbody having a forward end secured to an aft end of said forward centerbody, said forward and aft centerbodies being collinear and lying substantially along a vehicle centerline;

a plurality of stators extending outwardly of said aft centerbody;

a single toroidal duct assembly surrounding said rotor assembly and stators and secured to said stators;

a plurality of control vanes extending between said duct and said aft centerbody aft of said stators; and

flight control means for controlling said engine and control vanes to selectively cause the vehicle to move upwardly and downwardly with said rotor in a generally horizontal plane and to move horizontally with said rotor in a pane about 50 to 80 degrees to the horizontal.

5,295,644

BRACKET FOR MOUNTING AN ELECTRICAL OUTLET BOX

James A. Ferguson, Jr., 13802 N. 57th St., Scottsdale, Ariz. 85254

Filed Apr. 2, 1992, Ser. No. 862,297
Int. Cl.[5] G12B 9/00
U.S. Cl. 248—27.1 **4 Claims**

1. An electrical box support for securing with fasteners an electrical box in position intermediate the studs in a wall, said electrical box including

a back,

a plurality of sides attached to and outwardly extending from said back, and at least first and second fastener receiving apertures formed through one of said sides,

said electrical box support comprising

(a) a strut including

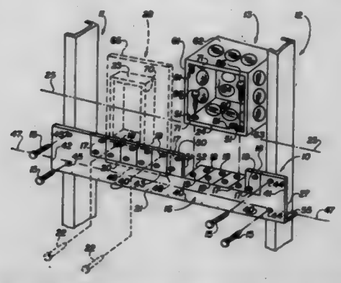
(i) an elongate generally planar panel member;

(ii) a plurality of panel-shaped fingers connected to and generally perpendicular to said elongate planar member; and,

(iii) at least one fastener receiving hole in each of said fingers; and,

(b) means for securing said strut between adjacent studs;

said fastener receiving holes in said fingers being positioned on said fingers such that when said electrical box is positioned on at least one of said fingers, one of said fasteners can be inserted



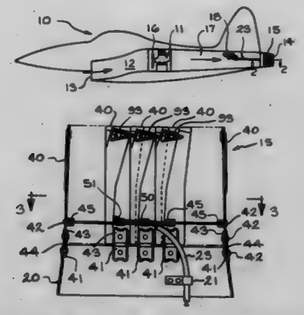
through one of said fastener receiving apertures in said electrical box and said fastener receiving hole in said one of said fingers to secure said electrical box to said one of said fingers.

5,295,645

AIRCRAFT VARIABLE GEOMETRY NOZZLE

Walter J. Rozmus, 6113 Zion Cir., Port Orange, Fla. 32019

Continuation-in-part of Ser. No. 867,471, Apr. 13, 1992, Pat. No. 5,199,643. This application Feb. 16, 1993, Ser. No. 18,365
Int. Cl.[5] B64D 33/04
U.S. Cl. 244—53 R **20 Claims**



1. In a jet propelled aircraft receiving its forward propelling thrust from the exit of high velocity gases from a rearwardly directed tail pipe, said tail pipe including a variable area exhaust nozzle affixed to the exit end thereof, said nozzle having a multiplicity of axially extending overlapping blades circumferentially spaced about the exit end of said tail pipe, each of said blades hingedly connected to said tail pipe, the improvement comprising:

a. eyelet means attached to the inside surface of selected nozzle blades,

b. actuation rod means circumscribing the inside periphery of said nozzle blades and passing through said eyelets;

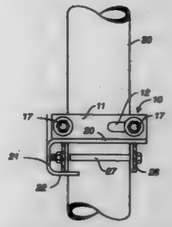
c. means for securing one end of said actuation rod means with the oppose free end thereof connected to motive means for applying a push or pull force to said actuation rod means whereby the diameter of said circumscribing actuation rod passing through said eyelets is caused to increase or decrease thereby causing said nozzle blades to rotate inwardly towards the nozzle centerline or outwardly from said nozzle center line thereby increasing or decreasing the exit end of said tail pipe accordingly.

5,295,646

LONGITUDINAL U-CLIP

Steven A. Roth, 2891 Danville Blvd., Alamo, Calif. 94507

Filed Apr. 2, 1993, Ser. No. 42,221
Int. Cl.[5] E21F 17/02
U.S. Cl. 248—58 **3 Claims**



1. An apparatus to prevent relative axial motion between a support braced to a structure against motion relative to said structure, and an elongated load having an elongated axial direction and a transverse direction comprising:

a brace including first means to releasably connect said brace against motion relative to said elongated load, said brace further including second means interlocking with said support to prevent relative motion between said support and said brace,

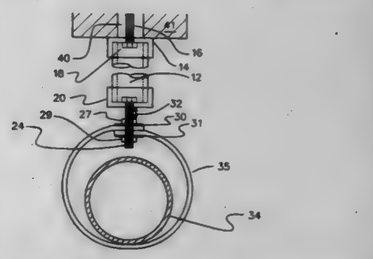
wherein said first means includes a first flange, said second means includes a second flange integral with said first flange, the plane of said first flange extending perpendicular to the plane of said second flange.

5,295,647

PIPE SUPPORT AND HANGER SYSTEM AND METHOD OF MAKING

Warren L. Weidler, Rte. 1, Box 107A, Florence, Tex. 76527

Filed Sep. 8, 1992, Ser. No. 941,795
Int. Cl.[5] E21F 17/02
U.S. Cl. 248—62 **16 Claims**



1. A pipe support and hanger system for use in corrosive environments comprising:

a cylindrical support member comprising a heavy-walled plastic pipe;

a first cap member, said cap member comprising a cylinder having one closed end, the inside diameter of said cylinder being sized to snugly fit over a first end of said plastic pipe and adhesively joined thereto;

first attachment means cooperating with said first cap member to affix said cap member to an overhead support;

a second cap member, said cap member comprising a cylinder having one closed end, the inside diameter of said cylinder being sized to fit over the other end of said plastic pipe and adhesively joined thereto;

a hanger member arranged to cradle and support a pipe or

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duct at a fixed elevation relative to the lower end of said plastic pipe; and

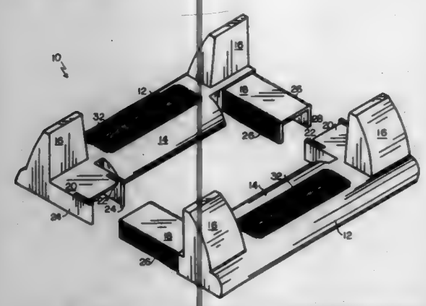
second attachment means arranged to fasten said second cap member to said hanger member.

5,295,648

ADJUSTABLE COMPUTER SYSTEM STAND

Edward L. Hames, Peterborough, N.H., assignor to Curtis Manufacturing Company, Inc., Jaffrey, N.H.

Filed Sep. 22, 1992, Ser. No. 949,398
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—149 **14 Claims**



1. An adjustable computer system stand adaptable to support in a generally vertical direction a computer system, which stand comprises:

a) a first and second section, each section having

i) an elongated base having one and the other end;

ii) spaced-apart, generally vertically extending supports at one and the other end of the base to provide supports for a computer system to be supported within the stand;

iii) spaced-apart generally inwardly extending legs, each leg having sides thereon at the one and the other end of the base;

iv) one leg in each pair of first and second sections having corrugation means; and

v) one leg in each pair of first and second sections having clip means to permit the clip means to engage in an interlocking relationship with the corrugation means of an opposing leg to provide for the interlocking together of the first and second sections to form a computer system stand of desired width to receive and support a computer system.

5,295,649

TELEPHONE SUPPORT FOR A ONE-PIECE TELEPHONE

Robert Lee, P.O. Box 54, Cazenovia, N.Y. 13035

Filed Jul. 7, 1992, Ser. No. 909,757
Int. Cl.[5] H04M *1/06*
U.S. Cl. 248—205.2 **10 Claims**

1. A braced telephone support for supporting, from a bedrail, a one-piece telephone comprising an angular extension, said telephone support comprising:

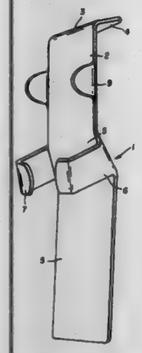
a planar section;

a lip extending along a first direction from a top edge of the planer section, said lip being substantially perpendicular to said planar section, wherein said planar section extends along a second direction away from and substantially perpendicular to said lip;

an angular section extending section along a direction between said first and second directions;

a pair of retaining members extending from opposite sides of said angular section, said pair of retaining members having inwardly bent ends, said pair of retaining members and said angular section defining an area for receiving and supporting said angular extension of said one-piece telephone;

a pair of positioning members extending from opposite sides



of said planer section along a third direction which is opposite said first direction; and

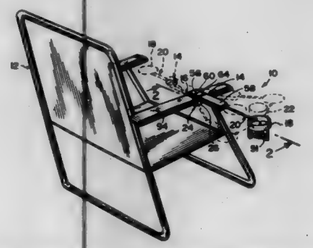
a longitudinal extension extending from said angular extension.

5,295,650

ADJUSTABLE BEVERAGE HOLDER FOR A FOLDING LOUNGE CHAIR

Beverly F. Brandt, 2152 Ili Ili Rd. #202, Kihei, Maui, HI. 96753

Filed Jan. 11, 1993, Ser. No. 3,006
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 **11 Claims**



1. An adjustable beverage holder for a folding lounge chair which comprises:

a) an arm

b) means for removably attaching a first end of said arm to said folding lounge chair, said removably attaching means is a clamp, said clamp includes a stationary jaw connected to said arm, a movable jaw having a portion that slides within said stationary jaw, and means for locking said portion of said movable jaw to said stationary jaw, said locking means includes said stationary jaw having a longitudinal slot on one side thereof, and a set screw having a threaded shaft and enlarged head, in which said threaded shaft fits through said longitudinal slot and threads into said portion of said movable jaw, and is tightened so that said enlarged head will bear against said one side of said stationary jaw to lock said movable jaw thereto;

c) a beverage receptacle; and

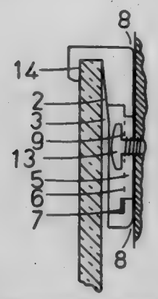
d) means for coupling in an adjustable manner, said beverage receptacle to a second end of said arm opposite from said removable attaching means, so that a beverage container placed within said beverage receptacle will be maintained in a steady upright position with respect to said folding lounge chair to prevent spillage from said beverage container, said adjustable coupling means includes said arm having a longitudinal aperture extending within said second end, an elongate shaft which adjustably fits into said longitudinal aperture and extends outwardly therefrom, means for retaining said elongate shaft within said longitudinal aperture, and means for pivotally connecting said beverage receptacle to a distal free end of said elongate shaft, so that said beverage receptacle can be positioned in a relative vertical position with respect to said folding lounge chair.

5,295,651

KLEAR KLIP

Gary E. Baker, Jr., 4517 Terry La., Wilmington, N.C. 28405, assignor to Gary E. Baker, Jr., Wilmington, N.C.

Filed Sep. 21, 1992, Ser. No. 947,848
Int. Cl.[5] A47G *1/00*
U.S. Cl. 248—488 **2 Claims**



1. A plastic mirror mounting clip comprising, a back plate having an integral flange on one edge extending forwardly from the front side of the back plate and an integral lip on the flange spaced forwardly from the forward side of the back plate, a mounting screw having a pan head, phillips head and a threaded shank, the back plate having an elongated, flat, recessed screw slot extending perpendicular to the flange for receiving the shank and the head of the mounting screw, the elongated, flat, recessed screw slot having a raised lip to serve as a screw depth gauge for the head of the mounting screw, the back plate having a solid ramp slanting from the back plate forward intersecting the integral flange.

5,295,652

ISOLATION GROMMET

Thomas W. Byrne, 439 Harrison St., Unit C, Corona, Calif. 91719

Filed Jun. 19, 1992, Ser. No. 901,155
Int. Cl.[5] F16L *5/00*
U.S. Cl. 248—635 **1 Claim**

1. A grommet assembly conformed for suspending articles from a suspension frame, comprising:

a first grommet piece of a generally annular form, characterized by an annular base having a first generally cylindrical boss extending from one side thereof and terminating at a first free end;

a second grommet piece of a generally annular form characterized by an annular base having a second generally cylindrical boss extending from one side thereof and terminating at a second free end, said second free end including a peripheral bead formed around the exterior thereof;

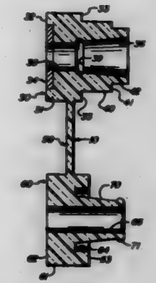
said first boss including a central cavity of a tapered configuration having a larger cavity dimension at said first free end and an interior radial recess conformed to engage said peripheral bead;

said second boss including a generally tapered exterior surface conformed for mating receipt in said cavity upon the engagement of said bead in said recess;

a first bore formed in said first grommet piece communicating coaxially with said central cavity;

a second bore formed to extend axially through said second grommet piece, said second bore having an interior radial dimension equal to said first bore;

a strap extending between said first and second grommet pieces;



said first and second grommet pieces and said strap being formed of a resilient polymeric material structure;

an annular metallic washer imbedded in said first grommet piece in coaxial alignment with said first bore and positioned distal of said first boss;

said first boss further including a reduced section extension at the exterior of said first free end; and

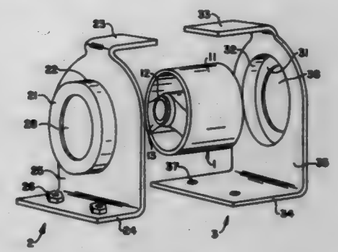
said second grommet piece includes an annular pocket adjacent the base of said second boss conformed to receive said extension.

5,295,653

VIBRATION INSULATOR HAVING BRACKET

Takeshi Miyazaki; Tetsuya Takamori; Yutaka Ogasawara; Minoru Yamashita, and Takaharu Shibuya, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 2, 1992, Ser. No. 955,440
Claims priority, application Japan, Oct. 11, 1991, 3-292505; Oct. 25, 1991, 3-306813
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—675 **8 Claims**



1. A vibration insulator comprising:

a vibration insulator section including an outer cylinder, a rubber member affixed to an inner peripheral surface of said outer cylinder, and an inner cylinder supported by said rubber member; and

a bracket for supporting said vibration insulator section, said bracket including:

bracket members supporting axial end portions of said vibration insulator section,

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plate-like base sections axially opposed to each other, cylindrical sections extending axially outward from said base sections, end portions of said outer cylinder being forced into said cylindrical sections,

abutting sections extending radially inward from end edges of said cylindrical sections and abutting end surfaces of said outer cylinder, and

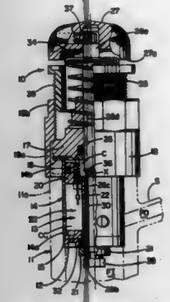
joint sections joining said base sections to each other.

5,293,654

METERING VALVE

Daniel J. Laube, Oak Park, Ill., assignor to The Chicago Faucet Company, Des Plaines, Ill.

Filed Mar. 1, 1993, Ser. No. 24,417
Int. Cl.[5] F16K *21/04, 31/48*
U.S. Cl. 251—35 **11 Claims**



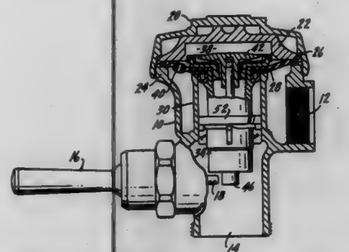
1. A metering valve for controlling fluid flow between a fluid inlet and fluid outlet, comprising a piston assembly for mounting between the fluid inlet and outlet and for relative movement within a tubular unit having an interior surface first section bore providing sealing engagement with said piston assembly and a second section bore large enough to prevent sealing engagement with said piston assembly; said piston assembly operative in a first open mode, a second open mode and a close mode and being biased to assume a close mode in which said piston assembly is disposed in non-sealing relation with the tubular unit interior surface second section; and an elongate valve actuating member having an exposed one end portion extending from a first end of the tubular unit, a second end portion extending from a second end of the tubular unit and an enlarged section disposed intermediate said end portions; said member second end portion including a first valve component actuated to an open position when a predetermined first external force is applied to said member one end portion, said piston assembly thereby assuming the first open mode in which fluid from said inlet through said first valve component fills a first cavity adjacent said piston assembly toward said tubular unit first end; said piston assembly including a second valve component actuated to an open position upon engagement by said enlarged section when a predetermined second external force is applied to said member one end portion, said piston assembly thereby moving within said tubular unit and assuming the second open mode in which said first cavity fluid volume is increased and said piston assembly is disposed in sealing relation with the tubular unit interior surface first section and direct interconnection between the fluid inlet and outlet is effected; upon the predetermined first and second external forces being released, said piston assembly automatically returning to the close mode upon successively moving through first and second segments of travel relative to said tubular unit; said piston assembly being in sliding sealing engagement with the tubular unit interior surface first section when moving through said first segment of travel whereby movement of said piston assembly is retarded as the fluid in said first cavity is slowly dissipated through a metering port in said piston assembly toward a side of said piston assembly opposite said first cavity, thereby allowing a predetermined volume of fluid to flow through the metering valve, said piston assembly being in a non-sealing relation with the tubular unit interior surface second section when said piston assembly move through the second segment of travel whereby said piston assembly relative motion is substantially instantaneous to the close mode as the fluid in said first cavity is quickly dissipated toward said opposite side between said piston assembly and said tubular unit interior surface second section, thereby halting further fluid flow through the metering valve.

5,295,655

FLUSH VALVE FLOW CONTROL RING

John R. Wilson, Naperville, and Peter Golen, Chicago, both of Ill., assignors to Sloan Valve Company, Franklin Park, Ill.

Filed Apr. 27, 1993, Ser. No. 52,743
Int. Cl.[5] F16K *31/385, 31/145*
U.S. Cl. 251—40 **23 Claims**



1. A diaphragm flow control assembly for a toilet device flush valve including a diaphragm reciprocal between a water flow position and a closed position, a piston attached to the diaphragm, a flow control ring carried by said piston, said flow control ring having flow control passages therein through which all water passes when said diaphragm and piston are in the water flow position, said flow control passages having a direction which forms an acute angle with the axis of said piston and being formed to dissipate power of the water flowing through said flow control assembly whereby said flow control assembly provides a relatively constant flow rate which is independent of water pressure applied thereto.

5,295,656

EXPANSION VALVE FOR AIR CONDITIONING SYSTEM WITH PROPORTIONAL SOLENOID

Chester D. Campbell, Rancho Santa Margarita; Sandra L. Harper, Dana Point; Virender Jain, Lake Forest; Richard L. Kenyon, Irvine, all of Calif.; Alan Matthies, Milwaukee, Wis.; Roger G. Riefler, Brandon, Miss.; Roy M. Yabuki, Los Angeles, and Ashok Zopey, Anaheim Hills, both of Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 951,259, Sep. 25, 1992. This application Oct. 15, 1992, Ser. No. 961,567
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.02 **13 Claims**

1. An expansion valve for controlling flow of expanded refrigerant material into an evaporator of a heat transfer system, comprising:

a body, said body including an inlet for receiving liquid refrigerant material; an outlet for delivering expanded refrigerant material to an evaporator of a heat transfer system; and control element means for controlling the rate of flow of refrigerant material from said inlet to said outlet;

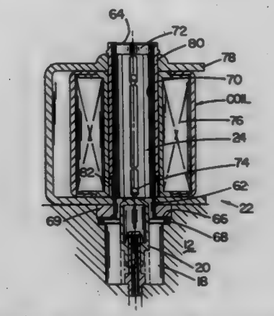
said body further including an opening, said control element means accessible through said opening;

a variable permeance element comprised of magnetic material, said variable permeance element in surrounding relation of said opening;

an isolation member comprised of nonmagnetic material, said isolation member extending outward on said body through said opening and terminating at an outer end, said isolation member having an enclosed interior area, said interior area extending longitudinally in said isolation member;

an actuating member, said actuating member positioned in said interior area of said isolation member and longitudinally movable therein, said actuating member comprised of magnetic material and sized for acceptance in said opening, said actuating member adapted for engaging said control element means, and wherein flow through said control element means varies with movement of said actuating member;

biasing means for biasing said actuating member toward said outer end of said isolating member;



sleeve member means for surrounding said isolating member, said sleeve member means comprised of magnetic material;

electrical coil means in surrounding relation of said sleeve member means, for producing electromagnetic flux responsive to delivery of electrical power thereto, said electrical coil means having a first end adjacent said outer end of said isolating member, and a second opposed end adjacent said variable permeance element;

frame means comprised of magnetic material for supporting said coil means, said frame means in connection with said sleeve means and extending between said ends of said coil means;

flux saturation means disposed longitudinally between said opening and said sleeve member means for providing an area of magnetic flux saturation; and

wherein electrical power delivered to said coil means moves said actuating member against the force of said biasing means and into said opening, whereby control of flow rate through said control element means is achieved.

5,295,657

MEDICAL COUPLING SITE VALVE BODY

Gordon E. Atkinson, Cedarville, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Division of Ser. No. 893,813, Jun. 4, 1992, Pat. No. 5,251,873. This application Apr. 12, 1993, Ser. No. 44,830
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.1 **16 Claims**

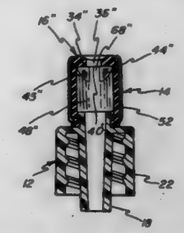
1. A medical coupling site valve element comprising:

a body portion including first and second body portion ends and inner and outer walls defining an interior and an exterior of said body portion, said body portion defining a longitudinal axis;

a diaphragm extending diametrically across said body portion interior at said first body portion end;

means defining a slit extending diametrically across said diaphragm; and

a biasing structure formed integrally with said diaphragm extending from a location on said inner wall to a location



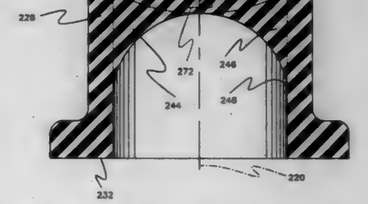
adjacent to said slit wherein said location on said inner wall is spaced from a plane containing said longitudinal axis and extending parallel to said slit, said biasing structure being located within said body portion between said diaphragm and said second body portion end for biasing said slit closed.

5,295,658

MEDICAL COUPLING SITE INCLUDING SLIT REINFORCING MEMBERS

Gordon E. Atkinson, Cedarville; Daniel J. Demuth, Enon, and David O. Werbil, Huber Heights, all of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Continuation of Ser. No. 42,525, Apr. 27, 1987, Pat. No. 4,724,244, which is a continuation-in-part of Ser. No. 893,813, Jun. 4, 1992, Pat. No. 5,251,873. This application Jun. 1, 1993, Ser. No. 68,777
Int. Cl.[5] F16L *37/28*
U.S. Cl. 251—149.1 **18 Claims**



1. A medical coupling site valve element comprising:

a body portion including first and second body portion ends and inner and outer walls defining an interior and an exterior of said body portion, said body portion defining a longitudinal axis;

a diaphragm extending diametrically across said body portion interior at said first body portion end;

means defining a slit extending diametrically across said diaphragm, said slit including opposing ends; and

ribs formed integrally with said diaphragm and extending radially inwardly from said inner wall to locations adjacent to said ends of said slit to prevent said diaphragm from tearing adjacent to said slit when a male luer is inserted into said site through said slit.

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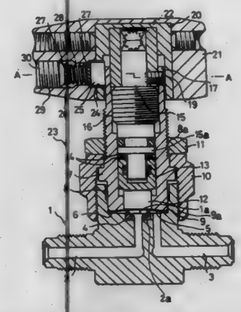
5,295,659
SHAFT SEAL FOR BUTTERFLY VALVE
James R. Steele, Stillwater, Minn., assignor to Dynamic Air, Inc., St. Paul, Minn.
Filed Jul. 26, 1993, Ser. No. 96,457
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—173 **8 Claims**



1. A butterfly valve for opening and closing an opening in a conduit comprising:
a housing having an inflatable sealing member located in said housing, said inflatable sealing member made from an elastomer material, said inflatable sealing member having elastomer legs that lengthen and contract in response to pressurization and a self-cleaning elastomer sealing portion of sufficient thickness that moves radially inward and outward as a unit in response to pressurization of said inflatable sealing member, said elastomer sealing portion locally deformable to form a seal around a rotatable butterfly disk, said inflatable sealing member including means to hold said inflatable sealing member in position on said housing to form an inflation chamber between said housing and said inflatable sealing member said inflatable sealing member having an interface portion forming an interface between a transport side of said inflatable sealing portion and the inflation chamber, and a rotatable butterfly disk mounted on a shaft extending through said inflatable sealing member, said butterfly disk having an exterior edge which, when in the closed condition and when the inflatable sealing member is in an uninflated condition, has a clearance therebetween with the improvement comprising:
a rigid race having an exterior surface bonded to and carried by said interface portion of said inflatable sealing member and a sealing ring located in a cavity of said race so that when said shaft extends through said race, said race holds said sealing ring in a fluid sealing relation with said race and said shaft to provide a two-way fluid seal during relative movement between said shaft and said inflatable member.

5,295,660
METAL DIAPHRAGM VALVE WITH LOCK MECHANISM
Katsuhiko Hoama, Ysbutsukahonmachi, Japan, assignor to Benkan Corporation, Tokyo, Japan
Filed Aug. 2, 1993, Ser. No. 100,429
Claims priority, application Japan, Nov. 12, 1992, 4-84259
Int. Cl.[5] F16K *31/00, 51/00*
U.S. Cl. 251—297 **1 Claim**

1. A lock mechanism for metal diaphragm valves having a valve casing housing an annular valve seat, a circular diaphragm made of an elastic metal material to regulate fluid flow with the valve seat, and a pair of inlet and outlet formed below the diaphragm and through which the fluid flows, a cylindrical hollow bonnet vertically extending above the casing and overlaying the diaphragm, the bonnet being secured in fixed position and made integral with a stationary shroud fixedly mounted on top of the casing, a vertically slidably disposed spindle housed in the bonnet, a cup-shaped reciprocating valve pusher clamped by a lower end of the bonnet and operatively coupled to the spindle, the pusher being adapted to drive the diaphragm into contact with or away from the valve seat, an inner collar provided in an upper end of the bonnet and made integral with a knob which is rotatable on a horizontal plane between a first position and a second position, the spindle being operatively coupled to the knob in which rotating the knob to the first position brings the diaphragm into contact the valve seat through the spindle and turning back to the second position drives the diaphragm away from the seat.
comprising a roller provided snugly inserted in a cutout formed in the inner collar for rotation with the collar



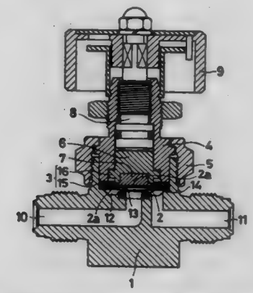
when the knob is turned, a vertical groove provided in the stationary bonnet, the groove being formed to receive therein the roller when the knob is rotated from the second position to the first position, and a compression spring provided in the knob, the spring being engaged at one end thereof with the roller and adapted to press the roller into the groove.

5,295,661
KNIFE VALVE
Renald Roussel, Laval, Canada, assignor to Velan Inc., Montreal, Canada
Continuation of Ser. No. 903,125, Jun. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 668,117, Mar. 12, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,466
Claims priority, application Canada, Dec. 17, 1990, 2032415
Int. Cl.[5] F16K *3/00*
U.S. Cl. 251—326 **19 Claims**



1. A wafer knife gate valve comprising a body having a valve seat, a knife blade longitudinally movable by an operating means in said body for opening and closing a lateral flow passage defined through said body, a bonnet means for completely enclosing said knife blade in said valve, said bonnet means comprising therein guide means defining a cavity with said operating means being displaceable therein, a pair of chamber means being defined in said bonnet means on each side of said operating means, said bonnet means defining at an upper portion thereof a passage means at least partly around said guide means for permitting a sufficient flow between said pair of chamber means when said valve is at least partly open, whereby a substance flowing through said valve and into said bonnet means can sufficiently circulate between said pair of chamber means by way of said passage means thereby preventing solids contained in the substance from accumulating in said bonnet means and hampering the operation of the valve, wherein, in a closed position of said valve, said knife blade is seated against said valve seat for isolating the flow passage of a seat side of said valve from said bonnet means and the flow passage on a seatless side of said valve.

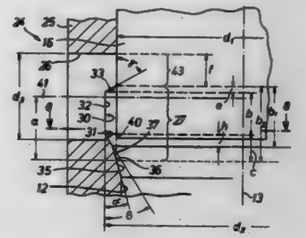
5,295,662
FLUID FLOW-CONTROLLER WITH IMPROVED DIAPHRAGM
Michio Yamaji, and Kenji Yamamoto, both of Osaka, Japan, assignors to Masako Kiyokara, Kumamoto, Japan
Continuation-in-part of Ser. No. 928,029, Aug. 11, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 35,209
Claims priority, application Japan, Aug. 26, 1991, 3-240346
Int. Cl.[5] F16K *7/16, 31/50*
U.S. Cl. 251—331 **10 Claims**



1. A valve comprising a valve body having fluid passages connecting with a valve chamber in said valve body, a diaphragm cooperating with said valve body to seal said valve chamber, means including a threaded valve stem longitudinally and rotatably movable in a valve bonnet mounted on said valve body for applying a force to said diaphragm, and stop means for limiting movement of said valve stem in the direction of said diaphragm when said valve is closed, said valve being characterized in that said diaphragm comprises a plurality of nested thin metal elements, each said element having a dome shaped circular portion and an upturned peripheral edge extending perpendicular to the circular portion, said elements being of different diameters whereby one said elements may be nested within another with an outer surface of the peripheral edge of the nested element engaging an inner surface of the peripheral edge of the element in which it is nested.

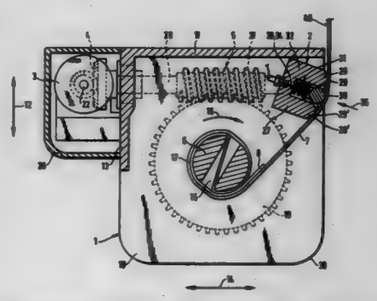
5,295,663
PRESSURE CONTROL VALVE
Götz-Dieter Machat; Eugen Ebert, and Hans Wölfges, all of Lohr, Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany
Continuation of Ser. No. 654,655, Feb. 7, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 996,487
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911426
Int. Cl.[5] F16K *17/10*
U.S. Cl. 251—333 **22 Claims**

1. A pressure control valve comprising:
a sleeve (25),
an inlet flow bore (12), axially extending in said sleeve,
a plurality of outlet flow bores (26) radially extending in said sleeve,
a spool (16) having a constant outer diameter, axially reciprocally mounted in said sleeve (25), acting as a control element, said spool having a spool edge (40) adapted to be moved through a control range,
an annular channel (27) provided in said sleeve (25) between said inlet flow bore (12) and said outlet flow bores (26), said annular channel (27) having a width (b2) and a diameter (d2), said diameter (d2) being larger than the diameter of said inlet flow bore,



a stepless transition area provided in said control range within said sleeve between the inlet flow bore (12) and a starting inclination (31) of the annular channel, said outlet flow bores form top ends and, opposite thereto, bottom ends and are arranged across a part of said annular channel such that a zone (43) remains which is free of the annular channel, and wherein the bottom ends are located in the area of said starting inclination (31).

5,295,664
MOTOR-DRIVEN TENSIONING AND WINDING DEVICE FOR LASHING STRAPS INCLUDING AN INTEGRATED CONTROL OF THE LASHING TENSION
Hans-Werner Kämper, Würselen, Fed. Rep. of Germany, assignor to Spanset Inter AG, Oetwil am See, Switzerland
PCT No. PCT/DE90/00491, § 371 Date Mar. 4, 1991, § 102(e) Date Mar. 4, 1991, PCT Pub. No. WO91/00196, PCT Pub. Date Jan. 10, 1991
PCT Filed Jul. 1, 1990, Ser. No. 656,087
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1989, 8908090[U]
Int. Cl.[5] B66D *1/00*; B60P *7/08*
U.S. Cl. 254—220 **26 Claims**



1. A tensioning and winding device for lashing straps comprising:
a drive motor;
a wind-up spindle driven by said drive motor for winding up a lashing strap, said lashing strap having a flat side; and

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a measurement sensor means for measuring tension in said lashing strap, said sensor means comprising:

a) a sensor tongue abutting against the flat side of said lashing strap;

b) two projections which between them guide and laterally flank the sensor tongue, said projections including end faces which abut against the flat side of said lashing strap and together with said sensor tongue define a three-point measuring element, said measuring element bending the lashing strap through a slope angle as defined by three points of tangency where the lashing strap makes contact with said end faces and said sensor tongue disposed therebetween, whereby said sensor tongue abuts against the lashing strap and exerts a deflection pressure against said lashing strap, said sensor means measuring the deflection pressure exerted by said sensor tongue on the lashing strap as a measured value of the tension in said lashing strap; and

c) means for transmitting the measured value as an actual value to a control circuit for turning on the drive motor for the wind-up spindle so as to maintain a desired lashing tension.

5,295,665

APPARATUS FOR BENEFICIATING ORES

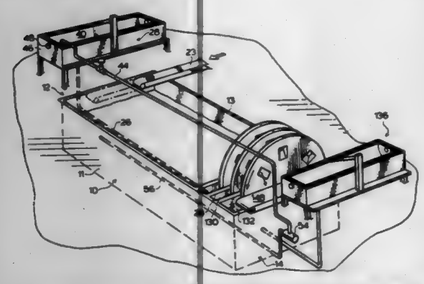
Daniel A. Mackie, 474 Copeland Court, Oakville, Ontario, L6J 4B9, Canada

Continuation-in-part of Ser. No. 273,536, Nov. 21, 1988, Pat. No. 4,991,824. This application Jan. 23, 1991, Ser. No. 646,952

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.[5] C22B *3/02*

U.S. Cl. 266—168 **27 Claims**



1. An apparatus for treating a particulate ore for the recovery of contained values therefrom comprising, in combination: a tank for receiving a liquid, said tank having a feed end, a discharge end and a bottom, said tank adapted to receive a bed of coarse particulate material on the tank bottom, said bed having a base adjacent the tank bottom; means for feeding the particulate ore to the tank at the feed end thereof; means for intermittently fluidizing the particulate ore in the tank for moving the ore particles from the feed end to the discharge end of the tank; means for withdrawing the ore particles at the tank discharge end; means at the bottom of the tank at the base of the bed of coarse particulate material for continuously withdrawing the liquid therefrom; and means for recycling the said liquid for intermittently fluidizing the particulate ore in the tank.

5,295,666

COOLING PLATES FOR BLAST FURNACES AND COOLING INSTALLATION EMPLOYING THIS TYPE OF PLATE

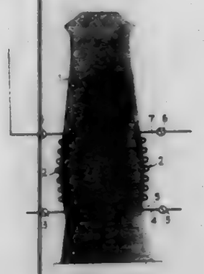
Pierre Rollot, Magne; Francois Graffeuille, Dunkerque; Raymond Capelani; deceased, late of Grande-Synthe, by Christine Capelani, administrator, Alain Dufour, Saint Mitre les Remparts; Hubert Dooda, Saint Martin de Crau; Lucien Delaitre, Donchery; Jean-Michel Dardart, Vrigne Aux Bois, and Bernard Thiel, Sedan, all of France, assignors to Chavane-Ketin, Puteaux, France

Continuation of Ser. No. 611,800, Nov. 13, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 985,237

Claims priority, application France, Nov. 14, 1989, 89 14936

Int. Cl.[5] C21B *7/10*

U.S. Cl. 266—194 **9 Claims**



1. A cooling installation for a blast furnace comprising: cooling plates, said cooling plates being arranged between an inner wall of a casing and a refractory lining in successive rings superimposed along the inner wall of a casing of the blast furnace and having inner tubes in which a a cooling fluid circulates therethrough, inlets and outlets of said inner tubes being located at various levels, the inner tubes of two adjacent plates in a vertical plane being connected to one another in order to create a network of substantially vertical circulation lines for the fluid, connected to an outer circuit, said inner tubes emerging at a face of the cooling plates and passing through the casing, each cooling plate having the form of a "C" whose arms define two continuous horizontal lips between which is inserted a lining element of refractory material, at least one of the lips comprising an undercut for blocking the lining element of refractory material.

5,295,667

TUNDISH BAFFLE WITH FLUTED OPENINGS

Madjid Soofi, St. Charles, Ill., assignor to Magneco/Metrel, Inc., Addison, Ill.

Filed Jul. 26, 1993, Ser. No. 97,650

Int. Cl.[5] C21C *5/48*

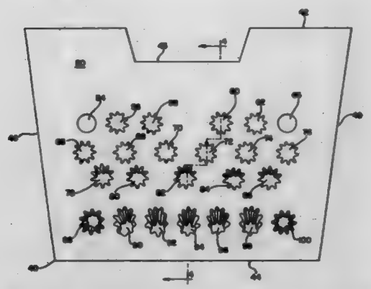
U.S. Cl. 266—229 **25 Claims**

1. A baffle for directing the flow of molten metal in a metallurigcal vessel, comprising:

a baffle plate; and

a plurality of fluted openings passing through the plate;

each of the fluted openings including a perimeter, a center portion, and a plurality of flutes around the perimeter;



the flutes being defined by peaks and valleys around the perimeter;

the peaks not extending into the center portion.

5,295,668

METAL TUBE OXIDATION TREATMENT APPARATUS

Tadahiro Ohmi, Miyagi; Yoshiyuki Nakahara, Osaka; Shigeki Hayashi, Osaka; Takashi Sakanaka, Osaka; Eiji Ohta, Osaka, and Fumio Nakahara, Tokyo, all of Japan, assignors to Osaka Sanso Kogyo Kabushiki-Kaisha, Osaka, Japan

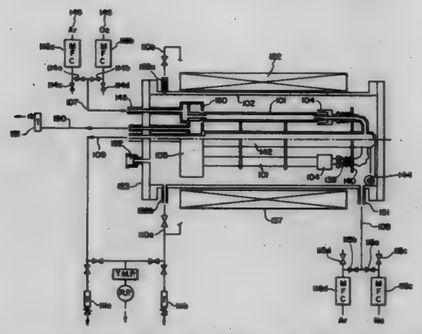
PCT No. PCT/JP90/01230, § 371 Date Apr. 13, 1992, § 102(e) Date Apr. 13, 1992, PCT Pub. No. WO91/05071, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 25, 1990, Ser. No. 842,361

Claims priority, application Japan, Sep. 26, 1989, 1-249773

Int. Cl.[5] C23C *8/18*

U.S. Cl. 266—252 **10 Claims**



1. An oxidation treatment apparatus for treating a metal tube, comprising:

an oxidation treatment furnace having an inert gas inlet for introducing inert gas into said furnace, and an inert gas outlet for exhausting inert gas from aid furnace;

a first hollow support member for introducing gas from the outside of said furnace into the metal tube, said first hollow support member including a first tubular member for supporting one end of the metal tube, said first tubular member having a generally frustoconical shape; and

a second hollow support member for exhausting gas from the inside of the tube to the outside of said furnace, said second hollow support member including a second tubular member for supporting an opposite end of the metal tube, said second tubular member having a generally frustoconical shape;

said first hollow support member including a cover tube for covering said first tubular member, said cover tube and said first tubular member defining a space therebetween which is in fluid communication with an exterior of said furnace.

5,295,669

REFRACTORY COATED IRON-BASED PIPE

Patsie C. Campana, Lorain, Ohio, assignor to Caldo International, Inc., Lorain, Ohio

Filed Oct. 26, 1992, Ser. No. 966,737

Int. Cl.[5] C21C *5/32*; C21B *7/16*

U.S. Cl. 266—265 **16 Claims**

1. An iron-based pipe having deposited thereon a thermally stable refractory coating, said coating comprising a mixture of coarse silica sand particles having an average particle size ranging from about 80 mesh to about 200 mesh and fine silica sand particles having an average particle size ranging from about 325 mesh to about 400 mesh and at least one type of clay binder material, said coating being deposited on the internal surfaces of said pipe, or on the external surfaces of said pipe, or on both the internal and external surfaces of said pipe.

5,295,670

STEERING COUPLING STRUCTURE HAVING CYLINDRICAL BUSHING WITH HOLLOW PORTIONS

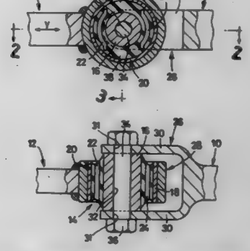
Yoshikazu Tsukamoto, Komaki, and Shinji Miyakawa, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed May 13, 1992, Ser. No. 882,565

Claims priority, application Japan, May 17, 1991, 3-142580

Int. Cl.[5] F16M *1/00*

U.S. Cl. 267—140.5 **5 Claims**



1. A steering coupling structure including a cylindrical bushing mounted in a transmission line of a steering force in a steering system of a motor vehicle, such that a longitudinal axis of said bushing extends in a direction substantially perpendicular to an axis of rotation of said steering system, said steering system including an input shaft and an output shaft, said cylindrical bushing comprising:

an inner sleeve connected to one of said input and output shafts of said steering system;

an outer sleeve disposed radially outwardly of said inner sleeve and connected to the other of said input and output shafts; and

an annular elastic body interposed between said input and output sleeves for elastic connection thereof, said elastic body including diametrically opposed solid portions formed on opposite sides of said inner sleeve, said solid portions being opposed to each other in a diametric direction of the elastic body which is perpendicular to said axis of rotation of said steering system, and diametrically opposed hollow portions formed on opposite sides of said inner sleeve such that said hollow portions extend in an

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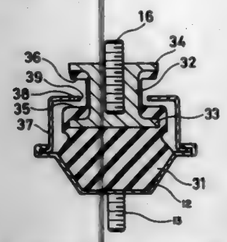
axial direction of the bushing between said inner and outer sleeves, said hollow portions being substantially opposed to each other in a diametric direction of the elastic body which is parallel to said axis of rotation of said steering system.

5,295,671

VIBRATION INSULATING MOUNT

Osamu Nakagaki, and Tatsuo Suzuki, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 30, 1992, Ser. No. 969,054
Claims priority, application Japan, Nov. 6, 1991, 3-290037
Int. Cl.[5] F16F *13/00*; B60K *5/12*
U.S. Cl. 267—140.13 **15 Claims**



1. A vibration insulating mount comprising:
an elastic body which is elastically deformable upon application of vibration from a vibrating body;
a first support provided at one portion of the elastic body;
a second support integrally formed with said elastic body and being disposed at a fixed distance from the first support so as to define a space between the first and second supports, and
a stopper arranged at another portion of the elastic body, the stopper having a stopping section at one end thereof disposed within the space defined between the first support and the second support, the stopping section being structured so that, in assembly of the insulating mount, the stopping section is capable of being moved from a first position in relation to the second support without interfering with the second support, to a final position so that after assembly of the insulating mount the stopping section is contacted with one of the first support and the second support in accordance with a predetermined degree of elastic deformation of the elastic body so as to regulate further elastic deformation of the elastic body.

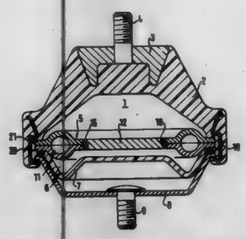
5,295,672

HYDRAULIC TWO-CHAMBER ENGINE MOUNT WITH RIGID OSCILLATING DIAPHRAGM AND SEAL THEREFOR

Mathias Gugsch, München, Fed. Rep. of Germany, assignor to Metzeler Gimetall AG, Munich, Fed. Rep. of Germany

Filed Aug. 13, 1992, Ser. No. 929,256
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126769
Int. Cl.[5] F16F *7/00*
U.S. Cl. 267—141.3 **9 Claims**

1. A hydraulically damping two-chamber engine mount, comprising two chambers with rubber-elastic borders, a rigid intermediate plate disposed between said chambers and having an overflow conduit, a central, rigid diaphragm being annularly surrounded by said rigid intermediate plate and having a predetermined vertical clearance for decoupling high-frequency, low-amplitude vibration, said rigid diaphragm and said rigid intermediate plate having opposed conduit walls defining an annular conduit between said conduit walls at a location radially between said rigid diaphragm and said intermediate plate, said annular conduit being open toward said chambers and having a top and a bottom with reduced cross sections forming stops for clearance limitation, and at least one element with a circular cross section disposed on at least one of



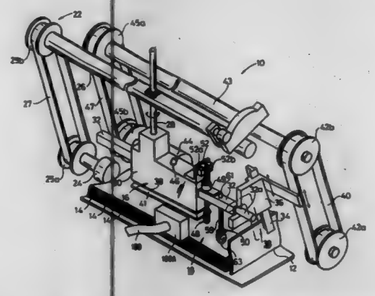
said conduit walls in said annular conduit on which said rigid diaphragm rolls and translates vertically.

5,295,673

METHOD OF AND DEVICE FOR CONTROLLING FEEDING OF SHEETS BY DETECTING MULTIPLE SHEET PICK UP

Nobuyuki Torisawa; Toshihiro Suya, and Norikazu Soga, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1991, Ser. No. 800,134
Claims priority, application Japan, Nov. 29, 1990, 2-331955; Nov. 29, 1990, 2-331956
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B65H *3/30*
U.S. Cl. 271—11 **7 Claims**



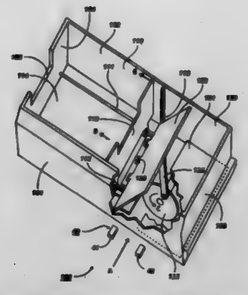
3. A device for controlling the feeding of sheets one-by-one, said device comprising:
a suction pad for attracting an uppermost sheet of stacked sheets so as to feed said uppermost sheet to a predetermined position;
means, facing said uppermost sheet attracted by said suction pad and being disposed in the vicinity of said suction pad, for pressing said uppermost sheet, said suction pad and said sheet pressing means being displaceable in unison, said sheet pressing means including:
a detecting head for abutting said uppermost sheet;
a sensor for detecting the magnitude of displacement of said detecting head; and
a flexing member for flexing said uppermost sheet.

5,295,674

HIGH CAPACITY ENVELOPE STACKER APPARATUS

John D. Zoltner, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 14, 1993, Ser. No. 62,647
Int. Cl.[5] B65H *29/00*
U.S. Cl. 271—2 **10 Claims**



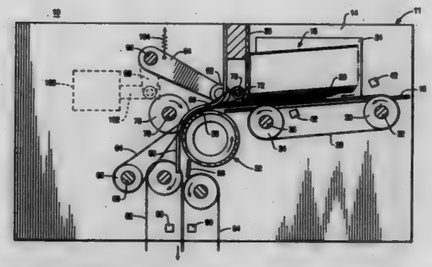
1. An envelope stacker apparatus, comprising:
a catch tray with said catch tray being divided into a receiving compartment for receiving envelopes flap side unexposed, individually from a source and supporting each envelope in a first substantially non-vertical position and a storage compartment for storing the envelopes in a stack in a second vertical position with the last envelope in the stack having its flap side exposed; said catch tray being positioned orthogonal to said source in order to receive each envelope short edge dimension first; and wherein said receiving compartment includes means for moving each envelope individually from said first position to said vertical position long edge dimension first.

5,295,675

SHEET HANDLING APPARATUS HAVING CONTROLLED PRESSURE ROLLS TO ENSURE FEEDING OF A SINGLE SHEET

David A. Hain, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 2, 1993, Ser. No. 85,623
Claims priority, application United Kingdom, Mar. 23, 1993, 9306009
Int. Cl.[5] B65H *5/08, 1/08*
U.S. Cl. 271—12 **9 Claims**



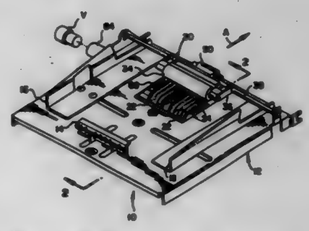
1. Sheet handling apparatus, comprising:
first feeding means for removing sheets from a stack;
second feeding means for receiving sheets fed thereto by said first feeding means;
third feeding means for receiving sheets fed thereto by said second feeding means;
sheet feed restraining means associated with said second feeding means and arranged to inhibit the feeding of two or more superposed sheets to said third feeding means;
pressure means movable between a home, nonoperative position in which said pressure means are out of cooperative association with said second feeding means, and an operative position in which said pressure means are in cooperative association with said second feeding means; and
sensing and control means for sensing in operation a cessation in the feeding of sheets from said second feeding means to said third feeding means and for causing said pressure means to be moved to said operative position in the event of such cessation so as to press a sheet engaged by said second feeding means against said second feeding means and thereby facilitate the feeding of this sheet to said third feeding means.

5,295,676

SHEET FEEDING APPARATUS

Michael Kesin, Rochester; David P. Dwerzanski, Walworth; Donald S. Hensel, Rochester, and Raymond M. Quackenbush, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,609
Int. Cl.[5] B65H *3/12*
U.S. Cl. 271—94 **6 Claims**



1. Apparatus for feeding material, in the form of discrete sheets, seriatim from a stack of discrete sheets, said apparatus comprising:
means for supporting a stack of discrete sheets;
at least one scuff feed belt frictionally engaging a sheet of a stack of discrete sheets supported by said stack supporting means, said at least one scuff feed belt movable in a direction for selectively removing such sheet from said stack of discrete sheets; and
vacuum means, located adjacent to said at least one scuff feed belt, for attracting a sheet from said stack of discrete sheets to increase the force of engagement of such sheet with said at least one scuff feed belt to facilitate removal of such sheet from said stack of discrete sheets by said sheet engaging means, said vacuum means including a vacuum source, a plenum defining a plurality of ports located adjacent to each marginal edge of said at least one scuff feed belt, and means for communicating said vacuum source with said plenum.

5,295,677

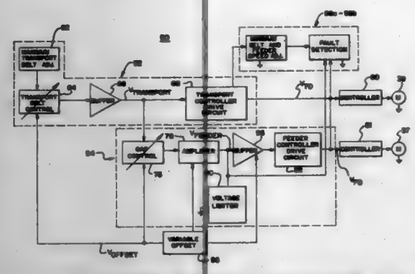
SPEED CONTROL FOR DOCUMENT HANDLING SYSTEM

Mark A. Hutner, Glenview, Ill., assignor to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Aug. 28, 1992, Ser. No. 937,300
Int. Cl.[5] B65H *7/08*
U.S. Cl. 271—110 **24 Claims**

1. In a document handling system including a document feeder station adapted to support a stack of generally flat documents, and a transport station having conveyor means

defining a transport path, the feeder station having a feeder controller operative in response to a feeder control signal to effect feeding of documents in sequential fashion from the stack to the conveyor means, the transport station having a transport controller operative in response to a transport control signal to actuate the conveyor means at a speed operative to establish a gap between successive documents received from the feeder station; the combination therewith comprising speed



control means including first control means operable to apply a transport control signal to said transport controller, and second control means operative to apply a feeder control signal to said feeder controller that is proportional to said transport control signal, said speed control means including means enabling adjustment of said transport control signal with simultaneous proportional adjustment of said feeder control signal.

5,295,678

CONTROL DRIVE FOR A STACK LIFT DRIVE IN SHEET PROCESSING MACHINES, MORE PARTICULARLY SHEET PRINTING MACHINES

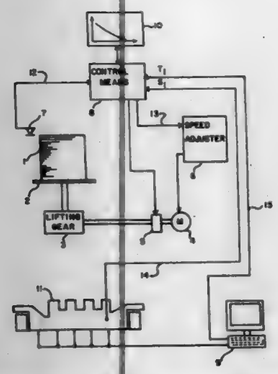
Bernd Lindner, Frankfurt; Albrecht Völz, Rodermark, and Joachim Blumör, Hainburg, all of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Oct. 29, 1992, Ser. No. 968,450

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135752

Int. Cl.[5] B65H *1/18*

U.S. Cl. 271—152 **11 Claims**



1. A system for controlling a drive means to drive a motor to lift a stack of at least one sheet of a predetermined thickness for feeding to a sheet processing machine, the system comprising:

stack height sensor means for determining the vertical position of the sheet and providing a signal representative thereof;

means for obtaining a value representative of the processing speed S_1 of the machine;

means for obtaining a value representative of the thickness T_1 of the sheet;

memory means for storing the values representative of the speed of the processing machine S_1 and the sheet thickness T_1; and

control means in communication with the memory means and responsive to the signal from the stack height sensor means for operating the drive means to drive the motor until the sheet is raised to a predetermined vertical position, the control means operating the motor in either the continuous mode or the discontinuous mode in dependence only on the values of the sheet processing speed S_1 and the thickness T_1 of the sheet.

5,295,679

METHOD AND APPARATUS FOR CONVEYING AWAY FLAT PRODUCTS SUPPLIED IN SCALE FLOW, PARTICULARLY PRINTED PRODUCTS

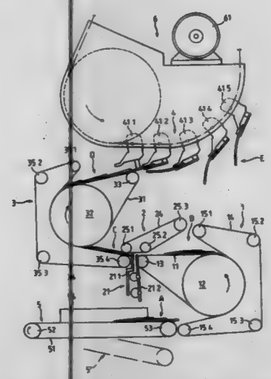
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 26, 1992, Ser. No. 904,703

Claims priority, application Switzerland, Jun. 27, 1991, 01904/91-8

Int. Cl.[5] B65H *29/68*

U.S. Cl. 271—182 **18 Claims**



1. A method of product flow transformation of a delivery flow of printed products in a formation in which the relative positions of the products are not fixed into an acceptance flow of products in which the relative positions of the products are fixed comprising the steps of

conveying the delivery flow of products on a first conveyor to a timing location with leading edges of the products positioned downwardly,

at the timing location, engaging the products adjacent their leading edges and transferring the products of the delivery flow to a second conveyor while selectively accelerating or retarding the progress of the products in accordance with a predetermined rhythmic pattern to arrange the products in an acceptance flow of uniformly spaced units of one or more products per unit,

conveying the acceptance flow of units of products to an acceptance location, and gripping each unit with fixedly spaced grippers and removing the units of products from the second conveyor.

5,295,680

PAPER STACKER APPARATUS AND METHOD

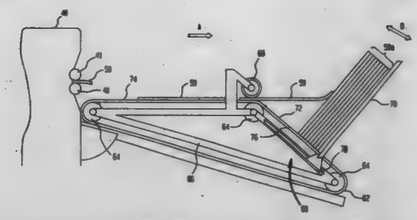
Hidehiro Nishiguchi, Kawasaki, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,623

Claims priority, application Japan, May 25, 1992, 4-132445

Int. Cl.[5] B65H *29/00*

U.S. Cl. 271—185 **7 Claims**



6. A document stacker for stacking a plurality of non-overlapped documents emerging from a document processing machine comprising:

means for conveying each of the documents away from the document processing machine in a substantially horizontal plane;

means for sequentially interrupting a horizontal travel of a leading edge of each of the document such that the leading edge of the document is tilted upwardly above the horizontal plane; and

means for sequentially producing a substantially simultaneous downward motion of a trailing edge of each of the documents below the horizontal plane such that a central portion of the document is oriented so as to be intersected by the horizontal plane such that the documents are sequentially stacked in the order in which they emerge from the document processing apparatus.

5,295,681

AUXILIARY-PILE CARRIER FOR A LIFTING DEVICE FOR A PILE OF SHEETS

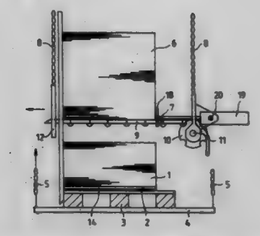
Peter T. Blaser, Dielheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 5, 1993, Ser. No. 42,999

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1992, 4211353

Int. Cl.[5] B65H *1/30*

U.S. Cl. 271—241 **19 Claims**



1. An auxiliary-pile carrier in a pile lift of a sheet-processing machine having a main-pile lifting unit and an auxiliary-pile lifting unit and wherein an auxiliary pile is supported on a pile board having grooves formed in an upper surface thereof, comprising:

auxiliary-pile carrier elements for carrying an auxiliary pile, said carrier elements each having a free end;

forward cross-member support means for supporting said free end of each of said carrier elements;

rear cross-member support means for supporting said carrier elements disposed apart from said forward cross-member;

said carrier elements having means for allowing a rod-like insertion thereof in the grooves formed in the upper surface of the pile board carrying the auxiliary pile such that said carrier elements are aligned parallel to the grooves;

said carrier elements being in the form of chains each having a plurality of links; said links including means for causing each of said chains to be non-flexible in one direction beyond a substantially straight alignment of said links;

said rear cross-member being in the form of a rotatable shaft, and including chain wheels rigidly disposed on said shaft, said chain wheels meshing with said chains and driving said chains.

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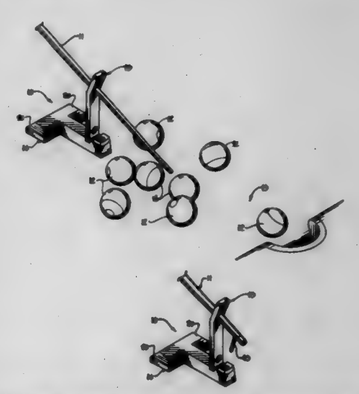
PORTABLE BRIDGE FOR BILLIARDS

Robert G. Leonard, 1139A Shirley Blvd., Port Tobacco, Md. 20677

Filed Feb. 19, 1993, Ser. No. 19,597

Int. Cl.[5] A63D *15/10*

U.S. Cl. 473—42 **12 Claims**



1. A portable bridge in combination with a cue stick for use in a game of billiards using billiard balls, the portable bridge being placed on, and removed from, the surface of a playing table, the portable bridge comprising:

an elongated base having a top, a bottom, a front end and a back end, the back end having support means extending therefrom to provide stability to the base when the portable bridge is placed on the surface of the playing table;

an upright arm, means connecting the upright arm substantially perpendicularly to the top of the base, said means being disposed near the front end;

said base having a concaved region on said top a predetermined distance from said front end, said predetermined distance extending between said front end and said means connecting;

a cue pool stick;

the upright arm having at least one opening formed therein, said at least one opening having a cross section, such that the cue stick may be inserted and longitudinally slidable therein to permit striking of a selected billiard ball with one end of the cue stick;

said at least one opening in the upright arm being adjacent to the base, such that one end of the cue stick is inserted through said at least one opening and the other end of the cue stick is lifted upwardly, the concave top of the front end of the base engages a portion of the cue stick, and the

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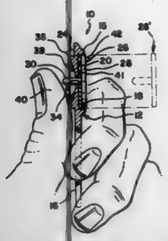
back end of the base drops away from the cue stick in a manner such that the portable bridge may be lifted from, and repositioned on, the surface of the table as desired and, when the other end of the cue stick is lowered, the concave region disengages the portion of the cue stick such that the cue stick may be slidably removed from said at least one opening.

5,295,683

GOLF DIVOT TOOL WITH BALL MARKER

John Tate, 14535 Firestone Blvd., La Mirada, Calif. 90638

Continuation-in-part of Ser. No. 821,033, Jan. 16, 1992. This application Oct. 13, 1992, Ser. No. 959,976
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—32 A **2 Claims**



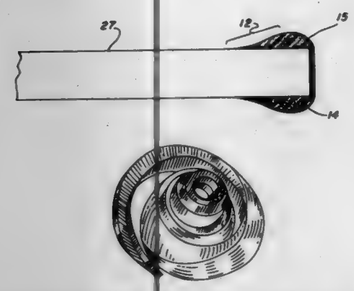
1. In a golf accessory formed with a substantially flat body having a recessed cavity defined therein, a pair of legs extending from said body generally parallel to each other, a magnetic material disposed in said cavity and permanently secured to said body, and a ball marker constructed of a material attracted by magnetism and adapted to be removably seated in said cavity atop said magnetic material, the improvement wherein aligned openings are formed through said magnetic material and through said body at said cavity, said body is formed with raised ring surrounding said opening on a side of said body opposite said cavity, and said ball marker has a post which passes through said openings in said magnetic material and said body and projects beyond said body when said ball marker is seated in said cavity.

5,295,684

END CAP FOR RACKET HANDLE

Juan Bracho, 5327 Patrick Henry, Bellaire, Tex. 77401

Continuation of Ser. No. 835,513, Feb. 13, 1992. This application Mar. 24, 1993, Ser. No. 37,509
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 J **1 Claim**



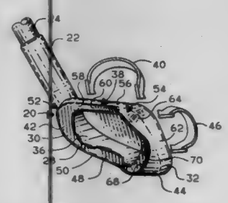
1. An end cap in combination with a racket having a handle and a head secured to the racket, said cap being disposed at the free end of the handle, said cap having a thickness greater than the thickness of the remainder of said handle, the thickest portion of said end cap having a rounded outermost longitudinal cross section adjacent the end of said handle and a bridging section which is tapered in the longitudinal direction of the handle as it extends from the thickest portion of said cap towards the head of said racket, said portion of said bridging section which is closest to the head of a racket being at a narrow angle with respect to the surface of the handle to form a smooth transition, said cap being formed of a wrap comprised of an elongated strip of cushioning material which is wound about said handle and is comprised of a cushioning material to absorb some of the shocks caused by impact with said racket, said elongated strip being longer than the periphery of said handle so that the wrap winds over itself to form said cap.

5,295,685

IRON-TYPE GOLF CLUB HEAD

Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Continuation of Ser. No. 749,553, Aug. 23, 1991, Pat. No. 5,193,805. This application Jan. 8, 1993, Ser. No. 2,252
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A **3 Claims**



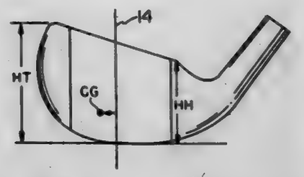
1. An iron-type golf club head comprising:
a front face for impacting a golf ball;
a heel portion, a toe portion, a top rail, and a sole;
said heel and toe portions being spaced apart and being located at opposite ends of said club head, said front face extending between said heel and toe portions along a frontal portion of said club head, said top rail extending between said heel and toe portions along an upper portion of said club head, and said sole extending between said heel and toe portions along a lower portion of said club head;
said top rail having a top surface extending in a rearward direction from said front face and forming an obtuse included angle with said front face, said top rail also having a rear surface extending in a downward direction from said top surface toward said sole with said rear surface forming an acute included angle with said top surface, and said rear surface also sloping inwardly from a back edge of said top surface toward said front face so that said top rail has a wedge shaped cross sectional configuration;
said top rail having a heel end and a toe end; and
an upper toe protuberance disposed adjacent said toe end of said top rail, said upper toe protuberance having a top surface blending with and protruding rearwardly with respect to the top surface of said top rail, and said upper toe protuberance also having a rear surface sloping inwardly from an outer edge of the top surface of said upper toe protuberance toward said front face forming an acute included angle with the top surface of said upper toe protuberance in order to provide said upper toe protuberance with a hood-like configuration.

5,295,686

GOLF CLUB SET

Harry C. Lundberg, Ramsey, N.J., assignor to S2 Golf Inc., Fairfield, N.J.

Continuation of Ser. No. 747,203, Aug. 16, 1991, abandoned.
This application Jan. 25, 1993, Ser. No. 8,393
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—77 A **3 Claims**



1. In a set of golf club irons, each iron having a shaft with a grip end and a club head opposite said grip end, said club head having a sole, a heel which is affixed to said shaft and a toe opposite said heel, with a planar striking face extending between said heel and said toe, said set including a long-shafted iron, a plurality of intermediate irons which are progressively shorter and more lofted than said long-shafted iron, and a short-shafted iron, each club head on said iron having a center plane perpendicular to said sole and located between said heel and said toe, the improvement comprising:
the head of said long-shafted iron having its weight concentrated adjacent said heel to have its center of gravity in a first position spaced from its center plane a first distance toward said heel;
the head of said short-shafted iron having its weight concentrated adjacent said toe to have its center of gravity in a second position spaced from its center plane a second distance toward said toe;
each intermediate iron having a center of gravity located on its club head between said first position and said second position, with the location of said center of gravity of each intermediate iron progressing from said first position toward said second position as the length of each shaft decreases;
wherein a differential between a vertical height of the toe on said long-shafted iron and a vertical height of the heel on said long-shafted iron is less than a differential between a vertical height of the toe on said short-shafted iron and a vertical height of the heel on said short-shafted iron.

5,295,687

IMPACT WEAPON

Roy R. Bedard, 2711 Allen Rd., Apt. J5, Tallahassee, Fla. 32312

Filed Dec. 21, 1992, Ser. No. 993,673
Int. Cl.[5] F41B *15/00*
U.S. Cl. 273—84 R **13 Claims**

1. An impact weapon comprising a unitary body including an elongated shaft having first and second opposite end portions and a longitudinal axis therebetween, a slightly curved first elongate arm member having an end connected to and extending laterally from said shaft and a free end and having a longitudinal axis therebetween, said first arm member being located spaced remotely from said first end portion of said shaft to define said first end portion and substantially longer than said second end portion, said second end portion being adapted to be gripped by a hand of a user to dispose said first end portion forwardly from a user, a straight second elongate arm member connected to and extending laterally from said shaft and a free end and having a longitudinal axis therebetween, said second arm member being located on said shaft substantially opposite from said first member, each said arm member being oriented with respect to said shaft such that respective said longitudinal axis of each said arm member defines an angle with said longitudinal axis of said shaft of less than ninety degrees, said ends of said first and second members being rigidly attached to said shaft rearwardly of respective said free end with respect to said first portion when said first portion is positioned forwardly from a user.

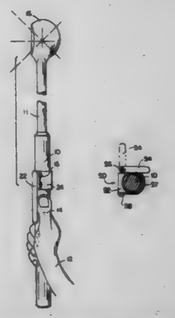


5,295,688

GOLF CLUB GRIP POSITIONING DEVICE

Robert Montgomery, 1211 Roebuck Ct., West Palm Beach, Fla. 33401

Filed Apr. 23, 1992, Ser. No. 873,289
Int. Cl.[5] A63B *53/14, 69/36*
U.S. Cl. 273—165 **2 Claims**

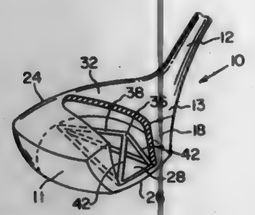


1. An apparatus used for preventing a golfer's thumb from moving as well as for accurate positioning of a golfer's thumb and lower hand grip on a handle of a golf club during a golf swing, comprising: a relatively thin rigid thumb guide member mounted on the handle and moveable between an in-use position and a non-use position, the thumb having an outer portion resting and touching adjacent said thumb guide member when said thumb guide member is in the in-use position, to properly align the golfer's hand grip on the handle and to prevent the thumb from moving during the golf swing, said guide member including a first portion and a second portion, said first portion and said second portion hingedly connected to each other by a pin, said pin permitting rotative movement of said second portion from a first, operative position, wherein said second portion is in the same vertical plane as said first portion, to a second and inoperative position, said second portion, when in said inoperative position, substantially abutting the handle to

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facilitate storage of the golf club in a golf bag, said second portion acting as a physical barrier for the thumb when said second portion is in the operative position, said second portion further being sized in width, length, and height to conform to the thumb of a golfer; and means for attaching said thumb guide member to the handle; wherein when in said operative position, said second portion depends outwardly from the handle to form a stop for the golfer's thumb and allows the outside portion of the golfer's thumb to rest against said second portion to provide correct positioning of the golfer's lower hand during the golf swing.

5,295,689
GOLF CLUB HEAD
Harry C. Lundberg, Ramsey, N.J., assignor to S2 Golf Inc., Fairfield, N.J.
Filed Jan. 11, 1993, Ser. No. 2,708
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **25 Claims**



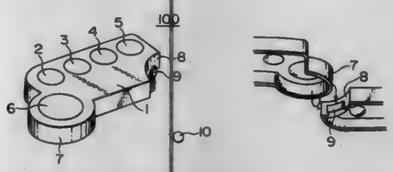
12. A golf club head, comprising:
a striking plate with an outer side and an interior side;
a tail spaced from the interior side of said striking plate;
a sole extending between said striking plate and said tail;
a top cover disposed opposite said sole and extending between said striking plate and said tail;
a plurality of struts engaging the interior side of said striking plate and extending toward said tail, said struts converging to form an apex adjacent the tail of the club head; and
a plurality of base rods engaging the interior side of said striking plate and interconnecting said struts to define a support cell directly behind said striking plate.

5,295,690
APPARATUS AND METHOD FOR IMPROVING A GOLF SWING
John Johnson, 8359 Montgomery Ct., Ventura, Calif. 93004
Filed Jul. 30, 1992, Ser. No. 922,537
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **11 Claims**



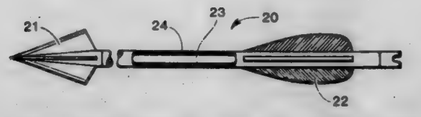
1. A golf swing teaching device comprising:
first arm connecting means for providing a first arm connecting point positioned on a golfer, the golfer having first and second arms, first ad second elbows, first and second shoulders, ad first and second hips, the first arm connecting point being positioned on the first arm between the first elbow and the first shoulder and not extending below the first elbow, the first arm connecting means comprising means for encircling the first arm and means for continuously adjusting the circumference of the means for encircling the first arm;
second arm connecting means for providing a second connecting point positioned on the second arm between the second elbow and the second shoulder and not extending below the second elbow, the second arm connecting means comprising means for encircling the second arm and means for continuously adjusting the circumference of the means for encircling the second arm, the second arm connecting means being connected to the first arm connecting means by an elastic member such that the distance between the first arm connecting means and the second arm connecting means is limited and such that the first arm is biased toward the second arm; and
hip attaching means for attaching the first connecting means to an area in proximity to the first hip such that as the golfer executes a golf back swing the first hip is rotated in the direction of the golfer's back swing, the hip attaching means comprising a hip strap including:
a length of elastic material;
means for releasably securing the length of elastic material to a point adjacent to the golfer's ilium;
means for holdably adjusting the effective length of the length of elastic material; and
a plurality of length markients provided on the hip strap such that the length of the hip strap can be repeatedly moved between a first length and a second length by the golfer as the golfer changes between different golf clubs.

5,295,691
PIECE SHIFT TYPE GAME BOARD BLOCK
Itsuko Mitsui, Syanpuren Haitsu 2-2, 27-3, 5-chome, Minaminaruse, Machida-shi, Tokyo, Japan
Filed Mar. 11, 1993, Ser. No. 29,868
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—283 **3 Claims**



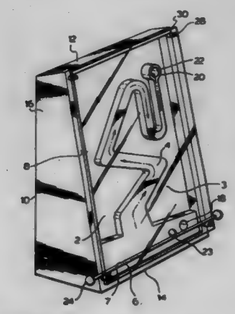
3. A game board block, comprising:
a main body having a first end and a second end;
an arcuate recess formed in said first end;
an arcuate protrusion formed in said second end;
said arcuate recess and said arcuate protrusion sharing a common radius of curvature and being disposed in concentric relation to one another;
whereby positioning a protrusion of a first main body in abutting relation to said arcuate recess of a contiguous main body serves to pivotally align said contiguous main bodies;
whereby any number of main bodies may be pivotally aligned with one another in any predetermined geometrical configuration; and
whereby the number of main bodies pivotally aligned with one another may be made equal to the number of players in a game.

5,295,692
BOWHUNTING ARROW
Barry M. Wright, 9906 Perry Rd., Le Roy, N.Y. 14482
Filed May 17, 1993, Ser. No. 61,232
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—416 **3 Claims**



1. A hunting arrow for use with a bow, said arrow including a head, a tail, and a shaft;
said shaft including an outer coating of an elastomeric material;
whereby movement of said arrow on said bow is substantially silent through the draw and release of said arrow.

5,295,693
GAME OF SKILL
John Dobson, R.R. #2, Burford, Ontario, Canada
Filed Feb. 28, 1992, Ser. No. 843,194
Int. Cl.[5] A63B *67/00*; **A63F** *9/00*
U.S. Cl. 273—441 **18 Claims**



1. A game comprising
a path in an upwardly slanting first plane,
an object means to be moved over the path and having the freedom to move on the path under the force of gravity and free to fall off the path unless otherwise controlled, and
a manipulating means for manipulating the object means, and having an edge in a second plane extending across and over the first plane to interact with and control the object means, said edge having the freedom of movement to move linearly with respect to the path to advance or retract, and to tilt clockwise or counterclockwise in said second plane when manipulated by a player.

5,295,694
LAPAROSCOPIC SURGERY SIMULATING GAME
John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072
Continuation-in-part of Ser. No. 966,984, Oct. 27, 1992, abandoned. This application Nov. 18, 1992, Ser. No. 977,932
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—447 **19 Claims**

1. A game for use by a player to simulate a minimally invasive surgical procedure comprising, a base member, a cover member, signaling means, a plurality of anatomic members shaped to simulate internal organs of a being, a lifting instrument, and an extracting instrument, said lifting instrument having a distal portion and a proximal portion, said extracting instrument having a distal portion and a proximal portion, said base member bearing a graphic likeness of the anatomy of said being and including plural cavities disposed at preselected portions in said likeness, each of said preselected portions in said likeness corresponding to the location of an anatomical organ of said being which is located thereat, said plurality of anatomic members being located in respective ones of said cavities, said cover member comprising a dome-shaped wall disposed over the portion of said base member including said cavities and defining a work space therebetween, said cover member comprising a first opening which is too small to enable any of said anatomic members to pass therethrough yet which is large enough to enable said distal portion of said lifting instrument to be extended therethrough into said work space while said proximal portion of said lifting instrument is located outside of said work space, said distal portion of said lifting instrument including means for selectively grasping and lifting any of said anatomic members out of its respective cavity when said distal portion of lifting instrument is extended through said first opening by said player, said signaling means being coupled to each of said cavities for providing a output signal in the event that said distal portion of said lifting instrument engages a portion of a cavity, said cover member having a second opening large enough to enable any of said anatomic members and said distal end portion of said extraction instrument to pass therethrough, said work space being sufficiently large to enable said lifting instrument to transfer said lifted anatomic member to said extraction instrument, whereupon said extraction instrument can be used by said player to carry said lifted anatomic member out of said working space through said second opening.

15. A method of playing a game simulating a minimally invasive surgical procedure by a player, comprising, providing a base member, a cover member, signaling means, a plurality of anatomic members shaped to simulate internal organs of a being, a lifting instrument, and an extracting instrument, said base member bearing a graphic likeness of the anatomy of said being and including plural cavities disposed at preselected portions in said likeness, each of said preselected portions in said likeness corresponding to the location of an anatomical organ of said being which is located thereat, said cover member comprising a wall having a first opening and a second opening therein, said cover member being disposed over a portion of said base member to define a work space therebetween, said lifting instrument having a distal portion and a proximal portion, said extraction instrument having a distal portion and a proximal portion, said first opening insaid cover member being is too small to enable any of said anatomic members to pass therethrough yet being large enough to enable said distal portion of said lifting instrument to be extended therethrough into said work space while said proximal portion of said lifting instrument is located outside of said work space, said second opening being large enough to enable said distal end portion of said extraction instrument and any of said anatomic members to pass therethrough, said method additionally comprising the steps of;
(a) locating each of said plurality of anatomic members in respective ones of said cavities,
(b) extending said distal portion of said lifting instrument

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through said first opening into said work space while said proximal portion of said lifting instrument is held outside said work space,

(c) operating said lifting instrument from outside said work space to grasp and lift a selected one of said anatomic members out of its respective cavity without touching said cavity with said distal portion of said lifting instrument, said signalling means coupled to each of said cavities to provide a output signal in the event that said lifting instrument engages a portion of said cavity, and

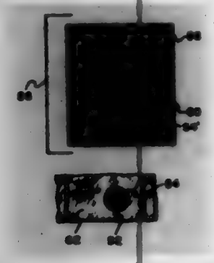
(d) extending the distal portion of said extraction instrument through said second opening in said cover member into said work space while said proximal portion of said extraction instrument is held outside of said work space, transferring said selected one of said anatomic members from said distal portion of said lifting instrument to said distal portion of said extraction instrument, and utilizing said extraction instrument to carrying said transferred anatomic member out of said work space through said second opening.

5,295,696

METHOD OF CODING GIFTS

Vicki L. Tamanini, 5039 Dante Ave., Vineland, N.J. 08360

Filed Apr. 22, 1993, Ser. No. 50,584
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—459 **17 Claims**



1. A method to aid children to identify their multiple gifts from the multiple gifts of others at a chosen time of giving, the method comprising:

(A) providing a first coding means comprising:

(i) a multiplicity of sheet members each comprising a front surface and a rear surface,

(ii) adhesive means on each sheet to cause the rear surface to adhere to a gift, and

(iii) first marking means visible on the front surface of each sheet making all the sheet members of the first coding means identifiable as single group to a child,

(B) providing a second coding means comprising:

(i) a multiplicity of sheet members each comprising a front surface and a rear surface,

(ii) second adhesive means on each sheet to cause the rear surface to adhere to a gift, and

(iii) second marking means visible on the front surface of each sheet making all the sheet members of the second coding means identifiable as single group to a child and distinguishable from the first coding means,

(C) providing first matching means comprising information that matches the first marking means with a first child,

(D) providing second matching means comprising information that matches the second marking means with a second child,

(E) adhering first coding means to at least a portion of gifts intended for the first child,

(F) adhering second coding means to at least a portion of gifts intended for the second child, and

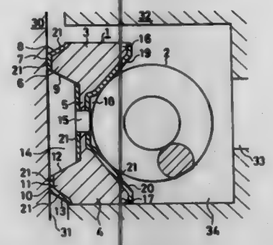
(G) at the chosen time for giving the gifts delivering the first coding means to the first child and the second coding means to the second child.

5,295,696

COMBINED OIL RING

Akira Harayama, and Kazuyoshi Aruga, both of Okaya, Japan, assignors to Teikoku Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 858,847, Mar. 20, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 34,663
Claims priority, application Japan, Apr. 4, 1991, 3-030318[U]
Int. Cl.[5] F16J *9/06*
U.S. Cl. 277—138 **10 Claims**



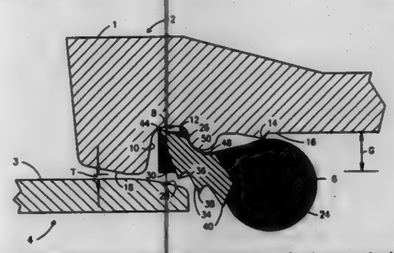
1. A combined oil ring for a piston engine comprising a steel oil ring having a generally I-shaped section consisting of upper and lower rails and a web connecting the upper and lower rails and a coil expander for forcing the oil ring outwardly, wherein each outer projecting portions in said upper and lower rails is coated with a nitrided layer having a hardness of Hv 900 or more, at least one of an upper and a lower surface connecting with the outer circumferential sliding surface at said circumferential outer projecting portion forms a surface lacking said nitrided layer and having a hardness lower than Hv 700, and an axial width of said outer circumferential sliding surface is smaller than 0.25 mm.

5,295,697

RESTRAINING ELEMENT FOR PRESSURE PIPE JOINTS

Joe Weber, Birmingham, and Lawrence S. Jones, Hueytown, both of Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Nov. 4, 1992, Ser. No. 971,110
Int. Cl.[5] F16J *15/12*; F16L *21/08*
U.S. Cl. 277—181 **3 Claims**



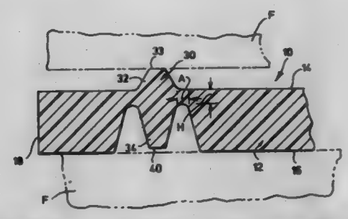
1. A gasket for preventing separation of telescoped pipes, said telescoped pipes comprising a first pipe having a gasket receiving groove, said groove having a front wall and a second pipe having a spigot end inserted into said first pipe comprising a compressible body having a heel portion and a sealing portion, said heel portion having circumferentially spaced metal segments embedded in an exposed face of said body, each of said metal segments having a row of teeth extending radially inwardly from a first face of said metal segment, and each of said metal segments having a single tooth extending radially outwardly of the side of said metal segment opposite said first face, said radially outwardly extending tooth being acutely pointed with respect to the radial direction and arranged so s to bite into the inner face of said front wall within said groove, whereby excessive rotation of the segments is prevented in order to avoid fractures in the spigot end of the inserted pipe.

5,295,698

MOLDED PLASTIC GASKET HAVING AN IMPROVED SEALING BEAD

Bhagwan D. Agarwal, Skokie, and Colin Chen, Barrington, both of Ill., assignors to Fel-Pro Incorporated, Skokie, Ill.

Continuation of Ser. No. 11,264, Jan. 29, 1993, abandoned. This application Jun. 10, 1993, Ser. No. 74,990
Int. Cl.[5] F16J *15/14*
U.S. Cl. 277—235 B **8 Claims**



1. A gasket comprising a thin main gasket body of a synthetic plastic material having a pair of expansive main surfaces and defining a plurality of openings including at least one service opening and a plurality of bolt holes, said gasket body defining a sealing bead which is integral with said body, which is vertically moveable relative to said body, and which surrounds said service opening, each sealing bead comprising a first bead segment projecting outwardly beyond one of said main surfaces and a second bead segment integrally formed with said first bead segment in line with said first bead segment and extending oppositely to said first bead segment, each said sealing bead being formed integrally with said main body via a cantilever section at each side of said sealing bead, each said cantilever section having a thickness no more than about 40 percent of the thickness of said main body and a width which is no less than about 75 percent of the thickness of the cantilever section, whereby when said gasket is clamped and loaded between a pair of flanges, said sealing bead segments cooperate to effect seals with said flanges thereat and said cantilever sections cooperate to provide restorative energy under loading.

5,295,699

METAL LAMINATE GASKET WITH INNER PROJECTION CONNECTING MECHANISMS

Takashi Inoue, Tokyo, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

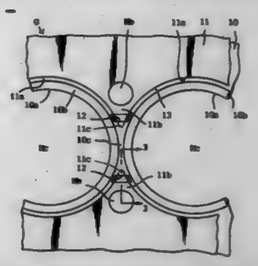
Filed Jan. 19, 1993, Ser. No. 5,947
Claims priority, application Japan, Jan. 24, 1992, 4-007381[U]
Int. Cl.[5] F02F *11/00*; F16J *15/02*
U.S. Cl. 277—235 B **4 Claims**

1. A metal laminate gasket for an internal combustion engine having at least two cylinder bores, comprising:

a first metal plate extending substantially throughout an entire area of the engine and including at least two first holes corresponding to the cylinder bores of the engine, an intermediate area located between the two first holes, and two openings situated in the intermediate area and facing against each other relative to an imaginary line linking between centers of the first holes,

sealing means formed around the first holes of the first metal plate for sealing therearound, and

a second metal plate situated on the first metal plate and having one second hole, said second hole having an inner configuration corresponding to parts of inner configurations of the cylinder bores and larger than the first holes and a narrow area situated on the intermediate area of the



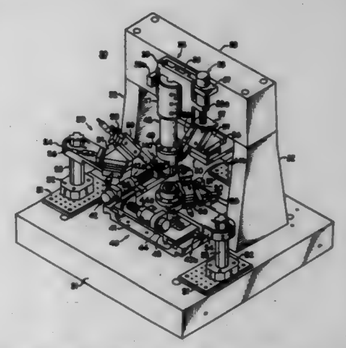
first plate, said second plate having projecting areas with edges located outside the narrow area and situated in the intermediate area, said edges, when the first and second metal plates are assembled, passing through the openings of the first plate and located at a side opposite to a side that the second plate is disposed so that the edges of the second plate are fixed to the intermediate area of the first plate.

5,295,700

WORKPIECE SUPPORT ASSEMBLY FOR MICROROBOTIC APPARATUS

Daniel F. Crews, Winfield; Gregory R. O'Brien, Villa Park, and Alan L. Stone, Wauconda, all of Ill., assignors to Dukane Corporation, St. Charles, Ill.

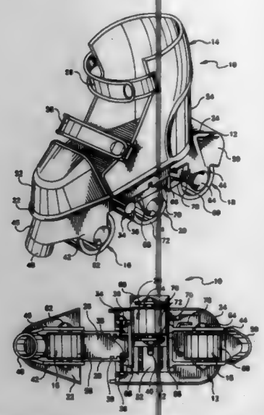
Filed Apr. 16, 1992, Ser. No. 870,056
Int. Cl.[5] B23B *5/22, 5/34*
U.S. Cl. 279—5 **32 Claims**



1. Apparatus for aligning a workpiece along an axis with respect to which it may be slightly misaligned comprising: a ball member, fixture means carried by said ball member for holding the workpiece aligned along a radius of said ball member, socket means seating said ball member with its center on said axis for free universal rotational movement about said center, and aligning means movable along said axis for engagement with the workpiece to move it into alignment with said axis, said ball member cooperating with said socket means for accommodating said aligning movement of the workpiece in response to engagement by said aligning means.

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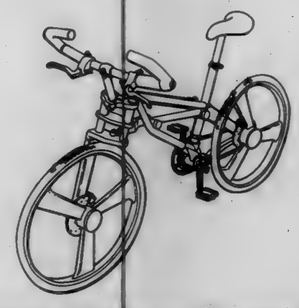
5,295,701
IN LINE ROLLER SKATE ASSEMBLY HAVING TRAINING WHEELS
Frederick M. Reiber, Rehoboth, Mass., and Joseph P. Sejnowski, Cumberland, R.I., assignors to Playskool, Inc., Pawtucket, R.I.
Filed Apr. 9, 1993, Ser. No. 45,617
Int. Cl.[5] A63C *17/04*
U.S. Cl. 280—11.22 6 Claims



1. A roller skate assembly comprising a sole portion for receiving a foot of a wearer thereon; means for securing said sole portion to the foot of the wearer; first and second roller means; means for rotatably mounting said first and second roller means on said sole portion for rotation about first and second spaced, substantially parallel, transverse axes of rotation so that said first and second roller means are in substantially longitudinally aligned relation on said sole portion and so that said first and second roller means are operable for movably supporting said sole portion and said wearer on a supporting surface, third roller means, carriage means, means for rotatably mounting said third roller means on said carriage means, and carriage mounting means for mounting said carriage means on said sole portion so that said third roller means is rotatable about a third axis which is substantially parallel to said first and second axes, said carriage mounting means mounting said carriage means so that said third roller means is operative in cooperation with said first and second roller means for supporting said roller skate assembly on said supporting surface and being operable for alternatively positioning said third roller means in a first position along said third axis of substantially longitudinally aligned relation to said first and second roller means and a second transversely shifted position along said third axis of longitudinally nonaligned relation to said first and second roller means.

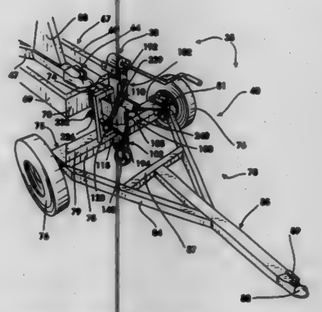
5,295,702
SINGLE SIDED CYCLE REAR SUSPENSION SYSTEM
Erik F. Buell, Mukwonago, Wis., assignor to Buell Motor Company, Inc., Mukwonago, Wis.
Filed Mar. 30, 1992, Ser. No. 860,313
Int. Cl.[5] B62K *25/28*
U.S. Cl. 280—284 21 Claims

1. A single-sided rear suspension system for mounting a rear wheel, rotatable about an axis, to a cycle having a main frame, said suspension system comprising:
A) a pivotable rear frame assembly including:
1) a single primary swingarm having front and rear ends, and pivotably connected at the front end to a pivot point on the main frame,
2) wheel mounting means at the rear end of the primary swingarm for mounting said rear wheel to one side only of said primary swingarm, said primary swingarm and wheel mounting means pivoting to allow for up and down movement of said rear wheel relative to the main frame, and
3) a secondary swingarm having two ends, a forward end and a rearward end, one end connected to the wheel mounting means and pivotably movable therewith about said pivot point;
B) spring means having two ends, connected at one end to the main frame and connected at the opposite end to the pivotable rear frame assembly, said spring means urging said pivotable rear from assembly toward an unloaded position with respect to said main frame; and



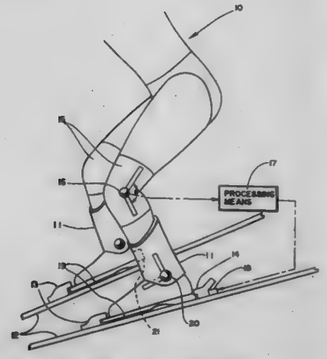
C) connecting and guiding means for connecting the main frame to the forward end of the secondary swingarm, and allowing rotational motion of said forward end of the secondary swingarm about the pivot point while resisting lateral motion of the forward end of the secondary swingarm with respect to the main frame;
whereby lateral load to the rear wheel is resisted from torsionally as well as laterally deflecting the rear frame assembly with respect to the main frame by both the pivot point and by the connecting and guiding means, said pivot point and said connecting and guiding means having no substantial lateral freedom of motion.

5,295,703
LOCKABLE ARTICULATED TRAILER
Donald J. White, 1212 S. Muskogee Ave., Russellville, Ark. 72801
Filed Nov. 9, 1992, Ser. No. 973,673
Int. Cl.[5] B62D *13/06*
U.S. Cl. 280—414.1 14 Claims



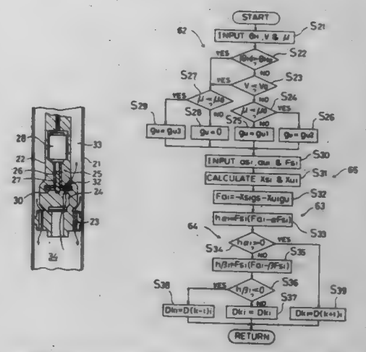
1. An articulated trailer comprising:
a carriage adapted to receive a load to be transported, said carriage comprising a rear, fixed, wheeled axle and a separate wheeled front axle, said front wheeled axle comprising tongue means for coupling said carriage to a tow vehicle;
extensible jack column means for normally pivotally mounting said wheeled front axle, said jack column means comprising a first portion comprising a tubular central sleeve, and a second portion comprising spaced apart, upper and lower tubular sleeves coaxialy disposed adjacent said central sleeve, and a rigid, C-shaped link mechanically extending between the upper and lower sleeves, said first and second portions adapted to be selectively, torsionally displaced from one another, one of said portions secured to said carriage, said jack column means further comprising means for selectively torsionally locking said first and second portions in predetermined positions relative to one another; and,
wherein said jack column means includes lock means selectively locking said front wheeled axle to said carriage and articulates said front wheeled axle relative thereto.

5,295,704
SKI BINDING WITH KNEE FLEX SENSOR
Thomas P. Flock, R.R. 2, Box 135, Murphysboro, Ill. 62966
Continuation of Ser. No. 623,233, Dec. 6, 1990, abandoned. This application Jun. 12, 1992, Ser. No. 898,181
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—611 9 Claims



1. A snow ski binding which comprises:
(a) a releasable means for retaining a skier's ski boot to a ski;
(b) a means for measuring and transmitting the angle of the knee flex of the skier;
(c) a processing means which receives the knee flex angle measurement and uaes the measurement in determining the knee's susceptibility to injury;
(d) a means for causing or facilitating the release of the ski boot from the ski when the knee is in a position susceptible to injury.

5,295,705
AUTOMOBILE SUSPENSION INCLUDING CONTROL OF VARIABLE DAMPING COEFFICIENT SHOCK ABSORBER
Tetsuro Butsuen; Tohru Yoshioka, and Yasunori Yamamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Dec. 8, 1992, Ser. No. 987,176
Claims priority, application Japan, Dec. 9, 1991, 3-324190
Int. Cl.[5] B60G *17/08*; F16F *9/44*
U.S. Cl. 280—707 13 Claims



1. A suspension system for automobiles, said suspension system comprising:
a shock absorber of multi-degree variable-damping-coefficient type which is disposed between a sprung element and an unsprung element;
means for determining a sprung vertical displacement velocity of said sprung element;
means for determining an unsprung vertical displacement velocity of said unsprung element;
damping force detection means which detects an actual damping force generated by said shock absorber; and
control means which is supplied with a signal from said damping force detection means and then changes and controls a damping coefficient of said shock absorber to set the damping force generated by said shock absorber equal to a target damping force;
whereby the target damping force, Fa is obtained by the following formula, as a function of the sprung vertical displacement velocity, Xs and the unsprung vertical displacement velocity, Xu:

$$Fa = -Xs \cdot gs - Xu \cdot gu,$$

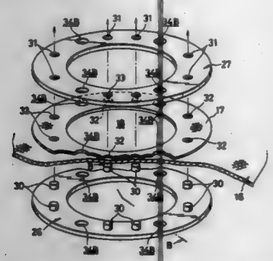
wherein both ga and gu are coefficients and $gs > 0$ and $gu \geqq 0$.

5,295,706
AIR BAG
Kazuo Morita, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan
Filed Apr. 16, 1992, Ser. No. 868,979
Claims priority, application Japan, May 20, 1991, 3-114611
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A 6 Claims

1. An air bag made of cloth, comprising:
a gas introducing opening for receiving gas from an inflator;
a marginal portion formed around the gas introducing opening and having two faces;
a ring-shaped reinforcing cloth superposed on one face of the marginal portion of said gas introducing opening;
a first ring-shaped synthetic resin molded member placed on said reinforcing cloth;

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a second ring-shaped synthetic resin molded member placed on the other face of said marginal portion of said gas introducing opening;
a plurality of protrusions integrally formed on one of said synthetic resin molded members to project in a direction toward the other of the synthetic resin molded members;
a plurality of engaging holes formed on the other synthetic resin molded member at portions corresponding to the protrusions;
holes formed in said reinforcing cloth and said marginal portion of the air bag at portions corresponding to the protrusions; and



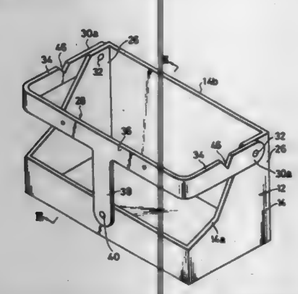
a plurality of through holes formed in said marginal portion of the air bag, the reinforcing cloth and the first and second ring-shaped synthetic resin molded members,
said protrusions, when the air bag is formed, being inserted in said engaging holes through said holes of the reinforcing cloth and the marginal portion, and integrally secured to said other synthetic resin molded member, said protrusions being flush with an outer surface of said other synthetic resin molded member without projecting outwardly therefrom so that the through holes are aligned to allow bolts for attaching the air bar to a retainer to pass therethrough and the air bag is easily assembled with the retainer and the inflator.

5,295,707

SHOCK ABSORBING AIR BAG CONTAINER

Takeshi Satoh, and Masato Tagawa, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,518
Claims priority, application Japan, Mar. 25, 1992, 4-067198
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 A **8 Claims**



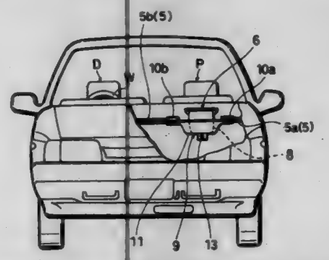
1. An air bag device for a passenger, comprising:
a box-shaped container having an open front face and including a pair of opposing sides;
an air bag contained in a folded state in said container;
a lid covering a front opening of said container;
an inflator disposed at a back of said container for injecting gases to extend said air bag;
a pair of extensions extending upward from said pair of opposing sides of said container; and
a U-shaped frame extending along the outside of said pair of opposing sides and another side of said container;
said frame having:
a pair of arms extending across said two opposing sides of said container and hinged to said extensions;
a bridge portion bridging the arm portions;
a support member protruding from said bridge portion to said container and having its leading portion supported by said another side of said container; and
a pair of notches formed midway of said arm portions and opposing said container for buckling said arm portions when a load heavier than a predetermined level is applied to said frame from said lid.

5,295,708

MOUNTING STRUCTURE OF AIR BAG MODULE FOR VEHICLE FRONT PASSENGER SEAT

Minoru Siga, and Tatsuhisa Yamane, both of Osaka, Japan, assignors to Daihatsu Motor Co., Ltd., Osaka, Japan

Filed May 27, 1992, Ser. No. 888,867
Claims priority, application Japan, Jun. 28, 1991, 3-50044[U]; May 13, 1992, 4-120787
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—732 **9 Claims**



1. A mounting structure of an air bag module for a vehicle, the vehicle having a driver's seat and a front passenger seat, the vehicle having a width, the mounting structure comprising a pillar-to-pillar member extending substantially across the full width of the vehicle in an instrument panel, wherein the pillar-to-pillar member includes a pair of divided pieces which are interrupted only at a position in front of the front passenger seat, the pillar-to-pillar member further including an intermediate module mount which is arranged between and connected to the respective divided pieces, the module mount having an upwardly open recess for fixedly receiving a bottom portion of the air bag module.

5,295,709

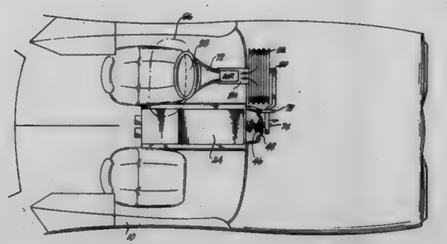
INERTIAL MASS SAFETY SYSTEM ACTIVATION OF AN AIR BAG IN PERSONAL VEHICLES

Lon Bell, Pasadena, Calif., assignor to Amerigon, Inc., Burbank, Calif.

Division of Ser. No. 771,869, Oct. 3, 1991, Pat. No. 5,249,826.
This application Jun. 30, 1993, Ser. No. 85,406
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—734 **5 Claims**

1. A safety system activation and energy supply device for personal vehicles, the device responsive to crash accelerations imparted on the vehicle and comprising:
a means for mounting one or more vehicle system components having high mass as a common movable structure, said mounting means movable, under crash acceleration, in at least one axis from a constrained first position through a range of motion to a displaced second position,

the mounting means acquiring kinetic energy through said acceleration;
means for constraining the mounting means in the first position;
means responsive to the motion of the mounting means for converting motion and kinetic energy of the mounting means to secondary motion in the safety system; and



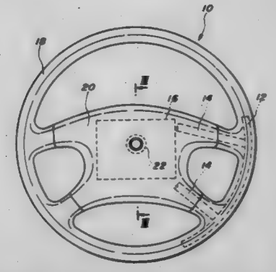
wherein the safety system is an impact prevention device and the responsive means comprises interconnection means for translating the motion of the mounting means to motion of the impact prevention device bringing the impact prevention device into contact with an occupant of the vehicle and supplying a restraining force thereby avoiding impact by the occupant on elements of the vehicle.

5,295,710

ENERGY ABSORBING STEERING WHEEL ASSSEMBLY

Takayoshi Kido, Ino Hiratsuka, and Tetsuya Watanabe, Fuji, both of Japan, assignors to Nissaan Motor Co., Ltd. and Nihon Plast, Co., Ltd., both of Japan

Continuation of Ser. No. 792,190, Nov. 14, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 35,535
Claims priority, application Japan, Nov. 16, 1990, 2-310846
Int. Cl.[5] B62D *1/11*
U.S. Cl. 280—750 **6 Claims**



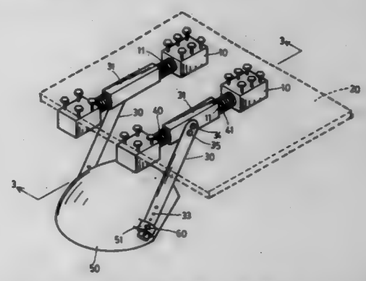
1. A steering wheel assembly for use with a steering shaft, said assembly comprising:
an annular rim;
a hub connecting said annular rim drivingly with said steering shaft;
a center covering member positioned at a generally center portion of said annular rim; and
an energy absorbing structure positioned between said hub and said center covering member, said energy absorbing structure being made so as to be compressively deformed to dissipate an impact load, exceeding a predetermined magnitude, which is applied to said center covering member, said energy absorbing structure comprising a first portion connected to said center covering member, a second portion connected to said hub, a hollow cylindrical portion having opposed open end portions, said hollow cylindrical portion being sandwiched longitudinally between said first and second portions and being attached to transverse edges of said first and second portions, respectively, at said opposed open end portions, and an elongate member for minimizing displacement of said first portion and said hollow cylindrical portion relative to each other and to said second portion when said impact load is applied to said center covering member at an angle to an axis of said steering shaft, said elongate member having longitudinally opposed ends, one of said opposed ends attached to a transverse edge of said first portion with the other opposed end attached to a transverse edge of said second portion such that said elongate member is diagonally arranged relative to said first and second portions and in a plane containing said transverse edges, the opposed end of said elongate member attached to the transverse edge of said second portion being proximate to the attachment of said one of the opposed open end portions to the second portion and being between the attachment of one of said opposed open end portions of said hollow cylindrical portion to said second portion and a location on the transverse edge of said second portion substantially coincident with a plane that intersects an axis of said steering shaft and is normal to the transverse edge of said second portion.

5,295,711

SAFETY DEVICE FOR PROTECTING THE HEAD OF A DRIVER

Seing-Fuw Huan, 58, Ma Yuan West St., Taichung, Taiwan

Filed Sep. 11, 1992, Ser. No. 944,182
Int. Cl.[5] B60R *21/055*
U.S. Cl. 280—751 **13 Claims**



1. A safety device of a vehicle for protecting a head of a user comprising at least one rod fixed on top of said vehicle, a slide slidably engaged on said rod, a cap coupled to said slide for engagement on said head of said user, and means for biasing said slide in order to absorb shocks transmitted to said head of said user, two blocks fixed to said top of said vehicle, said rod being fixed between said blocks, and said biasing means including a pair of springs engaged on said rod and biased between each of said blocks and said slide for biasing said slide.

5,295,712

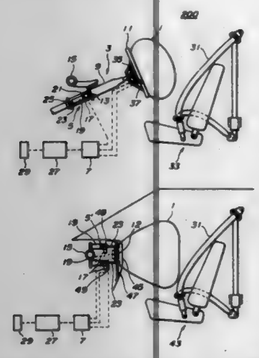
CONTROL OF A VEHICLE RESTRAINING SYSTEM HAVING AN AIR BAG IN A RETRACTABLE STEERING COLUMN

Hideo Omura, Yokosuka City, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Dec. 8, 1992, Ser. No. 987,720
Claims priority, application Japan, Dec. 11, 1991, 3-327490
Int. Cl.[5] B60R *21/32*; B62D *1/18*
U.S. Cl. 280—777 **18 Claims**

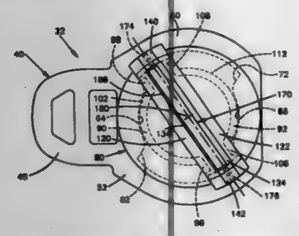
1. An air-bag type passenger restraining device for use in a motor vehicle having a seat, comprising:

a vehicle collision detecting means which issues a first instruction signal when detecting a vehicle collision;
an air-bag which is located in front of said seat and instantly inflated when receiving a second instruction signal;
an air-bag retreating device which instantly retreats said air-bag in a direction away from said seat when receiving a third instruction signal; and



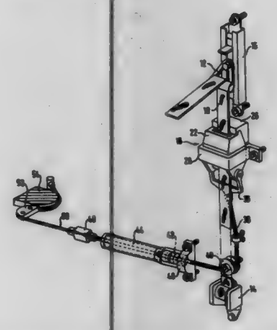
control means for producing said second and third instruction signals upon receiving said first instruction signal, said control means issuing said third instruction signal for starting said air-bag retreating device after said air-bag is inflated due to issuance of said second instruction signal therefrom.

5,295,713
TONGUE ASSEMBLY
Phillip H. McCune; James P. White, both of Mt. Clemens, and Keith R. Ball, New Baltimore, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Continuation of Ser. No. 744,272, Aug. 13, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,911
Int. Cl.[5] B60R *22/12*
U.S. Cl. 280—801 R **7 Claims**



1. A tongue assembly for use in a safety apparatus in which belt webbing restrains movement, said tongue assembly comprising:
a base having a portion which is latchable in the buckle, said base having an opening through which the belt webbing is extensible, said opening having an axis;
means for defining a first belt webbing clamping surface on said base;
a clamping member having a second belt webbing clamping surface, said clamping member being movable between a first position in which said clamping member clamps the belt webbing against said first belt webbing clamping surface on said base to block movement of the belt webbing through said opening and a second position in which the belt webbing is movable through said opening; and
means for mounting said first belt webbing clamping surface and said clamping member for rotation about the axis of said opening in response to forces acting on the belt webbing.

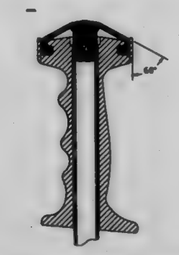
5,295,714
BELT TIGHTENER FOR VEHICLE SAFETY BELT SYSTEMS
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany
Filed Nov. 3, 1992, Ser. No. 970,762
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1991, 4136623
Int. Cl.[5] B60R *22/36, 22/46*
U.S. Cl. 280—806 **5 Claims**



1. A belt tightener for a vehicle safety belt system comprising:
a belt retractor;
a deflection fitting;
a safety belt which has a webbing section running freely between said belt retractor and said deflection filling;
belt gripping means for engaging said webbing section;
a belt tightener drive connected to said gripping means by a tension transmitting element;
a hollow cylinder defined by a cylinder wall, said cylinder being adapted to be secured to a vehicle bodywork;
a piston received in said cylinder and connected to said tension transmitting element;
said gripping means being movable with a portion of said belt webbing gripped by said gripping means under the action of tensile force transmitted by said tension transmitting element from said belt tightener drive to said gripping means; and
said piston being free to slide within said cylinder from an initial position in a first direction upon activation of said belt tightener drive but restrained against movement within said cylinder in a second direction opposite to said first direction up to a predetermined threshold value of tensile load transmitted to said piston through said tension transmitting element, and said piston, when said predetermined threshold value is exceeded, being forced to move within said cylinder in said second direction with plastic deformation of said cylinder wall during forced movement of said piston towards said initial position.

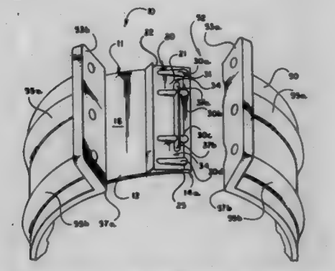
5,295,715
SHOCK ABSORBING SKI POLE HANDLE
Terry M. Van Blaricom, 6230 Van Nuys Blvd., Van Nuys, Calif. 91401
Filed Apr. 9, 1993, Ser. No. 45,658
Int. Cl.[5] A63C *11/22*
U.S. Cl. 280—821 **2 Claims**

1. A shock absorbing hand grip for attachment to an upper end portion of an elongated tubular ski pole, said hand grip comprising:
a hollow grip portion having a circular passage extending therethrough for receiving said upper end portion of said ski pole in a sliding relationship, said grip portion having an enlarged upper portion with an upper surface which inclines downwardly in a direction extending radially from said passage to an outer circumferential edge and a circular groove extending along a circumferential outer surface of said enlarged upper portion;



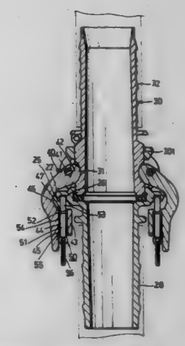
a shock absorber portion made of elastomeric material and having a circular configuration, said shock absorber portion including a centrally located circular mounting plug depending downwardly therefrom, said mounting plug being received within said upper end portion of said ski pole, and a thickened portion extending downwardly and inwardly from an outer circumferential edge of said shock absorber, said thickened portion being received within said circular groove of said grip portion; and
a retaining ring for securing said thickened portion within said circular groove.

5,295,716
PIPE COUPLING WITH SEALING PLATE
Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075
Continuation-in-part of Ser. No. 861,940, Apr. 2, 1992. This application Nov. 19, 1992, Ser. No. 978,770
Int. Cl.[5] F16L *21/02*
U.S. Cl. 285—15 **18 Claims**



1. A pipe coupling for sealing a leak location in a pipe, comprising:
a cylindrical member having an inner surface and an outer surface, and including an axial joint defined by a first axial edge and a second axial edge;
a sealing plate comprising a plate member having a first axial plate edge and a second axial plate edge along opposite ends of said plate member;
a first axial sealing pad adhered to an outer surface of said plate member along said first axial plate edge;
said sealing plate attached in spaced apart relation to said inner surface of said cylindrical member adjacent to said first axial joint edge by a second axial sealing pad adhered to said outer surface of said plate member along said second axial plate edge, and with a portion of said sealing plate extending beyond said first axial joint edge of said cylindrical member to a position spaced outwardly from said first axial joint edge;
a pair of spaced apart circumferential sealing pads adhering to an inner surface of said plate member;
a pair of arcuate gaskets attached to an inner surface of said cylindrical member, each of said arcuate gaskets engaging said second axial sealing pad and one of said circumferential sealing pads, and extending around said cylindrical member to a position adjacent to said first axial joint edge of said cylindrical member; and
means for closing said pipe coupling with a portion of said inner surface of said cylindrical member and said arcuate gaskets adjacent said first axial joint edge engaging said first axial sealing pad, sealing connections being formed around said pipe by said arcuate gaskets and corresponding circumferential sealing pads, and along both of said axial sealing pads.

5,295,717
TUBE CONNECTING DEVICE
Waterson Chen, No. 50-10, Shu-Wang Rd., Ta-Li Hsiang, Taichung Hsien, Taiwan
Filed Mar. 9, 1993, Ser. No. 28,470
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—84 **1 Claim**



1. A tube connecting device including
a first tubular connector member having a receiving end portion formed with a pair of opposite radial openings and an extension end portion to be connected to a corresponding tube;
a second tubular connector member having an insert end portion which extends into said receiving end portion and an engaging end portion to be connected to a corresponding tube, said insert end portion having an outer surface which is formed with an annular peripheral groove that is registered with said radial openings;
a pair of press arms, each having one end mounted pivotally to said first connector member adjacent to a respective one of said radial openings and formed with a cam face, each of said press arms being pivotable to a locking position in which said cam face thereof extends into said peripheral groove via the respective said radial opening so as to press against said second connector member at said annular groove in order to secure said second connector member to said first connector member;
wherein the improvements comprise:
a pair of retaining seats, each of which projecting outwardly from said first connector member and being disposed below a respective one of said radial openings, each of said

retaining seats having an inwardly and downwardly inclined side surface and a bottom formed with a vertical blind bore;

each of said press arms having an inner side which is formed with a longitudinal positioning seat, said positioning seat being formed with an axial positioning bore which is aligned with said blind bore in a respective one of said retaining seats when said press arm is in said locking position; and

a pair of retaining units, each of which including: a positioning rod being provided slidably in said positioning bore of a respective said positioning seat and having first and second end portions which extend out of said positioning bore; a biasing unit being disposed in said positioning bore of said respective positioning seat and biasing said positioning rod so that a tip of said first end portion is displaced normally from a pivoting axis of a respective said press arm by a distance equal to that between a plane lying on said inclined side surface of a respective said retaining seat and said pivoting axis of said respective press arm; and a pull ring secured on said second end portion of said positioning rod; said first end portion extending into said blind bore of said respective retaining seat when said respective press arm is in said locking position.

5,295,718

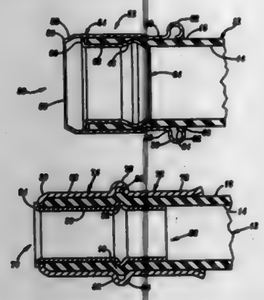
END TERMINATING MEANS FOR PLASTIC AND RUBBER CONDUIT

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Continuation of Ser. No. 697,222, May 6, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,538

Int. Cl.[5] F16L *33/20*

U.S. Cl. 285—258 **6 Claims**



1. A connector assembly adapted to be attached to the terminal end of a flexible conduit, said connector assembly comprising:

a first generally cylindrical member having a forward end and a rearward end positioned about the exterior surface of said terminal end of said conduit, said forward end including an inwardly tapering portion and an inwardly extending flange-like portion dependent therefrom, said flange-like portion adapted to locate said flexible conduit relative to said first cylindrical member, said first cylinder member having a smooth interior surface adjacent said conduit; and

a second generally cylindrical member axially disposed to said first member, and positioned about the interior surface of said terminal end of said conduit, said second cylinder member having an outwardly extending flange terminating on one of its ends for orienting the conduit for affixment, said flange positioned inside and abutting said first cylinder member adjacent said inwardly extending flange, said second cylinder member having a smooth exterior surface and a single annular bead forming a discontinuity on said exterior surface, said bead adapted for abutting said conduit against said smooth interior surface of said cylinder member to retain and seal said conduit in said members.

5,295,719

CONNECTION ASSEMBLY FOR VEHICLE ENGINE COOLANT CIRCUITS

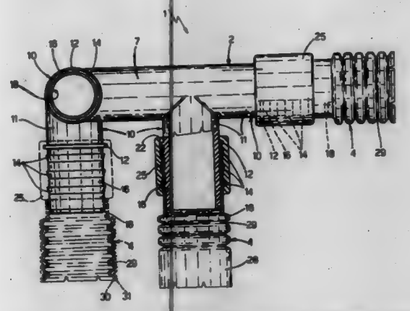
Attilio Dal Palu', Rivoli, Italy, assignor to Fabbrica Italiana Serrature Torino S.p.A., Turin, Italy

Continuation of Ser. No. 712,149, Jun. 6, 1991. This application Jul. 10, 1992, Ser. No. 911,880

Claims priority, application Italy, Jun. 8, 1990, 53078/90[U]

Int. Cl.[5] F16L *13/00*

U.S. Cl. 285—292 **4 Claims**



1. A connection assembly for a vehicle cooling system, comprising:

a distributing element with at least one tubular portion extending from said distributing element;

a branch pipe positioned or said tubular portion and means for securing said branch pipe to said tubular portion;

said securing means comprising a one-piece connecting element molded over said branch pipe and said tubular portion to form sealed one-piece unit;

said tubular portion having a radially-outwardly extending annular flange and a plurality of truncated cone-shaped projections extending radially-outwardly from said tubular portion, and

said connecting element having a cylindrical portion engaging said branch pipe over said annular flange and said cone-shaped projections to urge said branch pipe into sealing engagement with said tubular portion and said cylindrical portion having an internal recess terminating in an inwardly directed flange radially engaging said annular flange on one side and wall means radially engaging said annular flange on its other side to prevent said connecting element from sliding in relation to said tubular portion and said branch pipe.

5,295,720

MOTOR VEHICLE DOOR LOCK

Ulrich Budde, Bergneustadt, Fed. Rep. of Germany, assignor to BOMORO Bocklenberg & Motte GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

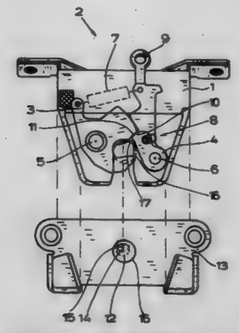
Filed Mar. 31, 1993, Ser. No. 41,429

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212327

Int. Cl.[5] E05C *3/26*; E05B *47/00*

U.S. Cl. 292—201 **7 Claims**

1. Motor vehicle lock for a motor vehicle closure member having a locking catch that is movable between an unlatched position and a latched position, a pawl for holding the locking catch in the latched position by latching engagement therewith, and a locking pin rotatably mounted on a carrier for rotation about an axis of rotation which is eccentric to a central axis thereof, said locking pin being rotatable by a motor around said axis of rotation between a preliminary locking position and a main locking position; wherein the pawl is disengageable



from latching engagement with the locking catch by a dynamic effect derived from the rotation of the locking pin from the main locking position in a direction toward the preliminary locking position, thereby releasing the locking catch.

5,295,721

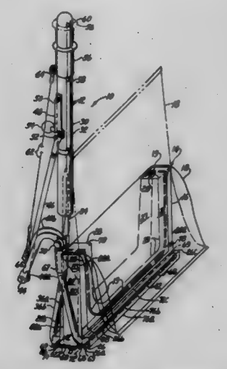
ANIMAL WASTE PICK-UP APPARATUS

Simon F. Wu, 3006 Blandford Dr., Rowland Heights, Calif. 91748

Filed May 21, 1993, Ser. No. 65,841

Int. Cl.[5] A01K *29/00*; E01H *1/12*

U.S. Cl. 294—1.4 **26 Claims**



1. Apparatus for handling waste material to be removed from a ground surface, the apparatus comprising in combination:

(a) a receptacle unit comprising:

(i) a jaw portion having first and second jaw members, lower extremities of the respective jaw members having corresponding generally horizontally extending first and second blade portions, one of the jaw members being movable relative to the other jaw member between an open position wherein the jaw members are separated by a jaw opening for receiving the waste material into the receptacle unit, and a closed position wherein the jaw members are in close proximity for forming a jaw cavity, each of the jaw members having an engagement member for actuation thereof;

(ii) a flexible bag member for holding the waste material, the bag member having a bag cavity and a bag opening, the bag opening defining a perimeter margin of the bag member;

(iii) a bag connector for sealingly connecting the bag member to the jaw portion with the bag cavity in fluid communication with the jaw cavity whereby the bag cavity is substantially closed by the jaw members in the closed position thereof for retaining the waste material within the receptacle unit; and

(iv) a jaw holder for yieldably holding the jaw members in the closed position; and

(b) an actuator unit comprising:

(i) a base handle member;

(ii) a spaced pair of actuator members for supportively connecting the engagement members of the receptacle unit;

(iii) a first actuator for selectively moving at least one of the actuator members for operating the jaw members between the open and closed positions thereof,

whereby the apparatus is operable for:

(i) while the jaw members are in the open position, positioning the receptacle unit in substantial contact with the ground surface with the blade portions on opposite sides of the waste material by manipulation of the base handle member;

(ii) moving the jaw members into the closed position whereby waste material is contained within the receptacle unit; and

(iii) disconnecting the receptacle unit from the actuator unit without releasing the waste material from the receptacle unit.

5,295,722

RETRACTABLE FOLDING TOP FOR MOTOR VEHICLES

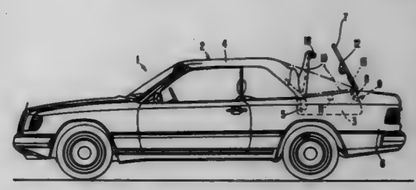
Andreas Bouné, Lindau; Martin Guckel, Wiernsheim; Jürgen Schrader, Weil im Schönbuch, and Klaus Claar, Gechingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 899,847

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120474

Int. Cl.[5] B60J *7/08*

U.S. Cl. 296—121 **9 Claims**



1. Retractable folding top for motor vehicles comprising:

a top frame having a material retaining hoop forming a lower termination of the folding top;

a top storage box for accommodating the folded top;

a top storage box lid for closing the top storage box;

a closure device coupled to the top storage box lid for holding shut the top storage box lid, the top having a position of rest of the material retaining hoop on the top storage box lid when the folding top is closed; and

a closure arrangement by which the material retaining hoop is connected to the top storage box lid, wherein the closure arrangement between the material retaining hoop and the top storage box lid has only a single, first closure which is arranged in a central region of an overlap zone between the top storage box lid and the material retaining hoop.

5,295,723

GRIPPING BELL FOR BOTTLES OR THE LIKE

Hermann Kronseder, Regensburger Strasse 42, 8404 Woerth, Fed. Rep. of Germany

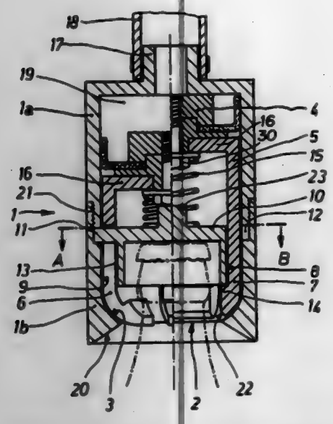
PCT No. PCT/EP91/00117, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO91/11378, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 22, 1991, Ser. No. 915,836

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1990, 9000849[U]; Mar. 7, 1990, 9002618[U]

Int. Cl.[5] B65C *1/48*

U.S. Cl. 294—88 24 Claims



1. A gripping bell for bottles comprising a sleeve-like housing having a central axis and a reception opening for the head of a bottle in a lower end thereof, said housing having an inner surface comprising a control surface portion that widens conically upwardly and outwardly from said reception opening and an axis parallel surface portion located above and that merges with an upper end of said control surface portion, an actuating element arranged for axial movement in an upper portion of the interior of said housing, a sleevelike collet chuck slidably mounted for axial movement in said housing between said actuating element and said reception opening, said collet chuck comprising a base portion attached to said actuating element and a plurality of elastic, circumferentially spaced gripping fingers extending downwardly from said base and separated from each other by axis parallel slots, each of said fingers having inner and outer side surfaces and gripping ends at the lower ends thereof, the outer side surfaces of said fingers being slidably guided by said axis parallel surface portion of said inner surface of the housing while said ends are slidably guided by said control surface portion thereof, and a stationary guide surface in the interior of said housing spaced radially inwardly from and extending parallel to at least a portion of said axis parallel surface portion of said inner surface of said housing to form an annular guide passage with said inner surface for said fingers, whereby during axial movement of said collet chuck within said housing by said actuating element, said ends of said elastic fingers are deformed and directed radially inwardly into a gripping position or radially outwardly into a bottle receiving position by said control surface portion of the housing's inner surface depending on the direction of movement of said collet, while said inner and outer side surfaces of said fingers are slidably guided in said annular guide passage, respectively, by said stationary guide surface and the axis parallel surface portion of said inner surface.

5,295,724

AIR-CONDITIONING ARRANGEMENT FOR PARKED PASSENGER CARS

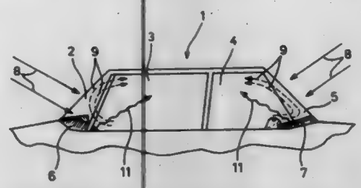
Johannes Feierlein, Oberpframmern, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG - Ottobrunn, Fed. Rep. of Germany

Filed Feb. 16, 1993, Ser. No. 18,796

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208845

Int. Cl.[5] B62D *25/00*

U.S. Cl. 296—1.1 6 Claims



1. An arrangement for controlling radiant heating of interior vehicle parts exposed to solar radiation comprising:

a carrier material;

a reflecting layer disposed on said carrier material; and

a foil layer having a controllable light transmitting capacity, which foil layer is disposed on said reflecting layer; and

a control unit which controls said foil layer to be in a light transmitting state when an engine of said vehicle is switched off, whereby incident light is transmitted to and reflected by said reflecting layer, and to be in a light absorbing state when said engine is switched on.

5,295,725

VISOR AND METHOD OF MANUFACTURING

Bryan G. Jones, West Olive, Mich., assignor to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 763,923, Sep. 23, 1991, abandoned. This application Sep. 25, 1992, Ser. No. 951,570

Int. Cl.[5] B60J *3/00*

U.S. Cl. 296—97.1 5 Claims



1. A vehicle visor having upper and lower elongated sides with spaced ends intersecting said sides to provide upper corners at the intersections of said upper elongated side and said ends comprising:

a flexible container shaped to define the outer surface of a visor, said container formed of a pattern of superimposed flexible material; said pattern when superimposed including a substantially straight folded edge forming said upper side; said superimposed material having peripheral engaging edges with a sealed portion extending along substantially the entire length of said peripheral edges except for an unsealed edge portion at one of said corners thereof thereby forming a relatively small opening at said corner, said container having been formed by drawing the flexible material through said opening to turn said superimposed flexible material inside out to form a container with said sealed portion of said peripheral engaging edges of said material extending into the interior of said container;

said container having an amorphous filling material therein introduced in a flowable form into said container through said opening to expand said container to the shape of a visor with the sealed peripheral edges of said material covered by said amorphous filling material inside said container;

a pivot rod extending adjacent and along said straight edge and embedded in said amorphous filling; and

said amorphous filling being cured to provide a rigid visor having said pivot rod extending outwardly through said opening for supporting said visor in a vehicle.

5,295,726

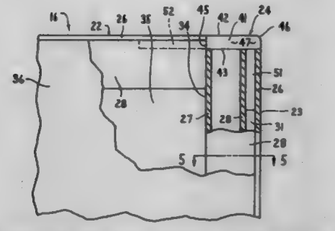
SIDEKIT PANEL FOR TRUCK OR TRAILER

Alan T. Carter, Sturgis, and Kirk A. Myers, Union, both of Mich., assignors to Carter Associates, Inc., Sturgis, Mich.

Continuation-in-part of Ser. No. 919,547, Jul. 24, 1992, abandoned. This application May 21, 1993, Ser. No. 65,349

Int. Cl.[5] B62D *33/023*

U.S. Cl. 296—191 21 Claims



1. In a bed structure for a truck or trailer having a load-supporting bed which defines thereon a horizontally upwardly facing loading surface, said bed having peripheral edges, and a sidewall structure mounted on and projecting upwardly from said bed structure adjacent at least one of the peripheral edges of the bed, said sidewall structure including a plurality of upright support posts which are mounted on and project upwardly from said bed in generally cantilevered relation, said posts having vertically elongate panel-receiving grooves formed therein, and a plurality of removable and vertically-oriented side panels cooperating with said posts for defining an upright wall which projects upwardly relative to said loading surface, said panel extending horizontally between a pair of adjacent said posts and having vertically-extending end edges which are accommodated within the grooves of said posts for horizontally securing said panel relative to said pair of posts, the improvement wherein said panel comprises:

a generally rectangular ringlike frame defined by generally parallel top and bottom edge rails which are horizontally elongate and are rigidly joined together by a pair of generally parallel side edge rails which are vertically elongate and extend substantially perpendicularly between said top and bottom rails, each of said side edge rails having upper and lower ends which are disposed adjacent ends of the top and bottom rails respectively and are respectively disposed at upper and lower corners of the side panel, the frame having an interior defined by said edge rails;

said frame including a set of four rigid corner members, one said corner member being located adjacent each corner of said side panel and being joined to adjacent ends of two said edge rails which effectively meet at said corner;

each said corner member being of a generally L-shaped configuration and including a blocklike corner part which abuts and substantially closes off the end of one of the two said edge rails which meet at said corner, said blocklike part having generally parallel and enlarged outer and inner walls with said inner wall being positioned substantially in abutting engagement with said end;

said corner member having a first securing leg fixed thereto and projecting generally perpendicularly outwardly in cantilevered relationship away from said inner wall, said first securing leg projecting longitudinally into said one edge rail from the end thereof for snug engagement therewith to fixedly secure said one edge rail to said corner member;

said corner member having a second securing leg projecting outwardly in cantilevered relation from said blocklike part in generally perpendicular relationship to said first securing leg, said second securing leg projecting longitudinally into said other edge rail from the end thereof at said corner for creating a snug and fixed engagement with said other rail, and the enlarged outer wall on said corner member being substantially flush and coextensive with an outer wall defined on said other rail;

a core structure disposed within and substantially filling the interior of said frame; and

a pair of cover members one fixedly secured to each side of said frame and extending coextensively across the interior of said frame for enclosing the core structure between the pair of cover members, said cover members defining exterior side surfaces of the side panel.

5,295,727

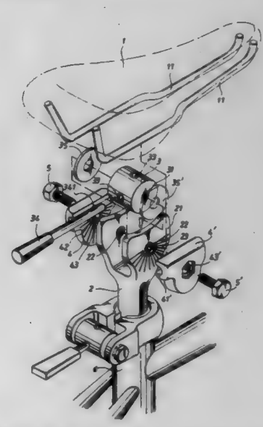
BICYCLE SEAT ADJUSTING DEVICE

Yu-Chien Kao, 2, Alley 1, Lane 29, Sec. 2, Pei-Shin Rd., Shin-Tien City, Taipei Hsien, Taiwan

Filed Apr. 14, 1992, Ser. No. 868,221

Int. Cl.[5] B62J *1/00*

U.S. Cl. 297—215.14 6 Claims



1. An adjusting device for a bicycle seat of the type having a pair of bottom supports comprising:

(a) a seat post including a pair of spaced sidewalls defining a U-shaped configuration, each sidewall including an outer side, a central hole extending through the sidewall and a plurality of first ribs extending radially from the central hole on the outer side;

(b) a cylindrical-shaped adjusting shaft disposed between the sidewalls and including first and second oppositely threaded holes extending inwardly from opposite ends of the shaft and a plurality of spaced positioning holes extending radially outwardly from a central axis of the shaft;

(c) a pair of retainers, each retainer including a retaining hole therethrough, an inner side, a slot for engaging a bottom support of a bicycle seat and a plurality of second ribs extending radially outwardly from the retaining hole on the inner side;

(d) first and second oppositely threaded members, the first threaded member extending through one retainer hole, one central hole and threadedly engaged within the first threaded hole, and the second threaded member extending

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through the other retainer hole, the other central hole and threadedly engaged within the second threaded hole; and

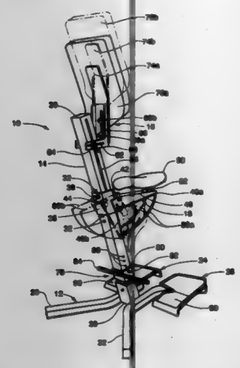
(e) an adjusting lever selectively engageable within any of the plurality of positioning holes for rotating the adjusting shaft and tightening or loosening the retainers with respect to the bottom supports of the bicycle seat to permit adjusting the seat to a desired position and securing the seat in such position.

5,295,728

ERGONOMIC MULTI-POSITION WORK STAND

Lester P. Schaevitz, 431 North Latch's La., Merion Station, Pa. 19066

Filed Jan. 23, 1990, Ser. No. 468,596
Int. Cl.[5] B60N *2/38*
U.S. Cl. 297—195.1 **13 Claims**



1. An ergonomic, multi-position work stand facilitating a user in performing work in a variety of work positions, including:

standing, leaning forward;
standing, leaning backward;
standing, working overhead;
standing, bending forward;
sitting, leaning forward;
sitting, leaning backward;
sitting, working overhead;
kneeling, leaning forward;

said work stand comprising:

a base member providing support and stability for a user and dissipating the forces placed on said work stand by a user;

at least one vertical support member securely attaching to said base member and transferring the forces placed on said work stand by a user;

an upper body support member adjustably attached to said at least one vertical support member and comprising a padded support provided with means to adjust said padded support in vertical height, horizontal placement and radial tilt with respect to said support member for the comfort and convenience of a user, said upper body support member receiving the forces placed on said work stand by a user and transferring said forces through said at least one vertical support member to said base member,

said upper body support member further comprising means to position said upper body support to accommodate the chest of a user working in a forward position, or the back of a user working in a position which requires said worker to lean back; and

a seat member means supporting at least a portion of the weight of a user, said seat member means adjustably mounted along the height of said at least one vertical support member to provide for height adjustment to said seating member means, and reversible in orientation with respect to said vertical support member,

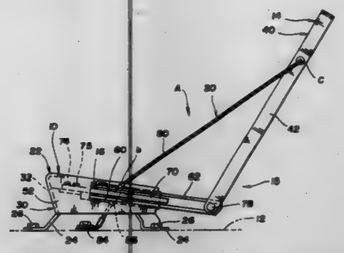
said seat member means further comprising means to position said seat member means to accommodate a sitting user working in a forward or rearward direction, to accommodate the knees of a kneeling worker or the calves of a standing worker, or to move to a position out of the way of a standing worker.

5,295,729

HIGH RETENTION SEAT BACK

David C. Viano, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1992, Ser. No. 838,184
Int. Cl.[5] B60N *2/42*
U.S. Cl. 297—216.14 **10 Claims**



1. In an automotive vehicle having a floor and a seat assembly supported by said floor, said seat assembly comprising a seat unit having a seat frame and a back rest unit having a back rest frame,

support means including energy absorbing means carried by said seat frame and connected with said back rest frame for supporting said back rest unit in a normal upright position and maintaining said back rest unit in a first position relative to said seat unit during usual operating conditions of the vehicle, said energy absorbing means allowing said back rest unit to move rearward relative to said seat unit toward a second position when an occupant imposed rearward load in excess of a predetermined magnitude is imposed thereon in response to the vehicle being crashed into from the rear, and

a collapsible retention means attached to one of said seat frame and vehicle floor and connected to said back rest frame, said collapsible retention means being collapsed and lying along the sides of seat frame and back rest unit when said back rest unit is in said one position,

said collapsible retention means becoming taut to form a triangulated support between its connections to one of said seat frame and vehicle floor and said back rest and the connection of said back rest frame with said energy absorbing means when said back rest unit is moved from its first position toward its second position by the occupant imposed load during a rearward crash into said vehicle to limit rearward deflection of said back rest unit relative to said seat unit.

5,295,730

DOUBLE ENVELOPING WORM AND GEAR SEAT RECLINER

Richard W. A. Rees, Rochester Hills, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,654
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—361.1 **20 Claims**

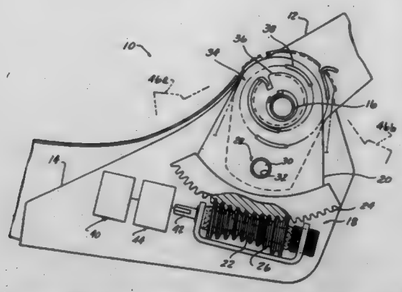
1. A device for adjusting the relative inclination of two elements comprising:

a first member;

a second member;

pivot means for connecting the first member to the second member and for allowing adjustable inclination of the first member relative to the second member; and

double enveloping gear and worm means formed at least in part of intermeshing double enveloping plastic teeth for adjustably driving the first member through a predetermined range of inclination relative to the second member, said gear means having a gear pitch diameter less than a pitch diameter of said worm means and a variable center to center distance between said gear pitch diameter and said worm pitch diameter allowing more plastic teeth to be brought into contact with one another under high load conditions.

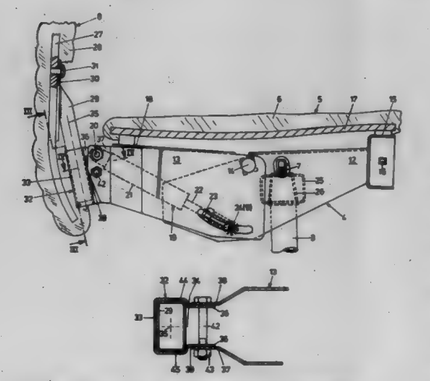


5,295,731

CHAIR, IN PARTICULAR OFFICE CHAIR

Friedrich W. Dauphin, Offenhausen, Fed. Rep. of Germany, assignor to Friedrich W. Dauphin GmbH & Co. Entwicklungs- und Beteiligungs-KG, Neukirchen, Fed. Rep. of Germany

Filed Apr. 20, 1992, Ser. No. 870,845
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1991, 9104854[U]
Int. Cl.[5] A47C *3/28, 3/40, 7/00*
U.S. Cl. 297—440.16 **2 Claims**



1. A chair, in particular office chair, comprising:

a seat support (4) having a rear end;

a seat (5) carried by said seat support (4);

a back rest (8);

and a rod-shaped back rest support (29) being part of the back rest (8) and being releasably connected with said rear end of said seat support (4);

wherein a clamping device (32) is formed at said rear end of said seat support (4), which clamping device (32) has a receiving sleeve (33) which receives said rod-shaped back rest support (29) and which is clampable together to hold said rod-shaped back rest support (29);

wherein said rod-shaped back rest support (29) has a lower end and a conical section (40) in the region of said lower end which conical section (40) tapers towards said lower end and wherein said receiving sleeve (33) has lateral walls (44, 45) which are adapted to said conical section (40);

wherein said receiving sleeve (33) has a receiving section (41) which is similar to said conical section (40);

wherein said receiving sleeve (33) is provided with retaining flanges (36) which protrude from said receiving sleeve (33) and which delimit an opening (34), which retaining flanges (36) are passed through by a clamping screw (42); and

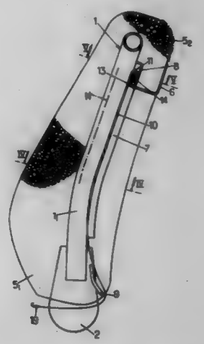
wherein said receiving sleeve (33) has a receiving section (41) which is similar to said conical section (40) and wherein said clamping screw (42) is disposed above said receiving section (41).

5,295,732

BACK OF VEHICLE SEATS

Bernard Boisset, Etampes, France, assignor to Bertrand Faure Automobile "BFA", France

Filed Mar. 25, 1992, Ser. No. 857,183
Claims priority, application France, Mar. 28, 1991, 91 03785
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.1 **3 Claims**



1. A vehicle seat back having a reentrant rear face, the seat back comprising an upsidedown U-shaped rigid frame, a resilient sheet tensioned inside the frame, and padding comprising resilient and flexible material covering said frame and a front face of said sheet, the seat back having three J-shaped metal section bars respectively comprising two uprights and a top horizontal cross-member and together forming an upsidedown U-shape, the bars being welded to the frame so that bases of their J-shapes lie on an inside of the frame and so that their openings face towards an outside of said frame, each opening of a J-shape being occupied by an adjacent edge of a facing that cover the padding, a horizontal metal bar also being welded to the frame at a bottom thereof and to a rear of the seat back, a flexible panel which is vertical or sightly sloping relative to the vertical and which is bounded laterally by two hems and along a top thereof by a horizontal line of stitching along the adjacent edge of the facing, and two L-shaped metal rods each comprising a length that is vertical or that slopes slightly relative to the vertical received in a corresponding one of the above two hems, the top ends of said lengths being fixed to the cross-member, and each having a horizontal bottom length fixed to the bar.

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5,295,733

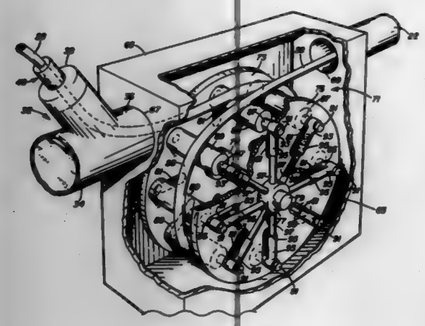
FIBER OPTIC REMOTE CONTROL SYSTEM FOR A CONTINUOUS MINER AND METHOD OF USE

Maurice K. LeBegue, Fairmont, W. Va., assignor to Tamrock World Corporation, N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 693,682, Apr. 30, 1991, abandoned. This application Jul. 22, 1992, Ser. No. 918,419

Int. Cl.[5] E21C *35/24*; B65H *23/16*; G02B *6/44*

U.S. Cl. 299—30 25 Claims



15. A method for transmitting optical communication signals to a mining machine comprising the steps of,

connecting a hose to a mining machine for movement with the mining machine in conducting mining operations,

supplying water to the mining machine through the hose from a source positioned remote from the mining machine for performing work on the mining machine,

generating optical communication signals from a station located remote from the operation of the mining machine,

inserting the fiber optic cable into the water hose adjacent to the station,

extending the fiber optic cable a preselected distance through the water hose,

exiting the fiber optic cable from the water hose for connection to the mining machine, and

supporting the fiber optic cable to extend and retract the length of the cable in the hose to relieve tension exerted on the fiber optic cable when the water hose is stretched.

19. A cable spooling device comprising,

a stationary frame,

a plurality of rollers positioned in spaced relation in a circular array adjacent to said frame, said rollers having surfaces for supporting a length of cable looped between ends of the cable around said rollers in a loop,

said rollers each having opposite end portions and a shaft extending from said end portions,

slot means in said frame for receiving the end portions of said shafts of said rollers,

said slot means extending in a radial direction on said frame to guide said rollers between an inner radial position and an outer radial position,

biasing means supported by said frame in abutting relation with said roller shafts for normally urging said roller shafts to move in said slot means to the outer radial position on said frame to support the cable in an expanded loop around said rollers, and

said biasing means responding to an increase in tension exerted on the cable to allow said roller shafts to move in said slot means to the inner radial position on said frame to support the cable in a retracted loop around said rollers to decrease the tension in the cable.

5,295,734

METHOD AND APPARATUS FOR DRILLING A TUNNEL

Valto Ilomäki, Loilantie 8, SF-33470 Ylöjärvi, Finland

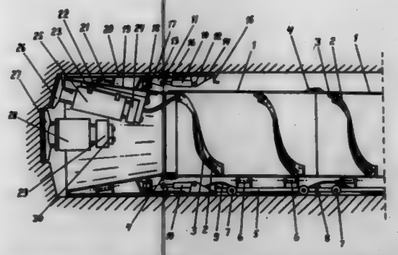
PCT No. PCT/FI90/00230, § 371 Date Mar. 17, 1992, § 102(e) Date Mar. 17, 1992, PCT Pub. No. WO91/05139, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 27, 1990, Ser. No. 838,792

Claims priority, application Finland, Sep. 27, 1989, 894557

Int. Cl.[5] E21D *9/06*

U.S. Cl. 299—32 9 Claims



1. In an apparatus for drilling a tunnel in rock, said apparatus comprising a drill head comprising a drum section and at least one drilling tool, a conveying drum connected to said drill head, and a power unit positioned at a rear end of said conveying drum for supplying a forward driving force to said apparatus, the improvement which comprises at least one roller unit positioned between an exterior surface of said conveying drum and a tunnel wall for supporting said conveying drum, said at least one roller unit contacting said drum section at a first end thereof and said power unit at a second end thereof for transmitting said forward driving force from said power unit to said drill head.

5,295,735

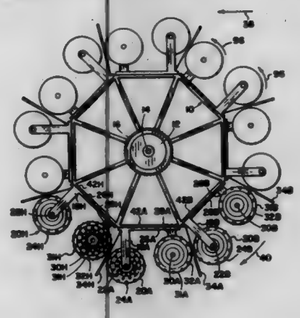
ROCK SAW

David C. Cobbs, 669 E. 139 Pl., Glenpool, Okla. 74033, and James H. Cobbs, 5350 E. 46th St., Tulsa, Okla. 74135

Filed Jun. 10, 1992, Ser. No. 896,203

Int. Cl.[5] E21B *10/12, 10/16*

U.S. Cl. 299—86 15 Claims



1. A machine for cutting a trench in rock which comprises:

a frame having a horizontal axis about which the periphery of the frame may rotate;

means to rotate said frame about said axis;

a plurality of primary cutters spaced about the periphery of said frame;

a support arm for each said primary cutter, each said primary cutter is rotatably supported from its respective support arm such that the axis of said primary cutter is parallel to the axis of said horizontal axis, each said arm being fixed to the periphery of said frame;

each said primary cutter having a disc-like body member having a plurality of spaced apart indentors secured to the external surface thereof, each indentor having an end point, the indentors being adaptable to penetrate into the rock face upon application of working force a distance "P" and wherein said indentor end points are spaced a distance not greater than 7P apart; and

a reaming cutter positioned between each pair of said primary cutters, a support arm supporting said reaming cutters from the periphery of said frame, said reaming cutters being rotatably mounted on said arm such that the shaft of rotation is parallel to the shaft of rotation of the primary cutters.

5,295,736

TRAILER BRAKING CONTROL SYSTEM FOR A TOWING VEHICLE

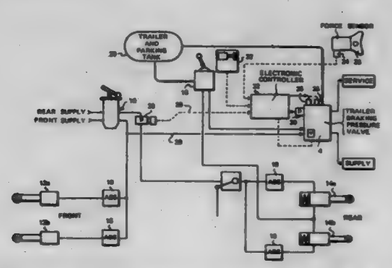
Malcolm Brearley, Solihull, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Aug. 31, 1992, Ser. No. 936,405

Claims priority, application United Kingdom, Aug. 31, 1991, 9118709

Int. Cl.[5] B60T *8/00*

U.S. Cl. 303—7 12 Claims



1. A braking control system in a towing vehicle for providing controlled braking pressures to a trailer vehicle when coupled to the towing vehicle, the system comprising:

(a) trailer coupling means on the towing vehicle for connecting the towing vehicle to a trailer vehicle;

(b) force sensing means at said trailer coupling means for detecting longitudinal thrust forces acting on the trailer coupling means between the towing vehicle and a trailer vehicle, when coupled thereto;

(c) means for generating a service braking pressure signal on the towing vehicle for supply to the trailer vehicle;

(d) means for establishing a braking pressure signal representative of a driver's input demand;

(e) means for regulating said service braking pressure signal in response to driver's demand pressure and measured valued of longitudinal force exerted on said coupling means just before and during braking;

(f) means for developing at least two adaptive variables in the control system on the towing vehicle for use in regulating said trailer service braking pressure signal derived from said driver's demand signal;

(g) means for establishing whether a current stop constitutes a qualifying stop of a vehicle/trailer combination, meeting prescribed operating characteristics;

(h) means for choosing one of said at least two adaptive variables to be corrected at that stop;

(i) means for establishing average error signals in thrust forces applied by a trailer to the towing vehicle compared to a reference thrust level; and

(j) means for correcting the chosen adaptive variable at the end of that stop using said average trailer thrust force error signals, for use in regulating said trailer service braking pressure signal on subsequent stops.

5,295,737

ELECTRIC MOTOR-DRIVEN HYDRAULIC PUMP

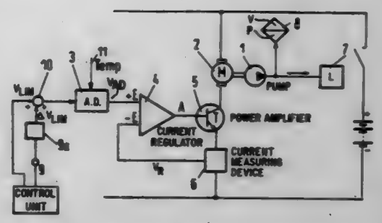
Volker Epple, Stuttgart; Michael Klose, Besigheim; Klaus Mueller, Tamm, and Wolfgang Maisch, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 22, 1991, Ser. No. 795,968

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037142

Int. Cl.[5] B60T *13/20*

U.S. Cl. 303—11 5 Claims



1. A system for generating a required hydraulic pressure for brakes of a vehicle, said brakes being controlled by hydraulic pressure, said system comprising

means for determining the required pressure,

a hydraulic pump for generating said required pressure,

an electric motor which immediately after switching on draws electric current up to a maximum current for driving said pump, said motor generating torque dependent on said current,

means for switching on said motor,

means for providing said motor with said maximum current for a predetermined time interval immediately after switching on and whenever an increase in hydraulic pressure is needed to generate said required pressure, and

means for limiting said current between said time intervals to a fixed lower value which corresponds to the torque for maintaining the required hydraulic pressure.

5,295,738

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLE

Masahiro Matsuura; Shouichi Masaki; Masashi Kishimoto, all of Chiryu, and Tatsuo Sugitani, Mishima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed May 21, 1992, Ser. No. 886,287

Claims priority, application Japan, May 23, 1991, 3-118642

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—100 5 Claims

1. An anti-skid control system for use in a motor vehicle which controls a braking pressure for a wheel of said motor vehicle to keep a slip of said wheel to an appropriate state, said system being arranged to increase said braking pressure by alternately performing a pressure-increasing operation and a pressure-maintaining operation in accordance with a slipping state of said wheel, said system comprising:

wheel speed detecting means for detecting a speed of said wheel;

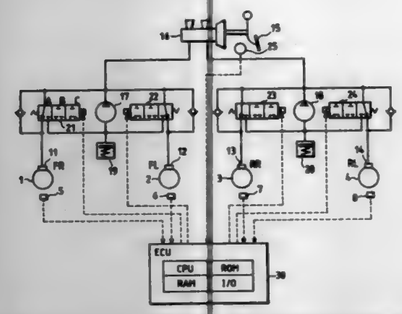
vehicle speed detecting means for detecting a speed of said motor vehicle;

first detecting means for detecting a slipping state of said wheel before performing said pressure-increasing operation on the basis of the detected vehicle speed and the detected wheel speed and for storing the detected wheel slipping state;

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second detecting means for detecting a slipping state of said wheel when a predetermined time period is elapsed from said pressure-increasing operation in a state that said braking pressure is maintained after the completion of said pressure-increasing operation, said predetermined time period corresponding to an amount of time sufficient to allow disturbances in said wheel resulting from a completion of the pressure-increasing operation to settle;

calculation means for calculating a variation of said slipping state of said wheel on the basis of the detection results of said first and second detecting means;



adjusting means for adjusting a ratio of a time period for said pressure-increasing operation to a time period for said pressure-maintaining operation so that said ratio becomes smaller as said variation of said slipping state calculated by said calculation means becomes greater; and

pressure-increasing means for alternately performing said pressure-increasing operation and said pressure-maintaining operation in the ratio adjusted by said adjusting means so as to increase said braking pressure for said wheel.

5,295,739

BRAKE PRESSURE CONTROL APPARATUS

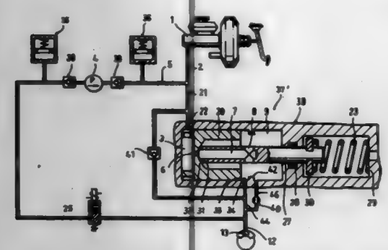
Jochen Burgdorf, Offenbach-Rumpenheim; Helmut Steffes, Hattersheim; Peter Volz, Darmstadt; Erhard Beck, Weilburg, and Dalibor Zaviska, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 705,221, May 24, 1991, Pat. No. 5,176,432. This application Oct. 22, 1992, Ser. No. 964,626

Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016744

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.1 **3 Claims**



1. A brake fluid pressure control apparatus for an automotive wheel brake including a wheel cylinder for operating said wheel brake, a brake pedal actuated master cylinder and a pump, each of said master cylinder and said pump having an outlet operable to pressurize fluid to operate said wheel cylinder, fluid circuit means establishing communication between said outlet of said master cylinder and pump and said wheel cylinder, said brake fluid pressure control apparatus comprising:

inlet valve means interposed in said fluid circuit means to control fluid communication between said master cylinder and pump and said wheel cylinder, said inlet valve means including a valve housing, a first bore in said housing, a control valve piston slidably mounted in said bore, said control valve piston and said valve housing defining on one side of said piston a master cylinder-pump chamber, said master cylinder-pump chamber connected by said fluid circuit means to said outlet of said master cylinder and pump to be pressurized thereby; another side of said control valve piston and said valve housing defining on the other side of said piston a wheel cylinder chamber, said wheel cylinder chamber connected by said fluid circuit means to said wheel cylinder, a flow passage connecting said master cylinder-pump chamber to said wheel cylinder chamber having a first orifice therein establishing fluid flow between said chambers at a rate proportioned to the pressure differential therebetween;

an auxiliary piston slidably mounted in said valve housing having one end protruding into said wheel cylinder chamber to be subjected to the pressure therein only on said one end, and a compressible prestressing spring developing a force acting on another end of said auxiliary piston to urge said auxiliary piston into engagement with said another side of said control valve piston and thereby exert said force of said prestressing spring on said control valve piston;

a control spring acting directly on said control valve piston to resist movement of said control valve piston toward said wheel cylinder chamber;

a control port formed in said valve housing connecting said wheel cylinder chamber with said wheel cylinder, said control port located adjacent said other side of said control valve piston so as to be covered upon advance of said control valve piston towards said wheel cylinder chamber;

said force of said prestressing spring neutralized upon development of a predetermined fluid pressure in said wheel cylinder chamber to allow said advance of said control valve piston completely over said control port;

a shunt passage connecting said control port to said wheel cylinder; and an orifice passage constantly connected to said wheel cylinder chamber and said wheel cylinder in parallel with said shunt passage, and an orifice in said orifice passage restricting flow thereto upon covering of said control port when said force of said prestressing spring is neutralized.

5,295,740

PRESSURE CONTROL DEVICE FOR HYDRAULIC BRAKING SYSTEM

Hiroyuki Watanabe; Yuji Oishi; Ishiro Kaneda; Masahiko Hara; Katsunori Shirai, all of Atsugi, and Koji Morita, Hiratsuka, all of Japan, assignors to Atsugi Unisai Corporation and Nissan Motor Co., Ltd., both of Japan

Filed May 11, 1992, Ser. No. 880,654

Claims priority, application Japan, May 14, 1991, 3-108014

Int. Cl.[5] B60T *8/02*

U.S. Cl. 303—113.2 **7 Claims**

1. A pressure control device for a hydraulic braking system for an automotive vehicle, said pressure control device comprising:

a first hydraulic pressure source pressurizing hydraulic fluid according to a braking action of a driver;

a wheel cylinder through which braking force is applied to a wheel of the automotive vehicle;

means for defining a main passage which communicates said first hydraulic pressure source and said wheel cylinder;

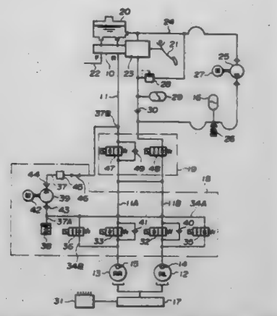
a second hydraulic pressure source connected to said main passage;

means for detecting a rotating condition of the wheel, said detecting means outputting a signal indicative of the rotating condition of the wheel;

means for controlling hydraulic pressure of said wheel cylinder when said detecting means detecting one of a lock condition and a slippage condition;

means for stopping the communication between said first hydraulic pressure source and said hydraulic pressure controlling means, and for opening the communication between said second hydraulic pressure source and said hydraulic pressure controlling means when said detecting means detects the slippage condition in acceleration; and

means defining a first return passage through which said hydraulic pressure control means is communicated with said main passage at a nearer side relative to said first hydraulic pressure source than a communicating state switching means.



5,295,741

CORE BAR FOR RUBBER TRACK AND RUBBER TRACK TRAVELING DEVICE

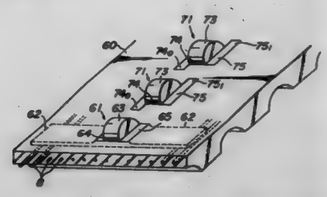
Sumio Togashi, Chigasaki; Tateo Murasatsu, Yokohama, and Harumichi Yamazaki, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 827,001

Claims priority, application Japan, Jan. 30, 1991, 3-029555; Jun. 12, 1991, 3-168704; Dec. 16, 1991, 3-353241

Int. Cl.[5] B62D *55/26*

U.S. Cl. 305—38 **13 Claims**



2. A core bar of a rubber track for a rubber track traveling device comprising track rollers and driving sprockets, said core bar including wings on both sides to be embedded in an elastic member of the rubber track and extending in width directions of the rubber track, one central driving protrusion formed at the center of the core bar and protruded from the inner circumferential surface of the rubber track, and a pair of track roller traveling surfaces formed on both sides of the driving protrusion, said central driving protrusion having rounded side edges on opposite sides thereof for engaging the sprocket wheel.

5,295,742

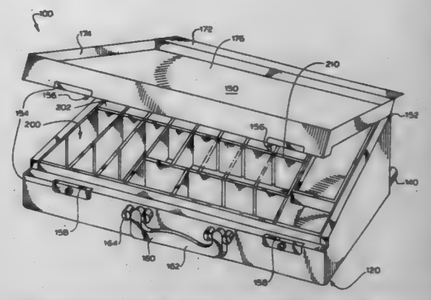
COMPARTMENTED CONTAINER FOR CRAFT TOOLS AND MATERIAL

Carol A. Knutson, 12717 Pleasant Valley Rd., Woodstock, Ill. 60098

Filed Mar. 18, 1992, Ser. No. 853,443

Int. Cl.[5] A47B *95/02;* **E05C** *7/06*

U.S. Cl. 312—244 **14 Claims**



1. A container for transporting handicraft material, wherein:

a. said container includes a padded base and a hinged flat top shelf movably secured thereto;

b. said padded base includes a compartment former containable therein;

c. said compartment former has a divider system for providing at least two compartments therein;

d. said divider system includes a means for adjusting a size of said at least two compartments;

e. said padded base includes a flexible padding means secured thereto provide comfort and permit said hinged flat top shelf to be a work support surface;

f. said hinged flat top shelf provides a workspace for handicraft material;

g. said compartment former is removably contained within said container;

h. said removable compartment former is closable by said hinged flat top shelf;

i. said removable compartment former includes a compartment base and four compartment walls therearound said four walls combining with said compartment base to form a hollow rectangle having an open side;

j. said compartment walls cooperate with said hinged flat top shelf to render said removable compartment former closable;

k. said means for adjusting includes a plurality of slots;

l. said plurality of slots includes a first slot paired with a second slot to support a secondary wall;

m. said secondary wall cooperates with said first slot and said second slot in the four walls therearound to form a compartment within said removable compartment former;

n. said four walls include said plurality of slots;

o. said secondary wall includes said plurality of slots therein;

p. said plurality of slots in said secondary wall cooperate with said plurality of slots in said four walls to form a plurality of smaller compartments in said removable compartment former;

q. at least one hinge connects said padded base to said hinged flat top shelf;

r. said padded base is sufficient to assist with positioning of said hinged flat top shelf;

s. at least one fastening assembly serves to close said container;

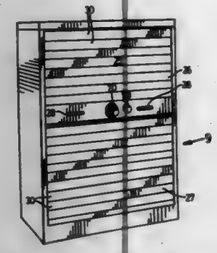
t. said at least one fastening assembly includes a first fastening member secured to an edge of said hinged flat top shelf and oppositely disposed from said at least one hinge;

u. said at least one fastening assembly includes a second

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fastening member is secured to said padded base and is oppositely disposed from said at least one hinge;
v. said fastening assembly operably secures said padded base to said hinged flat top shelf;
w. said at least one fastening assembly includes two of said at least one fastening assembly; and
x. a handle means is mounted between said two of said at least one fastening assembly.

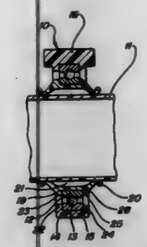
5,295,743
SECURE CABINETS
John L. Moulton; Frank G. Camilleri, both of Brampton, and Gordon F. Pranschke, Ottawa, all of Canada, assignors to Dasco Data Products Limited, Brampton, Canada
Filed Sep. 6, 1991, Ser. No. 755,645
Int. Cl.[5] E06B *9/15*
U.S. Cl. 312—297 **18 Claims**



1. A security cabinet comprising a housing having a front with a door opening, a tambour door mounted on said housing movable between a first position wherein said door opening is uncovered and a second position wherein said door opening is covered, said door comprising a plurality of interlocked slats capable of limited flexure relative to one another, each of said slats having a frontal wall with an outwardly directed front face and an upper side wall and a lower side wall, one of said upper and lower side walls having a hooked tongue means extending therefrom, the other of said upper or lower side walls having a tongue receiving and retaining slot means, and each of said slats having a protection barrier member extending from the same side wall as the hooked tongue means and positioned on said same side wall inwardly from said outwardly directed front face and inwardly from, and behind said hooked tongue means, said protection barrier member of any one slat to inhibit access to a joint formed by the hooked tongue means on said one slat with the receiving and retaining slot means of an adjacent slat when the hooked tongue means of said one slat is received and retained in the receiving and retaining slot means of said adjacent slat.

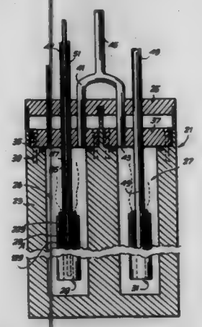
5,295,744
RESILIENT CENTRAL BEARING FOR A PROPELLER SHAFT
Miloslav Petrzelka, Much-Kraüchel, and Werner Hoffmann, Siegburg, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany
Continuation of Ser. No. 781,908, Oct. 22, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,929
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033592
Int. Cl.[5] F16C *27/06*
U.S. Cl. 384—536 **2 Claims**

1. A bearing for a motor vehicle drive train comprising:
means for resiliently receiving a shaft means of the drive train, said resilient receiving means including an elongated cavity for enhancing dampening characteristics, said cavity defined along one side by an annular web, a pair of annular lips at its axial ends and the shaft opposing said web;
roller bearing means comprised of an inner bearing race, an outer bearing race, and roller bearing means for rotationally bearing against said inner bearing race and said outer bearing race;



said inner bearing race annularly disposed in abutting circumscribing relationship to said resilient receiving means; and
means for connecting said roller bearing means to a body structure of said motor vehicle, said connecting means annularly disposed in abutting circumscribing relationship to said outer bearing race.

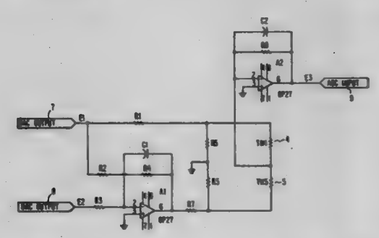
5,295,745
CALORIMETER FOR TIME/TEMPERATURE MEASUREMENTS OF THERMOSETTING RESINS (THERMOSETS)
Mario Cassettari, Pisa; Fabio Papucci, Cascina; Giuseppe Salvetti, San Giuliano Terme; Elpidio Tombari, Pietrasanta, and Stefano Veronesi, Calci, all of Italy, assignors to Consiglio Nazionale Delle Richerche, Rome, Italy
Filed Sep. 9, 1992, Ser. No. 942,575
Claims priority, application Italy, Sep. 13, 1991, FI/91/A-226
Int. Cl.[5] G01N *25/20*; G01K *17/00*
U.S. Cl. 374—010 **4 Claims**



1. A differential calorimeter, comprising:
an external accommodating head defining two cavities;
a measurement cell in which an inserted specimen may be examined;
a reference cell, each of said measurement cell and said reference cell including a cylindrical element with a uniformly distributed thermoresistor uniformly distributed thereon, said thermoresistor having a high temperature coefficient and being connected to measurement means for measuring a variation in resistance of said thermoresistor wherein variations in resistance correspond to temperature variations;

tubular stems, one of said tubular stems being connected to said measurement cell and one of said tubular stems being connected to said reference cell for support of said measurement cell and said reference cell respectively;
a tubular container for holding the specimen, one of said tubular stems defining a chamber wherein said tubular container may be inserted therein, said chamber having a fluid with high thermal conductivity present therein;
conduit means for controlling pressure in said two cavities;
covers closing said two cavities, said covers including openings for said tubular stems.

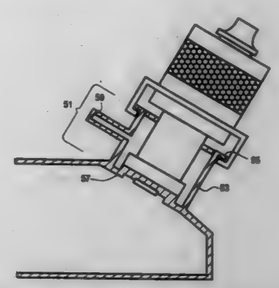
5,295,746
HIGH RESOLUTION DIGITAL THERMOMETER
Walter S. Friauf, Bethesda; Thomas R. Clem, Sr., Silver Spring, and Robert L. Berger, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
Filed Feb. 5, 1992, Ser. No. 831,603
Int. Cl.[5] G01N *25/00*; G06F *7/02*
U.S. Cl. 374—170 **13 Claims**



1. A high resolution digital thermometer which comprises:
a bridge circuit;
first and second thermistors arranged in series in said bridge circuit;
a high gain amplifier connected to an output of said bridge circuit;
an analog-to-digital converter connected to an output of said high gain amplifier; and
a computer means for initiating and maintaining said bridge circuit in a balanced state.

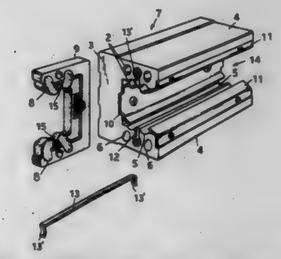
5,295,747
TEMPERATURE AND PRESSURE SENSOR FOR COOLING SYSTEMS AND OTHER PRESSURIZED SYSTEMS
Peter Vinci, Kennett Square, Pa., assignor to Waekon Industries, Inc., Kennett Square, Pa.
Division of Ser. No. 815,971, Jan. 2, 1992. This application Nov. 19, 1992, Ser. No. 979,057
Int. Cl.[5] G01K *1/14*
U.S. Cl. 374—208 **14 Claims**

8. A device for testing a closed pressurized system having an interior and an inlet with internal and external surfaces, said device, comprising
a spindle;
housing means for receiving said spindle, said housing means including a body having an aperture therethrough and at least two engaging parts extending from said body;
said spindle movable within said aperture, said spindle having at least a receiving portion and an engaging portion, an inner bore formed within the spindle for communication with said cooling system, said inner bore having a first end situated at said receiving portion, said inner bore having a second end at the engaging portion, said spindle being provided with a sealing member surrounding said second end, spring means being interposed between said housing means and said spindle for resisting movement of said spindle within said housing means;
plug means for sealingly permitting insertion of a means for measuring temperature through said inner bore, said plug means being connected to said first end of the inner bore;
means cooperating with said spindle and plug means for confining motion of said body relative to said spindle in the direction of said plug means;



whereby in a working condition of the device said engaging portion of the spindle being sealingly connected to said inlet in such a manner that said at least two engaging parts extending from the body engage the external surface of the inlet, so that said second end of the inner bore is in fluid communication with said cooling system with said sealing member being positioned between said engaging portion and said internal surface of the inlet.

5,295,748
BALL BEARING FOR RECTILINEAR SLIDING
Mitsuru Yamazaki, Ojiya, Japan, assignor to Nippon Bearing Co., Ltd., Niigata, Japan
Filed Oct. 15, 1992, Ser. No. 961,409
Int. Cl.[5] F16C *29/06*, *43/06*
U.S. Cl. 384—45 **18 Claims**



1. A ball bearing for rectilinear sliding, comprising:
a raceway track base having first and second sides and having ball rolling grooves on said first and second sides; and
a slide guide member slidably fitted on said raceway track base and comprising a slide member having a horizontal portion and first and second wing portions extending perpendicularly from respective first and second sides of said horizontal portion,
said slide member further including load ball grooves provided on an inner surface of said slide member, no-load ball raceway tracks provided in said slide member, corresponding to said load ball grooves, and first and second caps having return grooves corresponding to said load ball grooves and said no-load ball raceway tracks, said first and second caps being provided at respective first and second ends of said slide member such that endless ball

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circulation passages are formed by said load ball grooves, said ball rolling grooves, said no-load ball raceway tracks and said return grooves,

wherein a plurality of balls are slidably positioned in said endless ball circulation passages,

said ball bearing further comprising a first material, provided on said inner surface of said slide member, for retaining a first side portion of said balls placed in said load ball grooves on the inner surface of said slide guide member, and

a second material comprising a flexible material provided on the inner surface of said wing portions such that a second side portion of said balls are retained, whereby said balls placed in said load ball grooves are retained by said first material and said second material;

said ball bearing for rectilinear sliding further comprising curved engagement portions for engaging bent portions of said second material provided on the first and second end surfaces of one of said slide member and said caps.

17. A method of assembling a ball bearing for rectilinear sliding, said ball bearing comprising:

a raceway track base having first and second sides and having ball rolling grooves on said first and second sides; and

a slide guide member slidably fitted on said raceway track base and comprising a slide member having a horizontal portion and first and second wing portions extending perpendicularly from respective first and second sides of said horizontal portion,

said slide member further including load ball grooves provided on an inner surface of said slide member, no-load ball raceway tracks provided in said slide member, corresponding to said load ball grooves, and first and second caps having return grooves corresponding to said load ball grooves and said no-load ball raceway tracks;

said method comprising the steps of:

a) fixing said first and second caps at respective first and second ends of said slide member such that endless ball circulation passages are formed by said load ball grooves, said ball rolling grooves, said no-load ball raceway tracks and said return grooves; and then

b) slidably placing a plurality of balls in said endless ball circulation passages; followed by

c) fitting a first material, on one of the inner surface of said horizontal portion and said wing portions of said slide member, for retaining first side portions of said balls positioned in said load ball grooves; and

d) fitting a second material, comprising a flexible material, on the inner surface of said wing portions so as to retain second side portions of said balls positioned in said load ball grooves, whereby said balls placed in said load ball grooves are retained by said first and second materials.

5,295,749

SPHERICAL ROLLER BEARING

Katsuyoshi Takahashi; Hisao Funakoshi, and Takehiro Adachi, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Sep. 15, 1992, Ser. No. 944,942

Claims priority, application Japan, Sep. 20, 1991, 3-75884[U]

Int. Cl.[5] F16C *33/46*

U.S. Cl. 384—568 **6 Claims**

1. A double-row spherical roller bearing comprising:

an inner race;

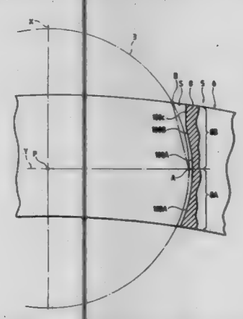
an outer race;

two retainers each molded of a synthetic resin, each of said retainers being located between said inner race and said outer race and integrally molded such that an annular portion on the large diameter side and an annular portion on the small diameter side are integrally jointed to each other with a plurality of retainer bars bridged therebetween so as to form a plurality of pockets each defined by said annular portion on the large diameter side, said annular portion on the small diameter side and adjacent retainer bars;

each of said retainer bars for said retainers comprising an inner portion located on the inner race side relative to a second phantom plane extending through a center of each spherical roller at a right angle relative to a first phantom plane extending through a center axis Of said spherical roller bearing and the center of each spherical roller and an outer portion located on the outer race side relative to said second phantom plane;

the side surface of said inner portion facing the corresponding pocket being defined by a part of the spherical surface extending around said spherical roller,

the central part of the side surface of said outer portion facing the corresponding pocket as seen in the axial direction being defined by a first surface merging into the spherical surface of said inner portion, a second surface extending from said first surface on the outer race side and



a third surface extending from said second surface on the outer race side, said first surface being formed by a part of the cylindrical surface extending around the spherical surface on the inner portion side while extending in the axial direction, the center axis of the cylindrical surface extending in parallel with said first phantom plane, said second surface tilting toward the spherical roller side and coming in point contact with the spherical roller as it rolls, and said third plane extending in parallel with said first phantom surface,

the side surfaces facing the corresponding pocket at the opposite ends of said outer portion exclusive of the central part of said spherical roller bearing as seen in the axial direction being defined by a part of the cylindrical surface defining said first surface, and

double-rows of spherical rollers rotatably received in said pockets and arranged one after another in the equally spaced relationship in the circumferential direction.

5,295,750

WIRE-DOT IMPACT PRINTER

Jiro Tanuma; Naoji Akutsu; Takao Uchida; Chihiro Komori, all of Tokyo, and Masaru Ito, Fukushima, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,094

Claims priority, application Japan, Feb. 13, 1992, 4-005530[U]

Int. Cl.[5] B41J *9/44*

U.S. Cl. 400—124 **8 Claims**

1. A wire-dot impact printer comprising:

a wire-dot print head composed of:

armatures each of which carries a print wire fixed on a free end thereof;

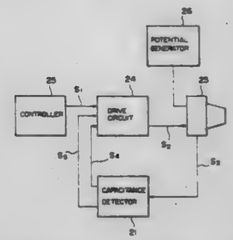
leaf springs supporting thereon the armatures, respectively;

cores arranged opposite the respective armatures;

a permanent magnet arranged to produce a magnetic flux, each armature being attracted by the magnet toward the associated core against a resilient force provided by the corresponding leaf spring;

coils would around the cores, respectively, each coil producing upon energization a magnetic flux to cancel out the magnetic flux of the permanent magnet so that the corresponding armature is released from the associated core;

sensor electrodes formed on a printed circuit board located opposite the armatures, said sensor electrodes being disposed with intervals between the sensor electrodes and the corresponding armatures; and



a shield pattern formed around the sensor electrodes on the printed circuit board without contacting the sensor electrodes, the shield pattern shielding each sensor electrode by maintaining a constant positive electric field around each sensor electrode;

a capacitance detector arranged to detect a displacement of each armature by the corresponding sensor electrode located opposite the armature; and

means for feeding a potential, which is at least equal to a potential of each sensor electrode, to the shield pattern.

5,295,751

PRINTER HAVING ELASTIC WHEEL CASSETTE HOLDERS

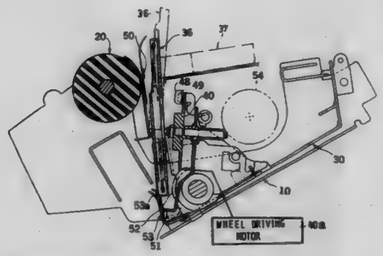
Toyonori Sasaki, Anjo, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 17, 1992, Ser. No. 977,879

Claims priority, application Japan, Nov. 20, 1991, 3-103624

Int. Cl.[5] B41J *1/00*

U.S. Cl. 400—144.2 **20 Claims**



1. A printer comprising:

a housing;

a platen coupled to said housing and supporting a sheet;

a guide shaft coupled to said housing, spaced from and parallel to said platen;

a carriage supported on and guided by said guide shaft, said carriage moving along said platen;

a wheel cassette including a print wheel and a wheel case containing said print wheel, said wheel case having an upper edge and a lower edge;

a wheel holder supported on and carried by said carriage and detachably holding said wheel case with said upper edge adjacent said platen, said wheel being shiftable between a work position and a release position and comprising a print wheel driving motor rotating said print wheel and a motor holder holding said print wheel driving motor, said motor holder having a support wall supporting said wheel case; and

at least one elastic member secured to said carriage engaging said lower edge of said wheel case and pressing said wheel case against said wheel holder when said wheel holder is shifted to said work position, and wherein said elastic member is bent by said wheel holder so that said wheel cassette can be inserted in and removed from said wheel holder when said wheel holder is shifted to said release position.

5,295,752

PRINTER USING DOUBLE SHEETS OF PRESSURE SENSITIVE PAPER

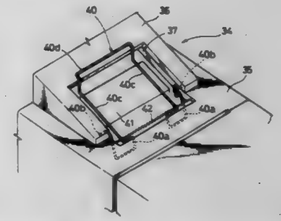
Shinsuke Kawamoto, Ikoma; Osamu Miyajima, Yamatokouriyama, and Tetsuya Ueda, Nabari, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1992, Ser. No. 904,755

Claims priority, application Japan, Jun. 28, 1991, 3-158571

Int. Cl.[5] B41J *15/04*

U.S. Cl. 400—606 **8 Claims**



1. A printer using double sheets of pressure sensitive paper, said printer comprising:

a casing having an opening at its upper portion;

a paper guide disposed in said opening of said casing for separating the printed double sheets of pressure sensitive paper into a receipt sheet and a journal sheet, said paper guide being operable to introduce said receipt sheet out of said casing through said opening and to guide said journal sheet in a predetermined direction within said casing with a front surface of said journal sheet exposed toward said opening;

a paper support disposed under said casing for upwardly supporting a rear surface of said journal sheet; and

paper collecting means disposed in said casing for collecting said journal sheet which passed over said paper support;

wherein said paper guide includes a first guide for guiding said receipt sheet to a front edge of said opening, and a second guide extending through a space between said opening and said paper support to a rear edge of said opening for guiding said journal sheet onto said paper support.

5,295,753

LABEL TAPE PRINTING SYSTEM USING THERMAL HEAD AND TRANSFER INK RIBBON

Hiroki Godo, and Tsutomu Yamazaki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 700,674, May 15, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 23,751

Claims priority, application Japan, May 17, 1990, 2-127247; May 17, 1990, 2-127426

Int. Cl.[5] B41J *15/16*

U.S. Cl. 400—612 **9 Claims**

1. A label tape printing system for applying ink from an ink

ribbon to a surface of a label tape both of which are drawn past a print station in said printing system, comprising:

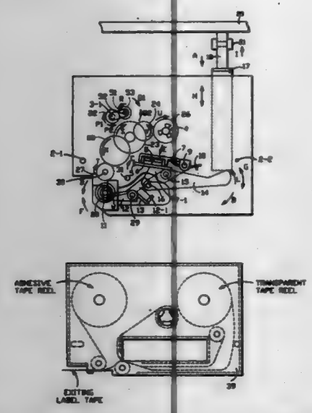
ink transfer head at said print station for selectively transferring ink from said ink ribbon to said label tape surface;

a motor capable of being driven in a first direction; and a second direction

tape feed means for transporting said label tape past said print station and out an exit of said printing system;

ribbon winding means for transporting said ink ribbon past said print station and for wind up on a take-up reel in said printing system;

said tape feeding and ribbon winding means coupled together so that said ink ribbon and said babel tape are moved in unison via said motor at substantially the same speed past said print station; and



means to permit unobstructed movement of said tape feeding and ribbon winding means comprising coupling means for engaging and disengaging said motor respectively to and from said tape feeding and ribbon winding means so that when said motor is operated in said first direction, said motor is engaged with said tape feeding and ribbon winding means to simultaneously drive said label tape and said ink ribbon past said print station for permitting printing on said label tape surface, and when said motor rotates in said second direction, said motor is disengaged from said tape feeding and ribbon winding means permitting said unobstructed movement of said tape feeding and ribbon winding means permitting unobstructed removal of said label tape from said exit with concurrent wind up of said ink ribbon on said take-up reel.

5,295,754

FRAMEWORK STRUCTURE FOR WOODEN BUILDING AND FRAMEWORK MEMBER

Masao Kato, Yanagi, Japan, assignor to Kato Sangyo Kabushiki Kaisha, Yanagi, Japan

Filed Nov. 3, 1992, Ser. No. 971,031
Claims priority, application Japan, Apr. 17, 1992, 4-124344
Int. Cl.[5] F16B *9/00*
U.S. Cl. 403—174 **6 Claims**

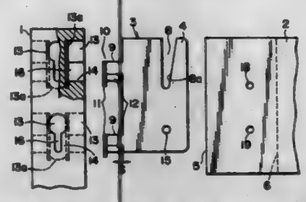
1. A framework member for wooden building comprising:

a plate-type hook plate having a base end and a pointed end;

an engaging means for being inserted for anchoring into an inserting hole provided in a framework surface of a columnar receiving member, said engaging means extending from said base end of said hook plate; and

an upward hook means formed at said pointed end of said hook plate for being inserted into an inserted groove vertically provided in a butt end surface of a columnar crossing member, said hook means having a groove including an opened upper portion and a bottom for positioning a bolt;

said engaging means including a projection having the same plate thickness as a plate thickness of said hook plate



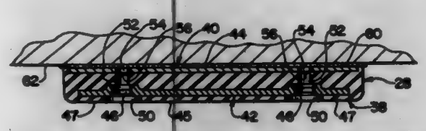
projecting from a surface of said base end of said hook plate, an anchoring plate laterally secured in the direction intersecting an end of said projection, and an attachment formed by a round bar secured along a lower surface of said projection.

5,295,755

SHOCK MOUNT

Richard DeHaan, III, Jenison; David M. Boruta, Grand Haven, and George B. Byma, Jenison, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Dec. 9, 1991, Ser. No. 805,491
Int. Cl.[5] F16F *7/12, 9/30*; F16B *12/04, 47/00*
U.S. Cl. 403—291 **30 Claims**



1. A shock mount for mounting a first member of a piece of furniture to a second member thereof, the shock mount comprising:

an elastic portion having mounting means for securing said portion to the second furniture member; and

a metal portion secured to the elastic portion, said metal portion having an exposed surface of a shape which conforms to the first furniture member; whereby the metal portion is adhesively secured to said first furniture member;

whereby the elastic portion absorbs various loads imparted by the first and second furniture members and the shock mount remains securely attached to said members.

5,295,756

SCREW TIGHTENING TYPE CONNECTOR

Yukio Ohta, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Sep. 22, 1992, Ser. No. 949,068
Claims priority, application Japan, Oct. 1, 1991, 3-79680[U]
Int. Cl.[5] F16D *1/02*
U.S. Cl. 403—407.1 **9 Claims**

1. A screw tightening type connector for connecting a plurality of wires, comprising:

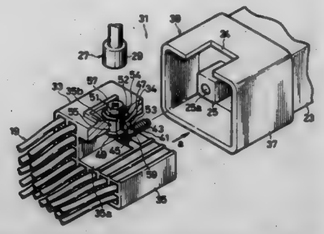
a first connector;

a second connector fitted in said first connector;

a first screw body provided on said first connector;

a second screw body provided in said second connector, said second screw body being screwed into said first screw body and being tightened so that said first connector and said second connector are fitted in each other;

a rotational force imparting section for imparting a rotational force to said second screw body, said rotational force imparting section comprising a rotary shaft having a tool engaging means extending beyond an outer periphery of said second connector, said rotary shaft extending in a direction transverse to the plurality of wires passing through the second connector; and



rotational force transmitting section for converting the rotational force from said rotary shaft to said second screw body.

5,295,757

SAFETY END BARRIER FOR CONCRETE ROAD BARRIERS

Don L. Ivey; Hayes E. Ross, Jr., both of Bryan, and W. Lynn Beason, College Station, all of Tex., assignors to The Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 691,392, Apr. 2, 1991, Pat. No. 5,156,485. This application Jul. 23, 1992, Ser. No. 919,023
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 **20 Claims**

1. A safety end treatment barrier for use alongside a traffic lane, which comprises:

an elongated concrete member which increases to a height of between about 12 and about 24 inches along its length and in the same direction as the flow of traffic alongside the member; said member including a base, and a sidewall facing the traffic lane which slants outwardly from the base.

5,295,758

SLIDING ROTATABLE BINDER ATTACHMENT

Ronald M. Bianco, Irvine, Calif., assignor to Day Runner, Inc., Fullerton, Calif.

Filed Jan. 7, 1993, Ser. No. 1,150
Int. Cl.[5] B42D *13/00*
U.S. Cl. 402—79 **20 Claims**

1. An attachment for a binder comprising:

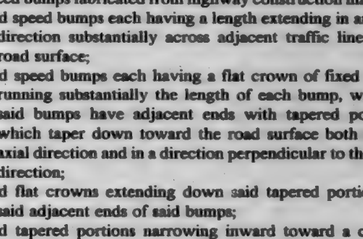
a frame having two spaced-apart arm portions;

a means associated with the frame for rotatably attaching the frame to the binder;

a first slot engaging element mounted to one arm portion and a second slot engaging element mounted to the other arm portion;

an article having a front surface, a top edge surface and a bottom edge surface, the top edge surface defining a slot that slidably receives the first slot engaging element and the bottom edge surface defining a slot, parallel to the slot in the top edge surface, that slidably receives the second slot engaging element; and

each slot having a first end and a second end such that when the frame is attached to the binder and when said first and



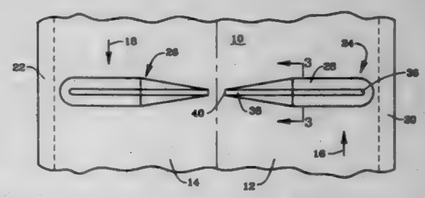
second slot engaging elements are adjacent the first ends of their respective slots, the front surface of the article may be placed in a face up position at a first location relative to the binder and when said first and second slot engaging elements are adjacent the second ends of their respective slots, the front surface may be placed in a face up position at a second location adjacent to said first location.

5,295,759

SNOW PLOW COMPATIBLE SPEED BUMPS

Stephen N. Flanders, Norwich, and Robert A. Estoa, East Thetford, both of Vt., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 13, 1993, Ser. No. 45,350
Int. Cl.[5] E01F *13/00, 9/06*
U.S. Cl. 404—15 **3 Claims**



1. Speed bumps for use in connection with highways located in climates where a snow plow is used to clear the highways comprising:

speed bumps fabricated from highway construction material;

said speed bumps each having a length extending in an axial direction substantially across adjacent traffic lines of a road surface;

said speed bumps each having a flat crown of fixed width running substantially the length of each bump, wherein said bumps have adjacent ends with tapered portions which taper down toward the road surface both in the axial direction and in a direction perpendicular to the axial direction;

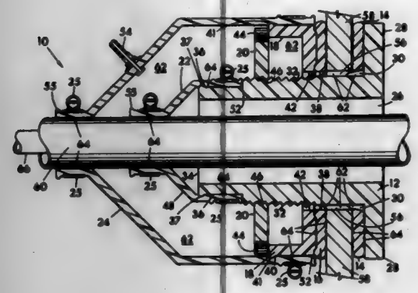
said flat crowns extending down said tapered portions to said adjacent ends of said bumps;

said tapered portions narrowing inward toward a central axis of the bumps such that the width of the adjacent ends of said bumps are equal to the fixed width of the flat crown; and wherein

said tapered portions are structurally configured to allow a snow plow to lift smoothly over said speed bumps.

VOL 1160 ISS 4 MR 22 1994 UMI

5,295,760
TESTABLE BULKHEAD
John W. Rowe, P.O. Box 601, Berry Creek, Calif. 95916
Filed Jul. 27, 1993, Ser. No. 96,983
Int. Cl.[5] B65G 5/00; B65B 3/06
U.S. Cl. 405—52 3 Claims

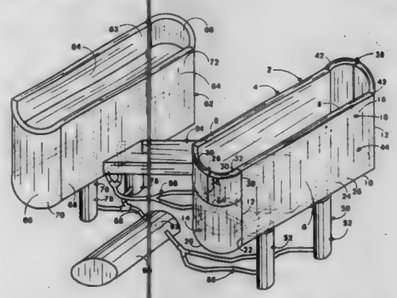


1. A sealing testable bulkhead for prevention of leakage around an elongated member penetrating a wall, comprising;
an insert means for placement into a hole in a wall, said insert means having a opening therethrough for passage of an elongated member through said insert means and the wall, said insert means having a flange means for preventing the complete passage of said insert means through the hole in the wall and for abutting against
a first sealing gasket sized for placement over said insert means between said flange means and the wall for sealing between said flange means and the wall,
a second sealing gasket sized for placement over said insert means and sealingly against the wall on the opposite side of the wall from said first sealing gasket,
a washer means sized for placement over said insert means and sealed abutment against said second sealing gasket,
securing means engagable between said insert means said washer means for applying pressure to said washer means so as to push said washer means toward the wall and to draw said flange means toward said washer means and thereby apply pressure to said first and second sealing gaskets to aid in defining fluid tight seals,
a first reducer means; said first reducer means being a hollow member having a first and a second open end oppositely disposed from one another, said first open end sized for placement over and sealed affixment to an elongated member passing through said insert means, said second open end sized for placement over and sealed affixment to said insert means adjacent said securing means;
a second reducer means larger than said first reducer means; said second reducer means being a hollow member having a first and a second open end oppositely disposed from one another with said first open end sized for placement over and sealed affixment to an elongated member passing through said insert means, said second open end sized for placement over and sealed affixment to said washer means so as to encase said first reducer means,
valve means affixed to and through an exterior wall of said second reducer means for in-putting pressurized air into an interior chamber defined at least in part by said second reducer means,
air conducting means for communicating air within said main chamber to each sealed area so as to allow testing for leaks in the sealing testable bulkhead.

5,295,761
METHOD FOR REMEDIATING CONTAMINATED SOIL
Gary E. Heacock, 1773 Wells Branch Pkwy., #606, Austin, Tex. 78728; Kenneth G. Grandstaff, 26 McDermott Ct., Allendale, N.J. 07401, and Michele Owens, 6900 Mesa Dr., Austin, Tex. 78731
Filed Mar. 25, 1993, Ser. No. 36,869
Int. Cl.[5] B09B 3/00
U.S. Cl. 405—128 6 Claims

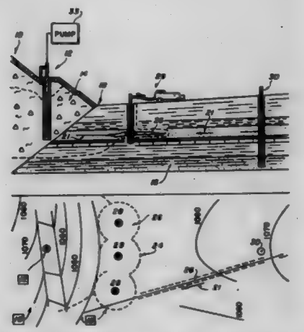
1. A method for remediating soils contaminated by hydrocarbon pollutants comprising the steps of:
(a) collecting the contaminated soil;
(b) reducing the collected soil to finely-divided particles;
(c) applying a controlled amount of a selective liquid additive as a spray onto the contaminated soil particles, said liquid additive consisting essentially of an aqueous solution of sodium silicate, ethylene glycol and sodium methyl silanolate; and
(d) aerating the soil particles as the additive is being applied, whereby the treated soil can be safely discharged into the environment.

5,295,762
MARINE LOCK SYSTEMS AND METHODS
Eudoro Lopez, Miami, and James R. McNew, Vero Beach, both of Fla., assignors to Locks and Waterways International, Inc., Vero Beach, Fla.
Continuation-in-part of Ser. No. 877,987, May 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 920,427, Nov. 20, 1986, abandoned. This application Aug. 18, 1993, Ser. No. 107,637
Int. Cl.[5] E02C 5/00
U.S. Cl. 405—86 11 Claims



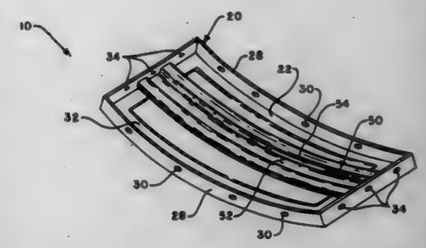
1. A balanced marine lock system comprising: a lock chamber defined by:
a pair of parallel vertical rectangular elongated walls each bounded by longitudinal horizontal top and bottom edges and opposed vertical first sides,
first and second end walls each bounded by top and bottom edges shorter in length than said edges of said elongated walls and opposed vertical second sides of lesser height than said first sides of said elongated walls, said second sides being joined to said first sides with said longitudinal bottom edges and said shorter bottom edges all lying in a horizontal plane,
a horizontal first bottom whose periphery joins with said elongated walls and said end walls,
a first gate including a pair of doors each bounded by top and bottom edges and vertical third sides of height equal to the height of said first sides of said elongated walls minus said height of said second sides of said end walls, each said door being hinged at its said third side to a first side of said elongated walls above said top edge of said first end wall,
a second gate including a pair of doors each constructed like said first gate and being hinged at its said third side to a first side of said elongated walls above said top edge of said second end wall,
a horizontal vertically movable first floor within said lock chamber having an area conforming to, but slightly less, than the horizontal cross-sectional area of said lock chamber,
inflatable gasket means associated with the periphery of said first floor to prevent liquid supported thereby from flowing below its level and to form a variable volume first pressure compartment between said first floor and said first bottom, and
first hydraulic means to positively raise and lower said first floor,
a balance chamber defined by:
a pair of vertical side walls, a pair of vertical end walls, a horizontal second bottom whose periphery joins with said balance chamber vertical walls and end walls and a open top,
a horizontal vertically movable second floor within said balance chamber having an area conforming to, but slightly less, than the horizontal cross-sectional area of said balance chamber, said area of said second floor being substantially equal to said area of said first floor,
inflatable gasket means associated with the periphery of said second floor to prevent liquid supported thereby from flowing below its level and to form a variable volume second pressure compartment between said second floor and said second bottom,
second hydraulic means to positively raise and lower said second floor, and
conduit means connecting said first pressure compartment to said second pressure compartment for flow of pressurized air between them.

5,295,763
METHOD FOR CONTROLLING GAS MIGRATION FROM A LANDFILL
James W. Stenborg, Wexford, and Darrell B. Williams, Imperial, both of Pa., assignors to Chambers Development Co., Inc., Pittsburgh, Pa.
Filed Jun. 30, 1992, Ser. No. 906,767
Int. Cl.[5] B09B 1/00
U.S. Cl. 405—129 7 Claims



1. A method of controlling gas migration with respect to a landfill comprising the steps of:
installing an extraction well having a zone of influence in proximity to the perimeter of the landfill; and
horizontally fracturing hydraulically the subsurface strata outside the perimeter of the landfill but in proximity to the perimeter of the landfill such that resulting horizontal fractures in the subsurface strata fluidically communicate with the landfill and the zone of influence of the extraction well so gas in the horizontal fractures can be drawn up by the extraction well.

5,295,764
TUNNEL LINER
Richard J. Canat, Boardman, Ohio, assignor to WCI Steel, Inc., Warren, Ohio
Filed Aug. 14, 1991, Ser. No. 744,949
Int. Cl.[5] E21D 5/08
U.S. Cl. 405—151 9 Claims



1. A tunnel liner plate assembly comprising:
(a) a tunnel liner plate of generally rectangular configuration and having a longitudinal direction and a transverse direction, said liner plate comprising a longitudinally curved and transversely essentially uncurved wall having opposed inside and outside surfaces, inwardly extending side flanges and inwardly extending end flanges, each of said flanges having a plurality of bolt holes, said wall having a pair of spaced longitudinally extending reinforcing ribs and a longitudinally curved web therebetween;
(b) a stiff longitudinally extending reinforcement comprising a longitudinally curved center portion having essentially the same longitudinal curvature as said tunnel liner plate and which abuts the inside surface of the web of the wall of said liner plate, a pair of upstanding longitudinally extending side portions which are integrally joined to said center portion along longitudinally extending edges and extend inwardly from said inside surface of said web of said wall, and laterally projecting members which are integral with respective side portions and disposed laterally outwardly therefrom, and which are spaced from said wall of said liner plate, said reinforcements having end edges which abut the respective end flanges of said liner plate and are attached thereto, the configuration of the center portion and the upstanding side portions of said reinforcement being such as not to interfere with any of the bolt holes of the end flanges, said reinforcement being fixedly secured to said liner plate.

5,295,765
SNORKELING VEST
Moon Y. Choi, Placentia, Calif., assignor to Under Sea Industries, Inc., Rancho Dominguez, Calif.
Filed Jul. 31, 1991, Ser. No. 738,449
Int. Cl.[5] B63C 9/24
U.S. Cl. 405—186 10 Claims

1. A snorkeling vest of the type having an inflatable bladder providing selectable degrees of buoyancy; the vest comprising:
an elastic upper-body garment for encircling the chest and back of a user and having a fastener for being secured thereto;
an air-tight inflatable bladder secured at discrete locations adjacent the intersection of the back-covering region and the chest-covering region of the garment by at least a pair of elastic straps for limited movement relative to the garment;

said bladder being substantially flat against the chest-covering region of said garment when deflated and being free to



move relative to said chest-covering region of said garment while being inflated.

5,295,766

APPARATUS AND METHOD FOR BUILDING A FOUNDATION FOR UPRIGHTS OR FOR MAKING PASSAGES THERETHROUGH

Matti K. Tilkkainen, Väinölintie 24, SF-01900 Nurmijärvi, Finland

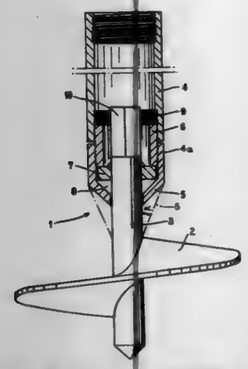
PCT No. PCT/FI91/00058, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/13225, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 25, 1991, Ser. No. 924,061

Claims priority, application Finland, Feb. 28, 1990, 901002

Int. Cl.[5] E21B *7/26;* **E04H** *12/22;* **E02D** *13/00*

U.S. Cl. 405—232 **14 Claims**



1. An apparatus for at least one of building a frost-resistant foundation for uprights and making passages, said apparatus comprising: a drive shaft equipped helical auger, which shaft is fitted with a tubular body portion, a diameter of said helical auger being substantially larger than a diameter of said body portion, a ratio of said diameter of said helical auger to said diameter of said tubular body portion being at least 1.8:1; said tubular body portion having at least a first body section, an end of said first body section of said tubular body portion facing said helical auger being fitted with a conical section tapering towards helical auger, an apex of said conical section being substantially level with a top edge of said helical auger, and a length of said conical section being at least equal to a pitch of said helical auger; whereby, when the apparatus is in operation, said tapered conical section compacts a soil layer softened by said helical auger, a volume of earth material compacted by said conical section being at least equal to a volume of earth material displaced by said helical auger during the course of a single rotation thereof.

5,295,767

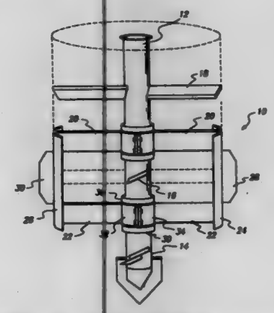
STABILIZER FOR AN IN SITU COLUMN DRILLING APPARATUS

Osamu Taki, 2358 Somerset Dr., Belmont, Calif. 94002

Filed Jun. 26, 1992, Ser. No. 904,837

Int. Cl.[5] E02D *7/00*

U.S. Cl. 405—233 **10 Claims**



1. A stabilizer for preventing changes in the drilling direction of an in situ column drilling system having a shaft and an auger bit, said stabilizer comprising:

a first and a second set of mounting arms, each of said mounting arms adapted for rotatable coupling to a shaft of the drilling system, said first and second set of mounting arms coupled to the shaft spaced apart along a longitudinal axis of the shaft proximate the auger bit, the longitudinal axis extending in the drilling direction;

first and second stabilizing members for preventing movement of the auger bit in a first direction, the first stabilizing member attached to ends of the first and second set of mounting arms, the first stabilizing member extending parallel to and about the longitudinal axis of the shaft between the ends of the first and second set of mounting arms, and the second stabilizing member attached to ends of the first and second set of mounting arms distal the first stabilizing member, the second stabilizing member extending parallel to and about the longitudinal axis of the shaft between the ends of the first and second set of mounting arms, the first and second stabilizing members having a plate shape, the first and second stabilizing members having a curved, semi-cylindrical shape and being curved about the longitudinal axis of the shaft for a close fit with a wall of the column; and

first and second stabilizing tabs for preventing movement of the auger bit in a second direction, said first and second stabilizing tabs mounted to the first and second stabilizing members, respectively, said first and second stabilizing tabs mounted parallel to the longitudinal axis of the shaft and extending radially outward from the respective stabilizing members.

5,295,768

FRICTION ROCK STABILIZER

Peter Buchhorn, New Lambton, and David H. R. Starke, Eleebana, both of Australia, assignors to The ANI Corporation Ltd., Pyrmont, Australia

Filed Sep. 29, 1992, Ser. No. 953,078

Claims priority, application Australia, Aug. 10, 1992, PL4057

Int. Cl.[5] E21D *21/00*

U.S. Cl. 405—259.3 **7 Claims**



1. A collar to be secured by welding to a friction rock stabilizer tube, said collar having an internal surface for abutting and being affixed to an outer surface of the tube, and wherein said collar having an internal surface diameter which is substantially equal to an external diameter of said tube when said tube is in a relaxed state, said collar having an outer surface for location adjacent to a mine bearing plate used in conjunction with said friction rock stabilizer tube, said outer surface having a substantially continuous arcuate shape to facilitate alignment of said collar with said mine bearing plate when said tube is inserted in a bore in a mine roof or wall.

5,295,769

STIRRING APPARATUS FOR IMPROVING GROUND

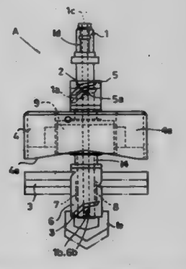
Kunihiro Sano, Tokyo, Japan, assignor to Daisho Shinki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 860,435, Mar. 30, 1992, abandoned. This application Oct. 26, 1992, Ser. No. 966,585

Claims priority, application Japan, Nov. 15, 1991, 3-300168; Mar. 25, 1992, 4-66977

Int. Cl.[5] E02D *3/12*

U.S. Cl. 405—266 **21 Claims**



1. A stirring apparatus for improving ground by stirring a consolidating agent into excavated soil with an excavating rod when ground is excavated by the rod and also when the rod is withdrawn and by shaping the resulting mixture into a rectangular cross section, said stirring apparatus comprising:

a rod body connected with the front end of the excavating rod;

an upper stirring blade and a lower stirring blade which protrude from the outer surface of the rod body and are spaced from each other axially of the rod body;

an upper discharge hole and a lower discharge hole that are formed in the outer surface of the rod body at the positions at which the upper and lower stirring blades protrude, respectively, for forcing the consolidating agent into the excavated hole through the rod body; and

a casing held at a height between the upper and lower stirring blades and spaced from the outer surface of the rod body so as to be isolated from rotation of the rod body.

5,295,770

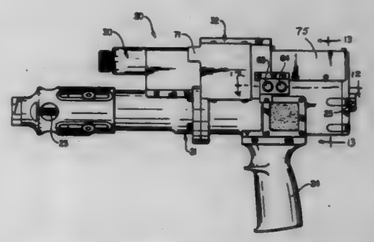
AIR FEED PECK DRILL WITH PNEUMATIC SAFETY SYSTEM

Robert A. Peanison, Bellville, and Richard E. Eckman, Houston, both of Tex., assignors to Indresco, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 831,821, Feb. 6, 1992. This application May 20, 1993, Ser. No. 65,120

Int. Cl.[5] B23B *45/04*

U.S. Cl. 408—6 **42 Claims**



1. A pneumatic peck drill operable in repetitive cycles including a rapid advance phase to a set back distance from a workpiece, a drilling phase, and a retract phase, comprising:

(a) a drill motor for rotating, advancing, and retracting a drill bit chuck through said cycles;

(b) pneumatic power means for advancing and retracting said drill motor;

(c) drilling phase control means connected with said drill motor and said pneumatic power means for limiting the drilling phase of said motor to a predetermined drill depth;

(d) retract phase control means operable with said drill motor and power means for controlling the retract phase of each peck cycle;

(e) peck cycle control means connected with said pneumatic means for terminating each drilling phase and controlling the rate of said repetitive peck cycles;

(f) hydraulic feed control means including a damping cylinder having a piston rod operable with said drill motor and power means to limit the advance of said drill motor in said drilling phase to an adjustable predetermined rate;

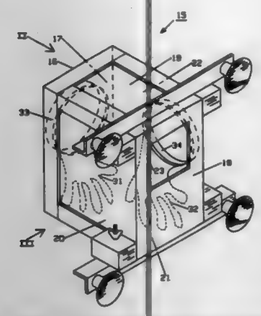
(g) set back control means operable with said feed control means for limiting said feed control means during said retract phase to a predetermined set back distance whereby said drilling phase during each peck cycle begins at a predetermined position before a bit carried by said chuck engages a workpiece;

(h) a shroud around selected movable components of said drill to protect an operator from injury; and

(i) means engageable by said shroud and connected with said pneumatic power means for disabling said pneumatic power means in response to removal of said shroud.

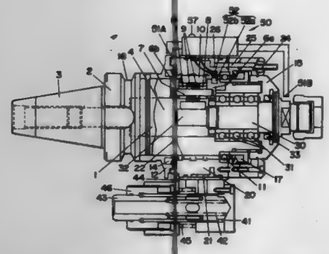
VOL 1160 ISS 4 MR 22 1994

5,295,771
CLEAN ROOM TOOL CHAMBER
Gary Wehrmann; Henry J. Thomas; James Perrin; Ernest H. Sierra, Jr., and Robert C. Wegmann, all of San Antonio, Tex., assignors to Sony Electronics Inc., Park Ridge, N.J.
Filed Aug. 28, 1992, Ser. No. 936,826
Int. Cl.[5] B23B *47/00*
U.S. Cl. 408—67 23 Claims



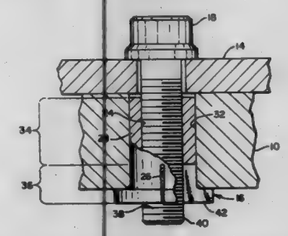
1. A device for removing contaminants adjacent to a workpiece surface in a cleanroom, said device being used in conjunction with a tool which produces said contaminants, comprising:
chamber means for surrounding said workpiece surface and said tool with a chamber having access means for accessing said tool;
flow means for inducing air flow into and out of said chamber; and
a transparent wall located perpendicular to said workpiece surface so as to form a wall of said chamber, at least one intake hole for air being located at upper portion of said wall, and another hole being located at a lower portion of said wall for connection to a source of vacuum, and wherein said chamber has an aperture for alignment with said workpiece surface and for providing access for said tool to said workpiece surface.

5,295,772
TRACTION DRIVE TOOL ADAPTER
Kouichi Ueda, Shiki, and Shinji Yasuhara, Kashiwara, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan
Continuation of Ser. No. 928,413, Aug. 12, 1992, abandoned.
This application Jul. 6, 1993, Ser. No. 86,769
Int. Cl.[5] B23C *9/00*; B23B *39/00*; F16H *13/06*
U.S. Cl. 409—232 2 Claims



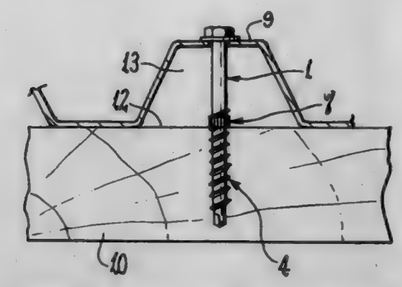
1. A traction drive tool adapter having a rotary portion provided at the front half section thereof with an axially extending central bore and fitted firmly at the rear half section thereof in a main shaft of a machine tool, a fixed portion consisting of a housing fitted rotatably around the outer circumferential surface of the front half section of said rotary portion and connected detachably to a fixed part of said machine tool, and a tool mount portion inserted in said central bore in said rotary portion, rotatable with respect to said fixed portion and said rotary portion and used to attach a tool to a front end section thereof, all of which three portions are put together via a planetary roller speed increasing mechanism, comprising a first revolution speed detecting means provided on said fixed portion and adapted to detect the number of revolutions per unit time of said rotary portion, a second revolution speed detecting means provided on said fixed portion and adapted to detect the number of revolutions per unit time of said tool mount portion, and an abnormal rotation judgement means which is connected to said first and second detecting means so that output signals from these detecting means are input thereinto, and which is adapted to generate an abnormality signal when a speed increasing ratio, i.e. a ratio of the number of revolutions per unit time of said tool mount portion to that of said rotary portion is lower than a predetermined level.

5,295,773
SELF-LOCKING PRESSED IN INSERT ARRANGEMENT
Robert M. Amoroso, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 974,005, Nov. 10, 1992, abandoned.
This application May 17, 1993, Ser. No. 62,267
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—60 3 Claims



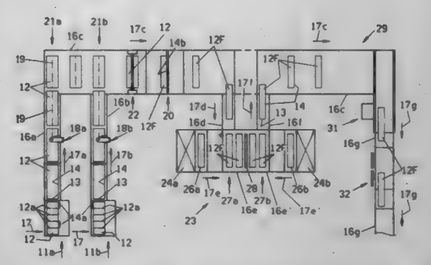
1. A self locking insert arrangement for securing a part, comprising:
a casing having a uniform diameter unthreaded hole therethrough;
a hollow cylindrical insert having an axis and an annular wall;
a radially extending shoulder perpendicular to said axis at one end of said insert;
said insert internally threaded the full length thereof, and having a uniform outside diameter through the entire length exclusive of said shoulder;
a plurality of radial slots through said shoulder and wall from the end having said shoulder axially extending through said shoulder and a portion of said wall;
said insert installed within said hole with a first interference fit through the entire length exclusive of said shoulder, whereby said internal threads are strained inwardly more at the slotted portion of said insert than at the unslotted portion of said insert; and
a threaded bolt installed within said insert from the end of said insert opposite said should with a loose fit in said unslotted portion, but a second interface fits in said slotted portion.

5,295,774
SCREW AND METHOD OF MAKING SAME
David Roberts, Melbourne, Australia, assignor to W. A. Deutsher Pty. Ltd., Moorabbin, Australia
Continuation of Ser. No. 641,955, Jan. 16, 1991, abandoned. This application Sep. 2, 1992, Ser. No. 938,580
Claims priority, application Australia, Jan. 16, 1990, PJ8215
Int. Cl.[5] F16B *25/00*
U.S. Cl. 411—387 5 Claims



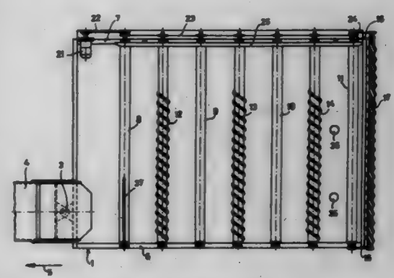
1. A screw of the self-drilling and self-tapping kind for securing a first component to a second component, wherein a space encompassing a corrosive environment is defined between said first and second components, comprising;
an elongate cylindrical shank;
an enlarged head formed at one end of said shank;
a drilling tip formed at the other end of said shank;
a threaded section formed upon said shank at an axial position adjacent to said drilling tip;
a non-threaded section of said shank being interposed between said threaded section of said shank and said head;
a corrosion-resistant coating disposed upon said non-threaded section of said shank for protecting said non-threaded section of said shank from said corrosive environment disposed within said space defined between said first and second components and to which said non-threaded section of said shank is exposed when said screw is used to fasten said first component to said second component; and
hole enlarging means disposed upon said shank of said screw at an axial location which is within the vicinity of the junction defined between said threaded and non-threaded sections of said shank and having a diametrical extent which is substantially equal to and just slightly greater than the diametrical extent of said non-threaded section of said shank for forming a hole within said first component which is enlarged with respect to an origindal hole formed within said first component by said drilling tip of said screw and which has a diameter which is substantially equal to and slightly greater than the diameter of said non-threaded section of said shank of said screw such that when said non-threaded section of said shank of said screw is passed through said enlarged hole formed within said first component, interior annular sidewall portions of said enlarged hole formed within said first component will not deleteriously affect said corrosion-resistant coating disposed upon said non-threaded section of said shank of said screw whereby said corrosion-resistant coating remains intact so as to protect said non-threaded section of said shank from said corrosive environment when said screw is used to fasten said first component to said second component and yet excessive play between said non-threaded section of said shank of said screw and said enlarged hole of said first component will not be developed.

5,295,775
METHOD OF AND APPARATUS FOR MAKING BOOKS
Milan Andjelic; Jens Pünner, both of Hamburg, and Siegfried Lampe, Ellerbek, all of Fed. Rep. of Germany, assignors to E. C. H. Will GmbH, Hamburg, Fed. Rep. of Germany
Filed Dec. 10, 1992, Ser. No. 988,459
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1991, 4141767
Int. Cl.[5] B42C *9/00*, *11/04*
U.S. Cl. 412—2 32 Claims



1. A method of making books from back strips, covers and piles with each pile composed of a plurality of overlapping sheets having a size several times that of a book page, comprising the steps of transporting a series of successive piles along a predetermined path; mechanically connecting the sheets of each of said successive piles to each other in at least one first portion of said path; thereafter folding successive piles of the series in at least one second portion of the path to convert each pile into a folded pile having a spine and two outermost sheets; adhesively securing the outermost sheets of successive folded piles to covers in at least one third portion of said path; adhesively affixing back strips to the spines of successive folded piles in at least one fourth portion of the path; and thereafter subdividing each folded pile into a plurality of books in at least one fifth portion of said path.

5,295,776
MOBILE BALE COLLECTOR
Thomas H. D. Meijer, Stadsweg 123, 9792 Re Ten Post, Netherlands
PCT No. PCT/NL90/00031, § 371 Date Sep. 19, 1991, § 102(e) Date Sep. 19, 1991, PCT Pub. No. WO90/11007, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 15, 1990, Ser. No. 768,580
Claims priority, application Netherlands, Mar. 20, 1989, 8900682
Int. Cl.[5] B60P *1/40*; A01D *90/08*
U.S. Cl. 414—111 8 Claims

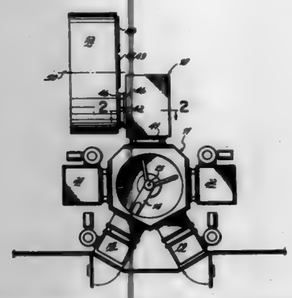


1. A mobile bale collector comprising:
(a) conveyor means for receiving a succession of bales, the

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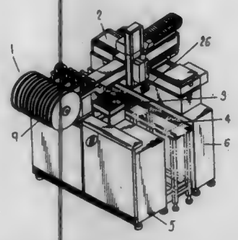
conveyor means forming a row of a predetermined number of bales, the row extending at right angles to the direction of travel of the collector, the conveyor means discharging the row of bales off the conveyor means in a direction opposite to the direction of travel of the collector upon completion of the row;
(b) detection means for detecting the completion of a row;
(c) discharge inhibiting means for inhibiting discharge of a row until the row is completed, the detection means being operatively connected to the discharge inhibiting means, and
wherein the conveyor means comprises co-planar bale supporting rollers, extending at right angles to the direction of travel of the collector, the rollers being screw conveyors which are rotatably driven, the direction of the screw thread and the direction of rotation of the rollers being such that bales supported on the rollers are urged in a first direction opposite to the direction of travel of the collector and, then, in a second direction, transversely to the direction of travel of the collector, and further wherein the inhibiting means comprises a blocking means behind a row to be formed as seen in the direction of travel and control means which, connected to the blocking means, such that upon completion of a row signalled by the detection means, the control means removes the blocking means out of its position blocking the completed row, the collector further comprising a guide element, which extends parallel to the direction of travel of the collector at a place to guide a first received bale of a completed row.

5,295,777
WAFER TRANSPORT MODULE WITH ROTATABLE AND HORIZONTALLY EXTENDABLE WAFER HOLDER
Julian Hodos, Howard Beach, N.Y., assignor to Materials Research Corporation, Orangeburg, N.Y.
Filed Dec. 23, 1992, Ser. No. 996,102
Int. Cl.[5] B65G *49/06*
U.S. Cl. 414—217 **11 Claims**



1. A wafer transport module for conveying a wafer between a horizontal wafer handling apparatus and a vertical wafer processing apparatus.
an evacuatable housing having a first port in communication with the horizontal wafer handling apparatus and a second port in communication with the vertical wafer processing apparatus, the first port sized to permit passage of a wafer therethrough in horizontal orientation and the second port sized to permit passage therethrough of a wafer in vertical orientation;
a wafer holder located in the housing, the wafer holder adapted to receive and retain a wafer in horizontal orientation adjacent the first port;
means for rotating the wafer holder about an inclined axis to position the retained wafer in vertical orientation and in alignment with the second port; and
means for horizontally extending the wafer holder through the second port and into a load/unload station of a vertical wafer processing apparatus, thereby to facilitate transfer to the vertical wafer processing apparatus.

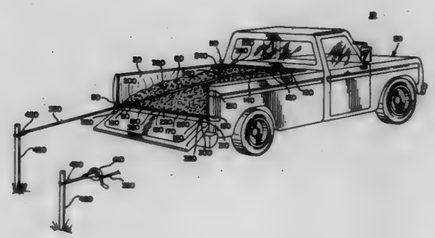
5,295,778
ASSEMBLING APPARATUS
Hiroyuki Hirai, Habikino; Kuninori Takezawa, Kofu, and Kelichi Jin, Yamanashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 26, 1992, Ser. No. 857,869
Claims priority, application Japan, Mar. 27, 1991, 3-62863
Int. Cl.[5] B25J *9/00*
U.S. Cl. 414—225 **2 Claims**



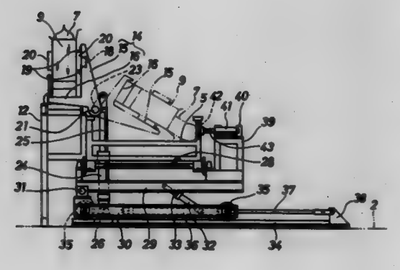
1. A parts assembly apparatus, comprising:
a parts accommodating member, comprising a flexible carrier tape having a plurality of packages thereon, each said package defining a concave portion for holding a part therein;
a supply reel having said parts accommodating member wound thereon;
a driving means feeding said parts accommodating member from said supply reel to a point whereat parts can be removed from said parts accommodating member;
a collecting reel winding said parts accommodating member thereon after parts have been removed therefrom, said collecting reel being disposed adjacent to said supply reel;
an assembly robot having a gripping tool for gripping parts supplied by said parts accommodating member at said point and mounting the parts on a workpiece; and
means for feeding a workpiece to said assembly robot;
wherein said supply reel and said collecting reel are coaxial and adjacent, and guide rollers are provided guiding said parts accommodating member between said driving means and said collecting reel.

5,295,779
FLEXIBLE MATERIAL VEHICLE UNLOADER
Robert M. Mihalich, and George M. Mihalich, both of 3944 Cameron Ave., Hammond, Ind. 46327
Filed Jun. 16, 1992, Ser. No. 899,624
Int. Cl.[5] B65G *67/24*
U.S. Cl. 414—395 **23 Claims**

1. A device for unloading a payload from a vehicle, comprising:
means for unloading the payload having first and second ends;
means for securing said second end of said means for unloading to the vehicle;
means for drawing said first end of said means for unloading in a direction toward said second end of said means for unloading, said drawing means positioned equal to or above a load supporting surface of the vehicle but no higher than an upper surface of the payload, causing the payload to be dumped from said means for unloading unhindered in the direction equal to the lowest surface of the payload.



5,295,780
DUMPING APPARATUS FOR BAG FILLED WITH MOLTEN SUBSTANCE
Sokichi Tanaka, 4-4-1106, Shiba-Daimon 1-chome, Minato-ku, Tokyo, Japan
Filed May 21, 1992, Ser. No. 886,083
Int. Cl.[5] B65G *65/34*
U.S. Cl. 414—421 **5 Claims**



1. A dumping apparatus for a bag filled with molten substance, comprising:
a tippler having first and second transfer positions;
a roller conveyor including a plurality of rollers for receiving a carrying can in which the bag filled with molten substance is accommodated and transporting the carrying can to the first transfer position at which the carrying can is to be transferred to said tippler;
a pallet conveyor for receiving and positioning a pallet to the second transfer position at which the carrying can is to be transferred from said tippler to the pallet;
said tippler having a plurality of first portions which extend horizontally between adjacent ones of said rollers of said roller conveyor when said tippler is at the first transfer position and a second portion which extends vertically when said tippler is at the first transfer position;
tippler moving means for pivoting said tippler around a stationary axis parallel to a transporting direction of said roller conveyor alongside said roller conveyor from the first transfer position to the second transfer position at which said second portion of said tippler is inclined downwardly toward said pallet conveyor to allow the carrying can to slip down somewhat along said second portion, said tippler receiving, at said second portion thereof, the carrying can when said tippler is pivoted from the first transfer position to lift said second portion thereof from between the adjacent ones of said rollers of said roller conveyor; and
pallet conveyor moving means for moving, after said tippler is pivoted from the first to the second transfer position together with the carrying can until the bag is partially received on the pallet, said pallet conveyor away from said tippler to pull out the bag from the carrying can thereby to transfer the bag to the pallet.

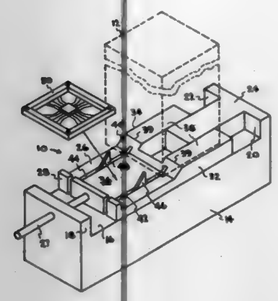
5,295,781
Patent Not Issued For This Number

5,295,782
TAB MAGAZINE LOADER AND METHOD USING A SLIDER MECHANISM
Ronald E. Frye, Jr., Newman, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Aug. 29, 1991, Ser. No. 751,500
Int. Cl.[5] B65G *57/30*
U.S. Cl. 414—795.3 **3 Claims**

1. Apparatus for loading a TAB carrier into the bottom position of a bottom-loading stacking magazine, comprising:
a base having a horizontal surface;
a one-piece slider member, moveable on the horizontal surface of the base, for conveying the TAB carrier from a first loading position to a second unloading position located below the stacking magazine; said one-piece slider member including a first horizontal surface on which a TAB carrier is initially placed, a second horizontal surface which is elevated above the first horizontal surface, and a ramp surface extending between and connecting the first horizontal surface and the second horizontal surface;
retractable cam means, mounted on said base and positioned beneath the bottom-loading stacking magazine to engage said TAB carrier, for permitting the TAB carrier to be carried by the one-piece slider member only from the first loading position to the second unloading position and for preventing the TAB carrier from being carried by the slider member from the second position back to the first position;

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said retractable cam means having a front surface configured as an inclined cam surface which is engaged and pushed vertically downward by the TAB carrier as the TAB carrier is moved horizontally by the one-piece slider member from the first loading position to the second unloading position; and said retractable cam means having a rear vertically-oriented surface which engages the TAB carrier and prevents horizontal movement of the TAB carrier as the slider member is returned from the second unloading position back to the first position;



wherein the leading edge of the TAB carrier first engages with the retractable cam means as the slider member is moved from the second position to the first position; wherein the bottom surface of the TAB carrier holds the retractable cam means in a retracted position as the slider member moves toward the second unloading position; wherein the TAB carrier is pushed up the ramp surface from the first horizontal surface of the slider to the second horizontal surface of the slider member as the slider member moves from the second position back to the first position and as the retractable cam means moves from the retracted position to engage the trailing edge of the TAB carrier when the TAB carrier is in the second unloading position to prevent the TAB carrier from moving from the second unloading position; and wherein the TAB carrier is pushed up into a stack of one or more previously loaded TAB carriers in the stacking magazine as the TAB carrier is pushed up the ramp surface of the slider member from the first horizontal surface to the second horizontal surface.

5,295,783

SYSTEM AND METHOD FOR REGULATING THE SPEED OF A STEAM TURBINE BY CONTROLLING THE TURBINE VALVE RACK ACTUATOR

Frederick H. Lesko, Lehighton, and Charles A. Parker, Saylorsburg, both of Pa., assignors to Coamec, Inc., Bethlehem, Pa.

Filed Apr. 19, 1993, Ser. No. 49,797

Int. Cl.[5] F01D *17/06*

U.S. Cl. 415—30 **20 Claims**

1. A system for regulating the speed of a turbine by operating a steam valve rack assembly to adjust the flow of steam to the turbine by controlling the position of the turbine valve rack actuator in response to oil within a first pressure range fed, reacting to signals from a closed loop speed control system, through a proportional valve to the turbine valve rack actuator comprising:

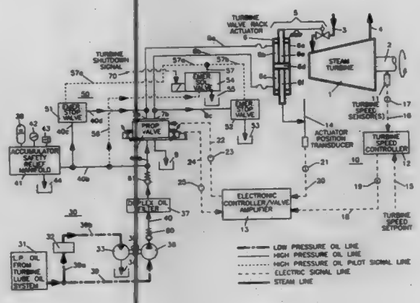
(A) a source of oil within a second pressure range lower than said first pressure range;

(B) oil accumulator; and

(C) pressure intensifying means arranged to receive oil within the second pressure range from the oil source, increase the pressure thereof to within said first pressure range, and circulate the oil within the first pressure range to the oil accumulator and proportional valve;

whereby oil within said first pressure range released from the accumulator passes to and through the proportional valve to the valve rack actuator to close the valve rack assembly and reduce the flow of steam to said turbine when a signal from the closed loop speed control system calls for a reduction in the speed of said turbine and to open the valve rack assembly and increase the flow of steam to the turbine when a signal from the closed loop speed control system calls for an increase in the speed of the turbine.

12. A method for regulating the speed of a turbine by operating a steam valve rack assembly to adjust the flow of steam to the turbine by controlling the position of the turbine valve rack actuator in response to oil within a first pressure range fed, reacting to signals from a closed loop speed control system,



through a proportional valve to the the turbine valve rack actuator, comprising the steps of:

(A) utilizing oil within a second pressure range from a source thereof to operate pressure intensifying means to increase the pressure thereof within the first pressure range;

(B) circulating oil within the first pressure range to the proportional valve and to an oil accumulator containing inert gas within a third pressure range;

(C) continuing the circulation of oil within the first pressure range to the oil accumulator for storage therein whereby the pressure of the inert gas therein is equalized to within the first pressure range;

(D) releasing and transferring on demand at least a portion of the oil stored in the oil accumulator within the first pressure range to the proportional valve and to the turbine valve rack actuator to adjust the position thereof to control the flow of steam to the turbine when a signal from the closed loop speed control system calls for a reduction in the speed of the turbine and to open the turbine valve rack assembly and increase the flow of steam to the turbine when a signal from the closed loop speed control system calls for an increase in the speed of the turbine.

5,295,784

SUCTION DEVICE, ESPECIALLY FOR USE IN DENTISTRY

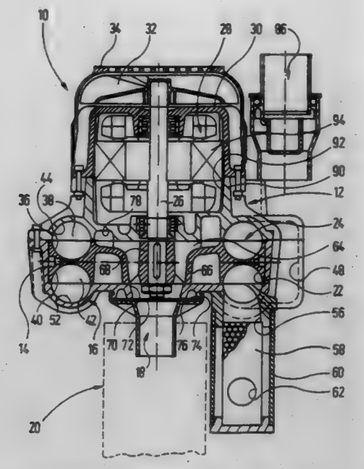
Uwe Grotz, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Durr Dental GmbH & Co. KG, Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 930,893

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1991, 4128150

Int. Cl.[5] F04D *5/00*

U.S. Cl. 415—55.6 **7 Claims**



1. A suction device, especially for use in dentistry, having three series connected compressor stages comprising

(a) a shaft (**26**) connectable to an electric motor (**28**);

(b) a rotor (**24**) mounted on said shaft (**26**), which rotor is formed with two parallel end faces, each of which is provided with side-channel compressor vanes (**38, 42**) adjacent to the periphery of the rotor;

(c) a casing (**12, 16**) defining a disc shaped rotor chamber having parallel end faces cooperating with the rotor (**24**) in essentially fluid tight manner to form first and second side-channels (**44, 52**) with the end faces of the rotor chamber, each side channel having an intake section and an outlet section;

(d) an axial connecting channel (**48**) connecting the outlet section of the first side-channel to the inlet section of the second side-channel, the outlet section of the second side-channel being connected to an outlet orifice (**62**) of the casing (**12, 16**), while the intake section of the first side-channel (**36**) communicates with an inlet orifice (**70**) of the casing (**12, 16**);

(e) the rotor (**24**) having a central hub portion (**68**) that surrounds said shaft (**26**), guide wall (**66**) annularly spaced from the hub portion and radially flaring towards said first side-channel (**36**) so as to form an axial passageway extending completely through the rotor (**24**), compressor vanes (**64**) mounted entirely within the annular space extending between the hub portion (**68**) and said guide wall (**66**); and

(f) a first end face of said casing (**12**) being formed with an intermediate channel (**78**) that is aligned with an opposing end portion of the guide wall (**66**) and having a radially outwardly extending connection section (**80**) communicating with the first side-channel (**36**).

5,295,785

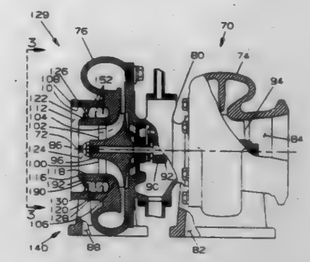
TURBOCHARGER HAVING REDUCED NOISE EMISSIONS

Peter D. Church, Peoria, and Phillip B. Gordon, Jr., Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 23, 1992, Ser. No. 996,414

Int. Cl.[5] F04D *29/66*

U.S. Cl. 415—58.3 **16 Claims**



1. A turbocharger comprising:

an intake housing having an outer wall defining an intake opening therein and an inner wall positioned within the outer wall;

a primary inlet formed within the inner wall;

an annular chamber formed between the outer wall and the inner wall;

a means for connecting interposed the annular chamber and the primary inlet forming a secondary inlet;

a means for reducing noise emitted from the turbocharger, said means for reducing being a passive noise reduction system including a plurality of deflector assemblies having a series of deflector fins defining a preestablished space therebetween positioned in generally axial alignment with the annular chamber; and

said preestablished space is determined by:

$$\text{Spacing} = \frac{N \times 10{,}4400{,}000}{S \times B}$$

N=Number of spaces

S=Turbocharger Speed (RPM)

B=Number of Main Blades.

5,295,786

LINER RING FOR A PUMP

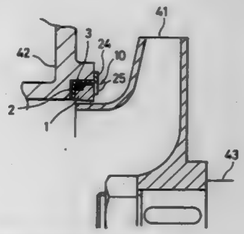
Ken-ichi Kajiwara, Tokyo, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,070

Claims priority, application Japan, Dec. 27, 1990, 2-402357[U]

Int. Cl.[5] F04D *29/16*

U.S. Cl. 415—172.1 **22 Claims**

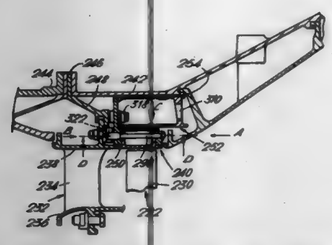


21. A centrifugal pump comprising:

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a pump casing body;
an impeller rotatably mounted in said pump casing body; and
a liner ring comprising
an annular seal housing press fit with said pump casing body,
an annular sealing member mounted in said annular seal housing and confronting said impeller in a radial direction with a predetermined space between said annular sealing member and said impeller,
an annular elastic member interposed between said annular sealing member and said annular said housing;
wherein said annular seal housing is formed of sheet metal pressed into a predetermined shape and includes a substantially axially extending cylindrical side wall, a substantially radially extending housing end wall joined to a first end of said cylindrical side wall, a corner portion defined between said cylindrical side wall and said housing end wall, and a radially outwardly extending flange joined to a second end of said cylindrical side wall;
wherein said flange defines a means for limiting axial movement of said annular seal housing relative to said pump casing body when said annular seal housing is press fit with the pump casing body; and
wherein said annular elastic member is disposed in said corner portion.

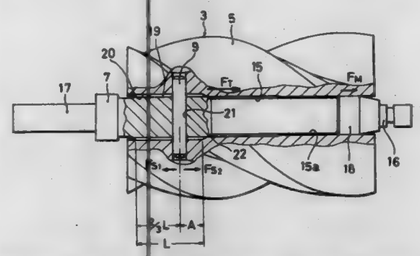
5,295,787
TURBINE ENGINES
John F. Leonard, Bristol, and Peter J. Maggs, Bath, both of England, assignors to Rolls-Royce plc, London, England
Filed Oct. 1, 1992, Ser. No. 955,026
Claims priority, application United Kingdom, Oct. 9, 1991, 9121386
Int. Cl.[5] F01D 5/20
U.S. Cl. 415—173.3 15 Claims



1. In a gas turbine engine having a main casing, turbine blades and a segmented cylindrical liner located radially of and surrounding the tips of the blades, an apparatus for compensating for differing radial expansions between the blades and the liner, the apparatus comprising a shroud structure axially adjacent the liner and including radially extending coupling means for coupling the liner to said structure in such a manner that thermal circumferential growth of said shroud structure causes a radial displacement of the liner segment relative to said adjacent shroud structure.

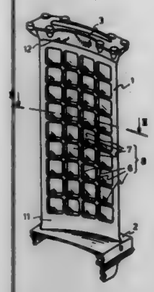
5,295,788
ROTOR ASSEMBLY FOR SCREW PUMP
Katsunori Tajima; Mitsunori Arimura, both of Asaka; Mamoru Yoshikawa, Kawagoe, and Tadashi Kimura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 991,213
Claims priority, application Japan, Dec. 27, 1991, 3-346539
Int. Cl.[5] F04C 18/18, 29/00
U.S. Cl. 416—204 R 9 Claims

1. A rotor assembly for a screw pump comprising a light alloy rotor main body having an axially extending central bore, a steel shaft frictionally connected by press-fitting into said central bore, and a diametrically extending fixing pin press-fitted through said rotor main body and said shaft, wherein friction forces between said rotor and said shaft are arranged to



be larger on a discharge side of said rotor assembly than on a suction side thereof and wherein said fixing pin is disposed at substantially a central position of entire friction forces in terms of their directions and magnitudes.

5,295,789
TURBOMACHINE FLOW-STRAIGHTENER BLADE
Alain P. M. Daguet, Bondoufle, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "SNECMA", Paris, France
Filed Mar. 4, 1993, Ser. No. 26,413
Claims priority, application France, Mar. 4, 1992, 92 02579
Int. Cl.[5] F01D 5/14
U.S. Cl. 416—241 A 9 Claims

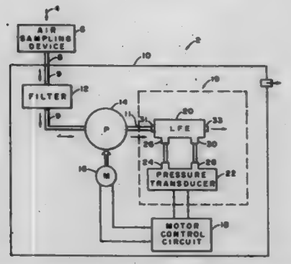


1. A flow-straightener blade for a turbomachine, comprising a metallic structure having opposite first and second sides, said metallic structure having a smooth surface on said first side defining one face of said blade and said second side forming a cellular network formed of a plurality of adjoining cells which includes a plurality of ribs extending from a tip portion to a root portion of the blade and from leading edge to a trailing edge of said blade, and a composite material which fills said cells, the filled second side of said metallic structure defining the other face of said blade.

5,295,790
FLOW-CONTROLLED SAMPLING PUMP APPARATUS
Clayton J. Bossart, Monroeville; Charles H. Etheridge, Jr., and Craig D. Gestler, both of Pittsburgh, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Dec. 21, 1992, Ser. No. 994,532
Int. Cl.[5] F04B 49/06, 49/08
U.S. Cl. 417—43 16 Claims

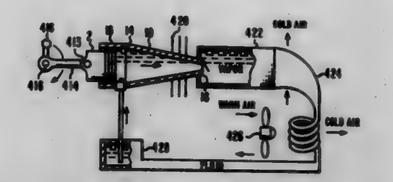
1. A sampling pump apparatus comprising:
an electric motor;

a pump operably driven by the electric motor to produce a flow rate;
a laminar flow element positioned in a flow path of the pump to provide a pressure drop across itself that is directly proportional to the flow rate of the pump;



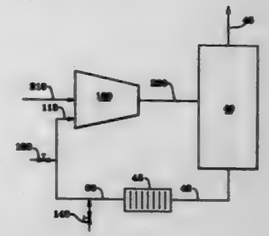
a pressure transducer for sensing the pressure drop across the laminar flow element and producing a first signal representative of the flow rate of the pump; and
a motor control circuit for receiving the first signal and for transmitting to the motor a second signal responsive to the first signal to control the motor and thereby regulate the flow rate of the pump.

5,295,791
TAPERED FLUID COMPRESSOR & REFRIGERATION APPARATUS
William H. Meise, P.O. Box 344, Penns Park, Pa. 18943
Filed Jan. 19, 1993, Ser. No. 6,267
Int. Cl.[5] F04B 19/24; F25B 1/00
U.S. Cl. 417—52 4 Claims



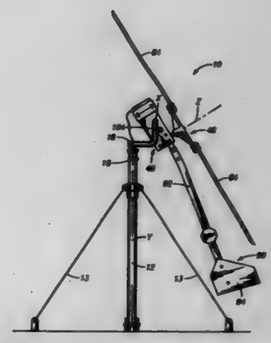
1. A fluid compressor for pressurizing fluid for use by a utilization apparatus, said compressor comprising:
a source of fluid:
reciprocating means coupled to said source of fluid for generating pressure pulses in said fluid;
an elongated tube including first and second ends, said tube including a bore tapering from a first diameter at said first end to a second diameter, smaller than said first diameter, at said second end, said first end being coupled to said reciprocating means and to said source of fluid for receiving said pressure pulses in said fluid, whereby said fluid pulses propagate from said first end of said tube toward said second end of said tube, and which arrive at said second end of said tube with increased pressure, said second end of said tube being coupled to said utilization means; and
drive means coupled to said reciprocating means for causing said reciprocating means to reciprocate with a predetermined cycle period; and wherein
said elongated tube has a dimension in the direction of elongation which is selected so that a pulse propagates through said fluid from said first end of said tube to said second end of said tube in a time greater than one-tenth of said cycle period.

5,295,792
METHOD FOR NON-DESTRUCTIVELY COMPRESSING OZONE GAS
Lewis D. Shackford, Merrimack, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Apr. 5, 1993, Ser. No. 43,055
Int. Cl.[5] F04C 19/00
U.S. Cl. 417—55 12 Claims



1. A method for non-destructively compressing ozone gas, comprising the steps of:
providing a compressor having liquid means for compressing said ozone, and for internally sealing said compressor, said liquid means comprising water in which the pH has been adjusted to a value of less than 7;
feeding said ozone gas to an inlet port of said compressor;
compressing said ozone gas; and
extracting compressed ozone gas from a discharge port of said compressor for use in a subsequent process.

5,295,793
WIND TURBINE
Ralph A. Belden, Melville, Australia, assignor to Telect, Inc., Liberty Lake, Wash.
Filed Mar. 2, 1992, Ser. No. 844,488
Int. Cl.[5] F03D 7/00
U.S. Cl. 416—13 20 Claims



1. A wind turbine for generating power in response to a wind, comprising:
a swivel head mounted to a wind turbine supporting structure for pivotal horizontal movement about an approximately vertical swivel axis;
a rotor assembly mounted to the swivel head for vertical tilting movement about an approximate horizontal axis between a substantial inclined downwind facing angle having maximum wind exposure for low wind velocities and an insubstantial inclined angle having minimum wind exposure for high wind velocities;

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said rotor assembly having a rotor shaft mounted to the rotor assembly for rotation about a rotor shaft axis;

said rotor assembly having at least one radial rotor blade operatively connected to the rotor shaft and extending radially outward from the shaft defining a circular rotor area as the blade rotates about the shaft axis;

said circular rotor area being downwind of the vertical swivel axis when the rotor assembly is in the substantial inclined downwind facing angle;

an airfoil tail section operatively connected to and spaced downwind from the rotor shaft axis for projecting into the wind to swivel the rotor assembly about the approximate vertical axis in response to the direction of the wind to horizontally orient the rotor assembly into the wind;

said rotor blade having an airfoil cross section with a negative angle of attack with respect to a plane perpendicular to the rotor shaft axis for rotating the rotor shaft in a prescribed rotational direction about the rotor shaft axis;

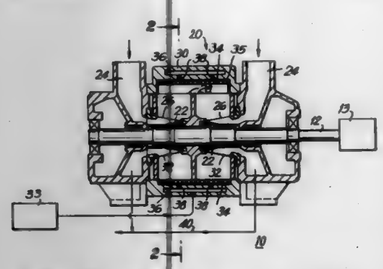
wherein the rotor shaft axis is spaced downwind from the horizontal pivot axis of the rotor assembly to gravitationally bias the rotor assembly about the horizontal pivot axis from the insubstantial inclined angle toward the substantial inclined downwind facing angle to increase the effective rotor area relative to the wind as the wind velocities decrease.

5,295,794

LIQUID RING PUMPS WITH ROTATING LINERS

Harold K. Haavik, Norwalk, Conn., assignor to The Nash Engineering Company, Norwalk, Conn.

Filed Jan. 14, 1993, Ser. No. 4,448
Int. Cl.[5] F04C *19/00*
U.S. Cl. 417—68 **67 Claims**



1. A liquid ring pump comprising:

a hollow, substantially cylindrical housing member;

a hollow, substantially cylindrical liner member disposed in said housing member substantially concentric wit said housing member, the diameter of the outer surface of said liner member being slightly smaller than the diameter of the inner surface of said housing member so that there is an annular clearance between the outer surface of said liner member and the inner surface of said housing member, the axial ends of said clearance being unsealed;

a rotor disposed in said liner member for rotation about a rotor axis which is parallel to but laterally spaced from the central longitudinal axis of said liner member, said rotor having a plurality of radially and axially extending blades spaced from one another about said rotor axis;

means for maintaining a quantity of pumping liquid between said liner member and said rotor;

means for rotating said rotor about said rotor axis so that said blades engage said pumping liquid and form it into a recirculating ring inside and substantially concentric with said liner member, said ring cooperating with said rotor to provide chambers for pumping gas supplied to the pump for pumping; and

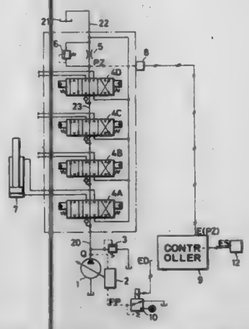
means for introducing compressed gas into said annular clearance so that said compressed gas substantially fills said annular clearance and supports said liner member for rotation relative to said housing member about said central longitudinal axis, said liner member being thus rotated by contact with said recirculating annular ring of pumping liquid.

5,295,795

HYDRAULIC DRIVE SYSTEM FOR CONSTRUCTION MACHINE

Tomohiko Yasuda, Kashiwa, and Yukio Aoyagi, Ibaraki, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00463, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO92/18710, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 13, 1992, Ser. No. 930,553
Claims priority, application Japan, Apr. 12, 1991, 3-106574
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—213 **5 Claims**



1. A hydraulic drive system for a construction machine comprising a hydraulic pump (**1**) of variable displacement type, a pump regulator (**2**) for controlling a delivery rate of said hydraulic pump, a plurality of hydraulic actuators (**7**) driven by a hydraulic fluid supplied from said hydraulic pump, a plurality of directional control valves (**4A-4D**) for controlling respective flows of the hydraulic fluid supplied from said hydraulic pump to said plural hydraulic actuators, a low-pressure circuit (**22**), a center bypass line (**23**) for connecting in series center bypasses of said plural directional control valves to said low-pressure circuit, a plurality of bleeding-off restrictor means (**26**) disposed in said center bypass line and having their openings variable in accordance with the associated directional control valves, respectively, flow resistive means (**5**) disposed in said center bypass line for producing a control pressure (PZ), and pressure sensor means (**8**) for detecting said control pressure and outputting a corresponding electric signal (E), wherein a drive signal (ED) of said pump regulator is given dependent upon the electric signal outputted from said pressure sensor means and said pump regulator is driven with said drive signal,

said hydraulic drive system further comprising:

(a) memory means (**9c**) for storing a plurality of preset pump flow rate characteristics (**40, 41, 42**) that define relationships between a value of the electric signal (E) outputted from said pressure sensor means (**8**) and a delivery rate (Q) of said hydraulic pump (**1**);

(b) selector means (**12**) for outputting a command signal (ES) to select one of the plural pump flow rate characteristics (**40, 41, 42**) preset in said memory means; and

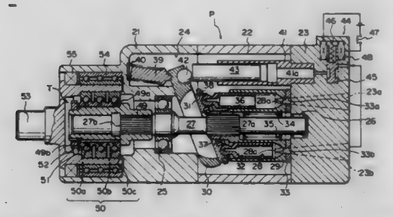
(c) arithmetic means (**9b**) for determining the delivery rate (Q) corresponding to the value of the electric signal (E) outputted from said pressure sensor means (**8**) based on the pump flow rate characteristic selected in response to said command signal (ES), and outputting, as said drive signal (ED), a signal corresponding to the determined delivery rate.

5,295,796

VARIABLE DISPLACEMENT HYDRAULIC PISTON PUMP WITH TORQUE LIMITER

Kunifumi Goto; Shigeru Suzuki; Nobuaki Hoshino, and Tatsuyuki Hoshino, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 26, 1992, Ser. No. 966,806
Claims priority, application Japan, Oct. 31, 1991, 3-286370
Int. Cl.[5] F04B *1/26*
U.S. Cl. 417—222.1 **11 Claims**



1. A variable displacement hydraulic piston pump comprising:

a housing means having an open-ended housing and an end covering closing one end of the housing;

a drive shaft rotatably supported in said housing means;

an inclinable swash plate pivoted in said housing means to take a position between a predetermined small inclination-angle position thereof substantially parallel with a plane vertical to an axis of said drive shaft and a predetermined large inclination-angle position thereof inclining far from the plane;

a cylinder block mounted on said drive shaft to be rotated about an axis thereof together with said drive shaft; the rotatable cylinder block being provided with a plurality of axial cylinder bores arranged parallel with the axis of said drive shaft;

a plurality of axial pistons reciprocatorily fitted in the plurality of cylinder bores, respectively, and engaged with said inclinable swash plate via shoes;

a valve plate arranged in close contact with an end of said rotatable cylinder block and having suction and discharge ports capable of being in cyclic communication with each of the plurality of cylinder bores; the suction and discharge ports being in constant communication with fluid suction and discharge bores formed in said end covering of said housing means, respectively;

a resilient means arranged in said housing means for constantly urging said swash plate toward the small inclination-angle position thereof;

a hydraulic control cylinder means arranged in said housing means for providing said swash plate with a controlled force to move said swash plate to a desired position between the predetermined small and large angle positions thereof against said resilient means;

a hydraulic opening and closing control valve means arranged in a hydraulic circuit of said hydraulic control cylinder means for controlling the introduction of pressurized oil into said hydraulic control cylinder means;

an input shaft rotatably supported in said housing means for transmitting a rotary drive power from an external drive source to said drive shaft; and

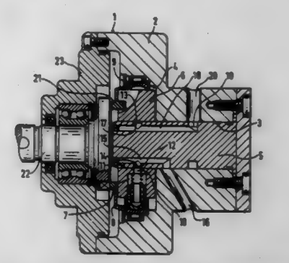
a torque limiter means arranged between said input shaft and said drive shaft for disconnecting the transmission of the rotary drive power from said input shaft to said drive shaft in response to an overload encountered by said drive shaft.

5,295,797

RADIAL PISTON PUMP

Manfred Kahrs, Wiesbaden; Gerhard Kunz, Linden; Franz Fleck, Langenselbold; Hermann Schoellhorn, Frankfurt am Main; Gerhard Schudt, Hanau, and Winfried Huthmacher, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/02085, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO92/08051, PCT Pub. Date May 14, 1992
PCT Filed Nov. 5, 1991, Ser. No. 854,636
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1990, 4035180; Oct. 31, 1991, 4135904
Int. Cl.[5] F07B *1/04*
U.S. Cl. 417—273 **8 Claims**



1. A suction-restricted radial piston pump, comprising a housing having a cylindrical recess formed therein, a rotor mounted for rotation in said recess in a direction about an axis eccentric to said cylindrical recess, said rotor formed with a plurality of radial piston bores, a plurality of pistons slidably received within said piston bores of said rotor, a stroke-generating member engaging one end of each of said pistons, the other end of each of said pistons defining pumping chambers in said rotor piston bores, and a fixed control pin received within said rotor, said pumping chambers each having a portion opening onto the surface of said control pin, the surface of said control pin formed with circumferential extending respective suction and pressure control grooves, a suction channel and a pressure channel communicating respectively with said suction and pressure control grooves, said control grooves separated by webs, with said control grooves, upon rotation of said pressure chambers in said rotor, successively communicating with said piston bores, characterized in that said pressure control groove is comprised of two connected sections, a first section comprising a damping groove, and a second pressure control section of larger cross sectional area than said first pressure control groove section.

5,295,798

FLUID ROTATING APPARATUS WITH ROTOR COMMUNICATING PATH

Teruo Maruyama, Hirakata; Akira Takara, Moriguchi, and Yoshikazu Abe, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 4, 1992, Ser. No. 941,171
Claims priority, application Japan, Sep. 5, 1991, 3-225717
Int. Cl.[5] F01C *1/16, 1/24*
U.S. Cl. 418—201.1 **11 Claims**

1. A fluid rotating apparatus comprising:

a casing having a gas inhaling inlet and a gas discharge outlet;

a pair of rotors mounted in the casing and respectively having fluid-transporting grooves engaged with each other;

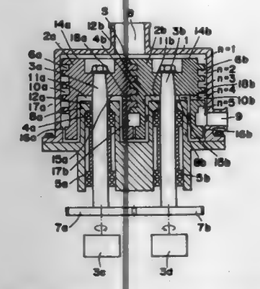
a bearing portion for supporting said rotors;

a driving means for synchronously rotating said rotors;

a communicating path for communicating a gas discharge-

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side inner space with a space defined by an inner surface of the casing and the fluid-transporting grooves of the rotors, the gas discharge-side inner space being defined by an end surface of one of said pair of rotors opposite to a gas inhaling-side surface thereof; and



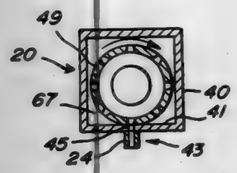
a sealing portion, formed between said rotors and the casing, for preventing fluid from flowing into the gas discharge-side inner space.

5,295,799

PELLET FORMING APPARATUS

Neil Prewitt, Grosse Ile, Mich., assignor to Diversey Corporation, Wyandotte, Mich.

Filed Feb. 13, 1989, Ser. No. 309,403
Int. Cl.[5] B29C *39/38*
U.S. Cl. 425—8 9 Claims



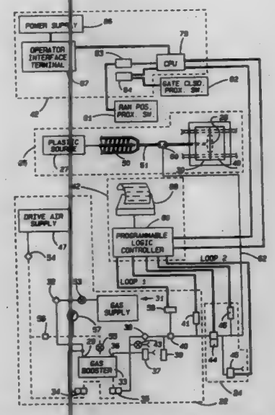
1. An apparatus for forming pellets, comprising:
(a) means for delivering a flowable medium to be pelletized to a distribution box;
(b) a distribution box having an inlet and an outlet, the inlet being disposed in communication with the means for delivering, the distribution box having a side wall and a floor, the side wall and floor defining an interior of the distribution box therebetween, the outlet comprising a plurality of flow holes formed through the floor of the distribution box;
(c) means for intermittently expelling discrete portions of the medium outwardly from the outlet to form droplets; and
(d) means for conveying the droplets in a direction away from the distribution box, the means for intermittently expelling comprising means for sealingly closing off the flow holes to prevent the medium passing therethrough and means for moving the closing means between an open position in which a portion of the medium may pass from the interior of the distribution box to the means for conveying and a closed position in which the flow holes are closed off preventing passage of the medium out of the distribution box, the flow holes being disposed in the floor of the distribution box, the closing means further comprising a rotatable cylinder disposed within the distribution box, the cylinder having holes formed therethrough which are alignable with the flow holes.

5,295,800

APPARATUS FOR GAS ASSISTED INJECTION MOLDING HAVING PRECISE CONTROL OF INJECTION AND HOLDING PRESSURE WITH STEPPED HOLDING PRESSURE CAPABILITY

William A. Nelson, New Baltimore, and Joseph Shemanski, Shelby Township, Oceana County, both of Mich., assignors to Automotive Plastic Technology, Inc., Sterling Heights, Mich.

Continuation-in-part of Ser. No. 628,746, Dec. 17, 1990, Pat. No. 5,200,127. This application Nov. 27, 1991, Ser. No. 800,176
Int. Cl.[5] B29C *45/77*
U.S. Cl. 425—130 23 Claims



1. An apparatus for introducing an injection gas into the interior of a mold cavity, said apparatus including, in combination:
(a) a source of injection gas;
(b) a gas booster having an inlet in fluid communication with the source of injection gas;
(c) a pressure regulator in fluid communication with an outlet of the gas booster;
(d) a fast operating valve in fluid communication with the pressure regulator;
(e) a mold cavity in fluid communication with the fast operating valve;
(f) a first pressure transducer located between and in fluid communication with the pressure regulator and the fast operating valve; and
(g) a second pressure transducer located between and in fluid communication with the fast operating valve and the mold cavity.

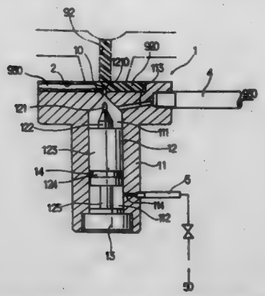
5,295,801

MOLD FOR HOLLOW INJECTION MOLDING

Kenji Sugiyama; Hidetaka Fukamachi, and Atsuo Kikuchi, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Division of Ser. No. 731,254, Jul. 17, 1991, Pat. No. 5,198,177. This application Dec. 7, 1992, Ser. No. 986,249
Claims priority, application Japan, Jul. 18, 1990, 2-189738; Mar. 22, 1991, 3-83498
Int. Cl.[5] B29C *45/22*
U.S. Cl. 425—130 12 Claims

1. A mold for hollow injection molding comprising:
means defining a cavity for making a hollow molded product from a synthetic resin;
a sprue for injecting resin in a molten state into said cavity,
a fluid inlet for admitting a fluid into the injected resin for forming a hollow interior in the product; and
pin means movable longitudinally with respect to said fluid inlet to advance and close said fluid inlet and project therefrom into the resin when it is injected, and to retract



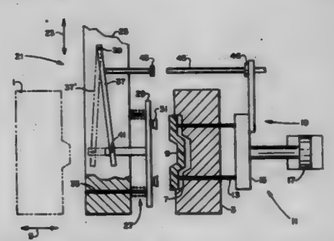
and open said fluid inlet to allow the fluid to flow therethrough into the injected resin.

5,295,802

DEMOLDING APPARATUS

Richard Hersbt, Freisinger Str. 3, D-8507 Eching, Fed. Rep. of Germany

PCT No. PCT/EP91/00955, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/18728, PCT Pub. Date Dec. 12, 1991
PCT Filed May 22, 1991, Ser. No. 938,156
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017796
Int. Cl.[5] B29C *43/50, 45/42*
U.S. Cl. 425—139 20 Claims



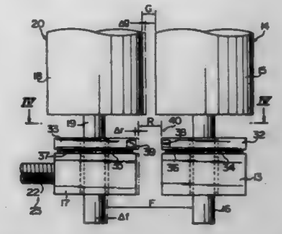
1. A demolding apparatus for removing a molding from a molding machine which is adjustable between a closed position and at least one open position, the demolding apparatus comprising a gripper for entering the molding machine when th molding machine is in an open position, including a gripping member, an ejector for ejecting the molding in a direction of ejection, an ejector drive acting on the ejector for carrying out an ejecting stroke, the ejecting stroke having at least an initial part and a fall part, and molding withdrawal means for moving at least one of the gripping member and the gripper together with the molding in a direction parallel to the direction of ejection for carrying out a moving away movement of the molding from the ejector, the molding withdrawal means including a drive transmission coupling the ejector drive, at least during the final part of the ejecting stroke, to one of the gripper and the gripping member, the drive transmission having a stepping-up ratio greater than 1 for enhancing the moving away movement of the molding from the ejector.

5,295,803

DEVICE FOR CONTROLLING THICKNESS OF SHEET IN CALENDERING

Shigeyuki Ogawa, and Masaru Suzuki, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,469
Claims priority, application Japan, Feb. 21, 1992, 4-72571
Int. Cl.[5] B29C *43/24, 43/58*
U.S. Cl. 425—141 2 Claims



1. A device for controlling the thickness of a sheet in calendering, comprising thickness measuring means for measuring the thickness of the sheet immediately after it has been formed by a pair of calendar rolls, roll adjusting means for moving at least one of the pair of calender rolls toward and away from the other calender roll, detection means for detecting a change in distance between the axes of said pair of calender rolls, and control means for comparing the measured thickness of the sheet with a target thickness to obtain a difference therebetween and thereafter calculating a gap adjusting value on the basis of the difference, comparing the change in distance between the axes of the rolls detected by the detection means with the calculated gap adjusting value, and when these values become equal, stopping the movement of the one calender roll toward or away from the other, thereby controlling said roll adjusting means to make the thickness of the sheet equal to the target thickness, wherein a roll shaft extending axially outwardly from each end of a roll body of each calender roll is supported by a bearing unit and provided with a support member rotatably supported thereby between the roll body and the bearing unit, and a pair of guide rails are provided on the surface of one of the bearing unit and the support member facing each other, and slide members slidably movable on each of the guide rails are provided on the other, thereby preventing the support member from rotating together with the calender roll.

5,295,804

FEMALE MOLD INCLUDING DECORATING INSERT FOR DIFFERENTIAL PRESSURE FORMING

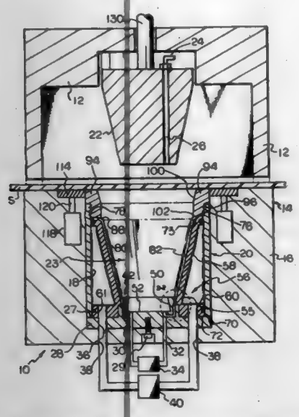
Timothy P. Dinnan, 2803 Valorie, Midland, Mich. 48640

Filed Jul. 27, 1992, Ser. No. 919,841
Int. Cl.[5] B29C *51/30*
U.S. Cl. 425—182 40 Claims

1. A female mold for differential pressure forming an article in a sheet of thermoplastic material comprising:
a mold body including a female mold cavity;
means for communicating a vacuum source to said cavity to draw a portion of said sheet into said cavity;
a replaceable mold liner detachably received in said cavity

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for forming the shape of a portion of an article to be formed; and



annular retaining ring means threadedly mounted on said mold body for detachably retaining said mold liner in said cavity.

5,295,805

ROTATING CYLINDRICAL TREATMENT APPARATUS

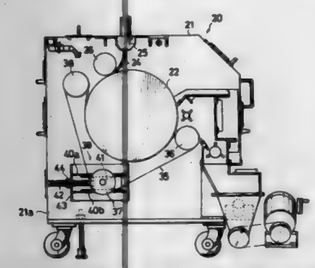
Hirokazu Akamatsu, Yokkaichi; Toyokazu Uda, Kita-Kyushu, and Masahiro Nishida, Yokkaichi, all of Japan, assignors to Ryoka Techno Engineering & Construction Co., Tokyo, Japan

Continuation of Ser. No. 885,018, May 19, 1992, abandoned, which is a continuation of Ser. No. 604,247, Oct. 29, 1990, abandoned. This application Jul. 1, 1993, Ser. No. 84,441

Claims priority, application Japan, Mar. 2, 1990, 2-49442; Mar. 2, 1990, 2-49443; Mar. 2, 1990, 2-49444; Mar. 2, 1990, 2-49445; Mar. 7, 1990, 2-53725; Mar. 22, 1990, 2-69682; May 8, 1990, 2-116822

Int. Cl.[5] B29C *35/16, 43/52*

U.S. Cl. 425—373 **13 Claims**



1. A rotating cylindrical treatment apparatus, comprising:
- a cylindrical body rotatably supported in said treatment apparatus;
- a feeding section arranged adjacently to said cylindrical body for supplying a treated material onto an outer circumferential surface of said cylindrical body;
- a pressure roller arranged adjacently to said cylindrical body and said feeding section for pressing said supplied treated material against said outer circumferential surface and for rolling said pressed treated material;
- a first medium introducing device disposed in said cylindrical body for introducing a heating or cooling medium into said cylindrical body and for discharging said introduced medium from said cylindrical body;
- a second medium introducing device attached to said pressure roller for introducing said medium into said pressure roller and for discharging said introduced medium from said pressure roller; and
- an endless belt partially wound along said outer circumferential surface of said cylindrical body for conveying said rolled treated material while causing said rolled treated material to be closely contacted with said outer circumferential surface,

said pressure roller comprising: a hollow roller body having two end faces; a tubular support member attached at one end thereof to one of said end faces of said roller body coaxially with said roller body; another tubular support member attached at one end thereof to the other of said end faces coaxially with said roller body, said tubular support member and said another support member being opened at said one ends thereof toward an interior of said roller body,

said second medium introducing device comprising: an introducing pipe disposed within said tubular support member for introducing said medium into said roller body through said introducing pipe, and projected outward from the other end of said tubular support member at one end of said introducing pipe, said introducing pipe having at said one end thereof an inlet port for said medium; a spraying nozzle pipe attached to the other end of said introducing pipe at one end of said nozzle pipe such that said spraying nozzle pipe is projected at the other end thereof from said one end of said tubular support member into said interior of said roller body, said spraying nozzle pipe having a spraying port in an end face of the other end thereof, said spraying port being formed so as to spray said medium into said interior of said roller body at a spraying angle of an obtuse angle around a central axis of said roller body; a discharging pipe disposed within said another tubular support member and provided with a suction port at one end thereof, said discharging pipe being projected outward from the other end of said another tubular support member at the other end of said discharging pipe and immersed at said one end thereof in a cooling or heating medium stored within a lower portion of said roller body, said discharging pipe having at the other end thereof an outlet port; and two sealing means respectively disposed at the other ends of said tubular support member and said another tubular support member for sealing respective interiors of said tubular support member and said another support member.

5,295,806

HOT RUNNER SYSTEM HAVING A BLOCK-SHAPED CASING

Herbert Gunther, Allendorf, Fed. Rep. of Germany, assignor to Dipl. -Ing. Herbert Gunther Gesellschaft mbh, Fed. Rep. of Germany

Filed May 14, 1992, Ser. No. 883,012

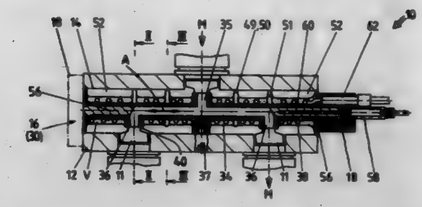
Claims priority, application Fed. Rep. of Germany, May 14, 1991, 9107154

Int. Cl.[5] B29C *45/00*

U.S. Cl. 425—547 **13 Claims**

1. A hot runner apparatus (10) for injection molding, including a block-shaped manifold casing (12) with at least one bore (14) for receiving a cartridge unit (16), said cartridge unit comprising a material flow tube (32) having flow transfer openings (35, 36), an electric heating device (38) enveloped by a thermoconductive casting (V) so that a closed cast body (30) is formed, radial supports (40) in regions adjacent to the flow transfer openings (35, 36) extending outwardly from the flow tube (32), said supports (40) each having an engaging face form-fit with surrounding components, said cartridge unit (16) being cylindrical and being adapted to be form-fitted by face-wise insertion into the manifold casing (12), an insulating layer

(30) encompassing the flow tube (32) and the cast body (30) being of substantially cylindrical shape and being supported within said bore (14) by a plurality of spacers (49, 50, 51), the



spacers (49, 50, 51) and the radial supports (40) being thermoresistant so as to decrease heat transfer from the thermoconductive casting (V) to the casing (12).

5,295,807

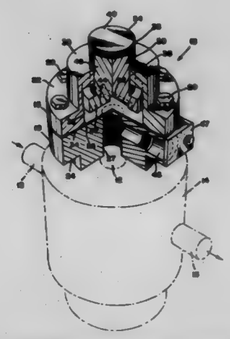
VARIABLE OUTPUT PUMP ADJUSTMENT MECHANISM

Ronald L. Wiley, and John H. Bearden, both of Marietta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 1, 1993, Ser. No. 24,703

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—274 **4 Claims**



1. Apparatus for providing a variable volumetric output of a pump having a primary pumping chamber coupled to an input port and an output port, comprising:
- a variable volume secondary chamber in fluid communication with the primary pumping chamber for receiving a predetermined portion of a fluid being pumped from the pumping chamber during an output stroke and returning said portion of fluid to the pumping chamber during an intake stroke, said secondary chamber including,
- a recess located in at least one of two mutually fastened body members, said body members comprising an inner member and an outer body member,
- rolling diaphragm means located between and secured by said two body members for being displaced by the volume of fluid entering the secondary chamber,
- a stop member for selectively restricting the displacement of said means for controlling the volume of fluid receivable from the pumping chamber and thereby controlling the output from the pump by controlling the net internal pump chamber volume, said stop member further being adjustable toward and away from a central portion of the diaphragm for controlling the maximum displacement of the diaphragm during the output stroke of the pump and including an inner end portion having a generally flat face for contacting the central portion of the diaphragm and a body portion extending from said inner end portion and including a threaded outer end portion, and
- wherein said outer body member includes a threaded bore for engaging said threaded outer end portion of said stop member for controlling the displacement of the diaphragm.

5,295,808

SYNCHRONOUS ROTATING TYPE SCROLL FLUID MACHINE

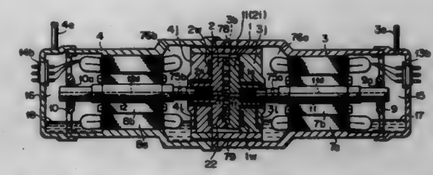
Shigeru Machida, Iwamamachi; Hiroshi Iwata, Odawara; Isamu Tsubono, Chiyodamachi; Kazutaka Suefuji, Shimizu; Seiji Ohtake, Tsuchiura, and Kenji Tojo, Moriyamachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,860

Claims priority, application Japan, Mar. 29, 1991, 3-066019; Jun. 26, 1991, 3-154780

Int. Cl.[5] F04B *35/04, 39/06*; F01C *1/04, 21/00*

U.S. Cl. 417—366 **8 Claims**



1. A synchronous rotating type scroll fluid machine, comprising:
- a first scroll driven by a shaft of a first motor and having an end plate with front and rear surfaces and a scroll wrap protruding from the front surface of said scroll end plate;
- a second scroll driven by a shaft of a second motor and having an end plate with front and rear surfaces and a scroll wrap protruding from the front surface of said scroll end plate;
- mounting means for mounting said scroll members such that the axes of said scroll members are offset from each other and that said wraps of said scroll members mesh with each other; and
- thrust balancing means for attaining a balance between the thrusting forces acting on each said scroll member both at said mounting means and said scroll members in meshing state under a wide range of operating conditions of the synchronous rotating type scroll fluid machine, said thrust balancing means operating by separately discharging a gas compressed by the first and second scrolls to the rear surfaces of the first and second scrolls.

5,295,809

VALVED PISTON PUMP WITH CYLINDER BIASING MEANS

Helmut Dreßler, Trostberg, and Ernst Turnwald, Altenmarkt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 23, 1992, Ser. No. 978,961

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, 4138174

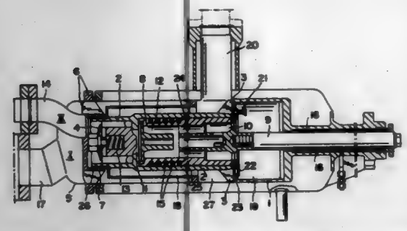
Int. Cl.[5] F01B *11/02*

U.S. Cl. 417—366 **15 Claims**

1. A piston pump for conveying a fluid includes a cylinder arranged in a pump casing and a piston displaceable within the cyclinder in the longitudinal direction, one end of the cylinder being associated with a pressure side and the other end of the cylinder being associated with a suction side of the piston pump, wherein the cylinder (2) is supported by a support (3) in the longitudinal direction with respect to the pump casing (1) and is urged with a pretensioned spring (4) in the direction of

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the support (3), wherein the pressure side (II) is sealed with respect to the suction side (I), and wherein at least one spacer



element (7) for centering the cylinder (1) is disposed between the cylinder (2) and the pump casing (1).

5,295,810

APPARATUS FOR COMPRESSING A FLUID

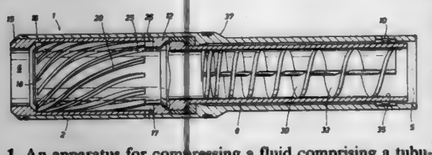
Wilhelmus H. P. M. Heijnen, Assen, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 765,791, Sep. 26, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 88,492

Claims priority, application United Kingdom, Oct. 10, 1990, 9022056

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—408 **4 Claims**



1. An apparatus for compressing a fluid comprising a tubular, open-ended housing having a suction end and a discharge end, a tubular, open-ended rotor rotatably arranged in the housing, an annular driver space which is defined between the inner surface of the housing and the outer surface of the rotor, an annular seal preventing fluid flow from the annular driver space to the suction end, a rotor driver arranged in the annular driver space, and a rotor-driven compressor arranged in the tubular rotor, wherein the rotor-driven compressor includes a helical screw blade which is secured to the inner surface of the tubular rotor, and wherein the pitch of the helical screw blade decreases in the direction of the discharge end, the pitch being the axial distance for each complete rotation of the helical screw blade.

5,295,811

PORTABLE FAN WITH ELECTRICAL CONTROL RETAINING STAND

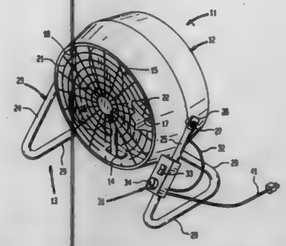
Bernard Chiu, Ashland, Mass., assignor to Duracraft Corporation, Whitinsville, Mass.

Filed Dec. 2, 1991, Ser. No. 800,950

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—423.15 **16 Claims**

1. A portable electrical fan comprising:
- housing means defining inlet and outlet openings for transmitting air flow;
- a fan blade disposed in said housing means;
- a motor disposed in said housing means and rotatably coupled to said fan blade;
- an elongated tubular support means having vertically extending opposite end portions attached to said housing means and an intermediate stand portion shaped and arranged to support said housing means on a surface;
- electrical control means connected to said motor;
- retainer means retaining said electrical control means and fixed to one of said opposite end portions, said retainer means comprising a box enclosing said electrical control means; and



- locator means comprising an aperture and a stem received thereby for establishing a relative position between said retainer means and said support means, and fastener means securing said retainer means to said support means.

5,295,812

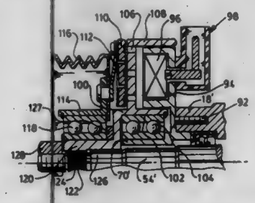
ELECTROMAGNETIC CLUTCH AND PULLEY BEARING ARRANGEMENT

Duane F. Steele, Onsted, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,609

Int. Cl.[5] F04C *29/00;* **F04B** *49/02;* **F16D** *27/112*

U.S. Cl. 418—55.1 **3 Claims**



1. A compressor for compressing refrigerant gas in an air conditioning system for a vehicle having an engine comprising a compressor housing, pumping elements in said housing, said housing having a flow inlet port and a flow delivery port, said pumping elements being adapted to compress refrigerant gas received through said inlet port and to discharge compressed refrigerant gas through said delivery port;
- a bearing support sleeve located on said housing, a bearing support member having a radial clutch plate joined thereto, electromagnetic clutch coil windings carried by said housing adjacent said clutch plate;
- first bearing means for journalling said bearing support member on said sleeve;
- a drive pulley located in axially spaced relationship with respect to said clutch plate;
- a clutch actuator plate connected to said pulley and located between said pulley and said clutch plate, said actuator plate having a resilient connection to said pulley;
- a torque input driveshaft extending through said sleeve and being connected to one of said pumping elements, said driveshaft being drivably connected to said bearing support member; and
- second bearing means for journalling said drive pulley on said bearing support member.

5,295,813

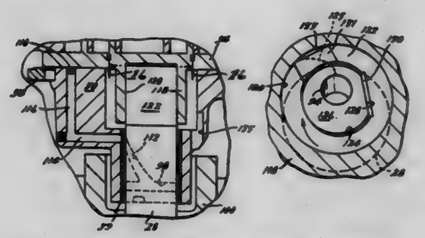
SCROLL-COMPRESSOR HAVING FLAT DRIVING SURFACES

Jean-Luc Caillat; Roger C. Weatherston, both of Dayton, and James W. Bush, Sidney, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Division of Ser. No. 884,412, May 18, 1992, Pat. No. 5,219,281, which is a division of Ser. No. 649,001, Jan. 31, 1991, Pat. No. 5,114,322, which is a division of Ser. No. 387,699, Jul. 31, 1989, Pat. No. 4,992,033, which is a division of Ser. No. 189,485, May 2, 1988, Pat. No. 4,877,382, which is a division of Ser. No. 899,003, Aug. 22, 1986, Pat. No. 4,767,293. This application Dec. 30, 1992, Ser. No. 998,549

Int. Cl.[5] F04C *18/04, 29/02;* **F16C** *23/04;* **F16D** *3/04*

U.S. Cl. 418—55.5 **21 Claims**



1. A hermetic motor-compressor assembly comprising:
- (a) a hermetic shell having side and end walls;
- (b) first and second scroll members disposed in said shell, each of said scroll members having a spiral wrap disposed thereon, said scroll members facing one another with said wraps intermeshed with one another so that orbiting movement of said first scroll member with respect to said second scroll member will cause said wraps to create pockets of progressively decreasing volume towards the center of said scroll members;
- (c) an annular hub disposed on the axially opposite side of said first scroll member from said spiral wrap, said hub defining a central bore;
- (d) an annular drive bushing journaled in said bore, said drive bushing having a centrally disposed oval opening in which is defined a flat driven surface;
- (e) drive means comprising a crankshaft having an eccentric crank pin disposed in said oval opening, said crank pin having a flat drive surface thereon drivingly engaging said driven surface to cause said first scroll member to orbit, said driven and driving surfaces being flat so that they can slide relative to one another within said oval opening to accommodate limited radial unloading of said scroll members, said oval opening restricting movement of said scroll member to a direction generally parallel to said flat drive surface on said crank pin; and
- (f) a motor disposed in said shell and connected to said crankshaft to power same.

5,295,814

TROCHOIDAL ROTARY PISTON MACHINE WITH PISTON FOLLOW-UP MECHANISM

Helmuth R. Uebel, Groton, Australia, assignor to Archimedes Associates Inc., Groton, Conn.

PCT No. PCT/AU90/00479, § 371 Date Apr. 6, 1992, § 102(e) Date Apr. 6, 1992, PCT Pub. No. WO91/05143, PCT Pub. Date Apr. 18, 1991

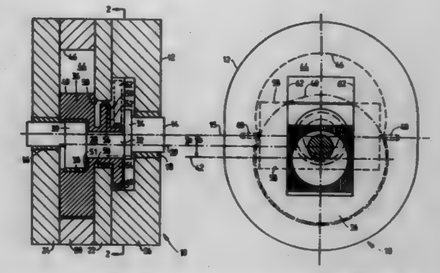
PCT Filed Oct. 4, 1990, Ser. No. 847,014

Claims priority, application Australia, Oct. 4, 1989, PJ6704

Int. Cl.[5] F01C *1/10, 17/06, 19/04, 19/08*

U.S. Cl. 418—60 **55 Claims**

1. A rotary piston machine of trochoidal construction comprising a rotatable drive shaft having an eccentric portion and supported for rotation in two spaced bearings, a piston eccentrically mounted on the eccentric portion of the drive shaft for contra rotation relative thereto in a housing, the piston being of epitrochoidal type with 1:1 generating circles and defined with an outer envelope and the housing having a co-operating working surface for the piston which substantially conforms to the outer envelope of the epitroichoid, and a piston follow-up mechanism comprising a pair of relatively offset eccenters mounted for eccentric rotation about the eccentric portion of the drive shaft with the piston, said eccenters being rotatably mounted in respective guide members which are constrained



by respective guiding means to reciprocate rectilinearly along angularly offset paths with rotation of the piston, the pairs of eccenters being located immediately adjacent the piston and secured for rotation directly therewith whereby to reduce the length of the eccentric portion of the drive shaft, and wherein the eccentric portion of the drive shaft comprises a stepped crank pin with the portion about which the eccenters rotate being of reduced diameter relative to the portion about which the piston rotates.

5,295,815

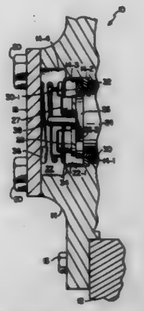
OIL INLET FEED

Bruce A. Fraser, Manlius; Timothy V. Nelson, Nedrow, and Steven J. Holden, Manlius, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 6, 1993, Ser. No. 85,793

Int. Cl.[5] F01C *21/04, 21/06*

U.S. Cl. 418—94 **3 Claims**



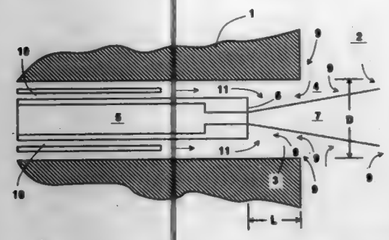
1. In a compressor having an oil pump driven by a crankshaft through a tang, oil supply means comprising:
- means defining a cavity;
- means dividing said cavity into an oil sump and a chamber isolated from said oil sump;
- said tang being located in said chamber and driven by said crankshaft whereby foam is generated in said chamber;
- tube means for supplying oil to said oil pump and extending from said crankshaft through said chamber to said sump.

5,295,816

METHOD FOR HIGH VELOCITY GAS INJECTION

Hisashi Kobayashi, Putnam Valley, and Arthur W. Francis, Jr., Monroe, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Division of Ser. No. 751,967, Aug. 29, 1991, Pat. No. 5,209,656.
This application Feb. 22, 1993, Ser. No. 20,918
Int. Cl.[5] F23C *7/02*
U.S. Cl. 431—9 9 Claims



1. A method for injecting high velocity gas into a combustion zone comprising:

(A) providing a cavity having an opening with a diameter LD communicating with a combustion zone containing furnace gases;

(B) injecting a main gas stream from a nozzle into the cavity at a point recessed from the opening in a direction toward the opening at a high velocity exceeding 200 feet per second, said recess having a length L such that L/D is not more than 3.0;

(C) injecting protective gas, having a composition substantially the same as that of the main gas, into the cavity at a point further recessed from the opening than the nozzle at a low velocity not more than 100 feet per second and at a flowrate such that the protective gas is within the range of from 10 to 50 percent of the total gas injected into the cavity;

(D) passing protective gas around and past the nozzle and entraining protective gas into the main gas stream downstream of the nozzle; and

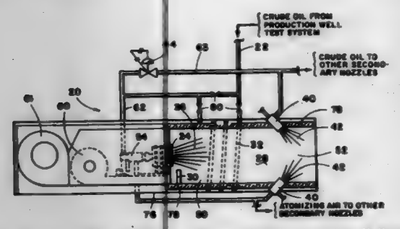
(E) drawing furnace gases from the combustion zone into the cavity and entraining furnace gases into the main gas stream within the cavity but downstream of the nozzle and preventing combustion near the nozzle within the cavity.

5,295,817

APPARATUS AND METHOD FOR COMBUSTING CRUDE OIL

Timothy M. Young, Coppell, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Aug. 19, 1992, Ser. No. 932,438
Int. Cl.[5] F23D *11/44*
U.S. Cl. 431—11 11 Claims



1. Apparatus for continuously combusting crude oil liquids produced during testing of a subterranean well in a pollution-abating manner, comprising:

supplying means for fluid communicatingly connecting the apparatus to the crude oil during testing;

a primary liquid nozzle, connected to the supply means, for atomizing and spraying a primary feed of the crude oil;

a combustion chamber for receiving and combusting the atomized primary feed and confining the combustion so that the primary feed is completely combusted in the combustion chamber, the primary nozzle being located inside the chamber;

a secondary liquid nozzle, connected to the supply means and located in the combustion chamber, for atomizing and spraying a secondary feed of crude oil into the combustion chamber for combustion; and

wherein the spray of the secondary feed is further defined as being heated above the ignition temperature of the secondary feed by the combustion of the primary feed so that the heated secondary feed will completely combust on contact with air outside the combustion chamber; and

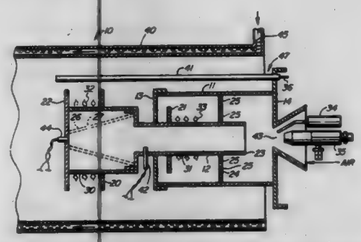
ignition means for igniting the combustion.

5,295,818

CONTROL UNIT FOR BURNER ASSEMBLY

Edgar C. Robinson, Vancouver, Canada, assignor to ITR Holdings Ltd., Vancouver, Canada

Filed Apr. 6, 1992, Ser. No. 864,879
Int. Cl.[5] F23N *5/00*
U.S. Cl. 431—75 8 Claims



1. In a combustion burner having a burner tube and ignition electrode means for creating a primary flame inside said burner tube which primary flame extends longitudinally of said burner tube during ignition of said combustion burner and said burner tube having a circumferentially extending flame grid thereon for accommodating a secondary flame on the outside of said burner tube during self-sustaining combustion in the burner, a control system comprising temperature sensing means for sensing the temperature of said primary flame inside said burner tube created by said ignition electrode means and first control means for terminating operation of said combustion burner during said ignition when said temperature of said primary flame is not sensed and flame monitoring means for monitoring the presence of said secondary flame on the outside of said burner tube and second control means for terminating the operation of said combustion burner when the presence of said secondary flame is not sensed.

5,295,819

POCKET LIGHTER HAVING A SAFETY MECHANISM

Isidro Gómez López, Barcelona, and Jorge Serrahima Formosa, Sant Cugat del Valles, both of Spain, assignors to Flamagas, S.A., Barcelona, Spain

Filed Oct. 14, 1992, Ser. No. 960,768
Claims priority, application Spain, Oct. 14, 1991, 9102256
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 12 Claims

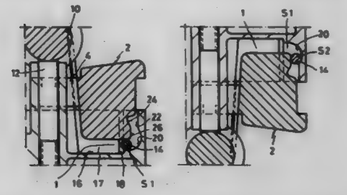
1. A pocket lighter which can be moved between upright and inverted positions comprising:

a push button moveable between an active position and an inactive position,

an inclined cavity operatively interconnected with the push button,

a free body inside said cavity and being moveable therein under gravity between three stable occupiable spaces within said cavity depending on the position of the push button and the position of the lighter, a first blocking space defined at a first location in said cavity, a third retaining space defined at a third location in said cavity, said third location being above said first location, and a second intermediate space defined at a second location in said cavity between said first and third locations,

said free body being in a push button blocking position when said lighter is upright and said free body occupies the first



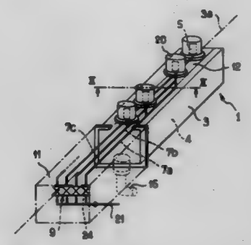
space, said free body being moveable from said first space to said second space when said lighter is placed in the inverted position, said third space can be occupied by said free body from said second space when the push button is placed in the active position and said lighter remains inverted, said free body being retained in said third space when the push button is placed in the inactive position, said free body remaining in said third space when said lighter is returned to the upright position thereby placing said free body in a push button release position, said free body returning to said first space after operating the lighter by placing said push button in the active position when said lighter is in the upright position, the above succession of positions of said push button and the positions of the lighter resulting in the free body being moveable between a push button blocking and push button releasing position.

5,295,820

LINEAR BURNER

Yves Bilcik, Crepy En Valois; Jean-Jacques Chasseing, Mouy; Jean-Marie Gobaille, Le Blanc Mesnil, and Dominique Teillay, Mitry Mory, all of France, assignors to Gaz de France, Paris and Alsace Gaz Industrie, Vieux Thann, both of France

Filed Apr. 7, 1992, Ser. No. 864,586
Claims priority, application France, Apr. 15, 1991, 91 04570
Int. Cl.[5] F23K *5/06*
U.S. Cl. 431—280 8 Claims



1. A linear burner comprising

an elongated air box, said air box having outer walls defining a substantially rectangular cross section, one outer wall having a slot therethrough extending longitudinally of the air box,

an air supply aperture made through another of said outer walls for supplying air to the air box,

a series of burner jets extending through said slot and communicating with said air box for being supplied with air therefrom, said jets being further connected to a series of gas supply tubes extending through said air box, and

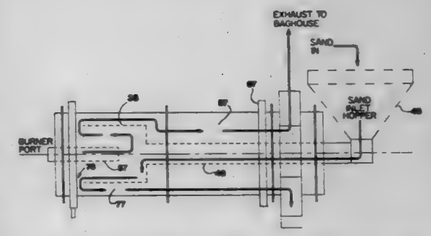
gas distribution means connected on a first side to a main supply of a fuel gas and on a second side to said series of supply tubes for selectively providing said supply tubes with said fuel gas.

5,295,821

FOUNDRY SAND THERMAL RECLAMATION SYSTEM AND METHOD

Kartis N. Daukss, 32704 N. Roundhead Dr., Solon, Ohio 44139

Filed Jul. 6, 1992, Ser. No. 908,478
Int. Cl.[5] F27B *15/00*
U.S. Cl. 432—103 21 Claims



1. A system for thermally treating solid, granular and aggregate material, comprising:

a base;

an outer drum mounted on said base for rotation about a rotational axis and having an inlet end, a heater end and an annular wall extending between said inlet and heater ends;

an inner drum mounted coaxially within said outer drum closer to said heater end than said inlet end of said outer drum, said inner drum having an inlet end, a heater end and an annular wall extending between said inlet and heater ends, said annular wall being spaced radially inwardly from said annular wall of said outer drum to form an annular flow passage surrounding said inner drum, said annular flow passage surrounding said inner drum having an inlet end and an outlet end;

passage means at said heater end of said inner drum for allowing material to drop from said inner drum into said outer drum for flow through said annular flow passage from its inlet end to its outer end;

means for rotating said outer and inner drums with respect to said base;

material conveying means for conveying material from said inlet end of said outer drum to said inner drum for deposit within the interior of said inner drum at its inlet end, said material conveying means including a feed tube through which the material is fed, said feed tube being mounted coaxially within said outer drum and extending from said inlet end of said outer drum to said inlet end of said inner drum, said feed tube being spaced radially inwardly from said annular wall of said outer drum to form an annular flow passage surrounding said feed tube, said annular flow passage surrounding said feed tube having an inlet end connected to said outlet end of said annular passage surrounding said inner drum, an outlet end, and a cross-sectional area greater than the cross-sectional area of said annular passage surrounding said inner drum;

means for generating and feeding hot gases into said inner drum for contacting with material fed into said inner drum

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by said material conveying means thereby to thermally treat the material, said hot gases flowing through said inner drum, then through said annular passage surrounding said inner drum and then through said annular passage surrounding said feed tube; and

outlet means for exhausting the hot gases and discharging thermally treated material from said outlet end of said annular passage surrounding said feed tube.

5,295,822

CONVECTIVE HEAT TRANSFER BY CASCADING JET IMPINGEMENT IN A BATCH COIL ANNEALLING FURNACE

Klaus H. Hemsath, Toledo, Ohio, assignor to Indugas, Inc., Toledo, Ohio

Division of Ser. No. 695,434, May 3, 1991, Pat. No. 5,228,513. This application Apr. 19, 1993, Ser. No. 48,678

Int. Cl.[5] F27B *3/22*

U.S. Cl. 432—146 **6 Claims**



1. In a batch coil annealing furnace for annealing a plurality of wound steel strip coils stacked one on top of the other and positioned on top a base plate, said furnace having an outer cover and an inner cover with said inner cover sealed to said base plate to define a closed sealed annealing chamber containing said coils, a fan positioned beneath said base plate and said base plate having a plurality of diffuser openings in fluid communication with said annealing chamber for causing furnace atmosphere to circulate at high flow rates under pressure within said inner cover from either inside to the outside of said coils or from the outside to the inside of said coils, and an annular, convertor plate spacer between and vertically supporting said coils, the improvement comprising:

said spacer having a plurality of vertically extending support bars upon which the exposed edge of said coils rest for supporting the weight thereof, said support bars radially extending from the inside of said coils to the outside thereof and circumferentially dividing said spacer into arcuate segments extending between adjacent support bars about said spacer;

within each segment a plurality of radially spaced baffles, each baffle extending between adjacent support bars and vertically the distance of said support bars to define a plurality of radially extending heat transfer chambers, each baffle having a vertically centered, radially protruding recess formed therein and each recess having at least one orificing opening provided therethrough for fluid communication between adjacent heat transfer chambers whereby said furnace atmosphere is directed to flow against a baffle adjacent one of the coils' radial ends and through said orificing opening to impinge against the edges of said coil while flowing radially along said spacer through successive heat transfer chambers and during the course thereof forming a plurality of free standing gas jets impinging said coil edges.

5,295,823

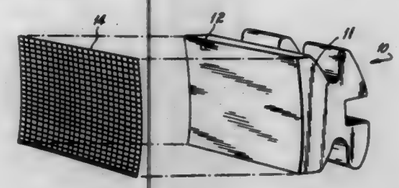
ORTHODONTIC APPLIANCES HAVING IMPROVED BONDING CHARACTERISTICS

Farrokh Farzin-Nia, Inglewood, Calif., assignor to Ormco Corporation, Glendora, Calif.

Filed Oct. 30, 1992, Ser. No. 969,410

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **21 Claims**



1. An orthodontic appliance having improved bonding characteristics, comprising:

a metallic bonding base having a tooth contact surface;

primary mechanical interlock retention means on said tooth contact surface, said primary retention means including undercut regions which facilitate mechanical bonding of said appliance to a tooth enamel surface using a dental adhesive, said primary retention means selected from the group consisting of (a) particles adhered to said tooth contact surface, (b) a mesh bonded to said tooth contact surface, and (c) undercut regions, including grooves, formed in said tooth contact surface; and

secondary mechanical bond strength enhancement means applied to said primary retention means and selected from the group consisting of (a) surface etching to increase the surface area of said primary retention means, (b) particles adhered to said primary retention means, and (c) a chemically activatable material deposited on said primary retention means, wherein said secondary mechanical bond strength enhancement means is applied to only a portion of said primary retention means.

5,295,824

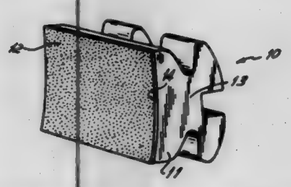
PLASTIC BRACKET WITH ADHESIVE PRIMER LAYER AND METHODS OF MAKING

Raymond F. Wong, Chino Hills, Calif., assignor to Ormco Corporation, Glendora, Calif.

Filed Sep. 4, 1992, Ser. No. 941,381

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **11 Claims**



1. A shelf-stable plastic orthodontic bracket, comprising:

a body portion,

a bonding base made of a plastic material and having a tooth contact surface, and

a monomeric adhesive primer layer adhered to and solvated into said tooth contact surface, said primer layer is shelf stable and retains efficacy to enhance the bond strength of said bracket with a dental adhesive even after prolonged storage of said bracket for up to at least several weeks.

5,295,825

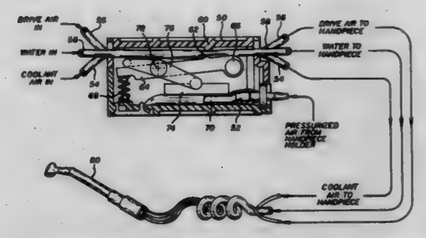
CONTROL SYSTEM FOR DENTAL HANDPIECES

Frank Betush, Carson, Calif., assignor to Proma, Inc., Carson, Calif.

Filed Dec. 24, 1992, Ser. No. 996,686

Int. Cl.[5] A61C *1/02*; F16K *7/04*

U.S. Cl. 433—28 **14 Claims**



1. A control system for a dental handpiece including a control module, a tube coupled to said control module for supplying pressurized fluid to said control module, a handpiece holder including pinch valve means for receiving said tube so as to cause the flow of the pressurized fluid to the control module to occur only when the handpiece is removed from the holder, at least one tube for supplying a selected fluid to the handpiece, and said control module including pinch valve means engaging said last named tube for causing the selected fluid to be supplied to said handpiece only in response to the pressurized fluid from the handpiece holder.

5,295,826

DENTAL MIRROR WITH ASPIRATING AND RINSING MEANS

Candice A. Yandell; Gregory D. Wilta, both of 624 Sixth Ter., Palm Beach Gardens, Fla. 33418; J. Michael Teets, 5225 SE. Inkwood Way, Hobe Sound, Fla. 33455, and Bruce E. Wilta, 848 Lakeside Dr., Palm Beach Gardens, Fla. 33410

Filed Feb. 2, 1993, Ser. No. 12,197

Int. Cl.[5] A61C *1/00, 3/00*; A61B *1/24*

U.S. Cl. 433—31 **7 Claims**



1. A dental mirror apparatus having rinsing and suction capabilities comprising;

an elongated tubular handle having external connection means at the proximal end for connection with a suction or rinsing line,

a circular back plate extending at an obtuse angle from the distal end of said elongated tubular handle,

a circular mirror coaxially disposed relative to said back plate and spaced therefrom for defining therewith a substantially annular complementary edge extending from one side of said elongated tubular handle to the opposing side of said tubular handle at its distal end where said elongated tubular handle joins said circular back plate and an annular cavity,

said complementary edge defining an inlet port extending from one side of said tubular handle to a diametrically opposite side thereof at the distal end of said tubular handle and communicating with said annular cavity for communicating with said external connection means through a passage defined by said tubular handle communicating with said annular cavity, whereby said dental mirror apparatus aspirates and/or rinses the mouth area.

5,295,827

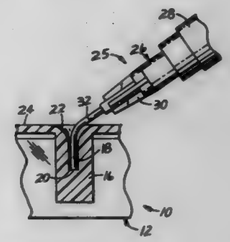
SYRINGE TIP FORMING APPARATUS

Jon W. Fundingsland, Stillwater, and Ralph F. Rogers, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 795,941, Nov. 18, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 977,926

Int. Cl.[5] A61G *17/02*

U.S. Cl. 433—80 **16 Claims**



1. An assembly comprising:

a syringe having a formable tip with a diameter less than about 0.5 cm; and

a syringe tip forming apparatus including a substrate having a passage with an effective diameter no greater than about 0.5 cm, said substrate including a chamfered entrance connected to said passage, said chamfered entrance having a radius of at least two times the effective diameter.

5,295,828

APPARATUS FOR FILLING TOOTH ROOT CANALS UNDER VACUUM

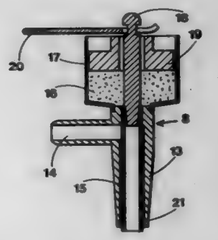
Jean Grosrey, Arzier, Switzerland, assignor to Meditec S.A., Ecublens, Switzerland

Filed Oct. 1, 1992, Ser. No. 955,533

Claims priority, application Switzerland, Oct. 18, 1991, 03065/91

Int. Cl.[5] A61G *5/02*

U.S. Cl. 433—81 **9 Claims**



1. In an apparatus for filling tooth root canals under vacuum, comprising a filling nozzle (8) designed to fit in a leaktight and

detachable manner into a burred aperture of a tooth, and abutting on the dental cavity in the tooth to be filled, said nozzle including a suction tube (14) for connection to a source of partial vacuum, a reservoir (17) of filling paste, a first channel (15) which is connected at one end to the inside of the dental cavity when the nozzle is fitted on to a tooth and at another end to said suction tube (14) so as to produce a vacuum in the dental cavity; a second channel (21), one end of which abuts on the dental cavity and another end of which is connected to said reservoir (17) of filling material; and means (18) for controlling the communication between the reservoir (17) and the second channel (21) in order to control the filling of the dental cavity with the filling material coming from the reservoir under the action of the partial vacuum in the dental cavity; the improvement wherein: the cross-section of flow area of said first channel (15) is of the order of ten times smaller than that of said second channel (21), so that, when the level of the filling material in the dental cavity reaches the lower end of said first channel (15), said filling material is then sucked into said first channel and travels, under the effect of the partial vacuum in the dental cavity, much more slowly inside said first channel (15) than in the second channel (21) but is sufficiently large to enable the necessary vacuum to be created so as to ensure that this cavity is correctly filled with this material.

5,295,829

WATER SUPPLY DEVICE FOR DENTAL WORK STATIONS

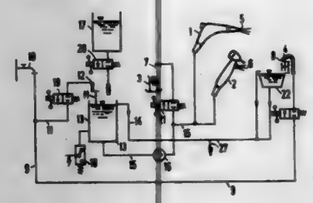
Hans-Peter Frey, Mannheim, and Hans-Michael Kratochwilla, Lorsch, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 24, 1992, Ser. No. 918,055

Claims priority, application European Pat. Off., Jul. 24, 1991, 91112441

Int. Cl.[5] A61C *1/10, 1/12, 1/02;* A61G *17/02*

U.S. Cl. 433—82 **18 Claims**



1. In a water supply device for a dental work station containing a plurality of equipment comprising water exits and withdrawal locations and to which water is supplied from a feed water line of a drinking water line network, wherein at least one of the withdrawal locations cannot be arranged at a safe distance with respect to a drain allocated to the withdrawal location that is required according to technical rules for protecting drinking water from a backflow, the improvements comprising isolation means being provided in a line leading from the feed water line of the drinking water line network to at least said withdrawal locations, said isolation means separating the feed water line from said withdrawal location within the framework of the prescribed safety measurements; and pump means being provided in a line section following the isolation means, said pump means increasing the water pressure in said line section to a value required at each of the withdrawal locations.

5,295,830

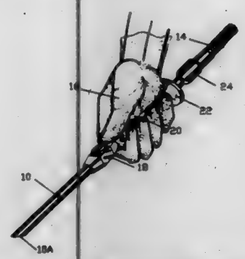
ASEPTIC DENTAL VALVES AND INSTRUMENTS

James Shea, 18751 Beach Blvd., Huntington Beach, Calif. 92648, and Rily Young, 8681 Luas Dr., Huntington Beach, Calif. 92646

Continuation of Ser. No. 992,360, Oct. 3, 1990, abandoned. This application Nov. 27, 1992, Ser. No. 982,413

Int. Cl.[5] A61C *1/16, 17/06, 17/14*

U.S. Cl. 433—116 **33 Claims**



1. A dental instrument for preventing a user of said instrument from touching a supply line for said instrument, thereby to reduce the transmission of microorganisms via contamination of said supply line:

said dental instrument having distal and proximal ends,

said dental instrument having a working tip at said distal end, said working tip being arranged to perform a predetermined function in the oral cavity of a patient, said proximal end of said dental instrument including line connection means for connecting said instrument to said supply line arranged to convey a fluid to or from said instrument,

said dental instrument having an elongated, hand-graspable handle extension adjacent and proximal to said tip, said handle extension being at least about 100 millimeters long so that said handle extension, and hence said dental instrument, can be held by an adult human hand without having to touch said line connection means,

said elongated, hand-graspable handle extension including aseptic guard means for preventing said user of said instrument from touching said supply line for said instrument,

said aseptic guard means comprising indicating means arranged to provide a palpable indication to said user of said instrument if said user attempts to move his or her hand past said indicating means toward said supply line,

said indicating means being mounted at said proximal end of said elongated hand-graspable handle extension and adjacent said line connection means,

said indicating means comprising a member which protrudes out from said elongated handle extension at least about 10 millimeters,

whereby said indicating means will prevent a user of said instrument from moving his or her hand past said hand-graspable handle extension toward said line connection means, so that said user's hand will not touch or contaminate said supply line or any other difficult-to-sterilize parts connected to said instrument.

5,295,831

DISPOSABLE TORQUE WRENCH FOR DENTAL COMPONENTS

Chad J. Patterson, Plantation; Richard A. Smolowitz, and Bruce L. Nickerson, both of Davie, all of Fla., assignors to Impla-Med, Inc., Sunrise, Fla.

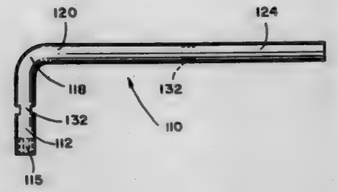
Filed Sep. 17, 1992, Ser. No. 946,924

Int. Cl.[5] A61C *3/00, 8/00;* B25B *23/153*

U.S. Cl. 433—141 **20 Claims**

1. A torque wrench for a dental implant component, comprising:

a single integral shaft having a first end, a second end, and a middle portion having an undercut therein, said first end having a first engaging means for engaging said dental implant component, said first engaging means having one of an outer surface which is hexagonal in cross-section and an indentation which is hexagonal in cross-section, wherein said shaft is constructed of a preselected material



and dimensioned to a first preselected cross-sectional thickness, and said undercut being located at a preselected location along said shaft and undercutting said shaft to at least one preselected cross-sectional thickness such that said shaft deforms substantially and noticeably without breaking at said undercut when a predetermined torque is applied through said shaft to said dental implant component.

5,295,832

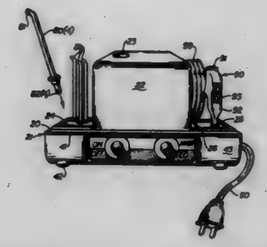
METHOD AND APPARATUS FOR CLEANING TEETH AND GUMS

Don A. Evans, 494 Turtlecreek Dr., Birmingham, Ala. 35226

Continuation of Ser. No. 725,578, Jul. 3, 1991, abandoned, which is a continuation of Ser. No. 205,654, Jun. 13, 1988, Pat. No. 5,029,576. This application Sep. 24, 1992, Ser. No. 950,764

Int. Cl.[5] A61C *15/00*

U.S. Cl. 433—216 **7 Claims**



1. A method for the treatment of deposits, including plaque, calculus, or the like, on the teeth in the oral cavity of an individual, comprising the steps of:

a) providing means for delivering fluid from a location that is accessible to, and controllable by, the individual along a flow path eventually arriving at the oral cavity of the individual;

b) creating a magnetic field along the flow path, the magnetic field terminating prior to the point that the flow path enters the oral cavity;

c) passing the fluid through the magnetic field prior to the arrival of the fluid in the oral cavity; and thereafter,

d) applying the fluid to the teeth in the oral cavity of the individual, whereby the harmful effects of the deposits on the teeth are reduced.

5,295,833

DENTAL ROOT CANAL DIAGNOSTIC AND TREATING EQUIPMENT

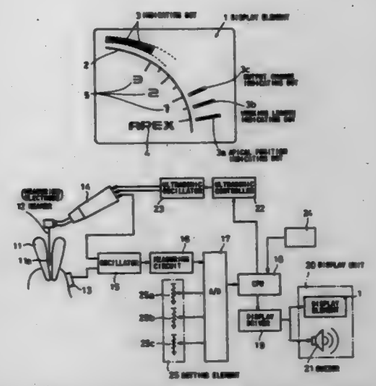
Kobayashi Chihiro, Chiba, and Kazunari Matoba, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,551

Claims priority, application Japan, Sep. 30, 1991, 3-280516

Int. Cl.[5] A61C *5/02;* A61B *5/10*

U.S. Cl. 433—224 **7 Claims**



1. A dental root canal diagnostic and treating equipment having a function to measure a root canal length, comprising:

a setting means for setting arbitrarily specific positions which serve as preset reference positions in the treatment of root canal, and

a display means for displaying the preset reference positions during diagnosis and treatment of a root canal.

5,295,834

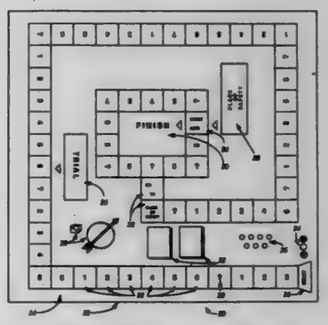
EDUCATIONAL DEVICE EMPLOYING GAME SITUATION

Reginald E. Saunders, P.O. Box 1116, Piscataway, N.J. 08854

Filed Dec. 16, 1992, Ser. No. 991,415

Int. Cl.[5] G09B *19/22*

U.S. Cl. 434—128 **9 Claims**



2. A method for playing an educational game with at least two players or playing teams comprising the steps of:

providing a game apparatus having thereon a plurality of contiguous spaces certain of which containing indicia corresponding to subject matter area categories and sub-

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ject matter area text entries on the cards of a first card deck, certain of said contiguous spaces containing a particular means of identification corresponding to a second card deck comprised of cards containing subject matter area answers and associated subject matter area answers and associated subject matter area questions, player interaction and player subsequent movement instructions suitable for reinforcing the subject matter of the game, certain of said contiguous spaces specifically directing player movement about the game apparatus, and the remaining contiguous space providing an entry point to the game apparatus finish area, a plurality of markers, a plurality of non-contiguous spaces providing penalty and advantage holding positions for certain of said markers, and a chance means which may be sequentially operated to direct player movement about the game apparatus;

assigning each player or playing team a player marker;

shuffling the first and second card decks;

determining the order of play by using chance means, beginning play at the player or playing team obtaining the highest indicated number on the chance device and proceeding clockwise;

initially advancing player marker along said contiguous spaces according to the number indicated on the chance device during player's or playing team's turn;

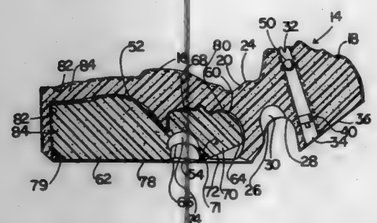
determining deck selection from said first and second card decks, subject matter area category and corresponding subject matter area text entry to be presented, subject matter area answer for which a subject matter area question must be formulated, player interaction, or subsequent player movement based on the contiguous space occupied by the player marker and any information appearing on an associated card selected.

5,295,835

TRAINING MANIKIN FOR CARDIO-PULMONARY RESUSCITATION HAVING NESTED INFANT-SIZE MANIKIN

Samuel Scheinberg, Lincoln City, Oreg., and David E. Moeller, Bainbridge Island, Wash., assignors to The Seaberg Company, Inc., South Beach, Oreg.

Filed Aug. 12, 1992, Ser. No. 929,331
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—265 **12 Claims**



1. A unitary cardio-pulmonary resuscitation training manikin, comprising:

(a) a head portion defining a mouth opening and a tubular airway extending from said mouth rearwardly through said head portion;

(b) a torso portion; and

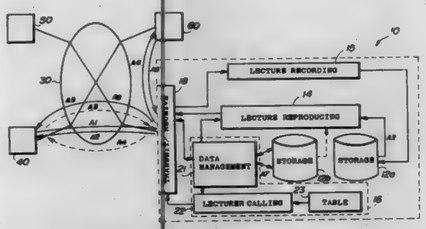
(c) a neck portion interconnecting said head and torso portions, said head, torso, and neck portions being an integral structure of micro-cellular foam, and said neck being flexible, allowing said head portion to be tilted between a normal position and a rearwardly tilted position by elastic flexure of said neck portion, and said head, neck, and torso portions being of a first, larger size and said torso portion defining a rearwardly open body cavity, and said manikin further comprising a smaller, infant-size manikin contained within said body cavity.

5,295,836

REMOTE LECTURING SYSTEM

Tadamitsu Ryu, Kanagawa; Toshitsugu Tanida, and Michio Tuchiya, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 28, 1991, Ser. No. 751,097
Claims priority, application Japan, Sep. 3, 1990, 2-232732
Int. Cl.[5] G09B *7/02*
U.S. Cl. 434—335 **14 Claims**



1. A remote lecturing system comprising:

first storage means for storing contents of at least one lecture of a lecturer;

second storage means for storing questions and corresponding answers related to each lecture stored in said first storage means;

reproducing means, coupled to said first storage means, for retrieving from said first storage means the contents of an arbitrary lecture which is requested in response to an external request from a first terminal station which is operated by a student at an arbitrary time, and for transferring the retrieved contents to the first terminal station;

answer obtaining means, coupled to said second storage means, for retrieving from said second storage means an answer which corresponds to a question from the first terminal station, said answer obtaining means interrupting the transfer of the contents of the arbitrary lecture from said reproducing means to the first terminal station when the question is raised from the first terminal station; and

a communication network coupled to a plurality of terminal stations, said reproducing means and said answer obtaining means being coupled to the first terminal station by way of said communication network, said reproducing means broadcasting the arbitrary lecture to the terminal stations coupled to said communication network, and said answer obtaining means broadcasting the question and the corresponding answer to the terminal stations coupled to said communication network.

5,295,837

MAGNETIC VISUAL DISPLAY

Michael Gilano, Irvine; Michael A. Gilano, Newport Beach, both of Calif., and Gordon B. Langford, Sandy, Utah, assignors to The Ohio Art Company, Bryan, Ohio

Continuation-in-part of Ser. No. 668,914, Mar. 13, 1991, Pat. No. 5,112,229, which is a continuation of Ser. No. 437,744, Nov. 16, 1989, Pat. No. 5,018,979. This application May 7, 1992, Ser. No. 879,815
Int. Cl.[5] B43L *1/00*
U.S. Cl. 434—409 **48 Claims**

1. A magnetic marking apparatus, comprising:

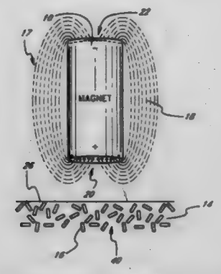
a first non-opaque surface;

a second surface spaced opposite from said first surface;

a non-opaque dispersion medium contained between said first and second surfaces;

a plurality of randomly oriented, magnetically active flakes in said dispersion medium, said flakes being dispersed such that said randomly oriented flakes produce a substantially uniform background when viewed through said first surface;

a permanent magnet for aligning said flakes in the dispersion medium proximate said magnet upon the application of said magnet to one of said surfaces, whereupon said portion of said dispersion medium containing aligned flakes allows light transmission therethrough; and



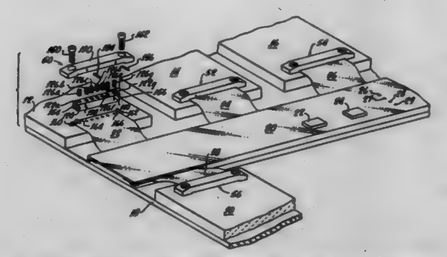
wherein the spacing between said first and second surfaces is selected so that light passing through said first surface and said portion of said dispersion medium containing said aligned flakes is transmitted to said second surface and creates an image formed by the contrast between said second surface as viewed through said first surface and said generally uniform background.

5,295,838

RAISED FEATURE/GOLD DOT PRESSURE INTERCONNECTIONS OF RIGID-FLEX CIRCUITS AND RIGID CIRCUIT BOARDS

James R. Walen, Mission Viejo; Robert E. Daugherty, and Kenneth G. Given, II, both of Irvine, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 14, 1993, Ser. No. 4,737
Int. Cl.[5] H01R *23/66, 23/68*
U.S. Cl. 439—67 **16 Claims**



1. A rigid-flex multi-layer circuit and connection assembly comprising:

a plurality of flexible layers each formed of a flexible dielectric and a pattern of conductive traces thereon,

a rigid substrate,

said layers and substrate being laminated together to form said multi-layer circuit,

one of said flexible layers having an integral connection arm that projects outwardly from said multi-layer circuit, and

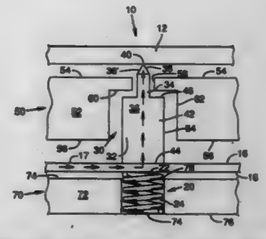
a plurality of projecting contact features on said integral connection arm, each said contact feature being connected to on of said conductive traces on said one flexible layer.

5,295,839

METHOD AND SYSTEM FOR INTERCONNECTINGLY ENGAGING CIRCUITS

Jeffrey J. Grange, Brush Prairie, Wash., and J. P. Harmon, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1993, Ser. No. 33,691
Int. Cl.[5] H01R *23/66*
U.S. Cl. 439—67 **19 Claims**



1. A method for interconnecting a rigid circuit to a flex circuit, which comprises

providing a rigid circuit and a flex circuit, said flex circuit having a first and a second major surface;

providing a rigid conductive member having a first end for interconnecting engagement with the rigid circuit and a second end for interconnecting engagement with the first major surface of the flex circuit;

providing a compressive member comprising a coil spring having a first end for interconnecting engagement with the second major surface of the flex circuit for compressively urging said rigid conductive member into interconnecting engagement against said rigid circuit;

interconnecting engaging the first end of the rigid conductive member with the rigid circuit and the second end of the rigid conductive member with the first major surface of the flex circuit; and

interconnectingly engaging the first end of the compressive member with the second major surface of the flex circuit and compressively urging said rigid conductive member for interconnecting engagement against said rigid circuit thereby connecting the rigid circuit to the flex circuit to form a completed electrical circuit.

5,295,840

CONTACT HAVING SPRING PORTION WITH SMALLER THICKNESS CONTACTING SURFACE

Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,500
Claims priority, application Japan, Dec. 13, 1991, 3-352175
Int. Cl.[5] H01R *9/09, 13/24*
U.S. Cl. 439—72 **4 Claims**

1. A contact comprising:

a spring portion having opposite side surfaces spaced at a spring portion thickness and an edge surface between said opposite side surfaces extending in said spring portion thickness direction;

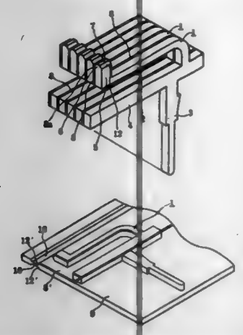
a contacting portion projecting from said edge surface and having a contacting surface on an outer free end for being contacted by a terminal of an electric part, said terminal of said electric part moving said spring portion against the resilience thereof for producing a contacting force of said contacting portion against the electric part terminal; and

an insulating layer on at least one surface of said spring portion and having a thickness substantially less than the spring portion thickness of said spring portion and an insulation layer edge portion along a side of said edge surface of said spring portion;

said contacting portion having a smaller thickness than said

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thickness between said opposite side surfaces of said spring portion and having said contacting surface spaced



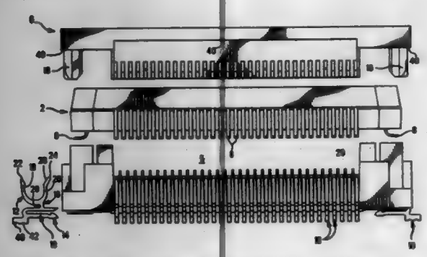
from said insulating layer edge portion and inwardly from said at least one side surface of said spring portion.

5,295,841

SUPPORTABLE CONTACT AND CHIP CARRIER SOCKET FOR USE WITH AN ASSEMBLY/DISASSEMBLY TOOL

Dimitry Grabbe, Middletown; Ioslf Korsunsky, Harrisburg, and Michael F. Laub, Etters, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 30, 1992, Ser. No. 969,597
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—73 **10 Claims**



1. An electrical contact for electrically connecting a chip carrier lead to a respective conductive area on a circuit member where said lead is wedged into electrical contact with the contact by the insertion of a wedge, said contact adapted so that the insertion forces required to wedge said leads against said contact can be opposed so as not to act on the connection with the circuit member, comprising:

a resilient portion for engaging the lead, said resilient portion having a contact surface in wedged electrical engagement with the lead;

a terminal portion in electrical engagement with the respective conductive area on the circuit member;

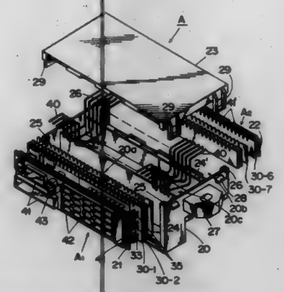
a web extending between and electrically interconnecting the resilient portion and the terminal portion for enabling flexure therebetween, said web being offset to one side of the contact to provide a tool receiving recess between the resilient portion and the terminal portion, said recess adapted to enable canceling the insertion related forces by providing support to said recess.

5,295,842

ELECTRIC JUNCTION BOX

Keiichi Ozaki; Masami Sakamoto, and Eiji Shimochi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,634
Claims priority, application Japan, Jun. 25, 1991, 3-153071
Int. Cl.[5] H01R *11/01, 11/11, 13/46*
U.S. Cl. 439—76 **4 Claims**



1. An electric junction box comprising:

a casing;

a plurality of busbar conductors accommodated in said casing;

each of said busbar conductors including an insulating substrate and a plurality of electrically conductive busbars with upright tabs arranged said insulating substrate;

said busbar conductors being stacked in face-to-face relation one on the other and being arranged in at least two separate blocks in said casing;

each of said busbars having at least one terminal portion;

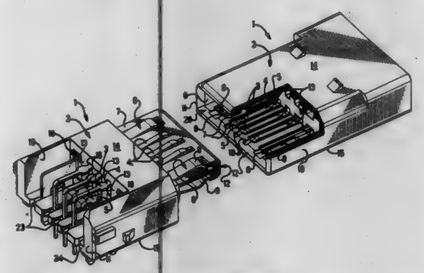
at least one wire electrically connectable to desired busbars at said terminal portions thereof such that busbars in one of said at least two blocks or busbars in said at least two blocks are selectively electronically connected with one another by said at least one wire.

5,295,843

ELECTRICAL CONNECTOR FOR POWER AND SIGNAL CONTACTS

Wayne S. Davis, Harrisburg; Robert N. Whiteman, Jr., Middletown, and David A. Griesemer, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 19, 1993, Ser. No. 5,690
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—108 **14 Claims**



1. An electrical connector comprising:

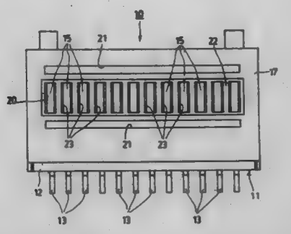
an insulative housing, multiple pairs of conductive signal contacts distributed along an insulative divider within an interior of the housing, the divider separating one of the signal contacts from the other of the signal contacts of each pair, and at least one conductive power contact having a pair of contact fingers on opposite sides of the divider, the contact fingers having a surface area sufficiently broad to radiate heat from electrical power dissipation, and the fingers extending parallel to the signal contacts in the cavity.

5,295,844

CONNECTOR

Kiyoshi Koshikawa; Hiroyuki Fujieda, both of Mito, and Takeshi Konno, Nagaoka, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 935,033
Int. Cl.[5] H01R *13/44, 13/648*
U.S. Cl. 439—138 **19 Claims**



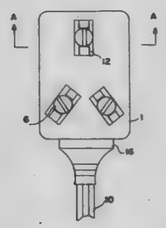
1. A connector comprising socket connectors covered with a cover formed with a number of slits and mounted on the upper surface of a molded body including a plurality of socket terminals and formed to expose said socket connectors from the slits, and a plug connector having a plurality of plug terminals opposed to said socket terminals, wherein said cover is formed of metal, said metal cover is pivotally secured at its one end to said molded body to be rotatable, energized upwards by a spring, said spring has a connecting portion to be connected to a ground, thereby conducting said metal cover with ground wherein the slits formed at said metal cover are respectively mounted with separators formed of resin in a window opened at said metal cover.

5,295,845

COMBINED POWER PLUG

Duan Changxing, Agricultural Bank of China Xinyan Sub-Branch, Minquan Road, Xinyang, Henan 464000, China

Continuation of Ser. No. 844,458, Mar. 2, 1992, abandoned. This application May 27, 1993, Ser. No. 68,838
Claims priority, application China, Mar. 2, 1991, 91203126.3; Feb. 22, 1992, 92101021.4
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—173 **11 Claims**



1. A power plug, comprising:

an insulating body having a first insulator portion and a second insulator portion, the first insulator portion has at least one slot formed therein;

at least one pin with a contact head, a screw bar and a shoulder, the shoulder being between the contact head and the screw bar, each of the at least one slots in the first insulator portion having a respective one of the pins therein; and

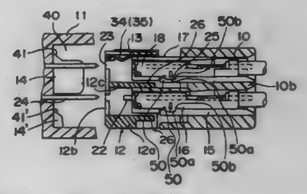
means for adjusting positioning of each pin relative to the insulating body and for adjusting rotational position of each pin about a longitudinal axis of each pin, each of the pins being slidable along its respective slot in which the is located to thereby vary the distance between the and an outer edge of the insulating body, the means for adjusting comprises at least one nut and elastic washer attached to the corresponding pin.

5,295,846

PLUG-IN CONNECTOR ASSEMBLY

Tatsuya Sumida, and Yasuo Matsushita, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Dec. 11, 1992, Ser. No. 989,580
Claims priority, application Japan, Jan. 10, 1992, 4-003171
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—188 **13 Claims**



1. A connector assembly comprising:

a connector housing having an end portion and also wall portions defining a plurality of passageways for accommodating therein terminal members;

a retainer mounted on the end portion of the connector housing for movement between a temporary mounting position and a completely mounted position for detecting an erroneous insertion of at least one of the terminal members into the associated passageway;

means for temporarily holding the retainer at the temporary mounting position on the end portion of the connector housing; and

at least one contact bridge member mounted on the retainer, at least one pair of the terminal members being short-circuited with each other by means of the contact bridge member when the terminal members have been inserted into the passageways and the retainer is subsequently moved from the temporary mounting position to the completely mounted position.

5,295,847

BRANCH JUNCTION BOX AND BUSBARS FOR BRANCH CONNECTION

Keiichi Ozaki; Katsuaki Terada, and Shinobu Tahara, all of Kosai, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 913,424, Jul. 15, 1992, Pat. No. 5,207,591, which is a division of Ser. No. 841,778, Mar. 2, 1992, Pat. No. 5,160,274, which is a division of Ser. No. 641,423, Jan. 15, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,775
Claims priority, application Japan, Jan. 16, 1990, 2-1628; May 2, 1990, 2-46660; Oct. 1, 1990, 2-102253; Oct. 1, 1990, 2-102255; Nov. 6, 1990, 2-115935
Int. Cl.[5] H01R *9/24*
U.S. Cl. 439—212 **2 Claims**

1. A branch junction box comprising:

an upper case and a lower case;

a plurality of parallel busbar accommodating grooves

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formed in opposing contact surfaces of the upper and lower cases at specified intervals; and

a plurality of raised walls and recesses provided on the



contact surfaces of the upper and lower cases between and along the busbar accommodating grooves so that the raised walls formed on one of the cases are received in the recesses on the other case.

5,295,848

RELEASABLE HYDRAULIC AND/OR ELECTRIC CONNECTION FOR SUBSEA EQUIPMENT

Frank Mohn, London, England, assignor to Framo Development (UK) Limited, London, England

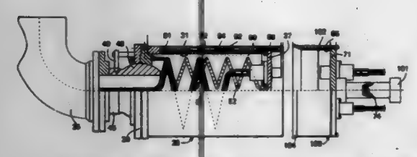
PCT No. PCT/GB91/00246, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO91/13233, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 19, 1991, Ser. No. 920,320

Claims priority, application United Kingdom, Feb. 20, 1990, 9003790

Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—247 **19 Claims**



1. A system for establishing electrical and/or hydraulic communication between two underwater units, the system comprising a connection device on one of the units, the connection device including a connection member which can be projected from the device, a receptacle on the other of the units for receiving the projected connection member therein, co-operable connector means on the connection member and in the receptacle for establishing the electrical and/or hydraulic communication when the connection member is projected into the receptacle, projection means in the connection device for projecting the connection member therefrom, and

alignment means arranged to effect alignment of the connection device and the receptacle along the direction of projection of the connection member, the alignment means comprising mounting means pivotally mounted each of the connection device and the receptacle on the respective one of the units.

5,295,849

FUSEHOLDER WITH SEQUENTIAL POWER DISCONNECT AND FUSE TENSION RELEASE MECHANISM

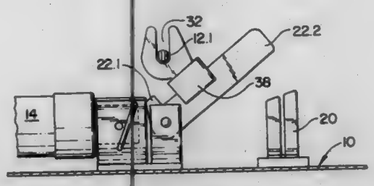
Walter L. Jeffcoat, Vidalia, and Wendell D. Copeland, Lyons, both of Ga., assignors to Challenger Electrical Materials, Inc., Malvern, Pa.

Filed Apr. 19, 1993, Ser. No. 47,897

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—266 **4 Claims**

1. A fuseholder comprising a pair of tensioned opposed jaws defining a clip for the flat end of fuse and a contact electrically connected to the jaws and rotatable to create an electrical connection to a power terminal, characterized by:



means on the contact for spreading the jaws as the contact is rotated to a first position at which the electrical connection to the power terminal is broken.

5,295,850

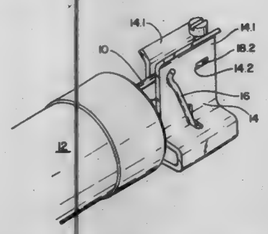
FUSE HOLDER WITH FUSE RELEASE

Walter L. Jeffcoat, Vidalia, and Wendell D. Copeland, Lyons, both of Ga., assignors to Challenger Electrical Materials, Inc., Malvern, Pa.

Filed Apr. 19, 1993, Ser. No. 47,898

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—266 **6 Claims**



1. A fuse holder comprising a pair of opposed jaws tensioned to receive a fuse terminal, characterized by:

means rotatably mounted between the jaws and accessible from a position above the jaws to spread the jaws to a first separation distance from a second separation distance.

5,295,851

ELECTRICAL CONNECTOR HUB HAVING IMPROVED SEALING RING

Jaspal S. Bawa, Memphis, Tenn.; Giacomo Mancini, Piscataway, and Luis R. Couto, Hillside, both of N.J., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Oct. 2, 1992, Ser. No. 955,945

Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—273 **4 Claims**

1. An electrical connector for securement to a wall of an electrical enclosure comprising:

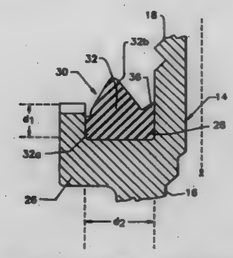
a hub having a cable receiving end, a cable egressing end and an internal bore therebetween, said cable egressing end being dimensioned for passage through an opening in said wall;

a hub nut for attachment to said cable egressing end of said hub for securing said hub to said wall;

said hub further including an annular shoulder extending transversely between said cable receiving end and said cable egressing end of hub for abutment against said wall upon attachment of said hub nut to said hub, said shoulder having an annular groove therein, said groove having a given transverse and longitudinal dimension; and

a sealing ring positioned in said groove for sealing engagement with said wall, said sealing ring having body of

noncircular cross-sectional shape having a first dimension which is greater than the longitudinal dimension of said groove and a second dimension within said groove which is less than the transverse dimension of said groove, said



sealing ring further including radially inwardly extending skirt positioned within said groove said skirt having a transverse dimensions such that the transverse dimension of said body and said skirt exceeds said transverse dimension of said groove.

5,295,852

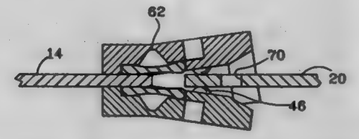
COPLANAR COMPUTER DOCKING SYSTEM

Robert M. Renn, Pfafftown; Keith L. Volz, Jamestown; Robert D. Irlbeck, Greensboro; Frederick R. Deak, Kernersville; David C. Johnson, and Warren A. Bates, both of Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 12, 1993, Ser. No. 89,867

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—328 **5 Claims**



1. Electronic apparatus for card edge mounting an electronic device, to a mother board, said apparatus comprising a pair of spring biased, hermaphroditic, resilient housing members, which when assembled define an elongated slot which receives an edge of said mother board therein, opposed camming surfaces within said slot to operatively spread said housing members upon insertion of said electronic device into said slot, and a flexible film member containing electrical circuitry thereon mounted within said housing members for electrically interconnecting corresponding circuitry on said mother board and said electronic device, wherein said electronic device includes a camming relief notch for receiving said camming surfaces when said electronic device is fully inserted into said slot.

5,295,853

MECHANISM FOR REMOVABLY MOUNTING DUT BOARD ON TEST HEAD

Keiichi Nagakusa; Tetsuya Shiraishi; Takeshi Tamura, and Shinichi Saito, all of Tokyo, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 6, 1992, Ser. No. 846,815

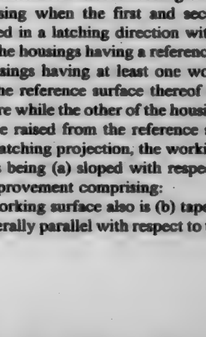
Claims priority, application Japan, Mar. 11, 1991, 3-070635

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—330 **8 Claims**

1. Apparatus for securing a DUT board assembly, with respect to contact probes on a test head comprising:

at least one rotatable cam mechanism which is adapted to directly engage with a DUT board assembly so that rotation of said cam mechanism in one direction secures the DUT board assembly to the test head without substantial horizontal motion of the DUT board assembly, allowing portions of the secured DUT board to maintain contact with predetermined contact probes on the test head, and so that rotation of said cam mechanism in a second, oppo-



site direction will release the secured DUT board assembly from said cam mechanism; and

means for rotating said cam mechanism, whereby a DUT board can be quickly and easily mounted and demounted without the need for mouting and demounting the DUT board to a separate supporter, and with less horizontal displacement than was heretofore possible.

5,295,854

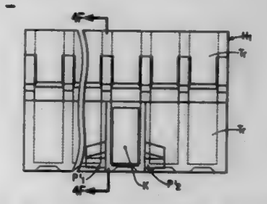
PASSIVE CONNECTOR LATCH WITH CAMMING ACTION

Stanley W. Olson, East Berlin, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 21, 1992, Ser. No. 964,086

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—350 **6 Claims**



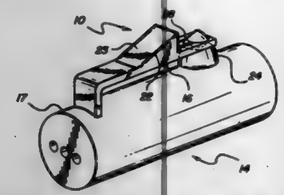
1. A passive latch for interconnecting a first and a second connector housing when the first and second housings are relatively moved in a latching direction with respect to each other, each of the housings having a reference surface thereon, one of the housings having at least one working surface depressed from the reference surface thereof to form part of a latching aperture while the other of the housing has at least one working surface raised from the reference surface thereof to form part of a latching projection, the working surface on one of the housings being (a) sloped with respect to its reference surface, the improvement comprising:

the sloped working surface also is (b) tapered in a direction that is generally parallel with respect to the latching direction.

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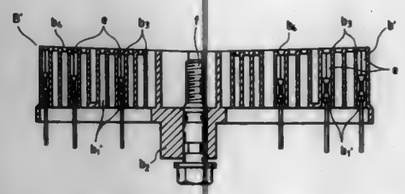
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,855
POSITIVE CONNECTION LATCH
Gerald C. Walz, Grass Lake, Mich., assignor to Electro-Wire Products, Inc., Dearborn, Mich.
Filed May 17, 1993, Ser. No. 61,457
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—354 5 Claims



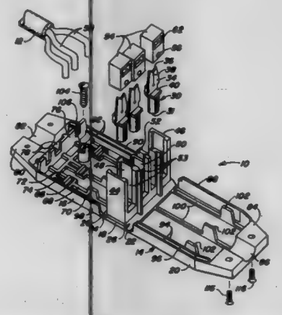
1. A positive connector latch assembly for releasable engagement with a corresponding structure on a matable connector, said latch assembly comprising:
a connector housing having at least one external surface; and
a cantilevered latching beam having a first end disposed on said housing and terminating in a second, free end and having a latching member disposed thereon for engagement with said corresponding structure on said matable connector, said beam being resiliently deflectable in a direction toward said housing by applying an appropriate pressure to said free end to release said latching member from said corresponding structure;
an elastomeric pressure pad associated with said latch assembly and disposed between said beam and said housing to resiliently bias said beam in a direction away from said housing and into locking engagement with said corresponding structure, said elastomeric pressure pad being elastically deformable by said appropriate pressure; and
means for mounting said pad to said latch assembly.

5,295,856
MULTI-TERMINAL CONNECTOR
Takayoshi Endo; Sakai Yagi, and Tamio Watanabe, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jan. 8, 1993, Ser. No. 2,026
Claims priority, application Japan, Jan. 16, 1992, 4-005611
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—364 6 Claims



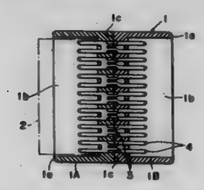
1. A multi-terminal connector extending in a traverse direction, comprising:
a first connector housing having a plurality of terminal receiving chambers arranged in parallel relation to each other in the transverse direction and a plurality of first metal terminals received in respective terminal receiving chambers;
a second connector housing adapted to be mated with said first connector housing, said second connector housing having a plurality of second metal terminals adapted to be electrically connected to respective first metal terminals; and
connecting means, provided in said first and second connector housings at central portions thereof with respect to said transverse direction, for mating said first connector housing with said second connector housing and respectively electrically connecting said first metal terminals to said second metal terminals, wherein said terminal receiving chambers, being located from the central portion of said first connector housing toward lateral sides thereof, gradually project forwardly toward said second connector housing in a sloped manner from the central portion so that a first metal terminal is disposed forwardly of an adjacent first metal terminal which is located closer to the central portion of said first connector housing in the transverse direction.

5,295,857
ELECTRICAL CONNECTOR WITH IMPROVED WIRE TERMINATION SYSTEM
Elde V. Toly, 109 Bulkley Ave., Sausalito, Calif. 94965
Filed Dec. 23, 1992, Ser. No. 995,823
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—395 12 Claims



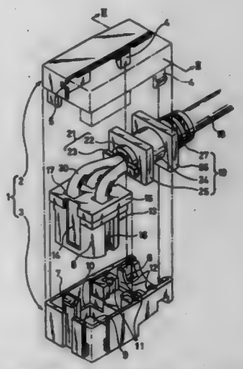
1. An electrical plug connector adapted for connection with individual wires of an electrical conduit, comprising:
a housing;
means in said housing forming a plurality of elongated chambers;
a plurality of electrical coupling elements fixed in said housing, each said coupling element including an elongated bifurcated jaw section having opposed inner knife edges and extending within a said chamber means;
a slider block within each said housing chamber; each said slider block including a first hole for receiving the end of an insulated wire to be terminally attached to a said coupling element and a second hole which diverges inwardly from an upper surface of said slider block and forms a fulcrum for receiving a tool adapted to move said slider block; said slider block being movable within its chamber toward a said jaw section of said coupling element so that said wire previously placed within said slider block will move between said knife edges of said jaw section to provide an electrical contact.

5,295,858
CONNECTING BOX FOR FORMING BRANCH CIRCUIT
Kouji Kasai; Yuuji Saka, and Shinshu Kato, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 17, 1992, Ser. No. 992,470
Claims priority, application Japan, Dec. 20, 1991, 3-105531; Apr. 14, 1992, 4-23747
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—404 6 Claims
1. A connecting box, for forming a branch circuit, comprising two rectangular casing members, each being formed in the same configuration, and a plurality of conductive members; in which each casing member comprises:
a partitioning wall formed therein;
a plurality of connecting openings, each opening being formed in the same configuration, said plurality of connecting openings being disposed on one side of the partitioning wall;
a conductive member-accommodating portion disposed on the other side of the partitioning wall; and
a plurality of connection portion-inserting openings formed on the partitioning wall;
wherein said two casing members are connected with each other to constitute a case having the conductive member-accommodating portion in a center portion thereof and the connecting openings front and back sides thereof;
said conductive members being disposed in the conductive member-accommodating portion so as to project a connecting portion of each conductive member into each of the connecting openings formed on the front and back



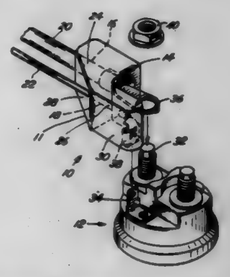
sides of the case through each connection portion-inserting opening;
each conductive member being disposed in the conductive member-accommodating portion and comprising a plurality of terminals and single core wires;
each terminal comprising at least one blade which penetrates into a single core wire in a direction perpendicular to the axial direction of the single core wire and is brought into contact with the single core wire and the connecting portion, and extending symmetrically from the blade in a direction perpendicular to the axial direction of the single core wire; said connecting portion projecting into each of the connecting openings formed on the front and back sides of the case through each of the connection portion-inserting openings formed on both partitioning walls; and
a plurality of said singe core wires being arranged in parallel with each other in the conductive member-accommodating portion so as to bring a plurality of terminals having connecting portions projecting into different connecting openings into contact with one of the single core wires.

5,295,859
ELECTRIC CONNECTOR
Mitsuru Kawai; Masaru Yoshida; Eiji Kunii, and Kouzou Uekido, all of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Oct. 8, 1992, Ser. No. 958,233
Claims priority, application Japan, Oct. 23, 1991, 3-094654[U]; Oct. 23, 1991, 3-094655[U]
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—455 11 Claims
1. An electric connector comprising:
a housing;
a clamper for clamping an outer jacket of a multicore cable which is formed with a plurality of sheathed cable elements bound by said outer jacket, a predetermined length of said outer jacket at an end thereof being removed; and
a contact holder accommodated and held in said housing, a portion of said contact holder projecting from said housing being adapted to be inserted into a mating connector,
wherein said clamper includes a clamper body for clamping said outer jacket and a wing-like portion projecting radially from said clamper body,
wherein contacts are fitted in said contact holder in such a manner as to be respectively connected to tips of core wires which are exposed with portions of respective sheaths of said plurality of sheathed cable elements removed, and
wherein said housing is constituted by two split housing portions to allow said housing to be split into two at a



plane including the axis of said multicore cable in a range covering said clamper, and said wing-like portion of said clamper is accommodated in a retaining groove formed in one of said slit housing portions, and
wherein said clamper body is deformed into a cylindrical shape by clamping said multicore cable, and a flexible sleeve formed of a resilient material is exteriorly fitted over at least a rear portion of said clamper body with resilient pressure.

5,295,860
INTEGRAL BATTERY CABLE SOLENOID CONNECTOR
John Josefczyk, Dearborn, and Anthony L. Militello, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 15, 1992, Ser. No. 961,569
Int. Cl.[5] H01R *11/00, 9/11*
U.S. Cl. 439—503 11 Claims



1. A connector unit in combination with a portion of a first conductor and a segment of a second conductor, the first and second conductors terminating in a first connector and a second connector, respectively, that are electrically connectable to a first terminal and a second terminal, respectively, of a solenoid, said connector unit comprising:
a generally L-shaped housing defined by a main body and an

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extension arm extending from the main body, the main body and the extension arm at least partially retaining the portion and segment, respectively for fixedly retaining a predetermined displacement and orientation between the portion and the segment and between the first connector and second connector, whereby simultaneous connection of the first connector and the second connector to the first terminal and the second terminal, respectively, is achieved due to the predetermined displacement and orientation whenever the first connector is applied to the first terminal.

5,295,861

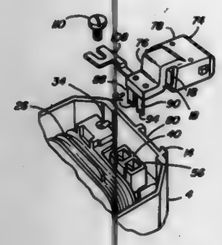
CONNECTOR FOR IGNITION COIL ASSEMBLY

James Peretick, Saline, and Vincent J. DeSantis, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 811,856, Dec. 23, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,217

Int. Cl.[5] H01R *13/60*

U.S. Cl. 439—527 **14 Claims**



1. A connector suitable for use in connecting with an electrical component located within an open cavity defined by a housing which is filled with a potting material, comprising:

a body formed from an electrically insulating material, including,

external means for extending external to the housing,

internal means for extending at least partially below the surface of the potting material,

mounting means, coupling between said internal means and said external means, including a generally U-shaped section for engaging with and for traversing over a lip section of the housing which is above the level of the potting material, said mounting means and the housing also including therein cooperating channels and ridges for restricting the relative motion of the connector with respect to the housing; and

conductor means, communicating through said U-shaped section of said mounting means and said internal means, for electrically coupling to and for being guided by said mounting means into mechanical coupling with the electrical component within the housing.

5,295,862

CONNECTOR BOARDLOCK

Rene A. Mosquera, Laguna Niguel, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Dec. 16, 1991, Ser. No. 777,556

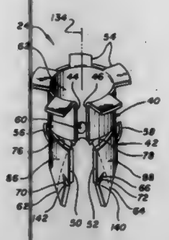
Int. Cl.[5] H01R *13/60*

U.S. Cl. 439—567 **14 Claims**

1. A connector having a housing that includes at least one flange that mounts facewise against a circuit board, where the flange and board have aligned largely cylindrical holes, and said connector includes at least one boardlock extending along a vertical axis through said holes of said flange and board to lock them together, characterized by:

said board hole has a larger diameter than said flange hole; said boardlock comprises a metal sheet which is bent to form largely tubular upper and lower hole-received portions received respectively in said flange hole and said board hole, with each hole-received portion having a pair of largely vertical edges that bear against the walls of a corresponding hole and with each largely tubular board-received portion having a vertical axis;

said boardlock having a pair of separation slots lying between parts of said tubular upper and lower portions, each separation slot extending largely horizontally from one of



said vertical edges and partially around said sheet so said slots separate parts of said tubular upper and lower portions into upper and lower edge regions, with each upper edge region lying above one of said slots and each lower edge region lying below one of said slots, and with each of said lower edge regions of said tubular lower portion having a larger average radius of curvature than each corresponding upper edge region of said tubular upper portion.

5,295,863

ELECTRICAL CONNECTOR FOR COAXIAL CABLE

James W. Cady, Austin, Tex., assignor to Arrowsmith Shelburne, Inc., Shelburne, Vt.

Filed Sep. 17, 1992, Ser. No. 946,747

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—578 **3 Claims**



1. An electrical connector assembly adapted to connect a first cable to a second cable, each cable including coaxial wires having a center conductor and an outer conductor separated by an insulating layer, by connecting the center and outer conductors of the first cable with the center and outer conductors, respectively, of the second cable, the electrical connector assembly comprising:

a male connector housing having a plurality of bores that are each adapted to receive a conductive pin;

a first plurality of conductive pins, each disposed within a different bore of the male connector housing and each being coupled to a different center conductor of the first coaxial cable;

a first plurality of dielectric material inserts, each disposed within a different male connector housing bore and insulating each respective first conductive pin from contact with the male connector housing bore;

a female connector housing having a plurality of bores that are each adapted to receive a conductive pin;

a second plurality of conductive pins, each disposed within a different bore of the female connector housing and each being coupled to different center conductor of the second coaxial cable; and

a second plurality of dielectric material inserts, each disposed within a different female connector housing bore and insulating each respective second conductive pin from contact with the female connector housing bore;

wherein the male connector housing and first dielectric material inserts are adapted to engage with the female connector housing and second dielectric material inserts such that the second dielectric material inserts engage the male connector housing bore in a friction fit and the first conductive pins conductively engage the second conductive pins.

5,295,864

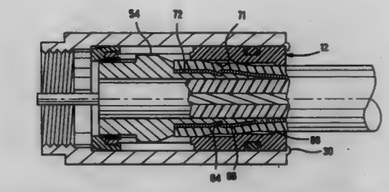
SEALED COAXIAL CONNECTOR

Norman R. Birch, Jacobus, and Nathan J. Norris, Evans City, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 6, 1993, Ser. No. 43,313

Int. Cl.[5] H01R *9/05*

U.S. Cl. 439—578 **5 Claims**



1. A sealed connector for installation on a prepared end of a coaxial cable including a central conductor and a coaxial metal braid spaced therefrom, the connector comprising a connector body, a dielectric insert within said connector body, where said insert includes a generally uniform central bore, a metal wedge member featuring at least one annular serration, where said wedge member is within said insert and said serration is spaced from the wall of said bore, and that said braid is to be captured between said serrations and said wall of the insert bore, and elastomeric sealing means provided at each end of the insert for contact with said connector body, whereby to environmentally seal the connector.

5,295,865

RUBBER PLUG FOR WATERPROOF CONNECTOR

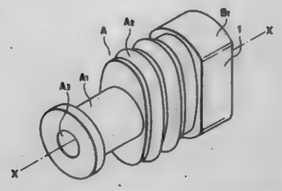
Takayoshi Endo; Sakai Yagi, and Kimihiro Abe, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,231

Claims priority, application Japan, Sep. 12, 1991, 3-233009

Int. Cl.[5] H01R *13/40*

U.S. Cl. 439—587 **5 Claims**



1. A rubber plug for a water proof connector comprising:

a tubular portion to which a metal terminal is securable;

a seal portion extending continuously from said tubular portion for sealingly contacting a housing in which said plug is disposed;

a reinforcement portion embedded in said seal portion for reinforcing said seal portion;

a sliding contact member, made of a synthetic resin, formed integrally with said reinforcement portion and having an exposed exterior surface, wherein when said plug is conveyed by a part feeder said exterior surface of said contact member slidably contacts a guide surface of said feeder enabling smooth movement of said plug therealong.

5,295,866

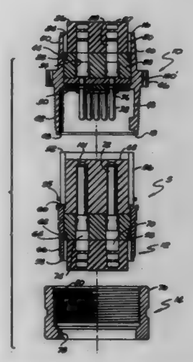
INSERT RETENTION GAS TIGHT SEAL FOR ELECTRICAL CONNECTOR AND METHOD OF MAKING SAME

Roy E. Kroger, 3151 Kips Corner Rd., Norco, Calif. 91760, and Louis E. Spears, 7810 Klusman Ave., Rancho Cucamonga, Calif. 91730

Continuation of Ser. No. 595,074, Oct. 9, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 821,345

Int. Cl.[5] H01R *13/40*

U.S. Cl. 439—589 **8 Claims**



1. An insert retention means for an electrical connector, comprising:

an electrical connector, said electrical connector having a receptacle, a plug and a coupling nut, said receptacle and said plug each having an interior and an exterior surface, said receptacle and said plug further having inserts disposed within said interior surfaces thereof;

at least one annular groove inscribed within the interior surface of said receptacle and the interior surface of said plug; and

at least one, soft metal, continuous annular ring disposed within said annular groove of said receptacle and said plug, said soft metal, continuous annular ring bulk deformed under a force F, in the range of 100 to 150 psi into said annular groove and compressed therein to form a gas tight seal between said inserts and the interior surfaces of said receptacle and said plug with the annular ring as an integral part of the interior surface of the receptacle.

5,295,867

EDGE CONNECTOR SHIELD

Gary C. Bethurum, Laguna Niguel, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Dec. 23, 1992, Ser. No. 996,428

Int. Cl.[5] H01R *9/09*

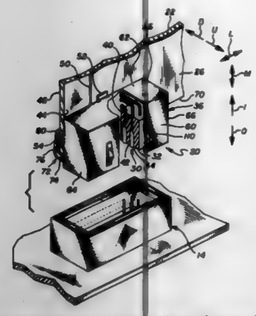
U.S. Cl. 439—607 **12 Claims**

1. A shield for placing around an edge connector that is permanently mounted on an outer edge portion of a circuit board that has an outer edge, wherein the board has upper and lower surfaces, and wherein said shield has a top portion

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spaced above said board upper surface and sides extending downwardly to aid board, and including opposite lateral sides extending in directions toward and away from said board outer edge, characterized by:

each of said opposite sides includes an arm having an outer arm part extending down from a lower edge of one of the



corresponding opposite lateral sides along said board edge to below said board lower surface, and having an arm inner part that extends inwardly below the board lower surface and that has a clamp end positioned to press up against the board lower surface, to thereby clamp said shield to said board.

5,295,868

SHIELDED HARNESS PRE-EQUIPPED SO THAT A CONNECTOR CAN BE MOUNTED THEREON

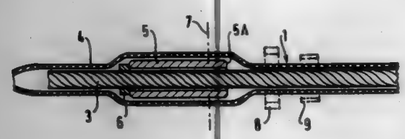
André Viaud, Crosne, and Pascal Clouet, Gregy sur Yerres, both of France, assignors to Filotex, Draveil, France

Filed Jan. 27, 1993, Ser. No. 9,985

Claims priority, application France, Jan. 29, 1992, 92 00949

Int. Cl.[5] H01R *13/658*

U.S. Cl. 439—610 9 Claims



1. A shielded harness for coupling to a connector and having a bundle of twisted-together conductors and a tubular shielding braid covering said bundle of conductors, said harness including a tubular expander having cross-sectional dimensions substantially identical to those of a rear connection end of said connector, the expander being positioned on an end portion of said harness at a location at which said connector is to be connected, and being partially covered by said shielding braid, said shielding braid being preformed over the expander and corresponding to the cross-sectional dimensions thereof, wherein the expander may be removed axially from the end of said harness and the rear connection end of said connector connected thereto, and wherein said shielding braid has a braiding pitch over said expander that is different from its braiding pitch over said bundle of conductors.

5,295,869

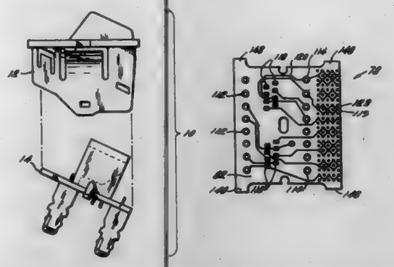
ELECTRICALLY BALANCED CONNECTOR ASSEMBLY

John Siemon, Woodbury, and Randy Below, Cheshire, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed Dec. 18, 1992, Ser. No. 993,480

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 8 Claims



1. A device for use in restoring electrical balance to transmission lines connected thereto, comprising:

a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

at least one capacitive element integrally defined within said circuit board and connected to said circuitry, said at least one capacitive element comprising a plurality of plated through holes, said plated through holes being spaced and interconnected in a defined configuration to obtain a desired capacitance for restoring electrical balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

5,295,870

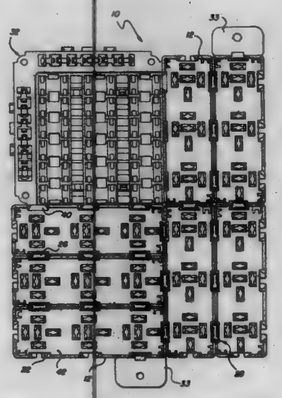
MODULAR ELECTRICAL ASSEMBLY AND REMOVABLE WEDGE THEREFOR

Mark W. Rei, Birmingham; Allen F. VanDerStuyf, Novi, and Christopher J. Volpe, Ferndale, all of Mich., assignors to Electro-Wire Products, Inc., Dearborn, Mich.

Filed Dec. 11, 1992, Ser. No. 989,145

Int. Cl.[5] H01R *9/22*

U.S. Cl. 439—717 18 Claims



1. A modular electrical connector assembly comprising:

a plurality of parallelepieped modules, each having top and bottom surfaces and two pairs of opposed sides, and each including at least one inwardly tapering mortise formed on one of said sides and extending for a distance on said side toward said top surface and said bottom surface;

socket means formed on the top surface of each of said plurality of modules for insertion of an electrical connection element therein; and

a plurality of resilient tubular wedges, each configured to include a pair of opposed, outwardly flaring tenons for mating engagement with said at least one mortise to form a dovetail joint therewith.

5,295,871

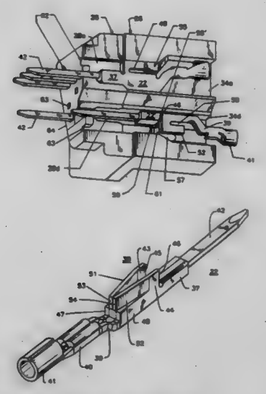
HIGH DENSITY CABLE CONNECTOR ASSEMBLY

Scott J. Lapraik, Spartanburg, and Eric D. Juntwait, Moore, both of S.C., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed May 29, 1992, Ser. No. 890,449

Int. Cl.[5] H01R *13/432*

U.S. Cl. 439—746 12 Claims



1. An electrical connector comprising:

a plurality of elongate conductive contact assemblies disposed in a geometric array, each contact assembly comprising at least a conductive contact portion, a conductor connection portion rearward of the contact portion and a retention portion intermediate the contact portion and the connection portion, the contact portions of the plurality of assemblies being adapted to be disposed in side by side positions along n rows across the connector where n is an integer;

an insulative housing having at least a rear wall, a forward wall and a plurality of contact assembly support cavities extending between said rear and forward walls, each said support cavity having a contact retention means disposed intermediate said rear and forward walls for engaging said retention portion of an associated contact assembly; each said support cavity having an elongate contact entry opening of a predetermined height in said rear wall, each said contact entry opening including a relatively wide portion and a relatively narrow portion for receiving, respectively, a relatively wide conductor connection portion and a relatively narrow contact portion of the associated contact assembly, said entry openings being disposed along n pairs of rows in a staggered array, with adjacent cavities in each pair of rows being alternately upright and inverted, the entry openings for upright cavities in each pair of rows lying along a first center line and the entry openings for inverted cavities in the same pair of rows lying along a second center line offset from said first center line by a distance less than the height of said contact entry openings such that said inverted and upright cavities in a pair of rows are interleaved.

5,295,872

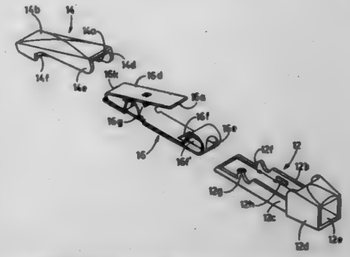
BIOMEDICAL ELECTRICAL CLASP

Eddy K. G. Christensson, 4016 Inglewood Ave. So., Edina, Minn. 55416

Filed Jul. 6, 1992, Ser. No. 908,397

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—822 27 Claims



1. A spring-operated biomedical electrical clasp for gripping a biomedical skin-contacting electrode which is applied to the skin of a patient, said clasp comprising:

a clasp base and a separate clasp lever each having a handle end and a jaw end,

said clasp lever being operatively associated with the clasp base for articulation relative to the clasp base intermediate the ends of the lever,

an electrically conductive spring member having a portion connected to the clasp base,

said spring member having a portion connected to the clasp lever,

said spring member yieldably biasing the jaw end of the lever toward a closed position with respect to the jaw end of the base,

said spring member having a jaw face portion adjacent the jaw end of said lever and said base to define an electrically conductive jaw surface that is a portion of said spring, said spring biasing the jaw surface toward an opposing jaw surface for releasably gripping said biomedical electrode and for making electrical contact therewith, and

the spring has a reverse bend at the handle end of the base, said reverse bend includes an opening to provide an electrical coupling receptacle for receiving and frictionally securing an electrically conductive pin member to transfer electrical signals to or from the clasp.

5,295,873

DOUBLE LEAF SPRING CONTACT WITH STOP DEVICE

Wolfram Walbrecht, Wuppertal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Fed. Rep. of Germany

Filed Nov. 7, 1991, Ser. No. 788,812

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 9017229

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—839 14 Claims

1. Double leaf spring contact with an external enclosure spring, in which

a) the double leaf spring contact is provided with a generally U-shaped spring arm base (4) with lateral side walls (6), and a frontal side wall (7) and prongs (8) for the connection of an electrically conducting wire are connected to one side of the spring arm base,

fork spring arms (3) that converge in the shape of a curve are connected to the other side of frontal edges of the lateral side walls,

the fork spring arms form a contact stud for a counter contact in a culmination area of the curves,

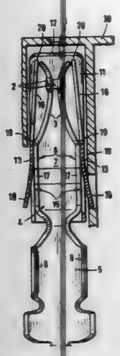
stop devices (2) that protrude toward the outside and

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maintain a certain distance between the converging fork spring arms are arranged in the contact area, and

b) the external enclosure spring (10) is provided with a box-shaped spring arm base (13) that rests on the spring arm base (4) of the double leaf spring contact in a positive and stationary manner, and plural converging enclosure spring fork arms (16) are connected to the lateral side walls (15) of the spring arm base (13) that press against the fork spring arms (3) of the double leaf spring contact from the outside,

characterized by the fact that:



c) a cover in form of skids (11) which covers at least the stop devices (2) of the fork spring arms (3) of the double leaf spring contact (1) is disposed on the external enclosure spring (10); and

said skids (11) extend linearly upwardly and plane to the spring arm base (13) and tightly adjoin the stop devices (2),

so that the elements of the stop devices do not hinder insertion of the double leaf spring contact into a mating plug chamber housing (30).

5,295,874

WEAK MATING FORCE FEMALE TERMINAL

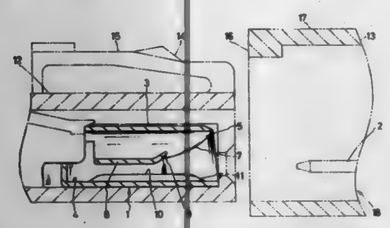
Takahiro Yoneda, Kanagawa; Keishi Jinno, and Takayoshi Endo, both of Shizuoka, all of Japan, assignors to Yazaki Corporation, Japan

Filed Apr. 27, 1993, Ser. No. 52,603

Claims priority, application Japan, Apr. 30, 1992, 4-028809[U]

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—850 **3 Claims**



1. A weak mating force female terminal, comprising:

a base plate portion;

a pair of elastic curled portions formed integral with said base plate portion and extending from side ends of said base plate portion so as to be folded over an inner surface of said base plate portion, each of said elastic curled portions being formed with a primary inclined guide portion extending upwardly and outwardly toward a male terminal insertion opening at an outer end of said elastic curled portion; and

a pair of electric contact portions each formed integral with said elastic curled portion and extending from a middle end of said elastic curled portion so as to be bent outwardly along the inner surface of said base plate portion at an inner end of said elastic curled portion, each of said electric contact portions being formed with a secondary inclined guide portion extending upwardly so as to intersect the primary inclined guide portion of said elastic curled portion at an outer end of said electric contact portion.

5,295,875

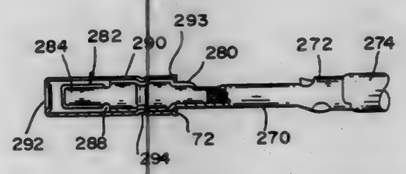
MICROPIN CONNECTOR SYSTEM

Willard B. McCardell, Rochester, Mich., assignor to Cardell Corporation, Rochester Hills, Mich.

Continuation of Ser. No. 767,636, Sep. 30, 1991, abandoned, which is a division of Ser. No. 670,757, Mar. 15, 1991, Pat. No. 5,100,346. This application Feb. 3, 1993, Ser. No. 13,231

Int. Cl.[5] H01R *13/11*

U.S. Cl. 439—851 **3 Claims**



1. An electrical socket for use with connectors having plastic retaining fingers, comprising:

a stamped sheet metal body portion having a first crimping region at a rearward end thereof, said crimping region having a first pair of opposed arms precision formed to extend around and to engage the insulating cover of an electrical connector wire to secure the body portion thereto and having a second crimping region spaced from said first crimping region and including a second pair of opposed arms precision formed to extend around and engage bare wire strands of an electrical connector wire to provide electrical contact therewith, said stamped sheet metal body portion further including a forward region having opposed edges, said forward region being precision formed to join said edges to provide a generally cylindrical head having a longitudinal axis, said forward region being shaped to form at the distal end of said head a pair of opposed contact fingers, said fingers being semicircular in cross section and extending slightly inwardly toward each other to provide a spring load grip on a pin terminal inserted therebetween;

a cylindrical hood surrounding only said head and said opposed fingers to protect said fingers and to provide a latching surface for retaining the socket in a connector, said hood being coaxial with said head and engaging said generally cylindrical forward region adjacent said distal end of said contact fingers, having an open forward end folded inwardly to provide a rounded inlet guide for a pin terminal, and having a rearward end portion precision formed to provide an open, outwardly flared, annular shoulder which is coaxial with said head and which has an inner surface which flares outwardly from engagement with said cylindrical head to provide a sharply outwardly angled, rearwardly-facing annular latching edge defining a substantially planar latching surface normal to said longitudinal axis of said head, said edge being adapted to engage a corresponding plastic retaining finger latching surface in a socket-receiving connector; and

means securing said hood to said cylindrical head.

5,295,876

RESILIENT METAL CONTACT BRUSH

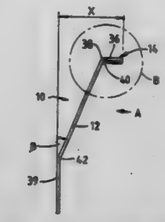
Christopher Cosby, Leighton Buzzard, and Paul Higgs, Northampton, both of United Kingdom, assignors to Delco Chassis Overseas Corporation, Detroit, Mich.

Filed Jan. 21, 1993, Ser. No. 6,884

Claims priority, application United Kingdom, Jan. 25, 1992, 9201661

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—862 **5 Claims**



1. A resilient metal contact brush comprising: a strip-like metal member having at one end thereof a contact head protruding at an angle to the plane of the strip-like member and at the other end thereof a fixing means, said contact head being an integral portion of the strip-like member and being formed by the juxtaposition of two flat ear-like protrusions formed on the strip-like member adjacent said one end thereof, each ear-like protrusion being initially located at a respective edge of, and in the plane of, said strip-like member adjacent said one end thereof, characterized in that the contact head is formed by first bending each ear-like protrusion through an angle of 180° to place it in close contact with a central portion of the strip-like member adjacent said one end, to produce a head portion having at least double the thickness of the strip-like member, and then bending the head portion thus formed at an angle to the plane of the strip-like member along a bend line adjacent said head portion which extends at right angles to a longitudinal axis of the strip-like member.

5,295,877

SPEED DETECTING SYSTEM FOR MARINE PROPULSION UNIT

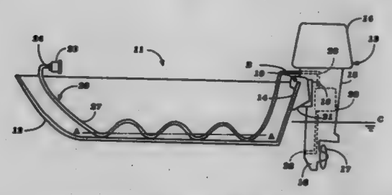
Isao Kanno, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Nov. 30, 1992, Ser. No. 982,843

Claims priority, application Japan, Dec. 5, 1991, 3-348332

Int. Cl.[5] B60L *1/14*

U.S. Cl. 440—2 **12 Claims**



1. A pressure sensitive speed indicator for a watercraft, said speed indicator including a conversion unit adapted to convert a fluid pressure into a speed signal, said conversion unit having a pressure inlet port, a water pressure sensing port positioned to receive dynamic water pressure as said watercraft travels through a body of water, and conduit means for interconnecting said pressure sensing port to said pressure inlet port for transmitting a fluid pressure signal thereto, said conduit means having a low portion connected at its outlet end to said pressure inlet port and a first high portion higher than the lowest part of said lowest portion and said water pressure sensing port, said conduit means having a volume between said pressure sensing port and said first high portion of volume sufficient that at the highest expected watercraft speed, the fluid pressure at said pressure sensing port will not cause water to flow past said first high part in said conduit means into said lower portion.

5,295,878

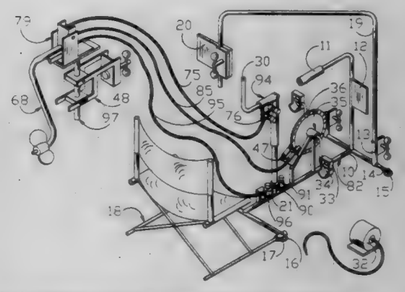
MUD BUG

Ben Guidry, Rt. 5, Box 3445, Sulphur, La. 70663

Filed Feb. 27, 1992, Ser. No. 842,537

Int. Cl.[5] B63H *16/20*

U.S. Cl. 440—28 **2 Claims**



1. A manual boat propulsion driver comprising:

a portable carrying frame supporting a telescoping adjustable steering handle which remotely controls the steering of a portable remote outdrive through a first flexible sheathed push-pull cable and remotely controls the lifting and lowering of said outdrive through a second flexible sheathed push-pull cable;

said frame removably supporting an adjustable boom;

said adjustable boom including attaching means for remotely supporting said outdrive;

said frame including adjustable outriggers having mounting pads;

said frame including a mounting with a seat;

said frame including a drive mechanism having a crank assembly including pedals, each having a clip-on heel rest with a counterweight;

said drive mechanism including a large bevel gear driving an idler gear which drives a smaller bevel gear, said smaller bevel gear turns a first rotating flexible sheathed cable as to transfer operator energy to said outdrive to produce forward and reverse propeller rotation; and

said drive mechanism having attachment means for a second rotating flexible sheathed cable which powers an air compressor.

5,295,879

SOUND DEADENING PAD FOR AN OUTBOARD MOTOR

Peter W. Meier, Stuart, Fla., and Chris W. Slater, Johns, V.I., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 665,017, Mar. 5, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 915,793

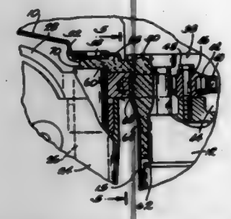
Int. Cl.[5] B63H *21/36*

U.S. Cl. 440—77 **15 Claims**

1. A marine propulsion device comprising a rigid assembly

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including a powerhead, and a lower unit rigidly connected to said power head and supporting a propeller shaft driven by said powerhead, a swivel bracket spaced from said rigid assembly and adapted to allow pivotal movement of said rigid assembly around a generally vertical steering axis, a steering linkage between said swivel bracket and said rigid assembly and including a portion spaced forwardly from said lower unit, and means including a resilient pad located forwardly of said lower unit and substantially surrounding and engaging said portion of said linkage for deadening noise generated by said power head and at least partially filling the space between said linkage portion and said rigid assembly.

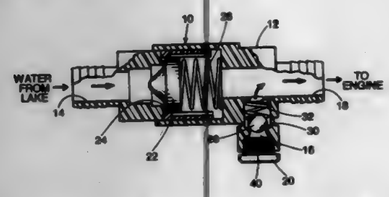


5,295,880

FLUSHING VALVE FOR INBOARD BOAT ENGINES

Marty E. Parker, Paso Robles, Calif., assignor to Tait International, Inc., Paso Robles, Calif.

Filed Jan. 11, 1993, Ser. No. 2,581
Int. Cl.[5] B63H *21/38*
U.S. Cl. 440—88 **9 Claims**



1. A flushing valve for an inboard boat engine that is installed in a conduit normally used for conducting ambient water to the engine for cooling it, said flushing valve comprising in combination:

a hollow body including a first port, a second port, and a third port;

said hollow body containing a first biased check valve preventing outward flow through said first port and preventing inward flow through said first port until the outside pressure exceeds the inside pressure by P_1, and permitting inward flow in relation to the difference between the outside pressure and the inside pressure when the outside pressure exceeds the inside pressure by at least P_1, whereby the flow of ambient water to the engine is modulated in relation to the engine speed to avoid overcooling the engine at low speeds;

said hollow body containing a second biased check valve preventing outward flow through said second port and preventing inward flow through said second port until the outside pressure exceeds the inside pressure by P_2 where P_2 is greater than P_1;

first means for connecting said first port to the conduit for receiving the ambient water;

second means for removably connecting said second port to a supply of a flushing fluid; and,

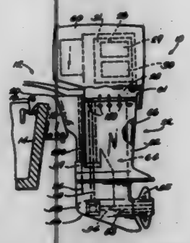
third means for connecting said third port to the conduit for discharging liquid from said third port to the engine.

5,295,881

MARINE PROPULSION DEVICE WITH COOLANT WATER PASSAGES

Paul W. Breckenfeld, Kenosha, Wis., and George L. Broughton, Zion, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 789,909, Nov. 12, 1991, abandoned, which is a division of Ser. No. 567,762, Aug. 15, 1990, Pat. No. 5,083,949, which is a division of Ser. No. 316,417, Feb. 27, 1984, Pat. No. 4,966,567. This application Nov. 10, 1992, Ser. No. 974,316
Int. Cl.[5] B63H *21/32*
U.S. Cl. 440—89 **7 Claims**



1. A marine propulsion device comprising an internal combustion engine including an engine block having therein a water jacket and having a lower face which includes therein an exhaust gas outlet port and a recess, a drive shaft housing connected to said lower face of said engine block, a propeller shaft rotatably supported by said drive shaft housing and adapted to support a propeller, a drive shaft extending through said drive shaft housing and including an upper end driven by said engine and a lower end drivingly connected to said propeller shaft, an exhaust housing located at least partially within said drive shaft housing and including an exhaust passage communicating with said exhaust gas outlet port, and an upper face mating with said lower face of said engine block and including therein a recess located in opposed relation to said recess in said lower face, a water passage extending in and defined by said recess in said lower face of said engine block and by said recess in said upper face of said exhaust housing, said water passage having an inlet located in said recess in said upper face, and an outlet located in said recess in said lower face, spaced horizontally from said inlet, and communicating with said water jacket, said water passage extending in adjacent heat exchanging relation to said exhaust gas outlet port, and means connected to said inlet for supplying water to said inlet.

5,295,882

MARINE SIGNAL DEVICE

Kevin McDermott, 196 Phillips Dr., Hampstead, Md. 21074

Continuation of Ser. No. 726,771, Jul. 8, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 953,754
Int. Cl.[5] B63C *9/20*
U.S. Cl. 441—16 **21 Claims**

1. An elongated marine signaling device in a tubular housing which may be deposited to float erect in a body of water to identify a location by emission of an omnidirectional light above the prevailing water line from a lamp, wherein the improvement comprises:

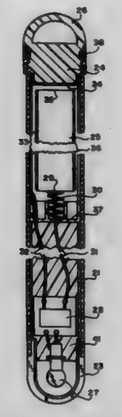
a) a battery power supply for said lamp;

b) means for the automatic movement of said battery power supply to a first location within the elongated tube of said signaling device below that location required for erection upon deployment in said body of water to effect a lower center of gravity for accelerating erection and for vertical stability of said signaling device in the presence of wave motions in said body of water;

c) means responsive to downward gravitational force acting upon the mass of said battery power supply and the counteracting upward buoyancy force acting upon said signaling device for an automatic closure of the contacts of an electrical switch to apply battery power to said lamp;

d) means for the automatic movement, responsive to said gravitational force, of said battery power supply to a second location within said signaling device upon stowage aboard ship with said lamp positioned below said battery power supply, for opening said automatic electrical switch for extinguishing said lamp throughout a wide range of roll and pitch motions of said ship; and

e) a spring under compression, said spring, firstly, for supplementing said gravitational force upon said battery power supply when said signaling device is deployed in said body of water for acceleration and reduction of the time for erection and lamp activation of said signaling device with continuous application of spring force in cooperation with said gravitational force for increased pressure between said contacts for reliable closure of said automatic electrical switch; said spring, secondly, when said signaling device is stowed aboard ship in an inverted orientation, for opposing said gravitational force upon said battery power supply to support said battery power supply while said contacts of said automatic electrical switch are opened to deactivate said lamp.

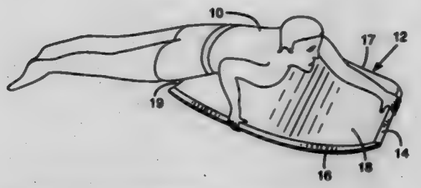


5,295,883

BODYBOARD WITH STIFFENING REINFORCEMENT

Steven M. Moran, Long Beach, Calif., assignor to Kranco, San Francisco, Calif.

Filed Feb. 15, 1991, Ser. No. 656,556
Int. Cl.[5] B63B *1/00*
U.S. Cl. 441—65 **3 Claims**



1. A bodyboard, comprising:

an elongate board having a semi-rigid foam core,

a bottom skin covering the underside of the foam core providing a surface for planing on water,

at least one layer of foam between the bottom skin and the foam core,

a stiffening layer in the form of an open pattern, cross-hatched fiber mesh formed of thermoplastic nonfoam fibers interlocked together at selected intersection points and having openings between the fibers in the open pattern, wherein the ratio of fiber thickness-to-fiber opening area is in the range of between about 1-to-8 and 1-to-25, and

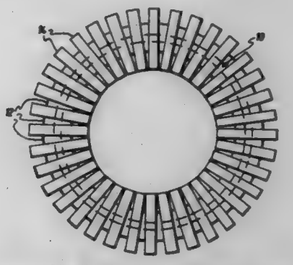
the fiber mesh being generally coextensive with the bottom skin of the board and interposed between the layer of foam and the foam core, and the layer of foam and the foam core being joined to one another through the openings between the fibers in the mesh, whereby the fibers of the mesh are embedded in and surrounded by foam.

5,295,884

FLOAT ASSEMBLY

Steven G. Whiteley, 64 Sandy Acres Close, Waterthorpe, Sheffield S19 6LT, England

Filed Sep. 8, 1992, Ser. No. 941,798
Claims priority, application United Kingdom, Sep. 10, 1991, 9119346
Int. Cl.[5] B63C *9/08*
U.S. Cl. 441—122 **3 Claims**



1. A float assembly for use in maintaining a person afloat, said assembly comprising a tubular core in the form of a ring and a plurality of buoyant rings made of plastics foam threaded on said core, the buoyant rings being of a plurality of different diameters and said buoyant rings of different diameters being arranged in alternation to each other, and the core being formed by a length of material having opposite ends juxtaposed and provided with interconnection means for forming said core into a closed loop, said rings overlying said core so as to substantially cover said interconnection means, the length of material comprising a tubular length with juxtaposed ends joined by a smaller diameter connecting plug member inserted in said ends and constituting said interconnection means.

5,295,885

INNER TUBE HAMMOCK/SEAT FOR WATER/SNOW RECREATION

Thomas P. Karl, 307 Mt. Vernon Ave., Alexandria, Va. 22301

Filed Feb. 16, 1993, Ser. No. 18,002
Int. Cl.[5] B63D *35/76*
U.S. Cl. 441—131 **2 Claims**

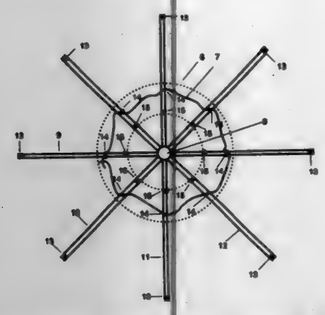
1. An inner tube recreational vehicle for supporting a person or other matter thereon, said inner tube recreational vehicle comprising:

an inflatable inner tube having a central opening therethrough;

a seat, said seat comprising a plurality of straps each having a free end, each said strap being connected to another said strap by a first connection means, each said strap further having a second connection means located on said free

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end thereof, each said strap having a third connection means located between said second connection means and said first connection means, said second connection means and said third connection means being adapted for coupling to each other, each said strap having a fourth connection means located between said second connection means and said third connection means, and said seat further comprising a rope, said rope being attached to each said fourth connection means;



wherein said inner tube recreational vehicle is formed by locating said first connection means in the center of said central opening, passing said free ends of said straps around said inner tube and coupling said second connection means and said third connection means to each other and thereby encircling the periphery of said inner tube with said rope attached at said fourth connection means and providing said seat within said central opening of said inflatable inner tube.

5,295,886

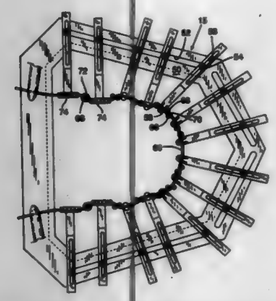
ORTHODONTIC ARCHWIRE SHAPING METHOD AND ARCHWIRE-SEGMENT FORMING TEMPLATES

Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405

Continuation-in-part of Ser. No. 684,053, Apr. 11, 1991, Pat. No. 5,100,316, which is a continuation-in-part of Ser. No. 472,362, Jan. 29, 1990, Pat. No. 5,011,405, which is a continuation-in-part of Ser. No. 249,453, Sep. 26, 1988, Pat. No. 4,909,735. This application Feb. 26, 1992, Ser. No. 842,234

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—24 **19 Claims**



1. A method of forming an orthodontic archwire to fit into archwire slots in a plurality of orthodontic brackets positioned on a patient's teeth to establish a predetermined archform, the method comprising:

determining a relative position of archwire slots in the brackets such that the archwire slots are positioned in a curved arrangement corresponding to the predetermined archform;

determining a set of shapes required for segments of the archwire between the brackets to conform the archwire to the curved arrangement of the archform;

clamping segments of an archwire into archwire-segment forming templates replicating the required set of shapes; and

forming the archwire as it is clamped in the archwire-segment forming templates to shape the archwire overall to the curved arrangement of the archform.

5,295,887

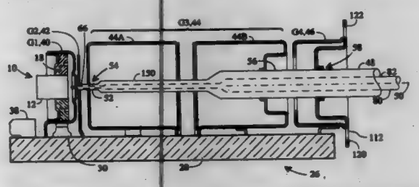
K-G1 ELECTRODE SPACING SYSTEM FOR A CRT ELECTRON GUN

Chester L. Zdanowski, Westmont, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 16, 1993, Ser. No. 78,939

Int. Cl.[5] H01J *9/18, 9/42*

U.S. Cl. 445—63 **20 Claims**



1. An apparatus for spacing a dispenser cathode in a cathode eyelet of a beaded assembly of a CRT electron gun at a fixed distance from an adjacent apertured grid electrode in the beaded assembly comprising:

a) means for holding the beaded assembly over a probe;

b) the probe constructed and arranged to pass through the apertures of the beaded assembly, the probe including:

1) an outer shaft having a shoulder for contacting a registration surface of the adjacent electrode, and

2) an inner shaft movable within and extensible from the outer shaft and having a tip sized to pass through the aperture of the adjacent electrode;

c) means for extending the inner shaft a predetermined distance from the outer shaft shoulder;

d) metrology means for detecting and quantifying movement of the inner shaft; and

e) means for adjustably placing the cathode in the cathode eyelet and bringing the cathode into contact with the inner shaft tip,

whereby the distance of the cathode from the adjacent electrode may be determined in real time and adjusted to the proper distance.

5,295,888

SAVING BOX

Teruhiro Tsutsumi, Hamamatsu, Japan, assignor to Shintowa Industry, Co., Ltd., Shizuoka, Japan

Filed Jul. 16, 1993, Ser. No. 93,357

Claims priority, application Japan, Jul. 30, 1992, 4-064192[U]

Int. Cl.[5] A45C *1/12*

U.S. Cl. 446—10 **6 Claims**

1. A saving box according comprising:

a cylindrical box body having a closed bottom;

a plurality of coin reservoirs each having a different diameter and formed on said closed bottom at proper spaces in a predetermined direction in order of diameter;

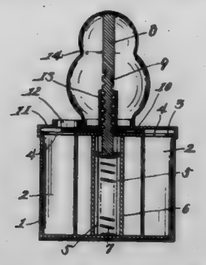
a sorting disc acting as an upper surface of said box body and provided with a plurality of openings corresponding to said coin reservoirs;

a guide sleeve formed within said box body at a central portion thereof and having a vertical groove;

an operating rod engaging with said vertical groove and extending upwardly of said box body;

spring means disposed within said guide sleeve and normally biasing said operating rod upwardly;

moving blade means slightly contacting an upper surface of said sorting disc and engaging a spiral groove formed in an outer peripheral surface of said operating rod;



an outer surface disc overlaid on and spaced away, by a predetermined distance, from an upper surface of said moving blade means and having a coin insertion port; and

a soft formative substance having a proper form mounted on said surface disc, an upper extension end of said operating rod being in opposite relation to an inner surface of a top portion of said soft formative substance.

5,295,889

MAGNETICALLY JOINTED TOY FOR EMITTING STIMULI

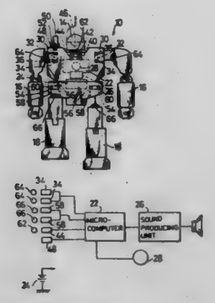
Takio Ejima, Sakura, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,264

Claims priority, application Japan, Jul. 6, 1992, 4-202044

Int. Cl.[5] A63H *33/06, 3/28*

U.S. Cl. 446—91 **12 Claims**



1. A combined toy comprising:

a toy body;

at least one attachment detachably combined with said toy body;

means for attaching the toy body and the attachment including a magnet, a pair of conductive elements sandwiching the magnet, and a semispherical electrically conductive member, which will be attracted by the magnetic force field to adhere to the conductive elements;

a stimulus producing means for producing at least one predetermined stimulus appealing to the sensitory senses of a human; and

circuit means for interconnecting the means for attaching and the stimulus producing means so that the connection of the semispherical electrically conductive member will activate the stimulus producing means, said stimulus producing means being provided in at least one of said toy body and attachment so as to be actuated when said attachment is combined with said toy body.

5,295,890

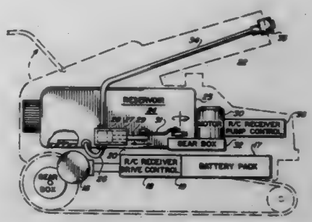
REMOTELY CONTROLLED TOY VEHICLE WITH WATER EJECTION CAPABILITIES

Jeff D. Myers, 12629 N. Tatum Blvd. Suite 206, Phoenix, Ariz. 85032

Filed Jan. 19, 1993, Ser. No. 5,793

Int. Cl.[5] A63H *29/10, 23/04, 17/00, 30/04*

U.S. Cl. 446—176 **5 Claims**



1. A model vehicle for generating a stream or burst of water under control of a remote transmitter transmitting radio signals to a receiver on board the vehicle comprising:

vehicle movement means featuring a drive train and propulsion motor

an on-board container being a source of water,

a piston actuated cylinder pump comprising a piston and piston rod mounted on board the model vehicle,

a water cannon mounted on said vehicle,

pipe means for interconnecting said piston actuated cylinder pump with said cannon and said source of water,

a transmitter for transmitting radio signals to said vehicle,

a receiver mounted on board said vehicle for receiving a first signal from said transmitter,

motor means mounted on said vehicle and actuated by said first signal for actuating said piston and piston rod to disperse a stream or burst of water from said source through said cannon,

said motor means comprising a D.C. motor connected through a drive means to said piston actuated cylinder, and

a first control means mounted on board said vehicle for receiving a second signal from said transmitter for controlling the vehicle movement means of said vehicle.

5,295,891

HOLDING DEVICE FOR INFLATABLE BALLOONS

Alfons Schalk, Osteranger 3, D-8197 Königsdorf, Fed. Rep. of Germany

PCT No. PCT/EP90/01734, § 371 Date Jun. 9, 1992, § 102(e) Date Jun. 9, 1992, PCT Pub. No. WO91/05592, PCT Pub. Date May 2, 1991

PCT Filed Oct. 12, 1990, Ser. No. 847,091

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 8912171; Mar. 2, 1990, 9002459

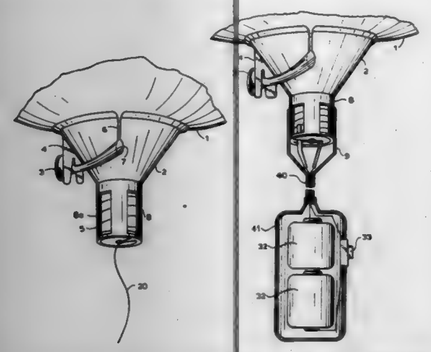
Int. Cl.[5] A63H *27/00*

U.S. Cl. 446—222 **15 Claims**

1. A holding device for inflatable balloons (1) which have a balloon envelope and a filling connection (3), said device including a holding part which has the shape of a bowl (2; 2') through which said filling connection extends, said bowl (2; 2') having a circumferential wall that is open towards the balloon (1), clamping means (4, 6, 7; 4, 6', 7') on said bowl for airtight

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clamping off of the filling connection (3) of the balloon (1) after its inflation, the clamping means including a groove (6, 7; 6', 7') formed in and extending through the circumferential wall of the bowl (2; 2'), the groove starting from a first edge (2a) of the bowl (2; 2') which rests against the balloon envelope upon use and being intended to receive the filling connection (3) of the balloon (1), and a clamping device (4) for the end of the filling connection (3) of the balloon (1), said clamping device being arranged on the outside of the circumferential wall of the bowl (2; 2'), said bowl (2; 2') forming the reflector



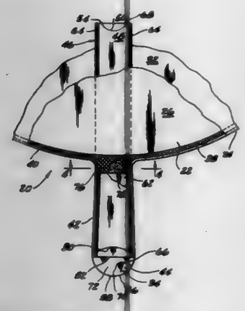
of an illuminating device for the balloon (1), and an illuminating device, said illuminating device including a lamp socket arranged in said bowl (2; 2') and remote from said first edge (2a) thereof, said lamp socket being constructed and disposed to receive a lamp and position same outside of said envelope and said filling connection, said clamping device (4) being formed by a wall which extends radially outward away from the circumferential wall of the bowl (2; 2') and a clamping groove (4a) in said wall tapering in a direction toward said first edge (2a) to receive the filling connection (3).

5,295,892

BALLOON HAVING A SELF SEALING VALVE AND METHOD OF MAKING SAME

Rick L. Felton, Festus, Mo., assignor to Show-Me Balloons, Festus, Mo.

Filed Nov. 4, 1992, Ser. No. 971,194
Int. Cl.[5] A63H *3/06*
U.S. Cl. 446—224 **7 Claims**



1. A balloon comprising:

first and second balloon sheets each having a body portion and a stem portion extending outwardly from the body portion and terminating at a stem end, the body portion and stem portion of each sheet defining a periphery, said balloon sheets being bonded together generally around their peripheries to define a balloon body and balloon stem, the stem portion of said first balloon sheet being shorter than the stem portion of said second balloon sheet so that the stem end of said second balloon sheet extends beyond the stem end of said first balloon sheet to define an extended portion of said second balloon sheet when said first and second balloon sheets are bonded together, the stem portions of said balloon sheets having edge margins extending from adjacent the body portions to adjacent their stem ends; and

a self-sealing valve comprising first and second valve sheets each having an inlet end, an outlet end, and an intermediate region between the inlet and outlet ends, said valve sheets being positioned face-to-face and bonded together to define a valve inlet and a valve outlet, the inlet end of said second valve sheet extending outwardly beyond the inlet end of said first valve sheet to define an extended portion of said second valve sheet when said first and second valve sheets are bonded together;

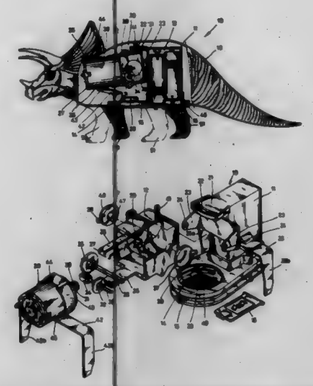
said valve being disposed between and bonded to said first and second balloon sheets generally at the balloon stem with the inlet end of said second valve sheet overlying the extended portion of said second balloon sheet and being coterminous with the stem end of said second balloon sheet, said valve being bonded to said balloon sheets along the edge margins of the balloon stems to form first and second edge seals extending from adjacent the body portion of balloon sheets to adjacent the stem ends, the extended portion of said second balloon sheet and the extended portion of said second valve sheet being bonded together to form a guide tongue for facilitating insertion of a gas supply nozzle into the valve inlet during inflation of the balloon.

5,295,893

DRIVING STRUCTURE FOR A TOY ANIMAL

Chien-Wang Chiu, P.O. Box 96-405, Taipei 10098, Taiwan

Filed Jan. 11, 1993, Ser. No. 2,988
Int. Cl.[5] A63H *11/20*
U.S. Cl. 446—356 **5 Claims**



1. A driving structure for a toy animal having an animal-like skin including two rear feet and two front feet, which driving structure comprises:

a) a supporting casing including two displacing plates for insertion into the two rear feet, means for mounting the supporting casing to the animal skin, a pair of supporting arms at a front of the supporting casing, each supporting arm having a hole therein, and an extension plate having a curvature slot at a top front of the support casing;

b) a rotary mechanism casing, a swinging link movably engaged within the curvature slot of the extension plate, a first transmission shaft extending through opposed sides of the rotary mechanism casing, a bias wheel mounted on each of two ends of the first transmission shaft, each bias wheel having an outer convex surface and a cam stud extending outwardly therefrom, the cam studs being engaged within the holes of the supporting arms, and a pair of extension arms extending from a front of the rotary mechanism casing:

c) a motor;

d) a motor mounting means carried by the motor for engagement by the extension arms to secure the motor to the rotary mechanism casing, and two swinging arms carried by the motor mounting means for insertion into the two front feet of the skin; and

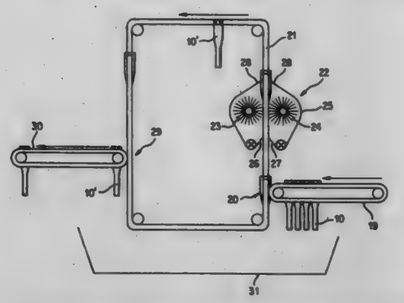
e) a transmission structure disposed within the rotary mechanism casing for drivingly connecting the motor to the first transmission shaft to rotate same and impart movement to the rotary mechanism casing.

5,295,894

DEVICE FOR REMOVING LIDS FROM HONEYCOMBS

Ludo De Cleroq, s.c. Mithras Templar c.v. Kasteel Beyaerdstraat 96, B-1120 Brussels, Belgium

Filed Sep. 23, 1992, Ser. No. 948,356
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1991, 4131682; Apr. 22, 1992, 4213156
Int. Cl.[5] A01K *59/02*
U.S. Cl. 449—54 **11 Claims**



1. A device for removing wax lids from honeycomb cells, comprising:

a frame casing;

a support device provided on top of said frame casing;

a rotatable cylindrical brush supported by said support device for rotation thereon and for engaging and removing the lids from the honeycomb cells, said brush provided with firm, flexible bristles constructed from a high wear-resistant plastic material, said bristles arranged in a plurality of rows, each row provided at an inclined angle to the longitudinal axis of said brush, said bristles being uniformly distributed across the peripheral surface of said brush; and

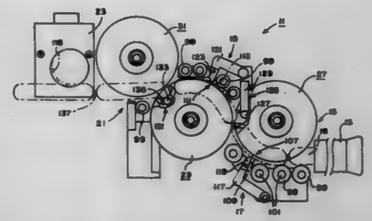
a trough provided below said frame casing for receiving the removed lids.

5,295,895

METHOD AND APPARATUS FOR SKINNING ENCASED FRANKFURTERS AND THE LIKE

Thomas A. Klyce, 4436 Ferndale, Memphis, Tenn. 38122, and Jerry W. Davis, 4115 Sunny Meadows, Bartlett, Tenn. 38135

Filed Jun. 21, 1993, Ser. No. 79,408
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—50 **13 Claims**



1. Apparatus for skinning the casing from a chain of encased frankfurters and the like comprising:

(a) conveying means for loosening the casing of the frankfurters and at the same time conveying the frankfurters endwise in a moving chain of frankfurters along a sinuous path and for applying tension to the chain of frankfurters to provide at least a pair of stressing stations at which the chain of frankfurters is bent and the casing thereof is stressed at least along one side; and

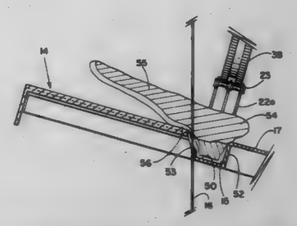
(b) knife means provided at least at one of said stressing stations for slitting the stressed side of the casing of the chain of frankfurters as the chain moves by one of said stressing stations.

5,295,896

BONE-CUTTING MEAT-RECOVERING UNIT

Ronald A. Petersen, 802-20th St. SW., Austin, Minn. 55912

Filed Nov. 10, 1992, Ser. No. 966,532
Int. Cl.[5] A22C *17/00*
U.S. Cl. 452—135 **18 Claims**



1. A bone-cutting meat-recovery unit comprising:

(a) a support having an upper surface constructed and arranged to support a rack of bones having an elongated spinal column with a strip of recoverable meat extending therealong;

(b) an elongated bone-guide mechanism fixedly located along said upper surface of said support and constructed and arranged to receive the spinal column of such a rack of bones longitudinally therealong and against which such a rack of bones may be guided into a cutting mechanism while supported by said upper surface in elevated relation thereto at an acute angle relative to the latter, said mechanism defining a guide-line along which such a rack of bones may be guided thereby into such a cutting mechanism; and

(c) a powered cutting member disposed within said guide

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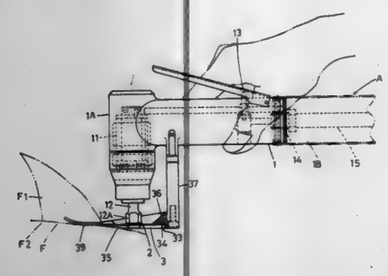
mechanism and extending immediately above said upper surface and defining a vertical cutting line in position to engage and sever the recoverable meat-bearing portions of such a rack of bones, the cut being along a line extending downwardly and inwardly from above the featherbones towards the spinal column at an angle relative to a plane extending vertically to said upper surface and longitudinally through and generally parallel to said guide mechanism, to thereby cut and recover the major portion of the strip of meat disposed adjacent to the spinal column and featherbones; said spinal column is moved along and against said guide mechanism, past said vertical cutting line.

5,295,897

FISH FIN REMOVER

Nobuo Kudo, and Tadashi Hikio, both of Wakayama, Japan, assignors to Marucho Shokuhin Kako Kabushiki Kaisha, Wakayama, Japan

Filed Apr. 19, 1993, Ser. No. 47,891
Claims priority, application Japan, Dec. 4, 1992, 4-83741
Int. Cl.[5] A22C *25/14*
U.S. Cl. 452—166 **2 Claims**



1. A fish fin remover comprising:
a main structure containing a rotary driving means and a rotary shaft which extends outward from the main structure, said rotary shaft is driven by the rotary driving means;
a rotary blade mounted onto the rotary shaft of the main structure; and
a guide frame arranged extending throughout the circumferential edge of the rotary blade so as to cover the edge of the rotary blade from the upper edge, said guide frame having a gap clearance for permitting a fish fin to pass, said guide frame having a step provided in an inside wall thereof for allowing the circumferential edge of the rotary blade to be accommodated inside the guide frame so that the lower surface of the rotary blade is on substantially a level with a bottom of the guide frame at least on both sides of the fin pass clearance.

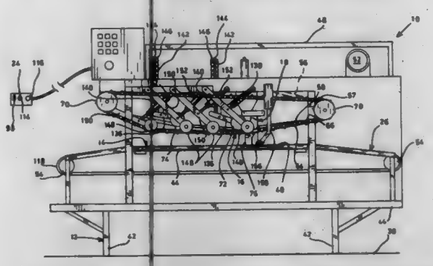
5,295,898

LOIN PULLER

L. George Andre, Hamilton, Ohio; Lawrence D. Boody, Roate, Tenn.; David R. Chappell, Loudon, Tenn., and Joseph C. Gundlach, Anderson, Tenn., assignors to Acraloc Corporation, Oak Ridge, Tenn.

Filed Dec. 22, 1992, Ser. No. 995,131
Int. Cl.[5] A22C *25/18*
U.S. Cl. 452—171 **20 Claims**

1. An improved loin puller for pulling a selected carcass half and separating the loin and ribs thereof from the fat thereof, said improved loin puller comprising:
a frame for elevating a working surface a selected distance above a support surface;
a primary support/conveyor carried by said frame for conveying at least a back portion of said carcass half toward, a selected location
a secondary support carried by said frame for supporting at least a portion of a front quarter including said ribs of said carcass half;
a first cutting blade carried by said frame proximate said selected location, said first cutting blade being disposed a selected distance above said conveyor to define a depth of cut, said first cutting blade defining a selected cutting contour for separating said loin from said fat;
a second cutting blade carried by said frame proximate a second selected location, said second cutting blade being disposed a selected distance above said conveyor to define a depth of cut, said second cutting blade defining a selected cutting contour for separating said ribs from said fat;



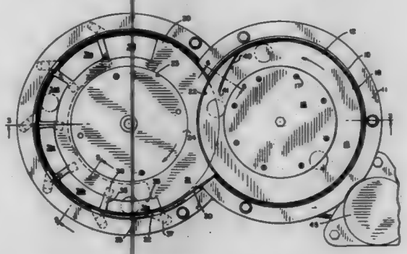
a first cutting width adjustor carried by said frame for selectively narrowing and widening said cutting contour of said first cutting blade;
a second cutting width adjustor carried by said frame for selectively narrowing and widening said cutting contour of said second cutting blade;
a loin gripper carried by said frame for gripping said loin and forcing said loin and said fat in a direction toward said primary support/conveyor; and
a rib gripper carried by said frame for gripping said ribs and forcing said ribs and said fat in a direction toward said secondary support.

5,295,899

TWO DISC COIN HANDLING APPARATUS

Thomas P. Adams, 7524 Thomas Dr., Oconomowoc, Wis. 53066; Joseph P. Hanus, 243 West St., Johnson Creek, Wis. 53186, and John H. Winkelman, W253 S4340 Meadowview Dr., Waukesha, Wis. 53186

Filed Mar. 3, 1992, Ser. No. 845,122
Int. Cl.[5] G07D *3/16*
U.S. Cl. 453—10 **10 Claims**



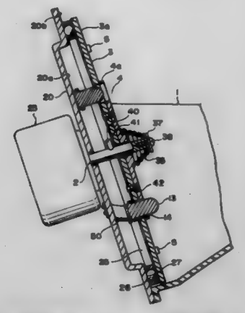
2. A coin sorter, comprising:
a hopper;
a rotatable hard disc forming the bottom of the hopper;
a stationary sorter plate to one side of the rotatable disc and having a generally circular sorting track beginning at a point adjacent to the perimeter of the hard disc, said sorter plate having a top surface that forms an extension of the top surface of the hard disc and is in the same plane; and
a rotatable resilient disc disposed above and opposing the top surface of the sorter plate and partially overlying the hard disc, the resilient disc being adapted to engage coins on the hard disc and to move the coins to and along the track.

5,295,900

COIN DISPENSING DEVICE

Tamotsu Tsuchida, and Yorio Suzukawa, both of Saitama, Japan, assignors to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,909
Claims priority, application Japan, Dec. 2, 1991, 3-357420
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—57 **11 Claims**



1. A coin dispensing device comprising a rotary plate mounted to a rotary shaft for use in dispensing a coin and a base plate oppositely disposed at a predetermined distance relative to said rotary plate, wherein said coin dispensing device comprises:
guide holes passing through said rotary plate;
agitating members each of which is cooperatively associated with each of said guide holes and which travels along a predetermined orbit on said base plate by means of rotation of said rotary plate; and
an extrusion member disposed on said base plate along the orbit so that said agitating members are caused to pass thereon, said extrusion member has a predetermined height relative to said base plate to enable a portion of said agitating member to protrude as an agitation protruding portion through said guide hole from said rotary plate, and is elastically deformed by a predetermined stress applied to said agitating member protruding from said rotary plate.

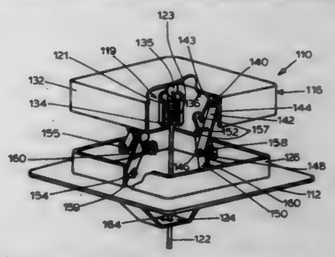
5,295,901

TOP SEALING CHIMNEY CAP

Walter Sexton, Foster, Ky., assignor to Lyemance International, Inc., Jeffersonville, Ind.

Filed Aug. 3, 1992, Ser. No. 924,730
Int. Cl.[5] F23L *17/10*
U.S. Cl. 454—4 **4 Claims**

1. An improved chimney damper and chimney cap system for use with a chimney flue comprised of
(a) a multi-sided support base securable to the top of the chimney flue;
(b) a plurality of bracket and spring means, each said bracket and spring means having first and second ends, the first end of which is secured to opposite sides of the support base; wherein the plurality of bracket and spring means is comprised of a plurality of bracket and spring assemblies wherein each bracket and spring assembly is comprised of a first and second bar, wherein said first end of said first bar and the first end of the second bar are rotatably secured to a pivot pin means, and the second end of the second bar is secured to the support base and wherein



there is secured to the pivot pin means and the first and bar is secured to the chimney cap, the second end of the first bar and the first end of the second bar are rotatably secured to a pivot pin means, and the second end of the second bar is secured to the support base and wherein there is secured to the pivot pin means and the first and second bars a coil spring means which biases the bars apart;
(c) a chimney cap secured to the second end of the plurality
(d) a damper cable secured to the chimney cap.

5,295,902

BIOLOGICAL SAFETY CABINET

Kuah T. Hock, Champaign, Ill., assignor to Forma Scientific, Inc., Marietta, Ohio

Filed May 7, 1992, Ser. No. 880,185
Int. Cl.[5] B08B *15/02*
U.S. Cl. 454—57 **24 Claims**



21. A biological safety cabinet comprising:
an enclosure having two side walls, a rear wall, a bottom wall defining a work surface, an air diffuser top wall and a front window below which access can be had to said work surface, said enclosure defining a work area;
a plenum surrounding at least a portion of said enclosure and communicating with said work area;
means for inducing a negative pressure within said plenum, said means for inducing a negative pressure creating a downwardly directed air curtain of work area air below said window tending to prevent interchange of ambient air external to said enclosure with work area air internal to said enclosure; and
a vertically oriented outwardly facing channel section having an open upper end secured to each said side wall adjacent said window, said plenum communicating with each said channel;
whereby ambient air and work area air within said air curtain adjacent upper lateral edges of said air curtain are accelerated downwardly to reduce a tendency of said ambient air and said side walls to decrease a velocity of

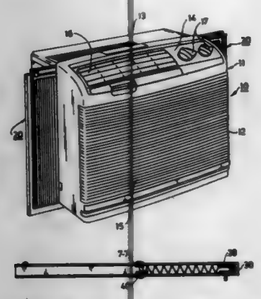
said air curtain, thereby increasing the strength of said air curtain and reducing a tendency for said ambient air and said work area air to interchange.

5,295,903

SIDE CURTAIN ASSEMBLY FOR AIR CONDITIONING UNIT

Theodore S. Bolton, Liverpool, and John H. Michaels, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 5, 1993, Ser. No. 14,391
Int. Cl.[5] F25D *23/12*
U.S. Cl. 454—203 **8 Claims**



1. An extendable side curtain assembly for use in a room air conditioner comprising:
an enclosure housing a window air conditioning unit, said enclosure further including a first vertically disposed locking member secured to a side wall thereof;
an adjustable frame containing an expandable curtain, said frame being slidably mounted in said enclosure adjacent to said side wall;
said frame further containing a second vertically disposed locking member joined to one end of said curtain and being movably mounted in said adjustable frame;
one of said locking members being a resilient U-shaped open-sided channel having a pair of opposed legs and a base, said open side of said channel facing the other locking member and containing a locking rib means mounted upon one leg of the channel that passes laterally into the entrance region of said channel opening; and
said other locking member being receivable within said channel opening of said one locking member, and containing a locking tab means for resiliently passing under the locking rib means to join together the members in locking engagement.

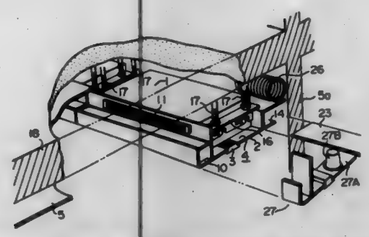
5,295,904

AIR CONDITIONING SYSTEM

Yukio Aoki; Masaji Yamashita, and Seiichi Iizima, all of Tochigi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,814
Claims priority, application Japan, Feb. 28, 1991, 3-055692
Int. Cl.[5] F24F *1/02, 13/072*
U.S. Cl. 454—233 **7 Claims**

1. An air conditioning system comprising: a plurality of profile elements attached to a ceiling of a room in a building and arranged to extend in line in such a manner as to define together with a bottom surface of the ceiling and a wall surface of the room a channel-like space and an air conditioner disposed in said space, wherein each of said profile elements has a substantially L-shaped cross section and includes a base extending toward said wall surface and a partition extending towards aid ceiling from a side edge of said base which is remote from said wall surface, the bases of all the profile elements have substantially the same widthwise dimension and the partitions of all the profile elements have substantially the same height, at least one of said profile elements has an air-flow opening formed in at least one of said base and said partition and connected to said air conditioner in a gas flow relationship to form an air outlet for air conditioned by said air conditioner,



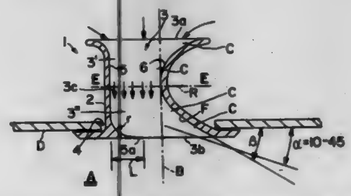
and at least another one of said profile elements has formed therein at least one air-flow opening to form an air inlet for room air to be sucked into said air conditioner whereby said air inlet and said air outlet are spaced from one another along said line of profile elements in said room for obtaining uniformity of temperature in said room.

5,295,905

AIR NOZZLE FOR A DIRECTED AIR FLOW INTO A ROOM

Per B. Simble, Nadderudveien 33, N-1340 Bekkestua, Norway

Filed Sep. 16, 1992, Ser. No. 930,427
Claims priority, application Norway, Mar. 21, 1990, 901309
Int. Cl.[5] F24F *13/06*
U.S. Cl. 454—286 **4 Claims**



1. In an air nozzle (1) for directed discharge of air into a room (A) and comprising a nozzle head (2) with an air channel (3) which is adjustably provided in a mounting opening (4) in a solid surface (D), which nozzle head (2) is rotatably provided in said mounting opening (4) with its axis of rotation (B) normal to the plane of said mounting opening (4), and with said air channel (3) extending from its inlet opening (3*a*) to its outlet opening (3*b*) with a decreasing cross sectional area (C) at least in the first longitudinal portion (3') of said air channel (3), with a change of direction in order to provide air discharge at an acute angle (α) with the plane of mounting opening (4); the improvement wherein said first longitudinal portion (3') of air channel (3) has the shape of a truncated eccentric funnel with an approximately circular inlet opening (3*a*) and with an elongated transition opening (3*c*) to a second longitudinal portion (3'') having an elongated outlet opening (3*b*), which transition opening (3*c*) is situated between said first and second longitudinal portions (3', 3'') in a region (E—E) for said change of direction of said air channel (3), two opposite wall faces of said air channel (3), as seen in section in the plane of change of direction of the air channel, forming two guide faces (5, 6), of which the first guide face (6) is curved, with the outer side of the curve facing the air channel, from said inlet opening (3*a*) past the region (E—E) for said change of direction, where said

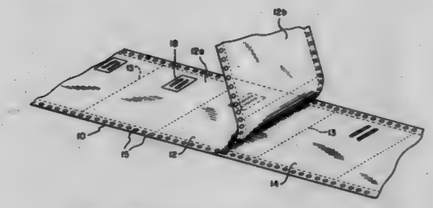
outer side of the curve continues as a tangential portion (F) to one longitudinal side of the elongated outlet opening (3*b*), and where the second guide face (5) extends substantially straight in parallel with the nozzle head axis of rotation (B) and with an outwards curved portion at said inlet opening (3*a*) and with an inwards curved portion in the shape of a lip (5*a*) at said outlet opening (3*b*), the radius of curvature (r) of said lip (5*a*) and the radius of curvature (R) of said first guide face (6) and the angle (β) between said tangential portion (F) and the plane of said mounting opening (4) determining the laminar shape and the angular direction (*a*) of the discharged air flow.

5,295,906

BUSINESS FORM OR MAILER HAVING AN IMAGABLE SURFACE

Hugh B. Skees, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed May 8, 1992, Ser. No. 880,694
Int. Cl.[5] B41L *1/22*
U.S. Cl. 462—18 **17 Claims**



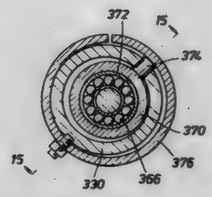
1. A mailer or business form comprising,
at least one exterior sheet having first and second major surfaces,
a transparent patch overlying at least a portion of said first surface of said sheet, the surface of said transparent patch facing said sheet including a coating comprising solvent soluble, water insoluble dye particles and an encapsulated solvent; said encapsulated solvent adapted to dissolve said dye particles upon the impact of an imaging force on said transparent patch to form a visible image within said coating which is viewable through said transparent patch.

5,295,907

RORQUE LIMITING DEVICE

Neil H. Akkerman, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Division of Ser. No. 676,841, Mar. 28, 1991, Pat. No. 5,195,721, which is a continuation-in-part of Ser. No. 518,942, May 4, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,240
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] F16D *7/04, 7/02;* F16K *31/04*
U.S. Cl. 464—37 **2 Claims**



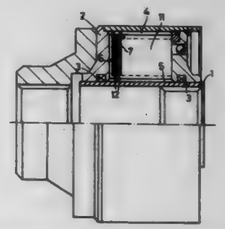
1. Apparatus for limiting the torque transmitted from a drive shaft to a driven shaft, comprising
a first body having a cylindrical portion and being adapted for rotation with one shaft and a second body having a cylindrical portion and being adapted for rotating the other shaft, the cylindrical portion of one body being mounted within the cylindrical portion of the other body for relative rotation with respect thereto about an axis which is eccentric to the axis of rotation of the one body,
a pin carried by the cylindrical portion of the other body for radial movement with respect thereto, said pin having inner and outer ends, and
means yieldably holding the inner end of the pin in direct engagement with the cylindrical portion of the one body to allow the drive shaft to rotate the driven shaft until the torque transmitted between them overcomes the yieldable holding means to allow the cylindrical portions of the bodies to rotate relatively to one another.

5,295,908

SPACING MECHANISM FOR THE PLATES OF A FLUID FRICTION COUPLING

Siegfried Schumann, and Wolfgang Gimpel, both of Lohmar, Fed. Rep. of Germany, assignors to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 866,083, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 561,970, Aug. 2, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 71,373
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1989, 3927586; Sep. 1, 1989, 3928976
Int. Cl.[5] F16D *7/02*
U.S. Cl. 464—45 **3 Claims**



1. A fluid friction coupling having at least one coupling hub, and a coupling housing rotatably supported on the coupling hub, comprising:
a first set of plates non-rotatably connected to the coupling hub; and
a second set of plates non-rotatably connected to the coupling housing, the plates of each of the sets of plates being disposed in an alternating sequence with the plates of one of the first and second sets being held at predetermined axial spacing from one another while the plates of the other of the first and second sets are axially movable, wherein the plates of the one set have spacing means including a predetermined number of spacing teeth each of which is bent out of the plane of the plate to form a Z-shape having a portion of said Z-shaped teeth substantially normal to the plane of the plate and two bending angles which are both 90 degrees so as to maintain constant axial spacing between the plates when axial force is applied to said spacing teeth.

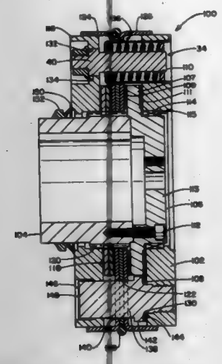
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5,295,909

COMPACT TORQUE LIMITING CLUTCH

David C. Heidenreich, Akron, Ohio, assignor to Power Transmission Technology, Inc., Sharon Center, Ohio

Continuation-in-part of Ser. No. 732,096, Jul. 18, 1991, Pat. No. 5,135,088. This application May 1, 1992, Ser. No. 877,148
Int. Cl.[5] F16D *7/02*
U.S. Cl. 464—48 18 Claims



1. A torque limiting clutch, comprising:
an input flange;
an output hub;
a pressure plate received upon said output hub;
a first friction disc interposed between said pressure plate and said input flange;
a keeper plate received by said hub, said keeper plate fixedly securing said first friction disc to said output hub; and
spring biasing means interposed between said input flange and said pressure plate for urging said pressure plate toward said input flange, said spring biasing means comprising a bolt having a collar of a selected geometric configuration, said pressure plate having a hole therein of said selected geometric configuration, said collar being received and retained from a rotation by said hole.

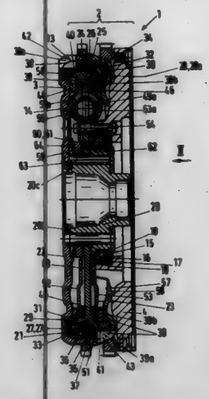
5,295,910

APPARATUS FOR DAMPING VIBRATIONS

Oswald Friedmann, Lichtenau, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Filed May 17, 1990, Ser. No. 525,141
Claims priority, application Fed. Rep. of Germany, May 22, 1989, 3916616
Int. Cl.[5] F16F *15/12*
U.S. Cl. 464—63 41 Claims

1. Apparatus for damping vibrations between an engine and a power train, comprising a plurality of flywheels including a first flywheel having first stops and an annular chamber and being connectable with the engine, and a second flywheel rotatable relative to said first flywheel and connectable with the power train by way of a clutch; and a damping device operating between said first and second flywheels and including energy storing means provided in said chamber and an output element having second stops and arranged to transmit torque to said second flywheel, said output element extending into said chamber substantially radially of said first flywheel and said energy storing means comprising at least one first and at least one second spring, said first and second springs being adjacent each other in the axial direction of said first flywheel and being angularly offset relative to each other in the circumferential direction of said first flywheel, said springs reacting against said first stops and bearing against said second stops and the stops for said at least one first spring being angularly offset relative to the stops for said at least one second spring in the circumferential direction of said first flywheel, the angular offset of said at least one first spring and said at least one second spring being such that the stressing of said springs between said first and second stops as a result of angular displacement of said first and second flywheels does not entail appreciable unbalancing of the apparatus.

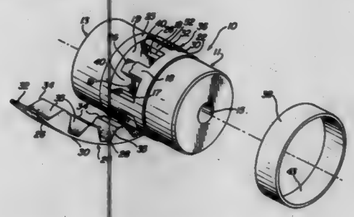


5,295,911

HORIZONTAL SHEAR MODE FLEXIBLE COUPLING

Raymond E. Hoyt, III, 26602 Via Gaviota, Mission Viejo, Calif. 92691; Jerry L. Hauck, 16548 San Andres, Fountain Valley, Calif. 92703, and Tom Artunian, 16291 Sundance La., Huntington Beach, Calif. 92649

Filed Jun. 5, 1992, Ser. No. 893,708
Int. Cl.[5] F16D *3/54, 3/72*
U.S. Cl. 464—88 15 Claims



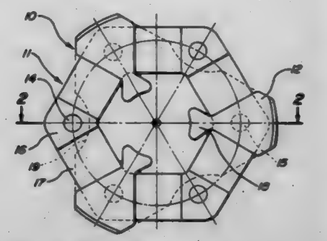
7. A flexible coupling comprising:
first and second hubs, each having respective first and second faces;
first and second pluralities of teeth extending from the respective one of said first and second faces, the teeth on said first face overlapping the teeth of said second face to form respective pairs of overlapped teeth with respective gaps between respective pairs of overlapped teeth;
a motion transmitting means extending generally around the hubs for engaging the overlapped teeth and cooperating with the teeth to transmit rotation from one of the hubs to the other; and
a retaining means positioned around the motion transmitting means for holding the motion transmitting means in contact with the teeth.

5,295,912

RESILIENT SHAFT COUPLING DESIGNED AS A COMPOSITE PART AND METHOD OF PRODUCING IT

Karl-Heinz Müller, Wissen, and Werner Hoffmann, Siegburg, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 780,767
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033594
Int. Cl.[5] F16D *3/78*
U.S. Cl. 464—93 16 Claims



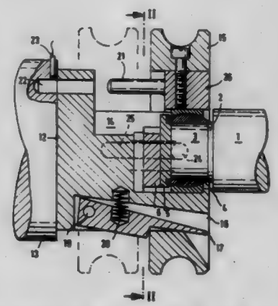
1. A resilient shaft coupling comprising:
a fiber reinforced resilient annular member comprising a joint disc with web regions and connecting regions, circumferentially alternating around said annular member;
at least one homogenous attaching element for connecting a shaft to the circumference of said annular member, the at least one attaching element having a plurality of integral flange arms; and wherein said resilient annular member is formed into the flange arms of the attaching element so as to fully enclose the connecting regions of the joint disc at the flange arms.

5,295,913

DEVICE FOR COUPLING A WINDING SHAFT PIN WITH A DRIVE SHAFT PIN

Udo Pyka, and Horst Teepe, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 977,979
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1991, 4137921
Int. Cl.[5] B65H *18/06, 18/10*
U.S. Cl. 464—106 10 Claims



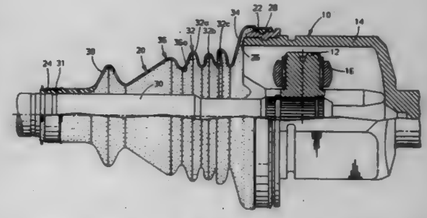
1. A device for coupling a winding shaft pin with a drive shaft pin, said drive shaft pin being provided with a radial recess, said winding shaft pin being held by a latching means in said radical recess to prevent relative rotation, characterized in that:
a self-aligning bearing (4) is provided on the winding shaft pin (3), an outer ring (4B) of said self-aligning bearing (4) pivotable about a transverse axis in relation to an inner ring (4A) of said self-aligning bearing (4) said inner ring possible and latchable in the radial recess (14), and
the winding shaft pin (3) being connected with the drive shaft pin (12) at one end thereof for torque transmission, independently of the bearing function provided by the self-aligning bearing.

5,295,914

THERMOPLASTIC ELASTOMER SEAL BOOT

Robin Z. Milavec, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 30, 1992, Ser. No. 953370
Int. Cl.[5] F16D *3/84*
U.S. Cl. 464—175 3 Claims



1. A low profile, long life plastic seal boot for a stroking constant velocity universal joint comprising:
the seal boot being produced from a thermoplastic elastomer and having a large diameter skirt at one end for attaching the seal boot to a round open end of a universal joint housing and a small diameter ring at an opposite end for attaching the seal boot to a drive shaft associated with the universal joint housing.
the seat boot having a generally cylindrical serpentine end section that comprises a plurality of convolutes serially arranged end-to-end and that is integrally connected to the skirt by a radial wall, the serpentine end section having a maximum diameter at a crest of one of the convolutes thereof that is substantially less than the diameter of the skirt,
the seal boot having an intermediate biconic section that has a large diameter end root that is integrally attached to a root of an adjacent convolute of the serpentine end section, the biconic section having a maximum diameter that is substantially less than the diameter of the skirt and less than the maximum diameter of the serpentine end section.
the biconic section having a root-to-root length that is substantially greater than the root-to-root length of any individual convolute of the serpentine end section and greater than the combined length of the convolutes of the serpentine end section,
the seal boot having a single convolute interconnecting the biconic section and the ring, the single convolute having a maximum diameter that is substantially less than the diameter of the skirt and a length that is greater than the length of any individual convolute of the serpentine end section but less than the root-to-root length of the biconic section.

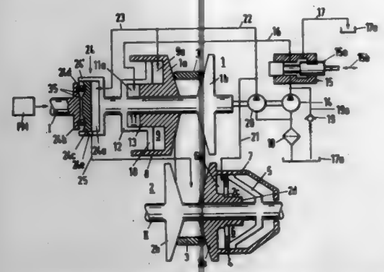
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5,295,915

CONTINUOUSLY VARIABLE SPEED TRANSMISSION

Oswald Friedmann, Lichtenau, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Fed. Rep. of Germany

Filed Oct. 19, 1992, Ser. No. 963,405
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1991, 4134641
Int. Cl.[5] F16H *9/18, 11/02*
U.S. Cl. 474—18 20 Claims



1. A continuously variable speed transmission comprising:
first and second sheaves rotatable about first and second axes, respectively, one of said sheaves comprising a first flange and a second flange coaxial with and movable axially toward and away from the first flange;
means for applying torque to said first sheave;
a tensionable endless flexible torque transmitting element trained over said sheaves;
means for moving said second flange to change the ratio of the transmission, and
means for varying the tension of said flexible element, said means for varying including a torque sensor rotatable about one of said axes and connected with said torque applying means, said torque sensor including
first and second opposing surfaces having at least one rolling element arranged therebetween and in contact therewith so as to generate torque and transmission ratio-dependent forces, said surfaces being configured such that said at least one rolling element is movable relative to said surfaces at least radially of said one axis in response to changes of said transmission ratio.

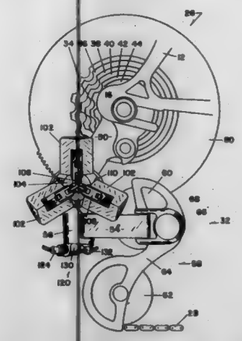
5,295,916

AUTOMATIC TRANSMISSION FOR MULTISPEED BICYCLE

Jessie R. Chattin, 7201 S. 49th Ave., Tampa, Fla. 33619

Continuation-in-part of Ser. No. 806,866, Dec. 12, 1991, Pat. No. 5,163,881. This application Nov. 16, 1992, Ser. No. 977,270
Int. Cl.[5] F16H *9/00*
U.S. Cl. 474—78 17 Claims

1. A derailer for derailing a drive chain from one sprocket to an adjacent sprocket of a multi-stage sprocket assembly, comprising in combination:
a base member having a longitudinal axis;
means for connecting said base member relative to the multi-stage sprocket assembly;
a chain guide assembly for moving the drive chain to derail the drive chain from one sprocket to an adjacent sprocket of the multi-stage sprocket assembly;
means for pivotably linking said chain guide assembly to said base member allowing said chain guide assembly to move;
a shaft rotatably journalled through said base member at said longitudinal axis;
means for interconnecting said shaft with the multi-stage sprocket assembly such that said shaft is rotated upon rotation of the sprockets of the multi-stage sprocket assembly;
a centrifugal weight; and
means for interconnecting said centrifugal weight with said shaft and said chain guide assembly such that said centrifugal weight is moved in response to the rotational speed of said shaft and upon movement of said centrifugal weight, said chain guide assembly is moved.

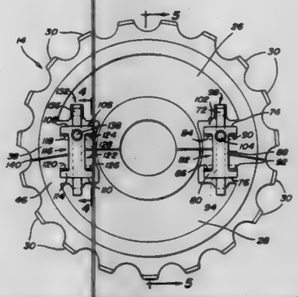


5,295,917

SPLIT SPROCKET WITH QUICK LOCKING MECHANISM

Joseph R. Hannum, Blue Bell, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 7, 1993, Ser. No. 1,464
Int. Cl.[5] F16H *55/46*
U.S. Cl. 474—95 14 Claims



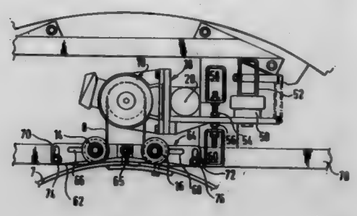
1. A split sprocket wheel for mounting on a shaft comprising:
(a) a pair of half, essentially semi-circular, sprocket members, each including:
(1) a first major face;
(2) a second opposite major face;
(3) a plurality of radially extending teeth;
(4) a pair of openings extending from said first face to said second face and located on opposite sides of an axis of rotation; and
(b) removable coupling means, disposed through the openings, for urging and rigidly securing said half sprocket members around the shaft to form said sprocket wheel.

5,295,918

DRIVE SYSTEM

Nigel S. Campbell, and David Lavender, both of Nelson, England, assignors to Drive Systems Limited, Preston, England

Filed Aug. 10, 1992, Ser. No. 910,088
Claims priority, application United Kingdom, Jan. 12, 1990, 9000716
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—101 16 Claims



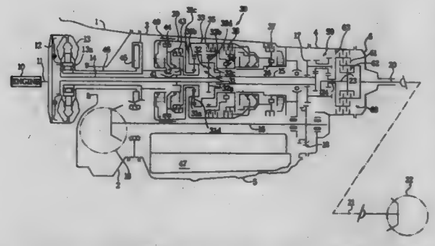
1. A drive system comprising: a rotary part to be rotated, the rotary part comprising a drive ring; a drive belt in contact with the drive ring; a drive wheel in driving engagement, in normal operation, with the drive belt, to thereby drive the drive ring; an electric motor for driving the drive wheel; and a control means connected to the drive wheel, for automatically removing the drive wheel from driving engagement with the drive belt in any one or more of the following circumstances:
if the supply voltage fails;
if the supply voltage falls below a minimum voltage;
if for a reason other than the voltage failing or falling below said minimum voltage, the motor does not operate.

5,295,919

POWER TRANSMITTING SYSTEM FOR A FOUR-WHEEL DRIVE MOTOR VEHICLE

Toshio Kobayashi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,828
Claims priority, application Japan, Oct. 22, 1991, 3-302404; Dec. 4, 1991, 3-348205
Int. Cl.[5] F16H *3/44*
U.S. Cl. 475—205 15 Claims



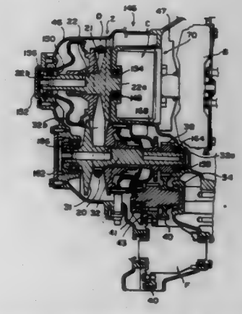
1. A power transmitting system for a motor vehicle provided with a complex planetary gear device having an input member operatively connected to a transmission for receiving a rotation of an engine through the transmission, first and second output members for transmitting the rotation to wheels, and having a third output member connected to the first output member for controlling a differential operation between the first output member and the second output member of the complex planetary gear device, the system comprising:
first friction engagement means operatively connected to the second and third output members for restricting the differential operation of the complex planetary gear device to uniformly rotate the first output member and second output member;
second friction engagement means provided on the second output member for braking a rotation of the second output member so as to provide a higher speed gear ratio than that of a smallest gear ratio of said transmission and to improve driveability of said vehicle.

5,295,920

AUTOMATIC TRANSMISSION SYSTEM FOR VEHICLE

Tomoo Sawasaki; Shuichi Kawamura; Yuji Mori, and Masako Kagawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 2, 1992, Ser. No. 984,512
Claims priority, application Japan, Dec. 4, 1991, 3-320447; Mar. 31, 1992, 4-077739
Int. Cl.[5] F16H *9/20*
U.S. Cl. 475—210 8 Claims



1. An automatic transmission system for a vehicle comprising a torque convertor; a forward-reverse switching mechanism; an infinitely variable gear having a primary pulley mounted on a primary shaft, a secondary pulley mounted on a secondary shaft and a belt passed around the primary and secondary pulleys; and a reduction gear having reduction gears mounted on a reduction gear shaft, these components being housed in a transmission casing, wherein
said transmission casing comprises a torque converter housing portion in which the torque converter is housed and an infinitely variable gear housing portion which is formed separately from the torque convertor housing portion and in which the infinitely variable gear is housed, said forward-reverse switching mechanism is provided between the torque convertor and the primary shaft of the infinitely variable gear and is supported on a support portion integrally-formed in the torque converter housing portion, opposite ends of the primary shaft of the infinitely variable gear are supported on support portions respectively integrally-formed in the infinitely variable gear housing portion and the torque convertor housing portion, and opposite ends of the secondary shaft of the infinitely variable gear are supported on support portions respectively integrally-formed in the infinitely variable gear housing portion and the torque convertor housing portion.

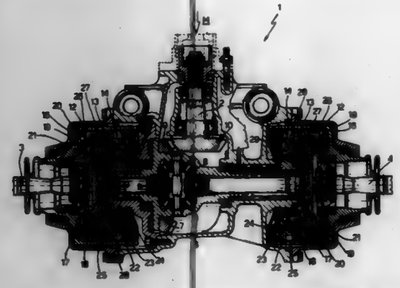
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,921

SYSTEM FOR CONTROLLING TORQUE DISTRIBUTION BETWEEN THE WHEELS OF A COMMON VEHICLE AXLE

Luigi Ippolito, Pianezza; Giorgio Lupo, Rivalta, and Alessandro Lorenzini, Lido di Ostia, all of Italy, assignors to Centro Ricerche Fiat Societa Consortili per Azioni, Strada Torino, Italy

Filed Dec. 18, 1992, Ser. No. 993,088
Claims priority, application Italy, Dec. 20, 1991, T091 A 00106
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—238 9 Claims



1. A system (1; 31) for instantaneously controlling torque distribution between wheels of a common vehicle axle, the system (1) comprising a pair of axle shafts (3, 4), each connected angularly integral with a respective drive wheel (5) on a vehicle; an input shaft (2) for transmitting torque (M); and a differential (6) for transmitting motion from said input shaft (2) to said axle shafts (3, 4); the differential (6) presenting a planet carrier (7) angularly integral with said input shaft (2), and a pair of sun gears (8); comprising: first releasable angular connecting means (12) interposed between each said axle shaft (3, 4) and a respective said sun gear (8); and second releasable angular connecting means (13) interposed between each said axle shaft (3, 4) and said planet carrier (7); control means (14) being provided for controlling said first and second angular connecting means (12, 13) to continuously vary distribution of said torque (M) between said axle shafts (3, 4).

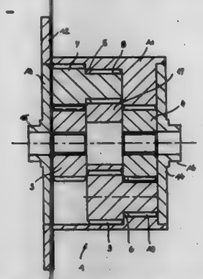
5,295,922

DIFFERENTIAL DRIVE

Peter Amborn, Neunkirchen, and Wolfgang Hildebrandt, Siegburg, both of Fed. Rep. of Germany, assignors to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed Aug. 5, 1992, Ser. No. 925,532
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126866
Int. Cl.[5] F16H *1/45, 1/42;* B60K *17/348*
U.S. Cl. 475—248 7 Claims

1. A differential drive comprising:
a drivable differential carrier having a plurality of cylinder bores;
two axle shaft gears are rotatably held in the cylindrical bores in the differential carrier and are arranged coaxially relative to each other, both said axle shaft gears having practically equal rolling circle diameters and equal outer diameters;
a plurality of differential gears are supported in bores in the differential carrier, said axle shaft gears rotate with the differential carrier and are axis-parallel arranged therewith;
a first group of the differential gears engaging one of the axle shaft gears and a second group of the differential gears engaging the other of the axle shaft gears, at least the gears of one of the groups of differential gears having two axially different toothed regions with different rolling circle diameters, one of said regions engaging one of the axle shaft gears and the other region engaging at least one



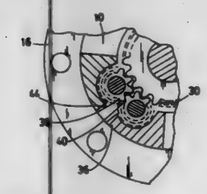
of the other group of differential gears for achieving an uneven torque distribution between the axle shaft gears.

5,295,923

LUBRICATION MODIFICATION FOR PARALLEL-AXIS DIFFERENTIAL

Hideyasu Takefuta, Higashimatsuyama, Japan, assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,648
Int. Cl.[5] F16H *1/42*
U.S. Cl. 475—252 3 Claims



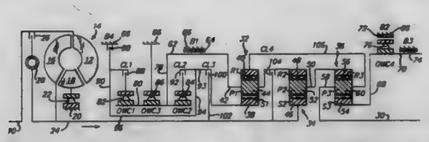
1. In a differential assembly having:
a differential housing;
a pair of side gears positioned in said housing for receiving a pair of respective axle ends for rotation therewith about a common axis;
at least one pair of element gears positioned in said housing operatively connecting said pair of side gears in a mutual driving relationship, each respective element gear in each pair being in meshing engagement with both a respective one of said side gears and with its paired element gear; and
at least one pair of pockets formed in said housing supporting said element gears for rotation about respective axes that extend parallel to said common axis of said side gears, said pockets having a predetermined shape with (a) an interior portion for mating with the surfaces of said element gears, (b) an opening providing clearance for the meshing engagement of each said respective element gear with its respective one of said side gears, and (c) an apron portion, adjacent said opening, demarcating the outer extremity of the bearing surface necessary to support the element gears so that their position remains appropriately fixed under outward thrust conditions;
the improvement wherein:
the shape of each said pair of pockets is modified between said apron portion and said opening to increase the space between said pocket and said surfaces of said element gears to facilitate the flow of lubricating fluid between said interior portion of said pockets and the surface of said element gears.

5,295,924

MULTIPLE SPEED NONSYNCHRONOUS AUTOMATIC TRANSMISSION FOR MOTOR VEHICLES

Rudolf Beim, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1992, Ser. No. 986,239
Int. Cl.[5] F16H *3/62*
U.S. Cl. 475—275 11 Claims



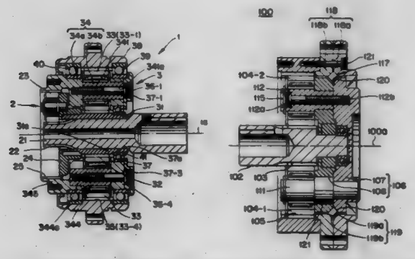
1. A multiple speed ratio automatic transmission, comprising:
an input shaft adapted to be driven by an engine and an output shaft;
first, second and third gear units, each gear unit having a sun gear, ring gear, planet pinions meshing with the sun gear and ring gear, and carrier rotatably supporting the planet pinions;
the sun gear of the second gear unit constantly driveably connected to the input shaft, the carrier of the second gear unit driveably connected to the ring gear of the third gear unit, the carrier of the first gear unit constantly driveably connected to the ring gear of the second gear unit, the ring gear of the first gear unit and carrier of the third gear unit driveably connected to the output shaft;
first brake means (**72**, **76** and **74**) for releasably holding the sun gear of the third gear unit against rotation;
a first clutch (**104**) for releasably connecting the ring gear of the second gear unit and the carrier of the first gear unit to the input shaft;
a second clutch (**100**) for releasably connecting the input shaft and sun gear of the first gear unit;
clutch means (**88**, **82** and **92**, **84**) for releasably connecting the sun gear of the first gear unit and carrier of the first gear unit;
second brake means (**64** and **86**, **66**) for releasably holding the carrier of the first gear unit against rotation; and
third brake means (**98**) for releasably holding the sun gear of the first gear unit against rotation.

5,295,925

PLANETARY GEAR TRANSMISSION

Kazumori Hirabayashi, Nagano, Japan, assignor to Harmonic Drive Systems, Inc., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 976,939
Claims priority, application Japan, Nov. 22, 1991, 3-104235; Nov. 22, 1991, 3-104236; Nov. 22, 1991, 3-104237; Feb. 3, 1992, 4-010907
Int. Cl.[5] F16H *1/28*
U.S. Cl. 455—331 5 Claims



1. A two-stage planetary gear transmission having a first-stage planetary gear transmission and a second-stage planetary gear transmission, each of said first and second planetary gear transmissions comprising a sun gear, a plurality of planetary gears meshed with said gun gears, a carrier for supporting said planetary gears rotationally, and an internal gear meshed with said planetary gears, wherein,
said carrier of the second-stage planetary gear transmission comprises first and second carrier parts integrally connected so that they sandwich said planetary gears and said sun gear of the second stage from both sides in an axial direction, said first carrier part positioned at the opposite side to said first planetary gear transmission is rotationally supported on a casing formed thereon with said internal gear of the second stage, and a hollow pinion shaft formed thereon with said gun gear of the second stage is rotationally supported on said first carrier part via a ball bearing in a cantilevered condition, wherein,
said internal gear of the first stage is integrally formed on said carrier of the second-stage, said carrier of the first stage is integrally formed on the end of said hollow pinion stage of the second stage, and said sun gear of the first stage is formed on a projected end of a pinion shaft of the first stage arranged extending through a hollow portion of said hollow pinion shaft of the second stage;
wherein said ball bearing is arranged so as to support said hollow pinion shaft of the second stage to prevent it from moving axially,
wherein an annular gap of about 15 μm to about 20 μm in width is formed between an inner race member of a planetary bearing and a planetary shaft for each of said planetary gears of the second stage, and a lubricant is filled in said annular gap to form a lubricant layer between said inner race member and said planetary shaft,
wherein a gear ratio u1 between an input and output of said first-stage planetary gear transmission is larger than a gear ratio u2 between an input and output of said second-stage planetary gear transmission, and wherein said gear ratio u1 is equal to or larger than about 5,
wherein the reduction gear ratio i of the two-stage planetary gear transmission thereof is defined by

$$(u1+1)\text{-}u2+1$$

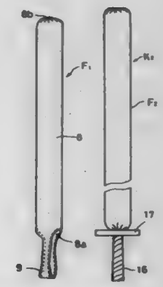
and which is equal to or less than about 16.

5,295,926

SOFT SWORD

Testundo Tanabe, 2-16-17 Kaminagaya, Kounan-ku, Yokohama-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 590,353, Sep. 28, 1990, abandoned. This application Dec. 26, 1991, Ser. No. 813,803
Claims priority, application Japan, Sep. 28, 1989, 1-112778
Int. Cl.[5] A63B *69/02*
U.S. Cl. 482—12 2 Claims



1. A soft sword assembly, which comprises:

a core rod having a flexible center core, an intermediate guard and a grip having a free end, said flexible center core, said intermediate guard and said grip integrally constructed into one integral body, in the form of a sword;
a soft core mounted coaxially about said flexible center core;
a bag comprised of a bag body provided with upper and lower closing portions at both ends and said lower closing portion being a strap-shaped portion providing access at both sides into said bag body for said soft core mounted on said flexible center core of said core rod, said soft core being inserted into said bag, wherein said grip is surrounded by said closing portion, said strap shaped portion extending towards and engaging said free end of said grip of said core rod;
a grip tape wrapped onto said strap-shaped portion engaging said grip of said core rod; and
a guard slipped over said grip tape and positioned at a root of said grip proximate said intermediate guard.

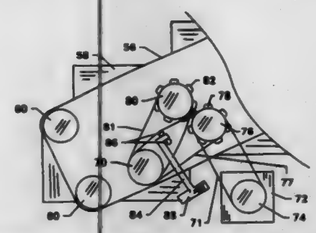
5,295,927
STEPPER EXERCISE MACHINE
James B. Easley, Minneapolis; Adolf H. Friedebach, Waconia; Paul M. Theisen, Shakopee, and John E. Titus, Savage, all of Minn., assignors to Fitness Master, Inc., Waconia, Minn.
Continuation-in-part of Ser. No. 800,554, Nov. 27, 1991, Pat. No. 5,199,931. This application Jul. 28, 1992, Ser. No. 920,780
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—52 **10 Claims**



1. An improved stair climbing exercise machine comprising:
a support frame having a tubular slide mast;
right and left pedals movably carried by said mast; and
electrically released drive means comprising an electric motor, a single drive shaft rotatable in one direction, drive linkage means for independently linking each pedal to said drive shaft, and worm means for operably coupling said motor to said drive shaft.

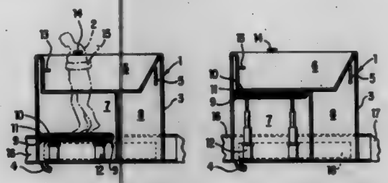
5,295,928
BI-DIRECTIONAL STAIR/TREADMILL RECIPROCATING-PEDAL EXERCISER
Brian G. Rennex, 431 Muddy Branch Rd., #101, Gaithersburg, Md. 20878
Division of Ser. No. 576,761, Sep. 4, 1990, Pat. No. 5,186,697, which is a continuation-in-part of Ser. No. 304,443, Jan. 31, 1989, abandoned. This application Oct. 30, 1992, Ser. No. 968,943
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—52 **9 Claims**

1. An improved portable stepping exerciser comprising:
an endless belt inclined at an angle relative to horizontal;
a plurality of steps attached to said endless belt;
first belt drive means for moving said endless belt in a first direction, whereby the center of mass of a user who has stepped onto one of said steps is shifted upwardly when said belt is moving in said first direction;
second belt drive means for moving said endless belt in a second direction opposite said first direction, whereby the center of mass of said user who has stepped onto one of said steps is shifted downwardly when said belt is moving in said second direction; and



switching means coupled to said first belt drive means and said second belt drive means for selecting one of said directions of movement of said endless belt.

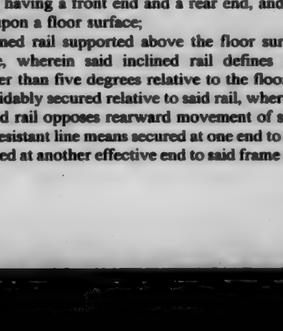
5,295,929
HYDROTHERAPY DEVICE WITH UNDERWATER TREADMILL
Stefano Weisz, Via Gogliardi, 14/a, I-31021, Mogliano Veneto, Italy
PCT No. PCT/EP90/01134, § 371 Date Jan. 15, 1992, § 102(e) Date Jan. 15, 1992, PCT Pub. No. WO91/01162, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 12, 1990, Ser. No. 793,386
Claims priority, application Italy, Jul. 18, 1989, 84142 A/89
Int. Cl.[5] A63B *21/00*
U.S. Cl. 462—54 **13 Claims**



1. A multifunction rehabilitative hydrotherapeutic device comprising a watertight container, having an upper part and a lower part, provided with an endless belt vertically adjustable between a upper position in which said endless belt forms a part of a bottom of a horizontal tub, located in said upper part of said container for clinostatic rehabilitation of a person, and a lower position in which said endless belt forms a walking treadmill platform, located in said lower part of said container, for a person housed upright inside said container for orthostatic rehabilitation.

5,295,930
EXERCISE DEVICE SIMULATING DOWNHILL SKIING
John W. Hogan, 135 Crestview Dr., Park City, Utah 84060
Filed Sep. 11, 1992, Ser. No. 944,083
Int. Cl.[5] A63B *69/18*
U.S. Cl. 482—71 **8 Claims**

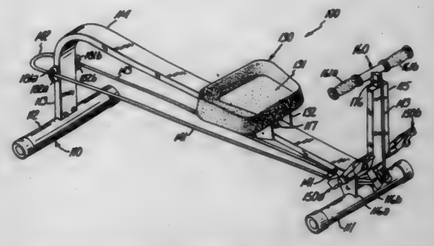
1. An exercise device that simulates downhill skiing to develop skiing skills as well as to thoroughly exercise one's body and cardiovascular system, said exercise device comprising
a frame including a base support member that rests on the floor or ground, said base support member having a front end, a back end and a longitudinal axis extending from the front end to the back end;
an elongate support member that is pivotally attached to said frame for pivotal, swaying movement about a pivot axis that is substantially parallel with said longitudinal axis of said base support, with said elongate support member extending upwardly from said base support member whereby said elongate support member sways back and forth above said base support member;
biasing means associated with said elongate support member for exerting a biasing force on the elongate support member to bias the elongate support member toward an upstanding position lying in a vertical plane through said pivot axis;
a platform for supporting a person in a standing position thereon, said platform being pivotally attached to a distal end of said elongate support member that extends upwardly from said base support member, whereby as said elongate support member sways back and forth, said platform moves in an arcuate, swinging motion in a substantially vertical plane that is substantially perpendicular to said pivot axis;



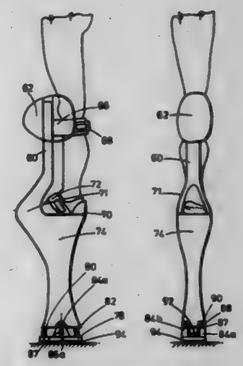
said biasing means comprising at least one elongate spring biasing member attached at its distal ends to said frame, and attached to said platform intermediate said distal ends; and
said frame further including a forward member extending upwardly from the front end of said base support member, said forward member including hand engagement means which a person standing on said platform can grasp to maintain balance as the person pushes said platform downwardly in alternating movements first to one side of said vertical plane extending through said pivot axis and then to the other side of said vertical plane extending through said pivot axis in a motion simulating turns in downhill skiing.

5,295,931
ROWING MACHINE EXERCISE APPARATUS
John S. Dreibelbis, Shakopee; Charles C. Hall, St. Louis Park; Dale R. Henn, Minneapolis, and Pat J. Novak, St. Paul, all of Minn., assignors to NordicTrack, Inc., Chaska, Minn.
Filed Sep. 4, 1992, Ser. No. 941,181
Int. Cl.[5] A63B *69/06*
U.S. Cl. 482—72 **4 Claims**

4. An exercise apparatus, comprising:
a frame having a front end and a rear end, and designed to rest upon a floor surface;
an inclined rail supported above the floor surface by said frame, wherein said inclined rail defines an angle of greater than five degrees relative to the floor surface;
a seat slidably secured relative to said rail, wherein the angle of said rail opposes rearward movement of said seat;
a load resistant line means secured at one end to said seat and secured at another effective end to said frame wherein said load resistant line means opposes rearward movement of said seat;
a retractable hand bar positioned proximate said front end of said frame; and
a second load resistant line means secured at one end to said hand bar secured at another effective end to said frame, wherein said second load resistant line means opposes rearward movement of said hand bar;
wherein said load resistant line means and said second load resistant line means are integral portions of a single elastic cord.



5,295,932
STILTS
Michael G. Rowan, Main Castle, East Kilbride, Glasgow, Scotland G74 4NR
PCT No. PCT/GB91/00169, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/11222, PCT Pub. Date Aug. 8, 1991
PCT Filed Feb. 5, 1991, Ser. No. 917,048
Claims priority, application United Kingdom, Feb. 5, 1990, 9002510
Int. Cl.[5] A63B *25/02*
U.S. Cl. 482—76 **9 Claims**



1. A pair of stilts in which each stilt has a foot support portion coupled to an upper leg portion and to a lower leg portion, each lower leg portion having flexible foot means resiliently coupled to the bottom thereof whereby the weight of the wearer acts directly from the foot support portion through the lower leg portion and the flexible foot means, each flexible foot means being pivotably mounted to a respective lower leg portion by an axle and the front and rear of each flexible foot being coupled to the respective lower leg portion by spring means and each flexible foot having upstanding first and second projections defining a front-to-back channel

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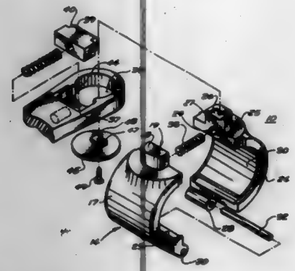
therein for receiving a third projection extending from the bottom of the lower leg portion, characterised in that said third projection has a substantially horizontal aperture therein to register with vertical slots in said upstanding first and second projections, said axle being disposed in said slots and said aperture to permit pivoting about a side-to-side axis and tilting about a front-to-rear axis and wherein a resilient element is disposed between the bottom of said third projection and an upper part of said flexible foot means.

5,295,933

QUICK RELEASE WEIGHT BAR CLAMP AND METHOD FOR USE

John A. Ciminski, 5108 W. Echo La., Glendale, Ariz. 85302, and Verl E. Miller, 907 M Ave., Le Grande, Oreg. 97850

Filed Jun. 18, 1992, Ser. No. 901,175
Int. Cl.[5] A63B *21/075*
U.S. Cl. 482—107 8 Claims



1. A quick release weight bar clamp comprising:
a collar having;
a first crescent half,
a second crescent half,
a hinge pivotally coupling a first end of said first crescent half to a first end of said second crescent half,
a spreader spring moveably coupling a second end of said first crescent half to a second of said second crescent half, said spreader spring biasing said second end of said first half away from said second end of said second half, and
a handle having;
a handle body, and
said handle body containing a cam configured to engage said cam follower, urging said second end of said first crescent toward said second end of said second crescent, compressing said spreader spring,
said cam follower extending into said cam;
a cover plate coupling said handle to said collar; and
a crescent liner coupled to the inside of said first crescent half and said second crescent half.

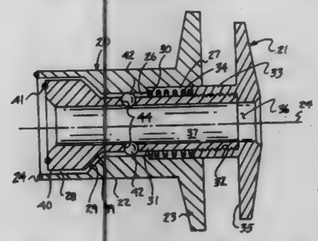
5,295,934

BARBELL COLLAR APPARATUS

Christopher H. Collins, and Matthew M. Collins, both of 442 Kenwood Ave., Delmar, N.Y. 12054

Filed Feb. 3, 1993, Ser. No. 12,769
Int. Cl.[5] A63B *13/00*
U.S. Cl. 482—107 6 Claims

1. A barbell collar apparatus, comprising,
a cylindrical bar, the cylindrical bar having a central portion and a first end spaced from a second end, and a first end portion extending from the central portion to the first end, and a second end portion extending from the central portion to the second end, and
a collar member and a sleeve mounted upon the first end portion and the second end portion for selective engagement with the first end portion and the second end portion, wherein each collar member telescopingly receives the sleeve, and
wherein the collar member includes a cylindrical collar housing, the cylindrical collar housing having a housing first end and a housing second end, and an abutment flange mounted to the housing first end, and
a collar housing resilient "O" ring mounted to the collar housing second end, and
the collar housing sleeves symmetrically oriented about a collar axis, and
detent means mounted within each sleeve for selective engagement of said cylindrical bar end a first bore having a first diameter spaced between the housing first end and the housing second end, and a second bore having a second diameter greater than the first diameter extending from the first bore to the housing first end, and a third bore extending from the first bore to the housing second end, having a third diameter greater than the second diameter,



and a conical transition wall extending from the first bore to the third bore, and an annular spring flange orthogonally oriented relative to the axis positioned at an intersection of the first bore and the second bore, with the sleeve member having a cylindrical sleeve central portion slidably received through the first bore and the second bore, and the sleeve central portion having an externally threaded first end portion extending to a sleeve first end, and an internally threaded abutment cylinder threadely mounted about the externally threaded first end portion, with a spring member interposed between abutment cylinder and the spring flange, and an abutment cylinder annular flange mounted to the abutment cylinder extending laterally thereof, wherein the abutment cylinder annular flange is orthogonally oriented relative to the axis and spaced from the abutment flange of the collar member, and a sleeve member bore directed coextensively through the sleeve member to receive the cylindrical bar therethrough.

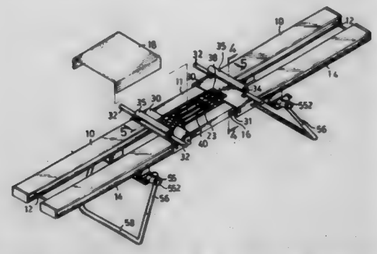
5,295,935

STRETCHING DEVICE WITH RESILIENT RESISTANCE

Yuh-Ruenn Wang, No. 18, Pei Ping 2nd Rd., Taichung, Taiwan

Continuation-in-part of Ser. No. 827,707, Jan. 27, 1992, abandoned. This application Feb. 22, 1993, Ser. No. 20,400
Int. Cl.[5] A63B *21/04*
U.S. Cl. 482—130 10 Claims

1. An exercise device comprising a pair of parallel tracks each including a beam disposed in a middle portion thereof, a shaft disposed in each of said beams, a pair of poles slidably coupled between said shafts and arranged in parallel with each other, means for biasing said poles away from each other, a pair of slides slidably engaged on said tracks and located at opposite end of said beams, and at least one resilient member including a first end fixed to each of said slides and engaged over a respective pole and a second end fixed to said tracks, said resilient members being arranged such that said poles are



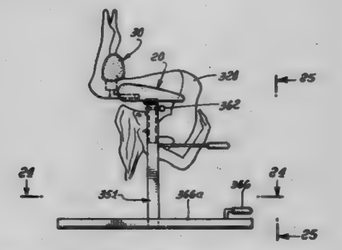
caused to move toward each other against said biasing means when said slides are moved away from each other.

5,295,936

ADDUCTOR CONTRACTION EXERCISE APPARATUS AND METHOD

Leroy R. Perry, Jr., 1301 East Rubio St., Altadena, Calif. 91101

Continuation-in-part of Ser. No. 706,648, Jun. 3, 1991, Pat. No. 5,135,459. This application Jun. 15, 1992, Ser. No. 898,842
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—144 9 Claims



1. Exercise apparatus, comprising, in combination:
a) a support means, the user's legs
b) a platform mounted on the support means to support a user's legs, there being a hinge connecting the platform to the support means and defining a generally horizontal hinge axis to allow pivoting of the user's trunk about a generally horizontal axis as the user relatively bends his body and his legs means, and extending in spaced
c) and other means carried by said platform to induce contraction of the user's thighs relatively toward one another in response to trunk pivoting, for producing anterior rotation of the user's ilium, thereby inducing distraction of the user's sacroiliac joint, at the ilium posterior, the user's legs are substantially encompassed by said pads.

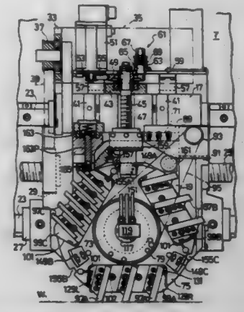
5,295,937

GROOVING MACHINE

Fumio Katoh, and Takeshi Chikamoto, both of Kanagawa, Japan, assignors to Amada Company, Limited, Kanagawa, Japan

PCT No. PCT/JP92/00518, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/19405, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 22, 1992, Ser. No. 955,858
Claims priority, application Japan, Apr. 25, 1991, 3-095307
Int. Cl.[5] B23D *43/02*
U.S. Cl. 483—28 8 Claims

1. A grooving machine for grooving the surface of a work, comprising: a work table on which the work is fixed; a frame; an X-axis slider disposed above said work table and horizontally movably supported by said frame; a Z-axis slider vertically movably supported by said X-axis slider; a tool holder base supported by said Z-axis slider; and a plurality of cutting



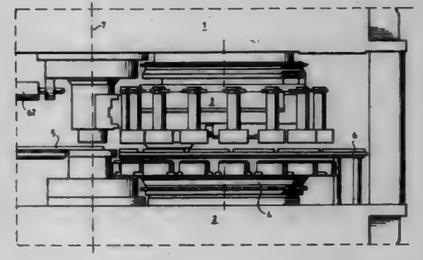
tools attached to said tool holder base, for grooving the surface of the work, any one of said cutting tools being indexed to a cutting position where the work is grooved.

5,295,938

ARRANGEMENT FOR TOOL MAGAZINES FOR SHEET METAL WORKING MACHINES

Per Q. Jilsen, Gothenburg, Sweden, assignor to Pulimax AB, Gothenburg, Sweden

Filed May 26, 1992, Ser. No. 888,972
Claims priority, application Sweden, May 30, 1991, 9101654-3
Int. Cl.[5] B23Q *3/155*
U.S. Cl. 483—29 10 Claims



1. Apparatus of the type for working on a workpiece by punching, nibbling and similar working operations requiring the use of paired, coactive tools comprising:
a punching tool upper magazine having a rotably drive punching tool magazine ring holding and storing a plurality of punching tools releasably held peripherally thereon spaced circumferentially for rotationally delivery individually, sequentially to a changing position for transferring thereof from said punching tool magazine ring individually;
means in said upper magazine including said punch tool magazine ring for cyclically lifting the punching tool magazine ring to a raised position in which the punching tools are stored disposed at a level in which the punching tools are spaced above a level at which a workpiece is fed to the apparatus and for cyclically lowering said punching tool magazine ring for effecting transfer of punching tools individually at said changing position for a corresponding working operation on said workpiece;
a fixed punching tool holder for receiving sequentially punching tools transferred thereto individually at the

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changing position thereof from the lowered punching tool magazine ring for a corresponding working operation on said workpiece;

a punching tool gripper device for sequentially transferring individually punching tools radially from said punching tool magazine ring when individually disposed at said changing position thereof in registry laterally with said fixed punching tool holder while said punching tool magazine ring is in a lowered position;

a die tool lower magazine having a rotatably driven die tool magazine ring for holding and storing a plurality of die tools peripherally thereon circumferentially spaced for rotational delivery individually and sequentially to a transfer position for transferring thereof individually to a ready position for readiness to cooperate with a corresponding individual punch tool in a corresponding working operation on the workpiece;

a die tool transfer device operable cyclically for sequentially transferring individually the die tools radially from the die tool magazine ring while at the transfer position thereof to said readiness position for subsequent delivery sequentially to a working position for coaction each with a corresponding punching tool in a corresponding working operation and for subsequently restoring the individual die tools sequentially from said readiness position to said die tool magazine ring after each said corresponding working operation on the workpiece;

an annular die tool holder disposed for receiving the die tools individually in a sequence for coating with a corresponding punch tool during each said corresponding working operation on the workpiece;

means operable cyclically for receiving at said readiness position the die tools individually from said die tool transfer device in sequence and cyclically delivering the die tools sequentially vertically into said annular die tool holder and maintaining the individual die tools vertically in position in said die tool holder during coaction with a corresponding punching tool during a corresponding working operation on said workpiece and subsequently cyclically lowering the individual die tools from said annular die tool holder after said working operation to said readiness position for restoration to said die tool magazine ring by said die tool transfer device, and

means for restoring individually the die tools to said die tool magazine ring after each said corresponding working operation.

5,295,939

MACHINE FOR FOLDING AND PERIPHERAL GLUEING OF THE EDGES OF SHEET MATERIAL AND THE LIKE

Roberto Ferrari, and Mario Pagani, both of Vigevano, Italy, assignors to Sagitta Officina Meccanica S.P.A., Vigevano, Italy

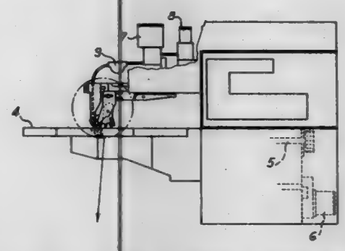
Filed Sep. 10, 1992, Ser. No. 947,750

Claims priority, application Italy, Sep. 17, 1991, MI91A002453

Int. Cl.[5] A43D *8/40, 25/00*

U.S. Cl. 493—1 **11 Claims**

1. A machine for folding and peripheral gluing the edges of a sheet material, said sheet material being a piece of work to be folded peripherally and glued onto a folding shoe, said machine comprising a working top (4), transporting means for transporting a piece of work (3) onto said working top and for moving said piece of work (3) thereon, said transporting means comprising at least one main shaft (5) driven through a transmission by a first motor and a second motor (6) for regulating the transport pitch, a folding shoe (1) on which said piece of work is to be peripherally folded and glued, a tank for holding glue at a predetermined temperature, means (9) for feeding predetermined quantities of said glue from said tank onto said folding shoe, a third motor (8) for controlling the feeding of said glue, means (2) for guiding said folding shoe to a position whereby said folding shoe and said piece of work cooperate to fold the edges of said piece of work and to glue said edges on said folding shoe, means for inserting a cutting blade for performing a cutting operation, a plurality of actuators (A1–An) located on said work top for controlling said first motor, said second motor and said third motor, said transporting means for transporting said piece of work, said second motor, said means for feeding said glue, said means for inserting said cutting blade



at predetermined operating parameters, a control unit UC) for said operating parameters wherein said control unit (UC) comprises a programming device (PR) connected to said actuators (A1–An) and a memory (M) accessible through said programming device (PR) and designed to contain said operating parameters used in a most recent processing of a work piece (3) executed manually by the operator.

5,295,940

PAIL BOX MACHINERY

Abram Fainberg, 7 Roger Williams Green, Providence, R.I. 02904

Filed Apr. 1, 1993, Ser. No. 41,155

Int. Cl.[5] B31B *3/44, 3/86;* B21F *45/00, 45/10*

U.S. Cl. 493—88 **4 Claims**

1. An automatic machine for producing pail boxes from pre-made blanks of paper and straight pieces of wire blanks, comprising:

a frame that defines a box blank storage, a blank feeding means for feeding the box blanks from the storage to position for folding, a folding means for folding said box blanks into the form of a box, a receiver means for receiving made boxes, and drive machine means, wherein the improvement comprises:

A. a wire blank container for containing wire blanks and feeding the machine with one said wire blank per cycle, said wire blank container comprising: two walls, the bottom portions of which form a gauged groove for arranging the escaped said wire blanks just in one row, a plate rigidly attached to one of the walls and making with a second of the walls a gauged outlet passing through only one said wire blank per cycle, said plate having guides and flushly inserted magnets which grip the lead wire blank and hold it in straight position, a bracket with guides, a pusher slidable in said guides of the bracket and the guides of said plate, said pusher having two or more claws each with a step on its end for picking up and pushing said lead wire blank through said outlet, an elastic suspension for mounting said container to the frame of the machine, and a vibrator means for putting the container in a vibration condition;

B. a bed die means secured to said frame for bending handles, said bed die means comprising a bed die with a shape around which are bended said handles, two side brackets each having a guide, two punches slidable in said guides for bending the ends of said handles, a front bracket having two guides and a pusher with two claws slidable in said guides of said front bracket for pushing a made handle from said bed die;

C. a shuttle means for transfering said handle from said bed die means and attaching it to the folded box and in the same motion transfering said lead wire blank from said container and bending it on said bed die means to form another said handle, said shuttle means comprising a plate means reciprocated in guides of the machine in a vertical plane, said plate means including in a receiver portion thereof a forming punch for bending legs of said handle and a number of magnets flushly inserted in said plate means for gripping said wire blank received from said container, and in a shipping portion of said plate means there is a hollow with magnet edges for receiving and gripping said made handle which is pushed from said bed die means, and opening for releasing the fastened handle, and two clinching means for attaching handles to the folded boxes, said clinching means each having a clincher, slidable in the guides of said plate means, and a return spring.

5,295,941

APPARATUS FOR PRODUCING CONTAINERS MADE OF PAPER-BASE LAMINATE

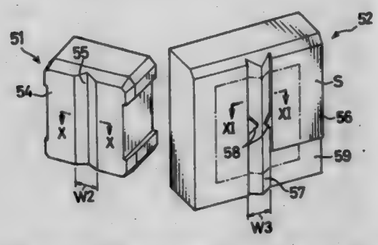
Yasuji Fujikawa; Kazuo Abe; Shoji Hirose, and Shoji Nishioka, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Itano, Japan

Filed Jul. 31, 1992, Ser. No. 922,729

Claims priority, application Japan, Feb. 5, 1991, 3-14049

Int. Cl.[5] B31B *1/64*

U.S. Cl. 493—133 **2 Claims**



1. An apparatus for producing containers made of paper-base laminate and each having a bottom closure **15**, the bottom closure **15** being formed with a recess **36** having an inverted V-shaped cross section and extending across the bottom closure through the center thereof for positioning the container upright with stability, the apparatus comprising:

an intermittently drivable rotor **42** having radial mandrels **43** each adapted to support a tubular container blank of square to rectangular cross section as fitted therearound, the mandrels **43** being so arranged as to successively stop at each of processing stations I to VI including a pressure bonding station V; and

a bottom bonding unit **48** disposed at the pressure bonding station V,

each of the mandrels **43** having in a forward end face **54** thereof a groove **55** of a constant V-shaped cross section extending across the entire end face for forming the recess **36** having the inverted V-shaped cross section,

the bottom bonding unit **48** including a bonding member **52** having a pressing face **56**, the pressing face **56** being opposed to the forward end face **54** of the mandrel **43** as stopped at the pressure bonding station V, the pressing face **56** being provided with a ridge **57** of a constant V-shaped cross section extending across the entire pressing face corresponding to the groove **55** of the V-shaped cross-section.

5,295,942

FILM ADVANCE MECHANISM

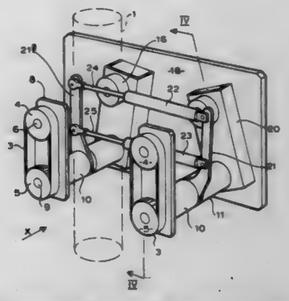
Kenneth W. Franklin, Warwickshire, United Kingdom, assignor to Bishopbarn Limited, United Kingdom

Filed Nov. 20, 1992, Ser. No. 979,188

Claims priority, application United Kingdom, Nov. 23, 1991, 9124906

Int. Cl.[5] B31C *13/00*

U.S. Cl. 493—302 **7 Claims**



1. A film advance mechanism for advancing a tubular film along a film support with the film surrounding the support, the mechanism comprising two drive units; each drive unit comprising a drive belt carrier, two rollers mounted rotatably with respect to the drive belt carrier and a drive belt arranged so that a straight run of the belt can engage frictionally against the film to drive the film along the support; drive means for rotatingly driving at least one of said rollers of each drive unit; support means for each drive belt carrier such that each carrier is supported for movement towards and away from the film support, said support means further allowing for variable angular movement between the straight run of the belt and the film support; and bias means for urging each carrier towards the film support such that each carrier aligns itself with the film support due to engagement therewith.

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5,295,943

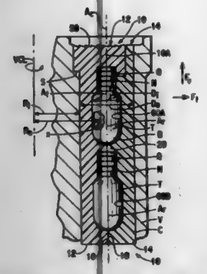
ADAPTER FOR HOLDING A PAIR OF CENTRIFUGE TUBES

William A. Romanauskas, and Edward T. Sheeran, Jr., both of Southbury, Conn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 35,513, Mar. 22, 1993, which is a continuation of Ser. No. 696,871, May 6, 1991, which is a continuation-in-part of Ser. No. 552,631, Jul. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,646, Nov. 7, 1989, abandoned. This application May 27, 1993, Ser. No. 68,497

Int. Cl.[5] B04B *15/00*

U.S. Cl. 494—16 1 Claim



1. An adapter for supporting a pair of closed centrifuge tubes within a cavity of a vertical angle centrifuge rotor for rotation about an axis of rotation, the adapter comprising:

a first, inboard, adapter segment and a second, outboard, adapter segment, each segment having an exterior surface and a mating surface thereon, each segment having a pair of indentations in the mating surface thereof, the indentations in each segment being shaped such that when the segments are joined along their mating surfaces the indentations cooperate to define a pair of recesses each able to totally surround a centrifuge tube disposed therein, each recess having an axis therethrough, the axes of the recesses being collinear and being parallel to the axis of rotation,

the adapter segments being fabricated of a material that has sufficient strength to withstand vertical forces created by the pressure of a liquid in each tube while under centrifugation,

at least the first, inboard, segment of the adapter having an effective weight sufficient to balance forces created by the pressure of a liquid carried in the tubes under centrifugation that act transversely to the axis of the recesses,

so that, in use with the adapter inserted into a cavity of a rotor with the mating surfaces of the adapter segments being in contacting relationship with each other, the effective weight of the inboard segment while under centrifugation is sufficient to maintain the mating surfaces of the adapter segments in such contacting relationship.

5,295,944

METHOD FOR TREATING A TUMOR WITH IONIZING RADIATION

Beverly A. Teicher, Needham; Carl W. Rausch, Medford, and Robert E. Hopkins, 2nd, Scituate, all of Mass., assignors to Dana-Farber Cancer Institute and Biopure Corporation, both of Boston, Mass.

Filed May 14, 1991, Ser. No. 699,761

Int. Cl.[5] A61N *5/00*

U.S. Cl. 600—1 9 Claims

1. A method for treating a tumor in a host with ionizing radiation, comprising:

a) administering to said host an ultrapurified polymerized hemoglobin solution in an amount sufficient to increase the antitumor effect of said ionizing radiation; and,

b) administering to said tumor an effective amount of said ionizing radiation.

5,295,945

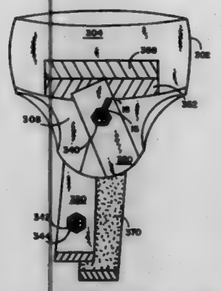
GARMENT AND METHOD FOR POSITIONING AND SECURING A RADIOACTIVE IMPLANT INTERNALLY WITHIN THE FEMALE GENITAL ORGANS

Donna M. Miller, Watertown, Mass., assignor to Beth Israel Hospital Assoc. Inc., Boston, Mass.

Filed Aug. 3, 1992, Ser. No. 923,520

Int. Cl.[5] A61N *5/00*

U.S. Cl. 600—6 6 Claims



2. A method for securing and maintaining the chose position of a radiotherapeutic appliance internally after insertion within the female genital organs during local radiation therapy, said method comprising the steps of:

placing a garment externally around the lower abdomen and pelvis on the female person prior to beginning local radiation therapy, said garment comprising

at least one supporting band of material having anterior and posterior aspects which are configured to be worn around the lower abdomen and pelvis of the female body without substantially covering other areas of the female body, said supporting band providing access on-demand to the vulva of the female person,

a plurality of members employed individually for securing and maintaining the chosen position of the inserted radiotherapeutic appliance within the female genital organs, each of said members being comprised of

(1) a first end joined to said posterior aspect of said supporting band,

(2) a member body extensible substantially about the medial plane of the female person to overlay the vulva at least in part,

(3) a second end attachable to and detachable from said anterior aspect of said supporting band on-demand, and

appliance engaging means upon at least one of said members for on-demand engagement of the radiotherapeutic appliance at a chosen position after insertion internally within the female genital organs;

inserting the radiotherapeutic appliance internally within the female genital organs at a chosen position;

extending said member of said garment about the medial plane of the female person such that the vulva is overlayed at least in part by said member body and said appliance engaging means engage the inserted radiotherapeutic appliance at the chosen position within the female genital organs; and

attaching said second end of said extended member to said anterior aspect of said supporting band to secure and maintain the inserted radiotherapeutic appliance internally at the chosen position within the female genital organs.

5,295,946

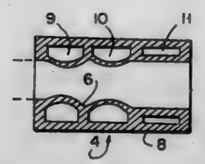
EXTERNAL PENILE ERECTION DEVICE

Moseley Collins, West Palm Beach, Fla., assignor to Gemini Medical Corporation, West Palm Beach, Fla.

Filed Nov. 18, 1992, Ser. No. 978,490

Int. Cl.[5] A61F *5/41*

U.S. Cl. 600—41 1 Claim



1. A penile erection device for external application to the shaft of a penis, the device comprising:

an inflatable cuff means for completely encircling a shaft of a penis at the penile base, said cuff means, when positioned on a penile shaft, extending along a proximal to distal axis of said shaft, and having at least one volume expandable annular space defined by an outer circumferential surface layer and an inner circumferential surface layer;

said outer circumferential surface layer being substantially fixed and forming a substantially unchangeable outer diameter and said inner circumferential surface layer being changable and forming an inner diameter which is varied by changing the volume of said at least one volume expandable annular space and constriction circumferential pressure is thereby applied to said shaft as said space is expanded;

means for inflating said at least one volume expandable annular space in a sequential manner along said proximal to distal axis, whereby said shaft is first constricted proximally and then progressively constricted distally to thereby enhance rigidity of said shaft,

in which said cuff means includes a plurality of separate volume expandable annular spaces arranged parallel to one another along said proximal to distal axis and said inner circumferential surface layer is formed of a resilient stretchable material the thickness thereof increasing along said proximal to distal axis; and

said means for inflating is connected to all said annular spaces at once, whereby said spaces will expand in sequence axially due to the first enhanced stretching of the thinner inner circumferential surface layer.

5,295,947

CHIROPRACTIC BRACE

Ron Muncy, Lakeland, Fla., assignor to H.E. Stanley Laboratories, Winter Haven, Fla.

Filed Apr. 29, 1992, Ser. No. 875,324

Int. Cl.[5] A61F *5/00*

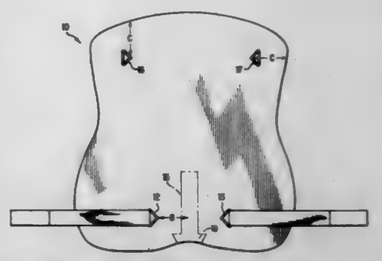
U.S. Cl. 602—5 20 Claims

1. A brace for supporting a human spinal column, comprising:

a) a substantially rigid posterior support means for supporting a posterior region of a human including the spinal column area, said posterior support means comprising an alignment means for aligning an area of the spine, said alignment means comprising a recessed portion in said substantially rigid posterior support means;

b) a substantially rigid anterior support means for supporting an anterior region of a human, said anterior support means comprising means for producing a hydrostatic lift to an abdominal region of the human, said means for producing hydrostatic lift comprising a recessed portion in said anterior support means; and

c) closure means for securing said posterior support means and said anterior support means around the human, said closure means comprising means for producing a pelvic tilt on the human so as to substantially prevent torque on a lumbar vertebra area of the human, wherein said recessed portion of said alignment means is positioned on said posterior support means to be abutable against substantially only a lumbar vertebra area of a human.



5,295,948

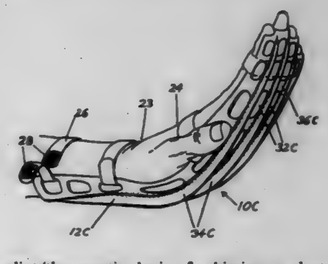
SPLINT/THERAPEUTIC DEVICE

James C. Gray, 2405 Alcoa Hwy., Knoxville, Tenn. 37920

Filed Sep. 21, 1992, Ser. No. 947,938

Int. Cl.[5] A61F *5/00, 5/37*

U.S. Cl. 602—5 18 Claims



1. A splint/therapeutic device for biasing a selected body portion of a patient to a preselected position and for providing at least partial limited mobility of said selected body portion, said device comprising a splint body integrally fabricated of a resilient material and preformed to restrain said body portion in said preselected position, said splint body having an inner surface that has preselectively contoured areas within said material of said splint body, without the necessity of deformation thereof, to closely conform to and engage said body portion as said body portion is in said preselected position, said splint body defining a preselected thickness when in an uncompressed state to achieve a preselected degree of bending of said splint body by resiliency of said splint body material and thereby said at least partial limited mobility of said body portion, whereby said resilient material of said splint body biases said portion of said selected body portion to said preselected position, said preselected thickness varying along a length and width of said splint body.

5,295,949

MODULAR NECK APPARATUS

Charles Hathaway, 11905 NE. Glisan St., Portland, Oreg. 97220

Filed Sep. 18, 1992, Ser. No. 946,567

Int. Cl.[5] A61F *5/02*

U.S. Cl. 602—18 2 Claims

1. A device for rehabilitation of a neck injury to a patient comprising:

an elongate neck band having a flexible elongate center portion and end portions, said elongate center portion

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comprised of a soft elastic material and configured to fit flat against a patient's neck with a width and length that substantially covers the neck area of a patient, said end portions configured to form handles that can be gripped by the patient's hands and with the soft elastic center portion wrapped around the back of the patient's neck the patient can pull on the handles to stretch the band against the resistance of the neck muscles for isometric and isotonic exercising of the neck muscles;

said center portion of the neck band having a pocket that substantially extends the length and width of the center portion and an opening to the pocket, and a rectangular immobilizing insert that fits the pocket length and width, said insert of a semi-rigid material that yieldingly resists



deformation and is substantially more rigid than the center portion of said neck band, said insert inserted into said pocket to convert the center portion into a neck support when wrapped around a patient's neck, and mated fasteners on the end portions for securing the end portions together and thereby securing the center portion of the band in place around a patient's neck for support of the patient's neck; and

a flexible container containing a fluid material having the property of being selectively cooled and heated, said flexible container sized to fit the pocket of the flexible center portion of the band and when inserted into the pocket with the band attached to the patient's neck, providing therapeutic cooling or heating of the patient's neck.

5,295,950

EAR PRESSURE DRESSING

Frederick A. Godley, 4 Rogers Ave., North Kingstown, R.I. 02852

Filed Oct. 21, 1992, Ser. No. 964,420
Int. Cl.[5] A61F *13/00, 15/00, 13/12*
U.S. Cl. 602—53 **9 Claims**



1. An ear pressure dressing comprising:

a thin strip of ductile metal having first and second spaced end portions which are joined by a central connector portion, said first and second end portions and said connector portion each having respective inner and outer surfaces;

a pair of soft pressure pads; and

means affixing said pads to the inner surfaces of said first and second end portions,

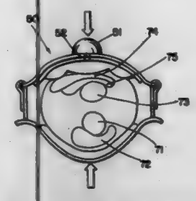
said connector portion being reversely bendable so that said pads are positionable in closely spaced, substantially adjacent relation, said pads being engageable with opposing sides of an ear, said thin strip of ductile metal being operable for maintaining said pads in pressured engagement with said opposing sides of said ear.

5,295,951

FOREARM TRANSAXIAL COMPRESSION BAND

Donald O. Fareed, 801 Buena Vista Ave., Santa Barbara, Calif. 93108

Continuation of Ser. No. 806,863, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 744,871, Aug. 14, 1991, Pat. No. 5,152,302. This application Nov. 13, 1992, Ser. No. 976,646
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—62 **1 Claim**



1. A method for treating the symptoms of tennis elbow comprising the following steps:

a) presenting a generally circular device that comprises a means for concentrating a radially compressive force onto the forearm, the means for concentrating the force are two surfaces projecting inwardly from the circular device and located at two distinct positions that are transaxially opposed from each other;

b) placing the device around the forearm to encircle at least a portion of the forearm;

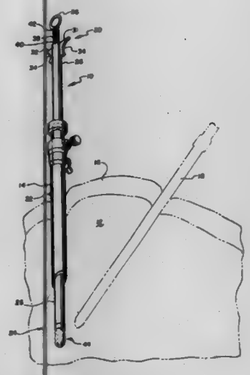
c) applying bipolar transaxial compression of equal magnitude simultaneously to discrete areas of the skin directly overlying the flexor and the extensor muscles of the forearm without substantial compression of other skin of the forearm.

5,295,952

SWAB FOR LAPAROSCOPY

Joseph J. Pietrafitta, Minnetonka, Minn., assignor to Surgical Innovations, Inc., Minneapolis, Minn.

Filed Jun. 19, 1991, Ser. No. 717,292
Int. Cl.[5] A61M *35/00;* **A61F** *13/20*
U.S. Cl. 604—1 **5 Claims**



1. A swab comprising:

a substantially cylindrical, straight outer hollow shank with a shank handle end and a shank working end;

a rigid shaft movably received in said shank, said shaft having a shaft handle end generally aligned with the shank handle end and a shaft working end generally aligned with said shank working end;

absorbent tip means for absorbing, said absorbent tip means operably and removably carried at the shaft working end and including generally opposed first and second ends and a body extending between said first and second ends, said body having a cross-sectional area, said first end carrying an absorbent material, a neck extending from said second end of said body, said neck having a terminal end and a central portion having a cross-sectional area that is less than the cross-sectional area of said body;

a spring for constantly urging said absorbent tip means toward said shank handle end, said spring operably coupled between said shank and said shaft; and

connecting means for operably connecting said absorbent tip means to said shaft, said connecting means comprising:

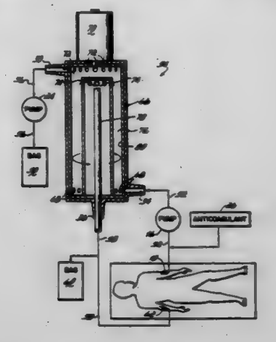
a transverse opening in said shaft adjacent to the shaft working end and a cut away extending between said opening and said shaft working end, said opening for being aligned with and receiving said terminal end and said cut away area for being aligned with said central portion.

5,295,953

METHOD AND APPARATUS FOR EXTRACORPOREAL SEPARATION OF FLUOROCHEMICALS FROM WHOLE BLOOD OF A PATIENT

Thomas J. Richard, University City, Mo.; Donald W. Schoendorfer, Santa Anna, Calif.; Robert J. Kaufman, University City, and Thomas H. Goodin, Manchester, both of Mo., assignors to HemaGen/PFC, St. Louis, Mo. and Baxter Health Care Corporation, Santa Anna, Calif.

Filed May 26, 1992, Ser. No. 888,987
Int. Cl.[5] A61N *1/03*
U.S. Cl. 604—5 **12 Claims**



1. A method of extracorporeally removing fluorochemical from fluorochemical-containing whole blood of a patient comprising

withdrawing a therapeutically acceptable extra-corporeal volume of the fluorochemical-containing whole blood from the patient,

passing the withdrawn blood through a continuous centrifugal apheresis device for removal of the fluorochemical and return of the blood to the patient at a therapeutically acceptable flow rate,

centrifugally separating at a therapeutically acceptable spin rate the withdrawn blood in the device into a fluorochemical-enriched fraction and a whole blood-enriched fraction,

removing the fluorochemical-enriched fraction from the centrifuge device to prevent build up of fluorochemical in the device, and

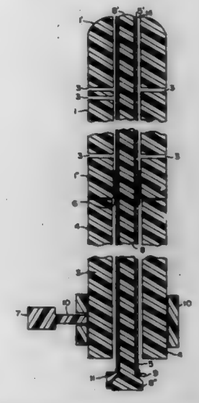
returning the whole blood-enriched fraction to the patient wherein said method takes place during one continuous cycle.

5,295,954

ARRANGEMENT CONSISTING OF URETER TUBE, (STENT) MANDRIN AND AUXILIARY TUBE

Hans-Ernst Sachse, Lercheastr. 55, 8500 Nürnberg 90, Fed. Rep. of Germany

Filed Sep. 12, 1991, Ser. No. 758,044
Claims priority, application Germany, Nov. 20, 1990, 9015815
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—8 **14 Claims**



1. An arrangement comprising a ureter tube having proximal and distal ends, a double mandrin having proximal and distal ends, inner and outer walls, and an outer mandrin and an inner mandrin which inner mandrin is longitudinally movable inside and relative to the outer mandrin, and an auxiliary tube having proximal and distal ends, the distal end of the auxiliary tube is in contact with the proximal end of the ureter tube, said ureter tube and auxiliary tube containing and being slidable over the outer mandrin, and said outer mandrin being releasably connected with said ureter tube by first releasable clamping means and said outer mandrin being releasably connected with said auxiliary tube by a separate second releasable clamping means, to form a functional unit of double mandrin, ureter tube and auxiliary tube, wherein both proximal end and the distal end of the ureter tube have openings and inherent curvatures and the distal end of the ureter tube has a central opening surrounded by the distal tip of the ureter tube, which distal tip has a distal face and wherein near the proximal end of the outer mandrin there are provided means for facilitating the introduction of an X-ray contrasting medium, and whereby said contrasting medium is enabled to flow through the length of said outer mandrin in a substantially rectilinear path via the open distal end of the outer mandrin and the central opening of the distal end of the ureter tube where it exits and arrangement.

5,295,955

METHOD AND APPARATUS FOR MICROWAVE AIDED LIPOSUCTION

Daniella Rosen, and Arye Rosen, both of Cherry Hill Township, Camden County, N.J., assignors to AMT, Inc., Cherry Hill, N.J.

Filed Feb. 14, 1992, Ser. No. 837,339
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **11 Claims**

1. A method for liposuction, comprising the steps of:

inserting a distal end of a hollow tube catheter into a body region of fatty tissue to be treated:

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applying suction to a proximal end of said tube to thereby tend to draw material from said region to be treated; and



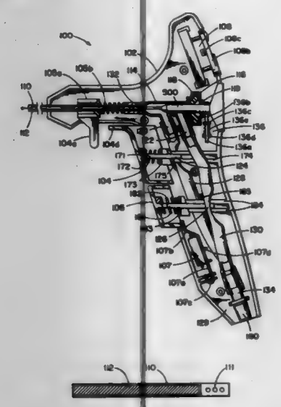
radiating RF/microwave energy to said region to be treated during said step of applying suction, to heat and thereby tend to soften said fatty tissue.

5,295,956

ENDOSCOPIC SUCTION INSTRUMENT HAVING VARIABLE SUCTION STRENGTH CAPABILITIES

Thomas O. Bales, Miami, Fla.; Kirk W. Charles, Austell, Ga.; Lionel Gillespie, Atlanta, Ga.; Joe Kopp, Decatur, Ga., and David Turkel, Miami, Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Oct. 9, 1992, Ser. No. 959,246
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **17 Claims**



1. An endoscopic suctioning instrument, comprising:

a) a hollow cannula having a proximal end and a distal end;

b) a sliding sleeve having a proximal end and a distal end and a longitudinal axis, said sliding sleeve being coaxial to and closely surrounding and slidingly engaging said hollow cannula, said sliding sleeve having a plurality of lateral holes at its distal end with said lateral holes being spaced along said longitudinal axis;

c) valve means for selectively coupling a suction source to said proximal end of said cannula;

d) sleeve actuation means means coupled to said sliding sleeve for sliding said sliding sleeve from a first position where said distal end of said sliding sleeve extends beyond said distal end of said cannula such that a first number of said plurality of lateral holes are unblocked by said cannula, to a second position where said distal end of said sliding sleeve extends beyond said distal end of said cannula such that a second number of said plurality of lateral holes are unblocked by said cannula, said second number being less than said first number, to a third position where said cannula blocks all of said lateral holes of said sliding sleeve;

e) valve actuation means coupled to said valve means for opening and closing said valve means,

wherein the sliding of said sliding sleeve from said first position to said second position to said third position when said suction tube is coupled to said cannula by said valve means, incrementally increases suction through said distal end of said sleeve as said lateral holes are sequentially blocked by said hollow cannula; and

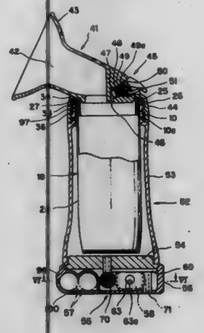
f) cooperation means acting between said sleeve actuation means and said valve actuation means such that actuation of one of said sleeve actuation means and said valve actuation means is effected by actuation of the other one of said sleeve actuation means and said valve actuation means.

5,295,957

BREAST PUMP HAVING A PRESSURE ADJUSTING MECHANISM

Shigeru Aida, and Hiroyuki Uehara, both of Chiba, Japan, assignors to Pigeon Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 811,936
Int. Cl.[5] A61M *1/06*
U.S. Cl. 604—74 **24 Claims**



1. A breast pump, comprising:

an extracting cup having one end having an engagement portion for engagement with a breast and an opposite end;

a container having a mouth portion connected to said extracting cup at said opposite end, said container having an interior space;

a milk receiving bag for mounting to said mouth portion of said container and suspension in said interior space of said container;

an air suction source connected to said container for producing an air suction condition in said interior space of said container;

a first air path defined between and fluidly connecting the interior of said extracting cup and said interior space of said container; and

a pressure adjusting means for adjusting the suction pressure on a breast in said extracting cup, comprising:

a body portion defining a second air path communicating with said interior space of said container and first air path and an opening communicating with said second air path,

a nozzle portion having a plurality of different diameter nozzle holes therein communicating with said second air path, said nozzle portion being fixed in said opening,

a rotating member rotatably mounted in said opening having a portion therein for selectively allowing a single said nozzle hole to communicate said second air path with the exterior of said container, and

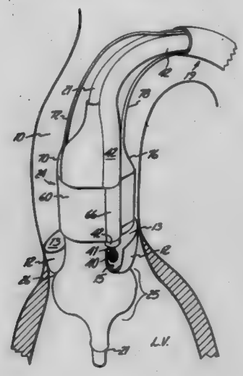
a knob rotatably mounted on said body portion and connected to said rotating member for rotation thereof.

5,295,958

METHOD AND APPARATUS FOR IN VIVO HEART VALVE DECALCIFICATION

Leonid Shturman, Minneapolis, Minn., assignor to Shturman Cardiology Systems, Inc., Minnetonka, Minn.

Filed Apr. 4, 1991, Ser. No. 680,705
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **55 Claims**



1. Apparatus for in vivo removal of deposits from an aortic heart valve, comprising:

a deposit removal tool; and

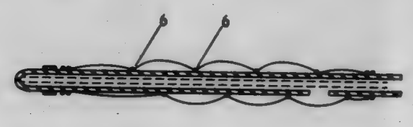
an anchoring balloon catheter fixatable across the aortic valve, the anchoring balloon catheter including anchoring balloon means, having an outer surface, for supporting the valve and for allowing movement of the deposit removal tool in relation to said outer surface, the anchoring balloon means having an inflation lumen extending proximally from the balloon means and including attachment means for securing the tool with respect to the anchoring balloon means and the aortic valve, the attachment means including positioning means for adjustably positioning the deposit removal tool along a range of rotational positions about at least a portion of the outer surface of the anchoring balloon means.

5,295,959

AUTOPERFUSION DILATATION CATHETER HAVING A BONDED CHANNEL

Paul A. Gurbel, and R. David Anderson, both of Baltimore, Md., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 13, 1992, Ser. No. 850,638
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **12 Claims**



1. An autoperfusion dilatation balloon catheter useful in angioplasty comprising

a catheter shaft,

mounted on said shaft, an inflatable non-elastomeric balloon having an outer surface and proximal and distal ends disposed along the length of said catheter shaft, said balloon when inflated having a channel in its outer surface whereby when said balloon is fully inflated and exerts pressure on the inner surface of a blood vessel in which blood is flowing, blood continues flowing between said outer surface of said balloon and said inner surface of said blood vessel through said channel, and

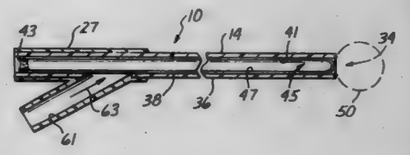
a band tightly mounted over the outside surface of said balloon on a line along the length of said catheter shaft and fixedly attached to said catheter shaft at or beyond each of said balloon proximal and distal ends, whereby said band exerts a force on said balloon outside surface directed inward toward said catheter shaft along said line when said balloon is inflated, whereby said channel is formed in said balloon outer surface when inflated.

5,295,960

CATHETER WITH INTERIOR BALLOON

Wassim Aliahmad, Irvine, and Said S. Hilal, Laguna Niguel, both of Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Apr. 1, 1992, Ser. No. 861,474
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **5 Claims**



1. A balloon catheter, comprising:

a catheter body extending along a longitudinal axis between a proximal end of the catheter body and a distal end of the catheter body;

an outer wall included in the catheter body and defining at least one lumen extending longitudinally of the catheter body;

first portions of the outer wall included in the catheter body and defining an opening from the lumen outwardly of the catheter body;

an expandable material including a peripheral edge portion and a central portion and being mounted in the catheter body with the central portion extending distally of the peripheral edge portion;

retention means spaced proximally of the opening for permanently securing the peripheral edge portion of the expandable material to the catheter body;

inlet means for admitting a pressurizing fluid into the lumen;

the expandable material being inflatable upon entry of said pressurizing fluid into the lumen, from a deflated state wherein the central portion is disposed entirely within the lumen, to a inflated state wherein the central portion extends through the opening to form a seal with the wall portions, and beyond the catheter wall to form a balloon exteriorly of the catheter body; and

second portions of the outer wall defining an injection port between the retention means and the opening for introducing an injectate into the catheter and outwardly through the opening.

5,295,961

CATHETER SYSTEM FOR MECHANICAL DILATATION OF CORONARY STENOSES

Werner Niederhauser; Eugen Hofmann, both of Zurich, and Susanne Pfenninger-Ganz, Uster, all of Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

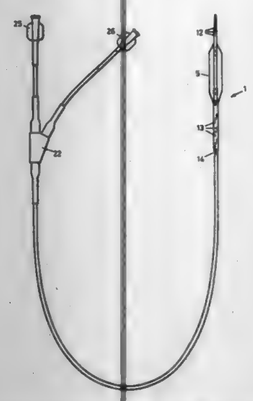
Filed Jun. 25, 1992, Ser. No. 904,231
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—96 **16 Claims**

1. A balloon dilatation perfusion catheter, comprising:

a balloon defining a balloon cavity therein;

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a bilumen tubular member having a proximal end and a distal end extending through the balloon cavity;
a plurality of side openings arranged in the bilumen tubular member located both distal and proximal of the balloon and in fluid communication with one another via a first lumen in the bilumen tubular member, the first lumen extending from the proximal end of the bilumen tubular member through the tubular member to an end hole distal of the balloon;



a guide wire outlet opening in the bilumen tubular member proximal of the balloon in communication with the first lumen; and
a second lumen in the bilumen tubular member extending from the proximal end of the bilumen tubular member to the balloon and in fluid communication with the balloon cavity wherein the first lumen is provided for receiving a guide wire or a temporary strengthening wire therein and for flushing the side openings with a liquid, and the second lumen is provided for receiving a pressure fluid for inflating the balloon.

5,295,962

DRUG DELIVERY AND DILATATION CATHETER

Michael D. Crocker, Mission Viejo; Michael R. Henson, Pleasanton, and Muny Chum, Santa Ana, all of Calif., assignors to Cardiovascular Dynamics, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 875,966, Apr. 29, 1992. This application Dec. 18, 1992, Ser. No. 992,835
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **23 Claims**



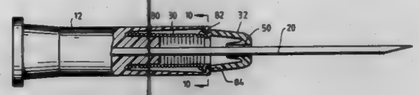
1. A drug delivery and balloon dilatation catheter, comprising:
an elongate catheter body having proximal and distal ends;
an inflation balloon on the distal end of the catheter body, the inflated profile of said inflation balloon having proximal and distal conical sections and a central cylindrical section,
a delivery balloon on the catheter, disposed about the inflation balloon;
a first lumen extending through the catheter for communication with the inflation balloon;
a second lumen extending through the catheter for communication with the delivery balloon;
a proximal annular seal between the inflation balloon and the delivery balloon; and
a distal annular seal between the inflation balloon and the delivery balloon;
wherein said proximal and distal annular seals extend axially into the conical sections of the inflation balloon so that deflation of the inflation balloon will cause a reduction in the exterior profile of the delivery balloon.

5,295,963

NEEDLE

David J. Deeks, 166 Mt. Eliza Way, Mount Eliza Vic. 3930, Australia

PCT No. PCT/AU89/00165, § 371 Date Nov. 1, 1990, § 102(e) Date Nov. 1, 1990, PCT Pub. No. WO89/10767, PCT Pub. Date Nov. 16, 1989
PCT Filed Apr. 18, 1989, Ser. No. 603,766
Claims priority, application Australia, May 6, 1988, PI8108; Jul. 1, 1988, PI9109
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—110 **9 Claims**



1. A needle assembly comprising:
a hub for connection to a syringe;
a needle connected to said hub and extending outwardly from said hub, said needle having a pointed end;
a spring having a first end secured to said hub and a second end;
an end cap secured to the second end of said spring, said end cap having an aperture so that the needle can pass through said aperture and said end cap can move along said needle relative to the needle;
a first engagement member on said end cap;
at least one deformable member coupled to said hub;
a second engagement member on said deformable member for releasable engagement with said first engagement member;
wherein said end cap is retained inwardly of said pointed end on said needle by engagement of the first engagement member with said second engagement member and with the needle projecting through said aperture and said spring being compressed, and wherein said deformable member is deformable by finger pressure so that the first and second engagement members are releasable from one another so that said spring biases said end cap to the pointed end of the needle so that the end cap covers said pointed end, said spring mechanically forcing said end cap to a position wherein the needle and the aperture in the end cap are not aligned with one another so that the needle cannot accidentally pass back through said aperture.

5,295,964

HOLDER AND WARMER FOR IV SOLUTION CONTAINERS

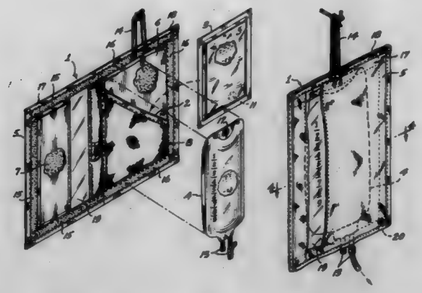
Robert T. Gauthier, 136 NW. 79th St., Seattle, Wash. 98117

Filed Oct. 2, 1991, Ser. No. 770,501
Int. Cl.[5] A61F *7/12*
U.S. Cl. 604—113 **2 Claims**

1. A holder for a container of IV solution comprising a generally rectangular cover of flexible sheet material, said cover having inner and outer surfaces and opposite end portions, said cover being foldable intermediate said end portions

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to a closed condition with the inner surfaces of said end portions disposed face-to-face and with the container therebetween for deterring heat loss from the container, a generally rectangular inner sheet having top, bottom and opposite upright side edges, said inner sheet being fastened along three of said top, bottom and opposite upright side edges to said inner surface of one of said end portions of said cover so as to form



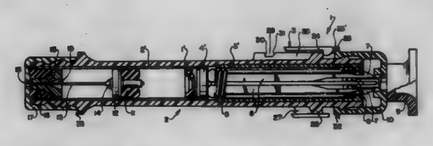
an inside pocket openable along the fourth of said edges, a heat source received in said pocket for warming the container, fastening means for normally maintaining the cover in its closed condition, the end portion of the cover opposite the end portion having the inside pocket having a window for viewing the container therethrough, and a flap movable to a position covering the window for deterring heat loss therethrough.

5,295,965

AUTOMATIC INJECTORS

John G. Wilmot, Kent, England, assignor to Survival Technology, Inc., Rockville, Md.

Filed Aug. 26, 1992, Ser. No. 936,236
Claims priority, application United Kingdom, Jan. 7, 1992, 9200219
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—136 **21 Claims**



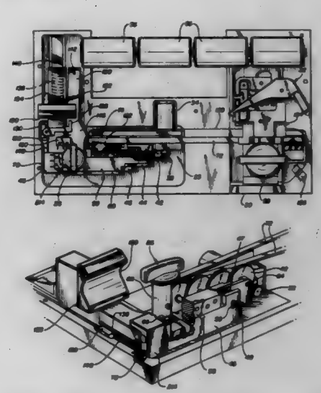
1. An automatic injector comprising:
a body;
a charge of medicament contained in said body;
a needle held in a normally sheathed position within said body and being driveable into an unsheathed projecting position from said body, said needle having a substantially constant diameter along a length thereof and terminating at a point at a forward end thereof;
a rigid cover member capable of movement relative to said body from an inoperative position to a protective position in which said cover member is capable of covering said needle when said needle is in said projecting position from said body, said cover member being generally concentrically disposed about a longitudinal axis of said body and having an opening in a portion thereof adapted to engage a general area of flesh to be injected by said needle, said opening having substantially the same diameter as said needle;
releasable drive means for driving said needle from said sheathed position to said unsheathed, projecting position from said body and through said opening in said cover member, said releasable drive means further forcing said medicament through said needle; and
biasing means for moving said cover member relative to said body into said protective position in which it covers said needle when said needle is in said unsheathed projecting position.

5,295,966

SYRINGE PUMP WITH BIASED LOCKABLE SYRINGE CLAMP

Carl M. Stern, Pennington, and James M. Wittes, Bernardsville, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 29, 1992, Ser. No. 875,921
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—154 **11 Claims**



1. A syringe pump for pumping fluid from a syringe, the syringe having a barrel and a plunger, the syringe pump comprising a syringe pump wall, a syringe clamp assembly for clamping a syringe to the wall, and a pusher for driving the syringe plunger, said syringe clamp assembly comprising:
a moveable clamp actuable directly on part of the syringe barrel for clamping the syringe to the wall;
clamp biasing means for biasing the clamp towards the wall wherein the clamp biasing means exerts a force on the clamp towards the wall thereby holding part of the syringe barrel between the clamp and the wall;
locking means for releasably locking the clamp so that when the locking means is locked, the syringe is clamped between the clamp and the wall;
control means for moving the locking means from a released position in which the clamp is loosely biased towards the wall by the clamp biasing means, to a locked position in which the clamp is locked and firmly holds the syringe against the wall.

5,295,967

SYRINGE PUMP HAVING CONTINUOUS PRESSURE MONITORING AND DISPLAY

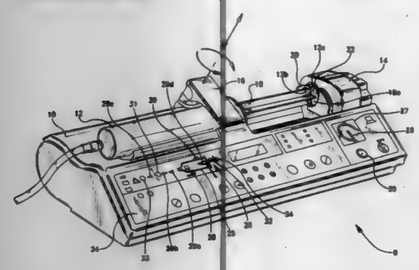
Jean-Claude Rondelet, Etienne de Crossey, and Jean-Michael Dupouy, La Tronche, both of France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 23, 1992, Ser. No. 949,610
Int. Cl.[5] A61M *5/20*
U.S. Cl. 604—154 **7 Claims**

1. A syringe pump for pumping fluid from a syringe, the pump comprising:

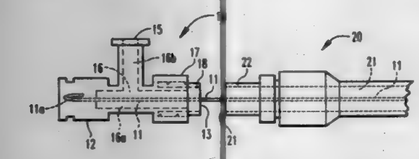
VOL 1160 ISS 4 MR 22 1994 UMI

means for detecting the pressure in the syringe substantially continuously; and



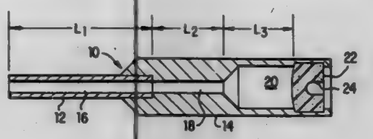
means for displaying the pressure in the syringe substantially continuously such that the pressure in the syringe can be monitored during pumping.

5,295,968
STYLET WIRE ASSEMBLY
Mark C. Martel, and John Karpiel, both of Winston-Salem, N.C., assignors to Wilson-Cook Medical Inc., Winston-Salem, N.C.
Filed Aug. 19, 1992, Ser. No. 932,321
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—164 **4 Claims**



1. A stylet wire assembly for providing stiffening reinforcement to a medical catheter by placement of a stylet wire into a fluid conduit in said catheter while allowing for unobstructed fluid communication therethrough, said assembly comprising:
a stylet wire; and
a housing having a proximal end and a distal end, said housing including:
a catheter fluid communication port, said catheter fluid communication port allowing for fluid communication between the distal end of said housing and the fluid conduit of said catheter;
stylet wire anchoring means located at said proximal end of said housing for anchoring the proximal end of said stylet wire into the proximal end portion of said housing with said stylet wire extending through said catheter fluid communication port at the distal end of said housing;
an external fluid communication port, said external fluid communication port allowing for fluid communication into and out of said housing in transverse orientation relative to the axis of said stylet wire within said housing and distally of said stylet wire anchoring means;
sealing engagement means for sealingly engaging the distal end of said housing to the proximal end of said catheter with said catheter communication port in fluid communication with the fluid conduit of said catheter; and
fluid conduit means for providing fluid communication within said housing between said catheter fluid communication port and said external fluid communication port.

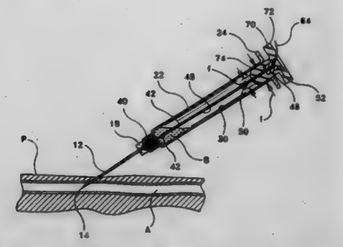
5,295,969
VASCULAR ACCESS DEVICE WITH AIR-TIGHT BLOOD CONTAINMENT CAPABILITY
Robert E. Fischell, Dayton, Md.; David R. Fischell, Fair Haven, N.J., and Tim A. Fischell, Los Altos, Calif., assignors to Cathco, Inc., Dayton, Md.
Filed Apr. 27, 1992, Ser. No. 874,366
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—168 **24 Claims**



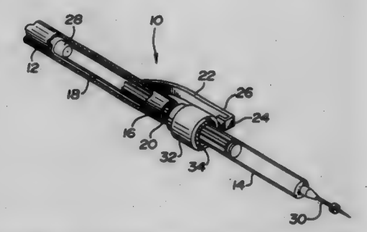
1. A vascular access device comprising:
a hollow thin-walled metal tube having distal and proximal ends, and having an opening at the tube's distal end, and further having a lumen extending freely from the opening at the tube's distal end to the tube's proximal end; and,
a transparent viewing section having distal and proximal ends, the distal end of the viewing section forming a first pressure tight seal with the metal tube's proximal end and having an interior lumen which is in fluid communication with the lumen of the metal tube, guide wire access means forming a portion of said transparent viewing section and having a second pressure tight seal at the viewing section's proximal end thereby forming an enclosed fixed volume non-venting chamber within the viewing section so as to contain any blood that enters into the opening at the tube's distal end, the blood being contained within the metal tube and viewing section, and the guide wire access means being adapted to allow passage of a guide wire through the viewing section and into the metal tube, the guide wire access means being further adapted to provide said second pressure tight seal to prevent free release of the blood prior to insertion of the guide wire through the guide wire access means.

5,295,970
APPARATUS AND METHOD FOR VASCULAR GUIDE WIRE INSERTION WITH BLOOD FLASHBACK CONTAINMENT FEATURES
Mary B. Clinton, Pearl River, N.Y.; Frederick C. Houghton, Sussex, and Joseph J. Gregg, Hasbrouck Heights, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 5, 1993, Ser. No. 14,036
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—168 **26 Claims**

1. A blood flashback containment apparatus comprising:
a barrel having opposed proximal and distal ends and a chamber therebetween, said distal end of said barrel having a distal opening;
an inner cannula mounted in said chamber, said inner cannula having a distal end communicating with said distal opening of said barrel, a proximal end and a lumen extending therebetween, said inner cannula including at least one aperture extending through said inner cannula providing communication between said lumen and said chamber;
means for preventing blood flow out of said proximal end of said inner cannula; and
a porous vent plug disposed in said chamber in sliding fluid-tight engagement with both said barrel and said inner cannula, said porous vent plug being slidably movable from a proximal position where said aperture through said inner cannula is exposed, to a distal position where said porous vent plug covers said aperture through said inner cannula, whereby blood flashback is contained and visually observable in said blood-receiving chamber of said barrel when said porous vent plug is in said proximal position, and whereby blood flashback is terminated when said porous vent plug is advanced to said distal position.

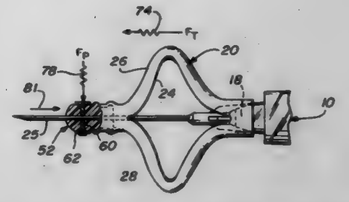


5,295,971
IMPACT RELEASABLE POLE MOUNTED SYRINGE
Donald Cameron, R.R. #3, Ponoka, Alberta, Canada T0C 2H0
Filed Aug. 10, 1993, Ser. No. 105,287
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **8 Claims**



1. An impact releasable pole mounted syringe, comprising:
a. a pole member having a gripping end and a syringe attachment end, the syringe attachment end having a receptacle with an opening to telescopically receive a syringe, the pole member having a flexible finger protruding past the syringe attachment end and biased radially away from the pole member, the finger having an engagement member positioned at a remote end;
b. said syringe having a plunger end and a needle end, the plunger end being telescopically insertable into the receptacle at the syringe attachment end of the pole member, the syringe having an annular collar serving as stop means to limit the telescopic insertion of the syringe into the receptacle, the syringe having an engagement channel adapted to receive the engagement member; and
c. pressure sensitive stop means maintaining the syringe and the pole member in an engaged position wherein the engagement member is engaged with the engagement channel to couple the syringe with the pole member, upon an axial pressure being placed upon the syringe the pressure sensitive stop means permitting the syringe to travel further into the receptacle of the pole member thereby moving the engagement member along the engagement channel until it is released from the engagement channel such that the biased finger springs radially away from the pole member permitting unrestricted withdrawal of the syringe from the receptacle.

5,295,972
HYPODERMIC SYRINGE WITH PROTECTIVE CAP
Peter S. Mischenko, Mount Prospect, Ill., assignor to Metatech Corporation, Lake Forest, Ill.
Filed Aug. 4, 1992, Ser. No. 925,084
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—192 **2 Claims**



1. A device to protect against accidental exposure to a needle on a hypodermic syringe comprising:
a cap having a solid body with a base;
a flexible, elastomeric tubular covering that extends beyond a tip of the needle to a front end that is attached to the cap base and extends to a back end that is attached to the syringe;
an orifice extending longitudinally through the solid body of the cap;
a molded slot extending through the solid cap orthogonal to the orifice;
a resilient oval-shaped annular band surrounding the cap and forming a spring member movable between first and second positions;
a first elongated, flat member attached at one end to a first position on an inside of the annular band along a minor axis of the oval-shaped band and extending into the slot;
a semicircular orifice in an inner end of said flat member;
a second elongated flat member attached at one end to a second position on the inside of the annular band diametrically opposite to the first position on the minor axis of the oval-shaped band and extending into the slot; and
a semicircular orifice in an inner end of the second elongated flat member such that, in a normal position of the oval-shaped band, the two flat members overlap to prevent the needle tip from passing through the cap orifice, and when the oval-shaped band is compressed along a major axis, the inner ends of the first and second flat members move away from each other until the semicircles in the two members form a complete circle enabling passage of the needle through the cap orifice.

5,295,973
SAFETY SYRINGE
Long-Hsiung Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jun. 7, 1993, Ser. No. 71,998
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—195 **1 Claim**

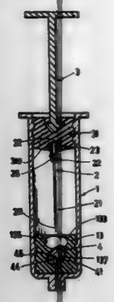
1. A safety syringe comprising:
a syringe cylinder with a front portion and a rear portion,
a flexible plug located inside of said cylinder near the front portion, said plug having front and rear portions, wherein a first disk socket is formed in the rear portion of said plug and a second disk socket, in communication with said first disk socket, is formed forwardly of said first disk socket in the front portion of said plug, said first disk socket of said plug extends perpendicularly outward from the longitudinal axis of said cylinder and said second disk socket of said plug extends outwardly inclined from the longitudinal axis of said cylinder,
a rigid blocking member sized to be held in the first or second disk sockets, said member having a central

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through hole and a larger shank hole extending through a portion of said member, said shank hole having an annular protrusion groove having a diameter larger than the shank hole,

a hollow needle having a needle portion and a needle head portion formed on the rear of said needle portion, said needle head portion having a longitudinal bifurcated slot and a plurality of annular protrusions formed on the outer surface of said head portion, said head portion is sized to be received in the shank hole of the blocking member and is retained in the shank hole by said grooves of said hole being engageable with the protrusions of the needle head portion, said head portion also having an enlarged end portion,

a plunger held in said syringe cylinder, said plunger having a needle head socket for engageably receiving and coupling with the enlarged end portion of said needle head, in operation said plunger is moved towards the front portion of the syringe cylinder to inject a fluid material held within the cylinder, the plunger then engages said hollow needle that is retained in said rigid blocking member, further forward movement of the plunger causes said needle head socket of the plunger upon the needle head portion and movement of the rigid blocking member from the first disk socket of the plug to the inclined second disk socket of the plug, retraction of the plunger pulls the hollow needle from the rigid blocking member into the syinge cylinder and the rigid blocking member positioned in the inclined second disk socket prevents the needle from aligning with the central through hole of the blocking member to maintain the needle inside of said syringe cylinder.



5,295,974

SHIELDED HYPODERMIC NEEDLE WITH I.V. CANNULA

D. Michael O'Laughlin, 320 SW. 10th St., #4, Gainesville, Fla. 32601

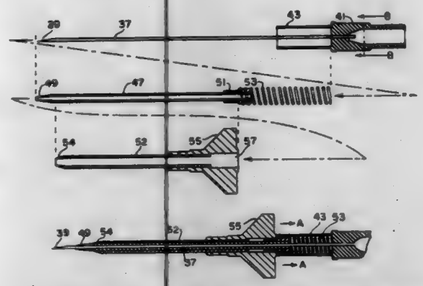
Filed Jan. 7, 1991, Ser. No. 637,674
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—198 16 Claims

1. A cannula assembly, comprising:

an elongated needle having a sharpened tip, said needle having an axial lumen,

a cannula sleeve comprising an elongated member having a lumen sized to fit over said cannula needle so that said needle can be inserted coaxially within the lumen of said elongated member, and

shielding means having a shield position for normally shielding said tip of said needle so as to prevent a person from being intentionally or accidentally stuck with said tip, and for providing a manually operable member for allowing a user to manually move said member to an unshield position so as to unshield said tip when said needle and said cannula are to be inserted into a patient's body, said shielding means including urging means for urging said member to a shield position when said member is not manually held in its unshield position so that said tip of said needle will be shielded unless said member is manually moved to and held in its unshield position, said shielding means comprising a wire having a blunt end positioned in said lumen, one end of said wire normally protruding from said tip of said needle, the other end of said wire being attached to said member.

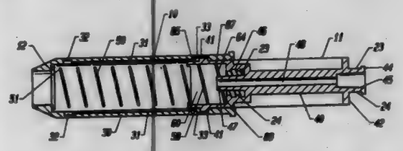


5,295,975

HYPODERMIC NEEDLE SAFETY DEVICE WITH SLIDING OUTER COVER

Hanford N. Lockwood, Jr., 2222 Alameda De Las Pulgas, San Mateo, Calif. 94403

Filed Oct. 28, 1992, Ser. No. 967,651
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—198 21 Claims



1. A needle protection device for use with a hypodermic needle and a reservoir, the device comprising:

an extension having front and back ends and a central cavity therethrough;

a front end connection at the front end of the extension for connecting the hypodermic needle to the extension;

a back end connection at the back end of the extension for connecting the reservoir to the extension; and

an outer cover slidably disposed about the extension and shiftable between an extended position where the hypodermic needle is covered and a retracted position where the needle is exposed; and

a means for retaining the outer cover in the extended position, which is disengageable by rotation of the outer cover with respect to the extension.

5,295,976

DOSE INDICATING INJECTION PEN

Dale C. Harris, Fairland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

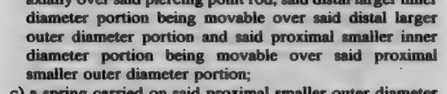
Division of Ser. No. 504,254, Apr. 4, 1990, Pat. No. 5,226,896.
This application Jun. 25, 1993, Ser. No. 83,740
Int. Cl.[5] A61M 5/24
U.S. Cl. 604—211 5 Claims

1. A syringe for containing a liquid to be injected including means for selectively adjusting the amount of liquid to be injected and means for indicating the amount selected comprising:

a syringe housing, having a proximal and a distal end a piston movable within the housing to expel the liquid, and a plunger rod having a first end in contact with the piston for exerting a force on the piston;

a collar including a threaded coupling coupled to the syringe housing for calibrated adjustment of the collar relative thereto, the collar including an outer portion having dose-indicating scale thereon; and

a hollow cap fixed to the plunger rod, and having an outer portion outer portion of the cap overlying the outer portion of the collar and having a window through which only a segment of the dose-indicating scale on said portion of the collar is visible, the visible portion indicating the amount of liquid selected for injection.



5,295,977

TROCAR CATHETER FOR DRAINAGE

Herbert Cohen, Fort Lauderdale; Frank A. Scarfone, Boca Raton, and David Turkel, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed May 11, 1993, Ser. No. 64,461
Int. Cl.[5] A61M 5/00, 5/178
U.S. Cl. 604—264 19 Claims

1. A trocar which extends through and for use with a catheter having a stepped diameter lumen, wherein said trocar is inserted into the lumen of the catheter and said trocar is used to incise a patient and install the catheter after which the trocar is removed from the lumen of the catheter, said trocar comprising:

a) a safety sleeve having a distal larger inner diameter portion and a proximal smaller inner diameter portion;

b) a piercing point rod having a distal larger outer diameter portion tapering to a piercing tip and a proximal smaller outer diameter portion, said safety sleeve being movable axially over said piercing point rod, said distal larger inner diameter portion being movable over said distal larger outer diameter portion and said proximal smaller inner diameter portion being movable over said proximal smaller outer diameter portion;

c) a spring carried on said proximal smaller outer diameter portion of said piercing point rod; and

d) a trocar rod having a distal end with a stepped receiving bore which receives said proximal smaller outer diameter portion of said piercing point rod, said spring, and said safety sleeve, said receiving bore having a relatively small diameter portion into which said proximal smaller diameter portion of said piercing point rod is mounted, a first seat for biasing said spring against said safety sleeve to a first position whereby said piercing tip is covered by said safety sleeve, and a relatively large diameter portion for receiving a portion of said safety sleeve against said spring.

5,295,978

BIOCOMPATIBLE HYDROPHILIC COMPLEXES AND PROCESS FOR PREPARATION AND USE

You-Ling Fan, East Brunswick, and Lawrence Martin, Bridgewater, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 28, 1990, Ser. No. 635,914
Int. Cl.[5] A61M 25/00
U.S. Cl. 604—265 45 Claims

1. A method of covering at least a portion of a substrate with a hydrophilic polymeric complex to provide a biocompatible surface said method consisting essentially of:

(1) contacting said substrate with a polyisocyanate contained in a first inert solvent to provide at least a partially coated substrate;

(2) contacting said coated substrate with a carboxylic acid containing polymer contained in a second inert solvent to provide a multiple coated substrate and optionally one or more additives selected from the group consisting of stabilizers, antioxidants, antimicrobial agents, antithrombogenic agents, colorants and biological agents;

(3) contacting said multiple coated substrate with a third inert solvent containing at least one member of the group consisting of a poly (N-vinyl lactam) and a poly (lower-alkylene oxide) and optionally one or more additives selected from the group consisting of stabilizers, antioxidants, antimicrobial agents, antithrombogenic agents, colorants and biological agents; and

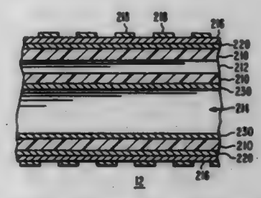
(4) thereafter drying said multiple coated substrate.

5,295,979

URINARY CATHETER AND SYSTEM

Mark DeLaurentis, Ocean Springs, Miss.; Kambiz Pourrezaei, Dresher, Pa.; Raymond L. Boxman, Herzliya, Israel, and Richard B. Beard, Atco, N.J., assignors to P & D Medical Coatings, Inc., Dresher, Pa.

Filed Mar. 27, 1992, Ser. No. 859,062
Int. Cl.[5] A61M 5/32, 25/00
U.S. Cl. 604—265 42 Claims

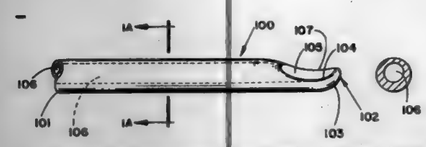


1. A catheter defining inner and outer surfaces and distal and proximal ends, said catheter comprising:

a smooth, flat continuous layer of a first metal extending over at least one of said inner and outer surfaces, said continuous layer of first metal extending from a point on said catheter to said distal end, said layer underlying a discontinuous smooth, flat layer of a second metal, dissimilar to said first metal, to thereby form contiguous exposed flat patches of said first and second dissimilar metals.

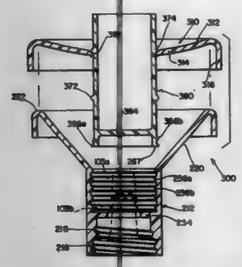
VOL 1160 ISS 4 MR 22 1994 UMI

5,295,980
MULTI-USE CANNULA SYSTEM
Robert A. Ersek, 62 Pascal, Austin, Tex. 78705
Continuation-in-part of Ser. No. 428,605, Oct. 30, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 768,010
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—272 4 Claims



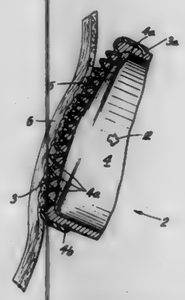
1. A surgical combination infusion/aspiration cannula comprising an elongated probe member characterized by:
(a) a single tubular distal section having a generally cylindrical, axially asymmetrical, hollow interior bore, the asymmetry producing relatively thick and relatively thin sidewall sectors, the interior bore configured to optionally carry a stilette member therein;
(b) an insertion tip distally contiguous with the tubular section and of asymmetrically reduced outer cross-section with respect to the tubular section;
(c) a transition portion in the form of a gradual arcuate taper, the taper being generally in the relatively thin wall sector of the tubular section;
(d) the tip portion further comprising a rounded blunt closed tissue penetration end for traumatically penetrating subcutaneous tissue and having a generally radially disposed infusion/aspiration opening rearward of the penetration end, the opening being configured with the asymmetry of cross-section so as to be at least partially protected to prevent incursion of foreign material during insertion of the probe; and
(e) wherein the edges of the opening have a blunt outward directed surface and sharpened inner edge component configured to cooperate with the cutting surface of a compatible stilette member to excise tissue specimens.

5,295,981
EYEDROP APPLICATOR ATTACHMENT
William L. Smith, P.O. Box 1334, Clayton, Ga. 30525, and William E. Smith, 220 College St., Dyersburg, Tenn. 38027
Division of Ser. No. 208,483, Jun. 20, 1988, Pat. No. 5,037,406. This application Aug. 5, 1991, Ser. No. 742,109
Int. Cl.[5] A61H *33/04*
U.S. Cl. 604—301 14 Claims



1. An eyedrop applicator attachment for a bottle with an externally threaded neck comprising:
a hollow cylindrical body with an open outer end for entry thereinto of the neck of a bottle,
a first female thread on the interior of said body adjacent the open outer end thereof,
a second female thread of smaller diameter than said first thread on the interior of said body axially of said first female thread and remote from said open outer end,
means for enabling liquid to flow from said applicator when the neck of the bottle is threadedly engaged with one said female thread,
a third female thread on the interior of said body axially of said first and second threads and closer to said second thread, and
a stopper having male threads thereon for threadedly engaging said third female thread, said stopper comprising a generally cylindrical body having an open end remote from the threads thereon.

5,295,982
SUCTION DEVICE FOR CLEANING SKIN
Viktor Schatz, Birkenweg 2, 5900 Siegen, Fed. Rep. of Germany
Filed Sep. 12, 1991, Ser. No. 758,769
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 4029326
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—313 15 Claims

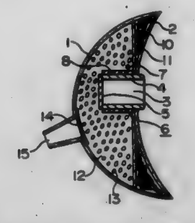


1. A suction device for cleaning skin comprising:
a suction nozzle having a plurality of openings;
an elastic diaphragm which covers the openings; and
means for generating a pulsating driving force for drawing the elastic diaphragm into the openings so that the diaphragm forms a plurality of pulsating secondary vacuum pumps in contact with the skin, wherein the pulsating drive force generating means further comprises electromagnets for generating the pulsating drive force and the diaphragm further comprises one of fine inserts and a layer of magnetic material.

5,295,983
URINARY COLLECTOR FOR WOMEN
Yoshinori Kubo, Oume, Japan, assignor to Akcare Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1992, Ser. No. 969,430
Claims priority, application Japan, Nov. 1, 1991, 3-313472
Int. Cl.[5] A61F *4/44*; A61B *5/00*; B65D *81/00*; A47K *11/00*
U.S. Cl. 604—329 8 Claims

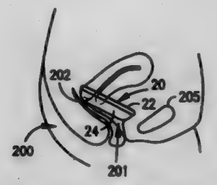
1. A urinary collector for women to receive urinary discharge comprising a urinary collector body member having wall means and a top portion defining a chamber therebetween for collection and transfer of urinary discharge, said wall means being constructed of a waterproof, soft material, said top portion being constructed of a thin water permeable film having an outer surface forming a skin contacting face, said chamber being partitioned by a water impermeable film into a first chamber portion located between said impermeable film and said top portion and a second chamber portion located therebelow, said first chamber portion being packed with a water absorbing material, said second chamber portion being packed with hydrophobic material having interstices forming

passages therethrough, a cup member extending through said top portion and through said impermeable film into said second chamber portion, said cup member being position and located for receiving urinary discharge and being constructed of a



water permeable material, said urinary collector body member having an outlet opening communicating with said second chamber portion, and means for preventing passage of the hydrophobic material through said outlet opening.

5,295,984
VAGINAL DISCHARGE COLLECTION DEVICE AND INTRAVAGINAL DRUG DELIVERY SYSTEM
Audrey Contente, New York, N.Y.; Bruce F. Rose, Yorba Linda, Calif., and Richard C. Potter, Seeley Lake, Mont., assignors to Ultrafem, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 817,498, Jan. 7, 1992, abandoned, and a continuation-in-part of Ser. No. 865,746, Apr. 10, 1992, abandoned, and a continuation-in-part of Ser. No. 852,265, Jun. 8, 1992, said Ser. No. 817,498, is a division of Ser. No. 446,553, Dec. 7, 1989, abandoned, said Ser. No. 865,746, is a continuation-in-part of Ser. No. 446,553, Dec. 7, 1989. This application Jun. 26, 1992, Ser. No. 904,367
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—317 14 Claims



1. A method of using a plurality of menstrual discharge collectors during a period of menstruation, said method comprising the steps of:
(a) providing a first menstrual discharge collector including body means for providing a collection space for the collection of menstrual discharge and having an opening for the passage of said menstrual discharge into said space, and rim means for providing resilient outward holding force sufficient for holding said collector in position within a woman's vaginal canal during use, said body means having a top, said rim means having a leading portion and a trailing portion, said rim means being affixed to said body means proximate said top of said body means;
(b) positioning said discharge collector in said position such that said leading portion of said rim means is located at a rearward location behind the woman's cervix, such that said trailing portion of said rim means is located at a forward location behind the woman's pubic bone, and such that the woman's cervix is located between said leading and trailing portions of said rim means;
(c) holding said collector in said position, with a substantially looser fit than would be needed to inhibit the passage of sperm around said rim means, by applying said resilient outward holding force against the walls of the woman's vaginal canal;
(d) while holding said collector in said position, collecting a first volume of said menstrual discharge in said collection space without absorbing said discharge by allowing said discharge to flow through said opening and into said space;
(e) subsequently, disposing of said vaginal discharge collector together with said first volume of said menstrual discharge;
(f) providing a second menstrual discharge collector including body means for providing a collection space for the collection of said menstrual discharge and having an opening for the passage of said menstrual discharge into said collection space of said collector, and rim means for providing a second resilient outward holding force sufficient for holding said second collector in said position within the woman's vaginal canal during use, said body means of said second collector having a top, said rim means of said second collector having a leading portion and a trailing portion, said rim means of said second collector being affixed to said body means of said second collector proximate said top of said body means of said second collector;
(g) positioning said second discharge collector in said position such that said leading portion of said rim means of said second collector is located at the rearward location behind the woman's cervix, such that said trailing portion of said rim means of said second collector is located at the forward location behind the woman's pubic bond, and such that the woman's cervix is located between said leading and trailing portions of said rim means of said second collector;
(h) holding said second collector in said position, with a substantially looser fit than would be needed to inhibit the passage of sperm around said rim means of said second collector, by applying said second resilient outward holding force against the walls of the woman's vaginal canal;
(i) while holding said second collector in said position, collecting a second volume of said menstrual discharge in said collection space of said second collector without absorbing said discharge by allowing said discharge to flow through said opening of said second collector and into said collection space of said second collector; and
(j) subsequently, disposing of said second discharge collector together with said second volume of said menstrual discharge; and
wherein said steps of positioning and disposing of said first discharge collector and said steps of positioning and disposing of said second discharge collector all occur during said period of menstruation.

5,295,985
POLYESTERS AND THEIR USE IN COMPOSTABLE PRODUCTS SUCH AS DISPOSABLE DIAPERS
James A. Romesser; Hyunkook Shin, and Raymond F. Tietz, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 834,797, Feb. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 769,414, Oct. 1, 1991, abandoned, and a continuation-in-part of Ser. No. 769,417, Oct. 1, 1991, abandoned, and a continuation-in-part of Ser. No. 771,019, Oct. 1, 1991, and a continuation-in-part of Ser. No. 645,995, Jan. 25, 1991, Pat. No. 5,097,005, and a continuation-in-part of Ser. No. 645,849, Jan. 25, 1991, Pat. No. 5,097,004, which is a continuation of Ser. No. 522,134, May 11, 1990, Pat. No. 5,053,482. This application Nov. 6, 1992, Ser. No. 973,240
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—358 16 Claims

1. A fiber and film forming polyester consisting essentially of recurring structural units of the formulae:

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$$-[-C(O)-R-C(O)-OG(O)-]_a-[-C(O)-Q-O-]_b-$$

wherein about 0.1 to about 2.5 mole % of R is an alkali metal or alkaline earth metal salt of a 4-sulfophthalic radical, up to about 40 mole % of R is a radical D, in amount d, selected from the group consisting of a chemical bond and one or more divalent, non-aromatic, C_1–C_{10} hydrocarbylene radicals, and the remainder of R is a divalent aromatic radical, with at least about 85 mole % of said remainder being p-phenylene,

wherein up to about 30 mole % of G is a polyethylene ether radical E, in amount 4e, selected from the group consisting of

$$-(CH_2)_2-O-(CH_2)_2- \text{ and}$$
$$-(CH_2)_2-O-(CH_2)_2-O-(CH_2)_2-,$$

and the remainder of G is selected from the group consisting of hydrocarbylene radicals $-(CH_2)_2-$, $-(CH_2)_3-$, and $-(CH_2)_4-$, and wherein the structural units of the formula:

$$[-C(O)-R-C(O)-OGO-]_a$$

contain a total amount of radicals D and/or E that is at least S, wherein S is the total of d+e, where d is the mole % of radical D and e is one quarter of the mole % of radical E, and wherein S is at least 5 mole %,

wherein Q is derived from an hydroxy acid of formula

$$HO[-C(O)-Q-O-]_xH,$$

where Q is selected from the group consisting of a chemical bond and hydrocarbylene radicals $-(CH_2)_n-$(where n is an integer from 1 to 5), $-C(R')H-$, and $-C(R')HCH_2-$, wherein R′ is selected from the group of $-CH_3$ and $-CH_2CH_3$, and where x and Q are selected such that the hydroxy acid has a melting point at least 5 degrees C below its decomposition temperature,

and wherein "a±" and "b" are mole fractions of the polymer, and the mole fraction "a" is 0.6 to 1 and, correspondingly, mole fraction "b" is 0 to 0.4.

5,295,986

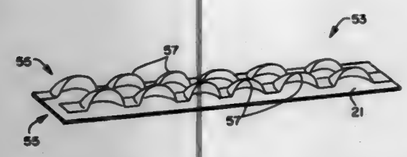
NEWBORN'S GROWTH ADJUSTABLE ABSORBENT DIAPER HAVING VARIABLE OVERLAPPING AND NON-OVERLAPPING EARS

Georgia L. Zehner, Larsen; Paulette M. Rosch, Appleton; Thomas W. Odorzynski, Green Bay; Bruce M. Siebers, Appleton, and Timothy J. Blenke, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 757,789, Sep. 11, 1991. This application Apr. 15, 1992, Ser. No. 868,915

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.1 **47 Claims**



1. A growth adjustable absorbent article having a length, said article comprising:

a backsheet including a front section having a front edge, a back section having a back edge, and an intermediate crotch section having opposite sides,

a main absorbent body being disposed on at least said intermediate crotch section,

a foldable absorbent panel being disposed on said front section between said main absorbent body and said front edge of said front section, said foldable absorbent panel being movable between a first position wherein said foldable absorbent panel is substantially coplanar with said main absorbent body and a second position wherein said foldable absorbent panel is folded inwardly upon said main absorbent body, whereby the length of said article is adjustable to accommodate the growth of a newborn baby.

a topsheet, and

a crotch cushion barrier being disposed on each side of said crotch section, wherein said cushion barrier comprises at least one row of cup-like members, wherein each cup-like member comprises an inner edge, an outer edge, and side edges, wherein said inner edge is unattached to, and said outer edge and said side edges are attached to, said topsheet to form a pocket-like void, and wherein said cup-like members face inwardly towards a longitudinal centerline of the absorbent article.

5,295,987

ABSORBENT DISPOSABLE ARTICLE WHICH IS DIVIDED INTO PORTIONS EXTENDING IN THE LONGITUDINAL DIRECTION OF THE ARTICLE

Leif U. R. Widlund, Mölnlycke, and Roy Hansson, Mölndal, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

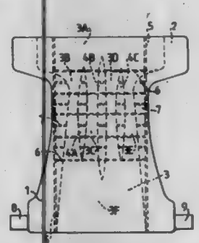
PCT No. PCT/SE90/00835, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/09579, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 14, 1990, Ser. No. 859,460

Claims priority, application Sweden, Dec. 21, 1989, 8904318

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.2 **5 Claims**



1. An absorbent, disposable article, such as a diaper, an incontinence guard or a sanitary napkin, which includes an outer liquid-impermeable casing layer which is intended to lie distal from the wearer in use, an inner, liquid-permeable casing layer which is intended to face toward the wearer's body in use and an absorbent pad enclosed between said two casing layers, wherein at least the crotch part of the pad that is placed in the crotch region of the wearer is divided into mutually separate parts, which extend in the longitudinal direction of the article, said separate parts being mutually separated transversely when the article is in an essentially flat state, intermediate originally flat and pleatable areas of the two casing layers being mutually joined and bridging the space between said separate parts, and transverse elastication means within the region of said separate parts of the absorbent pad, said elastication means bringing the edges of adjacent separate parts into abutment with one another while gathering together said intermediate originally flat areas of the mutually joined casing layers.

5,295,988

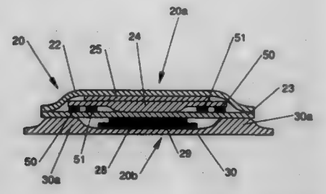
INDIVIDUALLY WRAPPED DISPOSABLE ABSORBENT ARTICLE WHICH BECOMES ELASTICIZED WHEN UNWRAPPED

Delmar R. Muckenfuhs, Middletown, Ohio, and Kim M. Roy, Lynn, Mass., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 4, 1992, Ser. No. 941,341

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.2 **22 Claims**



1. An individually wrapped disposable absorbent article comprising:

(a) an absorbent core having a first surface and a second surface;

(b) a fluid permeable topsheet secured in overlaying relation to said first surface of said absorbent core;

(c) a fluid impermeable backsheet secured in overlaying relation to said second surface of said absorbent core, said backsheet having an exposed surface and an inwardly oriented surface, said exposed surface of said backsheet including a layer of adhesive;

(d) a wrapper for covering the layer of adhesive on the exposed surface of said backsheet, said wrapper having an exposed surface and an inwardly oriented surface, said inwardly oriented surface of said wrapper being releasably affixed to the exposed surface of said backsheet by said layer of adhesive; and

(e) an elastic material secured to said backsheet, said elastic material being held in tension while said wrapper is affixed to said backsheet, a substantial portion of said absorbent article being maintained in a planar configuration while said wrapper is affixed to said backsheet, separation of said wrapper from said backsheet releasing the tension in said elastic material causing said absorbent article to form an upwardly cupped configuration.

5,295,989

LIGHT CABLE FOR USE IN AN APPARATUS FOR OPHTHALMIC OPERATION USING A LASER BEAM

Hirokazu Nakamura, Aichi, Japan, assignor to Nidek Co., Ltd., Gamagori, Japan

Filed May 29, 1992, Ser. No. 889,995

Claims priority, application Japan, May 31, 1991, 3-157867

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—4 **2 Claims**

1. An ophthalmic operation apparatus using a laser beam, in which the laser beam is introduced to a patient's eye for ophthalmic operation, the apparatus comprising:

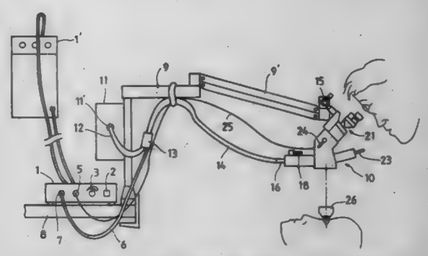
a body in which a laser beam oscillator is disposed;

a source of illumination light;

an ophthalmic operation microscope for observing an affected part of the patient's eye;

a delivery optical system, mounted in said ophthalmic operation microscope, for introducing the laser beam and the illumination light into the patient's eye;

a light cable connecting the apparatus with the delivery optical system, including a plurality of optical illumination fibers on which the illumination light is incident and an optical laser fiber on which the laser beam is incident, wherein said optical illumination fibers are arranged around the optical laser fiber at least at an end of the cable where an illumination light beam of the optical illumination fibers is emitted, and the end of the cable is arranged



at a conjugate position with the affected part of the eye to the delivery optical system.

5,295,990

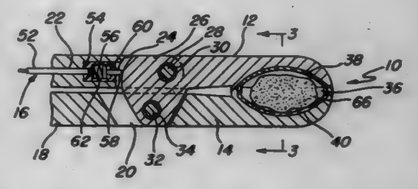
TISSUE SAMPLING AND REMOVAL DEVICE

John M. Levin, 412 Fairview Rd., Penn Valley, Pa. 19072

Filed Sep. 11, 1992, Ser. No. 943,660

Int. Cl.[5] A61B *10/00*

U.S. Cl. 606—49 **4 Claims**



1. A tissue sampling device comprising:

(a) Means for removing tissue from an area of a living being comprising a pair of cutting jaws located at the first end of the device, the pair of cutting jaws being pivotally connected to permit the jaws to open and close, each of said cutting jaws comprising a peripheral cutting edge and a cavity to hold said tissue, said means further comprising actuating means for pivoting the cutting jaws between opened and closed positions;

(b) control means for cauterizing the direct area from which the tissue has been removed, after said tissue has been removed; and

(c) means to prevent the cauterization of said tissue comprising heat insulating material forming the interior surface of said cavity.

5,295,991

SURGICAL INSTRUMENT FOR POSITIONING OSTEOSYNTHETIC ELEMENTS

Robert Frigg, Davos-Platz, Switzerland, assignor to Synthes (U.S.A.), Paoli, Pa.

Filed May 15, 1992, Ser. No. 883,177

Claims priority, application Switzerland, May 24, 1991, 01543/91-2

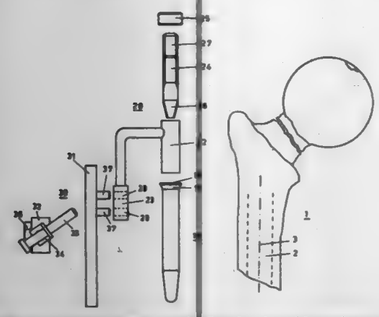
Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—62 **16 Claims**

1. Surgical instrument for positioning osteosynthetic elements comprising a U-shaped frame having a first leg and a second leg, said first leg comprising anchoring means for attaching said frame to a medullary pin at a predetermined position relative to said frame and a drill jig attached to said second

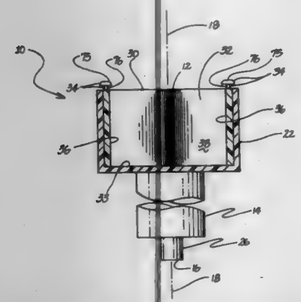
VOL 1160 ISS 4 MR 22 1994 UMI

leg, said drill jig having a drill bushing extending without intersecting the longitudinal axis of a medullary pin attached



by said anchoring means to said first leg in said predetermined position.

5,295,992
PATELLA CUTTING SYSTEM
Michael J. Cameron, Warsaw, Ind., assignor to Othy, Inc., Warsaw, Ind.
Filed Mar. 16, 1992, Ser. No. 851,504
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—79 **19 Claims**



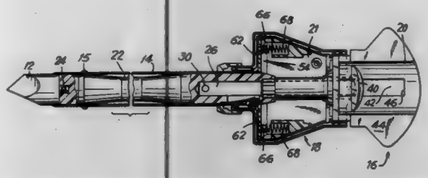
1. A patella cutting tool comprising a shaft having a longitudinal axis and opposite ends, a boss at one of said ends, a tool collet at the other of said ends, a bore on said boss extending axially of said shaft, a pair of pins extending from said boss on opposite sides of said bore, a cutting lid, said cutting lid having a top and a bottom, said top of cutting lid having cutters with cutting edges extending from said top, a pair of first bores extending through said cutting lid, said pins in said bores and a lock, said cutting edges being staggered to cover the entire area of said top, said lid having debris passages therein whereby said cutting lid may be retained on said boss and securely fastened to said shaft and the cuttings collected in said bore.

5,295,993
SAFETY TROCAR
David T. Green, Westport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Apr. 30, 1991, Ser. No. 693,582
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—184 **28 Claims**

1. A trocar comprising:

(a) a cannula assembly comprising a cannula and a cannula housing defining an internal cannula passage, said cannula being reciprocally mounted with respect to said cannula housing for movement between a distal position and a proximal position;

(b) a trocar assembly adapted to cooperate with said cannula assembly, said trocar assembly comprising a piercing tip mounted to an obturator shaft and a trocar housing, said piercing tip and at least a portion of said obturator shaft being configured and dimensioned for entry into said internal cannula passage;

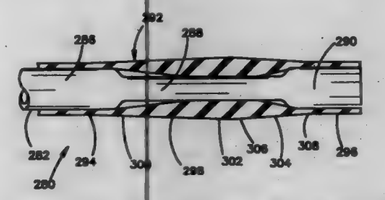


(c) releasable obturator means associated with the obturator shaft which releasably maintains the piercing tip in an extended position relative to said cannula;

(d) release means associated at least in part with the cannula assembly and actuated by movement of said cannula with respect to said cannula housing for releasing the releasable obturator means; and

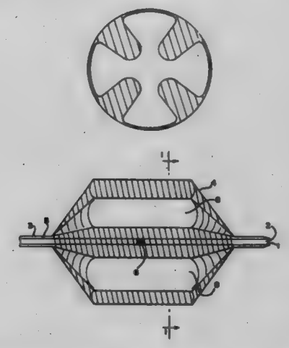
(e) biasing means for retracting said piercing tip and said obturator shaft from said extended position to a retracted position in response to release of the releasable obturator means.

5,295,994
ACTIVE CANNULAS
Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401
Filed Nov. 15, 1991, Ser. No. 792,730
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—192 **3 Claims**



1. An apparatus comprising a cannula for providing a working passage through body tissue, and an expandable bladder extending along and circumferentially around an outer surface of said cannula, said bladder being expandable from a retracted condition to an extended condition, said cannula having a cylindrical proximal portion, a cylindrical distal portion, and a cylindrical intermediate portion disposed between said proximal and distal portions, said intermediate portion having a diameter which is less than the diameter of said proximal portion and which is less than the diameter of said distal portion to form an annular recess which extends around said intermediate portion of said cannula, said bladder having a cylindrical thin-wall proximal end portion which extends around and is secured to said proximal portion of said cannula, said bladder having a cylindrical thin-wall distal end portion which extends around and is secured to said distal portion of said cannula, said bladder having a thick-wall intermediate portion which extends around said intermediate portion of said cannula, at least a portion of said thick-wall intermediate portion of said bladder having a thickness which is at least as great as the combined radial extents of the annular recess which extends around the intermediate portion of said cannula and the distal thin-wall end portion of the bladder, said thick-wall intermediate portion of said bladder being disposed in abutting engagement with an outer side surface of said intermediate portion of said cannula and extending radially outward of the annular recess which extends around the intermediate portion of said cannula when said bladder is in the retracted condition, said thick-wall intermediate portion of said bladder being disposed radially outward of the annular recess which extends around the intermediate portion of said cannula when said bladder is in the extended condition, said bladder having an axially tapering proximal connector portion which extends between said thin-wall proximal end portion of said bladder and said thick-wall intermediate portion of said bladder, said bladder having an axially tapering distal connector portion which extends between said thin-wall distal end portion of said bladder and said thick-wall intermediate portion of said bladder.

5,295,995
PERFUSION DILATATION CATHETER
Jay H. Kleiman, 2412 Lawndale, Evanston, Ill. 60201
Filed Aug. 27, 1992, Ser. No. 937,051
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 **20 Claims**

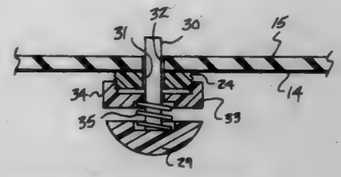


1. A dilatation catheter adapted for insertion into a target vessel and subsequent inflation therein, the catheter comprising:

a flexible elongated tubular shaft having proximal and distal ends defining at least one lumen and adapted for receiving a guide wire; and,

an inflatable balloon affixed near said distal end of said shaft and surrounding the circumference of said shaft, said balloon having a wall of substantially constant thickness and at least two substantially rounded axial protrusions formed in said wall said protrusions having a common internal chamber with substantially no internal boundaries, wherein upon expansion of said balloon, said protrusions come into apposition with the walls of said target vessel, such that said balloon upon expansion, becomes non-circular, thereby forming blood flow paths around said protrusions.

5,295,996
PRESSURE WRAP DEVICE
Dean H. Blair, 7837 Metacomet Rd., Hanover, Md. 21076
Filed Jun. 29, 1992, Ser. No. 906,098
Int. Cl.[5] A61B *17/12*
U.S. Cl. 606—203 **2 Claims**



1. A pressure wrap device, comprising,

an elastomeric strap, the strap having a strap first end and strap second end, the strap first end having a first end loop, and

the strap second end including a connector, the connector having a connector loop receiving the first end loop, and

a C-shaped connector leg extending from the connector loop, with a connector gap oriented between the connector leg and the connector loop, and

the strap having a strap bottom surface and a strap top surface, the strap top surface including a semi-spherical projection, and

the strap bottom surface including a first hook and loop fastener patch adjacent the strap second end, and a second hook and loop fastener patch spaced from the first hook and loop fastener patch, and between the first hook and loop fastener patch and the projection, wherein the first hook and loop fastener patch is securable to the second hook and loop fastener patch to configure a second loop to receive the connector leg, and

the projection includes a cylindrical support hub fixedly mounted medially of the elastomeric strap, the support hub including an externally threaded cylindrical side wall, and cap means adjustably mounted relative to the externally threaded side wall for effecting adjustable projection of the cap means relative to the strap top surface, and

the cap means includes a cylindrical intermediate cap, the intermediate cap including an internally threaded lower skirt adjustably and threadedly securable to the externally threaded side wall of the support hub, and the intermediate cap having an intermediate cap bore, the support hub having a support hub bore, and the strap having a strap bore, wherein the strap bore, the hub bore, and the intermediate cap bore are coaxially aligned, and further including a semi-spherical cap head having a cap head planar bottom surface having an indicator rod fixedly and coaxially mounted to the cap head, wherein the indicator rod is slidably received through the intermediate cap bore, the support hub bore, and the strap bore, and a spring member interposed between the intermediate cap and the cap head wound about the indicator rod.

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5,295,997

PROCESS FOR THE PRODUCTION OF A COTTON-BASED, WASHABLE NONWOVEN CLOTH AND CLOTH THUS OBTAINED

André Vuillaume, Biviers, and Jean-Claude Lacazale, Presle, both of France, assignors to Perfojet S. A., France

Filed Jul. 10, 1992, Ser. No. 911,472
Claims priority, application France, Jul. 25, 1991, 91 09697
Int. Cl.[5] D06M *15/59, 15/55*
U.S. Cl. 8—194 24 Claims

1. A process for producing a spunlace non-woven cotton cloth which can be repetitively laundered without significant deterioration in the mechanical and textile properties thereof, said process comprising the steps of:

providing a continuous supply of non-woven cotton-based cloth;

applying pressurized jets of water to the non-woven cotton-based cloth to interlace the fibers thereof;

draining free water from the cloth of interlaced fibers;

impregnating the cloth of interlaced fibers with an aqueous solution of a polyamide-amine-epichlorohydrin resin in an amount, measured as solids, of 0.2% to 1.0% of the weight of the fibers in the cloth; and

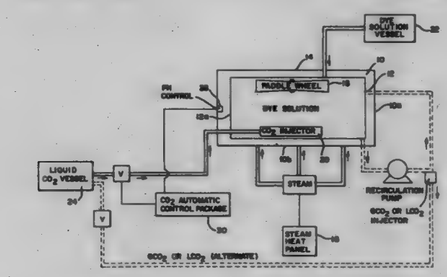
drying the impregnated cloth at a temperature sufficient to at least initiate crosslinking of the impregnated resin.

5,295,998

ADJUSTING PH IN DYEING PROCESSES USING CO_2

Ronald J. Merritello, Palos Heights, Ill.; William F. Kilgore, Kingwood, Tex.; David M. Forstrom, Duluth, Ga., and Terence A. Lane, Charlotte, N.C., assignors to Liquid Carbonic Industries Corporation, Chicago, Ill.

Filed Feb. 2, 1993, Ser. No. 13,016
Int. Cl.[5] D06P *1/00*
U.S. Cl. 8—474 13 Claims



1. A method for dyeing a substrate comprising the steps of:

providing a dye solution suitable for dyeing a substrate wherein said dye solution uses at least some water as a transport medium;

controlling the pH of said dye solution by introducing CO_2 into said solution; and

applying said dye solution to said substrate.

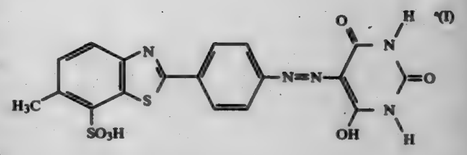
5,295,999

DYESTUFF MIXTURES

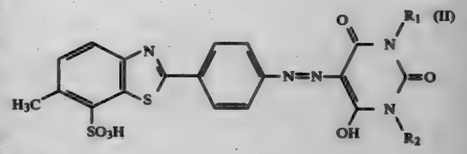
Rolf Hinrichs, Leverkusen, and Peter Wild, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 6,590
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202527
Int. Cl.[5] C09B *29/00*
U.S. Cl. 8—641 9 Claims

1. A dyestuff mixture comprising the dyestuff of the formula (I)



and a dyestuff of the formula



wherein

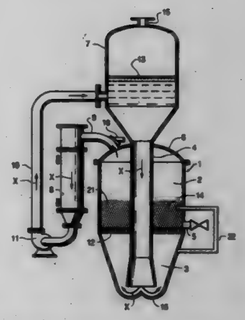
R_1 and R_2 independently of one another represent alkyl, cycloalkyl or aryl, tautomeric forms of the dyestuffs of the formulae II or mixtures thereof (II).

5,296,000

PROCESS AND EQUIPMENT FOR CRYSTALLIZING AN INORGANIC SUBSTANCE

Jacques Darmont, Brussels, and Léopold Detry, Wavre, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

PCT No. PCT/BE91/00037, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO92/00130, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 12, 1991, Ser. No. 965,397
Claims priority, application Belgium, Jun. 22, 1990, 09000645
Int. Cl.[5] B01D *9/00;* C01D *1/30*
U.S. Cl. 23—295 R 9 Claims



1. A process for crystallizing an inorganic substance in a fluidized bed of crystals, comprising:

generating a fluidized bed of crystals by passing a feed solution supersaturated in said inorganic substance in an ascending flow through a distributor located below the fluidized bed of a fluidized bed crystallizer,

crystallizing said inorganic substance in a crystallization zone containing the fluidized bed of crystals, the mother liquor from the crystallization zone exiting the crystallization zone downstream of the fluidized bed, said mother liquor being recycled and used in the reconstitution of said feed solution,

removing a fraction of said feed solution from the ascending circulation upstream of the distributor,

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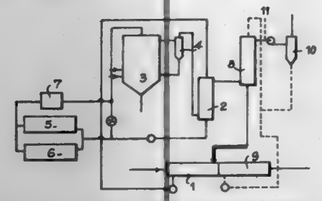
and supplying said fraction to the crystallization zone downstream of the distributor, at a location prior to the mother liquor exiting the crystallization zone.

5,296,001

PROCESS FOR SEPARATING SILICIC COMPOUNDS FROM CLEANING BATHS AND PLANT FOR ITS APPLICATION

Lothaire W. Scherer, Pos-sur-Mer, France, assignor to Sollac, Puteaux, France

Continuation of Ser. No. 713,354, Jun. 13, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,913
Claims priority, application France, Jun. 15, 1990, 90 07519
Int. Cl.[5] B01D *9/02*
U.S. Cl. 23—295 R **6 Claims**



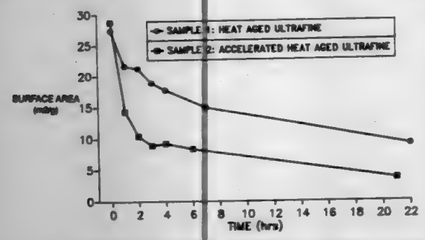
1. Process for separating silicic compounds from baths for cleaning steel substrates containing iron ions and silicic compounds, consisting of the following stages:
   a) a concentrated spent cleaning bath is cooled in a controlled manner, at a rate of between 0.2 and 4° C./min, to a temperature below 60° C. so as to precipitate the silicic compounds,
   b) terminating the controlled cooling of step (a) and allowing crystallization of silicic compounds to proceed in the cleaning bath for at least 2 hours,
   c) the cleaning bath is reheated to obtain a bath viscosity permitting a separation of the silicic compounds,
   d) the silicic compounds precipitated from the cleaning bath are separated off.

5,295,002

RHOMBOHEDRAL CALCIUM CARBONATE AND ACCELERATED HEAT-AGING PROCESS FOR THE PRODUCTION THEREOF

June D. Passaretti, Liberty Corner, N.J., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 493,075, Mar. 13, 1990. This application Dec. 17, 1990, Ser. No. 628,734
Int. Cl.[5] C01F *5/34, 5/24;* C09C *1/02*
U.S. Cl. 23—304 **2 Claims**



1. A process for producing a calcium carbonate product having a blocky rhombohedral or a hexagonal prismatic calcite crystal structure and properties including a surface area of from about 3 to about 15 m^2/g, an average particle size of from about 0.2 to about 0.9 micron, a discrete particle aspect ratio of less than about 2:1 , and a particle size distribution such that at least about 60 weight percent of the discrete particles have a size within 50 percent of the equivalent discrete particle average spherical diameter, said process consisting essentially of:
   a) forming an aqueous slurry of a calcium carbonate having a crystal structure selected from the group consisting of blocky rhombohedral, scalenohedral, hexagonal prismatic and substantially spherical calcite, and needle-like aragonite with an aspect ratio greater than about 2:1; said selected calcium carbonate having properties including a surface area greater than about 15 m^2/g and an average discrete particle size of from about 0.01 to about 0.8 micron;
   b) placing the slurry in a hydrothermal bomb;
   c) sealing said bomb;
   d) raising the temperature in the bomb to a hydrothermal aging temperature of the slurry of up to about 300° C., to initiate hydrothermal heat aging;
   e) maintaining the slurry in the hydrothermal bomb at the hydrothermal aging temperature and at the resultant bomb pressure, for a time in the range of from about 1 to about 24 hours, said time being sufficient to cause the crystal structure and properties of the calcium carbonate feedstock to rearrange to the product form, said time within the range being determined by the nature of the calcium carbonate feedstock, and said time being such that it is less than the time required for a given calcium carbonate feestock to rearrange to the product form by Ostwald ripening; and
   f) terminating hydrothermal heat aging by rapidly lowering the bomb pressure and temperature to fix the crystal structure and properties of the calcium carbonate in the product form.

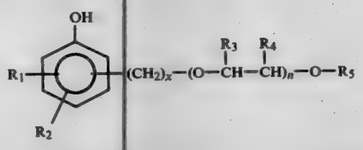
5,296,003

POLYESTERS OF POLY(OXYALKYLENE) HYDROXYAROMATIC ETHERS

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Mar. 8, 1993, Ser. No. 28,024
Int. Cl.[5] C10L *1/18;* C07C *69/76, 69/34, 69/66*
U.S. Cl. 44—389 **24 Claims**

14. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an effective detergent amount of a compound of the formula:

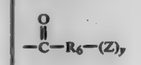


or a fuel-soluble salt thereof; wherein n is an integer from 5 to 100; x is an integer from 0 to 10;

R_1 and R_2 are each independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

R_3 and R_4 are each independently hydrogen or lower alkyl having 1 to 6 carbon atoms; and

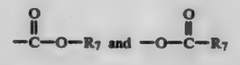
R_5 is acyl group of the formula:



wherein y is 1, 2 or 3;

R_6 is a divalent hydrocarbyl radical, when y is 1, a trivalent hydrocarbyl radical, when y is 2, or tetravalent hydrocarbyl group, when y is 3, said hydrocarbyl radicals having 1 to about 20 carbon atoms; and

each Z is independently selected from the group consisting of:



wherein each R_7 is independently alkyl having 1 to 30 carbon atoms, phenyl, aralkyl having 7 to 36 carbon atoms or alkaryl having 7 to 36 carbon atoms.

5,296,004

FIRESTARTING PELLET

Geoffrey W. A. Johnson, and Christopher J. Johnson, both of 25230 NE. 52nd Pl., Redmond, Wash. 98053

Filed Mar. 31, 1993, Ser. No. 40,337
Int. Cl.[5] C10L *11/06, 11/04*
U.S. Cl. 44—545 **12 Claims**

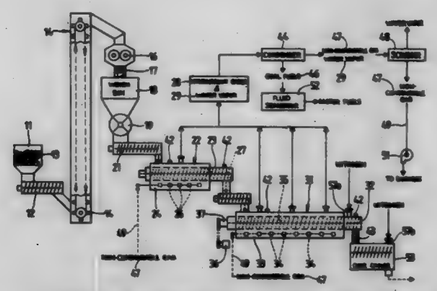
1. A firestarting pellet comprising a cedar pellet impregnated with an alcohol/water solution, wherein the cedar pellet has a moisture content of between 5 and 15 percent by weight and a density between 32 and 40 pounds per cubic foot prior to impregnation and wherein the alcohol/water solution is between 85 and 99 percent alcohol.

5,296,005

PROCESS FOR CONVERTING COAL INTO LIQUID FUEL AND METALLURGICAL COKE

Richard A. Wolfe; Chang J. Im, both of Abingdon, Va., and Robert E. Wright, Bristol, Tenn., assignors to Coal Technology Corporation, Bristol, Va.

Continuation-in-part of Ser. No. 614,085, Nov. 15, 1990, Pat. No. 5,151,159. This application Sep. 25, 1992, Ser. No. 951,136
Int. Cl.[5] C10L *5/16*
U.S. Cl. 44—551 **11 Claims**



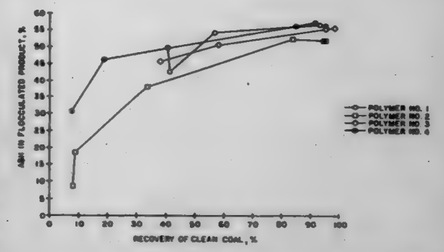
1. A method for producing metallurgical coke and liquid coal fuels from coal comprising the steps of:
   (a) selecting a parent coal with a low ash and low sulfur content equivalent to Pocahontas #3 coal;
   (b) reducing said parent coal to particulate;
   (c) pyrolyzing said particulate coal at about 1400° F. in an inert gas to produce a char of less than 8% volatile matter content while extracting volatile coal liquids and other liquid;
   (d) condensing and recovering said coal liquids at a temperature above 215° F.; and
   (e) forming calcined coke briquettes from said char, whereas said briquettes are formed with 60% char from said parent coal and 40% of a binder coal.

5,296,006

3-ACRYLAMIDO-3-METHYLBUTANOIC ACID COPOLYMERS AS SELECTIVE COAL FLOCCULANTS

Peter E. Reed, Naperville; Ram-Aiyangar Venkatadri, Chicago, and Lawrence J. Connelly, Oak Lawn, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 20, 1992, Ser. No. 979,021
Int. Cl.[5] C10L *5/00, 1/22;* B03D *3/06*
U.S. Cl. 44—621 **4 Claims**



1. A process for flocculating a coal refuse slurry with a water soluble polymeric flocculant to separate gangue from the coal, the improvement which comprises using as the flocculant a copolymer containing from 1–40 mole percent of 3-acrylamido-3-methyl butanoic acid with acrylamide or acrylic acid wherein the copolymers have an RSV measured as a 0.045 weight % copolymer solution in a 0.1M sodium nitrate solution of at least 15 dl/g.

5,296,007

PROCESS FOR REMOVING SULFUR FROM COAL

Thomas J. Clough, Santa Monica, and John W. Sibert, Malibu, both of Calif., assignors to ENSCI Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 445,041, Oct. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 931,246, Nov. 17, 1986, abandoned. This application Nov. 24, 1992, Ser. No. 982,077
Int. Cl.[5] C10L *9/00, 9/02*
U.S. Cl. 44—623 **20 Claims**

1. A process for reducing the sulfur content of coal containing metal pyrites and organic sulfur comprising:
   contacting said coal with at least one vanadium component in which vanadium is present in the +5 oxidation state effective to promote the oxidation of said metal pyrites and organic sulfur at conditions including a temperature of less than about 100° C. effective to oxidize at least a portion of said metal pyrites and said organic sulfur in said coal and form an oxidized sulfur-containing coal said contacting occurring in the presence of Cu+ + ion in an amount sufficient to promote the oxidation of organic sulfur and at least one reducible manganese component in an amount effective as a vanadium oxidant to provide at least one of the following: (A) maintain said vanadium component and (B) produce at least a portion of said vanadium component and at least one additional added oxidant effective to oxidize a reduced manganese component to produce reducible manganese component, the total amount of said reducible manganese component and said vanadium component present being less than the molar stoichiometric amount needed to fully oxidize the organic sulfur and metal pyrites in said coals; reducing the metal pyrites and organic sulfur content of said oxidized sulfur-containing coal; and recovering a coal product having a reduced metal pyrites and organic sulfur content.

5,296,008

METHOD FOR MANUFACTURING A CUTTING TOOL INSERT MADE OF A SILICON NITRIDE BODY

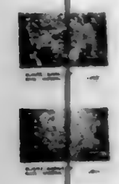
Hideki Moriguchi; Mitsunori Kobayashi; Toshio Nomura, all of Hyogo, and Tosiaki Nakamata, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 830,127, Jan. 31, 1992, abandoned. This application Jan. 5, 1993, Ser. No. 810

Claims priority, application Japan, Feb. 15, 1991, 3-022370; Feb. 28, 1991, 3-034695

Int. Cl.[5] C04B *41/53*

U.S. Cl. 51—295 9 Claims



1. A method for producing a cutting tool of a silicon nitride sintered body having a cutting edge, comprising the following steps: preparing a silicon nitride sintered body containing silicon nitride and at least one sintering assistant selected from the group consisting of MgO, Y_2O_3, Al_2O_3, ZrO_2, AlN, CaO, CeO_2, and SiO_2, whereby said sintered body includes a member selected from the group consisting of columnar β-Si_3N_4 and β'-SIALON, and performing on said sintered body a surface treatment with abrasive grains, said surface treatment being selected from the group consisting of blasting, barreling, and ultrasonic vibration, whereby said columnar β-Si_3N_4 and β'-SIALON is removed at least from said cutting edge, whereby said cutting edge is free of grinding grooves for an improved cutting wear resistance.

5,296,009

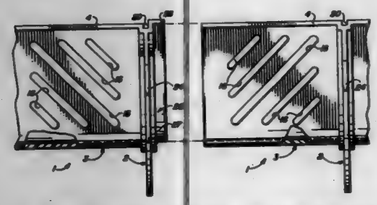
DEMISTER PANEL

Eddie D. Duke, P.O. Box 296, Tenaha, Tex. 79574

Filed Jun. 28, 1993, Ser. No. 83,626

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—440 20 Claims



1. An array of demister panels for separating liquid droplets from a gas stream, each of said panels having a flanged end and a non-flanged end, said panels characterized by a V shaped cross-section and V-shaped flange means provided on said flanged end of each of said panels for engaging said non-flanged end of an adjacent one of said panels, whereby said flange means stiffens and supports said panels in said array.

5,296,010

CERAMIC CANDLE FILTER ARRANGEMENTS

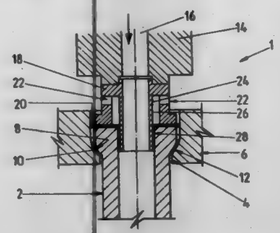
Richard K. Clark, Doncaster; John E. Fackrell, Keyworth, and John D. Stott, Solihull, all of England, assignors to Coal Industry (Patents) Limited, United Kingdom

Filed Dec. 1, 1992, Ser. No. 982,648

Claims priority, application United Kingdom, Dec. 3, 1991, 9125714

Int. Cl.[5] B01D *29/33, 29/66, 46/04*

U.S. Cl. 55—523 6 Claims



1. A ceramic candle filter arrangement including a plurality of filter candles, a tube plate, a plurality of aperture means formed in the tube plate, each filter candle being sealingly secured within a respective one of said aperture means, a tubular weight engaging with each filter candle, a gas flow path means being defined within and extending through each weight, and a conduit registering with the flow path means and extending into the candle to terminate therewithin, a passage means being defined between each conduit and each associated filter candle, and at least one exhaust port means located externally of the candle and communicating with said passage means.

5,296,011

METHOD OF MANUFACTURING HERMETIC COATING OPTICAL FIBER

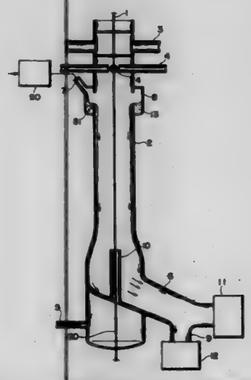
Haruhiko Aikawa; Yoichi Ishiguro, and Toshio Danzuka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 12, 1992, Ser. No. 897,753

Claims priority, application Japan, Jun. 12, 1991, 3-139903; Apr. 9, 1992, 4-088641

Int. Cl.[5] C03C *25/02*; C03B *37/023*

U.S. Cl. 65—3.12 30 Claims



1. A method of manufacturing a hermetically coated optical fiber comprising the steps of:

running a drawn bare heated fiber for an optical fiber through a reactor vessel;

supplying a reactant gas to the reactor vessel through at least one inlet located at an upstream portion of the reactor vessel;

coating a thin coating layer on the bare heated fiber by a thermal CVD process utilizing thermal chemical reaction caused by the heat generated in the heated bare fiber and the supplied reactant gas; and

flowing a liquid substantially on an entire surface of an inner wall of the reactor vessel facing the fiber from the upstream portion to a downstream portion of the reactor vessel to prevent buildup of ge erated particles on the surface of the inner wall of the reactor vessel.

5,296,012

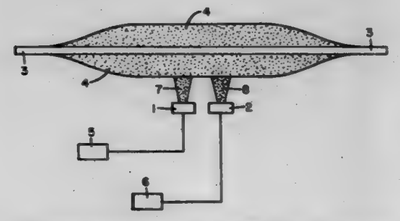
METHOD OF MAKING OPTICAL WAVEGUIDE PREFORMS

A. Joseph Antos, Elmira, N.Y., and Michael G. Blankenship, Sebring, Fla., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 28, 1992, Ser. No. 997,204

Int. Cl.[5] C03B *19/06*

U.S. Cl. 65—3.12 20 Claims



1. A method for making a preform from which optical waveguide fiber is drawn, comprising

a. generating a first vapor flow containing at least a first precursor,

b. delivering said first vapor flow to a first oxidation site,

c. oxidizing said first vapor flow to produce a first soot stream,

d. directing said first soot stream toward a mandrel,

e. collecting at least a portion of said first soot stream on said mandrel,

f. generating a second vapor flow not containing said first precursor and containing at least a second precursor,

g. directing said second vapor flow to a second oxidation site,

h. oxidizing said second vapor flow to produce a second soot stream,

i. directing said second soot stream toward said mandrel, and

j. collecting at least a portion of said second soot stream on said mandrel.

5,296,013

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF MINERAL WOOL NONWOVENS

Klemens Hirschmann, Ilvesheim, and Joachim Mellem, Schriesheim, both of Fed. Rep. of Germany, assignors to Grunzweig & Hartmann AG, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,171

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 4141659

Int. Cl.[5] C03B *37/06*

U.S. Cl. 65—5 6 Claims

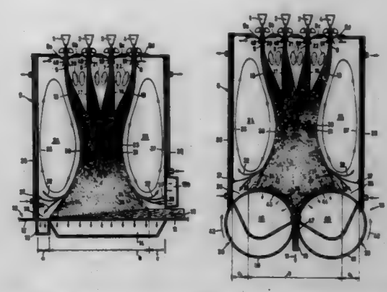
1. A process for continuous production of mineral wool nonwoven fabrics, comprising the steps of:

discharging a generally vertical stream of mineral wool fibers together with process air into a chute;

accumulating the fibers on a nonwoven formation zone of a conveyor beneath the chute;

applying suction with suction means and through the nonwoven formation zone of the conveyor to extract a portion of the process air through the conveyor and adhere the fibers to the conveyor, wherein another portion of the process air is deflected upward from the conveyor; and

extracting a further portion of the process air via extraction devices located adjacent said conveyor and outside of said nonwoven formation zone.



5,296,014

DEVICE FOR BENDING GLASS SHEETS ON BENDING MOLD HAVING A COVER

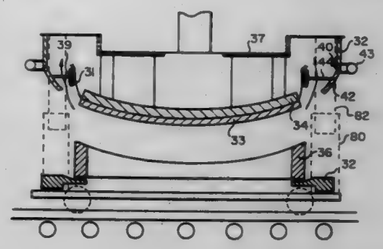
Jean-Luc Lesage, Margny les Compiegne; Jean-Marc Petitcollin, Thourotte; Arnaud Borderiou, and Thierry Franco, both of Compiegen, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Aug. 26, 1992, Ser. No. 935,205

Claims priority, application France, Aug. 27, 1991, 9110646

Int. Cl.[5] C03B *23/03*

U.S. Cl. 65—172 4 Claims



1. A bending station for bending heated glass sheets, comprising:

a vertically movable upper plate;

an upper bending mold mounted to the plate and positioned therebelow;

a skirt forming walls of a peripheral suction box and mounted to the plate, said skirt at least partially enclosing the upper bending mold;

a covering over the bottom surface of said upper bending mold;

a support frame separate from said upper bending mold and having means for releasably supporting said covering over the bottom surface of said upper bending mold;

a deflector forming a downward skirt extension;

means for mounting said support frame to said deflector; and

means for detachably mounting said deflector to said skirt.

VOL 1160 ISS 4 MR 22 1994

5,296,015

METHOD FOR THE PNEUMATIC TRANSPORT OF LARGE IRON-BEARING PARTICLES

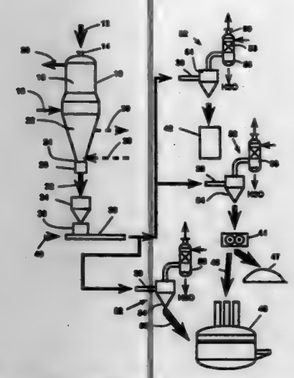
Jorge O. Becerra-Novoa, Apodaca; Ricardo Viramontes-Brown, Garza Garcia; Marco A. Flores-Verdugo, Monterrey, and Jose J. Garza-Ondarza, San Nicolás de los Garza, all of Mexico, assignors to Hylsa S.A. de C.V., Monterrey, Mexico

Filed May 18, 1990, Ser. No. 526,189

Claims priority, application Mexico, Jan. 9, 1990, 19059

Int. Cl.[5] C21B *13/00, 13/12*

U.S. Cl. 75—10.66 **40 Claims**



1. The method of transporting hot sponge iron particles, of a size at least 80% of which are greater than 0.5 cm and at least 50% of which are greater than 1.0 cm and which are produced by the direct reduction of particulate iron ore in a reduction reactor, from a departure point at the discharge of said reactor to a remote point of sponge storage or use, which comprises entraining said sponge iron particles in a carrier fluid, causing the mixture of carrier fluid and sponge iron particles to flow through a closed conduit to carry said particles by means of said carrier fluid to said remote point, and separating said carrier fluid from said particles at said remote point.

5,296,016

SURFACE COATED CERMET BLADE MEMBER

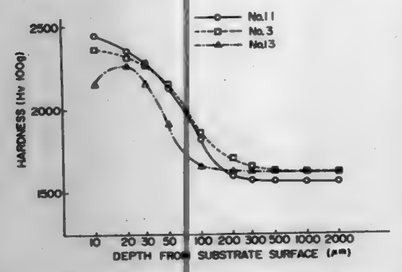
Hironori Yoshimura; Seiichiro Nakamura, and Niro Odani, all of Ishige, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 17, 1991, Ser. No. 761,402

Claims priority, application Japan, Dec. 25, 1990, 2-418976

Int. Cl.[5] C22C *29/04*

U.S. Cl. 75—238 **18 Claims**



1. A surface coated cermet blade member comprising:

a substrate of cermet which consists, apart from unavoidable impurities, of a binder phase of 5 to 30% by weight of at least one element selected from the group consisting of cobalt, nickel, iron and aluminum, and a hard dispersed phase of a balance carbo-nitride of metals, said metals being titanium, tungsten and at least one additional metal selected from the group consisting of tantalum, niobium, vanadium, zirconium, molybdenum and chromium, said substrate including a surface portion and an interior portion, said surface portion having a depth of less than 1 mm from a surface thereof, said surface portion further consisting of a binder phase enriched layer of less than 10 μm depth from said surface and a hard dispersed phase enriched layer; said binder phase enriched layer including said binder phase at higher concentration than that of said interior portion, said hard dispersed phase enriched layer including said binder phase in lower concentration than that of said interior portion, said hard dispersed phase enriched layer having greater hardness than said interior portion; and

a hard coating of an average thickness of 0.5 to 10 μm deposited on said substrate, said hard coating being composed of at least one coating layer formed of a coating compound selected from the group consisting of TiX and Al_2O_3, where X denotes at least one element selected from the group consisting of carbon, nitrogen, oxygen and boron.

5,296,017

METHOD AND APPARATUS FOR CONCENTRATING CHLORINE GAS

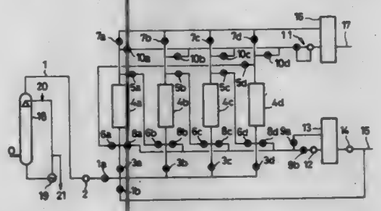
Yoshitsugu Kono; Masaaki Ura; Hiroyuki Itoh, and Satoshi Tsuruda, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,360

Claims priority, application Japan, May 28, 1991, 3-121682; May 28, 1991, 3-121683; Jun. 7, 1991, 3-136385; Jun. 19, 1991, 3-147486; Aug. 14, 1991, 3-204291

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—14 **18 Claims**



1. A method for concentrating/purifying a feed chlorine gas containing impurities in a pressure swing adsorption-desorption system in which, in an adsorbing operation, the feed chlorine gas is fed to an adsorption tower packed with an adsorbent which adsorbs the chlorine gas, to produce an exhaust gas depleted of chlorine which is discharged from the tower, and in a subsequent desorbing operation, the chlorine gas adsorbed by the adsorbent in the tower is desorbed at a reduced pressure, whereby the feed chlorine gas is concentrated/purified and is then discharged from the tower in the desorbing operation and the regenerated adsorption tower is then used again in an adsorbing operation, which method comprises introducing the exhaust gas discharged from the adsorption tower during the adsorbing operation into a second adsorbing tower for carrying out the adsorbing operation, whereby the adsorbing operation is conducted sequentially in at least two steps in at least two adsorption towers, thereby producing a chlorine-free exhaust gas.

5,296,018

METHOD AND APPARATUS FOR ELIMINATING ELECTRIC CHARGES IN A CLEAN ROOM

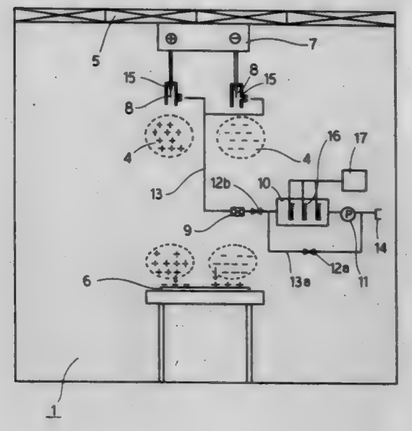
Masanori Suzuki, Tokyo, Japan, assignor to Techno Ryowa Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 670,785, Mar. 19, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 946,820

Claims priority, application Japan, Nov. 28, 1990, 2-322523

Int. Cl.[5] B03C *3/01*

U.S. Cl. 95—65 **3 Claims**



1. A method for removing electric charges in a clean room comprising the steps of:

removing fine grains from air supplied to the clean room by using a first filter;

feeding the air from the first filter, which includes superfine grains, to a purifying discharge electrode, and thereby depositing superfine grains on the purifying discharge electrode to effect larger superfine grains;

feeding the air from the purifying discharge electrode to a second filter to capture with the second filter the larger superfine grains splashed from the purifying discharge electrode;

feeding the air from the second filter to a means partially enclosing an ion generating electrode which is provided in the clean room; and

applying high voltage to the ion generating electrode to generate ions and feeding the ions into the clean room.

2. An apparatus for removing electric charges in a clean room comprising:

a first filter means provided in the clean room for eliminating fine grains;

ion generating electrode means provided in the clean room;

ion generating means for applying a voltage to said ion generating electrode means to feed ions from said ion generating electrode means into the clean room;

air discharge port for ventilating the air throughout of the clean room;

air feed port for feeding the air to the vicinity of the ion generating electrode means;

draft pipe means extending between said air discharge port and air feed port;

purifying discharge electrode means provided in said draft pipe means; and

second filter means provided between said discharge electrode means and said air feed port.

5,296,019

DUST PRECIPITATION FROM AIR BY NEGATIVE IONIZATION

Clive C. Oakley, Dudley, England, and Reginald R. Robertson, Winnipeg, Canada, assignors to Neg-Ions (North America) Inc., Winnipeg, Canada

Continuation-in-part of Ser. No. 544,524, Jun. 28, 1990, Pat. No. 5,141,529. This application Aug. 24, 1992, Ser. No. 933,365

Claims priority, application United Kingdom, Jun. 19, 1990, 9013621; Canada, Jun. 28, 1990, 2020114; United Kingdom, Aug. 21, 1990, 9018368; Canada, Aug. 22, 1990, 2023751

Int. Cl.[5] B03C *3/41*

U.S. Cl. 96—95 **18 Claims**



1. An emitter of charged ions for releasing to the air comprising an elongate tubular pipe having an elongate hollow interior therealong surrounded by an elongated peripheral wall and extending from a first end to a second end, a first conductor mounted within the hollow interior and extending from the first end to the second end, means defining a plurality of openings in the peripheral wall at longitudinally spaced positions along the peripheral wall, a second conductor formed of a fibrous yarn extending from said first end through one of said openings, such that at least a portion of the second conductor is exposed on an outer surface of the peripheral wall, through a second of said openings to said second end, and connector means for connecting a high voltage to the first conductor and the second conductor in parallel such that the exposed portion of the second conductor generates ions in the air surrounding the peripheral wall.

5,296,020

FORMULATION FOR THE ACTIVATION OF SUBSTRATE SURFACES FOR CURRENTLESS METALLIZATION THEREOF

Günther Reichert, Cologne; Frank Kobelka, Leverkusen; Gerhard-Dieter Wolf, Dormagen, and Ulrich von Gizycki, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 7, 1992, Ser. No. 864,782

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111817

Int. Cl.[5] C23C *18/30*

U.S. Cl. 106—1.11 **8 Claims**

1. An activator formulation, for the activation of substrate surfaces for currentless metallisation thereof, consisting of a) 0.03 to 3.0 parts by weight of an organic noble metal, b) 0.5 to 3.0 parts by weight of fillers, c) 10 to 30 parts by weight of an organic solvent and d) 12 to 28 parts by weight of an aqueous dispersion of a polyurethane polymer.

5,296,021

AEROSOL-DISPENSABLE FOODSTUFFS PARTING COMPOSITION

Clarence P. Clapp, and George S. Torrey, both of Danville, Ill., assignors to Creative Products Inc. of Rossville, Rossville, Ill.

Filed Oct. 28, 1992, Ser. No. 967,511

Int. Cl.[5] A23D *9/00*

U.S. Cl. 106—2 **33 Claims**

1. An aerosol-dispensable foodstuffs parting composition for coating cooking surfaces comprising a water-in-oil emulsion comprising lecithin, an edible oil, an emulsifying agent selected from the group consisting of one or more of monocalcium phosphate, calcium chloride dihydrate, dibasic magnesium phosphate trihydrate and potassium chloride, water, and a

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pressurized, normally gaseous propellant suitable for discharging the composition as an aerosol spray.

5,296,022

INK-JET RECORDING METHOD AND APPARATUS EMPLOYING INK CONTAINING HALOGENATED ALKANOL WITH 2 TO 4 CARBON ATOMS

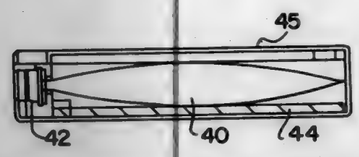
Masatsune Kobayashi; Shoji Koike, both of Yokohama; Shinichi Tochihara, Hadano; Kyoko Fukushima, Yokohama; Akira Nagashima, Tokyo; Koromo Shirota, Inagi, and Kumiko Mafune, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 789,879, Nov. 12, 1991. This application Jun. 22, 1993, Ser. No. 79,747

Claims priority, application Japan, Nov. 29, 1990, 2-325457; Nov. 29, 1990, 2-325458; Nov. 29, 1990, 2-325459

Int. Cl.[5] G01D *9/00, 15/00*

U.S. Cl. 106—20 D 44 Claims



1. An ink-jet recording method comprising the step of ejecting an ink from an orifice of a recording head according to a recording signal to make a record on a recording medium, wherein said ink comprises a dye and a liquid medium for dissolving or dispersing a dye, wherein the liquid medium comprises an alkyl alcohol having 2 to 4 carbon atoms, in which at least one of the hydrogen atoms is substituted by a halogen atom.

5,296,023

PHTHALOCYANINE COLORANTS AND THEIR USE IN INK JET PRINTING

Peter Gregory, Bolton, and Ronald W. Kenyon, Failsworth, both of England, assignors to Zeneca Limited, London, England

Filed Jan. 4, 1993, Ser. No. 6

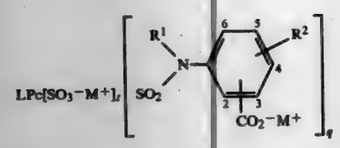
Claims priority, application United Kingdom, Mar. 6, 1992, 9204903

Int. Cl.[5] C09D *11/00*

U.S. Cl. 106—22 D 12 Claims

1. A colorant of Formula (1):

Formula (1)



wherein:

L is a metal cation or hydrogen;

Pc is a phthalocyanine radical having a valency from 3 to 4;

R^1 is H, alkyl, substituted alkyl, alkenyl, substituted alkenyl, aralkyl or substituted aralkyl;

R^2 is H, alkyl, alkoxy, halo or an optionally substituted amino group;

M^+ is NH_4^+ or a substituted ammonium cation; and (t+q) is from 3 to 4 inclusive;

with the proviso that the group CO_2-M^+ is at the 2-, 3-, 5- or 6-position in Formula (1).

5,296,024

PAPERMAKING COMPOSITIONS, PROCESS USING SAME, AND PAPER PRODUCED THEREFROM

Gary S. Hutcheson, Macon, Ga., assignor to Sequa Chemicals, Inc., Chester, S.C.

Filed Aug. 21, 1991, Ser. No. 748,098

Int. Cl.[5] C08L *1/02*; C09D *101/02, 7/12*

U.S. Cl. 106—243 27 Claims

1. A composition for adding to a pulp slurry of cellulose fibers during a papermaking process for enhancing brightness, opaqueness and sizing in the paper produced therefrom wherein said composition comprises a brightening, opacifying and sizing agent a cationic softener base selected from the group consisting of the reaction products formed from the reaction of fatty acids and diamines and wherein said composition further includes a surfactant.

5,296,025

PROCESS AND DEVICE FOR PREPARING AN ASPHALT MIX

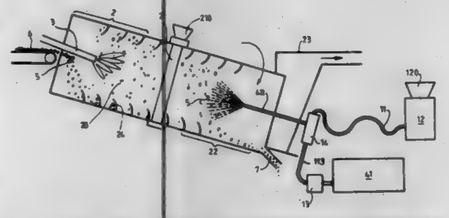
Gerard Basin, Clermont, and Patrick Le Breton, Liancourt, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Apr. 6, 1992, Ser. No. 864,354

Claims priority, application France, Apr. 18, 1991, 91 04776

Int. Cl.[5] C09D *195/00*

U.S. Cl. 106—282 12 Claims



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each horizontal member having a plurality of bore spaced along the length therein,

said rod members inserted within said bores and outwardly extending from said rack to enable said articles to be suspended therefrom without engaging other said articles.

5,296,031

ELECTROSTATIC POWDER SPRAY COATING SYSTEM FOR CAR BODIES

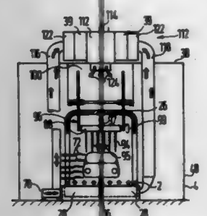
Daniel Seiler, Jona, and Heinz Hofler, St. Gallen, both of Switzerland, assignors to Gema Volstatic AG, St. Gallen, Switzerland

Filed Aug. 14, 1992, Ser. No. 929,358

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126891

Int. Cl.[5] B05B *5/025*

U.S. Cl. 118—631 **20 Claims**



1. An electrostatic powder spray coating system for electrostatically spray coating articles, comprising:

a spray coating cabin;

means for transporting articles-to-be-spray-coated through said cabin in a longitudinal direction of said cabin;

an outer cabin spaced from said spray coating cabin along longitudinal sides of said spray coating cabin and along a roof portion of said spray coating cabin;

electrostatic powder spray coating means, disposed within spaces defined between said outer cabin and said spray coating cabin and extending through said longitudinal sides and said roof portion of said spray coating cabin, for electrostatically charging said powder to an electrical potential which is different than the electrical potential of said articles-to-be-spray-coated and for electrostatically spray-coating said articles-to-be-spray-coated with said electrostatically charged powder;

a source of said powder fluidically connected to said electrostatic powder spray coating means for supplying said powder to said electrostatic powder spray coating means; and

means for recovering excess powder from said spray coating cabin and for conveying said recovered excess powder to said source of said powder for reuse within said electrostatic powder spray coating means.

14. A system as set forth in claim 1, wherein:

said longitudinal sides of said spray coating cabin are provided with vertically extending slits through which said spray coating means extend into said spray coating cabin so as to permit said spray coating means to be movably adjusted both vertically and laterally toward and away from said articles-to-be-spray-coated.

5,296,032

AQUEOUS RESISTANT METAL PIGMENT-CONTAINING PASTE AND METHOD FOR MAKING

William G. Jenkins, Plymouth; Craig Keemer; H. Taylor Lamborn, both of Reading, and Michael Curcio, Pen Argyl, all of Pa., assignors to Silberline Manufacturing Co., Inc., Tamaqua, Pa.

Filed Aug. 11, 1993, Ser. No. 104,548

Int. Cl.[5] C09C *1/62*

U.S. Cl. 106—404 **15 Claims**

1. A metal pigment-containing paste suitable for formation of a coating composition, comprising:

metal pigment particles;

a solvent;

and at least one heteropoly anion.

5,296,033

PROCESS FOR THE PRODUCTION OF PIGMENT PREPARATIONS BASED ON PHYTHALOCYANINE PIGMENTS

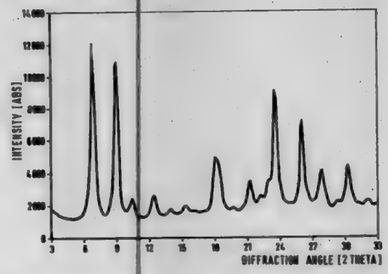
Erwin Dietz, Kelkheim/Taunus, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 80,080

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1992, 4219951

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—412 **28 Claims**



1. A process for the production of a phthalocyanine pigment or a pigment preparation based on a phthalocyanine pigment, which comprises

a) first wet milling a crude phthalocyanine pigment in an inert liquid medium in a stirred ball mill which is operated at a power density of more than 2.5 kW per liter of milling space and a peripheral speed of the stirrer of more than 12 m/s with exposure to a grinding medium having a diameter of less than 1 mm under phase-conserving conditions, thus producing a prepigment composition, then

b) subjecting the prepigment composition obtained by a) either

b1) in the form of the mill base suspension thus obtained, or

b2) in the case where the prepigment intermediate or the prepigment composition intermediate is isolated, after first taking it up in an organic solvent,

to a finishing treatment at elevated temperature, and

c) then isolating the resulting pigment or pigment preparation.

5,296,034

PROCESS FOR THE PRODUCTION OF COPPER PHTHALOCYANINE PIGMENT PREPARATIONS OF THE ALPHA PHASE

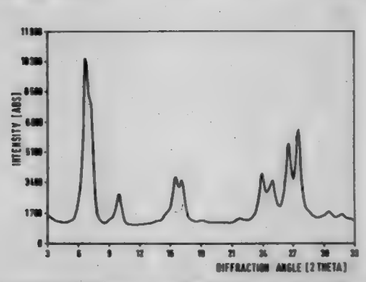
Erwin Dietz, Kelkheim/Taunus, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 80,472

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1992, 4219950

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—412 **23 Claims**



1. A process for the preparation of a copper phthalocyanine pigment of the α phase or a pigment preparation based on a copper phthalocyanine pigment of the α phase, which comprises

a) first wet milling a crude copper phthalocyanine pigment, which is predominantly present in the phase in an aqueous medium in a stirred ball mill which is operated at a power density of more than 2.5 kW per liter of milling space and a peripheral speed of the stirrer of more than 12 m/s with exposure to a grinding medium having a diameter of less than 1 mm under phase-converting conditions, thus producing a prepigment composition, then

b) subjecting the prepigment composition obtained by a) either

b1) in the form of the mill base suspension thus obtained, or

b2) after addition of an organic solvent to the mill base suspension obtained by a), or

b3) in the case where the prepigment intermediate or the prepigment composition intermediate is isolated, after first taking it up in an inert organic solvent,

to a finishing treatment at elevated temperature, and

c) then isolating the resulting pigment or pigment preparation.

5,296,035

APPARATUS AND METHOD FOR APPLYING COATING MATERIAL

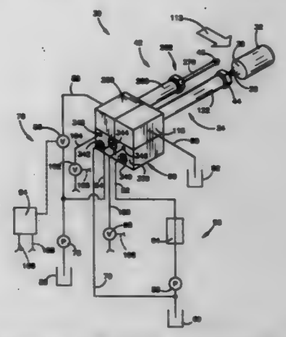
Donald A. Chicatelli, N. Ridgeville, Ohio, and Wataru Kakuta, Kawasaki, Japan, assignors to Nordson Corporation, Westlake, Ohio

Filed Mar. 27, 1992, Ser. No. 859,343

Int. Cl.[5] B05C *11/00;* **B05B** *15/02, 3/00*

U.S. Cl. 118—692 **56 Claims**

1. An apparatus for use in applying coating material to at least a portion of an inner surface of a can, said apparatus comprising a manifold block, first conduit means for conducting a flow of coating material to said manifold block, second conduit means for conducting a flow of cleaning material to said manifold block, coating material spray gun means connected with said manifold block and connected in fluid communication with said first conduit means through said manifold block for directing a flow of coating material toward the inner surface of the can, said coating material spray gun means including a nozzle through which the flow of coating material is conducted from said coating material spray gun means, and cleaning material spray gun means connected with said manifold block and connected in fluid communication with said second conduit means through said manifold block for directing a flow of cleaning material toward said nozzle of said



coating material spray gun means, said coating material spray gun means and said cleaning material spray gun means being mounted in a side-by-side relationship on said manifold block.

5,296,036

APPARATUS FOR CONTINUOUSLY FORMING A LARGE AREA FUNCTIONAL DEPOSIT FILM INCLUDING MICROWAVE TRANSMISSIVE MEMBER TRANSFER MEAN

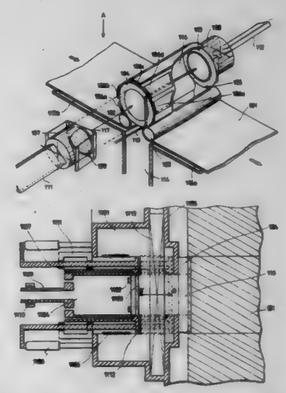
Jinsho Matsuyama, Nagahama, and Masahiro Kanai, Hikone, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 800,456

Claims priority, application Japan, Nov. 29, 1990, 2-332679

Int. Cl.[5] C23C *16/54, 16/50*

U.S. Cl. 118—718 **6 Claims**



1. An apparatus for continuously forming a large area functional deposit film comprising:

a column-shaped film deposition chamber capable of maintaining its inside essentially in vacuum, which is formed by a strip type member as the side walls thereof through curving portion formation means for enabling said strip type member to be continuously conveyed in its longitudinal direction to form the curving portion;

microwave applicator means for emitting microwave energy in the direction parallel to the progressing direction of the

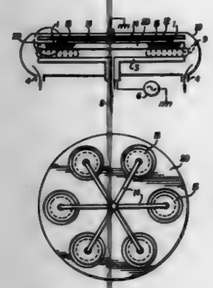
microwave energy to cause microwave plasma to be generated in said film deposition chamber;
exhausting means for exhausting said film deposition chamber;
means for introducing deposit film formation material gas into said film deposition chamber; and
temperature controlling means for heating and/or cooling said strip type member, and
forming a deposit film continuously by deposition on the surface of said strip type member on the side which is exposed to said microwave plasma, wherein
said microwave applicator means is arranged either on one side or on both sides of the both end faces of the column-shaped film deposition chamber which is formed by said strip type member as the side walls thereof,
a microwave transmitting member is arranged on a leading end portion of said microwave applicator means for separating said film deposition chamber and said microwave applicator means airtightly and allowing the microwave energy emitted from said microwave applicator to be transmitted to said film deposition chamber,
an auxiliary chamber which can be separated from said film deposition chamber airtightly is arranged adjacent to said film deposition chamber, and
a mechanism is arranged for transferring said microwave transmitting member between said film deposition chamber and said auxiliary chamber while maintaining the airtightness of said film deposition chamber.

5,296,037

PLASMA CVD SYSTEM COMPRISING PLURAL UPPER ELECTRODES

Nobuyoshi Sato, and Kojiro Segane, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kyogo, Japan

Filed Jun. 17, 1992, Ser. No. 901,764
Claims priority, application Japan, Jun. 21, 1991, 3-150599
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 E **7 Claims**



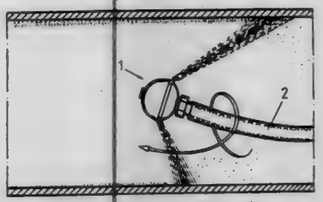
1. A diode parallel-plate plasma CVD system, wherein a plurality of semiconductor wafers, each with front and back surfaces, are mounted with said front surface of each semiconductor wafer having formed thereon an integral circuit, comprising:
an insulating wafer holder having a plurality of openings, each opening having a peripheral portion on which one of said semiconductor wafers is mounted such that the front surface of said semiconductor wafer is exposed; and
a plurality of conductive upper electrodes facing the back surfaces of the semiconductor wafers, each upper electrode being located only in a region of a corresponding one of said semiconductor wafers mounted on each of said openings of said insulating wafer holder to form a plasma only in the region of the semiconductor wafers.

5,296,038

PROCESS AND ARRANGEMENT FOR CLEANING OF PIPE LINES

Johan Faxon, Box 3109, S-903 03 Umea, Sweden

PCT No. PCT/NO91/00036, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/13699, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 923,924
Claims priority, application Sweden, Mar. 9, 1990, 9000837-6; Apr. 9, 1990, 9001282-4; Feb. 19, 1991, 9100486-1
Int. Cl.[5] B08B *9/00, 9/02, 9/04, 5/02*
U.S. Cl. 134—22.11 **10 Claims**



1. Process for cleaning pipe lines, especially ventilation pipes and ventilation ducts in buildings, by means of a cleaning means, which is connected via a supply conduit to a source of pressure medium, and which exhibits one or more nozzle openings which are directed backwards toward the supply conduit at an acute angle relative to a center line which extends through the fastening of the supply conduit in the cleaning means, said nozzle opening in the form of a mainly continuous annular gap, which extends along the periphery of the cleaning means and which is connected to the supply conduit and the source of the pressure medium, the medium being made to discharge through the annular gap and partly clean inner walls of the line, and partly, by way of forces of reaction from the discharging medium, make the cleaning means move into the pipe line, wherein: **(1)** the cleaning means is brought into contact with an inner wall of the line; **(2)** a reduced pressure is established on opposite sides of the continuous annular gap; and **(3)** the cleaning means is made to move around about the cross-section of the line by twisting the supply conduit about its longitudinal axis.

5,296,039

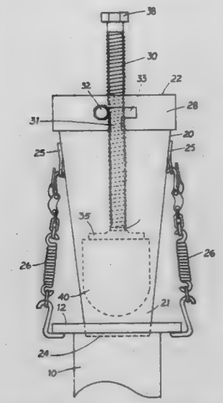
METHOD FOR LAUNCHING PIGS INTO PIPELINES

Clarence G. Cooper, 1417 Bernice St., Morgan City, La. 70380

Division of Ser. No. 638,618, Dec. 27, 1990, Pat. No. 5,208,937. This application May 6, 1993, Ser. No. 58,446
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—22.11 **2 Claims**

1. A method for launching compressible pigs into a pipe line, comprising the steps of:

a) placing the narrow end of a conical chamber into said pipeline;
b) fastening said chamber onto said pipeline;



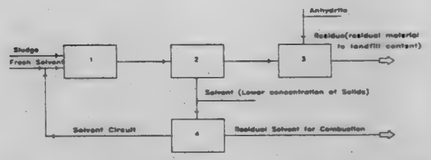
c) inserting said pig into said conical chamber; and
d) pushing said pig through said conical chamber into said pipeline.

5,296,040

PROCESS FOR CLEANING DEBRIS CONTAINING POLLUTANTS

Herbert Dybus, Essen, and Otto Funk, Dorsten, both of Fed. Rep. of Germany, assignors to Ruhrkohle Oel und Gas GmbH, Bottrop, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 842,913
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106281
Int. Cl.[5] B08B *3/00, 3/08*
U.S. Cl. 134—25.1 **20 Claims**



1. A treatment process for the decontamination of a contaminated material, the contaminated material being contaminated with a pollutant, and the contaminated material also containing water, said treatment process comprising the steps of:
adding a liquid to the contaminated material, the liquid consisting of a water immiscible solvent for dissolving the pollutant, the pollutant being soluble in the solvent;
mixing said added solvent with the contaminated material to produce a mixture of a liquid phase and a solid phase, the liquid phase containing solvent, water and a substantial portion of the pollutant;
separating a portion of said liquid phase containing the substantial portion of the pollutant from said solid phase to thereby produce a separated solid residue and a first recovered portion of said liquid phase, said separated solid residue still containing a residual amount of said liquid phase; and
subjecting said separated solid residue still containing a residual amount of said liquid phase to a further recovery treatment to thereby recover a substantial portion of said residual amount of said liquid phase as a second recovered portion of said liquid phase, said solid residue remaining after said further treatment comprising an environmentally safely disposable solid portion.

5,296,041

AQUEOUS ELECTRONIC CIRCUIT ASSEMBLY CLEANER AND METHOD

Alfredo Vinci, Dayton, and M. Stephen Lajoie, Basking Ridge, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 731,512, Jul. 17, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,237
Int. Cl.[5] C23G *5/06*
U.S. Cl. 134—40 **13 Claims**

1. A method for removing rosin soldering flux from a printed wiring board, comprising
(a) contacting the board with an aqueous saponifier solution comprising from about 1 to 15 percent by weight of a saponifier composition comprising alkali metal carbonate and bicarbonate salts so combined that they have a pH of from about 10 to 12 and an adequate reserve of titratable alkalinity, at least equivalent to from about 0.3 to 4.5 percent caustic potash when titrated to the colorless phenolphthalein end point;
(b) allowing the contact to continue for sufficient time to loosen the soldering flux from said board; and
(c) removing the combined saponifier composition and soldering flux from the board.

5,296,042

COMPOSITION AND PROCESS FOR TREATING SHEET STEEL

Michael S. Curran, DeKalb; Kenneth R. Kaluzny, Joliet, and William R. Moe, McHenry, all of Ill., assignors to C. L. R. Resources, Inc., Genoa, Ill.

Filed Nov. 6, 1992, Ser. No. 972,647
Int. Cl.[5] C23G *1/08*
U.S. Cl. 134—41 **11 Claims**

1. A method of removing a stain from sheet steel during a sheet steel pickling process comprising:
a) selecting at least one chelating agent from the group consisting if ethylenediaminetetraacetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid, aminotrimethylenephosphonic acid, and nitrilotriacetic acid at a concentration in a range of 1 gram to 100 grams per liter;
b) selecting at least one buffering agent from the group consisting of potassium hydroxide, sodium hydroxide, ammonium hydroxide, triethanolamine, monoethanolamine, and diethanolamine;
c) providing a mixture of at least one of said chelating agents and at least one of said buffering agents; and
d) applying the mixture to the steel sheet at a temperature of 65° C. to 110° C. for 5 seconds to 2 minutes and at a pH of 4.0 to 10.5 to thereby remove the stain from the steel sheet and improve the appearance of the steel sheet.

5,296,043

MULTI-CELLS INTEGRATED SOLAR CELL MODULE AND PROCESS FOR PRODUCING THE SAME

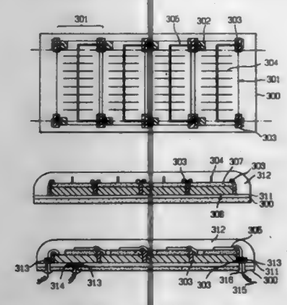
Soichiro Kawakami, Hikone, and Kimitoshi Fukae, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 853,844, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 656,010, Feb. 15, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,115
Claims priority, application Japan, Feb. 16, 1990, 2-35271
Int. Cl.[5] H01L *31/05, 31/18*
U.S. Cl. 136—244 **8 Claims**

1. An improved solar cell module, comprising a plurality of solar cell elements, each solar cell element comprising a metal

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electrode layer, a semiconductor layer, and a transparent and conductive electrode layer disposed in this order on a conductive surface of a substrate, said plurality of solar cell elements being electrically connected in series with each other, characterized in that the solar cell elements in said plurality of solar cell elements comprise a plurality of separate solar cell elements that have been prepared in advance and are spacedly arranged on an insulating surface of a common base member, wherein an insulating material is disposed in a space between solar cell elements in each pair of adjacent solar cell elements, an electrode wiring comprising a conductive paste and a foil-



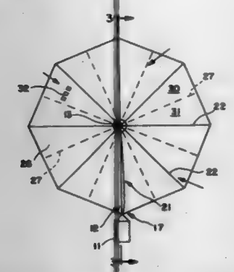
like or linear-shaped member of metal is disposed on said insulating material such that one end of said electrode wiring is electrically connected to the transparent and conductive electrode layer of one solar cell element in each pair of adjacent solar cell elements, and a remaining end of said electrode wiring is electrically connected to a given exposed portion of the conductive substrate surface of the other solar element in each pair of adjacent solar cell elements, and wherein the given exposed portion is an extended portion of the conductive substrate surface, and the given exposed portion is free of any of the metal electrode layer, the semiconductor layer, and the transparent and conductive electrode layer.

5,295,044

LIGHTWEIGHT STOWABLE AND DEPLOYABLE SOLAR CELL ARRAY

T. Jeffrey Harvey, Lompoc, and P. Alan Jones, Santa Barbara, both of Calif., assignors to AEC-Able Engineering Company, Inc., Goleta, Calif.

Filed Mar. 6, 1992, Ser. No. 847,720
Int. Cl.[5] H01L *31/045*
U.S. Cl. 136—245 7 Claims



1. A solar cell array comprising a root spar having an axis, a lead spar, and a plurality of intermediate spars,

a hub comprising an axle and a rotor mounted on and rotatable around said axle, said hub having an axis of rotation which is normal to the axis of the root spar;

drive means for rotating said rotor around said axle;

said root spar being fixed to said axle, said lead spar being fixed to said rotor, and said intermediate spars being mounted to said hub for free rotation around the axis of rotation of said hub, said spars extending radially from said hub;

a gore between and interconnecting each adjacent pair of spars, except between said root spar and said lead spar, each said gore being foldable along a mid-gore flexure which extends radially midway between its respective spars; and

solar cells mounted to said gores on each side of the flexures;

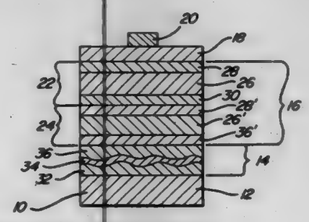
whereby deployment is accomplished by rotating the hub and the lead spar to open the gores, and stowage is accomplished by reverse rotation of the hub and the lead spar.

5,296,045

COMPOSITE BACK REFLECTOR FOR PHOTOVOLTAIC DEVICE

Arindam Banerjee, Madison Heights; Chi C. Yang, and Subhendu Guha, both of Troy, all of Mich., assignors to United Solar Systems Corporation, Troy, Mich.

Filed Sep. 4, 1992, Ser. No. 941,157
Int. Cl.[5] H01L *31/06, 31/075*
U.S. Cl. 136—249 20 Claims



1. A photovoltaic device comprising:

an electrically conductive substrate;

a composite back reflector disposed on said substrate, said reflector including an electrically conducting, texturizing layer disposed atop said substrate and a light reflecting layer conformally disposed atop said texturizing layer, said texturizing layer and light reflecting layer being fabricated from materials which are mutually non-reactive over a temperature range of −20° C. to 450° C.;

a body of photovoltaic material disposed atop the composite back reflector; and

a top electrode disposed atop the photovoltaic body.

13. A photovoltaic device as in claim 1, wherein said body of photovoltaic material is a multi-layered body including at least one layer of a silicon alloy material.

5,296,046

SUBLIMING SOLDER FLUX COMPOSITION

Frank J. Juskey, Coral Springs, and Douglas W. Hendricks, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1993, Ser. No. 106,671
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 14 Claims

1. A fluxing composition for soldering metals together at a soldering temperature, comprising:

a carrier solvent;

an oxide removing agent that sublimes at or below the soldering temperature; and

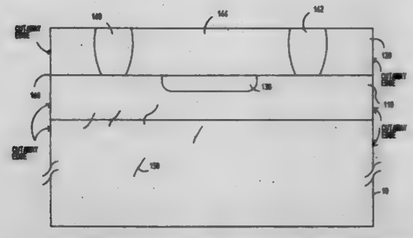
a compound that liberates nitrogen at or below the soldering temperature.

5,296,047

EPITAXIAL SILICON STARTING MATERIAL

Richard A. Feliner, Fort Collins, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 827,138, Jan. 28, 1992, abandoned. This application Dec. 1, 1992, Ser. No. 984,725
Int. Cl.[5] H01L *29/00*
U.S. Cl. 148—33 2 Claims



1. A method of fabricating semiconductor devices comprising the steps of:

growing immediately without any intervening high temperature process steps done before a first epitaxial layer on a silicon wafer substrate to form a starting material, the first epitaxial layer having the same doping type and resistivity as the silicon wafer substrate;

preparing the starting material for fabricating a semiconductor device in a second epitaxial layer; and

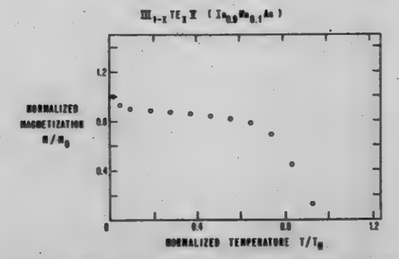
growing the second epitaxial layer on the first epitaxial layer.

5,296,048

CLASS OF MAGNETIC MATERIALS FOR SOLID STATE DEVICES

Leroy L. Chang, Goldens Bridge; Leo Esaki, Katonah; Hiro Munekata, Mahopac; Hideo Ohno, and Stephan vonMolnar, both of Ossining, all of N.Y., assignors to International Business Machines Corporation, Yorktown Heights, N.Y.

Continuation of Ser. No. 742,461, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 359,294, May 31, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 28,639
Int. Cl.[5] H01F *1/00*
U.S. Cl. 148—33 33 Claims



1. A crystalline substance of the formula III-V including as a part of said substance at least one of a transition element or a rare earth element present in an amount at least about $5.4\times10^{20}cm^{-3}$ to change said substance from a paramagnetic state to a locally ordered magnetic state where in said formula III-V:

(a) III is at least one element of Group IIIA; and

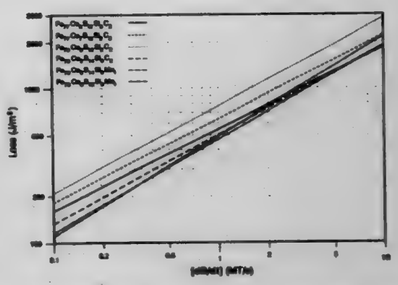
(b) V is at least one element of Group VA.

5,296,049

IRON RICH METALLIC GLASSES HAVING HIGH SATURATION INDUCTION AND SUPERIOR SOFT FERROMAGNETIC PROPERTIES AT HIGH MAGNETIZATION RATES

V. R. V. Ramanan, Dover, and Carl H. Smith, Chatham, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 774,493, Oct. 10, 1991, abandoned, which is a division of Ser. No. 537,221, Jun. 13, 1990, Pat. No. 5,062,909, which is a continuation of Ser. No. 379,763, Jul. 14, 1989, abandoned. This application May 25, 1993, Ser. No. 67,256
Int. Cl.[5] C21D *1/04*
U.S. Cl. 148—108 2 Claims



1. A method for making a magnetic core useful at magnetization rates greater than about 1 Mt/s, comprising the steps of:

a. forming a melt of metallic glass having a composition described by the formula $Fe_aCo_bB_cSi_dC_e$, where "a"–"e" are in atom percent, "a" ranges from about 72 to about 84, "b" ranges from about 2 to about 8, "c" ranges from about 11 to about 16, "d" ranges from about 1 to about 4, and "e" ranges from about 0.5 to about 2, with up to about 1 atom percent of Mn being optionally present in the glass;

b. rapidly solidifying said glass at a rate of at least about $10^{4\circ}$ C./sec by directing said melt into contact with a moving quench surface, said glass upon solidification having the form of a ribbon that is at least 80% glassy;

c. winding said ribbon to form a core having the shape of a toroid; and

d. annealing said core at a temperature ranging from about 573 to 623; K for a time ranging from about 900 s to 3600 s under an external field having strength ranging from about 400 to 1600 A/m, said core, after annealing, having saturation induction ranging from about 300 J/m^3 to 400 J/m^3 and a dc swing from negative remanence to positive saturation ranging from about 2.9T to 3.2T.

5,296,050

METHOD OF PRODUCING GRAIN ORIENTED SILICON STEEL SHEETS HAVING IMPROVED MAGNETIC PROPERTIES

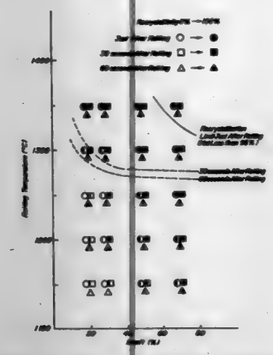
Toshito Takamiya; Masahiko Manabe; Fumihiko Takeuchi; Takashi Obara, all of Chiba, and Yoshiaki Iida, Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Japan

PCT No. PCT/JP90/00586, § 371 Date Jan. 7, 1991, § 102(e) Date Jan. 7, 1991, PCT Pub. No. WO90/13673, PCT Pub. Date Nov. 15, 1990
Continuation of Ser. No. 634,202, Jan. 7, 1991, abandoned. This PCT application May 8, 1990, Ser. No. 925,310
Claims priority, application Japan, May 8, 1989, 1-113643; May 16, 1989, 1-120337; Oct. 2, 1989, 1-255260
Int. Cl.[5] C21D *9/46*
U.S. Cl. 148—111 7 Claims

1. A method of producing a grain oriented silicon steel sheet having improved magnetic properties wherein a slab of silicon-containing steel, after heating, is subjected to hot rolling com-

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prising the steps of: rough rolling at a temperature within a region exceeding 1150° C. and subsequent finish rolling said steel sheet, subjecting said steel sheet to heavy cold rolling or cold rolling two times through intermediate annealing to a final sheet thickness, subjecting said steel sheet to decarburization annealing, applying a slurry of an annealing separator to a



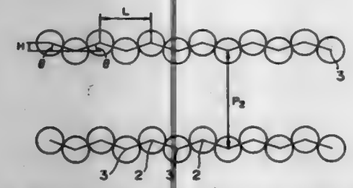
surface of said steel sheet, and subjecting said steel sheet to final finish annealing, characterized in that after said rough rolling occurs within a temperature region exceeding 1150° C., said finish rolling is carried out at the temperature of the steel sheet is within a range of 1000°–850° C. at a percent reduction of not less than 40% for 2–20% seconds to precipitate inhibitors in the steel sheet.

5,296,051

METHOD OF PRODUCING LOW IRON LOSS GRAIN-ORIENTED SILICON STEEL SHEET HAVING LOW-NOISE AND SUPERIOR SHAPE CHARACTERISTICS

Yukio Inokuti, and Kazuhiro Suzuki, both Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Feb. 11, 1993, Ser. No. 16,521
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—113 **7 Claims**



1. A method of producing a low iron loss grain oriented silicon steel sheet having improved magnetostrictive characteristics when used as a stacked iron core and low noise when used in a stacked transformer, as well as superior shape characteristics, comprising the steps of:

preparing a grain oriented finish-annealed silicon steel sheet;

forming an insulating film on a surface of said grain oriented silicon steel sheet;

irradiating said surface of said grain oriented silicon steel sheet with an electron beam along a multiplicity of spaced paths so as to refine the magnetic domains;

wherein said irradiation with said electron beam is conducted continuously or intermittently along a wave-form path on the surface of said grain oriented silicon steel, said wave-form having a period length much smaller than the width of said grain oriented silicon steel sheet and said wave-form path extends substantially perpendicularly to the direction of rolling of said grain oriented silicon steel sheet.

5,296,052

SURFACE TREATMENT CHEMICALS AND BATH FOR ALUMINUM OR ITS ALLOY AND SURFACE TREATMENT METHOD

Satoshi Ikeda, Yamato, and Shigeyuki Meguro, Yokohama, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 1, 1990, Ser. No. 561,423
Claims priority, application Japan, Aug. 1, 1989, 1-199657
Int. Cl.[5] C23C *22/34*
U.S. Cl. 148—273 **3 Claims**

1. A method of surface-treating aluminum or its alloy comprising the steps of (a) applying to said aluminum or its alloy a surface treatment bath consisting essentially of 10–1000 ppm of niobium ion and/or tantalum ion, and 1–50 pm of isolated fluorine ion released from compounds selected from the group consisting of HF, NH_4F, NH_4HF_2, NaF and $NaHF_2$, and having a pH of 1.5–4.0 at a temperature between room temperature and 50° C., and (b) washing the treated surface of said aluminum of its alloy with water.

5,296,053

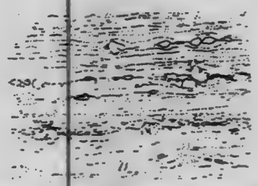
Patent Not Issued For This Number

5,296,054

AUSTENITIC STEEL

Levin F. Lvovich; Goronkova A. Dmitrievna; Krasnykh V. Ivanovich, all of Moscow, U.S.S.R.; Rolf Kirchheiner; Michael Köhler, both of Iserlohn, Fed. Rep. of Germany, and Ulrich Heubner, Werdohl, Fed. Rep. of Germany, assignors to I.P. Bardin Central Research Institute of Iron & Steel, Moscow, U.S.S.R. and Krupp-VDM GmbH, Werdohl, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 894,035
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1991, 4118437
Int. Cl.[5] C22C *38/34*
U.S. Cl. 148—327 **6 Claims**



1. A high-silicon-content corrosion-resistant austenitic steel comprising (in % by weight)

max. 0.02%	C
20 to 25%	Ni
8 to 13%	Cr
6.5 to 7.5%	Si
0 to 2%	Mn
max. 0.010%	S
max. 0.025%	P

balance iron including unavoidable impurities.

5,296,055

TITANIUM ALUMINIDES AND PRECISION CAST ARTICLES MADE THEREFROM

Kenji Matsuda, Matsudo, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,953
Claims priority, application Japan, Jul. 31, 1990, 2-201373; Aug. 17, 1990, 2-215846
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—421 **5 Claims**



1. A titanium aluminide comprising:

31 to 34 weight % of Al;

1.5 to 3.0 weight % of Fe;

0.18 to 0.35 weight % of B; and

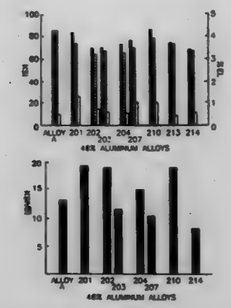
a predetermined amount of an element for refining Ti—B formation, with remainder being Ti and impurities.

5,296,056

TITANIUM ALUMINIDE ALLOYS

Sushil K. Jain, and James R. Roessler, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1992, Ser. No. 966,815
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—421 **17 Claims**



1. A gamma titanium aluminide alloy based on an intermetallic compound TiAl, the gamma titanium aluminide alloy consisting essentially of:

aluminum in an amount of about 45 to about 47 atomic percent;

niobium in an amount of about 2 to about 6 atomic percent;

tungsten in an amount of about 0.25 to about 2 atomic percent; and

one or both elements selected from the group consisting of chromium and manganese, each of the one or both elements selected being present in an amount of from about 1 to about 2 atomic percent;

with the balance being titanium;

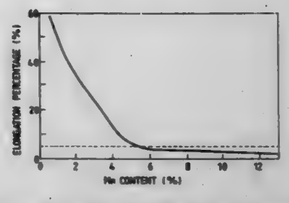
whereby the gamma titanium aluminide alloy exhibits oxidation resistance and fracture toughness.

5,296,057

HIGH ABRASION RESISTANT ALUMINUM BRONZE ALLOY, AND SLIDING MEMBERS USING SAME

Noboru Baba, Hitachioota; Katsuhiko Komuro, Hitachi; Masateru Suwa, Ibaraki; Mitsuo Chigasaki, Hitachi; Yozo Kumagai, Katsuta; Mashayoshi Kainuma, Mito, and Masaru Sakakura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,923
Claims priority, application Japan, Sep. 20, 1991, 3-241457
Int. Cl.[5] C22C *9/01*
U.S. Cl. 148—436 **10 Claims**



5. A sliding member, which slides with a sliding portion made from steel material for industrial apparatus, composed from abrasion resistant aluminum bronze alloy consisting of

Al: 7–12%,

Mn: 3.8–5.4%,

Si: 0.45–2.7%, respectively in weight, and

the rest is substantially Cu, wherein Mn/Si ratio is 1–3.25

metallic compound of Mn and Si is dispersed among said alloy structure, and

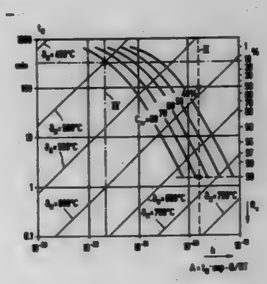
elongation percentage is at least 5%.

5,296,058

STRUCTURAL PART FOR A NUCLEAR REACTOR FUEL ASSEMBLY AND METHOD FOR PRODUCING THIS STRUCTURAL PART

Eckard Steinberg, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 839,629, Feb. 21, 1992, Pat. No. 5,245,645, which is a continuation of Ser. No. 745,904, Aug. 16, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,671
Claims priority, application European Pat. Off., Feb. 4, 1991, 101463.7; Aug. 1, 1991, 91112979.9; Jan. 27, 1992, 92101295.1
Int. Cl.[5] C22C *16/00*
U.S. Cl. 148—672 **18 Claims**



1. A method for producing a structural part, which comprises:

a) annealing a starting body of a zirconium alloy at a temperature in the β range below the melting temperature to dissolve precipitated-out alloy ingredients, then quenching the starting body at a quenching rate of at least 30 K/s at a surface of the starting body, at a temperature transition through the $\alpha+\beta$ range in which both hexagonal and

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body-centered cubic crystal structures are present in the zirconium alloy;

b) then annealing the starting body at a first temperature in the α range until formation of precipitates of the alloy ingredients having a precipitate diameter with a geometric mean value in a range of substantially from 0.1 to 0.3 m;

c) hot-forging the starting body into a forged part at a second temperature in the α range below the first temperature;

d) then hot-rolling or hot-extruding the forged part at a temperature in the α range below the first temperature; and

e) then cold-rolling the hot-rolled forged part in at least two rolling steps having recrystallization annealing carried out between two rolling steps with a degree of recrystallization in a range of substantially from 95% to 99% at an annealing temperature in the α range, while cold-pilgering the hot-extruded forged part in at least two pilgering steps, with a recrystallization annealing carried out between two pilgering steps with a degree of recrystallization in a range of substantially from 95% to 99% at an annealing temperature in the α range.

5,296,059

PROCESS FOR PRODUCING AMORPHOUS ALLOY MATERIAL

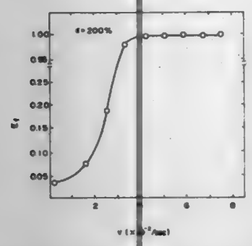
Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku, Sendai-shi, Miyagi; Akihisa Inoue, 11-805, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku, Sendai-shi, Miyagi; Junichi Nagahora, Yokohama, and Kazuhiko Kita, Uozu, all of Japan, assignors to Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi and Yoshida Kogyo K.K., Tokyo, all of Japan

Filed Sep. 11, 1992, Ser. No. 943,703

Claims priority, application Japan, Sep. 13, 1991, 3-234801

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—695 **18 Claims**



1. A process for producing an amorphous alloy material which comprises imparting ductility to an amorphous alloy having a supercooled liquid region by giving an amount of strain of 30% or greater at a strain rate of 1×10^{-3}/sec or higher to said alloy in the glass transition temperature region of said alloy.

5,296,060

DRYING A COATING OF SOLVENT-BASED ADHESIVE

Raymond Hanson, Rearsby, and Malcolm Tillyard, Leicester, both of England, assignors to British United Shoe Machinery Limited, Leicester, England

Filed Feb. 8, 1989, Ser. No. 320,479

Claims priority, application United Kingdom, Feb. 19, 1988, 8803917

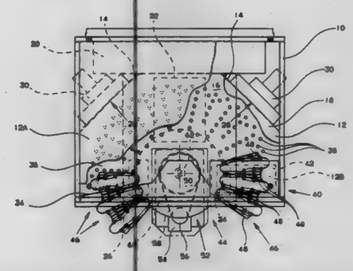
Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—60 **10 Claims**

1. A method of bonding a shoe sole to the bottom of a lasted shoe which includes the step of drying a coating of solvent-based adhesive applied to a bottom surface of a shoe by supporting the lasted shoe having a coating of solvent-based adhesive applied to the bottom surface thereof, with the bottom surface thereof to which adhesive has been applied exposed;

directing at least one jet of air at ambient temperature through an inlet therefor towards said surface such that the apical region of said jet impinges on the surface for so long as the rate of drying is substantially constant for the adhesive coating, and thereafter heating the surface to which adhesive has been applied for a further period for so long as drying of the adhesive coating continues, said heating period being determined according to the rate at which drying continues but being terminated when the condition of the adhesive coating is such that bonding of said surface to an attachment surface can be affected; and

during said drying step activating an adhesive coating previously applied to an attachment surface of the shoe sole, whereafter the attachment surface of the shoe sole and the shoe bottom surface to which adhesive has been applied are brought into a desired location with one another and



held pressed together until a bond therebetween is consolidated.

2. A substantially two stage method of drying a coating of solvent-based adhesive to a surface of an article, comprising:

supporting the article with the surface thereof to which adhesive has been applied exposed; and

in an air drying stage directing at least one jet of air at ambient temperature through an inlet therefor towards the surface of the article, in a direction extending substantially normally to the surface, such that the apical region of said jet impinges on the surface, for so long as the rate of drying is substantially constant for the adhesive coating, and thereafter employing a heating arrangement in a heat drying stage for heating the surface of the article to which adhesive has been applied for a further period for so long as drying continues but being terminated when the condition of the adhesive coating is such that the bonding of the surface to an attachment surface can be affected.

5,296,061

PROCESS FOR PRODUCING A TUBULAR NONWOVEN FABRIC AND TUBULAR NONWOVEN FABRIC PRODUCED BY THE SAME

Katsutoshi Ando, Otsu; Nobuo Kurata, Shiga; Yoshiharu Okumura, and Kouji Sugano, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,099

Claims priority, application Japan, Jun. 12, 1991, 3-140402; Aug. 27, 1991, 3-215590; Oct. 24, 1991, 3-277901

Int. Cl.[5] B32B *31/02*

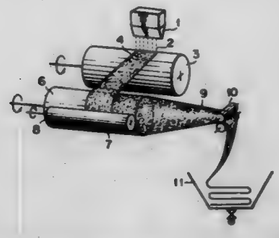
U.S. Cl. 156—622 **16 Claims**

1. A process for producing a tubular nonwoven fabric comprising the steps of:

forming a web on a first rotating cylinder by catching fibers carried to the surface of the first rotating cylinder by a fluid;

transferring the web from the first rotating cylinder to a second rotating cylinder;

forming a tube of the transferred web around the second rotating cylinder; and



drawing the formed tube in the axial direction of the second rotating cylinder to form a tubular nonwoven fabric.

5,296,062

MULTIPLE MATERIAL SYSTEMS FOR SELECTIVE BEAM SINTERING

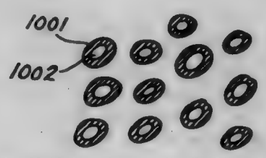
David L. Bourell; Harris L. Marcus; Joel W. Barlow; Joseph L. Beaman, and Carl R. Deckard, all of Austin, Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 814,715, Dec. 30, 1991, abandoned, which is a continuation of Ser. No. 559,338, Jul. 30, 1990, Pat. No. 5,076,869, which is a continuation of Ser. No. 402,694, Sep. 5, 1989, Pat. No. 4,944,817, which is a continuation-in-part of Ser. No. 920,580, Oct. 17, 1986, Pat. No. 4,863,538. This application Sep. 25, 1992, Ser. No. 951,349

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] B27N *3/00*; B32B *31/00*; B23K *9/00*; B29C *67/00*

U.S. Cl. 156—62.2 **19 Claims**



1. A method of producing a part, comprising the steps of:

depositing a layer of a powder onto a target surface, said powder comprising particles of a first material coated with a second material, said second material having a lower softening temperature than said first material;

irradiating a selected portion of said powder corresponding to a cross-section of the part with a directed energy beam, so that the second material in said selected portion bonds particles of said first material;

repeating said depositing and irradiating steps for a plurality of layers so that bonded portions of adjacent layers bond to one another to form a mass;

removing unbonded portions of the powder to yield the mass; and

heating the mass after said removing step.

5,296,063

METHOD FOR MOUNTING A SEMICONDUCTOR DEVICE

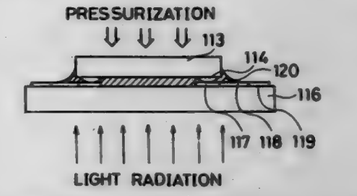
Keiji Yamamura, Sakurai, and Takashi Nukii, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 673,210, Mar. 20, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 944,008

Claims priority, application Japan, Mar. 20, 1990, 2-70296; Oct. 12, 1990, 2-274650

Int. Cl.[5] B32B *3/00*

U.S. Cl. 156—64 **7 Claims**



1. A method for mounting a semiconductor device wherein a semiconductor device on which connection electrodes are formed is connected to a circuit board on which circuit electrodes are formed in positions corresponding to the connection electrodes of the semiconductor device, the method comprising the following steps in the order named:

(a) applying an adhesive on a face of the semiconductor device to be connected to the circuit board or on a face of the circuit board to be connected to the semiconductor device,

(b) aligning the connection electrode and the circuit electrodes in positions corresponding to each other with the semiconductor device opposed to the circuit board,

(c) curing only predetermined portions of the adhesive located at regions other than regions where the electrodes are aligned to tack the semiconductor device to the circuit board,

(d) electrically evaluating the semiconductor device and the connection of the semiconductor device to the circuit board,

(e) removing the device from the board if a defect in the device or in the connection thereof is found and repeating the steps (a) through (d) to mount another semiconductor device on the board, and

(f) curing remaining portions of the adhesive not cured in step (c) to permanently bond the device to the board if no defects in the device and in the connection of the device to the circuit board are found.

5,296,064

FLEXIBLE MULTIPLY TOWPREG TAPE FROM POWDER FUSION COATED TOWPREG AND METHOD FOR PRODUCTION THEREOF

John D. Muzzy, and Jonathan S. Colton, both of Atlanta, Ga., assignors to Georgia Tech Research Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 339,297, Apr. 17, 1989, Pat. No. 5,094,883, and a continuation-in-part of Ser. No. 700,559, May 15, 1991, Pat. No. 5,171,630. This application Mar. 9, 1992, Ser. No. 848,297

Int. Cl.[5] D04H *3/08*

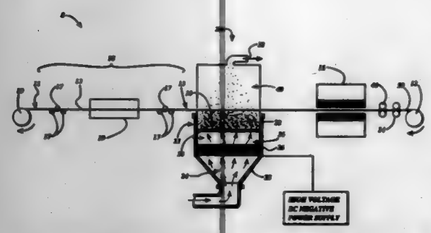
U.S. Cl. 156—180 **12 Claims**

1. A method for the production of an improved flexible towpreg tape of a known geometry comprising reinforcing filaments and matrix forming material, comprising the steps of:

(a) coating said reinforcing filaments with said matrix forming material in a manner causing interfacial adhesion of said matrix forming material to said reinforcing filaments;

(b) forming a fusion coated towpreg by heating said matrix forming material contacting said reinforcing filaments

until said matrix forming material liquefies and coats said reinforcing filaments; and



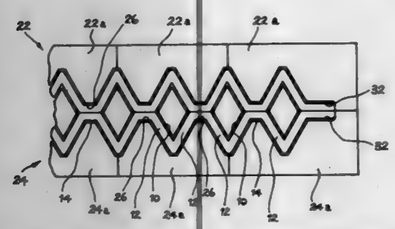
(c) forming a fusion coated towpreg tape by passing said fusion coated towpreg through a forming means of known geometry.

5,296,065

METHOD OF FORMING WORKPIECES BY MEANS OF MULTI-SECTIONAL PRESSING MEMBERS

Anthony T. Greatorex, Syston, United Kingdom, assignor to British United Shoe Machinery Limited, Belgrave, United Kingdom

Filed Sep. 24, 1992, Ser. No. 950,197
Claims priority, application United Kingdom, Oct. 9, 1991, 9121319
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—196 **20 Claims**



1. A method of forming a workpiece made up of two portions of material secured together to form pockets therebetween, comprising the steps of

inserting formers into said pockets, each former having a cross-sectional shape to be imparted to the pocket in which it is accommodated, and

thereafter placing the workpiece, with the formers thus accommodated in the pockets thereof, between two presser members having corrugated presser surfaces corresponding to the cross-sectional shape of the formers such that adjacent pockets of the workpiece each together with the former are accommodated in adjacent cooperating corrugations of each presser member,

wherein each presser member is made up of a plurality of sections, each section comprising at least one corrugation, said sections being supported on a support arrangement for movement between a spaced-apart position and a closed position,

and wherein the workpiece, with the formers accommodated in pockets thereof, is brought into surface contact with the corrugated surfaces provided by the presser members while the sections of each thereof are in their spacedapart position, the workpiece thus being held between the corrugated surfaces,

the method further comprising the steps of

then closing the sections together whereby the workpiece held as aforesaid is compressed laterally,

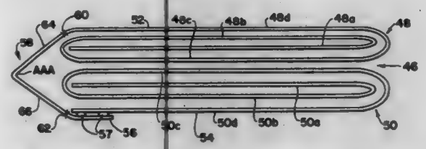
and thereafter applying forming pressure to the presser members, and thus to the workpiece held in its laterally compressed condition therebetween.

5,296,066

MULTIWEB PERFORATED FOLDED PRODUCT AND METHOD

Ake L. Dahlquist, Dixon, Ill., assignor to Dixonweb Printing Company, Dixon, Ill.

Continuation-in-part of Ser. No. 704,170, May 22, 1991. This application Oct. 24, 1991, Ser. No. 782,219
Int. Cl.[5] B31F *1/00*; B32B *31/00*
U.S. Cl. 156—201 **53 Claims**



41. A method for producing a removable folded insert for binding into a magazine or book having an unfolded width greater than the width of any single web forming a part thereof comprising the steps of:

longitudinally folding a first web printed by a web printing press to form a first display having a plurality of first web viewing panels;

longitudinally folding a second web to form a second display having a plurality of second web viewing panels, an attaching panel and a binding panel;

applying an adhesive to a portion of said attaching panel;

thereafter abutting said first web to said attaching panel to form a gutterless joint between the webs;

longitudinally folding said binding panel to define first and second binding panel members so that said first folded web generally overlaps said second folded web; and

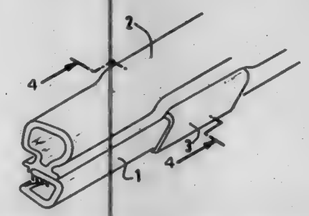
cutting said joined webs to form a removable magazine insert of a desired length.

5,296,067

PROCESS FOR PRODUCTION OF A SEAL FOR THE FRAME OF AN APERTURE OF THE BODY OF AN AUTOMOBILE

Francois Mesnel, Neuilly-sur-Seine, and Gerard Mesnel, Carrieres-sur-Seine, both of France, assignors to Etablissements Mesnel S.A., France

Filed Dec. 10, 1991, Ser. No. 805,103
Int. Cl.[5] B32B *31/00*; E06B *7/16*
U.S. Cl. 156—221 **6 Claims**



1. A method for producing a seal for a frame of an opening in an automobile body, comprising:

a) providing a grip forming channel section having a U-shaped cross section and made of a thermoplastic material;

b) providing a tubular sealing element made of a resiliently deformable material, said sealing element being separated from the channel section;

c) placing first and second portions of the sealing element against first and second portions, respectively, of the channel section, the first and second portions of the sealing element being spaced apart by an intermediate portion thereof, and the first and second portions of the channel section being spaced apart by an intermediate portion thereof, each of said intermediate portions having a respective length;

d) interposing a packing piece between said intermediate portions to separate said intermediate portions from each other and to form the intermediate portion of the sealing element into a bridge section spaced from and having a length greater than the length of the intermediate portion of the channel section;

e) bonding the first and second portions of the sealing element to the first and second portions, respectively, of the channel section while maintaining the packing piece between the intermediate portions of the channel section and sealing element to prevent said intermediate portions from being bonded together;

f) removing the packing piece;

g) bending the channel section and the sealing element; and

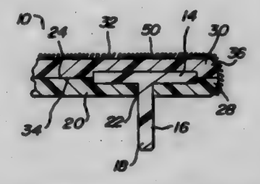
h) bonding the bridge section and the intermediate portion of the channel section together.

5,296,068

METHOD OF MAKING AN INTERIOR TRIM PANEL WITH ENTRAPPED FASTENERS

Douglas H. Turner, Troy, Mich., assignor to Cadillac Products, Inc., Troy, Mich.

Division of Ser. No. 767,864, Sep. 30, 1991, Pat. No. 5,178,927. This application May 26, 1992, Ser. No. 888,167
Int. Cl.[5] B32B *31/00, 3/06*
U.S. Cl. 156—228 **27 Claims**



1. A method of constructing a multi-layer laminated trim panel for attachment to vehicles, comprising the steps of:

(a) inserting fastening means having a head and an extending shaft through a first sheet of high density polymeric foam defined by first and second surfaces such that the head of said fastening means abuts the first surface of said first sheet and the leading end of the shaft extends beyond the second surface of said first sheet;

(b) heating a second sheet of low density polymeric foam in an oven; and

(c) compressing said first and second sheets together in the absence of a separate reinforcing layer disposed between said first and second sheets to bond said first and second sheets, thereby entrapping the head of said fastening means between said first and second sheets.

5,296,069

PROCESS FOR MANUFACTURING IMPLANTS HAVING COATED SURFACES

Antoine J. H. Robert, Rio de Janeiro, Brazil, assignor to Silimed-Silicone E. Instrumental Medico Cirurgico E. Hospitalar Ltda., Rio de Janeiro, Brazil

Filed Jul. 31, 1992, Ser. No. 923,230
Claims priority, application Brazil, Dec. 27, 1991, PI 9105626
Int. Cl.[5] B29C *35/02*; B32B *31/06*
U.S. Cl. 156—242 **4 Claims**

1. Process for manufacturing implants having coated surfaces, said implant being already filled with gel and having smooth surfaces, comprising the steps of:

a) disposing a nonvulcanized silicone sheet over a foam sheet to form a silicone sheet and foam sheet assembly;

b) passing the silicone sheet and foam sheet assembly through two parallel and spaced apart rollers so as to exert a predetermined pressure for adhering said assembly;

c) attaching said silicone sheet and foam sheet assembly to an auxiliary mounting base;

d) placing the smooth and filled implant in contact with one face of the silicone sheet;

e) centering said implant and exerting pressure on the same in order to establish an adhering position;

f) placing upon another face of the implant another silicone sheet and foam sheet assembly such that the silicone sheet contacts said implant to form an implant assembly;

g) disposing said implant assembly in a mold for uniform mechanical pressure throughout the entire surface of the implant assembly;

h) pressing the periphery of the mold in order to achieve a maximum adherence region between said two silicone and foam sheet assemblies; and

i) removing said implant from said mold.

5,296,070

PROCESS FOR PRODUCING LIQUID-CONTAINER MATERIAL

Yoshiaki Take; Hideki Yamamoto, and Shigenori Morishima, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,786
Claims priority, application Japan, May 31, 1991, 3-129681; Jul. 31, 1991, 3-191955
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—244.11 **10 Claims**



1. A process for producing a liquid-container material comprising a first thermoadhesive resin film layer, a substrate sheet having a thin-film layer of an inorganic compound, and a paper substrate, comprising the steps of:

(a) melt-extruding a thermoadhesive resin from an extruder die to form a first thermoadhesive resin film;

(b) cooling said first thermoadhesive resin film obtained in step (a), to a temperature at which the thermoadhesive properties inherent in said film can be retained and at which no crack is produced in the thin-film layer of an inorganic compound when said film is laminated to the substrate sheet having the thin-film layer of an inorganic compound;

(c) laminating said first thermoadhesive resin film obtained in step (b), to said substrate sheet having the thin-film layer of an inorganic compound to form a laminate, wherein the thin-film layer of an inorganic compound is formed by a dry plating process; and

(d) laminating said laminate obtained in step (c), to said paper substrate.

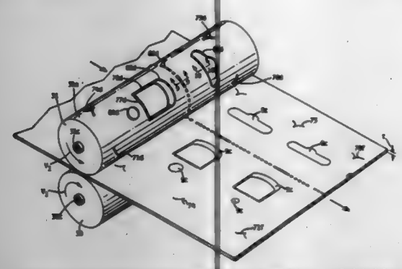
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,071

METHOD OF PRINTING AND CUTTING HEAVY STOCK ON FLEXOGRAPHIC PRESS

Dean Tapp, Mahtomedi, Minn., assignor to Label Technologies, Inc., St. Paul, Minn.

Filed May 19, 1992, Ser. No. 885,471
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—267 11 Claims



1. The flexographic press method of making a foldable dial card that can be folded on itself with the folded dial card having openings and edges in registration comprising the steps of:

feeding an elongated web of thickness t into a flexographic press with the thickness of the web sufficiently thick so as to normally cause the web to jam during the flexographic printing process;

printing a first color onto the web followed by drying the first color;

printing a second color on the web followed by drying the second color;

feeding the web between a first pair of rollers rotating at the same surface velocity to cut internal regions of a dial card in the web;

blowing on the web to remove internal cutouts from the web to thereby form a dial card from the web; and

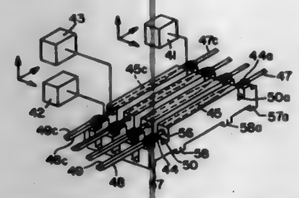
feeding the web with the cut internal regions between a second pair of rollers to cut exterior regions of the dial card with the second pair of rollers comprising a die cutting roller rotating at a first surface velocity and a back-up roller rotating at a second surface velocity, said second surface velocity slightly larger than the first surface velocity of the die cutting roller to thereby apply a shearing pull force to the web to prevent jamming of the web in the flexographic press.

5,296,072

METHOD OF MANUFACTURING AND TESTING INTEGRATED OPTICAL COMPONENTS

Thierry L. A. Dannoux, and Patrick J. P. Herve, both of Avon, France, assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,224
Claims priority, application European Pat. Off., Nov. 25, 1991, 91120030.1
Int. Cl.[5] G02B *6/30, 6/42*
U.S. Cl. 156—257 11 Claims



1. A method of manufacturing integrated optical devices having optical fiber pigtail means attached to optical output ports comprising:

a) forming a multiple unit structure comprising a plurality of optical device components, each of said optical device components having at least one optical output port;

b) attaching at least one optical fiber pigtail means in optical communication with at least one optical output port on each of a plurality of said optical device components, while said optical device components are integrally connected; and,

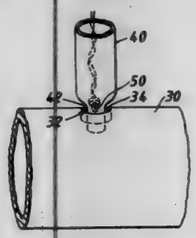
c) separating said multiple unit structure into a plurality of individual optical device components, said individual optical device components having attached optical fiber pigtail means.

5,296,073

METHOD OF FORMING A WELDED JOINT BETWEEN POLYOLEFINIC MEMBERS

Trevor G. Stafford, Whitley Bay, and Andrew Smart, Newcastle-upon-Tyne, both of United Kingdom, assignors to British Gas plc, London, England

Filed Apr. 24, 1992, Ser. No. 873,424
Claims priority, application United Kingdom, Apr. 24, 1991, 91 08934.2
Int. Cl.[5] B29C *65/14*
U.S. Cl. 156—272.2 6 Claims



1. A method of making a fusion welded joint comprising the steps of:

providing a hollow first member of non-crosslinked polyolefin material wherein said first member has a wall including a through-aperture defined by an edge surface having an original internal diameter;

providing a hollow second member of cross-linked polyolefin material having an end portion which has been drawn down so that said second member is heat recoverable, inserting said end portion of said second member in said through-aperture in said first member wherein, before heating, said end portion of said second member has an outside diameter which is less than said original internal diameter of said through-aperture;

inserting a source of electromagnetic radiation into said end portion of said second member; and

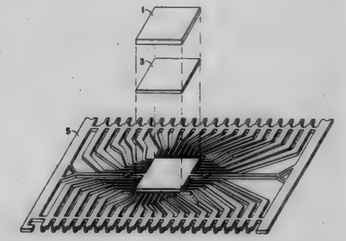
heating through said end portion with said source so that said end portion recovers outwardly into contact with said edge surface and so that polyolefin material of said fist member is upset at margins of said through-aperture, and while said end portion is recovering outwardly, said heating being of sufficient duration to ensure that a fusion welded joint is formed between said end portion of said second member and said first member.

5,296,074

METHOD FOR BONDING SMALL ELECTRONIC COMPONENTS

William F. Graham, Landenberg; Mel A. Lofurno, Kennett Square, and Byron C. Sakiadis, Chadds Ford, all of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 853,879, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 631,263, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 469,812, Jan. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 171,974, Mar. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 88,141, Aug. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 31,793, Mar. 30, 1987, abandoned. This application Feb. 1, 1993, Ser. No. 13,230
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—309.9 12 Claims



1. A method for rapidly bonding a small electronic component having a mating surface smaller than about one square inch selected from the class consisting of capacitor,

(a) cutting a continuous ribbon having a thickness of 25 to 125 micrometers of non-olefinic, substantially amorphous, solvent-free thermoplastic polymer, the polymer being further characterized in that

T_g is at least 30° C.

T_b is below −30° C.

S_w is less than 1.0% wt. and

extractable tonics are less than 10 ppm by wt.,

such that the cut ribbon forms the adhesive pad having both lateral dimensions substantially equal to or greater than the electronic component to be bonded;

(b) heating mating surfaces of the electronic component and substrate so that the temperature of at least one of the surfaces exceeds the T_g of the adhesive pad;

(c) positioning the adhesive pad upon the heated substrate with an application of slight pressure to effect heat transfer from the substrate to the adhesive pad, thus softening the adhesive without incurring adhesive flow;

(d) positioning the small electronic component upon the heated adhesive pad resulting in assembly of the electronic component, adhesive pad and substrates;

(e) laminating the small electronic component to the substrate by applying a higher pressure to the small electronic component to reduce the thickness of the adhesive pad by 0.5 to 3% followed by a release of pressure within about 5 seconds.

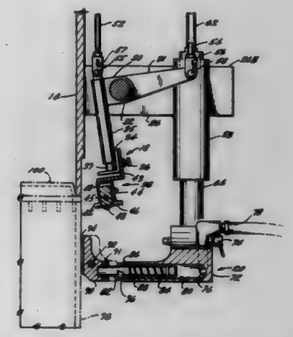
5,296,075

WELDING APPARATUS

James S. Hardigg, Conway, and Edward W. Turner, Deerfield, both of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Feb. 3, 1993, Ser. No. 12,873
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—362 5 Claims

1. A welding apparatus for welding plastic battery covers to plastic battery jars to form a closed container, said apparatus comprising a frame, a work zone having loading, welding and unloading stations, means for moving said battery covers and battery jars to be welded together from said loading station to said welding station, means for moving welded battery covers and battery jars from said welding station to said unloading station, welding means for heating portions of said battery covers and battery jars, clamping means for heating portions of said battery covers and battery jars, clamping means for positioning and controlling the relationship between said battery covers and battery jars during welding, drive means for operating the apparatus and control means for activating the drive means in a predetermined sequence, the improvement which comprises means for pressing against the interface between the battery cover and battery jar during welding thereof wherein



said means includes a plurality of presser feet individually disposed on said apparatus along each side of said container formed by said battery cover and battery jar, means for moving each presser foot in a vertical direction including a pair of brackets disposed on said apparatus, said brackets having a horizontal portion and a vertical portion, said vertical portion having a vertical bore therethrough, a shaft slidably disposed in said bore, a manifold attached to the lower end of said shaft and movable therewith, pneumatic means attached to the upper end of the shaft for moving same in a vertical direction, said presser foot being operatively associated with said manifold and moveable vertically therewith and means for moving each presser foot in a horizontal direction.

5,296,076

APPARATUS FOR APPLYING TAPE AND METHOD THEREFOR

Yoshikazu Morita, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 858,787
Claims priority, application Japan, Mar. 20, 1991, 3-81906
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—361 32 Claims

1. An apparatus for applying tape to a belt-like member supplied continuously comprising:

(A) a first accommodating means for accommodating a first double-coated, two-sided tape having a separation sheet on a first side thereof;

(B) a first applicator means for applying the second side of the first two-sided tape accommodated by said first accommodating means to a belt-like member;

(C) a first feeding means for feeding the first two-sided tape from said first accommodating means to said first applicator means;

(D) a first sheet removing means for removing the separation sheet from the first side of the first two-sided tape;

(E) a second accommodating means for accommodating a

VOL 1160 ISS 4 MR 22 1994 UMI

second double-coated, two-sided tape having a separation sheet on a first side thereof;

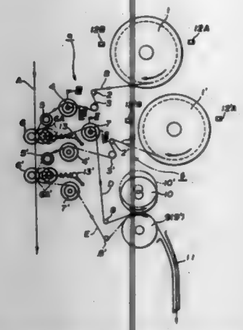
(F) a second applicator means for applying the second side of the second two-sided tape accommodated in said second accommodating means to a belt-like member;

(G) a second feeding means for feeding the second two-sided tape accommodated in said second accommodating means to said second applicator means;

(H) a second sheet removing means for removing the separation sheet from the first side of the second two-sided tape, each of said first and second sheet removing means including:

(i) a separation guide roller for guiding the separation sheet separated from said double-coated, two-sided tape away from the double-coated, two-sided tape;

(ii) a pair of feeding rollers which selectively substantially contact each other in a first position to engage and feed



the separation sheet therebetween and move away from each other to a second position to stop feeding the separation sheet; and

(iii) a chute for discharging the separation sheet from said pair of feeding rollers; and

(H) a switching means for activating said second applicator means, said second feeding and said second sheet removing means to apply the second double-coated tape to the belt like member when the supply of the first double-coated tape applied to the belt-like member by said first applicator means is depleted, said switching means including an actuator which actuates said feeding rollers of said first sheet removing means to move from the first position to the second position and said feeding rollers of said second sheet removing means to move from said second position to said first position when the double-coated tape applied to the belt-like member by said first applicator means is depleted.

5,296,077

APPARATUS FOR MANUFACTURING TIRES WITH WHITE SIDEWALL APPLIQUES

Georg G. A. Bohm, Akron; Arthur E. Oberster, Canton, and James H. C. Yang, Cleveland, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 469,705, Jan. 24, 1990, which is a continuation of Ser. No. 223,195, Jul. 8, 1988, abandoned. This application Dec. 16, 1991, Ser. No. 807,913

Int. Cl.[5] B60C *13/04*; B32B *33/00*; B28B *11/14*

U.S. Cl. 156—395 **10 Claims**

1. Apparatus for applying a white sidewall applique to a tire, comprising:

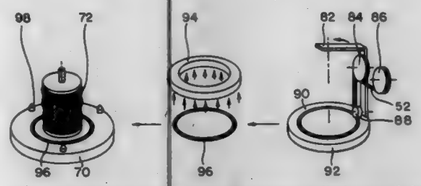
first means for mixing and calendering a layer of white rubber compound;

second means for mixing and calendering a layer of white rubber compound;

a laminator receiving said layers of barrier and white rubber compounds and laminating said layers together, forming an uncured laminate;

third means for forming a cylinder of said laminate and cutting said cylinder into a plurality of uncured bands; and

fourth means for transferring individual bands from said third means to a tire curing press, said fourth means comprising a storage cylinder receiving and maintaining said



bands, a fixture at an end of said storage cylinder receiving bands from said storage cylinder and forming a white sidewall applique, and a transfer means for urging a band from said storage cylinder and onto said fixture, said transfer means reorienting said band by deflecting said band through an area of at least 90° while maintaining said band about a fixed axis.

5,296,078

WELD SEAM COVER ON THE INSIDE OF SHEET METAL TUBES

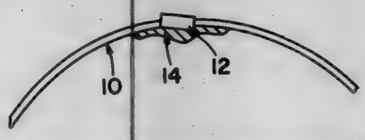
Ernst M. Frey, Lauenen 680 A, CH-3655 Sigriswil, Switzerland

Filed Dec. 14, 1992, Ser. No. 992,265

Claims priority, application Switzerland, Dec. 17, 1991, 03735/91

Int. Cl.[5] B05B *13/06*; B29D *23/00*

U.S. Cl. 156—466 **10 Claims**



1. A welding machine device for the continuous application of a protective layer to cover the inside of a longitudinal weld seam of sheet metal tubes lying end to end comprising an inner welding roller arranged on a welding arm, an application arm running coaxially to the welding arm, removable means for transporting in an axial direction the sheet metal tubes lying end to end and an application device comprising a nozzle for the protective layer, characterized in that:

the application arm providing for the introduction of a block-shaped block of hot-melt mass is tubular,

means for advancing and pressing the hot-melt mass in an advance direction (V) towards the welding arm with a forward and backward moving insert,

a heater which narrows in the advance direction (V),

a supply tube is provided for supplying an interchangeable application nozzle arranged next to the welding arm.

5,296,079

APPARATUS FOR PROVIDING LUGGAGE WITH A DISPOSABLE PROTECTIVE COVER

Ernesto S. Romo, 4926 N. Maywood Ave., #4, Eagle Rock, Calif. 90041

Filed Jun. 17, 1991, Ser. No. 716,211

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—475 **16 Claims**

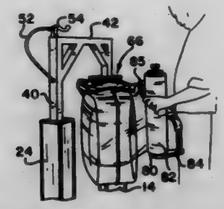
1. Apparatus for relatively holding a luggage case having a top surface while lengths of plastic sheeting are wrapped about said luggage case, comprising:

rotatable luggage case support means for rotatively supporting the luggage case;

clamping frame means for adjustable vertical positioning;

a clamping plate assembly secured to the clamping frame means for vertical movement above and aligned with the luggage case support means for clampingly engaging a luggage case while the luggage case is supported by the luggage case support means; and

means for securing an end portion of the plastic sheeting to



the luggage case while the luggage case is rotated to wrap the plastic sheeting about the luggage case;

wherein the clamping plate assembly comprises a frame defining a generally inverted "V" shaped clamping surface operable to contact the top surface of the luggage case and having a surface portion which extends below the horizontal plane at the top surface of the luggage case for increasing the stability of the luggage case while clamping the luggage case between the clamping surface of the frame and the luggage case support means upon the luggage case being supported by the luggage case support means.

5,296,080

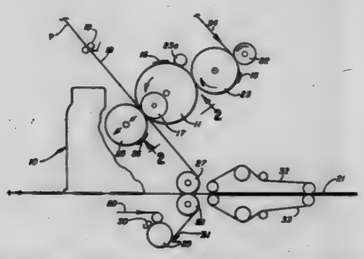
APPARATUS FOR APPLYING AN ELASTIC WAISTBAND TO A DISPOSABLE DIAPER

John Merkatoris, and James Hertel, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Apr. 19, 1988, Ser. No. 183,060

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—496 **1 Claim**



1. Apparatus for applying an elastic waistband in disposable diaper manufacture comprising:

a frame defining a first longitudinally extending path for advancing a diaper component web;

means operably associated with said frame for advancing said component web in said first path;

means operably associated with said frame for applying adhesive to said web at longitudinally spaced portions

said frame also defining a second longitudinally extending path intersecting said first path;

a pair of spaced apart wheels mounted on said frame in said second path prior to the intersection of said paths for rotation about angularly related axes to pass through a first position and a second position spaced from said first position, said second position being at the intersection of said paths, said wheels each being equipped with a plurality of circumferentially spaced apart pins projecting generally radially outwardly from the wheel periphery;

means on said frame in said second path for advancing elastic sheet material toward said wheels;

means on said frame in said second path for transversely cutting said material to provide transversely elongated segments therefrom;

means operably associated with said wheels for installing elastic sheet material on said pins at said first position;

means operably associated with said frame for rotating said wheels to place said wheel peripheries closer together at said first position than at said second position whereby said elastic sheet material is stretched in moving from said first position to said second position;

and pressure roll means on said frame between said wheels for sequentially disengaging said segments and substantially simultaneously pressing said segments against an adhesive-equipped portion of said web;

said frame in said second path adjacent said first position being equipped with roll means for applying said segments to said pins, said roll means including a vacuum anvil roll positioned adjacent said pair of spaced apart wheels, a cutoff roll adjacent said vacuum roll and cooperative therewith to generate said segments, and a staking roll also adjacent said pair of spaced apart wheels but downstream in said path from said vacuum anvil roll.

5,296,081

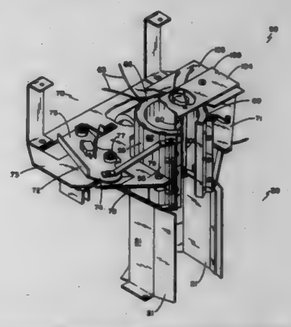
AUTOMATIC HEAT TRANSFER PRESS FOR TUBULAR STRUCTURES AND CONTAINERS

Mark W. Morin, Attleboro, and Randolph H. Baker, Foxboro, both of Mass., assignors to Geo. Knight & Co., Inc., Brockton, Mass.

Filed Jun. 30, 1992, Ser. No. 906,435

Int. Cl.[5] B65C *9/34*

U.S. Cl. 156—498 **3 Claims**



1. An automatic heat transfer press for imprinting sublimation transfers onto a tubular structure or container opened on at least one end thereof by utilizing heat and contact pressure, comprising:

a base;

a cooling chamber vertically mounted on said base, wherein said cooling chamber has a plurality of vertical sides, a vertical longitudinal axis, a bottom and a front opening, said sides providing support for a heating chamber and defining a cavity with a pad comprised of an energy absorbing foam, at the bottom of said cavity;

a heating chamber vertically mounted on said cooling chamber, wherein said heating chamber is comprised of:

a flexible, generally cylindrical, mineral insulated, metal

band heater having a horizontal radial axis and a central, vertical longitudinal axis defining an interior cavity in which said tubular structure or container is concentrically and centrally positioned, wherein said band heater is comprised of a unplanar heater element, sandwiched between first and second layers of compacted mineral insulation, which are in turn enclosed within a thin, metallic sheath, wherein the first of said insulation layers is a relatively thin, higher thermal conductivity layer separating the heater element from the inside diameter portion of the metallic sheath, and the second of said insulation layers is a relatively thick, lower thermal conductivity layer separating the heater element from the outside diameter portion of the metallic sheath, said second layer backing up said heater element to direct heat inward towards the interior cavity of said band heater, wherein the heater element is more heavily concentrated in that portion of the band heater which would be adjacent the tubular structure or container higher mass areas, said band heater having two positions, normally open and closed, formed by the cylindrical sheath of the band heater, wherein in the normally open position, t he band heater has a front, vertical opening formed therein;

a clamping mechanism for opening and closing said band heater about said tubular structure or container, wherein said clamping mechanism is formed in a general radial plane about the band heater and is adapted to close the band heater about a tubular structure or container positioned within the band heater interior cavity and to open the band heater when processing is complete; and

a heater extending vertically downward into said band heater cavity and positioned within said open end of said tubular structure or container; and

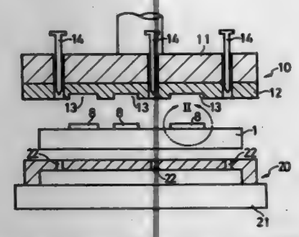
an external casing enclosing said cooling and heating chambers.

5,296,082

MOLD FOR PRINTED WIRING BOARD

Isamu Kubo, Saitama, Japan, assignor to Nippon CMK Corp., Japan

Filed Mar. 18, 1992, Ser. No. 853,115
Claims priority, application Japan, Mar. 20, 1991, 3-081483
Int. Cl.[5] B32B *31/14*
U.S. Cl. 156—500 **15 Claims**



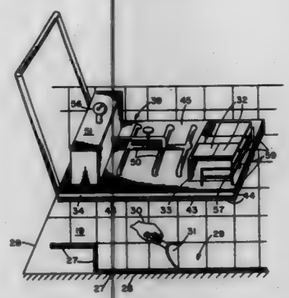
1. A mold for a printed wiring board having raised printed wiring circuit regions between flat regions on at least one opposed surface thereof, comprising: upper and lower dies for sandwiching the printed wiring board therebetween during drilling, punching or cutting of the printed wiring board, one of said upper and lower dies having a press surface which is provided with concave portions for receiving therein the raised printed wiring circuit regions of the printed wiring board and flat surfaces for pressing against the flat regions of the printed wiring board.

5,296,083

PROCESS AND APPARATUS FOR REMOVAL OF ASBESTOS FLOOR TILE

Onofrio G. Petino, 1580 E. 13th St., Brooklyn, N.Y. 11230

Filed Jun. 11, 1992, Ser. No. 897,027
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—344 **1 Claim**



1. A relatively safe method for the removal and containerization of obsolete floor tile previously adhered to a subfloor by a bonding agent, which floor tile contains one or more hazardous materials, comprising the steps of:

applying a temperature reducing agent selected from the group consisting of dry ice and a cryogen to one or more selected floor tiles for a selected period of time for causing a reduction of the temperature of the selected floor tile and the underlying bonding agent to a level whereby the bonding agent is rendered substantially ineffective as a bonding medium;

uplifting the debonded floor tile in substantially uniform and unbroken floor tile sections;

stacking the uplifted uniform floor tile sections into container means;

sealing said container means for shipment;

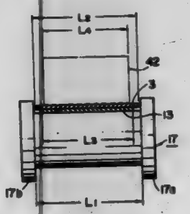
whereby the debonded floor tile may be removed and containerized with virtually a zero hazardous material air contamination risk to the workers.

5,296,084

TAPE ALIGNMENT MECHANISM

Shigenori Hattori, Ama, and Atsuhiro Kobayashi, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 422,113, Oct. 16, 1989, abandoned.
This application Feb. 25, 1993, Ser. No. 22,765
Claims priority, application Japan, Oct. 19, 1988, 63-136362[U]
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—554 **9 Claims**



1. A tape storage device comprising:

a tape feed mechanism;

a film tape detachably mounted on said tape feed mechanism;

a double sided adhesive tape detachably mounted on said tape feed mechanism;

an exfoliative sheet disposed over one side of said double sided adhesive tape;

said tape feed mechanism comprising:

a first feed member comprising a first feed roller for feeding one of said tapes;

a second feed member comprising a second feed roller adapted to be brought into and out of engagement with said first feed roller for feeding the other of said tapes to a position overlapping said one tape in accordance with an operation of said first feed member; and,

an adjust member comprising a pair of flange portions on said second feed roller for adjusting the position of the overlapped tapes in a width direction thereof, wherein the spacing between said flange portions is substantially the same as the width of said film tape, the width of said first feed roller is less than the spacing between said pair of flange portions, less than the width of said film tape and substantially the same as the width of said double sided adhesive tape whereby said first feed roller may be brought into engagement with said second feed roller.

5,296,085

MACROCRYSTALLINE α-ALUMINA HEXAGONAL PLATELETS

Annick Faure, Venissieux, and Roland Bachelard, Lyons, both of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 756,785, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 586,224, Sep. 21, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 918,787
Claims priority, application France, Sep. 21, 1989, 89/12402
Int. Cl.[5] C30B *29/64, 30/00*
U.S. Cl. 156—603 **26 Claims**

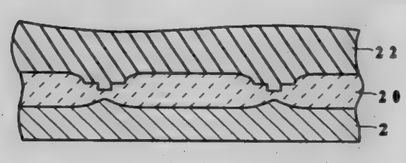
1. α-Alumina macrocrystals comprising monocrystalline hexagonal platelets having a diameter ranging from 2 to 20 μm, a thickness ranging from 0.1 to less than 1 μm and a diameter/-thickness aspect ratio ranging from 5 to 40.

5,296,086

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING GROWN LAYER ON INSULATING LAYER

Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 6, 1991, Ser. No. 788,397
Claims priority, application Japan, Jul. 25, 1991, 3-186280
Int. Cl.[5] C30B *25/14*
U.S. Cl. 156—610 **6 Claims**



1. A method for manufacturing semiconductor device having a grown layer on an insulating layer, comprises:

an insulating layer formation step of forming an oxide insulating layer on a silicon substrate;

an opening formation step of providing the oxide insulating layer with an opening for seed crystal growth;

a silicon carbide seed crystal growth step of effecting crystal growth until the silicon carbide seed crystal layer protrudes slightly from said opening with the oxide insulating layer used as a mask;

a selective oxidation step of oxidizing the silicon substrate under said opening thereby forming an oxide barrier layer cutting off the connection between the silicon carbide seed crystal layer and the silicon substrate;

a silicon carbide growth step of subjecting the silicon grown layer to crystal growth on the basis of the silicon carbide seed crystal layer; and

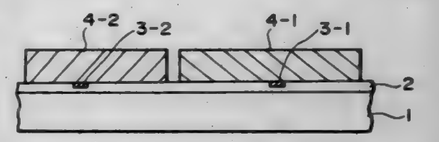
a device formation step of forming a semiconductor device on the silicon carbide grown layer.

5,296,087

CRYSTAL FORMATION METHOD

Hiroyuki Tokunaga, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 690,324, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 234,751, Aug. 22, 1988, abandoned. This application Dec. 9, 1992, Ser. No. 988,006
Claims priority, application Japan, Aug. 24, 1987, 62-209462
Int. Cl.[5] C30B *25/12*
U.S. Cl. 156—611 **2 Claims**



1. A gas phase method for forming II-VI group crystals or III-V group crystals in a crystal formation treatment space, comprising:

forming a substrate with a non-nucleation surface (S_{NDS}) and an adjacent nucleation surface (S_{NDL}), said nucleation surface (S_{NDL}) being comprised of an amorphous material having a sufficiently small area of 16 μm^2 or less so as to form only a single nucleus from which a single-crystal is grown, and having a larger nucleation density than said non-nucleation surface (S_{NDS}), wherein said nucleation surface (S_{NDL}) is formed by ion implantation and the amount of the ions implanted is at least $1\times10^{15}/cm^3$;

heating said substrate up to a substrate temperature within a range of 200° C. to 950° C.;

alternately feeding at least a first starting gas and a second starting gas into said crystal formation treatment space thereby forming said single nucleus and growing a single-crystal from said single nucleus, wherein the pressure during feeding of the starting gases is within a range of 10^{-1} Torr to 10 Torr, and wherein the time for feeding the starting gases is within a range of 5 sec. to 1 min.; and

during said alternate feeding step, after the feeding of one of the starting gases is terminated and before commencing the feeding of the other starting gas, evacuating said crystal formation treatment space to a pressure within a range of 10^{-2} torr to 10^{-5} Torr, wherein the time for evacuating the starting gases is within a range of 20 sec. to 3 min.

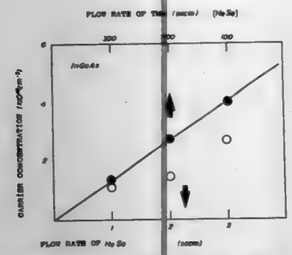
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,088

COMPOUND SEMICONDUCTOR CRYSTAL GROWING METHOD

Kunihiko Kodama, Takarazuka; Nobuyuki Ohtsuka, Kawasaki; Masashi Ozeki, Kawasaki, and Yoshiki Sakuma, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1992, Ser. No. 924,483
Claims priority, application Japan, Aug. 8, 1991, 3-198180
Int. Cl.[5] H01L *21/203*
U.S. Cl. 156—613 15 Claims



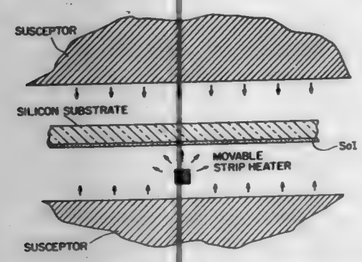
1. A compound semiconductor crystal growth method comprising the steps of:
supporting a substrate having a growth surface in a reaction chamber;
supplying to the chamber a material gas of a compound semiconductor which is to be grown in the form of a crystal on the growth surface;
supplying a control gas to the chamber under conditions such that the control gas undergoes competitive adsorption with the material gas on the growth surface but does not undergo chemical reaction sufficient to cause accumulation on said growth surface; and
controlling the rate of supply of said control gas to said chamber to thereby control the competitive adsorption mechanism and thus control the rate at which said compound semiconductor is adsorbed onto said growth surface.

5,296,089

ENHANCED RADIATIVE ZONE-MELTING RECRYSTALLIZATION METHOD AND APPARATUS

Chenson K. Chen, Weston, and James Im, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 251,558, Sep. 30, 1988, Pat. No. 5,173,271, which is a continuation-in-part of Ser. No. 238,311, Aug. 30, 1988, Pat. No. 5,160,575, which is a continuation-in-part of Ser. No. 124,346, Nov. 20, 1987, Pat. No. 4,889,583, which is a continuation of Ser. No. 805,117, Dec. 4, 1985, abandoned. This application Nov. 24, 1992, Ser. No. 981,189
Int. Cl.[5] C30B *13/16*
U.S. Cl. 156—620.7 10 Claims



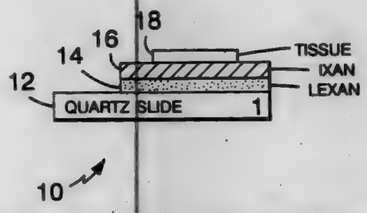
1. A method for preparing a SOI wafer having a monocrystalline semiconductor material film on a substrate comprising the steps of:
supporting the wafer;
providing a first heater positioned over the wafer, the first heater being stationary relative to the wafer;
providing a second heater positioned below the wafer, the second heater being stationary relative to the wafer;
providing a third heater adapted for heating regions of the film to melt the regions by relative motion between the third heater and the wafer;
radiatively heating the film using the first heater and the second heater such that a relative thermal contribution of the first heater and the second heater produces a base temperature in the film below the melting point of the film;
heating contiguous regions of the film with radiant energy from the third heater to melt the regions of the film; and
solidifying the contiguous regions of the film to produce substantially monocrystalline semiconductor material.

5,296,090

HIGH RESOLUTION TRACK ETCH AUTORADIOGRAPHY

Guido Solares, Arlington, and Robert G. Zamenhof, Brookline, both of Mass., assignors to New England Medical Center Hospitals, Inc., Boston and Massachusetts Institute of Technology, Cambridge, both of Mass.

Filed Dec. 3, 1991, Ser. No. 801,952
Int. Cl.[5] B44C *1/22;* B29C *37/00*
U.S. Cl. 156—628 9 Claims



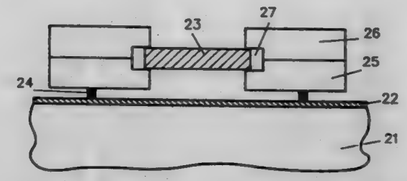
1. A method of etching a detector assembly with an etchant to produce high resolution autoradiographs, said detector assembly including a substrate on which is mounted a tissue sample, a protective layer that is resistant to said etchant and a detector layer for detecting radiation tracks in that order, the method comprising:
placing a container for the etchant in a temperature stabilization bath, said container having an opening for adding the etchant;
adding etchant to the container so as to cause a meniscus to form at the opening, said meniscus extending above the opening of the container;
placing the detector assembly on top of the container so that said detector layer faces down and is in contact with the meniscus of etchant; and
leaving the detector layer in contact with the etchant for sufficient time to etch radiation tracks in said detector layer.

5,296,091

METHOD OF ETCHING SUBSTRATES HAVING A LOW THERMAL CONDUCTIVITY

Johann Bartha; Thomas Bayer, both of Sindelfingen; Johann Greschner, Pliezhausen, all of Fed. Rep. of Germany; Dieter Kern, Amawalk, N.Y.; Volker Mattern, Boeblingen, and Roland Stoehr, Nufringen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 422,928, Oct. 17, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 768,490
Claims priority, application European Pat. Off., Oct. 19, 1988, 88117372.8
Int. Cl.[5] B01J *15/00*
U.S. Cl. 156—643 6 Claims



1. A method of etching a substrate having a low thermal conductivity and which is sensitive to temperature to a high degree of etch rate uniformity, in a vacuum reactor at a pressure ranging from about 100 to 10^{-3} mbar by electrically or optically energized particles, using a process gas supplying said particles, said vacuum reactor comprising a process chamber, means for introducing said process gas into said process chamber, means for connecting a vacuum pump to said process chamber, and electrode mounted in said process chamber, a counterelectrode in said process chamber, a substrate holder associated with said electrode for supporting a substrate to be etched and an energy source for applying RF energy to one of said electrode and said counterelectrode, said method comprising: maintaining the substrate at a predetermined distance from said electrode surface, said predetermined distance being at least about 0.2 mm from said electrode surface, and wherein the heat reflected from said electrode to the substrate is absorbed by a layer disposed on said electrode surface.

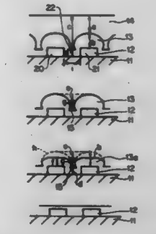
5,296,092

PLANARIZATION METHOD FOR A SEMICONDUCTOR SUBSTRATE

Chunghoan Kim, Kyunggi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Apr. 30, 1992, Ser. No. 876,622
Claims priority, application Rep. of Korea, Jan. 16, 1992, 92-576
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 10 Claims

1. A method for the planarization of a semiconductor substrate comprising the steps of:
(a) coating an insulating layer on a semiconductor substrate on which a metal wiring layer has been previously formed;
(b) forming a sacrificial layer on said insulating layer;
(c) etching said sacrificial layer forming sacrificial residues on said insulating layer between portions of said metal wiring layer;
(d) isotropically etching said insulating layer; and



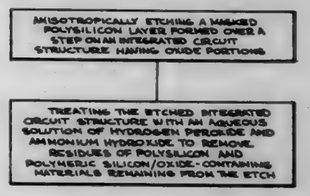
(e) anisotropically etching said sacrificial residues and said isotropically etched insulating layer simulataneously.

5,296,093

PROCESS FOR REMOVAL OF RESIDUES REMAINING AFTER ETCHING POLYSILICON LAYER IN FORMATION OF INTEGRATED CIRCUIT STRUCTURE

Chester Szwejkowski, Palisades, N.Y.; Ian S. Latchford, Cupertino, Calif.; Isamu Namose, Nagano, and Kazumi Tsuchida, Narita, both of Japan, assignors to Applied Materials, Inc., Santa Clara, Calif. and Seiko Epson Corp., Japan

Continuation-in-part of Ser. No. 735,127, Jul. 24, 1991, Pat. No. 5,147,499. This application May 27, 1992, Ser. No. 889,202
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00*
U.S. Cl. 156—643 19 Claims



1. In a process wherein a polysilicon layer, which is formed over a step on an integrated circuit structure and masked with a photoresist, is anisotropically etched to remove the exposed portions of the polysilicon layer leaving residues of a polymerized silicon/oxide-containing material adjacent the sidewalls of the masked portions of polysilicon, the improvement comprising: treating the integrated circuit substrate with an aqueous ammonium-containing base/peroxide solution to remove said residues of polymerized silicon/oxide-containing material with minimum damage to exposed oxide portions on the structure.

5,296,094

PROCESS FOR ETCHING SILICON DIOXIDE LAYER WITHOUT MICRO MASKING EFFECT

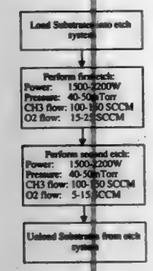
Hongging Shan, San Jose, and Donald W. Jillie, Jr., Cupertino, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 12, 1992, Ser. No. 897,768
Int. Cl.[5] H01L *21/00, 21/02;* B44C *1/22;* C03C *15/00*
U.S. Cl. 156—651 28 Claims

1. A process for etching an oxide layer during the fabrication of a device on a semiconductor substrate comprising the steps of:
providing said semiconductor substrate having said oxide layer; and

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performing an etch in a flow of a mixture of gases comprising a halogen containing species and O_2, wherein said



flow of said O_2 is equal to or greater than 15 SCCM and wherein said flow of said O_2 is equal to or greater than 10% by volume of the total gas flow.

5,296,095

METHOD OF DRY ETCHING

Yutaka Nabeshima, Katano, and Tokuhiko Tamaki, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1991, Ser. No. 785,300
Claims priority, application Japan, Oct. 30, 1990, 2-294663
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—662 **4 Claims**



1. A method of dry etching a silicon oxide or a multilayer oxide film thereof by using a principal etching gas and an additive gas, wherein said additive gas consisting essentially of CH_2F_2, CH_3F or CH_3Br and said principal gas consisting essentially of CF_4, SF_6 or ClF_3.

5,296,096

ETCHANT FOR PRODUCTION OF ELECTRODE PLATE STRUCTURE FOR LIQUID CRYSTAL DISPLAY DEVICE

Takashi Enomoto, Zama; Masayuki Shimamune, Tokyo, and Keishi Danjo, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,020
Claims priority, application Japan, Aug. 13, 1990, 2-211626; Aug. 5, 1991, 3-218071
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—667 **7 Claims**



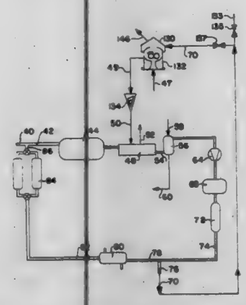
7. A process according to claim 6, wherein the organic layer comprises a color filter layer.

5,296,097

METHOD FOR REDUCING CONTAMINANTS IN PULP PRIOR TO OZONE BLEACHING

William H. Friend, Savannah, Ga., assignor to Union Camp Holding, Inc., Princeton, N.J.

Division of Ser. No. 739,050, Aug. 1, 1991. This application Sep. 14, 1992, Ser. No. 944,863
Int. Cl.[5] D21C *1/10, 9/147, 9/153*
U.S. Cl. 162—18 **15 Claims**



1. A method for reducing contaminants in pulp prior to ozone bleaching thereof, said method comprising:
providing a source of an oxygen rich gas which contains at least about 50% oxygen;
pressing pulp between rollers in a pulp consistency increasing stage to provide increased consistency pulp by removing liquid therefrom;
expanding the pulp during the pulp consistency increasing stages to create voids in said pulp;
maintaining a surrounding blanket of said oxygen rich gas around said pulp at least when the consistency is increased so that said oxygen rich gas contacts substantially all pulp after pressing to fill substantially all voids in said increased consistency pulp with said oxygen rich gas; and
supplying said increased consistency pulp to an ozone-pulp reaction zone for reaction with a gaseous mixture of ozone and oxygen, wherein the amount of contaminants in said increased consistency pulp is reduced by the presence of the oxygen rich gas in the voids of the pulp.

5,296,098

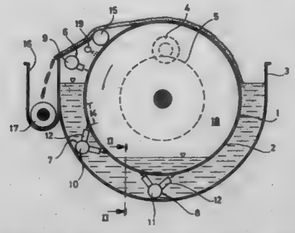
METHOD AND DEVICE FOR SEPARATING A FIBRE SUSPENSION

Roland Fjällström, Lawrenceville, Ga., assignor to Celleco Hedemora AB, Stockholm, Sweden

PCT No. PCT/SE91/00208, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO91/15629, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 19, 1991, Ser. No. 778,082
Claims priority, application Sweden, Apr. 11, 1990, 9001322-8
Int. Cl.[5] B07B *1/18*
U.S. Cl. 162—55 **9 Claims**

1. A method of separating a fibre suspension by means of a filter device having a hollow filter body with a wall of filter material, and a container in which the filter body is arranged, said method comprising spraying fibre suspension against the wall of filter material to force a fine fraction of the fibre suspension through the wall of filter material into the hollow filter body and leave a pool of coarse fraction of the fibre suspension in the container outside the hollow filter body, positioning the hollow filter body in said pool of coarse fraction, dewatering said coarse fraction through said wall of filter material, discharging the dewatered coarse fraction from the container,

displacing the wall of filter material alternately up and down through the surface of said pool of coarse fraction, and spray-



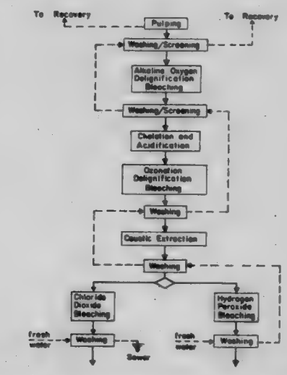
ing fibre suspension against the wall of filter material as the latter is displaced above said pool of coarse fraction.

5,296,099

ENVIRONMENTALLY IMPROVED PROCESS FOR BLEACHING LIGNOCELLULOSIC MATERIALS WITH OXYGEN, OZONE AND CHLORINE DIOXIDE

Bruce F. Griggs, Columbia, S.C.; Thomas P. Gandek, Trenton, N.J.; Michael A. Pikulin, Bound Brook, N.J., and Allen Rosen, Lawrenceville, N.J., assignors to Union Camp Holding, Inc., Princeton, N.J.

Division of Ser. No. 749,786, Aug. 26, 1991, Pat. No. 5,164,044, which is a division of Ser. No. 525,808, May 19, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 938,736
Int. Cl.[5] D21C *9/153*
U.S. Cl. 162—57 **23 Claims**



1. A process for delignifying and bleaching a lignocellulosic material which comprises the following steps in the order stated without additional intervening delignification or bleaching steps:
partially delignifying a lignocellulosic material by pulping to form a pulp, washing said pulp, and delignifying said pulp with oxygen to form a partially delignified pulp having a first K No. of about 10 or less and a first viscosity of greater than about 13 cps;
washing the partially delignified pulp;
further delignifying said partially delignified pulp at a consistency of at least about 20% by treating the particles with a gaseous mixture containing ozone in an amount sufficient to remove a substantial portion, but not all, of the lignin remaining in the pulp by intimately contacting and turbulently mixing the discrete particles with the ozone containing gaseous mixture in a dynamic reaction zone for a sufficient time and at a temperature sufficient to allow access of the ozone to substantially all surfaces of the pulp particles for reaction therewith while advancing the pulp particles through substantially all of the reaction zone to obtain a substantially delignified pulp having a second K No. of about 5 or less, a viscosity of greater than about 10 cps and a GE brightness of at least about 50%;
washing the substantially delignified pulp;
combining the substantially delignified pulp with an effective amount of alkaline material in an aqueous alkaline solution for a predetermined time and at a predetermined temperature correlated to the quantity of alkaline material to solubilize a substantial portion of any lignin which remains in the pulp;
extracting a portion of the aqueous alkaline solution so as to remove substantially all of the solubilized lignin therefrom and form a substantially lignin-free pulp;
washing the substantially lignin-free pulp;
bleaching the substantially lignin-free pulp with chlorine dioxide to raise the GE brightness thereof to at least about 70%; and
washing the bleached pulp;
wherein at least a portion of the wash water effluent from one or more of the partially delignified pulp washing step, the substantially delignified pulp washing step, the substantially lignin free pulp washing step or the bleached pulp washing step is recycled countercurrently to a previous pulp washing step, and further wherein the effluent from washing the bleached pulp has an amount of total organic chlorides of no more than about 2 pounds per ton prior to any treatment steps for organic chloride removal.

5,296,100

H_2O_2/ALKALINE BLEACHING OF WOOD PULPS

Michel Devic, Sainte Foy Les Lyon, France, assignor to Atochem, Puteaux, France

Filed Apr. 30, 1991, Ser. No. 693,800
Claims priority, application France, Apr. 30, 1990, 90 05749
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] D21C *9/16*
U.S. Cl. 162—78 **9 Claims**

1. A process for the bleaching of a high-yield lignocellulosic pulp, comprising
(i) first pretreating said pulp with a complexing agent for metal ions and next washing such pretreated pulp, and then
(ii) bleaching said pretreated/washed pulp with an initial amount of hydrogen peroxide ranging from 3% to 5% in an alkaline medium, including the addition of a supplementary bleaching amount of hydrogen peroxide and a supplementary amount of sodium hydroxide ranging from 0.5 to 1.5% to said pulp, all the above percentages being by weight based on the weight of the pulp in the dry state, said addition being carried out over the course of said bleaching step (ii) without interrupting same and wherein the hydrogen peroxide or the alkaline treatment agent are not removed during the beaching, at a point in time when from 70% to 80% of the initial amount of hydrogen peroxide has been consumed.

5,296,101

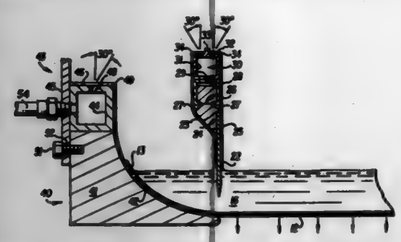
PAPER MACHINE DECKLE STRUCTURE WITH A C-CLIP SUPPORT BEAM

Ralph S. Peterson, Clifton Forge, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 8, 1992, Ser. No. 957,873
Int. Cl.[5] D21F *1/56*
U.S. Cl. 162—353 **7 Claims**

1. In a paper machine, a paper machine deckle means comprising a horizontally elongated C-clip support beam having a pair of spacially separated, parallel support walls and at least one longitudinal guide rail means depending therefrom, an elongated deckle blade body means having a longitudinal

guide channel means for receiving said guide rail means when said body means is inserted within a separation space between said support walls, a thin deckle blade means wherein said deckle blade body means comprises a stepped receptacle surface for receiving a section of said thin deckle blade means, said deckle blade body means having smooth and continuously faired surfaces below said support beam onto the surface of said thin deckle blade means.



5,296,102

DUAL CHAMBER APPARATUS FOR RECOVERY OF OIL FROM SOLID HYDROCARBONACEUS MATERIAL

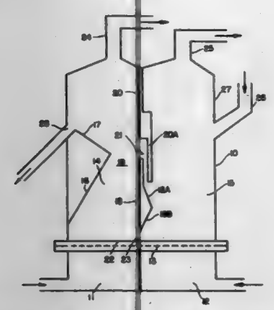
Donald J. Nicklin, Corinda, Australia, assignor to Southern Pacific Petroleum NL and Central Pacific Minerals NL, Sydney, Australia

Continuation of Ser. No. 574,385, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 406,812, Sep. 13, 1989, abandoned, which is a continuation of Ser. No. 273,741, Nov. 15, 1988, abandoned, which is a continuation of Ser. No. 143,241, Jan. 4, 1988, abandoned, which is a continuation of Ser. No. 826,114, Feb. 5, 1986, abandoned, which is a continuation-in-part of Ser. No. 572,859, Jan. 23, 1984, abandoned. This application Jul. 25, 1991, Ser. No. 737,595

Claims priority, application Australia, Jan. 28, 1983, PF7815

Int. Cl.[5] C10B *1/02*

U.S. Cl. 202—85 1 Claim



1. Apparatus for the recovery of oil from solid hydrocarbonaceous material in particulate form comprising:

(a) at least one first combustion chamber in which, in use of the apparatus, residual carbon in particulate hydrocarbonaceous material is combusted;

(b) at least one second reaction chamber disposed alongside the first chamber and in which, in use of the apparatus, particulate hydrocarbonaceous material in the form of fresh feed material is contacted in heat exchange relationship with material which previously has been combusted in the first chamber, the first and second chambers being separated by a partition wall;

(c) an upper passageway extending through the partition wall to permit passage of material between the chambers, the upper passageway incorporating a downwardly facing chute having an upper and a lower end for movement of material from the first chamber to the second chamber by the weight of the material;

(d) an inclined shelf located immediately below the lower end of the chute and extending from one side of the chute downwardly and transversely across beneath the lower end of the chute, the size and inclination of the shelf for forming a densely packed downwardly moving bed of solids in the chute in use, wherein the inclined shelf extends transversely outwardly from an upper edge adjoining the partition wall to a lower edge protruding into the second chamber beneath the lower end of the chute, and wherein an inclined surface is provided sloping transversely inwardly toward the partition wall downwardly form the lower edge of the inclined shelf, the said inclined surface promoting the upward movement of particulate material and entrainment of gas bubbles causing particulate material entering the second chamber through the chute to be entrained in an upward movement for circulation and mixing within the second chamber;

(e) a lower passageway extending through the partition wall between the first and second chambers below the upper passageway to permit return passage of material between the chambers;

(f) means for admitting a combustion supporting fluid to the first chamber at a rate for inducing fluidization of material contained in the first chamber and movement of that material into the upper passageway;

(g) means for admitting particulate feed material to the second chamber; and

(h) means for removing from the apparatus gas vapor products which are generated as a result of kerogen conversion in the second chamber.

5,296,103

METHOD FOR THE FRACTIONAL DISTILLATION OF LIQUID MIXTURES AND APPARATUS FOR CARRYING OUT THE METHOD

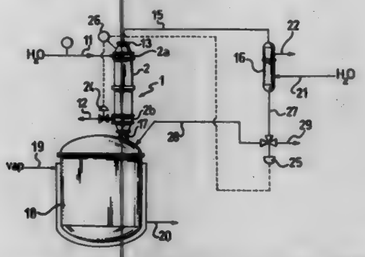
Gianclaudio Masetto, Milan, Italy, assignor to T.I.I. Tecnologie Industriali Innovative S.n.c. di Rosa Corigliano e.C., Milan, Italy

Filed May 13, 1992, Ser. No. 882,031

Claims priority, application Italy, May 14, 1991, MI 91A001320

Int. Cl.[5] B01D *3/42*

U.S. Cl. 203—1 7 Claims



1. A method for fractional distillation of a mixture including at least tow compounds with different boiling points comprising the steps of:

bringing into contact a rising flow of vapor of the mixture and a descending flow of liquid of the mixture in a column including a packing, obtaining the liquid flow from within the column itself by partially condensing the vapor flow by heat exchange with a cooled surface of a condenser which extends throughout the packing and obtaining the rising flow of vapor by heating the mixture in a boiler located at the base of the column,

controlling the liquid-vapor equilibrium conditions in each section of the column, from the exterior, by introducing a coolant fluid into the condenser through a conduit in countercurrent with the rising flow of vapor in the column and by measuring and controlling the temperature at the top of the column.

3. A distillation column for fractional distillation of a mixture including at least two compounds with different boiling points comprising:

a tubular member having a top end and a bottom end at opposite ends and including a packing,

a boiler in fluid communication with the bottom end,

a condenser extending throughout the entire length of the packing provided with input and output pipes for the circulation of coolant fluid located at the top end and at the bottom end of the column respectively,

means for controlling the liquid vapor equilibrium conditions in each section of the column by a valve located in the output pipe and by a device for measuring and controlling the temperature detected at the top of the column.

5,296,104

PROCESS FOR OBTAINING PURIFIED AQUEOUS HYDROGEN PEROXIDE SOLUTIONS

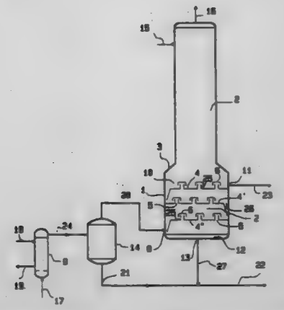
Lido Signorini, and Konstantin Glinos, both of Brussels, Belgium, assignors to Interox International (Societe Anonyme), Brussels, Belgium

Filed Aug. 20, 1992, Ser. No. 932,591

Claims priority, application Belgium, Aug. 27, 1991, 09100787

Int. Cl.[5] B01D *3/14*

U.S. Cl. 203—83 13 Claims



1. A process for obtaining purified aqueous hydrogen peroxide solutions, providing concentrated aqueous hydrogen peroxide solutions with a reduced content of impurities, comprising evaporating a crude aqueous hydrogen peroxide solution containing organic and/or inorganic impurities to obtain a vapour phase consisting of a mixture of water, hydrogen peroxide, volatile impurities and impurities which have been entrained with said vapour phase, and rectifying this vapour phase to produce an aqueous hydrogen peroxide solution depleted in impurities, wherein said vapour phase is fed in at the foot of a distillation column provided in its lower part with a washing zone and in its upper part with a rectification section, where the vapour phase is washed in the washing zone with a small flow of liquid which refluxes in the bottom of the column and which has the same composition as the product purified aqueous hydrogen peroxide solution, and where purified aqueous hydrogen peroxide solution is drawn off at a side of the distillation column at a column height such that the draw-off takes place in the upper part of said washing zone and wherein a residue consisting of a small flow of washing liquid, which contains most of the impurities, is collected at and removed from the bottom of the column, further wherein the washing zone of the distillation column has a column diameter which is greater than the diameter of the rectification section.

5,296,105

PROCESS USING TRANSITION METAL COMPLEXES FOR THE SEPARATION OF DIOXYGEN FROM A GAS MIXTURE BY ELECTRODECOMPLEXATION

Christian Amatore, Paris; Said Aziz, Le Mee sur Seine; Anny Jutand, Paris; Francois Draskovic, Fontenay-le-Fleury, all of France; Kenneth Yamaguchi, Laguna Beach, Calif., and Panayotis Cocolios, Limours, France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

PCT No. PCT/FR91/00218, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO91/14649, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 19, 1991, Ser. No. 777,213

Claims priority, application France, Mar. 27, 1990, 90 03886

Int. Cl.[5] C25B *1/02*

U.S. Cl. 204—59 R 35 Claims

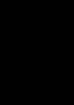
1. A process for separating dioxygen from a gaseous mixture containing dioxygen, which comprises:

a) absorbing dioxygen by one or more transition metal complexes at a low oxidation state of the formula (A):

$$(L_n(M^{+p})_m(X^{-s})_x)^{mp-xz} \quad (A)$$

wherein L represents a coordinate site which is a part of one or more ligands selected from the group consisting of phosphines, phosphine oxides and phosphites; each of which stabilizes low valences of M;

wherein M is a transition metal which binds O_2 thereby forming a peroxo dihapto deoxygenated species of the formula:



and selected from the group consisting of Pd, Pt, Rh, Ni, Ir and Mo;

X is a coordinating anion;

n is an integer of from 2 to 12, and represents the number of coordination sites L,

p represents the oxidation state number of M in the complex of the formula (A),

m is an integer of 1 or 2, and represents the number of metal centers of the complex,

z is an integer of from 1 to 3, and represents the charge of the X^{-z} anion,

x ranges from 0 to 4, and represents the number of anions X identical or different, coordinated to the metal centers M,

said absorption causing formation of a peroxo dihapto deoxygenated complex of the formula (B):

$$(L_{n'}(M^{p+2}O_2)_{m'}(X^{-s})_{x'})^{m'p-x'-z} \quad (B)$$

in which L, M, X, p, z have the same meanings as above, n', m', x' have, respectively, the same meanings as n, m and x with

$2 \leq n' \leq n$,

$1 \leq m' \leq m$, and

$0 \leq x' \leq x$;

b) desorbing dioxygen from the complex by electrochemically oxidizing the peroxo dihapto product complex (B) obtained by reaction of the complex of formula (A) with O_2; and

c) recovering desorbed oxygen.

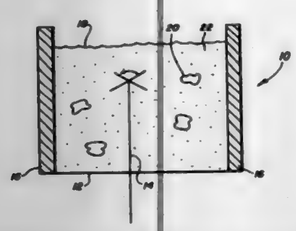
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,106

ELECTRIFIED MICROHETEROGENEOUS CATALYSIS

Debra R. Rolison, Arlington, Va., and Joseph Z. Stemple, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1992, Ser. No. 822,812
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—59 R 51 Claims



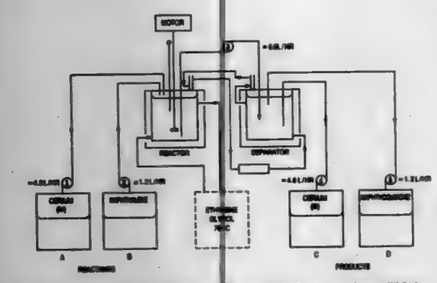
21. A method for reacting at least one reactant comprising the steps of:
(a) dispersing at least one reaction enhancer in a fluidic medium to form a preactivation mixture, said dispersal occurring in the absence of the at least one reactant, said at least one reaction enhancer being a stable, non-soluble, porous, electronically non-conductive solid;
(b) subjecting and preactivation mixture to a first electrifying force in the absence of the at least one reactant until said preactivation mixture reaches ionic equilibrium, thereby forming an activated mixture of low ionic strength;
(c) dispersing the at least one reactant in said activated mixture to form a reaction mixture of low ionic strength;
(d) subjecting said reaction mixture to a second electrifying force thereby forming a product by reaction of the at least one reactant, said subjection being carried out in such a manner that said at least one reaction enhancer enhances the reaction of the at least one reactant to form the product; and
(e) collecting the product.

5,296,107

INDIRECT CERIUM MEDICATED ELECTROSYNTHESIS

Stephen Harrison, Shawinigan, Canada, assignor to Hydro-Quebec, Montreal, Canada

Filed Mar. 4, 1992, Ser. No. 846,538
Int. Cl.[5] C25B *1/00, 9/00*
U.S. Cl. 204—59 R 9 Claims



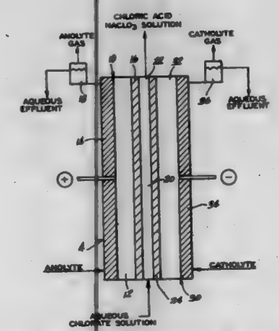
8. A process for oxidizing cerium III to cerium IV in an electrochemical cell at an anode including an electrically conductive planar sheet having an edge and two side surfaces, and a generally planar sheet of electrically conductive mesh positioned parallel with and electrically contacting one of said side surfaces, said process comprising the steps of flowing an electrolyte stream containing cerium III ions over said anode at near turbulent or turbulent flow rates.

5,296,108

ELECTROCHEMICAL PROCESS FOR GENERATING CHLORINE DIOXIDE USING CHLORIC ACID-ALKALI METAL CHLORATE MIXTURES

Jerry J. Kaczur; David W. Cawlfield; Kenneth E. Woodard, Jr., all of Cleveland, and Rudd L. Duncan, Athens, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 765,078, Sep. 24, 1991, which is a division of Ser. No. 475,603, Feb. 6, 1990, Pat. No. 5,084,148.
This application Jul. 24, 1992, Ser. No. 919,813
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] C25B *1/26;* C01B *11/14*
U.S. Cl. 204—95 23 Claims



1. A process for producing chlorine dioxide which comprises:
a) feeding an aqueous solution of an alkali metal chlorate to a first ion exchange compartment of an electrolytic cell having an anode compartment, a cathode compartment and at least one ion exchange compartment between said anode compartment and the cathode compartment,
b) electrolyzing an anolyte in said anode compartment to generate hydrogen ions,
c) passing said hydrogen ions from the anode compartment through a cation exchange membrane into the first ion exchange compartment to displace alkali metal ions and produce an aqueous solution of chloric acid and alkali metal chlorate,
d) passing alkali metal ions from said first ion exchange compartment into said cathode compartment, and
e) reacting said aqueous solution of chloric acid and alkali metal chlorate with a strong acid having a dissociation constant of 1×10^{3} [4] or greater and a reducing agent to generate chlorine dioxide.

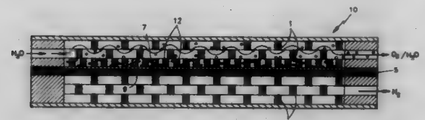
5,296,109

METHOD FOR ELECTROLYZING WATER WITH DUAL DIRECTIONAL MEMBRANE

Hugh A. Carlson, Winsted; Andrei Leonida, West Hartford; James F. McElroy, East Suffield, and Eric M. Shane, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 2, 1992, Ser. No. 892,152
Int. Cl.[5] C25B *1/10*
U.S. Cl. 204—129 3 Claims

1. A method for electrolyzing water using a water electrolyzer, said electrolyzer having an anode chamber, a cathode chamber, an anode electrode, a cathode electrode, and an ion exchange membrane disposed between the anode electrode and the cathode electrode, comprising the steps of:
a. introducing water to the anode chamber;
b. passing said water through pores in a porous sheet interposed between and in intimate contact with the anode chamber and the anode electrode, wherein said porous sheet is constructed and arranged for dual directional flow;
c. electrolyzing said water to oxygen and hydrogen ions on the anode electrode;
d. allowing said hydrogen ions to migrate across the ion exchange membrane to the cathode electrode;



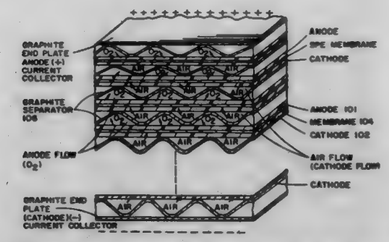
e. forming said hydrogen ions into molecular hydrogen at the cathode electrode;
f. passing said molecular hydrogen through a support element selected from the group consisting of a second porous sheet and a fine mesh screen interposed between the cathode electrode and the cathode chamber;
g. removing said molecular hydrogen from the electrolyzer through the cathode chamber; and
h. removing said oxygen from the electrolyzer by passing said oxygen through the pores of said porous sheet and through the anode chamber.

5,296,110

APPARATUS AND METHOD FOR SEPARATING OXYGEN FROM AIR

Ali Tabatabaie-Raissi, Melbourne, Fla., assignor to University of Central Florida, Orlando, Fla.

Continuation-in-part of Ser. No. 637,777, Jan. 7, 1991, abandoned. This application Jul. 23, 1992, Ser. No. 919,153
Int. Cl.[5] C25B *1/02*
U.S. Cl. 204—129 2 Claims



1. A process for separating and enriching air with oxygen comprising the steps of:
providing a solid polymer anion conducting material electrolyte including first and second opposed surfaces;
providing a cathode electrode on the first surface of the electrolyte;
providing an anode electrode on the second surface of the electrolyte;
connecting a direct current source between the cathode and anode electrodes;
flowing unprocessed ambient air through the electrolyte;
producing medical grade output oxygen at the anode electrode by electrolytic action of hydroxyl ions passing through the electrolyte; and
bypassing a portion of the air flow around the rim of the solid polymer electrolyte for diluting the output oxygen to a level therapeutically equivalent to 100% pure oxygen.

5,296,111

METHOD OF TREATING PHOTOGRAPHIC PROCESSING WASTES

Seiji Suzuki; Kozo Aoki; Hiroshi Ishizuka, and Yoshiya Ohara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1991, Ser. No. 800,128
Claims priority, application Japan, Nov. 30, 1990, 2-330773; Jan. 28, 1991, 3-008608
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—130 14 Claims

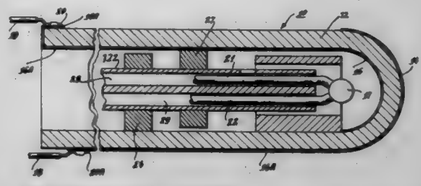
1. A method of treating photographic processing wastes, which comprises
(1) mixing a silver-recovery system waste and a development system waste from photographic processing to produce a waste mixture,
(2) adding to said waste mixture phosphorus, in the form of a compound selected from the group consisting of KH_2PO_4, K_2HPO_4, $NaH_2PO_4{\cdot}2H_2O$, and Na_2HPO_4, as a nutritive substrate in an amount corresponding to at least 2% based on the COD value of the waste mixture, and
(3) subjecting the resulting waste mixture to a bio-oxidation treatment carried out by aeration using microflora containing sulfur-oxidizing bacteria selected from the group consisting of the Thiobacillus genus, the Thiotrix genus, and the Beggiatoa genus, and
(4) subjecting the bio-oxidation treated waste mixture to an electrolytic oxidation treatment at a pH of 7 or higher.

5,296,112

OXYGEN MONITORING DEVICES

John L. Seger, Portland, and Paul G. LaHaye, Kennebunk, both of Me., assignors to H.P.S. Merrimac, Inc., South Portland, Me.

Filed Jun. 2, 1992, Ser. No. 892,211
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.18 20 Claims

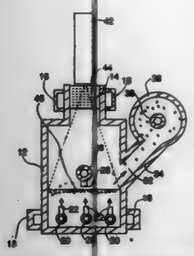


1. An oxygen sensor comprising
an elongated main body member which is made from yttrium stabilized zirconium oxide and has an internal chamber at one end,
two electrodes that are made from platinum and are in contact with said main body, one of which is an inner electrode positioned within said chamber at one end of said main body, and the other of which is an outer electrode positioned on the outside surface of said main body member substantially opposite said inner electrode,
electrical conductor means by which said electrodes are rendered electrically accessible from the other end of said main body,
an opening into said chamber from the outside of said main body via which the absolute pressure of gas in the environs of said outer electrode is transmitted to gas in the environs of said inner electrode,
isolation means for isolating the environs of said inner electrode from infiltration by gas being tested via said openings, and

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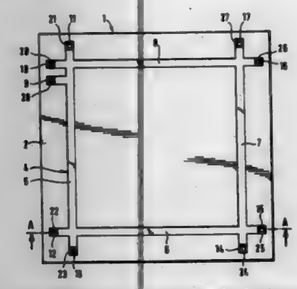
supply means including an orifice for supplying reference gas to the environs of said inner electrode at a pressure to cause it to flow at its critical flow rate through said orifice.

5,296,113
IRRADIATION DEVICE FOR FLUOROPOLYMERS
Robert S. Luniewski, 14 Maureen Dr., Smithtown, N.Y. 11787
Continuation-in-part of Ser. No. 885,284, Feb. 26, 1990, Pat. No. 5,149,727. This application Sep. 18, 1992, Ser. No. 947,423
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] C07C *7/00*; C08J *3/00*
U.S. Cl. 204—157.15 **12 Claims**



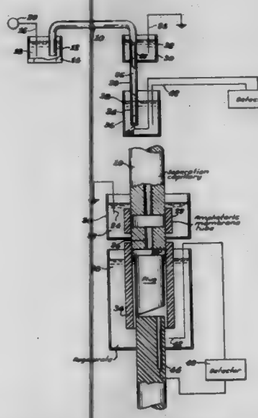
1. An apparatus for degrading particulate matter made of complex molecules, said apparatus comprising:
a closed chamber having an aperture;
particle injection means for injecting particle into said chamber;
air injection means for injecting air in said chamber, said air injection means being constructed and arranged for creating a fluidized bed of said particles, so that said particles are ground against each other;
an electron source directing an electron beam through said aperture intersecting said path;
wherein said particles are degraded into a powder by the simultaneous action of said electron beam and the grinding wherein said particles are degraded into a powder; and
collector means coupled to said chamber for collecting said powder.

5,296,114
ELECTROPHORETIC SEPARATING DEVICE AND ELECTROPHORETIC SEPARATING METHOD
Andreas Manz, Bettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 30, 1992, Ser. No. 983,178
Claims priority, application European Pat. Off., Dec. 6, 1991, 91810952.1
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **23 Claims**



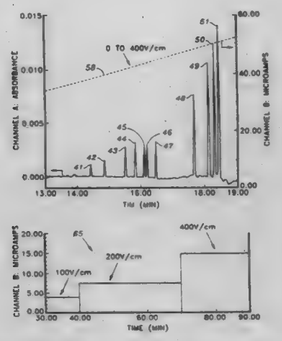
13. An electrophoretic separating method wherein a sample is introduced via a feed opening into an electrolytic carrier medium that is moved with the aid of an electric field through a channel being provided with inlet and outlet openings for the carrier medium, and is separated into individual components by the electric field which is generated in the channel by connecting electrodes in the region of the inlet and outlet openings to different potentials of a voltage source, which method comprises moving the carrier medium and the sample along a substantially closed path formed by the channel which is constructed in the form of an n-sided closed loop figure and that is provided with 2n inlet and outlet openings in addition to the feed opening for the sample.

5,296,115
METHOD AND APPARATUS FOR IMPROVED DETECTION OF IONIC SPECIES BY CAPILLARY ELECTROPHORESIS
Roy D. Rocklin, Sunnyvale; Christopher A. Pohl, Union City; John Stillian, Pleasanton, and Neboisa Avdalovic, San Jose, all of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.
Filed Oct. 4, 1991, Ser. No. 771,336
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **10 Claims**



7. A method of ion analysis comprising
(a) passing a sample containing ionic species in an electrolyte solution, including transmembrane electrolyte ions of opposite charge to said ionic species, through capillary electrophoretic separating means in which said ionic species are separated and wherein said capillary electrophoretic separating means comprises a capillary having first and second ends wherein said first end is in contact with a first electrolyte reservoir containing electrolyte and first electrode means and said second end comprises ionic conduction means in communication with a second electroiyte reservoir containing electrolyte and second electrode means, said first and said second electrode means having a voltage applied thereto to cause the separation of said ionic species,
(b) flowing the effluent from the capillary electrophoretic separating means through a suppressor means having at least one capillary effluent compartment means, at least one regenerant compartment means containing regenerant and at least one ion exchange membrane partitioning said capillary effluent and said regenerant compartment means, said ion exchange membrane being preferentially permeable to the counter ion of said ionic species to allow said counter ion to cross said membrane into said regenerant compartment means and regenerant ions of the same charge to pass said membrane into said effluent, and
(c) flowing the treated effluent from the outlet of said capillary effluent compartment in said suppressor means through detection means in which said separated ionic species are detected by measuring the conductivity of said treated effluent.

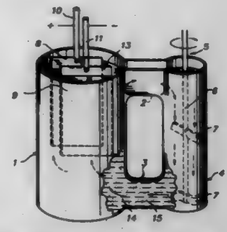
5,296,116
CAPILLARY ELECTROPHORESIS USING TIME-VARYING FIELD STRENGTH
Andras Guttman, Corona, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Jun. 17, 1992, Ser. No. 900,223
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 **9 Claims**



1. An apparatus for electrophoresis of a mixture of sample components comprising:
a medium suitable for electrophoresis defining a separation path for a mixture of sample components positioned in said path for electrophoresis, wherein the medium is supported in a capillary, and wherein said section of the separation path is uniform in cross-section;
means for applying a time-varying electric field along a section of the separation path in accordance with a user defined electric field profile with respect to time, said field causing electrophoresis of the sample,
whereby the electric field profile is selected by the user such that field strength is dependent on the size of the sample components to be separated, wherein said electric field profile is such whereby the electric field increases with time.

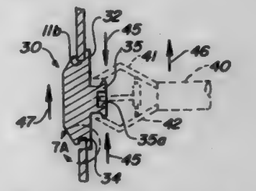
5,296,117
METHOD FOR THE PRODUCTION OF A RADIOGRAPHIC SCREEN
Nikolaas De Jaeger, Hove; Guy Damen, Dessel, both of Belgium; Gerhard Winter, Goslar, Fed. Rep. of Germany, and Jan Van Havenbergh, Zwijndrecht, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium
Filed Dec. 1, 1992, Ser. No. 983,708
Claims priority, application European Pat. Off., Dec. 11, 1991, 91203238.0
Int. Cl.[5] C25D *13/02*
U.S. Cl. 204—181.5 **13 Claims**

1. A method for producing a radiographic screen comprising the following steps:
1) dispersing phosphor particles in an organic liquid in the presence of a charge controlling agent that charges said phosphor particles with a positive or negative net charge, wherein the dispersing of said phosphor particles is carried out in a polar anhydrous organic liquid by means of an organic surface active compound being a member selected from the group consisting of an alkyl aryl polyether sulphate, an organic phosphorate, a phosphate ester and a phospholipid, and said phosphor particles are thereby electrostatically charged,
2) arranging said dispersion between a pair of electrodes, wherein one of said electrodes is or carries a conductive support of said radiographic screen,



3) applying and maintaining between said electrodes a sufficiently high direct current voltage to deposit charged phosphor particles forming a phosphor layer onto said conductive support, and
4) separating said support carrying electrophoretically deposited phosphor particles from said organic liquid.

5,296,118
ROBOTIC APPARATUS FOR AND METHOD OF MANUFACTURING DATA STORAGE DISKS
Ronald Allen, San Jose; Peter S. Bae, Sunnyvale, and Steven Miura, San Jose, all of Calif., assignors to Komag, Incorporated, Milpitas, Calif.
Division of Ser. No. 559,357, Jul. 30, 1990, Pat. No. 5,089,110.
This application Feb. 18, 1992, Ser. No. 837,831
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] C23C *14/22*; B66C *23/00*
U.S. Cl. 204—192.12 **9 Claims**



1. A robotic disk handler system comprising:
a carrier panel;
aperture means in said carrier panel for mounting a series of blank disks in said carrier panel, each of said disks having a circular central aperture;
a one-piece central plug for temporarily closing the central aperture and for holding each said disk;
a first disk cassette for holding unprocessed blank disks;
a second disk cassette for receiving processed disks;
first means for inserting an entry first portion on one side of said plug into the central aperture of a blank disk from one side only of said disk, said plug including a flange having a diameter greater than the diameter of said disk central aperture;
first robotic arm means grippable on a second portion of said plug on an opposite side of said plug for transporting and inserting successive ones of said blank disks from said first disk cassette into said carrier panel;
said plug having a cylindrical portion between said entry first portion and said flange for seating on an edge portion

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of said disk central aperture when said robotic arm means is not gripping said plug and when said disk in said carrier is being process coated with a data storage media;

second means grippable on said second portion of said plug for removing a processed disk from said carrier panel and transporting the processed disk to said second disk cassette;

third means for inserting the processed disk into said second disk cassette; and

wherein said third means removes said plug from said disc central aperture and from said one side only of said disc, such that said disc without a plug remains in said second cassette.

5,296,119

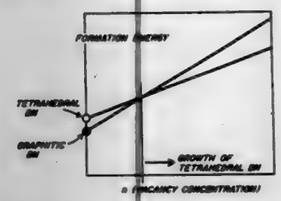
DEFECT-INDUCED CONTROL OF THE STRUCTURE OF BORON NITRIDE

Theodore D. Moustakas, Dover, Mass., assignor to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 614,994, Nov. 26, 1990, abandoned. This application Feb. 7, 1992, Ser. No. 833,628

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.15 **12 Claims**



1. A method for depositing a nitrogen-deficient, tetrahedrally coordinated boron nitride on a substrate, comprising the steps of:

generating a boron species and a nitrogen species by sputtering a boron and nitrogen containing target in an inert gas atmosphere containing no more than ten volume percent nitrogen;

generating a flux of the boron species and a flux of the nitrogen species towards the substrate, the ratio of nitrogen flux to boron flux being less than or equal to one, under conditions sufficient to deposit a nitrogen-deficient, tetrahedrally coordinated boron nitride on the substrate.

5,296,120

APPARATUS FOR THE REMOVAL OF CHLORIDE FROM REINFORCED CONCRETE STRUCTURES

John E. Bennett, Chardon, Ohio; Jacob R. Blasius, Boca Raton, Fla.; Thomas A. Mitchell; Thomas R. Turk, both of Mentor, Ohio, and Thomas J. Schue, Huntsburg, Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 526,480, May 21, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 794,188

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—196 **21 Claims**

1. An integrated, regenerable and reusable anode assembly for removing chloride ions from a reinforced concrete structure, comprising:

a flexible metal anode;

a flexible and porous, multi-component electrolyte sheet, with said anode being immersed in said electrolyte sheet;

a component of cellulosic fibers in said flexible and porous, multi-component electrolyte sheet;

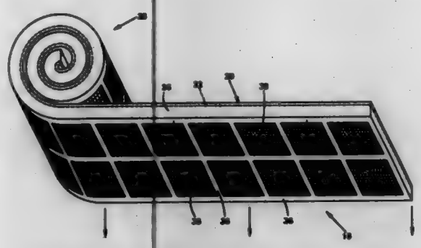
a synthetic, polymeric component in said flexible and porous, multi-component electrolyte sheet;

an electrolyte solution disposed uniformly within said flexible and porous, multi-component electrolyte sheet;

means for releasibly adhesively adhering said integrated anode assembly to said concrete structure when said anode assembly is at least substantially conformed to the surface configuration of said concrete structure, whereby said assembly can be removed from said concrete structure, regenerated and reused; and

means to establish an electric current between said anode and the reinforcement of said concrete structure;

wherein said electrolyte sheet has an amount of said cellulosic fiber component and said synthetic, polymeric component sufficient to maintain said electrolyte solution substantially uniformly dispersed within said electrolyte sheet for a prolonged period when said assembly is on an angle other than horizontal; and



wherein said anode and multi-component electrolyte sheet are at least substantially conformable to the surface configuration of said concrete structure.

5,296,121

TARGET ELECTRODE FOR PREVENTING CORROSION IN ELECTROCHEMICAL CELLS

Richard N. Beaver, deceased, late of Angleton, Tex. by Wanda Beaver, executor , and Gordon E. Newman, Sugarland, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1992, Ser. No. 935,626

Int. Cl.[5] C25B *9/00, 11/10, 15/08*

U.S. Cl. 204—228 **19 Claims**



8. In an electrolyzer system having metallic supply and discharge piping subjected to shunt currents, the improvement which comprises a target electrode frictionally held in the section of said piping subjected to said shunt currents, said target electrode comprising a removable member consisting of a metal substrate having a ruthenium oxide coating, whereby said target electrode reduces corrosion resulting from shunt currents.

5,296,122

APPARATUS FOR FORMING THIN FILM

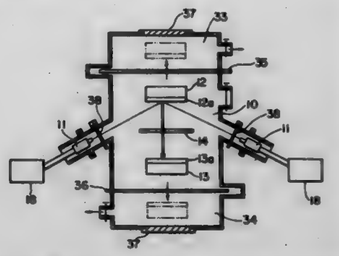
Teruaki Katsube, Tokyo; Shuichiro Yamaguchi; Naoto Uchida, both of Kanagawa, and Takeshi Shimomura, Kanagawa, all of Japan, assignors to Teruaki Katsube, Tama and Terumo Kabushiki Kaisha, Shibuya, both of Japan

Division of Ser. No. 500,293, Mar. 28, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 837,873

Claims priority, application Japan, Mar. 29, 1989, 1-77814; Jun. 19, 1989, 1-156603; Aug. 9, 1989, 1-206136; Aug. 25, 1989, 1-219040

Int. Cl.[5] C23C *14/46*

U.S. Cl. 204—298.04 **8 Claims**



1. An apparatus constructed and arranged for manufacturing a thin film by depositing sputtered particles on a predetermined surface of a substrate comprising:

a vacuum chamber;

a first front chamber formed adjacent to said vacuum chamber;

a first on-off means for on-off operating the passage between said front chamber and vacuum chamber;

a target base disposed in said vacuum chamber and for holding a target having at least a hydrophobic organic substance;

a first moving mechanism for moving said target base between said vacuum chamber and first front chamber;

a neutral beam generation means for irradiating said target supported by said target base with a neutral beam including ions with more than 95% thereof neutralized;

a substrate base for supporting said substrate; and

shutter means disposed between said substrate base and target base for controlling the passage and blocking of said sputtered particles.

5,296,123

IN-TANK ELECTROCHEMICAL SENSOR

Vilambi N. R. k. Reddy, Lakewood; Frank A. Ludwig, Rancho Palos Verdes; Bruce M. Eliash, and Nguyet H. Phan, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 16, 1992, Ser. No. 945,751

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—153.1 **18 Claims**

1. An electrochemical sensor adapted for use in the electrochemical analysis of liquids, said electrochemical cell comprising:

a cell assembly comprising a liquid flow control chamber, a sensing chamber and a liquid exit chamber wherein said liquid flow control chamber comprises an inlet and an outlet and said liquid exit chamber comprises an inlet and an outlet;

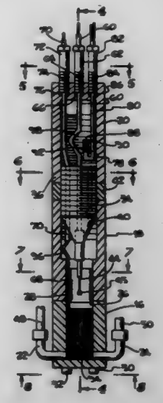
first connection means for connecting said liquid flow control chamber outlet to said sensing chamber inlet to provide for flow of liquid from said liquid flow control chamber into said sensing chamber;

second connection means for connecting said sensing chamber outlet to said liquid exit chamber inlet to provide for flow of liquid from said sensing chamber into said liquid exit chamber;

a working electrode located within said sensing chamber;

a counter-electrode located within said sensing chamber;

a reference electrode located within said liquid exit chamber or within said sensing chamber;



pump means for transporting said liquid through said cell assembly from said liquid flow control chamber inlet to said liquid exit chamber outlet; and

flow damper means for controlling the flow of said liquid through said liquid flow control chamber so that the liquid entering said sensing chamber is free of turbulence.

5,296,124

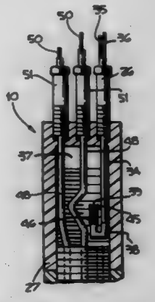
METHOD OF IN-SITU FORMATION OF A STABLE REFERENCE ELECTRODE FOR IN-TANK PLATING BATH ANALYSIS

Bruce M. Eliash, Los Angeles; Vilambi N. R. K. Reddy, Lakewood; Frank A. Ludwig, Rancho Palos Verdes, and Nguyet H. Phan, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 10, 1992, Ser. No. 974,650

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—402 **10 Claims**



1. A method for forming a reference electrode having a stable reference voltage and adapted for use in an in-tank electrochemical sensor, said method comprising the steps of:

providing at least one inert substrate;

providing at least one counter electrode;

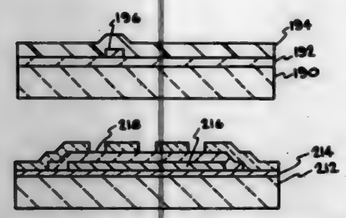
providing a liquid containing a metal which is electroplated onto said inert substrate;
passing a level of current between said inert substrate and said counter electrode for a time to thereby remove contaminants which are present on said inert substrate to provide a stripped inert substrate wherein said current applied to remove contaminants from said inert substrate is a current waveform with a current density of about 100 to 1000 milliamperes per square centimeter; and
passing a level of current between said stripped inert substrate and said counter electrode for a time to electrodeposit a layer of said metal from said liquid onto said stripped inert substrate to form said reference electrode.

5,296,125

ELECTROCHEMICAL SENSOR/DETECTOR SYSTEM AND METHOD

Robert S. Glass, Livermore; Sam P. Perone, Pleasanton; Dino R. Ciarlo, Livermore, and James F. Kimmons, Manteca, all of Calif., assignors to The United States of America as represented by the United States of Department of Energy, Washington, D.C.

Division of Ser. No. 576,289, Aug. 31, 1990, Pat. No. 5,120,421. This application Mar. 30, 1992, Ser. No. 860,329
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—153.21 **29 Claims**



1. A method for preparing an electrochemical detector containing microelectrodes embedded in an insulating matrix which comprises:
(a) selecting a silicon wafer of predetermined size;
(b) coating one side of said wafer with silicon nitride;
(c) applying a photo-resist composition to the top of said silicon nitride;
(d) applying to said photo-resist a mask which selects a predetermined electronic circuit pattern;
(e) developing said photo-resist;
(f) evaporating a metal onto the surface of said photo-resist covered wafer to a thickness of about 1000Å.
(g) lifting off the metal coated photo-resist, leaving a metal circuit pattern on said silicon nitride, and repeating steps (c) through (g) a predetermined number of times with a different metal each time.

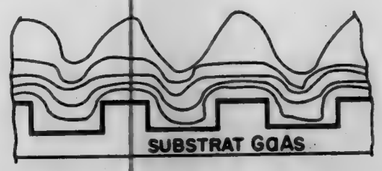
6. A method of preparing an electrochemical detector containing microelectrodes embedded in an insulating matrix which comprises:
a. selecting an alumina-ceramic wafer of predetermined size,
b. coating said wafer on one side with a layer of chromium,
c. coating said layer of chromium with a layer of gold,
d. coating said layer of gold with a positive photo-resist composition,
e. placing a photo-mask with a desired conductor pattern thereon over said photo-resist coated wafer,
f. exposing said photo-resist coating with ultraviolet light through said photo-mask, and dissolving away those areas of photo-resist not protected from exposure by said photo-mask in a chemical developer bath, exposing said gold,
g. etching away said gold not covered by said photo-resist, leaving a photo-resist covered gold circuit pattern,
h. removing the balance of said photo-resist exposing said gold circuit pattern,
i. depositing a plurality of sensor materials at pre-determined areas on said gold circuit pattern, at least one of said sensor materials being platinum,
j. applying a negative photo-resist over said sensor materials and said wafer,
k. applying a shadow-mask over said photo-resist covered wafer which has opaque dots corresponding in location with said sensor materials,
l. exposing said negative photo-resist to ultraviolet light through said shadow-mask,
m. dissolving the unexposed portions of said negative photo-resist corresponding in location with said opaque dots in said shadowmask,
thereby leaving exposed to the environment those specific areas of said sensor materials in register with the opaque dots in said shadow mask, thus forming arrays of microelectrodes.

5,296,126

METHOD FOR PROCESSING THE ETCHED SURFACE OF A SEMICONDUCTIVE OR SEMI-INSULATING SUBSTRATE

Alice Israel, Meaux, France, assignor to France Telecom, Paris, France

Filed Apr. 24, 1992, Ser. No. 873,121
Claims priority, application France, Apr. 26, 1991, 9105171
Int. Cl.[5] C25D *11/32*
U.S. Cl. 205—124 **15 Claims**



1. A method of processing an etched surface of a semiconductive or semi-insulating substrate, the method comprises the steps of:
immersing the substrate into an electrolytic bath,
mounting a first electrode on the substrate to be processed,
mounting a second electrode in the bath at a selected distance from the surface of the substrate to be processed,
connecting the first and second electrodes to a source of electricity,
applying specified magnitudes of current and voltage for a specified time, and
at least partially removing a formed oxide by peeling away a uniform controlled thickness independent of the orientation of the processed surface.

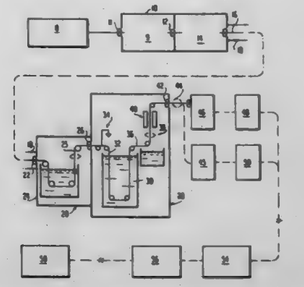
5,296,127

COMPOSITE-COATED FLAT-ROLLED SHEET METAL MANUFACTURE

William T. Saunders, c/o Weirton Steel Corporation, Weirton, W. Va. 26062-5133

Continuation of Ser. No. 573,366, Aug. 27, 1990, abandoned, and a continuation-in-part of Ser. No. 318,677, Mar. 3, 1989, Pat. No. 5,084,358, which is a continuation-in-part of Ser. No. 855,694, Apr. 25, 1986, Pat. No. 4,812,365. This application Aug. 6, 1992, Ser. No. 926,055
Int. Cl.[5] C25D *7/06*
U.S. Cl. 205—139 **8 Claims**

1. Process for preparing and protecting flat-rolled sheet metal for fabricating pre-coated sheet metal can parts ready for direct use as fabricated for canning comestibles, comprising the steps of
providing flat-rolled sheet metal selected from the group consisting of flat-rolled steel in the range of about 50 to about 110 pounds per base box and flat-rolled aluminum having a thickness range of about 0.005 inches to about 0.015 inches;
presenting opposed planar surfaces subject to surface oxidation;
cold-rolling the sheet metal with roughened rolls to provide a surface texture on each of its planar surfaces which contributes to mechanical interlocking of the subsequently applied coating;
delivering the cold-rolled textured-surface sheet metal for removal of surface oxidation;
carrying out removal of oxidation from both textured sheet metal surfaces to present a substrate for application of organic polymeric coating to provide can stock; then
directing the substrate into an E-coat aqueous bath in a manner to avoid oxidation of its textured surfaces,
selectively applying an organic coating from the aqueous bath solely by electrolytic means so as to stabilize each surface against oxidation while retaining at least a portion of said texture on each said E-coated surface,



said electrolytic coating from the E-coat aqueous bath being carried out with the sheet metal substrate as the cathode;
drying said coated surfaces as directed from the E-coat aqueous bath so as to remove moisture and at least partially cure said E-coat organic coating; and
non-electrically applying a smooth-finish outer-surface protective organic coating to produce at least one composite-coated surface on which total organic coating is in the range of above about three mg/in^2 to about twenty-one mg/in^2 of said composite-coated surface and, then
treating the coated substrate for purposes of curing said organic coatings;
wherein a lubricant is added to the can stock by incorporating a blooming-compound draw lubricant into the outer-surface organic coating, applying a surface-applied draw lubricant onto the outer surface coating, or a combination thereof; and
wherein the composite-coated sheet metal is free of metal or metal compound coatings.

5,296,128

GALLIC ACID AS A COMBINATION ANTIOXIDANT, GRAIN REFINER, SELECTIVE PRECIPITANT, AND SELECTIVE COORDINATION LIGAND, IN PLATING FORMULATIONS

Michael D. Gernon, North Providence; Hanoch S. Elroi, Wakefield; Brenda A. DeCesare, Warwick, and Florence P. Butler, Smithfield, all of R.I., assignors to Technic Inc., Cranston, R.I.

Filed Feb. 1, 1993, Ser. No. 11,993
Int. Cl.[5] C25D *3/32*
U.S. Cl. 205—254 **21 Claims**

1. A method of improving acidic tin and tin alloy electroplating baths, which comprises adding gallic acid thereto, whereby the resulting improvement is selected from one or more of the following bath properties, oxidation stability, grain refinement, selective precipitation of Sn(IV) and chelation or complex coordination of other metals in the bath.

5,296,129

PARAFFIN WAX COMPOSITIONS AND RUBBER COMPOSITIONS INTO WHICH PARAFFIN WAX COMPOSITIONS ARE INCORPORATED

Nobumasa Ikeda, and Masanori Tajima, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 798,952
Claims priority, application Japan, Nov. 30, 1990, 2-330606
Int. Cl.[5] C08L *91/06*; C08K *5/01*; C09K *15/00, 15/04*
U.S. Cl. 207—20 **4 Claims**

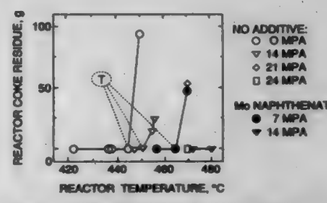
1. A paraffin wax composition comprising straight-chain saturated hydrocarbons,
wherein the content of each of the straight-chain saturated hydrocarbons having 31 to 44 carbon atoms, respectively, is not less than 2% by weight and the total amount of straight-chain saturated hydrocarbons having 31–44 carbon atoms is at least 28%,
and further wherein the content of each of the straight-chain saturated hydrocarbons having 22 to 30 carbon atoms, respectively, is not less than 4% by weight, and the total amount of straight-chain saturated hydrocarbons having 22 to 30 carbon atoms is at least 36%, relative to the entire straight-chain saturated hydrocarbons.

5,296,130

HYDROCRACKING OF HEAVY ASPHALTENIC OIL IN PRESENCE OF AN ADDITIVE TO PREVENT COKE FORMATION

Jaroslav F. Kriz, Nepean, and Marten Ternan, Kanata, both of Canada, assignors to Energy Mines and Resources Canada, Ottawa, Canada

Filed Jan. 6, 1993, Ser. No. 1,300
Int. Cl.[5] C10G *47/22, 45/00, 9/16*
U.S. Cl. 208—107 **2 Claims**



2. A hydroconversion process for upgrading heavy asphaltenic oil containing at least 50% by weight of material boiling above 525° C. and at least 10% by weight of asphaltenes and containing sulphur and other impurities, which comprises preparing a feed slurry of a heavy asphaltenic oil and less than 5 ppm of molybdenum naphthenate and contacting this slurry with a hydrogen-containing gas in a hydroconversion zone at hydrocracking conditions at a pressure in the range of 6 to 18 MPa, a temperature in the range of 400° to 600° C. and a LHSV in the range of 0.1 to 1.0 H^{-1} to convert at least a portion of said oil to lower boiling products with minimum coke formation.

5,296,131

PROCESS FOR SHORT CONTACT TIME CRACKING

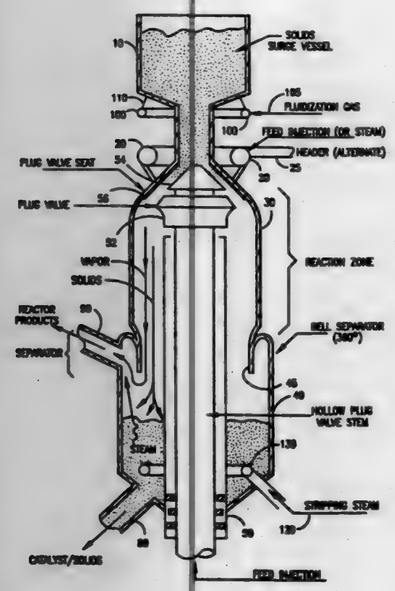
Michael F. Raterman, Doylestown, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 2, 1992, Ser. No. 984,630
Int. Cl.[5] C10G *11/18, 35/14*
U.S. Cl. 208—113 **15 Claims**

10. A process for the fluidized catalytic cracking of a heavy feed to lighter products comprising:

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forming a falling, annular curtain of regenerated FCC catalyst by discharging said FCC catalyst down through a vertical, cone shaped plug valve having a base attached to a vertical stem which controls the flow of said catalyst;
contacting said falling annular curtain of catalyst with a heavy feed by discharging from at least one of the base of the cone shaped plug valve or the stem of said valve said hydrocarbon feed in radial in to out flow, forming a downflowing mixture of catalyst and feed and vaporizing at least a majority by weight of said feed;
cracking said feed in a vertical, cylindrical reactor vessel having a vertical axis by passing said downflowing mixture as an annulus defined by the walls of said reactor vessel and the stem of said plug valve at catalytic cracking conditions including a superficial vapor velocity of 20 to 200 feet per second and a total catalyst and hydrocarbon vapor contact time of 0.01 to 1.0 seconds to produce cracked vapor products and spent catalyst;
separating cracked products from spent catalyst in a vertical, cylindrical, bell shaped, inertial separation means having a vertical axis axially aligned with said vertical axis of said cracking reactor and contiguous with and beneath said cracking reactor, to produce a cracked product vapor



phase and a spent catalyst phase, said inertial separator comprising:
an annular inlet for catalyst and cracked products in an upper portion of said bell separator having a diameter, and defined by the wall of said valve stem and a circumferential lip;
an annular flow expansion and vapor flow reversal section downstream of said annular inlet, defined by the wall of said valve stem and an outer wall of the cylindrical bell shaped separator, said outer wall having a diameter greater than the diameter of the reactor or of the diameter of the annular inlet, and having:
an inlet for stripping gas in a lower portion thereof; and
an outlet for stripped catalyst in a lower portion thereof; and
at least one vapor outlet in an upper portion thereof connective with and passing through said outer wall of said cylindrical separator vessel and connective with an annular, circumferential vapor removal means extending 360 degrees about the wall of said separator, defined by said circumferential lip and said wall of said separator;
regenerating in a catalyst regeneration means operating at catalyst regeneration conditions said spent catalyst to produce regenerated catalyst; and
charging regenerated catalyst to the top of said plug valve.

5,296,132

HIGH TEMPERATURE HYDROCARBON DEFOAMER COMPOSITION AND METHOD

Paul R. Hart, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 6, 1992, Ser. No. 957,327
Int. Cl.[5] C10G *9/14;* C10B *57/12*
U.S. Cl. 208—131 6 Claims

1. A method for controlling foam in hydrocarbon fluids at a temperature from about 300° F. to about 1000° F. during processing comprising adding an effective amount of a jojoba oil.

5,296,133

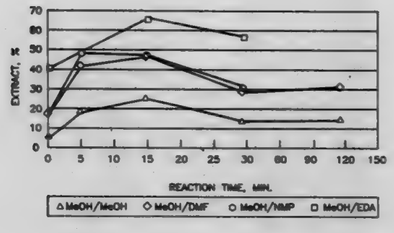
LOW ASH COAL PRODUCTS FROM DEPOLYMERIZED COAL

George M. Kramer, Berkeley Heights; Daniel P. Leta, Flemington; William A. Lamberti, Stewartsville; Mark M. Disko, High Bridge; Sutinder K. Behal, Somerville, and Edwin R. Ernst, Belle Meade, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 4, 1992, Ser. No. 925,362
Int. Cl.[5] C10G *1/00*
U.S. Cl. 208—400 8 Claims

1. A process for removing mineral contaminants from depolymerized coal which comprises:

depolymerizing coal by mixing finely divided coal particles with a hard acid in the presence of a soft base at temperatures of from 0° to 100° C., said hard acid being characterized by a heat of reaction with dimethylsulfide of from 10 kcal/mol to 30 kcal/mol and said soft base being characterized by a heat of reaction with boron trifluoride of from 10 kcal/mol to 17 kcal/mol; extracting the depolymerized coal with a polar solvent to remove hard acid, soft base and a portion of the mineral contaminants;



mixing the extracted coal with a swelling solvent having a density of from about 1.2 to about 2.6 g/ml whereby the extracted coal floats and the mineral contaminants sink; and
separating the mineral contaminants from the extracted coal.

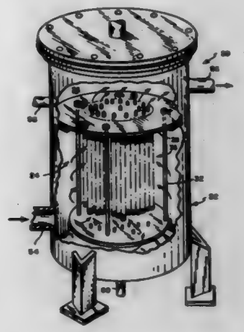
5,296,134

FILTRATION STRUCTURE FOR FLUID FLOW RADIALLY THROUGH CYLINDRICAL CONFIGURATION DEFINED BY STACK OF SERRATED WAFERS

Sohail Zaiter, 24 Old Farm Rd., Randolph, Mass. 02368

Continuation-in-part of Ser. No. 588,572, Sep. 21, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 844,472
Int. Cl.[5] B01D *29/46*
U.S. Cl. 210—108 13 Claims

1. A filtration structure comprising:
(a) at least one column of discrete annular wafers;
(b) each wafer having an exterior profile and an interior profile;
(c) each wafer being composed of a dimensionally stable polymer;
(d) faces of said wafers having serrations;
(e) a guide projecting through the interior profiles of said wafers;
(f) said guide having ribs in contact with said interior profiles;
(g) said wafers defining a tube having an exterior surface and an interior surface;
(h) said exterior surface and said interior surface being adapted to communicate through interstices defined by said serrations;
(i) said interstices serving as a filter for a liquid flowing at an operating pressure between said exterior surface and said interior surface;
(j) a spring connected with said wafers and said guide such that said wafers are capable of movement along said guide between two conditions, the first condition being intimate contact under spring pressure, and the second condition



being slight separation when said spring pressure is countered by fluid pressure greater than a given fluid pressure.

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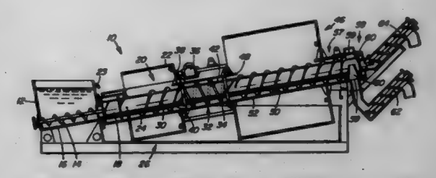
Patent Not Issued For This Number

5,296,136

APPARATUS FOR SEPARATING LIQUIDS AND SOLIDS COMPRISING SCREENS AND AUGERS

Gunther Abel, 8212 Alpine Way, Whistler, British Columbia, Canada V0N 1B0

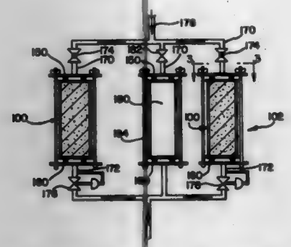
Division of Ser. No. 729,535, Jul. 15, 1991, Pat. No. 5,207,904. This application Feb. 9, 1993, Ser. No. 15,143
Int. Cl.[5] B01D *33/06, 33/76*
U.S. Cl. 210—158 10 Claims



1. Apparatus for separating solids and liquids, comprising:
an initial separator means for removing coarse solid material from a mixture of solids and liquids;
a first screen having a hollower interior for separating further solid material from the liquid;
a first auger extending axially through the first screen for removing the separated further solid material from the first screen;
a second screen having a hollow interior for receiving the liquid from the first screen and for separating fine particles from the liquid;
a second auger coaxial with the first auger and extending axially through the second screen for mixing and removing the solid material and the separated fine particles from the second screen; and
a compactor connecting the first and second augers for compacting the solid material removed from the first screen by the first auger and conveying the solid material to the second auger.

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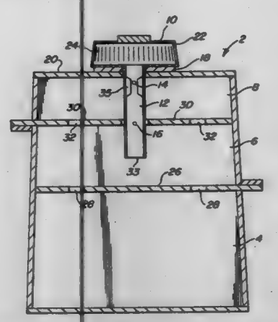
5,296,137
FILTRATION SYSTEM WITH AXIAL FLOW CARTRIDGE
Norman B. Gershon, Givrins, Switzerland, and David J. Truluck, Wisbech, England, assignors to Oil-Dri Corporation of America, Chicago, Ill.
Filed Mar. 12, 1992, Ser. No. 850,659
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—253 16 Claims



1. A system suitable for treating an aqueous effluent in a confined flow environment, which system comprises:
an elongated, axial flow filter cartridge including a bed of particulate constituted by superdried clay particles and foraminous retainer means to retain the clay particles within the cartridge;
an upstream cartridge cap defining an effluent inlet port and a seat for one end of the filter cartridge;
an end piece located between the bed and said inlet port and spaced from said upstream cartridge cap, said end piece defining a plurality of apertures adapted to pass and distribute a flow of the aqueous effluent and also defining, together with the cap, a plenum chamber above said apertures;
a downstream cartridge cap defining a filtrate outlet port and a seat for the other end of the filter cartridge;
an effluent conduit in liquid flow communication with said inlet port;
a filtrate conduit in liquid flow communication with said outlet port;
a flow control valve in said effluent conduit; and
a back pressure regulating valve in said filtrate conduit;
said axial flow filter cartridge being removably received and retained in a liquid-tight relationship between said cartridge caps.

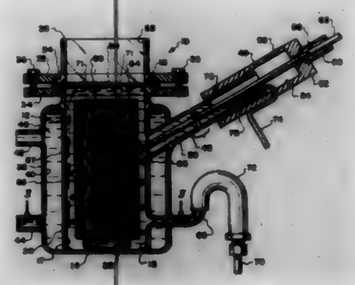
5,296,138
UNDERDRAIN FOR LIQUID PURIFICATION SYSTEMS
Thomas P. Walter, Dallas, Pa., assignor to Unifilt Corporation, Wilkes-Barre, Pa.
Continuation-in-part of Ser. No. 738,089, Jul. 30, 1991, Pat. No. 5,160,613, and a continuation of Ser. No. 518,687, May 3, 1990, Pat. No. 5,068,034. This application Jun. 2, 1992, Ser. No. 891,523
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—274 18 Claims

1. A liquid purification system comprising:
(a) a filter tank having sidewalls and a bottom wall containing filter media;
(b) a support base mounted in said tank;
(c) a means for cleansing said filter media using gas and backwash water; and
(d) a means for preventing turbulence in said backwash water comprising:
(i) a horizontal baffle mounted in said filter tank below said support base; and
(ii) a means for injecting said gas into the area between said support base and said horizontal baffle;
(iii) a means for preventing the entrance of said backwash water into said area;



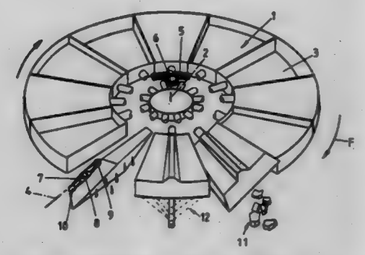
and wherein said horizontal baffle comprises means for providing for the passage of said gas from said area between said support base and said horizontal baffle to the area between said baffle and said bottom wall, comprising a plurality of openings in said baffle.

5,296,139
DIFFUSION CELL WITH FILTER SCREEN
William A. Hanson, Westlake Village, and Steven W. Shaw, Thousand Oaks, both of Calif., assignors to Hanson Research Corp., Chatsworth, Calif.
Filed Jun. 16, 1993, Ser. No. 76,965
Int. Cl.[5] B01D *65/08*
U.S. Cl. 210—297 15 Claims



1. A diffusion cell comprising:
a chamber divided by a membrane into a donor chamber and a receptor chamber, a liquid filling said receptor chamber and being in contact with said membrane, a media supplied into said donor chamber with said media being permitted to diffuse through said membrane and be mixed with said liquid; and
said receptor chamber including a mixing device, said mixing device to be operated to affect eve mixing of said liquid within said receptor chamber, said mixing device comprising a helical coil of a length equal to at least one half the length of said receptor chamber, means for rotating said coil about a longitudinal axis thereof, said helical coil defining an interior surface, a filter screen located within said coil, said filter screen being located directly adjacent said interior surface substantially covering said interior surface, said filter screen forming a basket having an open end spaced from and adjacent to said membrane.

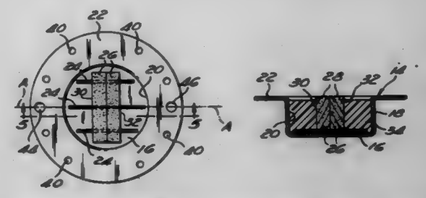
5,296,140
CONTINUOUS FILTRATION DEVICE
Serge Kurowaki, 5, rue des Mésanges, 4121 Neuvill-en-Condroz, Belgium
PCT No. PCT/BE92/00018, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/20426, PCT Pub. Date Nov. 26, 1992
PCT Filed May 15, 1992, Ser. No. 962,783
Claims priority, application Belgium, May 15, 1991, 09100450
Int. Cl.[5] B01D *33/327*
U.S. Cl. 210—328 10 Claims



1. A continuous filtration device comprising:
barrel-shaped filter cells, each presenting an opening which is placed upwards during filtration and which is covered by a filtering layer, these cells being arranged in a carousel around a vertical axis of rotation and each presenting a horizontal axis of tilt which intersects the axis of rotation of the carousel,
a lever connected in a fixed way to each filter cell, so as to intersect their axis of tilt at a tilting point,
follower elements, carried by the lever and placed on it on either side of the tilting point,
at least one stationary guiding element for each of the follower elements of the lever of a cell, these guiding elements being reciprocally arranged in a carousel area so as to achieve a tilting of each cell inside this area about its axis of tilt,
at least one housing provided in the first of these guiding elements for the corresponding follower element, this housing being placed so as to allow a turning of the lever around the follower element in position in this housing,
at least one loading area which is provided on a second guiding element and on which its corresponding follower element acts when the follower element corresponding to the first guiding element respectively leaves its housing or enters the latter, and
means for rotationally driving the filter cells around the aforesaid axis of rotation,
a first additional lever connected in a fixed way to each filter cell, on or near to their axis of tilt,
a first mobile stop, and
an elastic element connecting the first stop to a fixed support and acting on the first stop in a first direction,
said first additional lever cooperating with the first stop by acting on it in directions always approximately opposite to the aforesaid first direction, while the follower element corresponding to the second guiding element acts on the aforesaid corresponding loading area.

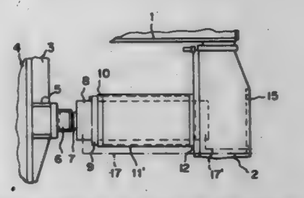
5,296,141
MAGNETIC WATER CONDITIONER
Mearl E. Ellison, 8600 Contrares, Space 69, Paramount, Calif. 90723
Filed Jan. 28, 1993, Ser. No. 11,466
Int. Cl.[5] C02F *1/48*
U.S. Cl. 201—222 6 Claims

1. A magnetic device for treating fluid flowing through a conduit, comprising:
a housing comprising:
a bottom wall portion; and
a continuous side wall portion extending laterally from said bottom wall portion, said side wall and said bottom wall portions defining an interior compartment;
a plurality of elongate rod members disposed within said interior compartment and attached to the bottom wall portion of said housing in spaced, parallel relation;
at least one permanent magnet disposed within said interior compartment, said at least one magnet being positioned directly upon and extended laterally across each of the rod



members in substantially perpendicular relation thereto and separated from said bottom wall portion by said rod members;
a cover member rigidly attached to said side wall portion in a manner enclosing said interior compartment, said cover member having inner and outer surface; and
means for releasably attaching said housing to said conduit in a manner wherein said conduit extends along and is abutted against the outer surface of said cover member so that fluid passing through said conduit will be affected by the magnetic fluid emanating from said at least one magnet disposed within said interior compartment.

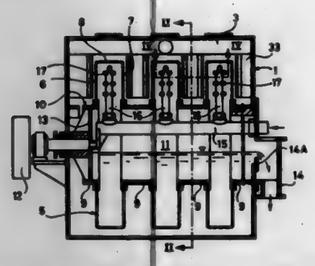
5,296,142
CHAMBER FILTER PRESS
Jürgen Fresenius, Bad Schwalbach, Fed. Rep. of Germany, assignor to Passavant-Werke AG, Fed. Rep. of Germany
Filed Feb. 23, 1993, Ser. No. 21,073
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1992, 9203784[U]
Int. Cl.[5] B01D *25/19*
U.S. Cl. 210—230 5 Claims



1. A chamber filter press for dewatering of waste water sludge comprising a head bracket and an end stand connected thereto, a plurality of filter plates movably suspended from said head bracket, a crosshead for closing the plurality of filter plates and a hydraulic cylinder having a front end attached to said crosshead for moving said crosshead, said front end of said hydraulic cylinder having a flange attached thereto, said end stand having front and rear sides, said filter press further comprising a removable receptacle device for receiving the hydraulic cylinder, said receptacle device comprising a tube with first and second annular end flanges, said first and second end flanges having through-bores dimensioned to receive said hydraulic cylinder, means for attaching said front annular end flange to said flange on said hydraulic cylinder, means for attaching said second annular end flange to the front side of said end stand, said front side of said end stand having a

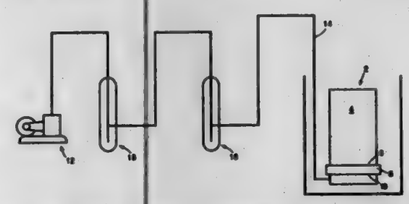
through hole through which the hydraulic cylinder passes, said rear side of said end stand having an opening dimensioned to allow a rear end of said hydraulic cylinder to pass therethrough.

5,296,143
APPARATUS FOR FILTERING LIQUIDS
Rune Frykhult, Stockholm, Sweden, assignor to Ingenjorsfirman R. Frykhult AB, Stockholm, Sweden
PCT No. PCT/SE91/00111, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO91/12064, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 18, 1991, Ser. No. 861,981
Claims priority, application Sweden, Feb. 16, 1990, 9000569; Feb. 16, 1990, 9000570
Int. Cl.[5] B01D *33/00*
U.S. Cl. 210—331 21 Claims



1. An apparatus for filtering liquids, such as fiber pulp suspensions or polluted water, comprising:
at least one annular hollow filter disc adapted to be at least partly immersed in a body of a liquid to be filtered and arranged substantially transverse to an axis extending centrally through the filter disc, the disc having two annular opposed walls, at least one of which is pervious to liquid and covered with filter material, the opposed walls having radially inner and outer ends;
wall means connected to the annular opposed walls and forming a filtrate chamber, which extends centrally through the hollow disc and which communicates with the interior of the latter;
the annular opposed walls being solely attached to each other at their outer ends, whereas they are spaced from each other at their inner ends, such that an annular opening is defined between the interior of the filter disc and the filtrate chamber;
means for creating a pressure difference between the body of liquid to be filtered and the interior of the hollow filter disc, such that a fine fraction of the liquid is forced through the filter material into the hollow filter disc and passed therefrom into the filtrate chamber during operation;
fine fraction discharge means for discharging fine fraction from the filtrate chamber;
spray nozzle means for spraying a cleansing fluid against the filter material for cleaning the filter material;
the spray nozzle means extending from the filtrate chamber through the annular opening into the interior of the filter disc; and
means for providing relative movement between the filter material and the spray nozzle means in the circumferential direction of the filter disc.

5,296,144
COMPOSITE MEMBRANE OF A HYDROPHILIC ASYMMETRIC MEMBRANE COATED WITH AN ORGANOSILOXANE BLOCK COPOLYMER
Larisa F. Sternina; Victor Mikhailovich; Alexander F. Fedotov; Mark I. Shkolnik, and Vera V. Strukova, all of Moscow, U.S.S.R., assignors to World Trade Corporation, New City, N.Y.
Filed Jan. 2, 1992, Ser. No. 816,187
Int. Cl.[5] B01D *71/80*
U.S. Cl. 210—490 12 Claims

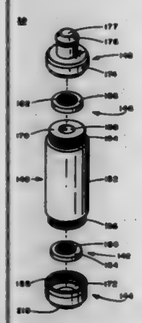


5. A composite membrane comprising a hydrophilic asymmetric membrane coated with a mixture of (a) an organosiloxane block copolymer having the general formula

—[A—B]—

wherein: A is an organosiloxane polymer having at least one vinyl group bonded to at least one silicon atom in the organosiloxane polymer and B is an organic polymer block other than an organosiloxane polymer defined as A; (b) a linking reagent; and (c) a catalytically effective amount of a hydrosilylation catalyst.

5,296,145
APPARATUS AND METHOD FOR SUPERCRITICAL FLUID EXTRACTION
Robert W. Allington; Daniel G. Jameson; Robin R. Winter, and Dale L. Clay, all of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.
Division of Ser. No. 966,083, Oct. 23, 1992, which is a continuation-in-part of Ser. No. 847,652, Mar. 5, 1992, Pat. No. 5,173,188, which is a continuation-in-part of Ser. No. 795,987, Nov. 22, 1991, Pat. No. 5,160,624, which is a continuation-in-part of Ser. No. 553,119, Jul. 13, 1990, Pat. No. 5,094,753. This application Jun. 11, 1993, Ser. No. 75,314
Int. Cl.[5] B01D *11/00*
U.S. Cl. 210—541 6 Claims



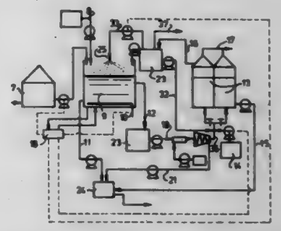
1. Supercritical fluid extraction cartridge for confining a sample, said cartridge having a tubular body with two ends, having an inside surface and an outside surface, porous means at each end near the said inside surface to retain the said sample and to provide for flow of pressurized supercritical fluid through the said cartridge and past or through the said sample contained therein, at least one of said ends and porous means removable to provide for insertion and removal of said sample into and from the said cartridge; characterized by:
at least one of the said body or ends being molded of plastic;
the said extraction cartridge being adapted to fit removably within the interior of a pressure vessel heated to a supercritical temperature with respect to the said fluid, said vessel sealed and pressurized to a high and supercritical gauge pressure to allow supercritical fluid extraction of the said sample within the said cartridge, at least one of the said ends incorporating a fluid path from the said porous means to a first low pressure sealing means, said first low pressure sealing means cooperating with a mating low pressure sealing means which is part of the said pressure vessel, the said mating sealing means continuing the said flow path within it and having an outside surface in contact with the said pressure vessel interior, and the two said low pressure sealing means when coupled seal only up to a pressure difference between said inside flow path to said outside surface which is substantially lower than the said gauge pressure.

5,296,146
METHOD FOR REMOVAL OF EXPLOSIVES FROM AQUEOUS SOLUTION USING SUSPENDED PLANT CELLS
Paul J. Jackson, Los Alamos; Agapito P. Torres, deceased, late of Los Alamos, both of N. Mex. by Joy M. Torres, executrix , and Emmanuel Delhaize, Giralang, Australia, assignors to The Regents of the University of CA and Los Alamos National Laboratory, Los Alamos, N. Mex.
Division of Ser. No. 530,765, May 30, 1990, Pat. No. 5,120,441. This application Jun. 8, 1992, Ser. No. 895,306
Int. Cl.[5] C02F *3/32*
U.S. Cl. 210—602 3 Claims



1. A method for reducing the concentration of TNT-related explosives in aqueous solution comprising the steps of adding a suspension of plant cells to the aqueous solution, and separating the plant cells from the solution after sufficient interaction time for the explosives to interact with the plant cells has taken place.

5,296,147
METHOD FOR PROCESSING MANURE, FERMENTED MANURE AND AMMONIUM NITROGEN CONTAINING WASTE WATER
Iman W. Koster, and Abraham Klapwijk, both of Bennekom, Netherlands, assignors to Ecotechniek B.V., Utrecht, Netherlands
Division of Ser. No. 599,345, Oct. 17, 1990, Pat. No. 5,232,583. This application Jun. 1, 1993, Ser. No. 70,112
Claims priority, application Netherlands, Oct. 17, 1989, 8902573
Int. Cl.[5] C02F *3/30*
U.S. Cl. 210—605 21 Claims

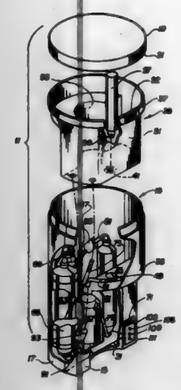


1. Method for processing manure, wherein fermented liquid manure is subjected to nitrification in a first step in an aerated nitrification reactor containing active sludge rich in nitrifying bacteria used in the nitrification step, acid-neutralizing chemicals being added to said nitrification reactor if necessary, and the effluent of the liquid manure from the nitrification reactor is then subjected to dentrification in a subsequent step in a continuously fed upflow sludge bed denitrification reactor containing a very compact biomass which is capable of converting nitrate to nitrogen gas and to which an organic substrate is added for use in the denitrification step, wherein the loading of the nitrification reactor is controlled to obtain optimal nitrification and denitrification on the basis of at least one of the following data:
the incoming nitrogen load;
the information from a WAZU respiration meter;
the oxygen concentration in the nitrification reactor;
the pH in the nitrification reactor being maintained in a range of from about 6 to about 8.5;
the temperature in both the nitrification reactor and the denitrification reactor being kept below 40° C.;
the concentration of oxidized nitrogen in the influent for the denitrification reactor being between 0 and 4 g N/l;
the concentration of oxidized nitrogen in the sludge/liquid mixture in the nitrification reactor being between 0 and 4 g N/l;
the concentration of the carbon source in the effluent from the denitrification reactor; and/or
the gas production in the denitrification reactor.

5,296,148
REVERSE OSMOSIS WATER PURIFIER
Anthony M. Colangelo, San Diego, and Keaneth N. Saunders, San Marcos, both of Calif., assignors to Nimbus Water Systems, Inc., San Marcos, Calif.
Filed Mar. 16, 1993, Ser. No. 32,142
Int. Cl.[5] B01D *61/12*
U.S. Cl. 210—642 15 Claims

1. A reverse-osmosis water-purification apparatus for supplying a desired measured quantity of potable water to an open-top container, which apparatus comprises
a housing having a pure water dispensing spout,
a feed water reservoir supported at an upper location in said housing and having a feed water outlet and a return water inlet,

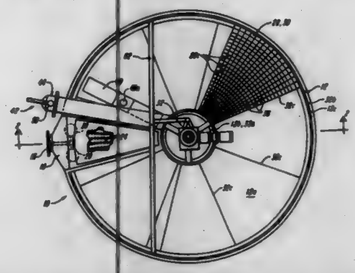
prefilter means located within said housing and having an inlet and an outlet,
first conduit means interconnecting said feed water reservoir outlet and said prefilter means inlet,
a reverse osmosis separation device having a feed water inlet, a product water outlet and a brine outlet,
second conduit means interconnecting said prefilter means outlet and said reverse osmosis separation device inlet,
third conduit means interconnecting said product water outlet and said product water dispensing spout,
fourth conduit means interconnecting said brine outlet and said return water inlet,
pump means interconnected into one of said conduit means for causing a stream of water to flow from said reservoir through said prefilter means and into said reverse osmosis separation device where said stream is split into 2 streamlets which flow to said spout and return to said reservoir, respectively,
said reservoir being designed for being filled to a first predetermined level with feed water, and
control means which includes
means for determining when the water level within said reservoir drops to a second predetermined level below said first predetermined level, the difference in the volume of water in said reservoir when the water level



is at said first predetermined level and when the water level is at said second predetermined level being equal to the desired measured quantity, and
means connected to said determining means for disabling the operation of said pump means when said water level drops to said second predetermined level, said desired measured quantity of product water being accommodated within said open-top container.

14. A method of providing a measured quantity of potable water in an open-top container, which method comprises
withdrawing a stream of feedwater from a reservoir and pumping said withdrawn stream through prefilter means and to a reverse osmosis separation device wherein said stream is split into a brine streamlet and a product water streamlet,
returning said brine streamlet to said reservoir,
directing said product water streamlet to an elevated outlet where said product water discharges into an open-top container proportioned to hold the desired measured quantity of potable water,
determining the level of water in said reservoir to detect when the water level reaches a first predetermined full level and to also detect when the level of water in said reservoir drops below a second predetermined level, the difference in the quantity of water in said reservoir between said full level and said second predetermined level being equal to said desired measured quantity, and
automatically halting said pumping to cease further flow of water to said reverse osmosis separation device and to the open-top container when the water level within said reservoir is detected to have fallen below said second predetermined level.

5,296,149
LAMELLAR APPARATUS AND METHOD FOR CLARIFYING WATER
Miles Krofta, 58 Yokum Ave., Lenox, Mass. 01240
Continuation-in-part of Ser. No. 755,697, Sep. 6, 1991, Pat. No. 5,188,729, which is a continuation of Ser. No. 241,384, Sep. 7, 1988, Pat. No. 4,931,175. This application May 20, 1992, Ser. No. 886,414
Int. Cl.[5] C02F *1/24*; B01D *21/02*
U.S. Cl. 210—704 **15 Claims**



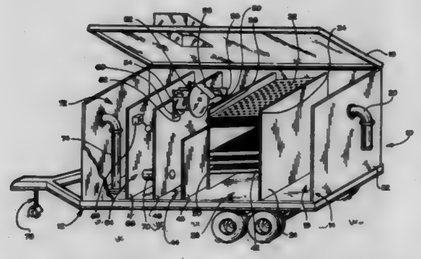
10. A water clarification process carried out in a generally circular tank with inlet means for raw, treated water, outlet means for clarified water and means for removing sludge that collects on the surface of the water held in the tank and being clarified by flotation, comprising,
holding the water in the tank in a plurality of generally vertically extending channels, and
rotationally transporting the plurality of channels through the tank with a net zero relative velocity of said held water with respect to said channels and substantially no turbulence for a period of time sufficient to effect clarification of the water held in said channels, and
holding the inlet means, outlet means and sludge removal means stationary.

5,296,150
WATER OIL SEPARATOR
Bennett W. Taylor, Jr., Mt. Holly, N.C., assignor to Environmental Pretreatment Systems, Inc., Maiden, N.C.
Filed Jul. 21, 1992, Ser. No. 917,458
Int. Cl.[5] B01D *17/04*
U.S. Cl. 210—708 **11 Claims**

1. Apparatus for use in aiding the separating a liquid which includes first and second phases; said first phase being less dense than said second phase; said apparatus comprising: a chamber for aiding in coalescing said first phase, further comprising elements including substantially imperforate sides, a top for receiving said liquid, formed of a substantially imperforate plate having spaced apertures therein, and a bottom open to at least one other coalescing stage; said elements being spaced, sized and dimensioned to allow the influent stream therefrom to reach a steady state and for maintaining a layer of said first phase of sufficient depth for promoting said coalescing after operation of said apparatus has reached steady state.

11. A method comprising: providing an apparatus for use in aiding the separating a liquid which includes first and second phases; said first phase being less dense than said second phase; said apparatus comprising: a chamber for aiding in coalescing

said first phase, further comprising elements including substantially imperforate sides, a top for receiving said liquid, formed of a substantially imperforate plate having spaced apertures therein, and a bottom open to at least one other coalescing stage; said elements being spaced, sized and dimensioned to



allow the influent stream therefrom to reach a steady state and for maintaining a layer of said first phase of sufficient depth for promoting said coalescing after operation of said apparatus has reached steady state, feeding said liquid to the top of said chamber, and withdrawing a product richer in said second phase from the bottom of said chamber.

5,296,151
PROCESS FOR THE PRECIPITATION OF PHOSPHATE WITH IRON HYDROXIDE
German Müller, Bammental, and Siegfried Riethmayer, Freiburg, both of Fed. Rep. of Germany, assignors to Industrie Automation Sondertechnik GmbH & Co., Heidelberg, Fed. Rep. of Germany
Filed Sep. 2, 1992, Ser. No. 939,468
Claims priority, application European Pat. Off., Sep. 4, 1991, 91114928.4
Int. Cl.[5] C02F *1/58, 1/72*
U.S. Cl. 210—716 **18 Claims**

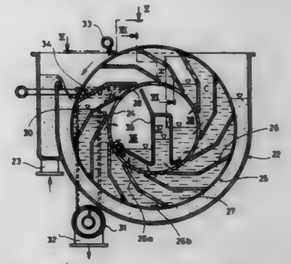
1. A process for the precipitation of phosphates from municipal and industrial waters and other phosphate comprising waters which comprises adding to the water a precipitating agent comprises of iron hydroxide of the formula

$$Fe_2O_3.nH_2O$$

wherein n=0.5–3.0, and other metal hydroxides, said iron hydroxide being prepared by dissolving metals from iron comprising starting materials by means of mineral acids at pH 0.5–2.5, isolating undissolved solids from the dissolved metal salts and re-precipitating the iron as hydroxide at pH 3.5–4.5.

5,296,152
APPARATUS FOR FILTERING SUSPENSIONS AND A METHOD OF OPERATING THE APPARATUS
Rune Frykhult, Stockholm, Sweden, assignor to Ingenjorsfirman R. Frykhult AB, Sweden
PCT No. PCT/SE91/00110, § 371 Date Jun. 30, 1992, § 102(e) Date Jun. 30, 1992, PCT Pub. No. WO91/12063, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 18, 1991, Ser. No. 861,980
Claims priority, application Sweden, Feb. 16, 1990, 9000569-5; Feb. 16, 1990, 9000571-1
Int. Cl.[5] B01D *33/21*
U.S. Cl. 210—780 **8 Claims**

8. A method for filtering mat forming suspension comprising:
providing a container for the suspension to be filtered; providing a hollow rotatable horizontal shaft journaled on the container, and at least one annular, substantially vertical hollow filter disc with two opposed side walls of filter material, the filter disc being concentrically mounted on the shaft, the interior of the hollow shaft being in fluid communication with the atmosphere, the shaft having a circumferential wall having holes for providing communication between the interior of the hollow filter disc and the interior of the hollow shaft, the side walls of filter material having partition walls extending therebetween and dividing the interior of the filter disc into a number of chambers disposed in series around the filter disc, the chambers communicating with the interior of the hollow shaft through the holes in the circumferential wall of the hollow shaft and extending at least partly above a pool of fine fraction in the hollow shaft;
controlling the volume of the suspension in the container to maintain the volume of the suspension partly below the



side walls of filter material in the container, and to maintain the hollow shaft at least partly submerged in the suspension in the container, whereby the gas pressure on the suspension in the container is substantially equal to the gas pressure prevailing within the entire hollow shaft, thereby forcing a fine fraction of the suspension through the side walls of filter material into the hollow filter disc and further into the hollow shaft via the holes by hydrostatic pressure in the suspension in the container, and creating a course fraction of the suspension outside the filter disc; and
rotating the filter disc at a sufficient speed to cause each chamber to contain a volume of fine fraction when at least a part of the chamber has been displaced up above the suspension in the container.

5,296,153
METHOD AND APPARATUS FOR REDUCING THE AMOUNT OF FORMATION WATER IN OIL RECOVERED FROM AN OIL WELL
Bruce R. Peachey, 10444 - 20 Avenue, Edmonton, Alberta, Canada T6J 5A1
Filed Feb. 3, 1993, Ser. No. 12,916
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—787 **4 Claims**

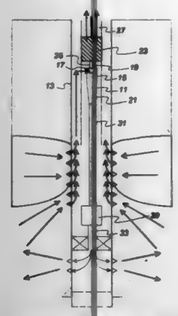
2. A method for reducing the amount of formation water in oil recovered from an oil well, comprising the steps of:
a. firstly, placing a cyclone separator downhole in an oil well, the cyclone separator including:
a separation chamber wherein liquids of differing densities are separated;
a mixed liquids inlet through which liquids pass into the separation chamber;
a first outlet for liquids of a first density to pass from the separation chamber;
a second outlet for liquids of a second density to pass from the separation chamber;
b. secondly, connecting the first outlet of the cyclone separator to a first pump having a first fluid inlet and a first fluid outlet;
c. thirdly, connecting the second outlet of the cyclone sepa-

rator to a second pump having a second fluid inlet and a second fluid outlet; and

d. fourthly, connecting the first fluid outlet of the first pump to a recovery conduit extending to surface;

e. fifthly, connecting the second fluid outlet of the second pump to a disposal conduit extending to a selected disposal site; and

f. sixthly, activating the first pump and the second pump whereby an oil/water stream is drawn through the mixed liquids inlet of the cyclone separator, with a stream of mainly oil being separated in the separation chamber from



the oil/water stream, the stream of mainly oil passing through the first outlet of the cyclone separator and then being pumped in the first fluid inlet through the first pump, out the first fluid outlet and along the recovery conduit to the surface, with a stream of mainly water concurrently being separated in the separation chamber from the oil/water stream, the stream of mainly waste passing through the second outlet and then being pumped in the second fluid inlet, through the second pump, out the second fluid outlet and along the disposal conduit to the selected disposal site.

5,296,154

HIGH MOLECULAR WEIGHT NITROGEN-CONTAINING CONDENSATES AND FUELS AND LUBRICANTS CONTAINING SAME

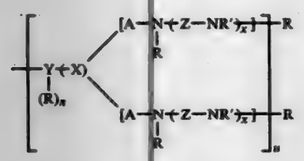
Thomas F. Stockel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 936,700, Aug. 27, 1992, Pat. No. 5,230,714, which is a division of Ser. No. 714,579, Jun. 13, 1991, Pat. No. 5,160,648, which is a division of Ser. No. 390,439, Aug. 3, 1988, Pat. No. 5,053,152, which is a continuation of Ser. No. 711,799, Mar. 14, 1985, abandoned. This application Apr. 29, 1993, Ser. No. 55,471

Int. Cl.[5] C10M *133/58, 133/38*

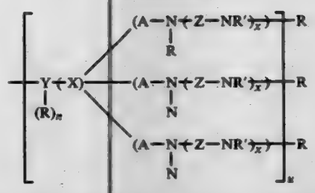
U.S. Cl. 252—51.5 R **18 Claims**

1. A polyamine comprising units of the formula:



or

-continued



wherein R is independently hydrogen or C_{1-7} hydrocarbyl; R′ is hydrogen, alkyl or $NH_2R''(NR'')_y$, wherein y is a number in the range from 1 to about 6 and R″ is an alkylene group of 1 to about 10 carbon atoms; Y represents N or O; X is an alkylene group; A is hydrocarbyl; Z is a heterocyclic ring containing at least one nitrogen atom; x is a number in the range from 1 to about 10; u is an integer greater than 1; and n is 0 or 1.

5,296,155

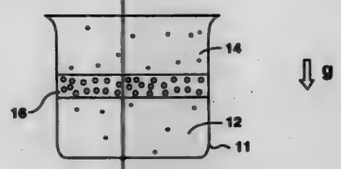
STRATIFIED CARRIER ELECTROVISCOUS FLUIDS AND APPARATUS

Ronald P. Reitz, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 584,964, Sep. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 219,522, Jul. 15, 1988, and a continuation-in-part of Ser. No. 219,523, Jul. 15, 1988, abandoned. This application Jan. 24, 1992, Ser. No. 826,202

Int. Cl.[5] C10M *169/04, 171/00*

U.S. Cl. 252—73 **11 Claims**



1. A stratified electroviscous fluid comprising:

a first fluid which is a dielectric and has a first density;

a second fluid which is a dielectric and has a second density which is greater than said first density; and

a plurality of particles having a third density which is greater than said first density but less than said second density;

said second fluid being immiscible with said first fluid;

said particles having the characteristic that they polarize in the presence of an electric field;

a substantial number of said particles each comprising a core and an electrically nonconductive shield;

said core being at least partially electrically conductive;

said shield partially encompassing said core;

said shield adapted to prevent particle to particle transmission of electric current;

whereby, in a settled state, said electroviscous fluid will stratify into a first layer comprised substantially of said second fluid and a second layer comprised substantially of said first fluid, and said particles will be suspended in said electroviscous fluid substantially between said first layer and said second layer.

5,296,156

BLEACHING GRANULES

Jan J. H. Ploumen, WC Roermond; Herman J. Edelijn, GA Zwolle, and Jan J. M. Reijnen, VH Utrecht, all of Netherlands, assignors to Akzo N.V., Netherlands

Continuation-in-part of Ser. No. 436,994, Nov. 15, 1989, Pat. No. 5,049,298. This application Jun. 28, 1991, Ser. No. 722,985

Claims priority, application European Pat. Off., Nov. 25, 1988, 88202691.7

Int. Cl.[5] C11D *7/54;* **C01B** *15/00*

U.S. Cl. 252—95 **9 Claims**

1. Solid, free-flowing bleaching granules produced by mixing at least one water-insoluble peroxy acid compound and a hydratable inorganic material at a total water content which is below the maximum hydration water content of the hydratable inorganic material and at a temperature which is below the hydration temperature of the hydratable inorganic material, until a powder is formed, raising the temperature of the resulting powder to at least the hydration temperature of the hydratable inorganic material and subsequently forming said powder into granules, wherein said granules have a size distribution range of 0.1 to 5 mm, said granules comprised of 5–60 wt. % peroxy acid, 35–95 wt. % hydratable inorganic material, up to 10 wt. % of a surface-active material, and up to 15 wt. % of a water insoluble organic compound, with the proviso that said granules do not contain a polymeric granulation aid.

5,296,157

LIQUID SOAP PERSONAL CLEANSER WITH CRITICAL HEAT CYCLE STABILIZING SYSTEM

Neil A. MacGilp; Kathleen G. Baier; Richard M. Girardot, and Efrain Torres, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 665,621, Mar. 5, 1991, Pat. No. 5,158,699. This application Sep. 23, 1991, Ser. No. 763,792

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] C11D *9/02, 9/04, 17/08*

U.S. Cl. 252—108 **17 Claims**

1. A very mild dispersoidal liquid soap personal cleansing composition comprising:

(A) from about 5% to about 20% by weight of potassium fatty acid soap;

(B) from about 2.5% to about 18% C_8–C_{22} free fatty acid;

(C) from about 55% to about 90% water; and

(D) from about 0.1% to about 4% of a stabilizer selected from the group consisting of: from about 0.1% to about 3.0% of an electrolyte; and from 0% to about 2.0% of a polymeric thickener; and mixtures thereof; and

wherein said fatty acid of (A) and (B) has an Iodine Value of from zero to about 15; and a titer (° C.) of from about 44 to about 70;

wherein said soap and said free fatty acid have a weight ratio of about 1:0.3 to about 1:1; and

wherein said liquid has an initial viscosity of from about 4,000 cps to about 100,000 cps at 25° C. and a Cycle Viscosity of from about 10,000 cps to about 100,000 cps at 25° C.;

wherein said composition is made by the following steps:

1. heating and mixing an aqueous mixture of potassium fatty acid soap and free fatty acid to provide a stable melt;
2. cooling the melt to about room temperature; and
3. diluting said cooled melt with water to provide said dispersoidal liquid; wherein said composition is contained in a container having a pressure actuated pump.

5,296,158

STABLE MILD LIQUID SOAP PERSONAL CLEANSER

Neil A. MacGilp; Kathleen G. Baier; Richard M. Girardot, and Efrain Torres, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 665,620, Mar. 5, 1991, Pat. No. 5,147,574. This application Sep. 23, 1991, Ser. No. 763,793

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] C11D *9/02, 9/04, 17/08*

U.S. Cl. 252—108 **17 Claims**

1. A very mild dispersoidal liquid soap personal cleansing composition comprising:

(A) from about 5% to out 20% by weight of potassium fatty acid soap;

(B) from about 2.5 to about 18% C_8–C_{22} free fatty acid;

(C) from about 55% to about 90% water; and

wherein said fatty ac f (A) and (B) has an Iodine Value of from zero to about 15; and a titer (° C.) of from about 44 to about 70; wherein said soap and said free fatty acid have a weight ratio of about 1:0.3 to about 1:1; and wherein said product has a viscosity of from about 4,000 cps to about 100,000 cps at 25° C.;

wherein said composition is made by the following steps:

1. heating and mixing an aqueous mixture of said potassium fatty acid soap and said free fatty acid to provide a stable melt;
2. cooling the melt to about room temperature;
3. diluting said cooled melt with water to provide said dispersoidal liquid;

wherein said composition is contained in a container having a pressure actuated pump.

5,296,159

MILD SOAP-SYNBAR

David B. Wilson; Charles D. Tereck; Donald A. Niederbaumer; Robert G. Bartolo; Francisco A. Pichardo, all of Cincinnati, and TImothy J. Welch, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 844,012, Feb. 28, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 988,323

Int. Cl.[5] C11D *9/30, 17/00, 10/04*

U.S. Cl. 252—117 **16 Claims**

1. A milled soap-synthetic bar comprising:

(1) from about 55% to about 80% soap;

(2) from about 0.5% to about 5% of cationic polymeric skin mildness aid selected from the group consisting of: (a) cationic polyalkylene imines, (b) cationic ethoxy polyalkylene imines, and (c) cationic poly[N-(-3-dimethylammonia)propyl}-N′-{3-(ethyleneoxyethylene dimethylammonio)propyl}urea dichloride];

(3) from about 2% to about 5% of C_{14-20} alkyl polyethoxylate nonionic detrgent surfactant containing from about 70 to about 100 ethylene oxide moieties per molecule; and

(4) from about 8% to about 10% water; wherein the soap bar does not contain soap in the beta-phase form; and wherein the surface of the soap bar does not show frosting or crystallization of the nonionic surfactant after storage of the bar.

5,296,160

AQUEOUS DISPERSIONS OF BLOCKED POLYISOCYANATES

Robin E. Tirpak, Wheeling, and James W. Rosthauser, Glendale, both of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jul. 23, 1991, Ser. No. 734,708

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—182.2 **8 Claims**

1. A process for the preparation of an aqueous dispersion of a blocked polyisocyanate which comprises reacting an aqueously dispersed polyisocyanate having an isocyanate content of at least 12% by weight, based on the weight of the polyisocyanate, with a monofunctional blocking agent which is more

reactive with isocyanate groups than water at an equivalent ratio of monofunctional blocking groups to isocyanate groups of 0.5:1 to 2:1, wherein said monofunctional blocking agent comprises a member selected from the group consisting of secondary aromatic amines, N-methyl toluidines, alkyl amides, imides, lactams, mercaptans, triazoles, alkali metal bisulfites and oximes.

5,296,161

ENZYMATIC PERHYDROLYSIS SYSTEM AND METHOD OF USE FOR BLEACHING

Richard J. Wiersema, Tracy, and Anna G. Stanislowski, Walnut Creek, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 768,466, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 363,442, Jun. 6, 1989, abandoned, which is a continuation of Ser. No. 872,252, Jun. 9, 1986, abandoned. This application Oct. 21, 1992, Ser. No. 964,565

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

Int. Cl.[5] C09K *3/00*

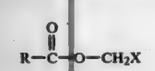
U.S. Cl. 252—186.38 **12 Claims**

1. An activated oxidant system capable of in situ generation of peracid by enzymatic perhydrolysis, comprising:

(a) a source of peroxygen;

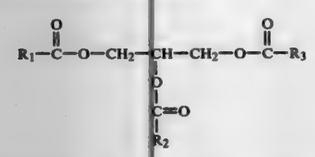
(b) an enzyme having lipase and/or esterase activity; and

(c) a functionalized ester substrate having the structure



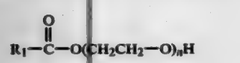
wherein R has at least one carbon atom and is a straight chain or branched chain alkyl optionally substituted with one or more functional groups and X comprises a functional group, the functionalized ester substrate being selected from the group consisting of:

(i) glycerides having the structure



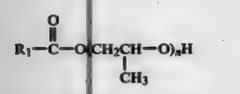
wherein R_1=C_1–C_{12}, R_2=C_1–C_{12} or H and R_3=C_1–C_{12} or H;

(ii) ethylene glycol derivatives having the structure



wherein n=1–10 R_1 is defined as above; and

(iii) propylene glycol derivatives having the structure



wherein R_1 and n are defined as above,

the enzyme and ester substrate being selected in combination and employed in selected amounts for interacting with each other in the presence of hydrogen peroxide from the peroxygen source to produce a peracid having the formula RCOOOH wherein R_1 of (i), (ii) and (iii) is a substituent having from one to twelve carbon atoms with the newly created peracid compound producing available oxygen of at least about 0.1 ppm in an aqueous solution for providing enhanced stain removing ability, the functionalized ester substrate being incapable of substantial chemical perhydrolysis.

5,296,162

NEAR INFRARED ABSORBERS AND DISPLAY/RECORDING MATERIALS USING THE SAME

Hisao Itoh, Yokohama; Katashi Enomoto, Zushi; Takahisa Oguchi, and Tutomu Nishizawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo and Yamamoto Chemicals, Incorporated, Yao, both of Japan

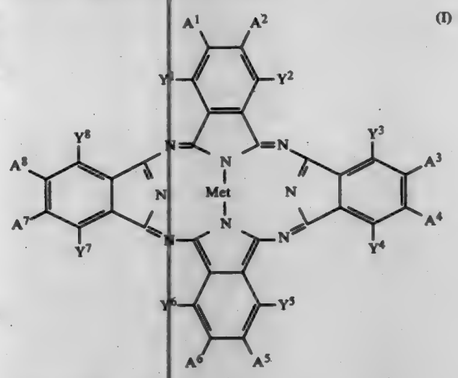
Division of Ser. No. 451,175, Dec. 15, 1989, Pat. No. 5,124,067. This application Mar. 2, 1992, Ser. No. 846,796

Claims priority, application Japan, Dec. 15, 1988, 63-314986; Jan. 13, 1989, 64-4763; Jan. 13, 1989, 64-4764; Apr. 19, 1989, 64-97604

Int. Cl.[5] C09B *47/04*; C09K *19/58*

U.S. Cl. 252—299.2 **5 Claims**

3. A liquid crystal element comprising a near infrared absorber having a molecular extinction coefficient of 200,000 or more and represented by the formula (I)



(I)

wherein one of each pair of Y^1 and Y^2, Y^3 and Y^4, Y^5 and Y^6, and Y^7 and Y^8 is a branched or cyclic alkoxy group having 4 to 9 carbon atoms and the other is a straight-chain alkoxy group having 4 to 9 carbon atoms or a straight-chain alkylthio group having 4 to 9 carbon atoms; each of A^1, A^2, A^3, A^4, A^5, A^6, A^7 and A^8 is independently a hydrogen atom, a halogen atom, a nitro group, a straight-chain, branched or cyclic alkyl group having 1 to 10 carbon atoms, an aralkyl group having 7 to 20 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkynyl group having 2 to 10 carbon atoms, a straight-chain or branched alkoxy group having 1 to 4 carbon atoms or a cyclic alkoxy group having 6 to 10 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, a straight-chain, ranched or cyclic alkylthio group having 1 to 10 carbon atoms, or an arylthio group having 6 to 20 carbon atoms; each pair of A^1 and A^2, A^3 and A^4, A^5 and A^6, and A^7 and A^8 may be bound together so as to form a ring; and Met represents two hydrogen atoms, a divalent metal atom, a trivalent monosubstituted or tetravalent disubstituted metal atom, or an oxymetal group.

5,296,163

METHOD FOR PRODUCING A SCINTILLATOR CERAMIC

Juergen Leppert, Inning A. Holz, and Wolfgang Rossner, Holzkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 26, 1993, Ser. No. 96,271

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1992, 4224931

Int. Cl.[5] C09K *11/08*

U.S. Cl. 252—301.4 S **14 Claims**



1. A method for producing a high-density scintillation ceramic of a rare earth oxisulfide, comprising the steps of:

providing a pigment powder having the general formula

$$(M_{1-x}Ln_x)_2O_2S$$

wherein M is at least one element selected from the group consisting of Y, La and Gd, Ln is at least one element selected from the group consisting of Eu, Ce, Pr, Tb, Yb, Dy, Sm and Ho and $1\times10^{-6}\leqq x\leqq2\times10^{-1}$, said powder having a specific surface of at least 10 m^2/g determined with the gas absorption method according to BET; and

compressing said pigment powder by single-axis hot-pressing to form a translucent ceramic member having a density of at least 99.9% of the theoretical density.

5,296,164

HIGH-STABILITY FOAMS FOR LONG-TERM SUPPRESSION OF HYDROCARBON VAPORS

Sophany Thach, Dallas; Kenneth C. Miller, Richardson, and Karen S. Schultz, Dallas, all of Tex., assignors to Atlantic Richfield company, Los Angeles, Calif.

Continuation of Ser. No. 584,978, Sep. 19, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,299

Int. Cl.[5] B01J *13/00, 19/16*

U.S. Cl. 252—307 **16 Claims**

1. A foam solution, comprising:

a) about 0.1 to 6.0% by weight of a water-soluble nonionic surfactant;

b) about 0.01 to 1.0% by weight of a fluorinated co-surfactant;

c) about 1.0 to 10.0% by weight of a polyol stabilizer;

d) about 500 to 5,000 ppm of a viscosifier selected from the group consisting of xanthan gum and welan gum; and

e) water;

said foam solution being capable of forming a foam having a persistence of at least 12 hours at temperatures of from 75 to 105° F.

14. A foam comprising:

from 10 to 1,000 parts of gas to 1 part of dilute foam solution comprising:

a) about 0.1 to 6.0% by weight of a water-soluble nonionic surfactant;

b) about 0.01 to 1.0% by weight of a fluorinated surfactant;

c) about 1.0 to 10.0% by weight of a stabilizer;

d) about 500 to 5,000 ppm of a viscosifier selected from the group consisting of xanthan gum and welan gum; and

e) water;

wherein said foam has a persistence of at least 12 hours at temperatures of from 75 to 105° F.

5,296,165

AQUEOUS DISPERSION AND COMPOSITE POWDER OF FLUORINE-CONTAINING POLYMER

Tetsuo Shimizu, Osaka, and Seitaro Yamaguchi, Minou, both of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 448,872, Dec. 12, 1989, Pat. No. 5,188,764. This application Aug. 14, 1992, Ser. No. 929,373

Claims priority, application Japan, Dec. 12, 1988, 63-314626

Int. Cl.[5] B01J *13/00*; B32B *27/00*; C08F *14/26*

U.S. Cl. 252—311 **8 Claims**

1. An aqueous dispersion comprising composite fluorine-containing colloidal particles having an average particle size of 0.05 to 1.0 micrometer, each of which particle comprises a core made of a copolymer comprising 99–100% by weight of tetrafluoroethylene and 0 to 1% by weight of a fluorine-containing olefin which is copolymerizable with tetrafluoroethylene and a shell made of at least one thermoplastic polymer resin selected from the group consisting of ethylene/tetrafluoroethylene base copolymers, ethylene/chlorotrifluoroethylene base copolymers and vinylidene fluoride/hexafluoroisobutene base copolymers.

5,296,166

METHOD OF MANUFACTURING EMULSIONS

Jerry Leong, 23515 Naffa Ave., Carson, Calif. 90745-5735

Continuation-in-part of Ser. No. 17,779, Apr. 10, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 338,292

Int. Cl.[5] B01F *3/08*

U.S. Cl. 252—314 **15 Claims**

1. A method of manufacturing emulsions from discontinuous and continuous phase constituents comprising:

forming a liquid discontinuous phase emulsion constituent by mixing together into a uniform dispersion quantities of an emulsifier, an oil which is immiscible in water, and at least one component of a multi-component hydrophilic colloid thickener system in the absence of water, wherein the ratio of the weight of said emulsifier to that of said thickener component is no greater than about 0.50 to 1 and wherein the weight of said thickener system in the total weight of all constituents is no greater than 2.5 percent,

combining said discontinuous phase emulsion constituent with a liquid continuous phase emulsion constituent that includes water and all the other components of said thickener system while mixing said discontinuous and continuous phase constituents together with low shear at least until the occurrence of phase inversion wherein said thickener is neutralized and gels as an emulsion is formed.

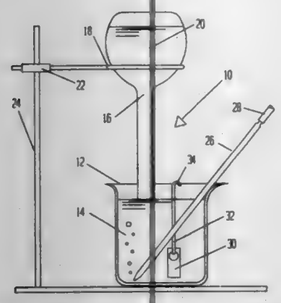
2. A method of manufacturing emulsions from discontinuous and continuous phase constituents comprising:

forming a liquid discontinuous phase emulsion constituent by mixing together into a uniform dispersion quantities of an emulsifier, an oil which is immiscible in water, and a single component hydrophilic colloid thickener in the absence of water, wherein the ratio of the weight of said emulsifier to that of said thickener is no greater than about 0.50 to 1 and wherein the weight of said thickener in the total weight of all constituents is no greater than 2.5 percent,

combining said discontinuous phase emulsion constituent with a liquid continuous phase emulsion constituent that includes water while mixing said discontinuous and continuous phase constituents together with low shear at least until the occurrence of phase inversion and until said thickener hydrates and gels as it forms an emulsion.

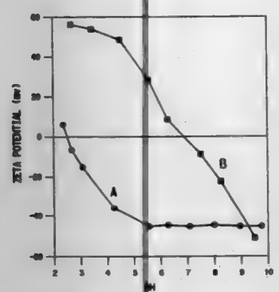
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,167
METHOD AND COMPOSITION FOR INHIBITING CORROSION BY SODIUM AND CALCIUM CHLORIDE
W. Bruce Murray, 28 Willow Grove, Irvine, Calif. 92714
Filed May 13, 1991, Ser. No. 699,370
The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.
Int. Cl.[5] C09K 3/18; C23F 11/06
U.S. Cl. 252—387 7 Claims



1. The method for inhibiting the corrosion of metal by an aqueous solution of sodium chloride containing calcium ions which comprises:
incorporating in said aqueous solution of sodium chloride an alkali metal or alkaline earth metal orthophosphate comprising from 10 to 60 percent dihydrogen phosphate and from 90 to 40 percent mono-hydrogen phosphate in an amount from 0.7 to about 5 weight percent of the weight of said salt in said aqueous sodium chloride solution.

5,296,168
ELECTROCONDUCTIVE PARTICLES AND METHOD FOR ADJUSTING THE ISOELECTRIC POINT THEREOF
Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 388,921, Aug. 3, 1989, abandoned. This application Dec. 19, 1990, Ser. No. 631,108
Int. Cl.[5] H01B 1/00
U.S. Cl. 252—518 1 Claim

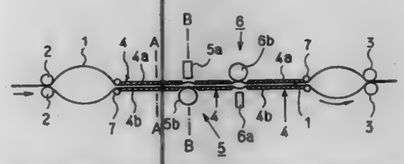


1. An electroconductive powder composition comprising powder particles smaller than 1000 microns comprising a non-conducting substrate, each such substrate having a first coating which comprises a network of interconnecting crystallites of antimony-containing tin oxide and a second outer coating layer of a hydrous metal oxide selected from the group consisting of alumina, magnesia, zirconia, titania and rare earth metal oxides and having a thickness of from about 1 monomolecular layer to 5 monomolecular layers and an isoelectric point in the range of from about 5 to 9.

5,296,169
METHOD OF PRODUCING VARISTOR
Hideo Ochi, Misato; Akihide Igari; Masaaki Toyoda, both of Saitama, and Zenbee Nakagawa, Yokohama, all of Japan, assignors to Somar Corporation, Japan
Filed Sep. 9, 1992, Ser. No. 942,392
Claims priority, application Japan, Jan. 29, 1992, 4-40102
Int. Cl.[5] H01B 1/06
U.S. Cl. 252—518 4 Claims

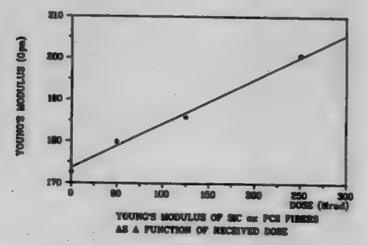
1. A method of producing a varistor material, comprising the steps of:
(a) mixing zinc oxide powder with a solvent solution of a manganese compound and a lead compound to obtain a mixture;
(b) calcining said mixture at a temperature of 600°–900° C. in an oxygen-containing atmosphere to obtain a calcined product;
(c) pulverizing said calcined product, steps (a) through (c) being perfomed while preventing contamination with impurity compounds of an element belonging to Group IIIb or Ia of the Periodic Table so that a pulverized product having a content of impurity compounds of an element belonging to IIIb or Ia of the Periodic Table of not greater than 20 ppm by weight is obtained, said zinc oxide powder, manganese compound and lead compound being used in amounts so that said pulverized product has MnO and PbO contents of 3–7 mole % and 0.003–0.007 mole %, respectively, based on the total amount of ZnO, MnO and PbO;
(d) molding said pulverized product to obtain a shaped body; and
(e) sintering said shaped body at a temperature of 1100°–1300° C. in an oxygen-containing atmosphere to obtain a sintered body.

5,296,170
METHOD FOR IMPROVING THE INTERNAL SURFACE OF SEAMLESS TUBE OF MULTI-LAYER PLASTICS FILM LAMINATE
Noritsugu Sugimoto, Zama; Mori Nobuyuki, Hatano; Shoji Nakamura, Yasu, and Fusazo Wada, Moriyama, all of Japan, assignors to Gunze Ltd., Kyoto and Gunze Kobunshi Corporation, Ichara, both of Japan
PCT No. PCT/JP89/01170, § 371 Date Jul. 13, 1990, § 102(e) Date Jul. 13, 1990, PCT Pub. No. WO90/05757, PCT Pub. Date May 31, 1990
PCT Filed Nov. 16, 1989, Ser. No. 543,833
Claims priority, application Japan, Nov. 17, 1988, 63-292021; Nov. 29, 1988, 63-303421
Int. Cl.[5] B29C 71/04, 59/10
U.S. Cl. 264—22 11 Claims



1. A method for improving the internal surface of a gas-barrier, optionally heat-shrinkable, multi-layer plastics film laminate in the form of a seamless tube having an innermost layer of olefin resin, the method comprising applying corona discharge employing at least two pairs of electrodes to the innermost layer from the outside of the tube having a gas sealed therein and pressed to a flat state avoiding the contact of opposed surface area of the innermost olefin resin layer with each other, said two pairs of electrodes being arranged such that one electrode of each pair is in contact with the outermost layer of the tube and the other of the same pair is out of contact therewith, the electrodes out of contact with the tube being diagonally opposed, so that the wetting tension of the innermost layer surface is increased to at least 35 dyne/cm by the corona discharge treatment.

5,296,171
METHOD FOR FABRICATING A CERAMIC FIBER REINFORCED COMPOSITE MATERIAL
Francois Christin, Saint Aubin de Medoc; Didier Mocaer, Gradignan, and René Pailler, Cestas, all of France, assignors to Societe Europeene de Propulsion, Suresnes, France
Filed Dec. 2, 1991, Ser. No. 801,436
Claims priority, application France, Dec. 3, 1990, 90-15127
Int. Cl.[5] B29C 35/02; D01C 5/00; B29D 28/00
U.S. Cl. 264—22 9 Claims



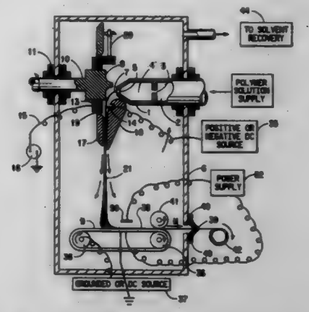
YOUNG'S MODULUS OF SiC ex PCS FIBERS AS A FUNCTION OF RECEIVED DOSE

1. A method of fabricating a composite material comprising a matrix reinforced by ceramic fibers, said method comprising the steps of:
providing ceramic fibers derived from an organometallic precursor by ceramifying fibers formed from said organometallic precursor;
irradiating the ceramic fibers by exposure to electromagnetic radiation of wavelength less than or equal to the wavelength of x-rays to improve the mechanical properties of the ceramic fibers; and
densifying a preform made of said irradiated ceramic fibers by impregnating or infiltrating the preform with a material constituting the matrix to obtain the composite material.

5,296,172
ELECTROSTATIC FIELD ENHANCING PROCESS AND APPARATUS FOR IMPROVED WEB PINNING
Michael C. Davis, Richmond, and Michael A. Bryner, Midlothian, both of Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 31, 1992, Ser. No. 922,658
Int. Cl.[5] B29C 47/00, 71/04
U.S. Cl. 264—24 10 Claims

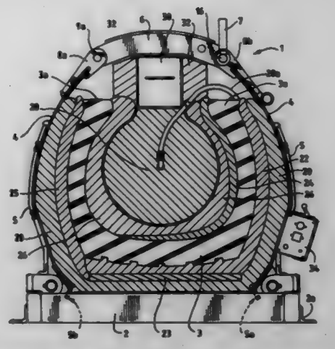
1. In a process for forming fibrous webs on a moving collection surface that comprises the steps of forming polymeric strands in the fluid medium, directing the strands toward a laydown position on the moving collection surface, electrostatically charging the strands and depositing the strands on the collection surface as a fibrous web, the improvement comprising imposing an auxiliary non-corona electrostatic field of up to 95% of the electrostatic breakdown strength of the fluid medium above the web and the moving collection surface and downstream of the laydown position where the web is deposited on the collection surface to enhance the electrostatic field in the region above the collection surface without the auxiliary field placing a higher electrostatic charge on the web.

6. In an apparatus for forming a fibrous web on a moving collection surface comprising means for forming polymeric strands in a fluid medium, means for directing the strands toward a laydown position on the moving collection surface, and means for charging the strands positioned between the forming and directing means and the collection surface, the improvement comprising an auxiliary non-corona electrostatic



field enhancing plate positioned above the web and the moving collection surface and downstream of the laydown position where the web is initially deposited on the collection surface to enhance the electrostatic field in the region above the collection surface without the auxiliary field placing a higher electrostatic charge on the web.

5,296,173
TIRE SECTION REPAIR UNIT AND METHOD
R. James Dornan, Scarborough, Canada, assignor to Vulcan Vulcap Industries, Inc., Ontario, Canada
Continuation of Ser. No. 802,353, Dec. 4, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,607
Int. Cl.[5] B60C 25/16; B29C 35/04
U.S. Cl. 264—36 16 Claims



1. A lightweight, portable and adjustable tire repair unit for use in vulcanizing a repair patch to a section of a tire, comprising:
a base member adapted to support a tire to be repaired;
two substantially rigid and upwardly extending, lightweight side walls pivotally connected to said base member and positioned at a predetermined distance from one another to accommodate a wide range of tire sizes, said side walls being disposed in juxtaposition to a section of the tire under repair;
inside and outside heating and pressure means contained inside and outside the tire section under repair and within said side walls for applying pressure and heat to the tire

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section, said heating and pressure means including a flexible, inflatable mandrel positioned within the tire to be repaired; said inside heating and pressure means also including a secondary inner bag for selectively fine-tuning the pressure about the tire; and

a substantially rigid locking arm connecting the upper portions of said side walls, whereby said base member, said side walls and said locking arm cooperate to form a substantially rigid and secure structure enclosing the tire section, thus providing an external support to enable the application of uniform pressure to the tire section to be repaired, and ensuring distortion-free curing of the repair patch.

11. A method for repairing a tire, comprising the steps of:

(a) placing a tire to be repaired within a lightweight and portable tire repair apparatus having a base member and two substantially rigid and upwardly extending, curved side walls pivotally connected to opposite ends of said base member;

(b) surrounding the section of the tire to be repaired within said side walls by inside and outside heating and pressure means so as to provide a snug fit about the tire section under repair, said inside heating and pressure means including a secondary inner air bag;

(c) selectively fine-tuning the pressure about the tire by adjusting the pressure within said secondary inner air bag;

(d) locking said side walls about said heating and pressure means and the tire section under repair by means of a locking arm; and

(e) simultaneously heating and applying pressure to the section under repair, thereby enabling uniform temperature and pressure to be applied, and allowing a distortion-free repair.

5,296,174

METHOD OF CONTROLLING HOLDING PRESSURE IN INJECTION MOLDING AND APPARATUS THEREFOR

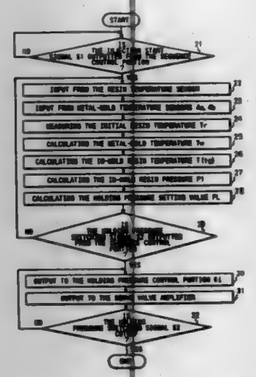
Kazutoshi Yakemoto, and Tsukasa Shiroganeya, both of Hiroshima, Japan, assignors to Japan Steel Works Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,070

Claims priority, application Japan, Mar. 19, 1991, 3-078171; May 10, 1991, 3-133322

Int. Cl.[5] B29C *45/77, 45/78*

U.S. Cl. 264—40.5 **8 Claims**



1. A method of controlling holding pressure in injection molding, comprising the steps of:

injecting melted resin from a cylinder of an injection molding machine into a cavity of a metal mold through a nozzle and resin paths by advancement of a screw, said injecting step further including the steps of:

estimating what the value of in-mold resin temperature will be at a given time in a holding pressure stage on the basis of metal-mold temperature and resin temperature in said resin path during said injecting step;

obtaining in-mold resin pressure which is required for attaining a desired weight of a molded product from the estimated in-mold resin temperature;

obtaining a holding pressure setting value based on the obtained in-mold resin pressure; and

retaining a holding pressure, during said holding pressure stage, in said cavity by pressing said screw after injecting said melted resin into said cavity so as to compensate for shrinkage of said melted resin which is caused as said melted resin is cooled and solidified in said cavity, said retaining step further including the step of:

controlling the value of said holding pressure by the obtained holding pressure setting value.

5,296,175

METHOD OF FORMING MOLDED BODY

Hiroyuki Iwasaki, and Syuji Sakai, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

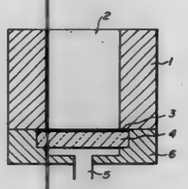
Division of Ser. No. 126,158, Nov. 27, 1987, Pat. No. 5,156,896.

This application Jul. 21, 1992, Ser. No. 916,269

Claims priority, application Japan, Dec. 4, 1986, 61-287627; Mar. 10, 1987, 62-54989

Int. Cl.[5] C04B *33/28*

U.S. Cl. 264—86 **6 Claims**



1. A pressure casting molding method for forming a high density ceramic molded body by pouring a ceramic slurry into a mold through a pouring portion thereof and pressurizing the ceramic slurry on a side of the pouring portion while removing a solvent medium of said slurry on the other side of the mold through a permeable mold part of the mold, comprising the steps of filling a hydrophobic pressurizing medium in said pouring portion after pouring said ceramic slurry into the mold for pressurizing the ceramic slurry through said hydrophobic pressurizing medium, and removing the solvent medium through a membrane filter provided on a side of a molding surface of said permeable mold part of the mold.

5,296,176

METHOD OF MANUFACTURING A PARENT MATERIAL FOR WOODEN PATTERNS

Kenichi Nakamura, Hyogo, Japan, assignor to Industrial Technical R&D Laboratory Inc., Hyogo, Japan

Filed Sep. 23, 1992, Ser. No. 949,568

Claims priority, application Japan, Jan. 31, 1992, 4-046067

Int. Cl.[5] B27N *3/00*

U.S. Cl. 264—109 **2 Claims**

1. A method of manufacturing a parent material for wooden patterns, comprising the steps of:

kneading together 50 to 70% by weight of 80 to 200 mesh wood flour and a main resin, a hardening agent and an accelerator for forming 30 to 50% by weight of a self-hardening resin; and pressure molding the kneaded product at ordinary temperature while controlling a pressure of said pressure-molding so that the coefficient of water absorption is 3% or lower for every 24 hours.

5,296,177

PROCESS FOR PRODUCING AGGLOMERATES FROM DUSTS

Kwat I. Thé; Dirk Noteboom, both of Jonquière, and Robert L. Clegg, Chicoutimie-Nord, all of Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation-in-part of Ser. No. 701,108, May 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 697,236, May 6, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,506

Int. Cl.[5] B29B *9/08*

U.S. Cl. 264—117 **9 Claims**

1. A process for producing unsintered agglomerates from dust collected during the thermal conversion of a material containing predominantly gibbsite to sub-alpha alumina by a multistage thermal process having at least one intermediate stage, which process comprises:

removing undercalcined alumina from an intermediate stage of said thermal conversion;

grinding particles of said undercalcined alumina to a median particle size of less than 30 microns and to a specific surface area in the range of 130–300 m^2/g;

combining about 1–4 parts by weight of the dust with one part by weight of said ground undercalcined alumina to form combined solids;

mixing the combined solids with water to produce agglomerates; and

aging the resulting agglomerates in a closed environment at a temperature of at least 80° C. for at least 2 hours in at least 90% humidity;

wherein the water is mixed with said combined solids by intensive mixing, the total amount of added water is about 0.8–1.2 parts by weight for every part by weight of said ground undercalcined alumina plus about 0.08 to 0.12 parts by weight for every part by weight of said dust, and the water is added according to the following scheme;

(a) adding 50–80% of said amount of water as a single addition to said mixed solids and mixing said solids and water by intensive mixing for a period of at least 30 minutes, and then

(b) adding a remainder of said water at a rate of about 0.01 to 0.07 parts by weight per minute while continuing said intensive mixing until said total amount of water has been added.

5,296,178

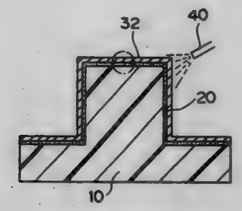
METHOD OF MAKING A MOLD BY SPRAYING METAL USING A PARTICULATE MOLD RELEASE AGENT

Kazuyuki Sugihara, Okayama, and Nobuhiko Yukawa, Hyogo, both of Japan, assignors to Chugoku Kako Co., Ltd., Kurashiki and Nippon Shokubai Co., Ltd., Osaka, both of Japan

Filed Jan. 7, 1992, Ser. No. 817,626

Int. Cl.[5] B28B *11/06*

U.S. Cl. 264—130 **3 Claims**



1. A method for producing a composition consisting essentially of a metal layer made by metal spraying and a resin layer which reinforces said metal layer comprising:

making a primary mold having a surface pattern which is a positive pattern of the surface of the finished molded composition;

applying a first mold release agent on the surface of the primary mold;

spraying a low melting point metal onto the primary mold surface to make a low melting point sprayed metal layer;

reinforcing the low melting point sprayed metal layer to make a secondary mold comprising the low melting point sprayed metal layer and the reinforcing substance;

releasing from the primary mold the secondary mold having the negative surface pattern of the primary mold on the low melting point metal;

applying a mold-releasing treatment on the surface of the secondary mold, wherein the mold-releasing treatment involves the application of a second mold release agent containing inorganic particles having an average particle diameter of from 0.05 to 20 μm on the surface of the secondary mold;

spraying a high melting point metal having a melting point of 1,000° C. or higher onto the secondary mold surface;

applying a reinforcing resin layer to the high melting point sprayed metal layer;

hardening said resin layer; and

releasing the finished molded composition consisting essentially of the high melting point sprayed metal layer and the reinforcing resin layer from the secondary mold.

5,296,179

METHOD AND APPARATUS FOR MONITORING INJECTION PRESSURE

Masao Kamiguchi, and Noriaki Neko, both of Oshino, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

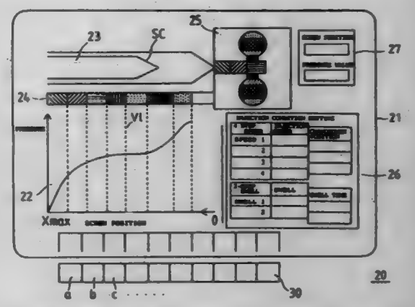
PCT No. PCT/JP92/00431, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/18317, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 7, 1992, Ser. No. 952,528

Claims priority, application Japan, Apr. 9, 1991, 3-103379

Int. Cl.[5] B29C *45/76*

U.S. Cl. 264—40.1 **7 Claims**



1. A method of monitoring injection pressure applicable to an injection molding machine having a screw adapted to be propelled to fill a resin into a cavity of a mold, said method comprising the steps of:

(a) storing in advance cavity data of said mold;

(b) displaying, based on said cavity data, a configuration of said cavity and divided regions obtained by dividing said cavity into a plurality of regions in a cavity display section provided on a display screen;

(c) detecting a screw position by a screw position detecting means while detecting an injection pressure at said screw position by a pressure detecting means;

(d) displaying in a graph a relationship between detected screw position and injection pressure in a pressure waveform display section provided on said display screen; and

(e) displaying a screw position region corresponding to said divided regions of said cavity being filled with the resin in

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a screw position region display section provided on said display screen, in comparison with a coordinate representing said screw position being displayed in said pressure waveform display section.

7. An apparatus for monitoring injection pressure, comprising:

a screw for propelling a resin into a mold;

a screw position detection means for detecting a position of said screw;

an injection pressure detection means for detecting an injection pressure of the resin produced by said screw;

a numerical control means for numerically controlling said screw;

a cavity data storage unit which in advance stores the cavity data of said mold; and

a cavity display section for displaying a configuration of said cavity and divided regions of the cavity defining said cavity into a plurality of regions based on said cavity data;

a pressure wave form display section for displaying in a graph a relationship between the screw position detected by said screw position detection means and the injection pressure detected by said pressure detection means; and

a screw position region display section for displaying a region of a screw position corresponding to divided regions being filled with the resin in comparison with a coordinate representing a screw position in said pressure waveform display section.

5,296,180

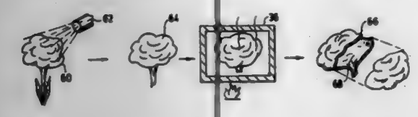
CERAMIC PROCESS

Kevin G. Hayes, Dansville, and Peter A. Roberts, Alfred, both of N.Y., assignors to PolyCeramics, Inc., Alfred, N.Y.

Filed May 11, 1992, Ser. No. 881,056

Int. Cl.[5] C04B *38/06*

U.S. Cl. 264—44 **7 Claims**



1. A process for preparing a porous ceramic material, comprising the steps of:

(a) providing a carbonaceous solid substrate which, when subjected to a temperature of 1,100 degrees Fahrenheit, will vaporize;

(b) providing a coating composition comprised of water, gluten, and ceramic material, wherein said coating is comprised of at least about 60 weight percent of said ceramic material and from about 1 to about 40 weight percent of gluten, by combined weight of ceramic material and gluten, and from about 5 to about 95 weight percent of water, by combined weight of water, ceramic material, and gluten, wherein at least about 70 weight percent of the particles of said ceramic material are within the range of from about 7 to about 20 microns and at least about 15 weight percent of the ceramic particles are less than about 7 microns;

(c) applying said coating composition to said substrate so that a film is formed on such substrate, thereby forming a coated substrate;

(d) drying said coated substrate so that it contains less than about 0.5 weight percent of water, thereby producing a dried coated substrate; and

(e) heating said dried coated substrate to a temperature of from about 1,100 to about 3,200 degrees Fahrenheit until a fired body with a porosity of from about 5 to about 70 volume percent is obtained.

5,296,181

PROCESS FOR THE PRODUCTION OF COMPOSITE BODIES HAVING ENHANCED BONDING BETWEEN LAYERS OF THE COMPOSITE BODIES THUS OBTAINED

Alfred Neuhaus; Bruno Luckas, and Gézar Avar, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 943,251

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1991, 4131203

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.4 **5 Claims**

1. In a process for the production of composite bodies of polyurethane foam and a covering layer, comprising at least partly lining the inside of a mold with a covering layer, and filling the mold with a reaction mixture which reacts to form a polyurethane foam, wherein the improvement comprises using a reaction mixture containing

(a) a polyisocyanate component consisting of at least one aromatic polyisocyanate,

(b) a reactive component consisting of at least one organic compound having at least two isocyanate reactive groups,

(c) blowing agents, and

(d) from 0.1% to 15% by weight, based on the weight of component b), of salts containing water of crystallization, while maintaining an isocyanate index of from 75 to 1500, thereby forming a polyurethane foam having improved adherence to said covering layer relative to a polyurethane foam produced from a reaction mixture containing no salts having water of crystallization.

5,296,182

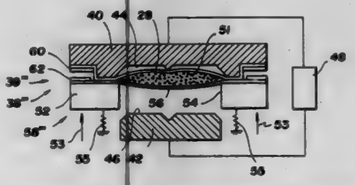
METHOD FOR MAKING FORMED LAMINATE

Christian Thary, Farmington Hills, Mich., assignor to Creme Art Corporation, Walled Lake, Mich.

Filed May 28, 1992, Ser. No. 890,530

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—46.5 **10 Claims**



1. A method for making a formed laminate, comprising:

positioning a flexible sheet and a film in a vertically spaced relationship to each other;

providing a foamable liquid mixture for reaction and expansion between the flexible sheet and the film to provide a foam which subsequently cures but which, after substantial completion of the expansion and before substantial curing has taken place, has a transitory state when the liquid mixture is viscous and defines cells enclosing gas generated during the expansion stage of the reaction; and

providing relative movement of first and second contoured mold surfaces toward each other from above and below the flexible sheet and film to compress the flexible sheet and film as well as the foam therebetween during the foam reaction while the foam is in said transitory state to form the flexible sheet and provide a collapsed foam layer that is bonded to the flexible sheet as the formed laminate.

5,296,183

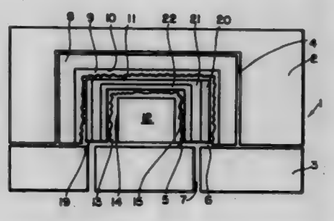
METHOD FOR COMOLDING PROPERTY ENHANCING COATINGS TO COMPOSITE ARTICLES

John W. Carbone, Middletown, and Douglas M. Hoon, Guilford, both of Conn., assignors to Dow-United Technologies Composite Products, Inc., Wallingford, Conn.

Filed Aug. 21, 1992, Ser. No. 933,371

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—131 **12 Claims**



1. A method for comolding a property enhancing coating and a polymer composite part comprising:

providing a mold having a mold cavity,

providing a removable carrier substrate having a desired shape,

applying a coating material to a surface of the carrier substrate,

distributing metallic or ceramic particles over the coating material to produce an irregular bonding surface,

loading the coated carrier substrate into the mold cavity,

placing a fiber preform composed of one or more fiber layers within the mold,

injecting flowable polymer into the mold such that the polymer fills the mold cavity and infiltrates the fiber preform and the irregular bonding surface and,

solidifying the polymer to form the part and lock the coating to the part.

5,296,184

METHOD OF MAKING AN ULTRA SOFT CLOTH-LIKE EMBOSSED PLASTIC FILM HAVING POST-EMBOSSED STRETCHED AREAS

Pai-Chuan Wu, Cincinnati, Ohio; Thomas R. Ryle, Burlington, Ky.; Robert M. Mortellite, Hamilton, Ohio, and John D. Toppen, Loveland, Ohio, assignors to Clopay Plastic Products Company, Inc., Cincinnati, Ohio

Division of Ser. No. 821,342, Jan. 13, 1992, Pat. No. 5,202,173, which is a continuation of Ser. No. 478,935, Feb. 12, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 967,750

Int. Cl.[5] B29C *55/18*

U.S. Cl. 264—154 **10 Claims**



1. A method of making an ultra soft cloth-like embossed plastic film comprising:

introducing a plastic film having a pattern embossed therein into a nip of rollers for incrementally machine stretching said film, said embossed film in a normal unstretched state having thick and thin areas,

stretching said film in a diagonal machine direction, a cross machine direction or a machine direction along lines at a plurality of regular intervals across the film width and length thereby stretching said thin areas of said embossed plastic film preferentially to said thick areas due to lower resistance to the stretching force to provide said embossed film with stretched areas on both film sides separated by unstretched areas of said film to produce a ratio of the width of the stretched areas to the width of the unstretched areas thereby resulting in an ultra soft, clothlike quiet film.

5,296,185

METHOD FOR SPINNING A POLYBENZAZOLE FIBER

Chieh-Chun Chau; Timothy L. Foley; Michael E. Mills, all of Midland, Mich.; Masaru Nakagawa, Obtsu City, Japan; Timothy J. Reig; Myrna Serrano, both of Midland, Mich.; Ravi Shanker, Missouri City, Tex.; George J. Quarderer, Jr., Midland, Mich., and Yoshihiko Teramoto, Obtsu City, Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1992, Ser. No. 985,079

Int. Cl.[5] D01D *5/04, 10/02, 10/06;* D01F *6/26*

U.S. Cl. 264—205 **19 Claims**

1. A process to spin a fiber from a liquid-crystalline dope that contains a solvent polyphosphoric acid and a lyotropic polybenzazole polymer which is polybenzoxazole, polybenzothiazole or a copolymer thereof, said process comprising the steps of:

(1) spinning the dope through a spinneret that contains: (1) two faces and (2) a plurality of holes through which the dope may pass from one face to the other, wherein:

(a) each hole contains an inlet by which dope enters the hole, a capillary section, and an exit by which dope leaves the hole, and

(b) the entry to the capillary section and the diameter of the capillary section are selected to spin on average at least about 10 km of finished filament, with no more than about one break per 10 km of filament spun;

whereby a plurality of dope filaments is formed; and

(2) drawing the dope filaments across a draw zone with a spin-draw ratio of at least about 20; and

(3) in any order (a) washing a major part of the polyphosphoric acid from the filaments, (b) drying the washed filaments and (c) taking up the filaments at a speed of at least 150 meters per minute whereby filaments that have an average diameter of no more than about 18 μm per filament are formed with on average no more than about one break per 10 km of filament.

5,296,186

PROCESS FOR PRODUCING MOLDED PRODUCTS OF PROPYLENE RESIN

Yoshihiro Sobajima; Masahide Hamaura, and Itsushi Imamura, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,377

Claims priority, application Japan, Feb. 13, 1992, 4-026930

Int. Cl.[5] B29B *7/48;* B29C *45/03*

U.S. Cl. 264—211.23 **17 Claims**

1. A process for producing a molded product of propylene resin which comprises melting and kneading at least a part of the following component (a), adding to the resulting melt the following component (b) or the component (b) and the remainder of the component (a) and kneading the resulting mixture to prepare a resin composition having a melt flow rate of 1 to 100 g/10 min, and then molding the resin composition into a molded product in which the breakage rate of the component (b) is 30% by weight or less:

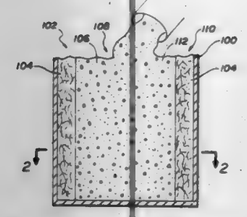
(a) 100 parts by weight of a crystalline propylene polymer having a melt flow rate of 1 to 300 g/10 min, and

(b) 3 to 80 parts by weight of a filler in the form of hollow particles having a mean particle density (true density) of 0.1 to 0.9 g/cm^3, as measured according to ASTM-D2840, a mean particle diameter of 7 to 100 μm and a 10%-by-

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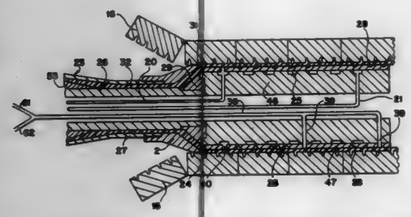
weight breakage pressure resistance of 100 kg/cm^2 or more, as measured according to ASTM-D3102.

5,296,187
METHODS FOR MANUFACTURING COLUMNAR STRUCTURES
Lloyd E. Hackman, Worthington, Ohio, assignor to Ribbon Technology, Corp., Gahanna, Ohio
Filed Mar. 23, 1993, Ser. No. 35,947
Int. Cl.^{5} B28B *1/00*
U.S. Cl. 264—257 **6 Claims**



1. A method for manufacturing a reinforced cementitious columnar structure comprising:
providing a mold having a cavity which corresponds to a shape and size of said columnar structure;
placing at least one nonwoven metal fiber mat into said cavity around a periphery thereof so as to form a core volume internally of said mat;
introducing a slurry of cementitious material containing a predetermined amount of aggregate having a particle size greater than a size of interstitial voids of said fiber mat into said core volume, said aggregate and said cementitious material filling said core volume and said cementitious material infiltrating and encapsulating said fiber mat, and said aggregate remaining within said core volume;
curing said slurry of cementitious material to form said reinforced cementitious columnar structure; and
separating said mold from said reinforced cementitious columnar structure.

5,296,188
METHODS FOR FORMING TUBING UTILIZING SUCTION AND PNEUMATIC PRESSURE AT THE SURFACE OF THE COOLING PLUG
Manfred A. A. Lupke, Concord, Canada, assignor to Corma, Inc., Concord, Canada
Continuation-in-part of Ser. No. 793,332, Jan. 14, 1992, abandoned. This application Sep. 10, 1992, Ser. No. 942,774
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.^{5} B29C *47/90*
U.S. Cl. 264—508 **10 Claims**



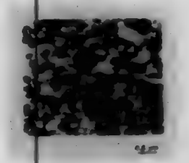
1. A method for forming a seamless thermoplastic tube, comprising:
extruding a tubular parison of heated thermoplastic into a tubular mold;
shaping the parison by passing it about the outer surface of a core plug which is disposed within the mold;
applying suction to an inner wall of the shaped tube at least one suction port in communication with fluid communication channels and a suction branch channel to provide suction of diminishing strength upstream of the port and, in intervals when an enlarged diameter is required, alternatively applying pressure through the fluid communication channels and a pressure branch channel.

5,296,189
METHOD FOR PRODUCING METAL POWDER WITH A UNIFORM DISTRIBUTION OF DISPERSANTS, METHOD OF USES THEREOF AND STRUCTURES FABRICATED THEREWITH
Sung K. Kang, Chappaqua; Sampath Purushothaman, Yorktown Heights; John J. Ritsko, Mount Kisco, all of N.Y.; Jane M. Shaw, Ridgefield, Conn., and Subhash L. Shinde, Croton-on-Hudson, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1992, Ser. No. 874,901
Int. Cl.^{5} B22F *7/00*
U.S. Cl. 419—9 **28 Claims**



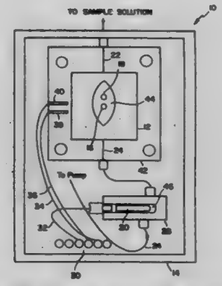
1. A method of forming a powder of particles containing a substantially uniform distribution of an additive therein comprising:
providing a first powder of particles;
providing a second powder of said additive particles;
ball milling an admixture of said first powder and said second powder to provide ball milled particles;
jet impact milling said ball milled admixtures to form said powder of said particles containing said substantially uniform distribution of said additive therein.

5,296,190
METALLURGICAL PRODUCTS IMPROVED BY DEFORMATION PROCESSING
M. K. Premkumar, Monroeville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Division of Ser. No. 542,460, Jun. 22, 1990, Pat. No. 5,154,780.
This application Oct. 13, 1992, Ser. No. 959,889
Int. Cl.^{5} C22C *21/00*
U.S. Cl. 420—550 **9 Claims**



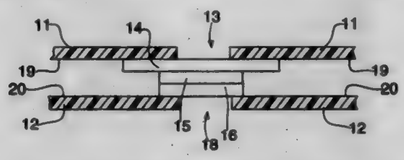
1. Aluminum alloy having a shear strength greater than 100 MPa at 300° C. and a formability greater than 0.9 true strain, as measured at room temperature (22° C.) with a strain rate of 8.7 sec^{-1}.

5,296,191
METHOD AND APPARATUS FOR CONDUCTING ELECTROCHEMILUMINESCENT MEASUREMENTS
Lee O. Hall, Gaithersburg; Glenn Zoski, Rockville, and Surendera K. Tyagi, Gaithersburg, all of Md., assignors to IGEN, Inc., Rockville, Md.
Division of Ser. No. 744,890, Aug. 14, 1991, Pat. No. 5,247,243, which is a continuation of Ser. No. 325,459, Mar. 17, 1989, Pat. No. 5,068,088, which is a continuation-in-part of Ser. No. 267,234, Nov. 3, 1988, Pat. No. 5,061,445. This application May 4, 1993, Ser. No. 57,682
Int. Cl.^{5} G01N *21/76, 27/00*
U.S. Cl. 422—52 **17 Claims**



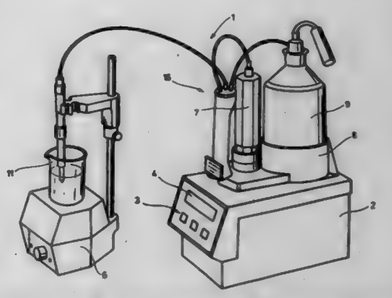
6. An apparatus for measuring electrochemiluminescent phenomena of a sample, comprising:
(a) cell means for holding the sample;
(b) voltage control means, including a working electrode, a counter electrode, and a reference electrode, said working electrode being located within said cell means so as to be exposable to said sample for triggering electrochemiluminescence therein, said reference electrode being located so as to sense the voltage substantially adjacent said working electrode, and said voltage control means being adapted to apply a controlled voltage waveform at said reference electrode with respect to said working electrode, said controlled voltage waveform being substantially sinusoidal in shape in the voltage range for which electrochemiluminescence is triggered; and
(c) radiation detection means for detecting electrochemiluminescent radiation from said sample.

5,296,192
DIAGNOSTIC TEST STRIP
Patrick J. Carroll, Ft. Lauderdale, and Robin A. Wiscovitch, Coral Springs, both of Fla., assignors to Home Diagnostics, Inc., Eatontown, N.J.
Filed Apr. 3, 1992, Ser. No. 862,733
Int. Cl.^{5} G01N *21/00*
U.S. Cl. 422—56 **8 Claims**



1. A test strip device for measuring an analyte in a liquid sample consisting essentially of relative to a horizontal plane,
a) a top support layer which provides support to the test strip device, such layer having a sample receiving port therein,
b) a spreading screen physically attached to said top layer and located directly below said sample receiving port whereby sample applied at said port encounters said screen, wherein said screen has mesh openings sufficient in size
i) to act as a retaining screen for said sample until substantially all of such screen in said port has been contacted with said sample, and
ii) to allow the sample to proceed vertically through the screen in a uniform flow,
c) a screen mesh separating layer adjacent to and in contact spreading screen in vertical alignment with said sample port, said layer having fixed thereon an agent capable of capturing red blood cells,
d) a reaction membrane having a surface which is in direct physical contact with said separation layer, said reaction membrane
i) being capable of excluding red blood cells from a liquid sample containing the same, and
ii) having reactants and an indicator system incorporated within its matrix capable of reacting with the analyte of interest in the sample and causing a color change at the reaction membrane which is a measure of the presence or amount of analyte in the sample, and
e) a bottom support layer in physical contact with said reaction membrane and which provides support to the test strip device, said layer having a reaction viewing opening in vertical alignment with the sample receiving port.

5,296,193
COMBINED TITRATION APPARATUS
Hubert Reger, Tübingen-Pfrondorf, and Günther Zimmermann, Filderstadt, both of Fed. Rep. of Germany, assignors to Deutsche Metrohm Gesellschaft mit beschrankter Haftung & Co. elektronische Messgeräte, Filderstadt, Fed. Rep. of Germany
Filed Jul. 20, 1993, Ser. No. 95,120
Claims priority, application European Pat. Off., Apr. 7, 1993, 93105733.5
Int. Cl.^{5} C01N *27/49*
U.S. Cl. 422—75 **14 Claims**

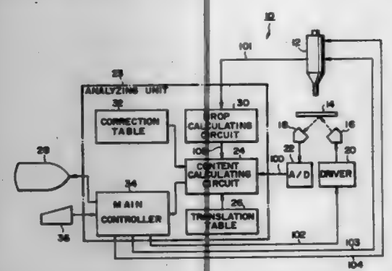


1. Volumetrically and coulometrically operating titration apparatus comprising:
a basic apparatus including control and actuation means for volumetrically metering of a reagent and for control of a coulometric filtration;
a separate volumetric metering unit adapted to be detachably connected with the basic apparatus for effecting volumetric titration, the basic apparatus having mechanical connection elements for connecting the metering unit with an actuation device of the control and actuation means; and
a separate coulometric titration cell adapted to be detachably connected with the basic apparatus for effecting

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coulometric titration and controllable by the control and actuation means of the basic apparatus.

5,296,194
BLOOD ANALYZING SYSTEM
Kenichi Igarashi, Tatebayashi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jan. 23, 1992, Ser. No. 824,146
Claims priority, application Japan, Feb. 1, 1991, 3-012118
Int. Cl.[5] G01N *1/14, 21/78*
U.S. Cl. 422—82.05 **8 Claims**



1. A blood analyzing system for analyzing the level of content of a component of a blood sample dropped onto a test slide, comprising:

(a) a pipet unit for dropping the blood sample the blood sample having a predetermined desired dropped volume, said pipet unit including a pump having a cylinder and a piston;

(b) a stroke meter for measuring the stroke of said piston and for outputting a stroke signal indicating a measured volume of the dropped blood sample, said stroke meter provided in said pipet unit wherein said pipet unit includes a motor for generating power to reciprocate said piston in said cylinder, a gear coupled to a rotary shaft of said motor, and a piston actuator for converting rotary motion of an output shaft of said gear into a rectilinear motion to reciprocate said piston, said piston actuator including a rotor coupled to said output shaft of said gear, a feed screw whose one end is coupled to said piston, and a rotation preventing member for allowing only the reciprocation of said feed screw while preventing the rotation thereof, said rotor being threadably engaged with the other end of said feed screw, said rotor being rotated by said output shaft to reciprocate said screw, said stroke meter determining the volume of the dropped blood sample based on the rotative amount of said rotor, said stroke meter including a slit disc rotatable with said rotor, and a photointerrupter for emitting light from one side of said slit disc and receiving the light from another side of said slit disc, said slit disc and said photo-interrupter comprising a rotation detector for determining rotor rotation indicative of a stroke of said piston;

(c) a drop calculating circuit for receiving the stroke signal, calculating the volume of the dropped blood sample, and outputting a signal indicating the measured volume of the dropped blood sample;

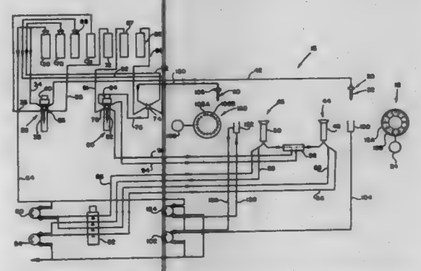
(d) a light source for irradiating light to the test slide holding the dropped blood sample;

(e) an optical sensor for receiving the light reflected from the test slide and outputting a received light signal;

(f) a content calculating circuit for receiving the signal indicating the measured volume of the dropped blood sample, and determining the level of content of the component of the blood sample, the analyzing system further including error determining means for determining an error between the desired and the measured dropped volumes, correction value obtaining means for obtaining a correction value from a correction table based on the determined error and correcting means for correcting the determined content level based on the obtained correction value; and

(g) a backlash preventing means for supplying a bias force to said feed screw from said rotor, said backlash preventing means enabling reliable determination of the rotative amount of said rotor.

5,296,195
AUTOMATIC IMMUNOCHEMISTRY ANALYZING APPARATUS AND METHOD
Wings S. Pang, West Covina; Peter Kan, Fullerton, and George K. Shibata, Chino, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Division of Ser. No. 512,036, Apr. 30, 1990, Pat. No. 5,162,236.
This application Oct. 2, 1992, Ser. No. 956,049
Int. Cl.[5] G01N *21/47, 33/00*
U.S. Cl. 422—82.05 **24 Claims**



1. A system for analyzing a reaction between reagents, comprising:

a reaction cuvette for containing the reagents during the reaction;

first reagent delivery means for delivering a first reagent to said reaction cuvette;

second reagent delivery means for delivering a second reagent to said reaction cuvette;

means for sensing the temperature of the reaction cuvette with first temperature sensor means and including means for selectively heating or cooling the cuvette to maintain the temperature in a predetermined temperature range, the reaction cuvette being for containing the reagents during the reaction;

means for sensing the temperature of reagents with second temperature sensor means, the reagents being delivered by a reagent delivery means for injecting at least one reagent into the reaction cuvette, and means for selectively increasing or decreasing the temperature of the reagents independently of said cuvette to maintain the temperature of the reagent in a predetermined temperature range; and

means for analyzing the reaction between the reagents by processing the light scattered from the reaction in the reaction cuvette.

5,296,196
SEMICONDUCTOR HYDROCARBON SENSOR
Shinichi Takeshima, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jan. 22, 1992, Ser. No. 823,720
Claims priority, application Japan, Feb. 4, 1991, 3-033365
Int. Cl.[5] G01N *27/00*
U.S. Cl. 422—98 **10 Claims**

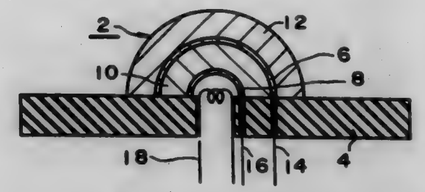
1. A semiconductor hydrocarbon sensor comprising:

an oxide semiconductor having an outside surface and an inside surface;

an outer electrode provided on at least a portion of the outside surface of the oxide semiconductor;

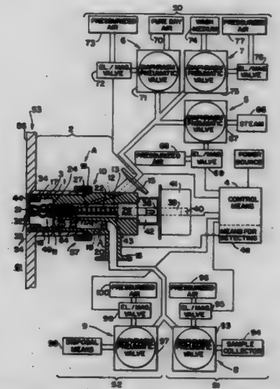
an inner electrode provided on at least a portion of the inside surface of the oxide semiconductor; and

a zeolite layer constructed of a porous zeolite carrying at least one metal selected from the group consisting of platinum and copper formed discretely from said oxide semiconductor and provided on the portion of the outside semiconductor and provided on the portion of the outside surface of the oxide semiconductor on which the outer electrode is provided so as to cover the outer electrode,



wherein small molecular weight hydrocarbons having five or less carbon atoms enter the pores of the zeolite and are oxidized by the metal carried therein so that the small molecular weight hydrocarbons are substantially absorbed in the zeolite layer before reaching the oxide semiconductor and large molecular weight hydrocarbons having six or more carbon atoms pass through paths formed between the grain boundaries of the zeolite layer to reach the oxide semiconductor.

5,296,197
AUTOMATED SAMPLE EXTRACTOR OR FEEDER/INOCULATOR FOR BIOREACTORS AND SIMILAR EQUIPMENT
Douglas A. Newberg, Annapolis; Vjekoslav Pavlin, Adelphi; Richard R. Newberg, Royal Oak, and Jackson C. S. Yang, Silver Spring, all of Md., assignors to NL Technologies, Limited, Annapolis and University of Maryland at College Park, College Park, both of Md.
Filed Jul. 9, 1992, Ser. No. 911,052
Int. Cl.[5] G01N *1/04;* **F16K** *31/44, 51/00*
U.S. Cl. 422—103 **21 Claims**



1. An apparatus for moving a sample of a flowable material through a port in a wall of a vessel or conduit comprising:

a body having an end wall and an internal cavity communicable with an orifice formed in said end wall, said body having a generally centrally disposed longitudinal axis extending therethrough;

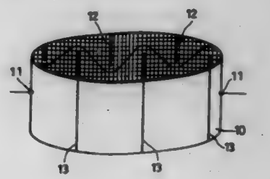
a bellows positioned within said internal cavity, said bellows having a tubular body and a sealing tip cooperable with said orifice for opening and closing said orifice, said tubular body being spaced from interior surfaces of said internal cavity to define a sample cavity between said tubular body and said interior surfaces, said sample cavity being communicable with said orifice;

a valve operating rod extending within said body for reciprocating the sealing tip of the bellows to thereby open and close the orifice;

a drain passage formed within said body, said drain passage communicating at one end with said sample cavity and extending away from said orifice, the drain passage having a longitudinal axis which is nonparallel, nonperpendicular and offset from the longitudinal axis of the body; and

an inlet passage formed within said body, said inlet passage communicating at one end with said sample cavity and extending away from said orifice, the inlet passage having a longitudinal axis, a plane passing through the longitudinal axis of the drain passage and the longitudinal axis of the body being nonparallel, nonperpendicular and offset from the longitudinal axis of the inlet passage.

5,296,198
HEATER AND CATALYTIC CONVERTER
Fumio Abe, Handa, and Keiji Noda, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Sep. 24, 1991, Ser. No. 765,059
Claims priority, application Japan, Nov. 9, 1990, 2-305430; Nov. 9, 1990, 2-305431
Int. Cl.[5] B01D *50/00, 53/34*
U.S. Cl. 422—180 **7 Claims**



4. A heater comprising:

a honeycomb structure having a plurality of passages;

an adsorbent-catalyst composition coated on the honeycomb structure, said adsorbent-catalyst composition comprising an adsorbent mainly composed of high-silica zeolite and catalyst component supported on the adsorbent, said high-silica zeolite having a Si/Al ratio of not less than 40; and

at least two electrodes fixed to the honeycomb structure for electrification of the honeycomb structure, whereby a gas flowing through the passages of the honeycomb structure is heated.

5,296,199
HEAT EXCHANGER IN AN HF ALKYLATION APPARATUS
Tai W. Kwok, and Scott D. Love, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 521,876, May 11, 1990, abandoned.
This application Apr. 13, 1992, Ser. No. 870,203
The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.
Int. Cl.[5] B01J *10/00, 19/00*
U.S. Cl. 422—187 **2 Claims**

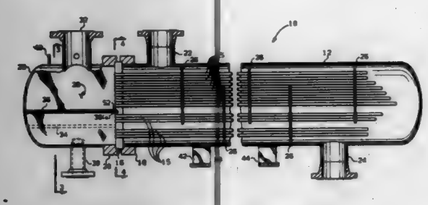
1. In an HF alkylation process system of the type having

a settler vessel having an upper end portion, a lower end position, and a medial portion;

a riser-reactor having an upper end portion, a lower end portion, and a medial portion;

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a catalyst cooler having an inlet means and an outlet means, with the outlet means thereof in fluid flow communication with the lower end portion of said riser-reactor;
a first conduit in fluid flow communication between the lower end portion of said settler vessel and said inlet means of said catalyst cooler;
a second conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the medial portion of said settler vessel and the second end portion thereof in fluid flow communication with the upper end portion of said riser-reactor;
an acid rerun column having an upper end portion, a lower end portion and a medial portion, with the upper end portion thereof in fluid flow communication with the medial portion of said settler vessel;
a third conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the outlet means of said catalyst cooler;
a pump having an inlet end and an outlet end, with the inlet end thereof in fluid flow communication with the second end portion of said third conduit;
a fourth conduit having a first end portion and a second end portion, with the first end portion thereof in fluid flow communication with the outlet end of said pump; and
a fifth conduit having a first end portion and a second end portion, with second end portion thereof in fluid flow communication with the medial portion of said acid rerun column;
the improvement which comprises:



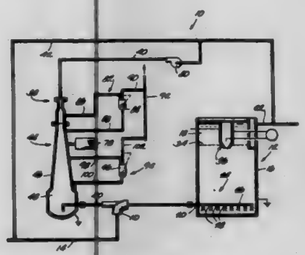
a shell-and-tube heat exchanger comprising;
a shell having an open first end portion and a closed second end portion;
a first tube sheet securable to the open first end portion of said shell and having a first face and a second face and a plurality of apertures communicating between said first and second faces;
a plurality of U-shaped tubes having opposite open ends and operatively connected to said first tube sheet and extending away from the second face of said first tube sheet with the open ends of said U-shaped tubes in fluid flow communication with the first face of said first tube sheet via corresponding said apertures;
a vertical partition groove formed in the first face of said tube sheet in the center thereof thereby forming symmetrical halves of the first face of said first tube sheet disposed on either side of said vertical partition groove whereby the opposite open ends of each of said U-shaped tubes communicate with the corresponding symmetrical halves of the first face of said first tube sheet;
at least one horizontal partition groove formed in the first face of said first tube sheet extending from said vertical partition groove to an outside edge of said first tube sheet, positioned to divide the first face of said first tube sheet into asymmetrical portions;
a bonnet head having an inlet, an outlet, an open first end portion and a closed second end portion and securable at the open first end portion thereof to said first tube sheet and the open first end portion of said shell;
a vertical partition formed within said bonnet head in the center thereof thereby forming symmetrical chambers within said bonnet head on either side of said vertical partition, said vertical partition being sized and shaped to be closely received within said vertical partition groove when said bonnet head is secured to said first tube sheet and said shell;
at least one horizontal partition formed within said bonnet head extending between said vertical partition and said bonnet head thereby dividing one of said symmetrical chambers within said bonnet head to form additional chambers having unequal numbers of tubes per pass, said at least one horizontal partition being sized and shaped to be closely received within a corresponding at least one said horizontal partition grooves when said bonnet head is secured to said first tube sheet and said shell;
means operatively related to said shell and said bonnet head for mutually securing the open first end portion of said bonnet head, said first tube sheet and the open first end portion of said shell together;
inlet means in fluid flow communication between one of said additional chambers in said bonnet head and the second end portion of said fourth conduit; and
an outlet means in fluid flow communication between another of said additional chambers in said bonnet head and the first end portion of said fifth conduit.

5,296,200

APPARATUS FOR VENTING EXCESS GAS BUBBLES FROM A BUBBLE CONTACTOR

Peter J. Petit, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Nov. 6, 1992, Ser. No. 973,087
Int. Cl.[5] B01J *10/00*
U.S. Cl. 422—189 **7 Claims**



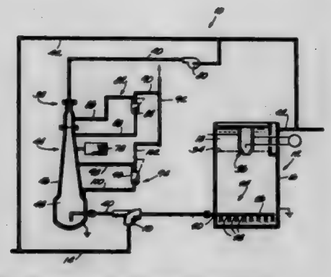
1. A liquid treatment apparatus comprising
a reactor,
a conduit connected to said reactor for delivering liquid to the reactor,
means for dissolving gas in the liquid, said means for dissolving gas including a bubble contactor disposed in said conduit, said bubble contactor defining a chamber having a lower chamber section, and an intermediate chamber section diverging downwardly into said lower chamber section, said intermediate chamber section including a bubble contact zone, said bubble contact zone having a lower level, and
valve means connected to said bubble contactor for venting excessive accumulations of gas bubbles that extend below the bubble contact zone and into the lower chamber section, said valve means including means for sensing the existence of undissolved gas in the lower chamber section, and means for selectively venting said lower chamber section responsive to the means for sensing the existence of the undissolved gas in the lower chamber section, said means for selectively venting including a float-operated valve communicating with said intermediate chamber section at a level below the lower level of the bubble contact zone and with said lower chamber section, said float-operated valve being positioned above said lower chamber section, and said means for sensing including the float for said float-operated valve, said float being operable to open said float operated valve when undissolved gas exists in said lower chamber section.

5,296,201

APPARATUS FOR VENTING A PRESSURIZED BUBBLE CONTACTOR

Peter J. Petit, Brookfield, Wis., assignor to Envirex Inc., Waukesha, Wis.

Filed Nov. 6, 1992, Ser. No. 973,164
Int. Cl.[5] B01J *10/00*
U.S. Cl. 422—189 **15 Claims**



1. A liquid treatment apparatus comprising
a reactor,
a conduit connected to said reactor for delivering liquid to the reactor,
means for dissolving gas in the liquid, said means for dissolving gas including a bubble contactor disposed in said conduit, said bubble contactor defining a chamber having a bubble contact zone,
means for preventing formation of a gas space in said chamber, said means for preventing formation of a gas space including a vent assembly connected to said bubble contactor, said vent assembly including means for sensing the existence of the gas space in said chamber and above said bubble contact zone, and means or venting the chamber upon detection of the gas space.

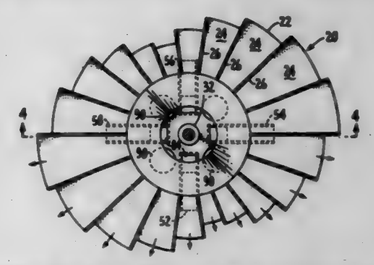
5,296,202

APPARATUS FOR UNIFORMLY LOADING PARTICULATE MATERIAL INTO CYLINDRICAL BEDS

Steven A. Souers, Port Neches, Tex., and Bruce E. Powell, Kensington, Calif., assignors to Chevron Research and Technology Co., San Francisco, Calif.

Continuation of Ser. No. 581,872, Sep. 13, 1990, abandoned, which is a continuation of Ser. No. 428,405, Oct. 27, 1989, Pat. No. 4,972,884, which is a continuation of Ser. No. 215,595, May 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 4,316, Jan. 10, 1987, abandoned, which is a continuation of Ser. No. 675,154, Dec. 7, 1984, abandoned. This application May 18, 1993, Ser. No. 62,722
Int. Cl.[5] B01J *8/18*
U.S. Cl. 422—219 **9 Claims**

1. A catalyst loading apparatus for uniformly distributing catalyst particles radially across a large diameter bed in a reactor vessel, said apparatus comprising:
means for supporting said apparatus in substantially the center of a reactor vessel and for receiving catalyst particles;
hopper means to supply catalyst particles into feed tube means having an outlet with a discharge opening extending generally centrally into the reactor vessel;
a disk member mounted below said hopper to receive catalyst from the hopper and mounted so as to provide a distribution surface within the reactor vessel below the outlet of said feed tube means, said distribution surface of the disk member having a multiplicity of vanes which divide the distribution surface into radially extending sectors, each of said sectors having an area determined by its radial length proportional to the outer radius of an associated annular area on a bed of catalyst in the reactor vessel and by its included circumferential angel proportional to the width of said associated annular area, each of said sectors having an area differing from its adjacent sectors, each of said sectors being separated form the adjacent sectors by a vane on each side of each of said sectors said vanes having substantially equal axial height above said distribution surface, each of said vanes extending radially from a common vertex at a rotational center



of said disk member beginning at substantially the same radial distance form said vertex, said vanes on each side of a sector which defines an included sector and the area of the included sector forming a volume proportional to the volume of catalyst delivered to said associated annular area on said bed, each adjacent sector of said distribution surface having a different radial length so that particles distributed from said multiplicity of sectors during rotation of said distribution surface at substantially constant speed simultaneously form a multiplicity of concentric annular rings of particles across the diameter of the vessel;
at least one central opening in said disk member for covering a central area of the surface of said catalyst bed; and
drive means for rotating said disk member about said rotational center.

5,296,203

RECOVERY OF NIOBIUM FROM IRRADIATED TARGETS

Dennis R. Phillips; David J. Jamriska, Sr., and Virginia T. Hamilton, all of Los Alamos, assignors to The United States of America as represented by United States Department of Energy, Washington, D.C.

Division of Ser. No. 860,617, Mar. 30, 1992, Pat. No. 5,190,735. This application Jan. 21, 1993, Ser. No. 6,929
Int. Cl.[5] C01G *17/00*
U.S. Cl. 423—2 **2 Claims**

1. A process for selective separation of niobium from proton irradiated molybdenum targets comprising:
dissolving a proton irradiated molybdenum target in a hydrogen peroxide solution to form a first ion-containing solution;
contacting the first ion-containing solution with a cationic exchange resin whereby ions selected from the group consisting of molybdenum, technetium, selenium, vanadium, zirconium, rubidium, niobium, arsenic and germanium are contained within a second ion-containing solution while ions selected from the group consisting of rubidium, zinc, beryllium, cobalt, iron, manganese#, chromium, strontium, yttrium and zirconium are selectively adsorbed by the cationic exchange resin;
adjusting the pH of the second ion-containing solution to within the range of from about 5.0 to about 6.0;

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contacting the ph-adjusted second ion-containing solution with a dextran-based material for sufficient time whereby niobium is selectively separated by the dextran-based material; and,

recovering the niobium from the dextran-based material.

5,296,204

THALLIUM EXTRACTION PROCESS

Luc Albert, Elancourt, and Hervé Masson, Mareil-Marly, both of France, assignors to Metaleurop S.A., France

Continuation of Ser. No. 650,576, Feb. 4, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 921,415

Claims priority, application France, Feb. 5, 1990, 90 01301

Int. Cl.[5] C01G *15/00*

U.S. Cl. 423—112 8 Claims

1. A process for extracting and recovering thallium from a solution which contains said thallium in the form of salts of strong inorganic acids and salts selected from the group consisting of zinc, cadmium, nickel, cobalt, lead, bismuth and arsenic salts, wherein wherein said solution has a redox potential which is maintained at a reducing level, which process comprises a step of bringing the said solution into contact with an ion exchange resin containing a thiol group.

5,296,205

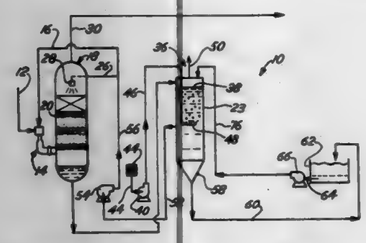
MULTI-BED MASS TRANSFER COLUMN WITH MOBILE PACKING

Leslie C. Hardison, Barrington, Ill., assignor to ARI Technologies, Inc., Palatine, Ill.

Filed Apr. 8, 1991, Ser. No. 682,543

Int. Cl.[5] C01B *17/16*

U.S. Cl. 423—220 16 Claims



1. A packed tower for use in gas-liquid contacting forming solid particulates within the tower, comprising;

at least one loosely packed bed of mobile parking elements disposed in said tower;

at least one packed bed of relatively fixed mobile packing elements disposed in said tower vertically adjacent to said loosely packed bed;

said mobile packing elements in both the loosely packed bed and the relatively fixed packed bed having a density such that the packing elements float in water;

means for flowing gas sequentially through said packed beds; and

means for flowing liquid essentially through said packed beds for intimate contact and mass transfer with said gas.

5,296,206

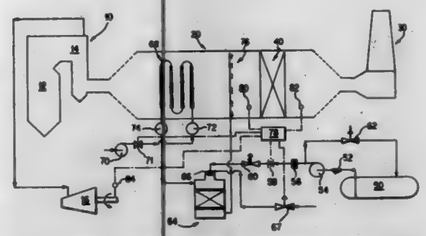
USING FLUE GAS ENERGY TO VAPORIZE AQUEOUS REDUCING AGENT FOR REDUCTION OF NO_x IN FLUE GAS

Soung M. Cho, Parsippany; Andrew H. Seltzer, Livingston, and Scot G. Pritchard, Somerville, all of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jul. 31, 1992, Ser. No. 923,718

Int. Cl.[5] C01B *21/00*; B01J *8/00*

U.S. Cl. 423—235 5 Claims



1. A method of vaporizing aqueous reducing agent for reducing NO_x in flue gas originating in a combustor in which the NO_x is generated, the combustor being part of a combustion system defining a predetermined path along which the flue gas is carried to a vent at a downstream end of the flue gas path, the method comprising the steps of:

providing a source of a reducing agent in aqueous solution, the reducing agent being of a type that is effective to reduce NO_x;

disposing a heat exchanger in the flue gas path so that the flue gas contacts a first functional side of the heat exchanger;

passing a heat transfer medium in contact with a second functional side of the heat exchanger such that the heat transfer medium is heated;

passing the heated medium from the heat exchanger in the flue gas path to a location outside the flue gas path;

using the heated medium to vaporize the said aqueous solution;

injecting the vaporized aqueous solution into said flue gas path; and

allowing the said vaporized solution to reduce NO_x in the flue gas.

5,296,207

COMPOSITE ELEMENT, PROCESS FOR ITS PREPARATION AND ITS USE

Benno Lux, Brentsch-Park 85, CH-7550 Scuol/GR, Switzerland

Filed Aug. 23, 1991, Ser. No. 749,304

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027580

Int. Cl.[5] B01J *3/06*

U.S. Cl. 423—446 18 Claims

1. Composite element having improved heat conductivity, comprising a substrate having a surface layer that enables growth of column-crystalline diamond from the gas phase, and a low pressure diamond layer grown on the substrate, wherein the grown diamond layer is enriched compared to the normal diamond composition in the carbon isotope C^{12} and depleted in the heavier carbon isotopes C^{13} and C^{14} and is composed of column-crystalline diamond.

5,296,208

MOLECULAR SIEVE SYNTHESIS

David A. Leach, Ossining, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Aug. 7, 1992, Ser. No. 925,824

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—700 7 Claims

1. In the process for synthesizing a crystalline microporous molecular sieve which comprises the steps of:

(a) forming in a reactor an aqueous reaction mixture suitable for the hydrothermal production of a crystalline molecular sieve, said reaction mixture containing at least one nitrogen-containing organic templating agent and optionally a supplemental organic base;

(b) establishing a crystallization period by heating and maintaining said reaction mixture at a crystallization temperature of at least 100° C. to from crystals of the molecular sieve product and establish an equilibrium between molecular sieve crystal formation and molecular sieve dissolution; and

(c) recovering the crystallized product from the reaction mixture;

the improvement which comprises forming the reaction mixture of step (a) to contain organic base in excess of the amount to be incorporated within the product molecular sieve crystals, and thereafter removing at least some of said excess organic base during the course of the crystallization period of step (b) whereby the said equilibrium between product formation and product dissolution of the reaction system is shifted in favor of decreased dissolution of molecular sieve product at the existing temperature conditions.

5,296,209

PET CHEW PRODUCT HAVING ORAL CARE PROPERTIES

Alexander J. Simone, Somerset, N.J.; John J. Hefferren, Lawrence, Kans.; Michael S. Hand, Maple Hill, Kans., and Gordon Huber, Sabetha, Kans., assignors to Colgate Palmolive Company, Piscataway, N.J.

Filed Jan. 17, 1992, Ser. No. 822,241

Int. Cl.[5] A61K *7/16, 9/20, 31/715, 7/26*

U.S. Cl. 424—49 6 Claims

1. A composition which is chewable by an animal to remove plaque, tartar and stain from the teeth of the animal, which composition comprises an edible, unbaked, extrudate chew product having a solid, flexible, inert starch based cellular matrix, the matrix having incorporated therein an effective mechanical cleansing amount of a corn cob fraction cellulosic fibrous material having a mechanical cleansing function, the composition when chewed by the animal effecting the removal of plaque, tartar and stain from the teeth of the animal.

5,296,210

STABILIZED SODIUM DITHIONITE

Donald M. Oglesby, Virginia Beach, Va., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 31, 1992, Ser. No. 998,983

Int. Cl.[5] C01B *17/66*

U.S. Cl. 423—275 9 Claims

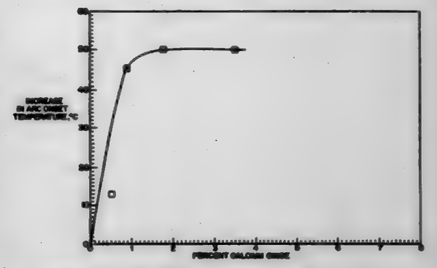
1. A method for stabilizing sodium dithionite comprising mixing with said sodium dithionite from 0.5 percent by weight to 5.0 percent by weight of an additive selected from the group consisting of

a) calcium oxide;

b) barium oxide;

c) a mixture of calcium sulfate and sodium carbonate;

d) a mixture of silica gel and sodium carbonate;



e) a mixture of aluminum oxide and sodium carbonate; and

f) a mixture of calcium oxide and barium oxide.

5,296,211

PRODUCTION OF $Si_{2-x}P_xN_{2+x}(NH)_{1-x}$, WHERE X=0.1 TO 1.0

Hans-Peter Baldus, Burscheid, and Wolfgang Schnick, Bonn, both of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 6, 1993, Ser. No. 1,559

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1992, 4200787

Int. Cl.[5] C01B *21/06*

U.S. Cl. 423—302 2 Claims

1. A compound comprising silicon, nitrogen and phosphorus having the composition $Si_{2-x}P_xN_{2+x}(NH)_{1-x}$, where x is from 0.1–1, wherein said compound has a three-dimensional network in which both the phosphorus and the silicon are tetrahedrally surrounded by nitrogen or (N—H) groups.

5,296,212

METHOD FOR THE REMOVAL OF SULFUR FROM PHOSPHORUS

Arndt Zschalich, Zschernsdorf, and Rudolf Schumann, Ragaba, both of Fed. Rep. of Germany, assignors to Chemie AG Bitterfeld-Wolfen, Bitterfeld, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 871,422

Int. Cl.[5] C01B *25/047*

U.S. Cl. 423—322 9 Claims

1. A method for purifying white phosphorus contaminated with sulfur bound thereto, comprising contacting said contaminated white phosphorus with a wash fluid at a temperature above the melting point of phosphorus for a time sufficient to remove said bound sulfur from said phosphorus, said wash fluid being selected from the group consisting of alkaline liquid aqueous solutions and alkaline vaporized aqueous solutions.

5. A method for purifying white phosphorus contaminated with sulfur bound thereto, comprising contacting said contaminated white phosphorus with a wash fluid at a temperature above the melting point of phosphorus for a time sufficient to remove said bound sulfur from said phosphorus, said wash fluid being steam.

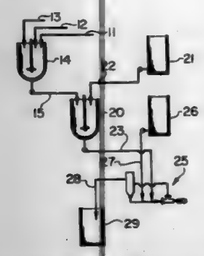
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,213

POLYMERIC ALUMINUM SILICATE-SULPHATE AND PROCESS FOR PRODUCING SAME

Dieter Haase, St. Constant, Canada; Robert M. Christie, Burnham, Great Britain; Carmel Jolicoeur, Deauville, and Denis Pothier, Boisbriand, both of Canada, assignors to Handy Chemicals Limited, La Prairie, Canada

Filed Aug. 13, 1992, Ser. No. 929,023
Int. Cl.[5] C01B *33/26, 7/74, 33/20*
U.S. Cl. 423—326 23 Claims



1. A process for producing a family of stable polynucleate silicate-containing compounds which comprises mixing a silicate into an alkaline reactant to form an alkaline premix and then introducing said alkaline premix into an acidic component under high shear conditions to thereby form a stable polynucleate product containing silicate.

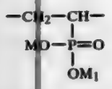
5,296,214

ANTICALCULUS COMPOSITION

Abdul Gaffar, Princeton, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Continuation-in-part of Ser. No. 754,887, Sep. 6, 1991, Pat. No. 5,192,530, and a continuation-in-part of Ser. No. 655,571, Feb. 14, 1991, Pat. No. 5,178,851, and a continuation-in-part of Ser. No. 758,345, Sep. 9, 1991, Pat. No. 5,192,531, and a continuation-in-part of Ser. No. 398,592, Aug. 28, 1989, Pat. No. 5,188,821, and a continuation-in-part of Ser. No. 657,885, Feb. 19, 1991, Pat. No. 5,180,578, said Ser. No. 657,885, is a continuation of Ser. No. 398,605, Aug. 25, 1989, abandoned, Ser. No. 754,887, Aug. 25, 1989, which is a continuation of Ser. No. 398,606, Aug. 25, 1989, abandoned, Ser. No. 655,571, Aug. 25, 1989, which is a continuation of Ser. No. 398,566, Aug. 28, 1989, Pat. No. 5,032,386, Ser. No. 758,345, Aug. 28, 1989, which is a continuation of Ser. No. 399,669, Aug. 25, 1989, abandoned. This application Aug. 4, 1992, Ser. No. 925,363
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] A61K *7/16, 7/15*
U.S. Cl. 424—49 25 Claims

1. An oral composition comprising an effective antiplaque amount of about 0.01%–5% of a substantially water insoluble noncationic antibacterial agent, 0.005%–4% by weight of polyvinyl phosphonate having recurring groups



and average molecular weight of at least about 1,000 wherein M and M_1 are hydrogen alkali metal or ammonium and wherein M and M_1 are the same or different, and an orally acceptable vehicle comprising at least one of a surface-active agent or a flavoring oil effective to enable the said antibacterial agent to dissolve in saliva in effective antiplaque amount, said polyvinyl phosphonate enhancing the antibacterial effect of said antibacterial agent to inhibit plaque formation.

5,296,215

HIGH FOAMING RHEOLOGICALLY STABLE NON-IRRITATING ORAL COMPOSITION

Michael R. Burke, Somerset; Michael Prencipe, East Windsor, and James M. Buchanan, Mercerville, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Jun. 16, 1993, Ser. No. 78,527
Int. Cl.[5] A61K *7/16, 7/18, 7/22*
U.S. Cl. 424—49 6 Claims

1. A substantially non-irritating oral composition of acceptable taste having improved stability to viscosity change on storage, the composition containing a surfactant system comprised of an effective amount of a sodium lauryl sulfoacetate surfactant purified to contain about 18% or less by weight impurities and an alkyl glycoside having the formula RO $(C_6H_{10}O_5)_xH$, wherein R is an aliphatic residue of a C_{12} to C_{22} fatty alcohol and x is an integer from 1 to 20.

5,296,216

PREVENTION AND TREATMENT OF ORAL LESIONS

Robert E. Turner, 421 Marble Dr., Coraopolis, Pa. 15108

Continuation of Ser. No. 423,500, Oct. 12, 1989, which is a continuation of Ser. No. 26,738, Mar. 17, 1987, abandoned. This application Sep. 25, 1991, Ser. No. 766,365
Int. Cl.[5] A61K *7/16, 7/20, 33/40, 33/10*
U.S. Cl. 424—53 21 Claims

1. A premixed hydrogen peroxide and sodium bicarbonate pharmaceutical formulation for the treatment of oral lesions consisting essentially of between about 0.1% and about 0.8% hydrogen peroxide and between about 0.1% and about 0.4% sodium bicarbonate, together in sterile saline or sterile water.

5,296,217

METHODS FOR PREVENTING DENTAL CALCULUS IN DOMESTIC ANIMALS

George K. Stookey, Noblesville, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 15, 1992, Ser. No. 898,290
Int. Cl.[5] A61K *7/16, 33/42, 47/00*
U.S. Cl. 424—57 7 Claims

1. In the method of preventing and/or reducing dental calculus buildup, deposit and/or formation on the teeth of dental calculus forming animals, the improvement comprising the step of contacting said teeth in said animals with a dry animal food having a surface coating that contains at least about 0.5% to about 3.0% by weight of the dry animal food of sodium hexametaphosphate, in a regular feeding regimen.

5,296,218

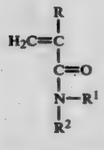
AMPHOLYTE TERPOLYMERS PROVIDING SUPERIOR CONDITIONING PROPERTIES IN SHAMPOOS AND OTHER HAIR CARE PRODUCTS

Shih-Ruey T. Chen, Pittsburgh, and Craig W. Vaughan, Freedom, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 722,637, Jun. 28, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 952,202
Int. Cl.[5] A61K *7/075, 7/09*
U.S. Cl. 424—70 23 Claims

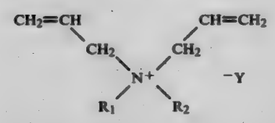
1. A composition for treating hair in which a cosmetically acceptable medium is used which contains from 0.1–10% by weight of a water-soluble ampholyte terpolymer having a weight average molecular weight of from about 10 thousand to 10 million, comprising:

(a) from at least 1 to as much as 95 weight percent of the nonionic monomer acrylamide (AM) of the following formula:



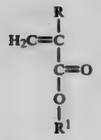
where R is H or CH_3; and R^1 and R^2 are independently H, C_{1-4}alkyl, CH_2OCH_3, $CH_2OCH_2CH(CH_3)_2$, $(CH_2CH_2O—)_x—H$, where x=1–50, or phenyl, or together are C_{3-6}cycloalkyl;

(b) from at least 5 to as much as 80 weight percent of the cationic monomer dimethyldiallylammonium chloride (DMDAAC) of the following formula:



where R_1 and R_2 are independently H or C_{1-12}alkyl, and the moiety ^-Y is a suitable anion; and

(c) from at least 1 to as much as 75 weight percent of the anionic monomer acrylic acid (AA) of the following formula:



where R is H or CH_3; and R^1 is X^+, H, C_{1-4}alkyl, CH_2CH_2OH, $(CH_2CH_2O—)_x—H$, where x=1–50, or phenyl, and X^+ is a suitable cation forming a salt of the carboxylic acid.

5,296,219

PROCESS FOR COATING ACTIVE PRINCIPLES USING A PH-SENSITIVE POLYMER

Pierre Ardaillon, Saint-Priest, and Christian Prud'Homme, Lyons, both of France, assignors to Rhone-Poulenc Nutrition Animale, Commentry, France

Continuation of Ser. No. 707,491, May 30, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,445
Claims priority, application France, Jun. 15, 1990, 90 07584
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—78.01 17 Claims

1. A process for coating at least one medicinal and/or foodstuff active principle useful for ruminants consisting essentially of the steps of:

(a) polymerizing at least one monomer in an oil-in-water emulsion in the presence of a surfactant, to synthesize a pH-sensitive-polymer, said synthesized polymer being contained in said oil-in-water emulsion, and

(b) without isolation of the pH-sensitive polymer, coating said active principle with said oil-in-water emulsion containing said pH-sensitive polymer, wherein said pH-sensitive polymer is not dissolved in an organic solvent or mixture of organic solvents in either step (a) or in step (b), and further wherein said pH-sensitive polymer is stable at pH 6 but wherein at pH 2 said coated active principle is released.

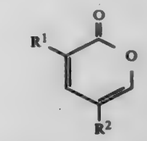
5,296,220

COCKROACH ATTRACTANT

Wendell L. Roelofs, 4 Crescence Dr., Geneva, N.Y. 14456; Coby Schal, 246 Edinburg Rd., Mercerville, N.J. 08619; Francis X. Webster, 302 Hurlburt Rd., Syracuse, N.Y. 13224; Ralph E. Charlton, 780 Tabor Valley Rd., Manhattan, Kans. 66502, and Aijun Zhang, 15 Reed Rd., Apt. 125, Geneva, N.Y. 14456

Filed Dec. 7, 1992, Ser. No. 986,054
Int. Cl.[5] C07D *309/32, 309/18;* A01N *25/00, 25/24*
U.S. Cl. 424—84 15 Claims

1. A pyran having the formula:



wherein:

R^1 is an H, methyl, ethyl, propyl, or methoxy group and R^2 is a branched alkyl side chain having from 7 to 11 carbons.

5,296,221

LACTOBACILLUS JOHNSONII FERM BP-2680 LACTIC ACID BACTERIA PREPARATIONS USING THE SAME AND A PROCESS OF MANUFACTURING THE PREPARATIONS

Tomotari Mitsuoka, Ichikawa; Kazumasa Suzuki, Ayase; Mitsugu Hayashi, Hisai; Umeyuki Doi, and Tsuneo Hadeishi, both of Chita, all of Japan, assignors to Sani-Ei Sucrochemical Co., Ltd., Chita, Japan

Continuation of Ser. No. 768,442, Nov. 27, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,274
Claims priority, application Japan, Jan. 31, 1990, 2-19100
Int. Cl.[5] A61K *37/00;* C12N *1/00, 1/20*
U.S. Cl. 424—93 J 6 Claims

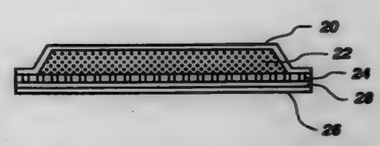
1. A biological pure culture of *Lactobacillus johnsonii* having all the identifying characteristics of FERM BP-2680.

5,296,222

PERCUTANEOUS DRUG DELIVERY SYSTEM

Robert V. Petersen, Murray, Utah; Tsung-Min Hsu, Union City, Calif.; Han-Chen Lee, Salt Lake City, Utah, and Don Christy, Albany, N.Y., assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 484,372, Feb. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 352,926, May 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 314,819, Feb. 23, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,866
Int. Cl.[5] A61K *37/54*
U.S. Cl. 424—94.63 17 Claims



1. A percutaneous permeation enhancer comprising an enzyme component including a proteolytic enzyme selected to enhance the penetration of a chemical agent through skin in admixture with a potentiating amount of a non-enzymatic compound for enhancing the penetration of said chemical agent through said skin.

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5,296,223
SUBTILISIN AS AN ORAL THROMBOLYTIC AGENT
Koichiro Nakanishi, Kobe; Hajime Hiratani, Osaka, and Kazuo Kato, Kobe, all of Japan, assignors to JCR Pharmaceuticals Co., Ltd., Hyogo, Japan
Continuation of Ser. No. 616,904, Nov. 21, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,259
Claims priority, application Japan, Nov. 24, 1989, 64-305868
Int. Cl.[5] A61K *37/547*
U.S. Cl. 424—94.64 6 Claims

1. A method for treating thrombosis in a patient in need thereof comprising administering orally to said patient a therapeutically effective amount of a proteolytic subtilisin enzyme isolated from a microorganism of the genus Bacillus.

5,296,224
KAVA-KAVA EXTRACT, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF
Klaus-Peter Schwabe, Karlsruhe, Fed. Rep. of Germany, assignor to Dr. Wilmar Schwabe GmbH & Co., Fed. Rep. of Germany
PCT No. PCT/EP91/01687, § 371 Date May 7, 1992, § 102(e) Date May 7, 1992, PCT Pub. No. WO92/04036, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 5, 1991, Ser. No. 856,066
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1990, 4028945
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.1 13 Claims

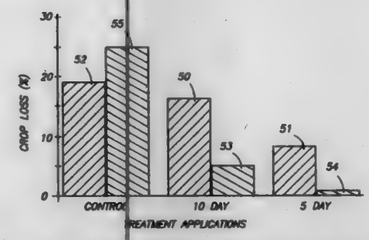
1. Dry extract from the rhizome of *Piper methysticum Forst.*, wherein said extract comprises a total content of kava lactones of at least 50% by weight and a flavokawin content of at most 0.3% by weight.

5,296,225
INDIRECT METHOD OF TREATING OROFACIAL PAIN
Michael Adekunle, 1660 N. Prospect Ave., #705, Milwaukee, Wis. 53202, and James L. Bowers, 10917 N. San Marino Dr., Mequon, Wis. 53092
Continuation-in-part of Ser. No. 870,510, Apr. 17, 1992, Pat. No. 5,178,879. This application Oct. 28, 1992, Ser. No. 967,364
Int. Cl.[5] A61K *35/78, 9/00*
U.S. Cl. 424—195.1 2 Claims

1. A method of treating an orofacial pain selected from ear pain and TMJ pain in a patient having such a pain which consists essentially of topically applying a preparation consisting essentially of about 0.025 to about 0.075% of capsaicin in a pharmaceutically acceptable carrier selected from the group consisting of a lotion, a cream, a gel, and an ointment to the skin of the patient overlying the trigeminal and cervical nerves which lead to the area of pain.

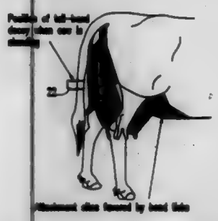
5,296,226
BIRD REPELLENT COMPOSITIONS
Leonard R. Askham, Pullman, Wash., assignor to Dolphin Trust, Pullman, Wash.
Continuation-in-part of Ser. No. 654,960, Feb. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 781,375, Oct. 23, 1991, abandoned. This application Sep. 29, 1992, Ser. No. 954,952
Int. Cl.[5] A61K *9/107*
U.S. Cl. 424—405 6 Claims

1. A bird repellent composition for protecting agricultural crops, aquatic systems, and man-made structures from avian depredation, damage or use, consisting of a mixture of:
(a) a chemical repellent consisting of a benzoic derivative of esters of anthranilic acid, phenylacetic acid or dimethyl benzyl carbonyl acetate having repellent affects, through smell and taste, on birds; and
(b) at least one anionic surfactant or emulsifier consisting of a saturated or unsaturated alkyl metal salt of a fatty acid having a chain length of 10 to 22 carbons and being formulated with carboxylic acids and salts thereof, phosphoric and polyphosphoric acid esters and salts thereof, sulfonic acids and salts thereof, sulfuric acid esters and salts thereof, sulfated esters or sulfated natural fats and oils that is a derivative of hydrogen, potassium, sodium, lithium, rubidium, cesium or francium;
the weight or volume ratio of the chemical repellent to the anionic surfactant or emulsifier agent being between 5:1 and 1:20;



the mixture further including water mixed with the chemical repellent and the anionic surfactant or emulsifier agent to produce an evenly distributed aqueous solution having a 0.01% to 40% concentration of the chemical repellent by weight or volume with no precipitation;
wherein a bridge is formed by the anionic surfactant or emulsifier that separates the chemical repellent in water and from surfaces to which the mixture is applied.

5,296,227
ATTRACTANT DECOY FOR CONTROLLING BONT TICKS
R. A. I. Norval, Gainesville, Fla.; Daniel E. Sonenshine, Virginia Beach, Va.; Martin I. Meltzer, and Michael J. Burridge, both of Gainesville, Fla., assignors to Old Dominion University, Norfolk, Va. and The University of Florida, Gainesville, Fla.
Filed Dec. 13, 1991, Ser. No. 809,939
Int. Cl.[5] A01N *25/08, 57/00, 53/00*
U.S. Cl. 424—411 8 Claims



1. A method for protecting an animal from bont ticks comprising the steps of:
providing a decoy which includes
(i) a pheromone composition having 1% by weight each of said decoy of O-nitrophenol and methyl salicylate; 0.2% by weight in volume of said decoy of 2,6-dichlorophenol; and 0.1% by weight of phenylacetaldehyde;
(ii) an acaricide selected from the group consisting of organophosphorous compounds and pyrethroid compounds; and
(iii) a matrix material selected from the group consisting of polyvinylchloride, nylons and waxes, said matrix material being impregnated with said pheromone composition, and said acaricide as 5–10% by weight of said decoy, said matrix material capable of releasing quantities of said composition and said acaricide over time which are sufficient to attract and kill said male, female, and nymph bont ticks; and
securing said decoy to a host animal that exhales CO_2 and needs to be protected against bont tick infestation.

5,296,228
COMPOSITIONS FOR CONTROLLED DELIVERY OF PHARMACEUTICAL COMPOUNDS
Nienyuan J. Chang, Irvine, Calif., and Kenneth J. Himmelstein, Omaha, Nebr., assignors to Allergan, Inc., Irvine, Calif.
Filed Mar. 13, 1992, Ser. No. 850,866
Int. Cl.[5] A61K *9/10, 47/36, 47/34*
U.S. Cl. 424—422 4 Claims

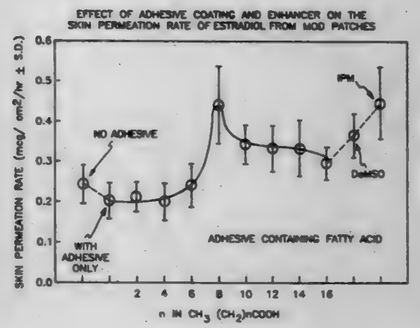


1. A sustained release drop instillable pharmaceutical compound delivery composition having long-term storage stability, said composition comprising:
a plurality of porous ion exchange resin particles sized from about 1 μm to about 50 μm in diameter, said porous ion exchange resin particles incorporated in an aqueous solution of from about 0.1 wt % to about 10 wt % methylcellulose wherein such aqueous solution has a free flowing, drop instillable viscosity at room temperature and at a pH value of from about 2.5 to 4.0, and a gel-like viscosity at a pH value of about 7.4 and at about 35° C.; and
at least one pharmaceutical compound ionically bound within said pores of said ion exchange resin particles, said porous ion exchange resin particles having a pore size sufficiently small to prevent said methylcellulose from diffusing into said pores.

5,296,229
FLEXIBLE, ELASTIC AND BIODEGRADABLE FILM MADE OF POLYMER BASED ON LACTIC ACID, CAPABLE OF BEING SUITABLE ESPECIALLY FOR THE PRODUCTION OF MEDICAL DRESSINGS
Dominique Grandjean, Brussels, Belgium, assignor to Solvay (Societe Anonyme), Brussels, Belgium
Filed Jul. 20, 1992, Ser. No. 915,543
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 09100686
Int. Cl.[5] A61L *15/64*
U.S. Cl. 424—444 7 Claims

1. A flexible, elastic and biodegradable film, wherein said film has less bubbles, less self-sticking and improved thermal stability, produced by extrusion of a copolymer of DL-lactic acid and glycolic acid, containing from 25 to 75 by weight of units derived from lactic acid, and said copolymer plasticised beforehand by incorporation of 5 to 30% by weight of the copolymer of a glycerol ester obtained from an acid containing 4 carbon atoms in its molecule.

5,296,230
TRANSDERMAL FERTILITY CONTROL SYSTEM AND PROCESS
Yie W. Chien, North Brunswick; Te-Yen Chien, Branchburg, and Yih-Chain Huang, Piscataway, all of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.
Continuation-in-part of Ser. No. 902,440, Aug. 29, 1986, Pat. No. 4,818,540, which is a continuation-in-part of Ser. No. 705,194, Feb. 25, 1985, abandoned, and a continuation-in-part of Ser. No. 770,968, Aug. 30, 1985, abandoned. This application Apr. 3, 1989, Ser. No. 332,471
The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—448 27 Claims



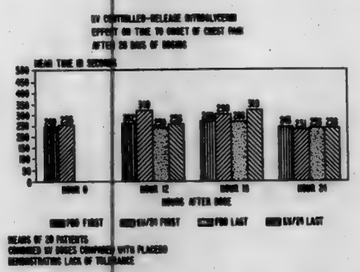
1. A transdermal fertility-controlling polymer matrix dosage unit comprising:
a) a backing layer which is substantially impervious to the fertility-controlling estrogen and progestin hormones to be delivered transdermally;
b) a polymer matrix disc layer which is adhered to said backing layer and which has microdispersed therein effective dosage amounts of fertility-controlling estrogen and progestin hormones, said estrogen component being selected from the group consisting of 17-beta-estradiol, ethinyl estradiol, biocompatible derivatives thereof convertible to said estradiols, and combinations thereof; said progestin component being selected from the group consisting of 1) progestins which are capable of being transdermally absorbed, which are biocompatible and which provide upon transdermal absorption from said dosage unit a fertility controlling effect bioequivalent to at least 20 mcg of levonorgestrel/20 cm^2 of the polymer matrix disc layer surface/day, 2) biocompatible derivatives thereof convertible to said progestins, and 3) combinations thereof; said polymer being bio-acceptable and permitting said hormones to be transmitted for transdermal absorption; said hormones being stable in said polymer matrix and being transdermally absorbed simultaneously to provide at least minimum effective daily doses of said hormones to effect fertility control; and
c) an adhesive means for securing the dosage unit for transdermal absorption to the subject treated.

5,296,231
PURIFICATION AND ADMINISTRATION OF DNA REPAIR ENZYMES
Daniel B. Yarosh, Merrick, N.Y., assignor to Applied Genetics, Inc., Freeport, N.Y.
PCT No. PCT/US89/02873, § 371 Date Dec. 26, 1990, § 102(e) Date Dec. 26, 1990
Continuation-in-part of Ser. No. 215,566, Jul. 6, 1988, Pat. No. 5,077,211. This PCT application Jun. 27, 1989, Ser. No. 623,888
Int. Cl.[5] A61K *37/22, 37/52, 37/59*
U.S. Cl. 424—450 22 Claims

1. A process for producing a liposome-encapsulated DNA repair enzyme comprising:
(a) growing cells which synthesize the DNA repair enzyme;
(b) preparing an extract of the cells which contains the DNA repair enzyme in an impure state;
(c) contacting the extract with a molecular sieve having an exclusion limit which is (i) larger than the molecular weight of the DNA repair enzyme and (ii) smaller than the molecular weight of at least some of the impurities in the extract such that the DNA repair enzyme will pass through the molecular sieve at a slower rate than at least some of said impurities;
(d) isocratically eluting the DNA repair enzyme from the molecular sieve with an aqueous elution solution so as to obtain the DNA repair enzyme in one or more selected fractions of the eluate in a state of enhanced purity, said aqueous elution solution being chosen so that complexes can form between the DNA repair enzyme and selected nucleic acids;
(e) without further purification, contacting the one or more selected fractions from step (d) in said aqueous elution solution with one or more selected nucleic acids which have been immobilized on a solid support so as to form immobilized nucleic-acid/DNA-repair-enzyme complexes between the DNA repair enzyme and the one or more selected, immobilized nucleic acids;
(f) washing the immobilized complexes to remove at least some of the remaining impurities;
(g) eluting the DNA repair enzyme from the one or more selected, immobilized nucleic acids so as to obtain the DNA repair enzyme in one or more selected fractions of the eluate in a state of further enhanced purity; and
(h) encapsulating at least a portion of the purified DNA repair enzyme contained in the one or more selected fractions of step (g) in pH sensitive liposomes.

5,296,232
PHARMACEUTICAL FORMULATION WHICH DOES NOT INDUCE TOLERANCE
George N. Paradissis, St. Louis; James A. Garegnani, Ballwin, and Roy S. Whaley, St. Louis, all of Mo., assignors to KV Pharmaceutical Company, St. Louis, Mo.
Continuation of Ser. No. 349,533, May 5, 1989, Pat. No. 5,122,384. This application May 13, 1992, Ser. No. 882,537
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] A61K *9/52, 9/22*
U.S. Cl. 424—451 16 Claims

1. A method of treating a human with at least one organic nitrate without inducing nitrate tolerance, which comprises:
administering a tablet or capsule containing at least one organic nitrate blended with nonpareils or sugar spheres, to the human over a 24 hour dosing period so as to achieve therapeutically effective levels of the at least one organic nitrate for at least about 16 hours, followed by less than

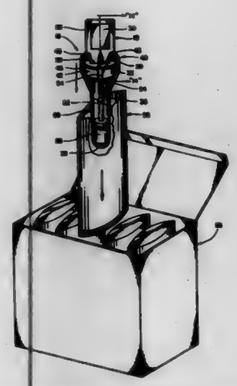


therapeutically effective levels of the at least organic nitrate for the remainder of the 24 hour dosing period.

5,296,233
DUAL SUBCOATED SIMULATED CAPSULE-LIKE MEDICAMENT
Marli F. Battista, Lower Gwynedd, and Thomas J. Markley, Lansdale, both of Pa., assignors to McNeil-PPC, Inc., Milltown, N.J.
Division of Ser. No. 458,434, Jan. 22, 1990, Pat. No. 5,198,227. This application Dec. 11, 1992, Ser. No. 989,407
Int. Cl.[5] A61K *9/40, 9/48*
U.S. Cl. 424—463 17 Claims

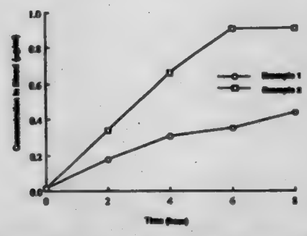
1. A simulated capsule medicament comprising: a solid caplet core comprising a medicament; a dual subcoating composition on the caplet core comprising an initial subcoating applied to the caplet core comprising povidone and a second subcoating comprising a mixture of povidone, hydroxypropyl comprising and castor oil, and a smooth gelatinous outer coating.

5,296,234
HOLDER AND PACKAGING FOR A HARDENED MEDICATED MATRIX
Michelle A. Hadaway, Gurnee; David E. Kramer, Northbrook, and Robert J. Best, Winthrop Harbor, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Oct. 11, 1991, Ser. No. 776,543
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—484 12 Claims



1. A stick holder and packaging for a hardened sucrose based matrix containing a dosage of fentanyl citrate comprising; a one-piece elongated molded plastic holder having a medicated hardened sucrose based matrix affixed to one end thereof wherein said one end of said elongated holder is provided with a series of longitudinally spaced annular rounded grooves for effectively affixing said hardened sucrose based medicated matrix to said one end of said holder, a handle portion at the opposite end thereof said handle portion being flat to facilitate gripping of same and to provide a surface upon which a pressure sensitive label may be applied, and a flange portion disposed perpendicular to said elongated holder adjacent the inner end of said handle portion; a molded plastic tubular overcap closed at one end and open at the opposite end and adapted to fit completely over said one end of said holder; and interengaging means for retaining said overcap on said one end of said holder.

5,296,235
PLASTER PREPARATION
Yoichi Sawayanagi, Tokyo, and Yutaka Kawamura, Narita, both of Japan, assignors to Dojin Iyaku-Kako Co., Ltd., Tokyo, Japan
Filed May 19, 1992, Ser. No. 885,195
Claims priority, application Japan, May 24, 1991, 3-120018
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—486 2 Claims



1. A plaster comprising pranoprofen, wherein the pranoprofen is not dissolved with an organic solvent, a hydrophilic base component and an absorbefacient comprising a mixture of propylene glycol, diisopropyladipate, and l-menthol, wherein each of the members of said mixture is present in an amount of from 0.1 to 15% by weight.

5,296,236
CONTROLLED RELEASE THERAPEUTIC SYSTEM FOR A LIQUID PHARMACEUTICAL FORMULATIONS
Giancarlo Santus, Milan, and Roberto Golzi, Cremona, both of Italy, assignors to Recordati S.A., Chemical and Pharmaceutical Company, Chiasso, Switzerland
Continuation of Ser. No. 711,588, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 408,755, Sep. 18, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 928,616
Claims priority, application Italy, Sep. 16, 1988, 21961 A/88
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—490 20 Claims

1. A controlled release pharmaceutical dosage form comprising
microgranules comprising a pharmaceutical and excipients, said microgranules before being coated having a homogeneously smooth surface, which permits a uniform deposition of coatings, and no controlled release properties, said microgranules having a plurality of at least three coatings thereon at least one of said coatings imparting controlled release properties to said coated microgranules,
the first of said coatings being a pH insensitive coating comprising a mixture of (i) a first component selected from the group consisting of derivatives of celluloae, acrylic acid and methacrylic acid, and derivatives thereof and mixtures thereof, and (ii) a second component selected from the group consisting of hydrogenated and partially hydrogenated vegetable oils, plasticizers and mixtures thereof, said first coating constituting a barrier allowing regulation of the release of said pharmaceutical; and
the others of said coatings comprising at least one polymeric hydrophilic coating and at least one hydrophobic coating, wherein the hydrophobic and hydrophilic coatings alternate;
said microgranules with the plural coatings thereon having dimensions which allow stable suspension of the plural coated microgranules in a liquid administration vehicle; and
a liquid administration vehicle for said plural coated microgranules, said vehicle including an additional amount of said pharmaceutical in a form immediately available upon ingestion.

5,296,237
WATER-SOLUBLE PHARMACEUTICAL METALLOCENE-COMPLEX COMPOSITION
Bernd W. Müller, Flintbek; Rainer Müller; Stefan Lacks, both of Kiel, and Wilfried Mohr, Hamburg, all of Fed. Rep. of Germany, assignors to medac Gesellschaft fur klinische Spezialpraparate mbH, Hamburg, Fed. Rep. of Germany
Continuation of Ser. No. 552,749, Jul. 16, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 810,449
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923270
Int. Cl.[5] A61K *31/28*
U.S. Cl. 424—489 10 Claims

1. A water-soluble lyophilized powdered pharmaceutical composition consisting essentially of a metallocene complex of the formula $(Cp)_2M^{II}X_{n-2}$ where Cp represents the cyclopentadienyl anion, M a transition metal of valency n, and X a mono- or polyvalent anion and a polyol selected from the group consisting of glycerol, 1,2-propylene glycol, 1,5-pentanediol, polyethylene glycol, a block copolymer of propylene glycol and ethylene glycol, pentaerythritol, sorbitol, mannitol, glucose, fructose, sucrose, lactose and mixtures thereof, which when re-solubilized in water forms a solution.

5,296,238
MICROBICIDES
Koji Sugiura; Satoru Maekawa, both of Nagoya; Hidemu Inoue, Seto; Takuya Oomura, Tokyo; Hideki Kato, and Hiroki Kourai, both of Tokushima, all of Japan, assignors to Toagosei Chemical Industry Co., Inc., Tokyo, Japan
Filed Feb. 26, 1991, Ser. No. 659,960
Int. Cl.[5] A01N *59/16, 59/26*
U.S. Cl. 424—604 8 Claims

1. A microbicide phosphate represented by the following general formula:

$$M_a^1A_bM_c^2(PO_4)_d{\cdot}nH_2O$$

wherein M^1 is silver
M^2 is zirconium or titanium,
A represents at least one ion selected from the group consisting of hydrogen ion, alkali metal ions, and ammonium ion,
n represents a number which satisfies $0 \leqq n \leqq 6$,
a and b each represents a positive number and satisfies the equation $la+mb=1$, where l is valence of M^1 and m is valence of A, and c is 2 and d is 3.

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5,296,239

PERACETIC ACID COMPOSITIONS AND PROCESS FOR OBTAINING THESE COMPOSITIONS

Jean-Claude Colery, Chaumont-Gistoux, and Pierre Ledoux, Brussels, both of Belgium, assignors to Interox, Brussels, Belgium

Continuation of Ser. No. 592,514, Oct. 4, 1990, abandoned. This application Mar. 25, 1992, Ser. No. 865,801

Claims priority, application Belgium, Oct. 5, 1989, 08901066

Int. Cl.[5] A01N *39/00*; A62D *3/00*

U.S. Cl. 424—613 **35 Claims**

1. Peracetic acid compositions comprising a solution of peracetic acid, at least one thickening agent selected from the group consisting of polymers of acrylic monomers, copolymers of acrylic monomers, derivatives of polymers of acrylic monomers, derivatives of copolymers of acrylic monomers and mixtures thereof, the amount of the thickening agent being such that the fluidity of the compositions does not exceed a Matthis value of 25 cm/10 s, said fluidity remaining substantially constant after a 12 week storage, and further comprising at least one stabilizer selected from the group consisting of sequestering agents, free-radical scavengers and mixtures thereof.

5,296,240

METHODS AND COMPOSITIONS FOR RETARDING AND ERADICATING INFESTATION IN TREES AND TREE DERIVED PRODUCTS

Vincent R. Palmere, Knoxville; Allan H. Dietrich, Corryton, and Stanley D. Galyon, Maynardville, all of Tenn., assignors to Nitus Corporation, Knoxville, Tenn.

Division of Ser. No. 528,838, May 24, 1990, Pat. No. 5,104,664. This application Mar. 6, 1992, Ser. No. 847,345

Int. Cl.[5] A61K *31/69*

U.S. Cl. 424—660 **3 Claims**

1. A composition of matter consisting essentially of: at least one short chain alkylene glycol, at least one glycol soluble boron containing composition and water in an amount of at least about 50% by weight based on the weight of the other two ingredients, said composition being environmentally safe and not posing safety risks to persons or animals.

5,296,241

THERAPEUTIC COMPOSITION AND METHOD OF USING SAME FOR TREATMENT OF HANGOVER

Barnett J. Brimberg, 427 Expositions Blvd., New Orleans, La. 70118, and Burde L. Kamath, 3021 Illinois Ave., Unit B, Kenner, La. 70065

Filed Apr. 3, 1991, Ser. No. 679,731

Int. Cl.[5] A61K *33/06, 33/12, 33/10, 31/16*

U.S. Cl. 424—682 **20 Claims**

1. A therapeutic composition for oral administration comprising, in suspension in a non-toxic therapeutically acceptable suspension medium, a finely powdered form of each of

(a) a pain relieving amount of acetaminophen, and

(b) an acid neutralizing and stomach settling amount of one or more mild antacid agents,

such that the composition is basic and has a pH less than 9.

5,296,242

AQUEOUS SOLUTION AND THE USE THEREOF

Rolf Zander, Luisenstrasse 17, D-6500 Mainz, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,819

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1991, 4125819

Int. Cl.[5] A61K *33/10*

U.S. Cl. 424—717 **7 Claims**

1. Sterilizable aqueous solution with substantially physiological values of the pH, bicarbonate concentration and CO_2 partial pressure, as well as with metabolizable anions in the form of two separately stored single solutions, which are combined with one another prior to use and whereof one is a bicarbonate-free, acid solution that is storage stable in contact with atmospheric air and the other a bicarbonate-containing, alkaline solution that is also stable in contact with atmospheric air, characterized in that per liter of the finished solution obtained by combining the two single solutions, the acid single solution contains 7.3 mmole±3% of at least one metabolizable, organic acid and the alkaline single solution 19.1 mmole±3% of alkali bicarbonate and 6.1 mmole±3% of alkali carbonate.

5,296,243

PROCESS TO CORRECT AND OPTIMIZE THE COMPOSITION OF FEED

Stefan Lange, Göteborg; Ivar Lönnroth, Mölndal; Kjell Martinsson, Hässleholm, and Leif Göransson, Kågeröd, all of Sweden, assignors to Svenska Lantmannens Riksforbund UPA, Stockholm, Sweden

PCT No. PCT/SE91/00003, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/09536, PCT Pub. Date Jul. 11, 1991

PCT Filed Jan. 3, 1991, Ser. No. 854,632

Claims priority, application Sweden, Jan. 4, 1990, 9000028-2

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—2 **11 Claims**

1. A process to correct and optimize the composition of a feed in order to increase the daily growth of animals which comprises including in the animal's feed a sufficient quantity of at least one material selected from the group consisting of sugars, sugar alcohols, amino acids and amides so that 1.0 ml of that animal's blood will contain at least 0.5 units of lectines, which in a 0.05M sodium chloride and 0.15M sodium phosphate buffer and at a pH of 7 will attach with high affinity to agarose and which will dissociate from the agarose after the addition of 1 M-α-methyl-D-glucoside.

5,296,244

CHEWING GUM CONTAINING ASPARTAME AND PALATINOSE OLIGOSACCHARIDE

Robert J. Yatka, Orland Park, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Oct. 30, 1992, Ser. No. 969,112

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **15 Claims**

1. A chewing gum composition comprising sweetness imparting amounts of unencapsulated aspartame and an effective amount of palatinose oligosaccharide to stabilize said aspartame against decomposition during storage at 85° F. for eight weeks whereby at least 5% less aspartame decomposes into non-sweetening derivatives that would have decomposed if the palatinose oligosaccharide were not included in the gum composition.

5,296,245

PLANT GUM MATERIAL AND USE THEREOF IN FOOD PRODUCTS

Adrienne E. Clarke, Parkville; Anthony Bacic, Eltham, and Alan G. Lane, Ashfield, all of Australia, assignors to Bio Polymers Pty. Ltd., Melbourne, Australia

Continuation-in-part of Ser. No. 415,263, Oct. 25, 1989, Pat. No. 5,133,979. This application Jul. 28, 1992, Ser. No. 920,788

Claims priority, application Australia, Feb. 26, 1987, PI0556; Sep. 22, 1987, PI4502

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] A23L *1/0532*

U.S. Cl. 426—49 **24 Claims**

1. A method of making a food product which comprises the step of adding a cultured plant gum of a vascular plant cell to a food or nutritional supplement.

5,296,246

ACTIVE AMINO ACID CA, BEVERAGES CONTAINING SAME, AND PROCESS FOR THEIR PRODUCTION

Ranko Inoue, and Kohzo Yamamoto, both of Tokyo, Japan, assignors to Fujix Corporation, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 925,767

Claims priority, application Japan, Aug. 9, 1991, 3-200851

Int. Cl.[5] A23L *1/304*

U.S. Cl. 426—74 **10 Claims**

1. An active amino acid calcium product comprising calcium of oyster shell origin in a layered structure and in a form selected from the group consisting of the oxide and the hydroxide, and one or more compounds selected from the group consisting of amino acids and hydrolyzable amino acid derivatives, including cystine, in an amount of 0.001 to 0.05% by weight, said compound being intimately coexistent with said calcium by being between layers of said layered structure of calcium or bound to said calcium.

5,296,247

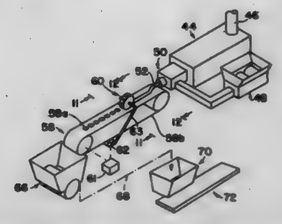
METHOD OF MAKING PRE-COOKED FILLED PASTA PRODUCTS BY CO-EXTRUSION

David P. Huang, Boundbrook, and Thomas Merolla, Millburn, both of N.J., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 789,067, Nov. 7, 1991, Pat. No. 5,216,946, which is a continuation-in-part of Ser. No. 198,897, May 26, 1988. This application Mar. 12, 1993, Ser. No. 30,970

Int. Cl.[5] A23L *1/00*; A23P *1/00*

U.S. Cl. 426—283 **6 Claims**



1. A method of producing pre-cooked pasta comprising the steps of extruding an elongate pre-cooked pasta shell which contains a pre-cooked filler material; advancing the extruded pasta shell along a predetermined path; partitioning the pasta shell into pasta segments each having axial ends and shaping each segment to have a predetermined configuration and sealing the axial ends to capture the filler material within each segment of the pasta shell; and drying the segments.

5,296,248

METHOD FOR CRACKING WALNUTS AND RECOVERY OF NUT MEAT THEREFROM

Chi-Tai Huang, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed Dec. 14, 1992, Ser. No. 992,266

Int. Cl.[5] A23L *1/10*; A23P *1/00*

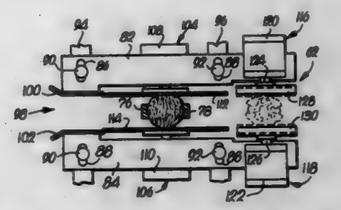
U.S. Cl. 426—482 **13 Claims**

1. A method for cracking walnuts each presenting a shell surface configuration in order to enhance the recovery of nut meat therefrom, said method comprising the steps of:

altering said surface configuration of each walnut shell to present thereon at least one compression zone,

said surface configuration-altering step comprising the step of abrading at least one region of each of said walnut shells to present said at least one flattened compression zone;

thereafter cracking the surface-altered walnut shells by subjecting each walnut to opposed compressive forces at said compression zone and at a point substantially opposite said compression zone,



said surface alteration serving to distribute compressive forces for cracking of said shells of said walnuts while leaving portions of the nut meats thereof intact; and

recovering said portions of said nut meats.

5,296,249

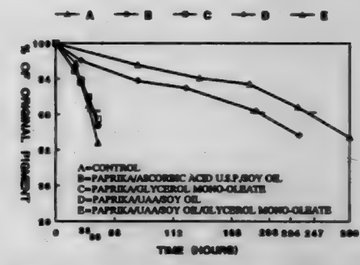
LOW MICRON-SIZED ASCORBIC ACID PARTICLES, ESPECIALLY A SUSPENSION THEREOF IN A MEDIUM IN WHICH THEY ARE INSOLUBLE, AND THE USE THEREOF AS AN ANTIOXIDANT FOR MEDIUMS IN WHICH THE PARTICLES REMAIN INSOLUBLE

Paul H. Todd, Jr., Kalamazoo, Mich., assignor to Kalamazoo Holdings Company, Inc., Kalamazoo, Mich.

Division of Ser. No. 717,926, Jun. 20, 1991, Pat. No. 5,230,836. This application Oct. 14, 1992, Ser. No. 960,912

Int. Cl.[5] A23D *9/00*; A61K *35/78*

U.S. Cl. 426—541 **20 Claims**



1. A food or feed which is lipid in nature or which comprises a lipid phase in which the lipid or lipid phase is stabilized with an oxidation-protective amount of a composition consisting essentially of solid particles of ascorbic acid which are less than about 38 microns in size on their largest dimension or a suspension of said particles in an oleogenous medium in which they are insoluble.

5,296,250

CAKE MIXES UTILIZING UNCHLORINATED WHEAT FLOUR

Stephen Grisamore, and Glen L. Weaver, both of Omaha, Nebr., assignors to ConAgra Flour Milling Co., Omaha, Nebr.

Filed Dec. 13, 1991, Ser. No. 808,015

Int. Cl.[5] A21D *10/00*

U.S. Cl. 426—555 **11 Claims**

1. A cake mix comprising:

a quantity of unchlorinated flour;

about 20–40 bakers wt % unmodified starch, and

an amount of shortening based on the amount of unmodified starch in the cake mix and represented by the formula

$$S=60-X$$

wherein S represents the amount of shortening in bakers wt

VOL 1160 ISS 4 MR 22 1994 UMI

% and X represents the bakers wt % of unmodified starch in the cake mix.

5,296,251
LIQUOR CAPABLE OF BEING FROZEN WHEN POURED

Shizuhiko Ishida, 52-9, Shichiku Higashikurisu-cho, Kita-ku, Kyoto-shi, Kyoto-fu, 603; Shunichi Karita, Tsu; Yasuo Umehara; Masaaki Hamachi, both of Kobe, and Ystaro Nunokawa, Ashiya, all of Japan, assignors to Ozeki Corporation, Hyogo and Shizuhiko Ishida, Kyoto, both of Japan

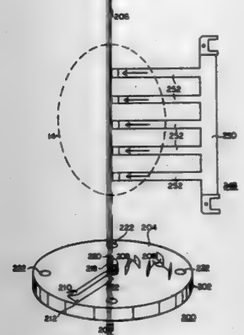
Filed Dec. 23, 1991, Ser. No. 812,278
Claims priority, application Japan, Dec. 26, 1990, 2-414839
Int. Cl.[5] C12G *3/06*
U.S. Cl. 426—592 4 Claims

1. A process for preparing a liquor capable of being frozen when poured comprising the steps of:
filling a liquor in a vessel under a pressure of not more than 0.9 kg/cm^2 or 1.5 to 5 kg/cm^2, as measured under the condition that atmospheric pressure is defined to be 1 kg/cm^2;
cooling the vessel containing the liquor to a temperature between the freezing point and the starting temperature of freezing at which the liquor starts to freeze; and
maintaining the liquor in the supercooled liquid state so that the liquor becomes softly frozen when poured; said liquor being selected from the group consisting of Japanese "sake," wine and liqueur.

5,296,252
SLIT FRUIT OR VEGETABLE PRODUCT

George A. Meadenhall, Boise, Id., assignor to Lamb-Weston, Inc., Tri-Cities, Wash.

Continuation of Ser. No. 818,415, Feb. 3, 1992, abandoned, which is a division of Ser. No. 696,180, May 6, 1991, Pat. No. 5,097,735. This application Dec. 4, 1992, Ser. No. 985,738
Int. Cl.[5] A23L *1/212, 1/216*
U.S. Cl. 426—615 15 Claims



11. A food product suitable for slicing into helical strips, comprising:
a whole vegetable or fruit having an outer surface and a longitudinal center axis;
the vegetable or fruit having a plurality of penetration slots which extend inwardly from the outer surface to the longitudinal center axis;
the slots being spaced apart longitudinally relative to the longitudinal center axis;
the slots having a thickness dimension, a longitudinal width dimension which extends longitudinally in parallel relationship to the longitudinal center axis, and a depth dimension which extends radially inwardly toward and hence substantially perpendicularly to the longitudinal center axis, the depth dimension terminating substantially at the longitudinal center axis.

5,296,253
INTERMEDIATE MOISTURE LEGUME AND CEREAL FOOD PRODUCT AND METHOD OF PRODUCING

Edmund W. Lusas, Bryan, and Gabriel J. Guzman, College Station, both of Tex., assignors to Texas A&M University, College Station, Tex.

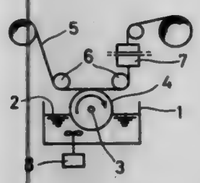
Filed May 28, 1992, Ser. No. 890,535
Int. Cl.[5] A23L *1/20*
U.S. Cl. 426—629 15 Claims

1. A method of producing an edible, non-meat, shelf-stable, field-dried legume food product, comprising
cooking a substrate selected from the group consisting of field-dried legume seeds under conditions effective to maintain a total content of water in the substrate at about 20 to 60 wt % and to inactivate microorganisms, lectins, enzymes, trypsin inhibitors, and hemagglutinins, while increasing protein and starch digestibility and palatability;
admixing the cooked substrate with an ingredient selected from the group consisting of solids or liquid fats, sweeteners, humectants, emulsifiers, salts, edible acids, flavorings and preservatives to obtain a final product water activity (A_w) of less than 0.87;
cooking the admixture under conditions effective to pasteurize the admixture and produce a flowable food product having a total water content of about 20 to 45 wt % while minimizing shearing and avoiding expansion or puffing of the contained starch; and
cooling and forming the food product into a desired shape.

5,296,254
METHOD OF PRODUCING A FILTERING MATERIAL

Sumiaki Tsuru, Tokyo, Japan, assignor to Bestex Kabushiki-Kaisha, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 896,042
Claims priority, application Japan, Jun. 6, 1991, 3-63903
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] B05D *5/00*; A62B *11/00*
U.S. Cl. 427—2 9 Claims

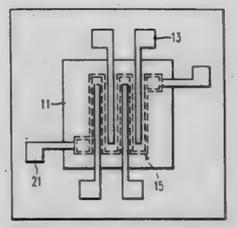


4. A method of producing a filtering material, comprising in the following order:
a first step preparing an aqueous treatment solution by dissolving a water soluble glucan of 0.5 to 25% by weight in water,
a second step of adhesively coating a sheet-shaped raw material with said treatment solution,
a third step of adhesively depositing porous apatite particles on said sheet-shaped raw material before said aqueous treatment solution adhesively coated on said sheet-shaped raw material is completely dried, said porous apatite particles being deposited in an amount sufficient to permit a thus-treated sheet-shaped raw material to adsorb infectious or antigenous particles and
a fourth step of drying said sheet-shaped raw material having said aqueous treatment solution adhesively coated thereon and said porous apatite particles adhesively deposited thereon.

5,296,255
IN-SITU MONITORING, AND GROWTH OF THIN FILMS BY MEANS OF SELECTED AREA CVD

John L. Giand, Pinckney; Johannes W. Schwank, and Kensall D. Wise, both of Ann Arbor, all of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Feb. 14, 1992, Ser. No. 835,340
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—8 18 Claims

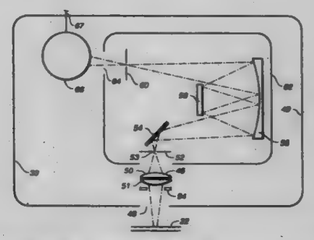


1. A method for selectively forming thin films comprising:
i) exposing at least two substrates to a decomposable gas;
ii) independently heating one of said substrate, causing decomposition of said gas to selectively form a film on said heated substrate;
iii) measuring an electrical property of said film while said film is being deposited;
iv) independently heating one of said substrate, different from said substrate of step ii), causing decomposition of said gas to form a film on said heated substrate; and
v) measuring an electrical property of said film while said film is being deposited.

5,296,256
METHOD AND APPARATUS FOR PAINTING HIGHWAY MARKINGS

William H. Hartman, Sacramento, Calif., assignor to Research Derivatives, Inc., Sacramento, Calif.

Division of Ser. No. 618,674, Nov. 27, 1990, Pat. No. 5,203,923.
This application Feb. 16, 1993, Ser. No. 999,719
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—10 12 Claims

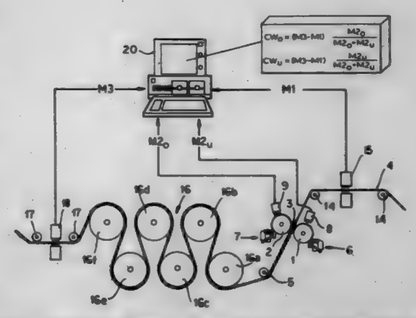


1. A method for repainting old traffic lane pavement markings on road surfaces comprising:
providing a vehicle capable of movement along the pavement and having a detection means for old markings on the pavement, a paint dispenser means and a control means for said dispenser means;
illuminating the surface with spectral emissions and causing return fluorescent emissions from the illuminated surface;
focusing the return emissions on the entrance slit of a spectroscope;
separating the spectrum of the return emissions into its component wavelengths;
at the output of the spectroscope, masking all but one or more wavelengths emitted by a specific chemical contained in the makeup of the paint being sought;
directing the desired remaining emission wavelengths into a photodetector;
amplifying the amount of any output signal from the photodetector;
measuring the amount of signal above a threshold level for determining the presence of any painted marking containing said specific chemical;
initiating said dispenser control means when the measured signal exceeds the threshold; and
applying new material to the pavement surface with said dispenser means in response to the detection method.

5,296,257
PROCESS FOR TWO-SIDED COATING OF A WEB

Reinhard Knop, Bochum, and Volker Fatike, Wuppertal, both of Fed. Rep. of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 781,350, Oct. 22, 1991. This application Jul. 22, 1993, Ser. No. 96,019
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1990, 4033521
Int. Cl.[5] B05D *1/28*
U.S. Cl. 427—10 4 Claims



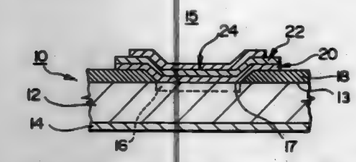
1. A process for two-sided coating of a web comprising the steps of:
(a) feeding said web through a nip of a pair of pressing rolls;
(b) metering onto each of said pressing rolls before the respective pressing roll meets said web, a controlled quantity of a coating substance, thereby transferring said substance to said web on a respective side thereof;
(c) measuring by infrared absorption a respective quantity of said coating substance on each of said rolls at a respective location of the roll upstream of the transfer of said substance to the web by the respective roll, thereby obtaining a value $M2_o$ for an absorption measurement on the roll applying said substance to an upperside of the web and a value $M2_u$ for an absorption measurement on the roll applying said substance to the underside of the web;
(d) determining values of a web upperside relative coating quantity RW_o and a web underside relative coating quantity RW_u based upon the relations:

$$RW_o = M2_o/(M2_o + M2_u) \text{ and}$$

$$RW_u = M2_u/(M2_o + M2_u); \text{ and}$$

(e) automatically controlling the application of said substance to each of said rolls in response to the respective values RW_o and RW_u.

5,296,258
METHOD OF FORMING SILICON CARBIDE
Sing P. Tay, and Joseph P. Ellul, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Sep. 30, 1992, Ser. No. 953,373
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—96 37 Claims

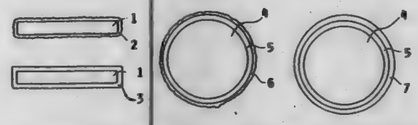


1. A method of forming silicon carbide for an integrated circuit structure comprising:
exposing a surface of a substrate in a chemical vapour deposition chamber and purging the chamber to remove residual oxygen by flowing through the chamber an inert gas purified to remove oxygen;
pre-cleaning and passivating the surface of the substrate with fluorine by exposure to a reactive fluorine containing gas;
purging the chamber with inert gas;
then exposing the substrate to a gaseous reactant mixture comprising di-tert-butyl silane and said inert gas and at a controlled flow rate, pressure and at a deposition temperature in the range 550° to 800° C., thereby depositing a layer of silicon carbide on the substrate,
and subsequently annealing the deposited silicion carbide in an inert atmosphere at a temperature above the deposition temperature and below 1100° C. whereby fluorine is incorporated into and passivates the deposited silicon carbide.

5,296,259
PROCESS FOR MAKING ELECTRICALLY CONDUCTIVE PATTERNS
Dietmar Dudek, Oberursel, Fed. Rep. of Germany, and Thomas Pfeiffer, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 510,334, Apr. 17, 1990, abandoned.
This application Oct. 30, 1992, Ser. No. 969,542
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913117
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—96 8 Claims

1. A process for making an electrically conductive pattern on a substrate comprising:
(a) coating the substrate with a solution comprising a salt of a supplementary element or a mixture thereof, wherein the supplementary elements are selected from the group consisting of bismuth, cadmium, lead, copper, boron, rhodium, nickel, indium, aluminum, and silicon;
(b) drying the coated substrate;
(c) heating the dried substrate to a temperature lower than the temperature at which a supplementary element oxide forms;
(d) forming on the heat treated substrate a patterned adhesive layer that is at least temporarily tacky;
(e) applying a powder comprising metal to the patterned adhesive layer; and
(f) firing the patterned substrate at a temperature and time sufficient to remove the adhesive layer and sinter the powder.

5,296,260
METHOD OF MANUFACTURING INORGANIC INSULATION
Kazuo Sawada; Shinji Inazawa, and Kouichi Yamada, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP90/01701, § 371 Date Aug. 22, 1991, § 102(e) Date Aug. 22, 1991, PCT Pub. No. WO91/10239, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 26, 1990, Ser. No. 743,429
Claims priority, application Japan, Dec. 28, 1989, 1-341394; Dec. 26, 1990, 1-341392
Int. Cl.[5] B05N *5/12*
U.S. Cl. 427—118 14 Claims

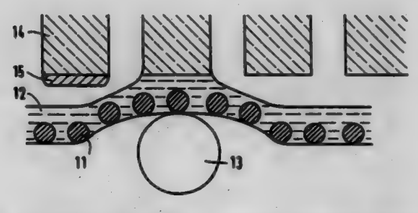


1. A method for manufacturing on an electrical conductor an inorganic insulation with a smooth surface finish measured as a finish surface roughness Ra2, comprising the following steps:
(a) forming a ceramic coating film on said electrical conductor, mixing silicone resin with ceramic particles and/or ceramic fibers to form a mixture, applying said mixture to said electrical conductor to form a coating film, first heating said coating film at a first temperature sufficiently low so that said silicone resin is not changed into a ceramic state and then second heating said coating film at a second higher temperature to convert said silicone resin into said ceramic coating film with said ceramic particles and/or fibers embedded in said ceramic coating film, whereby said ceramic coating film has a film surface with an initial surface roughness Ra1,
(b) preparing a solution of a ceramic precursor selected from the group consisting of metal alkoxides and metal acylates,
(c) applying said ceramic precursor solution to said film surface of said ceramic coating film, and
(d) heating said ceramic precursor solution sufficiently to convert said ceramic precursor solution at least partially to a ceramic state, whereby said initial surface roughness Ra1 is reduced and a smooth, dense composite insulator layer is formed on said electrical conductor, wherein said finish surface roughness Ra2 is smaller than said initial surface roughness Ra1.

5,296,261
METHOD OF MANUFACTURING A SPONGE-TYPE SUPPORT FOR AN ELECTRODE IN AN ELECTROCHEMICAL CELL
Jacques Bouet, Paris, and Bernadette Pichon, Velizy, both of France, assignors to Saft, Romainville, France
Filed Jul. 1, 1992, Ser. No. 907,297
Claims priority, application France, Jul. 1, 1991, 91 08164
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—123 12 Claims

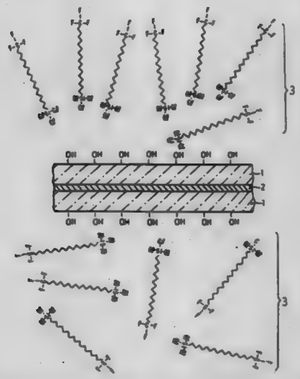
1. A method of manufacturing a sponge support made of a metal selected from the group consisting of nickel, copper and lead, comprising the steps of:
(a) first impregnating a sponge made of an organic material selected from the group consisting of polyurethane, polyester and polyether with a solution of a nitrate or a sulfate of said metal, the concentration of said solution is a function of the desired weight per unit area of said metal sponge support, said organic material sponge has a porosity in the range of from 96% to 98% and a pore-size in the range of from 200 μm to 400 μm; and
(b) next heat-treating said impregnated organic material sponge to remove organic material therefrom to form said metal sponge support.

5,296,262
METHOD OF PROVIDING A PASTE FOR A CERAMIC MULTILAYER ACTUATOR
Henricus A. C. Didden, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 12, 1992, Ser. No. 929,068
Claims priority, application European Pat. Off., Aug. 14, 1991, 91202076.5
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—125 7 Claims



1. A method of providing a paste on a substrate surface by dipping, characterized in that a pseudoplastic paste is used which is provided in the form of a layer on a wire gauze, the layer thickness being adjusted by means of a squeegee and a spacer, which paste layer is wiped off at the bottom side of the gauze by means of a squeegee, and subsequently a substrate with the substrate surface to be covered is dipped in the paste layer up to the gauze and is removed before the paste can flow over the parts of the substrate which are not to be covered.

5,296,263
METHOD OF MANUFACTURING A RECORDING MEDIUM
Mamoru Soga, Osaka, and Kazufumi Ogawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 7, 1993, Ser. No. 2,163
Claims priority, application Japan, Jan. 7, 1992, 4-006163; Apr. 20, 1992, 4-099381
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—130 11 Claims

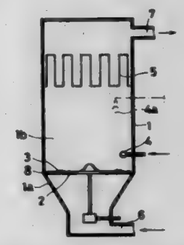


1. A method of manufacturing a recording medium having a recording layer on a surface of a plastic substrate, comprising first depositing the recording layer on the surface of the plastic substrate, then contacting a halogenated silane chemical adsorbent with the recording layer under vapor phase to induce a dehydrochlorination reaction, and reacting the chemical adsorbent with moisture to form a chemical adsorption film.

5,296,264
METHOD FOR SEALING AND PRIMING PREPARED SUBSTRATES FOR ROADWAYS
Ronald W. Blackidge, and Timothy D. Rayburn, both of Gulfport, Miss., assignors to Blackidge Emulsions, Inc., Gulfport, Miss.
Filed Sep. 30, 1991, Ser. No. 767,739
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—138 32 Claims

1. A method for sealing an exposed surface of a substrate comprising soil, clay, sand, shell, cement, limestone, fly ash or mixtures thereof, said method comprising the application to said exposed surface of said substrate an amount of an emulsion effective to retain moisture within said substrate; said emulsion consisting essentially of a first phase of an asphalt and a reainous petroleum oil, and a second phase of water, and at least one surfactant, the ratio of said first phase to said second phase being from about 1:1.8 to about 1:11.

5,296,265
FLUIDIZED COATING APPARATUS HAVING PERFORATED ROTATING DISK AND METHOD OF USING SAME
Moriyuki Okuma; Takayasu Ishikawa; Shinichi Yamamoto, all of Fujieda; Akira Iwasaki, and Masanori Ogawa, both of Tokyo, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo; Okawara Mf. Co., Ltd., Shizuoka and Freund Industrial Co. Ltd., Tokyo, all of Japan
Filed Nov. 25, 1992, Ser. No. 982,087
Claims priority, application Japan, Nov. 26, 1991, 3-310321
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—213 4 Claims



1. A fluidized coating apparatus comprising:
a processing cylinder, and
a rotatable perforated disk provided at a lower axial portion of the processing cylinder, having perforated disk opening portions only in the vicinity of the perforated disk outer peripheral edge so that the ratio of total opening area of the perforated disk opening portions to the area of an annular slit formed between the perforated disk and an inner wall of the processing cylinder is within the range from 0.2 to 0.6.

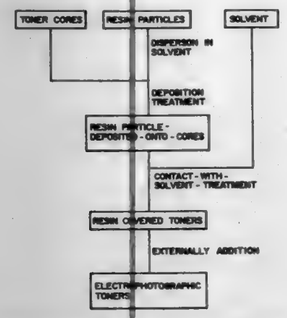
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,266

METHOD OF PREPARING MICROCAPSULE

Masanao Kasugi; Hiroshi Itoh, and Hajime Kurihara, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 19, 1991, Ser. No. 657,568
Claims priority, application Japan, Feb. 22, 1990, 2-41956; Sep. 11, 1990, 2-240593; Jan. 17, 1991, 3-003815
Int. Cl.[5] B01J *13/12*; G03G *9/08*
U.S. Cl. 427—213.36 12 Claims



1. A method for producing microcapsules, comprising the steps of:

(a) providing microcapsule cores having surfaces,

(b) depositing resin particles uniformly onto the surfaces of said microcapsule cores to form resin particle-deposited-onto-cores,

(c) putting said resin particle-deposited-onto-cores in a monodisperse state wherein they do not physically contact each other,

(d) bringing said resin particle-deposited-onto-cores in the monodisperse state into contact with a solvent in which the resin of said resin particles can dissolve whereby to form a solvent-resin solution on the surfaces of the microcapsule cores, and

(e) drying said resin particle-deposited-onto-cores which have been brought into contact with the solvent, while kept in the monodisperse state, whereby to form finished microcapsules having cores with continuous resin coats and, then, recovering the finished microcapsules.

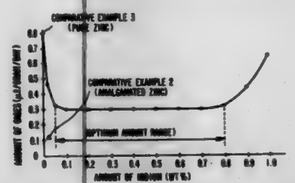
5,296,267

PROCESS FOR PREPARING NON-AMALGAMATED ZINC ALLOY POWDER FOR ALKALI DRY CELLS

Kinya Tada; Masaaki Kurimura; Mutsumi Yano, all of Osaka; Eiichiro Mieno, Gunma; Wataru Sekiguchi, Gunma; Junzo Nakagawa, Gunma, and Takanori Akazawa, Gunma, all of Japan, assignors to Toho-Aen Kabushikigaisha, Gunma; Sanyo-Ekonomy Kabushikigaisha and Sanyo-Denki Kabushikigaisha, both of Osaka, all of Japan

Filed Jul. 12, 1991, Ser. No. 729,145
Claims priority, application Japan, Jan. 22, 1991, 3-021697
Int. Cl.[5] B22F *1/02*
U.S. Cl. 427—216 6 Claims

1. A process for preparing non-amalgamated zinc alloy powder for alkali dry cells, comprising admixing zinc alloy powder with a predetermined amount of indium and heating a mixture of the zinc alloy powder with indium at a predetermined temperature in an atmosphere of an inert gas for the purpose of coating the zinc alloy powder with the indium.



5,296,268

PRETREATMENT PROCESS OF TIN LEAD PLATING

Richard A. Iantosca, W. Palm Beach, Fla., assignor to Shipley Company Inc., Marlborough, Mass.

Filed Sep. 3, 1991, Ser. No. 753,787
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—328 22 Claims

1. A process for plating a tin-lead alloy on cupreous substrates by displacement plating from an immersion plating solution having a pH varying between 0.0 and 1.5 containing dissolved tin and lead salts, said process comprising the steps of pretreatment of the substrates by contact of the substrates with a pretreatment solution containing an acid pH adjustor followed by contact of the substrates with said immersion plating solution for a time sufficient to deposit an alloy of tin and lead by displacement of copper by tin and lead, said pretreatment solution containing said acid pH adjustor in a concentration sufficient to maintain the pH of the immersion plating solution essentially constant by drag in of pretreatment solution on substrates as they pass from the pretreatment solution to the immersion plating solution in said steps of contact of the substrates with said pretreatment solution and said immersion plating solution.

5,296,269

PROCESS FOR INCREASING THE CREASE RESISTANCE OF SILK TEXTILES

Yiqi Yang, and Shiqi Li, both of Urbana, Ill., assignors to The Borad of Trustees of the University of Illinois, Urbana, Ill.

Filed Mar. 3, 1993, Ser. No. 25,596
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—393.2 15 Claims

1. A process for increasing the crease-resistance of silk textiles, which comprises:

wetting a silk textile with a finishing agent comprising a polycarboxylic acid and a phosphorus-containing salt catalyst;

drying the textile; and

curing the textile at an elevated temperature.

5,296,270

PROCESS FOR MAKING A THERMALLY RADIANT SURFACE

Paul L. Prosser, Chapin, S.C., assignor to Custom Training Aids, Inc., Swansea, S.C.

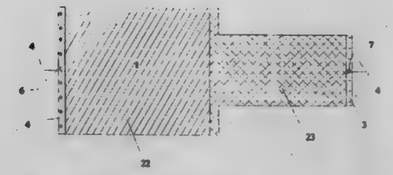
Filed Sep. 5, 1991, Ser. No. 755,622
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—448 5 Claims

1. A process for forming an electrically resistive element onto a surface of a structural element, using arc-sprayed metal, to produce a new surface, wherein the new surface is thermally radiant when, in the conveyance of an electric current, the electrically resistive element produces heat, wherein the process consists of the following steps:

Measuring an area of the surface of the structural element on to which is to be formed the electrically resistive element, wherein the electrically resistive element on the structural element is sized so as to simulate a military target having a distinctive signature infrared image;

Calculating a set of design parameters for a total resistance of the electrically resistive element to produce a heat flux of greater than or equal to 13.7 watts per square foot, where the resistive element is comprised of a resistive area having a surface that is not less than a bounded width of 18.9 inches and a bounded length of 34.5 inches and a pair of conductive busses, wherein both the resistive area and the pair of conductive busses are formed using a single arc-sprayed metal;

Using the set of design parameters to determine a total coating thickness of arc-sprayed metal of the resistive area and a total coating thickness of arc-sprayed metal of the conductive busses;



Confirming that the total coating thickness of arc-sprayed metal of the resistive area is within lower coating limits of equipment, wherein a practical lower limit for coating thickness of arc-sprayed metal is 0.1 mil;

Masking off sections of the structural element;

Setting an automated arc-sprayer to deliver a rate of deposition of metal at a rate of travel, and adjusting the rate of travel over the surface of the structural element such that for each pass over the surface of the structural element a fractional thickness of arc-sprayed metal is deposited, wherein the total coating thickness of arc-sprayed metal is a cumulative total of fractional thicknesses denominated by a sum of the number of passes;

Spraying the total coating thickness of arc-sprayed metal forming the conductive busses and the total coating thickness of arc-sprayed metal forming the resistive area, wherein the combination of multiple passes of the arc-sprayer enables a continuous coating of a single metal to be applied onto a structural element.

5,296,271

MICROWAVE TREATMENT OF PHOTORESIST ON A SUBSTRATE

Thomas J. Swirbel, Davie; Richard J. Kolcz, North Lauderdale, and James L. Davis, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 714,947, Jun. 13, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 4,478
Int. Cl.[5] B05D *1/32*
U.S. Cl. 427—493 12 Claims

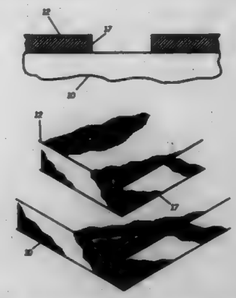
12. A method of processing photoresist in order to provide a straight sidewall, comprising the steps of:

applying a dry film photoresist to a substrate;

exposing the photoresist to a pattern of ultraviolet light to create a latent image;

placing the substrate and photoresist in a microwave oven;

curing the photoresist by exposing it to microwave energy after the step of exposing to ultraviolet light and prior to a developing step; and



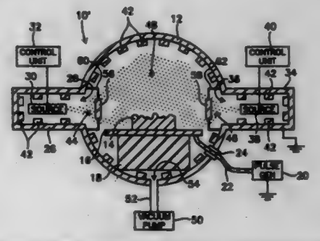
developing the photoresist with a liquid developer in order to develop the latent image.

5,296,272

METHOD OF IMPLANTING IONS FROM A PLASMA INTO AN OBJECT

Jesse N. Matossian, Woodland Hills, and Dan M. Goebel, Tarzana, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 758,405, Aug. 30, 1991, abandoned, which is a continuation of Ser. No. 595,123, Oct. 10, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,273
Int. Cl.[5] B05D *3/06, 3/02*
U.S. Cl. 427—523 5 Claims



1. A method of implanting ions from a plasma into a three-dimensional object comprising the steps of:

(a) enclosing the three-dimensional object in a container;

(b) generating a plasma having positive ions in a chamber separate from the container, and causing the plasma to diffuse into the container to surround the three-dimensional object with uniform density, and

(c) applying negative pulses at least approximately 20 kV to the object to accelerate the positive ions from the plasma toward the object to implant said positive ions into the object.

5,296,273

COATING METHOD FOR POLYPROPYLENE RESIN MOLDINGS

Hiroomi Abe; Hideo Shinozaqe; Kyoji Suzuki, and Satoru Sogabe, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 794,881
Claims priority, application Japan, Nov. 20, 1990, 2-316722
Int. Cl.[5] B05D *3/06, 3/02, 1/36, 7/26*
U.S. Cl. 427—553 1 Claim

1. A method for coating a polypropylene resin molding, which comprises irradiating the surface of a molding of a

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polypropylene resin selected from a polypropylene and a propylene-ethylene block copolymer with an ultraviolet light having an irradiating wavelength in the region of 300 nm or less, coating the irradiated surface with a primer, and further coating the coated surface with a coating material,

wherein said primer contains chlorinated polypropylene, and

wherein said coating material is a urethane coating material.

5,296,274

METHOD OF PRODUCING CARBON-CONTAINING MATERIALS BY ELECTRON BEAM VACUUM EVAPORATION OF GRAPHITE AND SUBSEQUENT CONDENSATION

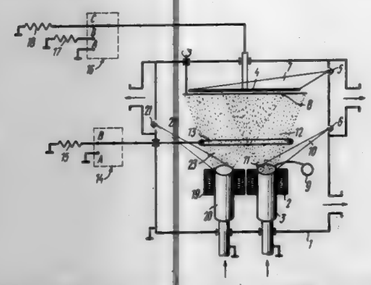
Boris A. Movchan, ulitsa Darvina, 7, kv.7.; Nikolai I. Grechanjuk, bulvar Davydova, 7, kv.29.; Jury B. Chuikov, ulitsa Tsitadelnaya, 4/7, kv.18.; Boris E. Paton, ulitsa Chkalova, 41a, kv.26., and Vladimir V. Stetsenko, ulitsa Malinovskogo, 11,kv.10., all of Kiev, U.S.S.R.

PCT No. PCT/SU89/00119, § 371 Date Nov. 8, 1991, § 102(e) Date Nov. 8, 1991, PCT Pub. No. WO90/13683, PCT Pub. Date Nov. 15, 1990

PCT Filed May 10, 1989, Ser. No. 700,201

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—566 **6 Claims**



1. A method of producing carbon-containing materials, comprising electron-beam vacuum evaporation of graphite with subsequent condensation thereof onto a support, comprising, prior to the electron-beam evaporation of the surface of the graphite, disposing at least one transition metal selected from Groups VI, VII and VIII of the Periodic System on the surface of the graphite, directing the electron-beam onto the transition metal and the graphite surface thereunder, thereby melting the transition metal and evaporating the graphite surface, and condensing the evaporated material onto the support.

5,296,275

PHOTOTRANSCHROMIC INK

Peter M. Gosman, and Sunil Sirdesai, both of San Diego, Calif., assignors to Xytronyx, Inc., San Diego, Calif.

Filed Jul. 1, 1992, Ser. No. 907,148

Int. Cl.[5] C09D *11/10, 11/02*

U.S. Cl. 428—29 **20 Claims**

1. A phototranschromic ink suitable for use in a printing machine, comprising

a water soluble, inert, non-ionic polymeric resin carrier base having film forming properties,

a photo acid or photo base progenitor which releases or takes up protons upon exposure to light,

a pH sensitive dye which changes color in response to a change in proton levels,

a water compatible non-ionic wetting agent which cooperates with said dye to allow said dye to change color in response to said change in proton levels,

a water compatible non-ionic thickening agent which cooperates with said dye to allow said dye to change color in response to said change in proton levels,

a neutral water soluble flow aid which cooperates with said dye to allow said dye to change color in response to said change of proton levels;

wherein said base, progenitor, dye, wetting agent, thickening agent and flow aid all cooperate to provide an ink which changes color upon exposure to ultraviolet radiation and is of suitable consistency for use in a printing machine.

9. A phototranschromic ink suitable for use in a printing machine, comprising

from about 5–10 weight percent of a water soluble, inert, non-ionic polymeric resin carrier base having film forming properties,

a photo acid or photo base progenitor which releases or takes up protons upon exposure to light,

a pH sensitive dye which changes color in response to a change in proton levels,

a water compatible non-ionic wetting agent which cooperates with said dye to allow said dye to change color in response to said change in proton levels,

a neutral water soluble flow aid which cooperates with said dye to allow said dye to change color in response to said change of proton levels;

wherein said base, progenitor, dye, wetting agent and flow aid all cooperate to provide an ink which changes color upon exposure to ultraviolet radiation and is of suitable consistency for use in a printing machine.

10. A substrate having an inert surface comprising a phototranschromic ink as defined in claim 1 or 9 applied thereto by a printing machine.

5,296,276

SEAMLESS ENDLESS BELT

Satoshi Maruyama; Kenji Tateishi, both of Kagawa, and Kazuo Kondo, Marugame, all of Japan, assignors to Okura Industrial Co., Ltd., Japan

Filed Dec. 18, 1991, Ser. No. 809,170

Claims priority, application Japan, Dec. 28, 1990, 2-416979; Jan. 18, 1991, 3-18443; Jun. 12, 1991, 3-167555

Int. Cl.[5] B27N *5/02*

U.S. Cl. 428—35.7 **5 Claims**

1. A seamless endless belt comprising laminated resin tubes (A), (B) and (C); the outer and inner tubes (A) and (C) being comprised of a polyetheretherketone resin subjected to a biaxial stretching in both lateral and longitudinal directions by at least 2 times its original dimensions at a temperature above the glass transition temperature of the resin but below the melting point of the resin; intermediate tube (B) being comprised of thermoplastic polyurethane resin, the outer and inner tubes (A), (C) and the intermediate tube (B) being integrally bonded and the outer and inner tubes (A), (C) having been thermoset by heating while relaxed.

5,296,277

POSITIONABLE AND REPOSITIONABLE ADHESIVE ARTICLES

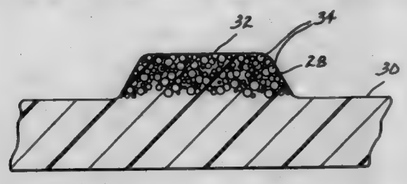
Kenneth D. Wilson, Stillwater, Minn.; Larry A. Meixner, St. Croix Falls; Sharon R. Benis, Osceola, both of Wis.; Clyde D. Calhoun, and Buren R. Ree, both of Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 904,850, Jun. 26, 1992, abandoned. This application Oct. 9, 1992, Ser. No. 959,456

Int. Cl.[5] B32B *7/06, 7/12*

U.S. Cl. 428—40 **40 Claims**

1. An adhesive sheet comprising (1) a backing, and (2) an adhesive layer having at least one topologically microstructured surface comprising a plurality of pegs, substantially uniformly distributed and protruding outwardly from an essentially planar adhesive layer surface to a height in the range of 15 μm to 200 μm, wherein the pegs have essentially flat tops that are adhesive and comprise less than 25% of the total



surface area of the adhesive layer and the planar adhesive surface between and around the pegs is greater than 30% of the total surface area of the adhesive layer.

5,296,278

GASTIGHT WOVEN FABRIC SHEET FOR AIR BAGS AND A PROCESS FOR PRODUCING SAME

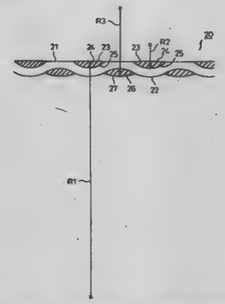
Kunio Nishimura, Ibaraki; Hideo Nakagawa, Takatsuki; Nobuo Takahashi, Ikoma, and Kiyoshi Maruo, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 25, 1992, Ser. No. 66,093

Claims priority, application Japan, Sep. 27, 1991, 3-275011; Jun. 29, 1992, 4-170812

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—36.1 **17 Claims**



1. A gastight woven fabric sheet for air bags, comprising a woven fabric formed from a plurality of warp and wefts each comprising a polyester multifilament yarn having a yarn thickness of 200 to 550 deniers and a twist multiplier of 3,000 or less, said woven fabric having a smoothed surface and an opposite non-smoothed surface thereof, and satisfying all the relationships (1) to (7):

$$78.74p \geqq Q(p) \geqq 7.874p \quad (1)$$

$$R1 > R2 \quad (2)$$

$$R1 > R3 \quad (3)$$

$$3.5 \geqq R3 \geqq 0.5 \quad (4)$$

$$Mu - Mc \geqq 0.0005 \quad (5)$$

$$Su - Sc \geqq 0.5 \quad (6)$$

and

$$85 \geqq P \geqq 70 \quad (7)$$

in which relationships (1) to (7),

p represents a pressure in unit of kg/cm^{2}G and satisfying the relationship:

$$0 \leqq p \leqq 0.03;$$

Q(p) represents a gas permeability function in units of ml/cm^2/sec of the woven fabric under the pressure p;

R1 represents a radius of curvature in units of mm of a smoothed surface side half portion of a cross-sectional profile of at least one selected from the warp and weft yarns located in the smoothed surface portions of the woven fabric;

R2 represents a radius of curvature in units of mm of an opposite side half portion of the cross-sectional profile of the at least one selected from the warp and weft yarns located in the smoothed surface portion of the woven fabric;

R3 represents a radius of curvature in units of mm of a non-smoothed surface side half portion of a cross-sectional profile of at least one selected from the warp and weft yarns located in the non-smoothed surface portion of the woven fabric;

Mc represents an average deviation in surface frictional coefficient of the smoothed surface of the woven fabric;

Mu represents an average deviation in surface frictional coefficient of the non-smoothed surface of the woven fabric;

Sc represents an average deviation in surface roughness in units of μm of the smoothed surface of the woven fabric;

Su represents an average deviation in surface roughness in units of μm of the non-smoothed surface of the woven fabric; and

P represents a fiber packing in units of % of the woven fabric.

5,296,279

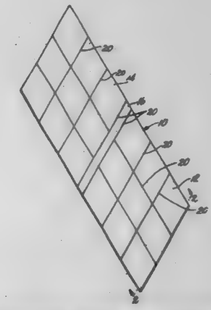
SELF ADHESIVE POSTAGE STAMP CONSTRUCTION

Robert P. Birnbaum, Redlands, Calif.; Alan Green, Simpsonville, S.C.; Joseph Y. Peng, and Alim A. Fatah, both of Washington, D.C., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jun. 25, 1992, Ser. No. 904,370

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—42 **2 Claims**



1. An arrangement of postage stamps which comprise a first array of nine individually removable postage stamps separated from a second array of nine individually removable postage stamps by a continuous peel strip, the combined first and second arrays of postage stamps and peel strip being of currency size, said arrays of said postage stamps and peel strip being adhered through a pressure sensitive adhesive to a release liner and formed by die cutting through a cancelable backing provided with postage information for each individual postage stamp printed thereon and a pressure sensitive adhesive layer to said release liner forming thereby said first array of postage stamps separated from a second array of postage stamps b a continuous peel strip extending across the width of the first and second arrays of postage stamps.

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5,296,280

PROCESS FOR MAKING A HONEYCOMB CORE FROM A HONEYCOMB HALF-CELL STRUCTURE AND HONEYCOMB CORE MADE THEREBY

Pui-Yan Lin, and Robert A. Marin, both of Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1991, Ser. No. 797,325
Int. Cl.[5] B32B 3/12
U.S. Cl. 428—118 9 Claims



1. A process for making a hexagonal-cell honeycomb core from a honeycomb half-cell structure, the structure having a plurality of peaks and valleys on each side thereof and a diagonal surface between each consecutive peak and valley, comprising the steps of:

(a) applying a first adhesive component comprising a cyanate ester and an epoxy to a first group of peaks disposed on one side of the structure;

(b) applying a second, different adhesive component comprising the epoxy and a catalyst to a second group of peaks disposed on the other side of the structure; and

(c) stacking the structure so that the first adhesive component on the first group of peaks comes into contact with the second adhesive component on the second group of peaks, thereby mixing the components to bond the half-cell structure together and form the honeycomb core.

5,296,281

Patent Not Issued For This Number

5,296,282

DEGRADABLE REPELLANT COATED ARTICLES

Glenn R. Evers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1991, Ser. No. 743,850
Int. Cl.[5] D06N 7/04; B32B 7/14, 27/00; A01G 23/02
U.S. Cl. 428—195 19 Claims



1. An article comprising:

(a) a substrate comprising a poly(hydroxy acid) selected from the group consisting of (1) poly(lactic acid), (2) poly(glycolic acid), (3) copolymers of lactic acid and glycolic acid, and (4) copolymers of lactic acid with a monomer selected from the group consisting of epsilon-caprolactone, beta-propiolactone, alpha,alpha-dimethyl-beta-propiolactone, and dodecanolactone; the substrate comprising at least one surface;

(b) a surface layer of a repellant material on at least one surface of the substrate, wherein the surface layer is:

(1) capable of preventing aqueous media from wetting the substrate;

(2) substantially discontinuous, giving coated and uncoated substrate areas, the coated areas comprising at least 80% of the substrate surface bearing the surface layer; and

(3) sufficiently discontinuous to permit biodegradation of the substrate or penetration of water vapor into the substrate;

wherein the repellant material has a critical surface tension of 5 to 54 dynes/cm.

5,296,283

PROTECTIVE COATING FOR MACHINE-READABLE MARKINGS

James R. Froggatt, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 819,692, Jan. 13, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 979,007
Int. Cl.[5] B32B 3/00, 5/16, 7/14
U.S. Cl. 428—204 4 Claims

1. An article containing a machine-readable marking on at least one surface thereof, said marking being protected by a coating of at least one amorphous fluoropolymer selected from:

A) dipolymers of perfluoro (1,3-dioxole) with tetrafluoroethylene;

B) copolymers of perfluoro(2,2-dimethyl-1,3-dioxole) with at least one comonomer selected from the class consisting of

(a) tetrafluoroethylene,

(b) chlorotrifluoroethylene.

(c) vinylidene fluoride,

(d) hexafluoropropylene,

(e) trifluoroethylene,

(f) perfluoro(alkyl vinyl ethers) of the formula CF_2=$CFOR_F$, where R_F is a normal perfluoroalkyl radical having 1–3 carbon atoms,

(g) fluorovinyl ethers of the formula CF2=CFOQZ, where Q is a perfluorinated alkylene radical containing 0–5 ether oxygen atoms, wherein the sum of the C and O atoms in Q is from 2 to 10; and Z is a group selected from the class consisting of —COOR, —SO_2F, —CN, —COF, and —OCH_3, where R is a C_1–C_4 alkyl,

(h) vinyl fluoride, and

(i) (perfluoroalkyl)ethylene, R_fCH=CH_2; where R_f is a C_1–C_8 normal perfluoroalkyl radical; and

C) cyclic aliphatic homopolymers in which the repeating unit contains an aliphatic ring of 5–9 members, at least two of the ring members being carbon atoms independently substituted either by fluorine atoms or by perfluoromethyl groups, and at most two of the ring members being oxygen atoms, the remaining portions of the repeating units, when present, being perfluoromethylene groups.

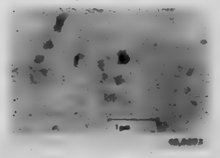
5,296,284

DYED HECTORITE PIGMENTS AND APPLICATIONS

David H. Durham, Macon, Ga., assignor to J. M. Huber Corporation, Rumson, N.J.

Continuation of Ser. No. 658,454, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 183,311, Apr. 5, 1988, abandoned. This application Sep. 29, 1992, Ser. No. 953,322
Int. Cl.[5] C09D 11/00
U.S. Cl. 428—207 12 Claims

1. A paint containing as a coloring agent a coloring pigment which comprises the reaction product of a cationic organic dye and a sheared, sodium exchanged McDermitt, Nevada calcium magnesium hectorite, said hectorite mineral having an average particle size of 0.1 to 0.6 microns, a generally square or plate-like morphology and high cation exchange capacity in the range of 110 to 150 milliequivalents per 100 grams of dry hectorite, and a charge density yielding a greater than 28.5 angstroms D(001) spacing as measured by x-ray diffraction.



5,296,285

HIGH EMITTANCE LOW ABSORPTANCE COATINGS

Henry W. Babel, Huntington Beach, and Huong G. Le, Fountain Valley, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 26, 1992, Ser. No. 887,851
Int. Cl.[5] B32B 7/02
U.S. Cl. 428—213 7 Claims

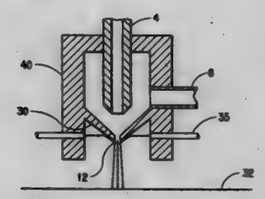
1. An article having a high infrared emittance low solar absorptance coating, which comprises a substrate formed of aluminum or an aluminum alloy having an anodized surface and a topcoat of an inorganic white paint on the anodic coating of said anodized surface, wherein said inorganic paint is comprised of a member selected from the group consisting of (1) a potassium silicate binder having zinc oxide particles distributed therein, and (2) a potassium silicate binder having zinc orthotitanate particles distributed therein, the amount of said particles in said binder ranging from about 50 to about 90% of said particles by weight of the total mixture of said particles and binder, wherein the total thickness of the anodic coating and said white paint topcoat ranges from about 1.5 to about 8 mils, and wherein the overall coating has a solar absorptance of about 0.15 to about 0.20, and a infrared emittance of about 0.90 to about 0.92.

5,296,286

PROCESS FOR PREPARING SUBDENIER FIBERS, PULP-LIKE SHORT FIBERS, FIBRIDS, ROVINGS AND MATS FROM ISOTROPIC POLYMER SOLUTIONS

Steven R. Allen, Midlothian, Va.; David M. Gale; Aziz A. Mian, both of Wilmington, Del.; Sam L. Samuels, Claymont, Del., and Hsiang Shih, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/05000, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/01829, PCT Pub. Date Feb. 6, 1992
Continuation-in-part of Ser. No. 555,194, Jul. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 304,461, Feb. 1, 1989, Pat. No. 4,963,298. This PCT application Jul. 19, 1991, Ser. No. 961,704
Int. Cl.[5] D03D 3/00
U.S. Cl. 428—224 22 Claims



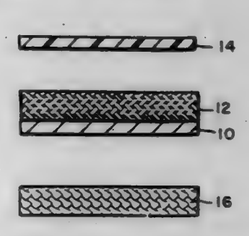
1. A process for preparing subdenier fiber from isotropic polymer solutions comprising 1) extruding a stream of an isotropic solution of a polymer through a spinneret orifice into a chamber, 2) introducing a pressurized gas into said chamber, 3) directing the gas in the flow direction of and in surrounding contact with said stream within the chamber, 4) passing both the gas and stream through an aperture into a zone of lower pressure at a velocity sufficient to attenuate the stream and fragment it into fibers, and 5) contacting the fragmented stream in said zone with a coagulating fluid.

5,296,287

SINGLE MEMBRANE INSULATION MATERIAL

Robert C. Ribbans, Amherst, N.H., assignor to Textiles Coated Incorporated, Amherst, N.H.

Filed Nov. 25, 1992, Ser. No. 981,198
Int. Cl.[5] B32B 7/00
U.S. Cl. 428—251 8 Claims



1. An integrally formed insulating composite comprising:

a flexible fluoropolymer coated substrate; and

a non-fluoropolymer insulating layer laminated to one side of said substrate by means of a melt bondable fluoropolymer adhesive interlayer interposed therebetween.

5,296,288

PROTECTIVE COATING FOR CERAMIC MATERIALS

Demetrius A. Kourtides, Gilroy; Rex A. Churchward, San Jose, and David M. Lowe, Hayward, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

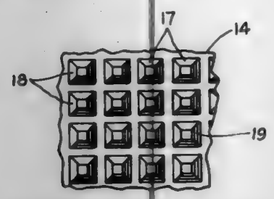
Filed Apr. 9, 1992, Ser. No. 865,535
Int. Cl.[5] B32B 18/00
U.S. Cl. 428—262 20 Claims



11. A thermal control structure comprising a ceramic material having coated thereon a protective coating comprising, in admixture, silicon dioxide powder in an amount of from 23.0 to 44.0 wt %; colloidal silicon dioxide in an amount from 25.0 to 45.0 wt %; water in an amount from 19.0 to 39.0 wt %; and one or more emittance agents selected from the group consisting of silicon tetraboride, silicon hexaboride, silicon carbide, molybdenum disilicide, tungsten disilicide and zirconium diboride.

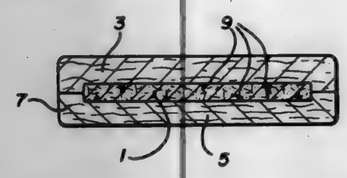
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,289
STRETCHABLE SPUN BONDED NONWOVEN WEB AND METHOD
Loren M. Collins, 2010 S. Ocean Blvd., North Myrtle Beach, S.C. 29582
Filed Apr. 29, 1992, Ser. No. 876,753
Int. Cl.[5] D04H *3/14*; D06C *3/02*
U.S. Cl. 428—296 14 Claims



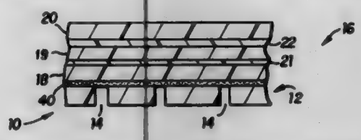
1. A soft stretchable spun bonded nonwoven web comprising:
a plurality of continuous and randomly deposited, molecularly oriented filaments of a thermoplastic polymer forming a web;
said web having a plurality of spaced spot bonds of autogenous releasable filament bonds having been formed by passing said web between a roll with a raised pattern thereon and another opposed roll exerting pressure and applying heat to said web;
said spot bonds being distributed in a pattern providing continuous strips of unbonded filaments therebetween aligned in both the machine direction and in the cross direction throughout the web;
said spot bonds being in rows and in side by side relation in both the machine direction and in the cross direction;
said continuous strips being of such width that respective spot bonds are sufficiently close as to provide secondary bonding between said spot bonds resulting in enhanced stretchability in both the machine direction and in the cross direction without substantial loss of strength; and
said releasable filament bonds serving to hold the filaments for stabilizing the web and the release strength of the filaments being such that the bonded intensity approaches but is less than the pull required for fracturing the filaments when the web is subjected to strain.

5,296,290
ABSORBENT LAMINATES
Nigel J. Brassington, Keighley, United Kingdom, assignor to Johnson & Johnson, New Brunswick, N.J.
Continuation of Ser. No. 769,509, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 545,671, Jun. 8, 1990, abandoned, which is a continuation of Ser. No. 784,290, Sep. 24, 1985, abandoned. This application Feb. 26, 1993, Ser. No. 23,740
Claims priority, application United Kingdom, Jan. 26, 1984, 8402095
Int. Cl.[5] B32B *5/06*
U.S. Cl. 428—300 6 Claims



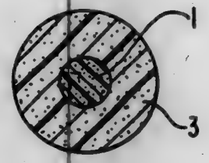
1. An absorbent laminate for absorbing aqueous body fluids comprising a first layer formed of hydrophobic fibers and pervious to said aqueous body fluids; a water absorbent hydrophilic layer adjacent thereto; and a plurality of said hydrophobic fibers extending from within said first layer into said hydrophilic layer wherein the plurality of fibers extending from within the first layer into the hydrophilic layer are formed from the material of the first layer by needling at a density of from 5 to 20 needles/cm^2.

5,296,291
HEAT RESISTANT BREATHABLE FILMS
Walter B. Mueller, Inman, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed May 5, 1989, Ser. No. 347,858
Int. Cl.[5] B32B *3/10, 31/14, 27/08*
U.S. Cl. 428—349 15 Claims



1. A multilayer laminate useful in packaging produce comprising:
(a) a first perforated film; and
(b) a second film, bonded to the first film, comprising
i) a bonding layer of ethylene vinyl acetate copolymer;
ii) a core layer of a heat resistant, breathable polymeric material selected from the group consisting of copolyesters, polymethyl pentene, and polyether block amide copolymer;
iii) an outer heat sealable layer; and
iv) a polymeric adhesive layer disposed between and bonding the core layer to each of the bonding and heat sealable layers respectively.

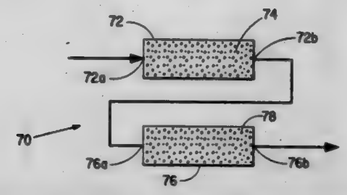
5,296,292
ELONGATED CYLINDRICAL TENSILE ARTICLE
Leslie C. Butters, Flagstaff, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Sep. 4, 1990, Ser. No. 576,867
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—375 17 Claims



1. A fly fishing line comprising:
(a) a non-metallic tensile strength member core comprising at least one monofilament; and
(b) a layer of porous polytetrafluoroethylene surrounding said tensile strength member;
wherein at least a portion of the length of the layer of porous polytetrafluoroethylene is tapered.

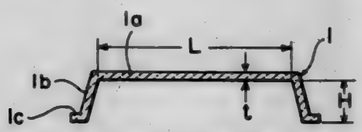
5,296,293
PARTICULATE MATERIAL SUITABLE FOR THE REMOVAL OF HEAVY METALS
Wolfram Jobst, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 23, 1991, Ser. No. 812,000
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—403 4 Claims

1. A particulate material suitable for the removal of heavy metals from an aqueous effluent, comprising: peat finely ground to an average size below about 30 mesh encapsulated in



a microporous shell of a polyvinyl chloride, wherein the weight percentage of the peat is less than 82%.

5,296,294
GLASS PANEL RESISTANT TO COLORING WHEN IRRADIATED WITH ELECTRON RAYS
Kouichi Suzaki, Nishinomiya, and Kazuo Shibaoka, Itami, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Dec. 14, 1992, Ser. No. 989,826
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—410 18 Claims



1. A glass panel resistant to coloring when irradiated with electron rays, which has an electrical resistivity of at least 1×10^{10} ohm-cm and consist essentially of the following glass composition:

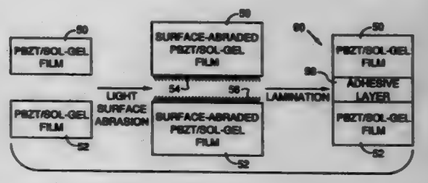
SiO_2	64–75% by weight
Al_2O_3	1.5–2.0% by weight
CaO	6.5–9.0% by weight
MgO	0–5.0% by weight
Li_2O	0.5–2.5% by weight
Na_2O	7.0–12% by weight
K_2O	2.1–5.0% by weight
$SrO + BaO + ZrO_2$	0–10% by weight
CeO_2	0–0.5% by weight,

wherein part of the Na ion, in at least the surface layer of the panel region to be irradiated with electron rays, is substituted with K ion by an ion exchange treatment in a K-containing molten salt so that the molar ratio of Na ion and K ion expressed by $Na_2O/(Na_2O+K_2O)$, in at least the glass layer ranging from 0.5 μm to 6.5 μm in depth from the panel surface of said panel region to be irradiated with electron rays, is 0.3–0.75.

5,296,295
RADIATION-CURABLE COATING COMPOSITIONS THAT FORM TRANSPARENT, ABRASION-RESISTANT TINTABLE COATINGS
William C. Perkins, Irvine, and William Lewis, Tustin, both of Calif., assignors to Pilkington Aerospace Inc., Garden Grove, Calif.
Division of Ser. No. 809,262, Dec. 17, 1991, Pat. No. 5,221,560, which is a division of Ser. No. 559,499, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 312,612, Feb. 17, 1989, abandoned. This application May 3, 1993, Ser. No. 56,712
Int. Cl.[5] B32B *27/36, 9/04*; C08G *77/04*; C08K *5/54*
U.S. Cl. 428—412 35 Claims

1. A tinted article made by applying to at least one surface of a substrate a tintable, radiation-curable coating composition which forms a transparent, abrasion-resistant coating upon curing, said coating composition comprising:
a. an effective abrasion-resistant amount of colloidal silica;
b. about 0.05 to about 5 parts by weight per each part colloidal silica of a hydrolysis product of a silane compound having a polymerizable functional group;
c. an effective tintable amount of a polyfunctional, polymerizable non-acrylate-functional ether; and
d. a catalytic amount of a radiation sensitive initiator;
curing said coating composition on the surface of said substrate by exposing said composition to high intensity irradiation for a period of time sufficient to form a transparent, tintable, abrasion-resistant coating; and immersing the coated surface of the substrate in a dye bath for a period of time sufficient for the coating to absorb or transmit to the substrate a desired amount of dye.

5,296,296
ORDERED POLYMER/SOL-GEL MICROCOMPOSITE LAMINATES WITH GLASS ADHESIVE
R. Ross Haghighat, Acton, and Robert F. Koyar, Wrentham, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 25, 1991, Ser. No. 722,583
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—426 17 Claims



1. A method for laminating ordered polymer/sol-gel glass microcomposite film layers comprising, forming at least two separate film layers, roughing an opposed surface of a pair of said film layers, applying fusible glass adhesive which fuses below 550° C., to at least one of the opposed film surfaces and compressing said film layers and said adhesive layer therebetween, at sufficient temperature and pressure to laminate said film and adhesive layers together.

5,296,297
REFLECTIVE ARTICLES HAVING IMPROVED CORROSION RESISTANCE
Albert Servais; Christian Danby, both of Gerpinnes, and Bernard Somerhausen, Nivelles, all of Belgium, assignors to Glaverbel, Brussels, Belgium
Filed Nov. 1, 1991, Ser. No. 786,826
Claims priority, application United Kingdom, Nov. 3, 1990, 9023949.2; Apr. 16, 1991, 9108009.3
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—426 16 Claims

1. A reflective article, comprising:
a glass substrate; and
a reflective metal coating deposited on the glass substrate and comprised of a reflective layer of silver which has been treated with a solution containing at least one ion selected from the group consisting of Cr(II), V(II or III), Ti(III or II), Fe(II), In(I or II), Cu(I), and Al(III), washed and dried, whereby the reflective metal coating is protected against corrosion.

5,296,298

SILICONE RUBBER COMPOSITION AND SILICONE RUBBER-PROCESSED FABRIC

Tetsuo Fujimoto, and Yasuji Matsumoto, both of Tokyo, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,338
Claims priority, application Japan, Nov. 22, 1991, 3-307603
Int. Cl.[5] B32B *25/02*
U.S. Cl. 428—447 10 Claims

1. A silicone rubber composition comprising

(A) 100 parts by weight of a polyorganosiloxane having, per molecule, at least two structural units represented by the following formula:

$$(R^1)_a(R^2)_bSiO_{(4-(a+b))/2} \quad (I)$$

wherein R^1 represents an alkenyl group; R^2 represents a substituted or unsubstituted monovalent hydrocarbon group containing no aliphatic unsaturated bonds; a represents 1 or 2; b represents 0, 1, or 2; and a+b represents 1, 2, or 3,

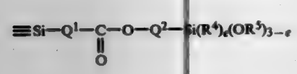
(B) a polyorganohydrogensiloxane comprising structural units shown by the following formula:

$$(R^3)_cH_dSiO_{(4-(c+d))/2} \quad (II)$$

wherein R^3 represents a substituted or unsubstituted monovalent hydrocarbon group; c represents 0, 1, or 2; d represents 1 or 2; and c+d represents 1, 2, or 3

and having at least three silicon-bonded hydrogen atoms per molecule, the amount of component (B) being such that the number of silicon-bonded hydrogen atoms in component (B) is from 0.5 to 4.0 per R^1 group in the structural units shown by formula (I) of component (A),

(C) from 0.1 to 10 parts by weight of a compound selected from the group consisting of an organosilicon compound having, per molecule, at least one silicon-bonded hydrogen atom and at least one group represented by the following formula:



(III)

wherein Q^1 and Q^2 each represents a divalent hydrocarbon group; R^4 and R^5 each represents a monovalent hydrocarbon group having from 1 to 4 carbon atoms; and e represents 0 or 1

and an acrylic- or methacrylic-functional silane coupling agent,

(D) from 0.1 to 10 parts by weight of an epoxyalkylalkoxysilane represented by the following formula:

$$X-Q^3-Si(R^6)_f(OR^7)_{3-f} \quad (IV)$$

wherein Q^3 represents a divalent hydrocarbon group having from 1 to 4 carbon atoms; R^6 and R^7 each represents a monovalent hydrocarbon group having from 1 to 4 carbon atoms; X represents glycidoxy group or epoxycyclohexyl group; and f represents 0 or 1,

(E) from 0 to 5 parts by weight of an aluminum chelate compound, and

(F) platinum and/or a platinum compound in an amount of from 1 to 100 ppm of the polyorganosiloxane, component (A), in terms of the amount of platinum atoms.

5,296,299

THERMAL TRANSFER FILM

Hideo Makishima, Tokyo; Sadao Morishita, Ushiku, and Toshihiko Matsushita, Tokyo, all of Japan, assignors to Matsubishi Paper Mills Ltd., Tokyo, Japan

Continuation of Ser. No. 340,457, Apr. 19, 1989, abandoned.
This application Nov. 23, 1992, Ser. No. 978,973
Claims priority, application Japan, Apr. 23, 1988, 63-100678; Aug. 25, 1988, 63-211937; Nov. 29, 1988, 63-302779; Jan. 6, 1989, 1-1589
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—447 11 Claims



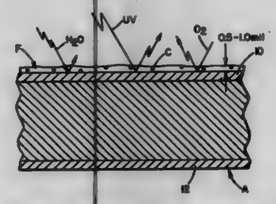
1. A thermal transfer film which comprises a base film, a heat resisting layer provided on one side of the base film, a heat meltable ink layer provided on the other side of the base film, and an antistatic layer provided between the base film and either the heat resisting layer or the heat meltable ink layer, said antistatic layer comprising a film of an antistatic agent which is an inorganic polymer of a polysiloxane containing a silanol group or an acrylic cationic polymer.

5,296,300

METHOD TREATING TERNE STEEL

Jay F. Carey, II, Follansbee, W. Va., and Mehrooz Zamanzadeh, Pittsburgh, Pa., assignors to The Louis Berkman Company, Steubenville, Ohio

Filed Jul. 10, 1991, Ser. No. 728,108
Int. Cl.[5] B32B *15/04, 11/00*
U.S. Cl. 428—457 13 Claims



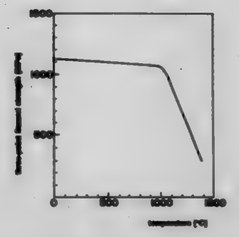
1. A coated steel sheet member that exhibits high resistance to corrosion and having accelerated terne patina formation when exposed to the atmosphere to produce a dull, iron oxide corrosion resisting finish, said sheet member including an outer layer of an alloy of lead and tin to produce a terne coated metal coated with a translucent layer of an asphalt base paint having a thickness of not more than 1.0 mil which accelerates said patina formation, said asphalt base paint comprises the following weight percentages: asphalt 60–80%, titanium oxide (anatase and rutile) 1.0–25.0%, inert silicates or clay 8.0–11.0%, carbon black 0.5–2.0% and antisettling agent 0.4–0.7%.

5,296,301

SINTERED CERAMIC-METAL COMPOSITE PRODUCT AND METHOD OF FABRICATING THE SAME

Masahiro Nawa, Katano; Koichi Niihara, 1142, Kori-Godo-cho-aha, 9-7, Korigaoka, Hirakata-shi, Osaka; Atsushi Nakahira, Suita, and Tohru Sekino, Mino, all of Japan, assignors to Matsushita Electric Works, Ltd. and Koichi Niihara, both of Osaka, Japan

Filed Oct. 1, 1991, Ser. No. 769,398
Claims priority, application Japan, Oct. 8, 1990, 2-270916; May 20, 1991, 3-145467; May 21, 1991, 3-116358; May 21, 1991, 3-116359
Int. Cl.[5] C04B *35/00*
U.S. Cl. 428—472 8 Claims



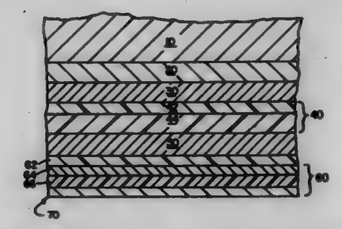
1. A sintered ceramic-metal composite product comprising:
a ceramic matrix of polycrystalline ceramic; and
a metal phase having a higher melting point than a sintering temperature of said ceramic matrix, characterized in that at least 2.0 vol % of said metal phase is dispersed within grains of said polycrystalline ceramic.

5,296,302

ABRASION-RESISTANT OVERCOAT FOR COATED SUBSTRATES

Roger O'Shaughnessy, Chaska, Minn., and Robert Bond, Spring Green, Wis., assignors to Cardinal IG Company, Minnetonka, Minn.

Filed Mar. 27, 1992, Ser. No. 859,574
Int. Cl.[5] H05B *3/10*
U.S. Cl. 428—472 13 Claims



1. A film stack applied on a substrate comprising a first metal oxide layer, at least one reflective metal layer, a second metal oxide layer disposed away from said first metal oxide layer, and an abrasion-resistant overcoat defining the outermost layer of the film stack, the overcoat being formed of an oxide of a metal selected from the group consisting of zinc, tin, indium, bismuth, and alloys thereof applied at a thickness which does not substantially affect the optical properties of said film stack.

5,296,303

PROCESS AND DEVICE FOR PRODUCING A PLASTIC LAYER OF HIGH OPTICAL QUALITY

Jean-Louis Bravet; Francois de Toytot, both of Thourotte; Gerd Leyens, Aachs; Siegfried Pilkhardt, Rostgen, and Herbert Bayer, Aachen, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Continuation of Ser. No. 184,601, Apr. 8, 1988, abandoned, which is a division of Ser. No. 8,101, Jan. 20, 1987, Pat. No. 4,749,586, which is a continuation of Ser. No. 729,573, May 2, 1985, abandoned. This application May 29, 1990, Ser. No. 528,325
Claims priority, application France, May 2, 1984, 84 06782
Int. Cl.[5] B32B *17/10*
U.S. Cl. 428—480 6 Claims

6. A composite sheet capable of being used in laminated glasses, comprising:

a) a flexible stretched support, and

b) two layers of high optical quality on said support, one layer formed on one face of the support, being a thin layer resistant to scoring and abrasion, the other layer formed on the other face of the support, having energy-absorbing properties, said two layers being produced by a continuous process, which comprises:

i) forming one of the two layers onto the flexible stretched support which is carried in a uniform horizontal movement,

ii) turning over the support, and

iii) forming the second layer onto the second face of the flexible stretched support, and wherein the layer resistant to scoring and abrasion is formed by a high-speed centrifugal spraying of the mixture of reaction components from a bowl spray head, which components have been separately added thereto, the centrifugal spraying being performed with the bowl spray head revolving at a speed between 1,000–80,000 rpm and further wherein mixing of the reaction components is effected directly in the spray head,

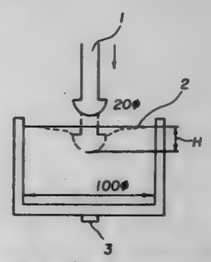
provided that said flexible stretched support is made of polyester.

5,296,304

LAMINATE FILM FOR STRETCH-WRAPPING AND PROCESS FOR PRODUCING THE SAME

Takao Yazaki; Masataka Noro, and Takashi Matsui, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1992, Ser. No. 831,350
Claims priority, application Japan, Feb. 26, 1991, 3-030582
Int. Cl.[5] B32B *27/28, 27/32*
U.S. Cl. 428—516 15 Claims



1. A laminate film for stretch-wrapping which comprises an intermediate layer containing from 50 to 95% by weight of at least one member selected from the group (A) consisting of (A-1) an ethylene-α-olefin copolymer comprising ethylene and an α-olefin having from 4 to 8 carbon atoms, having an α-olefin content of from 2 to 20% by weight, and having a melt flow rate of from 0.1 to 5 g/10 min at 190° C., (A-2) a propylene-

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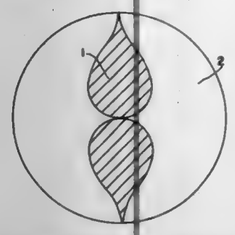
ethylene-α-olefin random copolymer or propylene-α-olefin random copolymer comprising propylene, ethylene and/or an α-olefin having from 4 to 8 carbon atoms, having an ethylene and/or α-olefin content of from 4 to 19% by weight and a propylene content of from 81 to 96% by weight, and having a melt flow rate of from 1 to 10 g/10 min at 230° C., and (A-3) a butene-1 homopolymer or butene-1-ethylene copolymer having an ethylene content of from 0.1 to 10% by weight having a melt flow rate of from 0.1 to 10 g/10 min at 190° C. and from 5 to 50% by weight of a hydrogenated block copolymer elastomer which is a hydrogenation product of a block copolymer containing, in the molecule thereof, from 5 to 70% by weight of a polymer block mainly comprising an alkenyl aromatic compound and from 30 to 95% by weight of a polymer block mainly comprising a conjugated diene compound, having laminated on both sides thereof a surface layer comprising from 75 to 95% by weight of ethylene and from 5 to 25% by weight of a vinyl acetate copolymer.

5,296,305

METHOD OF FABRICATING A LENS MADE OF TRANSPARENT POLYMER WITH MODULATED REFRACTING INDEX

Dominique Baude, Saint-Ouen, and Daniel Lougnot, Mulhouse, both of France, assignors to Essilor International (Compagnie Generale d'Optique), Creteil Cedex, France

Continuation of Ser. No. 793,408, Jan. 10, 1992, abandoned. This application Jun. 4, 1993, Ser. No. 71,871
Claims priority, application France, May 11, 1990, 90 05936
Int. Cl.[5] B32B *27/30*
U.S. Cl. 428—520 **20 Claims**



1. Method of manufacture of an optical lens or ocular implant providing refractive index modulation, comprising starting from a previously shaped lens of transparent hydrophilic polymer of the hydrogel type, said lens is impregnated with a photopolymerizable composition containing at least one monomer and one photoinitiator in solution in a solvent which causes swelling of the lens, the impregnated lens is subjected to irradiation which is spatially modulated in irradiation intensity and/or in irradiation time, thus producing selective local polymerization of the monomer, whereupon the excess quantity of photoinitiator and non-polymerized monomer is removed by solvent extraction.

5,296,306

FLAME RETARDANT BROMINATED STYRENE GRAFT LATEX COATINGS

Jin-liang Wang; Nicolai A. Favstritsky, both of Lafayette, and Richard S. Rose, West Lafayette, all of Ind., assignors to Great Lakes Chemical Corp., W. Lafayette, Ind.

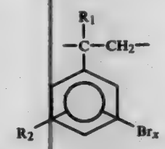
Filed Nov. 18, 1991, Ser. No. 977,911
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] B32B *27/30*
U.S. Cl. 428—522 **34 Claims**

1. In a composite material comprising a substrate and a latex coating adhered thereto, the improvement comprising the coating including:

a flame retardant, graft latex copolymer having the formula:



wherein n is >1, L is a natural or synthetic latex, and each S is a grafted-on side chain comprising a brominated monomeric unit of the formula:



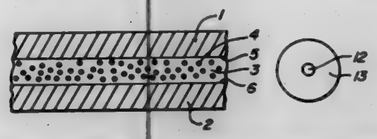
wherein x=1 to 4, R_1 is H or CH_3, and R_2 is H or a C_{1-4}lower alkyl group, said graft latex copolymer including at least about 1% bromine by weight of the graft latex copolymer.

5,296,307

LAMINATED PAPER POLYOLEFIN PAPER COMPOSITE

Bruce S. Bernstein, Rockville, Md., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 8, 1992, Ser. No. 879,942
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—537.5 **7 Claims**



1. A laminated paper polyolefin composite comprising first and second fiber paper layers each laminated to a polyolefin layer containing silicates which impart discharge resistance to said composite.

5,296,308

INVESTMENT CASTING USING CORE WITH INTEGRAL WALL THICKNESS CONTROL MEANS

Charles F. Caccavale, Wharton, N.J., and William E. Sikkenga, Twin Lake, Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Aug. 10, 1992, Ser. No. 931,221
Int. Cl.[5] B22C *9/04*
U.S. Cl. 428—586 **15 Claims**

1. A method for improving wall thickness control between an internal passage and an outer surface of a hollow casting, comprising the steps of:

a) providing a core having an external surface configured to form said passage in the casting and having a plurality of integrally formed protrusions extending from said external surface at relatively thin regions of said core deviating from a determined relationship of a master core configuration relative to a molding cavity,

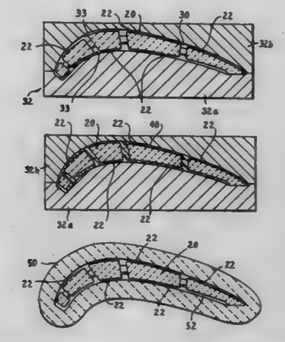
b) positioning the core in a molding cavity solely by engagement of the protrusions with rigid walls defining the molding cavity such that the core is substantially conformed to the determined relationship between the master core configuration and the molding cavity by said engagement,

c) molding a fugitive pattern corresponding to the casting to be formed about the external surface of said core while said core is positioned in said determined relationship to said molding cavity whereby the wall thickness of the pattern is controlled about the core,

d) investing a ceramic shell mold about the pattern and core,

e) removing the pattern from the invested shell mold, leaving the core positioned in a shell mold cavity,

f) heating the mold with the core therein prior to casting molten metal in the shell mold cavity, and



g) casting molten metal in the shell mold cavity about the core,

h) wherein in at least one of steps e), f) and g), said protrusions of said core engage said mold in response to core displacement or distortion to maintain said core substantially conformed to said determined relationship.

10. A hollow casting made by the method of claim 1.

5,296,309

COMPOSITE STRUCTURE WITH NBTIALCR ALLOY MATRIX AND NIOBIUM BASE METAL REINFORCEMENT

Mark G. Benz, Burnt Hills; Melvin R. Jackson, Schenectady, and John R. Hughes, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1992, Ser. No. 816,161
Int. Cl.[5] C22C *1/09*
U.S. Cl. 428—614 **10 Claims**



1. A metal-metal composite structure adapted to use at temperature above 1,000 degrees centigrade which comprises

a body of a matrix alloy having a composition in atom percent according to the following expression:

$$Nb_{balance}\text{-}Ti_{32\text{-}48}\text{-}Al_{8\text{-}16}\text{-}Cr_{2\text{-}12}$$

provided that the sum (Al+Cr)<=22a/o, and where Ti is less than 37a/o the sum (Al+Cr)<=16a/o,

said body having distributed therein a multitude of ductile reinforcing strand structures of a niobium base alloy having a body centered cubic crystal form to form a composite, and

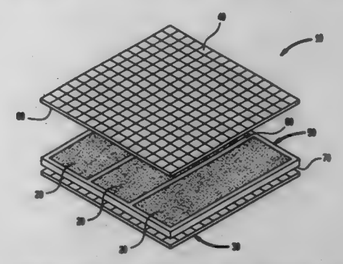
said composite being ductile and having higher tensile and rupture strength at temperatures above 1,000 degrees centigrade than that of the matrix alloy.

5,296,310

HIGH CONDUCTIVITY HYDRID MATERIAL FOR THERMAL MANAGEMENT

John J. Kibler, Lansdale, and Thomas G. Cassin, Prospectville, both of Pa., assignors to Materials Science Corporation, Blue Bell, Pa.

Filed Feb. 14, 1992, Ser. No. 836,130
Int. Cl.[5] H05K *7/20*; B32B *3/00*
U.S. Cl. 428—614 **21 Claims**



14. A hybrid structural material for mounting electronic components and transferring heat generated by the electronic components and combining high thermal conductivity and mechanical properties independently selected to be compatible with adjacent electronic components, said hybrid structural material comprising:

a non-structural, high thermal conductivity core material chosen from the group consisting of highly ordered pyrolytic graphite, compression annealed pyrolytic graphite, and synthetic diamond, having an in-plane isotropic thermal conductivity greater than 750 W/m-K, and defining the thermal conductivity of said hybrid structural material;

a pair of face sheets forming opposing surfaces of said hybrid structural material and helping to define the mechanical properties of said hybrid structural material, the first of said face sheets disposed on one side of said core material and the second of said face sheets disposed on the opposite side of said core material to create a face sheet-core material-face sheet sandwich construction;

a first interface between said first face sheet and said core material allowing physical contact between said first face sheet and said core material and allowing said first face sheet to slide over said core material on heating and cooling;

a second interface between said second face sheet and said core material allowing physical contact between said second face sheet and said core material and allowing said second face sheet to slide over said core material on heating and cooling; and

a frame substantially surrounding said core material and bonded to said face sheets for helping to define the mechanical properties of said hybrid structural material.

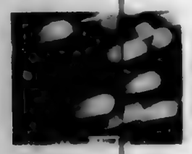
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5,296,311

SILICON CARBIDE REINFORCED REACTION BONDED SILICON CARBIDE COMPOSITE

Carl H. McMurtry, Youngstown; Sa-Kwing Lau, East Amherst; Gajawalli V. Srinivasan, Amherst, and Stephen Chwastiak, East Amherst, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 17, 1992, Ser. No. 852,589
Int. Cl.[5] B32B *18/00*
U.S. Cl. 428—688 3 Claims



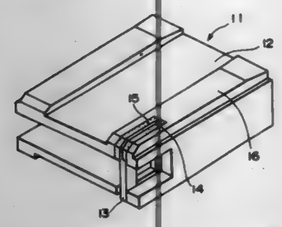
1. A silicon carbide fiber reinforced silicon carbide composite which is thermally stable to 1420° C. comprising:
a reaction bonded silicon carbide matrix;
a silicon carbide fiber reinforcement and
an aluminum nitride interface coating about 0.1 to about 15 microns thick on said fibers said coating having chemical and mechanical compatibility with said silicon carbide matrix and said silicon carbide fibers; wherein said silicon carbide fibers pull-out from said silicon carbide matrix upon fracture.

5,296,312

NON-MAGNETIC SUBSTRATE MATERIAL AND FLOATING-TYPE MAGNETIC HEAD

Kunio Kanai, Kounosu, and Masashi Yamaguchi, Maoka, both of Japan, assignors to Hitachi Metals Limited, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,921
Claims priority, application Japan, Jan. 28, 1992, 4-012683
Int. Cl.[5] G11B *5/147*
U.S. Cl. 428—702 11 Claims



1. A non-magnetic substrate material comprising: 0.5%–3% of Al_7O_3 and 3%–16% of one or a mixture of ZnO or SnO_2 under the condition that the total amount of ZnO and SnO_2 is equal to or less than 16%, in addition to main components of 45%–60% of TiO_2, 5%–20% of BaO and 20%–35% CaO by weight.

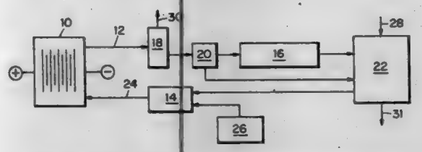
5,296,313

LOW DISCHARGE RATE ALKALINE BATTERY

James R. Modes, Bristol, and Zoe Adamedes, Providence, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 16, 1993, Ser. No. 17,918
Int. Cl.[5] H01M *12/04*
U.S. Cl. 429—50 10 Claims

1. A battery comprising:
a housing;
an aluminum anode within said housing;
an electrode capable of oxidizing water within said housing;
a 1 to 3 molar alkali electrolyte solution; and



a heat exchanger means for controlling the temperature of said electrolyte solution.

5,296,314

CONTACT TERMINAL ARRANGEMENT IN A STORAGE BATTERY

Wolfgang Millauer, Munich, and Manfred Spieth, Martingsried, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Oct. 28, 1992, Ser. No. 967,643
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138598
Int. Cl.[5] H01M *6/44, 14/00, 2/10*
U.S. Cl. 429—99 6 Claims

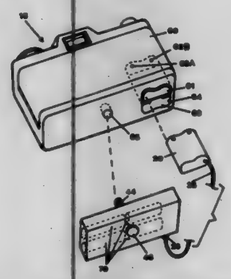
1. A storage battery, comprising:
a housing having a central axis;
at least one block located in said housing and having an axis, which extends parallel to the central axis of the housing, and at least one individual cell; and
a coupling part located at one end of said housing and having an outer end surface and at least one pair of plus-minus contact terminals associated with said at least one individual cell and accessible at said outer end surface;
wherein said coupling part extends transverse to the central axis of said housing, wherein said outer end surface is divided at least into two equal areas, and further wherein the at least one pair of contact terminals is accessible at one of said at least two equal surface areas.

5,296,315

DEVICE TO PERMIT THE USE OF NON-STANDARD BATTERIES TO POWER BATTERY OPERATED DEVICES

Clifford J. Rein, 345 Fireweed Ct., Windsor, Calif. 95492

Filed Apr. 29, 1993, Ser. No. 55,970
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—100 15 Claims



1. A device to permit the use of non-standard batteries to power battery operated devices comprised of:
an adapter, which is placed inside of the battery compartment of the battery operated device;
electrical contacts, which are positioned inside of the battery compartment of the battery operated device by the adapter so as to create an electrical connection between said contacts and the battery contacts of the battery operated device;
a battery box, which is designed to contain a battery or batteries not standard for use inside the battery compartment of the battery operated device;
an electrical connection between said contacts and the non-standard battery or batteries when said battery or batteries are placed within said battery box;
an electronic or mechanical means of regulating the direction of current flow from the non-standard batteries to the battery operated device, directly or indirectly electrically connected to said contacts; and
an electronic or mechanical means of limiting the maximum voltage that may occur across said contacts; or
an apparatus to limit the maximum voltage that may occur across said contacts. Said apparatus may consist of a Zener diode or other electronic or mechanical means of limiting voltage, directly or indirectly electrically connected to said contacts, or/and the interior cavity of the battery box, specifically sized and shaped with the placement of contacts within said cavity such that only a specific type, or types, of batteries may be placed within, in a specific quantity, or quantities, in accordance with the type used.

5,296,316

ALKALI METAL ENERGY CONVERSION DEVICE

Christopher O'Neil-Bell, Great Sankey, United Kingdom, assignor to Silent Power GmbH fur Energiespeichertechnik, Essen, Fed. Rep. of Germany

PCT No. PCT/GB91/00372, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/14291, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 934,475
Claims priority, application United Kingdom, Mar. 15, 1990, 9005802; May 22, 1990, 9011442
Int. Cl.[5] H01M *10/39*
U.S. Cl. 429—104 16 Claims

1. Alkali metal energy conversion device comprising sealing components made of a metal or metal alloy substrate having a solid phase bonded coating of aluminium/silicon alloy on an internal surface thereof, said aluminium/silicon alloy coating having the composition by weight of
0–0.5% Mg,
0–0.4% Cu,
0–1.0% Fe,
0.5–4.0% Si
up to 0.5% other trace elements, some oxygen present as an oxide and remainder Al.

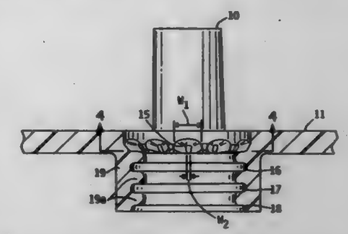
5,296,317

HIGH TORQUE BATTERY TERMINAL AND METHOD OF MAKING SAME

Robert W. Ratte, North Oaks; Ronald Cain, White Bear Lake, and Norman E. Peterson, Wyoming, all of Minn., assignors to Water Gremlin Co., White Bear Lake, Minn.

Filed Sep. 3, 1992, Ser. No. 940,391
Int. Cl.[5] H01M *2/30*
U.S. Cl. 429—178 7 Claims

1. A battery terminal lockable in a leakproof relation with a battery container to prevent accidental freeing of the battery terminal from the battery container comprising:
a cylindrical lead battery terminal for connecting to the grid post of a battery, said cylindrical lead battery terminal having a container engaging portion and a non-container engaging portion, said container engaging portion including a plurality of acid rings to help prevent an electrolyte from leaking past the junction formed between the acid rings and a battery container, said container engaging portion including an annular torque lock member having a plurality of frusto conical shaped cavities therein, said frusto conical shaped cavities having a base region and an apex region with said base region being larger then said apex region, said base region extending radially outward of said apex region so that a protrusion on a battery container can mateingly engage and mechanically interlock



with one of said frusto conical shaped cavities to rotationally lock the battery container to said cylindrical lead battery terminal to help prevent a user from accidently torquing said cylindrical lead battery terminal free of the battery container.

5,296,318

RECHARGEABLE LITHIUM INTERCALATION BATTERY WITH HYBRID POLYMERIC ELECTROLYTE

Antoni S. Gozdz, Tinton Falls; Caroline N. Schmutz, Eatontown, and Jean-Marie Tarascon, Martinsville, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 5, 1993, Ser. No. 26,904
Int. Cl.[5] H01M *6/18*
U.S. Cl. 429—192 18 Claims

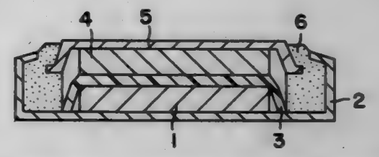
1. A solid electrolyte for a rechargeable lithium intercalation battery cell comprising a dissociable lithium salt dispersed in a polymeric matrix
characterized in that said electrolyte comprises a substantially self-supporting film of a copolymer of vinylidene fluoride with 8 to 25% by weight hexafluoropropylene, said film having homogeneously distributed therein 20 to 70% by weight of a solution of at least one lithium salt in a medium-boiling solvent.

5,296,319

NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY

Yasuhiko Bito, Yao; Masaki Hasegawa, Hirakata; Shuji Ito, Kadoma; Hiroyuki Murai, Hirakata, Japan, and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 1, 1992, Ser. No. 891,633
Claims priority, application Japan, May 30, 1991, 3-127322
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—194 3 Claims



1. A non-aqueous electrolyte secondary battery, comprising:
a rechargeable positive electrode and a rechargeable negative electrode; and
a non-aqueous electrolyte including a lithium salt, an acid anhydride selected from the group consisting of benzoic anhydride, phthalic anhydride and maleic anhydride, wherein said acid anhydride is included in a concentration

ranging from 0.002 to 1.0 mol/liter, and at least one solvent selected from the group consisting of organic carbonates and organic esters,

and further wherein the capacity holding rate of said battery is greater than 80% following storage of said battery at 60° C. for four weeks.

5,296,320

LEAD-ACID STORAGE BATTERY WITH TUBULAR BIPOLAR ELECTRODES

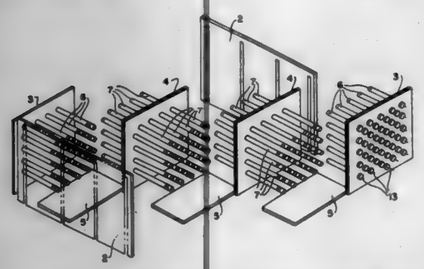
Marco V. Ginatta; Gianmichele Orsello; Pierangelo Perotti, all of Turin; Furio Rosetti, Cuorgné ; Marco Zampolli, Santena, and Mario Maja, Turin, all of Italy, assignors to Comitato Nazionale per la Ricerca e per lo Sviluppo dell'Energia Nucleare e delle Energie Alternative, Rome and Ginatta S.p.A., Turin, both of Italy

Continuation of Ser. No. 728,155, Jul. 12, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 948,608

Claims priority, application Italy, Jul. 17, 1990, 48148 A/90

Int. Cl.[5] H01M *10/18*

U.S. Cl. 429—210 **15 Claims**



1. A lead-acid storage battery, comprising a container for an electrolyte, the container being divided into a plurality of cells by at least one partition wall, the at least one partition wall being an insulating material and being transversed by bars of a conducting material, the bars supporting corresponding bipolar tubular electrodes, the container further having laterally extending end walls, the end walls being traversed by other bars, the other bars supporting corresponding unipolar tubular electrodes, the bipolar tubular electrodes and unipolar tubular electrodes being parallel to each other and being reciprocably interspersed, each of the at least one partition walls and the end walls have half walls which are coupled together to form the respective at least one partition wall and the end walls, the bars and the other bars each have a projection of a same material as the respective bar and other bar, the at least one partition wall and the end walls having cavities formed therein for receiving the projections, the cavities being formed by the half walls of the at least one partition wall and the end walls and the bars and the other bars being locked to the respective at least one partition wall and the end walls by the projections being received in the cavities.

5,296,321

PHOTORECORDING ELEMENT, METHOD FOR PRODUCTION THEREOF, AND THE LIQUID CRYSTAL CELL COMPRISING THE SAME

Yuji Kawanishi; Kunihiro Ichimura, both of Tsukuba; Takashi Tamaki, Ibaraki; Takahiro Seki, Tsukuba, and Mitsuhiro Ikeda, Tsukuba, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

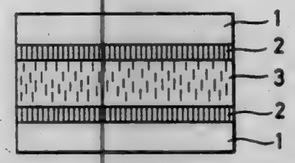
Continuation of Ser. No. 546,884, Jul. 2, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 998,658

Claims priority, application Japan, Jul. 3, 1989, 1-171627

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

Int. Cl.[5] G03C *1/73*; G02F *1/1337*; C09K *19/52*

U.S. Cl. 430—20 **10 Claims**



1. A photorecording element consisting essentially of:

a transparent substrate;

a layer of macromolecular compound consisting of a photochromic residue and a backbone polymer, deposited by adsorption on said transparent substrate, and capable of undergoing a reversible change in structure upon exposure to light, a unit ratio of said photochromic residue to said backbone polymer being at least 0.1; and

a liquid crystal layer deposited directly on said layer of macromolecular compound.

9. A liquid crystal cell consisting essentially of:

a liquid crystal layer;

two layers of macromolecular compound consisting of a photochromic residue and a backbone polymer, deposited one each on opposite surfaces of said liquid crystal layer, and capable of undergoing a reversible change in structure upon exposure to light, a unit ratio of said photochromic residue to said backbone polymer being at least 0.1; and

two substrates, at least one of which is transparent, upon said substrates said two layers of macromolecular compound are deposited, each by adsorption thereon.

5,296,322

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND APPARATUS USING SAME

Takashi Koyama; Naoto Fujimura, both of Yokohama; Yuichi Hashimoto, Tokyo; Tetsuo Shiraiwa, Ikoma, and Shigeo Mori, Kyoto, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, both of Japan

Filed Feb. 4, 1992, Ser. No. 830,862

Claims priority, application Japan, Feb. 4, 1991, 3-035711; Apr. 10, 1991, 3-103576

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—58 **36 Claims**

1. An electrophotographic photosensitive member, comprising: an electroconductive support, and an intermediate layer and a photosensitive layer disposed in this order on the support, wherein said intermediate layer comprises a reaction product of a polyol compound comprising at least one of a polyol compound [I] represented by Formula (1) shown below and a phosphated polyol compound with a polyisocyanate compound:

$$Z\text{-}[(\text{-A})_k\text{-}(\text{-B})_n\text{-H}]_h \qquad \text{Formula (1)}$$

wherein A denotes

$$-R^1-CH(-CH_2-O-(-R^2-O-)_p R^3)-O-$$

B denotes —R^4—O—, A and B may be connected at random or in blocks with each other, Z denotes an active hydrogen compound residue; R^1 is an alkylene group having 1–9 carbon atoms; R^2 is an alkylene group having 1–10 carbon atoms; R^3 is an alkyl group, alkenyl group, aryl group or aralkyl group having 1–20 carbon atoms; R^4 is an alkylene group having 2–10 carbon atoms; k is a number of 1–12; m is a number of 1–250; n is a number of 0–100; and p is a number of 0–5.

15. A photosensitive member according to claim 1, wherein said photosensitive layer has a laminated structure including an organic charge generation layer and a charge transport layer.

5,296,323

LAMINATED ORGANIC PHOTOSENSITIVE MATERIAL WITH NO INTERFERENCE FRINGES

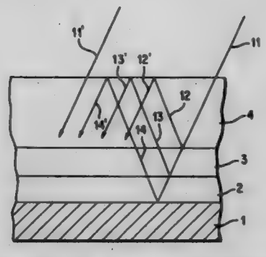
Tomokazu Kobata; Yousuke Matsui, and Hisashi Izumi, all of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Feb. 9, 1993, Ser. No. 15,163

Claims priority, application Japan, Feb. 10, 1992, 4-23603

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—59 **12 Claims**

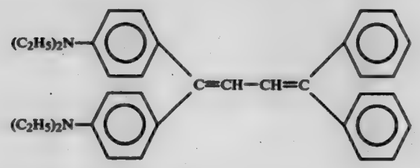


1. A laminated organic photosensitive material which comprises an electroconductive support, an undercoat, a charge producing layer and a charge transporting layer in sequence wherein each of the undercoat and the charge producing layer has a thickness of d (nm) which fulfills the relation

$$(2/5)\lambda < d < (3/5)\lambda$$

wherein λ (nm) is the wavelength of rays of light incident on the laminated organic photosensitive material.

3. The laminated organic photosensitive material as claimed in claim 1 wherein the charge producing layer contains X-type nonmetal phthalocyanine as a charge producing substance, and the charge transporting layer contains a bistyryl compound represented by the formula



as a charge transporting substance.

5,296,324

TONER FOR DEVELOPING ELECTROSTATIC CHARGE IMAGE AND PROCESS FOR PREPARING THE SAME

Hideyuki Akagi; Susumu Saito; Masaru Miura; Takashi Imai; Masayuki Takei; Masanori Ichimura; Michio Take; Satoshi Inoue; Yasuo Yamamoto; Toshiaki Murofushi; Hiroshi Nakazawa, and Koji Fukushima, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 4, 1992, Ser. No. 877,733

Claims priority, application Japan, May 14, 1991, 3-137041; May 14, 1991, 3-137043

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—106 **11 Claims**

1. A process for preparing a toner for developing an electrostatic charge image, which comprises adding external additives to toner particles having an average particle size of not larger than 9 μm and comprising at least a colorant and a binder resin and mixing them, wherein fine particles (A) having a particle size of 30 to 80 nm as one component of the external additives are added to and mixed with the toner particles such that said fine particles adhere onto the surface of the toner particles; and the addition and mixing of said fine particles (A) are carried out under such conditions that the product of an external addition shear rate γ defined by formula (I) and the external addition mixing time Ta (sec) of the fine particles (A) satisfies the relationship defined by formula (II);

$$\gamma = V/D \qquad \text{(I)}$$

wherein γ represents an external addition shear rate, V represents a peripheral speed (m/sec) of the blade tip in a mixer, and D represents a clearance (m) between the blade tip and the inner wall of the mixer;

$$1\times10^5 \leq \gamma \times Ta \leq 1\times10^6 \qquad \text{(II)}$$

wherein Ta represents the mixing time (sec) of the fine particles (A).

5,296,325

DICYANOIMIDAZOLE COMPOUNDS USABLE AS COLORANTS FOR MAGENTA TONERS, COLORED RESINS, COLORED MOLDED RESIN MEMERS AND COLOR FILTERS

Masahiro Ohtsuka, Osaka, and Tohru Tamura, Kodoma, both of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

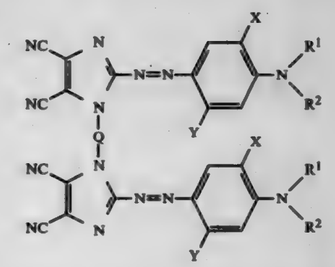
Division of Ser. No. 649,759, Feb. 1, 1991, Pat. No. 5,233,028. This application Oct. 27, 1992, Ser. No. 967,178

Claims priority, application Japan, Feb. 3, 1990, 2-24850

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—106 **17 Claims**

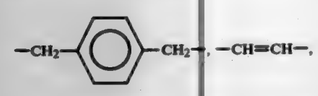
1. Magenta toner for color electrophotography incorporating at least one kind of the dicyanoimidazole compound as coloring agent, said Dicyanoimidazole compound having the formula



[I]

wherein R^1 and R^2 each independently is alkyl having 1–12

carbon atoms, alkoxyalkyl having 3–12 carbon atoms, hydroxy lower alkyl, β-cyanoethyl, β-chloroethyl, aralkyl or aryl, in which said aralkyl and aryl are unsubstituted or substituted with phenyl, halogen, lower alkyl and lower alkoxy; X is hydrogen, lower alkoxy, methyl or halogen; Y is hydrogen, methyl, methoxy, formylamino, alkylcarbonylamino having 1–8 carbon atoms in the alkyl moiety, alkylsulfonylamino having 1–8 carbon atoms in the alkyl moiety or alkoxycarbonylamino having 1-14 8 carbon atoms in the alkyl moiety; and —Q— is —$(CR_2)_n$— in which n is 1–12 and each R independently is hydrogen ar alkyl,



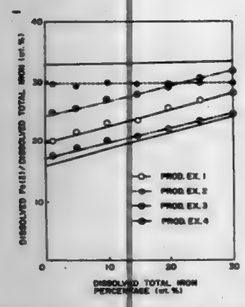
$-CH_2CH{=}CHCH_2-$ or $-CH_2-CH{=}CH-$.

5,296,326

MAGNETIC TONER

Masaki Taya, Kawasaki; Hirohide Tanikawa; Yasutaka Akashi, both of Yokohama; Makoto Unno, Tokyo; Masaki Uchiyama, Ichikawa, and Kiichiro Sakashita, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 675,307, Mar. 26, 1991, abandoned.
This application Dec. 21, 1992, Ser. No. 994,473
Claims priority, application Japan, Mar. 29, 1990, 2-078999; Mar. 11, 1991, 3-070480
Int. Cl.[5] G03G *9/083*
U.S. Cl. 430—106.6 52 Claims



1. A magnetic toner comprising magnetic toner particles containing at least a binder resin and magnetic iron oxide particles, wherein the distribution of Fe (II) in a surface layer of said magnetic iron oxide particles satisfy the following conditions (a)–(c):

(a) a dissolved Fe (II) content in dissolved total iron of 14–33.3 wt. % at a dissolved total iron percentage in the range of 4–6 wt. %;

(b) a dissolved Fe (II) content in dissolved total iron of 17–33.3 wt. % at a dissolved total iron percentage in the range of 9–11 wt. %; and

(c) a dissolved Fe (II) content in disolved total iron of 18–33 wt. % at a dissolved total iron percentage in the range of 14–16 wt. % and said magnetic iron oxide particles have an FeO content based on total Fe of 30–40 wt. %.

5,296,327

TONER POWDER FOR THE DEVELOPMENT OF LATENT ELECTROSTATIC OR MAGNETIC IMAGES AND A PROCESS FOR FORMING FIXED IMAGES ON AN IMAGE RECEIVING MATERIAL

Marcel L. M. Pennings, RH Horst; Rudolf A. M. Venderbosch, CA Arnhem; Wilhelmus H. G. Albrink, LG Horst, and Gerardus J. Crommentuyn, FV Lottum, all of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Mar. 13, 1992, Ser. No. 850,886
Claims priority, application Netherlands, Mar. 15, 1991, 9100457
Int. Cl.[5] G03G *5/00*
U.S. Cl. 430—109 12 Claims

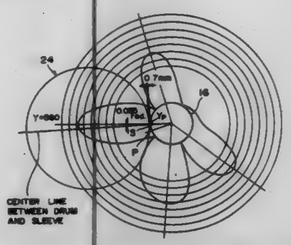
1. A toner powder for the development of latent electrostatic or magnetic images, said toner powder comprising a polyester resin composition of an etherified diphenol and a dicarboxylic acid, and a reaction product of an epoxy resin and a phenol compound "wherein said polyester resin has a number-averaged molecular weight of at least 2500, said epoxy resin has a number-averaged molecular weight of less than 1200 and epoxy groups of said epoxy resin are at least 60% blocked by a monofunctional phenol compound."

5,296,328

MAGNETIC BRUSH DEVELOPMENT PROCESS

Kazuo Fuji, Higashi-Osaka; Akira Nakakuma, Takaishi; Naruo Yabe, Kobe; Akihiro Watanabe, Kawai; Yoshihisa Kuramae, Hirakata; Toshio Nishio, Nara; Noriaki Tsubota, Himeji; Masahiko Kubo, Yao, and Kazuhisa Edahiro, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1991, Ser. No. 738,554
Claims priority, application Japan, Jul. 31, 1990, 2-203234; Jul. 31, 1990, 2-203235
Int. Cl.[5] G03G *13/09, 15/09*
U.S. Cl. 430—122 8 Claims



1. A process for developing an electrostatic latent image on the surface of a photosensitive material drum, which comprises forming a magnetic brush of a two-component magnetic developer comprising a toner and a carrier on a developing sleeve having magnets disposed in the interior thereof, and bringing the magnetic brush of the developer into sliding contact with the surface of the photosensitive material drum in a development zone in an amount such that the developer occupancy ratio R in the developing zone, represented by the following formula, satisfies the requirement of $30<R<75$:

$$R=M\times(T/D\times 1/\sigma t+C/D\times 1/\sigma c)/H$$

wherein M represents the amount (g/cm^2) of the developer delivered per unit area of the developing sleeve, H represents the distance (cm) between the photosensitive material drum and the developing sleeve at the position (S) where both approach each other most closely, T/D represents the toner concentration (% by weight) in the developer, C/D represents the carrier concentration (% by weight) in the developer, σt represents the true density (g/cm^3) of the toner, and σc represents the true density

(g/cm^3) of the carrier, to develop the surface of the photosensitive material drum, wherein the development is carried out under such conditions that

(1) at the position where the sliding contact of the magnetic brush with the surface of the photosensitive material drum terminates, the following requirement is satisfied:

$Px\geq 430$, or

$Px<430$ and $Py\geq -Px+800$,

wherein P_x represents the magnetic force (Gauss) acting in the tangential direction on the surface of the developing sleeve, and Py represents the magnetic force (Gauss) acting in the normal line direction on the surface of the developing sleeve; and

(2) the magnetic force in the normal line direction on the surface of the developing sleeve in the developing zone becomes maximum at the position located on the upatream side by 0.035 to 0.5 radian in the direction of the flow of the developer from the position(s) where the developing sleeve comes closest to the photosensitive material drum.

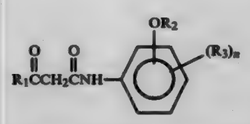
5,296,329

DIAZO HEAT-SENSITIVE RECORDING MATERIAL

Takekatsu Sugiyama, and Akira Igarashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 798,586, Nov. 26, 1991, abandoned.
This application Jul. 26, 1993, Ser. No. 96,845
Claims priority, application Japan, Nov. 30, 1990, 2-334783
Int. Cl.[5] G03C *1/58, 5/18*
U.S. Cl. 430—138 6 Claims

1. A diazo heat-sensitive recording material which consists essentially of a support having thereon a heat-sensitive recording layer comprising a diazo compound, a coupling component, a basic substance, and a binder; wherein said coupling component is an acylacetanilide represented by the formula (I):



(I)

wherein R_1 is $C(CH_3)_3$; R_2 is substituted or unsubstituted alkyl or aralkyl; R_3 is substituted or unsubstituted alkyl, alkoxy, aralkyloxy, alkylthio, or aralkylthio, substituted amino, or halogeno; the total number of carbon atoms in R_2 and $(R_3)_n$ is 8 or more; n is zero or an integer of from 1 to 4; and the R_3—s may be the same or different when n is 2 or more.

5,296,330

POSITIVE PHOTORESISTS CONTAINING QUINONE DIAZIDE PHOTOSENSITIZER, ALKALI-SOLUBLE RESIN AND TETRA(HYDROXYPHENYL) ALKANE ADDITIVE

Reinhard Schulz, Staufen-Wettelbrunn; Norbert Münzel, Heitersheim, both of Fed. Rep. of Germany; Martin Roth, Giffers, Switzerland, and Wilhelm Knobloch, Schwörstadt, Fed. Rep. of Germany, assignors to Ciba-Geigy Corp., Ardsley, N.Y. and OCG Microelectronics Inc., West Patterson, N.J.

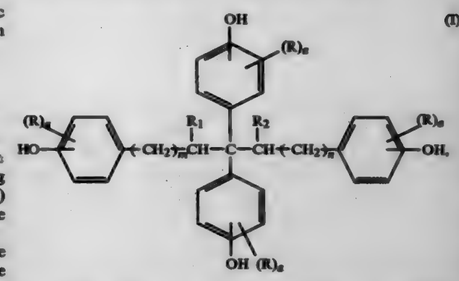
Filed Aug. 15, 1992, Ser. No. 932,128
Claims priority, application Switzerland, Aug. 30, 1991, 2550/91; Feb. 12, 1992, 413/92
Int. Cl.[5] G03F *7/023;* G03C *1/61*
U.S. Cl. 430—191 11 Claims

1. A positive photoresist composition comprising, in an organic solvent, at least

a) one alkali-soluble resin,

b) one photosensitive quinone diazide,

c) one aromatic hydroxy compound of formula I



(I)

wherein each R is —H, C_1–C_4alkyl, C_1–C_4alkoxy, —$OCH_2C_6H_5$, —OC_6H_5 or —$COOC_1$–C_4alkyl, and R_1 and R_2 are each independently of the other H, C_1–C_4alkyl, —C_6H_5 or a cycloaliphatic 5- or 6-membered ring, a is an integer from 0 to 4, and m and n are each independently of the other 0, 1 or 2, which compound of formula (I) is present in the photoresist composition in an amount effective to enhance the photosensitivity and/or the rate of development of said composition.

5,296,331

IMAGE RECEIVING MATERIAL CONTAINING PARTICLES OF THERMOPLASTIC COMPOUND

Keiichi Taguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 10, 1993, Ser. No. 29,389
Claims priority, application Japan, Mar. 11, 1992, 4-052730
Int. Cl.[5] G03C *5/54;* B41L *1/20*
U.S. Cl. 430—253 16 Claims

1. An image receiving material which comprises an image receiving layer provided on a support, said image receiving layer containing particles of a thermoplastic compound, and said layer having a porous surface formed by the particles, wherein the image receiving material is prepared by forming the image receiving layer on the support and heating the image receiving layer at a temperature of higher than a softening point of the thermoplastic compound to widen pores in the porous surface.

5,296,332

CROSSLINKABLE AQUEOUS DEVELOPABLE PHOTORESIST COMPOSITIONS AND METHOD FOR USE THEREOF

Harbans S. Sachdev, Hopewell Junction; Willard E. Conley, Cornwall; Premlatha Jagannathan, Patterson; Ahmad D. Katnani, Poughkeepsie; Ranee W. Kwong, Wappingers Falls; Lee L. Linehan, Walden; Steve S. Muira, Poughkeepsie, and Randolph J. Smith, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1991, Ser. No. 796,155
Int. Cl.[5] G03C *5/56, 1/73, 1/76*
U.S. Cl. 430—270 24 Claims

1. An aqueous base developable negative tone photoresist composition comprising, in admixture:

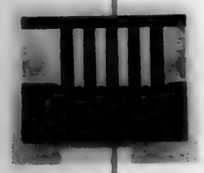
(a) a film-forming aromatic polymer resin having functional groups which activate said resin to electrophilic aromatic substitution,

(b) an acid catalyzable crosslinking agent which forms a carbonium ion upon reaction with acid, which carbonium ion is stabilized by the presence of one or more electron donating substituents on the crosslinking agent,

(c) a radiation degradable acid generator which forms an acid upon exposure of the photoresist composition to

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imaging radiation, which acid reacts with the crosslinking agent causing the composition to crosslink in the exposed regions, and which acid generator is selected from the group consisting of metallic onium salts, metalloid onium salts, non-metallic onium salts, and esters which are sulfonic acid precursors, and



(d) an oligomeric ether diol additive having a molecular weight in the range from about 200 to about 1000 Daltons, and which increases the dissolution rate of the unexposed portion of the photoresist composition.

5,296,333

PHOTORESIST ADHESION PROMOTER

Philip A. Lamarre, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 615,937, Nov. 16, 1990, abandoned. This application Mar. 12, 1992, Ser. No. 850,218

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—271 **7 Claims**

1. A structure comprising:

an adhesion promoter material having a thickness greater than 10Å and less than about 150Å disposed on a base; and a layer comprising a resist, said layer having a thickness substantially larger than the thickness of the adhesion promoter material and disposed on said adhesion promoter.

5,296,334

RADIATION-CURABLE COMPOSITION USEFUL FOR PREPARATION OF SOLDER MASKS

Steven A. Castaldi, Torrington; Peter D. Gabriele, Bristol, and Victor Severino, Southington, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Aug. 28, 1991, Ser. No. 938,029

Int. Cl.[5] G03C *1/725*

U.S. Cl. 430—280 **20 Claims**

1. A radiation-curable composition comprising (a) an esterified styrene-maleic anhydride copolymer having less than 15% free anhydride, and in which at least about 50% of the available anhydride groups are esterified with a hydroxyalkyl (meth)acrylate and at least about 0.1% of the available anhydride groups are esterified with a monohydric alcohol; (b) a multifunctional (meth)acrylate monomer; (c) a multifunctional epoxide; and (d) a photoinitiator.

5,296,335

METHOD FOR MANUFACTURING FIBER-REINFORCED PARTS UTILIZING STEREOLITHOGRAPHY TOOLING

Stan W. Thomas, Garland; Roger D. Key; Kyle G. Fluegel, both of Greenville; Willie K. Jackson, Commerce; Keith D. Elwell, and Gary L. White, both of Greenville, all of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Feb. 22, 1993, Ser. No. 20,727

Int. Cl.[5] G03C *5/00*; B29C *35/08*; B32B *5/10*

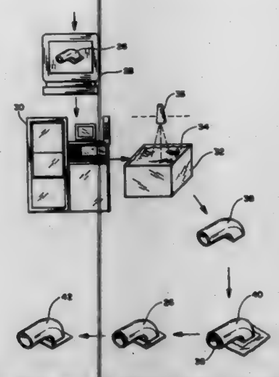
U.S. Cl. 430—320 **10 Claims**

1. A method for producing a fiber-reinforced part utilizing stereolithography tooling, comprising the steps of:

designing a part on a computer-aided design system;

stereolithographically fabricating a tool from the designed part;

applying fiber material to the tool;



curing the fiber material applied to the tool; and

removing the tool for final finishing of the designed part.

5,296,336

DAMPENING SOLUTION FOR LITHOGRAPHIC PRINTING

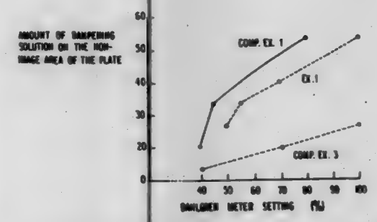
Kenichi Doi; Masumi Takase, both of Tokyo; Takeya Sakai; Toshio Sato, both of Wakayama; Takashi Ito, and Katsuhiro Osaki, both of Tokyo, all of Japan, assignors to Toyo Ink Manufacturing Co., Ltd.; Kao Corporation and Toppan Printing Co., Ltd., all of Tokyo, Japan

Continuation of Ser. No. 563,000, Aug. 6, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 803,799

Claims priority, application Japan, Aug. 5, 1989, 1-203148

Int. Cl.[5] G03C *5/00*

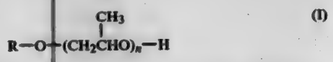
U.S. Cl. 430—331 **5 Claims**



1. A dampening solution composition for lithographic printing which consists essentially of

(a) water, and

(b) a compound (A) represented by the following formula (I)



(I)

wherein R represents a methyl group, an ethyl group, an n-propyl group or an isopropyl group, and n represents an integer of 1 to 4, wherein said composition contains from 0.1 to 10% by weight, based on the total weight of the composition, of said compound (A).

5,296,337

PROCESS FOR RETOUCHING PHOTOGRAPHIC IMAGES CONTAINING A DYE HAVING A CLEAVABLE BALLAST

J. Ramon Vargas, Webster; John W. Harder, Rochester; Phillip D. Knight, Fairport; Paul A. Buras, and Lynda D. Weber, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1992, Ser. No. 872,473

Int. Cl.[5] G03G *8/00, 7/00, 5/92, 5/94*

U.S. Cl. 430—359 **6 Claims**

1. A method of retouching a dye image formed in a photographic element by a dye having the structure:



(I)

where:

D is the residue of oxidized silver halide color developing agent,

C is the residue of a dye forming coupler,

Bal is a ballast group which immobilizes the dye in the photographic element and which is cleavable from the remainder of the dye by reaction with a dinucleophile to thereby render the dye mobile, the method comprising:

a) applying to the dye image an aqueous basic solution of a dinucleophile and a water-soluble organic co-solvent to cleave the ballast group and solubilize the dye, and

b) removing solubilized dye from the photographic element.

5,296,338

ANTISTATIC STABILIZER AND FINAL WASH ADDITIVE FOR PHOTO DEVELOPING

John A. Chester, 604 John Ross Ct., Woodstock, Ga. 30188

Filed Jun. 24, 1993, Ser. No. 82,231

Int. Cl.[5] G03C *11/06*

U.S. Cl. 430—372 **12 Claims**

1. In a wash for the photographic development of transparency films, an anti-static additive comprising:

water;

isopropanol; and

ethyl bis (polyethoxy ethanol) alkyl ammonium ethyl sulfate.

5,296,339

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yoshihiro Fujita, and Keiji Mihayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 28, 1992, Ser. No. 843,001

Claims priority, application Japan, Mar. 1, 1991, 3-57685

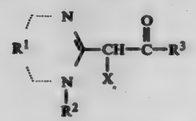
Int. Cl.[5] C03C *7/32, 5/31*

U.S. Cl. 430—389 **16 Claims**

1. A method for processing an imagewise exposed silver halide color photographic material comprising:

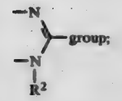
(1) color developing the silver halide color photographic material with a color developer;

(2) and then processing the photographic material with a processing solution having bleaching activity, in which said photographic material contains a coupler represented by the following general formula (I) and a replenishment rate of said color developer is not more than 600 ml/m^2 of photographic material;



(I)

wherein R^1 represents a group of nonmetallic atoms necessary for forming a 5-membered unsaturated heterocyclic ring together with a



group;

R^2 represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aromatic group or a heterocyclic group; R^3 represents an alkyl group, an alkenyl group, an alkynyl group, an aromatic group, an alkoxy group, an aryloxy group, a heterocyclic oxy group or



wherein R^4 and R^5 independently represent a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aromatic group or a heterocyclic group; and X represents a group which is eliminable by reaction with an oxidation product of an aromatic primary amine developing agent,

and wherein any of R^1, R^2, R^3, or X in formula (I) has at least one dissociation group represented by the following formula:

$$-Z^1-NH-Z^2-$$

wherein Z^1 and Z^2, which may be the same or different, represent SO_2 or CO.

5,296,340

DECORATIVE SHEET AND PROCESS FOR PREPARATION THEREOF

Masaki Tsukada; Osamu Takeko; Yoshiharu Horie; Tomio Doi; Norinaga Nakamura, and Kenshi Shimizu, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

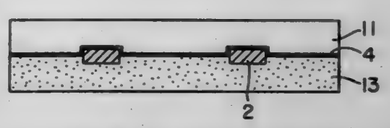
PCT No. PCT/JP90/00196, § 371 Date Dec. 20, 1990, § 102(e) Date Dec. 20, 1990, PCT Pub. No. WO90/09282, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 20, 1990, Ser. No. 582,845

Claims priority, application Japan, Feb. 20, 1989, 1-40049; Aug. 1, 1989, 1-19929

Int. Cl.[5] G03C *5/00*; B32B *31/00*

U.S. Cl. 430—394 **4 Claims**



1. A process for the preparation of a decorative sheet, which comprises the following steps:

1) performing buildup printing of at least one surface of a first substrate sheet with an ink comprising an ionizing radiation-curable resin or its mixture with an ionizing radiation-uncurable resin as the vehicle to form a pattern-printed layer;

2) semi-curing the pattern-printed layer by irradiation with an ionizing radiation;

3) coating an ionizing radiation-uncurable resin or its mix-

ture with an ionizing radiation-curable resin on the semi-cured pattern-printed layer to form a primer layer;
4) irradiating the assembly with an ionizing radiation again to cure completely the pattern-printed layer; and
5) piling a second substrate sheet and/or a third substrate sheet on the first substrate sheet and compressing or heat-compressing the assembly to embed the pattern-printed layer in at least one of the substrate sheets.

5,296,341

GREEN LIGHT LASER IMAGING METHOD

Bela S. Manian, Saratoga, Calif., assignor to Lumisys, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 665,416, Mar. 5, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 908,575
Int. Cl.[5] G03C *5/17*
U.S. Cl. 430—396 **8 Claims**

1. A method of laser imaging comprising the steps of,
recording on X-ray film a gray-scale picture image corresponding to an X-ray irradiated subject,
digitizing the recorded picture image by means of a film digitizer,
modulating a single laser beam of green light wavelength in accordance with the digitized picture image,
directing the modulated laser beam of green light wavelength onto film sensitive to green-blue light, and
thereafter developing the film to create a gray-scale re-recorded image, whereby the re-recorded image has optical characteristics to the human eye matching those of the picture image on the conventional black and clear X-ray film.

5,296,342

METHOD OF DEVELOPING X-RAY MATERIALS

André Roefs, Herentals; Francis Sels, Kontich, and Marc Van den Zegel, Boortmeerbeek, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 12, 1992, Ser. No. 975,000
Claims priority, application European Pat. Off., Nov. 14, 1991, 91202953.5
Int. Cl.[5] G03C *5/29*
U.S. Cl. 430—438 **9 Claims**

1. Method of processing an exposed silver bromide or silver bromoiodide X-ray material which comprises development with an aqueous alkaline photographic developing solution having a pH in the range of 9 to 12, comprising a dihydroxybenzene developing agent, 4-hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidinone as an auxiliary developing agent and at least one organic antifoggant characterized in that the developing solution further contains an iodide ion releasing compound to provide at least 4.10^{-5} equivalents of ions per liter.

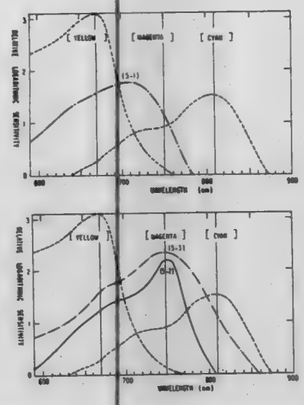
5,296,343

SILVER HALIDE PHOTOGRAPHIC EMULSION AND FULL COLOR RECORDING MATERIAL CONTAINING THE SAME

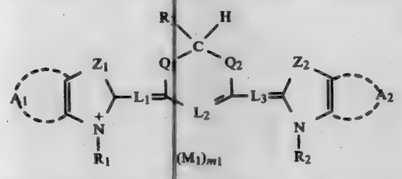
Takanori Hioki; Takashi Kato, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1991, Ser. No. 772,744
Claims priority, application Japan, Oct. 8, 1990, 2-270163
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—508 **17 Claims**

1. A silver halide photographic emulsion which is spectrally sensitized by containing at least one compound represented by the following general formula (I), said compound being added to said emulsion in an amount of from 0.3 to 0.9 based on the specific addition amount: 100 M R/S (wherein M represents the number of moles of the compound added to said emulsion, R is Avogadro's number, and S represents the total surface area ($Å^2$) of the silver halide grains present in said emulsion) at a temperature ranging from 60° C. to 85° C. to cause in said



emulsion J-band sensitization so as to confer a spectral sensitivity maximum at a wavelength from 730 nm to 900 nm:



wherein Z_1 and Z_2 each represent a sulfur or selenium atom; Q_1 and Q_2 each represent a methylene group; R_1 and R_2 each represent an alkyl group; R_3 represents an alkyl group, an aryl group or a heterocyclyl group; L_1, L_2 and L_3 each represent a methine group; A_1 and A_2 each represent atoms completing a benzene ring; R_1 and R_2 may combine with L_1 and L_3, respectively, to form a ring; M_1 represents a counter ion for charge balance; and m_1 represents a numerical value required for neutralization of the electric charge.

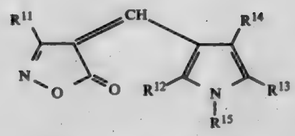
5,296,344

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoshihiro Jimbo, and Toshiyuki Watanabe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 9, 1992, Ser. No. 895,842
Claims priority, application Japan, Jun. 11, 1991, 3-165171; Jul. 26, 1991, 3-208907
Int. Cl.[5] G03C *1/84*
U.S. Cl. 430—522 **6 Claims**

1. A silver halide photographic light-sensitive material comprising a support and provided thereon at least one layer containing at least one compound represented by the following formula (I):



wherein R^{11} represents a hydrogen atom, an alkyl group, an aryl group, —$COOR^{16}$, or —$CONR^{16}R^{17}$; R^{12}, R^{13} and R^{14} each represents a hydrogen atom, an alkyl group, and an aryl group; R^{15} represents a hydrogen atom, an alkyl group, an aryl group, or an amino group; R^{13} and R^{14} may be combined to form a 6-membered ring; and R^{16} and R^{17} each represents a hydrogen atom, an alkyl group, and an aryl group; provided that the compound represented by formula (1) does not have a carboxy group or a salt thereof as a substituent.

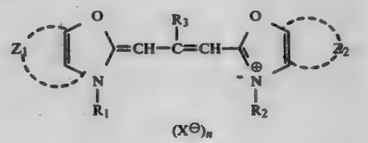
5,296,345

SILVER HALIDE PHOTOGRAPHIC MATERIAL

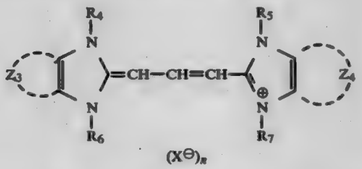
Seiji Yamashita; Masaki Okazaki, and Tadashi Ikeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1992, Ser. No. 933,184
Claims priority, application Japan, Aug. 27, 1991, 3-238884
Int. Cl.[5] G03C *1/08, 1/29*
U.S. Cl. 430—574 **9 Claims**

1. A silver halide photographic material, comprising a support having thereon at least one silver halide emulsion layer, wherein the silver halide emulsion layer contains at least 1×10^{-4} mol of a compound represented by formula (I) per mol of silver halide and from 1×10^{-3} to 1×10^{-1} mol of a compound represented by formula (II) per mol of the compound of formula (I) and the iodine content of the silver halide emulsion is up to 1 mol %:



wherein R_1 and R_2 each represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, or a substituted or unsubstituted aryl group, at least one of R_1 and R_2 is a sulfoalkyl group or a carboxyalkyl group; R_3 represents a substituted or unsubstituted alkyl group; $X^{\ominus}$ represents a counter ion necessary to balance the charge of the molecule; n represents a number necessary to balance the charge; and Z_1 and Z_2 each represents a group of nonmetallic atoms necessary to complete a substituted or unsubstituted benzene ring or a substituted or unsubstituted benzene ring or a substituted or unsubstituted naphtho ring, and when the molecule of formula (I) forms an intramolecular salt, n is 0:



wherein R_4, R_5, R_6 and R_7 each represents a substituted or unsubstituted alkyl group; $X^{\ominus}$ represents a counter ion necessary to balance the charge of the molecule; n represents a number necessary to balance the charge; and Z_3 and Z_4 each represents a group of nonmetallic atoms necessary to complete a substituted or unsubstituted benzene ring or a substituted or unsubstituted naphtho ring, and when the molecule of formula (II) forms an intramolecular salt, n is 0, wherein the silver halide emulsion layer contains tabular silver halide grains having a mean aspect ratio of at least 3 in an amount such that the tabular grains account for at least 50% of the total projected area of all the silver halide grains in the emulsion layer.

5,296,346

METHOD FOR DETERMINING LIPID BOUND SIALIC ACID IN PLASMA

Nonda Katopodis, 10 Greens Cir., Stamford, Conn. 06903

Filed Nov. 19, 1990, Ser. No. 615,597
Int. Cl.[5] G01N *33/48*; C12Q *1/00*
U.S. Cl. 435—4 **23 Claims**

1. A method of extracting lipid bound sialic acid from human blood plasma or serum and determining the amount of lipid bound sialic acid in a sample of human blood plasma or serum which comprises the following steps:
a) diluting a predetermined volume of 25 microliters or less of a blood plasma or serum sample with distilled water to a volume about two times that of the predetermined volume of the sample;
b) mixing the diluted sample for a suitable period of time to obtain a substantially homogeneous sample;
c) adding to the sample a mixture of a chlorinated lower alkyl hydrocarbon and a lower alkyl alcohol, the volume of the mixture added being about forth times the predetermined volume of the blood plasma or serum sample, and the volume ratio of chlorinated hydrocarbon to alcohol in the mixture being about 2:1;
d) mixing the resulting admixture for a suitable period of time to dissolve lipid-bound sialic acid in the sample in the chlorinated hydrocarbon/alcohol mixture;
e) diluting the admixture with a buffer solution at room temperature, the volume of buffer solution being about eight times the predetermined volume of the blood plasma or serum sample;
f) mixing the diluted admixture without vortexing for a suitable period of time to obtain a substantially homogeneous admixture and centrifuging the mixture to form a substantially clear upper phase;
g) separately recovering from the clear upper phase so formed a predetermined volume of the upper phase;
h) adding to the predetermined volume of the upper phase an amount of a mixture of a protein-precipitating agent and water without any adsorbing material, the amount of mixture being effective to cause precipitation of the lipid bound sialic acid;
i) mixing the resulting admixture;
j) separately recovering the resulting precipitate;
k) suspending the precipitate in a hydrolysis agent;
l) determining the amount of lipid bound sialic acid present in the suspended precipitate and thereby the amount present in the blood plasma or serum sample.

5,296,347

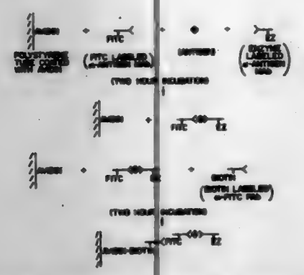
BRIDGE IMMUNOASSAY

George B. LaMotte, III, Larkspur, Calif., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Continuation of Ser. No. 653,024, Feb. 8, 1991, abandoned. This application Feb. 4, 1993, Ser. No. 14,092
Int. Cl.[5] G01N *33/569, 33/543, 33/53, 33/536*
U.S. Cl. 435—5 **41 Claims**

1. A method of immunoassay for an analyte in a liquid sample which comprises preparing or obtaining a solid phase to which is bound a first receptor which is selected from the group consisting of avidin and streptavidin and has as its ligand biotin conjugated to a second receptor which is an anti-hapten antibody;

wherein the second receptor is a bridge receptor which has as its ligand a hapten conjugated to a third receptor;
wherein the third receptor is an antibody that is not connected to a soluble liquid matrix and has as its ligand the analyte under assay;
contacting the liquid sample containing said analyte with said third receptor in either the presence or absence of said solid phase;



linking the third receptor to the solid phase by contacting the third receptor with the bridge receptor either in the presence or in the absence of the solid phase wherein the solid phase can be introduced to the liquid sample before, after or simultaneously with the bridge receptor; and
detecting and/or quantitating the analyte under assay;
wherein the molar ratio of the second receptor to the third receptor is greater than 1:1.

5,296,348

METHODS FOR SCREENING MONOCLONAL ANTIBODIES FOR THERAPEUTIC USE

Ewa Rakowicz-Szulczynska, Philadelphia, and Hilary Koprowski, Wynnewood, both of Pa., assignors to The Wistar Institute of Anatomy and Biology, Philadelphia, Pa.

Filed May 16, 1989, Ser. No. 352,258
Int. Cl.[5] C12Q *1/68*; G01N *33/566*; C07H *21/02*; C12N *15/00*
U.S. Cl. 435—6 **2 Claims**

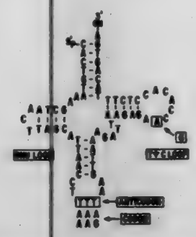
1. A method for selecting a monoclonal antibody specific for a surface antigen on a tumor cell, said antibody characterized by the ability to internalize into the nucleus of said cell where said antibody is selected from a group of monoclonal antibodies capable of binding to said surface antigen, said method comprising the steps of:
(a) providing a first sample and a second sample of said tumor cells and dividing said group of antibodies into a first sample and a second sample of monoclonal antibodies and pre-incubating the first sample of said tumor cells with a first sample of said monoclonal antibodies;
(b) labelling the second sample of said monoclonal antibodies with a radioactive label;
(c) incubating the pre-incubated first sample of tumor cells and the second non pre-incubated, sample of said tumor cells of step (a) with each said labeled monoclonal antibody;
(d) fractionating the cells and measuring the amount of the label present in each cell fraction of the first and second sample of said tumor cells;
(e) identifying the monoclonal antibody taken into the pre-incubated tumor cells in increased number compared to its uptake in the second sample of cells and in comparison to the uptake of the other labeled monoclonal antibodies in said group; and
(f) selecting the monoclonal antibody which is characterized by an increased amount of label in said pre-incubated tumor cells in comparison to said second sample of tumor cells, said increased amount of label being the result of that antibody's ability to induce expression of the cell surface antigen or chromatin antigen and to be translocated into the cell in comparatively highest quantities.

5,296,349

MOLECULAR GENETIC TEST FOR MYOCLONIC EPILEPSY

Douglas C. Wallace, Atlanta, Ga., assignor to Emory University, Atlanta, Ga.

Filed Jun. 15, 1990, Ser. No. 538,267
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **25 Claims**



1. A method of detecting neuromuscular disease in a patient, comprising the step of ascertaining the presence of a transition mutation at the nucleotide position 8344 of human mitochondrial DNA obtained from a biological sample from said patient.

5,296,350

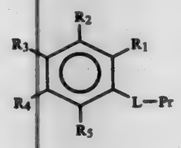
ION TRIGGERED ALKYLATION OF BIOLOGICAL TARGETS BY SILYLOXY AROMATIC AGENTS

Steven E. Rokita, Port Jefferson, and Tianke Li, Stony Brook, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Oct. 31, 1990, Ser. No. 606,463
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **30 Claims**



1. A silyloxy aromatic probe having the formula:



wherein
when R_1=—OSi($R_6R_7R_8$), then R_2 and/or R_4 is =—CHR_9X;
when R_2=—OSi($R_6R_7R_8$), then R_1, R_3 and/or R_5 is =—CHR_9X;
when R_3=—OSi($R_6R_7R_8$), then R_2 and/or R_4 is =—CHR_9X;
when R_4=—OSi($R_6R_7R_8$), then R_1, R_3 and/or R_5 is =—CHR_9X;
when R^5=—Osi($R_6R_7R_8$), then R_2 and/or R_4 is =—CHR_9X;

wherein said R_6, R_7, R_8=various alkyl or aromatic groups; X leaving group; wherein said R_9, is H, or an organic compound, such as an aliphatic or alkyl group L is a linking group for attachment to a probe which may be positioned at any carbon atom of the ring; and Pr is a probe for binding to a target molecule.

5,296,351

METHOD FOR DIAGNOSIS OF MONOCLONALITY IN LEUKAEMIA AND LYMPHOMA

Alexander A. Morley, 12 Barretts Road, Torrens Park, South Australia, and Michael J. Brisco, Marino, both of Australia, assignors to Alexander A. Morley, Australia

PCT No. PCT/AU89/00455, § 371 Date Jun. 13, 1991, § 102(e) Date Jun. 13, 1991, PCT Pub. No. WO90/04648, PCT Pub. Date May 3, 1990
PCT Filed Oct. 20, 1989, Ser. No. 684,889
Claims priority, application Australia, Oct. 20, 1988, PJ1057
Int. Cl.[5] C12A *1/68*
U.S. Cl. 435—6 **27 Claims**

1. A method for the detection of B-cell lymphoid leukemia or B-cell lymphoma in a tissue sample which comprises:
(a) amplifying the immunoglobulin gene segments in said tissue sample by the polymerase chain reaction using at least one pair of primers specific for said immunoglobulin gene segments, wherein said immunoglobulin gene segments comprise at least one of a V-D, D-J and J-C junction;
(b) separating the amplified immunoglobulin gene segments by size;
(c) detecting said size-separated amplified immunoglobulin gene fragments; and
(d) determining the homogeneity or heterogeneity of said amplified immunoglobulin gene segments wherein homogeneity is indicative of B-cell lymphoid leukemia or B-cell lymphoma.

5,296,352

MONOCLONAL ANTIBODIES DIRECTED AGAINST COMPLEXES FORMED BY THROMBIN AND HIRUDIN

Jean-Marc Schneppi, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 23, 1991, Ser. No. 763,860
Int. Cl.[5] A61K *35/14*; C07K *15/00*
U.S. Cl. 435—7.4 **25 Claims**

1. A monoclonal antibody which is directed against the thrombin/hirudin-complex, or a derivative thereof which retains the specificity of said antibody.

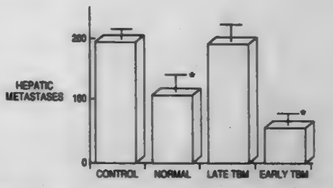
5,296,353

EVALUATION AND TREATMENT OF PATIENTS WITH PROGESSIVE IMMUNOSUPPRESSION

Augusto C. Ochoa, Washington, D.C.; Hiromoto Mizoguchi, Frederick, Md.; John J. O'Shea, Silver Spring, Md.; Dan L. Longo, Kensington, Md., and Cynthia M. Loeffler, Bladensburg, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C. and Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 6, 1992, Ser. No. 863,262
Int. Cl.[5] G01N *33/573, 33/574*
U.S. Cl. 435—7.23 **6 Claims**

1. A method of identifying patients having T lymphocytes capable of activation for autologous adoptive immunotherapy, comprising the steps of:
a. directly determining, in a lymphocyte preparation from a patient being evaluated for immunosuppression, the level of expression of at least one selected TCR subunit protein or protein in the T lymphocyte signal transduction pathway, said protein being selected from the group consisting of ζ, CD3 γ, FCεγ, and Lck; and
b. comparing said level of protein expression with the normal level of expression of said protein found in healthy individuals, and selecting patients whose level of expression of said protein is at or above the threshold level for response to activation for adoptive immunotherapy.



5,296,354

KIT FOR THE SPECIFIC ASSAY OF ANGIOTENSIN II

Dominique Simon; Jean Marchand, both of Montpellier; Gabriel Badonnille, Pignan; Bernard Roucstand, Saint-Gely-du-Fesc, and Jean-Alain Fehrentz, Saint Nazair du Pezan, all of France, assignors to Elf Sanofi, Paris, France

Filed Jul. 5, 1991, Ser. No. 726,376
Claims priority, application France, Jul. 5, 1990, 90 08563
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—7.92 **49 Claims**

1. A kit for the specific assay of Angiotensin II, comprising:
(a) an anti-Angiotensin II antibody,
(b) a solution of labelled Angiotensin II, and
(c) a solution of anti-Angiotensin III antibody, said anti-Angiotensin III antibody exhibiting a crossreactivity with Angiotensin II of less than 10%.

5,296,355

METHOD FOR ASSAYING IMMUNOLOGICALLY ACTIVE SUBSTANCE AND REAGENT THEREFOR

Shoichi Shutoh, Sega; Akinori Suginaka, Chigasaki, and Mikio Akita, Kawagoe, all of Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/JP89/01051, § 371 Date Jun. 12, 1991, § 102(e) Date Jun. 12, 1991, PCT Pub. No. WO90/04179, PCT Pub. Date Apr. 19, 1990
PCT Filed Oct. 12, 1989, Ser. No. 678,326
Claims priority, application Japan, Oct. 13, 1988, 257846
Int. Cl.[5] G01N *33/531, 33/536, 33/543*
U.S. Cl. 435—7.94 **4 Claims**

3. A buffer solution for the immunological measurement of turbidity of an immunologically active substance which contains buffer substances which have a pH range of 5 to 10 and a compound of the general formula

$$R^1O—\{(CH_2CH_2O)_m(AO)_n\}—R^2$$

wherein R^1 and R^2 each stands for a hydrogen atom or hydrocarbon group with 1–5 carbon atoms, AO for an oxyalkylene group with 3–4 carbon atoms, m and n represent the numbers of the oxyethylene groups and oxyalkylene groups, respectively, the oxyethylene groups and oxyalkylene groups having been copolycondensed randomly to have a molecular weight of 1000–20000 and the ratio of m/n being within the range of 60/40–90/10.

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5,296,356

ENZYME-IMMUNOASSAY METHOD FOR THE DETERMINATION OF AN ANALYTE

Dieter Mangold, Maxdorf; Ulrich Traeger, Limburgerhof, and Hans Lange, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 12, 1990, Ser. No. 626,257
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, 39411508
Int. Cl.[5] G01N 33/543
U.S. Cl. 435—7.92 14 Claims

1. Method for determining an analyte in a liquid sample by an enzyme immunoassay comprising:

(a) providing a transparent nonporous vessel comprising therein a porous solid phase having immobilized thereon a specific binding partner selected from the group consisting of a first specific binding partner which specifically binds to the analyte, the analyte, and an immunologically reactive analogue thereof;

(b) providing an enzyme-labelled immunologically active compound comprising an enzyme label conjugated to a compound selected from the group consisting of the analyte, the immunologically reactive analogue thereof and a second specific binding partner which specifically binds to the analyte or the immunologically reactive analogue thereof as either

(1) a separate liquid reagent or

(2) as part of the porous solid phase, wherein the enzyme-labelled immunologically active compound is specifically bound to the specific binding partner on the porous solid phase;

(c) contacting the liquid sample with both the enzyme-labelled immunologically active compound and the immobilized specific binding partner such that the liquid sample and the enzyme-labelled immunologically active compound form a first liquid phase wherein no more liquid volume is contacted than can be maximally absorbed by the porous solid phase and

for a time sufficient for the enzyme-labelled immunologically active compound to partition between the porous solid phase and the first liquid phase;

(d) contacting the porous solid phase of step (c) with a liquid chromogenic substrate specific for the enzyme label in a volume sufficient to displace the first liquid phase and to form a second liquid phase above the porous solid phase in the transparent nonporous vessel; and

(e) measuring the amount of chromogen produced in the second liquid phase in order to determine the amount of the analyte in the liquid sample, wherein the measurement is carried out in the transparent nonporous vessel of step (d) without prior removal of the porous solid phase.

10. The method of claim 1 wherein the analyte is albumin, T_4 or TSH.

5,296,357

METHOD FOR THE DETECTION OF PLASMINOGEN ACTIVATORS, THEIR INHIBITORS OF STIMULATORS

Hermann Keuper, Wetter, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed May 23, 1991, Ser. No. 704,876
Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016978
Int. Cl.[5] C12Q 1/37; C12N 9/68; A61K 37/547
U.S. Cl. 435—23 8 Claims

1. A method for the functional determination of plasminogen activator (PA) activity and the modulation thereof in body fluids, comprising the steps of:

a) incubating a sample of a biological material with a plasminogen activator substrate in the absence of a methionine oxidizing agent; and

b) determining the resulting plasmin variant by means of a chromogenic plasmin substrate,

wherein said plasminogen activator substrate is a plasminogen variant with kringle domains 1–4 partially or completely absent.

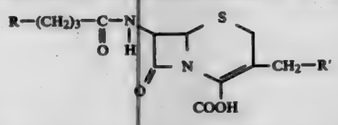
5,296,358

PROCESS FOR THE ENZYMATIC PREPARATION OF CEPHALOSPORANIC DERIVATIVES USING A D-AMINO ACID OXIDASE FROM *RHODOTORULA GLUTINIS* NCIMB 40412

Ezio A. Battistel, La Spezia; Pietro Cesti, Novara; Giuliana Franzosi, Milan; Wilhelmus van der Goes, Turin; Silvana Bonicelli, Bergamo, and Mirella Pilone, Milan, all of Italy, assignors to Ministero Dell'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy

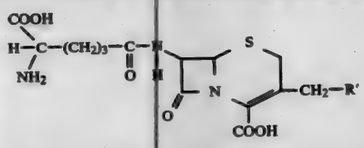
Filed Jun. 3, 1992, Ser. No. 893,048
Claims priority, application Italy, Jun. 3, 1991, MI 91 A 001509
Int. Cl.[5] C12P 35/06; C12N 9/02, 9/04, 9/06
U.S. Cl. 435—49 13 Claims

1. A process for the enzymatic preparation of a cephalosporanic derivative, or a salt thereof, having the formula (I)



(I)

wherein R is a —CO—COOH or —COOH group, and R′ is H, OH, or —OCO—R″, and R″ is an alkyl group with from 1 to 4 carbon atoms, said process comprising oxidatively deaminating a compound, or a salt thereof, having the formula (II)



(II)

in the presence of the D-amino acid oxidase enzyme extracted from the microorganism *Rhodotorula glutinis* NCIMB 40412 or a mutant thereof capable of producing said enzyme.

5,296,359

Patent Not Issued For This Number

5,296,360

PROCESS FOR PRODUCING GANGLIOSIDE G_{M1}

Tsunetake Sugimori, Uji; Yoji Tsukada, Kyoto, and Yasuhiro Ohta, Uji, all of Japan, assignors to Marukin Shoyu Co., Ltd., Japan

PCT No. PCT/JP89/01118, § 371 Date Jun. 28, 1991, § 102(e) Date Jun. 28, 1991, PCT Pub. No. WO91/06663, PCT Pub. Date May 16, 1991
PCT Filed Oct. 30, 1989, Ser. No. 679,087
Int. Cl.[5] C12P 19/04
U.S. Cl. 435—101 10 Claims

1. A process for preparing ganglioside G_{M1} selectively which comprises subjecting a solution of ganglioside or a mixture of gangliosides to the action of neuraminidase isozyme S obtained from a culture of a bacterium of *Arthrobacter ureafaciens* M1057, wherein the ganglioside or the mixture of gangliosides is at least one member selected from gangliosides G_{D1a}, G_{D1b}, G_{T1a}, G_{T1b} and G_{Q1b} or a mixture of gangliosides extracted from bovine brain.

5,296,361

Patent Not Issued For This Number

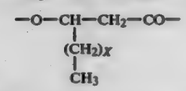
5,296,362

MICROBIOLOGICAL PRODUCTION OF POLYESTERS HAVING C_8 AND/OR C_{10} MONOMER REPEAT UNITS

Alistair J. Anderson, Hull; Edwin A. Dawes, Humberside; Geoffrey W. Haywood, Hull, and David Byrom, Cleveland, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 12, 1990, Ser. No. 507,842
Claims priority, application United Kingdom, Apr. 12, 1989, 8908214; May 19, 1989, 8911577; Oct. 4, 1989, 8922362
Int. Cl.[5] C12P 7/62, 1/00
U.S. Cl. 435—135 2 Claims

1. A process for the microbiological production of polyester containing a modal number of repeat units having the formula



wherein

X is 4 or 6, said process comprising cultivating, under aerobic conditions and pH of about 7, at least one bacterium on a substrate comprising an assimilable carbon compound selected from glucose, fructose, acetate, succinate, lactate, gluconate and glycerol; said bacterium being selected from the group consisting of *Pseudomonas sp.* NCIMB 40135, *Pseudomonas putida* NCIB 8865, *Pseudomonas putida* NCIB 9751, *Pseudomonas aeruginosa* NCIB 9904, *Pseudomonas aeruginosa* NCIB 8626, *Pseudomonas fluorescens* NCIB 9520, and recovering the polyester from the cultivation.

5,296,363

PREPARATION OF 2-(4-HYDROXYPHENOXY)PROPIONIC ACID BY FERMENTATION

Bryan Cooper, Mannheim; Wolgang Ladner; Bernhard Hauer, both of Fussgoenheim, and Hardo Siegel, Speyer, all of Fed. Rep. of Germany, assignors to Base Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP90/00472, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO90/11362, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 22, 1990, Ser. No. 761,343
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1989, 3910024
Int. Cl.[5] C12P 7/42, 7/52, 7/40
U.S. Cl. 435—146 5 Claims

1. A process for the preparation of 2-(4-hydroxyphenoxy)-propionic acid by fermentation, wherein hydroxylation takes place substantially only in the p-position, which process comprises oxidizing 2-phenoxypropionic acid of salts thereof under aerobic conditions in the presence of a 2-(4-hydroxyphenoxy) propionic acid activity-producing, soil-inhabiting microorganism selected from the group consisting of a Streptomycetes bacteria and a fungus.

5,296,364

MICROBIAL METHOD OF PRODUCING INOSITOL

Pramod Agrawal, Corpus Christi, Tex., assignor to Cerechem Corporation, Carpinteria, Calif.

Filed Jul. 21, 1992, Ser. No. 904,372
Int. Cl.[5] C12P 7/02
U.S. Cl. 435—155 11 Claims

1. A method of increasing production of inositol in a culture medium comprising:

providing a culture medium suitable for growth of microorganisms, comprising a source of carbon and a source of nitrogen,

inoculating said medium with *Saccharomyces cerevisiae* YS2 or *Saccharomyces cerevisiae* YS3,

culturing said strain in the medium to produce ethanol,

continuing said culturing until the concentration of glucose reaches less than about 5 grams per liter, then further continuing said culturing to permit consumption of ethanol, and

isolating inositol from the reaction medium.

5,296,365

PRODUCTION OF GUAR ALPHA-GALACTOSIDASE BY HOSTS TRANSFORMED WITH RECOMBINANT DNA METHODS

Nicholaas Overbeeke, Maasland; Arthur Fellinger, Hoogvliet, both of Netherlands, and Stephen G. Hughes, Chelveston, Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Division of Ser. No. 165,995, Feb. 2, 1988, Pat. No. 5,082,778.
This application Jun. 26, 1991, Ser. No. 721,409
Claims priority, application European Pat. Off., Jun. 3, 1986, 86200975; United Kingdom, Dec. 18, 1986, 8630255; Dec. 23, 1986, 8630719; Apr. 29, 1987, 8710139; May 11, 1987, 8711061; European Pat. Off., May 20, 1987, 87200955; United Kingdom, May 26, 1987, 8712318
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] C12N 9/40, 15/56, 15/80, 15/74
U.S. Cl. 435—208 13 Claims

1. An expression system comprising:

(i) a vector, and

(ii) a nucleotide sequence encoding a mature protein both having α-galactosidase activity and being capable of decreasing the galactose content of galactomannans by splitting off 1–6 linked α-D-galactopyranosyl units attached to a main chain of 1–4 linked β-D-mannopyranosyl units, or a precursor of such a protein, wherein said precursor is a pre-form of the protein, a prepro- form of the protein, or a fusion form of the protein which upon cleavage results in the mature protein,

wherein the nucleotide sequence is insufficiently complementary to the complement of the sequence of FIG. 6 to hybridize thereto, yet still encodes a protein comprising the following amino acid sequence:

AENGLGQTPPMGWNSWNHFGCDINE

NVVRETADAMVSTGLAALGYQYINL

DDCWAELNRDSEGNMVPNAAAFPSG

IKALADYVHSKGLKLGVYSDAGNQT

CSKRMPGSLGHEEQDAKTFASWGVD

YLKYDNCENLGISVKERYPPMGKAL

LSSGRPIFFSMCEWGWEDPQIWAKS

IGNSWRTTGDIEDNWNSMTSIADSN

DKWASYAGPGGWNDPDMLEVGNGGM

TTEEYRSHFSIWALAKAPLLVGCDI

RAMDDTTHELISNAEVIAVNQDKLG

VQGKKVKSTNDLEVWAGPLSDNKVA

VILWNRSSSRATVTASWSDIGLQQG

TTVDARDLWEHSTQSLVSGEISAEI

DSHACKMYVLTPRS,

wherein said nucleotide sequence is operably linked to a regulatory sequence present in said vector, which regula-

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tory sequence facilitates expression of said nucleotide sequence.

5,296,366

METHOD FOR THE ISOLATION AND EXPRESSION OF A GENE WHICH CODES FOR STREPTOKINASE, NUCLEOTIDE SEQUENCE OBTAINED, RECOMBINANT DNA AND TRANSFORMED MICROORGNAISMS

Mario P. E. Garcia; Aimee P. Felipe; Roger R. Chaplen; Ricardo S. Docc; Luciano F. H. Marrero, Havana; Pedro R. Collazo, Artemisa; Anaisel C. Ramirez, Havana; Emilio A. M. Munoz, Ciego de Avila; Walfrido B. Martinez, Havana; Magalys C. Somarriba, Havana; Alicia P. Fernandez, Havana; Jose d. d. Garcia, Havana, and Luis S. H. Martinez, Havana, all of Cuba, assignors to Centro de Ingenieria Genetica y Biotecnologia, Cuba

Filed May 22, 1991, Ser. No. 703,778

Claims priority, application Cuba, May 23, 1990, 90/90

Int. Cl.[5] C12N *15/58, 15/70, 15/81*

U.S. Cl. 435—216 26 Claims

13. An isolated and purified nucleic acid consisting essentially of the nucleotide sequence SEQ ID NO:1 in the Sequence Listing.

5,296,367

ALKALINE PROTEINASE ISOLATED FROM BACILLUS SP.

Jun Hitomi, Takanezawamachi; Shigehito Adachi, Utsunomiya; Yoshihiro Hakamada, Ichikaimachi; Mikio Takaiwa, Tochigi; Tadashi Yoshimatsu; Yoko Watanabe, both of Utsunomiya; Tohru Kobayashi, Ichikaimachi; Shuji Kawai, and Susumu Ito, both of Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jan. 3, 1992, Ser. No. 816,243

Claims priority, application Japan, Jan. 17, 1991, 3-17065; Jan. 17, 1991, 3-17066; Feb. 27, 1991, 3-33116; Feb. 27, 1991, 3-33117

Int. Cl.[5] C12N *9/52, 9/52, 9/54, 9/56*

U.S. Cl. 435—221 4 Claims

1. An alkaline proteinase K-16 isolated from Bacillus sp. KSM-K16 comprising the following enzymological characteristics:

(1)–(2) Action/Substrate specificity

Exhibits degradation activity on casein, hemoglobin, FCS albumin, keratin and elastin at pH 10.0;

(3) Optimum pH range

Optimum pH range of 11.0–12.3 when reacted at 40° C. using casein as a substrate;

(4) pH stability

Stable in a pH range of 5.0–12.0 in the presence of Ca^{2+} when stored in buffer solutions at 25° C. for 2 days;

(5) Optimum temperature

Optimum temperature 55° C. when reacted at pH 10.0 using casein as a substrate;

(6) Heat stability

Maintains 90% or higher residual activity when treated at 50° C. and at pH 9.5 for 10 minutes;

(7) Molecular Weight

28,000±1,000 measured by SDS-polyacrylamido gel electrophoresis;

(8) Isoelectric point 10.5 or higher;

(9) Effects of metal ions

Activity inhibited by Hg^{2+} and Cu^{2+}, and heat stability promoted by Ca^{+2};

(10) Effects of inhibitors

Activity not inhibited by ethylenediaminetetraacetic acid, 4-chloromercuribenzoate and antipain, and inhibited by diisopropyl fluorophosphate, phenylmethanesulfonyl fluoride, and chymostatin; and

(11) Effects of surface active agents

Stable in the presence of sodium linear alkylbenzene sulfonate, sodium polyoxyethylene alkyl sulfate, sodium dodecyl sulfate, sodium α-olefin sulfonate, sodium alkyl sulfonate, and α-sulfo-fatty acid ester.

5,296,368

BACILLUS THURINGIENSIS ISOLATE DENOTED B.T. PS81F, ACTIVE AGAINST LEPIDOPTERAN PESTS, AND A GENE ENCODING A LEPIDOPTERAN-ACTIVE TOXIN

Jewel Payne, and August J. Sick, both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Division of Ser. No. 629,504, Dec. 18, 1990. This application Nov. 19, 1992, Ser. No. 978,839

Int. Cl.[5] C12N *5/00, 15/00;* C12P *21/00, 21/04*

U.S. Cl. 435—240.4 1 Claim

1. A plant cell transformed to express a gene encoding a protein having the amino acid sequence shown in Table 2.

5,296,369

METHOD AND COMPOSITIONS FOR CONTROLLING ROUND-LEAVED MALLOW USING *COLLETOTRICHUM GLOEOSPORIOIDES* F. SP. *MALVAE*, A.T.C.C. 20767

Knud Mortensen, Balgonie; Roberte M. D. Makowski, Regina; James E. Cunningham, Saskatoon, and Robert D. Carmichael, Edmonton, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Agriculture, Ontario and Philom Bios, Saskatchewan, both of Canada

Continuation-in-part of Ser. No. 174,387, Mar. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 776,209, Sep. 16, 1985, abandoned. This application May 13, 1991, Ser. No. 699,253

Int. Cl.[5] A01N *63/00;* C12N *3/00, 1/14*

U.S. Cl. 435—242 13 Claims

1. A method for commercial-scale production of a fungal product having mycoherbicidal activity against round-leaved mallow (*Malva pusilla* Sm.), said method comprising the steps of

(a) preparing an inoculum stock of the fungus *Colletotrichum gloeosporioides* f.sp. malvae, ATCC 20767,

(b) in a multi-stage primary fermentation inoculating a first vessel containing a primary fermentation medium with said inoculum, said primary fermentation medium having a low carbon:nitrogen ratio to maximize mycelial biomass production, conducting a primary fermentation in said vessel to produce primarily mycelial biomasss essentially free of spores, transferring the mycelial biomass to at least one further vessel containing said primary fermentation medium and continuing the primary fermentation in said at least one further vessel while maintaining the culture in the exponential growth phase to produce primarily mycelial biomass essentially free of spores and

(c) transferring the mycelial biomass, from the primary fermentation to a final fermentation in a vessel containing a medium which contains no sporulation-suppressing component and has a high carbon:nitrogen ratio to thereby prevent further mycelial biomass production and conducting a final fermentation to optimize spore production with a yield of at least 2×10^7 spores/ml, separating said spores from the mycelial biomass, and concentrating said spores into a slurry, drying said spore slurry and adjusting the final moisture content of the dried spore product to between 12% and 33% moisture for storage.

5,296,370

REPAIR MEDIUM FOR THE RESUSCITATION OF INJURED CELLS

Alain Martin, Ringoes, and Stanley E. Katz, Milltown, both of N.J., assignors to Rutgers, The State University, Piscataway, N.J.

Continuation of Ser. No. 592,513, Oct. 4, 1990, abandoned. This application Oct. 14, 1992, Ser. No. 961,207

Int. Cl.[5] C12N *1/00, 1/12, 1/20, 1/04, 5/00*

U.S. Cl. 435—252.1 22 Claims

1. An anaerobic repair medium for the resuscitation of injured, damaged or stressed food pathogens, which medium comprises:

a non-selective complete nutrient medium in an amount effective to supply all nutrients required by said food pathogens;

a yeast derivative in an amount effective to promote the repair of said food pathogens;

one or more antioxidants in an amount effective to promote the repair of said food pathogens;

an oxygen tension reducing agent in an amount effective to reduce the oxygen tension of said nutrient medium to anaerobic levels; and

one or more fatty acids required for membrane repair of said food pathogens between about 10 and about 25 carbon atoms in length and having from 0 up to 4 double bonds.

5,296,371

DNA ENCODING SPIROPLASMA SP. DNA METHYLASE

Aharon Razin; Shlomo Rottem, and Pinhas F. Renbaum, all of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, an Israeli Corp.

Continuation of Ser. No. 390,649, Aug. 7, 1989, abandoned. This application Oct. 4, 1991, Ser. No. 771,525

Int. Cl.[5] C12N *1/21, 1/15, 15/70, 15/54*

U.S. Cl. 435—252.3 5 Claims

1. An isolated DNA sequence encoding a M.Sss MQ1 methylase of Spiroplasma, said DNA encoding the amino acid sequence set forth in FIG. 5.

5,296,372

Patent Not Issued For This Number

5,296,373

PROCESS FOR PRODUCING R(−)-MANDELIC ACID OR A DERIVATIVE THEREOF FROM A MANDELONITRILE USING RHODOCOCCUS

Takakazu Endo, and Koji Tamura, both of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

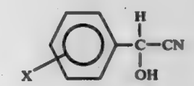
Filed Jun. 25, 1992, Ser. No. 904,335

Claims priority, application Japan, Jun. 26, 1991, 3-180475

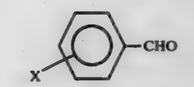
Int. Cl.[5] C12P *41/00, 7/42*

U.S. Cl. 435—280 5 Claims

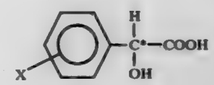
1. A process for producing a R(−)-mandelic acid represented by the following general formula (III) directly from a R,S-mandelonitrile represented by the following general formula (I) or from a benzaldehyde represented by the following general formula (II) and hydrogen cyanide by treating (A) the R,S-mandelonitrile of general formula (I) or (B) a mixture of the benzaldehyde of general formula (II) and hydrogen cyanide, with Rhodococcus sp. HT29-7 (FERM BP-3857) which stereoselectively hydrolyzes the nitrile group of the R,S-mandelonitrile represented by the general formula (I) in a substantially neutral or basic aqueous medium and recovering the produced R(−)-mandelic acid of general formula (III):



(I)



(II)



(III)

wherein X, is selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a thioalkyl group having 1 to 3 carbon atoms, an amino group, a nitro group, a mercapto group, a phenyl group and a phenoxy group.

5,296,374

APPARATUS FOR ASSESSING A PARTICULAR PROPERTY IN A MEDIUM

Brian Culshaw, Kilmacolm, Scotland, and Anthony P. F. Turner, North Crawley, England, assignors to University of Strathclyde, Glasglow, Scotland

PCT No. PCT/GB90/01615, § 371 Date Apr. 22, 1992, § 102(e) Date Apr. 22, 1992, PCT Pub. No. WO91/05999, PCT Pub. Date May 2, 1991

PCT Filed Oct. 19, 1990, Ser. No. 847,009

Claims priority, application United Kingdom, Oct. 20, 1989, 8923699

Int. Cl.[5] C12M *1/40, 1/34*

U.S. Cl. 435—288 6 Claims

1. An apparatus for assessing a particular property of a medium comprising:

a chamber having a thermally conductive portion;

a vibratile element thermally coupled within said chamber to said thermally conductive portion;

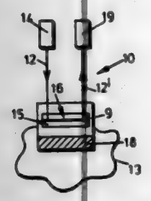
optical excitation means for delivering optical excitation energy incident to said vibratile element so as to cause the vibratile element to vibrate at its resonant frequency without inducing thermal changes in the chamber;

optical means for monitoring and detecting the vibration frequency of the vibratile element; and

thermally activated sensor means, thermally coupled to an

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exterior surface of said thermally conductive portion thereby being exposed to enable contact between said thermally activated sensor means and the medium, said thermally activated sensor means being a material which is thermally activated when contacted with said medium having said particular property for changing the tempera-



ture of the chamber and hence the resonant frequency of the vibratile element by heat transfer through the thermally conductive portion between the thermally activated sensor means and the chamber, said changes in said resonant frequency being monitored and detected by the optical means which provides an assessment of the presence of said particular property of said medium.

5,296,375

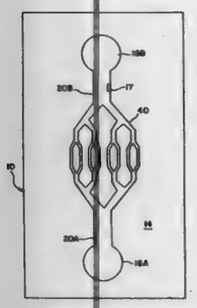
MESOSCALE SPERM HANDLING DEVICES

Larry J. Kricka, Berwyn, and Peter Wilding, Paoli, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed May 1, 1992, Ser. No. 877,661

Int. Cl.[5] G01N *21/03*

U.S. Cl. 435—291 **47 Claims**



1. A device for in vitro fertilization, the device comprising:
a solid substrate microfabricated to define:
an egg nesting chamber;
a sperm inlet port; and
an elongate channel of mesoscale cross-sectional dimension, communicating between said egg nesting chamber and said sperm inlet port, which permits competitive sperm migration from said inlet port to said nesting chamber for egg fertilization; and
an egg disposed within said nesting chamber.

5,296,376

DNA, CONSTRUCTS, CELLS AND PLANTS DERIVED THEREFROM

Ian G. Bridges, Slater, Iowa; Donald Grierson, Loughbrough, and Wolfgang W. Schuch, Crowthorne, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 119,614, Nov. 12, 1987. This application Dec. 5, 1990, Ser. No. 621,714

Claims priority, application United Kingdom, Nov. 11, 1986, 86262879; Nov. 26, 1989, 8927048

Int. Cl.[5] C12N *15/82*

U.S. Cl. 435—320.1 **1 Claim**

1. A construct having the structure of pJR16S.

5,296,377

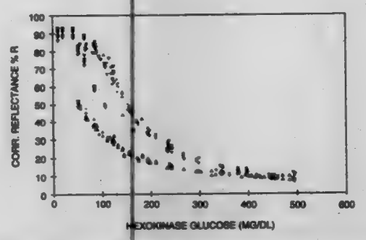
CONTROL REAGENT CONTAINING A HYDROXYLAMINE OR AN ANTIOXIDANT

Myron Rapkin, Indianapolis; David Tabb, Greenfield, and Eric Diebold, Fishers, all of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Dec. 15, 1992, Ser. No. 990,433

Int. Cl.[5] G01N *31/00, 33/66*

U.S. Cl. 436—13 **17 Claims**



1. Control reagent useful in determining an analyte selected from the group consisting of glucose and cholesterol, consisting essentially of
(i) a known amount of glucose or cholesterol;
(ii) an additive selected from the group consisting of (a) a hydroxylamine group containing compound; (b) 2,6-ditertiarybutyl 4-methyl phenol; (c) 2-(1,1-dimethyl)-1,4-benzenedial; (d) 3,4,5-trihydroxylbenzoic acid; (e) vitamin E and (f) a vitamin E derivative, and
(iii) a fluid carrier material.

5,296,378

METHOD FOR CLASSIFYING LEUKOCYTES BY FLOW CYTOMETRY

Takashi Sakata, and Tomoyuki Kuroda, both of Kakogawa, Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Continuation of Ser. No. 663,090, Feb. 28, 1991, Pat. No. 5,175,109, which is a continuation of Ser. No. 91,663, Sep. 1, 1987, abandoned. This application Sep. 18, 1992, Ser. No. 947,784

Claims priority, application Japan, Sep. 10, 1986, 61-213716; Nov. 27, 1986, 61-282697

Int. Cl.[5] G01N *33/49*

U.S. Cl. 436—63 **1 Claim**

1. A method for classifying leukocytes by flow cytometry that comprises the following steps (a) to (d):
(a) lysing the erythrocytes in a fresh sample of anticoagulated blood by adding it to a hypotonic first fluid composed of Neutral Red for selectively staining eosinophils, Astrazon Orange or Auramine O for selectively staining basophils, and a buffer for maintaining an acidic pH range;
(b) staining the leukocytes in the so-treated blood sample by adding it to a second fluid that is composed of a buffer for maintaining the acid in the buffer in the first fluid and maintaining the pH of the resulting dye solution at a staining pH, and an osmolarity compensating agent for adjusting the osmolarity of the dye solution to a value at which the leukocytes remain unchanged in shape;
(c) permitting the stained sample to flow through a flow cytometer, differentiating leukocytes from all other corpuscles and ghosts by intensity of fluorescence, and measuring the signals of one or two fluorescence emissions and right-angle scattered light from leukocytes; and
(d) identifying the type of each of the leukocytes based on said measured signals, counting the number of detected leukocytes according to their type, and calculating the proportions of individual leukocyte types.

5,296,379

APPARATUS AND METHOD FOR MODELING ARTERIAL THROMBUS FORMATIONS

Peter Gorog, and Iren Kovacs, both of 20 Grenville Court, Lymer Avenue, London, United Kingdom SE1G 1LR

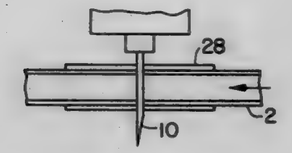
PCT No. PCT/GB91/00438, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/14943, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,284

Claims priority, application United Kingdom, Mar. 23, 1990, 9006520.2

Int. Cl.[5] G01N *33/86*

U.S. Cl. 436—69 **8 Claims**



1. A method of modeling occlusive thrombosis formations in vitro comprising:
supplying blood from a pressurized blood reservoir to a tubing which passes through a punching station to a collection reservoir;
providing a sleeve over said tubing in a portion of the tubing which passes through said punching station;
punching a needle hole in said sleeve and tubing at said punching station to stimulate bleeding, whereby blood exits said tubing and a portion of said blood is trapped between said tubing and said sleeve, some of the trapped blood contacting blood in said tubing thus forming a thrombus in said tubing which increases in size with time, and subsequently moves past said punching station; and,
measuring a change in pressure in said tube to identify the formation of the thrombus.

5,296,380

METHOD AND KIT FOR DETECTING EXPLOSIVES

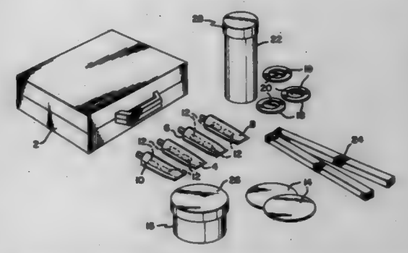
Yair Margalit, Rehovot, Israel, assignor to Israel Institute For Biological Research, Ness Ziona, Israel

Filed Sep. 3, 1992, Ser. No. 939,828

Int. Cl.[5] G01N *33/22*

U.S. Cl. 436—106 **38 Claims**

1. A method for detecting explosives selected from nitroaromatics, organic nitrates, nitramines, inorganic nitrates, chlorates and bromates, which method comprises providing a sample from a suspect source, and subjecting said sample to the steps of:
contacting the sample with a first reagent, which is an alkaline solution of a diazotizable aminoaromatic azo-dye precursor, whereby the presence of a nitroaromatic explosive affords a distinct coloration; and in the absence of such coloration,
contacting the sample, which is already in contact with said first reagent, with a second reagent containing a nitrate to nitrite ion reducing agent and a diazo-coupler which gives a colored product on reaction with a diazonium compound formed by reaction of the diazotizable aminoaromatic azo-dye precursor with nitrite ion, said second reagent being sufficiently strongly acidic in that it neutralizes and makes acidic a mixture thereof with an equal volume of said first reagent in contact with said sample, whereby the presence of an organic nitrate or nitramine



explosive affords a distinct coloration; and in the absence of such coloration,
contacting the sample, which is already in contact with said first and second reagents, with zinc powder suspended in a liquid, whereby the presence of inorganic nitrate affords a distinct coloration; and in the absence of a distinct coloration in all of the preceding steps, providing a second sample from said source, and:
contacting said second sample with an aniline salt in a homogeneous strongly acidic solution including at least one water-miscible organic solvent, whereby the presence of chlorate or bromate affords a distinct coloration.

5,296,381

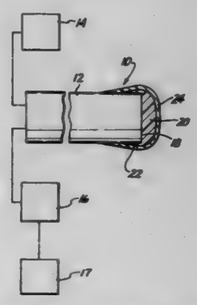
SENSING ELEMENTS AND METHODS FOR MAKING AND USING SAME

Masao Yafuso, El Toro, Calif.; Paul F. Korkowski, Hastings; Roger A. Mader, Stillwater, both of Minn.; Cheng Yan, Irvine, Calif., and John T. Carlock, Powell, Ohio, assignors to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Filed Aug. 8, 1991, Ser. No. 742,002

Int. Cl.[5] G01N *21/64*

U.S. Cl. 436—172 **39 Claims**



1. A sensing element for sensing the concentration of an analyte in a medium comprising:
a matrix material having at least one indicator component

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covalently bonded thereto, said indicator component being capable of providing a signal dependent on the concentration of an analyte in a medium and being derived from at least one indicator compound having an aromatic ring to which is directly covalently bonded a group including a functional portion which is conjugated relative to said aromatic ring.

5,296,382

RECOMBINANT DNA CLONE CONTAINING A GENOMIC FRAGMENT OF PFHRP-II GENE FROM *PLASMODIUM FALCIPARUM*

Thomas E. Wellems, Rockville, and Russell J. Howard, Gaithersburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 518,299, May 3, 1990, Pat. No. 5,130,416, which is a continuation of Ser. No. 279,245, Dec. 1, 1988, abandoned, which is a division of Ser. No. 895,942, Aug. 13, 1986, abandoned. This application Nov. 14, 1991, Ser. No. 791,392

Int. Cl.[5] G01N *33/536*; A61K *35/16*; C07K *15/28*

U.S. Cl. 436—501 **10 Claims**

1. A kit for detecting malarial infection comprising separate containers containing either PfHRP-II antigen or antibodies having specificity against PfHRP-II antigen in preservative medium.

5,296,383

HUMAN CENTROMERE ANTIGEN POLYPEPTIDE

Michio Himeno, and Kenji Sugimoto, both of Sakai, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed May 7, 1992, Ser. No. 879,685

Claims priority, application Japan, May 8, 1991, 3-102517

Int. Cl.[5] G01N *33/564*

U.S. Cl. 436—507 **2 Claims**

1. A polypeptide containing an epitope of human centrometer protein B, wherein the polypeptide is selected from the group consisting of polypeptide I and polypeptide II having the following amino acid sequences shown by SEQ ID No:1 and SEQ ID No:2;

Polypeptide I:

Asp Gly Asp Glu Val Pro Val Pro Ser Phe Gly Glu Ala Met
Ala Tyr Phe Ala Met Val Lys Arg Tyr Leu Thr Ser Phe Pro
Ile Asp Asp Arg Val Gln Ser His Ile Leu His Leu Glu His
Asp Leu Val His Val Thr Arg Lys Asn His Ala Arg Gln Ala
Gly Val Arg Gly Leu Gly His Gln Ser

Polypeptide II:

Ser Ser Glu Gly Leu Glu Ala Glu Asp Trp Ala Gln Gly Val
Val Glu Ala Gly Gly Ser Phe Gly Ala Tyr Gly Ala

2. A method for detecting a human anti-centromere antibody comprising the steps of:

(a) adding the polypeptide according to claim 1 to a sample to contact the polypeptide with a human anti-centromere antibody contained in the sample; and

(b) detecting the human anti-centromere antibody bound to the polypeptide.

5,296,384

BAKE-STABLE HGCDTE PHOTODETECTOR AND METHOD FOR FABRICATING SAME

Charles A. Cockrum; Francis J. Gesswein, both of Goleta, and Eric F. Schulte, Santa Barbara, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Jul. 21, 1992, Ser. No. 917,562

Int. Cl.[5] H01L *31/18*, *21/44*

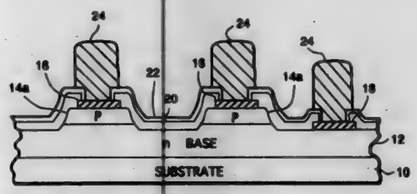
U.S. Cl. 437—5 **11 Claims**

1. A method for fabricating a photovoltaic diode, comprising the steps of:

providing a p-n junction between a base layer, comprised of Group IIB-VIA semiconductor material having a first type of electrical conductivity, and a cap region comprised of Group IIB-VIA semiconductor material having a second type of electrical conductivity;

forming a metal contact electrode upon the cap region;

coating the base layer, the cap region, and the metal contact electrode to form a coated structure, the step of coating including a step of depositing a first coating layer com-



prised of a semiconductor material having a bandgap selected to be wider than a bandgap of the semiconductor material of either the base layer or the cap region;

thermally annealing the coated structure;

opening a first window through the first coating layer for exposing, within the first window, a surface of the metal contact electrode; and

forming an electrically conductive interconnection to the metal contact pad for contacting an external circuit.

5,296,385

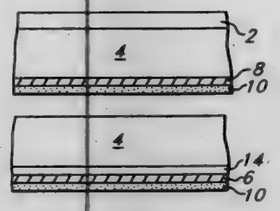
CONDITIONING OF SEMICONDUCTOR WAFERS FOR UNIFORM AND REPEATABLE RAPID THERMAL PROCESSING

Mehrdad M. Moslehi; John Kuehne, and Lino Velo, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 815,653, Dec. 31, 1991. This application Mar. 3, 1992, Ser. No. 845,118

Int. Cl.[5] H01L *21/31*

U.S. Cl. 437—20 **2 Claims**



1. A fabrication method for semiconductor wafer backside preparation for integrated device processing comprising:

heavily damaging said wafer backside to prevent infrared light transmission through said wafer; and

forming a top layer of silicon nitride over the wafer backside.

5,296,386

METHOD OF PROVIDING LOWER CONTACT RESISTANCE IN MOS TRANSISTOR STRUCTURES

Sheldon Aronowitz, San Jose; Courtney Hart, Los Gatos, and Court Skinner, East Palo Alto, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

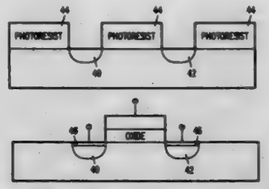
Filed Mar. 6, 1991, Ser. No. 665,465

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—24 **2 Claims**

1. A method of providing lower contact resistance in the source and drain regions of an MOS transistor, the method comprising the sequential steps of:

(a) defining source and drain regions in a silicon substrate, the source and drain regions being spaced apart to define a channel region therebetween;



(b) after defining the source and drain regions forming an epitaxial layer of silicon-germanium alloy at the surface of the source and drain regions; and

(c) after forming an epitaxial layer forming an MOS transistor structure comprising the source and drain regions and a gate electrode overlying the channel region and separated therefrom by a layer of dielectric material.

5,296,387

METHOD OF PROVIDING LOWER CONTACT RESISTANCE IN MOS TRANSISTOR STRUCTURES

Sheldon Aronowitz, San Jose, and Courtney Hart, Los Gatos, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 665,465, Mar. 6, 1991. This application Dec. 2, 1992, Ser. No. 984,889

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—24 **2 Claims**

1. A method of providing lower contact resistance in the source and drain regions of an MOS transistor, the method comprising the sequential steps of:

(a) defining regions on a silicon substrate which will later be formed into source and drain regions through the introduction of active dopant species, the future source and drain regions being spaced apart to define a channel region therebetween;

(b) after defining the future source and drain regions, introducing germanium atoms into the future source and drain regions;

(c) after introducing germanium atoms into the future source and drain regions, performing an oxidation step to form an oxide layer on the future source and drain regions and to create a germanium-rich layer in the future source and drain regions at the interfacial region between the future source and drain region and the oxide layer; and

(d) after performing the oxidation step, forming an MOS transistor structure having source and drain regions and a gate electrode overlying the channel region and separated therefrom by a layer of dielectric material, wherein the formation of the MOS transistor structure includes the implantation of active dopant species in order to form the source and drain regions.

5,296,388

FABRICATION METHOD FOR SEMICONDUCTOR DEVICES

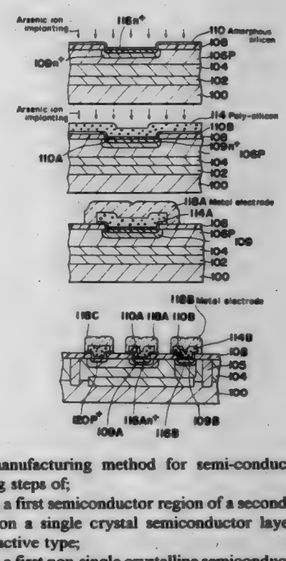
Shuichi Kameyama, Itami; Atsushi Hori; Hiroshi Shimomura, both of Moriguchi, and Mizuki Segawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1991, Ser. No. 729,490

Claims priority, application Japan, Jul. 13, 1990, 2-186533; Jul. 18, 1990, 2-191200

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **11 Claims**



1. A manufacturing method for semi-conductor devices comprising steps of;

forming a first semiconductor region of a second conductive type on a single crystal semiconductor layer of a first conductive type;

forming a first non-single crystalline semiconductor thin film on the surface of said semiconductor layer, with a first residual insulation film placed therebetween;

implanting ions of an impurity of the first conductive type, through said first semiconductor thin film, into said first semiconductor region to form a second semiconductor region of the first conductive type and, by this ion implanting, destroying said first residual insulation film and, at the same time, forming amorphous regions in said second semiconductor region and said first semiconductor thin film;

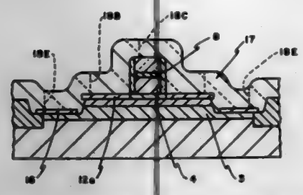
forming a second non-single crystalline semiconductor thin film containing an impurity of the first conductive type on said first semiconductor thin film, with a second residual insulation film placed therebetween;

causing a solid phase epitaxial growth in said second semiconductor region and said first semiconductor thin film by a first heat treatment, while aligning to said single crystal semiconductor layer to transform said amorphous regions into single-crystallized first semiconductor thin film and single-crystallized second semiconductor region;

increasing the activation rate of the impurity in said first semiconductor thin film and said second non-single crystalline semiconductor thin film and said semiconductor regions, through a second heat treatment of a higher temperature and a shorter time than in the first heat treatment; and

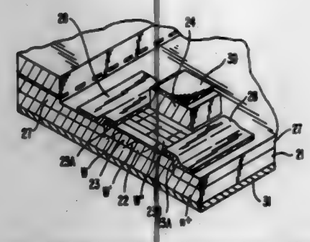
forming a metallic electrode on said second semiconductor thin film subjected to said second heat treatment.

5,296,389
METHOD OF FABRICATING A HETEROJUNCTION BIPOLAR TRANSISTOR
Hidenori Shimawaki, Tokyo, Japan, assignor to NEC Corporation, Japan
Division of Ser. No. 657,672, Feb. 19, 1991, Pat. No. 5,160,994. This application Jan. 6, 1992, Ser. No. 817,860
Claims priority, application Japan, Feb. 19, 1990, 2-36099
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 11 Claims



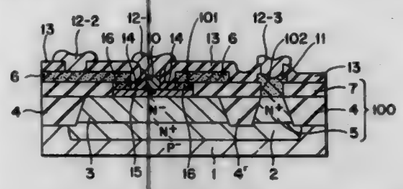
1. A method of fabricating a heterojunction bipolar transistor comprising the steps of:
depositing on a semi-insulating substrate an emitter layer made of a first semiconductor compound that is of a first conductivity type and is free of In;
depositing on said emitter layer a base layer made of a second semiconductor compound that is of a second conductivity type and is a semiconductor compound free of In, but is different from said first semiconductor compound;
depositing on said base layer a layer made of a third semiconductor compound that contains In;
depositing a collector layer made of a fourth semiconductor compound of said first conductivity type on said layer of said third semiconductor compound;
locally exposing said layer of said third semiconductor compound by patterning said collector layer in a prescribed shape by a use of a gas containing chlorine;
selectively removing said layer of said third semiconductor compound to expose a portion of said base layer; and
forming a base electrode in contact with a part of said portion of said base layer.

5,296,390
METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A VERTICAL CHANNEL OF CARRIERS
Yuji Awano, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 682,254, Apr. 9, 1991, Pat. No. 5,212,404. This application May 17, 1993, Ser. No. 61,250
Claims priority, application Japan, Apr. 9, 1990, 2-92049
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 2 Claims



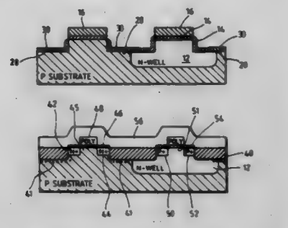
1. A method for fabricating a semiconductor device, comprising the steps of:
providing a substrate having a stepped upper major surface;
growing a semiconductor material epitaxially on the stepped upper major surface of the substrate as an emitter layer, said emitter layer releasing carriers, said step of growing the emitter layer being achieved in a crystal growth apparatus;
forming a base layer comprising a plurality of regions of different compositions on the stepped upper major surface of the substrate, said plurality of regions including a channel of the carriers that have been released by the emitter layer, said step of forming the base layer being achieved in said same crystal growth apparatus such that said plurality of regions are repeated in each step of the stepped upper major surface of the emitter layer and such that each region extend from a lower major surface of the base layer to an upper major surface of the base layer; and
growing a semiconductor material epitaxially on an upper major surface of the base layer as a collector layer, said collector layer collecting the carriers passed through the base layer, said step of growing the semiconductor material being achieved in the same crystal growth apparatus.

5,296,391
METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR HAVING THIN BASE REGION
Fumihiko Sato; Masahiko Nakamae; Mitsuhiro Sugiyama, and Tsutomu Tashiro, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Division of Ser. No. 856,815, Mar. 24, 1982, which is a continuation of Ser. No. 584,268, Apr. 12, 1991, abandoned. This application May 26, 1993, Ser. No. 67,017
Claims priority, application Japan, Apr. 13, 1990, 2-98116; Apr. 19, 1990, 2-103820; Apr. 25, 1990, 2-109146
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 5 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:
forming a first insulating film on a monocrystalline semiconductor layer of one conductivity type;
covering said first insulating film with a first polycrystalline semiconductor film of an opposite conductivity type having a first aperture exposing a portion of said first insulating film;
covering said first polycrystalline semiconductor film with a second insulating film with leaving a part of said portion of said first insulating film to be exposed;
selectively removing said first insulating film by using said second insulating film and said first polycrystalline semiconductor film as a mask to form a second aperture bigger than said first aperture, said second aperture exposing a part of said monocrystalline semiconductor layer and a part of a bottom surface of said first polycrystalline semiconductor layer; and
growing a semiconductor material to form a monocrystalline semiconductor film of said opposite conductivity type on said part of monocrystalline semiconductor layer and a second polycrystalline semiconductor film of said opposite conductivity type on said part of said first polycrystalline semiconductor film until said monocrystalline semiconductor film is in contact with said second polycrystalline film.

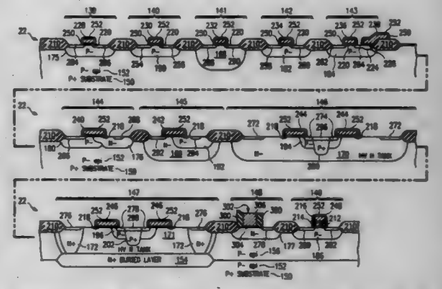
5,296,392
METHOD OF FORMING TRENCH ISOLATED REGIONS WITH SIDEWALL DOPING
Gregory J. Grula, Charlton, and Walter C. Metz, Shrewsbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 737,796, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 488,994, Mar. 6, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 841,239
Int. Cl.[5] H01L *21/225, 21/302*
U.S. Cl. 437—34 9 Claims



1. A method of making a semiconductor device having an isolation trench in a face of a silicon wafer, said wafer having an N-type area in said face adjacent a P-type area on said face, said N-type area being formed in said face using a first mask, said method comprising the steps of:
(a) after said N-well has been formed, forming a trench in a first area of said face of the silicon wafer using a second mask, said first area being different in shape on said face than said N-type area, said trench being at and on both sides of an interface between said N-type and P-type areas of said face of the wafer, said trench having nearly vertical side walls and having a bottom surface extending across said interface so that an N-type trench area and a P-type trench area are exposed in the bottom surface of the trench on both sides of said interface;
(b) selectively forming a silicon layer on one said wall and on a portion of the bottom surface of the trench over said P-type trench area and extending across said interface but not covering the major part of said N-type trench area of the bottom of the trench, said silicon layer being patterned using a third mask different from said first and second masks to define a second area of a shape on said face different from said N-type area and said first area so that said silicon layer extends across said interface, said silicon layer having a conductivity type dopant concentration which is greater than a P-type dopant concentration of said P-type area of the silicon wafer;
(c) heating the wafer at a temperature and for a time which are sufficient to drive a part of the dopant from the silicon layer into the silicon wafer; and
(d) filling the trench with a dielectric material.

5,296,393
PROCESS FOR THE SIMULTANEOUS FABRICATION OF HIGH-AND-LOW-VOLTAGE SEMICONDUCTOR DEVICES, INTEGRATED CIRCUIT CONTAINING THE SAME, SYSTEMS AND METHODS
Michael C. Smayling, Missouri City; Louis Hutter, Richardson; Georges Faleski, Sugarland; James R. Todd, Plano, and Manuel Torreno, Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 618,353, Nov. 23, 1990, abandoned. This application Aug. 3, 1992, Ser. No. 924,388
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 3 Claims

1. A process for the simultaneous fabrication of a first insulated-gate field-effect transistor and a second insulated-gate field-effect transistor at a face of a semiconductor layer having a first conductivity type, comprising the steps of:
simultaneously forming first and second tank regions in said semiconductor layer to be of a second conductivity type opposite said first conductivity type and to be spaced from each other;
simultaneously forming third and fourth tank regions to be of said first conductivity type, said third tank region formed within said first tank region, said fourth tank region formed within said second tank region;
forming a back gate region of said first conductivity type to be laterally within said fourth tank region;

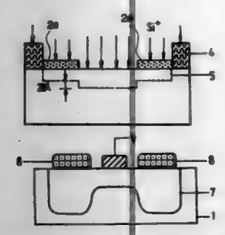


simultaneously forming a conductive control gate to be insulatively disposed over a lateral margin of said third tank region and an annular conductive control gate to be insulatively disposed over a lateral margin of said fourth tank region, said annular control gate disposed laterally outwardly from said back gate region; and
simultaneously forming, to be of said second conductivity type, (a) a highly doped region within said first tank region but spaced from said third tank region, (b) a highly doped region within said third tank region, and (c) a highly doped region within said second tank region but spaced from said fourth tank region, said highly doped regions operable as sources or drains, said third and fourth tank regions functioning as channel regions.

5,296,394
MANUFACTURING METHOD OF GAAS METAL SEMICONDUCTOR FET
Kyuhwan Shim; Chulsoon Park; Dojin Kim; Sangjae Maeng; Jeonwook Yang; Youngkyu Choi; Jinyeong Kang; Kyungho Lee, and Jinhee Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommuniations Research Institute, Rep. of Korea
Filed Dec. 26, 1991, Ser. No. 812,615
Claims priority, application Rep. of Korea, Dec. 26, 1990, 90-21813; Dec. 26, 1990, 90-21816
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—39 3 Claims

1. A manufacturing method of GaAs metal semiconductor FET comprising the steps of:
preparing a GaAs substrate;
depositing a silicon layer on the GaAs substrate;
forming a first photoresist pattern on the silicon layer by an image reversal process;
etching the silicon layer using the first photoresist pattern as a mask to define ohmic contact regions of source/drain electrodes;
forming a second photoresist pattern on the GaAs substrate after removal of the first photoresist pattern to define a channel region; injecting a predetermined quantity of silicon ions into the GaAs substrate to form the channel region;

depositing a protective layer around the GaAs substrate after removal of the second photoresist pattern;
annealing the substrate deposited with the protective layer to activate silicon ions of the remaining silicon layer and thus diffusing the activating silicon ions into the deep direction of the substrate;



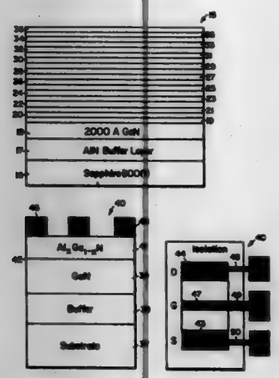
forming ohmic contacts on the annealed substrate using an ohmic contact mask after removal of the protective layer and the remaining silicon layer; and
forming a gate electrode by using a gate mask.

5,296,395

METHOD OF MAKING A HIGH ELECTRON MOBILITY TRANSISTOR

Muhammad A. Khan, White Bear Lake; James M. VanHove, Eagan; Jon N. Kuznia, Fridley, and Donald T. Olson, Circle Pines, all of Minn., assignors to APA Optics, Inc., Blaine, Minn.

Division of Ser. No. 701,792, May 17, 1991, Pat. No. 5,192,987. This application Mar. 3, 1993, Ser. No. 26,528
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **4 Claims**



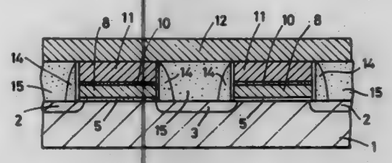
1. A method of making a transistor, comprising the steps of:
(a) depositing a buffer layer onto a substrate;
(b) depositing a layer of gallium nitride (GaN) onto the buffer layer;
(c) depositing a layer of $Al_xGa_{1-x}N$ on the gallium nitride layer, where x has a value of between 0 and 1;
(d) depositing a first metal layer onto the $Al_xGa_{1-x}N$ layer, thereby defining a source connection;
(e) depositing a second metallic layer onto the $Al_xGa_{1-x}N$ layer, thereby defining a drain region; and
(f) depositing a third metal layer, onto the $Al_xGa_{1-x}N$ layer, the third metal layer, onto the $Al_xGa_{1-x}N$ layer, the third metal layer residing between the source region and the drain region, thereby defining a shottky barrier.

5,296,396

MATRIX OF EPROM MEMORY CELLS WITH A TABLECLOTH STRUCTURE HAVING AN IMPROVED CAPACITATIVE RATIO AND A PROCESS FOR ITS MANUFACTURE

Orio Bellezza, Curno, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Division of Ser. No. 759,203, Sep. 11, 1991, Pat. No. 5,160,986, which is a continuation of Ser. No. 444,796, Dec. 1, 1989, abandoned. This application Aug. 14, 1992, Ser. No. 929,418
Claims priority, application Italy, Dec. 5, 1988, 22848 A/88
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—43 **2 Claims**



1. Process for the manufacture of a matrix of EPROM memory cells with source and drain lines parallel and alternated one to another on a semiconductor substrate, floating gate areas being interposed in a checkerboard pattern between said source and drain lines, and control gate lines parallel to one another and perpendicular to said source and drain lines in a superimposed condition with intermediate dielectric and aligned with respect to said floating gate areas, comprising the following succession of steps:
a) definition of strips of active areas alternated with parallel bars of field oxide on a semiconductor substrate;
b) growth of gate oxide;
c) deposition of a layer of floating gate, then of a dielectric layer and then of a barrier polysilicon layer;
d) self-aligned etching of the barrier layer, of the dielectric layer, of the floating gate layer and of the field oxide bars in parallel strips which are perpendicular to said field oxide bars for the definition of uncovered strips of substrate to the sides of said parallel strips;
e) implantation of dopant in said uncovered strips for the formation of source and drain lines;
f) deposition and planarization of a layer of thick dielectric material over said source and drain lines;
g) deposition of a layer of control gate;
h) patterning and etching of said layer of control gate and of said parallel strips of floating gate, dielectric layer and barrier layer until it stops on said field oxide for the definition of EPROM memory cells arranged in a checkerboard pattern at the intersection of said source and drain lines with control gate lines.

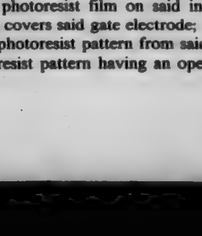
5,296,397

METHOD FOR MANUFACTURING AN EPROM CELL

Sangsoo Lee, Kyunki, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 804,478, Dec. 9, 1991, Pat. No. 5,223,731, which is a continuation-in-part of Ser. No. 708,824, May 29, 1991, abandoned, which is a continuation of Ser. No. 369,014, Jun. 20, 1989, abandoned. This application Apr. 22, 1993, Ser. No. 51,621
Claims priority, application Rep. of Korea, Jun. 30, 1988, 88-7986
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **4 Claims**

1. A method for manufacturing an EPROM cell in a semiconductor substrate, comprising the steps of:
(a) etching said semiconductor substrate to form a trench region therein having first and second side surfaces and dividing said semiconductor substrate into first and second portions adjacent said first and second side surfaces, respectively;
(b) filling said trench region with a trench-filler material;
(c) forming in said first portion of said semiconductor substrate a drain region and a source region separated from one another and both in contact with said first side surface of said trench region;
(d) forming a control gate region in said second portion of said semiconductor substrate in contact with said second side surface of said trench region and separated from said source region by said trench region;
(e) forming a first film of electrical insulating material over and covering said drain region, said source region and a portion of said control gate region that is disposed adjacent said second side surface of said trench region;



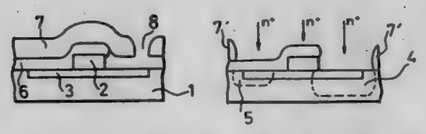
(f) forming a first polycrystalline silicon film over and covering at least that portion of said first insulating film that is disposed above said source region to serve as a floating gate;
(g) forming a second film of electrical insulating material over and covering said first polycrystalline silicon film; and
(h) forming a second polycrystalline silicon film over and covering at least partially said second film of electrical insulating material and electrically connected to a portion of said control gate region not covered by said first film of electrical insulating material to provide electrically interconnected control gate regions disposed both above and below said floating gate.

5,296,398

METHOD OF MAKING FIELD EFFECT TRANSISTOR

Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 673,339, Mar. 22, 1991, Pat. No. 5,153,683. This application May 11, 1992, Ser. No. 881,291
Claims priority, application Japan, Apr. 19, 1990, 2-104038
Int. Cl.[5] H01L *21/338*
U.S. Cl. 437—44 **1 Claim**



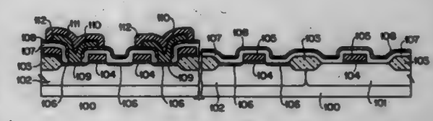
1. A production method of an asymmetric gate field effect transistor comprising:
producing a gate electrode on a substrate and depositing an insulating film on said substrate and completely covering said gate electrode;
depositing a photoresist film on said insulating film that completely covers said gate electrode;
producing a photoresist pattern from said photoresist film, said photoresist pattern having an opening spaced from said gate electrode exposing part of said insulating film spaced from said gate electrode;
selectively removing said insulating film only at the opening using said photoresist pattern as a mask leaving a remaining part of said insulating film in place;
removing said photoresist pattern;
implanting ions into said substrate to form source and drain regions using the remaining part of said insulating film as a mask at said drain region and forming said source region where said insulating film has been removed;
removing the remaining part of said insulating film; and
forming source and drain electrodes on said source and drain regions, respectively.

5,296,399

METHOD FOR MANUFACTURING A NARROWED SIDEWALL SPACER IN A PERIPHERAL CIRCUIT OF A ULSI SEMICONDUCTOR MEMORY DEVICE

Young-woo Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 783,341, Oct. 28, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,899
Claims priority, application Rep. of Korea, Apr. 24, 1991, 91-6580
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **10 Claims**



1. A method for manufacturing an ultra-large-scale integrated memory device having a memory cell array section and a peripheral circuit section, said peripheral circuit section including a plurality of transistors formed therein, the method comprising the steps of:
forming an insulating film over the surface of both the memory array section and the peripheral array section;
forming an etch blocking film over said insulating film;
forming capacitors at select locations of said memory cell array section, said insulating film and said etch blocking film preventing deterioration of the underlying surface structure during said capacitor forming step;
removing, after said capacitor forming step, the etch blocking film from the surface of said peripheral array section to expose said insulating film; and
forming side wall spacers on the side walls of the gate electrode of said transistors in the peripheral array section by anisotropically etching said insulating film.

5,296,400

METHOD OF MANUFACTURING A CONTACT OF A HIGHLY INTEGRATED SEMICONDUCTOR DEVICE

Cheol-Soo Park, Kyoungki; Yo-Hwan Koh; Jae-Beom Park, both of Seoul; Young-Jin Park, Kyoungki, and Jin-Seong Oh, Seoul, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 989,196
Claims priority, application Rep. of Korea, Dec. 14, 1991, 91-22977; Dec. 31, 1991, 91-25621
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **24 Claims**

1. A method of manufacturing a contact of a highly integrated semiconductor device, comprising the steps of:
forming a MOS transistor having gate, source, and drain electrodes and a field oxide on a silicon substrate;
forming a first insulating layer that completely covers said MOS transistor and field oxide;
forming a polyimide pattern only on contact areas located

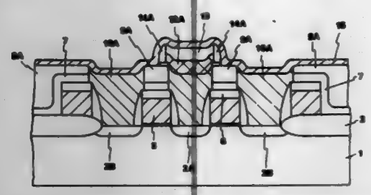
VOL 1160 ISS 4 MR 22 1994 UMI

on top of the source electrode and drain electrode after coating a photo-sensitive polyimide over the first insulating layer;

forming a second insulating layer over the device, particularly on said polyimide pattern and then forming a second insulating layer pattern by carrying out an etch back process until a surface of said polyimide pattern is exposed;

removing the exposed polyimide pattern using a plasma etching process;

forming a spacer on side walls of the gate electrode by carrying out a blanket etching process on the first insulating layer that has been exposed by said plasma etching



process while simultaneously forming contact areas where the source electrode and the drain electrode are exposed;

depositing a polysilicon layer over the second insulating layer pattern and forming several polysilicon pads that are in contact with the drain electrode or the source electrode by carrying out an etch back process until a surface of the second insulating layer pattern is exposed;

depositing a third insulating layer over the device, including said polysilicon pads; and

exposing each of said several polysilicon pads by removing a portion of the third insulating layer and depositing a conducting layer in contact with the exposed polysilicon pad.

5,296,401

MIS DEVICE HAVING P CHANNEL MOS DEVICE AND N CHANNEL MOS DEVICE WITH LDD STRUCTURE AND MANUFACTURING METHOD THEREOF

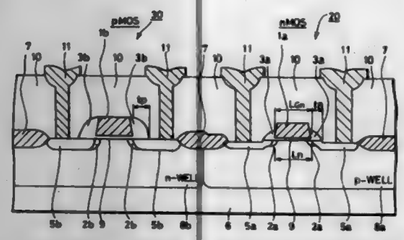
Katsuyoshi Mitsui, and Shigeki Komori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 869,084, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 635,316, Jan. 3, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,250

Claims priority, application Japan, Jan. 11, 1990, 2-4743

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—57 **5 Claims**



1. A method of manufacturing a semiconductor device having a p-channel MOS type field effect transistor and a n-channel MOS type field effect transistor formed on a common semiconductor substrate, comprising the steps of:

forming a p type transistor forming region for forming said n-channel MOS type field effect transistor and an n type transistor forming region for forming said p-channel MOS type field effect transistor in the main surface of the semiconductor substrate;

forming a first insulating layer on a surface of said p type and n type transistor forming region;

forming a polysilicon layer on an upper surface of said first insulating layer;

patterning said polysilicon layer to form a first gate electrode over said n type transistor forming region and a second gate electrode over said p type transistor forming region;

covering said p type transistor forming region and said second gate electrode with a first resist;

implanting a p type impurity into said n type transistor forming region to form first and second low concentration p type impurity regions on opposite sides of said first gate electrode;

removing said first resist;

covering said n type transistor forming region and said first gate electrode with a second resist;

implanting an n type impurity into said p type transistor forming region to form first and second low concentration n type impurity regions on opposite sides of said second gate electrode;

removing said second resist layer;

forming a second insulating layer on the first and second gate electrodes and on said first insulating layer adjacent said first and second gate electrodes;

etching said second insulating layer to form sidewall spaces on opposite sides of each of said first and second gate electrodes;

covering said n type transistor forming region with a third resist;

etching said sidewall spacers formed on the sidewalls of said gate electrode of said p type transistor forming region to reduce a thickness thereof;

implanting an n type impurity into said p type transistor forming region to form high concentration n type impurity regions on said opposite sides of said second gate electrode;

removing said third resist;

covering said p type transistor region with a fourth resist; and

implanting a p type impurity into said n type transistor forming region to form high concentration p type impurity regions on said opposite sides of said first gate electrode.

5,296,402

METHOD FOR MANUFACTURING A DRAM HAVING A SECOND EFFECTIVE CAPACITOR AREA

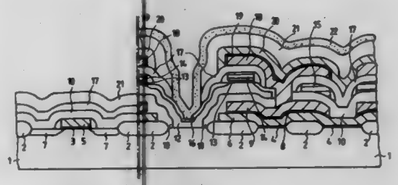
Eui K. Ryou, Seochoku, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Jul. 6, 1993, Ser. No. 88,188

Claims priority, application Rep. of Korea, Jul. 7, 1992, 1992-12085

Int. Cl.[5] H01L *21/72*

U.S. Cl. 437—60 **6 Claims**



1. A method of manufacturing a semiconductor memory device having a plurality of memory cells each provided with a capacitor, comprising the steps of:

forming a plurality of spaced field oxide films over a semiconductor substrate for each memory cell, depositing a first insulating film over a portion of said semiconductor substrate above which said capacitor is to be formed, forming a first plate electrode over said first insulating film, and a first dielectric film over said first plate electrode;

depositing a first charge storage electrode over said first dielectric film and depositing a second insulating film over the entire exposed upper surface of the resultant structure after said step of depositing said first charge storage electrode;

exposing a portion of said semiconductor substrate over which said field oxide films are not formed, and depositing a polysilicon film over both said exposed semiconductor substrate portion and a portion of the second insulating film which is disposed over first charge storage electrode, to form a polysilicon substrate;

forming, on said polysilicon substrate, a field effect transistor including an active region, a gate insulating film and a gate electrode, and forming a word line on the second insulating film simultaneously with the formation of said gate electrode;

depositing a third insulating film over the entire exposed upper surface of the resultant structure after the formation of said field effect transistor, partially exposing both said active region and said first charge storage electrode and forming a second charge storage electrode on a portion of said third insulating film such that it is connected with said exposed portions of the active region and first charge storage electrode;

depositing a second dielectric film over said second charge storage electrode and depositing a plate electrode over said second dielectric film; and

depositing a fourth insulating film over the entire exposed surface of the resultant structure after the deposition of said plate electrode and forming a bit line in contact with the active region.

5,296,403

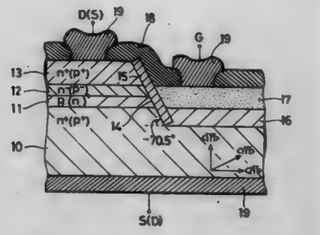
METHOD OF MANUFACTURING A STATIC INDUCTION FIELD-EFFECT TRANSISTOR

Jun-ichi Nishizawa, and Toru Kurabayashi, both of Sendai, Japan, assignors to Research Development Corp. of Japan, Tokyo; Jun-ichi Nishizawa, Miyagi and Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, all of Japan

Filed Oct. 23, 1992, Ser. No. 965,722

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—133 **4 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of:

depositing at least two semiconductor regions of different conductivity types by way of epitaxial growth on a substrate crystal according to either metal organic chemical vapor deposition or molecular layer epitaxy, thereby providing a source-drain structure;

etching said semiconductor regions to form a gate side which comprises either a (111)A face or a (111)B face; and

depositing a semiconductor region as a gate by way of epitaxial growth on said gate side according to either metal organic chemical vapor deposition or molecular layer epitaxy.

5,296,404

METHOD FOR FORMING A THIN FILM FOR A SEMICONDUCTOR DEVICE

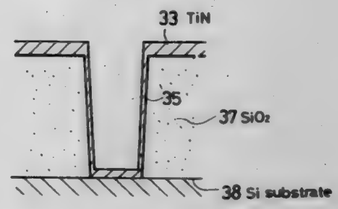
Takashi Akahori, Hyogo, and Akira Tanihara, Kyoto, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 24, 1991, Ser. No. 779,497

Claims priority, application Japan, Oct. 24, 1990, 2-287765; Jun. 7, 1991, 3-162365

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—173 **8 Claims**



1. A method for generating a thin film, comprising the steps of:

introducing Ar, H_2 and N_2 gas into a plasma generation chamber, and introducing $TiCl_4$ gas into one of the plasma generation chamber or a reaction chamber;

generating a plasma in the plasma generation chamber by action of an electric field generated by a microwave and a magnetic field generated by an exciting coil arranged around the plasma generation chamber; and

introducing the generated plasma into a reaction chamber by the magnetic field so as to form a thin Ti nitride film on a sample placed on a sample stage in the reaction chamber;

wherein said sample is a substrate of a semiconductor device having an insulating film and having a contact hole thereon, the pressure in the reaction chamber is less that 2.0 mTorr, and the temperature of said substrate forming the sample is more than 450° C.

5,296,405

METHOD FOR PHOTO ANNEALING NON-SINGLE CRYSTALLINE SEMICONDUCTOR FILMS

Shunpei Yamazaki; Kunio Suzuki, both of Tokyo; Susumu Nagayama, Yokohama; Takashi Inujima, Atsugi; Masayoshi Abe, Tama; Takeshi Fukada, Ebina; Mikio Kinka, Nonoichimachi; Ippei Kobayashi, Koube; Katsuhiko Shibuta, Hamamatsu; Masato Susukida, Chiba, and Kaoru Koyanagi, Saku, all of Japan, assignors to Semiconductor Energy Laboratory Co.., Ltd., Kanagawa, Japan

Continuation of Ser. No. 520,998, May 9, 1990, Pat. No. 5,171,710, which is a continuation-in-part of Ser. No. 251,940, Sep. 28, 1988, Pat. No. 4,986,213, which is a continuation of Ser. No. 891,791, Aug. 1, 1986, abandoned. This application Aug. 24, 1992, Ser. No. 933,718

Claims priority, application Japan, Aug. 2, 1985, 60-170956; Aug. 23, 1985, 60-186372

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] H01L *21/20, 21/324*

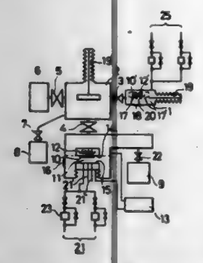
U.S. Cl. 437—174 **11 Claims**

1. A method of preparing non-single crystalline semiconductor films comprising the steps of:

forming an intrinsic amorphous semiconductor film includ-

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ing silicon and oxygen at a minimum density less than 5×10^{18} cm^{-3} therein on a substrate by a CVD method; radiating said semiconductor film with light;



introducing a neutralizing agent selected from the group consisting of fluorine, chlorine, and hydrogen into the radiated semiconductor film.

5,296,406

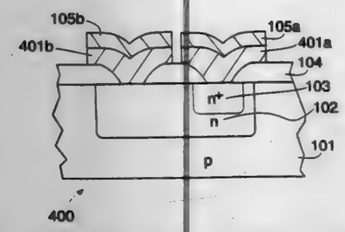
ALUMINUM ALLOY/SILICON-CHROMIUM SANDWICH SCHOTTKY DIODE

John E. Readdie, San Jose; Benjamin H. Kwan, Pleasanton, and Jeng Chang, San Jose, all of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Division of Ser. No. 772,941, Jun. 28, 1991, Pat. No. 5,254,869. This application Jul. 7, 1993, Ser. No. 88,928

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—175 **9 Claims**



1. An improved method of manufacturing an integrated circuit Schottky diode having a rectifying junction formed at an interface between a metallization layer and a semiconductor, the improvement comprising the step of interposing a barrier layer formed from a premixed material having at least three constituents including chromium, silicon from a source other than the semiconductor, and a third element between the metallization layer and the semiconductor to form the rectifying junction.

5,296,407

METHOD OF MANUFACTURING A CONTACT STRUCTURE FOR INTEGRATED CIRCUITS

Yoshikazu Eguchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 752,390, Aug. 30, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 39,604

Claims priority, application Japan, Aug. 30, 1990, 2-230290

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—195 **14 Claims**

1. A process of forming submicron structures for electrical connections between conductive regions in a substrate comprising the steps of:

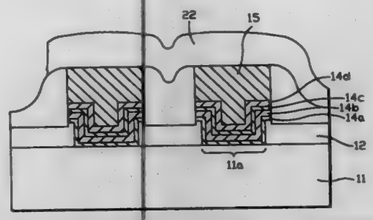
a) forming a first silicon oxide film having a first thickness over said substrate;

b) etching contact openings having a first width in said silicon oxide film;

c) forming a foundation metal system over said substrate and said insulating layer;

d) forming a layer of photoresist over said foundation metal system;

e) patterning said photoresist such that said foundation metal system is exposed where said electrical connections will be formed;



f) plating a first conductive material over said exposed foundation metal system;

g) stripping said photoresist; and

h) ion milling said foundation metal system with said conductive material as a mask until exposed portions of said foundation metal system and a portion of said silicon oxide film underlying said foundation metal system are removed;

wherein said silicon oxide film has a thickness less than or equal to half the width of said contact openings.

5,296,408

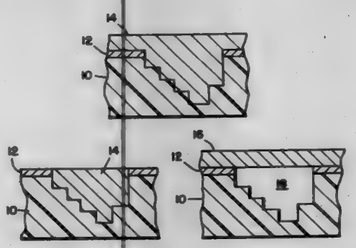
FABRICATION METHOD FOR VACUUM MICROELECTRONIC DEVICES

Robert R. Wilbarg, Hopewell Junction, and Claude Johnson, Jr., Yorktown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,460

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—203 **5 Claims**



1. A method for fabricating a microstructure incorporating a vacuum cavity therein comprising the steps of:

Step 1 forming a body of silicon material having an enclosed cavity therein filled with aluminum,

Step 2 heating said body of silicon material containing said aluminum filled cavity to cause said aluminum in said cavity to be absorbed into said body of silicon material and leave a vacuum remaining in said cavity.

5,296,409

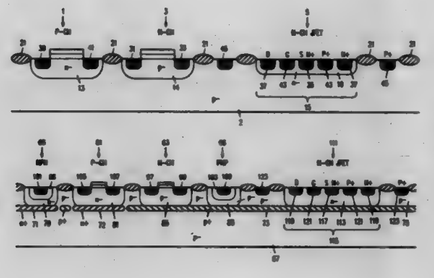
METHOD OF MAKING N-CHANNEL AND P-CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS AND CMOS TRANSISTORS USING A CMOS OR BIPOLAR/CMOS PROCESS

Richard B. Merrill, Daly City, and Doug R. Farrenkopf, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Calif.

Filed May 8, 1992, Ser. No. 880,677

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 **34 Claims**



1. A method of fabricating elements of a junction field-effect transistor while simultaneously fabricating the elements of a first metal-oxide-semiconductor transistor and a second metal-oxide-semiconductor transistor having a channel conductivity of the opposite type to the first metal-oxide-semiconductor transistor, the transistors each having a source, a drain, a gate, and a channel region, the method comprising the steps of:

(a) providing a substrate (2) of a semiconductor material having a conductivity of a first type and including,

(i) a first part, a portion of the first part forming the channel region of the second metal-oxide-semiconductor transistor (3), and

(ii) a second part, including a MOS channel well region (13) of a second conductivity type, opposite to the first conductivity type, the MOS channel well region forming the channel region of the first metal-oxide-semiconductor transistor (1);

(b) introducing an impurity into first selected regions (31, 33) in the first part of the substrate to form the source and drain of the second metal-oxide-semiconductor transistor, and into a second selected region (35) and a third selected region (37) in the first part of the substrate to form the source and drain, respectively, of the junction field-effect transistor (5), such that the first selected regions, the second selected region, and the third selected region are of the second conductivity type;

(c) introducing an impurity into a fourth selected region (19), substantially bounded by the third selected region, to form the channel region of the junction field-effect transistor, such that the fourth selected region is of the second conductivity type; and

(d) introducing an impurity into fifth selected regions (39, 41) in the MOS channel well region to form the source and drain of the first metal-oxide-semiconductor transistor, and into a sixth selected region (43) between the second selected region and the third selected region to form the gate of the junction field-effect transistor, such that the fifth selected regions and the sixth selected region are of the first conductivity type.

5,296,410

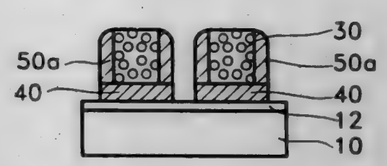
METHOD FOR SEPARATING FINE PATTERNS OF A SEMICONDUCTOR DEVICE

Won-suk Yang, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 16, 1992, Ser. No. 992,963

Int. Cl.[5] H01L *21/316*

U.S. Cl. 437—228 **11 Claims**



1. A method for separating patterns of a semiconductor device, comprising the steps of:

forming a first-to-be-patterned layer on a substrate;

coating a photoresist film on said first-to-be-patterned layer;

forming a thermally stable photoresist film pattern by patterning and curing said photoresist film;

forming a second layer on the entire surface of said semiconductor substrate on which said photoresist film pattern is formed, by a low temperature plasma method;

forming a spacer made of said second layer on the sidewalls of said photoresist film pattern, by anisotropically etching said second material layer;

forming a first pattern by etching said first-to-be-patterned layer using an anisotropic etching method in which said spacer and said photoresist film pattern are used as an etching mask; and,

removing said spacer and said photoresist film pattern.

5,296,411

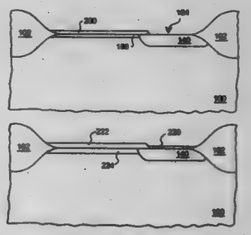
METHOD FOR ACHIEVING AN ULTRA-RELIABLE THIN OXIDE USING A NITROGEN ANNEAL

Mark I. Gardner, Red Rock, and Henry J. Fulford, Jr., Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1993, Ser. No. 54,324

Int. Cl.[5] H01L *21/02*

U.S. Cl. 437—238 **25 Claims**



1. In an integrated circuit fabrication process, a method for forming a high quality oxide upon a surface region of a semiconductor body, comprising the steps of:

oxidizing the semiconductor body a first time, under an oxidizing ambient, to form a first oxide layer upon the surface region;

annealing the semiconductor body a first time subsequent to the first oxidizing step, under a gettering ambient, to densify the first oxide layer and to dope the first oxide layer at its surface and for a portion thereinto near its surface with a gettering agent;

oxidizing the semiconductor body a second time, under an

VOL 1160 ISS 4 MR 22 1994 UMI

oxidizing ambient, to form a second oxide layer upon the first oxide layer, subsequent to the first annealing step; and annealing the semiconductor body a second time, under an oxidizing ambient containing nitrogen, thereby forming a third oxide layer upon the second oxide layer, the third oxide layer containing a concentration of nitrogen;

wherein the first, second, and third oxide layers together form a high quality oxide.

5,296,412

METHOD OF HEAT TREATING SEMICONDUCTOR WAFERS BY VARYING THE PRESSURE AND TEMPERATURE

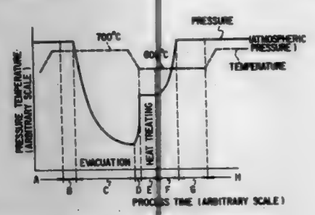
Tetu Ohsawa, Sagamihara, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Tohoku Limited, Esashi, both of Japan

Filed Jun. 25, 1993, Ser. No. 82,458

Claims priority, application Japan, Jun. 26, 1992, 4-168870

Int. Cl.[5] H01L *21/324*

U.S. Cl. 437—247 **15 Claims**



1. A heat-treating method comprising:

a step of inserting an object to be processed into a process tube;

a heat-treating step of supplying a process gas into said process tube to perform heat treating; and

a step of evacuating said process tube such that a pressure in said process tube is set to be lower than a pressure in the heat-treating step while a temperature in said process tube is kept to be higher than a temperature in the heat treating prior to the heat-treating step.

5,296,413

AUTOMOTIVE GLASS THICK FILM CONDUCTOR PASTE

Alan F. Carroll, Raleigh, N.C., and Hideaki Kuno, Kanagawa, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 801,918, Dec. 3, 1991. This application Mar. 6, 1992, Ser. No. 847,340

Int. Cl.[5] C03C *8/22*

U.S. Cl. 501—19 **2 Claims**

1. A thick film paste composition for applying conductive patterns to automotive window glass comprising finely divided particles of (a) metallic silver, (b) a mixture of high and low melting point glass frits having melting points which differ by at least 100° C. and having a total softening point of 350°–620° C. wherein the glass frits are lead silicate glasses or lead borosilicate glasses or mixtures thereof, and (c) 1–6% wt., basis paste, of an oxide of a transition metal selected from V, Mn, Fe, Co and mixtures thereof, all of (a), (b) and (c) being dispersed in (d) and organic medium, with the proviso that the valence of the transition metal is higher than 2.

5,296,414

PARTIALLY CRYSTALLIZABLE LOW MELTING GLASS

Seiichi Nakagawa, Tokyo; Kuninori Okamoto, Kanagawa, both of Japan; Barry E. Taylor, Wake Forest, N.C., and Motohiko Tsuchiya, Tokyo, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1992, Ser. No. 995,759

Claims priority, application Japan, Jan. 8, 1992, 3-300751

Int. Cl.[5] C03C *8/16, 10/02, 8/14*

U.S. Cl. 501—20 **5 Claims**

1. A crystallizable low melting glass consisting essentially by weight of 31–49% PbO, 35–50% ZnO, 15–20% B_2O_3, 0.1–10% GeO_2, 0–9.9% SiO_2, 0–3% SnO_2 and 0–3% of a metal oxide colorant with the proviso that in the absence of SiO_2 from 3 to 10% by weight GeO_2 is present or from 2 to 10% by weight of a mixed solution of GeO_2 and SiO_2 is present.

5,296,415

OPACIFIED ENAMEL FOR DIRECT-ON ENAMELLING ON UNPICKLED STEEL PLATE

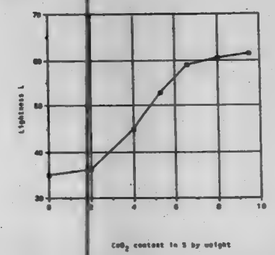
Wolfgang Podestá, Varsenare, Belgium, assignor to Bayer AG, Leverkusen

Filed Jul. 10, 1992, Ser. No. 911,892

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1991, 4124801

Int. Cl.[5] C03C *8/06, 8/02*

U.S. Cl. 501—25 **9 Claims**



1. An enamel frit for the direct-on enamelling of non-nickel-plated enamelling steel to form an opaque, acid-resistant enamel coating having good adhesion to the steel, the frit comprising the following glass-forming constituents:

40 to 60% by weight SiO_2+ZrO_2 with an SiO_2 to ZrO_2 molar ratio of greater than 10;

10 to 20% by weight alkali metal oxide with an Na_2O to (Li_2O+K_2O) molar ratio of greater than 0.8;

8 to 18% by weight B_2O_3;

0 to 15% by weight of combined CaO, BaO, MgO and ZnO;

0 to 8% by weight TiO_2;

0 to 4% by weight P_2O_5;

0 to 4% by weight Al_2O_3;

0.3 to 5% by weight fluorine in form of fluorides;

0.2 to 3.5% by weight NiO;

0.2 to 3.5% by weight CoO;

0 to 2% by weight Sb_2O_3;

0.2 to 2.5% by weight CuO;

2.5 to 9% by weight CeO_2; and other coloring constituents in quantities of up to 6% by weight, wherein the CeO_2 has a purity of at least 92% and is not contaminated with natural minerals.

5,296,416

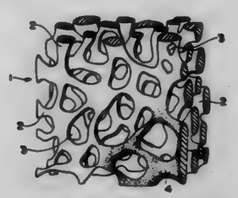
METHOD FOR PRODUCING CERAMIC COMPOSITE FOAMS

Eugene S. Park, Hockessin, Del., and Steven D. Poste, Kingston, Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 783,284, Oct. 28, 1991, Pat. No. 5,185,297, which is a continuation of Ser. No. 494,124, Mar. 15, 1990, Pat. No. 5,061,660, which is a continuation of Ser. No. 278,207, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 89,376, Aug. 26, 1987, Pat. No. 4,808,558, which is a continuation-in-part of Ser. No. 908,116, Sep. 16, 1986, abandoned. This application Feb. 8, 1993, Ser. No. 14,959

Int. Cl.[5] C04B *38/00, 35/65*

U.S. Cl. 501—80 **18 Claims**



1. A method of producing a ceramic composite article comprising:

(a) providing a parent metal foam body comprised of metallic ligaments interconnected randomly in three dimensions to constitute an open-cell reticulated structure, the external surfaces of said ligaments defining open channels interconnected randomly in three dimensions;

(b) providing at least a portion of said external surfaces of said ligaments with a permeable layer of substantially inert filler material;

(c) treating said precursor metal foam body, at a temperature below the melting point of said metal, for forming on the surface of said ligaments a support coating which maintains the integrity of the open-cell structure when said body is heated to a temperature above the melting point of the metal;

(d) heating the treated body in the presence of an oxidant to a temperature above the melting point of the metal but below the melting point of an oxidation reaction product of the precursor metal and the oxidant to melt the precursor metal and reacting said molten precursor metal with the oxidant to form the oxidation reaction product within and optionally beyond said support coating and into said filler material, to form an open-cell ceramic composite foam having essentially the open-cell reticulated structure of said metal body; and

(e) cooling said body and recovering said ceramic composite article.

5,296,417

SELF-SUPPORTING BODIES

Terry D. Claar, Newark, Del.; Steven M. Mason, Norwood, Pa.; Kevin P. Pochopien, Newark, Del.; Danny R. White, Elkton, Md.; William B. Johnson, Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 551,306, Jul. 12, 1990, Pat. No. 5,180,697, which is a continuation-in-part of Ser. No. 446,433, Dec. 5, 1989, Pat. No. 5,017,334, which is a continuation of Ser. No. 296,771, Jan. 13, 1989, Pat. No. 4,885,130, which is a continuation-in-part of Ser. No. 137,044, Dec. 23, 1987, Pat. No. 4,940,679, which is a continuation-in-part of Ser. No. 73,533, Jul. 15, 1987, abandoned. This application Jan. 19, 1993, Ser. No. 4,889

Int. Cl.[5] C04B *35/65*

U.S. Cl. 501—87 **5 Claims**

1. A self-supporting composite body comprising at least one inert filler, at lest one metal phase selected from the group consisting of titanium, zirconium, hafnium, tantalum, vanadium, chromium, aluminum, niobium, silicon, lanthanum, iron, calcium, magnesium and beryllium, and a three-dimensionally interconnected ceramic phase extending to the boundaries of said composite body, said ceramic phase comprising at least one carbide corresponding to said at least one metal phase, and said composite body further comprising a boride of the at least one metal corresponding to said carbide.

5,296,418

METHOD FOR MANUFACTURING A HAFNIUM-CONTAINING SILAZANE POLYMER AND A METHOD FOR MANUFACTURING A CERAMIC FROM SAID POLYMER

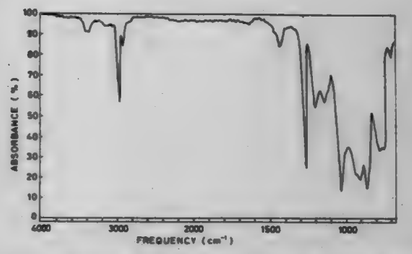
Yoshihumi Takeda, Niigata, and Akira Hayashida, Tokyo, both of Japan, assignors to Shin-Etsu Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 630,063, Dec. 19, 1990, Pat. No. 5,183,875. This application Oct. 23, 1992, Ser. No. 951,571

Claims priority, application Japan, Dec. 20, 1989, 1-330108

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—95 **5 Claims**



1. In a method for forming a shaped ceramic article wherein a silazane polymer is fused, shaped, infusibilized, and baked, the improvement which comprises said polymer being a hafnium-containing silazane polymer obtained by reacting, under conditions to effect polymerization in a water-free atmosphere and at a temperature between about 25° C. and 350° C., a mixture of

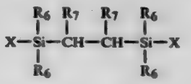
(A) a halide of an organic silicon compound selected from the group consisting of:



[III]

wherein R_4 and R_5 may be the same or different and are hydrogen, chlorine, bromine, methyl, ethyl, phenyl or vinyl and X is chlorine or bromine;

a compound having the formula:



[IV]

wherein R_6 is hydrogen, chlorine, bromine, methyl, ethyl, phenyl or vinyl, R_7 is hydrogen or methyl, and X is chlorine or bromine;

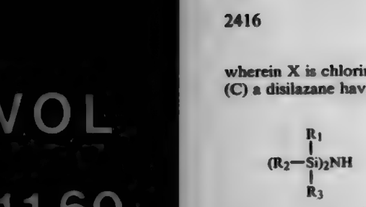
and mixtures thereof;

(B) a hafnium compound having the formula:

HfX_4 [I]

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wherein X is chlorine or bromine; and
(C) a disilazane having the formula



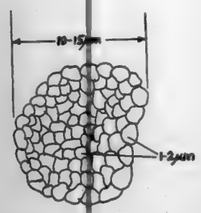
[II]

wherein R_1, R_2 and R_3 may be the same or different and are hydrogen, methyl ethyl, phenyl or vinyl.

5,296,419
SELF-SUPPORTING COMPOSITE BODIES
Danny R. White, Elkton, Md., and Terry D. Claar, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.
Continuation of Ser. No. 551,748, Jul. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 449,521, Dec. 12, 1989, Pat. No. 4,978,644, which is a continuation of Ser. No. 296,774, Jan. 13, 1989, Pat. No. 4,904,446. This application Feb. 12, 1993, Ser. No. 16,629
Int. Cl.[5] C04B *35/65*
U.S. Cl. 501—96 **16 Claims**

1. A self-supporting composite body comprising at least one inert filler, at least one metal phase selected from the group consisting of aluminum, titanium, zirconium, hafnium, vanadium, chromium, niobium, tantalum, molybdenum, silicon and tungsten, and a three-dimensionally interconnected ceramic phase extending to the boundaries of said composite body, said ceramic phase comprising at least one boride corresponding to said at least one metal phase, and said composite body further comprising at least one nitride of the at least one metal phase.

5,296,420
COMPOSITE REFRACTORY MATERIALS
Ronald C. Garvie, Beaumaris, Australia Gudrun Heidi Garvie, executrix , assignor to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia
Continuation of Ser. No. 513,709, Apr. 25, 1990, which is a continuation-in-part of Ser. No. 328,359, Apr. 14, 1989, abandoned. This application May 29, 1992, Ser. No. 892,728
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—105 **10 Claims**



1. A composite alumina/zirconia refractory material comprising an alumina matrix with particles of zirconia dispersed therein, said composite material having been formed by die pressing a mixture of alumina powder and the zirconia particles, followed by sintering in the absence of applied pressure at a temperature of about 1600° C., said composite material having a porosity which does not exceed 12 percent, wherein the particles of zirconia
(a) occupy from 1.0 percent by volume to 40 percent by volume of the composite refractory material;
(b) each comprise a polycrystalline agglomerate of microcrystals with no matrix material within the agglomerate, the microcrystals (i) being strongly bonded together, (ii) exhibiting a strong thermal expansion anisotropy, and (iii) having a size such that cracks do not form spontaneously within the agglomerate during cooling from a temperature of about 1600° C. to room temperature; and
(c) each have a mean diameter of from 10 to 15 micrometers, with the microcrystals therein having a mean diameter of from 1 to 2 micrometers.

5,296,421
METHOD FOR PRODUCING ZIRCONIA-BASED SINTERED BODY
Yasunori Nishida, and Masahide Mohri, both of Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Dec. 17, 1992, Ser. No. 991,946
Claims priority, application Japan, Dec. 25, 1991, 3-343122
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—105 **5 Claims**

1. A method for producing a zirconia-based sintered body comprising a zirconia matrix containing yttria doped therein to form a solid solution and alumina dispersed in said zirconia matrix which comprises compacting a mixed powder comprising zirconia or yttria-stabilized zirconia and yttrium-aluminum complex oxide and sintering the resulting compacted body.

5,296,422
MOLYBDENUM TRIOXIDE BONDED BASIC MONOLITH AND METHOD
Andrew M. Burkhart, West Mifflin, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Continuation of Ser. No. 714,474, Jun. 13, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,303
Int. Cl.[5] C04B *35/04, 35/06*
U.S. Cl. 501—108 **9 Claims**

1. A basic refractory mix consisting essentially of an amount up to 5 wt. % pH modifier, an amount up to 10 wt. % molybdic oxide, an amount up to 10 wt. % crude clay, and 75 to 99 wt. % of a basic aggregate selected from the group consisting of deadburned magnesite, calcined dolomite, and combinations thereof.

5,296,423
CORDIERITE SUBSTRATES
Howard J. Locker, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.
Filed Jan. 3, 1992, Ser. No. 816,240
Int. Cl.[5] C04B *35/02, 35/04*
U.S. Cl. 501—119 **45 Claims**

1. A plasticizable admixture for use in preparing a substrate having cordierite as its primary phase, said admixture comprising the minerals
(a) at least one source of alumina having an average particle diameter of about one micron or less;
(b) at least one source of magnesia having an average particle diameter of about seven microns or less;
(c) at least one kaolin having an average particle diameter, measured by x-ray sedigraph, not greater than about two microns, at least a portion of said kaolin being a delaminated kaolin, said delaminated kaolin comprising between about five and about thirty weight percent based on total minerals in the admixture, and at least a portion of said kaolin being a calcined kaolin, said calcined kaolin comprising about 15 to about 39 weight percent based on total minerals in the admixture,

said mixture having a chemical composition comprising, by weight on an analytical oxide basis, about 11.5–16.5% MgO, about 33–41% Al_2O_3, and about 46.6–53.0% SiO_2.

5,296,424
SYSTEM OF DIELECTRIC CERAMIC COMPOSITIONS SUITABLE FOR MICROWAVE APPLICATIONS
Da Y. Wang, Lexington, Mass.; Burton W. MacAllister, Hudson, N.H.; Daniel T. Kennedy, Burlington; Joanne Browne, Malden, both of Mass., and Kazumasa Umeya, Chiskirodai, Japan, assignors to GTE Control Devices Incorporated, Standish, Me.
Filed Apr. 22, 1992, Ser. No. 872,276
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—138 **17 Claims**

1. A dielectric ceramic composition suitable for microwave applications consisting essentially of a mixture represented by the general formula:

$$BaTi_{4-w}M_wO_9\text{-}xZn_2TiO_4\text{-}yBaO\text{-}zTa_2O_5$$

wherein M is at least one metal and $0.0 \leq w \leq$ about 0.05 and wherein x, y, and z are molar fractions of respective components with values within the following respective ranges:
$0.0 \leq x \leq$ about 0.45; about $0.01 \leq y \leq$ about 0.20; and
$0.0 \leq z \leq$ about 0.10.

5,296,425
CERAMIC MATERIALS OF IMPROVED DIELECTRIC CONSTANTS, AND CAPACITORS FABRICATED THEREFROM
Hirokazu Chazono, Yoshiokamachi; Yasuyuki Inomata; Kazuyuki Shibuya, both of Takasaki, and Katsuyuki Horie, Misatomachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1993, Ser. No. 98,640
Claims priority, application Japan, Jul. 31, 1992, 4-225066; Aug. 31, 1992, 4-257376
Int. Cl.[5] C04B *35/49*
U.S. Cl. 501—138 **4 Claims**

1. A dielectric ceramic composition consisting essentially of:
(a) 100 mole parts of a major ingredient expressed by the formula,

$$(Ba_{1-x}Ca_x)\,(Ti_{1-y}Zr_y)\,O_3,$$

where
x is a numeral in the range of about 0.01 to about 0.10, and
y is a numeral in the range of about 0.10 to about 0.24;
(b) from about 0.10 to about 2.0 mole parts of an erbium compound; and
(c) from about 0.03 to about 0.30 mole part of a manganese compound;
(d) 0–0.40 mole parts of a zinc compound; and
(e) 0–0.20 mole parts of a silicon compound.

5,296,426
LOW-FIRE X7R COMPOSITIONS
Ian Burn, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 538,527, Jun. 15, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 915,873
Int. Cl.[5] C04B *35/46*; H01G *4/10, 4/12*
U.S. Cl. 501—139 **12 Claims**

1. A composition for forming a densified ceramic dielectric body at a temperature below 1150° which dielectric body has a dielectric constant of at least 2500, a temperature coefficient of capacitance that remains within +/−15% of the value at 25° C. over the range of −55° C. to 125° C., a dissipation factor of not more than 2.5% at 25° C. and 1 kHz with 1.0 V applied, and an insulation resistance of at least 1000 ohm.farads at 25° C. and at least 100 ohm.farads at 125° C., the composition consisting essentially of:
(a) about 96.0–98.0 wt. % barium titanate having an average particle size of 0.5–1.25 microns;
(b) 0.3–1.2 wt. % niobium oxide or precursor thereof;
(c) 0.4–1.2 wt. % zinc oxide or precursor thereof;
(d) 0.1–1.2 wt. % neodymium oxide or precursor thereof;
(e) 0.15–0.75 wt. % boron oxide or precursor thereof; and
(f) 0–0.1 wt. % manganese oxide or precursor thereof.

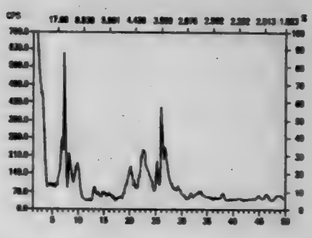
5,296,427
FLUORIDED BEIDELLITE CLAY AND PROCESS FOR PREPARING THE CLAY
Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.
Filed Nov. 9, 1992, Ser. No. 973,456
Int. Cl.[5] B01J *20/10, 21/16*
U.S. Cl. 502—63 **13 Claims**

1. A beidellite layered clay composition having the empirical formula

$$A_x(Al_4)(Si_{8-x}Al_x)(O_{20})(OH_{4-u}F_u)$$

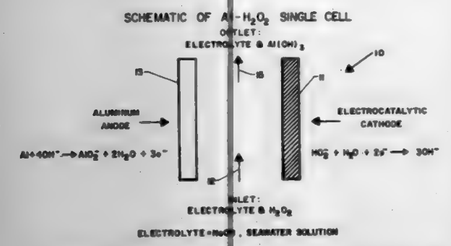
where A is a cation, x is the moles of the cation and varies from about 0.1 to about 2.0, and u varies from about 0.1 to about 3.5.
2. The composition of claim 1 further characterized in that the clay layers are separated by pillars selected from the group consisting of alumina, rare earth containing alumina, ZrO_2, TiO_2, Cr_2O_3, SiO_2, silica/alumina and mixtures thereof.
3. The composition of claim 2 where the pillar is alumina.

5,296,428
CATALYST COMPRISING MCM-36 AND A HYDROGENATION/DEHYDROGENATION COMPONENT
Thomas F. Degnan, Moorestown, N.J.; Kathleen M. Keville, Beaumont, Tex.; Charles T. Kresge, West Chester, Pa.; David O. Marler, Deptford, N.J.; Brenda H. Rose, Rosemont, Pa.; Wieslaw J. Roth, Sewell, N.J.; Kenneth G. Simons, deceased, late of Williamstown by Sarita E. Polhamus, Executor ; Hye K. C. Timken, Woodbury, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.
Continuation-in-part of Ser. No. 811,360, Dec. 20, 1991, which is a continuation-in-part of Ser. No. 776,718, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 640,330, Jan. 11, 1991, abandoned, said Ser. No. 811,360, Continuation-in-part of Ser. No. 640,329, and Ser. No. 640,339, and Ser. No. 640,341. This application Aug. 12, 1992, Ser. No. 929,070
Int. Cl.[5] B01J *21/06*
U.S. Cl. 502—84 **14 Claims**



1. A catalyst comprising MCM-36 and a hydrogenation/-dehydrogenation component.

5,296,429
PREPARATION OF AN ELECTROCATALYTIC CATHODE FOR AN ALUMINUM-HYDROGEN PEROXIDE BATTERY
Catherine L. Marsh, Exeter, R.I.; Gerald L. Seebach, Lexington, Ky.; John W. Van Zee, Columbia, S.C.; Russell R. Bessette, Mattapoisett; Hubert G. Mesnier, Holden, both of Mass., and Maria G. Medeiros, Bristol, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 21, 1992, Ser. No. 931,467
Int. Cl.[5] H01M *4/88*; B05D *5/12*; B01J *23/40*
U.S. Cl. 502—101 4 Claims



1. A method for producing an electrocatalytic cathode for use in an aluminum-hydrogen peroxide battery comprising the steps of:
providing a nickel electrode;
pre-treating said electrode by soaking in 6 Molar hydrochloric acid;
extensively rinsing said electrode with distilled water;
completely drying said electrode; and
coating said electrode with at least one metal selected from the group of metals including platinum, ruthenium, rhodium, osmium, palladium and iridium, to thereby form said electrocatalytic cathode which when used in an aluminum -hydrogen peroxide battery allows the battery to efficiently discharge up to 800 m Amp/cm^2.

5,296,430
METHOD FOR THE PREPARATION OF A STABILIZED CATALYST FOR THE POLYMERIZATION OF OLEFINS
Hideo Funabashi; Yoichi Matsuo, and Shigeo Iwasaki, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 799,103, is a continuation-in-part of Ser. No. 580,799, Sep. 11, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 43,626
Claims priority, application Japan, Sep. 20, 1989, 1-242030
Int. Cl.[5] C08F *4/651*
U.S. Cl. 502—108 7 Claims

1. A method for the preparation of a catalyst for the polymerization of an olefin having stabilized catalytic performance which comprises the steps of:
(a) subjecting a catalytic composition comprising a titanium halide-containing solid ingredient and an organoaluminum compound to a pre-polymerization treatment by contacting with an olefin monomer; and
(b) bringing the catalytic composition after the pre polymerization treatment in step (a) into contact with a stabilizing agent which is carbon monoxide, carbon dioxide or a mixture thereof undiluted or diluted with an inert gas until substantial disappearance of the activity for the polymerization of olefins, the amount of the stabilizing agent being at least 0.15 mole per mole of the titanium atoms in the catalytic composition.

5,296,431
ZIEGLER-NATTA CATALYST SYSTEMS CONTAINING ORGANOMETALLIC COMPOUNDS
Klaus-Dieter Hungenberg, Birkenau, and Juergen Kerth, Carlsberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jul. 30, 1991, Ser. No. 737,741
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1990, 4024421
Int. Cl.[5] C08F *4/654, 10/06*
U.S. Cl. 502—110 4 Claims

1. A Ziegler-Natta catalyst system consisting essentially of:
a) a titanium-containing solid component which also contains magnesium, halogen and a carboxylic acid ester as electron donor,
b) a trialkylaluminum compound, each of the alkyl substituents of which has 1 to 8 carbon atoms,
c) a further electron-donor component, and, as an additional component,
d) an organometallic compound of the formula M^1R^1 where M^1 is an element from Group I of the Periodic Table and R^1 is C_1–C_{10}-alkyl, C_8–C_{12}-aryl, C_8–C_{12}-arylalkyl, or 5- to 7-membered cycloalkyl, which may itself carry C_1–C_8-alkyl groups.

5,296,432
CATALYST FOR THE (CO) POLYMERIZATION OF ETHYLENE
Federico Milani, Maria Maddalena; Luciano Luciani, Ferrara, and Maddalena Pondrelli, Budrio, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy
Filed Jul. 9, 1992, Ser. No. 911,891
Claims priority, application Italy, Jul. 12, 1991, MI91 A/001936
Int. Cl.[5] C08F *4/657, 4/685*
U.S. Cl. 502—113 19 Claims

1. Solid component of catalyst for the (co)polymerization of ethylene, including magnesium, halogen and titanium, obtained by:
(i) dissolving, in an inert organic solvent, a magnesium dialkyl or a halide of magnesium alkyl, and a tin (IV) halide, with an atomic ratio between the tin, in said tin halide, and the magnesium, in said magnesium dialkyl or halide of magnesium alkyl, of 0.1:1 to 15:1, and contacting them until a granular solid precipitates from the solution;
(ii) contacting and interacting said granular solid with a titanium halide, alkoxide or halo-alkoxide, with an atomic ratio between the magnesium, in said granular solid, and the titanium, in said titanium compound, of 0.01:1 to 60:1.

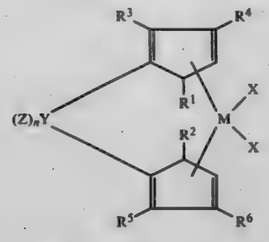
10. Solid component of catalyst according to claim 1, wherein, in step (i), at least one compound of a metal M selected from vanadium, zirconium and hafnium is also added, with an atomic ratio between the magnesium, introduced with the magnesium dialkyl or halide of magnesium alkyl, and the sum between the titanium and the metal or metals M, ranging from 1:1 to 30:1, and with an atomic ratio between the titanium and the metal or metals M of 0.1:1 to 2:1.

5,296,433
TRIS(PENTAFLUOROPHENYL)BORANE COMPLEXES AND CATALYSTS DERIVED THEREFROM
Allen R. Siedle, Lake Elmo, and William M. Lamanna, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 14, 1992, Ser. No. 868,041
Int. Cl.[5] C08F *4/60*
U.S. Cl. 502—117 20 Claims

1. A borane complex comprising (a) tris(pentafluorophenyl)-borane and (b) at least one complexing compound selected from the group alcohol, mercaptan, silanols, and oximes.

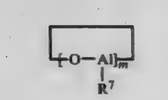
5,296,434
SOLUBLE CATALYST SYSTEMS FOR THE PREPARATION OF POLYALK-1-ENES HAVING HIGH MOLECULAR WEIGHTS
Eberhard Karl; Werner Roell, both of Konstanz, Fed. Rep. of Germany; Hans Brintzinger, CH-Leimbach-Guntershausen, Switzerland; Bernhard Rieger, Nehren, and Udo Stehling, Konstanz, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jun. 18, 1992, Ser. No. 900,427
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4120009
Int. Cl.[5] C08F *4/60*
U.S. Cl. 502—117 8 Claims

1. A catalyst system for the polymerization of C_2–C_{10}-alk-1-enes, containing, as active components,
a) a metallocene complex of the formula I

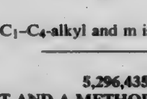


I

where M is titanium, zirconium, hafnium, vanadium, niobium or tantalum, X is halogen or C_1–C_8-alkyl, Y is carbon, phosphorus, sulfur, silicon or germanium, Z is C_1-C_8-alkyl, C_3-C_{10}-cycloalkyl or C_6–C_{10}-aryl, R^1 and R^2 are identical or different and are each C_1–C_4-alkyl, two adjacent radicals R^3 and R^4 and R^5 and R^6 in each case together form,, a hydrocarbon ring system of 10 to 15 carbon atoms and n is 0, 1 or 2, and
b) an open-chain or cyclic alumoxane compound of the formula II or III



(II)



(III)

where R^7 is C_1–C_4-alkyl and m is from 5 to 30.

5,296,435
CATALYST AND A METHOD OF PREPARE THE CATALYST
Shinya Kitagachi, Himeji; Sadao Terui, Hyogo, and Atsushi Nose, Himeji, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan
Filed Dec. 2, 1992, Ser. No. 984,524
Claims priority, application Japan, Dec. 5, 1991, 3-321780; Mar. 23, 1992, 4-65165
Int. Cl.[5] B01J *23/24*
U.S. Cl. 502—174 8 Claims

1. An ozone decomposing catalyst for catalytically decomposing ozone contained in a gas and/or an ozone deodorizing catalyst for catalytically and oxidatively decomposing offensive odor ingredients due to the presence of ozone, consisting essentially of manganese carbonate further containing MnO_x, wherein x is 1.6 to 2.0.

3. A catalyst as defined in claim 2, wherein the refractory inorganic oxide is selected from one or more of alumina, silica, titania and zirconia.

5,296,436
PHOSPHOROUS/VANADIUM OXIDATION CATALYST
Arie Bortinger, Ridgewood, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.
Filed Jan. 8, 1993, Ser. No. 2,240
Int. Cl.[5] B01J *27/198, 27/19*; C07D *307/34*
U.S. Cl. 502—209 23 Claims

1. In a method for preparing a molybdenum containing phosphorus/vanadium mixed oxide oxidation catalyst comprising reducing vanadium in the +5 valence state in a substantially anhydrous organic medium to a valence of less than +5 and digesting said reduced vanadium and a modifier comprising molybdenum in concentrated phosphoric acid wherein the improvement comprises adding said molybdenum as a solution of molybdenum compound prior to said digesting.

5,296,437
CATALYST FOR METATHESIS REACTIONS OF OLEFINES AND A METHOD FOR PREPARING IT AS WELL AS THE METATHESIS REACTION CONCERNED
Jukka Hietala; Pekka Knuuttila, both of Porvoo; Markku Leskelä, Espoo; Reijo Sillanpää, Kaarina, and Ari Lehtonen, Turku, all of Finland, assignors to Neste OY, Finland
Filed Jul. 16, 1992, Ser. No. 915,098
Claims priority, application Finland, Jul. 30, 1991, 913627
Int. Cl.[5] B01J *23/30*
U.S. Cl. 502—305 17 Claims

1. Catalyst for metathesis reactions of olefines, said catalyst comprising a tungsten precursor complex with the structure $W(ArCH_2)_2(diol)_2$, wherein $ArCH_2$ is benzene substituted with a lower alkyl group and said diol is 1,2-cyclohexane diol or pinacol, said tungsten precursor complex being impregnated in an inorganic carrier and calcinated.

6. A method for preparing a heterogenous catalyst for the metathesis reaction of olefines, which comprises;
a) forming a complex between an inorganic tungsten salt and a diol,
b) reacting the thus obtained complex with a benzyl anion or a benzyl anion substituted with a lower alkyl group, thus obtaining a tungsten complex containing diol ligands and benzyl ligands or benzyl ligands substituted with a lower alkyl group, and
c) impregnating the thus obtained tungsten complex into a carrier and calcinating.

5,296,438
DIMENSIONALLY STABLE METALLIC HYDRIDE COMPOSITION
Leung K. Heung, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 29, 1992, Ser. No. 952,931
Int. Cl.[5] B01J *20/10*; H01J *7/18*; C01B *6/24*; F17C *11/00*
U.S. Cl. 502—407 14 Claims

1. A composition for use in absorbing hydrogen, said composition made by a process comprising the steps of:
providing a hydride in the form of particles;
oxidizing the surfaces of said hydride particles;
providing kieselguhr in the form of particles;
providing a ballast metal in the form of particles;
mixing said hydride particles with said kieselguhr and said ballast metal to form a uniformly blended mixture;
compressing said mixture; and
calcining said mixture so that said ballast metal binds said hydride and said kieselguhr into a porous compact that absorbs said hydrogen.

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5,295,439

REVERSIBLE THERMOSENSITIVE COLORING RECORDING MEDIUM, RECORDING METHOD, AND IMAGE DISPLAY APPARATUS USING THE RECORDING MEDIUM

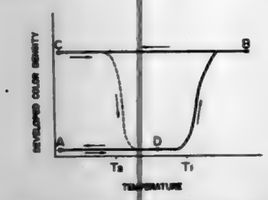
Shoji Maruyama, Yokohama; Hiroshi Goto, Fuji; Eiichi Kawamura, Numazu; Masaru Shimada, Shizuoka; Keishi Kubo, Yokohama; Kyoji Tsutsui, Mishima; Hideaki Ema, Shimizu; Takehito Yamaguchi, Toda; Hiroki Kuboyama, Mishima; Ichiro Sawamura, Numazu, and Keishi Taniguchi, Susono, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 24, 1991, Ser. No. 813,181

Claims priority, application Japan, Dec. 26, 1990, 2-414436; Dec. 26, 1990, 2-414438; Feb. 14, 1991, 3-042813; May 14, 1991, 3-138476; May 31, 1991, 3-155440; Jun. 29, 1991, 3-185242; Jul. 10, 1991, 3-195997; Jul. 12, 1991, 3-198901; Aug. 15, 1991, 3-229572; Sep. 10, 1991, 3-258552; Sep. 10, 1991, 3-258553; Dec. 20, 1991, 3-355078

Int. Cl.[5] B41M *5/30*

U.S. Cl. 503—201 32 Claims



1. A reversible thermosensitive coloring recording medium comprising a support and a reversible thermosensitive coloring recording layer formed thereon, said reversible thermosensitive coloring recording layer comprising a reversible thermosensitive coloring composition comprising (i) an electron-donor coloring compound and (ii) an electron-acceptor compound selected from the group consisting of an organic phosphoric acid compound, an α-hydroxycarboxylic acid, a halogen substituted aliphatic carboxylic acid compound, an aliphatic carboxylic acid compound, and a phenolic compound, each having a straight chain or branched chain alkyl group or alkenyl group having 12 or more carbon atoms, said electron-donor coloring compound and said electron-acceptor compound being capable of reacting to induce color formation in said reversible thermosensitive coloring composition at the eutectic temperature thereof, and said electron-donor coloring compound and said electron-acceptor compound, when fused and colored in a mixed state, with application of heat thereto, followed by rapidly cooling said fused mixture, exhibiting an exothermic peak in a temperature elevation process in a differential scanning calorific analysis or in a differential thermal analysis.

5,296,440

HEAT-SENSITIVE RECORDING MEDIUM

Nobuo Kanda, Neyagawa; Naoto Arai, Ikeda; Tosaku Okamoto, Osaka; Isamu Nakano, Takatsuki, and Tetsuo Tsuchida, Takarazuka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Japan

PCT No. PCT/JP91/01291, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO92/05963, PCT Pub. Date Apr. 16, 1992

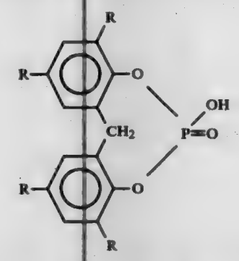
PCT Filed Sep. 27, 1991, Ser. No. 859,370

Claims priority, application Japan, Sep. 29, 1990, 2-261236; Dec. 27, 1990, 2-408460; Feb. 1, 1991, 3-012176

Int. Cl.[5] B41M *5/30*

U.S. Cl. 503—208 13 Claims

1. A heat-sensitive recording medium comprising (a) a support and (b) a heat-sensitive recording layer formed on the support and comprising a colorless or pale-colored basic dye and a color developing material capable of causing color development upon contact with the dye by heating, which medium is characterized in that the heat-sensitive recording layer contains at least one phosphate compound selected from the group consisting of 2,2'-methylenebis(4,6-di-tert-butylphenyl) phosphate of the general formula (1) shown below and alkali metal, ammonium and polyvalent metal salts thereof:



(I)

wherein R represents a tert-butyl group and at least one alkaline pigment in an amount of 3 to 15% by weight based on the total solids contained in the recording layer.

5,296,441

THERMAL PRINTING MEDIUM AND METHOD FOR PREPARING THE SAME

Mitsuhiro Yoshida; Tatsuhiro Yamaguchi, and Takayuki Norizuki, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,375

Claims priority, application Japan, Feb. 28, 1992, 4-75970; May 22, 1992, 4-154201

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—216 6 Claims

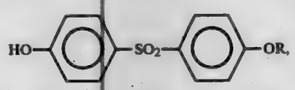
1. A thermal printing medium comprising

a substrate having an upper and lower surface;

a heat sensitive layer formed over at least one surface of said substrate and including at least one of a colorless and a lightly colored leuco dye, and a color developing agent which imparts color to said leuco dye; and

a protective layer comprised of aqueous resin and filler agent as main components thereof;

characterized in that said heat sensitive layer is comprising at least one compound indicated by formula (1)



(1)

wherein R indicates an alkyl group having 1 to 10 carbon atoms or a benzyl group which may have a substitutional group, as a color developing agent, and aluminum hydroxide.

5,296,442

METHOD FOR HEAT TRANSFER SHEET RECORDING

Hideo Fujimura, Kashiwa, and Hironobu Hanaki, Shinjuku, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 358,360, May 11, 1989, Pat. No. 5,006,502. This application Nov. 16, 1990, Ser. No. 614,394

Claims priority, application Japan, Sep. 14, 1987, 62-228626; Sep. 30, 1987, 62-244811; Nov. 5, 1987, 62-280058; Dec. 18, 1987, 62-321098; Mar. 4, 1988, 63-51259

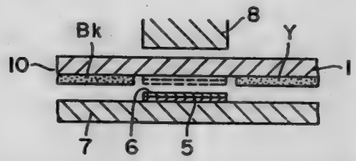
Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 19 Claims

1. A method for heat transfer recording which performs

printing by a heat transfer means on a laminate of a heat transfer sheet and a material to be recorded, said method comprising the steps of:

providing a heat transfer sheet comprising a substrate sheet, an image-receiving layer peelably formed on a surface of said substrate sheet, said image-receiving layer comprising a dyeable resin and first having a cushion layer and then an adhesive layer formed in this order on the surface thereof, and a heat migratable dye layer formed on a plane on which said image-receiving layer is formed;



bringing the heat-transfer sheet into contact with a material to be recorded;

transferring said image-receiving layer together with said cushion layer and said adhesive layer onto a surface of the material to be recorded so that said image-receiving layer is formed on the surface of the material to be recorded through said cushion and adhesive layers; and

carrying out printing on the thus transferred image-receiving layer.

5,296,443

THERMAL TRANSFER IMAGE RECEIVING SHEET

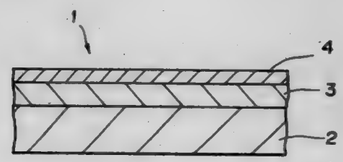
Kenichiro Suto, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Feb. 26, 1992, Ser. No. 842,013

Claims priority, application Japan, Mar. 1, 1991, 3-57704

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 14 Claims



1. A thermal transfer image receiving sheet comprising a substrate sheet, a dye receptor layer disposed on at least one surface side of the substrate sheet, and an antistatic agent layer disposed on the surface of the dye receptor layer;

wherein the dye receptor layer comprises a dyeable resin and a solvent-soluble antistatic agent.

5,296,444

SUBLIMATION TRANSFER METHOD AND HEAT-MELT TRANSFER MEDIUM USED IN THE METHOD

Atsuo Saiki, Tokyo; Hideki Suematsu, Osaka; Manabu Ikemoto, Osaka, and Hitomi Kawabata, Osaka, all of Japan, assignors to Fujicopian Co., Ltd., Osaka, Japan

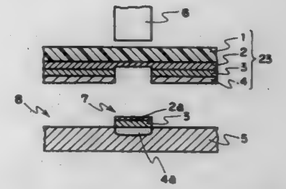
Filed Apr. 21, 1992, Ser. No. 871,325

Claims priority, application Japan, Apr. 26, 1991, 3-96887

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 14 Claims

1. A heat-melt transfer medium suitable for use in a sublimation transfer method which comprises using a heat-melt transfer medium with a heat-meltable ink layer containing a sublimation dye as a coloring agent, selectively melt-transferring the heat-meltable ink layer onto a sheet to form an image of the ink on the sheet, superimposing the resulting master onto a substrate so that the image faces the substrate and heating the resultant master/substrate at a temperature not less than the heat-transfer temperature of the sublimation dye to transfer the dye to the substrate,



said transfer medium comprising a foundation, a release layer provided on the foundation and comprising a wax substance having a melting point of 50° to 100° C. as a major component, a heat-meltable ink layer provided on the release layer and containing a sublimation dye as a coloring agent, and an adhesive layer provided on the heat-meltable ink layer and comprising a wax substance having a melting point of 50° to 100° C. as a major component.

5,296,445

DYE FOR HEAT-SENSITIVE TRANSFER RECORD, INK COMPOSITION FOR HEAT-SENSITIVE TRANSFER RECORD, AND TRANSFER SHEET

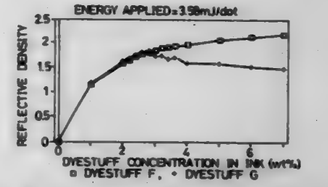
Tsukasa Ohyama; Yasushi Shimokawa; Yoriaki Matsuzaki; Keisuke Takuma, all of Fukuoka; Isamu Ghoda; Hitoshi Koshida, both of Hyogo; Ryohei Takiguchi, Chiba; Hiroshi Eguchi; Komei Kafuku, both of Saitama, and Masayuki Nakamura, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Dai Nippon Printing Co., Ltd., both of Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 924,874

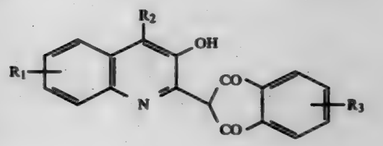
Claims priority, application Japan, Aug. 6, 1991, 3-196631; Dec. 27, 1991, 3-345869; Dec. 27, 1991, 3-345870

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 9 Claims



1. A transfer sheet which comprises abase sheet and a dyestuff-supporting layer formed all over the base sheet, the dyestuff contained in the dyestuff-supporting layer being the dyestuff for heat-sensitive transfer record represented by the formula (1)



(1)

VOL 1160 ISS 4 MR 22 1994 UMI

wherein

R_1 is an alkyl group having 1 to 8 carbon atoms or cycloalkyl group;

R_2 is a hydrogen atom, halogen atom, alkoxy group which may be substituted, alkylthio group which may be substituted or arylthio group which may be substituted;

R_3 is a branched alkyl group having 3 to 5 carbon atoms, an O-substituted oxycarbonyl group, an N-substituted aminocarbonyl group in which the N-substituted group may form a ring, or a substituted or unsubstituted heterocyclic ring having two or more hetero atoms of one or more kinds selected from the group consisting of a nitrogen atom, oxygen atom and sulfur atom.

5,296,446

THERMOSENSITIVE RECORDING MATERIAL

Hideo Fujimura; Haruo Takeuchi, and Katsuyuki Oshima, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 832,313, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 474,036, Apr. 13, 1990, abandoned. This application Sep. 25, 1992, Ser. No. 950,699

Claims priority, application Japan, Aug. 13, 1988, 63-202125; Aug. 17, 1988, 63-204132; Sep. 12, 1988, 63-226427; Sep. 20, 1988, 63-246143; PCT Int'l Appl., Aug. 1, 1989, PCT/JP89/00788

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **19 Claims**



1. A thermosensitive recording material use din combination with a heat transfer sheet carried thereon with a thermally transferable dye, said thermosensitive recording material comprising:

a substrate and

a dye-receiving layer provided on at least one surface of said substrate, said dye-receiving layer being formed by crosslinking and curing (1) a resin having a crosslinkable reaction group, (2) an additive having a crosslinkable reaction group, (3) a release agent having a crosslinkable reaction group, and (4) an organometallic compound catalyst based on dibutyltin or dioctyltin, the ratio of the equivalent of the crosslinkable reaction group of said additive to the equivalent of the crosslinkable reaction group of said resin being in the range of 3:1 to 8:1.

5,296,447

IMAGE RECEIVING SHEET

Kenichiro Suto; Kazunobu Imoto, and Nobuhisa Nishitani, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

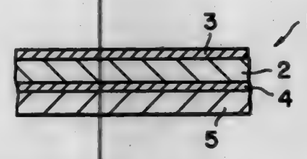
Continuation of Ser. No. 474,109, Apr. 30, 1990, abandoned. This application Jul. 30, 1993, Ser. No. 99,402

Claims priority, application Japan, Aug. 31, 1988, 63-217580; Oct. 25, 1988, 63-267113; Jun. 13, 1989, 1-148301

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **16 Claims**

1. An image receiving sheet for receiving dye migrated by heat from a heat transfer sheet, comprising a substrate, a dye receiving layer provided on one surface of said substrate, and a curl prevention layer provided on the surface of the substrate opposite to the dye receiving layer, said curl prevention layer comprising (i) a resin that is non-heat shrinkable and stretchable, and has a heating shrinkage or stretchability measured by JIS-K-6734 within a range of from −1.0 to 1.5%, and (ii) a filler which makes the curl prevention layer slippery, said filler having a particle size of from 0.5 to 30 μm and being present in



said curl prevention layer in an amount of 0.02 to 10% by weight.

5,296,448

THERMAL TRANSFER PRINTING

Roy Bradbury, St Helens, and Alan Butters, Ipswich, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 809,341, Dec. 18, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,161

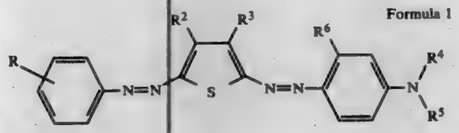
Claims priority, application United Kingdom, Dec. 21, 1990, 9027918; Jan. 18, 1991, 9101096

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **4 Claims**

1. A thermal transfer printing sheet comprising a substrate having a coating of a disazo dye of Formula (1):

Formula 1



wherein:

R is selected from —H; —CN; $—NO_2$; $—COT^1$; $—SO_2T^1$; $—COOT^1$; $—SO_2F$; and $—SO_2Cl$;

each

R^1 is independently selected from —H; —F, —Cl, —Br; and $—CF_3$;

n is 1, 2 or 3;

R^2 is —H or C_{1-4}-alkyl;

R^3 is —CN;

R^4 is a straight or branched chain C_{1-6}-alkyl;

R^5 is Sec.butyl; and

R^6 is elected from —H; C_{1-4}-alkyl; and $—NHCOT^1$;

wherein T^1 is C_{1-4}-alkyl or phenyl.

5,296,449

SYNERGISTIC COMPOSITION AND METHOD OF SELECTIVE WEED CONTROL

Patrick Ryan, Bar Hill, England; Urs Hofer, Rheinfelden, Switzerland; Richard Istead, Bottmingen, Switzerland; Hans Gut, Wallbach, Switzerland, and Wolfgang P. Iwanzik, Sissein, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

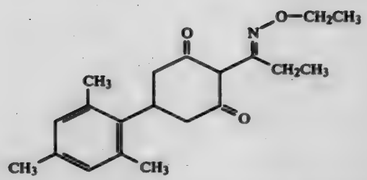
Filed Nov. 12, 1992, Ser. No. 975,250

Claims priority, application Switzerland, Nov. 15, 1991, 3326/91; Jun. 9, 1992, 1835/92

Int. Cl.[5] A01N *43/76, 43/40, 35/06, 25/32*

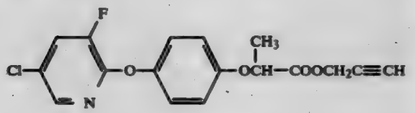
U.S. Cl. 504—105 **13 Claims**

1. A herbicidal composition comprising 5-(2,4,6-trimethylphenyl)-2-[1-(ethoximino)propionyl]-cyclohexane-1,3-dione of formula I



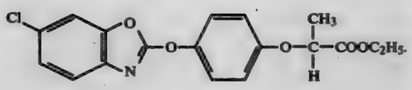
(I)

and a synergistically effective amount of either 2-[4-(5-chloro-3-fluoropyridin -2-yloxy)phenoxy]-propionic acid propynyl ester of formula II



(II)

or (±)-2-[4-(6-chlorobenzoxazol-2-yloxy)phenoxy]propionic acid ethyl ester of formula III



(III)

5,296,450

WATER DISPERSIBLE GRANULAR HERBICIDAL COMPOSITIONS COMPRISING DINITROANILINE HERBICIDES, MONTMORILLONITE CARRIER, AND A BASE

Joseph Kimler, Yardville, and Robert Kubisch, Martinsville, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 23, 1992, Ser. No. 996,412

Int. Cl.[5] A01N *25/08, 33/18*

U.S. Cl. 504—116 **16 Claims**

1. A water dispersible granular composition comprising on a weight to weight basis about 20% to 90% of a dinitroaniline herbicide; about 5% to 25% of a montmorillonite carrier; about 1.0% to 7.5% of a wetting agent; about 2% to 10% of a suspension agent; and about 0.5% to 20% of a base selected from the group consisting of amines and alkali metal hydroxides.

5,296,451

CINNAMIC ESTERS

Lothar Rueb, Speyer; Karl Eicken, Wachenheim; Karl-Otto Westphalen, Speyer, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

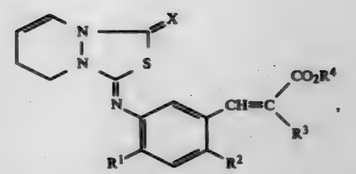
Continuation of Ser. No. 557,063, Jul. 25, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 920,816

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1990, 3924719

Int. Cl.[5] C07D *513/04;* **A01N** *43/90*

U.S. Cl. 504—236 **6 Claims**

1. Cinnamic esters of the formula I



I

where R^1 is hydrogen or fluorine, R^2 is halogen, R^3 is hydrogen, halogen or C_1–C_4-alkyl, R^4 is hydrogen, C_1–C_6-alkyl which may be substituted by one or two C_1–C_4-alkoxy groups, or is C_3–C_6-alkenyl, C_3–C_6-alkynyl or benzyl, and X is oxygen or sulfur.

5,296,452

HERBICIDAL 3-(3,4,5,6-TETRAHYDROPHTHALIMIDO)-CINNAMIC ESTERS

Lothar Rueb, Speyer; Karl Eicken, Wachenheim; Karl-Otto Westphalen, Speyer, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

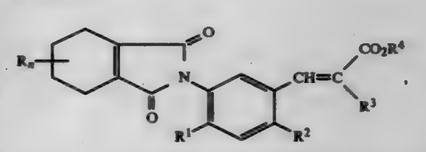
Filed May 18, 1990, Ser. No. 525,035

Claims priority, application Fed. Rep. of Germany, May 31, 1989, 3917676; Sep. 22, 1989, 3931615

Int. Cl.[5] A01N *43/38;* **C07D** *209/04*

U.S. Cl. 504—243 **4 Claims**

1. A 3-(N-3,4,5,6-Tetrahydrophthalimido)-cinnamic ester of the formula I



I

where R^1 is hydrogen or fluorine, R^2 is halogen, R^3 is hydrogen, halogen or C_1–C_6-alkyl, R^4 is hydrogen, C_1–C_6-alkyl which can be substituted by one or two C_1–C_4-alkoxy or C_1–C_4-alkylthio groups, or C_3–C_7-cycloalkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl or benzyl, R is C_1–C_4-alkyl, and n is 1 or 2.

5,296,453

PROCESS FOR THE INTERCONVERSION OF TWO SEPERATE CRYSTAL FORMS OF A HERBICIDAL PYRIDINE SULFONAMIDE

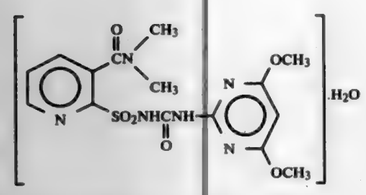
Ngoc Le-Si, Greenville, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 675,933, May 8, 1991, Pat. No. 5,202,439, which is a continuation-in-part of Ser. No. 274,463, Nov. 12, 1988, abandoned. This application Dec. 23, 1992, Ser. No. 997,611

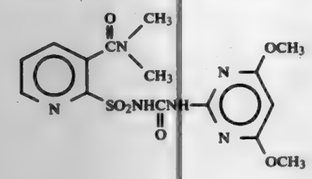
Int. Cl.[5] A01N *43/54;* **C07D** *401/12*

U.S. Cl. 504—243 **5 Claims**

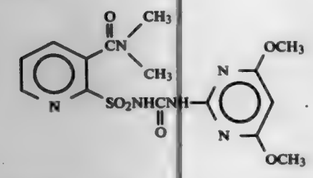
1. A dry flowable preparation which comprises



as the active ingredient prepared by hydrating



or hydrating



in the presence of heat.

5,296,454

ACETANILIDE HERBICIDES

Toshio Goto; Hidenori Hayakawa; Itsuko Manabe, and Akihiko Yanagi, all of Tochigi, Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

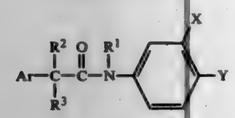
Filed Jun. 26, 1992, Ser. No. 905,944

Claims priority, application Japan, Jul. 3, 1991, 3-188239; Jul. 9, 1991, 3-193647; Sep. 20, 1991, 3-268607

Int. Cl.[5] A01N *43/08, 43/10;* **C07D** *307/54, 333/24*

U.S. Cl. 504—289 **10 Claims**

1. An acetanilide of the formula



(I)

wherein

Ar represents furyl or thienyl,

R^1 represents hydrogen, C_{1-5}-alkyl, C_{3-6}-cycloalkyl, C_{3-6}-cycloalkylmethyl, C_{3-5}-alkenyl, C_{3-5}-alkynyl, C_{1-3}-haloalkyl, C_{3-5}-epoxyalkyl, C_{1-3}-alkoxy-C_{1-4}-alkyl, C_{1-3}-alkylthio-C_{1-4}-alkyl, C_{1-3}-alkoxy-carbonyl-C_{1-2}-alkyl, cyano-C_{1-3}-alkyl, aralkyl or halogen-substituted aralkyl,

R^2 represents hydrogen or C_{1-3}-alkyl,

R^3 represents hydrogen or C_{1-3}-alkyl,

X represents halogen, and

Y represents iso-propyl, tert-butyl, C_{1-2}-haloalkyl, C_{1-2}-haloalkoxy, C_{1-2}-haloalkylthio or C_{1-2}-alkylsulfonyl.

5,296,455

PROCESS FOR PREPARING SUPERCONDUCTOR OF COMPOUND OXIDE OF BI-SR-CA-CU SYSTEM

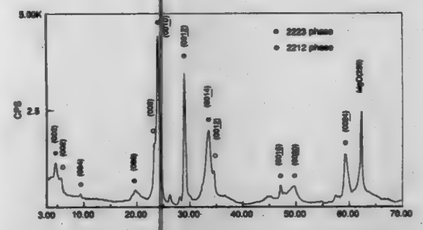
Keizo Harada; Hideo Itozaki; Kenjiro Higaki, and Shuji Yazu, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 416,639, Oct. 3, 1989, abandoned. This application May 7, 1992, Ser. No. 883,228

Claims priority, application Japan, Oct. 3, 1988, 63-249426

Int. Cl.[5] C23C *14/24, 14/34*

U.S. Cl. 505—1 **18 Claims**



Ib

Ia 1. A process for preparing a superconducting thin film on a substrate, which process comprises depositing a thin film consisting mainly of compound oxide of Bi, Sr, Ca and Cu on a substrate by physical vapor deposition, characterized in that the atomic ratios of Bi, Sr, Ca and Cu in a vapor source or a target used in the physical vapor deposition are a:1:1:1.5, respectively, wherein a>1 and the deposited thin film has a composition represented by the general formula:

$$Bi_{4+d}Sr_4Ca_{Cu6}O_{20+y}$$

in which,

"d" is a number which satisfies a range of $0.4 \leqq d \leqq 1.2$, and

"y" is a number which satisfies a range of $-2 \leqq y \leqq +2$.

5,296,456

CERAMIC SUPERCONDUCTOR WIRE AND METHOD OF MANUFACTURING THE SAME

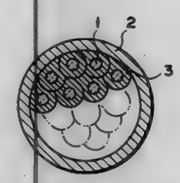
Shoji Shiga; Naoki Uno, and Hiroyuki Kikuchi, all of Tokyo, Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1990, Ser. No. 562,205

Claims priority, application Japan, Aug. 9, 1989, 1-206291; Sep. 18, 1989, 1-241148

Int. Cl.[5] H01L *39/12*

U.S. Cl. 505—1 **10 Claims**



1. A ceramic superconductor comprising:

a ceramic superconductive member; a first metal layer covering the ceramic superconducting member; and a second metal layer, made of noble metal selected from the group consisting of Ag, Au, Pd, Pt, Ir and Rh, covering a bundle of a plurality of members each prepared by covering the ceramic superconductive member with the first metal layer,

wherein electrical conductivity of the first metal layer is lower than that of the second metal layer, whereby an eddy current loop generated in the first and second metal layers by current flowing in the superconductor is reduced by the first and second metal layers.

5,296,457

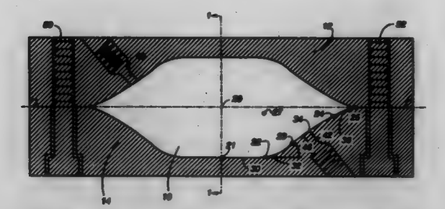
CLAMSHELL MICROWAVE CAVITIES HAVING A SUPERCONDUCTIVE COATING

D. Wayne Cooke; Paul N. Arendt, both of Los Alamos, N. Mex., and Helmut Piel, Wuppertal, Fed. Rep. of Germany, assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 856,428, Mar. 23, 1992, abandoned. This application Apr. 14, 1992, Ser. No. 868,150

Int. Cl.[5] H01P *1/16, 7/06;* **H01B** *12/06*

U.S. Cl. 505—1 **17 Claims**



2. A microwave cavity comprising a pair of opposing operatively connected clamshell halves oriented with respective inner facing concave surfaces, said halves comprised of a metal selected from the group consisting of silver, copper and silver-based alloys, wherein said clamshell halves each further includes an operatively connected coupling port, said coupling ports being arranged in an opposing orientation to each other said cavity is further characterized as exhibiting a dominant TE_{011} mode and a TM_{111} mode separated from said TE_{011} mode, and said clamshell halves are of dimensions yielding a frequency of about 10 GHz and a geometric factor of about 699 ohms.

4. The microwave cavity of claim 2 wherein said pair of opposing clamshell halves include a thin coating of a superconductive material upon the concave surfaces of the halves.

5,296,458

EPITAXY OF HIGH T_c SUPERCONDUCTING FILMS ON (001) SILICON SURFACE

Franz J. Himpsel, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 632,589, Dec. 21, 1991, abandoned, which is a continuation of Ser. No. 560,242, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 351,288, May 9, 1989, abandoned, which is a continuation of Ser. No. 151,772, Feb. 3, 1988, abandoned. This application Jun. 4, 1992, Ser. No. 893,958

Int. Cl.[5] B05D *5/12;* **C30B** *23/00, 25/00*

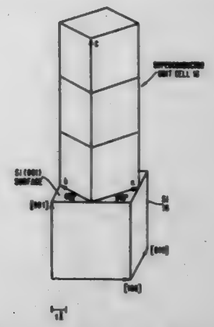
U.S. Cl. 505—1 **5 Claims**

1. A method of forming a high Tc copper-oxide superconductor-substrate combination comprising the steps of:

selecting a substrate including a layer of silicon having a (001) surface thereof,

first forming an intermediate layer over said silicon layer, said intermediate layer being substantially epitaxial with said (001) silicon surface and being essentially non-reactive with said silicon layer and said superconductor at the temperatures used to form a high Tc copper-oxide superconductor layer, and which is selected from the group consisting of BaO, SrO, CuO, Y_2O_3, CaF_2, BaF_2, alloys thereof and metal silicide; and

second forming said layer of high Tc copper-oxide superconductor having lattice matching to said (001) silicon surface on said intermediate layer, said superconductor having a unit cell characterized by crystallographic axes a,b,c, two out of said a,b,c, axes being oriented substantially 45 degrees with respect to the corresponding two axes of the unit cell of said silicon layer and the remaining axis of said superconductor unit cell being substantially perpendicular to said (001) surface of said silicon layer.



5,296,459

METHOD FOR MAKING AN ELECTRICALLY CONDUCTIVE CONTACT FOR JOINING HIGH T_c SUPERCONDUCTORS

Yehia Negm, Braintree; George O. Zimmerman, South Hamilton, both of Mass., and Randy J. McConeghy, Waxahachie, Tex., assignors to Trustees of Boston University, Boston, Mass.

Filed Jun. 19, 1992, Ser. No. 902,224

Int. Cl.[5] H01L *39/12;* **B05D** *5/12*

U.S. Cl. 505—1 **3 Claims**

1. A method for making an electrically conductive contact for electrical juncture of a high T_c superconductive material, said method comprising the steps of:

obtaining a noble metal in fragmented form;

applying said noble metal fragments as a preliminary external coating of an area on the surface of a high T_c superconductive material;

heating said preliminary external coating of noble metal fragments and said area of said superconductive material to a temperature greater than the softening-point temperature and less than the melting point temperature of said noble metal whereby said heated noble metal fragments of said preliminary external coating penetrate and become embedded within said superconductive material;

allowing said embedded noble metal fragments within said superconductive material to cool and solidify;

adding additional noble metal fragments as a final external coating over said area of said superconductive material;

warming said final external coating of noble metal fragments and said area of said superconductive material to a temperature greater than the softening-point temperature and less than the melting point temperature of said noble metal whereby said warmed noble metal fragments of said final external coating form a unified mass of noble metal externally on the surface of said superconductive material, said external unified mass being in electrical contact with said embedded noble metal within said superconductive material; and

cooling said external unified mass of noble metal to form a solid electrically conductive contact on the surface of said superconductive material.

VOL 1160 ISS 4 MR 22 1994 UMI

5,296,460

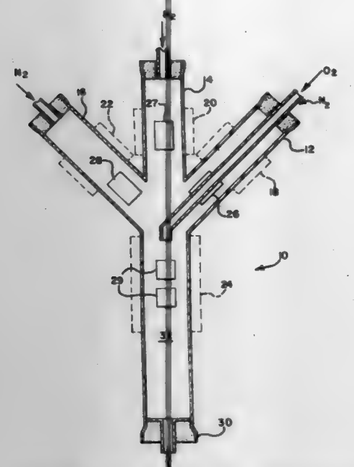
CVD METHOD FOR FORMING B_i-CONTAINING OXIDE SUPERCONDUCTING FILMS

Bruce W. Wessels, Wilmette; Tobin J. Marks; Darrin S. Richeson, both of Evanston, all of Ill.; Lauren M. Tonge, Sanford, Mich., and Jiming Zhang, Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Division of Ser. No. 691,477, Apr. 25, 1991, Pat. No. 5,185,317, which is a continuation of Ser. No. 436,078, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 158,322, Feb. 19, 1988. This application Aug. 5, 1992, Ser. No. 926,156

Int. Cl.[5] **C23C** *16/00;* **B05D** *5/12*

U.S. Cl. 505—1 **2 Claims**



1. A method for the preparation of a superconductive ceramic film by chemical vapor deposition comprising the steps of:

(a) flushing evaporation chambers with an inert gas;

(b) placing at least three metal organic beta-diketonate complexes in said chambers, the first of said complexes being based on Sr and being placed in a first flushed chamber, the second of said complexes being based on Ca and being placed in a second flushed chamber, the third of said complexes being based on Cu and being placed in a third flushed chamber;

(c) placing a compound of the formula BiR_3'' where R'' is selected from the group consisting of alkyl, alkoxide, aryl and halide in a fourth flushed chamber;

(d) heating each of said complexes to its vaporizing temperature to cause a source flow comprising vapors of each of said complexes in each respective chamber;

(e) heating a substrate to a temperature of about 500° C.–700° C. in a heated deposition chamber;

(f) transporting said vapors into said heated deposition chamber;

(g) initiating a flow of water vapor into said deposition chamber;

(h) depositing a film from said vapors onto said substrate in said deposition chamber;

(i) terminating said source flow;

(j) maintaining said water vapor flow; and

(k) adjusting the temperature of said substrate to the range of 600° C.–950° C. in flowing oxygen to thereby anneal said film to result in said superconductive ceramic film represented by the formula $Bi_2Sr_2Ca_{n-1}Cu_n$ oxide; n=1, 2, 3.

5,296,461

DITERPENOID ALCOHOLS FOR FLAVOURING PURPOSES

Johannes T. De Heij, Hilversum; Johannes M. Van Dort, Lage Vuursche, and Harrie Renes, Nederhorst den Berg, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Nov. 3, 1992, Ser. No. 970,869

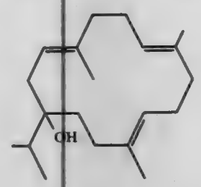
Claims priority, application European Pat. Off., Nov. 4, 1991, 91202865.1

Int. Cl.[5] **A61K** *7/46*

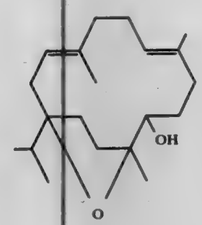
U.S. Cl. 512—15 **13 Claims**

1. A composition comprising at least 0.2% by weight of one or more of the compounds I, II and III, wherein said composition contains less than 5% by weight of volatile compounds having a boiling point below 80° C. at 1 kPa, and wherein said compounds I, II and III have the formulas

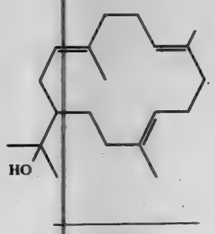
I



II



III



5,296,462

METHOD AND COMPOSITIONS USING POLYPEPTIDES OF ARABIDOPSIS THALIANA

Michael F. Thomashow, East Lansing, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Nov. 19, 1992, Ser. No. 794,398

Int. Cl.[5] **A61K** *37/00, 35/78;* **C12N** *15/00;* **C07K** *7/00*

U.S. Cl. 514—2 **7 Claims**

1. A method for protecting a biomembrane or protein material in vitro from freezing damage which comprises applying a polypeptide selected from the group consisting of polypeptide-1, polypeptide-2, polypeptide-3, polypeptide-4, polypeptide 5 and mixtures thereof which polypeptide is derived from Arabidopsis thaliana, which polypeptide is 6.6, 15, 24, 46 and 160 kilodaltons in mass as measured by SDS-PAGE, respectively, to the material in vitro wherein the polypeptide protects the material from freezing damage.

5,296,463

COMPOSITIONS AND METHODS FOR IMPROVING COLD TOLERANCE IN ANIMALS AND HUMANS

Tze-Fun Lee, and Lawrence C. H. Wang, both of Edmonton, Canada, assignors to University of Alberta, Edmonton, Canada

Division of Ser. No. 700,320, May 9, 1991, Pat. No. 5,192,740, which is a continuation of Ser. No. 287,974, Dec. 20, 1988, abandoned. This application Jan. 27, 1993, Ser. No. 9,995

Int. Cl.[5] **A61K** *31/00, 31/70, 31/715, 31/52*

U.S. Cl. 514—2 **11 Claims**

1. An orally ingestible composition for improving the cold tolerance of animals and humans which consists essentially of:

(a) an adenosine receptor antagonist in an amount effective to improve the cold tolerance of said animals, said antagonist selected from the group of caffeine, theobromine, 8-phenyltheophylline, 8-cyclopentyltheophylline, 8-(4-(2-aminoethyl)amino carboxymethyloxyphenyl)-1,3-dipropylxanthine 8-(amino-4-chlorophenyl)-1,3-dipropylxanthine 8-(p-sulfophenyl)-1,3-dipropylxanthine, alone or mixed with two or more thereof, or in combination with theophylline or aminophylline or both; and

(b) a nutritionally effective and cold tolerance improving amount of a nutritional supplement consisting of a mixture of 47 to 66% by weight of carbohydrate, 15 to 50% by weight of protein and 0 to 25% by weight of fat.

5,296,464

BIOACTIVE AGENTS AND COMPOSITIONS FOR MATERIALS COMPRISING THE BIOACTIVE AGENT AND A METHOD FOR TREATING MATERIALS THEREWITH

Mamoru Tomita; Seiichi Shimamura, both of Yokohama; Yasuo Fukuwatari, Kawasaki; Hiroshi Miyakawa, Kamakura, and Hitoshi Saito, Warabi, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 483,864, Feb. 23, 1990, abandoned. This application Oct. 21, 1991, Ser. No. 780,535

Claims priority, application Japan, Feb. 25, 1989, 1-44273

Int. Cl.[5] **A23L** *3/3463;* **A61K** *37/14;* **C07K** *15/22;* **C12N** *1/38*

U.S. Cl. 514—6 **18 Claims**

1. A method of promoting proliferation of a useful microorganism selected from the group consisting of *Bifidobacterium bifidum, Bifidobacterium infantis, Bifidobacterium breve, Bifidobacterium longum, Bifidobacterium pseudolongum, Bifidobacterium animalis, Lactobacillus acidophilus* and *Lactobacillus casei,* comprising adding a bovine lactoferrin substance selected from the group consisting of Zn-lactoferrin, Cu-lactoferrin and Mn-lactoferrin to a food containing said microorganism, such that said bovine lactoferrin substance is present in said food in a concentration not less than 100 ppm.

5,296,465

ULTRA PURE HEMOGLOBIN SOLUTIONS AND BLOOD-SUBSTITUTES

Carl W. Rausch, Providence, R.I., and Mario Feola, Lubbock, Tex., assignors to Biopure Corporation, Boston, Mass.

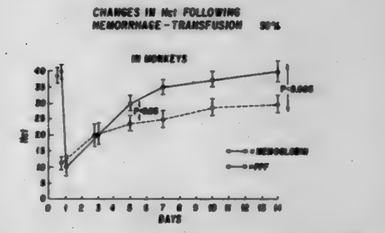
Continuation of Ser. No. 119,121, Nov. 10, 1987, Pat. No. 5,084,558, which is a continuation-in-part of Ser. No. 107,421, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 928,345, Nov. 10, 1986, abandoned. This application Jan. 13, 1992, Ser. No. 820,153

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *37/14;* **C07K** *3/02, 3/22, 15/22*

U.S. Cl. 514—6 **48 Claims**

1. A blood-substitute comprising of from about 5 to about 25 grams of croslinked hemoglobin per deciliter of an aqueous pharmaceutically acceptable carrier medium, said blood-substitute being substantially free of cell stroma, non-hemoglobin proteins and pyrogens and said blood-substitute being sufficiently purified with respect to endotoxin so that the blood-



substitute does not, upon in vivo administration to a mammal in a significant dosage, cause complement activation.

5,296,466

INHIBITION OF NITRIC OXIDE-MEDIATED HYPOTENSION AND SEPTIC SHOCK WITH IRON-CONTAINING HEMOPROTEIN

Robert G. Kilbourn, Houston, Tex.; Joseph De Angelo, Hamtramck, Mich., and Joseph Bonaventura, Beaufort, N.C., assignors to Board of Regents, The University of Texas System, Austin, Tex.; Strohtech, Inc., Detroit, Mich. and Duke University, Durham, N.C.

Filed Feb. 19, 1992, Ser. No. 838,603

Int. Cl.[5] **A61K** *37/02*

U.S. Cl. 514—6 **15 Claims**

1. A method for alleviating deleterious nitric-oxide induced effects in an animal, the method comprising administering a therapeutically effective amount of an iron hemoprotein to said animal.

5,296,467

COMPOSITION COMPRISING AN ANTICOAGULANT

Christiaan Reutelingsperger, JK Maastricht, Netherlands, assignor to Boehringer Ingelheim International GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 552,198, Jul. 13, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 873,601

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1989, 3923500

Int. Cl.[5] **C07K** *13/00;* **A61K** *37/02*

U.S. Cl. 514—12 **18 Claims**

1. A pharmaceutical composition consisting essentially of a vascular anticoagulant annexine, Ca^{2+}, Zn^{2+} and a pharmaceutically acceptable carrier.

5,296,468

GNRH ANALOGS

Carl A. Hoeger, San Marcos; Jean E. F. Rivier, La Jolla; Paula G. Theobald, Oceanside; John S. Porter, Leucadia; Catherine L. Rivier, and Wylie W. Vale, Jr., both of La Jolla, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 669,695, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,239, Jun. 27, 1990, Pat. No. 5,169,932, which is a continuation-in-part of Ser. No. 428,827, Oct. 30, 1989, abandoned. This application Jan. 21, 1993, Ser. No. 6,729

Int. Cl.[5] **A61K** *37/38;* **C07K** *7/20, 7/06*

U.S. Cl. 514—15 **25 Claims**

4. A method for inhibiting the secretion of gonadotropins in mammals comprising administering to a mammal an effective amount of a GnRH antagonist peptide or a nontoxic salt thereof as defined in claim 1.

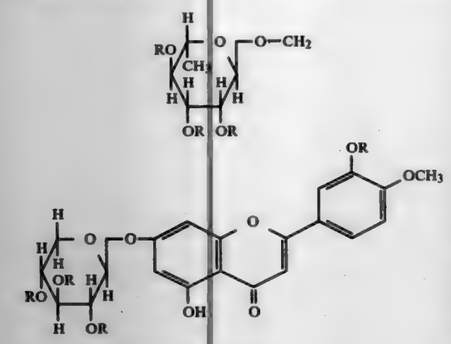
5,296,469

NEW SULFATED DIOSMIN DERIVATIVE

Aurelio Orjales-Venero, Neguri, and Ramon Mosquera-Pestana, Las Arenas, both of Spain, assignors to Fabrica Espanola de Productos Quimicos y Farmaceuticos, S.A., Leioa-Lamiaco, Spain

Filed Feb. 25, 1993, Ser. No. 22,571
Claims priority, application Spain, Feb. 25, 1992, 9200414
Int. Cl.[5] A61K *31/70*, C07H *11/00, 15/00, 15/24*
U.S. Cl. 514—27 7 Claims

1. Diosmin heptakis hydrogensulfate aluminum complex with molecular formula



in which R represents $SO_3Al_2(OH)_5$.

5,296,470

GRAFT POLYSACCHARIDES AND THEIR USE AS SEQUESTERING AGENTS

Sophie Vaslin, Bry/sur/Marne, and Christine Vidil, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jun. 26, 1991, Ser. No. 721,787
Claims priority, application France, Jul. 2, 1990, 90 08320
Int. Cl.[5] A01N *43/04*; A61K *31/715*; C08F *110/06, 1/00*
U.S. Cl. 514—54 13 Claims

1. Graft polysaccharides comprising:

a polymer backbone consisting essentially of a polydextrose having an average-weight molecular mass of less than 10,000,

and 20 to 70% by weight grafts derived from at least one water-soluble ethylenically unsaturated monomer, wherein said grafts are grafted onto said polymer backbone and said weight percent is based on the total weight of said polymer backbone.

5,296,471

METHOD FOR CONTROLLING O-DESULFATION OF HEPARIN AND COMPOSITIONS PRODUCED THEREBY

Kevin R. Holme; Patrick N. Shaklee, both of Alameda, and David J. Tyrrell, Redwood Shores, all of Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Filed Dec. 22, 1992, Ser. No. 994,804
Int. Cl.[5] A61K *31/725*; C08R *37/10*
U.S. Cl. 514—56 8 Claims

1. A composition comprising substantially unfragmented 2-O 3-O desulfated mucosal heparin, or 2-O, 3-O desulfated mucosal heparin fragments, wherein said substantially unfragmented 2-O, 3-O desulfated heparin, or 2-O, 3-O desulfated heparin fragments are at least about 96.7% to about 99% and 75% desulfated at the 2-O and 3-O positions, respectfully, wherein said fragments have an average molecular weight range of about 2–6.5 kd.

5,296,472

METHODS FOR DELIPIDATION OF SKIN AND CERUMEN REMOVAL

Robert A. Sanchez, Carlsbad, and Sheldon S. Hendler, La Jolla, both of Calif., assignors to Vyrex Corporation, La Jolla, Calif.

Continuation-in-part of Ser. No. 805,724, Dec. 5, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 40,052
Int. Cl.[5] A61K *31/70, 31/715*
U.S. Cl. 514—58 10 Claims

1. A method of removing cerumen from the ear canal comprising the steps of:

(1) instilling a composition containing as an active agent a cerumen permeating and complexing effective amount of substantially uncomplexed cyclodextrins;

(2) allowing said composition containing cyclodextrin to remain in the ear canal for sufficient time for said composition to permeate cerumen, and

(3) removing said composition containing cyclodextrin with complexed cerumen from the ear canal.

5,296,473

PROCESS FOR PREPARING A POWDER HAVING A HIGH CONCENTRATION OF LACTOSUCROSE AND USE OF SAID POWDER

Kozo Hara, Kanagawa; Kohki Fujita, Osaka; Masayuki Yamashita; Yasuhiko Tsunetomi, both of Hyogo; Shuzo Sakai, Okayama, and Toshio Miyake, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 665,828, Mar. 7, 1991, Pat. No. 5,130,239. This application Mar. 13, 1992, Ser. No. 850,609
Claims priority, application Japan, Mar. 8, 1990, 2-57331
Int. Cl.[5] A61K *31/70, 31/715*; C12P *19/04*
U.S. Cl. 514—61 7 Claims

1. A free-flowing powder containing a high concentration of lactosucrose having a moisture content lower than about 3% and obtained by the process of:

(a) allowing a saccharide-transferring enzyme to act on an aqueous solution containing suorose and lactose, wherein the ratio of said sucrose and lactose is in the range of about 1:10 to 10:1;

(b) removing concomitant saccharides from the resultant saccharide solution containing lactosucrose to obtain a solution having a high concentration of lactosucrose with a lactosucrose content of 45 w/w%, d.s.b., or higher based on sugar composition; and

(c) spray-drying the solution having a high concentration of lactosucrose into a free-flowing powder having a moisture content of less than about 3%.

5,296,474

Patent Not Issued For This Number

5,296,475

PHARMACEUTICAL COMPOSITIONS COMPRISING METHANEDIPHOSPHONIC ACID DERIVATIVES AND MACROCYCLIC POLYETHERS

Gérard Flesch, Mulhouse, and Jean-Marie Lehn, Strasbourg, both of France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,206
Claims priority, application Switzerland, Dec. 19, 1991, 3779/91; Jan. 27, 1992, 215/92
Int. Cl.[5] A61K *31/66*
U.S. Cl. 514—108 15 Claims

1. A pharmaceutical composition comprising

(1) at least one pharmaceutically useful methanediphosphonic acid derivative of formula I



(I)

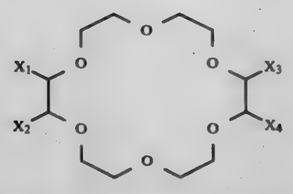
wherein R_1 is hydrogen or hydroxy; R_2 is —A—R_3, wherein A is lower alkylene; and R_3 is

hydrogen;

unsubstituted amino or amino which is mono- or disubstituted by lower alkyl,

or a pharmaceutically acceptable salt thereof;

(2) at least one macrocyclic polyether of formula II



(II)

wherein X_1–X_4 are each independently of the other carboxy, carbamoyl or N-mono- or N,N-disubstituted carbamoyl, or a pharmaceutically acceptable salt thereof; and optionally

(3) pharmaceutically acceptable adjuvants.

5,296,476

SKIN CARE COMPOSITIONS

Esther G. Henderson, 11641 Harrells Ferry Rd., Apt. D, Baton Rouge, La. 70816

Continuation-in-part of Ser. No. 404,660, Sep. 8, 1989, abandoned. This application Apr. 30, 1991, Ser. No. 693,037
Int. Cl.[5] A61K *31/60, 31/61*
U.S. Cl. 514—163 5 Claims

1. A method for removing soft corns in a human having a skin affected thereby comprising administering topically to the affected skin a therapeutically effective amount of micronized calcium citrate and salicylic acid.

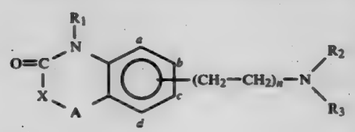
5,296,477

AMINOALKYL BENZOXAZINE AND BENZTHIAZINE COMPOUNDS HAVING A HIGH 5-HT_{1A} AFFINITY

Thierry Taverne, Saint Martin les Boulogne; Isabelle Lesieur, Gondecourt; Patrick Depreux, Armentieres; Daniel H. Caignard, Paris; Béatrice Guardiola, Neuilly sur Seine Paris; Gérard Adam, Le Mesnil le Roi, and Pierre Renard, Versailles, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 945,492, Sep. 16, 1992, which is a division of Ser. No. 765,959, Sep. 26, 1991, Pat. No. 5,196,434. This application Dec. 1, 1992, Ser. No. 983,676
Claims priority, application France, Sep. 26, 1990, 90 11866
Int. Cl.[5] A61K *31/535, 31/54*; C07D *265/36, 379/16*
U.S. Cl. 514—224.2 16 Claims

1. A compound selected from those of formula (I):



(I)

in which:

R_1 represents hydrogen or lower alkyl,

n represents 1 or 2,

A represents oxygen or sulfur,

X represents a CH_2 group,

R_2 represents hydrogen or lower alkyl or lower acyl and R_3 represents $(CH_2)_pR_4$, with p being an integer from 1 and 6, inclusive, and R_4 represents:

a nitrile group, in which case R_3 represents $(CH_2)_{p-1}R_4$, or

halogen or amino optionally substituted with:

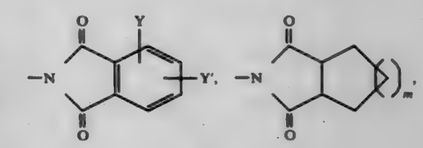
(lower alkyl) sulfonyl,

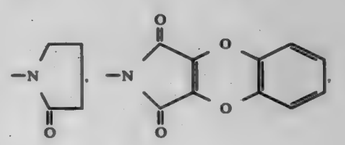
phenylsulfonyl optionally substituted on the phenyl ring with one or more lower alkyl, lower alkoxy, hydroxyl, or trifluoromethyl groups or a halogen atom,

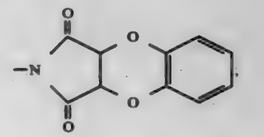
one or two (C_1–C_6) acyl groups optionally substituted with a lower alkyl, lower alkoxy, or hydroxyl group, a halogen atom, or a phenyl, thienyl, benzothienyl, indolyl, furyl, or benzofuryl group, the phenyl, thienyl, benzo-thienyl, indolyl, furyl and benzofuryl groups themselves optionally being substituted with one or more lower alkyl, lower alkoxy, or hydroxyl groups or a halogen atom,

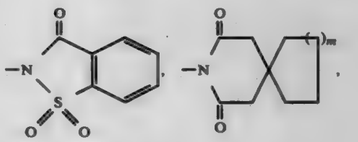
one or two linear or branched (C_1–C_6) alkyl groups,

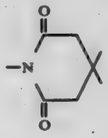
or R_4 represents any one of the following groups:











in which:

Y and Y', which may be identical or different, represent hydrogen, halogen or lower alkyl, lower alkoxy, or hydroxyl group,

m is 1 or 2,

its enantiomers, diastereoisomers, and epimers, and its addition salts with a pharmaceutically-acceptable acid or a pharmaceutically-acceptable base when R_1=H.

16. A method for treating a mammal afflicted with a condition requiring for its treatment an antidepressive or anxiolytic

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amount of a 5-HT_{1A} receptor agonist comprising the step of administering to the said mammal an amount of a compound of claim 1 which is effective for alleviation of said conditions.

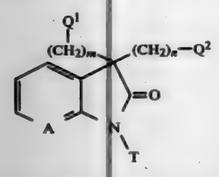
5,296,478
1-SUBSTITUTED OXINDOLES AS COGNITION ENHANCERS

Christopher A. Teleha, New Castle, Del., assignor to The DuPont Merck Pharmaceutical Co., Wilmington, Del.

Filed Oct. 7, 1992, Ser. No. 957,152
Int. Cl.[5] A61K *31/445*, *31/535*; C07D *401/04*, *413/04*
U.S. Cl. 514—235.2 **8 Claims**

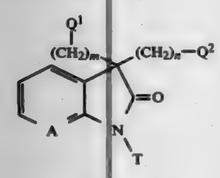
1. A compound of formula:

I



and pharmaceutically acceptable salts thereof, wherein:
Q^1, Q^2 are each independently selected from the group:
(a) 4, 3, or 2-pyridyl,
(b) 2, 4, or 5-pyrimidyl,
(c) 2-pyrazinyl,
(d) 2-fluoro-4-pyridyl,
(f) 3- or 4-pyridazinyl,
(g) 2- or 3-tetrahydrofuranyl,
A is CH;
T is selected from the group:

I



m and n are independently 0–1; and
s is 0–3.

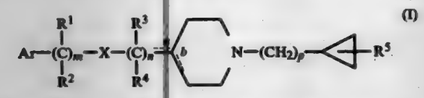
5,296,479
TREATMENT OF PSYCHOSIS USING 1-CYCLOALKYLPIPERIDINES

Gary A. Cain, New Castle; Paul J. Gilligan, Claymont, and Sang W. Tam, Hockessin, all of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 570,195, Aug. 20, 1990, Pat. No. 5,109,002, which is a continuation-in-part of Ser. No. 404,813, Sep. 8, 1989, abandoned. This application Feb. 6, 1992, Ser. No. 831,887
Int. Cl.[5] A61K *31/445*
U.S. Cl. 514—256 **25 Claims**

1. A method of treating physiological or drug induced psychosis or dyskinesia in a mammal comprising administering to the mammal an antipsychotic or antidyskinetic effective amount of a compound of having the formula:

(I)



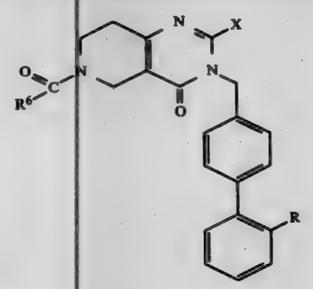
or a pharmaceutically acceptable salt thereof, wherein:
m is 0 to 3;
n is 0 to 3;
provided m and n are not both O;
p is 0 to 3;
X is O, S, SO, SO_2, NR^6 or CO;
R^1R^3, and R^7 independently are H, alkyl of 1 to 5 carbon atoms, halogen, $NR^{10}R^{11}$, OH, CO_2H, carboalkoxy of 2 to 6 carbon atoms, CN, Ar^1, alkoxy of 1 to 5 carbon atoms or alkylthio of 1 to 5 carbon atoms;
R^2, R^4 and R^8 independently are H, alkyl of 1 to 5 carbon atoms, carboalkoxy of 2 to 6 carbon atoms, CN, alkoxy of 1 to 5 carbon atoms or Ar^1;
provided that R^1, R^2, R^3 and R^4 are not alkoxy of 1 to 5 carbon atoms, alkylthio of 1 to 5 carbon atoms, $NR^{10}R^{11}$ or OH when X is O, S, SO, SO_2 or NR^6;
R^5 is H, alkyl, halogen, OH or alkenyl;
R^6 is H, alkyl of 1 to 5 carbon atoms or Ar^1;
Ar and Ar^1 independently are naphthyl, pyridyl, pyrimidyl, indolyl, quinolinyl, isoquinolinyl, or phenyl optionally substituted with alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, haloalkyl of 1 to 3 carbon atoms and 1 to 7 halogen atoms, SH, $S(O)_t$alkyl of 1 to 3 carbon atoms, where t is 1, 2 or 3, dialkylamino of 2 to 6 carbon atoms, halogen, OH, alkylamino of 1 to 3 carbon atoms, NH_2, CN, NO_2, SO_3H, tetrazole, CO_2H, carboalkoxy of 2 to 6 carbon atoms, $CONH_2$, SO_2NH_2, COR^9, $CONR^{12}R^{13}$, $SO_2NR^{12}R^{13}$, Ar^2, OAr^2 or SAr^2;
Ar^2 is naphthyl or phenyl optionally substituted with alkyl of 1 to 3 carbon atoms, haloalkyl of 1 to 3 carbon atoms and 1 to 7 halogen atoms, alkoxy of 1 to 3 carbon atoms, halogen or alkylthio of 1 to 3 carbon atoms;
R^9, R^{10}, R^{11}, R^{12} and R^{13} independently are H, alkyl of 1 to 5 carbon atoms or phenyl or R^{10} and R^{11} taken together are an alkylene chain of 3 to 6 carbon atoms or R^{12} and R^{13} taken together are an alkylene chain of 3 to 6 carbon atoms; and
a or b is a double bond or a single bond, provided that both are not double bonds.

5,296,480
ANGIOTENSIN II RECEPTOR BLOCKING 2,3,6-SUBSTITUTED 5,6,7,8-TETRA-HYDRO-PYRIDO[4,3]PYRIMIDIN-4(3H)-ONES

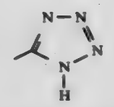
Howard Newman, Monsey, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,938
Int. Cl.[5] A61K *31/505*; C07D *471/04*; C07F *7/10*
U.S. Cl. 514—258 **12 Claims**

1. A pyrimidinone compound having the formula:



wherein:
R is

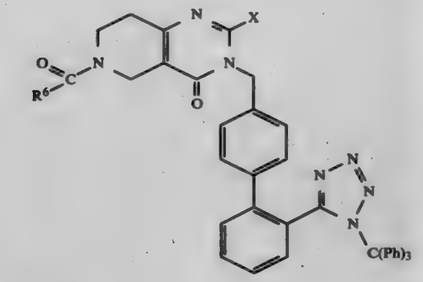


X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is



or pharmaceutically acceptable salts of these compounds.

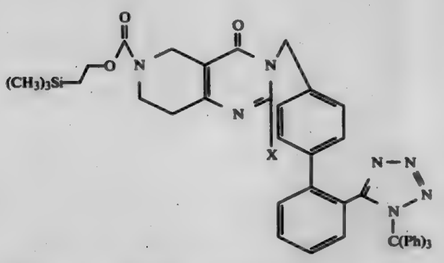
4. A pyrimidinone compound having the formula:



wherein
X is a straight or branched alkyl of 3 to 5 carbon atoms;
R^6 is



6. A pyrimidinone compound having the formula:



wherein: X is a straight or branched alkyl of 3 to 5 carbon atoms.

5,296,481
TREATMENT PROCESS FOR PROMOTING WEIGHT LOSS EMPLOYING A SUBSTITUTED Δ5-ANDROSTENE

Bruce E. Partridge, Lincoln, Nebr., and Henry A. Lardy, Madison, Wis., assignors to Humanetics Corporation, Chaska, Minn.

Continuation of Ser. No. 575,156, Aug. 29, 1990, abandoned. This application Apr. 10, 1992, Ser. No. 867,288
Int. Cl.[5] A61K *31/56*; C07J *1/00*
U.S. Cl. 514—178 **17 Claims**

1. A method of preventatively treating weight gain which comprises administering to a subject in need of such treatment an effective amount of a steroid selected from the group consisting
Δ5-Androstene 3β,7α,17β-triol,
and
Δ5-Androstene 3β,17β-diol-7-one,
and derivatives thereof wherein at least one of the hydroxyl groups is esterified with an acid selected from the group consisting of (i) a C_2 to C_{22} aliphatic acid, (ii) a C_{7-12} aromatic acid (iii) a C_3 or greater dicarboxylic acid in which only one of the carboxyl groups is esterified to the hydroxyl group(s) on the steroid; and (iv) an inorganic acid.

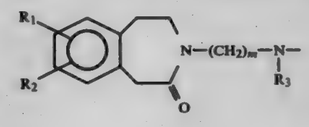
5,296,482
(BENZOCYCLOALKYL) ALKYLAMINES

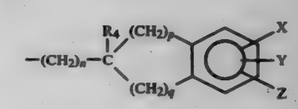
Jean-Louis Peglion, Le Vesinet; Joel Vian, Chaville; Jean-Paul Vilaine, Chatenay Malabry; Nicole Villeneuve, Rueil Malmaison; Philip Janiak, Clichy, and Jean-Pierre Bidouard, Chilly Mazarin, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Sep. 25, 1992, Ser. No. 950,957
Claims priority, application France, Sep. 27, 1991, 91 11894
Int. Cl.[5] A61K *31/55*; C07D *223/16*
U.S. Cl. 514—213 **9 Claims**

1. A compound selected from those of formula I

(I)





in which
m represents 2 to 5 inclusive,
n represents 1 to 6 inclusive,
p and q, which are the same or different, each represents 0, 1 or 2,
with the proviso that the sum of p and 2 is equal to 1 or 2,
R_1 and R_2, which are the same or different, each is selected from:
hydrogen,
halogen,
hydroxy,
lower alkoxy,
phenyl-lower alkoxy,
and substituted phenyl-lower alkoxy,
or R_1 and R_2, when they are carried by 2 adjacent carbon atoms, together form —O—$(CH_2)_r$—O— in which r represents 1 or 2,
R_3 is selected from:
hydrogen,
lower alkyl,
lower alkenyl,
cycloalkyl,
cycloalkyl-lower alkyl,

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phenyl-lower alkyl,
substituted phenyl-lower alkyl,
—CO—R_5 or —CO—O—R_5
R_5 being selected from: hydrogen, lower alkyl, lower alkenyl, lower alkynyl, phenyl, substituted phenyl, phenyl-lower alkyl, substituted phenyl-lower alkyl, cyclo alkyl, and cycloalkyl-lower alkyl,
and —CO—NR_6R_7 wherein R_6 and R_7 are the same or different and each has the same meanings as R_5 as defined above,
or R_6 and R_7, with the nitrogen atom carrying them, together a saturated heterocyclic ring having 4 to 7 ring members, inclusive, all members except the nitrogen being carbon
R_4 represents hydrogen or lower alkyl;
X, Y and Z, which are the same or different, are each selected from:
hydrogen,
halogen,
hydroxy,
lower alkoxy,
and substituted phenyl-lower alkoxy,
or X and Y, or Y and Z, when they are carried by 2 adjacent carbon atoms, together form —O—$(CH_2)_r$—O— (in which r is 1 or 2), —O—$(CH_2)2$— or —O—CH=CH—;
the term "substituted" describing the groups "phenyl" phenyl-lower alkyl" and "phenyl-lower alkoxy" meaning that those groups may be substituted in the phenyl nucleus by one or more substituents selected from halogen, hydroxy, trifluoromethyl, lower alkyl, and lower alkoxy,
the terms "lower alkyl" and "lower alkoxy" meaning saturated linear or branched groups containing 1 to 6 carbon atoms inclusive,
the terms "lower alkenyl" and "lower alkynyl" meaning unsaturated linear or branched groups
containing 2 to 6 carbon atoms inclusive,
the term "cycloalkyl" meaning a saturated hydrocarbon ring containing 3 to 8 inclusive, carbon atom in the ring,
its possible optical isomers, as well as its addition salts with a pharmaceutically-acceptable acid.

5,296,483

BRAIN-SPECIFIC ANALOGUES OF CENTRALLY ACTING AMINES

Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

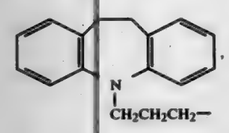
Division of Ser. No. 505,910, Apr. 4, 1990, Pat. No. 5,082,853, which is a division of Ser. No. 208,872, Jun. 20, 1988, Pat. No. 4,933,438, which is a division of Ser. No. 785,903, Aug. 29, 1985, Pat. No. 4,771,059, filed as PCT/US85/00236, Feb. 15, 1985, which is a continuation-in-part of Ser. No. 584,800, Feb. 29, 1984, abandoned. This application Sep. 27, 1991, Ser. No. 766,502

Int. Cl.[5] **A61K** *31/55;* **C07D** *401/06*

U.S. Cl. 514—217 **16 Claims**

1. A compound of the formula

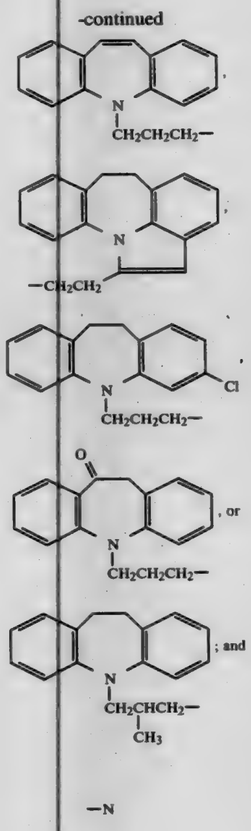
(I)



or a non-toxic pharmaceutically acceptable salt thereof, wherein D is a residue of the formula

wherein the dotted line indicates the presence of a double bond in either the 4- or 5-position of the dihydropyridine ring; n is zero, one or two; and each R is independently selected from the group consisting of halo, C_1–C_7 alkyl, C_1–C_7 alkoxy, C_2–C_8 alkoxycarbonyl, C_2–C_8 alkanoyloxy, C_1–C_7 haloalkyl, C_1–C_7 alkylthio, C_1–C_7 alkylsulfinyl, C_1–C_7 alkylsulfonyl, —CH=NOR‴ wherein R‴ is H or C_1–C_7 alkyl, and —CONR′R″, wherein R′ and R″, which can be the same or different, are each H or C_1–C_7 alkyl.

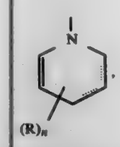
-continued



—N

is a radical of the formula

(a)



5,296,484

QUINOLINE DERIVATIVES

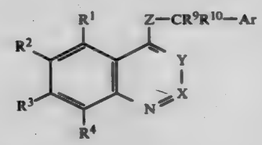
Michael J. Coghlan, Indianapolis; Barry A. Dreikorn, Lawrence; Glen P. Jourdan, Morristown, and Robert G. Suhr, Greenfield, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 150,103, Jan. 29, 1988, abandoned. This application Mar. 20, 1989, Ser. No. 325,734

Int. Cl.[5] **C07D** *215/12, 215/16, 401/12;* **A01N** *43/42*

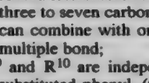
U.S. Cl. 514—311 **24 Claims**

1. A fungicidal method which comprises applying to the locus of a plant pathogen a disease inhibiting and phytologically acceptable amount of a compound of formula (1)

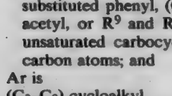


(1)

wherein
R^1 to R^4 are independently:
H, halo, $(C_1$–$C_4)$ alkyl, branched $(C_3$–$C_4)$ alkyl, halo $(C_1$–$C_4)$ alkyl, $(C_1$–$C_4)$ alkoxy, halo $(C_1$–$C_4)$ alkoxy, NO_2, or NH_2, at least two of R^1 to R^4 being H,
both X and Y are CR^5,
R^5 is H, CH_3, or Cl;
Z is 0, NR^6, or CR^7R^8;
R^6 is H, $(C_1$–$C_4)$ alkyl, or $(C_2$–$C_4)$ acyl,
R^7 and R^9 are independently H, $(C_1$–$C_4)$ alkyl, branched $(C_3$–$C_4)$ alkyl, or $(C_1$–$C_4)$ acyl, or R^7 and R^8 combine to form a saturated or unsatured carbocyclic ring containing three to seven carbon atoms, or one or both of R^7 and R^8 can combine with one or both of R^9 and R^{10} to form a multiple bond;
R^9 and R^{10} are independently H, $(C_1$–$C_3)$ alkyl, phenyl, substituted phenyl, $(C_3$–$C_8)$ cycloalkyl, hydroy, halo, or acetyl, or R^9 and R^{10} combine to form a saturated or unsaturated carbocyclic ring containing three to seven carbon atoms; and
Ar is
$(C_3$–$C_8)$ cycloalkyl,
substituted $(C_3$–$C_8)$ cycloalkyl,
$(C_3$–$C_8)$ cycloalkenyl,
naphthyl,
dihydronaphthyl,
tetrahydronaphthyl,
decahydronaphthyl,
1,3-benzodioxolyl,
fluorenyl,
pyridyl
substituted pyridyl,
2,3-dihydro-1,4-benzodioin-2-yl,
furyl optionally substituted with halo, CF_3, CN, NO_2, $(C_1$–$C_4)$ alkyl, branched $(C_3$–$C_4)$ alkyl, phenyl, or $(C_1$–$C_4)$ alkoxy,
thienyl optionally substituted with halo, CF_3, CN, NO_2, $(C_1$–$C_4)$ alkyl, branched $(C_3$–$C_4)$ alkyl, phenyl, or $(C_1$–$C_4)$ alkoxy,
a group of the formula (2) or (2a)

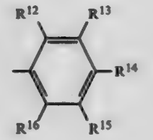


(2)



(2a)

wherein R^{11} is H, halo, CF_3, CN, NO_2, $(C_1$–$C_4)$ alkyl, branched $(C_3$–$C_4)$ alkyl, phenyl, or $(C_1$–$C_4)$ alkoxy, M is N or CH and G is O, NR^{20}, or CH_2, provided that M is N or G is NR^{20}, where R^{20} is H, $(C_1$–$C_4)$ alkyl, $(C_1$–$C_4)$ acyl, phenylsulfonyl, or substituted phenylsulfonyl;
a group of the formula (3)



(3)

wherein
R^{12} to R^{16} are independently H, halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, $(C_1$–$C_7)$ alkoxy, halo $(C_1$–$C_7)$ alkoxy, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio, or substituted phenylthio, NO_2, NH_2, acetoxy, OH, CN, or $SiR^{17}R^{18}R^{19}$, or $OSiR^{17}R^{18}R^{19}$, where R^{17}, R^{18}, or R^{19} are independently C_1–C_4 alkyl, C_1–C_4 branched alkyl, phenyl, or substituted phenyl, provided that unless each of R^{12} to R^{16} is F, CH_3, or H, then at least two of R^{12} to R^{16} are H;
or an acid addition salt of a compound of formula (1), or an N-oxide of a compound of formula (1);
wherein, as used above, the term "substituted phenyl" refers to phenyl substituted with up to three groups independently selected from halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, hydroxy $(C_1$–$C_7)$ alkyl, $(C_1$–$C_7)$ alkoxy, halo $(C_1$–$C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1$–$C_4)$ alkanoyloxy, or benzoyloxy;
"substituted phenoxy" refers to phenoxy substituted with up to three groups independently selected from halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, hydroxy $(C_1$–$C^7)$ alkyl, $(C_1$–$C_7)$ alkoxy, halo $(C_1$–$C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1$–$C_4)$ alkanoyloxy, or benzoyloxy;
"substituted phenylthio" refers to phenylthio substituted with up to three groups independently selected from halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, hydroxy $(C_1$–$C_7)$ alkyl, $(C_1$–$C_7)$ halo $(C_1$–$C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1$–$C_4)$ alkanoyloxy, or benzoyloxy;
"substituted phenylsulfonyl" refers to phenylsulfonyl substituted with up to three groups independently selected from halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, hydroy $(C_1$–$C_7)$ alkyl, $(C_1$–$C_7)$ alkoxy, halo $(C_1$–$C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1$–$C_4)$ alkanoyloxy, or benzoyloxy;
"substituted $(C_3$–$C_8)$ cycloalkyl" refers to a $(C_3$–$C_8)$ cycloalkyl group substituted with up to three groups independently selected from halo, $(C_1$–$C_{10})$ alkyl, branched $(C_3$–$C_6)$ alkyl, halo $(C_1$–$C_7)$ alkyl, hydroxy $(C_1$–$C_7)$ alkyl, $(C_1$–$C_7)$ alkoxy, halo $(C_1$–$C_7)$ alkoxy, phenoxy, phenyl, NO_2, OH, CN, $(C_1$–$C_4)$ alkanoyloxy, or benzoyloxy; and
"substituted pyridyl" refers to a pyridyl group substituted with halo, halomethyl, CN, NO_2, $(C_1$–$C_4)$ alkyl, $(C_3$–$C_4)$ branched alkyl, phenyl, $(C_1$–$C_7)$ alkoxy, or halo $(C_1$–$C_7)$ alkoxy;
provided that
Ar is not 5-nitro-2-furyl.

VOL 1160 ISS 4 MR 22 1994 UMI

5,296,485

SUBSTITUTED N-PHENYLPIPERIDINES AND DRUGS THEREFROM

Wilfried Lubisch, Mannheim; Sabine Schult, Heidelberg; Berthold Behl, Ludwigshafen, and Michael Kirchengast, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

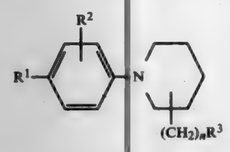
Filed Mar. 11, 1992, Ser. No. 849,250

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1991, 4117904

Int. Cl.[5] A61K *31/445*; C07D *401/04, 217/00*

U.S. Cl. 514—316 **3 Claims**

1. A substituted N-phenylpiperidine of the formula I



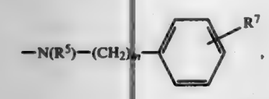
I

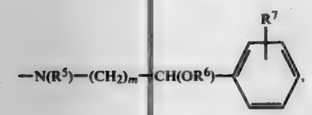
where

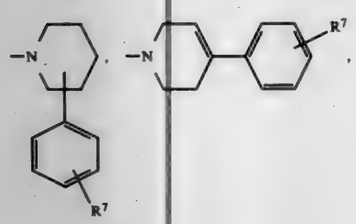
R^1 is hydrogen, nitro, cyano, halogen, C_1–C_4-alkyl, trifluoromethyl, trifluoromethoxy, hydroxyl, hydroxymethyl, hydroxycarbonyl, formyl, formylamino, amino, aminocarbonyl, 5-tetrazinyl, R^4—O—, R^4—O—CH_2—, R^4—O—CO—, R^4—CO—, R^4—NH—CO, R^4—CO—NH—, R^4—SO_2—NH—;

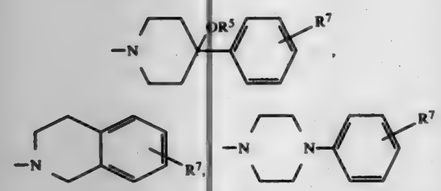
R^2 is hydrogen, nitro, halogen, C_1–C_4-alkyl or R^4—O—;

R^3 is one of the following:









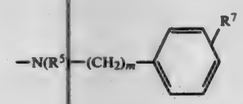
R^4 is C_1–C_4-alkyl or phenyl which may carry one of the R^2 radicals;

$R^5$and R^6 are each hydrogen, C_1–C_4-alkyl or phenyl which can carry one of the R^2 radicals;

R^7 is one of the R^1 radicals

n is 0 or 1;

m is 1 or 2; with the proviso that R^3 can be



only when n is 1, and the optical isomers when there is optical isomerism, and the physiologically tolerated acid addition salts.

5,296,486

LEUKOTRIENE BIOSYNTHESIS INHIBITORS

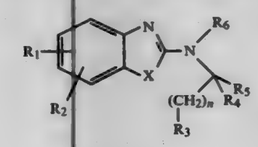
Edward S. Lazer, Trumbull; Julian Adams, Ridgefield; Clara K. Miao, Trumbull, all of Conn., and Peter Farina, North Salem, N.Y., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation-in-part of Ser. No. 704,591, May 23, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 937,315

Int. Cl.[5] C07D *413/12, 417/12*; A61K *31/44*

U.S. Cl. 514—333 **10 Claims**

1. A compound having the following formula:



wherein

X is O or S

R_1 and R_2 are each, independent of one another, hydrogen; C_1–C_6 alkyl; halo ; CF_3; nitrile; C_1–C_6 alkoxy; —CO_2R_7 wherein R_7 is hydrogen or C_1–C_6 alkyl; NO_2; —C-(O)NR_8R_9 wherein R_8 and R_9 are hydrogen, C_1–C_3 allyl or methoxy; —$NR_{10}R_{11}$ wherein R_{10} and R_{11} are hydrogen or C_1–C_6 alkyl; —$C(O)R_{12}$ wherein R_{12} is C_1–C_6 alkyl; SO_2R_{12}, —$NHC(O)R_{12}$; —$NHSO_2R_{12}$; or —$SO_2NR_{13}R_{14}$ wherein R_{13} and R_{14} are hydrogen or C_1–C_6 alkyl;

R_3 is cyclohexyl or an optionally substituted phenyl ring wherein the substituents are selected from halo, CF_3, C_1–C_4 alkyl or C_1–C_4 alkoxy; —SO_2R_{12}; —$NHC(O)R_{12}$; —$NHSO_2R_{12}$; $SO_2NR_{13}R_{14}$; or NO_2; or R_3 may be a 2-, 3- or 4-pyridine ring; or R_3 may be a dialkylamine (C_1–C_4); or may be an alkyl ether, (C_1–C_4)

R_4 is 2-, 3-, or 4-pyridyl.

R_5 and R_6 are each, independent of one another, hydrogen or methyl and

n is an integer of b 0, 1 or 2, in racemic form, or the pure or substantially pure enantiomers thereof.

5,296,487

QUINAZOLINE DERIVATIVES AND THEIR PREPARATION

Norihiko Shimazaki; Hitoshi Yamazaki; Takumi Yatabe, all of Tsukuba; Hirokazu Tanaka, Tsuchiura; Yoshikuni Itoh, Tsukuba, and Masashi Hashimoto, Tokyo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 627,417, Dec. 14, 1990, Pat. No. 5,264,438. This application Sep. 6, 1991, Ser. No. 755,747

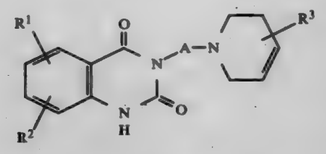
Claims priority, application United Kingdom, Jan. 2, 1990, 9000014; Nov. 19, 1990, 9025065

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/505*; C07D *239/74*

U.S. Cl. 514—259 **13 Claims**

1. A compound of the formula:



in which R^1 and R^2 are each hydrogen, halogen, nitro, ureido, N'-(lower)alkylureido, lower alkylsulfonylamino, amino, protected amino, hydroxyamino, lower alkyl, hydroxy, protected hydroxy, sulfamoyl, carboxy, protected carboxy, mercapto, lower alkylthio, hydroxy(lower)alkyl or protected hydroxy(lower)alkyl, optionally substituted heterocyclic-carbonyl or optionally substituted heterocyclic(lower)alkyl, wherein said heterocyclic group is selected from the group consisting of unsaturated 3 to 8-membered heteromonocyclic group containing 1 to 4 nitrogen atom(s), saturated 3 to 8-membered heteromonocyclic group containing 1 to 4 nitrogen atom(s), unsaturated 3 to 8-membered heteromonocyclic group containing 1 to 2 oxygen atom(s) and 1 to 3 nitrogen atom(s), and unsaturated condensed 7 to 12-membered heterocyclic group containing 1 to 2 oxygen atom(s) and 1 to 3 nitrogen atom(s), and wherein said heterocyclic group may be optionally substituted by at least one lower alkyl,

R^3 is aryl which may have suitable substituent(s), and

A is lower alkylene,

or pharmaceutically acceptable salts thereof.

5,296,488

METHOD OF USING 2,3-DIHYDRO-1-(PYRIDINYLAMINO)-INDOLES AS ANTICONVULSANTS AND FOR THE ENHANCEMENT OF MEMORY

Richard C. Effland, Bridgewater; David G. Wettlaufer, Phillipsburg, and Joseph T. Klein, Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

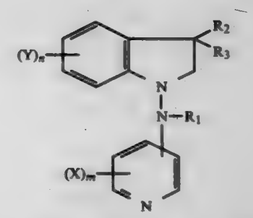
Division of Ser. No. 705,220, May 24, 1991, Pat. No. 5,179,099, which is a continuation-in-part of Ser. No. 388,415, Aug. 2, 1989, abandoned. This application Nov. 5, 1992, Ser. No. 972,273

The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—278 **2 Claims**

1. An anticonvulsant pharmaceutical composition which comprises an anticonvulsive effective amount of a compound of the formula



wherein R_1 is hydrogen, loweralkyl, aryl, arylloweralkyl, loweralkenyl or loweralkynyl; the term "aryl" means phenyl, unsubstituted or substituted with halogen, loweralkyl, loweralkoxy, CF, NO_2 or OH; R_2 and R_3 together form a spiro-fused cycloalkane ring of 4 to 6 carbons; X and Y are independently hydrogen, halogen, hydroxy, loweralkoxy, nitro, amino or trifluoromethyl; m and n are independently integers of 1 to 3, or a pharmaceutically acceptable acid addition salt thereof, or, where applicable, an optical, geometrical or stereoisomer or racemic mixture thereof and a suitable carrier therefor.

5,296,489

IMMUNOSUPPRESSIVE MACROCYCLIC COMPOUNDS

David K. Donald, Ashby-de-la-Zouch; Mark Furber, Derby, and Martin E. Cooper, Leicestershire, all of England, assignors to FISONS, Ipswich, England

PCT No. PCT/GB91/00393, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13889, PCT Pub. Date Sep. 19, 1991

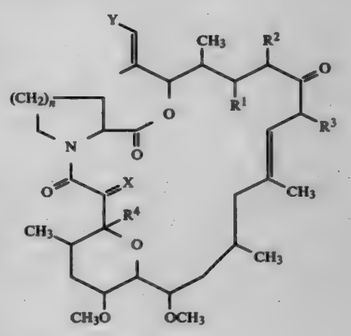
PCT Filed Mar. 13, 1991, Ser. No. 924,067

Claims priority, application United Kingdom, Mar. 13, 1990, 90/05672; Apr. 17, 1990, 90/08507; Apr. 17, 1990, 90/08556; Apr. 27, 1990, 90/09480; Aug. 9, 1990, 90/17447; Oct. 25, 1990, 90/23242

Int. Cl.[5] C07D *498/18*; A61K *31/395*

U.S. Cl. 514—291 **9 Claims**

1. A compound of formula I,



I

wherein

R^1 represents H, OH or $C_{1\text{-}10}$ alkoxy;

R^2 represents H;

in addition, R^1 and R^2 may together represent a second bond between the carbon atoms to which they are attached;

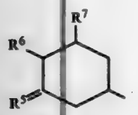
R^3 represents methyl, ethyl, propyl or allyl;

R^4 represents H, OH, $C_{1\text{-}10}$ alkyl, $C_{1\text{-}10}$ alkoxy, halogen, amino, S-$C_{1\text{-}10}$ alkyl, NHCHO or NHCO-$C_{1\text{-}10}$ alkyl;

n represents 1 or 2;

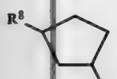
X represents O, (H,OH), (H,H) or =NH; and

Y represents a cyclic group of formula II,



II

in which R^5 represents (H,H), (H,OH), (H, methoxy) or O;
R^6 represents H, (R)—OH, (S)—OH, C_{1-10} alkoxy, amino, C_{1-10} alkylamino, C_{1-10} alkanoylamino, formyloxy or halogen;
R^7 represents H;
and in addition R^5 and R^6 may together represent a second bond between the carbon atoms to which they are attached; or R^6 and R^7 may together represent a second bond between the carbon atoms to which they are attached;
or a cyclic group of formula III,



III

in which R^8 represents C_{1-10} alkyl substituted by one or more groups selected from OH, C_{1-10} alkoxy, =O, and CO_2H; or C_{2-10} alkenyl optionally substituted by one or more groups selected from OH, =O, or CO_2H;
provided that
(a) when n represents 1; R^1 represents OH; R^3 represents allyl; R^4 represents OH; R^5 represents (H, methoxy); and R^6 represents (R)—OH; then X does not represent O;
(b) when n represents 2;
(i) R^1 represents OH; R^3 represents methyl, ethyl, allyl or propyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent O;
(ii) when R^1 and R^2 together represent a second bond between the carbon atoms to which they ar attached or each represents H; R^3 represents allyl or propyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent O;
(iii) when R^1 represents OH, methoxy or together with R^2 a second bond between the carbon atoms to which they are attached; R^3 represents allyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents methoxy; then X does not represent O;
(iv) when R^1 represents H or OH; R^3 represents allyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent (H,OH);
(v) when R^1 represents H; R^3 represents propyl; R^4 represents OH; R^5 represents (H,OH); and R^6 represents (R)—OH; then X does not represent O;
(vi) when R^1 represents OH; R^3 represents ethyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent (H,OH);
(vii) when R^1 and R^2 together represent a second bond between the carbon atoms to which they are attached or each represents H; R^3 represents ethyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent O;
(viii) when R^1 represents OH; R^3 represents allyl; R^4 represents OH; R^5 represents (H,OH); or (H,methoxy); and R^6 represents (R)—OH; then X does not represent (H,H);
(ix) when R^1 represents OH; R^3 represents ethyl; R^4 represents OH; R^5 represents (H,methoxy); and R^6 represents (R)—OH; then X does not represent (H,H);
(x) when R^1 represents OH; R^3 represents methyl, ethyl or allyl; R^4 represents OH; R^5 represents (H,OH); and R^6 represents (R)—OH; then X does not represent O; and
(xi) when R^1 represents OH; R^3 represents allyl; R^4 represents OH; R^5 represents O; and R^6 represents (R)—OH; then X does not represent O;
and pharmaceutically acceptable esters comprising a C_{1-6} alcohol moiety, amides comprising a C_{0-6} amine moiety, and salts thereof.

9. A method of effecting immunosuppression which comprises administering a therapeutically effective amount of a compound of formula I, as defined in claim 1, to a patient.

5,296,490

PHARMACEUTICALLY USEFUL PYRAZOLOPYRIDINES

Youichi Shiokawa, Ibaraki; Atsushi Akahane, Hyogo; Hirohito Katayama, Nishinomiya, and Takafumi Mitsunaga, Ashiya, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

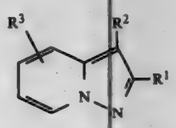
Division of Ser. No. 793,937, Oct. 22, 1991, Pat. No. 5,179,103, which is a division of Ser. No. 492,486, Mar. 12, 1990, Pat. No. 5,087,629, which is a division of Ser. No. 202,526, Jun. 6, 1988, Pat. No. 4,925,849. This application Oct. 30, 1992, Ser. No. 968,664

Claims priority, application United Kingdom, Jun. 15, 1987, 8713908; Aug. 20, 1987, 8719724; Dec. 31, 1987, 8730330

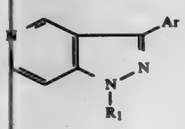
Int. Cl.[5] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **6 Claims**

1. A pyrazolopyridine compound of the formula:



wherein R^1 is lower alkyl, aryl which may have one or more suitable substituents(s) or a heterocyclic group,
R^2 is a group of the formula:



wherein R^6 is N-(lower)alkylcarbamoyl; N-(higher)alkylcarbamoyl; N,N-di(lower)alkylcarbamoyl or N-lower alkyl-N-ar(lower)alkylcarbamoyl, and A is lower aliphatic hydrocarbon group which may have one or more suitable substituent(s); and
R^3 is hydrogen, lower alkyl, lower alkoxy or halogen, or a pharmaceutically acceptable salt thereof.

5,296,491

PYRAZOLO[4,3-C]PYRIDINES AND THEIR USE AS SEROTONIN REUPTAKE INHIBITORS

Gregory M. Shutske, Flemington; Kevin J. Kapples, Little York, both of N.J., and John D. Toner, IV, Perkasie, Pa., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

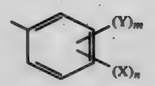
Division of Ser. No. 964,690, Oct. 22, 1992, Pat. No. 5,264,576. This application Aug. 17, 1993, Ser. No. 106,953

Int. Cl.[5] A61K *31/435;* **C07D** *471/04*

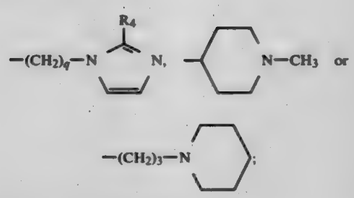
U.S. Cl. 514—303 **80 Claims**

1. A compound of the formula

wherein
Ar is



or pyridyl;
R_1 is $-(CH_2)_pNR_2R_3$,



R_2 is hydrogen or loweralkyl;
R_3 is hydrogen or loweralkyl;
R_4 is hydrogen or loweralkyl;
X and Y are independently hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy, nitro or hydroxy;
n is 1, 2 or 3;
m is 1 or 2;
p and q are independently 2, 3 or 4;
or a pharmaceutically acceptable addition salt and/or hydrate thereof, or where applicable, the optical or geometric isomer or racemic mixture thereof.

5,296,492

CERTAIN CHROMAN DERIVATIVES USEFUL FOR TREATING SYMPTOMS CAUSED BY CONTRACTION OF SMOOTH MUSCLES, CIRCULATORY DISEASES OR EPILEPSY

Akira Shiozawa, Omiya; Atsuro Inubushi, Tokyo; Kazuhisa Narita, Ageo; Yukihiro Sagawa, Yono; Makoto Hosono, and Masashi Iida, both of Kitamoto, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

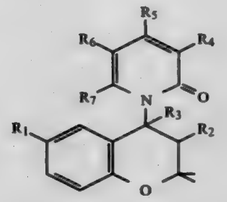
Filed Jun. 3, 1992, Ser. No. 893,403

Claims priority, application Japan, Jun. 14, 1991, 03-169079

Int. Cl.[5] C07D *407/04;* **C07F** *7/02;* **A61K** *31/44, 31/695*

U.S. Cl. 514—337 **12 Claims**

1. A chroman derivative represented by the following general formula (I):



(I)

wherein R_1 represents cyano group, nitro group, halogenomethyl group or $—SO_2—X$ group (X represents lower alkyl group having 1–6 carbon atoms or aryl group); R_5 represents hydrogen atom or OA group (A represents hydrogen atom, nitro group, lower acyl group having 1–6 carbon atoms, arylcarbonyl group, lower alkylsulfonyl group having 1–6 carbon atoms, arylsulfonyl group, arylalkyl group, tetrahydropyranyl group, lower alkoxycarbonyl group having 1–6 carbon atoms, arylalkoxycarbonyl group or silyl derivative group); R_3 singly represents a hydrogen atom; or R_2 forms a bond jointly with R_3; and at least one of R_4, R_5, R_6 and R_7 represents $—Y—(O-NO_2)_n$ and the remaining represent a hydrogen atom (Y represents straight or branched chain alkylene group having 1–6 carbon atoms or lower alkenylene group having 1–6 carbon atoms, and n represents an integer of 1–3.

5,296,493

1-SUBSTITUTED-2-(N-PHENYL-N-(PHENYLMETHYL)-METHANAMINE)-4,5-DIHYDRO-IMIDAZOLES AND RELATED COMPOUNDS AND THEIR USE IN TREATING CALCIUM OVERLOAD IN BRAIN CELLS

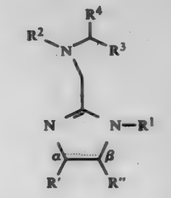
Peter Moldt, Humlebaek, and Elsebet Ø. Nielsen, Copenhagen, both of Denmark, assignors to NeuroSearch A/S, Glostrup, Denmark

Filed May 23, 1991, Ser. No. 704,469

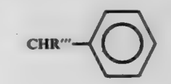
Int. Cl.[5] C07D *233/24, 233/60, 233/61, 401/06;* **A61K** *31/415, 31/44*

U.S. Cl. 514—341 **17 Claims**

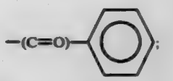
1. A compound having the formula



wherein
R^1 is C_{2-10} saturated or unsaturated alkyl or

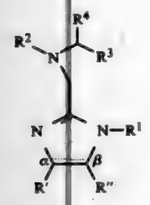


wherein R''' is H or



R^2 is phenyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, $CO_2—C_{1-6}$-alkyl, methyl; benzyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, $CO_2—C_{1-6}$-alkyl, methyl; or cyclohexyl;
R^3 is phenyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, $CO_2—C_{1-6}$-alkyl, methyl; naphthyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, $CO_2—C_{1-6}$-alkyl, methyl; C_{1-6} unsaturated alkyl;
R^4 is H, C_{1-6}-alkyl, or benzyl;
R' and R'' are each hydrogen

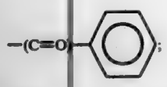
6. The method of treating an indication relating to or arising from Ca overload in brain cells comprising the step of administering to a person in need of treatment an effective Ca overload-blocking amount of a compound having the formula



wherein
R^1 is C_{1-10}-alkyl which is unbranched or branched; C_{2-10}-alkenyl or



wherein R''' is H or



R^2 is phenyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, CO_2—C_{1-6}-alkyl, methyl; benzyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, CO_2-C_{1-6}-alkyl, methyl; or cyclohexyl;
R^3 phenyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, CO_2—C_{1-6}-alkyl, methyl; naphthyl which is unsubstituted or substituted one or more times with halogen, CF_3, C_{1-6}-alkoxy, NO_2, CO_2—C_{1-6}-alkyl, methyl; C_{1-6} unsaturated alkyl;
R^4 is H, C_{1-6}-alkyl, or benzyl;
R′ and R″ are each hydrogen
or a pharmaceutically-acceptable addition salt thereof.

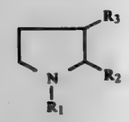
5,296,494

PYRROLIDINE COMPOUNDS HAVING THROMBOXANE A_2 RECEPTOR ANTAGONISTIC ACTIVITY AND THROMBOXANE A_2 SYNTHASE INHIBITING ACTIVITY

Gilbert Lavielle, La Celle Saint Cloud; Patrick Hautefaye, Servon Brie Comte Robert; Michel Laubie, Vaucresson, and Tony Verbeuren, Versouillet, all of France, assignors to Adir et Compagnie, Courbevoie, France

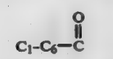
Filed Dec. 18, 1992, Ser. No. 992,930
Claims priority, application France, Dec. 30, 1991, 91 15851
Int. Cl.[5] A61K *31/44*; C07D *401/06, 207/48*
U.S. Cl. 514—343 **7 Claims**

1. A compound selected from those of formula (I):

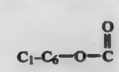


(I)

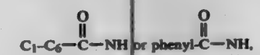
in which:
R_1 represents:
linear or branched (C_1-C_6) alkyl, unsubstituted or substituted with 2-pyridyl, 3-pyridyl, or phenyl (itself optionally substituted with one or more halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy or trihalomethyl),
phenyl, unsubstituted or substituted with one or more hydrogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy or trihalomethyl,
pyridyl,
phenylsulfonyl, unsubstituted or substituted on the phenyl ring with one or more halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy or trihalomethyl,
linear or branched



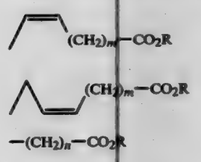
linear or branched



benzoyl (unsubstituted or substituted on the phenyl ring with one or more halogen, hydroxyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, or trifluoromethyl) or pyridylcarbonyl,
C_1–C_6 alkylaminocarbonyl or phenylaminocarbonyl (unsubstituted or substituted on the phenyl ring with one or more halogen, hydroxyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, or trifluoromethyl),



R_2 represents:
phenyl, unsubstituted or substituted with one or more halogen or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, hydroxyl or trihalomethyl,
3-pyridyl or 2-pyridyl,
R_3 represents any one of the following groups:



in which
m is equal to 2, 3 or 4,
n is equal to 4, 5, 6, or 7,
and R represents hydrogen or a linear or branched (C_1–C_6) alkyl
its enantiomers, diastereoisomers and epimers, as well as its addition salts with a pharmaceutically-acceptable acid or base.

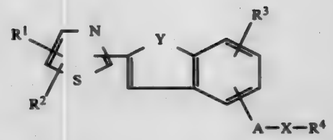
5,296,495

THIAZOLYLBENZOFURAN DERIVATIVES AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masaaki Matsuo, Toyonaka; Kazuo Okumura, Osaka; Shinji Shigenaga, Kobe, and Hiroshi Matsuda, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 12, 1992, Ser. No. 929,751
Claims priority, application United Kingdom, Aug. 16, 1991, 9117733.7; Jan. 17, 1992, 9201057.8
Int. Cl.[5] A61K *31/425*; C07D *417/04, 417/14*
U.S. Cl. 514—365 **8 Claims**

1. A compound of the formula:



wherein
R^1 is lower alkyl optionally substituted with halogen, lower alkylamino or lower alkyl(acyl)amino; cyclo(lower)alkyl; tricycloalkyl; aryl optionally substituted with lower alkoxy; thienyl; or pyridyl;
R^2 is hydrogen or halogen, or
R^1 and R^2 are taken together with the adjacent atoms to form cycloalken ring or tetrahydroazepine optionally substituted with acyl,
R^3 is hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy,
R^4 is hydrogen; acyl; cyano; aryl optionally substituted with hydroxy(lower)alkyl, halo(lower)alkyl, cyano(lower)alkyl, tetrazolyl(lower)alkyl or acyl; or lower alkyl which may be substituted with substituent(s) selected from the group consisting of halogen, cyano, hydroxy, lower alkylsulfonyloxy, arylsulfonyloxy, acyl, acyl(lower)alkylthio and aryl optionally substituted with halo(lower)alkyl, cyano(lower)alkyl, tetrazolyl(lower)alkyl, cyano, acyl, acyl(lower)alkyl, tetrazolyl or (lower alkylsulfinyl)(lower alkylthio)lower alkenyl;
wherein in R^1 and R^4 acyl is selected from the group consisting of carboxy, esterified carboxy, carbamoyl optionally substituted with lower alkyl arylsulfonyl, lower alkylsulfonyl, lower alkanoyl, aroyl and heterocycliccarbonyl,
A is lower alkylene, lower alkenylene or a single bond,
X is a single bond, O or S, and
Y is O or S,
provided that A or X is not a single bond when R^1 is lower alkyl or aryl and R^2 is hydrogen, or pharmaceutically acceptable salts thereof.

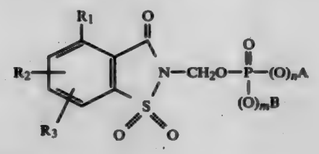
5,296,496

2-SACCHARINYLMETHYL PHOSPHATES, PHOSPHONATES AND PHOSPHINATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

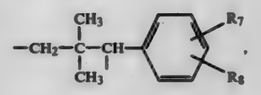
Ranjit C. Desai; John J. Court, both of Colonie, and Dennis J. Hlasta, Clifton Park, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

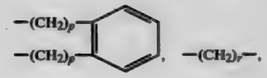
Continuation-in-part of Ser. No. 814,741, Dec. 27, 1991, Pat. No. 5,187,173. This application Dec. 8, 1992, Ser. No. 988,424
Int. Cl.[5] A61K *31/425*; C07D *275/06*
U.S. Cl. 514—373 **24 Claims**

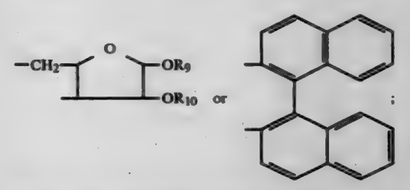
1. A compound having the formula



wherein:
R_1 is hydrogen, halogen, lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, lower-alkenyl, lower-alkynyl, cyano, amino, lower-alkylamino, di-lower-alkylamino, carboxamido, lower-alkoxy, benzyloxy, hydroxy, lower-alkoxycarbonyl or phenyl;
R_2 and R_3 are independently hydrogen or a substituent in any of the available 5-, 6- or 7-positions selected from the group consisting of halogen, cyano, nitro, N═B, 1-lower-alkyl-2-pyrrolyl, lower-alkylsulfonylamino, polyfluoro-lower-alkylsulfonylamino, polychloro-lower-alkylsulfonylamino, aminosulfonyl, lower-alkyl, polyfluoro-lower-alkyl, polychloro-lower-alkyl, cycloalkyl, lower-alkoxy, hydroxy, carboxy, carboxamido, hydroxy-lower-alkyl, formyl, aminomethyl, polyfluoro-lower-alkylsulfonyl, polychloro-lower-alkylsulfonyl, lower-alkylsulfonylaminosulfonyl, lower-alkoxy-poly-lower-alkyleneoxy, cycloalkyloxy, hydroxy-lower-alkoxy, benzyloxy-lower-alkoxy, polyhydroxyalkoxy, or acetal or ketal thereof, polyalkoxyalkoxy, (lower-alkoxy)$_2$-P(O)O—, —SR, —SOR, —SO_2R, —OCOR, —O—(C_{1-10}-alkylene)-COOR, —O—(C_{1-10}-alkylene)-COOH, —O—(C_{2-10}-alkylene)-N═B, —O—$(CH_2)_j$OC(O)$(CH_2)_k$—N═B, —O—$(CH_2)_j$-[5-$(CH_2)_k$—N═B-2-furanyl], —O—$(CH_2)_j$—C≡C—$(CH_2)_k$—N═B′, —O—$(CH_2)_j$—CH═CH—$(CH_2)_k$—N═B′, where R is lower-alkyl, phenyl, benzyl or naphthyl, or phenyl or naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy or halogen, —N═B in each instance is amino, lower-alkylamino, di-lower-alkylamino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl or (carboxy-lower-alkyl)amino, N═B′ is amino, lower-alkylamino, di-lower-alkylamino, dibenzylamino, 1-azetidinyl, 1-pyrrolidnyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl, or —NR′(C_{2-10}-alkylene)-N(alkyl)$_2$ wherein R′ is hydrogen or lower-alkyl, and j and k are independently an integer from 1 to 4; or R_2 and R_3 together represent a 3-atom or 4-atom unsubstituted or methylated saturated bridge bridging the carbon atoms at the 5,6 or 6,7 positions, wherein the atoms of the bridge consist of one or two carbon atoms and two of the same or different heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen;
m and n are independently 0 or 1;
when m and n are 1, A and B are independently hydrogen, lower-alkyl, phenyl, lower-alkoxyphenyl or benzyl, or, taken together, represent:







where R_7 and R_8 are independently hydrogen or chlorine, R_9 and R_{10} each is hydrogen or together represent isopropylidene, p is 0 or 1 and r is 2, 3 or 4;
when m is 1 and n is 0, A and B are independently lower-alkyl, phenyl, benzyl or 2-pyridinyl; and
when m and n are 0, A and B are independently lower-alkyl, phenyl or lower-alkoxyphenyl; or acid-addition salts of basic members thereof or base-addition salts of acidic members thereof.

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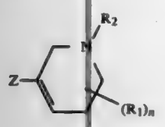
5,296,497

3,4-DEHYDROPIPERIDINE DERIVATIVES HAVING PSYCHOTROPIC ACTIVITY

Jan Hartog; Roelof Van Hes, Berend Olivier, and Ineke Van Wijngaarden, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation-in-part of Ser. No. 522,032, May 11, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 968,267
Claims priority, application Netherlands, May 16, 1989, 8901211
Int. Cl.[5] A61K *31/44*; C07D *211/70*
U.S. Cl. 514—357 8 Claims

1. A 3,4-dehydropiperidine derivative of the formula (I)

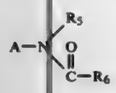


(I)

wherein

R_1 is a hydrogen atom or an alkyl group having 1–3 carbon atoms;

wherein R_2 represents a group of the formula



wherein

A is a branched or non-branched alkylene group having 2 to 10 carbon atoms,

R_5 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and

R_6 is an unsubstituted or substituted aryl or heteroaryl group, said heteroaryl group being selected from thienyl, furyl, pyridyl, quinolyl, pyrimidyl, imidazolyl, pyrrolyl, oxadiazolyl, pyrazinyl and indolyl, wherein the substituents are selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, esterified or etherified hydroxy, trifluoromethyl, alkylcarbonyl, cyano, C_1–C_4 alkylamino and di(C_1–C_4)alkylamino; a saturated or unsaturated C_1–C_{10} aliphatic or C_4–C_{10} cycloaliphatic hydrocarbon group; an unsubstituted or substituted aralkyl group substituted with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, trifluoromethyl, alkylcarbonyl, cyano, C_1–C_4 alkylamino or di(C_1–C_4) alkylamino; or a heterocyclic ring system selected from the group consisting of tetrahydrofuryl, tetrahydropyranyl, piperidyl and pyrrolidinyl which may be substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl, oxo and halogen;

n has the value 1 or 2; and

Z is one of the groups of the formulas 15 or 16 with the proviso that group 15 may be bound to the piperidine group via position 4 or 7 and the group 17 may be bound to the piperidine group via the indicated position in which groups R_3 and R_3' may be equal or different and represent hydrogen atoms; halogen atoms; oxo functions; saturated or unsaturated C_1–C_{10} aliphatic hydrocarbon groups; C_1–C_6 hydroxyalkyl groups; esterified or etherified C_1–C_6 hydroxyalkyl groups, wherein the ester group is derived from benzoic acid, from benzoic acid substituted with one or more equal or different substituents selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, esterified or etherified hydroxy, trifluoromethyl, alkylcarbonyl, cyano, C_1–C_4 alkylamino and di(C_1–C_4)alkylamino, or from a straight or branched C_2–C_8 aliphatic carboxylic acid, and wherein the ether group is a straight or branched, saturated or unsaturated aliphatic C_1–C_8 hydrocarbyloxy group, a C_3–C_6 cycloalkoxy group or a (C_3–C_6 cycloalkyl)C_1–C_4 alkoxy group; C_1–C_4 alkylcarbonyl groups; hydroxy groups; amino groups; C_1–C_3 alkylamino groups; di(C_1–C_3)alkylamino groups; substituted or non-substituted aryl groups or heteroaryl groups, said heteroaryl groups being selected from thienyl, furyl, pyridyl, quinolyl, pyrimidyl, imidazolyl, pyrrolyl, oxadiazolyl, pyrazinyl and indolyl, wherein the substituents are selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, esterified or etherified hydroxy, trifluoromethyl, alkylcarbonyl, cyano, C_1–C_4 alkylamino and di(C_1–C_4)alkylamino; or aryl(C_1–C_3)alkyl groups; and R_4 is a hydrogen atom, a halogen atom, a cyano group, a hydroxy group, a trifluoromethyl group, an alkyl group, an alkoxy group, an alkylthio group, an alkanoylamino group, an alkanoyl group, an aminocarbonyl group, an N-alkylaminocarbonyl group, an N,N-dialkylaminocarbonyl group, an alkanoyloxy group or an alkoxycarbonyl group, wherein the alkyl groups have 1 to 10 carbon atoms;

or a pharmaceutically acceptable salt thereof.

5,296,498

GUANIDINE COMPOUNDS

Charles Malen, Fresnes; Jean-Michel Lacoste, Sevres, and Guillaume de Nanteuil, Suresnes, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 787,374, Nov. 4, 1991. This application Jan. 19, 1993, Ser. No. 5,653
Claims priority, application France, Nov. 29, 1990, 90 14898
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—401 11 Claims

1. A compound selected from those of formula (I):



(I)

in which:

R_1 represents—phenyl optionally substituted with one or more halogen, linear or branched (C_1–C_6) alkyl, hydroxyl, or linear or branched (C_1–C_6) alkoxy; or C_3–C_7 cycloalkyl,

R_2 represents trifluoromethyl or C_3–C_4 cycloalkyl,

A represents —CH=N—, =N—, or —NH—,

R_3 and R_4, together with the nitrogen atoms to which they are attached, form a 5-membered heterocycle,

R represents hydrogen in the case where A represents —CH=N— or —NH—, or a bond selected from these of the group A when A represents =N—, with the proviso, however, that when A is =N— and R_1 is a phenyl optionally substituted, R_2 does not represent a cycloalkyl (C_3–C_4),

its enantiomers and epimers as well as its addition salts with a pharmaceutically-acceptable acid.

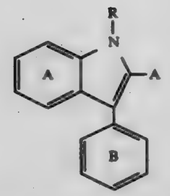
5,296,499

INDOLE DERIVATIVES, THEIR PRODUCTION AND USE

Takashi Sohda, Takatsuki; Iwao Yamazaki, Takarazuka, and Noriaki Kawamura, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 674,214, Mar. 25, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,252
Claims priority, application Japan, Mar. 26, 1990, 2-78494
Int. Cl.[5] C07D *209/18*; A61K *31/405*
U.S. Cl. 514—419 11 Claims

1. An agent for inhibiting bone resorption, which comprises a therapeutically effective amount of an indole compound of the formula (I):



(I)

wherein each of the rings A and B may be optionally substituted with one to four substituents selected from the group consisting of:

a. a halogen;

b. C_{1-10} alkyl which is unsubstituted or substituted by a halogen, nitro, amino (which may be substituted by a carboxylic C_{1-6} acyl, C_{1-10} alkyl, iminomethyl, imino(aryl-substituted)methyl, amidino and/or amino), phosphoryl, C_{1-4} alkoxyphosphoryl, sulfo, cyano, hydroxy, carboxy, hydrazino, imino, amidino, carbamoyl, aryl (which may be substituted with a halogen, C_{1-10} alkyl, C_{1-4} alkoxy, C_{1-10} alkylamino, amino, carbamoyl, sulfo, C_{1-10} alkylsulfonyl, cyano, hydroxy, carboxy, nitro, C_{1-6} acyloxy, arylalkyloxy, phosphonyl, C_{1-4} alkoxyphosphoryl and/or sulfoxyl), pyridine, pyridazine, thiazole, oxazole or morpholine (which may be substituted by nitro, oxo, aryl, C_{2-10} alkenylene, halogeno C_{1-10} alkyl, C_{1-10} alkyl sulfonyl, C_{1-10} alkyl, C_{1-4} alkoxy, C_{1-10} alkylamino, amino, halogen, carbamoyl, C_{1-10} hydroxy, cyano, carboxy, phosphonyl, C_{1-4} alkoxyphosphoryl and/or sulfo), wherein the aryl in the above moiety or groups is phenyl or naphthyl;

c. phenyl, naphthyl, biphenyl, anthryl or indenyl which is unsubstituted or substituted by a halogen, nitro, cyano, amino (which may be substituted by a C_{1-10} alkyl, C_{2-10} alkenyl, C_{3-6} cycloalkyl, phenyl and/or naphthyl, phosphoryl, sulfo, hydroxy, sulfoxy, sulfamoyl, C_{1-10} alkyl (which may be substituted by an amino, halogen, hydroxy, cyano and/or C_{1-4} alkoxyphosphoryl), C_{1-4} alkoxy, benzyloxy, phenethyloxy, phenylpropyloxy, C_{1-10} alkylsulfonamido, methylenedioxy, C_{1-4} alkoxyphosphoryl, C_{1-10} alkylsulfonyl, C_{1-10} alkylsulfonylamino, or which may form a condensed ring together with a C_{3-6} cycloalkyl;

d. C_{2-10} alkenyl, which is unsubstituted or substituted by a C_{1-6} alkyl (said C_{1-6} alkyl group optionally being substituted by the substituents for the C_{1-10} alkyl group), halogen, nitro, amino (which may be substituted by a carboxylic C_{1-6} acyl, iminomethyl, amidino, C_{1-10} alkyl and/or aryl), phosphoryl, sulfo, cyano, hydroxy, carboxy, C_{1-10} alkyloxycarbonyl, carbamoyl, C_{1-10} alkylthio, arylthio, C_{1-10} alkylsulfinyl, arylsulfinyl, C_{1-4} alkylphosphoryl, C_{1-10} alkylsulfonyl, arylsulfonyl, sulfamoyl, aryl or carboxylic C_{1-6} acyl, and which includes the E or Z form isomers with respect to the double bond of the C_{2-10} alkenyl group; wherein the aryl in the above moiety or groups is phenyl or naphthyl; and

e. hydroxy which is unsubstituted or substituted by a C_{1-10} alkyl, C_{2-10} alkenyl, phenyl-C_{1-4} alkyl, carboxylic C_{2-4} acyl, carboxylic C_{2-4} phenoxy, or a 4-chlorophenoxy;

R is hydrogen, C_{1-6} straight chain, branched-chain or cyclic alkyl or an acyl group formed by combining a C_{1-6} alkyl group with a carbonyl group; and

A is a hydroxymethyl group, an esterified carboxyl group in which the ester residue is a straight-chain, branched-chain or cyclic alkyl having 1 to 6 carbon atoms or an aralkyl having 7 to 15 carbon atoms, or an amidated carboxyl group formed by combining a carboxyl group with an amino group which is unsubstituted or substituted by the alkyl, aryl or alkenyl substituents defined as substituents for rings A and B, or by a 5–7 membered heterocyclic group for rings A and B, or by a 2-pyridyl, 3-pyridyl, 4-pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, pyrido)2,3-d)pyrimidyl, benzopyranyl, 1,8-naphthyridyl, 1,5-naphthyridyl, 1,6-naphthyridyl, 1,7-naphthyridyl, quinolyl, thieno(2,3-b)pyridyl, tetrazolyl, thiadiazolyl, oxadiazolyl, triazinyl, triazolyl, thienyl, pyrrolyl, pyrrolinyl, furyl, pyrrolindinyl, benzothienyl, indolyl, imidazolidinyl, piperidyl, piperidino, piperazinyl, morpholinyl or morpholino group which may be substituted by a substituent selected from the group consisting of an amino (which may be substituted by a (1) C_{1-6} acyl, halogen, phenyl and/or C_{1-10} alkyl), (2) halogen, (3) nitro, (4) sulfo, (5) cyano, (6) hydroxy, (7) carboxy, (8) oxo, (9) thioxo, (10) C_{1-10} alkyl (which may be substituted by a phenyl, naphthyl, halogen, amino, hydroxy, carboxy, C_{1-4} alkoxy, C_{1-10} alkylsulfonyl and-/or di-C_{1-10} alkylamino), (11) C_{3-6} cycloalkyl, (12) C_{1-4} alkoxy (which may be substituted by a halogen and/or hydroxy), (13) C_{1-4} acyl and (14) phenyl or naphthyl (which may be substituted by a halogen, nitro, C_{1-f0} alkyl, C_{1-4} alkoxy, amino, sulfo, hydroxy and/or cyano) group;

or its pharmaceutically acceptable salt, and a pharmaceutically acceptable carrier, diluent or excipient.

10. A method of inhibiting bone resorption which comprises administering a therapeutically effective amount of a compound of the formula (I) of claim 1 or its pharmaceutically acceptable salt optionally together with a pharmaceutically acceptable carrier, diluent or excipient to a mammal suffering from bone loss.

5,296,500

USE OF N-ACETYL-CYSTEINE AND DERIVATIVES FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Greg G. Hillebrand, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 890,308, May 27, 1992, abandoned, which is a continuation of Ser. No. 752,714, Aug. 30, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,772
Int. Cl.[5] A61K *31/23*
U.S. Cl. 514—562 10 Claims

1. A method for regulating wrinkles or atrophy in mammalian skin comprising treating skin in need of such regulation with a safe and effective amount of a composition comprising:

a) a safe and effective amount of N-acetyl-L-cysteine or a pharmaceutically-acceptable salt thereof, and

b) a pharmaceutically-acceptable carrier.

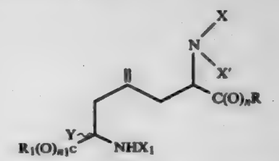
5,296,501

2,6-DIAMINO-HEPTANDEDIOIC ACIDS

Constantin Agouridas, Paris; Nicole Tessot, Claye-Souilly, and Annie Martel, Fresnes, all of France, assignors to Roussel Uclaf, France

Continuation of Ser. No. 848,265, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 509,552, Apr. 13, 1990, abandoned. This application Apr. 27, 1993, Ser. No. 53,464
Claims priority, application France, Apr. 18, 1989, 89 05108
Int. Cl.[5] A61K *31/195*, *31/24*; C07C *229/00*
U.S. Cl. 514—566 25 Claims

1. A compound selected from the group consisting of a compound of formula

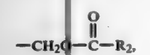


I

wherein Y is selected from the group consisting of alkenyl and

VOL 1160 ISS 4 MR 22 1994 UMI

alkynyl of 2 to 18 carbon atoms, X, X' and X_1 are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms, aryl of 6 to 14 carbon atoms, aralkyl of 7 to 18 carbon atoms, or n_1 is 2 and R and R_1 are selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, aryl of 6 to 14 carbon atoms, aralkyl of 7 to 18 carbon atoms and



R_2 is alkyl of 1 to 8 carbon atoms or aryl of 6 to 14 carbon atoms and their non-toxic, pharmaceutically acceptable salts with acids or bases.

5,296,502

Patent Not Issued For This Number

5,296,503

MEDICAMENTS CONTAINING SUBSTITUTED 2-CYCLOHEXENE DERIVATIVES AND THEIR USE FOR THE CONTROL OF CANDIDA INFECTIONS

Franz Kunisch, Odenthal-Glöbusch; Peter Babczinski, Wuppertal; Dieter Arlt, Cologne, and Manfred Plempel, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

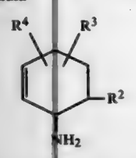
Continuation of Ser. No. 751,022, Jul. 28, 1991, abandoned. This application May 14, 1993, Ser. No. 62,486

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028046

Int. Cl.[5] A61K *31/215, 31/13, 31/045*

U.S. Cl. 514—529 **6 Claims**

1. A method of treating a Candida infection in humans and animals which comprises orally administering to a human or animal so afflicted an amount sufficient to be therapeutically effective against said infection of a substituted 2-cyclohexene derivative of the formula



in which

R^2 represents hydroxy lower alkyl, lower alkoxycarbonyl or phenyl lower alkoxycarbonyl, and

R^3 and R^4 each independently represents hydrogen or lower alkyl.

5,296,504

PROSTAGLANDIN DERIVATIVES FOR THE TREATMENT OF GLAUCOMA OR OCULAR HYPERTENSION

Johan W. Stjernschantz, and Bahram Resul, both of Uppsala, Sweden, assignors to Kabi Pharmacia, Sweden

Continuation of Ser. No. 469,442, Apr. 10, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 987,520

Claims priority, application Sweden, Sep. 6, 1988, 8803110; Oct. 28, 1988, 8803855

Int. Cl.[5] A01K *31/557*

U.S. Cl. 514—530 **16 Claims**

1. A therapeutic composition for topical treatment of ocular hypertension comprising 13,14-dihydro-17-phenyl-18,19,20-trinor PGF2α isopropyl ester in an amount sufficient to reduce intraocular pressure without causing substantial ocular irritation, and an ophthalmologically compatible vehicle.

5,296,505

COMPOSITIONS OF RETINOIDS SUBSTITUTED WITH A DITHIANE RING, THEIR USE, AND PROCESS FOR PREPARING THE COMPOUNDS

Guy Solladie, Strasbourg; Valérie Berl, Mulhouse, and Jean Maignan, Tremblay-Les-Gonesse, all of France, assignors to L'Oreal, Paris, France

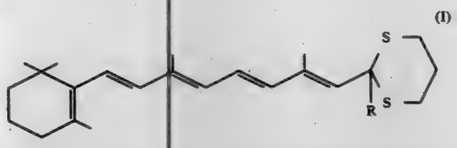
Filed Jun. 12, 1992, Ser. No. 897,763

Claims priority, application France, Jun. 14, 1991, 91 07292

Int. Cl.[5] A61K *31/385;* C07D *339/08*

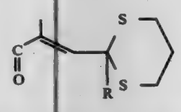
U.S. Cl. 514—436 **5 Claims**

1. A process for preparing a stereospecific retinoid having the formula



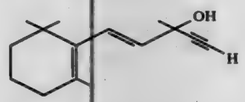
(I)

wherein R is H or a C_1–C_4 thioalkyl radical, said process comprising reacting a dithianepropenol having the formula



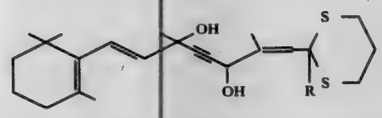
(VI)

wherein R has the meaning given above with ethynyl-β-ionol having the formula



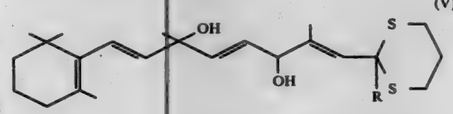
(VII)

in the presence of an organomagnesium compound, so as to obtain an acetylenic compound having the formula



(VIII)

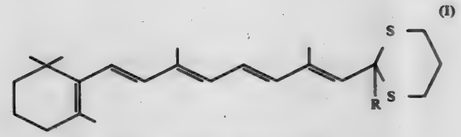
wherein R has the meaning given above, hydrogenating the acetylenic bond of the compound of formula VIII so as to obtain a diol having the formula



(V)

wherein R has the meaning given above and reducing said diol of formula V using a "low-valency" titanium.

3. A process for the treatment of acne or psoriasis comprising administering to a person suffering from acne or psoriasis, at a daily dosage of approximately 0.01 mg to approximately 100 mg/kg of body weight, in 1 to 3 doses, a stereospecific retinoic derivative having the formula



(I)

wherein R is H or a C_1–C_4 thioalkyl radical.

5,296,506

REARRANGED TAXOL COMPOUNDS AND METHOD OF USING IN TESTING OF IN VIVO ACTIVITY

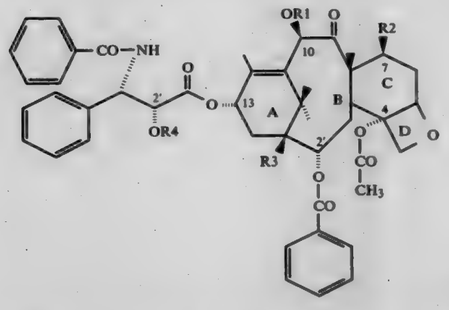
David G. I. Kingston, and Gamini Samaranyake, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 839,082, Feb. 24, 1992, Pat. No. 5,194,635, which is a continuation of Ser. No. 670,432, Mar. 18, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,713

Int. Cl.[5] A01N *43/02;* C07D *305/00, 407/00*

U.S. Cl. 514—449 **3 Claims**

1. A taxol compound having the following structure:



wherein R1 is $C(O)CH_3$, R2 is OH or $OSi(CH_2CH_3)_3$, R3 is OSO_2CH_3, and R4 is H or $Si(CH_2CH_3)_3$.

5,296,507

TREATMENT OF CERBROVASCULAR DISORDERS

Yoshiaki Tanaka; Naomi Kobayashi; Tadashi Kurimoto, all of Saitama, and Yugo Ikeda, Tokyo, all of Japan, assignors to H.Lundbeck A/S, Copenhagen-Valby, Denmark

Continuation of Ser. No. 742,907, Aug. 9, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,571

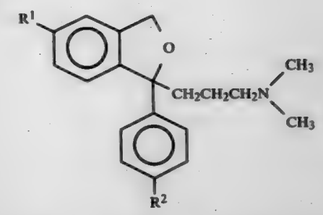
Claims priority, application Denmark, Sep. 6, 1990, 2132/90

Int. Cl.[5] A61K *31/36*

U.S. Cl. 514—465 **7 Claims**

1. A method for the treatment of dementia cognitive disorders, or amnesia associated with and cerebrovascular disorders in a patient in need thereof comprising the step of administering an amount of a 1-[3-(dimethylamino)propyl]-1-phenylphthalane of the formula

Formula I



wherein R^1 and R^2 each are selected from the group consisting of halogen, trifluoromethyl, cyano and R—CO—, wherein R is an alkyl radical with 1 to 4 C-atoms inclusive a, or a pharmaceutically-acceptable acid addition salt thereof which is effective for such purpose to the said patient.

5,296,508

FARNESYLATED TETRAHYDRO-NAPHTHALENOLS AS HYPOLIPIDEMIC AGENTS

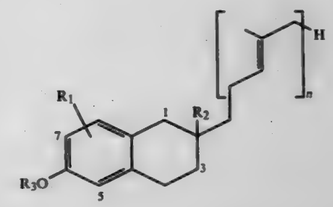
Bradley C. Pearce, East Hampton, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 749,778, Aug. 26, 1991, Pat. No. 5,204,373. This application Dec. 23, 1992, Ser. No. 995,485

Int. Cl.[5] A61K *31/215;* C07C *69/017*

U.S. Cl. 514—510 **6 Claims**

1. The compound having the structural formula (II)



(II)

wherein

R_3 is a physiologically hydrolyzable ester;

R_1 represents hydrogen, C_1–C_{10} lower alkyl, halogen, or OMe;

R_2 represents hydrogen, C_1–C_{10} lower alkyl; and

n is 1–3;

or pharmaceutically acceptable acid addition salts, metal salts or solvates thereof.

5,296,509

THIOESTER ENANTIOMERIC COMPOUNDS AND THEIR THERAPEUTIC USES

Pierre Duhamel; Lucette Duhamel, both of Mont Saint Aignan; Denis Deavy, Cany Barville; Jean-Christophe Plaquevent, Notre Dame de Bondeville; Bruno Giros, Kremlin Bicetre; Claude Gros, Paris; Jean-Charles Schwartz, Paris, and Jeanne-Marie Lecomte, Paris, all of France, assignors to Societe Civile Bioprojet, Paris, France

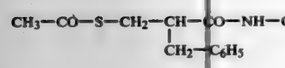
Division of Ser. No. 274,884, Nov. 22, 1988, Pat. No. 5,208,255. This application Feb. 1, 1993, Ser. No. 11,690

Claims priority, application France, Nov. 24, 1987, 87 16239

Int. Cl.[5] A61K *31/265;* C07C *327/06*

U.S. Cl. 514—513 **9 Claims**

1. An enantiomer (R) compound having the formula:



in which R_1=CH_3 or CH2–C_6H_5.

5,296,510
METHOD FOR TREATING THE SURFACE OF A THIN POROUS FILM MATERIAL OF TETRAFLUOROETHYLENE RESIN
Katsuya Yamada; Koichi Okita; Shin-ichi Toyo-oka, and Shigeru Asako, all of Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan
Continuation of Ser. No. 811,805, Dec. 20, 1985, abandoned. This application Apr. 26, 1990, Ser. No. 515,778
Claims priority, application Japan, Dec. 25, 1984, 59-279281
Int. Cl.[5] C08J 9/38
U.S. Cl. 521—145 19 Claims

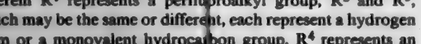
1. A method for enhancing the bending properties of a tubular thin porous film material of tetrafluoroethylene resin, comprising treating the surface of said tubular thin porous film material by heating said surface to a temperature of about 400° C. or more in a controlled manner effective to decompose and remove a desired part of said surface, thus providing the tubular thin porous film material with a roughened surface over an area effective to enhance the bending properties of the material while maintaining the strength of the material in the radial direction.

5,296,511
FILM-FORMER COMPOSITION
Yoshihito Ohsawa; Kohei Hasegawa, both of Annaka; Masanori Sutou, Takasaki, and Satoshi Kuwata, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Feb. 7, 1992, Ser. No. 832,303
Claims priority, application Japan, Feb. 8, 1991, 3-060894
Int. Cl.[5] C08G 77/20, 77/26; C08F 2/50
U.S. Cl. 522—33 15 Claims

1. A film-former composition, comprising:
(a) an organosilazane copolymer comprising a structural unit of the formula [I]:



and a structural unit of the formula [IV]:



wherein R^1 represents a perfluoroalkyl group, R^2 and R^3, which may be the same or different, each represent a hydrogen atom or a monovalent hydrocarbon group, R^4 represents an acryloyl or methacryloyl group, a and g are each an integer of 1 to 3, b and h are each an integer of 0 to 2, such that (a+b) and (g+h) are each an integer of 1 to 3, and m and n are each an integer of 2 to 5, provided that the structural unit of formula [I] and the structural unit of formula are contained in such amounts that the molar content ratio of the perfluoroalkyl group (R^1) to the total of the hydrogen atom or monovalent hydrocarbon group (R^2) and the acryloyl or methacryloyl group (R^4) satisfies the following equation:

$R^1/(R^2+R^4)$=from 99/1 to 50/50,

(b) a photosensitizer soluble in an organic solvent, and
(c) an organic solvent.

5,296,512
WATER-SOLUBLE PRESSURE-SENSITIVE SKIN ADHESIVE, ITS USE, AND AGENTS PROVIDED WITH IT
Helmut Beier; Hans-Ulrich Petereit, both of Darmstadt, and Gunter Bergmann, Hanau, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany
Continuation of Ser. No. 514,971, Apr. 26, 1990, abandoned. This application Jan. 9, 1992, Ser. No. 896,790
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1989, 3913734
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] C08L 31/02, 33/10
U.S. Cl. 523—111 18 Claims

1. A method of applying a permanently flexible pressure-sensitive skin adhesive coating to a substrate from which it is removable by washing with water, which consists essentially of the steps of coating said substrate with a layer of an aqueous solution consisting essentially of water and a salt of an uncross-linked copolymer of:
(a) a monoethylenically unsaturated mono- or dicarboxylic acid that can be polymerized by a free radical mechanism and
(b) at least one alkyl ester of (meth)acrylic acid, wherein the copolymer contains such a portion of said unsaturated mono- or dicarboxylic acid that it is water soluble in the salt form, and drying said coated layer to form a pressure-sensitive coating.

5,296,513
DENTAL COMPOSITION AND PROCESS FOR PRODUCING DENTAL POLYMERIC SHAPED ARTICLES
Hitoshi Ige; Nobuhiro Mukai, and Naoto Ohsuga, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 555,479, Aug. 13, 1990, abandoned. This application Jul. 20, 1992, Ser. No. 915,880
Claims priority, application Japan, Dec. 21, 1988, 63-322938
Int. Cl.[5] A61K 6/08; C08F 20/10
U.S. Cl. 523—115 10 Claims

1. A process for producing dental polymeric shaped articles which comprises the steps of shaping and curing a dental composition containing a monomer having at least one (meth-)acryloyloxy group, a polyfunctional monomer having two or more (meth)acryloyloxy groups and a monofunctional monomer wherein the weight ratio of the polyfunctional monomer to the monofunctional monomer ranges from 1:0.1 to 1:2, and bringing the cured product into contact with a halogen or a halogen compound selected from the group consisting of I_2, Br_2, Br_2, KI and HI.

5,296,514
CORNEAL TREATMENT AGENTS
David F. Muller, Boston, Mass., assignor to Summit Technology, Inc., Waltham, Mass.
Continuation-in-part of Ser. No. 855,308, Mar. 23, 1992, Pat. No. 5,214,071, which is a continuation-in-part of Ser. No. 690,081, Apr. 23, 1991, Pat. No. 5,098,896. This application May 21, 1993, Ser. No. 65,640
Int. Cl.[5] A62K 31/045
U.S. Cl. 514—724 6 Claims

1. A method of promoting corneal healing following injury to an eye comprising:
applying topically to the cornea of an injured eye, an aliphatic alcohol having a chain length ranging from about C-20 to about C-26 and in an amount effective to promote corneal healing.

5,296,515
HYDROVISBREAKING OF HYDROCARBON POLYMERS
Marvin M. Johnson; Fernando C. Vidaurri, Jr.; William R. Coutant, and Kenneth S. Wheelock, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jun. 3, 1992, Ser. No. 893,165
Int. Cl.[5] C08F 8/50
U.S. Cl. 521—47 8 Claims

1. A method comprising:
(a) providing a mixture of at least one hydrocarbon polymer and a solvent, wherein the solvent comprises a combined weight percentage of C_nH_{2n-8} and C_nH_{2n-10} hydrocarbons of at least about 10 weight percent, where n is an integer of at least 8 in C_nH_{2n-8} and n is an integer of at least 10 in C_nH_{2n-10};
(b) contacting the mixture, having said at least one hydrocarbon polymer at least partially dissolved in the solvent, with hydrogen under conditions which include a temperature of about 750° F.–1200° F. and a pressure of about 700–2000 psig, and which are sufficient to hydrovisbreak said at least one hydrocarbon polymer, thereby producing a product containing a fraction which comprises hydrovisbroken polymer.

5,296,516
POLYURETHANE AND POLYISOCYANURATE RIGID FOAMS PREPARED USING TERNARY BLOWING AGENT MIXTURES
David C. Krueger, Grosse Ile, and Curtis J. Reichel, Southgate, both of Mich., assignors to BASF Corporation, Parsippany, N.J.
Filed Dec. 9, 1992, Ser. No. 987,865
Int. Cl.[5] C08J 9/08, 9/14
U.S. Cl. 521—131 10 Claims

1. A dimensionally stable, low k-factor polyurethane or polyisocyanurate rigid foam having a density from about 1.3 to about 3.0 lbs/ft^3, containing in its cells carbon dioxide, monochlorodifluoromethane, and a third blowing agent component selected from the group consisting of methylene chloride, 1,1,1-trichloroethane, and mixtures thereof.

5,296,517
PROCESS FOR CONTINUOUS CONTROL OF THE CELL NUMBER OF POLYURETHANE FOAMS
Ulrich Wetzig, Rudesheim, and Manfred Hohenhorst, Rot an der Rot, both of Fed. Rep. of Germany, assignors to Koepp Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 5, 1993, Ser. No. 41,592
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1992, 4211080
Int. Cl.[5] C08G 14/00
U.S. Cl. 521—155 8 Claims

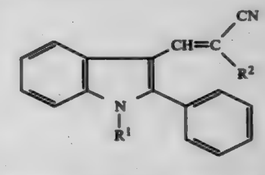
1. A process for continuous control of cell number in the production of polyurethane foams from components including isocyanates, compounds having at least two hydrogens reactive with an isocyanate group, and water, where mixing the components is effected in a mixing head with adjustable injection pressure and adjustable mixing chamber pressure, characterized in that prior to entering the mixing head the gas content of the isocyanate is continuously increased or reduced.

5,296,518
HYDROPHILIC POLYURETHANEUREA FOAMS CONTAINING NO TOXIC LEACHABLE ADDITIVES AND METHOD TO PRODUCE SUCH FOAMS
Timothy G. Grasel, Calabasas, Calif.; Clifford A. Ferrin, Baltimore, Md.; James L. Guthrie, Ashton, Md., and Clifton L. Kehr, Silver Spring, Md., assignors to Hampshire Chemical Corp., Lexington, Mass.
Continuation-in-part of Ser. No. 705,276, May 24, 1991, and a continuation-in-part of Ser. No. 764,589, Sep. 24, 1991. This application Dec. 18, 1991, Ser. No. 809,363
Int. Cl.[5] C08G 18/00
U.S. Cl. 521—176 24 Claims

1. A hydrophilic foam comprising the reaction product of
(a) a first polyol having a hydroxyl functionality of at least 2 and a number average molecular weight in the range of 200 to 20,000 and which contains at least 40 mole percent oxyethylene,
(b) a second polyol having a hydroxyl functionality in the range of about 3 to 8,
(c) a triol or higher polyol made up of at least 75% oxyethylene monomers, having a molecular weight of about 7000 to about 30,000,
(d) a polyisocyanate having an average isocyanate functionality in the range of about 2.0 to 2.8, and
(e) a foaming promoter.

5,296,519
INDOLE COMPOUND AND USE OF THE SAME
Masahiro Otsuka, Osaka, Japan, assignor to Orient Chemical Industries, Ltd., Osaka, Japan
Division of Ser. No. 765,201, Sep. 25, 1991, abandoned. This application Jun. 11, 1992, Ser. No. 897,103
Claims priority, application Japan, Sep. 25, 1990, 2-256036
Int. Cl.[5] C07D 209/12, 209/14; A61K 7/04
U.S. Cl. 524—94 4 Claims

1. A UV light absorber composition comprising an effective UV wavelength absorbing amount of an indole compound of the general formula:



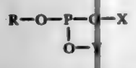
[I]

wherein R^1 represents a linear or branched alkyl or aralkyl group, and R^2 represents —CN or —$COOR^3$, wherein R^3 a linear or branched alkyl or aralkyl group having 1–20 carbon atoms, a β-cyanoethyl group, a β-chloroethyl group, a hydroxyalkyl group having 1–20 carbon atoms and an alkoxyalkyl group having 1–20 carbon atoms, as the active ingredient and a carrier acceptable for said UV light absorber composition.

5,296,520
LATENT ACID CURABLE COMPOSITIONS
Arthur H. Gerber, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio
Filed Dec. 9, 1992, Ser. No. 988,247
Int. Cl.[5] C08K 5/51
U.S. Cl. 524—128 40 Claims

1. A composition comprising:
A. an acid hardenable phenolic resin; and
B. from about 3% to 20% or an aryl phosphite, based on the weight of resin, wherein said phosphite has been pre-solvolyzed with from about 1% to 10% of water, alkanol of 1 to 4 carbon atoms, or alkylene glycol having from 2 to

4 carbon atoms, based on the weight of phosphite, said phosphite having the formula



wherein each of R and X is aryl of 6 to 12 carbon atoms, and Y is a member selected from the group consisting of hydrogen, aryl of 6 to 12 carbon atoms, and alkyl of about 1 to 12 carbon atoms.

5,296,521

FAST-CRYSTALLIZING POLYESTER COMPOSITIONS

John W. Gilmer, West Windsor, N.J., and Gianluigi Landoni, Milanese, Italy, assignors to Istituto Guido Donegani S.P.A., Milan and Enichem Synthesis S.P.A., Palermo, both of Italy

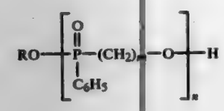
Continuation of Ser. No. 766,210, Sep. 27, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,361

Int. Cl.[5] C08K *5/5317*

U.S. Cl. 524—135 **13 Claims**

1. A method for accelerating polyester crystallization comprising the steps:

mixing a thermoplastic polyester resin and an effective amount of a nucleating agent of the formula:



wherein:

R is an alkali or alkaline-earth metal; m is 1, 2 or 3; n takes an average value within the range of 2 to 5; said nucleating agent being optionally admixed with the compound of formula (I) wherein R is a hydrogen atom, linear alkyl radical or branched alkyl radical having from 1 to 6 carbon atoms; with the proviso that at least 50 mole % of said nucleating agent is in the salt form.

5,296,522

ELECTRICAL MEDIUM AND HIGH VOLTAGE CABLE WITH A CABLE SHEATH HAVING HIGH RESISTANCE TO THE FORMATION AND THE GROWTH OF WATER TREES

Heinz Vogt, Ludwigshafen; Ingolf Hennig, Bensheim; Johannes Schlag, Ludwigshafen, all of Fed. Rep. of Germany, and Thomas Muehlenbernd, Tokyo, Japan, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

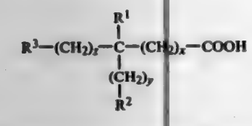
Filed May 8, 1992, Ser. No. 880,380

Claims priority, application Fed. Rep. of Germany, May 15, 1991, 4115751; May 15, 1991, 4135201; May 15, 1991, 4135202; Dec. 14, 1991, 4141272; Dec. 14, 1991, 4242273

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—300 **3 Claims**

1. An electrically semiconductive mixture based on ethylene homopolymers and/or copolymers, containing, based in each case on the mixture, from 10 to 50% by weight of an electrically conductive pigment and from 0.01 to 5% by weight of one or more compounds selected from the group consisting of the carboxylic acids of the formula I



(I)

where R^1, R^2 and R^3 independently of one another are each hydrogen, hydroxyl or carboxyl and x, y and z independently of one another are each 0 or an integer of from 1 to 3, and the anhydrides of these carboxylic acids I.

5,296,523

INORGANIC COLORANT, COLORANT-DISPERSED PASTE, AND PAINT CONTAINING THE SAME

Toshikatsu Kobayashi, Kyoto; Kenji Kouguchi, and Hiroyuki Kageyama, both of Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 524,889, May 18, 1990, abandoned. This application Feb. 12, 1992, Ser. No. 834,402

Claims priority, application Japan, May 22, 1989, 1-128240

Int. Cl.[5] C08K *9/00*

U.S. Cl. 523—200 **7 Claims**

1. In a paint comprising:

a resin, having a neutralized acidic or basic functional group, dissolved in said water, as a vehicle for said paint and

particles of at least one inorganic colorant which has surface hydroxyl groups and, as a consequence, a high surface polarity, dispersed in said water in which said resin is dissolved;

the improvement, whereby reducing the free energy at an interface between said inorganic colorant particles and said resin, which comprises:

the surface of high polarity of said inorganic colorant particles being at least partially covered with a coating consisting essentially of an amount of a non-polar crosslinked organic polymer sufficient to form enough of a nonpolar surface on the surface of said colorant particles to reduce the polarity of the surface of said inorganic colorant particles, to increase the affinity of said thus covered inorganic colorant particle surface to said resin, and to thereby increase the dispersibility of said covered inorganic colorant particles in said water in which said resin is dissolved;

said surface covering having been achieved by subjecting said inorganic colorant particles to low temperature plasma polymerization of a polymerizable organic compound under conditions sufficient to at least partially cover the surface thereof, which has high polarity, with said crosslinked polymer.

5,296,524

COMPOSITE PARTICLE DISPERSIONS

Julian A. Waters, Goring-on-Thames, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 555,024, Jul. 20, 1990, Pat. No. 5,210,113. This application Feb. 1, 1993, Ser. No. 11,543

Claims priority, application United Kingdom, Jul. 25, 1989, 8916944

The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.

Int. Cl.[5] C08L *31/06*

U.S. Cl. 523—319 **4 Claims**

1. A process for preparing a colloidally stable dispersion of composite particles in an aqueous phase, which process comprises mixing an aqueous dispersion of first polymer particles, where the particle surfaces include covalently attached ionic groupings to give the particles colloidal stability prior to the mixing, with an aqueous colloidally stable dispersion of second polymer particles; wherein the mixing takes place at a temperature above the operative glass transition temperature of the second particles and where

$$\theta_p < 90°$$

and

$$\cos\theta_p \geq \frac{1 - V_p^{\frac{1}{3}}}{V_c^{\frac{1}{3}}}$$

where v_p and v_c represent the relative volumes of, respectively, the average second particle and the average first particle, with $v_p + v_c = 1$ and where θ_p is the contact angle made by the material of the second particles in an environment of the aqueous phase at a surface which has the surface composition of the first particles.

5,296,525

AQUEOUS COATING COMPOSITIONS

Arthur T. Spencer, Allison Park, Pa., assignor to The Valspar Corporation, Minneapolis, Minn.

Continuation of Ser. No. 840,620, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 741,217, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 636,547, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 567,683, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 471,017, Jan. 22, 1990, abandoned, which is a continuation of Ser. No. 84,915, Aug. 13, 1987, abandoned. This application Oct. 22, 1992, Ser. No. 965,605

Int. Cl.[5] C08K *3/20*; C08L *25/04*

U.S. Cl. 523—408 **12 Claims**

1. A method of preparing a coating composition comprising

a) reacting from about 10% to about 50% of the 1,2- epoxy groups of a 1,2-epoxy resin with an ethylenically unsaturated, epoxy-reactive monomer under conditions providing a modified epoxy resin having unsaturated sites for subsequent copolymerization;

b) reacting the remaining 1,2-epoxy groups of the modified epoxy resin with a preformed carboxyl functional addition polymer and tertiary amine; and

c) in an aqueous dispersion of the resulting reaction product, copolymerizing the ethylenically unsaturated groups resulting from Step (a) with an ethylenically unsaturated monomer.

5,296,526

A PROCESS FOR PREPARING A COMPOSITION CONTAINING A POLYMER OF UNSATURATED HYDROCARBON, A C_{1-4} ALKYL OR HYDROXYALKYLETHER OF STARCH AND A VINYL OR ACRYLIC POLYMER AS A COMPATIBILIZING AGENT

Rita M. Deirae, Bergen Op Zoom; Anton L. German, Eindhoven; Henricus E. H. Meijer, Veldhoven; Antonius H. Zijderveld, Vaassen, and Jan Bussink, Bergen Op Zoom, all of Netherlands, assignors to Cargill, Incorporated, Minneapolis, Minn.

Division of Ser. No. 744,943, Aug. 14, 1991, Pat. No. 5,234,978. This application Jul. 9, 1993, Ser. No. 89,719

Claims priority, application Netherlands, Aug. 15, 1990, 9001826

Int. Cl.[5] C08L *3/08*

U.S. Cl. 524—50 **1 Claim**

1. A process for preparing a composition containing a polymer of an unsaturated hydrocarbon, a C_{1-4} alkyl or hydroxyalkyl ether of starch having a degree of substitution of at least 0.25 and a compatibilizing agent and terpolymers of ethylene-vinyl acetate(meth)acrylic acid, wherein the composition also contains a polyhydric aliphatic alcohol having 2–10 carbon atoms and 2–6 hydroxyl groups as a dispenser/plasticizer/lubricant for the starch ether,

wherein the starch ether and the polyhydric alcohol are extruded together as a homogeneous material and thereafter admixed with the other components, and wherein this mixture is extruded.

5,296,527

POLYMETHYLPENTENE COMPOSITIONS

Edwin Boudreaux, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 927,764, Aug. 10, 1992, Pat. No. 5,266,621, which is a continuation of Ser. No. 673,602, Mar. 21, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 85,521

Int. Cl.[5] C08F *283/00*; C08L *81/00*

U.S. Cl. 524—502 **10 Claims**

1. A composition of matter consisting essentially of:

about 99.5 to about 75 weight percent of composition (a), wherein the weight percent of composition (a) is based on the total weight of compositions (a) and (b), and wherein composition (a) consists essentially of unmodified polymethylpentene; and

about 0.5 to about 25 weight percent of composition (b), wherein the weight percent of composition (b) is based on the total weight of compositions (a) and (b), and wherein composition (b) consists essentially of polyphenylene sulfide; and

about 10 to about 67 weight percent of composition (c), wherein the weight percent of composition (c) is based on the total weight of compositions (a), (b), and (c), and wherein composition (c) consists essentially of glass fibers; and

wherein composition (a), composition (b), and composition (c) are compounded at a temperature above the melting point of said unmodified polymethylpentene and said polyphenylene sulfide.

5,296,528

COMPATIBLE POLYMER BLENDS WITH THERMOPLASTIC POLYCARBONATES

Holger Lütjens, Köln; Karl-Erwin Piejko, Bergisch Gladbach; Rüdiger Plaetschke, Leverkusen; Christian Lindner, Köln, and Jürgen Kirsch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 31, 1992, Ser. No. 922,898

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126422

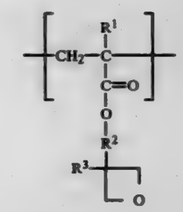
Int. Cl.[5] C08L *29/10, 69/00*

U.S. Cl. 524—513 **7 Claims**

1. A transparent thermoplastic molding composition consisting of

A) 90 to 40 percent of a thermoplastic polycarbonate based on 2,2-bis-(4-hydroxyphenyl)-propane and

B) 10 to 60 percent of a resin-like vinyl polymer having a weight average molecular weight of 10,000 to 500,000 and which contains 100% by weight structural units corresponding to formula (Ia)



(Ia)

in which

R^1 is H or CH_3,

R^2 is C_{1-4} alkylene, and

R^3 is C_{1-4} alkyl.

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5,296,529
SELF-CROSSLINKING RESIN

Yoshiyuki Yukawa, Hiratsuka; Motoshi Yabuta, Hadano; Akimasa Nakahata, Hiratsuka, and Kazunori Mayumi, Aichi, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Aug. 3, 1993, Ser. No. 100,994
Claims priority, application Japan, Aug. 18, 1992, 4-219087
Int. Cl.[5] C08G *81/02*
U.S. Cl. 524—513 12 Claims

1. A self-crosslinking resin having a carboxyl group, a blocked isocyanate group and a hydroxyl group in the molecule and characterized in that the resin is prepared from a vinyl polymer (A) having at least two free isocyanate groups in the molecule and a polyester resin (B) having at least two hydroxyl groups and at least one carboxyl group in the molecule by reacting some of the hydroxyl groups of the resin (B) with some of the free isocyanate groups of the polymer (A), and subsequently reacting a blocking agent with all the remaining free isocyanate groups.

5,296,530
METHOD FOR LIGHT-ASSISTED CURING OF COATINGS

Daniel A. Bors, Warminster; William D. Emmons, Huntingdon Valley, and Steven S. Edwards, Horsham, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 28, 1992, Ser. No. 920,972
Int. Cl.[5] B32B *27/30*; C08F *8/32, 16/36*; C08L *29/12*
U.S. Cl. 524—558 1 Claim

1. A process of preparing an aqueous coating composition for application to substrates which are exposed to ultraviolet light comprising:

a) mixing a vinyl polymer having acetoacetyl functional groups with an amount of ammonia or primary amine sufficient to convert the acetoacetyl groups to enamine,

b) storing the mixture for a period sufficient to allow the reactants to equilibrate,

c) adding a sufficient amount of ammonia or primary amine to raise the pH to about 9, and

d) maintaining the pH at about 9 until the coating is applied to the substrate.

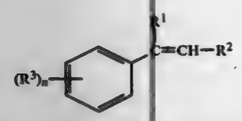
5,296,531
PIGMENT PREPARATIONS

Horst Belde; Manfred Herrmann; Franz Leppmeier, all of Ludwigshafen, and Dietrich Lach, Friedelsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 23, 1992, Ser. No. 980,189
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142240
Int. Cl.[5] C08L *39/06*
U.S. Cl. 524—556 15 Claims

1. A pigment preparation, consisting essentially of at least one pigment or delusterant or a mixture thereof, a binder and water, the binder, comprising:

A) from about 55 to 65% by weight of at least one aromatic vinyl compound of the formula (I):



I

wherein R^1, R^2 and R^3 are each hydrogen, methyl or ethyl and n is 1 or 2, and

B) from about 35 to 45% by weight of acrylic acid in the form of an ammonium salt.

5,296,532
ADHESIVE COMPOSITIONS CONTAINING AQUEOUS COPOLYMER DISPERSIONS AND ACID METAL SALTS OR FREE ACIDS

Reinhard Haerzschel; Rudolf Weissgerber; Herbert Kaiser, and Wilhelm Kaiser, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 626,953, Dec. 13, 1990, abandoned. This application Feb. 14, 1992, Ser. No. 837,553
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942628
Int. Cl.[5] C08K *5/09*; C08L *29/04*; C08G *63/91*; C08F *6/00*
U.S. Cl. 524—398 6 Claims

1. An adhesive composition having a high resistance to hot water and a long pot life comprising an aqueous vinyl ester graft copolymer dispersion, a water-soluble metal salt of a monobasic acid having a pK_a of less than 0, in which the vinyl ester graft copolymer comprises:

I. 2 to 12% by weight, based on the total weight of the graft copolymer, of at least one polyvinyl alcohol having a degree of hydrolysis of from 60 to 99 mole percent; and

II. 88 to 98% by weight, based on the total weight of the graft copolymer, of a monomer mixer containing:

(a) 5 to 50% by weight, based on the total weight of the monomer mixture, of vinyl esters of saturated, highly branched aliphatic monocarboxylic acids having 9 or 10 carbon atoms, vinyl pivalate, diisopropyl maleate, diisopropyl fumarate, vinyl chloride and mixtures thereof;

(b) 50 to 95% by weight, based on the total weight of the monomer mixture, of vinyl esters other than (a) having 1 to 18 carbon atoms in the acid radical;

(c) 0.01 to 4% by weight, based on the total weight of the monomer mixture, of copolymerizable polyethylenically unsaturated monomers; and

(d) 0 to 26% by weight, based on the total weight of the monomer mixture, of other copolymerizable monoethylenically unsaturated monomers.

5,296,533
THERMOPLASTIC RESIN COMPOSITION HAVING IMPROVED RESISTANCE TO DISCOLORATION FROM SUNLIGHT

Kenji Nagaoka; Hiroshi Hagimori, both of Ichihara; Yasurou Suzuki, Kisarazu; Takashi Sanada, Ichihara, and Etsuji Okumura, Yotsukaido, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 791,734, Nov. 14, 1991. This application Oct. 28, 1992, Ser. No. 967,842
Int. Cl.[5] C08J *5/10*; C08K *3/18, 3/22*; C08L *71/12*
U.S. Cl. 524—430 5 Claims

1. A resin composition having improved resistance to discoloration by sunlight, comprising (A) a polymer mixture which comprises a polyphenylene ether, a polyamide and optionally a polystyrene and/or an agent to improve impact resistance, and (B) an inorganic powder whose mean particle size is less than or equal to 5 micrometers, in an amount of more than or equal to 15 parts by weight based on 100 parts by weight of the polyphenylene ether in the polymer mixture (A), which is selected from the group consisting of titanium oxide, mica coated with titanium oxide, barium sulphate, zinc oxide and zinc sulfide.

5,296,534
FLAME RETARDANT COMPOSITION

Akitaka Senuma; Nobuo Yasuda, both of Yokohama, and Isao Noda, Yokosuka, all of Japan, assignors to Nippon Unicar Company Limited, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,631
Claims priority, application Japan, Jan. 16, 1992, 4-25744; Jan. 20, 1992, 4-31601
Int. Cl.[5] C08K *3/22*
U.S. Cl. 524—436 7 Claims

1. A composition comprising:

(i) a thermoplastic resin;

(ii) magnesium hydroxide; and

(iii) a styrene elastomer having an organopolysiloxane grafted thereto

wherein for each 100 parts by weight of thermoplastic resin, the other components are present in about the following amounts:

Component	Parts by weight
magnesium hydroxide	5 to 450
organopolysiloxane grafted styrene elastomer	1 to 80

5,296,535
REMOISTENABLE ADHESIVE COMPOSITION

Russell J. Nesiewicz, Hickory Hills, and Christopher T. Fazioli, Western Springs, both of Ill., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 439,750, Nov. 21, 1989, abandoned. This application May 3, 1990, Ser. No. 518,350
Int. Cl.[5] C09J *1/00, 11/04, 11/08*
U.S. Cl. 524—446 10 Claims

1. A liquid remoistenable adhesive composition having satisfactory properties at high temperatures and high humidity comprising water, a partially hydrolyzed polyvinyl alcohol having a degree of hydrolysis of from about 70 to 92% and a viscosity of a 4% aqueous solution at 20° C. of from about 2 to 50 cps, and a chemically inert, non-thermoplastic, cold water insoluble, particulate additive which is compatible and dispersible with the polyvinyl alcohol in water and wherein the additive is selected from the group consisting of clay, talc, calcium carbonate, gypsum, mica and ungelatinized granular starch, the alcohol and additive being present in an amount of from about 1:3 to 1:0.5 parts by weight of alcohol to additive, the composition having a viscosity of about 500 to 15,000 cps at 72° F. (22.2° C.) and a solids content of about 30 to 80% and provides resistance to hygroscopic blocking and thermoplastic blocking.

5,296,536
POLYMER BASED ARTICLES HAVING INCREASED STRUCTURAL RIGIDITY

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Filed Sep. 18, 1991, Ser. No. 761,502
Int. Cl.[5] C08K *3/04*
U.S. Cl. 524—495 13 Claims

1. A product which limits the structural deformation of polymer chains in a mixture, comprising a combination of polymer chains and fullerene molecules used in polymer based articles, whereby said fullerene molecules structurally support the polymer chains to preclude excessive deformation.

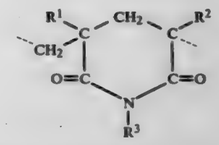
5,296,537
POLYMER BLENDS WITH ENHANCED PROPERTIES

Edward E. La Fleur, Warminster; Robert M. Amici, Doylestown, both of Pa.; William T. Freed, Stockton, N.J.; William J. Work, Huntingdon Valley, Pa., and William G. Carson, Moorestown, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 843,784, Feb. 28, 1992, Pat. No. 5,208,083, which is a division of Ser. No. 438,371, Nov. 16, 1989, Pat. No. 5,147,930. This application Feb. 16, 1993, Ser. No. 19,410
Int. Cl.[5] C08L *29/04, 33.08, 33/10*
U.S. Cl. 525—57 5 Claims

1. A gas-barrier polymer blend comprising

a) from about 20% to about 95% by weight of a first polymer containing at least 50 mole percent mers of one or both of lower alkyl (meth)acrylates and glutarimides of the formula



wherein R^1 and R^2 are selected from H and lower alkyl, and R^3 is selected from hydrogen, alkyl, aryl, alkaryl and aralkyl and forming a continuous phase,

b) from about 2.5% to about 40% by weight of a second polymer having at least 50 mole percent vinyl alcohol mers which is either miscible with, or forms a discontinuous phase in, the continuous phase, wherein the permeability to oxygen of the blend is 10% or less of the permeability of the first polymer alone, in the form of a laminar film or sheet having one or more additional layers, and

c) up to about 75% by weight of one or more additional thermoplastic polymers that are compatible with the continuous phase.

5,296,538
THERMOPLASTIC RESIN COMPOSITION

Yuichi Orikasa, Yokohama, and Suehiro Sakazume, Fujisawa, both of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Nippon Oil Fats Co., Ltd., Japan

Filed Mar. 25, 1992, Ser. No. 857,472
Claims priority, application Japan, Mar. 25, 1991, 3-83044
Int. Cl.[5] C08G *63/48, 63/91*
U.S. Cl. 525—63 10 Claims

1. A thermoplastic resin composition comprising

60 to 80% by weight of a polyarylenesulfide resin (I),

20 to 40% by weight of at least one polyphenyleneether resin (II), and

0.1 to 100 parts by weight, on the basis of 100 parts by weight of the aforesaid resins (I)+(II), of a graft copolymer as compatibilizer (III) for the resins (I) and (II),

wherein the compatibilizer having a multi-phase structure and being the graft copolymer is composed of 5 to 95% by weight of an epoxy group-containing olefin copolymer selected from the group consisting of ethylene-glycidyl (metha) acrylate copolymers, ethylene-glycidyl (metha) acrylate- (metha) acrylic acid alkyl ester copolymers, and 95 to 5% by weight of a vinyl (co)polymer having a polymerization degree of 5 to 10,000 and which is a styrene homopolymer or a styrene-acrylonitrile copolymer containing 50% by weight or more of styrene unit, one of the (co)polymer components of the graft copolymer being in the form of a dispersion phase having a particle diameter of 0.001 to 10 μm.

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5,296,539

THERMOPLASTIC COMPOSITIONS WITH IMPROVED MECHANICAL CHARACTERISTICS

Dario Ghidoni, Gonzaga; Gian C. Fasulo, San Silvestro, and Italo Borghi, Ferrara, all of Italy, assignors to ECP Enichem Polimeri S.R.L., Milan, Italy

Continuation of Ser. No. 856,683, Mar. 24, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 108,255

Claims priority, application Italy, Mar. 29, 1991, MI 91 A 000890

Int. Cl.[5] C08L *51/04, 77/06*

U.S. Cl. 525—66 14 Claims

1. Thermoplastic compositions having improved mechanical characteristics comprising:

A) from 10 to 90% by weight of a graft impact-resistant vinylaromatic copolymer containing between 0.1 and 2% by weight of an ethylenically unsaturated compound containing in its molecule a carboxylic acid, anhydride, amide or ester group, said vinylaromatic copolymer being at least partially grafted on an olefinic elastomer;

B) from 90 to 10% by weight of a polyamide resin; and

C) from 1 to 10 parts by weight, with respect to the mixture composed of the graft impact-resistant vinylaromatic copolymer (A) and the polyamide resin (B), of a polyolefin.

5,296,540

SHAPED RESIN ARTICLE COMPRISING POLYPHENYLENE ETHER

Yoshikuni Akiyama, Kurashiki, and Ken Mizushiro, Fuchu, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 476,436, May 25, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 982,124

Claims priority, application Japan, Oct. 6, 1989, 1-260072; Nov. 15, 1989, 1-294953

Int. Cl.[5] C08L *53/02, 71/12;* C08F *283/08*

U.S. Cl. 525—88 6 Claims

1. A shaped resin article consisting essentially of:

(1) a continuous phase of a polyphenylene ether and (2) a dispersed phase dispersed in said continuous phase (1) and consisting essentially of:

(α) a particulate dispersed polyolefin phase which is comprised of a polyolefin and has a minor diameter of not greater than 0.5 μm, the outer surface of said dispersed polyolefin phase (α) having, cohered thereto, particles of at least one block copolymer selected from the group consisting of a block copolymer of a vinyl aromatic compound and a conjugated diene compound, and a hydrogenation product thereof, and

(β) a particulate dispersed copolymer phase having a minor diameter of not greater than 0.3 μm, which is comprised of said at least one block copolymer and is dispersed in said continuous phase (1) and not cohered to said dispersed polyolefin phase (α),

said at least one block copolymer having a Young's modulus of at least 1,500 Kg/cm^2,

wherein the weight proportions of said polyphenylene ether, said polyolefin and said at least one block copolymer are respectively from 50 to 95%, from 5 to 15% and from 10 to 35% relative to the total weight of said polyphenylene ether, said polyolefin and said at least one block copolymer.

5,296,541

POLYAZETIDINOL CONTAINING MATERIALS

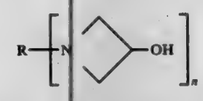
Shanti Swarup, and Gregory J. McCollum, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 814,655, Dec. 30, 1991. This application Aug. 23, 1993, Ser. No. 109,895

Int. Cl.[5] C08F *8/30*

U.S. Cl. 524—556 15 Claims

1. A reaction product of a polycarboxylic acid group containing polymeric material and a polyazetidinol represented by the following structural formula:



wherein R is alkylene, arylene, aralkylene, cycloalkylene or a heteroatom substituted derivative thereof, and n is an integer of from 2 to 4.

5,296,542

HEAT RESISTANT POLYMERS AND BLENDS OF HYDROQUINONE POLY (ISOTEREPHTHALATES) CONTAINING RESIDUES OF P-HYDROXYBENZOIC ACID

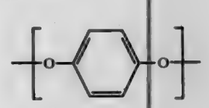
Richard Layton, Augusta, Ga.; James W. Cleary, Neenah, Wis.; Paul J. Huspeni, North Augusta, S.C.; Paul D. Frayer, Martinez, Ga., and Markus Matzner, Edison, N.J., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 499,482, Jun. 4, 1990, Pat. No. 5,079,289, which is a continuation-in-part of Ser. No. 255,670, Oct. 11, 1988, abandoned, and a continuation-in-part of Ser. No. 255,632, Oct. 11, 1988, abandoned. This application Nov. 8, 1991, Ser. No. 790,663

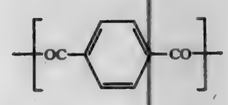
Int. Cl.[5] C08F *20/00;* C08G *63/00, 63/02*

U.S. Cl. 524—600 34 Claims

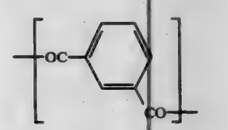
1. A fully aromatic polyester blend comprising 1 to 19 parts by weight of a polyester (a) comprising the following recurring moieties:



(I)



(II)



(III)



(IV)

wherein the sum of the number of units (II) and (III) is approximately equal to the number of unit (I); and unit (IV) ranges from about 0.18 to about 9.0 moles per each mole of unit (I); and which has a melting point in the range of from about 340° to about 400° C., a crystallization temperature of from about 300° to about 340° C., and a crystallization rate of at least 1,000 counts/minute; to one part by weight of a polyester (b) comprising recurring moieties:

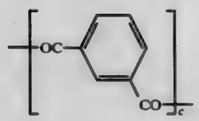


(V)

-continued



(VI)



(VII)



(VIII)

wherein the sum of the number of units (VI) and (VII) is approximately equal to the number of unit (V); and unit (VIII) ranges from about 1 to about 7 moles per each mole of unit (V); and said blend, when filled with 30 weight percent glass fibers has an heat distortion temperature of at least 240° C. when measured under a load of 264 psi.

5,296,543

AROMATIC POLYAMIDE COMPOSITIONS AND FIBERS

Robert V. Kasowski, West Chester, Pa.; Kiu-Seung Lee, Richmond, Va., and Ying Wang, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 52,810, Apr. 23, 1993. This application Sep. 8, 1993, Ser. No. 115,850

Int. Cl.[5] C08L *77/00*

U.S. Cl. 524—606 9 Claims

1. An aromatic polyamide composition consisting essentially of an aromatic polyamide, and from about 0.1 to about 20% by weight, based on the weight of the polyamide, of a fullerene compound.

5,296,544

POLYESTER-POLYURETHANE HYBRID RESIN SYSTEMS CONTAINING LOW LEVELS OF UNSATURATION HAVING IMPROVED LOW PROFILING BEHAVIOR

Michael S. Heise, Naperville, and Janet L. Zuffa, Elmhurst, both of Ill., assignors to Cook Composites and Polymers, Port Washington, Wis.

Filed Jul. 14, 1992, Ser. No. 913,297

Int. Cl.[5] C08L *67/06, 75/04*

U.S. Cl. 525—28 8 Claims

1. A polyester-polyurethane hybrid resin molding composition of the present invention formed by contacting:

(A) an A-side composition comprising a polyfunctional isocyanate compound and a free radical polymerization catalyst with,

(B) a B-side composition wherein the B-side composition comprises: an ethylenically unsaturated monomer solution having dissolved therein from about 40 wt. % to about 90 wt. % based on total B-side, of a substantially water-free, unsaturated polyester polyol which is the reaction product of:

(1) an unsaturated diacid selected from the group consisting of dicarboxylic acid, dianhydride, anhydride, and derivatives thereof, and

(2) a saturated diacid selected from the group consisting of dicarboxylic acid, dianhydride, anhydride, and derivatives thereof, in amounts such that the level of unsaturation is from about 2.5 to about 4 moles/kg polyol wherein the fumarate levels are greater than 95%, and

(c) a diol composition which is present in a molar excess to achieve a polyol equivalent weight ranging from about 250 to about 1000 and

said polyester-polyurethane hybrid resin molding composition further comprising a low profile additive and further wherein the polyol resin composition has an acid number less than five.

5,296,545

SURFACE APPEARANCE AND PROCESSING CHARACTERISTICS FOR URETHANE-CATALYZED LOW PROFILE-MODIFIED POLYESTER-POLYURETHANE HYBRID RESINS

Michael S. Heise, Naperville, Ill., assignor to Cook Composites and Polymers, Port Washington, Wis.

Filed Jul. 14, 1992, Ser. No. 913,300

Int. Cl.[5] C08L *67/06, 75/04*

U.S. Cl. 525—28 10 Claims

1. A polyester-polyurethane hybrid resin molding composition of the present invention formed by contacting:

(A) an A-side composition comprising a polyfunctional isocyanate compound and a free radical polymerization catalyst and,

(B) a B-side composition wherein the B-side composition comprises:

(1) a urethane catalyst, and

(2) an ethylenically unsaturated monomer solution having dissolved therein from about 40 wt. % to about 90 wt. % based on total B-side, of a substantially water-free, unsaturated polyester polyol which is the reaction product of:

(a) an unsaturated dicarboxylic acid, dianhydride, anhydride, or derivative thereof, and

(b) a saturated dicarboxylic acid, dianhydride, anhydride or derivative thereof, in amounts such that the level of unsaturation is greater than about 2.5 moles/Kg wherein the fumarate levels are greater than 95%, and

(c) a diol composition which is present in a molar excess to achieve a polyol equivalent weight ranging from about 250 to about 1000,

said polyester-polyurethane hybrid resin molding composition further comprising a low profile additive and further wherein the polyol resin composition has an acid number less than five.

5,296,546

WEATHER RESISTANT IMPACT MODIFIERS FOR THERMOPLASTIC RESINS

Kazuo Kishida, Hiroshima, Japan, and Kiyokazu Kitai, Westfield, N.J., assignors to Mitsubishi Rayon Co., Ltd.

Continuation of Ser. No. 369,685, Jun. 21, 1989, abandoned. This application Sep. 28, 1992, Ser. No. 952,467

Claims priority, application Japan, Aug. 10, 1988, 63-198082

Int. Cl.[5] C08F *265/04, 265/06, 297/02*

U.S. Cl. 525—310 10 Claims

1. A weather resistant impact modifier for thermoplastic resins which comprises a graft copolymer having a multi-layered structure which is obtained by graft polymerization of a component (c) which is a combination of

(i) 10–100 parts by weight of a monomer or a monomer mixture consisting of an aromatic vinyl monomer in a first stage selected from the group consisting of styrene, alpha-methylstyrene and vinyl toluene and

(ii) 10–100 parts by weight of a monomer or a monomer mixture consisting of a methacrylic ester in a second stage selected from the group consisting of alkyl esters of methacrylic acid,

to 100 parts by weight of an elastomer obtained by polymerizing a component (b) consisting of 98–60 parts by weight of a monomer mixture composed of

(i) 60–99.95 wt % of a copolymerizable monomer selected from the group consisting of alkyl esters of acrylic acid,

(ii) 0–49.95 wt % of another copolymerizable monomer

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consisting of a vinyl group containing unsaturated monomer and

(iii) 0.05–5 wt % of a polyfunctional monomer,

in the presence of 2–40 parts by weight of a component (a) composed of a butadiene elastomer having a degree of swelling of 5–40 and an average particle size not less than 0.15 μm.

5,296,547

BLOCK COPOLYMER HAVING MIXED MOLECULAR WEIGHT ENDBLOCKS

Mark K. Nestegard, Woodbury, and Jingjing Ma, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 28, 1993, Ser. No. 10,122

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **11 Claims**

1. A polymodal asymmetric elastomeric block copolymer of the formula Q_nY, comprising from about 4 to about 40 percent by weight of a polymerized monovinyl aromatic compound and from about 96 to about 60 percent by weight of polymerized conjugated diene, wherein:

Q represents an individual arm of the block copolymer and has the formula S-B;

n represents the number of arms Q in the block copolymer and is a whole number of at least 3; and

Y is the residue of a multifunctional coupling agent;

and further wherein:

(a) S is a nonelastomeric polymer segment endblock of a polymerized monovinyl aromatic homopolymer, there being at least two different molecular weight endblocks in the copolymer, a higher molecular weight endblock and a lower molecular weight endblock, wherein:

(i) the number average molecular weight of the higher molecular weight endblock $(Mn)_H$ is in the range of from about 5,000 to about 50,000;

(ii) the number average molecular weight of the lower molecular weight endblock $(Mn)_L$ is in the range of from about 1,000 to about 10,000; and

(iii) the ratio $(Mn)_H/(Mn)_L$ is at least 1.25; and

(b) B is an elastomeric polymer segment midblock which connects each arm to the residue of a multifunctional coupling agent (Y) and comprises a polymerized conjugated diene or combination of conjugated dienes.

5,296,548

COMPOSITIONS OF CRYSTALLINE PROPYLENE POLYMERS HAVING A LOW SEAL TEMPERATURE

Massimo Covezzi, and Antonio Ciarrocchi, both of Ferrara, Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Sep. 23, 1991, Ser. No. 763,695

Claims priority, application Italy, Sep. 28, 1990, 21601 A/90

Int. Cl.[5] C08F *297/08*; C08L *23/16, 23/14*

U.S. Cl. 525—322 **7 Claims**

1. A composition of crystalline propylene polymers consisting essentially of (percent by weight) either

(I):

A) 30–65% of a copolymer consisting of propylene and a C_4–C_8 α-olefin containing from 98 to 80% propylene; and

B) 35–70% of a copolymer consisting of propylene with ethylene, said copolymer containing 2 to 10% ethylene; or

(II):

A) 45–65% of copolymer (I) A); and

B) 55–35% of a terpolymer consisting of propylene with ehtylene and from 2 to 10% of a C_4–C_8 α-olefin, said terpolymer containing 0.5 to 5% ethylene, wherein the composition has a melting point of about 125° to 140° C. and is prepared by sequential polymerization.

5,296,549

VULCANIZABLE RUBBER COMPOSITION CONTAINING A PEROXIDE CROSSLINKER

Shuji Suyama; Hideyo Ishigaki, both of Aichi; Masayasu Tomoda, Osaka; Yoshihiro Shirai, Osaka; Hiroyuki Tanaka, Osaka, and Masaharu Komai, Osaka, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

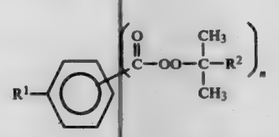
Filed Mar. 27, 1992, Ser. No. 858,505

Claims priority, application Japan, Mar. 27, 1991, 3-62923

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—326.3 **5 Claims**

1. A vulcanizable rubber composition which contains an iodine-containing rubber and an organic peroxide of the formula:



(I)

wherein R^1 is a hydrogen atom, a chlorine atoms or methyl group, R^2 is a linear or branched alkyl group having 3 to 5 carbon atoms, and n is an integer of 1 to 3.

5,296,550

IMPACT MODIFIED POLYESTER BLENDS WITH IMPROVED POLYMER COMPATIBILITY

Kavilipalayam M. Natarajan, North Brunswick; Palanisamy Arjunan, Dayton, and David Elwood, Palisades Park, all of N.J., assignors to Enichem S.p.A., Italy

Filed Nov. 1, 1991, Ser. No. 786,578

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—170 **38 Claims**

1. A thermoplastic molding composition comprising:

a first polymer comprising a thermoplastic polyester;

one or more second polymers suitable for use in thermoplastic molding compositions and selected from the group consisting of polyamides, polyolefins and mixtures thereof; and

an ethylene copolymer containing epoxy groups represented by the formula:

X/Y/Z

wherein

X is a monomeric unit formed from ethylene and comprises from about 50 to about 95 weight percent of said copolymer;

Y is a monomeric unit formed from a monomer selected from the group consisting of vinyl acetate and acrylate monomers having the structure:



in which

R_1 is selected from the group consisting of alkyl and cycloalkyl groups containing from about 1 to about 12 carbon atoms and phenyl and alkylphenyl groups, the alkyl portion of which contains from about 1 to about 12 carbon atoms; R_2 is selected from the group consisting of hydrogen, methyl and ethyl; and Y comprises from about 4 to about 35 weight percent of said copolymer; and

Z is a monomeric unit formed from a monomer containing an epoxy group selected from the group consisting of glycidyl acrylate and glycidyl methacrylate, wherein Z comprises from about 1 to about 15 weight percent of said copolymer.

5,296,551

SELF-CROSSLINKING RESIN

Yoshiyuki Yukawa, Hiratsuka; Motoshi Yabuta, Hadano; Akimasa Nakahata, Hiratsuka, and Kazunori Mayumi, Aichi, all of Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Filed Jul. 27, 1993, Ser. No. 97,236

Claims priority, application Japan, Aug. 3, 1992, 4-206662

Int. Cl.[5] C08G *81/02*

U.S. Cl. 525—175 **8 Claims**

1. A self-crosslinking resin having a blocked isocyanate group and a hydroxyl group in the molecule and characterized in that the resin is prepared from a vinyl polymer (A) having at least two free isocyanate groups in the molecule and a polyester resin (B) having at least two hydroxyl groups in the molecule by reacting some of the hydroxyl groups of the resin (B) with some of the free isocyanate groups of the polymer (A), and subsequently reacting a blocking agent with all the remaining free isocyanate groups.

5,296,552

ADHESIVE RESIN COMPOSITION

Tadayuki Ohmae, Chiba; Yoshiki Toyoshima, Ichihara; Hisao Tanaka, Ichihara; Mitsuyuki Okada, Ichihara, and Harunori Fujita, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 25, 1992, Ser. No. 840,805

Claims priority, application Japan, Feb. 27, 1991, 3-032697

Int. Cl.[5] C08L *23/26*

U.S. Cl. 525—193 **5 Claims**

1. An adhesive resin composition consisting essentially of

a mixture of at least one crystalline polyolefin resin (A) selected from the group consisting of low density polyethylene, high density polyethylene and copolymers of ethylene and an α-olefin of at least 3 carbon atoms and have an ethylene content of 90% by weight or more, and 45–95% by weight of an amorphous or low crystalline olefin copolymer of ethylene and an α-olefin having at least 3 carbon atoms (B),

maleic anhydride, and

at least one crystalline polyolefin resin (E) selected from the group consisting of low density polyethylene, high density polyethylene, linear low density polyethylene, copolymers of ethylene and any one of vinyl acetate, acrylic acid and their esters and obtained by

(a) mixing

(i) 0.01–5 parts by weight of maleic anhydride,

(ii) 0.01–2 parts by weight of a free-radical initiator (D), and

(iii) 100 parts by weight of a mixture consisting of 55–5% by weight of a crystalline polyolefin resin (A) selected from the group consisting of low density polyethylene, high density polyethylene, and copolymers of ethylene and an α-olefin of at least 3 carbon atoms which copolymers have an ethylene content of 90% by weight or more and 45–95% by weight of an amorphous or low crystalline olefin copolymer of ethylene and an α-olefin having at least 3 carbon atoms (B),

to obtain a precursor mixture,

(b) melt-kneading the precursor mixture in the first half stage of a twin-screw extruder having at least one side feeder provided at at least one portion of said extruder, the location of said one side feeder being selected from the group consisting of the midway stage of the extruder and the latter half stage of the extruder, to obtain a modified precursor mixture, and

(c) feeding a crystalline polyolefin resin (E) selected from the group consisting of low density polyethylene, high density polyethylene, linear low density polyethylene, and copolymers of ethylene and any one of vinyl acetate, acrylic acid and their esters from the at least one side feeder of the extruder and mixing the resin (E) with the modified precursor mixture so that the ratio of the total weight of the components (A) and (B) to the weight of the component (E) is within the range of from 60:40 to 2:98.

5,296,553

PROCESS FOR ISOLATION OF LOW MOLECULAR WEIGHT CHLORINATED AND CHLOROSULFONATED RESINS

Edward G. Brugel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1992, Ser. No. 979,109

Int. Cl.[5] C08L *23/28, 23/34*

U.S. Cl. 525—194 **18 Claims**

1. A process for isolation of low molecular weight chlorinated olefin polymers having enhanced melt and film strength which comprises

(a) preparing an olefin polymer blend by combining a C_2–C_8 olefin polymer having a melt index of 0.5–20 g/10 minutes, as determined according to ASTM D 1238, Method E, with a C_2–C_8 olefin polymer having a weight average molecular weight below about 10,000 in a weight ratio of about 2–15:100 respectively,

(b) chlorinating the olefin polymer blend in a halogenated solvent in the presence of a free radical catalyst and a chlorinating agent to produce a chlorinated olefin polymer blend having a chlorine content of 20–70% by weight, and

(c) recovering the chlorinated polymer blend.

5,296,554

ADHESIVE RESIN COMPOSITION

Kazuyuki Watanabe, and Yuji Kira, both of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 783,246, Oct. 28, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 43,892

Int. Cl.[5] C08L *23/08, 23/16, 33/00*

U.S. Cl. 525—207 **2 Claims**

1. An adhesive resin composition which comprises:

(A) 2 to 98% by weight of an ethylene copolymer resin containing 0.01 to 20% by weight of the unit of an unsaturated carboxylic acid anhydride in the main chain; and

(B) 98 to 2% by weight of a resin mixture comprising:

(i) 50 to 90% by weight of a copolymer resin of ethylene/-vinyl acetate,

(ii) 40 to 9.5% by weight of a binary copolymer resin of ethylene and an α-olefin having 3 to 12 carbon atoms, and

(iii) 10 to 0.5% by weight of an ethylene/propylene/unconjugated diene terpolymer,

said resin mixture being obtained by mixing (i), (ii) and (iii) in a molten state and having a toluene extraction residue of 10 to 60% by weight.

5,296,555

RUBBER COMPOSITION OF STRONG ADHESION TO METAL AND HOSE STRUCTURE USING THE SAME

Osamu Ozawa, Hiratsuka, Japan, assignor to The Yokohama Rubber Co., Ltd., Japan

Continuation of Ser. No. 537,777, Jun. 13, 1990, abandoned. This application May 27, 1993, Ser. No. 90,442

Claims priority, application Japan, Jun. 28, 1989, 1-166169

Int. Cl.[5] C08F *04/34, 267/08*; F16L *11/04*

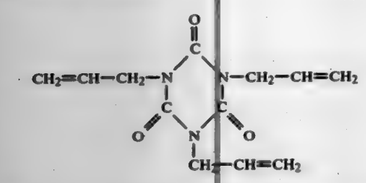
U.S. Cl. 525—263 **5 Claims**

1. A rubber composition comprising:

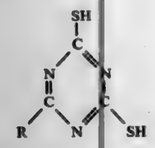
(I) 100 parts by weight of a base rubber comprising at least one copolymer which is (a) a hydrogenate of acrylonitrile-butadiene rubber, acrylonitrile-isoprene rubber or acrylonitrile-butadiene-isoprene rubber, (b) acrylonitrile-butadiene-methyl acrylate rubber, acrylonitrile-butadiene-acrylate rubber or a hydrogenate thereof, or (c) acrylonitrile-ethylene-butadiene rubber, acrylonitrile-butyl acrylate-ethoxyethyl acrylate-vinyl chloroacetate rubber or

acrylonitrile-butyl acrylate-ethyoxyethyl acrylate-vinyl norborene rubber or a hydrogenate thereof;

(II) 5 to 30 parts by weight of a triallyl isocyanurate compound of the formula:



(III) 0.1 to 15 parts by weight of a 6-R-2,4-dimercapto-1,3,5-triazine compound of the formula:



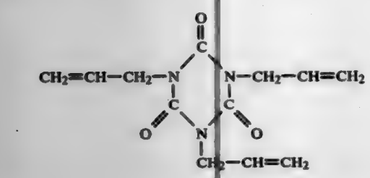
where R is a mercapto, alkoxy, mono- or di-alkylamino, mono- or di-cycloalkylamino, mono- or di-arylamino or N-alkyl-N'-arylamino group; and

(IV) 1 to 15 parts by weight of an organic peroxide.

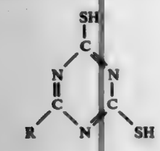
3. A hose structure comprising an inner tube of a single or multiple layer and a reinforcing layer laid thereover, the inner tube being formed from a rubber composition comprising:

(I) 100 parts by weight of a base rubber comprising at least one copolymer which is (a) a hydrogenate of acrylonitrile-butadiene rubber, acrylonitrile-isoprene rubber or acrylonitrile-butadiene-isoprene rubber, (b) acrylonitrile-butadiene-methyl acrylate rubber or acrylonitrile-butadiene-acrylate rubber or a hydrogenate thereof, or (c) acrylonitrile-ethylene-butadiene rubber, acrylonitrile-butyl acrylate-ethoxyethyl acrylate-vinyl chloroacetate rubber, or acrylonitrile-butyl acrylate-ethoxyethyl acrylate-vinyl norborene rubber or a hydrogenate thereof;

(II) 5 to 30 parts by weight of a triallyl isocyanurate compound of the formula:



(III) 0.1 to 15 parts by weight of a 6-R-2,4-dimercapto-1,3,5-triazine compound of the formula:



where R is a mercapto, alkoxy, mono- or di-alkylamino, mono- or di-cycloalkylamino, mono- or di-arylamino or N-alkyl-N'-arylamino group; and

(IV) 1 to 15 parts by weight of an organic peroxide; and the reinforcing layer being formed from a metallic wire of high pressure resistance plated with a copper-zinc alloy.

5,296,556

THREE-COMPONENT CURABLE RESIN COMPOSITIONS

Charles R. Frihart, Lawrenceville, N.J., assignor to Union Camp Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 606,793, Oct. 30, 1990, abandoned. This application Aug. 9, 1991, Ser. No. 743,050

Int. Cl.[5] C08F *283/04*; C08G *69/48*

U.S. Cl. 525—420.5 **17 Claims**

1. A thermoset adhesive composition, comprising:

(a) a thermoplastic, substantially amine-terminated polyamide resin having an amine plus acid number greater than about 1 and less than about 50 and having an excess of free amine to acid groups, said polyamide resin comprising the reaction product of:

a polymerized fatty acid,

at least one acid selected from the group consisting of a linear dicarboxylic acid and a monocarboxylic acid; and

at least one polyamine selected from the group consisting of linear, branched and cyclic polyamines;

(b) a diluent, distinct from and not a part of the polymer structure of said polyamide resin, which is selected from the group consisting of dimer diamine, RNH_2, $RNHCH_2CH_2CH_2NH_2$ and R—X—R' wherein R and R' are any C_{14}–C_{24} aliphatic hydrocarbons, and X is selected from the group consisting of



(c) an epoxy resin having at least two epoxy groups per molecule of epoxy resin;

said adhesive composition comprising a ratio of epoxy groups to free amine groups of greater than 1:1 and less than about 10:1 and a weight ratio of said polyamide resin to said diluent of from about 100:1 to about 4:1.

5,296,557

TWO-COMPONENT CURABLE HOT MELT COMPOSITIONS

Charles R. Frihart, Lawrenceville, N.J., assignor to Union Camp Corporation, Princeton, N.J.

Filed Jul. 2, 1992, Ser. No. 907,888

Int. Cl.[5] C08L *63/00*

U.S. Cl. 525—423 **21 Claims**

1. A two-component curable hot-melt composition comprising:

(I) a thermoplastic polyamide resin that is substantially free of piperazine-containing polyamines, said polyamide resin having a softening point above about 40° C. and an amine plus acid number less than about 75;

wherein said polyamide resin comprises the reaction product of (a) an acid component comprising one or more polymeric fatty acids and optionally at least one acid selected form the group consisting of linear dicarboxylic and monocarboxylic acids, and (b) an amine component consisting essentially of (i) about 45 to 100 equivalent percent of one or more acyclic diamines selected from the group consisting of 2-methyl-1,5-pentanediamine, 1,3-pentanediamine, 1,3-propanediamine, 1,5-pentanediamine, 1,7-heptanediamine, 1,9-nonanediamine, methyl-1,9-nonanediamine, 1,2-propanediamine and 2-methyl-1,2-diaminopropane, and (ii) about 0 to 55 equivalent percent of one or more polyamines selected form the group consisting of acyclic polyamines other than those amines of (b) (i), based on total equivalents of the amine component (b); and

(2) an epoxy resin, said epoxy resin having at least two epoxy groups per molecule of epoxy resin;

wherein the initial ratio of free maine and acid groups of the polyamide resin to epoxy groups of the epoxy resin is between about 1:1 and 1:10; and

wherein the cured composition possesses a tensile modulus of less than about 20,000 psi, using ASTM standard test method D 1708-84 and the secant modulus measurement technique defined in ASTM standard method D 638-89.

5,296,558

POLYMERIC COMPOSITION

Kathleen A. Hood, Swindon; Stephen Day, NR Swindon, and Richard J. Penneck, Lechlade, all of Great Britain, assignors to Raychem Limited, London, England

PCT No. PCT/GB89/00477, § 371 Date Nov. 2, 1990, § 102(e) Date Nov. 2, 1990, PCT Pub. No. WO89/10948, PCT Pub. Date Nov. 16, 1989

Continuation of Ser. No. 602,263, Nov. 2, 1990, abandoned. This PCT application May 5, 1989, Ser. No. 102,679

Claims priority, application United Kingdom, May 5, 1988, 8810645; Nov. 18, 1988, 8826998

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—425 **16 Claims**

1. A polymeric composition which comprises:

(i) from 10 to 60% by weight of an aromatic polyimide or an aromatic carboxylic ester polymer,

(ii) from 2 to 20% by weight of an aliphatic polyamide, and

(iii) from 30 to 75% by weight of a polyamide that contains both aromatic and aliphatic moieties. .

5,296,559

POLYIMIDE COMPOSITION

Manette M. Gebhardt, Pleasant Hill, and Yesh P. Sachdeva, Concord, both of Calif., assignors to Dexter-Hysol Aerospace, Inc., Pittsburg, Calif.

Filed Dec. 19, 1991, Ser. No. 810,506

Int. Cl.[5] C08L *79/08*; C08F *283/04*

U.S. Cl. 525—426 **23 Claims**

1. A composition comprising a finely divided, fully imidized, thermosetting polyimide dispersed in a non-volatile, fluidizing resin which is a liquid or low viscosity semi-solid at room temperature and substantially insoluble in the thermosetting polyimide at room temperature but soluble in the thermosetting polyimide at the elevated temperatures used during thermal processing,

said fluidizing resin being present in an amount sufficient to impart to said composition the flow characteristics of a highly filled liquid.

5,296,560

ASHLESS DISPERSANTS

Antonio Gutierrez, Mercerville; Robert D. Lundberg, Bridgewater, and Robert A. Kleist, Bayonne, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 876,136, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 547,930, Jul. 3, 1990, abandoned. This application Aug. 6, 1993, Ser. No. 88,493

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—327.6 **8 Claims**

1. Dispersant adduct useful in lubricating oils comprising reaction products of (A) polymer-substituted mono- or dicarboxylic acid or anhydrides derived from the reaction of (i) polyolefin with (ii) monounsaturated carboxylic reactant and (B) bis (para-amino cyclohexyl) methane oligomers; said reaction being conducted in a manner and under conditions sufficient to formimide, amide and mixtures thereof.

5,296,561

MOISTURE-CURABLE POLYOLEFIN PRESSURE-SENSITIVE ADHESIVE

Gaddam N. Babu, Woodbury; James R. Peterson, St. Paul, and Sehyun Nam, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 966,592, Oct. 26, 1992, Pat. No. 5,227,442, which is a continuation of Ser. No. 585,227, Sep. 19, 1990, abandoned. This application Mar. 24, 1993, Ser. No. 36,433

Int. Cl.[5] C08F *8/00*; B05D *5/10*; C08J *3/28*; C08K *3/30*

U.S. Cl. 525—342 **12 Claims**

1. A method of preparing a pressure-sensitive adhesive comprising the steps of

a) polymerizing a C_6 to C_{14} α-olefin monomer with a conjugated diene using Ziegler-Natta catalyst to produce a copolymer containing ethylenically-unsaturated chains,

b) optionally, blending at least one of a hydrated salt and a tackifying agent with said copolymer, and

c) in the presence of an effective amount of a hydrosilation catalyst, hydrosilating the ethylenic unsaturation with a hydrosilane of the formula $HSiR_pX_{(3-p)}$ wherein

R is a hydrocarbyl group selected from alkyl groups having 1 to 18 carbon atoms, aryl groups having 6 to 8 carbon atoms, and cycloalkyl groups having 5 to 8 carbon atoms;

p is zero, one or two, and

X is a hydrolyzable or condensable group selected from hydrogen, hydroxyl, hydrocarbyloxy, hydrocarbonyloxy, and halogen to produce a moisture-curable α-olefin polymer having a weight average molecular weight of at least 30,000.

5,296,562

INCORPORATION OF FUNCTIONAL GROUPS IN POLYMERS

Andrew J. Sivak, Edgewood Borough, and Leonard A. Callo, Hempfield Township, Westmoreland County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 532,850, Apr. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 257,895, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,960, May 8, 1987, abandoned. This application Mar. 18, 1993, Ser. No. 33,726

Int. Cl.[5] C08F *8/12*

U.S. Cl. 525—367 **10 Claims**

1. Method of making a stereoregular alpha-olefin polymer having functional groups comprising (a) polymerizing, in the presence of a Ziegler-Natta catalyst comprising a titanium chloride on a magnesium chloride support, monomers including at least one alpha-olefin and at least about 0.01 mole percent silyl-containing monomers of the general formula

$$[CH_2{=}CHCH_2]_y(X)(O_wSiR_{4-w})_z$$

where y, w, and z are independently 1 or 2, (X) is a connecting hydrocarbyl fragment other than an unsaturated non-cyclic hydrocarbyl, and other than an unsaturated cyclic non-aromatic hydrocarbyl, having from 1 to about 20 carbon atoms, and each R is independently selected from alkyl alkoxy, alicyclic, aryloxy, alkaryl and aryl groups having from 1 to about 20 carbon atoms, provided that the total of carbon atoms in all R's together with all carbons directly attached to the carbon in X connected to an O is at least 5, and (b) hydrolyzing or alcoholyzing the resulting polymeric product.

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5,296,563

PREPARATION OF POLYPHENYLENE ETHER/POLYAMIDE MOLDING MATERIALS

Axel Gottschalk; Robert Weiss, both of Ludwigshafen; Klaus Muehlbach, Gruenstadt; Carola Hedtmann-Rein, Hirschberg, and Robert Heinz, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,255

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142577

Int. Cl.[5] C08G *65/48, 71/04, 77/10;* **C08L** *71/12*

U.S. Cl. 525—397 **3 Claims**

1. A process for preparing a thermoplastic molding material of

A) 5–95% by weight of a polyphenylene ether,

B) from 5 to 95% by weight of a thermoplastic polyamide,

C) from 0 to 25% by weight of an impact-modifying rubber, and

D) from 0 to 50% by weight of additives,

in which the components are fed individually at one or more points into an extruder, mixed with one another, and melted, and the molten mixture is extruded, wherein component A is subjected to at least one process selected from the group consisting of compacting and sintering under pressure to form a porous compact, and the porous compact is added as granules to the feed zone of the extruder.

5,296,564

PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Helmut Derleth, Nienburg, Fed. Rep. of Germany, and Abel Grosjean, Brussels, Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Division of Ser. No. 848,347, Mar. 9, 1992, Pat. No. 5,232,883. This application Dec. 16, 1992, Ser. No. 991,419

Claims priority, application Belgium, Mar. 11, 1991, 09100227

Int. Cl.[5] C08F *2/04, 4/22*

U.S. Cl. 526—113 **17 Claims**

1. A process for the polymerization of alpha-olefins containing from 2 to 8 carbon atoms per molecule in the presence of a catalyst, comprising:

(a) electrostatically charging a gellable liquid material (L) comprising oxides of metals of Groups IIIb, IVB, IIIA, and IVA of the periodic table with an electrostatic charging means;

(b) spraying the electrostatically charged gellable liquid material (L) through a spraying orifice and into a chamber, so as to produce macrodrops which break up into microdrops which fall in the chamber and within which gelling is produced after spraying thereby providing monodisperse microspheroidal particles;

(c) supporting a catalyst which contains chromium and which is effective for polymerization of the alpha-olefins on the monodisperse microspheroidal particles; and

(d) polymerizing the alpha-olefins in the presence of the supported catalyst.

5,296,565

OLEFIN POLYMERIZATION CATALYST AND OLEFIN POLYMERIZATION

Takashi Ueda, and Okawa Kazunori, both of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 885,986, May 20, 1992. This application Apr. 2, 1993, Ser. No. 42,393

Claims priority, application Japan, May 20, 1991, 3-114450; May 20, 1991, 3-114451; Jan. 15, 1992, 4-5962; Jan. 16, 1992, 4-5963

Int. Cl.[5] C08F *4/66*

U.S. Cl. 526—114 **13 Claims**

10. A process for the polymerization of olefin which comprises polymerizing or copolymerizing olefin in the presence of a prepolymerized catalyst for olefin polymerization which comprises a solid catalyst comprising

a particulate carrier composed of (i) an oxide of at least one element selected from among those belonging to the groups II, III and IV of the periodic table and containing (II) at least 1.0 % by weight of water,

an organoaluminum oxy compound, and

a transition metal of metal belonging to the group IV B of the periodic table containing a ligand having a cyclopentadienyl skeleton, and

an organoaluminum compound, and

a prepolymerized polyolefin formed on the solid catalyst

wherein in the prepolymerized catalyst the organoaluminum oxy compound and the transition metal compound are supported on the particulate carrier.

5,296,566

POLYMERIZABLE COMPOSITIONS CONTAINING OLEFIN METATHESIS CATALYSTS AND COCATALYSTS, AND METHODS OF USE THEREFOR

Katherine A. Brown-Wensley, Lake Elmo; Michael C. Palazzotto, St. Paul; William M. Lamanna, Stillwater; Larry D. Boardman, Shoreview; John E. Gozum, Woodbury, and Fred B. McCormic, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 811,785, Dec. 20, 1991, Pat. No. 5,198,511. This application Dec. 16, 1992, Ser. No. 992,381

Int. Cl.[5] C08F *4/80*

U.S. Cl. 526—171 **18 Claims**

1. A polymerizable composition comprising

a) at least one ring-strained non-conjugated cyclic olefin, and

b) a one-part transition metal-containing catalyst which is air and moisture stable, said catalyst being selected from the group consisting of cationic organometallic Ru and Os-containing salts having at least one polyene ligand.

5,296,567

THERMOCURABLE COMPOSITIONS

Dieter Baumann, Möhlin; Werner Margotte, Lupsingen, and Beat Müller, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,638

Claims priority, application Switzerland, Apr. 8, 1991, 1029/91

Int. Cl.[5] C08F *4/06, 4/20;* **C08G** *59/68, 8/04*

U.S. Cl. 526—172 **14 Claims**

1. A thermocurable composition which comprises at least the following components:

a) a cationically polymerisable organic material,

b) an initiator for cationic polymerisation in the form of an onium compound or a compound of the formula (I)

$$[M^{+n}(L)_x]^{n+}nX^- \qquad (I),$$

in which n is 2 or 3, M is a metal cation selected from the group consisting of Zn^{2+}, Mg^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cr^{2+}, Ru^{2+}, Mn^{2+}, Sn^{2+}, VO^{2+}, Fe^{3+}, Al^{3+} and Co^{3+}, X^- is an anion selected from the group consisting of PF_6^-, AsF_6^-, SbF_6^-, BiF_6^-, derivatives of these anions in which at least one fluorine atom has been replaced by a hydroxyl group, and $CF_3SO_3^-$, or in which up to 50% of the anions X^-, based on the total amount of anions, may be any desired anions, L is water or an organic σ-donor ligand which contains, as bonding sites, one or more functional radicals selected from the group comprising —CO—, —CO—O—, —O—CO—O— and —O— and forms σ-bonds with the central atom via the oxygen atom or atoms, and x is an integer from 0 to 6, and where the ligands L may be different within said definitions,

c) a stabilizing effective amount of a polymerisation inhibitor which is otherwise present in such a small amount that sufficient initiator b) unaffected by it remains to effect the desired curing of the composition.

5,296,568

ADDITION-CURED SILICONE ELASTOMERS AND COATED FUSING ROLLS USING SUCH ELASTOMERS

Tsang J. Chen, Rochester, and Paul L. Nielsen, Lima, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 891,321

Int. Cl.[5] C08L *79/08, 83/06, 83/08*

U.S. Cl. 525—431 **12 Claims**

1. An addition-cured silicone elastomer comprising:

about 10 to 30 weight percent of a hydride-substituted organopolysiloxane polymer containing at least three hydride groups;

about 5 to 15 weight percent of a lower alkenyl-substituted organopolysiloxane polymer;

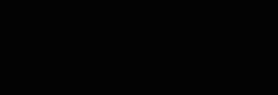
about 1 to 5 weight percent of a polyimide substituted with terminal aliphatic unsaturated hydrocarbon radicals; and

about 50 to 75 weight percent of a filler; wherein crosslinking is present between the hydride-bearing silicon atoms of said hydride-substituted organopolysiloxane and the unsaturated hydrocarbon radicals of said alkenyl-substituted organopolysiloxane polymer or said polyimide, said elastomer having a number-average molecular weight of 1,000 to 1,000,000, and wherein said polyimide has the formula:

$$R^{12}—R^{10}—(Ar—R^{11})_p—R^{13}$$

wherein,

Ar is naphthyl or

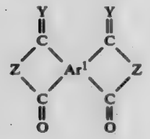


X is CH_2, O, S, SO, SO_2, CO, or a bridging bond;

p is 1–4;

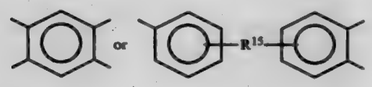
q is 0–3;

R^{10} and R^{11} independently represent a diradical of the formula:



wherein,

Ar^1 has the structure:



wherein,

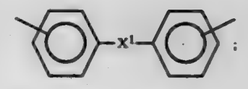
R^{15} is O, S, CO, SO, or $C(CF_3)_2$;

Y and Z are independently O or N— provided that when one of Y or Z is O the other is N—;

R^{12} and R^{13} are independently $R^{14}—Ar^2$, and R^{12} and R^{13} can be the same or different;

R^{14} is ethynyl or vinyl;

Ar^2 is phenyl, naphthyl, or



and

X^1 is O, S or $C(CF_3)_2$.

5,296,569

COMPLEX MICROSPHERES, METHOD OF MAKING SAME, AND THERMOPLASTIC FILMS CONTAINING SAME

Ippei Noda; Masanobu Abe, and Fumitoshi Sugiura, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

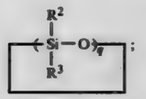
Continuation-in-part of Ser. No. 655,109, Feb. 14, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,393

Claims priority, application Japan, Feb. 22, 1990, 2-42130; Mar. 29, 1990, 2-81986

Int. Cl.[5] C08F *283/12*

U.S. Cl. 525—445 **18 Claims**

1. Complex microspheres consisting of polysiloxane and vinyl polymer, said polysiloxane and vinyl polymer being unistructurally mixed together and being substantially free of covalent bonds therebetween, said polysiloxane and vinyl polymer being contained at ratio of 97/3～30/70 by weight, the average diameter of said complex microspheres being 0.05～30 μm, the standard deviation of particle size of said complex microspheres being 1.0～2.5, and the ratio between the major and minor axes of said complex microspheres being 1.0～1.2, said complex microspheres being produced by the steps of causing polycondensation of silanol group-forming compound while said silanol group-forming compound undergoes hydrolysis in the absence of emulsifier inside an aqueous solvent containing said silanol-group forming compound and water-insoluble vinyl monomer at weight ratio of 99/1～33/67 under the condition of two layer system of said aqueous solvent and water-insoluble contents consisting of said silanol group-forming compound and water-insoluble vinyl monomer, thereby generating polysiloxane microspheres, impregnating said water-insoluble vinyl monomer into said polysiloxane microspheres to form polysiloxane microspheres mixed with said water-insoluble vinyl monomer, and polymerizing said water-insoluble vinyl monomer mixed in said polysiloxane microspheres in the presence of a radical initiator, thereby obtaining said complex microspheres, said silanol group-forming compound being of the form of Formula (1) or (2) and containing at least 15 mole % (converted to silicon quantity) of compounds of form R^1-SiX_3 and/or compounds of form SiX_4, and said water-insoluble vinyl monomer comprising one or more kinds which are not reactive with silanol group and silanol group-forming atoms, where said Formula (1) is R^1_p-SiX_{4-p}, and said Formula (2) is



p is an integer 0～3; q is an integer 3～20; R^1, R^2 and R^3 are non-substituted or substituted hydrocarbon groups having a carbon atom directly connected to a silicon atom and no tendency to undergo radical polymerization; and X is alkoxy group with 1～4 carbon atoms, alkoxyethoxy group having alkoxy group with 1～4 carbon atoms, acyloxy group with 2～4 carbon atoms, N,N-dialkylamino group having alkyl group with 1～4 carbon atoms, hydroxyl group, halogen atom, or hydrogen atom.

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5,296,570

CURABLE MIXTURES OF MESOGENIC EPOXY RESINS AND MESOGENIC POLYAMINES AND CURED COMPOSITIONS

Jimmy D. Earls; Robert E. Hefner, Jr., and Paul M. Puckett, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 906,081, Jun. 29, 1992, Pat. No. 5,218,062, which is a continuation-in-part of Ser. No. 562,182, Aug. 3, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 69,910

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] **C08G** *59/00, 65/08, 65/14*

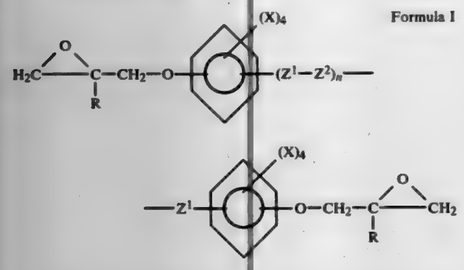
U.S. Cl. 525—481 **16 Claims**

1. A product resulting from curing a curable composition comprising

(I) an advanced epoxy resin prepared by reacting

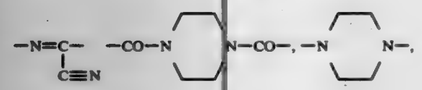
(A) one or more epoxy resins containing one or more rodlike mesogenic moieties, said epoxy resin being those represented by either the following Formula I

Formula I

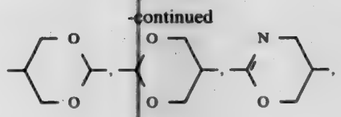


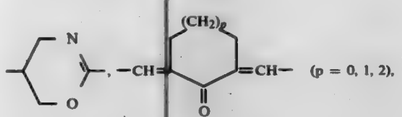
wherein at least about 80 percent of the $—(Z^1—Z^2)_n—Z^1—$ linkages and the glycidyl ether groups are in the para position with respect to each other; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, $—NO_2$, or —C≡N; each Z^1 is independently $—CR^1=CR^1—$, $—CR^1=CR^1—CR^1=CR^1—$, $—CR^1=N—N=CR^1—$, $—CR^1=CR^1—CO—O—CH_2—$, $—CR^1=CR^1—CO—O—CH_2—CH_2—$, $—CH_2—O—CO—CR^1=CR^1—$, $—CH_2—CH_2—O—CO—CR^1=CR^1—$, $—CR^1=CR^1—CO—O—$, $—O—CO—CR^1=CR^1—$, $—CO—NR^1—$, $—NR^1—CO—$, $—CO—NR^1—NR^1—CO—$, —C≡C—, —C≡C—C≡C—, —N=N—, —CO—S—, —S—CO—, $—CR^1=CR^1—O—CO—CH_2—$, $—CH_2—CO—O—CR^1=CR^1—$, $—CR^1=CR^1—O—CO—CH_2—CH_2—$, $—CH_2—CH_2—CO—O—CR^1=CR^1—$, $—CH_2—CH_2—CO—O—$, $—O—CO—CH_2—CH_2—$, $—CO—O—CR^1=CR^1—$, $—CR^1=CR^1—O—CO—$, a direct single bond when n≧1,

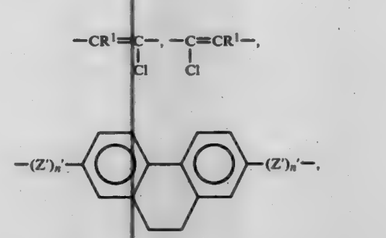


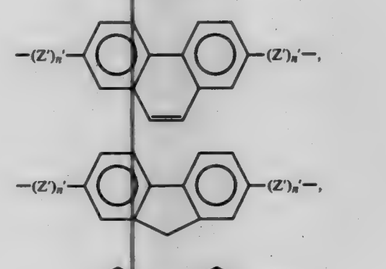


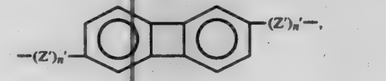
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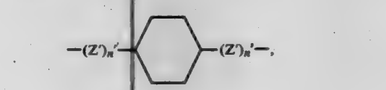


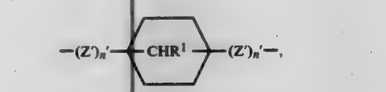


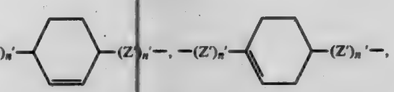


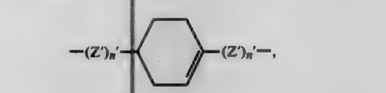


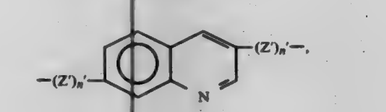




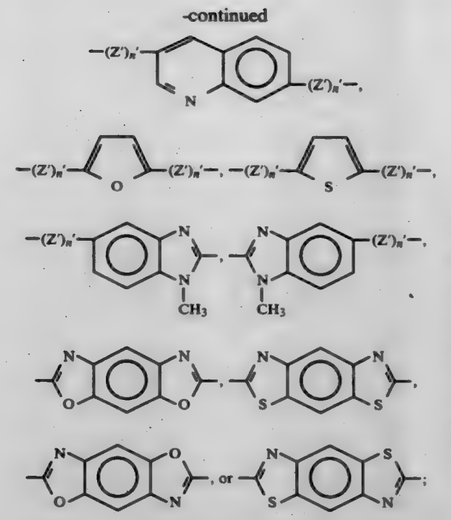






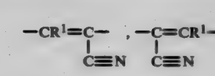


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Z^2 is a group represented by a cyclic or bicyclic ring system containing from 5 to about 12 carbon atoms and is cycloaliphatic, polycycloaliphatic, aromatic or a combination thereof; n is 0 to 2; each Z' is independently a —CO—, —O—CO—, —CO—O—, —CO—NR^1—, or —NR^1—CO— group and each n' independently has a value of zero or one;

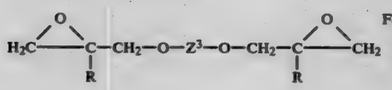
with the proviso that each Z^1 can also independently be



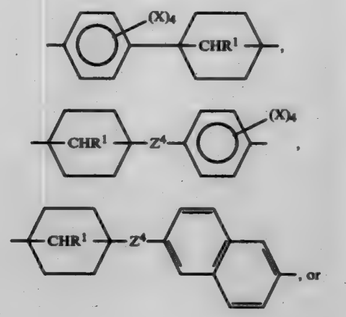
—CR^1=N—, —N=CR^1—, —CO—CR^1=CR^1—, —CR^1=CR^1—CO—, —CO—O—, or —O—CO— when Z^2 is not a benzene ring and when n≠0;

or the following Formula II

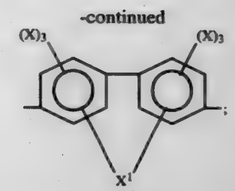
Formula II



wherein Z^3 is



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and Z^4 is —CO—O—, —O—CO—, —NR^1—CO— or —CO—NR^1—; X^1 is a divalent hydrocarbyl group having from 1 to about 10 carbon atoms which can optionally contain one or more heteroatoms selected from N, O or S and is saturated or unsaturated or X^1 is a direct bond; wherein R, R1 and X are as hereinbefore defined, or any combination of any two or more epoxy resins represented by the aforementioned Formulas I and II; with

(B) at least one compound having an average of more than one active hydrogen atom per molecule; and

wherein components (A) and (B) are employed in quantities which provide a ratio of active hydrogen atoms per epoxide group of from about 0.01:1 to about 0.95:1; and

(II) a curing amount of one or more polyamines containing one or more rodlike mesogenic moieties.

5,296,571

METHACRYLATE PREPOLYMER CONTAINING TRIAZINE RING STRUCTURE, ITS PREPARATION, AND SETTING COMPOSITION AND RESIN

Yutaka Hori, Yokkaichi; Takeshi Kamiya, Chita; Takayuki Mano, Gifu, and Ryuzo Asami, Nagoya, all of Japan, assignors to Aica Kogyo Co., Ltd., Japan

Division of Ser. No. 884,401, May 18, 1992. This application Oct. 30, 1992, Ser. No. 969,483

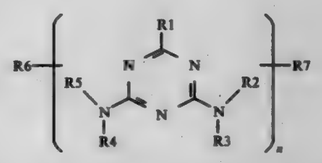
Claims priority, application Japan, May 20, 1991, 3-114894

Int. Cl.[5] **C08F** *226/06, 4/34, 4/04, 4/42*

U.S. Cl. 526—261 **7 Claims**

1. A setting composition comprising: a (meth)acrylate prepolymer containing a triazine ring structure, expressed as the formula:

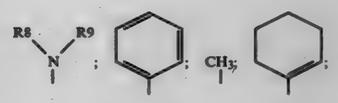
(I)



which is synthesized from an aminotriazine compound, paraformaldehyde, and 2-hydroxyethyl (meth)acrylate, and has an average molecular weight of two hundred to eight thousand; and an addition polymerization initiator acting on the ethylene unsaturated bonding,

where, the value of n is on the average from 1 to 10; R1 denotes a functional radical selected from monovalent and polyvalent functional radicals of the group consisting of radicals of the formulae:

(II)



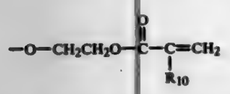
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R2, R3, R4, R5, R8, and R9 are radicals selected from hydrogen radicals and divalent functional radicals such as —CH_2— and —CH_2OCH_2—; where the radical —CH_2OCH_2— links triazine rings;

R6 and R7 are monovalent functional radicals selected from hydroxyl radicals and functional radicals with ethylene unsaturation as denoted by the formula:



(III)

and where R6 and R7 being bonded as terminal groups to the —CH_2— radicals of R2 through R5, R8, and R9, which are not bound to a triazine ring;

at least one functional group expressed as formula (III) exists in the prepolymer; and R10 is either a hydrogen radical or —CH_3; and.

wherein said setting composition is free from any additional solvent other than the 2-hydroxyethyl (meth)acrylate.

5,296,572

LARGE PORE POLYAMIDE RESIN AND METHOD OF PREPARATION THEREOF

James T. Sparrow, 12119 Atwell, Houston, Tex. 77035; Nancy Knuth-Cardosier, Houston, Tex.; Patrick Kunda, 15051 Church Estates Blvd., San Antonio, Tex. 78248, and Robert E. Lanford, San Antonio, Tex., assignors to James Sparrow and Patrick Kunda, both of San Antonio, Tex.

Continuation-in-part of Ser. No. 309,914, Feb. 10, 1989, Pat. No. 5,028,675, which is a continuation-in-part of Ser. No. 858,216, Apr. 30, 1986, abandoned. This application Apr. 29, 1991, Ser. No. 693,960

Int. Cl.[5] C08F *226/02*

U.S. Cl. 526—307.3 8 Claims

1. A method of preparing a large pore polyamide resin, comprising

mixing an unsaturated or alkenoyl amine monomer with a dimethylacrylamide monomer, a cross-linker and water in a proportion of monomer and cross-linker to water of about 1:2 to 1:50 (w/v);

adding an emulsifier in a proportion to the aqueous mixture of about 1:100 to 1:400;

adding an organic phase to the aqueous mixture in a proportion of about 2.5:1 to 8:1;

agitating the aqueous mixture in the presence of the organic phase;

adding an initiator;

adjusting the pH of the aqueous mixture to about 6.0 to 7.5;

adding a promoter to start polymerization to obtain polyamide resin beads of a pore size capable of lodging a protide of up to about 250,000 Dalton MW; and

isolating the thus formed polyamide resin beads.

5,296,573

POLYACRYLATE ESTER WITH LONG-CHAIN ALKOXYLATED HYDROCARBONOXY GROUPS AND THEIR USE IN COSMETICS AND PERSONAL GROOMING

Eberhard Esselborn; Jürgen Fock; Götz Koerner, and Dietmar Schaefer, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jan. 31, 1991, Ser. No. 648,725

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1990, 4006093

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] C08F *220/26, 220/28*

U.S. Cl. 526—320 14 Claims

1. Polyacrylate ester with long-chain alkoxylated hydrocarbonoxy groups obtained by transesterification of an alkyl polyacrylate ester with a polyoxyalkylene monool, wherein the alkyl polyacrylate ester up to 50% of which may be replaced by the corresponding methacrylate, is obtained by free radical polymerization and the alkyl groups of which contain 1 to 8 carbon atoms and wherein the polyoxyalkylene monool is of the average formula

$$R^1O-(C_nH_{2n}O-)_xH$$

wherein

R^1 can be the same or different in the monool and is an alkyl group with 9 to 30 carbon atoms, an alkenyl group with 8 to 22 carbon atoms or a monoalkyl- or dialkylphenyl group with 6 to 16 carbon atoms per alkyl group, and up to 40% of the R^1 groups may be replaced by alkyl groups with 1 to 4 carbon atoms,

n has a value of 2, 3 or 4 and an average value of 2.0 to 2.5 in an average molecule and

x has an average value of 10 to 200,

in such amounts, that 5 to 70% of the ester groups are transesterified, in the presence of a transesterification catalyst at a temperature of from 70° to 170° C. and, optionally, in the presence of a solvent.

5,296,574

METHOD OF SYNTHESIS OF BLOCK COPOLYMERS OF VINYL AROMATIC HYDROCARBONS AND POLYDIMETHYLSILOXANE

Ronald J. Hoxmeier, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 15, 1992, Ser. No. 990,587

Int. Cl.[5] C08L *83/10*

U.S. Cl. 528—25 4 Claims

1. A method for producing, in the presence of both monomers, a block copolymer of a first polymer block of anionic polymerization monomer(s) selected from the group consisting of vinyl aromatic hydrocarbons, conjugated dienes and mixtures thereof, and a second polymer block of polydimethysiloxane which comprises adding the anionic polymerization monomer(s), an organo alkali metal promoter, hexamethylcyclotrisiloxane and a polar promoter to a solvent at a temperature of 0° to 60° C., allowing the polymerization of the anionic polymerization monomer(s) to proceed until the color of the anionic polymerization monomer(s) - Li^+ spicies which is initially produced fades, then raising the temperature to 60° to 120° C. wherein the hexamethyl-cyclotrisiloxane polymerizes at the end of the first polymer block and then terminating the polymerization.

5,296,575

MONODISPERSE PARTICLE LATICES OF VINYL CHLORIDE POLYMERS

Jacques Grossoleil, Orthez; Patrick Kappler, Ecully, and Nicolas Krantz, Bernay, all of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 180,837, Apr. 12, 1988, abandoned. This application Sep. 26, 1991, Ser. No. 765,496

Claims priority, application France, Apr. 14, 1987, 87 05260

Int. Cl.[5] C08F *2/00*

U.S. Cl. 526—212 13 Claims

1. A process for the preparation of a monodisperse particle latex of a vinyl chloride polymer, comprising aqueousemulsion polymerizing, in one or two stages, vinyl chloride monomer in the absence of surface-active agent in the first stage, in the presence of at least 0.2% by weight of at least one water-soluble alkali metal or ammonium persulfate initiator, and also in the presence of at least one water-soluble auxiliary compound that is a solvent for vinyl chloride, said solvent not being capable of copolymerizing with said vinyl chloride monomer, in such amount that the solubility of vinyl chloride in the aqueous phase at 25° C. at atmospheric pressure is at least 1.5 g/l, and wherein said monodisperse particle latex is substantially free of non-spherical particles.

5,296,576

FATTY OIL EX *HELIANTHUS ANNUUS* FOR THE PRODUCTION OF EMULSIFIERS FOR EMULSION POLYMERIZATION

Rainer Hoefer, Duesseldorf, and Horst Eierdanz, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 190,792, May 6, 1999, abandoned. This application Oct. 1, 1992, Ser. No. 955,393

Claims priority, application Fed. Rep. of Germany, May 8, 1987, 3715421

Int. Cl.[5] C08K *5/09*

U.S. Cl. 526—216 16 Claims

1. In a emulsion polymerization process, the improvement wherein the emulsifier comprises an emulsifying effective quantity of at least one salt of a fatty acid mixture wherein said salt is selected from the group consisting of alkali metal, ammonium, and alkanolammonium salts, and wherein the fatty acid mixture is obtained from a fatty oil ex *Helianthus annuus* wherein the fatty acid mixture comprises the following components:

oleic acid:	78 to 92% by weight
linoleic acid:	2 to 10% by weight
palmitic acid:	2 to 5% by weight
stearic acid:	2 to 7% by weight, and

up to 1% by weight of one or more of the following acids: myristic, palmitoleic, linoleic, arachic, eicosenoic, and erucic acid.

5,296,577

PROCESS FOR PRODUCING ACRYLAMIDE POLYMER

Hitoshi Tamura; Teruzo Otsuka, both of Noda; Shoichi Kanda, and Masaharu Nagahama, both of Yokohama, all of Japan, assignors to Diafloc Co., Ltd. and Nitto Chemical Industry Co., Ltd., both of Tokyo, Japan

Filed May 25, 1990, Ser. No. 528,618

Claims priority, application Japan, May 30, 1989, 1-136850

Int. Cl.[5] C08F *20/56, 20/54, 4/04*

U.S. Cl. 526—220 15 Claims

1. A process for producing an acrylamide polymer which comprises polymerizing acrylamide monomer alone or a monomer mixture composed of 50 mole % or more of acrylamide monomer and a monomer capable of copolymerizing with acrylamide monomer in the presence of an azo series polymerization initiator and 0.1 % by weight or more of 2-mercaptobenzothiazole or a salt thereof based on the weight of the monomer in a aqueous medium having a pH of 6 or higher at a temperature range of 5° to 100° C, and then drying the resulting material.

5,296,578

PRODUCTION OF POLYSUCCINIMIDE AND POLYASPARTIC ACID FROM MALEIC ANHYDRIDE AND AMMONIA

Larry P. Koskan, Orland Park, and Abdul R. Y. Meah, Justice, both of Ill., assignors to Donlar Corporation, Bedford Park, Ill.

Filed Sep. 18, 1992, Ser. No. 947,712

Int. Cl.[5] C08G *69/00*

U.S. Cl. 528—363 11 Claims

1. A method of producing a polysuccinimide comprising the steps of:

a). adding maleic anhydride and ammonia to the same reaction vessel, and

b). heating the resulting mixture to a temperature of at least 170° C., until at least a yield of polysuccinimide of at least 70% of theoretical has been produced.

5,296,579

ARYLENE SULFIDE POLYMERS

Jon F. Geibel; Robert W. Campbell, both of Bartlesville, Okla.; Guy Senatore; Fernando C. Vidaurri, both of Borger, Tex., and Mark A. Haney, Algonquin, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 11, 1988, Ser. No. 155,179

Int. Cl.[5] C08F *8/32*

U.S. Cl. 528—379 38 Claims

1. A process for preparing arylene sulfide polymer comprising

1) admixing at least one first sulfur source selected from the group consisting of hydrogen sulfide, alkali metal sulfides and alkali metal hydrosulfides, at least one polyhalo-substituted aromatic compound, at least one polar organic compound and a second sulfur source comprised of at least one organic monothiol compound represented by the formula Z-S-R′ wherein Z is a halogen-free cyclic organic radical selected from the group consisting of carbocyclic and heterocyclic radicals having 1 to 4 heteroatoms as cycle members and wherein each said heteroatom is selected from the group consisting of nitrogen, oxygen, and sulfur and wherein Z has from 0 to about 4 substituents selected from the group consisting of alkyl, cycloalkyl, aryl, alkoxy, aryloxy, alkanoyl, alkanoyloxy, aroyl, alkoxycarbonyl, alkanamido, alkylamino, and alkylsulfonyl radicals, R′ is selected from the group consisting of H and M/y where M is a metal selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium, and y is the valence of M and wherein the -S-R′ of said Z-S-R′ is attached directly to a carbon atom which is a cycle member of said Z, to form an admixture; and

2) subjecting said admixture to polymerization conditions sufficient to produce a polymerization reaction mixture comprising said arylene sulfide polymer.

5,296,580

STRETCH PACKAGING METHOD EMPLOYING MULTI-LAYER FILM

Takashi Matsunaga, and Keiichi Miura, both of Chiba, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 216,217, Jul. 7, 1988, abandoned. This application Jul. 28, 1993, Ser. No. 97,921

Claims priority, application Japan, Jul. 7, 1987, 62-169501

Int. Cl.[5] B65B *11/08;* C08F *210/14*

U.S. Cl. 528—502 7 Claims

1. In a method for stretch packaging a plurality of articles by

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wrapping the articles in a stretchable film while stretching said stretchable film about said articles, the improvement comprising using as said stretchable film a multi-layer film for stretch packaging and having a non-tacky surface and a tacky surface, said multi-layer film comprising an intermediate layer of a linear low density polyethylene having a melt flow rate (190° C.), as measured by an ASTM-D-1238E method, of 0.3 to 8 g/10 min., a density, as measured by an ASTM-D-1505 method, of 0.900 to 0.918 g/cm^3, a molecular weight distribution ($M\bar{w}/M\bar{n}$) of 2 to 6, two or more melting points existing as measured by a differential scanning calorimeter, a maximum melting point Tm_1 of 118° to 125° C. and a ratio of the height Tm_1H of the peak of the highest melting point Tm_1 to the height Tm_2H of the melting point Tm_2 adjacent thereto (i.e., Tm_1H/Tm_2H), of 1.3 or less, a non-tacky surface layer on one surface of said intermediate layer and comprising a non-tacky linear low density polyethylene having a density greater than 0.918 g/cm^3, and, on the opposite surface of said intermediate layer, a tacky surface layer comprising a mixture of linear low density polyethylene having a melt flow rate (190° C.), as measured by an ASTM-D-1238E method, of 0.3 to 8 g/10 min., a density, as measured by an ASTM-D-1505 method, of 0.900 to 0.918 g/cm^3, a molecular weight distribution ($M\bar{w}/M\bar{n}$) of 2 to 6, two or more melting points existing as measured by a differential scanning calorimeter, a maximum melting point Tm_1 of 118° to 125° C. and a ratio of the height Tm_1H of the peak of the highest melting point Tm_1 to the height Tm_2H of the melting point Tm_2 adjacent thereto (i.e., Tm_1H/Tm_2H), of 1.3 or less and from 2 to 10% by weight of liquid polyisobutylene or liquid polybutadiene, said non-tacky surface layer having a thickness of from about 5 to 30% of the total thickness.

5,296,581

Patent Not Issued For This Number

5,296,582

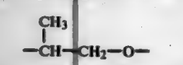
CURABLE RESIN COMPOSITION

Masayuki Fujita; Michihide Homma, and Hiroshi Wakabayashi, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Filed Nov. 18, 1991, Ser. No. 776,427
Claims priority, application Japan, Apr. 3, 1990, 2-89713
Int. Cl.^{5} C08G *77/04*
U.S. Cl. 528—27 **4 Claims**

1. A curable resin composition which comprises:

(A) an oxypropylene polymer which contains, in its main polymer chain, a repeating unit of the formula



and which has at least one silicon atom-containing group having a hydroxyl group or a hydrolyzable group bound to the silicon atom and has an Mw/Mn ratio of up to 1.6 and a number average molecular weight of at least 6,000, and

(B) an epoxy resin,

a ratio of (A) to (B) being 100/1 to 1/100 by weight.

5,296,583

CALCIFICATION-RESISTANT SYNTHETIC BIOMATERIALS

Robert J. Levy, Ann Arbor, Mich., assignor to University of Michigan, Ann Arbor, Mich.

Filed Jul. 9, 1992, Ser. No. 910,941
Int. Cl.^{5} C08G *18/38*
U.S. Cl. 528—72 **8 Claims**

1. A method of making a calcification-resistant bicompatible polymeric material comprising the steps of:

forming a monoadduct of a polyphosphonate anticalcification agent and a reactive polyfunctional epoxide;

adding the monoadduct to a prepolymer base of a biocompatible copolymer

adding the second component of the biocompatible copolymer; and

polymerizing.

5,296,584

RESOLE MELAMINE DISPERSIONS AS ADHESIVES

Wayne R. Wallauer, Floyds Knobs, Ind., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 896,428, May 20, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 95,931
Int. Cl.^{5} C08G *14/10, 14/06;* C08L *61/34*
U.S. Cl. 528—163 **22 Claims**

1. A water soluble, A-stage, unreacted, uncured but curable composition consisting of:

(a) an alkaline phenolic resole resin having a formaldehyde to phenol mole ratio of from 0.5:1 to 3.5:1 and a base catalyst to phenol mole ratio of from 0.01:1 to 1:1;

(b) melamine crystal dispersed in the resole resin, wherein the melamine crystal to phenol mole ratio is from 0.01:1 to 1.0:1.0; and

(c) an acid selected from the group consisting of oxalic acid, sulfamic acid, nitric acid, and methane sulfonic acid, in an amount sufficient to catalyze the polymerization reaction of said resin with the melamine crystal upon subsequent exposure to elevated temperatures, neutralize the base and drop the pH of the dispersion to a level of from 2.5 to about 5.5; and wherein the dispersion produced is a water soluble, curable, A-stage composition.

5,296,585

POLYMERIC METAL TEREPHTHALATE AND ISOPHTHALATE FIBERS AND METHOD OF MAKING

Thomas C. Jennings, Shaker Heights, and David M. Tanno, Richmond Heights, both of Ohio, assignors to Synthetic Products Company, Shaker Heights, Ohio

Continuation of Ser. No. 638,127, Jan. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 344,595, Apr. 28, 1989, Pat. No. 4,983,688. This application Jun. 14, 1993, Ser. No. 76,486
Int. Cl.^{5} C08G *63/02*
U.S. Cl. 528—272 **19 Claims**

1. A method of making anhydrous polymeric metal terephthalate or isophthalate fibers comprising

reacting incremental amounts of a metal compound selected from the group consisting of calcium, magnesium, barium and zinc metal compounds and a polycarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid, or salts thereof, in the presence of water to form fibers having an average aspect ratio of greater than about 5:1 and heating said fibers to render them anhydrous.

5,296,586

PROCESS FOR PRODUCING POLYESTERS

Robert R. Burch, Exton, Pa.; Edward B. Jones, Headersonville, Tenn., and Steven R. Lustig, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1992, Ser. No. 968,147
Int. Cl.^{5} C08G *63/78*
U.S. Cl. 528—274 **22 Claims**

1. A process for production of a polyester, comprising, heating and agitating one or more monomers or oligomers, polymerizable to a polyester upon heating, in an inert liquid medium at a temperature at which said liquid medium boils, in the absence of a nonvolatile surfactant, provided that:

a volatile product of said polymerizing is removed by codistillation with said inert liquid medium;

said monomers and said polyester are not swollen nor dissolved by said inert liquid medium.

5,296,587

COPOLYMERIZATION OF DICARBOXYLIC ACIDS AND DIALKYL ESTERS OF DICARBOXYLIC ACIDS TO FORM POLYESTERS

Charles E. Sumner, Jr., Kingsport, and Gary D. Boone, Johnson City, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Mar. 22, 1993, Ser. No. 34,963
Int. Cl.^{5} C08G *63/78*
U.S. Cl. 528—281 **22 Claims**

1. A process for preparing a polyester or copolyester, said process comprises the following steps:

(I) reacting

(A) a dicarboxylic acid or a copolymerizable carboxylic acid wherein the copolymerizable carboxylic acid contains a primary alkyl ester group having 1 to 6 carbon atoms;

(B) a dialkyl ester having 2 to 4 carbon atoms of a dicarboxylic acid; and

(C) a diol,

in the presence of at least one transesterification catalyst at temperatures in the range of 150° C. to 300° C., and pressures of atmospheric to about 0.2 mm Hg wherein the reaction between the dicarboxylic acid and diol produces an ester and water, and the reaction between the dialkyl ester of a dicarboxylic acid and diol produces an ester and alcohol, provided the concentration of diol is maintained, by backadding the diol to the reaction, at a level equal to at least a 2% molar excess of the total concentration of components (A) and (B); and (II) polycondensing the reaction product of Step (I) to form a polyester or copolyester under increased temperature and reduced pressure while excess diol is removed.

5,296,588

PROCESS OF PREPARING N-SUBSTITUTED ALDONAMIDES

Van Au, Peekskill, N.Y., and Bijan Harirchian, South Orange, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,422, Dec. 31, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,402
Int. Cl.^{5} C07G *3/00;* C07H *15/04;* C07C *235/06*
U.S. Cl. 536—1.11 **17 Claims**

1. A process of preparing an N-substituted aldonamide, the process comprising the steps of:

i) preparing a homogeneous mixture comprising an aldonolactone, an organic polar solvent, and an amine HNR^1R^2, wherein R^1 and R^2 are the same or different and may contain heteroatoms, selected from the group consisting of nitrogen, oxygen, and sulphur, and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, an aromatic radical, a cycloaliphatic radical, an amino acid ester, an ether amine and mixtures thereof, except that R^1 and R^2 are not both hydrogen at the same time, wherein the total number of carbon atoms in R^1 and R^2 ranges from 1 to 36 and wherein the molar ratio of the aldonolactone to the amine is in the range of from abut 1:1.5 to about 1:1.

ii) reacting the homogeneous mixture at a temperature in the range of from about 25° C. to not greater than 65° C. to obtain a reaction product including a first solution comprising the aldonamide and a corresponding ammonium salt of an aldonic acid; and

iii) treating the first solution with a solid base to obtain a solid salt of aldonic acid and a second solution comprising the starting amine and the aldonamide, wherein the base and the salt are solid at ambient temperature and pressure.

5,296,589

HYDROGENATION OF 2-FLUORO-9-(2,3,5-TRI-O-BENZYL-BETA-D-ARABINOFURANOSYL)ADENINE

Peter Blumbergs, Royal Oak, Mich., assignor to Ash Stevens, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 445,446, Dec. 4, 1989, Pat. No. 5,110,919. This application Apr. 30, 1992, Ser. No. 876,412
Int. Cl.^{5} C07H *19/167;* A61K *31/70*
U.S. Cl. 536—27.7 **6 Claims**

1. A process for the preparation of 9-beta-D-arabinofuranosyl-2-fluoroadenine (VII) which consists essentially of:

(a) reacting a mixture of 2-fluoro-9-(2,3,5-tri-O-benzyl-beta-D-arabinofuranosyl)adenine (VI) dissolved in a non-reactive solvent for (VI), with hydrogen and a molar amount of palladium chloride less than (VI) and concentrated hydrochloric acid in a molar excess to (VI) such that the weight of palladium chloride is between about 3 and 15% by weight of (VI) in a sealed vessel at elevated pressure above atmospheric pressure between about 30 and 50 psig to produce (VII) in the reaction mixture;

(b) removing the palladium chloride from the reaction mixture;

(c) neutralizing the reaction mixture; and

(d) separating 2-fluoro-9-beta-D-arabinofuranosyl adenine from the reaction mixture.

5,296,590

Patent Not Issued For This Number

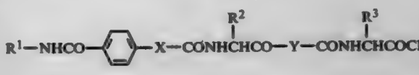
5,296,591

TRIFLUOROMETHYLKETONE DERIVATIVES, PROCESSES FOR PREPARATION THEREOF AND USE THEREOF

Keiji Hemmi, Tsukuba; Ichiro Shima, Ibaraki; Keisuke Imai, Tsukuba, and Hirokazu Tanaka, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 12, 1991, Ser. No. 805,610
Claims priority, application United Kingdom, Dec. 31, 1990, 9028231; Sep. 16, 1991, 9119713
Int. Cl.^{5} C07K *5/00, 5/06*
U.S. Cl. 530—331 **6 Claims**

1. A trifluoromethylketone compound of the formula:



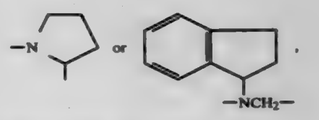
wherein

R^1 is C_{1-6} alkyl which has one or two substituents selected from carboxy, esterified carboxy and di-C_{1-6} alkylcarbamoyl; phenyl(C_{1-6})alkyl, the phenyl moiety of which may have halogen or nitro or amino substituents and the alkyl moiety of which may have carboxy or esterified carboxy substituents; halo-phenyl; morpholino; or morpholino(C_{1-6})alkyl,

R^2 and R^3 are each C_{1-6} alkyl,

X is — or —NH—, and

Y is



and pharmaceutically acceptable salts thereof.

5,296,592

PROCESS FOR PURIFYING INTERLEUKIN-1 RECEPTORS

Steven K. Dower, Redmond; Carl J. March, Seattle; John E. Sims, Seattle, and David L. Urdal, Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation of Ser. No. 691,551, Apr. 25, 1991, abandoned, which is a division of Ser. No. 258,756, Oct. 13, 1988, Pat. No. 5,081,228, which is a continuation-in-part of Ser. No. 160,550, Feb. 25, 1988, Pat. No. 4,968,607, which is a continuation-in-part of Ser. No. 125,627, Nov. 25, 1987, abandoned. This application Mar. 1, 1993, Ser. No. 24,880

Int. Cl.[5] C07K *3/20*

U.S. Cl. 530—413 **6 Claims**

1. A process for purifying a biologically active mammalian type I IL-1 receptor, which has a full length native form having a molecular weight of about 82 kd, comprising:

(a) applying a sample comprising mammalian IL-1 receptor to an affinity matrix comprising a ligand selected from the group consisting of an antibody specific to the type I IL-1 receptor or an IL-1 molecule bound to an insoluble support; and

(b) eluting the IL-1 receptor from the affinity matrix.

5,296,593

COMPLEXES OF THIOETHERS

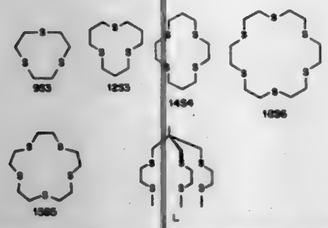
Stephen R. Cooper, Oxford, England; Heinz-Josef Kueppers, Muelheim an der Ruhr, Fed. Rep. of Germany, and Philip Blower, Canterbury, England, assignors to Isis Innovation Limited, Oxford, England

Filed Nov. 30, 1992, Ser. No. 982,698

Claims priority, application United Kingdom, Mar. 29, 1990, 9007039

Int. Cl.[5] C07F *13/00*

U.S. Cl. 534—14 **7 Claims**



1. A Technetium complex of a crown thioether having 3 to 6 donor sulphur atoms joined into a macrocyclic ring by ethylene or trimethylene groups.

5,296,594

SIALIC ACID GLYCOSIDES, ANTIGENS, IMMUNOADSORBENTS, AND METHODS FOR THEIR PREPARATION

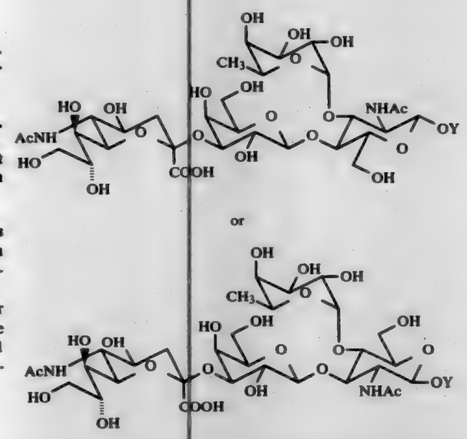
Robert M. Ratcliffe; Andre P. Venot, and S. Zabeer Abbas, all of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Division of Ser. No. 127,905, Dec. 2, 1987, Pat. No. 5,079,353. This application Jun. 20, 1990, Ser. No. 545,999

Int. Cl.[5] C07H *5/06*; C07K *3/20*; G01N *33/531*

U.S. Cl. 536—53 **8 Claims**

1. A compound of the formula:



or

wherein Ac is an acyl group of from 1 to 6 carbon atoms, and Y is selected from the group consisting of hydrogen, lower alkyl of from 1 to 6 carbon atoms, a linking arm and a moiety comprising a chromatographic support.

5,296,595

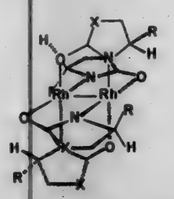
METHOD OF ENANTIOSELECTIVELY INSERTING A CARBENE

Michael P. Doyle, San Antonio, Tex., assignor to Research Corporation Technologies, Tucson, Ariz.

Division of Ser. No. 502,139, Mar. 29, 1990, Pat. No. 5,175,311. This application Sep. 24, 1992, Ser. No. 950,836

Int. Cl.[5] C07D *205/08, 207/26, 307/33*; C07F *7/08*

U.S. Cl. 540—200 **53 Claims**



1. A method of enantioselectively inserting a carbene between a carbon and a hydrogen comprising the steps of:

providing a compound with a carbon-hydrogen bond;

providing a carbene precursor, wherein either said compound or said carbene precursor is prochiral;

providing a chiral catalyst comprising

a nucleus with a first and second atom of the same metal aligned on an axis, said metal selected from the group consisting of rhodium, ruthenium, chromium, molybdenum, tungsten, rhenium and osmium; and

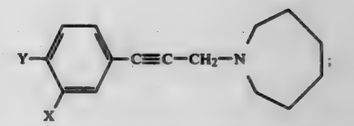
first, second, third and fourth bridging ligands oriented radially to the axis,

each ligand having a first and second complexing atom, the first complexing atom of each of said bridging ligands being complexed with said first metal atom, and the second complexing atom of each of said bridging ligands being complexed to said second metal atom,

said first bridging ligand further comprising a ring including said first complexing atom and attached to said second complexing atom, said ring also including a chiral center attached through a first bonding site to said first complexing atom, attached through a second bonding site to said ring, having a third bonding site occupied by a first substituent, and having a fourth bonding site occupied by a second substituent, and

said second bridging ligand further comprising a ring including said second complexing atom and attached to said first complexing atom, said ring also including a chiral center attached through a first bonding site to said second complexing atom, attached through a second bonding site to said ring, having a third bonding site occupied by a first substituent, and having a fourth bonding site occupied by a second substituent, and wherein the R/S configuration of the chiral center on the second bridging ligand is the same as the R/S configuration of the chiral center on the first bridging ligand; and

reacting said compound, said carbene precursor, and said chiral catalyst under conditions sufficient to cause said carbene insertion to proceed.



b) a hydrogenation by nascent hydrogen of the acetylenic bond of the acetylenic containing compound is carried out to prepare a compound of formula (I) in which A represents the —CH═CH— group in the form of a mixture of cis and trans isomers and said cis isomer is separated from said mixture; or

c) a hydrogenation is carried out in the presence of a supported metal catalyst to directly prepare the vinylene compound of formula (I) in cis form; and

d) optionally, an acid addition salt of a compound of formula (I) is prepared by addition of an appropriate mineral or organic acid to the hydrogenation product of step b) or c).

5,296,596

HEXAHYDROAZEPINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION

Serge Lavastre, Montpellier; Jean-Pierre Maignan, Portet/-Garonne; Raymond Paul, St Gely du Fesc; Martine Poncelet, St Mathieu de Treviers, and Vincent Santucci, Combaillaux, all of France, assignors to ELF SANOFI, Paris, France

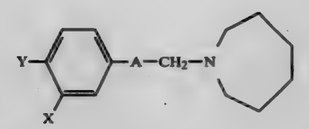
Division of Ser. No. 714,832, Jun. 13, 1991, Pat. No. 5,231,092. This application Apr. 14, 1993, Ser. No. 45,722

Claims priority, application France, Jun. 14, 1990, 90 07434

Int. Cl.[5] C07D *223/04*

U.S. Cl. 540—612 **7 Claims**

1. A process for the preparation of a hexahydroazepine derivative of formula



(I)

in which:

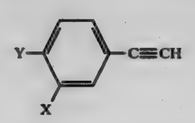
A is a —CH═CH—(cis) group;

X represents hydrogen or a halogen;

Y is a cyclohexyl group or, when X is hydrogen, a phenyl group;

or of their pharmaceutically acceptable addition salts with mineral or organic acids, wherein:

a) a condensation reaction is carried out in the presence of heat and an inert solvent with formaldehyde and hexahydroazepine on a phenylacetylene derivative of formula:



(III)

in which X and Y have the meanings indicated above, to obtain an acetylenic bond containing compound of formula

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5,296,597

AMIDE DERIVATIVES OF PARTRICIN A & PARTRICIN B

Tiberio Bruzzese; Franco Ottoni, and Giuseppe Ghielmetti, all of Milan, Italy, assignors to SPA Societa' Prodotti Antibiotici S.P.A., Milan, Italy

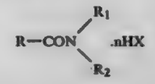
Filed Nov. 14, 1990, Ser. No. 612,912

Claims priority, application Italy, Nov. 16, 1989, 22396 A/89

Int. Cl.[5] C07D *265/30*

U.S. Cl. 544—106 **25 Claims**

1. A compound of the formula



(I)

wherein:

R is the residue of partricin A or partricin B molecule, which is bound to the C-18 carboxyl;

R_1 is a dimethylamino-substituted cyclohexyl or phenyl group; or an alkyl group with 1 to 6 carbon atoms substituted with an N-methyl- or N-ethyl-cycloalkyleneamine with 4 to 5 carbon atoms, with a pyridyl group or with a primary amine group NH_2, a secondary amine group NHR_3 or a tertiary amine group NR_3R_4, wherein R_3 and R_4 are alkyl groups with 1 to 4 carbon atoms, or NR_3R_4 together form a basic nitrogen heterocycle, said heterocycle being 5- or 6-membered and optionally containing one or more further heteroatoms chosen from N or O or S;

R_2 is a hydrogen atom, a methyl group, or has the same meanings as R_1; or

NR_1R_2 together form a basic nitrogen heterocycle, said heterocycle being 5- or 6-membered and optionally containing one or more further N atoms;

n is an integer of from 0 to 2,

X is the residue of a pharmacologically and pharmaceutically acceptable organic or inorganic acid.

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5,295,598

DERIVATIVES OF 2,4-DIAMINO-1,3,5-TRIAZINYL-6-PHOSPHONIC ACID

Roberto Cipolli, Novara; Enrico Masarati, Castelnuovo Valtidone; Cristina Rossi, Rome; Roberto Oriani, Milan, and Gilberto Nucida, San Giuliano Milanese, all of Italy, assignors to Ministero dell'Universita' e della Ricerca Scientifica e Technologica, Rome, Italy

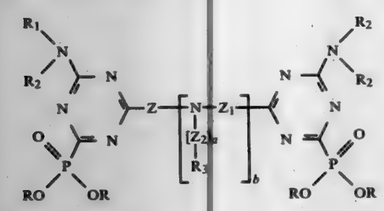
Filed Jan. 6, 1993, Ser. No. 1,528

Claims priority, application Italy, Jan. 10, 1992, MI92A000018

Int. Cl.[5] C07D *251/40*; C07F *9/53*

U.S. Cl. 544—195 **7 Claims**

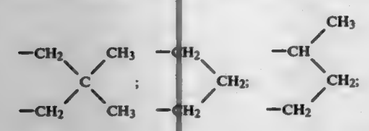
1. A derivative of 2,4-diamino-1,3,5-triazinyl-6-phosphonic acid of the formula (I):



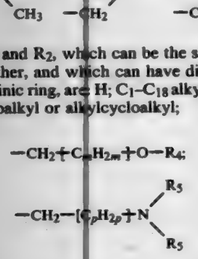
(I)

wherein:

the radicals R, which can be the same, or different from each other, are: hydrogen; C_1–C_5 alkyl; C_3–C_5 hydroxyalkyl; C_3–C_4 alkenyl; cyclohexyl; C_6–C_{10} aryl; C_7–C_8 aralkyl; or, taken jointly, can constitute a cyclic structure, as:



the radicals R_1 and R_2, which can be the same, or different from each other, and which can have different meanings on each triazinic ring, are: H; C_1–C_{18} alkyl; C_2–C_8 alkenyl; C_6–C_{16} cycloalkyl or alkylcycloalkyl;



wherein:

m is an integer comprised within the range of form 1 to 7;

p is an integer comprised within the range of from 1 to 5;

R_4 is H; C_1–C_6 alkyl; C_2–C_6 alkenyl; $-(C_qH_{2q}-O)-R_6$ wherein q is an integer comprised within the range of from 1 to 4 and R_6 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl;

the radicals R_5, which can be the same, or different from each other, are H; C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or alkylcycloalkyl; C_1–C_4 hydroxyalkyl; or the moiety:



is replaced by a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, 4-ethylpiperazine, 2-methylpiperazine, 2,5-dimethylpiperazine, 2,3,5,6-tetramethylpiperazine, 2,2,5,5-tetramethylpiperazine, 2-ethylpiperazine, and 2,5-diethylpiperazine;

or in the general formula (I) the moiety:

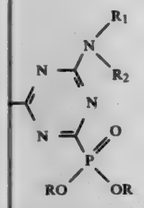


is replaced by a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine, and 4-ethylpiperazine;

a is 0 or 1;

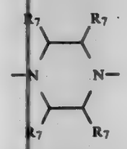
b is 0 or an integer comprised within the range of from 1 to 5;

R_3 is hydrogen or:



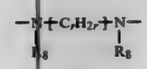
and its meaning may vary within each repeating unit;

when b is 0, Z is a divalent radical falling within the scope of one of the following formulae:

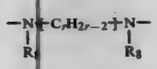


(II)

wherein the radicals R_7, which may be the same or different from each other, are hydrogen or C_1–C_4 alkyl;



(III)

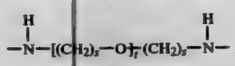


(IV)

wherein r is an integer comprised within the range of from 2 to 14; R_8 is hydrogen; C_1–C_4 alkyl; C_2–C_6 alkenyl; C_1–C_4 hydroxyalkyl;

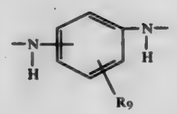


(V)

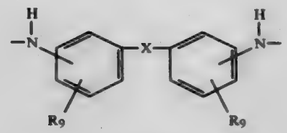


(VI)

wherein s is an integer comprised within the range of from 2 to 5 and t is an integer comprised within the range of from 1 to 3;



(VII)

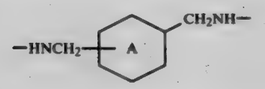


(VIII)

wherein:

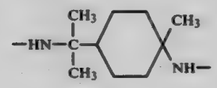
X is a direct C—C bond; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2;

R_9 is hydrogen; hydroxy; C_1–C_4 alkyl; C_1–C_4 alkoxy;

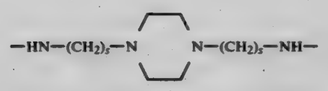


(IX)

wherein A can be saturated or unsaturated ring;



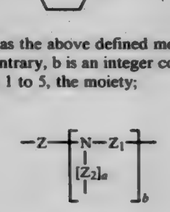
(X)



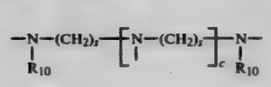
(XI)

wherein s has the above defined meaning;

when, on the contrary, b is an integer comprised within the range of from 1 to 5, the moiety;



is a multivalent radical falling within the scope of one of the following formulae:



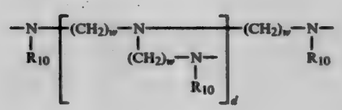
(XII)

wherein:

R_{10} is hydrogen or C_1–C_4 alkyl;

c is an integer comprised within the range of from 1 to 5;

the indexes s, which can be the same, or different from each other, have the same meaning as defined hereinabove;



(XIII)

wherein:

R_{10} has the same meaning as defined hereinabove;

w is an integer comprised within the range of from 2 to 4;

d is either 1 or 2.

5,296,599

ACTIVATED CARBAMATES COMPOUNDS

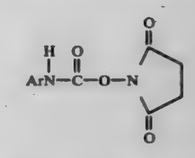
Steven A. Cohen, Hopkinton, and Dennis P. Michaud, Dracut, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Sep. 19, 1991, Ser. No. 762,579

Int. Cl.[5] C07D *237/20, 215/38, 217/26*

U.S. Cl. 544—235 **4 Claims**

1. A heterocyclic activated carbamate compound having the formula:



wherein Ar is quinolyl, acridinyl, coumarin or fluorescein which may be substituted with alkyl, alkoxy, OH, halo, amino, sulfur, oxygen or phenyl.

5,296,600

PYRROLOPYRIMIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Akimoto Hiroshi; Takenori Hitaka, and Tetsuo Miwa, all of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 578,258, Sep. 6, 1990, Pat. No. 5,106,974, which is a division of Ser. No. 326,901, Mar. 21, 1989, Pat. No. 4,997,838. This application Jan. 22, 1992, Ser. No. 824,106

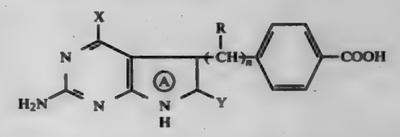
Claims priority, application Japan, Mar. 24, 1988, 63-71149; Sep. 29, 1988, 63-245379

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] C07D *471/04*

U.S. Cl. 544—280 **15 Claims**

1. A compound of the formula



wherein the ring A is a pyrrole or pyrroline ring, X is an amino group or a hydroxyl group, Y is a hydrogen atom, an amino group or a hydroxyl group, R is a hydrogen atom, a fluorine atom, a C_{1-3} alkyl group, a C_{2-3} alkenyl group or a C_{2-3} alkynyl group, and n is an integer of 2 to 4, and R may be different in each of the n repeating units, or a salt or a C_{1-3} alkyl, benzyl, nitrobenzyl, methoxybenzyl, phenyl, nitrophenyl or methoxyphenyl ester at the carboxyl group thereof.

5,296,601
PROCESS FOR PRODUCING CARBOXYLIC ACID ESTERS

Keiji Sato, Nishinomiya; Masaaki Kudo, Kadoma, and Moriharu Yamamoto, Kobe, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Division of Ser. No. 528,919, May 29, 1990, Pat. No. 5,142,057. This application May 27, 1992, Ser. No. 888,618
Claims priority, application Japan, Mar. 12, 1987, 62-57431; Feb. 13, 1988, 63-31139
Int. Cl.[5] C07C *69/76, 69/84, 317/14, 241/44, 213/55*
U.S. Cl. 544—355 7 Claims

1. A process for producing a carboxylic acid ester represented by the general formula (I-2)

$$R^1.(COOR^4)m \quad \text{(I-2)}$$

wherein R^1 is a phenyl or substituted phenyl group with substituents selected from the group consisting of halogen atom, alkyl group having 1 to 3 carbon atoms, haloalkyl group having 1 to 3 carbon atoms, cyano group, nitro group, hydroxy group, alkoxy group having 1 to 3 carbon atoms, alkylthio group having 1 to 3 carbon atoms, alkylcarbonyl group having 1 to 3 carbon atoms or amino group, said R^1 further being phenoxyphenyl group, benzoylphenyl group, phenylsulfonylphenyl group, biphenyl group, hydroxybiphenyl group, thienyl group, furyl group, pyridyl group, picolinyl group, quinolinyl group and quinoxalinyl group; R^4 is an alkyl group having 1 to 8 carbon atoms, phenyl group, cresyl group, xylenyl group, benzyl group, cinnamyl group, furfuryl group or thienyl group; and m is an integer of 1 to 4;

said process comprising the steps of reacting an aromatic chloride represented by the general formula (IV)

$$R^1.(Cl)m \quad \text{(IV)}$$

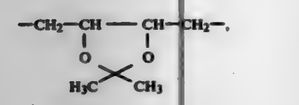
wherein R^1 and m have the same meaning as defined above, carbon monoxide and an alcohol represented by the general formula (II)

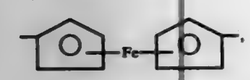
$$R^4.OH \quad \text{(II)}$$

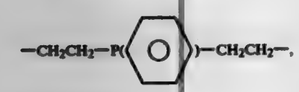
wherein R^4 have the same meaning as defined above, in the presence of a base and catalysts consisting of a palladium compound and a phosphine compound having the general formula (V)

$$(R)_2P—X—P(R)_2 \quad \text{(V)}$$

wherein R is an alkyl group having 1 to 4 carbon atoms or a phenyl group, and X is an alkylene group having 1 to 6 carbon atoms,







or a binaphthyl group;

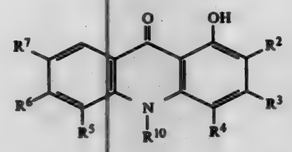
said reaction being conducted under conditions that temperature and pressure are sufficient to induce reaction.

5,296,602
MULTISUBSTITUTED 1-HYDROXY-9-ACRIDONES WITH ANTICANCER ACTIVITY

Tsann-Long Su, Baldwin Place, and Kyoichi A. Watanabe, Rye Brook, both of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Mar. 18, 1991, Ser. No. 671,126
Int. Cl.[5] C07C *63/42*
U.S. Cl. 546—103 17 Claims

1. A method for synthesizing a compound having the structure:



(I)

wherein

R^2 and R^3 are the same or different and are hydrogen, a saturated or unsaturated alkyl group having 1 to 5 carbon atoms, a hydroxy group, a saturated or unsaturated alkyloxy group having 1 to 5 carbon atoms, an O-alkyloxyalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an O-benzyloxyalkyl group with the alkyl having 1 to 5 carbon atoms, an O-acetyl group, an O-benzoyl group, or an O-benzyl group;

R^4 is hydrogen, a saturated or unsaturated alkyl group having 1 to 5 carbon atoms, a hydroxy group, a hydroxymethyl group, a saturated or unsaturated alkyloxy group having 1 to 5 carbon atoms, an O-alkyloxyalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an O-benzyloxyalkyl group with the alkyl having 1 to 5 carbon atoms, an O-alkyloxyalkyloxyalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an O-acetyl group, an O-benzoyl group, or an O-benzyl group;

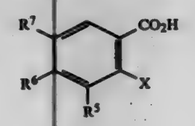
wherein

R^5, R^6 and R^7 are the same or different and are hydrogen, a saturated or unsaturated alkyl group having 1 to 5 carbon atoms, sulfate, phosphate, a hydroxy group, a saturated or unsaturated alkyloxy group having 1 to 5 carbon atoms, an O-alkyloxyalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an O-benzyloxyalkyl group with the alkyl having 1 to 5 carbon atoms, an O-acetyl group, an benzoyl group, a nitro group, an amino group, an N-alkylamino group having 1 to 5 carbon atoms, an N,N-dialkylamino group with each alkyl having 1 to 5 carbon atoms, an aminoalkyloxy group having 1 to 5 carbon atoms, an N-alkyl-aminoalkyloxy group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an N,N-dialkyl-aminoalkyloxy group wherein each alkyl is the same or different having 1 to 5 carbon atoms, a quaternary ammonium alkyloxy salt, or a halogen; and

R^{10} is hydrogen, a saturated or unsaturated alkyl group having 1 to 5 carbon atoms, aminoalkyl group having 1 to 5 carbon atoms, an N-alkylaminoalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, an N,N-dialkylaminoalkyl group wherein each alkyl is the same or different having 1 to 5 carbon atoms, or an amino acid moiety;

which comprises:

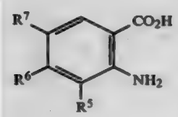
(a) combining a compound having the structure:



(II)

-continued

or

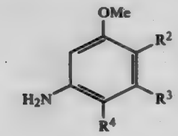


(III)

wherein R^5, R^6 and R^7 are the same as defined previously; and

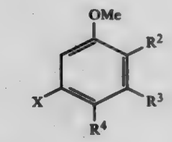
X is F, Cl, Br, or I;

with a compound having the structure:



(IV)

or



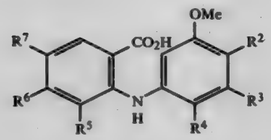
(V)

respectively,

wherein the molar ratio of the compound of formula II to the compound of formula IV or of the compound of formula III to the compound of formula V is about 1 to 5 and R^2, R^3 and R^4 are the same as defined previously; and

X is F, Cl, Br, or I or a nitro group;

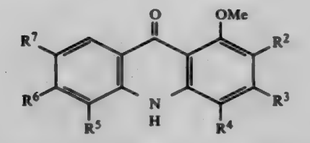
under Ullman condensation conditions so as to form a compound having the structure:



(VI)

wherein R^2, R^3, R^4, R^5, R^6, and R^7 are the same as defined previously;

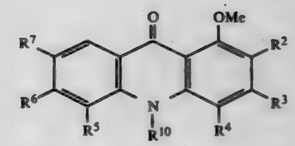
(b) treating the compound formed in step (a) under cyclization conditions so as to form a compound having the structure:



(VII)

wherein R^2, R^3, R^4, R^5, R^6, and R^7 are the same as defined previously;

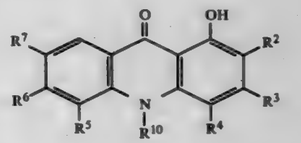
(c) treating the compound formed in step (b) under N-alkylating conditions so as to form a compound having the structure:



(VIII)

wherein R^2, R^3, R^4, R^5, R^6, R^7 and R^{10} are the same as defined previously; and

(d) treating the compound formed in step (c) under de-O-methylating conditions so as to form a compound having the structure:



(I)

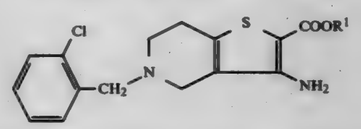
wherein R^2, R^3, R^4, R^5, R^6, R^7 and R^{10} are the same as defined previously.

5,296,603
3-AMINO-5-O-CHLOROBENZYL-4,5,6,7-TETRAHYDRO-THIENO[3,2-C]-PYRIDINE-2-CARBOXYLIC ACID COMPOUNDS

Katsuyoshi Yamakawa; Kozo Sato, both of Minami-ashigara, and Takashi Suginome, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1993, Ser. No. 70,685
Claims priority, application Japan, Jun. 8, 1992, 4-147188; Jun. 8, 1992, 4-147189
Int. Cl.[5] C07D *333/50*
U.S. Cl. 546—114 9 Claims

1. A compound of the formula (I):



(I)

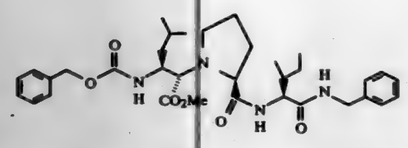
wherein R^1 represents a hydrogen atom or an alkyl group or an acid salt thereof.

5,296,604
PROLINE DERIVATIVES AND COMPOSITIONS FOR THEIR USE AS INHIBITORS OF HIV PROTEASE

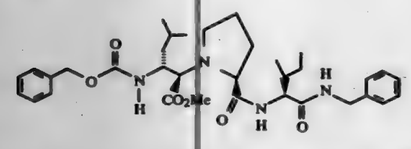
Rudolf H. Hanko, Essen, Fed. Rep. of Germany; Thomas Gould, Overland Park, Kans., and Paul P. Tamburini, Kensington, Conn., assignors to Miles Inc., West Haven, Conn.

Filed May 15, 1992, Ser. No. 883,491
Int. Cl.[5] C07D *207/16, 401/12;* A61K *31/47, 31/40*
U.S. Cl. 546—169 12 Claims

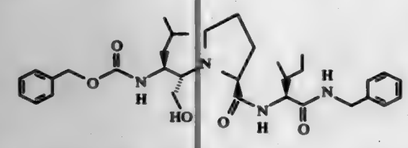
1. A compound selected from the group consisting of: (2S, 3S) N-methyl 2-(3-carbobenzyloxyamino-5-methyl-hexanoyl)]-prolyl-isoleucine N-benzyl amide of the formula



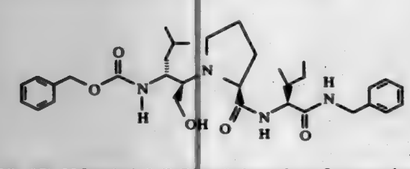
(2R, 3R) N-methyl 2-(3-carbobenzyloxyamino-5-methyl-hexanoyl)]-prolyl-isoleucine N-benzyl amide of the formula



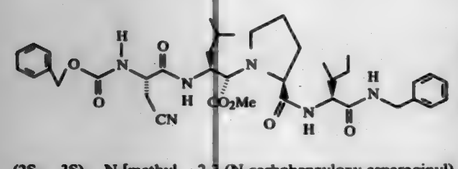
(2S, 3S) N-[2-(3-carbobenzyoxyamino-5-methyl hexan-1olyl)]-prolyl-isoleucine N-benzyl amide of the formula



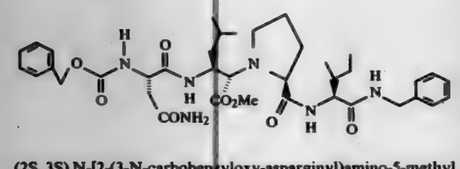
(2R, 3R) N-[2-(3-carbobenzoxyamino-5-methyl hexan-1-olyl)]-prolyl-isoleucine N-benzyl amide of the formula



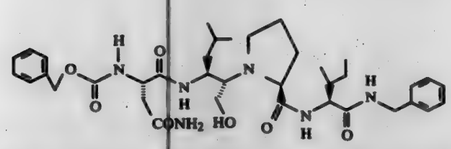
(2S, 3S) N-[methyl 2-(3-(N-carbobenzyloxy-β-cyano-alanyl) amino-5-methyl-hexanoyl)]-prolyl-isoleucine N-benzyl amide of the formula



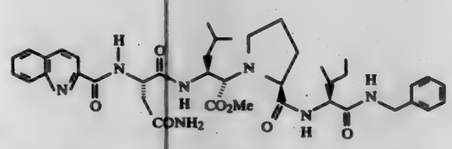
(2S, 3S) N-[methyl 2-3-(N-carbobenzyloxy-asparaginyl) amino-5-methyl-hexanoyl)]-prolyl-isoleucine N-benzyl amide of the formula



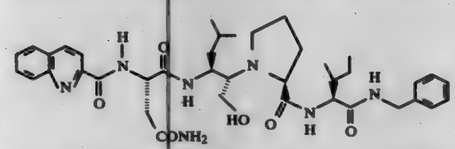
(2S, 3S) N-[2-(3-N-carbobenzyloxy-asparginyl)amino-5-methyl hexan-1-olyl)]-prolyl-isoleucine N-benzyl amide of the formula



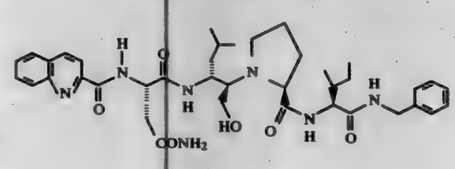
(2S, 3S) N-]methyl 2-()-N-guinaldyl-asparginyl)amino-5-methyl-hexanoyl)]-prolyl-isoleucine N-benzyl amide of the formula



(2S, 3S) N-[2-(3-(N-guinaldyl-asparginyl)amino-5-methyl hexan-1-olyl)]-prolyl-isoleucine N-benzyl amide of the formula



(2R, 3R) N-[2-(3-(N-guinaldyl-asparginyl)amino-5-methyl hexan-1-olyl)]-prolyl-isoleucine N-benzyl amide of the formula



5,296,605

2,4-THIAZOLIDINEDIONE COMPOUNDS

Guillaume de Nanteuil, Suresnes; Jacques Duhault, Croissy sur Seine; Denis Ravel, Igny, and Yolande Herve, Puteaux, all of France, assignors to Adir et Compagnie, Courbevoie, France

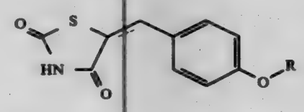
Division of Ser. No. 900,001, Aug. 14, 1992, Pat. No. 5,266,582. This application Jan. 29, 1993, Ser. No. 11,268

Claims priority, application France, Aug. 20, 1991, 91 10430

Int. Cl.[5] C07D *401/10;* A61K *31/41*

U.S. Cl. 546—176 **5 Claims**

1. A compound selected from those of formula (I),

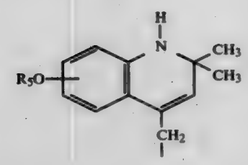


(I)

in which:

the dotted line indicates the optional presence of a double bond,

R represents the following group:



in which:

R_5 represents hydrogen or linear or branched (C_1–C_6)alkyl

5,296,606

O-(3-AMINO-2-HYDROXYPROPYL)-HYDROXIMIC ACID HALIDES AND PROCESS FOR PREPARING THE SAME

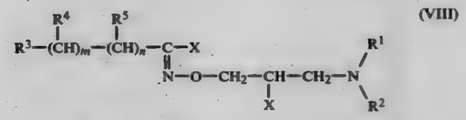
Péter L. Nagy; Béla Balázs; Mária Boros; Jenó Szilbereky; Gizella Zsila; Lajos Ábrahám; György Blaskó; Béla Gachályi; Attila Almási, and Gábor Német, all of Budapest, Hungary, assignors to Biorex Kutato-Fejleszto KFT, Budapest, Hungary

Division of Ser. No. 499,318, Jun. 28, 1990, Pat. No. 5,147,879, which is a division of Ser. No. 48, Oct. 19, 1989. This application Jul. 1, 1992, Ser. No. 906,402

Int. Cl.[5] C07D *211/04;* C07C *219/06*

U.S. Cl. 546—193 **1 Claim**

1. Hydroximic acid derivatives of formula (VIII)



(VIII)

and the salts thereof wherein

X is selected from the group consisting of fluoro, chloro, bromo and iodo,

R^1 and R^2 when taken together with the nitrogen to which these are attached form a 5 to 8 membered saturated ring,

R^3 is hydrogen, phenyl, naphthyl or pyridyl optionally substituted with one or more halo or alkoxy,

R^4 is hydrogen or phenyl,

R^5 is hydrogen or phenyl,

m is 0, 1 or 2 and

n is 0, 1 or 2.

5,296,607

PHOTOCHROMIC COMPOUND

Akihiko Tomoda; Hisao Suzuki; Akira Kaneko, and Hideki Tsuboi, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

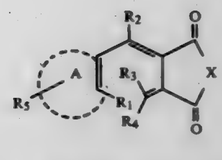
Continuation of Ser. No. 607,999, Oct. 31, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 902,778

Claims priority, application Japan, Nov. 8, 1989, 2-90578; Jul. 18, 1990, 1-89664

Int. Cl.[5] C07D *413/06*

U.S. Cl. 548—236 **1 Claim**

1. A photochromic compound characterized by a general formula



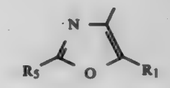
(I)

in which

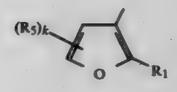
said R_1 to R_4 in said formula indicate hydrogen, an alkyl group, or an aryl group,

said X in said formula indicates oxygen or N—R_6, R_6 indicating hydrogen, an alkyl group, an aryl group, or an allyl group,

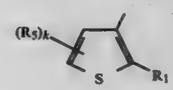
said ring A is given in the form of one of the following four chemical groups:



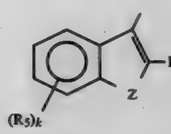
(II)



(V)



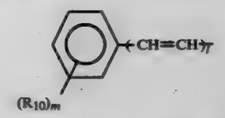
(VI)



(VII)

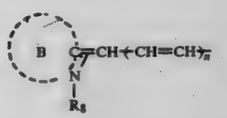
in said chemical group (II),

R_5 is an electron donating group and in the form of an indolyl group, a compound as shown in (VIII):



(VIII)

(in which said R_{10} indicates an alkoxyl group, an amino group, a di-alkyl amino group, or a mono-alkyl amino group; and l and m indicate integers 0 to 5), or a compound as shown in (IX):



(IX)

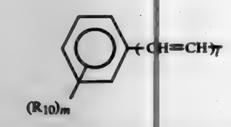
(in which said R_8 indicates an alkyl group, an aryl group, an aralkyl group, or an allyl group; said ring B indicates a 5 or 6 membered heteroaromatic ring or a condensed ring containing a 5 or 6 membered heteroaromatic ring; and n indicates an integer from 0 to 4), and

VOL 1160 ISS 4 MR 22 1994 UMI

in said chemical groups (V) to (VII),

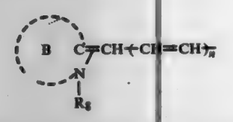
R_5 is given in the form of an amino group, a di-alkyl amino group, a mono-alkyl amino group, a pyrrolyl group, an indolyl group, a compound as shown in (XII):

(XII)



(in which said R_{10} indicates an alkoxyl group, an amino group, a di-alkyl amino group, a mono-alkyl amino group, l indicates an integer from 0 to 5; and m indicates an integer from 1 to 5), or a compound as shown in (XIII):

(XIII)



(in which said R_8 indicates an alkyl group, an aryl group, an aralkyl group, or an allyl group; said ring B indicates a 5 or 6 membered heteroaromatic ring or a condensed ring containing a 5 or 6 membered heteroaromatic ring; and n indicates an integer from 0 to 4), and

in said chemical groups (V) and (VI),

k is 1 or 2, and in said chemical group (VII),

k is an integer from 1 to 4; z indicates O, S, N—R_9 (in which R_9 indicates an alkyl group, an aryl group, an aralkyl group, or an allyl group).

5,296,608

INTERMEDIATES FOR ANALOGS OF TYROSINE SULFATE OR TYROSINE PHOSPHATE CONTAINING PEPTIDES

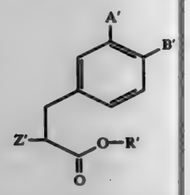
Waleed Danho, Wayne; Jefferson W. Tilley, North Caldwell; Joseph Triscari, Bloomfield, and Rolf Wagner, West Milford, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 732,435, Jul. 18, 1991, Pat. No. 5,182,263, which is a continuation of Ser. No. 311,872, Feb. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 185,228, Apr. 25, 1988, abandoned. This application Apr. 9, 1992, Ser. No. 868,431

Int. Cl.[5] A61K *37/41*; C07D *257/04*

U.S. Cl. 548—253 **15 Claims**

1. A compound of the formula:

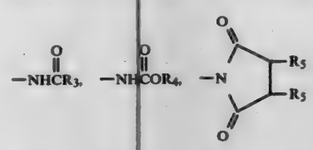


wherein one of A′ or B′ is a group of the formula:



and the other of A′ or B′ is H wherein R_0 is H or F, R_2 is H, lower alkenyl, or substituted or unsubstituted lower alkyl with the substituents selected from 1 to 3 aryl groups, and r is an integer from 0–2;

R′ is H, substituted or unsubstituted lower alkyl with the substituents selected from 1 to 3 aryl groups;



wherein R_3 and R_4 are H, substituted or unsubstituted lower alkyl with the substituents selected from 1 to 3 aryl groups, and each R_5 is independently H, lower alkyl, or both groups R_5 taken together are a six membered ring which may be aromatic.

5,296,609

PROCESS FOR THE PREPARATION OF 1,2,4-SUBSTITUTED IMIDAZOLES AND RELATED AMINOALKYLIMIDAZOLE DERIVATIVES

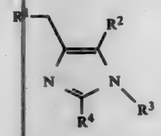
Gary McCort, Paris, and Jean-Claude Pascal, Cachan, both of France, assignors to Syntex Pharmaceuticals, Ltd., Maidenhead, United Kingdom

Filed Apr. 9, 1993, Ser. No. 46,002

Int. Cl.[5] C07D *233/56, 233/64*

U.S. Cl. 548—325.1 **20 Claims**

1. A process for the preparation of compounds represented by the formula:



wherein:

R^1 is hydrogen, lower alkyl, or optionally substituted phenyl;

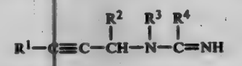
R^2 is hydrogen, lower alkyl, or optionally substituted lower alkyl phenyl;

R^3 is hydrogen, alkyl, optionally substituted phenyl, or optionally substituted biphenylmethyl; and

R^4 is hydrogen, lower alkyl, optionally substituted phenyl, or —SR^5, in which R^5 is lower alkyl, optionally substituted phenyl, or optionally substituted benzyl;

which process comprises:

cyclizing a compound represented by the formula:



wherein R^1, R^2, R^3 and R^4 are as defined; in the presence of a palladium or gold catalyst.

5,296,610

N-SUBSTITUTED POLYAMIDE-IMIDES

Peter Wolf, Frankenthal, and Juergen Koch, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ladwigshafen, Fed. Rep. of Germany

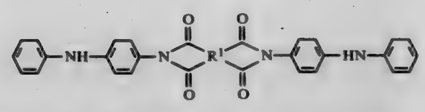
Division of Ser. No. 822,261, Jan. 17, 1992, Pat. No. 5,229,484. This application Feb. 4, 1993, Ser. No. 13,374

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101379

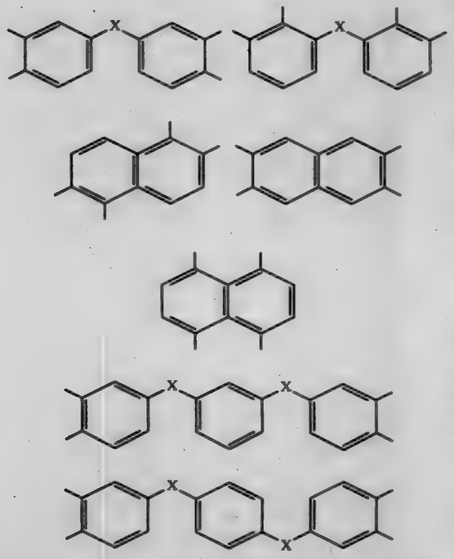
Int. Cl.[5] C07D *209/48, 223/10*; C07F *7/02*

U.S. Cl. 548—406 **1 Claim**

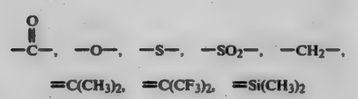
1. A bis(phthalimide) of the structure



where R^1 is one of the following tetravalent aromatic radicals



and X is a bond or X is one of the following divalent radicals



5,296,611

PROPENALS SUBSTITUTED WITH A DITHIANE RING AND PROCESSES FOR THE PREPARATION OF THESE PROPENALS

Guy Solladie, Strasbourg; Valerie Berl, Mulhouse, and Jean Maignan, Tremblay-les-Gonesse, all of France, assignors to L'Oreal, Paris, France

Filed Jun. 12, 1992, Ser. No. 897,778

Claims priority, application France, Jun. 14, 1991, 91 07293

Int. Cl.[5] C07D *339/08*

U.S. Cl. 549—21 **4 Claims**

1. Propenals of formula:



(I)

in which formula R is hydrogen or a C_1–C_4 thioalkyl radical, the dithiane ring being at the cis position with respect to the aldehyde function when R is H, and at the trans position when R is a thioalkyl radical.

5,296,612

PROCESS FOR PRODUCING ENYNE DERIVATIVES

Susumu Nakagawa; Akira Asai; Satoru Kuroyanagi; Makoto Ishihara, and Yoshiharu Tanaka, all of Okazaki, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 861,160, Mar. 27, 1992, Pat. No. 5,231,183, which is a continuation of Ser. No. 588,931, Sep. 27, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,488

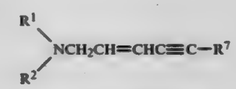
Claims priority, application Japan, Oct. 2, 1989, 1-257310

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] C07C *211/02*; C07D *333/58*

U.S. Cl. 549—49 **3 Claims**

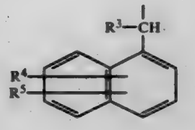
1. A process for producing an enyne derivative of the formula:



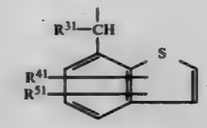
[VII]

wherein R^1 is a hydrogen atom, a lower alkyl group, a halo lower alkyl group, a lower alkenyl group, a lower alkynyl group or a cycloalkyl group, R^2 is a hydrogen atom or a group of the formula:

[III^a]



[III^b]

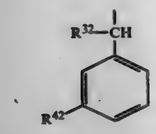


or

VOL 1160 ISS 4 MR 22 1994 UMI

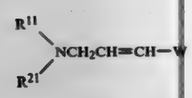
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[III^c]



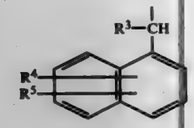
wherein each of R^3, R^{31} and R^{32} which may be the same or different, is a hydrogen atom or a lower alkyl group, each of R^4, R^5, R^{41} and R^{51} which may be the same or different, is a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group or a lower alkoxy group, R^{42} is a hydroxyl group, a halogen atom, a group of the formula R^8—O— wherein R^8 is a protecting group for a hydroxyl group, a hydroxymethyl group, a formula group, a carboxyl group, a lower alkoxycarbonyl group, a lower alkanoyl group, an amino group, a mercapto group, or a group of the formula R^6—X—Y— wherein R^6 is a phenyl or thienyl group which may be one or two substituents selected from the group consisting of a halogen atom, a hydroxyl group, a lower alkyl group, a cyano group, a lower alkoxy group, a furyl group, a tetrahydrofuryl group, a pyrrolyl group, pyrrolydinyl group, an imidazolyl group, a pyrazolyl group, an oxazolyl group, an isoxazolyl group, a furazanyl group, a thiazolyl group, an isothioazolyl group, a thiadiazolyl group, a thienyl group, a pyridyl group, a piperidyl group, a pyrazinyl group, a pyrimidinyl group, a pyridazinyl group, a piperidinyl group, a morpholinyl group, a thiomorpholinyl group, a triazinyl group, a quinolyl group, an isoquinolyl group, a phthalazinyl group, a naphthyridinyl group, a quinoxalinyl group, a quinazolinyl group, a benzofuranyl group, a benzothienyl group, a benzoisoxazolyl group, a benzothiazolyl group and a benzofurazanyl group, each of X and Y which may be the same or different, is an oxygen atom, a sulfur atom, a carbonyl group, a group of the formula —CHR^a— wherein R^a is a hydrogen atom or a lower alkyl group or a group of the formula —NR^b— wherein R^b is a hydrogen atom or a lower alkyl group, or X and Y together form a vinylene group or an ethynylene group, provided that when either one of X and Y is an oxygen atom, a sulfur atom or a group of the formula —NR^b— wherein R^b is as defined above, the other is a carbonyl group or a group of the formula —CHR^a— wherein R^a is as defined above, and R^7 is a lower alkyl or cycloalkyl group which may have a hydroxyl group or a lower alkoxy group, a phenyl group or a tri-lower alkylsilyl group, comprising reacting a compound of the formula:

[IV]



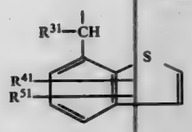
wherein W is a halogen atom, R^{11} is a hydrogen atom, a lower alkyl group, a halo lower alkyl group, a lower alkenyl group, a lower alkynyl group or a cycloalkyl group, and R^{21} is a hydrogen atom or a group of the formula:

[III^a]



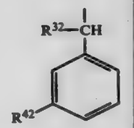
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[III^b]



or

[III^c]

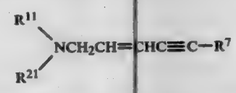


wherein R^3, R^4, R^5, R^{31}, R^{32}, R^{41}, R^{42} and R^{51} are as defined above, with an acetylene derivative of the formula:

$$HC{\equiv}C{-}R^7 \qquad [V]$$

wherein R^7 is as defined above, in the presence of a palladium catalyst, to obtain a compound of the formula:

[VI]



wherein R^{11}, R^{21} and R^7 are as defined above, and, if necessary, N-alkylating this compound.

5,296,613

PYRAN DERIVATIVES

Richard W. Bayles, Stockport; Anthony P. Flynn, Great Budworth, and Ralph W. Turner, Cheadle, all of England, assignors to Imperial Chemical Industries plc, London, United Kingdom

Division of Ser. No. 334,749, Apr. 6, 1989, Pat. No. 5,155,236, which is a continuation of Ser. No. 942,437, Dec. 16, 1986, abandoned. This application Jul. 23, 1992, Ser. No. 917,376

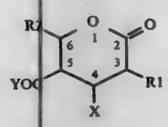
Claims priority, application United Kingdom, Dec. 23, 1985, 8531638

Int. Cl.^{5} C07D *309/30*

U.S. Cl. 549—291 **6 Claims**

1. A tetrahydropyran derivative of formula I:

(I)



wherein:

R1 is hydrogen or alkyl;

R2 is alkyl optionally substituted by one or more alkoxy groups or halogen atoms;

X is a group of formula —NHCVR^4 wherein V is oxygen or sulphur, R^4 is hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, aryl, arylalkyl, amino, mono- or di-alkylamino or a group of the formula —OR^5 wherein R^5 is alkyl, substituted alkyl, aryl or arylalkyl, or X is a group of formula —NHSO$_2$R^{4a} wherein R^{4a} is alkyl, aryl or a group of formula —CH$_2$COR^{4b} wherein R^{4b} is alkyl or aryl, and Y is a group of formula —NR^{6}R^7, wherein R^6 is hydrogen or alkyl and R^7 is alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl or arylalkyl or R^7 is a group of formula —COOR^8 wherein R^8 is alkyl or arylalkyl;

or X is of the formula —NHSOR^{4a}, wherein R^{4a} is defined as hereinabove, and

Y is alkoxy, cycloalkoxy, arylalkoxy, or of the formula —NR^{6}R^7, wherein R^6 and R^7 are defined as hereinabove; wherein alkyl means (1–6C)alkyl, cycloalkyl means (3–7C)cycloalkyl or bridges (6–9C)bicycloalkyl, aryl means an optionally substituted 5- or 6-membered carbocyclic group, arylalkyl means aryl(1–4C)alkyl, alkoxy means (1–6C)alkoxy, cycloalkoxy means (3–7C)cycloalkoxy or bridged (6–9C)bicycloalkoxy and alkenyl means (2–6C)alkenyl.

5,296,614

PREPARATION OF PHTHALIDES

Jochem Henkelmann; Thomas Ruehl, both of Ludwigshafen, and Horst Zimmermann, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,725

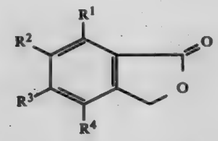
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4136992

Int. Cl.^{5} C07D *307/87*

U.S. Cl. 549—307 **16 Claims**

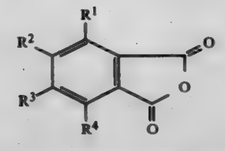
1. A process for the preparation of phthalides of the formula

I



where R1, R2, R3 and R4, independently of one another, are hydrogen C1–C4 alkyl or C1–C3 alkoxy, which comprises: reacting a phthalic anhydride of the formula

II



where R1, R2, R3 and R4 are as defined above with hydrogen in the presence of a hydrogenation catalyst at from 50° to 400° C. and at from 1 to 400 bar, wherein the hydrogenation catalyst employed is a fixed-bed catalyst essentially free from Lewis acids and is selected form the group consisting of:

a) oxides of the elements of main groups one to four of the Periodic Table of Elements, oxides of the elements of sub-groups one to eight of the Periodic Table of Elements, oxides of the elements of the lanthanide group, or mixtures of said oxides; and

b) metallic catalysts wherein the metal is selected from the group consisting of ruthenium, rhenium, palladium, platinum, boron, tin and mixtures thereof on support materials.

5,296,615

PROCESS AND INTERMEDIATES FOR CHIRAL EPOXIDES

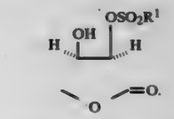
Leland O. Weigel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 881,913, May 12, 1992, Pat. No. 5,256,807, which is a division of Ser. No. 770,676, Oct. 3, 1991, Pat. No. 5,183,910, which is a division of Ser. No. 518,384, May 3, 1990, Pat. No. 5,097,049. This application Feb. 1, 1993, Ser. No. 12,109

Int. Cl.^{5} C07D *307/32*

U.S. Cl. 549—314 **3 Claims**

1. A compound of the formula



wherein R^1 is C_1–C_6 alkyl, trifluoromethyl, benzyl, phenyl or tolyl.

5,296,616

OPTICALLY ACTIVE FLUORINE-CONTAINING COMPOUND

Masaaki Namekawa; Shinichi Nayuki; Keizou Itoh; Mitsunori Takeda, and Yoshinobu Murayama, all of Ibaraki, Japan, assignors to Kashima Oil Company, Tokyo, Japan

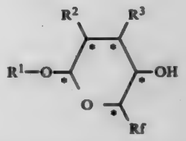
Filed Dec. 11, 1992, Ser. No. 989,541

Claims priority, application Japan, Dec. 26, 1991, 3-344802

Int. Cl.^{5} C07D *309/10*

U.S. Cl. 549—417 **10 Claims**

1. An optically active fluorine-containing compound represented by the general formula (I)



wherein Rf is a fluoroalkyl group having 1 or 2 carbon atoms; R^1, R^2 and R^3, independently of one another, are each a hydrogen atom, a straight or branched chain alkyl group having 1 to 15 carbon atoms, an alkenyl group having 2 to 15 carbon atoms or an aralkyl group having 7 to 10 carbon atoms; and * is an asymmetric carbon atom.

5,296,617

PROCESS FOR PREPARING 1,3-DIOXOLES

Walter Navarrini, and Simonetta Fontana, both of Milan, Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 5, 1992, Ser. No. 831,169

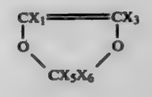
Claims priority, application Italy, Feb. 7, 1991, MI 91 A 000320

Int. Cl.^{5} C07D *317/42*

U.S. Cl. 549—455 **10 Claims**

1. A process for preparing 1,3-dioxoles of formula:

(I)



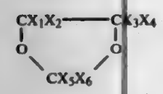
wherein:

X_1 and X_3, like or different from each other, are F or H,

VOL 1160 ISS 4 MR 22 1994 UMI

X_5 and X_6, like or different from each other, are F or CF_3, which comprises the steps of:

a) preparing a dioxolane of formula:



(II)

wherein:

X_2 and X_4, like or different from each other, are Cl or Br, X_1, X_3, X_5 and X_6 have the meaning defined hereinbefore, starting from reagents in which the halogens X_2 and X_4 are substantially in trans position, or by a process such that the anti/syn isomeric ratio in the resulting dioxolane is higher than the trans/cis isomeric ratio of the starting reagents;

b) reacting said dioxolane with at least a dehalogenating agent at a temperature ranging from +30° to +130° C.;

c) separating the dioxol (I) from the reaction product of step b).

5,296,618

METHOD FOR THE MANUFACTURE OF THE DERIVATIVES OF PROPIONIC ACID

Olli Aaltonen, Helsinki; Veikko Komppa, Nummela; Martti Alkio, Espoo; Pekka Kairisalo, Helsinki; Martti Hytönen, Espoo, and Anneli Hase, Helsinki, all of Finland, assignors to Orion-yhtymä Oy Fermion, Espoo, Finland

Filed May 10, 1993, Ser. No. 58,125

Claims priority, application Finland, May 14, 1992, 922189

Int. Cl.[5] C07D *301/12, 303/12, 303/22*

U.S. Cl. 549—542 **20 Claims**

1. A method for the manufacture of optically active derivatives of epoxypropionic acid from racemic mixtures comprising, that

a) the racemic mixture is dissolved in carbon dioxide and the obtained solution is conducted through a chromatographic column and

b) the desired optical isomer of epoxypropionic acid is separated from the eluant.

5,296,619

Patent Not Issued For This Number

5,296,620

INTERMEDIATES IN THE ASYMMETRIC SYNTHESIS OF 3-SUBSTITUTED FURANOSIDE COMPOUNDS

Yuri E. Raifeld, Moscow, U.S.S.R., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 698,042, May 10, 1991, Pat. No. 5,216,145. This application Mar. 12, 1993, Ser. No. 31,304

Int. Cl.[5] C07D *303/14;* **C07C** *33/42*

U.S. Cl. 549—554 **3 Claims**

1. The compound 2R,3R-epoxyhex-5-en-1-ol.

5,296,621

PROCESS FOR THE ISOLATION OF HYDROXY FATTY ACID DERIVATIVES FROM CONVOLVULACEAE PLANTS

Robert Roos, Bussum, and Jan Bakker, Huizen, both of Netherlands, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 553,404, Jul. 17, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 990,935

Claims priority, application European Pat. Off., Jul. 20, 1989, 89201920.9

Int. Cl.[5] C07C *1/00*

U.S. Cl. 554—15 **15 Claims**

1. In a process for the isolation of a hydroxy fatty acid or alkyl ester thereof from Convolvulaceae plants by extracting parts of said plants with an extraction agent and subsequently subjecting the extraction liquor to hydrolysis, the improvement which comprises:

(a) extracting the parts of the Convolvulaceae plants with an organic solvent;

(b) removing the solvent from at least the main part from the extract to obtain a resinous material containing the desired hydroxy fatty acid in ester form, dispersing the thus obtained material into water and subjecting the obtained dispersion to hydrolysis to form the hydroxy fatty acid or alkyl ester, said hydrolysis selected from the group consisting of:

(i) acid hydrolysis performed at a temperature in the range of 25° to 180° C. and under a pressure of from 1 up to 25 bar;

(ii) a neutral hydrolysis performed at a pH of about 7 at a temperature in the range of 25° to 180° and under a pressure of from 1 up to 25 bar; and

(iii) an enzymatic hydrolysis in the presence of an enzyme having ester activity performed in a pH range of 4–9 at a temperature in the range of 25° to 40° C. under about atmospheric pressure; and

c) recovering the resulting hydroxy fatty acid or alkyl ester thereof from the aqueous suspension.

5,296,622

QUATERNIZED ESTERS

Guenter Uphues, Monheim; Uwe Ploog, Haan; Rainer Jeschke, Duesseldorf, and Peter Waltenberger, Breitscheid-Hollig, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/00863, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO91/17974, PCT Pub. Date Nov. 28, 1991

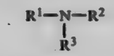
PCT Filed May 8, 1991, Ser. No. 949,260

Claims priority, application Fed. Rep. of Germany, May 17, 1990, 4015849

Int. Cl.[5] C07C *219/00;* **D06M** *13/46;* **C11D** *1/62*

U.S. Cl. 554—103 **19 Claims**

1. An ester quaternized with an alkylating agent wherein the ester is the reaction product of a) a monounsaturated C_{16-22} fatty acid or mixture of such fatty acids or an ester of the foregoing with glycerol or an aliphatic C_{1-4} alcohol wherein the fatty acid moieties contain at least 40 mol % trans-configuration double bonds, and b) an alkanolamine of formula I



(I)

in which R^1 and R^2 are independently C_{2-4} hydroxyalkyl groups and R^3 is either a C_{2-4} hydroxyalkyl group or a C_{1-22} straight or branched alkyl group.

5,296,623

DIRECT PROCESS FOR THE PREPARATION OF ACTIVATED ANTIPERSPIRANT SALTS

Dimitris E. Katsoulis, Midland, Mich., and Walter J. Carmody, Port Jervis, N.Y., assignors to Somerville Technology Group, Inc., Huguenot, N.Y.

Division of Ser. No. 484,288, Feb. 26, 1990, abandoned. This application Sep. 26, 1991, Ser. No. 765,796

Int. Cl.[5] C07F *7/00, 5/06*

U.S. Cl. 556—27 **6 Claims**

1. A method for preparing activated aluminum-zirconium-amino acid salts comprising:

(I) reacting

(A) zirconium carbonate and

(B) aluminum hydroxide; with

(C) an acid selected from HCl, HI, HBr, HF, HNO_3, AlX_3, ZrX_4, $ZrO(OH)X$, and $ZrOX_2$, wherein X is selected from Cl, Br and I and wherein there is between 2 and 10 times the stoichiometric amount of aluminum per amount of zirconium present in the reaction mixture; and

(II) adding an amino acid to the reaction product of (I); and

(III) recovering the reaction product of (II).

3. A method for preparing activated aluminum-zirconium-amino acid salts, comprising:

(I) producing an activated aluminum salt by

(i) reacting at a temperature of less than 100° C.

(A) aluminum hydroxide and

(B) HCl

(ii) reacting at a temperature of less than 100° C.

(A) zirconium carbonate with

(B) HCl

(iii) adding an amino acid to the activated zirconium salt produced in (ii);

(iv) combining the activated aluminum salt (i) and the activated zirconium/amino acid salt (iii) to react same wherein there is between 2 and 10 times the stoichiometric amount of aluminum per amount of zirconium present in the reaction mixture; and

(v) recovering from solution the activated aluminum-zirconium salt of (iv).

5. A method for preparing activated aluminum-zirconium-amino acid salts, comprising:

(I) producing an activated aluminum salt by

(i) reacting at a temperature of less than 100° C.

(A) zirconium hydroxide and

(B) HCl

(ii) reacting at a temperature of less than 100° C.

(A) zirconium carbonate with

(B) HCl

(iii) adding an amino acid to the activated aluminum salt produced in (i);

(iv) combining the activated aluminum/amino acid salt (iii) and the activated zirconium acid salt (ii) to react same wherein there is between 2 and 10 times the stoichiometric amount of aluminum per amount of zirconium present in the reaction mixture; and

(v) recovering from solution the activated aluminum-zirconium salt of (iv).

5,296,624

PREPARATION OF STERICALLY-HINDERED ORGANOSILANES

Gerald L. Larson, Newtown, and Barry Arkles, Dresher, both of Pa., assignors to Huls America, Inc., Piscataway, N.J.

Filed Nov. 25, 1992, Ser. No. 981,805

Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—435 **20 Claims**

1. A composition comprising a compound of the structure

$$(R_1)_a(R_2)_bSiX_c$$

wherein R_1 is a neophyl group; R_2 is a methyl group; X is a halo group or a saturated, unsaturated, branched, unbranched or cyclic alkoxy group of 1–18 carbon atoms; a is 1 or 2, b is an integer from 0 to 2, and c is an integer from 1 to 3.

5,296,625

SILICONE ALKOXYLATED ESTERS CARBOXYLATES

Anthony J. O'Lenick, Jr., Lilburn; Jeff K. Parkinson, Lawrenceville, and Robert T. Torbush, Snellville, all of Ga., assignors to Siltech Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 788,345, Oct. 16, 1991, abandoned. This application Oct. 26, 1992, Ser. No. 966,434

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—437 **16 Claims**

1. A silicone compound conforming to the following structure;



wherein;

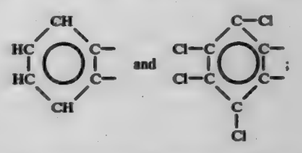
Me is methyl;

R and R' are selected from methyl and

$$-(CH_2)_3-O-(EO)_e-(PO)_f-(EO)_c-C(O)-R''-C(O)-OH;$$

with the proviso that both R and R' are not methyl;

R'' is selected from $-CH_2-CH_2-$; $-CH_2-C(R^7)-H$;



R^7 is alkyl having from 1 to 20 carbon atoms;

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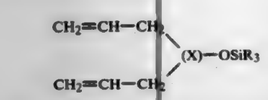
R^1 is selected from lower alkyl $CH_3(CH)_n$— or phenyl;
n is an integer from 0 to 8;
a, b and c are integers independently ranging from 0 to 20;
EO is an ethylene oxide residue —(CH_2CH_2—O)—;
PO is a propylene oxide residue —($CH_2CH(CH_3)$—O)—;
o is an integer ranging from 1 to 100;
q is an integer ranging from 0 to 500.

5,296,626
INCORPORATION OF FUNCTIONAL GROUPS IN POLYMERS

Andrew J. Sivak, Edgewood Borough, and Leonard A. Cullo, Hempfield Township, Westmoreland County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 532,856, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 257,895, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,960, May 8, 1987, abandoned. This application Feb. 24, 1993, Ser. No. 21,446
Int. Cl.[5] C07F *7/18*
U.S. Cl. 556—482 2 Claims

1. A compound of the formula



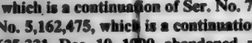
wherein (X) is a connecting hydrocarbyl fragment other than an unsaturated non-cyclic hydrocarbyl, and other than an unsaturated cyclic non-aromatic hydrocarbyl, having from 1 to 20 carbon atoms, and each R is independently selected from alkyl, alkoxy, alicyclic, aryloxy, alkaryl and aryl groups having from 1 to about 20 carbon atoms, provided that the total of carbon atoms in all R's together with all carbons directly attached to the carbon in X connected to an O is at least 5.

5,296,627
ETHYLENICALLY UNSATURATED POLY(ALKYLENEOXY) SURFACTANTS

Robert H. Tang, Murrysville, and Paritosh M. Chakrabarti, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 974,035, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 722,423, Jun. 27, 1991, Pat. No. 5,162,475, which is a continuation-in-part of Ser. No. 625,321, Dec. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 552,355, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 436,968, Nov. 15, 1989, abandoned, which is a continuation of Ser. No. 209,249, Jun. 20, 1988, abandoned. This application Dec. 4, 1992, Ser. No. 985,780
Int. Cl.[5] C07C *43/04, 43/15, 211/03, 305/04*
U.S. Cl. 558—34 11 Claims

1. A compound represented by the following graphic formula:



wherein R is selected from the group consisting of vinyl, allyl, acryiyl, acrylyl(C_1–C_{10})alkyl, methacrylyl, methacrylyl (C_1–C_{10}) alkyl, vinylphenyl and vinylphenylene (C_1–C_6) alkyl, R'O is the bivalent radical derived from butylene oxide, E is the bivalent ethylene radical, m is a number from about 10 to about 15, n is a number of from about 10 to about 40, the ratio of m:n being from about 1.5:1 to about 1:4, and X is selected from the group consisting of chloride, tertiaryamino, the anionic groups sulfonate, sulfate, phosphate, isethionate (and alkali metal salts of said anionic groups.

5,296,628
PREPARATION OF 6-AMINOCAPRONITRILE

Kathryn M. Sanchez, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1992, Ser. No. 836,782
Int. Cl.[5] C07C *255/03*
U.S. Cl. 558—452 6 Claims

1. A process for the production of 6-aminocapronitrile by the hydrogenation of adiponitrile which comprises forming a reaction mixture containing (a) adiponitrile, (b) a base selected from the group consisting of sodium hydroxide, lithium hydroxide, potassium hydroxide, and ammonium hydroxide, (c) hydrogen, (d) a low valent transition metal complex selected from the group consisting of chromium hexacarbonyl, tungsten hexacarbonyl, dibenzene chromium, dicobalt octacarbonyl, chromium (III) acetate, cobalt (II) acetate, and iron (III) acetylacetonate, and (e) a Raney nickel catalyst and reacting said mixture at a hydrogen pressure of between about 200 and 1000 psig and at a temperature of about 50 to 90 degrees C.

5,296,629
METHOD OF PREPARING INSOLUBLE HYDROLYSABLE TANNIN AND METHOD OF TREATING WASTE LIQUID WITH THE TANNIN

Wataru Shirato, and Yoshinobu Kamei, both of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Company, Ltd., Tokyo, Japan

Division of Ser. No. 918,971, Jul. 23, 1992. This application Jan. 22, 1993, Ser. No. 7,614
Claims priority, application Japan, Aug. 7, 1991, 3-222288
Int. Cl.[5] C07C *69/88*
U.S. Cl. 560—68 2 Claims

1. A method for recovering a heavy metal element from a waste liquid containing the same comprising:

A. contacting the waste liquid with an insoluble hydrolysable tannin prepared by a method comprising the steps of:
(a) dissolving a hydrolysable tannin powder in aqueous ammonia;
(b) mixing the resulting solution with an aldehyde aqueous solution to form a precipitate;
(c) heating the precipitate at a temperature and for a time sufficient to make the precipitate insoluble in water; and
(d) mixing the precipitate from step (c) with a mineral acid to make it insoluble in acid and alkali; and
(e) filtering the resulting mixture to separate the precipitate,
for a time period sufficient to adsorb the heavy metal element onto the tannin,
B. separating the tannin with the element adsorbed thereon from the remaining waste liquid; and
C. treating the separated tannin from step B. with dilute mineral acid to extract the adsorbed element into the acid.

5,296,630
PROCESS FOR CONTINUOUSLY PRODUCING AN ANHYDROUS METHYL ACETATE/METHANOL MIXTURE

Heinz Erpenbach, Köln; Klaus Günther, Eppstein/Taunus, and Gerog Kohl, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 488,276
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1989, 3908555
Int. Cl.[5] C07C *27/00*
U.S. Cl. 560—265 10 Claims

1. A process for continuously producing an anhydrous methyl acetate/methanol mixture by esterifying acetic acid and methanol in the presence of an acidic esterification catalyst, which comprises carrying out the esterification in a distillation column having n=20 to 50 distillation trays,

a) the acetic acid being fed together with the catalyst to a distillation tray which is at a distance of 0.5 n to 0.8 n from the still bottom,
b) feeding 50 to 80% by weight of the total methanol to the still bottom and the remaining methanol to a distillation tray which is 2 to 10 trays above the acetic acid feed tray,
c) feeding methanol and acetic acid into the distillation column at a molar ratio of (1.5 to 3):1,
d) setting a reflux ratio of (0.75 to 1.5):1,
e) taking off the anhydrous methyl acetate/methanol mixture at the top of the column and
f) taking off a water/methanol/acetic acid bottom product with the catalyst from the still bottom.

5,296,631
PROCESS FOR PRODUCING N-ALKYL-N-METHYLAMINE OR N-ALKENYL-N-METHYLAMINE

Hiroshi Abe, Albany, Calif.; Hideki Taniguchi, Wakayama, Japan; Yoshifumi Nishimoto, Wakayama, Japan, and Kohshiro Sotoya, Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,541
Claims priority, application Japan, Apr. 22, 1991, 3-90270
Int. Cl.[5] C07C *209/16*
U.S. Cl. 564—480 9 Claims

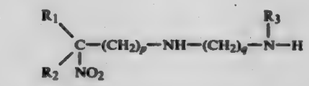
1. A process for producing an N-alkyl-N-methylamine or an N-alkenyl-N-methylamine, which comprises a step of reacting a higher alcohol with methylamine in the presence of: (1) a catalyst comprising copper and a fourth period transition metal of the Periodic Table, except for chromium, or (2) a catalyst comprising copper, a fourth period transition metal of the Periodic Table, except for chromium, and an element of the platinum group VIII of the Periodic Table, at a pressure ranging from atmospheric pressure to 100 atm. G., at a reaction temperature ranging from 100° to 250° C., with hydrogen gas being introduced into the reaction system while water produced in the reaction is removed from the reaction system and the amount of methylamine in a gaseous mixture that is exhausted from the reaction system and which contains no water formed through the reaction, is regulated from 5 to 50% by volume.

5,296,632
CONTINUOUS REDUCTION OF A HINDERED NITRO MOIETY IN ALIPHATIC NITRO POLYAMINES

Dusan J. Engel, Barrington; Thomas P. Malloy, Lake Zurich, and Steven R. Paeschke, Mt. Prospect, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 777,944, Oct. 17, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 908,199
Int. Cl.[5] C07C *209/34*
U.S. Cl. 564—494 16 Claims

1. A method for the continuous conversion of a nitro moiety in a nitro polyamine having the structure X or Y





to the corresponding primary amino moiety comprising hydrogenating the nitro moiety by flowing a liquid mass of the nitro polyamine over a solid mass of a catalyst consisting essentially of from about 40 to about 85 weight percent zerovalent nickel dispersed on a support of silica at a temperature from about 40° to about 120° C. and at a partial hydrogen pressure from about 10 up to about 1000 pounds per square inch and recovering the hydrogenated product, where R_1 and R_2 are independently selected from the group consisting of alkyl groups containing from 1 up to about 10 carbon atoms, p is an integer from 1 up to about 4, q is an integer from 2 up to about 6, and R_3 is hydrogen, an alkyl group containing from 1 up to about 10 carbon atoms, or a cycloalkyl group containing from 5 up to about 10 carbon atoms.

5,296,633
HMTA PREPARATION OF METHYLATED TERTIARY AMINES

Stephane Fouquay, 7, Parc de la Seane, 76130 Mont Saint-Aignan, France

Filed Dec. 30, 1992, Ser. No. 998,596
Claims priority, application France, Dec. 30, 1991, 91 16316
Int. Cl.[5] C07C *209/00, 209/48, 209/62, 209/64*
U.S. Cl. 564—469 19 Claims

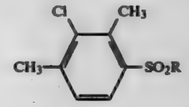
1. A process for the preparation of a methylated tertiary amine, comprising reacting a primary or secondary amine, or a nitrile or aminonitrile, with hexamethylenetetramine (HMTA), under hydrogen pressure and in the presence of a catalytically effective amount of a hydrogenation catalyst.

5,296,634
METHOD FOR PREPARING 4-ALKYLSULFONYL-2-CHLORO-M-XYLENE

Masatoshi Baba, and Eiichi Oya, both of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

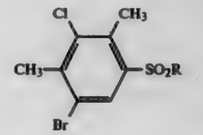
Division of Ser. No. 773,431, Oct. 9, 1991, Pat. No. 5,189,224. This application Aug. 19, 1992, Ser. No. 932,221
Claims priority, application Japan, Oct. 19, 1990, 2-282961
Int. Cl.[5] C07C *315/04*
U.S. Cl. 568—28 8 Claims

1. A method for preparing a 4-alkylsulfonyl-2-chloro-m-xylene of the formula (E):



(E)

wherein R is a C_{1-8} alkyl group or a C_{3-8} cycloalkyl group, which comprises reacting a reducing agent with a 4-alkylsulfonyl-6-bromo-2-chloro-m-xylene of the formula (D-2):



(D-2)

wherein R is as defined above and the reducing agent comprises hydrogen and one or more catalysts selected from the group consisting of palladium, platinum, ruthenium, Raney nickel, platinum oxide and ruthenium oxide.

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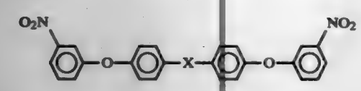
5,296,635

PREPARATION OF BIS(3-NITROPHENOXY) COMPOUND

Motohiro Kase; Hitoshi Nakayama; Masaru Wada; Teruyuki Nagata, all of Fukuoka, and Akihiro Yamaguchi, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

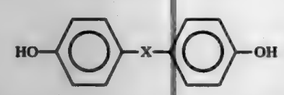
Continuation of Ser. No. 631,493, Dec. 21, 1990, abandoned.
This application Nov. 13, 1992, Ser. No. 975,952
Claims priority, application Japan, Dec. 28, 1989, 1-338210; Dec. 28, 1989, 1-338211
Int. Cl.[5] C07C 315/04, 319/20, 205/06, 41/09
U.S. Cl. 568—30 2 Claims

1. A process for the preparation of a compound of the formula (II)



(II)

wherein X is a direct bond, divalent hydrocarbon having from 1 to 10 carbon atoms or a divalent group selected from $-C(CF_3)_2-$, —CO—, —S—, $-SO_2-$ or —O— by a condensation reaction of a compound of formula (I)



(I)

wherein X is defined above with m-dinitrobenzene comprising charging into a reaction vessel an aprotic polar solvent and a base which is an alkali metal carbonate, said base having a particle size that passes through a 60 mesh sieve, the amount of the base being from 1.0 to 1.5 moles per mole of the compound of formula (I), adding the compound of formula (I) an m-dinitrobenzene to the reaction vessel simultaneously with a constant feed ratio of from 2.0 to 2.1 moles of m-dinitrobenzene per mole of the compound of formula (I), and reacting the compound of formula (I) and the m-dinitrobenzene in the reaction vessel while removing water formed during the reaction.

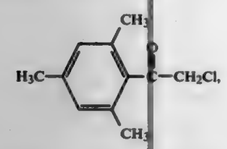
5,296,636

PREPARATION OF 2,4,6-TRIMETHYLBENZOIC ACID

Wolfgang Siegel, Mannheim; Rudolf Kropp, and Jochen Schroeder, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,058
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202567
Int. Cl.[5] C07C 51/16, 45/00
U.S. Cl. 568—323 4 Claims

1. A process for the preparation of α-chloro-2,4,6-trimethylacetophenone of formula II



(II)

by the reaction of 1,3,5-trimethylbenzene with chloroacetyl chloride in the presence of a catalyst at a temperature ranging from 0° to +150° C. and a pressure ranging from 0.01 to 50 bar, wherein the catalyst used is an iron oxide.

5,296,637

PRODUCTION OF ODOR-FREE TETRAHYDROISOHUMULATES FROM ALPHA ACIDS VIA THEIR TETRAHYDROHUMULATES AND SUBSEQUENT ISOMERIZATION

Larry J. Stegink; James A. Guzinski, and Paul H . Todd, Jr., Kalamazoo, all of Mich., assignors to Kalamazoo Holdings, Inc., Kalamazoo, Mich.

Filed Dec. 31, 1992, Ser. No. 999,599
Int. Cl.[5] C07C 45/67
U.S. Cl. 568—341 11 Claims

1. A process for the preparation of an alkali metal tetrahydrohumulate in high yield and purity which consists essentially of the step of hydrogenating with two moles of hydrogen and in the presence of a noble metal catalyst a solution of an alkali metal humulate at a pH of at least 10 to produce an alkali metal tetrahydrohumulate.

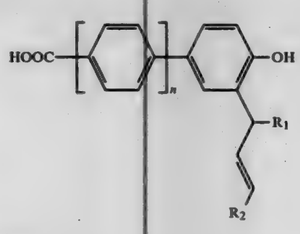
5,296,638

PROCESS FOR PREPARING CARBOXYLATED 2-ALLYL-PHENOLS

Alessandro Lezzi, Milan; Arnaldo Roggero, San Donato Milanese; Ugo Pedretti, and Cesarina Bonfanti, both of Milan, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Filed Aug. 20, 1992, Ser. No. 932,617
Claims priority, application Italy, Sep. 6, 1991, MI.91-A/002370
Int. Cl.[5] C07C 54/40, 65/01
U.S. Cl. 562—469 7 Claims

1. A process for preparing a carboxylated 2-allyl-phenol of formula (I):



(I)

wherein:
n is zero or 1,
R_1 and R_2, which can be the same or different, are hydrogen or C_1–C_2 alkyl, comprising:
(a) simultaneously allyl-esterifying and allyl-etherifying a hydroxy-carboxy acid of formula (II):



(II)

wherein n is zero or 1, with an allyl halide of formula (III):

$$X—CHR_2—CH=CHR_1$$

wherein R_1 and R_2 are as defined above and X is Cl or Br, by reacting the hydroxy-carboxy acid with an alkali metal or alkaline-earth metal carbonate in a molar ratio of carbonate/hydroxy-carboxy acid of greater than 2 while heating the reaction mixture to remove water and subsequently adding the allyl halide to the reaction mixture at 40°–80° C. to produce an allyl-ester allyl-ether of the hydroxy-carboxy acid and separating the allyl-ester allyl-ether from the reaction mixture;
(b) heating the allyl-ester allyl-ether at a temperature of 200° to 280° C. for a period of from 2 to 6 hours in the presence of a heat stabilizer to thermally rearrange the allyl-ester allyl-ether to an allylcarboxylated 2-allyl-phenol, and recovering the allylcarboxylated 2-allyl-phenol; and
(c) saponifying the allylcarboxylated 2-allyl-phenol by treatment with a strong base and subsequent acidification to produce the 2-allyl-phenol of formula (I).

5,296,639

ADIPIC ACID PURIFICATION

Diana L. Klug, Wilmington, Del., and Johannus H. Van Mil, Ramat Gan, Israel, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1992, Ser. No. 993,276
Int. Cl.[5] C07C 51/42
U.S. Cl. 562—593 7 Claims

1. A process for purification of adipic acid during crystallization comprising modifying the crystal morphology to decrease incorporation of impurities by introduction of an additive to the crystallizing solution.

5,296,640

PROCESS FOR PREPARING PERHALOACYL CHLORIDES

Stephen E. Jacobson, Princeton Junction, N.J., and Wayne B. Ely, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 15, 1992, Ser. No. 945,055
Int. Cl.[5] C07C 51/16, 51/21, 51/215
U.S. Cl. 562—856 6 Claims

1. A process for preparing perhaloacyl chlorides of the formula $X(CF_2)_nCOCl$ comprising contacting compounds of formula $X(CF_2)_nCHCl_2$ with oxygen in the absence of water within the supercritical region of said compounds
wherein
X=F or Cl and
n=1–4.

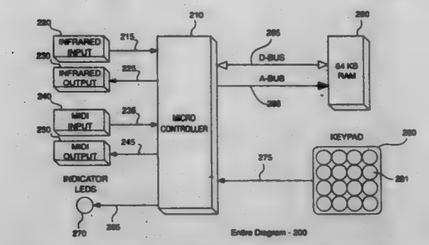
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5,296,641

COMMUNICATING BETWEEN THE INFRARED AND MIDI DOMAINS

Jason A. Stelzel, 13623 S. Berendo Ave., Gardena, Calif. 90247-2023

Filed Mar. 12, 1992, Ser. No. 849,734
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—602 **26 Claims**



12. Apparatus for communicating between a signal of the MIDI domain and a signal of the IR domain comprising:

a. a transceiver for receiving and outputting IR signals and for receiving and outputting MIDI signals; and

b. microprocessor means in the transceiver for translating signals between the MIDI domain and the IR domain, and

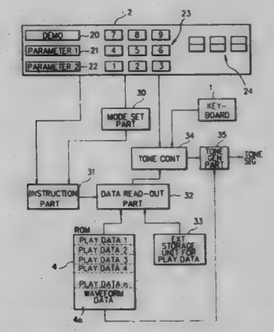
c. wherein the IR signal is related to an independently operable IR device and the MIDI sequence is related to an independently operable MIDI device.

5,296,642

AUTO-PLAY MUSICAL INSTRUMENT WITH A CHAIN-PLAY MODE FOR A PLURALITY OF DEMONSTRATION TONES

Shinya Konishi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Oct. 9, 1992, Ser. No. 958,694
Claims priority, application Japan, Oct. 15, 1991, 3-295060
Int. Cl.[5] G10H *1/00*
U.S. Cl. 84—609 **2 Claims**



1. An auto-play apparatus having storage means for storing auto-play data of a plurality of music pieces, and play means for performing an auto-play based on the auto-play data stored in said storage means, comprising:

mode set means for setting a demonstration mode for performing a continuous auto-play of a music piece;

music piece selection means for selecting a music piece to be continuously played back in the demonstration mode;

instruction means for, when said music piece selection means does not select a music piece for a predetermined period of time after the demonstration mode is set by said mode set means, instructing to start a chain-play for sequentially and continuously playing back a plurality of music pieces; and

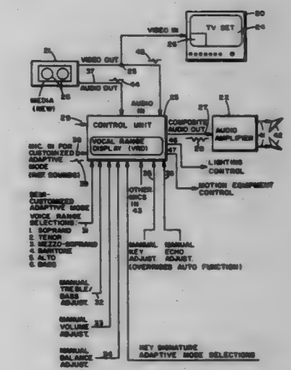
play means for, when said instruction means instructs to start the chain-play, sequentially reading out auto-play data of a plurality of music pieces from said storage means, and performing a continuous auto-play of the plurality of music pieces.

5,296,643

AUTOMATIC MUSICAL KEY ADJUSTMENT SYSTEM FOR KARAOKE EQUIPMENT

Jen-Wei Kuo, 7 Sun Rise La., and Tat N. Ho, 163 Willow Spring Condo, both of New Milford, Conn. 06776

Filed Sep. 24, 1992, Ser. No. 949,992
Int. Cl.[5] G09B *15/04;* **G10H** *1/36*
U.S. Cl. 84—610 **18 Claims**



14. An accompaniment control system for providing a musical composition accompaniment signal and singing environment control stage effect signals, in combination comprising:

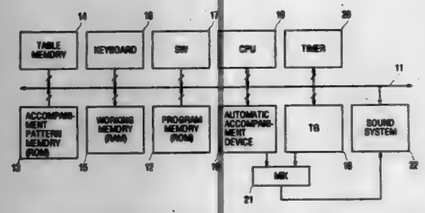
audio/video playback means having an audio/video media for providing a musical composition signal and a song profile data signal and a stage effect data signal;

customized key adjustment means **(23)** for adjusting the frequency bandwidth **(78)** of said musical composition accompaniment signal (X) about a predetermined central frequency, including a digital signal processor **(56)** operatively coupled to an input microphone **(38)** and a central processing unit **(52)**, a vertical blanking interval data decoder **(53)** operatively coupled to said audio/video playback means and to said central processing unit, a signal energy detector **(58)** and data demodulator **(50)** each operatively coupled to said audio/video playback means and to said central processing unit, a front panel user interface unit **(30)** to enable selective operation of said control means;

whereby said customized key adjustment means in response to said song profile data signal adjusts the key range of said musical composition signal and in response to said stage effect data signal provides a lighting and motion control signal **(71)**.

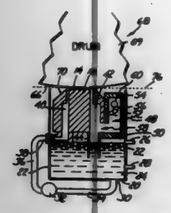
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5,296,644
CHORD DETECTING DEVICE AND AUTOMATIC ACCOMPANIMENT DEVICE
Eiichiro Aoki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Filed Jul. 24, 1992, Ser. No. 919,306
Claims priority, application Japan, Jul. 24, 1991, 3-184545
Int. Cl.[5] G10H *1/38*
U.S. Cl. 84—637 9 Claims



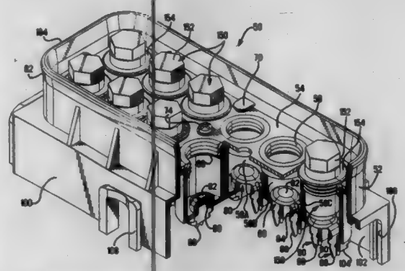
1. A chord detecting device comprising:
note data storage means for storing note data of music for each of a plurality of specified sections in a period;
first chord storage means for storing a first chord corresponding to the note data of a first section of the plurality of specified sections in the period;
tonality data supply means for supplying tonality data; and
chord imparting means for imparting a second chord in a second section of the plurality of specified sections of the period according to (1) note data at the beginning of the second section, (2) the tonality data supplied by the tonality data supply means, and (3) the first chord stored in the first chord storage means.

5,296,645
LIQUID TONER DEVELOPING MODULE FOR ELECTROGRAPHIC RECORDING
Gregory L. Zwadlo, and George J. Kramer, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing, Saint Paul, Minn.
Division of Ser. No. 509,732, Apr. 16, 1990, Pat. No. 5,120,630.
This application May 19, 1992, Ser. No. 885,491
Int. Cl.[5] G03G *15/10*
U.S. Cl. 118—647 7 Claims



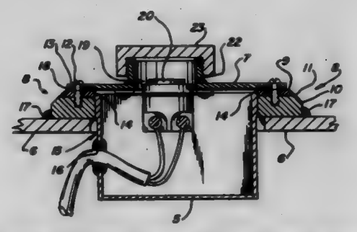
1. A toner developing module for the application of liquid toner to an imaging surface of a photoconductive member, comprising:
a shroud;
a development electrode supported by the shroud and configured to be positioned in spaced proximity to the imaging surface of the photoconductive member;
a liquid toner supply configured to contain a supply of liquid toner;
a pump mechanism coupled to the shroud to provide a continuous flow of liquid toner to the development electrode from the supply of liquid toner;
means for allowing liquid toner that has not been deposited on the imaging surface to flow from the development electrode to the supply of liquid toner;
a vacuum chamber mounted to the shroud and positioned between the development electrode and the supply of liquid toner and in communication with the undeposited liquid toner flowing between the development electrode and the supply of liquid toner;
a vacuum source coupled to the shroud for drawing undeposited liquid toner from the development electrode and for skiving air from around the development electrode in addition to the undeposited liquid toner, said vacuum source applying a vacuum pressure to the vacuum chamber to separate skived air into the vacuum chamber; and
an undeposited liquid toner return passageway coupled to the shroud for allowing undeposited liquid toner to bypass the vacuum source and the pump mechanism and flow past the vacuum chamber to the supply of liquid toner.

5,296,646
PROTECTOR MODULE FOR TELEPHONE LINE JUNCTION BOX
Harry M. Capper, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 3, 1992, Ser. No. 863,626
Int. Cl.[5] H02H *9/04*; H05K *5/02*
U.S. Cl. 174—51 12 Claims



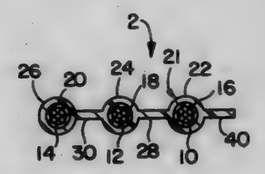
1. A circuit protection module for interposing along an array of conductors and adapted to receive thereinto and contain protector elements for circuit surge protection electrically connectable to respective circuits of said conductors to provide grounding for voltage surges therealong and being of the type having an active electrode exposed along a bottom thereof and a ground electrode therearound spaced a known distance from said active electrode, comprising:
housing means including cavities extending thereinto from an insertion face thereof and adapted to receive thereinto respective ones of said protector elements, a ground means having an exposed portion adjacent each said cavity and extending along said insertion face and at least to each said cavity, and said housing means further including at least a first contact member retained in each one of said cavities isolated from said ground means;
each said first contact member including first and second contact sections, said first contact section extending upwardly into said cavity and substantially transversely thereacross on a bendable spring arm, thereby being adapted to be engaged by an active electrode of a said protector element and deflected downwardly upon full insertion of a said protector element in said cavity and said second contact section adapted to be electrically connected to a respective said conductor; and
said exposed portion of said ground means to be electrically engaged by a ground electrode of each said protector element upon full insertion to a respective said cavity and adapted to be connected to external ground means,
whereby upon connecting respective said conductor to said second contact section of said first contact member and securing a said protector element fully into a respective said cavity, said first contact section of said first contact member is electrically engaged by said active electrode connecting said protector element to said conductor for surge protection of the circuit.

5,296,647
ASSEMBLY FOR CONNECTING AN ELECTRICAL BOX TO A PLATE WITH A BIMETALLIC FRINGE
John G. Banker, Louisville, Colo., assignor to Explosive Fabricators, Inc., Louisville, Colo.
Filed Oct. 25, 1991, Ser. No. 782,510
Int. Cl.[5] H01H *9/02*; H02G *3/08*
U.S. Cl. 174—58 8 Claims



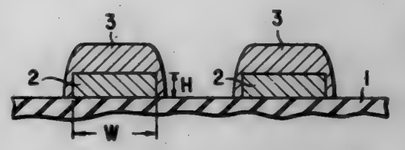
1. A combination of an electrical box, a metal plate and a bimetallic flange assembly comprising:
a) a box having a bottom and at least one side wall, wherein said box is of a first metal, and said at least one side wall has a first portion and a second portion;
b) a plate having a top surface, wherein said plate is of a second metal different than said first metal,
c) an aperture in said plate sized to receive said box wherein said box is partially recessed in said aperture with the first portion of said at least one side wall extending through said aperture and the second portion of said at least one side wall extending above said top surface of said plate,
a bimetallic flange surrounding said second portion of said at least one side wall of said box to reinforce said aperture in said plate, said bimetallic flange having a first layer of a third metal galvanically compatible with said box wherein said first layer of said flange is welded to said box,
said bimetallic flange further comprising a second layer of a fourth metal galvanically compatible with said second metal of said plate wherein said second layer of said flange is welded to said plate,
a metallurgical bond between said first and second layer of said flange.

5,296,648
FLAT CABLE
John E. Johnson, Huber Heights, Ohio, assignor to Belden Wire & Cable Company, Richmond, Ind.
Filed Apr. 27, 1992, Ser. No. 874,039
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—117 F 3 Claims



1. A flexible jacketed flat cable comprising:
a plurality of insulated conductors in spaced relationship to each other, each of said insulated conductors having a conductor and a layer of insulation surrounding said conductor,
a separate one-piece jacket surrounding all of said insulated conductors to provide a plurality of spaced jacketed conductors,
said one-piece jacket separating said jacketed conductors by a plurality of webs interconnecting each of said jacketed conductors, a thickness of said webs being less than the diameter of the jacketed conductors, and a polarity wing extending from said jacket and said polarity wing being integral with said jacket,
said conductors lie in a common plane and are axially spaced,
said polarity wing and one of said webs are located diametrically opposite of one of said conductors,
said conductors have equal diameters and the thicknesses of said webs and said polarity wing are less than ½ of the diameter of the jacketed conductors, the diameter of said conductors is from about 0.037 to 0.040 inches, the conductor insulation has a thickness of approximately 8 to 12 mils, the conductors are axially spaced a distance from their center line of from about 0.145 ± 0.165 inches and preferably 0.156±0.005 inches and the jacket has a thickness of approximately 10 to 18 mils; the polarity wing extends from the outer surface of the conductor jacket and is spaced from the center-line of an adjacent end conductor a distance of at least 0.10; inches and the distance from the outer surface of the conductor jacket to the end of the polarity wing is preferably greater than web distance between adjacent conductors; and the thickness of the webs and polarity wing are substantially equal and are from about 15 to about 25 mils;
said layer of insulating material surrounding the conductors and said jacket being constructed of different materials.

5,296,649
SOLDER-COATED PRINTED CIRCUIT BOARD AND METHOD OF MANUFACTURING THE SAME
Izumi Kosuga; Kenichi Fuse; Takao Fukunaga; Hirokazu Shiroishi, all of Tokyo; Masanao Kohno, Kakogawa, and Hisao Irie, Takasago, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Harima Chemicals, Inc., Hyogo, both of Japan
Filed Mar. 17, 1992, Ser. No. 852,526
Claims priority, application Japan, Mar. 26, 1991, 3-84383; Mar. 26, 1991, 3-84384
Int. Cl.[5] H05K *01/00*
U.S. Cl. 174—250 15 Claims



1. A solder-coated printed circuit board comprising:
a printed circuit board body; and
a plurality of pads formed on a surface portion of the board body and each pad having as older layer of a thickness necessary for soldering a parts lead,
wherein the solder layer is of a type formed by a substitution reaction between (a) one of a powder of a metal having the highest ionization tendency among metals constituting the solder layer and a powder of an alloy thereof, and (b) a salt formed by bonding another metal or metals in the solder alloy to an organic acid, and wherein a projecting

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height H of each pad from the surface of the board body and a width W of each pad satisfy the relation $2H < W$.

5,296,650

METHOD FOR WATERPROOFING WITH A CROSS-LINKED MACROMOLECULAR WATERPROOFING AGENT

Hiroya Kobayashi; Tadao Shimomura; Kazuhiro Okamura, all of Osaka, and Yoshinori Sano, Hyogo, all of Japan, assignors to Nippon Shokubai Kagaku Kogyko Co., Ltd., Osaka, Japan

Division of Ser. No. 716,628, Jun. 17, 1991, Pat. No. 5,190,815, which is a division of Ser. No. 318,067, Jan. 27, 1989, abandoned.
This application Dec. 2, 1992, Ser. No. 984,500
Claims priority, application Japan, Jun. 9, 1987, 62-142186; Jul. 7, 1987, 62-167692; Nov. 16, 1987, 62-287366
Int. Cl.[5] H02G *15/00*
U.S. Cl. 174—23 C 11 Claims

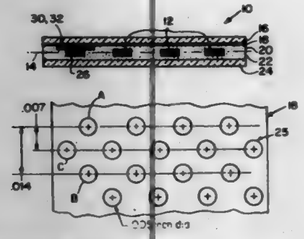
1. A method for waterproofing an optical or electric cable, which comprises packing in the sheath of said cable a cross-linked macromolecular compound containing a sulfonic acid group or a salt thereof in an amount of not less than 0.5 mg. equivalent/g. and a dissociating group in an amount of not less than 1.0 mg. equivalent/g. and having the ability to absorb deionized water in the range of 50 to 1000 times its own weight, said cross-linked macromolecular compound being produced by polymerizing a monomer mixture consisting essentially of (A) 5 to 100 mol% of at least one sulfonic acid group unsaturated monomer selected from the group consisting of sulfoethyl(meth)acrylate, sulfopropyl(meth)acrylate, and 2-acrylamide-2-methyl propanesulfonic acid or salt thereof and (B) 95 to 0 mol% of at least one other unsaturated monomer selected from the group consisting of methacrylic acid, sodium methacrylate, acrylamide, acrylic acid, calcium acrylate, methacrylamide, methoxypolyethylene glycol monomethacrylate and sodium acrylate in the presence of a cross-linking agent in the range of 0.00001 to about 0.3 in molar ratio, based on said monomer mixture.

5,296,651

FLEXIBLE CIRCUIT WITH GROUND PLANE

Francis E. Gurrie, Ipswich, and Wojtek Sudol, Burlington, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 9, 1993, Ser. No. 14,973
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—254 7 Claims



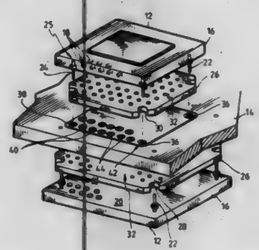
1. A planar flex circuit comprising:
conductor traces at approximately a center plane of the flex circuit;
first and second dielectric layers on opposite sides of the center plane joined to each other and to the conductor traces through adhesive; and
a planar conductor formed on at least one of the dielectric layers on a surface facing the conductor traces and separated from the conductor traces by the adhesive.

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APPARATUS FOR ATTACHING A CIRCUIT COMPONENT TO A PRINTED CIRCUIT BOARD

Grady A. Miller, Jr., Grand Prairie, Tex., assignor to Loral Vought Systems Corporation, Grand Prairie, Tex.

Division of Ser. No. 695,206, May 3, 1991. This application Apr. 30, 1992, Ser. No. 876,192
Int. Cl.[5] H02B *1/00*
U.S. Cl. 174—265 17 Claims



1. A printed circuit board assembly, comprising:
an integrated circuit package having a plurality of button-type electrical contacts;
a printed circuit board having a plurality of contact regions formed thereon and arranged in a configuration corresponding to a portion of said integrated circuit package button type-contacts;
a sheet of electrically insulative and thermally conductive material positioned between said printed circuit board and said integrated circuit package and having a plurality of resilient electrical contacts extending therethrough and arranged in a configuration corresponding to a portion of the button-type contacts of said integrated circuit package and said contact regions of said printed circuit board whereby at least a portion of said integrated circuit package button-type contacts are in electrical communication with said corresponding printed circuit board contact regions; and
means for retaining said integrated circuit package on said printed circuit board and urging said integrated circuit package and said printed circuit board together with sufficient force to compress said sheet of material into substantial thermal contact with said integrated circuit package.

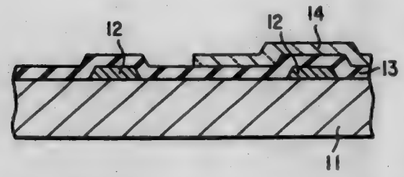
5,296,653

DEVICE HAVING A MULTI-LAYERED CONDUCTOR STRUCTURE

Toshiya Kiyota, Tokyo; Mitsushi Ikeda, Yokohama; Meiko Ogawa, Tokyo; Yoshifumi Ogawa, Kawasaki, and Michio Murooka, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1992, Ser. No. 987,601
Claims priority, application Japan, Dec. 9, 1991, 3-324647; Sep. 14, 1992, 4-271084
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 19 Claims

1. A device having a multi-layered conductor structure comprising:
a substrate;
a first conductor layer formed on the substrate, which provides an electrode or wiring;
an insulating film covering the first conductor layer and the substrate; and
a second conductor layer formed on the insulating film, and comprising an indium tin oxide, which provides an electrode or wiring;
wherein said first conductor layer is formed of an alloy of aluminum with at least one element selected from copper, gold, boron, bismuth, cobalt, chromium, germanium, iron,



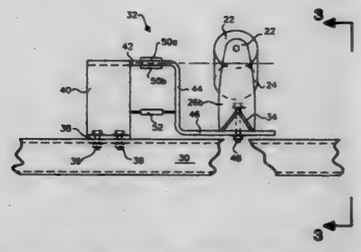
molybdenum, niobium, nickel, palladium, platinum, tantalum, titanium, tungsten, and silver.

5,296,654

UNIVERSAL BELT SCALE

Paul W. Farley, Minneapolis, Minn.; Chester L. Nachtigal, Seattle, Wash.; Gerald J. Berger, and Harold J. Kilts, both of Andover, Minn., assignors to CST Autoweigh, Minneapolis, Minn.

Filed Dec. 20, 1991, Ser. No. 810,965
Int. Cl.[5] G01G *19/00*
U.S. Cl. 177—145 27 Claims



1. A universal belt scale for weighing material being transported on a conveyor belt, comprising:
a pair of opposite stringers extending parallel to one another;
a pair of cantilevered beams, each having a neutral axis and being mounted at a first end to one of said stringers and supporting at a support location spaced from the first end an idler assembly, said idler assembly including a carry roller rotatably supporting a conveyor belt;
sensing means coupled to cantilevered beams for measuring the deflection of the cantilevered beams responsive to a weight of material being conveyed by the belt;
said cantilevered beams being mounted to the stringers independently of one another to isolate each said cantilevered beam from each other; and
said neutral axis of said cantilevered beams lying in a first plane, the idler assembly being mounted to the beams to position a top of the carry roller in said first plane so that the sensing means accurately senses the weight of material on the belt without being appreciably affected by external factors unrelated to the weight of the material on the belt.

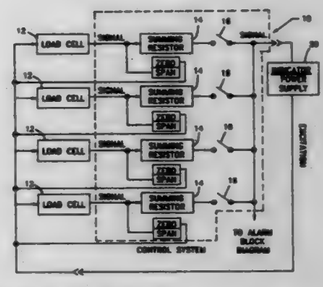
5,296,655

CONTROL SYSTEM FOR MULTIPLE INPUT SCALES

Michael P. Sargent, and Timothy W. Williams, both of Huntsville, Ala., assignors to Beowulf Corporation, Huntsville, Ala.

Filed Feb. 10, 1992, Ser. No. 833,056
Int. Cl.[5] G01G *19/00*
U.S. Cl. 177—199 1 Claim

1. In an electronic multiple input industrial load weighing apparatus having a load cell adapted to support the weight of each of said multiple inputs and to provide an output signal in response to the weight of said input, a power supply connected to each of said load cells, a control system for receiving and processing said output signals from each of said load cells and for transmitting processed signals to an indicator adapted to respond to said processed signals, said control system comprising:



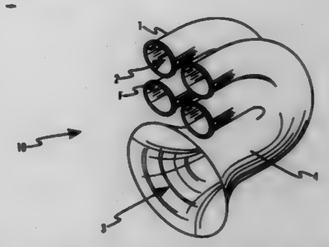
means for selective isolation of one or more of said load cells whereby the output signal from any isolated cell is eliminated from said processing as well as from transmission to said indicator, and wherein said processing includes the summing and averaging of said output signals.

5,296,656

SOUND COLLECTING AND CONCENTRATING DEVICE FOR ATTACHING TO THE BACK OF MULTIPLE LOUDSPEAKERS

Gin Kon Jung, 93-7 3GA Jung Ang Dong, Iri-City Junbuk 570-120, Rep. of Korea

Continuation-in-part of Ser. No. 714,529, Jun. 13, 1991, Pat. No. 5,206,465, which is a continuation-in-part of Ser. No. 531,660, Jun. 1, 1990, Pat. No. 5,025,886, and a continuation-in-part of Ser. No. 638,968, Jan. 9, 1991. This application Feb. 10, 1993, Ser. No. 15,976
Claims priority, application Rep. of Korea, Nov. 26, 1990, 16514; Nov. 26, 1990, 16515; Nov. 26, 1990, 16516
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—152 23 Claims



1. A sound collecting and directing device for attaching to a plurality of loudspeakers each having a diaphragm with a frontal side which generally faces an ambient surrounding and a back side which faces opposite the frontal side; a frame means which operatively supports the diaphragm and a speaker driving means, the frame means having a flange at its outermost peripheral edge; and a plurality of sound venting cut-outs in the frame means to permit sound waves to pass therethrough, said device comprising:
a plurality of sound collecting tubes, each having an inlet end and an outlet end, each inlet end having means for attaching to the back side of one of said loudspeakers so

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that said inlet end shrouds over at least one of said sound venting cut-outs in the frame means, at least one of said inlet ends having means for isolating the speaker driving means from the sound traveling path in the respective sound collecting tube; and

a single sound concentrating and directing horn means connected to all of the outlet ends of said sound collecting tubes,

wherein said sound collecting tubes collect sound emitting from the back side of the diaphragm and direct into said horn means.

5,296,657

METHOD OF SOUND-DEADENING FOR VEHICLES

Robert J. Gilliland, W. Willington, Conn., and Earl A. Williams, Stevensville, Mich., assignors to USM Corporation, Wilmington, Mass.

Filed Apr. 16, 1993, Ser. No. 48,846
Int. Cl.[5] E04B *1/84*; B32B *5/06*
U.S. Cl. 181—294 **20 Claims**



1. A method of sound-deadening a metallic sheet comprising:

securing to one side of said metallic sheet a layer of impregnated non-woven fabric sheet material having a weight in the range 0.5 to 0.75 kg/m^2 and a density in the range 35 to 425 kg/m^3,

said fabric material comprising a blend of polyester staple fibers having an average decitex in the range 2.5 to 4.0 dtex, said impregnant comprising (i) 10 to 35% by dry weight carboxylated styrene-butadiene copolymer in which the styrene content is not less than 55%, (ii) 5 to 10% by dry weight carboxylated styrene butadiene copolymer in which the styrene content is not more than 50%, and (iii) 50 to 70% by dry weight mineral filler.

5,296,658

SAFETY EDGE SWITCH FOR DETECTION OF OBSTRUCTIONS ENCOUNTERED BY A MOVING OBJECT

Dennis A. Kramer, Troy; David E. Peck, Rochester Hills, and Marc A. Brookman, Livonia, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 25, 1992, Ser. No. 951,634
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—61.43 **13 Claims**

1. A safety edge switch for detection of obstructions in a vehicle window opening comprising:

a first member having an internal wall and defining a first central aperture;

said first member being constructed of a resilient material;

a second member defining a second central aperture, said second member disposed within said first member and affixed to said internal wall thereof;

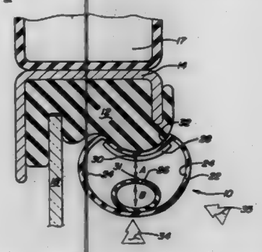
said second member constructed of a resilient conductive material;

a continuous conductive surface disposed on said internal wall of said first member opposite said second member;

a first and second conductive wire disposed within said continuous conductive surface and said second member;

first and second opposed ends of said switch including means for electrical connection thereto; and

said first aperture and said second aperture sized in relation to provide a first signal in response to a first predetermined displacement of said second member into contact



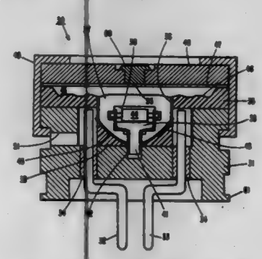
with said continuous conductive surface and to permit a second predetermined displacement of said second member subsequent thereto.

5,296,659

DIFFERENTIAL PRESSURE MONITORING DEVICE

Luken W. Potts, Merion; Alfred R. Schenker, Norristown, both of Pa., and Michael D. Ross, Somerdale, N.J., assignors to Viz Manufacturing Company, Inc., Philadelphia, Pa.

Filed Jan. 19, 1993, Ser. No. 5,584
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 J **16 Claims**



1. A differential pressure monitoring switch, comprising:

a switch body,

electrical lead means extending through said switch body to a point outside said switch body,

a mandrel on said switch body,

a recess in said mandrel,

a movable piston mounted in said recess in said mandrel,

a sealed capsule mounted on said piston and said mandrel,

said capsule containing gas at a predetermined threshold pressure,

said sealed capsule comprising a movable diaphragm bottom plate connected to a top plate means,

contact means coupled to said movable piston for engagement with said electrical lead means when the gas pressure inside said capsule is lower than the pressure on the outside of said diaphragm sufficient to disengage said diaphragm from said mandrel,

said contact means being disengaged from said electrical lead means when said movable diaphragm is fully engaged with said mandrel means and said threshold pressure in said capsule equals or exceeds the pressure outside of said capsule, and

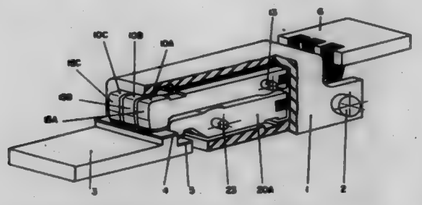
retainer means for connecting said top plate means to said switch body.

5,296,660

AUXILIARY SHUNT MULTIPLE CONTACT BREAKING DEVICE

Robert Morel, Eybeas; Marc Serpinet, Jarrie, and Xavier Thomassin, Meylan, all of France, assignors to Merlin Gerin, France

Filed Jan. 25, 1993, Ser. No. 8,314
Claims priority, application France, Feb. 7, 1992, 92 01487
Int. Cl.[5] H01H *9/38*, *33/12*
U.S. Cl. 200—146 R **10 Claims**



1. An electrical breaking device, comprising:

a movable contact assembly comprising a support cage, a lower contact finger and an upper contact finger, said lower and upper contact fingers being pivotally connected to said support cage via respective lower and upper transverse spindles which extend along a transverse direction, said upper contact finger being superposed on said lower contact finger in a plane perpendicular to the transverse direction, said lower and upper contact fingers being parallel to each other and extending along a longitudinal direction, each of said lower and upper contact fingers having a first end defined by a head having a movable contact and a second end opposite said first end, the second end of each contact finger being connected to a stationary contact pad via a flexible conductor; and

a stationary contact assembly comprising first and second contact parts for electrical connection with respective movable contacts of the lower and upper contact fingers,

wherein said lower transverse spindle is positioned to be closer to said first end than to said second end of said lower contact finger, and said upper transverse spindle is positioned to be closer to the second end than the first end of the upper contact finger such that said lower and upper transverse spindles are spaced apart from each other a distance along said longitudinal direction.

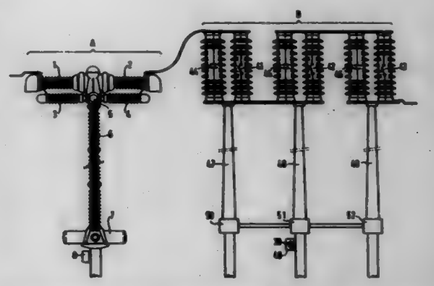
5,296,661

HYBRID CIRCUIT-BREAKER FOR INTERRUPTING CURRENTS HAVING HIGH DC COMPONENTS

Van Doan Pham, Meyzieu; Robert Jeanjean; Armand Scarato, both of Lyons, and Jean-Pierre Arandel, Civrieux D'Azergues, all of France, assignors to GEC Alsthom SA, Paris, France

Filed Nov. 16, 1992, Ser. No. 977,287
Claims priority, application France, Nov. 20, 1991, 91 14348
Int. Cl.[5] H01H *33/82*, *33/14*
U.S. Cl. 200—148 R **3 Claims**

1. A hybrid circuit-breaker for interrupting currents having high DC components, said hybrid circuit-breaker comprising firstly a compressed-air circuit-breaker including at least one interrupting chamber having terminals thereof connected in parallel with an impedance selected from a resistance of several thousand ohms and a capacitance of several hundreds of thousands of picofarads, and secondly a sulfur hexafluoride circuit-breaker including at least one interrupting chamber, said first and second circuit-breakers being connected in series and said hybrid circuit-breaker further comprising the means for controlling said first and second circuit-breakers for opening said first and second circuit-breakers substantially simultaneously or with the compressed-air circuit-breaker opening a few thousandths of a second earlier than the SF_6 circuit-breaker, and wherein said compressed-air circuit-breaker further includes means for automatically giving a close command



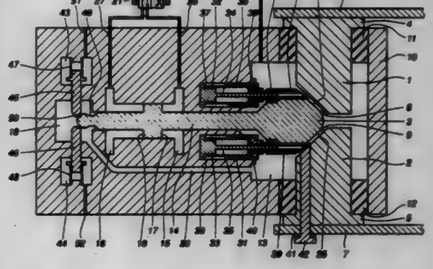
to said compressed-air circuit-breaker in the range of 2 hundredths of a second to 3 hundredths of a second after an open command is received by said compressed-air circuit-breaker.

5,296,662

ELECTRIC SWITCHING DEVICE

Göran Engdahl, Tilby; Gunnar Molund, and Ingvar Niemi, both of Västerås, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed Jan. 9, 1992, Ser. No. 895,369
Claims priority, application Sweden, Jan. 14, 1991, 9101831-7
Int. Cl.[5] H01H *33/70*
U.S. Cl. 200—150 R **10 Claims**



1. An electric switching device, comprising:

a housing;

a main contact assembly including two fixed contacts, each formed as a pin and positioned along a common center line axis and each said pin including a confronting plane surface directed to form a wedge-shaped opening, and one movable contact including two plane contact wedge-shaped surfaces conforming to the wedge-shaped opening each of said fixed contacts, said movable contact being movable between a closed position to close an electrical circuit, in which said two fixed contacts are connected, and an open position to open said electrical circuit, in which said two fixed contacts are disconnected, said main contact assembly being disposed in a first cavity in said housing;

a piston shaft axially movable along an axis perpendicular to said common center line axis, a first end of said shaft carrying said movable contact in said first cavity, a second end of said piston shaft positioned in a second cavity in said housing, said first cavity and second cavity being interconnected through a channel in said housing, said

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piston shaft carrying a piston with first and second piston cavities on each end thereof;

an auxiliary contact mechanism connected to said main contact assembly and including two movable hollow contact pins for closing and opening said electrical circuit later than the respective closing and opening of said electrical circuit by operation of said main contact assembly;

a hydraulic system interconnected with said first cavity and said second cavity for operating said movable contact mechanism and said auxiliary contact mechanism; and

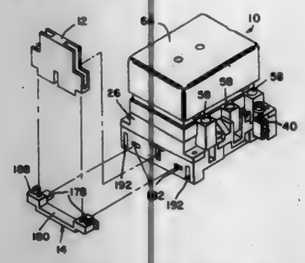
two bistable mechanisms disposed in said second cavity and including at least one piston biased by means of a spring for locking said piston shaft with said movable contact in said open and closed positions in which said movable contact is positioned with a pressure drop in the hydraulic system.

5,296,663

ELECTRIC SWITCH

Robert E. Borchardt, Brown Deer; Eberhardt H. Schreiber, Montello, and Grant W. Nelson, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Division of Ser. No. 806,963, Dec. 12, 1991, Pat. No. 5,138,296.
This application Jun. 2, 1992, Ser. No. 889,936
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—295 **2 Claims**



1. An auxiliary switch mounting bracket for mounting an auxiliary switch to a main switch, comprising:

a bridge adapted to support an auxiliary switch, said bridge extending in a lateral direction;

means adapted to removably mount said auxiliary switch to said bridge;

a clip extending from said bridge in a longitudinal direction, said longitudinal direction being generally perpendicular to said lateral direction, said clip being laterally resilient and having a catch which extends laterally outwardly from said clip, said clip being adapted to flex laterally inwardly and spring outwardly to engage said catch behind a wall of said main switch so as to secure said bridge to said main switch; and

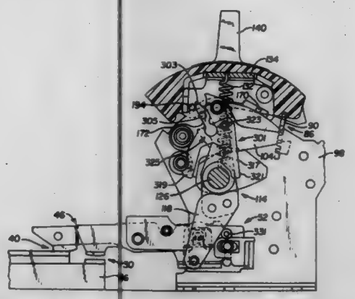
a nose extending from said clip and positioned laterally outwardly of said auxiliary switch, said nose being sized and positioned so that when said auxiliary switch is mounted to said bridge and said bridge is secured to said main switch and said clip is flexed laterally inwardly, said nose abuts a lateral side of said auxiliary switch and thereby prevents said catch from becoming disengaged from said wall.

5,296,664

CIRCUIT BREAKER WITH POSITIVE OFF PROTECTION

Ronald W. Crookston, Penn Township, Westmoreland County; Douglas C. Marks, Trafford; David C. Turner, North Fayette; Richard E. White, III, Brighton Township, Beaver County, and Steven Castelein, Sewickley, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1992, Ser. No. 976,636
Int. Cl.[5] H01H *23/00*
U.S. Cl. 200—401 **13 Claims**



1. A circuit breaker comprising:

a housing;

one or more pairs of separable contacts mounted in said housing;

an operating mechanism operatively coupled to said one or more pairs of separable contacts;

a pair of side plates mounted in said housing and supporting said operating mechanism;

a handle assembly operatively coupled to said operating mechanism and selectively movable reciprocally along a path between an on position in which said separable contacts are closed by said operating mechanism and an off position in which said separable contacts are opened by said operating mechanism; and

positive off means comprising:

at least one positive off lever slidable in a slot in one of said side plates between an extended position in which said positive off lever extends into said path of said handle assembly and blocks movement of said handle assembly toward said off position, and a retracted position in which said handle assembly is free to move to said off position; and

actuating means coupled to said operating mechanism actuating said positive off lever to said extended position to block movement of said handle assembly to said off position when said separable contacts are welded closed.

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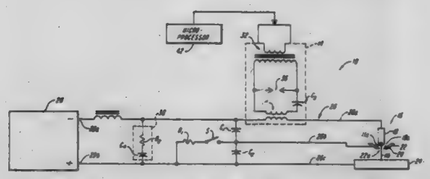
METHOD OF RESTARTING A PLASMA ARC TORCH USING A PERIODIC HIGH FREQUENCY-HIGH VOLTAGE SIGNAL

Jeffrey L. Peterson, Lebanon, and William V. Bailey, West Lebanon, both of N.H., assignors to Hypertherm, Inc., Hanover, N.H.

Filed May 19, 1992, Ser. No. 885,521
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.57 **2 Claims**

1. A method of reliably starting and maintaining an arc in a plasma arc torch where a high frequency, high-voltage (HFHV) signal initiates a breakdown in a plasma gas flowing between the electrode and the nozzle, and where a surge injection circuit includes a surge capacitor initially charged to a predetermined value and a DC power supply connected across the surge injection circuit, said surge injection circuit supplying current to maintain the arc as a pilot arc and then a transferred arc, comprising

pulsing said HFHV signal applied between the electrode and nozzle with intervals between pulses having a time period



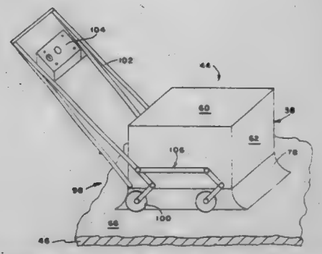
T which is at least equal to the time required for the power supply to charge the surge injector circuit to a value sufficient to initiate and sustain the pilot arc while the D.C. power supply ramps up from a zero current, open circuit output.

5,296,666

MICROWAVE HEATING APPARATUS HAVING TWO CAVITIES AND METHOD OF USING THE SAME

Vijay K. Varadan; Vasundara V. Varadan, both of State College, and Thomas L. Schaffer, Osceola Mills, all of Pa., assignors to The Pennsylvania Research Corporation, University Park, Pa.

Filed May 4, 1992, Ser. No. 877,852
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—696 **23 Claims**



1. Apparatus for heating an underlying material comprising:

an enclosure capable of substantially containing microwave energy therein having a top, at least one sidewall integral with said top and extending downwardly therefrom to a lowermost rim, and an applicator means integral with said sidewall, said enclosure defining a first cavity;

a source of microwave radiation capable of emitting microwave energy into said enclosure; and

microwave shielding means fixed to said lowermost rim of said enclosure and capable of extending to the underlying surface, said shielding means and said applicator means together defining a second cavity, said shielding means capable of substantially containing microwave energy in the second cavity;

said applicator means capable of receiving and converting a portion of microwave energy from said source to thermal energy and of transmitting said thermal energy into the second cavity and of transmitting a portion of the microwave energy into the second cavity;

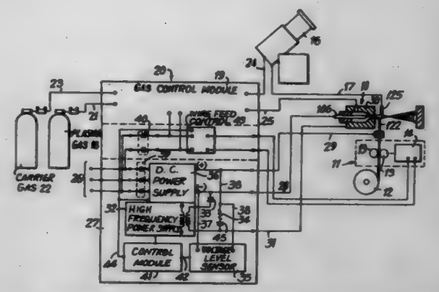
the first cavity being adjacent the second cavity with said applicator means separating the first and second cavities.

5,296,667

HIGH VELOCITY ELECTRIC-ARC SPRAY APPARATUS AND METHOD OF FORMING MATERIALS

Daniel R. Marantz; David R. Marantz, both of Sands Point, and Keith A. Kowalsky, Merrick, all of N.Y., assignors to Flame-Spray Industries, Inc., Port Washington, N.Y.

Filed Aug. 31, 1990, Ser. No. 576,632
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.47 **29 Claims**



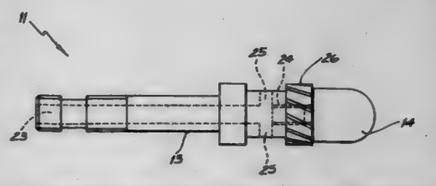
1. A high velocity arc spray apparatus comprising transferred-arc-plasma torch assembly means for forming a transferred-arc column, metal feedstock feeding means for feeding a metal feedstock into said transferred-arc column at an angle such that no portion of said metal feedstock is closer than the leading edge of said fed metal feedstock to said plasma torch assembly means during operation as the leading edge intersects a plasma flow, power source means coupled to said metal feedstock and said transferred-arc-plasma torch assembly means for selectively energizing said transferred-arc-plasma torch assembly means and said metal feedstock to create an electrical potential difference between said metal feedstock and said transferred-arc-plasma torch assembly means with a corresponding electric current flow, said metal feedstock being an anode to effect the transfer of an arc formed by said transferred-arc column.

5,296,668

GAS COOLED CATHODE FOR AN ARC TORCH

Craig Foreman, St. Ives, and Peter Vierboom, Turramurra, both of Australia, assignors to The University of Sydney and The Electricity Commission of New South Wales, both of Australia

PCT No. PCT/AU91/00017, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO91/11089, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 17, 1991, Ser. No. 910,138
Claims priority, application Australia, Jan. 17, 1990, PJ8227
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.48 **3 Claims**



2. A gas cooled cathode for a direct current arc torch of the type including an anode and an insulating collar housing the cathode, comprising:

a body having a tip;

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a gas passage for working gas which passes through the body, passes proximate the tip, and exits the body adjacent the tip through ports; and

a swirler surrounding the tip of the cathode and being downstream of the ports, the swirler being made of metal and being sized so that in use, as the torch heats up to an operating temperature the swirler expands and seals against the collar which electrically insulates the cathode from the anode.

5,296,669

SPECIMEN HEATING DEVICE FOR USE WITH AN ELECTRON MICROSCOPE

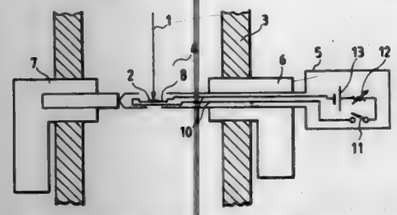
Hiroyuki Kobayashi, Mito, and Takeo Kamino, Masahiro Tomita, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instruments Engineering Co., Ltd., Katsuta, both of Japan

Filed May 28, 1993, Ser. No. 69,192

Claims priority, application Japan, May 29, 1992, 4-161946

Int. Cl.[5] H01J *37/20*; H05B *3/02*

U.S. Cl. 219—201 **7 Claims**



1. A specimen heating device for use with an electron microscope, comprising a specimen holder for holding a specimen to be irradiated with an electron beam, a heating member for heating the specimen, a power supply, and electric conductor means for conducting an electric power from the power supply to the heating member, the heating member, the power supply and the electric conductor means being integrated into the specimen holder.

5,296,670

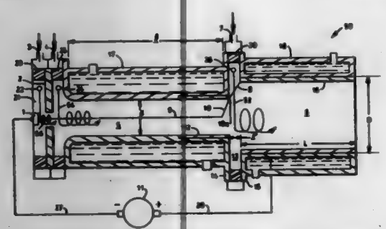
DC PLASMA ARC GENERATOR WITH EROSION CONTROL AND METHOD OF OPERATION

Leonid P. Dorfman, Athens; Sanjay Sampath, Sayre; Michael J. Scheithauer, Ulster, and Jack E. Vanderpool, Laceyville, all of Pa., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 31, 1992, Ser. No. 999,642

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.52 **15 Claims**



1. A DC plasma arc generator comprising: a generally cylindrical anode, said anode being divided into two portions, an arc constricting portion and an exit portion, said portions being coaxial with each other and each having distal and proximal ends, the distal end of said constricting portion being spaced from the proximal end of said exit portion by a predetermined distance, the inner diameter of said exit portion being greater than the inner diameter of said constricting portion, said constricting portion being electrically insulated from said exit portion prior to arc ignition;

refractory metal liners being disposed on at least said distal end of said constricting portion and said proximal end of said exit portion;

a cathode disposed adjacent said proximal end of said constricting portion and electrically insulated therefrom;

means to introduce tangentially a first stream of a vortex-generating gas adjacent said proximal end of said constricting portion adjacent said cathode;

means to introduce tangentially a second stream of a vortex-generating gas in the space between said distal end of said constricting portion and said promixal end of said exit portion;

means for establishing two arcs, one between said cathode and said distal end of said refractory metal liner in said constricting portion and the other between said distal end of said refractory metal liner in said constricting portion and said refractory metal liner in said promixal end of said exit portion, said two arcs sharing one common connection point, said common connection point of said two arcs being rotated by said second stream of a vortex-generating gas to reduce erosion within said generator.

5,296,671

PIPING ARRANGEMENT FOR A LASER ROBOT WRIST

Nobutoshi Torii, Tokyo; Akihiro Terada, and Yasuo Sasaki, both of Minamitsuru, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

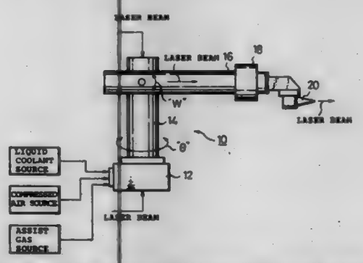
PCT No. PCT/JP92/00093, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/13669, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 30, 1992, Ser. No. 930,525

Claims priority, application Japan, Jan. 30, 1991, 3-9716

Int. Cl.[5] B23K *26/08*

U.S. Cl. 219—121.78 **8 Claims**



1. A piping arrangement for a laser robot wrist for supplying working media such as an assist gas and a liquid coolant, through a plurality of supply pipe means to the robot wrist joined for rotation at least about one axis to an extremity of a robot forearm of the laser robot, and holding a laser beam projecting device at a front end thereof, said piping arrangement comprising:

a sheathing pipe means provided as an outer pipe of said robot wrist;

a plurality of sealing means disposed on said sheathing pipe means of said robot wrist at appropriate spacings along a direction of an axis of rotary bearings supporting said robot wrist for rotation and provided in a joint joining said sheathing pipe means to an extremity of a robot forearm;

a sealing means holding ring mounted on said plurality of sealing means to hold said sealing means in place;

a plurality of annular chambers formed between respective two neighbouring sealing means of said plurality of sealing means, and including at least one gas-carrying annular chamber and at least one liquid-carrying annular chamber;

first working medium supply pipe means connected to said gas-carrying annular chamber and said liquid-carrying annular chamber among said plurality of annular chambers and fixedly arranged along an outer surface of said robot forearm to convey a gaseous working medium and a liquid working medium; and

second working medium supply pipe means arranged close to and along an outer surface of said sheathing pipe means of said robot wrist to convey the assist gas and the liquid coolant through said gas-carrying annular chamber and said liquid-carrying annular chamber to a front portion of said robot wrist and to said laser beam projecting device.

5,296,672

ELECTRIC ARC REACTOR HAVING UPSTREAM AND DOWNSTREAM ELECTRODES

Subramania Ramakrishnan, Glen Waverly; Walter T. Oppenlander, deceased, late of Greensborough by Gisela Hildgard Oppenlander, executor; Alan E. Mundy, Sunbury, and Ian M. Ogilvy, North Balwyn, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell and Siddons Ramset Limited, Victoria, both of Australia

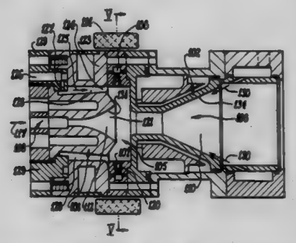
PCT No. PCT/AU89/00216, § 371 Date May 21, 1991, § 102(e) Date May 21, 1991, PCT Pub. No. WO89/11775, PCT Pub. Date Nov. 30, 1989

PCT Filed May 17, 1989, Ser. No. 602,281

Claims priority, application Australia, May 17, 1988, PI8273

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.52 **30 Claims**



1. An electric arc reactor including, an upstream electrode and a downstream electrode which are connectable to a power source such as to enable an arc to be generated between them, a feed material passage extending in a substantially straight path through said electrodes and being connectable to a source of feed material at an injection end thereof, an upstream portion of said feed passage extending through said upstream electrode, an electrode gap formed between adjacent inner ends of said electrodes which are spaced apart in the direction of said passage, said injection end being at an outer end of said upstream passage portion remote from said gap, rotation inducing means whereby said arc is caused to rotate about the axis of said passage to create a hollow arc column through which feed material can pass, and manifold means arranged to direct a flow of gas into said gap so that a component of said flow is in a direction towards said injection end and said gas enters said upstream passage portion at the inner end of said upstream electrode to flow along an inner surface of said upstream electrode, whereby in use the flow along said inner surface is counter to the flow of said feed material and a stagnation zone is thereby created at said inner surface, and the upstream root of said arc is confined to attachment to said inner surface at said stagnation zone.

5,296,673

LASER MACHINING

Nicholas J. G. Smith, Wiltshire, England, assignor to Raychem Limited, London, England

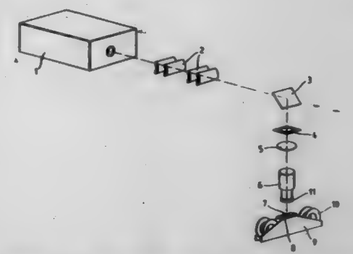
PCT No. PCT/GB90/01071, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/01514, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 12, 1990, Ser. No. 820,903

Claims priority, application United Kingdom, Jul. 14, 1989, 8916133.5

Int. Cl.[5] B23K *26/18*

U.S. Cl. 219—121.68 **6 Claims**



1. Apparatus for ablation excimer laser image projection ablation of a target material and comprising a projection lens system for projecting along a projection path a mask pattern to be ablated onto the target, said lens system being telecentric towards the image (target) end of the projection path, and means for moving the target along projection path whereby in use the size of projected image areas to be ablated from the target is adjusted substantially without altering the relative positions of said image areas on the target.

5,296,674

LASER PROCESSING METHOD FOR A THIN-FILM STRUCTURE

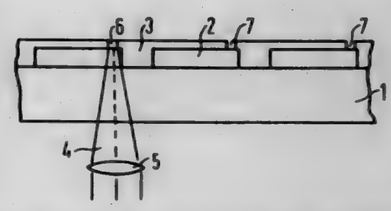
Stefan Praschek; Wolfgang Riedl, both of Munich, and Hans Goslowsky, Grafting, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 946,601

Claims priority, application European Pat. Off., Oct. 7, 1991, 91117061.1

Int. Cl.[5] B23K *27/00*

U.S. Cl. 219—121.69 **10 Claims**



1. A method for eroding material with a laser including the steps of:

providing a thin-film structure including at least one thin-film over at least one transparent layer for laser irradiation, said thin-film structure being a thin-film solar cell; and

irradiating said thin-film structure through said transparent layer with a laser pulse having a wavelength in an absorption range of said at least one thin-film for popping said thin-film structure off said at least one transparent layer in

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a region of said laser pulse and in order to form inactive regions.

5,296,675
METHOD FOR IMPROVING HIGH TEMPERATURE WELDMENTS
Paul S. Gilman, Suffern, N.Y., assignor to AlliedSignal Inc., Morristown, N.J.
Filed May 19, 1993, Ser. No. 63,475
Int. Cl.[5] B23K *9/167, 9/23*
U.S. Cl. 219—137 WM 20 Claims



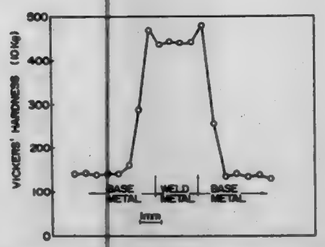
1. A process for producing a weld by TIG welding a dispersion strengthened aluminum base alloy comprising the steps of:
a. adjusting TIG welding power to minimize energy input into the weld;
b. contacting said weld with an arc gas composition to maximize rapid quenching of the weld;
c. contacting said weld with a second gas, the contact being predominantly at the undersurface of said weld, so that the undersurface of the weld is quenched;
d. contacting said weld with a trailing gas to enhance cooling of the weld beyond that achieved by said arc gas and said second gas; and
e. shot peening the weld.

5,296,676
WELDING OF ALUMINUM POWDER ALLOY PRODUCTS
Paul S. Gilman, Rockland, N.Y., assignor to AlliedSignal Inc., Morristown, Morris, N.J.
Filed May 20, 1993, Ser. No. 63,811
Int. Cl.[5] B23K *9/167, 9/23*
U.S. Cl. 219—137 WM 17 Claims



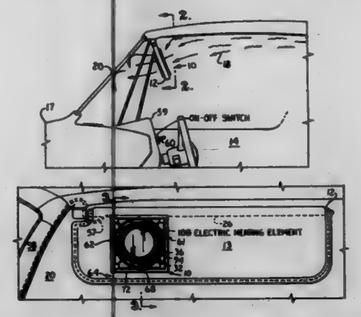
1. A process for producing a weld by TIG welding a dispersion strengthened aluminum base alloy comprising the steps of:
a. adjusting TIG welding power to minimize energy input into the weld;
b. contacting said weld with an arc gas composition to maximize rapid quenching of the weld;
c. contacting said weld with a second gas, the contact being predominantly at the undersurface of said weld, so that the undersurface of the weld is quenched; and
d. contacting said weld with a trailing gas to enhance cooling of the weld beyond that achieved by said arc gas and said second gas.

5,296,677
FILLER METAL FOR WELDING SINTERED MATERIALS
Eiji Takahashi; Yasuo Murai, and Hironori Suzuki, all of Fujisawa, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Filed Feb. 26, 1992, Ser. No. 841,550
Claims priority, application Japan, Feb. 26, 1991, 3-056198; Mar. 13, 1991, 3-074136; Apr. 12, 1991, 3-108741
Int. Cl.[5] B23K *35/34*
U.S. Cl. 219—146.41 4 Claims



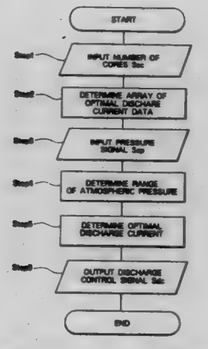
3. A cored wire, comprising a stainless steel sheath and a filler metal powder comprising 5–30% Mn, 7–15% Ni and at least member selected from the group consisting of Al and Ti in a total amount of 0.2–3%, based on the total weight of the wire, the balance being Fe and inevitable impurities.

5,296,678
VEHICLE SUN VISOR HAVING AN ELECTRIC FAN AND HEATER ASSEMBLY FOR CLEARING THE VEHICLE WINDSHIELD
Allen C. Schnorf, 18807 E. 5th St. N., Independence, Mo. 64056
Filed Mar. 12, 1992, Ser. No. 850,046
Int. Cl.[5] F24H *3/04;* B60J *3/00;* H05B *1/00*
U.S. Cl. 219—203 16 Claims



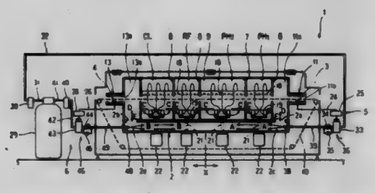
1. A fan system for mounting on an object with an opening, which comprises:
(a) a fan subassembly including a body having a first face, a second face and a throughbore extending between and open at said faces, said fan subassembly also including fan motor means mounted on said body and fan blade means drivingly coupled to said motor means;
(b) a retainer subassembly for mounting said fan subassembly body on the object with the fan subassembly body positioned in the object opening, said retainer subassembly including a retainer flange;
(c) said fan subassembly body including a receiver receiving said retainer flange; and
(d) said retainer subassembly includes first and second retainer frames each mounted in proximity to a respective fan subassembly body face.

5,296,679
METHOD AND APPARATUS FOR FUSION SPLICING OPTICAL FIBERS
Isao Suzuki, Sakura; Hiroyuki Kawasaki, Chiba; Michio Morooka, Katori, and Mikio Yoshinuma, Yachiyo, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan
Filed Aug. 11, 1993, Ser. No. 104,540
Claims priority, application Japan, Aug. 12, 1992, 4-236418
Int. Cl.[5] G02B *6/255*
U.S. Cl. 219—383 8 Claims



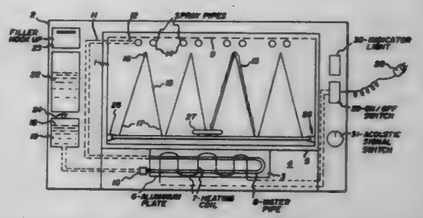
1. A method of fusion splicing optical fibers, comprising the steps of:
arranging cores of the optical fibers, including ends to be fusion spliced, in such a manner that the ends of the corresponding cores of optical fibers opposingly face to each other between discharge electrodes for fusion splicing;
automatically adjusting discharge current flowing between the discharge electrodes according to a number of the cores of the optical fibers to substantially provide an optimal correction to the discharge current in relation to the number of the cores of the optical fibers;
further adjusting the discharge current to a variation in atmospheric pressure to substantially provide an optimal correction to the discharge current in relation to the variation in atmospheric pressure.

5,296,680
AUTOMATIC REFLOW APPARATUS WITH PRESSURE EQUALIZATION MEANS
Osamu Yamada, Tokyo, Japan, assignor to Eightech Tectron Co., Ltd., Hachioji, Japan
Filed Feb. 24, 1993, Ser. No. 21,558
Claims priority, application Japan, Sep. 30, 1992, 4-286965
Int. Cl.[5] H05K *13/04;* B23K *3/04*
U.S. Cl. 219—388 6 Claims



1. An automatic reflow soldering apparatus for soldering a printed circuit board having a plurality of electronic elements mounted thereon to be soldered thereto by transporting the printed circuit board through a heating chamber having an inert gas filled therein, said apparatus comprising: a first station chamber arranged on one side of the heating chamber and provided with a first outer opening for enabling the printed circuit board to be transported therethrough into the heating chamber so as to be soldered therein, said first station chamber being further provided with a first inner opening; a second station chamber arranged on the opposite side of the heating chamber from said first station chamber and provided with a second outer opening for enabling the soldered printed circuit board to be transported therethrough out of the heating chamber, said second station chamber being further provided with a second inner opening; and a duct to establish a path for equalizing pressures within aid first and second station chambers, said duct having a one end opening and an opposite end opening, said one end opening connected to the first inner opening of the first station chamber and said opposite end opening connected to the second inner opening of the second station chamber, said first inner opening and said one end opening having an area larger than the area of said first outer opening of the first station chamber, and said second inner opening and said opposite end opening having an area larger than the area of said second outer opening of the second station chamber.

5,296,681
APPARATUS FOR HOT MOISTENING FACE-TOWELS
Gunter Tschauder, An der Lehmkaut 10, 6393 Wehrheim, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 820,260, Jan. 14, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 944,910
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4100961; European Pat. Off., Jul. 23, 1992, 92112622.3
Int. Cl.[5] A21B *1/00*
U.S. Cl. 219—410 4 Claims



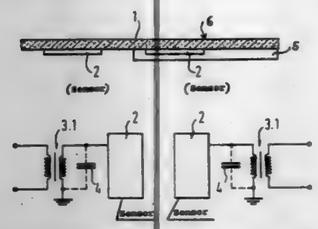
1. An apparatus for hot-moistening face-towels comprising:
a heating system comprising a heater unit and a water pipe;
a metering container for metering a predetermined quantity of water to be heated in the heating system, the metering container in fluid communication with one end of the water pipe;
an internal chamber comprising a base plate, wherein the heater unit is affixed from below to the base plate;
towel supports disposed within said chamber;
a spray system mounted on a ceiling of the internal chamber for spraying steam and hot water of said predetermined quantity onto towels supported on the towel supports within the internal chamber, the spray system being in fluid communication with a second end of said water pipe;
wherein the towel supports are in the form of steep gables with triangular cross section; and
wherein the spray system comprises supply conduits in fluid communication with said water pipe of the heating system and a plurality of pairs of spray pipes, each pair mounted so as to be disposed parallel to and on either side of a horizontal top portion of each respective towel support.

5,295,682

AC POWER LINE VOLTAGE CONTACT PROTECTOR FOR SENSORS UNDER GLASS-CERAMIC COOKTOPS UTILIZING REJECTION FILTER

Günther Wittauer, Traunstein, and Manfred Plankl, Wallersdorf, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 29, 1992, Ser. No. 905,475
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 9108012[U]
Int. Cl.[5] F24C *15/10*; H03K *17/96*; H05B *3/74*
U.S. Cl. 219—464 14 Claims



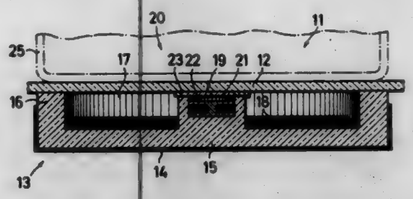
1. In a cooktop assembly having a glass-ceramic cooktop, a radiant heater defining a heating zone of the cooktop, and a metal sensor disposed under the cooktop, a mains voltage contact protector for the sensor, comprising a rejection filter being connected to the sensor and dimensioned for mains voltage contact protection, and the sensor operating at a higher-frequency operating point than for normal operation.

5,296,684

DEVICE FOR DETECTING A COOKING VESSEL POSITIONED IN A HEATING ZONE OF A COOKER OR HEATER

Willi Essig, Boeblingen, and Ivo Russ, Oberderdingen, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Feb. 5, 1991, Ser. No. 650,489
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1990, 4004129
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—518 16 Claims



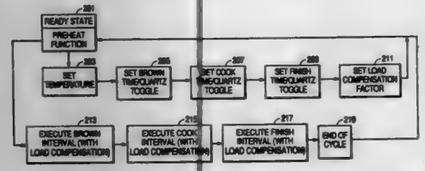
1. Device for detecting a cooking vessel positioned in a heating zone of an appliance of a kind including cooking and heating appliances, the device comprising a sensor supplying a sensor signal, said sensor signal having a sensor signal characteristic dependent on the placement and removal of the cooking vessel in said heating zone; and evaluating means which, as a function of the sensor signal characteristic, supply an output signal for controlling the energization of the appliance, the evaluating means producing the output signal as a function of the rate of change of the sensor signal characteristic.

5,296,683

PREHEATING METHOD AND APPARATUS FOR USE IN A FOOD OVEN

Doug Burkett, and Gary L. Mercer, both of Eaton, Ohio, assignors to Henny Penny Corporation, Eaton, Ohio

Filed Aug. 19, 1991, Ser. No. 746,760
Int. Cl.[5] H05B *1/02*; F27D *11/02*
U.S. Cl. 219—497 24 Claims



1. In a control system for use with an oven having a cavity in which to heat a load, a thermally conductive heat source beneath a base plate upon which said load is placed, and a high thermal intensity heat source within the cavity, a method of preheating said cavity and said base plate, said preheating method comprising the steps of:

(a) activating said conductive heat source until the temperature of said base plate reaches a first temperature;

(b) activating said high thermal intensity heat source until the temperature within said cavity reaches a second temperature; and

(c) terminating the preheating method when the temperature within said cavity reaches said second temperature.

5,296,685

HEATING COIL STRUCTURES

Norman Burstein, Philadelphia, Pa., and John Stein, Ewing, N.J., assignors to Quartz Tubing, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 818,054, Jan. 8, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 46,491
Int. Cl.[5] H05B *3/40*; H01C *1/026*; H01J *1/15, 19/08*
U.S. Cl. 219—534 21 Claims



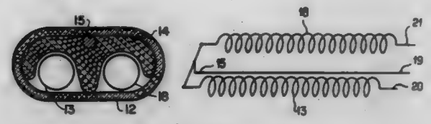
1. An electrical heater having a helix of coils of resistance wire characterized by each turn of the wire of said coils being formed of a plurality of wires twisted together in a plurality of twists, and electrical means, forming an electrical connection at each end of said twisted wires, for applying a source of electrical power across said helix via said connections, said twisted wires having a lay distance which between about 9 and 11 times greater than the individual diameter of said wires, said wires being in continuous contact along their respective lengths between said electrical connections, said heater helix being unsealed from the ambient.

5,296,686

HEATING ELEMENT

Christian Ullrich, Bad Homburg, Fed. Rep. of Germany, and John A. Winterburn, Dumfries, Great Britain, assignors to Thermal Quartz Schmelze GmbH, Fed. Rep. of Germany

Filed Sep. 28, 1990, Ser. No. 590,245
Claims priority, application France, Sep. 28, 1989, 89 12683
Int. Cl.[5] H05B *3/40, 3/10*
U.S. Cl. 219—553 26 Claims



13. A heating element comprising:

a. a tubular refractory member;

b. a trough oriented within said tubular refractory member for reflecting and directing substantially all radiant energy directed toward it from at least one filament positioned therein within said refractory member, said trough configured and adapted to precisely accommodate the shape of said at least one filament, said trough comprised of a thermally reflecting and thermally insulating material, said trough further comprising at least one recessed portion substantially parallel to a longitudinal axis thereof;

c. at least one helical filament adapted for providing radiant energy to said heating element, said at least one helical filament located within and supported by said at least one recessed portion along substantially the entire length within said trough; and

d. a metal rod located within said trough parallel to said longitudinal axis of said trough and said metal rod electrically insulated from said at least one helical filament along substantially the entire length of said trough;

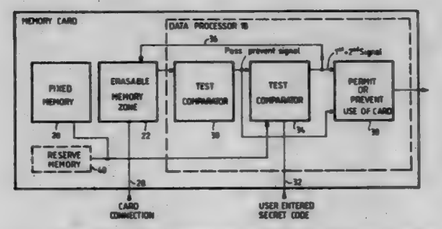
wherein said radiant energy is reelected to and re-emitted by all surfaces of said refractory member not in contact with said trough.

5,296,687

METHOD OF RATIFYING SECRET CODES FOR MEMORY CARDS

François Gerouimi, Aix en Provence, France, assignor to Gemplus Card International, Gemenos, France

Filed Oct. 16, 1991, Ser. No. 778,348
Claims priority, application France, Oct. 19, 1990, 90 12985
Int. Cl.[5] G06K *5/00*; B42D *15/00*
U.S. Cl. 235—380 8 Claims



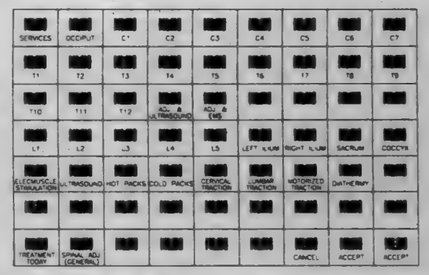
1. A method of ratifying secret codes for IC memory cards which cards include a data processing member, and a storage device for recording a secret code and data delivered to the card, wherein the method comprises writing in at least one fixed-size memory zone in the storage device at least one bit in said zone prior to each presentation of a secret code, and in erasing all of the bits recorded in the fixed-size zone once the data processor member detects that the presented secret code corresponds to the secret code recorded in the card.

5,296,688

APPARATUS AND METHOD FOR RECORDING PROGRESS NOTES

David W. Hamilton, 5950 Bartholomew Dr., Lincoln, Nebr. 68512, and David J. Kats, 1725 S. 33rd St., Lincoln, Nebr. 68506

Continuation of Ser. No. 444,897, Dec. 4, 1989, abandoned. This application Jan. 23, 1992, Ser. No. 824,575
Int. Cl.[5] G06F *15/42*
U.S. Cl. 235—375 17 Claims



1. An apparatus for recording progress notes, comprising a bar code input data source including a plurality of bar codes indicative of preassigned input information,

at least some of said bar codes being indicative of information in a form selected from the group consisting of words and phrases,

a computer having memory means and programmable data processing means,

input means operative to scan selected bar codes of said data source and to input the scanned codes into said computer memory means,

said programmable data processing means being operative to compile and edit said scanned codes, including the scanned codes of the aforementioned some of said bar codes so as to generate full text progress notes, in complete sentences, of the preassigned input information indicated by said scanned codes,

said programmable data processing means being operative to assign a respective numeric value to each scanned code and to then edit each scanned codes as a function of the numeric value thereof.

5,296,689

AIMING BEAM SYSTEM FOR OPTICAL DATA READING DEVICE

Brad R. Reddersen, and Thomas L. Durant, both of Eugene, Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.

Filed Feb. 28, 1992, Ser. No. 843,473
Int. Cl.[5] H01S *3/10*
U.S. Cl. 235—467 21 Claims

1. An aiming system for an optical data reading device, comprising:

a light source generating an optical beam along an outgoing optical path toward an object to be scanned;

a detector for detecting light reflected off the object;

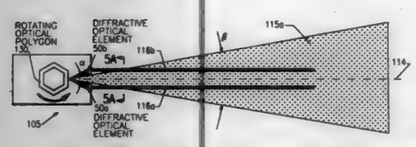
a scan mirror in the outgoing optical path directing light toward the object along a scan plane; and

a diffractive optical module positioned in the outgoing optical path adjacent the scan mirror, the diffractive optical module comprising:

a pair of diffractive optical elements separated by an aper-

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ture, the diffractive optical elements positioned on either side of the aperture along the scan plane, each



diffractive optical element de-scanning the portion of the optical beam passing therethrough to form an aiming light beam.

5,296,690

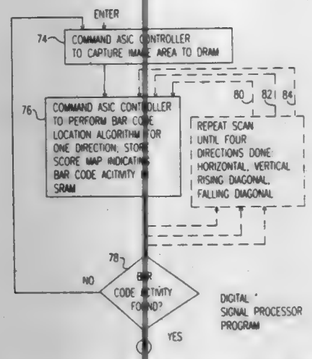
SYSTEM FOR LOCATING AND DETERMINING THE ORIENTATION OF BAR CODES IN A TWO-DIMENSIONAL IMAGE

Donald G. Chandler, and Eric P. Batterman, both of Princeton, N.J., assignors to Omniplanar, Inc., Princeton, N.J.

Continuation of Ser. No. 500,802, Mar. 28, 1991, abandoned. This application Sep. 26, 1991, Ser. No. 766,909

Int. Cl.[5] G06K *7/20, 9/80*

U.S. Cl. 235—462 **22 Claims**



1. A method for reading a bar code symbol, said method comprising:

capturing and storing a two dimensional image in a memory, said stored two dimensional image containing an image of a bar code symbol anywhere within the field of view of said stored two dimensional image;

locating an area within the field of view of said stored two dimensional image, said located area being likely to contain a bar code image, said locating step including the step of comparing two substantially parallel scan line segments by comparing corresponding points of a function of the reflectance waveforms of said two substantially parallel scan line segments, said function having a plurality of output points for each of said scan line segments;

examining the image within said located area to determine the orientation of said bar code image within said located area of said stored two dimensional image;

filtering said bar code image along an axis substantially perpendicular to said detected orientation of said bar code image; and

scanning said filtered bar code image to read out information contained in said bar code image.

5,296,691

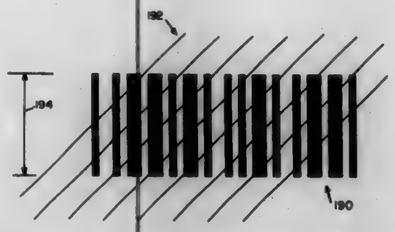
SCANNING DEVICE FOR RECONSTRUCTING A COMPLETE CODE FROM SCANNED SEGMENTS

James R. Waldron; Larry A. Nordstrom, both of Oviedo, and Daniel A. Kenney, Daytona Beach, all of Fla., assignors to LazerData Corporation, Orlando, Fla.

Filed Sep. 14, 1992, Ser. No. 944,506

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **40 Claims**



1. A device for reading machine readable code, having a plurality of code elements, comprising:

scanning means for successively scanning the code and for outputting a signal representative of at least a portion of the code, for each successive scan of the code;

signal processing means for processing each of said signals outputted by said scanning means, said signal processing means further providing signal identification data, including a width and position associated with each of said signals, for each successive scan of the code; and

data processing means for reconstructing the code from said signal identification data for each successive scan of the code provided by said signal processing means,

said data processing means including position aligning means, said position aligning means comprising means for selecting an element in a previous scan,

calculating the position of that element in a successive scan based upon a calculated offset, said calculated offset determined by an offset calculating means which calculates the difference in position of features in previous scans, and

aligning said successive scan with said previous scan by means of said calculated offset by placing said selected element in said successive scan in alignment with said selected element in said previous scan.

5,296,692

IC CARD ADAPTER FOR USE IN MEMORY CARD SLOT WITH OR WITHOUT SUPERIMPOSED MEMORY CARD

Katsuhide Shino, Sonaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 425,102, Oct. 23, 1989, abandoned. This application Aug. 15, 1991, Ser. No. 746,179

Claims priority, application Japan, Oct. 24, 1988, 63-138469[U]; Oct. 28, 1988, 63-141704[U]; Oct. 28, 1988, 63-141705[U]; Oct. 28, 1988, 63-141706[U]

Int. Cl.[5] G06K *7/00*; **H05K** *5/00*

U.S. Cl. 235—486 **11 Claims**

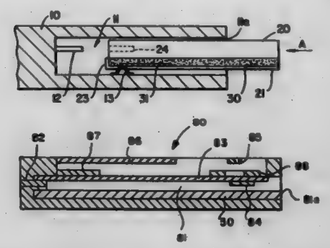
7. An adapter for facilitating space-efficient interface with an electronic apparatus having an electrical signal interface disposed within a slot at one end of a narrow rectangular cavity, said adapter comprising:

a housing having an electrical signal interface having female plug contact sockets at one end which matingly connects with electrical signal interface male contacts of the electronic apparatus when the adapter is inserted into said slot;

said housing including a memory card permanently connected to the female plug contact socket electrical signal interface of the housing;

said housing including an opening for receiving an IC card therewithin; and

said housing including a coupling circuit for coupling signals between the electrical signal interface of the housing and



said IC card when one is present therein, wherein the IC card faces the memory card when the IC card is present in the housing.

5,296,693

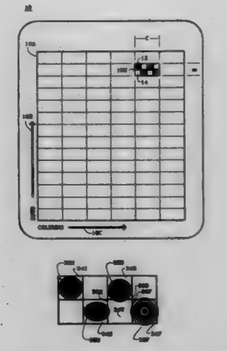
INK INTRUSION RESISTANT DIGITAL CODE

Dirk Hughes-Hartogs, Morgan Hill, Calif., assignor to Canon Kabushiki Kaisha, Palo Alto, Calif.

Filed Dec. 16, 1991, Ser. No. 807,227

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—494 **14 Claims**



1. A two dimensional row and column based system for storing digital data, comprising:

base medium having at least one digital data storage area formatted along a row axis and a column axis;

deposited recording material carried by the base medium for recording the digital data by the selective presence and absence of the recording material within the storage area;

a plurality of two dimensional data units within the storage area, each data unit having L data locations with R locations extending along the row axis and C locations extending along the column axis, any E locations of which are designated recording material present locations and L−E locations of which are designated recording material absent locations, E being any whole integer greater than 0 but less than L exclusive of 0 and L;

each location designated as recording material present location which is positioned adjacent to a location designated as recording material absent location having a present-absent interface therebetween; and

the number of possible codes C represented by a data unit is determined by the relationship

$$C=(L!)\,/\,(L-E)!(E!)\ -(\text{discarded codes}),$$

in which the discarded codes have the most present-absent interfaces between adjacent locations.

5,296,694

OPTICAL PICK-UP HEAD APPARATUS WITH OPTICAL MEANS HAVING POLARIZATION ANISOTROPY

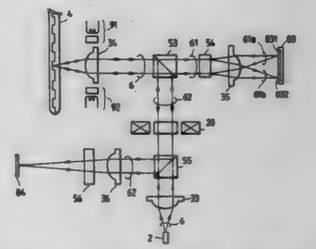
Shin-ichi Kadowaki, Osaka; Yoshiaki Komma, Kyoto; Seiji Nishino, and Hiroaki Yamamoto, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 21, 1992, Ser. No. 963,474

Claims priority, application Japan, Mar. 31, 1992, 4-076693

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.5 **19 Claims**



1. An optical pick-up head apparatus comprising:

a laser source for emitting a going beam;

an imaging optics for receiving said going beam emitted from said laser source and focusing this beam onto a tiny spot of a magneto-optical recording medium;

first optical means for splitting a returning beam diffracted at the magneto-optical recording medium and reflected back through said imaging optics into first and second returning beams, said first optical means having polarization anisotropy;

second optical means for receiving said first returning beam split by the first optical means and further splitting said first returning beam into a plurality of first detecting beams of different directions in accordance with polarization direction of the first returning beam;

a first photodetector unit having a plurality of photodetectors for receiving said plurality of first detecting beams split by the second optical means and generating photoelectric currents in response to respective first detecting beams;

third optical means for receiving said second returning beam split by the first optical means and further splitting this beam, said third optical means having polarization anisotropy;

a focusing-error detecting element for receiving said beam split by the third optical means and generating a second detecting beam for obtaining a focusing-error signal;

a second photodetector unit having a plurality of photodetectors for receiving said second detecting beam generated from said focusing-error detecting element and respectively generating photoelectric current in response to said second detecting beam; and

a polarization rotator element, disposed on an optical path between said first optical means and said third optical means to rotate polarization direction of the going beam emitted from the laser source and also rotate polarization direction of the returning beam reflected back at the magneto-optical recording medium, thereby differentiating the polarization directions of said going and returning beams;

wherein said going beam emitted from said laser source advances to said magneto-optical recording medium via a going optical path passing through said third optical means, said polarization rotator element, said first optical

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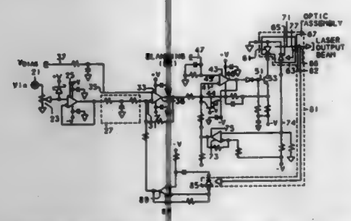
means, and said imaging optics, and the returning beam reflected at the magneto-optical recording medium returns to said second photodetector unit via a returning optical path passing through said imaging optics, said first optical means, said polarization rotator element, said third optical means, and said focusing error detecting element.

5,296,695

DUAL FEEDBACK PATH LINEARIZATION OF CURRENT MODULATED LASER WITH DUAL AMPLIFIER CIRCUIT

Andrew M. Bardos, Indian Harbour; Jon E. Holmes, West Melbourne, and Edward Tegge, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 30, 1992, Ser. No. 954,576
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **33 Claims**



1. A device for controlling the generation of a light beam comprising:
an input terminal to which an input signal is applied;
an electro-optic light-emitting output device which is operative to generate a light beam in response to a control signal applied thereto;
an amplifier circuit having an input coupled to said input terminal and an output coupled to said electro-optic light-emitting output device;
a first opto-electronic detector device which is responsive to the light beam generated by said electro-optic light-emitting output device and the output of which is coupled in a first feedback path to an input of said amplifier circuit; and
a second opto-electronic detector device which is responsive to the light beam generated by said electro-optic light-emitting output device and the output of which is coupled in a second feedback path to an input of said amplifier circuit.

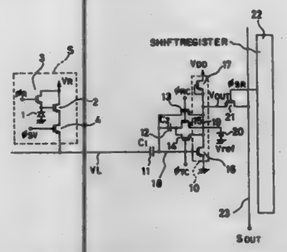
5,296,696

SOLID STATE IMAGE PICKUP APPARATUS AND DRIVING METHOD

Masayuki Uno, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1993, Ser. No. 1,656
Claims priority, application Japan, Jan. 29, 1992, 4-036923
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **21 Claims**

1. A solid state image pickup apparatus, comprising:
pixels, each of said pixels being composed of a photoelectric transducer element having a function of amplification; and
fixed-pattern-noise suppression basic cells, each of said cells comprising:
an inverting amplifier;
an input capacitor connected between the output of said pixel and the input of said inverting amplifier;
a reset switching element for supplying an initial voltage to the input of said inverting amplifier;
a feedback capacitor, one node of said feedback capacitor being connected to the input of said inverting amplifier;
a feedback switching element connected between the other node of said feedback capacitor and the output of said inverting amplifier; and
a switching element for supplying a reference voltage, connected between a reference voltage source and a node



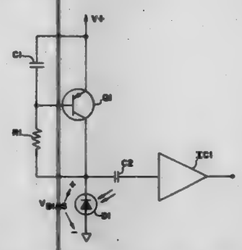
connecting the said feedback capacitor and the feedback switching element;
whereby the fixed pattern noise caused by the offset variation of the pixels composed of a photoelectric transducer element is suppressed.

5,296,697

DETECTION CIRCUIT FOR MAINTAINING CONSTANT SIGNAL TRANSFER CHARACTERISTICS OF A LIGHT-SENSITIVE DETECTOR

Charlie D. Moses, Jr., Jacksonville, Fla., assignor to ParkerVision, Inc., Jacksonville, Fla.

Filed Aug. 10, 1992, Ser. No. 926,403
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **21 Claims**



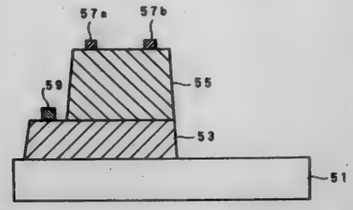
1. A method of electrically controlling the signal transfer characteristics of a variable impedence electromagnetic signal detector having an impedence that varies in response to the signal detected over an operating range of input signal intensity comprising the steps of:
A. establishing a voltage across the detector;
B. maintaining the voltage established in step A substantially constant independent of the variation of the impedence of the detector over the operating range of the detector; and
C. varying the electric current supplied to the detector in response to the variation in the impedence of the detector over the operating range of the detector independently of the maintenance of constant voltage in step B.

5,296,698

LATERAL PHOTO-SENSING DEVICE, OPT-ELECTRONIC INTEGRATED CIRCUIT USING THE LATERAL PHOTO-SENSING DEVICE AND PHOTO-LOGIC DEVICE USING THE LATERAL PHOTO-SENSING DEVICE

Nobuyoshi Tatoh, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 26, 1992, Ser. No. 840,899
Claims priority, application Japan, Feb. 28, 1991, 3-34046; Apr. 17, 1991, 3-85311; Jul. 2, 1991, 3-161769; Jul. 2, 1991, 3-161800
Int. Cl.[5] H01L *49/00, 27/00*
U.S. Cl. 250—214.1 **16 Claims**



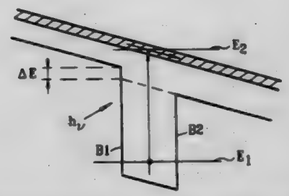
1. A lateral photo-sensing device comprising;
a first semiconductor layer of a first conductivity type formed on a semi-insulative semiconductor substrate;
a second semiconductor layer of a second conductivity type formed on said first semiconductor layer for absorbing a light;
a pair of electrodes formed on said second semiconductor layer, thereby forming a rectifying junction at an interface between said electrodes and said second semiconductor layer; and
a biasing electrode for applying a biasing voltage to said first semiconductor layer.

5,296,699

QUANTUM WELL PHOTOELECTRIC DETECTOR WITH IMPROVED DETECTIVITY

Benoît Deveaud-Pledran, Lannion, and Jean-Michel Gerard, Paris, both of France, assignors to France Telecom, France

Filed Feb. 17, 1993, Ser. No. 18,116
Claims priority, application France, Feb. 18, 1992, 92 01826
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **10 Claims**



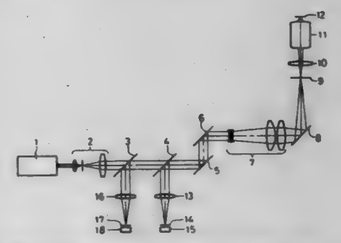
1. Photoelectric detector presenting a multiple quantum well structure, each quantum well comprising a first barrier made from a first semiconductor material, a well made from a second semiconductor material, and a second barrier made from a third semiconductor material, each semiconductor material being defined by its chemical composition, and the electric conductibility in the detector being ensured by propagation, from the first barrier to the second barrier, of given charge carriers in a given electronic band, presenting an energy extremum in each of the said materials, said semiconductor materials being at least partly doped with carriers, the chemical composition of the first and third semiconductor materials being such that the difference in energy, at the said barriers, between the energy extremum of the said electronic band in the first semiconductor material and the energy extremum of the said electronic band in the third semiconductor material is greater in absolute value than the maximum energy of the optical longitudinal phonons in the second semiconductor material making up the well, said structure being formed from an alternating stack of layers of the second semiconductor material separated by layers of a semiconductor material presenting, from the second barrier of one well to the first barrier of the following well, in the direction of carrier propagation, a chemical composition that gradually varies between the composition of the third semiconductor material to that of the first semiconductor material.

5,296,700

FLUORESCENT CONFOCAL MICROSCOPE WITH CHROMATIC ABERRATION COMPENSATION

Satoru Kumagai, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,713
Claims priority, application Japan, Sep. 12, 1991, 3-260488
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **5 Claims**



1. A fluorescent confocal microscope comprising:
a light source for producing excitation light;
an objective optical system for condensing said excitation light on a specimen;
scanning means for scanning a surface of said specimen with said excitation light;
an intermediary optical system including a scanning optical system arranged between said scanning means and said objective optical system and constructed to provide compensation for chromatic aberration of magnification of said objective optical system for wavelengths of said excitation light and said fluorescent light; and
fluorescent light detecting means for detecting fluorescent light emitted from said specimen excited by said excitation light and passed through said objective optical system and said scanning optical system.

5,296,701

APPARATUS FOR INSPECTING CONTAINERS HAVING A DUAL OPTICAL TRANSMISSION MEANS, A DUAL LIGHT SENSING MEANS AND A ROTATING HEAD

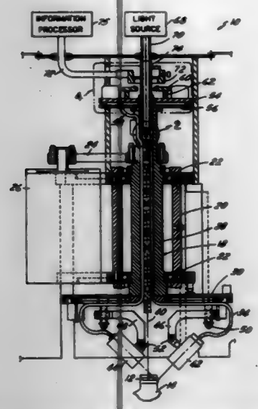
James A. Kirkman, Oregon, and James A. Ringlien, Maumee, both of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Apr. 19, 1993, Ser. No. 48,639
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 B **13 Claims**

1. Apparatus for inspecting containers comprising:
an inspection head including means for rotating said head adjacent to a container about a fixed axis,
a light source disposed in fixed position adjacent to said head,
first optical transmission means on said head and aligned

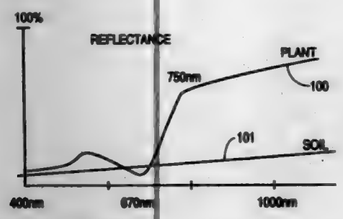
VOL 1160 ISS 4 MR 22 1994 UMI

with said light source for receiving illumination light energy from said source and projecting said illumination energy onto the container,
first light sensing means on said head for receiving at least a portion of said light energy following interaction of said light energy with the container and generating a first electrical signal as a function thereof,
second optical transmission means on said head responsive



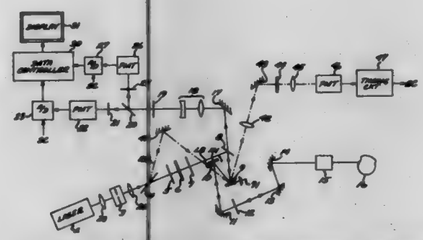
to said first electrical signal for generating light energy as a function thereof,
second light sensing means disposed in fixed position adjacent to said head in alignment with said second optical transmission means for receiving light energy generated by said second optical transmission means and generating a second electrical signal as a function thereof, and
means responsive to said second electrical signal for detecting commercial variations in the container.

5,296,702
STRUCTURE AND METHOD FOR DIFFERENTIATING ONE OBJECT FROM ANOTHER OBJECT
Jim Beck, Los Gatos, and Tom Vyse, Santa Clara, both of Calif., assignors to Patchen California, Los Gatos, Calif.
Filed Jul. 28, 1992, Ser. No. 920,942
Int. Cl.[5] G01J *3/50*
U.S. Cl. 250—226 **42 Claims**



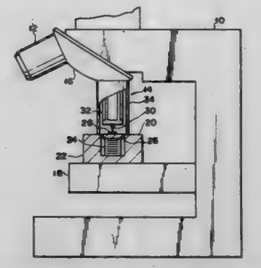
1. Structure comprising:
at least two substantially monochromatic light sources, each light source providing a light beam with a different wavelength, each said light beam being focused at an area of a surface, said surface being substantially stationary;
a detector for detecting a reflectance of light from said area;
means for analyzing said reflectance to determine whether said area is a plant;
means for initiating a selected activity with respect to plants other than of a selected type in response to a signal from said means for analyzing; and
means for moving said at least two substantially monochromatic light sources and said detector with respect to said surface so that said area is scanned across said surface.

5,296,703
SCANNING CONFOCAL MICROSCOPE USING FLUORESCENCE DETECTION
Roger Y. Tsien, La Jolla, Calif., assignor to The Regents of The University of California, Oakland, Calif.
Filed Apr. 1, 1992, Ser. No. 862,633
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—235 **18 Claims**



1. A confocal microscope for scanning a sample, comprising:
a laser for generating a collimated incident beam having a predetermined wavelength;
optical path means including
a primary dichroic mirror, and
a first scanning mirror, disposed between the dichroic mirror and the sample and rotatable about a first axis, for scanning the incident beam repeatedly across the sample, whereupon the sample fluoresces and emits radiation having a first predetermined wavelength, different from the wavelength of the incident beam, a portion of the emitted radiation forming a fluorescence beam that retraces the path of the incident beam back to the primary dichroic mirror,
wherein the primary dichroic mirror separates the fluorescence beam from the incident beam;
a fluorescence beam detector for detecting the intensity of the fluorescence beam and for generating a corresponding fluorescence scan signal; and
reference beam means including
means for directing a reference beam toward the first scanning mirror, where it impinges on the first scanning mirror at a location coincident with the incident beam, to produce a scanning reference beam,
a grating having a series of alternating transparent and opaque regions and positioned to receive the scanning reference beam and produce a pulsed reference beam indicative of the scan rate, and
a reference beam detector for detecting the intensity of the pulsed reference beam and for generating a corresponding clock signal representative of the scan rate of the scanning reference beam and thereby the incident beam;
wherein the clock signal generated by the reference beam detector can be used to sample the fluorescence scan signal generated by the fluorescence beam detector.

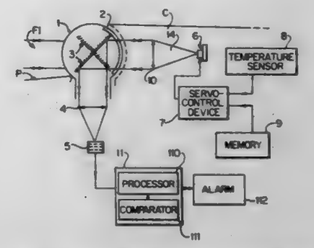
5,296,704
SCANNING TUNNELING MICROSCOPE
Shuzo Mishima; Takao Okada; Tsugiko Takase; Hiroko Ota, and Hirofumi Miyamoto, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 590,462, Sep. 28, 1990, abandoned. This application Jan. 14, 1992, Ser. No. 821,123
Claims priority, application Japan, Oct. 2, 1989, 1-257523
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **11 Claims**



1. A scanning tunneling microscope for investigating a surface of a sample, comprising:
an STM unit including a probe for detecting a tunnel current, said probe having an axis, movement means for supporting and moving said probe along the surface of the sample. and an enclosing member disposed around said probe and said movement means;
an optical system for preliminarily observing the surface of the sample for locating a portion of the sample which is to be subjected to STM measurement by said STM unit, said optical system including an objective lens having an optical axis;
a table for mounting the sample thereon, said table having an axis passing through the sample;
holding means for holding both said STM unit and said objective lens, said holding means including means for selectively brining the axis of said probe and the optical axis of said objective lens into substantial coincidence with the axis of said table one-at-a time; and
means for moving at least one of said STM unit and said table relative to each other, only when said axis of said probe is brought into coincidence with the axis of said table, so that said table contacts with said enclosing member to provide a closed space surrounding the sample and said probe.

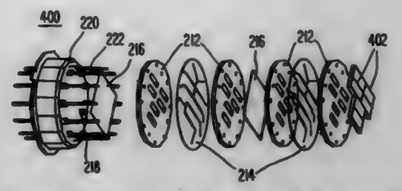
5,296,705
IMAGING SYSTEM WITH INTEGRATED MEASURING OF THE WEAR OF ITS OPTICAL ELEMENTS WORKING IN TRANSMISSION MODE AND OPTRONIC IMAGING EQUIPMENT COMPRISING AN IMAGING SYSTEM SUCH AS THIS
Christian Pepin, Gif sur Yvette, and Jean-Louis Bourgain, Issy les Moulineaux, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Jul. 22, 1992, Ser. No. 916,616
Claims priority, application France, Jul. 23, 1991, 91 09276
Int. Cl.[5] G01D *18/00*
U.S. Cl. 250—338.1 **6 Claims**

1. An imaging system with integrated measurement of wear in at least one of its optical elements working in transmission mode in a given spectral band, said system including an input optical element, a combination of optical elements and an imaging detector on which there is projected, in imaging mode, an incident beam coming from an observed scene by means of the combination of optical elements, wherein said system comprises:
means to generate a reference test pattern having a temperature difference defined with precision;
means for the servo-control of the temperature difference of the reference test pattern, designed to give the imaging detector a known reference modulation transfer rate to the imaging detector, irrespectively of the ambient temperature;
optical means which, in wear measurement mode, define an optical path designed to form an image of the reference



test pattern on the imaging detector through the optical element to be checked;
means to measure the modulation transfer rate and the rate of transmission of light through the optical element to be controlled on the basis of the variation in the amplitude of the signal given by the imaging detector;
and alarm means designed to report the presence of an optical element, the degree of wear of which is greater than a critical value.

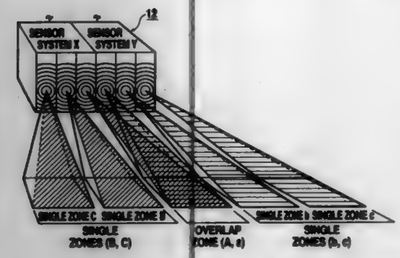
5,296,706
SHUTTERLESS MAINSTREAM DISCRIMINATING ANESTHETIC AGENT ANALYZER
James R. Braig, Oakland, Calif.; Daniel S. Goldberger, Boulder, Colo.; Mark L. Yelderman, Plano, Tex., and Roger O. Herrera, Oakland, Calif., assignors to Critikon, Inc., Tampa, Fla.
Filed Dec. 2, 1992, Ser. No. 985,793
Int. Cl.[5] G01J *5/2*
U.S. Cl. 250—339 **20 Claims**



17. An infrared energy detector for measuring the amount of incident infrared radiation received from a source of infrared energy, comprising:
a plurality of thermopile detectors disposed so as to receive incident radiation from said infrared radiation source via respective optical channels and to produce first electrical signals representative of the received incident radiation and ambient temperature transients;
a separate reference thermopile detector for each of said thermopile detectors, each reference thermopile detector being connected in parallel opposed manner with its corresponding thermopile detector and outputting second electrical signals representative of ambient temperature transients; and
means for shielding said reference thermopile detectors from said infrared energy source.

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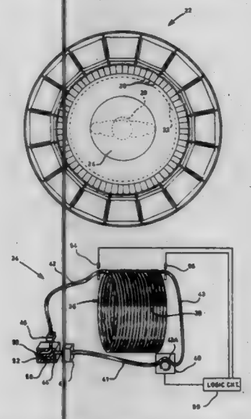
5,296,707
APPARATUS FOR DETECTING MOVEMENT OF HEAT SOURCE
Shinya Nozu, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan
Filed May 26, 1992, Ser. No. 888,153
Claims priority, application Japan, Jun. 3, 1991, 3-041141[U]
Int. Cl.[5] G01J *5/08*; G01K *7/07*
U.S. Cl. 250—353 10 Claims



1. A heat source movement detecting system comprising:
a sensor section including infrared detecting means for detecting change in temperature in a heat source;
means for dividing the area to be observed by said infrared detecting means into a plurality of zones;
means for overlapping at least two of said zones to form (a) at least one overlap zone comprising said at least two zones and (b) single zones without overlap; and
discriminating means for judging the movement of the heat source between at least one of the single zones and the at least one overlap zone and between different single zones;
said heat source movement detecting system being able to detect the movement of the heat source over the area to be observed by said sensor section by judging the movement of the heat source between at least one of the single zones and the at least one overlap zone, and between different single zones;
wherein said infrared detecting means comprises at least two infrared sensors X and Y, the dividing means divides the area to be observed by said infrared sensor X into at least three single zones A, B and C and the area to be observed by said infrared sensor Y into at least three single zones a, b and c, said overlapping means combines said single zones A and a to form an overlap zone (A, a), and said discriminating means is able to judge the movement of the heat source between the single zones B and b, between the overlap zone (A, a) and the single zone B, and between the overlap zone (A, a) and the single zone b, wherein said heat source movement detecting system can detect the movement of the heat source over the entire area observed by said sensor section.

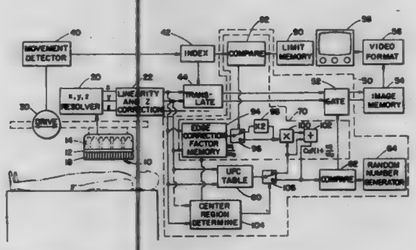
5,296,708
METHOD AND APPARATUS FOR TRANSMISSION MEASUREMENTS TO FORM A 3-D IMAGE IN TOMOGRAPHY APPLICATIONS
J. Clifton Moyers, Anderson County, and Ronald Nutt, Knox County, both of Tenn., assignors to CTI, Inc., Knoxville, Tenn.
Filed Mar. 26, 1993, Ser. No. 37,303
Int. Cl.[5] G01T *1/161*
U.S. Cl. 250—363.03 15 Claims

1. A system for determining 3-D data of radiation transmission within an object positioned in a tomograph device, said device having radiation detectors defining a plurality of faces of said radiation detectors, said system comprising:
a conduit formed from cylindrical tubing, said tubing having a selected interior configuration, said conduit having an external configuration so as to have a portion positioned adjacent each of said plurality of radiation detector faces, said conduit having an inlet and an outlet;
a transport fluid contained within said conduit;
a pump for circulating said transport fluid within said conduit, said pump having an inlet and an outlet, said pump inlet being in fluid communication with said outlet of said conduit;
a selected point source of radioactive radiation positioned within said tubing for circulating through said conduit by circulation of said transport fluid, said radiation directed



through the object and received by said detectors of said tomograph device;
storage shield for containing said source of radioactivity when not being circulated through said conduit, said storage shield having an inlet in fluid communication with said outlet of said conduit and an outlet in fluid communication with said inlet to said pump; and
signal processing circuitry connected to outputs of said detectors of said tomograph device to determine transmission data of radiation from said source of radiation during passage of said radiation through the object.

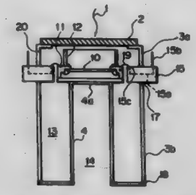
5,296,709
UNIFORMITY CORRECTION OF WHOLE BODY IMAGES TAKEN WITH NON-RECTANGULAR DETECTORS
Gary G. Jarkewicz, Willoughby, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio
Filed Jun. 4, 1992, Ser. No. 893,465
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.07 9 Claims



9. A nuclear medicine camera comprising:
a detector ith a non-rectangular radiation receiving face,

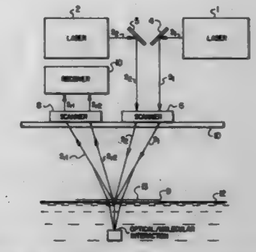
which radiation receiving face has a maximum dimension W_0 in a longitudinal direction for each of a first plurality of longitudinally extending paths and shorter dimensions than W_0 in the longitudinal direction for each of a second plurality of longitudinal extending paths;
a means for moving the detector head longitudinally;
a means for determining a coordinate location on the non-rectangular radiation receiving face of each incident radiation event;
a means for providing a signal indicative of longitudinal movement of the detector;
a means for translating the coordinates in accordance with the longitudinal detector movement signal;
a uniformity correction means for altering a number of radiation event s for each coordinate location to correct for intrinsic non-uniformity of the detector head;
an adjusting means for adjusting the number of radiation events altered by the uniformity correction means to cause a higher percentage of radiation events along the second plurality of longitudinally extending paths of dimension less than W_0 than along the first plurality of longitudinally extending paths of dimension W_0 to be counted;
an image memory means for storing the counts corresponding to each pixel of a resultant image representation.

5,296,710
INFRARED RADIATION DETECTOR
Katsuhiro Ohno, Hyogo; Akifumi Wada; Yousuke Sugiura, both of Kanagawa, and Masatoshi Yasunaga, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1992, Ser. No. 868,836
Claims priority, application Japan, Jun. 11, 1991, 3-168926
Int. Cl.[5] G01J *5/04*
U.S. Cl. 250—352 14 Claims



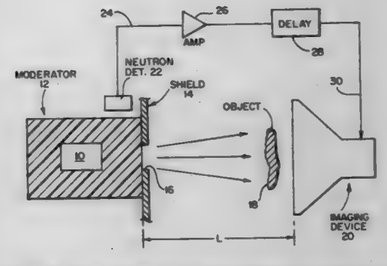
1. An infrared radiation detector having a cryogenic container with an infrared radiation detecting unit cooled at cryogenic temperature with a cooling device, comprising:
a cryogenic container composed of an inner cylinder and an outer cylinder and having an inside thereof held at vacuum pressure;
an infrared radiation detecting unit accommodated within the cryogenic container and disposed at a predetermined position of the inner cylinder; and
a signal output section disposed substantially in the same plane as that of the infrared radiation detecting unit for transferring output of the infrared radiation detecting unit outside of the cryogenic container, the signal output section comprising a multi-layered ceramic lead plate and a plurality of output terminals located outside the cryogenic container on the lead plate and electrically connected to the infrared radiation detecting unit.

5,296,711
TECHNIQUE FOR THE REMOTE DETECTION OF SEA SLICKS
Donald A. Leonard, Cupertino, and Harold E. Sweeney, Menlo Park, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Nov. 5, 1992, Ser. No. 971,872
Int. Cl.[5] G01N *21/65*
U.S. Cl. 250—372 17 Claims



1. A method for remote detection of an oil slick at or near a water surface comprising:
(a) directing a plurality of beams of different wavelengths at substantially the same point on the water surface;
(b) receiving a plurality of Raman shifted signals emanating from the water surface which result from said step of directing a plurality of beams;
(c) measuring the magnitude of each of the plurality of Raman shifted signals; and
(d) ratioing the magnitudes of each of the plurality of Raman shifted signals whereby the existence of a ratio other than one indicates the existence of oil slick on the water surface.

5,296,712
DETECTOR TIME-GATING FOR NEUTRON RADIOGRAPHIC IMAGING
Frank R. Swanson, Freeport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Nov. 12, 1992, Ser. No. 974,509
Int. Cl.[5] G01T *3/00*; G01N *23/05*
U.S. Cl. 250—390.02 4 Claims



1. A method for radiographically inspecting an object comprising the steps:
generating a source of pulsed neutrons;
moderating the speed of the pulsed neutrons;
collimating neutron flow along an axis intersecting the object;
detecting the occurrence of pulsed neutrons and generating an electrical pulse signal therefrom;
delaying the pulse signal by an interval sufficient to allow

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passage of non-moderated neutrons past a detection point located beyond the object; and

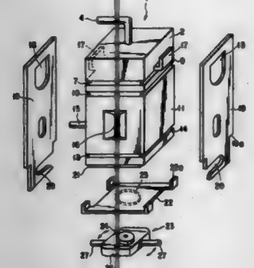
gating an imaging device with the delayed pulse signal when moderated neutrons passing through the object arrive at the imaging device, the device being located at the detection point.

5,296,713

ION SOURCE DEVICE

Hisato Tanaka, Nirasaki, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,786
Claims priority, application Japan, Jan. 23, 1992, 4-32772
Int. Cl.[5] H01J *3/02*
U.S. Cl. 250—423 R 20 Claims



1. An ion source device comprising:

a casing having a slit through which ions are emitted;

means for generating plasma, in which the ions are contained, in the casing;

a first component for forming a part of the casing;

a second component forming another part of the casing, said second component being formed independent of the first component and detachably combined with the first component;

a pair of projections projected from both sides of the first component;

a holder plate contacted with the second component, located in opposite to the first component and having a recess on its side opposed to the first component;

a fixing member contacted with the holder plate and located in opposite to the second component, said fixing member including a fixing member body, a pusher fitted into the recess of the holder plate and struck against the top of the recess, and springs for elastically supporting the pusher in the fixing member body; and

a pair of holder members arranged along both sides of the casing, each holder member being engaged with both of the first component and the fixing member through a first engaging means detachably engaged with the projection of the first component and through a second engaging means detachably engaged with the fixing member;

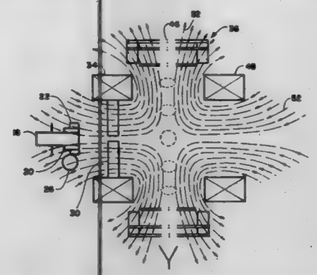
wherein said first and second components and said holder plate are held and fixed between the projections of said first component and the pusher of said fixing member through the holder members.

5,296,714

METHOD AND APPARATUS FOR ION MODIFICATION OF THE INNER SURFACE OF TUBES

James R. Treglio, San Diego, Calif., assignor to ISM Technologies, Inc., San Diego, Calif.

Filed Jun. 29, 1992, Ser. No. 905,350
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—492.3 16 Claims



1. An apparatus for ion modification of the inner surface of tubes which comprises:

a metal ion plasma source;

a drift tube adjacent to the plasma source;

a first ring magnet for guiding plasma from said plasma source into said drift tube;

a second ring magnet spaced from said first magnet and having a current opposite to that in said first magnet so that a magnetic cusp is formed therebetween which guides said plasma outwardly along magnetic field lines;

a radial extractor surrounding the volume between said magnets including means for receiving said plasma from said drift tube, separating ions from said plasma and accelerating said ions radially outwardly;

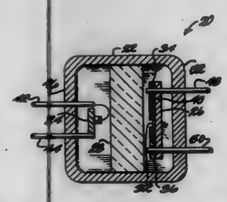
whereby the interior of a tube placed around said apparatus is impacted by said ions.

5,296,715

OPTICALLY ISOLATED SIGNAL COUPLER WITH LINEAR RESPONSE

James W. Kronberg, Aiken, S.C., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 21, 1992, Ser. No. 993,553
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—551 18 Claims



1. Apparatus for optically isolating electric signals, said apparatus for use with an electrical input system and an electrical output system, said apparatus comprising:

a light emitting diode made of silicon carbide, said light emitting diode responsive to electric input signals from said input system and converting said electric input signals to light signals; and

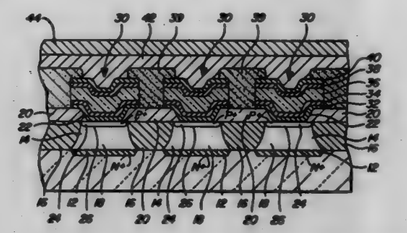
means in spaced relationship to said light emitting diode for receiving light, said light receiving means responsive to said light signals and converting said light signals to electrical output signals, said electric output signals proportional to said electric input signals, said light receiving means in electrical communication with said output system.

5,296,716

ELECTRICALLY ERASABLE, DIRECTLY OVERWRITABLE, MULTIBIT SINGLE CELL MEMORY ELEMENTS AND ARRAYS FABRICATED THEREFROM

Stanford R. Ovshinsky, Bloomfield Hills; Wolodymyr Czubatyj, Warren; Quiyi Ye, Rochester; David A. Strand, West Bloomfield, and Stephen J. Hudgens, Southfield, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 642,984, Jan. 18, 1991, Pat. No. 5,166,758. This application Aug. 19, 1991, Ser. No. 747,053
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] H01L *45/00*
U.S. Cl. 257—3 70 Claims



1. An electrically operated, directly overwritable, multibit, single-cell memory element comprising:

a volume of memory material defining a single cell memory element, said memory material constituting means for assuming a large dynamic range of electrical resistance values with the ability to be set directly to one of a plurality of resistance values within said dynamic range without the need to be set to a specific starting or erased resistance value, regardless of the previous resistance value of said material in response to a selected electrical input signal so as to provide said single cell with multibit storage capabilities; and

a pair of spacedly disposed contacts for supplying said electrical input signal to set said memory material to a selected resistance value within said dynamic range.

5,296,717

RADIATION-EMITTING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Adriaan Valster, and Coen T. H. F. Liedenbaum, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 691,205, Apr. 25, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 94,585
Claims priority, application Netherlands, May 23, 1990, 9001192; May 23, 1990, 9001193
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—13 12 Claims

1. A radiation-emitting semiconductor diode comprising

(a) semiconductor substrate of a first conductivity type,

(b) a buffer layer of said first conductivity type on said substrate, said buffer layer being aluminum-gallium-arsenide (AlGaAs) having an aluminum content equal to or larger than a minimum value,

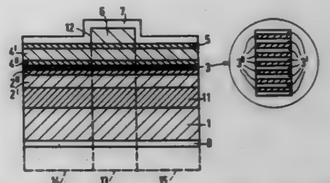
(c) a first cladding layer of said first conductivity type on said buffer layer, said first cladding layer being indium-aluminum gallium-phosphide (InAlGaP),

(d) an active layer on said first cladding layer, said active layer being one of indium-gallium-phosphide (InGaP) or indium-aluminum-gallium-phosphide (InAlGaP),

(e) a second cladding layer of a second conductivity type on said active layer, said second cladding layer being indium-aluminum-gallium-phosphide (InAlGaP),

wherein distribution of indium and gallium atoms or indium and gallium and aluminum atoms on lattice sides in said active layer and distribution of indium and gallium and aluminum atoms on lattice sides in said cladding layers have a degree of disordering by which the bandgap of said active layer and the bandgap of said cladding layers are increased, and

wherein said minimum value of said aluminum content of said buffer layer is proportional to the degree of disordering of said active and cladding layers.

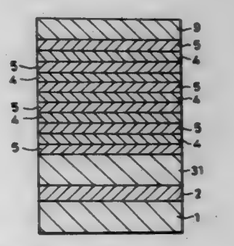


5,296,718

LIGHT EMITTING SEMICONDUCTOR DEVICE HAVING MULTILAYER STRUCTURE

Shigeo Fujita, Kyoto, and Shizuo Fujita, Neyagawa, both of Japan, assignors to Seiwa Electric Mfg. Co., Ltd., Kyoto, Japan

Filed Feb. 18, 1992, Ser. No. 836,428
Claims priority, application Japan, Feb. 21, 1991, 3-027065
Int. Cl.[5] H01L *29/161, 29/205*
U.S. Cl. 257—14 6 Claims

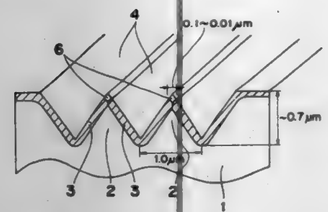


1. A semiconductor device comprising:

a single crystal substrate composed of a III-V compound; and

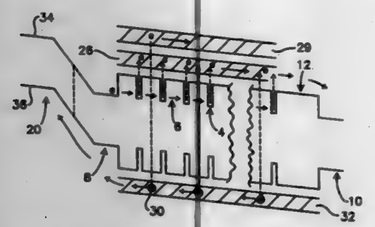
ZnSSe mixed crystal semiconductors and ZnCdSe mixed crystal semiconductors alternately laminated on said substrate.

5,296,719
QUANTUM DEVICE AND FABRICATION METHOD THEREOF
Yoshihiko Hirai; Juro Yasui; Yasuaki Terui; Kiyoshi Morimoto; Atsuo Wada; Kenji Okada; Shin Hashimoto; Shinji Odanaka; Masaaki Niwa, and Kaoru Inoue, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 20, 1992, Ser. No. 915,311
Claims priority, application Japan, Jul. 22, 1991, 3-180830; Jul. 22, 1991, 3-180831; Jul. 22, 1991, 3-180832; Jul. 22, 1991, 3-180834
Int. Cl.[5] H01L *21/308, 27/08*
U.S. Cl. 257—14 9 Claims



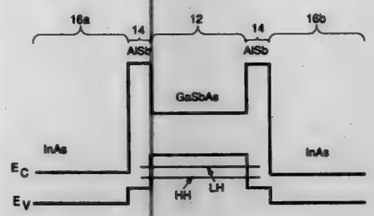
1. A quantum wire structure, comprising:
a silicon substrate comprising a protrusion forming a ridge having a triangular cross section;
a silicon oxide layer formed on the sides of the protrusion; and
a fine conduction line formed in the top portion of the protrusion and in contact with the silicon oxide layers;
wherein the fine conduction line is electrically isolated from the silicon substrate.

5,296,720
APPARATUS AND METHOD FOR DISCRIMINATING AGAINST UNDESIRED RADIATION IN A MULTIPLE QUANTUM WELL LONG WAVELENGTH INFRARED DETECTOR
Cheng P. Wen, Mission Viejo, and Chan-Shin Wu, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 17, 1991, Ser. No. 792,535
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—21 21 Claims



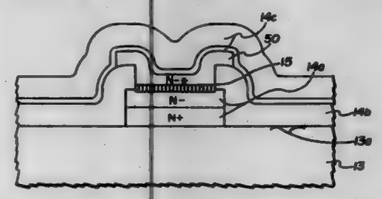
1. A sensor for electromagnetic radiation within a predetermined waveband, comprising:
a multiple quantum well (MQW) structure, said radiation exciting majority charge carriers from said MQW structure into a conduction band, and undesired radiation outside of said predetermined waveband exciting both majority and minority charge carriers,
means for obtaining a flow of said excited majority charge carriers as an indication of the total of the radiation within said predetermined waveband and said undesired radiation, and
means for simultaneously obtaining a flow of said excited minority charge carriers as an indication of the portion of said majority charge carrier flow that is attributable to said undesired radiation.

5,296,721
STRAINED INTERBAND RESONANT TUNNELING NEGATIVE RESISTANCE DIODE
Joel N. Schulman, Agoura; David H. Chow, Newbury Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 31, 1992, Ser. No. 923,397
Int. Cl.[5] H01L *29/205, 29/72*
U.S. Cl. 257—25 13 Claims



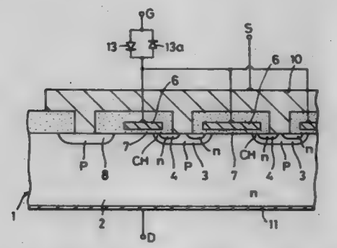
1. A double barrier tunnel diode, comprising:
a quantum well having at least one layer of a semiconductor material;
a pair of electron injection layers on either side of the quantum well, a material of the electron injection layer having a conduction band minimum energy; and
a barrier layer between each of the electron injection layers and the quantum well, the barrier layers having a thickness sufficiently small to permit electrons to tunnel through the barriers and through the valence bands in the quantum well and having a biaxially strained epitaxial relationship with the material of the quantum well, the biaxial strain being sufficient to reduce the energy of the heavy holes in the quantum well to less than the energy of the conduction band minimum energy of the electron injection layers.

5,296,722
ELECTRICALLY ALTERABLE RESISTIVE COMPONENT STACKED ABOVE A SEMICONDUCTOR SUBSTRATE
Hanan Potash, La Jolla; Melvyn E. Genter, and Bruce B. Roesner, both of San Diego, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.
Continuation of Ser. No. 802,572, Dec. 5, 1991, abandoned, which is a division of Ser. No. 237,429, Feb. 23, 1981, Pat. No. 5,148,256. This application Jan. 26, 1993, Ser. No. 9,372
Int. Cl.[5] H01L *45/00*
U.S. Cl. 257—50 4 Claims



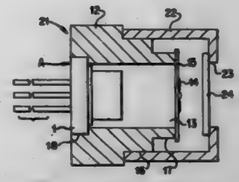
1. An electrically alterable resistive component in an integrated circuit; said circuit including a substrate having a major surface, a patterned insulating layer on said surface, and a polycrystalline silicon member which has large crystalline grains that occur in silicon when it is subjected to temperatures above 600° C.; and said electrically alterable resistive component being comprised of:
a pair of spaced apart conductors, supported by said insulating layer, for applying a threshold voltage thereacross;
a switching material serially coupled between said conductors for receiving said threshold voltage;
said switching material consisting essentially of silicon having less than 10^{17} dopant atoms per CM^3 and having small crystalline grains that occur in silicon which is deposited at temperatures below 600° C. and confined to such temperatures;
whereby said switching material will exhibit a high resistance that will irreversibly switch to a low resistance without the flowing of any metal therethrough upon the application of said threshold voltage thereacross.

5,296,723
LOW OUTPUT CAPACITANCE, DOUBLE-DIFFUSED FIELD EFFECT TRANSISTOR
Takeshi Nobe, Hirakata, and Sigeo Akiyama, Neyagawa, both of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan
Filed Jul. 7, 1992, Ser. No. 909,846
Claims priority, application Japan, Jul. 12, 1991, 3-172600; Jul. 12, 1991, 3-172601
Int. Cl.[5] H01L *31/12*
U.S. Cl. 257—82 10 Claims



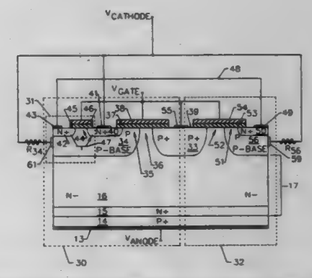
1. A low output-capacitance, double diffused field effect transistor comprising:
a first conduction type semiconductor substrate having two major surfaces;
a drain electrode provided on one of said major surfaces of said semiconductor substrate and connected to a drain terminal;
well regions of a second conduction type in the other of said major surfaces of said semiconductor substrate formed by means of a double diffusion to have source regions of said first conduction type in each well region,
said source regions being provided thereon with a source electrode connected to a source terminal;
channel regions defined in a surface area of said well regions to be between a first conduction type semiconductor zone of said semiconductor substrate and said source regions;
gate electrodes respectively provided above each of said channel regions with an insulating film interposed between said gate electrodes and said channel regions,
said gate electrodes being connected to a gate terminal through at least a capacitance component means for lowering the output capacitance of the double diffused field effect transistor; and
a guard ring region of said second conduction type disposed in said first conduction type semiconductor zone to be outside said well regions including said channel regions.

5,296,724
LIGHT EMITTING SEMICONDUCTOR DEVICE HAVING AN OPTICAL ELEMENT
Shiro Ogata, Nishigyo; Koichi Imanaka, Minami; Hiroshi Goto, Yamatokoriyama; Yoshinori Ito, Takatsuki, and Kouroa Kitajima, Higashiyodogawa, all of Japan, assignors to Omron Corporation, Kyoto, Japan
Filed Apr. 29, 1991, Ser. No. 692,901
Claims priority, application Japan, Apr. 27, 1990, 2-46394[U]; Apr. 27, 1990, 2-112892; May 22, 1990, 2-131550; Aug. 10, 1990, 2-85100[U]
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—98 30 Claims



1. A light emitting semiconductor device comprising:
a light emitting element;
an optical element for condensing, collimating or diverging a ray emitted from the light emitting element which is packaged as a single unit with said light emitting element;
said optical element and light emitting element being responsive to changes in temperature which produce changes in a condensing angle, collimations, or diverging angle of light emitted by said unit; and,
means for compensating for said temperature induced changes, said compensating means being constructed as at least part of a protective cap which surrounds and protects said light emitting element, said optical element being connected to said protective cap, said protective cap changing a focal distance of said optical element in response to changes in temperature.

5,296,725
INTEGRATED MULTICELLED SEMICONDUCTOR SWITCHING DEVICE FOR HIGH CURRENT APPLICATIONS
Mahalingam Nandakumar, and Bantval J. Baliga, both of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.
Filed Jun. 10, 1992, Ser. No. 896,656
Int. Cl.[5] H01L *31/111, 29/74*
U.S. Cl. 257—138 30 Claims



1. A semiconductor switching device comprising:
a semiconductor substrate having first and second opposing faces;
a cathode contact on said first face;

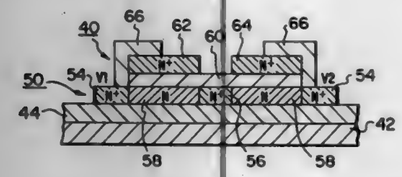
an anode contact on said second face;
a first thyristor in said semiconductor substrate for producing a predetermined current, said first thyristor including a first emitter region of first conductivity type at said first face, contacting said cathode contact, and an anode region of second conductivity type at said second face, contacting said anode contact;
a second thyristor in said semiconductor substrate, said second thyristor being located closer to an edge of said semiconductor substrate than said first thyristor and including a second emitter region which is electrically disconnected from said cathode contact at said first face; and
current exporting means, electrically connected between said first thyristor and said second thyristor and electrically disconnected from said cathode contact at said first face, for exporting a portion of said predetermined current to said second thyristor;
wherein said first thyristor is electrically connected in parallel, between said cathode contact and said anode contact, with the series combination of said current exporting means and said second thyristor.

5,296,726

HIGH VALUE RESISTIVE LOAD FOR AN INTEGRATED CIRCUIT

Thomas W. MacElwee, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 1, 1993, Ser. No. 41,378
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—213 **16 Claims**



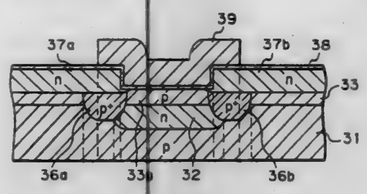
1. A highly resistive load for an integrated circuit formed on a semiconductor substrate, comprising
a highly resistive semiconductor layer of a first conductivity type isolated from the semiconductor substrate by a first dielectric layer;
the high resistivity semiconductor layer having defined therein heavily doped regions of said first conductivity type forming first and second source regions and a common drain region of a pair of field effect transistors coupled in series,
the high resistivity semiconductor layer forming first and second resistive channel regions between the common drain region and the first and second source regions respectively,
an overlying second dielectric layer;
a second conductive layer defining first and second gate electrodes overlying the first and second channel regions respectively, the gate electrodes being isolated from each other and from the channel regions by the second dielectric layer;
means for holding each gate electrode to a respective adjacent source voltage to maintain a zero source-gate voltage for biasing the transistor into a subthreshold, high impedance, "off" state;
first and second contacts of the resistive load structure provided to the heavily doped source regions, whereby the coupled transistors are operable together in accumulation mode as a symmetrically 'off' state device presenting a highly resistive load between contacts to respective first and second source regions.

5,296,727

DOUBLE GATE FET AND PROCESS FOR MANUFACTURING SAME

Shinichi Kawai, Tokyo, and Tetsuo Izawa, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 748,923, Aug. 23, 1991, abandoned. This application May 5, 1993, Ser. No. 57,016
Claims priority, application Japan, Aug. 24, 1990, 2-224100
Int. Cl.[5] H01L *29/78, 21/265*
U.S. Cl. 257—260 **13 Claims**



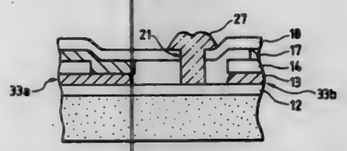
1. An FET comprising
a semiconductor substrate having a main surface, the semiconductor substrate being of a first conductivity type;
a first semiconductor layer formed on the semiconductor substrate, the first semiconductor layer comprising a channel region of the first conductivity type and having opposite ends, a lower surface on the main surface of the semiconductor substrate and an upper surface;
a first gate comprising a buried, doped region formed within the semiconductor substrate and having an upper surface at least adjacent to the main surface of the semiconductor substrate and disposed under the channel region, the first gate being of a second conductivity type opposite to the first conductivity type, the first gate and the channel region forming a pn junction;
a gate insulating layer on the upper surface of the channel region;
a gate electrode formed on the gate insulating layer, above the upper surface of the channel region;
source and drain regions formed in association with the first semiconductor layer and respectively in contact with said opposite ends of the channel region, the source and drain regions being of the second conductivity type.

5,296,728

COMPOUND SEMICONDUCTOR DEVICE WITH DIFFERENT GATE-SOURCE AND GATE-DRAIN SPACINGS

Yoshikazu Nakagawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 813,980, Dec. 26, 1991, abandoned, which is a division of Ser. No. 658,218, Feb. 20, 1991, Pat. No. 5,110,751. This application Feb. 24, 1993, Ser. No. 23,151
Claims priority, application Japan, Feb. 26, 1990, 2-45225
Int. Cl.[5] H01L *29/80, 31/112*
U.S. Cl. 257—282 **4 Claims**



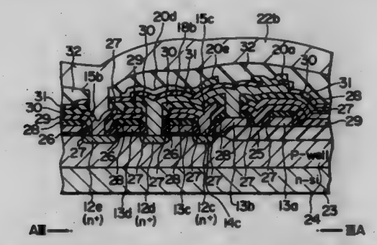
1. A compound semiconductor device comprising:
a compound semiconductor layer;
a source region and a drain region formed on the compound semiconductor layer;
a composite structural layer including at least first, second and third layer portions formed over the source and drain regions having an opening located between the source and drain regions and forming edges of the first, second and third layer portions; and
a gate electrode having a perpendicular portion extending through the opening in the structural layer substantially perpendicularly to the compound semiconductor layer and located closer to the source region than to the drain region, the edges of at least one of the second and third layer portions adjacent to the source region and the drain region, respectively, being spaced from the perpendicular portion of the gate electrode by different distances, and the first layer portion extending above the second and third layer portions to engage the gate electrode, the gate electrode also having an enlarged portion above the first layer portion of the structural layer which extends beyond the opening therein in a direction parallel to the structural layer so that the structural layer supports the enlarged portion of the gate electrode.

5,296,729

SEMICONDUCTOR MEMORY DEVICE HAVING STATIC RANDOM ACCESS MEMORY

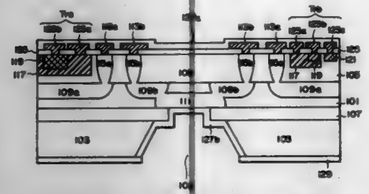
Toshiaki Yamanaka, Iruma; Norio Hasegawa; Toshihiko Tanaka, both of Tokyo; Takashi Hashimoto, Hachioji; Koichiro Ishibashi, Tokyo; Naotaka Hashimoto, Kokubunji; Akihiro Shimizu, Akishima; Yasuhiro Sugawara, Hachioji; Tokuo Kure, Tokyo; Shimpei Iijima, Akishima; Takashi Nishida, Tokyo, and Eiji Takeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi VLSI Engineering Corp., Kodaira, both of Japan

Filed Oct. 25, 1991, Ser. No. 782,623
Claims priority, application Japan, Oct. 26, 1990, 2-287058
Int. Cl.[5] H01L *27/02, 29/00, 29/78*
U.S. Cl. 257—377 **4 Claims**



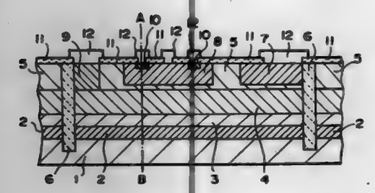
1. A semiconductor memory device having a plurality of word lines, a plurality of complementary data line pairs each intersecting said plurality of word lines, and a plurality of memory cells provided at intersections of said plurality of word lines and said plurality of complementary data line pairs,
each of said memory cells having a first and a second driver insulated gate field effect transistor of a first conductivity type, a first and a second load insulated gate field effect transistor of a second conductivity type different from the first conductivity type of said driver insulated gate field effect transistors, and a first and a second transfer insulated field effect transistor, said first and said second driver insulated gate field effect transistor and said first and said second transfer insulated gate field effect transistor being formed on a major surface of a semiconductor substrate,
a gate of said first driver insulated gate field effect transistor and a gate of said first load insulated gate field effect transistor being coupled with a drain of said second driver insulated gate field effect transistor and a drain of said second load insulated gate field effect transistor, a gate of said second driver insulated gate field effect transistor and a gate of said second load insulated gate field effect transistor being coupled with a drain of said first driver insulated gate field effect transistor and a drain of said first load insulated gate field effect transistor so as to form complementary inverter circuits, thereby establishing a flip-flop circuit, said drain of said first driver insulated gate field effect transistor and said drain of said first load insulated gate field effect transistor being a first storage node of said flip-flop circuit, said drain of said second driver insulated gate field effect transistor and said drain of said second load insulated gate field effect transistor being a second storage node of said flip-flop circuit, said first storage node of said flip-flop circuit being coupled to a first line of said complementary data line pair via a source-drain path of said first transistor insulated gate field effect transistor, said second storage node of said flip-flop circuit being coupled to a second line of said complementary data line pair via a source-drain path of said second transfer insulated gate field effect transistor,
said gates of said first and second driver insulated gate field effect transistors and said gates of said first and second transfer insulated gate field effect transistors being formed by a first level conductive layer on said major surface of said semiconductor substrate,
a first coupling layer for coupling sources of said first and second driver insulated gate field effect transistors with a predetermined potential being formed on said major surface of said semiconductor substrate,
a second coupling layer for coupling either a source or a drain of said first transfer insulated gate field effect transistor with said first line of said complementary data line pair being formed on said major surface of said semiconductor substrate,
a third coupling layer for coupling either a source or a drain of said second transfer insulated gate field effect transistor with said second line of said complementary data line pair being formed on said major surface of said semiconductor substrate, said first coupling layer, said second coupling layer and said third coupling layer being formed by a second level conductive layer on said major surface of said semiconductor substrate,
said gates of said first and second load insulated gate field effect transistors being formed by a third level conductive layer on said major surface of said semiconductor substrate,
sources and said drains of said first and second load insulated gate field effect transistors being formed by a fourth level conductive layer on said major surface of said semiconductive substrate;
said first line and said second line of said complementary data line pair being formed by a fifth level conductive layer on said major surface of said semiconductor substrate,
said first line of said complementary data line pair formed by said fifth level conductive layer being coupled with either said source or said drain of said first transfer insulated gate field effect transistor via said second coupling layer formed by said second level conductive layer,
said second line of said complementary data line pair formed by said fifth level conductive layer being coupled with either said source or said drain of said second transfer insulated gate field effect transistor via said third coupled layer formed by said second level conductive layer, and
said second level conductive layer being patterned using a photo-mask having a phase shifter so as to form said first coupling layer, said second coupling layer and said third coupling layer.

5,296,730
SEMICONDUCTOR PRESSURE SENSOR FOR SENSING PRESSURE APPLIED THERETO
Osamu Takano, and Koji Matsumi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1993, Ser. No. 680
Claims priority, application Japan, Jan. 16, 1992, 4-005655
Int. Cl.[5] A01L *29/66*
U.S. Cl. 257—417 5 Claims



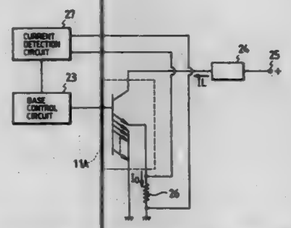
1. A semiconductor pressure sensor comprising:
a semiconductor substrate having a first surface, a second surface opposite the first surface and a recess formed in the first surface, the recess defining an interior surface including a bottom surface;
a diffusion region formed in the semiconductor substrate extending from the bottom surface to the second surface; and
a conductive layer formed on the second surface, electrically connected to the diffusion region.

5,296,731
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH ALPHA RAYS RESISTANCE
Takenori Morikawa, Tokyo, Japan, assignor to NEC Corporation, Japan
Division of Ser. No. 661,438, Feb. 25, 1991, abandoned. This application Sep. 30, 1992, Ser. No. 954,698
Claims priority, application Japan, Feb. 27, 1990, 2-47685
Int. Cl.[5] H01L *27/02, 27/04*
U.S. Cl. 257—546 7 Claims



1. A semiconductor integrated circuit device having alpha rays resistance, said device comprising:
a semiconductor substrate of a first conductivity type;
a first semiconductor layer of said first conductivity type having a high concentration of impurity atoms, said layer being formed on a predetermined area of said semiconductor substrate;
a second semiconductor layer of said first conductivity type having a low concentration of impurity atoms, said layer being formed on said first semiconductor layer;
a third semiconductor layer of a second conductivity type having a high concentration of impurity atoms, said layer being formed on said second semiconductor layer and being separated from said first semiconductor layer by said second semiconductor layer;
a fourth semiconductor layer of said second conductivity type having a low concentration of impurity atoms, said layer being formed on said third semiconductor layer; and
at least one isolation region which extends from a surface of said fourth semiconductor layer into said semiconductor substrate with said isolation region penetrating said first semiconductor layer.

5,296,732
BIPOLAR TRANSISTOR
Hitoshi Iwata; Koichi Jinkai, and Yasuo Imaeda, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Continuation of Ser. No. 317,410, Mar. 1, 1989, abandoned. This application Mar. 9, 1993, Ser. No. 29,966
Claims priority, application Japan, Mar. 2, 1988, 63-49427
Int. Cl.[5] H01L *29/40, 29/72*
U.S. Cl. 257—565 13 Claims

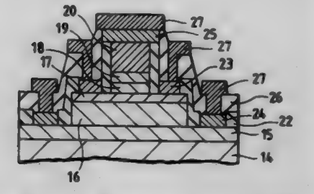


1. An apparatus including a bipolar transistor of the multi-emitter type, comprising:
a substrate having a first side and a second side;
a base diffusion layer formed on said first side of said substrate;
a plurality of emitter diffusion layers formed on said base diffusion layer in a planar array;
a plurality of emitter electrode films formed respectively on said emitter diffusion layers;
a base electrode film formed on said base diffusion layer;
a collector electrode film formed on said second side of said substrate;
a wiring film connecting more than one but less than all of said emitter electrode films;
an inter-layer insulation film for covering said base electrode film;
an auxiliary wiring film connected to said emitter electrode films not connected to said wiring film; and
means, connected to said auxiliary wiring film, for measuring the current flowing through the emitter electrode films connected to said auxiliary wiring film, and for determining the current flowing through the emitter electrode films connected to said wiring film from the measured current flowing through the emitter electrode films connected to said auxiliary wiring film.

5,296,733
HETERO JUNCTION BIPOLAR TRANSISTOR WITH IMPROVED ELECTRODE WIRING CONTACT REGION
Chushiroh Kusano, Saitama; Hiroshi Masuda, Tokyo; Katsuhiko Mitani, Tokyo; Kazuhiro Mochizuki, Tokyo; Masaru Miyazaki, Tokyo; Masahiko Kawata, Tokyo, and Susumu Takahashi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 19, 1990, Ser. No. 615,381
Claims priority, application Japan, Nov. 27, 1989, 1-304814
Int. Cl.[5] H01L *29/72, 29/06*
U.S. Cl. 257—586 27 Claims

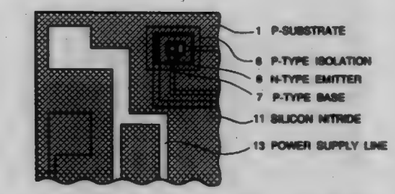
1. A hereto junction bipolar transistor comprising:
a semi-insulative compound semiconductor substrate;
a first compound semiconductor layer having a first conductivity type formed on said semi-insulative compound semiconductor substrate;

a second compound semiconductor layer having a second conductivity type opposite to said first conductivity type formed on a top surface of said first compound semiconductor layer and having a predetermined shape;
a third compound semiconductor layer having said first conductivity type formed on a top surface of said second compound semiconductor layer and having a desired shape and composed of material differing from that of said second compound semiconductor layer;
a fourth compound semiconductor layer having said first conductivity type formed on a top surface of said third compound semiconductor layer and having a desired shape and composed of material differing from that of said third compound semiconductor layer;



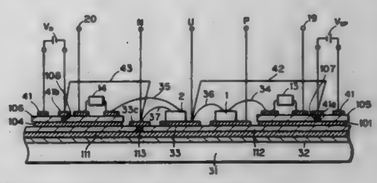
an emitter pattern of conductive material formed on a top surface of said fourth compound semiconductor layer;
an electrode formed on a top surface of said emitter pattern;
a wiring formed on a top surface of said electrode; and
an insulating film being disposed along side surfaces of said third compound semiconductor layer, said fourth compound semiconductor layer and said emitter pattern,
wherein said side surfaces of said third compound semiconductor layer, said fourth compound semiconductor layer, and said emitter pattern are substantially coplanar and
wherein an area of contact between said top surface of said electrode and said wiring is equal to or larger than area of said top surface of said fourth compound semiconductor layer.

5,296,734
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING SILICON NITRIDE PROVIDED AS INSULATOR OF CAPACITOR
Megumi Satoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 22, 1992, Ser. No. 902,110
Claims priority, application Japan, Jun. 21, 1991, 3-149084
Int. Cl.[5] H01L *29/34*
U.S. Cl. 257—638 3 Claims



1. An integrated circuit comprising a semiconductor substrate, a plurality of islands formed at a principal surface of the substrate and isolated from one another, an interlayer insulating film formed to substantially cover said principal surface of said substrate, a capacitor formed in a selected one of said islands and having a dielectric layer which is formed within an opening formed in said interlayer insulating film above said selected island, said dielectric layer including a silicon nitride film, and a power supply line conductor formed on said interlayer insulating film without intermediary of said silicon nitride film, said silicon nitride film extending to cover all the surface of said interlayer insulating film excluding an area under said power supply line conductor.

5,296,735
POWER SEMICONDUCTOR MODULE WITH MULTIPLE SHIELDING LAYERS
Masanori Fukunaga, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 9, 1991, Ser. No. 727,449
Claims priority, application Japan, Jan. 21, 1991, 3-4828
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] H01L *23/34, 23/522*
U.S. Cl. 257—659 7 Claims



1. A semiconductor device comprising:
a metal substrate;
a first insulating layer formed on said metal substrate;
a first shield pattern composed of conductors formed on said first insulating layer;
a supply terminal to which a reference potential is applied;
first connection means for connecting said first shield pattern to said supply terminal;
a second insulating layer formed on said first shield pattern;
second and third shield patterns composed of conductors formed on said second insulating layer;
a third insulating layer formed on said second shield pattern;
a fourth insulating layer formed on said third shield pattern;
first and second power switching elements formed on said first insulating layer, said first and second power switching elements each having a first main terminal and a second main terminal, the second main terminal of said first power switching element being connected to the first main terminal of said second power switching element to form an output node;
a first control circuit formed on said third insulating layer for turning said first power switching element ON/OFF;
a second control circuit formed on said fourth insulating layer for turning said second power switching element ON/OFF;
second connection means for connecting said second shield pattern to the second main terminal of said first power switching element; and
third connection means for connecting said third shield pattern to the second main terminal of said second power switching element.

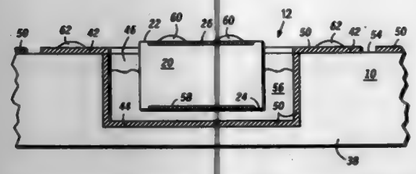
5,296,736
LEVELED NON-COPLANAR SEMICONDUCTOR DIE CONTACTS
John K. Frei, Mesa; Howard D. Kueth, Tempe, and Bruce R. Tegge, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 21, 1992, Ser. No. 993,563
Int. Cl.[5] H01L *23/02, 23/12, 39/02, 23/48*
U.S. Cl. 257—668 16 Claims

1. A carrier for substantially leveling non-coplanar semiconductor die contacts, said carrier comprising:
a substrate having an external surface and a cavity therein, said cavity being bordered by cavity walls of said substrate that extend from said external surface a predetermined distance into an interior of said substrate and being

bordered by a cavity floor of said substrate that extends between said cavity walls;

an electrically continuous conductive layer having a first portion overlying said cavity floor, a second portion on said cavity walls, and a third portion on said external surface such that said first portion is electrically coupled to said third portion via said second portion of said conductive layer;

a semiconductor die having first and second active contacts located respectively on first and second non-coplanar



surfaces, and wherein said cavity is dimensioned so that said semiconductor die fits within said cavity, said first active contact being electrically coupled to said first portion of said conductive layer, and said second active contact being approximately co-planar with said third portion of said conductive layer; and

a first conductive bump positioned on said third portion of said conductive layer, said first conductive bump being electrically coupled to said first active contact of said semiconductor die by said conductive layer.

5,296,737

SEMICONDUCTOR DEVICE WITH A PLURALITY OF FACE TO FACE CHIPS

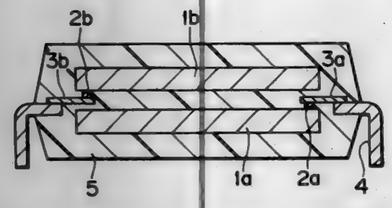
Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura; Akihiro Yaguchi, Ibaraki; Nae Yoneda, Ibaraki; Ryuji Kohno, Ibaraki; Gen Murakami, Tama, and Ichiro Anjoh, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 713,100, Jun. 11, 1991. This application Sep. 6, 1991, Ser. No. 755,655

Claims priority, application Japan, Sep. 6, 1990, 2-236711

Int. Cl.[5] H01L *23/28*

U.S. Cl. 257—673 **20 Claims**



1. A semiconductor device comprising a plurality of semiconductor chips; electrodes formed on circuit surfaces of said plurality of semiconductor chips; inner leads comprised of a metal foil and respectively bonded at first ends thereof to said electrodes; outer leads each having a predetermined surface at a first end thereof bonded to a second end of at least one of said inner leads; and a sealing material sealing said plurality of semiconductor chips, said electrodes, said inner leads, and part of each of said outer leads; wherein said semiconductor chips are laminated in such a manner that those surfaces of said semiconductor chips on which their respective circuits are formed are disposed in facing relation to each other wherein all of the outer leads are part of a lead frame having a first surface facing in a first direction and a second surface facing in a second direction opposite to said first direction, wherein all of the predetermined surfaces of the outer leads are formed on only one of the first and second surface of the lead frame, and wherein the inner leads are connected to the outer leads only at said predetermined surfaces of the outer leads, whereby the inner leads can be connected by bonding between the electrodes of the plurality of semiconductor chips and the outer leads without having to invert the lead frame.

5,296,738

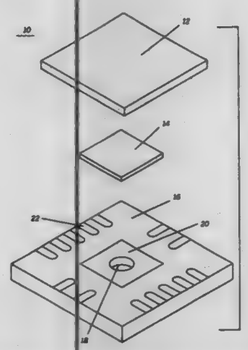
MOISTURE RELIEF FOR CHIP CARRIER

Bruce J. Freyman, Plantation; Frank J. Juskey, Coral Springs, and Barry M. Miles, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 726,660, Jul. 8, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 927,774

Int. Cl.[5] H01L *23/28*

U.S. Cl. 257—684 **12 Claims**



1. An overmolded pad array chip carrier package, comprising:

a semiconductor die;

a printed circuit board substrate for receiving said semiconductor die, said printed circuit board substrate having first and second opposed major surfaces and said substrate having at least one hole below said die;

an adhesive applied to said printed circuit board substrate for mounting said semiconductor die to said printed circuit board substrate, at least a portion of said adhesive filling at least a portion of said hole;

at least one wirebond from said printed circuit board substrate to said semiconductor die;

an overmolded epoxy cover encapsulating said semiconductor die, said at least one wirebond, and portions of said printed circuit board substrate first surface so as to expose said portion of said adhesive to an environment.

5,296,739

CIRCUIT ARRANGEMENT WITH A COOLING MEMBER

Heinrich Heilbronner, Stein; Werner Tursky, Schwabach; Christian Goebl, and Thomas Frank, both of Nürnberg, all of Fed. Rep. of Germany, assignors to Export-Contor Aussenhandelsgesellschaft mbH, Nürnberg, Fed. Rep. of Germany

Filed Mar. 31, 1992, Ser. No. 861,186

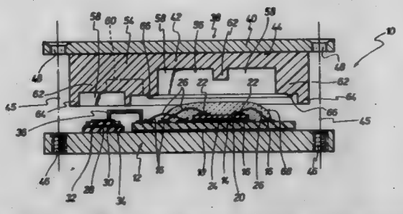
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1991, 4111247; Jul. 6, 1991, 4122428

Int. Cl.[5] H01L *23/02, 23/12*

U.S. Cl. 257—687 **22 Claims**

1. A circuit arrangement comprising at least one mounting plate, at least one chip-form component to be cooled, which is disposed on the mounting plate, contact surface means on the mounting plate, connecting means electrically conductively connecting the chip-form component to associated contact

surface means, a cooling member on which the at least one mounting plate is arranged, and a pressing arrangement adapted to press the at least one mounting plate against the cooling member, the pressing arrangement including at least one mounting element which is stable in respect of heat and shape and a pressing means comprising a cushion element of electrically insulating, elastically yielding material on the side



of the mounting element which is towards the cooling member and adapted to press against at least one of the chip-form component and the mounting plate in electrically insulated relationship in the vicinity thereof, further including at least one bridge element associated with the cushion element to delimit same at least at one side, the bridge element comprising a material which is stable in respect of heat and shape.

5,296,740

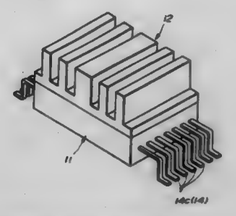
METHOD AND APPARATUS FOR A SEMICONDUCTOR DEVICE HAVING A RADIATION PART

Michio Sono, and Junichi Kasai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 13, 1992, Ser. No. 851,208

Int. Cl.[5] H01L *23/02, 23/28, 23/12*

U.S. Cl. 257—706 **6 Claims**



1. A semiconductor device comprising:

a stage having top and bottom surfaces;

a semiconductor element mounted on the top surface of the stage;

a package part made of a first resin which encapsulates the semiconductor element and the stage therewithin and such that a surface of the package part and the bottom surface of the stage lie in substantially a common plane; and

a radiation part made of a second resin and molded directly on the bottom surface of the stage and the surface of the package part and thereby having a surface lying in the common plane and in integral and thermally conductive relationship with the bottom surface of the stage, said second resin including a filler material comprising metal powder and insulator powder materials selected to provide a value of thermal conduction of the second resin which is greater than that of the first resin, said radiation part having a fin structure extending outwardly from the surface thereof lying in the common plane.

5,296,741

CARRIER FOR SEMICONDUCTOR ELEMENT PACKAGES

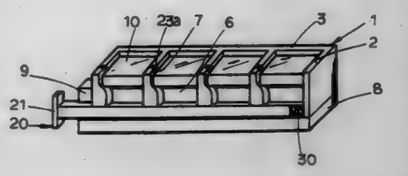
Dae S. Kim, Kyungsangbook, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook, Rep. of Korea

Continuation of Ser. No. 813,625, Dec. 26, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 95,045

Claims priority, application Rep. of Korea, Jul. 13, 1991, 10831/1991

Int. Cl.[5] H01L *23/16, 23/02, 23/12*

U.S. Cl. 257—723 **2 Claims**



1. A carrier for semiconductor element packages comprising:

a carrier body having at least one series of laterally aligned chambers for receiving the packages; and

means for positioning the packages for being removed from the chambers, said means for positioning being disposed in said carrier body and including means for inclining the packages;

wherein each of said means for positioning comprises:

a pushing member mounted to said carrier body to move the packages laterally and slidably along a horizontal direction and provided with a sliding bar extended in the horizontal direction and a plurality of spaced vertical projections formed on the sliding bar, each of the projections having a slant surface at one side of upper part thereof adapted to incline the packages for removal when the pushing member is moved;

guide means formed at the carrier body and adapted to guide the sliding movement of said pushing member; and

elastic means adapted to return the pushing member to its original position and inserted between an end of said pushing member and said carrier body.

5,296,742

MULTILAYERED INTEGRATED CIRCUIT CHIP WIRING ARRANGEMENT

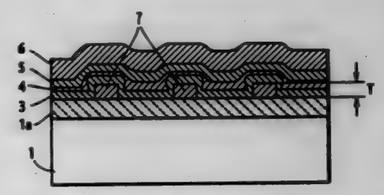
Isami Sakai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,731

Claims priority, application Japan, Nov. 21, 1990, 2-316906

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—758 **4 Claims**



1. An integrated circuit chip, comprising:

a substrate in which active circuits are formed;

a lower layer of a plurality of parallel conductors formed over said substrate, a ratio of the thickness of the lower layer conductors to the separation between the lower layer conductors being within either of two ranges of

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values, one range having an upper limit of and including 0.25 and another range having a lower limit of and including 0.45;

a first insulating layer of silicon dioxide over said lower layer conductors, a second insulating layer of silica over said first insulating layer, and a third insulating layer of silicon dioxide over said second insulating layer, said third insulating layer having troughs corresponding to spaces where the lower layer conductors are absent over said substrate and crests corresponding to spaces where the lower layer conductors are present over said substrate; and

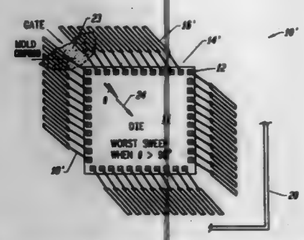
an upper layer of parallel conductors formed over said third insulating layer, the upper layer conductors extending in a direction normal to the length of said lower layer conductors, said upper layer conductors having a minimum step coverage of 50%.

5,296,743

PLASTIC ENCAPSULATED INTEGRATED CIRCUIT PACKAGE AND METHOD OF MANUFACTURING THE SAME

Luu T. Nguyen, San Jose, and Hien P. Takiar, Fremont, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 7, 1993, Ser. No. 58,424
Int. Cl.[5] H01L *29/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—784 **15 Claims**



1. An integrated circuit package encapsulated by plastic which during formation of the package was caused to flow over the latter in a given flow direction, said package comprising:

(a) an IC chip including an array of chip output/input terminals;

(b) means for supporting said chip, said support means including an array of electrically conductive leads, all of which are provided for connection with the output/input terminals of said IC chip, all of said leads extending in directions that define acute angles of less than 45° with said given flow direction;

(c) bonding wires connecting said chip output/input terminals with respective ones of said leads such that each bonding wire extends in substantially the same direction as its connected lead, whereby all of said bonding wires define acute angles of less than 45° with said given flow direction; and

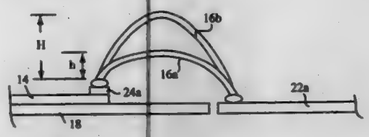
(d) plastic material encapsulating said IC chip, support means and bonding wires.

5,296,744

LEAD FRAME ASSEMBLY AND METHOD FOR WIRING SAME

Louis H. Liang, Los Altos, and Sang S. Lee, Sunnyvale, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 728,927, Jul. 12, 1991, abandoned. This application Jun. 3, 1992, Ser. No. 893,553
Int. Cl.[5] H01L *23/48, 29/44, 29/52*
U.S. Cl. 257—784 **4 Claims**



1. A lead frame assembly comprising:

a lead frame including support means and a plurality of fingers, each finger having first and second ends and extending generally radially away from said support means;

an integrated circuit die coupled to said support means and including a plurality of attach pads; and

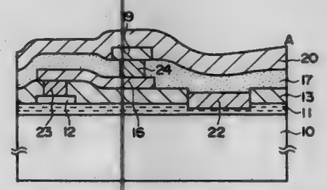
a plurality of connecting wires, each wire having two ends and being connected between one of the attach pads and one of the fingers at a first end of the finger so that a central portion of each wire is higher than the end of the wire connected to said attach pad and the end of the wire connected to said finger, where for each two wires that are adjacent to each other, a central portion of a first wire lies entirely above a central portion of a second wire and a portion of said first wire between said attach pad and said central portion lies substantially above a portion of said second wire between said attach pad and said central portion so that central portions and portions of the plurality of connecting wires between said attach pad and said central portion form an alternating sequence of high-lying wires of greater height, medium-lying wires of middle height, and low-lying wires of lesser height with no overlap in height of the central portions or portions between said attach pad and said central portion of any two adjacent wires.

5,296,745

SEMICONDUCTOR DEVICE HAVING A MOISTURE BARRIER AROUND PERIPHERY OF DEVICE

Kenichi Shirai, Yokohama, and Satoshi Shibahara, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1991, Ser. No. 674,753
Claims priority, application Japan, Mar. 23, 1990, 2-72134; Feb. 18, 1991, 3-078685
Int. Cl.[5] H01L *29/34, 27/02*
U.S. Cl. 257—786 **8 Claims**



1. A semiconductor device having a moisture barrier comprising:

a semiconductor substrate,

a plurality of bonding pads arranged along at least one side edge of said semiconductor substrate, and

an insulating film provided between said side edge of said semiconductor substrate and the bonding pads provided along said side edge, and comprised of at least two layers; and

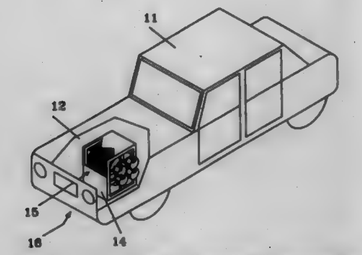
means for preventing incursion of moisture, said preventing means being of a groove structure formed in said layers of said insulating film, said groove structure partially extending through said insulating film such that at least a portion of said insulating film remains between the bottom of said groove structure and said semiconductor substrate.

5,296,746

EXTENDED RANGE CHARGING SYSTEM FOR ELECTRICAL VEHICLE

Harry E. Burkhardt, 106 Seminole Dr., Roanoke, Tex. 76262

Filed Dec. 17, 1992, Ser. No. 992,087
Int. Cl.[5] F03D *9/00;* **H02J** *7/14, 7/32*
U.S. Cl. 290—55 **18 Claims**



1. A wind charging system mounted in a standard automobile in the engine compartment for charging a plurality of batteries of an electrical powered vehicle, comprising:

a single mounting frame;

a wind driven rotation device mounted on a shaft in said frame;

a plurality of automotive alternators mounted on said frame;

a first gear attached to the shaft on a first side of said wind driven rotation device;

a second gear attached to the shaft on a second side of said wind driven rotation device;

a first plurality of small gears, one each attached to an alternator and in mesh with said first gear; and

a second plurality of small gears, one each attached to an alternator and in mesh with said second gear;

whereby said wind rotation device turns said alternators through said first and second gears and said small gears to supply charging power to said plurality of batteries.

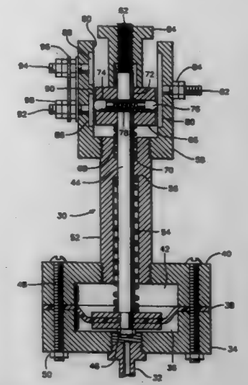
5,296,747

DIAPHRAGM OPERATED ELECTRICAL POLARITY REVERSING SWITCH

Benjamin F. Rabitsch, and Douglas G. Rabitsch, both of P.O. Box 598, Millen, Ga. 30442

Filed May 29, 1992, Ser. No. 889,979
Int. Cl.[5] H01H *9/00*
U.S. Cl. 307—127 **4 Claims**

1. A pressure sensitive electrical polarity reversing switch comprising a condition sensing movable member, an electrical circuit including primary contact means connected with a power source, spaced secondary contact means connected with an electrically driven means having a output driven in opposite directions depending upon the polarity of electrical power supplied to said electrically driven means, said condition sensing movable member completing an electrical circuit between said primary contact means and one of said spaced secondary contact means to drive said electrically driven means in a first direction in response to one condition and completing an electrical circuit to the other of said spaced secondary contact means in response to another condition, said spaced secondary contact means including a neutral area therebetween to interrupt the electrical circuit to said secondary contact means when the condition sensing movable member is



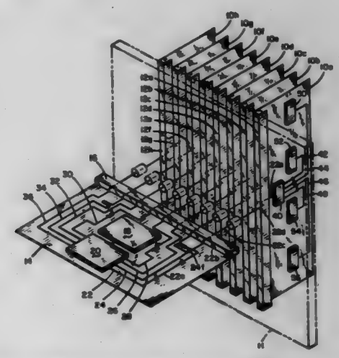
moving between said secondary contact means to stabilize said electrically driven means when said condition sensing movable member has been moved to a predetermined position in response to the condition being sensed.

5,296,748

CLOCK DISTRIBUTION SYSTEM

Denton G. Wicklund, Delano, and John P. Mullaney, Minneapolis, both of Minn., assignors to Network Systems Corporation, Minneapolis, Minn.

Filed Jun. 24, 1992, Ser. No. 903,692
Int. Cl.[5] H05K *7/20*
U.S. Cl. 307—303.1 **11 Claims**



1. In a sequential digital logic system of the type including a plurality of logic circuit boards, each populated with clocked digital logic devices and interconnected with one another and to an edge connector by printed conductors, a centerplane having first and second major surfaces and a plurality of connector terminals on said first major surface for mating with said edge connectors on said logic circuit boards when said logic circuit boards are disposed in parallel, spaced relation to one another and project orthogonally from said first major surface of said centerplane, said centerplane including a pattern of printed wiring for interconnecting said plurality of connector

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terminals on said first major surface of said centerplane in a desired manner, the improvement comprising:

(a) a clock distribution circuit board having clock pulse generator means mounted thereon, said clock pulse generator means producing regularly occurring clock pulse signals, clock driver circuit means coupled to said clock pulse generator means for simultaneously producing multiple copies of said clock pulse signals, an edge connector having a plurality of contacts, and a pattern of printed wiring for applying said multiple copies of said clock pulse signals to said plurality of contacts in exact time phase;

(b) means for mounting said clock distribution circuit board to said second major surface of said centerplane orthogonal to both said centerplane and said plurality of logic circuit boards; and

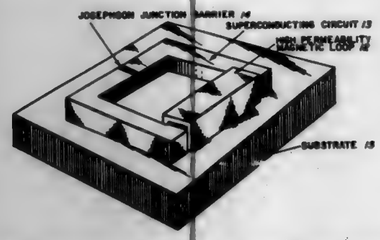
(c) connector means for coupling said plurality of contacts of said edge connector on said clock distribution board through said centerplane to said edge connectors of said logic circuit boards, whereby said clock pulse signals are introduced onto said logic circuit boards in exact time phase with respect to one another.

5,296,749

SUPERCONDUCTOR MICROELECTRONIC DEVICES AND CIRCUITS AND A METHOD OF FABRICATING THEREFOR

Ted G. Berlincourt, McLean, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 5, 1992, Ser. No. 831,582
Int. Cl.[5] H03K *17/92*
U.S. Cl. 307—306 **24 Claims**



1. In a method of reducing the circuit area of a superconducting microelectronic circuit which ha a magnetic flux therein, the steps of; depositing a superconducting circuit on a substrate, enveloping a portion of said superconducting circuit with a coating of high magnetic permeability material so as to concentrate the magnetic flux of the superconducting circuit.

5,296,750

MEASURAND TRANSIENT SIGNAL SUPPRESSOR

Richard J. Bozeman, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 2, 1992, Ser. No. 955,801
Int. Cl.[5] H01H *35/18*; H03K *5/22*
U.S. Cl. 307—308 **8 Claims**

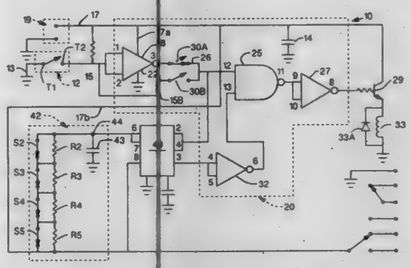
1. A transient signal suppressor for use in a controls system which is adapted to respond to a change in a physical parameter whenever it crosses a predetermined threshold value in a selected direction of increasing or decreasing values with respect to the threshold value and is sustained for a selected discrete timer interval, said suppressor including:

a sensor transducer for sensing the physical parameter and generating an electrical input signal whenever the sensed physical parameter crosses the threshold level in the selected direction of increasing or decreasing values;

an adjustable time delay circuit for suppressing the input signal for a preselected one of a plurality of available discrete suppression times and producing an output signal only if the input signal is sustained for a time greater than the selected suppression time;

an electronic gate coupled to receive the transducer electrical input signal and the time delay circuit output signal and to produce a useful output drive signal whenever the transducer electrical input signal is sustained beyond the selected suppression time; and

a manually operated switch coupled between the transducer and said gate for adapting the suppressor to produce an output drive signal whenever the physical parameter crosses the threshold value in the selected direction of increasing or decreasing values.

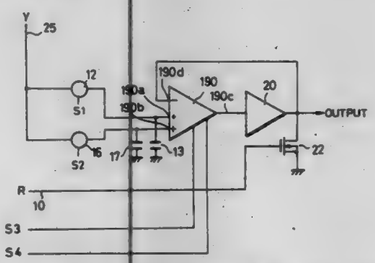


5,296,751

SAMPLE-AND-HOLD CIRCUIT

Yoshiki Sano, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1992, Ser. No. 855,677
Claims priority, application Japan, Mar. 25, 1991, 3-60200
Int. Cl.[5] G11C *27/02*
U.S. Cl. 307—353 **9 Claims**



1. A sample-and-hold circuit comprising:

two capacitors, coupled to an input signal line through respective analog switches, for holding an input signal voltage; and

a differential amplifier circuit, having two non-inverting input terminals for respectively receiving voltages held in said two capacitors and having one inverting input terminal to which an output of said differential amplifier is coupled through a buffer amplifier as a negative feedback signal, for amplifying said received voltages,

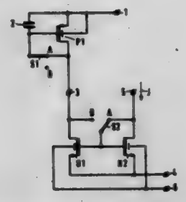
said differential amplifier circuit alternately amplifying said voltages received through said two non-inverting input terminals.

5,296,752

CURRENT MEMORY CELL

Dirk W. J. Groeneveld, and Hendrikus J. Schouwenaars, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, N.Y.

Filed Apr. 20, 1992, Ser. No. 870,657
Claims priority, application European Pat. Off., May 8, 1991, 91201102-0
Int. Cl.[5] H03K *17/687*
U.S. Cl. 307—353 **21 Claims**



1. A current memory cell for applying to a current terminal, during a hold interval, an output current which is substantially equal to an input current forced onto the current terminal during a sample interval preceding the hold interval, comprising:

a first current terminal,

a first transistor having a source, a drain and a gate, the drain being coupled to the first current terminal,

a capacitor connected between the source and gate of the first transistor, and

a first switch for coupling the gate of the first transistor to the first current terminal during the sample interval, characterized in that the current memory cell further includes:

a second current terminal,

second and third transistors of a conductivity type opposite to that of the first transistor and each having a source, drain and gate, the drain of the second transistor being coupled to the first current terminal and the drain of the third transistor to the second current terminal, the gate of the second transistor being connected to the gate of the third transistor and gate-source circuits of the second and third transistors being connected in parallel, and

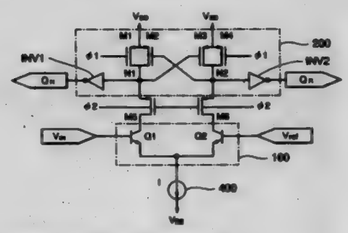
a second switch for coupling the gates of the second and third transistors to the first current terminal during the hold interval and to the second current terminal during the sample interval.

5,296,753

COMPARATOR CIRCUIT

Naotoshi Nakadai, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 4,909
Claims priority, application Japan, Jan. 20, 1992, 4-007024
Int. Cl.[5] H03K *17/60, 5/153*
U.S. Cl. 307—362 **4 Claims**



1. A comparator circuit comprising:

first and second bipolar transistors for amplification of an input voltage and a reference voltage,

first to fourth MOS type transistors for comparison and latching of an amplified input voltage and reference voltage according to a first driving signal, said first and fourth MOS type transistors being driven by said first driving signal and said second and third MOS type transistors connected respectively in parallel with said first and fourth MOS type transistors and receiving said amplified reference voltage and input voltage, and

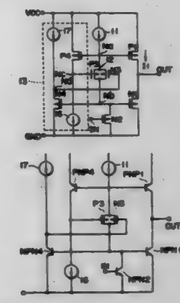
fifth and sixth MOS type transistors respectively connected between said first and second bipolar transistors and said first and second and between said third and fourth MOS type transistors for turning on and off according to a second driving signal.

5,296,754

PUSH-PULL CIRCUIT RESISTANT TO POWER SUPPLY AND TEMPERATURE INDUCED DISTORTION

Yoshiro Yoshinaga, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 926,383, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 585,978, Sep. 21, 1990, abandoned. This application May 25, 1993, Ser. No. 66,930
Claims priority, application Japan, Sep. 27, 1989, 1-249076
Int. Cl.[5] H03K *17/10, 19/092*
U.S. Cl. 307—443 **7 Claims**



1. A push-pull circuit comprising:

an output stage circuit connected between a first potential and a second potential and having a first transistor of a first conductivity type and a second transistor of a second conductivity type whose current paths are serially connected;

a level shift circuit having a third transistor of the first conductivity type and a fourth transistor of the second conductivity type whose current path is connected in parallel with the current path of said third transistor of the first conductivity type;

a control circuit having a fifth transistor of the first conductivity type and a first current source circuit which are serially connected between said first and second potentials, and a second current source circuit and a sixth transistor of the second conductivity type which are serially connected between said first and second potentials;

wherein a control terminal of said fifth transistor of the first conductivity type is connected to a control terminal of said first transistor of the first conductivity type and one of output terminals of said level shift circuit;

a control terminal of said sixth transistor of the second conductivity type is connected to a control terminal of said second transistor of the second conductivity type and the other output terminal of said level shift circuit;

a connection node between said fifth transistor of the first conductivity type and said first current source circuit is

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connected to a control terminal of said third transistor of the first conductivity type; and

a connection node between said second current source circuit and said sixth transistor of the second conductivity type is connected to a control terminal of said fourth transistor of the second conductivity type.

5,296,755

HIGH SPEED BI CMOS LOGIC CIRCUIT AND A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING SAME

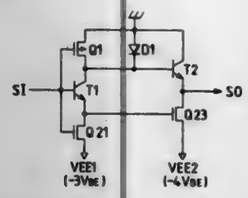
Kazuhisa Miyamoto; Mitsuga Kusunoki, both of Ohme; Masanori Odaka, Kodaira, and Mitsuo Usami, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,327

Claims priority, application Japan, Nov. 29, 1990, 2-332348

Int. Cl.[5] H03K *17/04*

U.S. Cl. 307—446 **55 Claims**



1. A logic circuit comprising:

an input terminal coupled to receive an input signal having a logic high level and a logic low level;

an output terminal coupled to a load capacitance;

a first supply terminal coupled to receive a first supply voltage;

a second supply terminal coupled to receive a second supply voltage;

a third supply terminal coupled to receive a third supply voltage;

a first bipolar transistor having a base coupled to said input terminal, a collector and an emitter;

variable impedance means, connected between said first supply terminal and said collector of said first bipolar transistor, having a relatively high impedance value in response to said logic high level at said input terminal and having a relatively low impedance value in response to said logic low level at said input terminal;

a first N-channel MOSFET having a source-drain path coupled between said emitter of said first bipolar transistor and said second supply terminal, wherein said first N-channel MOSFET has a conductance which is increased in response to said logic high level at said input terminal and which is decreased in response to said logic low level at said input terminal;

a second bipolar transistor for charging said load capacitance in response to said variable impedance means having said low impedance value, wherein said second bipolar transistor has an emitter-collector path coupled between said first supply terminal and said output terminal and a base coupled to receive a collector potential of said first bipolar transistor; and

charge extracting means connected between said output terminal and said third supply terminal for discharging said load capacitance.

5,296,756

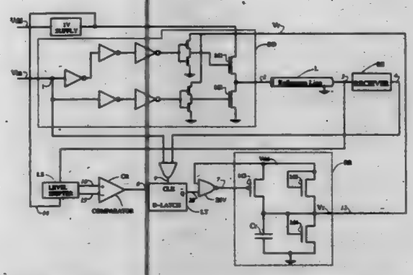
SELF ADJUSTING CMOS TRANSMISSION LINE DRIVER

Hitesh N. Patel, 8610 Causeway, Houston, Tex. 77083; Jakob H. Hohl, 10249 E. Placita Cresta Feliz, Tucson, Ariz. 85749, and Olgierd A. Palusinski, Dept. of ECE, Univ. of Arizona, Tucson, Ariz. 85719

Filed Feb. 8, 1993, Ser. No. 14,656

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—443 **6 Claims**



1. A MOSFET integrated circuit on a chip comprising:

a plurality of substantially identical off-chip driver circuits, each having a final stage consisting of two NMOS output transistors connected in series and operated by a supply voltage in the ohmic region thereof, each of said driver circuits having an output impedance that can be varied by a control voltage, one of said driver circuits being dedicated as a reference driver and driving a first end of a reference transmission line with characteristic impedance substantially equal to the output impedance of the reference driver, and said reference transmission line having a second end in substantially open circuit;

means for applying a clock signal to the reference driver;

a comparator circuit for comparing the amplitude of the clock signal at said second end of said reference transmission line with said supply voltage and sampling the comparison result at suitable instants in each clock cycle;

means for storing sampled comparison results over the entire clock cycle;

means for deriving therefrom said control voltage for varying said driver output impedance, and said control voltage rising when said clock signal amplitude at said second end of the reference transmission line is lower than said supply voltage, and said control voltage declining when said clock signal amplitude is higher than said supply voltage;

means for applying said control voltage to said substantially identical off-chip driver circuits, including said dedicated reference driver, wherein a node between said NMOS output transistors connected in series forms the output node, and where said output transistors are turned on alternatively to a controlled level of impedance by separate CMOS inverters having said control voltage as their supply voltage.

5,296,757

LOW-NOISE OUTPUT DRIVER HAVING SEPARATE SUPPLY LINES AND SEQUENCED OPERATION FOR TRANSIENT AND STEADY-STATE PORTIONS

Masayuki Koizumi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 30, 1992, Ser. No. 998,922

Claims priority, application Japan, Jan. 9, 1992, 4-002108

Int. Cl.[5] H03K *19/003, 17/16*

U.S. Cl. 307—443 **24 Claims**

1. An output circuit comprising:

an input terminal for receiving an input signal at a predetermined logic level;

an output terminal held at a potential corresponding to the logic level of said input signal;

first and second power sources separated from each other;

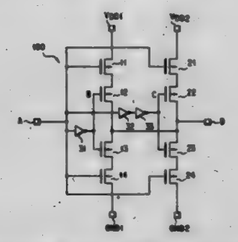
third and fourth power sources separated from each other;

fast potential changing means connected between said first and third power sources, for instantaneously changing the potential of said output terminal when the logic level of said input signal changes;

potential maintaining means connected between said second and fourth power sources, for maintaining the potential of said output terminal at the same level after the potential is changed by said rapid potential changing means;

first controlling means for controlling said fast potential changing means such that said fast potential changing means starts operating when the logic level of said input signal changes, and stop operating when a predetermined time of period elapses; and

second controlling means for controlling said potential maintaining means such that said potential maintaining means starts operating after said fast potential changing means starts operating.



5,296,758

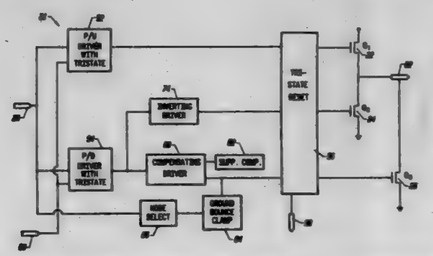
OUTPUT BUFFER WITH GROUND BOUNCE COMPENSATION

Bal S. Sandhu, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 24, 1992, Ser. No. 840,348

Int. Cl.[5] H03K *17/16, 19/092*

U.S. Cl. 307—443 **15 Claims**



1. A ground bounce compensating output buffer comprising:

an input line;

an output line;

a logic ground node;

a pull-up transistor, the gate of said pull-up transistor being coupled to said input line, the output of said pull-up transistor being coupled to said output line;

a pull-down transistor, the gate of said pull-down transistor being coupled to said input line, the drain of said pull-down transistor being coupled to said output line, and the source of said pull-down transistor being coupled to said ground node, a state transition on said pull-down transistor discharging current to said ground node, thereby producing increased voltage on said ground node; and

means, connected between said input line and said gate of said pull-down transistor, for compensating for said increased voltage on said ground node, said compensating means regulating drive current to said pull-down transistor in the presence of said increased voltage on said ground node, said compensating means turning on said pull-down transistor at a rate inversely related to said increased voltage on said ground node.

5,296,759

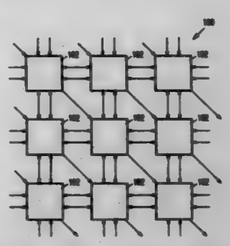
DIAGONAL WIRING BETWEEN ABUTTING LOGIC CELLS IN A CONFIGURABLE LOGIC ARRAY

Jim Sutherland; Sanjay Popli; Venkata Alturi, all of Sunnyvale, and Frederick Furtek, Menlo Park, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 13,780, Feb. 5, 1993, abandoned, which is a division of Ser. No. 752,282, Aug. 29, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 79,213

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465.1 **1 Claim**



1. In a configurable logic array that includes a plurality of individually configurable logic cells arranged in a matrix that includes a plurality of horizontal rows of logic cells and a plurality of vertical columns of logic cells, adjacent abutting logic cells being interconnectable via horizontal and vertical configurable interconnections running between adjacent logic cells, the improvement comprising configurable diagonal interconnections running between diagonally adjacent abutting logic cells in the array.

5,296,760

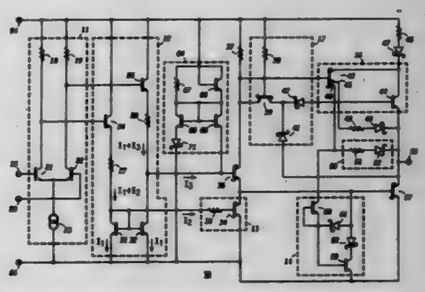
VOLTAGE TRANSLATOR

Kent C. Oertle, Phoenix, Ariz., and Jia S. Chiang, Taipei, Taiwan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1992, Ser. No. 914,731

Int. Cl.[5] H03K *19/092*

U.S. Cl. 307—475 **18 Claims**

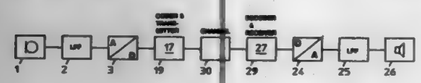


1. A voltage translator comprising:

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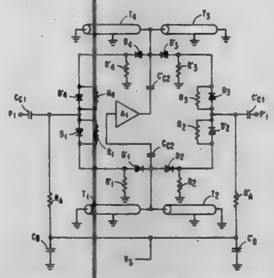
a differential amplifier having a pair of differential inputs and a pair of differential outputs that produce an amplified signal;
a current mirror having a pair of mirror inputs coupled to the pair of differential outputs and also having a first current output and a second current output wherein the first current output and the second current output each produce a current that is proportional to a voltage applied to the differential inputs;
a clamp circuit that clamps the first current output to a predetermined voltage when the first current output has a current value that is less than a current value of the second current output;
a phase splitter transistor having a control electrode coupled to the first current output, a first current electrode coupled to a first terminal of a first resistor, and a second current electrode;
a second terminal of the first resistor connected to a voltage supply terminal;
a first transistor having a control electrode coupled to a first terminal of a second resistor, a first current electrode coupled to the second current electrode of the phase splitter transistor, and a second current electrode coupled to a voltage return;
a second terminal of the second resistor coupled to the second current output;
a lower output transistor having a control electrode coupled to the first current electrode of the first transistor, a first current electrode coupled to the voltage return, and a second current electrode;
an a.c. coupled Miller killer circuit having a Miller output coupled to the control electrode of the lower output transistor, and a Miller input that is capacitively coupled to the Miller output;
an upper Darlington transistor including a second transistor and a third transistor, wherein the second transistor has a control electrode coupled to the first current electrode of the phase splitter transistor, a first current electrode coupled to a first current electrode of the third transistor, a second current electrode coupled to a control electrode of the third transistor, and a third current electrode coupled to the Miller input;
an output terminal of the voltage translator coupled to a second current electrode of the third transistor and to the second current electrode of the lower output transistor;
a third resistor having a first terminal coupled to the Miller input, and a second terminal; and
a first diode having an anode coupled to the second terminal of the third resistor, and a cathode coupled to the output terminal.

5,296,761
TEMPERATURE-COMPENSATED LOGARITHMIC DETECTOR HAVING A WIDE DYNAMIC RANGE
Ali Fotowat-Ahmady, Tehran, Iran, and Nasrollah S. Navid, Saratoga, Calif., assignors to North American Philips Corporation, New York, N.Y.
Filed Nov. 23, 1992, Ser. No. 974,631
Int. Cl.[5] H03F *1/30*
U.S. Cl. 307—492 **6 Claims**



1. An electronic circuit with a logarithmic detector, comprising:
amplifying means responsive to an input voltage for amplifying the input voltage to produce a series of successively-amplified versions of the input voltage;
rectifying means coupled to the amplifying means for rectifying the successively-amplified versions to produce rectified versions;
conversion means coupled to the rectifying means for converting the rectified versions into currents; and
current summing means coupled to the conversion means for summing the currents to produce an aggregate output current, wherein:
the amplifying means comprises a cascade of a plurality of voltage amplifiers (**12, 14, 16**), each amplifier generating a respective one of the amplified versions of the input voltage, and each amplifier comprising:
a first differential transistor pair (**60, 62**) having first and second transistors connected to a first current source (**64**) and operative to complementarily control first and second current branches, respectively, the first and second branches comprising first and second resistors, respectively;
the conversion means comprises a plurality of converters (**26, 28, 30**), each respective one thereof being coupled to a respective one of the voltage amplifiers via the rectifying means and comprising:
a second differential transistor pair (**120, 126**) biased by a second current source and having a third current branch with a first load that includes a first load transistor (**124**), and having a fourth current branch with a second load that includes a second load transistor (**130**), wherein main current paths of the second pair are interconnected via a resistor (**132, 134**);
a third differential transistor pair (**136, 138**) biased by a third current source (**140**) and having first and second control electrodes coupled to the third and fourth current branches, respectively, between the first and second loads, respectively, and the second pair; and wherein:
the first current source supplies a first current whose value is substantially proportional to the absolute temperature; and
the second current source and the third current source supply second and third currents, respectively, a ratio of values of the third and second currents being substantially proportional to the absolute temperature.

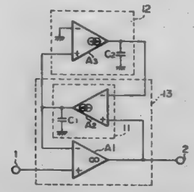
5,296,762
BIDIRECTIONAL MICROWAVE AMPLIFIER APPARATUS
Larry P. Hanson, and Christopher J. Swanke, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Nov. 4, 1992, Ser. No. 971,426
Int. Cl.[5] H03K *3/013*; H03B *1/04*
U.S. Cl. 307—520 **11 Claims**



1. A bidirectional microwave frequency amplifier apparatus comprising:
an amplifier device;
a plurality of paired diodes symmetrically coupled to the amplifier device; and

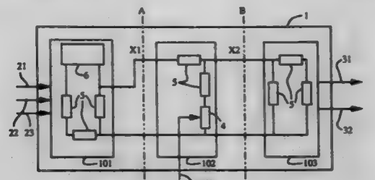
a plurality of transmission line devices coupled to either end of the amplifier device;
wherein the paired diodes are strategically placed in relation to each other in order to provide circuit isolation to "off" diodes and the transmission line devices reduce high frequency feedback.

5,296,763
POLAR LEAPFROG FILTER
Hiroshi Tanigawa; Hiroshi Kondo; Isao Fukai, and Tsuneo Tohyama, all of Tsurugashima, Japan, assignors to Toko, Inc., Tokyo, Japan
Filed Mar. 26, 1992, Ser. No. 858,010
Claims priority, application Japan, Mar. 29, 1991, 3-89439
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] H03F *3/04*
U.S. Cl. 307—520 **7 Claims**



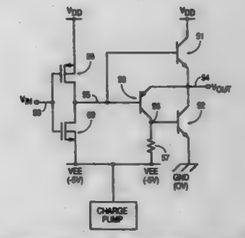
1. A polar leapfrog filter including a polar network which comprises a differentiator constituted by an operational amplifier having input and output terminals, and a first integrator for providing negative feedback to said operational amplifier, said first integrator comprising a first capacitor and a first variable transconductance amplifier; and a second integrator for providing negative feedback to said first integrator, said second integrator comprising a second capacitor, and a second variable transconductance amplifier.

5,296,764
REDUCTION OF DISTURBANCES IN A POWER NETWORK
Gunnar Asplund, Ludvika; Henrik Breder, Västerås, and Anders Aberg, Staffanstorp, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden
Filed Oct. 16, 1992, Ser. No. 961,631
Claims priority, application Sweden, Nov. 4, 1991, 9103229
Int. Cl.[5] H02M *7/02*
U.S. Cl. 307—521 **49 Claims**



1. A method in an electric power network, which network comprises at least one output line and an active filter controllable via a control input, for reducing disturbances on said output line generated by a disturbance source located in or connected to the power network, comprising the steps of:
sensing at least one state variable in the power network and supplying said state variable to a controller;
forming an output signal from the controller in dependence on the control deviation of said at least one state variable form a desired value as a sequence of values repeated with a period T', said values being formed in dependence on the control deviation;
generating a control signal in dependence on the output signal and supplied to the control input; and
said step of forming the output signal of the controller including the step of carrying out a transformation dependent on non-minimum phase properties of the transfer function from the output signal of the controller to the control deviation.

5,296,765
DRIVER CIRCUIT FOR SINKING CURRENT TO TWO SUPPLY VOLTAGES
Richard K. Williams, Cupertino, and Barry J. Concklin, San Jose, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.
Filed Mar. 20, 1992, Ser. No. 855,377
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—572 **31 Claims**



1. A driver circuit, having an input node for receiving a control signal and an output node, said circuit comprising:
first means for pulling a voltage on said output node to a first supply voltage when a voltage on said input node is positive with respect to said voltage on said output node;
second means for pulling a voltage on said output node to a second supply voltage when said voltage on said output node is positive with respect to said second supply voltage and when a voltage on said input node is negative with respect to said voltage on said output node; and
third means for pulling a voltage on said output node to a third supply voltage when said voltage on said output node is negative with respect to said second supply voltage and when a voltage on said input node is negative with respect to said voltage on said output node,
wherein said first supply voltage is positive with respect to said second supply voltage, and wherein said third supply voltage is negative with respect to said second supply voltage.

5,296,766
CMOS CIRCUIT WITH CROWBAR LIMITING FUNCTION
Yoshifumi Masaki, Nara, Japan, assignor to Sharp Microelectronics Technology, Inc., Camas, Wash. and Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 4, 1992, Ser. No. 894,368
Int. Cl.[5] H03K *17/687*
U.S. Cl. 307—576 **20 Claims**

1. A crowbar-limited CMOS circuit comprising:
a signal input node for receiving an input signal, said input signal switching between predefined low and high input levels;
a transition control node for receiving a reconvergence control signal, said reconvergence control signal switching between opposed first and second states;
a N-type first transistor having respective first gate, source and drain terminals;
a P-type second transistor having respective second gate,

VOL 1160 ISS 4 MR 22 1994 UMI

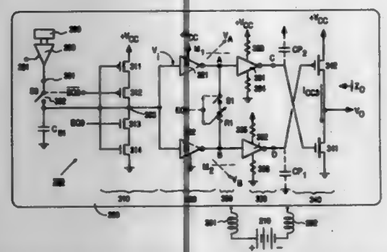
source and drain terminals, where the second drain is coupled to the first drain, the first source is coupled to a first power rail, and the second source is coupled to a second power rail, thereby defining a series current path from the second power rail, through the first and second transistors, to the first power rail;

first gate voltage supply means for supplying a first gate voltage to the first gate terminal; and

second gate voltage supply means for supplying a second gate voltage to the second gate terminal;

wherein the first and second gate voltage supply means are operatively coupled to the signal input node and responsive to transitions of the input signal between said low and high input levels;

wherein the first and second gate voltage supply means are further operatively coupled to the transition control node and responsive to the reconvergence control signal;



wherein the first and second gate supply means are interoperatively coupled such that, for a first state of the reconvergence control signal, one gate supply means keeps its corresponding transistor turned off while the other gate supply means starts to turn its corresponding transistor off in response to the input signal transitioning to one or the other of the low and high levels; and

wherein the first and second gate supply means are further interoperatively coupled such that, in response to a transition of the reconvergence control signal from the first state to the opposed second state, the one gate supply means begins to turn on its corresponding transistor as the other gate supply means completes the turning off of its corresponding transistor in further response to the input signal transitioning to said one or the other of the low and high levels.

5,296,767

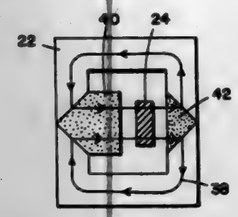
EFFICIENT MAGNETIC MOTOR ARMATURES

Pierre Asselin, Santa Barbara, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 745,447, Aug. 15, 1991. This application Aug. 11, 1993, Ser. No. 105,872

Int. Cl.[5] H02K *41/02*

U.S. Cl. 310—13 **7 Claims**



1. In a permanent magnet actuator of the type wherein permanent magnetic material is positioned adjacent to a magnetic flux carrying armature so as to generate magnetic flux through the armature, and the armature has a gap therein across which said flux is conducted, and an electrically conductive coil is located in said gap so as to be subjected to a motive force from said flux proportional to the electric current in the coil, the improvement comprising:

a portion of said magnetic material being extended into a reduced flux region of said armature in such a way that the cross sectional area of the armature A is related to the distance D along the interface between the armature and magnetic material substantially by the formula : A=kD, where k is a constant.

5,296,768

REVOLUTIONS PER MINUTE REGULATION DEVICE FOR A HAND-HELD ELECTRIC TOOL AND METHOD OF ITS MANUFACTURE

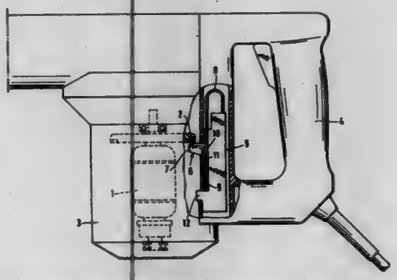
Helmut Burger, Weilheim, and Wolfgang Millauer, München, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Liechtenstein

Filed Oct. 26, 1992, Ser. No. 966,765

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137385

Int. Cl.[5] H02K *11/00*

U.S. Cl. 310—68 B **4 Claims**



1. Revolutions per minute (RPM) control device for a hand-held electric tool insertable as a separate block-like unit (5) into a space in the region of a handle (4) and a drive motor housing (3) of the electric tool comprising a RPM sensor for checking the RPM of an electric motor in the drive motor housing of the electric tool by a rotating excitation device (2) driven by said electric motor which RPM sensor (6) is connected with the separate blocklike unit (5) of said control device via an elongated flexible cable (8), wherein the improvement comprises a separate housing (7, 14) for the RPM sensor (6) arranged to fit into and through an opening through a wall of the driving motor housing (3) which opening is arranged in alignment to said excitation device (3), and said separate housing (7, 14) of the RPM sensor (6) is provided with guides (10) slidably displaceably held in elongated slide guides (9) in said block-like unit of the RPM control device such as to be adjustable in the elongated direction of said slide guides (9) during assembly of said tool to the position of said wall opening in the drive motor housing, a flexible cable connecting said separate housing and said block-like unit.

5,296,769

AIR GUIDE ASSEMBLY FOR AN ELECTRIC MOTOR AND METHODS OF MAKING

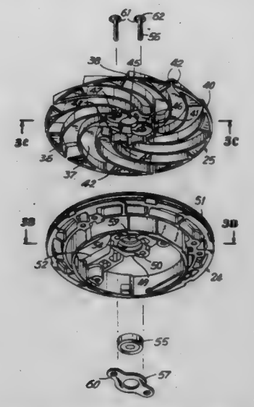
Paul W. Havens, Abingdon, Va., and Dennis J. Mancl, Bluff City, Tenn., assignors to Electrolux Corporation, Marietta, Ga.

Filed Jan. 24, 1992, Ser. No. 825,613

Int. Cl.[5] H02K *5/16, 5/15, 9/06*; **F04B** *39/12*

U.S. Cl. 310—90 **31 Claims**

1. In an air guide and motor assembly comprising a motor having an armature and motor housing, a shaft extending from the armature, a bearing assembly mounted on the motor housing and supporting the shaft, a fan mounted on the shaft, and a vaned air guide mounted with fastening means interposed between the fan and the motor for directing the flow of air from the fan to the motor, the vaned air guide having a first surface disposed adjacent to the fan and a second surface disposed adjacent to the motor, the improvement comprising a plurality of radially outwardly curved vanes integrally formed with the vaned air guide, each one of said plurality of radially



outwardly curved vanes forming a passage that communicates between the first and second surfaces, and a center detail integrally formed with the vaned air guide, the center detail comprising at least one locating tab and a fastener-supporting surface, the motor housing having a recess for accepting the locating tab, the center detail cooperating with the motor housing so that the fastening means contacts the fastener-supporting surface to fasten both the bearing assembly and the vaned air guide to the motor housing.

5,296,770

ELECTRIC MACHINE, PREFERABLY ROTARY CURRENT GENERATOR FOR VEHICLES

Gerhard Pflueger, Markgroeningen; Bernhard Fakler, Esslingen; Susanne Klaus, Stuttgart, and Klaus-Georg Buerger, Markgroeningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

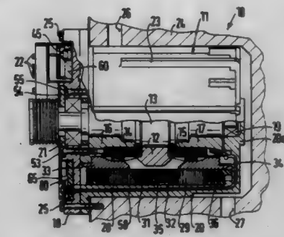
PCT No. PCT/DE91/00351, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/20119, PCT Pub. Date Dec. 26, 1991

PCT Filed Apr. 26, 1991, Ser. No. 934,683

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1990, 4018710

Int. Cl.[5] H02K *16/00*

U.S. Cl. 310—14 **14 Claims**



1. Electric machine for vehicles, said electric machine having a drive side and comprising a plurality of connection terminals; a pot-shaped metal housing having a base; a bearing cover closing the pot-shaped housing on the drive side; a drive shaft supported at one end thereof in the base of the pot-shaped housing and on another end in the bearing cover; two stator plate stacks spaced from each other axially in the pot-shaped metal housing, said stator plate stacks each being provided with a slot; two three-phase windings, each of the three-phase windings having an exciter winding, the three-phase windings being inserted in the slots of the stator plate stacks, said three-phase windings having electrical connection means received in the bearing cover and said exciter windings having electrical connection means received in the bearing cover; two circumferentially extending claw pole rotors fastened to the drive shaft; rectifier units comprising negative and positive diodes in the bearing cover; and regulator means on the bearing cover, wherein said electrical connection means of the exciter and three-phase windings are electrically connected with the rectifier units, connection terminals and the regulator means on the bearing cover.

5,296,771

MINIATURE MOTOR

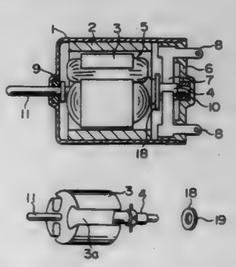
Eiichi Sakuma; Kazumasa Saiga, and Yuji Kashiwazaki, all of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Dec. 14, 1992, Ser. No. 990,324

Claims priority, application Japan, Dec. 17, 1991, 3-103870[U]

Int. Cl.[5] H02K *13/06*

U.S. Cl. 310—220 **5 Claims**



1. A miniature motor comprising:

a housing having a bottomed hollow cylindrical shape with an inner circumferential surface;

a permanent magnet fixedly fitted to said inner circumferential surface;

a rotor having an armature and a commutator;

an end bracket having brushes fitted to an open end of said housing and making sliding contact with said commutator;

input terminals electrically connected to said brushes;

bearings rotatably supporting said rotor, said bearings being positioned on said housing and said end bracket;

spark-quenching means connected between said armature and said commutator including a ring-shaped laminated ceramic capacitor having electrodes on an outer surface, said electrodes being of a same number as a number of poles of said armature, said capacitor having an electrostatic capacity of more than 1 μF, said ring shaped laminated ceramic capacitor being formed of thin sheets of highly dielectric material and thin-film internal electrodes formed of an electrically conductive material, and having a sector shape, said internal electrodes and said dielectric material being alternately laminated in an axial direction of said ring-shaped laminated ceramic capacitor, said ring-shaped laminated ceramic capacitor being formed by overlapped portions of said internal electrodes, said por-

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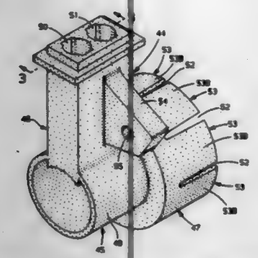
tions being overlapped with respect to a projected plane orthogonally intersecting an axis of said rotor.

5,296,772

VENTILATED BRUSH HOLDER

Michael D. Bradfield, Anderson; David L. Wright, Pendleton, and Thomas R. Sowash, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1993, Ser. No. 43,081
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—242 **7 Claims**



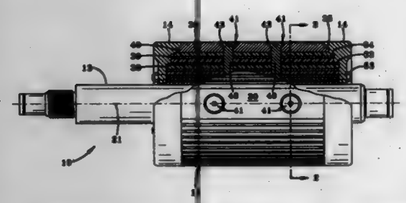
5. A brush holder for a dynamoelectric machine comprising, a tubular axially extending shield portion having an open end that is adapted to enclose the slip rings of a dynamoelectric machine, a brush holding portion extending from said tubular shield portion, said brush holding portion having at least one bore which is open at one end to the interior of said tubular shield portion, said bore adapted to receive a brush, and a tubular bearing retainer portion that is adapted to engage the outer race of a ball bearing, said bearing retainer portion having a plurality of circumferentially spaced and axially extending slots, said slots being adapted to form air passages connecting the interior of said tubular shield portion to the exterior of said brush holder.

5,296,773

COMPOSITE ROTOR FOR A SYNCHRONOUS RELUCTANCE MACHINE

Ahmed M. El-Antably, Indianapolis, and Donald Klemen, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 20, 1993, Ser. No. 48,913
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—261 **12 Claims**



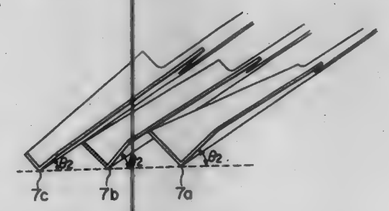
1. A composite rotor assembly for a synchronous reluctance machine, said composite rotor assembly comprising;
a supporting shaft member;
a core carried on said supporting shaft member;
said core having a body with equiangularly spaced, radially extending arm means defining axially extending supporting cavities between adjacent arm means;
a plurality of axially extending magnetic laminations disposed in the cavities;
a plurality of axially extending non-magnetic laminations disposed in the cavities and being interspersed with the magnetic laminations;
said core and said laminations defining a plurality of cylindrical end surfaces with a radially inner end surface having a greater axial length than a adjacent radially outer end surface; and,
end cap means secured in covering relation with each end surface and including surface mating with and being complementary to the end surfaces defined by said core and laminations.

5,296,774

MINIATURE MOTOR WITH BRUSH PIECES FORMING DIFFERENT ANGLES WITH COMMUTATOR

Satoshi Nishiwaki, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Oct. 29, 1992, Ser. No. 968,202
Claims priority, application Japan, Oct. 30, 1991, 3-088835[U]
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—248 **6 Claims**



1. A miniature motor comprising:
a housing including a bottomed hollow cylindrical member defining an inner circumferential surface;
a permanent magnet fixedly fitted to said inner circumferential surface of said housing;
an end plate engaged with an open end of said housing;
a rotor rotatably supported by bearings provided on said housing and said end plate;
a commutator connected to said rotor;
brush means for providing power to said commutator, said brush means including a plurality of brush pieces, each of said brush pieces including a brush intermediate part extending in a brush piece longitudinal direction and a brush tip with bent portion defining a V-shape providing open legs, each tip of said each of said brush pieces making contact along a tangential line with respect to said commutator wherein said tangential line of each tip is different from an adjacent tip wherein each tip of said brush pieces has sides disposed at a different angle with respect to said line extending in said longitudinal direction as compared to an adjacent tip.

5,296,775

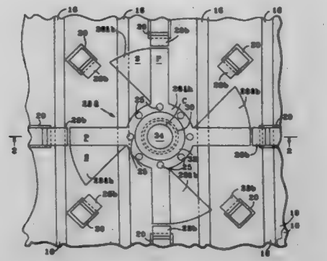
COOLING MICROFAN ARRANGEMENTS AND PROCESS

John E. Cronin, Milton; Rosemary A. Previti-Kelly, Richmond, both of Vt.; James G. Ryan, Sandy Hook, Conn., and Timothy D. Sullivan, Underhill, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1992, Ser. No. 950,621
Int. Cl.[5] H02N *1/00*
U.S. Cl. 310—309 **13 Claims**

1. An integrated circuit semiconductor arrangement comprising
a semiconductor substrate having first and second major surfaces,
heat generating circuits disposed at the first surface of said substrate,

a plurality of channels disposed in the second major surface of said substrate,
a fan disposed on the second major surface of said substrate including
a plurality of stators attached to the second major surface of said substrate through an insulator,
a rotary element having a hub with an aperture therein and a plurality of fan blades, each of said fan blades having a first end connected to said hub, a second end and a surface



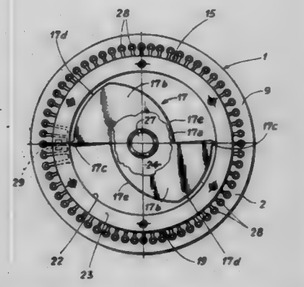
disposed in a plane located at an angle with respect to the second major surface of said substrate, and
an axle disposed within the aperture of said hub but spaced therefrom and attached to the second major surface of said substrate, and
means connected to said plurality of stators for providing an operating voltage to said fan,
said plurality of stators being positioned around said axle adjacent to but spaced from the second ends of said fan blades.

5,296,776

PIEZO-ELECTRIC MOTOR INTENDED FOR A TIMEPIECE

Hans M. Wind, Roggwill, and Christian Péclat, Granges, both of Switzerland, assignors to ETA SA Fabriques d'Ebauches, Granges, Switzerland

Filed Mar. 23, 1992, Ser. No. 855,922
Claims priority, application Switzerland, Mar. 28, 1991, 00949/91-3
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **7 Claims**



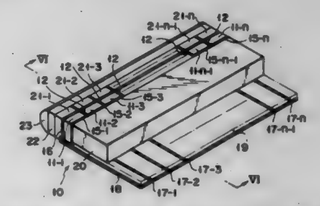
1. A piezo-electric motor comprising:
two elements mounted for relative motion with respect to one another in a plane;
the first of said elements having a generally planar form co-planar with said plane of relative motion and including:
a generally circular central portion;
a plurality of lobes extending from said central portion, the majority of the surface area of said lobes being in said plane of relative motion; and
an active contact point on each of said lobes, said active contact points engaging said second element for imparting relative motion thereto; and
means mounted on one of the faces of said central portion of said first element for generating vibratory waves therein,
wherein the lateral edges of said lobes are configured for concentrating the energy of said vibratory waves emanating from said central portion within said active points for imparting generally elliptical motion to said active points for transmitting motion to said second element relative to said first element.

5,296,777

ULTRASONIC PROBE

Yoshitaka Mine; Susumu Hiki, and Makoto Hirama, all of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

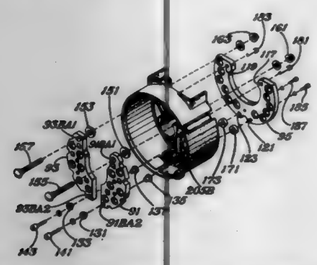
Continuation of Ser. No. 627,915, Dec. 17, 1990, abandoned, which is a continuation of Ser. No. 411,269, Sep. 25, 1989, abandoned, which is a continuation of Ser. No. 151,692, Feb. 2, 1988, abandoned. This application Jul. 7, 1992, Ser. No. 908,872
Claims priority, application Japan, Feb. 3, 1987, 62-21764; Mar. 5, 1987, 62-48963; Jun. 26, 1987, 65-157924
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 **8 Claims**



1. An ultrasonic probe to be connected to a transmitter/-receiver which transmits driving signals to said probe and receives echo signals from said probe, said probe comprising:
an ultrasonic transducer element structure including a plurality of ultrasonic transducer elements which are electrically isolated from each other and arranged adjacent to each other in a row, each transducer element for generating an ultrasonic wave toward an examined object at times when the driving signals are applied to the element, and for receiving an echo ultrasonic wave from the examined object for generating the echo signal, wherein each transducer element has opposite sides;
a plurality of signal electrodes arranged adjacent to each other and corresponding to the transducer elements, each signal electrode provided on one side of a corresponding transducer element for applying the driving signals to the element and receiving the echo signals from the element;
an earth electrode having an inner surface provided on the other side opposite to said one side of at least one of the ultrasonic transducer elements and having an outer flat surface which opposes the inner surface and faces the echo wave;
a plurality of signal conductive members for leading the driving signals from the transmitter/receiver to corresponding signal electrodes and the echo signals to the transmitter/receiver, said plurality of signal conductive members being disposed substantially in a planar, coextensive relationship with adjacent signal conductive members having distal end portion in lapped electrical connection with edge portions of adjacent signal electrodes; and
an earth conductive member for earthing said earth electrode and having an end portion in lapped electrical connection with an edge portion of said earth electrode and a conductive portion electrically isolated from said signal

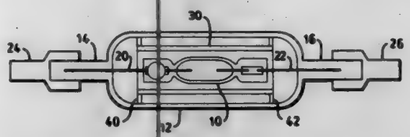
conductive members and extending proximally along at least one of said signal conductive members to limit a mutual inductance between at least two said signal conductive members.

5,296,778
THREE-FOUR ALTERNATOR COIL WINDING WITH ASSOCIATED HEAT SINKS
Leburn W. Stroud, 6546 Baker Blvd., Fort Worth, Tex. 76118
Filed Jun. 30, 1992, Ser. No. 906,512
Int. Cl.[5] H02K *11/00*, *3/00*; H02J *7/14*
U.S. Cl. 310—68 D 8 Claims



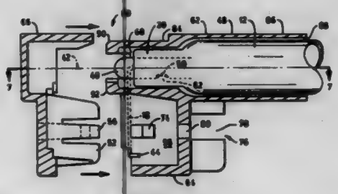
1. An alternator for a motor vehicle, comprising:
a metal housing having an annular side wall and two end walls,
an annular stator core supported in said metal housing in a stationary position relative to said metal housing,
said core having thirty-six segments with adjacent segments being separated by a slot such that there are thirty-six slots,
a rotor supporting a rotor winding located concentrically within said annular stator core,
means for supporting said rotor for rotation relative to said annular stator core with the distance between the outside of said rotor and the inside of said stator core being equal to about 0.00125 of an inch, said rotor winding being rated at about 2.8 ohms,
a three phase stator winding connected in a delta configuration such that the end of each coil is connected to the end of another coil at a junction forming three junctions,
each phase comprising a winding having twelve coils extending around said stator core on the inside thereof,
each of said coils of each phase winding comprising a plurality of turns of wire encircling three segments,
said twelve coils of each phase winding having a plurality of turns located in twelve of said slots such that said twelve slots for each phase winding respectively have the following number of turns located therein 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,
said twelve coils of each phase winding respectively having the following number of turns at one edge of said winding located outside of said slots on one side of said core 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 3,
said twelve coils of each phase winding respectively having the following number of turns at the other edge of said winding located outside of said slots on the other side of said core, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3, 4, 3,
each of said windings being formed of 12 America Wire Gage electrically conductive wire.

5,296,779
DOUBLE-ENDED METAL HALIDE ARC DISCHARGE LAMP WITH ELECTRICALLY ISOLATED CONTAINMENT SHROUD
Martin M. Muzeroll, Merrimack, N.H., assignor to GTE Products Corp., Danvers, Mass.
Filed Apr. 10, 1992, Ser. No. 866,381
Int. Cl.[5] H01J *61/30*
U.S. Cl. 313—25 13 Claims



1. A double-ended arc discharge lamp comprising:
a sealed, light-transmissive outer jacket;
a light-transmissive shroud of a given material disposed within said outer jacket and directly supported by said outer jacket through a pair of annuli composed of said given material;
an arc discharge tube disposed within said shroud; and
electrodes for coupling electrical energy through opposite ends of said outer jacket to said arc discharge tube.

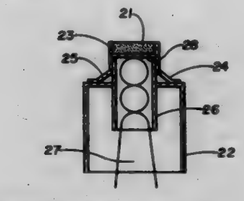
5,296,780
ARC DISCHARGE LAMP HAVING CEMENTLESS RIGHT-ANGLE BASE MEMBERS
Thomas Haraden, S. Hamilton, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.
Filed Mar. 20, 1992, Ser. No. 854,185
Int. Cl.[5] H01J *5/48*, *5/50*
U.S. Cl. 313—318 10 Claims



1. An arc discharge lamp comprising:
a light-transmissive envelope having a tubular-shaped main body and a press seal disposed at each end of said main body which includes at least one detent formed therein, said main body of said envelope containing a fill material for supporting a low pressure discharge;
a layer of phosphor disposed on a surface within said main body of said envelope;
an electrode filament located in each end of said main body;
a pair of electrical leads attached to each electrode filament and sealed within a respective press seal; and
an insulative two-piece base member disposed at each end of said envelope and including a main housing and a cap, said main housing having a tubular-shaped first portion and a second portion protruding perpendicularly from one end of said first portion and defining a cavity therewithin, said base member having a pair of terminals supported on opposite surfaces thereof, said one end of said first portion defining a first opening therein for receiving said press seal and having at least one protruding segment within said first opening positioned within said at least one detent of said press seal when said press seal is positioned within said first portion, the other end of said first portion of said main housing defining an annular-shaped second opening

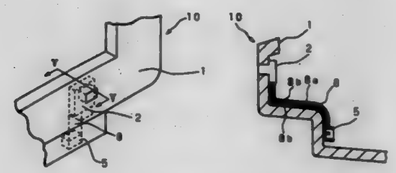
for receiving a portion of said main body of said envelope adjoining said press seal, said first portion of said main housing including flexure means therein for enabling the sidewalls of said first portion to expand outwardly during positioning of said press seal within said first portion of said main housing, said base member including means for securing said cap to said main housing.

5,296,781
IMPREGNATED CATHODE
Kyung Sang Lee, Kumi, Rep. of Korea, assignor to Goldstar Co. Ltd., Seoul, Rep. of Korea
Filed Dec. 27, 1991, Ser. No. 813,648
Claims priority, application Rep. of Korea, Dec. 29, 1990, 21698
Int. Cl.[5] H01J *29/04*
U.S. Cl. 313—446 2 Claims



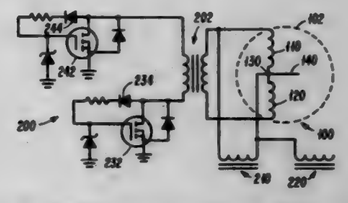
1. An impregnated cathode comprising:
an impregnated pallet including a porous metal body to which a material radiating electrons upon being subjected to a heat is impregnated;
a cathode ring having an upper portion in which the impregnated pallet is fitted;
a cathode sleeve containing a heater therein and having a closed upper end mounted to the lower end of the cathode ring such that the closed upper end has a surface in direct contact with a lower surface of the impregnated pallet, so as to transmit directly the heat from the heater accumulated in the cathode sleeve to the impregnated pallet;
a cathode holder surrounding the cathode sleeve and having an upper end surface; and
means for centering the cathode ring and the cathode holder whereby metal ribbons are formed integrally with the cathode ring and are fixedly mounted to the upper end surface of the cathode holder.

5,296,782
FRONT MASK OF DISPLAY DEVICE AND MANUFACTURING METHOD THEREOF
Yasuhiko Sawai, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 778,353, Oct. 17, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,194
Claims priority, application Japan, Oct. 17, 1991, 2-280861
Int. Cl.[5] G09F *13/00*
U.S. Cl. 313—499 7 Claims



7. A front mask of a display device, comprising:
a plurality of luminous elements;
a plurality of peripheral components to be electrically connected to said luminous elements;
a film insulated wire made up of a plurality of insulated conductive elements, each of said insulated conductive elements being electrically connected to one of said luminous elements and to one of said peripheral components; and
a main mask body comprising resin integrally molded around said plurality of luminous elements, said plurality of peripheral components, and said film insulated wire for physically securing said plurality of luminous elements, said plurality of peripheral components, and said film insulated wire to another.

5,296,783
DUAL FILAMENT LAMP AND DRIVE APPARATUS FOR DIMMABLE AVIONICS DISPLAYS
Gregory M. Fischer, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.
Continuation-in-part of Ser. No. 709,942, Jun. 4, 1991, Pat. No. 5,250,877. This application Apr. 30, 1992, Ser. No. 876,832
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—64 9 Claims



1. A dimmable fluorescent backlight for displays comprising;
a fluorescent lamp bulb having a first end and a second end;
disposed at said first end of said fluorescent lamp bulb is a plurality of first end filaments;
disposed at said second end of said fluorescent lamp bulb is a plurality of second end filaments;
first current source means for providing a current through a first one of said plurality of first end filaments; and,
current switching means for isolating a second one of said plurality of first end filaments when said first one of said plurality of first end filaments is provided with said current therethrough, and further for switching said current through said second one of said plurality of first end filaments when said first one of said plurality of first end filaments fails.

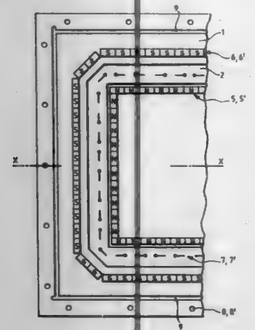
5,296,784
APPARATUS FOR THE PRODUCTION OF GLOW DISCHARGE
Michael Geisler, Waechtersbach; Michael Jung, Kahl/Main, and Rudolf Koetter-Faulhaber, Karben, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany
Filed Nov. 22, 1991, Ser. No. 795,988
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108212; Apr. 23, 1991, 4113142
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.41 10 Claims

1. Apparatus for the production of glow discharge, particularly for a large-area plasma CVD process, comprising: a vacuum coating chamber having an outer wall, and microwave waveguide resonator means with discrete coupling points each comprising an antenna,
the resonator means being microwave waveguide ring reso-

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nator means and disposed in the area of the outer wall of the chamber,

reaction zones each being formed at each of the discrete coupling points between the microwave waveguide ring resonator means and the vacuum chamber, the reaction zones having a similar ring-like composite configuration to the resonator means and being disposed on the inside of the chamber wall, individual spatially uniform plasma clouds being disposed in the individual reaction zones, and



a series of permanent magnets of different polarity being disposed in the area of the annularly formed reaction zones, the magnets being so disposed inside the chamber wall that in front of the reaction zones a tunnel of magnetic field lines running parallel thereto is formed between magnet poles, and the magnetic field lines covering the individual spatially uniform plasma clouds of the reaction zones.

5,296,785

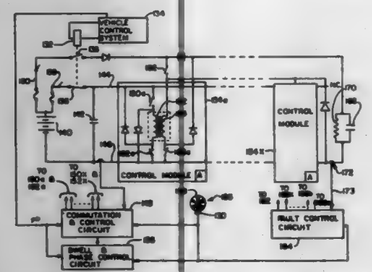
FAIL-SAFE VEHICLE SUSPENSION SYSTEM INCLUDING SWITCHED RELUCTANCE MOTOR

John M. Miller, Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 976,729, Nov. 16, 1992, which is a continuation of Ser. No. 812,644, Dec. 23, 1991, abandoned. This application Aug. 25, 1993, Ser. No. 112,044

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—254 **20 Claims**



1. A fail-safe suspension system for a motor vehicle having sprung and unsprung masses comprising:

a switched reluctance rotary machine including a rotor and a stator;

a ball screw and nut apparatus connecting the sprung and unsprung masses and rotating with said machine in alternate rotary directions as the sprung and unsprung masses move relative to one another;

sensor means connected to said machine for sensing rotational positioning of said rotor of said machine;

first controller means connected to said machine and said sensor means for providing standard operating excitation current to actively control said machine and thereby said suspension system; and

second controller means connected to said machine and said sensor means for providing fail-safe excitation current to passively control said machine in the event of failure of said suspension system and thereby define a fail-safe damping rate for said suspension system, said stator of said switched reluctance rotary machine including at least one standard control winding connected to said first controller means and at least one fail-safe control winding connected to said second controller means.

5,296,786

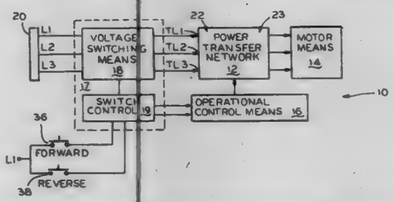
TIME DELAY RELAY ARRANGEMENT

Chris X. Habisohn, 1075 Englewood Rd., Hoffman Estates, Ill. 60195, and Michael R. A. Habisohn, 685 Bent Ridge La., Elgin, Ill. 60120

Filed Jan. 9, 1992, Ser. No. 818,331

Int. Cl.[5] H02P *1/00*

U.S. Cl. 318—280 **13 Claims**



1. An electrical power control means interposed between an electrical power source and a load and comprising:

a power transfer network having an input end and an output end, said power transfer network having an on-mode and an off-mode, said transfer network transferring electrical power from the input end to the output end when in the on-mode;

a voltage switching means having an on-condition and an off-condition, said voltage switching means connecting voltage from the power source to the input of the transfer network when in the on-condition;

means for switching the power transfer network to the on-mode after the voltage switching means is switched form the off to the on-condition;

a system switch means having an on-position and an off-position, said switch means after switching form the off to the on-position causing said voltage switching means to switch into the on-condition;

a stop time delay means for preventing the voltage switching means from switching from an on-condition to an off-condition for a predetermined time delay period after said system switch means is switched from the on to the off-position; and

means for switching the power transfer network from the on-mode to the off-mode during said time delay period.

5,296,787

METHOD FOR REGULATING A MOTOR CURRENT OF A BRUSHLESS D.C. MOTOR

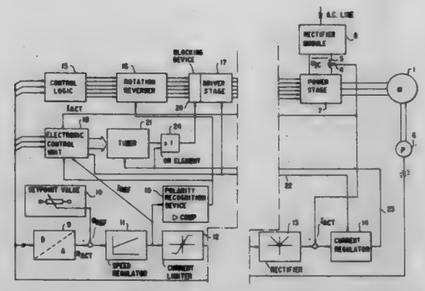
Kai Albrecht, Heidelberg, and Helmut Meyer, Weinheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 748,329, Aug. 21, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 2,125

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1990, 4026366; Jul. 22, 1991, 4124240

Int. Cl.[5] H02P *7/06, 6/02*

U.S. Cl. 318—433 **10 Claims**



1. Method for regulating a motor current in phase windings of a brushless d.c. motor, which comprises the steps of applying current to the phase windings individually via an electronically controllable converter connected to a d.c.-voltage intermediate circuit and having switchable semiconductor valves and respective freewheeling diodes connected in parallel with each semiconductor valve in individual bridge arms, measuring an actual value of the motor current exclusively in the d.c.-voltage intermediate circuit, controlling the rotational speed of the motor as a function of the motor current, wherein controlling the motor speed as a function of the motor current is performed by means of a two-step current regulator, switching off, in a motor mode of operation, only one switchable semiconductor valve of the energized bridge arms for a first period of time dependent upon the rotational speed of the motor when a reference value of the motor current is reached, and switching on, in a generator mode of operation, only one of the switchable semiconductor valves of the energized bridge arms for a second period of time dependent upon the rotational speed of the motor.

5,296,788

SYSTEM FOR CONTROLLING A MOTOR DRIVEN SWITCH

Arnold L. Betton, Kings Beach, and Edgar A. Hirzel, Granada Hills, both of Calif., assignors to Baton Labs, Inc., Granada Hills, Calif.

Continuation-in-part of Ser. No. 679,535, Apr. 2, 1991, Pat. No. 5,200,877, which is a continuation-in-part of Ser. No. 504,238, Apr. 4, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,736

Int. Cl.[5] H02P *1/00*

U.S. Cl. 318—283 **11 Claims**

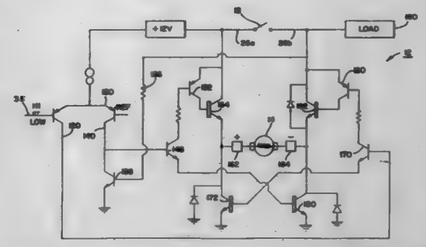
1. A system for controlling a motor driven switch comprising:

a switch having at least one switch contact moveable between electrically closed and open positions;

a reversible direct current motor having a shaft rotatable in first and second opposite rotary directions;

means connected to said motor shaft for operating said at least one switch contact for electrically opening and closing the switch responsive to rotation of said motor shaft in first and second opposite rotary directions;

command circuit means responsive to a first condition for generating a first signal and responsive to a second condition for generating a second signal; and



control circuit means responsive to said first signal for driving said direct current motor shaft in the first rotary direction and responsive to said second signal for driving said direct current motor shaft in the second opposite rotary direction;

whereby the motor driven switch is controlled between the open and closed positions by electrical signals.

5,296,789

APPARATUS FOR CONTROLLING BRUSHLESS MOTORS IN RESPONSE TO SWITCHING TRANSISTOR TEMPERATURE

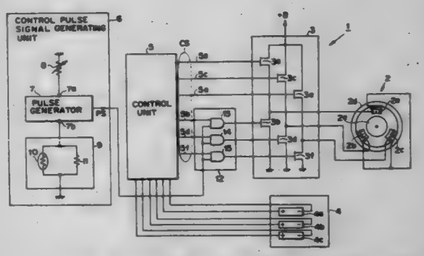
Shinichi Ohi, Ohsato, Japan, assignor to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 701,149, May 17, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,026

Claims priority, application Japan, May 18, 1990, 2-128318

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—254 **18 Claims**



1. A control apparatus for controlling a brushless direct current motor comprising:

a position sensor for detecting a rotational position of a rotor of the motor;

switching circuit means for selectively supplying exciting current to a plurality of coils located on the stator side of the motor;

setting means for producing a first signal for setting a preselected set rotational speed of the motor;

detecting means for producing a second signal related to a temperature of a switching transistor or transistors of said switching circuit means;

generating means responsive to the first and second signals for generating a pulse signal, the duty cycle of the pulse signal being established by the first signal to control the speed of said motor, said generating means comprising determining means responsive to the second signal for establishing the frequency of said pulse signal so that the

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frequency changes as the temperature of the switching transistor(s) changes to reduce power consumption and prevent overheating of said switching transistors; and,

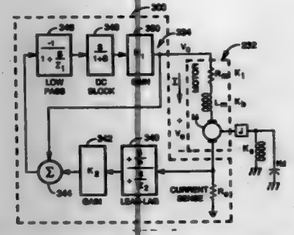
control means responsive to said position sensor and pulse signal for controlling said switching circuit means to supply the exciting current necessary for rotating the motor to the coils in a pulse pattern according to the pulse signal generated by said generating means.

5,296,790

MOTOR DRIVEN DAMPING ARRANGEMENT AND METHOD

Jeffrey L. Fincher, San Carlos, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.

Filed May 8, 1992, Ser. No. 881,017
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—560 **12 Claims**



1. Apparatus for damping vibrations within a member to be damped, comprising:

(a) motor means including

a motor output shaft connected to the member such that vibrations within the member are detected by the motor output shaft and

EMF generating means responsive to the detected vibrations for generating a corresponding back EMF voltage; and

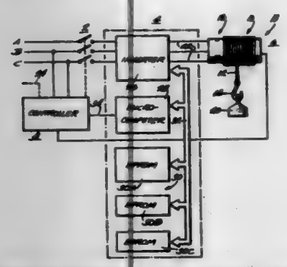
(b) servo circuit means connected to an input of the motor and responsive to the back EMF voltage generated by the motor means for electrically driving the motor means whereby the vibrations detected by the motor output shaft are damped.

5,296,791

METHOD AND APPARATUS FOR OPERATING A HOIST

William A. Hipp, Brookfield, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Apr. 27, 1992, Ser. No. 874,149
Int. Cl.[5] H02P *7/67*
U.S. Cl. 318—563 **10 Claims**



1. A method of operating a hoist having a rotatable drum, alternating current induction motor coupled to the drum for rotating the drum during raising and lowering operations, and an adjustable frequency alternating current power supply connected to the motor comprising the steps of:

selecting a first voltage boost value;

supplying power to the motor from the power supply at the initiation of a raising and a lowering operation at a predetermined minimum frequency; and

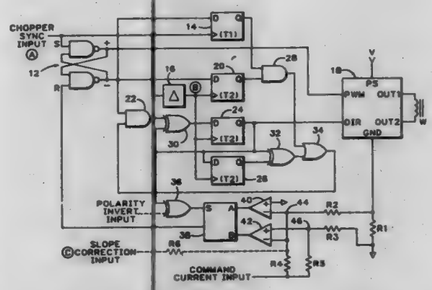
supplying said power at a voltage level increased by the first voltage boost value above the voltage level that would be applied without the first voltage boost value only during the initiation of a raising operation.

5,296,792

BIDIRECTIONAL CHOPPER TRANSCONDUCTANCE AMPLIFIER

David L. Knierim, Wilsonville, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 19, 1993, Ser. No. 6,296
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—685 **8 Claims**



1. A bidirectional chopper transconductance amplifier for controlling a voltage applied across a motor winding to generate a current through the motor winding comprising:

means for generating a control signal having a duty cycle determined by a command current input representing a desired magnitude and polarity for the current and a sensed current through the motor winding representing an actual magnitude and polarity for the current during the time while the voltage is applied across the motor winding in response to the control signal; and

means for automatically determining from the sensed current, the command current input and a direction input for a prior and a current cycle of the control signal the direction input that determines the polarity of the voltage applied across the motor winding for a next cycle of the control signal.

5,296,793

STATE OBSERVER FOR SYNCHRONOUS MOTORS

Jeffrey H. Lang, Waltham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

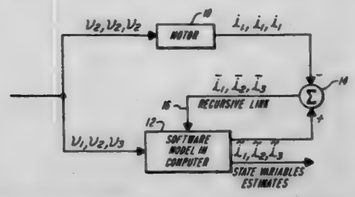
Filed Nov. 5, 1986, Ser. No. 927,532
Int. Cl.[5] H02P *1/46*
U.S. Cl. 318—715 **12 Claims**

1. Controller for a synchronous motor comprising:

means for measuring motor phase voltages and currents,

computing means responsive to the motor phase voltages and currents for calculating estimates of rotor angular orientation from observer model equations derived from state equations of the motor and adapted to have stable dynamics, whereby the estimates of rotor angular orientation converge to values of actual rotor angular orientation, and

means responsive to said estimates of rotor angular orientation for controlling the motor pulse voltages,



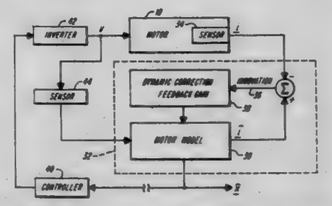
whereby motor phases are excited substantially in synchronism with the rotor angular orientation.

5,296,794

STATE OBSERVER FOR THE PERMANENT-MAGNET SYNCHRONOUS MOTOR

Jeffrey H. Lang, Waltham, and Lawrence A. Jones, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 668,393, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 264,087, Oct. 28, 1988. This application Apr. 13, 1993, Ser. No. 47,245
Int. Cl.[5] H02P *1/46*
U.S. Cl. 318—715 **5 Claims**



1. Controller for a permanent magnet synchronous motor having a single harmonic of air gap flux driven by known motor phase voltages, comprising:

apparatus adapted to measure motor phase currents;

computing apparatus adapted to compute estimates of electrical and mechanical states of the motor from observer model equations, said electrical states being parameters relating to the motor phase currents and said mechanical states being parameters relating to rotor speed and position, said observer model equations being derived from state equations of motor dynamics transformed into the rotor frame of reference, the computation being performed in response to the motor phase voltages and a parameter relating to the difference between measurements of the motor phase currents and estimates of the motor phase currents obtained from the estimates of the electrical states of the motor, and

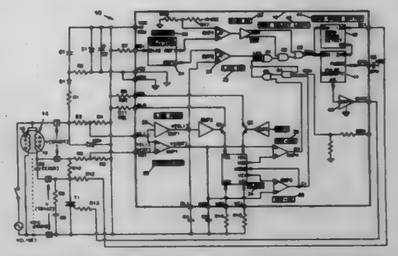
means responsive to said estimates of the electrical and mechanical states of the motor for controlling the phase voltages of the motor.

5,296,795

METHOD AND APPARATUS FOR STARTING CAPACITIVE START, INDUCTION RUN AND CAPACITIVE START, CAPACITIVE RUN ELECTRIC MOTORS

Kevin J. Dropps, Berkley, Mass.; Herbert A. Thompson, Cumberland, R.I.; James Alverusz, West Warwick, R.I., and Robert H. Fugere, North Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1992, Ser. No. 966,768
Int. Cl.[5] H02P *1/42, 1/44*
U.S. Cl. 318—778 **15 Claims**



1. A system for starting one of a capacitor start induction run and capacitor start-capacitor run motor having a main winding and an auxiliary winding comprising:

a triac having a gate and having first and second main terminals connected in series with the auxiliary winding to control the energization thereof,

control apparatus comprising;

a power supply means for providing first DC control circuit supply and second line voltage reference voltages,

bias OK means to compare supply voltage to the first reference voltage, a first condition being satisfied when the supply voltage exceeds the first reference voltage,

line OK means to compare line voltage to the second reference voltage, a second condition being satisfied when the line voltage exceeds the second reference voltage,

cut-in voltage means to compare start winding voltage to a selected cut-in level, a third condition being satisfied when the start winding voltage is less then the cut-in level,

zero crossing detection means to detect the crossing through zero of a sinusoidal voltage across the triac and, with the other three conditions being satisfied, to generate an enable signal when the sinusoidal voltage has cross zero and is below a selected maximum; and,

means to turn on the triac in response to the enable signal.

5,296,796

METHOD AND APPARATUS FOR DYNAMIC RANGE OPTIMIZATION IN A PWM MOTOR DRIVE

Penn H. Clower, Andover, Mass., assignor to The Charles Stark-Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 23, 1992, Ser. No. 980,535
Int. Cl.[5] H02P *5/28*
U.S. Cl. 318—808 **14 Claims**

1. An apparatus for generating a control signal for application to one of a plural number (n) of phase windings of an n-phase electrical motor, wherein the other (n—1) of the phase windings are driven from current sources, and the motor is powered from a dc voltage source having a high side terminal and a reference side terminal and a potential difference between the high side terminal and the reference side terminal, the apparatus comprising:

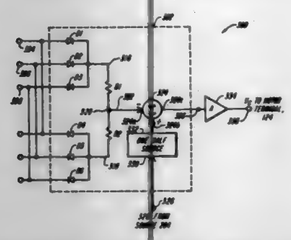
A. signal generation means for generating (n) phase voltage signals, each phase voltage signal being indicative of the voltage level at a corresponding one of the (n) phase windings;

B. averaging circuit means, coupled to the signal generation

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means, for generating an averaging signal representative of an arithmetic mean between a greatest one of the phase voltage signals and a least one of the phase voltage signals, thereof;

C. potential difference generation circuit means for generating a potential difference signal indicative of a predetermined portion of the potential difference; and



D. summation circuit means coupled to the averaging circuit means and to the potential difference circuit means, for generating a control signal representative of the difference between the potential difference signal and the averaging signal.

5,296,797

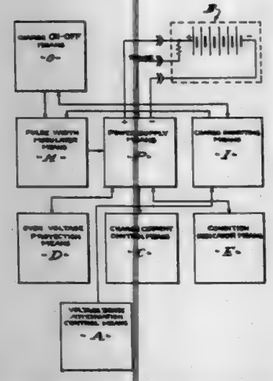
PULSE MODULATED BATTERY CHARGING SYSTEM

William H. Bartlett, Lake View Terrace, Calif., assignor to Byrd Electronics Corp., Arcadia, Calif.

Filed Jun. 2, 1992, Ser. No. 891,960

Int. Cl.[5] H02J 7/10

U.S. Cl. 320—21 **15 Claims**



1. A pulse modulated battery charging system having charge pulses and dwell therebetween for charging a battery, and characterized by shortening the charge pulses and lengthening the dwell therebetween in proportion to the closeness of the battery reaching full charge whereupon charge current is turned OFF, and including:

a power supply means having a battery charge bus and an operational bus and dual voltage regulation for supplying the battery charge bus with amperage at a given voltage, and supplying the operational bus with an operational amperage and voltage bias,

a pulse width modulator means for producing uniformly timed pulses of varied width and dwell between pulses, and having an ON-OFF switch means controlling the battery charge bus,

a charge inhibiting means for determining a pulse width and dwell acceptable to the battery under charge, in response to a sense circuit from said battery during said dwell,

a charge ON-OFF means responsive to the charge inhibiting means for ON-OFF control of the switch means controlling the pulse width modulator means,

and a charge current control means for limiting the maximum current applied through the charge bus to the battery under charge,

and wherein the charge bus and operational bus of the power supply means are each in circuit with a regulator means adjustable to supply said amperage at a given voltage, the regulator means having resistors and positive and negative charge conductors electrically connected to battery charging terminals for voltage control, said resistors operable to set maximum voltage of said regulator means.

5,296,798

METHOD OF REGULATING AN EXCITATION CURRENT OF AN INDUCTOR OF A MOTOR VEHICLE ALTERNATOR

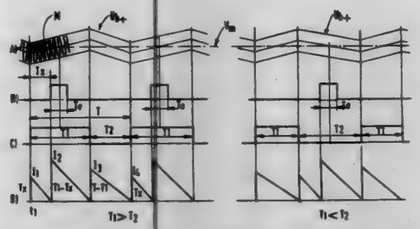
Jean-Marie Pierret, Paris, and Christian Ducrot, Lyons, both of France, assignors to Valeo Equipments Electriques Moteur, Saint-Ouen Cedex, France

Filed Oct. 9, 1991, Ser. No. 774,081

Claims priority, application France, Oct. 15, 1990, 90 12684

Int. Cl.[5] H02J 7/24

U.S. Cl. 322—28 **5 Claims**



1. A method of regulating an excitation current of an inductor of a motor vehicle alternator, said alternator comprising a rectifier bridge delivering a rectified voltage to be regulated, said rectified voltage having a low frequency waveform of variable amplitude on which a high frequency waveform of constant amplitude is superimposed, said rectified voltage being thus a cyclic voltage, each cycle of which comprises a first alternate period having a duration T1, in the course of which a voltage is applied to the inductor of the alternator, and a second alternate period having a duration T2, in the course of which no voltage is applied to the inductor, wherein said method comprises the steps of:

initiating measurement of the rectified voltage during one of said alternate periods of each said cycle,

evaluating the measurement, over a sampling break having a predetermined duration Te by carrying out successive iterative measurements of the rectified voltage and computing a mean value of said rectified voltage,

comparing the mean value of said rectified voltage with a calculated theoretical value thereof,

deducing from that comparison the durations of the periods T1 and T2 for the next following cycle,

applying a voltage to the inductor of the alternator for said deduced duration of T1, and

removing said applied voltage from the inductor of the alternator for said deduced duration of T2.

5,296,799

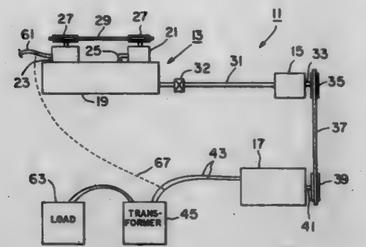
ELECTRIC POWER SYSTEM

Emsley A. Davis, 1805 Park La., Wellington, Tex. 79095

Filed Sep. 29, 1992, Ser. No. 953,461

Int. Cl.[5] H02P 9/00

U.S. Cl. 322—35 **6 Claims**



1. A system for producing electric power, comprising:

a) an air compressor unit, said air compressor unit comprising an air compressor, a storage tank connected to an output of said air compressor, and an electric motor for operating said air compressor;

b) an air powered motor having an air inlet and a shaft that is rotated by air entering said air inlet, said air inlet being connected to an air outlet on said air compressor storage tank;

c) an electric generator having a rotatable shaft that is rotatably coupled to said shaft of said air powered motor, said generator having electrical outputs;

d) electrical storage batteries connected to the electrical outputs of said generator, wherein said batteries are charged by said generator;

e) means for converting dc electrical power to ac electrical power, said converter means having an input connected to an output of said batteries and an output connected to said electric motor of said air compressor unit.

5,296,800

REGULATED POWER SUPPLY CIRCUIT

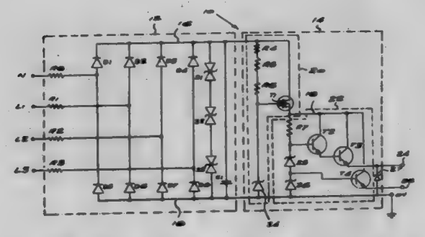
Ivan N. Bjorkman, Johannesburg, and Klaus J. R. Nusse, Randburg, both of South Africa, assignors to Circuit Breaker Industries Limited, South Africa

Filed Jan. 30, 1992, Ser. No. 828,203

Claims priority, application South Africa, Jan. 30, 1991, 91/0683

Int. Cl.[5] G05F 5/00

U.S. Cl. 323—303 **3 Claims**



1. A high voltage regulated DC power supply circuit comprising a full wave rectification stage for rectifying an input voltage of alternating current and a regulating stage capable of regulating an output voltage from the rectification stage in excess of 1 kV, the regulating stage having a primary voltage regulating circuit and a secondary voltage regulating circuit, the primary voltage regulating circuit having an open-loop configuration including a MOSFET-type device connected in a source-follower configuration, a primary voltage reference element for limiting a gate reference voltage to a gate of the MOSFET-type device to a maximum gate reference voltage, and a plurality of current limiting elements connected in series with the primary voltage reference element for limiting bias current to the gate and for sharing major portions of the output voltage from the rectification stage, and the primary voltage regulating circuit being directly cascaded to the secondary voltage regulating circuit in a voltage sharing configuration without a feedback or clamping circuit at an output from the MOSFET-type device, the MOSFET-type device arranged to operate in two modes, namely a first saturated on mode, in which the output voltage from the rectification stage is less than the maximum gate reference voltage, and the output from the MOSFET-type device follows the output voltage from the rectification stage, and a second on mode, in which the output voltage from the rectification stage exceeds the maximum gate reference voltage determined by the primary voltage reference element, and the output from the MOSFET-type device is held at approximately the maximum gate reference voltage provided by the primary voltage reference element, the power supply circuit being capable of handling an input voltage which exceeds a maximum-voltage rating of the MOSFET-type device.

5,296,801

BIAS VOLTAGE GENERATING CIRCUIT

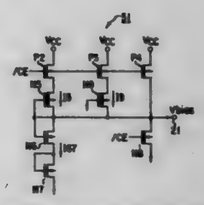
Nobuaki Ohtsuka, Yokohama; Sumio Tanaka, Tokyo, and Masao Kuriyama, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 29, 1992, Ser. No. 921,098

Claims priority, application Japan, Jul. 29, 1991, 3-188807; Jul. 17, 1992, 4-190402

Int. Cl.[5] G05F 3/16

U.S. Cl. 323—313 **10 Claims**



1. A bias voltage generating circuit for supplying a bias voltage to bit lines of a memory, comprising:

an enhancement-type first transistor of a first conductivity type having a current path with a first end connected to a first power supply, said first transistor being rendered conductive in accordance with a control signal being supplied to a gate thereof;

a depletion-type second transistor of a second conductivity type having a current path with a first end connected to a second end of the current path of the first transistor, a second end of the current path of the second transistor and a gate of the second transistor being connected to an outer node;

an enhancement-type third transistor of the second conductivity type having a current path, a first end of the current path of the third transistor and a gate of the third transistor being connected to the output node;

an enhancement-type fourth transistor of the second conductivity type having a current path, a first end of the current path of the fourth transistor an a gate of the fourth transistor being connected to a second end of the current path of the third transistor, a second end of the current path of the fourth transistor being connected to a second power supply;

an enhancement-type fifth transistor of the first conductivity

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type having a current path, a first end of the current path of the fifth transistor being connected to the first power supply, the fifth transistor being rendered conductive in accordance with said control signal also being supplied to a gate thereof;

a depletion-type sixth transistor having a current path, a first end of the current path of the sixth transistor being connected to a second end of the current path of the fifth transistor, a second end of the current path of the sixth transistor being connected to the output node, the gate of the sixth transistor being connected to a potential source; and

an enhancement-type seventh transistor of the second conductivity type having a current path, a first end of the current path of the seventh transistor being connected to the output node, a second end of the current path of the seventh transistor being connected to a ground potential, said seventh transistor being rendered non-conductive in accordance with said control signal also being supplied to a gate thereof,

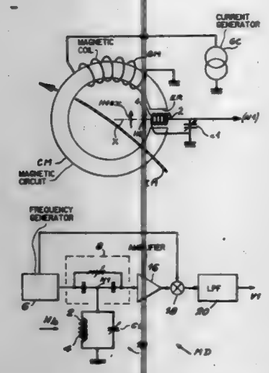
wherein said output node outputs a bias voltage to the bit lines when the control signal is activated, and said output node is grounded through the seventh transistor when the control signal is non-activated.

5,296,802

CURRENT SENSOR USING A RESONANCE DIRECTIONAL MAGNETOMETER

Marc Beranger, Meylan, and Denis Duret, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 5, 1992, Ser. No. 894,540
Claims priority, application France, Jun. 18, 1991, 9107445
Int. Cl.[5] G01R *33/20*; G01V *3/00*
U.S. Cl. 324—117 R **16 Claims**



1. A current sensor comprising:

a magnetic circuit having a magnetic loop interrupted by a gap, said magnetic loop surrounding a current to be measured;

polarization means having a magnetic coil surrounding the magnetic loop, said polarization means being supplied by a polarization direct current for producing said polarization magnetic field; and

a measuring device for supplying a voltage representative of a magnetic field Hlex produced in said gap by said current to be measured, said magnetic field Hlex having a value which is a function of the intensity of said current to be measured, wherein said measuring device is a resonance directional magnetometer including

a sample placed in said gap which is made from a material having resonant spins and which is exposed to a polarization magnetic field generated by said polarization means parallel to said magnetic field Hlex produced in said gap, and

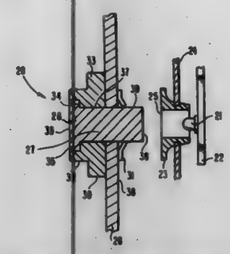
measuring means comprising first magnetic means positioned in the vicinity of the sample for exciting a spin resonance of said sample and for detecting the excited spin resonance, and wherein said measuring means has a function for providing, an an output, said voltage representative of said magnetic field Hlex produced in said gap.

5,296,803

WATT-HOUR METER COVER WITH BATTERY HATCH/RESET SWITCH AND OPTICAL COMMUNICATION PORT

Lane C. Kirby, West Point; Lester C. Moore; Christopher J. Gatz, both of West Lafayette, and Ronald C. Tate, Battle Ground, all of Ind., assignors to Landis & Gyr Metering, Inc., Lafayette, Ind.

Continuation of Ser. No. 719,246, Jun. 21, 1991, abandoned, which is a division of Ser. No. 410,980, Sep. 22, 1989, Pat. No. 5,049,810. This application Oct. 7, 1992, Ser. No. 957,758
Int. Cl.[5] G01R *1/04, 19/16*
U.S. Cl. 324—156 **11 Claims**



1. A cover for mounting on an energy consumption meter having a radiation signal transmitter for external communication with an external reader, the cover comprising:

a cover body having means for engaging an energy consumption meter;

communication pathway means for conducting a radiation signal from a transmitter in the meter, said pathway means including;

an elongated conduit body having a pair of opposite ends;

means for supporting said conduit body on said cover body for communicative alignment of one end of said elongated conduit body with the transmitter when said cover body is mounted on the meter, said means mounting the other end of said conduit body to said cover body with said elongated conduit body extending toward the transmitter; and

means integral with said conduit body for enhancing transmission of the radiation signal through the interior of said conduit body by enhancing internal reflection of the signal therewithin; and

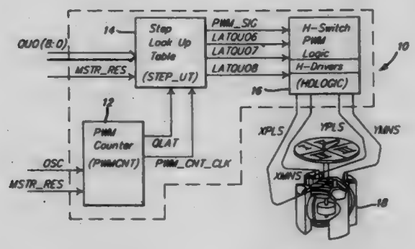
engagement means for engaging an external reader in communication with said other end of said elongated conduit body.

5,296,804

AIR CORE GAUGE FIXED VOLTAGE SIGNAL AND VARIABLE PULSE WIDTH MODULATION SIGNAL INTERCHANGED CONTROL SYSTEM THEREFOR

Paul A. Markow, Huntsville; Kevin R. Hammond, Harvest, and Donald E. Hutchings, Decatur, all of Ala., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 8, 1992, Ser. No. 941,623
Int. Cl.[5] G01R *11/36*; G01P *3/48*
U.S. Cl. 324—143 **8 Claims**



1. A drive apparatus for an air core gauge responsive to a coded data indicative of magnitudes and polarities of varying measurands, the drive apparatus comprising:

a) a fixed frequency PWM count clock with an input terminal for receiving a fixed clock oscillator signal and producing at one output terminal a chosen number of pulse signals at a chosen frequency related to the oscillator signal and, at another output terminal, producing a period signal each time after counting a chosen number of pulses of the pulse signal;

b) a ROM-BASE current controller, with a ROM containing a corresponding number of memory locations as the total chosen number of pulses counted by the PWM count clock, having one input terminal for: (1) receiving the coded data related to the varying measurand to be displayed, the coded data being in a form which can address a ROM location containing a digital word; the digital word containing a number of which a portion represents the magnitude of the measurand and another portion which represents bipolar information of the measurand; the controller having a second input terminal for: (2) receiving the pulse signals and a third input terminal for: (3) receiving the period signal and, after having a location addressed by the coded data, producing at a first output port a PWM signal for a duration proportional to the magnitude of the measurand and, at another output port, bipolar control signals indicative of a polarity of the PWM signal that route to one of a first or a second stator coils of the gauge and the polarity of a fixed voltage signal applied to another of the dual stator coils of the gauge not receiving the PWM signal; and

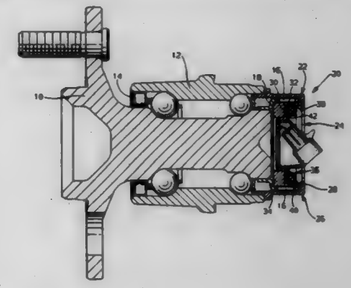
c) a bridge driver having logic circuits for receiving the PWM signal and the control signals, and producing at a first output port the PWM signal of a chosen polarity dictated by the logic circuits that route to the first or the second of the stator coils of the gauge, and producing at a second output port a fixed voltage signal of a chosen polarity that applies to the opposite of the first or second stator coils that receive the PWM signals, also dictated by the logic circuits, the PWM signals and the fixed voltage signal, developing current signals, having a vectorial relationship which causes a rotor with a dial needle connected thereto to rotate to dial positions indicative of the magnitude and direction of the measurand.

5,296,805

SERVICEABLE WHEEL SPEED SENSOR WITH MAGNET ASSISTED RETENTION

Edward R. Clark, Monroeville, and Jan Dubovec, Sandusky, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 17, 1992, Ser. No. 930,946
Int. Cl.[5] G01P *3/488*; F16C *32/00*; B60T *8/72*
U.S. Cl. 324—174 **3 Claims**



1. For use in a vehicle wheel bearing having a stationary bearing race and a coaxial rotating race forming an annular space therebetween, in which said rotating race has an exciter ring secured thereto including a cylindrical array of magnetic material teeth, an improved serviceable seal and speed sensor assembly, comprising,

a stator subassembly including a seal portion fixed to said stationary bearing race and covering said annular space, said stator subassembly further including a magnetic clamping portion proximate said teeth,

a sensor subassembly including a speed sensor and a speed sensor support adapted to interfit axially with said stator subassembly so as to locate said speed sensor proximate said exciter ring teeth, and also having a magnetic clamping portion abuttable with said stator subassembly clamping portion, and,

a permanent magnet secured to one of said stator and sensor subassemblies in abutment with said abutted magnetic clamping portions,

whereby said magnet is proximate to both said speed sensor and exciter ring teeth, so as to provide magnetic flux therefor, and also serves to magnetically retain said stator and sensor subassembly clamping portions together and thereby retain said subassemblies together.

5,296,806

METHOD FOR LOCATING METAL STUDS HIDDEN BEHIND A WALL PARTITION BY USE OF PARTICULATE MAGNETIC MATERIAL

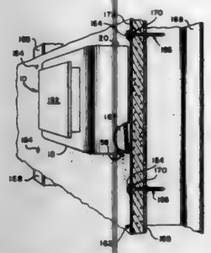
Charles J. Hurl, Jr., 846 E. 5th St., South Boston, Mass. 02127

Division of Ser. No. 829,949, Feb. 3, 1992, abandoned. This application Oct. 23, 1992, Ser. No. 965,796
Int. Cl.[5] G01R *33/00*; G01N *27/84*
U.S. Cl. 324—214 **8 Claims**

1. Method for locating a plurality of metal studs disposed in upright manner and spaced apart from one another horizontally along a wall, said metal studs being hidden from view by a vertically disposed wallboard member having a front face facing outwardly into a room or other open area and being defined by vertically upright first and second edges, said wallboard member being secured to each of the said plurality of metal studs by a plurality of spaced-apart metal screw-type fasteners located in vertical disposition along each said metal stud, said crew-type fasteners being characterized by their ability to attract magnetic particles comprising the following steps:

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(a) providing in loose fashion particulate magnetic material capable of being attracted by said fasteners; and
(b) causing said particulate material to be deposited in dispersed manner on the said front surface of the wallboard



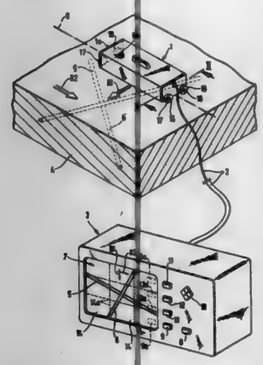
member between said upright edges whereby a portion of said particulate material is attracted to one of the said screw-type fasteners, and other portions of the particulate material will be attracted to other of said fasteners; and whereby the location of said studs is thereby defined.

5,296,807

APPARATUS FOR DETERMINING LOCATION OF AN ELEMENT OF MAGNETIZABLE MATERIAL IN A CONSTRUCTION STRUCTURE

Heinz Kousek, Feldkirch, Austria; Hansjörg Nipp, Mauren; Otto Noser, Vaduz, both of Liechtenstein; Otmar Ganahl, Bloss, Austria, and Hans Leimann, Ruggell, Liechtenstein, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Jan. 31, 1992, Ser. No. 830,140
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1991, 4103216
Int. Cl.[5] G01R *33/06;* **G01B** *7/14;* **G01V** *3/165*
U.S. Cl. 324—235 **14 Claims**



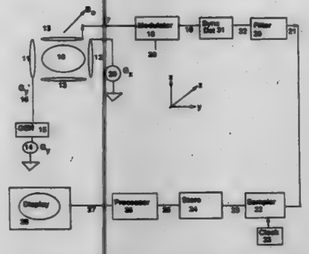
1. Apparatus for determining a location of a magnetizable element in a construction structure, said apparatus comprising:
a scanning head displaceable in a scanning direction and including a magnet for producing a magnetic field in the structure and having a bottom pole face adjacent to the surface of the structure along which the scanning head is displaceable;
at least one pair of magnetic field sensors secured in the region of the bottom pole face for measuring the magnetic field disturbed by the magnetizable element, the at least one pair of magnetic field sensors comprising a pair of field plates located on the bottom pole face, the field plates lying, in a spaced relationship relative to each other on a straight line extending parallel to the scanning direction during displacement of the scanning head;
a differential circuit connecting the field plates together for generating a differential measurement value in each scanning position of said scanning head;
means, associated with said differential circuit, for storing generated differential measurement values for all of the scanning positions of the scanning head during displacement of the scanning head along the entire displacement path thereof in the scanning direction; and
means, associated with said storing means, for determining a location of the magnetizable element wherein the determining means comprises means for processing the stored differential measurement values for determining a maximum of the stored differential measurement values, which defines the location of the magnetizable element.

5,296,808

MRI IMAGING SYSTEM WITHOUT ALIASING

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Filed Oct. 26, 1992, Ser. No. 966,357
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **9 Claims**



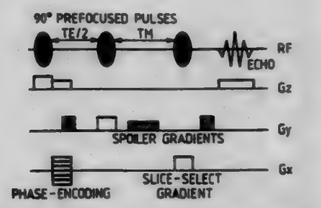
1. In a method for imaging precessing magnetic moments of an object within a volume using magnetic resonance imaging the steps of:
scanning k-space of the object using a sequence of magnetic gradient waveforms in at least two spatially orthogonal axes;
applying a first periodic waveform to at least one magnetic gradient axis which is superimposed on the gradient waveforms providing the k-space scan to provide a convolution operation which will substantially prevent aliasing of the image of the object;
receiving signals produced by the precessing magnetic moments in the object at each point of the k-space scan;
low-pass filtering the received signals at a cutoff frequency lower than the frequency of the periodic gradient waveform;
sampling the received signal; and
transforming the samples into an image of the object.

5,296,809

MAGNETIC RESONANCE EXPERIMENT AND APPARATUS

Timothy P. L. Roberts, 4 Romsey Road, Cambridge, England CB1 3DD ; Thomas A. Carpenter, 12 Whitehill Road, Cambridge, England CB5 8LT , and Laurence D. Hall, 22 Long Road, Cambridge, England CB2 2QS

PCT No. PCT/GB91/00507, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/15754, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 2, 1991, Ser. No. 930,653
Claims priority, application United Kingdom, Apr. 4, 1990, 9007655
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **7 Claims**



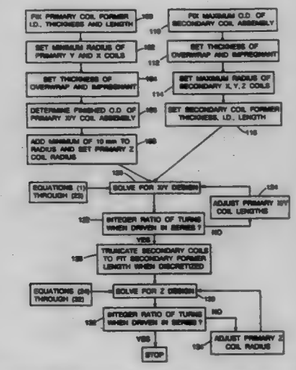
1. Magnetic resonance apparatus comprising magnetic field generating means for subjecting a sample under test to a sequence of magnetic field gradients; an RF pulse generator; and means for monitoring resultant pulse echoes characterized int hat the RF pulse generator generates a prefocused, phase-modulated, time-asymmetric RF pulse.

5,296,810

MRI SELF-SHIELDED GRADIENT COILS

Michael A. Morich, Mentor, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 859,152, Mar. 27, 1992, and a continuation-in-part of Ser. No. 859,154, Mar. 27, 1992. This application Sep. 9, 1992, Ser. No. 942,521
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **10 Claims**



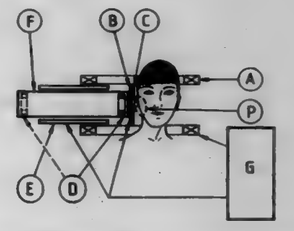
1. A magnetic resonance imaging system comprising:
an annular vacuum chamber which defines a cylindrical inner bore therein;
an annular helium reservoir disposed within the vacuum chamber surrounding and displaced from the central bore thereof;
a superconducting primary magnetic field coil disposed within the helium chamber for generating a substantially uniform magnetic field longitudinally through the central bore;
a self-shielded gradient coil assembly disposed in the central bore for generating gradient magnetic fields across a central region thereof and for shielding the vacuum chamber, the helium reservoir, and other components within the vacuum chamber from the generated gradient field magnetic fields such that eddy currents are not induced in the vacuum chamber or the contained associated structure, which eddy currents would tend to generate spurious magnetic fields within the bore, the self-shielded gradient coil assembly including:
an outer former on which x, y, and z secondary shielding coils are mounted, the outer former being received within the bore proximate thereto;
an inner former received in and spaced from the outer former, the inner former defining a subject receiving region therein for receiving a portion of a subject to be imaged therein;
primary x and y-gradient coils being mounted to the inner former for generating gradients across an examination region in the inner former orthogonal to a central axis of the vacuum chamber inner bore;
a z-gradient coil spaced outward from the inner former and the primary x and y-gradient coils and mounted inward from the outer former for generating magnetic field gradients along the central axis of the vacuum chamber inner bore, the z-gradient coil being displaced from the primary x and y-gradient coils to define a passage therebetween;
a radio frequency coil disposed within the vacuum chamber inner former;
a gradient control means for selectively causing electrical pulses to be applied to the x, y, and z primary gradient coils for inducing magnetic gradient pulses across the examination region;
a radio frequency transmitter for applying radio frequency pulses to the radio frequency coil for exciting and manipulating magnetic resonance of selected dipoles within the examination region;
a receiver means for receiving and demodulating magnetic resonance signals emanating from the examination region;
a reconstruction means for reconstructing the demodulated magnetic resonance signals into an image representation.

5,296,811

MAGNETIC RESONANCE IMAGING APPARATUS AND METHOD

Gösta J. Ehnholm, Helsinki; Ilmari Kinanen, Espoo, and Raimo Sepponen, Helsinki, all of Finland, assignors to Instrumentarium Corp., Finland

Filed Nov. 3, 1992, Ser. No. 970,805
Claims priority, application Finland, Nov. 22, 1991, 915520
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—319 **12 Claims**

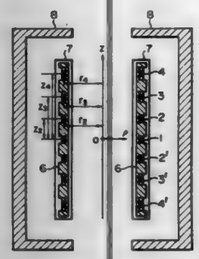


1. A magnetic resonance imaging apparatus that produces images of small objects, comprising:
a permanent magnet, physically displaced from said object,

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said object having nuclei, protons, and paramagnetic electrons;
means for cyclically polarizing said nuclei, said protons, or said electrons using said permanent magnet to thereby create a polarization field, said magnet being disposed near and end of said field; and
means for shifting said permanent magnet, after said object has been polarized, to a distance from said polarized object such that said permanent magnet has no substantial effect on subsequent signal collection carried out for MRI-imaging.

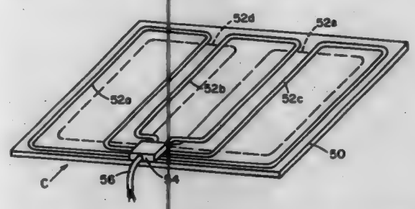
5,296,812
SUPERCONDUCTING MAGNET ASSEMBLY FOR MRI AND MRI DIAGNOSTIC APPARATUS
Masashi Kitamura, Kashiwa, and Shigeru Kakugawa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 30, 1992, Ser. No. 998,852
Claims priority, application Japan, Jan. 8, 1992, 4-001318
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—319 **8 Claims**



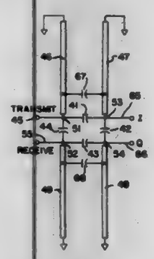
1. A superconducting magnet assembly for MRI comprising:
small superconducting coils disposed axially symmetrically with respect to a central axis and coaxially with said central axis;
a non-magnetic bobbin having said small super-conducting coils wound thereon;
a cryostat for storing said bobbin and said small superconducting coils; and
a magnetic shield member fitted to the outside of said cryostat;
wherein seven to nine of said small super-conducting coils are disposed so that the number of turns of said small superconducting coils becomes progressively greater towards the outside.

5,296,813
MAGNETIC RESONANCE SCANNER WITH IMPROVED PACKAGING FOR CIRCUITRY WITHIN THE MAGNETIC FIELD
Timothy B. Holmes, Solon, and Paul M. Scsavnicki, Mentor, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio
Filed Mar. 5, 1992, Ser. No. 847,796
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—322 **16 Claims**

1. In a magnetic resonance apparatus which includes a means for creating a magnetic field through an examination region; a means for exciting nuclei of a subject with int he examination region to emit radio frequency magnetic resonance signals; a radio frequency receiving coil means disposed in the examination region for receiving the magnetic resonance signals, the coil means including: an insulating substrate; at least one coil segment supported by the insulating substrate; a magnetic resonance signal processing circuit; a radio receiver for receiving magnetic resonance signals from the resonance signal processing circuit, the receiver means being disposed outside of the examination region; a data reconstruction means operatively connected with the receiver means for processing the received data; a memory means for storing the processed data for selected display on a video monitor; THE IMPROVEMENT COMPRISING:
constructing the magnetic resonance signal processing circuit using chip and wire hybrid technology in which a plurality of ferrous-free unpackaged dice are mounted and bonded to a semiconductor substrate having electrical lead lines defined thereon, the dice are wire bonded by whiskers bonded directly to electrically conductive layers of the dice and the substrate lead lines.

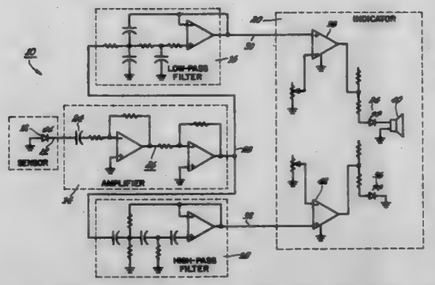


5,296,814
TUNABLE SIGNAL COUPLER FOR A MAGNETIC RESONANCE IMAGING SYSTEM
David E. Lyle, Brookfield, Wis., assignor to General Electric Company, Milwaukee, Wis.
Filed Apr. 15, 1992, Ser. No. 869,270
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—322 **16 Claims**



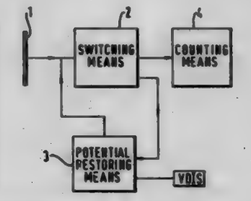
1. A circuit for coupling a transmitter of a magnetic resonance imaging system to an antenna, said circuit comprising:
first and second transmission lines with each transmission line having two ends;
a first capacitor connected across first ends of said first and second transmission lines;
a first conductor for coupling a signal at a given radio frequency from the transmitter to the first end of said first transmission line;
a second capacitor connected across said first and second transmission lines at an intermediate point between the ends of each transmission line, the point being chosen to tune the circuit to the given radio frequency; and
a second conductor for connecting the antenna to an end of the second transmission line.

5,296,815
DEVICE FOR DETECTING THE TYPE OF BALLAST OF A DISCHARGE LAMP
Kathryn M. Conway, North Chatham; Peter Boyce, Ballston Lake, and Kenneth Sasiadek, Nassau, all of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.
Filed Jul. 14, 1992, Ser. No. 913,653
Int. Cl.[5] G01R *23/16, 31/00, 19/14, 27/02*
U.S. Cl. 324—414 **8 Claims**



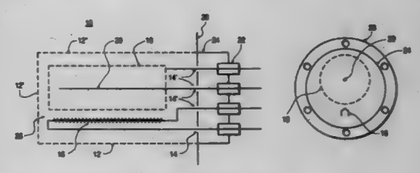
1. A device enabling detection of the operating frequency for the ballast means of a gaseous discharge lamp from a remote location which comprises:
(a) sensor means converting the light output of said gaseous discharge lamp to a variable frequency output voltage, said sensor means being unconnected to said discharge lamp,
(b) frequency selective circuit means which include a low-pass response providing a voltage output signal at relatively low-frequencies in combination with a high-pass response providing a voltage output signal at relatively high frequencies, while also removing any transient direct current voltage, and
(c) multiple lamp indicating means for separate lamp actuation with each voltage output signal from said frequency selective circuit means.

5,296,816
INTEGRATED CIRCUIT SENSOR AND DETECTOR AND SPECTROMETERS INCORPORATING THE SENSOR
Keith Birkinshaw, Machynlleth, Wales, assignor to Fisons Plc, Ipswich, United Kingdom
PCT No. PCT/GB90/01003, § 371 Date Jan. 16, 1992, § 102(e) Date Jan. 16, 1992, PCT Pub. No. WO91/00612, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 29, 1990, Ser. No. 820,862
Claims priority, application United Kingdom, Jun. 29, 1989, 8914910.8
Int. Cl.[5] G01R *29/12, 5/28;* **H01J** *49/02;* **G01T** *1/28*
U.S. Cl. 324—457 **39 Claims**



1. A sensor for electrical charge comprising:
a) an electrode for receiving charge;
b) means connected to said electrode for initially setting the potential of said electrode to a selected potential;
c) potential sensitive switching means connected to said electrode for monitoring the potential of said electrode, said switching means switching state whenever the potential of said electrode deviates from said initially set potential by more than a preselected amount;
d) means connected to said electrode for restoring the potential of said electrode to substantially said selected potential whenever said switching means switches state; and
e) means connected to said switching means for counting the number of times said switching means switches state to provide an indication of the electrical charge received by said electrode;
wherein said electrode, said means for initially setting said electrode potential, said potential sensitive switching means, said means for restoring and said means for counting are fabricated as an integrated circuit.

5,296,817
IONIZATION GAUGE AND METHOD OF USING AND CALIBRATING SAME
Daniel G. Bills, Boulder; Michael D. Borenstein, Louisville, and Paul C. Arnold, Boulder, all of Colo., assignors to Granville-Phillips Company, Boulder, Colo.
Continuation-in-part of Ser. No. 778,371, Oct. 17, 1991, and a continuation-in-part of Ser. No. 507,579, Apr. 11, 1990, Pat. No. 5,128,617. This application Jun. 30, 1992, Ser. No. 906,665
Int. Cl.[5] G01L *21/32*
U.S. Cl. 324—460 **94 Claims**



31. An ionization gauge comprising:
an anode defining a cylindrical anode volume and having an axis of substantial symmetry;
a source of electrons disposed outside said anode volume and extending in a direction substantially parallel to the anode axis; and
a collector electrode for collecting ions formed by impact between said electrons and gas molecules within said anode volume so that the pressure of the gas can be measured;
wherein said anode is provided with end caps which extend radially inward at least 25% of the radius of the anode but not more than 75% of said radius; and
the length of said electron source is within a range which is (a) shorter than to (b) not substantially longer than the axial dimension of the region within said anode volume in which the electric field is predominantly directed radially inward, the electron source being located adjacent substantially only to said region.

5,296,818
ELECTRICAL YOKE TESTER
John W. Vrablec, Sealy, Tex., assignor to Houston Industries Incorporated, Houston, Tex.
Filed Aug. 13, 1992, Ser. No. 929,690
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—542 **11 Claims**

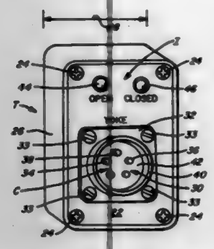
1. An apparatus for isolating the source of a fault in transfer of control signals between a yoke and an electrical switch in an electrical power distribution system, the yoke having an open signal conductor for an open control signal to open the electrical switch and a close signal conductor for a close control signal to close the electrical switch, comprising:

connector means comprising a receptacle with appropriately spaced connectors for enabling a slidable, mating fit connection to the signal conductors of the yoke without disassembly of said yoke, said connector means further comprising:

a connector electrically connected to the open signal conductor; and

a connector electrically connected to the close signal conductor;

indicator means electrically connected to said connector means for indicating the flow of electrical current through the yoke, said indicator means comprising:



an open indicator for indicating on passage of the open control signal through the open signal conductor that such conductor is operative and on failing to indicate such passage identifying a faulty open signal conductor;

a close indicator for indicating on passage of the close control signal through the close signal conductor that such conductor is operative and on failing to indicate such passage identifying a faulty close signal conductor;

said open indicator and said close indicator on both indicating passage of their respective signals isolating the faulty condition as being in the electrical switch; and

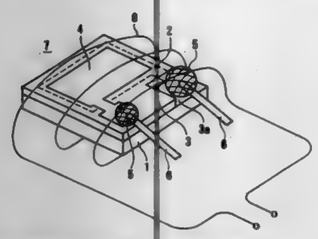
housing means for containing said connector means and said indicator means.

5,296,819

POLYMER CAPACITATIVE MOISTURE SENSITIVE DEVICE COMPRISING HEATING MEANS

Takaaki Kuroiwa; Tooru Abe, and Tetsuya Miyagishi, all of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Japan

Filed Jun. 23, 1992, Ser. No. 903,000
Claims priority, application Japan, Jun. 25, 1991, 3-179006
Int. Cl.[5] G01N *27/56*; G01R *27/26*
U.S. Cl. 324—670 **3 Claims**



1. A moisture sensitive device comprising:

a polymer capacitive moisture sensitive element, having initial characteristics, formed by sequentially stacking, on an insulating substrate, a lower electrode, a moisture sensitive film made of an organic polymer resin material and an upper electrode; and

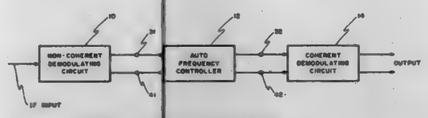
heating means for heating said moisture sensitive film to restore said initial characteristics in said polymer capacitive moisture sensitive element when said characteristics drift from their initial state.

5,296,820

COHERENT DEMODULATOR PRECEDED BY NON-COHERENT DEMODULATOR AND AUTOMATIC FREQUENCY CONTROL CIRCUIT

Hisashi Kawabata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,853
Claims priority, application Japan, Aug. 28, 1991, 3-216777
Int. Cl.[5] H04L *27/22*
U.S. Cl. 329—307 **10 Claims**



1. A demodulating device comprising:

non-coherent demodulating means for multiplying a modulated signal with a local frequency signal having frequency close to a frequency of the modulated signal to produce a first pseudo baseband signal having frequency error;

automatic frequency control means for reducing the frequency error of the first pseudo baseband signal to produce a second pseudo baseband signal; and

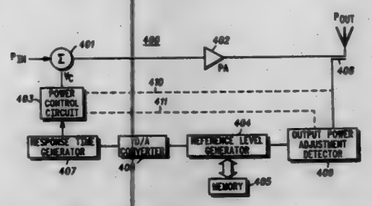
coherent demodulating means for multiplying the second pseudo baseband signal with a reproduced carrier to produce a baseband signal.

5,296,821

METHOD AND APPARATUS FOR CONTROLLING TRANSIENT RESPONSES IN A POWER AMPLIFIER

Michael W. Petersen, Elgin, Ill., and Clark D. Fischbach, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 55,460
Int. Cl.[5] H03G *3/20*
U.S. Cl. 330—141 **13 Claims**



1. In a power amplifier, a method for controlling transient responses, the method comprises the steps of:

a) detecting when an output power adjustment is requested to produce a requested output condition;

b) accessing a memory device for a reference level, wherein the reference level is based on a previous output condition that is substantially equal to the requested output condition;

c) when the reference level is retrieved from the memory device, calculating a first response time based on the reference level;

d) supplying the first response time to a control circuit of the power amplifier to operate the power amplifier at a first gain level; and

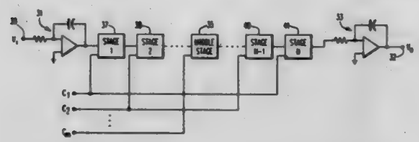
e) when the first response time elapses, operating the power amplifier at a second gain level, wherein the first gain level is greater than the second gain level.

5,296,822

LOW PASS FILTER CIRCUIT DEVICE AND METHOD HAVING SELECTABLE CUTOFF FREQUENCY

Edward A. Cockey, IV, Jarrettsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 31, 1992, Ser. No. 999,754
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—306 **9 Claims**



1. An electrical signal filter device having a selectable low pass cutoff frequency changeable within a designated range, said device comprising:

an input filter having an input node electrically connectable to receive input signals to be filtered, said input filter having a first fixed low pass cutoff frequency greater than an upper limit frequency of said designated range;

an output filter having an output node electrically connectable to deliver filtered output signals, said output filter having a second fixed low pass cutoff frequency greater than said upper limit frequency of said designated range;

at least three serially coupled clock driven filter stages electrically connected interposing said input filter and said output filter, each of said clock driven filter stages having a variable low pass cutoff frequency proportional to a clock rate of a respective clock signal applied thereto;

a first stage of said clock driven filter stages having a first variable low pass cutoff frequency no greater than said upper limit frequency of said designated range;

a second stage of said clock driven filter stages having a second variable low pass cutoff frequency no greater than said first variable low pass cutoff frequency and equal to said selectable low pass cutoff frequency;

a third stage of said clock driven filter stages having a third variable low pass cutoff frequency no less than said second variable low pass cutoff frequency and no greater than said second fixed low pass cutoff frequency; and,

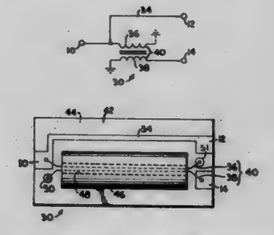
clock means for providing respective clock signals to said clock driven filter stages such that effective filtering of frequencies greater than said selectable low pass cutoff frequency is facilitated.

5,296,823

WIDEBAND TRANSMISSION LINE BALUN

James Dietrich, 1642 N. Baltimore Ave., Derby, Kans. 67037

Filed Sep. 4, 1992, Ser. No. 940,656
Int. Cl.[5] H01P *5/10*
U.S. Cl. 333—26 **13 Claims**



1. A balun for converting between unbalanced and balanced signals and comprising:

(a) a first transmission line having an input and an output;

(b) a second transmission line having an input and an output;

(c) coupling means for dividing a power signal equally between said first transmission line input and said second transmission line input;

(d) said first transmission line and said second transmission line having substantially equal electrical lengths between said respective input and output;

(e) said first transmission line having a single electrical conductor;

(f) said second transmission line having a polarity reversing connection; and

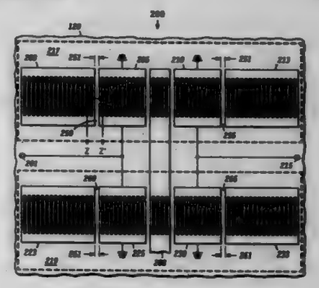
(g) said balanced signals being taken at said first transmission line output and said second transmission line output.

5,296,824

LOW LOSS WIDE BANDWIDTH PARALLEL CHANNEL ACOUSTIC FILTER

Frederick Y. Cho, Scottsdale; Thomas S. Hickernell, Tempe, and David Penunuri, Fountain Hills, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1991, Ser. No. 801,297
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—193 **27 Claims**



8. A wide bandwidth acoustic wave filter comprising:

a piezoelectric substrate comprising a piezoelectric material including a surface;

a first acoustic wave filter, having a first center frequency, low loss and a first bandwidth, disposed on said surface of said piezoelectric substrate;

a second acoustic wave filter, having a second center frequency, low loss and a second bandwidth, disposed on said surface of said piezoelectric substrate, said first and second acoustic wave filters including corresponding electrodes having a common width and a common periodicity;

an input commonly connected to said first and second acoustic wave filters, said input receiving a first input signal and coupling said first input signal to said first and second acoustic wave filters;

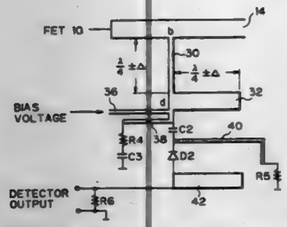
said first acoustic wave filter providing a first output signal in response to said first input signal;

said second acoustic wave filter providing a second output signal in response to said first input signal; and

an output commonly connected to said first and second acoustic wave filters, said output combining said first and second output signals from said first and second acoustic wave filters to provide a width bandwidth, low loss acoustic wave filter output, wherein said wide bandwidth is greater than either said first or said second bandwidth.

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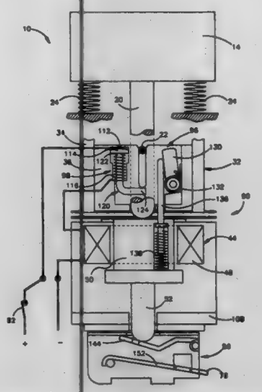
5,296,825
BIAS CIRCUIT HAVING SIGNAL OUTPUT TO DETECTOR PORTION
Yoshiyasu Tsuruoka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 4, 1992, Ser. No. 940,515
Claims priority, application Japan, Sep. 5, 1991, 3-224504
Int. Cl.[5] H01P *5/00*; H03F *3/19*
U.S. Cl. 333—246 9 Claims



1. A bias circuit for supplying a main transmission line with a bias voltage and for taking out a detection signal from the main transmission line, the detection signal being for use in detection of a level of a main signal transmitted on the main transmission line, the circuit comprising:
a first transmission line connected to the main transmission line at one end of the first transmission line;
a second transmission line opened at one end thereof and connected to the other end of the first transmission line at the other end of the second transmission line;
a conductive line connected to said other end of the second transmission line for feeding the bias voltage through the first transmission line to the main transmission line;
a terminal provided between the second transmission line and the conductive line, for taking out the detection signal; and
a detector portion connected to said terminal and receiving the detection signal therefrom for detecting a level of a leakage signal leaked from the main transmission line.

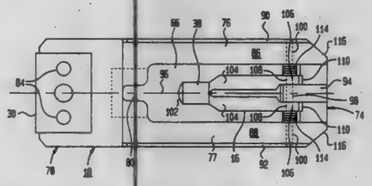
5,296,826
SWITCH ASSEMBLY
Roy L. Hart, Laguna Niguel, and Yusuke P. Okabayashi, Costa Mesa, both of Calif., assignors to Eaton Corporation, Cleveland, Ohio
Filed May 13, 1993, Ser. No. 61,835
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—132 15 Claims

1. A switch assembly comprising switch contacts operable between a first condition and a second condition, a base member, electromagnetic means operable between an energized condition and a deenergized condition, said electromagnetic means being effective to provide an electromagnetic field when said electromagnetic means is in the energized condition, manually actuatable means for moving at least a portion of said electromagnetic means toward said base member from a first position in which said portion of said electromagnetic means is spaced from said base member toward a second position in which said portion of said electromagnetic means is adjacent to said base member and the electromagnetic field from said electromagnetic means cooperates with said base member to retain said portion of said electromagnetic means in the second position, means for operating said switch contacts from the first condition to the second condition upon movement of said portion of said electromagnetic means from the first position to the second position and for retaining said switch contacts in the second condition while said portion of said electromagnetic means is in the second position, said manually actuatable means being manually movable from an unactuated position to an actuated position to move said portion of said electromagnetic means toward said base member with said electromagnetic means in the energized condition, said manually actuatable means being movable from the actuated position to the unactuated position with said portion of said electromagnetic means in the second position and said electromagnetic means in the



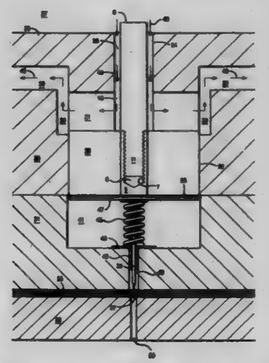
energized condition, and switch means for effecting operation of said electromagnetic means to the deenergized condition upon movement of said manually actuatable means from the unactuated position to the actuated position with said portion of said electromagnetic means in the second position.

5,296,827
CIRCUIT BREAKER WITH MAGNETIC SHIELD
Bernard DiMarco, Lilburn; Robert E. Black, Snellville, and Stephen D. Cella, Stone Mountain, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Division of Ser. No. 713,803, Jun. 13, 1991. This application Oct. 16, 1992, Ser. No. 962,539
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 17 Claims



1. A circuit breaker contact arm support assembly comprising:
an electrically conductive contact support having:
a terminal portion;
an end portion; and
first and second generally parallel, spaced-apart side members which extend between the terminal and end portions, where the members conduct current in parallel and in the same direction between the terminal and end portions;
a circuit breaker contact arm pivotally coupled to the conductive contact support end portion in an electrically conductive manner, so as to pivot between a first position and a second position between and generally coplanar with the generally parallel side members; and
a magnetic shield interposed between the arm and the conductive support side members;
such that when the arm is in the second position and current is being conducted through the contact support and arm, the generally coplanar orientation of the contact support side members and contact arm in combination with the shield interposition therebetween reduces magnitude of magnetic forces which cause movement of the arm from the second position to the first position.

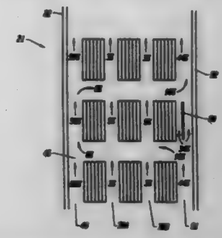
5,296,828
COIL FOR MAGNETIC REPULSION PUNCH
Paul Feinstein, Jr., Austin; Robert N. Price, Round Rock; Verlon E. Whitehead, Austin, and John A. Williamson, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 9, 1991, Ser. No. 743,002
Int. Cl.[5] H01F *5/00*
U.S. Cl. 335—300 8 Claims



1. A coil used in a magnetic repulsion punching apparatus to drive a punch assembly and form holes in a substrate, comprising:
an electrically actuated tape wound coil for providing energy to drive said punch assembly which includes a punch head having a circumference substantially identical to a circumference of said coil and rigidly connected to a punch shaft;
means for cooling said coil by circulating coolant radially through a first side of said coil; and
means for biasing said punch head adjacent a planar surface of said coil, opposite said first side:
means for providing electrical energy to said coil wherein said punch head is driven in a direction away from said coil and toward said substrate such that said punch shaft forms said holes in said substrate.

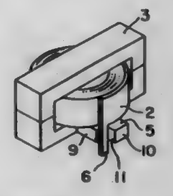
5,296,829
CORE-FORM TRANSFORMER WITH LIQUID COOLANT FLOW DIVERSION BANDS
Richard E. Kothmann, Pittsburgh, and Donald K. Whirlow, Murrysville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Nov. 24, 1992, Ser. No. 980,765
Int. Cl.[5] H01F *27/10*
U.S. Cl. 336—60 9 Claims

1. A core-form transformer winding comprising:
a winding tube including a central longitudinal axis;
a plurality of coil sections axially displaced along said central longitudinal axis of said winding tube, said plurality of coil sections including radial ducts between said coil sections and internal vertical ducts formed within each of said coil sections;
an outer wrap encircling said plurality of coil sections and thereby forming an outer vertical duct between said outer wrap and said plurality of coil sections;
a liquid coolant flowing through said outer vertical duct; and
a flow diversion band, with an interior surface and an exterior surface, positioned in said outer vertical duct between said outer wrap and said plurality of coil sections so as to



allow said liquid coolant to flow over said interior surface and said exterior surface, said flow diversion band being positioned around a selected coil section of said plurality of coil sections and having an axial length substantially equivalent to the axial length of said selected coil section, said flow diversion band generating a partial blockage of said liquid coolant to form a radial flow into one or more of said radial ducts.

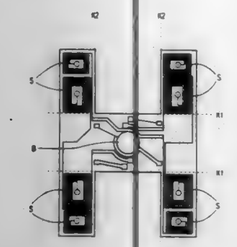
5,296,830
CHOKE COIL
Teruo Tamada; Shigeru Kameyama, and Koji Arakawa, all of Tsurugashima, Japan, assignors to Toko Kabushiki Kaisha, Tokyo, Japan
Filed May 21, 1992, Ser. No. 886,285
Claims priority, application Japan, May 27, 1991, 3-47415[U]
Int. Cl.[5] H01F *15/10, 27/30*
U.S. Cl. 336—192 6 Claims



1. A choke coil comprising:
a bobbin provided with a cylindrical winding portion;
a terminal fixing plate which is attached to said bobbin and which protrudes rom the periphery to the outer side of one end of said cylindrical winding portion;
a band-shaped conductor which is made of a conductive material which provides a spring force and which is wound around said cylindrical winding portion, both ends of said band-shaped conductor being provided with terminal portions which extend in one direction perpendicular to the longitudinal direction, and said band-shaped conductor being fixed in the status where said terminal potions sandwich opposing side surfaces of said terminal fixing plate and are held against said terminal fixing plate by said spring force applied by said band shaped conductor as said spring force urges said band-shaped conductor into an unwound state, thus causing said terminal portions to engage said bobbin.

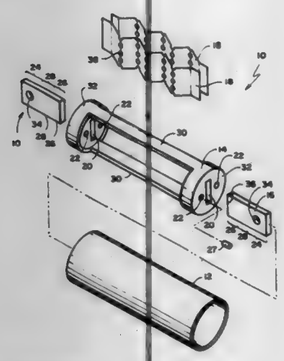
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,831
COIL ARRANGEMENT FOR A FOCUSING OR TRACK CONTROL CIRCUIT
Tsuneo Suzaki, Mönchweiler, Fed. Rep. of Germany, assignor to Deutsch Thomson Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany
Filed Apr. 24, 1992, Ser. No. 872,753
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1989, 3932860
Int. Cl.[5] H01F 5/00
U.S. Cl. 336—200 2 Claims



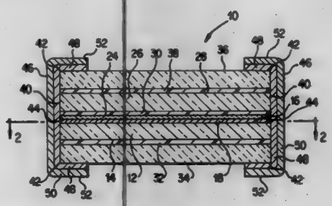
1. A coil arrangement for a control circuit which controls the motion of a housing, wherein the coils are arranged on a flexible foil as a printed circuit and serve as control elements for said control circuit, said coil arrangement comprising:
an H-shaped flexible foil, said coils being arranged on the verticals of said H-shaped foil, and the portions of said verticals adjacent to the cross-bar of said H-shaped foil supporting connecting-conductors which connect the coils on the individual vertical;
an aperture, soldering terminals and conductive strips arranged on said cross-bar, said cross-bar being affixed to the top or bottom of a block-shaped housing and the verticals of said H-shaped foil being folded against the sides of said housing.

5,296,832
CURRENT LIMITING FUSE
Richard J. Perreault, Amesbury, Mass., and Robert M. Pimpis, Dover, N.H., assignors to Gould Inc., Eastlake, Ohio
Filed Apr. 23, 1991, Ser. No. 52,388
Int. Cl.[5] H01H 85/04, 85/143
U.S. Cl. 337—158 32 Claims



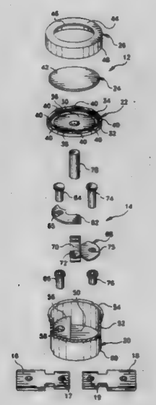
1. A fuse comprising
a tubular member made of insulative material and having two open ends;
end block portions made of insulative material and located at each of said two ends of said tubular member, each of said end block portions having an opening therethrough;
a spanner joining together said end block portions;
said spanner being directly attached to said block portions;
terminals extending through both of said openings, each of said terminals having an internal portion inside said tubular member, an external portion outside of said tubular member, and a middle portion between said internal and external portions and located within one of said openings; and
said terminals being spaced from said spanner; and
a fusible element having ends connected to respective internal portions of both of said terminals.

5,296,833
HIGH VOLTAGE, LAMINATED THIN FILM SURFACE MOUNT FUSE AND MANUFACTURING METHOD THEREFOR
Barry N. Breen, Givat Zeev; Michael Dakhiya, Kiryat Ono, and Irina Daynov, Givat Zeev, all of Israel, assignors to AVX Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 920,113, Jul. 24, 1992, Pat. No. 5,228,188, which is a division of Ser. No. 846,264, Feb. 28, 1992, Pat. No. 5,166,656. This application Apr. 16, 1993, Ser. No. 48,735
Int. Cl.[5] H01H 85/04, 69/02
U.S. Cl. 337—297 6 Claims



4. A thin film surface mount fuse comprising:
a generally rectangular, insulating substrate having an upper planar surface, opposite end surfaces perpendicular to the top surface and a lower planar surface;
a deposited, electrically conductive thin film on the upper surface of the substrate, the thin film defining a fuse element comprising a pair of contact portions interconnected by at least one link having a width smaller than that of the contact portions, the link being fusible in response to a predetermined current therethrough, each of the contact portions having an exposed outer edge flush with an end surface of the substrate;
an insulating cover coextensive with the substrate and having end surfaces, the insulating cover being bonded to the upper surface of the insulating substrate, the end surfaces of the substrate and cover and the outer edges of the thin film element defining opposed end faces of the surface mount fuse, the insulating cover having an upper planer surface;
a first cover layer coextensive with the insulating cover and bonded to upper surface thereof, the first cover layer having an upper surface;
a second cover layer coextensive with the insulating substrate and bonded to the lower surface thereof, the second cover layer having a lower surface, the first and second cover layers having a mechanical strength greater than that of the substrate and insulating cover; and
an electrically conductive termination covering each of the end faces of the fuse and being in electrical contact with the outer edge of one of the contact portions of the fuse element, each termination having a leg extending along a portion of the upper surface of the first cover layer and a leg extending along a portion of the lower surface of the second cover layer.

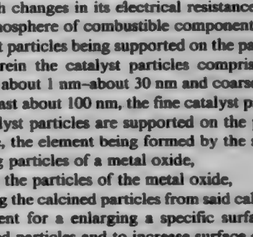
5,296,834
THERMOSTATIC SWITCH AND BIMETALLIC DISC ASSEMBLY THEREFOR
Anthony F. Urban, Warren, R.I., assignor to Ellmwood Sensors, Inc., Pawtucket, R.I.
Filed Jun. 10, 1993, Ser. No. 74,932
Int. Cl.[5] H01H 37/04, 37/52
U.S. Cl. 337—372 6 Claims



1. A disc retainer for a thermostatic switch of the type actuated by a bimetallic disc comprising:
a circular flange portion having an axial bore extending therethrough;
a circular shoulder portion extending upwardly from a first side of said flange portion, said shoulder portion engaging a peripheral edge portion of said bimetallic disc and supporting said disc above said first side of said flange; and
a peripheral rim portion extending upwardly from said shoulder portion, said peripheral rim portion having a terminal edge, and a plurality of circumferentially spaced projections which extend upwardly from said terminal edge.

5,296,835
VARIABLE RESISTOR AND NEURO DEVICE USING THE VARIABLE RESISTOR FOR WEIGHTING
Takashi Nakamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Jun. 30, 1993, Ser. No. 83,570
Claims priority, application Japan, Jul. 1, 1992, 4-174558
Int. Cl.[5] H01C 7/10
U.S. Cl. 338—130 19 Claims

6. A variable resistor comprising:
a plurality of pairs of opposed electrodes which differ in spacing;
a chalcogenide semiconductor with which spaces between said pairs of opposed electrodes are filled; and



connecting means for electrically connecting said plurality of pairs of opposed electrodes in parallel.

5,296,836
GAS COMPONENT DETECTING ELEMENT AND DETECTOR
Toshiki Saburi, Ichinomiya; Masaya Fujimoto, Kariya; Tadashi Tsuruta, Nagoya, and Naochika Nunogaki, Yokkaichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Division of Ser. No. 580,970, Sep. 12, 1990, Pat. No. 5,182,136. This application Sep. 28, 1992, Ser. No. 952,653
Claims priority, application Japan, Sep. 12, 1989, 1-236328
Int. Cl.[5] H01C 7/00
U.S. Cl. 338—34 5 Claims

1. A detector of the type which has a gas component detecting element comprising a sintered body of particles of a metal oxide which changes in its electrical resistance depending on relative atmosphere of combustible components in an exhaust gas, catalyst particles being supported on the particles of metal oxide, wherein the catalyst particles comprise fine catalyst particles of about 1 nm–about 30 nm and coarse catalyst particles of at least about 100 nm, the fine catalyst particles and the coarse catalyst particles are supported on the particles of the metal oxide, the element being formed by the steps of:
preparing particles of a metal oxide,
calcining the particles of the metal oxide,
subjecting the calcined particles from said calcining step to a treatment for a enlarging a specific surface area of the calcined particles and to increase surface defects thereof,
supporting catalyst particles on the surface of the particles subjected to the enlargement treatment in said subjecting step.
sintering the particles which support the catalyst particles; and
forming the gas component detecting element from the sintered particles.

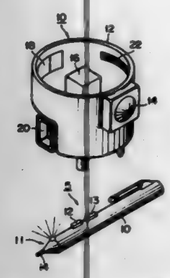
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,837
STANNOUS OXIDE FORCE TRANSDUCER AND COMPOSITION
Stuart I. Yaniger, Ventura, Calif., assignor to Interlink Electronics, Inc., Camarillo, Calif.
Filed Jul. 10, 1992, Ser. No. 911,769
Int. Cl.[5] H01C *10/10*
U.S. Cl. 338—47 23 Claims



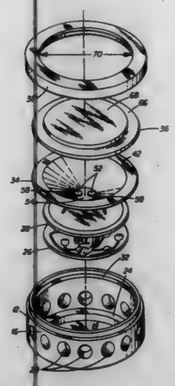
1. A transducer having a resistance which varies in response to the amount of applied force comprising:
a base ply;
a resistance ply disposed on the base ply, the resistance ply comprising:
a continuous matrix conductive resin; and
a stannous oxide particulate interspersed in the continuous matrix of conductive resin to form a surface with a plurality of microprotrusions formed by the stannous oxide particulate;
at least two spaced apart conductors electrically interconnected across the resistance ply to enable electrical conduction through the resistance ply, at least one of the conductors juxtaposed opposite the surface of the resistance ply for being pressed thereagainst, the resistance to electrical current conducting through the resistance ply varying in response to the amount of force applied to press the at least one conductor against the surface of the resistance ply.

5,296,838
WIRELESS INPUT SYSTEM FOR COMPUTER
Toru Suzuki, Kanagawa, Japan, assignor to Digital Stream Corp., Sagamihara, Japan
Filed Apr. 20, 1992, Ser. No. 870,955
Claims priority, application Japan, Apr. 22, 1991, 3-118118
Int. Cl.[5] G09G *3/02*; G01V *9/04*
U.S. Cl. 345—157 13 Claims



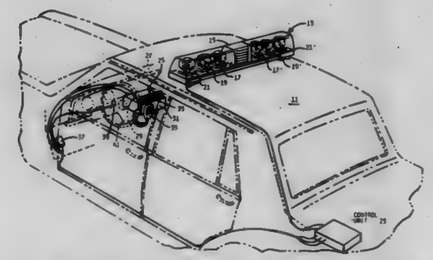
13. A wireless input device for a computer which is capable of detecting the position of a source of incident light, such as a movable, pen-type input unit that emits light pulses, comprising:
a light source distance detecting section mounted with said wireless input device for detecting a distance of the incident light source from said input device, said light source distance detecting section comprising: (a) a lens movably mounted on said input device for receiving the incident light from the light source; (b) focus detecting means for detecting when the incident light received through said lens becomes focused; (d) lens moving means coupled to said focus detecting means for controllably moving said lens to the focus position; and (d) focus position detecting means for detecting the focus position to which said movable lens is moved, wherein the detected focus position of said movable lens has a predetermined relationship in correspondence to the distance of the light source from said input device;
an incident angle detecting section mounted with said wireless input device for detecting an angle at which the incident light is received by said lens; and
a calculating section for calculating the position of the source of incident light based upon the focus position of said movable lens detected by said focus position detecting means and the angle position of the incident light detected by said incident angle detecting section,
wherein said focusing means includes a two-division photo-detector for detecting the incident light received through said movable lens, and a knife edge disposed between said two-division photo-detector and said lens, said two-division photo-detector comparatively measuring two quantities of the incident light, and said lens being movable relative to said knife edge such that a difference between the two quantities of the incident light detected by said two-division photo-detector becomes eliminated when said lens is moved to the focus position.

5,296,839
SOUND GENERATING APPARATUS
Clive S. Lu, 282 Newbridge Rd., Hicksville, N.Y. 11801
Filed Aug. 10, 1992, Ser. No. 927,742
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—384.6 12 Claims



1. An electronic sound generating apparatus comprising:
a housing including a sidewall defining a cavity and a series of sound radiating ports;
a circuit board received in said cavity of said housing;
a sound generating element received in said cavity of said housing and electrically connected to said circuit board;
a sound reflector received in said cavity of said housing adjacent said sound generating element, said sound reflector including means for radially reflecting sound from said sound generating element through said series of sound radiating ports;
a touch plate received in and mounted for limited axial movement with respect to said housing;
switch means for activating said electronic sound generating apparatus in response to depression of said touch plate; and
a retaining ring mounted to said housing to hold said circuit board, sound generating element, sound reflector and touch plate in said cavity.

5,296,840
PROGRAMMABLE EMERGENCY SIGNALLING SYSTEM FOR A VEHICLE
Ward J. Gieffers, Oak Lawn, Ill., assignor to Federal Signal Corporation, University Park, Ill.
Filed May 25, 1990, Ser. No. 529,207
Int. Cl.[5] B60Q *1/26*; G08B *3/00*
U.S. Cl. 340—474 34 Claims



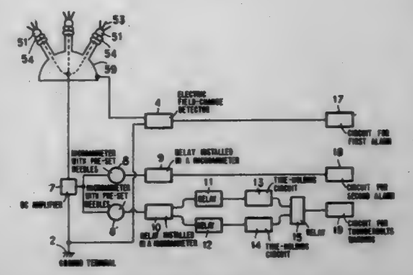
1. A signalling system alternatively operable in programming and operating modes, said signalling system comprising:
an array of manually operable switches;
a control means responsive to actuations of the switches in the array for alternatively operating in the programming and operating modes;
a plurality of signalling devices selectively activated by the control means in the operating mode in order to generate a plurality of different signalling configurations;
first means of the control means responsive to a first set of actuations of the switches in the array for first placing the system in the programming mode and also responsive to a subsequent second set of actuations of the switches in the array for selecting the signalling devices that comprise each of the said signalling configuration, which may be generated by actuating switches in the array when the system is in the operating mode;
a memory in communication with said first means for storing the signalling configurations;
second means of the control means in communication with the memory and responsive to a third set of actuations of the switches in the array when the system is in the operating mode for activating different ones of the signalling configurations.

5,296,841
CHAIN GUARD ALARM APPARATUS
Alan Vormbrock, 100 Schraalenburgh Rd., Harrington Park, N.J. 07640
Filed Sep. 21, 1992, Ser. No. 948,118
Int. Cl.[5] E05B *45/06*; H01H *3/16*
U.S. Cl. 340—542 9 Claims



1. A chain guard alarm apparatus comprising
a slot member having a slot portion and a pair of side panels,
mounting means disposed on said slot member for mounting said slot member on a door,
a slide member removeably engaged in said slot portion,
a retainer member,
mounting means disposed on said retainer member for mounting said retainer member on a door jamb,
flexible chain means connecting said retainer member and said slide member,
electrically operated alarm means mounted on said slot member,
battery means mounted on said slot member,
normally open switch means mounted on said slot member with said switch means being closed when said slide member is engaged in said slot portion and said door is opened,
electrical connection means connecting said switch means, said battery means and said alarm means for activation of said alarm means responsive to said slide member closing said switch means as a result of said door being opened,
with said switch means comprising
a slide block with said slide block slideably disposed between said side panels of said slot member,
a conductive plate mounted on said slide member,
a pair of electrical contacts mounted on said slot member, and
helical spring means mounted on said slide block and disposed to bias said slide block away from said electrical contacts until pressure applied to said slide block overcomes the bias of said helical spring means and brings said plate into contact with said electrical contacts thereby completing an electric circuit between said electrical contacts.

5,296,842
THUNDER ALARM
Giichiro Kato, Tokyo, Japan, assignor to Central Lightning Protection Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 642,649, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 516,349, Apr. 30, 1990, abandoned. This application Nov. 27, 1991, Ser. No. 799,177
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—601 5 Claims



1. An apparatus for predicting the onset of thunder storms and the occurrence of nearby thunderbolts comprising:
a sensor including a hemispherical metal electrode having a hemispherical surface and a plurality of metal pipes radially projecting from the metal surface with equal separation, said pipes each having a radially projecting end portion, each of the metal pipes having an insulating means of predetermined shape provided at the radially projecting end portion of the pipes;
a metal sphere for each said pipe affixed to the insulating means;
a predetermined number of corona needles extending from each said metal sphere;
a circuit connected to the hemispherical metal electrode, said circuit having means for counting electric field

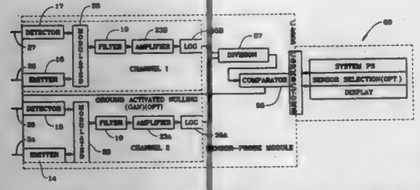
changes of a first predetermined amplitude occurring within a predetermined time interval;
means responsive to a count of said counting means for issuing a first alarm upon the count exceeding a first predetermined amount, said first alarm informing a user that thunder storms are distantly active;
wherein said corona needles are commonly connected to each other and to said circuit, said circuit further including means for measuring corona current and means for issuing a second alarm upon the corona current exceeding a predetermined level, said second alarm informing said user that thunder storms are approaching the site of the sensor; and
said circuit includes a coincidence circuit connected to said corona needles, said coincidence circuit including two relays connected with respective time holding circuits, one of said relays and one of said time holding circuits responding to a positive preset corona current and the other of said relays and the other of said time holding circuits responding to a negative preset corona current, said circuit including means for detecting changes in the electric field that occur when the corona currents exceed the positive and negative preset corona currents, and means for issuing a thunderbolt warning when said changes in magnitude of electric field that correspond to corona currents beyond the positive and negative preset corona currents are at a second predetermined amount, said thunderbolt warning informing said user that thunderbolts are occurring in close proximity to said sensor and that persons in close proximity to said sensor should take immediate refuge.

5,295,843

FLUID OR VAPOR DIAGNOSTIC DEVICE

Scott D. Wohlstein, Convent Station, and Emil W. Ciurczak, Morristown, both of N.J., assignors to SD Laboratories, Inc., Convent Station, N.J.

Filed Mar. 28, 1991, Ser. No. 677,643
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—603 **26 Claims**



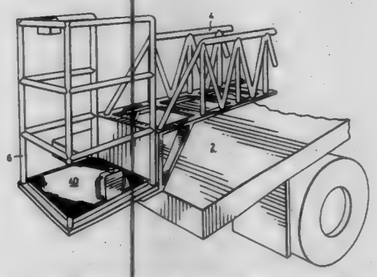
1. A non-destructive diagnostic device for continuously testing fluid or vapor contained in a fluid or vapor reservoir comprising:
a) at least two light sources, each of said light sources emitting light at a different preselected wavelength;
b) means for directing light from each of said light sources through the fluid or vapor;
c) means for receiving light from each of said light sources after it has been directed through the fluid or vapor,
d) means for positioning said means for directing light and said means for receiving light in the fluid or vapor reservoir, said means for receiving light separated from said means for directing light by a distance, thereby forming a gap through which the fluid or vapor may pass;
e) means, connected to said means for receiving light, for determining the absolute intensity of light from each of said light sources after the light has been directed through the fluid or vapor in the reservoir and passed to said means for determining through said means for receiving;
f) means for determining the ratio of absolute intensity of light from each of said light sources after the light has been directed through the fluid or vapor;
g) means, responsive to said means for determining, for creating a control signal indicating that said ratio is outside of a preselected limit; and,
h) means, responsive to said control signal, for communicating that said ratio is outside of said preselected limit.

5,296,844

ELECTRICAL CONTACT AVOIDANCE DEVICE

Robert C. Hanrahan, Whitby, and James Williamson, Courtice, both of Canada, assignors to Ontario Hydro, Toronto, Canada

Filed Jan. 27, 1992, Ser. No. 826,058
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—657 **12 Claims**



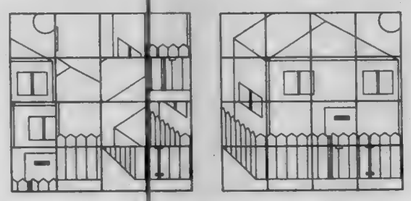
1. A portable monitoring system for detecting a voltage induced in a user's body by a radiated electrostatic field, and producing a warning when the detected voltage exceeds a selected value, comprising
a platform suitable for the user to stand on, having an inductor plate separated from a reference plate by an electrically insulating frame whereby the inductor plate is electrically coupled to the user, and
a monitoring circuit having detector circuit means for deriving a DC signal corresponding to the detected voltage, comparator means for comparing the DC signal with a selected reference signal representing the potential difference between the inductor plate and the reference plate, and alarm means responsive to an output signal from the comparator.

5,296,845

COMPUTER KEYBOARD FOR USE WITH SOFTWARE FOR PLAYING GAMES OR SOLVING PUZZLES

Amit Haller, 20 Taviv Street, Petah Tiqua, Israel

Continuation of Ser. No. 697,698, May 9, 1991, abandoned. This application Nov. 10, 1992, Ser. No. 974,346
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—168 **4 Claims**



1. A computer system having a computer keyboard for use with software for playing games or solving puzzles, comprising:

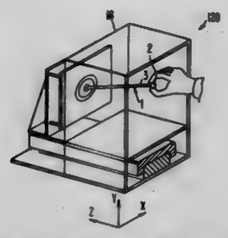
software for playing a puzzle game;
a central processing unit for processing said software;
a monitor for the display of information receiving from said central processing unit;
a keyboard connected to said central processing unit for manipulating information displayed on said monitor, said keyboard including:
a first keypad having a rectangular pattern of keys of "m" times "n" keys, wherein "m" and "n" are each an integer of from, and including, 4 to 8;
means for a direct exchange of positions occupied by two partial pictures, said means for a direct exchange including a depression of any two keys of said first keypad for permitting the direct exchange of partial pictures not located within a common row or a common column, nor located at an end of a row or an end of a column, corresponding to the keys so depressed, within a rectangular picture displayed on said monitor; and,
a second keypad having keys for designating "yes" and "no" functions and for moving columns within the rectangular picture displayed on said monitor in either a leftward or rightward direction, said second keypad further including "+" and "−" keys for designating clockwise and counter-clockwise, respectively, whereby actuation of said "+" key results in a turn of a selected partial picture in a clockwise direction by 90° for each depression of said "+" key and actuation of said "−" key results in a turn of a selected partial picture in a counter-clockwise direction by 90° for each depression of said "−" key.

5,296,846

THREE-DIMENSIONAL CURSOR CONTROL DEVICE

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Continuation of Ser. No. 597,843, Oct. 15, 1990, abandoned. This application Oct. 5, 1992, Ser. No. 957,462
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—161 **13 Claims**



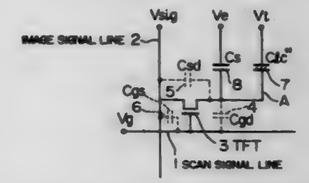
1. In a system for displaying a three-dimensional stereoscopic image of an object positioned in a displayed three-dimensional volume;
a cursor control device comprising a housing defining a volume corresponding to the displayed three-dimensional volume, said device further comprising joystick means operable by the suer for moving the positioning a cursor in the displayed three-dimensional volume, wherein said joystick means includes a knob which is movable from one position to another within the volume defined by said housing;
said joystick means further comprising a base portion, an upper portion mounted on said base portion, and a shaft having a first end connected to said upper portion and a second end, said knob being positioned on said second end of said shaft;
said device further comprising potentiometer means responsive to movement of said upper portion relative to said base portion for generating an electrical signal corresponding thereto, said potentiometer means comprising a resistance strip disposed beneath said upper portion and a potentiometer slider extending from said upper portion to said resistance strip.

5,296,847

METHOD OF DRIVING DISPLAY UNIT

Etsuya Takeda, Suita; Yutaka Nanno, Amagasaki, and Seiichi Nagata, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 448,662, Dec. 11, 1989, abandoned. This application Jun. 22, 1992, Ser. No. 902,564
Claims priority, application Japan, Dec. 12, 1988, 63-313456
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—92 **14 Claims**



1. A method of driving a display unit having matrix-arranged pixel electrodes each connected via a capacitor to a first line, each pixel electrode being connected to a switching transistor which is electrically connected to an image signal line and a scan signal line, and liquid crystal material held between said pixel electrode and an opposing electrode and being AC driven, said method comprising the steps of:
transmitting an image signal voltage to said pixel electrode during an on-period of said switching transistor in response to a scanning signal applied to the scan signal line to which a gate of said switching transistor is connected, applying a constant voltage to said opposing electrode, and
applying a modulating signal with its voltage level rising and falling from a preceding level alternately only once for each field to said first line during an off-period of said switching transistor after a predetermined delay from a termination of the scanning signal,
wherein potential changes Cs/Ct·Ve(−) and Cs/Ct·Ve(+) of said pixel electrode respectively in negative and positive directions caused by the voltage level changes Ve(−) and Ve(+) through said storage capacitor are superposed on a potential change CgdVg/Ct of said pixel electrode caused by the scanning signal Vg through a parasitic capacitance between the gate and a drain of said switching transistor to satisfy the following relationship:

$$CsVe(+)+CgdVg=CsVe(-)-CgdVg,$$

where
Cs is a capacitance of the storage capacitor,
Cgd is the parasitic capacitance between the gate and drain of the switching transistor,
Ct is a sum of all capacitances for one pixel,
Ve(+) is the potential change of the pixel electrode in the positive direction,
Ve(−) is the potential change of the pixel electrode in the negative direction, and
Vg is the scanning signal,
thereby to enable potentials respectively induced on said pixel electrode in even and odd fields to be equal to each other,
thereby to eliminate a DC voltage caused by a capacitance of said liquid crystal material held between the image signal line and the pixel electrode, the image signal line

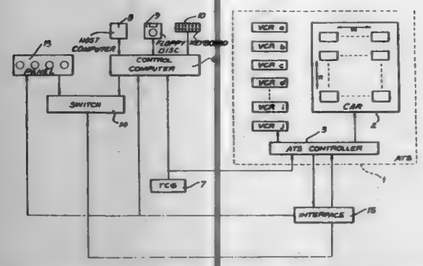
and the opposing electrode and the pixel electrode and the opposing electrode.

5,296,848

METHOD AND APPARATUS FOR TRIGGERING AN AUTOMATIC TRANSMISSION

Neil Witheridge, Glebe, and Tapas K. Debray, Seven Hills, both of Australia, assignors to Sony (Australia) Pty Limited, North Ryde, Australia

Filed Oct. 1, 1991, Ser. No. 769,830
Claims priority, application Australia, Oct. 23, 1990, PK2986
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.040 **11 Claims**



1. A method of triggering an automatic transmission system so as to broadcast a plurality of selected sequences of events of video and/or audio signals, said method comprising the steps of:

storing a first selection of said events in a control computer;

summing play durations of each of said events of said first selection to be broadcasted;

entering a second selection of said events to input means;

supplying an output signal from said control computer corresponding to said first selection to switch means when said summed play duration equals a reference duration;

supplying to said switch means an output signal from said input means corresponding to said second selection; and

operating said switch means so as to supply to said automatic transmission system an output signal corresponding to one of said first selection, said second selection and a third selection of said events, said third selection being obtained by modifying said first selection by said input means, so as to trigger the automatic transmission system and enable each of said sequences to be simultaneously broadcast over a respective one of a plurality of broadcast channels.

5,296,849

PAGER RECEIVER FOR ENABLING TO OMIT POWER-ON SIGNAL FOR RECEIVING SYNCHRONIZATION CODE IN PAGER SIGNAL

Motoki Ide, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1991, Ser. No. 782,829
Claims priority, application Japan, Oct. 25, 1990, 2-285753
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.44 **4 Claims**

1. A pager receiver for receiving a pager signal having a predetermined baud rate, said pager signal comprising a preamble signal and one or more batch signals succeeding the preamble signal, each of the batch signals comprising a synchronization code signal and a plurality of address signals succeeding the synchronization code signal, each of said address signals comprising a call number signal representative of a call number and a message signal representative of a message, a particular one of the address signals being assigned to the pager receiver, said pager receiver comprising:

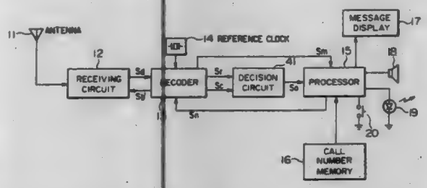
receiving means for receiving said pager signal to produce a received signal at power-on signals of a battery saving signal;

baud rate monitoring means coupled to said receiving means for monitoring a baud rate of said received signal to produce a monitored signal when said baud rate is equal to said predetermined baud rate;

preamble detection means coupled to said receiving means for detecting said preamble signal in said received signal to produce a preamble detection signal;

synchronization code detection means coupled to said receiving means for detecting said synchronization code signal in each of said batch signals of the received signal to produce a synchronization detection signal;

battery saving signal generating means coupled to said baud rate monitoring means, said preamble detection means and said synchronization code detection means for generating one of said power-on signals of said battery saving signal during a time period from reception of one of said monitoring signal and said preamble detection signal to first reception of said synchronization signal and, thereafter, producing another of said power-on signals at a timing for receiving said particular address signal;



deriving means coupled to said receiving means for deriving said message signal from said received signal as a derived message signal;

memorizing means for memorizing a particular call number assigned to said pager receiver;

call number comparing means coupled to said receiving means and said memorizing means for comparing said call number represented by said call number signal in said received signal and said particular call number to produce a coincident signal when said call number and said particular call number are coincident with each other;

deciding means coupled with said baud rate monitoring means and said call number comparing means for deciding whether or not both of said monitored signal and said coincident signal are present to produce an acceptance signal when said both of said monitored signal and said coincident signal are present; and

processing means coupled to said deciding means and said deriving means responsive to said acceptance signal for taking said derived message signal thereinto.

5,296,850

APPARATUS AND PROCESES FOR MAPPING THE CONNECTIVITY OF COMMUNICATIONS SYSTEMS WITH MULTIPLE COMMUNICATIONS PATHS

Fred N. King, 1930 Lake Port Way, Reston, Va. 22091

Division of Ser. No. 282,133, Dec. 9, 1988, Pat. No. 4,901,004, and a continuation of Ser. No. 439,311, Nov. 21, 1989, abandoned. This application Mar. 11, 1991, Ser. No. 666,444
The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.49 **11 Claims**

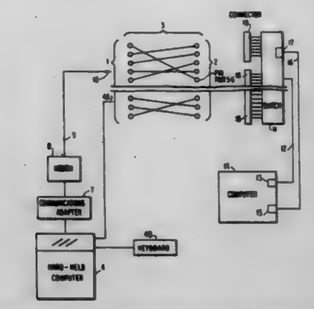
1. A method using computer means of identifying the physical locations of each of a plurality of first communications points, each of said points being identified by a respective first identifier and being connected to a respective one of a plurality of second communications points, each of said second points being identified by a respective second identifier and being connected to a first point by a respective one of a plurality of communications links, comprising:

storing in said computer means a first data base identifying the physical location of each of said first communications points with a respective first identifier;

transmitting from each of said first communications points said respective first identifier;

receiving at a respective one of said second communications points said respective first identifier;

storing in said computer means the identity of said first identifier and the identity of said respective second communications points at which said first identifier is received;



correlating with said computer means the physical locations of each said first points in said first data base and the identity of said respective second communications points to which it is connected by one of said communication links, and

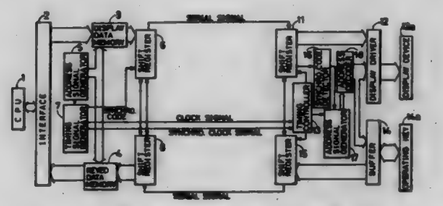
generating a connectivity map comprising the identity of the physical location of each first communications point correlated to the identity of its corresponding second point, wherein movement of any one of said first or second communication points yields a different connectivity map when said method is repeated.

5,296,851

SIGNAL COMMUNICATION SYSTEM

Yoshihisa Ikuta, Toyonaka; Yoshiaki Yanagida, Hirakata, and Hisaki Shimosaka, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1991, Ser. No. 710,739
Claims priority, application Japan, Jun. 8, 1990, 2-151331; Aug. 23, 1990, 2-224080; Aug. 23, 1990, 2-224081; Aug. 23, 1990, 2-224082
Int. Cl.[5] H01Q *1/00*
U.S. Cl. 340—825.07 **5 Claims**



1. A control device for controlling a plurality of operable elements, comprising a control portion and an operation portion;

the control portion comprising:

timing signal generator means for generating a timing signal at a specified time;

memory means for storing a plurality of control data, the plurality of control data corresponding to the plurality of operable elements respectively, each control data having address data for designating one of the plurality of operable elements and operation data for specifying an operation to be executed by the designated operable element;

control data transmitter means responsive to the timing signal generator means for transmitting one of the plurality of control data in a serial form in synchronism with the timing signal;

the operation portion comprising:

control data receiver means for receiving the serial control data;

converter means for converting the serial control data into a designating signal and an operation signal; and

signal feeder means responsive to the timing signal generator means and the converter means for feeding the operation signal to the designated operable element in synchronism with the timing signal so as to control the designated operable element to operate in synchronism with the timing signal;

the control data transmitter means comprising sequential transmitter means for transmitting all of said plurality of control data in a predetermined sequence;

the control data transmitter means further comprising changer means for changing the transmission sequence of the plurality of control data;

the control data transmitter means still further comprising data adder means for adding error detection data to each of the plurality of control data;

the control data receiver means further comprising error detector means for detecting the presence of error in the control data transmission based on the error detection data, and error notifying means for notifying the presence of error to the changer means of the control data transmitter means;

the changer means comprising means for changing the transmission sequence of control data in response to notification thereof of the presence of an error,

the changer means further comprising means for changing the transmission sequence so that the erroneously transmitted control data is transmitted prior to the remaining control data to be transmitted in the predetermined sequence.

5,296,852

METHOD AND APPARATUS FOR MONITORING TRAFFIC FLOW

Rajendra P. Rathi, 21008 Green Hill Rd., Farmington Hills, Mich. 48335

Filed Feb. 27, 1991, Ser. No. 661,297
Int. Cl.[5] G08G *1/01*
U.S. Cl. 340—933 **9 Claims**

1. A method for determining the speed of a vehicle traveling along a predetermined path, comprising the steps of:

generating a reference image of a section of said path;

transducing said reference image into a reference array of pixels;

generating successive images of said section of said path;

transducing said successive images into successive arrays of pixels;

separating each one of said arrays of pixels into first and second subarrays of pixels, each of said subarrays corresponding to first and second portions of said path, said first and second portions of said path being separated by a known distance;

summing the intensity values of all the pixels in said first subarray of said reference array;

summing the intensity values of all the pixels in said first subarray of each one of said successive arrays;

successively comparing the pixel intensity sum for each said

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first subarray of each one of said successive arrays to the pixel intensity sum for said first subarray of said reference array;

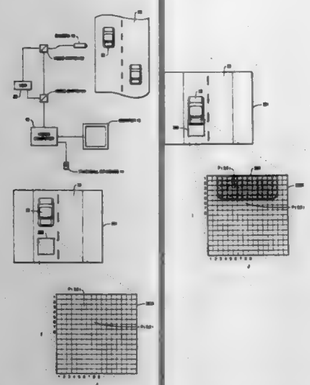
generating data indicative of the presence of said vehicle in said first portion of said path when the difference in pixel intensity sums between said first subarrays recited in said comparing step exceeds a predetermined value;

recording a first reference time when said vehicle is first determined to be present in said first portion of said path;

summing the intensity values of all the pixels in said second subarray of said reference array;

summing the intensity values of all the pixels in said second subarray of each one of said successive arrays;

successively comparing the pixel intensity sum for each said



second subarray of each one of said successive arrays to the pixel intensity sum for said second subarray of said reference array;

generating data indicative of the presence of said vehicle in said second portion of said path when the difference in pixel intensity between said second subarrays recited in said last-recited comparing step exceeds said predetermined value;

recording a second reference time when said vehicle is first determined to be present in said second portion of said path; and

calculating the speed of said vehicle from the difference in said first and second reference times and said known distance between said first and second portions of said path.

5,296,853

LASER ICE DETECTOR

Harold L. Federow, and Jeffrey H. Silverman, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 721,861, Jun. 25, 1991, abandoned, and a continuation-in-part of Ser. No. 371,231, Jun. 26, 1989, abandoned. This application Nov. 25, 1992, Ser. No. 982,254

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—962 **4 Claims**

1. An ice detector system for detecting the formation of ice on an aircraft outer surface comprising:

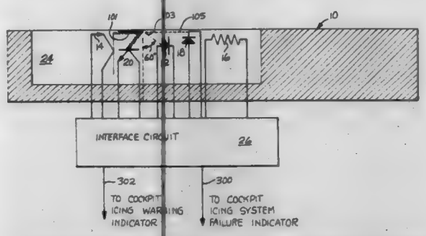
first and second infrared lasers having first and second terminals;

first and second infrared photodetectors having first and second terminals;

a thermistor having first and second terminals; and, said first infrared laser and said first infrared photodetector disposed in said aircraft outer surface for detecting formation of ice through a change in refractive index of the space near said aircraft outer surface;

said second infrared laser and said second infrared photodetector disposed in said aircraft outer surface for testing said first infrared laser and said first photodetector; and,

interface circuit means coupled to said first and second terminals of said first and second lasers, said first and



second terminals of said first and second infrared photodetectors and said first and second terminals of said thermistor(s) for providing a cockpit output signal representative of icing warning and a cockpit signal representative of ice detector system failure.

5,296,854

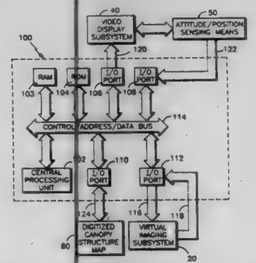
HELICOPTER VIRTUAL IMAGE DISPLAY SYSTEM INCORPORATING STRUCTURAL OUTLINES

Bruce E. Hamilton, Sandy Hook; Lorren Stiles, Roxbury, and Howard P. Harper, Huntington, all of Conn., assignors to United Technologies Corporation, Stratford, Conn.

Continuation of Ser. No. 689,405, Apr. 22, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,567

Int. Cl.[5] G01C *21/00*

U.S. Cl. 340—980 **15 Claims**



1. A virtual image display system for use by a pilot in an aircraft having a canopy structure of predetermined configuration, comprising:

virtual imaging means for generating virtual images of the external world;

video display means for generating and displaying video images based upon said virtual images of the external world for viewing by the pilot.

sensing means disposed in interactive relation with said video display means for generating position signals corresponding to the spatial location and perspective of said video display means;

map means for storing structural outlines corresponding to the predetermined configuration of the canopy structure; and

computer processing means for defining the spatial location and perspective of said video display means based upon said position signals generated by said sensing means;

said computer processing means being further operative for reconstructing structural outlines of segments of the canopy structure from said stored structural outlines of said

map means, said reconstructed structural outline segments being based upon and synchronized with said defined spatial location and perspective of said video display means;

said computer processing means being further operative to superimpose said reconstructed structural outline segments onto said displayed video images to provide the pilot with a high-definition pictorial representation of the external world wherein said superimposed, reconstructed structural outline segments occlude corresponding segments of said displayed video images such that said superimposed, reconstructed structural outline segments provide the pilot with a referential framework during viewing of said occluded displayed video images.

5,296,855

OFFSET CORRECTION APPARATUS OF TURNING ANGULAR VELOCITY SENSOR

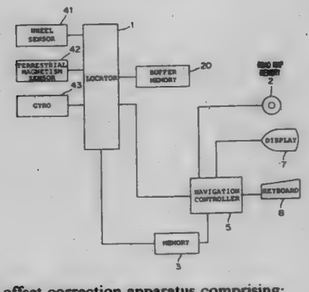
Shinichi Matsuzaki, and Kenji Okamoto, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 794,941

Claims priority, application Japan, Nov. 30, 1990, 2-340021

Int. Cl.[5] G08G *1/123*

U.S. Cl. 340—988 **2 Claims**



1. An offset correction apparatus comprising:

a turning angular velocity sensor;

a vehicle speed sensor means for outputting a pulsed signal every constant distance traveled by a vehicle;

stop determining means for determining that said vehicle is at a stop;

offset calculation means for integrating an output of said turning angular velocity sensor during a period of time that the stop of said vehicle is determined by said stop determining means and then calculating an offset value of said output of said turning angular velocity sensor;

storage means to store said offset value calculated by said offset calculation means; and

heading correction means for correcting heading data obtained from said output of said turning angular velocity sensor, with said offset value; wherein

said stop determining means determines that said vehicle is at a stop in response to an absence of said pulsed signal from said vehicle speed sensor means in combination with said output from said turning angular velocity sensor being less than a threshold.

5,296,856

WINDOW TRACKING ADC

Frank L. Mantong, 9026 Acorn Ridge Cir., Elk Grove, Calif. 95758-5412

Filed Mar. 4, 1993, Ser. No. 28,699

Int. Cl.[5] H03M *1/18*

U.S. Cl. 341—139 **15 Claims**

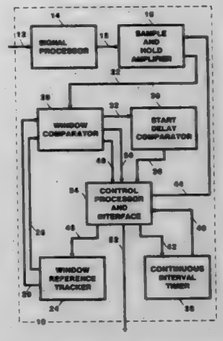
1. A method of converting an analog input signal into a digital output signal, comprising the steps of:

(a) sampling an analog input signal to be converted, said analog input signal having an amplitude;

(b) comparing said amplitude of said sampled analog input signal to a voltage window defined by an upper reference voltage and a lower reference voltage;

(c) generating an out of limit signal in response to said amplitude of said sampled analog input signal falling outside said voltage window;

(d) adjusting, in response to said out of limit signal, said voltage window until said amplitude of said sampled analog input signal is within said voltage window;



(e) generating a plurality of periodic timing signals;

(f) counting said timing signals and generating a first output signal indicative of the number of timing signals occurring between said out of limit signal and an immediately preceding out of limit signal; and

(g) generating a second output signal indicative of said adjusted voltage window, said second output signal corresponding to said amplitude of said sampled analog input signal.

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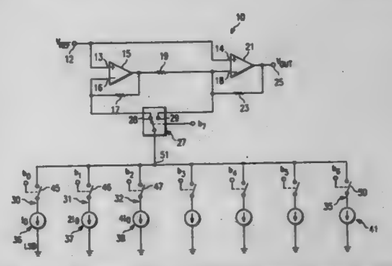
DIGITAL TO ANALOG CONVERTER WITH PRECISE LINEAR OUTPUT FOR BOTH POSITIVE AND NEGATIVE DIGITAL INPUT VALUES

Francesco Carobolante, Phoenix, Ariz., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 28, 1992, Ser. No. 843,578

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **23 Claims**



1. A circuit for converting a digital number having positive or negative sign to an analog output signal, comprising:

transistor switches for producing weighted currents representing bits that have a predetermined state for combination into a sum current;

operating amplifiers serially connected in a unity-gain configuration, each operational amplifier having feedback

resistors for obtaining a precise output voltage, for converting said sum current into a voltage with a polarity with respect to a reference voltage corresponding to the signal of said digital number; and

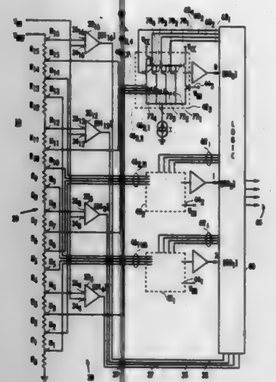
switching circuitry for selectively delivering the sum current to a selected input of said operational amplifiers depending on the sign of the digital number for the purpose of determining the polarity with respect to said reference voltage of the analog output signal.

5,296,858

IMPROVED TWO-STAGE ANALOG-TO-DIGITAL CONVERTER

Miki Z. Moyal, Austin, Tex., assignor to Advanced Micro Devices, Inc., Austin, Tex.

Filed May 14, 1992, Ser. No. 882,666
Int. Cl.[5] H03M *1/14*
U.S. Cl. 341—156 **14 Claims**



11. A circuit for converting an analog signal to a digital signal comprising:

an analog signal input;

first and second reference terminals;

a voltage reference circuit including a series of nodes coupled between the reference terminals, where the circuit is configured to produce reference voltages at each node, with the reference voltages at the nodes increasing from the first node to the last node in the series;

at least one comparator coupled to the signal input and an intermediate node in the series, where a first set of at least two of the nodes lay between the intermediate node and the first reference terminal and a second set of at least two of the nodes lay between the intermediate node and the second reference terminal;

a logic circuit including a first logic output, a second logic output, a first logic input coupled to the comparator, where the logic circuit is configured to output a first signal at the first logic output when an input signal at the signal input is greater than the voltage at the intermediate node and output a second signal at the second logic output when the input signal is less than the voltage at the intermediate node, the logic circuit further including second and third logic inputs and a digital output; a first comparator circuit coupled to the second logic input and the analog signal input, the first comparator circuit including first and second transistors wherein transistor is connected to another node of the first set, the second transistor is coupled to the first logic output, and the first comparator circuit is configured to output a first comparison signal to the second logic input when the voltage at the one node is above a first predetermined limit; and

a second comparator circuit coupled to the third logic input and the analog signal input, the second compartor circuit including third and fourth transistors wherein where the gate of the third transistor is connected to another node of the first set, the fourth transistor is coupled to the second logic output, and the second comparator circuit is configured to output a second comparison signal to the third logic input when the voltage at the another node is above a second predetermined limit;

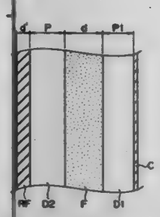
the logic circuit being configured to output a digital signal at the digital output representative of a voltage at the analog input based upon the status of the logic inputs.

5,296,859

BROADBAND WAVE ABSORPTION APPARATUS

Yoshiyuki Naito, 8-9-29, Tsukinino, Yamato-Shi, Kanagawa-Ken; Tetsuya Mizumoto, Yokohama, and Michiharu Takahashi, 390-190, Takaza, Yachiyo-Shi, Chiba-Ken, all of Japan, assignors to Yoshiyuki Naito, Kanagawa and Michiharu Takahashi, Chiba, both of Japan

Filed May 28, 1992, Ser. No. 890,632
Claims priority, application Japan, May 31, 1991, 3-129509
Int. Cl.[5] H01Q *17/00*
U.S. Cl. 342—1 **2 Claims**



1. A broadband electromagnetic wave absorbing apparatus comprising:

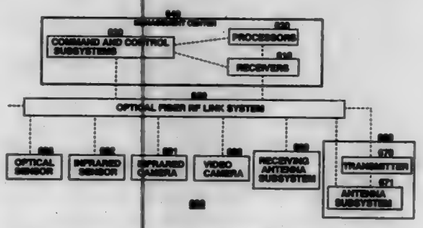
successive layers of a first dielectric body, a sintered ferrite magnetic body, a second dielectric body having a low permittivity, and a magnetic body having a low magnetic permeability overlapped on a flat reflector plate, said first dielectric being disposed between said reflector plate and said sintered ferrite magnetic body, and where the relationship between the magnetic permeability $\mu 1$ of said sintered ferrite magnetic body and the magnetic permeability of $\mu 2$ of said magnetic body having a low magnetic permeability is $\mu 1 \geqq 25 \cdot \mu 2$.

5,296,860

OPTICAL FIBER BASED BISTATIC RADAR

Ming-Chiang Li, 11415 Bayard Dr., Mitchellville, Md. 20721

Filed Nov. 4, 1991, Ser. No. 787,085
Int. Cl.[5] G01S *7/48, 13/86*
U.S. Cl. 342—58 **20 Claims**



1. A bistatic radar system comprising:

a transmitting radar site;

a receiving radar site;

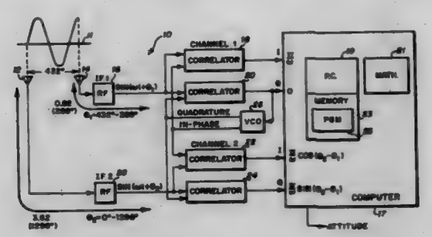
an optical fiber RF link system linking the transmitting radar site and receiving radar site; wherein the transmitting radar site comprises means for transmitting RF signals; wherein the receiving radar site comprises means for receiving reflections of the RF signals; and wherein the optical fiber RF link system comprises: (a) means for receiving a portion of the reflected RF signals from the receiving radar site; (b) means for up-converting the portion of the reflected RF signals to an optical signal; (c) means for sending the optical signal from one end to a second end; (d) means for down-converting the optical signal at second end to a RF signal; and (e) means for sending the received portion RF signal to the transmitting radar site.

5,296,861

METHOD AND APPARATUS FOR MAXIMUM LIKELIHOOD ESTIMATION DIRECT INTEGER SEARCH IN DIFFERENTIAL CARRIER PHASE ATTITUDE DETERMINATION SYSTEMS

Donald T. Knight, San Pedro, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 13, 1992, Ser. No. 976,174
Int. Cl.[5] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 **7 Claims**



1. An apparatus for determining a direction or heading in a reception environment that includes radio reflections, reception noise, antenna phase center motion, temperature-sensitive drifts and detected signal phase corruption, comprising:

a pair of GPS antennas separated by a known first physical distance that exceeds one wavelength of a radio carrier signal emitted by a GPS satellite for simultaneously receiving radio carrier signals emitted by radio transmitter in at least four corresponding GPS satellite each having a known position;

a pair of first and second phase coherent GPS correlators connected to the pair of GPS antennas and having respective first and second correlator outputs derived from said GPS satellite radio carrier signal as independently received by each of the pair of GPS antennas wherein said first and second correlator outputs include a phase difference representative of a phase difference that exists in the pair of GPS antennas for said GPS satellite radio carrier signal;

first computer means connected to the pair of first and second phase coherent GPS correlators for determining a first plurality of possible headings to a first of said GPS satellites based on a single first phase difference between said first and second correlator outputs for a first radio carrier signal from said first GPS satellite, wherein said first plurality of possible headings includes more than one possible heading due to whole cycle carrier phase ambiguities;

second computer means connected to the pair of first and second phase coherent GPS correlators for determining a second plurality of possible headings to a second of said GPS satellites based on a single second phase difference between said first and second correlator outputs for a second radio carrier signal from said second GPS satellite, wherein said second plurality of possible headings includes more than one possible heading due to whole cycle carrier phase ambiguities;

third computer means connected to the pair of first and second phase coherent GPS correlators for determining a third plurality of possible headings to a third of said GPS satellites based on a single third phase difference between said first and second correlator outputs for a third radio carrier signal from said third GPS satellite, wherein said third plurality of possible headings includes more than one possible heading due to whole cycle carrier phase ambiguities;

fourth computer means connected to the pair of first and second phase coherent GPS correlators for determining a fourth plurality of possible headings to a fourth of said GPS satellites based on a single fourth phase difference between said first and second correlator outputs for a fourth radio carrier signal from said fourth GPS satellite, wherein said fourth plurality of possible headings includes more than one possible heading due to whole cycle carrier phase ambiguities; and

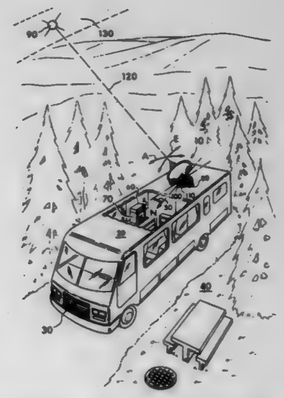
simultaneous heading solution computer means connected to the first through fourth computer means for matching said first through said fourth pluralities of possible headings and for identifying at least one geometry for the pair of antennas that satisfies at least three of said first through fourth plurality of possible headings and eliminating any additional geometries for the pair of antennas that satisfies at least three of said first through fourth plurality of possible headings that have a less perfect fit to said respective geometries before identifying any geometry for the pair of antennas that satisfies four of said first through fourth plurality of possible headings.

5,296,862

METHOD FOR AUTOMATICALLY POSITIONING A SATELLITE DISH ANTENNA TO SATELLITES IN A GEOSYNCHRONOUS BELT

Charles E. Rodeffer, Burlington, Iowa; John D. Byers, Arvada, Colo., and Michael E. Rodeffer, Burlington, Iowa, assignors to Winegard Company, Burlington, Iowa

Filed Nov. 18, 1992, Ser. No. 978,289
Int. Cl.[5] H01Q *3/00*
U.S. Cl. 342—359 **22 Claims**



1. An automated method for positioning a satellite dish antenna mounted on the roof of a parked vehicle in order to receive signals from a plurality of satellites located in a geosynchronous belt, a receiver in the vehicle connected to receive

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signals from the satellite dish antenna, said automated method comprising:

(a) moving the satellite dish antenna in the azimuth and elevation directions to an initial search position in response to signals from the receiver,

(b) with the satellite dish antenna in the initial search position, incrementally moving the satellite dish antenna in predetermined search patterns in the azimuth and elevation directions until detecting in the receiver a signal peak for a selected audio subcarrier frequency in a selected channel of a target satellite located in the geosynchronous belt, the selected audio subcarrier frequency being unique in that the frequency of the selected audio subcarrier is not present in the corresponding selected channels of satellites near the target satellite, and

(c) calculating in the receiver the azimuth and elevation positions of all remaining satellites in the geosynchronous belt based upon the position of the satellite dish antenna upon detecting said signal peak.

5,296,863

BEAM COMPRESSION PROCESS FOR ANTENNA PATTERN

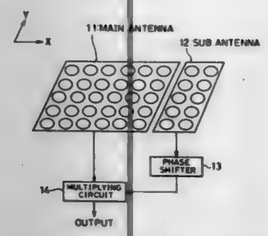
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,586

Claims priority, application Japan, Apr. 10, 1992, 4-116686

Int. Cl.[5] H01Q *3/22*; G01S *3/16, 5/02*

U.S. Cl. 342—371 **15 Claims**



1. A beam compression process for an antenna pattern comprising the steps of:

providing an antenna system made up of a main antenna for receiving a radio wave and at least one sub antenna which is adjacent said main antenna in the direction where a beam width of said main antenna is to be compressed and which has a beam axis coincident with a beam axis of said main antenna;

scanning a beam of said main antenna at a constant speed in said direction of compression of the beam width over a range of from (c−a) degree to (c+a) degree with an arbitrary angle c set as a reference angle, and scanning a beam of said sub antenna at a constant speed for the same period as the scan of said main antenna in said direction of compression of the beam width over a range of from (c−b) degree to (c+b) degree where b represents an angle corresponding to a first zero point of an antenna pattern of said sub antenna and larger than said angle a;

repeating the beam scans of said main antenna and said sub antenna while shifting the reference angle c in units of 2a degree successively; and

executing an in-phase multiplication process of received signals of said main antenna and said sub antenna obtained by said beam scans.

5,296,864

BEAM COMPRESSION PROCESS FOR ANTENNA PATTERN

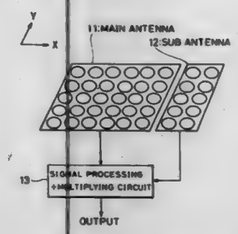
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 39,820

Claims priority, application Japan, Apr. 22, 1992, 4-127928

Int. Cl.[5] G01S *3/16, 3/28*

U.S. Cl. 342—382 **3 Claims**



1. A beam compression process for an antenna pattern for an antenna system including a main antenna for receiving a radio wave, at least one sub antenna which is adjacent said main antenna in the direction where a beam width of said main antenna is to be compressed and which has a beam axis coincident with a beam axis of said main antenna, and a signal processing and multiplying circuit connected to said main antenna and said sub antenna, comprising the steps of:

scanning antenna beams of said antenna system in said direction of compression of the beam width; and

executing an in-phase multiplication process of received signals of said main antenna and said sub antenna,

wherein the received signal of said sub antenna is output and subjected to said multiplication process by the signal processing and multiplying circuit only when a double differential coefficient of the received signal of said main antenna and a double differential coefficient of the received signal of said sub antenna are both negative.

5,296,865

MTI COMPATIBLE COHERENT SIDELOBE CANCELLER

Bernard L. Lewis, Ocean Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1974, Ser. No. 499,962

Int. Cl.[5] G01S *3/16, 3/28*

U.S. Cl. 342—384 **10 Claims**

1. An interference suppression system for use in high clutter environments comprising:

main channel means for receiving desired and interference signals and providing a main channel signal;

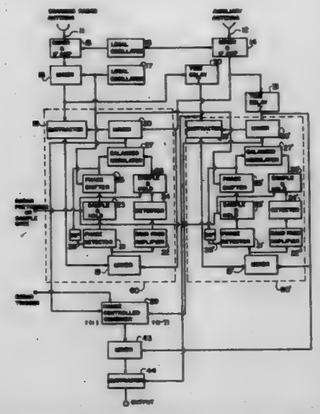
auxiliary channel means for receiving primarily interference signals and providing an auxiliary channel signal;

first means coupled to said main and auxiliary channel means for correlating the interference signals to produce a first weighting function;

second means coupled to said main and auxiliary channel means for correlating the interference signals to produce a second weighting function;

third means coupled to said first and second means for providing an instantaneous weighting function proportional to said first and second functions;

means coupled to said providing means and said auxiliary channel means for translating an auxiliary channel signal with said instantaneous weighting function to provide a cancelling signal;



means coupled to said translating means and said main channel means for subtracting said cancelling signal from said main channel signal to thereby reduce interference.

5,296,866

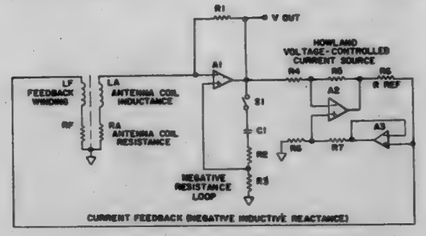
ACTIVE ANTENNA

John F. Sutton, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 29, 1991, Ser. No. 736,845

Int. Cl.[5] H01Q *1/26*

U.S. Cl. 343—701 **6 Claims**



1. An active antenna including an antenna, a feedback winding, and circuit means:

said antenna having positive inductance and positive resistance, including any impedances coupled into said antenna from the environment, said antenna being field coupled to said feedback winding;

said circuit means including an operational amplifier and a voltage-controlled current source, the output of said operational amplifier connected to said voltage-controlled current source, said circuit means providing a negative inductance and a negative resistance, the magnitude of said negative inductance being on the order of said antenna positive inductance but somewhat less, and the magnitude of said negative resistance being on the order of said antenna positive resistance but somewhat less;

means to connect the antenna and said circuit means in a configuration which provides an algebraic addition of said positive and negative inductances and resistances, with the total active antenna circuit impedance being a very small, but positive, series inductance and resistance;

said antenna being connected to the inverting input of said operational amplifier, and said voltage-controlled current source being controlled by the output of said amplifier and providing current to said feedback winding.

5,296,867

ELECTRONIC SWITCHING DEVICE FOR AN ANTENNA SWITCHABLE IN THE VHF AND UHF FREQUENCY RANGES

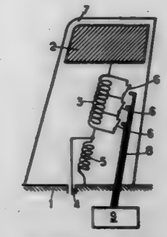
Hervé Jaquet, Paris, France, assignor to Dassault-Aviation, Paris, France

Filed Jun. 5, 1992, Ser. No. 894,651

Claims priority, application France, Jun. 6, 1991, 91 06860

Int. Cl.[5] H01Q *9/06, 1/28*

U.S. Cl. 343—745 **6 Claims**



1. An electronic switching device for use in a switchable antenna operating in the VHF and/or UHF ranges of frequencies and comprising in particular a capacitive element spaced from a flat reflector forming a ground plane, and at least one self-inductance and a switching device connected between one end of said self-inductance and a point chosen from between another end of said self-inductance and one end of said capacitive element, the switching device comprising a PIN diode located on the same side of the ground plane as the self-inductance, the diode modifying the state of the self-inductance in dependence on its bias and being connected to a control means located on the other side of the ground plane, the coupling between the PIN diode and the control means through the ground plane being effected by way of a link comprising optical transmission means for transmitting an optical signal.

5,296,868

DISPLAY APPARATUS FOR VEHICLE

Kazuhiro Itami, and Tadashi Hino, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 737,000, Jul. 29, 1991, abandoned. This application Jan. 10, 1993, Ser. No. 74,565

Claims priority, application Japan, Jul. 30, 1990, 2-80894[U]; Jul. 31, 1990, 2-80584[U]

Int. Cl.[5] G02B *27/00*

U.S. Cl. 345—7 **17 Claims**

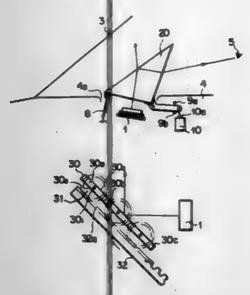
1. A display apparatus for a vehicle, comprising:

light emitting displaying means for emitting visible light therefrom;

a reflecting member for reflecting visible light from said light emitting displaying means toward a driver of said vehicle directly or indirectly by way of a component of said vehicle such as a windshield, said reflecting member being supported for movement between a first position at which said reflecting member totally internally reflects visible light directly from said light emitting displaying means and a second position at which said reflecting member internally reflects part of said visible light from

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said light emitting displaying means and transmits a remaining part of said visible light therethrough; and



means for moving said reflecting member between the first position and the second position.

5,296,869

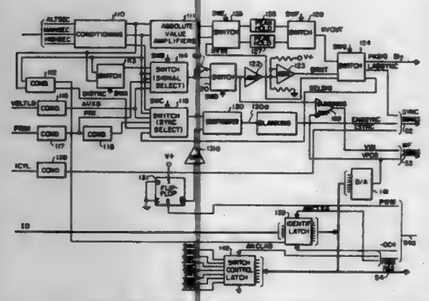
DIGITAL ENGINE ANALYZER

Gary D. Jonker, Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill.; Michael B. Meeker, Kenosha; James R. Piehl, both of Kenosha, Wis.; Michael C. Putrow, Racine, Wis., and John C. Sniegowski, Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Continuation of Ser. No. 779,506, Oct. 18, 1991, abandoned, which is a division of Ser. No. 587,357, Sep. 24, 1990, Pat. No. 5,250,935. This application May 14, 1993, Ser. No. 62,145

Int. Cl.[5] G09G *1/00*

U.S. Cl. 345—24 9 Claims



1. In a system for analyzing the operation of a multiple cylinder internal combustion engine having a spark plug for each cylinder and an ignition coil having a secondary winding for applying a firing voltage to each spark plug, with each cylinder having a cylinder time interval from the application of a firing voltage to the spark plug for that cylinder to the application of a firing voltage to the spark plug for the next cylinder and a spark plug burn time interval, including display means and sensing means coupled to the secondary winding for generating ignition voltage signals representative of the ignition characteristics of individual cylinders, the improvement comprising: detection means coupled to the sensing means and responsive to only the ignition voltage signals from the secondary winding for determining spark plug burn time, said detection means including first and second comparison means for respectively comparing the voltage of the ignition voltage signals to predetermined first and second threshold voltage levels greater than zero and respectively generating first and second pulse signals each having a leading edge when the voltage of the ignition voltage signals rises above the corresponding threshold voltage level, said second pulse signal having a trailing edge when the voltage of the ignition voltage signals drops below the second threshold level, blanking means coupled to said first comparison means for disabling the output thereof an instant after the leading edge of said first pulse signal and maintaining said output disabled for the duration of the cylinder time interval to terminate said first pulse signal so that said first comparison means can produce only one first pulse signal during each cylinder time interval, processing means coupled to said detection means and responsive to said pulse signals for measuring the time between the leading edge of said first pulse signal and the trailing edge of said second pulse signal for determining the duration of burn time interval for each cylinder and generating duration data representative thereof, and display drive means coupled to said processing means and to the display means and responsive to the duration data for displaying on the display means a representation of the burn time interval for each cylinder.

5,296,870

MATRIX DISPLAY DEVICES

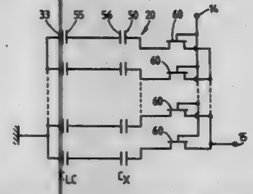
Keith H. Nicholas, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 408,415, Sep. 14, 1989, abandoned, which is a continuation of Ser. No. 130,368, Dec. 8, 1987, abandoned. This application Mar. 28, 1991, Ser. No. 680,022

Claims priority, application United Kingdom, Dec. 19, 1986, 8630410

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—89 20 Claims



1. A matrix display device comprising a plurality of display elements arranged in a matrix and defined by respective electrodes carried on opposed substrates between which is disposed an electrically excitable display material which, together with the electrodes, exhibits inherent capacitance in operation, and in which the display elements are controlled by selectively applying voltages to the respective electrodes via respective switching means carried on one substrate,

characterized in that the display element electrodes on the one substrate each comprise a plurality of separate electrodes defining a plurality of sub-elements, which separate electrodes are each capacitively coupled to the respective switching means by means of a respective series capacitor, the series capacitors each comprising an extension of the respective sub-element electrode, the overlying portion of an extension of an output electrode of the switching means, and an intervening dielectric insulator layer, and in that the ratio of the inherent capacitance of each sub-element to the capacitance of its respective series capacitor differs from one sub-element to another;

and further characterized in that the capacitance value of each series capacitor is determined by the area of the overlying portions of the output electrode extension and the extension of the sub-element electrode.

5,296,871

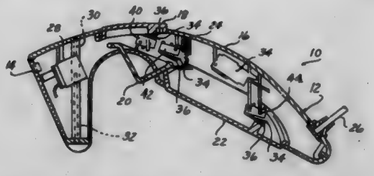
THREE-DIMENSIONAL MOUSE WITH TACTILE FEEDBACK

W. Bradford Paley, 170 Claremont Ave., Suite 6, New York, N.Y. 10027

Filed Jul. 27, 1992, Ser. No. 919,931

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—163 2 Claims



1. A three-dimensional mouse for interfacing with a central processing unit, the mouse comprising:

a hand-held housing adapted to be used in free space, the housing having a generally vertical orientation relative to a user;

deformable means, movably disposed within the housing, for providing a variation of a physical property to be sensed, wherein the deformable means comprises a thumb push button, an index finger push button and a grip push button;

a pressure sensor comprising a force sensitive resistor, operatively connected to each of the push buttons, for sensing an amount of force applied;

means, responsive to the pressure sensor, for transmitting the force amount information to at least one of intermediate interpreting electronics and the central processing unit;

at least one of an ultrasonic sensor and a magnetic sensor secured within the housing, for locating the mouse with respect to at least one of spatial dimension and orientational dimension, which locating means includes means for transmitting the location to a central processing unit; and

a vibrator secured within the housing and responsive to the central processing unit, for imparting tactile feedback to a user based on the position of the locating sensor with respect to the type and position of data on a central processing unit display.

5,296,872

CUTTING DEVICE FOR A PLOTTER

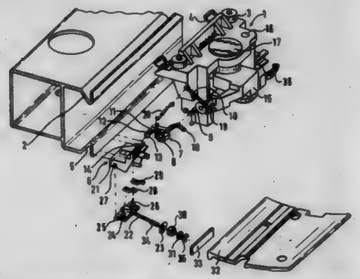
Ventura Caamano, Barcelona, Spain, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 7, 1992, Ser. No. 879,628

Claims priority, application European Pat. Off., May 10, 1991, 91500042.6

Int. Cl.[5] B41J *11/70*

U.S. Cl. 346—24 6 Claims



1. A cutting device for a plotter for cutting a printed sheet moveable through the plotter in a first direction, said plotter comprising a print head carriage having a print head thereon, and means for moving said print head carriage transversely of said first direction and an electromagnet for moving said print head toward and away from said sheet for printing, said cutting device comprising a cutter carriage having a cutter wheel thereon, said cutter carriage being moveable by said print head carriage transversely of the direction of sheet travel, a cutter pickup hook pivotally affixed to said print head carriage, and a spring for biasing said hook toward a carriage disconnecting position, said electromagnet moving said hook to a position for connecting said print head carriage to said cutter carriage when said electromagnet moves said print head away from said sheet and said spring moving said hook to a position for disconnecting said cutter carriage from said print head carriage when said print head is moved toward said sheet for printing.

5,296,873

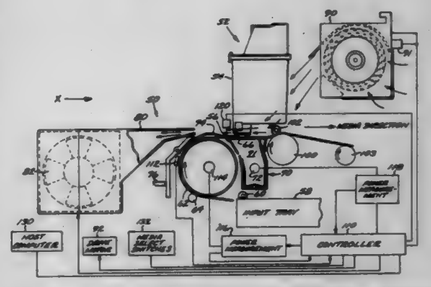
AIRFLOW SYSTEM FOR THERMAL INK-JET PRINTER

Todd L. Russell, Camas, Wash.; Brent W. Richtsmeier, San Diego, Calif.; Kevin L. Glassett, Escondido, Calif., and Raymond M. Cundiff, Poway, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 876,939

Int. Cl.[5] B41J *2/01, 29/377*

U.S. Cl. 346—25 30 Claims



1. An ink-jet printer operable in a heated printing environment, comprising:

a printhead for ink-jet printing on a print medium disposed at a print zone, said printhead being supported by a printhead carriage for movement relative to a printer body;

means for advancing the print medium to said print zone beneath said printhead during print operations;

print heater means for heating a portion of said medium disposed at said print zone during print operations to cause accelerated drying of ink deposited on said medium, said heater means positioned such that said print medium is disposed between said printhead and said heater means at said print zone; and

air evacuation means for evacuating air and ink vapors away from said print zone, said means comprising an evacuation duct having an elongated inlet opening disposed along an extent of said print zone, said evacuation duct and inlet opening fixed in position relative to said printer body, and an evacuation fan for drawing said air and ink vapors into said evacuation duct and away from said print zone.

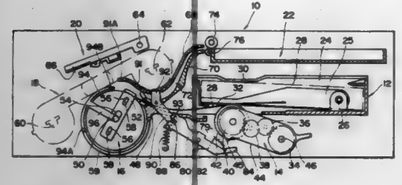
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,874

THERMAL PRINTER

Atsushi Nagata; Masaaki Orimoto, and Yoshiyuki Watanabe, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1991, Ser. No. 778,280
Claims priority, application Japan, Oct. 19, 1990, 2-282753; Oct. 19, 1990, 2-282754; Oct. 20, 1990, 2-282660; Oct. 20, 1990, 2-282661; Oct. 20, 1990, 2-282662; Oct. 20, 1990, 2-282663; Oct. 20, 1990, 2-282664; Oct. 20, 1990, 2-282666; Oct. 20, 1990, 2-282667; Oct. 20, 1990, 2-282668
Int. Cl.[5] B41J *2/325*
U.S. Cl. 346—76 PH 15 Claims



1. A thermal printer comprising:
a recording paper storage part for storing a plurality of sheets of recording paper respectively cut to a given length and piled on one another;
recording paper feed-out means for feeding out said recording paper sheet by sheet from said recording paper storage part;
a platen drum for winding said recording paper fed out by said recording paper feed-out means around a peripheral surface of said platen drum;
clamp means for clamping a leading end of said recording paper to said platen drum;
a thermal print head having a printing position being set just behind a clamp starting position of said clamp means for printing an image onto said recording paper disposed on said platen drum while said platen drum is rotating; and
a paper discharge tray part for receiving said recording paper conveyed through a discharge passage way which has the entrance of said discharge passage way located just near the down stream of said thermal print head by said platen drum when said platen drum is rotated after completion of printing said image onto said recording paper.

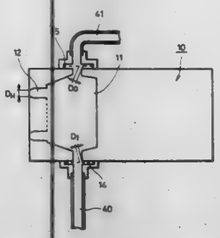
5,296,875

INK JET RECORDING HEAD HAVING IMPROVED FILTER SYSTEM AND RECORDING APPARATUS USING SAME

Masashi Suda, Iruma, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 668,240, Mar. 12, 1991, abandoned.
This application Oct. 29, 1992, Ser. No. 968,467
Claims priority, application Japan, Mar. 19, 1990, 2-67288
Int. Cl.[5] B41J *2/18*
U.S. Cl. 346—140 R 13 Claims

1. An ink jet recording head comprising:
an outlet for discharging ink onto a recording medium;
a liquid chamber for storing ink to be discharged from said outlet;
a first filter disposed in a first flow path in communication with said liquid chamber at a first location, said first filter having filter openings for ink flowing in said first flow path to said liquid chamber for a recovering operation of the recording head; and
a second filter disposed in a second flow path in communication with said liquid chamber at a second location different from said first location, said second filter in the second flow path having filter openings for ink flowing to said liquid chamber for discharge from said outlet onto the recording medium and for ink flowing from said liquid chamber during the recovering operation,



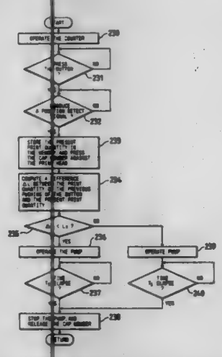
wherein a size D_I of said openings of said first filter, a size D_O of said openings of said second filter and a minimum diameter D_H of said outlet, have a relationship $D_I < D_O < D_H$.

5,296,876

APPARATUS FOR DECLOGGING AN INK JET RECORDING APPARATUS

Shuichi Yamaguchi; Seiji Mochizuki; Hideaki Suzuki; Satoshi Shinada, and Mayumi Aida, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 608,858, Nov. 5, 1990, Pat. No. 5,153,614.
This application Aug. 18, 1992, Ser. No. 913,636
Claims priority, application Japan, Nov. 21, 1989, 1-302853; May 29, 1990, 2-138980; Nov. 6, 1990, 1-288390
Int. Cl.[5] B41J *2/165*
U.S. Cl. 346—140 R 4 Claims



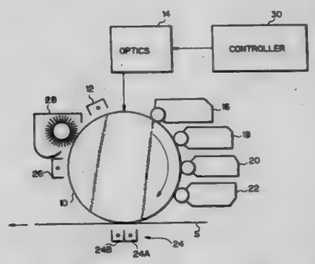
1. An ink jet recording apparatus comprising:
an ink jet print head for forming dots on a recording sheet by shooting ink jets from an array of nozzles;
a cap member which, when pressed against a nozzle surface of said print head, forms a hermetically sealed head receiving chamber;
a suction pump for applying a negative pressure to said head receiving chamber, thereby to suck ink through said nozzles;
cap member drive means for placing said cap member in contact with and separating said cap member from said print head;
cap member drive signal generating means for generating a signal to said cap member drive means to place said cap member in contact with said print head;
suction pump drive signal generating means for generating a signal to said suction pump to cause said suction pump to start a suction operation;
a recovery button provided on a printer chassis; and
control circuit receiving a signal from said recovery button provided on said printer chassis, said control circuit computing a difference between a print quantity at a present pushing of said recovery button and a print quantity at a previous pushing thereof, and determining a suction time on a basis of said print quantity difference computed, and producing an instruction signal to said cap member drive signal generating means and said suction pump drive signal generating means so as to operate said cap member drive signal generating means and said suction pump drive signal generating means according to the determined suction time.

5,296,877

MULTICOLOR IMAGE FORMING METHOD AND APPARATUS THEREFOR

Masumi Sato, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,500
Claims priority, application Japan, Jun. 18, 1991, 3-146060
Int. Cl.[5] G03G *15/01*
U.S. Cl. 346—157 4 Claims



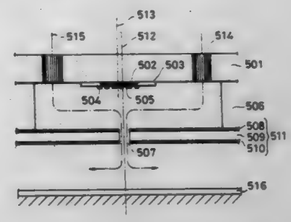
1. In a method of forming a multicolor image on a recording medium by repeating a sequence of steps of uniformly charging a photoconductive element, scanning said photoconductive element by a laser beam to form an electrostatic latent image on said photoconductive element, and developing the latent image by reversal with each of a plurality of toners of different colors to thereby produce a multicolor toner image on said photoconductive element, and transferring the multicolor toner image to and fixing the multicolor toner image on a recording medium, an intensity of the laser beam is controlled together with a beam diameter or an emission pulse width in the event of the second and successive sequences of steps included in a single multicolor image forming process such that, when the laser beam scans part of said photoconductive element where a toner image formed by the preceding sequence of steps is present, the laser beam forms a dot of substantially the same size in both the part where a toner image is present and part where a toner image is absent, in matching relation to an interception and scattering characteristics of the laser beam due to the toner image.

5,296,878

APPARATUS FOR GENERATING IONS IN SOLID ION RECORDING HEAD WITH IMPROVED STABILITY

Yasuo Hosaka, Tokyo; Hideyuki Nakao, Kanagawa; Hitoshi Nagato, Kanagawa, and Shuzo Hirahara, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 753,233, Aug. 30, 1991, Pat. No. 5,239,317.
This application Feb. 11, 1993, Ser. No. 16,231
Claims priority, application Japan, Feb. 20, 1991, 3-109910; May 31, 1991, 3-138008
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—159 13 Claims



1. An apparatus for generating ions, comprising:
ion generation electrode means having a slit section for generating ions in the slit section;
induction electrode means for inducing an electric field for generating ions in the slit sections of the ion generation electrode means;
control electrode means including a pair of electrodes separated by an insulation layer inserted therebetween and having an ion passing hole for controlling a flow of ions generated by the ion generation electrode means and passing through the ion passing hole;
driving means for applying a signal voltage indicating a timing for passing the flow of ions through the ion passing hole by being in an on state and a timing for not passing the flow of ions through the passing hole by being in an off state to the ion control electrode means; and
bias voltage source means for applying a bias voltage between the ion generation electrode means and the induction electrode means, in order to cause a generation of ions at the slit section of the ion generation electrode means.

5,296,879

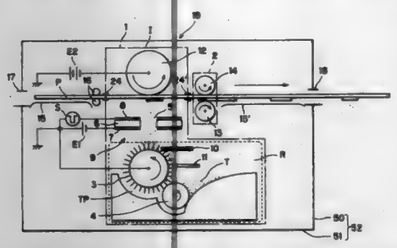
IMAGE RECORDING APPARATUS HAVING DETACHABLE CARTRIDGE

Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 726,907, Jul. 8, 1991, abandoned. This application Mar. 23, 1992, Ser. No. 855,837
Claims priority, application Japan, Jul. 9, 1990, 2-181083
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—160.1 39 Claims

18. An image recording cartridge for use in an image recording apparatus for recording an image on an image receiving medium, comprising:
charging means for electrostatically charging toner particles;
toner mist producing means for receiving the electrostatically-charged toner particles from said charging means and producing a mist of the electrostatically-charged toner particles;
a particle controller having at least one row of apertures for selectively allowing the mist of electrostatically-charged toner particles to pass through the apertures; and
conveying passage defining means for defining a conveying passage of the image receiving medium at a position apart from said particle controller by a predetermined distance,

the image receiving medium being conveyed along the conveying passage so that the mist of electrostatically-charged toner particles that passed through the aperture



of said particle controller attach to the image receiving medium to form a toner image thereon;

wherein said image recording cartridge is detachably mounted in a housing of said image recording apparatus.

5,296,880

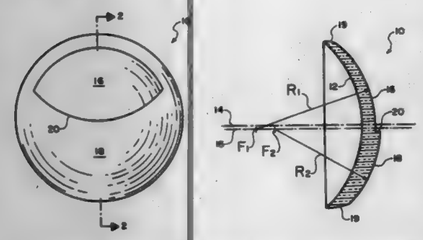
BIFOCAL CONTACT LENS

Jimmy C. Webb, Georgetown, Tex., assignor to Metro Optics of Austin, Inc., Pflugerville, Tex.

Filed Dec. 3, 1992, Ser. No. 985,160

Int. Cl.[5] G02C *7/04*

U.S. Cl. 351—161 **4 Claims**



1. A bifocal contact lens formed from a material having a uniform index of refraction and having a concave posterior surface shaped in conformity with a patient's cornea and defining an optical axis, the bifocal contact lens comprising:

(a) a convex distance correction anterior surface located at an upper portion of the lens and having a distance correction radius of curvature with a center of curvature at a point on a first line extending at least parallel to the optical axis of the lens;

(b) a convex near correction anterior surface located at a bottom portion of the lens and having a near correction radius of curvature with a center of curvature at a point on the first line; and

(c) a junction between the distance and near correction surfaces having generally a crescent shape that opens toward the upper portion of the lens and that extends substantially across an entire optical zone of the lens.

5,296,881

METHOD AND CONTACT LENSES FOR TREATING PRESBYOPIA

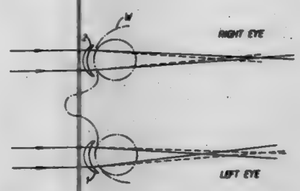
Michael H. Freeman, Denbigh, Wales, assignor to Pilkington Diffractive Lenses Limited, St. Helens, Wales

Filed Apr. 12, 1991, Ser. No. 684,223

Claims priority, application United Kingdom, Apr. 17, 1990, 9008582

Int. Cl.[5] G02C *7/04*; G02B *5/18, 27/42*

U.S. Cl. 351—177 **6 Claims**



1. A method of correcting or alleviating presbyopia in humans, comprising:

fitting a first contact lens to a first eye, said first contact lens having an optical zone adapted to provide a corrected near and far image for said first eye; and

fitting a second contact lens to the second eye, said second contact lens having an optical zone adapted to provide a corrected far and near image for said second eye,

wherein each of said first and second contact lenses has an optical zone with a first power provided by the shape, curvature and material of the lens to provide one corrected image and a second power provided by diffractive means which is additive to, or subtractive from, said first power to provide a second corrected image, the diffractive means being arranged so that the amount of light directed into the near image by the first contact lens is substantially greater than that directed into the far image by that lens, and the light directed into the far image by the second contact lens is substantially greater than that directed into the near image by that lens, so that each of the eyes sees one of the two images as being of relatively high intensity while maintaining a large amount of stereoscopic vision.

5,296,882

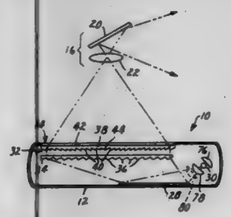
OVERHEAD PROJECTOR WITH CATADIOPTRIC FRESNEL LENS

John C. Nelson, The Sea Ranch, Calif.; Robert M. Fealer, and Dennis F. Vanderwerf, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 21, 1992, Ser. No. 988,851

Int. Cl.[5] G03B *21/28, 21/132*

U.S. Cl. 353—63 **14 Claims**



10. An overhead projector comprising:

a base having a stage area;

a projector head mounted to said base, overlying said stage area;

a light source in said base;

lens means for condensing light from said stage area toward said projector head; and

means for directing light from said light source towards said stage area, said directing means including a mirror located in said base, which produces an apparent location of said light source, said light source and said mirror being positioned with respect to said stage area whereby said apparent location of said light source lies outside a volume defined by normal projection of said stage area.

5,296,883

LAMP CHANGING SYSTEM IN LCD PROJECTOR

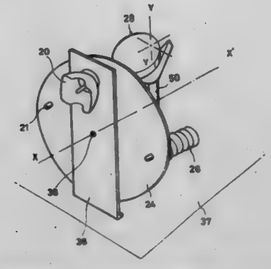
Hong C. Park, and Hee S. Koo, both of Seoul, Rep. of Korea, assignors to GoldStar Co. Ltd., Seoul, Rep. of Korea

Filed Nov. 25, 1992, Ser. No. 981,394

Claims priority, application Rep. of Korea, Nov. 27, 1991, 1991/21442

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—87 **11 Claims**



1. A lamp changing system in a liquid crystal display projector comprising:

a reflective facet,

a rotary plate disposed at the rear side of said reflective facet, said rotary plate including:

a plurality of arc-tubes biased by a spring disposed within an elastic tube box, and

a plurality of blocks disposed closer to a center of said rotary plate than said plurality of arc-tubes,

an upper cam for supplying an electric source by moving one of said plurality of arc-tubes toward said reflective facet, and

a lower cam for moving one of said plurality of blocks so as to rotate said rotary plate, whereby when the one of the plurality of arc-tubes has been used for its useful life, the one of the plurality of arc-tubes is separated from the electrode source and another of said plurality of arc-tubes is replaced a light source for the liquid crystal display projector.

5,296,884

CAMERA HAVING A DATA RECORDING FUNCTION

Tsutomu Honda; Yasuhiro Morimoto; Kuniteru Sakakibara; Kenji Nakamura, all of Takatsuki; Hirokazu Naruto, Higashi-osaka, and Hiroshi Ishibe, Kyoto, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 660,353, Feb. 22, 1991, abandoned.

This application Jun. 25, 1992, Ser. No. 905,503

Claims priority, application Japan, Feb. 23, 1990, 2-043347

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—106 **11 Claims**

1. A camera system comprising:

a camera housing capable of being hand-held by an operator, including within the housing:

first means for recording an image of an object on a recording medium at every recording event;

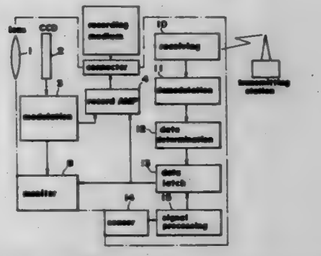
means for receiving an electric wave transmitted from an external device in a wireless manner including a antenna operatively mounted on the camera housing;

means for storing a plurality of predetermined data in advance;

means for selecting a portion of the data stored by said storing means in accordance with the electric wave received by said receiving means to output data relating to the names of physical places;

first monitor means on the camera housing to display the names of physical places to the operator;

second means for recording the data output by said selecting means with respect to every recording event; and



a filing device including:

means for designating specific data relating to a desired image that has been recorded; and

means for searching, among the data recorded by said second recording means, for data identical with the data designated by said designating means to detect the desired image, and

means for reproducing the image recorded on the recording medium wherein said reproducing means reproduces the image searched by said searching means, including a second monitor for displaying both the image and output data relating to the names of physical places.

5,296,885

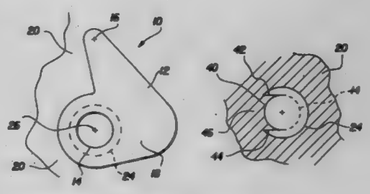
APERTURE CORRECTION FOR MOVING APERTURE SHUTTERS

Jude A. Sangregory, Spencerport, and Stephen G. M. Desormeaux, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 9, 1992, Ser. No. 865,915

Int. Cl.[5] G03B *9/08, 9/02*

U.S. Cl. 354—230 **18 Claims**



1. A moving aperture shutter, comprising

a) means for defining a first aperture;

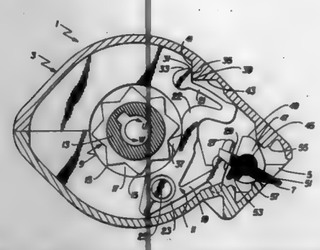
b) means for defining a second aperture; and

c) means for causing relative movement between said first and second aperture defining means between an initial position where the first and second apertures are out of registry, through an intermediate position where one of the apertures is partially within the other aperture and an exposure position where the one aperture is within the other aperture, wherein in said exposure position a portion of an edge of said one aperture is aligned with a portion of

VOL 1160 ISS 4 MR 22 1994 UMI

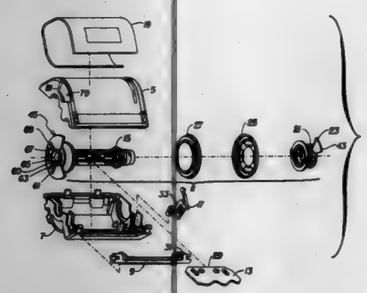
an edge of said other aperture which was first exposed by said one aperture so as to minimize the amount of exposure of the other aperture during movement through the intermediate position.

5,296,886
FILM CASSETTE WITH SPOOL LOCK
Dennis R. Zander, Penfield, N.Y., and Hideaki Kataoka, Odawara, Japan, assignors to Eastman Kodak Company, Rochester, N.Y. and Fuji Photo Film Co., Ltd., Tokyo, Japan
Filed Mar. 22, 1993, Ser. No. 34,037
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 10 Claims



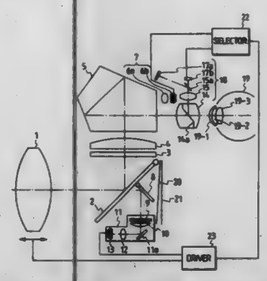
1. A film cassette adapted to be opened and closed comprising a film spool supported for rotation, and movable locking means for inhibiting rotation of said film spool when said cassette is closed and allowing the film spool to rotate when the cassette is opened, is characterized in that:
retaining means keeps said movable locking means in place to make it inhibit rotation of said film spool when said cassette is opened, but allows the film spool to be initially forcibly rotated to move the locking means out of place to then allow the film spool to be freely rotated, whereby the film spool must be rotated to discontinue the affect of the locking means after the cassette is opened.

5,296,887
BAR-CODED FILM SPOOL
Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 23, 1993, Ser. No. 81,533
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 5 Claims



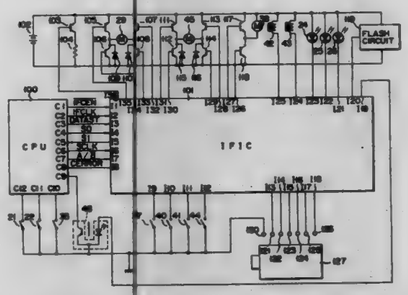
1. A rotatable film spool comprising a bar-coded disk with a bar code symbol consisting of a sequence of lesser and greater photo reflective elements having various widths, is characterized in that:
said lesser photo reflective elements are respective cut-outs in said disk and said greater photo reflective elements are respective flat segments of the disk between adjacent pairs of said cut-outs.

5,296,888
SIGHT AXIS DETECTION APPARATUS
Akira Yamada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 14, 1993, Ser. No. 45,688
Claims priority, application Japan, Apr. 20, 1992, 4-126856
Int. Cl.[5] G03B *7/08, 13/36, 13/02*
U.S. Cl. 354—402 10 Claims



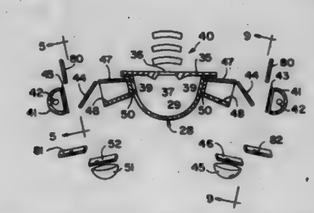
1. A focus adjustment apparatus for an objective lens, comprising:
detection means for detecting a view point of an observer;
photometry means for measuring luminances at a plurality of positions in a field; and
selection means for selecting an area to be subjected to focus adjustment of said objective lens on the basis of a detection signal from said detection means and a photometry signal from said photometry means.

5,296,889
CAMERA DRIVING CIRCUIT
Yuji Imai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 662,491, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 393,900, Aug. 14, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 879,160
Claims priority, application Japan, Sep. 5, 1988, 63-221635
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—412 25 Claims



1. A device for driving a camera, comprising: a plurality of controlled objects which actuate mechanisms of the camera;
a central processing unit ("CPU") including means for generating a serial sequence of digital data bits arranged into groups, each of said groups having a given number of said bits each of which is designated for one of said controlled objects, and means for outputting each of said groups in a data communication period;
an interface including memory means for receiving said bits and having a plurality of memory locations at least equal in number to the number of bits in one of said groups of bits, each of said plurality of controlled objects being coupled to at least one of said memory locations, wherein said memory means stores the bits belonging to each one of said groups of bits in a predetermined manner such that, at the end of said data communication period, the received bits of one said group are all stored, respectively, in memory locations coupled to controlled objects for which such bits have been respectively designated; and
means for simultaneously providing the bits stored in said memory means to the controlled objects to which said memory locations are respectively coupled.

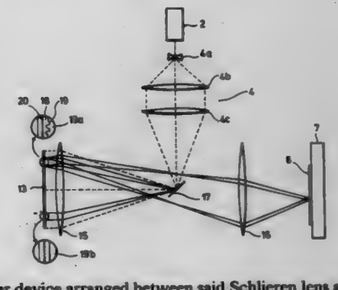
5,296,890
LIGHT SOURCE FOR PHOTOGRAPHIC COLOR PRINTERS
Roy A. Clapp, 2505 S. Kiwanis Ave., Apt. 352, Sioux Falls, S. Dak. 57105
Continuation of Ser. No. 763,318, Sep. 20, 1991, abandoned. This application May 26, 1992, Ser. No. 888,920
Int. Cl.[5] G03B *27/54, 27/72*
U.S. Cl. 355—37 13 Claims



1. For use with apparatus for exposing color photographic material through a negative, said material having a plurality of emulsion layers, a light source device having a plurality of lamps, one for each emulsion layer, each lamp having an integral reflector with a solid collection angle greater than 180 degrees designed to project a light stream composed of substantially parallel rays, said parallel rays being combined with the direct divergent fan of rays emitted by the lamp filament to form composite light streams, a dichroic filter positioned in the path of each of said composite light streams, each dichroic filter being adapted to limit the spectral energy of the parallel rays to act exclusively on a single emulsion layer, means to combine these composite light streams into a single light stream, means to remove from this combined light stream rays that exceed a predetermined angle, and to form a printing light stream.

5,296,891
ILLUMINATION DEVICE
Holger Vogt, Mülheim; Heais Kück, Duisburg; Günther Hess, Duisburg, and Andreas Gehner, Duisburg, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany
PCT No. PCT/DE91/00375, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/17483, PCT Pub. Date Nov. 14, 1991
PCT Filed May 2, 1991, Ser. No. 940,958
Claims priority, application Fed. Rep. of Germany, May 2, 1990, 4014131
Int. Cl.[5] G03B *27/54*
U.S. Cl. 355—67 16 Claims

1. An illumination device for producing models used for manufacturing electronic elements, or for direct illumination of wafers or substrates during the photolithographic steeps required for their production, or for direct illumination of structures including light-sensitive layers, comprising:
a pulsed laser light source;
a pattern generator;
said pattern generator including an optical Schlieren system and an active, matrix-addressable surface light modulator;
said surface light modulator including a reflective surface having addressed surface areas which diffract incident light and non-addressed surface areas which reflect incident light;
said Schlieren system comprising a Schlieren lens arranged on a side of said surface light modulator, a projection lens facing away from said surface light modulator, and a mirror device arranged between said lenses for directing light coming from said light source onto said reflective surface on said surface light modulator;
means for focussing the light coming from said light source onto said mirror device;
wherein said Schlieren lens is arranged from said surface light modulator at a short distance relative to the focal length of said Schlieren lens;



a filter device arranged between said Schlieren lens and said projection leans, said filter device having a structural design to filter out undiffracted light reflected by said non-addressed surface areas of said surface light modulator and to permit diffracted light reflected by said addressed surface areas to pass via said projection lens to the model, or to the electronic element, or to the structure;
a displaceable positioning table for securing the model, or the electronic element, or the structure so that a sharp image of said addressed surface areas of said surface light modulator is formed on the model, or on the electronic element, or on the structure;
said pulse laser light source having a pulse duration shorter than the minimum structural dimension of the model to be produced, or of the electronic element, or of the structure divided by the displacement rate of said positioning table; and
during the displacement of the positioning table, the model, or the electronic element, or the structure is put together using a plurality of successive partial images by adequate addressing of said surface light modulator.

5,296,892
ILLUMINATING APPARATUS AND PROJECTION EXPOSURE APPARATUS PROVIDED WITH SUCH AN ILLUMINATING APPARATUS
Takashi Mori, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jan. 22, 1993, Ser. No. 8,370
Claims priority, application Japan, Feb. 1, 1992, 4-46140
Int. Cl.[5] G03B *27/42, 27/54*
U.S. Cl. 355—67 24 Claims

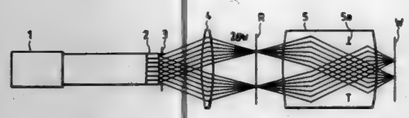
1. An illuminating apparatus including the following:
light source means to supply parallel light beams;
multiple light beam formation means to form a plurality of

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secondary light sources by the parallel light beams from said light source means; and

a condensing optical system to condense the light beams from said plural secondary light sources to illuminate an area to be irradiated in a superposed manner,

said multiple light beam formation means including a first optical integrator which forms a given number of secondary light sources, and a second optical integrator which is arranged replaceably with said first optical integrator and



forms substantially the same number of second light sources as the first optical integrator,

said area to be irradiated being illuminated with a first aperture number when said first optical integrator is installed in the illuminating light path, and

said area to be irradiated being illuminated with a second aperture number which differs from said first aperture number when said second optical integrator is installed in said light path.

5,296,893

BOX FOR AN OPTICAL STEPPER RETICLE

Charles G. Shaw, San Antonio, and Edward R. Vokoun, III, Boerne, both of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jul. 31, 1992, Ser. No. 923,728
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 **18 Claims**



1. A reticle box comprising:

base means having stand-off means adapted to contact a first side of a reticle, said base means defining a perimeter and being substantially solid within said perimeter;

cover means adapted to operationally engage said base means such that said base means and said cover means substantially fully enclose said reticle; and

closing means operative to urge a portion of said cover means into firm contact with a second side of said reticle, whereby said reticle is inhibited from moving.

5,296,894

IMAGE FORMING APPARATUS AND AN IMAGE MEMBER CARTRIDGE CONTAINING A PHOTOCONDUCTIVE DRUM

Michael H. Green, Rochester; Francisco L. Ziegelmuller, Penfield, and William B. Vreeland, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

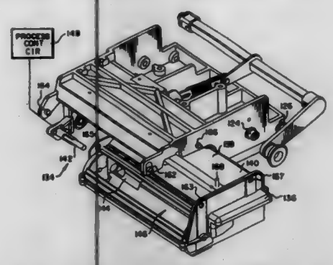
Filed Dec. 3, 1992, Ser. No. 985,075
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **11 Claims**

1. Image forming apparatus usable with a photoconductive drum cartridge having a photoconductive drum with a cylindrical photoconductive surface rotatable about an axis of rotation, said image forming apparatus comprising:

a laser,

a laser chassis for supporting said laser, said laser chassis including means for receiving such a photoconductive drum cartridge by movement of the cartridge parallel to the axis of rotation,

process control circuitry including an electrometer and means for controlling said image forming apparatus in response to a signal from said electrometer, and



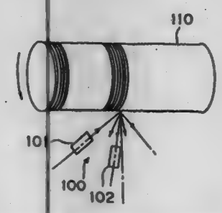
means for mounting said electrometer fixed to said laser chassis and to be closely spaced from the photoconductive surface of a photoconductive drum of a cartridge received in said receiving means.

5,296,895

IMAGE FORMING APPARATUS WITH TONER DETECTION

Yoshikazu Naito, Gamagori, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1991, Ser. No. 775,337
Claims priority, application Japan, Oct. 12, 1990, 2-274476
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **7 Claims**



1. An image forming apparatus for forming a visible image on a sheet material, said apparatus comprising:

a photoreceptor medium including a substrate and a photosensitive layer formed on the substrate, said substrate having a regularly developed pattern of grooves formed thereon;

means for measuring the amount of rays of light reflected from the photoreceptor medium and undergoing diffuse reflection therefrom, said measuring means comprising a light emitting element and a light receiving element, each of said elements having an optical axis, said light emitting and receiving elements being so positioned that a common plane containing the respective optical axes lies substantially parallel to any one of the grooves on the substrate; and

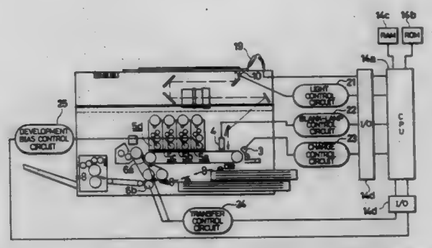
means for controlling said apparatus based on the amount of rays of light measured by said measuring means.

5,296,896

IMAGE FORMING APPARATUS WITH STORAGE FOR COPYING CONDITIONS

Hidetomo Nishiyama, Yamatokoriyama; Atsushi Kurimoto, Nara; Kazunori Iwasa, Yamatokoriyama, and Masami Oka, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 847,265
Claims priority, application Japan, Mar. 11, 1991, 3-043902
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **8 Claims**



1. An image forming apparatus for forming an electrophotographic image by applying light to an original document and using reflected light from the document, comprising:

condition determining means for determining optimum conditions of an electrophotographic process for a formation of an image;

code forming means for converting information concerning the determined optimum conditions of the electrophotographic process into a code and forming the code on a copy paper sheet;

code reader means for reading the code when forming an image by using the copy paper carrying the code and an image thereon as an original document; and

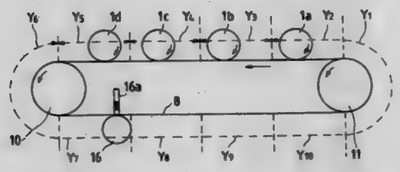
adjusting means for establishing conditions of the electrophotographic process for the formation of an image according to the code read.

5,296,897

IMAGE FORMING APPARATUS FOR FORMING MULTI-IMAGE ON TRANSFER SHEET WITH PLURAL COLOR TONERS

Koji Amemiya, Tokyo; Yuji Sakemi, Inagi, and Masami Izumizaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,338
Claims priority, application Japan, Mar. 4, 1992, 4-082711
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **7 Claims**



1. An image forming apparatus for forming a multi-image on a transfer sheet with plural color toners, comprising:

a plurality of electrophotographic photosensitive members each having an endless electrophotographic photosensitive layer;

light information illuminating means arranged in a confronting relation to said photosensitive members and adapted to illuminate light information;

developing means for developing respective areas on said photosensitive members illuminated by said light information illuminating means with color toners;

transfer means for electrostatically transferring respective toner images developed by said developing means onto a transfer sheet;

detecting developed image measuring means associated with the respective photosensitive members and adapted to measure conditions of detecting toner images formed in respective image forming areas of said photosensitive members by said developing means in order to detect image formation conditions of said photosensitive members;

image forming condition adjusting means for adjusting image forming conditions on said photosensitive members on the basis of measured results from said detecting developed image measuring means;

transfer sheet conveying means contacted with said photosensitive members at respective transfer positions for the respective photosensitive members and moved along an endless path to convey a transfer sheet to said respective transfer positions for the respective photosensitive members and having a length longer than the sum of an image area of said photosensitive member and a non-image area between the adjacent image areas by an integral number of times, and adapted to carry and convey a plurality of transfer sheets simultaneously;

transfer sheet supplying means capable of supplying a plurality of transfer sheets to said transfer sheet conveying means successively; and

transfer sheet conveying means cleaning means disposed in a confronting relation to said transfer sheet conveying means and adapted to clean a surface of said transfer sheet conveying means which can face said photosensitive members;

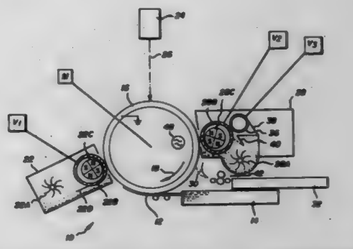
wherein toner images to be measured by said developed image measuring means for detecting the image formation conditions are formed on said photosensitive members, in the image areas of said photosensitive members in correspondence to the non-image areas of said transfer sheet conveying means.

5,296,898

METHOD FOR PRODUCING IMAGES

Bruce J. Rubin; Peter G. Evans, both of Rochester, and Dennis R. Kamp, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1992, Ser. No. 925,005
Int. Cl.[5] G03G *15/04, 15/08, 15/09*
U.S. Cl. 355—245 **4 Claims**



1. A method of producing an image on an imaging member, said method comprising the steps of:

depositing a substantially uniform layer of charged toner particles onto a photoconductive layer of an imaging member in the presence of an electrical field urging the toner particles toward the photoconductive layer, said

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photoconductive layer contacting a conductive layer which is maintained at a reference potential, such as ground;

imagewise heating said layer of charged toner particles to lightly tack selected toner particles to said imaging member; and

uniformly exposing said photoconductive layer to actinic radiation to cause charge injection from said charged toner particles into said photoconductive layer while removing only the nonselected toner particles from said imaging member.

5,296,899

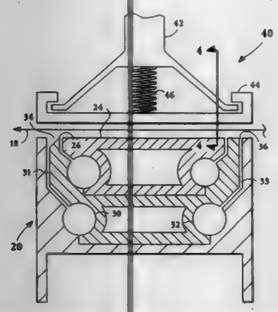
SEGMENTED BACKING ASSEMBLY FOR TONING AN ELECTROSTATIC IMAGE

Gene F. Day, Hillsborough, Calif., assignor to Phoenix Precision Graphics, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 930,779, Aug. 17, 1992, Pat. No. 5,231,455. This application Mar. 9, 1993, Ser. No. 28,371

Int. Cl.[5] G03G *15/10*

U.S. Cl. 355—256 **21 Claims**



1. A backing assembly for an electrostatic recorder or copier comprising:

a positive pressure toner applicator having a length spanning the entire width of a recording medium and having a toning surface thereon, said toning surface in fluid communication with said recording medium for applying toner thereto, said recording medium disposed across said toning surface, said applicator generating pressure against said recording medium, thereby pushing said recording medium away from said applicator,

a rigid cross member positioned above and parallel to said toning surface of said toner applicator, said cross member extending in a lengthwise direction completely across said applicator, and

a plurality of closely spaced backing segments having flat bottom surfaces, each of said backing segments elastically coupled to said rigid cross member and disposed between said cross member and said applicator, said backing segments urged toward said applicator in a manner balancing said pressure against said recording medium to the extent that said recording medium is spaced in close proximity to said toning surface.

5,296,900

SUBSTANTIALLY CYLINDRICAL DEVELOPER SUPPLYING CONTAINER FOR SUPPLYING APPROXIMATELY CONSTANT AMOUNTS OF DEVELOPER

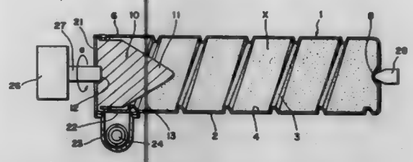
Hiromitsu Saijo; Shunji Yamamoto, and Akio Kimura, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 530,962, May 30, 1990, abandoned. This application Oct. 11, 1991, Ser. No. 777,721

Claims priority, application Japan, May 31, 1989, 1-138531; May 31, 1989, 1-138532; May 31, 1989, 1-138533

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **26 Claims**



1. A developer supplying device comprising:

a developer container of substantially cylindrical form and having on its inner surface a spiral groove extending therearound in an axial direction thereof, said container being rotatable to transport a developer therein by the spiral groove;

supplying means in a form of an opening provided at the peripheral surface of said container to supply the developer therethrough; and

regulating means provided in said container and regulating an amount of the developer supplied from said supplying means, said regulating means being so formed to reduce a sectional area between said regulating means and an inner surface of said container in the vicinity of said supplying means.

5,296,901

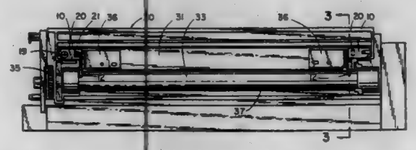
ELECTRIC CONTACT FOR DRY TONER CARTRIDGE

Wilkins L. Davies, P.O. Box 4806, Clearwater, Fla. 34618

Filed Jan. 21, 1992, Ser. No. 823,290

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **4 Claims**



1. An improved dry toner cartridge for use in a copy machine or a digital printer, said improvement comprising an external electrical contact member for bypassing an interruptable factory-installed electrical contact, said factory-installed contact providing a frictional electrical connection internal to a rotatable metallic toner roller, wherein said external contact member is attached to a doctor blade and wherein said external contact member includes a contact finger of sufficient length to make a tangential rubbing connection to an external curved surface of said toner roller.

5,296,902

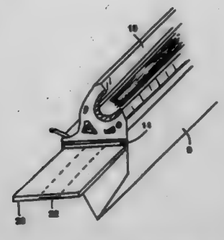
APPARATUS AND METHOD FOR PROVIDING A REMOVABLE SEAL BETWEEN THE TONER HOPPER AND FEED ROLLER COMPARTMENT OF A TONER CARTRIDGE ASSEMBLY

Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322

Filed Jul. 6, 1992, Ser. No. 908,085

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **45 Claims**



1. A seal used to permit the re-charging of a toner cartridge assembly used in printers, copy machines, and facsimile machines and prevent the loss of toner from said cartridge assembly during handling and shipment, said cartridge assembly including a toner hopper and a feed roller compartment, said seal comprising a slotted seal insert semi-permanently attached to the toner hopper by joining means, said joining means comprising grooves or a ledge on the cartridge assembly between said toner hopper and said feed roller compartment for receiving said slotted seal insert, said slotted seal insert is semi-permanently affixed to said grooves of said ledge of said assembly into a position between said toner hopper and said feed roller compartment, said seal further including a removable closure sealing means for covering the slot in the slotted seal insert.

5,296,903

IMAGE FORMING APPARATUS HAVING CONTROL BASED ON DETECTED TONER CHARGE AND TRANSFER EFFICIENCY

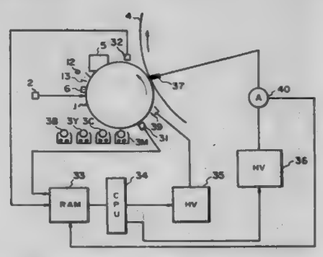
Akio Suzuki, Yokohama; Hisashi Fukushima, Kawasaki; Haruhiko Moriguchi, Yokohama; Yasushi Miura, Kawasaki, and Nobuatsu Sasanuma, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,387

Claims priority, application Japan, Oct. 18, 1991, 3-298120

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—271 **21 Claims**



1. An image forming apparatus, comprising:

an image bearing member;

toner image forming means for forming a toner image on said image bearing member;

transfer charging means for transferring the toner image from said image-bearing member onto a transfer material;

first detecting means for detecting toner charge amount before image transfer onto the transfer material;

second detecting means for detecting efficiency of the image transfer; and

control means for controlling a condition of image transfer operation in accordance with outputs of said first and second detecting means.

5,296,904

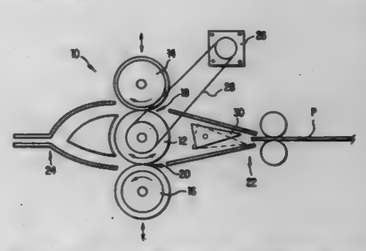
THREE-ROLL FUSER WITH CENTER PRESSURE ROLL FOR BLACK AND COLOR APPLICATION

Mark S. Jackson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1993, Ser. No. 41,308

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—290 **28 Claims**



17. A three roll fuser system for a xerographic machine, comprising:

a reversibly drivable central pressure roll;

a first heatable fuser roll located adjacent said central pressure roll;

a first fuser nip formed between said pressure roll and said first fuser roll capable of receiving a copy substrate and fusing an unfused image located on a first side of the copy substrate;

a second heatable fuser roll located adjacent said central pressure;

a second fuser nip formed between said central pressure roll and said second fuser roll capable of receiving a copy substrate and fusing an unfused image located on a second side of the copy substrate;

a sheet inlet for transporting copy substrates having an unfused image on one of a first side and a second side directly to a selected one of said first and second fuser nips of the fuser system based on which side of the copy substrates the unfused image is located; and

a sheet outlet for receiving fused copy substrates from one of said first and second fuser nips of the fuser system.

5,296,905

CLEANING DEVICE USING MAGNETIC PARTICULATE CLEANING MATERIAL

Kevin E. Youney, Brockport, and Dennis R. Kamp, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1992, Ser. No. 975,258

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—305 **2 Claims**

1. Image forming apparatus comprising:

means for applying toner to a surface,

means for imagewise tacking toner to the surface,

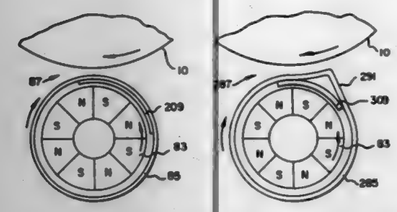
means for cleaning untacked toner from the surface while said surface moves in a first direction, said cleaning means including:

a shell having a surface defining a path for hard magnetic particulate cleaning material through a cleaning zone in cleaning relation to the surface being cleaned, and

a magnetic core positioned inside said shell and rotatable

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to move hard magnetic particulate cleaning material on said shell through the cleaning zone in a second direction opposite the first direction, said shell being shaped



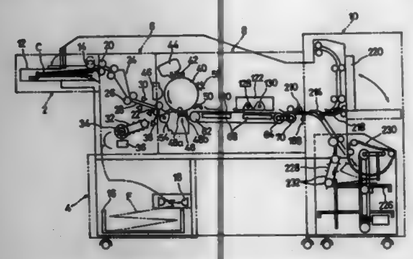
to extend the cleaning zone only in the second direction from the position at which the core is closest to the surface to be cleaned.

5,296,906

ELECTROPHOTOGRAPHIC APPARATUS CAPABLE OF SELECTIVELY USING CUT SHEET AND CONTINUOUS PAPER AND METHOD THEREFOR

Shigehiro Hano; Jun Inagaki; Yoshihiro Chujo, all of Otsu; Takanobu Hagiwara, Urawa; Ezo Kanaya, Shiga; Yoshinobu Takatsuki, Otsu; Satoru Kato, Yamanashi; Hajime Saegusa, Yamanashi; Tetsuya Aiyama, Yamanashi; Hiroyuki Aonuma, Yamanashi; Shozo Yoshizawa, Iida; Naoki Kobayashi, Kofu; Koichi Sugihara, Yamanashi; Akihito Dobashi, Yamanashi, and Kazuhito Shimura, Yamanashi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 14, 1992, Ser. No. 929,523
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—311 **27 Claims**



1. An electrophotographic apparatus comprising:

first supplying means for supplying cut sheet as printing paper towards a common feeding path;

second supplying means for supplying continuous paper as printing paper towards said common feeding path;

feeding means for feeding the printing paper supplied from one of said first and second supplying means along said common feeding path;

image forming means for forming an electrostatic latent image on a photosensitive medium;

developing means for developing the latent image on the photosensitive medium into a toner image;

transferring means for transferring the toner image on said photosensitive medium onto the printing paper lying on said common feeding path at a present transferring position;

fixing means for fixing the transferred toner image on the printing paper at a preset fixing position on said common feeding path;

cutting means for cutting continuous paper at a cutting position set on a downstream side of the fixing position with respect to a feeding direction of the printing paper;

retracting means for drawing back the continuous paper which is left behind on said common feeding path after the continuous paper is cut apart to a position which lies on an upstream side of said common feeding path and does not prevent supply of the cut sheet by said first supplying means; and

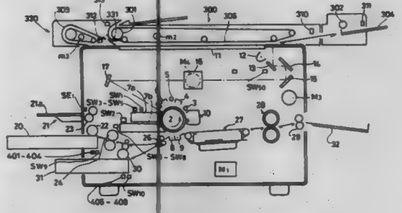
separating means for separating said common feeding path from said photosensitive medium and said fixing means when the continuous paper is moved in a reverse direction.

5,296,907

IMAGE FORMING APPARATUS THAT PERMITS THE SETTING OF SEPARATED COPY MODES FOR AT LEAST ONE ORIGINAL DOCUMENT OF A PLURALITY OF ORIGINAL DOCUMENTS TO BE COPIED

Yoichi Kawabuchi; Masazumi Ito; Kazuhiro Araki, and Toshiyuki Yamashita, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 551,029, Jul. 11, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 905,143
Claims priority, application Japan, Jul. 18, 1989, 1-185794
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—313 **10 Claims**



1. An image forming apparatus comprising:

original transporting means for transporting a plurality of originals set on a tray one by one to a platen;

a plurality of developing units containing toner;

means for determining whether each color of the toner provided in the developing units is different from each other;

copying mode selecting means for selecting either a first copying mode in which a copy of all of the originals transported by said original transporting means is made by one of said developing units, or a second copying mode in which a copy of a particular original among said plurality of original is made by one of said developing units and a copy of the remaining originals is made by the other developing units; and

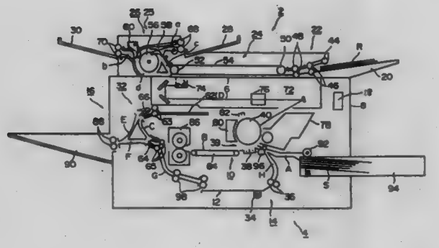
mean for executing control so that a copying operation of said second copying mode is permitted when said determining means determines that each color of the developing units is different from each other, and so that the copying operation of said second copying mode is prevented when said determining means determines that each color of the developing units is the same as each other.

5,296,908

IMAGE PROCESSING MACHINE WITH AN AUTOMATIC SHEET HANDLER

Masaru Hatano, Amagasaki, and Tsukasa Sugiyama, Moriguchi, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1990, Ser. No. 611,785
Claims priority, application Japan, Nov. 30, 1989, 1-313244
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—319 **6 Claims**



3. A system of a copying machine and an original-sheet handling machine placed adjacent with a contact plate therebetween, the system comprising:

an initial tray provided in the original-sheet handling machine for laying a plurality of original sheets;

a placing mechanism provided in the original-sheet handling machine for taking an uppermost one of the plurality of original sheets on the initial tray and placing an original sheet on the contact plate by conveying it from one end of the contact plate;

a first recycling mechanism provided at the opposite side of the contact plate with respect to the initial tray in the original-sheet handling machine for removing an original sheet from the contact plate, reversing an original sheet and replacing an original sheet on the contact plate by conveying it from the opposite side of the contact plate, the first recycling mechanism including a large reversing roller by which an original sheet removed from the contact plate is reversed and replaced on the contact plate;

a first ejecting mechanism provided in the original-sheet handling machine for ejecting an original sheet on the contact plate either with reversing to a first final tray or without reversing to a second final tray;

a copying section provided in the copying machine for copying a surface of an original sheet placed on the contact plate to a surface of a copy sheet;

a second recycling mechanism provided in the copying machine for transporting a copy sheet copied at the copying section again to the copying section with a copied surface upside down;

a second ejecting mechanism provided in the copying machine for ejecting a copy sheet copied at the copying section onto a finish tray;

a reversing mechanism provided in the copying machine for reversing a copy sheet upside down before a copy sheet is ejected by the second ejecting mechanism; and

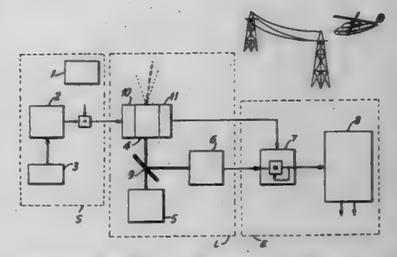
a controller for controlling the movement of an original sheet in synchronism with the movement of a copy sheet.

5,296,909

DETECTOR OF SUSPENDED CABLES FOR AVIONIC APPLICATIONS

Marco Fazi, Rome, and Filippo Modestini, Nemi, both of Italy, assignors to Alenia Aeritalia & Selenia S.p.A. and C.N.R., both of Rome, Italy

PCT No. PCT/IT91/00072, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO92/04643, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 5, 1991, Ser. No. 854,639
Claims priority, application Italy, Sep. 7, 1990, 48264 A/90
Int. Cl.[5] G01C *3/08, 1/00;* G01B *11/26*
U.S. Cl. 356—5 **9 Claims**



1. An apparatus for detecting thin, elongated objects suspended in the flight path of a flying vehicle, the apparatus comprising:

means for generating a scan signal conforming to a raster scan signal modulated by random noise;

means for driving a repetitively pulsed laser beam, said driving means being responsive to said scan signal for driving said laser beam pulses in a search path of motion conforming to a randomly modified raster scan pattern within a predetermined scan period;

means for receiving reflected laser beam pulses, said reflected laser beam pulses being formed as said laser beam pulses are reflected from an object within said search path;

means for converting each of said reflected laser beam pulses into reflection data conforming to a three dimensional spatial relationship between the point of reflection of said laser beam pulse from said object and said vehicle; and

means for discriminating desired target reflections from background reflections, said discriminating means comprising:

means for analyzing said reflection data so as to identify specific reflection data falling within a predetermined spatial range; and

means for processing said specific reflection data received during said scan period so as to assemble said specific reflection data into configurations, and so as to identify the conformance of said configurations of said specific reflection data with preselected configurations, such that identification of conformance triggers an indication of the presence of a thin, elongated object in the flight path of said flying vehicle to an operator of said flying vehicle.

5,296,910

METHOD AND APPARATUS FOR PARTICLE ANALYSIS

Reagan Cole, Little Rock, Ark., assignor to University of Akransas, Little Rock, Ark.

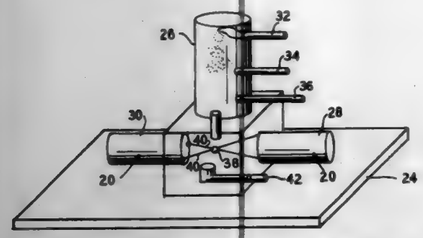
Filed Oct. 5, 1992, Ser. No. 956,296
Int. Cl.[5] G01P *3/36;* G01N *15/02, 21/00*
U.S. Cl. 356—28.5 **29 Claims**

1. A method for analyzing particles in a laser doppler velocimeter, comprising the steps of:

supplying particles to be tested to a sensing volume of the laser doppler velocimeter;

exciting the particles in the sensing volume with a plurality

of forces which are orthogonal over an interval corresponding to a cycle of a fundamental frequency of said forces and which have a zero mean force over said interval; and



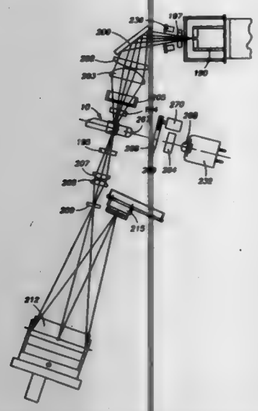
sensing resulting motion of the particles in the sensing volume to obtain a sensor signal, wherein said sensor signal includes components representative of physical characteristics of the particles.

5,296,911

OPTICAL TEST SYSTEM FOR A CHEMICAL ANALYZER

Bruce Weyrauch, Newman Lake; James Clark, Spokane; Norman Kelln, Spokane, and Leon Schmidt, Spokane, all of Wash., assignors to Schiapparelli Biosystems, Inc., Fairfield, N.J.

Filed Jul. 16, 1992, Ser. No. 916,193
Int. Cl.[5] G01N *21/00, 21/25;* G01J *3/28*
U.S. Cl. 356—73 7 Claims



1. An optical test apparatus for a chemical analyzer having test samples within cuvettes, comprising:

a light source located at one side of a sample location;

light directing means located between the light source and the sample location for training light from the light source in a light path leading across the sample location;

a movable filter assembly located between the light source and the sample position, the filter assembly including an excitation filter movable between a first position clear of the light path and a second position intersected by the light path;

first detector means located in the light path at the opposite side of the sample location for monitoring the intensity of light from the light source that is absorbed by a test sample while the excitation filter is in its first position; and

second detector means located adjacent to the sample location and offset from the light path for monitoring the intensity of light fluoresced by a test sample in response to light excitation while the excitation filter is in its second position;

the light directing means comprising a series of optical elements contained within an assembled light-proof enclosure formed from complementary first and second molded compartments joined across a parting line extending along the center of the light path;

the series of optical element being individually positioned within the enclosure by engagement against complementary control surfaces that are included within the first compartment and that locate the optical elements along the length of the light path; and

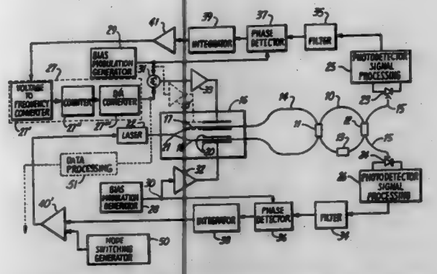
complementary retaining surfaces presented in the second compartment in structural opposition to the control surfaces of the first compartment for maintaining the optical elements in a centered position across the parting line when the first and second compartments are assembled.

5,296,912

RFOG ROTATION RATE ERROR REDUCER HAVING RESONATOR MODE SYMMETRIZATION

Lee K. Strandjord, Glendale, and Glen A. Sanders, Scottsdale, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 16, 1992, Ser. No. 821,667
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 19 Claims



1. An error reducer for reducing rotation rate errors arising because of polarization modes coupling and differing polarization modes characteristics associated with a coiled optical fiber having a pair of principal birefringent axes in a rotation sensor capable of sensing rotation about a symmetry axis of said coiled optical fiber forming a closed optical path having a transfer means therealong for transferring electro radiation propagating along one of said principal birefringent axes into propagating along another of said axes, said coiled optical fiber connected with at least a first coil coupler such that electromagnetic waves can be coupled between said coiled optical fiber and a first external optical fiber, said rotation sensing based on having opposing electromagnetic waves propagating through said coiled optical fiber in opposing directions so as to result in each said opposing coiled optical fiber electromagnetic wave impinging at least in part on a corresponding one of first and second photodetectors with at least one of said opposing coiled optical fiber electromagnetic waves propagating in one of said opposing directions being subject to having frequencies thereof varied by selected signals supplied to a first input of a source means capable of supplying an emitted electromagnetic wave from which that said opposing coiled optical fiber electromagnetic wave is obtained, said first photodetector providing an output signal in response to such impingement thereon of a corresponding said opposing coiled optical fiber electromagnetic wave which is representative of that wave, said error reducer comprising:

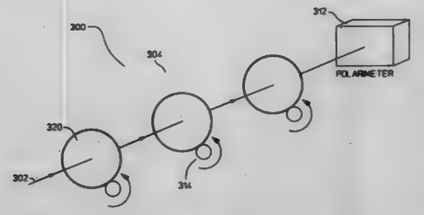
oscillating frequency value establishment means having an output electrically connected to said first input of said source means, said oscillating frequency value establishment means being capable of providing an output signal on said output thereof sufficient to cause said source means to direct said opposing coiled optical fiber electromagnetic waves propagating in one of said opposing directions subject to having frequencies thereof varied by selected signals supplied to a first input of said source means, as aforesaid, to oscillate in frequency value between frequencies occurring substantially in opposite polarization mode resonances of those said waves.

5,296,913

POLARIMETER RE-CALIBRATION METHOD AND APPARATUS

Brian L. Heffner, Redwood City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 8, 1992, Ser. No. 958,211
Int. Cl.[5] G01J *4/04*
U.S. Cl. 356—364 20 Claims



1. A method of re-calibrating a polarimeter, the method comprising:

measuring an input electromagnetic wave with the polarimeter to obtain raw values indicative of the state and degree of polarization of the wave;

transforming the electromagnetic wave into another electromagnetic wave having a different state of polarization but substantially the same degree of polarization after the transformation as before;

measuring the transformed electromagnetic wave with the polarimeter to obtain raw values indicative of the state and degree of polarization of the wave;

repeating the preceding two steps until at least three electromagnetic waves, each having a state of polarization differing from that of the other two, have been measured;

calculating a calibration factor by the steps of:

a. initializing the calibration factor;

b. calculating the degree of polarization of each measured electromagnetic wave by means of the initialized calibration factor, the measured raw values of the wave, and a predetermined instrument matrix; and

c. correcting the calibration factor according to the calculated degrees of polarization of the waves;

so that the calibration factor is effective to alter the raw values such that the raw values, after alteration, indicate substantially the same degree of polarization for each of the electromagnetic waves; and

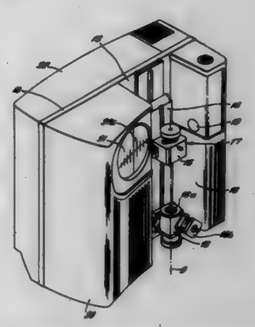
re-calibrating the polarimeter by means of the calibration factor.

5,296,914

ELECTRO-OPTICAL MEASUREMENT AND FOCUSING APPARATUS

Philip J. E. Aldred, Shrewsbury, United Kingdom, assignor to Tesa Metrology Limited, Telford, United Kingdom

Filed Apr. 2, 1992, Ser. No. 862,073
Claims priority, application United Kingdom, Apr. 4, 1991, 9107037.
Int. Cl.[5] G01B *11/04, 11/10*
U.S. Cl. 356—385 11 Claims



1. An electro-optical measurement apparatus comprising, a measurement station, a light source on one side of the measurement station, means to direct a beam of collimated light from the light source along an optical path through the measurement station, photo-detector array means disposed in the optical path from the measurement station, means to support an object to be measured at the measurement station in said optical path to block part of the light beam from the light source leaving transmitted portions of the beam to reach and activate corresponding sections of said array means, means to derive the dimension of the object in the optical path from the resulting activation of the array means, a screen, and an optical device on which light from the measurement station is incident having one area which directs light to the array means and another area which directs light to the screen, wherein the improvement comprises providing means to focus parallel light from the measurement station onto said one area of the optical device for directing said light onto the array means and providing further focussing means for focussing non-parallel light directed from the optical device onto said screen to create an image of the object being measured in the measurement station on the screen.

5,296,915

METHOD AND APPARATUS FOR CONTROLLING DIRECTION OF EXCAVATING MACHINE

Toshio Akesaka, Kanagawa, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,820
Claims priority, application Japan, Jul. 19, 1991, 3-287344
Int. Cl.[5] G01B *11/27;* E21B *44/00;* E21D *9/06*
U.S. Cl. 356—400 18 Claims

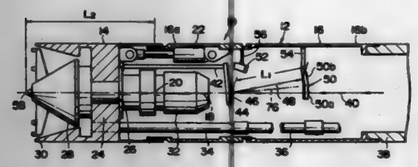
1. A method for controlling the direction of an excavating machine, comprising the steps of:

providing an excavating machine which includes a shield body provided with a head portion and a tail portion flexibly connected to the rear of the head portion and means for correcting the direction of said head portion relative to said tail portion;

directing a light beam toward said excavating machine along an imaginary reference line from the rear of said excavating machine;

receiving said light beam on a reflector mounted on said head portion;

receiving a reflected light beam from said reflector on a target mounted on said tail portion; and



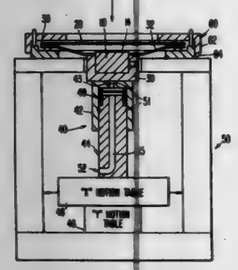
controlling said correcting means such that said reflected light beam is irradiated at an objective position within said target.

5,296,916

MASK ALIGNMENT SYSTEM FOR COMPONENTS WITH EXTREMELY SENSITIVE SURFACES

Howard L. Kelly, Warrenton; Hans Kolan, Manassas, both of Va., and David Perlman, Wappingers Falls, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 18, 1991, Ser. No. 687,256
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 **11 Claims**



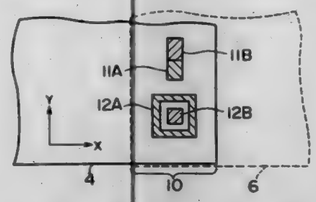
1. An apparatus for contact masking a substrate comprising:
first means for holding a substrate, wherein said first means includes a deformable disk, one surface of said deformable disk supporting said substrate;
a contact mask;
means for holding said contact mask;
separating means for keeping said substrate and said contact mask apart during optical alignment;
aligning means for optically aligning said substrate and said contact mask, said aligning means aligning through apertures in the contact mask to alignment features disposed on said substrate;
second means for bringing said substrate and said contact mask in contact once aligned and locking means for holding together the first means and means for holding a contact mask in superposed, aligned relation as a fixture, whereby the fixture can be transported for processing of the substrate.

5,296,917

METHOD OF MONITORING ACCURACY WITH WHICH PATTERNS ARE WRITTEN

Haruhiko Kusonose, and Hidehiko Kozawa, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,900
Claims priority, application Japan, Jan. 21, 1992, 3-19147
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 **3 Claims**



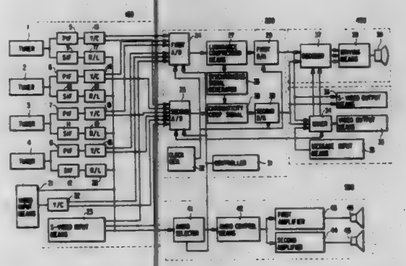
1. A method of monitoring the accuracy with which patterns are written comprising the steps of:
dividing a mask pattern into a chip zone and a monitor zone separate from the chip zone;
disposing in the monitor zone a monitor pattern for monitoring accuracy;
partitioning the monitor pattern into a plurality of overlapping fields;
forming a rectangular annulus and a rectangle in each of two overlapping fields as checking patterns in the monitor pattern, the rectangle being positioned at the center of the rectangular annulus in the monitor pattern where the plurality of fields overlap each other;
exposing an electron beam resist with an electron beam, thereby writing the monitor pattern on the resist; and
measuring alignment accuracy in the pattern exposed by the electron beam by inspecting the checking patterns in the exposed overlapping fields.

5,296,918

MESSAGE OUTPUT APPARATUS FOR MULTI-PICTURES

Jae-Chul Kim, Suwon-shi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-Do, Rep. of Korea

Filed Jun. 24, 1992, Ser. No. 903,285
Claims priority, application Rep. of Korea, Jun. 24, 1991, 91-10696
Int. Cl.[5] H04N *5/45*
U.S. Cl. 348—568 **6 Claims**



1. A message output apparatus for multi-pictures comprising:

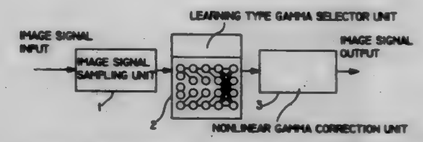
a signal input means for processing external image signal inputs and internal image signals;
multi-signal compression means for compressing outputs from said signal input means, and for outputting the compressed signals;
message overlapping means for overlapping message signals with compressed signals provided by said multi-signal compression means, said message overlapping means including message input means for inputting the message signals;
signal outputting means for displaying output signals from said message overlapping means on a single screen; and
an audio signal treatment means for selectively outputting audio signals from the image signals of said signal input means.

5,296,919

IMAGE PROCESSING APPARATUS AND METHOD FOR PERFORMING NONLINEAR GAMMA CORRECTIONS

Susumu Maruno, Osaka; Shigeo Sakaue, Moriguchi; Haruo Yamashita, Osaka, and Hiroshi Yamamoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 938,419
Claims priority, application Japan, Aug. 30, 1991, 3-219538
Int. Cl.[5] H04N *9/69*
U.S. Cl. 348—675 **15 Claims**



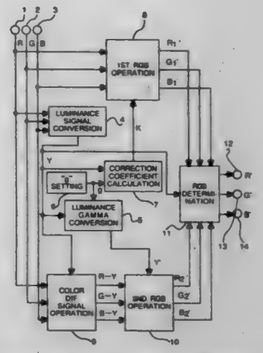
1. An image processing apparatus for performing nonlinear gamma corrections to a plurality of image signals for a single picture frame, comprising:
image signal sampling means for sampling the plurality of image signals of said single picture frame and producing a sampling means output corresponding to the sampled image signals,
learning type gamma selector means, coupled to said image signal sampling means, for:
a) establishing, in advance, a nonlinear relation between sampling means outputs under various conditions and a plurality of nonlinear gamma curves;
b) judging said sampling means output according to said established nonlinear relation; and
c) selecting one of the plurality of nonlinear gamma curves for correction; and
nonlinear gamma correction means, coupled to said learning type gamma selector means, for correcting said plurality of image signals using the selected nonlinear gamma curve.

5,296,920

COLOR GRADATION CORRECTION METHOD AND APPARATUS

Shigeo Sakaue, Moriguchi; Susumu Maruno; Haruo Yamashita, both of Osaka; Yasuki Matsumoto, Hirakata, and Hideshi Ishihara, Katano, all of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Filed Sep. 16, 1992, Ser. No. 945,626
Claims priority, application Japan, Sep. 17, 1991, 3-236068
Int. Cl.[5] H04N *9/69*
U.S. Cl. 348—675 **12 Claims**



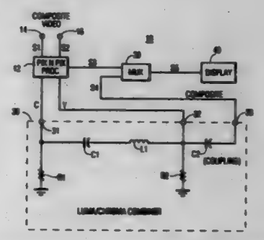
5. A gradation correction method comprising the steps of:
(a) obtaining an original luminance signal and first and second original color difference signals;
(b) gamma converting said original luminance signal according to a predetermined gradation characteristics for obtaining a gamma converted luminance signal;
(c) multiplying a ratio of the gamma converted luminance signal to the original luminance signal by each of the first and second original color difference signals for obtaining first and second primary gradation-corrected color difference signals; and
(d) obtaining first and second final gradation-corrected color difference signals based on said first and second primary gradation-corrected color difference signals and said first and second original color difference signals.

5,296,921

TWO PORT NETWORK WITH SHARED ELEMENTS FOR COMBINING AND FILTERING LUMA AND CHROMA COMPONENTS TO FORM COMPOSITE VIDEO SIGNAL

Kristopher A. Klink, Fishers, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 16, 1992, Ser. No. 945,832
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—711 **12 Claims**



1. A luminance chrominance signal combining circuit for combining a luminance component input signal with a chromi-

nance component input signal to form a combined output signal and comprising:

first means for providing a filtering characteristic for reducing low frequency noise in said chrominance component signal to be combined;

second means for providing a filtering characteristic for reducing the amplitude of said luminance component input signal at the color subcarrier frequency by a predetermined amount;

and third means for combining the outputs of said filters to form said combined output signal in a given video format; and wherein:

said first, second and third means comprise a two port network having respective ports to which said component signals are applied,

said two port network including shared network elements for providing both of said filtering characteristics and the function of said combining means; and wherein:

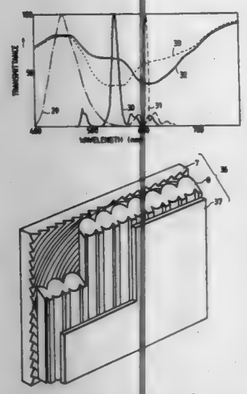
said combined output signal is of a composite video format obtained from a common port to which one of said luminance and chrominance component signals is applied.

5,296,922

PROJECTION TELEVISION WITH A WAVELENGTH-SELECTION-TYPE REAR PROJECTION SCREEN

Katsuaki Mitani; Noboru Yasumatsuya, and Yoshiki Tsujita, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 17, 1992, Ser. No. 852,980
Claims priority, application Japan, Apr. 4, 1991, 3-071517
Int. Cl.[5] H04N *5/72, 9/31, 5/74*
U.S. Cl. 348—779 **5 Claims**



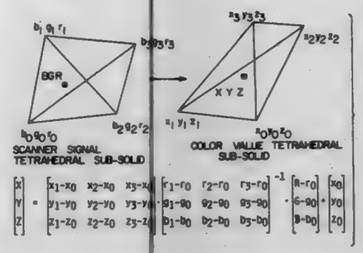
1. A projection television having a rear projection screen including a Fresnel lens sheet and a lenticular lens sheet, wherein a dye or a pigment is mixed into the lenticular lens sheet which thereby has a waveform selection transmittance, wherein the transmittance of the rear projection screen is equal to or more than 65% when the wavelength of the incident light is less than 490 nm, wherein the transmittance of the rear projection screen is equal to or less than 60% when the wavelength of the incident light is within a range from 490 nm to 660 nm, and wherein the transmittance of the rear projection screen corresponding to the incident light, the wavelength of which is within a range from 490 nm to 580 nm, is substantially different from the transmittance corresponding to the incident light, the wavelength of which is within a range from 580 nm to 660 nm.

5,296,923

COLOR IMAGE REPRODUCING DEVICE AND METHOD

Po-Chieh Hung, Rochester, N.Y., assignor to Konica Corporation, Tokyo, Japan

Filed Jan. 9, 1991, Ser. No. 639,261
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 **39 Claims**



1. A color image reproducing device comprising:

(a) a scanner for scanning an original and producing a first signal corresponding thereto;

(b) a scanner signal memory for storing a plurality of sets of standard scanner signals used to convert said first signal to a second signal, wherein said sets of standard scanner signals in a signal gamut of a plurality of sets of reference scanner signals obtained by scanning color patches with said scanner is determined by an interpolation based on said sets of reference scanner signals, and said sets of standard scanner signals outside of said signal gamut are determined by an extrapolation based on said sets of standard scanner signals determined by said sets of reference scanner signals;

(c) a color value memory for storing a plurality of sets of standard color values wherein said set of standard color values corresponding to said sets of standard scanner signals in a signal gamut of a plurality of sets of reference scanner signals are determined by said interpolation based on a plurality of sets of reference color values obtained by measuring said color patches with a colorimeter and corresponding to said sets of reference scanner signals, and said sets of standard scanner signals encompassed by said sets of reference scanner signals and standard color values corresponding to said sets of standard scanner signals outside of said signal gamut is determined by said extrapolation based on said sets of standard color values determined by said sets of reference color values and said sets of standard scanner signals.

5,296,924

PROCESS FOR DETECTION OF OBSTACLES PRESENT, IN PARTICULAR, IN FRONT OF AN AUTOMOTIVE VEHICLE

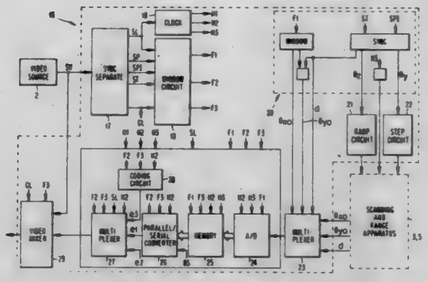
Marie de Saint Blancard, Rueil Malmaison; Joseph Alizon, Orcet, and Jean Gallice, Chamalieres, all of France, assignors to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly sur Seine, both of France

Filed May 7, 1992, Ser. No. 879,281
Claims priority, application France, Jul. 5, 1991, 91 05628
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—118 **23 Claims**

1. A process for detecting the presence of obstacles, said process comprising the steps of:

providing, by means of a video camera, a video signal representative of a video image of a scene;

measuring the distances of the obstacles in the scene relative to the video camera by means of a ranging apparatus, pulsed waves of which scan the scene by successive horizontal range lines; and



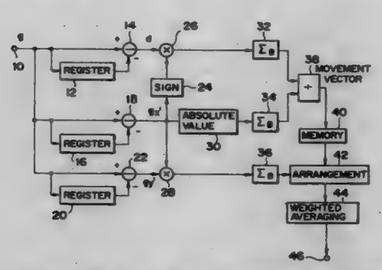
synchronizing the pulsed waves and the scan of the pulsed waves by synchronization signals of the field and the line extracted from the video signal.

5,296,925

MOVEMENT VECTOR DETECTION DEVICE

Toshiaki Kondo, Tokyo, and Masayoshi Sekine, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 691,807, Apr. 26, 1991, abandoned. This application Oct. 27, 1992, Ser. No. 967,569
Claims priority, application Japan, Apr. 27, 1990, 2-113953; Apr. 27, 1990, 2-113954; Apr. 27, 1990, 2-113955
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—208 **30 Claims**



1. A movement vector detection device for detecting a movement vector of an image signal output from image sensing means based on a spatial inclination in a frame detected in the image signal, said movement vector detection device comprising:

(A) first operation means for receiving the image signal output from the image sensing means and for determining the movement vector by detecting the spatial inclination in the frame detected in the image signal, said first operation means outputting a movement vector signal;

(B) second operation means for detecting a spatial inclination component in a diagonal direction of the image signal and for outputting a diagonal inclination signal;

(C) third operation means for weighted-averaging the movement vector signal output from said first operation means in accordance with the diagonal inclination signal output from said second operation means to generate a weighted-averaged movement vector; and

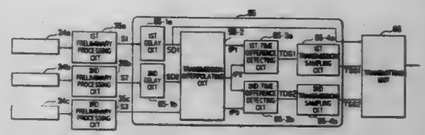
(D) output means for outputting the weighted-averaged movement generated by said third operation means.

5,296,926

IMAGE DATA TRANSMISSION SYSTEM CAPABLE OF OBTAINING A HIGH RESOLUTION STEREO IMAGE WITH REDUCED TRANSMISSION DATA

Riichi Nagura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 19, 1992, Ser. No. 978,995
Claims priority, application Japan, Nov. 19, 1991, 3-303641; Nov. 19, 1991, 3-303642
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—144 **25 Claims**



9. An image data transmission system for transmitting an image data signal from a craft to an earth station, said craft flying over an object zone in a predetermined direction and comprising an optical system for producing first through third partial optical images of first through third partial zones of said object zone, which are picked up by first through third pickup angles, respectively, said first partial zone being spaced apart from said second and said third partial zones by first and second distances, respectively, forwardly of said predetermined direction, said first distance being shorter than said second distance, said image data transmission system comprising first through third photoelectric transducers consisting of a plurality of photoelectric transducing elements lying transversely of said predetermined direction for transducing said first through said third partial optical images to first through third partial electric signals representative of said first through said third partial zones, respectively, each of said first through said third partial electric signals comprising a succession of picture element signals which are in one-to-one correspondence to said plurality of photoelectric transducing elements and which have picture element signal levels, said craft flying for a first duration from a first position to a second position spaced apart from said first position by said first distance and flying for a second duration from said first position to a third position spaced apart from said first position by said second distance, said image data transmission system further comprising a transmission signal processing means which comprises:

a first delay circuit supplied with said first partial electric signal for giving said first partial electric signal a first delay equal to said second duration to produce a first delayed signal having said first delay relative to said first partial electric signal;

a second delay circuit supplied with said second partial electric signal for giving said second partial electric signal a second delay equal to said first duration to produce a second delayed signal having said second delay relative to said second partial electric signal;

a first time difference detecting circuit connected to said first and said second delay circuits for detecting a first time difference between said first and said second delayed signals in each of said picture element signals, said first time difference detecting circuit producing a first time difference signal representative of said first time difference;

a second time difference detecting circuit connected to said second delay circuit and supplied with said third partial electric signal for detecting a second time difference between said second delayed signal and said third partial electric signal in each of said picture element signals, said second time difference detecting circuit producing a second time difference signal representative of said second time difference;

a first transmission processing circuit connected to said first

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time difference detecting circuit for processing said first delayed signal by subtracting said first time difference from said first delayed signal in each of said picture element signals, said first transmission processing circuit producing a first processed signal having a signal waveform approximate to that of said second delayed signal;

a second transmission processing circuit connected to said second time difference detecting circuit for processing said second delayed signal by subtracting said second time difference from said second delayed signal in each of said picture element signals, said second transmission processing circuit producing a second processed signal having a signal waveform approximate to that of said third partial electric signal;

a first level difference detecting circuit connected to said first transmission processing circuit and said second delay circuit for detecting a first level difference between said first processed signal and said second delayed signal in each of said picture element signals, said first level difference detecting circuit producing a first level difference signal representative of said first level difference;

a second level difference detecting circuit connected to said second transmission processing circuit and said third photoelectric transducer for detecting a second level difference between said second processed signal and said third partial electric signal in each of said picture element signals, said second level difference detecting circuit producing a second level difference signal representative of said second level difference; and

a multiplexer supplied with said first delayed signal and connected to said first and said second transmission processing circuits and said first and said second level difference detecting circuits for multiplexing said first delayed signal, said first and said second time difference signals, and said first and said second level difference signals into a multiplexed signal to transmit said multiplexed signal to said earth station as said image data signal.

5,296,927

METHOD OF CODING WITH ADJUSTABLE PARAMETERS OF A FIELD OF MOVEMENT IN A SEQUENCE OF ANIMATED IMAGES

Philippe Guillotel, Rennes, France, assignor to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00505, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO92/00651, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 25, 1991, Ser. No. 834,263

Claims priority, application France, Jun. 29, 1990, 90 08299

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—415 **6 Claims**



1. A method of coding with adjustable parameters of a field of movement in a sequence of animated images comprising the steps of:

dividing an image into a plurality of macroblocks of given dimensions;

calculating a coding tree for each of said macroblocks in order to obtain a plurality of vector menus corresponding to said image;

decomposing each field of movement of said image according to said coding tree; and

identifying, using said menus, each movement vector present in said image by accompanying each vector by its address in said menus.

5,296,928

COMPOSITE SYNCHRONIZING SIGNAL SEPARATION CIRCUIT

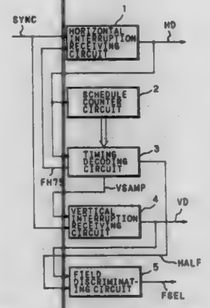
Shinji Yamashita, and Yoshihiro Inada, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,469

Claims priority, application Japan, Mar. 12, 1992, 4-053600

Int. Cl.[5] H04N *5/08, 5/04*

U.S. Cl. 348—529 **4 Claims**



1. A composite synchronizing signal separation circuit which separates, from a composite synchronizing signal composed of a horizontal synchronizing signal and a vertical synchronizing signal, said two synchronizing signals respectively, comprising:

a horizontal synchronizing signal separation circuit which, when detecting significant level changes of the composite synchronizing signal in a reset state, outputs said significant level changes as the horizontal synchronizing signal, and fixes the state of output signal;

a counter circuit which is reset by the horizontal synchronizing signal outputted by said horizontal synchronizing signal separation circuit, and outputs count value while counting up to a predetermined value in one horizontal synchronizing period;

a decoding circuit which decodes the count value outputted by said counter circuit, and respectively outputs first, second and third timing signals at the time points of $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ from the starting time point of one horizontal synchronizing period; and

a vertical synchronizing signal separation circuit which outputs the vertical synchronizing signal by inverting its own output signal level, when the composite synchronizing signal level at the time moment corresponding to said first and third output timings differs from the composite synchronizing signal level at the previous time moment corresponding to the first and third timing signals;

wherein said horizontal synchronizing signal separation circuit is reset by the third timing signal.

5,296,929

AUTOMATIC CORRECTION APPARATUS FOR VIDEO SIGNAL OF DIGITAL VTR

Takeshi Morimoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1991, Ser. No. 774,198

Claims priority, application Japan, Oct. 31, 1990, 2-295751; Apr. 4, 1991, 3-071531; Jun. 14, 1991, 3-142951

Int. Cl.[5] H04N *5/16*

U.S. Cl. 358—607 **20 Claims**

1. An automatic correction apparatus for a video signal of a digital VTR, which defines a transmission path for converting a first digital video signal, having a first number of bits, into an analog video signal by digital-to-analog conversion means, transmitting said converted analog video signal and converting said converted analog video signal into a second digital signal by analog-to-digital conversion means, comprising:

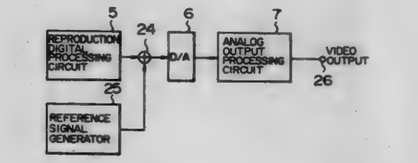
reference signal superposition means for superposing a first reference signal, of a predetermined digital value, onto said first digital video signal;

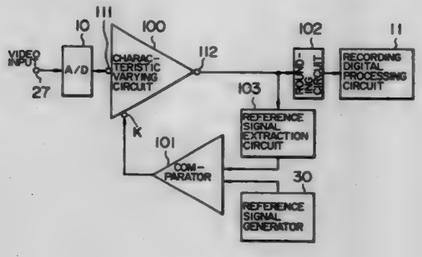
comparison means for comparing a second reference signal in said second video signal with said predetermined digital value; and

characteristic varying means for varying the characteristics of said second digital video signal, to control said characteristic varying means based on the result of a comparison by said comparison means,

wherein said analog-to-digital conversion means has a greater resolution than said first number of bits of said first digital video signal.

11. An automatic correction apparatus for a video signal of a digital VTR, for receiving and transmitting a first digital video signal that has a first number of bits and that has been reproduced from a recording medium, said apparatus comprising:





reference signal superposition means for superposing a first reference signal, having a predetermined digital value, onto said first digital video signal;

digital-to-analog conversion means for converting said first digital signal into a first analog signal and outputting said first analog signal to a transmission medium;

analog-to-digital conversion means for receiving said first analog signal form said transmission medium and for converting said first analog signal into a second digital signal, said analog-to-digital conversion means having a greater resolution than said first number of bits of said first digital video signal;

reference signal generating means for generating a second reference signal;

reference signal extraction means for extracting a third reference signal, corresponding to said first reference signal, from said second digital video signal;

comparison means for comparing said second and third reference signals to each other and generating a resultant signal; and

characteristic varying means for varying a characteristic of said second digital video signal in accordance with said resultant signal.

5,296,930

NOISE REDUCTION PROCESSING DEVICE FOR VIDEO SIGNALS BY ARBITRATION OF PIXEL INTENSITIES

Richard C. Thomson, Edinburgh, United Kingdom, assignor to GEC Ferranti Defence Systems Limited, Middlesex, United Kingdom

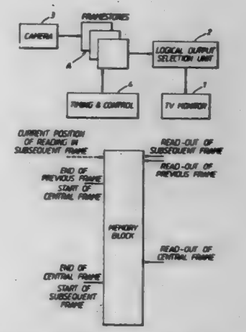
PCT No. PCT/GB91/02144, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/11733, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 3, 1991, Ser. No. 938,140

Claims priority, application United Kingdom, Dec. 20, 1990, 9027589

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—607 **9 Claims**



1. A noise reduction processing device for video signals, comprising,

framestore means for receiving successive pixels of first, second and third video frames in sequence, and

selection means for arbitrating between an output of the framestore means for each respective pixel of the first, second and third video frames when the respective outputs of the framestore means for the first and second video frames for a particular pixel represent an increase in intensity from the first video frame to the second video frame of at least one eighth of a range of pixel intensity values by comparing a pixel intensity value for the particular pixel of the third video frame with a pixel intensity value for the particular pixel of the first video frame and with a pixel value for the particular pixel of the second video frame, and assessing whether the pixel intensity value for the particular pixel of the third video frame is nearer to the pixel intensity value for the particular pixel of the second video frame or nearer to the pixel intensity value for the particular pixel of the first video frame.

5,296,931

CHANNEL SELECTING METHOD FOR PROGRAMS OF THE SAME CATEGORY

Un-heui Na, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 11, 1992, Ser. No. 849,465

Claims priority, application Rep. of Korea, Mar. 11, 1991, 91-3861

Int. Cl.[5] H04N *5/44, 5/50*

U.S. Cl. 348—731 **9 Claims**

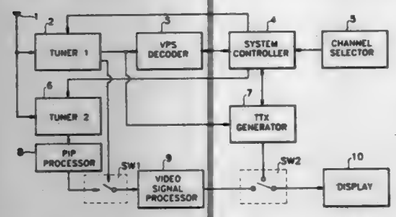
1. A channel selecting method for programs of a same category in a broadcasting signal receiving device having a VPS decoder for decoding a video program system (VPS) code included in a video signal detected from a broadcasting signal received through an antenna and showing at least a program starting time, a system controller for recognizing information decoded in said VPS decoder, and display means for display-

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ing said video signal under control of said system controller, said method comprising the steps of:

classifying decoded information into similar-typed programs when information decoded in said VPS decoder is supplied to said system controller;

making broadcast channels of the similar-typed programs, classified in said classifying step, correspond to predetermined channels arbitrarily set in said system controller;



selecting a first broadcast channel corresponding to a desired program category from said predetermined channels;

displaying information about the broadcast channels, corresponding to the channel selected in said first channel selection step, through said display means; and

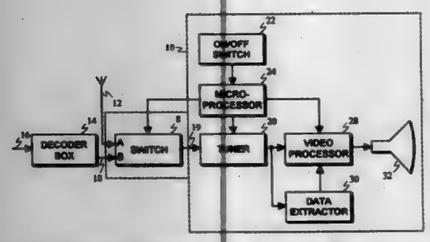
selecting a second broadcast channel by determining which broadcast channel is desired to be viewed in said displaying step.

5,296,932

NON-PROGRAM SIGNAL ACQUISITION SYSTEM FOR A TELEVISION SIGNAL RECEIVER

Michael E. Long, Oakbrook, Ill., assignor to Zenith Electronics Corporation, Gleaview, Ill.

Filed Oct. 6, 1992, Ser. No. 957,542
Int. Cl.[5] H04N *5/445*
U.S. Cl. 348—731 **7 Claims**



1. In a television receiver apparatus having video processor circuitry for controlling a display medium to produce a display, multiple broadcast signal input sources, and a tuner for selecting broadcast channels from among the multiple input sources for application to the video processor, the improvement comprising:

a) means for detecting whether the video processor circuitry is active or inactive;

b) means for selecting a predetermined input signal source if the video processor circuitry is inactive;

c) means for selecting a predetermined tuner channel setting if the video processor circuitry is inactive.

4. A television signal receiver comprising,

a) an ON/OFF switch,

b) a microprocessor for detecting the position of the ON/-OFF switch,

c) a tuner controllable by the microprocessor to select a broadcast channel carrying nonprogram information when the ON/OFF switch is in the OFF position,

d) an input source switch having first and second input terminals and an output, the output connected to the tunner,

the input source switch being controllable by the microprocessor to select the first input to pass to the output when the ON-OFF switch is in the OFF position, and to select the second input to pass to the output when the ON/OFF switch is in the ON position,

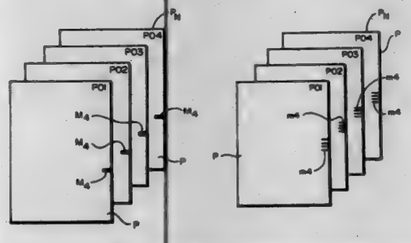
whereby a reliable broadcast source of nonprogram information is automatically available to the television signal receiver when the receiver is turned off.

5,296,933

FACSIMILE APPARATUS

Etsurou Nakatsuji, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 522,895, May 14, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 931,504
Claims priority, application Japan, May 15, 1989, 1-122658
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—400 **9 Claims**



1. A facsimile machine for transmitting and receiving communications, comprising:

modem means for transmitting and receiving image information;

means for determining the beginning and end of the receipt of image information for a single communication;

index selecting means for selecting one of a plurality of non-alphanumeric index marks upon the initial receipt of a communication as a function of a previously received different communication, said selected index mark being different than at least an index mark selected for said previously received different communication;

means for combining said selected index mark with each page of image information received for a single communication; and

printing means for printing each said combined page of image information and said selected index mark on a respective one of image receiving sheets, said selected index mark being printed adjacent an edge of each of the sheets.

5,296,934

FACSIMILE TERMINAL CONCENTRATION EQUIPMENT AND REMOTE OPERATION CONTROL SYSTEM THEREFOR

Junichi Ohtsuki, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,990
Claims priority, application Japan, Oct. 30, 1990, 2-293285
Int. Cl.[5] H04N *1/00*
U.S. Cl. 58—403 **14 Claims**

1. A facsimile terminal concentration equipment having remote operation control and fault notification capability for use with a plurality of facsimile terminal units having means for transmitting and receiving facsimile messages, and with a remote facsimile mail equipment having means for transmitting and receiving packet data of facsimile messages through a packet network, said facsimile terminal concentration equipment comprising:

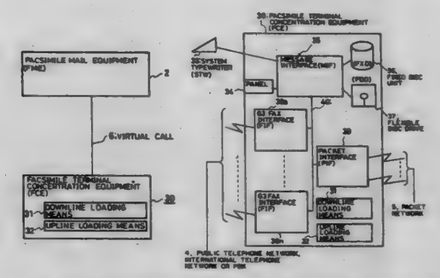
a memory;

means for communicating with said plurality of facsimile terminal units, storing temporarily in said memory a first facsimile message from a facsimile terminal unit, converting said first facsimile message into packet data, and transmitting said packet data to said facsimile mail equipment;

means for storing temporarily in said memory a second packet data from said facsimile mail equipment, converting said second packet data into a facsimile message, and transmitting said facsimile message to a facsimile terminal unit;

downline loading means for supporting remote operation control and fault handling at a system operator level by transferring commands, load modules, and files other than said packet data from said facsimile mail equipment; and

upline loading means for supporting remote operation control and fault handling at a system operator level by transferring commands, load modules, and files other than said packet data to said facsimile mail equipment.

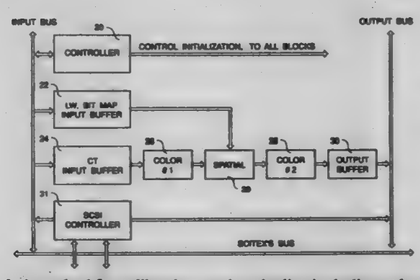


5,296,935

METHOD AND APPARATUS FOR CALIBRATING A PIPELINED COLOR PROCESSING DEVICE

Yoav Bresler, Tel Aviv, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel

Division of Ser. No. 650,461, Feb. 4, 1991. This application Sep. 27, 1991, Ser. No. 766,765
Claims priority, application Israel, Feb. 5, 1990, 93274; Feb. 22, 1990, 93493; Dec. 27, 1990, 96816; Dec. 30, 1990, 96829; Jan. 15, 1991, 96955; Jan. 15, 1991, 96957
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—406 **5 Claims**



1. A method for calibrating a color pipeline including at least one initial color processing unit, an intermediate color processing unit and a final color processing unit, the method comprising the steps of:

comparing a first output representation of a first reference color image to a first target representation thereof and calibrating the final color processing unit in accordance with the comparison;

processing a second input representation of a second reference color image using a pipeline comprising the intermediate color processing unit and the calibrated final color processing unit, thereby to define a second output representation of the second reference color image;

comparing the second output representation to a second target representation of the second reference color image and calibrating the intermediate color processing unit in accordance with the comparison;

processing a third input representation of a third reference color image using a pipeline comprising the calibrated intermediate and final color processing units, thereby to define a third output representation of the third reference color image; and

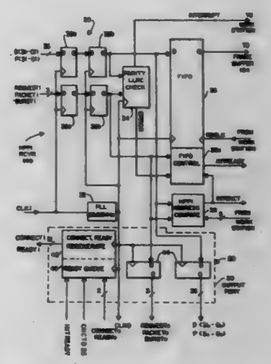
comparing the third output representation to a third target representation of the third reference color image and calibrating at least one of the uncalibrated initial color processing units in accordance with the comparison.

5,296,936

COMMUNICATION APPARATUS AND METHOD FOR TRANSFERRING IMAGE DATA FROM A SOURCE TO ONE OR MORE RECEIVERS

John L. Pittas, Bethel, Conn.; Sung M. Choi, White Plains, N.Y.; Leon Lumelsky, Stamford, Conn., and Alan W. Peevers, Berkeley, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1991, Ser. No. 734,383
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—407 **27 Claims**



1. A method for transmitting image data over a communication bus from a source of image data to one or more of a plurality of image data receivers that are serially coupled along the communication bus, comprising the steps of:

generating, with each of the one or more of the plurality of image data receivers, an internal Ready signal;

storing the internal Ready signal within the image data receiver that generates the internal Ready signal; and

determining with each of the one or more of the plurality of image data receivers if a downstream image data receiver, if there be one, has generated an external Ready signal indicating that the downstream image data receiver is ready to receive data; wherein

if there is no downstream image data receiver for a particular one of the image data receivers, generating the external Ready signal with the particular one of the image data receivers and providing the generated external Ready signal to an upstream image data receiver, if there be one,

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or if not, providing the generated external Ready signal to the source;

if the downstream image data receiver for the particular one of the image data receivers has not generated the external Ready signal, idling the particular one of the image data receivers until the downstream image data receiver generates the external Ready signal;

if the downstream image data receiver has generated the external Ready signal, generating the external Ready signal with the particular one of the image data receivers and providing the generated external Ready signal to the upstream image data receiver, if there be one, or if not, providing the generated external Ready signal to the source;

with the source of image data;

receiving the external Ready signal and, responsive thereto, transmitting information to the communication bus for addressing one or more of the image data receivers; and

with each of the addressed image data receivers,

receiving the transmitted information from the communications bus;

wherein the step of transmitting information includes the step of,

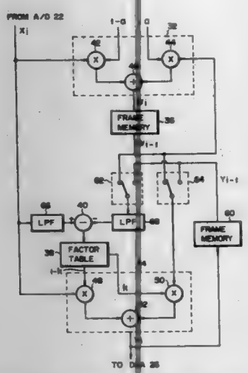
transmitting a data burst comprised of data words, at least one of the words specifying an address word comprised of a plurality of bits, individual ones of which, if asserted, identify one of the image data receivers.

5,296,937

IMAGE PROCESSING APPARATUS USING RECURSIVE FILTERS

Yoshinori Nakatani, Ootawara, and Michitaka Honda, Yaita, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1992, Ser. No. 883,389
Claims priority, application Japan, May 17, 1991, 3-112073
Int. Cl.[5] H05G *1/64*
U.S. Cl. 358—448 **17 Claims**



14. A diagnostic X-ray apparatus comprising:

fluoroscopy means for outputting a fluoroscopic image signal by picking up a fluoroscopic image obtained by radiating an X-ray to an object;

first recursive filter means including a frame memory, for adding an output of said fluoroscopy means and an output of said frame memory with predetermined weights to write the result of addition into said frame memory;

second recursive filter means for adding a value which is (1—k) times the output of said fluoroscopy means and a value which is k times the output of said first recursive filter means, a factor k being a positive number between 0 and 1;

subtracter means for subtracting the output of said second recursive filter means from the output of said fluoroscopy means for every pixel; and

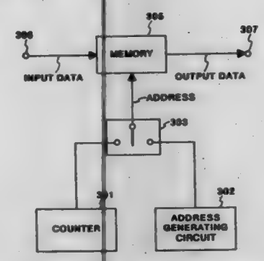
means for setting the factor k in accordance with the difference obtained by said subtracter means, the factor k and the difference having an inverse proportional relationship if the difference has a positive value.

5,296,938

ADDRESS GENERATING METHOD, AND CIRCUIT THEREFOR

Tadayoshi Nakayama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1991, Ser. No. 733,143
Claims priority, application Japan, Jul. 31, 1990, 2-201107
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **13 Claims**



1. An address generating circuit for generating addresses of a memory which stores two-dimensionally arrayed data, comprising:

address generating means for generating column and row addresses of the two-dimensionally arrayed data;

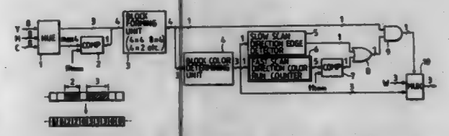
wherein said address generating means comprises storing means for storing temporarily an address of the memory and a logic circuit for performing a logic operation and renewing the address temporarily stored in said storing means, and wherein the addresses being generated are capable of scanning the two-dimensionally arrayed data in zigzag fashion.

5,296,939

IMAGE AREA DISCRIMINATING SYSTEM FOR AN IMAGE PROCESSING APPARATUS

Yuzuru Suzuki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1991, Ser. No. 637,026
Claims priority, application Japan, Jan. 10, 1990, 2-2940
Int. Cl.[5] A04N *1/387*
U.S. Cl. 358—453 **6 Claims**



1. An image area discriminating system for an image processing apparatus for discriminating between a character area and a halftone area on an original document containing characters and halftone areas, for selecting parameters for each discriminated area, and for adjusting and generating image data, said image area discriminating system comprising:

block color discriminating means for grouping a plurality of multicolor pixels into blocks and determining a color of each block by selecting one pixel color most frequently occuring in the block;

determining means for detecting block run lengths of block colors other than white according to results of said block color discriminating means, for comparing said detected block run lengths with a predetermined threshold value, and for determining whether a document area being examined is one of the character area and the halftone area; and

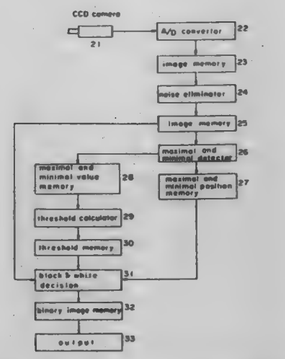
area signal output means for outputting a signal to select an image area signal according to results determined from said determining means.

5,296,940

IMAGE PROCESSING METHOD AND APPARATUS FOR CONVERTING GRAY-SCALE IMAGES INTO BINARY IMAGES

Sumihiko Kawashima, Ootsu, Japan, assignor to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1991, Ser. No. 686,626
Claims priority, application Japan, Apr. 18, 1990, 2-104047
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **7 Claims**



1. An image processing method for converting grey images inputted according to horizontal scanning lines and vertical scanning lines from a plurality of image pickup elements into binary images, comprising the steps of:

obtaining maximal values and minimal values of grey scale values for each horizontal scanning line and each vertical scanning line of the inputted gray images;

obtaining threshold values for each horizontal scanning line and each vertical scanning line from the corresponding maximal and minimal values;

obtaining first binary images for each horizontal scanning line and each vertical scanning line from the threshold values; and

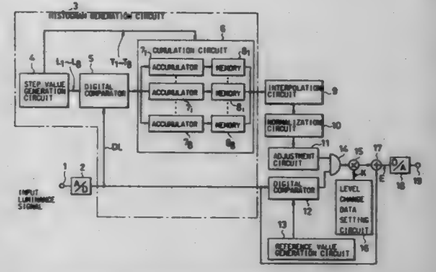
obtaining composite binary images from a logical product or a logical sum of respective pixels of the first binary images.

5,296,941

GRADATION COMPENSATION APPARATUS OF VIDEO IMAGE

Yosuke Izawa, Ibaraki, and Naoji Okumura, Mino, both of Japan, assignors to Matsushita Electric Industrial Co, Ltd., Kadoma, Japan

Filed Dec. 18, 1992, Ser. No. 992,646
Claims priority, application Japan, Dec. 20, 1991, 3-338088
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—458 **3 Claims**



1. A gradation compensation apparatus comprising:

step value generation means for generating a predetermined number of step value signals which change stepwise in level in the range of a first level and a second level during a predetermined time period,

first comparator means for outputting a first value when the level of a said step value signal is lower than the level of an input luminance signal, and outputting a second value signal when the level of a said step value signal is higher than the level of said input luminance signal, by comparing said input luminance signal with said step value signals,

cumulation means comprising a predetermined number of accumulators corresponding to the respective levels of said predetermined number of step value signals, for cumulating said second value output from said comparator means in said accumulators corresponding to the respective levels of said step value signals,

normalization means for outputting a normalized value by multiplying the cumulated values cumulated by said cumulation means basing on a first coefficient,

an adjustment circuit for subtracting a predetermined reference histogram value being proportional to the level of said input luminance signal from said normalized value,

reference value generation means for generating a reference value which is equal to said second level of said step value generation means,

second comparator means for outputting the signal of a third value when said input luminance signal is equal to said reference value or below, and outputting the signal of a fourth value when said input luminance signal is higher than said reference value, by comparing said input luminance signal with said reference value,

gate means for outputting the signal of said normalized value of said adjustment circuit when the second comparator means outputs said third value, and outputting the signal of 0 (zero) when said second comparator means outputs said fourth value, by inputting said normalized value output from said adjustment circuit and the output of said second comparator means,

multiplier means for multiplying the output of said gate means basing on a predetermined second coefficient, and

addition means for adding said input luminance signal to the output of said multiplier means.

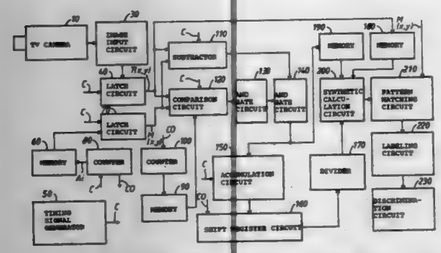
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,942

METHOD AND APPARATUS FOR INSPECTING LIGHTNESS ON THE SURFACE OF AN OBJECT

Yoshio Yokoyama, Anjo; Takashi Hieda, Nagoya, and Toshihiro Asai, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 9, 1992, Ser. No. 817,805
Claims priority, application Japan, Jan. 19, 1991, 3-12936; Feb. 5, 1991, 3-36762
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—461 6 Claims



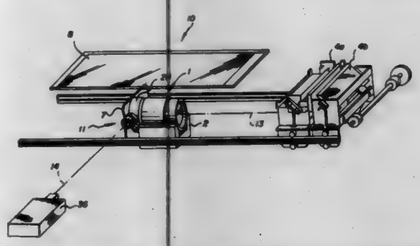
1. An apparatus for inspecting lightness of the surface of an object having at least first and second surface portions different in lightness, comprising:
first means for taking an image of the first and second surface portions of the object under appropriate illumination,
second means for memorizing a normal image defining the first and second surface portions as a reference image,
third means for memorizing allowable ranges of the lightness of the first and second surface portions as first and second allowable lightness ranges respectively,
fourth means for determining as to whether or not lightness of each pixel (hereinafter called as each taken pixel) of said taken image and lightness of each pixel (hereinafter called as each reference pixel) of said reference image corresponding to said each taken pixel belong to said first and second allowable lightness ranges respectively at each of said corresponding taken and reference pixels in sequence, and if so, defining each pair of said corresponding taken and reference pixels as a first or second pair of determined corresponding pixels in sequence,
fifth means for counting the number of said first pairs of determined corresponding pixels and the number of said second pairs of determined corresponding pixels respectively to be set as first and second count values in sequence,
sixth means for accumulating a difference in pixel lightness of said each first pair of determined corresponding pixels and a difference in pixel lightness of said each second pair of determined corresponding pixels respectively to be set as first and second accumulated values in sequence,
seventh means for averaging said first and second accumulated values in accordance with said first and second count values respectively to be set as first and second average values,
eighth means for correcting lightness of each taken pixel of said each first pair of determined corresponding pixels so that the lightness of each taken pixel of said each first pair of determined corresponding pixels approaches the lightness of said corresponding reference pixel in accordance with said first average value and for correcting lightness of each taken pixel of said each second pair of determined corresponding pixels so that the lightness of each taken pixel of said each second pair of determined pixels approaches the lightness of said corresponding reference pixel in accordance with said second average value, and
ninth means for forming a single corrected image from said taken image in accordance with correction performed by said eight means.

5,296,943

MULTI-PATH ELECTRONIC CAMERA ASSEMBLY

Grant D. Goebel; Norman C. Discher, and Collin M. Campbell, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 26, 1991, Ser. No. 814,025
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—471 13 Claims



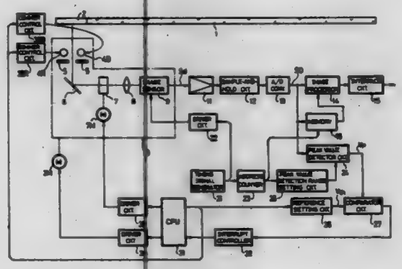
1. An electronic scanning camera adapted to receive light images along two distinct optical paths, said camera comprising:
a multiportion housing,
at least two lens elements retained in said housing adapted to focus the received light images,
a common image pick-up device mounted to the housing for receiving the focused light images and converting said light images into machine readable electronic signals, and
a movable optical element contained within the housing and having a first position removed from said optical paths so as to neither direct nor block said light images and a second position in said optical paths, said movable optical element being adapted in its second position to direct the light images received from one lens element to the common image pick-up device while blocking light images received from an other of said lens elements from impacting on the common image pick-up device.

5,296,944

IMAGE SCANNER AND DYNAMIC RANGE ADJUSTING METHOD THEREOF

Satoshi Suzuki, Tokyo; Susumu Takahashi, Hino; Yoshihiro Kuwata, Hino, and Yasuo Morinaga, Hino, all of Japan, assignors to Iwatsu Electric Co. Ltd., Tokyo, Japan

Filed Jun. 14, 1991, Ser. No. 715,248
Claims priority, application Japan, Jun. 18, 1990, 2-158932
Int. Cl.[5] H04N *1/04, 1/40, 1/46*
U.S. Cl. 358—475 15 Claims



1. An image scanner comprising:

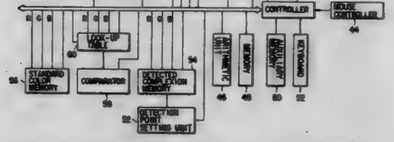
a plurality of light sources for illuminating an original document with lights of different colors;
an image sensor consisting of a line sensor for receiving a reflected light from said original document and converting the same into an output signal of image data;
means for moving said image sensor relative to said original document, wherein said means for moving said image sensor consists of a mechanism which moves said image sensor in the direction parallel to the length direction of said original document;
an iris mechanism provided on an optical path between said original document and said image sensor;
a reference reflection plane provided such that a light from said plurality of light sources is reflected and a reflected light becomes incident on said image sensor;
a comparing circuit for comparing a level of an output signal from said image sensor with a reference level when said image sensor receives the light from said reference reflection plane; and
means for correcting a dynamic range of said image scanner by controlling said iris mechanism on the basis of the compared output,
wherein said original document is read under the condition such that a ratio of the quantities of light is set to be a predetermined value by turning on and off said plurality of light sources according to predetermined duty ratios and said plurality of light sources are turned on in full power after the reading of said original document is ended.

5,296,945

VIDEO ID PHOTO PRINTING APPARATUS AND COMPLEXION CONVERTING APPARATUS

Masaji Nishikawa, Tokyo; Junichi Ishibashi, Iruma, and Toshiyuki Ebihara, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,439
Claims priority, application Japan, Mar. 13, 1991, 3-48307; Nov. 28, 1991, 3-314512
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—518 8 Claims



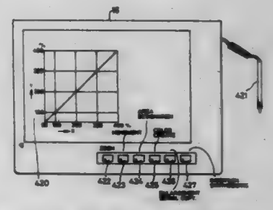
1. A video ID photo printing apparatus comprising:
video image pickup means for photographing an object and for outputting video original image data;
address designating means for designating an address corresponding to a complexion data portion of the video original image data, said complexion data portion corresponding to a skin tone portion of the photographed object;
extracting means for extracting color data from the video original image data at the designated address corresponding to the complexion data portion, the extracted color data comprising conversion-designated color data;
storage means for storing standard color data representing a predetermined standard complexion;
comparing means for comparing the conversion-designated color data with said standard color data stored in said storage means;
complexion conversion arithmetic means, having a conversion parameter determined by a comparison result obtained from said comparing means, for converting, as a function of said conversion parameter, color data for all pixels of the video original image data into a converted video image signal; and
a full-color video printer for printing an image corresponding to said converted video image signal.

5,296,946

IMAGE PROCESSING APPARATUS WITH COLOR CONVERSION MEANS

Toshihiro Kadowaki; Tetsuya Ohnishi; Koichi Katoh, all of Yokohama; Yasumichi Suzuki, Tokyo, and Toshio Honma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 622,770, Dec. 5, 1990, abandoned, which is a continuation of Ser. No. 193,936, May 13, 1988, Pat. No. 4,996,591. This application Aug. 31, 1992, Ser. No. 936,722
Claims priority, application Japan, May 15, 1987, 62-119305; May 15, 1987, 62-119306
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—531 17 Claims



1. An image processing apparatus comprising:
hue appointing means for appointing a hue to be obtained after a conversion processing of original image data having a gradation;
area appointing means for appointing an area of an original image without setting a range of color to be converted, the original image in the appointed area having a plurality of colors; and
conversion means for converting the original image data within the area appointed by said area appointing means into converted image data having the same hue appointed by said hue appointing means so that the entire color of the original in the appointed area will be converted into an image having a density level proportional to a density level of the original image data and the same hue,
wherein said hue appointing means and said area appointing means comprise a common operating means for manually appointing the hue and the area.

5,296,947

SYSTEM FOR SOFTPROOFING A COLOR REPRODUCTION

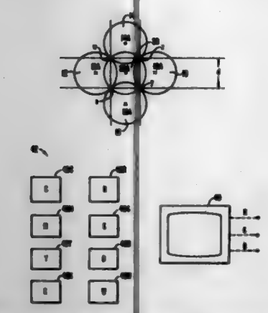
Harry Bowers, New York, N.Y., assignor to Cactus, Santa Fe Springs, Calif.

Filed Oct. 6, 1992, Ser. No. 957,396
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—527 19 Claims

1. A method for soft proofing a color reproduction, said reproduction to be performed on areas of a medium using a set of at least two reproduction colorants according to a predetermined overlapping pattern, wherein amounts of the reproduction colorants to be used in the reproduction are determined by reproduction signals, said method using a display device capable of displaying images of colors corresponding to the colorants, wherein the color or colors of said images displayed are determined by the values of corresponding appearance signals, said method comprising:

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reproducing said colorants in areas of a medium so that each colorant is reproduced separately in at least one area, and so that two colorants overlap in at least one area;
displaying color images on the display device so that the color of one of said images corresponds to the color of colorant or of overlapping colorants in each reproduced area;
adjusting said display device until the color of each of said images matches the color of colorant or colorants of its corresponding reproduced area;
determining values of appearance signals corresponding to the color of each of said images matching the color of colorant or colorants of its corresponding reproduced area, said values of appearance signals determined also



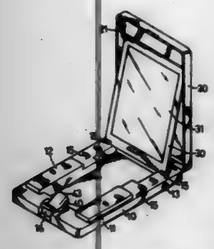
corresponding to the colorant or colorants of its corresponding matching reproduced area;
storing the values of appearance signals corresponding to the colorant or colorants of its corresponding matching reproduced area and the reproduction signals for such colorant or colorants in a lookup table;
transforming the reproduction signals of a color reproduction to be softproofed into corresponding appearance signals according to said overlapping pattern and the lookup table; and
displaying color images on the display device in accordance to said corresponding appearance signals, so that said color images will resemble said color reproduction in said medium.

5,296,948

HOLOGRAM LIGHT BOX

Alexander C. T. Chen, No. 25, Sec. 2, Ho Ping W. Rd., Taipei, Taiwan, and Francis C. S. Fong, Room 910, 9/F., Tower A, Hunghom Commercial Centre, 37-39, Ma Tau Wai Rd., Kowloon, Hong Kong

Filed Jan. 8, 1993, Ser. No. 2,216
Int. Cl.[5] G03H *1/24, 1/02*
U.S. Cl. 359—1 **7 Claims**



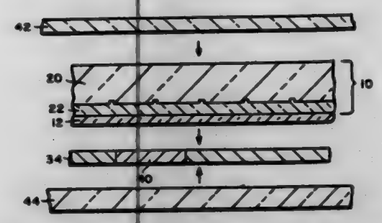
1. A hologram light box comprising a lower casing and an upper casing pivotally connected to said lower casing, a lighting element being pivotally mounted to an inner side of said lower casing in which said lighting element is switched on when said upper casing is opened to a pre-determined extent relative to said lower casing, a plurality of pairs of spaced ridges being provided on both longitudinal sides of an inner periphery of said lower casing, a plate being pivotally received in said inner side of said upper casing at an upper side thereof, a lower side of said plate being selectively supported by one of said pairs of said ridges, and a hologram being provided on one side of said plate which faces said lighting element.

5,296,949

OPTICAL AUTHENTICATION DEVICE

John R. Pennace, Paxton, Mass., assignor to FLEXcon Company Inc., Spencer, Mass.

Filed Apr. 23, 1992, Ser. No. 872,055
Int. Cl.[5] G03H *1/22*; B41F *1/12*
U.S. Cl. 359—2 **20 Claims**



1. An optical device through which incident light passes to produce a resultant light containing an optical image, said incident light including at least one component having a minimum wavelength, said optical device comprising:
a first material having a first index of refraction and a surface engraved with a relief pattern, and a second material having a second index of refraction different than said first index of refraction, said second material being deposited onto said surface in the form of a continuous layer having an inner contoured surface which follows said relief pattern and an outer surface which in comparison to said inner surface is substantially smooth, said layer having a minimum depth of deposition at least equal to three quarters of said minimum wavelength component of said incident light within said second material.

18. A method of coating an embossed surface of a first material having a first index of refraction, said first material being capable of receiving an incident light and producing a resultant light containing an optical image, said incident light comprising at least one component having a minimum wavelength, said method comprising the step of:
depositing a coating material having a second index of refraction different than said first index of refraction onto said embossed surface of said first material to a depth of deposition at least equal to three quarters of the minimum wavelength component of said incident light within said coating material.

5,296,950

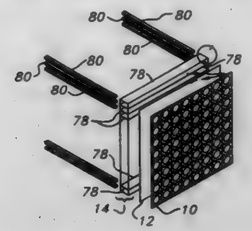
OPTICAL SIGNAL FREE-SPACE CONVERSION BOARD

Tsen-Hwang Lin, Dallas; Falvey Malarcher, and Jeffrey B. Sampsell, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1992, Ser. No. 829,100
Int. Cl.[5] G03H *1/08*; G11C *5/06*; G02B *6/12*
U.S. Cl. 359—9 **9 Claims**

1. A board to transport and convert optical outgoing free-space signals from a spatial light modulator comprising:
a. at least one detector to process said outgoing free-space signal;

b. at least one signal transmitter to process said outgoing free-space signal; and
c. at least one outgoing optical signal carrier to carry a



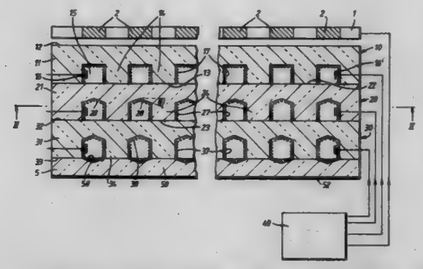
converted outgoing signal, wherein said board converts free-space signals from a processing module which comprises Digital Micro-Mirror Devices and at least one Computer Generated Hologram board.

5,296,951

MUTLI-COLOR DISPLAY APPARATUS EMPLOYING SUPERPOSED PLANAR DISCHARGE LAMPS

Neil A. Fox, Evesham, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Feb. 19, 1992, Ser. No. 836,821
Claims priority, application United Kingdom, Feb. 23, 1991, 9103803; Jun. 17, 1991, 9112993
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 359—48 **11 Claims**



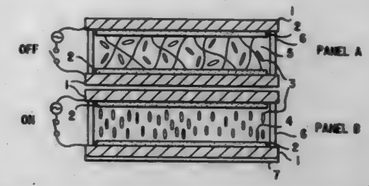
1. In display apparatus of the kind including a display unit having a plurality of display regions that vary in light transmission characteristic when electrically energized, the improvement wherein the apparatus includes a first planar discharge lamp mounted below the display unit, the first lamp being energizable to illuminate the display with light of a first spectral characteristic, and a second planar discharge lamp mounted below the first lamp, the second lamp being energizable to produce light of a second spectral characteristic different from the first spectral characteristic, the first lamp being substantially transparent to light from the second lamp so that the display unit can be illuminated by light from said second lamp passing through the first lamp.

5,296,952

DOUBLE-LAYER LIQUID CRYSTAL DEVICE HAVING A THREE DIMENSIONAL NETWORK STRUCTURE

Haruyoshi Takatsu; Kiyofumi Takeuchi, both of Tokyo, and Yasuo Umezu, Saitama, all of Japan, assignors to Dainippon Ink & Chemicals Inc., Tokyo, Japan

Continuation of Ser. No. 887,814, May 26, 1992, abandoned.
This application Aug. 2, 1993, Ser. No. 100,207
Claims priority, application Japan, May 27, 1991, 3-121102; Jul. 9, 1991, 3-168224; Jan. 31, 1992, 4-016315
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—53 **20 Claims**



1. A light scattering liquid crystal device having a double structure composed of (1) a first display panel of light scattering type which comprises a pair of transparent substrates each having a transparent electrode layer and a light controlling layer formed therebetween, said light controlling layer containing a liquid crystal material and a transparent solid substance and (2) a second display panel comprising a pair of transparent substrates each having an electrode layer and a liquid crystal material filled therebetween.

5,296,953

DRIVING METHOD FOR FERRO-ELECTRIC LIQUID CRYSTAL OPTICAL MODULATION DEVICE

Junichiro Kanbe, and Kazuharu Katagiri, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

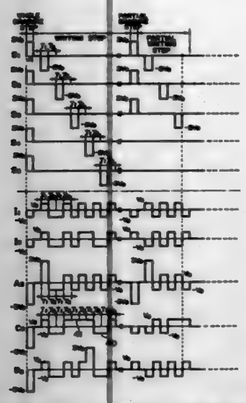
Continuation of Ser. No. 919,381, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 760,504, Sep. 16, 1991, abandoned, which is a division of Ser. No. 390,922, Aug. 8, 1989, Pat. No. 5,092,665, which is a division of Ser. No. 320,798, Mar. 9, 1989, abandoned, which is a continuation of Ser. No. 135,535, Dec. 17, 1987, abandoned, which is a continuation of Ser. No. 691,761, Jan. 15, 1985, abandoned. This application Jun. 21, 1993, Ser. No. 79,215
Claims priority, application Japan, Jan. 23, 1984, 1-0504; Jan. 23, 1984, 1-0593; Dec. 13, 1984, 2-63662; Dec. 24, 1984, 2-72357
Int. Cl.[5] G02F *1/133*; G09G *3/36*
U.S. Cl. 359—56 **13 Claims**

1. A driving method for an optical modulation device having a plurality of picture elements arranged in a matrix and comprising scanning lines, data lines spaced apart from and intersecting with the scanning lines, and a chiral smectic liquid crystal assuming a first orientation state or a second orientation state depending on the direction of an electric field applied thereto interposed between the scanning lines and the data lines, each of the intersections between the scanning lines and the data lines forming one of said plurality of picture elements; said driving method comprising:
a step of forming an image area comprising picture elements, wherein the chiral smectic liquid crystal assumes the first orientation state by application of a voltage of one polarity, exceeding a first threshold voltage of the chiral smectic liquid crystal and picture elements, wherein the chiral smectic liquid crystal assumes the second orientation state by application of a voltage of the other polarity exceeding a second threshold voltage of the chiral smectic liquid crystal, the image area comprising a rewriting region and a non-rewriting region;
a first step wherein, in the rewriting region, a voltage of one polarity exceeding the first threshold voltage of the chiral

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smectic liquid crystal is applied to the intersections of a scanning line and the data lines; and

a second step wherein a scanning selection signal is applied to a scanning line in the rewriting region, data signals are applied to data lines in the rewriting region, said data signals comprising an information signal in combination with the scanning selection signal for providing either a voltage of the other polarity exceeding the second threshold of voltage or a voltage not exceeding the second threshold, and an auxiliary signal following the information signal, and a voltage of the same voltage level as a scanning non-selected signal applied to a non-selected scanning line in the rewriting region is applied to scanning lines outside the rewriting region;



the auxiliary signal, in combination with the scanning non-selection signal applied to a non-selected scanning line, providing an inversion preventing voltage at a picture element on the non-selected scanning line before the application period of a voltage of one and the same polarity appearing at the picture element while it is not on a selected scanning line reaches a period beyond which the first or second orientation state of the picture element formed when the picture element was placed on a selected scanning line is inverted due to said voltage of one and the same polarity, the inversion preventing voltage being a voltage of opposite polarity to that of said voltage of one and the same polarity.

5,296,954

LIQUID CRYSTAL DISPLAY DEVICE HAVING MASKING FILMS BEING CONNECTED BY CONDUCTORS WHICH EXTEND ACROSS THE CENTRAL PORTIONS OF THE DISPLAY ELECTRODES

Yukiko Ichimura, and Kojiro Tsubota, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 755,068, Sep. 5, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,602

Claims priority, application Japan, Sep. 11, 1990, 2-241716

Int. Cl.[5] G02F *1/133*

U.S. Cl. 359—67 **16 Claims**

1. A liquid crystal display device comprising:

a first substrate;

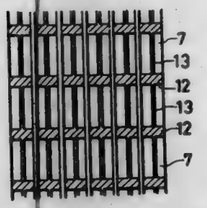
a second substrate, the first substrate and the second substrate opposing each other;

a plurality of first display electrodes formed on the first substrate;

a plurality of second display electrodes formed on the second substrate in a direction perpendicular to the first display electrodes;

a liquid crystal layer located between the first substrate and the second substrate; and

a plurality of masking films for intermittently masking regions between the display electrodes formed on at least one of the first and second substrates, said masking films



being formed on the display electrodes on the other substrate of said first and second substrates, said masking films being further connected to one another in the middle part of the second display electrodes by wires having a low resistance and a width of 30 μm or less.

5,296,955

LIQUID CRYSTAL DISPLAY APPARATUS WITH STABLE CONTRAST AGAINST TEMPERATURE CHANGES

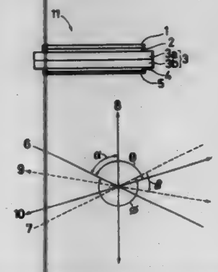
Tomotoshi Tsujioka, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1992, Ser. No. 986,616

Claims priority, application Japan, Dec. 10, 1991, 3-325955

Int. Cl.[5] G02F *1/133, 1/135*

U.S. Cl. 359—73 **1 Claim**



1. A liquid crystal display apparatus comprising:

a lamination structure in which an upper polarizer, a phase difference plate, a liquid crystal display element where a supertwisted nematic liquid crystal is sandwiched between upper and lower substrates, a lower polarizer, and a reflection plate which reflects incident light from the side of the phase difference plate are stacked in this sequence, wherein

the retardation R$_0$ of the phase difference plate is in the range of 555 to 580 nm, the product d·Δn of the cell thickness and the refractive anisotrophy of the liquid crystal display element is in the range of 0.76±0.02 μm, the angle α formed by the liquid crystal molecular orientation axis of the upper substrate and the upper polarizer is in the range of 55 to 65 deg., the angle β formed by the liquid crystal molecular orientation axis of the lower substrate and the lower polarization axis is in the range of 40 to 50 deg., the angle θ formed by the liquid crystal molecular orientation axis of the upper substrate and the optical axis of the phase difference plate is in the range of 120 to 130 deg., and the twisting angle Φ of the liquid crystal molecule is 240 deg. to thereby enable the display to maintain a stable contrast irrespective of temperature changes.

5,296,956

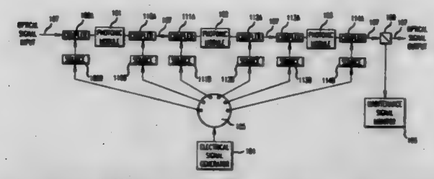
PERFORMANCE MONITORING AND FAULT LOCATION FOR OPTICAL EQUIPMENT, SYSTEMS AND NETWORKS

Mohammad T. Fatehi, Middletown, and Fred L. Heismann, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 17, 1992, Ser. No. 914,301

Int. Cl.[5] H04B *10/08*

U.S. Cl. 359—110 **36 Claims**



1. A method for monitoring the performance of a modular optical system wherein a primary optical signal is transmitted through a plurality of modules within the system via an optical path, comprising the steps of:

inserting, in response to an electrical signal generated at a signal source, a first maintenance signal into the optical path of said system at the input of each of said plurality of modules;

monitoring the optical path of said system at a fixed point to detect each of said inserted first maintenance signals;

inserting, in response to an electrical signal generated at a signal source, a second maintenance signal into the optical path of said system at the output of each of said plurality of modules;

monitoring the optical path of said system at said fixed point to detect each of said inserted second maintenance signals; and

determining the performance of each of said plurality of modules based upon the detection of said first and second maintenance signals at said fixed point.

5,296,957

OPTICAL REPEATER HAVING LOOP-BACK FUNCTION USED IN TRANSMISSION SYSTEM

Masaaki Takahashi, Yokosuka; Takanori Maki; Kazuya Amaki, both of Kawasaki; Katsumi Kikawa, Ichikawa, and Mitsushi Nitta, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 13, 1991, Ser. No. 759,483

Claims priority, application Japan, Sep. 18, 1990, 2-248482; Sep. 18, 1990, 2-248483

Int. Cl.[5] H04B *10/02, 10/00*

U.S. Cl. 359—177 **27 Claims**

1. An optical repeater having a loop-back function used in a transmission system including first and second transmission lines, comprising:

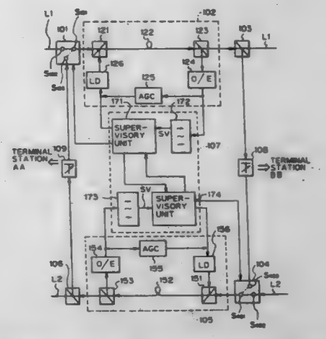
a first optical amplifier, connected to said first transmission line, for directly amplifying optical signals transferred from a first terminal station through said first transmission line;

a second optical amplifier, connected to said second transmission line, for directly amplifying optical signals transferred from a second terminal station through said second transmission line;

a loop-back means, connected to said first and second transmission lines, for constituting a loop-back line;

a control means, connected to said first and second amplifiers and said loop-back means, for controlling said loop-back means to constitute the loop-back line when detecting a loop-back instruction output from one of said terminal stations through a corresponding one of said optical amplifiers,

said loop back means comprising first and second optical switches and first and second optical splitters; said first optical switch, said first optical amplifier, and said first optical splitter being provided in series along said first



transmission line, and said second optical switch, said second optical amplifier, and said second optical splitter being provided in series along said second transmission line; and

a first optical attenuator provided between said first optical splitter and said second optical switch, and a second optical attenuator provided between said second optical splitter and said first optical switch.

5,296,958

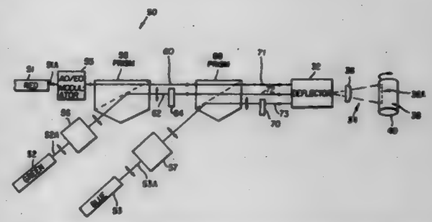
MULTIPLE WAVELENGTH LASER BEAM SCANNING SYSTEM

James E. Roddy, and Badhri Narayan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1992, Ser. No. 890,407

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—204 **30 Claims**



11. A multicolor, simultaneous scan exposure system, comprising:

first, second, and third light beam sources providing respective input beams at respectively differing wavelengths;

means for imagewise modulation of selected ones of the input beams;

a first Thompson prism, locatable for receiving and for combining the first and second input beams to form therefrom a first output beam;

a second Thompson prism, locatable for receiving and for combining the first output beam and the third input beam to form therefrom a second output beam;

means for deflecting the second output beam to provide a scanning beam; and

VOL 1160 ISS 4 MR 22 1994 UMI

means for focussing the scanning beam to an exposure plane for effecting scan exposure thereon.

5,296,959

POLYGONAL MIRROR, AND MANUFACTURING PROCESS AND MOLD THEREOF

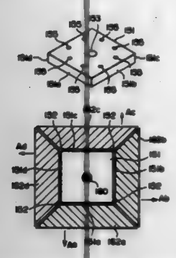
Shingo Asai, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1992, Ser. No. 827,075

Claims priority, application Japan, Jan. 30, 1991, 3-009862; Jan. 30, 1991, 3-009863; Nov. 28, 1991, 3-314621

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—216 **10 Claims**



1. A method for producing a resin polygonal mirror having a plurality of reflective facets, the method comprising the steps of:

setting a mold having a plurality of segments which are parted at every corner between the neighboring reflective facets of the polygonal mirror to be produced;

closing the mold;

injecting molten resin into a cavity formed by the closure of the mold; and

opening the mold.

5,296,960

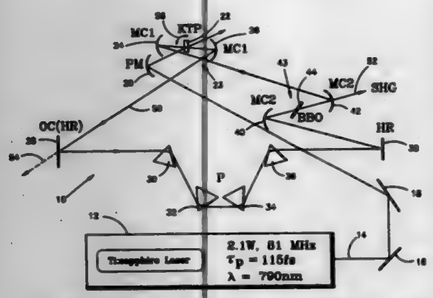
INTRACAVITY-DOUBLED TUNABLE OPTICAL PARAMETRIC OSCILLATOR

Randall J. Ellingson, and Chung L. Tang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 26, 1993, Ser. No. 25,377

Int. Cl.[5] G02F *1/39*; H01S *3/109*

U.S. Cl. 359—330 **16 Claims**



1. A broadly tunable optical parametric oscillator, comprising:

an oscillator ring cavity having a closed path which includes a first focus, a second focus and beam output means;

a first nonlinear optical crystal located at said first focus of said cavity;

a laser pumping source located externally of said cavity and producing a high repetition rate pulsed pump beam;

means directing said pump beam onto a surface of said first crystal to synchronously pump said first crystal to generate corresponding high repetition rate pulsed idler and signal beams from said first crystal, a selected one of said idler and signal beams being directed along said cavity for oscillation therein;

a second nonlinear optical crystal located at said second focus of said cavity;

means in said cavity directing said selected one of said idler and signal beams onto a surface of said second crystal to generate a high repetition rate pulsed second output signal beam which is a second harmonic of said selected one of said idler and signal beams; and

means directing at least a portion of said second harmonic beam to said beam output means to emit said second harmonic signal from said cavity.

5,296,961

DICHROIC OPTICAL FILTER

David Trost, San Francisco; Philip Baumeister, Newcastle, and Dennis Fischer, Auburn, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Filed Apr. 23, 1991, Ser. No. 690,068

Int. Cl.[5] G02B *5/28*

U.S. Cl. 359—359 **13 Claims**

Layer no.	Starting design		Final design		Modified design	
	Material	Thickness, μm	Material	Thickness, μm	Material	Thickness, μm
	air	massive	air	massive	massive	massive
1	ThF4	0.03	ThF4	0.0025	PbF2	0.36
2	ZnS	0.02	ZnS	0.1274	ThF4	0.30
3	ThF4	0.03	ThF4	0.0499	PbF2	0.36
4	ZnS	0.02	ZnS	0.0239	ThF4	0.30
5	ThF4	0.03	ThF4	0.0295	PbF2	0.36
6	ZnS	0.02	ZnS	1.0513	ThF4	0.30
7	ThF4	0.03	ThF4	0.0177	PbF2	0.36
8a	ZnS	0.02	ZnS	0.0283	ThF4	0.30
8b	ZnS	1.13	.	.	.	.
9	ThF4	0.03	ThF4	0.0476	PbF2	0.36
10	ZnS	0.02	ZnS	0.0043	ThF4	0.0025
11	ThF4	0.03	ThF4	1.9234	ZnS	0.1274
12	ZnS	0.02	ZnS	0.0143	ThF4	0.0499
13	ThF4	0.03	ThF4	0.0587	ZnS	0.0239
14	ZnS	0.02	ZnS	0.0278	ThF4	0.0295
15	ThF4	0.03	ThF4	0.0578	ZnS	1.0513
16	ZnS	0.02	ZnS	0.0289	ThF4	0.0177
17a	ThF4	1.0	ThF4	0.0587	ZnS	0.0283
17b	ThF4	0.03	.	.	.	.
18	ZnS	0.02	ZnS	0.0312	ThF4	0.0476
19	ThF4	0.03	ThF4	0.0236	ZnS	0.0043
20	ZnS	0.02	ZnS	1.1409	ThF4	1.9234

12. A dichroic optical filter, including:

a substrate that is substantially transparent to visible radiation, wherein the substrate has a front surface;

a coating on the front surface, wherein the coating includes:

an oxide semiconductor layer that has a reflectivity of more than 50% to a selected infrared wavelength and is substantially transparent to visible radiation; and

a first multilayer coating for enhancing the filter's reflectance to the selected infrared wavelength, wherein the first multilayer coating includes thick layers having a higher refractive index alternating with thick layers having a lower refractive index, wherein each of the thick layers has an optical thickness substantially equal to one quarter of the selected infrared wavelength, and wherein each of the thick layers is substantially transparent to visible radiation, and wherein the combined reflectivity of the first multilayer coating and the oxide semiconductor layer to the selected infrared wavelength is substantially equal to at least 90%.

5,296,962

HIGH SENSITIVITY MICROSCOPE

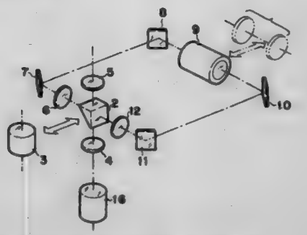
Hidehiko Furuhashi, Fujisawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,762

Claims priority, application Japan, Apr. 1, 1991, 3-094723

Int. Cl.[5] G02B *21/06*

U.S. Cl. 359—388 **6 Claims**



1. A high sensitivity microscope comprising:

a viewing optical system having an objective and an eyepiece;

an image intensifier capable of being disposed in said viewing optical system such that an acceptance plane thereof is positioned at an image plane of said objective and that an optical output plane thereof is conjugate with an image plane of said eyepiece; and

switching means for causing light from said objective to be guided selectively through an optical path passing through said image intensifier and an optical path not passing through said image intensifier.

5,296,963

APPARATUS AND METHOD FOR APPLYING A LASER BEAM THROUGH A MICROSCOPE

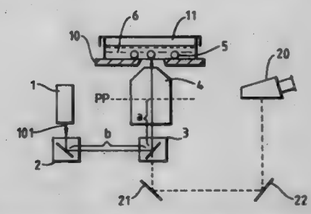
Sei Murakami; Masao Takai; Ryusei Nakano, and Nobuo Kimura, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,517

Claims priority, application Japan, Feb. 27, 1991, 3-032607; Dec. 5, 1991, 3-321691

Int. Cl.[5] G02B *21/06, 26/10*; C12N *5/10, 13/00*

U.S. Cl. 359—389 **18 Claims**



1. Microscope apparatus adapted for directing a laser beam onto a specimen, said apparatus comprising:

an inverted microscope, said microscope comprising an objective lens;

means defining a laser beam path of the apparatus, said laser beam path passing through the objective lens of the microscope;

said defining means comprising at least two laser beam deflectors mounted on said laser beam path optically behind said objective lens, and being controllably adjustable to adjust the direction of the laser beam path through the objective lens as the apparatus is operated;

said inverted microscope defining a microscope optical pathway, the microscope optical pathway comprises a parallel-beam region behind the objective lens, and the laser beam path meets the microscope optical pathway at said parallel-beam region.

5,296,964

REPLACEABLE FASCIA FOR PROJECTION SCREEN CASE

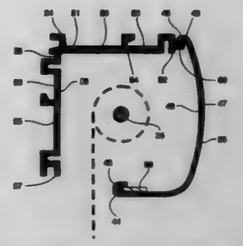
Rick A. Shopp, New Castle, Ind., assignor to Draper Shade & Screen Co., Inc., Spiceland, Ind.

Division of Ser. No. 940,548, Sep. 4, 1992, Pat. No. 5,274,499.

This application Sep. 2, 1993, Ser. No. 116,352

Int. Cl.[5] E06B *9/00*; G03B *21/56*

U.S. Cl. 359—443 **7 Claims**



1. A casing for a projection screen, comprising:

a spine including first and second substantially rectangular plates, each plate having first and second opposing edges, the first plate having top and bottom sides and the second plate having right and left sides, such that the first and second plates are joined at their respective first edges and such that the bottom side of the first plate and the right side of the second plate define an interior angle, the first plate also including a trough along the top side of the second edge;

a bracket affixed to the spine, the bracket having a protrusion therefrom positioned away from the right side of the second plate and below the bottom of the first plate; and

a removable fascia having first and second edges, the first edge having a ridge for engaging the trough of the first plate and the second edge having a ridge for engaging the protrusion extending from the bracket.

5,296,965

REFLECTION-TYPE SCREEN

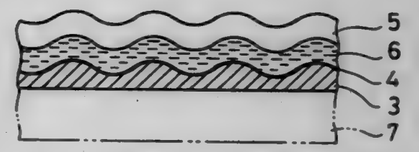
Masao Uetsuki, Tokyo; Satoshi Hirofuji, Kurashiki, and Yasuhira Takeuchi, Fuwa, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 11, 1993, Ser. No. 2,819

Claims priority, application Japan, Jan. 10, 1992, 4-21787; Jan. 23, 1992, 4-34332

Int. Cl.[5] G03B *21/60*

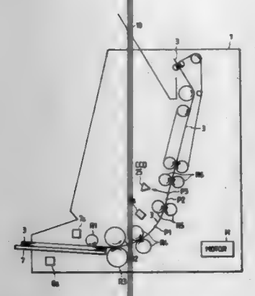
U.S. Cl. 359—459 **10 Claims**



1. A screen of reflection-type operable with linearly polarized imagewise rays of light projected thereon for presenting a projected image, carried by the linearly polarized imagewise rays of light, to viewers occupying a position in front of the screen, said screen comprising:

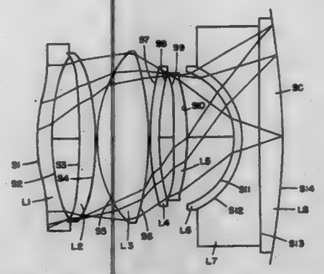
a polarizing film having first and second surfaces, said linearly polarized imagewise rays of light being incident upon the first surface thereof while the linearly polarized imagewise rays of light have a plane of vibration of an electric field or a magnetic field in a direction required to exhibit a maximum light transmissivity;
a metal layer formed on the second surface of the polarizing film for reflecting the linearly polarized imagewise rays of light; and
an indentation structure formed on both of the metal layer and the polarizing film for reflecting the imagewise rays of light uniformly at a desired angle of reflection.

5,296,966
ELECTRONIC FILING SYSTEM
Kamon Hasuo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1990, Ser. No. 598,952
Claims priority, application Japan, Oct. 20, 1989, 1-273431
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—498 **11 Claims**



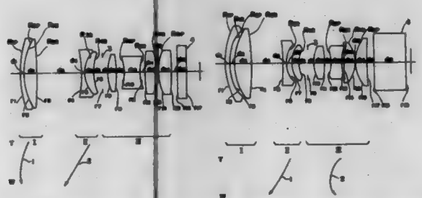
6. An electronic filing system comprising:
a conveying section for conveying an original put on an original setting plate to a reading position;
a reading section for reading an image of the original at the reading position;
manual feed mode control means for executing a manual feed mode for conveying and reading the original each time the original has been set onto the original setting plate;
continuous feed mode control means for executing a continuous feed mode to continuously convey and continuously read a plurality of originals which were stacked on the original setting plate;
a mode selecting circuit for selecting either one of the manual feed mode and the continuous feed mode; and
a memory section for storing the image, which was read by the reading section, together with index information; and
an interruption key for interrupting the continuous feed mode,
wherein after the storage of the image has been started in the continuous feed mode, the feed mode can be switched to the manual feed mode and the image can be stored together with the same index information without again inputting the index information and when the continuous feed mode is interrupted, the feed mode can be switched to the manual feed mode.

5,296,967
HIGH SPEED WIDE ANGLE PROJECTION TV LENS SYSTEM
Jacob Moskovich, Cincinnati, Ohio, assignor to U.S. Precision Lens Incorporated, Cincinnati, Ohio
Filed Mar. 2, 1992, Ser. No. 844,160
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—649 **14 Claims**



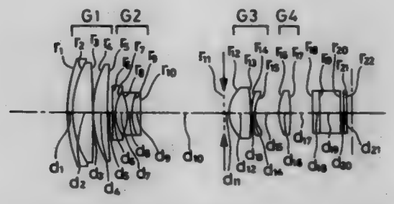
1. A projection lens system for use with a cathode ray tube comprising in order from the image side a first weak meniscus aspherical element which is convex to the image, a second weak meniscus aspherical element which is concave to the image, a strong positive element which provides a majority of the power of the lens, a third weak aspherical meniscus element which is convex to the image, a fourth weak aspherical meniscus element which is concave to the image and a strong negative unit which is associated with the cathode ray tube during use of the lens system and which provides most of the correction for the field curvature of the lens system.

5,296,968
ZOOM LENS SYSTEM
Kazuyoshi Hata, and Masami Tanaka, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 982,012, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 875,207, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 640,975, Jan. 14, 1991, abandoned, which is a division of Ser. No. 244,796, Sep. 15, 1988, Pat. No. 4,984,876. This application Apr. 27, 1993, Ser. No. 53,559
Claims priority, application Japan, Sep. 16, 1987, 62-231293; Sep. 16, 1987, 62-231294; Sep. 16, 1987, 62-231295; Sep. 16, 1987, 62-231296; Sep. 16, 1987, 62-236493; Sep. 21, 1987, 62-236494; Sep. 21, 1987, 62-236495; Sep. 30, 1987, 62-246222
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—684 **3 Claims**



1. A zoom lens system consisting, from the object side to the image side:
a first lens unit having a positive refractive power and being fixed on an optical axis of the lens system in a zooming mode of operation;
a second lens unit having a negative refractive power and being shiftable along the optical axis in the zooming mode of operation; and
a third lens unit having a positive refractive power and being shiftable along the optical axis in both the zooming operation and a focusing operation.

5,296,969
ZOOM LENS SYSTEM HAVING A SHORT TOTAL LENGTH
Shinichi Mihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1992, Ser. No. 939,944
Claims priority, application Japan, Sep. 2, 1991, 3-221697
Int. Cl.[5] G02B *15/14, 13/18, 3/02*
U.S. Cl. 359—687 **13 Claims**



1. A zoom lens system which includes, in order from the object side, a first lens unit having a positive refracting power, a second lens unit having a negative refracting power, including a doublet, and movable along the optical axis for zooming, a third lens unit comprising, in order from the object side, a positive leans in which the object-side surface has a stronger curvature than the image-side surface and takes an aspherical configuration and a negative meniscus lens in which the image-side surface has a stronger curvature than the object-side surface, said third lens unit having a positive refracting power as a whole, and a fourth lens unit consisting of a positive single lens in which the object-side surface takes an aspherical configuration and movable along the optical axis for zooming and focusing,
wherein said third and fourth lens units satisfy the following conditions:

$$0.4 < f_{34S}/(f_W f_T)^{\frac{1}{2}} < 0.8, \quad (1)$$

$$0.28 < \beta_{4T} < 0.56, \quad (2)$$

$$0.4 < r_{31}/\{(n_{31} - 1)(f_W f_T)^{\frac{1}{2}}\} < 0.8, \quad (3)$$

$$0.25 < r_{34}/\{(n_{34} - 1)(f_W f_T)^{\frac{1}{2}}\} < 0.6, \quad (4)$$

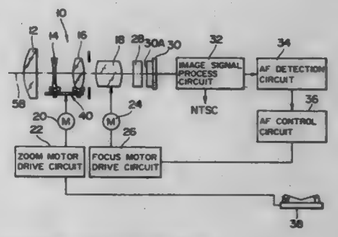
$$0.2 < D_{III}/(f_W f_T)^{\frac{1}{2}} < 0.4, \quad (5)$$

$$0.3 < D_{34T}/(f_W f_T)^{\frac{1}{2}} < 0.6, \text{ and} \quad (6)$$

$$1.45 < n_5 < n_6 - 0.25, \quad (18)$$

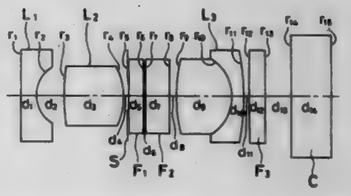
where:
f_W and f_T are the focal lengths of the total system at the wide angle and telephoto ends, respectively,
f_{34S} is the composite focal length of the third and fourth lens units when the focal length of the total system lies at $(f_W f_T)^{\frac{1}{2}}$ and the object point at infinity is focused,
β_{4T} is the magnification of the fourth lens unit when the object point at infinity is focused at the telephoto end,
r_{31} and r_{34} are the radii of curvature of the surfaces of the third lens unit proximate to the object and image sides, respectively,
n_{31} and n_{34} are the refractive indices of the positive and negative meniscus lenses of the third lens unit, respectively,
D_{III} is the distance on the optical axis between the surfaces of the third lens unit proximate to the object and image sides, respectively,
D_{34T} is the space on the optical axis between the third and fourth lens units, when the object point at infinity is focused at the telephoto end, and
n_5 and n_6 are the refractive indices of the respective lenses of the doublet of the second lens unit.

5,296,970
ZOOM LENS SYSTEM
Masaaki Morizumi, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd, Saitama and Fuji Photo Film Co., Inc., Kanagawa, both of Japan
Filed Mar. 30, 1993, Ser. No. 39,743
Claims priority, application Japan, Mar. 30, 1992, 4-073878
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—700 **8 Claims**



5. A zoom lens system comprising:
a variable lens for changing a focal distance;
a compensator lens for correcting the shift of focussing caused by the movement of said variable lens such that focussing can be made at a surface of image-formation;
driving means for driving said variable lens and said compensator lens in a direction of an optical axis;
a focus lens for performing a focal adjusting;
an AF control means for driving said focus lens in the direction of the optical axis such that an object image can be made to focus at the surface of image-formation; and
a position regulating means for moving said focus lens to a position where the rear end of the focal depth of said object image at infinity coincides with the surface of image-formation during the photographing of the object image, before the start of photographing.

5,296,971
OBJECTIVE LENS SYSTEM FOR ENDOSCOPES
Takao Mori, Shibuya, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 3, 1992, Ser. No. 845,158
Claims priority, application Japan, Mar. 4, 1991, 3-37275
Int. Cl.[5] G02B *3/02*
U.S. Cl. 359—716 **11 Claims**

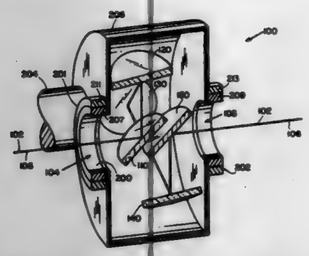


1. An objective lens system for endoscopes comprising, in order from an object side to an image side of the system:
a first lens component having a negative refractive power,

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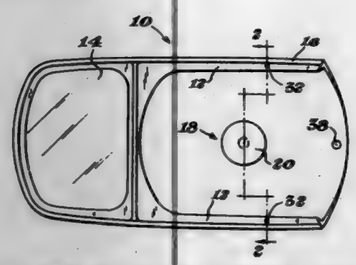
a second lens component comprising an uncemented lens having a positive refractive power,
an aperture stop, and
a third lens component comprising a positive and a negative lens cemented together,
wherein the cemented positive and negative lenses which comprise the third lens component are the only lenses located on the image side of said aperture stop.

5,296,972
NON-POLARIZING IMAGE ROTATION APPARATUS AND METHOD
William G. McKinley, Littleton, Mass., assignor to Litton Systems, Inc., Lexington, Mass.
Filed Jul. 31, 1992, Ser. No. 923,314
Int. Cl.[5] G02B *17/00, 5/08, 27/64*
U.S. Cl. 359—861 **23 Claims**



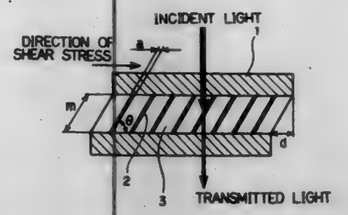
1. An optical system for rotating an image of an object comprising:
an entrance aperture for admitting light into the system along an optical axis of the system, said light entering along an optical path and following the optical path through the system;
an exit aperture for allowing the light to exit the system along the optical axis of the system and the optical path, the system being rotatable about the optical axis of the system; and
a plurality of optical surfaces for dividing the optical path into a plurality of optical path segments, each of said segments being along an optical path segment axis, two of said optical path segment axes defining a plane and at least a third optical path segment axis being outside the plane.

5,296,973
AUXILIARY SIDE VIEW MIRROR MODULE
David W. Burke, 809 Taylor St., Bay City, Mich. 48708
Continuation-in-part of Ser. No. 861,101, Mar. 31, 1992, abandoned. This application Sep. 16, 1992, Ser. No. 945,502
Int. Cl.[5] G02B *7/18, 5/10, 1/06, 1/08*
U.S. Cl. 359—865 **1 Claim**



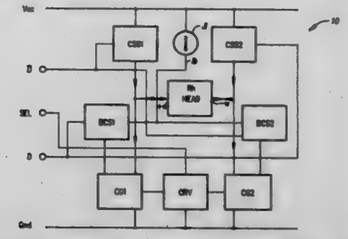
1. An auxiliary side view mirror module for extending the viewing area of an automotive side view mirror mounted in a housing on a support bracket configured to be attached to the exterior of a vehicle, said automotive side view mirror having a forward-facing surface and a rearward-facing surface as viewed when said automotive side view mirror is mounted on a vehicle, said module comprising:
an elongated planar casing;
a pair of opposed channel sections supported on the casing, said channel sections being separated by a distance substantially equal to a dimension between opposed edges of said automotive side view mirror housing so that said casing is supported on said housing by sliding the channel sections over said opposed edges of said housing so that one of the ends of said casing extends laterally outward from the vehicle;
an auxiliary mirror mounted in said casing at said laterally extending end so as to be supported alongside and substantially co-planar, with said side view mirror housing; said casing comprising an interior and exterior surface and means for adjustably engaging the forward-facing surface of said automotive side view mirror housing, said means comprising a tough, resilient, semi-rigid plastic material positioned between the interior surface of said casing and the forward-facing surface of said side view mirror housing and engaged by means of an adjusting screw, said plastics material being adapted to conform to the forward-facing surface of said side view mirror housing.

5,296,974
LIGHT CONTROLLING DEVICE AND PROCESS FOR CONTROLLING LIGHT TRANSMISSION
Hiroaki Tada, Kobe; Yasuhiro Saito, Nishinomiya; Masahiro Hirata, Takatsuki; Masato Hyodo, Kobe, and Hideo Kawahara, Kawanishi, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Jul. 14, 1992, Ser. No. 913,173
Claims priority, application Japan, Jul. 16, 1991, 3-175567
Int. Cl.[5] G02B *5/22*
U.S. Cl. 359—885 **20 Claims**



1. A light controlling device comprising a pair of substrates, a viscoelastic or elastic material containing fine particles interposed between said substrates and aligned in a first predetermined direction with respect to said substrates, and means for intermittently applying a shear stress to said viscoelastic or elastic material and aligning said particles in a second direction.

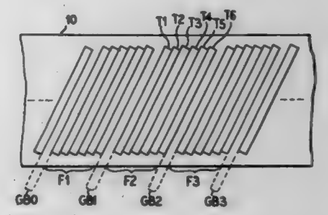
5,296,975
HIGH-TRANSITION-RATE, LOW-SUPPLY-VOLTAGE WRITE DRIVER CIRCUITRY FOR MAGNETIC INDUCTIVE WRITE HEAD
John T. Contreras, San Jose; Stephen A. Jove, Watsonville; Klaas B. Klaassen, and Jacobus C. Leonardus van Peppen, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 9, 1992, Ser. No. 958,635
Int. Cl.[5] G11B *5/09, 15/12, 5/02*
U.S. Cl. 360—46 **14 Claims**



1. Circuitry for modulating the writing of data on a magnetic storage disk, said circuitry comprising:
a single supply voltage source referenced to ground;
a source providing a bias current and connected to either said supply voltage source or ground;
an inductive magnetic transducer for writing the data on the disk;
positive and negative data input terminals;
two current gain circuits;
two bias control switches, each respectively directing the bias current to one or the other of the gain circuits according to which of said input terminals is at a preselected polarity;
said gain circuits each selectively responsive to the bias current directed by an associated control switch for amplifying the bias current to remove a write current from a respective associated terminal of the transducer; and
two current source switches, each current source switch and an associated one of the gain circuits being connected in series between the supply voltage source and ground via respective separate paths that extend in parallel between the supply voltage source and ground, and each current source switch being connected to a respective one of the input terminals and to a respective different one of the terminals of the transducer for selectively allowing and preventing the write current from flowing into its respective associated terminal of the transducer depending upon which of said input terminals is at said preselected polarity.

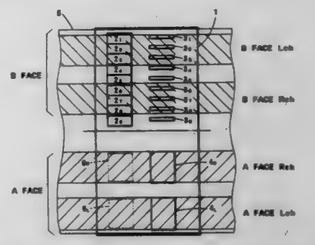
5,296,976
MAGNETIC RECORDING/REPRODUCING DEVICE
Jun Takayama, Tokyo; Kiyoshi Sawakata; Kozo Kaminaga, both of Kanagawa, and Seiichi Sakai, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 25, 1991, Ser. No. 765,380
Claims priority, application Japan, Jun. 28, 1991, 3-185482
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—57 **2 Claims**

1. A magnetic recording/reproducing device comprising a plurality of rotary heads (HA, HB1, HC1, HD1) mounted so as to scan different tracks on a magnetic tape which passes over a helical drum and wherein a first information is recorded by said plurality of rotary heads on a first plurality of side by side parallel information tracks (T1, T2, T3, T4, T5, T6) on said magnetic tape which do not have spaces therebetween, and guard bands (GB0, GB1, GB2, GB3) are formed between said first plurality of information tracks (T1, T2, T3, T4, T5, T6)



and adjacent plurality of second, third and fourth information tracks before and after said first plurality of information tracks.

5,296,977
DIGITAL RECORDING/REPRODUCING METHOD IN WHICH DIGITAL CONTROL CODES ARE SIMULTANEOUSLY RECORDED/REPRODUCED WITH ANALOG INFO TO ENHANCE ANALOG RECORDING/REPRODUCTION
Nagaki Fujioka, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Apr. 28, 1992, Ser. No. 874,856
Claims priority, application Japan, Sep. 30, 1991, 3-252079
Int. Cl.[5] G11B *15/12, 5/02*
U.S. Cl. 360—63 **10 Claims**



1. A digital recording and reproducing method for a digital tape recorder of the fixed head type wherein a fixed head unit has a first track face on which an analog head is provided and a second track face on which a plurality of digital heads are provided, comprising the steps of:
digitally recording, upon analog reproduction or recording from or onto one of a pair of analog tracks of a tape by means of said analog head, a desired control code onto a non-recorded gap portion of the other analog track using a particular one of said digital heads; and
reading out, upon analog reproduction by said analog head, the digitally recorded control code from the tape using said digital heads.

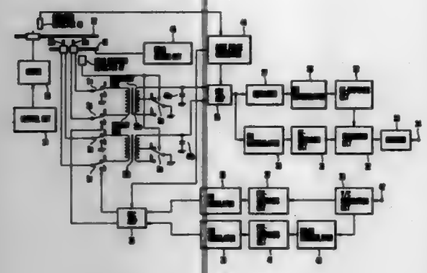
VOL 1160 ISS 4 MR 22 1994

5,296,978

INFORMATION SIGNAL REPRODUCING APPARATUS

Tokihiko Ogura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,201, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 239,790, Aug. 1, 1991, which is a continuation of Ser. No. 682,399, Apr. 5, 1991, abandoned, which is a continuation of Ser. No. 565,212, Aug. 8, 1990, abandoned, which is a continuation of Ser. No. 237,217, Aug. 26, 1988, abandoned. This application Jan. 7, 1993, Ser. No. 1,897
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—67 15 Claims



1. An information signal reproducing apparatus for reproducing, from a disk-like recording medium, information signals recorded on recording tracks formed on said disk-like recording medium, said information signal reproducing apparatus comprising:

(A) reproduction head means, capable of tracing the recording tracks of said disk-like recording medium, for reproducing an information signal recorded on each recording track of said disk-like recording medium and outputting the information signal thereby reproduced;

(B) head moving means for moving said reproduction head means to a desired position in the radial direction of said disk-like recording medium;

(C) boosting means having a plurality of boosting ratios, for boosting the information signal reproduced by the reproduction head means;

(D) head position detecting means for detecting the position of said reproduction head means on a radius of said disk-like recording medium and outputting a head position information signal;

(E) relative speed information detecting means for detecting changes in the speed of said reproduction head means relative to said recording medium when said reproduction head means traces the tracks of said recording medium, said relative speed information detecting means outputting relative speed information in correspondence with the detected relative speed;

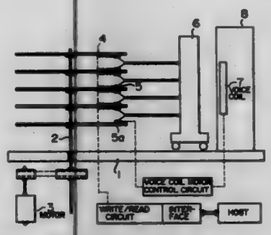
(F) boosting ratio changing means for changing, in response to the relative speed information output from said relative speed information detecting means, the ratio at which the information signal is boosted by said boosting means, wherein said boosting ratio changing means includes change-over means for selecting the boosting ratio of said boosting means in response to the head position information signal output from said head position detecting means.

5,296,979

MAGNETIC DISC APPARATUS WITH THIN FILM HEAD SUITABLE FOR HIGH-DENSITY RECORDING

Takashi Kawabe; Moriaki Fuyama, both of Hitachi; Shinji Narishige, Mito; Masatoshi Tsuchiya, Hitachi; Eiji Ashida, Hitachiota; Makoto Morijiri; Hideki Yamazaki, both of Hitachi; Yutaka Sugita, Tokorozawa; Hiroshi Fukui, Hitachi; Tadayuki Iwakura, Hitachi; Makoto Aihara, Hitachi; Makoto Saito, Tokyo; Shunichiro Kuwatsuka; Hiroshi Ikeda, both of Odawara, and Yokuo Saitoh, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 890,111, May 29, 1992, abandoned, which is a continuation of Ser. No. 406,517, Sep. 13, 1989, abandoned. This application Oct. 19, 1992, Ser. No. 963,039
Claims priority, application Japan, Sep. 20, 1988, 63-233430
Int. Cl.[5] G11B *5/012*
U.S. Cl. 360—97.01 36 Claims



1. A magnetic disc apparatus comprising:

a magnetic disc for recording thereon information at a track density Tr of 1800 or more tracks per inch; and

a thin film magnetic head having a main surface facing said magnetic disc and including a magnetic pole structure having an upper magnetic pole tip and a lower magnetic pole tip disposed to form therebetween a magnetic gap extending across said main surface for at least one of writing and reading information in and from said magnetic disc;

said upper and lower magnetic pole tips having upper and lower tip faces, respectively, exposed on said main surface and adjacent to said magnetic gap, wherein a side of said lower tip face extending along said magnetic gap is longer than a side of said upper tip face extending along said magnetic gap by a difference ΔCW expressed in μm which satisfies a relation

$$0.2 \leq \Delta CW \leq 5000/Tr.$$

5,296,980

MAGNETIC DISK APPARATUS HAVING RECORDING HEADS FOR OPPOSITE DISK SURFACES WHICH ARE OFFSET FROM EACH OTHER

Takao Matsui, Yamato, and Yoshiaki Sonobe, Fujisawa, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 705,837, May 28, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 93,294
Claims priority, application Japan, May 28, 1990, 2-135506
Int. Cl.[5] G11B *5/48, 17/02*
U.S. Cl. 360—97.01 7 Claims

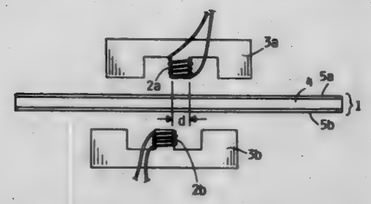
1. A magnetic disk apparatus comprising:

at least one magnetic disk having an axis of rotation and a first and second surface, said disk comprising a rigid non-magnetic substrate and at least one layer of magnetic material covering said first and second surfaces;

a first magnetic head provided for a first surface of said magnetic disk; and

a second magnetic head provided for a second surface of said magnetic disk;

wherein the first and second magnetic heads are shifted with respect to each other a distance d in a direction radial to the axis of rotation of said disk, said first and second heads



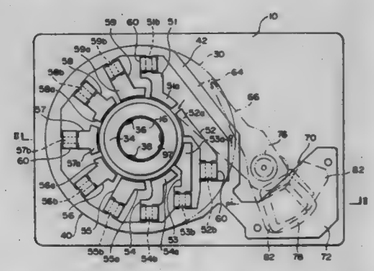
having a dimension in the direction of the shift, said distance d being less than the dimension of said heads in the direction of the shift.

5,296,981

DISK DRIVE APPARATUS

Tokumon Ogawa, Komagane, Japan, assignor to Nagano Nidec Corporation, Nagano, Japan

Filed Jul. 28, 1992, Ser. No. 921,306
Claims priority, application Japan, Jul. 31, 1991, 3-216142; Sep. 2, 1991, 3-250487
Int. Cl.[5] G11B *7/02*
U.S. Cl. 360—99.08 8 Claims



1. A disk drive apparatus including a magnetic disk on which data is recorded, a spindle motor for rotating the magnetic disk in a predetermined direction, a magnetic head for writing data on and/or reading out data from the magnetic disk, a support arm for supporting said magnetic head, and a voice coil motor for pivoting said support arm and thereby moving said magnetic head in a radial direction of the magnetic disk, said spindle motor having a hub on which the magnetic disk is mounted, a rotor magnet mounted on said hub, and a stator disposed opposite to said rotor magnet,

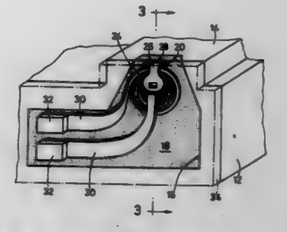
the improvement being characterized in that said stator includes a stator core having an annular proximal end portion disposed on an outer side of said rotor magnet, a plurality of coil winding portions extending from said annular proximal end portion, and stator teeth portions each of which is provided on a free end portion of each of the plurality of coil winding portions, in that an armature coil is wound around each of said plurality of coil winding portions, and in that said stator teeth portions are disposed substantially equiangularly in a circumferential direction while at least part of said plurality of coil winding portions are disposed non-uniformly in the circumferential direction, whereby the armature coils wound around said plurality of coil winding portions are retracted from a path in which said support arm is moved.

5,296,982

THIN-FILM MAGNETIC HEAD HAVING SLIDER BODY FORMED OF FERRITE

Nobuhiro Terada, Kasugai, and Soichiro Matsuzawa, Kuwana, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jun. 9, 1992, Ser. No. 895,854
Claims priority, application Japan, Jun. 13, 1991, 3-168778
Int. Cl.[5] G11B *5/10*
U.S. Cl. 360—103 10 Claims



1. A thin-film magnetic head comprising:

a slider body formed of a ferrite material and having air bearing portions on one major surface thereof on which a magnetic recording medium is slidable, each of said air bearing portions having a trailing end face in which a recess if formed;

a non-magnetic layer formed in said slider body such that said non-magnetic layer is at least embedded in said recess in said trailing end face of each of said air bearing portions, said non-magnetic layer having a thickness of at least 20 μm;

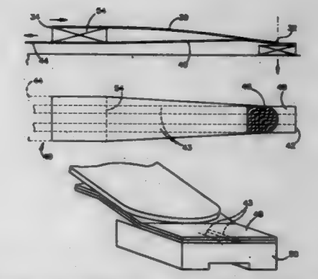
a head portion including an upper and a lower magnetic layer and a coil which are positioned within an area of said non-magnetic layer, at least said lower magnetic layer, said coil and said upper magnetic layer being laminated on said non-magnetic layer such that said upper and lower magnetic layers constitute a closed magnetic path, and such that a magnetic gap is formed between said upper and lower layers, said magnetic gap being open in a top face of said each air bearing portion.

5,296,983

SLIDER SPRING UNDER "TENSION-COMPRESSION"

Henri Blanc, Saint Julien de Ratz; Gérard Barrois, Le Fontanil, and Christian Piselia, Beaucroissant, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Nov. 23, 1992, Ser. No. 980,470
Claims priority, application France, Nov. 29, 1991, 91 14825
Int. Cl.[5] G11B *21/16*
U.S. Cl. 360—104 12 Claims



1. Spring for a slider, characterized in that it comprises:

a flexible leaf (30) having a first and a second ends (32,34),

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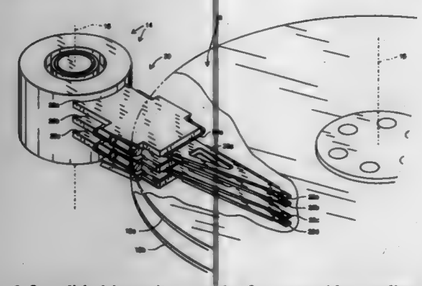
a pliable strip (40) having electrically conductive tracks (43) and a first and a second ends (42, 44),
a means (46) for fixing the first end (42) of the pliable strip (40) beneath the first end (32) of the flexible leaf (30), the strip (40) projecting slightly beyond the first end (32) of the flexible leaf (30) in order to form a tongue (48),
a slider (50) with one or more magnetic heads (51), said slider (50) being fixed beneath the tongue (48), the conductive tracks (43) of the strip being connected to the head (51),
a shim (54) fixed beneath the second end (34) of the flexible leaf (30) and to the flexible strip (40),
the pliable strip (40) being under tension between the shim (54) and the fixing means (46) and the flexible leaf (30) under compression, a top to bottom force is thus exerted on the first end (32) of the flexible leaf (30) and consequently on the slider (50),
the second strip (40) having its second end (44) located behind the fixing shim (54) and at a certain distance (Y) from the latter.

5,296,984

ADAPTER PLATE FOR COUPLING A HEAD TO AN ACTUATOR ARM IN A DISK DRIVE ASSEMBLY

Adolf L. Fick, 10130 N. Blaney Ave., Cupertino, Calif. 95014

Filed Mar. 23, 1993, Ser. No. 35,742
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **14 Claims**



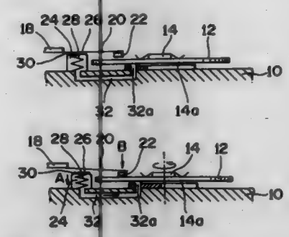
1. In a disk drive unit, a coupler for removably coupling an actuator arm to a load beam that is connected to a head, the actuator arm including an end section having a grooved edge with a V-shaped groove formed therein and a latching edge opposite the grooved edge, said coupler comprising:
an adapter plate including
a plate surface for coupling with the load beam, said plate surface including a first edge and a second edge opposite the first edge,
a latch hook formed on the first edge of the plate surface, said latch hook having a shape for hooking over the latching edge of the actuator arm end, and
a coupling hook formed on the second edge opposite the latch hook, said coupling hook including a notch formed centrally therein and extending inward toward the plate surface; and
a tapered pin for inserting between the coupling hook and the V-shaped groove;
said latch hook having a first curved shape and said coupling hook having a second curved shape, so that when the tapered pin is inserted between the coupling hook and the V-shaped groove, the plate surface is pressured against the portion of the actuator arm end proximate thereto.

5,296,985

MAGNETIC DISK UNIT USING NEGATIVE PRESSURE TO COUNTERBALANCE HAVING HEAD LIFTING MECHANISM

Masanobu Mochizuki, and Masanori Iwabuchi, both of Ibaragi, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,765
Claims priority, application Japan, Sep. 28, 1990, 2-259487
Int. Cl.[5] G11B *21/22*
U.S. Cl. 360—105 **7 Claims**



1. A magnetic disk unit comprising:
a rotatable magnetic disk for data storage;
a magnetic head which flies above and in close proximity to a data storage surface of said magnetic disk for recording and reading data while the magnetic disk is rotating;
supporting means for supporting said magnetic head and forcing said magnetic head toward said surface of said magnetic disk;
lifting means for affecting said supporting means so as to lift said magnetic head to a position at a predetermined distance from said surface of said magnetic disk;
releasing means for forcing said lifting means to stop affecting said supporting means while said magnetic disk is rotating, the releasing means being operative when a negative pressure is applied thereto; and
pressure transmitting means for transmitting a negative pressure to said releasing means, said negative presuure being created below and in the vicinity of a radially inner region of said magnetic disk while the magnetic disk is rotating.

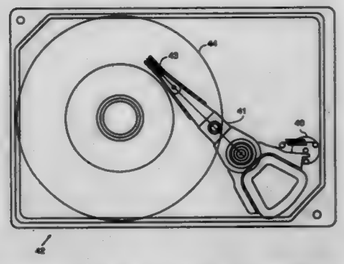
5,296,986

ROTARY INERTIAL LATCH FOR DISK DRIVE ACTUATOR TO PROTECT AGAINST ROTATIONAL SHOCK FORCE

James H. Morehouse, Longmont; James A. Dunckley; David M. Furay, both of Boulder; Richard K. Thompson, Berthoud, and Robert A. Alt, Longmont, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 629,929, Dec. 19, 1990, Pat. No. 5,189,576. This application Sep. 25, 1991, Ser. No. 765,353
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] G11B *5/55, 5/54*
U.S. Cl. 360—106 **21 Claims**

1. A disk drive for storing and/or retrieving information comprising:
a disk comprising a storage medium and rotatable about an axis;
means for rotating said disk;
an actuator rotatable about a pivot and comprising a head for writing information on and/or reading information from said storage medium; and
an inertial latch for preventing a rotational shock force acting on said disk drive from rotating said actuator with respect to said disk drive, said inertial latch comprising:
an inertial body rotatable about an axis;
engagement means joined to said inertial body, said engagement means being capable of engaging said actuator so as to prevent said actuator from rotating about said pivot point when said disk drive is subjected to a rotational shock force; and



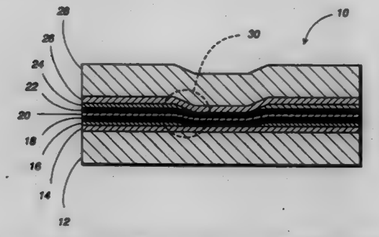
prevention means for preventing said engagement means from engaging said actuator when said disk drive is not being subjected to a rotational shock force.

5,296,987

TAPERED CONDUCTORS FOR MAGNETORESISTIVE TRANSDUCERS

Thomas C. Anthony, Sunnyvale, and James A. Brug, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 5, 1992, Ser. No. 894,389
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 **8 Claims**



1. In a magnetoresistive transducer, a method for reducing Barkhausen noise, comprising the step of:
forming a first conductor for supplying current to an associated magnetoresistive stripe, said magnetoresistive stripe being located above said conductor and traversing a conductor edge, said conductor having a tapered portion at an edge of a transducer track region, wherein said first conductor tapered portion is formed at an angle between about 10° and 65°, and preferably between about 15° and 45°, relative to a transducer substrate.

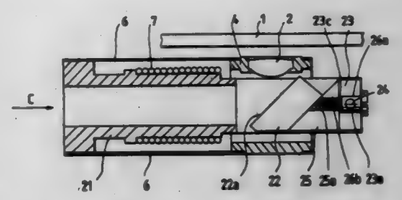
5,296,988

OPTICAL HEAD WITH AN ADJUSTING MECHANISM FOR ADJUSTING THE POSITION OF AN OPTICAL MIRROR

Masahisa Fujino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1992, Ser. No. 882,895
Claims priority, application Japan, May 20, 1991, 3-114593
Int. Cl.[5] H02K *33/18*; G11B *7/00*
U.S. Cl. 360—110 **3 Claims**

1. An optical head for effecting information recording and/or reproducing by using a laser beam emitted from a light source, which is converged by an objective lens to irradiate an optical disk, said optical head comprising:
a carriage for supporting the objective lens and for moving the objective lens in a radial direction with respect to the optical disk;
a deflection mirror, mounted on said carriage, for deflecting the laser beam emitted from the light source toward the objective lens; and
an adjusting mechanism, mounted on said carriage, for adjusting a posture of said deflection mirror on said carriage, said adjusting mechanism comprising: (i) a mirror supporting base for supporting said deflection mirror, (ii) a first adjusting mechanism for causing said mirror supporting base to pivot about an axis that is perpendicular to the optical axis of the laser beam emitted from the light source and that is parallel to a recording surface of the optical disk and (iii) a second adjusting mechanism for causing said mirror supporting base to pivot about the optical axis of the laser beam emitted from the light source.

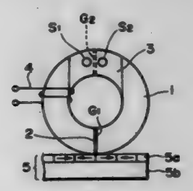


5,296,989

HIGH DENSITY DUAL GAP MAGNETIC HEAD USING POLAR KERR EFFECT

Yoshitaka Ochiai; Hideki Matsuda, both of Kanagawa; Takehiro Nagaki, Miyagi, and Shunichi Hashimoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

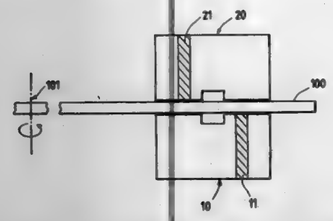
Continuation of Ser. No. 745,334, Aug. 15, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 95,339
Claims priority, application Japan, Aug. 24, 1990, 2-224007
Int. Cl.[5] G11B *5/127, 13/04*
U.S. Cl. 360—114 **14 Claims**



1. A magnetic head comprising:
a magnetic member in the form of a planar ring and defining a magnetic path having a first and a second gap, said first gap facing a magnetic recording medium; and
a vertically magnetizable film formed across said second gap parallel to the plane of said ring;
wherein the state of magnetization in said vertically magnetizable film is detected through the use of a polar Kerr effect, when a linearly polarized light beam is irradiated onto said vertically magnetizable film.

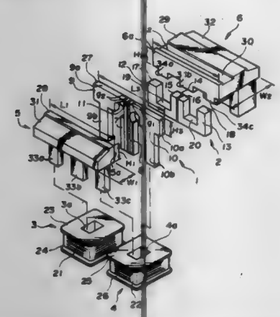
VOL 1160 ISS 4 MR 22 1994 UMI

5,296,990
MAGNETIC HEAD ASSEMBLY FOR DOUBLE-SIDED DISK
Teruo Kamimura, Koide, and Kazuyuki Sorimachi, Nagaoka, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Nov. 5, 1992, Ser. No. 971,790
Claims priority, application Japan, Nov. 13, 1991, 3-325377
Int. Cl.[5] G11B *5/23*
U.S. Cl. 360—119 1 Claim



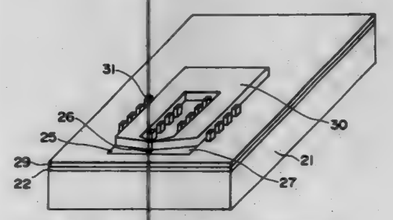
1. A magnetic head assembly comprising a pair of magnetic heads respectively disposed on two sides of a magnetic disk, respective core blocks of said magnetic heads being set at different distances from the center of rotation of the magnetic disk, wherein recording/reproduction gaps of said pair of magnetic core blocks are formed so that the depth of the recording/reproduction gap of one of said magnetic core blocks closer to the center of rotation of the magnetic disk is larger than the depth of the recording/reproduction gap of the other of said magnetic core blocks.

5,296,991
MAGNETIC HEAD
Masayoshi Fujita; Toshimitsu Takano, and Masahiko Yamazaki, all of Miyagi, Japan, assignors to Sony Corporation, Japan
Filed Mar. 9, 1992, Ser. No. 848,528
Claims priority, application Japan, Mar. 13, 1991, 3-072196
Int. Cl.[5] G11B *5/29, 5/265, 5/48*
U.S. Cl. 360—121 9 Claims



1. A magnetic head, comprising:
a front core including a pair of side cores and center cores interposed between the pair of side cores so that first and second magnetic gaps are formed between the side cores and the center cores;
a rear core having a center leg and side legs which contact with the center cores and the side cores of the front core;
coil bobbins having core through-holes into which the side cores and the side legs of the front and rear cores are inserted; and
a pair of sliders which sandwich the front core therebetween;
wherein at least one of the sliders is provided with core reinforcing portions which contact with the center cores and/or the side cores of the front core for reinforcing the same, in which the side cores of the front core and the core reinforcing portions of the sliders which contact with the side cores of the front core are positioned within the core through-holes of the coil bobbins and are in surface contact with each other.

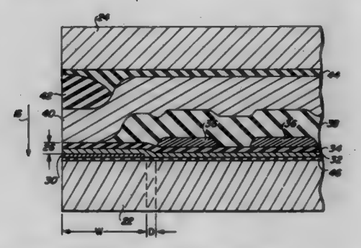
5,296,992
THIN FILM MAGNETIC HEAD HAVING INCREASED CORE CROSS SECTION
Iwao Abe, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 15, 1991, Ser. No. 729,555
Claims priority, application Japan, Jul. 17, 1990, 2-188224
Int. Cl.[5] G11B *5/147*
U.S. Cl. 360—126 2 Claims



1. A thin film magnetic transducer comprising;
a non-magnetic generally planar substrate,
a first thin film magnetic core half formed on a first portion of said non-magnetic substrate,
a second thin film magnetic core half formed on a second portion of said non-magnetic substrate adjacent said first core half to form a magnetic transducing gap between said first and second core halves at a surface of said head facing a travelling magnetic recording medium,
said gap being elongated and extending transverse to the plane of the substrate,
a coil wound around at least one of said first and second thin film magnetic core halves,
said coil comprising a plurality of first coil portions underlying said one core half, a plurality of second coil portions overlying said one core half, and a plurality of third core portions connecting said first and said second coil portions to form said coil, said third coil portions being provided on said non-magnetic substrate at portions uncovered by said one core half;
and a further core portion provided directly on and magnetically coupled to said first and second thin film magnetic core halves at a position remote from said magnetic gap.
2. A thin film magnetic transducer comprising;
a non-magnetic substrate,
a first thin film magnetic core half formed on a first portion of said non-magnetic substrate,
a second thin film magnetic core half formed on a second portion of said non-magnetic substrate having a magnetic gap therebetween at a surface of said head facing a travelling magnetic recording medium,
a coil wound around at least one of said first and second thin film magnetic core halves,
said coil comprising a plurality of first coil portions underlying said one core half, a plurality of second coil portions overlying said one core half, and a plurality of third core portions connecting said first and said second coil portions to form said coil, said third coil portions being provided on said non-magnetic substrate at portions uncovered by said one core half;

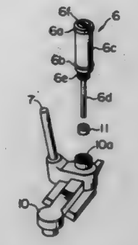
a layer of magnetic material overlying said core halves and said coil, electrical connection terminals provided on an outer surface of said layer, and conducting means interconnected between said terminals and said coil.

5,296,993
MAGNETIC HEAD WITH MAGNETIC SUBSTRATE AND AN ENHANCED POLETIP THEREON
Joseph A. Aboaf; Edward V. Denison; Vincent N. Kahwaty, and Gerald Steving, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 881,286, May 11, 1992, abandoned, which is a division of Ser. No. 694,611, May 2, 1991, Pat. No. 5,142,768. This application Mar. 10, 1993, Ser. No. 29,346
Int. Cl.[5] G11B *5/187, 5/23, 5/31*
U.S. Cl. 360—126 27 Claims



1. A magnetic head assembly comprising:
a supporting substrate of a magnetic material with a contact recording medium bearing surface provided at an edge of said substrate,
a first thin layer of a magnetically soft material on said substrate, said first thin film layer having an edge providing a contact recording medium bearing surface, said first thin film layer and said supporting substrate forming a first bottom pole piece for the magnetic head assembly with a magnetic flux path through the supporting substrate to said first thin film layer;
a magnetic transducing gap forming insulation layer with an edge providing a contact recording medium bearing surface, said gap layer covering said first thin film layer and said substrate;
a conductor coil placed on said magnetic gap layer recessed from the bearing surface edge of said gap layer;
a coil insulating layer covering said conductor coil and extending partially from said coil to the bearing surface edge of said gap layer;
a second thin film layer of magnetically soft material insulated from said conductor coil and connected at a back gap to said substrate, said second thin film layer having an edge providing a contact recording medium bearing surface and forming a second top pole piece for the magnetic head assembly;
a leveling layer of an insulating material covering said second pole piece and having an edge providing a contact recording medium bearing surface;
a closure block of a non-magnetic ceramic bonded to said leveling insulating layer and having an edge providing a contact recording medium bearing surface; and
said edge of said first thin film layer, said magnetic transducing gap forming insulation layer, and said second thin film layer forming said magnetic transducing gap at said contact recording medium bearing surface, said first thin film layer extending from said bearing surface toward said conductor coil a distance greater than 80% of the distance from said bearing surface to said conductor coil, but less than the distance from said bearing surface to said conductor coil.

5,296,994
MAGNETIC TAPE GUIDE MECHANISM FOR MAGNETIC RECORDING/REPRODUCING APPARATUS
Noboru Katohno; Yasuhiro Hashiguchi, both of Mito, and Masabumi Katsunuma, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Katsuta, both of Japan
Filed Sep. 8, 1992, Ser. No. 941,682
Claims priority, application Japan, Oct. 22, 1991, 3-273753
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—130.21 2 Claims



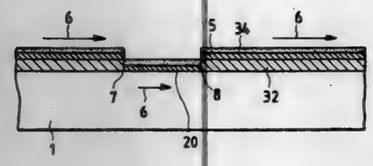
1. A magnetic tape guide mechanism for a magnetic recording/reproducing apparatus, the magnetic tape guide comprising:
a magnetic tape guide having a cylindrical rotary roller for conveying a magnetic tape drawn out from a cassette in a state where the magnetic tape is would around a rotary cylinder with a magnetic head mounted thereon at a predetermined angle, said magnetic tape guide further having at least a shaft of said rotary roller and a threaded portion fixed to said shaft;
a base on which said magnetic tape guide is retained, said base having a shaft hole into which said shaft is inserted, a larger-inner-diameter hole having a larger inner diameter than said shaft hole, and a threaded hole into which said threaded portion of said magnetic tape guide is threaded; and
a substantially cylindrical resilient member located in said large-inner-diameter hole and surrounding said shaft.

5,296,995
METHOD OF MAGNETICALLY RECORDING AND READING DATA, MAGNETIC RECORDING MEDIUM, ITS PRODUCTION METHOD AND MAGNETIC RECORDING APPARATUS
Seiji Yonezawa, Hachioji; Keiji Kataoka, Kawagoe; Hajime Fukke, Tama; Tsuneo Terasawa; Keizo Kato, both of Hachioji; Harukazu Miyamoto, Kodaira, all of Japan; Klaus Kinstätter, Bamberg, Fed. Rep. of Germany; Masaru Ito, Sagamihara, and Norio Ohta, Iruma, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 462,565, Jan. 9, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 549
Claims priority, application Japan, Jan. 11, 1989, 1-2736; Jan. 30, 1989, 1-17633; Feb. 13, 1989, 1-31034; Feb. 20, 1989, 1-38220; Mar. 15, 1989, 1-60967; Apr. 24, 1989, 1-101623; Jun. 19, 1989, 1-154570
Int. Cl.[5] G11B *9/02, 9/08;* B05D *1/32;* G06K *19/06*
U.S. Cl. 360—135 23 Claims

15. A magnetic recording medium comprising a substrate having preformed pits therein and a magnetic film overlying a

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surface of the substrate including the pits preformed therein so as to enable a magnetic field occurring at edges of each of the



preformed pits to be detected by a magnetic head scanning the magnetic recording medium.

5,296,996

DEVICE FOR MOTOR AND SHORT-CIRCUIT PROTECTION

Tomas Hansson, Enköping, and Per-Olof Karlström, Västeras, both of Sweden, assignors to Asea Brown Boveri AB, Västeras, Sweden

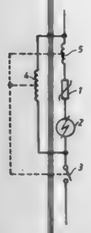
PCT No. PCT/SE91/00076, § 371 Date Jun. 26, 1992, § 102(e) Date Jun. 26, 1992, PCT Pub. No. WO91/12643, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 4, 1991, Ser. No. 854,623

Claims priority, application Sweden, Feb. 8, 1990, 9000453-2

Int. Cl.[5] H02H *3/093*

U.S. Cl. 361—24 **11 Claims**



1. Device for overload and short-circuit protection, comprising:

a contact device and an electric tripping circuit connected in series with the contact device;

said tripping device comprising two current branches connected in parallel, a first current branch comprising a first thermistor providing overload protection with thermal delay, said first thermistor having a positive temperature coefficient of resistivity;

a second current branch comprising an excitation coil operatively connected to the contact device for opening thereof during an overcurrent condition;

said first current branch further comprising a second thermistor connected in series with said first thermistor and providing short-circuit protection, said second thermistor having a positive temperature coefficient of resistivity and being made of electrically conductive polymer composite to change to a high resistance state only if the short-circuit current amounts to substantially at least 15 times the rated current of the device.

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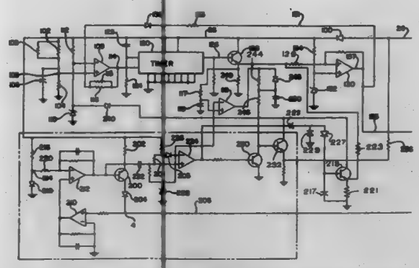
SYSTEM FOR PROTECTING A BATTERY

Arnold L. Betton, Kings Beach, and Edgar A. Hirzel, Granada Hills, both of Calif., assignors to Baton Labs, Inc., Granada Hills, Calif.

Continuation-in-part of Ser. No. 679,535, Apr. 2, 1991, Pat. No. 5,200,877, which is a continuation-in-part of Ser. No. 504,238, Apr. 4, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 985,902

Int. Cl.[5] H02H *3/24*

U.S. Cl. 361—92 **12 Claims**



1. For use in conjunction with a vehicle having a battery, an ignition system, and at least one electrically powered load connected to the battery, a device adapted to electrically disconnect the battery from the at least one load whenever the battery energy falls below a predetermined value, comprising:

a normally closed main switch connected in series between the battery and the load;

means for sensing a battery characteristic indicative of battery drain and for generating an output signal whenever an energy capacity of said battery falls below a predetermined value;

timing means responsive to said sensing means output signal for generating a timing output signal a delay interval after said sensing means output signal;

means responsive to said timing means output signal for opening said switch;

means for generating a signal when the engine is running; and

means, including a pulse pump circuit, for inhibiting generation of said timing output signal responsive to said engine running signal.

5,296,998

LIGHTNING ARRESTER FOR UNDER-OIL APPLICATIONS

Ronny D. Jergenson, Hickory, and Gary D. Davis, Taylorsville, both of N.C., assignors to General Electric Company, Malvern, Pa.

Filed Nov. 27, 1991, Ser. No. 799,092

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—117 **13 Claims**

1. A lightning arrester for use under oil, comprising:

(a) a generally vertically-extending tubular housing having upper and lower ends and comprising a tubular base section at said upper end, a tubular cap section at said lower end, and a tubular spacer section between said base and cap sections, said sections being disposed in substantially aligned relationship to define a generally vertically-extending internal chamber within said tubular housing,

(b) means for securing said base section to stationary structure independently of said spacer and cap sections,

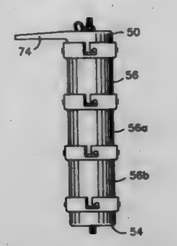
(c) a stack of arrester elements and contacts at opposite ends of said stack located within said internal chamber, one of

said contacts being a line contact having a normal location within said tubular base section,

(d) first locking means for holding said base section and said spacer section together in substantially aligned relationship,

(e) second locking means for holding said spacer section and said cap section together in substantially aligned relationship, and in which:

(f) said first locking means is substantially weaker than said second locking means in ability to resist separation of the



tubular sections between which the respective locking means are located, whereby housing-rupturing pressure within said internal chamber resulting from an arrester failure causes separation of said spacer section from said base section while said spacer section remains locked to said cap section, and

(g) motion-limiting means is provided for holding said line contact within or immediately adjacent said tubular base section in the event of separation of said spacer section from said base section in response to a buildup of housing-rupturing pressure within said internal chamber.

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IGNITER ASSEMBLY

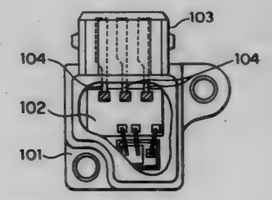
Masaaki Taruya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 699,107, May 13, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,344

Claims priority, application Japan, May 16, 1990, 2-124216

Int. Cl.[5] F02P *3/00*

U.S. Cl. 361—247 **4 Claims**



1. An igniter assembly comprising:

a casing;

an electronic circuit unit supported by and enclosed within said casing;

an electrical connector housing fixedly attached to said casing; and

a plurality of connector terminals electrically insulated and separated from each other and being supported by and partially enclosed within said electrical connector housing so that, when said connector housing is attached to said casing, one end of each connector terminal can be placed in direct contact with said electronic circuit unit.

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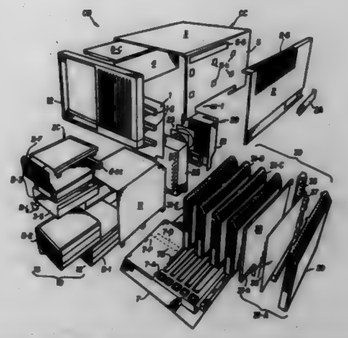
PACKAGED CIRCUIT-BOARDS

D. Edmond Freige, Los Altos, and Richard N. Hibbs, Palo Alto, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 22, 1989, Ser. No. 411,427

Int. Cl.[5] H05H *7/20*

U.S. Cl. 361—692 **28 Claims**



1. Circuit package means for use with prescribed base means that includes receiving-board means and superposed deck means including slot means and deck-vent holes, this package means comprising: circuit board means including connector means arranged to be removably connected into the receiving-board means; and nonconductive envelope means constructed to house and and closely surround said circuit board means, said envelope means being relatively square and including tang means, projected centrally from a bottom-edge portion thereof surrounding said connector means, and being arranged and adapted to interfit with a receiving one of said slot means in said deck means, said bottom-edge portion also including vent aperture means adapted for registry with respective ones of said deck vent holes;

said envelope means also including upper vent means along an upper-edge portion, opposite said bottom-edge portion, and also including cooling-vent slit means in other portions of said envelope means whereby to conduct coolant-air from upper portions thereof, down across the circuit-board means, to exit through said vent aperture means in said bottom-edge portion and onto said receiving board means for cooling thereof.

5,297,001

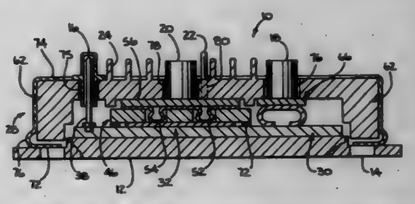
HIGH POWER SEMICONDUCTOR ASSEMBLY

Robert J. Sterling, Rockton, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 8, 1992, Ser. No. 958,154

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—717 **32 Claims**



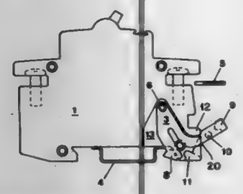
1. An insulated gate bipolar transistor assembly comprising:

an insulated gate bipolar transistor die having gate, at least one emitter and collector electrodes and first and second opposed surfaces;

VOL 1160 ISS 4 MR 22 1994

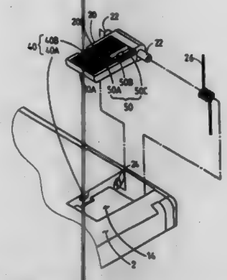
a heat conductive electrically insulative substrate thermally coupled to the first surface for conducting heat away from the first surface of the die and having conductors for conducting electric current between the gate electrode and a gate terminal and a collector electrode and a collector terminal of the assembly;
a first heat radiator thermally coupled to the substrate for radiating heat flowing from the first surface of the die through the heat conductive insulative substrate;
a heat conductive electrical insulator having first and second surfaces with the first surface being thermally coupled to the second surface of the die and a plurality of apertures aligned with the emitter electrode of the die;
an emitter contact disposed on the second surface of the insulator having a plurality of spring contacts extending through the apertures of the insulator for conducting electric current between the emitter electrode and an emitter terminal of the assembly; and
a second heat radiator which is electrically insulative and thermally coupled to the emitter contact for radiating heat flowing from the second surface of the die through the emitter contact.

5,297,002
DEVICE FOR RAPID ATTACHMENT OF SERIALLY-MOUNTED ELECTRICAL APPARATUS
Peter Flohr, Kahl/Main, Fed. Rep. of Germany, assignor to Heinrich Kopp GmbH & Co. KG, Kahl, Fed. Rep. of Germany
PCT No. PCT/DE91/00634, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO92/08264, PCT Pub. Date May 14, 1992
PCT Filed Aug. 5, 1991, Ser. No. 859,730
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1990, 4034307
Int. Cl.[5] H02B *1/20*
U.S. Cl. 361—652 **8 Claims**



1. A device for rapid releasable attachment of electrical serially-mounted apparatus, said apparatus having a housing (1) having bearing holes formed therein on a mounting rail (4), comprising:
a resiliently displaceable coupling member (3) on the housing (1) of the apparatus, for engaging the mounting rail;
said housing having a wall recess (13) and said coupling member (3), being radially pivotable in the region of the wall recess (13) of the housing (1);
said coupling member having the form of a U-shaped arc of elastic material having two legs on which inwardly-extending pins are attached for engagement in bearing holes (6) of the housing (1);
said coupling member having a connector web which is provided on the longitudinal side with a slot (7) continuing into the two legs, for mutually subdividing the connector web into an engagement end (8) for securing on the mounting rail (4), and an activating end (9) inherently resiliently lockable on the housing (1) opposite the bearing holes (6).

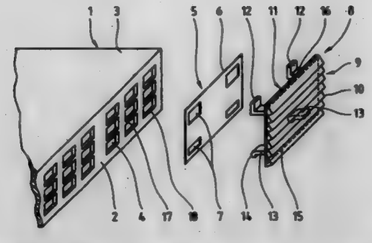
5,297,003
COMPUTER, KEYBOARD APPARATUS, AND KEYBOARD TILTING MECHANISM
Hideo Nomura, Yokohama, and Yoshiharu Uchiyama, Isehara, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 8, 1992, Ser. No. 958,062
Claims priority, application Japan, Nov. 10, 1991, 3-290406
Int. Cl.[5] H05K *5/02*; G06F *1/16*
U.S. Cl. 361—680 **12 Claims**



1. A computer having:
computer body means for enclosing electronic circuits and including a computer body;
a keyboard supported by a top side of said body;
recesses in a bottom side of said computer body;
leg means, including leg members, for sliding to one side of the recesses and for rotating about an axis for extending the leg members from the recesses to support and tilt the computer body;
spring means for biasing said leg members to rotate about said axis so as to open and extend from said recesses and to slide in a first direction of said axis; engagement means for selectively engaging said leg members with said recesses to hold the leg members in the recesses in spite of the force caused by said spring means to rotate said leg members and for selectively releasing said engagement to extend the leg members from the recesses; and
handling means for sliding said leg members along an opposite, second direction of said axis for releasing said engagement means to extend said leg members from said recesses, including handling portions provided on an exposed surface of said leg members in said recesses.

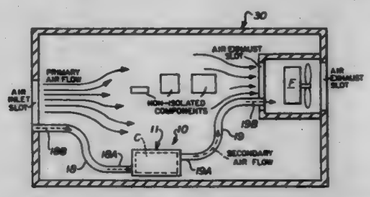
5,297,004
HOUSING
Paul Mazura, Karlsbad/Langensteinbach, Fed. Rep. of Germany, assignor to Schroff GmbH, Straubenhardt, Fed. Rep. of Germany
Filed Jun. 1, 1993, Ser. No. 69,603
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1992, 4218007
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—690 **5 Claims**

1. A housing for electrical equipment having walls, comprising:
a side wall having at least one ventilation opening;
a cover plate for closing the at least one ventilation opening, the cover plate having at least one recess; and
a louver arranged in front of the at least one ventilation opening and having a receptacle for the cover plate so the cover plate can be inserted between the at least one ventilation opening and the louver; and



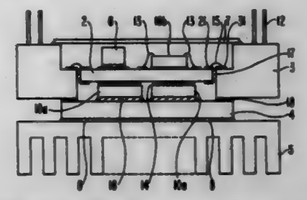
fastening means for attaching the louver to the side wall through the at least one recess in the cover plate and engaging in the at least one ventilation opening.

5,297,005
APPARATUS AND METHOD FOR COOLING HEAT GENERATING ELECTRONIC COMPONENTS IN A CABINET
Meredith C. Gourdine, Houston, Tex., assignor to Energy Innovations, Inc., Houston, Tex.
Filed Sep. 28, 1992, Ser. No. 952,308
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—697 **24 Claims**



3. Apparatus for cooling electronic components within a cabinet of the type having air inlets and air outlets and an exhaust fan which creates a primary air flow across the components between the air inlets and air outlets in the cabinet and exhausts the air to the cabinet exterior, said apparatus comprising;
an enclosure formed of electrically non-conductive material having an interior cavity configured to enclose at least one predetermined heat generating electronic component and isolate it from other electronic components in the cabinet,
air inlet means on said enclosure connected with the air inlets of the cabinet and air outlet means on said enclosure connected with the air outlets of the cabinet and the exhaust fan, and
said air inlet means, said enclosure, and said air outlet means defining a secondary air flow pathway from the air inlets of the cabinet across the enclosed heat generating electronic component to the air outlets and exhaust fan of the cabinet which is isolated from the primary air flow,
the fan in operation creating the primary air flow across the non-isolated components between the air inlets and air outlets of the cabinet and exhausting the air to the cabinet exterior, and
simultaneously creating a separate secondary air flow through said secondary air flow pathway across the enclosed heat generating electronic component between the air inlets and air outlets of the cabinet and exhausting the secondary air flow to the cabinet exterior, such that
the non-isolated components and the enclosed heat generating electronic component are independently cooled by the primary air flow and said secondary air flow, respectively, and the heat generated by the enclosed heat generating electronic component and the non-isolated components is not mixed within the cabinet to maximize cooling of all components within the cabinet.

5,297,006
THREE-DIMENSIONAL MULTI-CHIP MODULE
Masataka Mizukoshi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 21, 1992, Ser. No. 916,264
Claims priority, application Japan, Aug. 13, 1991, 3-202089
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—704 **18 Claims**



1. A multi-chip module having a plurality of semiconductor elements arranged three-dimensionally, said module comprising:
a substrate having first and second surfaces and including wiring patterns providing a respective plurality of electrode terminals on each of said surfaces;
a first semiconductor element having a front face and a back surface, said first element being mounted on the substrate with its front face on said first surface of the substrate and being operatively connected to electrode terminals on said first surface;
a second semiconductor element mounted on the second surface of the substrate, said second element being operatively connected to electrode terminals on said second surface;
a heat conductive base having a contact surface which faces the first surface of the substrate, said contact surface being in thermal contact with the back surface of said first element;
a support base having a plurality of outer leads and a plurality of electrode terminals operatively connected to the outer leads, said base having an opening therein, said substrate with the semiconductor elements thereon being disposed in said opening, said electrode terminals on the support base being operatively connected to said electrode terminals on the substrate, said support base being affixed to said heat conductive base;
a cap disposed on said support base so as to face the second surface of the substrate, said heat conductive base, said support base and said cap forming an enclosure for said substrate; and
an elastic member of heat conductive material disposed between the inside surface of said cap and the second surface of the substrate, said member being positioned and arranged for conducting heat generated by elements on said second surface of the substrate to said cap.

5,297,007
E/M SHIELDED RF CIRCUIT BOARD
Charles C. Deyo, Rockledge; Thomas R. Wolters, Satellite Beach, and Robert H. Oas, Melbourne, all of Fla., assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 19, 1990, Ser. No. 585,333
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—707 **2 Claims**

1. A circuit board of the type having portions thereon with a higher heat generating nature with respect to other portions

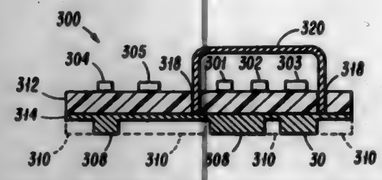
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of the board and further having portions thereon with a higher degree of need for E/M shielding with respect to other portions of the board; the circuit board comprising:

(a) a printed circuit board having a plurality of electronic components mounted thereon;

(b) said printed circuit board further having a slot extending therethru, said slot completely encircling a portion of the printed circuit board having a relatively higher degree of need for E/M shielding;

(c) a backing plate soldered to said printed circuit board, said backing plate having various thickness, wherein the thickness is predetermined in relation to predetermined characteristics for particular components of corresponding portions of the printed circuit board,



said predetermined characteristics are predetermined mounting requirements for said particular component; and,

(d) a metallic E/M shielding cover disposed over a portion of the printed circuit board and extending through said slot in the printed circuit board; said shielding cover further contacting said backing plate;

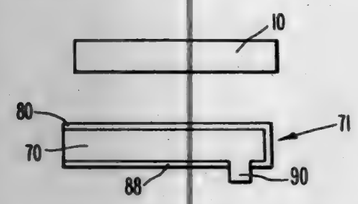
WHEREBY, an improved circuit board having enhanced E/M shielding characteristics and hear dissipating characteristics is provided.

5,297,008

POLYMERIC COMPOSITE LEAD WIRE AND METHOD FOR MAKING SAME

Howard S. Estes, Houston, Tex., assignor to Compaq Computer Corporation (COMPAQ), Houston, Tex.

Filed Dec. 31, 1991, Ser. No. 815,425
Int. Cl.[5] H01R *9/00*
U.S. Cl. 361—773 24 Claims



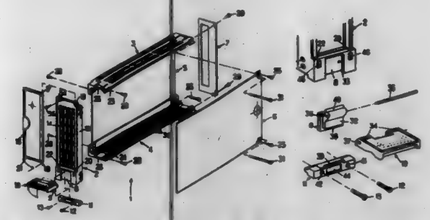
1. An electrical lead comprising an elongated polymeric dielectric core and a conducting metal layer disposed thereon, said conducting metal layer having a first conductive path disposed along a first peripheral edge region of said polymeric dielectric core, and a second conductive path disposed along a second peripheral edge region of said polymeric dielectric core and electrically insulated from said first conductive path.

5,297,009

DEVICE FOR LOCKING IN A RACK A DRAWER FOR ELECTRONIC BOARD(S)

Francois Gelez, Bry Sur Marne; Joël Aube, Ecardeaville Sur Eure, and Gérard Dector, Carrouges, all of France, assignors to Audio Visuel Systemes, Montreuil Sous Bois, France

Filed Jun. 25, 1992, Ser. No. 903,470
Claims priority, application France, Jun. 25, 1991, 91 07769; Jul. 3, 1991, 91 08288
Int. Cl.[5] H05K *7/14*
U.S. Cl. 361—796 12 Claims



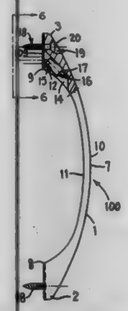
1. A device for locking in a rack the front face of a drawer for electronic board(s), which comprises a strike plate carried by said rack, a bolt carried by said front face to slide between a position locking it in said strike plate and an unlocking position, a lever pivoted on said bolt and movable in translation together with the latter, and complementary cam means carried by said lever and said front face, said complementary cam means cooperating together to displace said bolt in translation between said locking and unlocking positions when said lever is turned respectively between a position in which it is substantially folded down along said front face and a gripping position in which it projects with respect from said front face.

5,297,010

ILLUMINATED GRAB HANDLE

Richard J. Camarota; James H. Miller, both of Holland, and Steven R. Isenga, Zeeland, all of Mich., assignors to ITC Incorporated, Zeeland, Mich.

Filed Aug. 28, 1992, Ser. No. 937,229
Int. Cl.[5] B60Q *1/32*
U.S. Cl. 362—80 12 Claims



1. A lighted grab handle for mounting on an outside wall of a vehicle, comprising:

a rigid member of generally bent configuration including a pair of end portions mountable on a wall in spaced relation from each other and joined by a central portion spaced away from such wall, so as to allow insertion of a human hand between handle and wall, said end portions each having a mounting face opposable to such wall, said member having an external surface for facing away from such wall and having an interior surface for facing toward such wall;

a chamber in a given said end portion of said member, said chamber being defined by a passage opening through the mounting face of one end portion of said member and extending from the mounting face, into said member end portion, and toward the central portion of said member, said chamber further including a recess opening through the interior surface of said one end portion and facing toward the other end portion and into a space bounded by the central portion of said member and such wall on which the handle is mounted, said recess being open to said passage;

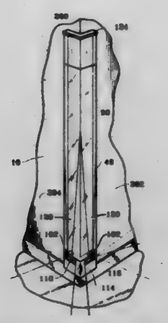
a light socket mountable in said passage for locating a light bulb where the passage communicates with said recess so that light emitted from the bulb shines out through said recess into the space between the central portion of said member and such wall on which the handle is mounted to illuminate an area of such wall.

5,297,011

LIGHTED CORNER GUARD

George Trianfol, 935 Seton Ct., Wheeling, Ill. 60090

Filed Aug. 12, 1992, Ser. No. 928,993
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—147 15 Claims



1. A lightable corner guard comprising:

an elongated substantially right angled rigid support structure having a length and a width, said width demarcated by two side edges defining an inner surface and an outer surface, said inner surface adapted to be secured to at least a portion of a protruding corner edge of two adjoining walls;

an elongated transparent flexible plastic cover releasable engageable to said two side edges of said support structure defining a deformable chamber between said outer surface of said support structure and an inner surface of said cover; and

a means for illumination of said outer surface of said support structure, said means for illumination comprised of at least one lamp, a lamp lighting control circuit, and an electrical source to energize said lamp in response to said control circuit

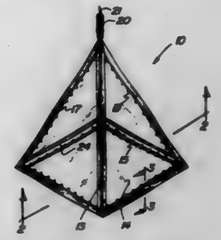
whereby activation of said control circuit directs said electrical source to energize said lamp providing illumination of said outer surface of said support structure that is viewable through said cover.

5,297,012

PYRAMIDAL SIGNAL LIGHT

Arthur L. Fletcher, 34945 Cella La., Yucaipa, Calif. 92399

Filed Sep. 21, 1992, Ser. No. 948,105
Int. Cl.[5] F21Q *3/00*; F21N *7/04*
U.S. Cl. 362—252 3 Claims



1. A pyramidal signal light, comprising,

a square base frame having a translucent floor plate contained therewithin, and

four isosceles frames, with each of the isosceles frames contiguously and integrally mounted to the base frame and the four isosceles frames secured together to form a pyramidal housing, and

each of the isosceles frames having a translucent panel mounted therewithin, and

a support cable mounted to an apex of the housing spaced from the base frame, and

a first light arrays mounted within the housing coextensively within the base frame, and four second light array extending from the base frame to the apex within the housing, and each of the light arrays in electrical communication relative to one another, and electrical power supply cord directed through the support cable directed to each light array, and the base frame including a continuous reinforcing web mounting the first light array, and each intersection of said four isosceles frames including a further reinforcing web extending between adjacent of said isosceles frames, and each of the reinforcing webs mounting one of said light arrays.

5,297,013

OUTDOOR LIGHT FIXTURE

Milly S. Hall, Dallas, Tex.; Donald L. Rohrs, Overland Park, Kans., and Jung C. Hung, Richmond, Canada, assignors to Brinkmann Corporation, Dallas, Tex.

Filed Aug. 9, 1991, Ser. No. 742,916
Int. Cl.[5] F21V *3/00*
U.S. Cl. 362—363 13 Claims

1. A light fixture comprising:

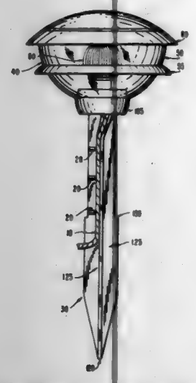
a support means for supporting the components of the light fixture;

a light source holding means mounted on the support means;

a light source means adapted to be held by the light source holding means;

an inner refracting lens that is mounted to the light fixture such that the light source means is situated in the interior of the inner refracting lens, said inner refracting lens comprising means for refracting light emitted from the light source means;

a globe assembly, said globe assembly being mounted to the light fixture such that is encloses the inner refracting lens;



and wherein the globe assembly comprises an opaque top, said opaque top comprising a reflective inner surface.

5,297,014

SWITCHING DC POWER SUPPLY APPARATUS

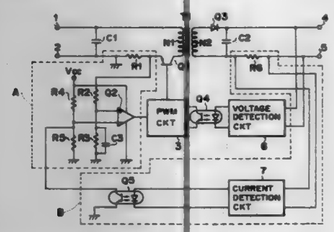
Masayoshi Saito, Chiba, and Takashi Birumachi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1992, Ser. No. 816,725

Claims priority, application Japan, Jan. 9, 1991, 3-001115; Jul. 16, 1991, 3-175237; Oct. 25, 1991, 3-279592

Int. Cl.[5] H02M *3/335;* **H02H** *7/122*

U.S. Cl. 363—21 **13 Claims**



1. A DC power supply apparatus comprising:

a switching transformer having a switching element;

primary current detection means, arranged on a primary side of said transformer, for detecting a current flowing in said switching element;

secondary voltage detection means, arranged on a secondary side of said transformer, for detecting an output voltage of the secondary side;

feedback means for feeding back the detected output voltage detected by said secondary voltage detection means to said switching element to maintain the output voltage at a constant value;

secondary current detection means for detecting an output current from said secondary side of said transformer; and

control means for controlling said switching element on the basis of outputs from said primary and second current detection means such that the output current detected by said secondary current detection means does not exceed a predetermined level.

5,297,015

POWER SUPPLY CONTROL SYSTEM

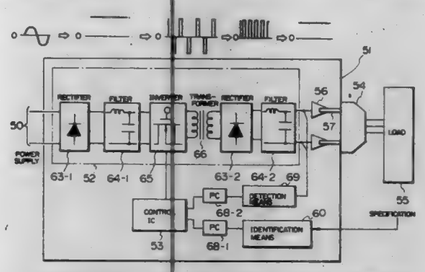
Hideki Miyazaki; Ikuo Yamato; Kenichi Onda, all of Hitachi, Japan; Yasuo Matsuda, Eastchester, N.Y.; Yuzo Morita, Hitachi, Japan; Hidefumi Shirahama, Hitachi, Japan; Norikazu Tokunaga, Hitachi, Japan, and Yutaka Suzuki, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1990, Ser. No. 555,025

Claims priority, application Japan, Jul. 21, 1989, 1-187356; Aug. 11, 1989, 1-206804; Mar. 14, 1990, 2-063805

Int. Cl.[5] H02M *7/537, 7/155;* **H01R** *25/00*

U.S. Cl. 363—146 **27 Claims**



3. A socket with a power conversion function comprising:

conversion means including at least

rectifier means for rectifying power,

smoothing means connected to the rectifier means for smoothing the rectified power,

transformer means connected to the smoothing means for transforming the smoothed rectified power; and

frequency changing means connected at least to the transformer means for changing a frequency of the transformed smoothed rectified power;

means for detecting an output of the conversion means; and

means for controlling the conversion means to make the output of the conversion means detected by the detecting means equal to a desired output of the conversion means.

5,297,016

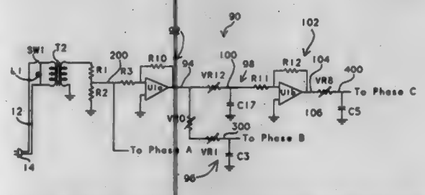
POLYPHASE EMULATOR FOR SINGLE PHASE CIRCUIT

George H. Stephens, Duluth, and R. Wendell Goodwin, Dunwoody, both of Ga., assignors to Schlumberger Industries, Inc., Norcross, Ga.

Filed May 27, 1993, Ser. No. 68,490

Int. Cl.[5] H02M *5/00*

U.S. Cl. 363—149 **4 Claims**



1. A polyphase emulator for use in demonstrating the functionality of a polyphase electricity meter and for operation on a single phase electricity circuit comprising:

a. phase generating circuit means for generating multiple sets of currents and voltages, each of said sets having a nominal predetermined phase relationship with respect to each of the other sets, said phase generating circuit means including means for altering said nominal predetermined phase relationships between said sets of currents and voltages; and

b. a plurality of phase specific circuit means, the number of said phase specific circuit means corresponding to the number of sets of currents and voltages generated by said phase generating circuit means, each of said plurality of phase specific circuit means including means for emulating specific parameters which relate to the phase relationships between the voltage and current within each of said sets as they relate to each other and to the voltage and currents within other ones of said sets.

5,297,017

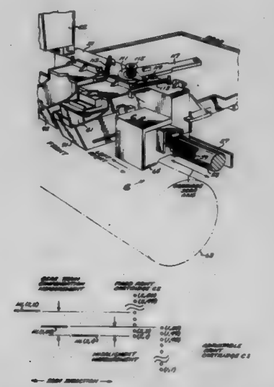
PRINT CARTRIDGE ALIGNMENT IN PAPER AXIS

Robert D. Haselby, San Diego, Calif., and Michael A. Nguyen, Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1991, Ser. No. 785,650

Int. Cl.[5] B41J *2/01, 25/308*

U.S. Cl. 346—1.1 **11 Claims**



1. A method for aligning an operation of printhead cartridges along a media scan axis in a swath printer having (a) a carriage that is movable along a horizontal carriage scan axis in first and second carriage scan directions, (b) independently controlled first and second ink jet printhead cartridges supported by the movable carriage for printing onto a print media that is selectively movable along a vertical media scan axis, each printhead cartridge having as plurality of ink jet nozzles arranged in alignment with the vertical axis such that the nozzles of each cartridge are spaced apart along the vertical axis, the cartridges being positioned relative to each other such that the ink jet nozzles of the first and second printhead cartridges may overlap along the vertical axis, and (c) an optical sensor supported by the movable carriage for imaging a horizontal line and providing an output indicative of a vertical position of said line within a vertical operating range of the optical sensor, the method comprising the steps of:

(A) causing the first and second printhead cartridges to print two non-overlapping horizontal test line segments in as single carriage scan, wherein one horizontal test line segment is printed with a selected nozzle of the first printhead cartridge and the other horizontal test line segment is printed with a selected nozzle of the second printhead cartridge;

(B) determining with the optical sensor respective vertical positions of the horizontal test line segments;

(C) determining a vertical distance between the two horizontal test line segments; and

(D) adjusting an operation of the first and second printhead cartridges along the vertical axis by enabling selected nozzles and adjusting the position of the first and second printhead cartridges relative to each other on a basis of the vertical distance between the two horizontal test line segments so that the enabled nozzle of the first cartridge and the enabled nozzle of the second cartridge that are closest along the vertical axis are vertically apart by substantially one nozzle pitch.

5,297,018

RECORDING APPARATUS

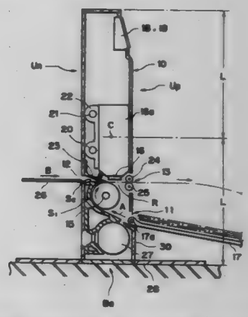
Makoto Kashimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1991, Ser. No. 683,837

Claims priority, application Japan, Apr. 11, 1990, 2-95975

Int. Cl.[5] B41J *2/01, 11/48, 29/02*

U.S. Cl. 346—134 **23 Claims**



1. A recording apparatus for recording on a recording medium, said apparatus comprising:

a first conveyance route having an insertion port and an exhausting port for the recording medium, said insertion port and exhausting port being provided on a same surface of a body of said apparatus so as to convey the recording medium in a U-shaped path;

a second conveyance route having an exhausting port common to said exhausting port of said first conveyance route and an insertion port provided at an opposite side to said exhausting port of said second conveyance route, said second conveyance route conveying the recording medium substantially linearly;

a mounting means for mounting a recording member for recording on the recording medium, said mounting means and said recording member being provided at a common route common to said first and second conveyance routes;

a platen roller for conveying recording medium, said platen roller being provided along said first and second conveyance routes; and

a cover member openably provided at said insertion port of said first conveyance route, said cover member being capable of mounting the recording medium thereon when said cover member is open and protecting said exhausting port and said insertion port of said first conveyance route when said cover member is closed.

5,297,019

CONTROL AND HYDRAULIC SYSTEM FOR LIFTCRANE

Arthur G. Zuehlke, Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 418,879, Oct. 10, 1989, Pat. No. 5,189,605. This application Aug. 13, 1990, Ser. No. 566,751

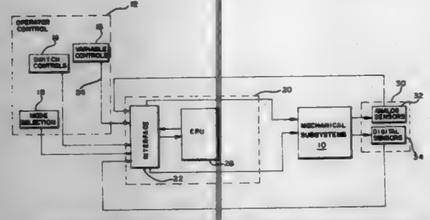
Int. Cl.[5] G05B *11/01;* **G06B** *11/32*

U.S. Cl. 364—140 **23 Claims**

1. A control system for a liftcrane having mechanical subsystems powered by an engine and connected thereto by a closed

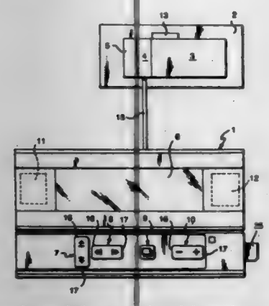
VOL 1160 ISS 4 MR 22 1994 UMI

loop hydraulic system having individual closed hydraulic loops associated with the mechanical subsystems, comprising:
- a first mechanical subsystem powered by the engine and connected thereto by a first closed hydraulic loop,
- a first set of controls for outputting signals for operation of said first mechanical subsystem.
- a first sensor operable to sense the pressure in the closed hydraulic loop and for outputting signals indicative thereof,
- a mode selector for providing an operator with a selection of



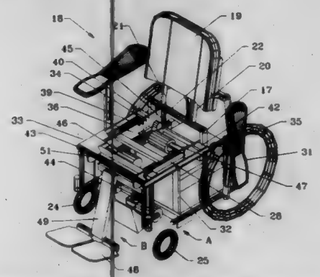
alternative modes of liftcrane mechanical subsystem operation and adapted to output a signal representative of said selection and wherein at least two of the alternative modes of liftcrane mechanical subsystem operation are fully operational modes; and
- a programmable controller connected to said set of controls, said first sensor, and said mode selector, said programmable controller adapted to run a routine operable to output signals to said first mechanical subsystem for the operation thereof based upon the signals output by said set of controls, said first sensor, and said mode selector.

5,297,020
SIMPIFIED OPERATION, ELECTRONIC CONTROL PANEL FOR INDUSTRIAL SEWING MACHINES
Sergio Borile, Via Corsico, 26, 27029 Vigevano, Pavia, Italy
Filed Feb. 28, 1992, Ser. No. 843,504
Claims priority, application European Pat. Off., Mar. 1, 1991, 91830069.0
Int. Cl.[5] G06F *13/46*; D05B *3/02*
U.S. Cl. 364—146 **12 Claims**



1. A control panel for an industrial sewing machine, said sewing machine comprising at least in part, an electric motor controlled through a microprocessor, and a control panel comprising a visual display and keys for programming said microprocessor and controlling said sewing machine,
wherein the improvement comprises:
a) a visual display comprising electronic means including an array of horizontal rows and vertical columns containing means for the display of graphic symbols and sewing operational parameters, which graphic symbols and operational parameters are related to microprocessor programs controlling the sewing operation of said sewing machine; and,
b) keys for programming and controlling said sewing machine, said keys consisting essentially of:
i) a first key means for scrolling through additional graphic symbols and operational parameters;
ii) a second key means for selecting a position within a horizontal row of said visual display;
iii) a third key means for selecting a position within a vertical column of said visual display; and,
iv) a fourth key means for enabling, disabling, or changing the function corresponding to the selected graphic symbol, or for increasing or decreasing the selected operational parameter.

5,297,021
ZERO SHEAR RECLINER/TILT WHEELCHAIR SEAT
James M. Koerlin, 950 Lilac St., Broomfield, Colo. 80020, and J. Leslie Tausz, 27 Laurcleaf Rd., Thornhill, Ontario, Canada
Filed Nov. 16, 1992, Ser. No. 977,271
Int. Cl.[5] G06F *15/20*; B60N *2/02*
U.S. Cl. 364—167.01 **7 Claims**

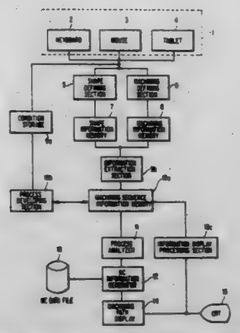


1. A reclining back assembly for a user comprising:
a pivotable backplate assembly support rail;
a carriage slidably affixed to said support rail;
a backrest affixed to said carriage;
means for reclining said pivotable backplate assembly support rail;
means for sensing shear during recline; and
means for closed loop control responsive to the means for sensing shear during recline to eliminate said shear by moving said carriage.

5,297,022
CAD/CAM UNIT DATA GENERATING APPARATUS AND PROCESS
Kotaro Watanabe, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 27, 1992, Ser. No. 826,073
Claims priority, application Japan, Feb. 21, 1991, 3-027234
Int. Cl.[5] G06F *15/46*; G05B *19/403*
U.S. Cl. 364—191 **13 Claims**

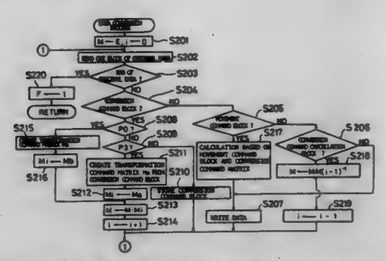
1. A CAD/CAM unit data generating process comprising the steps of:
extracting predetermined information from shape information and machining information;
generating said extracted information as machining sequence information in a defined sequence;

setting conditions for rearranging said machining sequence information;



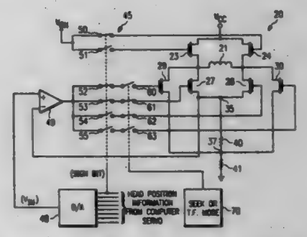
rearranging said machining sequence information in accordance with said set conditions; and
storing said rearranged machining sequence information.

5,297,023
NC DATA EDITING METHOD USING TRANSFORMATION MATRIX AND CONVERSION COMMAND
Masaki Seki, Suginami; Takashi Takegahara, Hachioji, and Takeshi Arakaki, Urawa, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP90/00745, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991, PCT Pub. No. WO90/15373, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 7, 1990, Ser. No. 646,736
Claims priority, application Japan, Jun. 7, 1989, 1-143105; Jul. 7, 1989, 1-174090
Int. Cl.[5] G05B *19/42*; G06F *15/46*
U.S. Cl. 364—192 **10 Claims**



1. An editing method for n-dimensional numerical control commands, comprising the steps of:
(a) adding to the n-dimensional numerical control commands a positional conversion command composed of a positional conversion command code, reference coordinate value data indicating a group of n reference points which are permitted to be arbitrarily set, and corresponding coordinate value data indicating a group of n corresponding points in one-to-one correspondence with the group of n reference points;
(b) adding a conversion cancellation command to the n-dimensional numerical control commands;
(c) automatically calculating and storing a transformation matrix when the conversion command is read from the n-dimensional numerical control commands;
(d) converting an input point associated with a movement command using the transformation matrix, thereby automatically obtaining a post-conversion point, for every movement command read from the numerical control commands, until the conversion cancellation command is read, after the transformation matrix is stored in step (c); and
(e) automatically rewriting the n-dimensional numerical control commands to produce rewritten numerical control commands using the post-conversion point.

5,297,024
VOICE COIL DRIVER WITH VARIABLE GAIN IN SEEK AND TRACK-FOLLOW MODES
Francesco Carobolante, San Jose, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Dec. 1, 1992, Ser. No. 983,690
Int. Cl.[5] G11B *5/02*, *5/596*
U.S. Cl. 360—67 **20 Claims**



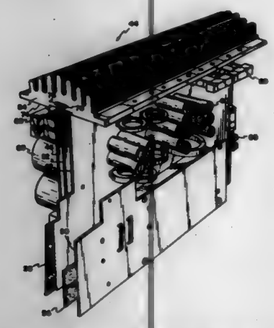
9. A circuit for driving a coil for positioning a read/write head of a memory disk system in which a first signal providing coil current and direction information and a second signal providing seek and track-follow mode selection information are provided, comprising:
- a pair of high side driver transistors having current paths connected between respective terminals of the coil and a voltage source, one or the other of which being selected by said direction information of said first signal;
- a low side driver circuit connected to the terminals of said coil to provide current flow paths selectively in either direction through said coil and a selected one of said pair of high side driver transistors, in response to said direction information of said first signal, said low side driver circuit also being connected to receive the coil current information of said first signal for controlling the current through said coil to position the read/write head;
- and a gain selection circuit for changing a gain of the coil driving circuit in response to the seek and track follow mode selection information of said second signal.

5,297,025
POWER SUPPLY ASSEMBLY
William A. Shoquist, Prior Lake, and Gregory A. Morey, Bloomington, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.
Filed Oct. 28, 1992, Ser. No. 967,445
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—704 **23 Claims**

1. A power supply assembly including electrical components for converting input power into desired output power, comprising:
- a first circuit board having oppositely facing front and back major surfaces and a second circuit board having oppositely facing front and back major surfaces, the back major surfaces of the first and second circuit boards being substantially devoid of the electrical components, the front major surfaces of the first and second circuit boards containing most of the electrical components;
- a heat sink disposed adjacent an edge of the first and the second circuit boards;

an electrically conducting spline member having oppositely facing major surfaces and attached at an edge to the heat sink;

the first and second circuit boards being mounted on the spline member with the back major surfaces of the first and second circuit boards facing one another and the spline member being disposed intermediate of the first and the second circuit boards with the oppositely facing major surfaces of the spline member facing the back major surfaces of the first and second circuit boards so as to form a sandwich-like configuration with the first and second circuit boards being positioned back-to-back and the spline member being disposed therebetween;



an output port of the power supply assembly being disposed on an edge of the second circuit board away from the heat sink; and

electrical connection means for electrically connecting the first and second circuit boards.

5,297,026

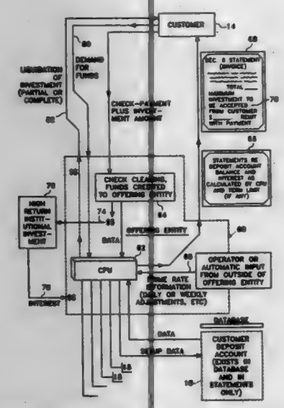
SYSTEM FOR PROMOTING ACCOUNT ACTIVITY

Frank Hoffman, 1760 Willow Rd., Hillsborough, Calif. 94010

Filed Jan. 3, 1992, Ser. No. 816,675

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—408 **10 Claims**



1. A method used by an offering entity such as a seller of goods or services or a firm financing goods and services, for using a computer having a memory with associated data processing means to create and operate investment accounts for investors/purchasers and to provide an attractive rate of return for the investor/purchaser in such investment account while also promoting purchases by the investor/purchaser of products or services from or through the offering firm or entity, comprising:

(a) selecting an interest rate and entering and storing the selected interest rate into the memory of the computer,

(b) each time the investor/purchaser makes a purchase from or through the offering entity, entering and storing a record of the purchase in the computer memory, including the date and the amount of the purchase,

(c) using the data processing means of the computer, automatically calculating a sum of total purchases made by the investor/purchaser during a preselected period,

(d) under the control of the computer, automatically calculating a prescribed proportion of the sum of total purchases made by the investor/purchaser during the preselected period, and automatically issuing a statement to the investor/purchaser for the preselected period, indicating said prescribed proportion of the sum of total purchases as a maximum amount which can be received from the investor/purchaser as an investment.

(e) accepting investment funds from the investor/purchaser up to said prescribed proportion of the sum of total purchases and entering and storing the amount of said investment funds into the computer memory and, under the control of the computer, creating a deposit account for the investor/purchaser in the computer memory and crediting such investment funds in the deposit account of the investor/purchaser in the computer memory,

(f) under the control of the computer, automatically accruing interest for the investor/purchaser in the deposit account by automatically calculating interest due based on the amount and date of investment funds in the investor/-purchaser's deposit account in the computer memory, by applying said selected interest rate stored in the computer memory, and

(g) at a time when the investor/purchaser's deposit account is to be liquidated, using the computer to automatically determine an amount of principal and accrued interest due the investor/purchaser based on amounts and dates stored in the deposit account in the computer memory, and paying the investor/purchaser such determined amount.

5,297,027

METHOD OF AND APPARATUS FOR PROMOTING THE UNDERSTANDING OF A TEXT BY USING AN ABSTRACT OF THAT TEXT

Yasutsugu Morimoto, Kawasaki, and Fumiyuki Yamano, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,365

Claims priority, application Japan, May 11, 1990, 2-122411

Int. Cl.[5] G06F *15/40*

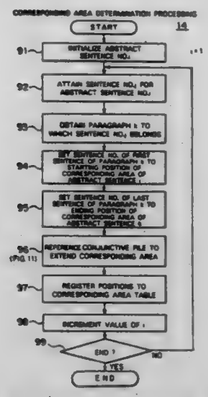
U.S. Cl. 364—419.19 **17 Claims**

1. A method for supporting text understanding using abstract of the text with a computer system including an input unit, an output unit, and a storage, comprising the steps of:

storing documents, abstracts, thereof, relational information indicating relationships between sentences of the abstracts and sentences of the documents, and text information related to sentences of the documents associated with sentences of the abstracts in the storage;

choosing in response to an input from the input unit at least one of the sentences of the abstracts;

extracting from the documents, based on the relational information, sentences of the documents associated with the chosen one abstract sentence;



obtaining the text information related to the extracted sentences of the documents associated with the chosen one abstract sentence; and

outputting the obtained text information to the output unit.

5,297,028

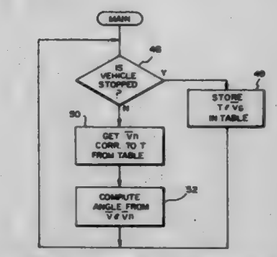
METHOD AND APPARATUS FOR CORRECTING DRIFT ERRORS IN AN ANGULAR RATE SENSOR

Masataka Ishikawa, San Jose, Calif., assignor to Zexel Corporation Daihatsu-Nissan, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,655

Int. Cl.[5] G01P *21/00, 3/00*

U.S. Cl. 364—571.03 **4 Claims**



1. An angular rate sensor for a vehicle comprising:

means for measuring an angular rate;

means for measuring a temperature related to an environmental temperature to which said angular rate sensor is exposed;

means, effective when said vehicle is stopped, for measuring a null voltage of said means for measuring an angular rate;

said null voltage being an output voltage, of said means for measuring an angular rate, when said vehicle is stopped;

table means for storing a plurality of said null voltages together with corresponding measurements of a plurality of said environmental temperatures made at the time said null voltages are stored; and

means, effective during motion of said vehicle, for compensating an output of said means for measuring an angular rate with a null voltage from said table means corresponding to an environmental temperature measured at a time of said compensating.

5,297,029

SEMICONDUCTOR MEMORY DEVICE

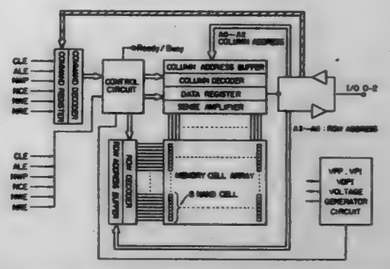
Hiroto Nakai, Yokohama; Hideo Kato, Kawasaki; Kaoru Tokushige, Yokohama, and Masamichi Asano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1992, Ser. No. 993,109

Claims priority, application Japan, Dec. 19, 1991, 3-354872; Mar. 27, 1992, 4-68961

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—238.5 **6 Claims**



3. A semiconductor memory device having a plurality of memory cells disposed in a matrix form, data in said memory cells at a selected row being transferred in parallel to a plurality of data registers, the data transferred in said data registers being serially outputted to an external circuit, the above-described operations being repeated, a plurality of data stored from said external circuit in said plurality of data registers being written simultaneously in said memory cells at a selected row, to allow page data read and write operations, comprising:

address input means for storing a data read start address inputted from said external circuit;

address control means for incrementing an internal address stored in said address input means;

read means for transferring data in said memory cells to said data registers after outputting data of one page from said data registers;

busy signal output means for outputting a busy signal indicating a disabled access to said external circuit while said read means is transferring data;

data input means for writing data from said external circuit into said data registers among said plurality of data registers designated by said internal addresses; and

data setting means for setting data in the other data registers not written with data to a predetermined write data.

5,297,030

METHOD USING BILL AND COIN IMAGES ON A TOUCH SCREEN FOR PROCESSING PAYMENT FOR MERCHANDISE ITEMS

Ali M. Vassigh, Duluth; Mark A. Hastings, Lawrenceville; Michael T. Inderrieden, Tucker; Helen Buchanan-Miller, Lawrenceville, and David M. Rubini, Smyrna, all of Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 8, 1992, Ser. No. 866,650

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—405 **16 Claims**

1. A method for operating a business terminal having a touch screen display device for processing the payment of purchased merchandise items comprising the steps of:

entering on aid business terminal a listing of amounts of merchandise purchased by a customer;

totaling said amounts by said terminal to obtain an amount due;

displaying on a display device a receipt representation including a listing of the merchandise items purchased by the customer and the amount due; and

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displaying on the display device a plurality of possible alternative payment amounts that may be submitted by the



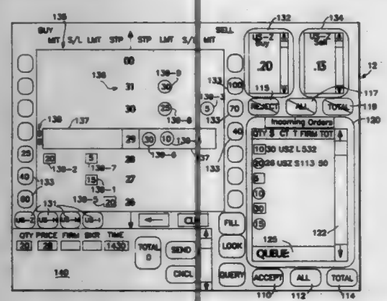
customer based upon the amount due as payment for the purchase of the merchandise items.

5,297,031

METHOD AND APPARATUS FOR ORDER MANAGEMENT BY MARKET BROKERS

Burton J. Gutterman, Glenco; John J. Brogan, Palatine; Thomas Palenik, Oak Forest; Dolores Panek, St. Charles, and Shirley Wu, Roselle, all of Ill., assignors to Chicago Board of Trade, Chicago, Ill.

Filed Mar. 6, 1990, Ser. No. 489,196
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—408 **13 Claims**



1. A broker workstation for managing buy and sell orders submitted to a broker from a plurality of customers for execution in a commodities, securities, securities options, futures contracts or futures options exchange, comprising:

a first means for displaying information concerning a plurality of unexecuted orders submitted to a broker from a plurality of customers for execution, each of said unexecuted orders comprising a quantity of a particular commodity, security, option or contract to be bought or sold;

a computer for receiving order information, for controlling said first displaying means, and for calculating a total of said unexecuted orders for a particular commodity, security, option, or contract at the market price; and

means for entering data into the computer, said data comprising information concerning incoming orders submitted to a broker from a plurality of customers for execution;

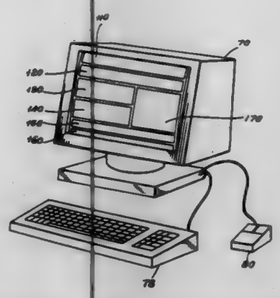
wherein said first displaying means comprises means for displaying selected information about each incoming order, means for displaying selected information concerning orders that have been accepted for execution, and means for displaying said total of unexecuted orders.

5,297,032

SECURITIES TRADING WORKSTATION

Donald R. Trojan, New Canaan, Conn.; Edward F. Keenan, III, Franklin Square, and Henry Hyatt, Glendale, both of N.Y., assignors to Merrill Lynch, Pierce, Fenner & Smith Incorporated, New York, N.Y.

Filed Feb. 1, 1991, Ser. No. 649,761
Int. Cl.[5] G06F *15/30*
U.S. Cl. 364—408 **8 Claims**



1. In combination in a system for controlling the operation of a trader work station as integrated in a network for the trading of financial instruments wherein a database is configured to deliver an on-line datastream to a plurality of traders said system comprising:

data communication means for managing the transfer of on-line data from said database to the work station and the transfer of trader selected transactions to said database;

data compilation means for providing select records to a plurality of separate window interface applications;

market maker application means for displaying a select security and associated market makers with current price quote information, and further permitting the entry of a transaction order by the trader for transmission to the database; and

trader book application means for displaying a select group of securities associated with an individual trader wherein said group of securities include current data on an inside market, depth of said inside market, and direction of said inside market for each security in said group.

5,297,033

DATA PROCESSING METHOD IN NUCLEAR MAGNETIC RESONANCE MEASUREMENT

Yoshitaka Bito, Kokubunji; Kensuke Sekihara, Musashimurayama, and Ryuichi Suzuki, Kokubunji, all of Japan, assignors to Hitachi, Ltd and Hitachi Medical Corp., both of Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,896
Claims priority, application Japan, Sep. 7, 1990, 2-235543
Int. Cl.[5] G06F *15/42*; G01R *33/20*
U.S. Cl. 364—413.2 **14 Claims**

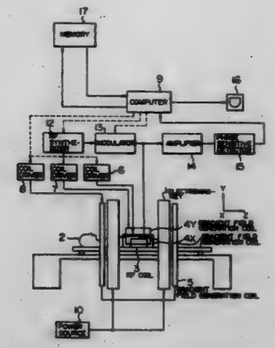
1. A data processing method in nuclear magnetic resonance measurement, comprising the steps of:

measuring nuclear magnetic resonance signals by a nuclear magnetic resonance measuring method in which measurement data lined up on a time axis represent data of a space frequency dimension, and obtained discrete measurement data arrays lined up in a first region limited on a space frequency axis in a certain direction;

determining the position of a point providing the greatest value of a function represented by said measurement data arrays, and estimating the origin of said space frequency axis;

applying a high-pass filter using said origin as a reference to said measurement data arrays;

effecting data extrapolation to said data arrays, to which said high-pass filter is applied, by a one-dimensional linear



prediction analysis, and estimating data arrays of a second region beyond said first region; and

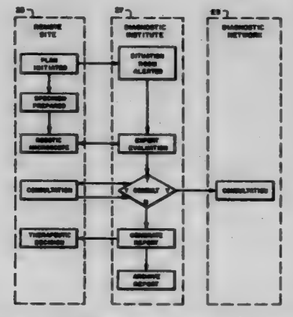
effecting inverse Fourier transformation for said data arrays of said second region and obtaining nuclear spin image data.

5,297,034

TELEPATHOLOGY DIAGNOSTIC NETWORK

Ronald S. Weinstein, Tucson, Ariz., assignor to Corabi International Telemetrics, Inc., Alexandria, Va.

Continuation of Ser. No. 462,991, Jan. 5, 1990, Pat. No. 5,216,596, which is a continuation of Ser. No. 44,907, Apr. 30, 1987, abandoned. This application Jan. 5, 1993, Ser. No. 497
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.02 **20 Claims**



1. A telepathology diagnostic system which allows a pathologist located at a diagnostic center to render pathology diagnostic opinions in connection with specimens located at a site which is remote from the diagnostic center, which system comprises:

a microscope located at the remote site including robotic means for adjusting the relative position of a specimen to the lens, the magnification of the specimen, and the focus of the specimen;

video camera means for collecting video signals from the microscope;

bidirectional communication means for communicating signals between the remote site and the diagnostic center;

a pathologist workstation located at the diagnostic center and comprising a monitor for viewing the video signals collected by the video camera means which signals are sent over the bidirectional communication means, and further comprising microscope control means by which the pathologist generates control signals which are sent over the bidirectional communication means to the robotic means of the microscope so that the pathologist can thereby remotely adjust the relative position of the specimen to the lens, the magnification of the specimen, and the focus of the specimen; and

means for determining and storing coordinates corresponding to the relative position of the specimen to the lens of selected microscopic fields of interest;

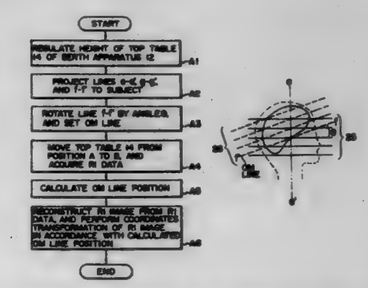
whereby the system provides the pathologist located at the diagnostic center with the ability to remotely adjust the relative position of the specimen to the lens, the magnification of the specimen, and the focus of the specimen to thereby make observations of various microscopic fields on the specimen necessary for rendering a pathology diagnostic opinion, and the ability to store the coordinates of said selected microscopic fields of interest for later reference.

5,297,035

METHOD AND SYSTEM FOR PROCESSING RI IMAGES IN SPECT APPARATUS

Takashi Ichihara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1990, Ser. No. 502,238
Claims priority, application Japan, Apr. 4, 1989, 1-84056
Int. Cl.[5] G06F *15/00*; G01T *1/166*
U.S. Cl. 364—413.13 **6 Claims**



1. A method for processing RI (radioisotope) images of a subject in a SPECT (single photon emission computed tomography) apparatus, comprising the steps of:

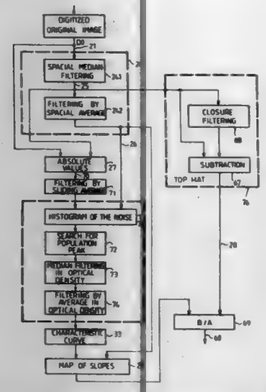
setting an angle of a visible line, said visible line being a line of light projected to an axis of the subject;

acquiring RI data of the subject using a detector rotatably around said axis of the subject;

reconstructing a plurality of RI images perpendicular to said axis of the subject; and

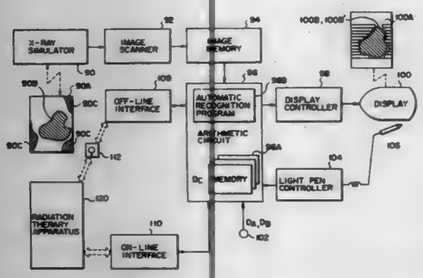
preforming coordinates conversion of said RI images in accordance with said angle of the visible line, to obtain RI images parallel to said visible line.

5,297,036
METHOD FOR THE CORRECTION OF THE MEASUREMENTS OF OPTICAL DENSITY MADE ON A RADIOGRAPHIC FILM
Michel Grimaud, Paris, France, assignor to General Electric CGR S.A., Issy Les Moulineaux, France
Filed Aug. 22, 1991, Ser. No. 748,813
Claims priority, application France, Aug. 31, 1990, 90 10859
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.13 12 Claims



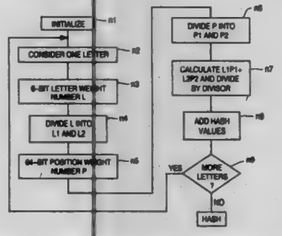
1. A method to correct the measurement of the values of optical density of an image revealed on a radiographic film, the method comprising:
a. measuring a value of optical density for each dot on the film, said measurement leading to a signal of optical density of the radiographed image;
b. correcting said signal of optical density by taking into account non-linearities in the sensitivity of the radiographic film; and
c. carrying out a top-hat transformation on said signal of optical density using a given size of structuring element on said signal of optical density.

5,297,037
X-RAY SIMULATING METHOD AND SYSTEM FOR RADIOTHERAPY PLAN
Akira Ifuku, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 31, 1991, Ser. No. 738,558
Claims priority, application Japan, Jul. 31, 1990, 2-203547
Int. Cl.[5] A61N *5/10*; A61B *6/00*
U.S. Cl. 364—413.15 7 Claims



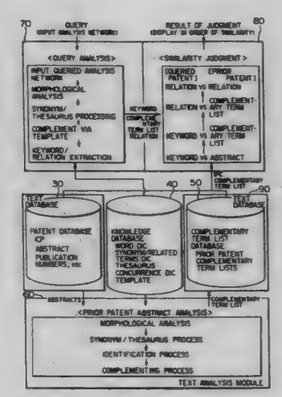
1. A system adapted to use a radiation therapy apparatus, for determining a radiation field in a radiotherapy of a patient, comprising:
acquiring means for acquiring an image showing a diseased region of the patient;
display means for displaying an image acquired by said acquiring means;
marking means for marking the shape of the diseased region in the image displayed on said display means;
determining means for determining data of the radiation field for radiation on the basis of first and second data, the first data being determined on the basis of radiation therapy apparatus data and image acquiring condition data of said acquiring means and expresses data related to the shape of the diseased region by coordinates of the radiation therapy apparatus on the basis of coordinate data for geometrically matching the coordinates of the radiation therapy apparatus with those of said acquiring means, the second data expressing a specification of a limiting unit included the radiation therapy apparatus; and
supplying means for supplying the data of the radiation field determined by said determining means to the radiation therapy apparatus.

5,297,038
ELECTRONIC DICTIONARY AND METHOD OF CODIFYING WORDS THEREFOR
Keizou Saito, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation-in-part of Ser. No. 463,813, Jan. 16, 1990, abandoned, which is a continuation of Ser. No. 289,485, Dec. 21, 1988, abandoned, which is a continuation of Ser. No. 186,721, Apr. 22, 1988, abandoned, which is a continuation of Ser. No. 912,530, Sep. 26, 1986, abandoned. This application Jan. 25, 1991, Ser. No. 646,358
Claims priority, application Japan, Sep. 27, 1985, 60-215691; Jan. 16, 1986, 61-7712; Jan. 27, 1986, 61-15342
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.11 7 Claims



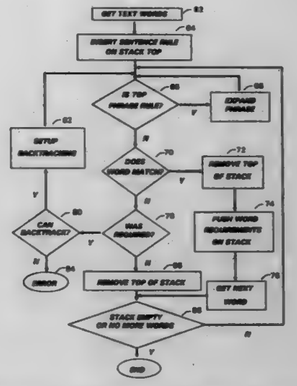
1. A method of using an electronic dictionary, said method comprising the steps of
(a) preliminarily defining letter weight numbers individually corresponding to alphanumeric symbols and position weight numbers individually corresponding to letter positions in any word,
(b) obtaining a word-representing hash value for each of given words to be stored by sequentially calculating letter-representing hash values of individual letters of said each given word from both the letter and position weight numbers respectively corresponding to said individual letters and a predefined divisor and by adding said sequentially calculated letter-representing hash values,
(c) arranging said obtained word-representing hash values sequentially in numerical order separately for even-letter words and odd-letter words,
(d) dividing each of said word-representing hash values into an index section represented by high digits thereof and a data section represented by lower digits thereof,
(e) forming groups of said word-representing hash values according to said index sections separately for even-letter words and odd-letter words,
(f) storing numbers of said word-representing hash values in said groups,
(g) calculating and storing addresses of the first word-representing hash values in said groups.

5,297,039
TEXT SEARCH SYSTEM FOR LOCATING ON THE BASIS OF KEYWORD MATCHING AND KEYWORD RELATIONSHIP MATCHING
Atsushi Kanegami; Kazuhiro Koike; Hirokazu Taki, and Hitoshi Ohgashi, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 27, 1992, Ser. No. 826,090
Claims priority, application Japan, Jan. 30, 1991, 3-9861; Sep. 20, 1991, 3-241327
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—419.13 8 Claims



1. A text search system comprising:
(a) a text database storing texts to be searched;
(b) a complementary term list database storing complementary term lists obtained from said texts via morphological analysis, each complementary term list including lexically divided words of one of said texts and terms related to said words;
(c) query analysis means for receiving an input query and outputting sets of keywords and relations between keywords contained in said input query;
(d) first search means for searching said text database with respect to said keywords obtained by said query analysis means, said first search means counting frequency of said keywords in respective texts stored in said text database and outputting texts in which said keywords occur at a frequency above a predetermined level;
(e) second search means for searching said complementary term list database with respect to said keywords obtained by said query analysis means, said second search means calculating similarity points of respective complementary term lists on the basis of weighted sum of frequency of said keywords in said respective complementary term lists, said second search means outputting complementary term lists having similarity points above another predetermined level;
(f) complementary term list generating means for generating complementary term lists of texts in response to said texts outputted from said first search means;
(g) third search means for searching among complementary term lists outputted from said second search means and said complementary term list generating means, for occurrences of said sets of keywords and relations outputted from said query analysis means.

5,297,040
MOLECULAR NATURAL LANGUAGE PROCESSING SYSTEM
Franklin T. Hu, 2813 Whitworth Ave., S., Renton, Wash. 98055, assignor to Franklin T. Hu
Filed Oct. 23, 1991, Ser. No. 781,761
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—419.08 8 Claims



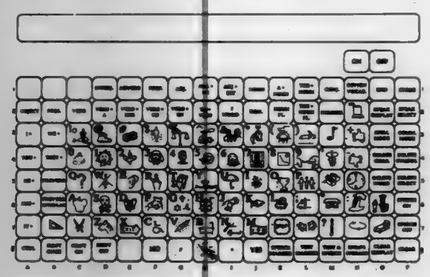
1. Apparatus for the analysis of digitally encoded natural language, such apparatus comprising
means for receiving encoded natural language text for processing,
dictionary means for storing words of the natural language in which each word in the dictionary can have a rule which specifies the types of words or phrases that can follow each word in the dictionary and their syntax, processing means for analyzing a sentence by verifying that the next word or phrase in a sentence is allowed by the rules contained in the previous words.

5,297,041
PREDICTIVE SCANNING INPUT SYSTEM FOR RAPID SELECTION OF AUDITORY AND VISUAL INDICATORS
Clifford Kushler, Wooster, Ohio; Bruce R. Baker, Pittsburgh, Pa.; David Hershberger, Millersburg, Ohio; Edward Gasser, Sterling, Ohio, and Barry Romich, Wooster, Ohio, assignors to Semantic Compaction Systems, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 536,022, Jun. 11, 1990, Pat. No. 5,097,425. This application Mar. 16, 1992, Ser. No. 851,899
Int. Cl.[5] G06F *15/21, 3/023*
U.S. Cl. 364—419.15 117 Claims

1. A predictive scanning input system for predictive selection of indicators corresponding to keys on a keyboard, each key corresponding to one of a plurality of symbols, comprising:
detecting means for detecting activation of a first of a plurality of keys on said keyboard and for detecting a first symbol corresponding to said activated key;
memory means for storing a plurality of symbol sequences, each including a plurality of symbols, each symbol corresponding to one of a plurality of keys on the keyboard, said memory means further storing a message, one message corresponding to each of said plurality of symbol sequences;
comparison means, operatively connected to said detecting means and said memory means, for comparing the de-

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tected first symbol to said plurality of symbol sequences stored in said memory means, determining which of said plurality of symbol sequences begin with said detected first symbol, determining second symbols as being symbols of those symbol sequences beginning with the detected first symbol which immediately follow the detected first symbol, and determining which of said plurality of keys correspond to each second symbol; and



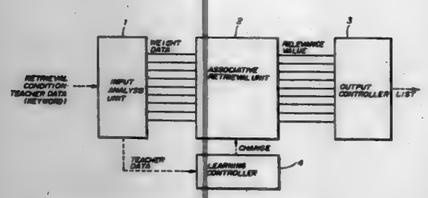
indicator activation means operatively connected to said comparison means, for activating an indicator for each of said plurality of keys determined to correspond to each of said second symbols to thereby define a limited number of second symbol keys for subsequent activation in producing a stored message of a symbol sequence beginning with the detected first symbol.

5,297,042

KEYWORD ASSOCIATIVE DOCUMENT RETRIEVAL SYSTEM

Tetsuya Morita, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,817
Claims priority, application Japan, Oct. 5, 1989, 1-260693
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.19 9 Claims



1. A document retrieval system comprising:

a) inputting means for inputting one or a plurality of keywords and weight value for each keyword;

b) a neural network including:

1) an input layer having units corresponding to keywords that have been previously determined in said document retrieval system,

2) a hidden layer having the same number of units as said input layer, and

3) an output layer having units corresponding to documents that have been previously determined in said document retrieval system;

wherein:

i) each of the units in said input layer is linked to each of the units in said hidden layer by first link factors determined based on relationship values;

ii) each relationship value is defined as a degree of a relationship between two keywords corresponding to linked units in said input and hidden layers;

iii) each of the units in said hidden layer is linked to each of the units in said output layer by second link factors determined based on importance values;

iv) each importance value is defined as a degree of importance of one of said keywords in one of said documents, the keyword and the document corresponding to linked units in said hidden and output layers;

v) the weight value for each of the keywords is supplied from said inputting means to a corresponding one of the units in said input layer; and

vi) an output value for each of the document is output from a corresponding one of the units in said output layer; and

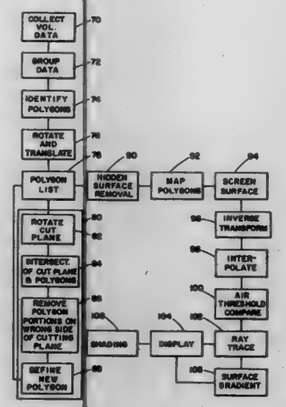
c) means, coupled to said neural network, for generating a relevance value for each of the documents based on the output value from a corresponding one of the units in said output layer of said neural network and for outputting the relevance value as a retrieval result, said relevance value being defined as a degree of relevance in satisfying a user's requirement.

5,297,043

RAPID DISPLAY OF ROTATED AND TRANSLATED THREE DIMENSIONAL IMAGE REPRESENTATIONS

Heang K. Tuy, Chesterland, and Todd J. Krochta, Copley, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 391,484, Aug. 8, 1989, Pat. No. 5,079,699, which is a continuation-in-part of Ser. No. 200,697, May 31, 1988, abandoned, and a continuation-in-part of Ser. No. 126,368, Jan. 27, 1987, abandoned. This application Oct. 15, 1990, Ser. No. 597,191
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—422 22 Claims



1. A method of generating a three dimensional image presentation comprising:

a) storing image data indicative of a three dimensional volume;

b) defining a region of the volume by defining at least one surface;

c) projecting coordinates of the defined surface onto a viewing screen which viewing screen has a pixel array on which the projection of the surface coordinates is displayed;

d) rotating the projection of the surface coordinates on the viewing screen to select a different view angle and storing the rotation;

e) for each pixel within the rotated projection of the surface coordinates on the viewing screen projecting a ray into the image data along the stored view angle at least to the defined surface and retrieving a corresponding image pixel value;

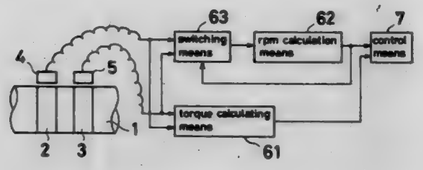
f) displaying the retrieved image pixel values at the corresponding pixels of the viewing screen in a human-readable display.

5,297,044

TORQUE AND ROTATING SPEED SENSOR

Minji Sakaki; Masaharu Sakoda, both of Hiroshima; Takeshi Inoue, Kanagawa, and Yasuhumi Kawado, Yamaguchi, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 24, 1992, Ser. No. 856,667
Claims priority, application Japan, Mar. 25, 1991, 3-059833
Int. Cl.[5] G06F *15/50*; G06G *7/70*; G01L *3/02*
U.S. Cl. 364—424.1 13 Claims



1. A torque and rotating speed sensor for detecting a torque of a rotating shaft and a rotating speed of the rotating shaft, comprising:

a pair of magnetic recording parts, axially spaced apart from one another on the rotating shaft, each to which a location signal in a circumferential direction of the rotating shaft is to be recorded;

a pair of magnetic heads, respectively opposed to said respective magnetic recording parts, for recording and reproducing the location signal;

torque calculating means for detecting the torque applied to the rotating shaft based on a quantity of a phase change caused by a torsion of the rotating shaft between each location signal reproduced by a pair of said magnetic head;

rpm calculating means for calculating a number of rotations of the rotating shaft based on a frequency of the location signal to be reproduced by one of a pair of said magnetic heads; and

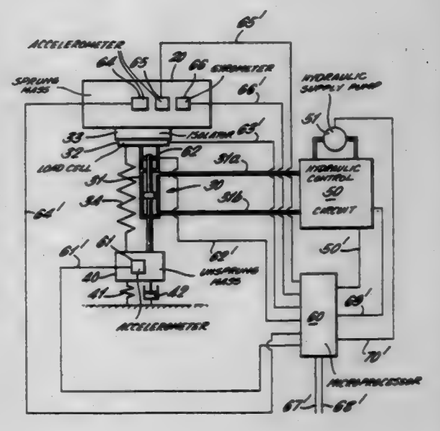
signal recording means for recording the location signal to one of the magnetic recording parts by one of the magnetic heads with a frequency according to a frequency of the location signal reproduced from the other magnetic recording part by the other magnetic head, and for recording the location signal to the other magnetic recording part by the other magnetic head with a frequency according to a frequency of the location signal reproduced from the one of the magnetic recording parts.

5,297,045

VEHICLE SUSPENSION SYSTEM

David. A. Williams, Stoney Stratford, and Peter G. Wright, Wymondham, both of United Kingdom, assignors to Group Lotus plc, Norfolk, United Kingdom

PCT No. PCT/GB90/00621, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/12699, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 23, 1990, Ser. No. 773,855
Claims priority, application United Kingdom, Apr. 21, 1989, 8909073
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 4 Claims



1. A suspension unit of a wheeled vehicle comprising:

a hydraulic actuator of which the displacement is variable by control of the flow of hydraulic fluid to at least one side of the piston and cylinder thereof;

means to connect the actuator to the body and a wheel hub of the vehicle so that variation of the displacement of the actuator controls the height of the body above the wheel hub;

transducers on the vehicle which generate signals, each transducer providing a signal indicative of at least one of force applied to the body by the actuator, longitudinal acceleration of the vehicle, lateral acceleration of the vehicle, speed of vehicle and yaw rate of the vehicle;

control means to control the flow of fluid to and from the actuator, in response to the signals generated by the transducers, to control the vehicle suspension, said control means comprising a processor which generates a velocity demand signal which corresponds to a velocity required of the actuator and a hydraulic control circuit controlled by the velocity demand signal;

displacement detector means to detect when the actuator displacement approaches a desired maximum/minimum value and to generate a control signal when the actuator displacement approaches the desired maximum/minimum value; and

means to modify the velocity demand signal which operates in response to the control signal generated by the displacement detector means to being the extension/contraction of the actuator gradually to a stop as the desired maximum/-minimum value is reached.

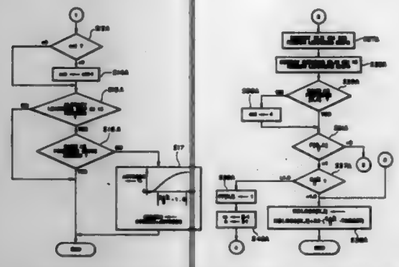
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,046

SYSTEM AND METHOD FOR LEARNING AND CONTROLLING AIR/FUEL MIXTURE RATIO FOR INTERNAL COMBUSTION ENGINE

Shinpei Nakaniwa, Gunma, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Apr. 16, 1992, Ser. No. 869,341
Claims priority, application Japan, Apr. 17, 1991, 3-085421; Apr. 19, 1991, 3-088658
Int. Cl.[5] F02D *41/14*
U.S. Cl. 364—431.05 21 Claims



1. A system for learning and controlling an air/fuel mixture ratio for an internal combustion engine, comprising:

a) first means for detecting an engine driving condition including a driving parameter related to an intake air quantity sucked into the engine;

b) second means for setting a basic fuel supply quantity on the basis of the engine driving condition;

c) third means for detecting the air/fuel mixture ratio of the intake air mixture fuel;

d) fourth means for comparing the detected air/fuel mixture ratio with a target air/fuel mixture ratio and for setting an air/fuel mixture ratio feedback correction coefficient used to correct the basic fuel supply quantity so as to make the actual air/fuel mixture ratio approach to the target air/fuel mixture ratio;

e) fifth means for rewritably storing a learning correction coefficient for each driving region, a whole driving region being divided into a plurality of driving regions according to the engine driving condition, the learning correction coefficient being used to correct the basic fuel supply quantity;

f) sixth means for learning a deviation of a value of the air/fuel mixture ratio feedback correction coefficient to a target convergence value and for modifying and rewriting the air/fuel mixture ratio learning correction coefficient stored so as to correspond to one of the driving regions in the fifth means so that the deviation thereof is reduced;

g) seventh means for determining the present corresponding driving region in the fifth means as a learned region when the value of the air/fuel mixture ratio feedback correction coefficient substantially coincides with the target convergence value and for storing a result of determination of the learned region according to each driving region;

h) eighth means for estimatingly learning the air/fuel mixture ratio learning correction coefficients corresponding to the other driving regions which are adjacent in terms of the driving condition to one of the driving regions at which the corresponding learning correction coefficient is rewritten by the sixth means;

i) ninth means for controlling the estimatingly learning of the eighth means according to a number of rewritten driving regions at which the corresponding air/fuel mixture ratio learning correction coefficients are rewritten by the eighth means together with the rewritten learning correction coefficient by the sixth means such that the number of the rewritten driving regions is decreased as the number of learned driving regions is increased; and

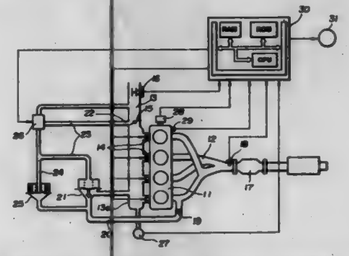
j) tenth means for driving a final fuel supply quantity on the basis of the basic fuel supply quantity, air/fuel mixture ratio feedback correction value, and air/fuel mixture ratio learning correction coefficient stored so as to correspond to the present driving region, the final quantity being a quantity of fuel to be supplied to the engine.

5,297,047

DIAGNOSTIC ARRANGEMENT FOR USE WITH AUTOMOTIVE ENGINE SYSTEMS

Osamu Matsuno, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 5, 1991, Ser. No. 725,063
Claims priority, application Japan, Jul. 6, 1990, 2-178861
Int. Cl.[5] G06F *15/00*; G01M *15/00*
U.S. Cl. 364—431.06 4 Claims



1. A diagnostic apparatus for an internal combustion engine for an automotive vehicle, comprising:

means for sampling a magnitude of an operating parameter based on the presence of a malfunction of the engine;

means for recording a plurality of operating parameters sequentially sampled through said sampling step;

means for recording the number of times the operating parameter is sampled;

means for determining an average sample value on the basis of the sequentially sampled operating parameters;

means for determining a reference value necessary to judge the malfunction of the engine;

means for comparing the average sample value and the reference value to generate a signal representative of the difference between the average sample value and the reference value;

means responsive to the signal generated by said comparing means, for determining that the malfunction has occurred in the engine in the event that the average sample value exhibits a predetermined relationship with the reference value, and for generating a malfunction indicative signal; and

a warning indicator provided in the automotive vehicle and responsive to the malfunction indicative signal, for warning of the malfunction of the engine,

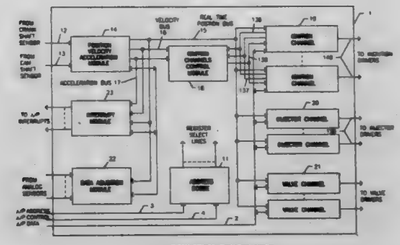
wherein said reference value is variably determined depending on the number of times the operating parameter has been sampled, such that diagnostic severity for the malfunction of the engine, in a comparison between the reference value and the magnitude of the operating parameter, is enhanced in accordance with an increase in the number of times the operating parameter is sampled.

5,297,048

ANGULAR POSITION EXTRAPOLATION OF A ROTATING CRANKSHAFT CORRECTED FOR CRANKSHAFT ACCELERATION AND DECELERATION

Richard J. Gauer, Tempe, Ariz., assignor to Automotive Integrated Electronics Co., Inc., Phoenix, Ariz.

Filed Sep. 21, 1992, Ser. No. 948,165
Int. Cl.[5] F02M *7/00*
U.S. Cl. 364—431.12 24 Claims



17. In a system for indicating the position of a rotating member with respect to a reference position, wherein the member has a plurality of markers spaced at substantially equal angles about the member, the markers defining a plurality of marker intervals, sensor means for generating a pulse signal in response to detection of each of the markers, a position extrapolation circuit comprising:

(a) computing means responsive to the pulse signals for computing the initial velocity of the member at the beginning of each marker interval; and

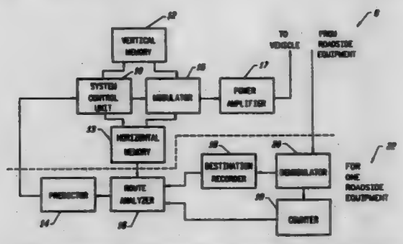
(b) a digital velocity bus for communicating the initial velocity of the member.

5,297,049

VEHICLE GUIDANCE SYSTEM

Hallemichael Gurmu, 507 Forrest St., #102, Oakland, Calif. 94618, and Adamsu Gebre, Vreeland 19C, NE Amersfoort, Netherlands

Continuation of Ser. No. 874,746, Apr. 27, 1992, Pat. No. 5,247,439, which is a continuation of Ser. No. 476,890, Feb. 8, 1990, Pat. No. 5,126,941, which is a continuation-in-part of Ser. No. 439,836, Nov. 11, 1982, abandoned. This application Jun. 16, 1993, Ser. No. 77,533
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—436 19 Claims



1. A vehicle guidance system for guiding a motor vehicle in a municipality wherein locations within said municipality are designated by respective horizontal and vertical coordinate means, said system comprising:

a central traffic control system including:

means for transmitting dynamically alterable coordinate information representative of the whereabouts of congested route segments for use as route guidance information in accordance with detected traffic conditions,

at least one roadside equipment including:

horizontal and vertical coordinate memory means for storing coordinate information representative of said whereabouts of said congested route segments,

roadside transmitter means for transmitting roadside identification information indicative of the location of the transmitting roadside equipment and for transmitting to said vehicle said route guidance information received from the central traffic control system,

an on-board guidance unit including:

on-board receiver means for receiving said identification information and said route guidance information transmitted by said roadside equipment,

on-board vertical and horizontal coordinate memory means for storing said vertical and horizontal coordinate information transmitted from said roadside transmitter,

an on-board system control unit for controlling the reception and storage of said identification information and said route guidance information,

means for altering said coordinate information in said on-board memory means in accordance with said route guidance information transmitted by said roadside equipment, and

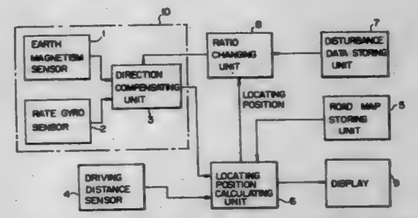
said on-board system control unit including means for generating vehicle guidance information in accordance with data contents of said on-board memory means and for transferring said vehicle guidance information to a display means for assisting a driver in guiding said vehicle.

5,297,050

DIRECTION SENSOR HAVING AN EARTH MAGNETISM SENSOR AND A RATE GYRO SENSOR AND NAVIGATION SYSTEM HAVING THIS DIRECTION SENSOR

Atsushi Ichimura, and Yasuhiro Nakatani, both of Kobe, Japan, assignors to Fujitsu Ten Limited, Kobe, Japan

Filed Nov. 6, 1991, Ser. No. 788,456
Claims priority, application Japan, Nov. 6, 1990, 2-298993; Nov. 6, 1990, 2-298994
Int. Cl.[5] G06F *15/50*; G01C *17/28*
U.S. Cl. 364—444 7 Claims



3. A navigation system of a vehicle providing a locating position on a map, comprising:

an earth magnetism sensor detecting a forward angle, forming the detected forward angle relative to magnetic north of earth, and outputting a first driving direction calculated from said detected forward angle;

a rate gyro sensor, detecting a rotating speed, forming the detected rotating speed, calculating a rotated angle from the detected rotating speed, and outputting a second driving direction, obtained by adding said rotated angle to a reference direction;

direction compensating means for calculating a compensated direction, using a calculating process receiving said first driving direction and said second driving direction;

a driving distance sensor detecting a driving distance;

map storing means for storing map information;

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locating position calculating means for calculating the locating position on said road map using said compensated direction received from said direction compensating means, said driving distance received from said driving distance sensor and said map information received from said map storing means;

disturbance data storing means for storing distribution information indicating a magnetic disturbance having an intensity to an earth magnetism in a form corresponding to said map; and

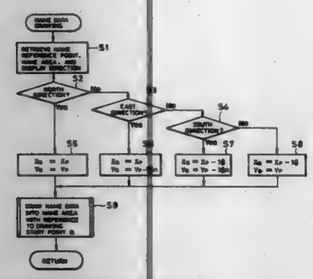
ratio changing means for detecting the intensity of the magnetic disturbance at said locating position received from said disturbance data storing means, and for ratio changing the calculating process used for calculating said compensated direction.

5,297,051

MAP DISPLAY DEVICE

Takeharu Arakawa; Morio Araki, and Kiyoshi Yamanaka, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 848,921
Claims priority, application Japan, Mar. 18, 1991, 3-52542
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **6 Claims**



1. A map display device comprising:

a storage medium for storing geographical data and associated name data;

reading means for reading said geographical data and said name data of a predetermined regional part from said storage medium;

retrieving means for retrieving a name reference point having absolute coordinates and a name area of said name data read by said reading means and for retrieving a display direction of map orientation;

calculating means for calculating a display start point for said name data including name data display coordinates on the basis of said absolute coordinates of said name reference point and in accordance with said display direction of map orientation in a manner that said name data display coordinates are at a corner of said name area associated with said name reference point;

superimposing means for correlating absolute coordinates of said geographical data with said name data display coordinates of said display start point of said name data, and writing said name data into said name area with reference to said display start point so that said geographical data and said name data are superimposed with each other, thereby forming map data; and

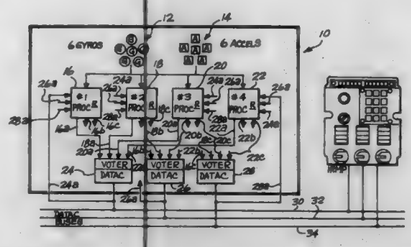
display controlling means for displaying said map data on a display.

5,297,052

INTEGRATED FAULT-TOLERANT AIR DATA INERTIAL REFERENCE SYSTEM

Melville D. W. McIntyre, Bellevue, and David L. Sebring, Snohomish, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 422,145, Oct. 16, 1989, abandoned. This application Nov. 14, 1990, Ser. No. 613,219
Int. Cl.[5] G01C *19/02*
U.S. Cl. 364—453 **10 Claims**



8. A fault-tolerant navigation reference system, comprising:

a plurality of six independent accelerometers, each of which is in skewed orientation with respect to the others;

a plurality of six independent gyroscopes, each of which is in skewed orientation with respect to the other gyroscopes; and

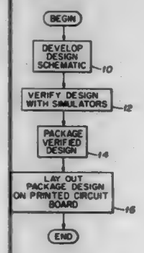
at least four independent but parallelly operating processor circuits, each individual processor circuit being connected to each gyroscope and each accelerometer to receive an output signal from each gyroscope and each accelerometer, and each processor circuit being operable to discard the output signal of any malfunctioning accelerometer or gyroscope, and to calculate navigational reference signals from the output signals of the remaining accelerometers or gyroscopes, so long as at least four accelerometers and at least four gyroscopes remain functional, said processor circuits calculating said navigational reference signals substantially simultaneously.

5,297,053

METHOD AND APPARATUS FOR DEFERRED PACKAGE ASSIGNMENT FOR COMPONENTS OF AN ELECTRONIC CIRCUIT FOR A PRINTED CIRCUIT BOARD

Mark D. Pease, Phoenix, Ariz., and William Anderson, Jr., Hillsboro, Oreg., assignors to Computervision Corporation, Bedford, Mass.

Filed Jun. 4, 1991, Ser. No. 710,322
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.24 **30 Claims**



1. A computer aided design system, comprising:

a) means for creating a design schematic which provides a functional specification of a design for electronic circuitry;

b) means for creating a plurality of model schematics, each model schematic providing packaging information for a discrete electronic component forming part of the design for electronic circuitry, said model schematic being separate from said design schematic; and

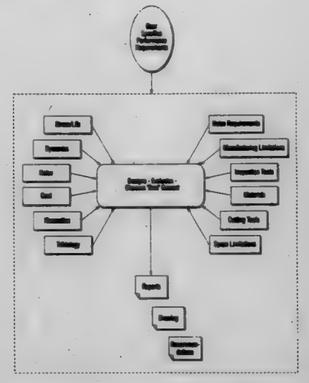
c) means for mapping the model schematic to the design schematic to generate a packaged design or the design for electronic circuitry, whereby the packaged design is suitable for layout on a printed circuit board.

5,297,054

EXPERT SYSTEM FOR AUTOMICALLY GENERATING GEAR DESIGNS

Kent H. Kienzle, Ypsilanti, Mich.; Mark J. Jeffery, Sunnyvale, Calif.; Trent R. Jaeger, Troy, and Karon A. Barber, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1992, Ser. No. 864,880
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.24 **1 Claim**



1. A computer implemented method of generating a gear set design, said design being based on a problem specification which is input by the user and which includes a plurality of characteristics of the design as well as desired weighting of each of a plurality of design goals, said gear set design including a plurality of independent and dependent parameter values; said method comprising the steps of:

a. selecting one of a plurality of design approaches based on the design specification;

b. selecting at least one of said plurality of independent parameters of the gear set design based on the design approach;

c. determining a range over which said selected independent parameter is to be varied based on the characteristics of the design and a default range for one or more of the unselected ones of said independent parameters,

d. varying the selected independent parameter over said range to generate a gear design space including a plurality of gear set designs,

e. limiting said design space to those designs which are within predetermined dependent parameter ranges,

f. ranking the designs of step e. based on the design goal weights.

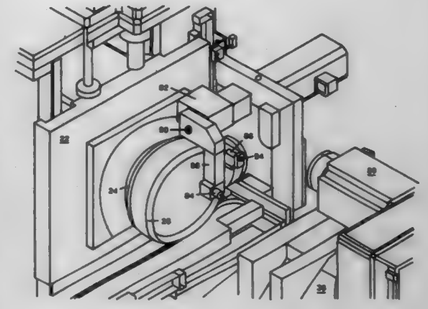
g. repeating steps b–f for each of the remaining ones of said independent parameters.

5,297,055

MULTI-FUNCTIONAL MEASUREMENT SYSTEM

Richard Johnstone, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Apr. 20, 1990, Ser. No. 513,309
Int. Cl.[5] G05B *19/19*
U.S. Cl. 364—474.37 **21 Claims**



13. Monitoring apparatus for a machine for manufacturing bevel and hypoid gears, said machine being computer controlled and having a tool support with a spindle mounted in its front face for rotatably holding a tool for shaping teeth on a workpiece rotatably held in a work spindle mounted in the front face of a work support, said work support also having a side face and both said supports being movable relative to each other along a minimum number of operational axes, namely, three mutually orthogonal rectilinear axes and one pivot axis, said machine also having a plurality of encoder means associated with machine drive means for moving said supports, said encoder means providing respective measurement signals indicative of the positions of said supports relative to each other; said monitoring apparatus comprising:

contact probe means, mounted on said tool support and movable from a withdrawn position to an extended position in which a sensitive tip associated with said contact probe means projects beyond the front face of said tool support, said contact probe means providing a contact trigger signal whenever the surface of said tip contacts another surface;

a plurality of locating points positioned in predetermined locations on the side and front faces of said work support and on said work spindle;

sets of predetermined position signals corresponding to the relative location of each of said locating points when said tool and work columns are in each of a plurality of predetermined relative orientations; and

sets of instantaneous position signals from said encoders indicative of the relative location of said tool and work supports in respect to said axes whenever trigger signals are provided by said contact probe means upon contact with respective ones of said locating points;

said computer being programmable for

comparing sets of said instantaneous and predetermined position signals for each of said plurality of orientations;

generating error signals based upon the difference between said respective signal sets; and

controlling the operation of said machine drive means for positioning said tool and work supports in accordance with said error signals.

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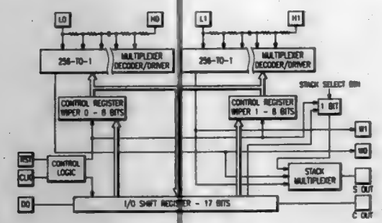
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,056

DIRECTLY-WRITABLE DIGITAL POTENTIOMETER

Robert D. Lee, Denton, and Gary V. Zanders, Dallas, both of Tex., assignors to Dallas Semiconductor Corp., Dallas, Tex.

Filed Mar. 30, 1990, Ser. No. 502,469
Int. Cl.[5] H01C *10/14, 10/16*
U.S. Cl. 364—482 21 Claims



1. An integrated circuit, comprising:

first, second, and third signal terminals;

a passive resistor string having multiple tap points, and having endpoints connected to said first and third signal terminals;

a plurality of switching devices respectively connected to said multiple tap points and to said second signal terminal; and

control circuitry, comprising

a serial port interface, connected to receive digital signals indicating a desired resistance value, said serial port including lines generally corresponding to clock, data, and reset signals;

a shift register, connected to store and propagate digital data values received over said serial port, and to serially propagate said data values therethrough when said reset line is in a first state;

parallel control register circuitry, connected to hold digital data values from said shift register in parallel, when said reset line transitions from said first state to a second state; and

decoder/driver logic, connected to control said switching devices in accordance with the digital data values in said parallel control register circuitry.

5,297,057

METHOD AND APPARATUS FOR DESIGN AND OPTIMIZATION FOR SIMULATION OF MOTION OF MECHANICAL LINKAGES

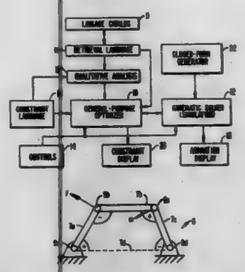
Glenn A. Kramer, Austin, Tex.; Harry G. Barrow, Brighton, England; Patrick R. Turner, Davisburg, Mich.; Michael E. Bodner, Southfield, Mich., and Jeffrey G. Cooper, Pinckney, Mich., assignors to Schlumberger Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 363,626, Jun. 13, 1989, abandoned. This application Nov. 13, 1991, Ser. No. 793,303
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—512 18 Claims
MICROFICHE APPENDIX INCLUDED
(4 Microfiche, 487 Pages)

1. A method of performing synthesis of mechanical linkages in a digital computer comprising the steps of:

a) optimizing a design so as to minimize at least one deviation from desired behavior; and

b) displaying on a video display a simulated motion of said design and a relative contribution of at least two parameters to deviations from desired behavior to a total deviation from desired behavior, said total deviation comprised



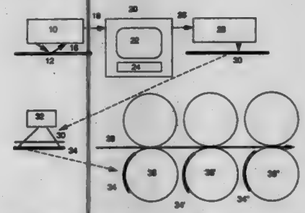
of a sum of individual deviations from desired behavior, said individual deviations are weighted.

5,297,058

METHOD FOR CREATING MULTICOLORED HALFTONE REPRODUCTIONS FROM CONTINUOUS TONE MONOCHROME ORIGINALS

Mark R. Samworth, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 573,072, Aug. 29, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 992,406
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—526 11 Claims



1. A method for producing a multi-colorant output image from an input monochrome image having a lightness, the multi-colorant output image having a preselected chroma, a preselected hue and a desired lightness comprising:

(a) selecting a first transfer function correlating optical density values (Do) of the monochrome input image to percent dot areas (% Dt) of the multi-colorant output image such that use of the first transfer function produces a first single colorant image having the desired Lightness;

(b) selecting a sample image from a set of sample images, each of the sample images having a chroma, a hue and a lightness, the lightness being the same or substantially the same in each of the sample images, each of the sample images generated using a combination of at least two colorants;

(c) establishing a colorant transfer function for each of the colorants such that use of each of the colorant transfer functions produces a single colorant output image such that the multi-colorant output image comprises the combination of all of the single colorant output images generated from the colorant transfer functions where the multi-colorant output image has a lightness equal to or substantially equal to the lightness of the first single colorant image generated using the first transfer function and the same or substantially the same hue and chroma of the selected sample image, wherein the colorant transfer functions are established using an equation where A_C is a function of A and W_C and is independent of gray level (D_o) where:

A_c is a percent dot area for a given lightness value corresponding to the colorant transfer function for a colorant,

A is a percent dot area for the same lightness value calculated based on the first transfer function, and

W_c is a color weight factor derived for each of the colorants for each of the sample images; and

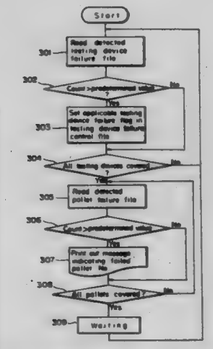
(d) using the colorant transfer functions to generate the multi-colorant output image.

5,297,059

TESTING DEVICE CONTROL SYSTEM FOR DETECTING TESTING DEVICE FAILURE

Masamichi Kawasoe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 12, 1992, Ser. No. 975,095
Claims priority, application Japan, Nov. 13, 1991, 3-297034
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—552 7 Claims



1. A testing device control system comprising:

a plurality of pallets for carrying a product each, each of said plurality of pallets having a connector for electric connection to the product carried;

transport means for transporting said plurality of pallets;

a plurality of automatic testing means furnished along said transport means;

a plurality of automatic connection means for automatically connecting said plurality of automatic testing means to the connectors of said plurality of pallets;

common storage means containing a testing item file, a detected testing means failure file, a detected pallet failure file and a testing means failure control file;

a host computer connected to said plurality of automatic testing means and to said common storage means;

first defect item writing means for writing to said detected testing means failure file for each automatic testing means the defect items of said product detected by said plurality of automatic testing means;

first count writing means for counting the number of the same defect items detected by the same automatic testing means and for writing the defect item count to said detected testing means failure file, said first count writing means including means for canceling said defect item count when different defect items detected by said same automatic testing means are written to said detected testing means failure file by said first defect item writing means, and for writing to said detected testing means failure file the updated defect item count of said different defect items;

first count setting means for setting a desired count;

failure information writing means for writing failure information about any automatic testing means to said testing means failure control file when said defect item count exceeds the count set by said first count setting means; and

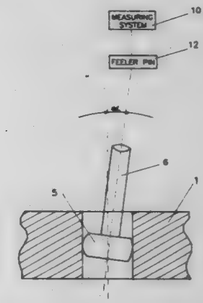
first resetting means for resetting said defect items and said defect item count written to said detected testing means failure file when the testing of said product by said same automatic testing means proves said product to be good.

5,297,060

METHOD AND TOOL FOR THE DIGITIZING OF DRILLING JIGS

Sandro Foletti, Piacenza, and Franco Cassinari, Podenzano, both of Italy, assignors to JOBS S.p.A., Piacenza, Italy

Filed Jul. 23, 1991, Ser. No. 734,590
Claims priority, application Italy, Aug. 9, 1990, 44818 A/90
Int. Cl.[5] G01B *5/03*
U.S. Cl. 364—559 2 Claims



1. A method for locating a tool positioning point on the axis of a jig hole in a jig having a front surface and a back surface, for use in digitizing drilling jigs, the hole having a known diameter and the method comprising:

inserting a feeler pin provided with a rounded head having the same diameter as the hole, into the jig hole;

providing a measuring system suitable for continously finding a position of the head in the hole and on the hole axis;

storing coordinates of the location of the head at a first point in the hole and on the hole axis, near a front surface of the jig;

inserting the feeler pin and head deeper into the hole;

storing coordinates of a second location of the head at a second point in the hole and on the hole axis near a back surface of the jig;

calculating an inclination of the jig hole axis using the coordinates of the first and second points; and

calculating a third point on the hole axis which is external of the hole and at a distance which is greater than a distance between the front surface of the jig and a maximum depth reached by the head in the hole, said third point being used as the tool positioning point along the axis of the hole.

5,297,061

THREE DIMENSIONAL POINTING DEVICE MONITORED BY COMPUTER VISION

Daniel F. Dementhon, Columbia, Md., and Yukio Fujii, Yokohama, Japan, assignors to University of Maryland, College Park, Md.

Filed May 19, 1993, Ser. No. 63,489
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—559 13 Claims

1. In an apparatus for monitoring the position and orientation of a rigid three-dimensional (3-D) object in space comprising:

an electronic camera having a reference coordinate frame and producing an analog video signal, the analog video signal being composed of scanning lines, each scanning line corresponding to a single line of an image of the electronic camera;

a plurality of light sources rigidly attached to the rigid 3-D object, these lights projecting bright spots onto the image of the camera;

processing means for processing the analog video signal and determining a list of positions of the bright spots;

computing means including memory means, output means and display means;

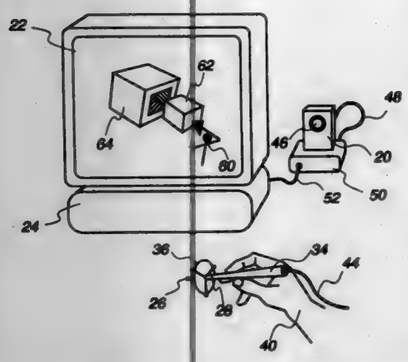
the computing means including pose computing means for computing a translation vector and a rotation matrix of the rigid 3-D object in the reference coordinate frame of the electronic camera and transmitting these quantities to the output means; the output means modifying images on the display means;

the improvement comprising in the processing means:

a first electronic means for generating a timing signal synchronous to the beginning of the scanning line,

a clock generator for producing a clock signal,

a second electronic means for digitizing the scanning line into a string of digitized values, at the rate of the clock signal,



thresholding means for thresholding the string of digitized values into a string of thresholded digitized values in which values higher than a given threshold value are set to a logical high value and values lower than a given brightness threshold value are set to a logical low value,

a third electronic means for producing a flag signal which is set to a logical high value when all elements of the string of thresholded digitized values are set to a logical low value and which is reset by the synchronous timing signal,

a counter driven by the clock signal and reset by the synchronous timing signal for generating address numbers,

a second memory means for: i) storing strings of thresholded digitized values to memory cells addressed by the address numbers, and (ii) storing an additional data when the flag signal is set to a logical high value,

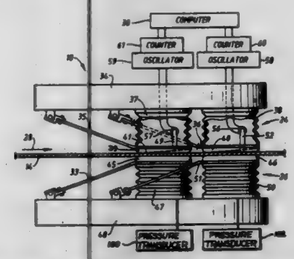
and the processing means further including means for: i) recalling the strings of thresholded digitized values from the memory cells and skipping a string of thresholded digitized values when the additional data indicates that these digitized values are all set to a logical low value, ii) calculating from recalled strings of thresholded digitized values the positions of centers of the bright spots, and iii) computing the position and orientation of the object from the positions of the centers of the bright spots.

5,297,062

SENSOR, SYSTEM AND METHOD FOR DETERMINING Z-DIRECTIONAL PROPERTIES OF A SHEET

Thierry M. Cresson, Cupertino; John D. Goss, and Barclay W. Wallace, both of San Jose, all of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Continuation of Ser. No. 632,315, Dec. 21, 1990, abandoned.
This application Apr. 12, 1993, Ser. No. 47,171
Int. Cl.[5] G01B *7/10*
U.S. Cl. 364—564 **32 Claims**



1. A sensor for use in determining sheet caliper measured at a plurality of pressures exerted on the sheet, the sheet having opposed, first and second major surfaces, the sensor comprising:

means for simultaneously pressing the first and second major surfaces on opposite sides of the sheet at a plurality of pressures;

means for measuring and generating a signal indicative of said plurality of pressures; and

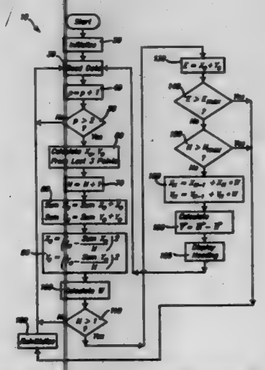
means for measuring and generating a signal indicative of sheet caliper at the plurality of pressures.

5,297,063

METHOD FOR SELECTING CALIBRATION DATA FOR AN AUTO-CALIBRATING COMPASS

Russell E. Cage, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1991, Ser. No. 815,264
Int. Cl.[5] G01C *25/00*; G01D *18/00*
U.S. Cl. 364—571.02 **4 Claims**



1. A method for determining heading from an origin of the earth's magnetic field vector in an auto-calibrating electronic compass comprising the steps of:

(a) orienting first and second sense coils of a flux-gate sensor perpendicular to each other in the earth's magnetic field;

(b) saturating said sense coils with a drive signal;

(c) measuring an induced voltage in said sense coils induced by said magnetic field;

(d) measuring and storing, in a memory unit connected to a processing unit, at least three heading data points related to said induced voltage, each said heading data point having an x and a y coordinate, each said heading data point being measured and stored after the orientation of the flux-gate sensor with respect to the earth's magnetic field vector, as measured at the flux-gate sensor, has changed;

(e) calculating and storing x and y coordinates for an earth's magnetic field circle center;

(f) adding said center coordinates to a sum of previous center coordinates;

(g) calculating mean square errors of said center and said previous center coordinates;

(h) calculating a figure of merit associated with the accuracy of said center coordinates;

(i) calculating and storing x and y coordinates for a new center for said earth's magnetic field circle by adding to one of said previous center coordinate, said center coordinates calculated in step (b) as weighted by said figure of merit;

(j) subtracting said new center coordinates from said stored heading data points to yield compensated heading data points having a compensated y coordinate and a compensated x coordinate;

(k) dividing the compensated y coordinate by the compensated x coordinate to obtain a quotient, and calculating the arctangent of said quotient; and

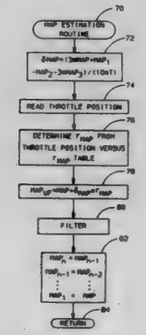
(l) using said calculated arctangent of said quotient to obtain a new vehicle heading for conveying information regarding true heading to a display unit.

5,297,064

SENSOR LAG COMPENSATION

Paul A. Bauerle, De Witt, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1991, Ser. No. 678,094
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—571.02 **7 Claims**



1. A method for approximation of a present value of a measured automotive control parameter, variations in the value of said parameter being substantially describable by means of a dominant time constant, comprising the steps of:

sensing the value of the parameter;

estimating the rate of variation of the parameter;

approximating the dominant time constant of the parameter; and

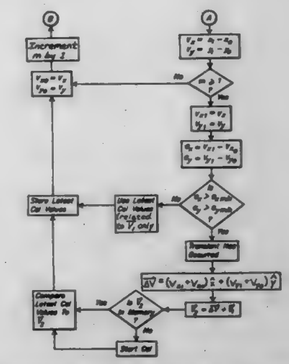
determining the present value of said parameter, based on the sensed value, the rate of variation of the sensed value, and the dominant time constant of the parameter.

5,297,065

MAGNETIC TRANSIENT DETECTION AND CALIBRATION TECHNIQUE FOR AN AUTO-CALIBRATING COMPASS

Russell E. Cage, Ann Arbor, Mich.; John A. Wilke, Eppstein-Bremthal, Fed. Rep. of Germany, and Rafi A. Al-Attar, Troy, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1991, Ser. No. 815,268
Int. Cl.[5] G01C *25/00*; G01D *18/00*
U.S. Cl. 364—571.05 **5 Claims**



1. In an electronic compass system for a vehicle operating within a resultant magnetic field made up of the earth's and vehicle's magnetic field wherein said vehicle's magnetic field periodically includes electrical transients, a technique for calculating heating comprising:

(a) orienting first and second sense coils of a flux-gate sensor perpendicular to each other in the earth's magnetic field;

(b) saturating said sense coils with a drive signal;

(c) measuring an induced voltage in said sense coils induced by said resultant magnetic field;

(d) sensing, calculating and storing in a memory unit of a processing unit a first heading data value related to said induced voltage for a resultant magnetic field for a given vehicle heating;

(e) sensing, calculating and storing a second heading data value related to said induced voltage for the resultant magnetic field for said given vehicle heating;

(f) calculating and storing a first heading data velocity by subtracting said first stored data value from said second stored data value;

(g) sensing and storing a third heading data value related to said induced voltage for the resultant magnetic field for said given vehicle heading;

(h) calculating and storing a second heading data velocity by subtracting said second stored data value from said third stored data value;

(i) calculating and storing a heading data acceleration by subtracting said first stored data velocity from said second stored data velocity; and

(j) comparing said heading data acceleration with a predetermined data acceleration representing the minimum acceleration caused by electrical transients;

(k) calculating and storing a vehicle magnetic field vector;

(l) calculating and storing a vector change in said vehicle magnetic field vector when the heading data acceleration exceeds said predetermined heading data acceleration;

(m) calculating a new vehicle magnetic field vector by add-

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ing said stored vector change to said stored vehicle magnetic field vector;

(n) recalling calibration values associated with said stored vehicle magnetic field vector when said new vehicle magnetic field vector corresponds to said stored vehicle magnetic field vector;

(o) adding said calibration values to said new vehicle magnetic field vector; and

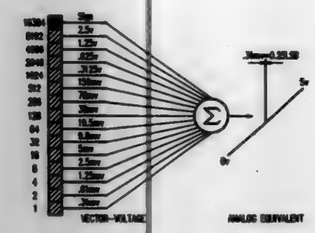
(p) making said new vehicle magnetic field vector available for communicating heading information to a vehicle user.

5,297,066

DIGITAL CIRCUIT SIMULATION OF ANALOG/DIGITAL CIRCUITS

Michael K. Mayes, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 22, 1991, Ser. No. 780,775
Int. Cl.[5] G06G *7/48*
U.S. Cl. 364—578 **13 Claims**



6. A method of digitally simulating on a digital circuit simulator the operation of an electronic circuit having both analog and digital components, said method comprising the steps of:

storing in a memory module of a data processor a netlist representing a specified electronic circuit, said netlist containing a list of analog and digital circuit components and corresponding connections for each of said components;

converting each of said analog and digital circuit components in said netlist to a corresponding digital circuit model comprising a set of specified mathematical relationships between binary input and binary output signals; and

simulating the operation of said specified electronic circuit with said digital circuit models, said simulating step including representing analog input signals into said specified circuit and analog signals generated by said analog circuit components as a vector of binary signal values.

5,297,067

ELECTRONIC HOT CONNECTION OF DISK DRIVE MODULE TO COMPUTER PERIPHERAL BUS

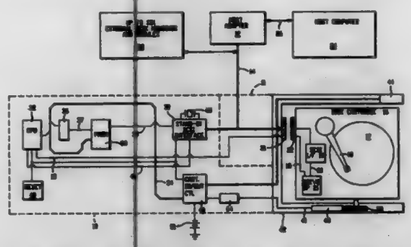
Richard J. Blackborow, Cupertino; John Brooks, San Jose; Jeffery H. Appelbaum, San Mateo; Garrick Yeung; Faheem Dani, both of San Jose, and Tim R. Glassburn, Milpitas, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Oct. 16, 1991, Ser. No. 778,446
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—708.1 **13 Claims**

13. In a data storage subsystem including a removable hard disk drive module including a bus-level interface circuit means and a base unit for automatically loading and unloading the hard disk drive module in response to control signals received from a host computer to which the base unit is connected via a host bus adapter, a method for passing between the module and the base unit of an electrical appearance of the data storage subsystem to the computer at a predetermined logical address, the method comprising the steps of:

presenting via a stand-in interface circuit means of the base unit an active electrical "drive not ready" appearance to the host computer at the predetermined logical address when the drive module is not loaded and ready for data transfer operations,

determining at the base unit when the drive module becomes loaded and ready for data transfer operations and thereupon activating the bus-level interface circuit means of the drive module at the predetermined logical address and disabling the stand-in interface circuit means, and



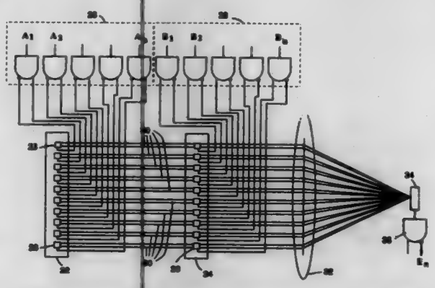
determining at the base unit when the drive module is about to be unloaded and thereupon activating the stand-in interface circuit means at the predetermined logical address and disabling the appearance of the bus-level interface circuit means of the drive module at the predetermined logical address.

5,297,068

GLOBAL INTERCONNECT ARCHITECTURE FOR OPTICAL COMPUTER

Peter S. Guilfoyle, Zephyr Cove, Nev.; Frederick F. Zeise, Milpitas, Calif., and Valentin N. Morozov, Boulder, Colo., assignors to Opticomp Corporation, Lake Tahoe, Nev.

Continuation-in-part of Ser. No. 639,284, Jan. 10, 1991, Pat. No. 5,164,913, which is a continuation of Ser. No. 266,907, Nov. 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 31,431, Mar. 27, 1987, Pat. No. 4,864,524. This application Feb. 27, 1992, Ser. No. 842,896
Int. Cl.[5] G06E *1/04*
U.S. Cl. 364—713 **41 Claims**



1. An apparatus for acting upon input data having a plurality of binary bits and for providing outputs which are Boolean logical AND/OR operations on user designated combinations of the binary bits, wherein the apparatus comprises:

input means comprising a plurality of elements, each of which is responsive to a corresponding one of the binary bits of the input data and projects an optical signal representative of the logical state of the corresponding binary bit along a different one of a first set of signal paths;

control means comprising a plurality of elements, each of which is associated with a different one of the paths in the first set of signal paths, receives the optical signal projected along the associated signal path, and broadcasts the received optical signal along a set of selected signal paths, wherein the signal paths in the sets of selected signal paths collectively form sets of coincident signal paths, wherein each set of coincident signal paths is coincident at an associated detect location, and further wherein the signal paths contained in a particular set of coincident signal paths are selected so that the optical signals which the set routes to the associated detect location represent the bits in a particular one of the designated combinations of binary bits;

binary detector means comprising a plurality of elements, each of which is associated with a different one of the associated detect locations and is responsive to the optical signals routed to the associated detect location, and wherein each element of the binary detector means includes:

means for detecting the optical signals routed to the associated detect location by detecting only the presence or absence of an optical signal;

means for performing a selectable logical negation of the detected presence or absence of an optical signal; and

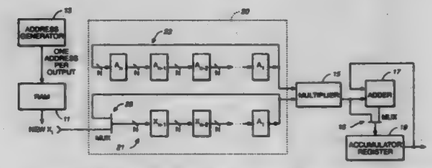
means for producing an output representative of the result of the logical negation means.

5,297,069

FINITE IMPULSE RESPONSE FILTER

Creigton S. Asato, and Christoph Ditzen, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 13, 1992, Ser. No. 929,867
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 **10 Claims**



3. A system for calculating output data points of a Finite Impulse Response filter comprising:

first recirculating shift register means for storing in order a plural number of coefficients;

second recirculating shift register means for storing in order input data points one fewer than said number; and

means for multiplying respective ones of the coefficients and input data points and for accumulating the results of the multiplying a the coefficients and the input data points are circulated in the first and second recirculating shift register means.

5,297,070

TRANSFORM PROCESSING CIRCUIT

Kien T. Hua, Prospect; John D. O'Sullivan, Ermington; Colin E. Jacka, North Turramurra, and David R. Brown, Roseville, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

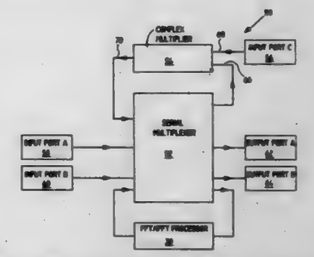
Filed Apr. 6, 1990, Ser. No. 466,276
Claims priority, application Australia, Aug. 21, 1987, 3888/87
Int. Cl.[5] G06F *7/38, 15/34*
U.S. Cl. 364—726 **29 Claims**

1. A transform processing circuit comprising:

first and second input/output terminals, said first input/output terminal inputting data in a first order, said second input/output terminal inputting data in a second order; and

a plurality of processing units connected in series between said input/output terminals;

with said data inputted by said first input/output terminal in said first order being passed through said units sequentially, transformed and outputted at said second terminal in said second order, and with said data inputted by said second input/output terminal in said second order being passed through said units sequentially, transformed and outputted at said first terminal in said first order.

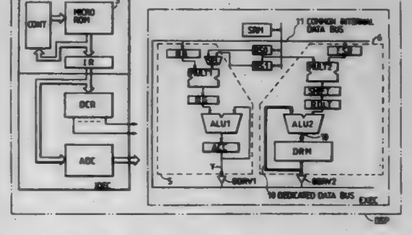


5,297,071

ARITHMETIC CIRCUIT, AND ADAPTIVE FILTER AND ECHO CANCELER USING IT

Kinihiro Sugino, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,538
Claims priority, application Japan, Mar. 29, 1991, 3-091156
Int. Cl.[5] G06F *7/00*
U.S. Cl. 364—736 **20 Claims**



1. An arithmetic circuit comprising:

a register for storing a predetermined data;

first data bus means, including a plurality of signal lines, and for transferring data;

memory means including,

a plurality of word lines, data lines, and a plurality of memory cells for storing data,

decoding means for selecting one word line from the plurality of word lines according to an address supplied, and

data input/output means to which the data lines are coupled, wherein the memory means outputs data from the memory cells coupled to the word line selected according to the address;

arithmetic means having a first input terminal for receiving the predetermined data from the register and a second input terminal for receiving data from the selected memory cells, the arithmetic means performing calculation on the data from the memory cells and the predetermined data from the register, the arithmetic means having an output terminal coupled to the memory means for outputting the calculation result, wherein the result of calcula-

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tion by the arithmetic means is written from the output terminal of the arithmetic means into the memory cells coupled to the selected word line; and

data path means, including a plurality of signal lines, and for transferring data from the selected memory cells, wherein the data path means has a part dedicated only to transfer data from the selected memory cells to the second input terminal.

5,297,072

SQUARE-ROOT OPERATING CIRCUIT ADAPTED TO PERFORM A SQUARE-ROOT AT HIGH SPEED AND APPLY TO BOTH OF BINARY SIGNAL AND QUADRUPLE SIGNAL

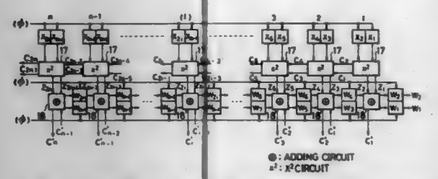
Yukihiro Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1993, Ser. No. 31,996

Claims priority, application Japan, Mar. 18, 1992, 4-62451; Feb. 16, 1993, 5-26339

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—752 **21 Claims**



1. A square-root operating circuit adapted to perform a square-root at high speed of both a binary signal and a quadruple signal, comprising:

means for performing a square of an input signal, said performing means arranged to perform said square of a candidate square-root of any one of an originally quadruple logic input signal and a quadruple logic input signal converted from binary logic and

means for comparing said input signal with said square of the candidate square-root at each digit and for outputting a result of each comparison so as to discriminate a proper digit of said square-root.

5,297,073

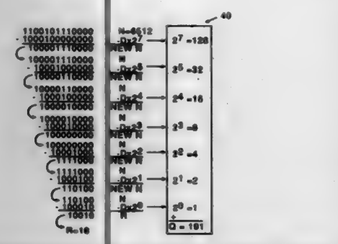
INTEGER DIVIDE USING SHIFT AND SUBTRACT

David Davidian, Cambridge, Mass., assignor to NEC Electronics, Inc., Mountain View, Calif.

Filed Aug. 19, 1992, Ser. No. 932,393

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—766 **5 Claims**



1. A method of operating a computer wherein said computer comprises a data flow processor, said method comprising:

(1) inputting a numerator N and a denominator D into a storage location;

(2) determining the number of leading zeros L in said denominator;

(3) forming a trial multiplier table including powers of two, said trial multiplier table including the value 2^L;

(4) forming a mask entry table of left shifted denominator values, each mask entry table value formed by multiplying said denominator by an associated trial multiplier;

(5) storing said numerator as a new numerator;

(6) performing trial subtractions with successive values of said mask entry table from said new numerator until a selected mask entry table value yields a smallest positive subtraction result;

(7) forming a subquotient token containing said associated trial multiplier associated with said selected mask entry table value;

(8) storing said smallest positive subtraction result as said new numerator;

(9) repeating steps (6), (7) and (8) until no mask entry table value, when subtracted from said new numerator, yields a positive subtraction result;

(10) forming a quotient comprising the sum of said subquotients; and

(11) forming a remainder by reading said new numerator.

5,297,074

ROLL-OFF FILTER APPARATUS

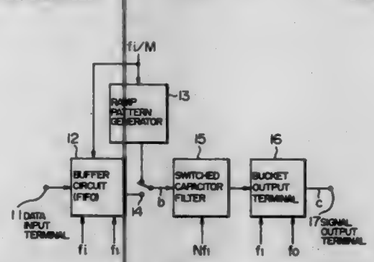
Kouichi Honma, Yokohama, Japan, assignor to Matsushita Electric Industrail Co., Ltd., Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 894,610

Claims priority, application Japan, Jun. 14, 1991, 3-142916

Int. Cl.[5] G06G *7/02*

U.S. Cl. 364—825 **3 Claims**



1. A roll-off filter apparatus comprising

a buffer circuit of a first in first out type having an input for receiving a data input signal made up on data blocks with gaps therebetween, said buffer circuit also having an output,

a ramp pattern generator having an output for supplying a rising and falling signal pattern in the form of a burst signal,

a filter with an input and having a roll-off filter characteristic,

switch means connected to said outputs of said buffer circuit and said ramp pattern generator and said input of said filter, said filter receiving at its input a signal from said switch means in which said rising and falling signal pattern is inserted in said gaps between each of said data blocks in said data input signal, and

an analog storage device receiving the output signal of said filter as its input, said device having a variable input/output data transmission rate.

5,297,075

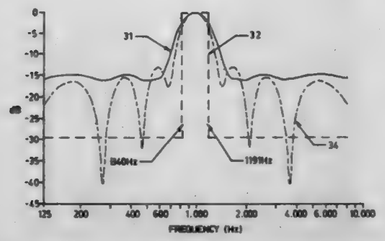
COMPUTER CONTROLLED TRANSVERSAL EQUALIZER

Richard W. Peters, Algonquin; John G. Christopher, Berkeley, and John W. Staples, Buffalo Grove, all of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.

Filed Jul. 27, 1992, Ser. No. 919,742

Int. Cl.[5] G06G *7/02*

U.S. Cl. 364—825 **4 Claims**



1. A minimum-phase equalizer network adapted to develop an equalized output signal having a predetermined frequency response characteristic with minimum ripple, over a preselected frequency range, comprising:

a series chain of N all pass delay stages, the chain having an initial tap connected to the input to the first stage in the chain and N additional taps each connected to the output of a succeeding stage in the chain;

N+1 scaling circuits, each connected to one of the taps, each scaling circuit having a scaling coefficient based on the log magnitude of the desired frequency response; and

summing circuit means for additively combining the outputs of all of the scaling circuits to develop the equalized output signal.

5,297,076

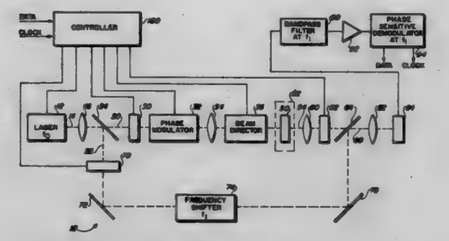
SPECTRAL HOLE BURNING DATA STORAGE SYSTEM AND METHOD

Carl M. Jefferson, San Jose, Calif., and Alfred J. Meixner, Winterthur, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1992, Ser. No. 902,621

Int. Cl.[5] G11C *13/04*

U.S. Cl. 365—119 **16 Claims**



1. A data storage system comprising:

an inhomogeneously broadened material;

a means for generating a reference optical pulse directed at the material;

a means for generating a phase modulated optical data pulse directed at the material;

a means for generating a comparison optical pulse;

an optical detection means for receiving an optical echo pulse from the material and for receiving the comparison optical pulse; and

a phase detection means connected to the optical detection means for generating a data signal.

5,297,077

MEMORY HAVING FERROELECTRIC CAPACITORS POLARIZED IN NONVOLATILE MODE

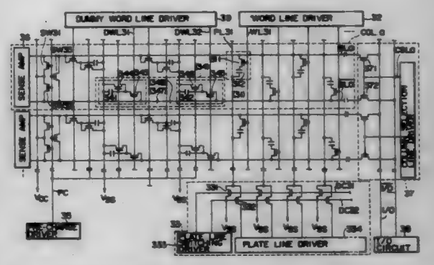
Motomasa Imai, Tokyo; Hiroshi Toyoda, Yokohama; Kazuhide Abe; Koji Yamakawa, both of Kawasaki; Hisakazu Iizuka, Yokohama; Mitsuo Harata, Kawasaki, and Koji Sakui, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1991, Ser. No. 676,546

Claims priority, application Japan, Mar. 30, 1990, 2-81131; Mar. 30, 1990, 2-84680

Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **19 Claims**



1. A semiconductor memory comprising:

at least one ferroelectric capacitor having a predetermined capacitance;

voltage output means for outputting a first voltage for reversely polarizing said ferroelectric capacitor and a second voltage for forwardly polarizing said ferroelectric capacitor, regardless of data stored in said ferroelectric capacitor;

a first reference capacitor having such a capacitance as to accumulate less charge than charge which said ferroelectric capacitor accumulates, when the second voltage is applied to said ferroelectric capacitor;

a second reference capacitor having such a capacitance that as to accumulate greater charge than the charge which said ferroelectric capacitor accumulates while said ferroelectric capacitor is forwardly polarized, when the first voltage is applied to said ferroelectric capacitor, thus reversely polarizing said ferroelectric capacitor;

a sense amplifier connected to said ferroelectric capacitor and one of said reference capacitors; and

reference-capacitor selecting means for connecting said first reference capacitor to said sense amplifier when said voltage output means outputs the second voltage, and connecting said second reference capacitor to said sense amplifier when said voltage output means outputs the first voltage.

5,297,078

STATIC SEMICONDUCTOR MEMORY DEVICE FOR STABLE OPERATION

Takashi Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1992, Ser. No. 897,774

Claims priority, application Japan, Jun. 27, 1991, 3-183105

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—149 **4 Claims**

1. A semiconductor memory device of a static type achiev-

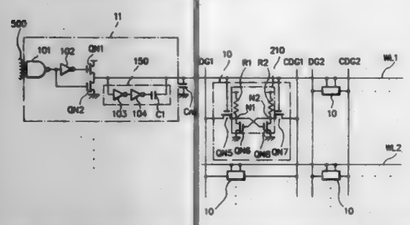
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ing information read and write operations according to a content specified by an address, comprising:

memory cells which are connected to a predetermined word lines respectively related thereto and which are connected to predetermined first and second digit lines respectively associated therewith,

each said memory cell including a flip flop circuit for storing and keeping therein information and a first gate circuit and a second gate circuit which respectively connect the flip flop circuit to a first digit line and a second digit line in a respective manner according to a potential of the word line; and

word line selector circuits connected to predetermined word lines respectively associated therewith,



each said word line selector circuit selecting one of the word lines related thereto in response to the address signal by a voltage of said word line,

each said word line selector including a booster circuit for increasing a voltage of the word line to produce a higher first level and a lower second level for a write operation and a read operation, respectively;

said booster circuit including:

a first booster section including two inverters and a capacitor connected in series thereto,

the series connection of said two inverters and said capacitor being connected in parallel to the word line; and

a second booster section including a second capacitor which is selectively connected to said first capacitor according to a write signal in a write operation.

5,297,079

MEMORY DEVICES HAVING NAND TYPE CELLS USING BOTH REFERENCE CELLS AND DUMMY CELLS

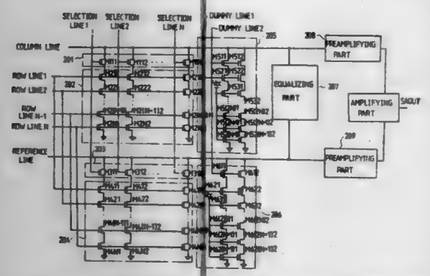
Chang W. Ha, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Sep. 28, 1992, Ser. No. 952,043

Claims priority, application Rep. of Korea, Sep. 27, 1991, 1991-16946

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—182 **17 Claims**



1. A memory device having NAND type cell, comprising:

a column line to which a plurality of NAND type cells are connected;

a reference line to which a reference potential is applied;

a reference cell string selecting means connected to said reference line for selecting each reference cell string;

a reference storage means connected to said reference cell string selecting means and to a plurality of row lines in the memory device for providing a reference potential;

first and second dummy lines to which signals varying with address transitions are applied;

a column dummy cell means connected to a power source, to said column line and to said first and second dummy lines for providing a potential to said column line;

a reference dummy cell means connected to the power source, to said reference line and to said first and second dummy lines for providing a potential to said reference line;

a first preamplifying means connected to said column line for preamplifying the applied potential;

a second preamplifying means connected to said reference line for preamplifying the applied potential;

an equalizing means connected to said column and to said reference line for equalizing the potentials; and

an amplifying means connected to said first and second preamplifying means for amplifying potential difference.

5,297,080

SENSE AMPLIFIER IN SEMICONDUCTOR MEMORY DEVICE

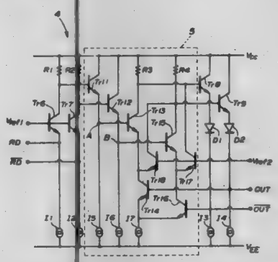
Yasuhiro Yamamoto, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Jul. 9, 1991, Ser. No. 727,598

Claims priority, application Japan, Jul. 9, 1990, 2-181888

Int. Cl.[5] H03K *5/153*

U.S. Cl. 365—190 **14 Claims**



1. A sense amplifier in a semiconductor memory device having plural memory cells arranged in corresponding rows and columns, at least one pair of bit lines coupled to the plurality of memory cells of a column thereof and plural word lines connected to the plurality of memory cells of the respectively corresponding rows, comprising:

detection means for generating complementary state signals exhibiting the respective states of a pair of bit lines coupled to the plurality of memory cells of a corresponding column in the semiconductor memory device and to each of which corresponding word lines are coupled;

an input circuit comprising first and second transistors having corresponding bases thereof connected in common and having the corresponding emitters thereof connected to respective, first and second independent power sources and respectively connected to and receiving the complementary state signals generated by the detection means, the input circuit amplifying the complementary state signals independently of each other and producing as the outputs thereof corresponding, amplified complementary state signals; and

latch means, operatively coupled to said input circuit, for receiving said amplified complementary state signals and a reference voltage signal and for inverting the respective states of the received and amplified complementary state signals and outputting the inverted complementary state signals only when the voltage level of one of said received and amplified complementary state signals decreases to a level lower than the voltage level of said reference voltage signal.

5,297,081

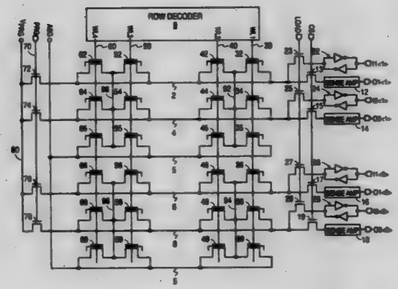
ELECTRICAL ERASABLE PROGRAMMABLE READ-ONLY MEMORY ARRAY

Nagesh Challa, Sunnyvale, Calif., assignor to Nexcom Technology, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 625,807, Dec. 11, 1990, Pat. No. 5,222,040. This application Jun. 10, 1992, Ser. No. 896,772

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—184 **5 Claims**



1. A memory operative in an erase mode, a program mode, or a read mode, comprising a plurality of word lines arranged in groups of a number "n," a plurality of banks equal to the number of bits in a byte, and a plurality of bit lines per bank equal to the number of bytes in a word, wherein a bank comprises:

a plurality of groups of memory cells associated with each bit line, wherein each group of memory cells comprises a number "n" of memory cells associated with a common one of the bit lines and having their read control terminals respectively connected to the word lines of one of the word line groups; and

a plurality of groups of switches, wherein each group of switches comprises n switches associated with a common reference line and having their control terminals respectively connected to the word lines of one of the word line groups;

wherein the memory cells and the switches having their control terminals connected to the same one of the word line groups have a common operating line; and

the memory further comprising a plurality of sense amplifiers respectively associated with the bit lines, each of said sense amplifiers having a current threshold between an amount of current drawn by one ON memory cell and an amount of current drawn by n−1 OFF memory cells.

5,297,082

SHALLOW TRENCH SOURCE EPROM CELL

Roger Lee, Bosie, Id., assignor to Micron Semiconductor, Inc., Bosie, Id.

Filed Nov. 12, 1992, Ser. No. 976,226

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—185 **18 Claims**

1. A programmable read-only memory device, comprising:

a) a semiconductor substrate having first and second major surfaces, said second major surface being in an inferior plane with respect to said first major surface, said substrate being discontinuous thereby, said second major surface forming a bottom of a trench, said trench having a substantially vertical sidewall;

b) a gate dielectric layer overlying first and second portions of said first major surface of said substrate;

c) a floating gate overlying said first position of said first major surface, said floating gate having a substantially vertical sidewall;

d) an insulation layer overlying said floating gate;

e) a control gate layer overlying said insulation layer, said control gate layer comprising a plurality of control gates, said control gates having a substantially vertical sidewall;

f) a plurality of drain regions formed under said second portion of said first major surface; and

g) a plurality of source regions formed under said second major surface wherein said source regions are interposed between said control gates,

wherein said substantially vertical sidewalls of said trench, said floating gate, and one of said control gates align vertically.

5,297,083

Patent Not Issued For This Number

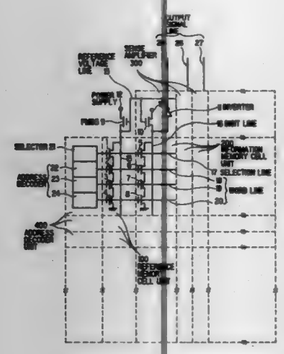
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,084

MEMORY DEVICE WITH CURRENT MIRROR TYPE SENSE AMPLIFIERS FOR COMPARING UNITS OF REFERENCE CELLS AND INFORMATION CELLS

Akira Ban, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,646
Claims priority, application Japan, Nov. 27, 1990, 2-327737
Int. Cl.[5] G11C 7/00, 7/02
U.S. Cl. 365—189.09 5 Claims



1. A memory device with current mirror type sense amplifiers, comprising:

a plurality of information memory cell units arranged in a matrix pattern having a predetermined number of columns and a predetermined number of rows, each of said information memory cell units comprising a first selection cell and information memory cells, information being stored in said information memory cells;

a plurality of address decoder units each comprising a selector for controlling turning-on and off of said first selection cell and an address decoder for accessing said information memory cells, said selector being connected in each row to said selection cell by a selection line, and said address decoder being connected at outputs in said each row to said information memory cells by word lines;

a plurality of sense amplifiers connected to columns of said information memory cell units by digit lines, respectively; and

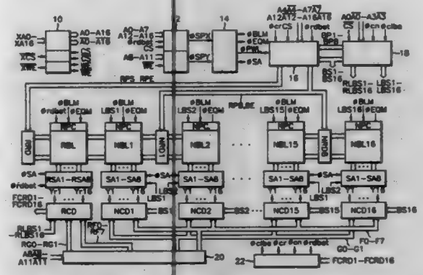
a plurality of reference memory cell units each comprising a second selection cell and reference memory cells including depletion-type NMOS transistors, and connected to rows of said information memory cell units, respectively, such that said second selection cell is connected in said each row to said selector by said selection line, and said reference memory cells are connected in said each row to said outputs of said address decoder by said word lines, whereby one of said reference memory cell units applies a reference voltage to a reference voltage line connected to said sense amplifiers, when said second selection cell is selected in said one of said reference memory cell units by said selector of said address decoder unit.

5,297,085

SEMICONDUCTOR MEMORY DEVICE WITH REDUNDANT BLOCK AND CELL ARRAY

Kyu-Hyun Choi, Seoul; Hyun -Kun Byun; Jung-Ryul Lee, both of Suwon, and Choong-Kun Kwak, Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 359,685, May 31, 1989, abandoned. This application Dec. 2, 1991, Ser. No. 800,701
Claims priority, application Rep. of Korea, May 24, 1989, 1989-6959
Int. Cl.[5] G11C 7/00, 8/00, 29/00
U.S. Cl. 365—200 32 Claims



1. A semiconductor memory device, comprising:

a plurality of normal blocks each having a plurality of normal row lines and bit lines pairs, each of which respectively contains a plurality of normal memory cells thereto and therebetween, the normal bit line pairs in the respective normal blocks being arranged to form a plurality of normal bit line pair groups;

a redundant block having a plurality of redundant row lines and bit line pairs, each of which respectively contains a plurality of redundant memory cells thereto and therebetween, the redundant bit line pairs in the redundant block being arranged to form redundant bit line pair groups whose number is equal to that of the normal bit line pair groups;

block decoder means for generating block selecting signals selecting one of the normal blocks in response to first address signals;

column predecoder means for producing column predecoding signals selectively addressing one of normal bit line pairs in the respective normal bit line pair groups in each of the normal blocks and one of redundant bit line pairs in the respective redundant bit line pair groups in response to second address signals;

a redundant column decoder for selecting, upon receipt of the block selecting signals and the column predecoding signals addressing a normal bit line pair containing a defective normal memory cell, redundant bit line pairs in the respective redundant bit line pair groups corresponding to the defective normal bit line pair, said redundant column decoder producing redundant operation signals, when selecting the redundant bit line pairs;

means for producing redundant control signals upon receipt of the redundant operation signals;and

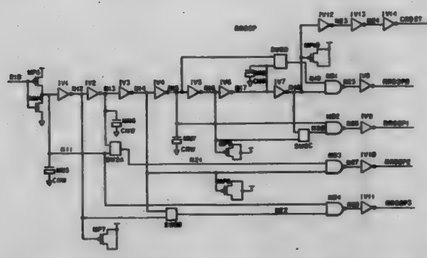
a plurality of normal column decoders associated with the respective normal blocks, one of the normal column decoders being enabled in response to said block selecting signals when a defect-free normal memory cell is addressed and selecting normal bit line pairs containing a normal bit line pair having the defect-free normal memory cell in the respective normal bit line pair groups in the addressed normal block, said plurality of normal column decoders all being disabled in response to said redundant control signals when a defective normal memory cell is addressed.

5,297,086

METHOD FOR INITIALIZING REDUNDANT CIRCUITRY

Takumi Nasu, Dallas, and Hugh P. McAdams, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 560,935, Jul. 31, 1990, abandoned. This application May 27, 1992, Ser. No. 892,390
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—200 5 Claims



1. In a semiconductor memory device having an array of memory cells and redundant array circuits, a method to reduce peak current power drawn by in the redundant array circuits when electrical power is applied to the semiconductor device comprising the steps of:

producing a power up signal in response to sensing application of power to the device;

dividing the redundant array circuits into plural redundant array groups;

generating a timed sequence of plural activation pulses for the respective plural redundant array groups in response to receipt of the power up signal; and

supplying the activation pulses to the respective redundant array groups so that each group receives power in timed sequence to avoid high peak current into the redundant array circuits.

5,297,087

METHODS AND DEVICES FOR ACCELERATING FAILURE OF MARGINALLY DEFECTIVE DIELECTRIC LAYERS

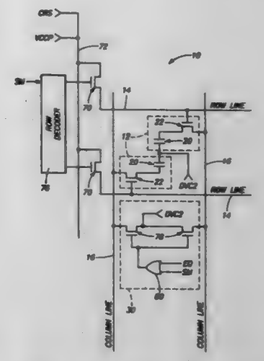
Stephen R. Porter, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 29, 1993, Ser. No. 54,902
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—201 26 Claims

1. A method of stressing a semiconductor memory device to induce failure of marginally defective dielectric layers within the semiconductor memory device, the memory device having a plurality of row lines, a plurality of column lines, and a common storage cell plate; the method comprising the following steps:

simultaneously connecting a row line stress voltage to a plurality of row lines; a column line stress voltage to a plurality of column lines; and a cell plate stress voltage to the common storage cell plate; and

creating a voltage stress differential between at least two of the stress voltages, the voltage stress differential being greater than any voltage differential occurring between the row lines, the column lines, and the storage cell plate during memory access operations.

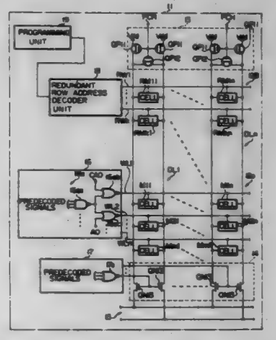


5,297,088

RANDOM ACCESS MEMORY DEVICE WITH REDUNDANT ROW DECODER FOR CONTROLLING A PLURALITY OF REDUNDANT WORD LINES

Takashi Yamaguchi, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,037
Claims priority, application Japan, Dec. 25, 1990, 2-413753
Int. Cl.[5] G11C 7/00
U.S. Cl. 365—200 8 Claims



1. A random access memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of regular memory cells arranged in rows and columns, and respectively storing data bits, each of said regular memory cells having a row address indicated by a plurality of row address bits and a column address indicated by a plurality of column address bits;

b) a plurality of regular word lines respectively associated with said rows of said regular memory cells, and selectively driven for making one of said rows of said regular memory cells accessible;

c) a plurality of redundant memory cells arranged in rows and columns, each of said rows of said regular memory cells being replaceable with one of said rows of said redundant memory cells for storing data bits;

d) a plurality of redundant word lines respectively associated with said rows of said redundant memory cells, and selectively driven for making one of said rows of said redundant memory cells accessible;

e) at lease one programming circuit storing address bits representative of a row address assigned to one of said rows including at least one defective regular memory cell, and operative to determine whether said address bits are matched with predetermined row address bits selected from said plurality of row address bits, said at least one programming circuit producing a matching signal when said address bits are matched with said predetermined row address bits; and

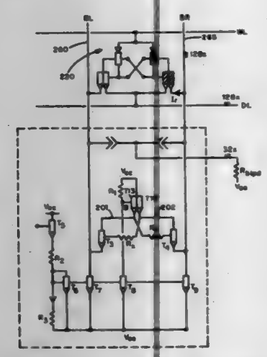
f) at lease one redundant row address decoder circuit associated with four redundant word lines selected from said plurality of redundant word lines for allowing said four redundant word lines to be selectively accessible, and supplied with said matching signal and with two row address bits and corresponding complementary bits of said two row address bits indicative of one of said four redundant word lines, said at least one redundant row address decoder circuit selectively driving one of said four redundant word lines in the presence of said matching signal.

5,297,089

BALANCED BIT LINE PULL UP CIRCUITRY FOR RANDOM ACCESS MEMORIES

Robert C. Wong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1992, Ser. No. 842,673
Int. Cl.[5] G11C *7/00, 11/40*
U.S. Cl. 365—202 10 Claims



6. A random access memory bit line pair balancing circuit, for eliminating the offset between a pair of bit lines to which a plurality of memory cells and a bit line driver are coupled in a random access memory system, comprising:

(a) a first transistor pair (T_{13}, T_{14}) having a common control terminal (B), a common first conduction terminal tied to a first voltage reference (V_{cc}), and a pair of second conduction terminals;

(b) said V_{cc} connected to said common first conduction terminal;

(c) control means (R_1) connected between said first voltage reference and said common control terminal; and

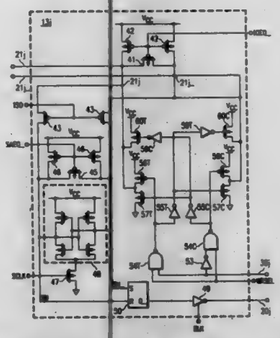
(d) a pair of balancing transistors (T_3, T_4), wherein each of said balancing transistors has a resistor (R_x, R_y) connected between a control terminal and a first conduction terminal of the other transistor of said pair of balancing transistors.

5,297,090

SEMICONDUCTOR MEMORY WITH COLUMN DECODED BIT LINE EQUILIBRATE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 13, 1990, Ser. No. 627,050
Int. Cl.[5] G11C *7/00, 11/34*
U.S. Cl. 365—203 19 Claims



1. A memory in an integrated circuit, comprising:

a plurality of memory cells arranged in rows and columns;

a plurality of pairs of bit lines, each associated with one of said columns, for communicating a differential signal from a selected memory cell in its associated column;

a row decoder for selecting, responsive to a row address, a plurality of memory cells for connection with their associated pair of bit lines;

a plurality of equilibration transistors, each associated with a pair of bit lines, having a conduction path connected between its associated bit lines, and having a control terminal;

a column decoder for selecting a column in said array responsive to a column address; and

means for controlling the control terminals of said equilibration transistors according to said column address in such a manner that each of said equilibration transistors is conductive responsive to its associated column being not selected, and in such a manner that each of said equilibration transistors is not conductive responsive to its associated column being selected so that the selected memory cell in the selected column places a differential signal on its associated bit lines without opposition from a DC load;

wherein said controlling means is also for controlling the control terminals of said equilibration transistors in such a manner that each of said equilibration transistors is conductive responsive to a transition in either said row address or in said column address.

5,297,091

EARLY ROW ADDRESS STROBE (RAS) PRECHARGE

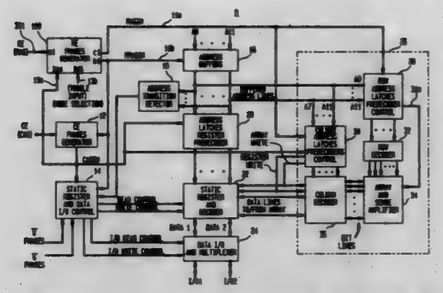
Robert M. Blake, Wappingers Falls, N.Y.; William P. Hovis, Rochester, Minn., and David J. Perlman, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1991, Ser. No. 786,241
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—203 13 Claims

1. A memory system, which includes a random access memory array whose contents are selectively read out to a static register, the memory system comprising:

means coupled to the memory array and within the static register for receiving and statically storing a predetermined number of data bits read out from the memory array upon the receipt of a read-out command; and

enabling means coupled to the static register and to the memory array for enabling the read-out of the contents of



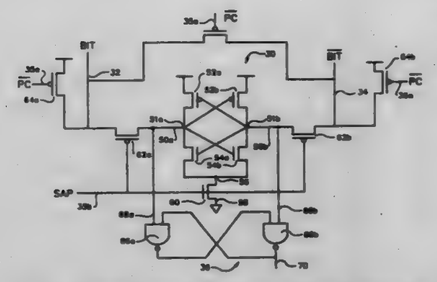
the static register and for concurrently precharging the memory array to prepare the memory array for a subsequent read-out command.

5,297,092

SENSE AMP FOR BIT LINE SENSING AND DATA LATCHING

Larry D. Johnson, San Jose, Calif., assignor to Mips Computer Systems, Inc., Sunnyvale, Calif.

Filed Jun. 3, 1992, Ser. No. 892,918
Int. Cl.[5] H03K *17/16*; G11C *11/409*
U.S. Cl. 365—203 12 Claims



1. In a memory device which outputs binary signals on a plurality of bit and inverse bit lines, a sense amplifier for determining the binary state of said bit and inverse bit lines and outputting a signal indicating the sensed binary state, comprising:

amplifier means for receiving a first, pre-charge signal and for receiving a second signal from said bit line and a third signal from said inverse bit line which is the inverse of said second signal, said amplifier means including first and second means for retaining said pre-charge signal;

means for

selectively discharging one of said first and second means, depending on the binary state of said second and third signals and

uncoupling said bit line and inverse bit line from said amplifier means;

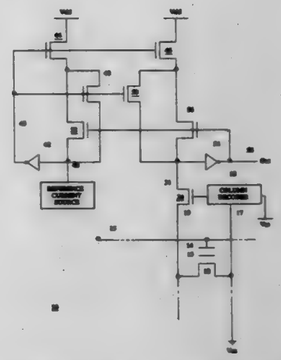
latching means for outputting latch output signals based on the state of said amplifier means, said latch output signals including a first signal when said first means is the means which is discharged and outputting a second signal when said second means is the means which is discharged, said outputting occurring before said one of said first and second means is fully discharged, and after said bit and inverse bit lines are uncoupled from said amplifier means wherein said latching means is perpetually enabled, such that either said first or second signals may be output without the need for first receiving an enablement signal.

5,297,093

ACTIVE CASCODE SENSE AMPLIFIER

Tim M. Coffman, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1993, Ser. No. 967
Int. Cl.[5] G11C *11/409*
U.S. Cl. 365—208 14 Claims



14. In a computer having non-volatile memories, each non-volatile memory having an array of memory cells, each cell having a drain, and the drains of all the cells for one column of cells connected to a drain-column line, a sense amplifier for reading the state of a memory cell, the sense amplifier comprising:

(a) means for sensing a reference current;

(b) means for providing drain-column voltage swings during the reference current sensing;

(c) means for sensing the current on the drain-column line;

(d) means for purposefully producing voltages above and below a reference voltage, the produced voltages representing the state of the memory cell; and

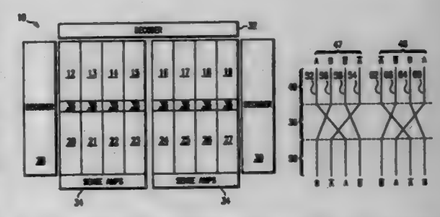
(e) means for biasing the drain-column voltage swings, using the produced voltages.

5,297,094

INTEGRATED CIRCUIT MEMORY DEVICE WITH REDUNDANT ROWS

Bahador Rastegar, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 17, 1991, Ser. No. 731,487
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—210 14 Claims



9. A method for transmitting data to and from a dual port memory array, comprising the steps of:

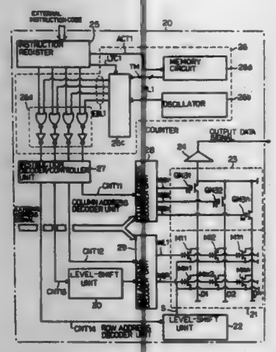
for data written into a first and a second set of rows in the array from a first port, writing uncomplemented data into the array;
for data written into the first set of rows from a second port, writing uncomplemented data into the array;
for data written into the second set of rows from the second port, complementing the data prior to writing it into the array; and
for data written into a spare row substituted for a row in the second set of rows, complementing the data twice before writing it into the array.

5,297,095

SEMICONDUCTOR NON-VOLATILE MEMORY DEVICE IMPROVED IN VERIFYING OPERATION FOR ERASED AND WRITE-IN STATES

Toshiya Sato, and Kazuhisa Nisomiya, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 943,003
Claims priority, application Japan, Sep. 10, 1991, 3-258411
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—218 **5 Claims**



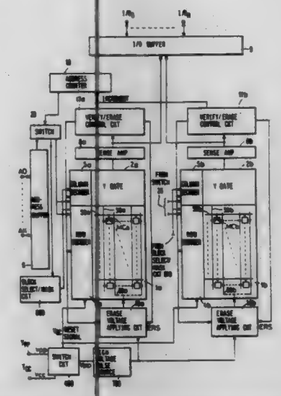
1. A semiconductor non-volatile memory device fabricated on a single semiconductor chip and having at least an erasing mode, a write-in mode and a read-out mode of operation, comprising:
a) a plurality of memory cells for storing electrically erasable data bits;
b) a timer means for storing an interval data indicative of a time period determined through an inspection sequence for said plurality of memory cells for appropriately allowing most of said plurality of memory cells to enter an erased state, and producing an enable signal until said time period is expired; and
c) an erasing means responsive to an external instruction code indicative of an erasing mode of operation, and enabled with said enable signal for erasing said electrically erasable data bits stored in said plurality of memory cells, thereby causing most of said plurality of memory cells to enter said erased state.

5,297,096

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND DATA ERASING METHOD THEREOF

Yasushi Terada; Takeshi Nakayama; Shinichi Kobayashi; Yoshikazu Miyawaki; Masanori Hayashikoshi, and Tomoshi Futatsuya, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1991, Ser. No. 711,547
Claims priority, application Japan, Jun. 15, 1990, 2-158358; May 30, 1991, 3-127873
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—218 **55 Claims**



1. A nonvolatile semiconductor memory device comprising:
a memory cell array including a plurality of memory cells, said memory cell array divided into first and second blocks,
each of said memory cells including a field effect semiconductor element enabling both data writing and data erasing electrically;
first high voltage applying means for collectively applying high voltages to said memory cells included in said first block for the data erasing;
second high voltage applying means for collectively applying high voltages to said memory cells included in said second block for said data erasing;
reading means for reading storage data of said memory cells included in said first and second blocks to detect incomplete data erasing; and
control means for selectively enabling said first and second high voltage applying means in response to the data read by said reading means.

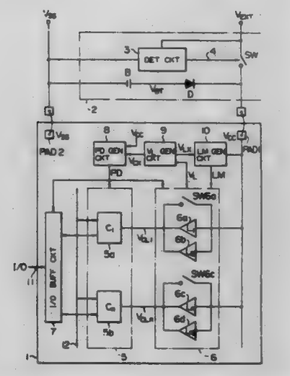
5,297,097

LARGE SCALE INTEGRATED CIRCUIT FOR LOW VOLTAGE OPERATION

Jun Etoh, Hachioji; Kiyoo Itoh, Higashikurume; Yoshiki Kawajiri, Hachioji; Yoshinobu Nakagome, Hachioji; Eiji Kume, Hachioji, and Hitoshi Tanaka, Tachikawa, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering, both of Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 366,869
Claims priority, application Japan, Jun. 17, 1988, 63-148104; Sep. 7, 1988, 63-222317; Feb. 10, 1989, 1-29803; Mar. 20, 1989, 1-66175
Int. Cl.[5] G11C *5/14, 11/407*
U.S. Cl. 365—226 **16 Claims**

1. A semiconductor device comprising:
a semiconductor chip;
circuit blocks formed on the semiconductor chip, selectively supplied by an internal power supply voltage or plural internal power supply voltages;
a reference voltage generator formed on the semiconductor chip, for outputting a reference voltage comprising a supply voltage reference level for operation of a one of the circuit blocks;
voltage converter means formed on the semiconductor chip for selectively converting an external power supply voltage to the internal power supply voltage or to one of the plural internal power supply voltages by using said reference voltage as the reference level; and



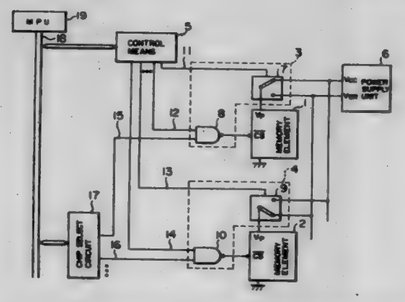
an input/output buffer circuit formed on the semiconductor chip;
wherein the voltage converter means includes an amplifier means for selectively generating the internal power supply voltage or the plural internal power supply voltages according to the reference voltage, and the voltage converter means includes switching means for selectively connecting the external power supply voltage to the circuit blocks when the external power supply voltage is smaller than the reference voltage.

5,297,098

CONTROL APPARATUS FOR DATA STORAGE APPARATUS

Kohichi Nakatani, Yokohama, and Takashi Tsuchiro, Ebina, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1991, Ser. No. 650,418
Claims priority, application Japan, Feb. 9, 1990, 2-030940
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 **15 Claims**



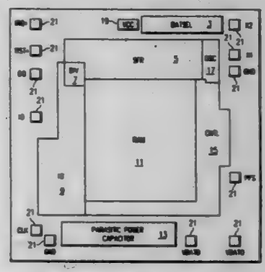
1. A control apparatus for a data storage apparatus comprising:
storage means for storing data and having a power supply terminal to which a first voltage and a second voltage different from said first voltage are selectively supplied to switch said storage means between a normal electric power consumption state and a low electric power consumption state wherein an electric power consumption of said storage means is lower than in said normal electric power consumption state;
switching means for selectively supplying said first voltage and said second voltage to said power supply terminal of said storage means, thereby switching said storage means between said normal electric power consumption state and said low electric power consumption state;
access means for selectively accessing said storage means; and
control means for detecting accessing of said storage means performed by said access means, for controlling said switching means to supply said first voltage to said power supply terminal of said storage means when said access means is accessing said storage means, thereby switching said storage means to said normal electric power consumption state, and for controlling said switching means to supply said second voltage to said power supply terminal of said storage means when said access means is not accessing said storage means, thereby switching said storage means to said low electric power consumption state.

5,297,099

INTEGRATED CIRCUIT WITH BOTH BATTERY-POWERED AND SIGNAL-LINE-POWERED AREAS

Michael L. Bolan, Dallas, and Clark R. Williams, Plano, both of Tex., assignors to Dallas Semiconductor Corp., Dallas, Tex.

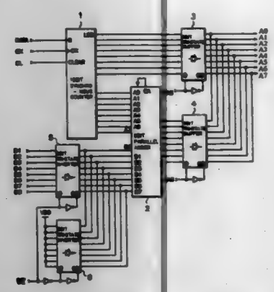
Filed Jul. 10, 1991, Ser. No. 727,639
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—229 **41 Claims**



1. An integrated circuit, comprising:
a power supply;
a data input buffer connected to at least one signal line;
decoding circuitry operatively connected to receive and decode signals received through said data input buffer;
first energy-storage circuitry operatively connected to said signal line, said first energy-storage circuitry supplies powers said data input buffer;
second energy-storage circuitry operatively connected to said signal line, said second energy-storage circuitry supplies powers said decoding circuitry; and
a first plurality of transistors said further plurality of transistors powered by said power supply.

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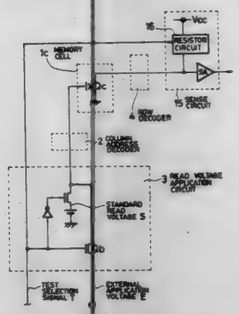
5,297,100
ADDRESS CONTROL SYSTEM FOR A RAM IN A DIGITAL AUDIO SET
Byung-Chull Park, Buchon-city, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Apr. 10, 1992, Ser. No. 866,858
Claims priority, application Rep. of Korea, Sep. 28, 1991, 91-16964
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.01 **15 Claims**



1. An address control system for a random access memory, comprising:
a synchronous counter for receiving input data according to a clock signal and providing an n-bit row address and an n-bit column address;
a first tri-state buffer for providing said n-bit row address in dependence upon said n-bit row address received from said synchronous counter;
a first tri-state inverter for receiving and inverting delay data stored in a read only memory according to a write enable signal to generate inverted data;
a second tri-state inverter for receiving and inverting reference voltage data according to said write enable signal;
an adder for adding said n-bit column address from said synchronous counter and said inverted data from said first tri-state inverter to generate an added signal; and
a second tri-state buffer for receiving said added signal from said adder and generating a delayed column address delayed by an amount of time based on said delay data.

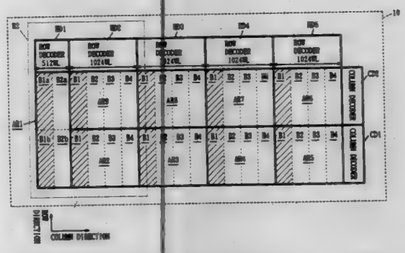
5,297,101
PROM IC WITH A MARGIN TEST FUNCTION
Yoshihiro Tada, and Hiromi Uenoyama, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Filed Oct. 14, 1992, Ser. No. 960,807
Claims priority, application Japan, Oct. 16, 1991, 3-296479
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 **4 Claims**

1. A PROM IC comprising:
a plurality of memory cells;
means responsive to an address signal for selecting one of said memory cells;
a reading voltage application circuit responsive to a test selection signal for switching a reading voltage to be applied to said selected one of said memory cells from a predetermined voltage to an externally supplied voltage to read an information written therein;
sense circuit means for binarizing a read signal from said selected one of said memory cells;
resistor circuit means included in said sense circuit means on the side of an input thereof for pulling-up a potential of said input, said resistor circuit means being responsive to said test selection signal to change its resistance value from a first value to a second value with which drive condition of current flowing through said selected memory cell becomes severe;
wherein each said memory cell comprises a floating gate type transistor and wherein said second value of said resistor circuit means is smaller than said first value; and



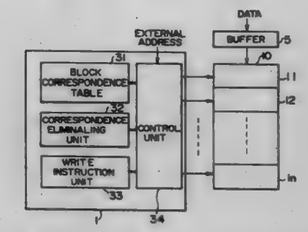
wherein said predetermined voltage applied to said gate of said transistor is 0 V and wherein said first resistance value is in a range from several hundreds k to several M ohms and said second resistance value is in a range from several k to several tens k ohms.

5,297,102
SEMICONDUCTOR MEMORY DEVICE STORING DATA AND PARITY BIT
Tetsushi Tanizaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1992, Ser. No. 950,365
Claims priority, application Japan, Nov. 27, 1991, 3-312631; Sep. 17, 1992, 4-248151
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 **15 Claims**



1. A semiconductor memory device formed on a chip, comprising:
a plurality of first memory arrays arranged in at least two columns each including a plurality of first memory cells;
a second memory array; and
addressing means for accessing said plurality of first memory arrays and said second memory array in parallel; wherein
said plurality of first memory cells of each first memory array are arranged in a plurality of columns and a plurality of rows and said each first memory array is divided into a first number of blocks arranged in a column direction for divisional operation,
said second memory array includes a plurality of second memory cells arranged in a plurality of columns aligned with the plurality of columns of said plurality of first memory cells, and is divided into a second number of blocks arranged in a column direction for divisional operation, the number of columns in each block being greater than the number of rows,
said second number is no greater than half of said first number, and
said plurality of first memory cells included in each of said first number of blocks and the second memory cells included in each of said second number of blocks are arranged in the same number of rows.

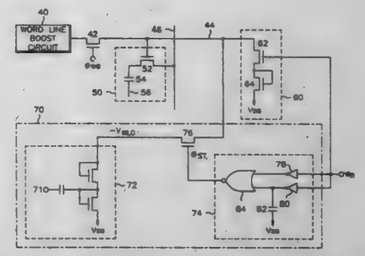
5,297,103
ELECTRICALLY ERASABLE AND PROGRAMMABLE SEMICONDUCTOR MEMORY DEVICE
Mitsuo Higuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 19, 1993, Ser. No. 4,864
Claims priority, application Japan, Jan. 20, 1992, 4-007420
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.03 **13 Claims**



1. An electrically erasable and programmable memory device comprising:
a memory cell array comprising a plurality of blocks, each comprising electrically erasable and programmable memory cells;
data input/output means, coupled to said memory cell array, for transferring data between the memory cell array and an external device; and
address conversion means, coupled to said memory cell array, for converting an external address signal into a decoded signal applied to the memory cell array so that a correspondence between the external address and the plurality of blocks is changed so as to equally access the plurality of blocks for programming,
the number of the plurality of blocks being greater than the number of blocks accessible by the external address signal.

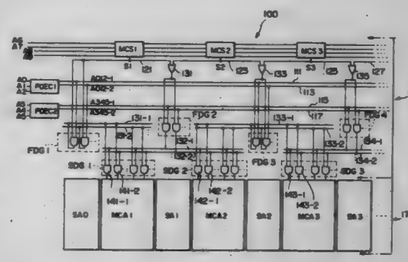
5,297,104
WORD LINE DRIVE CIRCUIT OF SEMICONDUCTOR MEMORY DEVICE
Takashi Nakashima, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Mar. 13, 1992, Ser. No. 850,840
Claims priority, application Rep. of Korea, Mar. 14, 1991, 1991/4068
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 **24 Claims**

1. A semiconductor memory device, comprising:
a plurality of word lines;
a plurality of bit lines each arranged to intersect with a corresponding one of said plurality of word lines;
a plurality of memory cells each arranged at an intersection between one of said plurality of bit lines and said corresponding one of said plurality of word lines;
driving means connected to said plurality of word lines, for selecting and driving voltage potentials of a selected word line from a first voltage level to a second voltage level in response to an input address signal in a memory cycle;
negative voltage generating means connected to said plurality of word lines for generating a negative voltage in a non-memory cycle; and
means for maintaining said selected word line at an intermediate voltage level between said first voltage level and said second voltage level at least at one point between an end



point and a starting point of said memory cycle, wherein an absolute value of a difference between said first voltage level and said intermediate voltage level is less than that of said second voltage level and said intermediate voltage level.

5,297,105
SEMICONDUCTOR MEMORY CIRCUIT
Katsuaki Matsui; Sampei Miyamoto, and Tamihiro Ishimura, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 30,708
Claims priority, application Japan, Mar. 13, 1992, 4-055764
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **8 Claims**



1. A semiconductor memory circuit for selecting one of memory cell groups in response to an address signal having block selection information, first significant bit information and second significant bit information; comprising:
a first memory cell block having a plurality of cells;
a second memory cell block having a plurality of memory cell groups each including a plurality of memory cells;
a third memory cell block having a plurality of memory cell groups each including a plurality of memory cells;
decoder group having a plurality of first
a first decoders, said first decoders each being coupled to one of the memory cell groups in said first memory cell block;
a second decoder group having a plurality of second decoders, said second decoders each being coupled to one of the memory cell groups in said second memory cell block;
a third decoder group having a plurality of third decoders, said third decoders each being coupled to one of the memory cell groups in said third memory cell block;
a first logic circuit outputting a first common block selection signal with respect to said first and second memory cell

blocks in response to the block selection information of the address signal;

a second logic circuit outputting a second common block selection signal with respect to said second and third memory cell blocks in response to the block selection information of the address signal;

a third logic circuit, in response to the second significant bit information, applying a plurality of first common decode signals to said first and second decoder groups upon the first common block selection signal being outputted;

a fourth logic circuit, in response to the first significant bit information, applying a plurality of second common decode signals to said second and third decoder groups upon the second common block selection signal being outputted; and

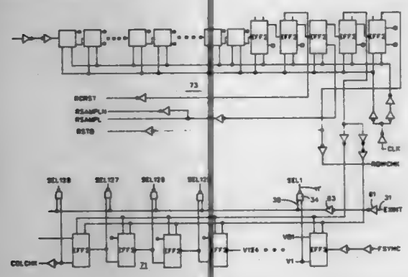
one of said second decoders in said second decoder group, in response to said first and second common decode signals, being activated so as to select one of the memory cell groups in said second memory cell block.

5,297,106

METHOD AND APPARATUS FOR CONTROLLING INTEGRATION TIME ON MULTIPLEXING STARING ARRAYS

Paul E. Green, La Mirada, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 1, 1991, Ser. No. 769,302
Int. Cl.[5] H04N *3/14*
U.S. Cl. 365—233 **7 Claims**



1. A staring sensor array for detecting an object, comprising:

a staring detector array having a plurality of rows of detecting elements for generating signals corresponding to said object detected;

a plurality of integrating capacitors coupled to said detector array for integrating said signals to generate charge-carrier patterns;

row select means, for selectively causing rows of said detector array to be connected to said integrating capacitors by generating a row ON selection signal;

control logic means coupled to said row select means for controlling the time all or any of a portion of each row from said detector array is connected to said integrating capacitors, said control logic means:

receiving said row ON selection signal from said row select means;

generating a clocking signal having controllable on and off states corresponding to a portion of the time each row of said detector array is to be connected to said integrating capacitors; and

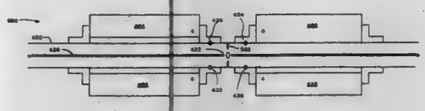
anding said row ON selection signal and its corresponding clocking signal to controllably connect said row to said integrating capacitors.

5,297,107

INTERCONNECT ARRANGEMENT FOR ELECTRONIC COMPONENTS DISPOSED ON A CIRCUIT BOARD

Jeffrey A. Metzger, and Paul J. Graffam, both of Leominster, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 873,922
Int. Cl.[5] H05K *1/18*
U.S. Cl. 361—778 **16 Claims**



1. A substrate with improved electrical performance, comprising:

at least one signal line extending a predetermined distance within the substrate, with the signal line having at least four common connection nodes disposed along its length;

via means that connects to the signal line at the common connection node; and

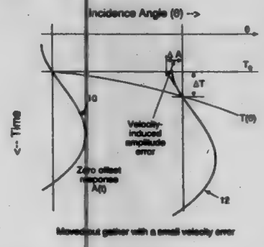
a plurality of electrical component connection means that connect a plurality of electrical components disposed at first and second opposing surfaces of the substrate to the via means, with each of the electrical component connection means for connecting a predetermined connection point of an electrical component disposed at first or second opposing surface of the substrate to the via means, the electrical components being arranged at the first and second opposing surfaces of the substrate such that the predetermined connection points of the plurality of electronic components at each surface are an optimal minimum distance from the common connection node.

5,297,108

SEISMIC VELOCITY ESTIMATION METHOD

Herbert W. Swan, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 982,524, Nov. 27, 1992, Pat. No. 5,258,960.
This application Jun. 14, 1993, Ser. No. 76,889
Int. Cl.[5] G01V *1/28*
U.S. Cl. 367—38 **2 Claims**



1. A method for estimating seismic velocity errors comprising:

performing seismic observations along a surface line to obtain common midpoint seismic data;

selecting a gather of traces having a common midpoint;

performing a normal moveout correction to the gather of traces using a conventional velocity estimation method, such as semblance;

calculating a zero offset reflectivity trace and an amplitude versus offset slope trace from the corrected gather;

calculating a corrected amplitude versus offset slope trace by removing distortions in the amplitude versus offset slope trace caused by normal moveout correction of seismic data;

calculating analytic traces for each of the zero offset reflectivity and the corrected amplitude versus offset slope traces;

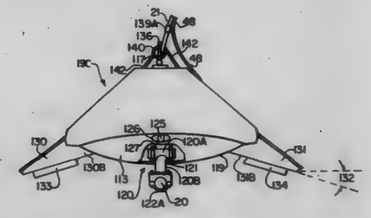
multiplying the analytic zero offset reflectivity trace by the complex conjugate of the analytic slope trace, wherein the imaginary part of the product is an indicator of velocity errors.

5,297,109

PILING AND PIER INSPECTION APPARATUS AND METHOD

Gordon G. Barksdale, Jr., Webster, Tex., and Herman J. Schellstede, New Iberia, La., assignors to American Oilfield Divers, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 919,743, Jul. 27, 1992, Pat. No. 5,231,610. This application Apr. 27, 1993, Ser. No. 52,901
Int. Cl.[5] G01S *15/08*
U.S. Cl. 367—106 **20 Claims**



1. A method of determining the nature of a scoured underwater bottom area adjacent to a structure submerged in a current of rapidly moving water during a flood condition, said method comprising the steps of:

(a) temporarily supporting sonar beam transducer means at least at a first underwater location within sonar beam range of said scoured area, wherein said transducer means is supported by a body which is suspended underwater by means located above the water surface, said body including a laterally extending delta-shaped wing member on each side of said body, which wing tapers inwardly toward an end of said body that faces upstream in said current of water and where each said wing has a trailing edge which laterally slopes downwardly from said body at an angle with the horizontal so as to form an inverted dihedral angle between said wing and said body;

(b) scanning a first portion of said scoured area with a sonar beam from said first underwater location by sweeping said sonar beam through an angle in a first substantially vertical scan plane that points in a first azimuth direction from said first underwater location, so as to generate signals indicative of the range and bearing of said scanned first portion from said transducer means at said first underwater location; and

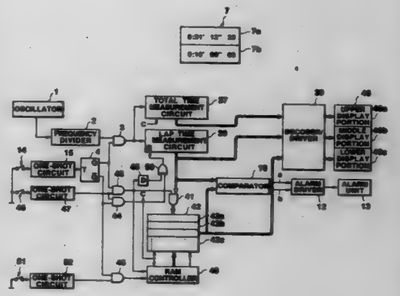
(c) scanning at least a second different portion of said scoured area with a sonar beam from said first underwater location by sweeping said sonar beam through an angle in a second different substantially vertical scan plane that points in a second different azimuth direction from said first underwater location, so as to generate signals indicative of the range and bearing of said scanned second portion from said transducer means at said first underwater location.

5,297,110

STOPWATCH WITH TARGET TIME FUNCTION

Tatsuo Ohira, Akishima, and Naoyuki Sakazaki, Tachikawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1991, Ser. No. 646,827
Claims priority, application Japan, Jan. 31, 1990, 2-8794; Feb. 21, 1990, 2-40669
Int. Cl.[5] G04F *8/00*
U.S. Cl. 368—110 **9 Claims**



1. A stopwatch comprising:

operation switching means for generating a start command when operated;

time measuring means for starting a measuring operation to measure time upon receipt of the start command generated by said operation switching means, and for generating all measurement time information based on time which has been measured;

measurement time information storing means, having a plurality of time information storage areas, for sequentially storing the measurement time information based on time which has been measured by said time measuring means at a time when said operation switching means is operated;

comparing means for continuously performing a comparing operation to compare current measurement time information based on a time which has been measured at present by said time measuring means with a last measurement time information which was stored in said measurement time information storing means at a time when said operation switching means was last operated; and

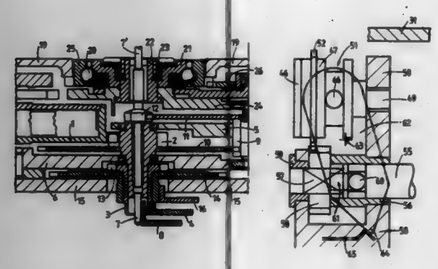
alarming means for providing an alarm when said comparing means determines that the current measurement time information coincides with the last measurement time information.

5,297,111

Patent Not Issued For This Number

VOL 1160 ISS 4 MR 22 1994 UMI

5,297,112
SETTING A DOUBLE FACE WATCH
Raphael Cohen, Geneva; Maurice Jeanmonod, Boussens, and Jean-Daniel Dubois, Le Sentier, all of Switzerland, assignors to Rafal SA, Carouge, Switzerland
Filed Apr. 15, 1992, Ser. No. 868,505
Claims priority, application Switzerland, Apr. 15, 1991, 1113/91
Int. Cl.[5] G04B *25/00, 19/00*
U.S. Cl. 368—190 12 Claims

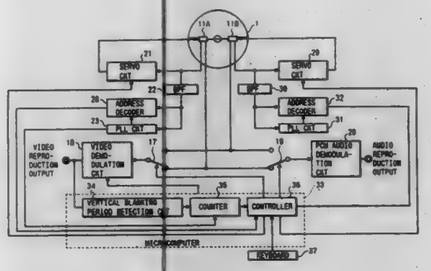


1. A double faced watch having first and second dials on opposite sides thereof and first and second hand displays overlying said first and second dials, respectively, first and second gearing for setting said first and second hands arrays, a rotatable setting stem slidable axially between a first position in which rotation of said setting stem actuates said first gearing to set said first hands array and a second position in which rotation of said setting stem does not move said first gearing, a rotatable member slidable in a direction parallel to said setting stem between a first position in which rotation of said member actuates said second gearing to set said second hands array and a second position in which rotation of said member does not move said second gearing, means to rotate said member, and a lever pivotally interconnecting said stem and said member for movement in opposite axial directions such that when said stem is in its respective first and second positions said member is in its respective second and first positions.

5,297,113
JUMP OPERATION IN TWO-HEAD-TYPE VIDEO DISC PLAYER
Hiroshi Hikima, and Takeo Tobe, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 30, 1992, Ser. No. 953,269
Claims priority, application Japan, Nov. 8, 1991, 3-293410
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.28 2 Claims

1. An information reading and reproducing method in a video disc player having first and second recording heads, for reading and reproducing a video signal and a PCM audio signal that is recorded in a predetermined portion of a vertical blanking period section of a video disc in an operation mode accompanied by a jump operation, comprising the steps of:

having a reading position of the first recording head jump when it is located in the vertical blanking period section, and employing, as a video reading signal, an output of the first reading head that is produced by reading sections of the video disc other than the vertical blanking period section; and

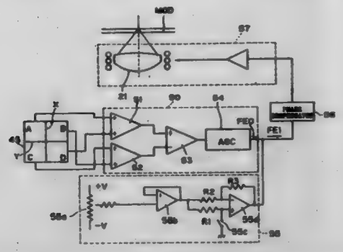


having a reading position of the second recording head jump when it is located outside the predetermined portion of the vertical blanking period section, and employing, as an audio reading signal, an output of the second reading head that is produced by reading the vertical blanking period section.

5,297,114
MAGNETO-OPTIC RECORDING/REPRODUCTION APPARATUS FOR MINIMIZING VARIATION IN FOCUSING ERROR SIGNALS CAUSED BY VARIATION IN OPTICAL SOURCE WAVELENGTH
Tsuyoshi Itoh; Isao Okuda; Toshiyuki Kase; Hiroshi Nishikawa; Ryoto Ogawa; Masahiro Oono; Koichi Maruyama; Makoto Iki, and Isao Takahashi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 29, 1991, Ser. No. 800,846
Claims priority, application Japan, Nov. 30, 1990, 2-335934; Mar. 14, 1991, 3-128867
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.32 7 Claims

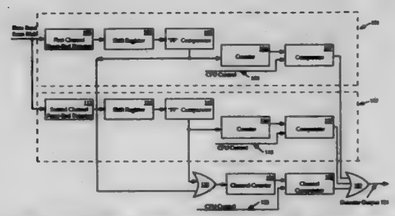
1. A mechanism for use with a magneto-optic recording/reproduction apparatus, said mechanism comprising:
- a laser light source for emitting a light beam of variable wavelength;
- an objective lens for converging said light beam on an optical disk;
- focusing error detection means for receiving a light beam reflected by said optical disk and for producing a focusing error signal;
- offset adjusting means for adding a predetermined offset voltage to said focusing error signal; and
- drive means for driving said objective lens in the direction of an optical axis of said objective lens, based on said focusing error signal to which said offset voltage has been added by said offset adjusting means;

said offset adjusting means comprising means for reversing the polarity of the offset voltage in accordance with a



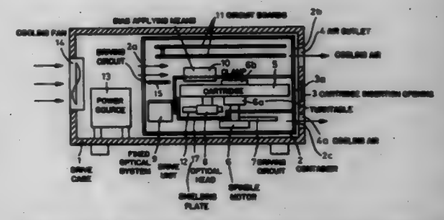
change in the wavelength of said light beam emitted by said laser light source.

5,297,115
DETECTION OF SAVED SECTORS ON AN OPTICAL DISK
Simon Y. Poon, Pleasanton; Zeljko Markovic, Hayward, and Charles B. Abate, San Jose, all of Calif., assignors to Maxoptix Corporation, San Jose, Calif.
Filed Jul. 30, 1992, Ser. No. 922,211
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—47 15 Claims



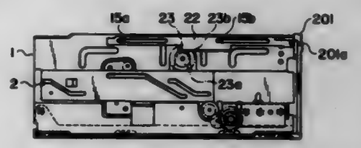
1. An optical disk drive system having an optical disk for storing data and an apparatus for determining whether data read from a field within a sector of said optical disk corresponds to a code which specifies that said sector should not be erased, said apparatus including a clock means for generating a clock signal and a first read channel comprising:
- a first means for generating a signal synchronized with said clock signal, said synchronized signal representing data read from said field;
- a first means for serially shifting said synchronized signal to generate a shifted signal;
- a first comparator means for comparing said shifted signal with said code;
- a first counting means which increments each time said comparator detects a match between said shifted signal and said code;
- a second comparator means for comparing the number stored in said counter with a pre-determined number, wherein if said counter number is greater than or equal to said pre-determined number said comparator generates a signal indicating that said sector contains data which should not be erased.

5,297,116
OPTICAL INFORMATION RECORDING/REPRODUCTION APPARATUS WHICH COOLS COMPONENTS WITHOUT ADVERSELY AFFECTING OPERATING EFFICIENCY
Susumu Ikuma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 1, 1991, Ser. No. 724,135
Claims priority, application Japan, Jul. 3, 1990, 2-174436
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—75.1 15 Claims



1. An optical information recording/reproduction apparatus having a box-like casing containing a rotary drive mechanism for rotating a disk-like optical recording medium, an optical head for emitting a laser beam for recording information on and/or reproducing information from the recording medium rotated by the rotary drive mechanism, the optical head having a movable portion on which at least an objective lens is mounted and a fixed portion on which are mounted at least a laser source for emitting the laser beam and a detector for detecting light reflected by the recording medium, and an electric circuit board having at least a control circuit for controlling the laser source and a control circuit for controlling the movement of the movable portion of the optical head, said apparatus comprising:
- shielding plate means for separating the recording medium and the movable portion of the optical head from the rotary drive mechanism, the electric circuit board and the fixed portion of the optical head; and
- cooling means for cooling the rotary drive mechanism, the electric circuit board and the fixed portion of the optical head separated from the recording medium and the movable portion of the optical head by said shielding plate means.

5,297,117
INFORMATION RECORDING AND REPRODUCING APPARATUS FOR AUTOMATICALLY LOADING AND UNLOADING AND MANUALLY UNLOADING A RECORDING MEDIUM
Kazuo Uzuki, Yokohama, and Izumu Nishida, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 659,455, Feb. 21, 1991, abandoned, which is a continuation of Ser. No. 193,783, May 13, 1988, abandoned. This application Feb. 24, 1992, Ser. No. 839,714
Claims priority, application Japan, May 19, 1987, 62-120227; May 19, 1987, 62-120228
Int. Cl.[5] G11B *33/02, 17/04*
U.S. Cl. 369—75.2 9 Claims



1. An information recording/reproducing apparatus for

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effecting at least one of information recording on and information reproducing from a recording medium, said apparatus comprising:

a front panel having an opening formed therein for allowing insertion and discharge of the recording medium between an insertion position and a discharge position, respectively;

a holder for receiving the recording medium inserted through the opening in said front panel, said holder comprising a drive source for automatically transporting the recording medium in a transport direction along a transport path arranged substantially perpendicular to said front panel, from the insertion position to a loading position and from the loading position to the discharge position;

a slidable member movable in the recording medium transport direction and engageable with said holder in the loading position, said slidable member maintaining engagement with said holder when moved;

a lever member integrally coupled to said slidable member and adapted to be pulled through said front panel for moving said slidable member toward the discharge position; and

wherein the recording medium is transported from the loading position to the discharge position by manually pulling said lever member through said front panel when said drive source is rendered inoperative due to an abnormal operating condition.

5,297,118

ELECTRONIC WATCH WITH PAGER

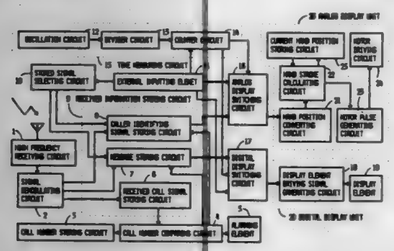
Kazumi Sakumoto, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Jun. 23, 1993, Ser. No. 81,550

Claims priority, application Japan, Jul. 2, 1992, 4-175312

Int. Cl.[5] G04B *47/00, 19/04*

U.S. Cl. 368—10 **4 Claims**



1. An electronic watch provided with a pager comprising:

high frequency receiving means for receiving pager signals such as an individual call signal;

signal demodulating means for demodulating the received pager signals to digital signals;

received call signal storing means for storing the call signal;

message storing means for storing a callers' message signal such as a telephone number;

caller identifying signal storing means for storing a callers' identifying signal;

call number storing means for storing a plurality of previously given individual call number signals;

call number comparing means for comparing the received individual call signal with the previously given individual call number signals;

alarming means for generating an alarm when both compared results which compared by said call number comparing means match each other;

time measuring means for measuring time;

external inputting means for selecting information to be displayed;

stored signal selecting means responsive to an output signal of said external inputting means, for outputting the stored signals to said caller identifying signal storing means and said message storing means;

analog display switching means responsive to the output signal of said external inputting means, for switching an output signal of said time measuring means and an output signal of said caller identifying signal storing means;

hand position converting means for converting an output signal of said analog display switching means to hand position data for display;

current hand position storing means for storing current hand position data now displayed;

hand stroke calculating means for calculating a stroke of a hand to be displayed on the basis of an output signal of said hand position converting means and an output signal of said current hand position storing means;

motor pulse generating means for generating a motor driving pulse on the basis of an output signal of said hand stroke calculating means;

motor driving means for driving a motor on the basis of an output signal of said motor pulse generating means;

digital display switching means responsive of the output signal of said external inputting means, for switching the output signal of said time measuring means and an output signal of said message storing means;

display element signal generating means for generating a display element driving signal on the basis of an output signal of said digital display switching means; and

a display element for displaying a digital display on the basis of an output signal of said display element driving signal generating means.

5,297,119

DATA STORAGE APPARATUS

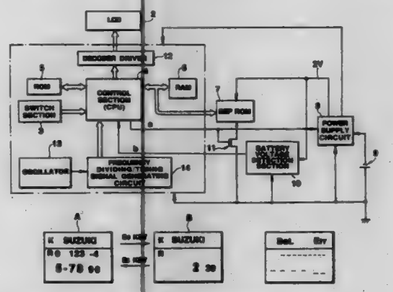
Nobuyuki Tonegawa, Kawasaki, and Syuji Yamaguchi, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,619

Claims priority, application Japan, Nov. 30, 1990, 2-128002; Nov. 30, 1990, 2-334527; Dec. 27, 1990, 2-402495

Int. Cl.[5] G04B *45/00*

U.S. Cl. 368—41 **23 Claims**



1. A data storage apparatus comprising:

a battery power supply;

data input means for inputting data;

nonvolatile memory means, to which a power supply voltage is applied from said battery power supply, for storing the data input by said data input means; and

storage control means for storing the data input by said data input means in said nonvolatile memory means by control of microprograms, said storage control means comprising:

write determination means for determining whether the data input by said data input means is correctly written in said nonvolatile memory means;

first informing means for, when said write determination means determines that the data is correctly written, informing that the data is correctly written;

voltage detecting means for detecting whether a voltage of said battery power supply is lower than a predetermined voltage immediately after said write determination means determines that the data is not correctly written;

second informing means for, when said voltage detecting means detects that the voltage of said battery power supply is lower than the predetermined voltage, informing that the data is not written because of a decrease in voltage of said battery power supply; and

third informing means for, when said voltage detecting means detects that the voltage of said battery power supply is higher than the predetermined voltage, giving information different from information from said second informing means.

5,297,120

RADIO WAVE-STANDARDIZED ELECTRONIC TIMEPIECE

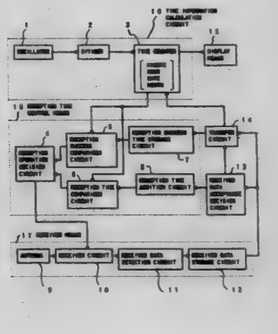
Toshiyuki Yuzaki; Yuichi Inoue, and Kazumi Sakumoto, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 1, 1993, Ser. No. 24,493

Claims priority, application Japan, Mar. 4, 1992, 4-047262

Int. Cl.[5] G04C *11/02*

U.S. Cl. 368—47 **3 Claims**



1. A radio wave-standardized electronic timepiece comprising:

a time information calculation circuit for calculating and processing information about time or other information;

a display means which receives the output signal from the time information calculation means and displays the information;

a receiver means which receives a standard time signal produced externally and stores data about it;

a received data acceptance decision circuit which receives the output signal from the receiver means and makes a decision to see if the received data contains given information;

a transfer circuit that produces modifying pulses to the time information calculation circuit in response to the received data stored in the receiver means according to the output signal from the received data acceptance decision circuit;

a reception success time storage circuit that stores the time at which reception is made, in response to the output signal from the transfer circuit according to the output signal from the reception data acceptance decision circuit;

a reception time addition circuit that adds a given time according to the output signal from the received data acceptance decision circuit;

a reception success comparison circuit which receives the output signal from the reception success time storage circuit and the output signal from the time information calculation circuit and compares them;

a reception time comparison circuit which receives the output signal from the reception time addition circuit and the output signal from the time information calculation circuit and compares them; and

a reception operation decision circuit which receives the output signal from the reception success comparison circuit and the output signal from the reception time comparison circuit and controls the operation of the reception means.

5,297,121

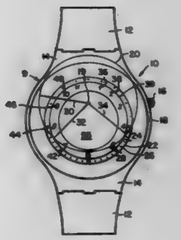
ECCENTRIC MOUNTED WATCH

Seyyed S. Sepehri, 205 McGuirk Dr., Glen Burnie, Md. 21061

Filed Oct. 14, 1992, Ser. No. 960,874

Int. Cl.[5] G04B *19/04, 19/06*

U.S. Cl. 368—228 **3 Claims**



1. A watch for creating a visual illusion, said watch having an upper end and a lower end, said watch comprising a central framework constituting the rigid body of said watch, a casing centrally positioned in said framework, a circular bezel having time increments marked thereon centrally positioned in said casing, a plurality of watch hands rotating about a fixed fulcrum point, and a round, opaque portion covering said fixed fulcrum point, wherein said casing, said circular bezel, and said round, opaque portion are concentrically positioned and thereby share a common center point, and whereby said fixed fulcrum point about which said watch hands rotate is positioned radially outward from said common center point toward said upper end of said watch.

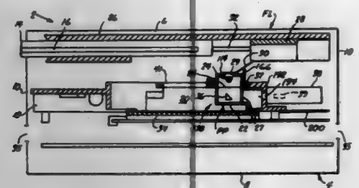
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,122

DUST PROTECTION ASSEMBLY FOR MAGNETO-OPTIC DRIVE APPARATUS

Leslie G. Christie, Greeley, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 14, 1992, Ser. No. 944,565
Int. Cl.[5] G11B *17/32*
U.S. Cl. 369—13 **20 Claims**



1. A magneto-optic drive apparatus comprising:
drive means for rotating a disk contained in a cartridge;
an optical assembly mounted on support means for movement in linear directions between an operating position and a parked position and including a read/write lens for focusing laser light for reading or writing information from or to said disk;
said operating position being located between said drive means and said parked position;
protection means for protecting said read/write lens when in said parked position; and
mounting means for mounting said protection means for movement relative to said optical assembly.

5,297,123

Patent Not Issued For This Number

5,297,124

TAPE DRIVE EMULATION SYSTEM FOR A DISK DRIVE

Barry Plotkin, Stony Brook, and Daniel C. Ginsburg, North Massapequa, both of N.Y., assignors to Miltope Corporation, Melville, N.Y.

Filed Apr. 24, 1992, Ser. No. 874,585
Int. Cl.[5] G11B *7/013*; G06F *13/00*
U.S. Cl. 369—32 **12 Claims**



1. A tape drive emulation system, for allowing a disk drive device, connected to a host computer through a tape drive interface, to transparently emulate a tape drive device, comprising:

first recording means for recording a master directory containing a plurality of sequentially numbered entries to an area on a disk, each of said sequentially numbered entries corresponding to a sequentially numbered tape data record, each of said entries containing a DISK START ADDRESS field;

converting means for converting said tape data record to a disk format data record; and

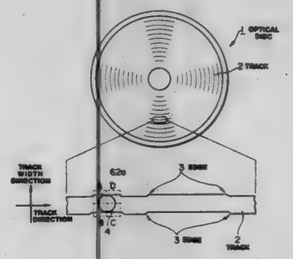
second recording means for recording said disk format data record to said disk starting at an address specified by said DISK START ADDRESS field of said corresponding entry.

5,297,125

OPTICAL RECORDING MEDIUM AND INFORMATION RECORDING APPARATUS FOR RECORDING BURSTS OF LOW-PASS FILTERED REPRODUCE-ONLY INFORMATION IN A WOBBLING PRE-GROOVE ON THE OPTICAL RECORDING MEDIUM

Tamotsu Yamagami, Kanagawa, and Yoichiro Sako, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 674,344, Apr. 22, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 951,021
Claims priority, application Japan, Aug. 25, 1989, 1-219411
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.13 **3 Claims**



1. An information recording apparatus for forming a track on an optical recording medium from which recorded information is read out by optical means, said apparatus comprising

deviating means for deviating a recording beam, for forming said track, along the width of the track on said optical recording medium,

deviation control signal generating means, supplied with address information from an external source, for generating corresponding deviation control signals for controlling said deviating means, and

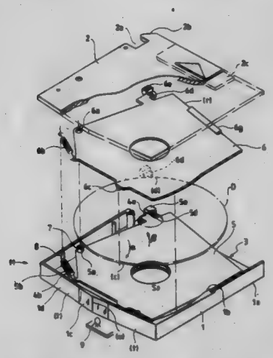
a low-pass filter for removing high-frequency components of the deviation control signals and supplying a resulting signal to the deviating means, wherein the low-pass filter has a cut-off frequency of about 1.2 MHz.

5,297,126

COMPACT DISK PLAYER WITH A MECHANISM FOR EJECTING A SELECTED DISK

Shoji Suzuki, Iwaki, Japan, assignor to Alpine Electronics, Inc., Tokyo, Japan

Filed Aug. 20, 1991, Ser. No. 747,556
Claims priority, application Japan, Sep. 12, 1990, 2-241494; Sep. 12, 1990, 2-241495; Sep. 13, 1990, 2-245692
Int. Cl.[5] G11B *33/02, 17/00*
U.S. Cl. 369—77.1 **15 Claims**



1. A disk player with a disk select function comprising:
a playback unit including a rotation mechanism for rotating a disk, a clamper for placing said disk on said rotation mechanism, and a pickup positioned to face said disk;
a magazine having an opening positioned towards said playback unit and accommodating a plurality of disks therein;
an ejection mechanism provided in said magazine for protruding a desired disk through said opening when said magazine has been loaded into said disk player, said ejection mechanism including a driven part positioned close to said opening of said magazine;
a drive mechanism provided on said disk player and engaging said driven part for driving said ejection mechanism to protrude said desired disk through said opening of said magazine; and
a disk feeding mechanism positioned in front of said opening of said magazine and receiving the protruded desired disk for feeding the desired disk toward said playback unit.

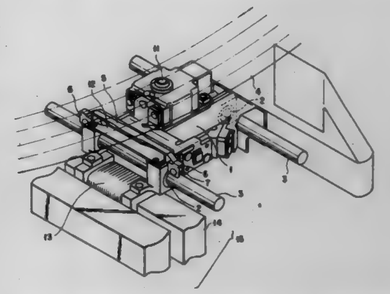
5,297,127

OPTICAL DEVICE

Hideki Ohtsuka, Yokosuka, and Kazuharu Odawara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1992, Ser. No. 854,473
Claims priority, application Japan, Jun. 28, 1991, 3-158893
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—114 **5 Claims**

5. An optical device comprising:
information processing means for optically processing information recorded on a recording medium;
a main body for holding said information processing means;
a first supporting shaft for guiding one end of said main body;
a second supporting shaft, arranged parallel to said first supporting shaft, for guiding another end of said main body;
sliding bearings, arranged between said main body and said first and second supporting shafts, for slidably supporting said main body with respect to said first and second supporting shafts;
an energizing member arranged on an upper surface of said



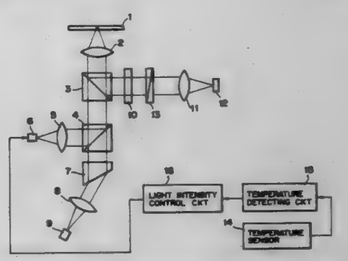
one end of said main body and having an energizing force applied toward said first supporting shaft;
a first roller coupled to a first side of said energizing member, and pressed against said first supporting shaft by the energizing force of said energizing member; and
a second roller coupled to a second side of said energizing member, and pressed against said first supporting shaft by the energizing force of said energizing member.

5,297,128

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS INCLUDING MEANS FOR VARYING INTENSITY OF A PREHEATING LIGHT BEAM

Eiji Yamaguchi, Sagamihara; Susumu Matsumura, Kawaguchi; Hironki Hoshi, Yokohama; Masakuni Yamamoto, Yamato, and Hideki Morishima, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,179, Nov. 25, 1991, abandoned. This application Dec. 2, 1992, Ser. No. 984,740
Claims priority, application Japan, Nov. 27, 1990, 2-321119
Int. Cl.[5] G11B *7/125*
U.S. Cl. 369—116 **28 Claims**

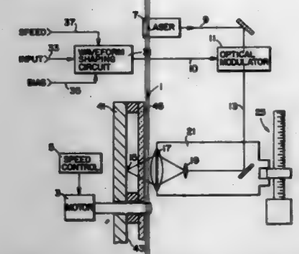


1. An optical information recording apparatus comprising:
means for irradiating an information track of an optical information recording medium with a preheating light beam;
means for irradiating a light spot of the preheating light beam with a recording light beam;
detection means for detecting the environmental temperature of the apparatus; and
means for varying the light intensity of the preheating light

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beam in accordance with the detection result of said detection means.

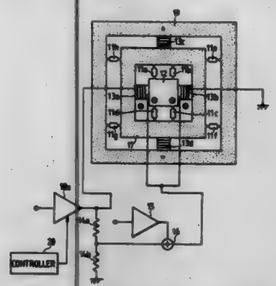
5,297,129
WAVEFORM SHAPING METHOD AND APPARATUS FOR OPTICAL RECORDING
Richard L. Wilkinson, La Mirada; Stephen P. Brown, Santa Ana, and Shigang Li, Norwalk, all of Calif., assignors to Optical Disc Corporation, Santa Fe Springs, Calif.
Filed Dec. 24, 1992, Ser. No. 996,729
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **24 Claims**



1. A waveform shaping circuit for use in an optical recording apparatus which includes a writing light beam source and an optical modulator for modulating the intensity of the writing beam of light above and below a threshold level of a moving recording medium in response to a modulator drive signal for recording information on the medium, the light beam being capable of forming a track of surface effects in the moving recording medium when the writing beam is above the threshold and incapable of forming said track of surface effects in the moving recording medium when the writing beam is below the threshold, said waveform shaping circuit comprising:
delay means for receiving a substantially rectangular waveform having leading and trailing edges, provided as said modulator drive signal to modulate the writing beam, and for delaying said leading edges while passing said trailing edges undelayed; and
waveform shaping means coupled to said delay means for producing a shaped modulator drive signal having steep leading edges reaching a first level sufficient to cause said writing beam to have an intensity above the threshold of the moving medium, and having ramped trailing edges changing amplitude at a prescribed rate to reach a second level sufficient to cause said writing beam to have an intensity below the threshold of the moving medium prior in time to the occurrence of the respective next leading edges of the received rectangular waveform.

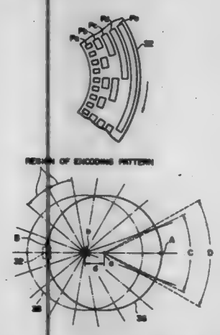
5,297,130
DRIVING APPARATUS AND A RECORDING AND/OR REPRODUCING APPARATUS USING THE SAME
Masahiro Tagawa, Atsugi; Toshihiko Miyazaki, Hiratsuka, and Toshimitsu Kawase, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1992, Ser. No. 832,595
Claims priority, application Japan, Feb. 8, 1991, 3-37746
Int. Cl.[5] G11B *9/08*; H01L *41/08*
U.S. Cl. 369—126 **25 Claims**

1. A driving apparatus for driving an object, comprising:
a pair of piezoelectric elements, one of said pair of piezoelectric elements being arranged on one side of said object, and the other of said pair of piezoelectric elements being arranged on the other side of said object, wherein each electrode arrangement direction of said pair of piezoelectric elements is substantially identical to each other; and
a control circuit, said control circuit applying a predetermined voltage between outer electrodes of said pair of piezoelectric elements, and said control circuit giving an equipotential to inner electrodes of said pair of piezoelectric elements,
wherein said control circuit allows the equipotential given to said inner electrodes to be varied, thereby causing said pair of piezoelectric element to drive said object, and



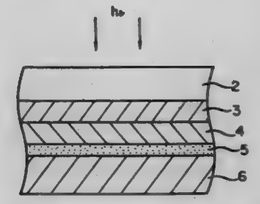
wherein said control circuit allows the potential given to said inner electrodes to be obtained by adding a predetermined potential to an intermediate potential and for resistance dividing of a predetermined voltage applied between said outer electrodes.

5,297,131
ECCENTRICITY DETECTION AND COMPENSATION OF A DISK BY A PREFORMATTED ENCODING PATTERN
Shosuke Tanaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 28, 1992, Ser. No. 889,671
Claims priority, application Japan, May 31, 1991, 3-129465
Int. Cl.[5] G11B *7/007*
U.S. Cl. 369—275.2 **17 Claims**



1. A disk shaped signal recording medium comprising:
a center portion for engagement with a driving shaft of a rotary driving mechanism,
an annular area for recording information data in a plurality of sectors in tracks provided thereon in the form of either concentric circles with respect to the center portion or in a spiral track provided thereon about the center portion, and
an encoding pattern provided on said signal recording medium in an area of a concentric circle with respect to said center portion and separate from the annular area for permitting a state of eccentric engagement of said center portion with the driving shaft of said rotary driving mechanism to be detected.

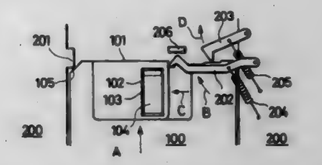
5,297,132
DRAW TYPE OPTICAL RECORDING MEDIUM
Atsushi Takano, Kokubunji; Masayuki Iijima, Koto; Kazuo Umeda, Setagaya; Kazuo Takahashi, Koto; Osamu Sasaki, Shinjuku; Hitoshi Fujii, Kasukabe; Mitsuru Takeda, Yokohama, and Masaaki Asano, Shinjuku, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan
PCT No. PCT/JP87/00702, § 371 Date Jun. 24, 1988, § 102(e) Date Jun. 24, 1988, PCT Pub. No. WO88/03310, PCT Pub. Date May 5, 1988
Continuation of Ser. No. 219,158, Jun. 24, 1988, abandoned.
This PCT application Sep. 25, 1987, Ser. No. 892,471
Claims priority, application Japan, Oct. 29, 1986, 61-257789; Nov. 28, 1986, 61-283398; Nov. 29, 1986, 61-285773; Dec. 9, 1986, 61-292975; Mar. 27, 1987, 62-73469
Int. Cl.[5] G11B *7/24*
U.S. Cl. 369—284 **6 Claims**



1. A DRAW type optical recording card comprising:
a surface protective layer;
a transparent first support formed on the surface protective layer;
a tracking forming layer, having at least one guide groove for tracking, formed on the transparent first support;
a recording layer provided on said tracking forming layer for forming information pits through physical deformation thereof by irradiation of an energy beam;
means for augmenting thermochemically the physical deformation in said recording layer, said means comprising a hot melt adhesive sensitizing layer provided on the recording layer; and
a second support provided on said sensitizing layer;
wherein said recording layer and said sensitizing layer are laminated between said first and second supports and no voids exist between the layers, and said recording layer and said sensitizing layer are sealed from an outer environment.

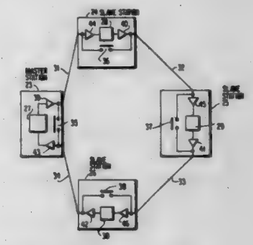
5,297,133
OPTICAL DISC CARTRIDGE AND MECHANISM FOR PREVENTING AN INCORRECT INSERTION OF A CARTRIDGE
Yasuo Otsuka, Hase Kamakura; Nobuhiro Katase, and Tohru Sasaki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 27, 1988, Ser. No. 224,728
Claims priority, application Japan, Jul. 27, 1987, 62-185471; Nov. 9, 1987, 62-280919
Int. Cl.[5] G11B *23/03*
U.S. Cl. 369—291 **10 Claims**

2. An optical disc cartridge for use with a data handling apparatus comprising:
a case having an aperture and an optical disc operatively arranged therein;
a shutter slidably associated with said case for selectively opening said aperture to expose said disc to handle data thereon, wherein said shutter is contacted and slid open by a shutter opening lever provided in said data handling apparatus when said cartridge is inserted into said data handling apparatus;
a cut-off portion provided only at a head and left side corner of said case as viewed looking down on said case in a direction of insertion of said cartridge into said data handling apparatus;
a shutter opening lever receiving portion provided at a head side of said case at a right side of said shutter when said shutter is closed as viewed looking down on said case in the insertion direction; and



a depression provided only at the head side of said case to the left of a center line of said case as viewed looking down on said case in said insertion direction such that an edge of said depression is symmetric about said center line with respect to the right side of said shutter when said shutter is closed as viewed looking down on said case in the insertion direction.

5,297,134
LOOP MODE TRANSMISSION SYSTEM WITH BUS MODE BACKUP
Noboru Takahashi, and Noriyuki Hattori, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 10, 1992, Ser. No. 818,832
Claims priority, application Japan, Jan. 11, 1991, 3-001996
Int. Cl.[5] H04J *1/16*
U.S. Cl. 370—16.1 **16 Claims**



4. A transmission system comprising:
a master station;
a plurality of satellite stations;
a common transmission trunk line connecting said master and said plurality of satellite stations for sequential communication in a loop, said master station being operative to transmit addressable signals periodically to each of said satellite stations via said line and each of said satellite stations being operative to periodically receive signals addressed to it and to relay other signals not addressed to it on said common line; and
transmission switching means at each of said satellite stations for connecting said stations in a bus mode.

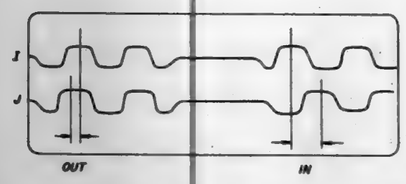
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,135

METHOD AND APPARATUS FOR DETERMINING DIRECTIONALITY OF COMMUNICATION SIGNALS ON A COMMUNICATION CHANNEL

Kenneth Gural, 7207 Dartmouth Ave., College Park, Md. 20740

Continuation of Ser. No. 304,217, Jan. 31, 1989, Pat. No. 5,036,534. This application May 6, 1991, Ser. No. 696,018
Int. Cl.[5] H04J *15/00*; H04L *5/14*
U.S. Cl. 370—32 **11 Claims**



1. Method for determining a directionality of at least one signal on a communication channel comprising:

deriving at least two independent signals from said communication channel;

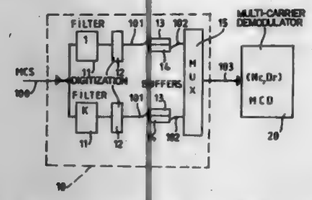
analyzing said independent signals to derive at least one numerical value representing a relative phase of said independent signals; wherein said numerical value comprises multiple bits; and classifying said at least one numerical value to determine a directionality of said at least one signal.

5,297,136

MULTICARRIER DEMODULATOR

Claudio Soprano, La Haye, and Luigi Bella, Noordwijk-aan-zee, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris Cedex, France

PCT No. PCT/EP91/01847, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/06545, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 25, 1991, Ser. No. 859,314
Claims priority, application France, Oct. 2, 1990, 90 12109
Int. Cl.[5] H04J *4/00*
U.S. Cl. 370—50 **15 Claims**



1. In an apparatus arranged to demodulate a multicarrier signal which occupies a predetermined frequency bandwidth and comprises a plurality (Nc) of carriers, where Nc represents the number of carriers in said plurality, modulated by data transmitted having a first predetermined data rate, an input circuit for enabling a multicarrier demodulator to process a plurality of data channels each having a data rate less than said first data rate, said input circuit comprising:

first means (11) connected to receive said predetermined frequency bandwidth and divide said frequency bandwidth into a number (K) of distinct frequency sub-bands, where K represents the number of sub-bands each frequency sub-band being occupied by Nc/K carriers modulated by a data channel having a data rate different from the first data rate,

a plurality of sampling means (12) each being connected to the output of at least one band dividing means, each sampling means being arranged to sample the output signal from said band dividing means at a predetermined rate so as to generate a distinct expanded sample sequence, in which a frequency spectrum is expanded to the bandwidth of the input multicarrier signal,

a plurality of store means (13), each of which being connected to the output of a sampling means so as to buffer the expanded sample sequence as generated,

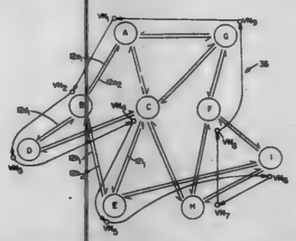
multiplexer means (15) arranged to periodically scan each of said store means at a predetermined rate so as to read out successively each stored sample sequence and to produce a composite sequence containing the plurality of successive expanded sample sequences, said composite sequence being applied to the input of said multiplexer demodulator (20).

5,297,137

PROCESS FOR ROUTING DATA PACKETS AROUND A MULTI-NODE COMMUNICATIONS NETWORK

Yoram Ofek, Riverdale, and Marcel M. Yung, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1991, Ser. No. 647,765
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **21 Claims**



1. In a communication network having a multitude of switching nodes and a multitude of links interconnecting the nodes to transmit data packets therebetween, each link connecting together two of the nodes to transmit data packets in first and second opposite directions between said two nodes, a subset of said links forming a virtual ring embedded in said network and traversing each of the nodes thereof at least once, and wherein in said virtual ring each of said subset of links is traversed in each of said directions at most once, a method comprising:

the nodes routing each data packet to a destination node thereof without requiring any data from the data packet other than data indentifying the destination node of the data packet, the routing step including the step of the nodes routing each data packet to the destination node thereof so that the distance, along said virtual ring, between the data packet and the destination node thereof always decreases; and

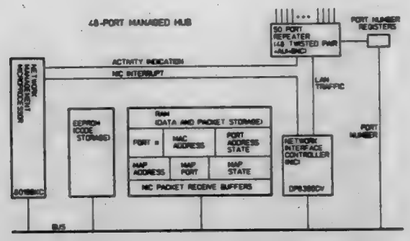
the nodes determining, from data in each data packet that identifies the destination node of the data packet, a set of links over which the data packet is transmitted to said destination node.

5,297,138

DETERMINING PHYSICAL TOPOLOGY ACROSS REPEATERS AND BRIDGES IN A COMPUTER NETWORK

Chuck A. Black, Rocklin, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1991, Ser. No. 693,980
Int. Cl.[5] H04L *12/46, 12/56, 12/44*
U.S. Cl. 370—60 **4 Claims**



1. A method for determining physical topology of a plurality of devices in an extended computer network, each device in the plurality of devices having at least one port, the method comprising the steps of:

(a) choosing a particular device from the plurality of devices as a starting reference, and

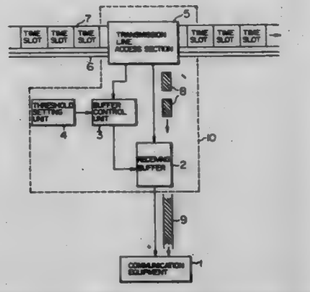
(b) recursively determining network device connections on each port of the particular device.

5,297,139

DATA COMMUNICATION SYSTEM

Yoshinori Okura, Mito; Shunji Inada, Hitachi; Norihiko Sugimoto, Katsuta, and Masakazu Okada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,131
Claims priority, application Japan, Jun. 19, 1991, 3-147094
Int. Cl.[5] H04J *3/14*; H04L *12/26*
U.S. Cl. 370—60 **10 Claims**



1. A method of controlling writing of data from a communication transmission line of a communication system in a buffer device and reading of the data out of said buffer device, comprising the steps of:

receiving data from said communication transmission line and writing received data in said buffer device at a predetermined write rate;

starting to read the data, written in said buffer device, out of said buffer device at a predetermined read rate;

comparing the quantity of data written and accumulated in said buffer device with a predetermined threshold during a predetermined period from a read start point of time;

writing the data from said communication transmission line by said buffer device when it is found as a result of comparison that the quantity of said accumulated data is the same as or less than said threshold; and

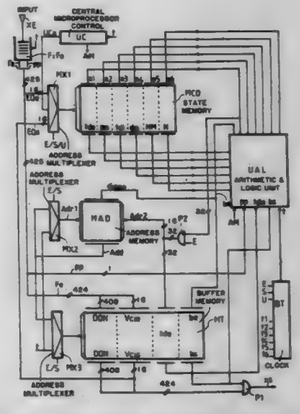
performing both write of data from said communication transmission line and read of data out of said buffer device during said predetermined period when the quantity of said accumulated data is larger than said threshold.

5,297,140

METHOD AND SYSTEM OF SMOOTHING AND CONTROL OF ASYNCHRONOUS TIME COMMUNICATIONS

Pierre Boyer, 3 Park an Denved, Kerligonan; Yvon Rouaud, Goas Ar Stivel, Servel, and Michel Servel, Le Rhu en Servel, all of F-22300, France

Filed Dec. 13, 1990, Ser. No. 627,044
Claims priority, application France, Jan. 19, 1990, 9000770
Int. Cl.[5] H04J *3/24*; H04L *25/30*
U.S. Cl. 370—61 **12 Claims**



1. A method of smoothing asynchronous time communication outputs formed by cells carried by an incoming asynchronous time division multiplex (XE) in order to supply an asynchronous outgoing time division multiplex (XS), said method comprising the steps of:

(a) arranging each incoming cell in a buffer memory (MT) with an address (Add) corresponding to its actual time of retransmission (t) on an asynchronous outgoing time division multiplex (XS); and

(b) determining said actual time of retransmission as a function of a period (pm) allotted to a communication to which said incoming cell belongs, said period (pm) corresponding to a theoretical minimum time period between retransmitted cells in the asynchronous outgoing time division multiplex (XS).

5,297,141

ETHERNET AUTOMATIC ADAPTER INTERFACE CARD

John R. Marum, Berkeley, Calif., assignor to Farallon Computing, Inc., Emeryville, Calif.

Continuation of Ser. No. 563,454, Aug. 7, 1990, abandoned. This application Dec. 27, 1991, Ser. No. 814,888
Int. Cl.[5] H04L *12/40*; H04B *10/20*
U.S. Cl. 370—85.13 **4 Claims**

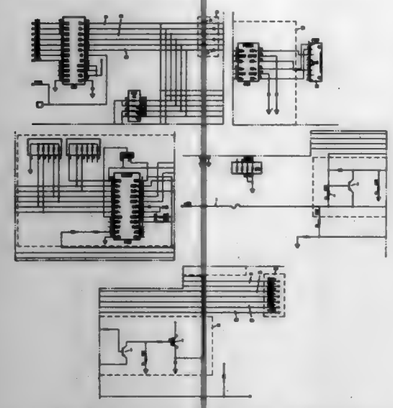
1. A current sensing automatic switching network comprising:

an attachment unit interface port having a power supply line, first and second transmit lines, first and second data receive lines, and first and second collision detect lines;

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an internal transceiver having input and output signal terminals comprising first and second transmit terminals, first and second data receive terminals, and first and second collision detect terminals, said internal transceiver characterized in that it tristates said input and output signal terminals when it is powered down, said internal transceiver having a power terminal at which power may be applied;

a plurality of DC isolating means each individually coupling one of said transmit lines, data receive lines, and collision



detect lines of said attachment unit interface port to a respective one of said transmit terminals, data receive terminals, and collision detect terminals of said internal transceiver; and

a current sensing circuit coupled to said power supply line of said attachment unit interface port and coupled to said power terminal of said internal transceiver for powering down said internal transceiver when current is drawn through said power supply line of said attachment unit interface port.

5,297,142

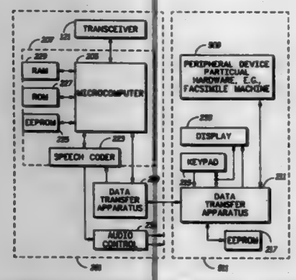
DATA TRANSFER METHOD AND APPARATUS FOR COMMUNICATION BETWEEN A PERIPHERAL AND A MASTER

Bruce M. Paggeot, Carpentersville; Jeffrey W. Tripp, Grayslake, and Patrick J. Marry, Huntley, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1991, Ser. No. 732,511

Int. Cl.[5] H04J *3/16*; H04Q *7/00*

U.S. Cl. 370—85.6 **23 Claims**



10. A method of transferring data from a radiotelephone peripheral to a radiotelephone unit via a time multiplexed data bus, comprising the steps of:

(a) generating data representative of priority in response to a busy condition on the bus when the radiotelephone peripheral is powered up;

(b) accepting a plurality of data bits; and

(c) assembling said data representative of priority and said accepted data bits for transmission of an assembled field in one time slot on the time multiplexed data bus.

5,297,143

NETWORK COMMUNICATION PROTOCOL INCLUDING A RELIABLE MULTICASTING TECHNIQUE

Marek J. Fridrich, San Jose; Glen M. Riley, Los Gatos, and Robert A. Dolin, Jr., Menlo Park, all of Calif., assignors to Echelon Systems, Corp., Palo Alto, Calif.

Filed Dec. 3, 1990, Ser. No. 621,739

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.3 **8 Claims**



1. In a network system allowing for communication, sensing and control comprising a plurality of nodes coupled to a medium, said plurality of nodes comprising at least one group of nodes which may be referred to herein as Group 1, a method for reliably communicating with members of said Group 1 comprising the steps of:

a) a first device preparing a first message packet for transmission on said medium, said first message packet addressed to members of said Group 1;

b) said first device transmitting said first message on said medium;

c) said first message being received by a first member of said Group 1, said first member of said Group 1 referred to herein as Member 1;

d) said first device setting a timer;

e) if said timer expires prior to said first device receiving a first acknowledgement of receipt of said first message on said medium, then said first device transmitting a reminder message of a format different than said first message for transmission at least to said Member 1, said Member 1 receiving said reminder message;

f) said Member 1 transmitting said first acknowledgement of receipt of said first message on said medium;

g) said first device receiving said first acknowledgement;

h) said first message being received by a second member of said Group 1, said second member of said Group 1 referred to herein as Member 2;

i) said Member 2 transmitting a second acknowledgement of receipt of said first message on said medium;

j) said first device receiving said second acknowledgement.

5,297,144

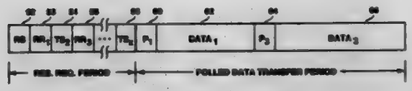
RESERVATION-BASED POLLING PROTOCOL FOR A WIRELESS DATA COMMUNICATIONS NETWORK

Sheldon L. Gilbert, San Diego, Calif.; Carolyn L. Heide, Lincolnshire, and Dennis L. Director, Wilmette, both of Ill., assignors to Spectrix Corporation, Evanston, Ill.

Filed Jan. 22, 1991, Ser. No. 643,875

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—95.2 **6 Claims**



1. A method of controlling a plurality of data communications devices in accordance with a noncontention-based multiple-access signalling protocol, said signalling protocol being characterized by defining a cycle time, defining a reservation request period in a first portion of said cycle time, defining a data transfer period in a second portion of said cycle time, and assigning a number X of time slots within said reservation request period, said controlling method comprising the steps of:

(a) outputting a sync signal in synchronization with the beginning of said reservation request period;

(b) inputting a number Y of reservation request signals into particular time slots;

(c) assigning a number of data slots within said data transfer period, said number of data slots corresponding to said number Y of reservation request signals;

(d) outputting a polling signal during said data transfer period;

(e) inputting a data packet into one of said assigned data slots; and

(f) repeating steps (d) and (e) at least Y-1 times per said cycle time.

5,297,145

DIGITAL SUBSCRIBER LINE CIRCUIT FOR CONNECTING AN ISDN SUBSCRIBER TO THE TRUNK SIDE OF A DIGITAL EXCHANGE

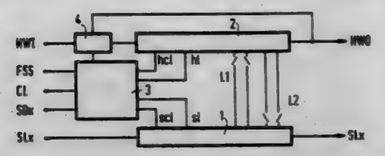
Gerardus M. J. Havermans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1992, Ser. No. 896,070

Claims priority, application European Pat. Off., Jun. 14, 1991, 91201478.4

Int. Cl.[5] H04J *3/06*

U.S. Cl. 370—100.1 **13 Claims**



1. A digital subscriber line circuit for connecting an ISDN subscriber to the trunk side of a digital exchange, comprising:

an SLD interface operating according to the SLD system, and

a transfer arrangement for exchanging, during a transfer time window, data signals between incoming and outgoing time slots of a SL line of the SLD interface and time slots assigned thereto of outgoing or incoming trunks of the digital exchange,

characterized in that said transfer time window has a lower boundary corresponding to the end of the last data channel in the incoming time slot of the SL line, and an upper boundary corresponding to the beginning of the first data channel in the outgoing time slot of the SL line, and

the subscriber line circuit comprises a slip detection means for detecting a slip of a time slot of the incoming or outgoing trunk out of the transfer time window, and

a slip correction means controlled by the slip detection means, for controlling the transfer arrangement in response to detection of a slip, to skip data in one data transfer direction and to repeat data in the other data transfer direction.

5,297,146

COMMUNICATION TERMINAL APPARATUS AND ITS CONTROL METHOD

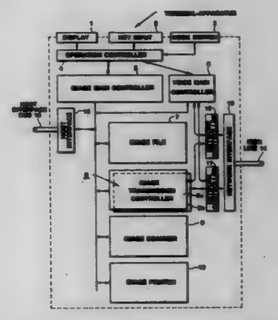
Fukashige Ogawa, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 586,387, Sep. 20, 1990, abandoned, which is a continuation of Ser. No. 372,089, Jun. 27, 1989, abandoned. This application Mar. 9, 1992, Ser. No. 846,988

Claims priority, application Japan, Jul. 1, 1988, 63-165661; Jul. 1, 1988, 63-165662; Jul. 1, 1988, 63-165663

Int. Cl.[5] H04J *3/12*

U.S. Cl. 370—110.1 **20 Claims**



1. A communication terminal apparatus connected to an integrated services digital network through an integrated services digital line having a plurality of data channels, comprising:

a plurality of independently operable network control means for carrying out an incoming/outgoing call procedure with respect to said integrated services digital network;

network interface means for allocating operations of said plurality of network control means to the plurality of data channels of said integrated services digital line, respectively;

voice control means connected to said plurality of network control means for carrying out an input processing operation or an output processing operation of a voice signal transmitted or received through said network control means;

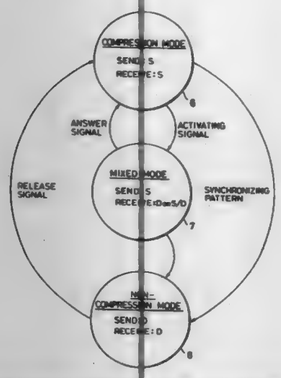
image transmission control means connected to said plurality of network control means for carrying out a transmission control of image data transmitted or received through said network control means; and

image control means for carrying out an input/output processing operation of the image data controllably transmitted through said image transmission control means,

wherein voice speech in response to said voice control means with use of at least one of said plurality of network control means as well as image data communication in response to said image transmission control means and said image control means with use of at least another one of said plurality of network control means are carried out at the same time.

VOL 1160 ISS 4 MR 22 1994

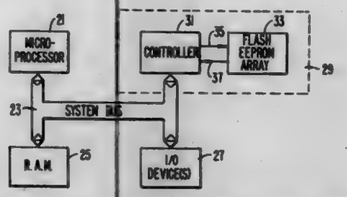
5,297,147
DATA COMPRESSION AND DECOMPRESSION CONTROLLING METHOD
Kiyoshi Shimokasa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1991, Ser. No. 832,906
Claims priority, application Japan, Feb. 8, 1991, 3-037860
Int. Cl.[5] H04J *15/00*
U.S. Cl. 370—118 13 Claims



1. A method for transmitting digital data between a digital private branch exchange PBX and a digital communication line, comprising the steps of:
(a) obtaining send data from said digital PBX to be transmitted on said digital communication line and determining whether a certain pattern of synchronizing bits is contained in said send data;
(b) transmitting selected information bits of said send data on said digital communication line without compression if said certain pattern of synchronizing bits is determined to be contained in said send data, and compressing said send data and transmitting the compressed send data on said digital communication line if said certain pattern of synchronizing bits is determined to be not contained in said send data;
(c) obtaining receive data from said digital communication line to be sent to said digital PBX, adding said certain pattern of synchronizing bits to said receive data, and transmitting said receive data containing said certain pattern of synchronizing bits to said digital PBX, when said certain pattern of synchronizing bits has been determined to be contained in said send data obtained from said digital PBX; and
(d) obtaining receive data from said digital communication line to be sent to said digital PBX, decompressing said receive data, and transmitting said decompressed receive data to said digital PBX, when said certain pattern of synchronizing bits has been determined to be not contained in said send data obtained from said digital PBX.

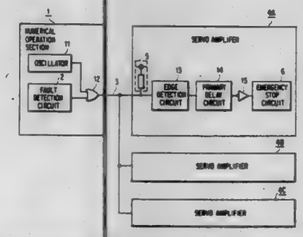
5,297,148
FLASH EEPROM SYSTEM
Eliyahou Harari, Los Gatos; Robert D. Norman, San Jose, and Sanjay Mehrotra, Milpitas, all of Calif., assignors to SunDisk Corporation, Santa Clara, Calif.
Division of Ser. No. 337,566, Apr. 13, 1989, abandoned. This application Oct. 20, 1992, Ser. No. 963,838
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—10.2 4 Claims

1. A memory card connectable to a computer system, comprising
an array of electrically Erasable and Programmable Read Only Memory ("EEPROM") cells partitioned into a plurality of flash sectors,
each flash sector being a group of cells that are erasable together as a unit, and having a portion thereof reserved as redundant cells; and
a memory controller for controlling operations of the EEPROM cells,
error detection means within said memory controller for detecting any defective cells within the array;



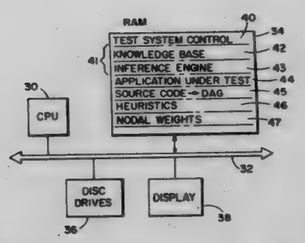
defect pointers, each generated by said memory controller for linking a detected defective cell's address to that of a corresponding redundant cell substituting for the defective cells, said defect pointer being stored within the array; and
defective cell substituting means within said memory controller and responsive to said defect pointers for substituting said detected defective cell with said corresponding redundant cells.

5,297,149
EMERGENCY CIRCUIT FOR, E.G., NUMERICAL CONTROL UNIT
Hirohiko Kazato, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 23, 1991, Ser. No. 653,201
Claims priority, application Japan, Jun. 6, 1990, 2-146176
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—14 11 Claims



11. A fault detection or alarm system, comprising:
a first unit containing detection means for generating a clock signal only when no faults are detected in said system;
at least one second unit including determination means for receiving said clock signal and for generating a fault signal in response to an absence of said clock signal; and
means for exercising control over said at least one second unit upon receipt of said fault signal,
wherein said determination means includes an edge detection circuit for generating a pulse in response to a leading edge of each pulse in said clock signal received by said determination means, and
wherein said determination means includes a delay circuit, coupled to said edge detection circuit, for outputting a pulse having a predetermined time constant for each pulse received from said edge detection circuit, and inverter means, coupled to said delay circuit for inverting an output from the delay circuit, said delay circuit and inverting means operating to output a signal having a first level representing a no fault condition while receiving pulses from said edge detection circuit.

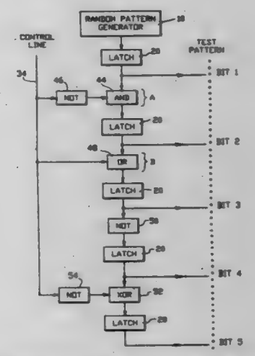
5,297,150
RULE-BASED METHOD FOR TESTING OF PROGRAMMING SEGMENTS
Andrew L. Clark, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 17, 1992, Ser. No. 900,169
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—19 19 Claims



1. A method for determining a set of flow paths in a code listing as being the most likely ones to fail, the method comprising the steps of:
(a) converting said code listing to a directed acyclic graph (DAG) representation, said DAG including nodes and directed edges, each node representing a basic block of unconditional code statements, a basic block being a code listing that terminates at an exit point once commencing at a starting point, a said exit point being an exit code statement or a conditional code statement, each edge representing an action taken upon the occurrence of a condition in a said conditional code statement;
(b) loading as facts into a knowledge base, said nodes and directed edges from said DAG and unconditional code statements from each said basic block's code listing;
(c) loading as rules into said knowledge base, conditional statements from said code listing and determined complexity indicator values for conditional and unconditional code statements;
(d) assigning a weight in each node based upon a combination of complexity indicator values for conditional and unconditional code statements associated with a said node; and
(e) determining a set of ranked flow paths through said code listing by employing said facts and rules, said flow paths ranked in order by analysis of each flow path's nodal weights, those flow paths with weights indicating greater complexity being those most likely to fail.

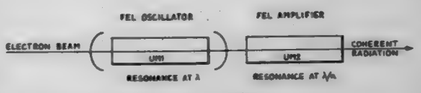
5,297,151
ADJUSTABLE WEIGHTED RANDOM TEST PATTERN GENERATOR FOR LOGIC CIRCUITS
Matthias Gruetzner, Stuttgart, Fed. Rep. of Germany; Leendert M. Huisman, Peekskill; Sandip Kundu, Mohegan Lake, both of N.Y., and Cordt W. Starke, Weil Der Stadt, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 17, 1992, Ser. No. 900,706
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—27 16 Claims

1. An apparatus for generating test patterns, said apparatus comprising:
a random pattern generator for generating a series of digit signals at an output of the random pattern generator, each digit signal in the series having an initial probability of having a first value, the initial probability being adjustable;
a shift register for storing a plurality of digit signals of a test pattern, said shift register having an input for receiving digit signals from the output of the random pattern generator, said shift register having a plurality of outputs for outputting a test pattern comprising the stored digit signals;
characterized in that the shift register comprises:
a series of latches, each latch having an input and having an output, the input of a first latch being connected to the output of the random pattern generator, the output of each latch being connected to the input of a next adjacent latch, each latch storing one digit signal of a test pattern; and



at least a first logic circuit for connecting the output of the random pattern generator to the input of the first latch or for connecting the output of a latch to the input of a next adjacent latch, said logic circuit having first and second states, and a control input for selecting either the first state or the second state, said logic circuit having a data output for outputting a series of digit signals, each digit signal output by the logic circuit having a first output probability of having the first value when the logic circuit is in the first state, the first output probability being independent of the initial probability, each digit signal output by the logic circuit having a second output probability of having the first value when the logic circuit is in the second state, the second output probability being dependent on the initial probability.

5,297,152
FREE ELECTRON LASER WITH TWO SELF-STIMULATING ONDULATORS AT HIGHER ORDER HARMONICS
Giuseppe Dattoli, Ariccia; Luca Giannessi, and Angelo Marino, both of Rome, all of Italy, assignors to Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (ENEA), Rome, Italy
Filed Nov. 22, 1991, Ser. No. 796,372
Claims priority, application Italy, Dec. 5, 1990, 48541 A/90
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—2 11 Claims



1. A free electron laser, comprising:
oscillator means for generating coherent radiation at a deter-

minate frequency and at higher order harmonic frequencies of said determinate frequency; and

amplifier means for amplifying said coherent radiation at said at least one of said higher order harmonic frequencies generated by said oscillator means, said amplifier being tuneable to at least one of said higher order harmonic frequencies.

5,297,153

METHOD AND APPARATUS FOR DECODING CODE WORDS PROTECTED WORDWISE BY A NON-BINARY BCH CODE FROM ONE OR MORE SYMBOL ERRORS

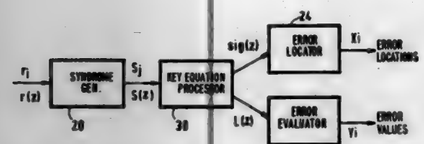
Constant P. M. J. Baggen, Eindhoven, and Lodewijk B. Vries, deceased, late of Valkenswaard, both of Netherlands by Henricus J. Kunnen, legal representative , assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 570,098, Aug. 20, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 911,252

Claims priority, application European Pat. Off., Aug. 24, 1989, 89202139.5

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.1 **4 Claims**



3. Apparatus for decoding a series of electrical signals which represent non-binary BCH code words each of which includes data symbols and parity symbols, the parity symbols of a coded word of a code word providing protection against at least one data symbol error in such code word, said apparatus comprising:

syndrome generating means for receiving a protected code word and, in accordance with code defining information, generating a series of at least two syndrome symbols representing error locating and error evaluating syndrome information relating to such code word;

processing means for processing the series of syndrome symbols generated by said syndrome generator in accordance with a key equation and solving said key equation so as to generate an error locator polynomial sig(z) and an error evaluator polynomial w(z), said processing means comprising:

Euclid's algorithm means for receiving said error locator polynomial sig(z) and deriving a formal derivative polynomial sig'(z) thereof which has no common divisor therewith other than unity, and applying Euclid's polynomial algorithm to said sig(z) and sig'(z) polynomials to derive therefrom first and second accessory polynomials b(z), c(z) such that

$$b(z)\cdot sig(z)+c(z)\cdot sig'(z)=1,$$

and

Lagrangian algorithm means for receiving said error locator polynomial sig(z), said formal derivative polynomial sig'(z), said error evaluator polynomial w(z) and said first accessory polynomial b(z), and deriving therefrom an intermediate polynomial $L^*(z)$ given by

$$L^*(z) = -w(z)\cdot c(z) = \frac{-w(z)\{1 - b(z)\cdot sig(z)\}}{sig'(z)},$$

and a Lagrangian polynomial L(z) given by

$$L(z)=L^*(z) \bmod sig(z),$$

said Lagrangian polynomial L(z) for any inversed error location signifying an error value at such location;

first evaluating means for receiving the error locator polynomial sig(z) from said processing means and generating therefrom a set of error locations in said protected code word;

second evaluating means for receiving the Lagrangian polynomial L(z) from said processing means and generating therefrom a set of error values associated with said set of error locations; and

output means coupled to said first and second evaluating means for outputting said set of error values and the error locations associated therewith in the form of electrical signals.

5,297,154

FIBER-OPTIC AMPLIFIER WITH FEEDBACK-INSENSITIVE PUMP LASER

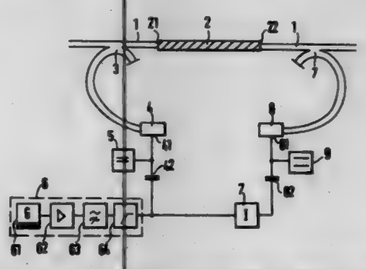
Rolf Heidemann, Tamm, and Jürgen Otterbach, Leonberg, both of Fed. Rep. of Germany, assignors to Alcatel SEL A.G., Stuttgart, Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 56,305

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214766

Int. Cl.[5] H01S *3/30, 3/00*; G02B *6/26*

U.S. Cl. 372—6 **4 Claims**



1. A fiber-optic amplifier comprising a light-signal-amplifying section of fiber (**2**) which contains an active laser medium and is coupled to at least one semiconductor laser (**4**) which serves as a pump source and can be activated by an operating current from an operating-current source (**5**, **6**), wherein the operating current is a direct current having a noise current superimposed thereon, the spectral components of the noise current having frequencies which lie above a reciprocal lifetime of an energy level of the active laser medium which causes amplification of light signals.

5,297,155

TUNABLE LASER ASSEMBLY

Jing-Jong Pan, Milpitas; Frank Y. F. Liang, San Jose; Xing-Liang Jing, San Jose, and Ming Shih, Milpitas, all of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed Mar. 29, 1993, Ser. No. 37,859

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—20 **15 Claims**

1. An assembly for tuning a laser mounted to a base, comprising

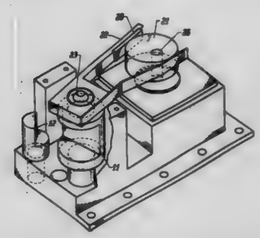
a stepper motor mounted to said base, said motor having a rotatable shaft;

means, responsive to control signals and connected to said stepper motor, for controlling rotation of said stepper motor shaft;

a cam mounted to said stepper motor shaft;

a grating rotatably mounted to said base and positioned with respect to an end of said laser to form an tuning cavity therewith; and

a follower arm in fixed relationship to said grating and biased against said cam;



whereby said cavity is tuned to vary the output of said laser by rotating said grating in response to said control signals.

5,297,156

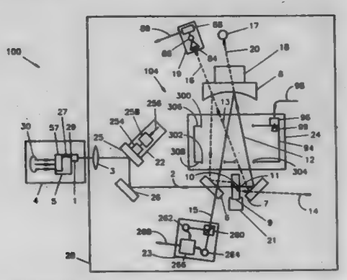
METHOD AND APPARATUS FOR DUAL RESONANT LASER UPCONVERSION

David A. G. Deacon, Los Altos, Calif., assignor to Deacon Research, Palo Alto, Calif.

Continuation-in-part of Ser. No. 826,316, Jan. 24, 1992, Pat. No. 5,206,868, which is a continuation-in-part of Ser. No. 632,447, Dec. 20, 1990, Pat. No. 5,134,622. This application Dec. 2, 1992, Ser. No. 984,382

Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—21 **74 Claims**



1. An apparatus for generating an optical output beam, the apparatus comprising:

a solid state laser pump means for producing a first optical beam along a first defined axis, said first optical beam having a first preselected spectrum having at least one spectral peak;

a resonator cavity means coupled to receive said first optical beam from said solid state laser pump means, for supporting buildup of selected optical power in a first spectral range including said first preselected spectrum and in a second spectral range, said resonator cavity means being disposed to have an axis coincident with said first optical beam for admitting a portion of said first optical beam;

first means for adjusting at least one longitudinal mode in said first spectral range of said resonator cavity means relative to said at least one spectral peak of said optical pump means in response to a first control input in order to achieve buildup of optical power at said at least one longitudinal mode;

a nonlinear optical element means disposed in said resonator cavity means, which is adjustable to phase match at least two optical beams through said nonlinear optical element means, for generating a second optical beam with a preselected frequency along a second defined axis at least partially overlapping said first defined axis; and

second means for adjusting a second longitudinal mode in said second spectral range of said resonator cavity means relative to said preselected frequency of said second optical beam in response to a second control input in order to achieve buildup of optical power at said preselected frequency for producing an optical output.

5,297,157

DRIVER CIRCUIT FOR A LASER

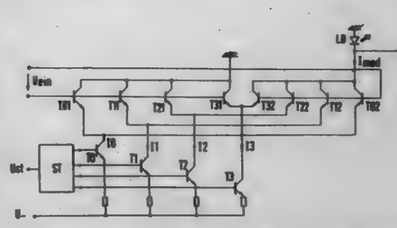
Norbert Kaiser, Tamm, and Werner Manz, Leinfelden-Echterd, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 19, 1993, Ser. No. 34,692

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1992, 4210022

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—38 **7 Claims**



1. A driver circuit for a laser, said driver circuit comprising:

a first differential amplifier with a first controlled current source, first and second outputs of the first differential amplifier being connected through a laser to a first terminal of a voltage source and directly to the first terminal of the voltage source, respectively, an input voltage being applied between first and second inputs of the first differential amplifier, the first differential amplifier being connected through the first controlled current source to a second terminal of the voltage source;

at least one second differential amplifier with an associated second controlled current source, the at least one second differential amplifier connected in parallel with the first differential amplifier by interconnecting respective first and second inputs and respective first and second outputs, so that the laser is a common load of the first and the at least one second differential amplifiers, the at least one second differential amplifier being connected through the associated second controlled current source to the second terminal of the voltage source; and

a control circuit for controlling the current sources, respective control inputs of the current sources being coupled to outputs of the control circuit, the control circuit having an input connected to an external control voltage.

5,297,158

SEMICONDUCTOR LASER DEVICE INCLUDING A GALLIUM-ALUMINUM ARSENIC COMPOUND

Hiroki Naitou, Suita; Masahiro Kume, Otsu; Isaei Ota, Fujiidera, and Hirokazu Shimizu, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,913

Claims priority, application Japan, Apr. 22, 1991, 3-090510; Jun. 19, 1991, 3-147427; Dec. 5, 1991, 3-321679; Dec. 12, 1991, 3-328522; Dec. 12, 1991, 3-328525; Dec. 13, 1991, 3-330196; Jan. 7, 1992, 4-000610; Feb. 12, 1992, 4-024902

Int. Cl.[5] H01S *3/19*

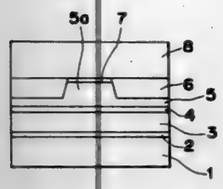
U.S. Cl. 372—46 **36 Claims**

1. A semiconductor laser device, comprising:

a $Ga_{1-x}Al_xAs$ layer as an active layer;

a $Ga_{1-Y}Al_YAs$ layer of a conduction type, provided on at least one side of the principal planes of the $Ga_{1-X}Al_XAs$ layer, which $Ga_{1-Y}Al_YAs$ layer having a stripe-like current channel portion extending in a direction opposite to the active layer; and

a $Ga_{1-Z}Al_ZAs$ layer of the other conduction type than the conduction type of the $Ga_{1-Y}Al_YAs$ layer, which $Ga_{1-Z}Al_ZAs$ layer being provided on the two sides in the longitudinal direction of the stripe-like current channel portion of the $Ga_{1-Y}Al_YAs$ layer;



wherein the AlAs mole fractions X, Y and Z has a following relation:

$$Z>Y>X\geq 0.$$

5,297,159

DIRECT CURRENT-LIGHT ARC FURNACE

Herbert Dung, Dortmund, and Emil Elsaer, Sinzheim-Vormberg, both of Fed. Rep. of Germany, assignors to Flohe GmbH & Co., Castrop-Rauxel, Fed. Rep. of Germany

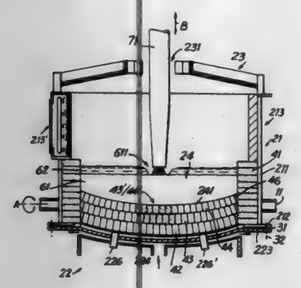
PCT No. PCT/DE91/00582, § 371 Date Mar. 16, 1992, § 102(e) Date Mar. 16, 1992, PCT Pub. No. WO92/02112, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 17, 1991, Ser. No. 838,743

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022720

Int. Cl.[5] H05B *7/00*

U.S. Cl. 373—72 **8 Claims**



1. A direct current arc furnace, comprising a graphite cathode; and

a container forming a hearth with a hearth base surface and having a container bottom, wherein said container bottom includes a supporting copper-plated sheet steel base consisting of a steel sheet and a copper plating on said steel sheet; electrical connection means extending through said steel sheet to contact said copper plating to supply an anode current to said copper plating; and a brick lining of refractory material arranged on said copper-plated sheet steel base, said copper plating being positioned between said brick lining and said steel sheet.

5,297,160

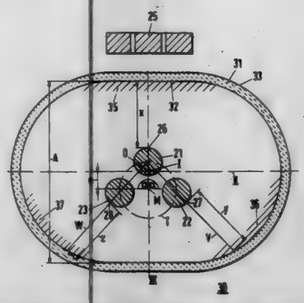
FURNACE ELECTRODE DESIGN

Joseph F. Kroker, Aliquippa, Pa., assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 10, 1992, Ser. No. 820,411

Int. Cl.[5] F27D *23/04*

U.S. Cl. 373—85 **5 Claims**



1. A three-phase electric arc furnace, comprising a furnace vessel having a notional vertical central vessel axis and a notional horizontal transverse vessel axis that is perpendicular to said central vessel axis, a central electrode and two peripheral electrodes disposed on each side of said central electrode, said three electrodes each having a notional vertical central electrode axis, said electrodes being disposed with their respective notional vertical central electrode axes to define a periphery of a notional horizontal circle, the center of said notional horizontal circle being disposed parallel to said notional vertical central vessel axis, means for vertically suspending each of said electrodes in said furnace vessel, said notional horizontal transverse vessel axis intersecting with the center of said notional horizontal circle and with said notional vertical electrode axis of said central electrode, said notional vertical central electrode axis being disposed from the other two of said notional vertical electrode axes along said notional horizontal circle at a maximum angle from said center of said notional horizontal circle of less than 110°.

5,297,161

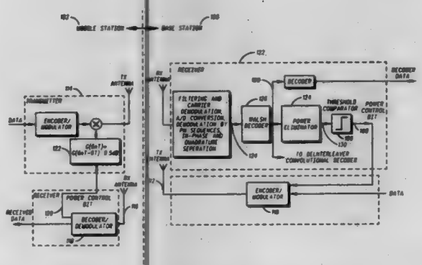
METHOD AND APPARATUS FOR POWER ESTIMATION IN AN ORTHOGONAL CODED COMMUNICATION SYSTEM

Fuyun Ling, Jamaica Plains, Mass., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 29, 1992, Ser. No. 906,321

Int. Cl.[5] H04B *7/216*; H04J *13/00*

U.S. Cl. 375—1 **26 Claims**



1. An apparatus comprising a signal power estimator, the signal power estimator comprising:

(a) orthogonal code detector means for correlating an input data vector with a set of mutually orthogonal codes to generate a set of output values, the input data vector comprising data samples of a received orthogonal coded signal, each output value corresponding to a measure of confidence that the input data vector is substantially similar to one of the orthogonal codes from within the set of mutually orthogonal codes; and

(b) estimating means, operatively coupled to the orthogonal code detector means, for generating an estimate of the power of the received orthogonal coded signal as a non-linear function of the set of output values.

5,297,162

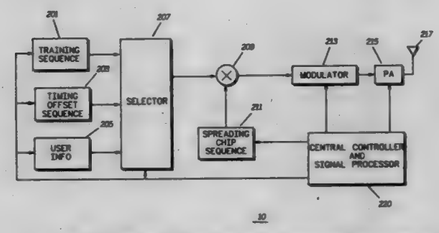
SYSTEM AND METHOD FOR BIT TIMING SYNCHRONIZATION IN AN ADAPTIVE DIRECT SEQUENCE CDMA COMMUNICATION SYSTEM

Edward K. B. Lee, Sunrise; Jimmy Cadd, Coral Springs; Tracy L. Fulghum, and Robert S. Babayi, both of Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1993, Ser. No. 73,226

Int. Cl.[5] H04L *9/00*

U.S. Cl. 375—1 **20 Claims**



1. In a direct sequence CDMA spread spectrum communication system, wherein spread spectrum communication signals comprising binary bits coded with spreading chip sequences are communicated between a transmitter and a receiver; a bit synchronization method for synchronizing receiver bit timing with transmitter bit timing comprising the steps of:

a) transmitting a direct sequence spread spectrum communication signal (DS-SS) including a redundant training bit sequence followed by a transmitter bit timing sequence coded with a spreading chip sequence;

b) despreading the DS-SS communication signal based on said redundant training bit sequence to provide a decoded communication signal; and

c) determining receiver bit timing offset based on the transmitter bit timing sequence and the decoded communication signal.

5,297,163

METHOD FOR PROCESSING SIGNALS FOR SIGNAL TRANSMISSION IN THE BASE BAND

Johann Pfeiffer, Vienna, Austria, assignor to Schrack Telecom-Aktiengesellschaft, Vienna, Austria

Filed Jun. 3, 1991, Ser. No. 708,015

Claims priority, application Austria, Jun. 1, 1990, 1200/90

Int. Cl.[5] H04B *1/38*; H04C *5/16*

U.S. Cl. 375—8 **5 Claims**

1. A method of using a modem for transmitting at least a transmit signal and receiving a receive signal in a base band on a two-wire line comprising the steps of:

receiving an input signal in a transmitting unit, said input signal having a plurality of data bits;

scrambling said input signal to form a scramble signal having said plurality of data bits;

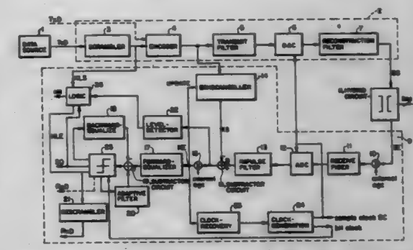
encoding a predetermined amount of consecutive said data bits of said scramble signal to form a transmit symbol signal in accordance therewith;

generating said transmit signal in accordance with said transmit symbol signal;

transmitting said transmit signal;

receiving in a receiving unit said receive signal and generating a received symbol signal in accordance therewith;

generating a correction signal in a feedback-loop by analyzing a corrected received symbol signal and said transmit symbol signal, said corrected received symbol signal being generated by combining said correction signal with said received symbol signal in said feedback-loop;



determining whether a signal level of said corrected received symbol signal is within a predetermined signal level range and generating a range-indicator signal in accordance therewith;

decoding said corrected received symbol signal to form an output signal having an output signal level and a plurality of data bits; and

logically comparing said output signal level of said output signal to said scramble signal level of said scramble signal to determine it at least one of transmission of said transmit signal and receipt of said receive signal is interrupted.

5,297,164

DIGITAL COMMUNICATIONS SYSTEMS

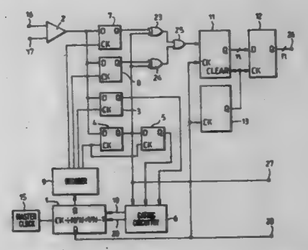
David J. McCabe, Winchester, England, assignor to Shaye Communications, Limited, Hampshire, England

Filed Feb. 7, 1992, Ser. No. 833,446

Claims priority, application United Kingdom, Feb. 12, 1991, 9102936

Int. Cl.[5] H04B *3/46*

U.S. Cl. 375—10 **12 Claims**



1. A method of detecting data corruption in digital communications systems, said method comprising taking samples of the received signal and utilizing a function of the value of such samples to determine whether excessive jitter is occurring, the existence of such jitter being used as an indication of possible data corruption, said method being characterized in that, for each bit of the received signal, three samples are taken as follows:

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1) a mid-bit sample indicating the value at the approximate mid position of the bit; and
2) two further samples taken within the bit period, one before and one after the mid-bit sample;

said method further comprising comparing the values of all three samples with one another to determine whether jitter is present, and wherein jitter is assumed to be present if the value of one sample is different from that of the other two samples.

5,297,165

EQUALIZER FOR RADIO RECEIVE SIGNAL

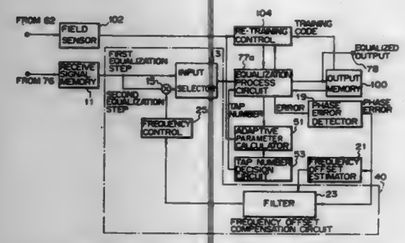
Takashi Ueda; Hiroshi Suzuki, and Hitoshi Yoshino, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 724,612

Claims priority, application Japan, Jul. 6, 1990, 2-179067; Aug. 3, 1990, 2-206333; Feb. 25, 1991, 3-30496; Mar. 1, 1991, 3-36415

Int. Cl.[5] H04B *1/10*; H03C *7/00*

U.S. Cl. 375—12 **14 Claims**



1. An equalizer for a radio receive signal comprising:

a receive signal memory for storing a burst of receive signals each having a training series signal and a data series signal;

an equalization process circuit for equalizing a signal read out of said receive signal memory and for providing equalized output signal at an output terminal, said equalization process circuit including

a plurality of series connected delay elements each providing a predetermined delay time,

a plurality of multipliers coupled with input/output of said delay elements for providing tap coefficients,

an adder coupled with output of said multipliers to provide equalized output, and

a tap coefficient calculator for adjusting tap coefficients according to equalization error of equalized output for a training series signal;

an adaptive parameter calculator for calculating absolute value of a power of a tap coefficient for each tap; and

a tap number decision circuit for determining whether each tap is used or not based upon a comparison of said absolute value with a predetermined value.

5,297,166

METHOD AND APPARATUS FOR DECISION FEEDBACK EQUALIZATION WITH REDUCED CONVERGENCE TIME

Roy G. Batruni, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 2, 1992, Ser. No. 907,377

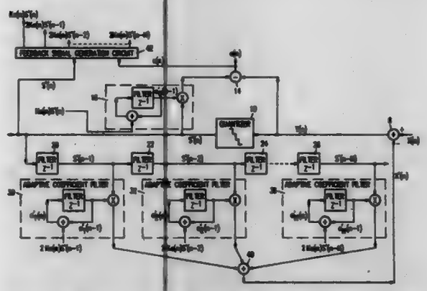
Int. Cl.[5] H03K *5/159*

U.S. Cl. 375—14 **10 Claims**

1. A method for performing blind mode decision feedback equalization with reduced convergence time, including the steps of:

(a) receiving a transmitted signal x(n) resulting from transmission of an input signal s(n) through a channel having a z-domain transfer function A(z);

(b) performing a decision feedback equalization operation comprising multiple iterations on the transmitted signal x(n), wherein a replica input signal s'(n) is generated during each of the iterations, a feedback coefficient a'$_0$(n) is generated in response to a feedback signal Ke(n)s'(n) during each of the iterations, where K is a convergence scaling factor, and an error signal e(n) is generated in response to the feedback coefficient a'$_0$(n) during each of the iterations; and



(c) during each of the iterations, processing the replica input signal s'(n) in an adaptive filter means thereby generating a replica transmitted signal x'(n), wherein the adaptive filter means processes the replica input signal s'(n) in response to a set of adaptively generated coefficients a'$_j$(n), where j=1, 2, . . . , N, and N is an integer, and wherein each of the coefficients a'$_j$(n) is generated in response to a feedback signal 2Ke(n)s'(n−j), where j=1, 2, . . . , N, where K is said convergence scaling factor.

5,297,167

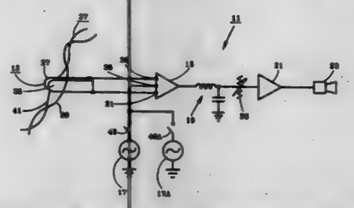
METHOD AND APPARATUS FOR DETECTING DIGITAL CARRIER SIGNALS ON TELEPHONE CABLES

James M. Buzbee, and Douglas R. Connally, both of Mineral Wells, Tex., assignors to Industrial Technology, Inc., Mineral Wells, Tex.

Division of Ser. No. 635,294, Dec. 28, 1990, Pat. No. 5,140,614. This application May 12, 1992, Ser. No. 882,687

Int. Cl.[5] H04B *3/46*

U.S. Cl. 375—10 **10 Claims**



1. An apparatus for use in detecting signals on a pair of conductors, comprising:

a) capacitive probe means for collecting an electrical signal, said probe means being thin so as to allows its insertion between a pair of conductors;

b) means for amplifying said collected signal, said amplifier means having differential inputs that are connected to said probe means, wherein said apparatus discriminates between a first electrical signal carried by and uncoupled to said conductor pair and a second electrical signal that has been electrically coupled to said conductor pair.

5,297,168

SPACE-DIVERSITY DIGITAL MOBILE RECEIVER AND RELEVANT PROCESS

Marcello Sant'Agostino, Milan; Luigi Moreno, Torino, and Renato D'Avella, Milan, all of Italy, assignors to Italtel Societa Italiana Telecommunicazioni s.p.a., Milan, Italy

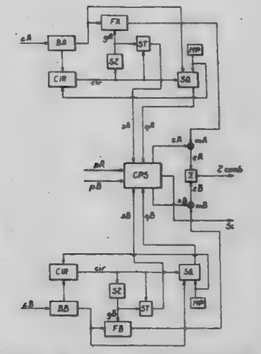
PCT No. PCT/EP90/00603, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO90/16118, PCT Pub. Date Dec. 27, 1990

PCT Filed Apr. 11, 1990, Ser. No. 777,399

Claims priority, application Italy, Jun. 15, 1989, 20880 A/89

Int. Cl.[5] H04B *7/08*

U.S. Cl. 375—100 **27 Claims**



1. In a digital radio mobile system in which radio signals having signal power levels are received by at least two separate branches with associated antennas, a process for equalizing time-division digital radio signals containing a preamble of known content, the process comprising the steps of:

(a) estimating a channel impulse response for each of the receiving branches based on said preamble;

(b) matched adaptive filtering each received signal producing filtered signals;

(c) calculating at lest two weighting coefficients as a function of the signal power levels received at each of said antennas and reception quality signals of each channel representative of an estimate of distortion undergone by each channel and calculated with the aid of said preamble;

(d) weighting said filtered signals with said weighting coefficients;

(e) adding the weighted filtered signals to generate a combined signal;

(f) weighting response time signals representing the transmission channel response time to a single impulse;

(g) adding the weighted response time signals to generate a control signal; and

(h) estimating a numerical sequence contained in the radio signals transmitted through an equalization of the combination signal utilizing said control signal.

5,297,169

EQUALIZER TRAINING IN A RADIOTELEPHONE SYSTEM

Tomas Backström, Kista; Torbjörn Ward, and Gustav Larsson, both of Stockholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

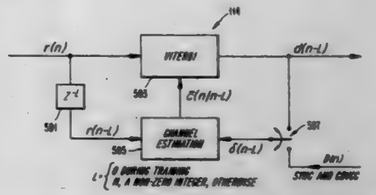
Filed Jun. 28, 1991, Ser. No. 723,266

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—13 **17 Claims**

9. In a digital cellular radiotelephone system having a base station and a mobile station exchanging communications bursts of a specified format, one of said base station and said mobile station having equalizer means for reducing inter-symbol interference during said communications bursts, an apparatus for further reducing said inter-symbol interference, comprising:

means for training said equalizer means using a known synchronization pattern occurring at the beginning of said specified format;



means for retraining said equalizer means during said communications bursts using a second known pattern provided according to said specified format, said second known pattern having an additional function besides retraining; and

means for inserting said second known pattern in each communications bursts during a particular call.

5,297,170

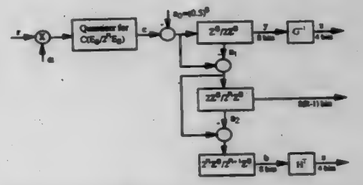
LATTICE AND TRELLIS-CODED QUANTIZATION

Vedat M. Eyuboglu, Boston, and G. David Forney, Jr., Cambridge, both of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Aug. 21, 1990, Ser. No. 570,413

Int. Cl.[5] H04B *14/04*

U.S. Cl. 375—25 **65 Claims**



60. Apparatus for quantizing signal vectors comprising multiple codebooks forming a super codebook, at least two of said codebooks having different densities of codewords, the apparatus further comprising means for selecting one of said codebooks and one of said codewords in said selected codebook to represent said vector, the apparatus further comprising means for representing said selected codebook and said selected codeword by bits, and further comprising means for representing the selected codebook as a variable length prefix code to represent the selected codebook so that a fixed number of bits can be used to represent the combination of the selected codebook and the codeword.

5,297,171

RECEIVER COMPRISING AT LEAST TWO RECEIVE BRANCHES

Wolfgang Koch, Heroldsberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1991, Ser. No. 804,151

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1990, 4039245

Int. Cl.[5] H04B *7/10*

U.S. Cl. 375—100 **14 Claims**

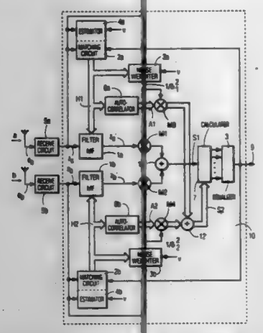
1. A receiver comprising at least two receive branches (a, b) for receiving transmitted signals affected by different transmission characteristics, each said branch comprising a respective

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receive circuit (5*a*, 5*b*), and a combining arrangement (10) for combining the receive branches (a, b),

characterized in that each receive branch (a,b) comprises a matched filter (1*a*, 1*b*) having a respective output signal and an arrangement (6*a*, 6*b*) for forming an estimated impulse response (H1, H2) for that branch and an appropriate autocorrelation function (A1, A2) for the estimated impulse response (H1, H2) of that receive branch (a,b), and

in that the combining arrangement (10) comprises means for weighting the matched filter output signals (z_a, z_b) with respective first weight factors, means for weighting the



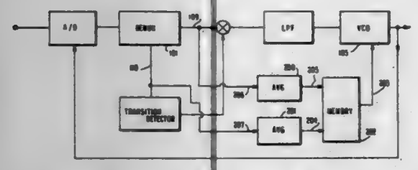
autocorrelation functions (z_a, z_b) with respective second weight factors, a first adder circuit (11) for adding together the matched filter output signals (z_a, z_b) which have been weighted with said first weight factors to form a first sum (S1), a second adder circuit (12) for adding together the receive branch autocorrelation functions (A1, A2) weighted with the second weight factors to form a second sum (S2), and an equalizer (3,7) for evaluating the first and second sums (S1, S2), the respective weight factors being approximately inversely proportional to an instantaneous noise power (σ_1^2, σ_2^2) in each receive branch (a,b).

5,297,172

METHOD AND APPARATUS FOR CLOCK RECOVERY FOR DIGITALLY IMPLEMENTED MODEM

Ajit Shenoy, Germantown; Lin-nan Lee, Potomac, and Michael K. Eng, Rockville, all of Md., assignors to Comsat Corporation, Washington, D.C.

Filed Apr. 11, 1991, Ser. No. 791,052
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—118 **11 Claims**



1. A method for obtaining a correct sampling timing phase in a digital burst communications receiver during a time when a synchronization preamble section of a data burst transmitted to said receiver is being processed, said processing including the step of sampling said preamble in accordance with said sampling timing phase, said method including steps of:

(a) averaging samples of said preamble section of said data burst;

(b) using the results of said step (a) as an address to a memory which stores correction values;

(c) outputting from said memory an appropriate correction value corresponding to a presently received sampling timing phase in accordance with said address; and

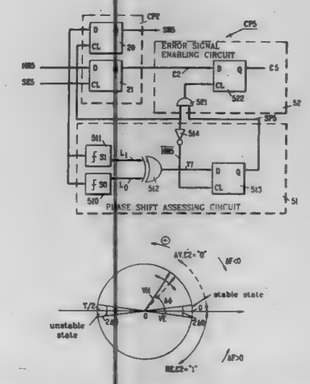
(d) using said appropriate correction value from said step (c) to alter the phase of the presently received sampling timing phase so as to correct the presently received sampling timing phase to the correct sampling timing phase.

5,297,173

PHASE/FREQUENCY COMPARATOR FOR TIMING RECOVERING CIRCUIT

Sari Hikmet, Creteil, and Hervé F. Houeix, Lannion, both of France, assignors to SAT (Société Anonyme de telecommunications), Paris, France

Filed Feb. 19, 1992, Ser. No. 836,872
Claims priority, application France, Feb. 22, 1991, 91-02175
Int. Cl.[5] H04L *7/033*
U.S. Cl. 375—118 **18 Claims**



1. A phase/frequency comparator, for comparing a digital input signal (SE) having a given binary period and a clock signal (HR) having a clock period variable to within a first time interval with respect to said given binary period, comprising:

(a) phase comparing means (CP) for comparing the respective phases of said digital input signal and said clock signal to produce a first error signal (ε2, ε4) having a sign that is a function of the sign of the phase difference between said digital input signal and said clock signal;

(b) phase shift assessing means (51, 751, 851) for producing a phase detection signal (SP) in accordance with a phase shift between said clock signal and said digital input signal that falls within at least one given phase shift range, said phase shift assessing means including:

(1) means for detecting transitions between logic states in said digital input signal, thereby to derive transition pulses having a width greater than said first time interval; and

(2) means for deriving from said phase detection signal a pulse having a width equal to at least one clock period in response to a transition pulse substantially in phase with a clock signal complementing said clock signal; and

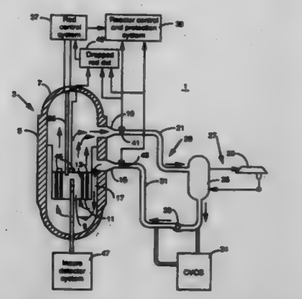
(c) second error signal producing means (52, 703) operable in response to said first error signal and said phase detection signal to produce a second error signal (ε5, ε6, ε7, ε8) the sign of which is a function of the difference between said given binary period and said clock period.

5,297,174

SAFETY SYSTEM GRADE APPARATUS AND METHOD FOR DETECTING A DROPPED CONTROL ROD AND MALFUNCTIONING EXIT THERMOCOUPLES IN A PRESSURIZED WATER REACTOR

Albert J. Impink, Jr., Murrysville; Michael D. Heibel, Penn Township, Westmoreland County; Toshio Morita, Wilkinsburg, and Raymond Calvo, N. Huntingdon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 26, 1993, Ser. No. 67,280
Int. Cl.[5] G21C *7/06*
U.S. Cl. 376—236 **10 Claims**



1. A method of protecting a pressurized water reactor having a reactor core with fuel assemblies through which a reactor coolant is circulated from a cold leg to a hot leg, said method comprising the steps of:

providing safety system grade core exit thermocouples at selected fuel assemblies across said reactor core;

automatically measuring core exit temperatures at the selected fuel assemblies at which said safety system grade core exit thermocouples are located;

automatically measuring average core inlet and outlet temperatures with safety system grade temperature sensors at said cold leg and hot leg;

automatically analyzing with a safety system grade analyzer said pattern of exit temperatures and said average core inlet and outlet temperatures to identify a dropped control rod; and

automatically blocking with safety system grade means withdrawal of control rods from said reactor core when a dropped rod is identified.

5,297,175

ASSEMBLING MACHINE FOR NUCLEAR FUEL ASSEMBLY

Taichi Koiwai; Katsunori Ohuchi, and Nobuo Miwa, all of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,019
Claims priority, application Japan, Oct. 24, 1991, 3-278095
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—261 **17 Claims**

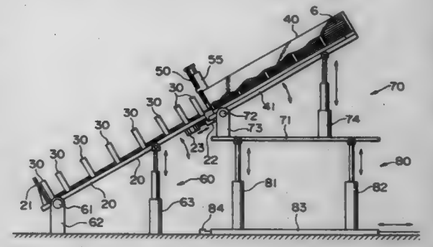
1. An assembling machine for nuclear fuel assembly comprising:

a base, formed in a plate shape, which is arranged in an inclined manner to extend in an inclined direction;

a plurality of supporting posts, disposed linearly on the base along with its inclined direction, each of which supports a supporting grid, each supporting grid including at least one grid cell, and wherein said plurality of supporting posts support said supporting grids such that said at least one grid cell is directed along the inclined direction;

a fuel magazine, provided at an upper portion of the base in its inclined direction, which holds a fuel rod along the inclined direction in a free-engaged state;

a stopper, fixed in the vicinity of a lower edge portion of the fuel magazine in the inclined direction, which regulates a fall-down movement of the fuel rod; and



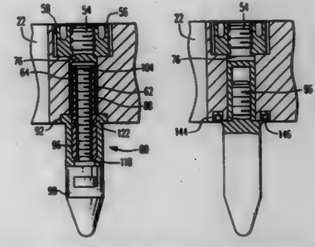
a releasing mechanism which drives the stopper so as to release a regulation of the stopper applied to the fuel rod.

5,297,176

REMOTELY REPLACEABLE FUEL ASSEMBLY ALIGNMENT PIN

David A. Altman, Plum; James R. Chrise, Trafford; Bruce W. Bevilacqua, Export, and Gregory L. Calhoun, Allegheny Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1992, Ser. No. 887,264
Int. Cl.[5] G21C *5/06*
U.S. Cl. 376—364 **12 Claims**



1. A guide structure for aligning a top nozzle of a nuclear fuel assembly to an upper core plate of a nuclear reactor, the guide structure including a replacement for an original guide pin structure having an original guide pin rigidly mounted at a through bore in the upper core plate via a clamping nut rigidly attached to an upper surface of the upper core plate, said guide structure comprising:

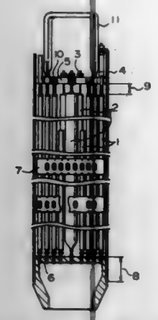
a shaft portion including an expansion fitting for rigidly engaging a bore extending through a portion of the original guide pin;

wherein the shaft portion is attachable to said portion of the original guide pin exclusively from below the upper core plate;

a guide portion affixed to the shaft portion, the guide portion having an upward facing shoulder for bearing against a lower surface of the upper core plate, and a nose dimensioned for receipt in the upper nozzle of the fuel assembly.

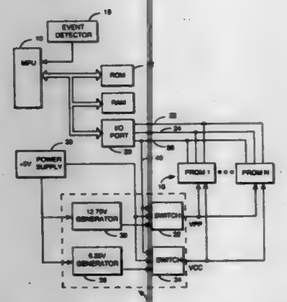
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,177
FUEL ASSEMBLY, COMPONENTS THEREOF AND METHOD OF MANUFACTURE
Masahisa Inagaki, Hitachi; Masayoshi Kanno, Kitaibaraki; Hiromasa Hirakawa, Hitachi; Hideaki Ishizaki, Mito; Nobukazu Yamamoto, Hitachi; Hideo Maki, Katsuta; Junjiro Nakajima, Hitachi; Shozo Nakamura, Hitachiota, and Satoshi Kanno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 21, 1992, Ser. No. 948,030
Claims priority, application Japan, Sep. 20, 1991, 3-241674
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—462 41 Claims



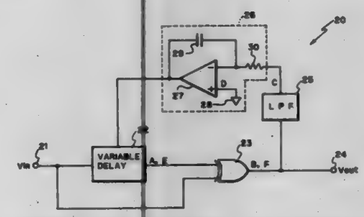
16. A water rod for a fuel assembly, which is made from a zirconium-based alloy tube having a crystallographic orientation parameter in the tube thickness direction of <0001> crystallographic direction, as a Fr value, of 0.25 to 0.50, a crystallographic orientation parameter in the longitudinal direction, as a Fl value, of 0.25 to 0.36, and a crystallographic orientation parameter in the tube circumferential direction, as a Ft value, of 0.25 to 0.36.

5,297,178
HIGH SECURITY COUNTER
John R. Martin, Rockford, Ill., assignor to Arachnid, Inc., Rockford, Ill.
Filed Mar. 18, 1992, Ser. No. 853,507
Int. Cl.[5] G06F *11/00*
U.S. Cl. 377—26 16 Claims



1. A high security counting system for counting events represented by an event signal comprising:
a programmable memory counter having a plurality of sequentially arranged memory locations, each memory location having a unique memory address and including a predetermined number of storage elements, each storage element being programmable from a first value to a second value and not programmable from said second value to said first value, the number of storage elements programmed to said second value representing the count of said programmable memory counter;
a programmer coupled to said programmable memory counter; and
a controller responsive to an event signal for controlling said programmer to program a storage element from said first value to said second value, wherein said controller controls said programmer to sequentially program the storage elements within a memory location by reprogramming a respective memory location a predetermined number of times equal to the number of storage elements at said memory location.

5,297,179
DOUBLING CIRCUIT
Satoshi Tatsumi, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Apr. 27, 1992, Ser. No. 874,631
Claims priority, application Japan, Apr. 30, 1991, 3-128572
Int. Cl.[5] H03B *19/00*
U.S. Cl. 377—47 4 Claims

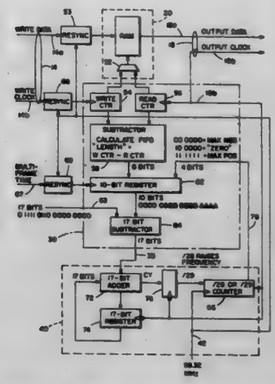


1. A doubling circuit for doubling a frequency of an input signal, comprising:
variable delay means for delaying the input signal to produce a delayed signal;
exclusive-OR (EOR) gate means for EORing the delayed signal from said variable delay means and the input signal to produce an EOR signal;
low pass filter (LPF) means for filtering the EOR signal from said EOR gate means to produce a filtered signal; and
integrating circuit means for integrating a voltage difference between the filtered signal from said LPF means and a reference voltage to produce an integrated signal;
said variable delay means delaying the input signal a period of time controlled by the integrated signal from said integrating circuit means.

5,297,180
DIGITAL CLOCK DEJITTER CIRCUITS FOR REGENERATING CLOCK SIGNALS WITH MINIMAL JITTER
Daniel C. Upp, Southbury, Conn., and Dan H. Wolaver, Brookfield, Mass., assignors to TranSwitch Corporation, Shelton, Conn.
Continuation-in-part of Ser. No. 742, Feb. 8, 1990, which is a continuation-in-part of Ser. No. 439,097, Nov. 17, 1989, Pat. No. 5,033,064. This application Dec. 10, 1991, Ser. No. 805,465
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—112 20 Claims

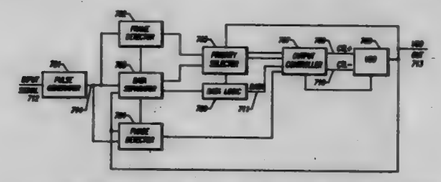
1. Apparatus for regenerating a jittered stream of data of a first standard telecommunications signal, said apparatus having a second telecommunications clock signal as an input thereto, said second telecommunications clock signal being a fast clock signal at a substantially faster rate than the rate of said first standard telecommunications signal, comprising;

a) FIFO means for receiving said jittered stream of data, and for providing said data for output from said apparatus;
b) a digital, integer/fractional FIFO fullness gauge means coupled to said FIFO means for tracking the relative rates at which said FIFO means receives and outputs said data and for generating therefrom a first control indication which is responsive to an integer fullness of said FIFO means, and for generating from said first control indication and from an indication of a fractional fullness of said FIFO means, a second control indication; and



c) a controllable digital frequency generator means coupled to said digital integer/fractional FIFO fullness gauge means for receiving said fast clock signal and said second control indication, and for generating therefrom a substantially jitter-free output clock signal at the same nominal rate as said first telecommunications signal, said substantially jitter-free output clock signal being coupled to said FIFO means in order to cause said FIFO means to provide said data for output from said apparatus in a substantially jitter-free manner at said nominal rate.

5,297,181
METHOD AND APPARATUS FOR PROVIDING A DIGITAL AUDIO INTERFACE PROTOCOL
Keith Barr, Los Angeles; Alan Zak, Culver City; Marcus Ryle, Marina del Rey; David Brown, Los Angeles, and Carl Lafky, Simi Valley, all of Calif., assignors to Alesis, Los Angeles, Calif.
Filed Jan. 17, 1992, Ser. No. 822,469
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—119 19 Claims

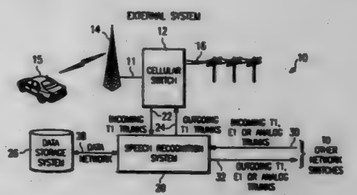


1. A method for asynchronous communication of digital data at a plurality of data rates, said method comprising the steps of:
encoding digital information into a plurality of data frames each having a sync pattern and a plurality of valid data bits;
transmitting said plurality of data frames using a communications medium;
receiving said plurality of data frames using a receive oscillator having a frequency and detecting said sync pattern of each of said data frames;
counting a number of periods of said oscillator during detection of each sync pattern;
executing a first adjustment of said frequency of said receive oscillator, based upon said number of oscillator periods counted;
executing a second adjustment of said frequency of said receive oscillator such that the number of receive oscillator periods that elapse between occurrences of said sync pattern is within a range of the number of bits in said data frame allowing a phase locking means to phaselock said receive oscillator to said digital data; and,
phase locking said receive oscillator to said digital data.

5,297,182
METHOD OF DECOMMISSIONING A NUCLEAR REACTOR
Martin D. Cepkauskas, Eastham, Mass., assignor to M-K Ferguson Company, Cleveland, Ohio
Filed Oct. 29, 1991, Ser. No. 784,548
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 30 Claims

1. A method of decommissioning a nuclear reactor including a vessel defining a chamber and reactor internals positioned within said chamber, said method comprising the steps of:
encapsulating the vessel and reactor internals into a solid reactor capsule by forming a matrix within the chamber which integrally attaches to the vessel and integrally embeds the reactor internals to create the solid reactor capsule whereby the capsule will have an outer shell which is formed from the vessel and which substantially encases the matrix and thus the reactor internals;
converting the reactor capsule into a plurality of decommissioned segments by cutting the reactor capsule into segments which each include a portion of the outer shell and a portion of the matrix and the reactor internals embedded therein whereby each of the segments includes a portion of the reactor vessel and pieces of the reactor internals;
providing sheets which are dimensioned to cover the exposed surfaces of the matrix of the segments; and
attaching the sheets to the segment to cover the exposed surfaces.

5,297,183
SPEECH RECOGNITION SYSTEM FOR ELECTRONIC SWITCHES IN A CELLULAR TELEPHONE OR PERSONAL COMMUNICATION NETWORK
Bernard F. Bareis; Peter J. Foster, and Thomas B. Schalk, all of Dallas, Tex., assignors to VCS Industries, Inc., Dallas, Tex.
Filed Apr. 13, 1992, Ser. No. 867,873
Int. Cl.[5] H04M *11/00, 1/64;* H04Q *7/00;* H04B *1/00*
U.S. Cl. 379—59 11 Claims



1. In a mobile telecommunications system that connects mobile telecommunications customers, each having a mobile unit, to land-based customers served by a telephone network, wherein incoming and outgoing calls are routed through a

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mobile telecommunications switching office connected to a group of cell sites that communicate with the mobile units, the improvement comprising a voice recognition system located at the mobile telecommunications switching office, the voice recognition system comprising:

a voice recognizer for recognizing characters and commands spoken by a mobile unit customer;

announcing means; and

processor means, operative under the control of a program stored therein and responsive to receipt by the voice recognizer of a first spoken command from said mobile unit customer, for controlling the announcing means to request the mobile unit customer to enter information identifying a destination number to be dialed;

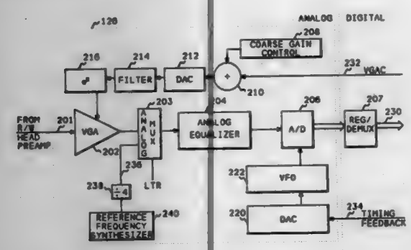
the processor means further operative under the control of said program and responsive to receipt by the voice recognizer of a second spoken command from the mobile unit customer, for transferring the identifying information received by the voice recognizer to the mobile telecommunications switching office.

5,297,184

GAIN CONTROL CIRCUIT FOR SYNCHRONOUS WAVEFORM SAMPLING

Richard T. Behrens, Louisville, Trent Dudley, Littleton, and Neal Glover, Broomfield, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Feb. 1, 1993, Ser. No. 12,049
Int. Cl.[5] H04L *27/08*
U.S. Cl. 375—98 **17 Claims**



1. A gain control circuit for adjusting the gain of a variable gain amplifier that receives an analog signal, to cause an output of said variable gain amplifier to have a predetermined signal level at an occurrence of a pulse, said gain control circuit comprising:

amplitude sampling means for receiving said analog signal and for taking a plurality of amplitude samples of an amplitude of said analog signal, said amplitude samples being taken at times determined by a clock signal;

pulse detection means connected to receive said plurality of amplitude samples, wherein said pulse detection means determines whether a pulse occurred coincident with each of said plurality of amplitude samples;

sample selection means connected to an output of said amplitude sampling means and an output of said pulse detection means, said sample selection means for selecting, for each pulse detected by said pulse detection means, at least one of said plurality of amplitude samples, wherein said at least one amplitude sample has a predetermined relationship to a location of said pulse;

arithmetic means for comparing said at least one selected amplitude sample to a predetermined value and for creating an amplitude error measurement signal representative of a difference in amplitude between said at least one selected amplitude sample and said predetermined value; and

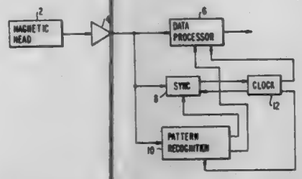
conversion means connected between said arithmetic means and a gain control input of said variable gain amplifier, said conversion means for receiving said amplitude error measurement signal and converting said amplitude error measurement signal into a gain control signal connected to said gain control input.

5,297,185

PATTERN DETECTION AND SYNCHRONIZATION CIRCUIT

Donald T. Best, Colorado Springs, Colo.; Alvin Schultz, East Greenville, and Richard C. Carickhoff, North Wales, both of Pa., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 13, 1992, Ser. No. 835,644
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—116 **15 Claims**



14. An apparatus for recovering data from a binary bit stream, each bit being a first value or a second value different from said first value, said stream containing at least data and sequences of a preamble pattern interleaved with said data, wherein said preamble pattern has a length of at least m bits, and a given ratio R of average numbers of bits of said first value to bits of said second value, where m is an integer and R is a ratio of two integers; and said data are coded to have a probability P that the ratio of bits of said first value to bits of said second value in the coded data differ from said given ratio when averaged over at least k bits, where k is an integer, comprising:

a variable frequency clock,

data detector means, synchronized by said clock, for detecting said data in said bit stream, and

means for synchronizing said clock to said bit stream,

characterized in that said apparatus comprises:

a preamble detection circuit, for detecting reception of said preamble pattern responsive to receipt of n bits of said pattern, where n is an integer, an $n<m$; $n<k+1$, and

means for disabling said means for synchronizing until said preamble detection circuit has detected said preamble pattern,

and wherein said preamble detection circuit comprises means for determining the ratio r of bits of said first value to bits of said second value over an n bit sampling period, where r is a ratio of two integers, and, responsive to determination that said ratio r over said n bit period equals said given ratio R, providing to said means for disabling a signal that said preamble pattern is detected,

said preamble detection circuit continues determining said ratio r for an additional period of time, and

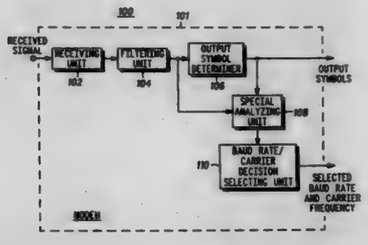
said apparatus further comprises means for disabling said means for synchronizing responsive to determination during said additional period that said ratio r is not substantially equal to said given ratio R.

5,297,186

DEVICE AND METHOD FOR ON-LINE ADAPTIVE SELECTION OF BAUD RATE AND CARRIER FREQUENCY

Ping Dong, No. Quincy, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Jul. 29, 1991, Ser. No. 736,859
Int. Cl.[5] H04L *23/00*
U.S. Cl. 375—121 **42 Claims**



1. A device for at least receiving at least a single-carrier modulated signal transmitted from a remote device utilizing at least one baud/carrier frequency over at least a first communication channel, comprising at least:

(A) a receiving means, operably coupled at least to the first communication channel, for receiving the single-carrier modulated signal transmitted by the remote device over any one of a plurality of frequency bands;

(B) a filtering means, operably coupled to the receiving means, for at least providing a demodulated equalized received signal;

(C) an output symbol determiner, operably coupled to the filtering means, for at least determining output symbols for the equalized received modulated signal;

(D) a spectrum analyzing means, operably coupled to the filtering means and to the output symbol determiner, for at least utilizing the demodulated equalized received modulated signal and the output symbols for estimating at least one of a signal-to-noise ratio (SNR) spectrum and a noise power spectrum; and

(E) a baud rate/carrier decision selecting means, operably coupled at least to the spectrum analyzing means, for utilizing information from the spectrum analyzing means for estimating at least one of: decoder signal-to-noise ratios (SNRs), maximum supported bit rates, and SNRs at band edges for at least some of the available baud rate and carrier frequency combinations to select adaptively a desired baud rate and carrier frequency selection in a data communication channel.

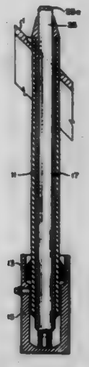
5,297,187

PRESSURE VESSEL PENETRATION SEALING DEVICE

Jan H. Sodergren, Harrison, and Harry K. Williams, Signal Mountain, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 671,279, Mar. 18, 1991, abandoned.
This application Dec. 23, 1992, Ser. No. 996,365
Int. Cl.[5] G21C *13/067*
U.S. Cl. 376—203 **4 Claims**

1. A device for sealing a penetration in a pressurizer of a nuclear steam supply system, said penetration including a tubular heater sleeve projecting from the pressurizer and providing passage thereinto, said device comprising a hollow cylinder disposable within said heater sleeve and a substantially cylindrical smooth rod disposable within said cylinder, said cylinder having an external diameter substantially equal to the internal diameter of said heater sleeve and a length exceeding the length thereof, said cylinder including a nose portion formed with a plurality of axially extending slots defining therein a plurality of radially displaceable segments, each of said segments having an outwardly extending flange proximate its distal end engageable with said heater sleeve, said rod having a diameter substantially equal to the internal diameter of



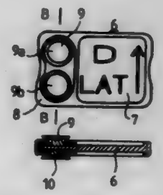
said cylinder and being operable to prevent radial displacement of said segments and to urge said cylinder against said heater sleeve to provide an interference seal therebetween.

5,297,188

DEVICE FOR THE MARKING OF INFORMATION ELEMENTS

Claude Fajac, Paris, and Fabienne Ohnet-Lombal, Videlles, both of France, assignors to General Electric CGR S.A., Issy Les Moulineaux, France

Filed Jul. 17, 1992, Ser. No. 913,922
Claims priority, application France, Jul. 19, 1991, 91 09187
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—162 **5 Claims**



1. An x-ray identification module comprising:

a strip having at least one recess formed therein;

an opaque x-ray marker received within the recess;

a lateral strip portion defined adjacent the recess; and

at least two suction cups mounted to the lateral portion, in non-overlying relationship to the marker, so as to avoid adding thickness to the strip in the area of the marker;

the suction cups permitting releasable attachment of the device to an x-ray film plate.

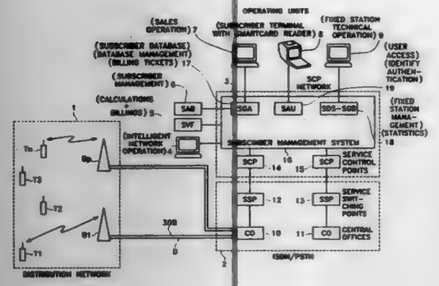
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5,297,189

WIRELESS TELEPHONE SERVICE SUBSCRIPTION DATA USER ACCESS METHOD

Christian Chaberaaud, Neuilly-Plaisance, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed May 29, 1991, Ser. No. 706,765
Claims priority, application France, May 30, 1990, 90 06707
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **7 Claims**



1. Method for providing a user with access to subscription data in a wireless telephone service network including a distribution network having fixed stations and wireless digital telephones linked by radio to said fixed stations, a digital public switched telephone network to which each fixed station is connected, service control points connected to said public switched telephone network and each containing a wireless telephone service subscription database and a call processing logic device for generating a call ticket at the end of each telephone call, a service management system for processing each call ticket to generate a billing ticket and containing a reference database storing the characteristics of each subscription and all said billing tickets, said method comprising the steps:

storing and keeping up to date in real time in a reference database file of the service management system, billing tickets classified by subscription;

designating a subscription of interest;

setting up a link between a user terminal to a server of said service management system;

using a smart card connected to said terminal to determine a first signature using a random number and a secret key specific to said user;

transmitting said first signature to said service management system;

reading the data of said subscription of interest in said reference database to recover said secret key associated with said subscription;

computing a second signature using said secret key read from said subscription data and said random number;

comparing said first and second signatures;

authenticating the identity of said user if and only if said first and second signatures are identical;

ascertaining the user's access rights;

reading billing tickets corresponding to said subscription of interest in said database file into the user terminal, according to the user's access rights thus ascertained; and

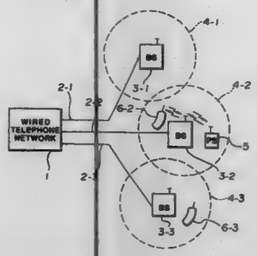
processing the information from the billing tickets thus read.

5,297,190

RADIO COMMUNICATION SYSTEM

Koichi Ito, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 5, 1991, Ser. No. 788,270
Claims priority, application Japan, Nov. 5, 1990, 2-299272
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **13 Claims**



1. A radio communication system comprising:

a plurality of fixed stations each having at least one branch unit and connected to a wired communication network through a digital line in which at least two communication channels are set; and

at least one mobile transceiver for calling said wired communication network,

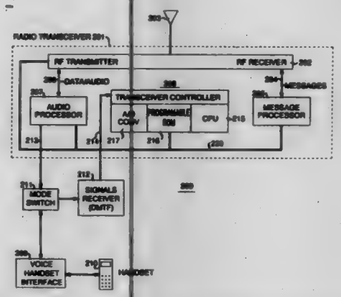
wherein each of said fixed stations establishes a radio communication channel having a plurality of time division time slots, preferentially performs control over communication between one of said at least one branch unit and said wired communication network with use of one of said plurality of time division time slots and with use of one of said at least two communication channels, and also performs, when one of said at least one mobile transceiver calls said wired communications network, control over communication between said one of said at least one mobile transceiver and said wired communication network with use of an idle one of said plurality of time division time slots and with use of another one of said at least two communication channels.

5,297,191

METHOD AND APPARATUS FOR REMOTELY PROGRAMMING A WIRELESS TELEPHONE SET

Irwin Gerszberg, Lakewood, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 914,214, Jul. 15, 1992, Pat. No.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **6 Claims**



1. An improved wireless mobile radiotelephone set adapted for operation in a cellular mobile radio telecommunications system;

comprising:

a transmit and receive antenna;

a radio transceiver connected to the antenna and including, a radio transmitter, a radio receiver and an audio processor for processing received and originated voice and data signals;

a voice handset and handset interface coupled to the audio processor;

wherein the improvement comprises:

a mode switch interconnecting the voice handset and handset interface to the audio processor;

a tone signals receiver connected to the mode switch to receive tone signals representative of mobile service authorization codes sent from a service provider center, over a channel unblocked to unauthorized subscribers and transmitted to it by mode switch;

a transceiver controller connected to the tone signals receiver and responding to service authorization tone signals placing the wireless mobile radiotelephone set into a program mode and enabling reception of the tone signals;

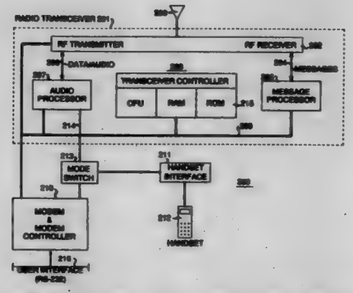
the transceiver controller including a converter for converting the tone signals into digital signals and a memory for storing the digital signals representing mobile service authorization codes that are specific to the wireless mobile radiotelephone set owner and operative for enabling telephone service to the wireless mobile radiotelephone set.

5,297,192

METHOD AND APPARATUS FOR REMOTELY PROGRAMMING A MOBILE DATA TELEPHONE SET

Irwin Gerszberg, Lakewood, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 914,011, Jul. 15, 1992, abandoned, which is a continuation of Ser. No. 590,411, Sep. 28, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 85,248
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **4 Claims**



1. A wireless remotely programmable mobile radiotelephone set in a cellular telephone system comprising:

a transmit and receive antenna;

a radio transceiver connected to the antenna and including transmit and receive apparatus for establishing a wireless bidirectional voice and data communication path between the wireless remotely programmable mobile radiotelephone set and a distant control center;

an audio processor for processing received and originated voice and data signals;

a voice handset and handset interface coupled to the audio processor;

means for enabling a wireless remotely programmable mobile radiotelephone set owner to receive and have downloaded into the wireless remotely programmable mobile radiotelephone set, via the wireless bidirectional voice and data communication path, a set of service authorization signals, including a telephone number for the wireless remote programmable mobile radiotelephone set, enabling its operation within a cellular telephone system, by initiating a call from the wireless remotely programmable mobile radiotelephone set which is directed, over a channel unblocked to unauthorized subscribers, to a service center number at the distant control center;

the means for enabling including:

a modem and modem controller connected to the radio transceiver;

a mode switch for controllably interconnecting the modem and modem controller and the voice handset and handset interface to the audio processor, and for bridging the modem onto a voice communication path;

actuating means for selectively bridging through the mode switch the modem of the mobile radiotelephone set onto a voice communication path;

means responsive to the actuating means for enabling the modem to receive, over the voice communication path, the set of service authorization signals transmitted from the distant control center and allocated to the wireless remotely programmable mobile radiotelephone set; and

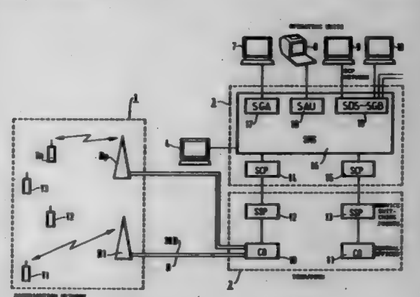
means for storing in the mobile data telephone set the received set of service authorization signals that are specific to the wireless remotely programmable mobile radiotelephone set owner and operative for enabling telephone service to the wireless remotely programmable mobile radiotelephone set.

5,297,193

WIRELESS TELEPHONE NETWORK CENTRALIZED MAINTENANCE METHOD

Alain Boulx, Longjumeau, and Claude Hilbert, Issy les Moulineaux, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed May 29, 1991, Ser. No. 706,970
Claims priority, application France, May 30, 1990, 90 06706
Int. Cl.[5] H04M *11/00, 3/10*
U.S. Cl. 379—63 **4 Claims**



3. A wireless telephone network comprising:

a plurality of fixed stations each including software that is at least in part replaceable at the initiative of an operator of said each station;

a plurality of wireless digital telephones;

means for linking the wireless digital telephones by radio to the fixed stations;

an integrated services digital public telephone network having a plurality of circuit switched telephone channels and at least one message switched user-to-user signaling channel for connecting the fixed stations to the public telephone network;

a plurality of service control points connected to said public switching telephone network and each comprising a wireless telephone service subscriber database and a call processing device;

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a service management system comprising a reference database;

means for transmitting a maintenance message from a fixed station to a service control point over the user-to-user signaling channel in response to the fixed station detecting a fault, independent of any telephone signals then being transmitted between the fixed station and the service control point over said circuit-switched telephone channels;

means for generating a maintenance ticket at said service control point;

means for transmitting said maintenance ticket to said service management system and storing it in said reference database;

means for downloading replacement software having an associated software version from said service management system to a designated fixed station via the service control point serving said designated fixed station over a telephone channel connecting said designated fixed station to said public switching telephone network, and

means for transmitting a word identifying said software version of a fixed station in each respective maintenance message sent by said designated fixed station to said service management system.

5,297,194

SIMULTANEOUS SPEAKER-INDEPENDENT VOICE RECOGNITION AND VERIFICATION OVER A TELEPHONE NETWORK

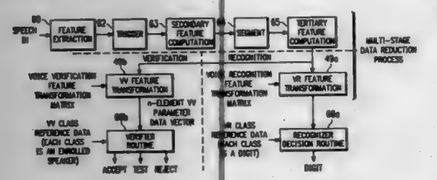
Alan K. Hunt, Carrollton, and Thomas B. Schalk, Dallas, both of Tex., assignors to VCS Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 523,486, May 15, 1990, Pat. No. 5,127,043. This application Jun. 22, 1992, Ser. No. 901,742

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] G10L 9/08; H04M 1/66

U.S. Cl. 379—88 **4 Claims**



3. A method for enabling a caller to obtain access to one or more services via a telephone network by speaking a password having a plurality of characters, comprising the steps of:

prompting the caller to speak the password;

generating first and second sets of parameters for each spoken character using a voice recognition feature transformation and a voice verification feature transformation, respectively, the first sets of parameters for use in a voice recognition system and the second sets of parameters for use in a voice verification system;

recognizing the password using the first sets of parameters;

following entry of the password, using the second sets of parameters to attempt to verify the caller's identity;

if the caller's identity cannot be verified, prompting the caller to answer at least one personal question associated with the password;

determining whether the question is answered correctly; and

if the question is answered correctly, accepting the caller's identity.

5,297,195

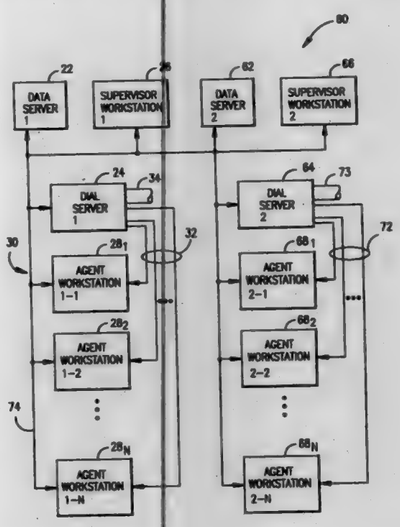
METHOD AND APPARATUS FOR AUTOMATIC TELEPHONE SCHEDULING SYSTEM

Glenn A. Thorne, Bettendorf, and Steven E. Peterson, Davenport, both of Iowa, assignors to Teledirect International, Inc., Davenport, Iowa

Filed Oct. 2, 1991, Ser. No. 769,594

Int. Cl.[5] H04M 1/64, 11/00

U.S. Cl. 379—93 **16 Claims**



11. A method of operating an automatic telephone dialing system in a telephone calling champaign, the method comprising:

(a) providing a data server means with access to a plurality of account information records, the account information records being formatted to include a telephone number in a telephone number field, said data sever means accessing a particular set of records corresponding to a particular campaign selected from a plurality of available campaigns;

(b) communicating to a dial server means the identity of an available agent workstation which has previously logged on with one or more of said plurality of available campaigns selected for participating in said particular campaign;

(c) transmitting an account information record for the campaign to the dial server means from the data server means in response to a request from the dial server means;

(d) accessing a telephone line and dialing thereupon a telephone number included in an account information record transmitted to the dial server means;

(e) connecting the telephone line obtained at step (d) with the available agent workstation;

(f) transmitting the account information record of step (c) to the available agent workstation;

(g) permitting any necessary modifications to the account information record transmitted to the available agent workstation; the,

(h) returning the account information record of step (g) from the available agent workstation to the dial server means; the,

(i) returning the account information record of step (g) from the dial server means to the data server means.

5,297,196

FACSIMILE APPARATUS ADAPTED TO COMMUNICATE VIA AN ACOUSTIC COUPLER

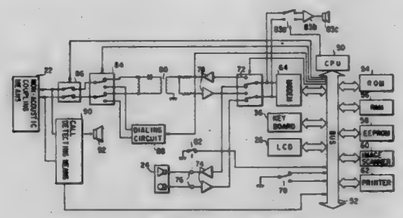
Akira Yamada, Shizuoka; Shuichi Suzuki, Numazu, and Shunji Akitsu, Shizuoka, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,505

Claims priority, application Japan, Mar. 25, 1991, 3-84662

Int. Cl.[5] H04M 11/00, 1/00

U.S. Cl. 379—99 **6 Claims**



COMMUNICATION MODE	PARAMETER	PARAMETER VALUE
WIRE TELEPHONE	INITIAL TRANSMITTING SPEED	9600BPS
	IMAGE SIGNAL TRANSMITTING LEVEL	-10 dBm
	EQUALIZER	3 6dB
MOBILE TELEPHONE (CELLULAR PHONE)	INITIAL TRANSMITTING SPEED	4800BPS
	IMAGE SIGNAL TRANSMITTING LEVEL	-6dBm
	EQUALIZER	0 0dB
ACOUSTIC COUPLER	INITIAL TRANSMITTING SPEED	2400BPS
	IMAGE SIGNAL TRANSMITTING LEVEL	-0dBm
	EQUALIZER	1 0dB

1. An information communication apparatus for communicating information by facsimile, comprising:

information sending means for sending information;

acoustic coupler means for acoustically transmitting the information to a communication line through sound according to a predetermined communication characteristic including a plurality of items;

non-acoustic coupler means for non-acoustically transmitting the information to the communication line according to a predetermined communication characteristic including a plurality of items;

connection switching means for selectively connecting said information sending means to one of said acoustic coupler means and said non-acoustic coupler means;

communication characteristic item setting means for selectively setting a plurality of items of the communication characteristic of said acoustic coupler means and a plurality of items of the communication characteristic of said non-acoustic coupler means;

communication characteristic memorizing means for memorizing a plurality of communication characteristics each having a plurality of items the values of which are preset by said communication characteristic item setting means;

acoustic coupler connection detecting means for detecting a connection of said acoustic coupler means to the communication line; and

information sending control means for:

(a) connecting said information sending means to said acoustic coupler means by said connection switching means in response to the detection of the connection of said acoustic coupler means to the communication line by said acoustic coupler connection detecting means, for reading out the communication characteristic of said acoustic coupler means from said communication characteristic memorizing means, and for controlling the sending of the information from said information sending means according to the read out communication characteristic of said acoustic coupler means, and for

(b) connecting said information sending means to said non-acoustic coupler means by said connection switching means in response to a non-detection of the connection of said acoustic coupler means to the communication line by said acoustic coupler connection detecting means, for reading out the communication characteristic of said non-acoustic coupler means from said communication characteristic memorizing means, and for controlling the sending of the information from said information sending means according to the read out communication characteristic of said non-acoustic coupler means.

5,297,197

MULTIPLE PARTY TELEPHONE CONTROL SYSTEM

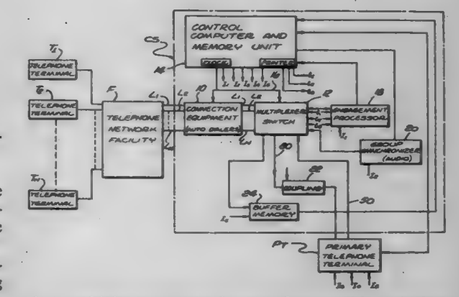
Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.

Continuation of Ser. No. 832,720, Feb. 7, 1992, Pat. No. 5,185,787, which is a continuation of Ser. No. 642,602, Jan. 17, 1991, Pat. No. 5,091,933, which is a continuation of Ser. No. 470,468, Jan. 26, 1990, Pat. No. 4,987,590, which is a continuation of Ser. No. 371,188, Jun. 26, 1989, Pat. No. 4,939,773. This application Jun. 8, 1992, Ser. No. 895,077

The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.[5] H04M 3/56, 11/06, 1/26

U.S. Cl. 379—204 **18 Claims**



1. A multiple-party control system for use with a telephone facility to interface a coupled primary terminal with a multiplicity of remote coupled terminals through said telephone facility, said system comprising:

a audio generator structure for providing audio signals to cue persons at said remote terminals;

switching apparatus for bridging a multitude of said remote terminals under control of signals from said remote terminals;

coupling apparatus connected to said switching apparatus unilaterally connecting said multitude of remote terminals to said primary terminal for receiving audio communication; and

control structure including a memory for storing qualification reference data for interfacing said persons, said system further including means for testing said reference data against signals from said remote terminals.

5,297,198

TWO-WAY VOICE COMMUNICATION METHODS AND APPARATUS

Chandru T. Butani, East Hanover; Joseph R. Cesaturrino, Morris Plains, and James F. Scheidemann, Wayne, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

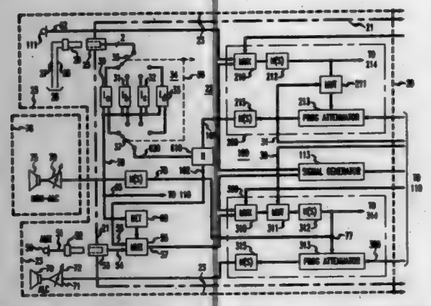
Filed Dec. 27, 1991, Ser. No. 815,313

Int. Cl.[5] H04M 1/00

U.S. Cl. 379—389 **7 Claims**

1. The improvement in two-way voice telecommunications apparatus comprising a hands-free speaker and a first hands-free microphone disposed at a local site in a common acoustic

environment, housing means, signal processing means in said housing means and comprising receive and transmit sections electrically preceding and succeeding, respectively, said speaker and said microphone, said receive section having an input and being adapted to process and then supply to said speaker electrical signals received at said input and originated at a remote station outside said environment and representative of voice sounds at said station ("receive signals"), and said transmit section having an output and being adapted to process and then supply to said output, for transmission to said station, electrical signals originated at said microphone and representative of voice sounds in said environment ("transmit signals"), first and second loss stages in, respectively, said receive section and said transmit section and responsive to computer control to produce in said receive and transmit signals respective signal losses of selected variable value called for by such control, and a computer coupled to said two stages and responsive to, among other factors, information from said microphone to dynamically adjust the losses respectively produced thereby so



as to switch the state of operation of said apparatus between at least transmit and receive states, and said improvement being that said acoustic environment served by said speaker is large, said speaker is a loudspeaker adapted to project into said environment paging announcements and other voice sounds audible in said environment at multiple locations separated from each other by more than the normal hearing distance for the normal spoken human voice, and said improvement also comprising a second auxiliary hands-free microphone disposed in said environment for converting voice sounds therein sensed by said electrical auxiliary microphone into electrical auxiliary voice signals, switch means for selectively effecting a connection of said electrical auxiliary voice signals to said receive section for passage therethrough to said loudspeaker, and means responsive to receive signals incoming to said receive section to disable such connection such that said electrical auxiliary voice signals do not reach said loudspeaker and only said receive signals pass through such section to said loudspeaker.

5,297,199

APPARATUS FOR CONNECTING AND DISCONNECTING SUBSCRIBER PREMISES LINE AND INCOMING TELEPHONE COMPANY LINE

Thomas G. Graham, Ocean Township, Monmouth County, and Patrick J. Epple, Bradley Beach, both of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.

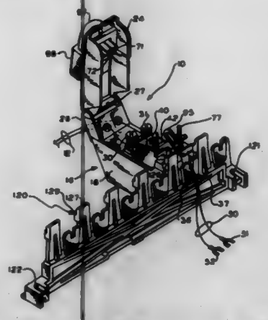
Filed Feb. 20, 1992, Ser. No. 839,355
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—399 **14 Claims**

1. Module for being mounted to telephone network interface apparatus and for interconnecting a subscriber premises line of a subscriber to an incoming telephone company line and for disconnecting said subscriber premises line from said incoming telephone company line to provide a demarcation point between said lines, comprising:

a base;

a telephone jack provided on said base, said telephone jack including a first pair of contact wires for being connected to said subscriber premises line and a second pair of contact wires for being connected to said incoming telephone company line, and said telephone jack including a cavity;

interconnect means provided on said base and for being inserted into said telephone jack and into engagement with said first and second pairs of contact wires to interconnect said pairs of contact wires and thereby to connect said subscriber premises line to said incoming telephone



company line, and said interconnect means for being withdrawn from said telephone jack and out of engagement with said pairs of contact wires to disconnect said subscriber premises line from said incoming telephone company line and provide said demarcation point and to permit said telephone jack to receive the plug of an operating telephone to facilitate determination of whether a fault exists on said subscriber premises line or said incoming telephone company line; and

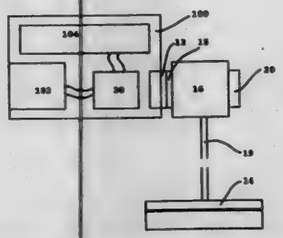
a telephone jack insert block mounted in said cavity and said first and second pairs of contact wires mounted on said telephone jack insert block.

5,297,200

COMPUTER SECURITY SYSTEM

Douglas Murray, Glasgow, Scotland, assignor to Nighthawk Electronics Limited, London, England

Continuation of Ser. No. 768,296, Oct. 1, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 54,723
Claims priority, application United Kingdom, Apr. 1, 1989, 8907412.4
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **12 Claims**



1. A security system for a computer (10) having at least one external serial communications port (12),

the external serial communications port comprising a plurality of inputs and outputs for connection to a peripheral device,

the security system comprising:

a card reader (14);

switching means (22) connected to the card reader and connectable to the external serial communications port, the switching means being operable to connect the card reader to at least a portion of the inputs of the external serial communications port and to disconnect the same portion of the inputs from the peripheral device in response to a command including protected routines which generate said command to cause the switching means to connect the card reader to the at least a portion of the inputs of the external serial communications port; and

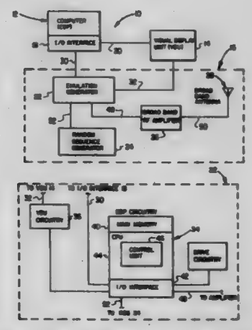
means for comparing data, read from a card by the card reader, with authorization data held in the computer, to enable or disable further operation of the protected routine.

5,297,201

SYSTEM FOR PREVENTING REMOTE DETECTION OF COMPUTER DATA FROM TEMPEST SIGNAL EMISSIONS

John H. Dunlavy, Colorado Springs, Colo., assignor to J.D. Technologies, Inc., Colo.; Haynes and Boone, L.L.P., Dallas, Tex. and Feferman & Rehler, L.L.P., Corpus Christi, Tex.

Filed Oct. 13, 1992, Ser. No. 960,532
Int. Cl.[5] H04K *1/02, 3/00*
U.S. Cl. 380—6 **19 Claims**



1. Apparatus for preventing the remote detection and decoding of signal emissions from a data processor to discover data being processed by said data processor, said apparatus comprising:

means coupled with said data processor for generating signal emissions which emulate said data processor signal emissions, said generated signal emissions having identical spectral signatures with respect to amplitude and frequency components versus time as said data processor signal emissions, said generating means comprising circuitry which is identical to circuitry of said data processor that produces emissions containing said data processor data;

control means coupled with said generating means for synchronizing said generated signal emissions with said data processor signal emissions; and

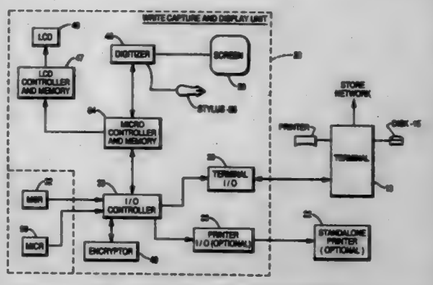
means coupled with said generating means for randomizing said generated signal emissions, said generated signal emissions and said data processor signal emissions together producing a composite signal which is not decodable to discover said data processor data.

5,297,202

APPARATUS AND METHOD FOR PRODUCING A DIGITIZED TRANSACTION RECORD INCLUDING AN ENCRYPTED SIGNATURE

Michael A. Kapp, Alpharetta; Robert L. Protheroe, Lawrenceville, both of Ga., and Albert Onega, Lore City, Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 640,199, Jan. 11, 1991, Pat. No. 5,195,133. This application Nov. 20, 1992, Ser. No. 979,817
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—9 **6 Claims**



5. Transaction validating apparatus comprising:

transaction input means for creating a digitized transaction record including information defining a business transaction;

stylus means for manual movement corresponding to the writing of an approving signature for said transaction;

liquid crystal display means for presenting a visual image of said signature;

capture means including a transparent reference surface connected for generating position signals in response to moving contact by said stylus and mounted on said display means for causing said visual image to be written in registration with the moving point of contact between said surface and stylus means; and

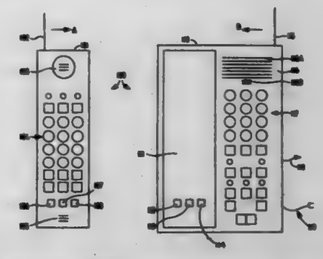
encryption means responsive to said capture means for encrypting said signature record.

5,297,203

DIGITAL CORDLESS TELEPHONE APPARATUS

Chris Rose, Vancouver, and Charley Heung, Richmond, both of Canada, assignors to Video Technology Engineering, Ltd., Tai Po, Hong Kong

Division of Ser. No. 707,324, May 29, 1991. This application Jan. 6, 1993, Ser. No. 1,026
Int. Cl.[5] H04M *11/06*; H04K *1/00*
U.S. Cl. 380—9 **6 Claims**



1. An improved digital cordless telephone apparatus of the type having a microprocessor based battery powered portable handset unit and a microprocessor based stationary base unit which each transmit and receive distinct digital voice data and

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digital command data to and from one another over a radio frequency link, wherein the improvement includes a command data - voice data interface means for inserting said digital command data, int the form of a command data packet, into a stream of said digital voice data transmitted between said handset unit and said base unit and for locating and capturing said command data packet from a received digital voice data signal stream, and comprising:

security code register means associated with said portable handset unit for storing said security code generated by said base unit microprocessor;

firs microprocessor interface means associated with said portable handset unit for receiving from said base unit microprocessor said security code toward transferring said security code to said security code register means and for receiving a digital command code from said handset unit microprocessor for transmission to said base unit;

transmitter register means associated with said portable handset unit for receiving as an input said digital voice data to be transmitted to said base unit;

transmitter register controller means associated with said portable handset unit for controlling the transfer of said digital voice data to said transmitter register means, said transmitter register controller means further serving to transfer said security code from said security code register means to said transmitter register means, and to transfer said digital command code from said first microprocessor interface means to said transmitter register means, said security code and said digital command code together forming said command data packet, said transmitter register controller means further causing the flow of said digital voice data through said transmitter register means to be interrupted and said command data packet to be inserted into said stream of said digital voice data for transmission to said base unit;

receiver register means associated with said base unit for receiving as an input said stream of said digital voice data intermixed with said command data packets;

receiver register controller means associated with said base unit for controlling the transfer of said stream of digital voice data intermixed with said command data packets into said receiver register means, said receiver register controller means further serving to transfer said stream of digital voice data intermixed with said command data packets to a security code comparator means;

said security code comparator means serving to locate and identify said command data packets intermixed within said stream of digital voice data toward causing said receiver register means to transfer said command data packets to a second microprocessor interface means associated with said base unit toward connection to said base unit microprocessor, said receiver register controller means further serving to replace said command data packet with a quiet sequence data packet, said digital voice data nd said quiet sequence data packet being transferred to the output of said receiver register controller means for further operation by said base unit.

5,297,204

VCR WITH CABLE TUNER CONTROL

Michael R. Levine, Boca Raton, Fla., assignor to Smart VCR Limited Partnership, Ann Arbor, Mich.

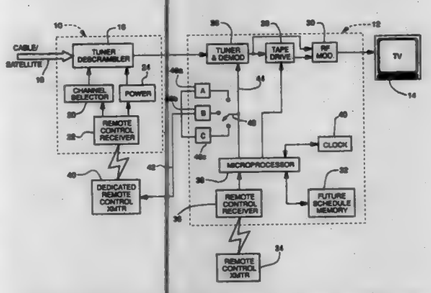
Continuation-in-part of Ser. No. 609,291, Nov. 5, 1990, Pat. No. 5,123,046. This application Dec. 10, 1991, Ser. No. 805,300

Int. Cl.[5] H04N *7/167;* **H04H** *1/02;* **H04B** *10/04, 10/06*

U.S. Cl. 380—10 **15 Claims**

1. In a television viewing system of the type including a television receiver that receives control signals, a first hand-held remote transmitter that transmits control signals to at least said television receiver, a first associated unit that provides video signals to said television receiver, and a second hand-held remote transmitter that transmits control signals to at least said associated unit, wherein said television receiver and said first hand-held remote transmitter constitute a master unit and said first associated unit and said second hand-held transmitter constitute a slave unit, said master unit being trainable to transmit control signals to said slave unit, the method of training said master unit as to the required control signal codes for transmission to the slave unit comprising the steps of:

generating displays on the screen of the television receiver requesting the operator to use the second hand-held trans-



mitter of the slave unit to transmit at least certain control signals to said master unit;

receiving said control signals at the master unit from the second hand-held transmitter of the slave unit; and

establishing a conversion memory within said master unit, based on such received control signals, to enable said master unit to transmit control signals to the slave unit.

5,297,205

PORTABLE ELECTRONIC DEVICE TO ESTABLISH PUBLIC LOYALTY TO A MEDIUM OR SIMILAR

Yves Audebert, Croissy-sur-Seine, and Achille Delahaye, Chesnev Ieres-sur-Marne, both of France, assignors to Adventure, Issy-les-Moulineaux, France

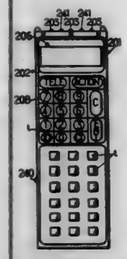
PCT No. PCT/FR90/00753, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO91/06914, PCT Pub. Date May 16, 1991

PCT Filed Oct. 18, 1990, Ser. No. 849,064

Claims priority, application France, Oct. 24, 1989, 89 13910

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—23 **32 Claims**



1. Portable electronic device for validating participation of an individual in a plurality of operations each involving the input in said device under the command of said individual of at least one encoded datum brought to the knowledge of said individual by at least one information medium, comprising:

data processing means;

memory means;

at least one input interface for applying said encoded datum supplied by said information medium to said data processing means;

said data processing means comprising:

means for decoding said encoded datum;

means for extracting a variable numerical value from said decoded datum;

means for comparing said extracted variable numerical value with at least one previously stored variable numerical value and for producing a first output if said extracted variable numerical value exhibits a predetermined relationship with said at least one previously stored variable numerical value and a second output if said extracted variable numerical value does not exhibit said predetermined relationship with said at least one previously stored variable numerical value;

means for conditionally validating said participation based on at least one condition comprising the issuance of said second output by said means for comparing, said validating means:

prohibiting validation of said participation in response to said first output, and

validating said participation and storing said extracted variable numerical value in said memory means if said at least one condition is fulfilled;

said memory means being inaccessible from said input interface and being controlled by said data processing means to store, over a period of time, information representative of said at least one previously stored variable numerical value; and

an output interface to produce an output code representative of participations validated by said data processing means; and

means for supplying electrical power to said data processing means and said memory means.

5,297,206

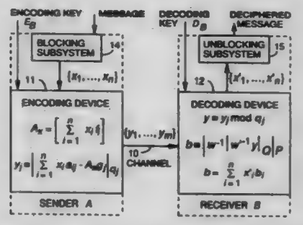
CRYPTOGRAPHIC METHOD FOR COMMUNICATION AND ELECTRONIC SIGNATURES

Glenn A. Orton, 158 Kent Street, Hamilton, Ont., Canada L8P 3Z3

Continuation-in-part of Ser. No. 854,389, Mar. 19, 1992, abandoned. This application Oct. 7, 1992, Ser. No. 957,105

Int. Cl.[5] H04L *9/30, 9/32*

U.S. Cl. 380—30 **20 Claims**



1. A cryptographic communication system comprising:

A. a communications channel;

B. an encoder coupled to the channel and adapted for transforming a message $\{x_1, x_2, \ldots, x_n\}$ to a ciphertext $\{y_1, y_2, \ldots, y_m\}$ on the channel, where $\{x_1, x_2, \ldots, x_n\}$ corresponds to a set of integers representative of the message and

$x_i \in [0,2^s)$,

for i=1 to n, where n≧2 and s is some positive integer, and where $\{y_1, y_2, \ldots, y_m\}$ corresponds to a set of integers representative of an enciphered form of the message and corresponds to

$$y_i = \sum_{i=1}^{n} x_i a_{ij} - \sum_{k=1}^{r-1} \sum_{l=1}^{m^k} A_l^k g_{lj}^k \bmod q_j \text{ for } j = 1, \text{ to } m',$$

-continued

$$y_i = \sum_{i=1}^{n} x_i a_{ij} - \sum_{k=1}^{r-1} \sum_{l=1}^{m^k} A_l^k g_{lj}^k \text{ for } j = = m' + 1 \text{ to } m,$$

and

$$A_l^k = \left[-2^{-e-1} + \sum_{i=1}^{n} x_i f_{il}^k - \sum_{h=1}^{k-1} \sum_{j=1}^{m^h} A_j^h f_{jl}^{h,k} \right],$$

where $1 \leq m' < m$ and $r \geq 2$, and where an encoding key contains the integers a_{ij}, g_{lj}^k, and fractions f_{il}^k and $f_{jl}^{h,k}$, for i=1 to n, j=1 to m, l=1 to m^k, k=1 to r−1, and h=1 to k−1, and q_j, for j=1 to m', wherein

$a_{ij} = a_i^r \bmod q_j$,

where a_i^r is obtained by performing r iterations of modular multiplication according to the relation

$a_i^{k+1} = a_i^{k+1} \bmod p_j^{k+1} = w^{k+1}(a_i^k \bmod p_j^k) \bmod p_j^{k+1}$,

for j=1 to m^k and k=1 to r, where $a_i^0 = b_i$, for i=1 to n, and

$$f_{il}^k = \frac{g_l^k \bmod p_i^k}{p_i^k},$$

$$f_{jl}^{h,k} = \frac{p_{jl}^{h,k}}{p_i^k}, \text{ and}$$

$g_{ij}^k = p_i^{k,r} \bmod q_j = p_{ij}^{k,r}$, and

where $p_{ij}^{h,k}$ is obtained by modular multiplying p_i^k to modulus p_i^h according to the same relations followed by a_{ij}^k, and where a set of initial knapsack weights $\{b_1, b_2, \ldots, b_n\} = \{a_1^0, a_2^0, \ldots, a_n^0\}$ is selected as a superincreasing series according to the relation

$$b_j > \sum_{i=1}^{j-1} b_i(2^s - 1)$$

and where

$$p^k = \prod_{j=1}^{m^k} p_j^k,$$

where k ∈ [1, r−1], and where $m^{r-1} = 1$ and $m^r = m$, and where

$$p^1 > \sum_{i=1}^{n} b_i(2^s - 1) \text{ and}$$

$p_j^{k+1} > p_j^k(1 + 2^{-e})$, where

$$p^{k+1} = \prod_{j=1}^{m^k} p_j^{k+1},$$

and where A_l^k has an approximation error bounded by $[-2^{-e-1}, 2^{-e-1})$ before truncation, and where $\{q_1, q_2, \ldots, q_m\}$ are pairwise relatively prime and

$$p^r = \prod_{j=1}^{m} q_j.$$

and, where p^1 is relatively prime to b_i, for i=1 to n, and where p^{k-1} and p^k are relatively prime, for k=2 to r, and where w^k and p^k are relatively prime, for k=1 to r;

C. a decoder coupled to the channel and adapted for receiving the ciphertext $\{y_1, y_2, \ldots, y_m\}$ from the channel and for transforming $\{y_1, y_2, \ldots, y_m\}$ to a deciphered message $\{x'_1, x'_2, \ldots, x'_n\}$, wherein the deciphered message $\{x'_1, x'_2, \ldots, x'_n\}$ corresponds to a set of numbers representative of a deciphered form of the ciphertext $\{y_1, y_2, \ldots, y_m\}$, and where $\{y_1, y_2, \ldots, y_m\}$ is decoded by first calculating

$$y'^k = (w^{k+1})^{-1} y'^{k+1} \bmod p_j^{k+1},$$

for j=1 to m^k and decrementing from k=r−1 to 0, where $y'^r = \{y_1, y_2, \ldots, y_m\} \bmod \{q_1, q_2, \ldots, q_m\}$, and then solving a knapsack problem,

$$b = \sum_{i=1}^{n} x_i b_i$$

with the set of initial knapsack weights $\{b_1, b_2, \ldots, b_n\}$ and target value $b=y^0$, by calculating sequentially

$$x_i' = \left\lfloor \frac{b - \sum_{j=i+1}^{n} x_j' b_j}{b_i} \right\rfloor$$

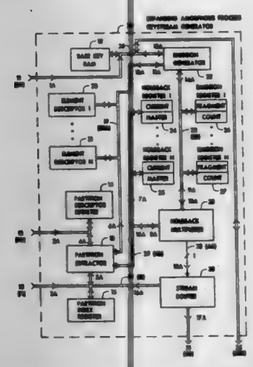
from i=n decrementing to 1, to return the deciphered message $\{x'_1, x'_2, \ldots, x'_n\}$, and where a decoding key includes the positive integers $\{b_1, b_2, \ldots, b_n\}$, $\{w_1, w_2, \ldots, w_r\}$, $\{p^1, p^2, \ldots, p^r\}$, and $\{q_1, q_2, \ldots, q_m\}$.

5,297,207

MACHINE GENERATION OF CRYPTOGRAPHIC KEYS BY NON-LINEAR PROCESSES SIMILAR TO PROCESSES NORMALLY ASSOCIATED WITH ENCRYPTION OF DATA

Steven T. Degele, 1501 7th Ave. West, Williston, N. Dak. 58801

Filed May 24, 1993, Ser. No. 66,513
Int. Cl.[5] G06F *1/02*
U.S. Cl. 380—46 33 Claims



25. A state machine keystream generator comprising:

1) a source of a key in the form of a machine index and a state variable;

2) a process intermediary-result register means including

2.1) a machine register means for storing a machine index, the machine index serving to parameterize a transition and output function of the state machine,

2.2) a state register means for storing a state variable, the state variable serving to further parameterize the transition and output function during each transition,

2.3) a dependency table means for storing pseudo random bits, filled at the start of each transition, which parameterize a state transition,

2.4) a garbage index means for storing a garbage index which specifies how a state transition is to proceed, a garbage index comprises the various fields of (i) a global dependency index, (ii) a plurality of packed function indexes, (iii) a nibble perm selector, (iv) an accumulation index, (v) a permutation selector, (vi) a state emitter index, and (vii) an output emitter index,

2.5) a function table means for storing a plurality of function values,

2.6) a sum table means for storing a plurality of sum elements,

2.7) an accumulator multiplicand register means for storing a plurality of accumulation elements; and

3) a process state transition computational means including

3.1) a random generator means for forming random numbers, in accordance with a seeding value received from the machine register means and state register means, for storage in the dependency table means,

3.2) a streaming CEM means for coarse encoder multiplication of a multiplicand and a multiplier stream specified by a starting address within the dependency table means to form a product value, the streaming CEM means including

3.2.1) a streamer means for forming a multiplier stream from a starting address which selects a bit in the dependency table means, the multiplier stream consisting of a selected bit and those bits immediately following, cyclically addressed,

3.2.2) a parsing means for forming a plurality of position value and XOR datum bit pairs from the multiplier stream,

3.2.3) an XOR means for forming a product bit by modulo-2 addition of a XOR datum bit with a bit in the multiplicand selected by the corresponding position value, and

3.2.4) an accumulation means for concatenating the plurality of product bits to form a product value;

3.3) an unpacker means for expanding a packed function index received from the garbage index means into a function index, the expansion is in accordance with a global dependency index also received from the garbage index means with each resulting function index sent to an evaluator means;

3.4) the evaluator means for transforming a function index received from the unpacker means into a function value for storage in the function table means;

3.5) a permuting unit means for transforming function values received from the function table into sum elements for storage in the sum table, the permuting unit means including

3.5.1) an ordering means for providing a permutated ordering of the function values in accordance with a permutation selector received from the garbage index means,

3.5.2) a permuting-unit decomposition means for decomposing a nibble perm selector received from the garbage index means into a plurality of nib selectors, each nib selector corresponding to a pair of permutated function values taken consecutively,

3.5.3) a permutation means for resolving a nib selectors received from the permuting-unit decomposition means into a permutation, the permutation being applied to the nibbles of the corresponding function values pair to form a sum element;

3.6) a collecting unit means for transforming sum elements received from the sum table means into accumulation elements for storage in the accumulator multiplicand register means, the collecting unit means including

3.6.1) a collecting-unit decomposition means for decomposing an accumulation index received from the garbage index means into a plurality of collector indexes, each collector index corresponding to a pair of sum elements, a pairing being formed with consecutive sum elements, and

3.6.2) a combining operation means for forming an accumulation element by using a collector index received from the collecting-unit decomposition means to select a combining operation, from a plurality of functions comprised of ADD and SUB and XOR and NEG, with the selected combining operation applied to the corresponding sum element pair;

4) a bus switch means for routing multiplicands to the streaming CEM means, and product values from the streaming CEM means;

5) a transition controller means for providing a keystream fragment and a next state value, the transition controller means including

5.1) a dependency initialization means for storing the random numbers from the random generator means into the dependency table means, wherein the random generator means is seeded with values received from the machine register means and state register means,

5.2) a garbage initialization means for storing the product value from the streaming CEM means into the garbage index means, wherein the starting address received by the streaming CEM means is zero and the multiplicand received by the streaming CEM means is the concatenation of the machine register means and state register means routed through the bus switch means,

5.3) a garbage parsing means for decomposing the garbage index means into its component fields,

5.4) an unpacking means for successively transmitting to the evaluator means a plurality of function indexes formed by the unpacker means,

5.5) an evaluation means for successively transmitting to the function table means a plurality of function values formed by the evaluator means,

5.6) a summation means for successively transmitting to the sum table means a plurality of sum elements formed by the permuting unit means,

5.7) a collection means for successively transmitting to the accumulator multiplicand register means a plurality of accumulation elements formed through by the collect unit means,

5.8) a next state means for storing the product value from the streaming CEM means as a next state variable into the state register means, wherein the starting address received by the streaming CEM means is the state emitter index from the garbage index means, and wherein the multiplicand received by the streaming CEM means is the contents of the accumulator multiplicand register means routed through the bus switch means, and

5.9) an output means for transmitting the product value from the streaming CEM means as a keystream fragment, wherein the starting address received by the streaming CEM means is the output emitter index from the garbage index means, and wherein the multiplicand received by the streaming CEM means is the contents of the accumulator multiplicand register means routed through the bus switch means;

wherein a state transition permits the process to continue;

wherein a plurality of keystream fragments result;

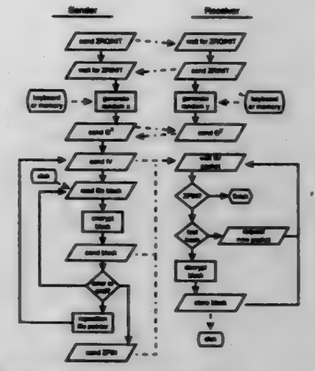
wherein a concatenation of successive keystream fragments is defined as the keystream.

5,297,208

SECURE FILE TRANSFER SYSTEM AND METHOD

Roger Schlafly, P.O. Box 1680, Soquel, Calif. 95073, and Michael J. Markowitz, 1115 N. East Ave., Oak Park, Ill. 60302

Filed Aug. 5, 1992, Ser. No. 926,125
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—49 20 Claims



1. A file transfer system consisting of

a plurality of computers connected by a communications channel,

means for generating or retrieving random numbers in each of said computers,

means for digital handshaking between said computers to establish communications,

means for sending frames and data blocks through said channel, reliably and efficiently,

means for transmitting an encryption initialization vector frame in order to synchronize cipher feedback,

means for deriving a secure session key in each of said computers, based on said random numbers and on exchanged derived numbers,

means for encrypting data blocks using said cipher feedback,

means for detecting transmission errors,

means for resending variants of said encryption initialization vector frame and said frames and data blocks in case of said transmission errors,

means for sending an encrypted copy of a file or files based on said session key,

means for receiving said encrypted copy of said file or files, and

means for decrypting said received copy of said file or files.

5,297,209

SYSTEM FOR CALIBRATING SOUND FIELD

Hiroshi Kowaki, Kobe, Japan, assignor to Fujitsu Ten Limited, Hyogo, Japan

Filed Jul. 9, 1992, Ser. No. 911,114
Claims priority, application Japan, Jul. 31, 1991, 3-192028
Int. Cl.[5] H04H *5/00*
U.S. Cl. 381—10 4 Claims

1. A system for calibrating a sound field when a stereophonic broadcast is interrupted, comprising:

two means for adjusting the respective amplitudes of an R-channel signal and an L-channel signal output from a stereophonic tuner;

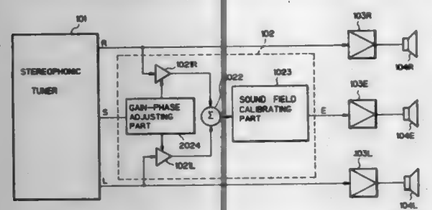
a means for mixing the R-channel signal and the L-channel signal output from said two amplitude adjusting means;

a means for generating a calibrating signal in accordance with an output signal from said mixing means;

a means for controlling the amplitudes and the output polarities of the R-channel signal and the L-channel signal from

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said two means for adjusting in accordance with the state of a pilot signal output from said stereophonic tuner that



designates whether or not the stereophonic broadcast is interrupted.

5,297,210

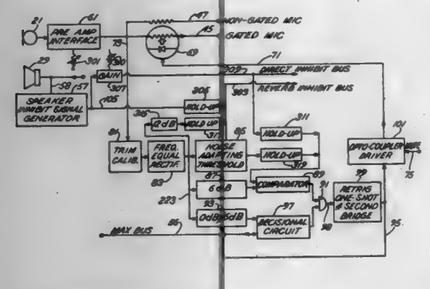
MICROPHONE ACTUATION CONTROL SYSTEM

Stephen D. Julstrom, Chicago, Ill., assignor to Shure Brothes, Incorporated, Evanston, Ill.

Filed Apr. 10, 1992, Ser. No. 866,747

Int. Cl.[5] H04B *3/20, 3/00;* **H04R** *3/00;* **H04M** *3/42*

U.S. Cl. 381—66 **14 Claims**



6. In a microphone system having

at least one microphone for generating an electrical microphone signal carrying speech information,

a source for issuing a loudspeaker signal, and

loudspeaker means for generating sound in the area of said microphone,

said loudspeaker means being driven by said loudspeaker signal,

a trigger signal generator for identifying speech comprising:

rectifier means for monitoring said microphone signal and responsively providing a microphone signal level representation of said microphone signal;

scaling means for monitoring said microphone signal level representation of said microphone signal and responsively providing a scaled microphone signal level representation;

monitoring means for monitoring said loudspeaker signal issued by said source and responsively producing a direct inhibit signal representing a scaled level of said loudspeaker signal and a loudspeaker reverb inhibit signal representing another scaled level of said loudspeaker signal;

threshold means for receiving said microphone signal level representation of said microphone signal and said loudspeaker reverb inhibit signal and producing a threshold signal, said threshold signal following said microphone signal level representation when said loudspeaker reverb inhibit signal is below both said microphone signal level representation and threshold signal, said threshold signal otherwise following said loudspeaker reverb inhibit signal;

comparison means for comparing said scaled microphone signal level representation of said microphone signal with a maximum of both said direct inhibit signal and threshold signal and responsively generating a compared signal; and

logic means for generating a trigger signal upon receiving said comparison signal, whereby said trigger signal generator issues said trigger signal when a signal is detected that is representative of speech within a room, rather than direct or reverberant loudspeaker sound.

5,297,211

ACOUSTIC DEVICE FOR CUSTOM INSTALLATION

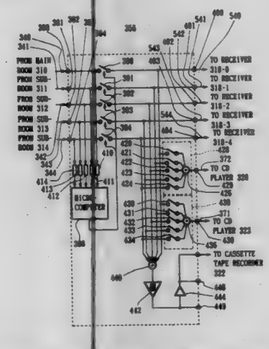
Masao Noro, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 6, 1992, Ser. No. 817,154

Claims priority, application Japan, Jan. 9, 1991, 3-12818; Jan. 9, 1991, 3-12819

Int. Cl.[5] H04B *3/00*

U.S. Cl. 381—81 **5 Claims**



1. An acoustic device for utilizing in a plurality of zones which are substantially acoustically partitioned from each other, the acoustic device comprising:

a plurality of loudspeakers located in the plurality of zones respectively;

an acoustic device main unit which is located in one of the plural zones and is capable of providing an audio source signal and is capable of adjusting a provision state of the audio source signal;

audio signal transmission paths for transmitting the audio source signal provided by the acoustic device main unit to the plurality of loudspeakers;

remote control means for remotely controlling the provision state of the audio source signal of the acoustic device main unit, the remote control means comprising,

remote controllers provided in the plurality of zones, for designating a command for controlling the provision state of the audio source signal of the acoustic device main unit and for producing a command signal according to a designated command,

command signal receiving means for receiving the command signal produced by the remote controller,

a command signal transmission path for transmitting the command signal received by the command signal receiving means to the acoustic device main unit;

transmission path on/off switch means provided in each of the audio source signal transmission paths, for switching a transmission state of the transmission paths; and

switch control means for controlling the transmission path on/off switch means, the switch control means comprising,

inputting means for inputting the command signal received by the command signal receiving means,

identifying means for identifying, in response to an inputted command signal which is a zone independent command for switching one of the audio signal transmission paths by means of the transmission path on/off switch means, the zone where the inputted command signal is provided, and

switching designation means for designating switching of the transmission path on/off switch means so that the audio signal transmission path corresponding to the identified zone is switched.

5,297,212

LOUDSPEAKER SYSTEM INSTALLED ON AN AUTOMOBILE DOOR AND INCLUDING A WOOFER AND A TWEETER

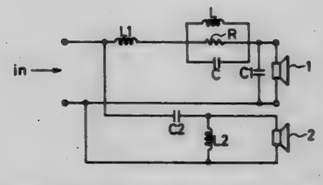
Fumio Murayama, and Takashi Suzuki, both of Yamagata, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 154,549, Feb. 10, 1988, abandoned. This application May 31, 1989, Ser. No. 361,662

Claims priority, application Japan, Feb. 14, 1987, 67-20591[U]

Int. Cl.[5] H03G *5/00*

U.S. Cl. 381—86 **4 Claims**



1. A mobile compound loudspeaker system mounted in the passenger compartment of a vehicle, said system comprising at least a first middle/low frequency loudspeaker for reproducing middle/low frequency sound, and a second loudspeaker for reproducing high frequency sound, said speakers being mounted on a vehicle door of said vehicle, and a first circuit comprising parallel conductors for connecting said middle/low frequency speaker to a signal source, said second loudspeaker being connected by a second circuit across said parallel conductors of said first middle/low frequency loudspeaker, said first circuit including a filter comprised by a first inductance element and a first capacitor, wherein said first capacitor is connected to said conductors in parallel with said first middle/low frequency speaker, said system further comprising:

a resonance circuit connected in said first circuit in series between said first inductance element and said first capacitor of said filter for said middle/low frequency speaker to suppress enhancement in a middle-frequency range in a frequency characteristic of sound pressure.

5,297,213

SYSTEM AND METHOD FOR REDUCING NOISE

Thomas W. Holden, 507 S. Washington St., Beverly Hills, Fla. 32665

Filed Apr. 6, 1992, Ser. No. 863,001

Int. Cl.[5] H04B *15/00*

U.S. Cl. 381—94 **15 Claims**

1. A method for reducing noise between pauses in audio communication having an energy distribution, the method comprising the steps of:

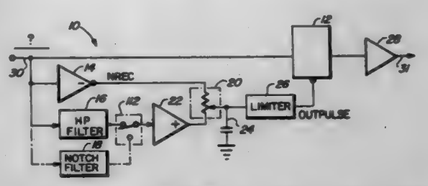
providing an audio signal having an intelligence plus noise component and a noise only component;

determining a frequency value below which most of the energy distribution in the audio communication occurs;

filtering and increasing the amplitude of a portion of the audio signal having a frequency less than the frequency value determined;

rectifying the filtered audio signal;

rectifying the audio signal with a polarity opposite to the



polarity of the rectified filtered audio signal and combining the rectified filtered audio signal with the rectified audio signal to produce an intelligence syllable signal; and passing the intelligence component plus noise of the audio signal in response to the intelligence syllable signal.

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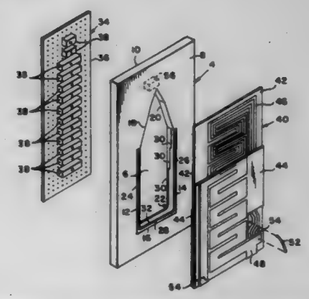
LOUDSPEAKER STRUCTURE

Paul F. Bruney, 12812 Meadowood Dr., Silver Spring, Md. 20904

Division of Ser. No. 482,801, Feb. 21, 1990, Pat. No. 5,148,493, which is a division of Ser. No. 245,915, Sep. 19, 1988, Pat. No. 4,939,784. This application Sep. 14, 1992, Ser. No. 944,518

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—203 **7 Claims**



1. A membrane for a membrane-type loudspeaker, comprising

(a) a plurality of generally planar layers of flexible material having the same widths and different lengths; and

(b) a pattern of conductor material mounted on each of said layers of flexible material, the conductor material on at least two of said layers having a different mass, said layers of flexible material being connected together in stacked relation with said conductor material being sandwiched between adjacent layers to define along the length of the membrane areas of greater thickness and greater conductor mass and areas of lesser thickness and less conductor mass for bass and treble responses, respectively.

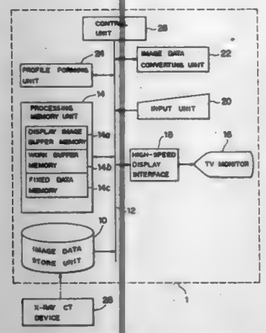
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5,297,215

APPARATUS AND METHOD OF DISPLAYING MEDICAL IMAGES OF SLICED TISSUE

Ichiro Yamagishi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 12, 1991, Ser. No. 714,026
Claims priority, application Japan, Jun. 13, 1990, 2-155788
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—6 **11 Claims**



1. A method of displaying medical images comprising:

storing three-dimensional time-dependent image data consisting of a plurality of two-dimensional image data collected throughout a sliced tissue in a biological body to be examined by dynamic scanning of a certain time interval;

displaying one of said plurality of scanned two-dimensional image data;

designating a region of interest elongated along a direction on the two-dimensional image displayed;

converting said three-dimensional time-dependent image data to a two-dimensional time-dependent image data having two aces, one axis representing the scanning time, the other axis representing, at each scan, a position in the designated region of interest;

displaying the converted two-dimensional time-dependent image data;

designating a position on the position axis of the displayed two-dimensional time-dependent image;

forming a profile data of the image data values along a line perpendicular to the designated position on the position axis; and

displaying the formed profile data.

5,297,216

HANDWRITTEN KEYBOARDLESS ENTRY COMPUTER SYSTEM

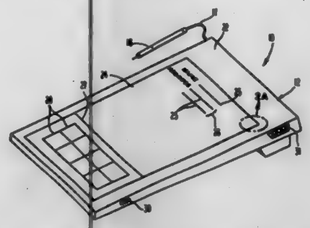
Ralph Sklarew, 2004 Turtle Pond Dr., Reston, Va. 22091

Division of Ser. No. 523,447, May 14, 1990, Pat. No. 5,157,737, which is a continuation of Ser. No. 29,772, Mar. 24, 1987, Pat. No. 4,972,496, which is a continuation-in-part of Ser. No. 889,513, Jul. 25, 1986, abandoned. This application Oct. 11, 1991, Ser. No. 775,167
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **16 Claims**

1. In a device for processing information which includes a display device for displaying predetermined text and a device for recognizing digitized symbols, for displaying recognized characters on said display device and for executing commands corresponding to recognized command symbols, including commands for editing said predetermined text, a method for inputting symbols to said device comprising:

providing a digitizer for digitizing a handwritten symbol and providing a digitized symbol to the device for recognizing, said digitizer and said display device positioned one over the other to permit viewing of said predetermined text on said display while looking at said digitizer; and

creating a window on said display device, upon execution of a predetermined command, in an area where no window



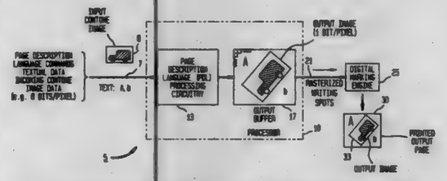
appeared during a time prior to execution of said predetermined command, said window for entering at least two handwritten symbols in the same window, for editing said predetermined text displayed on said display device.

5,297,217

TILE-ORIENTED TECHNIQUE FOR COLLECTIVELY PERFORMING IMAGE ROTATION SCALING AND DIGITAL HALFTONE SCREENING

John F. Hamilton, Jr., Rochester, and Anthony J. Leone, III, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 741,877, Aug. 6, 1991, Pat. No. 5,204,916. This application Aug. 21, 1992, Ser. No. 934,090
The portion of the term of this patent subsequent to Apr. 20, 2000, has been disclaimed.
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—41 **22 Claims**



1. A method for producing a scaled, rotated and halftoned output image from an input continuous tone (contone) image, wherein said output image depicts said input image scaled by a pre-defined scale factor and rotated through a pre-defined angle of rotation, said method comprising the steps of:

(A) defining pixel sampling increments, said pixel sampling increments specifying incremental movement between successive sampling locations in one of a plurality of contone tiles in said contone image, said incremental movement corresponding to movement between two adjacent pixel locations in a corresponding block of said output image, said output image being formed of a plurality of spatially overlapping blocks wherein each of said blocks spatially corresponds to and stores output data for a different one of said contone tiles; said pixel sampling increments being a function of the scale factor, the angle of rotation and the screen angle; a said contone tile being sized as a function of the scale factor and the angle of rotation such that the contone image is broken into an array of non-overlapping ones of said contone tiles, each of said contone tiles containing a portion of said contone image, and wherein the defining step comprises the step of sizing the corresponding block as a function of a size of the tile and the angle of rotation with an extent of the overlap between two adjacent ones of said blocks being governed by the angle of rotation;

(B) in response to corresponding ones of said pixel sampling increments:

(1) generating addresses that represent incremental movement through the corresponding block to produce a sequence of addressed output pixel locations;

(2) sampling through said contone image to yield a sampled contone value associated with each of said addressed output pixel locations so as to produce a plurality of sampled contone values; and

(3) producing, in response to each of said sampled contone values and a pre-defined pattern, a corresponding halftone output value for each addressed output pixel location in said sequence to yield a plurality of halftone output values; and

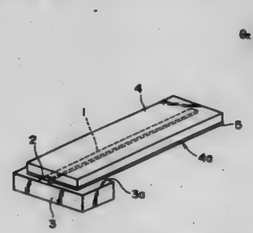
(C) writing each of the halftone output values in the corresponding addressed output pixel location in the corresponding block in the event said each halftone output value is associated with a pixel location situated within the one contone tile.

5,297,218

OPTICAL SEMICONDUCTOR LASER AND OPTICAL WAVEGUIDE ALIGNMENT DEVICE

Hideaki Hanaoka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,976
Claims priority, application Japan, Dec. 20, 1991, 3-338717
Int. Cl.[5] G02B *6/12*; H01S *3/04*
U.S. Cl. 385—52 **3 Claims**



1. A laser aligning device comprising, an optical waveguide formed in an optical waveguide substrate, a laser, a heat sink with a smooth planar surface for aligning the output light of the laser with said optical waveguide wherein said laser has a planar light exit surface and a planar mounting surface which is normal to said light exit surface and said planar mounting surface of said laser is attached to said smooth planar surface of said heat sink, said optical waveguide substrate is formed with a planar light entry surface for said optical waveguide and said optical waveguide substrate is formed with a planar mounting surface which is normal to said planar light entry surface, and said planar mounting surface of said optical waveguide substrate is attached to said smooth planar surface of said heat sink such that said planar light entry surface abuts said light exit surface and so that light from said laser enters said optical waveguide.

5,297,219

TRANSFORMS FOR DIGITAL IMAGES IN A HIERARCHICAL ENVIRONMENT

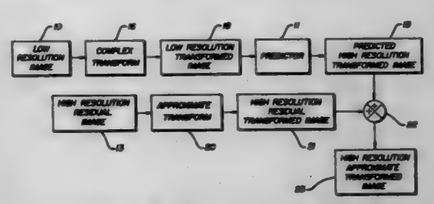
John A. Weldy, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1991, Ser. No. 722,419
Int. Cl.[5] G06K *9/36, 9/40, 9/46, 9/03*
U.S. Cl. 382—54 **11 Claims**

1. A method of processing a digitized image having a low resolution image component and at least one high resolution image component through a selected transformation to form a transformed high resolution digitized image comprising the steps of:

(a) transforming said low resolution image component by a first transformation to form a first transformed low resolution image component;

(b) predicting a high resolution image component from the first transformed low resolution image component;



(c) transforming said at least one high resolution image component by a second transformation to form a transformed high resolution image component; and

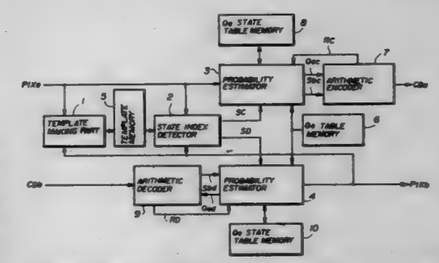
(d) combining said predicted high resolution image component with said transformed high resolution image component to provide a transformed high resolution digitized image.

5,297,220

IMAGE PROCESSING SYSTEM FOR IMAGE COMPRESSION AND DECOMPRESSION

Yasuyuki Nomizu, Ebina, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,655
Claims priority, application Japan, Aug. 28, 1991, 3-240288
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **10 Claims**



1. An image processing system for image compression in which a template is produced from an image to be processed with respect to each pixel so that the image is encoded into a compressed image by using the template, said system comprising:

template making means for carrying out a template producing process so that a template is produced from an image with respect to one target pixel in said image, said template containing a prescribed number of reference pixels selected from among an array of pixels preceding the target pixel on a plurality of scanning lines including a current scanning line, said reference pixels having respective colors which have been detected;

storage means for storing the colors of the reference pixels in the template produced by said template making means;

state detection means for detecting a state index of the template from the colors of the reference pixels stored in said storage means by referring to a state index table in which correspondence between values of the state index and states of colors of the reference pixels is pre-defined; and

encoding means for encoding the target pixel by carrying

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out an arithmetic encoding process in accordance with the state index detected by said state detection means, so that a compressed image is generated from said image,

said template producing process carried out by said template making means comprising steps of:

counting the number of color coincidences between a color of one of said pixels in said array and a color of the target pixel with respect to each of said pixels in said array;

repeating said counting step until a count number which is the same as the number of pixels on the successive scanning lines is reached;

selecting one reference pixel having a maximum count number of color coincidences from among said pixels in said array;

updating a corresponding template data of the template table by the maximum count number of said selected reference pixel;

repeating said selecting and updating steps until all template data corresponding to the prescribed number of reference pixels are updated in the template table; and

storing the template table in said storage means, each of the colors of the reference pixels being described by corresponding template data in the template table.

5,297,221

IMAGE SIGNAL PROCESSING APPARATUS

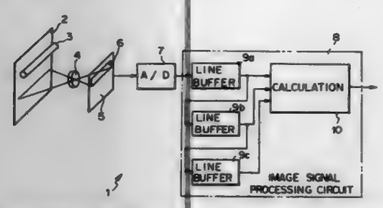
Kazuya Masuda, Nara, and Kouji Yamaji, Yamato-Koriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 707,115, May 29, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,385

Claims priority, application Japan, May 30, 1990, 2-142126

Int. Cl.[5] G06K *9/38*

U.S. Cl. 382—50 **6 Claims**



1. An image signal processing apparatus for correcting an image signal at Nyquist limit, the apparatus comprising;

an image signal generation means for sequentially generating analog image signals representing information on light and shade of an original image per every picture element, said image signal generation means including a lens for receiving light from an original and an image reading device for converting light passing through said lens into said analog image signals;

an analog to digital converting means for converting generated image signals into essentially proportional digital image signals representing the same information of said generated image signals, respectively;

an extreme portion detection means for comparing said converted digital image signal of a picture element of interest and each of said converted digital image signals of a plurality of peripheral picture elements which are positioned in the vicinity of said picture element of interest, and judging whether said picture element of interest is an extreme portion or not thereby detecting a picture element of which a level of a digital image signal is deteriorated due to an influence of the Nyquist limit;

a correction means for correcting a level of said digital image signal of said picture element of interest, if the picture element of interest is judged to be said extreme portion under said influence of the Nyquist limit by said extreme portion detection means, by adding a value proportional to said level of said digital image signal, said correction being accomplished in accord with the expression:

$$M1h = M1 + K * M1 * (1/MTF - 1)$$

wherein M1 represents an original level of said digital image signal of said picture element of interest, M1h is a corrected level thereof, K is a correction coefficient and MTF is a modulation transfer function, K and MTF being peculiar values determined by the characteristic of the combination of said lens and said image reading device and the MTF being constant at the Nyquist limit; and

output means for outputting a corrected digital image signal in case that the picture element of interest is the extreme portion, and outputting an original digital image signal without correction in the case that the picture element of interest is other than the extreme portion.

5,297,222

IMAGE PROCESSING APPARATUS

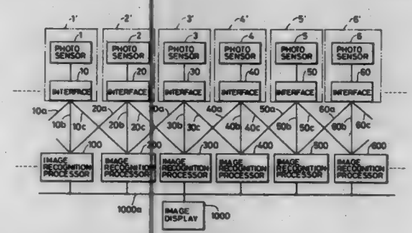
Kinji Mori, Yokohama; Yoko Kunai; Shoji Miyamoto, both of Kawasaki; Sadanori Shingai, Yokohama, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 262,179, Oct. 26, 1988, abandoned, which is a continuation of Ser. No. 28,468, Mar. 20, 1987, abandoned, which is a continuation of Ser. No. 634,558, Jul. 26, 1984, abandoned. This application Oct. 28, 1991, Ser. No. 785,221

Claims priority, application Japan, May 4, 1982, 57-75644; May 21, 1982, 57-84792

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—62 **27 Claims**



1. An image processing system comprising:

inputting means for supplying input signals from respective ones of a plurality of sources of object data, each input signal representing a respective feature of an image of an object;

a plurality of processing means connected with said inputting means for receiving the input signals, each processing means including a programmable processor connected to receive plural input signals for producing an output signal corresponding to a partial image of the object by performing a predetermined processing which is a function of said plural input signals and at least one quantity which is selectable in accordance with a desired image processing; and

a plurality of outputting means connected with the plurality of processing means for outputting partial images in response to the output signal produced by said processing means.

5,297,223

TRANSMISSION SYSTEMS FOR POLARIZATION-INDEPENDENT TRANSMISSION OF SIGNALS

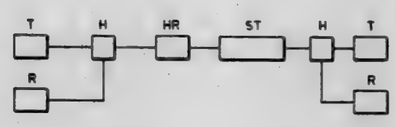
Mattijs O. van Deventer, Leidschendam, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Sep. 1, 1992, Ser. No. 938,784

Claims priority, application Netherlands, Sep. 6, 1991, 9101505; Dec. 20, 1991, 9102159

Int. Cl.[5] G02B *6/26*; H04J *14/00*

U.S. Cl. 385—11 **33 Claims**



1. Transmission system for the polarisationinsensitive transmission of signals over a signal route between a first and a second transceiver, each comprising a transmitter (T) and a receiver (R), the receiver comprising a detector (D), a local oscillator (LO) and a device for coupling the output signal of the oscillator to the detector, characterised in that a passive high-order retarder (HR) is connected in series with the signal route (ST) between said signal route and a bidirectional port of a three-port hybrid circuit (H) and in that a said transmitter (T) and a said receiver (R), respectively, are connected to the other ports of the hybrid circuit (H).

5,297,225

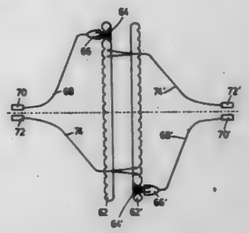
OFF-AXIS OPTICAL ROTARY JOINT

James W. Snow, Bedford; Ian B. MacKay, and Kenneth Bowers, both of Dartmouth, all of Canada, assignors to Focal Technologies Incorporated, Dartmouth, Canada

Filed Jun. 4, 1992, Ser. No. 894,338

Int. Cl.[5] G02B *6/34*

U.S. Cl. 385—25 **30 Claims**



1. An optical rotary joint for off-axis optical signal transfer comprising: a source of light; an annular optical waveguide member having optical discontinuity means for intercepting a light beam emanating from said source and directing the light beam into said waveguide member; means for reflecting light out of said waveguide member; and detector means adjacent said reflecting means for intercepting light reflected out of said waveguide member; said light source being rotatable relative to said waveguide member, reflecting means and detector means.

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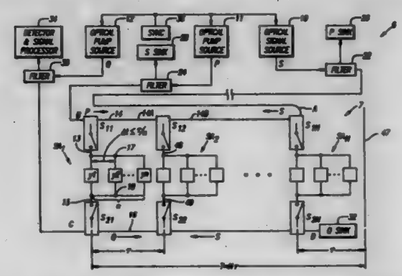
OPTICALLY SWITCHED SENSOR ARRAY

H. John Shaw, Stanford, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 14, 1992, Ser. No. 930,581

Int. Cl.[5] G02B *6/02*

U.S. Cl. 385—12 **23 Claims**



1. Apparatus for sensing changes in a physical parameter comprising:

means for generating first and second light signals;

a plurality of arrays of optic sensors that are responsive to a physical parameter for sensing changes therein;

means responsive to said first light signal for selectively connecting said second light signal to ones of said arrays; and

means for monitoring output signals of said plurality of sensor arrays for detecting changes in the physical parameter.

5,297,226

LIGHT GUIDE CONNECTOR

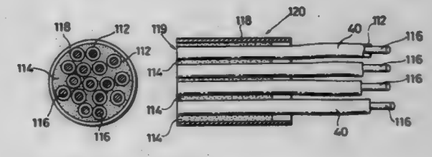
Souhei Fukunishi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1991, Ser. No. 761,229

Claims priority, application Japan, Sep. 18, 1990, 2-246233

Int. Cl.[5] G02B *6/40*

U.S. Cl. 385—54 **7 Claims**



1. A light guide, comprising:

a bundle of separate optical fiber elements for transmitting light; and

a connector for removably connecting sections of said light guide to one another, wherein said connector is obtained by melting and solidifying together a cladding around a core of each of said separate optical fiber elements at an end portion of said separate optical fiber elements, wherein a cross-section area of said cladding in said connector and a light receiving area of said light guide is increased,

said solidified end portion having a length such that optical attenuation in said cladding is completely achieved.

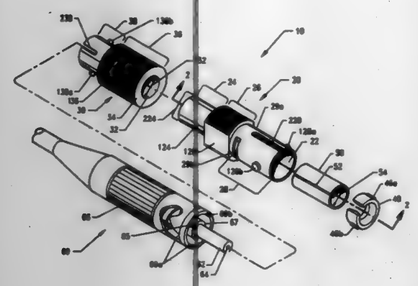
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5,297,227

DISENGAGABLE ADAPTER FOR AN OPTICAL FIBER CONNECTION

Gair D. Brown, Dahlgren; Michael A. Richardson, and Gary A. Burcham, both of Fredericksburg, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1993, Ser. No. 33,223
Int. Cl.[5] G02B 6/38, 6/26
U.S. Cl. 385—56 14 Claims



1. An adapter mechanically coupling ferrules respectively located in two optical-fiber connector plugs, comprising: a first part holding one of the two optical-fiber connector plugs having a bore receiving the ferrule of said one of the connector plugs, a mating end and a connecting end having first means for securing said one of the connector plugs to said first part; and a second part disengagably coupled to the first part and holding the other of the two optical-fiber connector plugs having a mating end mating in a complementary fashion with the mating end of said first part and a connecting end having second means for securing the other of the connector plugs to said second part, said second part also having a hole through which the ferrule of the other of the connector plugs passes to effect said coupling of the ferrules.

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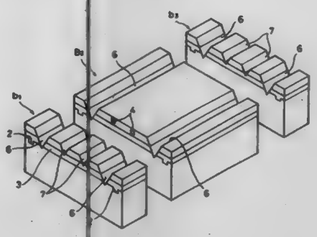
METHOD OF CONNECTING AN OPTICAL FIBER TO AN OPTICAL WAVEGUIDE

Hisaharu Yanagawa; Takeo Shimizu; Shiro Nakamura, and Ken Ueki, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 17, 1993, Ser. No. 63,005
Claims priority, application Japan, May 29, 1992, 4-138789
Int. Cl.[5] G02B 6/30
U.S. Cl. 385—129 2 Claims

1. A method of connecting an optical fiber to a planar optical waveguide, in which an end face of a waveguide chip in which planar optical waveguides are formed is abutted against an end face of a fiber aligning jig on which optical fibers are arranged, to thereby connect the optical fiber to the corresponding planar optical waveguide, the method comprising:

forming at least one marker in each of the waveguide chip and the fiber aligning jig, and at least one pin guide groove in each of the waveguide chip and the fiber aligning jig by using the marker as a reference mark, the markers of the waveguide chip and the fiber aligning jig being aligned with each other along optical axes of the planar optical waveguides when the waveguide chip and the fiber aligning jig are abutted against each other, and forming fiber guide grooves in the fiber aligning jig by using the marker as a reference mark; and



abutting the waveguide chip and the fiber aligning jig against each other, and aligning the planar optical waveguide and the optical fiber with each other by means of a common guide pin laid along the corresponding pin guide grooves.

5,297,229

SYSTEM FOR EXTENDING COMMUNICATION EQUIPMENT USING FLAT COAXIAL CABLE

Shozo Shimada; Tomoyuki Hongoh, and Tetsuya Takahashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 24, 1993, Ser. No. 36,408
Claims priority, application Japan, Mar. 26, 1992, 4-068470
Int. Cl.[5] G02B 6/00
U.S. Cl. 385—135 6 Claims

1. A communication equipment extension system comprising:

a rack;

a base shelf mounted on said rack, said base shelf having a plurality of base printed wiring board assemblies installed perpendicularly and in parallel with one another;

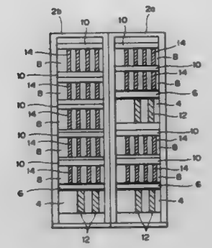
a first tray mounted on said rack above said base shelf;

at least one extension shelf mounted on said rack above said first tray, said extension shelf having a plurality of extension printed wiring board assemblies installed perpendicularly and in parallel with one another;

a second tray fixed integrally at the top of said extension shelf; and

a flat coaxial cable bundle connected detachably to the front side of each of said base printed wiring board assemblies,

said flat coaxial cable bundle threading through said first tray from front to back to enter said second tray from the back thereof, extra length portions of said flat coaxial cable bundle being accommodated inside said first tray



and said second tray, said flat coaxial cable bundle leaving the front end of said second tray to connect detachably to the front side of each of said extension printed wiring board assemblies.

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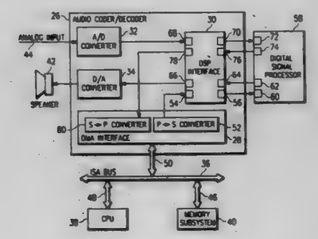
Patent Not Issued For This Number

5,297,231

DIGITAL SIGNAL PROCESSOR INTERFACE FOR COMPUTER SYSTEM

David A. Miller, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 31, 1992, Ser. No. 860,909
Int. Cl.[5] G10L 3/00
U.S. Cl. 395—2.1 18 Claims



1. Apparatus for interfacing audio equipment and a computer system, comprising:

first interfacing means for exchanging digital audio data with a system bus of said computer system;

second interfacing means for exchanging digital audio data with said first interfacing means; and

converter means for converting digital audio data received from said second interfacing means into analog format for output to said audio equipment and analog audio data received from said audio equipment into digital format for output to said second interfacing means, said second interfacing means including means including means for routing digital audio data received from said first interfacing means to said converter means and said audio equipment including means for routing analog audio data originating thereat to said converter means; wherein

said second interfacing means further comprises:

a first serial-in port for receiving digital audio data transmitted by said first interfacing means;

a first internal serial-out port;

a second serial-in port;

said first internal serial-out port directly propagating received digital audio data to said second serial-in port when said first internal serial-out port is directly interconnected with said second serial-in port and indirectly propagating received digital audio data to said second serial-in port via said digital signal processor when said first internal serial-out port is indirectly interconnected with said second serial-in port via said digital signal processor, said digital signal processing digital audio data propagated from said first internal serial-out port to said second serial-in port via said digital signal processor; and

a second internal serial-out port for routing signal audio data received from said second serial-in port to said converter means;

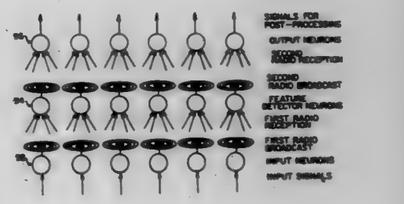
said second interfacing means routing digital audio signals received from said converter means to said first interfacing means.

5,297,232

WIRELESS NEURAL NETWORK AND A WIRELESS NEURAL PROCESSING ELEMENT

John H. Murphy, Churchill Boro., Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 30, 1991, Ser. No. 785,393
Int. Cl.[5] G06F 15/18
U.S. Cl. 395—24 18 Claims



16. A method of performing neural network operations between first and second groups of neural processing elements, comprising the steps of:

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(a) performing, by the first group, a first neural processing element transfer function to produce first neuron signals;
(b) radio frequency transmitting the first neuron signals;
(c) guiding the transmitted first neuron signals from the first group to the second group; and
(d) performing, by the second group, a second neural processing element transfer function on the first neuron signals.

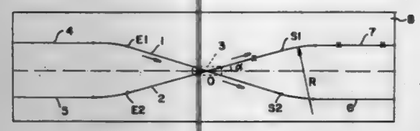
5,297,233

INTEGRATED OPTICS ACHROMATIC SPLITTER AND AN MXN COUPLER INCORPORATING SUCH A SPLITTER

Christian Lerminiaux, Fontainebleau, France, assignor to Corning Incorporated, Corning, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,538
Claims priority, application France, Aug. 13, 1991, 91 10271
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—27 **11 Claims**

1. An achromatic integrated optics splitter with two inputs, for the transmission of an optical signal entering one input to two outputs, with a predetermined ratio of the signal powers at these two outputs, comprising a symmetrical X-junction of two identical rectilinear waveguides, single mode at the utilization wavelength, and defining at their intersection a half-angle (α), characterized in that two flat outer regions (9,10), perpendicular to the axis of the splitter, partially define the boundary of the intersection of the waveguides, these flat outer regions



(9,10), cutting off the regions of the two vertices of half-angle (α) of the intersection, the half-angle (α) being greater than an angular value which is a function of the dimensions of the fundamental mode transmitted by the waveguides, the half-angle being selected to establish the predetermined power ratio.

5,297,234

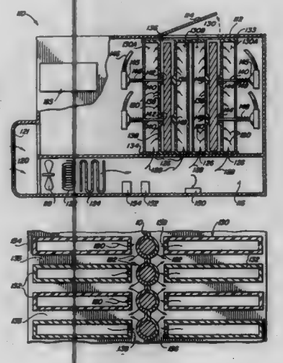
METHOD AND APPARATUS FOR THE RAPID THERMAL PROCESSING OF TRANSFUSION FLUID

Frank H. Harms, Marietta, Ga.; John R. Beard, Memphis, Tenn., and Alexander Duncan, Dunwoody, Ga., assignors to LifeSource Advanced Blood Bank Systems, Inc., Atlanta, Ga.

Filed May 9, 1990, Ser. No. 521,185
Int. Cl.[5] A61F *7/00*
U.S. Cl. 392—470 **32 Claims**

1. Apparatus for the thermal processing of a container of transfusion fluid; said container comprising first and second sheets of flexible material joined at intervals to present a plurality of laterally spaced tubular chambers having internal cores and being filled with the transfusion fluid; said apparatus comprising:

a housing defining a cavity;
means, located on said housing, for creating a flow of air;
means, located on said housing, for controlling temperature of the flow of air;



means, located on said housing, for directing the temperature controlled flow of air into said cavity; said directing means comprising first and second pluralities of tubes communicated to receive the temperature controlled flow of air and located in said cavity, spaced longitudinally across a gap; the tubes of each of said first and second pluralities having vents and being laterally separated by slots having positions corresponding to said intervals of said container; and

means for removably mounting said container within said gap, with said first sheet adjacent said first plurality of tubes, said second sheet adjacent said second plurality of tubes, and said chambers respectively aligned with said tubes;

said tubes, vents and slots being relatively dimensioned, configured and positioned so that the temperature controlled air will be directed through said vents to impinge on said sheets substantially perpendicular to said chambers and to exit through said slots.

5,297,235

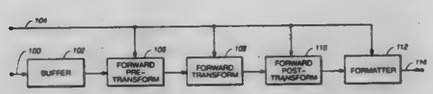
Patent Not Issued For This Number

5,297,236

LOW COMPUTATIONAL-COMPLEXITY DIGITAL FILTER BANK FOR ENCODER, DECODER, AND ENCODER/DECODER

Michael B Antill, San Rafael, and Grant A. Davidson, Oakland, both of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 508,809, Apr. 12, 1990, abandoned, and Ser. No. 458,894, Dec. 12, 1989, Pat. No. 5,109,417, which is a continuation-in-part of Ser. No. 303,714, Jan. 27, 1989, abandoned. This application Jun. 5, 1991, Ser. No. 710,805
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.12 **34 Claims**



1. In an encoder a combination for the filtering of one or more signals comprising input samples, said combination comprising

means for receiving said input samples representing stimuli intended for human perception,

input buffer means for grouping said input samples into time-domain signal sample blocks of length N, where N is a positive integer, wherein said input samples are analysis-window weighted samples,

analysis means for generating spectral information in response to said time-domain signal sample blocks, said spectral information comprising spectral coefficients C(k) and S(k) substantially corresponding to the frequency-domain transform coefficients of an Evenly-Stacked Time-Domain Aliasing Cancellation transform applied to said time-domain signal sample blocks, wherein said spectral coefficients C(k) and S(k) substantially correspond to Modified Discrete Cosine Transform coefficients and Modified Discrete Sine Transform coefficients, respectively, comprising

forward pre-transform means for generating modified-sample blocks comprising ½N modified samples by combining one or more pairs of analysis-window weighted samples to form said modified samples, and

forward transform means for generating frequency-domain transform coefficients by applying one or more discrete transform functions to said modified-sample blocks, and

means for generating an encoded signal in response to said spectral information.

5,297,237

LEARNING SYSTEM FOR A DATA PROCESSING APPARATUS

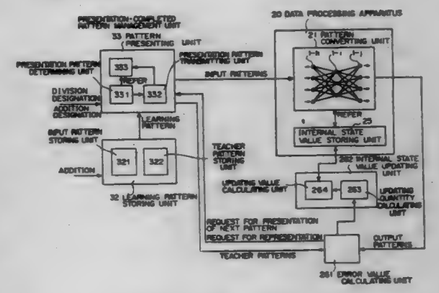
Ryusuke Masuoka, Tokyo; Nobuo Watanabe, Zama; Takashi Kimoto, Yokohama; Akira Kawamura; Kazuo Asakawa, both of Kawasaki, and Jun'ichi Tanahashi, Yamato, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 481,195, Feb. 20, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 913,749
Claims priority, application Japan, Feb. 20, 1989, 1-039670; Feb. 21, 1989, 1-041448
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—23 **8 Claims**

1. A learning system for use in a data processing apparatus for learning an input pattern by obtaining an internal-state value necessary for realizing a desired data conversion, comprising:

a pattern converting neural network having a multiplier, an accumulator and a threshold value processor for performing a pattern conversion defined by the internal-state value and for calculating an output pattern corresponding to the input pattern;

pattern presenting means, coupled to said pattern converting neural network, for inputting to the learning system an input pattern group of a subject to be learned for pattern conversion, said pattern presenting means dividing the input pattern group of the subject to be learned into a least two sets, selecting one of the divided sets, and presenting the input patterns belonging to all the sets presented up to the current point when an internal-state value to be converged is obtained in accordance with the input of said selected set;



error value calculating mans for calculating an error value representing a magnitude of an inconsistency between an output pattern outputted from said pattern presenting means in accordance with the presented patterns and a teacher pattern representing a pattern designated by said output; and

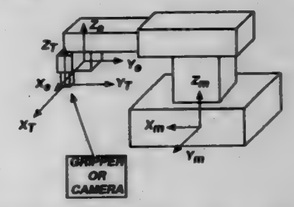
an internal-state value updating means for updating an internal-state value in accordance with an updated quantity of an internal-state value calculated based on the error value and obtaining an internal-state value having an error value within a specified allowance.

5,297,238

ROBOT END-EFFECTOR TERMINAL CONTROL FRAME (TCF) CALIBRATION METHOD AND DEVICE

Xuguang Wang; Walter E. Red, both of Provo, and Peter H. Manley, Alpine, all of Utah, assignors to Cimetrix Incorporated, Orem, Utah

Filed Aug. 30, 1991, Ser. No. 752,790
Int. Cl.[5] G06F *15/46;* **G05B** *19/42*
U.S. Cl. 395—94 **10 Claims**



1. A method for calibrating a tool control frame (TCF) of a robot with respect to a known calibration reference frame (CRF), which CRF moves with and is associated with a robot link in rigid body relationship, said method comprising the steps of:

a) attaching a sensory tooling assembly to a link of the robot in rigid body relationship, which link has a known positional and orientational relationship with respect to the CRF and which allows for feedback of positional and/or

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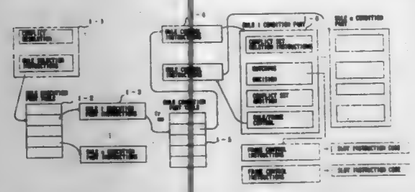
orientational information with respect to a sensory reference frame associated with the sensory tooling assembly;
b) calibrating the sensory tooling assembly and any data output systems associated with the tooling assembly to enable sensor output in units capable of defining physical dimensions;
c) identifying a calibration feature separate from the robot which is capable of being mapped by the sensory tooling assembly;
d) causing relative movement of the calibration feature and sensory tooling assembly to bring the calibration feature within sensing range without need of manually jogging the sensory tooling assembly to a specific alignment position with respect to the calibration feature;
e) recording robot configuration and new relative position and orientation (pose) of the calibration feature with respect to the sensory reference frame as an initial configuration data record;
f) causing relative movement of the calibration feature and sensory tooling assembly along a known direction such that the calibration feature and sensory tooling assembly are still within sensing range;
g) recording robot configuration and new relative location and orientation of the calibration feature with respect to the sensory reference frame as a secondary configuration data record;
h) determining if the orientation of the secondary configuration is the same as the orientation of the initial configuration data record;
i) if the orientation of the initial and secondary configurations are the same, an additional orientational change is required and is accomplished and recorded by causing relative movement of the calibration feature and the sensory tooling assembly such that the calibration feature has a different orientation from the orientation as determined in the initial and secondary data records, and recording robot configuration and new relative location and orientation of the calibration feature with respect to the sensory reference frame as a third configuration data record;
j) applying coordinate transformations to the initial and secondary configuration data records, and to the third configuration data record if required, to generate a correct tool control frame (TCF) pose with respect to the CRF.

5,297,239

COMPILE TYPE KNOWLEDGE PROCESSING TOOL, A HIGH-SPEED INFERENCE METHOD THEREFOR AND A SYSTEM USING THE TOOL

Kenichi Kurosawa; Masaru Shimada, both of Hitachi; Hirokazu Hirayama, Yokohama; Tadaaki Bandoh, Ibaraki, and Kiyomi Mori, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 469,918, Jan. 24, 1990, abandoned. This application May 13, 1992, Ser. No. 883,592
Claims priority, application Japan, Jan. 25, 1989, 1-013944
Int. Cl.[5] G06F *15/18, 15/40, 9/44*
U.S. Cl. 395—75 **1 Claim**



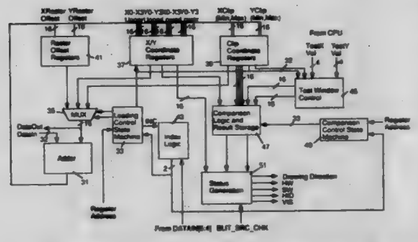
1. A compile type knowledge processing system, comprising:
a processor having means for generating instructions, means for executing instructions, and N registers, including first to sixth registers, a stack pointer register, and a plurality of slot registers;
a knowledge base including a plurality of sets, each set having a rule and a frame, said rule including a condition part, expressing a condition of applying the rule according to a variable and representing renewal of a frame slot of an indicated frame and an execution part, said frame including M slots; and
a memory unit including:
(a) a first area storing said knowledge base;
(b) a second area storing a machine language instruction generated by compiling a rule and a fact of said knowledge base;
(c) a third area serving as a stack in an execution of machine language instructions; and
(d) a fourth area storing a conflict set table, a conflict set control table, a rule execution part table, and a rule condition part table;
wherein said means for generating instructions includes means for generating pattern-match instructions including conflict-resolution instructions, rule-execution-part instructions, rule-control instructions, rule-condition-part instructions, frame-control instructions and frame instructions, said rule-condition-part instruction including a conflict-set-delete instruction, a matching decision instruction, a conflict-set-add instruction and a rule/frame control instruction; and
wherein said means for executing instructions comprises:
(a) means responsive to a first conflict-resolution instruction for reading a time tag from said conflict set table via said conflict set control table indexed uniquely with a rule number to select a rule established under a most recent time tag, responsive to a second conflict-resolution instruction for transferring a value of a variable appearing in said execution part, responsive to a third conflict-resolution instruction for transferring a return address to said sixth register and responsive to a conflict resolution branch instruction for referring to said rule execution part table indexed with said rule number to branch to an instruction in said rule execution part corresponding to said rule number;
(b) means responsive to a first rule-execution-part instruction for updating a value of a time tag of said indicated frame, responsive to a second rule-execution-part instruction for transferring an instruction code address of said frame to said fourth register and responsive to a rule-execution-part branch instruction for referring to said rule condition part table indexed with a number of said frame to branch an address stored at an entry in said rule condition part table;
(c) means responsive to a rule-control create-RCB R1 instruction for storing contents of said fourth and sixth registers and an address of a next instruction and, thereafter, branching to said rule-condition-part instruction, responsive to a rule-control modify-RCB R2 instruction for restoring contents of said third area into said fourth and sixth registers and storing said next instruction address to branch a code address of said rule-condition-part instruction and, responsive to a rule-control instruction for restoring said contents of said third area into said fourth and sixth registers and updating contents of said stack pointer register to branch to a code address of said rule-condition-part instruction;
(d) means responsive to a conflict-set-delete instruction, including an instruction code, for deleting a time tag indicated with said third register from a conflict set table of said conflict set control table;
(e) means responsive to a first matching decision instruction for transferring a class name of said frame indicated with said condition part, responsive to a second matching decision instruction for transferring a frame name of said frame to said second register, and means responsive to a matching decision compare instruction for comparing a value of a K-th slot indicated for matching in said condition part with contents of a K-th slot register;
(f) means responsive to a conflict-set-add instruction for adding contents of said third register to said conflict set table;
(g) means responsive to a rule/frame control instruction for reading contents of an address indicated with said stack pointer register to branch to an address indicated with said contents;
(h) means responsive to a frame-control create-frame F1 instruction for storing contents of said first, second and sixth registers into said third area and, thereafter, branching to a code address of said frame instruction, responsive to a frame-control modify-frame F2 instruction for restoring contents of said third into said fourth and sixth registers and an address of a next instruction and, thereafter, branching to said frame-instruction code address, and responsive to a frame-control delete-frame F3 instruction for restoring said contents of said third area into said fourth and sixth registers and updating contents of said stack pointer register to branch to a code address of said frame instruction; and
(i) means responsive to a first frame instruction for transferring a class name of said frame to said first register, responsive to a second frame instruction for transferring a frame name of said frame to said second register, responsive to a third frame instruction for transferring an address of a time tag of said frame to said third register, responsive to a fourth frame instruction for transferring an i-th slot value of said frame to an i-th slot register and responsive to a fifth frame instruction for branching to an address indicated with said sixth register.

5,297,240

HARDWARE IMPLEMENTATION OF CLIPPING AND INTERCOORDINATE COMPARISON LOGIC

Curtis Priem, Freemont, and Chris Malachowsky, Santa Clara, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 564,697, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 297,475, Jan. 13, 1989, abandoned. This application Feb. 25, 1992, Ser. No. 841,883
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—134 **14 Claims**



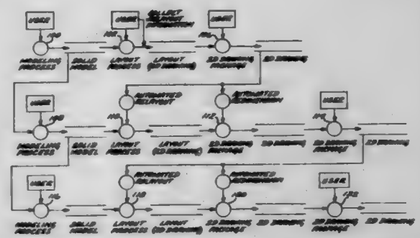
1. In a graphics display system for displaying an object defined by a plurality of object coordinates, said system utilizing a clip window defined by a plurality of clip coordinates for clipping said object prior to display, and a test window defined by a plurality of predetermined offsets from said clip coordinates for operating in conjunction with said clip window to selectively determine whether said object should be clipped in accordance with a first method of clipping or a second method of clipping, an apparatus for facilitating the clipping and rendering of said object comprising:
at least one object coordinate register for storing said object coordinates;
at least one clip coordinate register for storing said clip coordinates;
at least one offset register for storing said predetermined offsets;
at least one multiplexer coupled to said at least one object coordinate register, said at least one clip coordinate register, and said at least one offset register for selectively outputting predetermined object coordinates, clip coordinates, and predetermined offsets;
at least one comparator coupled to said at least one multiplexer for comparing said selectively output predetermined object coordinates, clip coordinates, and predetermined offsets;
incrementor/decrementor means coupled to said at least one clip coordinate register and said at least one offset register;
means for clipping and rendering said object based upon a plurality of output signals from said at least one comparator.

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AUTOMATED RE-LAYOUT WITH DIMENSIONAL ASSOCIATIVITY

Otto A. Hirr, Jr., San Diego; Norman H. MacNeil, Poway, both of Calif., and F. Steve Gutierrez, Corrales, N. Mex., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 30, 1991, Ser. No. 769,620
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—127 **23 Claims**

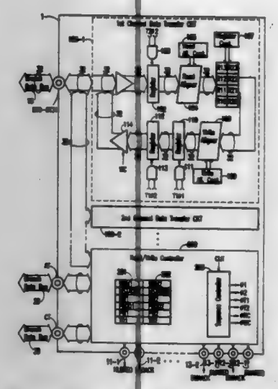


1. A method for interfacing between a solid modeler, which modeler describes objects in three-dimensional (3D) space, and a two-dimensional (2D) documentation package, which package provides 2D representations of objects which are projections of features of said objects onto a viewing plane, said method comprising a sequence of the following steps:
creating an original 3D analytical model of the object using the solid modeler;
invoking a 2 D layout process to generate one or more of said 2D representations, which 2D representations are projections of said 3D model onto said viewing plane, and for each such 2D representation, associating projection format information regarding such 2D representation to permit the 2D representation to be reproduced later;
storing in memory said one or more 2D representations and said projection format information associated therewith;
modifying said 3D model of the object, using the 3D modeler to incorporate geometry changes in the object, thereby creating a modified 3D model; and
invoking an automated re-layout process which interfaces with the solid modeler and said modified 3D model, and which recalls from memory said one or more stored 2D representations and said projection format information, and employs said projection format information to automatically generate modified ones of said one or more stored 2D representations which embody any geometry changes resulting from said modifications of the 3D model, wherein said modified one or more 2D representations, represent one or more projections of said modified

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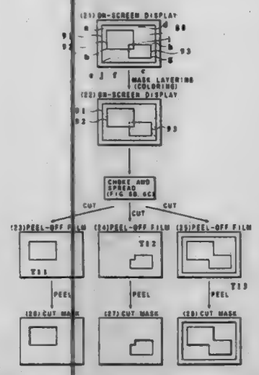
3D model onto said viewing plane in accordance with said projection format information.

5,297,242
DMA CONTROLLER PERFORMING DATA TRANSFER BY 2-BUS CYCLE TRANSFER MANNER
Yoshiyuki Miki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 13, 1990, Ser. No. 626,957
Claims priority, application Japan, Dec. 15, 1989, 64-326893
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—425 **4 Claims**



1. A Direct Memory Access (DMA) data transfer controller coupled through a system bus including a data bus to a data source unit and a data destination unit for transferring data from said data source unit to said data destination unit through said data bus, said data source unit being operatively coupled to said data destination unit through said system bus, said data source unit being accessed in L-byte units (L being a positive integer), said data destination unit being accessed in M-byte units (M being a positive integer different from said L) and said data bus having an N-byte length (N being a positive integer not less than one of said L and said M), said data transfer controller comprising:
- a data register operatively coupled to said data bus and including a plurality of storage areas, each of said storage areas having a one-byte length;
- accessing means operative coupled to said system bus and to said data register for performing a read bus cycle to read L-byte data from said data source coupled to said data bus and a write bus cycle to write M-byte data into said data destination unit coupled to said data bus;
- data input means operatively coupled to said data register and to said data bus and activated during said read bus cycle for operatively coupling said data bus to said data register;
- write pointer means operatively coupled to said data register and activated during said read bus cycle for simultaneously selecting L storage areas of said data register to thereby cause the selected L storage areas to be written with L-byte data read out from said data source unit;
- output means operatively coupled to said data register and activated during said write bus cycle for operatively coupling said data register to said data bus; and
- read pointer means operatively coupled to said data register and to said data bus and activated during said write bus cycle for simultaneously selecting M storage areas of said data register to thereby cause the selected M storage areas to supply M-byte data stored therein to said data destination unit.

5,297,243
CUTOUT MASK PRODUCTION APPARATUS AND METHOD
Masato Shiotani, and Makoto Kitaura, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Sep. 4, 1991, Ser. No. 754,801
Claims priority, application Japan, Sep. 10, 1990, 2-241478
Int. Cl.[5] G06K *9/46*; H04N *1/38, 5/65*
U.S. Cl. 395—135 **4 Claims**

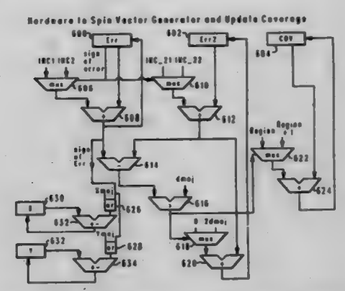


1. A cutout mask production instrument comprising:
- a device for reading the information of locations and frames of a plurality of closed areas such as characters, figures within a print peel-off film, referring to a mechanical;
- a first storage device for storing the read information;
- grouping means for grouping said plurality of closed areas into a plurality of grouped areas, referring to the mechanical;
- a second storage device for storing the information of locations and frames of grouped areas, within the same print peel-off film;
- a monitor screen, wherein the monitor screen presents the information of locations and frames a plurality of closed areas such as characters, figures referring to the mechanical;
- choke and spread means for spreading the bordering side of one grouped area over another grouped area by a predetermined amount, wherein both grouped areas, stored in said second storage device, belong to two different groups, but have common borders;
- a third storage device for storing the information of locations and frames of grouped areas which are choke-and-spread processed, within the same print peel-off film; and
- a cutting device for cutting print peel-off films in accordance with the locations and the frames of grouped areas, which are choke-and-spread processed, within the same print peel-off film, according to the information stored in said third storage device.

5,297,244
METHOD AND SYSTEM FOR DOUBLE ERROR ANTIALIASING IN A COMPUTER DISPLAY SYSTEM
Gerald P. Pomichter, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 22, 1992, Ser. No. 949,296
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—143 **16 Claims**

9. A data processing system for generating and displaying an antialiased approximation of a line, said data processing system comprising:
- a graphics adapter including:
  - an input for receiving a graphics data stream;

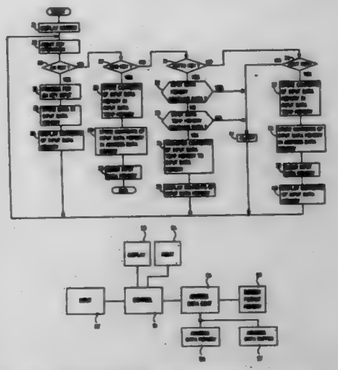
- means, responsive to receiving, in said memory, a line in said graphics data stream, for generating a plurality of parameters according to Bresenham's algorithm for said line, wherein said plurality of parameters comprises a first error term and a second error term;
- means for generating a pixel intensity for an initial pixel for a pixel approximation of said line;
- means for comparing said first error term with a threshold to determine an amount of error;
- means for adjusting said first error term by a first selected amount in response to said means for comparing said first error term and means for adjusting said second error term by a second selected amount in response to said means for comparing of said first error term;
- means for selecting a first pixel proximate to said initial pixel



comprising means for comparing said first adjusted error term with a second threshold to locate a pixel closest to an intersection of said line and a minor axis and means for assigning said first pixel a first intensity based on said comparison of said second adjusted error term with said first error term;
- means for selecting second pixel proximate to said first pixel in response to means for selecting said first pixel and means for assigning said second pixel a second intensity based on said comparison of said second adjusted error term with said first error term; and
- a raster-scan device, coupled to said graphics adapter, for generating images within a two-dimensional grid comprising rows and columns of pixels, wherein an antialiased approximation of a line may be displayed utilizing assigned pixel intensities from the graphics adapter.

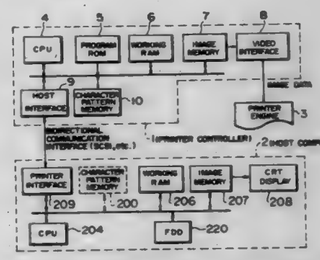
5,297,245
DATA INPUT SYSTEM WITH AUTOMATIC DUPLICATION OF REPETITIVE DATA TO A DATABASE
Kozo Kitamura; Junji Tanaka; Masaaki Kurata; Kiyoshi Kakuda, all of Nara; Kenji Hirano, Osaka, and Hirofumi Yanaru, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 361,909, May 17, 1989, abandoned. This application Mar. 27, 1992, Ser. No. 860,298
Claims priority, application Japan, May 17, 1988, 63-119957
Int. Cl.[5] G06F *3/00, 15/403*
U.S. Cl. 395—149 **10 Claims**

1. In a data management system comprising a data input means, said data management system further comprises:
- a display means for displaying a data set including data items, said data set being input through said data input means by an operator, and for displaying sequentially a plurality of images for inputting data, the plurality of images for inputting data including a plurality of areas for displaying data sets, the display means displaying inputted data in the plurality of areas corresponding to the inputted data;
- a determination means for determining whether a data item among said data set displayed on the areas for displaying data sets on said display means contains a data string of predetermined type or not; and
- a control means for displaying said data string on one of the areas on the selected areas of said display means as at least a part of the contents of a data item in said data set other



than said predetermined item other than said predetermined data item, when said determination means determines that said predetermined data item contains said data spring of said predetermined type, and when other areas are selected on which the inputted data sets are displayed.

5,297,246
PRINTER SYSTEM AND OPERATING METHOD THEREFOR
Yuichi Horiuchi, Hitachi, and Syoichi Ito, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 700,309, May 8, 1991, abandoned, which is a continuation of Ser. No. 320,596, Mar. 8, 1989, abandoned. This application Mar. 5, 1992, Ser. No. 845,366
Claims priority, application Japan, Mar. 11, 1988, 63-56035
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—150 **6 Claims**

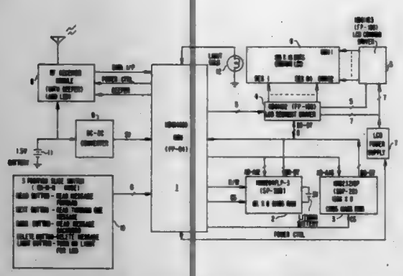


1. A method of operating a printer system for printing out various images including character images by controlling via a printer controller a printer engine from at least one host computer, wherein said printer controller has memory means storing character pattern data for defining character images to be printed by said printer engine, and said host computer is adapted to receive input data for the printing of character images and to display character images by making use of character pattern data of said memory means of said printer; said method comprising:
- a first step of storing in said memory means said character pattern data comprising characters and typefaces of said characters, including Ming style, Gothic style of al-

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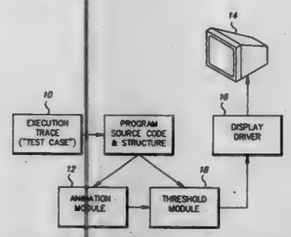
phanumerica and Chinese characters, type styles of said characters, including oblique characters and bold characters, and sizes and storage types of said characters, including dot patterns, outline coordinates and skeleton vectors;
a second step of reading, in response to input data, corresponding character pattern data from said memory means of said printer controller and producing character image data to enable said printer engine to print out the produced character image data;
a third step of selectively reading, in response to said input data, character pattern data representative of selected characters, and respective typefaces, type styles sizes and storage types of said characters from said memory means of said controller;
a fourth step of transmitting the selectively read character pattern data to said host computer; and
a fifth step of displaying by said host computer character images corresponding to the transmitted character pattern data, thereby enabling reduction of capacity of the host computer memory capacity otherwise needed for storing such character pattern data for the display of character images.

5,297,247
DISPLAY DEVICE
Susanna K. Kan, Hong Kong, Hong Kong, assignor to Chinese Computers Limited, Hong Kong, Hong Kong
Continuation of Ser. No. 617,388, Nov. 19, 1990, abandoned, which is a continuation of Ser. No. 216,396, Jul. 7, 1988, abandoned. This application Aug. 30, 1993, Ser. No. 113,315
Claims priority, application United Kingdom, Jul. 7, 1987, 8715964; Feb. 15, 1988, 8803418
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—151 **23 Claims**



1. In a system for transmitting messages from a common source to a plurality of movable destinations by radio transmission, a device at at least one of the destinations, comprising:
(a) receiver means for receiving a radio message from the common source, said message comprising a sequence of coded signals;
(b) fixed memory means for storing fixed graphical images, which include character font images, at addressable locations;
(c) read-write memory means for storing graphical images that can be changed, which include character font images, at addressable locations;
(d) processor means, coupled to said receiver means, for processing the coded signals received from said receiver means, said processor means including:
(1) means for converting each coded signal into an address code having N bits of 2^N possible address codes;
(2) first means for addressing said fixed memory means with a first set of the 2^N possible address codes to retrieve fixed graphical images therefrom;
(3) second means for addressing said read-write memory means with a second set of the 2^N possible address codes to retrieve the graphical images therefrom;
(4) means responsive to a command signal from the common source for altering the graphical images stored in said read-write memory means, whereby the total number of graphical images retrievable from said fixed memory means and said read-write memory means by the 2^N possible address codes exceeds 2^N; and
(e) display means coupled to said processing means for displaying the graphical images retrieved from said fixed memory means and said read-write memory means by said first and second addressing means.

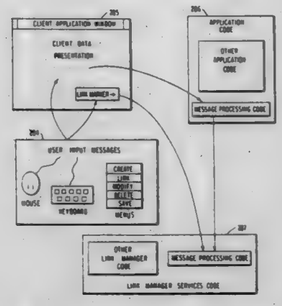
5,297,248
MULTI-COLOR ANIMATION OF COMPUTER PROGRAM EXECUTION
Andrew L. Clark, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 546,056, Jun. 28, 1990, abandoned. This application Oct. 7, 1992, Ser. No. 957,747
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—155 **7 Claims**



4. In a computerized data processing system, having means for recording a set of trace statements, the improvement comprising:
(a) means for determining a total statement execution count (total count) using the set of trace statements; and
(b) means for sequentially processing the set of trace statements in a forward direction determining a current statement and performing for each current statement the steps of:
(i) incrementing a count variable associated with the current statement;
(ii) calculating an execution frequency by dividing the associated count variable by the total count; and
(iii) displaying data representative of the current statement on the display in a selected color based on the execution frequency;
(c) means for determining a first and second threshold frequency, the second threshold frequency being greater than the first threshold frequency;
(d) means for selecting a first color if the execution frequency is less than the first threshold frequency;
(e) means for selecting a second color if the execution frequency is greater than or equal to the first threshold and less than the second threshold frequency; and
(f) means for selecting a third color if the execution frequency is greater than or equal to the second threshold frequency.

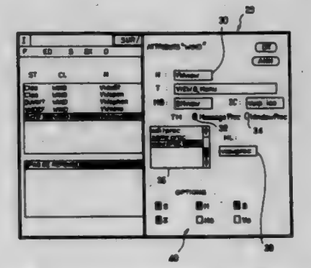
5,297,249
HYPERMEDIA LINK MARKER ABSTRACT AND SEARCH SERVICES
Keith Bernstein, Washington, D.C., and John A. Stephens, Boyds, Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 31, 1990, Ser. No. 606,309
Int. Cl.[5] G06F *3/14, 15/00*
U.S. Cl. 395—156 **14 Claims**

1. A method of providing hypermedia link marker abstract and search services in an open hypermedia system in which data for individual applications may be displayed on a screen of a display device in an application window, each of said windows including a main application workspace in which said data is displayed, said hypermedia system providing a uniform and consistent graphical user interface for applications which utilize hypermedia services available from said open hypermedia system, said method comprising the steps of:
providing an open hypermedia system which allows any application to participate in linking, allowing a seamless integration of applications and application-rendered data developed totally independently from one another;



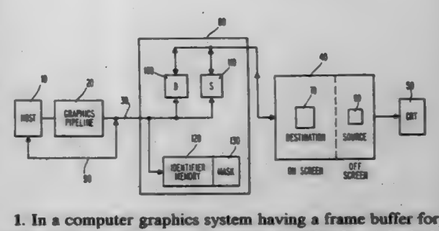
prompting a user to input information to create a link marker within an application window, said link marker being bidirectionally linked to one or more other link markers and/or unidirectionally linked to objects not written for said open hypermedia system;
providing the user with an option to input a link marker abstract in the form of summary text associated with the link marker; and
maintaining a database of said link markers and link marker abstracts.

5,297,250
METHOD OF GENERATING INTERFACES FOR USE APPLICATIONS THAT ARE DISPLAYABLE ON THE SCREEN OF A DATA PROCESSING SYSTEM, AND APPARATUS FOR PERFORMING THE METHOD
Francoise Leroy, Paris; Hervé Lejeune, Boulogne, and Pascal Graffion, Elancourt, all of France, assignors to Bull, S.A., Paris, France
Continuation of Ser. No. 526,712, May 22, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 827,490
Claims priority, application France, May 22, 1989, 89 06643
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—157 **49 Claims**



1. A method of generating interfaces for user applications, each of the interfaces being structured about a window displayable on the screen of a data processing system operating in the graphics mode, and interface including visual or dynamic items, the method comprising:
displaying, in at least one survey window (16) of a survey module, an instantaneous synoptical table (18, 20) representing the constitution of an interface and composed on the basis of a descriptive status of the visual or dynamic items (22) present in the interface, said synoptical table being displayed in the form of at least one item list (18) having items accompanied by at least one list of responses (20) which itemizes the responses associated with a currently selected item (22) in the item list (18), and
creating or modifying, in an interactive mode, said items (22) with the aid of at least one working window (29) under the control of the survey module, said at least one working window providing item selection and editing capabilities in said interactive mode.

5,297,251
METHOD AND APPARATUS FOR PIXEL CLIPPING SOURCE AND DESTINATION WINDOWS IN A GRAPHICS SYSTEM
Byron A. Alcorn, Fort Collins; Robert W. Cherry, Loveland; Mark D. Coleman, and Brian D. Rauchfuss, both of Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 494,992, Mar. 16, 1990, abandoned. This application May 6, 1991, Ser. No. 662,150
Int. Cl.[5] G06F *15/62*; G06G *1/08*
U.S. Cl. 395—158 **2 Claims**



1. In a computer graphics system having a frame buffer for storing pixel data, including a window identifier for each pixel, a cache memory coupled to the frame buffer, and comparator means for comparing pixel window identifiers read from the frame buffer with a pixel window identifier previously stored in the memory, a mask register, comprising:
(a) means for setting a predefined set of mask bits, and
(b) means for selecting particular bits of said pixel window identifiers read from the frame buffer and particular bits of said previously stored pixel window identifier to be used by said comparator means in making the comparison, said particular bits selected as a function of said predefined set of mask bits.

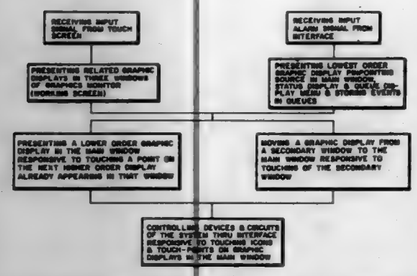
5,297,252
COLOR GRAPHICS TERMINAL FOR MONITORING AN ALARM SYSTEM
Don Becker, 57 Brook Street East, Tara, Ontario, Canada N0H 2N0
Filed May 7, 1991, Ser. No. 696,494
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—160 **15 Claims**

1. A color graphics terminal for monitoring a fire alarm system in which a plurality of inputs become active depending on the occurrence of events taking place in the system comprising:
computer means;
a graphics monitor connected to said computer means, said graphics monitor having at least two separate graphics

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windows and capable of presenting simultaneously two geographically, hierarchically related graphic displays of said system;

means for controlling said computer means to automatically present on said graphics monitor said geographically, hierarchically related graphic displays in response to predetermined ones of said inputs becoming active responsive to events in the system received by said computer means;



wherein said inputs relate to said occurrence of events taking place within said system, whereby at least a peripheral perception of each of said events is dually enabled by the display in said at least two separate graphics windows; and

means for interacting with the graphic displays, including means for moving the geographically, hierarchically related graphic displays from one graphic window to another, and for calling up other graphic displays of said system to any of said graphics windows.

5,297,253

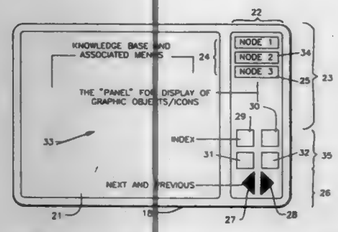
COMPUTER USER INTERFACE NAVIGATIONAL TOOL

Leslie M. Meisel, Fair Lawn, N.J., assignor to Ehrlich Associates, Inc., Park Ridge, N.J.

Filed Jan. 9, 1992, Ser. No. 818,665

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—160 **27 Claims**



1. A navigational tool for traversing information units stored in a memory of a computer system, the computer system having a monitor and operating according to a preselected application program, the navigational tool comprising:

a first module for independently tracking a path traversed by the computer system under the control of the application program through the memory, generating a sequence of nodes, each representative of one level of the path followed by the computer system under the control of the application program and organizing the nodes into a hierarchical representation of the path;

a second module for displaying the sequence of nodes on the monitor simultaneously with a display generated by the application program;

the first module operating to continuously update the sequence of nodes as the computer system continues to independently traverse the memory under the control of the application program;

the second module operating to display on the monitor, the updated sequence of nodes simultaneously with a display generated by the application program;

a control device coupled to the monitor for controllably selecting any one of the sequence of nodes displayed on the monitor; and

a third module responsive to the selection of a node by the control device to redirect the traversal of the computer system to the level of the path represented by the selected node.

5,297,254

INPUT DEVICE FOR CAD

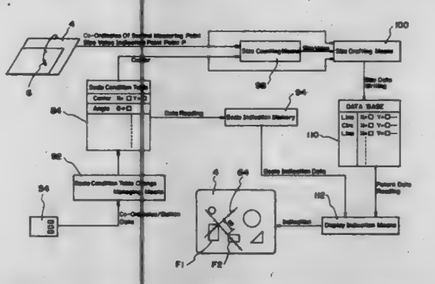
Ryuji Arai, Sapporo; Toru Eshita, Tokyo; Kaoru Niimi, Tokyo; Tatsuyoshi Ikuta, Tokyo; Hiroyuki Furuichi, Tokyo, and Tetsuya Iwanaga, Tokyo, all of Japan, assignors to Mutoh Industries Ltd., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,108

Claims priority, application Japan, Sep. 26, 1990, 2-256539

Int. Cl.[5] G06F *15/60, 3/033*

U.S. Cl. 395—161 **2 Claims**



1. A CAD input device for drawing patterns on a screen of a display device by superposing a scene of the display device on a drawing board-like digitizer, making the indication position of a first cursor device on said digitizer correspond with the indication position shown on the display device on the digitizer, and inputting a positional signal to a control apparatus by means of the first cursor device, said CAD input device comprising a means for displaying right angle scale lines on a screen of the display device, a second cursor device which is separate from the first cursor device, for controlling the right angle scale lines, a control means for moving in parallel and rotating the right angle scale lines using output signals from the second cursor device, a dimension calculating means for calculating a dimension value between a first measurement point indicated by a center point of the right angle scale lines and a second measurement point indicated by said first cursor device, a dimension drawing means for creating respective indication data of dimension auxiliary lines in parallel to an ordinate axis of said right angle scale lines and a dimension line corresponding to the data of two points using the data of said first measurement point and the dimension value from the output of said dimension calculating means, wherein said indication data includes dimension values, dimension auxiliary lines, and dimension lines, in a data base, and a display indication means for displaying the dimension indication data of the data base on the screen of the display device.

5,297,255

PARALLEL COMPUTER COMPRISED OF PROCESSOR ELEMENTS HAVING A LOCAL MEMORY AND AN ENHANCED DATA TRANSFER MECHANISM

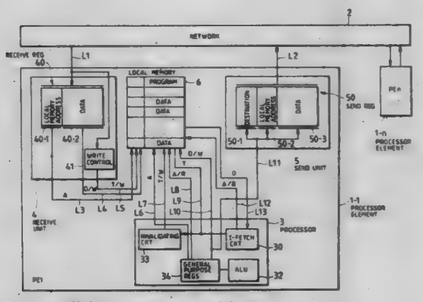
Naoko Hamanaka, Tokyo, and Teruo Tanaka, Koyasumachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 647,773, Jan. 30, 1991, which is a continuation of Ser. No. 78,656, Jul. 28, 1987, abandoned, and Ser. No. 145,614, Jan. 19, 1988, abandoned. This application Jan. 27, 1989, Ser. No. 303,626

Claims priority, application Japan, Jan. 29, 1988, 63-17070; Jan. 29, 1988, 63-17073

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—200 **45 Claims**



1. A parallel computer comprising:

(a) a plurality of processor elements connected to each other by a data transfer network;

(b) each of said processor elements including;

(b1) a local memory for holding one program of a group of programs to be executed in parallel by said computer and data related to the one program,

(b2) a processor connected to the local memory, executing instructions included in said program, said processor including means for fetching data required by one of the instructions from said local memory and for storing data obtained as a result of execution of one of the instructions into said local memory,

(b3) transmitting means connected to the network and said processor and responsive to a send request given by the program for transfer of data and a data identifier for transmitting data and the data identifier to a destination processor element via the network, the send request being given by the program being programmed to issue the send request without receiving a request for transfer of the data from the destination processor element,

(b4) receiving means connected to the network for receiving therefrom, in parallel to execution of instructions by said processor, data and a data identifier both sent from another processor element,

(b5) a plurality of reception data areas each for storing data received by said receiving means,

(b6) a plurality of tag areas, each provided for a corresponding one of the reception data areas, each for storing a tag representative of validity of data stored in each corresponding reception data area,

(b7) writing means connected to said receiving means, said reception data areas and said tag areas and responsive to receipt of data and a data identifier by said receiving means for writing the received data into one of said plurality of reception data areas determined by the received data identifier and for writing a tag indicative of validity into one of said plurality of tag areas corresponding to said one reception data area, said writing means operating in parallel to execution of instructions by said processor, and

(b8) access means included in said processor and connected to said reception data areas and said tag areas and responsive to a receive request given by the program for readout of received data from one of said reception data areas for checking if a tag held in one of the tag areas corresponding to one of the reception data areas determined by a data identifier designated by the receive request indicates validity and for supplying data held in said one reception data area to a portion within said processor for processing received data as valid received data under a condition that the checked tag indicates validity, the access means including means for repeatedly checking until a tag indicative of validity is read out from the one tag area, in the event that initially the checked tag indicates invalidity.

5,297,256

DIGITAL IMAGE PROCESSING SYSTEM AND METHOD

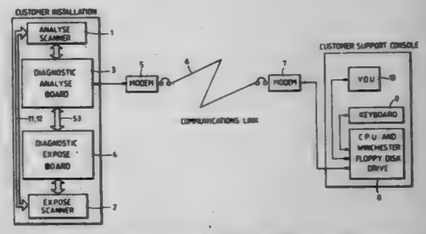
Arthur T. Wolstenholme, Peterborough; Robert F. Burton, Lincs; Ignazio Barraco, Peterborough, and Eddie Kin Kwok Chu, Leighton, all of United Kingdom, assignors to Crosfield Electronics (USA) Limited, Burlington Gardens, London, United Kingdom

Continuation of Ser. No. 30,642, Mar. 27, 1987, abandoned. This application Apr. 4, 1991, Ser. No. 681,638

Claims priority, application United Kingdom, Apr. 7, 1986, 8608431

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **2 Claims**



1. A method of monitoring at a first site digital image input scanning equipment at a second site remote from said first site to determine whether said digital image input scanning equipment is properly functioning, said method comprising causing from said first site said input scanning equipment at said second site to scan a line of an image whose pixel content is already know at said first site to generate scanned digital data; transmitting information related to said scanned digital data to said first site; and comparing said transmitted information with expected information stored at said first site that is related to said known pixel content to detect any errors in said scanned line caused by failure of said digital image input scanning equipment.

5,297,257

DISTRIBUTING A REAL-TIME CONTROL PROGRAM TO A PLURALITY OF INPUT/OUTPUT NODES

Odo J. Struger, Chagrin Falls, and Ernst Dummermuth, Chesterland, both of Ohio, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 15, 1991, Ser. No. 686,054

Int. Cl.[5] G05B *19/05*

U.S. Cl. 395—200 **6 Claims**

1. A method of distributed logic processing for operation through a network having a logic programming node which connects through I/O nodes to a plurality of inputs on a controlled system the inputs having logic states, and which connect to a first I/O node for operating a first output on the controlled system and which connects to a second I/O node for operating a second output on the controlled system, the method comprising the steps of:

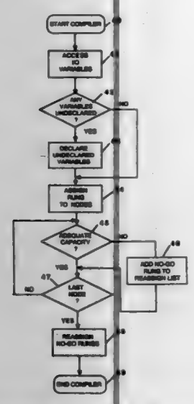
within the logic programming node, translating a control

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program from a higher-level logical programming language into an executable logic, wherein the control program logically relates the first and second outputs to the logic states for inputs communicating with the network;

automatically subdividing the executable logic into a first portion corresponding to the first output controlled at the first I/O node, and a second portion corresponding to the second output controlled at the second I/O node;

communicating the first portion of the executable logic through the network for execution within the first I/O



node to operate the first output in response to the logic states for logically related inputs;

communicating the second portion of the executable logic through the network for execution within the second I/O node to operate the second output in response to the logic states for logically related inputs; and

transmitting through the network to the first and second I/O nodes the logic states for the plurality of inputs, wherein each I/O node responds to the logic states for logically related inputs to control a respective one of the outputs connected to that I/O node.

5,297,258

DATA LOGGING FOR HARD DISK DATA STORAGE SYSTEMS

Robert P. Hale, and Robert J. Beard, both of Irvine, Calif., assignors to AST Research, Inc., Irvine, Calif.

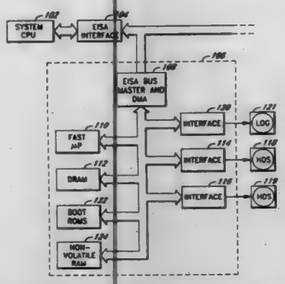
Filed Nov. 21, 1991, Ser. No. 795,682
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **13 Claims**

1. An improved hard disk system for use in a host computer having an operating system, said system comprising:

a hard disk subsystem having at least two hard disks;

a hard disk controller; and

a data log which temporarily stores data from consecutive write operations directed to the hard disk subsystem, wherein the hard disk controller accepts data from the host computer to be written to both contiguous and non-contiguous disk addresses on the hard disk subsystem, and stores said data in the data log sequentially in the order in which the data re received, and wherein the data are later



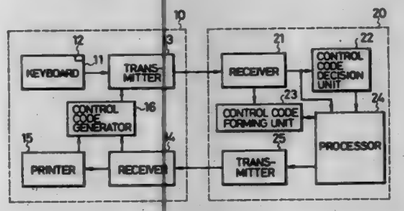
moved from the data log to the appropriate disk addresses within the hard disk subsystem.

5,297,259

INFORMATION PROCESSING SYSTEM FOR TRANSMITTING INFORMATION FROM ONE APPARATUS TO ANOTHER

Masaki Nishiyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 403,778, Sep. 8, 1989, abandoned, which is a continuation of Ser. No. 694,238, Jan. 24, 1985, abandoned. This application Jun. 24, 1992, Ser. No. 902,790
Claims priority, application Japan, Jan. 27, 1984, 59-12110
Int. Cl.[5] G06F *3/02, 7/02, 9/06, 13/376*
U.S. Cl. 395—800 **12 Claims**



1. An information processing system for transmitting information between first and second apparatuses,

wherein said first apparatus comprises:

processing means for processing code information of a first kind;

first transmission means for transmitting information to said second apparatus;

first control means for controlling said first transmission means according to code information of the first kind;

first receiving means for receiving code information of the first kind and a code information of second kin via a same transmission path;

discrimination means for discriminating between the code information of the first kind and the code information of the second kind received by said first receiving means;

converting means for converting the code information of the second kind discriminated by said discrimination means to the code information of the first kind and outputting the converted code information to said first control means; and

second control means for controlling said processing means to process the code information of the first kind discriminated by said discrimination means,

wherein said second apparatus comprises:

key input means for inputting code information of the first kind;

second receiving means for receiving information from said first apparatus;

generation mean for generating code information of the second kind for controlling said second apparatus in response to the transmitting of information to said second receiving means by said first apparatus; and

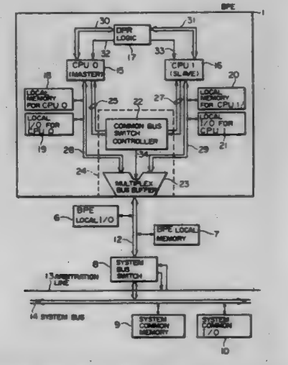
second transmission means for transmitting the code information of the first kind input by said key input means and the code information of the second kind generated by said generation means to said first apparatus via the same transmission path.

5,297,260

PROCESSOR HAVING A PLURALITY OF CPUS WITH ONE CPU BEING NORMALLY CONNECTED TO COMMON BUS

Masatsugu Kametani, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 471,801, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 13,548, Feb. 11, 1987, abandoned. This application Jan. 7, 1991, Ser. No. 636,562
Claims priority, application Japan, Mar. 12, 1986, 61-52448; Oct. 20, 1986, 61-247436
Int. Cl.[5] G06F *13/364, 15/16*
U.S. Cl. 395—325 **18 Claims**



1. A processor module comprising:

a common bus for transferring first and second information;

a first CPU providing an always active bus request signal so as to be normally connected to said common bus for processing the first information from said common bus to generate first data from the first information;

a second CPU for processing the second information from said common bus to generate second data from the second information, for generating an access request signal requesting connection of said second CPU to said common bus, and for terminating the access request signal upon termination of the requirement of said second CPU for access to said common bus;

first and second local buses connected respectively to said first and second CPUs, for transferring the first and second information, respectively;

said first CPU being responsive to the access request signal from said second CPU for providing a disconnect acknowledge signal; and

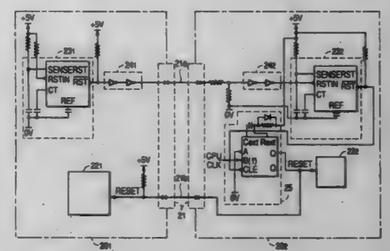
a controller for normally connecting the first CPU to said common bus and being responsive to the disconnect acknowledge signal for disconnecting said first CPU from said common bus, for connecting said second CPU to said common bus through said second local bus and for enabling access thereto, said controller being responsive to termination of the access request signal from said second CPU and the always active bus request signal from said first CPU for connecting said first CPU to said common bus through said first local bus and enabling access thereto.

5,297,261

MULTIPROCESSOR SYSTEM WITH POWER-ON RESET FUNCTION

Kazuhiko Kuranaga, Machida, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 12, 1990, Ser. No. 536,758
Claims priority, application Japan, Jun. 12, 1989, 1-148682
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **20 Claims**



1. A multiprocessor system with power-on reset, comprising:

a plurality of printed circuit boards;

a plurality of processors respectively provided on said plurality of printed circuit boards, each circuit board having a respective, individual processor thereon;

power supply voltage monitor means, connectable to receive a power supply voltage, for detecting the power supply voltage and for producing a corresponding reset signal in response thereto;

a first signal line connecting said power supply voltage monitor means and at least two of said printed circuit boards; and

a reset signal line provided in parallel with the first signal line and connecting at least two of said printed circuit boards.

5,297,262

METHODS AND APPARATUS FOR DYNAMICALLY MANAGING INPUT/OUTPUT (I/O) CONNECTIVITY

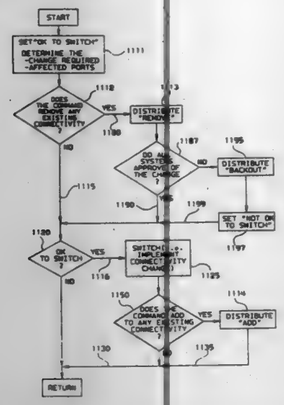
Michael C. Cox, Saugerties; Richard Cwiakala, Wappingers Falls, both of N.Y.; Jean-Louis Fava, Montpellier, France; Gary A. Fisher, Sr., Port Ewen, N.Y.; Robert J. Gallagher, Hurley, N.Y.; Eugene P. Hefferon, Poughkeepsie, N.Y.; Karl H. Hoppe, Ulster Park, N.Y.; Peter I. Kania, Poughkeepsie, N.Y., and Martin W. Sachs, Westport, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 444,190, Nov. 28, 1989. This application Oct. 21, 1992, Ser. No. 964,571
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **24 Claims**

20. In a computer system that includes a plurality of host processor/operating systems and at least one switch for switchably connecting at least one Input/Output (I/O) device to said hosts in response to a switch command that alters the switchable connection of said hosts to said I/O device, a machine-implemented method for handling a proposed connectivity change originating from one of said hosts, comprising the steps of:

(a) communicating the proposed connectivity change from the originating host to the other hosts in said system;

(b) obtaining responses from said other hosts indicating whether they accept the proposed connectivity change; and



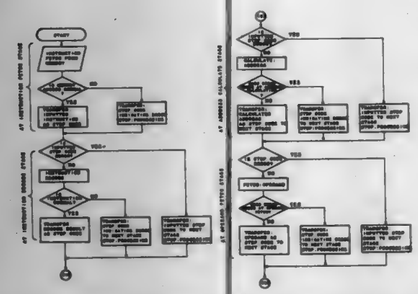
(c) processing said proposed connectivity change in accordance with said responses.

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MICROPROCESSOR WITH PIPELINE SYSTEM HAVING EXCEPTION PROCESSING FEATURES

Akira Ohtsuka, and Toru Shimizu, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,924, Jan. 8, 1991, abandoned, which is a continuation of Ser. No. 170,508, Mar. 21, 1988, abandoned. This application Apr. 17, 1992, Ser. No. 871,598
Claims priority, application Japan, Jul. 17, 1987, 62-179365
Int. Cl.[5] G06F *11/00, 9/38*
U.S. Cl. 395—375 **43 Claims**



1. In a processor of the type having a pipeline formed by a plurality of consecutive processing stages, each stage having an input means for receiving an input code, a processing means for processing the input code, and an output means for providing an output code to a subsequent processing stage, a method for processing an exception, comprising the steps of:

conveying information pertaining to an exception occurring at a given stage from the processing means of said given stage to an exception code generating means coupled thereto;

generating an exception code at said given stage via said exception code generating means to indicate occurrence of the exception at said given stage;

transferring said exception code to succeeding stages until said exception code is transferred to a special stage;

suspending further processing at said given stage after said exception code is generated and transferred until an initiation of exception processing;

decoding said exception code at said special stage; and

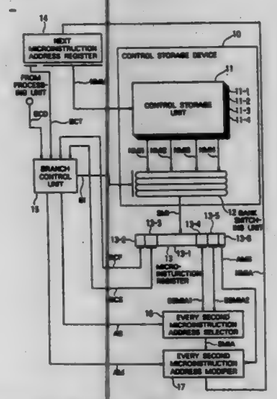
initiating, at said special stage, an exception processing sequence by said pipeline when said exception code is decoded at said special stage.

5,297,264

MICROPROGRAM-CONTROLLED DEVICE COMPRISING A CONTROL STORAGE DEVICE WITH A SMALL STORAGE CAPACITY

Takao Kishi, and Kiyoshi Iwase, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,406
Claims priority, application Japan, Apr. 26, 1991, 3-123098
Int. Cl.[5] G06F *9/26, 9/40*
U.S. Cl. 395—375 **5 Claims**



1. A microprogram-controlled device operable under the control of a microprogram and comprising:

a control storage device comprising a control storage unit for memorizing a plurality of microinstructions which compose said microprogram, each of said microinstructions including a plurality of every second microinstruction addresses for microinstructions to be executed two steps after a current microinstruction being currently executed, branch classification information indicative of a classification of a branch, branch condition selection information indicative of a selection of branch conditions, and address modifying selection information indicative of whether or not said every second microinstruction addresses are modified, said every second microinstruction addresses being in number less than the maximum number of available branches for said microprogram, said control storage unit simultaneously producing a plurality of next microinstructions in response to a next microinstruction address, said control storage device comprising microinstruction selecting means for selecting, as a selected microinstruction, one of said next microinstructions on the basis of a branch information signal;

microinstruction holding means connected to said control storage device for holding said selected (claim 1 continued) microinstruction as said current microinstruction, said microinstruction holding means producing said every second microinstruction addresses, a branch classification signal indicative of said branch classification information, a branch condition selection signal indicative of said branch condition selection information, and an address modifying selection signal indicative of said address modifying selection information;

next microinstruction address holding means connected to said control storage device for holding said next microinstruction address for the next microinstructions to be executed following said current microinstruction, said next microinstruction address holding means supplying said next microinstruction address to said control storage unit to make said control storage unit produce said next microinstructions, said next microinstruction address holding means producing a part of said next microinstruction address as a branch control signal;

branch control means supplied with a branch condition signal, and connected to said microinstruction holding means, said next microinstruction address holding means, and said control storage device for processing said branch condition signal, said branch control signal, said branch classification signal, and said branch condition selection signal into said branch information (claim 1 twice continued) signal, an address selection signal, and an address modifying signal;

every second microinstruction address selecting means connected to said microinstruction holding means and said branch control means for selecting, as a selected microinstruction address, one of said every second microinstruction addresses on the basis of said address selection signal; and

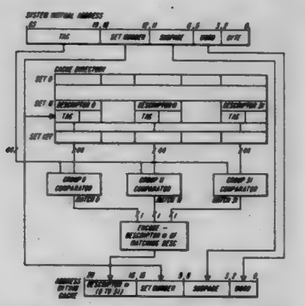
every second microinstruction address modifying means connected to said every second microinstruction address selecting means, said branch control means, said microinstruction holding means, and said next microinstruction address holding means for modifying said selected microinstruction address into a modified microinstruction address on the basis of said address modifying signal and said address modifying selection signal, said every second microinstruction address modifying means supplying said next microinstruction address holding means with said modified microinstruction address.

5,297,265

SHARED MEMORY MULTIPROCESSOR SYSTEM AND METHOD OF OPERATION THEREOF

Steven J. Frank, Hopkinton; Henry Burkhardt, III, Manchester; Linda Q. Lee, Cambridge; Nathan Goodman, Brookline; Benson I. Margulies, Arlington, and Frederick D. Weber, Cambridge, all of Mass., assignors to Kendall Square Research Corporation, Waltham, Mass.

Continuation of Ser. No. 136,930, Dec. 22, 1987, Pat. No. 5,055,999. This application Jun. 22, 1989, Ser. No. 370,341
Int. Cl.[5] G06F *1/00*
U.S. Cl. 395—400 **25 Claims**



1. A digital data processing apparatus comprising plural processing cells, each including a memory element for storing data pages, each data page comprising a plurality of data subpages of information-representative signals,

at least one of said processing cells including central processing unit means for generating an access-request signal representative of a request for access to a data subpage stored in one or more of said memory elements,

memory management means, coupled to said processing cells, for accessing information-representative signals stored in said memory elements,

said memory management means including means responsive to at least selected ones of said access-request signals for

i) allocating, only within a memory element associated with the requesting central processing unit means, physical storage space for the data page associated with the requested data subpage, wherein that space is the exclusive physical storage space for the requested information-representative signal with respect to all of said memory elements, and for

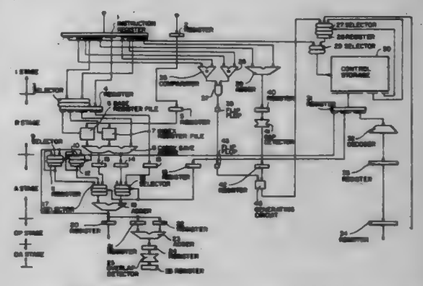
ii) storing the requested data subpage in that allocated physical storage space.

5,297,266

APPARATUS AND METHOD FOR CONTROLLING MEMORY REQUESTS IN AN INFORMATION PROCESSOR

Katsumi Tanaka, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Continuation of Ser. No. 468,940, Jan. 23, 1990, abandoned. This application Dec. 24, 1992, Ser. No. 997,125
Claims priority, application Japan, Jan. 25, 1989, 1-15392
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—400 **12 Claims**



2. An apparatus for controlling data transfer from a first memory location indicated by a first memory address to a second memory location indicated by a second memory address comprising:

control memory means for storing control information corresponding to said data transfer;

identity indicating means coupled to said control memory means for providing an indication of whether or not a first register number is identical to a second register number, said first register number corresponding to said first memory address, said second register number corresponding to said second memory address;

difference detecting means coupled to said identity indicating means for detecting a difference in displacement between said first and second memory addresses; and

read address determining means coupled to said difference detecting means for determining a read address in accordance with said difference whenever said identity indicating means provides said indication that said first register number is identical to said second register number, wherein said read address indicates a location of said control information in said control memory means.

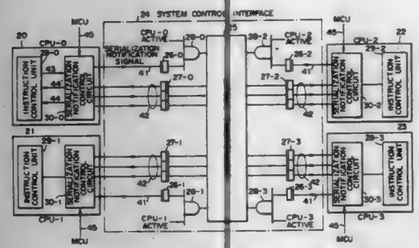
VOL 1160 ISS 4 MR 22 1994 UMI

5,297,267

SYSTEM AND METHOD FOR SERIALIZATION CONTROL OF ACCESSES TO A COMMON MAIN STORAGE

Aiichiro Inoue, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 12, 1989, Ser. No. 420,780
Claims priority, application Japan, Oct. 12, 1988, 63-256604
Int. Cl.[5] G06F *13/00, 13/16*
U.S. Cl. 395—425 23 Claims



1. A serialization control system for controlling a main storage unit access in an information processing apparatus, said serialization control system comprising:

a plurality of central processing units (CPUs);

a main storage unit commonly shared by said plurality of CPUs;

a memory control unit operatively connected to each of said plurality of CPUs;

a plurality of caches of high speed and small capacity in said plurality of CPUs forming a hierarchical memory apparatus together with said main storage unit; and

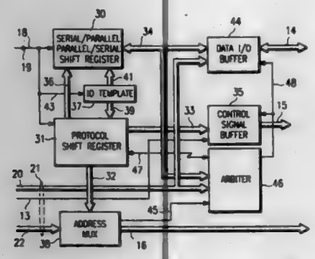
a control means for notifying an occurrence of a serialization in one of said plurality of CPUs to all other of said plurality of CPUs before the one CPU requests of said memory control unit for a serialization of main storage unit accesses and for allowing the one CPU to immediately perform a main storage unit access which follows the occurrence of the serialization.

5,297,268

ID PROTECTED MEMORY WITH A READABLE/WRITABLE ID TEMPLATE

Robert D. Lee, Denton, and Hal Kurkowski, Dallas, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 202,874, Jun. 3, 1988, abandoned. This application Dec. 4, 1990, Ser. No. 622,297
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—425 20 Claims



1. A protection circuit for selectively providing data access to a peripheral device that is capable of executing commands in a system having a common serial data link, comprising:

(a) an interface circuit connected to provide a data interface to said common serial data link;

(b) a protocol shift register operatively connected to said interface circuit and configured for storing control information and ID information received from said common serial data link, said control information having at least one embedded command executable by said peripheral device;

(c) an internal storage register from storing an ID template;

(d) a compare circuit connected and configured to compare said ID information stored in said protocol shift register with said ID template stored in said internal storage register;

(e) a decode circuit connected to receive said control information from said protocol shift register and configured to provide logic outputs reflecting said embedded command(s) in said control information, said logic outputs executable by said peripheral device, said embedded command(s) reads or writes to said peripheral device or reads or writes to said internal storage register;

(f) wherein said compare circuit, said decode circuit, said internal storage register, and said interface circuit are operatively connected together in such relation that:

(i) whenever said decode circuit indicates that said embedded command(s) is to read said ID template from said internal storage register, said embedded command(s) will be executed by said peripheral device and said ID template will be read to said common serial data link;

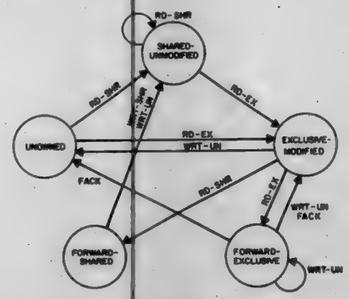
(ii) but any other embedded command(s) will be executed by said peripheral device only if said compare circuit indicates a match between said ID information and said ID template.

5,297,269

CACHE COHERENCY PROTOCOL FOR MULTI PROCESSOR COMPUTER SYSTEM

Darrel D. Donaldson, Lancaster, Mass.; Mark N. Howard, Issaquah, Wash.; David A. Orbits, Redmond, Wash.; John M. Parchem, Seattle, Wash.; David M. Robinson, Bellevue, Wash., and Douglas Williams, Pepperel, Mass., assignors to Digital Equipment Company, Maynard, Mass.

Continuation of Ser. No. 514,716, Apr. 26, 1990, abandoned. This application May 24, 1993, Ser. No. 66,597
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 27 Claims



1. In a computer system including a plurality of nodes and at least one memory device, each at least one memory device storing one or more data blocks, at most one of the plurality of nodes having, at any one time, write access to any one of the one or more data blocks, each of the at least one memory device comprising:

a) a storage space for one or more data blocks;

b) a memory directory for maintaining information associated with the one or more data blocks, the memory directory including, for each data block stored in the storage space,

i) a respective data block identification field for identifying the data block, and

ii) a respective memory state field, wherein the memory state field maintains one of a plurality of states including a SHARED-UNMODIFIED state, an EXCLUSIVE-MODIFIED state, and a FORWARD-EXCLUSIVE state;

c) the memory device operating to determine, for each of the one or more data blocks,

i) whether any one of the plurality of nodes has write access to a respective one of the one or more data blocks, and

ii) whether any one of the plurality of nodes has requested exclusive read access to the respective one of the one or more data blocks by issuing a Read Exclusive command to the memory device for the respective one of the one or more data blocks;

d) the memory device operating to set the memory state field for each of the one or more data blocks:

i) to the SHARED-UNMODIFIED state in response to the memory device determining that none of the plurality of nodes has write access to a copy of a respective one of the one or more data blocks;

ii) to the EXCLUSIVE-MODIFIED state in response to the memory device determining that one and only one of the plurality of nodes has write access to the respective one of the one or more data blocks;

iii) to the FORWARD-EXCLUSIVE state in response to the memory device determining that the memory state field for the respective one of the one or more data blocks is in the EXCLUSIVE-MODIFIED state and the memory device further determining that there is an outstanding Read Exclusive command from one of the plurality of nodes; and

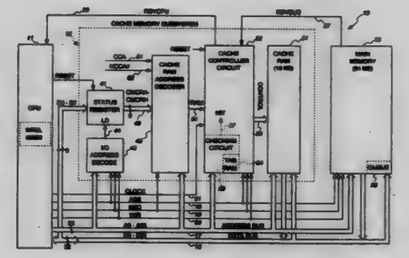
e) the memory device further operating to delay processing any additional read commands for any one of the one or more data blocks determined to be in the FORWARD-EXCLUSIVE state until processing of a respective outstanding Read Exclusive command is complete.

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PROGRAMMABLE CACHE MEMORY WHICH ASSOCIATES EACH SECTION OF MAIN MEMORY TO BE CACHED WITH A STATUS BIT WHICH ENABLES/DISABLES THE CACHING ACCESSIBILITY OF THE PARTICULAR SECTION, AND WITH THE CAPABILITY OF FUNCTIONING WITH MEMORY AREAS OF VARYING SIZE

Anthony M. Olson, Stevensville, Mich., assignor to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 435,320, Nov. 13, 1989, abandoned. This application Feb. 12, 1993, Ser. No. 17,972
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 15 Claims



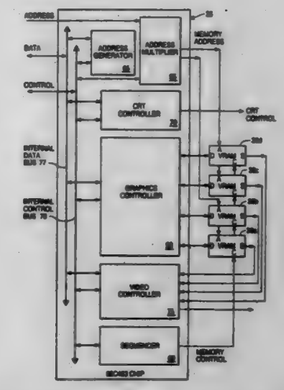
11. An apparatus comprising: a main memory having a plurality of sections which each include a plurality of selectively addressable storage locations; selectively settable status means for specifying for each said section of said main memory a status which is one of a caching enabled status and a caching disabled status; external input means for selectively specifying one of a caching enabled status and a caching disabled status; accessing means for successively requesting data from respective said storage locations in said main memory; a cache memory; and cache control means for inhibiting reading and storing of data by said cache memory when the requested data is in one of said sections of said main memory for which said selectively settable status means is specifying said caching disabled status, for inhibiting reading and storing of data by said cache memory when said external input means is specifying said caching disabled status, for responding to a request by said accessing means for data in a location of said main memory when said cache memory lacks a duplicate of the requested data by storing in said cache memory a duplicate of the requested data from said main memory when said external input means is specifying caching enabled status for the location and by storing in said cache memory a duplicate of the requested data from said main memory when said selectively settable status means is specifying caching enabled status for the location and said external input means is not specifying caching disabled status, for responding to a request by said accessing means for data in a location of said main memory which has previously been stored in said cache memory by supplying the requested data to said accessing means when said external input means is specifying caching enabled status for the location, and by supplying the requested data to said accessing means when said selectively settable status means is specifying caching enabled status and said external input means is not specifying caching disabled status.

5,297,271

METHOD AND APPARATUS FOR PERFORMING A READ-WRITE-MODIFY OPERATION IN A VGA COMPATIBLE CONTROLLER

Dhimant Bhayani, San Jose, Calif., assignor to Chips and Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 586,060, Sep. 21, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 52,238
Int. Cl.[5] G06F *15/62, 12/00*
U.S. Cl. 395—425 5 Claims



1. In the operation of a video graphics array controller having a memory and a timing sequencer, said video graphics array controller being coupled to a CPU, a method for implementing a read-modify-write cycle comprising the steps of:

enabling the read-modify-write cycle by setting a read-modify-write control bit for said sequencer;

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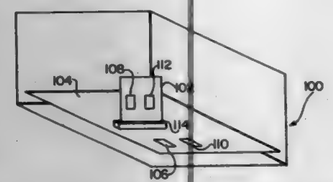
specifying a particular logical operation;
said CPU generating a hardware request for a write operation to the video graphics array memory, said hardware request specifying a first operand value, and a video graphics array memory write address;
said sequencer generating timing signals for a read-modify-write cycle when said control bit is set;
reading a second operand value from the video graphics array memory write address;
performing the particular logic operation on the first operand value and the second operand value to produce a result; and
writing the result of performing the particular logic operation to the video graphics array memory write address, wherein said reading, performing, and writing steps all take place during said read-modify-write cycle.

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APPARATUS FOR AUTOMATICALLY DISABLING AND ISOLATING A COMPUTER'S ORIGINAL PROCESSOR UPON INSTALLATION OF A PROCESSOR UPGRADE CARD

Gene Y. Lu, San Clemente; David L. Kelly, Mission Viejo; Norman M. Hack, Tustin, and Scott R. Rushford, Huntington Beach, all of Calif., assignors to Advanced Logic Research, Inc., Irvine, Calif.

Filed Aug. 2, 1989, Ser. No. 388,445
Int. Cl.[5] G06F *15/76*
U.S. Cl. 395—500 **63 Claims**



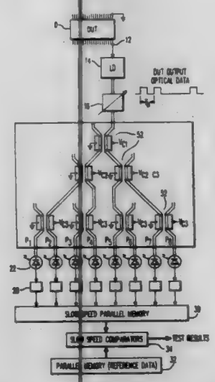
3. A base computer system with modular upgrade capability, in which installation of a module which is not originally part of the base computer system causes functional disablement of a first processor without its physical removal from the computer system, while allowing a second processor on the module to assume functions which would otherwise be performed by the first processor, the base computer system having an expansion bus with a set of expansion bus signal paths, the base computer system comprising:
a) the first processor, having a first input which, when activated, disables the first processor;
b) an OR circuit having an output signal which is input to the first input of the first processor, the OR circuit having respective inputs responsive to:
1) a first signal generated from within the base computer system, the first signal for causing functional disablement of the first processor when the first signal is active and a module is not installed in the base computer system; and
2) an installation announcement signal output by the module when the module is installed, the installation announcement signal being restricted to a path in the base computer system which is electrically separate from the expansion bus signals paths, thereby causing functional disablement only of the first processor and of minimal portions of the base computer system to allow the second processor to assume functions otherwise performed by the first processor; and
c) the path which carries the installation announcement signal to the OR circuit.

5,297,273

SYSTEM FOR OPTICALLY SPLITTING HIGH-SPEED DIGITAL SIGNALS USING CASCADING TREE-TYPE CONFIGURATION WHEREIN THE NUMBER OF SUCCESSIVE LEVEL OF CASCADING INCREASE BY A FACTOR OF TWO

Anastasios P. Goutzoulis, Pittsburgh; Peter J. Chantry, Churchill Boro, and Tom Henningsen, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1990, Ser. No. 574,976
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—500 **24 Claims**



1. An apparatus for testing high speed digital signals comprising:
a) a signal generating means which transmits high-speed digital signals having a determined bitwidth;
b) means for optically splitting said high-speed signals into a plurality of high-speed parallel data signals, said optical splitting means comprising optical demultiplexing means for splitting said high-speed signal into a plurality of high-speed parallel data signals, said optical demultiplexing means comprising a plurality of integrated optic directional coupling structures arranged to receive said high-speed signal and provide a plurality of parallel high-speed data signals, said plurality of integrated optic directional coupling structures being provided in a cascading tree-type configuration in which the plurality of integrated optic directional coupling structures in each successive level increases by a factor of 2; and
c) means to convert said plurality of parallel high-speed data signals into a plurality of slow-speed data signals.

5,297,274

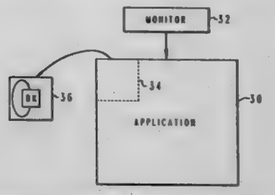
PERFORMANCE ANALYSIS OF PROGRAM IN MULTITHREAD OS BY CREATING CONCURRENTLY RUNNING THREAD GENERATING BREAKPOINT INTERRUPTS TO ACTIVE TRACING MONITOR

John W. Jackson, Southlake, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1991, Ser. No. 685,582
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—500 **8 Claims**

1. A method in a data processing system for implementing a sampling performance analysis for a selected application within a multi-thread operating system having a high degree of isolation between applications within the operating system, said method comprising the data processing system implemented steps of:
initiating a trace function for controlling the execution of a

selected application and accessing memory within said selected application;
substituting a mole program for a selected code segment at a particular memory location within said selected application;
in response to an initial execution of said mold program within said selected application, initiating a separate running thread program within said operating system and rewriting said selected code segment at said particular memory location within said selected application, said



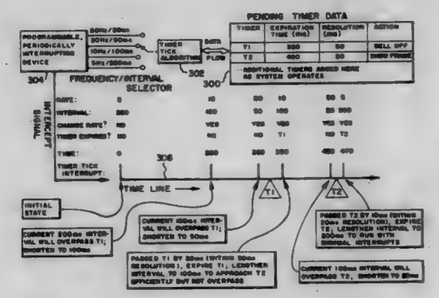
separate running thread program continuously generating break point interrupts on a periodic basis;
in response to each break point interrupt generated by said separate running thread program during execution of said selected application suspending execution of said selected application, examining said selected application utilizing said trace function and storing an indication of a current execution location within said selected application at said suspension for utilization in performance analysis; and
thereafter, resuming execution of said selected application.

5,297,275

PERSONAL COMPUTER SYSTEM VARIABLE RESOLUTION TIMERS

Paul Thayer, Deerfield Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,397
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—550 **6 Claims**



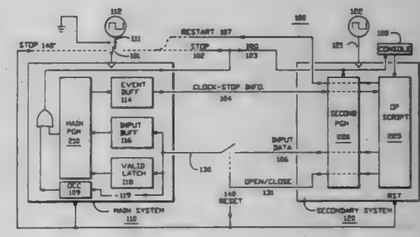
1. A variable resolution timer system for a data processing system, including a processor, memory, local processor bus, buffer means for receiving signals from the processor along a local process bus and for generating output signals as a function of the received signals for processing by an input/output device, input/output bus for receiving the output signals and a planar board for supporting the data processing system components, including the local processor bus and the input/output bus comprising:
a periodic interrupting device for generating periodic interrupts within the data processing system at a fixed frequency and constant time intervals;
a timer having a duration time value constituting a length of time in some unit of time that is to be delayed, and a resolution time value constituting a length of time in some unit of time that is not to be exceeded;
first detection means for detecting if the timer expires before the next periodic interrupt;
varying means for varying the fixed frequency of the periodic interrupts generated by the periodic interrupting device upon detection by the first detection means of the timer expiring before the next periodic interrupt at the fixed frequency;
second detection means for detecting if the time expired after a periodic interrupt;
signal means for generating signals in response to the second detection means detecting the expiration of the timer to reset the periodic interrupt rate of the periodic interrupting device until such time as the first detection means detects the expiration of a timer at any subsequent given time before the next generated periodic interrupt occurring at the reset periodic interrupt rate; and
action means activated by a signal from the signal means for initiating an action within the data processing system.

5,297,276

METHOD AND APPARATUS FOR MAINTAINING DETERMINISTIC BEHAVIOR IN A FIRST SYNCHRONOUS SYSTEM WHICH RESPONDS TO INPUTS FROM NONSYNCHRONOUS SECOND SYSTEM

James P. Millar; Eddie B. Collins, both of San Jose; Ronald Weber, Sunnyvale, and Clifford A. Petersen, San Jose, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 26, 1991, Ser. No. 814,389
Int. Cl.[5] G06F *11/00, 13/00*
U.S. Cl. 395—550 **15 Claims**



1. A structure for maintaining deterministic behavior in a first system whose operations are synchronized by clock pulses of a first clock, where the first system responds to input signals from a second system and operations of the second system are not synchronized by the clock pulses of the first clock, the structure comprising:
clock control means for receiving clock stop commands and clock restart commands and correspondingly stopping and restarting the supply of clock pulses to the first system;
event anticipating means for anticipating that a unique event corresponding to a unique cycle of the first clock will occur in the first system within a predefined amount of time, where said unique event includes receipt of a response-inducing input signal from the second system, the response inducing signal being one which induces a change of behavior in the first system;
information generating means, responsively coupled to the event anticipating means, for generating event information identifying the upcoming unique event when such an event is anticipated by the event anticipating means;
clock stop means, operatively coupled to the event anticipating means, for issuing a clock stop command to the clock control means just before the occurrence of the unique

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event so that synchronous operations in the first system come to a halt at the beginning of the unique clock cycle;

event service means, located in the second system and coupled to the clock stop means and the information generating means, for detecting the issuance of a clock stop command, for collecting the event information and determining therefrom which unique event has occurred in the first system and for loading a corresponding one or more response inducing input signals into the first system while clock pulses are not supplied to the first system; and

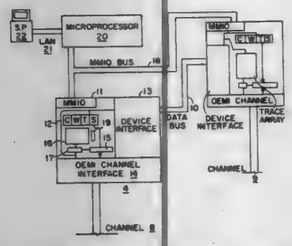
restart means, coupled to the event service means, for issuing a restart command to the clock control means after the event service means has loaded the corresponding one or more response-inducing input signals.

5,297,277

APPARATUS FOR MONITORING DATA TRANSFERS OF AN OEMI CHANNEL INTERFACE

Dennis A. Dein, Vestal, N.Y.; Hugh C. Holland, Brackney, Pa.; Robert J. Kammerer, and Reynold G. Valdez, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1990, Ser. No. 575,576
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **17 Claims**



1. An apparatus for recording data events on a channel interface for a OEMI data channel comprising:

a control register connected to receive commands identifying data bus events to record,

a write register connected to receive a set of bits corresponding to OEMI tag bits which identify a write sequence, and connected to said control register for further identifying alternate selections of said tag bits;

a logic circuit for comparing events on said OEMI data channel with said write register contents; and,

a trace memory for storing OEMI channel events detected by said logic circuit which are identified by said write register contents.

5,297,278

SYSTEM FOR AUTHORIZED CONDITIONAL DELETION OF DATA OBJECTS WITHIN A LIBRARY SERVICE

Diana S. Wang, Trophy Club, and Marvin L. Williams, Lewisville, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

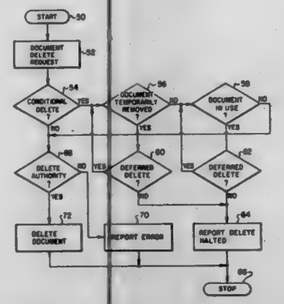
Filed May 24, 1990, Ser. No. 528,655
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **2 Claims**

1. A method in a data processing system having a plurality of data objects stored within a library service for use or temporary removal by a system user, for controlling the deletion of a selected data object, said method comprising the data processing system implemented steps of:

determining if a request made by a selected user to delete a selected data object within a library service is a deletion request or a conditional deletion request in response to each request to delete a data object within said library service;

in response to each deletion request, determining if said selected user has authority to delete said selected data object and if said selected user has said authority, automatically deleting all references to said selected data object from said library service regardless of whether or not said selected data object is in use or temporarily removed by a system user;

in response to each conditional deletion request, automatically determining if said selected data object is in use or temporarily removed by a system user;



automatically determining if said selected user has authority to delete said selected data object and if said selected user has said authority, deleting all references to said selected data object from said library service in response to a conditional deletion request if said selected data object is not in use or temporarily removed by a system user; and

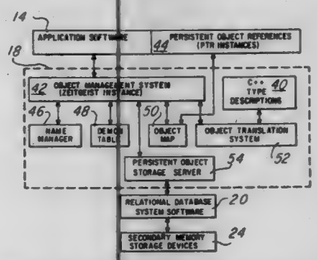
automatically terminating said request to delete said selected data object in response to a conditional deletion request if said selected data object is in use or temporarily removed by a system user.

5,297,279

SYSTEM AND METHOD FOR DATABASE MANAGEMENT SUPPORTING OBJECT-ORIENTED PROGRAMMING

Thomas J. Bannon, Dallas; Stephen J. Ford; Vappala J. Joseph, both of Plano; Edward R. Perez, Dallas; Robert W. Peterson; Diana M. Sparacin, both of Plano; Satish M. Thatte, Richardson; Craig W. Thompson, Plano; Chung C. Wang, and David L. Wells, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 30, 1990, Ser. No. 531,493
Int. Cl.[5] G06F *3/00, 15/40*
U.S. Cl. 395—600 **4 Claims**



1. A system for storing objects in at least one relational database management system for retrieval during later execution of an application program, comprising:

an object manager;

a persistent object storage server with a SQL interface to said at least one relational database manager and said object manager; and

an object translator accessible by said object manager to generate a first buffer containing at least one object and a second buffer containing at least one reference from said at least one object to additional at least one objects; said first buffer and said second buffer interpretable by said at least one relational database management system, wherein said object manager passes said retrieved objects to said object translator for use by said application program during execution;

wherein said persistent object storage server stores said first buffer and said second buffer into said at least one relational database management system; and

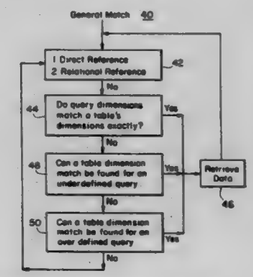
wherein said persistent object storage server retrieves said first buffer and said second buffer from said at least one relational database management system for return to said object manager.

5,297,280

AUTOMATICALLY RETRIEVING QUERIED DATA BY EXTRACTING QUERY DIMENSIONS AND MODIFYING THE DIMENSIONS IF AN EXTRACT MATCH DOES NOT OCCUR

George W. Potts, Sr., Wellesley; Mark Zand, Brighton, and Terrence P. Higgins, Arlington, all of Mass., assignors to Occam Research Corporation, Watertown, Mass.

Filed Aug. 7, 1991, Ser. No. 741,636
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **20 Claims**



1. A data reference system comprising:

means for storing a data base including a number of data tables wherein at least one of said data tables has at least two dimensions;

means for receiving a query for a data item;

means for extracting the dimensions from the query and for determining the number of dimensions extracted from said query;

means for determining whether an exact match is found between the extracted query dimensions and the dimensions in said number of data tables, wherein an exact match data table contains the same number of dimensions as the number determined from said received query means, coupling to said exact match determining means, for determining, if it is determined there is no exact match, whether a match is found between the query dimensions of an underdefined query and the dimensions in said number of data tables, the number of dimensions of said underdefined query is derived by adding at least one dimension to the number of dimensions determined from the received query;

means, coupling to said underdefined query determining means, for determining, if it is determined the query is not underdefined, whether a match is found between the query dimensions of an overdefined query and the dimensions in said number of data tables, the number of dimensions of said overdefined query is derived by subtracting at least one dimension from the number of dimensions determined from the received query; and

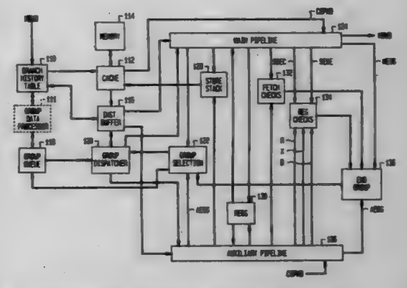
means, responsive to one of said means for determining whether a match is found, for retrieving said data item from one of said data tables with the dimensions that matched the query.

5,297,281

MULTIPLE SEQUENCE PROCESSOR SYSTEM

Philip G. Emma, Danbury, Conn.; Joshua W. Knight, Mohegan Lake, N.Y.; James H. Pomerene, Chappaqua, N.Y.; Rudolph N. Rechtschaffen, Scarsdale, N.Y., and Frank J. Sparacio, Sarasota, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 342,494, Apr. 24, 1989, abandoned. This application Feb. 13, 1992, Ser. No. 836,193
Int. Cl.[5] G06F *9/38, 9/28*
U.S. Cl. 395—650 **11 Claims**



11. A digital data processing system, comprising:

means for providing a sequence of machine instructions form a single task;

means for dividing said sequence of machine instructions into first and second groups of sequential machine instructions according to a delimiting rule;

main and auxiliary data processing means each of which is able to execute any instruction in the sequence;

data storage means, coupled to the main and auxiliary processing means, for holding data values which may be modified by said main and auxiliary processing mean as a result of executing instructions in the sequence; and

means for dispatching the first and second groups of instructions to the respective main and auxiliary data processing means to cause said main processing means to obtain and execute the first group of machine instructions and, concurrently, to cause the auxiliary processing means to obtain and execute the second group of machine instructions;

checking means, coupled to said main and auxiliary data processing means, for detecting the occurrence of an action taken by said main data processing means on one of the data values held by the data storage means which action affects one of the data values held by the data storage means that is used during the concurrent execution of said second group of sequential machine instructions by said auxiliary data processing means; and

means for selectively invalidating the execution of said second groups of sequential machine instructions by said auxiliary data processing means responsive to the detection of said action.

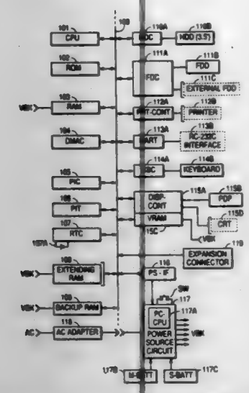
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5,297,282

RESUME PROCESSING FUNCTION FOR THE OS/2 OPERATING SYSTEM

Joseph A. Heilak, Rancho Santa Margarita, Calif., and Kinya Aoshima, Fussa, Japan, assignors to Toshiba America Information Systems, Inc., Irvine, Calif.

Filed May 29, 1991, Ser. No. 707,044
Int. Cl.[5] G06F *12/16*
U.S. Cl. 395—700 **56 Claims**



1. In a computer system having a central processing unit (CPU) capable of operating in a protected mode and a real mode in conjunction with an operating system, a resume processing method of saving and subsequently restoring system data indicative of the CPU's operating conditions in response to a power-off signal and a subsequent power-on signal, said resume processing method comprising the steps of:

(a) saving a first set of protected mode data associated with the operating system indicative of operating conditions responsive to said power-off signal,

(b) saving a second set of data associated with said CPU, but not associated with said operating system, indicative of said CPU's operating conditions in response to said power-off signal,

(c) restoring said second set of data saved in step (b) responsive to a power-on signal, and

(d) restoring said first set of data saved in step (c) responsive to said power-on signal.

5,297,283

OBJECT TRANSFERRING SYSTEM AND METHOD IN AN OBJECT BASED COMPUTER OPERATING SYSTEM

James W. Kelly, Jr.; Frank L. Perazzoli, Jr., both of Redmond, and David N. Cutler, Bellevue, all of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 374,165, Jun. 29, 1989, abandoned.
This application Oct. 16, 1992, Ser. No. 962,397
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—650 **15 Claims**

1. A computer system, comprising:

memory means for storing data and data structures;

a multiplicity of objects comprising data structures stored in said memory means, each said object including characteristic denoting means for denoting at least one attribute of said object;

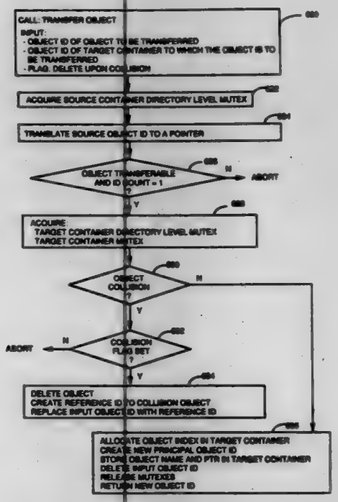
a multiplicity of container means stored in said memory means for referencing sets of said objects, each container means including means for storing a multiplicity of object pointers to locations in said memory means where said set of objects corresponding to said container means are stored; each said object including means for denoting one of said container means as the container means in which said object resides;

a multiplicity of processes running concurrently on said computer system, each process including means linking said each process to a subset of said multiplicity of container means and means for accessing only objects referencing by those container means linked to said each process; wherein at least a plurality of said container means are each linked to two or more processes; and

object transfer means, coupled to said memory means and responsive to an object transfer request by any one of said multiplicity of processes, for transferring an object pointer corresponding to a specified object from a first container means to a specified container means;

said object transfer means including:

collision detecting means for determining whether said specified container means stores an object pointer to an object having characteristic denoting means which denotes the same at least one attribute as denoted by the characteristic denoting means of said specified object



and thereby determining whether there is a collision between said specified object and an object referenced by said specified container means; and

means, operative when said collision detecting means does not detect a collision, for storing an object pointer corresponding to said specified object in said specified container means and for denoting in said specified object said specified container as the container in which said specified object resides;

further including object identifiers stored in said memory means, corresponding to each said object, for referencing said objects;

each said object including count means for denoting the number of said object identifiers corresponding to said object which exist in said computer system;

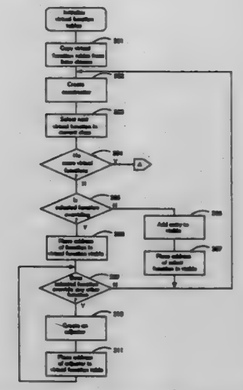
said object transfer means including means for transferring an object pointer corresponding to a specified object only when said count means of said specified object denotes a value of one and for blocking transfer of said corresponding object pointer when said count means of said specified object denotes a value greater than one.

5,297,284

METHOD AND SYSTEM FOR IMPLEMENTING VIRTUAL FUNCTIONS AND VIRTUAL BASE CLASSES AND SETTING A THIS POINTER FOR AN OBJECT-ORIENTED PROGRAMMING LANGUAGE

David T. Jones, Preston; Martin J. O'Riordan, Redmond, and Mark J. Zbikowski, Woodinville, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Apr. 9, 1991, Ser. No. 682,537
Int. Cl.[5] G06F *9/42*
U.S. Cl. 395—700 **19 Claims**



1. A computer-implemented method for implementing virtual functions for an object-oriented programming language, the programming language having classes, each class defined in terms of base classes and function members, each function member defined as either virtual or non-virtual, each function member when invoked being passed a third pointer, wherein each class that introduces a virtual function member has an associated virtual function table and a virtual function table pointer, the virtual function tables having pointers to the virtual functions defined in the associated class, the method comprising the computer-implemented steps of:

(a) inputting into the computer system a class definition for a specified class wherein the specified class has a virtual function that overrides a virtual function in at least two base classes, each of such base classes having an associated virtual function table;

(b) creating a data structure layout for the specified class wherein the data structure layout contains an occurrence of each base class, the occurrences containing a virtual function table pointer for the associated virtual function table, the data structure layout having a class address;

(c) creating a copy of the virtual function table for each of such base classes;

(d) compiling the overriding virtual function to expect the this pointer to point to the occurrence in the specified class of a designated base class that is at an offset from the class address;

(e) overriding the pointer to the virtual function in the virtual function table associated with the designated base class with a pointer to the compiled overriding virtual function; and

(f) for each non-designating base class with the overridden virtual function,

generating an adjustor to adjust the this pointer and then invoke the compiled overriding function, and

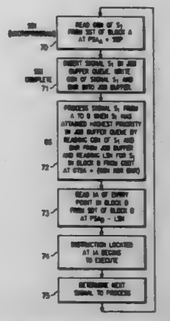
overriding the pointer to the virtual function in the virtual function table associated with the non-designated class with a pointer to the adjustor.

5,297,285

SYSTEM FOR DYNAMICALLY LINKING MODULAR PORTIONS OF COMPUTER SOFTWARE

Anders Abrahamsson, Stockholm, and Lars Holmqvist, Haninge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jul. 23, 1991, Ser. No. 734,456
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—700 **15 Claims**



1. A method of transferring software signals for communicating information from a first module of modular software for a computer system to a second module of said software residing in said computer system in which a local signal number associated with a particular processing operation to be performed by said software module is stored in a global signal distribution table cross-referencing said local signal number to a global signal number associated with a particular type of software signal within said modules, said global signal distribution table being updated at the time of the loading of said software module, said method comprising:

identifying a software signal to be transferred from said first module to said second module;

transferring a global signal number associated with said software signal along with a block number associated with said second module to a register within a job buffer of a central processing unit running said software;

accessing said global signal distribution table to obtain said local signal number corresponding to said global signal number of said software signal within said second module; and

transferring said software signal to the requisite address within said second module associated with said local signal number.

5,297,286

POPUP CONTROL SYSTEM FOR PORTABLE COMPUTER HAVING SETUP FUNCTION AND POPUP FUNCTION

Keiichi Uehara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1991, Ser. No. 783,911
Claims priority, application Japan, Nov. 7, 1990, 2-301692
Int. Cl.[5] G06F *3/14, 9/44*
U.S. Cl. 395—700 **5 Claims**

1. A portable computer system, comprising:

key input means for inputting data and commands;

a central processing unit for controlling the system;

memory means for storing a plurality of system configuration information and setup and popup utility programs, wherein the plurality of system configuration information includes a status of the popup utility program;

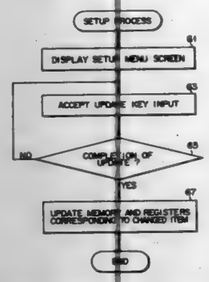
setup means for displaying the plurality of system configuration information on a display screen and selectively setting

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the plurality of system configuration information, the setup means being inactive while an application program is being executed;

timer interrupt means for periodically generating an interrupt signal to the central processing unit;

means for determining, in response to the interrupt signal, whether the status of the popup utility program is enabled or disabled;



popup means for displaying on the display screen, in response to the status of the popup utility program as being enabled and independent of the execution of the application program, a predetermined portion of the system configuration information and selectively setting the predetermined portion of the system configuration.

5,297,287

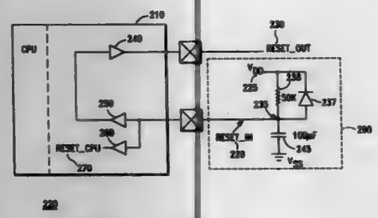
SYSTEM AND METHOD FOR RESETTING A MICROPROCESSOR SYSTEM

Yoshiyuki Miyayama, Santa Clara, Calif.; Akira Nakada, Suwa, Japan; Jun Nakamura, Shimosuwa, Japan, and Shoichiro Kasahara, Suwa, Japan, assignors to S-MOS Systems, Incorporated, San Jose, Calif.

Filed Mar. 2, 1992, Ser. No. 844,494

Int. Cl.[5] G06F *1/24*

U.S. Cl. 395—700 **6 Claims**



220

1. A reset circuit for resetting at least a first and second device, the circuit comprising:

(a) a first buffer with a first threshold voltage level, the input of said first buffer being connected to a reset signal and the output of said first buffer being connected to trigger the reset function of at lease one first device; and

(b) a second buffer with a second threshold voltage level that is higher than said first threshold voltage level, the input of said second buffer being connected to said reset signal and the output of said second buffer being connected to trigger the reset function of a second device;

wherein said first buffer and said second buffer are located within said second device.

5,297,288

SYSTEM FOR USE WITH A HIGH RESOLUTION SCANNER FOR SCHEDULING A SEQUENCE OF SOFTWARE TOOLS FOR DETERMINING THE PRESENCE OF BANDS IN DNA SEQUENCING SAMPLES

Robert W. Hemminger, Oberlin, and Robert J. Emery, Wakeman, both of Ohio, assignors to United States Biochemical Corporation, Cleveland, Ohio

Continuation of Ser. No. 640,471, Jan. 15, 1991, abandoned, which is a division of Ser. No. 442,553, Nov. 28, 1989, abandoned. This application Jun. 10, 1992, Ser. No. 897,606

Int. Cl.[5] G06F *9/44, 13/10, 15/42, 15/70*

U.S. Cl. 395—700 **1 Claim**

MICROFICHE APPENDIX INCLUDED
(10 Microfiche, 820 Pages)



1. In a data processing system comprising a computer, an image scanner, and a natural language interface responsive to user input of natural language identifiers, a method for creating and executing a custom application computer program comprising a sequence of user-specified software tools for scanning and analyzing an image comprising four vertical sections, each section containing zero or more horizontal bands with non-uniform perimeters, said method comprising the computer-implemented steps of:

storing a plurality of said software tools for directing the performance of said scanning and analysis of said image;

creating a custom application computer program by storing a user-defined sequence of software tools using said natural language identifiers, to be executed for scanning and analyzing said image;

executing said custom application computer program to scan said image and store data relating to said scanned image; and

executing said custom application computer program to use said stored data to locate said horizontal bands with non-uniform perimeters in each of said four vertical sections and to correlate each of said horizontal bands with non-uniform perimeters to a predetermined shape.

5,297,289

SYSTEM WHICH COOPERATIVELY USES A SYSTOLIC ARRAY PROCESSOR AND AUXILIARY PROCESSOR FOR PIXEL SIGNAL ENHANCEMENT

Lester Mintzer, Santa Ana, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 31, 1989, Ser. No. 430,835

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—800 **8 Claims**

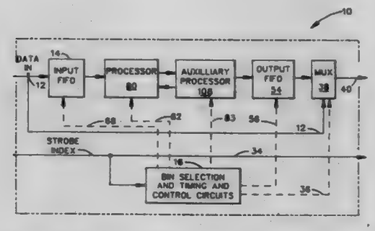
1. A lofargram enhancement system comprising:

a systolic processor having 1 to i rows and 1 to j columns of processing elements, each processing element having a unique row and column location corresponding to its respective i-j index, each processing element having a computational capability and memory means for storing at least a pixel intensity value; the memory of all processing elements being addressable concurrently;

means, including said systolic processor, for receiving and storing successive digitized scan lines of sonar derived data comprising a sequence of pixel intensity signal values and for storing each respective received pixel intensity signal value in the respective first row location for each line and down shifting the stored signal values after the end of each scan line;

means, including said systolic processor, for calculating a row total value to determine the average of the pixel intensity signal values stored in a predetermined relational row array for each respective processing element and for calculating a column average value for the total of the pixel intensity signal values stored in a predetermined relational column array for each respective processing element in the systolic processor;

an auxiliary processor for reading the respective row total and column total for each processing element in the jth column of the systolic processor and for loading the corresponding first column processing element with a corrected pixel value, using the total row value and the total column value from the corresponding jth column processing element, the corrected pixel value being calculated as a function of the difference between the respective pixel



intensity value and the corresponding row and column total values;

an output FIFO; and,

column selection and timing and control circuit means for sequentially right shifting the systolic array one column to the right and for actuating the auxiliary processor means to calculate and enter corrected pixel values in each successive first column data processing element until a corrected pixel value has been inserted in each column position of the processing element, row totals and column totals being stored in the respective data processing elements, the contents of the bottom row of corrected pixel values being shifted into said output FIFO for delivery to a recorder as a scan line of data, the contents of all rows in the array of computing elements being down row shifted one row in preparation for commanding the means for receiving the next scan line of data to receive the next scan line of data in the top row of computing elements.

5,297,290

METHOD AND APPARATUS FOR INTERRUPTION PROCESSING IN MULTI-PROCESSOR SYSTEM

Koji Masui, and Masayuki Tanji, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 18, 1989, Ser. No. 408,731

Claims priority, application Japan, Sep. 20, 1988, 63-233426

Int. Cl.[5] G06F *13/14, 13/368*

U.S. Cl. 395—725 **10 Claims**

1. A method for interruption processing in a multi-processor system, comprising the steps of:

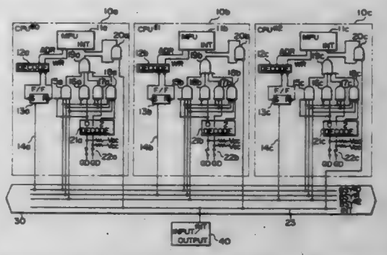
delivering an interruption signal from an input/output device simultaneously to a plurality of processors through a common bus;

delivering from each processor to all processors a state signal indicating whether the processor issuing the state signal is in a state to accept an interruption signal;

controlling each processor to determine individually within that processor and simultaneously with the other processors whether the remaining processors are in a state to accept the receipt of said interruption signal using the state signals received from all processors; and

controlling only a single processor which is ready to accept the receipt of an interruption signal, from within that processor, to accept the receipt of said interruption signal in accordance with a predetermined priority;

in response to detection in each processor that none of said



processors are ready to accept the receipt of an interruption signal, accepting receipt of an interruption signal in accordance with a predetermined procedure in which one processor accepts an interruption signal regardless of the interruption receipt refusal state of that processor.

5,297,291

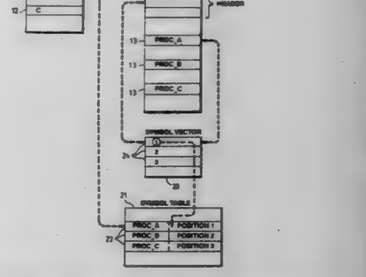
SYSTEM FOR LINKING PROGRAM UNITS BY BINDING SYMBOL VECTOR INDEX IN THE SYMBOL TABLE INTO CALLING IMAGE TO OBTAIN CURRENT VALUE OF THE TARGET IMAGE

Daniel L. Murphy, Hollis, N.H., assignor to Digital Equipment Corporation, Maynard, Mass

Filed Mar. 7, 1991, Ser. No. 666,023

Int. Cl.[5] G06F *3/00, 13/00*

U.S. Cl. 395—700 **18 Claims**



1. A method of preparing a calling image for execution on a computer comprising the steps of:

providing an ordered list of identified symbols contained in a target image which are available for referencing by said calling image;

constructing from said ordered list a symbol vector associated with said target image, said symbol vector containing a vector entry identified by a vector index for each of said identified symbols, and each vector entry containing corresponding target image information for said identified symbol;

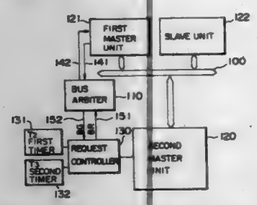
binding in said calling image the vector index corresponding to each identified symbol which is referenced in said calling image; and

upon activating said target image and said calling image for execution, utilizing said vector index bound into said

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calling image to obtain from said symbol vector said corresponding target image information for each of said identified symbols.

5,297,292
BUS SYSTEM WHEREIN A BUS-USING REQUEST SIGNAL IS ISSUED IN ADVANCE OF A DETERMINATION THAT A BUS IS TO BE USED AND IS THEREAFTER CANCELLED IF THE BUS IS NOT USED
Shigeki Morimoto; Norikazu Endo, and Toshihiko Nakauchi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 13, 1991, Ser. No. 698,956
Claims priority, application Japan, May 11, 1990, 2-121893
Int. Cl.[5] G06F *13/36, 15/16*
U.S. Cl. 395—725 **3 Claims**



3. A bus system with a plurality of units connected to a common bus, wherein at least one unit of the units uses the common bus at predetermined timings, the bus system comprising:

a bus arbiter coupled to each of said units for carrying out arbitration of a bus-using right of the common bus;

first timer means for measuring a first time period indicative of a timing at which said one unit will next begin to use the common bus and for producing a first output signal when the first time period has been measured;

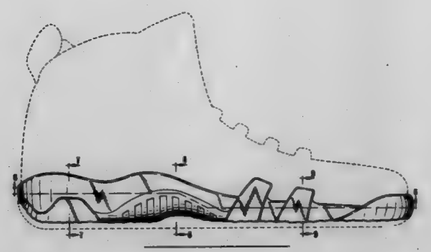
second timer means for measuring a second time period during which said one unit does not use the common bus and for producing a second output signal when the second time period has been measured; and

request control means connected to said one unit, said bus arbiter, said first timer means, and said second timer means for driving said first timer means to start measuring the first time period when said one unit begins to use the common bus, for generating a bus-using request to said bus arbiter in response to the first output signal from said first timer means, for driving said second timer means to start measuring the second time period when the bus-using request is issued, for resetting the second timer means if said one unit begins to use the common bus before the second timer produces the second output signal, and for cancelling the bus-using request if said second timer means produces the second output signal before said one unit begins to use the common bus.

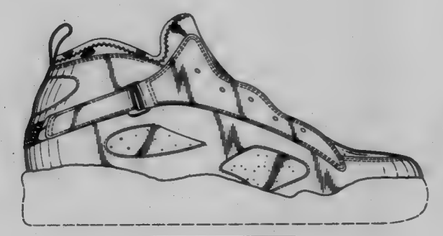
DESIGNS

MARCH 22, 1994

345,243
SHOE MIDSOLE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 25, 1993, Ser. No. 6,315
Term of patent 14 years
U.S. Cl. D2—977



345,244
SHOE UPPER
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1993, Ser. No. 6,406
Term of patent 14 years
U.S. Cl. D2—970



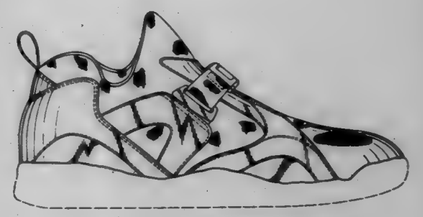
345,245
SHOE UPPER
Steven C. McDonald, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,041
Term of patent 14 years
U.S. Cl. D2—969

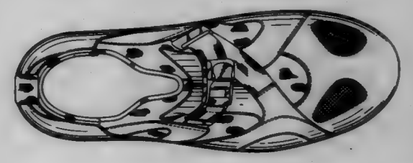


345,246
SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,043
Term of patent 14 years
U.S. Cl. D2—978



345,247
SHOE UPPER
Catherine M. Bailey, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,045
Term of patent 14 years
U.S. Cl. D2—969





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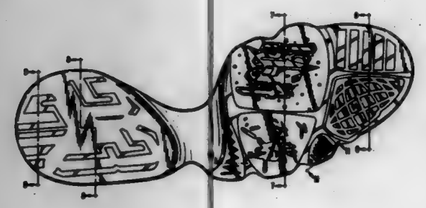
345,248
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,046
Term of patent 14 years
U.S. Cl. D2—970



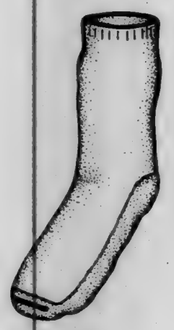
345,249
BLADDER FOR A SHOE SOLE
James C. Sell, Jr., Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Apr. 20, 1993, Ser. No. 7,933
Term of patent 14 years
U.S. Cl. D2—961



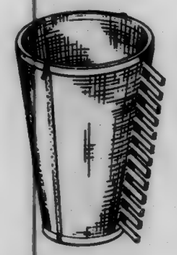
345,250
SHOE OUTSOLE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 25, 1993, Ser. No. 6,316
Term of patent 14 years
U.S. Cl. D2—952



345,251
COMBINATION SOCK
Robert D. Pounds, 675 Short Rd., Fairburn, Ga. 30213
Filed Oct. 23, 1991, Ser. No. 781,279
Term of patent 14 years
U.S. Cl. D2—980



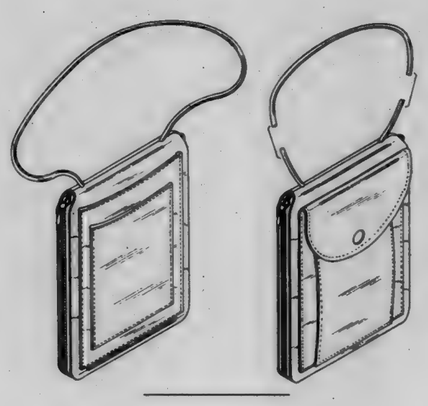
345,252
LEG FASHION ACCESSORY
Ruth A. Randall, 515 Lincoln St., Monett, Mo. 65708
Filed Jan. 31, 1992, Ser. No. 828,649
Term of patent 14 years
U.S. Cl. D2—901



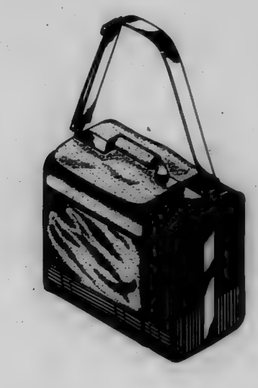
345,253
SHOE UPPER
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,026
Term of patent 14 years
U.S. Cl. D2—969



345,254
HAND BAG
Ruth F. Bodden, Cliffside Park, N.J., assignor to Kangaroos, Inc., Fort Lee, N.J.
Filed Sep. 10, 1992, Ser. No. 926,865
Term of patent 14 years
U.S. Cl. D3—246



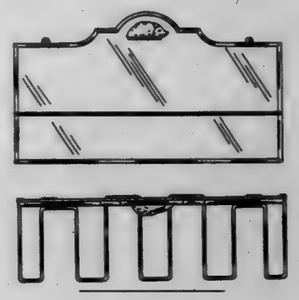
345,255
SPORT BAG
Cheryl A. Hughes, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Jun. 19, 1992, Ser. No. 901,463
Term of patent 14 years
U.S. Cl. D3—254



345,256
TOOTHBRUSH
Basaw Khin, 1860 Camino Claveles, Tucson, Ariz. 85745
Filed Oct. 4, 1991, Ser. No. 772,008
Term of patent 14 years
U.S. Cl. D4—104



345,257
BOOT RACK
James K. Dunlop, The Ivy House, High Street, Rode, Bath, Avon BA3 6NZ, United Kingdom
Filed Sep. 29, 1992, Ser. No. 954,058
Claims priority, application United Kingdom, Apr. 1, 1992, 2022001
Term of patent 14 years
U.S. Cl. D6—316



345,258
CHAIR
Luca Giacomuzzi, and Paolo Giacomuzzi, both of Via Bolzano, 5, 39044, Egna (BZ), Italy
Filed Jun. 8, 1992, Ser. No. 895,388
Claims priority, application Italy, Dec. 20, 1991, MI910-00889
Term of patent 14 years
U.S. Cl. D6—334



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345,259
CHAIR
Tetsuya Narita, Funabashi, Japan, assignor to Okamura Corporation, Japan
Filed Sep. 3, 1991, Ser. No. 753,685
Term of patent 14 years
U.S. Cl. D6—366



345,260
CHAIR
Tetsuya Narita, Funabashi, Japan, assignor to Okamura Corporation, Japan
Filed Sep. 3, 1991, Ser. No. 753,686
Term of patent 14 years
U.S. Cl. D6—366



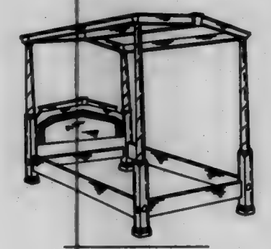
345,261
BENCH
Chin H. Chen, Taipei, Taiwan, assignor to Berkeley Products, Inc., Paramount, Calif.
Filed Aug. 17, 1992, Ser. No. 930,299
Term of patent 14 years
U.S. Cl. D6—370



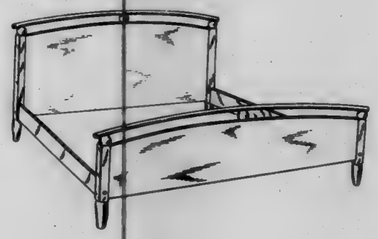
345,262
CHAIR
John Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 23, 1991, Ser. No. 705,165
Term of patent 14 years
U.S. Cl. D6—376



345,263
BED
H. Thomas Keller, High Point, N.C., assignor to Bernhardt Furniture Co., Inc., Lenoir, N.C.
Filed May 4, 1992, Ser. No. 877,028
Term of patent 14 years
U.S. Cl. D6—389



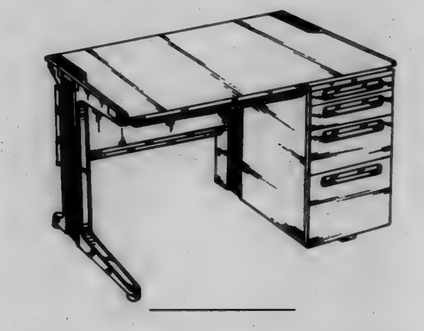
345,264
BED
Philip Stone, Woodbury, and Craig Stout, Redding, both of Conn., assignors to Ethan Allen Co., Danbury, Conn.
Division of Ser. No. 877,030, May 4, 1992, Pat. No. Des. 366,797. This application May 6, 1993, Ser. No. 8,058
Term of patent 14 years
U.S. Cl. D6—393



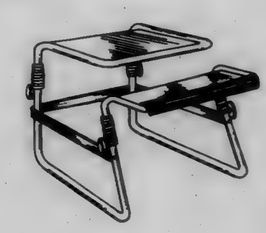
345,265
SUPPORT FOR ONE OR MORE BOARDS
Jonothon M. W. McIntyre, 6733 Hinds Ave., North Hollywood, Calif. 91606
Filed Apr. 27, 1992, Ser. No. 873,732
Term of patent 14 years
U.S. Cl. D6—400



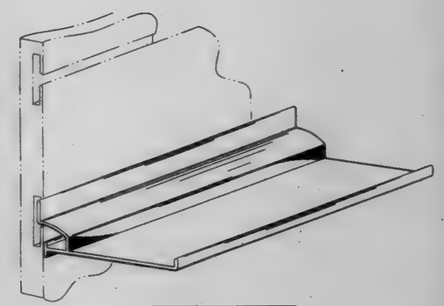
345,266
DESK
Seiji Koguma, Warabi, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Nov. 16, 1989, Ser. No. 438,152
Claims priority, application Japan, Sep. 1, 1989, 1-31691
The portion of the term of this patent subsequent to Jun. 15, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—422



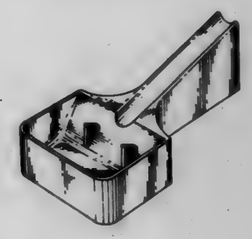
345,267
COMPUTER SUPPORT
Edward Moore, L'Acadie, Canada, assignor to 2749394 Canada Inc., Montreal, Canada
Filed Apr. 17, 1992, Ser. No. 869,712
Term of patent 14 years
U.S. Cl. D6—474



345,268
SHELF
John S. Pate, 5339 Stonetrace, Gainesville, Ga. 30501
Filed Jul. 22, 1991, Ser. No. 733,252
Term of patent 14 years
U.S. Cl. D6—511

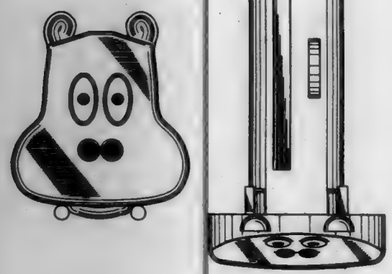


345,269
SHAVER HOLDER
Paul F. Novak, 87 Coggeshall St., Fairhaven, Mass. 02719
Filed Jun. 15, 1992, Ser. No. 898,743
Term of patent 14 years
U.S. Cl. D6—526

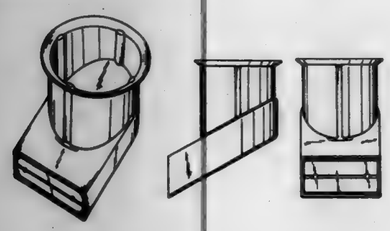


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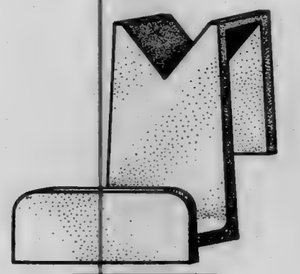
345,270
TOOTHPASTE DISPENSER
Randy L. Stroetz, 3983 Marsh La., Spencer, Wis. 54479
Filed Jun. 1, 1992, Ser. No. 890,482
Term of patent 14 years
U.S. Cl. D6—541



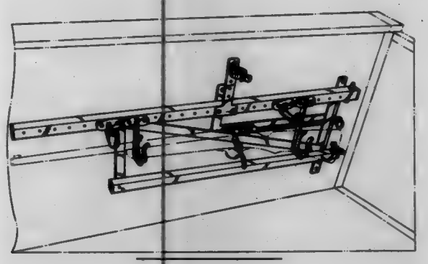
345,271
TOILET BRUSH HOLDER
Roland Vetter, Giengen-Sachsenhausen, Fed. Rep. of Germany, assignor to Schwaebische Beerstenfabrik Hans Haug KG, Koenigsbronn, Fed. Rep. of Germany
Filed Aug. 14, 1991, Ser. No. 930,824
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1992, 9201345
Term of patent 14 years
U.S. Cl. D6—551



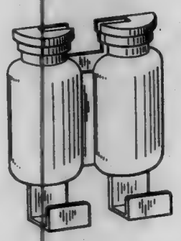
345,272
TENNIS ACCESSORIES SUPPORT
Jeffrey L. Kelsoe, 4194 Hamilton St., San Diego, Calif. 92104
Filed Feb. 25, 1991, Ser. No. 659,924
Term of patent 14 years
U.S. Cl. D6—552



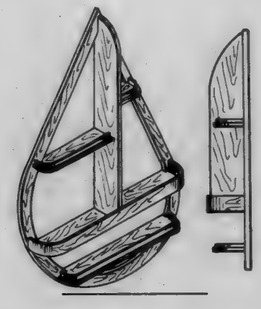
345,273
WEAPONRY BRACKET ASSEMBLY
Dennis L. Horn, 3422 Valley Rd., Marysville, Pa. 17053
Filed Apr. 9, 1992, Ser. No. 866,248
Term of patent 14 years
U.S. Cl. D6—552



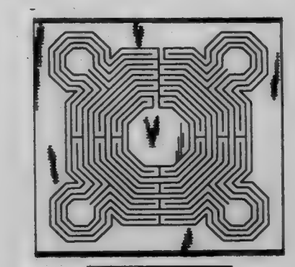
345,274
WALL-MOUNTED STETHOSCOPE AND LAB COAT HOLDER
Richard Costa, Piscataway, N.J., assignor to PharmaDesign, Warren, N.J.
Filed Mar. 9, 1992, Ser. No. 847,210
Term of patent 14 years
U.S. Cl. D6—567



345,275
WALL SHELF UNIT
Douglas Picotte, 92 Gaylord Rd., Gaylordsville, Conn. 06755
Filed Oct. 26, 1992, Ser. No. 816
Term of patent 14 years
U.S. Cl. D6—571



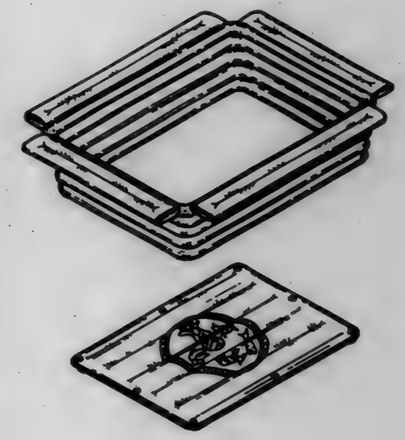
345,276
RUG
Edoardo Ceretto, Strada del Lauro 22, and Behrouz Kolahi, Via Mazzini 52, both of, Torino, Italy
Filed Aug. 8, 1991, Ser. No. 742,665
Term of patent 14 years
U.S. Cl. D6—593



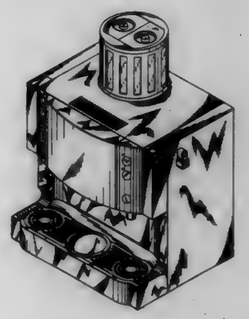
345,277
RUG
Edoardo Ceretto, Strada del Lauro 22, and Behrouz Kolahi, Via Mazzini 52, both of, Torino, Italy
Filed Aug. 8, 1991, Ser. No. 742,666
Term of patent 14 years
U.S. Cl. D6—593



345,278
CUSHION FOR A BATHTUB
Teresa Hamilton, and Thomas Hamilton, both of 7032 Mower St., Philadelphia, Pa. 19119-2513
Filed Jan. 29, 1993, Ser. No. 4,189
Term of patent 14 years
U.S. Cl. D6—601

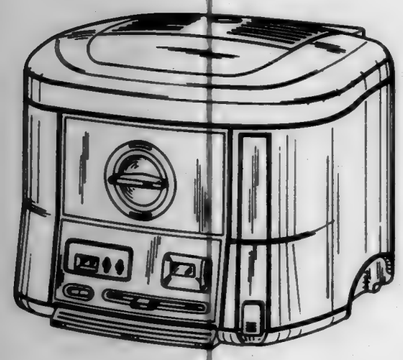


345,279
COFFEE MAKING APPLIANCE
Dieter Sieger, Sassenberg, Fed. Rep. of Germany, assignor to WMF Wuerttembergische Metallwarenfabrik Aktiengesellschaft, Geislingen, Fed. Rep. of Germany
Filed Jun. 17, 1992, Ser. No. 900,692
Claims priority, application World Int. Prop. O., Dec. 20, 1991, DM 021492
Term of patent 14 years
U.S. Cl. D7—309

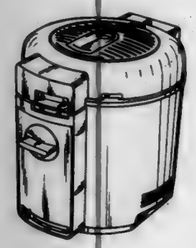


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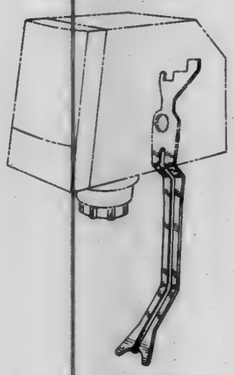
345,280
DEEP-FRYER
Dick Powell, London, Great Britain, assignor to SEB, Selongey, France
Filed Dec. 21, 1992, Ser. No. 2,859
Claims priority, application France, Jun. 19, 1992, 923 827
Term of patent 14 years
U.S. Cl. D7—354



345,281
DEEP-FRYING APPLIANCE
Guy Mauffrey, Breuchotte, France, assignor to Vogalu S.A., Faucogney, France
Continuation of Ser. No. 801,179, Dec. 2, 1991, abandoned. This application Jun. 9, 1993, Ser. No. 9,241
Claims priority, application France, Jun. 6, 1991, 913491
Term of patent 14 years
U.S. Cl. D7—354



345,282
LEVER FOR BEVERAGE DISPENSING APPARATUS
William K. Henninger, Southington, Conn., assignor to Wilshire Partners, Cleveland, Ohio
Filed Jun. 19, 1992, Ser. No. 902,297
Term of patent 14 years
U.S. Cl. D7—393

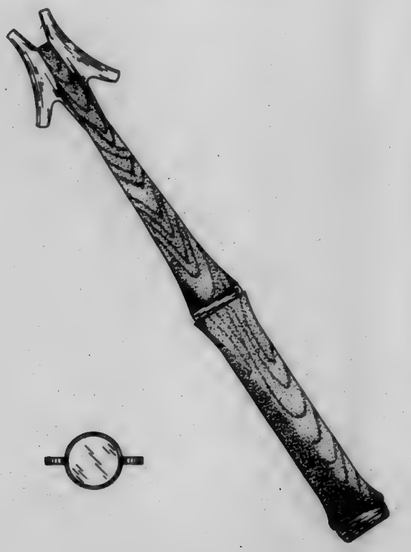


345,283
COFFEE BIN
Christopher A. Papanicolas, Aurora, Ill., assignor to NAPCO, Inc., Batavia, Ill.
Filed Dec. 1, 1992, Ser. No. 2,068
Term of patent 14 years
U.S. Cl. D7—589

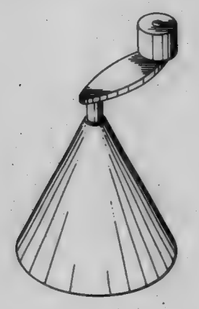
345,284
KNIFE
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,014
Term of patent 14 years
U.S. Cl. D7—649



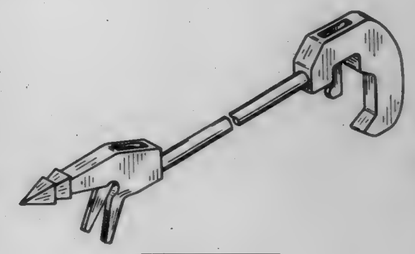
345,285
TOOL FOR SLIDING OVEN AND GRILL RACKS
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Norman L. Grettner, 745 Moran Apt. E, Reno, Nev. 89502
Filed Jun. 18, 1991, Ser. No. 717,726
Term of patent 14 years
U.S. Cl. D7—669



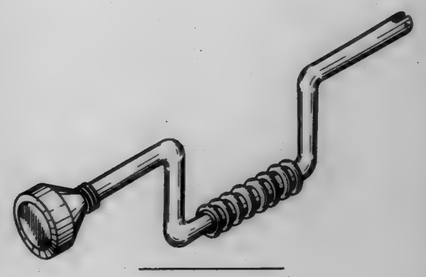
345,286
CONDIMENT MILL
Carsten Jorgensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Mar. 16, 1992, Ser. No. 851,360
Term of patent 14 years
U.S. Cl. D7—679



345,287
PICK UP TOOL
Harry Bentz, P.O. Box 43, Claremore, Okla. 74018
Filed Sep. 14, 1992, Ser. No. 945,344
Term of patent 14 years
U.S. Cl. D8—51



345,288
CRANK FOR USE WITH SEMI-TRAILERS
Timothy A. Hubal, P.O. Box 432, Mary Esther, Fla. 32569, and Theresa Hubal, 9915 Pioneer Rd., Byesville, Ohio 43723
Filed Jan. 28, 1992, Ser. No. 827,828
Term of patent 14 years
U.S. Cl. D8—59



345,289
KNIFE
Kimiyuki Sakai, Seki, Japan, assignor to Gerber. Sakai, Gifu, Japan
Filed Sep. 28, 1992, Ser. No. 952,437
Term of patent 14 years
U.S. Cl. D8—99



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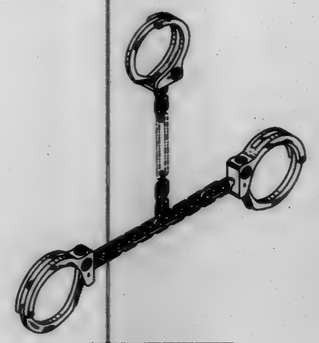
345,290
CRAFTS KNIFE HANDLE
Jeffrey Samber, 12 E. 86th St., Apt. 621, New York, N.Y. 10028
Filed Jul. 16, 1992, Ser. No. 915,951
Term of patent 14 years
U.S. Cl. D8—107



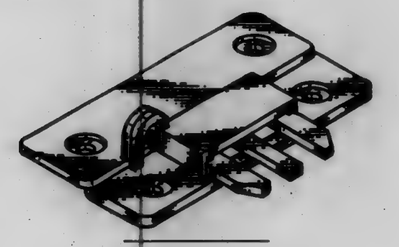
345,291
SNAP TOGETHER BOLT LOCK
Clive A. Brown, Birmingham, England, assignor to Blair Security Products Limited, Walsall, United Kingdom
Filed May 19, 1992, Ser. No. 885,212
Term of patent 14 years
U.S. Cl. D8—331



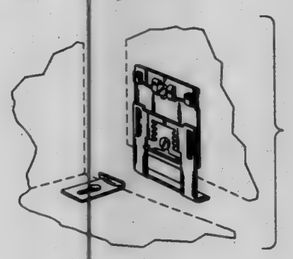
345,292
SECURITY RESTRAINT
Tommy Tipton, 500 Michigan Pl., West Palm Beach, Fla. 33409
Filed Feb. 5, 1992, Ser. No. 830,253
Term of patent 14 years
U.S. Cl. D8—333



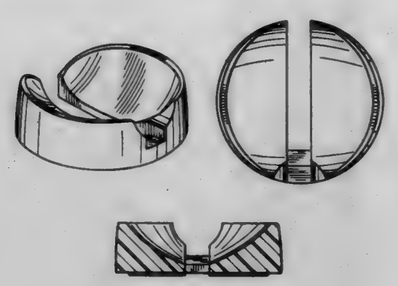
345,293
LOCKABLE LATCH ASSEMBLY FOR A VIDEO CASSETTE CASE
Jeffrey D. Bell, Murfreesboro, and Carl D. Massey, Nashville, both of Tenn., assignors to Pelikan, Inc., Franklin, Tenn.
Filed May 11, 1992, Ser. No. 882,097
Term of patent 14 years
U.S. Cl. D8—339



345,294
CUPBOARD DOOR LATCH ASSEMBLY
Reed A. Palmer, 3 Vercelli, Irvine, Calif. 92720
Filed Sep. 4, 1992, Ser. No. 940,709
Term of patent 14 years
U.S. Cl. D8—339



345,295
KEY GUIDE
Douglas R. Davey, 291 Marguerita, Vista, Calif. 92084
Filed Apr. 6, 1992, Ser. No. 864,064
Term of patent 14 years
U.S. Cl. D8—352



345,296
ROPE CLEAT
Robert R. Thomas, 1359 S. Lyman Ave., Glendora, Calif. 91740
Filed Sep. 14, 1992, Ser. No. 945,348
Term of patent 14 years
U.S. Cl. D8—356



345,297
STRETCH CORD HOOK
Ronald J. Kraine, Garfield Heights, Ohio, assignor to Highland Group Industries L.P., Solon, Ohio
Filed Oct. 30, 1992, Ser. No. 1,011
Term of patent 14 years
U.S. Cl. D8—367



345,298
DISPLAY HOOK
Gunter Rosenthal, St. Benoit, Canada, assignor to G. Rosenthal Import Ltd., Montreal, Canada
Filed Feb. 7, 1992, Ser. No. 828,731
Claims priority, application Canada, Dec. 2, 1991, 02-12-91-14
Term of patent 14 years
U.S. Cl. D8—373



345,299
PUMP DISPENSER
Paul Schmitt, New York, N.Y., assignor to L'Oreal, Clichy Cedex, France
Filed Jul. 6, 1992, Ser. No. 909,425
Term of patent 14 years
U.S. Cl. D9—300

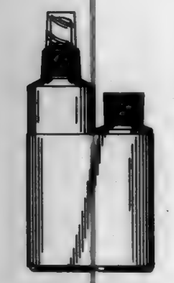


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345,300
COMBINED SPRAY BOTTLE AND CAP
Bernard Koytak, New York, N.Y., assignor to Lauren Ricky and Mark N. Kaplan, both of New York, N.Y.
Filed Sep. 3, 1992, Ser. No. 939,637
Term of patent 14 years
U.S. Cl. D9—300



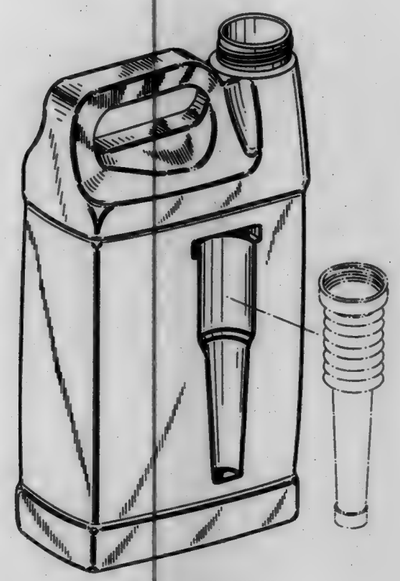
345,301
DUAL COMPARTMENT BOTTLE
Melvin G. Goehring, 1234 N. Palo Loma Pl., Orange, Calif. 92669
Filed Sep. 21, 1992, Ser. No. 948,878
Term of patent 14 years
U.S. Cl. D9—300



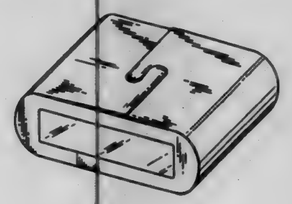
345,302
DUAL COMPARTMENT BOTTLE
Melvin G. Goehring, 1234 N. Palo Loma Pl., Orange, Calif. 92669
Filed Sep. 21, 1992, Ser. No. 948,958
Term of patent 14 years
U.S. Cl. D9—300



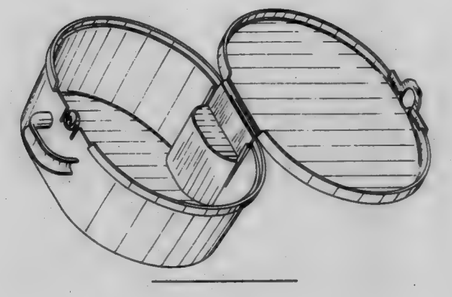
345,303
BOTTLE
Donald J. Sykes, Upper Saddle River, N.J., assignor to Marpac Industries, Inc., Waldwick, N.J.
Filed Nov. 23, 1992, Ser. No. 1,734
Term of patent 14 years
U.S. Cl. D9—341



345,304
OVAL PACKAGE
Elliott Leader, Paramus, N.J., assignor to Royal Sound Co., Inc., Eatontown, N.J.
Filed Dec. 23, 1992, Ser. No. 2,927
Term of patent 14 years
U.S. Cl. D9—418



345,305
TOY CONTAINER
Henrik Host, DK-4000 Roskilde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,902
Term of patent 14 years
U.S. Cl. D9—423



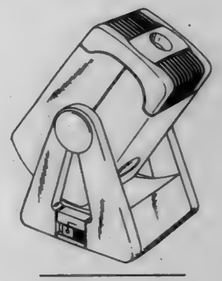
345,306
COMBINED BOTTLE AND CAP DESIGN APPLICATION
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,618
Term of patent 14 years
U.S. Cl. D9—522



345,307
CLOCK
Mitsuo Wada, and Mariko Miasmi, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed May 24, 1991, Ser. No. 705,160
Term of patent 14 years
U.S. Cl. D10—22



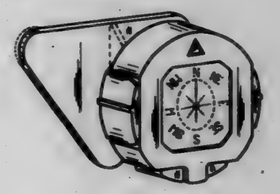
345,308
CLOCK
Hiromi Kanai, Tokyo, Japan, assignor to Matsubara Denki Kogyo Kabushiki Kaisha, Japan
Filed Feb. 3, 1992, Ser. No. 829,678
Claims priority, application Japan, Sep. 2, 1991, 3-26392
Term of patent 14 years
U.S. Cl. D10—26



345,309
MULTI-PURPOSE HAND TOOL
Larry W. Goldstein, San Jose, Calif., assignor to Xcelar, Inc., San Jose, Calif.
Filed Jul. 28, 1992, Ser. No. 921,019
Term of patent 14 years
U.S. Cl. D10—62



345,310
DIRECTIONAL COMPASS FOR MOUNTING ON A SURFACE
Thomas G. Henning, San Francisco, Calif., assignor to Precision Navigation, Incorporated, Mt. View, Calif.
Filed Sep. 19, 1991, Ser. No. 762,951
Term of patent 14 years
U.S. Cl. D10—68

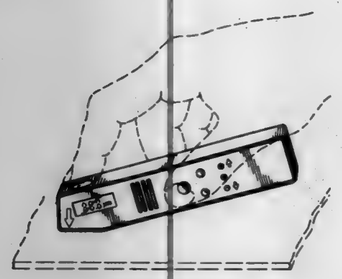


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345,311
DRAWING INSTRUMENT
Michael J. Wagner, Carol Stream, Ill., assignor to Sanford Corporation, Bellwood, Ill.
Filed May 4, 1992, Ser. No. 878,882
Term of patent 14 years
U.S. Cl. D10—71



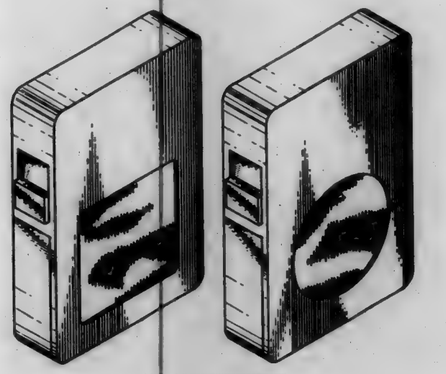
345,312
COATING THICKNESS GAGE
Hans F. Nix, Cologne, Fed. Rep. of Germany, assignor to Elektro-Physik Hans Nix & Dr.-Ing. E. Steingroever GmbH & Co. Kommanditgesellschaft, Cologne, Fed. Rep. of Germany
Filed Oct. 26, 1992, Ser. No. 822
Term of patent 14 years
U.S. Cl. D10—78



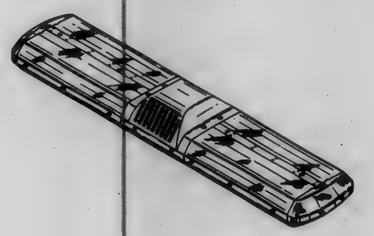
345,313
PORTABLE MOTION DETECTOR
Bert S. Bedrosian, Farmington Hills, Mich., assignor to Guard-Tech Industries, Inc., Farmington Hills, Mich.
Filed Feb. 17, 1993, Ser. No. 4,974
Term of patent 14 years
U.S. Cl. D10—106



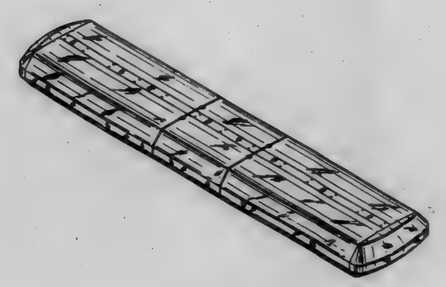
345,314
COMBINED TRANSMITTER AND RECEIVER FOR CHILD MONITORING
Edwin R. Chandra, 362 Alida Way #5, S. San Francisco, Calif. 94080
Filed Apr. 2, 1993, Ser. No. 6,627
Term of patent 14 years
U.S. Cl. D10—106



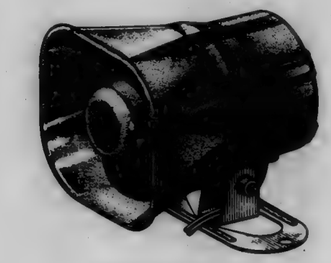
345,315
LIGHT BAR
Timothy M. Green; Paul L. Stein; Paul A. Bennett, and John H. Loudenslager, all of St. Louis, Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.
Filed Mar. 23, 1992, Ser. No. 855,343
Term of patent 14 years
U.S. Cl. D10—114



345,316
LIGHT BAR
Timothy M. Green; Paul L. Stein; Paul A. Bennett, and John H. Loudenslager, all of St. Louis, Mo., assignors to Public Safety Equipment, Inc., St. Louis, Mo.
Filed May 26, 1992, Ser. No. 888,588
Term of patent 14 years
U.S. Cl. D10—114



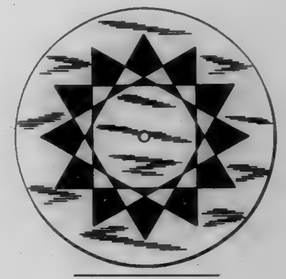
345,317
SIREN
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Jul. 6, 1993, Ser. No. 10,594
Term of patent 14 years
U.S. Cl. D10—120



345,318
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,126
Term of patent 14 years
U.S. Cl. D10—126



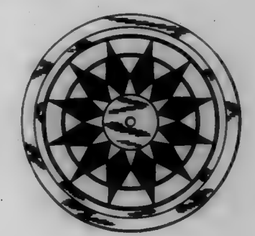
345,319
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,129
Term of patent 14 years
U.S. Cl. D10—126



345,320
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,139
Term of patent 14 years
U.S. Cl. D10—126

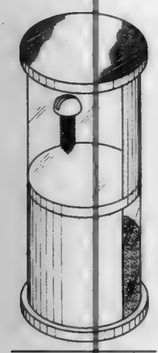


345,321
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,141
Term of patent 14 years
U.S. Cl. D10—126

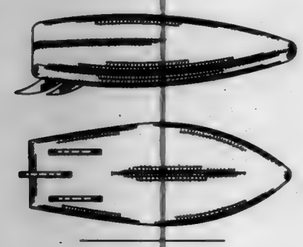


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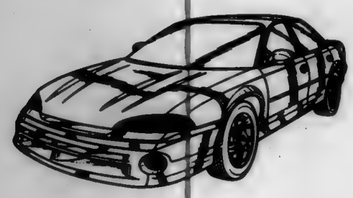
345,322
TABLETOP NOVELTY
Jimmy C. Menefee, 2324 14th Ave. N., Texas City, Tex. 77590
Filed Jul. 22, 1991, Ser. No. 733,276
Term of patent 14 years
U.S. Cl. D11—131



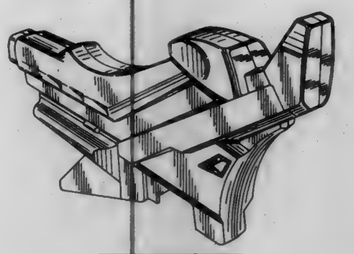
345,323
SOFT SCULPTURE
Scott Stimpson, 105 Hedgegrove Ave., Satellite Beach, Fla. 32937
Filed Feb. 10, 1992, Ser. No. 833,403
Term of patent 14 years
U.S. Cl. D11—157



345,324
AUTOMOBILE
John D. Bucci, Rochester Hills; Thomas C. Odette, Troy, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 3, 1992, Ser. No. 864,907
Term of patent 14 years
U.S. Cl. D12—92



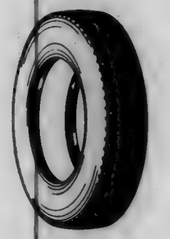
345,325
BICYCLE SHROUD
David K. Camfield, 513 Glenwood, and Daniel G. Hahn, 1040 E. North, both of, Olney, Ill. 62450
Filed Jun. 10, 1992, Ser. No. 896,544
Term of patent 14 years
U.S. Cl. D12—117



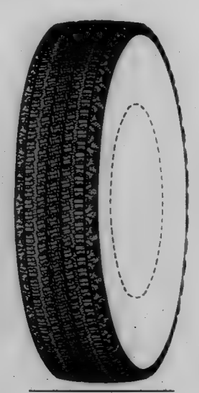
345,326
UPPER FRAME OF BABY CART
Kun-Hei Liu, 2F, No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan
Filed Jul. 21, 1992, Ser. No. 915,964
Term of patent 14 years
U.S. Cl. D12—133



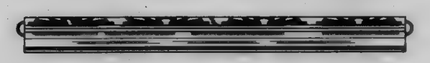
345,327
AUTOMOBILE TIRE
Shigeki Ota, Suita, and Tatsuo Kimura, Himeji, both of Japan, assignors to Sumotomo Rubber Industries, Ltd., Kobe, Japan
Filed Aug. 20, 1992, Ser. No. 932,059
Claims priority, application Japan, Feb. 27, 1991, 4-5480
Term of patent 14 years
U.S. Cl. D12—146



345,328
TIRE TREAD
Olivier De Barsy, Mersch, and Amratlal U. Patel, Colmar-Berg, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 31, 1992, Ser. No. 937,202
Term of patent 14 years
U.S. Cl. D12—146



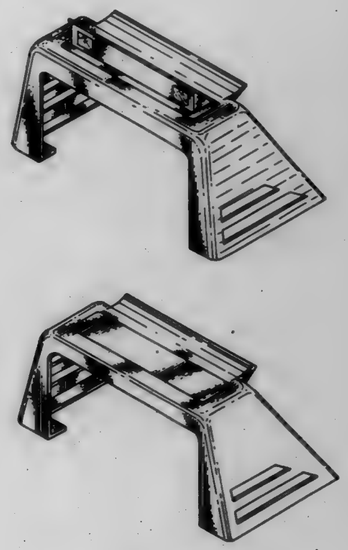
345,329
HEATED WIPER BLADE UNIT
Peter Kanellis, and Asterios Tsikrikis, both of 8 Baden Street, Toronto, Ontario, Canada M6J 1Z4
Filed Aug. 27, 1992, Ser. No. 935,728
Term of patent 14 years
U.S. Cl. D12—220



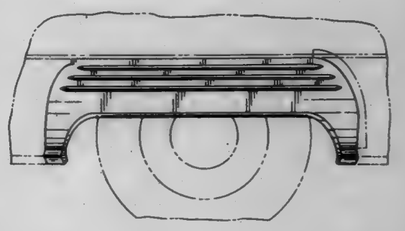
345,330
WINDSHIELD WIPER
Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuen Street, Taipei Hsien, Taiwan
Filed Oct. 19, 1992, Ser. No. 562
Term of patent 14 years
U.S. Cl. D12—219



345,331
MOVABLE TRUCK MOUNTED LIGHT SYSTEM
Lee Smith, Rte. 1, Box 178, Hartselle, Ala. 35640
Filed Nov. 13, 1992, Ser. No. 1,430
Term of patent 14 years
U.S. Cl. D12—222

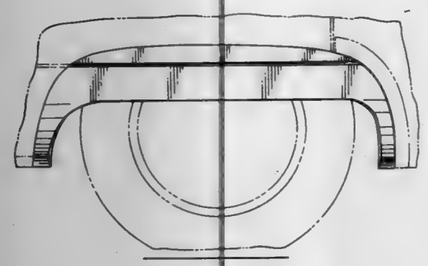


345,332
AUTOMOBILE FENDER SKIRT
Jerry Roman, Avon Lake, Ohio, assignor to Roman Chariot, Inc., Cleveland, Ohio
Filed Oct. 1, 1992, Ser. No. 46
Term of patent 14 years
U.S. Cl. D12—184



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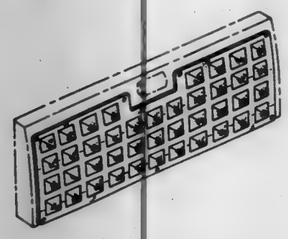
345,333
AUTOMOBILE FENDER SKIRT
Jerry Roman, Avon Lake, Ohio, assignor to Roman Chariot, Inc., Cleveland, Ohio
Filed Oct. 1, 1992, Ser. No. 116
Term of patent 14 years
U.S. Cl. D12—184



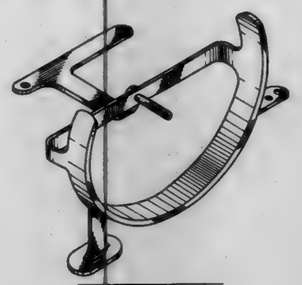
345,334
AUXILIARY REARVIEW MIRROR
David N. Cathey, 110 Chateau Cir., Fayetteville, Ga. 30214
Filed Feb. 25, 1992, Ser. No. 841,732
Term of patent 14 years
U.S. Cl. D12—187



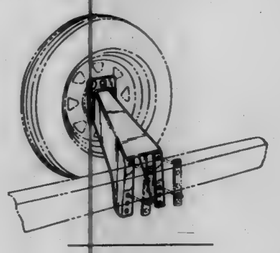
345,335
TRUCK TAILGATE FAIRING
Eddie R. Montgomery, 5016 Fernhill Dr., St. Louis, Mo. 63128
Filed Mar. 30, 1992, Ser. No. 860,347
Term of patent 14 years
U.S. Cl. D12—196



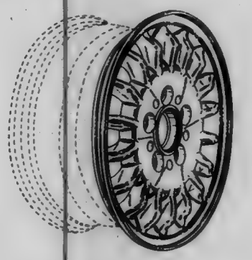
345,336
SPARE TIRE SUPPORT BRACKET
David M. Pigott, Jr., 39 Cedar Ave., Bethpage, N.Y. 11714
Filed Jun. 25, 1992, Ser. No. 903,557
Term of patent 14 years
U.S. Cl. D12—202



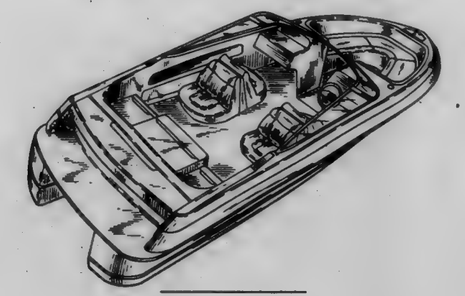
345,337
SPARE TIRE CARRIER
Robert P. Feller, Milwaukee, Wis., assignor to Fulton Performance Products, Inc., West Allis, Wis.
Filed Aug. 13, 1992, Ser. No. 929,802
Term of patent 14 years
U.S. Cl. D12—202



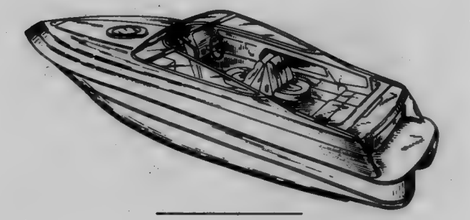
345,338
FRONT FACE OF A WHEEL FOR AN AUTOMOBILE
Peter Gabath, München, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Jun. 13, 1990, Ser. No. 537,277
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1989, M 89 08 658.9
Term of patent 14 years
U.S. Cl. D12—209



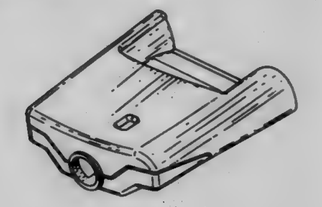
345,339
RECREATIONAL BOAT
Thomas D. Wenstadt, and J. Kelly Payne, both of Cadillac, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 824,250, Jan. 21, 1992. This application May 17, 1993, Ser. No. 8,434
Term of patent 14 years
U.S. Cl. D12—313



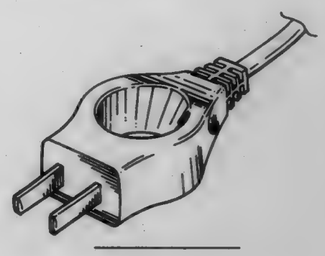
345,340
RECREATIONAL BOAT
Thomas D. Wenstadt, and J. Kelly Payne, both of Cadillac, Mich., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 824,250, Jan. 21, 1992. This application May 17, 1993, Ser. No. 8,444
Term of patent 14 years
U.S. Cl. D12—313



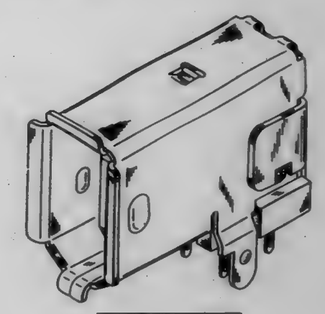
345,341
BATTERY ADAPTER
Jouko Tattari, Salo; Antero Nurmi, and Rauno Oksanen, both of Halikko, all of Finland, assignors to Nokia Mobile Phones, Ltd., Salo, Finland
Filed Jun. 18, 1992, Ser. No. 900,828
Term of patent 14 years
U.S. Cl. D13—119



345,342
ELECTRIC PLUG
Michael Fox, Strathfield, Australia, assignor to Breville R & D Pty Limited, Pyrmont, Australia
Filed Jun. 24, 1992, Ser. No. 903,378
Term of patent 14 years
U.S. Cl. D13—138



345,343
ELECTRICAL CONNECTING SOCKET
Masahiko Nakamura, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan
Filed Mar. 20, 1992, Ser. No. 854,958
Claims priority, application Japan, Sep. 26, 1991, 3-29242
Term of patent 14 years
U.S. Cl. D13—147

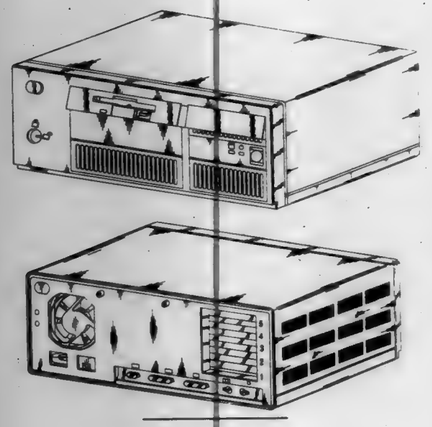


345,344
ACTUATOR FOR AN ELECTRICAL SWITCH
Maurice Schaeffer, Strasbourg, France, assignor to BACO Constructions Electriques - Anct. Baumgarten S.A., France
Filed Jan. 13, 1992, Ser. No. 820,049
Term of patent 14 years
U.S. Cl. D13—171

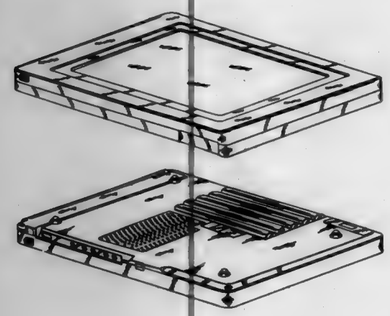


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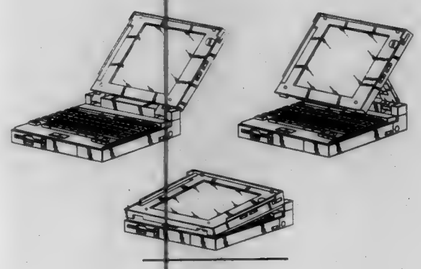
345,345
ENCLOSURE FOR A COMPUTER
Elke D. R. Falkenberg, and Vincent S. Garmon, both of Palm Beach, Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 10, 1991, Ser. No. 714,772
Term of patent 14 years
U.S. Cl. D14—100



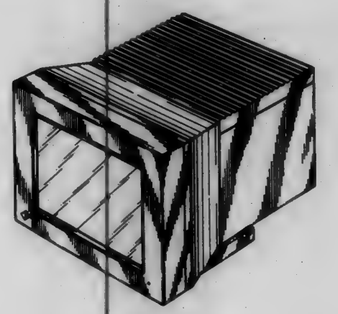
345,346
PEN-BASED COMPUTER
Pedro M. Alfonso, Delray Beach; Daniel F. Ansell, Coral Spring; Jeffrey W. Benck, Delray Beach; Hunter T. Foy, Boca Raton, all of Fla.; Richard P. Sapper, Montagnola, Switzerland, and Robert D. Wysong, Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 18, 1991, Ser. No. 779,486
Term of patent 14 years
U.S. Cl. D14—100



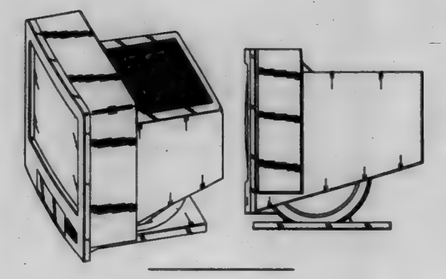
345,347
PORTABLE COMPUTER
Kazuhiko Yamazaki, Hiratsuka, Japan, assignor to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 21, 1992, Ser. No. 934,072
Claims priority, application Japan, Apr. 28, 1992, 4-12572
Term of patent 14 years
U.S. Cl. D14—106



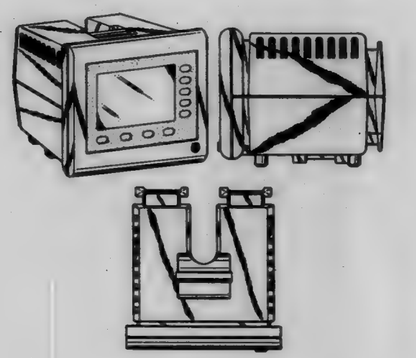
345,348
MONITOR HOUSING
Philip Yurkonis, Campbell; Craig Leverault, Mountain View; Paul Montgomery, and Herbert Pfeifer, both of San Francisco, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed May 19, 1992, Ser. No. 885,565
Term of patent 14 years
U.S. Cl. D14—113



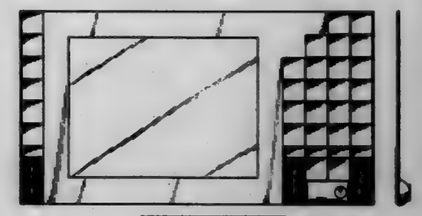
345,349
VIDEO DISPLAY
Toshitaka Imai, Sagamihara; Yoshiyuki Manabe, Ebina, and Tomoyuki Takahashi, Fujisawa, all of Japan, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 21, 1992, Ser. No. 934,073
Claims priority, application Japan, Feb. 21, 1992, 4-4496
Term of patent 14 years
U.S. Cl. D14—113



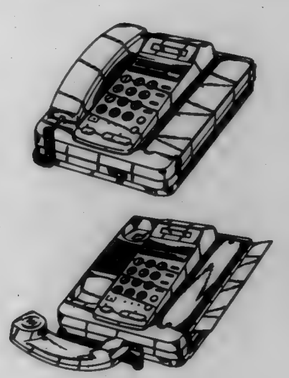
345,350
DISPLAY MONITOR
Cheryl D. Germany, Kirkland, Wash., and James D. Morrow, Oak Park, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Oct. 16, 1992, Ser. No. 579
Term of patent 14 years
U.S. Cl. D14—113



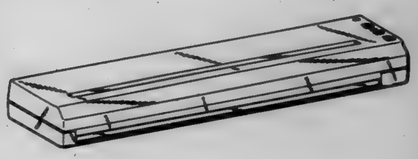
345,351
COMPUTER DISPLAY PANEL
Barry Wingate, San Jose, Calif., assignor to Dolch American Instruments, Inc., Milpitas, Calif.
Filed Oct. 17, 1991, Ser. No. 778,606
Term of patent 14 years
U.S. Cl. D14—115



345,352
FACSIMILE
Takuji Kaneko, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed Nov. 25, 1992, Ser. No. 1,981
Claims priority, application Japan, May 26, 1992, 4-15505
Term of patent 14 years
U.S. Cl. D14—118

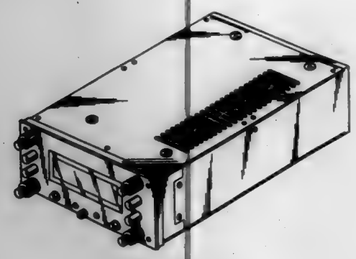


345,353
FACSIMILE MACHINE
Ralf E. Dietrich, 24 Coast Oak Way, San Rafael, Calif. 94903-1708
Filed Dec. 10, 1992, Ser. No. 2,376
Term of patent 14 years
U.S. Cl. D14—118

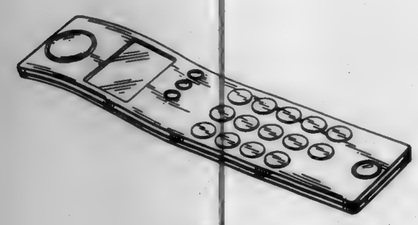


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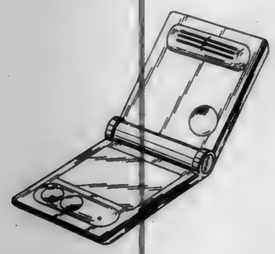
345,354
AIR BAND TRANSCEIVER
Masato Ichimura, 3-2-24 Nishi Aoki, Kawaguchi City, Saitama 332, Japan
Filed Jun. 1, 1992, Ser. No. 891,816
Term of patent 14 years
U.S. Cl. D14—137



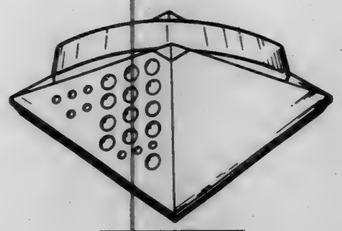
345,355
PORTABLE RADIO TELEPHONE
Akihiko Konno, and Takato Yokouchi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 945,345
Term of patent 14 years
U.S. Cl. D14—138



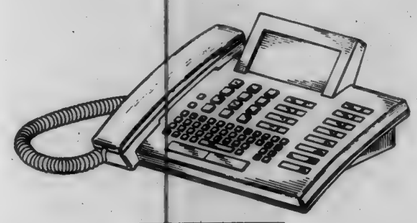
345,356
PORTABLE RADIO TELEPHONE
Takaharu Ando, Ryugasaki, and Seiji Namba, Inba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,856
Term of patent 14 years
U.S. Cl. D14—138



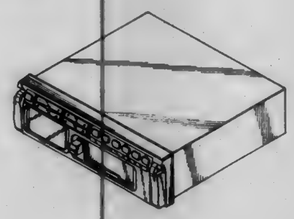
345,357
TELEPHONE
Dongyun Kim, Kwanak, Rep. of Korea, assignor to Telson Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 30, 1992, Ser. No. 2,025
Claims priority, application Rep. of Korea, May 29, 1992, 1992-8803
Term of patent 14 years
U.S. Cl. D14—150



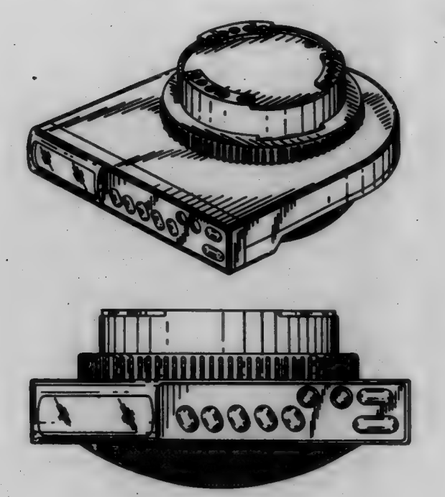
345,358
TELEPHONE STATION
Stefan Hillenmayer, and Wolfgang Muenscher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Minich, Fed. Rep. of Germany
Filed Oct. 20, 1992, Ser. No. 1,147
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1992, 9203417
Term of patent 14 years
U.S. Cl. D14—151



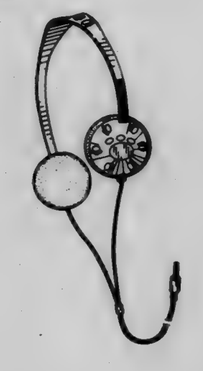
345,359
COMBINED CASSETTE TAPE PLAYER AND RADIO FOR AUTOMOBILES
Shigemoto Yamane, Yokohama, Japan, assignor to Shintom Co., Ltd., Kanagawa, Japan
Filed Apr. 30, 1992, Ser. No. 875,160
Term of patent 14 years
U.S. Cl. D14—157



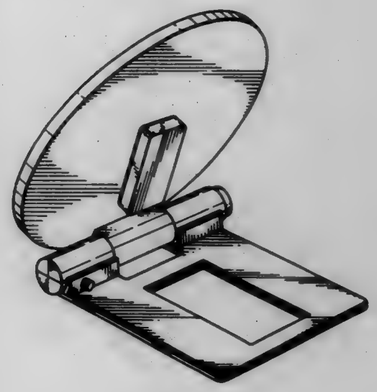
345,360
KITCHEN CLOCK RADIO
Richard Gioscia, Mahwah, N.J., assignor to Sony Electronics Inc., Park Ridge, N.J.
Filed May 11, 1992, Ser. No. 880,985
Term of patent 14 years
U.S. Cl. D14—171



345,361
HEADPHONE
Mark A. Grasse, 20748 Pacific Coast Highway Malibu, Calif. 90265
Filed Jan. 7, 1992, Ser. No. 817,743
Term of patent 14 years
U.S. Cl. D14—205



345,362
FLAT ANTENNA FOR RECEIVING SATELLITE BROADCASTING
Tsuyoshi Kadono, and Hiroyuki Nishimura, both of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Feb. 18, 1992, Ser. No. 836,442
Claims priority, application Japan, Dec. 17, 1991, 3-38155
Term of patent 14 years
U.S. Cl. D14—230

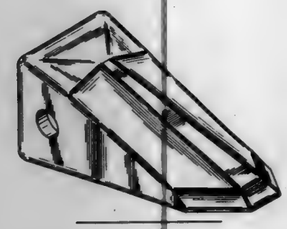


345,363
ANTENNA
Hironobu Watanabe, Itabashi, Japan, assignor to Dai-Ichi Denpa Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1992, Ser. No. 819,002
Term of patent 14 years
U.S. Cl. D14—234

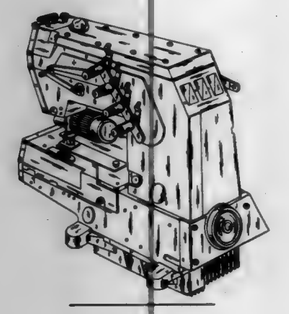


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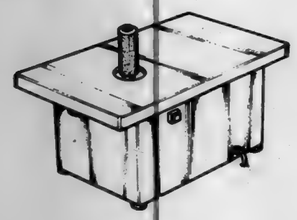
345,364
LOADER TOOTH
Howard W. Robinson, Grapevine, Tex., assignor to G. H. Hensley, Dallas Tex.
Continuat' .n-part of Ser. No. 496,340, Mar. 20, 1990, Pat. No. Des. 329,243. This application Aug. 24, 1990, Ser. No. 572,783
Term of patent 14 years
U.S. Cl. D15—29



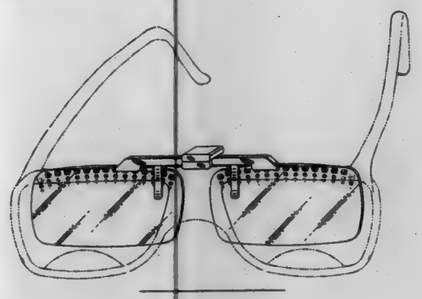
345,365
CYLINDRICAL RED SEWING MACHINE
Roberto Sanvito, Milan, Italy, assignor to Rimoldi, S.r.l., Milan, Italy
Continuation of Ser. No. 590,644, Sep. 28, 1990, abandoned, which is a continuation of Ser. No. 218,933, Jul. 13, 1988, abandoned. This application Apr. 14, 1993, Ser. No. 8,883
Claims priority, application Italy, May 17, 1988, 21258/88[U]
Term of patent 14 years
U.S. Cl. D15—69



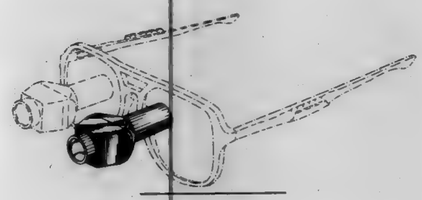
345,366
PORTABLE BENCH TOP UNIT FOR GRINDING
Timothy W. Hewitt, Pleasant Ridge, Mich., assignor to Clayton Machine Corporation, Clawson, Mich.
Filed Mar. 2, 1992, Ser. No. 844,398
Term of patent 14 years
U.S. Cl. D15—125



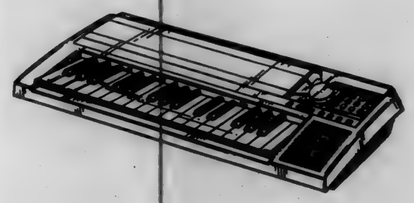
345,367
CLIP-ON FLIP-UP MAGNIFIED LENS
Nelson H. Wulf, R.D. #2, Cattaraugus, N.Y. 14719
Filed Jul. 18, 1991, Ser. No. 731,946
Term of patent 14 years
U.S. Cl. D16—123



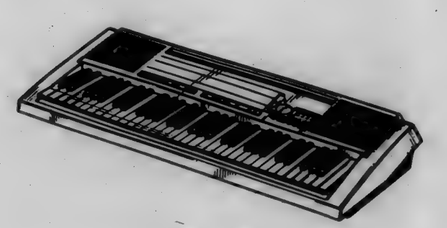
345,368
SURGICAL TELESCOPE
Bernard Clark, Arlington, Vt., and Frederick Morris, Shrewsbury, Mass., assignors to Luxtec Corporation, Worcester, Mass.
Filed Jul. 31, 1992, Ser. No. 923,169
Term of patent 14 years
U.S. Cl. D16—132



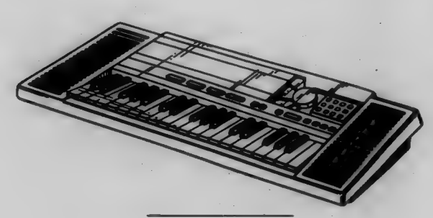
345,369
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Masafumi Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 9, 1992, Ser. No. 895,399
Claims priority, application Japan, Jan. 8, 1992, 4-216
Term of patent 14 years
U.S. Cl. D17—1



345,370
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Mitsuru Miyamoto, and Tomoaki Ida, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 9, 1992, Ser. No. 896,151
Claims priority, application Japan, Jan. 8, 1992, 4-214
Term of patent 14 years
U.S. Cl. D17—1



345,371
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Masafumi Ito, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 29, 1992, Ser. No. 905,644
Claims priority, application Japan, Jan. 8, 1992, 4-217
Term of patent 14 years
U.S. Cl. D17—1



345,372
ELECTRONIC PIANO
Tomoaki Ida, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Dec. 22, 1992, Ser. No. 2,890
Claims priority, application Japan, Jun. 26, 1992, 4-19071
Term of patent 14 years
U.S. Cl. D17—7



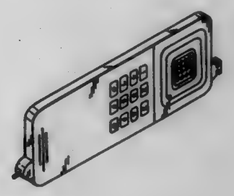
345,373
HAND HELD MUSICAL TONE CONTROL APPARATUS
Junko Mine, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Dec. 17, 1991, Ser. No. 810,018
Claims priority, application Japan, Jun. 24, 1991, 3-18753
Term of patent 14 years
U.S. Cl. D17—99



345,374
HAND HELD MUSICAL TONE CONTROL APPARATUS
Junko Mine, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Dec. 17, 1991, Ser. No. 809,059
Claims priority, application Japan, Jun. 24, 1991, 3-18754
Term of patent 14 years
U.S. Cl. D17—99

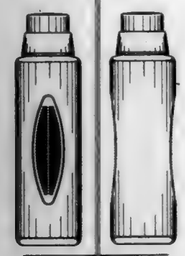


345,375
WRITING PEN
Ronald F. Monzyk, Washington, Mo., assignor to Magnet Inc., Washington, Mo.
Filed Nov. 25, 1992, Ser. No. 1,959
Term of patent 14 years
U.S. Cl. D19—42

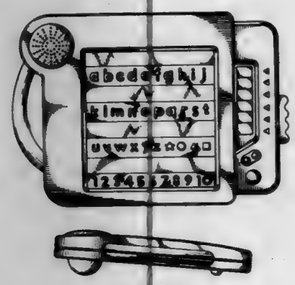


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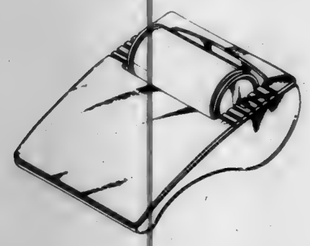
345,376
BINGO MARKER
David B. Underwood, Jr., Spokane, Wash., assignor to Bingo Products, Inc., Great Falls, Mont.
Filed Oct. 1, 1992, Ser. No. 50
Term of patent 14 years
U.S. Cl. D19—48



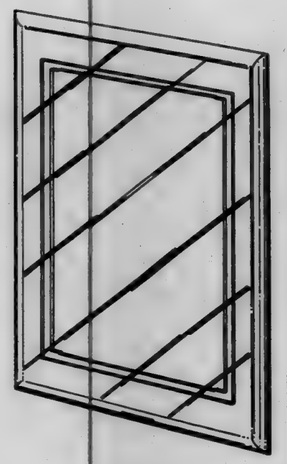
345,377
EDUCATIONAL TOY
Tak W. Poon, Tai Po, Hong Kong, assignor to VTech Industries, Inc., Wheeling, Ill.
Filed Mar. 10, 1992, Ser. No. 849,328
Claims priority, application United Kingdom, Nov. 6, 1991, 2018809
Term of patent 14 years
U.S. Cl. D19—60



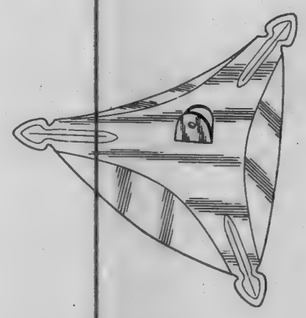
345,378
PAPER CLIP DISPENSER
James Hu, Taipei, Taiwan, assignor to Pro Eton Corporation, Taipei, Taiwan
Filed Sep. 22, 1992, Ser. No. 949,091
Term of patent 14 years
U.S. Cl. D19—75



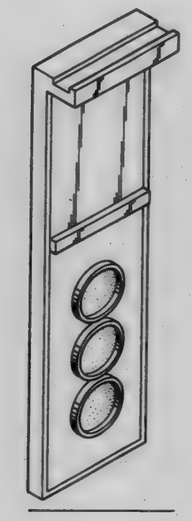
345,379
CARD HOLDER
Robert J. Chan, Mississauga, Canada, assignor to Canadian Moulded Products Inc., Mississauga, Canada
Filed Jul. 6, 1992, Ser. No. 909,456
Term of patent 14 years
U.S. Cl. D20—40



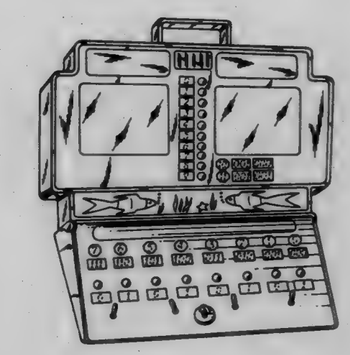
345,380
SUPPORT BRACE FOR A MOBILE SIGN
Stuart C. W. Wear, Minnetonka, Minn., assignor to Popco, Inc., Minneapolis, Minn.
Filed Apr. 5, 1993, Ser. No. 6,740
Term of patent 14 years
U.S. Cl. D20—42



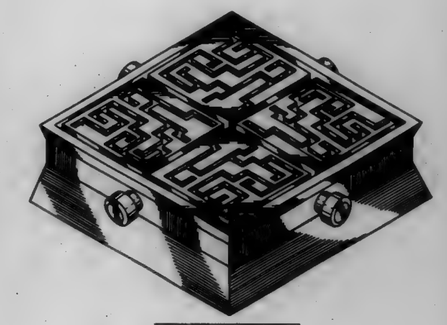
345,381
TARGET GAME BOARD
George Varga, 6839 - 90 Avenue, Edmonton, Alberta, Canada T6E 0P3
Filed Dec. 17, 1992, Ser. No. 2,709
Claims priority, application Canada, Jun. 23, 1992, 26-06-92-6
Term of patent 14 years
U.S. Cl. D21—5



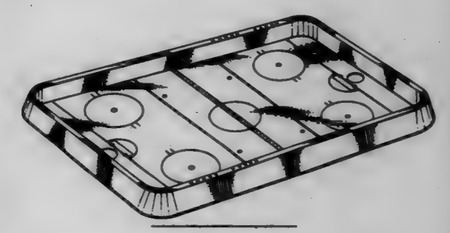
345,382
ELECTRONIC GAME HOUSING
Luis F. Valdes, 175 W. 90th St., 19D, New York, N.Y. 10024
Filed Aug. 5, 1991, Ser. No. 740,182
Term of patent 14 years
U.S. Cl. D21—13



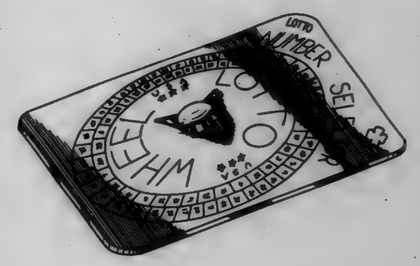
345,383
TILTING MAZE GAME
Lawrence Lehoux, 922 Riverdale, Windsor Ontario, CN N8S 4C3, Canada
Filed Oct. 18, 1991, Ser. No. 778,626
Term of patent 14 years
U.S. Cl. D21—16



345,384
GAME BOARD
David Tataryn, P.O. Box 128, 265 Bridge Street, Fergus, Ontario, Canada N1M 2W7
Filed Jan. 10, 1991, Ser. No. 639,691
Term of patent 14 years
U.S. Cl. D21—18

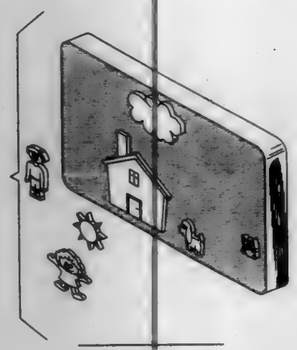


345,385
LOTTO NUMBER SELECTOR
Tibor Palatin, RR 1, Port Robinson, Ontario, Canada L0S 1K0
Filed Jun. 25, 1992, Ser. No. 903,192
Term of patent 14 years
U.S. Cl. D21—37

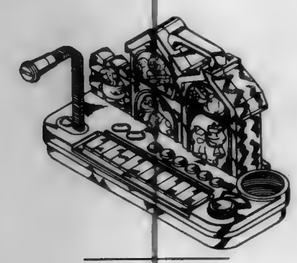


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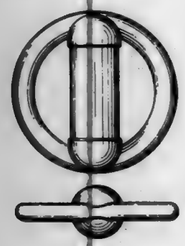
345,386
TOY
Clara S. Gilliam-Ogle, 120 Audubon Rd., Oak Ridge, Tenn. 37830
Filed Mar. 14, 1991, Ser. No. 669,288
Term of patent 14 years
U.S. Cl. D21—59



345,387
TOY PIANO
Yung-Fang Yang, P.O. Box 82-144, Taipei, Taiwan
Filed Oct. 28, 1992, Ser. No. 895
Term of patent 14 years
U.S. Cl. D21—64



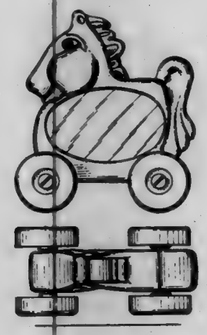
345,388
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 24, 1992, Ser. No. 934,209
Term of patent 14 years
U.S. Cl. D21—65



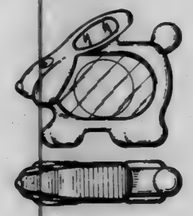
345,389
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 23, 1992, Ser. No. 934,212
Term of patent 14 years
U.S. Cl. D21—65



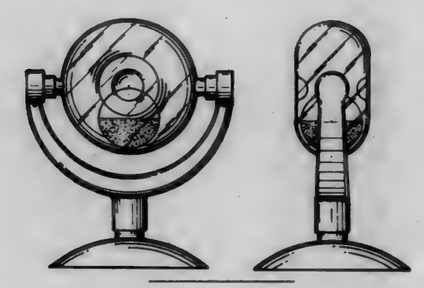
345,390
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,710
Term of patent 14 years
U.S. Cl. D21—65



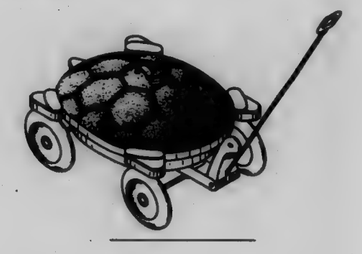
345,391
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,720
Term of patent 14 years
U.S. Cl. D21—65



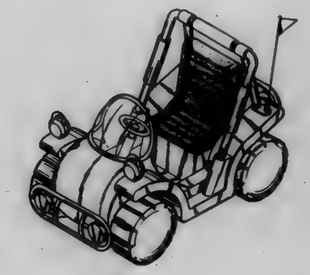
345,392
RATTLE
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Nov. 23, 1992, Ser. No. 1,722
Term of patent 14 years
U.S. Cl. D21—65



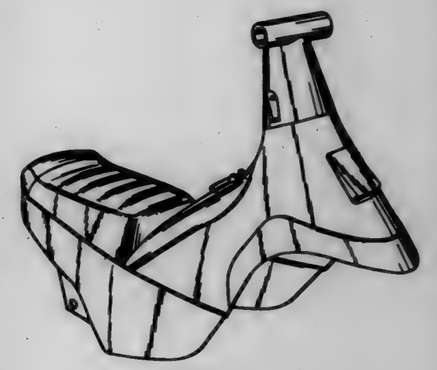
345,393
TURTLE TOY CAR
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Dec. 21, 1992, Ser. No. 2,761
Term of patent 14 years
U.S. Cl. D21—74



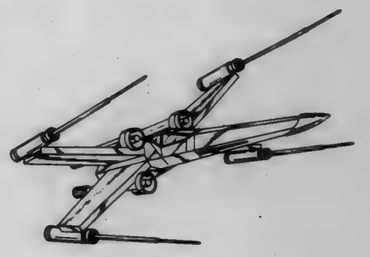
345,394
TOY JEEP
Ting-Hsing Chen, Tainan Hsien, Taiwan, assignor to Far Great Plastics Co., Ltd., Tainan Hsien, Taiwan
Filed Apr. 2, 1993, Ser. No. 6,645
Term of patent 14 years
U.S. Cl. D21—78



345,395
CHILDREN TRICYCLE BODY
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Feb. 22, 1993, Ser. No. 5,057
Term of patent 14 years
U.S. Cl. D21—80

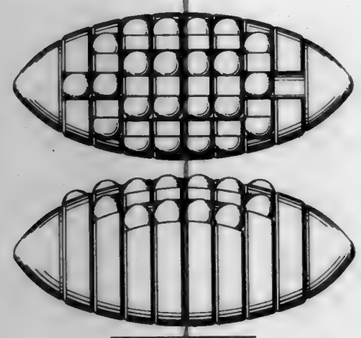


345,396
AMUSEMENT SPACE VEHICLE
Timothy J. Delaney, Northridge, Calif., assignor to The Walt Disney Company, Burbank, Calif.
Filed Mar. 20, 1992, Ser. No. 854,261
Term of patent 14 years
U.S. Cl. D21—87

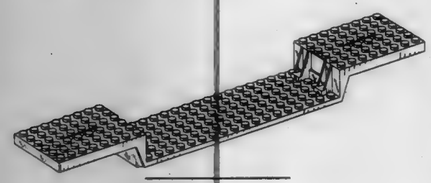


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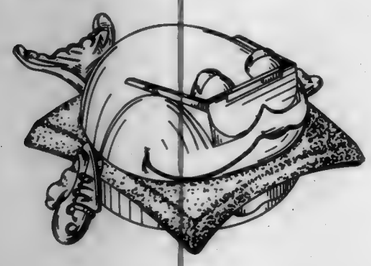
345,397
FINGER MANIPULATABLE GAME WITH MOVABLE COMPONENTS
Miklos Kamandi; Joseph Nemeth, both of 38C Robert Treat Dr., Milford, Conn. 06460, and George Sabol, 93 Mary Ave., Stratford, Conn. 06497
Filed Jun. 29, 1992, Ser. No. 905,404
Term of patent 14 years
U.S. Cl. D21—104



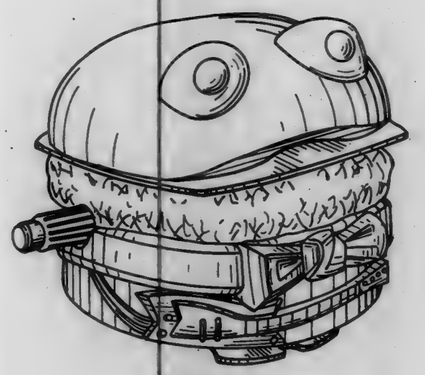
345,398
ELEMENT FOR A TOY BUILDING SET
Torben Plagborg, Grindsted, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,899
Term of patent 14 years
U.S. Cl. D21—108



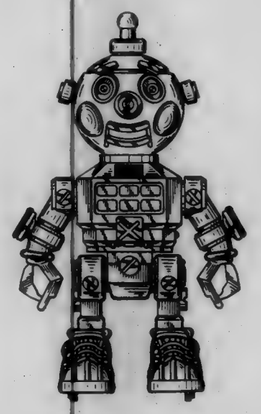
345,399
TOY FISH SANDWICH
Stephen J. Pachol, Naperville, Ill., and Ferenc Fekete, Huntington Beach, Calif., assignors to M-B Sales, A Division of the Havi Group L.P., Westmont, Ill.
Filed Jun. 2, 1992, Ser. No. 892,367
Term of patent 14 years
U.S. Cl. D21—109



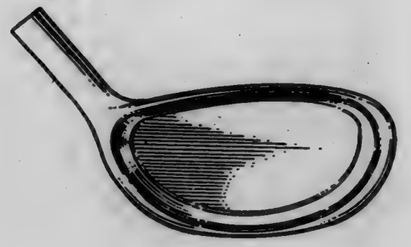
345,400
TOY HAMBURGER SANDWICH
Stephen J. Pachol, Naperville, Ill., and Ferenc Fekete, Huntington Beach, Calif., assignors to M-B Sales, A Division of the Havi Group L.P., Westmont, Ill.
Filed Jun. 2, 1992, Ser. No. 892,376
Term of patent 14 years
U.S. Cl. D21—109



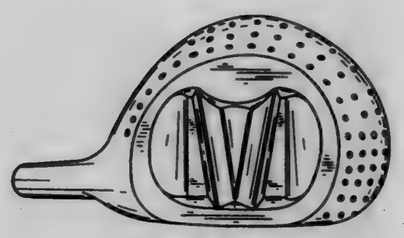
345,401
TOY ROBOT
Melvin R. Kennedy, Hampton Bays, N.Y., and Avi Arad, Westport, Conn., assignors to Toy Biz, Inc., New York, N.Y.
Filed Jan. 13, 1992, Ser. No. 819,937
Term of patent 14 years
U.S. Cl. D21—150



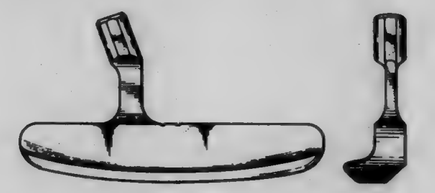
345,402
METAL GOLF CLUB HEAD
Richard C. Wilson, 2066 Vista, Arcadia, Calif. 91006
Filed Jul. 9, 1990, Ser. No. 549,703
The portion of the term of this patent subsequent to Jan. 15, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—214



345,403
GOLF CLUB HEAD
Philippe Sanchez, San Clemente, Calif., assignee to Taylor Made Golf Company, Carlsbad, Calif.
Filed Jan. 8, 1992, Ser. No. 817,832
Term of patent 14 years
U.S. Cl. D21—214



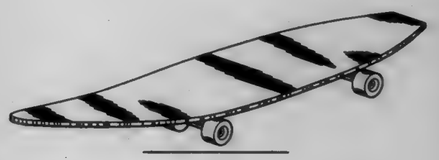
345,404
GOLF PUTTER HEAD
Donnie R. Meeks, Macon, Ga., assignor to Overspin Golf, Inc., Savannah, Ga.
Filed Jun. 15, 1992, Ser. No. 898,738
Term of patent 14 years
U.S. Cl. D21—219



345,405
IN-LINE ROLLER-SKATE
Giuseppe Cavasin, Montebelluna, Italy, assignor to Roces S.r.l., Italy
Filed Feb. 20, 1992, Ser. No. 839,360
Claims priority, application Italy, Aug. 23, 1991, MI910-000620; Dec. 6, 1991, TV910-000053
Term of patent 14 years
U.S. Cl. D21—226



345,406
SKATEBOARD FOR SIMULATING SURFING
Scott Shankland, and Timothy Oates, both of 763-b Foothill #263, San Luis Obispo, Calif. 93405
Filed Jul. 23, 1992, Ser. No. 920,150
Term of patent 14 years
U.S. Cl. D21—227



345,407
COMPACT PISTOL
William B. Ruger, Croydon Turnpike, Croydon, N.H. 03773
Filed May 6, 1992, Ser. No. 880,319
Term of patent 14 years
U.S. Cl. D22—104



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345,408
JERK WORM LURE
Louie W. Gibbs, Clermont, Fla., assignor to Classic Manufacturing Co., Inc., Clermont, Fla.
Filed May 10, 1991, Ser. No. 698,071
Term of patent 14 years
U.S. Cl. D22—127



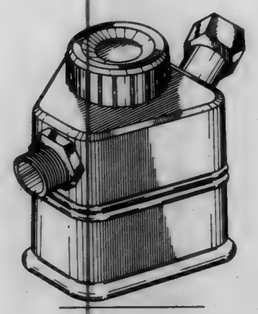
345,409
FISHING ROD HOLDER
Calvin Baynard, Rte. 4, Box 1444, Manning, S.C. 29102
Filed Dec. 4, 1992, Ser. No. 2,128
Term of patent 14 years
U.S. Cl. D22—147



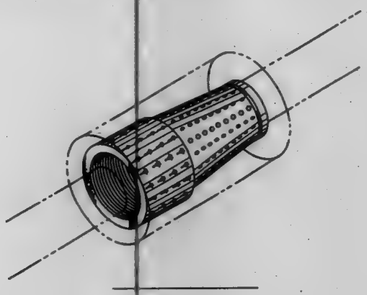
345,410
VAPOR LIQUID CONTACT TOWER PACKING BODY
Michael J. Del Prete, P.O. Box 16350, San Francisco, Calif. 94116
Filed Dec. 13, 1991, Ser. No. 807,575
Claims priority, application United Kingdom, Oct. 28, 1991, 2018584
Term of patent 14 years
U.S. Cl. D23—209



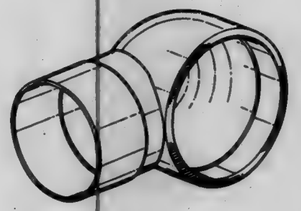
345,411
CHEMICAL DISPENSING LAWN WATERER
Billy T. Jernigan, Sr., 913 Swann Dr., Lakeland, Fla. 33809
Filed Mar. 6, 1992, Ser. No. 846,418
Term of patent 14 years
U.S. Cl. D23—207



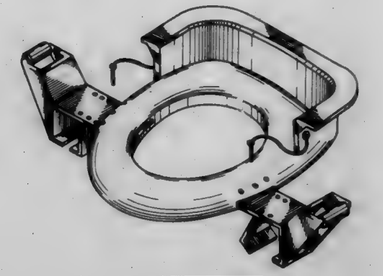
345,412
FILTER FOR USE ON WATER CONDUITS
Arnold J. Myrvik, and Ione M. Myrvik, both of 1740 Elaine St., Billings, Mont. 59105
Filed Oct. 19, 1990, Ser. No. 600,097
Term of patent 14 years
U.S. Cl. D23—209



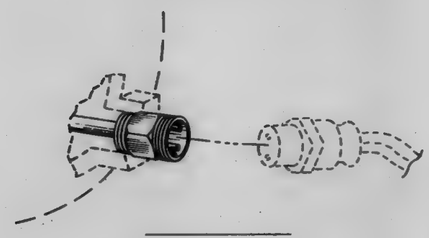
345,413
ELBOW
Brad Brown, Toronto, Canada, assignor to HMI Incorporated, Rexdale, Canada
Filed Apr. 2, 1991, Ser. No. 679,551
Term of patent 14 years
U.S. Cl. D23—263



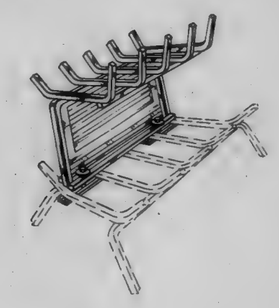
345,414
PORTABLE TOILET SEAT FOR A CHILD
Jeffrey Douglas, 5857 Harrell St., Detroit, Mich. 48213
Filed May 14, 1992, Ser. No. 882,105
Term of patent 14 years
U.S. Cl. D23—296



345,415
RESISTIVE WATER HEATER ELEMENT
Richard W. Bremer, P.O. Box 1395, Hemet, Calif. 92343
Filed Jan. 15, 1991, Ser. No. 641,355
Term of patent 14 years
U.S. Cl. D23—322



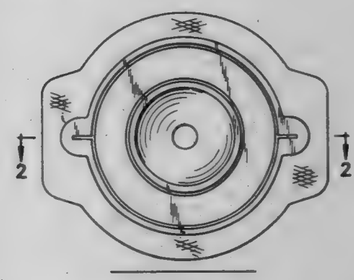
345,416
COMBINED SECOND GRATE AND BACKPANEL FOR ATTACHMENT TO A PRIMARY FIREPLACE GRATE
Richard E. Steele, Columbus, and John B. Grot, P.O. Box 7186, Columbus, Ga. 31908, assignors to John B. Grot
Filed Apr. 8, 1992, Ser. No. 865,111
Term of patent 14 years
U.S. Cl. D23—398



345,417
THORACIC DRAINAGE TUBE
Igor A. Sharipov, Moscow, U.S.S.R., assignor to AmRus Corp., St. Louis, Mo.
Filed Dec. 6, 1991, Ser. No. 805,816
Term of patent 14 years
U.S. Cl. D24—112



345,418
BODY MOUNTING FLANGE FOR AN OSTOMY POUCH
Leonard Fenton, Beachwood, Ohio, assignor to Marlen Manufacturing and Development Co., Inc., Bedford, Ohio
Filed Jun. 26, 1992, Ser. No. 904,545
Term of patent 14 years
U.S. Cl. D24—129

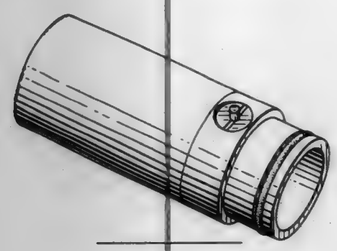


345,419
GUIDE CATHETER TORQUE HANDLE
John B. Horrigan, Merrimac, and Peter A. Lunn, Beverly, both of Mass., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Dec. 30, 1991, Ser. No. 821,556
Term of patent 14 years
U.S. Cl. D24—130



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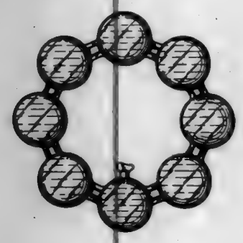
345,420
COMPACT POWER-ACTUATED MALE IMPOTENCY TREATMENT PUMP
Edward T. Stewart, Sr., 107 Plaza Ter., Dodge City, Kans. 67801
Filed May 28, 1993, Ser. No. 890,463
Term of patent 14 years
U.S. Cl. D24—143



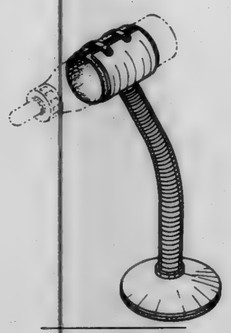
345,421
ANKLE BRACE
Gail H. Schumann, Carrollton, and Vernon L. Stevenson, Fort Worth, both of Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.
Filed Feb. 19, 1992, Ser. No. 838,116
Term of patent 14 years
U.S. Cl. D24—192



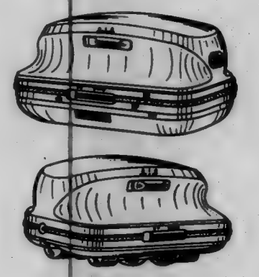
345,422
TEETHING RING
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 24, 1992, Ser. No. 934,077
Term of patent 14 years
U.S. Cl. D24—194



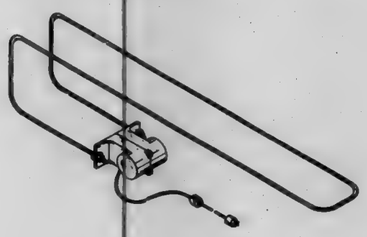
345,423
BABY BOTTLE HOLDER
Ferdinand M. Sabalones, 2131 Vintage Au., Fitchburg, Wis. 53572
Filed Jun. 24, 1992, Ser. No. 903,661
Term of patent 14 years
U.S. Cl. D24—199



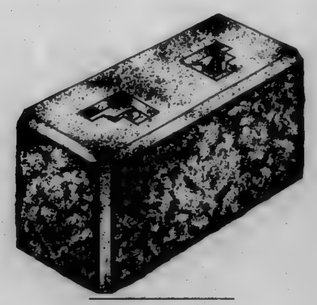
345,424
COMBINED MASSAGER AND COVER
Jacques Gudecin, Saint Priest, France, assignor to Calor S.A., Lyons, France
Filed Jul. 13, 1992, Ser. No. 912,711
Claims priority, application France, Jan. 17, 1992, 920 286
Term of patent 14 years
U.S. Cl. D24—215



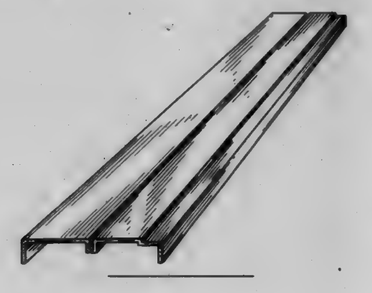
345,425
BED VIBRATOR
Thomas L. Klamm, 1509 Rapids Dr., Racine, Wis. 53404
Filed Aug. 17, 1992, Ser. No. 930,043
Term of patent 14 years
U.S. Cl. D24—215



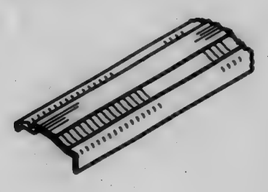
345,426
CORNER BLOCK
Peter L. Anderson, Centreville; Michael J. Cowell, Leesburg, and Dan J. Hotek, Chantilly, all of Va., assignors to Societe Civile des Brevets Henri C. Vidal, Le Pecq, France
Continuation of Ser. No. 40,904, Mar. 31, 1993. This application Jun. 7, 1993, Ser. No. 9,214
Term of patent 14 years
U.S. Cl. D25—118



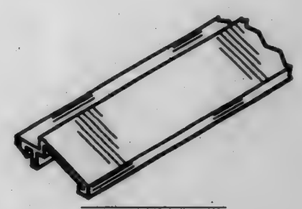
345,427
WINDOW COMPONENT EXTRUSION
Jeanne A. Moss, Windom; Dennis C. Westphal, Galva, both of Kans., and Jeffrey B. Hersh, Wayne, Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Dec. 26, 1991, Ser. No. 814,286
Term of patent 14 years
U.S. Cl. D25—119



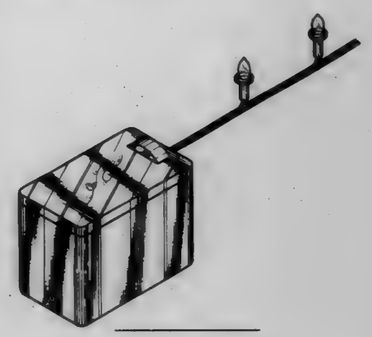
345,428
GLAZING BEAD
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,829
Term of patent 14 years
U.S. Cl. D25—119



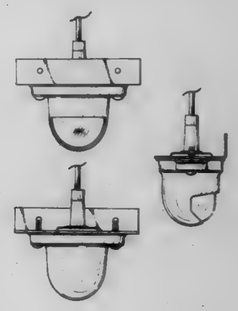
345,429
SILL EXTERIOR TRIM
Joseph C. Bancroft, 134 Harmony La., McComb, Miss. 39648
Filed Sep. 8, 1992, Ser. No. 940,831
Term of patent 14 years
U.S. Cl. D25—119



345,430
SET OF BATTERY POWERED MINIATURE CHRISTMAS LIGHTS
Jerry D. Ridgeway, 255 Canterbury Dr., Jonesboro, Ga. 30236
Filed Sep. 23, 1991, Ser. No. 764,383
Term of patent 14 years
U.S. Cl. D26—25

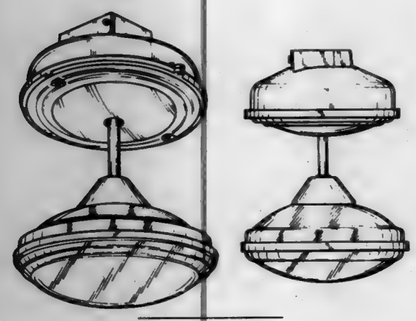


345,431
TRUCK BED RAIL LIGHT
Jimmy D. Pogue, Rte. 6, Box 94-A, Ada, Oklahoma City, Okla. 74820
Filed Oct. 20, 1992, Ser. No. 607
Term of patent 14 years
U.S. Cl. D26—28

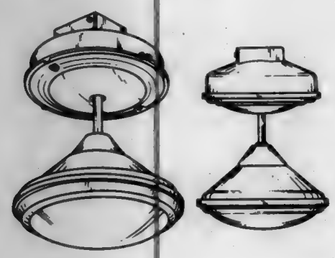


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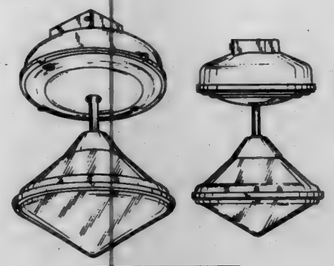
345,432
SUSPENDED LUMINAIRE
Harold T. Gruber, Summit Station; Bonnie J. Brohard, Newark; William W. Belisle, Newark, and Herbert A. Fouke, Newark, all of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Feb. 27, 1992, Ser. No. 842,582
Term of patent 14 years
U.S. Cl. D26—88



345,433
SUSPENDED LUMINAIRE
Harold T. Gruber, Summit Station; Bonnie J. Brohard, Newark; William W. Belisle, Newark, and Herbert A. Fouke, Newark, all of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Feb. 27, 1992, Ser. No. 842,948
Term of patent 14 years
U.S. Cl. D26—88



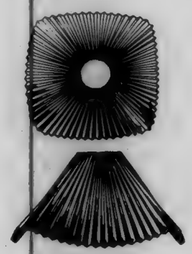
345,434
SUSPENDED LUMINAIRE
Harold T. Gruber, Summit Station; Bonnie J. Brohard, Newark; William W. Belisle, Newark, and Herbert A. Fouke, Newark, all of Ohio, assignors to Holophane Lighting, Inc., Newark, Ohio
Filed Feb. 27, 1992, Ser. No. 844,006
Term of patent 14 years
U.S. Cl. D26—88



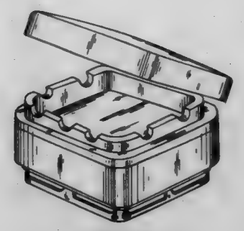
345,435
DECORATIVE LIGHT ENCLOSURE
William E. McLaughlin, II, Box 4356 Woodland Acres R.R. #4, Berwick, Pa. 18603
Filed Jan. 11, 1993, Ser. No. 3,614
Term of patent 14 years
U.S. Cl. D26—125



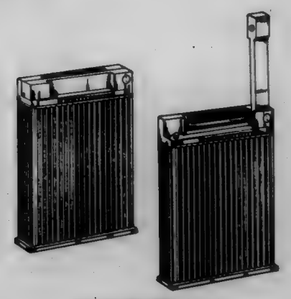
345,436
LAMPSHADE
Barry Evans, Courtaulds Acetate Works, P.O. Box 5, Spondon, Derby, DE2 7BP, England
Filed Aug. 16, 1991, Ser. No. 746,514
Claims priority, application United Kingdom, Feb. 16, 1991, 2013084; Feb. 16, 1991, 2013085
Term of patent 14 years
U.S. Cl. D26—136



345,437
ASHTRAY
Robert Bruno, Avon, Conn., assignor to Pollenex Corporation, Kansas City, Mo.
Filed Jun. 17, 1992, Ser. No. 900,248
Term of patent 14 years
U.S. Cl. D27—105



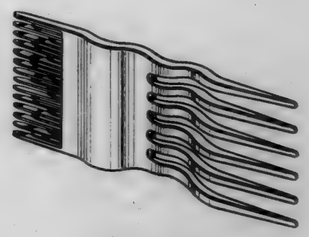
345,438
TABLE LIGHTER
Jean-Claude Tracol, Giez, France, assignor to S. T. Dupont S.A., Paris, France
Filed Oct. 19, 1992, Ser. No. 595
Claims priority, application France, Apr. 28, 1992, 922695
Term of patent 14 years
U.S. Cl. D27—157



345,439
HAIR DRYER
Lindsey J. J. Walker, Flat 1, 21 Woodstock Road, London NW11, England
Filed Aug. 29, 1990, Ser. No. 576,892
Claims priority, application United Kingdom, Mar. 7, 1990, 2005235
Term of patent 14 years
U.S. Cl. D28—13



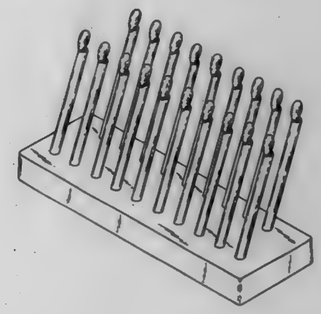
345,440
COMB
Thomas Van Dyk, Prospect Park, N.J., assignor to Goody Products, Inc., Kearny, N.J.
Filed May 4, 1992, Ser. No. 878,328
Term of patent 14 years
U.S. Cl. D28—29



345,441
RAZOR HANDLE
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 8, 1992, Ser. No. 483
Term of patent 14 years
U.S. Cl. D28—48



345,442
NAIL POLISH SELECTOR
Margaret A. Gillan, 249 Middle St., Weymouth, Mass. 02189
Filed Apr. 29, 1992, Ser. No. 875,146
Term of patent 14 years
U.S. Cl. D28—56



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Fitness Master, Inc.: *See*—
Easley, James B.; Friedebach, Adolf H.; Theisen, Paul M.; and Titus, John E., 5,295,927, Cl. 482-52.000.

Fjallstrom, Roland, to Celleco Hedemora AB. Method and device for separating a fibre suspension. 5,296,098, Cl. 162-55.000.

Flamagas, S.A.: *See*—
Gomez Lopez, Isidro; and Serrahima Formosa, Jorge, 5,295,819, Cl. 431-153.000.

Flame-Spray Industries, Inc.: *See*—
Marantz, Daniel R.; Marantz, David R.; and Kowalsky, Keith A., 5,296,667, Cl. 219-121.470.

Flanders, Stephen N.; and Eaton, Robert A., to United States of America, Army. Snow plow compatible speed bumps. 5,295,759, Cl. 404-15.000.

Fleck, Franz: *See*—
Kahrs, Manfred; Kunz, Gerhard; Fleck, Franz; Schoellhorn, Hermann; Schudt, Gerhard; and Huthmacher, Winfried, 5,295,797, Cl. 417-273.000.

Fleming, William T., Jr. : *See*—
Lalin, Hill S.; and Fleming, William T., Jr., 5,295,396, Cl. 73-861.000.

Flesch, Gerard; and Lehn, Jean-Marie, to Ciba-Geigy Corporation. Pharmaceutical compositions comprising methanediphosphonic acid derivatives and macrocyclic polyethers. 5,296,475, Cl. 514-108.000.

Fletcher, Arthur L. Pyramidal signal light. 5,297,012, Cl. 362-252.000.

FLEXcon Company Inc.: *See*—
Pennace, John R., 5,296,949, Cl. 359-2.000.

Flock, Thomas P. Ski binding with knee flex sensor. 5,295,704, Cl. 280-611.000.

Flohe GmbH & Co.: *See*—
Dung, Herbert; and Elsner, Emil, 5,297,159, Cl. 373-72.000.

Flohr, Peter, to Heinrich Kopp GmbH & Co. KG. Device for rapid attachment of serially-mounted electrical apparatus. 5,297,002, Cl. 361-652.000.

Flores-Verdugo, Marco A.: *See*—
Flores-Becerra-Novoa, Jorge O.; Viramontes-Brown, Ricardo; Flores-Verdugo, Marco A.; and Garza-Ondarza, Jose J., 5,296,015, Cl. 75-10.660.

Flowers, James L.: *See*—
Adekunle, Michael; and Flowers, James L., 5,296,225, Cl. 424-195.100.

Fluegel, Kyle G.: *See*—
Thomas, Stan W.; Key, Roger D.; Fluegel, Kyle G.; Jackson, Willie K.; Elwell, Keith D.; and White, Gary L., 5,296,335, Cl. 430-320.000.

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Focal Technologies Incorporated: *See*—
Snow, James W.; MacKay, Ian B.; and Bowers, Kenneth, 5,297,225, Cl. 385-25.000.

Fock, Jurgen: *See*—
Esselborn, Eberhard; Fock, Jurgen; Koerner, Gotz; and Schaefer, Dietmar, 5,296,573, Cl. 526-320.000.

Focke & Co (GmbH & Co): *See*—
Focke, Heinz; and Gosebruch, Harald, 5,295,579, Cl. 206-494.000.

Focke, Heinz; and Gosebruch, Harald, to Focke & Co (GmbH & Co). Paper tissue pack, especially paper handkerchief pack. 5,295,579, Cl. 206-494.000.

Fohl, Artur, to TRW Repa GmbH. Belt tightener for vehicle safety belt systems. 5,295,714, Cl. 280-806.900.

Fokker Aircraft B.V.: *See*—
Kaptein, Dick, 5,295,641, Cl. 244-1.00N.

Foletti, Sandro; and Cassinari, Franco, to JOBS S.p.A. Method and tool for the digitizing of drilling jigs. 5,297,060, Cl. 364-559.000.

Fong, Francis C. S.: *See*—
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Fontana, Simonetta: *See*—
Navarrini, Walter; and Fontana, Simonetta, 5,296,617, Cl. 549-455.000.

Ford Motor Company: *See*—
Beim, Rudolf, 5,295,924, Cl. 475-275.000.
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Jozefczyk, John; and Milisello, Anthony L., 5,295,860, Cl. 439-503.000.
Miller, John M., 5,296,785, Cl. 318-254.000.
Peretick, James; and DeSantis, Vincent J., 5,295,861, Cl. 439-527.000.
Rao, V. Durga N.; and Crosbie, Gary M., 5,295,461, Cl. 123-188.009.
Ridgway, Robert W.; and Doorenbos, Keith Z., 5,295,471, Cl. 123-479.000.
Steele, Duane F., 5,295,812, Cl. 418-55.100.

Ford, Stephen J.: *See*—
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Foreman, Craig; and Vierboom, Peter, to University of Sydney, The; and Electricity Commission of New South Wales, The. Gas cooled cathode for an arc torch. 5,296,668, Cl. 219-121.480.

Forest, Mark W.: *See*—
Cousineau, B. Robert; and Forest, Mark W., 5,295,620, Cl. 227-156.000.

Forma Scientific, Inc.: *See*—
Hock, Kuah T., 5,295,902, Cl. 454-57.000.

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Eyuboglu, Vedat M.; and Forney, G. David, Jr., 5,297,170, Cl. 375-25.000.

Forstrom, David M.: *See*—
Merritello, Ronald J.; Kilgore, William F.; Forstrom, David M.; and Lane, Terence A., 5,295,998, Cl. 8-474.000.

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Foster, Peter J.: *See*—
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Foster Wheeler Energy Corporation: *See*—
Cho, Soung M.; Seltzer, Andrew H.; and Pritchard, Scot G., 5,296,206, Cl. 423-235.000.

Fotowat-Ahmady, Ali; and Navid, Nasrollah S., to North American Philips Corporation. Temperature-compensated logarithmic detector having a wide dynamic range. 5,296,761, Cl. 307-492.000.

Fouquay, Stephane. HMTA preparation of methylated tertiary amines. 5,296,633, Cl. 564-469.000.

Fox, Neil A., to Smiths Industries Public Limited Company. Mutli-color display apparatus employing superposed planar discharge lamps. 5,296,951, Cl. 359-48.000.

Framo Development (UK) Limited: *See*—
Mohn, Frank, 5,295,848, Cl. 439-247.000.

France Telecom: *See*—
Deveaud-Piedran, Benoit; and Gerard, Jean-Michel, 5,296,699, Cl. 250-214.100.
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Franklin, Paul R. Cold liquid and slush ice producer. 5,295,368, Cl. 62-307.000.

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Fraser, Bruce A.; Nelson, Timothy V.; and Holden, Steven J., to Carrier Corporation. Oil inlet feed. 5,295,815, Cl. 418-94.000.

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Frey, Ernst M. Weld seam cover on the inside of sheet metal tubes. 5,296,078, Cl. 156-466.000.

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Freyman, Bruce J.; Juskey, Frank J.; and Miles, Barry M., to Motorola, Inc. Moisture relief for chip carrier. 5,296,738, Cl. 257-684.000.

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Fridrich, Marek J.; Riley, Glen M.; and Dolin, Robert A., Jr., to Echelon Systems, Corp. Network communication protocol including a reliable multicasting technique. 5,297,143, Cl. 370-85.300.

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Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Continuously variable speed transmission. 5,295,915, Cl. 474-18.000.

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Frigg, Robert, to Synthes (U.S.A.). Surgical instrument for positioning osteosynthetic elements. 5,295,991, Cl. 606-62.000.

Frihart, Charles R., to Union Camp Corporation. Three-component curable resin compositions. 5,296,556, Cl. 525-420.500.

Frihart, Charles R., to Union Camp Corporation. Two-component curable hot melt compositions. 5,296,557, Cl. 525-423.000.

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Frye, Ricky J.; and Landis, Robert N., to MIM Industries, Inc. Adjustable stand for sewing machines. 5,295,452, Cl. 112-217.100.

Frye, Ronald E., Jr., to VLSI Technology, Inc. Tab magazine loader and method using a slider mechanism. 5,295,782, Cl. 414-795.300.

Frykhult, Rune, to Ingenjorsfirman R. Frykhult AB. Apparatus for filtering liquids. 5,296,143, Cl. 210-331.000.

Frykhult, Rune, to Ingenjorsfirman R. Frykhult AB. Apparatus for filtering suspensions and a method of operating the apparatus. 5,296,152, Cl. 210-780.000.

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Koiwai, Taichi; Ohuchi, Katsunori; and Miwa, Nobuo, to Mitsubishi Nuclear Fuel Co. Assembling machine for nuclear fuel assembly. 5,297,175, Cl. 376-261.000.

Koizumi, Masayuki, to Kabushiki Kaisha Toshiba. Low-noise output driver having separate supply lines and sequenced operation for transient and steady-state portions. 5,296,757, Cl. 307-443.000.

Kokusai Gijutsu Kaihatsu Kabushiki Kaisha: *See*—
Ueno, Yasuo, 5,295,533, Cl. 165-88.000.

Kolan, Hans: *See*—
Kelly, Howard L.; Kolan, Hans; and Perlman, David, 5,296,916, Cl. 356-401.000.

Kolcz, Richard J.: *See*—
Swirbel, Thomas J.; Kolcz, Richard J.; and Davis, James L., 5,296,271, Cl. 427-493.000.

Komag, Incorporated: *See*—
Allen, Ronald; Bae, Peter S.; and Miura, Steven, 5,296,118, Cl. 204-192.120.

Komai, Masaharu: *See*—
Suyama, Shuji; Ishigaki, Hideyo; Tomoda, Masayasu; Shirai, Yoshihiro; Tanaka, Hiroyuki; and Komai, Masaharu, 5,296,549, Cl. 525-326.300.

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Komma, Yoshiaki: *See*—
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Komppa, Veikko: *See*—
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Kondo, Toahiaki; and Sekine, Masayoshi, to Canon Kabushiki Kaisha. Movement vector detection device. 5,296,925, Cl. 348-208.000.

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Konishi, Shinya, to Kabushiki Kaisha Kawai Gakki Seisakusho. Autoplay musical instrument with a chain-play mode for a plurality of demonstration tones. 5,296,642, Cl. 84-609.000.

Konno, Takeshi: *See*—
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Kono, Yoshitsugu; Ura, Masaaki; Itoh, Hiroyuki; and Tsuruda, Satoshi, to Mitsui Toatsu Chemicals, Inc. Method and apparatus for concentrating chlorine gas. 5,296,017, Cl. 95-14.000.

Koo, Hee S.: *See*—
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Kordes, Herbert, to Dorma GmbH & Co. KG. Guiding system having a trolley for moving suspended door panels and the trolley. 5,295,281, Cl. 16-95.00R.

Korhonen, Charles J.; and Cortez, Edel R., to United States of America, Army. Antifreeze admixture for concrete. 5,296,028, Cl. 106-815.000.

Korkowski, Paul F.: *See*—
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Koshikawa, Kiyoshi; Fujieda, Hiroyuki; and Konno, Takeshi, to Mitsumi Electric Co., Ltd. Connector. 5,295,844, Cl. 439-138.000.

Koshizuka, Toshio: *See*—
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Koskan, Larry P.; and Meah, Abdul R. Y., to Donlar Corporation. Production of polysuccinimide and polyaspartic acid from maleic anhydride and ammonia. 5,296,578, Cl. 528-363.000.

Koso Internationa, Inc.: *See*—
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Koster, Iman W.; and Klapwijk, Abraham, to Ecotechniek B.V. Method for processing manure, fermented manure and ammonium nitrogen containing waste water. 5,296,147, Cl. 210-605.000.

Kosuga, Izumi; Fuse, Kenichi; Fukunaga, Takao; Shiroishi, Hirokazu; Kohno, Masanao; and Irie, Hisao, to Furukawa Electric Co., Ltd., The; and Harima Chemicals, Inc. Solder-coated printed circuit board and method of manufacturing the same. 5,296,649, Cl. 174-250.000.

Kothmann, Richard E.; and Whirlow, Donald K., to Electric Power Research Institute, Inc. Core-form transformer with liquid coolant flow diversion bands. 5,296,829, Cl. 336-60.000.

Kotitschke, Gerhard; Kugler, Georg; Mayer, Wolfgang; and Hauser, Ludwig, to J. M. Voith GmbH. Dryer section. 5,295,311, Cl. 34-117.000.

Kouguchi, Kenji: *See*—
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Kourai, Hiroki: *See*—
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Kourtides, Demetrius A.; Churchward, Rex A.; and Lowe, David M., to United States of America, National Aeronautics and Space Administration. Protective coating for ceramic materials. 5,296,288, Cl. 428-262.000.

Kousek, Heinz; Nipp, Hansjorg; Noser, Otto; Ganahl, Otmar; and Leemann, Hans, to Hilti Aktiengesellschaft. Apparatus for determining location of an element of magnetizable material in a construction structure. 5,296,807, Cl. 324-235.000.

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Kowalsky, Keith A.: *See*—
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Koyama, Takashi; Fujimura, Naoto; Hashimoto, Yuichi; Shiraiwa, Tetsuo; and Mori, Shigeo, to Canon Kabushiki Kaisha; and Dai-Ichi Kogyo Seiyaku Co., Ltd. Electrophotographic photosensitive member and apparatus using same. 5,296,322, Cl. 430-58.000.

Koyanagi, Kaoru: *See*—
Yamazaki, Shunpei; Suzuki, Kunio; Nagayama, Susumu; Inujima, Takashi; Abe, Masayoshi; Fukada, Takeshi; Kinka, Mikio; Kobayashi, Ippei; Shibata, Katsuhiko; Susukida, Masato; and Koyanagi, Kaoru, 5,296,405, Cl. 437-174.000.

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Kozlowski, Brian J.; Trzebiatowski, Anthony J.; and Jewell, Perry J., to A.F. Machining Specialties, Inc. Jogger/aerator. 5,295,309, Cl. 34-23.000.

Kramer, David E.: *See*—
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Kramer, Dennis A.; Peck, David E.; and Brookman, Marc A., to Rockwell International Corporation. Safety edge switch for detection of obstructions encountered by a moving object. 5,296,658, Cl. 200-61.430.

Kramer, George J.: *See*—
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Kramer, George M.; Leta, Daniel P.; Lamberti, William A.; Disko, Mark M.; Behal, Sutinder K.; and Ernst, Edwin R., to Exxon Research and Engineering Company. Low ash coal products from depolymerized coal. 5,296,133, Cl. 208-400.000.

Kramer, Glenn A.; Barrow, Harry G.; Turner, Patrick R.; Bodner, Michael E.; and Cooper, Jeffrey G., to Schlumberger Technologies, Inc. Method and apparatus for design and optimization for simulation of motion of mechanical linkages. 5,297,057, Cl. 364-512.000.

Kransco: *See*—
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Krantz, Nicolas: *See*—
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Krause, Jens M.; and Bauer, Kurt, to Hoechst AG. Process for selective flotation of phosphorus minerals. 5,295,584, Cl. 209-166.000.

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Kricka, Larry J.; and Wilding, Peter, to University of Pennsylvania, Trustees of the. Mesoscale sperm handling devices. 5,296,375, Cl. 435-291.000.

Kriz, Jaroslav F.; and Ternan, Marten, to Energy Mines and Resources Canada. Hydrocracking of heavy asphaltenic oil in presence of an additive to prevent coke formation. 5,296,130, Cl. 208-107.000.

Krochta, Todd J.: *See*—
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Krofta, Miklos. Lamellar apparatus and method for clarifying water. 5,296,149, Cl. 210-704.000.

Kroger, Roy E.; and Spears, Louis E. Insert retention gas tight seal for electrical connector and method of making same. 5,295,866, Cl. 439-589.000.

Kroker, Joseph F., to Mannesmann Aktiengesellschaft. Furnace electrode design. 5,297,160, Cl. 373-85.000.

Kronberg, James W., to United States of America, Energy. Optically isolated signal coupler with linear response. 5,296,715, Cl. 250-551.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
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Kronseder, Hermann. Gripping bell for bottles or the like. 5,295,723, Cl. 294-88.000.

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Krueger, David C.; and Reichel, Curtis J., to BASF Corporation. Polyurethane and polyisocyanurate rigid foams prepared using ternary blowing agent mixtures. 5,296,516, Cl. 521-131.000.

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Kubo, Masahiko: *See*—
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Nakamura, Tadashi; Ushiro, Kenzo; Iritani, Hirofumi; and Ishida, Eiishi, 5,295,414, Cl. 74-655.000.

Kubota, Masao. Escalator device. 5,295,569, Cl. 198-333.000.

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Kudo, Nobuo; and Hikio, Tadashi, to Marucho Shokuhin Kako Kabushiki Kaisha. Fish fin remover. 5,295,897, Cl. 452-166.000.

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Kumagai, Satoru, to Nikon Corporation. Fluorescent confocal microscope with chromatic aberration compensation. 5,296,700, Cl. 250-216.000.

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Kunisch, Franz; Babczinski, Peter; Arlt, Dieter; and Plempel, Manfred, to Bayer Aktiengesellschaft. Medicaments containing substituted 2-cyclohexene derivatives and their use for the control of candida infections. 5,296,503, Cl. 514-529.000.

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Kurosawa, Kenichi; Shimada, Masaru; Hirayama, Hirokazu; Bandoh, Tadaaki; and Mori, Kiyomi, to Hitachi, Ltd. Compile type knowledge processing tool, a high-speed inference method therefor and a system using the tool. 5,297,239, Cl. 395-75.000.

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Kushler, Clifford; Baker, Bruce R.; Hershberger, David; Gasser, Edward; and Romich, Barry, to Semantic Compaction Systems. Predictive scanning input system for rapid selection of auditory and visual indicators. 5,297,041, Cl. 364-419.150.

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610 5,296,643
637 5,296,644

CLASS 86
49 5,295,428

CLASS 91
445 5,295,429

CLASS 92
165 R 5,295,430

CLASS 95
14 5,296,017
65 5,296,018

CLASS 96
95 5,296,019

CLASS 99
293 5,295,431

CLASS 100
110 5,295,432
257 B1 5,109,766

CLASS 101
91 5,295,433
211 5,295,434
415.1 5,295,435
5,295,436
487 5,295,437

CLASS 102
217 5,295,438
438 5,295,439

CLASS 104
7.2 5,295,440
28 5,295,441

CLASS 105
176 5,295,442
199.2 5,295,443
453 5,295,444

CLASS 106
1.11 5,296,020
2 5,296,021
20 D 5,296,022
22 D 5,296,023
35 5,296,026
243 5,296,024
282 5,296,025
404 5,296,032
412 5,296,033
5,296,034
630 5,296,027
815 5,296,028

CLASS 108
57.1 5,295,445
167 5,295,446

CLASS 109
65 5,295,447

CLASS 110
214 5,295,448
229 5,295,449

CLASS 112
80.45 5,295,450
121.12 5,295,451
217.1 5,295,452

CLASS 114
61 5,295,453
123 5,295,454

CLASS 118
326 5,296,029
500 5,296,030
631 5,296,031
647 5,296,645
692 5,296,035
718 5,296,036
723 E 5,296,037

CLASS 119
57.9 5,295,455
172 5,295,456

CLASS 122
255 5,295,457
504 5,295,458

CLASS 123
90.31 5,295,459
90.58 5,295,460
188.009 5,295,461
193.5 5,295,462
196 R 5,295,463
308 5,295,464
418 5,295,465
425 5,295,466
456 5,295,467
5,295,468
5,295,469
458 5,295,470
479 5,295,471
520 5,295,472

CLASS 126
6 5,295,477
39 G 5,295,476
103 5,295,473
152 R 5,295,474
263 R 5,295,475

CLASS 128
203.11 5,295,478
203.15 5,295,479
203.17 5,295,480
639 5,295,482
653.1 5,295,488
660.03 5,295,483
5,295,484
660.07 Re.34,566
5,295,485
661.01 5,295,486
662.03 5,295,487
715 5,295,489
721 5,295,490
731 5,295,491
772 5,295,492
5,295,493
845 5,295,494
898 5,295,495

CLASS 132
293 5,295,496

CLASS 134
22.11 5,296,038
5,296,039
25.1 5,296,040
40 5,296,041
41 5,296,042
169 A 5,295,497

CLASS 135
65 5,295,498
68 5,295,499
88 5,295,500
99 5,295,501

CLASS 136
244 5,296,043
245 5,296,044
249 5,296,045

CLASS 137
93 5,295,505
233 5,295,504
271 5,295,506
315 5,295,502
556 5,295,503
614.06 5,295,507
625.33 5,295,509
625.4 5,295,508
625.48 5,295,510
625.64 5,295,511
625.69 5,295,512
636.2 5,295,513

CLASS 138
118.1 5,295,514

CLASS 139
435.1 5,295,515
452 5,295,516

CLASS 141
1 5,295,517
18 5,295,518
5,295,519
39 5,295,520
59 5,295,521
98 5,295,522
244 5,295,523

CLASS 144
114 R 5,295,524

CLASS 148
23 5,296,046
33 5,296,047
5,296,048
108 5,296,049
111 5,296,050
113 5,296,051
273 5,296,052
327 5,296,054
421 5,296,055
5,296,056
436 5,296,057
672 5,296,058
695 5,296,059

CLASS 153
503 5,295,525
517 5,295,526

CLASS 156
60 5,296,060
62.2 5,296,062
64 5,296,063
180 5,296,064
196 5,296,065
201 5,296,066
221 5,296,067
228 5,296,068
242 5,296,069
244.11 5,296,070
257 5,296,072
267 5,296,071
272.2 5,296,073
309.9 5,296,074
344 5,296,083
361 5,296,076
362 5,296,075
395 5,296,077
466 5,296,078
475 5,296,079
496 5,296,080
498 5,296,081
500 5,296,082
554 5,296,084
555 Re.34,567
603 5,296,085
610 5,296,086
611 5,296,087
613 5,296,088
620.7 5,296,089
622 5,296,061
628 5,296,090
643 5,296,091
5,296,092
5,296,093
651 5,296,094
662 5,296,095
667 5,296,096

CLASS 160
199 5,295,527

CLASS 162
18 5,296,097
55 5,296,098
57 5,296,099
78 5,296,100
353 5,296,101

CLASS 164
75 5,295,528
100 5,295,529
516 5,295,530

CLASS 165
48.1 5,295,531
76 5,295,532
88 5,295,533

CLASS 166
75.1 5,295,534
81 5,295,535
5,295,536
105.1 5,295,537
205 5,295,538
263 5,295,539
272 5,295,540
277 5,295,541
278 5,295,542
293 5,295,543
297 5,295,544
299 5,295,545
353 5,295,546
368 5,295,547

CLASS 174
23 C 5,296,650
H 5,296,646
58 5,296,647
117 F 5,296,648
250 5,296,649
5,296,653
254 5,296,651
265 5,296,652

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CLASS 175

40 5,295,548
371 5,295,549

CLASS 177

145 5,296,654
199 5,296,655

CLASS 180

79.1 5,295,550
167 5,295,551
197 5,295,552
212 5,295,553
236 5,295,554

CLASS 181

152 5,296,636
294 5,296,637

CLASS 182

63 5,295,555
187 5,295,556
222 5,295,557
5,295,558

CLASS 188

65.4 5,295,559
71.5 5,295,560
79.52 5,295,561
187 5,295,562
299 5,295,563
381 5,295,564

CLASS 190

18 A 5,295,565

CLASS 192

98 5,295,566

CLASS 198

323 5,295,567
330 5,295,568
333 5,295,569
465.1 5,295,570
302.1 5,295,571
626.1 5,295,572
659 5,295,573
689.1 5,295,574

CLASS 200

61.43 5,296,658
83 J 5,296,659
146 R 5,296,660
148 R 5,296,661
150 R 5,296,662
295 5,296,663
401 5,296,664

CLASS 201

222 5,296,141

CLASS 202

85 5,296,102

CLASS 203

1 5,296,103
83 5,296,104

CLASS 204

59 R 5,296,105
5,296,106
5,296,107
95 5,296,108
129 5,296,109
5,296,110
130 5,296,111
153.1 5,296,123
153.18 5,296,112
153.21 5,296,125
157.15 5,296,113
180.1 5,296,114
5,296,115
5,296,116
181.5 5,296,117
192.12 5,296,118
192.15 5,296,119
196 5,296,120
228 5,296,121
298.04 5,296,122
402 5,296,124

CLASS 205

124 5,296,126
139 5,296,127
254 5,296,128

CLASS 206

204 5,295,575
309 5,295,576
5,295,577
408 5,295,578
494 5,295,579
588 5,295,580

CLASS 207

20 5,296,129

CLASS 208

107 5,296,130
113 5,296,131
131 5,296,132
400 5,296,133

CLASS 209

3 5,295,581
5,295,582
17 5,295,583
166 5,295,584
167 5,295,585
552 5,295,586

CLASS 210

108 5,296,134
136 5,296,135
158 5,296,136
230 5,296,142
253 5,296,137
274 5,296,138
297 5,296,139
328 5,296,140
331 5,296,143
490 5,296,144
541 5,296,145
602 5,296,146
605 5,296,147
642 5,296,148
704 5,296,149
708 5,296,150
710 5,295,609
716 5,296,151
780 5,296,152
787 5,296,153

CLASS 211

13 5,295,587
32 5,295,588
41 5,295,589
50 5,295,590
59.2 5,295,591
5,295,592
59.4 5,295,593
87 5,295,594
105.1 5,295,595
175 5,295,596

CLASS 213

11.4 5,295,597
100 R 5,295,598
204 5,295,599
252 5,295,600

CLASS 219

121.47 5,296,667
121.48 5,296,668
121.52 5,296,670
5,296,672
121.57 5,296,665
121.68 5,296,673
121.69 5,296,674
121.78 5,296,671
137 WM 5,296,675
5,296,676
146.41 5,296,677
201 5,296,669
203 5,296,678
383 5,296,679
388 5,296,680
410 5,296,681
464 5,296,682
497 5,296,683
518 5,296,684
534 5,296,685
553 5,296,686
696 5,296,666

CLASS 220

287 5,295,601
306 5,295,602
307 5,295,603
321 5,295,604
345 5,295,605
403 5,295,606
407 5,295,607
501 5,295,608

CLASS 222

26 5,295,610
129.3 5,295,611
135 5,295,612
137 5,295,613
5,295,614
327 5,295,615

CLASS 226

110 5,295,616
181 5,295,617
196 5,295,618

CLASS 227

156 5,295,620

CLASS 228

180.5 5,295,619
219 5,295,621

CLASS 229

1.5 R 5,295,622
109 5,295,623
138 5,295,630
150 5,295,631
198 5,295,632

CLASS 233

375 5,296,688
380 5,296,687
462 5,296,690
5,296,691
467 5,296,689
486 5,296,692
494 5,296,693

CLASS 238

125 5,295,624

CLASS 239

14.1 5,295,625
526 5,295,626
585.4 5,295,627
590.5 5,295,628

CLASS 241

57 5,295,629
166 5,295,633

CLASS 242

71.1 5,295,634
74 5,295,635
197 5,295,636
199 5,295,637
201 5,295,638
5,295,639
248 5,295,640

CLASS 244

1 N 5,295,641
2 5,295,642
7 B 5,295,643
53 R 5,295,645

CLASS 248

27.1 5,295,644
58 5,295,646
62 5,295,647
149 5,295,648
205.2 5,295,649
311.2 5,295,650
488 5,295,651
635 5,295,652
675 5,295,653

CLASS 250

201.5 5,296,694
205 5,296,695
208.1 5,296,696
214 R 5,296,697
214.1 5,296,698
5,296,699
216 5,296,700
222.1 B1 4,812,643
223 B 5,296,701
226 5,296,702
235 5,296,703
306 5,296,704
338.1 5,296,705
339 5,296,706
352 5,296,710
353 5,296,707
363.03 5,296,708
363.07 5,296,709
372 5,296,711
390.02 5,296,712
423 R 5,296,713
492.3 5,296,714
551 5,296,715

CLASS 251

35 5,295,654
40 5,295,655
129.02 5,295,656
149.1 5,295,657
5,295,658
173 5,295,659
297 5,295,660
326 5,295,661
331 5,295,662
333 5,295,663

CLASS 252

51.5 R 5,296,154
73 5,296,155
95 5,296,156
108 5,296,157
5,296,158
5,296,159
117 5,296,160
182.2 5,296,161
186.38 5,296,162
299.2 5,296,163
301.4 S 5,296,164
307 5,296,165
311 5,296,166
314 5,296,167
387 5,296,168
518 5,296,169

CLASS 254

220 5,295,664

CLASS 257

3 5,296,716
13 5,296,717
14 5,296,718
5,296,719
21 5,296,720
25 5,296,721
50 5,296,722
82 5,296,723
98 5,296,724
138 5,296,725
213 5,296,726
260 5,296,727
282 5,296,728
377 5,296,729
417 5,296,730
546 5,296,731
565 5,296,732
586 5,296,733
638 5,296,734
659 5,296,735
668 5,296,736
673 5,296,737
684 5,296,738
687 5,296,739
706 5,296,740
723 5,296,741
758 5,296,742
784 5,296,743
5,296,744
786 5,296,745

CLASS 264

11 5,296,170
5,296,171
24 5,296,172
36 5,296,173
40.1 5,296,179
40.5 5,296,174
44 5,296,180
46.4 5,296,181
46.5 5,296,182
86 5,296,175
109 5,296,176
117 5,296,177
130 5,296,178
131 5,296,183
154 5,296,184
205 5,296,185
211.23 5,296,186
257 5,296,187
508 5,296,188

CLASS 266

168 5,295,665
194 5,295,666
229 5,295,667
252 5,295,668
265 5,295,669

CLASS 267

140.13 5,295,671
140.5 5,295,670
141.3 5,295,672

CLASS 271

2 5,295,674
11 5,295,673
12 5,295,675
94 5,295,676
110 5,295,677
152 5,295,678
182 5,295,679
185 5,295,680
241 5,295,681

CLASS 273

32 A 5,295,683
73 J 5,295,684
77 A 5,295,685
5,295,686
84 R 5,295,687
165 5,295,688
167 H 5,295,689
187.2 5,295,690
283 5,295,691
416 5,295,692
441 5,295,693
447 5,295,694
459 5,295,695

CLASS 277

138 5,295,696
181 5,295,697
235 B 5,295,698
5,295,699

CLASS 279

5 5,295,700

CLASS 280

11.22 5,295,701
284 5,295,702
414.1 5,295,703
611 5,295,704
707 5,295,705
711 B1 4,166,640
728 A 5,295,706
5,295,707
732 5,295,708
734 5,295,709
750 5,295,710
751 5,295,711
777 5,295,712
801 R 5,295,713
806 5,295,714
821 5,295,715

CLASS 285

15 5,295,716
84 5,295,717
258 5,295,718
292 5,295,719

CLASS 290

55 5,296,746

CLASS 292

201 5,295,720

CLASS 294

1.4 5,295,721
88 5,295,723

CLASS 296

1.1 5,295,724
97.1 5,295,725
121 5,295,722
191 5,295,726

CLASS 297

195.1 5,295,728
215.14 5,295,727
216.14 5,295,729
361.1 5,295,730
440.16 5,295,731
452.1 5,295,732

CLASS 299

30 5,295,733
32 5,295,734
86 5,295,735

CLASS 303

7 5,295,736
11 5,295,737
100 5,295,738
113.1 5,295,739
113.2 5,295,740

CLASS 305

38 5,295,741

CLASS 307

127 5,296,747
303.1 5,296,748
5,296,749
306 5,296,750
308 5,296,751
353 5,296,752
5,296,753
5,296,754
5,296,756
5,296,757
5,296,758
5,296,755
5,296,759
5,296,760
5,296,761
5,296,762
5,296,763
5,296,764
5,296,765
5,296,766

CLASS 310

5,296,767
5,296,770
5,296,768
5,296,778
5,296,769
5,296,771
5,296,772
5,296,774
5,296,773
5,296,775
5,296,776
5,296,777

CLASS 312

5,295,742
5,295,743

CLASS 313

5,296,779
5,296,780
5,296,781
5,296,782

CLASS 315

5,296,783
111.41 5,296,784

CLASS 318

254 5,296,785
5,296,789
280 5,296,786
283 5,296,788
433 5,296,787
560 5,296,790
563 5,296,791
685 5,296,792
715 5,296,793
5,296,794
778 5,296,795
808 5,296,796

CLASS 320

21 5,296,797

CLASS 322

28 5,296,798
35 5,296,799

CLASS 323

303 5,296,800
313 5,296,801

CLASS 324

117 R 5,296,802
143 5,296,804
156 5,296,803
174 5,296,805
214 5,296,806
235 5,296,807
309 5,296,808
5,296,809
318 5,296,810
319 5,296,811
5,296,812
322 5,296,813
5,296,814
414 5,296,815
457 5,296,816
460 5,296,817
542 5,296,818
670 5,296,819

CLASS 329

307 5,296,820

CLASS 330

141 5,296,821
306 5,296,822

CLASS 333

26 5,296,823
193 5,296,824
246 5,296,825

CLASS 335

16 5,296,827
132 5,296,826
300 5,296,828

CLASS 336

60 5,296,829
192 5,296,830
200 5,296,831

CLASS 337

158 5,296,832
297 5,296,833
372 5,296,834

CLASS 338

34 5,296,836
47 5,296,837
130 5,296,835

CLASS 340

384.6 5,296,839
474 5,296,840
542 5,296,841
601 5,296,842
603 5,296,843
657 5,296,844
825.040 5,296,848
825.07 5,296,851
825.44 5,296,849
825.49 5,296,850
933 5,296,852
962 5,296,853
980 5,296,854
988 5,296,855

CLASS 341

139 5,296,856
144 5,296,857
156 5,296,858

CLASS 342

1 5,296,859
58 5,296,860
357 5,296,861
359 5,296,862
371 5,296,863
382 5,296,864
384 5,296,865

CLASS 343

701 5,296,866
745 5,296,867

CLASS 345

7 5,296,868
24 5,296,869
89 5,296,870
92 5,296,847
157 5,296,838
161 5,296,846
163 5,296,871
168 5,296,845

CLASS 346

1.1 5,297,017
24 5,296,872
25 5,296,873
76 PH 5,296,874
134 5,297,018
140 R 5,296,875
5,296,876
157 5,296,877
159 5,296,878
160.1 5,296,879

CLASS 348

118 5,296,924
144 5,296,926
208 5,296,925
415 5,296,927
529 5,296,928
568 5,296,918
607 5,296,930
675 5,296,919
5,296,920
711 5,296,921
731 5,296,931
5,296,932
779 5,296,922

CLASS 351

161 5,296,880
177 5,296,881

CLASS 353

63 5,296,882
87 5,296,883

CLASS 354

106 5,296,884
230 5,296,885
275 5,296,886
5,296,887
402 5,296,888
412 5,296,889

CLASS 355

37 5,296,890
67 5,296,891
5,296,892
75 5,296,893
200 5,296,894
208 5,296,895
5,296,896
5,296,897
245 5,296,898
256 5,296,899
260 5,296,900
5,296,901
5,296,902
271 5,296,903
290 5,296,904
305 5,296,905
311 5,296,906
313 5,296,907
319 5,296,908

CLASS 356

5 5,296,909
28.5 5,296,910
73 5,296,911
350 5,296,912
364 5,296,913
385 5,296,914
400 5,296,915
401 5,296,916
5,296,917

CLASS 358

400 5,296,933
406 5,296,935
407 5,296,936
448 5,296,937
5,296,938
453 5,296,939
455 5,296,940
458 5,296,941
461 5,296,942
471 5,296,943
475 5,296,944
498 5,296,966
518 5,296,945
527 5,296,923
5,296,947
531 5,296,946
607 5,296,929

CLASS 359

5,296,948
2 5,296,949
9 5,296,950
48 5,296,951
53 5,296,952
56 5,296,953
67 5,296,954
73 5,296,955
110 5,296,956
177 5,296,957
204 5,296,958
216 5,296,959
330 5,296,960
359 5,296,961
388 5,296,962
389 5,296,963
443 5,296,964
459 5,296,965
649 5,296,967
684 5,296,968
687 5,296,969
700 5,296,970
716 5,296,971
861 5,296,972
865 5,296,973
885 5,296,974

CLASS 360

46 5,296,975
57 5,296,976
63 5,296,977
67 5,296,978
5,297,024
97.01 5,296,979
5,296,980
99.08 5,296,981
103 5,296,982
104 5,296,983
5,296,984
105 5,296,985
106 5,296,986
110 5,296,988
113 5,296,987
114 5,296,989
119 5,296,990
121 5,296,991
126 5,296,992
5,296,993
130.21 5,296,994
135 5,296,995

CLASS 361

24 5,296,996
92 5,296,997
117 5,296,998
247 5,296,999
652 5,297,002
680 5,297,003
690 5,297,004
692 5,297,000
697 5,297,005
704 5,297,006
5,297,025
707 5,297,007
717 5,297,001
773 5,297,008
778 5,297,107
796 5,297,009

CLASS 362

80 5,297,010
147 5,297,011
252 5,297,012
363 5,297,013

CLASS 363

21 5,297,014
146 5,297,015
149 5,297,016

CLASS 364

140 5,297,019
146 5,297,020
167.01 5,297,021
191 5,297,022
192 5,297,023
405 5,297,030
408 5,297,026
5,297,031
5,297,032
413.02 5,297,034
413.13 5,297,035
5,297,036
413.15 5,297,037
413.2 5,297,033
419.08 5,297,040
419.11 5,297,038
419.13 5,297,039
419.15 5,297,041
419.19 5,297,027
5,297,042
422 5,297,043
424.05 5,297,045
424.1 5,297,044
431.05 5,297,046
431.06 5,297,047
431.12 5,297,048
436 5,297,049
444 5,297,050
449 5,297,051
453 5,297,052
474.24 5,297,053
5,297,054
474.37 5,297,055
482 5,297,056
512 5,297,057
526 5,297,058
552 5,297,059
559 5,297,060
5,297,061
564 5,297,062
571.02 5,297,063
5,297,064
571.03 5,297,028
571.05 5,297,065
578 5,297,066
708.1 5,297,067
713 5,297,068
724.16 5,297,069
726 5,297,070
736 5,297,071
752 5,297,072
766 5,297,073
825 5,297,074
5,297,075

CLASS 365

119 5,297,076
145 5,297,077
149 5,297,078
182 5,297,079
184 5,297,081
185 5,297,082
189.05 5,297,083
189.09 5,297,084
190 5,297,080
200 5,297,085
5,297,086
5,297,088
201 5,297,087
202 5,297,089
203 5,297,090
5,297,091
5,297,092
208 5,297,093
210 5,297,094
218 5,297,095
5,297,096
226 5,297,097
5,297,098
229 5,297,099
230.01 5,297,100
5,297,101
230.03 5,297,102
5,297,103
230.06 5,297,104
5,297,105
233 5,297,106
238.5 5,297,029

CLASS 367

38 5,297,108
106 5,297,109

CLASS 368

10 5,297,118
41 5,297,119
47 5,297,120
110 5,297,110
156 5,297,111
190 5,297,112
228 5,297,121

CLASS 369

13 5,297,122
5,297,123
32 5,297,124
44.13 5,297,125
44.28 5,297,113
44.32 5,297,114
47 5,297,115
75.1 5,297,116
75.2 5,297,117
77.1 5,297,126
114 5,297,127
116 5,297,128
5,297,129
126 5,297,130
275.2 5,297,131
284 5,297,132
291 5,297,133

CLASS 370

16.1 5,297,134
32 5,297,135
50 5,297,136
60 5,297,137
5,297,138
5,297,139
61 5,297,140
85.13 5,297,141
85.3 5,297,143
85.6 5,297,142
95.2 5,297,144
100.1 5,297,145
110.1 5,297,146
118 5,297,147

CLASS 371

10.2 5,297,148
14 5,297,149
19 5,297,150
27 5,297,151
37.1 5,297,153

CLASS 372

2 5,297,152
6 5,297,154
20 5,297,155
21 5,297,156
38 5,297,157
46 5,297,158

CLASS 373

72 5,297,159
85 5,297,160

CLASS 374

010 5,295,745
170 5,295,746
208 5,295,747

CLASS 375

1 5,297,161
5,297,162
8 5,297,163
10 5,297,164
5,297,167
12 5,297,165
13 5,297,169
14 5,297,166
25 5,297,170
98 5,297,184
100 5,297,168
5,297,171
112 5,297,180
116 5,297,185
118 5,297,172
5,297,173
119 5,297,181
121 5,297,186

CLASS 376

203 5,297,187
236 5,297,174
260 5,297,182
261 5,297,175
364 5,297,176
462 5,297,177

CLASS 377

26 5,297,178
47 5,297,179

CLASS 378

162 5,297,188

CLASS 379

58 5,297,189
5,297,190
59 5,297,183
5,297,191
5,297,192
63 5,297,193
88 5,297,194
93 5,297,195
99 5,297,196
204 5,297,197
389 5,297,198
399 5,297,199

CLASS 380

010 5,295,745
170 5,295,746
208 5,295,747

CLASS 381

10 5,297,209
66 5,297,210
81 5,297,211
86 5,297,212
94 5,297,213
203 5,297,214

CLASS 382

6 5,297,215
52 5,297,216
86 5,297,217
128 5,297,221
129 5,297,219
56 5,297,220
62 5,297,222
232 5,295,766
233 5,295,767
259.3 5,295,768
266 5,295,769

CLASS 408

6 5,295,770
67 5,295,771

CLASS 409

232 5,295,772

CLASS 411

60 5,295,773
387 5,295,774

CLASS 412

2 5,295,775

CLASS 414

111 5,295,776
217 5,295,777
225 5,295,778
395 5,295,779
421 5,295,780
788.4 5,295,781
795.3 5,295,782

CLASS 415

30 5,295,783
55.6 5,295,784
58.3 5,295,785
172.1 5,295,786
173.3 5,295,787

CLASS 416

13 5,295,793
204 R 5,295,788
241 A 5,295,789

CLASS 417

43 5,295,790
52 5,295,791
55 5,295,792
68 5,295,794
213 5,295,795
222.1 5,295,796
273 5,295,797
274 5,295,807
366 5,295,808
5,295,809
408 5,295,810
423.15 5,295,811

CLASS 418

55.1 5,295,812
55.5 5,295,813
60 5,295,814
94 5,295,815
201.1 5,295,798

CLASS 419

9 5,296,189

CLASS 430

550 5,296,190

CLASS 422

52 5,296,191
56 5,296,192
75 5,296,193
82.05 5,296,194
5,296,195
98 5,296,196
103 5,296,197
180 5,296,198
187 5,296,199
189 5,296,200
5,296,201
219 5,296,202

CLASS 423

2 5,296,203
112 5,296,204
220 5,296,205
235 5,296,206
275 5,296,210
302 5,296,211
322 5,296,212
326 5,296,213
446 5,296,207
700 5,296,208

CLASS 424

49 5,296,209
5,296,214
5,296,215
53 5,296,216
57 5,296,217
70 5,296,218
78.01 5,296,219
84 5,296,220
93 J 5,296,221
94.63 5,296,222
94.64 5,296,223
195.1 5,296,224
5,296,225

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405 5,296,226
411 5,296,227
422 5,296,228
444 5,296,229
448 5,296,230
450 5,296,231
451 5,296,232
463 5,296,233
484 5,296,234
486 5,296,235
489 5,296,237
490 5,296,236
604 5,296,238
613 5,296,239
660 5,296,240
682 5,296,241
717 5,296,242

CLASS 425

8 5,295,799
130 5,295,800
5,295,801
139 5,295,802
141 5,295,803
182 5,295,804
373 5,295,805
547 5,295,806

CLASS 426

2 5,296,243
3 5,296,244
49 5,296,245
74 5,296,246
283 5,296,247
482 5,296,248
541 5,296,249
555 5,296,250
592 5,296,251
615 5,296,252
629 5,296,253

CLASS 427

2 5,296,254
8 5,296,255
10 5,296,256
5,296,257
96 5,296,258
5,296,259
118 5,296,260
123 5,296,261
125 5,296,262
130 5,296,263
138 5,296,264
213 5,296,265
213.36 5,296,266
216 5,296,267
328 5,296,268
393.2 5,296,269
448 5,296,270
493 5,296,271
523 5,296,272
553 5,296,273
566 5,296,274

CLASS 428

29 5,296,275
35.7 5,296,276
36.1 5,296,278
40 5,296,277
42 5,296,279
118 5,296,280
195 5,296,282
204 5,296,283
207 5,296,284
213 5,296,285
224 5,296,286
251 5,296,287
262 5,296,288
296 5,296,289
300 5,296,290
349 5,296,291
375 5,296,292
403 5,296,293
410 5,296,294
412 5,296,295
426 5,296,296
5,296,297
447 5,296,298
5,296,299
457 5,296,300
472 5,296,301
5,296,302
480 5,296,303
516 5,296,304
520 5,296,305
522 5,296,306
537.5 5,296,307
586 5,296,308
614 5,296,309
5,296,310
688 5,296,311
702 5,296,312

CLASS 430

50 5,296,313
99 5,296,314
100 5,296,315

104 5,296,316
178 5,296,317
192 5,296,318
194 5,296,319
210 5,296,320

CLASS 430

20 5,296,321
58 5,296,322
59 5,296,323
106 5,296,324
5,296,325
106.6 5,296,326
109 5,296,327
122 5,296,328
138 5,296,329
191 5,296,330
253 5,296,331
270 5,296,332
271 5,296,333
280 5,296,334
320 5,296,335
331 5,296,336
359 5,296,337
372 5,296,338
389 5,296,339
394 5,296,340
396 5,296,341
438 5,296,342
508 5,296,343
522 5,296,344
574 5,296,345

CLASS 431

9 5,295,816
11 5,295,817
B1 4,828,483
75 5,295,818
153 5,295,819
280 5,295,820

CLASS 432

103 5,295,821
146 5,295,822

CLASS 433

9 5,295,823
5,295,824
24 5,295,886
28 5,295,825
31 5,295,826
80 5,295,827
81 5,295,828
82 5,295,829
116 5,295,830
141 5,295,831
216 5,295,832
224 5,295,833

CLASS 434

128 5,295,834
265 5,295,835
335 5,295,836
409 5,295,837

CLASS 435

4 5,296,346
5 5,296,347
6 5,296,348
5,296,349
5,296,350
5,296,351
7.23 5,296,353
7.4 5,296,352
7.92 5,296,354
5,296,356
7.94 5,296,355
23 5,296,357
49 5,296,358
101 5,296,360
135 5,296,362
146 5,296,363
155 5,296,364
208 5,296,365
216 5,296,366
221 5,296,367
240.4 5,296,368
242 5,296,369
252.1 5,296,370
252.3 5,296,371
262.5 5,296,372
280 5,296,373
288 5,296,374
291 5,296,375
320.1 5,296,376

CLASS 436

13 5,296,377
63 5,296,378
69 5,296,379
106 5,296,380
172 5,296,381
301 5,296,382
307 5,296,383

CLASS 437

5 5,296,384
20 5,296,385

24 5,296,386
5,296,387
31 5,296,388
5,296,389
5,296,390
5,296,391
34 5,296,392
5,296,393
5,296,409
39 5,296,394
40 5,296,395
43 5,296,396
5,296,397
44 5,296,398
52 5,296,399
5,296,400
57 5,296,401
60 5,296,402
133 5,296,403
173 5,296,404
174 5,296,405
175 5,296,406
195 5,296,407
203 5,296,408
228 5,296,410
238 5,296,411
247 5,296,412

CLASS 439

67 5,295,838
5,295,839
72 5,295,840
73 5,295,841
76 5,295,842
108 5,295,843
138 5,295,844
173 5,295,845
188 5,295,846
212 5,295,847
247 5,295,848
266 5,295,849
5,295,850
273 5,295,851
328 5,295,852
330 5,295,853
350 5,295,854
354 5,295,855
364 5,295,856
395 5,295,857
404 5,295,858
455 5,295,859
503 5,295,860
527 5,295,861
567 5,295,862
578 5,295,863
5,295,864
5,295,865
589 5,295,866
607 5,295,867
610 5,295,868
620 5,295,869
717 5,295,870
746 5,295,871
822 5,295,872
839 5,295,873
850 5,295,874
851 5,295,875
862 5,295,876

CLASS 440

2 5,295,877
28 5,295,878
77 5,295,879
88 5,295,880
89 5,295,881

CLASS 441

16 5,295,882
65 5,295,883
122 5,295,884
131 5,295,885

CLASS 445

63 5,295,887

CLASS 446

10 5,295,888
91 5,295,889
176 5,295,890
222 5,295,891
224 5,295,892
356 5,295,893

CLASS 449

54 5,295,894

CLASS 482

50 5,295,895
135 5,295,896
166 5,295,897
171 5,295,898

CLASS 483

10 5,295,899
57 5,295,900

CLASS 484

4 5,295,901

57 5,295,902
203 5,295,903
233 5,295,904
286 5,295,905

CLASS 485

331 5,295,925

CLASS 462

18 5,295,906
54 5,295,929

CLASS 464

37 5,295,907
45 5,295,908
48 5,295,909
63 5,295,910
88 5,295,911
93 5,295,912
106 5,295,913
175 5,295,914

CLASS 473

42 5,295,682

CLASS 474

18 5,295,915
78 5,295,916
95 5,295,917
101 5,295,918

CLASS 475

205 5,295,919
210 5,295,920
238 5,295,921
248 5,295,922
252 5,295,923
275 5,295,924

CLASS 482

12 5,295,926
52 5,295,927
5,295,928
71 5,295,930
72 5,295,931
76 5,295,932
107 5,295,933
5,295,934
130 5,295,935
144 5,295,936

CLASS 483

28 5,295,937
29 5,295,938

CLASS 493

1 5,295,939
88 5,295,940
133 5,295,941
302 5,295,942

CLASS 494

16 5,295,943

CLASS 501

19 5,296,413
20 5,296,414
25 5,296,415
80 5,296,416
87 5,296,417
95 5,296,418
96 5,296,419
105 5,296,420
5,296,421
108 5,296,422
119 5,296,423
138 5,296,424
5,296,425
139 5,296,426

CLASS 502

63 5,296,427
84 5,296,428
101 5,296,429
108 5,296,430
110 5,296,431
113 5,296,432
117 5,296,433
5,296,434
174 5,296,435
209 5,296,436
305 5,296,437
407 5,296,438

CLASS 503

201 5,296,439
208 5,296,440
216 5,296,441
227 5,296,442
5,296,443
5,296,444
5,296,445
5,296,446
5,296,447
5,296,448

CLASS 504

105 5,296,449

116 5,296,450
236 5,296,451
243 5,296,452
5,296,453
289 5,296,454

CLASS 505

1 5,296,455
5,296,456
5,296,457
5,296,458
5,296,459
5,296,460

CLASS 512

15 5,296,461

CLASS 514

2 5,296,462
5,296,463
6 5,296,464
5,296,465
5,296,466
12 5,296,467
15 5,296,468
27 5,296,469
54 5,296,470
56 5,296,471
58 5,296,472
61 5,296,473
106 5,296,474
163 5,296,476
178 5,296,481
213 5,296,482
217 5,296,483
224.2 5,296,477
235.2 5,296,478
256 5,296,479
258 5,296,480
259 5,296,487
278 5,296,488
291 5,296,489
300 5,296,490
303 5,296,491
311 5,296,484
316 5,296,485
333 5,296,486
337 5,296,492
341 5,296,493
343 5,296,494
357 5,296,497
365 5,296,495
373 5,296,496
401 5,296,498
419 5,296,499
436 5,296,505
449 5,296,506
465 5,296,507
510 5,296,508
513 5,296,509
529 5,296,503
530 5,296,504
562 5,296,500
566 5,296,501
724 5,296,514

CLASS 521

47 5,296,515
98 Re.34,568
131 5,296,516
145 5,296,510
155 5,296,517
176 5,296,518

CLASS 522

33 5,296,511

CLASS 523

111 5,296,512
115 5,296,513
200 5,296,523
319 5,296,524
408 5,296,525

CLASS 524

50 5,296,526
94 5,296,519
128 5,296,520
135 5,296,521
300 5,296,522
398 5,296,532
430 5,296,533
436 5,296,534
446 5,296,535
495 5,296,536
502 5,296,527
513 5,296,528
5,296,529
556 5,296,531
5,296,541
558 5,296,530
600 5,296,542
606 5,296,543

CLASS 525

5,296,544
5,296,545

57 5,296,537
63 5,296,538
66 5,296,539
88 5,296,540
170 5,296,550
175 5,296,551
193 5,296,552
194 5,296,553
207 5,296,554
263 5,296,555
310 5,296,546
314 5,296,547
322 5,296,548
326.3 5,296,549
327.6 5,296,560
342 5,296,561
367 5,296,562
397 5,296,563
420.5 5,296,556
423 5,296,557
425 5,296,558
426 5,296,559
431 5,296,568
445 5,296,569
481 5,296,570

CLASS 526

113 5,296,564
114 5,296,565
171 5,296,566
172 5,296,567
212 5,296,575
216 5,296,576
220 5,296,577
261 5,296,571
307.3 5,296,572
320 5,296,573

CLASS 528

25 5,296,574
27 5,296,582
72 5,296,583
163 5,296,584
272 5,296,585
B1 4,238,593
274 5,296,586
281 5,296,587
363 5,296,578
379 5,296,579
502 5,296,580

CLASS 530

331 5,296,591
413 5,296,592

CLASS 534

14 5,296,593

CLASS 536

1.11 5,296,588
27.7 5,296,589
53 5,296,594

CLASS 540

200 5,296,595
612 5,296,596

CLASS 544

106 5,296,597
195 5,296,598
235 5,296,599
280 5,296,600
355 5,296,601

CLASS 546

103 5,296,602
114 5,296,603
169 5,296,604
176 5,296,605
193 5,296,606

CLASS 548

236 5,296,607
253 5,296,608
325.1 5,296,609
406 5,296,610

CLASS 549

11 5,296,611
49 5,296,612
291 5,296,613
307 5,296,614
314 5,296,615
417 5,296,616
455 5,296,617
542 5,296,618
554 5,296,620

CLASS 552

548 5,296,619

CLASS 554

15 5,296,621
103 5,296,622

CLASS 556

27 5,296,623

435 5,296,624
437 5,296,625
482 5,296,626

CLASS 558

34 5,296,627
452 5,296,628

CLASS 560

68 5,296,629
265 5,296,630

CLASS 562

469 5,296,638
593 5,296,639

856 5,296,640

CLASS 564

469 5,296,633
480 5,296,631
494 5,296,632

CLASS 568

28 5,296,634
30 5,296,635
323 5,296,636
341 5,296,637

CLASS 600

1 5,295,944
6 5,295,945

41 5,295,946

CLASS 601

43 5,295,481

CLASS 602

5 5,295,947

CLASS 604

1 5,295,952
5 5,295,953
8 5,295,954

22 5,295,955
30 5,295,956
74 5,295,957
96 5,295,958
5,295,959
5,295,960
5,295,961
5,295,962
5,295,963
5,295,964
5,295,965
5,295,966
5,295,967
5,295,968
5,295,969

187 5,295,970
5,295,971
192 5,295,972
195 5,295,973
198 5,295,974
5,295,975
211 5,295,976
264 5,295,977
265 5,295,978
5,295,979
272 5,295,980
301 5,295,981
313 5,295,982
317 5,295,984
329 5,295,983

338 5,295,985
385.1 5,295,986
385.2 5,295,987
5,295,988

CLASS 606

4 5,295,989
49 5,295,990
62 5,295,991
79 5,295,992
184 5,295,993
192 5,295,994
194 5,295,995
203 5,295,996

CLASSIFICATION OF DESIGNS

D2— 901 345,252
952 345,250
961 345,249
969 345,245
345,247
345,253
970 345,244
345,248
977 345,243
978 345,246
980 345,251
D3— 246 345,254
254 345,255
D4— 104 345,256
D6— 316 345,257
334 345,258
366 345,259
345,260
370 345,261
376 345,262
389 345,263
393 345,264
400 345,265
422 345,266
474 345,267
511 345,268
526 345,269
541 345,270
551 345,271
552 345,273
345,274
567 345,275
571 345,276
593 345,276

601 345,278
D7— 309 345,279
354 345,280
345,281
393 345,282
589 345,283
649 345,284
669 345,285
679 345,286
D8— 11 345,287
59 345,288
99 345,289
107 345,290
331 345,291
333 345,292
339 345,293
345,294
352 345,295
356 345,296
367 345,297
373 345,298
D9— 300 345,299
345,300
345,301
345,302
341 345,303
418 345,304
423 345,305
522 345,306
D10— 22 345,307
26 345,308
62 345,309
68 345,310

345,277
78 345,312
106 345,313
345,314
114 345,315
345,316
120 345,317
126 345,318
345,319
345,320
345,321
D11— 131 345,322
157 345,323
D12— 92 345,324
117 345,325
133 345,326
146 345,327
345,328
184 345,332
345,333
187 345,334
196 345,335
202 345,336
345,337
209 345,338
219 345,330
220 345,329
222 345,331
313 345,339
345,340
D13— 119 345,341
138 345,342
147 345,343

71 345,311
D14— 100 345,345
345,346
106 345,347
113 345,348
345,349
345,350
115 345,351
118 345,352
345,353
137 345,354
138 345,355
345,356
190 345,357
151 345,358
157 345,359
171 345,360
205 345,361
230 345,362
234 345,363
D15— 29 345,364
69 345,365
125 345,366
D16— 123 345,367
132 345,368
D17— 1 345,369
345,370
7 345,372
99 345,373
D22— 104 345,374
42 345,375
48 345,376

60 345,377
75 345,378
D20— 40 345,379
42 345,380
D21— 5 345,381
13 345,382
16 345,383
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PATENTS

01 :	5,295,609	5,295,690	5,296,315	5,297,028	5,295,433	5,295,762
	5,295,697	5,295,709	5,296,341	5,297,049	5,295,458	5,295,826
	5,295,832	5,295,715	5,296,347	5,297,062	5,295,490	5,295,831
	5,296,655	5,295,721	5,296,368	5,297,066	5,295,518	5,295,879
	5,296,804	5,295,758	5,296,381	5,297,067	5,295,519	5,295,916
04 :	5,295,484	5,295,760	5,296,384	5,297,069	5,295,567	5,295,946
	5,295,537	5,295,765	5,296,386	5,297,076	5,295,596	5,295,947
	5,295,585	5,295,767	5,296,387	5,297,081	5,295,615	5,295,956
	5,295,644	5,295,782	5,296,406	5,297,092	5,295,773	5,295,974
	5,295,685	5,295,823	5,296,409	5,297,106	5,295,794	5,295,977
	5,295,890	5,295,824	5,296,468	5,297,115	5,295,869	5,296,046
	5,295,933	5,295,825	5,296,471	5,297,129	5,295,943	5,296,110
	5,296,292	5,295,830	5,296,472	5,297,138	5,295,993	5,296,192
	5,296,736	5,295,837	5,296,518	5,297,141	5,296,109	5,296,227
	5,296,756	5,295,838	5,296,559	5,297,143	5,296,183	5,296,268
	5,296,760	5,295,857	5,296,631	5,297,144	5,296,334	5,296,271
	5,296,824	5,295,862	5,296,641	5,297,148	5,296,346	5,296,483
	5,296,857	5,295,866	5,296,693	5,297,155	5,296,486	5,296,691
	5,296,912	5,295,867	5,296,702	5,297,156	5,296,508	5,296,695
	5,296,993	5,295,880	5,296,703	5,297,166	5,296,643	5,296,697
	5,297,034	5,295,883	5,296,706	5,297,181	5,296,657	5,296,738
	5,297,048	5,295,911	5,296,711	5,297,197	5,296,854	5,296,901
	5,297,053	5,295,936	5,296,714	5,297,208	5,296,936	5,297,007
05 :	5,295,703	5,295,951	5,296,720	5,297,224	5,297,032	5,297,162
	5,296,910	5,295,960	5,296,721	5,297,236	5,297,180	5,297,204
06 :	5,295,267	5,295,962	5,296,722	5,297,240	5,297,281	5,297,213
	5,295,270	5,295,975	5,296,743	5,297,241	10 :	5,295,985	5,296,168	13 :	5,297,275
	5,295,271	5,296,003	5,296,744	5,297,248					5,295,555
	5,295,278	5,296,007	5,296,758	5,297,258			5,296,280		5,295,716
	5,295,319	5,296,044	5,296,759	5,297,271			5,296,282		5,295,807
	5,295,340	5,296,079	5,296,765	5,297,272			5,296,283		5,295,849
	5,295,366	5,296,094	5,296,767	5,297,276			5,296,293		5,295,850
	5,295,391	5,296,115	5,296,788	5,297,282			5,296,416		5,295,981
	5,295,403	5,296,116	5,296,790	5,297,287			5,296,417		5,296,024
	5,295,440	5,296,118	5,296,797	5,297,289			5,296,426		5,296,064
	5,295,448	5,296,123	5,296,808	08 :	5,295,369			5,296,453		5,296,097
	5,295,480	5,296,124	5,296,826	5,295,398			5,296,478		5,296,098
	5,295,482	5,296,125	5,296,837	5,295,419			5,296,479		5,296,284
	5,295,491	5,296,139	5,296,856	5,295,445			5,296,553		5,296,338
	5,295,493	5,296,141	5,296,861	5,295,545			5,296,639		5,296,349
	5,295,498	5,296,148	5,296,882	5,296,047			5,297,058		5,296,542
	5,295,506	5,296,161	5,296,899	5,296,647	11 :	5,295,432			5,296,625
	5,295,551	5,296,166	5,296,913	5,296,817			5,296,353		5,296,747
	5,295,594	5,296,167	5,296,961	5,296,986			5,297,249		5,296,827
	5,295,597	5,296,195	5,296,975	5,297,021	11 :	5,295,275			5,297,016
	5,295,599	5,296,228	5,296,984	5,297,122			5,295,368		5,297,030
	5,295,625	5,296,256	5,296,987	5,297,184			5,295,481		5,297,202
	5,295,626	5,296,272	5,296,997	5,297,185			5,295,512		5,297,234
	5,295,643	5,296,275	5,297,000	5,297,201			5,295,599		15 :	5,295,454
	5,295,646	5,296,279	5,297,012	5,297,251			5,295,642		5,295,650
	5,295,652	5,296,285	5,297,017	09 :	Re.34,565			5,295,645		16 :	5,296,252
	5,295,656	5,296,288	5,297,024	5,293,362			5,295,687		5,297,082
	5,295,683	5,296,295	5,297,026	5,293,378			5,295,688		5,297,087

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17 :	5,295,268		5,295,928		5,296,462		5,296,560		5,295,360		5,296,627
	5,295,285		5,295,959		5,296,516		5,296,608		5,295,402		5,296,628
	5,295,288		5,295,969		5,296,536		5,296,640		5,295,452		5,296,646
	5,295,334		5,295,996		5,296,583		5,296,690		5,295,489		5,296,659
	5,295,376		5,296,155		5,296,589		5,296,841		5,295,520		5,296,664
	5,295,406		5,296,191		5,296,623		5,296,843		5,295,560		5,296,666
	5,295,465		5,296,197		5,296,637		5,296,956		5,295,577		5,296,670
	5,295,478		5,296,307		5,296,658		5,297,191		5,295,590		5,296,685
	5,295,483		5,296,382		5,296,716		5,297,192		5,295,595		5,296,829
	5,295,500		5,296,419		5,296,785		5,297,198		5,295,600		5,297,160
	5,295,514		5,296,822		5,296,852		5,297,199		5,295,601		5,297,174
	5,295,527		5,296,846		5,296,902		5,297,235		5,295,608		5,297,176
	5,295,535		5,296,860		5,296,973		5,297,253		5,295,610		5,297,232
	5,295,588		5,296,865		5,297,010	35 :	5,295,283		5,295,657		5,297,273
	5,295,591		5,296,866		5,297,054		5,296,146		5,295,658		4,828,483
	5,295,633		5,297,061		5,297,063		5,296,203		5,295,669	44 :	5,295,940
	5,295,654		5,297,121		5,297,064		5,296,457		5,295,764		5,295,950
	5,295,655		5,297,135		5,297,065	36 :	5,295,280		5,295,813		5,296,128
	5,295,667		5,297,172		5,297,270		5,295,291		5,295,821		5,296,313
	5,295,677		5,297,214		4,166,640		5,295,301		5,295,822		5,296,429
	5,295,698	25 :	5,295,276	27 :	5,295,277		5,295,342		5,295,898		5,296,465
	5,295,700		5,295,305		5,295,326		5,295,350		5,295,906		5,296,834
	5,295,704		5,295,308		5,295,364		5,295,352		5,295,909	45 :	5,295,370
	5,295,742		5,295,459		5,295,395		5,295,447		5,295,988		5,295,525
	5,295,785		5,295,477		5,295,556		5,295,522		5,296,035		5,295,871
	5,295,887		5,295,492		5,295,659		5,295,586		5,296,077		5,296,099
	5,295,902		5,295,502		5,295,827		5,295,627		5,296,120		5,296,270
	5,295,972		5,295,558		5,295,872		5,295,634		5,296,154		5,296,289
	5,295,994		5,295,582		5,295,896		5,295,649		5,296,157		5,296,291
	5,295,995		5,295,612		5,295,927		5,295,674		5,296,158		5,296,438
	5,295,998		5,295,701		5,295,931		5,295,676		5,296,159		5,296,715
	5,296,006		5,295,811		5,295,952		5,295,692		5,296,184	46 :	5,296,890
	5,296,021		5,295,944		5,295,958		5,295,777		5,296,187	47 :	5,295,269
	5,296,042		5,295,945		5,296,071		5,295,815		5,296,500		5,295,300
	5,296,066		5,296,075		5,296,277		5,295,816		5,296,585		5,295,411
	5,296,205		5,296,081		5,296,302		5,295,903		5,296,648		5,295,450
	5,296,234		5,296,089		5,296,317		5,295,934		5,296,683		5,295,851
	5,296,244		5,296,090		5,296,395		5,295,970		5,296,701		5,295,895
	5,296,269		5,296,119		5,296,433		5,295,984		5,296,709		5,295,948
	5,296,427		5,296,134		5,296,547		5,296,012		5,296,805		5,296,108
	5,296,460		5,296,149		5,296,561		5,296,026		5,296,810		5,296,240
	5,296,535		5,296,296		5,296,566		5,296,048		5,296,813		5,296,587
	5,296,544		5,296,333		5,296,645		5,296,083		5,296,967		5,296,708
	5,296,545		5,296,392		5,296,654		5,296,093		5,297,041		5,297,187
	5,296,578		5,296,424		5,296,748		5,296,113		5,297,043	48 :	5,295,274
	5,296,632		5,296,459		5,297,025		5,296,180		5,297,257		5,295,321
	5,296,786		5,296,514		5,297,230		5,296,189		5,297,288		5,295,367
	5,296,821		5,296,599	28 :	5,295,979		5,296,208		4,238,593		5,295,397
	5,296,840		5,296,651		5,296,264		5,296,220		5,109,766		5,295,421
	5,296,932		5,296,780	29 :	5,295,565		5,296,231	40 :	5,295,542		5,295,429
	5,297,001		5,296,793		5,295,892		5,296,309		5,295,543		5,295,536
	5,297,011		5,296,794		5,295,953		5,296,311		5,295,735		5,295,538
	5,297,031		5,296,795		5,296,232		5,296,332		5,296,199		5,295,539
	5,297,075		5,296,796		5,296,678		5,296,337		5,296,515		5,295,540
	5,297,142		5,296,806	31 :	5,295,339		5,296,350		5,296,527		5,295,541
	5,297,178		5,296,832		5,295,455		5,296,408		5,296,579		5,295,549
	5,297,210		5,296,949		5,296,145		5,296,423	41 :	5,295,317		5,295,575
18 :	5,295,387		5,296,972		5,296,250		5,296,458		5,295,329		5,295,580
	5,295,404		5,297,073		5,296,688		5,296,480		5,295,554		5,295,581
	5,295,430		5,297,107	32 :	5,295,358		5,296,496		5,295,835		5,295,647
	5,295,462		5,297,161		5,295,426		5,296,568		5,295,886		5,295,684
	5,295,507		5,297,170		5,297,068		5,296,588		5,295,949		5,295,757
	5,295,530		5,297,182	33 :	5,295,439		5,296,602		5,296,689		5,295,761
	5,295,779		5,297,186		5,295,648		5,296,667		5,296,792		5,295,770
	5,295,976		5,297,265		5,295,792		5,296,675	42 :	5,295,290		5,295,771
	5,295,992		5,297,269		5,296,028		5,296,676		5,295,338		5,295,817
	5,296,030		5,297,280		5,296,287		5,296,712		5,295,359		5,295,863
	5,296,056	26 :	5,295,304		5,296,665		5,296,815		5,295,379		5,295,907
	5,296,217		5,295,374		5,296,779		5,296,839		5,295,388		5,295,980
	5,296,306		5,295,382		5,297,291		5,296,871		5,295,392		5,296,009
	5,296,377		5,295,408	34 :	5,295,320		5,296,885		5,295,503		5,296,062
	5,296,484		5,295,409		5,295,330		5,296,886		5,295,606		5,296,121
	5,296,584		5,295,412		5,295,396		5,296,887		5,295,694		5,296,132
	5,296,615		5,295,413		5,295,424		5,296,894		5,295,728		5,296,135
	5,296,772		5,295,461		5,295,456		5,296,898		5,295,747		5,296,164
	5,296,773		5,295,471		5,295,578		5,296,904		5,295,763		5,296,202
	5,296,803		5,295,521		5,295,635		5,296,905		5,295,783		5,296,253
	5,296,921		5,295,523		5,295,686		5,296,923		5,295,790		5,296,335
	5,296,964		5,295,563		5,295,689		5,296,943		5,295,791		5,296,364
19 :	5,296,376		5,295,598		5,295,695		5,296,947		5,295,841		5,296,385
	5,296,762		5,295,602		5,295,834		5,296,958		5,295,843		5,296,393
	5,296,783		5,295,632		5,295,955		5,296,960		5,295,854		5,296,411
	5,296,862		5,295,713		5,295,966		5,297,055		5,295,864		5,296,466
	5,297,195		5,295,718		5,295,978		5,297,089		5,295,917		5,296,570
20 :	5,295,631		5,295,725		5,296,002		5,297,091		5,295,990		5,296,572
	5,296,248		5,295,726		5,296,041		5,297,124		5,296,032		5,296,574
	5,296,823		5,295,729		5,296,049		5,297,137		5,296,074		5,296,595
21 :	5,295,442		5,295,730		5,296,133		5,297,150		5,296,131		5,296,619
	5,295,901		5,295,755		5,296,206		5,297,217		5,296,138		5,296,652
	5,296,520		5,295,799		5,296,209		5,297,219		5,296,190		5,296,746
22 :	5,295,534		5,295,800		5,296,214		5,297,244		5,296,216		5,296,750
	5,295,544		5,295,804		5,296,215		5,297,262		5,296,218		5,296,778
	5,295,878		5,295,812		5,296,230		5,297,277		5,296,233		5,296,799
	5,296,039		5,295,855		5,296,247	37 :	5,295,420		5,296,310		5,296,818
	5,296,241		5,295,860		5,296,308		5,295,510		5,296,348		5,296,828
	5,296,476		5,295,861		5,296,318		5,295,651		5,296,375		5,296,858
23 :	5,296,112		5,295,870		5,296,370		5,295,852		5,296,422		5,296,880
24 :	Re.34,566		5,295,875		5,296,428		5,295,968		5,296,525		5,296,893
	5,295,312		5,295,914		5,296,436		5,296,150		5,296,530		5,296,950
	5,295,323		5,295,924		5,296,450		5,296,413		5,296,537		5,297,005
	5,295,557		5,296,045		5,296,488		5,296,725		5,296,541		5,297,008
	5,295,587		5,296,068		5,296,491		5,296,998		5,296,543		5,297,013
	5,295,614		5,296,182		5,296,521	38 :	5,297,207		5,296,562		5,297,056
	5,295,682		5,296,185		5,296,550	39 :	5,295,292		5,296,586		5,297,057
	5,295,746		5,296,249		5,296,556		5,295,332		5,296,624		5,297,086
	5,295,882		5,296,255		5,296,557		5,295,335		5,296,626		5,297,090

	5,297,093	49 :	5,295,410		5,296,210		5,295,839		5,296,127		5,295,881
	5,297,094		5,295,930		5,296,286		5,295,964		5,296,160		5,295,899
	5,297,099		5,296,222		5,296,506		5,296,004		5,296,300		5,295,986
	5,297,108		5,297,238		5,296,749		5,296,226	55 :	5,295,273		5,296,080
	5,297,109	50 :	5,295,759		5,296,769		5,296,592		5,295,309		5,296,200
	5,297,111		5,296,775		5,296,850		5,296,853		5,295,361		5,296,201
	5,297,167	51 :	5,295,528		5,296,916		5,296,873		5,295,423		5,296,225
	5,297,183		5,295,574		5,297,216		5,296,911		5,295,488		5,296,481
	5,297,194		5,295,885		5,297,227		5,297,040		5,295,532		5,296,663
	5,297,231		5,296,005	53 :	5,295,336		5,297,052		5,295,562		5,296,791
	5,297,268		5,296,101		5,295,341		5,297,283		5,295,593		5,296,814
	5,297,274		5,296,106		5,295,418		5,297,284		5,295,630		5,296,869
	5,297,278		5,296,172		5,295,474	54 :	5,295,733		5,295,702		5,297,019

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	345,406		345,430								

PLANT PATENTS

06 :	8,646	8,649	8,650	8,654	12 :	8,657	34 :	8,648

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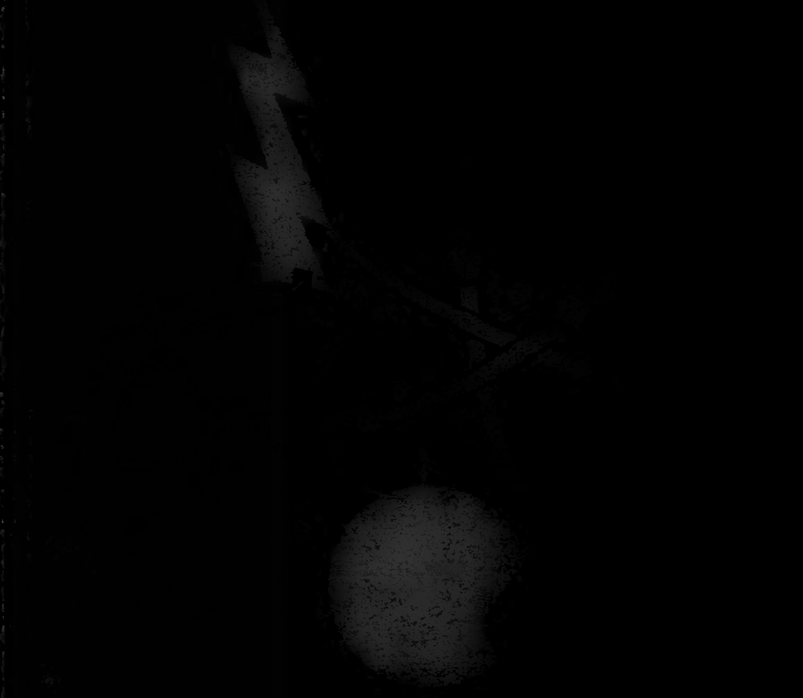
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PATENTS

March 29, 1994



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UNITED STATES PATENT AND TRADEMARK OFFICE

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1160 O.G. 93, on Mar. 29, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1993, due to changes in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1154 O.G. 25, on Sept. 14, 1993.

International fees were changed, effective on May 1, 1993, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1992, and were announced in the *Official Gazette* at 1141 O.G. 68, on Aug. 25, 1992.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1993, is as follows:

International Applications (PCT Chapter I) fees:	
Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1415.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
For the first 10 national or regional offices designated	128.00
For each designation fee in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
Designation fee	128.00
Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	450.00
—Additional examination fee, per additional invention (payable only upon invitation	140.00
—USPTO was not ISA in PCT Chapter I	670.00
—Additional examination fee, per additional invention (payable only upon invitation	230.00

U.S. National Stage fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
All claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
All claims presented did not satisfy provisons of PCT Article 33(2) to (4)	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA		
Filed without a search report from the European Patent Office or the Japanese Patent Office	475.00	950.00
Filed with a search report from the European Patent Office or the Japanese Patent Office	415.00	830.00
Other National Fees		
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update

Declarations of Continuation by Kyrgyzstan, the Republic of Moldova, and Tajikistan

The United States Patent and Trademark Office received notification from the World Itellectual Property Organization (WIPO) that Kyrgyzstan, the Republic of Moldova, and Tajikistan deposited their declarations of continuation of the application of the Patent Cooperation Treaty (PCT) on February 14, 1994. Kyrgyzstan, the Republic of Moldova, and Tajikistan became the 65th, 66th, and 67th Contracting States, respectively, of the PCT on February 14, 1994. Consequently, nationals and residents of Kyrgyzstan, the Republic of Moldova, and Tajikistan are entitled to file international applications on and after February 14, 1994, and from the same date it is possible to file international applications designating and electing Kyrgyzstan (country code: KG), the Republic of Moldova (country code: MD), and Tajikistan (country code: TJ).

Under PCT Regulations, applicants are afforded the possibility of requesting the extension of the effects of any international

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application filed on or after December 25, 1991 (the date on which the Soviet Union ceased to exist), to successor States which have made a declaration of continuation. PCT Rule 32 will allow the extension of all international applications filed between December 25, 1991, and April 14, 1994, to Kyrgyzstan, the Republic of Moldvola, and Tajikistan.

Applicants or their agents in respect of each international applications application concerned will receive a notification from the International Bureau of WIPO, informing them about the possibility and the applicable conditions for extending the effects of their international application to Kyrgyzstan, the Republic of Moldvola, and Tajikistan.

Listing of PCT Member Countries

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(1)	Central African Republic[2]	Accession	15	September 1971	24	January 1978
(2)	Senegal[2]	Ratification	08	March 1972	24	January 1978
(3)	Madagascar	Ratification	27	March 1972	24	January 1978
(4)	Malawi	Accession	16	May 1972	24	January 1978
(5)	Cameroon	Accession	15	March 1973	24	January 1978
(6)	Chad[2]	Accession	12	February 1974	24	January 1978
(7)	Togo[2]	Ratification	28	January 1975	24	January 1978
(8)	Gabon[2]	Accession	06	March 1975	24	January 1978
(9)	United States of America	Ratification	26	November 1975	24	January 1978
(10)	Germany[3]	Ratification	19	July 1976	24	January 1978
(11)	Congo[2]	Accession	08	August 1977	24	January 1978
(12)	Switzerland[3]	Ratification	14	September 1977	24	January 1978
(13)	United Kingdom[3]	Ratification	24	October 1977	24	January 1978
(14)	France[3]	Ratification	25	November 1977	25	February 1978
(15)	Russian Federation	Ratification	29	December 1977	29	March 1978
(16)	Brazil	Ratification	09	January 1978	09	April 1978
(17)	Luxembourg[3]	Ratification	31	January 1978	30	April 1978
(18)	Sweden[3]	Ratification	17	February 1978	17	May 1978
(19)	Japan	Ratification	01	July 1978	01	October 1978
(20)	Denmark[3]	Ratification	01	September 1978	01	December 1978
(21)	Austria[3]	Ratification	23	January 1979	23	April 1979
(22)	Monaco[3]	Ratification	22	March 1979	22	June 1979
(23)	Netherlands[3]	Ratification	10	April 1979	10	July 1979
(24)	Romania	Ratification	23	April 1979	23	July 1979
(25)	Norway	Ratification	01	October 1979	01	January 1980
(26)	Liechtenstein[3]	Accession	19	December 1979	19	March 1980
(27)	Australia	Accession	31	December 1979	31	March 1980
(28)	Hungary	Ratification	27	March 1980	27	June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08	April 1980	08	July 1980
(30)	Finland	Ratification	01	July 1980	01	October 1980
(31)	Belgium[3]	Ratification	14	September 1981	14	December 1981
(32)	Sri Lanka	Accession	26	November 1981	26	February 1982
(33)	Mauritania[2]	Accession	13	January 1983	13	April 1983
(34)	Sudan	Accession	16	January 1984	16	April 1984
(35)	Bulgaria	Accession	21	February 1984	21	May 1984
(36)	Republic of Korea (South Korea)	Accession	10	May 1984	10	August 1984
(37)	Mali[2]	Accession	19	July 1984	19	October 1984
(38)	Barbados	Accession	12	December 1984	12	March 1985
(39)	Italy[3]	Ratification	28	December 1984	28	March 1985
(40)	Benin[2]	Accession	26	November 1986	26	February 1987
(41)	Burkina Faso[2]	Accession	21	December 1988	21	March 1989
(42)	Spain[3]	Accession	16	August 1989	16	November1989
(43)	Canada	Ratification	02	October 1989	02	January 1990
(44)	Greece[3]	Accession	09	July 1990	09	October 1990
(45)	Poland	Accession	25	September 1990	25	December 1990
(46)	Cote d'Ivoire[2]	Ratification	31	January 1991	30	April 1991
(47)	Guinea[2]	Accession	27	February 1991	27	May 1991
(48)	Mongolia	Accession	27	February 1991	27	May 1991
(49)	Czech Republic	Declaration[4]	18	December 1992	01	January 1993
(50)	Ireland[3]	Ratification	01	May 1992	01	August 1992
(51)	Portugal[3]	Accession	24	August 1992	24	November 1992
(52)	New Zealand	Accession	01	September 1992	01	December 1992
(53)	Ukraine	Declaration[4]	21	September 1992	25	December 1991
(54)	Viet Nam	Accession	10	December 1992	10	March 1993
(55)	Slovakia Republic	Declaration[4]	30	December 1992	01	January 1993
(56)	Niger[2]	Accession	21	December 1992	21	March 1993
(57)	Kazakhstan	Declaration[4]	16	February 1993	25	December 1991
(58)	Belarus	Declaration[4]	14	April 1993	25	December 1991
(59)	Latvia	Accession	07	June 1993	07	September 1993
(60)	Uzebekistan	Declaration[4]	18	August 1993	25	December 1991
(61)	China	Accession	01	October 1993	01	January 1994
(62)	Slovenia	Accession	01	December 1993	01	March 1994
(63)	Trinidad and Tobago	Accession	10	December 1993	10	March 1994(64)
(64)	Georgia	Declaration[4]	18	January 1994	25	December 1991
(65)	Kyrgyzstan	Declaration[4]	14	February 1994	25	December 1991

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(66)	Republic of Moldvola	Declaration[4]	14	February 1994	25	December 1991
(67)	Tajikistan	Declaration[4]	14	February 1994	25	December 1991

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.

[4]Declaration of continued application.

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Eurasian Patent Convention Initialed By Eleven Successor States Of The Soviet Union

In a notice received recently from the World Intellectual Property Organization, the following was announced:

1. On February 17, 1994, at the headquarters of the World Intellectual Property Organization (WIPO) in Geneva, representatives of eleven of the twelve member States of the Commonwealth of Independent States have adopted and initiated a multilateral treaty entitled "Eurasian Patent Convention."

2. The treaty establishes a new intergovernment organization called the "Eurasian Patent Organization." Once in force, the treaty will allow nationals of any country to obtain patents of invention from the Eurasian Patent Office to be set up in Moscow. Such regional (Eurasian) patents will have effect in all countries of the Eurasian patent system.

3. The Eurasian Patent Convention not only provides modalities of applying for and obtaining Eurasian patents but also for their legal effects: patented inventions can be used only with the authorization of the holders of the patents. Subject to the payment of a yearly renewal fee, any Eurasian patent can be maintained in force for 20 years.

4. The Eurasian patent system will be of enormous advantage both for local and foreign applicants. They will not have to apply for a patent separately in each country but with single application, filed in the Russian language in Moscow, they can obtain, with a single act and a single payment, patent protection in all the States members of the new system. Foreigners shall be able to apply for Eurasian patents *via* the Patent Cooperation Treaty (PCT), a treaty administered by WIPO in Geneva, which allows them to postpone the translation of their applications into Russian for 20 or 30 months.

5. Any country may become a party to the Eurasian Patent Convention, provided it is a party to two WIPO-administered treaties: the Paris Convention for the Protection of Industrial Property and the Patent Cooperation Treaty. Most of the States members of the Commonwealth of Independent States already fulfill this condition.

6. The Convention, adopted in the presence of Dr. Arpad Bogsch, Director General of WIPO, was initialized by the representatives of Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Ukraine and Uzbekistan.

7. The Convention is expected to be presented in the next months for formal signature to one of the regular meetings of the Heads of Governments of the Commonwealth of Independent States. Instruments of ratification will be deposited with the Director General Of WIPO, who, according to the terms of the Convention, has not only the role of depositor of the Convention but also the role of mediator among the member States in case of possible disputes among them concerning the interpretation and application of the Convention.

8. WIPO is mentioned in the Convention as having a permanent advisory status in the governing body ("Administrative Council") of the Eurasian Patent Organization.

9. The negotiation of the Convention took less than a year. It took place in three meetings of the Interstate Council for the Protection of Industrial Property held in Moscow in May 1993, in Uzghorod (Ukraine) in September 1993 and in Geneva in February 1994. WIPO was invited to each meeting to give advice and assist in the drafting of the Convention. The Convention reflects the contemporary trends of patent legislation and administration and is compatible with the multilateral industrial property treaties administered by WIPO and the provisions on patents contained in the TRIPS draft of GATT.

March 8, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignments to Panel for A Decision Without a Hearing as of February 28, 1994.

Chemical Discipline -	June 15, 1992
Mechanical Discipline -	February 24, 1993
Electrical Discipline -	October 23, 1992 *

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of February 28, 1994.

Chemical -	September 16, 1991 *
Mechanical -	August 19, 1992
Electrical -	October 23, 1991 *

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of February, 1994.

Affirmed	121
Affirmed-in-Part	19
Reversed	82
Total Decided	222

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* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7 and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee.is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 26, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,001,781 through 5,003,629
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 24, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,651,345 through 4,653,118
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 22, 1983 for which maintenance fees due at 11 years and six months may now be paid. the patents have patent numbers within the following ranges:

Utiility Patents 4,377,007 through 4,377,871
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and 7 years and six months and 11 years and six months are set forth in 37 CFR 1.20(e) - (g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 16, 1993
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re 33,862	07/454,860	3/31/92
(4,564,102)	(06/547,133)	(1/14/86
Re 34,448	07/586,752	3/31/92
(4,894,062)	(07/279,439)	(1/16/90)
4,311,485	06/220,200	1/19/82
4,311,613	06/216,125	1/19/82
4,311,724	06/228,166	1/19/82
4,563,777	06/627,656	1/14/86
4,563,782	06/563,926	1/14/86
4,563,784	06/641,728	1/14/86
4,563,791	06/572,205	1/14/86
4,563,794	06/618,234	1/14/86
4,563,797	06/667,849	1/14/86
4,563,803	06/487,506	1/14/86
4,563,804	06/472,409	1/14/86
4,563,805	06/748,135	1/14/86
4,563,808	06/632,667	1/14/86
4,563,812	06/580,140	1/14/86
4,563,813	06/597,913	1/14/86
4,563,819	06/659,802	1/14/86
4,563,821	06/666,771	1/14/86
4,563,822	06/590,304	1/14/86
4,563,823	06/634,124	1/14/86
4,563,826	06/664,256	1/14/86
4,563,827	06/589,543	1/14/86
4,563,828	06/563,086	1/14/86
4,563,833	06/712,084	1/14/86
4,563,834	06/626,764	1/14/86
4,563,839	06/724,486	1/14/86
4,563,841	06/623,345	1/14/86
4,563,842	06/555,073	1/14/86
4,563,844	06/470,629	1/14/86
4,563,848	06/519,194	1/14/86
4,563,851	06/662,034	1/14/86
4,563,852	06/684,944	1/14/86
4,563,856	06/525,535	1/14/86
4,563,857	06/631,094	1/14/86
4,563,861	06/578,863	1/14/86

Patent Number	Serial Number	Issue Date
4,563,862	06/663,891	1/14/86
4,563,864	06/560,514	1/14/86
4,563,871	06/619,139	1/14/86
4,563,872	06/604,373	1/14/86
4,563,874	06/543,512	1/14/86
4,563,875	06/714,475	1/14/86
4,563,878	06/681,030	1/14/86
4,563,880	06/637,110	1/14/86
4,563,884	06/564,413	1/14/86
4,563,889	06/589,030	1/14/86
4,563,897	06/570,180	1/14/86
4,563,901	06/530,562	1/14/86
4,563,902	06/599,393	1/14/86
4,563,903	06/599,395	1/14/86
4,563,906	06/554,600	1/14/86
4,563,909	06/394,720	1/14/86
4,563,911	06/628,340	1/14/86
4,563,915	06/509,999	1/14/86
4,563,916	06/530,086	1/14/86
4,563,921	06/708,498	1/14/86
4,563,925	06/488,746	1/14/86
4,563,926	06/555,780	1/14/86
4,563,929	06/646,277	1/14/86
4,563,930	06/643,671	1/14/86
4,563,931	06/554,833	1/14/86
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4,563,939	06/502,524	1/14/86
4,563,941	06/649,693	1/14/86
4,563,943	06/708,649	1/14/86
4,563,949	06/605,562	1/14/86
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4,563,974	06/532,787	1/14/86
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4,563,979	06/560,047	1/14/86
4,563,981	06/670,054	1/14/86
4,563,982	06/588,522	1/14/86
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4,563,985	06/589,319	1/14/86
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4,564,002	06/644,455	1/14/86
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4,564,006	06/634,442	1/14/86
4,564,008	06/620,958	1/14/86
4,564,011	06/539,160	1/14/86
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4,564,026	06/557,735	1/14/86
4,564,029	06/531,918	1/14/86
4,564,031	06/509,205	1/14/86
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4,564,049	06/568,410	1/14/86
4,564,052	06/676,208	1/14/86
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4,564,060	06/661,209	1/14/86
4,564,064	06/678,419	1/14/86
4,564,066	06/522,033	1/14/86
4,564,068	06/554,209	1/14/86
4,564,069	06/600,272	1/14/86
4,564,070	06/554,875	1/14/86
4,564,075	06/596,410	1/14/86
4,564,078	06/571,189	1/14/86
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4,564,101	06/557,743	1/14/86
4,564,103	06/359,138	1/14/86
4,564,108	06/620,076	1/14/86
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4,564,112	06/638,476	1/14/86
4,564,113	06/647,762	1/14/86
4,564,114	06/684,810	1/14/86
4,564,119	06/679,383	1/14/86
4,564,121	06/561,462	1/14/86
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4,564,131	06/699,945	1/14/86
4,564,135	06/566,826	1/14/86
4,564,136	06/511,317	1/14/86
4,564,141	06/668,286	1/14/86
4,564,144	06/575,683	1/14/86
4,564,145	06/495,152	1/14/86
4,564,148	06/624,061	1/14/86
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4,564,158	06/545,428	1/14/86
4,564,167	06/547,205	1/14/86
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4,564,171	06/720,060	1/14/86
4,564,172	06/621,268	1/14/86
4,564,179	06/599,493	1/14/86
4,564,182	06/700,047	1/14/86
4,564,184	06/631,079	1/14/86
4,564,186	06/617,904	1/14/86
4,564,187	06/616,149	1/14/86
4,564,193	06/560,755	1/14/86
4,564,194	06/720,973	1/14/86
4,564,195	06/620,282	1/14/86
4,564,196	06/517,273	1/14/86
4,564,204	06/526,436	1/14/86
4,564,210	06/535,861	1/14/86
4,564,212	06/560,145	1/14/86
4,564,213	06/704,151	1/14/86
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4,564,219	06/511,170	1/14/86
4,564,222	06/644,629	1/14/86
4,564,226	06/317,330	1/14/86
4,564,230	06/538,344	1/14/86
4,564,231	06/620,404	1/14/86
4,564,232	06/585,986	1/14/86
4,564,235	06/670,367	1/14/86
4,564,236	06/562,402	1/14/86
4,564,238	06/538,209	1/14/86
4,564,240	06/543,514	1/14/86
4,564,243	06/470,220	1/14/86
4,564,246	06/551,402	1/14/86
4,564,247	06/558,918	1/14/86
4,564,250	06/623,277	1/14/86
4,564,253	06/680,544	1/14/86
4,564,261	06/485,039	1/14/86
4,564,264	06/536,084	1/14/86
4,564,266	06/487,186	1/14/86
4,564,271	06/549,287	1/14/86
4,564,273	06/606,001	1/14/86
4,564,279	06/674,905	1/14/86
4,564,282	06/441,356	1/14/86
4,564,289	06/636,397	1/14/86
4,564,299	06/620,970	1/14/86
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4,564,314	06/602,815	1/14/86
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4,564,316	06/439,778	1/14/86
4,564,318	06/584,258	1/14/86
4,564,319	06/310,272	1/14/86
4,564,322	06/529,354	1/14/86
4,564,323	06/579,895	1/14/86
4,564,330	06/638,001	1/14/86
4,564,333	06/550,208	1/14/86
4,564,334	06/604,075	1/14/86
4,564,337	06/540,493	1/14/86
4,564,341	06/606,266	1/14/86
4,564,344	06/559,805	1/14/86
4,564,348	06/443,645	1/14/86

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Patent Number	Serial Number	Issue Date
4,564,355	06/569,459	1/14/86
4,564,358	06/611,321	1/14/86
4,564,361	06/642,922	1/14/86
4,564,362	06/511,759	1/14/86
4,564,369	06/516,449	1/14/86
4,564,371	06/693,823	1/14/86
4,564,375	06/697,335	1/14/86
4,564,391	06/708,618	1/14/86
4,564,392	06/632,174	1/14/86
4,564,394	06/630,103	1/14/86
4,564,396	06/462,441	1/14/86
4,564,399	06/573,379	1/14/86
4,564,400	06/587,412	1/14/86
4,564,401	06/537,135	1/14/86
4,564,409	06/690,511	1/14/86
4,564,413	06/616,242	1/14/86
4,564,414	06/493,801	1/14/86
4,564,419	06/679,384	1/14/86
4,564,423	06/675,791	1/14/86
4,564,424	06/600,833	1/14/86
4,564,425	06/481,894	1/14/86
4,564,427	06/686,178	1/14/86
4,564,434	06/656,163	1/14/86
4,564,435	06/738,205	1/14/86
4,564,436	06/739,015	1/14/86
4,564,437	06/626,673	1/14/86
4,564,442	06/738,500	1/14/86
4,564,448	06/555,799	1/14/86
4,564,449	06/467,329	1/14/86
4,564,450	06/671,428	1/14/86
4,564,451	06/477,378	1/14/86
4,564,452	06/557,836	1/14/86
4,564,453	06/572,465	1/14/86
4,564,456	06/616,088	1/14/86
4,564,461	06/575,220	1/14/86
4,564,462	06/618,462	1/14/86
4,564,463	06/621,289	1/14/86
4,564,464	06/686,951	1/14/86
4,564,467	06/566,203	1/14/86
4,564,473	06/520,097	1/14/86
4,564,478	06/570,693	1/14/86
4,564,479	06/437,704	1/14/86
4,564,485	06/349,244	1/14/86
4,564,487	06/533,501	1/14/86
4,564,491	06/570,905	1/14/86
4,564,492	06/591,470	1/14/86
4,564,494	06/532,980	1/14/86
4,564,496	06/742,654	1/14/86
4,564,501	06/627,938	1/14/86
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4,564,503	06/523,489	1/14/86
4,564,506	06/497,089	1/14/86
4,564,515	06/606,376	1/14/86
4,564,517	06/582,452	1/14/86
4,564,518	06/603,929	1/14/86
4,564,522	06/525,048	1/14/86
4,564,524	06/495,683	1/14/86
4,564,532	06/689,488	1/14/86
4,564,535	06/459,135	1/14/86
4,564,536	06/710,187	1/14/86
4,564,538	06/640,445	1/14/86
4,564,542	06/714,143	1/14/86
4,564,543	06/650,261	1/14/86
4,564,560	06/646,080	1/14/86
4,564,564	06/523,990	1/14/86
4,564,565	06/611,968	1/14/86
4,564,568	06/667,871	1/14/86
4,564,570	06/661,061	1/14/86
4,564,572	06/694,237	1/14/86
4,564,574	06/632,059	1/14/86
4,564,578	06/551,761	1/14/86
4,564,581	06/629,759	1/14/86
4,564,587	06/629,361	1/14/86
4,564,588	06/698,746	1/14/86
4,564,595	06/569,562	1/14/86
4,564,596	06/705,343	1/14/86
4,564,600	06/436,660	1/14/86
4,564,601	06/646,022	1/14/86
4,564,603	06/667,000	1/14/86
4,564,606	06/638,167	1/14/86
4,564,610	06/562,248	1/14/86
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4,564,639	06/471,191	1/14/86
4,564,640	06/576,414	1/14/86
4,564,642	06/321,086	1/14/86
4,564,646	06/580,710	1/14/86
4,564,648	06/652,858	1/14/86
4,564,650	06/564,610	1/14/86
4,564,654	06/674,846	1/14/86
4,564,657	06/580,989	1/14/86
4,564,663	06/703,633	1/14/86
4,564,664	06/522,491	1/14/86
4,564,665	06/482,202	1/14/86
4,564,666	06/710,337	1/14/86
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4,564,678	06/553,182	1/14/86
4,564,684	06/614,371	1/14/86
4,564,687	06/684,225	1/14/86
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4,564,697	06/676,433	1/14/86
4,564,698	06/460,259	1/14/86
4,564,705	06/266,058	1/14/86
4,564,710	06/669,558	1/14/86
4,564,711	06/732,313	1/14/86
4,564,714	06/666,411	1/14/86
4,564,719	06/733,338	1/14/86
4,564,720	06/494,485	1/14/86
4,564,723	06/553,651	1/14/86
4,564,731	06/476,358	1/14/86
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4,564,736	06/608,042	1/14/86
4,564,737	06/512,363	1/14/86
4,564,739	06/630,673	1/14/86
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4,564,744	06/606,247	1/14/86
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4,564,823	06/653,150	1/14/86
4,564,827	06/593,095	1/14/86
4,564,828	06/609,613	1/14/86
4,564,831	06/505,078	1/14/86
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4,564,839	06/417,928	1/14/86
4,564,845	06/625,625	1/14/86
4,564,849	06/704,899	1/14/86
4,564,859	06/543,521	1/14/86
4,564,863	06/562,339	1/14/86
4,564,865	06/493,414	1/14/86
4,564,869	06/553,894	1/14/86
4,564,875	06/380,426	1/14/86
4,564,881	06/659,472	1/14/86
4,564,886	06/433,254	1/14/86
4,564,896	06/626,318	1/14/86
4,564,898	06/507,003	1/14/86
4,564,905	06/505,440	1/14/86
4,564,906	06/338,862	1/14/86
4,564,909	06/547,028	1/14/86
4,564,914	06/523,197	1/14/86
4,564,919	06/450,785	1/14/86
4,564,924	06/500,333	1/14/86
4,564,927	06/356,875	1/14/86
4,564,934	06/446,062	1/14/86
4,564,935	06/569,644	1/14/86
4,564,945	06/505,210	1/14/86
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4,564,955	06/543,291	1/14/86
4,893,356	07/099,791	1/16/90
4,893,357	07/158,553	1/16/90
4,893,358	07/270,781	1/16/90
4,893,359	07/311,742	1/16/90
4,893,360	07/303,759	1/16/90
4,893,362	07/176,646	1/16/90
4,893,363	07/247,174	1/16/90
4,893,364	07/197,586	1/16/90
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4,893,395	07/247,743	1/16/90
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4,893,403	07/181,875	1/16/90
4,893,406	07/256,529	1/16/90
4,893,409	07/104,939	1/16/90
4,893,412	07/293,156	1/16/90
4,893,414	07/090,940	1/16/90
4,893,416	07/215,574	1/16/90
4,893,419	07/218,639	1/16/90
4,893,421	07/294,336	1/16/90
4,893,423	07/241,892	1/16/90
4,893,424	07/119,310	1/16/90
4,893,427	07/269,444	1/16/90
4,893,428	07/338,191	1/16/90
4,893,431	07/240,530	1/16/90
4,893,434	07/352,282	1/16/90
4,893,437	07/178,555	1/16/90
4,893,441	07/019,083	1/16/90
4,893,444	07/189,188	1/16/90
4,893,446	07/119,875	1/16/90
4,893,448	07/313,856	1/16/90
4,893,450	07/159,108	1/16/90
4,893,452	07/275,729	1/16/90
4,893,454	07/191,952	1/16/90
4,893,457	07/264,075	1/16/90
4,893,459	07/217,260	1/16/90
4,893,460	07/302,449	1/16/90
4,893,469	07/141,576	1/16/90
4,893,473	07/146,347	1/16/90
4,893,477	07/129,284	1/16/90
4,893,482	07/323,467	1/16/90
4,893,486	07/382,714	1/16/90
4,893,487	07/366,674	1/16/90
4,893,488	07/318,013	1/16/90
4,893,502	07/227,647	1/16/90
4,893,511	07/233,137	1/16/90
4,893,513	07/265,719	1/16/90
4,893,519	07/230,905	1/16/90
4,893,526	07/098,531	1/16/90
4,893,529	07/296,131	1/16/90
4,893,540	07/135,933	1/16/90
4,893,543	07/376,271	1/16/90
4,893,549	07/225,284	1/16/90
4,893,560	07/249,908	1/16/90
4,893,563	07/280,049	1/16/90
4,893,570	07/276,883	1/16/90
4,893,572	07/242,586	1/16/90
4,893,574	07/364,258	1/16/90
4,893,578	07/235,012	1/16/90
4,893,583	07/332,447	1/16/90
4,893,585	07/123,281	1/16/90
4,893,587	07/247,726	1/16/90
4,893,589	07/218,909	1/16/90
4,893,591	07/247,739	1/16/90
4,893,593	07/273,891	1/16/90
4,893,594	07/273,890	1/16/90
4,893,597	07/342,186	1/16/90
4,893,604	07/270,481	1/16/90
4,893,610	07/359,693	1/16/90
4,893,615	07/180,983	1/16/90
4,893,629	07/111,128	1/16/90
4,893,630	06/597,518	1/16/90
4,893,634	07/077,895	1/16/90
4,893,640	07/275,078	1/16/90
4,893,646	07/187,666	1/16/90
4,893,672	07/193,299	1/16/90
4,893,679	07/162,479	1/16/90
4,893,680	07/258,948	1/16/90
4,893,682	07/277,974	1/16/90
4,893,684	07/334,019	1/16/90
4,893,689	07/198,720	1/16/90
4,893,700	07/196,283	1/16/90
4,893,714	07/158,220	1/16/90
4,893,719	07/217,164	1/16/90
4,893,720	07/312,169	1/16/90
4,893,722	07/228,525	1/16/90
4,893,725	07/216,473	1/16/90
4,893,727	07/229,465	1/16/90
4,893,728	07/218,470	1/16/90
4,893,729	07/216,289	1/16/90
4,893,730	07/214,477	1/16/90
4,893,736	07/194,331	1/16/90
4,893,739	06/798,300	1/16/90
4,893,742	07/287,763	1/16/90
4,893,746	07/309,529	1/16/90
4,893,751	07/228,938	1/16/90
4,893,754	07/119,973	1/16/90
4,893,755	07/265,267	1/16/90
4,893,761	07/175,207	1/16/90
4,893,768	07/208,978	1/16/90
4,893,771	07/279,958	1/16/90
4,893,775	07/285,426	1/16/90
4,893,782	07/173,991	1/16/90
4,893,783	07/303,037	1/16/90
4,893,785	07/128,203	1/16/90
4,893,793	07/171,991	1/16/90
4,893,802	07/207,107	1/16/90
4,893,803	07/003,735	1/16/90
4,893,806	07/223,355	1/16/90
4,893,811	07/295,993	1/16/90
4,893,812	07/149,291	1/16/90
4,893,813	07/245,262	1/16/90
4,893,817	07/258,822	1/16/90
4,893,820	07/091,899	1/16/90
4,893,829	07/318,764	1/16/90
4,893,832	07/237,698	1/16/90
4,893,835	07/231,203	1/16/90
4,893,838	07/209,501	1/16/90
4,893,840	07/181,941	1/16/90
4,893,841	07/340,836	1/16/90
4,893,856	07/313,442	1/16/90
4,893,860	07/213,625	1/16/90
4,893,864	07/279,492	1/16/90
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4,893,892	07/244,847	1/16/90
4,893,894	07/137,860	1/16/90
4,893,895	07/311,312	1/16/90
4,893,900	07/246,709	1/16/90
4,893,901	07/246,798	1/16/90
4,893,905	07/204,646	1/16/90
4,893,908	07/211,537	1/16/90
4,893,909	07/021,109	1/16/90
4,893,910	07/158,710	1/16/90
4,893,915	07/259,057	1/16/90
4,893,919	07/134,188	1/16/90
4,893,922	07/291,377	1/16/90
4,893,923	06/915,650	1/16/90
4,893,935	07/234,367	1/16/90
4,893,938	07/320,601	1/16/90
4,893,939	07/021,203	1/16/90
4,893,940	07/023,681	1/16/90
4,893,946	07/352,001	1/16/90
4,893,954	07/049,095	1/16/90
4,893,959	07/203,104	1/16/90
4,893,965	07/124,103	1/16/90
4,893,972	07/273,275	1/16/90
4,893,981	07/030,887	1/16/90
4,893,996	07/357,185	1/16/90
4,894,000	07/122,385	1/16/90
4,894,008	07/333,436	1/16/90
4,894,010	07/193,883	1/16/90
4,894,023	07/240,683	1/16/90
4,894,028	07/180,396	1/16/90
4,894,030	07/338,486	1/16/90
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4,894,039	07/239,308	1/16/90
4,894,041	07/251,997	1/16/90
4,894,042	07/196,018	1/16/90
4,894,043	07/153,980	1/16/90
4,894,047	07/343,232	1/16/90
4,894,050	07/337,499	1/16/90
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4,894,066	07/183,221	1/16/90
4,894,067	07/121,981	1/16/90
4,894,070	07/169,826	1/16/90
4,894,071	07/149,855	1/16/90
4,894,073	07/327,554	1/16/90
4,894,074	07/264,265	1/16/90
4,894,075	07/321,093	1/16/90
4,894,076	07/297,463	1/16/90
4,894,082	07/181,489	1/16/90
4,894,095	07/141,483	1/16/90
4,894,096	06/877,178	1/16/90
4,894,099	07/227,956	1/16/90
4,894,101	07/123,424	1/16/90
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4,894,111	07/356,433	1/16/90
4,894,117	07/187,103	1/16/90
4,894,122	07/297,524	1/16/90
4,894,129	07/146,236	1/16/90
4,894,131	07/251,456	1/16/90
4,894,134	07/125,938	1/16/90
4,894,136	07/255,302	1/16/90
4,894,141	06/567,487	1/16/90
4,894,145	07/221,484	1/16/90
4,894,149	07/245,169	1/16/90
4,894,152	07/084,880	1/16/90
4,894,169	07/257,253	1/16/90
4,894,176	07/297,467	1/16/90
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4,894,236	07/142,909	1/16/90
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4,894,246	07/082,540	1/16/90
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4,894,261	07/216,614	1/16/90
4,894,263	07/265,337	1/16/90
4,894,272	07/233,906	1/16/90
4,894,292	06/888,638	1/16/90
4,894,300	07/234,077	1/16/90
4,894,306	06/890,824	1/16/90
4,894,312	07/201,948	1/16/90
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4,894,356	07/286,412	1/16/90
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4,894,379	07/198,906	1/16/90
4,894,383	07/190,733	1/16/90
4,894,384	07/165,382	1/16/90
4,894,387	07/030,235	1/16/90
4,894,391	06/623,869	1/16/90
4,894,392	07/195,353	1/16/90
4,894,393	07/245,243	1/16/90
4,894,394	07/256,522	1/16/90
4,894,408	07/235,858	1/16/90
4,894,413	07/107,144	1/16/90
4,894,425	07/055,543	1/16/90
4,894,433	07/152,638	1/16/90
4,894,437	07/085,674	1/16/90
4,894,446	07/206,208	1/16/90
4,894,451	07/222,360	1/16/90
4,894,461	06/833,587	1/16/90
4,894,462	07/213,037	1/16/90
4,894,465	07/161,530	1/16/90
4,894,466	07/161,529	1/16/90
4,894,468	07/044,475	1/16/90
4,894,469	07/128,805	1/16/90
4,894,471	07/031,598	1/16/90
4,894,472	07/170,754	1/16/90
4,894,473	07/117,669	1/16/90
4,894,485	07/206,623	1/16/90
4,894,487	07/228,186	1/16/90
4,894,491	07/297,992	1/16/90
4,894,494	07/220,429	1/16/90
4,894,499	07/249,610	1/16/90
4,894,505	07/288,587	1/16/90
4,894,508	07/267,422	1/16/90
4,894,515	06/720,733	1/16/90
4,894,516	07/231,033	1/16/90
4,894,528	07/209,186	1/16/90
4,894,537	07/222,623	1/16/90
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4,894,557	07/191,363	1/16/90
4,894,566	07/259,123	1/16/90
4,894,589	07/229,187	1/16/90
4,894,590	07/226,584	1/16/90
4,894,592	07/197,351	1/16/90
4,894,600	07/261,012	1/16/90
4,894,601	07/207,737	1/16/90
4,894,606	07/216,080	1/16/90
4,894,608	07/076,456	1/16/90
4,894,612	07/249,101	1/16/90
4,894,614	07/321,027	1/16/90
4,894,623	07/223,990	1/16/90
4,894,636	07/260,497	1/16/90
4,894,639	07/328,541	1/16/90

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4,894,643	07/344,779	1/16/90
4,894,644	07/253,026	1/16/90
4,894,645	07/199,527	1/16/90
4,894,648	07/240,502	1/16/90
4,894,653	07/211,492	1/16/90
4,894,659	07/253,029	1/16/90
4,894,660	07/256,681	1/16/90
4,894,664	07/125,433	1/16/90
4,894,674	07/247,627	1/16/90
4,894,680	07/203,318	1/16/90
4,894,712	07/261,616	1/16/90
4,894,724	07/137,543	1/16/90
4,894,728	07/288,794	1/16/90
4,894,744	07/240,678	1/16/90
4,894,756	07/248,100	1/16/90
4,894,757	07/235,025	1/16/90
4,894,761	07/105,238	1/16/90
4,894,762	07/350,310	1/16/90
4,894,763	07/279,636	1/16/90
4,894,780	07/146,516	1/16/90
4,894,792	07/252,177	1/16/90
4,894,806	07/012,279	1/16/90
4,894,808	07/359,220	1/16/90
4,894,810	07/099,920	1/16/90
4,894,812	07/372,774	1/16/90
4,894,848	07/247,181	1/16/90
4,894,849	07/252,218	1/16/90
4,894,852	07/044,232	1/16/90
4,894,863	07/103,385	1/16/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,422,208	06/445,822	12/27/83	12/01/82	1/31/94
4,473,422	06/417,259	9/25/84	9/13/82	3/31/93
4,491,085	06/517,736	1/01/85	7/28/83	1/31/94
4,520,073	06/565,197	5/28/85	12/23/83	1/31/94
4,530,620	06/467,580	7/23/85	2/17/83	2/02/94
4,537,102	06/463,592	8/27/85	2/03/83	1/24/94
4,537,878	06/597,378	8/27/85	4/06/84	2/02/94
4,547,804	06/476,915	10/15/85	3/21/83	1/31/94
4,583,520	06/636,749	4/22/86	8/01/84	2/02/94
4,653,482	06/735,159	3/31/87	5/17/85	5/24/94
4,668,029	06/839,956	5/26/87	2/18/86	1/31/94
4,683,832	06/636,102	8/04/87	7/30/84	11/15/93
4,711,786	06/756,400	12/08/87	7/17/85	1/31/94
4,713,894	06/638,416	12/22/87	8/07/84	1/31/94
4,745,716	06/897,057	5/24/88	8/15/86	1/27/94
4,757,777	07/015,911	7/19/88	2/18/87	2/03/94
4,769,587	07/023,562	9/06/88	3/09/87	1/31/94
4,775,342	06/558,544	10/04/88	12/02/83	11/15/93
4,790,035	07/077,738	12/13/88	7/27/87	2/02/94
4,801,875	07/021,670	1/31/89	3/04/87	1/31/94
4,822,334	06/937,910	4/18/89	12/04/86	1/31/94
4,836,687	06/852,632	6/06/89	4/16/86	1/31/94
4,858,856	07/164,152	8/22/89	3/04/88	12/17/93
4,877,525	07/261,706	10/31/89	10/24/88	1/31/94

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,576,837, Re. S.N. 08/180,008, Jan. 11, 1994, Cl. 427, METHOD OF TREATING SURFACES, Gregorio Tarancon, et. al., Owner of Record: *Praxair Technology, Inc., Danbury, Conn.*, Attorney or Agent: Lawrence G. Kastriner, Ex. Gp.: 1112

4,809,308, Re. S.N. 08/182,841, Jan. 14, 1994, Cl. 378/99, METHOD AND APPARATUS FOR PERFORMING AUTOMATED CIRCUIT BOARD SOLDER QUALITY INSPECTIONS, John Adamas, et. al., Owner of Record: *IRT Corp., San Diego, Calif.*, Attorney or Agent: Matthew J. Sampson, Ex. Gp.: 2506

4,992,895, Re. S.N. 08/016,287, Feb. 11, 1993, Cl. 360/96.5, IDLING ROTATION MECHANISM USED IN THE HOUSING OF A VIDEO CASSETTE TAPE RECORDER, Young-Chan Kim, Owner of Record: *Inventor*, Attorney or Agent: Robert E. Bushnell, Ex. Gp.: 2512

5,047,033, Re. S.N. 08/120,034, Sept. 10, 1993, Cl. 606/159, MILL AND GUIDE APPARATUS FOR PREPARATION OF A HIP PROTHESIS, Thomas W. Fallin, Owner of Record: *Smith & Nephew Richards, Inc.*, Attorney or Agent: Charles E. Krieger, Ex. Gp.: 3309

5,050,166, Re. S.N. 08/122,934, Sept. 17, 1993, Cl. 370/94.1, TRANSFER OF MESSAGES IN A MULTIPLEXED SYSTEM, Antonio Cantoni, et. al., Owner of Record: *Inventors*, Attorney or Agent: Timothy A. French, Ex. Gp.: 2603

5,051,036, Re. S.N. 08/127,381, Sept. 24, 1993, Cl. 405/227, METHOD OF INSTALLING LEAN-TO WELL PROTECTOR, Ricardo R. Gomez De Rosas; Esteban O. Suarez, Owner of Record: *Inventors*, Attorney or Agent: Pravel, Hewitt, Kimball & Krieger, Houston, Tex., Ex. Gp.: 3501

5,058,157, Re. S.N. 08/137,582, Oct. 15, 1993, Cl. 380/11, METHOD AND APPARATUS FOR ENCRYPTING AND DECRYPTING TIME DOMAIN SIGNALS, John O. Ryan,

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Owner of Record: *Macrovision Corp., Mountain View, Calif.*, Attorney or Agent: Gerow D. Brill, Ex. Gp.: 2202

5,065,840, Re. S.N. 08/154,926, Nov. 19, 1993, Cl. 182/93, SWIMMING POOL SAFETY LADDER, Lloyd Cadigan, Owner of Record: *Lloyd Inc., Linden, N.J.*, Attorney or Agent: Michael R. Friscia, Ex. Gp.: 3505

5,069,769, Re. S.N. 08/160,747, Dec. 3, 1993, Cl. 204/182.8, ELECTROPHORESIS PATTERN READING SYSTEM OF FLUORESCENCE TYPE, Hitoshi Fuyimiya, et. al., Owner of Record: *Hitachi Software Engineering Co., Ltd., Kanagawa-ken, Japan*, Attorney or Agent: Thomas E. Beall, Jr., Ex. Gp.: 1102

5,070,885, Re. S.N. 08/160,933, Dec. 2, 1993, Cl. 128/763, DISPOSABLE BLOOD COLLECTION DEVICE, Jean M. Bonaldo, Owner of Record: *Care Medical Devices, Inc., Ontario, Calif.*, Attorney or Agent: Robert R. Thornton, Ex. Gp.: 3301

5,079,841, Re. S.N. 08/179,937, Jan. 11, 1994, Cl. 30/216, CLIPPER-TYPE BUSH CUTTER, Masao Ohkanda, et. al., Owner of Record: *Kioritz Corp., Tokyo, Japan*, Attorney or Agent: John S. Mortimer, Ex. Gp.: 3204

5,081,913, Re. S.N. 08/183,755, Jan. 21, 1994, Cl. 454, AIR VENT CLOSURE SYSYEM, Herbert Gervais, Owner of Record: *Inventor*, Attorney or Agent: David J. French, Ex. Gp.: 3404

5,083,016, Re. S.N. 08/185,615, Jan. 24, 1994, Cl. 250/208.1, 3-TRANSISTOR SOURCE FOLLOWER PER DETECTOR UNIT CELL FOR 2-DIMENSIONAL FOCAL PLANE ARRAYS, Richard H. Wyles, Owner of Record: *Hughes Aircraft Co., Los Angeles, Calif.*, Attorney or Agent: William C. Schubert, Ex. Gp.: 2509

5,083,296, Re. S.N. 08/184,070, Jan. 21, 1994, Cl. 365/230.02, SEMICONDUCTOR MEMORY WITH ALTERNATELY MULTIPLEXED ROW AND COLUMN ADDRESSING, Kouji Hara, et. al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Thomas E. Beall, Jr., Ex. Gp.: 2511

5,106,530, Re. S.N. 08/192,515, Feb. 7, 1994, Cl. 252/299.6, SILYLATED BENZOIC ACID DERIVATIVES, Wolfgang Haas, et. al., Owner of Record: *Consortium For Elektro-Chemische Industrie GmbH, Munchen, West Germany*, Attorney or Agent: Martin Connaughton, Ex. Gp.: 2203

5,133,289, Re. S.N. 08/186,800, Jan. 25, 1994, Cl. 119/6.6, ARTIFICIAL SYSTEM AND METHOD FOR BREEDING FLEAS, Jay R. Georgi, Owner of Record: *Cornell Research Foundation, Inc., Ithaca, N.Y.*, Attorney or Agent: Eric S. Spector, Ex. Gp.: 3303

5,147,560, Re. S.N. 08/123,237, Sept. 20, 1993, Cl. 210/745, METHOD FOR MONITORING TURBIDITY OF WASTE LIQUAD IN BACKWASHING FILTER BEDS, William R. Nichols, Owner of Record: *Infilco Degremont Inc., Richmond, Va.*, Attorney or Agent: Carroll F. Palmer, Ex. Gp.: 1308

5,156,872, Re. S.N. 08/187,998, Jan. 28, 1994, Cl. 426/489, JUICE EXTRACTOR, Moon H. Lee, Owner of Record: *Inventor*, Attorney or Agent: Benjamin J. Hauptman, Ex. Gp.: 1302

5,167,721, Re. S.N. 08/189,860, Feb. 1, 1994, Cl. 134/32, LIQUID JET REMOVAL OF PLASMA SPRAYED AND SINTERED COATINGS, Charles C. McComas, et. al., Owner of Record: *Waterjet Systems, Inc., Huntsville, Ala.*, Attorney or Agent: Pamela J. Curbello, Ex. Gp.: 1101

5,173,218, Re. S.N. 08/180,609, Jan. 13, 1994, Cl. 252/700, PREPARATION OF CHEMILUMINESCENT VINYL HALIDE OF VINYLIDENE HALI POLYMER STRUCTURES, Martin L. Cohen, et. al., Owner of Record: *Omniglow Corp., Novato, Calif.*, Attorney or Agent: Chuck H. Jew, Ex. Gp.: 2203

5,193,481, Re. S.N. 08/189,157, Jan. 27, 1997, Cl. 119/003, SPAR BUOY PEN SYSYEMS, Gary F. Loverich, et. al., Owner of Record: *Nor'Eastern Trawl Systems, Inc., Bainbridge Island, Wash.*, Attorney or Agent: Steven J. Pollinger, Ex. Gp.: 3303

5,242,836, Re. S.N. 08/193,534, Feb. 7, 1994, Cl. 436/178, METHOD AND DEVICE FOR TREATMENT OF A GAS TO BE ANALYZED, Alois Ruse, Owner of Record: *Hartmann & Braun Aktiengesselschaft, Frankfurt, Federal Republic of Germany*, Attorney or Agent: Horst M. Kasper, Ex. Gp.: 1809

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,956, Reexam. No. 90/003,180, Aug. 30, 1993, Cl. 250/550, INSPECTION SYSTEM FOR ARRAY OF MICROCIRCUIT DIES HAVING REDUNDANT CIRCUIT PATTERNS, Lawrence H. Lin, et. al., Owner of Record: *Optical Specialities, Inc., Fremont, Calif.*, Attorney or Agent: Craig S. Jepson, Stoel, Rives, Boley, Jones & Grey, Portland, Oreg., Ex. Gp.: 2509, Requester: Owner

4,138,670, Reexam. No. 90/003,069, May 26, 1993, Cl. 340/237.5, A.C. POWERED DETECTOR DEVICE WITH BATTERY BACKUP, Quentin L. Schneider, et. al., Owner of Record: *Pittway Corp., Northbrook, Ill.*, Attorney or Agent: Kirkland & Ellis, Chicago, Ill., Ex. Gp.: 2617, Requester: Seatt Corp., Downers Grove, Ill.

4,457,847, Reexam. No. 90/003,157, Aug. 3, 1993, Cl. 210/698, CARBOXYLATED POLYMERS INTERNAL SCALE CONTROL AGENTS IN BOILERS SYSTEMS, Walter F. Lorenc, et. al., Owner of Record: *Nalco Chemical Co., Naperville, Ill.*, Attorney or Agent: Henry L. Brinks, Willian, Brinks, Olds, Hofer, Gilson & Lione, Chicago, Ill., Ex. Gp.: 1306, Requester: Owner

4,529,313, Reexam. No. 90/003,257, Nov. 15, 1993, Cl. 356/350, RING INTERFERDMETER, Klaus Petermann, et. al., Owner of Record: *Telefunken Systemtechnik GmbH, Ulm (Donau), Germany*, Attorney or Agent: John J. McGlew, McGlew & Tuttle, Scarborough, N.Y., Ex. Gp.: 2505, Requester: Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill.

4,555,314, Reexam. No. 90/003,191, Sept. 10, 1993, Cl. 029/571, METHOD FOR MAKING A SEMICONDUCTOR DEVICE, Tsiu C. Chan, et. al., Owner of Record: *SGS Thomson Microelectronics, Inc., Carrollton, Tex.*, Attorney or Agent: Lisa K. Jorgenson, SGS Thomson Microelectronics, Inc., Carrollton, Tex., Ex. Gp.: 1104, Requester: Owner

4,701,350, Reexam. No. 90/003,192, Sept. 13, 1993, Cl. 427/097, PROCESS FOR ELECTROLESS METAL DEPOSITION, Deborah J. Lindsay, Owner of Record: *Surface Technology, Inc., Princeton, N.J.*, Attorney or Agent: Steven B. Goldman, Lerner, David, Littenberg, Krumholz & Mentlik, Westfield, N.J., Ex. Gp.: 1502, Requester: Owner

4,784,356, Reexam. No. 90/003,198, Sept. 20, 1993, Cl. 246/125, VARIBLE PLACEMENT INTERCHANGEABLE LAMP SYSTEM, David K. Fox, Owner of Record: *Railway Equipment Co., Delano, Minn.*, Attorney or Agent: Merchant, Gould, Smith, Edell, Welter & Schmidt, Minneapolis, Minn., Ex. Gp.: 3103, Requester: Owner

4,792,374, Reexam. No. 90/003,197, Sept. 17, 1993, Cl. 156/503, APPARATUS FOR FUSION JOINING PLASTIC PIPE, Kent A. Rianda, Owner of Record: *Georg Fischer, Schaffhausen, Switzerland*, Attorney or Agent: Pretty, Schroeder, Bruggemann & Clark, Los Angeles, Calif., Ex. Gp.: 1304, Requester: Owner

4,861,041, Reexam. No. 90/003,184, Sept. 2, 1993, Cl. 273/292, METHODS OF PROGRESSIVE JACKPOT GAMING, Daniel A. Jones, et. al., Owner of Record: *D & D Gaming Patents, Inc., Ft. Lauderdale, Fla.*, Attorney or Agent: Robert E. Purcell, Englewood, Colo., Ex. Gp.: 3304, Requester: Daniel W. Sixbey, McLean, Va.

4,863,014, Reexam. No. 90/003,158, Aug. 12, 1993, Cl. 260/045.310, TRANSPARENT BUILDING INDUSTRY PRODUCT WITH COLLAPSIBLE TUBE, Wayne L. Summons, Owner of Record: *Sashco, Inc., Commerce City, Colo.*, Attorney or Agent: Timothy Martin, Lakewood, Colo., Ex. Gp.: 2401, Requester: Red Devil, Inc., Union, N.J.

4,867,800, Reexam. No. 90/003,178, Aug. 30, 1993, Cl. 134/040, CLEANING COMPOSITION OF TERPENE COMPOUND AND DIBASIC ESTER, Kenneth T. Dishart, et. al., Owner of Record: *E.I. Du Pont de Nemours & Co., Wilmington, Del.*, Attorney or Agent: Andrew G. Golian, Patent Div., E.I. Du Pont de Nemours & Co., Wilmington, Del., Ex. Gp.: 1105, Requester: Alexis Barron, Synnestvedt & Lechner, Philadelphia, Pa.

4,878,840, Reexam. No. 90/002,998, Mar. 17, 1993, Cl. 433/009, ORTHODONTIC APPLIANCE, James M. Reynolds, Owner of Record: *Class One Orthodontics, Lubbock, Tex.*, Attorney or Agent: Michael A. O'Neil, Gardere & Wynne, Dallas, Tex., Ex. Gp.: 3303, Requester: 3M Unitek Corp., Monrovia, Calif.

4,905,973, Reexam. No. 90/003,193, Sept. 13, 1993, Cl. 269/032, POWER OPERATED CLAMP WITH EXTERNALLY MOUNTED ADJUSTABLE CLAMP ARM, John A. Blatt, Owner of Record: *Inventor, Grosse Pointe, Mich.*, Attorney or Agent: Andrew R. Baisle, Basile & Hanlon, Troy, Mich., Ex. Gp.: 3203, Requester: Lloyd M. Forster, Troy, Mich.

4,922,264, Reexam. No. 90/002,952, Dec. 17, 1992, Cl. 343/878, SATELLITE ANTENNA MOUNTING APPARATUS WITH BALLAST MEANS, Robert M. Fitzgerald, et. al., Owner of Record: Robert M. Fitzgerald, Marietta, Ga., Eugene O. Gresens, Norcross, Ga., Attorney or Agent: Jason A. Bernstein, Bernstein & Associates, Atlanta, Ga., Ex. Gp.: 2508, Requester: Owners

4,964,710, Reexam. No. 90/003,203, Sept. 23, 1993 Cl. 359/434, DISPOSABLE RIGID ENDOSCOPE, Dennis C. Leiner, Owner of Record: *Monadnock Optics, Inc., Huntington Valley, Pa.*, Attorney or Agent: David M. Carter, Sillworth & Barrese, Uniondale, N.Y., Ex. Gp.: 2507, Requester: Owner

5,013,744, Reexam. No. 90/003,194, Sept. 15, 1993, Cl. 514/345, ACETYLENES DISTRIBUTED WITH A PYRIDINYL GROUP AND A SUBSTITUTED PHENYL GROUP HAVING RETINOID LIKE ACTIVITY, Rosantha A. S. Chandraratna, Owner of Record: *Allegran, Inc., Irvine, Calif.*, Attorney or Agent: Klein & Szekeres, Irvine, Calif., Ex. Gp.: 1201, Requester: Owner

5,029,573, Reexam. No. 90/003,136, July 22, 1993, Cl. 128/004, SYSTEM FOR ENDOSCOPIC SURGERY, James C. Chow, Owner of Record: *Inventor, Mt. Vernon, Ill.*, Attorney or Agent: Rosenman & Colin, New York, N.Y., Ex. Gp.: 3304, Requester: Owner

5,043,438, Reexam. No. 90/003,072, May 27, 1993, Cl. 536/119, PROCESS FOR THE SYNTHESIS OF POLYOL FATTY ACID ESTERS, Markus G. Buter, Owner of Record: *Van Den Bergh Foods Co., Lisle, Ill.*, Attorney or Agent: Gerald J. McGowan, Jr., Unilever United States, Edgewater, N.J., Ex. Gp.: 1803, Requester: Eugene Sabol, Fischer, Christen & Sabol, Washington, D.C.

5,114,598, Reexam. No. 90/002,995, Mar. 9, 1993, Cl. 252/8.512, A METHOD OF MAKING DRILLING FLUID CONTAINING ASPHALTITE IN A DISPERSED STATE, Jerry J. Raborn, Owner of Record: *Sun Drill Products Corp., Belle Chasse, La.*, Attorney or Agent: Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 2203, Requester: Frank Sawa, Arlington, Va.

5,148,802, Reexam. No. 90/003,258, Nov. 12, 1993, Cl. 128/204.180, METHOD FOR TREATMENT OF SLEEP APNEA AND METHOD AND APPARATUS FOR PROVIDING SUCH TREATMENT, Mark H. Sanders, et. al., Owner of Record: *Respironics, Inc., Pittsburgh, Pa.*, Attorney or Agent: J. Stewart Brams, Pittsburgh, Pa., Ex. Gp.: 3307, Requester: Owner

5,195,299, Reexam. No. 90/003,179, Aug. 31, 1993, Cl. 053/428, METHOD OF REDUCING MOISTURE CONTENT OF HERMETIC PACKAGES CONTAINING SEMICONDUCTOR DEVICES, My N. Nguyer, Owner of Record: *Johnson Matthey, Inc., Vally Forge, Pa.*, Attorney or Agent: Christie, Parker & Hale, Pasadena, Calif., Ex. Gp.: 3201, Requester: Quantum Materials, Inc., San Diego, Calif.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
FEBRUARY 07, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
40,254	70/040,254	5/05/1903
91,484	71/058,340	5/06/1913
298,548	71/328,064	11/01/1932
300,903	71/323,929	2/14/1933
302,826	71/332,665	5/02/1933
302,849	71/332,547	5/02/1933
302,853	71/332,747	5/02/1933
302,899	71/333,167	5/02/1933
302,905	71/333,043	5/02/1933
302,926	71/332,069	5/02/1933
302,933	71/333,399	5/02/1933
302,934	71/333,304	5/02/1933
564,913	71/602,598	10/07/1952
564,915	71/603,220	10/07/1952
568,682	71/537,760	1/06/1953
572,876	71/618,257	4/07/1953
573,926	71/570,722	5/05/1953
573,928	71/584,079	5/05/1953
573,940	71/602,737	5/05/1953
573,943	71/605,054	5/05/1953
573,946	71/607,946	5/05/1953
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573,954	71/612,519	5/05/1953
573,958	71/614,250	5/05/1953
573,960	71/615,357	5/05/1953
573,965	71/616,458	5/05/1953
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573,979	71/619,477	5/05/1953
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574,000	71/623,540	5/05/1953
574,002	71/624,347	5/05/1953
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Reg. No.	Serial Number	Reg. Date
574,059	71/631,498	5/05/1953
574,063	71/631,934	5/05/1953
574,067	71/632,283	5/05/1953
574,068	71/632,321	5/05/1953
574,074	71/633,177	5/05/1953
574,078	71/633,294	5/05/1953
574,086	71/635,122	5/05/1953
574,096	71/637,010	5/05/1953
574,098	71/637,977	5/05/1953
574,104	71/523,324	5/05/1953
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951,315	72/337,190	1/23/1973
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958,036	72/396,879	5/01/1973
958,037	72/419,463	5/01/1973
958,038	72/420,115	5/01/1973
958,041	72/364,041	5/01/1973
958,043	72/406,351	5/01/1973
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958,052	72/414,816	5/01/1973
958,056	72/397,682	5/01/1973
958,057	72/407,478	5/01/1973
958,058	72/378,362	5/01/1973
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958,060	72/394,791	5/01/1973
958,064	72/413,306	5/01/1973
958,066	72/414,579	5/01/1973
958,069	72/417,447	5/01/1973
958,072	72/419,468	5/01/1973
958,074	72/424,227	5/01/1973
958,077	72/419,267	5/01/1973
958,078	72/421,080	5/01/1973
958,083	72/399,857	5/01/1973
958,088	72/418,908	5/01/1973
958,089	72/419,893	5/01/1973
958,094	72/421,868	5/01/1973
958,097	72/378,033	5/01/1973
958,101	72/398,708	5/01/1973
958,105	72/406,879	5/01/1973
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958,107	72/412,309	5/01/1973
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958,124	72/391,325	5/01/1973
958,136	72/385,467	5/01/1973
958,137	72/405,804	5/01/1973
958,139	72/409,051	5/01/1973
958,155	72/425,705	5/01/1973
958,157	72/413,175	5/01/1973
958,158	72/411,943	5/01/1973
958,162	72/401,912	5/01/1973
958,163	72/385,622	5/01/1973
958,164	72/389,687	5/01/1973
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958,170	72/420,860	5/01/1973
958,173	72/401,711	5/01/1973
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958,176	72/406,640	5/01/1973
958,177	72/416,232	5/01/1973
958,179	72/418,857	5/01/1973
958,182	72/419,229	5/01/1973
958,183	72/419,242	5/01/1973
958,188	72/399,897	5/01/1973
958,189	72/400,499	5/01/1973
958,191	72/403,082	5/01/1973
958,195	72/409,259	5/01/1973
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958,209	72/421,286	5/01/1973
958,211	72/403,267	5/01/1973
958,217	72/418,954	5/01/1973
958,219	72/419,376	5/01/1973
958,221	72/420,560	5/01/1973
958,222	72/420,675	5/01/1973
958,223	72/420,723	5/01/1973
958,225	72/420,981	5/01/1973
958,228	72/421,263	5/01/1973
958,229	72/421,279	5/01/1973
958,230	72/421,295	5/01/1973
958,231	72/421,335	5/01/1973
958,232	72/412,785	5/01/1973
958,239	72/376,557	5/01/1973
958,240	72/376,668	5/01/1973
958,241	72/376,670	5/01/1973
958,242	72/398,711	5/01/1973
958,245	72/404,562	5/01/1973
958,249	72/410,347	5/01/1973
958,250	72/411,177	5/01/1973
958,251	72/411,359	5/01/1973
958,252	72/411,361	5/01/1973
958,253	72/411,400	5/01/1973
958,254	72/413,437	5/01/1973
958,259	72/416,917	5/01/1973
958,260	72/417,844	5/01/1973
958,263	72/418,428	5/01/1973
958,264	72/420,918	5/01/1973
958,265	72/409,271	5/01/1973
958,267	72/415,577	5/01/1973
958,276	72/402,771	5/01/1973
958,277	72/406,433	5/01/1973
958,283	72/415,126	5/01/1973
958,284	72/415,631	5/01/1973
958,285	72/416,258	5/01/1973
958,286	72/418,319	5/01/1973
958,287	72/418,345	5/01/1973
958,288	72/418,347	5/01/1973
958,298	72/414,632	5/01/1973
958,304	72/381,439	5/01/1973
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958,308	72/409,563	5/01/1973
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958,325	72/420,410	5/01/1973
958,326	72/413,436	5/01/1973
958,327	72/414,519	5/01/1973
958,328	72/408,536	5/01/1973

Survey of Registered Practioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on January 18, 1994 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names began with K through O. Enclosed with the letter was a blue data sheet which was to be completed and returned to OED as soon as possible. If your last name begins with K through O and you did not receive a survey letter, please contact Shirley B. Rasheed at (703) 308-9617.

Feb. 24, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment & Discipline

Response Requested to 1993 Patent Examiner's Action Survey

As part of the continuing quality reinforcement efforts of the Patent and Trademark Office, the Office has sent out a Patent Action Survey Form with each Patent Examiner's Office action mailed during a period of several weeks during December, 1993-January, 1994. **If you have received one or more of these forms, please complete each one, no later than the time of response to the Office action being surveyed.**

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific and important items related to patent examining practices and procedures. The results of the survey will be used in the development of Office training programs. The survey is a follow-up to the Patent Action Surveys conducted in 1991 and 1992. Where training is provided to address identified deficiencies in performance, follow-up surveys are intended to be conducted in the future to determine whether the training was effective enough to improve performance in the measured areas.

The Survey Form is brief and easy to complete and does not permit identification of the respondent or of the particular application involved. The Survey Form may be completed at the time of response to the Office Action. It is possible that a practitioner may receive many Office Actions containing a Survey Form during the survey period. To have results that are meaningful, the Office needs a high response rate. Therefore, it is **important** that patent practitioners complete each survey form **no later than the time of response to the Office action being surveyed.** To assure that this form is completed and mailed back to the address indicated on the Survey Form, it would be desirable for patent practitioners to have their office managers/docketing personnel take appropriate steps to keep the form and Office action together for the practitioner's benefit.

Your cooperation in completing the Survey Form is appreciated.

Nov. 16, 1993 STEPHEN G. KUNIN
Acting Assistant Commissioner
for Patents

Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from January through March 1994. Information includes:

- o subclasses established or abolished (major changes)
- o subclass title, indent, or position change
- o changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the *Official Gazette* and is intended to provide an interim notice of classification changes pending publication of the manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Mall 2, Room 309
Washington, D.C., 20231

Mar. 1, 1994 WILLIAM S. LAWSON
Administrator for Search and
Information Resources

Reclassification Alert Report
January 1994 -- March 1994

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
002			DEFN CHANGE	1480
004			DEFN CHANGE	1480
005			DEFN CNANGE	1475
005			DEFN CHANGE	1480
014			DEFN CHANGE	1479
015			DEFN CHANGE	1478
015			DEFN CHANGE	1480
024			DEFN CHANGE	1479
028			DEFN CHANGE	1472
029			DEFN CHANGE	1472
034			DEFN CHANGE	1472
043			DEFN CHANGE	1477
049			DEFN CHANGE	1478
052			DEFN CHANGE	1475
052	169.9		TITLE CHANGE	1479
052	171		ABOLISH	1478
052	171.1	171.3	ESTABLISH	1478
052	287	288	ABOLISH	1478
052	287.1		ESTABLISH	1478
052	288.1		ESTABLISH	1478
052	384		TITLE CHANGE	1479
052	393		TITLE CHANGE	1479
052	396		ABOLISH	1479
052	396.01	396.09	ESTABLISH	1479
052	396.1		ESTABLISH	1479
052	403	407	ABOLISH	1479
052	403.1		ESTABLISH	1479
052	404.1	404.5	ESTABLISH	1479
052	405.1	405.4	ESTABLISH	1479
052	406.1	406.3	ESTABLISH	1479

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
052	407.1	407.5	ESTABLISH	1479
052	408		TITLE CHANGE	1479
052	414		TITLE CHANGE	1479
052	443		TITLE CHANGE	1479
052	459		TITLE CHANGE	1479
052	474		TITLE CHANGE	1479
052	475		ABOLISH	1479
052	475.1		ESTABLISH	1479
052	479		TITLE CHANGE	1479
052	481		ABOLISH	1479
052	481.1	481.2	ESTABLISH	1479
052	482		TITLE CHANGE	1479
052	483	489	ABOLISH	1479
052	483.1		ESTABLISH	1479
052	489.1	489.2	ESTABLISH	1479
052	490	491	TITLE CHANGE	1479
052	490	491	POSITION CHANGE	1479
052	503		TITLE CHANGE	1479
052	506		ABOLISH	1479
052	506.108	506.09	ESTABLISH	1479
052	506.1		ESTABLISH	1479
052	573		ABOLISH	1479
052	573.1		ESTABLISH	1479
052	574	576	TITLE CHANGE	1479
052	577		INDENT CHANGE	1479
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430			DEFN CHANGE	1476
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434			DEFN CHANGE	1476
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446			DEFN CHANGE	1479
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455			DEFN CHANGE	1472
455			DEFN CHANGE	1473
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492			DEFN CHANGE	1480
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600			DEFN CHANGE	1474
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Errata

In the "Trademark Registrations Canceled, Section 18" and "Index of Registrants" sections of the Trademark *Official Gazette* dated October 5, 1993, Registration No. 996213 on pages TM 407 and TMI 7 is canceled as to class 39 only.

Feb. 25, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers were inadvertenly listed as "Trademark Registraions Issued Under Section 1(d)"and "Index of Registrants"sections of the*Official Gazette:*

TM 314, TMI 37	1,796,061	10-12-93
TM 274, TMI 9	1,813,003	12-21-93
TM 302, TMI 10	1,809,932	12-07-93
TM 281, TMI 26	1,801,686	10-26-93

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Feb. 25, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* were listed inadvertently:

TM 270, TMI 3	1,809,384	12-07-93
TM 265, TMI 6	1,813,722	12-28-93
TM 267, TMI 7	1,813,809	12-28-93
TM 240, TMI 28	1,817,051	01-18-94
TM 148, TMI 4	1,818,670	02-01-94
TM 154, TMI 2	1,818,942	02-01-94
TM 154, TMI 2	1,818,939	02-01-94
TM 153, TMI 27	1,818,864	02-01-94
TM 160, TMI 27	1,818,199	02-01-94

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Feb. 25, 1994

DAVID E. BUCHER
Director of Trademark Examining Group

The following registration numbers were inadvertently listed as canceled in the "Trademark Registrations Canceled, Section 8" and "Index of Registrants" sections of the *Official Gazette:*

TM 382, TMI 28	1,396,012	09-21-93
TM 354, TMI 20	1,435,118	11-16-93
TM 340, TMI 40	1,430,513	10-12-93
TM 302, TMI 1	1,432,174	10-26-93
TM 284, TMI 21	1,431,028	10-19-93
TM 411, TMI 18	1,376,169	06-12-93
TM 432, TMI 153	1,333,799	12-15-92
TM 213, TMI 3	1,445,086	11-29-90
TM 367, TMI 25	1,368,873	06-02-92
TM 190, TMI 19	1,296,750	03-26-91

Consequently, the above-identified registration numbers are still active.

Feb. 25, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants"sections of the *Official Gazette* were listed Inadvertently:

TM 327, TMI 13	1,793,209	09-14-93
TM 294, TMI 11	1,792,321	09-14-93
TM 294, TMI 7	1,792,323	09-14-93
TM 313, TMI 14	1,793,128	09-14-93
TM 302, TMI 18	1,792,647	09-14-93
TM 277, TMI 12	1,796,265	10-05-93
TM 224, TMI 33	1,797,464	10-12-93
TM 208, TMI 31	1,900,539	10-26-93
TM 200, TMI 27	1,801,919	11-02-93
TM 231, TMI 27	1,803,472	11-09-93
TM 220, TMI 22	1,803,007	11-09-93
TM 297, TMI 29	1,805,860	11-23-93
TM 397	1,807,709	11-30-93

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TM 390, TMI 24	1,807,422	11-30-93
TM 404, TMI 1	1,808,024	11-30-93

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

Feb. 25, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

Information Directories

The Following is an updated version of Information Contacts.

July 2, 1993

THERESA A. BRELSFORD
Assistant Commissioner for Public Services and Administration

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Washington, D.C. 20231

Certificates of Correction
Issue of March 29, 1994

D.315,821	5,118,689	5,173,749	5,200,262
D.319,597	5,120,026	5,175,637	5,200,764
D.330,794	5,120,588	5,175,790	5,200,769
D.336,095	5,121,232	5,175,806	5,201,252
D.336,717	5,123,096	5,178,383	5,201,410
D.338,673	5,123,420	5,178,763	5,201,803
D.338,741	5,124,160	5,179,457	5,201,999
Re.33,893	5,128,102	5,179,812	5,202,130
Re.34,083	5,129,125	5,180,203	5,202,268
4,342,566	5,131,551	5,180,365	5,202,407
4,401,758	5,133,946	5,180,608	5,202,497
4,580,794	5,134,124	5,181,267	5,202,631
4,634,850	5,135,224	5,181,620	5,202,727
4,713,374	5,135,717	5,181,866	5,202,904
4,820,561	5,135,753	5,182,194	5,202,912
4,824,854	5,136,791	5,182,226	5,202,937
4,880,712	5,137,350	5,182,558	5,203,078
4,882,188	5,137,860	5,182,597	5,203,204
4,914,519	5,138,179	5,182,695	5,203,241
4,925,908	5,143,846	5,183,697	5,203,661
4,933,206	5,145,342	5,183,906	5,203,666
4,944,602	5,145,801	5,184,200	5,203,748
4,949,783	5,146,019	5,184,232	5,204,321
4,950,166	5,146,104	5,184,433	5,204,833
4,961,425	5,146,342	5,184,841	5,204,946
4,981,322	5,148,019	5,185,172	5,205,459
4,994,664	5,148,195	5,185,370	5,206,077
5,000,102	5,148,518	5,185,686	5,206,489
5,002,026	5,148,929	5,185,708	5,207,272
5,002,605	5,149,356	5,186,337	5,207,227
5,023,316	5,149,832	5,186,581	5,207,521
5,026,865	5,151,114	5,187,023	5,207,563
5,032,152	5,151,191	5,187,575	5,207,852
5,032,576	5,151,395	5,187,963	5,208,077
5,043,098	5,151,783	5,188,081	5,208,246
5,045,193	5,152,725	5,188,270	5,208,343
5,045,551	5,154,192	5,188,650	5,208,684
5,053,838	5,155,121	5,189,039	5,208,689
5,054,550	5,155,205	5,189,438	5,209,064
5,061,575	5,157,006	5,190,440	5,209,074
5,066,602	5,157,180	5,190,613	5,209,688
5,067,069	5,157,213	5,191,147	5,209,870
5,067,213	5,157,652	5,191,609	5,210,226
5,068,800	5,157,743	5,192,352	5,210,374
5,069,171	5,157,847	5,192,432	5,210,424
5,075,235	5,158,383	5,192,790	5,210,569
5,077,327	5,158,446	5,193,148	5,210,754
5,079,162	5,158,788	5,193,293	5,210,015
5,083,292	5,159,262	5,193,554	5,211,181
5,084,362	5,159,576	5,193,661	5,211,274
5,084,382	5,160,015	5,193,846	5,211,502
5,085,811	5,160,386	5,194,583	5,211,565
5,088,024	5,160,437	5,195,388	5,211,613
5,089,481	5,160,486	5,195,623	5,212,215
5,090,897	5,162,222	5,195,693	5,212,678
5,091,641	5,162,369	5,195,912	5,212,854
5,094,852	5,162,566	5,195,943	5,212,891
5,095,221	5,162,639	5,196,093	5,213,031
5,097,948	5,164,530	5,196,283	5,213,080
5,098,712	5,164,845	5,196,359	5,213,091
5,099,377	5,165,015	5,196,458	5,213,295
5,104,539	5,166,368	5,196,731	5,213,630
5,104,614	5,166,846	5,196,843	5,213,832
5,105,950	5,167,245	5,196,846	5,213,997
5,108,133	5,168,605	5,196,848	5,214,065
5,108,463	5,168,757	5,197,295	5,214,297
5,108,517	5,169,758	5,197,415	5,214,541
5,108,545	5,170,152	5,197,614	5,214,822
5,108,933	5,170,349	5,197,915	5,215,572
5,109,223	5,171,863	5,198,061	5,215,577
5,110,939	5,172,325	5,198,289	5,215,622
5,111,270	5,173,016	5,198,392	5,215,766
5,111,291	5,173,036	5,198,428	5,215,985
5,111,622	5,173,063	5,198,523	5,216,607
5,117,086	5,173,284	5,198,805	5,216,736
5,118,015	5,173,640	5,199,166	5,217,276
5,217,332	5,227,445	5,235,511	5,244,855
5,217,523	5,227,864	5,235,580	5,244,879
5,217,659	5,228,164	5,235,636	5,244,934
5,217,704	5,228,302	5,235,679	5,244,973
5,217,745	5,228,610	5,235,985	5,244,976
5,218,091	5,228,714	5,236,199	5,245,005
5,218,230	5,228,788	5,236,380	5,245,377
5,218,244	5,228,995	5,236,391	5,245,565
5,218,297	5,229,074	5,236,471	5,245,617
5,218,446	5,229,118	5,236,691	5,245,680
5,218,454	5,229,171	5,236,714	5,246,009
5,218,487	5,229,211	5,236,732	5,246,123
5,218,498	5,229,216	5,236,840	5,246,131
5,218,623	5,229,268	5,236,880	5,246,142
5,218,767	5,229,601	5,236,950	5,246,312
5,218,909	5,229,701	5,236,967	5,246,441
5,218,957	5,229,911	5,236,987	5,246,455
5,219,279	5,230,124	5,237,336	5,246,914
5,219,463	5,230,190	5,237,338	5,247,052
5,219,625	5,230,290	5,237,371	5,247,653
5,220,037	5,230,306	5,237,494	5,247,685
5,220,363	5,230,358	5,237,564	5,247,690
5,220,405	5,230,415	5,237,592	5,247,720
5,220,987	5,230,503	5,237,641	5,248,204
5,220,994	5,230,519	5,237,794	5,248,300
5,221,139	5,230,640	5,237,882	5,248,507
5,221,239	5,230,694	5,238,253	5,248,737
5,221,375	5,230,825	5,238,291	5,248,790
5,221,406	5,231,096	5,238,635	5,248,821
5,221,545	5,231,108	5,238,636	5,248,828
5,221,684	5,231,165	5,239,250	5,248,841
5,221,706	5,231,384	5,239,796	5,248,964
5,221,853	5,231,608	5,240,327	5,249,363
5,221,963	5,231,615	5,240,687	5,249,602
5,222,124	5,231,631	5,240,690	5,249,726
5,222,160	5,231,718	5,240,730	5,249,731
5,222,286	5,231,758	5,240,794	5,249,889
5,222,691	5,231,869	5,240,870	5,250,158
5,222,946	5,231,952	5,241,397	5,250,611
5,223,081	5,231,956	5,241,956	5,250,691
5,223,199	5,232,108	5,241,997	5,250,762
5,223,457	5,232,146	5,242,018	5,250,935
5,223,472	5,232,518	5,242,036	5,250,940
5,223,581	5,232,540	5,242,065	5,251,161
5,223,665	5,232,552	5,242,071	5,251,298
5,223,737	5,232,620	5,242,096	5,251,430
5,224,164	5,232,723	5,242,167	5,251,875
5,224,421	5,232,770	5,242,213	5,251,921
5,224,525	5,233,031	5,242,351	5,252,534
5,224,548	5,233,138	5,242,391	5,252,680
5,224,777	5,233,185	5,242,476	5,253,261
5,224,859	5,233,195	5,242,524	5,253,498
5,225,168	5,233,382	5,242,726	5,253,727
5,225,427	5,233,485	5,242,776	5,254,094
5,225,546	5,233,518	5,242,810	5,254,131
5,225,569	5,233,759	5,243,067	5,254,717
5,225,862	5,233,958	5,243,307	5,254,790
5,226,242	5,234,094	5,243,469	5,254,892
5,226,280	5,234,389	5,243,596	5,255,234
5,226,478	5,234,544	5,243,624	5,255,476
5,226,634	5,234,583	5,243,636	5,256,289
5,226,646	5,234,627	5,243,816	5,256,399
5,226,946	5,234,658	5,243,982	5,257,049
5,226,996	5,234,696	5,244,112	5,259,268
5,227,049	5,234,702	5,244,464	5,260,737
5,227,249	5,235,121	5,244,491	5,261,217
5,227,430	5,235,381	5,244,633	5,275,111

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
January 31 - February 4, 1994

Date Issued	Type of Proceeding (1)	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods of Registration Cited by Examining Atty.	Recommended for Publication	TTAB Decision
1-31	EX	74/132,314	Seer Technologies, Inc.	2(e)(1); Section 6 Disclaimer Requirement		"HIGH PRODUCTIVITY SYSTEMS" [training services in the field of computer hardware and software systems for use in computer aided software engineering, etc.]; "HIGH PRODUCTIVITY SYSTEMS" and "HIGH PRODUCTIVITY SYSYEMS" (stylized letters)[both marks for computer hardware and software systems for use in software development in the field of computer aided software engineering]		No	
	EX	74/133,443							
	EX	74/134,196							
1-31	EX	74/170,058	Reuven Dessler	2(e)(1)		"IT'S A DOLLAR" and "JUST ONE DOLLAR" [retail variety store services]		No	Refusal Affirmed
	EX	74/170,059							
2-3	OPP	85,996	Origins Natural Resources, Inc. v. Salon Sciences Inc.	2(d)	"ORIGINS LIQUID CRYSTAL" and "LIQUID CRYSTAL" [face cleanser]	"LIQUID CRYSTAL" and "LIQUID CRYSTAL DEVELOPER" [nail care preparations]		No	Opposition Sustained
2-3	EX	74/049,842	Country Kids Tights, Inc.	2(d)		"COUNTRY KIDS" [tights, stockings, and socks for children]	"COUNTRY GIRL" [ladies' hosiery]	No	Refusal Affirmed

(1) EX= EX PARTE APPEAL; OPP= OPPOSITION; C= CANCELLATION; CU= CONCURRENT USE; (R)= REQ. FOR RECONSIDERATION

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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	12/22/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	9/04/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	4/22/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during Feb. 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 4,005,494 to 4,009,493 inclusive
Plant Patents ..... 4,013 to 4,018

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Robert M. Anderson, Acting Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of February 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308-9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/27/93	12/23/93
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308-9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	12/23/93
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308-9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/25/93
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308-9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/21/93	11/24/93
Law Office 7—David Shallant, Managing Attorney, (703) 308-9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	9/29/93
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308-9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/09/93	11/05/93
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308-9109 Lubricants, Industrial Equipment, Materials & Musical Instruments-Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/14/93	12/20/93
Law Office 10—Jean Logan, Managing Attorney, (703) 308-9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Covering-Int. Classes 22, 23, 24, 25, 26, 27 Services-Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/01/93	11/19/93
Law Office-11—Thomas Howell, Managing Attorney, (703) 308-9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	9/03/93
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308-9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/17/93	12/13/93
Law Office 13—Craig Morris, Managing Attorney, (703) 308-9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/28/93	12/07/93
Law Office 14—Ron Williams, Managing Attorney, (703) 308-9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/04/93	12/15/93
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308-9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	9/07/93	11/24/93
** Collective Marks—Class 200		
** Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308-9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	7/19/93	—0—
Renewals (All Classes)	11/15/93	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquiries concerning the status of their applications and a touch tone telephone should call (703) 305-8747 from 6:30 A.M. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

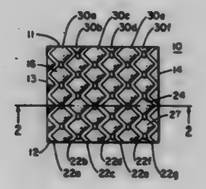
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REEXAMINATIONS

MARCH 29, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,228,225 (2251st)
BATTERY SEPARATOR
Dennis D. O'Rell, Boxboro, and Nan J. Lin, Burlington, both of Mass., assignors to W. R. Grace & Co.-Conn., Lexington, Mass.
Reexamination Request No. 90/002,056, Jun. 18, 1990.
Reexamination Certificate for Patent No. 4,228,225, issued Oct. 14, 1980, Ser. No. 51,175, Jun. 22, 1979.
Reexamination Certificate B1 4,228,225, issued Jul. 3, 1990.
Int. Cl.[5] H01M *2/18*
U.S. Cl. 429—147



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–22** and **27–29** is confirmed.

Claims **23–26, 30–36** are cancelled.

1. In a battery separator comprising a porous sheet having at least one positive plate engaging face having a top and a bottom and at least one negative plate engaging face having a top and a bottom, said sheet being embossed to provide a reverse configuration of embossment on said positive plate engaging face and said negative plate engaging face, the improvement comprising having essentially all embossment walls opening continuously upwardly in the battery plate engagement areas and at least some of said embossment walls formed into a configuration angled from the vertical and comprising gas impeding restrictions on at least one of said faces, all restrictions being penetrated from their lower surface at its upper extremity.

B1 4,359,827 (2252nd)
HIGH SPEED PAPER DRYING
Keith V. Thomas, 29856 Marine View Dr. SW., Federal Way, Wash. 98032
Reexamination Request No. 90/002,994, Mar. 2, 1993.
Reexamination Certificate for Patent No. 4,359,827, issued Feb. 17, 1981, Ser. No. 234,288, Nov. 23, 1982.
Int. Cl.[5] F26B *3/24*
U.S. Cl. 34—16

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4, 7, 12–15** is confirmed.

Claims **1, 5, 6, 8, 11** are determined to be patentable as amended.

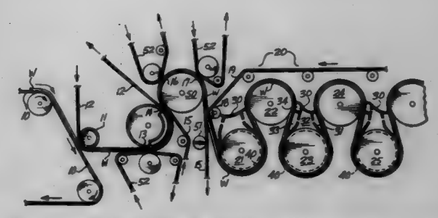
Claims **2, 3, 9, 10** dependent on an amended claim, are determined to be patentable.

New claims **16–22** are added and determined to be patentable.

1. In a papermaking process of the type wherein a paper web is dewatered by passage through a press nip and dried by a series of heated cylinders, the improvement, wherein velocity and other paper machine related stresses that typically operate on the web to limit production speed are substantially eliminated, comprising:

transporting said web on supporting means for the press nip through a series of heated cylinders;

drying said web by contacting it directly and indirectly with said series of heated cylinders; [and]



holding said web onto its supporting means by employing *vacuum holding* forces normal to the major web surfaces sufficient to overcome velocity-related stresses on all portions of the web during said transportings, at least until said web has attained sufficient strength through drying to be self-supporting at the speed selected[.] *; and*

applying said vacuum holding forces along at least a first zone and a second zone associated with said web, said holding forces applied at said first zone having a magnitude greater than said holding forces applied at said second zone.

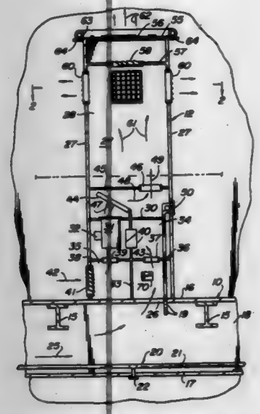
B1 4,860,642 (2253rd)
PERSONALIZED AIR CONDITIONING AND METHOD
Otto J. Nussbaum, Newtown, Pa., assignor to Argon Associates, L.P., Cherry Hill, Pa.
Reexamination Request No. 90/003,155, Aug. 19, 1993.
Reexamination Certificate for Patent No. 4,860,642, issued Aug. 29, 1989, Ser. No. 291,404, Dec. 19, 1988.
Int. Cl.[5] F24F *7/06, 13/06*
U.S. Cl. 454—306

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. In the method of air conditioning a room space, the steps which comprise; providing a horizontally generally unobstructed plenum chamber vertically contiguous to and horizontally generally coextensive with the room space without duct work between the plenum chamber and room space, supplying substantially all necessary conditioned air to the plenum chamber at a pressure above atmospheric just sufficiently to overcome gravity and friction and fill the plenum chamber, selectively locating a vertical passageway in said room space and communicating at one end directly with the adjacent portion of said plenum chamber, the conditioned air being supplied to the plenum at not more than 0.1 inch of water which is insufficient pressure to move a selected rate of conditioned air through said passageway during air conditioning operation, and applying air moving force in said passageway for moving said substantially all necessary conditioned air at a

selected rate from said plenum chamber through said passageway to the selected location in said room space for both cooling of a person proximate to the passageway and general cooling throughout the room.

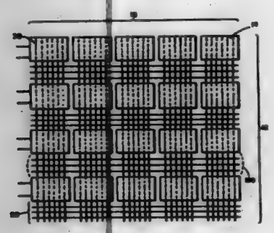


B1 4,937,475 (2254th)

LASER PROGRAMMABLE INTEGRATED CIRCUIT

F. Matthew Rhodes, Arlington, and Jack I. Raffel, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Reexamination Request No. 90/002,565, Feb. 10, 1992.
Reexamination Certificate for Patent No. 4,937,475, issued Jun. 26, 1990, Ser. No. 246,311, Sep. 19, 1988.
Int. Cl.[5] H04Q *1/00*; H03K *3/01, 17/693, 19/096*
U.S. Cl. 307—465



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3–5, 9, 12,** and **14–20** is confirmed.

Claims **1** and **2** are cancelled.

Claims **6, 10, 13,** and **21–23** are determined to be patentable as amended.

Claims **7, 8, 11,** and **24,** dependent on an amended claim, are determined to be patentable.

[1. A laser programmable integrated circuit comprising:
(a) an array of logic modules;
(b) a grid-like array of laser breakable conductors in connection with the logic modules comprising:
(i) a first set of conductors; and
(ii) a second set of conductors which cross the first set of conductors; wherein the first and second sets of conductors are electrically isolated; and
(c) a set of laser activated links which connect adjacent conductors that cross when irradiated by a laser beam.]

6. A laser programmable integrated circuit as recited in claim 1 wherein, *before programming,* the grid-like array of laser breakable conductors connects logic [modules] *module inputs and outputs* to *all* other logic modules *of a column,* inputs, outputs, and chip testing registers.

B1 5,017,391 (2255th)

PACKAGED FOODSTUFF CONTAINING A LACTATE SALT

Robert J. Anders, Middleton; John G. Cerveny, and Andrew L. Milkowski, both of Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Reexamination Request No. 90/003,105, Jun. 25, 1993.
Reexamination Certificate for Patent No. 5,017,391, issued May 21, 1991, Ser. No. 448,341, Dec. 11, 1989.
Division of Ser. No. 287,252, Dec. 20, 1988, Pat. No. 4,888,191, which is a continuation of Ser. No. 120,769, Nov. 13, 1987, Pat. No. 4,798,729, which is a continuation of Ser. No. 808,319, Dec. 12, 1985, abandoned
The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.
Int. Cl.[5] A23L *1/315, 1/325*
U.S. Cl. 426—129

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

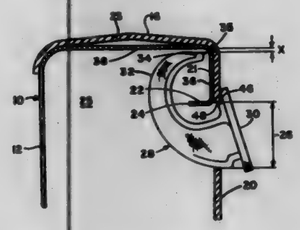
1. In a packaged foodstuff, said foodstuff being selected from the group consisting of fish and poultry, said fish or poultry being cooked, but not sterilized, being packaged in an anaerobic plastic barrier package and intended to be stored under refrigeration, said foodstuff being subject to the growth of *Clostridium botulinum* under temperature abuse, the improvement wherein the foodstuff comprises a lacate salt in an amount of from 1 to 7% by weight and sufficient to delay growth of *Clostridium botulinum* in the foodstuff.

B1 5,150,940 (2256th)

FASTENER FOR TRUCK BED LINER

John W. Kennedy, Spring Grove, Pa., assignor to York Products, Inc., Hanover, Pa.

Reexamination Request No. 90/003,009, Mar. 31, 1993.
Reexamination Certificate for Patent No. 5,150,940, issued Sep. 29, 1992, Ser. No. 793,626, Nov. 18, 1991.
Int. Cl.[5] B62D *33/02*
U.S. Cl. 296—39.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. In combination: a pick-up truck bed having a vertical outermost side which terminates into an upper rail having an upper horizontal portion and an inside vertical flange which forms an open side downwardly of the upper horizontal portion with the upper portion and flange having interior exposed walls, and a protective liner for at least the vertical side of the bed, the liner having an opening in an area below a lower end of the vertical flange and adjacent the open side of the rail, a fastener comprising:

a body member;

said body member havingan integral elongated extending section with a free end at the end thereof,

said extending section having a length sufficient to extend and pass through said opening of the liner with said free end extending within the open side of the rail,

a base plate at the end of said extending section opposite said free end,

said base plate having a perimeter portion larger than the opening in the liner,

said base plate having at the junction thereof with the upper surface of said extending section an edge engagable with an adjacent portion of the liner formed by the opening to create a pivot surface for the fastener,

said base plate having an inside recess located at its lower end generally opposite said edge,

said recess having a transverse dimension to receive the thickness of the liner therein,

the vertical distance of the opening in the liner being smaller than the distance between said pivot surface and the exterior surface of said extending section adjacent said recess to an extend that when the fastener is inserted into the opening said free end will be brought into contact with the interior wall of the flange, in a manner to cause said extending section to deflect by forcible contact with the interior wall of the flange and wherein said recess will be caused to snap over the liner to fasten the liner to the bed.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,569

ROBOTIZED HANDLING DEVICE AND SHEET METAL BENDING SYSTEM FEATURING THE SAME

Franco Sartorio, Turin, Italy, assignor to Amada Company, Limited, Japan

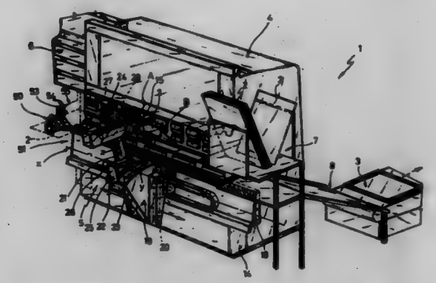
Original No. 4,827,757, dated May 9, 1989, Ser. No. 135,308, Dec. 21, 1987. Continuation of Ser. No. 696,936, May 8, 1991, abandoned. Application for reissue Jul. 10, 1992, Ser. No. 911,802

Claims priority, application Italy, Dec. 30, 1986, 67980A/86

Int. Cl.[5] B21D *11/22*

U.S. Cl. 72—420

16 Claims



16. A bending press system, comprising:

a bending press provided with a punch and a die extending in an X-axis direction, the punch and the die cooperating with each other for effecting a bending operation on a sheet workpiece provided therebetween;

a robotized handling device located in front of the punch and the die, for providing the workpiece between the punch and the die, the robotized handling device being adapted to be movable in the X-axis direction while gripping the sheet workpiece;

a lateral gauge means including a linear transducer having a relatively long measuring range and provided on a frame of the bending press, for detecting the sheet workpiece position at a predetermined position in the X-axis direction;

means for detecting a distance through which the robotized handling device is moved in the X-axis direction; and

control means connected to the lateral gauge means and the distance moved detecting means, for controlling the movement of the robotized handling device, the control means calculating the position of the X-axis direction of the workpiece, based upon signals from the lateral gauge means and the distance moved detecting means, and controlling the robotized handling device so as to position the sheet workpiece at a predetermined position in the X-axis direction with respect to the punch and the die.

Re. 34,570

SHOE CUBBIES

Cyrus J. Fromkin, 7 Butternut Ct., Dix Hills, N.Y. 11746

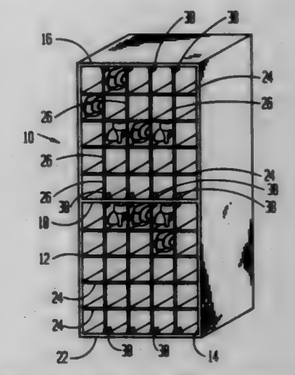
Original No. 5,170,892, dated Dec. 15, 1992, Ser. No. 840,406, Feb. 24, 1992. Application for reissue Jul. 9, 1993, Ser. No. 87,871

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—36

8 Claims

7. A cabinet for the storage of shoes and the like comprising a pair of spaced, vertically extending end walls and a pair of spaced, horizontally extending upper and lower end walls defining an enclosure having a front and rear, a plurality of spaced, vertical dividers parallel to said vertical end walls extending between said horizontal end walls, said vertical dividers being slit at spaced intervals at the front, each slit extending part of the way back from the front of said enclosure, a plurality of spaced, horizontal dividers parallel to said horizontally extending end walls and extending between said vertical extending end walls, said horizontal dividers being slit at spaced intervals at the rear of said enclosure, each slit extending part of the way from the rear of said enclosure, said vertical and horizontal dividers being interleaved with each other so that the slits in said horizontal dividers accommodate said



vertical dividers and the slits in said vertical dividers accommodate said horizontal dividers forming vertical columns and horizontal rows of cubby holes for said shoes with the forward edges of said vertical dividers located forward of the front edges of said horizontal dividers, and prevention means to prevent side movement of the front edges of said vertical dividers, said preventing means including channels mounted on the forward edges of said vertical dividers forward of the front edges of said horizontal dividers and channels mounted on the front edges of said horizontal dividers, the forward edges of said vertical dividers adjacent said slits being recessed to accommodate said channels.

Re. 34,571

OZONE GENERATOR

Richard Uys, 141265 Minarchi Trail, Woodford, Va. 22580

Original No. 4,909,996, dated Mar. 20, 1990, Ser. No. 293,439, Jan. 4, 1989. Application for reissue Mar. 19, 1992, Ser. No. 853,998

Int. Cl.[5] B01J *19/08*

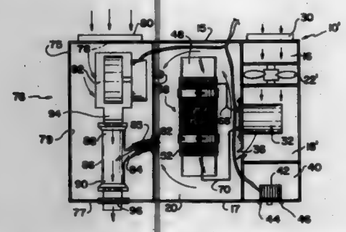
U.S. Cl. 422—186.07

21 Claims

10. An air handling system for ozone generating apparatus having at least one ozone generating unit coupled to and energized by a transformer, a blower unit for supplying air to said ozone generating unit which receives and discharges ozone from said ozone generation unit into said supplied air, a mixing chamber which contains air and which is connected to receive the air sup-

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plied to the ozone generator after said supplied air has received ozone from the ozone generator unit and wherein the supplied air



and ozone are mixed with the air in the mixing chamber prior to being discharged from the ozone generating apparatus.

Re. 34,572

EXERCISE MACHINE WITH MULTIPLE EXERCISE STATIONS

Jeffrey B. Johnson, and Arthur B. Ish, III, both of Redmond, Wash., assignors to Vectra Fitness, Inc., Redmond, Wash.

Original No. 4,809,972, dated Mar. 7, 1989, Ser. No. 97,549, Sep. 16, 1987. Application for reissue May 9, 1991, Ser. No. 697,949

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—99 **22 Claims**

28. An exercise machine comprising

a vertically movable weight;

first, second, third and fourth exercise units;

a set of upper and lower floating pulleys coupled together for unitary vertical movement;

a bodily moveable pulley associated with said fourth exercise unit such that a manual exercising force applied to said fourth exercise unit causes displacement of said bodily moveable pulley;

two upper guide pulleys at a higher elevation than said set of floating pulleys;

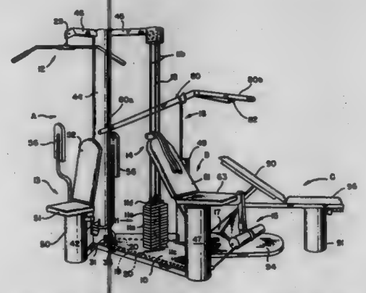
two lower guide pulleys at a lower elevation than said set of floating pulleys;

an additional guide pulley;

a frame assembly supporting all of said guide pulleys;

a first cable passing part way around said additional guide pulley, over the top of said upper guide pulleys and looping downwardly between the latter by a loop passing beneath the underside of the upper one of said floating pulleys, said first cable being connected at one of its ends so as to be loaded by said weight and connected at its other end to said first exercise unit, said first cable also looping part way around said bodily moveable pulley at a location between said upper guide pulleys and said additional guide pulley;

a second cable passing beneath the underside of said lower guide pulleys and looping upwardly therebetween by a loop passing over the top of the lower one of said floating pulleys, and said



second cable being connected at one of its ends to said second exercise unit and connected at its other end to said third exercise unit; and

stops for said exercise units whereby a manual exercising force applied either to said first cable by use of said first and fourth exercise units or applied to said second cable by use of said second or third exercise unit, applies a lifting force to said weight and a force to all of said stops except the stop for the exercise unit in use, whereby said set of floating pulleys remains vertically stationary and said weight lifts when said first or fourth exercise unit is used, and whereby said set of floating pulleys lowers and said weight lifts responsive to use of said second or third exercise unit.

PLANT PATENTS

GRANTED MARCH 29, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,658

CRABAPPLE VARIETY NAMED SCIORN

Donald S. Tustin, 14A Lovat Street, Havelock North, New Zealand

Filed Sep. 14, 1992, Ser. No. 945,070

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—35.2 **1 Claim**

1. A new and distinct variety of crabapple plant substantially as herein described and illustrated, and identified by the characteristics enumerated above.

8,659

STRAWBERRY PLANT CALLED ANAHEIM

Victor Voth, Santa Ana; Douglas V. Shaw, and Royce S. Bringhurst, both of Davis, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,634

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,660

STRAWBERRY PLANT CALLED "CARLSBAD"

Victor Voth, Santa Ana; Douglas V. Shaw, and Royce S. Bringhurst, both of Davis, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,638

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,661

STRAWBERRY PLANT CALLED SUNSET

Royce S. Bringhurst; Douglas V. Shaw, both of Davis, and Victor Voth, Santa Ana, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,639

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,662

STRAWBERRY PLANT CALLED 'CUESTA'

Royce S. Bringhurst; Douglas V. Shaw, both of Davis, and Victor Voth, Santa Ana, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,748

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,663

STRAWBERRY PLANT NAMED 'LAGUNA'

Victor Voth, Santa Ana; Douglas V. Shaw, and Royce S. Bringhurst, both of Davis, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,750

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant illustrated and described and having the characteristics above enumerated.

8,664

STANDARD CARNATION NAMED SOLAR

Jean-Louis Descleaux, Angers, France, assignor to Laboratorie de Physiologie Vegetale, Le Pradet, France

Filed Nov. 4, 1992, Ser. No. 971,406

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.1 **1 Claim**

1. A new and distinctive hybrid standard carnation plant, substantially as herein shown and described, characterized in particular by its recurrent profuse production of very large flowers, the serrated petals of which are in general of carrot red color and the body longitudinally brushed with current red, delft rose and dresden yellow with a greenish base, said plant having more than 120 leaves on a thick stem.

8,665

CHRYSANTHEMUM PLANT NAMED YELLOW TAYRONA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jul. 27, 1992, Ser. No. 919,257

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Tayrona, as described and illustrated.

8,666

CHRYSANTHEMUM PLANT NAMED LEMON TAYRONA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jul. 27, 1992, Ser. No. 919,760

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Lemon Tayrona, as described and illustrated.

8,667

CHRYSANTHEMUM PLANT NAMED SHEENA

Barrie J. Machin, Lee-on-Solent, England, assignor to Goldstock Breeding Limited, Fareham, England

Filed Oct. 23, 1992, Ser. No. 965,718

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Sheena, as described and illustrated.

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8,668

ALSTROEMERIA NAMED STAGELMI

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staaveren BV, Aalsmeer, Netherlands

Filed Mar. 3, 1993, Ser. No. 25,581
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.1 1 Claim

1. A new and distinctive Alstroemeria plant, substantially as herein shown and described.

8,669

GERANIUM PLANT 'DESIGNER SCARLET'

Scott C. Trees, Nipomo, Calif., assignor to Ball Floraplant, A Division of Geo. J. Ball, Inc., West Chicago, Ill.

Filed Dec. 23, 1992, Ser. No. 996,113
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct geranium cultivar, substantially as herein described and shown, characterized by its orange-scarlet color, strong peduncle and basal branching in the absence of growth regulators.

PATENTS

GRANTED MAR. 29, 1994

ERRATA

For CLASS	See PATENT NO.
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052-712	5,297,383
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105-001	5,297,484
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119-863	5,297,514
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273-459	5,297,816
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095-099	5,298,054
106-498	5,298,076
429-033	5,298,235
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395-325	5,298,921
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ERRATA—CONTINUED

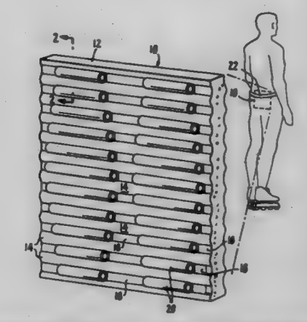
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355-202	5,298,961
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356-353	5,298,971
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GRANTED MARCH 29, 1994

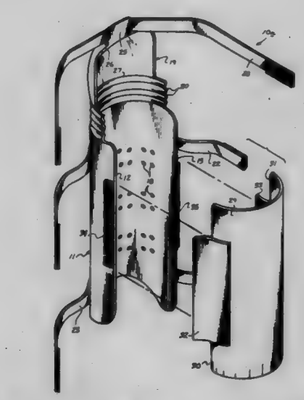
GENERAL AND MECHANICAL

5,297,293
PROTECTIVE DEVICE
Douglas M. Obujen, P.O. Box 160446, Cupertina, Calif. 95014
Filed Sep. 10, 1992, Ser. No. 943,314
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **13 Claims**



1. A protective device comprising, in combination:
a foam padding member having a plurality of spaced apart ridges having tops on at least one broad surface thereof, and
a plurality of flexible tubular elements fixedly secured to said padding member in between the ridges thereof
whereby the protective device worn on the human body cushions impact over a wide force range while remain comfortable for active movement of the human body.

5,297,294
SHIN GUARD HAVING KNEESHIELD, ACCORDIAN PLEATED FLEXURE AREA, FLEXURE GROOVES AND VENTILATION APERTURES
Steven R. Washick, 7834 Corey Path, Inver Grove Heights, Minn. 55076-3129
Filed Mar. 15, 1993, Ser. No. 31,703
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—22 **1 Claim**



1. A shin guard, comprising,
a deformable U-shaped channel web formed of a shape retentive material, including a web convex exterior surface and a web concave interior surface, with the web having a web first side spaced from a web second side, a web first end spaced from a web second end, and a web second end central recess directed into the second end to accommodate an individual's foot therewithin, and
a rigid knee shield, the knee shield having a shield convex exterior surface and a shield concave interior surface, and
a shield first end and a shield second end, with the shield second end spaced from and in adjacency to the web first end, and
a plurality of accordion pleated ribs extending between the shield second end and the web first end permitting pivoting and rotation of the shield relative to the web, and
the web includes a plurality of spaced parallel grooves extending between the web first side and the web second side, wherein the grooves are arranged parallel relative to one another and to the web first side and the web second side, and within each of the grooves is a plurality of ventilation apertures affording protection to the ventilation apertures in use of the web, and
the shield includes a radial array of shield grooves extending from the shield second end in a splayed orientation relative to the shield first end, and
a first strap and a second strap arranged in a parallel relationship relative to one another and directed through the web, wherein the first strap includes first strap first end fasteners and the second strap includes second strap fasteners, with the first strap fasteners and the second strap fasteners permitting securement of the first strap and the second strap for an individual's lower limb portion, and
the web concave interior surface and the shield concave interior surface and the accordion pleated ribs include a unitary form cushion layer extending from the web second end to the shield first end, and extending between the web first side and the web second side, and
the shield first end includes a lug fixedly mounted to the shield first end medially thereof, and a third strap is mounted to the lug, wherein the third strap includes third fasteners permitting securement of the shield relative to an individual's knee portion in a surrounding relationship, and
a U-shaped calf cover shield, the cover shield having a cover shield first side and a cover shield second side, with the cover shield first side arranged for contiguous and coextensive communication with the web first side, and the cover shield second side including contiguous and coextensive relationship relative to the web second side, and the cover shield first side including a first side hook and loop fastener web, and the cover shield second side including a second side hook and loop fastener web, and the web having a web first side hook and loop fastener strip mounted to the web convex exterior surface in adjacency to the web first side for securement to the first side hook and loop fastener web, and the web including a web second side hook and loop fastener strip mounted to the web convex exterior surface in adjacency to the web second side for securement to the second side hook and loop fastener web.

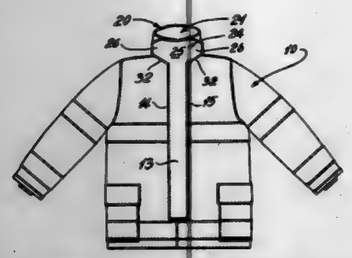
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5,297,295

FIRE PROTECTIVE COAT WITH CLOSURE FLAP HAVING INTEGRAL FLAP THROAT PROTECTIVE BAND WITH OPPOSED ADJUSTABLE WINGS

Claude Barbeau, St. Lambert, and Ross Cochran, Montreal, both of Canada, assignors to Securitex Inc., Montreal, Canada

Filed Mar. 12, 1993, Ser. No. 31,113
Int. Cl.[5] A41D *1/00*
U.S. Cl. 2—96 **7 Claims**



1. A firefighter's protective coat formed of fire protective material, said coat having a frontal opening with closure means for securing said frontal opening in a closed position, a closure flap secured adjacent said frontal opening and having detachable connectable means entirely therealong for securement over said opening when said opening is closed, said coat having a collar about a neck opening thereof, said collar having opposed free end portions on a respective side of a central neck opening, and a throat protective band of fire protective material formed integrally in a top section of said closure flap to provide a continuous shield of said central neck opening; said protective band having a central section extending above said flap and aligned with said central neck opening when closed, and opposed wing sections extending from opposed side edges of said closure flap to form an integral T-shaped top end section, said wing sections at said side edges of said closure flap being at least as wide as said collar and having a predetermined length to permit expansion of said neck opening of said collar while maintaining shielding of said central neck opening; variable attachment means interconnecting each said wing sections to an associated one of said opposed free end portions of said collar to provide for said expansion of said collar so that said protective band and said collar encircles a firefighter's neck of different size even when wearing a breathing apparatus, said attachment means independently adjusting the size and configuration of said neck opening from either side of said top end of said opening.

5,297,296

MULTI-LAYER MOISTURE MANAGEMENT ELASTIC FABRIC

Herbert L. Moretz, 20205 Lola Cir., Davidson, N.C. 28036, and Daniel L. Brier, 33 Angelfish Cay Dr., Key Largo, Fla. 33037

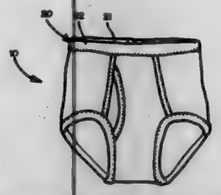
Continuation-in-part of Ser. No. 945,677, Sep. 16, 1992, which is a continuation-in-part of Ser. No. 842,224, Feb. 26, 1992, Pat. No. 5,210,882, which is a continuation-in-part of Ser. No. 791,066, Nov. 12, 1991, Pat. No. 5,217,782. This application Dec. 17, 1992, Ser. No. 991,761
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] A41D *20/00, 27/00*
U.S. Cl. 2—237 **19 Claims**

1. A multi-layer moisture management elastic fabric strap of indeterminate length, comprising:

(a) a moisture transport fabric layer constructed of hydrophobic yarns and defining a first fabric face for residing in skin contact during garment wear and for wicking moisture away from the skin;

(b) a moisture dispersal fabric layer constructed of hydrophilic yarns and defining a second fabric face for residing in spaced-apart relation from the skin during garment wear and for receiving moisture from the hydrophobic moisture transport layer; and

(c) elastic yarns integrated with the yarns of the moisture transport fabric layer and the yarns of the moisture dispersal fabric layer to form a single, integrated fabric strap which is highly elastic having stretch of no less than 100 percent in the lengthwise direction with substantially no stretch in the widthwise direction; whereby said fabric strap may be used as a waistband, wristband, headband, or brassiere strap.

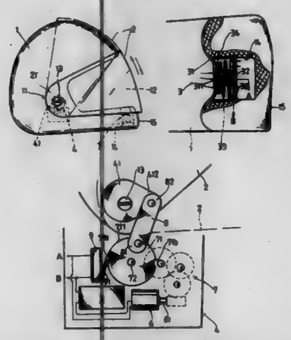


5,297,297

AUTOMATIC VISOR CONTROL DEVICE FOR HELMETS

Pei-Hsin Pei, P.O. Box 30780, Taipei, Taiwan

Filed Apr. 2, 1993, Ser. No. 41,864
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—424 **2 Claims**



1. An automatic visor control device for helmets, said device comprises:

a helmet having a pair of pivot seats provided on either side of said helmet near the wearer's ear region, a pair of pivot pins each provided on the corresponding pivot seat, an opening in the upper central portion of the front side of said helmet, and installation hole provided in the lower portion of the front side of said helmet, a movable visor covering said opening, two elements at both ends thereof being pivotally fixed on said pivot seats by means of said pivot pins;

a wind-pressure switch fixed inside said installation hole; and

a power device disposed on one side of said helmet near the wearer's ear region, said power device having a rotary plate with an application end, said rotary plate being pivotally provided on one of said pivot pins and engaging with one of said elements at one end of said visor by means of annular continuous notches and a nose portion formed on one of said elements and said rotary plate, respectively, so that said visor may perform partial rotation with said rotary plate simultaneously; a battery device; a motor connected to said battery device and having an output shaft; a decelerating device driven by said output shaft of said motor and having an output end with a cam ring fixed thereon, said cam ring having a circumference and at least two action elements formed on said circumference; a link, the first end thereof being pivotally provided on said cam ring, with the other end thereof pivotally provided on said application end of said rotary plate; and a limit switch having a switch element and connected in series to said battery device and said motor, said limit switch being connected in parallel to said wind-pressure switch and said switch element alternately touching either said circumference of said cam ring or one of said action elements of said cam ring; wherein

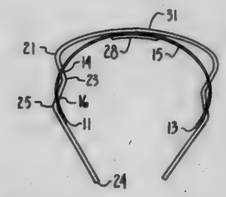
when said wind-pressure switch is blown against to become closed, the path from said battery device to said motor is connected, causing said motor to rotate, and by means of said circumference of said cam ring, said limit switch is caused to become closed so that said motor continues to receive power supply from said battery device and keeps on rotating until one of said action elements of said cam ring activates said switch element of said limit switch, thereby cutting off power supply to said motor.

5,297,298

EYE SHIELD

Robert G. Salatka, 5461 Los Robles, Carlsbad, Calif. 92008, and James H. Mitchell, 11025 Autillo Way, San Diego, Calif. 92127

Filed Dec. 29, 1992, Ser. No. 997,854
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—447 **23 Claims**



1. An eye shield comprising:

an eye covering member comprising a substantially transparent, flexible member having an upper edge for extending along a user's forehead from opposite first and second side edges between the user's temples and a lower edge for extending across a user's face and forming an eye shielding lens between said upper and lower edges, and a pair of first and second orifices located adjacent to said upper edge, each of said first orifices located adjacent to said first and second side edges, respectively, and each of second orifices spaced from said first orifices toward the center of said eye covering member, and

a frame member for securing said eye covering member on the face of a user, comprising an elongated flexible, spring-like shaft generally bowed along its length between opposite frame member ends thereof and biased toward a first unsprung condition having said opposite frame member ends spaced apart a distance less than the width of the user's head between the ears, wherein said frame member is formed along its length with a pair of opposite first bends and a forehead portion extending therebetween, a pair of opposite second bends each located between a different one of said first bends and a different one of said opposite frame member ends, and a pair of opposite third bends each located between a different one of said second bends and a different one of said opposite frame member ends.

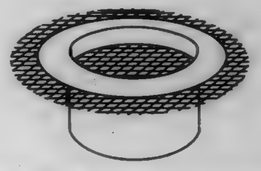
said flexible eye covering member being removably secured on said frame member, said shaft extending through each of said first and second orifices, wherein said secured eye covering member is generally bowed for following a generally bowed contour of a user's face and forehead, wherein said forehead portion, said first bends and said third bends of said frame member are positioned on the outside of the bow of said eye covering member, and wherein said second bends of said frame member are positioned on the inside of the bow of said eye covering member, said eye covering member being capable of being secured on a user's face with said frame member extending along a user's forehead with said opposite ends urged apart from said first condition to a second condition against opposite sides of the user's head, and wherein said eye covering portion extends downwardly from said upper edge over the user's eyes.

5,297,299

DRAIN HAIR NET

Mary A. Wilson, Box 213, Palmetto, Fla. 34221

Filed Oct. 16, 1992, Ser. No. 961,878
Int. Cl.[5] E03C *1/264*
U.S. Cl. 4—290 **3 Claims**



1. A drain hair net for use with conventional drain openings comprising:

a cylindrical member having top and bottom ends and an outer diameter sized to fit detachably into the drain opening;

a circular section of flexible netting having a diameter larger than said outer diameter of said cylindrical member; and

a flange member including an annular disc-shaped top portion having an undersurface and a cylindrical collar having an inner diameter substantially equal to the inner diameter of said top portion, said collar being coaxial with and depending from said top portion, said collar further having an outer diameter substantially equal to the inner diameter of said cylindrical member,

wherein said netting is frictionally retained between said undersurface of said top portion and said top end of said cylindrical portion with said collar fully inserted into said cylindrical member such that said netting is engagingly sandwiched between said top end and said undersurface, and wherein said netting extends circumferentially beyond the outer circumferential edge of said top portion when said collar is fully inserted into said cylindrical member.

5,297,300

RECLINING BOARD WITH AN ADJUSTABLE STAND FOR USE IN A BABY BATHTUB

Min-Tsung Shen, No. 156 Cheng Kung Road, Chang Hua City, Taiwan

Filed Jun. 24, 1993, Ser. No. 80,763
Int. Cl.[5] A47K *3/024*
U.S. Cl. 4—572.1 **1 Claim**

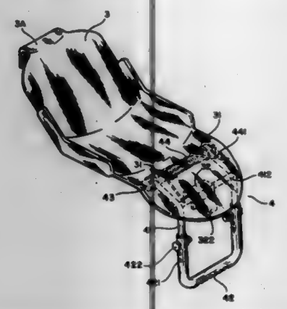
1. A reclining board for carrying a baby in a baby bathtub, comprising:

a board made in an oblong FIGURE for carrying a baby, said board comprising a unitary hook projected from a front end thereof for hooking on one end of a thereof at the bottom of said board and two spaced barrels bilaterally disposed at the bottom of said board near said locking device, said locking device comprising a channel casing

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fastened to said board at the bottom, said channel casing having an elongated open groove and a slot on an outer side wall thereof in communication with said open groove, a latch having a front end inserted into said slot and retained inside said channel casing by a pin and a rear end terminated to a handle disposed outside said channel casing, a spring mounted around said latch and retained between said pin and said channel casing, the front end of said latch having a sloping guide edge at the bottom of said latch:

a stand pivotably connected to said barrel by a pivot bolt and alternatively retained by at least one torsional spring in a non-operative position closely received to the bottom of said board or an operative position to support the rear end of said board above the bottom of said baby bathtub, said stand comprising two eye end rods parallelly joined by a cross rod in the middle, and a substantially U-shaped supporting tube having two opposite ends respectively connected to said eye end rods, each eye end rod having



one end terminated to an eye connected to either barrel by said pivot bolt and a plain opposite end inserted into either end of said U-shaped supporting tube, the plain end of each eye end rod having a through hole connected to either of a series of longitudinally spaced through holes on either end of said U-shaped supporting tube by a respective screw bolt, said at least one torsional spring being respectively mounted around said pivot bolt, each torsional spring having one end stopped against said board and an opposite end stopped against said cross rod;

whereby said stand is moved from said nonoperative position to said operative position by turning said U-shaped supporting tube outwards to compress each of said at least one torsional spring, for permitting said cross rod to be inserted into said elongated open groove and locked in place by said latch; the elevation of said board on said stand is adjusted by connecting the through holes on said eye end rods to different through holes on said U-shaped supporting tube.

5,297,301
CULTURED MARBLE SHOWER STALL WITH RAISED EDGE

Robert E. Sodrel, Rte. 1 Box 1020, LaBelle, Fla. 33935

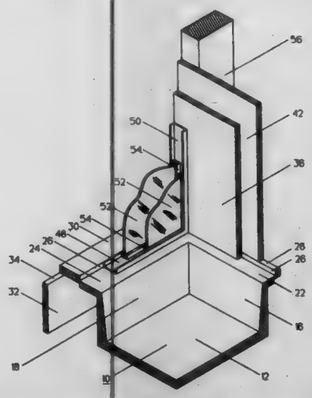
Filed Nov. 27, 1992, Ser. No. 982,765
Int. Cl.[5] A47K *3/16*
U.S. Cl. 4—613 **15 Claims**

1. A shower stall comprising:

a generally horizontal, unitary base portion;

a side wall portion unitarily interconnected to and extending upwardly from said base portion, said wall portion completely surrounding said base portion and terminating in an upper ledge having a generally horizontal upper surface that completely surrounds said side wall portion and is sufficiently wide to support at least one of an outer wall covering and a shower door mechanism; and

a raised rim portion unitarily interconnected to and completely surrounding said ledge, said rim portion including a generally vertical surface for engaging at least one of an

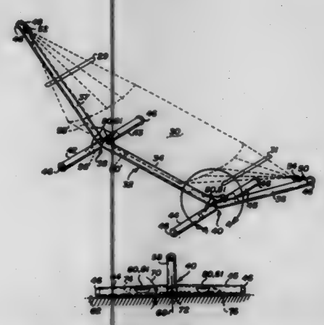


outer wall covering and a shower door mechanism and a continuous, generally horizontal surface that extends sufficiently outwardly from said vertical surface to an outer periphery of said shower stall for supporting an inner wall covering thereon, said shower stall having a unitary, one piece construction.

5,297,302
HAMMOCK STAND

Bill R. Anderson, 24 Airport Rd., Freedom, Calif. 95019

Filed Nov. 13, 1992, Ser. No. 975,802
Int. Cl.[5] A45F *3/24*
U.S. Cl. 5—127 **7 Claims**



1. A portable, mountable and disassemble stand assembly for supporting a hammock comprising in operative combination;

a) a first connector (40) having a first crosspiece pipe (56), a first extension tube (60), and a second extension tube (58), said first and second tubes extending away from said first crosspiece pipe and secured permanently thereon, and said crosspiece pipe having a first and a second end;

b) a second connector (38) having a second crosspiece pipe (56'), a third extension tube (60'), a fourth extension tube (58') said third and said fourth tubes extending away from said second crosspiece pipe and secured permanently thereon, and said crosspiece pipe having a third and a fourth end;

c) a central base pipe (34) having a first open base pipe end and a second open base pipe ned, said first base pipe open end telescopingly mountable onto said first extension tube (60) and said second base pipe open end telescopingly mountable onto said third extension tube (60');

d) said crosspieces being bowed concave down to create a vertical lift (68) beneath said first and second connectors and said central base pipe (66) beneath said first and second connectors and said central base pipe (66) to compensate for uneven ground surface levels, and to provide stabilizing and cushioning support of said hammock;

e) a first upstanding arm pipe (36) having a first open arm pipe end and a second arm pipe end, said first arm pipe open end telescopingly mountable onto said second extension tube (58), and said second arm pipe end having means (50) for mechanical coupling to a first end of a hammock 30;

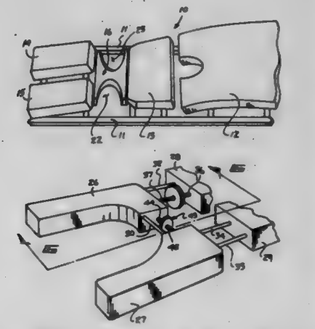
f) a second upstanding arm pipe (37) having a third open arm pipe end and a fourth arm pipe end, said third arm pipe open end telescopingly mountable onto said fourth extension tube (58'), and said fourth arm pipe end having means (48) for mechanical coupling to a second end of said hammock; and

g) the inner diameter of said base pipe and arm pipes being oversized with respect to the outer diameter of said connector pipes and tubes to permit ease of mounting and disassembly without wedging together.

5,297,303
EXAMINATION TABLE TOP

Teresa E. Stafford, R.R. #1, Box 77, Attica, Ind. 47918-9729, and Karen E. Davis, 805 S. Brady St., Attica, Ind. 47918

Filed Apr. 26, 1993, Ser. No. 51,773
Int. Cl.[5] A61G *7/10, 13/00*
U.S. Cl. 5—613 **4 Claims**



1. An examination table top including at least one torso cushion, the at least one torso cushion spaced from a first shoulder cushion and a second shoulder cushion, with the second cushion and the first shoulder cushion arranged in adjacency and in a coextensive relationship relative to one another, and a mammary plate positioned between the first shoulder cushion, the second shoulder cushion, and the torso cushion, the mammary plate including a first side wall spaced from a second side wall, a first end wall spaced from a second end wall, a top wall spaced from a bottom wall, with the first side wall positioned in adjacency to the first shoulder cushion and the second shoulder cushion oriented at an oblique angulation relative to the first shoulder cushion and the second shoulder cushion, and the second side wall positioned in adjacency relative to said torso cushion,

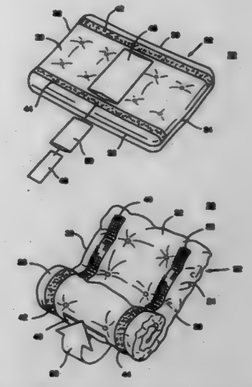
and

the first end wall including a first arcuate recess directed into the mammary plate from the first end wall, and a second arcuate recess of a mirror image configuration relative to said first arcuate recess directed into the mammary plate from said second end wall, with the first arcuate recess and the second arcuate recess arranged in a spaced orientation relative to one another longitudinally aligned relative to one another.

5,297,304
ROLL-UP BODY SUPPORT CUSHION

Dennis C. O'Sullivan, 123 Jnanita Unit 1-4, Incline Village, Nev. 89451

Filed Nov. 6, 1992, Ser. No. 973,084
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—630 **34 Claims**



1. A roll-up body support cushion, comprising:

a cushion having first and second opposed surfaces having pillow fill positioned therebetween, the cushion having a length and a width, the cushion being flexible such that it can be rolled up in a direction substantially parallel to its length to give substantial support to various body portions;

a strip fastening means for releasably fastening to a complementary strip fastening means, the strip fastening means being secured to the first opposed surface, having a length equal to at least one-fourth the length of the cushion, and being positioned substantially parallel to the length of the cushion; and

a complementary strip fastening means for releasably fastening to the strip fastening means, the complementary strip fastening means being secured to the second opposed surface, having a length equal to at least one-fourth the length of the cushion, and being positioned substantially parallel to the length of the cushion and in juxtaposition to the respective strip fastening means secured to the first opposed surface.

5,297,305
CHANGING TABLE CONVERTIBLE INTO A YOUTH BED AND PLAY TABLE

Keith A. Williams, Salem, Ind., assignor to Child Craft Industries, Inc., Salem, Ind.

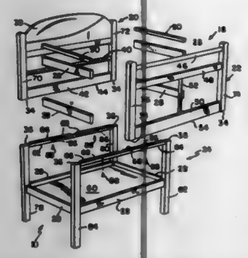
Filed Jul. 14, 1992, Ser. No. 913,142
Int. Cl.[5] A47D *11/00*
U.S. Cl. 5—655 **7 Claims**

1. A convertible furniture kit having component parts capable of being assembled to form an infant changing table or a youth bed frame and play table, the article comprising:

a plurality of horizontally disposed, vertically registered platforms, the top platform of which serves as a child supporting top for said changing table in a first configura-

tion, first means for supporting said platforms in elevated, spaced-apart relation, said first means comprising an upper portion which is removable to form a portion of said youth bed frame and a lower portion to form a base for said play table, said youth bed frame and said play table forming a second configuration,

side rails for enclosing the platforms, said side rails being



adapted to be coupled to the platforms and the first supporting means,

mattress support rails for supporting a mattress, said mattress support rails being adapted to be coupled to the upper portion of said first supporting means to provide said youth bed frame, and

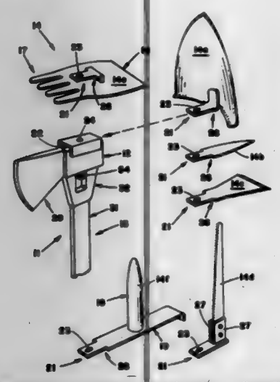
a table top adapted to be coupled to the lower portion of said first supporting means to provide said play table.

5,297,306

MULTIPURPOSE OUTDOOR TOOL

Frederick Shandel, 31200 Meadow Ridge Rd., Albion, Calif. 95410

Filed Feb. 23, 1993, Ser. No. 21,094
Int. Cl.[5] B25F *1/02*
U.S. Cl. 7—114 **10 Claims**



1. A multipurpose outdoor tool having a handle and an ax head at one end thereof, said tool further having means for optionally fastening an auxiliary tool implement to said ax head, said auxilary implement having a tang for engaging said ax head which tang has an opening therein and said ax head having a socket for receiving said tang, wherein the improvement comprises:

said ax head having an interior passage which extends from said socket to an exterior surface of said ax head,

further including a movable latch pin extending within said passage, said latch pin being slidable along said passage between first and second positions at each of which at least a portion of said latch pin remains within said passage, and wherein said latch pin has a first end which extends into said socket when said latch pin is at said first position and which enters said tang opening when a tang is seated in the socket and said latch pin is at said first position, said latch pin being retractable from said socket by sliding of said latch pin towards said second position to enable withdrawal of said tang,

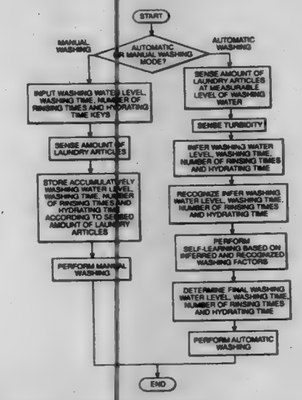
further including means for limiting axial movement of said latch pin to movement between said first and second positions thereof which means prevents inadvertent separation of said latch pin and said ax head.

5,297,307

WASHING MACHINE AND METHOD OF CONTROLLING SUCH

Seung T. Baek, Kyungsangnam-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 47,177
Int. Cl.[5] D06F *33/02*
U.S. Cl. 8—159 **17 Claims**



1. A washing machine comprising:

key signal generating means for generating a washing mode signal to select one of automatic and manual washing operations and a plurality of washing factors necessary to perform the manual washing operation according to user selections;

washing information sensing means for sensing a plurality of washing information regarding conditions in a washing bath;

memory means for storing in an accumulated manner the plurality of washing factors from said key signal generating means which are selected by the user whenever the manual washing operation is performed;

control means for recognizing one of the manual and automatic washing operations in response to the washing mode signal from said key signal generating means, for controlling the manual washing operation in accordance with the plurality of washing factors from said key signal generating means and the plurality of washing information from said washing information sensing means, for inferring a plurality of washing factors from the plurality of washing information from said washing information sensing means, and for controlling the automatic washing operation according to the inferred washing factors and the plurality of washing factors stored in said memory means when the manual washing operation was performed;

load means for executing the automatic and manual washing operations of the washing machine; and

load driving means for driving said load means in the automatic washing operation or the manual washing operation under the control of said control means.

6. A method of controlling a washing machine, comprising the steps of:

generating a washing mode signal to select one of automatic and manual washing operations of the washing machine according to user selection;

if the manual washing operation is indicated by the mode select signal, performing the manual washing operation in accordance with a plurality of washing factors which are selected by the user and a plurality of washing information regarding conditions in a washing bath and storing the plurality of washing factors in an accumulated manner in a memory; and

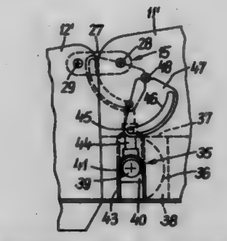
if the automatic washing operation is indicated by the mode select signal, inferring a plurality of washing factors from one of the plurality of washing information, analyzing the washing factors stored in said memory when the manual washing operation was performed to recognize those which the user prefers, performing self-learning based on the inferred washing factors and the recognized washing factors to determine a plurality of final washing factors, and performing the automatic washing operation according to the determined final washing factors.

5,297,308

DEPLOYABLE BRIDGE

Hans N. Wiedeck, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to Krupp Industrietechnik Gesellschaft mit beschränkter Haftung, Duisburg, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 36,202
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1992, 4209316
Int. Cl.[5] E01D *15/12*
U.S. Cl. 14—14 **13 Claims**



1. In a bridge including a bridge element having

a basic bridge body having a height and including opposite sloped end faces and a horizontal top face; the end faces extending from opposite ends of said top face and terminating at mid height of said basic bridge body;

a folding ramp situated at each sloped end face; each folding ramp having a travel face;

a hinge connection pivotally attaching each folding ramp to a respective said sloped end face to provide movement of each said folding ramp into upfolded and downfolded positions; in the upfolded position the travel face of the folding ramp is in a face-to-face engagement with the respective sloped end face of the basic bridge body and in the downfolded position the travel face of the folding ramp forms a common access ramp with the respective sloped end face of the basic bridge body; and

a locking device supported by said basic bridge body for firmly locking the folding ramp to the basic bridge body in the downfolded position;

the improvement wherein

said folding ramps and opposite ends of said basic bridge body include means for defining locking pin-receiving openings;

said locking device includes a locking pin and actuating means for moving the locking pin into a locking position or into a withdrawn position; in said locking position the locking pin extends into the locking pin-receiving opening of said folding ramp if the folding ramp is in said downfolded position or into the locking pin-receiving opening of an adjoining basic bridge body in said upfolded position of said folding ramp and in said withdrawn position the locking pin is retracted from said locking pin-receiving openings;

said hinge connection comprises a double-jointed lever connected to the basic bridge body by a first pivotal joint and to the respective folding ramp by a second pivotal joint; a distance between said first and second pivotal joints being such that pivotal motion of the folding ramp is effected with a play relative to said basic bridge body; and

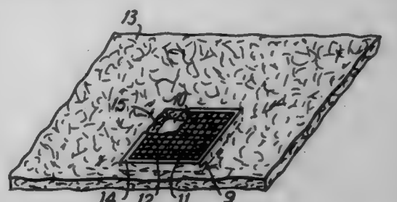
each said folding ramp and said basic bridge body have pressure surfaces being pressed to one another by pressure forces in said upfolded position of said folding ramps.

5,297,309

DEVICE FOR DISINFECTING AND CLEANING PARTS OF PERSONS, ANIMALS AND OBJECTS PASSING OVER IT AND CONTACTING THE GROUND

Antonio Rotoli, Via Trionfale N.76, 00195 Roma, Italy

PCT No. PCT/IT90/00093, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/08701, PCT Pub. Date Jun. 27, 1991
PCT Filed Nov. 12, 1990, Ser. No. 853,764
Claims priority, application Italy, Dec. 7, 1989, 36087 B/89
Int. Cl.[5] A47L *23/24*
U.S. Cl. 15—104.92 **4 Claims**



1. Device for disinfecting parts of persons, animals and objects passing thereover and coming into contact with ground, said device comprising

a doormat provided with a rectangular aperture;

a shallow flat-bottomed rectangular tray having a bottom and vertical peripheral sides made from metal, each of said peripheral sides being shaped to form a channel having a C-shaped transverse cross-section opening outwards from said rectangular tray; said channel, said aperture and said tray being shaped and dimensioned so that said tray can fit in said aperture with edges of said doormat engaged in said channels of said vertical sides;

a sheet of rectangular spongy material located in said rectangular tray;

a disinfecting liquid impregnating said sheet of said spongy material; and

an elastic grating having an upper surface and above said sheet of said spongy material,

wherein said elastic grating, said sheet of said spongy material and said rectangular tray are dimensioned so that said upper surface of said elastic grating is approximately flush with top edges of said vertical sides of said rectangular tray and said elastic grating has an elasticity such that, when depressed by said parts of said persons, animals and objects passing thereover, said elastic grating flexes sufficiently to compress said sheet of said spongy material sufficiently to force a portion of said disinfecting liquid

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residing in said spongy material through said elastic grating to said parts, and such that said elastic grating returns to an original conformation when said parts no longer contact said elastic grating, said upper surface of said elastic grating being substantially coplanar with an upper surface of said doormat in said original conformation.

5,297,310

CLEANING BRUSH FOR ENDOSCOPES

Dennis Cox, 25479 Sheffield La., Saugus, Calif. 91350, and Lanita Cox, 25059 Wintergreen Ct., Newhall, Calif. 91381

Filed Jan. 21, 1993, Ser. No. 11,468
Int. Cl.[5] F16L *45/00*; A46B *15/00*
U.S. Cl. 15—106 2 Claims



1. A brush for cleaning an endoscope comprising:
a tubular cannula having a first end and a second end, a wire insert fitted in said cannula extending from said second end and terminating a substantial length from said first end;
a first bristle brush on said first end of said cannula, said first brush comprising a first metal core having first and second ends and a plurality of bristles supported on said first core between said first and second ends of said first core, said first end of said first core extending into said cannula at said first end of said cannula and secured therein, said first end of said first core and said wire insert being spaced apart by said substantial length, and a flexible tubular tip secured to said second end of said first core, with a substantial length of said tip free of said second end of said first core;
a second bristle brush on said second end of said cannula, said second bristle brush having a second metal core including a free end and a plurality of bristles supported on said free end, said second core extending into said second end of said cannula and secured therein, and a depth limit stop on the exterior of the cannula spaced apart from said free end of said second core of the second bristle brush by a distance which permits said free end of the second core to extend a limited distance into an endoscope channel for cleaning thereof.

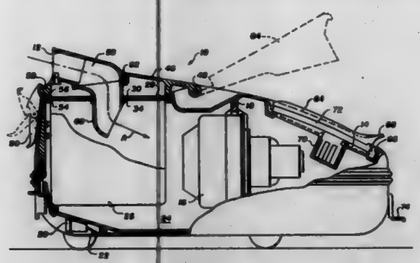
5,297,311

VACUUM CLEANER

Krishan K. Puri, Richmond, Canada, assignor to Citywide Machine Wholesale, Inc., Vancouver, Canada

Filed May 4, 1992, Ser. No. 882,984
Int. Cl.[5] A47L *9/14*
U.S. Cl. 15—347 7 Claims

1. A vacuum cleaner comprising:
a body having an inlet for dust laden air and an outlet;
a first door pivotally mounted to the body and containing the inlet for dust laden air;
an impeller between the inlet and the outlet;
a perforate dust receptacle able to filter dust from the dust laden air;
an inlet pipe extending from the inlet for dust laden air into the perforate dust receptacle when the first door is closed;
said perforate dust receptacle including a relatively rigid top having an opening to receive the pipe, the remainder of the dust receptacle being a perforate cylinder attached to the top and having at least one wall;
a flexible gasket positioned in said opening of the perforate dust receptacle, said flexible gasket receiving said pipe to provide a close fit around the pipe;
a flap formed flush with the top of the perforate dust receptacle, the flap including means for raising and folding the



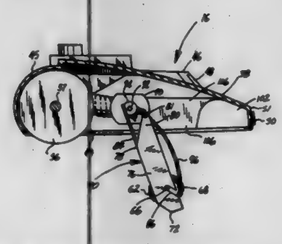
flap over the opening to seal the opening for disposal of the perforate dust receptacle without loss of the dust;
said inlet pipe having an outlet remote from the lid, said inlet pipe being directed at said at least one wall whereby dust laden air entering the receptacle is filtered to remove dust and the dust laden air, forced against said at least one wall by the impeller, acts to keep said at least one wall free of dust accumulation.

5,297,312

CLEANING APPLIANCE WITH AGITATION MEMBER MOUNTING BRACKET

Marc D. Zuiderveen, Hudsonville; Charles A. Reed, Jr., Rockford, and Scott R. Graham, Grand Rapids, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.

Filed Apr. 21, 1993, Ser. No. 50,708
Int. Cl.[5] A47L *5/30*
U.S. Cl. 15—391 18 Claims



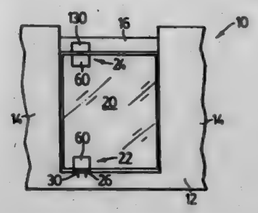
1. A floor cleaning appliance comprising;
a housing;
a bracket having a pair of opposed sidewalls and a web interconnecting the sidewalls, the bracket being pivotally mounted to said housing for rotation about a first axis of rotation between an operating position and a belt replacement position;
an agitation member selectively mounted to the bracket for rotation about a second axis of rotation, the agitation member having first and second ends;
a drive motor mounted in the housing, the motor having a drive shaft which rotates about a third axis of rotation;
a belt selectively mounted to the agitation member and the drive shaft and adapted to convey a force of rotation from the drive shaft to the agitation member, the first axis of rotation lying on one side of a plane extending between the second and third axes of rotation in the operating position and the first axis of rotation lying on another side of the plane extending between the second and third axes of rotation in the belt replacement position.
whereby, the belt is under tension in the operating position for driving of the agitation member and the belt is relaxed in the replacement position for ease of removal and replacement of the belt.

5,297,313

PIVOT HINGE ASSEMBLY FOR GLASS STRUCTURES

Gavin Brin, Thornhill, Canada, assignor to Lalique Hinge Co. Inc., Thornhill, Canada

Filed Apr. 14, 1993, Ser. No. 45,751
Int. Cl.[5] E05D *5/02, 7/08*; E05F *1/14*
U.S. Cl. 16—252 6 Claims



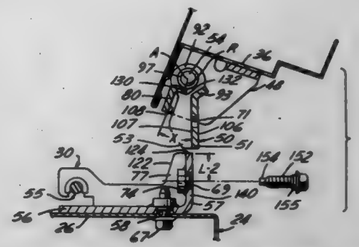
1. A two-part glass hinge assembly comprising:
(a) a first hinge member adapted to be clamped to a glass plate and comprising:
(i) first and second plate portions adapted to lie in parallel planes one on each side of said glass plate and having a pair of ends lying in a common plane,
(ii) a block portion of smaller lateral dimensions than those of said plate portions and adapted to lie between said plate portions and to be connected thereto,
(iii) said block portion having a flat end lying in said common plane, said flat end thereby being flush with said ends of said first and second plate portions, said block portion having first and second side surfaces extending at right angles to said flat end and to the planes of said plate portions,
(iv) said block portion having a first bore extending into said block portion perpendicular to said flat end thereof, said bore having an inner closed end,
(v) said block portion having second and third threaded bores in said first side surface thereof and fourth and fifth threaded bores in said second side surface thereof, each of said second to fifth bores extending perpendicular to its respective side surface and intersecting said first bore,
(b) a second hinge member adapted to be connected to a support structure and having a flat end surface adapted to overlie said flat end of said block portion,
(c) a pivot pin non-rotatably connected to and protruding from said end surface of said second hinge member and extending into said first bore, said pivot pin being rounded in cross-section but having a pair of opposed flat surface portions one extending along each side thereof, and having a free end adjacent said inner closed end of said first bore,
(d) pressure pad means located in each of said second to fifth bores for resiliently pressing on said flat surface portions of said pivot pin to bias said pivot pin to a selected position relative to said first hinge member,
(e) each of said pressure pad means including spring means, and adjustable screw means for adjusting the pressure of each of said pressure pad means on said pivot pin.

5,297,314

THREE-PIECE LATERAL TAKE-APART DOOR HINGE ASSEMBLY

Frederick F. Bender, 9765 Daleview Dr., South Lyon, Mich. 48178, and Earl L. Watson, 2560 Canal, Walled Lake, Mich. 48390

Filed Sep. 10, 1992, Ser. No. 942,911
Int. Cl.[5] E05D *7/12*
U.S. Cl. 16—270 4 Claims



1. In combination, an arrangement for laterally removing and re-mounting a door to a vehicle body, said arrangement including upper and lower three-piece separable hinge assemblies, each said hinge assembly comprising:
a door-half sub-assembly and a body-half mounting hinge, said door-half sub-assembly comprising a door mounting bracket and a link plate, said door mounting bracket adapted to be secured to the vehicle door and said body-half hinge plate adapted to be secured to the vehicle body and pivotally connected by a hinge pin about a vertical hinge axis to said link plate;
said body-half mounting hinge being generally L-shaped in horizontal section providing a leg plate and a foot plate such that said leg plate adapted to be secured to the vehicle body and said foot plate generally channel-shaped in vertical section providing upper and lower flanges and a vertical free stop edge;
said link plate having vertically spaced upper and lower apertures aligned on a common vertical centerline adapted for paired alignment with upper and lower threaded holes in said foot plate, such that a take-apart screw extends through each said link plate aperture for threaded engagement in an associated foot plate threaded hole;
one of said link plate apertures being slightly elongated along said vertical centerline and the remaining aperture having a predetermined circular dimension, said link plate remaining aperture adapted for alignment with an associated one of said foot plate threaded holes and adapted for initial reception of a first take-apart shouldered screw, and whereby a second take-apart shoulder screw adapted for subsequent reception in said elongated aperture and its aligned foot plate threaded hole;
said door-half mounting bracket being generally U-shaped in vertical section having an upright strap portion formed with upper and lower right-angle horizontal wings projecting outwardly therefrom, a pivot hole in each said wing vertically aligned on said hinge axis and receiving a hinge pin therethrough, said strap portion having one vertical inboard edge formed with an inwardly angled leaf adjacent said hinge pin, said angled leaf having a vertically disposed line-edge stop spaced a predetermined dimension from said hinge axis;
said door-half mounting bracket upper and lower wings spaced a predetermined dimension for receiving said link plate therebetween, said link plate formed with upper and lower horizontally disposed apertured knuckles on one inboard end aligned with said wing pivot holes whereby said pair of wing pivot holes and said knuckle apertures

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receiving said hinge pin therethrough such that said link plate pivots intermediate said wings relative to said door-half mounting bracket;

a locating bore formed at a predetermined location in one of said wings, said locating bore adapted to receive a locating peg therethrough prior to pivoting the door outwardly from a closed position such that said peg engages an outer face of said link plate locating the door at a predetermined full open take-apart position;

with said door in said take-apart position said link plate inner face and an opposed inner face of said door-half mounting bracket strap portion provide a wedge-shaped receptacle, said wedge-shaped receptacle being open for reception of said body-half foot plate, said foot plate having a wedge-shape adapted for complementary insertion in said wedge-shaped receptacle;

whereby said upper and lower hinge assemblies enabling a removed door to be laterally remounted on the vehicle body by virtue of each upper and lower wedge-shaped receptacle receiving, in a guided manner, an associated wedge-shaped foot such that each said plate stop edge contacts its associated door-half line-edge stop thereby laterally aligning each said upper and lower foot plate threaded hole with an associated link plate one elongated aperture and said remaining circular aperture, such that upon initial insertion and tightening of a first take-apart screw in each said link plate circular aperture and its associated foot plate threaded hole, and subsequent insertion and tightening of a second take-apart screw in each said link plate elongated aperture and its associated foot plate threaded hole, thereby permitting self-adjustment of said second screw to compensate for slight off-centering of said pair of line plate apertures with their associated pair of foot plate threaded holes, whereby each said upper and lower foot plate and associated upper and lower line plate are positively clamped together insuring exact fit of said door in said body door opening.

5,297,315

SUSPENSION FOR HINGED DOOR

Leon Yulkowski, 40 W. Howard, Pontiac, Mich. 48058

Filed Mar. 19, 1992, Ser. No. 854,010

Int. Cl.[5] E05D *7/04*

U.S. Cl. 16—248 **15 Claims**



1. In combination, an apertured door frame;

a door nested within said frame;

an elongated hinge assembly interconnecting one upright door edge with a corresponding edge of said frame for swinging movements of said door in a horizontal plane; and

a flexible cable adjacent one end supportably anchored to and suspended from an upper portion of said frame, extending along said hinge and at its other end supportably connected to and suspending said door within said frame against downward movements relative to said frame.

5,297,316

APPARATUS FOR PRODUCING FIBER MATERIAL OR THE LIKE WITH A PRECISE FEED WEIGHT

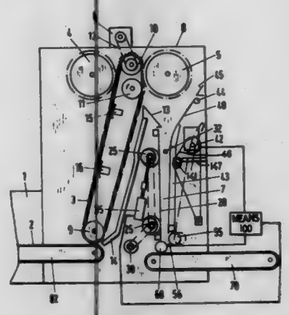
Siegfried Bernhardt, Bremen; Uwe Dierks, Stuhr; Wolfgang Uliczka, Schwanewede, and Dietrich Menzel, Bremen, all of Fed. Rep. of Germany, assignors to Spinnbau GmbH, Fed. Rep. of Germany

Filed Aug. 28, 1992, Ser. No. 936,641

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1991, 4128929

Int. Cl.[5] D01G *15/40*

U.S. Cl. 19—105 **20 Claims**



1. In an apparatus for producing fiber material with a prescribable feed weight, said apparatus including a conveyor means for delivering fiber flock to a filling stack which comprises a vibrating wall extending in a vertical direction with means for vibrating the wall, and a displaceable wall with means for displacing the displaceable wall, said apparatus including a stationary delivery roller being arranged in a discharge region of the filling stack, said delivery roller supplying the emerging fiber material to a delivery table, the improvements comprising a displaceable second delivery roller being arranged opposite and at a distance from the stationary delivery roller in the discharge region of the filling stack, means for displacing the second delivery roller, a pressure sensor being provided between the two delivery rollers, said pressure sensor producing output signals for controlling the means for displacing the second delivery roller, for controlling the means for vibrating the wall and for controlling the means for displacing the dispaceable wall.

5,297,317

COILER CAN CONVEYOR WITH POSITIVE GUIDANCE BETWEEN MACHINE ROWS

Ferdinand Leifeld, Kempen; Stefan Schlichter, Viersen; Paul G. Teichmann, and Manfred Langen, both of Mönchengladbach, all of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed May 14, 1991, Ser. No. 699,377

Claims priority, application Fed. Rep. of Germany, May 14, 1990, 4015377

Int. Cl.[5] D01H *9/18*; B65H *75/16*

U.S. Cl. 19—159 A **5 Claims**

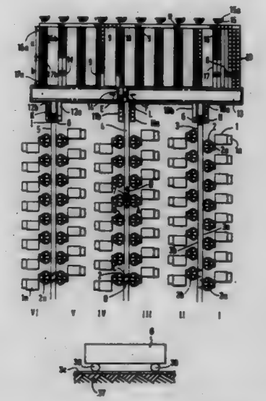
1. An apparatus for transporting a coiler can from a sliver-producing fiber processing machine to a sliver-using fiber processing machine in combination with a plurality of sliver-producing fiber processing machines and a plurality of sliver-using drafting frames; each drafting frame having a drafting frame lane for receiving coiler cans; said apparatus comprising

(a) a transport carriage;

(b) motor means for propelling the transport carriage along a path of travel;

(c) positive guidance means for positively guiding the transport carriage along said path of travel; wherein said positive guidance means comprises

(1) spaced first rail tracks each having an end and each supporting a separate said transport carriage; said sliver-producing fiber processing machines being arranged in rows along said first rail tracks;



(2) a second rail track extending transversely to the first rail tracks and operatively connecting the ends of said first rail tracks; said drafting frames being arranged along said second rail track; and

(d) a separate can storing device situated at each said drafting frame lane; the can storing devices being arranged along said second rail track.

5,297,318

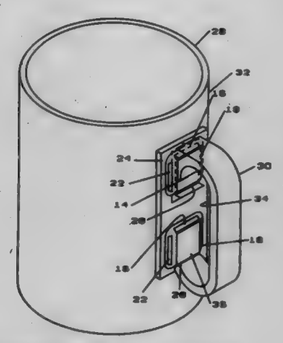
ATTACHABLE UTILITY DEVICES

Bradley K. Adolphson, 2434 W. 3965 So., West Valley City, Utah 84119, and Brett W. Adolphson, 8565 So. Kings Cove Dr., Salt Lake City, Utah 84121

Filed Aug. 31, 1992, Ser. No. 937,145

Int. Cl.[5] A45F *5/00*

U.S. Cl. 24—3 R **9 Claims**



1. An attachable utility device comprising:

a rectangular attaching member having raised central portions which is fixedly securable to a desired object and formed with a plurality of opposing pairs of slits extending along the edges of said raised central portions, and

a utility device having means releasably engageable with a respective pair of said slits to attach said utility device to said desired object.

5,297,319

SLIDE FASTENER

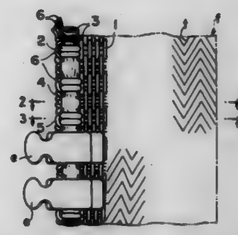
Shunji Akashi; Tsutomu Yonezawa, and Masahiro Kusayama, all of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,945

Claims priority, application Japan, Nov. 5, 1991, 3-318328

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—405 **8 Claims**



1. A slide fastener comprising: a pair of woven or knitted stringer tapes each having a core thread extending in and along their confronting inner longitudinal edges; a row of die-cast coupling elements mounted on and along the confronting inner longitudinal edges; and each of said stringer tapes including a conductive wire extending along the respective core thread on its side toward the inner longitudinal edge, an edge warp yarn extending along the inner longitudinal edge, and a weft yarn having a succession of turnover portions arranged along the inner longitudinal edge, said conductive wire together with said edge warp yarn being incorporated into each of said stringer tapes by said turnovers in such a manner that said conductive wire is partially concealed by said edge warp yarn and said turnover portions.

5,297,320

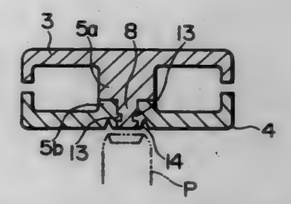
SLIDER FOR A SLIDE FASTENER AND ITS MANUFACTURING METHOD

Keiichi Keyaki, and Nobuhiro Ichikawa, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 959,043

Int. Cl.[5] A44B *19/26*

U.S. Cl. 24—430 **11 Claims**



1. A slider for a slide fastener comprising a pair of upper and lower wings which are respectively provided with separate upper and lower connecting posts on tip portions, said upper and lower connecting posts being contacted with each other, one of said connecting posts being provided with a joining protrusion which is solid in cross section, which protrudes from the contact face of one of said connecting posts and

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which is provided with at least one joining groove on the outer surface thereof, said joining protrusion being engaged with a joining hole which is bored in the other connecting post, and the material of said other connecting post plastic-flowed into said at least one joining groove of said joining protrusion by plastic deformation to form a projected portion therein, so that said projected portion is interengaged with said joining groove of said joining protrusion to join said pair of said upper and lower wings.

5,297,321

FASTENING DEVICE

Ryukichi Murai, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,127
Claims priority, application Japan, Jul. 8, 1992, 4-053799
Int. Cl.[5] A44B *13/00*
U.S. Cl. 24—600.4 **4 Claims**



1. A fastening device which comprises a main body and a retainer member engageable therewith, said main body including, integral therewith, a cylindrical socket member, a belt connector overlying said socket member and a hook member underlying said socket member, and said retainer member including, integral therewith, a plate portion and a plug portion; said socket member being provided in its inner peripheral wall with a pair of guide slots disposed in diammetrically opposed relation to each other and tapering towards one end of said socket member and further with lock windows communicating with said guide slots; said hook member generally in the form of a "J"-like configuration having an arcuate bay; said plate portion having a downwardly projecting tongue dimensioned to cover said bay; and said plug member being movable in and relative to said socket member and provided with a pair of spaced parallel resilient arms each having arrow-like heads respectively engageable with said guide slots and lockable in said lock windows.

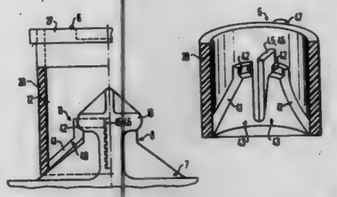
5,297,322

CONNECTION BETWEEN A SUPPORT AND A PLATE ELEMENT

Willibald Kraus, Grunstadt, Fed. Rep. of Germany, assignor to TRW United Carr GmbH & Co. KG, Enkenbach-Alsenborn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 695,616, May 3, 1991, Pat. No. 5,106,223. This application Nov. 4, 1992, Ser. No. 971,298
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1991, 4136422
Int. Cl.[5] A44B *17/00*; F16B *21/00*
U.S. Cl. 24—662 **11 Claims**

1. In a fastener assembly for connecting between a support base and a plate element, said assembly including a lower holding component insertable into a connecting opening in the support base and equipped with a head piece carrying a spherical segment which is clipped into a fastener opening in a tubular section of an upper holding component, the fastener opening having a counter profile which receives the spherical segment, the improvement wherein the counter profile has a plurality of spring elements distributed about the circumference of the fastener opening and hooking behind the spherical



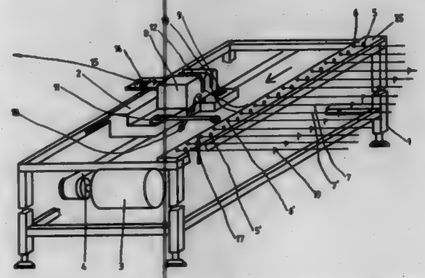
segment, and spacer elements arranged between the spring elements and at least partially acting upon the spherical element to center it between the spring elements.

5,297,323

DEVICE AND PROCESS FOR AUTOMATICALLY JOINING THREADS

Markus Jaeggi, Wattwil, Switzerland, assignor to Rhone-Poulenc Viscosuisse S.A., Emmenbrucke/Schweiz, Switzerland

PCT No. PCT/CH89/00172, § 371 Date May 9, 1991, § 102(e) Date May 9, 1991, PCT Pub. No. WO91/04217, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 19, 1989, Ser. No. 675,901
Int. Cl.[5] B65H *69/00*; D04B *15/62*
U.S. Cl. 28—211 **7 Claims**



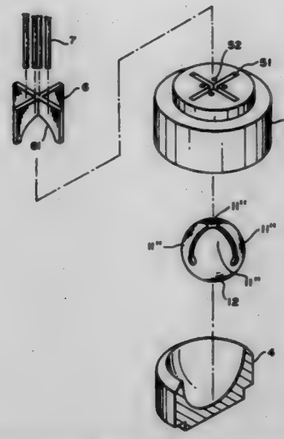
1. Apparatus for automatically joining threads, comprising
a frame having a rail member,
a plurality of thread clamps linearly arranged on said rail member to receive a respective plurality of threads,
a like plurality of thread guide tubes fixed to said rail member, each sad guide tube having a thread entry and a thread exit, said entries being linearly arranged adjacent respective said thread clamps, said exits being linearly arranged below said entries,
a vacuum duct arranged for movement toward and away from said thread exits for drawing said threads through said guide tubes and maintaining a bias tension thereon,
a carriage which is movable stepwise on said frame on a linear path parallel to sad rail member,
a thread joining system on said carriage,
means borne by said carriage for releasing an individual clamp, and
a threading arm pivotably mounted on said carriage and having suction means which is pivotable between said rail and said thread joining system, whereby,
upon moving said carriage to a preselected position, a thread may be drawn from a preselected guide tube by said suction means, and upon releasing the adjacent thread clamp, sad thread may be moved to the thread joining system by pivoting said threading arm.

5,297,324

FULLY ROUNDED JINGLE BELL MAKING METHOD

Wen-Chian Su, No. 247, Lin Sen Road, Chang Hua City, Taiwan

Filed Jul. 15, 1993, Ser. No. 91,431
Int. Cl.[5] B29D *17/00*
U.S. Cl. 29—169.5 **3 Claims**



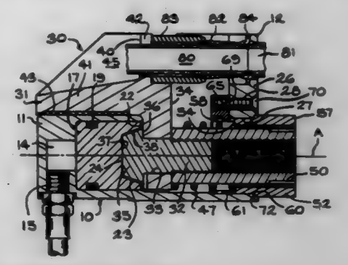
1. A fully rounded jingle bell making method comprising steps of:
(a) preparing a bell blank primarily shaped formed from a metal plate by a punching process, the bell blank having four blades equiangularly and horizontally extended outwards from a dome-like body portion thereof and spaced from one another by notches on the border of said dome-like body portion;
(b) placing the bell blank in a tubular mold for allowing the four blades of the bell blank to bridge over the cavity of the tubular mold, and then punching the primarily shape formed bell blank into a secondarily shaped formed bell blank having the four blades turned from respective horizontal positions to respective vertical positions;
(c) preparing a mold comprising a rotary lower die having a half-round top cavity and an upper die having a half-round bottom cavity, a cross-shaped hole extending through the upper die and into the half-round bottom cavity, a cross-piece detachably receivable within the cross-shaped hole, and a plurality of guide holes equiangularly spaced around a center of the upper die for receiving a plurality of push rods;
(d) placing the outside wall of the secondarily shape formed bell blank thus obtained from the step (b) in the half-round top cavity of said rotary lower die, then placing a steel ball on the secondarily shape formed bell blank, and then placing said upper die on said lower die for permitting said cross piece to insert between the four blades of said secondarily shape formed bell blank;
(e) punching said upper die against said lower die to deform the four blades of said secondarily shape formed bell blank, causing the four blades of said secondarily shape formed bell blank to fit over the surface of the bottom cavity of said upper die and to form with said steel ball into a finished, fully rounded jingle bell having a cross mouth;
(f) removing the finished, fully rounded jingle bell from said upper die by inserting push rods into said guide holes on said upper die.

5,297,325

HYDRAULIC TOOL

William G. Thelen, Onondaga, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed Mar. 11, 1993, Ser. No. 29,828
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—237 **32 Claims**



1. A hydraulic tool comprising:
(a) a body structure including a hydraulic cylinder extending along a first axis and a stationary tool element offset from said first axis,
(b) a piston received in said cylinder for movement along said first axis from a retracted to an extended position upon introduction of hydraulic fluid into said cylinder, said piston including an abutment face centered on said first axis;
(c) a slide member having a leg extending radially with respect to said first axis, said leg having a portion lying on said first axis and a movable tool element offset from said first axis, said movable tool element cooperating with said stationary tool element to define a second axis offset from and parallel to said first axis; and
(d) a shaft member rigidly mounted on said leg portion lying on said first axis for movement with said slide member, said shaft member including an abutting face centered on said first axis is non-fixed contact with said piston abutment face;
movement of said piston to said extended position moving said shaft member and said slide member to carry said movable tool element toward said stationary tool element said leg being subject to angular movement in response to pressure applied to said movable tool element along said second axis, said angular movement of said leg causing angular deflection of said shaft relative to said axis and said non-fixed contact avoiding angular deflection of said piston.

5,297,326

METHOD AND APPARATUS FOR CONVERTING A FIXED-OPENING AIR DIFFUSER TO AN INDIVIDUALLY-CONTROLLED VARIABLE AIR VOLUME DIFFUSER

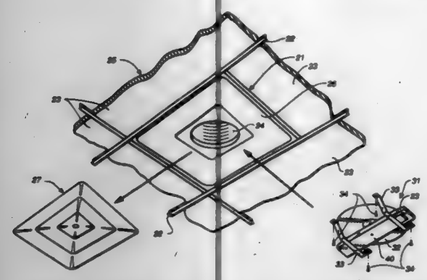
James R. Kline, Moraga, Calif., assignor to Acutherm Limited, Hayward, Calif.

Filed Apr. 26, 1993, Ser. No. 53,099
Int. Cl.[5] F24F *13/14*
U.S. Cl. 29—401.1 **9 Claims**

1. A method of converting a fixed-opening air diffuser to an individually-controlled variable air volume diffuser, said fixed-opening air diffuser including a diffuser housing mounted to a support structure and coupled to receive air from a supply conduit positioned behind said support structure, and a diffusion assembly mounted across said diffuser housing, said method including the steps of:
removing said diffusion assembly from a position across said diffuser housing to provide access to said diffuser housing;
mounting a thermally-powered diffuser actuator assembly having a movable vane coupled to said actuator assembly inside said diffuser housing in a position for control of air

discharged from said diffuser housing by thermally-driven displacement of said vane; and

each of said steps being accomplished while maintaining said



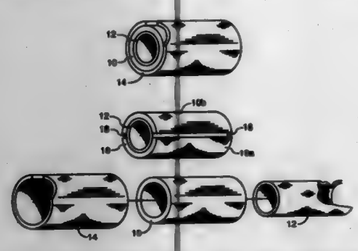
diffuser housing in place in said support structure and while maintaining said support structure in a substantially undisturbed state to minimize the release of dangerous materials possibly present in said support structure.

5,297,327

CRYOGENIC REMOVAL METHOD FOR EPOXY IMPREGNATED COILS FROM RIGID OUTER HOUSINGS

Gary R. Waldsmith, Pilot Hill, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 83,754
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—403.3 8 Claims



1. A method for separating a focusing coil assembly comprising an epoxy impregnated coil mounted on and epoxy bonded to a cylindrical metal liner, said coil and liner being housed within and epoxy bonded to a metal housing, said method sing the steps of:

(1) removing all hardware from said metal housing;

(2) placing the assembly of the coil, liner and housing into a bath of liquid nitrogen;

(3) leaving said assembly in said liquid nitrogen bath until cooled to the temperature of the liquid nitrogen, as determined by observing when the boiling in the area of the assembly has stopped;

(4) removing the assembly from the liquid nitrogen bath;

(5) striking the metal housing to break the epoxy and outer housing bond;

(6) pressing the coil along with the liner out of the housing;

(7) cutting the coil longitudinally in two places to produce two coil halves;

(8) splitting the two coil halves away from the inner liner; and

(9) disposing of the coil halves;

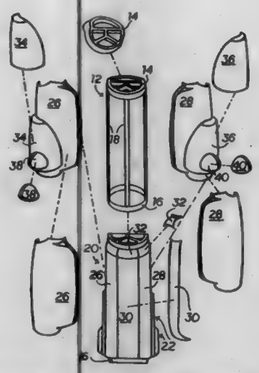
whereby said liner and said housing are salvaged.

5,297,328

THERMOFORMING MANUFACTURING PROCESS FOR GOLF BAGS

Eric W. Reimers; Jonathan T. Rose, both of Missoula, and Allen D. Slagell, Florence, all of Mont., assignors to Sun Mountain Sports, Inc., Missoula, Mont.

Filed Sep. 29, 1992, Ser. No. 953,545
Int. Cl.[5] B23P *11/02*; B68G *7/00*; A63B *55/02*
U.S. Cl. 29—450 13 Claims



8. A process for creating a golf bag having a rounded pliable exostructure, the process comprising:

providing a plurality of female mold elements with vacuum apertures;

vacuum thermoforming a plurality of complementary golf bag components from a thermoformable sheet material by securing segments of the sheet material over said plurality of female mold elements, heating the segments of the sheet material, applying a vacuum to the vacuum apertures to draw the segments of the sheet material into said plurality of female elements thereby creating a plurality of complementary bag components conforming in shape to said plurality of female mold elements, removing the segments from said female mold elements, and securing said complementary golf bag components together to form a golf bag structure.

5,297,329

APPARATUS FOR CUTTING STRING TIES OF PRODUCTS CARRIED ON PALLET-LIKE SUPPORTS

Giancarlo Santin, and Armando Neri, both of Bologna, Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Jul. 6, 1992, Ser. No. 909,496
Claims priority, application Italy, Jul. 11, 1991, B091A000246
Int. Cl.[5] B23P *19/00*; B65B *69/00*
U.S. Cl. 29—564.3 5 Claims

1. Apparatus for cutting string ties of wrapped products carried on support means which are adapted for supporting at least a layer of said wrapped products, said apparatus comprising:

a conveyance line for conveying said support means at an advancement speed along a longitudinal direction;

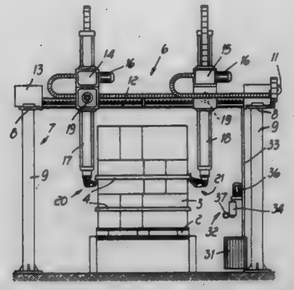
at least one cutting unit having a transverse beam arranged above said conveyance line, said beam being slidable along said longitudinal direction at a speed equal to the advancement speed of said support means;

a pair of trucks slideably mounted on said transverse beam;

a pair of vertical arms vertically slideably mounted on said trucks;

a cutting element carried by a first one of said arms and actuatable for automatically locating the string tie to be cut;

a gripping element being supported by a second one of said arms opposite to and cooperating with said cutting element; and means for removing the cut string tie carried by said transverse beam and cooperating with said gripping element; wherein said gripping element comprises an arm articulated to said second one of said vertical arms for



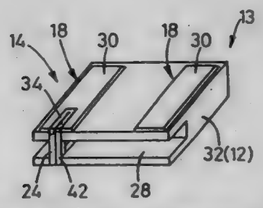
oscillating with respect thereto; a clamp articulated to said arm for being movable with respect thereto; and actuation elements for respectively oscillating said arm and said clamp articulated thereto with respect to said second one of said vertical arms and for actuating said clamp, the actuation of said clamp being controlled by means for detecting the presence of said string tie to be cut.

5,297,330

METHOD OF PRODUCING CORE SLIDER FOR RIGID MAGNETIC DISC DRIVE

Soichiro Matsuzawa, Kuwana; Nobuhiro Terada, Kasugai, and Hiroaki Yui, Kohnan, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 672,111, Mar. 19, 1991, Pat. No. 5,177,654. This application Aug. 21, 1992, Ser. No. 933,301
Claims priority, application Japan, Mar. 23, 1990, 2-74371
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 10 Claims



1. A method of producing a core slider for a rigid magnetic disk drive, the core slider including a slider body having air bearing portions, and a core chip which has a magnetic gap for writing and reading information and which is integrally secured to said slider body, said method comprising the steps of:

preparing a slider body blank by glass-bonding together a Mn—Zn ferrite sheet and a non-magnetic ceramic sheet;

preparing said core chip having said magnetic gap;

forming in said slider body blank a chip-accommodating groove for accommodating said core chip;

inserting said core chip in said chip-accommodating groove and glass-bonding said core chip to said slider body blank; and

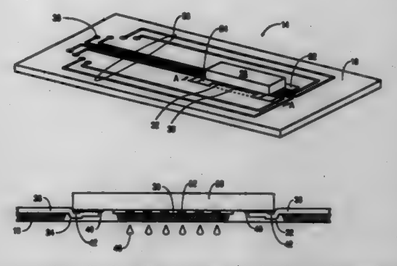
forming said air bearing portions on said slider body blank such that said air bearing portions are provided by said Mn—Zn ferrite sheet, to thereby provide said slider body.

5,297,331

METHOD FOR ALIGNING A SUBSTRATE WITH RESPECT TO ORIFICES IN AN INKJET PRINTHEAD

Winthrop D. Childers, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 2, 1992, Ser. No. 864,930
Int. Cl.[5] H04B *3/00*
U.S. Cl. 29—611 10 Claims



1. A method for bonding conductive leads to electrodes on a substrate in the formation of a printhead comprising the steps of:

providing conductive leads on a nozzle member containing orifices for ejecting ink;

positioning a substrate, having ink ejection elements and electrodes on a front surface thereof, with respect to said nozzle member so as to align said ink ejection elements with said orifices, wherein alignment of said ink ejection elements with said orifices also aligns said electrodes with ends of said conductive leads; and

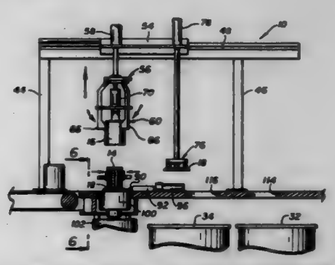
using a bonding tool to bond said conductive leads to said electrodes on said substrate.

5,297,332

OIL FILTER DISASSEMBLY AND RECYCLING APPARATUS

Gilbert B. Ross, and Charles Brittain, both of 814 San Fernando Rd., Sun Valley, Calif. 91352

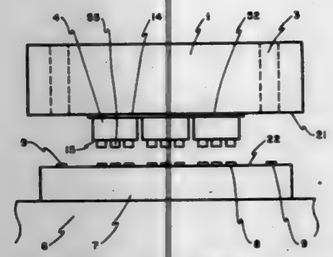
Continuation-in-part of Ser. No. 851,011, Mar. 13, 1992, Pat. No. 5,182,842. This application Dec. 30, 1992, Ser. No. 997,728
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—801 11 Claims



1. Apparatus for disassembling and recycling the filter element, perforated base and canister components of an oil filter, comprising spaced facilities for disassembling and recycling said oil filter components, means to deliver an oil filter comprising said components to said disassembly facility, means at said disassembly facility to sever said canister from said base, means to transfer said canister from said disassembly facility to a first recycling facility, means to transfer said base from said disassembly facility to a second recycling facility; and means to clear said filter element from said disassembly facility before another delivery of oil filter to be disassembled.

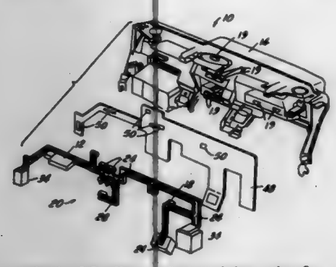
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,333
PACKAGING METHOD FOR FLIP-CHIP TYPE SEMICONDUCTOR DEVICE
Teruo Kusaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 22, 1992, Ser. No. 948,688
Claims priority, application Japan, Sep. 24, 1991, 3-242249
Int. Cl.[5] B23K *31/02*
U.S. Cl. 29—840 9 Claims



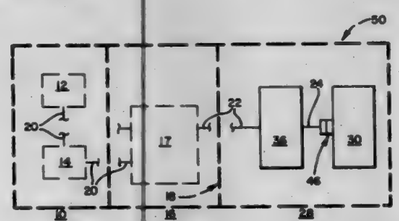
1. A packaging method for a flip-chip type semiconductor device, said method comprising the steps of:
temporarily binding with an adhesive a rear surface on each of a plurality of semiconductor chips at respective predetermined locations on a flat surface of a block, each of said semiconductor chips having a plurality of solder bump electrodes formed on a front surface thereof;
preparing a printed circuit board having a plurality of pads formed on a front surface thereof;
positioning the flat surface of said block to face the front surface of said printed circuit board, with said bump electrodes in contact with said pads, said solder bump electrodes on the block and said pads on said printed circuit board being in direct contact with each other without an intermediary of soldering flux; and
heating and melting said solder bump electrodes of said semiconductor chips in order to connect said solder bump electrodes to said pads so that said plurality of semiconductor chips are bonded in a lump to said printed circuit board.

5,297,334
AUTOMATED WIRE FEEDING AND RESTRAINING
Michael J. Johnson, El Paso, Tex., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 21, 1992, Ser. No. 993,545
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—861 18 Claims



1. A method of feeding and restraining wire for a vehicle instrument panel, the wire being fed into and restrained in a system of troughs attached to a structure serving as a wiring board, each trough having a floor and two substantially parallel side walls perpendicular to said floor and extending upwardly from said floor to an open ceiling defined by its boundaries formed by said walls, the system of troughs having at least two terminals disposed remotely from one another, the method comprising the steps of:
attaching one end of a first wire to a first terminal within a first trough;
laying said first wire to trace the extension of said first trough;
spraying said first wire to trace the extension of said first trough;
spraying said first wire at intervals with adhesive to attach said wire to the floor of said trough;
cutting said first wire at the location of the second terminal; and
attaching the wire to the second terminal.

5,297,335
METHOD FOR REPAIRING ELECTRICAL CABLE IN NUCLEAR POWER PLANT
Paul H. Vancil, P.O. Box 1894, Glen Rose, Tex. 76043
Filed Aug. 13, 1992, Ser. No. 929,314
Int. Cl.[5] H01R *11/00, 43/00*
U.S. Cl. 29—868 1 Claim



1. A method for repairing a damaged portion of an electrical cable extending between a motor operator for a motor operated valve and a control board in a nuclear power plant, comprising the steps of:
a. determinating said electrical cable from said motor operator;
b. removing the damaged portion of said electrical cable;
c. installing an electrical terminal box at or near the point of removal;
d. reterminating the electrical cable at the terminal box;
e. providing an extension cable sufficiently long to extend between the terminal box and the motor operator to establish an electrical connection between the motor operator and the control board.

5,297,336
PROCESS FOR MAKING AN INK MANIFOLD HAVING ELASTOMER CHANNEL PLATE FOR INK JET PRINTHEAD
Vincent A. Burolla, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 862,393, Apr. 2, 1992, Pat. No. 5,255,022.
This application Jul. 16, 1993, Ser. No. 92,644
Int. Cl.[5] B29C *45/00, 65/02;* B41J *2/16*
U.S. Cl. 29—890.1 8 Claims

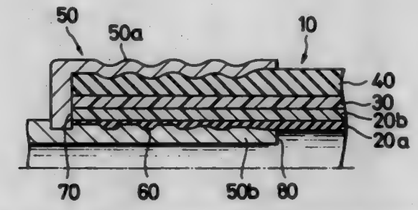
5. A process for fabricating a thermal ink jet printhead comprising the steps of:
a) injection molding a manifold having an inlet, an outlet and a passage connecting said inlet and outlet;
b) injection molding in said manifold a channel plate having a plurality of channels and a reservoir communicating with said plurality of channels and said manifold outlet;
c) bonding a heater plate having a plurality of heater elements corresponding in number and location to the plurality of channels to a heat sink; and

d) securing said manifold to said heat sink so that the heater elements on said heater plate are located in corresponding

S101	FORM CHANIFOLD
S102	FORM HEATER WAFER
S103	DICE HEATER WAFER
S104	ULTRASONICALLY CLEAN HEATER WAFER
S105	SINGULATE HEATER WAFER TO FORM DISTINCT HEATER PLATES
S106	APPLY ADHESIVE TO HEAT SINK
S107	MOUNT HEATER PLATE TO HEAT SINK
S108	CURE ADHESIVE BOND
S109	APPLY PWB TO HEAT SINK
S109	WIRE BOND HEATER PLATE TO PWB
S111	ALIGN CHANIFOLD TO HEATER PLATE
S112	INSERT POST INTO HEAT SINK
S113	SECURE CHANIFOLD TO HEAT SINK

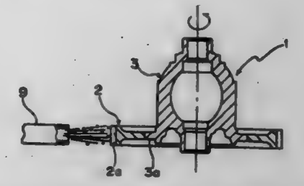
channels in said channel plate to form a plurality of nozzles for the thermal ink jet printhead.

5,297,337
METHOD OF HOSE-METAL FITTING ATTACHMENT
Shigeru Igarashi; Osamu Ozawa, both of Hiratsuka, and Tetsu Kitami, Hadano, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Division of Ser. No. 489,029, Mar. 6, 1990, Pat. No. 5,149,732.
This application Jun. 9, 1992, Ser. No. 895,721
Claims priority, application Japan, Mar. 7, 1989, 1-54732; May 8, 1989, 1-114551
Int. Cl.[5] F16L *9/14;* B21D *39/00*
U.S. Cl. 29—890.144 4 Claims



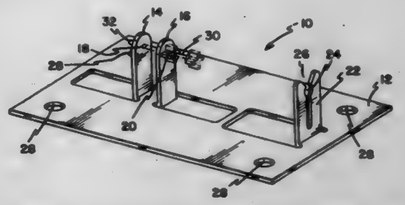
1. A method of integrally attaching a composite hose to a metal fitting, said hose comprising an inner tube, a reinforcing layer and a cover superimposed in the order mentioned, said inner tube including an inner peripheral wall formed of a polymeric material and an outer peripheral wall formed of a rubbery material, which method comprises:
(a) disposing a rubber composition on said hose at an end thereof and in a predetermined area thereof;
(b) mounting said fitting on said composition disposed on said hose; and
(c) subsequently clamping said metal fitting into fixed relation to said hose end;
wherein said rubber composition comprises;
(d) 100 parts by weight of a base rubber selected from the group consisting of chlorosulfonated polyethylene rubber, butyl rubber, chlorobutyl rubber and bromobutyl rubber;
(e) 30 to 300 parts by weight of at least one inorganic or organic filler, said inorganic filler having a hydrochloric acid-soluble content of less then 3%;
(f) two or greater parts by weight of a silane coupling agent; and
(g) a vulcanizing agent, whereby said composition has a minimum viscosity of from 45 to 120 as determined at 125° C. on a Mooney viscometer.

5,297,338
METHOD OF CONNECTING METAL RING GEAR TO METAL BOSS PORTION
Kyoso Ishida, and Yoshihisa Miwa, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Dec. 14, 1992, Ser. No. 989,651
Claims priority, application Japan, Jan. 13, 1992, 4-3688
Int. Cl.[5] B21D *53/28*
U.S. Cl. 29—893.2 8 Claims



1. A method of forming a metal ring gear and boss portion assembly comprising the steps of:
providing a boss portion of a metal material;
providing a metal ring gear to be connected to said boss portion;
mechanically connecting said ring gear to said boss portion by plastic deformation of the metal material; and
shot peening a tooth portion of said ring gear after said ring gear is mechanically connected to said boss portion.

5,297,339
FIXTURE FOR TERMINATING MINIATURE COAXIAL CABLE
Todd A. Morgenstern, Bloomington; James D. Dewey, Plymouth, and James D. Bradley, Mound, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.
Filed Dec. 28, 1992, Ser. No. 997,692
Int. Cl.[5] B25B *11/02*
U.S. Cl. 29—281.1 9 Claims



1. A fixture for terminating a miniature coaxial cable with a connector; the coaxial cable having an axially aligned center conductor, and the coaxial cable having a distal end; and the connector having a connector center conductor having a pin-shaped first end and a receiving means for receiving the center conductor of the coaxial cable disposed at the second end of the connector center conductor; the fixture for terminating a miniature coaxial cable comprising:
(a) a base;
(b) a first beam and a second beam, each having a distal end and each secured to the base with the first beam spaced from and opposing the second beam by a spacing less than a length of said pin-shaped first end;
(c) a first bore formed through the distal end of the first beam, and a second bore formed through the distal end of the second beam, said first and second bores being axially aligned said first and second bores sized to slidably and removably receive said pin-shaped first end within said bores;
(d) a third beam secured to the base, and having a distal end,

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said third beam opposing said second beam on a side thereof opposite said first beam; and

(e) a cutout proximate the distal end of the third beam and being approximately axially aligned with the first and second bores, said cutout sized to releasably receive said cable whereby the pin-shaped end at the connector center conductor is insertable in the two axially aligned first and second bores with the receiving means being disposed toward the third beam and the coaxial cable is insertable in the cutout with the distal end of the coaxial cable being disposed toward and proximate the receiving means so that the center conductor of the coaxial cable is insertable in the receiving means.

5,297,340

PARTING TOOL

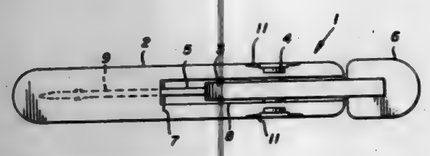
Hartwig Kahlcke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechstmass Balzer GmbH, Fed. Rep. of Germany

Filed Feb. 18, 1992, Ser. No. 836,619

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127644

Int. Cl.[5] B26B *3/06*

U.S. Cl. 30—155 **20 Claims**



1. A parting tool comprising

a casing;

a cutting blade shaft having at least an arc-shaped cutting blade located between two tines of unequal length;

a shaft holder having at least a pressure surface located at one end and a rotation axle rotatably supported by lateral surfaces of said casing; said cutting blade shaft fastened to said shaft holder;

a recess provided in an interior portion of each of said lateral surfaces of said casing;

for guiding said rotation axle into said casing during assembly of said casing and said shaft holder.

5,297,341

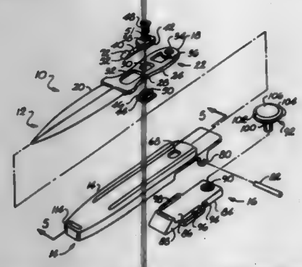
LOCKING KNIFE AND SHEATH

Walter W. Collins, P.O. Box 100, North, S.C. 29112

Filed Jan. 22, 1993, Ser. No. 7,609

Int. Cl.[5] B26B *3/06*

U.S. Cl. 30—162 **14 Claims**



1. A knife and sheath combination, the sheath being usable in association with an article, the knife and sheath combination comprising:

a knife having a blade portion and a handle portion which are unitary; said handle portion being adjacent said blade potion; said handle portion being of substantially the same thickness as said blade portion adjacent thereto and defining a grip receiving opening; at least one detachable and reversible grip member for receipt in said grip receiving opening; at least one flexible elongated tab member movable with respect to said handle portion for left and right handed use, said tab member having a first end adjacent said grip member and a second end opposite said first end of said tab member, said second end of said tab member being cantilevered and free to move with respect to said handle portion; and a tab projection connected to said tab member extending outwardly from said handle portion; said handle portion further defining a tab member receiving opening passing through said handle portion and adjacent said grip receiving opening, said tab member receiving opening being for receipt of said tab member and for allowing movement of said tab member therein;

a sheath having a front portion, a back portion opposite said front portion, and first and second side portions opposite one another and each being connected to said front and back portions; said front and back portions and said first and second side portions together defining a blade receiving passage; said back portion having a frontal surface adjacent said receiving passage and a rearward surface opposite said frontal surface; said front portion defining a tab projection opening for receiving said tab projection of said tab member of said knife, such that upon said blade portion being inserted into said blade receiving passage, said tab projection projects through said tab projection opening and outwardly from said front portion of said sheath, such that said tab projection releasably engages said tab projection opening to retain said knife in said sheath; said knife being removable from said sheath upon depression of said tab projection inwardly into said tab projection opening; and

sheath retention means connected to said rearward surface of said back portion of said sheath for selectively retaining said sheath to an article.

5,297,342

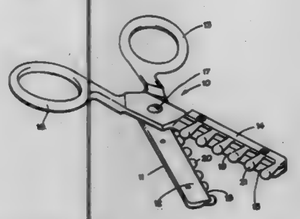
SAFETY SCISSORS

Jason R. Malone, Matthews, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 790,849, Nov. 12, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 906,167

Int. Cl.[5] B26B *13/00*

U.S. Cl. 30—233 **6 Claims**



1. Scissors comprising

a) a pair of first and second linear elongated scissor blades each having an inner side, a continuous cutting edge on said inner side, a plurality of non-cutting protrusions incorporated with each blade and spaced, both outwardly from and along said blade, and gripping means on each blade, and

b) means for pivotally securing said first and second scissor blades to each other with said inner sides facing towards each other whereby when the blades are pivotally moved toward each other from an open position to a closed position, a clearance between the overlapping protrusions of $\frac{1}{8}$ to $\frac{1}{4}$ inch is formed.

5,297,343

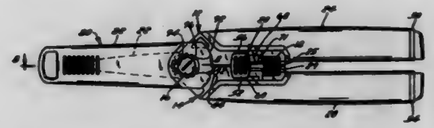
TRIMMING SCISSORS AND SHEATH ASSEMBLY

Craig H. Melter, Baraboo, and Charles S. Ramsey, Wausau, both of Wis., assignors to Fiskars Oy Ab, Helsinki, Finland

Filed Jan. 7, 1993, Ser. No. 1,498

Int. Cl.[5] B26B *13/00*

U.S. Cl. 30—262 **7 Claims**



1. A trimming scissors comprising a first blade assembly and a second blade assembly, means pivotally connecting said first and second blade assemblies, means biasing said blade assemblies to an open position, and a lock button mounted on said first blade assembly for sliding movement between open and closed positions with respect to said second blade assembly, said first and second blade assemblies each include a blade and a handle, said lock button being mounted on said handle of said first blade assembly for movement into engagement with said handle of said second blade assembly on closing the scissors, said handle of said first blade assembly includes two rails one on the bottom and one on the top thereof, said lock button being mounted on said rails, said handle of said second blade assembly includes two short rails one on the top and one on the bottom thereof which are aligned with the lock button on closing the scissors whereby said lock button can be moved on said rails on said first blade assembly into engagement with said short rails on said second blade assembly to lock the scissors in the closed position.

5,297,344

WHEEL EXAMINING APPARATUS

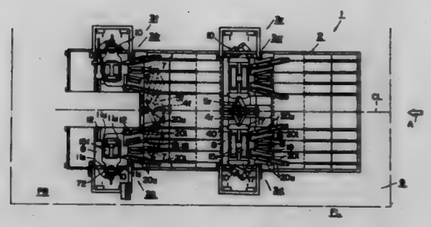
Yutaka Fukuda, Tokorozawa; Yukio Higuchi, Fuji; Kiyoshi Masuda, and Toshihiko Chisaki, both of Numazu, all of Japan, assignors to Anzen Motor Car Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,152

Claims priority, application Japan, Jul. 5, 1990, 2-176190; Jul. 5, 1990, 2-176191; Jul. 5, 1990, 2-176192; Jul. 5, 1990, 2-176193

Int. Cl.[5] G01B *5/255*

U.S. Cl. 33—203.13 **25 Claims**



1. A wheel guide apparatus, comprising:

at least one center roller rotatably and fixedly supported on a frame and extending generally in a direction of advancement of a wheel vehicle to be guided;

a plurality of first side rollers disposed on both sides of said center roller at a first height higher in level than said center roller, said first side rollers being rotatably and movably supported on said frame and inclined such that downstream ends thereof are located closer than upstream ends thereof; and

a plurality of second side rollers disposed on both sides of said center roller and outward of said first side rollers at a second height higher than said first height in a fixed positional relationship with said first side rollers, said second side rollers being rotatably and movably supported on said frame and inclined such that downstream ends thereof are located closer than upstream ends thereof, such that said first and second side rollers are movable in unison relative to said center roller in a transverse direction.

5,297,345

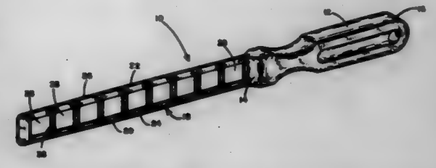
SLICING KNIFE WITH NON-STICK BLADE

Kenneth A. Jaakola, 1804 Big Lake Rd., Cloquet, Minn. 55720

Filed Jul. 28, 1992, Ser. No. 920,729

Int. Cl.[5] B26B *3/03, 9/00*

U.S. Cl. 30—348 **4 Claims**



1. A slicing knife for cutting thin slices of a food item from a block thereof, comprising:

(a) a handle member; and

(b) a thin, elongated blade formed from a blade material of a predetermined thickness and affixed to said handle member, said blade being generally rectangular with opposed side edges which are beveled at a predetermined angle from said predetermined thickness to a knife edge, said blade having a single aligned row of a plurality of longitudinally spaced apertures formed into the blade material between said opposed side edges, said blade material being tapered inwardly in progressing from said opposed side edges toward said longitudinally spaced apertures, said blade including a transversely extending rib disposed between adjacent ones of said apertures at intervals along the length of said blade, said ribs having a generally rhombic cross-section defining a pair of transversely extending fine line edges on opposed sides of said blade, whereby when one of said side edges of said blade is pressed through said block in slicing the food item, the blade engages the block and a severed slice only along said fine line edges and said knife edge.

5,297,346

DEVICE FOR MEASURING DISTANCE AND DETERMINING POSITION FROM A REFERENCE POINT, AND METHOD OF USING SAME

Mark A. Weiner, New York, N.Y., assignor to Irving M. Weiner, Walled Lake, Mich., a part interest

Filed Nov. 25, 1991, Ser. No. 796,814

Int. Cl.[5] A61B *1/04*; G01B *5/02*

U.S. Cl. 33—512 **18 Claims**

1. Apparatus for determining and indicating a location of a predetermined portion of an elongated device within a living organism, comprising, in combination:

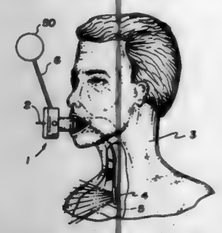
first means for permitting at least a portion of said elongated device to move therethrough into said living organism for sensing movement of said elongated device;

second means connected to said first means for determining and indicating distance and location of said predetermined portion of said elongated device within said living organism relative to a selected zero point;

third means connected to said second means for selecting said zero point;

an ultrasound transponder at said predetermined portion of

said elongated device for providing an ultrasonic picture of anatomical features within said living organism; and fourth means connected to said ultrasound transponder and said first, second and third means for recording and displaying signals representative of the location and distance



of said predetermined portion of said elongated device within said living organism relative to said selected zero point in synchronism with said ultrasonic picture of anatomical features within said living organism in the vicinity of said predetermined portion of said elongated device.

5,297,347

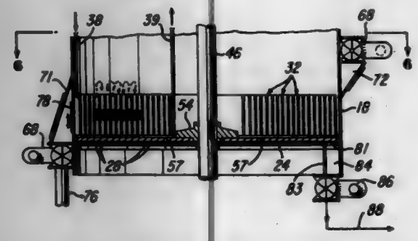
Patent Not Issued For This Number

5,297,348

PROCESS AND APPARATUS FOR EFFICIENTLY DRYING WET-MILLED CORN GERM AND OTHER MATERIALS

Ralph H. Willgohs, Covington, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Mar. 1, 1993, Ser. No. 24,292
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—10 **25 Claims**



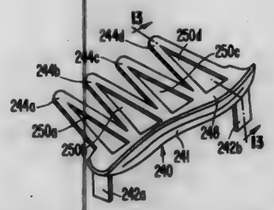
1. A process adapted for continuously drying a wet solid material having a high moisture content, comprising the steps of feeding the wet material into a vessel and above a generally horizontal deck having across the deck horizontally spaced zones of closely arranged perforations providing for a substantial flow of gas through the deck and with the zones of perforations separated by spaces which substantially limit the flow of gas through the deck between the zones, blowing gas into the vessel and upwardly through the zones of perforations to produce a recirculating bed of the material above the deck with an upward flow of the material above the zones of perforations and a downward flow of the material within the spaces defined between the zones of perforations, heating the material while the material is flowing upwardly and downwardly within the bed above the deck for efficiently drying the material, and feeding drier material from the bed out of the vessel.

5,297,349

ATHLETIC SHOE WITH REARFOOT MOTION CONTROL DEVICE

Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike Corporation, Beaverton, Oreg.

Continuation-in-part of Ser. No. 433,436, Nov. 8, 1989, Pat. No. 5,046,267, which is a continuation of Ser. No. 115,661, Nov. 6, 1987, abandoned. This application Feb. 22, 1991, Ser. No. 659,175
Int. Cl.[5] A43B *13/12, 5/00*
U.S. Cl. 36—114 **34 Claims**



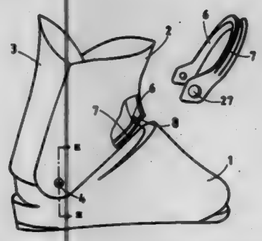
7. A cushioning sole for use in footwear comprising:
a sole member extending along at least a heel and an arch section of the cushioning sole, said sole member being compressible and resilient for cushioning foot impact;
means, incorporated into said sole member and formed of substantially non-compressible material, for gradually increasing the resistance to compression of said sole member from its lateral side to a maximum adjacent its medial side to control pronation motion, said gradual resistance increasing means including:
a first substantially rigid member having a major surface extending generally laterally and vertically along a portion of said sole member; and
a second substantially rigid member spaced longitudinally from said first substantially rigid member and having a major surface extending generally longitudinally and vertically along a portion of said sole member, wherein,
said major surface of said first rigid member is substantially perpendicular to said major surface of said second rigid member.

5,297,350

REAR-ENTRY SKI BOOT

Marcello Stampacchia, Treviso, and Sergio Cavaliere, Istrana, both of Italy, assignors to Lange International S.A., Fribourg, Switzerland

Continuation of Ser. No. 583,603, Sep. 17, 1990, abandoned. This application Dec. 6, 1991, Ser. No. 803,795
Claims priority, application Switzerland, Oct. 6, 1989, 3656/89-2
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—120 **5 Claims**



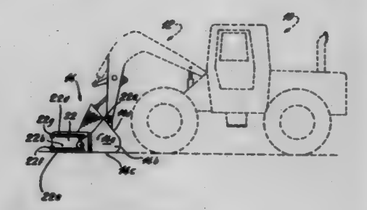
1. A rear-entry ski boot comprised of a shell (1) surrounding the foot and the heel and of a shaft in two parts, a front part (2) and a rear part (3) respectively, the front part and rear part (3) being articulated on the shell about two pins comprising principle fixing points, and in which a lateral inclination of the shaft in relation to the shell can be modified in an adjustment range, and wherein the boot comprises a piece (6; 6'; 6'') in the form of a small arch attached to the shell and extending over the instep between the shell and the front part of the shaft, the small arch being a unitary piece having a mating profile (7; 17) which interacts with an opposite mating profile (8; 18) on the front part (2) of the shaft, the mating profile and opposite mating profile being a combination of an edge and a groove adapted to receive the edge the mating profile and opposite mating profile being engaged with one another in such a manner that they remain engaged independent of the lateral inclination of the shaft in relation to the shell, within the adjustment range of the lateral inclination of the shaft, wherein the modification of the lateral inclination of the shaft comprise a pivot (11) which passes through the two parts of the shaft and has an oblong hole (12) which is passed through by the articulation pin (4) and makes it possible to displace the pivot perpendicularly to the articulation pin in order to modify the lateral inclination of the shaft, wherein the piece in the form of a small arch (6; 6') is gripped between the pivot and the shell.

5,297,351

BLADES FOR SNOW-REMOVAL VEHICLES AND VEHICLES THEREWITH

Mario Côté, 422 rue Gilbert St-Léon, Lac St-Jean Qc G0W 2S0, Canada

Filed Oct. 14, 1992, Ser. No. 960,828
Int. Cl.[5] E01H *5/04*
U.S. Cl. 37—232 **20 Claims**



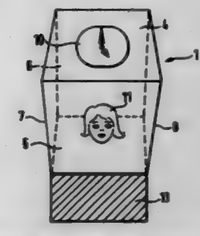
1. A snow bucket comprising;
side walls,
bottom and rear walls joining said side walls to define a bucket having an opening away from said rear wall,
at least one floating snow blade having opposite top and bottom edges, said top and bottom edges being substantially straight and having each respectively opposite ends,
said at least one blade near one of the ends between said top and bottom edges, being rotatably mounted to one of said side walls and substantially parallel to said one of said side walls, adjacent to said bottom and near said opening of said bucket, with a means to rotate joining said blade to said one of said side walls and said means to rotate being the only means to hold said blade to said bucket, to enable said blade to be floating according to configuration of the surface bearing said bottom edge, underneath said bottom edge, and for allowing said snow blade to be projectable frontward, in front of the lower portion of said at least one of said side walls, adjacent to said opening, to confine and to force any snow adjacent to said snow blade and said opening of said bucket to enter said bucket, to be shovelled, and thereby to increase the snow content of a bucket per stroke.

5,297,352

DECORATIVE GLASS BODY

Martin Poll, Fritzens, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Continuation of Ser. No. 648,294, Jan. 29, 1991, abandoned. This application Aug. 5, 1993, Ser. No. 102,492
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1990, 4002819
Int. Cl.[5] G09F *19/12*
U.S. Cl. 40—427 **24 Claims**



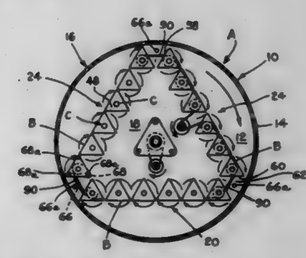
1. A decorative glass body for viewing at least one object, comprising
a base surface of said body on which the object is disposed,
a viewing surface of said body opposite said base surface,
a side surface of said body between said base surface and said viewing surface,
wherein said viewing surface and said base surface are parallel, an acute angle is formed between said side surface and said viewing surface such that the object is visible through said viewing surface when viewed at an angle oblique to said viewing surface.

5,297,353

MULTIVISION INTERMITTENT DISPLAY

Faouzi M. Ghalayini, 250 Sandhurst Rd., Columbia, S.C. 29210

Filed May 13, 1991, Ser. No. 698,975
Int. Cl.[5] G09F *11/02, 13/12*
U.S. Cl. 40—503 **25 Claims**



1. A multivision display for producing a plurality of visual displays in an intermittent manner comprising:
a display housing having an interior and an exterior, said display housing having a perimeter wall surrounding the periphery of said display housing;
a rotating display base carried within said display housing having a plurality of display positions;
a plurality of display faces carried by said rotating display base;
each of said display faces including a plurality of rotating display elements having a plurality of display positions;
a plurality of image faces carried by said rotating display elements having images which create visual displays at said display positions of said display base and said display elements;

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illumination means carried within said display housing for illuminating said display faces, said illumination means having an on state and an off state;

said perimeter wall of said display housing including optical means for rendering at least a portion of said perimeter wall transparent when said illumination means is in said on state, and which renders said perimeter wall opaque when said illumination means is in said off state so that said displays can be seen from said exterior of said display housing only when said display faces are illuminated;

drive means for independently rotating said display base and said display elements to said display positions in synchronization with one another so that multiple visual displays are created at each of said display faces as said display elements rotate on said display base and said display base rotates independently; and

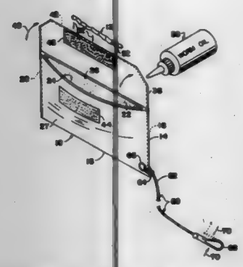
control means for controlling said drive means and for switching said illumination means between said on and off states to produce intermittent visual displays.

5,297,354

APPARATUS FOR APPLYING BAIT OIL TO A FISHING LURE

Alvin J. McGriff, Fort Myers, Fla., assignor to Donabelle F. McGriff, Fort Myers, Fla.

Filed Aug. 19, 1992, Ser. No. 932,225
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—4 **8 Claims**



1. An apparatus for applying bait oil to a fishing lure, said apparatus comprising:

a flexible pouch assembly having a plurality of interconnected walls composed exclusively of a relatively pliable material, each wall having an interior surface and an opposite, fully exposed exterior surface that is directly engagable by a person's fingers, and an interior compartment formed between said walls, said pouch further having four elongate sides, three of said sides being sealed closed and the fourth said side being open to permit access into said compartment; and

an absorbent applicator that lines said compartment and is secured therein to said interior surfaces of said walls for holding bait oil; whereby a fishing lure is introduced into said compartment and said exterior surfaces of said pliable walls deformably squeezed to press said applicator against said lure and apply bait oil to said lure.

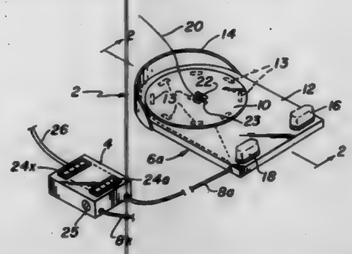
5,297,355

FLY FISHING PRACTICE DEVICE

Dan O'Brien, 916 St. Andrew St., Rapid City, S. Dak. 57701

Filed May 5, 1993, Ser. No. 58,169
Int. Cl.[5] A01K *97/00*; F41J *5/04*
U.S. Cl. 43—4 **18 Claims**

1. A fly fishing system for practicing fly casting and for amusement purposes, comprising a control unit with a power-on/off switch; a power supply; a target unit comprising a conducting plate, means for applying a magnetic field through and around said conducting plate, and a conducting front lip; a fly fishing rod comprising a line, a leader attached to said line



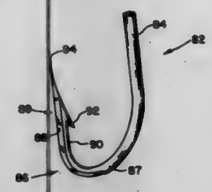
and an artificial fly of ferritic material attached to said leader; and a cable connecting said target unit to said control unit.

5,297,356

BEVELLED FISHHOOK

Russell A. Wickham, 3818 Fairfield Ave., Fort Wayne, Ind. 46807

Filed Nov. 4, 1992, Ser. No. 971,408
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—43.16 **5 Claims**



1. A fishhook comprising:

a shank;

a hook portion at a first end of said shank and an eyelet at a second and opposite end of said shank;

said hook portion terminating in a point and comprising a generally straight section and a curved section, said straight section comprising a first surface including a barb extending outwardly therefrom and a second and opposite surface comprising a first bevelled surface and a second bevelled surface, said first and second bevelled surfaces intersecting at an edges, said first and second bevelled surfaces extending beyond said straight section and into said curved section but not beyond said curved section.

5,297,357

ICE FISHING APPARATUS WITH CATCH INDICATING MEANS

Blaine A. Bigelow, 250 Edmond Rd., Griswold, Conn. 06331, and John R. Bigelow, Jr., P.O. Box 73, Hanover, Conn. 05350

Filed Jun. 1, 1993, Ser. No. 69,788
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **4 Claims**

1. An apparatus for fishing through ice comprising:

(a) a first cylinder;

(b) a second cylinder attached to the first cylinder forming a nesting lip;

(c) at least one anchoring device connected to the first cylinder;

(d) a reel means rotatively attached to the first cylinder comprising:

a line spooling shaft;

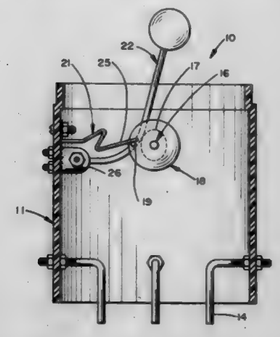
a camming surface on the line spooling shaft;

at least one end plate attached to the line spooling shaft;

an audio-indicator activator on the end plate; and

a reeling member attached to the line spooling shaft;

(e) an audio-indicator attached to the first cylinder and slidingly abutting the audio-indicator activator; and



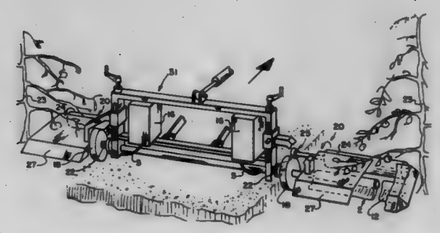
(f) a visual indicating means attached to the first cylinder and slidingly abutting the reel means.

5,297,358

DEVICE FOR APPLYING A LIQUID TO A CROP

Henricus J. M. Van Steen, Klutenweg No. 22, NL-8314 PD Bant, Netherlands

Filed Oct. 31, 1991, Ser. No. 785,485
Claims priority, application Netherlands, Oct. 31, 1990, 9002372
Int. Cl.[5] A01G *13/00*
U.S. Cl. 47—1.5 **13 Claims**



1. An apparatus for applying liquid to plants to be treated by said liquid, said apparatus comprising:

a frame;

at least one liquid transfer body positioned on said frame which is connected to a container holding said liquid, each said liquid transfer body including a flexible part wherein said flexible part of said liquid transfer body is adapted to come into at least partial contact with said plants to transfer said liquid to said plants; and

shield means for shielding plants which are not to be treated with said liquid, said shield means attached to said frame in a position which encloses the top and sides of each said liquid transfer body,

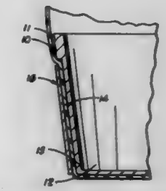
said shield means including a rotatable body on a forward end of said shield means.

5,297,359

PLANT COVER/WRAP SYSTEM

Pedro F. Garcia, Atlanta, Ga., assignor to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 434,581, Nov. 13, 1989, Pat. No. 5,085,003, which is a continuation of Ser. No. 149,002, Jan. 27, 1988, abandoned. This application Dec. 6, 1991, Ser. No. 802,905
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—58 **4 Claims**



1. A method comprising:

providing a sheet of material;

providing a flower pot having an upper end, a lower end, a bottom and an outer peripheral surface;

providing a sleeve having a lower end and an upper end with an opening extending through the upper end of the sleeve adapted to be received over the flower pot and cover the outer peripheral surface of the flower pot when received over the flower pot;

placing the sheet of material over the upper end of the sleeve;

placing the flower pot generally over the upper end of the sleeve and generally over the sheet of material; and

lowering the flower pot into the opening in the sleeve until the flower pot is placed generally within the opening in the sleeve with the sleeve extending generally between the upper and the lower ends of the flower pot and covering the outer peripheral surface of the flower pot and with the sheet of material substantially covering the outer peripheral surface of the flower pot and being disposed generally between the sleeve and the outer peripheral surface of the flower pot with a portion of the sheet of material extending beyond the upper end of the sleeve and outwardly from the upper end of the flower pot, the sleeve engaging the sheet of material and holding the sheet of material against the outer peripheral surface of the flower pot and providing a decorative cover for the flower pot, the sleeve engaging and holding the sheet of material against the outer peripheral surface of the flower pot and providing the sole means for holding the sheet of material in position about the outer peripheral surface of the flower pot.

5,297,360

REFRIGERATOR CABINET WITH COMBINATION SEALING ARRANGEMENT

John K. Besore, and Helen M. Denham, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 20, 1992, Ser. No. 932,801
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—484.1 **4 Claims**

1. A household refrigerator comprising:

a cabinet having an outer metal shell including an inwardly projecting peripheral flange extending around and defining an access opening;

a plastic inner liner defining a refrigerator storage compartment, said liner being received within said shell with thermal insulation therebetween, said inner liner including inner liner panels extending inwardly from the distal edge of said peripheral flange;

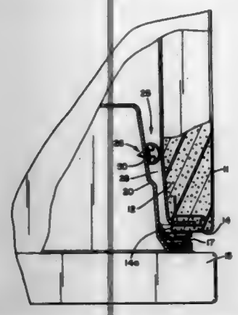
a door hingedly mounted on said cabinet adjacent said ac-

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cess opening and movable between a closed position over said opening and an open position exposing said opening;

a resilient sealing gasket carried by said door and engaging said peripheral flange when said door is in its closed position to seal the opening between said door and flange;

a plastic door liner panel mounted on the compartment side of said door and providing additional storage shelves; when said door is in its closed position, said door liner panel being positioned closely adjacent said inner liner panels around the periphery of said inner liner and extending into said compartment a sufficient distance that said inner liner panels and said door liner panel define a semi-enclosed space of restricted area forming a partial dike which tends to prevent cold air within the refrigerated compartment from migrating freely toward the gasket and



from impinging upon said peripheral flange of said metal shell;

a resilient, elongated flap having an elongated wiper of elastomeric material integrally molded to have a relatively soft body and a simi-rigid base mounted on at least one of said inner liner panels and said door liner panel substantially removed from said peripheral flange, said flap engaging the opposed one of said inner liner panels and said door liner panel as said door moves to its closed position to form an air flow seal therebetween so that the portion of said semi-enclosed space of restricted area between said resilient gasket and said flap becomes an extended dead air space;

whereby heat transfer between the interior of said refrigerated compartment and the area of said peripheral flange and resilient gasket is substantially eliminated.

5,297,361

POLISHING MACHINE WITH AN IMPROVED SAMPLE HOLDING TABLE

André Baldy, Seyssins; Gérard Barrois, Le Fontanil; Henri Blanc, Saint Julien de Ratz, and Marcel Dominiak, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 893,052, Jun. 3, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 92,565

Claims priority, application France, Jun. 6, 1991, 91 06868

Int. Cl.[5] B24B *7/07, 41/06*

U.S. Cl. 51—119 **3 Claims**

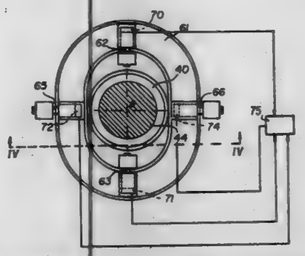
1. A polishing machine comprising:

a holder for maintaining a sample wafer, said sample wafer having a face to be polished, said face having a center and being directed upwards;

a rigid ring articulated on said holder by two first articulation shafts having a first common longitudinal axis;

two second articulation shafts on said rigid ring for connecting said rigid ring to a frame, said two second articulation shafts having a second common longitudinal axis perpendicular to said first common longitudinal axis, said first and second common longitudinal axis being in a plane of the face to be polished and intersecting at said center of said face to be polished;

means for holding an abrasive disk above said holder;



means for applying said abrasive disk on said sample wafer; and

means for displacing said abrasive disk with respect to said sample wafer.

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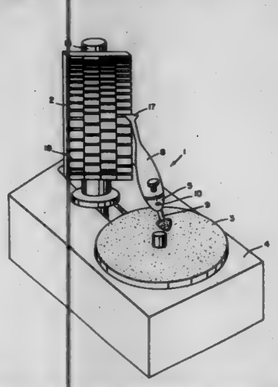
FACETING HEAD APPARATUS FOR WORKING COLORED STONES

Gerald L. Wykoff, 11 Maple Rd., York, Pa. 17403

Filed Oct. 9, 1992, Ser. No. 958,768

Int. Cl.[5] B24B *7/22, 9/06, 9/16*

U.S. Cl. 51—125.5 **2 Claims**



1. A calibrated jamb peg faceting machine that requires minimal mechanical manipulation to control height, angle and indexing for grinding facets upon precious stones, comprising:

a base having an abrasive lap wheel rotatable thereon adjacent one end and a vertically extending mast rigidly supported at another end;

a backplate slidably adjustably mounted on the mast, said backplate including a series of trigonometrically established vertically spaced and horizontally extending arcuately shaped grooves whose positions on the backplate are mathematically determined and which provide specific angle settings through triangulation;

a quill member featuring a generally cylindrically configured male tailstock element disposed horizontally so as to fit tightly to a female profile of matching backplate grooves.

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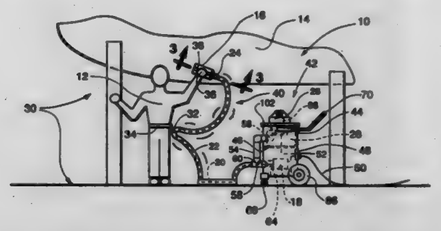
PORTABLE SURFACE PREPARATION ABRADING UNIT

Lowell W. Schroder, R.D. #3, Box 298, Red Lion, Pa. 17356, and Robert G. Ward, State Rte. 1352, Box 476, Townsville, N.C. 27584

Filed Sep. 28, 1992, Ser. No. 952,094

Int. Cl.[5] B24B *27/033, 55/10*

U.S. Cl. 51—170 PT **14 Claims**



1. A portable surface preparation abrading unit, said abrading unit comprising in combination a workhead housing adapted to support a rotationally driven abrading means, a removable plurality of workhead housing assembly screws to enable disassembly of said workhead housing, a removable abrading unit mandrel upon which said rotationally driven abrading means is insertably assembled within said workhead housing, a drive key having a drive key roll pin insertably engaging a mandrel shaft drive slot within said removable abrading unit mandrel at a drive end thereof, a set screw threadably adjustable within an axially aligned mandrel shaft threaded opening at a idler end of said removable abrading unit mandrel to compressively engage an abrading unit retention roll pin within an elongated slot therewithin to in turn compressively engage said rotationally driven abrading means insertably assembled thereon, an idler key roll pin insertably engaging a mandrel shaft idler slot within said removable abrading unit mandrel at the idler end thereof, a flexible drive shaft interconnecting said rotationally driven abrading means from the removable abrading unit mandrel drive end thereof to a remote power source, and a vacuum conduit interconnecting said workhead housing to an auxiliary vacuum conduit intake connectably communicating with an auxilliary vacuum conduit of a vacuum source.

5,297,364

POLISHING PAD WITH CONTROLLED ABRASION RATE

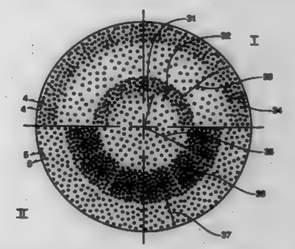
Mark E. Tuttle, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 468,348, Jan. 22, 1990, and Ser. No. 562,288, Aug. 3, 1990, Pat. No. 5,020,283. This application Oct. 9, 1991, Ser. No. 773,477

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—209 R **5 Claims**

1. A polishing pad rotatable about a central axis, said pad having a circular, planar face perpendicular to said axis, said face to be brought in spinning contact with a workpiece during a polishing operation, said face comprising both raised and voided regions, said raised and voided regions being configured so as to produce a controlled nonuniform rate of material removal from said workpiece, said rate of material removal



being a non-linear function of distance from the pad's rotational axis to a working radius.

5,297,365

METHOD OF MACHINING SILICON NITRIDE CERAMICS AND SILICON NITRIDE CERAMICS PRODUCTS

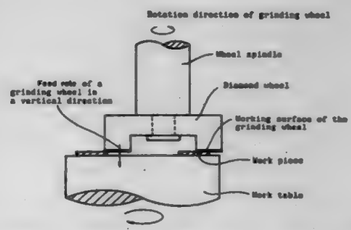
Takao Nishioka; Kenji Matsunuma, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 29, 1992, Ser. No. 921,255

Claims priority, application Japan, May 1, 1992, 4-112649

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—283 R **2 Claims**



1. A method of grinding a silicon nitride ceramic workpiece, comprising:

positioning a grinding wheel, having a rotational axis about which it is rotatable, relative to the workpiece;

rotating said grinding wheel about its rotational axis at a peripheral cutting speed of not less than 25 meters/second and not more than 75 meters/second;

moving one of the workpiece and said grinding wheel toward the other of the workpiece and said grinding wheel so as to cause said grinding wheel to be fed into the workpiece in a direction parallel to said rotational axis at a feed rate of not less than 0.005 microns per rotation of said grinding wheel and not more than 0.1 microns per rotation of said grinding wheel;

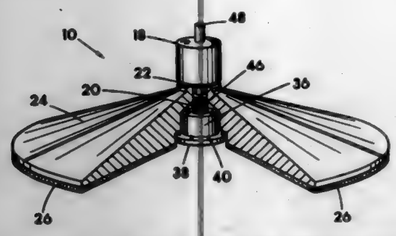
varying said feed rate in a linear or stepwise manner; and

limiting vibration of said grinding wheel relative to said workpiece such that displacement of said grinding wheel relative to the workpiece due to vibration is 0.5 microns or less;

whereby the workpiece is ground to a surface finish having a maximum height-roughness surface roughness Rmax of 0.1 microns or less and a ten-point mean roughness Rz of 0.05 microns or less.

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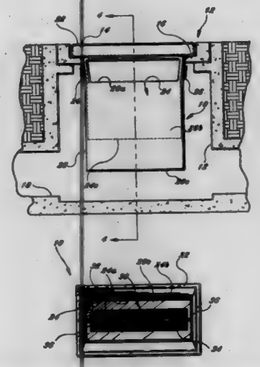
5,297,366
SELF AFFIXING SANDING AND BUFFING PADS/SYSTEM AND APPARATUS
Michael D. Huddleston, P.O. Box 1353, Citrus Heights, Calif. 95611
Filed Mar. 26, 1993, Ser. No. 37,323
Int. Cl.[5] B24D *17/00*
U.S. Cl. 51—376 1 Claim



1. A drill pad assembly for releasably retaining a polishing disc and having an attachment device for attaching the drill pad to a hand drill comprising:
a conical shaped drill pad having an arbor receiver rim located on the top of the drill pad, a drill retainer receiving bore located on the bottom of the drill pad opposite the arbor receiver rim, a through bore extending between the receiver rim and the retainer bore and a hook or loop interlock surface located on the bottom surface of the drill pad for releasably retaining a polishing disc having a hook or loop surface;
wherein the attachment device comprises a special arbor having an upper arbor shaft for attaching to a drill chuck, a middle section extending from the upper arbor shaft having a larger diameter than the upper arbor shaft and being in contact with the arbor receiver rim, a threaded shaft extending from the middle section into the through bore, and a drill pad retainer extending in the receiving bore and attaching to the threaded shaft;
wherein the drill pad retainer comprises an external rim having spaced teeth located thereon extending in a direction toward the receiver rim when the drill pad retainer is secured to the threaded shaft so that the teeth engage the drill pad to prevent the pad from rotating with respect to the attachment device.

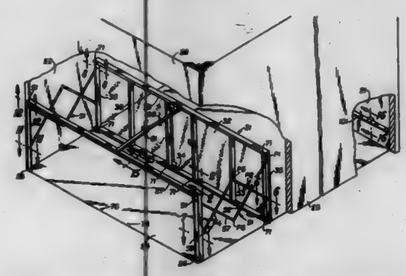
5,297,367
REMOVABLE STORM DRAINAGE CARTRIDGE
Jorge R. Sainz, 649 SW. 9th St., No. 103, Miami, Fla. 33130
Continuation-in-part of Ser. No. 823,265, Jan. 17, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 55,914
Int. Cl.[5] E03F *5/16*
U.S. Cl. 52—12 1 Claim

1. A removable storm drain cartridge for insertion into a conventional storm drain, said cartridge used for separating storm run-off liquid and debris, such as sand, stones and rocks to prevent collection of debris within the storm drain itself or the storm drain pipes, said storm drain cartridge comprising:
a sturdy longitudinally elongated water retaining container for receiving storm run-off liquid and collecting heavy debris, said container sized in length to penetrate longitudinally a significant portion of the storm drain to allow large flow through volume for mounting within a conventional storm drain, said elongated container including at least one continuous enclosing side wall and a bottom connected to said side wall and an open top;
means connected to the top of sad container to provide a support for said container within said storm drain;
internal conduit means having a first open end and a second open end, said first open end connected across the open top of said container covering the open top of said container, and said second conduit opening end mounted within said container a predetermined distance from said container bottom;
said continuous side wall including at least one opening in said container at a predetermined location near the top of said container relative to said internal conduit means second open end such that store liquid can flow into said container and into said internal conduit means first open end, flow through said internal conduit means and flow out of said internal conduit means in said container and flow out said opening in said continuous side wall, whereby debris that are heavy enough to not flow upwardly out of said opening in said container side wall will



be collected within said container at the bottom and the water level remaining in said container is defined by the opening in said continuous side wall;
means for trapping oil connected across sad internal conduit means first open end for removing and trapping oil from said storm liquid entering said container;
wherein said oil trapping means includes a pad for trapping oil particles and a frame means for holding said pad in a predetermined position adjacent said opening, said oil trapping means being movable to allow debris and other objects to flow adjacent said oil trapping means, preventing environmental pollution.

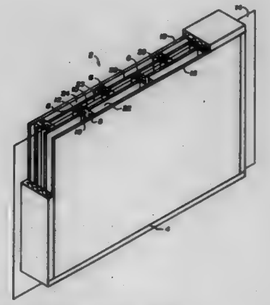
5,297,368
MOVABLE WALL SYSTEM
Paul M. Okada, 12670 E. 132nd Ave., Brighton, Colo. 80601
Filed May 11, 1992, Ser. No. 881,334
Int. Cl.[5] E04B *2/82*
U.S. Cl. 52—64 19 Claims



1. A movable wall system for use with a pair of opposed side walls and a floor and in combination with a support means opposite and spaced from a wall comprising:

movable wall means having side and bottom rollers to slide the wall means along the side walls and floor, respectively, and between said support means and wall,
extensible and retractable connecting means between the support means and wall means for stabilizing the wall means during movement to change the distance between said movable wall means and said wall, and
means for holding said wall means against movement in selected positions with respect to said wall.

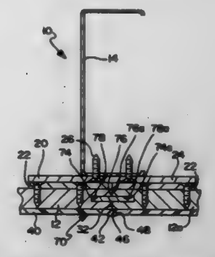
5,297,369
BUILDING STRUCTURE WITH IMPROVED SOUNDPROOFING CHARACTERISTICS
Sydney L. Dickinson, 306-7660 Minoru Blvd., Richmond, B.C., Canada V6Y 1Z5
Filed May 5, 1993, Ser. No. 57,318
Int. Cl.[5] E04B *1/74*
U.S. Cl. 52—281 7 Claims



1. A building structure comprising:
a base;
a plurality of spaced support members extending from the base in offset relation, each support member having an outer edge, side edges and an inner edge and positioned such that the inner edges of offset support members overlap through a vertical plane in the structure;
first and second panels attached to the outer edges of the support members, the inner edge of each support member being spaced apart from the opposite panel; and
a plurality of rigid panel members extending between the side edges of any two adjacent support members attached to the same panel and across the inner edge of the intervening offset support member attached to the opposite panel to define a series of three non-communicating chambers between the first and second panels repeated along the length of the structure to lessen the transmission of sound through the structure.

5,297,370
PANEL SYSTEM AND CLEAN ROOMS CONSTRUCTED THEREFROM
John Greenstreet, 30106 Valleyside Dr., Farmington Hills, Mich. 48334, and Joe Hillebrand, 34572 Bunker Hill, Farmington Hills, Mich. 48331
Filed Apr. 23, 1992, Ser. No. 873,288
Int. Cl.[5] E04B *5/00*
U.S. Cl. 52—287.1 16 Claims

1. A clean room wall panel system comprising:
(a) at least two wall panels, the wall panels being abutted against each other, the wall panels forming an intersection joint, each wall panel having a first side and a second side;
(b) a z-clip bracket assembly for mounting the wall panel to a mounting surface, the bracket assembly comprising:
(1) a first z-clip disposed on the second side of each wall panel; and
(2) a second z-clip attached to a mounting surface, the second clip cooperatively engaging the first z-clip, the second z-clip retaining the first z-clip without bearing the weight of the wall panel; and



(c) an alignment spline extending between the panels, each panel having an alignment notch formed therein, the spline extending into the notches.

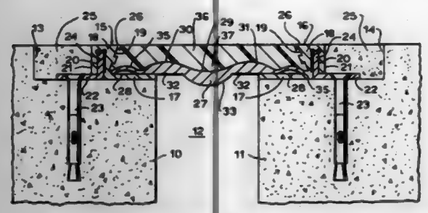
5,297,371
JOINT FRAMEWORK FOR BUILDING UNITS
Oddo Borghetto, Via Giotto 19, 31033 Castelfranco-Veneto, Italy
Continuation of Ser. No. 755,582, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 532,182, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 403,837, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 191,211, May 6, 1988, abandoned. This application Feb. 11, 1993, Ser. No. 16,877
Int. Cl.[5] E04C *1/42*
U.S. Cl. 52—308 11 Claims



1. An outer frame for a joint framework for a building unit comprising:
a retainer for supporting a unit, the retainer including a peripheral ledge upon which the unit is supported; and
a multi-planar support base having a first peripheral surface integral with the retainer and a second peripheral surface some distance therefrom, the distance between the first and second peripheral surfaces defining the extent of the base, the second peripheral surface including a ledge extending outwardly therefrom, the ledge including projecting tongues extending in the same plane as the ledge and having grooves, the ledge including edge sections, the edge sections coupling with the grooves of the projecting tongues of an adjacent outer frame for connecting consecutive outer frames to form a joint framework having joints for receiving an adhesive mixture therein to form the building unit, the cooperation of the bases and ledges of consecutive connected frames defining the joints of the joint framework wherein the grooves of the projecting tongues of a first frame and the edge sections of a second adjacent frame lock together for joining consecutive frames.

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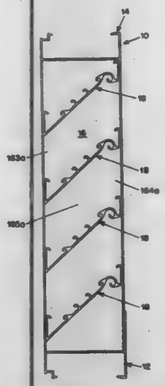
5,297,372
ELASTOMERIC SEALING SYSTEM FOR ARCHITECTURAL JOINTS
John D. Nicholas, Lawrenceville, Ga., assignor to Pawling Corporation, Pawling, N.Y.
Filed Jun. 9, 1992, Ser. No. 896,477
Int. Cl.[5] E04B *1/68*
U.S. Cl. 52—396.07 6 Claims



1. An architectural joint system connecting two spaced-apart, relatively movable structures and of the type including spaced-apart edge rail elements mounted on the respective structures, support means spanning the space between said structures, and an elastically extensible elastomeric sealing element secured by the edge rail elements and spanning said space directly above and supported by said support means, wherein
(a) said support means comprises a generally rigid plate-like member extending between and movably supported by said spaced-apart edge rail elements,
(b) said plate-like member having an upwardly concave central cross sectional contour in its central region and upwardly convex cross sectional contours immediately adjacent said central cross sectional contour,
(c) said central cross sectional contour and said adjacent, upwardly convex cross sectional contours forming a gently undulating, sinusoid-like upper surface configuration of said plate-like member in the regions where said plate-like member spans the space between said structures,
(d) said elastomeric sealing member being directly supported by and initially having lower surface contours complementary to the upper surface contours of said plate-like member, whereby said sealing member is of greater thickness in its central region than in regions thereof on either side of said central region,
(e) said sealing member being secured at opposite side edges hereof to said side rail members and being movable with respect to said plate-like member in response to relative movements of said structures.

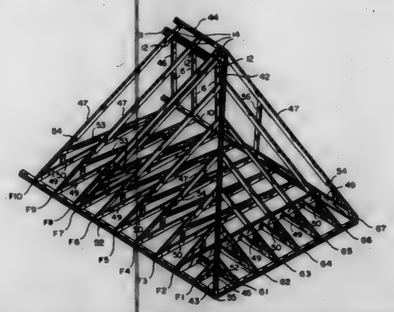
5,297,373
DRAINABLE BLADE LOUVER
Robert W. Olsen, Washington, N.J., assignor to Construction Specialties, Inc., Cranford, N.J.
Filed Apr. 30, 1993, Ser. No. 56,258
Int. Cl.[5] E06B *7/08*
U.S. Cl. 52—473 13 Claims

1. A drainable blade louver comprising a peripheral rectangular frame having spaced-apart vertical jambs, a sill and a header, and a multiplicity of inclined blades extending horizontally between the jambs, each blade having in cross-section a base portion sloping smoothly upwardly from a lowermost point at the front edge of the blade to an uppermost point proximate to the rear edge of the blade, the undersurface of the base portion being free of protuberances so that there are no drip points and water clinging to the undersurface of the base portion is transported along the undersurface by the air flowing through the louver, a generally C-shaped bottom trough portion adjacent the upper edge of the blade, the bottom trough portion having an upper arm joined to the base portion at a smoothly curved juncture, being oriented with its opening facing toward the front of the louver, and having a lower arm forming a trough for capturing water blown along the undersurface of the blade and draining it toward the jambs, a front flange portion extending upwardly from lower front edge of the base portion and defining with an adjacent part of the base



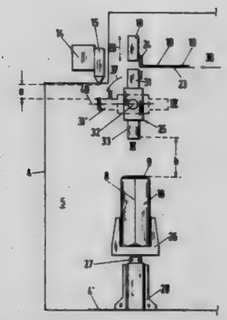
portion a top front trough for capturing water and draining it toward the jambs, and at least one rib portion extending upwardly from the base portion intermediate the front and rear edges of the blade and defining a top intermediate trough for capturing water and draining it toward the jambs.

5,297,374
PREFABRICATED BUILDING STRUCTURE HAVING A COLLAPSIBLE HIP ROOF AND METHOD OF ERECTING THE ROOF
J. Todd Himes, Walkersville, Md., assignor to North American Housing Corp., Point of Rocks, Md.
Filed Sep. 28, 1992, Ser. No. 952,093
Int. Cl.[5] E04B *7/08, 1/32*
U.S. Cl. 52—641 22 Claims



1. A prefabricated building structure comprising at least two modular units secured together to provide an integral building structure, at least two of said modular units each including a collapsible, complementary hip roof system comprising:
a plurality of transversely disposed, longitudinally spaced trusses including front trusses and front hip trusses;
a plurality of longitudinally disposed, transversely spaced gable trusses, said gable trusses being substantially perpendicular to said front hip trusses; and
a connector for connecting said front hip trusses to said gable trusses;
wherein selected ones of said front, front hip, and (gable trusses and said connector are hinged for folding to reduce overall dimensions of said hip roof system.

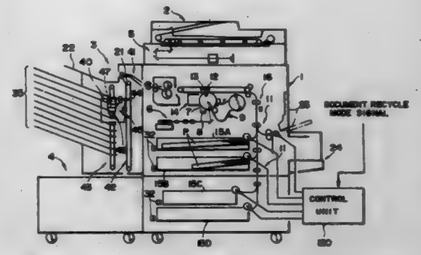
5,297,375
METHOD AND APPARATUS FOR CLOSING A PACK
Wilhelm Reil, Bensheim, and Manfred Wallich, Nauheim, both of Fed. Rep. of Germany, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Filed Apr. 7, 1992, Ser. No. 864,549
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111758
Int. Cl.[5] B65B *7/28*
U.S. Cl. 53—420 21 Claims



1. A method for sealingly closing a pack for liquids, wherein the pack is provided with a hole having an upstanding collar, the method comprising the steps of:
positioning a pouring device on a support which has a longitudinal axis, said pouring device including a recess which defines a flange;
applying a thread of adhesive that is compatible with food to an outer peripheral surface of the flange while rotating said support about its longitudinal axis to cause the pouring device itself to rotate about a horizontal axis during application of the thread of adhesive, the longitudinal axis of the support being horizontally disposed during application of the thread of adhesive; and
bringing the outer peripheral surface of the flange of the pouring device into contact with an inner surface of the upstanding collar of the pack to thereby join the flange to the collar.

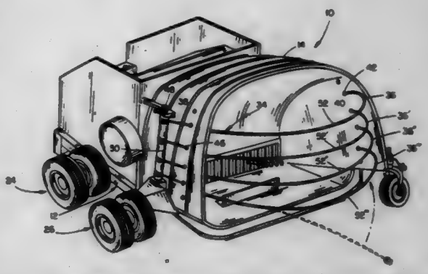
5,297,376
FINISHER FOR AN IMAGE FORMING APPARATUS
Kazushige Taguchi, Warabi; Tetsuya Fujioka, Yokohama; Hiroshi Takahashi, Kawasaki; Kazunori Bannai, Tokyo, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 2, 1992, Ser. No. 907,653
Claims priority, application Japan, Jul. 5, 1991, 3-190992; Jul. 17, 1991, 3-176498; Jul. 23, 1991, 3-182450; Jul. 24, 1991, 3-184656; Jul. 29, 1991, 3-188950; Jul. 30, 1991, 3-190102
Int. Cl.[5] B65B *35/00, 57/00*
U.S. Cl. 53—504 34 Claims

15. A finisher for an image forming apparatus, comprising:
a plurality of bins for stacking paper sheets each carrying an image formed by the image forming apparatus;
binding means for binding the paper sheets stacked on each of said bins to form a bound stack;
transporting means for transporting the bound stack from each of said bins into an envelope;
determining means for determining an envelope size capable of accommodating the bound stack;
envelope size sensing means for sensing sizes of envelopes stored in the image forming apparatus; and



comparing means for comparing the sizes of the envelopes sensed by said envelope size sensing means and the envelope size determined by said determining means.

5,297,377
DENSITY CONTROL MEANS FOR AN AGRICULTURAL FEED BAGGING MACHINE
Steven R. Cullen, Rte. 1, Box 642, Astoria, Oreg. 97103
Continuation-in-part of Ser. No. 912,873, Jul. 13, 1992. This application Jan. 13, 1993, Ser. No. 3,540
Int. Cl.[5] B65B *1/24*
U.S. Cl. 53—527 14 Claims



1. An agricultural bagging machine for bagging agricultural material into agricultural bags having a closed end and an open mouth comprising,
a wheeled frame having rearward and forward ends,
a tunnel on said wheeled frame and having an intake end for receiving the material to be bagged and an output end adapted to receive the open mouth of the agricultural bag, said tunnel having opposite sides,
a hopper on said wheeled frame forwardly of said tunnel for receiving the material to be bagged,
a horizontally disposed rotor rotatably mounted on said wheeled frame at the intake end of said tunnel for forcing the material to be bagged from said hopper into said tunnel and into said bag,
means for rotating said rotor,
and a density control means extending between the opposite sides of said tunnel within the agricultural bag for engagement with the material being bagged to control the density of the material as the material is forced past said density control means and further into the agricultural bag.

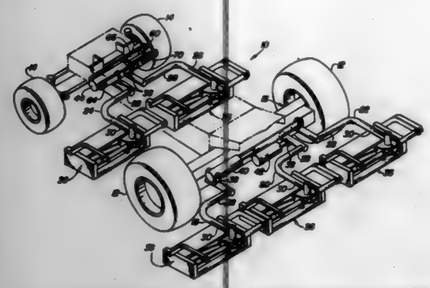
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,378

SUSPENSION MECHANISM FOR REEL MOWERS

Larry N. Smith, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed May 13, 1992, Ser. No. 882,340
Int. Cl.[5] A01D *34/44, 34/86*
U.S. Cl. 56—7 23 Claims



1. A mechanism for attaching a cutting unit to a vehicle, comprising:

an arm means having a first end portion coupled with the vehicle, said arm means having a second end portion adapted for shifting up and down with respect to the vehicle,

a cutting unit operatively coupled to the second end portion and engagable with the ground, and

a hydraulic cylinder means operatively coupled between the arm means and the vehicle for selectively applying a force to the arm means to urge the second end portion of the arm means downwardly for pressing the cutting unit against the ground during cutting operations, said cylinder means also being adapted for lifting the second end portion of the arm means for selectively lifting and maintaining the cutting unit above the ground during vehicle transport.

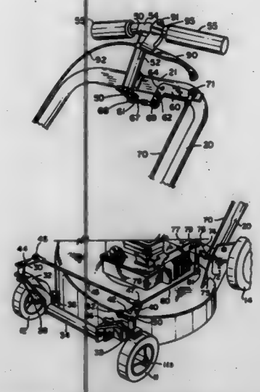
5,297,379

WALK-BEHIND LAWN MOWER WITH FRONT WHEEL STEERING

Leary W. Smith, Chamblee, Ga., assignor to Fuqua Industries, McDonough, Ga.

Filed Mar. 9, 1992, Ser. No. 848,731
Int. Cl.[5] A01D *34/64, 34/68, 34/82*
U.S. Cl. 56—11.8 14 Claims

1. In a walk-behind lawn mower having a plurality of front and rear wheels for moving the mower over the ground surface, and a handle for operating the mower; steering means for steering the front wheels including a control mounted on the handle and connecting means interconnecting the control and at least one front wheel for turning said one wheel in a horizontal plane about a generally vertical axis upon operation of said control, said steering means including means interconnecting said one front wheel with another front wheel such that movement of said one front wheel is transmitted to the other front wheel, said control including a spindle mounted for rotation on said handle, said connecting means including a linkage system interconnecting said spindle and said one wheel, and said linkage system including a first rod, a first crank connected between said spindle and said rod, a second rod, a second crank



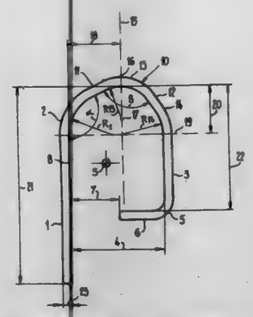
connected between said first and second rods, and a third crank connected between said one wheel and said second rod.

5,297,380

RING TRAVELLER FOR A BEVELLED FLANGED RING

Franz Oberholzer, Fehraltorf, Switzerland, assignor to Bracker AG, Pfaffikon, Switzerland

Filed Jul. 23, 1992, Ser. No. 917,388
Claims priority, application Switzerland, Aug. 13, 1991, 02388/91
Int. Cl.[5] D01H *7/60*
U.S. Cl. 57—125 7 Claims



1. In a ring traveller for use with a bevelled flanged ring of a ring spinning machine or a ring doubling and twisting machine, said ring having a running surface, wherein said ring traveller comprises:

(a) first and second traveller arms arranged in approximately the same direction, said first traveller arm being longer than said second traveller arm and having a counterface intended for bearing on said running surface of the ring, and said second traveller arm has an inwardly angled engagement part intended for engagement with an annular shoulder, and

(b) a connecting part extending between the traveller arms and comprising first and second straight portions extending towards each other at an obtuse angle, whereof said first straight portion adjoins said first longer traveller arm via an arcuate portion and a circular arcuate portion interconnects said first and second straight portions and forms

an apex whose distance from said first traveller arm is greater than its distance from said second traveller arm;

the improvement wherein

(c) the traveller has a longitudinal extent which amounts to approximately 140% of a first distance between the said first and second traveller arms, and

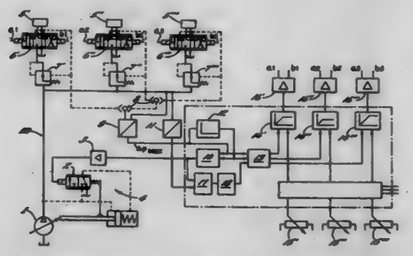
(d) the part distance from said first traveller arm to an axis passing through the apex and disposed approximately parallel to said first and second traveller arms amounts to approximately 54% of said first distance.

5,297,381

HYDRAULIC SYSTEM

Otwin Eich, and Franz-Peter Salz, both of Remscheid, Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

PCT No. PCT/DE91/00967, § 371 Date Oct. 15, 1992, § 102(e) Date Oct. 15, 1992, PCT Pub. No. WO92/10684, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 13, 1991, Ser. No. 920,376
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1990, 4040176; Jul. 26, 1991, 4124793
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—452 32 Claims



1. A hydraulic system for feeding hydraulic fluid to a plurality of loads (5) from a common controllable pump (1) at a rate not exceeding a predetermined capacity of said pump, comprising:

individual control valve means (6) associated with each of said plurality of loads and responsive to respective external control signals (a^1, b^1);

means for measuring the feed pressure (P) of said pump (1) and the load pressure of each of said plurality of loads;

means (8, 9) for determining the different between said feed pressure (P) and the highest one of said load pressures and for deriving a difference signal (ΔP) representative of said difference;

means (2, 3, 4, 10) for adjusting said feed pressure of said pump in response to said difference signal;

means (23, 25) for comparing the difference signal (ΔP) with a predetermined minimum pressure difference signal (ΔP_{min}) and for generating a first signal when the pressure difference signal (ΔP) is at least equal to said predetermined minimum difference signal (ΔP_{min}) and a second signal when said pressure difference signal (ΔP) is less than said predetermined minimum difference signal (ΔP_{min}); and

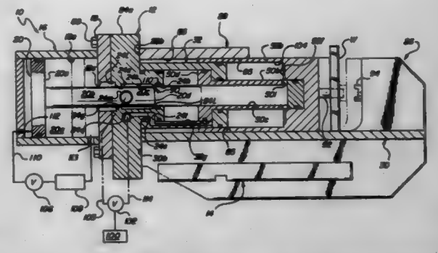
means (14) for adjusting said external control signals in response to said first and second signals.

5,297,382

INTENSIFIER CYLINDER

Edward J. Waltonen, Southfield, and Robert E. Obrecht, Bloomfield Hills, both of Mich., assignors to REO Hydraulic Pierce & Form, Inc., Detroit, Mich.

Filed Aug. 3, 1992, Ser. No. 923,599
Int. Cl.[5] F15B *7/00*
U.S. Cl. 60—533 14 Claims



1. An intensifier cylinder including a body structure defining a first bore, means for introducing hydraulic fluid into said first bore, a first piston structure including a piston mounted in said first bore and a piston rod secured to said piston and extending at its forward end through an end wall of said body structure, a second bore defined in said body structure, means for introducing pressurized fluid into said second bore, a second piston structure including a second piston mounted in said second bore and a second piston rod secured to said second piston and movable at its forward end into said first bore upon stroking of said second piston in response to the introduction of pressurized fluid into said second bore to seal off and act upon the hydraulic fluid in said first bore to produce an intensified force on said first piston structure; characterized in that said first piston structure further includes a ram member including an end wall secured to the forward end of said first piston rod and an annular sleeve secured to said ram member end wall and extending rearwardly in surrounding relation to said first piston rod, said body structure defines an annular bore surrounding said first bore and slidably receiving said sleeve, an annular space is defined between said first piston rod and said sleeve, and said first piston structure includes means for introducing hydraulic fluid into said annular space upon forward movement of said first piston structure.

5,297,383

FILE CLIP, APPARATUS AND INSTALLATION METHOD

George R. Mackay, Queensland, Australia, assignor to Binda Nominees Pty Ltd., Queensland, Australia

PCT No. PCT/AU90/00097, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/10768, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 13, 1990, Ser. No. 768,215
Claims priority, application Australia, Mar. 13, 1989, PJ3149; Jul. 25, 1989, PJ5440
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—712 23 Claims

1. A clip for attaching two roof tiles or the like to a batten or similar member, said clip comprising:

(i) a rigid body;

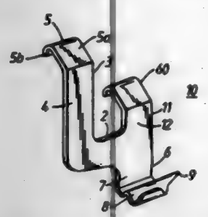
(ii) first and second securing members, each said securing member depending from said rigid body in a first direction and adapted to engage respective side edges of said two roof tiles or the like; and

(iii) a fastening member depending from said rigid body in a second direction opposite to said first direction and being adapted to secure said clip to said batten or similar member;

each said securing member comprising a shank terminating

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in a hook, each said shank having a portion thereof bent at an obtuse angle to form a linear web before terminating in



said hook, and the shank of said second securing member being shorter than the shank of said first securing member.

5,297,384

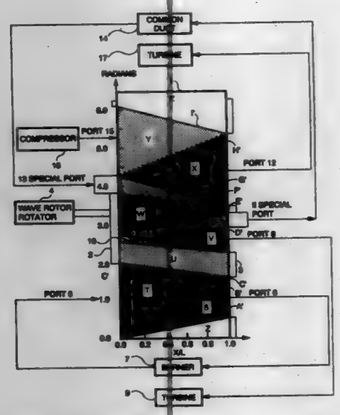
METHOD FOR CANCELLING EXPANSION WAVES IN A WAVE ROTOR

Daniel E. Paxson, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Division of Ser. No. 889,003, May 26, 1992. This application Jul. 6, 1993, Ser. No. 86,581

Int. Cl.[5] F02C *3/02*

U.S. Cl. 60—39.02 **11 Claims**



1. A method for cancelling expansion waves in a wave rotor having rotating cells containing working fluid of relatively high temperature and pressure, comprising the steps of:

(a) rotating the wave rotor to communicate with a first port for allowing the working fluid of relatively high temperature and pressure to exit the wave rotor, thus generating a first expansion wave having a head and a tail, and thus generating working fluid of relatively low temperature and intermediate pressure;

(b) rotating the wave rotor to communicate with a reflecting portion of the wave rotor, thus causing the first expansion wave to reflect from the reflecting portion;

(c) rotating the wave rotor to communicate with a second port having a first end corresponding substantially to the head of the first expansion wave and a second end corresponding to the tail of the first expansion wave, the second port having dimensions which continually change along a direction of rotation of the wave rotor, and the second port introducing a fluid of a stagnation pressure equal to the stagnation pressure of the working fluid in at least one of the rotating cells communicating with the second port;

(d) rotating the wave rotor to communicate with a third port for allowing the working fluid of relatively low temperature and intermediate pressure to exit the wave rotor, thereby generating a second expansion wave having a head and a tail; and

(e) rotating the wave rotor to communicate with a fourth port having a first end corresponding to the head of the second expansion wave and a second end, the fourth port having dimensions which continually change along the direction of rotation of the wave rotor, and the fourth port requiring a fluid of stagnation pressure equal to the stagnation pressure of the working fluid in at least one of the rotating cells communicating with the fourth port.

5,297,385

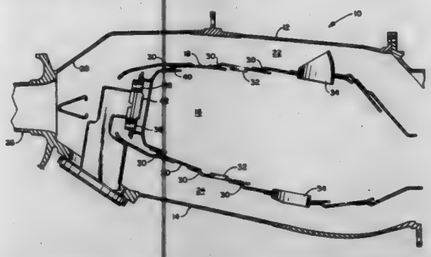
COMBUSTOR

Thomas L. Dubell, Palm Beach Gardens, and James H. Shadowen, Riviera Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1988, Ser. No. 200,480

Int. Cl.[5] F01C *3/06*

U.S. Cl. 60—39.36 **4 Claims**



1. An annular combustor for a gas turbine engine including an elongated annular outer liner and an elongated annular inner liner, a dome enclosing the forward end of the annular combustor being supported to said annular outer liner and said annular inner liner all of which define a combustion zone, a plurality of openings circumferentially spaced in said dome for admitting air into said combustion zone, at least one row of fixed openings in said inner annular liner and outer annular liner circumferentially spaced within a transverse plane for admitting air radially into said combustion zone, a portion of said plurality of openings in said dome and a portion of said row of fixed openings being dimensioned to admit a reduced level of air relative to the amount of air being admitted by the remaining openings in said dome and said fixed openings in a given sector of said combustion zone from the level outside of said sector so that said sector operates stable under all combustor operating conditions and when said portion outside said sector operates in a non-stable condition.

5,297,386

COOLING SYSTEM FOR A GAS TURBINE ENGINE COMPRESSOR

Robert Kervistin, le Mee sur Seine, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Valin, France

Filed Jul. 29, 1993, Ser. No. 98,864

Claims priority, application France, Aug. 26, 1992, 92 10277

Int. Cl.[5] F02C *7/18*; F02K *3/04*

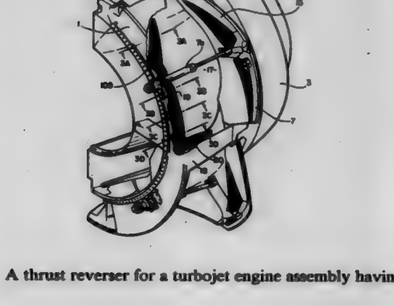
U.S. Cl. 60—226.1 **7 Claims**

1. A cooling system for an axial flow compressor of a gas turbine engine having a rotor with a plurality of rotor wheels and a cone located downstream of the rotor wheels in a direction of flow of primary air P through the compressor, each rotor defining a peripheral groove in which are mounted root portions of rotor blades and a plurality of guide vane stages located axially between the rotor wheel blades, the cooling system comprising:

a) tap means to tap a portion of air R from primary air flow P;

b) control means operatively associated with the tap means to control the amount of air R tapped from the primary air flow P;

c) cooling means operatively connected to the tap means to cool the portion of air R tapped from the primary air flow P;



d) a cooling air chamber;

e) conduit means directing the air R from the cooling means into the cooling air chamber; and,

f) nozzle means operatively associated with the chamber to direct a portion R1 of air R onto the rotor wheel in a direction generally opposite to the direction of primary flow P such that portion R1 flows between the root portions of the rotor blades and the peripheral grooves to cool the root portions, and to direct a portion R2 of air R onto the cone so as to cool the cone.

5,297,387

DEFLECTOR EDGE FOR A THRUST REVERSER

Félix Carimali, and Michel J. L. Legrau, both of Le Havre, France, assignors to Societe Hispano-Suiza, Saint Cloud Cedex, France

Filed Aug. 18, 1992, Ser. No. 931,355

Claims priority, application France, Aug. 21, 1991, 91 10475

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **8 Claims**

1. A thrust reverser for a turbojet engine assembly having a housing with a longitudinal axis and defining a gas flow duct comprising:

a) a reverse thrust opening defined by the housing, the opening having opposite sides;

b) door means operatively associated with the housing so as to be movable between a forward thrust position wherein the door means covers the reverse thrust opening thereby preventing gas in the gas flow duct from passing through the reverse thrust opening, and a reverse thrust position wherein the reverse thrust opening is opened so as to allow gas in the gas flow duct to pass through the reverse thrust opening; and

c) a deflector having a deflector edge on a deflector edge portion defining an upstream boundary of the reverse thrust opening wherein curvature of the deflector edge portion, measured in a longitudinal plane extending along the longitudinal axis and passing through the reverse thrust opening varies from one side of the opening to the opposite side so as to control the direction of the gas emanating from the reverse thrust opening.

5,297,388

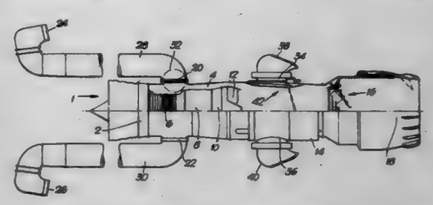
FLUID FLOW DUCT WITH ALTERNATIVE OUTLETS

Douglas J. Nightingale, Jonesboro, Ga., assignor to Rolls-Royce Inc., Reston, Va.

Filed Apr. 13, 1992, Ser. No. 867,465

Int. Cl.[5] F02K *1/00*

U.S. Cl. 60—229 **19 Claims**



1. An aircraft power plant providing selectively vectorable thrust comprising:

a bypass gas turbine engine having a core engine and a bypass duct surrounding the core engine, said core engine and bypass duct, in operation, exhausting gas into a common flow duct,

said common flow duct comprising a jet pipe for carrying hot exhaust flow from a turbine section of the core engine and relatively cooler bypassflow from the bypass duct,

said jet pipe having a substantially cylindrical wall one end of which defines an upstream flow entry, at least one side aperture which defines a first flow exit for vectored thrust, and a downstream end which defines a second flow exit for axial thrust,

diverter valve means located in the jet pipe for opening one of the first flow exit and the second flow exit and blocking the other of the first flow exit and the second flow exit, to divert said hot exhaust flow from the turbine section and said bypass flow from the bypass duct,

said valve means comprising:

axially translatable first valve means for selectively blocking the first flow exit, the first valve means comprising a sleeve housed within the duct and having an upstream end and a downstream end, and

pivotally movable second valve means for selectively blocking the second flow exit, the second valve means being a circular array of valve segments each of which is pivotally attached to the upstream end of the sleeve of the first valve means whereby said segments lie flush with inner faces of the first valve means in a stowed position, said segments being arranged to deploy transversely across the duct to block the second flow exit when the first valve means is translated in a downstream

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direction to open the first flow exit, at least some of segments in the region of the first flow exit having extended tips which sweep a region of the jet pipe wall adjacent to the region of the first flow exit as the second valve means begins to deploy transversely across the duct,

wherein said adjacent region of the jet pipe wall is an outwardly sloping ramp section formed with a profile such that during initial deployment of the valve means the extended tips of the segments of the second valve means sweep outwardly of the first valve means and cooperate with the ramp section to delay uncovering of the first flow exit by the first valve means relative to blocking of the second flow exit by the second valve means.

5,297,389

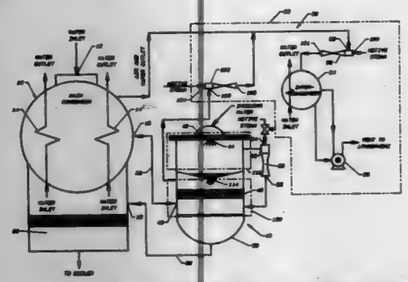
METHOD AND APPARATUS FOR MAINTAINING A REQUIRED TEMPERATURE DIFFERENTIAL IN VACUUM DEAERATORS

Roderick E. Athey, Pittsford, N.Y.; Elliot Spencer, Cranbury, N.J., and Lance L. Frens, Byron, N.Y., assignors to Graham Corporation, Batavia, N.Y.

Division of Ser. No. 666,807, Mar. 8, 1991, Pat. No. 5,165,237. This application Aug. 6, 1992, Ser. No. 926,349

Int. Cl.[5] F01K *19/00*

U.S. Cl. 60—657 **9 Claims**



1. A method for deaerating incoming water in a vacuum deaerator, comprising:

(a) introducing sparge steam into a deaerating section of the vacuum deaerator;

(b) introducing incoming water into a cooling section of the vacuum deaerator; and

(c) reducing the pressure in the cooling section to a pressure sufficient to cause the incoming water to flash cool.

5,297,390

FUEL INJECTION NOZZLE HAVING TIP COOLING

Virendra M. Sood, Encinitas, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 10, 1992, Ser. No. 973,892

Int. Cl.[5] F02C *1/00*

U.S. Cl. 60—740 **7 Claims**

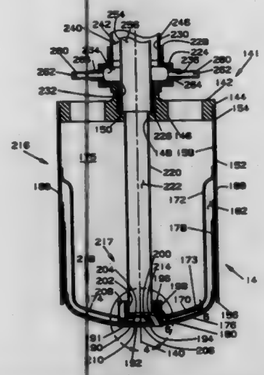
1. A fuel injection nozzle having a nozzle axis comprising:

a cylindrical housing being coaxially positioned about the nozzle axis, having a first end a second end and defining a plurality of radially extending passages therethrough intermediate the first and second ends;

a first member having a generally cup shaped contour including an open end and a generally radial end portion positioned opposite the end, said first member having the open end attached to the cylindrical housing intermediate the first end and the plurality of radially extending passages, said generally radial end portion having an opening centrally positioned therein;

a second member having a generally cup shaped contour and having a generally radial end portion and an another end attached to the cylindrical housing intermediate the second end and the plurality of radially extending passages, said generally radial end portion having an opening centrally positioned therein;

a cooling passage being formed generally between the first member and the second member and being in communication with the plurality of radially extending passages;



a tip being positioned in the openings in the first and second members coaxial with the nozzle axis and being sealingly attached to the second member;

means for supplying a combustible fuel to the fuel injection nozzle; and

means for communicating a flow of cooling fluid through the cooling passage.

5,297,391

FUEL INJECTOR FOR A TURBOJET ENGINE AFTERBURNER

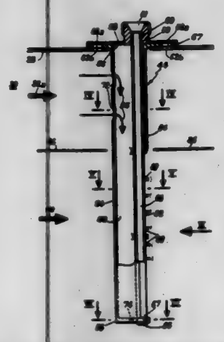
Jacques A. M. Roche, Lisses, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Valis, France

Filed Mar. 17, 1993, Ser. No. 32,484

Claims priority, application France, Apr. 1, 1992, 92 03936

Int. Cl.[5] F02C *3/04*

U.S. Cl. 60—740 **6 Claims**



1. A fuel injector for an afterburner of a turbojet engine having a case defining an afterburner combustion chamber through which gases pass in an upstream to downstream direction, comprising:

a) a fuel tube extending into the afterburner combustion chamber, the fuel tube defining a plurality of fuel discharge orifices along a portion of its length, the plurality of fuel discharge orifices facing generally in a downstream direction;

b) an elongated tubular enclosure substantially enclosing the fuel tube, the elongated tubular enclosure having a larger cross-sectional area than that of the fuel tube so as to define a cooling cavity therebetween, and defining a slit aligned with the plurality of fuel discharge orifices such that fuel from the discharge orifices passes into the afterburner combustion chamber through the slit and further defining a plurality of air discharging orifices;

c) attachment means to attach proximal ends of the fuel tube and the elongated tubular enclosure to the case, wherein the attachment means comprises:

i) a fastening collar on the elongated tubular enclosure;

ii) a base attached to the fuel tube; and

iii) means to removably attach the fastening collar and the base to the case;

d) an end wall extending across a distal end of the elongated tubular enclosure, the end wall defining an opening therethrough, the length of the fuel tube being greater than that of the tubular enclosure such that a distal end of the fuel tube extends through the opening so as to permit relative movement between the fuel tube and the elongated tubular enclosure caused by thermal expansion and contraction; and,

e) means to supply cooling air to the cooling cavity.

5,297,392

AIR CONDITIONING APPARATUS

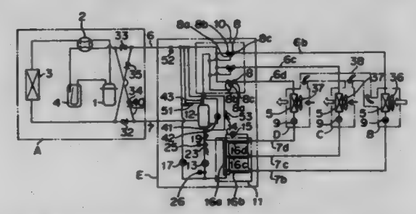
Shigeo Takata; Hidekazu Tani; Takashi Nakamura; Noriaki Hayashida; Tomohiko Kasai, and Junichi Kameyama, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1992, Ser. No. 880,719

Claims priority, application Japan, May 9, 1991, 3-104407; Jun. 4, 1991, 3-132671; Jun. 4, 1991, 3-132758; Jun. 6, 1991, 3-135024; Jun. 12, 1991, 3-140004; Jun. 13, 1991, 3-141980; Jun. 20, 1991, 3-148360

Int. Cl.[5] F25B *13/00*; F24F *7/00*

U.S. Cl. 62—160 **13 Claims**



1. An air conditioning apparatus comprising:

a single heat source device including a compressor, a reversing valve, an outdoor heat exchanger and an accumulator;

a plurality of indoor units including indoor heat exchangers and first flow controllers;

a first main pipe and a second main pipe for connecting between the heat source device and the indoor units;

a first branch joint which can selectively connect one end of the indoor heat exchanger of each indoor unit to either one of the first main pipe and the second main pipe;

a second branch joint which is connected to the other end of the indoor heat exchanger of each indoor unit through the first flow controllers, and which connects the other end to the second main pipe through a second flow controller;

the first branch joint and the second branch joint connected together through the second flow controller;

the second branch joint connected to the first main pipe through a third flow controller;

a junction device which includes the first branch joint, the second flow controller, the third flow controller and the second branch joint, and which is interposed between the heat source device and the indoor units;

the first main pipe having a greater diameter than the second main pipe;

a switching arrangement between the first main pipe and the second main pipe in the heat source device to switch the first main pipe and the second main pipe to a low pressure side and to a high pressure side, respectively, when the outdoor heat exchanger works as a condenser or as an evaporator;

a first timer for changing the setting of the second flow controller at a first cycle during operation of the compressor;

a second timer for returning the setting of the second flow controller to its initial setting at a second cycle longer than the first cycle; and

determination means for changing the setting of the second flow controller by a predetermined value at a time based on outputs from the first timer, and for returning the setting of the second flow controller to the initial setting based on an output from the second timer.

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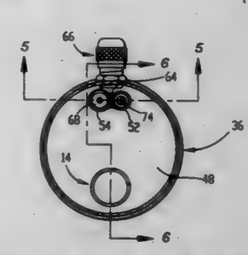
LIQUID LEVEL AND TEMPERATURE MONITORING APPARATUS

Lee H. Thompson, 4409 Saint Charles Rd., Columbia, Mo. 65201

Filed Feb. 9, 1993, Ser. No. 15,628

Int. Cl.[5] G01K *13/00*

U.S. Cl. 62—129 **16 Claims**



2. An apparatus for use in monitoring the level and temperature of a liquid flowing through a horizontally extending line formed by first and second line sections, wherein the temperature of the liquid is to be maintained below an established acceptable value, the liquid level and temperature monitoring apparatus comprising:

chamber interposed between the first and second line sections and including a transverse cross-sectional area greater than the transverse cross-sectional area of the liquid line, the chamber being disposed at least partially above the line and being normally closed except for an inlet in fluid communication with the first line section and an outlet in fluid communication with the second line section, the chamber including an upper wall within which a valve is provided for selectively venting gas from within the chamber;

a temperature sensor provided within the chamber above the height of the line;

an alarm;

a control means for measuring the temperature of the sensor and activating the alarm when the sensor temperature exceeds a predetermined value above the established acceptable value; and

a heater provided within the chamber adjacent the temperature sensor above the height of the line, the heater being of a temperature greater than the predetermined value so that when the liquid within the chamber falls below the temperature sensor and heater, heat is transferred to the sensor and raises the temperature of the sensor, and when

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the liquid level within the chamber reaches the sensor and heater, heat is transferred to the liquid and the temperature of the sensor is maintained at about the same value as the liquid.

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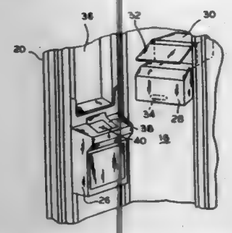
CLEAR CUBE ICE MAKER

Edwin H. Frohbieter, Lincoln Township, Berrien County; Andrew C. Reck, Hartford Township, Van Buren County; Roger D. Jewell, Lincoln Township, Berrien County; Donald E. Janke, Benton Township, Berrien County; Brian R. McClure, St. Joseph Township, Berrien County, and Larry J. Manson, Baroda Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 815,970, Dec. 31, 1991, Pat. No. 5,187,948. This application Feb. 2, 1993, Ser. No. 12,240

Int. Cl.[5] F25C *1/12*

U.S. Cl. 62—135 **43 Claims**



1. An ice maker for making clear ice bodies comprising:
a support arranged to have an ice body formed thereon;
means for refrigerating said support to a below freezing temperature;
a container adapted to hold a body of water;
means for moving the container to move liquid water contained therein uniformly about said support suitable to cause a clear substantially symmetrical ice body to build up outwardly on the refrigerated support, comprising a tray supporting said container, said tray including support pins received in a track defining a path of movement of said tray, and a drive controlling movement of said tray;
means for heating the container to prevent freezing of water contained therein; and
means for causing harvesting of the ice body from the support.

5,297,395

AIR CONDITIONER USING ROTARY-TYPE HEAT EXCHANGERS

Masao Ozu, Yokohama; Masao Isshiki, Fuji; Eiji Kuwahara, Fuji; Takao Hoshi, Fuji; Atsuyuki Hiruma, Fuji; Tohru Kubo, Fuji; Atsushi Nagasawa, Mishima; Nobuo Kawai, Fujinomiya; Yoshiaki Nagaoka, Fuji, and Kazuhiko Akiyama, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

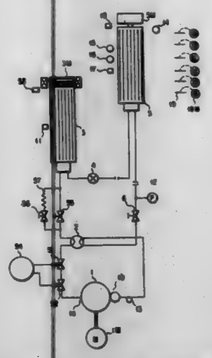
Filed Jan. 29, 1993, Ser. No. 11,222

Claims priority, application Japan, Feb. 24, 1992, 4-036726

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—174 **20 Claims**

1. An air conditioner comprising:
a refrigeration cycle having a compressor, an outdoor rotary-type heat exchanger, a motor-operated expansion valve, and an indoor rotary-type heat exchanger which are sequentially connected to each other to circulate a refrigerant;
a refrigerant tank selectively set in a connected state and a non-connected state with respect to a refrigerant discharge side of said compressor;
pressure detecting means for detecting at least a pressure at one side of each of said indoor and outdoor rotary-type heat exchangers;
first control means for setting said refrigerant tank in a non-connected state when a normal operation of said air conditioner is to be started, and controlling a capacity of said compressor, a rotational speed of said outdoor rotary-type heat exchanger, a rotational speed of said indoor rotary-type heat exchanger, and an opening degree of said motor-operated expansion valve in accordance with at least an air-conditioning load, thereby performing the normal operation of said air conditioner;
second control means for causing said compressor to keep operating at a predetermined capacity until a detection



pressure from said pressure detecting means coincides with a set pressure value, when said air conditioner is to be stopped, and setting said refrigerant tank in a connected state while controlling said motor-operated expansion valve to a predetermined opening degree, thereby recovering the refrigerant in said refrigerant tank; and
third control means for rotating said outdoor and indoor rotary-type heat exchangers at a predetermined speed when said air conditioner is to be started, and setting said refrigerant tank in a connected state while controlling said motor-operated expansion valve to a predetermined opening degree, thereby filling the refrigerant, recovered in said refrigerant tank by said second control means, in said outdoor and indoor rotary-type heat exchangers.

5,297,396

AIR CONDITIONING APPARATUS HAVING A PLURALITY OF INDOOR UNITS CONNECTED TO AN OUTDOOR UNIT

Manabu Kitamoto, Shizuoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1993, Ser. No. 83,695

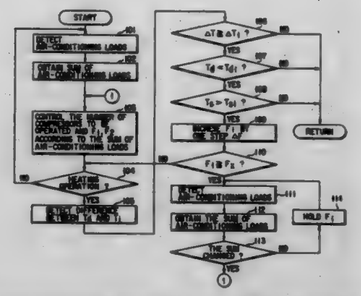
Claims priority, application Japan, Jul. 10, 1992, 4-184103

Int. Cl.[5] G01K *17/06*; F25B *1/00*

U.S. Cl. 62—175 **6 Claims**

1. An air-conditioning apparatus in which a plurality of indoor units are connected to an outdoor unit, comprising:
a variable-capability compressor, installed in said outdoor unit, for sucking, compressing and discharging a refrigerant;
an outdoor heat exchanger installed in said outdoor unit;
a plurality of indoor heat exchangers respectively installed in said indoor units;
a refrigerating cycle constituted by connecting said variable-capability compressor, said outdoor heat exchanger and said indoor heat exchangers by means pipes;
first detecting means, installed in each of said indoor units, for detecting an air-conditioning load on the corresponding indoor unit;

first control means for controlling the capability of said variable-capability compressor according to the sum of air-conditioning loads on said indoor units detected by said first detecting means;
means for, in said refrigerating cycle, allowing the refrigerant discharged from said variable-capability compressor to flow through said indoor heat exchangers and then said outdoor heat exchanger and to return to said variable-capability compressor, thereby carrying out a heating operation;



second detecting means for, at the time of said heating operation, detecting the refrigerant heat loss in each of pipes respectively connected to said indoor heat exchangers; and
second control means for, when the detected refrigerant heat loss in at least one of said pipes is a given value or more, enhancing the capability of said variable-capability compressor.

5,297,397

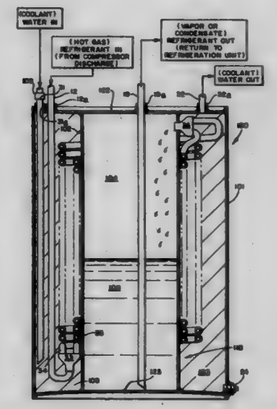
EFFICIENCY DIRECTED SUPPLEMENTAL CONDENSING FOR HIGH AMBIENT REFRIGERATION OPERATION

Ronald J. Pointer, 430 Glen Canyon, Garland, Tex. 75040

Continuation-in-part of Ser. No. 791,588, Nov. 11, 1991. This application Jan. 29, 1993, Ser. No. 11,002

Int. Cl.[5] F25B *27/02*

U.S. Cl. 62—238.6 **9 Claims**



1. A refrigeration system including a compressor, a primary condenser, and an evaporator, comprising in combination therewith:
a. means in operative relation with said primary condenser for causing both the efficiency trend of said system to increase, and the power demand trend of said system to decrease, as the ambient temperature increases above about ninety degrees Fahrenheit, and
b. wherein said means comprises a supplemental precondensing system having a first tank and a second tank adjacent thereto and sealed therefrom,
c. said second tank being a reservoir for containing varying levels of vapor and liquid refrigerant,
d. an incoming and exiting coolant line to said first tank,
e. means for receiving incoming hot refrigerant gas from said compressor, and for exiting cooler refrigerant gas and accumulated vapor condensate into said second tank, and
f. concentric line coils surrounding said second tank, and ultimately delivering said refrigerant into said second tank,
g. an exit line from said second tank to deliver partially cooled and precondensed refrigerant to said primary condenser, wherein
h. said precondensed refrigerant at this point being either a vapor, a condensate, or both, when entering said primary condenser,
i. and wherein the operating characteristics of said system are such as to neutralize the detrimental effect of said ambient temperature increases.

5,297,398

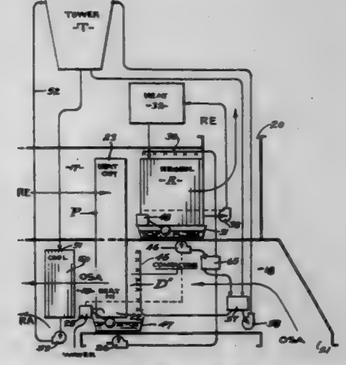
POLYMER DESICCANT AND SYSTEM FOR DEHUMIDIFIED AIR CONDITIONING

Milton Meckler, 930 20th St. #2, Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 726,040, Jul. 5, 1991, Pat. No. 5,191,771. This application Feb. 5, 1993, Ser. No. 16,152

Int. Cl.[5] F25D *23/00*

U.S. Cl. 62—271 **18 Claims**



1. An air conditioning system having an outside air inlet duct, a conditioned air supply duct into a conditioned space, a return air duct from said conditioned space and a relief exhaust air duct exhausting return air displaced by outside air and with a blower means to transport said outside, supply, return and relief air, and comprised of:
a heat-pipe having a heat absorber section in the inlet duct for removing the heat of adsorption in the dehumidified inlet air therefrom, and a heat rejecter section in the relief exhaust air duct for applying heat to exhaust air flow therethrough,
and an air dehumidifier means for processing a water adsorptive liquid desiccant and having a distribution means for wetting said heat absorber section of the heat-pipe for interface contact of incoming outside air with said liquid desiccant applied thereto to adsorb water vapor therefrom

VOL 1160 ISS 5 MR 29 1994 UMI

and thereby defining a dehumidifier contacter section, and having a regenerater section in the exhaust air duct following said heat rejecter section for interface contact of relief exhaust air with weakened liquid desiccant from said contacter section and applied thereto by distribution means for removing the heat of adsorption in the dehumidifier air therefrom,

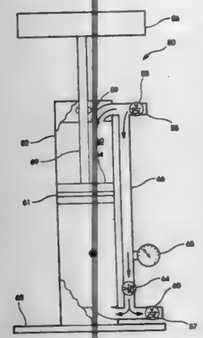
and a heat source means applying heat to the regenerater section to remove water from the liquid desiccant and into the exhaust air.

5,297,399

MANUALLY OPERATED REFRIGERANT RECOVERY DEVICE

James B. Tieken, 2018 Woodlawn Ave., Indianapolis, Ind. 46203

Filed Sep. 24, 1992, Ser. No. 950,463
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **8 Claims**



1. A device for manually transferring fluid in a pressurized fluid system, said pressurized fluid system including a fluid source and a fluid reservoir, said device comprising:

a cylinder including an inlet and an outlet;

a foot stand attached to said cylinder wherein said foot stand includes a cantilevered portion elevated above a step portion, said cylinder being attached to said cantilevered portion;

a piston movably disposed in said cylinder, said piston defining a first and a second fluid chamber in said cylinder, sid first fluid chamber being in fluid communication with said outlet and said second fluid chamber being in fluid communication with said inlet;

a rod attached to said piston and extending axially outward from within said cylinder;

a handle attached to said rod external of said cylinder;

a first one-way check valve in fluid communication with said outlet, said first one-way check valve enabling fluid flow out of said first fluid chamber;

a second one-way check valve in fluid communication with said inlet, said second one-way check valve enabling fluid flow into said second fluid chamber;

means for fluidly coupling said first fluid chamber to said second fluid chamber, said means for fluidly coupling including a third one-way check valve enabling fluid flow out from said second fluid chamber into said first fluid chamber; and

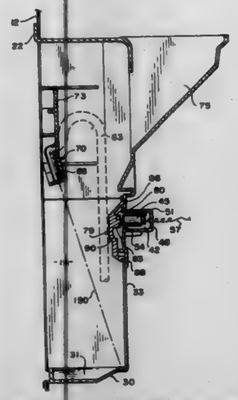
wherein said pressurized fluid is a refrigerant.

5,297,400

LIQUID DISPENSING ASSEMBLY FOR A REFRIGERATOR

Ronald E. Benton, and Kurt C. Senner, both of Galesburg, Ill., assignors to Maytag Corporation, Newton, Iowa

Filed Feb. 17, 1993, Ser. No. 18,704
Int. Cl.[5] F25C *5/18*
U.S. Cl. 62—389 **13 Claims**



1. A liquid dispensing assembly for use on a refrigerator including a door comprising:

a fill chamber including a base well, a rear upstanding wall and opposed side walls, said fill chamber being recessed within and accessible through the door;

a liquid supply line;

means for controlling the flow of liquid in said supply line in response to the insertion of a container into the fill chamber;

an ejection spout defined at a terminal end of a liquid supply line, said ejection spout being located above said fill chamber and defining an axial liquid discharge path angled downwardly and rearwardly, whereby upon activation of said flow controlling means, liquid flowing through said supply line will be dispensed into the container through said spout and when said flow controlling means is deactivated upon removal of the container from the fill chamber, any remaining liquid flowing through said spout will fall into the container prior to its complete removal from the fill chamber; and

means for retaining said supply line in a predetermined position so as to maintain said axial liquid discharge path in a desired orientation, said retaining means including a contoured guide member along which said liquid supply line extends and a flange member, said liquid supply line being maintained between said contoured guide member and said flange member.

5,297,401

ICE MAKER RESERVOIR APPARATUS

James H. Hawco, 110 St. Charles Blvd., Luling, La. 70070

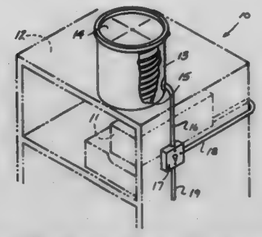
Filed Apr. 19, 1993, Ser. No. 48,320
Int. Cl.[5] F25C *1/00*
U.S. Cl. 62—340 **4 Claims**

1. An ice maker reservoir apparatus, comprising in combination with a refrigerator, with the refrigerator including an ice maker, wherein the apparatus comprises,

a rigid canister mounted upon the refrigerator, with the canister including a canister lid removably mounted to the canister, with the canister having a canister chamber, and

an insert chamber mounted within the canister chamber, with the insert chamber collapsible, having an accordion pleated side wall, with the insert chamber including an insert chamber lid movably mounted relative to the insert chamber, and

a first fluid conduit directed from the insert chamber in fluid communication with the insert chamber extending through the rigid canister, and



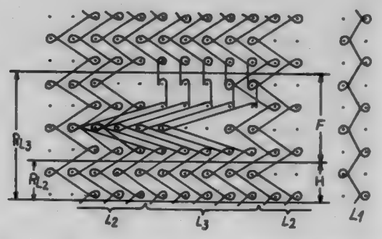
a valve member, with the first fluid conduit in fluid communication with the valve member, and the valve member including a second fluid conduit in fluid communication with the valve member, and the ice maker, and a third fluid conduit, with the valve member permitting selective fluid communication between the first fluid conduit and the second fluid conduit and the first fluid conduit and third fluid conduit.

5,297,402

WARP KNITTED FABRIC AND PROCESS AND MACHINE THEREFOR

Gerhard Bergmann, Heusenstamm, Fed. Rep. of Germany, assignor to Karl Mayer Textilmachinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,771
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1992, 4202981
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] D04B *23/16, 21/14*
U.S. Cl. 66—203 **23 Claims**



1. A process for the production of warp knitted fabric with (a) a plurality of spaced needles, (b) a ground thread system having a ground guide bar with a plurality of guides, and (c) first and second additional thread systems having a common warp beam and each having a supplemental guide bar with a plurality of guides, comprising the steps of:

partially threading from said common warp beam the supplemental guide bar of each of said first and said second additional thread systems;

executing a main lap with a two row repeat with said first additional thread system;

performing with said second additional thread system, in alternation, main lapping and pattern lapping, said pattern lapping being performed by employing displacements larger and smaller than that of the main lap to keep the average thread utilization substantially equivalent to that of the main lapping; and

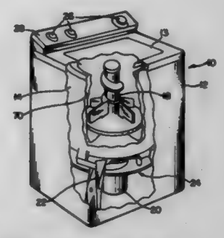
laying a ground fabric with said ground guide bar acting as part of said ground thread system.

5,297,403

ROTATABLE WASH BASKET FOR AN AUTOMATIC WASHER

Eric K. Farrington, Lincoln Township, Berrien County, and Brenner M. Sharp, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 3, 1992, Ser. No. 985,046
Int. Cl.[5] D06F *37/12*
U.S. Cl. 68—23.3 **16 Claims**



11. An automatic washer comprising:

an imperforate tub;

a motor having an output shaft;

a drive system connectable with said output shaft and having a drive shaft; and

a rotatable wash basket disposed within said imperforate tub, said wash basket further including:

an integral plastic body, said plastic body further including:

a generally cylindrical outerwall defining a vertical axis and further having an upper end open for receiving clothes for wash treatment and a lower end,

a base for forming a bottom of said cylindrical member, said base having an outer edge integral with said lower end of said generally cylindrical outerwall, said base further having an annular cavity formed within said base, said annular cavity having a triangular radial cross section, said base further comprising:

a first wall parallel with said vertical axis and further having an upper end and a lower end,

a second wall substantially perpendicular to said vertical axis and extending outwardly from said lower end of said first wall toward said outer edge of said base, and

a third wall interconnected with said second wall near said outer edge of said base and extending at an acute angle upwardly and inwardly to said upper end of said first wall, and said first, second and third walls being interconnected such that a vertical downward force applied to said outer edge of said base places said second wall in compression and said third wall in tension for eliminating bending and increasing base rigidity; a hub member positioned centrally within and integrally molded with said first wall of said annular cavity and having means drivingly connectable with said drive shaft for rotating said wash basket and further having said annular cavity disposed around said hub member, said hub member further including:

a generally cylindrical hollow portion having an axis aligned with said vertical axis of said body, and having an upper and a lower end, said generally cylindrical hollow portion further having a first means for mechanically interlocking with said base,

a substantially rectangular hollow portion intersecting said generally cylindrical hollow portion and having an open bottom corresponding to said lower end of said generally cylindrical hollow portion such that said generally cylindrical hollow portion and said substantially rectangular hollow portion define an interior cavity of said hub member having an open top end and open bottom end and further having a lower portion having a substantially rectangular cross-section and an upper portion having a substantially circular cross-section, and

a flange portion intersecting said lower end of said generally cylindrical hollow portion and said open bottom of said substantially rectangular hollow portion and further having a second means for mechanically interlocking with said base.

5,297,404

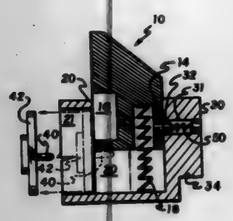
BOLT FOR AN INNER CYLINDER LOCK

Donald J. Embry, Cloverport, Ky., assignor to HSL Marketing, Inc., Atlanta, Ga.

Continuation of Ser. No. 909,171, Jul. 6, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 119,817

Int. Cl.[5] E05B 63/00

U.S. Cl. 70—1.5 **5 Claims**



1. An inner cylinder lock comprising:

a rear case having a plurality of walls defining a first opening and at least one groove, a second opening, and a third opening, said first opening, said second opening, and said third opening being connected to each other;

a bolt, movably accommodated in said first opening of said rear case, said bolt sealing said third opening of said rear case when located at a first position, and said bolt having a cavity connectable to said third opening of said rear case when said bolt is located at a second position, said bolt comprises at least one projecting member engaged with said groove of said rear case, whereby an engagement between said projecting member and said groove defines a moving direction of said bolt as said direction from said first position to said second position;

a cam pin, removably accommodated in said second opening of said rear case, which retains said bolt to be located at the first position;

first biasing means, accommodated in said first opening of said rear case and coupled to said bolt, for biasing said bolt so as to move said bolt in a direction from said first position to said second position in said first opening;

a locking pin, accommodated in said third opening of said rear case and engageable with said cavity of said bolt; and

second biasing means, accommodated in said third opening of said rear case and coupled to said locking pin, for biasing said locking pin so as to project said locking pin through said first opening of said rear case and to engage said locking pin with said cavity of said bolt, whereby when said cam pin is removed, said bolt is moved from said first position to said second position by said first biasing means and retained at the second position by means of an engagement between said cavity thereof and said locking pin projected by said second biasing means.

5,297,405

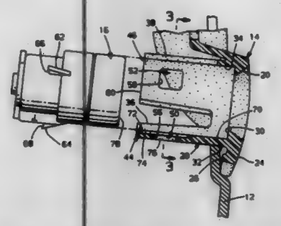
DOOR HANDLE ASSEMBLY WITH SNAP-IN KEY CYLINDER

Steven F. Manning, Northville; Michael E. Compeau, Fraser; James D. Girard, St. Clair Shores, and Joseph E. Mishark, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1993, Ser. No. 8,106

Int. Cl.[5] E05B 9/08

U.S. Cl. 70—208 **7 Claims**



1. A vehicle door handle assembly in a vehicle having an apertured shell and a key cylinder having a key slot comprising:

a tubular extension integral with and extending inwardly from said shell and having a free end and said tubular extension defining a bore that receives said key cylinder;

said tubular extension having a plurality of slots defining a plurality of tubular sections radially yieldable outwardly from their natural free state positions;

at least one of said plurality of tubular sections having an opening extending therethrough and having a shoulder;

at least one lug extending radially outward from the periphery of said key cylinder and engaging said shoulder of said tubular section thereby prohibiting movement of said key cylinder; and

means for positioning said key cylinder so that said key slot is orientated in a desired position.

5,297,406

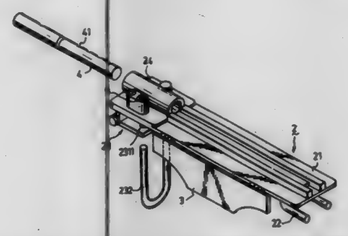
LOCK DEVICE FOR A STEERING WHEEL OF AN AUTOMOBILE

Chuan-Chuan Lin, I-Hsiu No. 148, I-Hsiu Li Hsueh-Chia Chen, Tainan Hsien, Taiwan

Filed Sep. 22, 1992, Ser. No. 948,440

Int. Cl.[5] B60R 25/02

U.S. Cl. 70—209 **2 Claims**



1. A lock device for a steering wheel of an automobile, said steering wheel including a circular rim, a fastening member at a center of said circular rim and a plurality of ribs extending radially from said fastening member to connect with said circular rim, said lock device comprising:

a retaining unit including an elongated plate body capable of covering upper surfaces of two diametrically opposed portions of said circular rim, said elongated plate body having a guiding tube which is formed on an upper surface and which extends along a longitudinal length of said plate body, and an elongated blocking rod having a row of notches along a length thereof, said blocking rod being movably received in said guiding tube, one end of said blocking rod extending out from a first end of said plate body;

a first pawl member fixed on a lower surface adjacent to a second end of said plate body, said first pawl member cooperating with said plate body to form a hooking portion which is capable of locking one of said diametrically opposed portions of said circular rim;

a second pawl member spaced from said first pawl member and mounted pivotally on said lower surface adjacent to said first end of said plate body, said second pawl member being pivotable relative to said plate body between a first position, wherein said second pawl member is generally parallel to and cooperates with said plate body to confine a receiving space that is capable of receiving a remaining one of said diametrically opposed portions of said circular rim, and a second position which is farther away from said plate body than said first position;

said plate body further having an engaging bore extending from said lower surface thereof and being communicated with an interior of said guiding tube;

said second pawl member having a first through hole formed therethrough and aligned with said engaging bore of said plate body when said second pawl member is at said first position;

a locking rod member having a first end inserted into said engaging bore of said plate body through said first through hole of said second pawl member, said first end of said locking rod member extending into one of said notches of said blocking rod, thereby limiting movement of said blocking rod in said guiding tube and preventing said second pawl member from rotating from said first position to said second position; and

means for releasably retaining said locking rod member in said engaging bore;

wherein said elongated plate body further includes a longitudinal edge and a blocking plate mounted pivotally thereto, said blocking plate having a periphery in contact with said ribs which prevent said blocking plate from pivoting upward relative to said plate body when said second pawl member is at said first position.

5,297,407

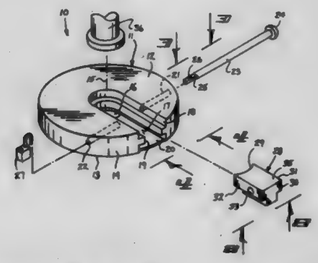
TRAILER LOCKING APPARATUS

Merwin E. Tarr, R.D. #5, Box 457, Franklin, Pa. 16323

Filed Feb. 22, 1993, Ser. No. 20,608

Int. Cl.[5] B60R 25/00

U.S. Cl. 70—232 **2 Claims**



1. A trailer locking apparatus arranged for securement about a trailer pin, wherein the apparatus comprises,

a locking collar, the locking collar having a collar top wall spaced from a collar bottom wall in a spaced parallel relationship, and a discontinuous collar side wall,

and

a collar axis, with the collar symmetrically oriented about the collar axis, with the collar axis extending through the top wall and bottom wall, and a collar bore directed orthogonally through the top wall and the bottom wall coaxially aligned with the collar axis,

and

a channel orthogonally oriented relative to the collar axis directed into the collar from the collar side wall,

and

a locking head arranged for reception within the channel to engage the trailer pin positioned within the collar bore,

and

lock means directed through the locking collar and the locking head for securement of the trailer pin within the locking collar,

and

the channel includes a U-shaped channel side wall, the channel side wall having a U-shaped rib coextensive with the side wall intermediate the collar top wall and the collar bottom wall, with the locking head having a T-shaped cross-sectional configuration, and an arcuate first end wall arranged in a facing relationship relative to the collar bore, and a head second end wall spaced from the first end wall, and a stepped first side wall parallel to and coextensive with a stepped second side wall, with the first side wall and the second side wall arranged for sliding arrangement with the U-shaped rib, and the stepped first side wall and the stepped second side wall including a side wall bore orthogonally directed through the stepped first side wall and the stepped second side wall arranged to receive the lock means therethrough,

and

the locking head includes a head top wall coplanar with the collar top wall, and the channel having a channel floor plate coplanar with the collar bottom wall, and the locking head having a locking head bottom wall in sliding engagement with the channel floor plate.

5,297,408

METHOD OF AN APPARATUS FOR CONTROLLING HYDRAULIC ROLLING REDUCTION IN A ROLLING MILL

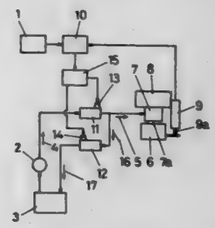
Keiichiro Yoshida, 497, Shimonagayoshi, Mobara, Chiba, Japan

Filed Jan. 7, 1992, Ser. No. 817,693

Claims priority, application Japan, Feb. 19, 1991, 3-046184; Nov. 21, 1991, 3-332582

Int. Cl.[5] B21B 37/08

U.S. Cl. 72—16 **16 Claims**



1. A control apparatus for controlling a gap between opposing rolls of a rolling mill, comprising:

a hydraulic cylinder means operably coupled to at least one of the opposing rolls of the rolling mill for adjustably maintaining the gap between the opposing rolls;

a hydraulic fluid supply;

a first fluid control means for causing hydraulic fluid to flow from said hydraulic fluid supply in a first flow path toward said hydraulic cylinder means;

a second fluid control means for causing hydraulic fluid to

flow to said hydraulic fluid supply in a second flow path away from said hydraulic cylinder means; and

means for combining the fluid flow in said first flow path with the fluid flow in said second flow path to obtain a resultant fluid flow, and for applying said resultant fluid flow to said hydraulic cylinder means such that hydraulic fluid is supplied to said hydraulic cylinder means when the fluid flow in said first flow path is greater than the fluid flow in said second flow path and such that hydraulic fluid is removed from said hydraulic cylinder means when the fluid flow in said second flow path is greater than the fluid flow in said first flow path.

5,297,409

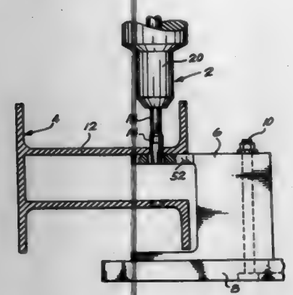
WORKHARDENING HIGH-STRENGTH STEEL AIRCRAFT COMPONENTS

Danny L. Beaman, 25308 - 169th Pl. SE., Kent, Wash. 98042; Kenneth R. Christie, 2815 - 164th Pl. SE., Bothell, Wash. 98012; Dennis M. Cordy, 29730 - 115th Ave. SE., No. B202, Kent, Wash. 98031; Craig W. Graham, 26515 - 186th Pl. SE., Kent, Wash. 98042; Steven W. Lightle, 9538 S. 213th, Kent, Wash. 98031, and Michael L. Watts, 6718 - 50th Ave. E., Tacoma, Wash. 98443

Filed Jun. 22, 1992, Ser. No. 902,248

Int. Cl.[5] B21D *39/08*

U.S. Cl. 72—42 **4 Claims**



1. A method of enlarging and workhardening holes in high strength steel aircraft components, the method comprising

forming a hole having a diameter less than the desired finish diameter;

applying a lubricant to the working surfaces of said hole, said lubricant consisting essentially of a first powder taken from the group of nickel and molybdenum powders; a second powder which consists essentially of one or more metals that is more reactive than the steel of said component; and a spreadable medium in which said first and second powders are dispersed;

centering a forming mandrel over said hole, said mandrel having a cylindrical shape, a maximum diameter substantially equal to the desired finish diameter of said hole and a frustoconical shape on either end; and

pushing said mandrel through said hole at a rate such that a normal tempered martensitic structure is obtained in the steel immediately adjacent said hole.

5,297,410

METHOD OF MANUFACTURING A MULTIPLE-WALLED TUBE

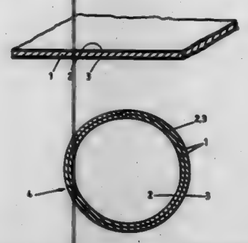
Robert W. J. Goff, Abingdon, England, assignor to Bundy International Limited, Abingdon, England

Filed Dec. 8, 1992, Ser. No. 985,935

Claims priority, application Belgium, Dec. 10, 1991, 09101122

Int. Cl.[5] B21C *37/06*

U.S. Cl. 72—47 **8 Claims**



1. A method of manufacturing a multiple-walled tube, comprising the steps of:

providing a metal strip;

applying a plated layer of a first brazeable metal on one side of the metal strip;

applying a plated layer of a second different brazeable metal to the other side of the metal strip;

rolling the plated metal strip through at least two complete revolutions to form a tube having at least two walls which has one of said plated layers on the inside thereof and the other of said plated layers on the outside thereof; and

heating the tube to cause the surfaces of the walls of the tube which are in contact with one another to be brazed, the direction of rolling of said metal strip being dependent upon which of said first and second brazeable layers is to be provided on the inside and outside of said rolled metal tube, whereby two different multiple-walled tubes may be provided from a common plated metal strip.

5,297,411

METHOD OF FORMING THREADED OPENING

Sydney I. Scrimshaw, Liverpool, United Kingdom, assignor to Eagle Precision Technologies Limited, Merseyside

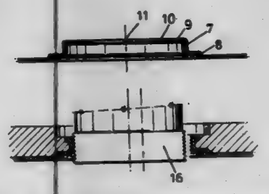
PCT No. PCT/GB90/01123, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO91/01188, PCT Pub. Date Feb. 7, 1991

PCT Filed Jul. 20, 1990, Ser. No. 838,223

Claims priority, application United Kingdom, Jul. 20, 1989, 8916630

Int. Cl.[5] B21D *51/40*

U.S. Cl. 72—70 **11 Claims**



1. A method of forming a cylindrical opening in a metal sheet, comprising piercing, pressing and drawing the metal sheet to provide a raised cylindrical section having an axis and partly closed at one end by an annular flange, and bending the flange axially inwardly to enlarge said cylindrical opening by (i) orbiting a tool in engagement with said flange about said cylindrical section axis and (ii) rolling the tool along the flange about a second axis offset from said cylindrical section axis to enable enlargement and thinning of said flange.

5,297,412

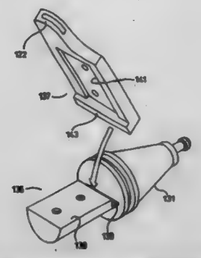
WIRE WORKING TOOL AND HOLDER

Luigi Maggi, Lecco, Italy, assignor to North America OMCG, Inc., Bridgeport, Conn.

Division of Ser. No. 518,074, May 2, 1990, Pat. No. 5,203,191. This application Dec. 16, 1992, Ser. No. 992,378

Int. Cl.[5] B21F *35/02*

U.S. Cl. 72—140 **6 Claims**



1. A working tool for a wire working machine, comprising:

a tool holder having a first part extending therefrom at one end and having a cone-shaped tool mount at another end, said tool holder being releasably mountable with its cone-shaped end to a universal tool mount;

a wire former having a second part extending therefrom;

said first and second parts being sized and shaped to interfit in lateral and longitudinal interlocking relationship with each other so as to provide a referenced position for the wire former that is maintained throughout high force operation of the wire working machine and to restrain said wire former from lateral and longitudinal movement with respect to said tool holder, and means for releasably mounting the first and second parts to each other.

5,297,413

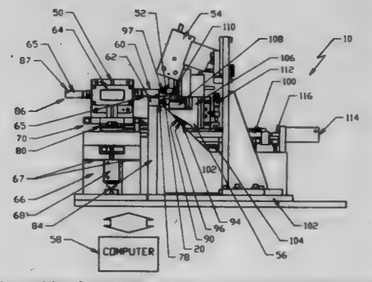
LOAD ADJUSTING MACHINE FOR MAGNETIC DISK DRIVE HEAD GIMBAL ASSEMBLIES

Thomas A. Schones, and Peter Torreani, both of Hutchinson, Minn., assignors to Hutchinson Technology Incorporated, Hutchinson, Minn.

Filed Feb. 4, 1993, Ser. No. 13,580

Int. Cl.[5] B21D *11/10*

U.S. Cl. 72—342.1 **21 Claims**



1. A machine for adjusting loads on magnetic disk drive head suspension assemblies to bring the loads within a desired specification window defined by upper and lower window specifications, including:

a load cell for measuring and providing load signals representative of actual suspension assembly loads;

a mechanical bending mechanism responsive to mechanical adjust control signals for bending suspension assemblies to increase and decrease suspension assembly loads;

a heat source responsive to heat adjust control signals for applying heat to suspension assemblies to decrease suspension assembly loads;

memory for storing:

mechanical adjust data representative of the relationship between mechanical adjust control signals and load changes induced by the mechanical bending mechanism;

heat adjust data representative of the relationship between heat adjust control signals and load decreases induced by the heat source; and

control data representative of the upper and lower window specifications and a light adjust threshold, wherein the light adjust threshold is a load greater than the upper window specification; and

a digital processor coupled to the load cell, mechanical bending mechanism, heat source and memory, and including means for:

(a) receiving load signals representative of suspension assembly loads measured by the load cell;

(b) accessing the memory and generating mechanical adjust control signals as a function of the load signals, to actuate the mechanical bending mechanism and attempt to increase suspension assembly loads to loads greater than the upper window specification if the measured loads are less than the lower window specification;

(c) accessing the memory and generating mechanical adjust control signals as a function of the load signals, to actuate the mechanical bending mechanism and attempt to decrease suspension assembly loads to loads less than or equal to the light adjust threshold and greater than the upper window specification if the measured loads are greater than the light adjust threshold;

(d) accessing the memory and generating heat adjust control signals as a function of the load signals, to actuate the heat source and attempt to decrease suspension assembly loads to loads less than or equal to the upper window specification and greater than or equal to the lower window specification if the measured loads are greater than the upper window specification and less than or equal to the light adjust threshold; and

(e) repeating functions (a)–(d) a predetermined number of times, or until the measured suspension assembly loads are within the specification window.

5,297,414

METHOD FOR NECKING CONTAINERS

Sergio R. Sainz, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 30, 1992, Ser. No. 954,769

Int. Cl.[5] B21D *22/00*

U.S. Cl. 72—354.6 **4 Claims**

1. A multi-stage die-forming method for necking-in the open end of a can body to form a reduced diameter neck having a smooth profile comprising the steps of:

providing an open-ended can body having a sidewall of substantially cylindrical configuration about a longitudinal central axis,

the sidewall defining an open end having a terminal edge,

at a first die-forming station, causing relative axial movement between first necking-die means and the open end of the sidewall to engage the first die means against the sidewall to form a first reduced diameter control neck having a first contoured portion extending inwardly from said sidewall to a first cylindrical portion terminating at said terminal edge,

at a second die-forming station, causing relative axial movement between a second necking-die means and the first

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control neck to engage the second die means against the first control neck and an adjacent portion of said sidewall to completely reform the control neck and the adjacent portion of said sidewall into a second reduced diameter neck having a second contoured portion extending inwardly from said sidewall to a second cylindrical portion terminating at said terminal edge,



the diameter of said second cylindrical portion being substantially less than the diameter of said first cylindrical portion, and the axial length of said second neck being substantially greater than the axial length of said control neck.

5,297,415

METHOD FOR FORMING TUBING INTO CURVED, UNBALANCED AND NON-UNIFORM SHAPES

John L. Hendricks, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 645,971, Jan. 24, 1991, abandoned. This application Feb. 4, 1992, Ser. No. 830,925

Int. Cl.[5] B21D *7/00*

U.S. Cl. 72—369 **7 Claims**



1. A method of forming and shaping at least a portion of a length of generally straight tubing into a desired and predetermined curved shape in a continuous operation and without interruption, comprising the steps of:

holding the tubing by engaging the exterior thereof intermediate its ends;

bending at least a portion of a length of tubing continuously without interior support and without supporting the ends of the tubing to achieve the desired and predetermined curved shape;

holding the position of the tubing in said predetermined shape; and

changing the cross-section of the tubing along said at least a portion of its length without interior support into a non-uniform configuration which varies along the length of the tubing sufficiently to eliminate springback substantially and provide a stable part with shape retention by applying pressure to the tubing at a level sufficient to squeeze and clamp the tubing without holding the ends of the tubing to produce stresses which counterbalance surface stresses in the tubing and which stabilize the shape of the tubing in said predetermined curved shaped.

5,297,416

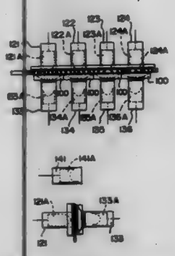
METHOD OF PRODUCING AN ELLIPSOID FORM FROM AN EXPANDED METAL NET

Shaikh G. M. Y. Alhamad, and Sami I. Altikan, both of Riyadh, Saudi Arabia, assignors to Shaikh G.M.Y. Alhamad, Saudi Arabia

Division of Ser. No. 804,904, Dec. 12, 1991, Pat. No. 5,207,756, which is a division of Ser. No. 605,268, Oct. 29, 1990, Pat. No. 5,095,597, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a continuation of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Apr. 2, 1993, Ser. No. 42,480

Int. Cl.[5] B21D *22/26*

U.S. Cl. 72—379.4 **3 Claims**



1. A method of producing an ellipsoid form from an expanded metal foil net comprising the steps of placing a sheet of expanded metal net on a work surface adjacent an open-ended hollow molding cylinder having an interior molding surface formed in the shape of a semi-ellipsoid, moving a first molding piston having an exterior molding surface formed in the shape of a semi-ellipsoid against said expanded metal sheet and into said open-ended cylinder to form said sheet into a semi-ellipsoid piece having a closed end and an open end, and subsequently moving a second piston into said open-ended cylinder to close the open end of said semi-ellipsoid piece and thus complete formation of the ellipsoid form.

5,297,417

PORTABLE COLLET CRIMPING APPARATUS

Eric D. Orcutt, Rockvale, Tenn.; George Easterday, Jr.; Duane L. Lambert, both of Columbia City, Ind., and Marlin D. Meredith, North Webster, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 18, 1992, Ser. No. 947,494

Int. Cl.[5] B21D *39/04*

U.S. Cl. 72—402 **21 Claims**

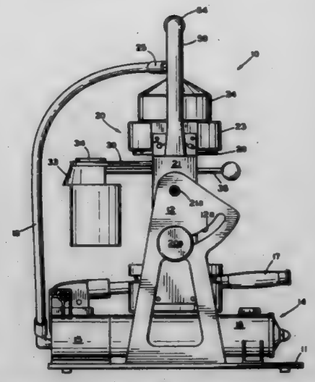
8. An apparatus for crimping a tubular fitting onto the end of a hose comprising:

a die assembly adapted to be selectively engaged so as to crimp a tubular fitting onto the end of a hose;

a cylinder having a piston which is movable between a first position and a second position;

a pusher; and

means for supporting said pusher for linear sliding movement relative to said piston between a retracted position, wherein said pusher is disposed between said piston and said die assembly such that said piston can urge said pusher into engagement with said die assembly to crimp a tubular fitting onto the end of a hose when said piston is moved from said first position to said second position, and an extended position, wherein said pusher is not disposed between said piston and said die assembly such that said piston cannot urge said pusher into engagement with said die assembly to crimp a tubular fitting onto the end of a



hose when said piston is moved from said first position to said second position.

5,297,418

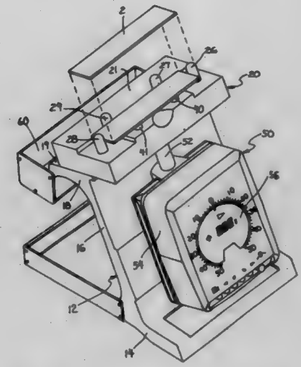
GAGE FOR MEASURING THE INTENSITY OF SHOT-BLAST PEENING

Jack M. Champaigne, South Bend, Ind., assignor to Electronics, Incorporated, Mishawaka, Ind.

Filed Mar. 9, 1993, Ser. No. 28,332

Int. Cl.[5] G01L *5/00*

U.S. Cl. 73—11.02 **9 Claims**



5. A gage for testing the intensity of shot blasting against an elongated conductive test strip in a peening process comprising:

a stand including a platform,

two pairs of magnetically conductive contacts protruding above said platform,

magnetically conductive means carried by said platform for supporting each said pair of contacts,

magnet means for creating a magnetic attraction at each pair of contacts to fixedly anchor said test strip to said pairs of contacts overlying said platform, and

means carried by said stand for engaging said test strip upon said contacts for measuring the deflection of said test strip caused by said shot blasting.

5,297,419

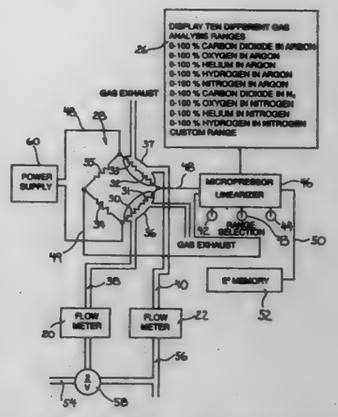
LINEARIZING GAS ANALYZER

Kent G. Richardson, LaPorte, Ind., assignor to Thermco Instrument Corporation, LaPorte, Ind.

Filed Jul. 16, 1992, Ser. No. 914,553

Int. Cl.[5] G01N *31/00*

U.S. Cl. 73—25.03 **7 Claims**



1. A machine for analysis of gas mixtures, said machine comprising a housing, first inlet means for introducing a first gas sample into said housing, second inlet means for introducing a second gas sample into said housing, means positioned across said first and second inlet means for detecting thermal conductivity of the first gas sample relative to the second gas sample, means for comparing a difference between thermal conductivities of the first gas sample and the second gas sample, memory means connected to said means for comparing, said memory means for converting the difference in thermal conductivity into a first gas percentage reading, means for visually displaying the percentage reading connected to said means for comparing, said memory means housing a plurality of different thermal conductivity ranges based upon different compositions of the first and second gas samples.

5,297,420

APPARATUS AND METHOD FOR MEASURING RELATIVE PERMEABILITY AND CAPILLARY PRESSURE OF POROUS ROCK

Ronnie E. Gilliland, New Orleans, La., and Daniel R. Maloney, Bartlesville, Okla., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 19, 1993, Ser. No. 64,390

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 **11 Claims**

1. Apparatus for measuring porous rock properties at subterranean reservoir conditions, comprising:

a) a sleeve containing a core sample of a porous rock saturated with a first fluid,

b) a fluid inlet positioned in a first end of said sleeve through which a second fluid is injected under pressure into a first end of said core sample for displacing said first fluid from a second end of said core sample, said second fluid being immiscible with said first fluid,

c) a first member positioned adjacent a second end of said core sample within said sleeve and which is permeable to said first fluid and impermeable to said second fluid,

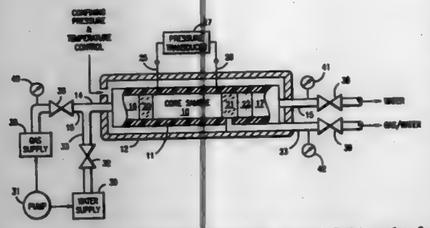
d) a second member positioned between said first member and the second end of said core sample which is permeable to both said first fluid and said second fluids,

e) a first fluid outlet positioned in a second end of said sleeve

through which said first fluid flows from said sleeve after having been discharged from the second end of said core sample through said first and second members,

f) a second fluid outlet positioned in said second end of said sleeve through which said first and second fluids flow from said sleeve after having been discharged from the second end of said core sample through said second member,

g) a first valve positioned in said first fluid outlet for controlling the discharge of said first fluid from said core sample through said first and second members,



h) a second valve positioned in said second fluid outlet for controlling the discharge of both said first and second fluids from said core sample through said second member,

i) means for applying a confining pressure through said sleeve to said core sample,

j) a pair of pressure taps contacting the outer surface of said core sample at spaced-apart positions along the length of the core sample, and

k) a pressure transducer connected to said pressure taps for measuring pressure across said core sample.

5,297,421

LEAK DETECTION SYSTEM FOR GAS, STEAM OR THE LIKE THAT INVOLVES MULTI-POINT SAMPLING

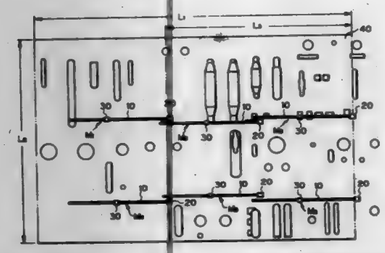
Akira Hosonuma, Abiko; Teruyuki Onodera, Sennan; Saburoh Takahashi, Takaishi; Kunio Sakashita, Yokohama, and Yoshinori Hiroshige, Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,185

Claims priority, application Japan, Mar. 5, 1991, 3-062482; Dec. 24, 1991, 3-341416

Int. Cl.[5] G01M *3/00*

U.S. Cl. 73—40 **2 Claims**



1. A leak detection system for gas, steam or the like in a plant yard where a flammable or noxious substance is handled in a gaseous, liquid or solid form, comprising:

a plurality of sampling modules arranged in the plant yard, each of said sampling modules including a gas pipe having an interior, a plurality of air inlet tubes attached to the gas pipe in communication with the interior of the gas pipe, and a plurality of air intakes which correspond in number to the number of air inlet tubes, each of said air intakes being connected to a free end of one of the air inlet tubes to collect samples of the surrounding atmosphere;

at least one sensor module connected to each sampling module for receiving the samples of the atmosphere collected through the sampling modules and having a built-in sensor to detect the gas, steam or the like in the atmosphere so received if the gas, steam or the like is leaking from equipment or apparatus in the plant yard;

at least one vacuum pump for normally drawing the samples of the atmosphere which exist in the sampling modules, through the sensor module;

at least one wind direction and velocity indicator for the real-time determination of the direction and velocity of local wind, and

data processing means for real-time analysis of wind direction and velocity data obtained from the wind direction and velocity indicator and concentrations of the gas, steam or the like in the atmosphere which have been collected by the sampling modules and detected by the sensor module,

whereby leakage of the gas, steam or the like from the equipment or apparatus in the plant over a wide area can be discovered promptly and with a high degree of probability by effectively and constructively using the data of the real-time fluctuations in the wind direction and velocity.

5,297,422

TRACER-GAS LEAK DETECTOR

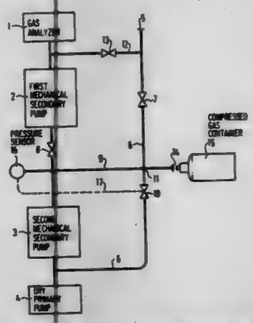
Gilles Baret, Annecy, France, assignor to Alcatel CIT, Paris, France

Filed Sep. 24, 1992, Ser. No. 950,276

Claims priority, application France, Sep. 25, 1991, 91 11815

Int. Cl.[5] G01M *3/20*

U.S. Cl. 73—40.7 **4 Claims**



1. A tracer-gas leak detector including an analysis unit, a primary pump having an inlet connected to a first inlet orifice of the detector via a first pipe equipped with a first valve, and a secondary pumping set having an inlet connected to said analysis unit and an outlet connected to the inlet of the primary pump, wherein the primary pump is a dry pump, said secondary pumping set includes two secondary pumps of the mechanical type separated from each other by a second valve, the secondary pump proximate to said dry primary pump being a second secondary pump and including a dynamic seal stage at an outlet thereof, and wherein a second pipe connects the inlet of said second secondary pump downstream from said second valve, to said first pipe, a third valve is disposed on said first pipe between the outlet of said second secondary pump and a junction where the second pipe meets the first pipe, said third valve being controlled by a pressure sensor placed at the inlet of said second secondary pump.

5,297,423

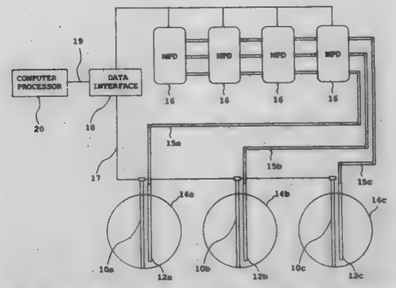
STORAGE TANK AND LINE LEAKAGE DETECTION AND INVENTORY RECONCILIATION METHOD

Jerome P. Keating; William W. Dunn, and William D. Dunn, all of San Antonio, Tex., assignors to Integrated Product Systems, Inc., San Antonio, Tex.

Filed Jul. 27, 1992, Ser. No. 920,616

Int. Cl.[5] G01M *3/32*

U.S. Cl. 73—49.2 **14 Claims**



1. A method for accurately detecting and quantifying changes in a quantity of liquid and gaseous product present in a storage tank over a period of time comprising the steps of:

dispensing a portion of said product from said tank through a dispensing means;

measuring a temperature corrected volume of said product dispensed from said tank through said dispensing means by means of flow meters operatively connected to said dispensing means;

sensing and measuring a positive or negative change in a temperature corrected volume of said product remaining within said tank by means of a sensor within said tank;

comparing said temperature corrected volume of said portion of said product dispensed as measured by said flow meters with said positive or negative change in said temperature corrected volume of product remaining within said tank as measured by said sensor; and

identifying a source of difference between said temperature corrected volume of said portion of said product dispensed and said positive or negative change in said temperature corrected volume of product remaining within said tank.

5,297,424

TELEMETRY SYSTEM FOR TIRE PRESSURE AND TEMPERATURE SENSING

Ray A. Sackett, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 7, 1990, Ser. No. 490,061

Int. Cl.[5] B60C *73/02*

U.S. Cl. 73—146.5 **6 Claims**

1. A method for adjusting the ride characteristics of a suspension system in response to the temperature and pressure of air in a pneumatic tire, said method comprising the steps of:

generating a first signal in response to the pressure of air in said pneumatic tire;

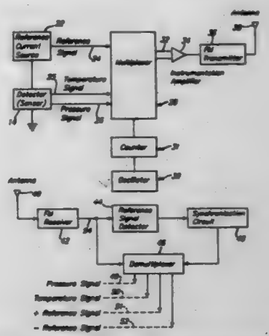
generating a second signal in response to the temperature of air in said pneumatic tire;

multiplexing said first and second signals to produce a multiplexed signal;

transmitting said multiplexed signal;

receiving said multiplexed signals;

demultiplexing said multiplexed signals after said multiplexed signals have been received, said step of demultiplexing operable to generate a demultiplexed signal; and



adjusting the ride characteristics of said suspension system in response to said demultiplexed signal.

5,297,425

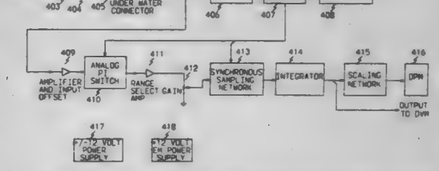
ELECTROMAGNETIC BOREHOLE FLOWMETER SYSTEM

Jimmie W. Hamby; Hubert S. Pearson, both of Knoxville; William R. Waldrop; Donald E. Warren, both of Powell, and Steven C. Young, Oak Ridge, all of Tenn., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Mar. 23, 1992, Ser. No. 857,555

Int. Cl.[5] G01F *1/00*

U.S. Cl. 73—155 **39 Claims**



1. A flowmeter system for determining the flow of fluid through conduit, said system comprising:

(a) probe means for travel within said conduit and for measuring the flow of fluid therethrough, said probe means comprising:

(1) flowmeter transducer means for effecting a magnetic field perpendicular to the axis of said conduit;

(2) electrodes for determining the voltage induced by said magnetic field in the flow of fluid; and

(3) first amplifier means coupled to said electrodes and impedance matched therewith for converting the output from said electrodes to a low impedance signal;

(b) connector means for coupling said probe means and later mentioned external circuit means over distances ranging up to about 5000 feet; and

(c) external circuit means coupled with said probe means through said connector means for applying signals to said flowmeter transducer means and for being responsive to signals from said electrodes, said external circuit means comprising:

(1) timing signal generator means coupled to a first power supply and having first timing means for providing a later mentioned signal sampling delay and second tim-

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ing means for providing a later mentioned signal blocking pulse;

(2) variable voltage generating means coupled to a second power supply for output of a drive signal to said flowmeter transducer means, said output synchronized with signal sampling from said electrodes and delayed therefrom for about 16×10^{-9} to about 3×10^{-3} seconds, said delay provided by said first timing means, and said second power supply electrically isolated from said first power supply;

(3) input offset circuit means coupled to said electrodes for zeroing the signal under conditions of zero flow of fluid through said probe means;

(4) analog switching means coupled to the output of said input offset circuit means and provided with a blocking pulse for passing to later mentioned sampling means a signal substantially free of switching transients, said blocking pulse provided by said second timing means; and

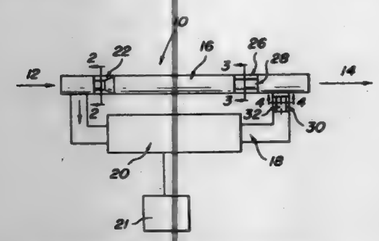
(5) sampling means coupled to the output of said analog switching means and synchronized with said drive signal to said flowmeter transducer means for coupling the signal from said analog switching means for a full master clock period occurring immediately prior to generation of a timing signal to said first timing means, said sampling means determinative of both the negative and positive peak amplitudes coupled therethrough for converting peak-to-peak AC amplitudes to a DC signal.

5,297,426

HYDRODYNAMIC FLUID DIVIDER FOR FLUID MEASURING DEVICES

Martin Kane, Linwood, and Mark Perelshteyn, Vineland, both of N.J., assignors to ABB K-Flow Inc., Millville, N.J.

Filed Apr. 7, 1993, Ser. No. 44,349
Int. Cl.[5] G01F *5/00, 1/84*
U.S. Cl. 73—202 **20 Claims**



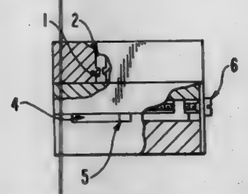
1. A hydrodynamic fluid divider comprising:
an inlet for receiving fluid flow;
an outlet for exhausting fluid flow;
a main line for directing fluid flow from the inlet to the outlet;
a shunt line for withdrawing a portion of the flow from the inlet and directing the flow portion to the outlet separately from the flow in the main line;
a balancing plate positioned in the main line having at least one opening therein for passage of at least a portion of the fluid flow from the inlet, through the main line, and into the outlet;
means for measuring flow characteristics within the shunt line;
a first restriction plate positioned downstream of the balancing plate within the main line; and
a second restriction plate positioned downstream of the flow measuring means within the shunt line,
the first restriction plate having at least one opening therein, and the second restriction plate also having at least one opening therein, the open area of the second restriction plate opening with respect to the total area of first restriction plate opening and the second restriction plate opening being proportional to the portion of the overall fluid flow directed through the shunt line and the flow measuring means and the balancing plate form equivalent restrictions on the fluid flow through the shunt line and the main line, respectively.

5,297,427

WIDE-RANGE LAMINAR FLOWMETER

Ali Shambayati, Tucson, Ariz., assignor to Alicat Scientific, Inc., Tucson, Ariz.

Filed Sep. 3, 1992, Ser. No. 940,144
Int. Cl.[5] G01F *5/00*
U.S. Cl. 73—203 **12 Claims**



1. An adjustable laminar flowmeter comprising:
a housing;
a plurality of fluid paths located in said housing including at least a first fluid path and a second fluid path;
an adjustment mechanism for adjusting at least one dimension of at least one of said first and second fluid paths to cause a predetermined ratio of a flow to pass through said at least one fluid path in a flow direction; and
measurement means operatively positioned with respect to at least one of said first and second flow paths to measure a characteristic of the flow through said flow path;
wherein said adjustment mechanism comprises a plate which is linearly movable in a direction perpendicular to the flow in said first or second flow path and said plate extends in a longitudinal direction which is parallel to the flow direction and is adjustable in a direction perpendicular to the flow direction.

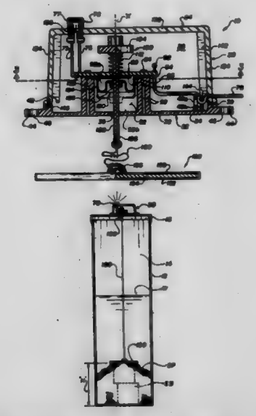
5,297,428

SALT LEVEL MONITORING DEVICE

Larry L. Carr, Chesterland, and James R. Mismas, Concord Township, Cuyahoga County, both of Ohio, assignors to Tridelta Industries, Inc., Mentor, Ohio

Filed Aug. 13, 1992, Ser. No. 929,679
Int. Cl.[5] G01F *23/00*
U.S. Cl. 73—290 R **19 Claims**

1. A device for monitoring the level of salt in a brine tank comprising:
a housing,
a first circuit within said housing connectable to an electric power source, a second circuit within said housing connectable to said electric power source
indicator means connectable to said first and second circuits for indicating the existence of a first electrical state and a second electrical state, respectively,
actuator means including a conductive element, said actuator having a first position wherein said conductive element conductively engages said first circuit and said indicator means indicates said first electrical state, and a second position wherein said conductive element is spaced from said first circuit and activates said second circuit so that said indicator means indicates said second electrical state,
biasing means of a predetermined force of biasing said actuator means toward said first position,
surface means for resting on the upper surface of said material in said tank, said surface means having a weight greater than said predetermined force of said biasing means, a density greater than water, and being movable in said brine tank as the height of salt therein varies, and



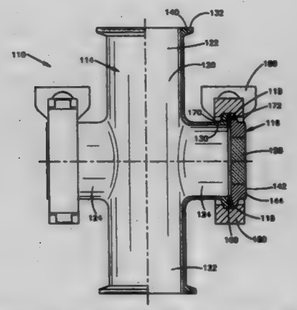
means for connecting said surface means to said actuator means, wherein the weight of said surface means causes said actuator means to move to said second position when said surface means descends a predetermined distance.

5,297,429

SANITARY SIGHT INDICATOR

David E. Brown, Brunswick, and David E. Parcel, Elyria, both of Ohio, assignors to Clark-Reliance Corporation, Strongsville, Ohio

Division of Ser. No. 764,837, Sep. 24, 1991, Pat. No. 5,243,929.
This application May 20, 1993, Ser. No. 64,848
Int. Cl.[5] G01F *23/02*
U.S. Cl. 73—323 **20 Claims**



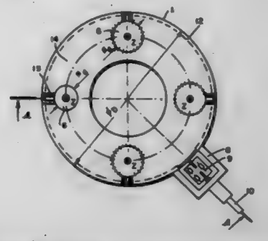
1. A sanitary sight indicator for viewing the contents of a production process, said indicator comprising a body, an optical unit, and a sanitary connection between said body and said optical unit;
said body comprising a member including two aligned through-flow sections and at least one transverse section, each of said through flow sections including a process-interfacing portion which is adapted to interface with the production process and said transverse section including an optical unit-interfacing portion which interfaces with said optical unit;
said optical unit including a viewing portion for viewing the contents of the production process and a body-interfacing portion which interfaces with said optical unit-interfacing portion of said body;
said sanitary connection including a sanitary gasket including a substantially flat annular portion, and first and second annular projections which are essentially semi-circular in cross-sectional shape and which extend outwardly from opposite sides of said annular portion;
said sanitary connection further including a sanitary gasket-groove in each of said optical unit-interfacing portion and said body-interfacing portion, each of said sanitary-gasket grooves including a flat surface supporting said flat annular portion of said sanitary gasket and a channel supporting one of said first and second annular projections of said sanitary gasket;
wherein said process-interfacing portions of said body are adapted to interface with a process line.

5,297,430

THIN DISK FORCE SENSOR AND METHOD OF MAKING

Hans Sonderegger, Neftenbach; Rolf Kuratle, Winterthur; Peter Wolfer, Kleinandelfingen, and Reto Calderara, Neftenbach, all of Switzerland, assignors to Kistler Instrumente AG, Switzerland

Filed May 31, 1991, Ser. No. 708,372
Claims priority, application Switzerland, May 31, 1990, 01839/90
Int. Cl.[5] G01L *3/00*
U.S. Cl. 73—862.043 **16 Claims**



1. Thin disk force sensor to be fitted between force transmitting element comprising:
measuring elements each having at least two but not more than five layers forming gaps there between and including at least one individual force introduction layer per measuring element;
weld means including a weld for individually securing each of said measuring elements under mechanical preloading sufficient to reduce said gaps into a thin disk housing; and
said measuring elements, weld and disk housing having a common planar surface.

5,297,431

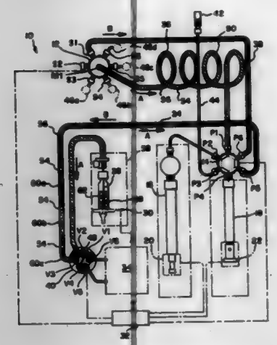
AUTOMATED SAMPLE DILUTION

Landy B. White, Sunol, Calif., assignor to Thermo Separation Products (California) Inc., Fremont, Calif.

Filed Jun. 1, 1992, Ser. No. 891,703
Int. Cl.[5] G01N *35/06*
U.S. Cl. 73—864.22 **25 Claims**

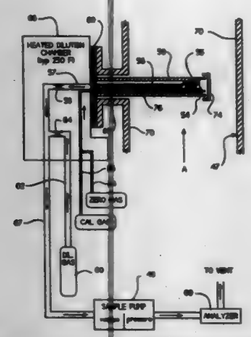
13. An apparatus for automatic preparation of samples from a plurality of components for analysis, said apparatus comprising:
a solvent selector valve having a plurality of ports and a plurality of positions corresponding to ones of said ports, at least some of said plurality of ports being connected to separate solvent reservoirs so that selection may be made therebetween;

a flush valve having a plurality of ports and two positions, and interconnected with said solvent selector valve;
a solvent syringe communicating with a port of said flush valve, and first drive means for operating said solvent syringe;
a sample syringe having a smaller volume than said solvent syringe and connected to a port of said flush valve, and second drive means for operating said sample syringe;
a sample line extending from a port of said flush valve;



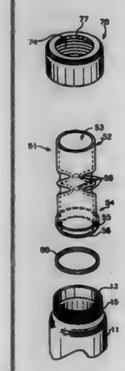
a needle disposed at the end of said sample line for insertion into a container;
means for positioning sequentially ones of a plurality of containers at said needle; and
processor means for controlling the operation of said solvent selector valve, flush valve, first and second drive means, and means for positioning, to automatically prepare a sample in a container.

5,297,432
VACUUM DILUTION EXTRACTION GAS SAMPLING METHOD
John E. Traina, Glenshaw, and Richard Myers, Gibsonia, both of Pa., assignors to United Sciences, Inc., Gibsonia, Pa.
Filed Nov. 12, 1991, Ser. No. 789,935
Int. Cl.[5] G01N *1/24*
U.S. Cl. 73—864.34 **15 Claims**



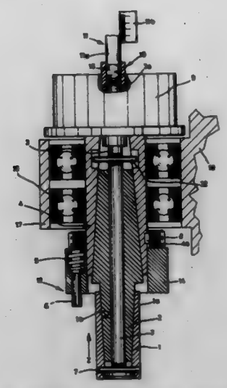
1. A method of extractive sampling from a system containing at least one gas comprising the steps of:
a) drawing a portion of at least one gas from the system through a first critical flow orifice;
b) diluting the portion drawn from the system with a dilution gas drawn through a second critical flow orifice to form a mixture of the dilution gas and the portion of the at least one gas drawn from the system;
c) drawing a vacuum on the mixture sufficient to induce critical flow through the first critical flow orifice and the second critical flow orifice to provide a first desired flow of the portion drawn from the system through the first critical flow orifice and a second desired flow of the dilution gas drawn through the second critical flow orifice, thereby providing a known dilution ratio;
d) transporting the mixture to at least one analyzer through an elongated conduit; and
e) further adjusting the vacuum on the mixture to maintain a dew point of the mixture below a preselected temperature level.

5,297,433
EXPANSION-CHAMBER/VIAL SPARGER VESSEL
David H. Elgas, 4886 Cannington Dr., San Diego, Calif. 92117
Filed Mar. 4, 1992, Ser. No. 845,999
Int. Cl.[5] G01N *30/00, 33/18*
U.S. Cl. 73—864.85 **13 Claims**



1. A sparger vessel for use with a purge and trap instrument; the instrument having a compression fitting; said vessel comprising:
a jar for holding a sample to be tested; said jar having a top end including:
a top opening;
a rim surrounding said top opening; and
external threads;
an expansion chamber tube of transparent material having:
a top end adapted for gas tight fit in a compression fitting of a host purge and trap instrument;
a bottom end including an external flange; and
an internal passage for fluid communication between said jar top opening and the host instrument;
connector means for connecting said jar to said expansion chamber tube bottom end; said connector means comprising a tube having:
a bottom end having internal threads for mating with said jar external threads; and
a top end having an internal flange for bearing down on said expansion chamber tube bottom end external flange; and
gasket means for forming a positive pressure seal between said expansion chamber tube bottom end and said jar.

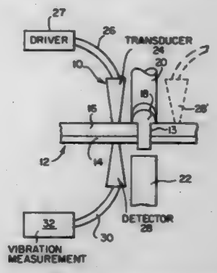
5,297,434
METHOD OF AND APPARATUS FOR MEASURING WORKPIECES
Karl-Wilhelm Stell, Schoppenkamp 3, D-4424 Stadtlohn, Fed. Rep. of Germany
Filed Jan. 21, 1992, Ser. No. 823,677
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1991, 4101702; Mar. 6, 1991, 4107077
Int. Cl.[5] G01B *21/00*; B66F *11/00*
U.S. Cl. 73—865.8 **12 Claims**



1. A method of measuring workpieces, comprising the steps of transporting successive workpieces of a series of workpieces in a first plane at a first level in a predetermined direction to a measuring station; gripping successive workpieces of the series at the measuring station; shifting a gripped workpiece from the first plane into a second plane at a second level at which the gripped workpiece is movable to a predetermined angular position with reference to a predetermined axis; monitoring at least one parameter of the thus gripped and shifted workpiece; and returning the monitored workpiece into the first plane, said shifting step being carried out by an elevator which is turnable about said axis and said gripping step is performed by a clamping device which is carried by the elevator, further comprising the steps of coupling the gripped workpiece to the elevator and turning the elevator about said axis.

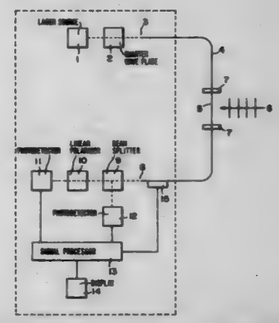
5,297,435
RESIDUAL STRESS MEASUREMENT AT FASTENER HOLES
John M. Papazian, 255-20 West End Dr., Great Neck, N.Y. 10020
Filed Apr. 27, 1992, Ser. No. 873,760
Int. Cl.[5] G01N *29/18*
U.S. Cl. 73—597 **10 Claims**

1. A method for measuring local elastic stress at a fastener hole of a structural member comprising the steps:
introducing ultrasonic energy into the member;
cold working the hole;
measuring the propagation velocity changes of the ultrasonic energy as the hole is cold worked; and terminating the cold working when a preselected velocity change is



measured corresponding to optimum induced elastic stress in the material around the hole.

5,297,436
OPTICAL FIBRE ULTRASONIC SENSOR
Helen L. W. Chan, Beecroft, and Kin S. Chiang, Greenwich, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia
PCT No. PCT/AU89/00307, § 371 Date Feb. 25, 1991, § 102(e) Date Feb. 25, 1991, PCT Pub. No. WO90/01149, PCT Pub. Date Feb. 8, 1990
PCT Filed Jul. 20, 1989, Ser. No. 635,621
Claims priority, application Australia, Jul. 20, 1988, PI9386
Int. Cl.[5] H01J *5/16*; G01N *21/00*
U.S. Cl. 73—657 **17 Claims**



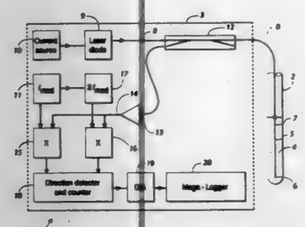
1. An ultrasonic sensor comprising a polarization maintaining fibre having two orthogonal linear principal axes, an input end and an output end, input means for launching into said fibre light beams respectively aligned with each of said two orthogonal linear principal axes, and output means for determining a phase difference induced between said light beams by ultrasonic waves incident upon a substantially straight intermediate portion of the polarization maintaining fibre, the ultrasonic waves having a propagation direction aligned with a principal axis of said polarization maintaining fibre.

5,297,437
DEVICE FOR MANOMETRIC MEASUREMENT OF THE ESOPHAGUS
Joachim Schneider, Hoppe-Seyler-Str. 3, 7400 Tübingen, Fed. Rep. of Germany
Filed Apr. 9, 1992, Ser. No. 865,971
Int. Cl.[5] G01L *9/00*
U.S. Cl. 73—705 **12 Claims**

1. A device for manometric measurement of the oesophagus

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(21) comprising a catheter (2) having a pressure sensor, and a recording unit (3) having a light source (9) for emitting monochromatic and coherent light and a counting unit for counting light pulses, wherein the pressure sensor further comprises a pliable optical fiber (5) having first and second ends embedded in an elastic base material (4) and is constructed as a Fabry Perot measuring section which is connected to the recording



unit by a fiber-optic light guide (8), wherein said first end (6) of the optical fiber (5) is metal-coated and the second end (7) is partially metal-coated and is connected to the fiber-optic light guide (8), whereby the fiber-optic light guide (8) conveys the light emitted from the light source (9) to the optical fiber (5) and conveys a return light pulse from the optical fiber to the counting unit (18).

5,297,438

PIEZORESISTIVE SENSOR

Aldo B. Alles, Youngsville, and Walter A. Schulze, Alfred Station, both of N.Y., assignors to Alfred University, Alfred, N.Y.

Continuation-in-part of Ser. No. 771,123, Oct. 3, 1991, Pat. No. 5,225,126. This application Dec. 14, 1992, Ser. No. 992,241

Int. Cl.[5] G01L *9/06*

U.S. Cl. 73—727 **4 Claims**



1. A pressure-sensing electrical circuit, comprised of a ceramic body, a source of electric current, means for electrically connecting said ceramic body with said source of electric current, and means for applying a maonmetric pressure of at least 15 pounds per square inch gauge to said ceramic body, wherein:

(a) said ceramic body consists essentially of metal of metal titanate, from about 0.01 to about 5.0 atom percent (by weight of metal titanate) of an aliovalent, cationic dopant, and from about 0.01 to about 1.0 weight percent (by weight of metal titanate) of cationic counterdopant, wherein:

1. said metal titanate is selected from the group consisting of barium titanate, strontium titanate, lead titanate, and mixtures thereof;
2. the cation in said aliovalent dopant is selected from the group consisting of lanthanum, yttrium, niobium, antimony, samarium, holmium, gadolinium, and mixtures thereof;
3. the cation in said cationic counterdopant is selected from the group consisting of chromium, manganese, iron, cobalt, nickel, copper, and mixtures thereof;
4. at least about 1.1 atoms of said aliovalent dopant cation are present for each atom of counterdopant cation in said material; and
5. the particles in said sintered body have a average particle size in excess of 10 microns.

5,297,439

MAGNETOELASTIC STRESS SENSOR

Carl H. Tyren, 12, Boulevard Albert-ler,, F06600 Antibes, and Donald G. Lord, 69, Woodford Road, Bramhall, Cheshire SK7 1JR, England

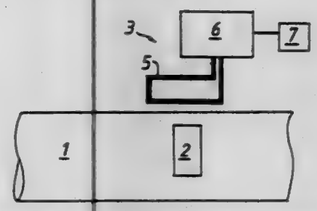
PCT No. PCT/SE90/00444, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992, PCT Pub. No. WO91/00494, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 27, 1990, Ser. No. 829,087

Claims priority, application Sweden, Jun. 28, 1989, 8902330-3

Int. Cl.[5] G01B *7/16*

U.S. Cl. 73—779 **10 Claims**



1. Sensor for detecting mechanical influence on an object of measurement comprising:

an element of magneto-elastic material;

an electric resonant circuit having an electric coil inductively coupled to said element;

said element and said circuit being integrated into a unit firmly attached to said object of measurement;

an aerial connected to said resonant circuit for wireless reception and transmission of electromagnetic energy, wherein transmitted energy from said circuit forms a measuring signal.

5,297,440

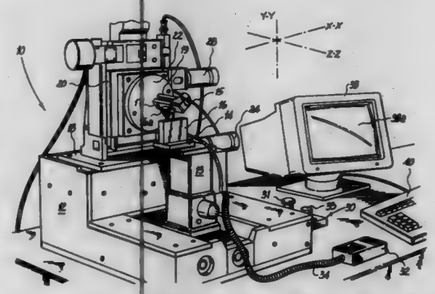
METHOD AND APPARATUS FOR TESTING THE BENDING CHARACTERISTICS OF SURGICAL NEEDLES

Said A. Rizk, Monroe, and Alfred G. Evans, Torrington, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,274

Int. Cl.[5] G01N *3/20*

U.S. Cl. 73—849 **21 Claims**



1. An apparatus for determining the bending characteristics of a curved surgical needle having a butt end portion and a tip portion which comprises:

a) support means;

b) means associated with said support means for releasably gripping the butt end portion of the needle;

c) means for moving said gripping means and the needle along a predetermined path;

d) means positioned within said predetermined path for engagement by the tip of the needle;

e) means for sensing the forces applied to said engagement means by the needle tip; and

f) means to maintain the needle tip at a predetermined location on said engagement means while moving said gripping means and the needle.

5,297,441

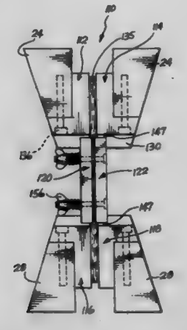
APPARATUS FOR SUPPORTING A TEST SPECIMEN FOR COMPRESSION TESTING

Gregory J. Smith, Kent; Stephen H. Ward, Seattle, and Ronald F. Zabora, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 14, 1992, Ser. No. 929,226

Int. Cl.[5] G01N *3/04*

U.S. Cl. 73—860 **2 Claims**



1. Apparatus for supporting an elongate workpiece between grips of a machine for testing of the workpiece, the apparatus comprising:

a. grip plates for engaging opposing faces of the workpiece in a manner that the grip plates are engaged by the grips for delivering an axial force to the workpiece;

b. means for stabilizing the workpiece along first and second elongate sides of the workpiece, the stabilizing means including (i) a first engaging surface for engaging a first face of the workpiece along an edge thereof at a location adjacent the first side and (ii) a second engaging surface for engaging a second face of the workpiece along an edge thereof at a location adjacent the first side, and a third engaging surface for engaging the second side of the workpiece.

5,297,442

METHOD TO DETERMINE LIQUID FLOW RATE FOR MANIFOLD FEED NOZZLES

Henry A. Wolf, Franklin Lakes, and Richard J. Bellows, Hampton, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 718,506, Jun. 20, 1991, abandoned. This application May 20, 1993, Ser. No. 63,831

Int. Cl.[5] G01F *1/00*

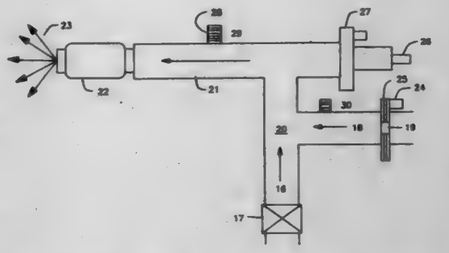
U.S. Cl. 73—861 **16 Claims**

1. A method for determining in-service the absolute volume flow rate of liquid from each liquid commissioned nozzle in a plurality of manifolded nozzles which carry two-phase liquid/-gas flow comprising:

(a) temporarily interrupting the liquid flow through one of said liquid commissioned nozzles;

(b) measuring the total volume of the liquid flow to the manifold system;

(c) measuring a liquid flow parameter for each of said liquid commissioned nozzles (including the one temporarily decommissioned) where the parameter is functionally related to the volume of nozzle liquid flow; finally liquid flow is restored to the nozzle where flow was temporarily interrupted;



(d) repeating steps (a), (b) and (c) for each of said liquid commissioned nozzle in said manifold;

(e) determining a linear functional relationship including calibration coefficients between the liquid flow and the liquid flow parameter for each liquid commissioned nozzle;

(f) determining the present value of said liquid flow parameter for at least one nozzle;

(g) determining the liquid flow volume from the functional relationship of claim 1(e).

5,297,443

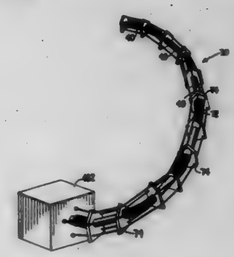
FLEXIBLE POSITIONING APPENDAGE

John D. Wentz, 369 Washington Ave., Apt. 2B, Brooklyn, N.Y. 11238

Filed Jul. 7, 1992, Ser. No. 909,960

Int. Cl.[5] G05G *11/00*; **B25J** *18/06*

U.S. Cl. 74—479 BF **17 Claims**



1. A flexible positioning appendage, comprising:

a plurality of segments, aligned to define a longitudinal axis of the appendage, each of the segments having at least one opening spaced laterally of the axis, defining a passage substantially parallel to the longitudinal axis;

resilient couplings spacing the segments; and,

at least one control line having an end fixed to a remote one of the segments, spaced from a proximal end of the appendage, the control line passing through the passage of each of the segments between the remote segment and the proximal end, whereby tension on the control line causes the appendage to bend laterally toward the control line;

wherein each of the segments defines an open lumen substantially along the longitudinal axis, and wherein the resilient

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couplings are hollow tubular structures, aligned with the lumen of the segments; and,

wherein the tubular resilient couplings between respective ones of the segments have different rigidities.

5,297,444

TOGGLE ASSEMBLY

Robert L. Kriner, York, S.C., and David A. Stamps, Charlotte, N.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed Sep. 4, 1992, Ser. No. 940,488

Int. Cl.[5] A43C *11/00*

U.S. Cl. 74—520 **3 Claims**



1. In a closure assembly for removably securing a closure member over an opening in a pressure vessel wherein said closure member and said pressure vessel have cooperating annular flanges, said closure assembly comprising a clamping band having opposite band ends and being formed into a substantially annular shape with said band ends in adjacent facing relation for encircling said flanges, and a toggle assembly affixed to said opposite band ends for selectively drawing said band ends together to exert clamping force annularly about the respective said flanges of said closure member and said pressure vessel when said closure member is disposed over said pressure vessel opening and selectively moving said band ends sufficiently apart for removal of said closure member from said pressure vessel opening, the improvement wherein said toggle assembly comprises a first pair of lugs affixed to a first one of said band ends in laterally spaced facing relation, a second pair of lugs affixed to the other of said band ends in laterally spaced facing relation, a toggle body having a pair of laterally spaced arm portions each pivotably affixed to a respective one of said first lugs and a handle portion extending outwardly from said arm portions, and an actuating link affixed pivotably at one end to each of said arm portions of said toggle body intermediately of said handle portion and the location at which said arm portions are pivoted to said first lugs and affixed pivotably at an opposite end to each of said second lugs, whereby pivotal movement of said toggle body with respect to said first lugs actuates translatory movement of said actuating link for selective clamping and unclamping movement of said band ends toward and away from one another, each lug of said first and second pairs of lugs including an ear portion projecting beyond its respective band end with an opening in said ear portion for disposition of said first and second pairs of lugs in overlapping relation with their respective openings in alignment with one another when said band ends are drawn together, thereby to facilitate receipt of a safety locking pin in said aligned openings to prevent unintended separation of said band ends.

5,297,445

STRUCTURE OF HANDLE OF BICYCLE

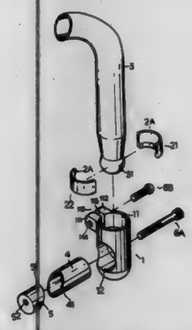
Liu Chen, Changhua, Taiwan, assignor to Lu Goo Co., Ltd., Changhua, Taiwan

Filed Jun. 24, 1993, Ser. No. 83,077

Int. Cl.[5] B62K *21/12*

U.S. Cl. 74—551.3 **1 Claim**

1. An angle-adjustable grip mounting device comprising: a grip having one end terminated to a round head; a cylindrical connector to connect said grip to either end of a tubular bicycle handlebar, said cylindrical connector comprising a longitudinal hole on one end, a transverse hole on one side communicated with said longitudinal hole, a small through hole on an opposite side aligned with said transverse hole, two lugs projected from the outside wall at the top and separated by an opening; two arched clamping plates symmetrically disposed inside said longitudinal hole of said cylindrical connector to hold said round head of said grip inside said cylindrical connector as said lugs of said cylindrical connector are fastened together by a screw bolt; a short tube inserted in said transverse hole of said cylindrical connector, said short tube having an outer end terminated to a bevel edge; and a screw nut connected to said short tube outside said cylindrical connector



by an adjusting screw, said screw nut comprising a bevel edge on one end fitted over the bevel edge on said short tube, a screw hole deviated from the longitudinal axis thereof into which said adjusting screw is threaded; whereby said screw nut and said short tube become biased on two opposite sides and firmly retained in said tubular bicycle handlebar as said adjusting screw is turned in one direction to move said screw nut toward said short tube; said screw nut and said short tube become longitudinally aligned and disconnected from said tubular bicycle handlebar as said adjusting screw in turned in the reversed direction to move said screw nut away from said short tube.

5,297,446

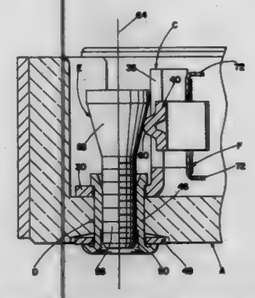
SWITCH CALIBRATION MECHANISM

James M. Krillenberger, Bellville, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Feb. 1, 1993, Ser. No. 11,532

Int. Cl.[5] F16H *53/06*

U.S. Cl. 74—569 **18 Claims**



1. In an electrical switch having a selectively variable operating point, said switch including an adjustable calibrating member for selectively adjusting said operating point by moving in response to selective movement of a cam member, said

mechanism including a cam member that is mounted for selective rotation about a longitudinal axis and for movement axially along said axis responsive to rotation thereof, and a cam surface on said cam member cooperating with said calibrating member for adjustably moving same to adjust said switch operating point responsive to axial movement of said cam member by selectively rotating said cam member.

5,297,447

STEERING AXLE FOR VEHICLES, PARTICULARLY FOR AGRICULTURAL TRACTORS

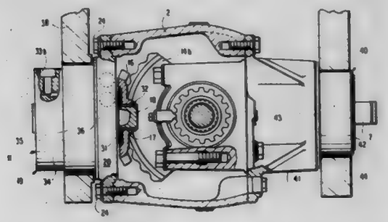
Gianni Massaccesi, Vigodarzere, Italy, assignor to Carraro S.p.A., Campodarsego, Italy

Filed Nov. 19, 1992, Ser. No. 978,977

Claims priority, application Italy, Nov. 22, 1991, PD91A000216

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—607 **8 Claims**



1. A steering axle for a vehicle comprising a beam housing a steering mechanism and a transmission therein, steering actuator means attached to said beam and operably connected to said steering mechanism, said actuator means having a case with an external surface for pivotally mounting said actuator means and attached axle in a load-bearing vehicle structure.

5,297,448

CRANK MECHANISM

George F. Galvin, 9 Christchurch Rd., Sidcup, Kent DA15 7HG, England

PCT No. PCT/GB91/00087, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/10848, PCT Pub. Date Jul. 25, 1991

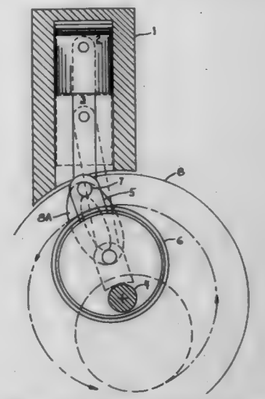
PCT Filed Jan. 21, 1991, Ser. No. 910,186

Claims priority, application United Kingdom, Jan. 22, 1990, 9001413; PCT Int'l Appl., Jan. 21, 1991, PCT/GB91/00087

Int. Cl.[5] F16H *25/14*; F02B *75/22, 75/32*

U.S. Cl. 74—55 **16 Claims**

1. A crank mechanism for an internal combustion engine, the crank mechanism comprising a cylinder, a piston reciprocable within the cylinder, and a rotatable shafts the piston being in drivable connection with the shaft via a connecting rod, a slipper and a torque lobe, the connecting rod being pivotally connected to the piston, and the slipper being pivotally attached to the free end of the connecting rod, wherein the torque lobe is a circular plate eccentrically mounted on the shaft for rotation therewith about the axis thereof, wherein the slipper is slidable along, but restrained to, a rim of the torque lobe, and wherein the slipper is constrained to move around a



closed path whereby rectilinear movement of the piston is converted to rotary movement of the torque lobe or vice versa.

5,297,449

TRANSMISSION DEVICE

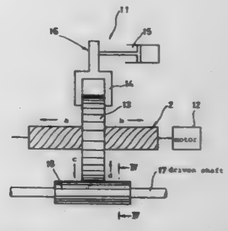
Hiroshi Karita, 1343, Isobe, Sagamihara-Shi, Kanagawa-Ken, Japan

Filed Jun. 18, 1992, Ser. No. 900,288

Claims priority, application Japan, Jun. 18, 1991, 3-173271

Int. Cl.[5] F16H *1/18*

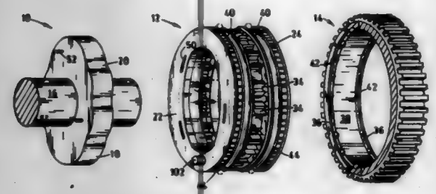
U.S. Cl. 74—128 **11 Claims**



1. A transmission device comprising a rotating shaft having a first inclined plane oblique to an axial direction, an rotating body engaged with said rotating shaft, wherein said rotating body is formed with a second inclined plane slidably engaging with said first inclined plane and wherein one of said rotating shaft and said rotating body is selected as a driving side and the other is selected as a driven side, a driven shaft with rotation controlled in a predetermined direction of rotation connected to said driven side, and an output shaft connected to said driven shaft wherein both or one of said rotating shaft and said rotating body are displaced in the axial direction of said rotating shaft temporally by an operating force.

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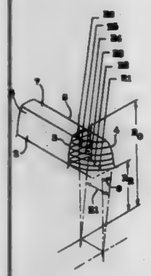
5,297,450
POSITIVE VARIABLE DRIVE TRANSMSISSION
Roger MacPherson, 185 Pleasant Way, Penfield, N.Y. 14526
Continuation-in-part of Ser. No. 357,407, May 26, 1989, Pat. No. 4,958,533. This application Nov. 21, 1991, Ser. No. 777,370
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—333 7 Claims



1. A variable speed transmission comprising:
a first shaft having a first series of coaxially spaced gears mounted for rotation therewith;
a second shaft having a second series of coaxially spaced gears mounted in mesh with said first series of gears;
said first and second series of gears defining respective gear pairs of progressively increasing gear ratio for selectively transmitting power from one of said shafts to the other;
a series of two-way roller clutches interposed between respective gear members of said second series of gears and said second shaft, said roller clutches being engageable for rotatively coupling said respective gear members to said second shaft and being disengageable for permitting relative rotation between said respective gear members and said second shaft;
each of said roller clutches including a camming member having a plurality of recesses formed in its surface and a roller retainer circumferentially supporting a plurality of rollers within respective recesses in said camming member;
an externally controlled actuator operatively connected to each of said retainers for indexing said roller retainers together with said plurality of rollers between respective limit positions within said recesses, one of said limit positions enabling engagement of said roller clutches in response to one direction of relative rotation between said respective gear members and said second shaft and the other of said limit positions enabling engagement of said roller clutches in response to an opposite direction of relative rotation between said respective gear members and said second shaft; and
a disk brake for momentarily interrupting transmission of engine torque to one of said shafts, thereby enabling one of said roller clutches engaged at one of said limit positions to be indexed to the other of said limit positions.

5,297,451
CAM TOOTH STARTER PINION
Floyd D. Mills, Valois, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Dec. 15, 1992, Ser. No. 991,047
Int. Cl.[5] F16H *55/06*
U.S. Cl. 74—462 2 Claims

1. A cam tooth starter pinion characterized by a lead-in chamfer formed on a cam tooth projecting in elevation from said pinion by rotating a gear tooth involute form of said cam tooth through 90 degrees across a lead engaging end of said cam tooth from a front driving side of said cam tooth to a back trailing side of said cam tooth and wherein a radius and axis of rotation at each tooth elevation are selected such that a lead-in cam surface is generated which is across the full face of said lead engaging end of the tooth and said cam surface intersects

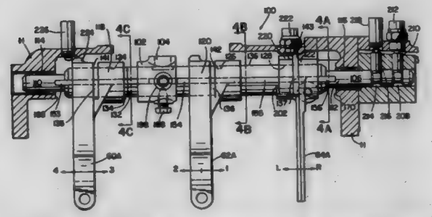


said back trailing side of said tooth at a first engaging edge of said lead engaging end of said cam tooth.

5,297,452
TRANSMISSION UNIT FOR A MOTOR VEHICLE HAVING TWO POWERED AXLES
Roland Gruss, Jembke; Klaus Wiese, Wolfenbüttel, and Eberhard Diessner, Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany
PCT No. PCT/EP90/01159, § 371 Date Mar. 26, 1992, § 102(e) Date Mar. 26, 1992, PCT Pub. No. WO91/01898, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 14, 1990, Ser. No. 828,915
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1989, 3925213
Int. Cl.[5] F16H *57/04, 37/08*
U.S. Cl. 74—467 5 Claims

1. A transmission system for a motor vehicle having two powered axles comprising an engine disposed transversely to the direction of vehicle travel, a first housing for a transmission with its axis parallel to the engine shaft, a transmission output drive gear member acting a flywheel for driving a first powered axle, an angle drive connected to the transmission output drive gear member by a connecting shaft and arranged in a second housing which is separated from the first housing by a partition, a driveshaft leading from the angle drive to a second powered axle, bearing means for the connecting shaft provided in the partition, the second housing being mounted on the first housing adjacent to the transmission output drive gear, a supply of lubricant in each of the first and second housings for lubrication of the parts therein, the lubricant supplies in the two housings being separated from each other by the partition, at least one first opening in the partition providing a lubricant inlet leading from the first housing to the second housing, and at least one second opening in the partition providing a lubricant return leading from the second housing to the first housing, the second opening being located not below a first horizontal plane passing approximately through the bottom of the effective axial opening for the connecting shaft, the first opening being located above a second horizontal plane passing approximately through the top of the second opening, and at least one lubricant trap and conduit means in the first housing leading to the first opening and cooperating with the transmission output drive gear member which acts as a flywheel for the centrifugal lubrication so that lubricant projected by the transmission output drive gear member is diverted toward the first opening.

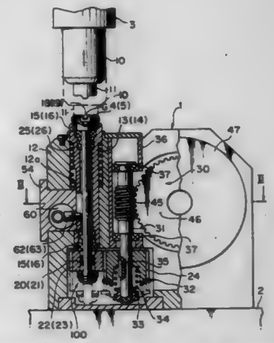
5,297,453
SNAP RING ACTUATED SINGLE SHAFT SHIFTING MECHANISM
William R. Chene, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 18, 1992, Ser. No. 978,390
Int. Cl.[5] F16H *63/36*
U.S. Cl. 74—477 9 Claims



1. Apparatus for selection and engagement of selectable gear ratios in a change speed transmission, the apparatus comprising:
a housing;
a shaft mounted for relative axial and rotational movement in the housing;
a plurality of shift forks each including a hub portion, each of the hub portions having a through-bore through which the shaft is received and a pair of axially opposite end surfaces; and
a plurality of snap rings, each of the snap rings being disposed about the shaft and abutting a corresponding hub portion, each of the snap rings having a tooth projecting radially from the shaft;
each of the hub portions having a groove extending axially from respective end surfaces thereof, each of the grooves being formed to receive a corresponding tooth such that when one of the grooves is not aligned with a corresponding tooth in response to rotation of the shaft, the other grooves are aligned with a corresponding tooth.

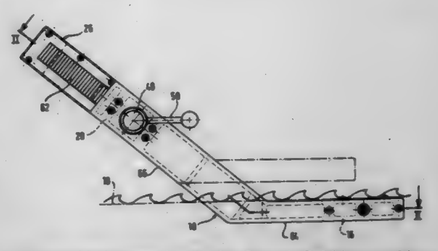
5,297,454
INDEXING DEVICE OF MACHINE TOOL
Toshio Ito, Gifu, Japan, assignor to Howa Machinery, Ltd., Aichi, Japan
Filed May 26, 1992, Ser. No. 888,902
Claims priority, application Japan, May 24, 1991, 3-149623
Int. Cl.[5] F16H *27/02;* B23B *29/24*
U.S. Cl. 74—816 12 Claims

1. An indexing device, comprising:
a driver adapter releasably mounted on a machine tool main spindle, said drive adapter having an end with a first clutch member thereon;
a main body having an input shaft rotatably supported therein, said input shaft having, at an end thereof, a second clutch member adapted to be engaged with said first clutch member;
an indexing table having a rotational shaft separate from said input shaft rotatably supported on said main body and operatively connected to said input shaft by a rotation transmission mechanism such that said indexing table can be indexed by rotation of said main spindle;
means for slidably supporting said input shaft in an axial direction of said input shaft such that, when said main spindle is advanced and rotates in a synchronized tapping function, said input shaft is moved to undergo a shafting movement and remote with said shifting movement



through said drive adapter and said first clutch member being engaged with said second clutch member;
a first spring biasing said input shaft with an axial spring force against said shifting movement; and
a one-way clutch in said rotation transmission mechanism transmitting rotation in one rotational direction only from said input shaft to said rotational shaft of said indexing table.

5,297,455
SAW BLADE CLAMPING DEVICE FOR SAW FINISHING MACHINES
Peter Lenard; Fritz Richlein, both of Biberach/Riss, and Hans-Joachim Reimann, Dellmensingen, all of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach/Riss, Fed. Rep. of Germany
PCT No. PCT/EP92/01009, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/20486, PCT Pub. Date Nov. 26, 1992
PCT Filed May 8, 1992, Ser. No. 958,364
Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115319
Int. Cl.[5] B23D *63/00*
U.S. Cl. 76—79.5 9 Claims



1. A saw blade clamping device for saw finishing machines, comprising a stationary clamping jaw (12) and a movable clamping jaw (14) which is hingedly connected to a bracket (26) and adapted to be fastened in clamping position in which it presses a saw blade (10) against the stationary clamping jaw (12), characterized in that the movable jaw (14) is carried by a support member (20) which is guided for displacement on the

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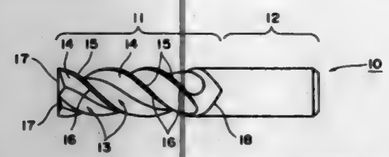
bracket (26) by a flat guide means (30) to cause a slightly arcuate movement, deviating only a little from the plane of the saw blade, of the movable clamping jaw (14) away from the stationary clamping jaw (12), which support member further is adapted to be clamped to the bracket (26) and is connected to the same in addition by a four-joint arrangement (22).

5,297,456

CUTTING TOOL WITH TWISTED EDGE AND MANUFACTURING METHOD THEREOF

Takayuki Nishimura, Nara, Japan, assignor to GN Tool Co., Ltd., Nara, Japan

Division of Ser. No. 880,482, May 6, 1992, Pat. No. 5,226,760. This application May 11, 1993, Ser. No. 62,911
Claims priority, application Japan, Feb. 7, 1990, 2-27963
Int. Cl.[5] B21K *5/04*
U.S. Cl. 76—108.6 **8 Claims**



1. A manufacturing method of a cutting tool having twisted edge in its blade part, comprising:
- a first step of forming a presintered base material of the blade part by presintering material powder,
- a second step of forming a twisted groove on the outer circumference of the presintered base material in which the twisted edge is to be formed,
- a third step of filling the twisted groove with material powder of sinter of high hardness and high wear resistance and higher in harndess and wear resistance than the base material after complete sintering
- a fourth step of heating and pressurizing the presintered base material of which twisted groove is filled with the material powder of sinter of high harndess and high wear resistance to complete sintering of the presintered base material to form a base sintered body, sinter the material powder of sinter of high harndess and high wear resistance to form a sintered compact and affix the sintered compact to the base sintered body, and
- a fifth step of machining the base sintered body affixed with the sintered compact of high harndess and high wears resistance to form the twisted edge on the sintered compact of high harndess and high wear resistance.

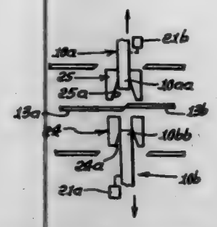
5,297,457

MULTIPLE BLADE SET STRIP APPARATUS FOR CABLE AND WIRE

Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Company, Monrovia, Calif.

Continuation of Ser. No. 659,557, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Jun. 30, 1993, Ser. No. 83,512
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 **28 Claims**

1. In apparatus for processing wire to cut the wire into sections and to strip sheathing from the sections to expose section wire ends, the combination comprising:
- a) conveyor means for displacing the wire, including said sections, axially endwise,
- b) first cutter means including multiple blades located for movement toward said axis, a first drive means for controllably displacing said multiple blades toward said axis to sever the wire,
- c) second and third cutter means each including multiple blades located for movement toward said axis, and additional drive means for controllably displacing said multiple blades of said second and third cutter means toward said axis to cut into said sheathing and to selected depths, said second and third cutter means respectively located at axially opposite sides of said first cutter means and axially spaced therefrom,
- d) and drive means to controllably drive said conveyor means to
  - i) position the wire to be severed by said first cutter means, thereby to produce forward and rearward wire sections,



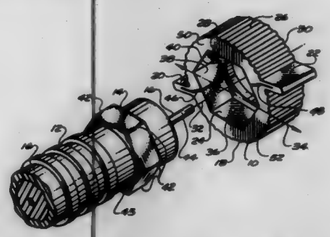
  - ii) controllably relatively displace said sections axially, into positions to enable controlled penetration of said second and third cutter means blades into said sheathing to controlled depth, for subsequent stripping off of selected lengths of sheathing from a rearward portion of the forward section and from a forward portion of the rearward section, as during controlled endwise displacement of said sections by said conveyor means,
- e) and wherein the blades of said first cutter means having positions of side-by-side relative overlap to sever the wire, in response to operation of said first drive means, and said blades of said second and third cutter means having positions of penetration only into said sheathing of said section end portions to enable stripping of said sheathing end portions in response to said controllable driving of said conveyor means.

5,297,458

TORQUE WRENCH

Barry A. Smith, and Rex M. Ickes, both of 7460 S. Reed Ct., Littleton, Colo. 80123

Filed May 18, 1992, Ser. No. 885,278
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—124.3 **9 Claims**



1. A wrench for aiding in the manual application of a torque to an object so that said torque is likely to be confined within a predetermined torque range, said wrench comprising:
- a ring-shaped collar having interior and exterior walls, said interior wall being configured to grasp an exterior surface of said object, and said collar and said interior wall thereof being configured with respect to said object to prevent removal of said wrench from said object without destroying said wrench; and
- first and second rigid fins attached to said collar at said exterior wall thereof, said fins projecting outward from said collar, wherein said collar includes at least one slit extending between said interior wall and said exterior wall in the vicinity of one of said fins so that said collar is held together at said slit through said one fin and so that said collar may be removed from said object by removing at least a portion of said one fin to allow said collar to expand at said slit.

5,297,459

RATCHETING ADJUSTABLE WRENCH

Thomas Stojanowski, 97 Delafield Pl., Staten Island, N.Y. 10310

Filed Apr. 12, 1993, Ser. No. 46,602
Int. Cl.[5] B25B *13/14*
U.S. Cl. 81—165 **3 Claims**

1. A ratcheting adjustable wrench which comprises:
- a) a head having a fixed jaw extending from one side, a protrusion extending from an opposite side, a laterally extending opening between said fixed jaw and said protrusion, a longitudinally extending slot between said fixed jaw and said laterally extending opening and a laterally extending hole opposite from said protrusion;
- b) a moveable jaw having a rack with a plurality of teeth which is slideably received in said longitudinally extending slot, so that said rack teeth will extend into said laterally extending opening;
- c) a thumb wheel having an adjusting worm gear thereon;
- d) a shaft having an enlarged end, said thumb wheel fitted onto said shaft, so that said thumb wheel can be rotatively received in said laterally extending opening with said worm gear engaging with said rack teeth to adjust said moveable jaw with respect to said stationary jaw;
- e) a handle having a recess in one end with a projection formed on a first side of said recess, a stop formed on an opposite second side of said recess and a laterally extending hole through said recess;
- f) a compression spring having one end fitted upon said projection within said recess of said handle; and
- g) a pivot pin which fits through said laterally extending hole at said recess end of said handle and through said laterally extending hole in said head, allowing said compression spring to normally force said protrusion of said head against said stop on said second side and said enlarged head of said shaft against said first side of said recess, so that a continuous clamping operation is performed on a nut by rotating said handle in one direction, while when said handle is rotated in an opposite direction said head will pivot about said pivot pin overcoming said compression spring to disengage said enlarged head of said shaft from said first side of said recess to allow said thumb wheel to now slide with said rack on said moveable jaw thereby allowing a ratcheting action about the nut without having to repeatedly remove said wrench from the nut.

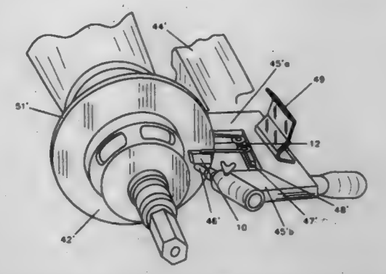
5,297,460

VIBRATION DAMPENING DEVICE

Kenneth E. Hartman, Nashville, and James D. Ford, Franklin, both of Tenn., assignors to Ammco Tools Technology Corporation, Wilmington, Del.

Filed Dec. 11, 1992, Ser. No. 989,379
Int. Cl.[5] B23B *5/02*
U.S. Cl. 82—163 **5 Claims**

1. A vibration dampener for dampening vibration of a rotating disc during machining of the faces thereof by a pair of tooling pieces mounted on a support arm, one of said tooling pieces engaging each of said faces, said vibration dampener comprising in combination:
- a spring member having a base section having two ends and having an arm extending from each of said ends of said base section,
- said arms each having a principal longitudinal axis and an outer end section and said spring being adapted to urge said outer end sections of said arms towards each other,



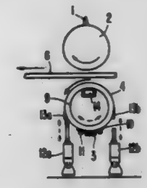
- a pair of pads, each of said pads having a planar surface and one of said pads being mounted on said outer end sections of each of said arms, and
- pivot means for pivotally mounting said pads on said outer end sections of said arm for rotation about an axis perpendicular to said principal longitudinal axis of said arms and substantially parallel to the face of the rotating disc.

5,297,461

ROTARY SHEAR

Tadashi Hirakawa, Hiroshima; Hideo Nobuhara, Tokyo, and Makoto Ando, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 945,249
Claims priority, application Japan, Sep. 25, 1991, 3-271825
Int. Cl.[5] B26D *1/62, 3/14*
U.S. Cl. 83—304 **3 Claims**



1. A rotary shear disposed in a traveling passage of a corrugated cardboard web manufactured continuously by a corrugating machine and constructed so as to perform cutting and slitting in the widthwise direction of the corrugated cardboard web by rotational pinching between a knife on a knife cylinder and a first elastic body fixedly secured to an outer circumferential surface of an anvil cylinder equipped above and under said web and opposed to each other; wherein said anvil cylinder is comprised of a plurality of sections along an axial direction of a shaft supporting said anvil cylinder, the elastic body is fixedly secured to a part of an outer circumferential surface of an anvil cylinder section, and connecting means for connecting said anvil cylinder section to said shaft such that said anvil cylinder section is adjustable relative to said shaft to selectively position said elastic body between a first position in cutting phase with said knife and a second position out of cutting phase with said knife.

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5,297,462

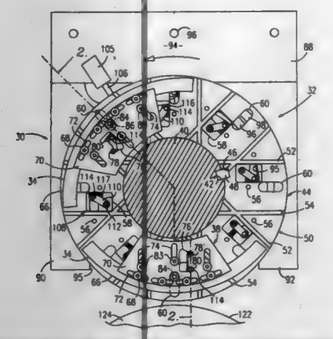
SLOTTER WHEEL MECHANISM HAVING DYNAMICALLY RETRACTABLE SLOTTER BLADES

David E. Creaden, Lawrence, Kans., assignor to The Lawrence Paper Company, Lawrence, Kans.

Continuation-in-part of Ser. No. 782,523, Oct. 25, 1991, abandoned. This application Jul. 22, 1992, Ser. No. 916,610

Int. Cl.[5] **B26D** *1/12;* **B31B** *1/14*

U.S. Cl. 83—305 **16 Claims**



1. Slotter wheel apparatus for slotting of box blanks at selectively variable locations along the length of the blanks as the blanks are sequentially advanced along a path of travel, said apparatus comprising:

a rotatable body presenting an axial length and a peripheral margin;

motor means operable coupled with said body for rotating said body at a rotational speed;

at least one slotter blade presenting an elongated cutting edge oriented substantially perpendicular to said axial length of said body;

means operably coupling said blade with said body and including structure for selectively shifting of said blade during rotation of said body between an extended slotting position wherein the blade cutting edge is located outboard of said body peripheral margin for slotting of said blank, and a retracted, blank-clearing position wherein said blade cutting edge will pass said blank without slotting thereof;

rotatable anvil means adjacent said rotatable body and operable with the rotatable body to define a region therebetween for receiving the box blank as the box blanks are sequentially advanced along said path of travel,

said anvil means presenting an opening for reception of said slotter blade when the slotter blade is moved from said retracted position thereof to said extended position thereof,

said blade-shifting structure including control means for selectively varying the instances when said blade is moved from said retracted position to said extended position thereof during rotation of said body without the need for stopping the rotation of said body; and

means for locking said blade in said extended and retracted positions thereof.

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ADJUSTABLE FENCE FOR COMPOUND MITER SAW

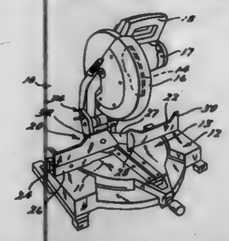
Michael L. O'Banion, Westminster, and Daryl S. Meredith, Hampstead, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Oct. 9, 1991, Ser. No. 774,022

Int. Cl.[5] **B27B** *27/08*

U.S. Cl. 83—468.3 **47 Claims**

19. A device adapted for performing working operations on a workpiece, the device having a base and a working tool selectively movable into any of a number of different preselected configurations, comprising: an adjustable, laterally-extending, workpiece-supporting fence assembly, said fence assembly including a fixed fence portion fixedly interconnected with the base and disposed on one side of the working tool, and a movable fence portion selectively laterally movable and interconnected with the base and disposed on an opposite side of the working tool laterally spaced from said fixed fence portion, said fence assembly further including a fixed clamping means for selectively and clampingly securing said movable



fence portion at any of a number of selected positions relative to the saw blade and the base, said fixed clamping means being fixedly interconnected with the base, and a movable clamping means fixedly interconnected with said movable fence portion for selective movement therewith relative to the base for selectively and clampingly securing said movable fence portion at any of said selected positions, said fence assembly thereby being selectively adjustable to vary the lateral spacing between said fixed and movable fence portions in order to provide clearance for the working tool in any of the selected configurations thereof.

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ROTARY SHEARS

Adolf Mayer, Magstadt, Fed. Rep. of Germany, assignor to Reinhardt Maschinenbau GmbH, Sindelfingen, Fed. Rep. of Germany

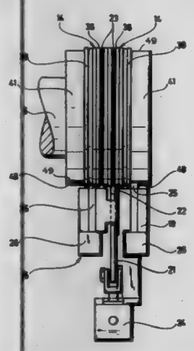
PCT No. PCT/EP91/00237, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO91/12938, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 8, 1991, Ser. No. 910,276

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1990, 4005271

Int. Cl.[5] **B23D** *19/04;* **B26D** *7/26*

U.S. Cl. 83—499 **11 Claims**



1. Rotary shears for dividing sheet metal bands or sheet metal panels into several strips including in combination a machine frame, first and second blade shafts (5,6), means mounting said blade shafts for rotary movement on said machine frame, said blade shaft mounting means comprising

means (13) for adjusting the distance between said shafts, a plurality of roller blades (14), means mounting said roller blades (14) directly on said shafts (5,6) for individual and independent movement of each roller blade axially along its associated shaft, actuatable clamping means (34, 41, 48; 53, 58, 64) for individually and independently clamping said roller blades to their associated shafts, one single manipulating means (15) for said roller blades, and means mounting said manipulating means for displacement on the machine frame parallel to the blade shafts for axially positioning the roller blades on their blade shafts, said one single manipulating means (15) comprising first means (21) for shifting the roller blades along their associated shafts and second means (25) for actuating said clamping means, said clamping means comprising a hub member (34; 53) having an outer circumferential surface and being connected to a blade member (36) and mounted non-rotatably but axially displaceably on its blade shaft, said hub member being partially covered on said outer circumferential surface by a ring member (41,58) and so arranged to be clamped against axial displacement on said blade shaft by a relative rotation between said hub member and said ring member and said second means for actuating the clamping means (34, 41, 48; 53, 58, 64) comprising remote controlled movable fingers (25) on said one single manipulating means (15) for locking said ring member (41; 58), so that by rotating the blade shaft (5,6) the hub member (34;53) is rotated relative to the ring member (41;58).

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Patent Not Issued For This Number

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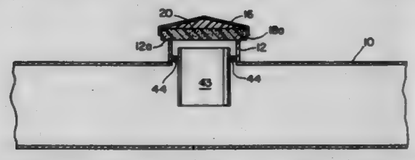
TONE HOLE PAD AND PROCESS FOR MAGNETICALLY SEATING SAME

Steven A. Wasser, Wellesley, Mass., assignor to Verne O. Powell Flutes, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 877,906, May 1, 1992. This application Aug. 25, 1992, Ser. No. 936,358

Int. Cl.[5] **G10P** *7/02*

U.S. Cl. 84—385 P **13 Claims**



1. A process for magnetically seating a woodwind instrument tone hole sealing pad in a pad cup so that the pad evenly contacts a tone hole rim in play, comprising:

placing an at least partially magnetically attractable pad on the tone hole rim;

applying a magnetic force to the pad to seat it on the tone hole rim; and

securing the cup to the pad to provide an even-seating cup-pad assembly.

5,297,467

BEATER AMPLITUDE ADJUSTMENT MECHANISM FOR A DRUM PEDAL

Yoshiki Hoshino, Asahi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Nov. 13, 1992, Ser. No. 975,796

Claims priority, application Japan, Jun. 19, 1992, 4-049047

Int. Cl.[5] **G10D** *13/00*

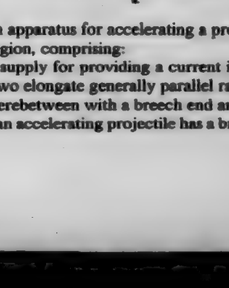
U.S. Cl. 84—422.1 **9 Claims**

1. Apparatus for enabling adjustment of the amplitude of swing of a drum beater with respect to a drum head, the apparatus comprising:

a support; a shaft supported by the support and rotatable around the axis of the shaft;

a drum beater comprising a beater head and means for supporting the beater head, the beater head support means comprising a clamp which is clampable on the shaft to secure the clamp and the beater head at a selected rotation orientation around the shaft and which is unclampable for enabling resetting the rotation orientation of the beater head support means;

a beater operating pedal operable between an operating position to which the pedal is operated by the operator and a return position;



connecting means connecting the pedal to the shaft such that movement of the pedal between the operating and return positions rotates the shaft and through the clamp, rotates the beater head toward and away from the drum head for beating the drum head;

a support on the shaft for the connecting means, the connecting means from the pedal being connected with the connecting means support, such that moving the connecting means by the pedal moves the connecting means support on the shaft for rotating the shaft;

the connecting means support having an extended portion, and the clamp having an opening therein which receives the portion of the connecting means support so that the clamp may be rotatable to selected rotative orientations with respect to the shaft before the clamp is clamped to the portion of the connecting means support.

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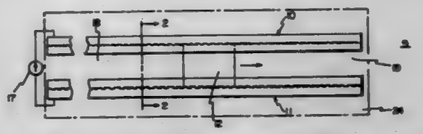
RAILGUN WITH ADVANCED RAIL AND BARREL DESIGN

Yuri A. Dreizin, Minneapolis, Minn., assignor to Dyuar Incorporated, Minneapolis, Minn.

Filed Apr. 27, 1992, Ser. No. 874,781

Int. Cl.[5] **F41B** *6/00*

U.S. Cl. 89—8 **14 Claims**



1. A railgun apparatus for accelerating a projectile having a conductive region, comprising:

a) a power supply for providing a current impulse;

b) at least two elongate generally parallel rails which define a bore therebetween with a breech end and a muzzle end, wherein an accelerating projectile has a breech velocity at

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the breech end and a muzzle velocity at the muzzle end which differ, with more than half of the difference between the breech and muzzle velocities occurring in a main acceleration region of the bore; and

c) wherein said rails have two layers, said first layer being comprised of a highly conductive material which is switchably connected to said power supply and said second layer being comprised of a highly resistive layer which has a resistivity that varies along the main acceleration region of said bore, and said second layers being so sized and arranged as to contact the conductive region of the projectile so that when said current impulse is applied to said rails to accelerate the projectile, the current is spread over the conductive region of the accelerating projectile, and velocity skin effect is reduced.

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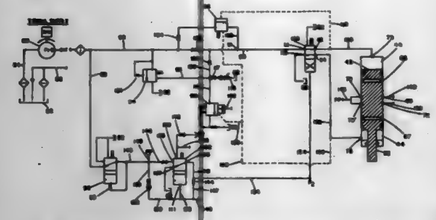
LINEAR FLUID POWER ACTUATOR ASSEMBLY

Robert E. Raymond, 495 Military Rd., Zanesville, Ohio 43071

Continuation of Ser. No. 782,422, Oct. 25, 1991. This application Feb. 23, 1993, Ser. No. 22,152

Int. Cl.[5] F01L *25/04*

U.S. Cl. 91—291 4 Claims



1. An improved hydraulic actuator system comprising, in combination,

a) a piston mounted for reciprocation in a cylinder bore operatively connected to a hydraulic circuit including a reversal valve and a source of hydraulic driving pressure causing said piston to alternately travel between a driving stroke and a return stroke;

b) a pair of signal inlet ports and a pair of signal outlet ports disposed in a selected axial position in a wall of said cylinder bore along the stroke path of said piston, said signal inlet ports being continuously communicated to a source of hydraulic signal pressure independent of the position of said piston in said bore and circumferentially spaced from a different one of said signal outlet ports;

c) a pair of circumferential grooves disposed in a selected axially spaced position on said piston to communicate said fluid signal pressure from a respective one of said signal inlet port to a respective one of said signal outlet ports to generate a fluid pressure signal pulse from a respective one of said signal outlet ports during travel of said piston in said cylinder bore when one of said grooves is axially aligned with a respective one of said inlet and outlet ports;

d) a hydraulically actuated control valve including a spool element slidable in a bore operable between a predetermined first state and a second state to deliver a control signal to actuate a control event and including first and second control valve signal inlet ports, a respective one of said control valve signal inlet ports communicating with opposite ends of said spool element, wherein said first state of said control valve is defined as communicating a control valve inlet pressure port to a control valve outlet pressure port and said second state is defined as communicating said control valve outlet pressure port to a control valve return port communicating with tank;

e) a first fluid passage communicating a pressure signal pulse from a first one of said signal outlet ports in said cylinder bore to said first control valve inlet signal port to actuate said spool element to move from said first state to said second state;

f) a second fluid passage operatively connected to said first passage and continuously communicating said first one of said outlet signal ports and said first control valve inlet port to tank in parallel to said first fluid passage through an orifice restriction to allow said spool element to be returned to said first state upon termination of said pressure signal pulse form said first one of said outlet signal ports by a force acting on an opposing end of said spool element relative to said first control valve inlet port; a third fluid passage communicating said second control valve inlet signal port to the second one of said outlet signal ports in said cylinder bore; a fourth fluid passage operatively communicating said control valve outlet pressure port to a fluid operative element; a fifth fluid passage operatively connecting said third fluid passage to said fourth fluid passage and including an orifice restriction disposed in said fifth fluid passage between said second control valve inlet signal port and said control valve outlet pressure port to communicate a pressure signal in said third fluid passage to said second control valve inlet signal port without shorting to tank through said control valve outlet pressure port when said spool element is in said second state and to hold said spool element in said first state upon termination of a pressure signal pulse in said third fluid passage; and means for maintaining said spool element in said second state until a pressure signal pulse form the second one of said outlet signal ports in said cylinder bore is communicated to said second control valve inlet signal port.

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PNEUMATIC ROTARY DRIVE

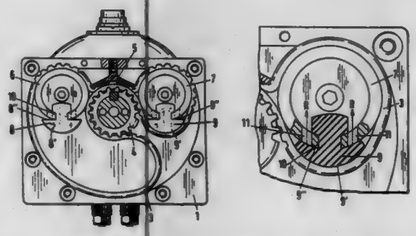
Jörg Niederstadt, Schramberg, and Ralf Huber, Brigachtal, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 21, 1992, Ser. No. 994,418

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142844

Int. Cl.[5] F01B *11/02*

U.S. Cl. 92—85 R 7 Claims



1. A pneumatic rotary drive comprising a housing connected to a pressure medium source, the housing having plane covers for closing the housing in a pressure medium-tight manner, a rotatable shaft mounted so as to extend out of the housing through at least one of the covers, a belt mounted within the housing so as to be in engagement with the shaft and forming movable pressure medium chambers, at least one guide body mounted within the housing and being surrounded by the belt, and at least one spring element mounted on the at least one guide body, such that an effective circumference of the at least one guide body is resiliently adjustable by the belt acting on the spring element in an end stop position of the belt on the at least one guide body.

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HOUSING FOR A PNEUMATIC POWER BOOSTER AND PROCESS FOR ITS MANUFACTURE

Peter Boehm, Friedrichsdorf; Wilfried Wagner, Huttenberg-Weidenhausen; Lothar Schiel, Hofheim; Manfred Ruffer, Sulzbach; Ralf Jakobi, Liederbach; Kai-Michael Graichen, Langen, and Lothar Mattheis, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

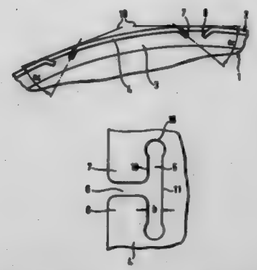
PCT No. PCT/EP90/01616, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO91/09761, PCT Pub. Date Jul. 11, 1991

PCT Filed Sep. 24, 1990, Ser. No. 861,829

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942211

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—98 R 11 Claims



1. A housing defining an inner space of a pneumatic power booster, comprised of a first and a second open sided bowl shaped housing half, each of which having a protective surface finish, the open side of each of said housing half telescoped one into the other and fixed to each other, the open side of said first housing half formed with a rim which is formed reversely and outwardly, the open side of said second housing half having a cylindrical edge, an elastic diaphragm having a perimeter retained between said open sides of said housing halves which serves to seal a movable wall formed by said diaphragm and dividing said inner space of said housing into two pneumatic chambers, said edge of said second housing formed with a plurality of uniformly distributed circumferential slots running parallel and adjacent to said edge, creating radially weakened zones, each of said circumferential slots defined by axially spaced apart slot sides and radiused slot ends connecting said spaced apart sides, said slot sides and slot ends of each said radially weakened zones having two opposing tongues formed by an axial slot extending from said edge into the associated circumferential slot, said tongues defined by material intermediate one side of said circumferential slots and said edge, said tongues angled radially inwardly behind said formed rim of said first housing half and engaging said rim to retain said first and second halves together in an axial direction.

7. A process for the manufacture of a housing for a pneumatic power booster, which is comprised of two open sided, bowl shaped housing halves, the open sides of which are telescoped one into the other and are fixed to each other, a first housing half having a rim about the open side thereof which is formed reversely an outwardly and a second housing half having an edge about the open side thereof of a substantially cylindrical configuration, and an elastic diaphragm having a perimeter compressed between said rim and edge respectively of said first and second housing halves, said edge formed with a plurality of uniformly distributed circumferential slots, each having parallel spaced apart sides and curved slot ends connecting said slot sides, said circumferential slots extending parallel and adjacent to said edge, so that localized radially weakened zones are formed, said process comprising the steps of:

fabricating a series of axial slots extending in from said edge of said second housing into each of said circumferential slots in such a manner that two oppositely extending tongues are formed defined by the material between said circumferential slot and said edge;

applying a protective surface finish on both housing halves including surfaces defining said circumferential and axial slots;

pressing said open sides of said two housing halves together so that the radially outer perimeter of said elastic diaphragm is simultaneously compressed therebetween, so that a slight axial clearance is created between the internal side of each of said tongues and said rim of said first housing;

bending said tongues radially inwardly; and,

releasing said two housing halves, so that said housing halves move axially apart slightly to assume an assembled position with said rim against said tongues.

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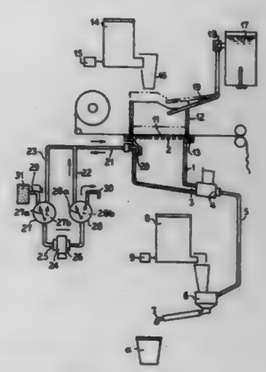
BEVERAGE EXTRACTION DEVICE

Mitsuo Suzuki; Hitoshi Karasawa, and Michio Seshimo, all of Guama, Japan, assignors to VKI Technologies, Inc., Canada

Filed Sep. 29, 1992, Ser. No. 953,005

Int. Cl.[5] A47J *31/32*

U.S. Cl. 99—289 T 2 Claims



1. A beverage machine comprising,

an airtight beverage receiver chamber;

a filter connected across the top of said beverage receiver chamber;

an extraction chamber attached to said beverage receiver chamber with said filter therebetween;

means for supplying powdered material into said extraction chamber;

means for supplying hot water into said extraction chamber;

an outlet beverage valve connected to said beverage receiver chamber;

an air pump with an inlet and an outlet,

a first two-way valve connected to the inlet of said pump, a second two-way valve connected to the outlet of said pump, an air intake pipe (29) connected to said first valve, a first outlet pipe (30) connected to said second valve, an inflow pipe (22) connected to said second valve, a vent pipe (21) connected to said inflow pipe (22) and to said beverage receiver chamber, a second outflow pipe (23) connected to said first valve and to said vent pipe (21), and said first and second valve moveable to first positions when said outlet beverage valve is closed so that high pressure air passes through said air intake pipe (29), said first valve (27) through said pump, said second valve, said inflow pipe (22) and said vent pipe (21) so as to force air up through said filter so as to agitate said powdered mate-

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rial and hot water, and said first and second valves moveable to second positions when said outlet beverage valve is closed so that low pressure is produced in said beverage receiver chamber and air passes from said beverage receiver chamber through said vent pipe (21), said second outflow pipe (23), said first valve, said second valve (28) and said first outlet pipe (30) so as to draw said powdered material and hot water through said filter from said extraction chamber moving it into said beverage receiver chamber, and said first and second valves moveable to said first positions when said outlet beverage valve is open so as to apply high pressure air to said beverage receiver chamber so as to discharge said detection fluid through said outlet beverage valve.

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PRESSURE COOKER

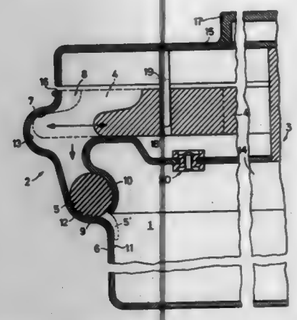
Arnold Thelen, Idar-Oberstein, and Heinz P. Falkenstein, Rötsweiler-Nockenthal, both of Fed. Rep. of Germany, assignors to Fissler GmbH, Idar-Oberstein, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,602

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133524

Int. Cl.[5] A47J *27/08*

U.S. Cl. 99—337 **20 Claims**



1. A pressure cooker comprising:

a container having a wall forming a container bottom and an upper rim defining a container opening, said rim including an inner annular locking shoulder directed toward said container bottom and an inner annular sealing shoulder directed toward said container opening;

a cover to be mounted on said rim in a pressure tight manner, said cover including a cover body having a circumferential sealing ring and plural closing members; and

said closing members being mounted on said cover body for movement relative thereto between an open position, wherein said cover selectively is insertable into and removable from said container opening, and a locking position, whereat said closing members are braced against said locking shoulder and thereby press said sealing ring into pressure tight contact with said sealing shoulder.

5,297,474

OIL-OVERFLOW ALARMING SYSTEM IN FRYING APPARATUS

Yasuhiko Tabuchi, Sapporo, Japan, assignor to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 14, 1993, Ser. No. 62,122

Claims priority, application Japan, May 16, 1992, 4-149844

Int. Cl.[5] A47J *37/12*

U.S. Cl. 99—344 **10 Claims**

1. A fryer apparatus used in commercial cooking facilities for cooking food items in cooking liquid or oil, said fryer apparatus comprising:

a housing supportable on a floor and having a bottom plate and side walls;

a plurality of frypots disposed in a side by side arrangement in an upper portion of said housing, each being filled with cooking oil in which food items are fried or cooked;

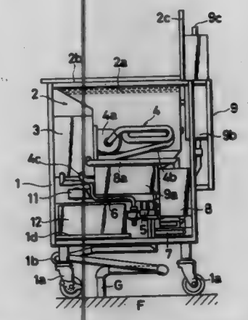
heating means for heating cooking liquid contained in each of said plurality of frypots;

a plurality of drainage conduit means each connected to each of said plurality of frypots for draining cooking oil therefrom, each drainage conduit having a first end connected to each frypot for receiving cooking oil drained therefrom and a second end for discharging the received cooking oil;

a plurality of drainage valve means each disposed in each of said plurality of drainage conduit means, each drainage valve means being movable between an open position and a close position to initiate and terminate drainage of cooking oil from each frypot through each discharge conduit means;

cooking oil filtration means for receiving cooking oil contained in one of said plurality of frypots and discharged from the second end of one of said drainage conduit means corresponding to said one of frypots and filtering the discharged cooking oil;

oil pump means connected to said cooking oil filtration means for returning the cooking oil filtered by said cooking oil filtration means to said one of frypots;



a plurality of supply conduit means for flowing cooking oil into each of said plurality of frypots, each supply conduit means having a first end connected to said oil pump means for receiving cooking oil and a second end connected to each frypot for discharging the received cooking oil thereinto; and

a plurality of supply valve means each disposed in each of said plurality of supply conduit means, each supply valve means being movable between an open position and a close position to permit and prevent flow of cooking oil into each frypot through each supply conduit means,

said fryer apparatus further comprising an oil overflow alarming system for generating an overflow alarm,

said oil overflow alarming system comprising:

control means for detecting, while drainage valve means for one of said plurality of frypots is open to allow cooking oil contained therein to be drained into said cooking oil filtration means through drainage conduit means, whether at least either drainage valve means or supply valve means of another frypot is in its open position, and outputting an overflow signal when at least either said drainage valve means or said supply valve means of said another frypot is in its open position; and

alarm means for receiving said overflow signal from said control means and generating an overflow alarm.

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MULTI-PURPOSE KITCHEN APPARATUS FOR PROCESSING FOODS

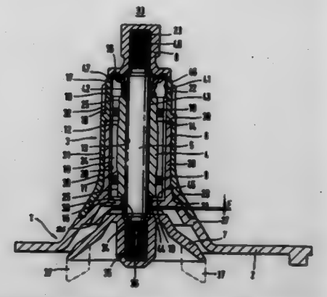
Georg Börger, Steinbach, and Karl-Heinz Kamprath, Wiesbaden, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,759

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1992, 4205422

Int. Cl.[5] A47J *43/07, 43/046, 43/08*; B01F *7/16*

U.S. Cl. 99—348 **18 Claims**



1. A multi-purpose kitchen apparatus for processing foods, said kitchen apparatus to be used with a drive motor including a drive shaft, said kitchen apparatus comprising:

a container having a bottom with a bore located therein;

a journal bearing sleeve arranged within said bore;

at least one resilient intermediate ring radially surrounding, biasing and thereby securing said journal bearing sleeve within said bore;

a tool shaft journalled within said journal bearing sleeve for rotary movement therein, said tool shaft extending through the container bottom and having a first end and an opposing second end;

a first coupling member attached to the first end of said tool shaft, said first coupling member for coupling said tool shaft to the drive shaft of the motor; and

a second coupling member attached to the second end of said tool shaft, said second coupling member for coupling said tool shaft to a processing element for processing the foods.

5,297,476

HEALTH GUARD FAT SKIMMER

Charles D. Garland, P.O. Box 472, Harbour, Grace, Nfld., Canada, and George Spector, 233 Broadway Rm. 702, New York, N.Y. 10279

Filed Mar. 5, 1993, Ser. No. 26,569

Claims priority, application Canada, May 4, 1992, 2067981

Int. Cl.[5] A47J *43/28*

U.S. Cl. 99—495 **5 Claims**

1. A fat skimmer for separating an unwanted fat liquid from a wanted liquid which comprises:

a) a transparent cone shaped jug with central bottom end for storing the unwanted fat liquid and the wanted liquid that is to be separated, said jug having a tapered exhaust conduit formed at said central bottom end through which the wanted liquid will pass by force of gravity;

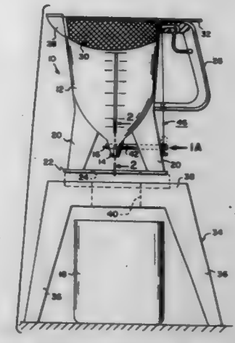
b) a valve within said conduit selectively permitting passage of the wanted liquid through said conduit into a vessel, positioned below said conduit, while the unwanted fat liquid is retained within said jug; wherein said jug includes:

c) a plurality of stanchions for supporting said jug;

d) a circular base having a central opening, whereby said base is secured to bottom ends of said stanchions with said central opening aligned with and under said conduit, so as to stabilize said jug on a flat surface;

e) a handle secured to one side thereof;

f) a spout for pouring the unwanted fat liquid therefrom; and



g) a removable strainer with hand grip placed onto a top of said jug for preventing large solid particles from entering said jug.

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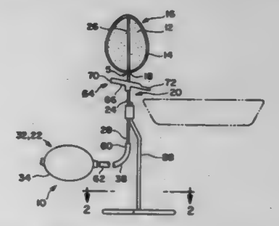
EDUCATIONAL EGG ART TOY

Bert Phillips, R.D. 1, Box 107G, Spring Mills, Pa. 16875

Filed Mar. 8, 1993, Ser. No. 27,428

Int. Cl.[5] A23B *5/00*; A23N *1/00*; A47J *43/14*; B02B *3/00*

U.S. Cl. 99—495 **9 Claims**



1. Apparatus comprising

a tube means for positioning through one hole in the shell of an egg, said tube means including a tube having a first end, a second end and a passageway therethrough, said tube extending generally vertical through said one hole in said shell into the content of the egg, said tube being smaller in diameter than said hole in said shell, said first end contacting the inside of said shell whereby said egg is supported on said first end,

an air supply means for providing air flow into said second end of said tube, through said tube and exiting out said first end against said content whereby said air flow moves said content out said hole around said tube, and

a content catching chute to collect the content of said egg as it flows out said hole around said tube.

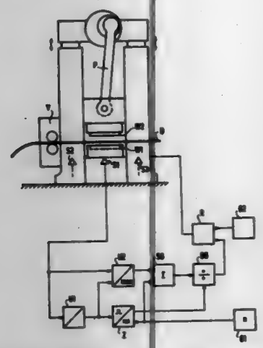
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,478

METHOD OF OPERATING A PRESS

Hermann Jartyn, Burghaslach, and Dieter Pachtner, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 30, 1991, Ser. No. 707,634
Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017598
Int. Cl.[5] B30B *13/00, 15/26*
U.S. Cl. 100—35 5 Claims



1. A method for adjusting the lower dead center position of a first die in a press having a cyclic, continuous motion of said first die, said first die having an upper dead center position and a lower dead center position relative to a second die, wherein said motion occurs between said upper dead center and said lower dead center, wherein said motion generates a pressing force having a peak force value, and wherein said press comprises means for detecting said pressing force, and controlling means for adjusting the lower dead center position of said first die the method comprising the steps of:
   a. summing a number of peak force values corresponding to an identical number of cycles of said first die of said press;
   b. calculating an average peak force value by dividing the sum of the peak force values by the number of pressing cycles executed by the press;
   c. comparing said average peak force value to a specific desired force value; and
   d. adjusting said lower dead center position of said first die by said controlling means based on the difference between said average force and said desired force.

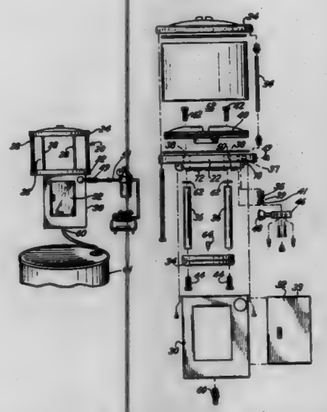
5,297,479

OIL FILTER CRUSHER APPARATUS

Joel A. Negus, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Filed Nov. 3, 1992, Ser. No. 971,076
Int. Cl.[5] B30B *15/16, 9/04*
U.S. Cl. 100—48 16 Claims

1. An oil filter crusher for compressing an oil filter of the type comprised of a generally cylindrical container having a filter medium therein, said container defining a longitudinal axis, a dome at one end, an opposite end with a passage for connection to an engine oil circulation system, said crusher comprising, in combination:
   a generally horizontal platform for receipt and support of the filter;
   a plurality of platform support members fixed to the platform and projecting generally vertically from the platform;
   a base member having a plurality of platform support member slide passages, each slide passage configured for sliding receipt of a single platform support member;
   a cylinder mounted on the base member;
   a piston reciprocally slidable in the cylinder in the vertical direction, the platform support members projecting into the cylinder and being attached to the piston for sliding movement therewith within the cylinder to transport the platform toward or away from the base member;
   a housing attached to the base plate and surrounding the platform and support members between the platform and base member, said housing including a housing floor;
   an access door to the housing for placement of a filter on the platform;
   a lower fluid drain from the housing floor;



   said platform movable vertically within the housing between a separated position spaced from the base member so as to receive a filter on the platform with the filter oil passage adjacent the platform for draining of oil from the filter and an adjacent position; and
   fluid control means for directing fluid against one side of the piston to drive the platform vertically upward toward the base member and simultaneously the piston vertically upward from the base member when the access door is closed to compress and crush an oil filter positioned between the platform and base member forcing excess oil from the crushed filter into the housing to be drained therefrom when the access door is closed.

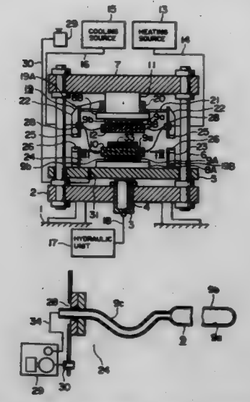
5,297,480

HIGH VACUUM HOT PRESS

Akimi Miyashita, Toride; Hazime Sato, Iwamamachi; Mutsumasa Fujii, Chiyodamachi; Isao Koromegawa, Tsuchiura, and Katsunori Shibata, Kashiwa, all of Japan, assignors to Hitachi Techno Engineering Co., Ltd., Tokyo, Japan

Filed May 6, 1992, Ser. No. 879,247
Claims priority, application Japan, May 9, 1991, 3-104232
Int. Cl.[5] B30B *9/00, 15/34*
U.S. Cl. 100—90 4 Claims

1. A high vacuum hot press including a pair of bolsters arranged to have surfaces opposed to each other; a pair of hot plates each arranged on the surface of the corresponding bolster through heat insulating means and adapted to hold therebetween a multi-layer workpiece including wafers and an adhesive base material; means, disposed between the bolsters, for hermetically enclosing said hot plate and said heat insulating means and defining therein a sealed space; means for shifting said bolsters relative to each other so as to press said workpiece; evacuating means for evacuating the sealed space in the enclosing means to a high vacuum; a heat source for heating the hot plates to heat the workpiece within the sealed space at the high vacuum to thereby bond the wafers of the multi-layer workpiece to each other by curing the adhesive base material, wherein the heat insulating means comprises a thin metallic cover and a heat insulating material enclosed by said thin



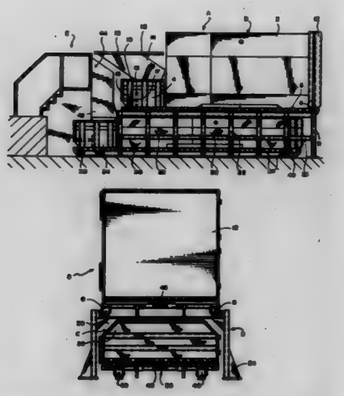
metallic cover, said thin metallic cover defining a hermetic space in which said heat insulating material is hermetically accommodated.

5,297,481

SYSTEM FOR COMPACTING AND STORING SEPARATELY RECYCLABLE AND NONRECYCLABLE WASTE MATERIALS

James K. Robbins, Fayette, and Danny L. Cundiff, Northport, both of Ala., assignors to Marathon Equipment Company, Vernon, Ala.

Filed Aug. 13, 1992, Ser. No. 929,218
Int. Cl.[5] B30B *7/00, 1/00*
U.S. Cl. 100—193 17 Claims



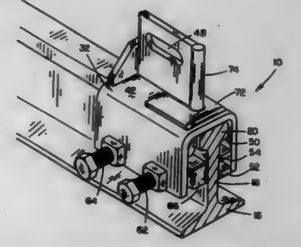
1. A system for storing materials, comprising:
   a) a first waste storage compartment for storing waste materials therein:
   b) a second waste storage compartment for storing waste materials therein;
   c) a support member for supporting said first waste storage compartment above said second waste storage compartment;
   d) said support member includes a substantially horizontally extending platform having left and right sides, said support member further includes at least first and second side support members, said first side support member extends downwardly from said left side of said platform and said second side support member extends downwardly from said right side of said platform, said platform, said first side support member and said second side support member form a passageway for receiving said second waste storage compartment;
   e) a first compactor connected to said first waste storage compartment for compacting waste materials stored therein, one of said first and second compactors including a horizontally acting ram;
   f) a second compactor connected to said second waste storage compartment for compacting waste materials stored therein;
   g) said first compactor and said first waste storage compartment being mounted on said platform.

5,297,482

RAIL THREADER

Robert K. Cleveland, 2625 Angel Dr., Stockton, Calif. 95209

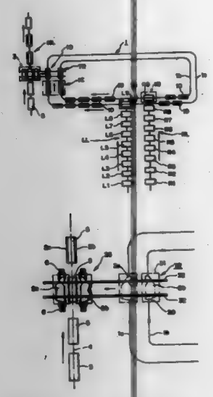
Filed Apr. 29, 1993, Ser. No. 54,693
Int. Cl.[5] E01B *29/16*
U.S. Cl. 104—7.2 12 Claims



3. A loose rail threader for mounting on a fixed rail of a pair of spaced apart fixed rails, said fixed rail including a base portion, a web portion extending upwardly therefrom, and a bail on the upper end of said web portion, comprising:
   a clamp means for removable attachment to said fixed rail;
   a rail abutment means extending therewith upwardly from said damp means to enable the loose rail to be brought into moving abutting engagement therewith so that said loose rail is either threaded into the pair of fixed rails or threaded outwardly from therebetween,
   said clamp means comprising a horizontally disposed top member having opposite ends and opposite sides, a first side member extending downwardly from one side of said top member, a second side member extending downwardly from the other side of said top member, said first said member having means extending inwardly therefrom for engagement with one side of said web portion of said fixed rail, said second side member having at least one threaded opening extending therethrough, a spacer means for removably positioning between said second side member and the other side of said web portion of said fixed rail, and a bolt means threadably mounted in said threaded opening for forcing said spacer means into engagement with the other side of said web portion of said fixed rail.

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5,297,483
WORK CONVEYOR
Takuya Kakida, Kurashiki; Noriyuki Inoue, Asakuchi; Shoichi Okada, Kurashiki; Yoshiki Nakamura, Kurashiki; Wakaharu Ikeda, Kurashiki; Akira Mikami, Kurashiki; Akiyoshi Kimura, Kurashiki; Masayuki Aihara, Kurashiki; Hisashi Fujiwara, Tamano, and Yuji Watanabe, Kojima, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 28, 1992, Ser. No. 966,755
Int. Cl.[5] B61B *1/00*
U.S. Cl. 104—88 11 Claims



8. A work conveyor for simultaneously transporting a left panel component and a right panel component in combination from corresponding two panel component production lines, in which two types of panel components used as left and right panel components for vehicle bodies are produced respectively, to a predetermined position in a main body assembly line in which various vehicle body components fed thereto are assembled into vehicle bodies, comprising:

two panel component conveyors arranged in the respective panel component production lines and connecting together plural work stations arranged along the individual panel component production lines, whereby a panel component worked at each of the work stations in each of the panel component production lines is conveyed to the next work station on a downstream side of the panel component production line;

two vertical lifters disposed adjacent to the respective panel component conveyors and vertically reciprocal between receiving positions, where the vertical lifters receive the panel components from the corresponding panel component conveyors, and delivery positions arranged above the receiving positions to deliver the panel components;

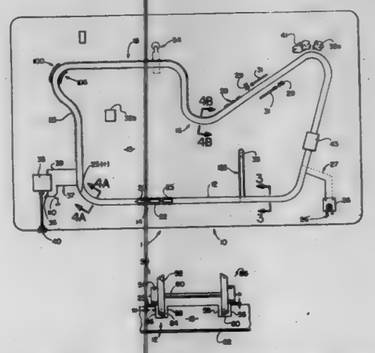
a trolley conveyor having conveyor rails extending in parallel combination, each of said conveyor rails being formed in a loop, including a cut-off portion formed by cutting itself off at least at a portion thereof and having plural types of insulated trolley lines; and a plurality of runners arranged on each of the conveyor rails and movable upon receipt of the electric signals from the trolley lines, each of said runners having a hanger disposed thereon and provided with arms closable to hold the panel component transported to the corresponding delivery position by the associated vertical lifter;

ground control means connected to the trolley lines of the paired conveyor rails in the trolley conveyor for outputting running control signals so that the runners are stopped at least at corresponding transfer positions, where the runners receive the left and right panel components from the associated vertical lifters, and at a single standby position arranged before both of the cut-off portions and each runners running on the corresponding conveyor rails are caused to run and stop following the runners running ahead of said each runners;

a traverser having transport rails disposed extending from the cut-off portions to positions above the main body assembly line, respectively, traverser main bodies provided movably along the transport rails, respectively, and connecting rails disposed on the respective traverser main bodies and, when the traverser main bodies are located at the corresponding cut-off portions, connected substantially with the corresponding conveyor rails to receive the associated runners from the corresponding conveyor rails; and

a drop lifter arranged below the traverser and adjacent to the main body line for simultaneously receiving the panel components from the runner, which have been transported by the traverser, and lowering and feeding the body components to a predetermined position in the main body assembly line.

5,297,484
VEHICLE GUIDANCE TRACK SYSTEM
Gregory T. Piserchia, Painesville, and Eric F. Wilson, Chesterland, both of Ohio, assignors to Train Products, Inc., Painesville, Ohio
Filed Jul. 3, 1991, Ser. No. 725,293
Int. Cl.[5] B61D *17/00*; A63H *18/00*
U.S. Cl. 105—1.5 30 Claims



1. A guidance track system for a vehicle having at least two wheels on which said vehicle travels, said guidance track system comprising:

a generally planar uniform material having a top surface;

at least two grooves in said top surface, each of said two grooves having means for receiving at least a portion of a respective wheel and means for guiding said respective wheels such that said vehicle progresses along said guidance track in the direction of said groove;

each of said grooves including two generally oppositely facing side walls for guiding said portion of said wheel therein, and wherein said side walls are formed by said uniform material;

wherein said means for receiving comprise a cavity at least partly defined by said side walls;

said means for guiding comprising said side walls, and wherein said side walls are operative to exert directive forces on a respective wheel;

wherein each of said wheels has a flange portion which is received by said cavity;

wherein said directive forces are exerted on said flange portion;

wherein each of said wheels further has a contact portion which rides at least one of on or above said top surface;

further comprising a respective conductive surface on said top surface, each being adjacent to at least a portion of a respective one of said two grooves, and wherein said contact portion of said wheels engages in electrical connection with a respective conductive surface;

further comprising means for providing a voltage across said respective conductive surfaces;

wherein said contact portion on said at least one wheel electrically couples said voltage on said conductive surfaces to an electric motor in said vehicle to power said vehicle along said track;

said material comprising a dielectric substrate, and wherein said conductive surfaces comprise metal which is fixedly attached to said top surface; and

wherein said metal comprises a layer of at least one of a conductive thin film, a photo-etched material and deposited metal.

5,297,485
PALLET HAVING ADJUSTABLE LOAD LOCATOR POSTS
Irvin D. Bond, 10270 Allen Rd., Clarkston, Mich. 48348
Filed Jan. 19, 1993, Ser. No. 5,733
Int. Cl.[5] B65D *19/44*
U.S. Cl. 108—55.1 15 Claims

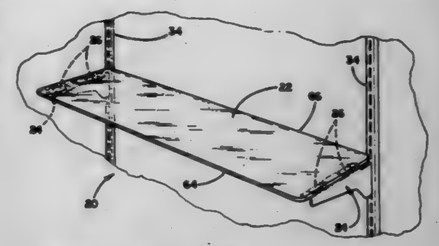
1. A pallet for supporting a plurality of similarly shaped parts piled one above the other in a stacked condition, said parts having a common edge orientation when in the stacked condition; said pallet comprising:

a base that comprises a plural number of elongated hollow tracks, each track comprising an upper horizontal flat wall having a slot therein;

a plural number of vertical posts supported on said base, each post having a lower end seated against one of said tracks and an upper end elevated above said base, said posts being horizontally adjustable along the associated tracks, whereby the posts can be shifted along the tracks to engage the edges of differently sized stacked parts so as to prevent dislocation of the parts from the stack; and

a clamp mechanism carried by each post for releasably clamping said post to the associated track; each clamp mechanism comprising a shoe located within the associated track, an elongated connector extending upwardly from the shoe through the track slot, a manual handle pivotally mounted on the post in the space above said connector, and a link trained between the handle and the connector, whereby upward swinging of the handle around its pivotal mounting causes the link to exert an upward pulling force on the elongated connector, such that said shoe comes into pressure engagement with the upper horizontal wall of the track.

5,297,486
BRACKET AND SHELF
Robert S. Herrmann, Grand Haven; Gregory T. Wolters; Edmund J. Kane, both of Holland, and Donald C. Gilbert, Muskegon Heights, all of Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Aug. 14, 1991, Ser. No. 744,938
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—108 24 Claims



1. A shelf assembly comprising:

a shelf support bracket having a support surface to receive and support a shelf panel;

a shelf panel abutting said support surface and supported by said support bracket;

a fastening stud projecting from one of said support bracket and said shelf panel toward the other of said support bracket and said shelf panel, said other of said support bracket and said shelf panel having a corresponding fastening aperture defined therein, said fastening aperture being generally figure eight shaped with a large portion adapted to receive said fastening stud, with a small portion adapted to receive said fastening stud from said large portion and to release said fastening stud to said large portion, and with a throat extending between and interconnecting said large portion and said small portion; and

a resilient, compressible bushing circumscribing said fastening stud, said bushing being sized to compress between said fastening stud and said fastening aperture when in said small portion, whereby said shelf panel is securely fastened to said support bracket, said throat having smoothly curved, opposing convex surfaces facilitating compression of said bushing as said stud and bushing are slid from said large portion, through said throat, to said small portion, said opposing convex surfaces defining a pair of opposed shoulders between said throat and said small portion to resist withdrawal of said fastening stud with said bushing, from said small portion.

5,297,487
INK CONTAINMENT APPARATUS FOR SCREEN PRINTING FRAME ASSEMBLIES
David O. Simmons, 16609 Black Kettle Dr., Leander, Tex. 78641
Filed Feb. 11, 1993, Ser. No. 16,505
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B05C *17/06*
U.S. Cl. 101—127 19 Claims

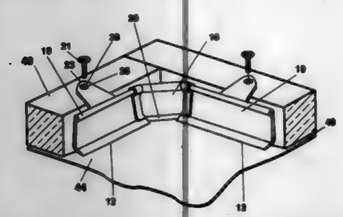
1. In combination, a screen and screen printing frame which contains a viscous substance within the utilizable area of said screen, and a structural assembly removeably received within and encompassed by said screen printing frame, said structural assembly comprising:

a plurality of linear members and a plurality of unions, said unions being fixedly coupled to the ends of said linear members,

sealing means attached to said linear members and to said unions to encompass the entire perimeter of said structural

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assembly to inhibit the flow of the viscous substance between said structural assembly and said screen, and
means enabling said structural assembly to be mounted in, maintained constant relative to, and removed from the



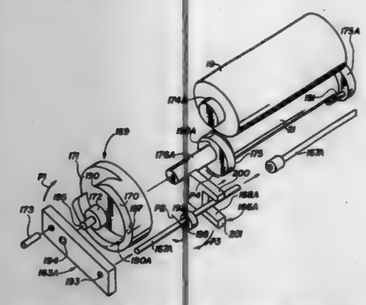
screen printing frame as a unitary assembly, said enabling means including substantially rigid retaining means attached to the unions or the linear members or both the unions and linear members, said retaining means facing said screen printing frame.

5,297,488

APPARATUS FOR SELECTIVE RANDOM PRINTING OF FIXED DATA

Earnest B. Bunch, Jr., Phoenix, Ariz., assignor to B. Bunch Company, Inc., Phoenix, Ariz.

Filed Oct. 26, 1992, Ser. No. 967,016
Int. Cl.[5] B41F *5/06, 13/28*
U.S. Cl. 101—182 **4 Claims**



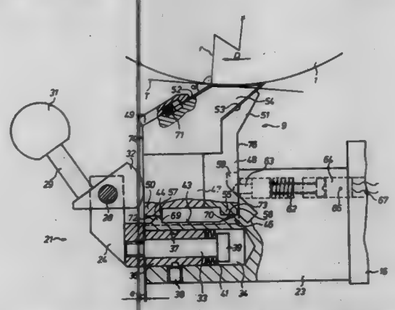
1. Plate printing apparatus for printing images on a web passing through said apparatus and comprising a plurality of pages attached end-to-end, said apparatus including
(a) frame means;
(b) a reservoir of ink mounted on said frame means;
(c) an imprint roller rotatably mounted on said frame means and including at least one plate means for imprinting an image on the web, said imprint roller and said plate means normally being spaced apart from the web;
(d) control means for receiving instructions defining where on the web said image is to be imprinted and for generating printing format signals specifying at least one selected location on the web at which said image is to be imprinted;
(e) means mounted on said frame means for transferring ink from said reservoir to said plate means on said imprint roller;
(f) an impression roller rotatably mounted on said frame means for intermittently pressing the web passing intermediate said imprint roller and impression roller against said plate means, said impression roller normally being spaced apart from said imprint roller;
(g) activation means mounted on said frame means and responsive to said printing format signals to displace at least one of the roller pair comprising
said imprint roller, and
said impression roller,
to press said web against said plate means and imprint said image on the web at said selected location, said activation means including
(i) rotatable eccentric means contacting said one of said pair to displace said one of said pair when said eccentric means rotates, and
(ii) tracking means for rotating said eccentric means to displace one of said pair with respect to the other of said pair, said tracking means including
a rotating arcuate track (170) with at least one opening (190) formed therethrough and including an outer tracking surface and an inner tracking surface,
a roller follower (172), and
means for preloading said roller follower (172) to press against said outer tracking surface such that when said arcuate track (178) rotates sufficiently for said opening (190) to reach said roller follower (172), said roller follower is immediately displaced through said opening to turn said rotatable eccentric means.

5,297,489

APPARATUS FOR CLAMPING AND PLACEMENT OF A DOCTOR BLADE BAR AGAINST AN INK-DISPENSING ROLLER

Georg Schneider, Würzburg; Wolfgang O. Reder, Veitshöchheim, and Dieter Reinhart, Hettstadt, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,940
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213670
Int. Cl.[5] B41F *31/04*; B41L *27/06*
U.S. Cl. 101—350 **9 Claims**



1. An apparatus for the clamping and placement of a doctor blade bar against an ink dispensing roller in a web fed rotary printing press, said apparatus comprising:
a doctor blade bar;
first and second spaced doctor blade bar support beams, said first and second spaced doctor blade bar support beams each supporting said doctor blade bar for sliding movement thereon;
means engaging said doctor blade bar to shift said doctor blade bar on said first and second doctor blade base support beams to move said doctor blade bar with respect to an ink dispensing roller, said doctor blade bar shifting means including a shifting body rotatably secured at a first end to a first end of each of said support beams, and having spaced arms at a second end, said spaced arms rotatably supporting a shaft having a double armed lever with a stop on a first end and an eccentric on a second end, said eccentric being engageable with a front face of said doctor blade bar;
a pressure piece and switch assembly supported by one of

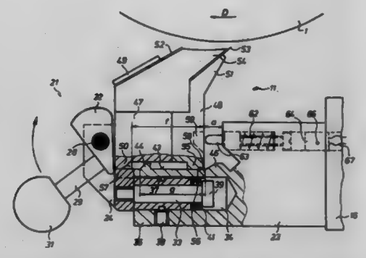
said first and second doctor blade bar support beams and being engageable with a rear face of said doctor blade bar; and
an abutment face on each of said support beams, said doctor blade bar engaging said abutment face when said doctor blade bar is positioned in a work position with respect to an ink dispensing roller.

5,297,490

APPARATUS FOR PLACEMENT OF A DOCTOR BLADE BAR AGAINST AN INK-DISPENSING ROLLER

Georg Schneider, Würzburg; Wolfgang O. Reder, Veitshöchheim, and Dieter Reinhart, Hettstadt, all of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,130
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213669
Int. Cl.[5] B41F *31/04*
U.S. Cl. 101—365 **5 Claims**



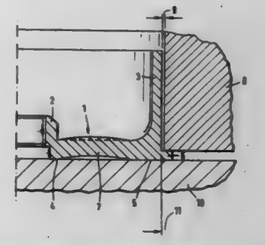
1. An apparatus for the placement of a doctor blade bar against an ink dispensing roller in a web fed rotary printing press, said apparatus comprising:
first and second doctor blade supporting base bodies, said first and second base bodies cooperating to form a doctor blade bar;
a first counter strip having a flat front with a first edge on a lower surface of said first base body and a second counter strip having a flat front with a second edge on a lower surface of said second base body;
first and second spaced doctor blade base support beams, said first and second spaced doctor blade base support beams each supporting said first and second doctor blade supporting base bodies;
first and second spaced lifting strips on each of said first and second spaced doctor blade base support beams, said first lifting strip having a first inclined surface and said second lifting strip having a second inclined surface; and
means engaging said doctor blade body to shift said first and second doctor blade supporting bar bodies on said first and second doctor blade base support beams to slide said first and second edges of said first and second counter strips along said first and second inclined surfaces of said lifting strips to move said doctor blade bar with respect to an ink dispensing roller.

5,297,491

CASING BOTTOM FOR A PROPELLING CHARGE CASING

Achim Sippel; Heinz-Josef Kruse, both of Ratingen; Gisbert Bartsch, Halle in Westfalen; Monika Wildau, Korschenbroich, and Jürgen Meyer, Köln, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 947,399
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1991, 4131286
Int. Cl.[5] F42B *5/28*
U.S. Cl. 102—469 **2 Claims**



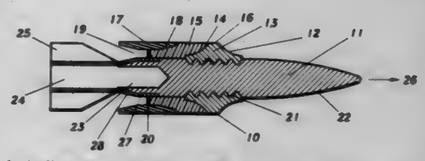
1. A casing bottom for a propelling charge casing, said casing bottom comprising:
a circular ring-shaped base plate formed of metal and having an exterior and an interior face, said base plate being provided with a centrally arranged primer sleeve, for accommodating a primer element, and with a cylindrical section at an outer edge thereof, with said sleeve and said cylindrical section being formed of metal and in one piece with said base plate;
wherein the exterior face of said base plate is inwardly curved in an annular region of said base plate which is concentric with and around said sleeve and which is disposed between and extends from first and second planar annular portions of said exterior face; and
wherein the interior face of said base plate is planar in said annular region.

5,297,492

ARMOR PIERCING FIN-STABILIZED DISCARDING SABOT TRACER PROJECTILE

Steven M. Buc, 53 Lake Park Ct., Germantown, Md. 20874

Filed Feb. 26, 1993, Ser. No. 22,894
Int. Cl.[5] F42B *14/06*
U.S. Cl. 102—521 **6 Claims**



1. A discarding sabot projectile comprising:
a sub-caliber rod penetrator having an outer surface, having a central cylindrical region; said central cylindrical region having a grooved interface;
a sabot disposed circumferentially about said central cylindrical region; said sabot having a sabot concave aft ramp; said sabot is segmented longitudinally into a plurality of parts; and
a plastic obturator assembly comprising; a segmented plastic obturator having an internal surface mating with said

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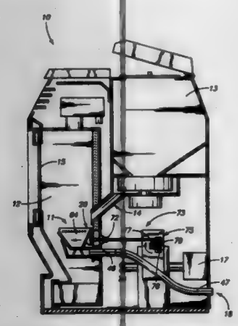
outer surface of said sub-caliber rod penetrator and having a forward internal convex surface mating with said sabot concave aft ramp and having a tapered aft ramp; a solid plastic obturator ring having an internal bulkhead mating with the outer surface of said sub-caliber rod penetrator; said internal bulkhead providing an uninterrupted gas seal to prevent leakage of propellant gasses forward into the segmented obturator; said solid obturator ring having a forward internal cavity in front of said internal bulkhead which mates with said tapered aft ramp of said segmented obturator and having an internal aft cavity behind said internal bulkhead; said internal aft cavity formed by an inner surface of said solid obturator ring and said outer surface of said sub-caliber rod penetrator; said internal aft cavity serving to entrap propellant gas pressure to facilitate fracture of the solid obturator ring upon muzzle exit.

5,297,493

BURN POT FOR PARTICULATE COMBUSTORS

David L. Nuesmeyer, N. 5530 Cannon, Spokane, Wash. 99205, and Gary W. Broadt, 16220 S. Sherman Rd. #27, Cheney, Wash. 99004

Filed Mar. 16, 1993, Ser. No. 33,508
Int. Cl.[5] F13B *7/00*
U.S. Cl. 110—233 20 Claims



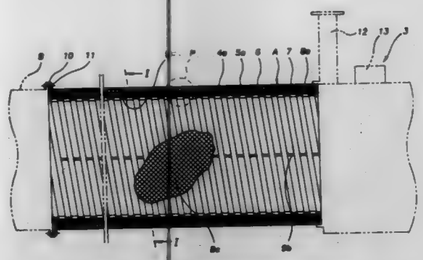
1. A pellet burn pot for a particulate fuel burner having a firebox, a hopper and a particulate feeder for dropping particulate fuel into the firebox, the burn pot comprising:
- a burn pot body including a front wall, side walls joining the front wall, and a bottom wall joining the front and side walls, the walls defining a combustion bowl area;
- said burn pot body being adapted to be positioned in a firebox to receive particulate fuel from a particulate feeder;
- wherein the front wall is inclined away from the bottom wall and includes an upper ash discharge edge;
- a back wall slidably mounted to the side and bottom walls and facing the front wall; and
- a driver for moving the back wall in a reciprocating movement along the bottom wall and side walls toward, and away from the front wall, to engage and move particulates along the bottom wall and side walls toward the front wall and the discharge edge thereof.

5,297,494

INCINERATOR FOR BURNING WASTE

Jae B. Kim, 1-10, Songwool-dong, Joong-ku, Inchun, and Jang H. Kim, Na-dong 105, Sachan Apt., Yonghyun-dong, Nam-Ku, Inchun, both of Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 996,181
Claims priority, application Rep. of Korea, Mar. 2, 1992, 92-3441
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—234 16 Claims



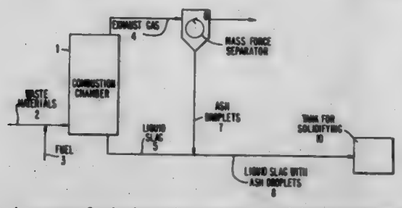
1. A combustible waste incinerator comprising:
- a tubular furnace defining a cavity with a first opening for receiving said waste and a second opening and an interior and an exterior surface;
- a burner unit positioned at said second opening of said cavity for producing an intense flame in said cavity sufficient to burn said combustible waste therein;
- a water pipe spirally coiled along said interior surface of said cavity for dissipating heat formed in use in said furnace;
- an air supply pipe spirally coiled along said interior surface of said cavity and with said air supply pipe having a plurality of apertures formed therein for supplying air to said cavity of said furnace to promote in use combustion therein;
- said water pipe and said air supply pipe being disposed on said interior surface of said cavity such that a spiral channel is formed from said first opening to said second opening of said cavity;
- a cylindrical wire screen disposed between said water and air supply pipes and said cavity to permit at least a portion of said waste to pass from said cavity into said spiral channel; and,
- means for rotating said furnace about its longitudinal axis such that in use at least a portion of said waste in said tubular furnace tumbles within said cavity so as to be directly exposed to said flame produced by said burner thereby drying and breaking up said waste such that at least an additional portion of said waste passes from said cavity into said spiral channel to be moved in said channel away from said first opening, and upon further rotation of said furnace an additional portion of said combustible waste further tumbles within said cavity so as to be directly exposed to said flame produced by said burner thereby becoming further reduced in size, dried and burned such that a further portion of said waste passes from said cavity into said spiral channel for movement toward said second opening, and upon further rotation said waste further tumbles and burns such that upon arriving at said second opening said combustible waste is completely burned.

5,297,495

PROCESS OF INCINERATING WASTE MATERIALS

Ekkehard Weber, Essen, Fed. Rep. of Germany, assignor to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 25, 1992, Ser. No. 904,340
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121347
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 12 Claims



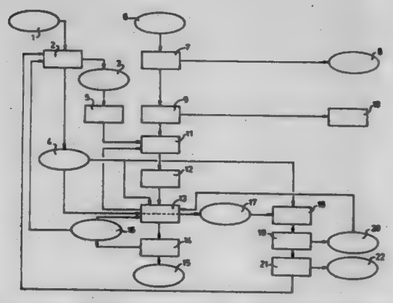
1. A process for incinerating waste materials comprising the steps of:
- a) incinerating waste materials at an incineration temperature of 1000° to 1700° C. to form a liquid ash and an exhaust gas containing solid and gaseous pollutants as well as pollutant-containing liquid ash droplets;
- b) removing a major part of the liquid ash from the waste materials as a liquid slag;
- c) removing the solid and gaseous pollutants from the exhaust gas;
- d) separating the pollutant-containing liquid ash droplets from the exhaust gas at a temperature in the vicinity of the incineration temperature by at least one mass force separator; and
- e) solidifying the pollutant-containing liquid ash droplets separated in step d).

5,297,496

PROCESS FOR THE COMBINED TREATMENT OF WASTE MATERIALS

Marinus P. Quaak, Woerden, and Johannes Bouman, Dordrecht, both of Netherlands, assignors to Ecotechniek B.V., Utrecht, Netherlands

PCT No. PCT/NL91/00058, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO91/16154, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 11, 1991, Ser. No. 934,506
Claims priority, application Netherlands, Apr. 12, 1990, 9000868
Int. Cl.[5] F23G *7/00*
U.S. Cl. 110—346 15 Claims



1. A process for the combined treatment of waste materials of two types A and B,
- A containing more than 40 wt. % of organic material and having a relatively high energy content and
- B being a water containing material containing less than 30 wt. % of organic material and having a relatively low energy content, said percentages being based on dry matter.

said process comprising the following steps:
1. pyrolyzing material A to produce a gas and/or oil and a carbonaceous residue.
2. mixing said carbonaceous residue with B to form a water containing mixture C.
3. shaping said mixture C into individual pieces,
4. drying and baking said pieces to ceramic bodies,

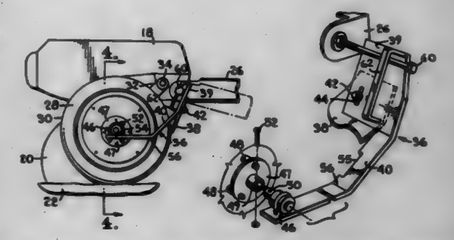
wherein in step 2. the carbonaceous residue is used in such an amount that less than about 80% of the totally required baking energy is contained in mixture C.

5,297,497

SCRAPER ATTACHMENT FOR DEPTH GAUGE WHEEL ON SEED PLANTER

LaVern D. Schmidt, P.O. Box 234, Montezuma, Kans. 67867

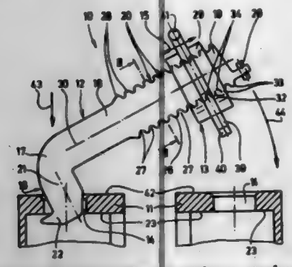
Filed Nov. 6, 1992, Ser. No. 972,548
Int. Cl.[5] B60S *1/68;* A01B *15/16*
U.S. Cl. 111—200 15 Claims



1. A scraper for a depth gauge wheel mounted by a pivot arm to a frame of a seed planter and permitting movement of the depth gauge wheel in vertical and fore-and-aft directions, said scraper comprising:
- a scraper blade presenting an edge for contacting an outer circumference of the depth gauge wheel;
- an elongated arm mounting the scraper blade;
- a mount for coupling the elongated arm with the depth gauge wheel and permitting relative rotative movement between the depth gauge wheel and the elongated arm to permit the arm to remain generally stationary as the depth gauge wheel rotates,
- whereby said edge of the scraper blade is maintainable in contact with the outer circumference of the depth gauge wheel as the depth gauge wheel rotates; and
- means for stabilizing the elongated arm at a position remote from said mount and including a member presenting an elongated opening for receiving a support bolt and permitting sliding movement of the support bolt along said member when the scraper is mounted on the depth gauge wheel and said wheel moves in the vertical or fore-and-aft direction, whereby said scraper blade is maintainable in contact with said outer circumference of the depth gauge wheel as it moves in the vertical and fore-and-aft directions.

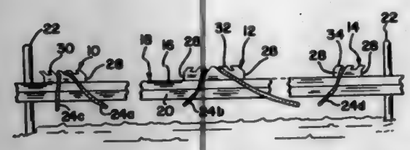
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,498
DEVICE FOR CONNECTING CONTAINERS
Julius Donner, Barschlitte, Fed. Rep. of Germany, assignor to Conver-OSR Oceanservice-Reparatur Ingenieurtechnik GmbH, Bremen, Fed. Rep. of Germany
Filed Sep. 17, 1991, Ser. No. 761,419
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1990, 4030337
Int. Cl.[5] B60P 7/13
U.S. Cl. 114—75 12 Claims



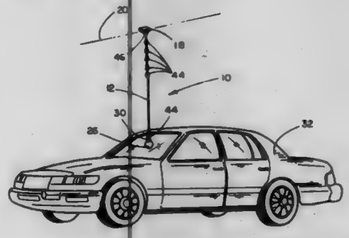
1. A device for connecting containers stacked on ships, especially on ship's decks, with:
at least two connecting pieces;
said connecting pieces comprising holding portions which are engageable to container corner fittings of adjacent containers;
said at least two connecting pieces having corresponding projections;
the distance between the holding portions being variable by means of a relative displacement in which the projections of the connecting pieces are not engaged with one another in order to adapt the distance of the holding portions to the distance between the respective containers which are to be connected;
wherein said connecting pieces are relatively moveable in a rotatably manner such that when said connecting pieces are in one relative rotational position, said projections are engaged to lock said connecting pieces against longitudinal movement whereby said holding portions are locked at a selected distance apart, and when said connecting pieces are in another relative rotatable position, said projections are disengaged, allowing longitudinal adjustment of said connecting pieces to selectively vary the distance between said holding portions.

5,297,499
CLEAT FOR SECURING A BOAT TO A DOCKING STRUCTURE
Robert T. Grange, 333 Victory Rd., North Quincy, Mass. 02171
Filed Feb. 3, 1993, Ser. No. 12,586
Int. Cl.[5] B63B 21/00
U.S. Cl. 114—218 17 Claims



1. A cleat for mounting to piling to enable selective engagement and disengagement of a boat line from a location spaced from the piling, the boat line having a working end with a cross-sectional dimension greater than cross-sectional dimensions of the boat line at locations spaced from the working end, said cleat comprising:
a planar cleat plate having opposed substantially parallel surfaces, an engagement edge and an opposed base edge extending between said surfaces, a notch defined along said engagement edge adjacent said piling and extending toward said base edge, said notch defining a cross-sectional dimension less than the cross-sectional dimension of the working end of the boat line and greater than the cross-sectional dimension of the boat line at locations spaced from the working end, a chamfer extending between said notch and said engagement edge of said cleat plate; and a plurality of mounting holes extending through said cleat plate generally parallel to the surfaces thereof and a plurality of bolts passing through the mounting holes and into the piling for mounting said cleat plate to said piling.

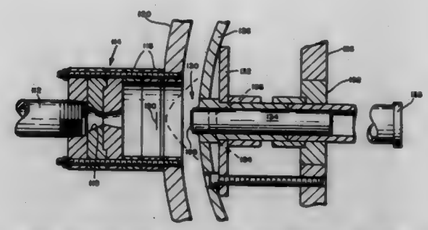
5,297,500
APPARATUS FOR ASSISTING IN PARKING VEHICLES IN A VEHICLE SHELTER
Stanley B. Wilson, Rte. 2 Box 107, Gibbon, Nebr. 68840
Filed Jan. 29, 1993, Ser. No. 10,698
Int. Cl.[5] B60S 13/00
U.S. Cl. 116—28 R 2 Claims



1. An apparatus for visually positioning a vehicle in a shelter having a ceiling surface; wherein, the apparatus comprises:
an adjustable length line having ceiling and indicator attachment ends;
a ceiling fastener adapted to be secured to a ceiling surface;
ceiling attachment means for removable securing said line ceiling attachment end to said ceiling fastener;
an indicator mass;
an indicator fastener secured to said indicator mass;
indicator mass attachment means for removable securing said line indicator attachment end to said indicator fastener such that said indicator mass may be adjustably suspended from the ceiling fastener of a vehicle shelter whereby the operator of a vehicle may utilize the location of said suspended indicator mass to selectively park the vehicle in an appropriate location within said vehicle shelter; and,
releasable coupling means operatively associated with said ceiling and mass attachment means for releasing the indicator mass from the ceiling fastener upon the application of a certain amount of force.

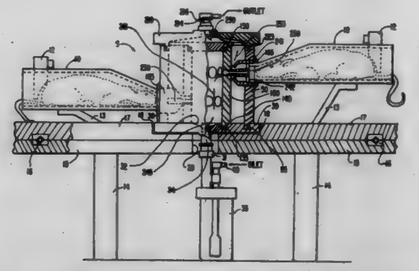
5,297,501
INTENSE NOISE GENERATOR
Paul Lieberman, Torrance, and Ronald W. Bocksruker, Los Angeles, Calif., assignors to National Technical Systems, Calabasas, Calif.
Filed Dec. 28, 1992, Ser. No. 997,358
Int. Cl.[5] B06B 1/00; G01N 29/00
U.S. Cl. 116—137 A 13 Claims

1. Apparatus for generating acoustical noise for testing purposes comprising:
a. a source of compressible fluid under elevated pressure in excess of 200 p.s.i.g.;
b. an expansion nozzle coupled to said fluid source and having a flow output axis for directing the flow of fluid in the axial direction;
c. a resonance tube axially aligned with said nozzle and adapted to receive substantially all of the expanding fluid emerging from said nozzle;
d. a first outer containment chamber enclosing said nozzle and coaxial with said flow output axis;
e. a second, inner containment chamber, coaxial with said



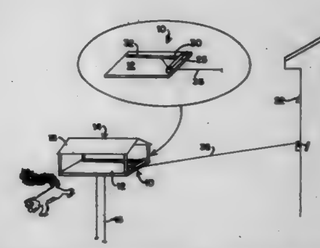
first chamber and surrounding the opening of said resonance tube, said opening being located in the space between said inner and outer containment chambers; and
f. means for mounting an article to be tested adjacent said second chamber but within said first chamber,
whereby acoustic noise generated by said nozzle and said resonance tube is propagated between said inner and outer chambers to challenge test articles located within said outer chamber.

5,297,502
MODULAR REVERSIBLE-FLOW-PAST NASOPULMONARY RESPIRATORY DOSING SYSTEM FOR LABORATORY ANIMALS
Rudolf J. Jaeger, 48 James St., Westwood, N.J. 07675
Filed May 5, 1993, Ser. No. 56,463
Int. Cl.[5] A61D 7/04; A01K 1/03
U.S. Cl. 119—15 4 Claims



1. A modular inhalation fixture for exposing laboratory animals to various substances for scientific and medical research comprising:
a disk-shaped horizontal base;
a first generally vertical manifold supported by said base, the manifold having: a hollow interior defining a distribution duct; a plurality of apertures on a vertical surface thereof; and an inlet port at its lower end open to the hollow interior;
a second generally vertical manifold being concentric with said first manifold wherein said first and second manifolds define an exhaust duct in the space therebetween, said second manifold supported by said base and having a plurality of apertures on a vertical surface thereof, the plurality of apertures being generally axially aligned with the apertures in said first manifold;
a top cover having an exhaust port, the cover covering said second manifold such that the exhaust port is in fluid communication with the exhaust duct formed between said first and second manifolds, said cover having a conically shaped lower surface;
a plurality of connectors, a portion of each connector having a conical shape, thus defining larger and smaller ends thereof, the small end having an axial aperture therein, the larger end of each connector being removable and mounted in one of the plurality of apertures of said outer manifold such that each axial aperture is in fluid communication with the hollow interior of said outer manifold;
a plurality of distribution tubes, one end of each tube having a horn shaped end and the other end of the tube having an outer diameter smaller than the horn shaped end, the smaller end of each tube being removably mounted in one of the plurality of apertures in said first manifold such that each tube is in fluid communication with said hollow interior of said first manifold and each tube extends through the axial aperture in one of said connectors, said tubes being concentric with said connectors such that the horn shaped end of each tube is spaced apart from said connector;
an animal holder having at least one inhalation opening, one end of said holder being removably positionable within said connector such that the inhalation opening of said holder is adjacent to said horn shaped end of said tube.

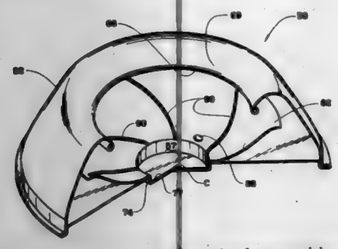
5,297,503
BIRD FEEDER PROTECTOR
Frederick B. Hibbard, P.O. Box 261, Bar Harbor, Me. 04609
Filed Sep. 1, 1993, Ser. No. 115,417
Int. Cl.[5] A01K 39/00
U.S. Cl. 119—57.9 16 Claims



1. A bird feeder protector for removing unwanted animal intruders from a bird feeding area or bird feeding platform of a bird feeder comprising:
a protector mounting base secured to the bird feeder;
a sweeper arm having a length sufficient to sweep across the bird feeding area;
a mounting spring mounting the sweeper arm on the protector mounting base in a rest position adjacent to the bird feeding area and generally parallel with the bird feeding area, said sweeper arm being positioned to sweep across the bird feeding area upon bending the mounting spring, said mounting spring having a selected spring constant for restoring the sweeper arm to the rest position;
a line coupled to the sweeper arm for pulling the sweeper arm at a remote location and bending the mounting spring;
and a line guide mounted on the bird feeder for guiding the line so that the line pulls the sweeper arm across and generally in parallel with the bird feeding area for startling, thumping, and sweeping away unwanted animal intruders on the bird feeding area.

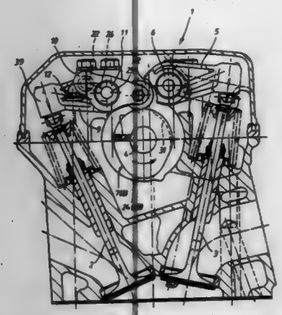
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,504
PET WATER SAVER
Kenneth S. Carrico, Singer Island, Fla., assignor to Pet Life, Inc., West Palm Beach, Fla.
Continuation-in-part of Ser. No. 885,188, May 19, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 14,787
Int. Cl.[5] A01K *5/01, 7/04*
U.S. Cl. 119—61 23 Claims



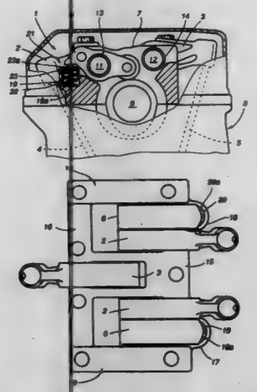
1. A spill-resistant container for animals comprising:
a support base;
a dish coupled to said support base defining a generally circular upper peripheral rim and at least one aperture fluidly communicating the interior of said dish with the exterior thereof; and
a housing means sealingly connected to said support base and extending upwardly and inwardly forming an upper ridge and therefrom extending generally downwardly and inwardly to define a centrally disposed generally circular animal access aperture therethrough, water being moveable from the exterior of said dish through said aperture to the interior of said dish for maintaining a constant level of water in the dish, the diameter of said peripheral rim being greater than the diameter of said animal access aperture.

5,297,505
INTERNAL COMBUSTION ENGINE VALVE ACTUATOR
Gerhard Doll, Stuttgart, and Jürgen Frey, Esslingen, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Jun. 28, 1993, Ser. No. 82,857
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1992, 4221134
Int. Cl.[5] F01L *1/34, 1/12*
U.S. Cl. 123—90.16 11 Claims



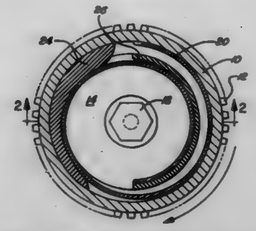
1. An apparatus for valve actuation in an internal combustion engine, comprising a camshaft with at least one first cam and at least one second cam, an actuation lever driving a valve and driven by the first cam having a cam protrusion and a base circle, a coupling lever driven by the second cam having a cam protrusion and a base circle, the actuation lever and coupling lever being operatively supported on a lever pin so as to be pivotable relative to one another, a coupling device including a coupling element for coupling the actuation lever and the coupling lever, which coupling element is associated with one of the levers and is configured to engage the other lever with movement thereof via a force change, and, for preventing movement of the coupling element at a predetermined position of the camshaft inclusive of the force change acting on the coupling element, a depression is provided at the base circle of one of the two cams in a first region in which the associated one lever is in contact at the predetermined position of the camshaft.

5,297,506
VALVE OPERATING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Christoph Reckziigel, Stuttgart; Mario Mürwald, Ebersbach; Gerhard Doll, Stuttgart, and Ralf Ohlendorf, Weinstadt, all of Fed. Rep. of Germany, assignors to Mercedes-Benz A.G., Stuttgart, Fed. Rep. of Germany
Filed Aug. 12, 1993, Ser. No. 105,124
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1992, 4227567
Int. Cl.[5] F01L *1/34, 1/18*
U.S. Cl. 123—90.16 5 Claims



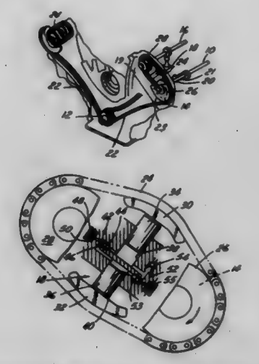
1. A valve operating system for an internal combustion engine having a cylinder head with at least one intake and exhaust valve per cylinder, with a camshaft having cams and being supported in a bearing bracket mounted on the cylinder head, for the actuation of said intake and exhaust valves via a rocker arm arrangement which, for at least one of said intake and exhaust valves, comprises a main rocker arm and an auxiliary rocker arm adapted to be coupled with said main rocker arm, and a spring support element engaging said auxiliary rocker arm so as to maintain it in contact with its associated cam structure, said spring supporting element having one end engaging the underside of said auxiliary rocker arm and an opposite end of said spring supporting element engaging said bearing bracket.

5,297,507
INTERNAL COMBUSTION ENGINE HAVING VARIABLE EVENT TIMING
Thomas T. Ma, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 11, 1993, Ser. No. 30,292
Claims priority, application United Kingdom, Sep. 12, 1990, 9019915
Int. Cl.[5] F01L *1/12*
U.S. Cl. 123—90.17 14 Claims



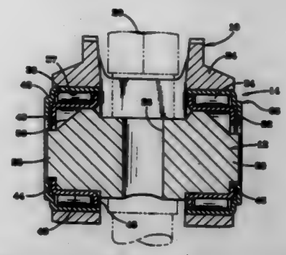
1. An internal combustion engine having a crankshaft, a camshaft (16) driven by the crankshaft through a drive wheel (10) at half the crankshaft speed, and a plurality of cams on the camshaft (16) for actuating respective spring biased poppet valves of the engine, characterised in that a spring biased lost motion coupling (10, 20, 14) is arranged between the drive wheel (10) and the camshaft (16) so that during the opening of each valve the camshaft (16) rotates at substantially the same speed as the drive wheel (10) and during the closing of each valve the camshaft (16) may be accelerated by the valve spring to lead the drive wheel (10) and thereby reduce the duration of the valve events by altering the closing timing of the valves.

5,297,508
VARIABLE CAMSHAFT DRIVE SYSTEM FOR INTERNAL COMBUSTION ENGINE
James R. Clarke, Northville; Aladar O. Simko, Dearborn Heights, and Robert A. Stein, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 6, 1993, Ser. No. 85,802
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 5 Claims



1. A reciprocating internal combustion engine, comprising:
a crankshaft mounted within a cylinder block having one or more banks of cylinders, with each bank having a cylinder head with a plurality of camshaft operated poppet valves, and with at least one intake valve and at least one exhaust valve per cylinder;
a first camshaft mounted to the cylinder head of one bank and driven by the crankshaft, with said first camshaft operating a first set of poppet valves through a lift mechanism;
a second camshaft mounted to the cylinder head of of the first camshaft and driven by the first camshaft by means of a flexible, generally inextensible drive element which is trained over sprockets affixed to said camshafts such that two chords of said drive elements extend between said sprockets, with said second camshaft operating a second set of poppet valves through a lift mechanism;
primary phaser means for coupling the first camshaft to the crankshaft and for varying the primary phase relationship between the crankshaft and said first camshaft; and
secondary phaser means for varying the phase relationship between the first and second camshafts, with said secondary phaser means comprising a variable position tensioner controlled by an electronic control means, with said tensioner having tensioning elements bearing upon both drive element chords extending between the camshaft sprockets, and comprising upper and lower tensioning elements, with each of said tensioning elements being carried upon a separate plunger mounted in a separate oil-filled barrel mounted to said cylinder head between the chords of the drive element such that the amount of oil within each barrel determines the position of both the plunger and the associated tensioning element mounted thereto, with said secondary phaser further comprising control valve means operated by said electronic control means for allowing oil to flow between the barrels to achieve the desired secondary phase relationship.

5,297,509
ROCKER ARM ASSEMBLY
Richard F. Murphy, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Jun. 30, 1993, Ser. No. 85,572
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.39 21 Claims



1. A rocker arm assembly for mounting about a stud means, the assembly comprising:
a rocker arm having two spaced apart side portions;
a bearing support member having two support arms extending in opposite directions, the bearing support member being adapted for mounting about the stud means;
two bearing cups having a common axis, one bearing cup rigidly mounted on each side portion of the rocker arm so as to prevent relative movement between the bearing cup and the rocker arm and extending over part of an arm of the bearing support member, each bearing cup having a stepped bottom surface; and
rolling members within an annulus formed between the bearing cups and the bearing support member such that the rocker arm is free to oscillate rotatably with respect to the bearing support member;
the stepped bottom surface having a first bottom portion engageable with ends of the rolling members to limit axial movement of the rolling members and the second bottom

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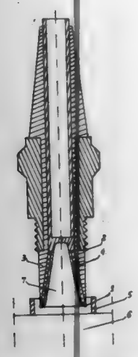
portion, offset axially with respect to the first bottom portion, engageable with stop surfaces to limit axial movement of the rocker arm with respect to the support member.

5,297,510

VOLUME IGNITION SYSTEM

Wojciech M. Turkowski, 10000 Rosensteel Ave., Silver Spring, Md. 20910, assignor to Wojciech M. Turkowski, Silver Spring, Md.

Filed Apr. 26, 1991, Ser. No. 698,829
Int. Cl.[5] F02P *13/00*
U.S. Cl. 123—156 **4 Claims**



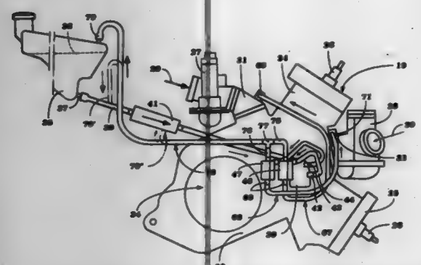
1. A volume ignition system for an engine having a cylinder with a piston therein, the ignition system including a spark plug having an elongated, conical high voltage electrode and a low voltage electrode, the electrodes having therebetween an insulator with a cylindrical outer surface and a conical inner surface, said conical inner surface covering said conical high voltage electrode and exposing a portion of said high voltage electrode at an end of said insulator spaced from said low voltage electrode, whereby a large discharge surface is formed on said cylindrical outer surface between said electrodes.

5,297,511

LUBRICATING SYSTEM FOR ENGINE

Akitaka Suzuki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 19, 1992, Ser. No. 885,660
Claims priority, application Japan, Feb. 15, 1992, 4-061435
Int. Cl.[5] F01L *1/12*
U.S. Cl. 123—196 R **12 Claims**



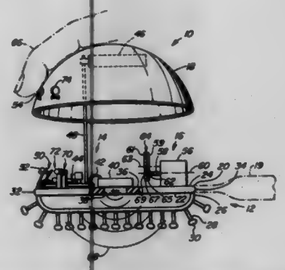
1. A lubricating system for an internal combustion engine comprising a lubricant tank for containing a lubricant, a lubricant pump having an inlet and an outlet for pumping lubricant, a first conduit for supplying lubricant from said lubricant tank to said lubricant pump inlet, a delivery valve operable to direct lubricant from an inlet to either of a supply outlet or a return outlet for controlling the amount of lubricant supplied, a second conduit connecting said lubricant pump outlet to said delivery valve inlet, a third conduit for returning lubricant from said return outlet of said delivery valve to a point in said system upstream of said lubricant pump inlet, and a fourth conduit connecting said supply outlet of said delivery valve to said engine for its lubrication, said fourth conduit supplying lubricant directly to said engine and independently of the engine fuel at a point vertically above said supply outlet of said delivery valve for precluding flow of lubricant from said delivery valve to said engine when said engine is not running.

5,297,512

VIBRATING AND ULTRASONIC SOUND EMITTING GROOMING DEVICE APPARATUS AND METHOD

Steve R. Sharp, Fort McMurray, Canada, assignor to Okanagan House Inc., Penticton, Canada

Filed May 13, 1993, Ser. No. 60,655
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—86 **14 Claims**



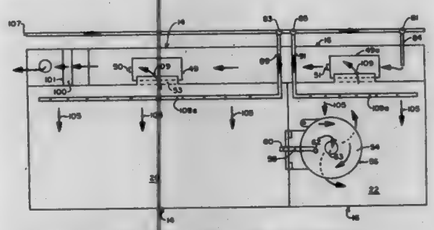
1. An apparatus for grooming hair, the apparatus comprising a hairbrush having a plurality of vibrating tines and ultrasonic sound emitting means for emitting ultrasonic sound waves into said hair.

5,297,513

BREEDING TANK ASSEMBLY FOR FISH LARVAE

Gary Musgrave, 267 27th St., San Francisco, Calif. 94131

Filed Jun. 12, 1992, Ser. No. 898,062
Int. Cl.[5] 119 *259; A01K 63/00*
U.S. Cl. 119—252 **13 Claims**



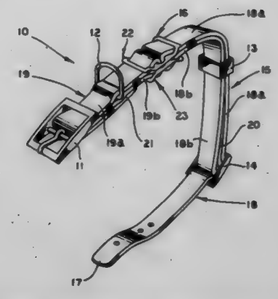
1. Tank assembly for breeding fish comprising:
a first tank having an upper edge;
a second tank in a location adjacent to the first tank;
a third tank in the second tank, said third tank being near the location;
water transfer means near the upper edge of the first tank for directing water from the first tank into the third tank;
adjustable overflow means for adjusting the level of the water in the first tank for flow of the water and thereby fish larvae from the first tank into the third tank;
means for circulating water through the first, second and third tanks; and
means for trapping food particles circulating in in the tanks.

5,297,514

SAFETY LOCK FOR AN ADJUSTABLE PET COLLAR

James G. Stout; Kenneth J. Baker, and Brian D. Oyster, all of Alliance, Ohio, assignors to Coastal Pet Products, Inc., Alliance, Ohio

Filed Apr. 12, 1993, Ser. No. 44,799
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—863 **14 Claims**



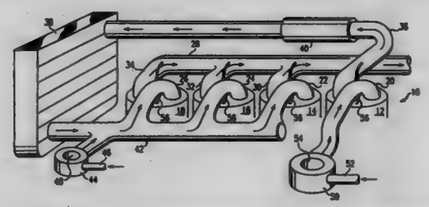
1. A pet collar comprising a first web portion, a second web portion, and lock means providing a connection between one end of said first web portion and one end of said second web portion, a buckle on the other end of said first web portion, and a free end on the other end of said second web portion, said free end being engageable by said buckle to form a continuous collar, said lock means including a first plate member having a second plate member, each said plate member having a plurality of apertures to receive said first and second web portions and also having barb means to engage said first and second web portions when at least one of said web portions is placed under tension, said barb means of said first plate member being opposed to said barb means of said second plate member to engage said web portions positioned therebetween.

5,297,515

FUEL SUPPLY SYSTEMS FOR ENGINES AND COMBUSTION PROCESSES THEREFOR

Nigel F. Gale; David W. Naegeli; Thomas W. Ryan, III, and Steven R. King, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 846,025, Mar. 5, 1992. This application May 3, 1993, Ser. No. 58,317
Int. Cl.[5] F02B *43/08*
U.S. Cl. 123—3 **7 Claims**



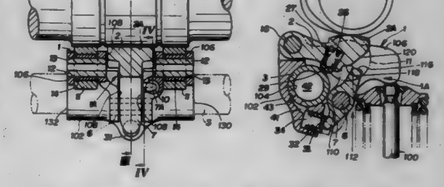
1. A fuel combustion process for multi-cylinder, reciprocating engines that reduce emissions of unburned hydrocarbons, carbon monoxide and oxides of nitrogen in the engine exhaust, the process includes the steps of:
burning a hydrocarbon rich fuel in at least one engine cylinder to produce exhaust gas containing carbon monoxide, oxides of nitrogen, unburned hydrocarbons, water vapor and hydrogen;
reacting the exhaust gas in the presence of a water-gas shift catalyst disposed in conduit means connecting an exhaust port from the one engine cylinder with an inlet port of each remaining engine cylinder to produce a mixture containing increased hydrogen and carbon dioxide;
mixing said mixture with a hydrocarbon lean fuel to form a hydrogen enriched inlet gas; and
burning said inlet gas in the remaining engine cylinders to power said engine and producing engine exhaust containing reduced amounts of unburned hydrocarbons and reduced amounts of oxides of nitrogen.

5,297,516

VALVE ACTUATING APPARATUS

Seinosuke Hara, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Oct. 22, 1992, Ser. No. 965,071
Claims priority, application Japan, Oct. 23, 1991, 3-275617; Jan. 10, 1992, 4-3100
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **26 Claims**



1. An apparatus for actuating valves of an engine, comprising:
a cam shaft with at least one set of cams;
a rocker shaft;
a rocker arm for the valves, said rocker arm being supported by said rocker shaft and driven by said cam shaft for rotatable motion about said rocker shaft, said rocker arm having a sub-rocker shaft and a pin;
a free cam follower supported by said sub-rocker shaft and driven by said cam shaft for rotatable motion about said sub-rocker shaft;
a mechanism including a lever supported by said pin of said rocker arm, said lever having a first position wherein said lever and said free cam follower are joined for attaining unitary motion of said free cam follower with said rocker arm and a second position wherein said lever and said free cam follower are separated for allowing relative motion of said free cam follower with respect to said rocker arm; and
wherein said mechanism includes a return spring biasing said lever toward said second position, and wherein said mechanism includes a hydraulic piston acting on said lever for urging said lever toward said first position against said return spring.

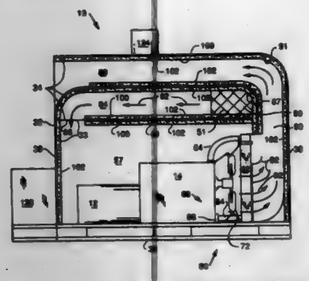
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5,297,517

NOISE SUPPRESSION ENCLOSURE FOR AN ENGINE

Everett G. Brandt, Chillicothe; M. Kathryn Christensen, Metamora, and W. Charles Sehm, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/05865, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991
PCT Filed Aug. 19, 1991, Ser. No. 721,422
Int. Cl.[5] F02B 77/00
U.S. Cl. 123—198 E 40 Claims



1. A noise reduction enclosure (10) adapted for use with an engine (14); said noise reduction enclosure (10) comprising:
- a housing (32) having a generally rectangular shape surrounding the engine (14) and being divided into a duct portion (54) and an engine portion (56) defining an engine compartment (57), said housing (32) further including a plurality of formed sheet material skins (34) attached one to another, said sheet material skins (34) being relatively thin and at least a portion thereof having an inlet opening (50) and an outlet opening (52) therein, each of said plurality of skins (34) having an interior surface of which at least a portion of the interior surfaces are adjacent the engine (14);
- a damping material (100) and an absorptive material (102) being fixedly attached to at least a portion of the interior surfaces;
- an outlet duct (88) being positioned in the duct portion (54) having a preestablished length through which the cooling medium (82) flows, said outlet duct (88) interconnecting the outlet opening (52) through which said cooling medium (82) exits and the engine compartment (57);
- an inlet duct (84) being positioned in the duct position (54) between the outlet duct (88) and the engine compartment (57) having a preestablished length through which said cooling medium (82) flows, said inlet duct (84) interconnecting the inlet opening (50) through which said cooling medium (82) enters and the engine compartment (57); and
- said preestablished length of said outlet duct (88) being a greater length than the preestablished length of the inlet duct (84).

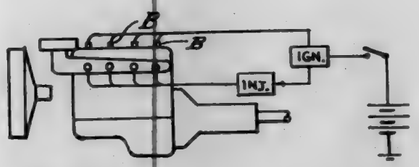
5,297,518

MASS CONTROLLED COMPRESSION TIMED IGNITION METHOD AND IGNITER

Mark A. Cherry, 965-A Jamacha Rd., El Cajon, Calif. 92019

Filed Aug. 10, 1992, Ser. No. 926,740
Int. Cl.[5] F02B 19/00
U.S. Cl. 123—260 22 Claims

1. A method of positive curve ignition timing in internal combustion engines having a compression cycle and ignition of a combustible fuel-air mixture in a combustion chamber followed by a power cycle, and including;
- the first step of providing a closed pre-chamber in open communication with the combustion chamber for penetration therein of a pressure front of a mass of combustible fuel-air mixture,
- the second step of positioning an electrically powered hot wire anemometer-heater element having a determined mass and applying voltage and current thereto and at a depth of pressure front penetration of said combustible fuel-air mixture into the pre-chamber at a determined compression of said combustible fuel-air mixture, electrical resistance through the hot wire anemometer-heater element being sensed to increase electrical power to the hot wire anemometer-heater element for advanced ignition and to reduce power thereto for retarded ignition, thereby adjusting a positive curve timing slope,
- the third step of transferring the mass of combustible fuel-air mixture from the combustion chamber and into the pre-chamber for cooling contact with and over the said hot wire anemometer-heater element during the compression



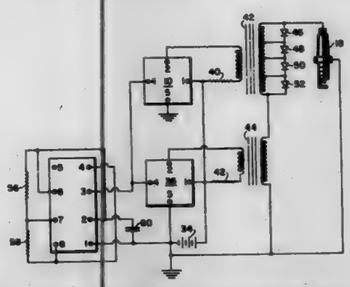
cycle and for the transfer of heat between the mass of the combustible fuel-air mixture and the mass of the hot wire anemometer-heater element.
- the fourth step of capturing a volume of previously burnt non combustible gasses in the pre-chamber for occlusion of the hot wire anemometer-heater element and for depression as a spring,
- and the fifth step of depressing said captured previously burnt and combustible gases with the penetrating pressure front of combustible fuel-air mixture for said contact over the hot wire anemometer-heater element for ignition thereby and transfer of burning plasma into the combustion chamber for continued burning of the combustible fuel-air mixture therein to effect the power cycle and leaving burnt non combustible gases in the pre chamber.

5,297,519

METHOD AND APPARATUS FOR DIRECT FUEL INJECTION IN AN INTERNAL COMBUSTION ENGINE

Sylvan Simons, 45 Don Bosco Pl., Port Chester, N.Y. 10573

Filed Feb. 19, 1992, Ser. No. 836,868
Int. Cl.[5] F02B 3/00
U.S. Cl. 123—298 15 Claims



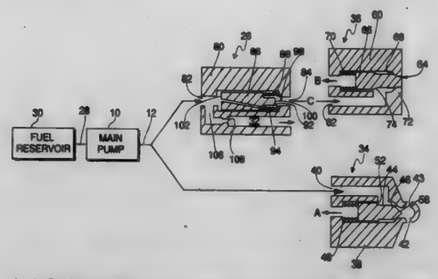
1. In an ignition system for an internal combustion engine having spark plug electrodes and means for injecting fuel, the improvement comprising means for heating said spark plug electrodes to a temperature at which said fuel is ignited on contact therewith, and wherein said means for injecting fuel comprises means for spraying fuel directly against said heated electrodes for igniting said fuel.

5,297,520

FUEL SUPPLY SYSTEM WITH HIGH TURN DOWN RATIO

Paul R. Danyluk, Beloit, Wis., assignor to Coltec Industries, Inc., New York, N.Y.

Filed Nov. 18, 1992, Ser. No. 977,937
Int. Cl.[5] F02B 3/00
U.S. Cl. 123—299 9 Claims



1. A fuel supply system for an internal combustion engine of the type requiring a high turn-down ratio for full range operation, said system comprising:
- a fuel pump operable to deliver sequentially repeated pulses of fuel wherein the quantity of fuel delivered in each pulse is selectable within a range between a maximum and an effective minimum;
- said fuel pump having an inlet connnectable to a fuel reservoir, and an outlet through which said repeated pulses of fuel are delivered;
- a first fuel path having an inlet connected to the said outlet of said fuel pump, and an outlet for delivering fuel to an engine;
- a first pressure-actuated valve means in said first fuel path, operable in response to fluid pressure in said first fuel path in excess of a first predetermined value, to permit flow of fuel through the outlet of said first fuel path;
- a second fuel path having an inlet connected to the said outlet of said fuel pump, and an outlet for delivering fuel to an engine;
- a second pressure-actuated valve means in said second fuel path, operable in response to fluid pressure in said second fuel path in excess of a second predetermined value that is less than said first predetermined value, to permit flow of fuel through the outlet of said second fuel path;
- a fixed quantity fuel dispenser connected in said second fuel path for delivering a predetermined quantity of fuel through said second fuel path once only in response to each opening of said pressure actuated valve means, wherein said predetermined quantity is less than the effective minimum quantity of fuel in any pulse delivered by said fuel pump.

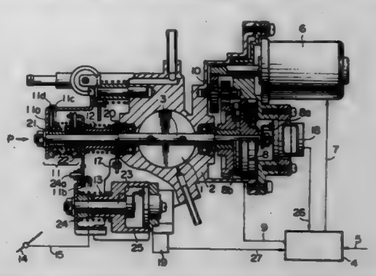
5,297,521

THROTTLE VALVE CONTROLLER FOR INTERNAL COMBUSTION ENGINE

Yasushi Sasaki, Ibaraki, and Yasuhiro Kaminura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 28, 1992, Ser. No. 997,697
Claims priority, application Japan, Dec. 26, 1991, 3-345237; Mar. 10, 1992, 4-051678
Int. Cl.[5] F02D 11/10
U.S. Cl. 123—396 14 Claims

4. A throttle valve controller for an internal combustion engine, comprising:
- an actuator for operating a throttle valve to be opened and closed;
- a driving force connection/disconnection apparatus provided between an opening/closing drive member of the throttle valve and a driving force output member of said actuator;
- the throttle valve to be opened and closed being configured to operate via an accelerator pedal when said actuator is disconnected from said opening/closing drive member of the throttle valve; and
- a flexing driving force transmitter provided at a driving force connection between a member displaced with the operation of the accelerator pedal and said opening/driving member of the throttle valve;
- wherein a difference between an opening of the throttle valve controlled with said actuator and another opening to which the throttle valve is to be set by the operation of the accelerator pedal is absorbed by said flexing driving force transmitter.

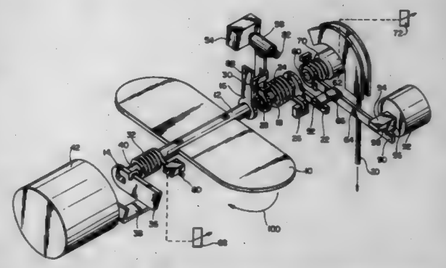


5,297,522

THROTTLE VALVE

Josef Buchl, Lenting, Fed. Rep. of Germany, assignor to Audi AG, Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/EP91/00433, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/15669, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 8, 1991, Ser. No. 927,438
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1990, 4011182
Int. Cl.[5] F02D 11/10
U.S. Cl. 123—399 4 Claims



1. Throttle valve (10) for an internal combustion engine, having
- a) a shaft (12), on which the valve (10) is mounted,
- b) a stop point (30), which limits the opening movement of the throttle valve (10) in the direction of the open position,
- c) a device (18, 20) for displacing the stop point (30) in the direction of the open position in response to the actuation of a mechanical cable pull (20) via the accelerator,
- d) a spring (32) biasing the throttle valve (10) in the direction of the stop point (30),
- e) a servomotor (42) which controls the throttle valve (10) between its closed position and its maximum open position defined by the stop point (30),

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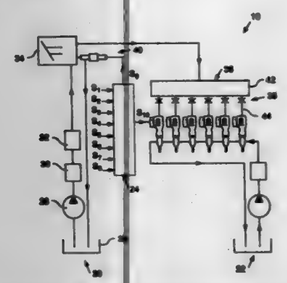
f) a restoring spring (24), which actuates the stop point in the direction of the closed position of the throttle valve (10) when the mechanical cable pull (20) is slack, and
g) said throttle valve biasing spring (32) being weaker than said restoring spring (24),
h) a reference value transmitter (72) for a pivoting part (60) and an actual value transmitter (68), associated with the servomotor (42), for the throttle valve position,
i) the mechanical cable pull (20) acting on the pivoting part (60), which cooperates with the stop point (88) in order to displace the same,
j) a pivoting restoring spring (70) biasing the pivoting part (60) in the closing direction,
k) a stop actuator (92) associated with the pivoting part (60) and, in normal operation, limiting the pivoting of the pivoting part in the closing direction to a minimum angle which is larger than the idling position of the throttle valve (10),
characterized in that
l) said stop actuator (92) consists of an electromagnet, which in the excited state moves out a pin (94), in order actively to engage a first step (90),
m) the stop actuator (92) defines two steps, the first corresponding to normal operation, and the second being actuated if a malfunction of the servomotor (42) is detected,
n) said second step permitting further closing of the throttle valve in comparison to the first step,
o) a stop limiter (54) limits the pivoting of the stop point (30) in the throttle valve close direction.

5,297,523

TUNED ACTUATING FLUID INLET MANIFOLD FOR A HYDRAULICALLY-ACTUATED FUEL INJECTION SYSTEM

Gregory G. Hafner, Normal; Jeffrey C. Huang, Peoria, both of Ill., and Xiangying Liu, Ann Arbor, Mich., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 26, 1993, Ser. No. 23,770
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—456 **13 Claims**



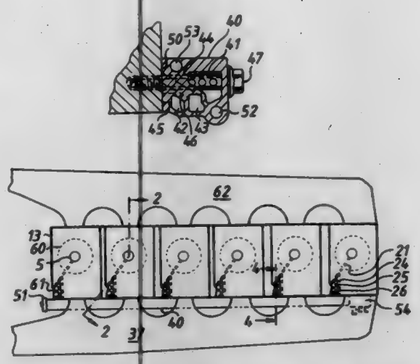
1. An actuating fluid inlet manifold adapted for a hydraulically-actuated injector fuel system having means for pressurizing actuating fluid and a plurality of hydraulically-actuated injectors adapted to be supplied with actuating fluid from the manifold, said manifold adapted to be positioned in fluid communication between the pressurizing means and the injectors, said manifold having a common rail passage and a plurality of rail branch passages extending from the common rail passage, each rail branch passage adapted to be positioned in fluid communication between the common rail passage and a respective injector, said manifold having fluid dynamic tuning means for controlling the flow of actuating fluid between the manifold and the injectors and thereby reducing the initial rate of fuel injection produced by each of said injectors.

5,297,524

ARRANGEMENT FOR A FUEL LINE IN AN INTERNAL COMBUSTION ENGINE

Hakan Fransson, Björklunda, and Peter Sperle, Nykvarn, both of Sweden, assignors to Saab-Scania Aktiebolag, Sweden

PCT No. PCT/SE92/00462, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO93/01408, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 24, 1992, Ser. No. 975,552
Claims priority, application Sweden, Jul. 2, 1991, 9102059
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—468 **18 Claims**



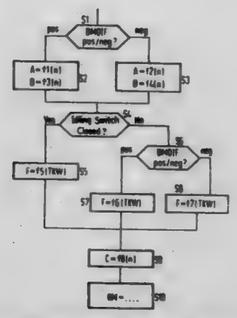
1. An arrangement for supplying fuel to fuel injectors in a multiple cylinder internal combustion engine, the engine having a cylinder block, the cylinder block having the cylinders arrayed therealong, the cylinder block having first and second opposite sides at the opposite sides of the array of cylinders;
at least one cylinder head on the cylinder block;
a respective fuel injector for each of the cylinders, the fuel injectors being mounted in the at least one cylinder head;
a fuel pump for being connected to the fuel injectors by the fuel supply arrangement;
the fuel supply arrangement comprising:
a respective set of fuel passages in the at least one cylinder head for each cylinder, all of the passages extending from the first side of the cylinder block and each set of fuel passages extending to the respective fuel injector for each cylinder;
a separate fuel molding mounted to and extending along the one side of the cylinder block and the molding being connectable to the at least one cylinder head; the fuel molding having a set of longitudinal channels extending along the molding and along the cylinder block at least for supplying fuel to and returning fuel from the fuel injectors; for each cylinder, the fuel molding having a set of transverse connection ducts, each duct of each set being connected to one of the channels in the molding, and the ducts extending toward the at least one cylinder head;
the set of cylinder head fuel passages opening on the first side of the cylinder block, each fuel passage in the at least one cylinder head connecting with a respective one of the respective sets of fuel molding connection ducts for that cylinder, whereby fuel supplied to the longitudinal channels is delivered by the ducts to the respective fuel passages in the at least one cylinder head;
means connecting the channels in the fuel molding with the fuel system of the engine at least for supply of fuel to and removal of fuel from the molding.

5,297,525

METHOD FOR DETERMINING THE QUANTITY OF FUEL INJECTED

Stefan Krebs, and Björn Miener, both of Regensburg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/01664, § 371 Date Mar. 16, 1993, § 102(e) Date Mar. 16, 1993, PCT Pub. No. WO92/05352, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 3, 1991, Ser. No. 30,192
Claims priority, application European Pat. Off., Sep. 18, 1990, 90117957.2
Int. Cl.[5] F02D *41/10*
U.S. Cl. 123—492 **5 Claims**



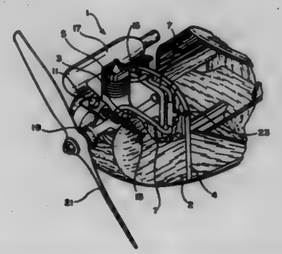
1. A method for determining a quantity of fuel injected for an internal combustion engine during dynamic transition operation, comprising the steps of:
providing a base quantity of injected fuel as a function of load and speed of the internal combustion engine;
differentiating the base quantity;
filtering the differentiated base quantity using a filter characteristic having at least one filter constant to provide a correction quantity of injected fuel, the at least one filter constant being a function of at least one operating parameter of the internal combustion engine; and
changing a normal basic quantity of injected fuel by the amount of the correction quantity of injected fuel during the dynamic transition operation.

5,297,526

GLOW-PLUG ENGINE

Douglas J. Braddock, 8415 Sweet Pine Ct., Springfield, Va. 22153

Continuation of Ser. No. 859,169, Mar. 27, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 97,625
Int. Cl.[5] F02M *37/04*; F16K *7/04*
U.S. Cl. 123—510 **29 Claims**



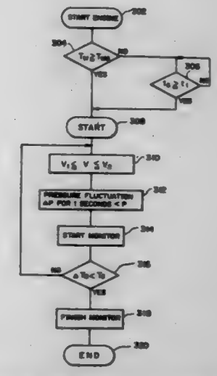
1. An improved glow-plug machine engine of the type that includes an output shaft, a carburetor, a needle valve means in close proximity to said output shaft and being manually adjustable by an operator for controlling the ratio of fuel-to-air entering said carburetor, and a conduit formed from a flexible, resilient material for conducting fuel into the carburetor, wherein the improvement comprises: a pinch valve means more remotely located from the output shaft than the needle vale means for exclusively controlling the ratio of fuel-to-air entering the carburetor by controlling the flow of fuel through said conduit, and for obviating the need for an operator to place a hand in close proximity to said output shaft when making an adjustment of the fuel-to-air mixture.

5,297,527

DIAGNOSING APPARATUS OF EVAPORATION FUEL CONTROL SYSTEM OF VEHICLE

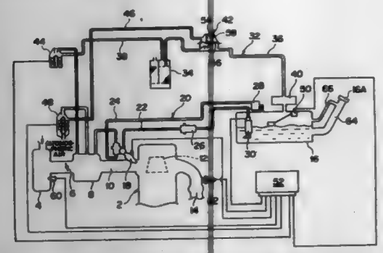
Harumi Suzuki; Takeshi Mukai, and Hitoshi Nakashima, all of Shizuoka, Japan, assignors to Suzuki Motor Corporation, Shizuoka, Japan

Filed Dec. 23, 1992, Ser. No. 996,955
Claims priority, application Japan, Dec. 28, 1991, 3-360651; Dec. 28, 1991, 3-360654
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **12 Claims**



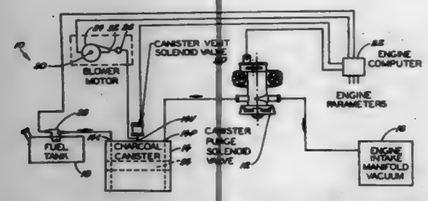
1. In a diagnosing apparatus of an evaporation fuel control system of a vehicle for supplying and controlling an evaporation fuel adsorbed and held in a canister to an internal combustion engine in accordance with an operating state of the internal engine, comprising the improvement wherein said diagnosing apparatus includes:
first means for determining whether engine cooling water temperature is below a first set value at the start-up of said internal combustion engine;
second means for determining when said cooling water temperature is equal to or above a second set value only if said first means initially determines that said cooling water temperature is below said first set value;
third means for discriminating one or more predetermined engine operating and/or vehicle running conditions when it is determined by said second means that said cooling water temperature is equal to or above said second set value; and
fourth means for executing a failure diagnosis monitor of said evaporation fuel control system when said one or more predetermined engine operating and/or vehicle running conditions are satisfied.

5,297,528
EVAPORATION FUEL CONTROL APPARATUS FOR ENGINE
Takeshi Mukai, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan
Filed May 25, 1993, Ser. No. 66,981
Claims priority, application Japan, Jun. 30, 1992, 4-196211; Jun. 30, 1992, 4-196212
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—518 6 Claims



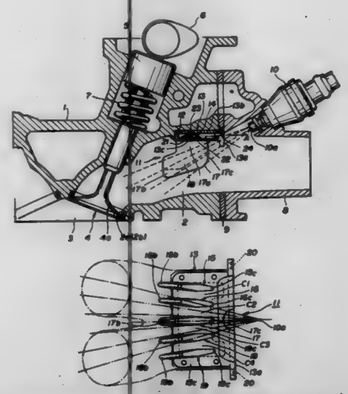
1. An evaporation fuel control apparatus for an engine comprising a canister disposed at an intermediate part of a control passage for communicating with an inlet passage of an engine and a fuel tank, the canister being adapted to draw and retain evaporated fuel, the control passage including a first passage for intercommunicating said fuel tank and said canister and a second passage for intercommunicating said canister and said inlet passage, said first and second passage constituting said control passage, a pressure control valve disposed at an intermediate part of said first passage, a first solenoid valve being provided at an intermediate part of said second passage, a communication passage for intercommunicating said inlet passage and said pressure control valve, a second solenoid valve disposed at an intermediate part of said communication passage, a fuel detection means associated with said fuel tank for detecting an amount of fuel therein, and a control means for permitting inlet passage negative pressure to act on and open said pressure control valve during operation of said engine and for causing operation of said second solenoid valve in accordance with a detection signal coming from said fuel detection means when the quantity of fuel in said fuel tank is brought equal to or more than a predetermined amount so that atmospheric air acts on and closes said pressure control valve.

5,297,529
POSITIVE PRESSURE CANISTER PURGE SYSTEM INTEGRITY CONFIRMATION
John E. Cook, and Murray F. Busato, both of Chatham, Canada, assignors to Siemens Automotive Limited, Chatham, Canada
Filed Jan. 27, 1993, Ser. No. 9,623
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 13 Claims



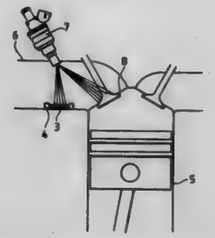
1. A canister purge system comprising a collection canister for collecting volatile fuel vapors from a fuel tank, and means for selectively purging collected fuel vapors from said canister to an internal combustion engine's intake manifold for entrainment with a combustible mixture that passes from the intake manifold into combustion chamber space of the engine for combustion therein, said means including a purge flow path between said canister and intake manifold, said canister having tank port means for communicating said canister with said fuel tank and other port means for communicating said canister with other than said fuel tank, characterized by an associated diagnostic system for detecting leakage from a portion of the canister purge system, which portion includes said canister and tank, said diagnostic system comprising means for positively pressurizing said portion to a predetermined positive pressure, detecting means for detecting loss of said predetermined positive pressure indicative of leakage from said portion, and signaling means for giving a signal indicative of such loss, and further characterized in that said means for positively pressurizing said portion of said canister purge system comprises means for positively pressurizing said portion through said other port means by pumping atmospheric air into said portion through a vapor collection medium within said canister so that pressurizing air entering said portion is entrained with some of the fuel vapors previously collected in said canister.

5,297,530
HEATING DEVICE FOR INJECTED FUEL FOR INTERNAL COMBUSTION ENGINE
Noboru Kaneko, Kamakura, and Takahisa Yamashita, Suntoh, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Texas Instruments Japan Limited, Tokyo, both of Japan
Filed Sep. 11, 1992, Ser. No. 943,827
Claims priority, application Japan, Sep. 12, 1991, 3-232135
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—549 12 Claims



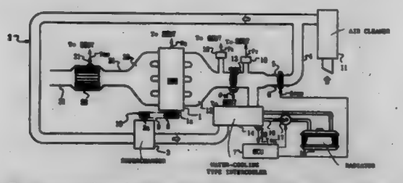
1. A heating device disposed in an intake passage of a fuel injected internal combustion engine, said heating device heating fuel which is injected in a radial manner from a fuel injection valve into said intake passage in a direction toward a combustion chamber, said heating device comprising:
- a supporting member fixed to a wall defining said intake passage; and
- a plurality of fins extending from said supporting member into said injected fuel, said fins further being oriented radially with respect to said injection valve.

5,297,531
FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION GASOLINE ENGINE
Yoshiaki Akase, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 994,291
Claims priority, application Japan, Jan. 7, 1992, 4-000903
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—549 3 Claims



1. A fuel supplying device for an internal combustion gasoline engine, comprising:
- a suction pipe of said engine;
- a suction valve provided at the junction of said engine and said suction pipe;
- a heater, for heating fuel, which is mounted through a holder on an inner wall of said suction pipe in such a manner that said heater is extended along said inner wall; and
- a fuel injection valve means for jetting a plurality of sprays of said fuel towards at least said suction valve and said heater, wherein said fuel injection valve means comprises:
- a multi-spray type fuel injection valve mounted on said suction pipe, said fuel injection valve jetting at least two discrete sprays of fuel, with one of said sprays being jetted towards said heater and another of said sprays being jetted towards said suction valve.

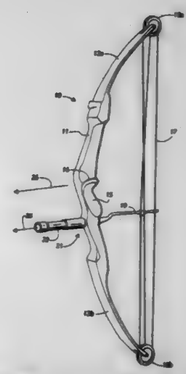
5,297,532
SUPERCHARGING PRESSURE CONTROL SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINES
Hidehito Ikebe; Takuya Sugino; Susumu Nakajima; Kenichiro Kinoshita, and Nobu Takahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 14, 1992, Ser. No. 960,961
Claims priority, application Japan, Oct. 16, 1991, 3-296342; Dec. 27, 1991, 3-360628
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—564 6 Claims



1. In a supercharging pressure control system for a supercharged internal combustion engine including an intake passage, a supercharger arranged in said intake passage, an exhaust passage, and a catalytic converter arranged in said exhaust passage, said supercharging pressure control system comprising a bypass passage connected to said intake passage such that said bypass passage by-passes said supercharger, a supercharging pressure control valve arranged in said bypass passage for controlling supercharging pressure of intake air supplied to said engine, by said supercharger, driving means for driving said supercharging pressure control valve, control means for controlling said supercharging pressure of intake air by operating said driving means, and temperature-detecting means for detecting the temperature of said catalytic converter,

the improvement wherein said control means includes determining means for determining whether or not said temperature of said catalytic converter detected by said temperature-detecting means falls within a predetermined range, said control means controlling said supercharging pressure to a desired level dependent on said temperature of said catalytic converter by way of said supercharging pressure control valve driven by said driving means to thereby bring said temperature of said catalytic converter into said predetermined range when said temperature of said catalytic converter falls outside said predetermined range.

5,297,533
LIGHT HOLDER AND STABILIZER ATTACHMENT FOR BOW
Virgil Cook, 337 Nob North Dr., Cohutta, Ga. 30710
Filed Dec. 22, 1992, Ser. No. 995,188
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—88 22 Claims



1. An attachment for a bow of the type having a threaded receptacle on a front face thereof comprising in combination:
- an elongated cylinder having a characteristic longitudinal axis, an open front end, and a rear end closed by a substantially circular plate disposed substantially perpendicular to said longitudinal axis;
- a shaft connected to said substantially circular plate and extending away from said rear end of said elongated cylinder having a characteristic shaft axis that is substantially coaxial with said longitudinal axis of said cylinder, said shaft being threaded to mate with said threaded receptacle; and
- annular deformable light holding means for supporting a cylindrical light, said light holding means being journaled within said cylinder.

5,297,534
BARBECUE GRILL APPARATUS
William R. Louden, 23209 Tuttle Lake Rd., Neshkoro, Wis. 54960
Filed Jun. 14, 1993, Ser. No. 75,603
Int. Cl.[5] A47J *37/07*; F24B *3/00*; F24C *1/16*
U.S. Cl. 126—30 2 Claims

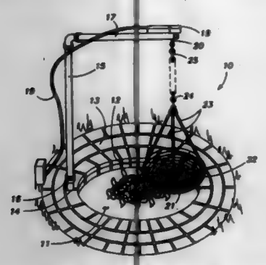
1. A barbecue grill apparatus, comprising,
- a fire pit, having a fixed pit side wall and a fixed pit top wall, with the top wall extending beyond the side wall, with a

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support tube mounted to the top wall fixedly thereof in adjacency to the side wall, a rotary shaft received within the support tube, with the rotary shaft extending longitudinally beyond the support tube, and

an extension leg fixedly mounted to the rotary shaft at a junction, with the extension leg arranged for extension over the fire pit, and

a rotisserie housing, the rotisserie housing secured relative to the extension leg, with the rotisserie housing having an



output shaft, and the output shaft including a central cable, with the central cable extending in a spaced relationship relative to the support tube, and

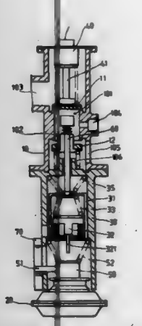
a plurality of support lines intersecting at a support line junction, with the support line junction secured to the central cable, and the support lines having a mesh basket positioned and secured to the support lines spaced from the support line junction, with the support tube arranged for pivoting the mesh basket arcuately relative to the fire pit.

5,297,535

IGNITION DEVICE FOR WATER HEATERS

Chang P. Chi, P.O. Box 82-144, Taipei, Taiwan

Filed Sep. 21, 1992, Ser. No. 947,921
Int. Cl.[5] F24H *1/00*
U.S. Cl. 126—351 **1 Claim**



1. An ignition device for water heaters comprising:

a body portion;

a mirco-switch mounted on a lower portion of said body portion; .

a water container including a diaphragm fixedly mounted on a bottom of said body portion and having a lift rod extending into said body portion, said lift rod having a spring thereon and being formed with an arm extending through said body portion to contact said micro-switch;

a valve operating means mounted within said body portion and located above the lift rod of said water container, said valve operating means having a housing and an electro-magnet which is provided with a rod extending downwardly through said housing;

a linking rod attached on a top of the housing of said valve operating means and extending upwardly through a valve gasket to connect with a leak-proof gasket; and

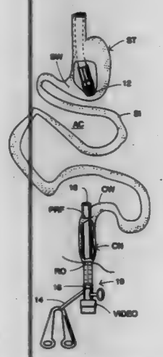
a solenoid mounted on a top of said body portion and connected with said leak-proof gasket via a rod.

5,297,536

METHOD FOR USE IN INTRA-ABDOMINAL SURGERY

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Aug. 25, 1992, Ser. No. 934,914
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **17 Claims**



1. A method for use in intra-abdominal surgery, comprising the steps of:

inserting an endoscope through a natural body opening into a natural body cavity of a patient;

inserting an endoscopic type incising instrument into said natural body cavity along a passage established by said endoscope;

manipulating said incising instrument from outside the patient to form a perforation in an internal wall of said natural internal body cavity;

moving a distal end of said endoscope through said perforation;

using said endoscope to visually inspect internal body tissues in an abdominal cavity of the patient;

executing a surgical operation on said internal body tissues by manipulating an endoscopic surgical instrument passed along said endoscope through said natural body opening, said natural body cavity and said perforation into said abdominal cavity;

withdrawing said surgical instrument and said endoscope from said abdominal cavity through said perforation;

closing said perforation; and

withdrawing said endoscope from said natural body cavity.

5,297,537

DISPOSABLE LIQUID SUPPLY KIT FOR USE IN AN ENDOSCOPE

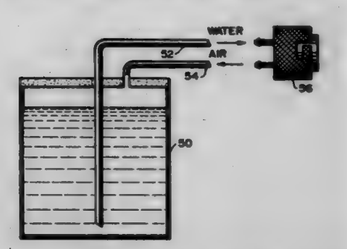
Robert Savitt, Dover Plains, and Christopher O. R. Siddall, Rye, both of N.Y., assignors to Endoscopy Support Services, Inc., Patterson, N.Y.

Continuation of Ser. No. 832,546, Feb. 7, 1992, abandoned, which is a division of Ser. No. 601,968, Oct. 22, 1990, Pat. No. 5,133,336. This application Jul. 14, 1993, Ser. No. 91,454
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **33 Claims**

1. A disposable liquid supply system kit for use in supplying a liquid to an endoscope, said kit comprising, in combination a kit package and a plurality of articles contained therein, said articles including:

a) a closed and sealed liquid container having an openable top with a frangible seal and a bottom, said container containing a liquid;

b) a first flexible tube having a first end connectable to said container when said kit is assembled and terminating at said top when connected to said container for introducing a gas into said container, and having a second, opposite end adapted to be connected to an endoscope; and



c) a second flexible tube having a first end connectable to said container when said kit is assembled and terminating at said bottom when connected to said container for supplying a liquid to an endoscope, and having a second, opposite end adapted to be connected to an endoscope;

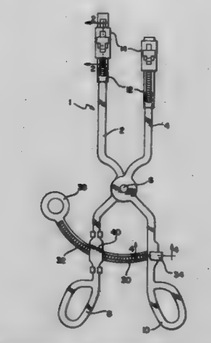
said container forming a closed, sealed, liquid-containing unit which is unsealed prior to use and connected to an endoscope via said first and second tubes.

5,297,538

SURGICAL RETRACTOR/COMPRESSOR

Elie C. Daniel, 402 First Ave., Mendota, Ill. 61342

Filed Apr. 10, 1992, Ser. No. 866,862
Int. Cl.[5] A61B *17/02, 17/28*
U.S. Cl. 128—20 **16 Claims**



1. A surgical instrument comprising:

(a) first and second arms pivotally secured together at an intermediate point to allow relative pivoting movement;

(b) a plurality of posts, each post including a first set of serrations extending along the partial length thereof;

(c) means for removably securing said posts to said arms whereby different posts can be secured to said arms depending on the surgical procedure to be performed;

(d) a plurality of surgical heads including means for contacting tissue; and

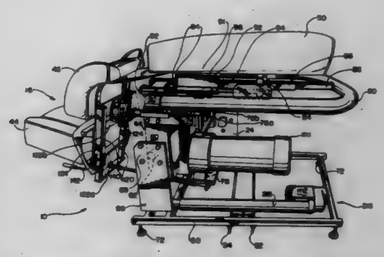
(e) means for removably securing the surgical heads to the posts including a passage extending through each surgical head for receiving the post and a second set of serrations formed on each surgical head for releasably engaging said first set of serrations such that the surgical head can be movably positioned along the length of the post whereby different surgical heads can be secured to said arms depending on the surgical procedure being performed.

5,297,539

THERAPEUTIC DEVICE FOR CHIROPRACTIC DIAGNOSIS AND TREATMENT

Thomas J. Liebl; David J. Liebl, both of R.R. 1, Donnelly, Minn. 56235, and Robert J. Jensen, 611 NE. Second Ave., Stewartville, Minn. 55976

Filed Aug. 31, 1990, Ser. No. 575,919
Int. Cl.[5] A47C *17/00*
U.S. Cl. 601—26 **11 Claims**



1. A therapeutic device for manipulation of selected body portions of a patient supported thereon, comprising:

a frame;

a first body portion support operably coupled to said frame, said first body support being adapted for supporting a first body portion of a patient;

a second body portion support operably coupled to said frame, said second body support being adapted for supporting a second body portion of a patient; and

means operably coupling the first and second body portion supports for circumductive rotation therebetween, comprising

hinge means for operably coupling said first body portion support in angular relationship with said second body portion support, said hinge means presenting a selectively adjustable hinge angle;

extensible drive means operably coupled to said hinge means for selectively adjusting said angle presented by said hinge means;

rotating drive means operably coupled to said hinge means for rotating said hinge means thereby circumductively changing the angular relationship between said first body portion support and said second body portion support; and

bearing means operably isolating said extensible and rotating drive means for shifting of said extensible drive means independently of the rotation of said rotating drive means whereby said hinge angle is adjustable while said hinge means is rotating.

5,297,540

CONTINUOUS PASSIVE MOTION ORTHOSIS DEVICE FOR A TOE

Robert T. Kaiser, Mount Laurel, N.J.; George Telepko, Fort Washington, Pa.; Vero Ricci, Collingswood, and Berdj C. Kalustyan, Morrestown, both of N.J., assignors to Jace Systems, Inc., Moorestown, N.J.

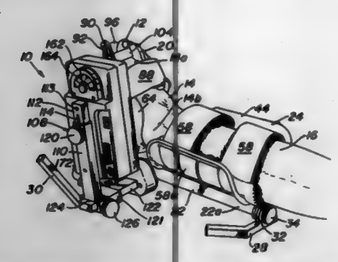
Filed Jan. 29, 1992, Ser. No. 827,787
Int. Cl.[5] A61F *5/00*
U.S. Cl. 69—27 **10 Claims**

1. A continuous passive motion orthosis device for a toe of a foot, said device comprising:

mounting means including a surface for receiving the foot;

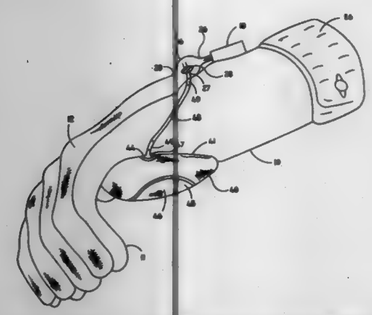
a carriage member positioned proximate the mounting means having a first end for receiving a toe and a second end, the first end of the carriage member including a surface for receiving the toe; and

drive means for oscillating said first end of said carriage member about said second end thereof with respect to said



mounting means to thereby move the toe between a neutral position wherein said surfaces are generally parallel, an extension position wherein said surface of said carriage member is positioned on one side of said surface of said mounting means and a flexion position wherein said surface of said carriage member is positioned on another side of said surface of said mounting means.

5,297,541
ATHLETIC THERAPEUTIC GLOVE
Franz Hensey, 18182 Ceres St., Fontana, Calif. 92355
Filed Nov. 14, 1989, Ser. No. 436,370
Int. Cl.[5] A61H *1/02*; A61F *5/10*
U.S. Cl. 601—40 **9 Claims**



1. An athletic therapeutic glove for the active exercise of the muscles of the fingers, hand, wrist and forearm, comprising in combination:

a glove formed of a flexible non-extensible material;

a plurality of elongated strips formed of said flexible non-extensible material attached to the dorsal surface of the finger sections of said glove said strips extending from the tip of the finger sections to just behind the knuckles and one strip extending from substantially the tip of the thumb section of said glove to approximately the base of the thumb, said strips being attached around their periphery except at the posterior end;

a plurality of elongated tubular pockets formed by said attached strips;

a plurality of elongated tubular elastomeric bladders contained within said pockets;

a manifold attached to the dorsal surface of the hand of said glove behind the knuckle region said manifold having an inlet/outlet tube, a valve deployed in said inlet/outlet tube, a plurality of forwardly facing finger bladder exhaust tubes located substantially at the center positions of said pockets, a sideways facing thumb bladder exhaust tube on the inward side of said glove, a rearward facing exhaust tube located in the center of said manifold, said bladders being attached to said finger and thumb bladder exhaust tubes; means for fluid pressurization of said bladders through said valve in said inlet/outlet tube;

means for measuring the pressure in said bladders said means attached to said rearward facing exhaust tube;

a substantially circular palmar cover of said flexible non-extensible material attached to the palmar surface of said glove around the periphery of said cover except for a small section of the periphery below the base of the little finger of said glove forming a small orifice;

a palmar pocket formed by said attached palmar cover;

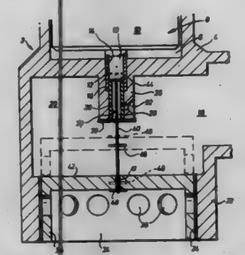
a substantially circular elastomeric palmar bladder with a short inlet tube contained within said palmar pocket said palmar bladder inlet tube extending through said small orifice;

a palmar bladder exhaust tube extending sideways from said manifold on the outside of said glove;

a valve deployed in said palmar bladder exhaust tube;

a flexible non-extensible tube attached to said palmer bladder inlet tube and to said palmar bladder exhaust tube whereby opening said palmar bladder exhaust tube valve to said fluid pressurizing means allows said palmar bladder to be inflated forming a flexible ball-like structure.

5,297,542
AEROSOL DISPENSING DEVICE
Raymond J. Bacon, 36 Down End Road, Drayton, Portsmouth P06 1HU, England, assignor to Raymond J. Bacon, Portsmouth, England
Continuation of Ser. No. 742,579, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 541,610, Jun. 21, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,038
Claims priority, application United Kingdom, Jun. 22, 1989, 8914383
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **15 Claims**



1. An inhalation-actuable dispensing device for use with a pressurised aerosol dispensing container comprising:

a) a receptacle for the pressurised aerosol dispensing container;

b) means defining a storage chamber arranged in fluid communication with the pressurised aerosol dispensing container when received in said receptacle to receive a metered dose from the pressurised aerosol dispensing container, and having an outlet;

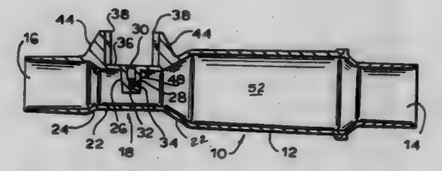
c) an outlet spout in fluid communication with said outlet through which a user can inhale;

d) valve means disposed between said container and said outlet spout and normally closing off said outlet from communication with said outlet spout under pressure from the dose in said storage chamber;

e) a dose releasing device movable in response to inhalation of a user to engage said valve means and move said valve means toward said pressurised aerosol dispensing container and to its open position against the pressure from the dose in said storage chamber; and

f) said dose releasing device being movable away from said pressurised aerosol dispensing container upon cessation of inhalation to return said valve means to its closed position.

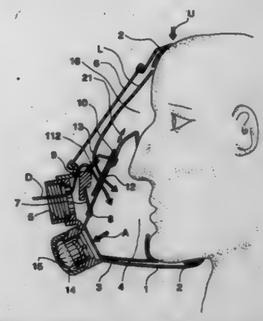
5,297,543
MEDICATION INHALER MIXER
Douglas A. Larson, River Forest, and Thomas J. Danowski, Hoffman Estates, both of Ill., assignors to Healthscan Products, Inc., Cedar Grove, N.J.
Filed Jun. 24, 1992, Ser. No. 903,611
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.23 **6 Claims**



1. Apparatus for combining a medication with a gas carrier for administration to a patient through a ventilator circuit, said ventilator circuit having a gas supply tube between a gas source and the patient, said apparatus comprising means for developing a continuing gas flow from said source through said supply tube; an elongated tubular body having opposed inlet and exit portions of diameters dimensioned and adapted to be inserted in series with said ventilator gas supply tube, means located between said inlet and exit portions adapted to accelerate said gas flow to an increased velocity between said inlet and exit portions and to return said gas flow to approximately its initial velocity upon exiting from said exit portion, a stem projecting inwardly from said tubular body upstream of said exit portion, said stem having a hollow passageway therein with an entrance exterior to said tubular body and an exit within said tubular body facing said inlet portion within the path of the accelerated gas flow; and means for introducing a pressurized flow of fluid medication into said tubular body through said stem passageway subsequent to the initiation of a flow of carrier gas through said tubular body and while the gas from said source is passing through said tubular body from said inlet end to said outlet end whereby said medication is actively combined with the simultaneous counter-directed accelerated flow of gas and carried therewith to the patient.

5,297,544
RESPIRATOR WITH INNER HALF MASK AND POLLUTANT INDICATOR
Wolfgang May, Reinfeld; Wolfgang Bäther; Carl-Ernst van der Smissen, both of Lüübeck, and Gerhold Mühmel, Hamberge, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Lubeck, Fed. Rep. of Germany
Filed Sep. 18, 1992, Ser. No. 947,769
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1991, 4132680
Int. Cl.[5] A62B *9/00, 27/00*
U.S. Cl. 128—202.22 **13 Claims**

1. A respirator, comprising: an inner half mask for connection around the nose and mouth of a user; and a full face piece mask having a sealing edge in contact with the face of the user, said full face piece mask cooperating with said inner half mask to define a space between said inner half mask and said full face piece mask, said space being in communication with the eyes of the user; a flow opening in said full face piece mask for flow into said space; a passage opening connecting said space with an interior of said inner half mask; and indicator means located on a support, said indicator means for indicating an amount of pollutant passing into said interior of said inner half mask, said support being positioned on said inner half mask and having an



access surface containing said indicator means, said access surface being in flow contact with air being inhaled and said access surface being positioned adjoining said passage opening.

5,297,545
UNDERWATER BREATHING DEVICE
Anthony M. Infante, Clearwater, Fla., assignor to Snorkel Systems, Clearwater, Fla.
Filed Apr. 27, 1992, Ser. No. 874,108
Int. Cl.[5] A62B *7/12*
U.S. Cl. 128—204.18 **8 Claims**

1. A breathing apparatus for a diver, comprising:

floatation means holding a first end of an air conduit above a surface of water,

an air compressor causing air flow through said conduit,

a flexible hose, forming a portion of said conduit, said hose attached intermediate said floatation means and an air reservoir located on said diver,

said reservoir having a moveable wall portion adapted to move between a first predetermined position and a second predetermined position, said apparatus further comprising limit switch means operatively connected to said moveable wall element, means responsive to said moveable wall being at said first predetermined position to actuate said limit switch to turn said compressor on, and means responsive to said moveable wall being at said second predetermined position to actuate said limit switch to turn said compressor off and

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a mouthpiece means attached proximate a second end of said conduit.

5,297,546

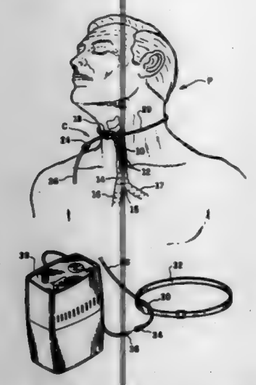
TRANSTRACHEAL CATHETER SYSTEM AND METHOD

Bryan T. Spofford, 1470 S. Quebec Way; Kent L. Christopher, 9086 E. Colorado Cir., both of Denver, Colo. 80231, and Michael E. Hovanes, Denver, Colo., assignors to Bryan T. Spofford and Kent L. Christopher, Denver, Colo.

Division of Ser. No. 101,172, Sep. 28, 1987, which is a continuation-in-part of Ser. No. 788,817, Oct. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,912, Nov. 21, 1984, abandoned. This application Sep. 4, 1990, Ser. No. 577,693

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.014 **16 Claims**



1. A system of kits for insertion of a transtracheal catheter system into a patient, said system comprising:

a first kit for forming a tract in the neck and trachea of the patent; said first kit including:

a hypodermic needle for forming an initial tract in said trachea;

guide wire means for insertion through said hypodermic needle to maintain said initial tract after said hypodermic needle is removed;

dilator means for insertion over said guide wire means to enlarge said initial tract; and

stent means for maintaining said enlarged tract as said enlarged tract initially heals;

a second kit for temporarily inserting a temporary transtracheal catheter in said patient while said tract fully heals; said second kit including:

a temporary transtracheal catheter for insertion in said initially healed tract to maintain said tract until said tract fully heals wherein said temporary transtracheal catheter is kept in place to allow said tract to fully heal; and

means for cleaning said temporary transtracheal catheter in place wherein said temporary transtracheal catheter is cleaned without removing from said tract as said tract fully heals; and

a third kit for insertion of the final transtracheal catheter in said patient; said third kit including:

a final removable transtracheal catheter wherein said final removable transtracheal catheter is removable from said tract; and

means for cleaning said final transtracheal catheter both as said final transtracheal catheter is in place in the patient's trachea and as said final transtracheal catheter is removed from the patient's trachea.

5,297,547

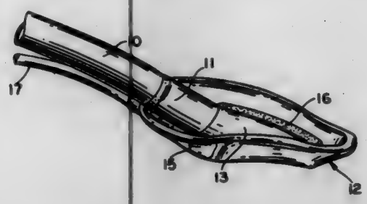
LARYNGEAL MASK CONSTRUCTION

Archibald I. J. Brain, Sandford House, Sancourt Gardens, Longcross Road, Chertsey, Surrey KT16 0DJ, United Kingdom

Filed Jul. 30, 1992, Ser. No. 922,132

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.15 **9 Claims**



1. As an article of manufacture, an artificial airway device to facilitate a patient's lung ventilation, comprising an airway tube and a laryngeal mask at one end of said tube, said mask comprising an elongate generally elliptical body having between distal and proximal ends thereof a concave anterior side and a convex posterior side, said body having a rim of generally tear-drop shape wherein the distal end is more pointed distally and the proximal end is more rounded proximally, an inflatable ring of material that is more flexible than the material of said body, said ring having a radially inner limit that is peripherally continuously connected to and surrounds said body rim and that is configured upon inflation to form a seal of said mask around the circumference of the laryngeal inlet, the posterior side of said body having an airway-port connection which is open to the concave anterior side and on a directional alignment which is generally directed toward the larynx via the laryngeal inlet when said ring is inflated and sealed around the laryngeal inlet, the posterior side of said body having peripherally continuous juncture of generally V-shaped section at adjacency with the material of said ring, said V-shaped section being defined by and between (a) by a peripherally continuous annular wall-surface portion of said ring and (b) a peripherally continuous annular wall-surface portion of the posterior side of said body, and a peripherally continuous filler of flexible material contained within and adhered to the adjacent wall-surface portions of said generally V-shaped section, whereby body stiffness preferentially extends over adjacent posterior material of said ring, so that upon deflation of said ring, the material of said ring forms a resilient concave annular flange peripherally continuously surrounding the posterior side of said body, the distal end of said flange being configured for resiliently loaded sliding contact with posterior contours of the patient's mouth and throat in the course of mask insertion into ring placement for inflation to establish said seal around the laryngeal inlet.

5,297,548

ARTERIAL BLOOD MONITORING PROBE

Jonas A. Pologe, Boulder, Colo., assignor to Ohmeda Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 832,551, Feb. 7, 1992. This application Apr. 12, 1993, Ser. No. 45,962

Int. Cl.[5] A61B *5/00*

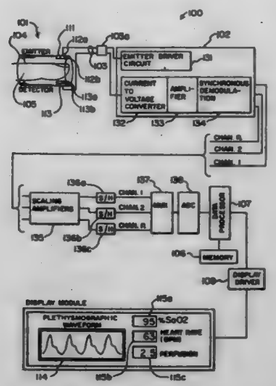
U.S. Cl. 128—633 **10 Claims**

1. A probe for noninvasively measuring components contained in arterial blood in a subject, which components include a plurality of dominant absorbers, by producing data indicative of a change in light absorption as a function of a change in path length in said arterial blood in said subject at a plurality of predetermined wavelengths of light,comprising:

a plurality of light source means for transmitting a plurality of beams of light, at a plurality of predetermined wavelengths of light along a substantially identical light path through said arterial blood; and

means for measuring a change in light absorption of said plurality of beams of light transmitted through said arterial blood, indicative of said change in path length at said plurality of wavelengths of light through said arterial blood along said substantially identical light path, comprising:

first light detector means for measuring the magnitude of



a first of said plurality of beams of light transmitted at a first of said plurality of wavelengths of light along said substantially identical light path:

second light detector means for measuring the magnitude of a second of said plurality of beams of light transmitted at a second of said plurality of wavelengths of light along said substantially identical light path; and

wherein said first and said second light detector means are mounted coaxially along said substantially identical light path.

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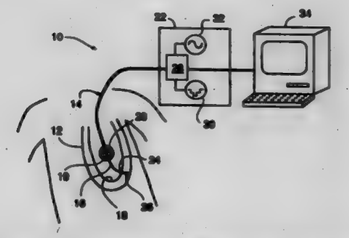
ENDOCARDIAL MAPPING SYSTEM

Graydon E. Beatty, St. Paul; Jonathan Kagan, Minneapolis, and Jeffrey R. Budd, St. Paul, all of Minn., assignors to Endocardial Therapeutics, Inc., St. Paul, Minn.

Filed Sep. 23, 1992, Ser. No. 950,448

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—642 **4 Claims**



1. A method of mapping a volumetric electrical potential distribution of a heart chamber arising from electrical activation in a myocardium comprising the steps of:

a) positioning an electrode array within the endocardial cavity;

b) positioning a reference electrode at the interior surface of said heart chamber at a known distance from said array, said reference electrode and said array together defining an endocardine reference position;

c) measuring volume and shape of said heart chamber, and generating volume measurement data from the volume and shape measurements;

d) computing the position of said array, from said volume measurement, and from said endocardial reference position, and generating array position measurement data;

e) measuring electrical potentials on said array, and generating electrical potential measurement data from the electrical potential measurements;

f) computing the three-dimensional volumetric electrical field distribution of said heart chamber volume from a spherical harmonic series expression containing said electrical potential measurements, and said array position measurement data; and

g) displaying said volumetric electrical field distribution.

5,297,550

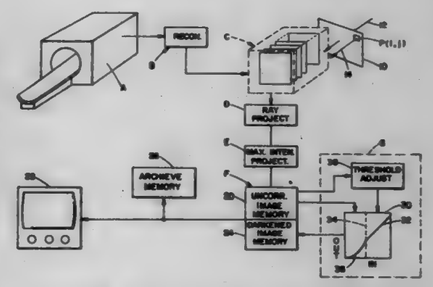
BACKGROUND DARKENING OF MAGNETIC RESONANCE ANGIOGRAPHIC IMAGES

Paul M. Margosian, Lakewood, Ohio, assignor to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 6, 1992, Ser. No. 925,993

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **20 Claims**



1. A magnetic resonance apparatus for producing a projection angiographic image representation, the apparatus comprising:

a magnetic resonance means for subjecting a subject in an examination region to magnetic field gradient and radio frequency signals, receiving magnetic resonance signals therefrom and producing a series of corresponding electronic views;

an image reconstruction means for reconstructing a plurality of the views from the magnetic resonance means into a volumetric image representation;

a ray projecting means for projecting a plurality of rays orthogonal to a selected viewing plane through the volumetric image representation and retrieving a series of volumetric data values corresponding to each ray;

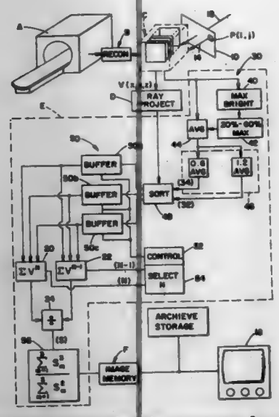
a means for converting each series of volumetric data values into a pixel value of an uncorrected projection angiographic image representation;

a transfer function means for operating on the pixel values of the uncorrected projection angiographic image representation with a non-linear transfer function which reduces pixel values corresponding to a brightness below a threshold brightness value such that the reduced pixel values are displayed darker in a corrected angiographic projection image representation;

an image memory means for storing at least the corrected angiographic image representation.

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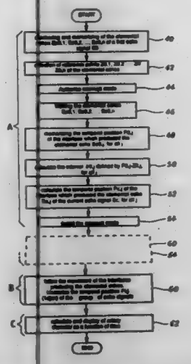
5,297,551
WEIGHTED RAY PROJECTION IMAGING FOR MR ANGIOGRAPHY
Paul M. Margosian, Lakewood, and Haiying Liu, Euclid, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio
Filed Aug. 6, 1992, Ser. No. 925,999
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 20 Claims



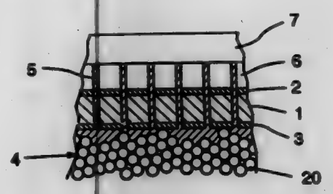
1. A magnetic resonance imaging apparatus for producing an angiographic shadowgraphic image, the apparatus comprising:
a means for generating views of magnetic resonance data from a region of a subject in an examination region;
a reconstruction means for reconstructing the views into voxel values of a volumetric image representation;
a ray projecting means for projecting rays from a viewing plane into the volumetric image data and retrieving a one-dimensional array of voxel values from the volumetric image data intersected by each ray;
an expansion means for raising the voxel values of each ray to an exponent N to expand a dynamic range of the voxel values non-linearly and summing the voxel values raised to the exponent, where $N \geq 2$;
a normalizing means for raising the same voxel values to an exponent lower than N and summing the voxel values raised to the lower exponent;
a means for generating a weighted pixel value by dividing the sum from the expansion means with the sum from the normalizing means;
an image memory means for storing the weighted pixel value generated from each projected ray for display as the angiographic image.

5,297,552
PROCESS FOR MEASURING THE POSITION OF AT LEAST ONE MOBILE INTERFACE USING ULTRASOUND AND APPARATUS FOR CARRYING OUT SAID PROCESS
Jean-Pierre Migaot, Peseux, Switzerland, assignor to Asulab S.A., Bienne, Switzerland
Filed Sep. 4, 1992, Ser. No. 941,254
Claims priority, application Switzerland, Sep. 27, 1991, 02871/91
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.04 16 Claims

1. A process for measuring the temporal evolution of the position of a mobile interface of an inhomogeneous body wherein ultrasonic impulses are transmitted at a repetition frequency F_r in said inhomogeneous body towards said mobile interface, each ultrasonic impulse generating an echo signal having an elemental echo comprising a plurality of impulses resulting from the reflection of such ultrasonic impulse from a region near to and including said mobile interface, said process comprising an initialization step wherein:
a first echo signal is detected and the said elemental echo is located in said first echo signal,
a reference point is selected on the elemental echo of said first echo signal,
said elemental echo of said first echo signal is processed to determine accurately the position of said mobile interface in said first elemental echo and simultaneously the temporal evolution of the position of said reference point is tracked in a first group of echo signals detected subsequent to said first echo signal;
said process further comprising a measurement step following said initialization step wherein the temporal evolution of the determined position of said mobile interface is tracked in a second group of echo signals following immediately said first group of echo signals.

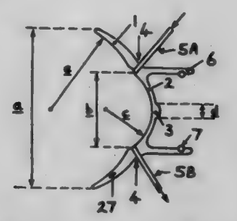


5,297,553
ULTRASOUND TRANSDUCER WITH IMPROVED RIGID BACKING
John W. Sliwa, Jr., Palo Alto; Sevig Ayter, Cupertino; Champa G. Sridhar, Los Altos; John P. Mohr, III, San Jose; Samuel M. Howard, Mountain View, and Michael H. Ikeda, San Jose, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.
Filed Sep. 23, 1992, Ser. No. 949,719
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.03 18 Claims



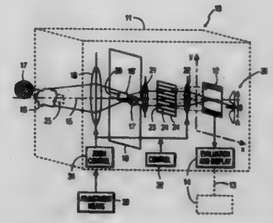
1. In an ultrasound transducer having at least one array of piezoelectric transducer elements separated by kerfs and top and bottom electrodes for individually addressing each transducer element of the at least one array,
an improved backing upon which the transducer elements and electrodes are mounted comprising rigid polymeric or polymer-coated particles fused into a macroscopically rigid structure having remnant tortuous permeability to provide high acoustic attenuation and to permit fluid passage into the structure.

5,297,554
DEVICE FOR USE IN REAL-TIME MONITORING OF HUMAN OR ANIMAL BODILY FUNCTION
Christopher J. Glynn, Bridge Farmhouse, Appleford, Oxon OX14 4NU, United Kingdom, and Adrian R. Hill, Brewers, Sheepstead, Abingdon, Oxon, OX13 6QG, United Kingdom
PCT No. PCT/GB90/00648, § 371 Date Sep. 27, 1991, § 102(e) Date Sep. 27, 1991, PCT Pub. No. WO90/12534, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 26, 1990, Ser. No. 768,645
Claims priority, application United Kingdom, Apr. 26, 1989, 8909491
Int. Cl.[5] A61B *6/00, 5/00, 3/14*
U.S. Cl. 128—665 23 Claims



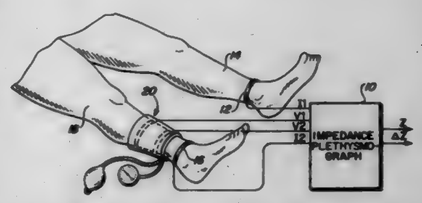
1. A device for use in real-time monitoring of human or animal bodily functions in vivo comprising:
a scleral contact lens for locating and supporting the device on an eye including a pupil having a size determined by dilation of the pupil, a retina and an iris, of a human or animal; and a first optical system supported by the contact lens having at least one discrete light input means and at least one discrete light receiving means, wherein the light input means is arranged to direct light through the contact lens and the pupil of the eye so as to illuminate at least a portion of the retina of the eye substantially independently of the pupil size and the light receiving means is positioned so as to receive light returning through the contact lens directly from a portion of the retina which is illuminated directly by the light input means.

5,297,555
MULTICHANNEL SPECTROMETER
Gerhard Martens, Henstedt-Ulzberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 2, 1991, Ser. No. 803,313
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039070
Int. Cl.[5] A61B *6/08*; G01J *3/18, 3/46*
U.S. Cl. 128—665 8 Claims



1. A spectrometer for analyzing radiation re-emitted from a skin surface under examination, in relation to a white standard, said spectrometer comprising;
a detector having an image plane, which detector is for producing signals in response to radiation projected onto said image plane;
optical means for, in response to re-emitted radiation from points in a stripe-shaped region of said skin surface under examination, projecting said re-emitted radiation onto said image plane as an elongated image formed on said image plane, said optical means including a diaphragm having a slot through which at least a portion of the re-emitted radiation passes, which slot is elongated in a direction to define a direction of elongation of said stripe-shaped region and of said image, and a diffraction grating for receiving at least a portion of the re-emitted radiation passing through said slot for causing diffraction of the received re-emitted radiation, based on color content, in a direction in the image plane which is orthogonal to the direction of image elongation; and
evaluating and display means, responsive to signals generated by the detector, for simultaneously producing from said image formed in said image plane, individual re-emission spectra for a plurality of said points.

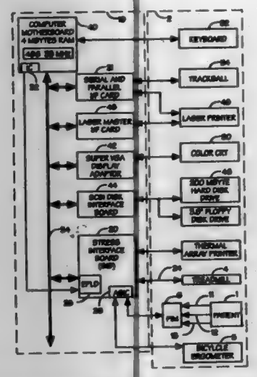
5,297,556
METHOD OF DETECTING ATHEROSCLEROSIS WHILE EXCLUDING MOTION ARTIFACTS
Ravi Shankar, Boca Raton, Fla., assignor to Florida Atlantic University Research Corp., Boca Raton, Fla.
Continuation of Ser. No. 9,340, Jan. 26, 1993, Pat. No. 5,241,963, which is a continuation of Ser. No. 715,106, Jun. 12, 1991, abandoned. This application Jul. 28, 1993, Ser. No. 98,707
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—668 18 Claims



1. A method of detecting the onset of atherosclerosis comprising the steps of:
changing blood flow through an artery with the application of differing amounts of induced pressure thereat;
sensing an arterial blood volume differential while said artery is placed under said differing amounts of induced pressure;
repeating said sensing step when a signal parameter representative of said blood volume differential exceeds a predetermined level;
determining whether a function of said volume differential and said differing amounts of induced pressure defines a waveform peak; and,
generating an atherosclerosis indicator signal in the absence of said waveform peak.

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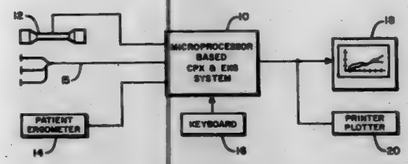
5,297,557
STRESS TEST SYSTEM WITH BIDIRECTIONAL FILTER
Philip Reichl, Irvine, Calif., assignor to Del Mar Avionics, Irvine, Calif.
Filed Oct. 14, 1992, Ser. No. 960,959
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—707 14 Claims



1. A stress test system for eliminating noise contained in an accelerated ECG signal comprising:
electrode means for detecting bioelectric signals generated by accelerated hearts of human subjects and generating, therefrom, an analog electrical signal;
digitizing means for converting said analog signal into a series of digital signals;
processing means for performing digital processing on said series of digital signals;
storage means operatively coupled to said processing means for storing data relating to said processing means operation, including storage of a predetermined length;
segmentation means contained within said processing means for dividing said series of digital signals into a series of windows, each of said windows being of said predetermined length;
filtering means contained within said processing means, said filtering means performing a bidirectional infinite impulse response (IIR) filter upon each of said windows; and
comparison means contained within said processing means for determining when said filtering means has completed each pass of said bidirectional IIR filter by comparing the length filtered in each direction against said predetermined length.

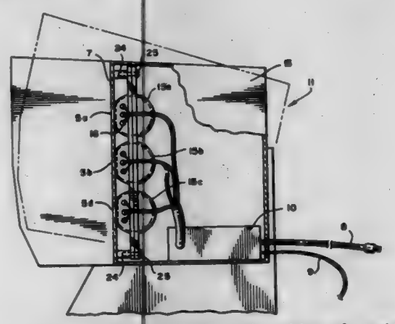
5,297,558
ALGORITHM FOR PRESCRIBING AN EXERCISE REGIMEN TO ENHANCE FAT BURNING AND CARDIOVASCULAR FITNESS
Russell G. Acorn; Michael G. Tyler, both of White Bear Lake, and David B. Viele, Shoreview, all of Minn., assignors to Medical Graphics Corporation, St. Paul, Minn.
Filed Mar. 12, 1993, Ser. No. 30,685
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—719 5 Claims

1. A method for prescribing an exercise regimen for a subject to enhance one of fat consumption and cardiovascular fitness comprising the steps of:
(a) providing a microprocessor-based cardiopulmonary exercise system of the type including means for sensing respiratory flow of a subject while undergoing exercise of predetermined intensity levels and for measuring the resulting oxygen uptake ($\dot{V}O_2$) and carbon dioxide production ($\dot{V}CO_2$) on a breath-by-breath basis, means for sensing a pulse rate of said subject and means for measuring the work performed by said subject during a plurality of stages of exercise;
(b) subjecting said subject to a ramping cardiopulmonary stress test while using said microprocessor-based cardiopulmonary exercise system to measure and compute physiologic events correlating fat burning and cardiovascular fitness to heart rate; and



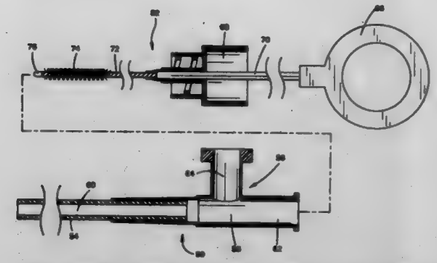
(c) providing said subject with a target heart rate range or work rate range for purposes of self-monitoring for adherence to an activity protocol, said activity protocol establishing a frequency for exercise sessions, a length of time for each of said exercise sessions and an intensity level of exercise during said exercise sessions as determined from an actual heart rate or work rate to be measured during each of said exercise sessions.

5,297,559
APPARATUS FOR TESTING COLOR VISION
Matthew L. Severns, McLean, Va., assignor to LKC Technologies, Inc., Gaithersburg, Md.
Filed Oct. 13, 1992, Ser. No. 959,797
Int. Cl.[5] A61B *13/00*
U.S. Cl. 128—745 8 Claims



1. An apparatus for evaluating color vision of a subject comprising:
a planar background panel;
a plurality of viewing ports formed in said background panel;
a hollow light reflective sperical member located behind each of said viewing ports, each hollow member having an opening in optical alignment with one of said viewing ports;
a plurality of side apertures formed in each hollow member, each of said apertures receiving a respective lamp therethrough for selectively shining a differently colored light against an interior surface of said hollow member for mixing with other colored lights upon reflection from said interior surface;
switch means for simultaneously and selectively energizing the lamps in said hollow members; and
means for simultaneously controlling the luminance of light emitted from the selected lamps.

5,297,560
METHOD OF PROTECTED BRONCHIAL SAMPLING USING A TRANSLARYNGOSCOPIC CATHETER
G. Umberto Meduri, Memphis, Tenn., assignor to Mill-Rose Laboratories, Inc., Mentor, Ohio
Filed Apr. 10, 1992, Ser. No. 866,734
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—756 12 Claims



1. In a method of diagnosing disease of a patient, the disease being associated with the lungs, by protected sampling of tracheal or mainstem bronchial secretions using a laryngoscope and a catheter adapted to pass through an instrument channel of a laryngoscope insertion tube, the catheter including a lumen, a sampling element slideably disposed in the lumen and an actuating means for advancing, retracting and manipulating the sampling element, the steps comprising:
a. passing the insertion tube of a laryngoscope through the nasal passage of the patient and positioning a distal end of the insertion tube in the larynx of the patient;
b. advancing the translaryngoscopic catheter through the instrument channel of the laryngoscope and into the trachea of the patient;
c. positioning the distal end of the translaryngoscopic catheter into the lower portion of the trachea of the patient;
d. advancing the sampling element from the lumen of the translaryngoscopic catheter into either the trachea or a mainstem bronchus;
e. manipulating the sampling element to contact and sample the secretions present in the trachea or a mainstem bronchus;
f. retracting the sampling element into the lumen of the translaryngoscopic catheter;
g. retracting the sampling element through the lumen of the translaryngoscopic catheter and removing the element from the translaryngoscopic catheter;
h. removing the translaryngoscopic catheter from the instrument channel of the laryngoscope; and
i. removing the insertion tube of the laryngoscope from the larynx of the patient.

5,297,561
BLOOD COLLECTION TUBE ASSEMBLY
Walter C. Hulon, P.O. Box 40745, Baton Rouge, La. 70835
Continuation-in-part of Ser. No. 366,468, Jun. 15, 1989, abandoned. This application Jul. 19, 1990, Ser. No. 555,573
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—764 10 Claims

1. An air-evactuated blood collection tube assembly comprising:
an air-evactuated tubular container having an open end and a closed end, said tubular container formed of a polyethylene terephthalate material, said open end flared outwardly, said open end of said tubular container having a hump extending inwardly of an inner diameter of said tubular container; and
a cannula-penetrable self-sealing gas-proof closure in sealing engagement in the open end of said container so as to maintain a vacuum inside said container, said closure having one end interior of said container and another end exterior of said container, said end interior having a surface in continuous sealing contact with said container, said end interior having an annular sleeve extending from said

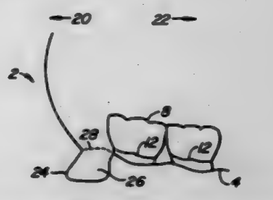


surface toward said closed end, said annular sleeve having a first notch extending through a wall of said annular sleeve and juxtaposed against said container, said closure having an indented ring formed about said first notch of said end interior and said indented ring engaging said hump of said tubular container.

5,297,562
METHOD FOR DETECTING AND TREATING ALZHEIMER'S DISEASE
Huntington Potter, Boston, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Filed Apr. 1, 1991, Ser. No. 678,683
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 6 Claims

1. A method for detecting sporadic or inherited forms of Alzheimer's disease comprising testing an individual for the presence of a mosaic population of cells having two copies of chromosome 21 and cells which have three copies of chromosome 21 by administering to the individual a cholinergic agonist or antagonist and detecting increased sensitivity to the agonist or antagonist as an indication of the presence of a mosaic population.

5,297,563
GUIDED BONE AND TISSUE GENERATION DEVICE AND METHOD TO BE USED DURING OR AFTER DENTAL SURGERY OR JAW SURGERY
Charles S. Syers, 325 Ascot Rd., Hillsborough, Calif. 94010
Filed Apr. 3, 1992, Ser. No. 862,894
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 7 Claims



1. A method to facilitate tissue guided regeneration of a bony deficit of a bone using a mechanical barrier sized to cover said deficit comprising:
a. placing the barrier over the deficit and beneath the periosteum of the bone;
b. shaping the barrier to the deficit; and
c. securing the barrier in place.

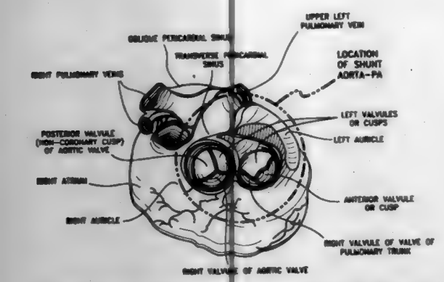
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,564

CATHETER TECHNIQUE FOR CREATION OF AN AORTICO-PULMONARY SHUNT

Jack W. Love, 785 Corosam Rd., Santa Barbara, Calif. 93110

Filed Aug. 27, 1992, Ser. No. 936,767
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 11 Claims



1. A method for creating an aortico-pulmonary shunt in the human body at the location of the chambers of the heart where the pulmonary artery and aorta form a common trunk, comprising the steps of:

(a) introducing a catheter into the body, said catheter being coupled to equipment for monitoring blood and oxygen characteristics;

(b) positioning the catheter within a blood vessel to said location outside the chambers of the heart where the pulmonary artery and aorta form a common trunk;

(c) utilizing a laser to form a hole through said common trunk between the aorta and pulmonary artery at said location along a common trunk through the process of ablation;

(d) utilizing the catheter to monitor a characteristic of the body; and

(e) optionally utilizing the laser to increase the size of the hole until the monitored characteristic achieves a predetermined level.

5,297,565

BRISTLE FOR HAIR STIMULATOR

Satendra Charitar, 5154 Shelter Creek La., San Bruno, Calif. 94066, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Jun. 21, 1993, Ser. No. 79,396
Int. Cl.[5] A45D *24/22*
U.S. Cl. 132—114 2 Claims



1. An improved hair shampoo stimulator device which comprises:

a rectangular shaped open frame being slightly curved downwardly;

a plurality of zip zag supports affixed to and extending across a narrow portion of said frame in spaced apart relationships;

a plurality of bristles each shaped similar to a finger tip and extending downwardly from each said support;

a container affixed to and extending across a center of the narrow portion of said frame with said supports arranged substantially uniformly therefrom, said container having a chamber for holding shampoo solution therein;

a manually operable pump reciprocally carried within the container; and

a pair of nozzles, each fluidly connected to one bottom edge of said container, so that when said pump is actuated said nozzles will spray some of the shampoo solution out of the chamber onto a scalp of a person, each said nozzle further including a first one way check valve to allow some of the shampoo solution to spray out therefrom when said pump is activated and to prevent air from entering the chamber when the pump is deactivated;

said frame, said zig zag supports and said bristles having hollow interconnecting channels therethrough and each of said nozzles further having a second one way check valve fluidly connected to said channel to an adjacent zig zag support so that when said pump is activated some of the shampoo solution will travel through said channels and out of bottom ends of said bristles;

each of said bristles including a rectangular shaped shank and an oval base attached perpendicularly to a distal end of said shank with said channel extending through said shank and out of said base;

whereby said bristles are allowed to foam the shampoo solution and massage the scalp of the person to stimulate hair roots without damaging hair.

5,297,566

METHOD AND DEVICE FOR INCREASING THE VOLUME OF A HEAD OF HAIR

Donald E. Firsteberg, Edison; Martha L. Huff, Ridgewood; Edward Carhart, Jackson; Donald Warren, Keansburg; Herbert Umstead, Madison; Roland de la Mettrie, Westfield; John A. Penicsak, Mt. Lakes, all of N.J.; Régis Beitone, Paris, and Pierre Meurice, L'Isle Adam, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 30, 1991, Ser. No. 736,953
Claims priority, application France, Jul. 31, 1990, 90 09748
Int. Cl.[5] A45D *7/04*
U.S. Cl. 132—203 8 Claims

1. A hairdressing method for increasing the apparent volume of a head of hair and simultaneously setting said head of hair, said method consisting of spraying into said head of hair an aerosol which is produced by a dispensing head of an aerosol generator and is in the form of liquid particles dispersed in a gas or a mixture of propulsive gases, the liquid phase of said aerosal comprising at least one film-forming polymer dissolved in a solvent, which polymer is deposited onto the hair and makes said hair rigid upon evaporation of said solvent, said aerosol being ejected onto said head of hair at room temperature with a mass flow between 0.5 and 4.0 g/sx at 20° C., thereby ensuring an atomization, the ejection conditions of which correspond to an initial thrust between 6,500 and 30,000 dynes at 20° C., when said atomization acts onto a rigid circular disc having a diameter of 160 mm, with the same axis as the atomization and located at a distance of 150 mm from the dispensing head.

5,297,567

HAIR CURLING ROLLER APPARATUS

Melanie L. Summerville, 998 Monaca Rd., and Daniel W. Gillin, 102 Gillin Dr., both of Monaca, Pa. 15061

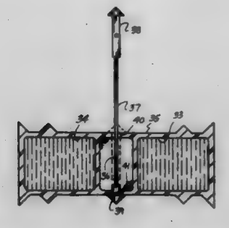
Filed Jul. 30, 1993, Ser. No. 99,653
Int. Cl.[5] A45D *1/02*
U.S. Cl. 132—227 2 Claims

1. A hair curling roller apparatus, comprising:

a housing having a plurality of concentric annular side walls, including a first side wall, a second side wall, and a third side wall, and arranged in a spaced concentric relationship, with a first top wall mounted to said first side wall, a second side wall mounted to the second side wall, and a third top wall mounted to the third side wall, with the first top wall, the second side wall and the third side wall each including an array of hair curling cylinder container receiving sockets, with each of said sockets having a hair curling cylindrical container therewith, each hair curling cylinder including a central cylinder and a plurality of end flanges, wherein the end flanges are orthogonally oriented relative to and axis of said cylinder,

said cylinders having at least one first cylinder cavity containing a silicon gel therewithin, said gel having heat retentive properties,

each cylinder including a second cavity spaced from said first cavity, and a central cavity intermediate the first and



second cavity, the first cavity and the second cavity each including said silicon gel therewithin, the central cavity having an anchor shaft medially thereof,

an elastomeric cord secured to said anchor shaft, with the elastomeric cord having a first end and a second end, the first end including a first anchor lug, the second end having a second anchor, with a first opening directed through said cylinder into said central cavity, and a second opening directed through said cylinder into said central cavity, the first anchor lug being received within the first opening and the second anchor lug being received within the second opening,

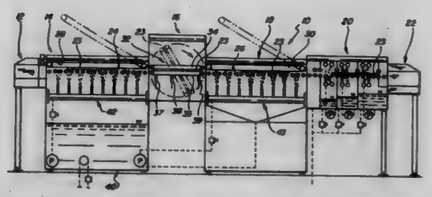
wherein at least said first anchor lug is pivotally mounted to said elastomeric cord.

5,297,568

PROCESS AND APPARATUS FOR TREATMENT OF BOARD-LIKE ARTICLES

Dieter C. Schmid, Freudenstadt, Fed. Rep. of Germany, assignor to Gebr. Schmid GbmH & Co., Freudenstadt, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,708
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107464
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—62 21 Claims



1. An apparatus for treating circuit boards with a liquid medium, comprising:

conveying apparatus for conveying the circuit boards through the apparatus in a conveying direction on a horizontal conveying path;

at least one treatment station containing application means situated below the conveying path for treating only one side of the circuit boards at a time with the liquid medium, said side being treated facing downwardly; and

a turning-over mechanism for rotating the circuit boards so that a first side already treated with the liquid medium passes into an upwardly facing position, the turning-over mechanism comprising conveying means for the circuit boards;

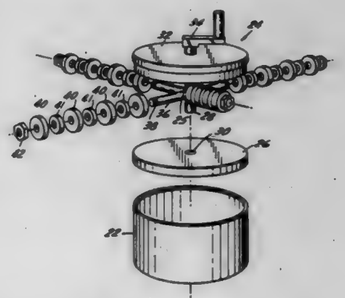
wherein the conveying means convey the circuit boards on said conveying path directly into one of said at least one treatment stations for treatment of a second side of said circuit boards opposite said first side.

5,297,569

METHOD AND APPARATUS FOR MAINTENANCE OF WHEEL BEARINGS

William B. McLain, 61 Peterboro, Detroit, Mich. 48201

Filed Aug. 31, 1992, Ser. No. 938,888
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—143 2 Claims



1. An apparatus for cleaning or lubricating wheel bearings with bores comprising:

a container having an enclosed bottom, a side wall and an open top for holding a cleaning solvent or a lubricant;

a top plate provided with a centrally located opening enclosing said open top;

a rotary member having a central axis extending through said opening, rotatably mounted within said top plate, and extending into the interior of said container;

a bottom plate received within the enclosed bottom of said container, said bottom plate having upper and lower surfaces, with said lower surface abutting said enclosed bottom, said bottom plate having a central hole;

said rotary member having a first end portion rotatably received within said central hole of said bottom plate to properly guide said rotary member and a second end portion extending through said centrally located opening in said top plate;

four elongated cylindrical mount posts for telescopically mounting the wheel bearings, said mount posts being spaced 90° apart and having inner and outer ends, the inner ends of said mount posts being received in openings provided in said rotary member, said mount posts extending radially outwardly from said rotary member toward the side wall of said container, and the outer ends of said mount posts being threaded;

locking members positioned on the outer threaded ends of said mount posts, said locking members having an outer dimension which is greater than the inner diameter of the bores in the wheel bearings on said mount posts, each locking member being a nut which is threaded onto the threaded outer end of the corresponding post to retain the wheel bearings thereon; and

a handle located exteriorly of said container and connected to said second end portion of said rotary member for

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turning the rotary member and the posts and wheel bearings carried thereby within the solvent or lubricant in said container relative to said top plate;

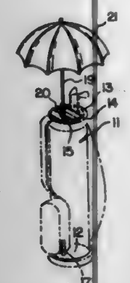
said handle and said rotary member when rotated causing the wheel bearings to roll along the upper surface of said bottom plate.

5,297,570

GOLF BAG UMBRELLA

Warren D. Conner, Rte. 1, Box 1286, Scottsburg, Va. 24589

Filed Aug. 24, 1992, Ser. No. 933,764
Int. Cl.[5] A45B *3/00*
U.S. Cl. 135—16 **3 Claims**



1. A golf bag umbrella, comprising,

a handle shaft tube, the handle shaft tube having a covering foot,

and

the handle shaft tube including an entrance end, wherein the entrance end includes a first extension tube reciprocatably mounted within the handle shaft tube, the first extension tube includes a coil spring mounted to the first extension tube spaced from the handle shaft tube, and a second extension tube mounted to the coil spring,

and

an umbrella canopy mounted to the second extension tube spaced from the coil spring, wherein the handle shaft tube, the first extension tube, the second extension tube, and the coil spring junction are coaxially aligned in a first position, and wherein the first extension tube and the second extension tube are deflected relative to one another at an oblique angle relative to one another in a second position,

and

the first extension tube and the handle shaft tube include a latch mechanism, wherein the latch mechanism includes a row of apertures directed through the handle shaft tube, and the first extension tube includes a plunger housing mounted to a lower distal end of the first extension tube within the handle shaft tube, wherein the plunger housing includes a plunger, and a plunger spring captured between the plunger and the plunger housing to bias the plunger to one of said apertures,

and

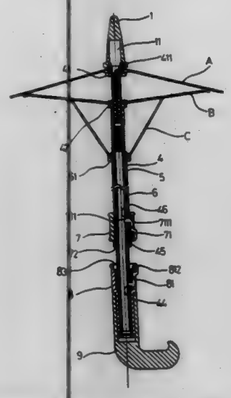
the canopy includes a canopy periphery, and a plurality of spaced rings mounted about the canopy periphery, and an anchor ring mounted to the first extension tube below the coil spring, and a flexible cord, the flexible cord having a cord first end, the cord first end having a hook, and the hook directed through one of the spaced rings, and the cord directed slidably through the anchor ring, and the cord having a cord second end, wherein the cord second end includes an arresting plate, the arresting plate includes a first plate wing spaced from and coplanar with a second plate wing, the first plate wing includes a first wing aperture, the second plate wing includes a second wing aperture, and a central plate V-shaped ridge extending between the first plate wing and the second plate wing, and the flexible cord second end mounted to the second wing aperture, and the flexible cord directed orthogonally and slidingly over the V-shaped ridge and through the first wing aperture.

5,297,571

TWO BUTTON SAFETY UMBRELLA

Chin-Tang Chu, No. 18, Lane 49, Chung Shan Road, and Wen-Ching Haong, 4F, No. 1, Lane 213, Min Hu Road, both of Hsinchu, Taiwan

Filed Sep. 22, 1992, Ser. No. 948,306
Int. Cl.[5] A45B *25/14, 25/16*
U.S. Cl. 135—24 **1 Claim**



1. A two button safety umbrella, comprising:

a longitudinally extended inner tube member having upper and lower portions;

an intermediate tube member concentrically disposed on said inner tube member, said inner tube member being slidable within said intermediate tube member, said intermediate tube member having a flange formed on one end thereof and being fixedly coupled to a handle member on an opposing end;

an outer tube member concentrically disposed on said intermediate tube member and slidable thereon;

a first crown member slidably coupled to said upper portion of said inner tube member;

a plurality of first rib members, each of said plurality of first rib members having one end pivotally coupled to said first crown member;

a second crown member fixedly coupled to said upper portion of said inner tube member below said first crown member;

a plurality of second rib members, each of said plurality of second rib members having one end pivotally coupled to said second crown member and an opposing end pivotally coupled to an intermediate portion of a respective one of said plurality of first rib members;

an upper coil spring member disposed within said inner tube member between said first and second crown members for applying a bias force therebetween;

a third crown member fixedly coupled to a first end of said outer tube member;

a plurality of third rib members, each of said plurality of third rib members having one end pivotally coupled to said third crown member and an opposing end pivotally coupled to an intermediate portion of a respective one of said plurality of second rib members;

a lower coil spring member disposed on said inner tube member between said second crown member and said flange of said intermediate tube member for applying a bias force therebetween;

lower button means disposed on said intermediate tube member and fixedly coupled to said handle member for releasable coupling with said lower portion of inner tube member, said lower button means including a first stopper member having a first hook formed on one end and extending through an opening formed in said intermediate tube member for releasable coupling with a first opening formed in said inner tube member, said first hook being disengaged from said first opening of said inner tube member responsive to a pivotal displacement of said first stopper member; and,

upper button means fixedly coupled to a second end of said outer tube member for releasable coupling with said inner tube member, said upper button means including a second stopper member having a second hook formed on one end and extending through an opening formed in said outer tube member for releasable coupling with a second opening formed in said inner tube member, said second hook being disengaged from said second opening of said inner tube member responsive to a pivotal displacement of said second stopper member, said upper button means including an annular lip extending from a lower end thereof for receipt within an annular recess

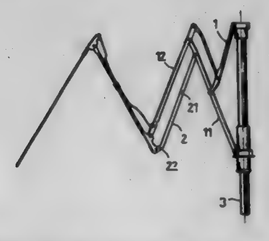
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5,297,572

IMPROVED FRAMES OF A FOLDED UMBRELLA

Cheng M. L. Kuo, 18, Alley 15, Lane 582, Sea Ta Road, Hsinchu, Taiwan

Filed May 4, 1993, Ser. No. 56,790
Int. Cl.[5] A45B *19/00*
U.S. Cl. 135—25.3 **1 Claim**



1. A folding umbrella frame having a shaft and a runner slidably displaceable on said shaft comprising:

(a) a first rib member having opposing first and second ends, said first end of said first rib member being pivotally coupled to a top end of said shaft, said second end of said first rib member being inclined with respect to an extended length direction of said first rib member;

(b) a second rib member having opposing first and second ends, said first end of said second rib member being pivotally coupled to said runner, said inclined second end of said first rib member being pivotally coupled to a central section of said second rib member;

(c) a first stick member having opposing first and second ends, said first end of said first stick member being pivotally coupled to said first rib member, said second end of said first stick member being inclined with respect to an extended length direction of said first stick member;

(d) a second stick member having opposing first and second ends, said second stick member first end being pivotally coupled to said second rib member, said second stick member second end being inclined with respect to an extended length direction of said second stick, said second stick member having a recess formed therein for receiving said second end of said first rib member;

(e) a third rib member having opposing first and second ends, said first end of said third rib member being pivotally coupled to said second end of said second rib member and said inclined second end of said first stick member; and,

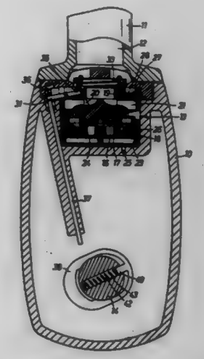
(f) a fourth rib member having one end pivotally coupled to said inclined second end of said second stick member and said second end of said third rib member.

5,297,573

OVERSPEED SAFETY DEVICE

Rolf A. Jacobsson, Saltsjö-Boo, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

Filed Jun. 23, 1993, Ser. No. 82,060
Claims priority, application Sweden, Jun. 29, 1992, 9201989[2]
Int. Cl.[5] F16K *31/50*
U.S. Cl. 137—57 **7 Claims**



1. An overspeed safety device for a pneumatic rotation motor, comprising a housing (10, 18) and a valve element (28) guidingly supported in a bore (27) in the housing (10, 18) and arranged to block at least the main part of the air supply to the motor when shifted from a normally open position to a closed position, an activating means coupled to a rotating part (14) of the motor and arranged to be shifted from a normal rest position to an active position at a predetermined motor speed level, and a trip means (29, 31) supporting said valve element (28) in said open position and arranged to be triggered by said activating means (37, 38) to thereby release said valve element (28) for movement toward said closed position,

wherein said trip means (29, 31) comprises:

an open spring wire lock ring (29) pretensioned toward a closed condition and located in a groove (30) in said valve element (28),

a shoulder (32) in said bore (23) having an inner diameter that is larger than the outer diameter of said lock ring (29) as said lock ring (29) occupies its closed condition, and

a holding means (31) normally located between ends of said lock ring (29) so as to maintain said lock ring (29) in an expanded condition in which an outer diameter of said lock ring (29) exceeds an inner diameter of said shoulder (32), thereby supporting the valve element (28) in said open position.

5,297,574

FUEL DISPENSING HOSE BREAKAWAY ASSEMBLY

James W. Healy, Hollis, N.H., assignor to Healy Systems, Inc., Hudson, N.H.

Filed Apr. 13, 1993, Ser. No. 46,996
Int. Cl.[5] F16L *29/00*; F16K *17/40*
U.S. Cl. 137—68.1 **12 Claims**

1. A breakaway assembly for use in combination with a fuel dispenser apparatus comprising a fuel dispenser unit, a coaxial hose connected thereto, and terminating in a fuel delivery

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nozzle, the hose defining a first, outer fuel conduit for delivery of fuel from the dispenser unit to the nozzle, for filling a vehicle tank, and a second, inner vapor conduit, coaxial with said first, outer fuel conduit, for vacuum flow of vapor displaced from the vehicle tank, said breakaway assembly disposed between a first segment of the hose attached to the dispenser unit and a second segment of the hose terminating in the nozzle,

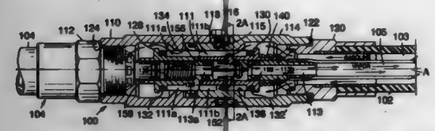
said breakaway assembly comprising:

a first body portion adapted for attachment to the first segment of the hose and a second body portion adapted for attachment to the second segment of the hose,

said breakaway assembly having a first, assembled condition in which said first body portion and said second body portion are joined and together define a fuel conduit connecting the fuel conduit of the first hose segment with the fuel conduit of the second hose segment for flow of fuel through the breakaway assembly, and together define a vapor conduit connecting the vapor conduit of the first hose segment with the vapor conduit of the second hose segment for vacuum flow of vapor through the breakaway assembly, and said breakaway assembly having a second condition in which said first body portion and said second body portion are separated,

said breakaway assembly further comprising:

a first fuel valve and a first fuel valve seat, said first fuel valve mounted in said first body portion for movement between a first position, with said first fuel valve spaced from engagement with aid first fuel valve seat for permitting flow of fuel within said fuel conduit within said first body portion, and a second position, with said first fuel valve in engagement with said first fuel valve seat for restricting flow of fuel through said fuel conduit within said first body portion,



a second fuel valve and a second fuel valve seat, said second fuel valve mounted in said second body portion for movement between a first position, with said second fuel valve spaced from engagement with said second fuel valve seat for permitting flow of fuel within said fuel conduit within said second body portion, and a second position, with said second fuel valve in engagement with aid second fuel valve seat for restricting flow of fuel through said fuel conduit within said second body portion,

a vapor valve and a vapor valve seat, said vapor valve mounted in said first body portion for movement between a first position, with aid vapor valve spaced from engagement with said vapor valve seat for permitting vacuum flow of vapor within said vapor conduit within said first body portion, and a second position, with said vapor valve in engagement with said vapor valve seat for restricting vacuum flow through said vapor conduit within said first body portion, and

a securement element securing together said first body portion and said second body portion in said first condition, said securement element adapted to release engagement of said first body portion and said second body portion upon application of tension force to the hose, across said breakaway assembly, above a predetermined maximum level,

a first spring urging said first fuel valve toward said second position and a second spring urging said second fuel valve toward said second position, and, in said first condition of said breakaway assembly, said first fuel valve and said second fuel valve being urged toward said first positions, and

a vapor valve spring urging said vapor valve toward said second position and, in said first condition of said breakaway assembly, said vapor valve being urged toward said first position,

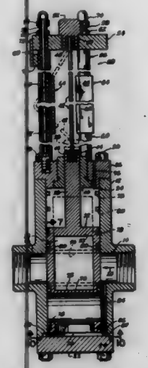
whereby, during normal operation, the first and second body portions are secured together by the securement element, and the first and second fuel valves and the vapor valve are all urged toward their respective first positions, and, upon application to the hose of tension above a predetermined maximum level, the securement element releases, allowing the first and second body portions to separate, and allowing the first and second fuel valves to move toward their second positions to cease flow of fuel from both body portions and further allowing the vapor valve to move toward its second position to cease vacuum flow through the first body portion.

5,297,575

IN-LINE HIGH PRESSURE FLUID RELEASE VALVE

Julian S. Taylor, 8300 SW. 8th, Oklahoma City, Okla. 73128

Filed Jul. 30, 1993, Ser. No. 99,380
Int. Cl.[5] F16K *17/14*
U.S. Cl. 137—70 **10 Claims**



8. An in-line fluid release valve for a high pressure fluid conductor, comprising:

a valve body having a cylinder and having axially aligned inlet and outlet ports forming a transverse fluid passageway adapted to be interposed in the fluid conductor;

piston means including a piston slidable in the cylinder and having a piston rod projecting outwardly of the valve body and normally closing the fluid passageway,

said piston having a transverse passageway for mating with the fluid passageway in response to fluid pressure above a predetermined value acting on the piston end portion opposite its rod; and,

pin cage means including an axially collapsible pin supported in axial outstanding relation with respect to said piston rod by said valve body for normally maintaining the piston in passageway closed position.

5,297,576

ORAL INFLATION AND RELIEF TUBE

Jacek M. Weinheimer, Treasure Island, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Oct. 16, 1992, Ser. No. 962,386
Int. Cl.[5] F16K *15/20*; B63C *9/00*
U.S. Cl. 137—226 **1 Claim**

1. An oral inflation and relief tube for connection to an inflatable article, comprising in combination:

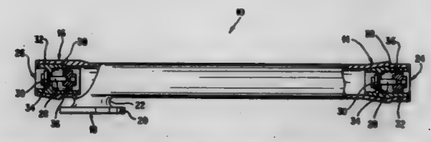
an elongated tube having an oppositely positioned first opened end and second opened end, with a flanged opening positioned therebetween at ninety degrees for connection to the inflatable article;

said flanged opening comprising a mounting flange and boss integrally formed through a wall of said elongated tube;

an inflation valve sealingly positioned within said first opened end;

a relief valve sealingly positioned within said second opened end; and

said elongated tube comprising an in-line configuration, said inflation valve and said relief valve and said tube comprising a



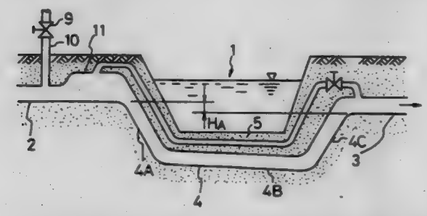
generally-cylindrical configuration with a common axis, with said boss positioned substantially adjacent to said second opened end away from said first opened end such that when said mounting flange of said flanged opening is connected to the inflatable article, said in-line configuration of said elongated tube lies substantially parallel to the inflatable article while permitting said first and opened end to be grasped and rotated about said boss and orally inflated, said inflation valve and said relief valve each having a coil spring with the coil spring of said relief valve having a higher cracking pressure than said inflation valve.

5,297,577

CULVERT OF VACUUM SEWERAGE

Junichi Yamanaka, Tokoname, Japan, assignor to INAX Corporation, Aichi, Japan

PCT No. PCT/JP92/00127, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO80/02855, PCT Pub. Date Dec. 24, 1980
PCT Filed Feb. 10, 1992, Ser. No. 934,464
Claims priority, application Japan, Feb. 14, 1991, 3-20951; Dec. 11, 1991, 3-327567; Dec. 11, 1991, 3-327568; Dec. 11, 1991, 3-327569; Dec. 11, 1991, 3-327570
Int. Cl.[5] E03F *3/00*
U.S. Cl. 137—236.1 **9 Claims**



1. A culvert of a vacuum sewerage in which an upstream vacuum sewer provided at one side of an obstacle and having a lower end, and a downstream vacuum sewer provided at the other side of the obstacle and having an upper end located lower than the lower end of the upstream vacuum sewer, are connected, said culvert comprising:

a water flow pipe passing under said obstacle to connect said upstream vacuum sewer and said downstream vacuum sewer; and

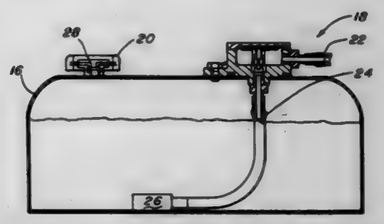
an air pipe passing along one of upper and lower sides of said obstacle to connect said upstream vacuum sewer and said downstream vacuum sewer, said air pipe having end portions connected to the upstream and downstream vacuum sewers and disposed to orient at least partly upwardly from the sewers so that liquid inside the sewer does not enter into the air pipe to allow vacuum force in the downstream vacuum sewer to smoothly transfer to the upstream vacuum sewer without substantial vacuum loss in the water flow pipe flowing under the obstacle.

5,297,578

AUTOMATIC SHUTOFF VALVE

William A. Scott, Mt. Zion, and Gary L. Baumberger, Decatur, both of Ill., assignors to Tillotson, Ltd., Tralee, Israel

Filed Aug. 14, 1992, Ser. No. 930,735
Int. Cl.[5] F16K *31/365*
U.S. Cl. 137—510 **2 Claims**



1. An assembly for a fuel supply system, the assembly comprising:

a housing defining a cavity, said housing including a first portion and a second portion;

a guide portion at least partially disposed within said cavity, said guide portion at least partially defining a cylindrical channel having an upper and a lower end, said lower end having a diameter larger than the diameter of the upper end;

a fuel inlet in communication with said cavity;

an elongated valve member disposed substantially within said guide portion, said elongated valve member being moveable in a first direction to an open position and in a second direction to a closed position, said second direction being toward said inlet;

a diaphragm connected to said valve member, said diaphragm being peripherally captured between said first and second portions, thereby defining said cavity into an atmosphere chamber and a metering chamber, said diaphragm being operated by reduced pressures transmitted to said metering chamber; and

a spring adapted to bias said valve member toward said closed position, said spring surrounding said guide portion and being disposed adjacent said diaphragm.

5,297,579

BALL AND SEAT-TYPE CHECK VALVE FOR DOWNHOLE ROD PUMP

Kenneth R. McConnell, 8532 - 67 Avenue, Edmonton, Alberta, Canada T6E OM8 , and Douglas A. Jensen, 9017 - 60 Street, Edmonton, Alberta, Canada T6C 3L8

Continuation-in-part of Ser. No. 529,497, May 29, 1990, Pat. No. 5,117,861. This application Apr. 14, 1992, Ser. No. 868,361
Int. Cl.[5] F16K *15/06*
U.S. Cl. 137—515.7 **26 Claims**

1. A check valve for assembly and use in a downhole rod pump, comprising:

a tubular one-piece barrel having a longitudinal bore;

a tubular nose sub adapted to thread into the lower end of the barrel and having a longitudinal bore;

a hollow cylindrical cage adapted to be contained in the upper end of the barrel bore, said cage having upstanding, spaced apart ribs forming its side wall and defining flow windows therebetween, said cage forming an internal chamber having a bottom inlet and top outlet;

a tubular seat member, forming a longitudinal bore, adapted

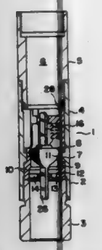
VOL 1160 ISS 5 MR 29 1994

to be retained in the lower end of the barrel bore by end support from the nose sub, said seat member forming an annular valve seat;

means for retaining the cage in the barrel bore;

a plunger having a valve member adapted to be disposed in the cage chamber, said valve member having upper and lower ends, said lower end forming an arcuate sealing surface adapted to seal against the valve seat with essentially line contact to effect a liquid-tight seal, the valve member being spaced inwardly from the ribs;

the seat member and nose sub being adapted to form a unit for cooperating with the barrel to effect a liquid-tight lower outer seal for preventing downward leakage of liquid through the check valve when the valve member is seated;



the length of the cage chamber being sufficient to allow the valve member to be displaced upwardly off the valve seat to open a flow passage extending through the assembled check valve;

the plunger having centrally located upper and lower guide stems extending axially from the upper and lower ends of the valve member;

the seat member and cage each having a transversely extending guide web forming a central aperture for receiving and loosely guiding the guide stems to centralize the valve member, each associated guide means and stem having a clearance therebetween for enabling sand particles to pass therethrough.

5,297,580

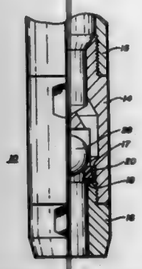
HIGH PRESSURE BALL AND SEAT VALVE WITH SOFT SEAL

Bobbie Thurman, P.O. Box 69714, Odessa, Tex. 79769

Filed Feb. 3, 1993, Ser. No. 12,639

Int. Cl.[5] F16K *15/04*

U.S. Cl. 137—533.15 **12 Claims**



1. In an oil well down-hole pump having a ball valve therein for producing fluid therefrom the improvement comprising:

a ball valve seat having a non-corrosive metal body conforming to API specifications for replacement of an existing valve seat in said down-hole pump, and having an insert bonded to said metal body forming the seating surface for the ball of said ball valve,

said insert formed from a urethane plastic having a shore "D" hardness from between 60 to 80, elongation percent of at least 230, tensile strength of at least 7000 pounds per square inch, said insert contoured to seat and seal said ball against fluid flow.

5,297,581

PIPELINE PLUGGER

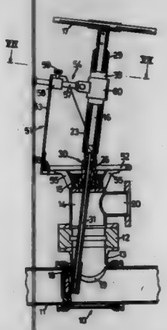
Geoffrey C. Godfrey, Mansfield, United Kingdom, assignor to Underpressure Engineering Co. Limited, Nottinghamshire, United Kingdom

Filed Jul. 20, 1992, Ser. No. 916,521

Claims priority, application United Kingdom, Jul. 25, 1991, 9116111

Int. Cl.[5] F16L *55/12*

U.S. Cl. 138—94 **7 Claims**



1. A pipe plugger of the type consisting of a split branch connection for fitting around a pipe and having a damper type valve for closing and opening the branch, a chamber sealed to the valve and having a swivel seal and an actuating rod extending upwards from below the swivel seal, an operating handle on an upper end of the rod for pushing the rod down or pulling it up, and a pipe plug pivoted on a lower end of the actuating rod, the handle and the rod enabling the plug to be pushed down, after opening of the valve, from within the chamber, down through the valve, the branch and a hole drilled in the pipe, and into the pipe, and then the swivel seal enabling the actuating rod to be swung to move the plug sideways to fit sealingly in the pipe to one side of the hole; wherein a piston is carried by the actuating rod in slidable sealing engagement in a cylinder extending upwards from the movable member of the swivel seal, a lower end of the cylinder being sealed to the movable member of the swivel seal and having the actuating rod sealingly slidable within it, and an upper end of the cylinder being slidable sealed on the actuating rod, a vent hole to atmosphere being provided from the cylinder adjacent the swivel seal, and a bleed passageway being provided in the actuating rod from adjacent the plug to just above the piston.

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5,297,582

METHOD FOR WATER LEAKAGE PREVENTION IN PIPELINE

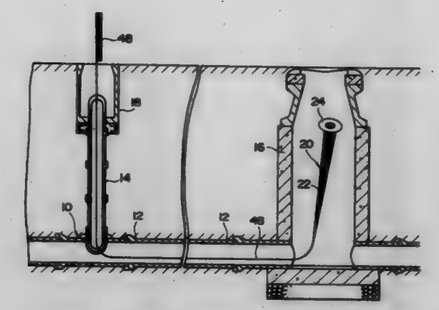
Hisashi Kitajima, and Hidehiro Noda, both of Tokyo, Japan, assignors to Kabushiki Kaisha Iseki Kaihatsu Koki and Toa Grout Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 737,379, Jul. 7, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 33,983

Claims priority, application Japan, Nov. 22, 1990, 2-315908

Int. Cl.[5] F16L *55/165, 55/18*

U.S. Cl. 138—98 **4 Claims**



1. A method of water leakage prevention in a portion connecting a first pipeline, having one end and an other end as well as an inner surface and an outer surface, to a second pipeline, having one end in communication with said first pipeline and an other end as well as an inner surface, an outer surface, and an inner diameter, comprising the steps of:

passing an elastically deformable elongate member from the other end of the second pipeline to the one end of the first pipeline;

engaging an impermeable cut-off member, having an expandable hose portion and a flange portion integrally provided at one end of the hose portion, with said elongate member at the one end of said first pipeline at said hose portion, said hose portion having a length longer than that of said second pipeline;

drawing said cut-off member into said first and second pipelines by drawing back said elongate member toward said other end of said second pipeline to dispose said cut-off member in said first and second pipelines, so that the flange portion may be positioned within said first pipeline and the hose portion may extend within said second pipeline;

maintaining said flange portion in liquid-tight contact with said inner surface of said first pipeline;

disposing an elastically deformable sheet-like base wound in a cylindrical form to be radially expandable within said first pipeline such that a hole in said base confronts the opening of the flange portion of the cut-off member, said hole having a diameter approximately equal to the inner diameter of said second pipeline;

pressing said flange portion on said inner surface of said first pipeline by means of said base by radially expanding said base, and maintaining said base in a radially expanded state by mutually engaging a plurality of engaging portions provided at said base; and

maintaining said hose portion so that said hose portion may be in contact with said inner surface of said second pipeline in order to cover said inner surface of said second pipeline over the entire length of said second pipeline from the inside with said hose portion.

5,297,583

APPARATUS FOR LIMITING A LEAK IN THE EVENT OF A RUPTURE IN PIPEWORK

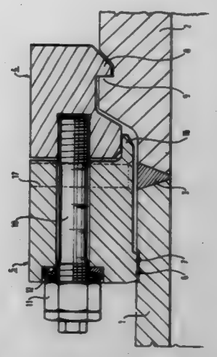
Bernard Bioret, Nantes, France, assignor to ACB, Paris, France

Filed Sep. 13, 1991, Ser. No. 759,371

Claims priority, application France, Sep. 13, 1990, 90 11338

Int. Cl.[5] F16L *55/16*

U.S. Cl. 138—99 **6 Claims**



1. A device for permitting axial expansion of a pipework and for restricting leakage in the event of rupture of a section (3) of pipework by preventing offset of the respective axes of ruptured portions of said pipework upon rupture of the pipework at said section (3), said device comprising:

two flanges (4, 5) mounted concentrically on said pipework on respective sides of said section (3) of the pipework to be protected, each of said flanges including means for respectively fixedly securing said flanges axially on said pipework to opposite sides of said section (3), assembly means (10, 11) coupling said flanges including members (12) having axial resilience for permitting said pipework on respective sides of said section (3) to expand axially, and each flange being constituted by two half-collars (5A, 5B), assembled together and extending completely about the periphery of said pipework, whereby the portions of the pipework to respective sides of the section (3) are prevented from being thrown out of alignment in the event of rupture of the pipework at said section (3).

5,297,584

PIPE SEAL

Robert L. Goad, Woodstock, and Ronald G. Marotta, Antioch, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.

Filed Mar. 5, 1992, Ser. No. 846,159

Int. Cl.[5] F16L *55/168*

U.S. Cl. 138—99 **10 Claims**

1. Apparatus for sealing a leak in a pipe, said apparatus comprising:

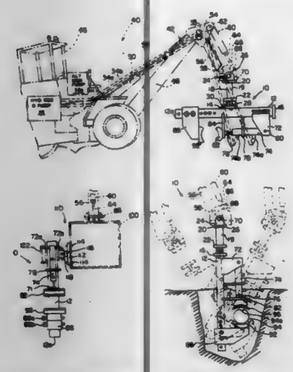
a frame;

mounting means coupled to said frame for attaching said frame to an entrenching bucket of a backhoe, said mounting means including a rotatable mounting arrangement for attaching said frame to said entrenching bucket for maintaining said frame either in an inclined or in a generally upright orientation, wherein said entrenching bucket provides support for said frame and wherein said rotatable mounting arrangement includes a plate attached to a lateral portion of said bucket and first and second cylindrical connecting arms respectively mounted to said plate and to said frame and coupled together in a rotatable, telescoping manner, said rotatable mounting arrangement further

including a coupling pin inserted through said first and second connecting arms for maintaining said frame in a fixed inclined or generally upright orientation;

a first movable pipe engaging block and a second fixed pipe engaging block attached to said frame, wherein said first and second engaging blocks are adapted for engaging opposed outer surfaces of the pipe; and

hydraulic means mounted to said frame and coupled to said first movable pipe engaging block for positioning and applying pressure to said first pipe engaging block over the leak for sealing the leak.



5,297,585

ROOM TEMPERATURE SHRINKABLE TUBE

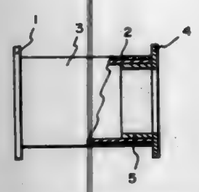
Hiroyuki Andoo; Norio Adachi, and Osamu Miyata, all of Oita, Japan, assignors to Nishi Nippon Electric Wire & Cable Co. Ltd., Oita, Japan

Filed Apr. 21, 1992, Ser. No. 871,404

Claims priority, application Japan, Apr. 24, 1991, 3-059317[U]

Int. Cl.[5] F16L *47/00*

U.S. Cl. 138—103 4 Claims



1. A room temperature shrinkable tube apparatus comprising:

an cylindrical shell with a space through the center;

said cylindrical shell having a flange at a first end thereof;

an elastic tube covering said cylindrical shell;

said elastic tube having an inner diameter with an unstretched inner diameter dimension that is smaller than an outer diameter of said cylindrical shell;

said inner diameter being enlarged to fit said elastic tube on said cylindrical shell;

said elastic tube being removable from said cylindrical shell by means of sliding said elastic tube on an outer diameter surface of said cylindrical shell;

said elastic tube having an elasticity at room temperature such that said inner diameter returns to said unstretched inner diameter dimension when said elastic tube is removed from said cylindrical shell;

a stopper having first and second ends;

said stopper having a flange at said first end thereof; and

said second end of said stopper being fitted in said space in said cylindrical shell.

5,297,586

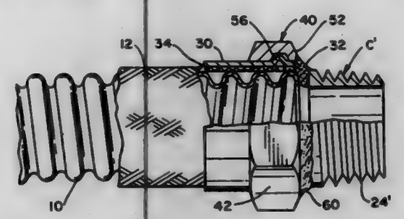
FLEXIBLE METAL HOSE ASSEMBLY INCORPORATING MODIFIED BRAID RING WITH ANNULAR MEMBER HAVING TOOLS FLATS

Robert McIntosh, 220 Fox Hollow Dr., #310, Mayfield Heights, Ohio 44124

Filed Mar. 16, 1993, Ser. No. 33,102

Int. Cl.[5] F16L *55/00*

U.S. Cl. 138—109 19 Claims



1. A flexible hose assembly comprising:

a corrugated tube having a first end;

a braid ring received over the tube and having a first end generally aligned with the tube first end, the ring having a smooth outer surface; and

an annular member closely received over the ring, the annular member having at least first and second tool receiving flats generally diametrically disposed on its outer peripheral surface adapted to receive an associated tool, the ring and annular member being mechanically connected together to limit relative movement therebetween.

5,297,587

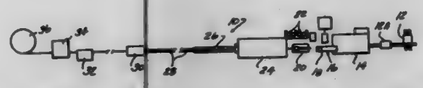
SEALED DOUBLE WALL STEEL TUBING HAVING STEEL OUTER SURFACE

Arnold T. Johnson, Davisburg, Mich., assignor to ITT Corporation, New York, N.Y.

Division of Ser. No. 599,217, Oct. 17, 1990, Pat. No. 5,145,103, which is a continuation-in-part of Ser. No. 525,787, May 18, 1990, Pat. No. 5,069,381. This application Jun. 29, 1992, Ser. No. 905,721

Int. Cl.[5] F16L *9/14*

U.S. Cl. 138—143 8 Claims



1. A brazed double wall tube having a defined exposed steel outer surface, the outer surface having an outer boundary layer essentially free of metal constituents not derivable from steel, the tube comprising:

an inner wall composed of non-ferritic steel;

an outer wall composed of non-ferritic steel, said outer wall having an outer face forming the defined exposed steel surface, said outer face completely consisting of exposed non-ferritic steel; and

an intermediate layer interposed between said inner wall and said outer wall and fused thereto, said intermediate layer consisting essentially of a bonding metal selected from the group consisting of copper, silver, copper alloys, silver alloys and mixtures thereof, wherein said intermediate layer and said inner wall and outer walls respectively are essentially uniformly and continuously fused to one another, and wherein the double-wall tube is produced by a process comprising the steps of:

sequentially forming an unbrazed, unsealed continuous double-wall tube of a predetermined first circumference from an elongated metal sheet of a defined width, said metal sheet composed of said non-ferritic steel having a first defined surface region of exposed non-ferritic steel and a second defined region having said bonding metal in overlying relationship to said non-ferritic steel sheet, said bonding metal capable of being electroplated in overlying relationship over said non-ferritic steel and forming a fusion bond therewith, said exposed non-ferritic steel region having a width less than said defined width and essentially equal to said circumference of said resulting double-wall tube;

rapidly raising the surface temperature of said unbrazed, unsealed continuous tube to an elevated temperature sufficient to trigger fusion between said non-ferritic steel and said overlying bonding metal, said temperature elevation occurring in a humidified gaseous atmosphere consisting essentially of at least one essentially non-reactive carrier gas and sufficient hydrogen to achieve and maintain fluxing;

maintaining said unsealed continuous tube in contact with said humidified gaseous atmosphere at said elevated temperature for an interval sufficient to permit fusion between said overlying bonding metal and said non-ferritic steel to form a fused leak-proof continuous double-wall metal tube having an exterior surface of exposed non-ferritic steel;

after fusion between said bonding metal and said non-ferritic steel has occurred, maintaining said fused double-wall metal tube in said humidified gaseous atmosphere and allowing said fused continuous double-wall metal tube to cool to a temperature in a first lowered temperature range, said first lowered temperature range being lower than said fusion temperature and higher than the temperature at which an initial metallurgical transformation of the non-ferritic metal from an austenitic phase to an intermediate phase occurs;

then, rapidly cooling said fused continuous double-wall tube to a temperature in a second lowered temperature range, said second lowered temperature range being lower than the temperature at which metallurgical transformation of said fused metal from said intermediate phase occurs; and

after reaching said temperature in said second lowered temperature range, slowly cooling said fused continuous double-wall tube in a non-oxidative atmosphere to a third lowered temperature below which said bonding metal fused on said continuous metal tube is not reactive with oxygen.

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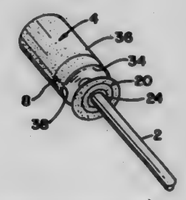
PIPE INSULATION END CAP

Chris J. Botsolas, Clearwater, Fla., assignor to Carol M. Botsolas, Clearwater, Fla.

Continuation of Ser. No. 782,667, Oct. 25, 1991. This application Jun. 4, 1993, Ser. No. 73,278

Int. Cl.[5] F16L *55/10*

U.S. Cl. 138—149 11 Claims



1. An end cap for pipe insulation comprised of a tape strip surrounding the terminal portion of the pipe insulation; caulking compound adhering to the end of the insulation; and a flat disc to fit within an area defined by the tape comprising concentric score lines on the disc for sizing the disc to the outer diameter of the pipe insulation.

5,297,589

HEDDLE FRAME WITH DETACHABLE CORNER CONNECTIONS

Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

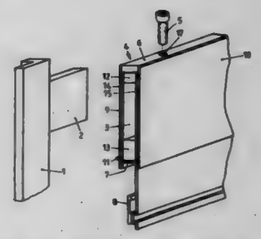
PCT No. PCT/CH91/00240, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO92/09730, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 26, 1991, Ser. No. 916,114

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 4038384

Int. Cl.[5] D03C *9/06*

U.S. Cl. 139—91 10 Claims



1. A heddle frame comprising a hollow frame stave and opposed lateral supports, the frame stave having a detachable corner connection between each of the supports and the frame stave, each said corner connection comprising a projection on each said support, the frame stave comprising a pair of thin, opposing and spaced side walls having opposed inner surfaces, a pair of spaced longitudinal support elements located between said side walls and connected thereto, a rigid insert provided at each said corner connection being located between said side walls, each said insert having spaced opposed reinforcing walls defining an open cavity, the projection on each of the lateral supports extending into the cavity, threaded fastener means extending through one of said support elements and bearing against each said projection for clamping each of the lateral supports to the frame stave, said reinforcing walls of each said insert being connected to the opposed inner surfaces of said thin side walls of said frame stave for transmitting pull or thrust forces generated during a weaving operation from the lateral supports to the frame stave via the thin side walls and for generating an expanded thrust area along the longitudinal direction of the support elements.

5,297,590

PAPERMAKING FABRIC OF BLENDED MONOFILAMENTS

Thomas B. Fleischer, Pelzer, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Continuation-in-part of Ser. No. 908,472, Jul. 6, 1992, Pat. No. 5,228,482. This application Feb. 11, 1993, Ser. No. 16,256

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

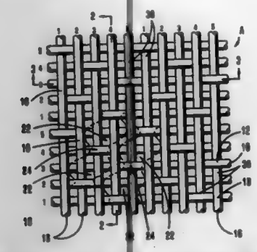
Int. Cl.[5] D03D *13/00*

U.S. Cl. 139—383 A 21 Claims

1. A woven fabric for use on a paper making machine having a support surface and a running surface, said fabric comprising a first set of synthetic filaments disposed in generally parallel relationship and in a machine direction; a second set of synthetic filaments disposed generally in parallel relationship in a

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cross machine direction and transversely of said first set of filaments' said first and second sets of filaments being interwoven with each other so as to be serpentinely configured to provide a first grouping of machine direction filaments having coplanar support surface crossovers, which cross over filaments of said cross machine direction filaments and lie along a first substantially horizontal plane, and a second grouping of machine direction filaments having sub-support surface crossovers which cross over filaments of the cross machine direction filaments and lie along a second substantially horizontal plane spaced below said first substantially horizontal plane, and said set of cross machine direction filaments having coplanar support surface crossovers which cross over machine



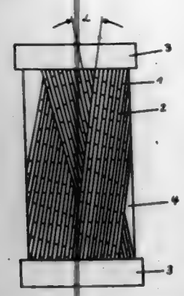
direction filaments and are recessed below said first plane formed by said first grouping of machine direction crossovers, said set of cross machine crossovers are disposed above said second plane of said second grouping of machine direction crossovers, said first grouping of machine direction crossovers and said cross machine direction crossovers are arranged in spaced relationship so as to define diagonally arranged pockets across said support surface, said pockets being separated from each other across said support surface by said first grouping of machine direction crossovers and interconnected in said machine direction along the length of said fabric at said cross machine crossovers; and; wherein at least one of said first and second set of filaments are blended synthetic monofilaments.

5,297,591

HOLLOW FIBER BUNDLE

Ulrich Baurmeister, Wuppertal, Fed. Rep. of Germany, assignor to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 880,712, May 8, 1992, Pat. No. 5,224,522, which is a division of Ser. No. 654,596, Feb. 13, 1991, Pat. No. 5,141,031. This application Mar. 31, 1993, Ser. No. 40,203
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004797
Int. Cl.[5] D03D *15/00*
U.S. Cl. 139—383 R **2 Claims**



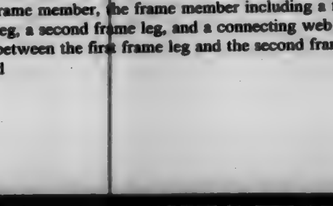
1. A hollow fiber bundle having a lengthwise axis and comprising a plurality of woven hollow fiber tapes in which hollow fibers are in a form of warp threads of the woven hollow fiber tapes, the hollow fibers of each woven hollow fiber tape form an angle with the lengthwise axis of the bundle, the hollow fibers are arranged essentially parallel to one another inside each woven hollow fiber tape, and some part of the woven hollow fiber tape forms an angle of intersection with an adjacent woven hollow fiber tape, the woven hollow fiber tapes having a plurality of hollow fibers held together by a low density double weft thread weave, wherein the hollow fibers of each woven hollow fiber tape form an angle of ≦15° with the lengthwise axis of the bundle and the angle of intersection with adjacent woven hollow fiber tapes is ≦30°.

5,297,592

METHOD OF DISCHARGING A WEFT YARN WOUND AROUND A DRUM

Yujiro Takegawa, Kaiboku, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Ishikawa, Japan

Filed Feb. 16, 1993, Ser. No. 18,321
Claims priority, application Japan, Feb. 18, 1992, 4-060995
Int. Cl.[5] D03D *47/34*
U.S. Cl. 139—450 **1 Claim**



1. A method of discharging a weft yarn in a jet loom when said weft yarn is broken between a picking nozzle and a fixed drum type weft yarn measuring and storing device, comprising the steps of:

delivering a weft yarn in a looped shape with end portions and a leading tip end extending between a winding yarn guide and a drum in said weft yarn measuring and storing device to a yarn sucking device aligned with an outlet of said winding yarn guide by generating an air current in said winding yarn guide of said weft yarn measuring and storing device in a picking direction;

while keeping a retaining pin from being advanced to said drum in said weft yarn measuring and storing device, whereby one of the end portions of said weft yarn fed in a loop shape is linked to said outlet of said winding yarn guide while the other end is retained by said retaining pin, thereby stably positioning said weft yarn at the leading tip end portion thereof;

delivering said looped weft yarn to said yarn sucking device;

retracting said retaining pin from the surface of said drum after said sucking device receives said looped weft yarn; and

drawing the delivered weft yarn so as to discharge the weft yarn on the drum.

5,297,593

STEEL LINE CLOSED LOOP FORMING TOOL

Robert P. Holzman, 4550 NE. Campaign St., Portland, Oreg. 97218

Filed Feb. 8, 1993, Ser. No. 14,755
Int. Cl.[5] B21F *1/06*
U.S. Cl. 140—104 **1 Claim**

1. A steel line closed loop forming tool, comprising,

a frame member, the frame member including a first frame leg, a second frame leg, and a connecting web extending between the first frame leg and the second frame leg, and

a first crank arm mounted to the connecting web, wherein the first crank arm has a first handle rotatably and orthogonally mounted relative to the first crank arm,

and

a first axle shaft orthogonally mounted to the connecting web mounting the first crank arm in a spaced relationship relative to the first handle, with the first handle parallel to the first axle shaft,

and

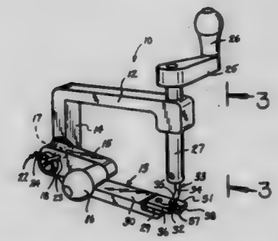
the first axle shaft including a fixed hub extending axially beyond the first crank arm terminating in a planar end wall, with the planar end wall including a first guide pin and a second guide pin arranged in a parallel relationship relative to one another and orthogonally oriented relative to the planar end wall,

and

arm means mounted to the first crank arm to effect bending of a wire workpiece directed between the first guide pin and the second guide pin,

and

the arm means includes an L-shaped bending arm, having a first leg fixedly and orthogonally mounted to the first crank arm in adjacency to the planar end wall, and the L-shaped bending arm including a second leg orthogonally mounted to the first leg, wherein the second leg is oriented parallel and over the planar end wall in spaced adjacency to the first guide pin and the second guide pin to receive the wire member within the first leg and second leg and bend the wire member into a loop about the first guide pin,



and

a second crank arm, the second crank arm including a second handle orthogonally and rotatably mounted to the second crank arm and a second axle shaft orthogonally mounted to the second crank arm parallel to the second handle, with the second axle shaft extending orthogonally through the first frame leg in a spaced orientation relative to the second frame leg orthogonally oriented relative to the second frame leg, and to a second frame leg interior wall that is in facing relationship relative to the first frame leg, and the second frame leg interior wall including a recess floor at a free distal end of the second frame leg spaced from the second frame leg interior wall, wherein the recess floor includes an alignment plate fixedly mounted to the recess floor, and the alignment plate includes an alignment plate groove arranged to receive the metallic wire therewithin, and the second axle shaft having an L-shaped mounting rod, the L-shaped mounting rod including a mounting rod first leg coaxially aligned with and fixedly mounted to the second axle shaft at a free distal end of the second axle shaft spaced from the first frame leg between the first frame leg and the alignment plate, and a mounting rod second leg orthogonally and fixedly mounted to the first leg arranged to receive the loop thereabout, and the alignment plate having a first side wall portion extending from the groove to the second frame leg interior wall, and a side wall second portion extending from the groove to a front end wall portion of the alignment plate spaced from the second frame leg, wherein the side wall second portion is arranged to provide abutment for the wire member extending from the loop,

and

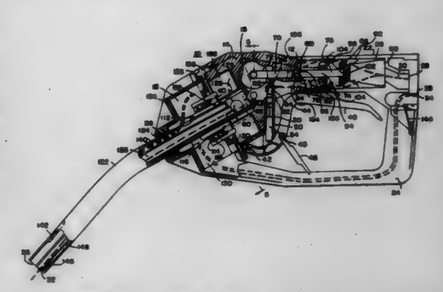
a storage plate mounted to the connecting web, wherein the storage plate includes a plurality of parallel grooves, and the storage plate formed of a ferrous magnetic material arranged to secure a plurality of further wire members within the grooves.

5,297,594

VAPOR RECOVERY NOZZLE

Joshua E. Rabinovich, 15 Voss Terr., Newton, Mass. 02159

Filed Jun. 3, 1992, Ser. No. 893,335
Int. Cl.[5] B65B *31/00*; B67D *5/32*
U.S. Cl. 141—59 **18 Claims**



1. A dispensing nozzle having a vapor recovery system comprising:

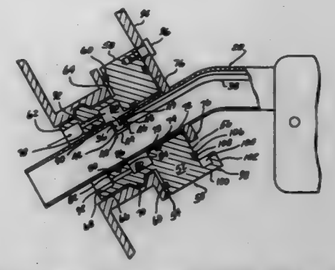
a body having a fuel conduit for passage of fuel terminating at a spout secured to said body with said spout having a distal end for placement within a fuel tank, a vapor conduit in said body and continuous with a vapor passage in said spout for flow of vapor from the tank to said body, and a vapor suction centrifugal pump in said body for moving vapor through said vapor passage and said vapor conduit.

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APPARATUS FOR INTRODUCING VOLATILE FUEL INTO A STORAGE TANK

Clay Haile, Farmington Hills, and Ram D. Bedi, Birmingham, both of Mich., assignors to K. J. Manufacturing Company, Wixom, Mich.

Filed Mar. 12, 1993, Ser. No. 30,831
Int. Cl.[5] B65D *43/16*
U.S. Cl. 141—59 **17 Claims**



1. An apparatus for introducing volatile fuel into an on-board fuel storage tank of an automotive vehicle, and said apparatus adapting to a conventional automotive vehicle hav-

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ing a fuel filler line, a threaded region along said fuel filler line, and a fuel receiving opening in fluid communication with the on-board fuel storage tank, the volatile fuel introduction occurring with reduced discharge of fuel vapors into the surrounding atmosphere, the apparatus comprising:

means for receiving fuel into the on-board storage tank of the automotive vehicle, the fuel receiving means including a fuel filler cap releasably and sealingly engageable in the fuel receiving opening of the automotive vehicle, the cap having an essentially flat planar surface member oriented in a plane perpendicular to a longitudinal axis of the automotive vehicle fuel filler line when the cap is in sealing engagement therewith, the flat planar surface of the fuel filler cap having an inner face engageable with the inlet in the fuel filler line of the automotive vehicle, an opposed upper face, and a central aperture extending therethrough;

at least one first sealing flange located on the inside diameter of the fuel filler cap defining the central aperture and providing deformable sealing contact between the inside diameter of the fuel filler cap and a fuel filler nozzle device so that upon the insertion of the fuel filler nozzle device into the central aperture, fuel vapors and liquid fuel are prohibited from escaping into the surrounding atmosphere; and

means for dispensing fuel from a fuel storage site remote from the automotive vehicle into the on-board fuel storage tank of the automotive vehicle permanently connected to the fuel filler cap, the fuel filler cap being at least partially rotatably therearound, the fuel dispensing means comprising:

a) the fuel filler nozzle device engageable with the fuel receiving opening of the automotive vehicle, the fuel filler nozzle device having a fuel directing conduit receivable within the central aperture extending through the fuel filler cap and means for regulating and interrupting fuel flow therethrough, the fuel directing conduit having a fuel inlet end, an opposed fuel outlet end, and a vapor receiving inlet located in the body of the fuel directing conduit between the fuel inlet and the fuel outlet, the fuel directing conduit further having a vapor conveying line contained within the fuel conveying conduit having a first end and a second end, the first end of the vapor conveying line being in fluid communication with the vapor receiving inlet; and

b) means for conveying fuel from the remote storage site to the fuel inlet end of the fuel filler nozzle.

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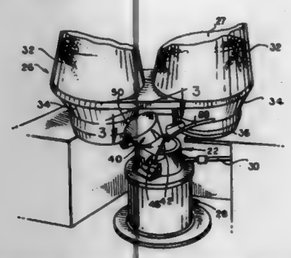
DETERGENT DISPENSER

James H. Anson, Auburn, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Dec. 7, 1992, Ser. No. 986,584

Int. Cl.[5] B65B 3/00; B67C 11/00

U.S. Cl. 141—98 **9 Claims**



1. A dispensing assembly in combination with a beverage brewing apparatus for controllably dispensing and directing a cleaning material into said beverage brewing apparatus, said beverage brewing apparatus including a brewing chamber for brewing a beverage from a beverage brewing substance, said brewing chamber having a receiving mouth through which a beverage brewing substance is deposited in said brewing chamber for brewing a beverage, said dispensing assembly comprising:

a hinge part;

a funnel body cooperatively attached to said hinge part, said funnel body having a pouring port and a dispensing port, said dispensing port being smaller than said pouring port; and

means for movably attaching said hinge part and attached funnel body proximate to said receiving mouth for positioning said dispensing port of said funnel body in communication with said receiving mouth of said beverage brewing apparatus.

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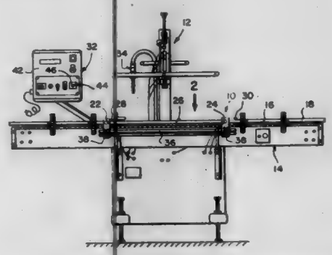
CONTAINER FILLER INDEXING COUNTER

Kenneth J. Herzog, 200 Mill Rd., Riverhead, N.Y. 11901

Filed Jan. 26, 1993, Ser. No. 9,590

Int. Cl.[5] B65B 3/12

U.S. Cl. 141—157 **2 Claims**



1. A container filler indexing counter for an automatic filling machine comprising:

a) a filler mechanism and a conveyor having a belt and guide rail for carrying a plurality of containers therealong;

b) two cylinders spaced apart and adjustably mounted to said conveyor, in which said first cylinder is positioned as an incoming stop gate, while said second cylinder is positioned as an exit stop gate to form a filling area therebetween;

c) two fiber optic sensors, spaced apart and adjustably mounted to the guide rail of said conveyor, in which said first fiber optic sensor is positioned as a counter for the containers entering the filling area, while said second fiber optic sensor is positioned as a counter for the containers leaving the filling area;

d) means for operating said two cylinders by count information received from said two fiber optic sensors, so that at least one container entering the filling area on the belt of said conveyor can be automatically filed by said filler mechanism and then removed therefrom on the belt of said conveyor; wherein said two cylinders are adjustably mounted to said conveyor by a mounting rail attached to a side of said conveyor and a pair of mounting brackets, in which each said mounting bracket is adjustably mounted between one of said cylinders and said mounting rail; wherein said operating means includes:

e) a pair of fiber optic eyes, each connected to one of said fiber optic sensors;

f) a programmable controller connected to said pair of fiber optic eyes, said pair of cylinders and the filler mechanism; and

g) means for entering into said programmable controller the amount of containers to be filled at the filling area.

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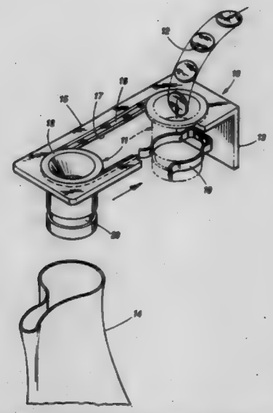
COIN BAG HOLDING DEVICE FOR COIN HANDLING MACHINES

James M. Rasmussen, Chicago, Ill., assignor to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed Sep. 17, 1992, Ser. No. 946,754

Int. Cl.[5] B65B 67/04

U.S. Cl. 141—314 **10 Claims**



1. A bag holding device for coin bags which require periodic removal and replacement, said device comprising:

a tube having an open upper end for receiving coins and an open lower portion adapted to fit into the mouth of a coin bag,

a support bracket for receiving said tube, said bracket forming an elongated horizontal track to support and guide said tube for sliding movement between an advanced position where the tube receives coins and a retracted position where the tube is accessible for removal and replacement of the coin bag, and

a clamping device at the advanced position of said tube for gripping both the tube and a coin bag on the lower portion of the tube to hold the coin bag on the tube and to hold the tube in said advanced position.

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CLOSURE DEVICE FOR SEALING REAGENT CONTAINERS IN AN AUTOMATIC PIPETTING SYSTEM

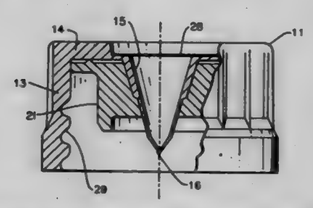
Rudolf Bucheli, Hünenberg, Switzerland, assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Mar. 10, 1992, Ser. No. 848,766

Claims priority, application Switzerland, Mar. 19, 1991, 823/91

Int. Cl.[5] B65D 17/42; G01N 1/10

U.S. Cl. 141—329 **13 Claims**



1. A cap member for a reagent container for use in an analysis system with an automatic pipetting device having a pipetting needle for transferring small quantities of at least one reagent from the reagent container to a reaction cell, the cap comprising

a) an outer cylindrical side wall having an inner and an outer surface and having an axis of symmetry parallel to the side wall;

b) an annular top wall adjacent to the side wall and having a circular aperture; and

c) an inner conical wall with an inner and outer surface adjacent to the top wall tapering inwardly from the aperture in the top wall and away from the side wall along the axis of symmetry, and ending at a tip configured and proportioned to be piercable by the pipetting needle,

the cap member being formed as a single piece of plastic material wherein the inner conical wall has a first and second part, the first part forms a first angle with the axis of symmetry and the second part ending in the tip forms a second angle with the axis of symmetry, the second angle being greater than the first angle, wherein the first angle is about 5° to about 30° and the second angle is about 20° to about 60° with respect to the axis of symmetry.

5,297,600

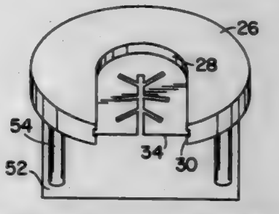
CONTAINER EMPTYING DEVICE

Kenneth V. Downes, 2619 Potsprings Rd., Timonium, Md. 21093; Michael R. Reitz, 2124 Corbin Rd., Baltimore, Md. 21214, and Frances S. Downes, 4133 Edinburgh Dr., Virginia Beach, Va. 23452

Filed Jan. 13, 1993, Ser. No. 4,052

Int. Cl.[5] B65B 1/04, 3/00; B67C 3/00

U.S. Cl. 141—364 **7 Claims**



1. A device for emptying bottles containing semi-viscous fluids, comprising, an upper member having a recess, a resiliently flexible sleeve contained within said recess of said upper member, a rear plate running perpendicular to said upper member and joined to said upper member along the rearward edge of said upper member, and a multiplicity of diagonal support members connecting said upper member to said rear plate, whereby said resiliently flexible sleeve may slide into a groove on said recess of said upper member, wherein said resiliently flexible sleeve has at least one slit cut along its length to allow the passage of the neck of an inverted bottle, and whereby said resiliently flexible sleeve is of sufficient strength to adequately hold said inverted bottle placed within said slit or group of slits to allow for gravity emptying of the contents of said inverted bottle.

5,297,601

TRIPLE HEAD HIGH SPEED LOG DEBARKER

Andy E. Munsey, LaGrande, Oreg., and Ralph R. Harvey, Post Falls, Id., assignors to Pierce-Pacific Manufacturing, Inc., Tualatin, Oreg.

Continuation-in-part of Ser. No. 850,483, Mar. 12, 1992, Pat. No. 5,247,977. This application Mar. 4, 1993, Ser. No. 27,150

Int. Cl.[5] B27L 1/00; B27M 1/02

U.S. Cl. 144—208 F **13 Claims**

1. A high speed log debarker for debarking a lengthwise-moving log comprising;

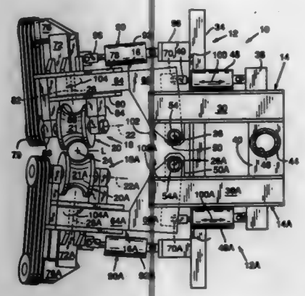
a pair of debarking subassemblies including a pair of cylindrically concave, rotating cutter elements positioned an-

VOL 1160 ISS 5 MR 29 1994 UMI

gularly asymmetrically toward one side of the log and away from an opposite side thereof;

the cutter elements each having a cutting surface, formed with a cylindrical radius of concavity about an axis of rotation of the cutter element, defining a maximum diameter of log that can be debarked;

means for moving one of the cutter elements toward and



away from the other cutter element to adapt to different log diameters; and

means for pivoting each of the cutter elements about a pivoting axis normal to their axes of rotation so that the cutter elements can nest within one another when moved toward one another; and

a third debarking subassembly including a cutter element positioned to debark said opposite side of the log.

5,297,602

WOODEN POLE BENDER

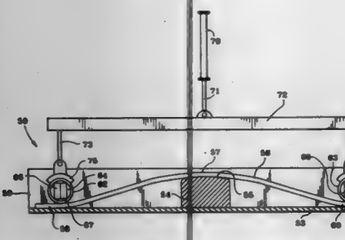
Paul J. Nobbe, 11177 U.S. Highway 52, Brookville, Ind. 47012

Continuation-in-part of Ser. No. 877,643, May 1, 1992, Pat. No. 5,183,091. This application Jan. 27, 1993, Ser. No. 9,809

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] B27H *1/00*

U.S. Cl. 144—360 **15 Claims**



6. A method of preparing wooden poles for subsequent use comprising the steps of:

harvesting a tree in the warm growing season;

removing limbs from said tree to create a wooden pole;

heating said pole in a kiln subsequent to said harvesting step but during said warm growing season to destroy living things foreign to but located in said pole; and,

storing said pole until said pole is to be used.

5,297,603

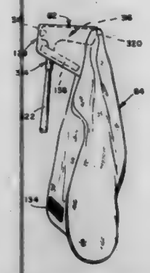
COMBINED WIPER AND CLUB HEAD COVER

William Meek, Los Angeles, Calif., assignor to MacWillie's Golf Products, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 642,389, Nov. 7, 1991, Pat. No. 5,146,968. This application Jun. 26, 1992, Ser. No. 904,702

Int. Cl.[5] A63B *57/00*

U.S. Cl. 150—160 **4 Claims**



1. A combined wiper and head cover for a golf club having a head attached to a shaft, comprising in combination:

a panel including a first section of a pliant material and a second section of a pliant material, said pliant material of said first section being different than said pliant material of said second section, said first section having an end-engaging portion inwardly extending from an edge of said panel for engaging a first end of the club head; and

fastening means along said edge in the vicinity of said end-engaging portion for releasably securing said panel to the club shaft with said end-engaging portion engaging the head's first end and with said first section covering the club head and said panel draping over a second end of the head with said second section substantially confined to one side of the shaft when the club is vertically positioned with the head above the shaft.

5,297,604

TREAD FOR RADIAL CARCASS TIRES FOR HEAVY VEHICLES

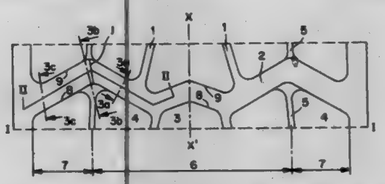
Patrick Lurois, Greenville, S.C., assignor to Compagnie Generale Des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand, France

Filed Nov. 5, 1991, Ser. No. 788,090

Claims priority, application France, Nov. 15, 1990, 90/14344

Int. Cl.[5] B60C *11/11*

U.S. Cl. 152—209 R **13 Claims**



1. A tire tread for a heavy-duty tire, wherein when the tread is formed in a circumferential configuration, said tread comprising at least one broken-line groove of generally circumferential orientation (1) and wide grooves of generally transverse orientation (2) defining at least two rows of individual blocks, characterized by the fact that the wide grooves of generally transverse orientation (2) have opposing walls of a constant and symmetrical inclination with respect to normals to the tread over a median zone (6) extending on both sides of the median plane of the tread over a center tread width of between

40% and 75% of the width of the tread and, have beyond the said median zone and up to the edges of the tread, opposing walls of an asymmetrical variable inclination from one wall relative the other, the inclination angles of the opposing groove walls having an asymmetrical variable inclination with respect to normals to the tread gradually changing from beyond the median zone to the tread edge, and by the fact that two narrow side grooves of generally circumferential orientation (5) are located in the side zones (7) of the tread at a distance from the edges not exceeding ¼ of the width of the tread and having a depth less than that of the grooves of generally transverse orientation of between 10% and 70% of the depth of said transverse grooves.

5,297,605

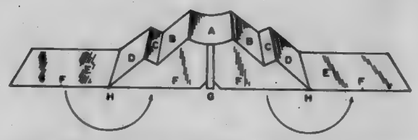
FOLDABLE TIRE CHAIN ATTACHING AID

Gary T. Littell, 6923 Burnet Ave., Van Nuys, Calif. 91405

Filed Oct. 21, 1992, Ser. No. 964,062

Int. Cl.[5] B25B *27/22*

U.S. Cl. 152—213 R **3 Claims**



1. A support apparatus for holding tire chains for placement around tires comprising: first and second half sections, each of said sections having left and right side walls, and having an upper wall connecting said left and right walls, each of said upper walls having a curved surface and a sloped surface wherein a cup-shaped surface is formed where said upper walls meet, each of said sloped surfaces having a notched portion running across the width of the apparatus so as to divide each sloped surface into top and bottom slopes, each of said bottom slopes having a bottom edge, left and right guide means in pivotal connection with each said section along a line running widthwise along said bottom edge of each of said section, and a layer of frictional material overlying each of said upper surfaces and also overlying said cup shaped portion, whereby the guide means can be folded underneath the apparatus in order to enclose a space defined by the side walls and the upper walls.

5,297,606

COMBINATION OF A TIRE AND RIM FOR AVOIDING THE DISLODGING OF THE BEADS OF THE TIRE

Jean P. Pompier, Volvic, and Jean-Claude Blazy, Chatel-Guyon, both of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

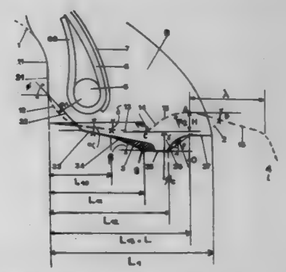
Filed Jan. 28, 1992, Ser. No. 826,887

Claims priority, application France, Feb. 8, 1991, 91 01574

Int. Cl.[5] B60C *15/02*

U.S. Cl. 152—539 **4 Claims**

1. A combination formed of a light-vehicle tire without independent inner tube, having a radial carcass reinforcement (6) and a tread reinforcement, the carcass reinforcement (6) being anchored in each bead (B) by winding around a substantially nonextendible bead wire (5), and a rim (1) provided with two flanges (11), a circumferential groove (4) and, at least on the outer side of the vehicle, a rim seat forming an angle (δ) of 5°±1° with the axis of rotation of the combination and provided with a circumferential protrusion (2) symmetrical in revolution around said axis of rotation, the protrusion having a point A which is radially furthest from the axis of rotation which point is located at an axial distance L from the rim flange (11), characterized by the fact that, seen in meridian section, the rim seat includes a first frustoconical generatrix (13) intermediate a flange and the circumferential protrusion (2), the point A of which is located at a radial distance H, measured between a point C of the seat having the minimum diameter and said point A, of between 3 and 4 mm, said point A being connected axially to the first frustoconical generatrix (13) by a circular arc (15) having its center on a perpendicular to the axis of rotation passing through A and of radius R_2 of between 6 and 8 mm, and a second circular arc (14) of radius R_3 tangent to the first arc (15) and to the first frustoconical generatrix (13) of the seat, R_3 being equal to 2±1 mm, and said point A being connected axially on the inside to the circumferential groove (4) by a second frustoconical generatrix (16) forming an angle (θ) of between 10° and 30° with the axis of rotation and of an axial width (λ) at east equal to 5 mm; by the fact that the bead (B) intended to be mounted on the rim seat provided with the circumferential protrusion (2) has an outer vertical wall (31) and a base (3) the meridian profile of which is adapted to the meridian profile of said seat, which meridian profile has, axially on the inside from a point spaced from the



vertical wall (31) of the bead (B) by a distance (L_{12}) of between .9 L–1 mm and 0.9 L, a generatrix (36) in the form of a circular arc of radius (ρ) of between 4 and 8 mm, the chord subtending this generatrix (36) forming an angle (γ) of between 20° and 40° with the axis of rotation, said generatrix (36) in the form of a circular arc being extended by a final quasi-cylindrical generatrix (37), the ends axially to the inside of said circular arc and final quasi-cylindrical generatrices (36, 37) being axially spaced, respectively, from the vertical wall (31) of the bead (B) by the distance L and a distance (L_1) which is greater than L by at most 5 mm; and by the fact that the vulcanized rubber surrounding the bead wire (5) - carcass reinforcement (6) combination and the turn-up (60) of the latter axially on both sides of said combination and at least in the part radially to the inside of an axis parallel to the axis of rotation passing through the end of the turn-up (60) of the carcass reinforcement (6) has a secant modulus of elasticity in extension under an elongation of 10% equal to at least 4 MPa.

5,297,607

SHEET CURTAIN WITH VERTICAL BLIND ACTUATING MECHANISM

Pierre Beauchamp, 17, Place Kieffer, Dollard-des-Ormeaux (Quebec), Canada H9B 1H9

Filed Dec. 15, 1992, Ser. No. 990,798

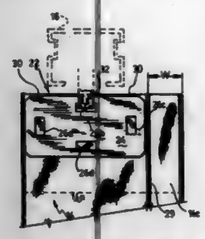
Int. Cl.[5] E06B *9/06*

U.S. Cl. 160—84.1 C **8 Claims**

1. In combination, an integral, flexible, translucent yet untransparent, sheet curtain, defining a width and having a substantially straight, top edge section, means for suspending said curtain spacedly over ground by said top edge section thereof, means for biasing said curtain into a generally wavy configuration about its said width, whereby a plurality of first, generally open, vertical pockets are defined successively about said curtain width, each one of said sheet curtain first pockets defining a sheet curtain section base and two generally parallel sheet curtain section side legs, and means for tilting in unisson said sheet curtain section side legs from a first limit position, in which said side legs are generally orthogonal to said curtain

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section bases and said first pockets are generally open, through an intermediate position, in which said side legs are oblique relative to said curtain section bases and said first pockets are partially closed, to a second limit position, in which said side legs are generally parallel to said curtain section bases and edgewisely abut in successive pairs against one another and said first pocket becomes generally closed; wherein said tilting means consists of a number of rigid, polygonal, flat members, each polygonal member being freely engaged into a curtain sheet second, generally closed pocket defined by a pair of adjacent sheet sections from two successive said first pockets, each said second pocket being located at the top edge portion of said curtain far away from the bottom edge portion thereof



so that most of said curtain sheet hangs freely beneath said polygonal members, each said second pocket defining top seat means against which edgewisely bears a corresponding said polygonal member, and means for supporting said polygonal member over ground and for pivoting same about a vertical axis; wherein said polygonal member includes a few peripheral bores spaced from one another, said supporting means including a plurality of hook members destined to slidingly engage a horizontal track, said horizontal track of the type to be anchored horizontally over a window frame to be concealed by said curtain, each said hook member destined to engage a selected one of said bores from a corresponding one of said polygonal members.

5,297,608

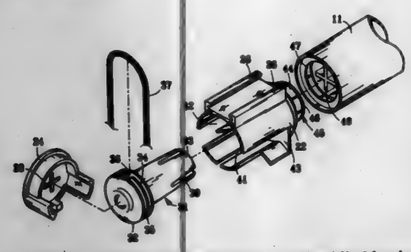
TILTER MECHANISM

William H. Rap, Buena Park, Calif.; Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Topeka, Kans., assignors to Nien Made Enterprise Co., Ltd., Chang Hua, Taiwan

Filed Dec. 4, 1992, Ser. No. 986,012

Int. Cl.[5] E06B *9/38*

U.S. Cl. 160—177 6 Claims



1. A tilter mechanism for use with a Venetian blind having a rotary tubular headrail, a rotary tubular foot rail, at least two ladder sets fixed between the headrail and the foot rail with each ladder set having an inner ladder tape and an outer ladder tape running in parallel with each other as well as a plurality of equidistant and parallel horizontal connecting tapes each supporting a slat between the inner and outer ladder tapes above respective horizontal connecting tapes, said tilter mechanism comprising:

a hollow drum secured to the head rail, said drum having a middle cord outlet and a side cord outlet;

an end cover secured to said drum;

a hollow rotary mechanism rotatably mounted in said drum, said rotary mechanism including a pulley section having two cord ways defined by three spaced rims with a notch formed in a central one of said rims for interconnecting the two cord ways and a connector which extends out of said drum and engages with the headrail for synchronous motion therewith;

a tilt cord, made of soft material, wound around the pulley section and having an end extending out of said side cord outlet, whereby pulling of the tilt cord results in the rotary mechanism and the headrail being rotated synchronously with the inner ladder type and the outer ladder tape being linearly driven by the rotating headrail to move vertically in opposite direction so that the slats are tilted with the same degree of rotation.

5,297,609

INVESTMENT CASTING OF METAL MATRIX COMPOSITES

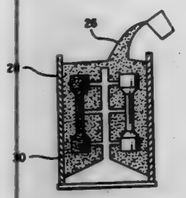
Arnold J. Cook, 372 N. Craig St., Pittsburgh, Pa. 15213, assignor to Arnold J. Cook, Pittsburgh, Pa.

Continuation of Ser. No. 594,303, Oct. 9, 1990, Pat. No. 5,113,925. This application May 15, 1992, Ser. No. 883,661

The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.

Int. Cl.[5] B22C *9/02*; B22D *19/02, 19/14*

U.S. Cl. 164—35 20 Claims



1. A method for forming a metal matrix composite within a mold of investment material comprising the steps of:

forming a preform mixture of liquid flow medium, binding agent and reinforcement material into the desired shape of said metal matrix composite;

allowing the preform mixture to solidify into said desired shape;

encasing the preform mixture within a container of investment material;

heating said preform mixture such that any water evaporates and the flow medium is removed;

sintering the remaining reinforcement material and binder agent to form a solid preform;

disposing molten metal on top of the solid preform within the container such that the molten metal forms a seal with the container;

pressurizing the molten metal such that it is forced into said preform;

solidifying said molten metal to form said metal matrix composite in the shape of said preform; and

removing said investment material from the metal matrix composite.

5,297,610

PRESSURE CASTING METHOD AND APPARATUS

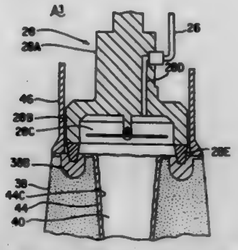
Kelichiro Noguchi, Higashihoirshima; Kouichi Hori, Kure, and Masahiko Shibahara, Minami, all of Japan, assignors to Mazda Motor Corporation, Tokyo, Japan

Continuation of Ser. No. 523,522, May 15, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 944,758

Claims priority, application Japan, May 16, 1989, 1-122216

Int. Cl.[5] B22D *18/00, 27/13*

U.S. Cl. 164—119 16 Claims



1. A pressure casting method using a mold with a casting cavity and a pouring gate through which a molten metal is fed into said casting cavity, said pressure molding method comprising the steps of:

feeding a molten metal into said mold through said pouring gate to fill said casting cavity and pouring gate with said molten metal;

forming a dead head of the molten metal so that it surrounds a top of said pouring gate;

placing a cap member on said mold to bring an under surface extending entirely around an open end of said cap member into direct contact with said dead head of said molten metal at the top of said pouring gate;

forming an air-tightly sealed chamber between said cap member and said dead head of the molten metal by pushing said cap member into said dead head and casing the cap member to penetrate into the molten metal; and

supplying pressure into said air-tightly sealed chamber to force said molten metal in said mold through said dead head.

5,297,611

CASTING OF METAL OBJECTS

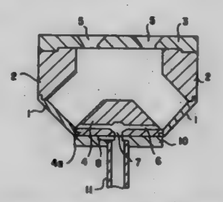
Rodney A. Legge, Woodend; John A. Eady, East Doncaster; Rodney E. Proposch, Applecross, all of Australia, and Joseph R. Ponteri, Chicago, Ill., assignors to Comalco Aluminium Limited, Melbourne, Australia

Continuation of Ser. No. 786,866, Nov. 4, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 114,242

Claims priority, application Australia, Nov. 5, 1990, PK3198

Int. Cl.[5] B22C *9/08*; B22D *15/00*

U.S. Cl. 164—353 31 Claims



1. A mold assembly for the production of metal castings by solidification of molten metal, the mold assembly defining a mold cavity for receiving liquid metal and comprising:

at least one mold segment formed from relatively low thermal conductivity material;

a primary inlet for filling said mold cavity with liquid metal;

a feeding system for feeding liquid metal to said mold cavity during solidification of metal in said mold cavity for compensating for shrinkage of metal during solidification; and

at least one thermal extraction member of a relatively high thermal conductivity material, said thermal extraction member defining part of said mold cavity and being positioned opposite said feeding system.

5,297,612

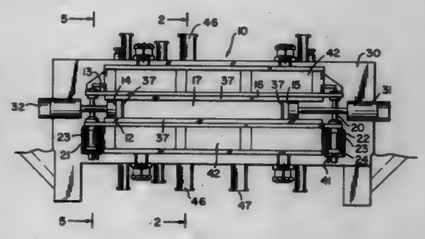
METHOD FOR CONTROLLING THE CLAMPING FORCES EXERTED ON A CONTINOUS CASTING MOLD

Thomas J. Korpela, Forest Hill, and Lester A. Foster, Jr., Baltimore, both of Md., assignors to Vöest-Alpine International Corporation, Pittsburg, Pa.

Continuation of Ser. No. 565,041, Aug. 9, 1990, abandoned. This application Nov. 27, 1992, Ser. No. 982,417

Int. Cl.[5] B22D *11/16*

U.S. Cl. 164—452 23 Claims



1. A method for controlling the clamping forces exerted on opposing sidewalls of a casting mold during a continuous casting operation, which comprises the steps of presetting the mold so as to accommodate the maximum load to be experienced by the sidewalls of the mold, securing the mold at the presetting, and controlling the forces exerted upon the sidewalls during the continuous casting operation as a function of thermodynamic stresses to which the mold is subjected

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5,297,613

PROCESS AND APPARATUS FOR PRODUCING ROTATIONALLY SYMMETRICAL BODIES

Norbert Uebber, Langenfeld, and Hans-Joachim Kreymann, Krefeld, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,619

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1991, 4135194

Int. Cl.[5] B22D *23/00*

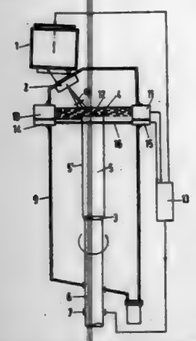
U.S. Cl. 164—457 6 Claims

1. A method for producing a rotationally symmetrical body from a molding material, such as a molten metal, which comprises atomizing the molding material in liquid form through a spraying nozzle that is disposed relative to a spray receiving surface for receiving the sprayed molding material on an initial position of said surface, forming a level of liquid molding material on said spray receiving surface forming a controllably rotating body of said liquid molding material while it is solidifying, said solidifying rotating body having a diameter, drawing the so-formed body downwardly from said initial position while continuing its rotation, continuously forming said body at said initial position, monitoring the momentary diameter of the rotating body at a plane adjacent to said initial position, and controlling said rotation by said momentary diameter.

5. Apparatus for producing a rotationally symmetrical body from a molding material, such as molten metal, comprising a container for molding material, a spray orifice for atomizing

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molding material, a rotatable spray receiving surface spaced from said orifice for receiving the atomized molding material, a chamber surrounding said orifice and said spray receiving



surface, means for determining the level of the spray receiving surface, means for monitoring the diameter of the forming body, and a controller, each of said means for determining and said means for monitoring being connected to said controller.

5,297,614

PROCESS FOR CONTINUOUS CASTING OF ULTRA LOW CARBON ALUMINUM KILLED STEEL

Nagayasu Bessho; Hisao Yamazaki, and Tetsuya Fujii, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

PCT No. PCT/JP91/01625, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO92/09387, PCT Pub. Date Nov. 6, 1992

PCT Filed Nov. 27, 1991, Ser. No. 915,708

Claims priority, application Japan, Nov. 28, 1990, 2-322693

Int. Cl.[5] B22D *11/10*

U.S. Cl. 164—488 **2 Claims**

1. In a process for continuous casting of ultra low carbon aluminum killed steel, wherein said steel is caused to flow from a tundish through a nozzle which includes a straight portion, and wherein said steel contains 6–20 ppm of calcium, less than 0.01 wt. % of sulfur, and less than 30 ppm of oxygen, the steps which comprise providing a molten steel superheat temperature in the tundish which is higher than 16° C., and providing an average flow rate of molten steel which is greater than 1.2 m/sec in the straight portion of the nozzle.

5,297,615

COMPLAINT INVESTMENT CASTING MOLD AND METHOD

Paul R. Aimone, Muskegon; Bart M. Kilinski, and Keith D. Ramthun, both of Montague, all of Mich., assignors to Howmet Corporation, Greenwich, Conn.

Filed Jul. 17, 1992, Ser. No. 916,015

Int. Cl.[5] B22C *1/02, 9/04*

U.S. Cl. 164—519 **5 Claims**

1. A method of casting one of a high melting point metallic material and a low ductility metallic material, comprising:

a) providing a refractory mold having a mold cavity for receiving molten metallic material and having a facecoat layer and a plurality of back-up layers about said facecoat layer wherein at least one of the back-up layers is a relatively weak sacrificial layer that comprises a bonded graphite-bearing layer and a crushable constituent about the graphite-bearing layer and that is deformable proximate the ductile-to-brittle transition temperature of said metallic material,

b) providing molten metallic material in the mold,

c) solidifying the molten metallic material in the mold, and

d) as the metallic material solidifies in the mold and cools below its ductile-to-brittle transition temperature, selectively deforming the relatively weak sacrificial layer to avoid hot tearing or cracking of the solidified metallic material during cooling in the mold below said ductile-to-brittle transition temperature.

5,297,616

HEAT-INSULATED PACKING FOR THE REFRIGERATED OR HOT TRANSPORT OF RECEPTACLES CONTAINING FOOD PRODUCTS

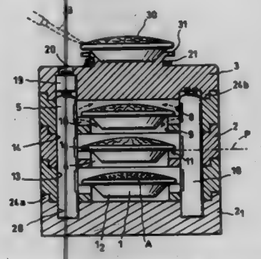
Georges Pralus, Rue de la Libération, Briennon, Pouilly Sous Charlieu 42720, France

Filed May 29, 1992, Ser. No. 890,258

Claims priority, application France, May 29, 1991, 91 06683

Int. Cl.[5] F25D *3/08, 23/12*; **F24H** *7/02, 3/00*

U.S. Cl. 165—47 **9 Claims**



1. A packing assembly for transporting food products comprising:

a bottom member;

a lid member; and

a plurality of heat-insulated trays, each of said trays including upper and lower surface portions and a cavity extending entirely through the tray from said upper surface portion to said lower surface portion;

assembly means for removably locating said plurality of trays in a superposed manner between said bottom member and said lid member so as to define a closed, heat-insulated box with the cavity of each of said plurality of trays being vertically aligned;

at least one receptacle adapted to contain a food product to be transported, said at least one receptacle including an upper section and a lower section with said upper section adapted to be supported by a respective one of said trays with said lower section thereof extending into at least one of said cavities;

means for supplying cold or hot fluid into said box; and

means for circulating the cold or hot fluid from said supplying means within said box, said circulating means providing for direct contact of the cold or hot fluid with both the upper and lower sections of said at least one receptacle.

5,297,617

FAN ASSEMBLY WITH HEAT SINK

Edward Herbert, 1 Dyer Cemetery Rd., Canton, Conn. 06019-2029

Filed Dec. 22, 1992, Ser. No. 994,671

Int. Cl.[5] F28F *13/12*

U.S. Cl. 165—80.3 **10 Claims**

1. A fan assembly with heat sink comprising:

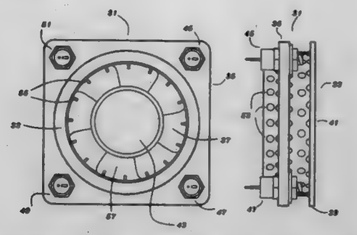
a fan having a plurality of fan blades,

means for rotating the fan so that air is moved through the fan assembly with heat sink,

a fan duct having a wall with an inside and outside surface surrounding the fan, the fan rotating within the fan duct with the plurality of fan blades of the fan proximate to the inside surface of the fan duct, and

at least one heat sink mounting surface integral to the fan duct for mounting a device to be cooled or heated,

the heat further being conducted from the fan duct to the air which is moved through the fan assembly with heat sink, whereby



the conduction of heat is enhanced by the high velocity and turbulence of the air in the vicinity of the plurality of fan blades of the fan, and

is further enhanced by textural features which increase the surface area of the inside surface of the fan duct proximate to the fan blades of the fan.

5,297,618

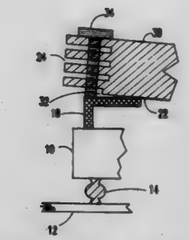
APPARATUS FOR REMOVING A HEATSINK FROM AN ELECTRONIC MODULE OR PACKAGE

John R. Behun, Poughkeepsie, and Joseph A. Benenati, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,260

Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—80.3 **13 Claims**



1. A removable heat sink for use on electronic modules or packages, comprising:

a heat sink body;

a pedestal connected to said heat sink body having a bonding surface suitable for adhesive bonding to an electronic module or package;

an adhesive positioned on said pedestal at said bonding surface;

at least one cantilevered portion extending from said pedestal; and

means for exerting a prying action on said heat sink body at said bonding surface of said pedestal, said means for exerting a prying action being connected to said cantilevered portion and being operable in a direction perpendicular to said bonding surface of said pedestal.

5,297,619

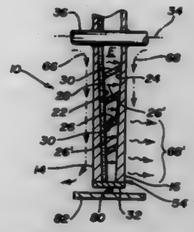
CENTRIFUGAL HEAT PIPE VAPOR ABSORPTION HEAT PUMP

Amir Faghri, Dayton, Ohio, assignor to Wright State University, Dayton, Ohio

Continuation-in-part of Ser. No. 710,065, Jun. 4, 1991, Pat. No. 5,201,196. This application Aug. 24, 1992, Ser. No. 933,775

Int. Cl.[5] F28D *15/02*

U.S. Cl. 165—86 **19 Claims**



1. A rotatable plate for use in a vapor-absorption heat pump, wherein said plate provides high efficiency heat transfer across the first and second faces thereof, and wherein said plate is mountable for rotation, said plate further comprising:

a heat pipe having opposing first and second walls defining a sealed hollow body, said first and second walls having first and second faces, and opposing first and second inner surfaces, respectively;

said first face adapted for contact with a first fluid only and said second face adapted for contact with a second fluid only, for high efficiency heat transfer therebetween the outer periphery of said rotatable plate including a seal to substantially separate said first fluid in contact with said first face from said second fluid in contact with said second face;

a wick disposed along at least a portion of said first and second inner surfaces, said wick including at least one layer of wick material;

at least one portion of wick material disposed in said sealed hollow body, extending between said first and second inner surfaces, and spaced inward from the periphery of said sealed hollow body; and

a quantity of heat pipe working fluid enclosed in said sealed hollow body.

5,297,620

METHOD AND APPARATUS FOR TRANSPORTING, UTILIZING AND RECOVERING HEAT UTILIZING DECOMPOSING AND SYNTHESIZING REACTIONS OF METHANOL

Akira Yabe; Iwao Yamashita, and Naoki Endo, all of Tsukuba, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,868

Claims priority, application Japan, Mar. 31, 1992, 4-105489

Int. Cl.[5] F24J *1/00*; **F28D** *21/00*

U.S. Cl. 165—104.12 **9 Claims**

5. An apparatus for transporting, utilizing and recovering heat by utilizing decomposing and synthesizing reactions of methanol, said apparatus comprising:

high-temperature heat utilization means, low-temperature heat utilization means, heat recovery means, means for supplying waste heat to the heat recovery means, a supply pipeline for supplying methanol to said three utilization and recovery means, and a supply pipeline for supplying said three utilization and recovery means with reformed gas mixture of hydrogen and carbon oxide,

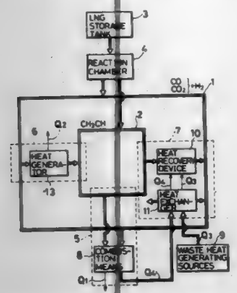
wherein the high-temperature heat utilization means includes combustion means in which methanol and re-

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formed gas supplied by the supply pipelines are subjected to direct combustion,

the low-temperature heat utilization means is provided with a low-temperature heat generation means which subjects reformed gas input from the reformed gas supply pipeline to an exothermic reform reaction and feeds methanol thus produced to the methanol supply pipeline, and



the heat recovery means includes a heat recovery device which subjects methanol input from the methanol supply pipeline to an endothermic reform reaction and feeds reformed gas thus produced to the reformed gas supply pipeline.

5,297,621

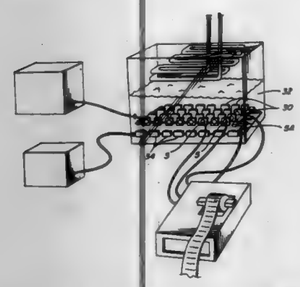
METHOD AND APPARATUS FOR MAINTAINING ELECTRICALLY OPERATING DEVICE TEMPERATURES

Richard Taraci, Phoenix, Ariz.; Brian Taraci, Laguna Niguel, Calif., and Imre Gorgenyi, Scottsdale, Ariz., assignors to American Electronic Analysis, Phoenix, Ariz.

Division of Ser. No. 633,382, Dec. 20, 1990, Pat. No. 5,099,908, which is a continuation-in-part of Ser. No. 379,083, Jul. 13, 1989, Pat. No. 5,004,973. This application Feb. 12, 1992, Ser. No. 835,711

Int. Cl.[5] H01L *23/44*; G01R *31/02*

U.S. Cl. 165—104.13 **5 Claims**



1. An apparatus for maintaining an electrically operating device at a desired ambient temperature during operation of the device, comprising:

a. a tank to contain the device while it is being electrically operated;

b. a first inert liquid, having a boiling point less than the desired ambient temperature, said first inert liquid partially filling the tank and completely covering the device to form a bath;

c. means for heating said bath while said device is being electrically operated;

d. a second inert liquid, having a boiling point greater than the desired ambient temperature, said second inert liquid being selected to modify the rate of nucleate boiling of the first inert liquid, said second inert liquid being mixed with said first inert liquid;

e. means connected to said device for electrically operating the device, thereby generating heat which is transferred to the bath by nucleate boiling of the first inert liquid; and

f. means for monitoring the bath temperature.

5,297,622

METHOD FOR COOLING OF DUST SEPARATED FROM THE FLUE GASES FROM A PFBC PLANT

Roine Brännström, and Antal Molnar, both of Finspong, Sweden, assignors to ABB Stal AB, Finspong, Sweden

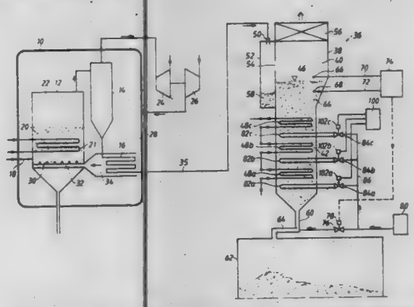
PCT No. PCT/SE91/00305, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO91/17391, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 29, 1991, Ser. No. 937,835

Claims priority, application Sweden, Apr. 30, 1990, 9001563-7

Int. Cl.[5] F02C *3/26*; F28C *3/16*

U.S. Cl. 165—104.16 **1 Claim**



1. A method for cooling dust which accompanies flue gas from a PFBC plant, said method including the steps of:

separating the dust in a dust separator inside the pressure vessel of the PFBC plant from the flue gas;

subjecting the separated dust to a first cooling before it is transported out of the pressure vessel by means of the flue gas;

then subjecting the dust outside the pressure vessel to continued cooling while being stirred by;

a. supplying the flue gas transporting the dust outside the pressure vessel to the upper part of a vertical duct for absorption of the dust as a material column in the duct;

b. discharging the dust from the lower part of the material column while passing the dust down through the duct to maintain the surface of the material column within predetermined level limits;

c. cooling the dust in the material column by circulating coolant through cooling modules in the material column for successive reduction of the temperature of the dust in the material column, when the dust through the discharge at the bottom is being moved downwards through the duct;

stirring the dust in the material column by injecting a stirring gas into the material column while separating the remaining flue gas from the material column, before the dust has been cooled to a temperature which lies below the dew point for sulphuric acid, and

causing the flue gas and the stirring gas to escape from the duct at the upper end thereof.

5,297,623

HEAT EXCHANGE APPARATUS AND METHOD FOR PREPARING THE APPARATUS

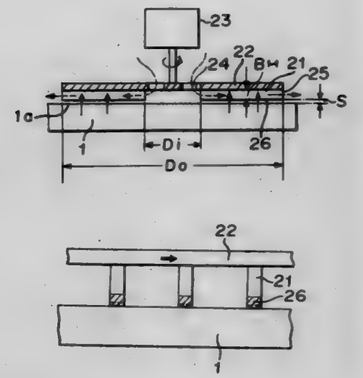
Tetsurou Ogushi; Kunihiko Kaga; Hideharu Tanaka, and Goro Yamanaka, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 741,331, Aug. 7, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 579

Claims priority, application Japan, Sep. 20, 1990, 2-252576

Int. Cl.[5] F28F *13/12*

U.S. Cl. 165—121 **4 Claims**



1. A heat exchange apparatus comprising:

a heat transfer member having a heat transfer surface;

a rotatable disk facing the heat transfer surface of said heat transfer member;

a center aperture defined in a central portion of the rotatable disk for permitting air flow therethrough;

at least one projecting blade disposed on the rotatable disk and radially extending from said central aperture of said rotatable disk to an edge portion of said disk which defines an air flow output, wherein said at least one projecting blade has a substantially uniform width along the air flow and outwardly extends from said disk in a direction toward said heat transfer surface of the heat transfer member to define an edge portion such that the edge portion of said at least one projecting blade faces said heat transfer surface of the heat transfer member for defining a constant distance between the edge portion of said at least one projecting blade and the heat transfer surface of the heat transfer member which is smaller than a value which corresponds to a rising point where an upward gradient of convective heat transfer coefficients rise as the distance decreases; and

means for rotating said rotatable disk such that the rotation of said rotatable disk and the at least one projecting blade disposed thereon causes an air flow through said aperture and produces centrifugal forces to cause the air to flow from said central aperture radially outward along the heat transfer surface to said edge portion of said disk; wherein:

a leading edge of said edge portion of said at least one projecting blade is made of a wearable resin which contacts said heat transfer surface; and

said rotation of said rotatable disk wears away said leading edge of said edge portion of said at least one projecting blade to form said constant distance between said edge portion of said at least one projecting blade and said heat transfer surface.

5,297,624

HEADER FOR A FLAT TUBE LIQUEFIER

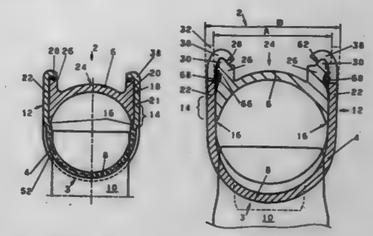
Roland Haussmann, Wiesloch, and Hans Huber, Horrenberg, both of Fed. Rep. of Germany, assignors to Thermal-Werke Wärme-, Kälte-, Klimatechnik GmbH, Hockenheim, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 906,886

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1991, 4121877; Nov. 11, 1991, 4137037

Int. Cl.[5] F28F *9/02*

U.S. Cl. 165—173 **39 Claims**



31. In a header for a flat tube liquefier; said header having a length and being composed of first and second elongated components extending along said length;

said first component having generally parallel-spaced side walls and a bottom portion interconnecting said side walls; said side walls having inner wall faces oriented toward one another and outer wall faces oriented away from one another; said bottom portion having a series of slots spaced along said length for receiving end portions of flat tubes of said liquefier;

said second component having generally parallel-spaced side walls and a top portion interconnecting the side walls of said second component; said side walls of said second component having outer faces oriented away from one another; said top portion facing said bottom portion and defining therewith a tubular cavity of said header;

said inner wall face of each said side wall of said first component being in a zone of overlap with the outer wall face of each respective side wall of said second component; a soldered bond provided in each said zone of overlap between adjoining side walls of said first and second components;

said header having a dimension constituted by a distance measured between opposite zones of overlap in a direction transverse to said length;

the improvement wherein said second component is situated in its entirety within said dimension.

5,297,625

BIOCHEMICALLY ENHANCED OIL RECOVERY AND OIL TREATMENT

Eugene T. Premuzic, East Moriches, and Mow Lin, Rocky Point, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 571,917, Aug. 24, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,391

Int. Cl.[5] E21B *43/22*

U.S. Cl. 166—246 **5 Claims**

1. A process for the recovery of oil from an underground oil bearing reservoir comprising:

injecting into said reservoir an aqueous solution containing a microorganism or a mixture of microorganisms, modified through challenge growth processes to be suitable for microbial enhanced oil recovery said challenge growth processes including:

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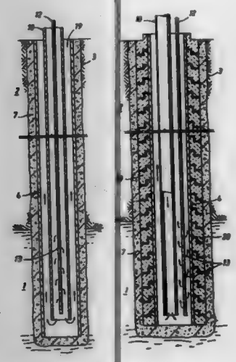
(a) selecting a thermophilic microorganism or mixture of thermophilic microorganisms,
(b) growing said thermophilic microorganism or a mixture of microorganisms in a medium containing crude oil and nutrients, step wise removing up to 90 percent of said nutrients while maintaining growth of said microorganism or mixture of microorganisms in the presence of said crude oil,
(c) adapting said microorganism or mixture of said microorganisms to a desired reservoir temperature of from about 4° C. to about 85° C.,
(d) increasing the pressure at which said microorganisms are grown to a desired pressure of from about 200 psi up to about 2,500 psi; and
(e) growing said modified organisms to their maximum strength and maturity and subsequently removing biotreated oil from the reservoir.

5,297,626

OIL RECOVERY PROCESS

Harold J. Vinegar; Eric P. DeRouffignac; Carlos A. Glandt; Thomas Mikus, and Mark A. Beckemeier, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 12, 1992, Ser. No. 896,864
Int. Cl.[5] E21B *43/24, 43/26*
U.S. Cl. 166—271 **18 Claims**



1. A process comprising the steps of:
providing heat injection means extending essentially through a hydrocarbon containing subterranean formation having a permeability less than about 20 darcy, the heat injection means effective to provide heat in at least one plane, the plane being essentially perpendicular to the direction of the minimum principal stress, and the heat injection means capable of injecting heat at a temperature level of about above 900° C.;
providing a plurality of production wells extending into the hydrocarbon containing subterranean formation;
fracturing the formation from the production wells;
injecting heat into the formation from the heat injection means at a temperature level above about 900° C. thereby driving hydrocarbons away from the heat injection means and toward the production wells; and
producing from the production wells hydrocarbons that have been driven away from the heat injection means wherein the heat injection means comprise a plurality of heat injection wellbores provided along a plane perpendicular to the minimum formation stress, and the plurality of oil production wells are provided on each side of the plane which contains the heat injection wellbores.

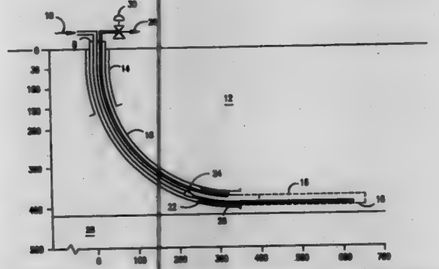
10. An apparatus to recover hydrocarbons from a hydrocarbon-bearing subterranean formation comprising:
a) a heat injection wellbore extending from a surface wellhead to within the subterranean formation;
b) a gas fired burner within the heat injection wellbore capable of heating the subterranean formation adjacent to the wellbore to a temperature greater than about 900° C. wherein combustion is distributed over the length of the heat injection wellbore within the subterranean formation;
c) a means to provide a gas composition for combustion within the gas fired burner that does not form carbon deposits when heated to 900° C.; and
d) a hydrocarbon production well, wherein the burner comprises a conduit within the wellbore for directing a flow of combustion air to a lower portion of the wellbore; a conduit within the wellbore for directing a fuel gas to a plurality of release points where a portion of the fuel gas mixes with combustion gas rising from the lower portion of the wellbore; and a conduit within the wellbore for direct combustion gases from the lower portion of the wellbore to the surface wellhead that is in communication with the combustion air conduit in the lower portion of the wellbore.

5,297,627

METHOD FOR REDUCED WATER CONING IN A HORIZONTAL WELL DURING HEAVY OIL PRODUCTION

J. Michael Sanchez, Carrollton, and Herbert G. Weinstein, Dallas, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 419,875, Oct. 11, 1989, abandoned, and a continuation-in-part of Ser. No. 625,289, Dec. 10, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,353
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—272 **19 Claims**



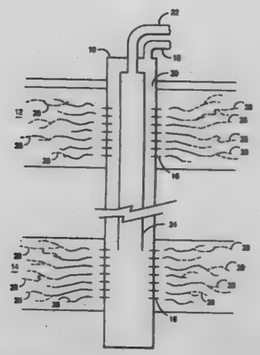
1. A method to reduce water coning in a viscous oil formation during heavy oil production comprising:
a) circulating steam into a horizontal wellbore that penetrates a viscous oil containing formation or reservoir where said wellbore is positioned above an aquifer or bottom water zone in said formation which steam is at a pressure at or below the reservoir pressure and below the reservoir's fracture pressure so as to substantially avoid steam entry into the reservoir thereby conduction heating the formation;
b) allowing the steam to circulate in and out of said wellbore for a time sufficient to heat the reservoir by transient conduction to a temperature sufficient to mobilize hydrocarbonaceous fluids for a desired distance from the wellbore; and
c) continuing circulation of steam in the wellbore thereby heating the formation and producing simultaneously oil of reduced viscosity to the surface thereby substantially reducing water coning from said aquifer or bottom water zone and increasing the production of hydrocarbonaceous fluids by substantially conduction heating only during heavy oil production from said reservoir while controlling the wellbore outlet pressure at or below the reservoir pressure.

5,297,628

SIMULTANEOUS MATRIX ACIDIZING USING ACIDS WITH DIFFERENT DENSITIES

Alfred R. Jennings, Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 782,192, Oct. 24, 1991, Pat. No. 5,207,778. This application May 3, 1993, Ser. No. 57,132
Int. Cl.[5] E21B *43/27, 33/138*
U.S. Cl. 166—281 **20 Claims**



1. A method for simultaneously matrix acidizing two spaced apart zones of a carbonate containing formation comprising:
a) injecting a lower density acid into an upper zone of said formation via an annulus of a perforated wellbore communicating with said upper zone thereby forming wormholes which make this zone more permeable;
b) Simultaneously injecting with the lower density acid of step a), a higher density acid into a lower spaced apart zone of said formation via a tubing string within the perforated wellbore that communicates fluidly with said lower zone which acid is injected at a pressure sufficient to simultaneously form wormholes within said lower zone thereby acidizing in each simultaneously;
c) directing a solidifiable viscous gel with gel breakers into the upper and lower zones which gel enters the wormholes and forms a solid gel therein which precludes entry of additional acid while displacing the acid further into the formation;
d) introducing additional acid into the upper and lower zones as in steps a) and b) which acid bypasses the wormholes containing the solid gel and penetrates substantially further into the formation; and
e) repeating steps c) and d) which displaces acid further into the formation so as to substantially increase the permeability of the formation and improve matrix acidizing.

5,297,629

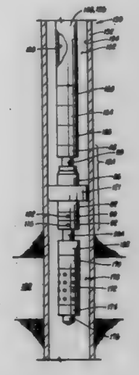
DRILL STEM TESTING WITH TUBING CONVEYED PERFORATION

Burchus Q. Barrington, Duncan, Okla., and Flint R. George, Katy, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 23, 1992, Ser. No. 824,427
Int. Cl.[5] E21B *43/116, 34/12, 33/128, 49/08*
U.S. Cl. 166—297 **16 Claims**

10. A test string for testing a well, comprising:
a tubing string having a tubing bore;
an annulus pressure responsive tester valve disposed in said tubing string;
a tubing conveyed perforating gun disposed in said tubing string below said tester valve, said perforating gun including a tubing pressure actuated time delay firing mechanism; and
a compression set packer disposed in said tubing string between said tester valve and said perforating gun, said packer including:
a bypass valve means for communicating said well below said packer with said tubing bore, said bypass valve means being operably associated with said packer so that said bypass valve means is open prior to setting said packer and so that said bypass valve means is closed as said packer is set; and
one-way equalizer valve means for allowing one-way fluid flow from said well below said packer to said tubing bore, said equalizer valve means being operably associated with said bypass valve means so that said equalizer valve means is inoperable when said bypass valve means is open, and so that said equalizer valve means is operable when said bypass valve means is closed.

15. A method of perforating and testing a well, said method comprising:
(a) running a test string into said well, said test string including:
a tubing string having a tubing bore;



an annulus pressure responsive tester valve disposed in said tubing string;
a tubing conveyed perfection gun disposed in said tubing string below said tester valve, said perforating gun including a tubing pressure actuated time delay firing mechanism; and
a compression set packer disposed in said tubing string between said tester valve and said perforating gun, said packer including:
a bypass valve means or communicating said well below said packer with said tubing bore, said bypass valve means being operably associated with said packer so that said bypass valve means is open prior to setting said packer and so that said bypass valve means is closed as said packer is set; and
one-way equalize valve means for allowing one-way fluid flow from said well below said packer to said tubing bore, said equalizer valve means being operably associated with said bypass valve means so that said equalizer valve means is inoperable when said bypass valve means is open, and so that said equalizer valve means is operable when said bypass valve means is closed;
(b) setting down weight on said tubing string and thereby

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setting said compression set packer to isolate an upper well annulus from a lower portion of said well;

(c) increasing well fluid pressure in said upper well annulus and thereby opening said annulus pressure responsive tester valve;

(d) increasing tubing fluid pressure in said tubing bore down through said tester valve and thereby actuating said firing mechanism without increasing well fluid pressure in said lower portion of said well;

(e) after step (d), reducing tubing fluid pressure in said tubing bore down through said tester valve and equalizing well fluid pressure in said lower portion of said well with said reduced tubing fluid pressure through said one-way equalizer valve means;

(f) after step (e), firing said perforating gun to perforate said lower portion of said well to communicate a subsurface hydrocarbon producing formation with said well in an underbalanced condition.

5,297,630

DOWNHOLE MILLING TOOL

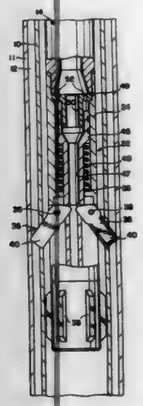
Gerald D. Lynde, Houston, Tex., and Harold H. Harvey, Jr., Bossier City, Calif., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 680,702, Apr. 4, 1991, Pat. No. 5,150,755, which is a continuation-in-part of Ser. No. 621,063, Dec. 3, 1990, Pat. No. 5,058,666, which is a continuation of Ser. No. 181,812, Apr. 15, 1988, Pat. No. 4,978,260, which is a continuation-in-part of Ser. No. 816,287, Jan. 6, 1986, Pat. No. 4,796,709. This application Sep. 21, 1992, Ser. No. 948,362

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] E21B *10/26*

U.S. Cl. 166—297 **9 Claims**



1. In a cutting tool adapted to be positioned downhole in a well for removing material from the well bore;

a tool body adapted to be received within said well and to be supported at its upper end for rotation about a longitudinal axis;

a plurality of cutting surfaces at spaced intervals around the tool body;

each of said cutting surfaces comprising a plurality of cutting elements arranged in at least one column extending generally along the longitudinal direction of the tool body for presenting at least part of said cutting surface;

each cutting element being of a predetermined size and shape and arranged in a predetermined columnar pattern; and

with each of said cutting elements having an exposed cutting face including a surface irregularity for directing an extending end portion of a turning cut from said material to effect a breaking of said turning from the material being cut in a predetermined manner to minimize internestings of the turnings.

5,297,631

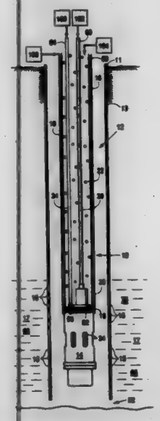
METHOD AND APPARATUS FOR DOWNHOLE OIL WELL PRODUCTION STIMULATION

Thomas C. Gipson, Cisco, Tex., assignor to Fleet Cementers, Inc., Cisco, Tex.

Filed Apr. 7, 1993, Ser. No. 44,187

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—299 **8 Claims**



1. An apparatus for stimulating the production zone of an oil well comprising:

a high pressure gas gun adapted to provide sudden release of high pressure compressed gas when electrically fired within said production zone;

a coil tubing conduit connected at a distal end to said gun, said conduit housing a high pressure compressed gas supply line attached to said gun and an electrical power transmission line attached to said gun, said conduit adapted to deliver a liquid in proximity to said gun.

5,297,632

METHOD AND APPARATUS FOR PRODUCTION OF SUBSEA HYDROCARBON FORMATIONS

Joseph W. Blandford, 15 Mott La., Houston, Tex. 77024

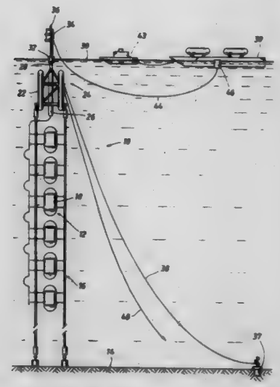
Continuation of Ser. No. 626,994, Dec. 13, 1990, Pat. No. 5,117,914. This application Jun. 1, 1992, Ser. No. 891,953

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] B63B *35/44*

U.S. Cl. 166—344 **5 Claims**

1. A subsea well tender system comprising a surface buoy having at least three submersible brace members spaced about a surface-piercing central flotation column connected to said brace members, wherein said surface piercing flotation column supports one or more decks above the water surface for accommodating equipment to process oil, gas, and water, and



further including mooring means securing said surface buoy to the seabed.

5,297,633

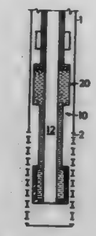
INFLATABLE PACKER ASSEMBLY

Philip M. Snider, 12102 Rocky Lake Dr., Houston, Tex. 77070; Michael J. Dietrich, 23214 Cinco Park Place Ct., Katy, and Vel Berzin, 12015 Circle Dr. E., Houston, both of Tex. 77071

Filed Dec. 20, 1991, Ser. No. 811,209

Int. Cl.[5] E21B *33/127*

U.S. Cl. 166—387 **21 Claims**



1. An inflatable packer assembly for use in an enclosure having a substantially tubular configuration, the assembly comprising:

securing means for securing the assembly against axial movement within the substantially tubular enclosure;

inflatable means for forming a fluid tight seal between the assembly and the enclosure upon being inflated thereby substantially preventing fluid flow through an annulus defined between the assembly and the enclosure;

pump means for mechanically pumping fluid which is initially present within the enclosure to and from said inflatable means;

positioning means for fixedly positioning said securing means and said pump means at a location which is sufficiently distant from said inflatable means to inhibit material entering the enclosure from contacting and causing the securing means and pump means to become stuck within the enclosure; and

means for axially transporting fluid through the assembly.

15. A process for treating an interval of a well bore which is in fluid communication with a subterranean formation, the process comprising:

a) securing an inflatable packer assembly to a string of tubing, said assembly comprising securing means for securing the assembly against axial movement within the well bore, inflatable means for forming a fluid tight seal between the assembly and the well bore upon being inflated thereby substantially preventing fluid flow through an annulus defined between the assembly and the well bore and pump means for mechanically pumping fluid which is initially present within the well bore to and from said inflatable means;

b) positioning said inflatable means adjacent the well bore interval to be treated, the assembly being constructed such that said securing means and said pump means being positioned at a location distant from the interval to be treated;

c) expanding the securing means into contact with the well bore by manipulation of the tubing string to secure the assembly against axial movement within the well bore;

d) manipulating the tubing string to pump said fluid from the pump means to the inflatable means thereby inflating the inflatable means to form said fluid tight seal and to isolate the well bore interval; and

e) injecting a treating fluid through the assembly and into contact with the well bore interval to be treated.

5,297,634

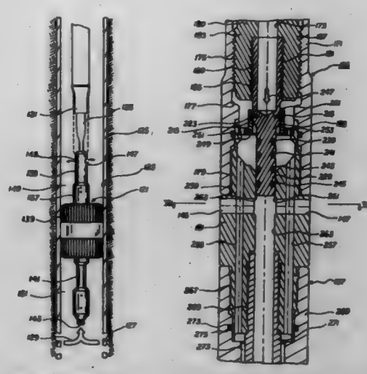
METHOD AND APPARATUS FOR REDUCING WELLBORE-FLUID PRESSURE DIFFERENTIAL FORCES ON A SETTABLE WELLBORE TOOL IN A FLOWING WELL

Michael J. Loughlin, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 745,910, Aug. 16, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 41,123

Int. Cl.[5] E21B *23/06, 33/127, 34/10*

U.S. Cl. 166—387 **21 Claims**



1. An apparatus for use to grippingly and sealingly engage a wellbore surface within a wellbore having a wellbore fluid flowing therein for preventing said wellbore fluid flow therethrough, said apparatus comprising:

a settable wellbore tool for use in downhole oil and gas operations which is operable in a plurality of operating modes including a running mode of operation with a reduced radial dimension, an expansion mode of operation in which said settable wellbore tool is urged radially outward from said reduced radial dimension to an intermediate radial dimension, and a setting mode of operation in which said settable wellbore tool is further radially expanded into a setting radial dimension and urged into a fixed position within said wellbore for grippingly and sealingly engaging said wellbore surface, wherein flowing of said wellbore fluid may create a pressure differential across said settable wellbore tool during at least said ex-

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pansion mode of operation, said pressure differential urging said settable wellbore tool to move longitudinally within said wellbore;

a bypass fluid flow path extending through said settable wellbore tool to direct said wellbore fluid through said settable wellbore tool in response to said pressure differential developed across said settable wellbore tool for preventing said pressure differential from urging said settable wellbore tool to move longitudinally within said wellbore prior to said settable wellbore tool radially expanding to attain a sufficient level of said setting mode of operation to grippingly engage said wellbore surface with enough force to prevent said settable wellbore tool from moving longitudinally within said wellbore with said bypass fluid flow path closed;

a means for selectively maintaining said bypass fluid flow path in an open condition during at least said expansion mode of operation to diminish said pressure differential developed across said settable wellbore tool and prevent said pressure differential from urging said settable wellbore tool from moving longitudinally within said wellbore;

a means for selectively closing said bypass fluid flow path and preventing said wellbore fluid from flowing therethrough after said sufficient level of said setting mode of operation is obtained and said settable wellbore tool grippingly engages said wellbore surface with enough force to prevent said settable wellbore tool from moving longitudinally within said wellbore once said bypass fluid flow path is closed; and

a latch having at least one collet-finger member which couples with a mating member for retaining said by pass fluid flow path closed once said means for selectively closing said by pass fluid flow path selectively closes said bypass fluid flow path.

5,297,635

COMBINED ALARM AND BACK-FLOW PREVENTION ARRANGEMENT FOR FIRE SUPPRESSION SPRINKLER SYSTEM

George J. McHugh, Broomall, Pa., assignor to Back-Flo Alarm Valve Co., Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 733,203, Jul. 19, 1991, Pat. No. 5,154,232, which is a continuation of Ser. No. 571,406, Aug. 23, 1990, abandoned, which is a continuation of Ser. No. 335,381, Apr. 10, 1989, Pat. No. 4,991,655, which is a continuation-in-part of Ser. No. 269,314, Nov. 10, 1988, abandoned, which is a continuation-in-part of Ser. No. 250,834, Sep. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 247,073, Sep. 21, 1988, abandoned. This application Dec. 20, 1991, Ser. No. 811,291

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] G08B *17/04*

U.S. Cl. 169—23 19 Claims

1. A combined alarm and backflow prevention arrangement for a fire suppression sprinkler system, having a main conduit and an arrangement of individual sprinklers downstream of the main conduit, said combined alarm and backflow prevention arrangement comprising:

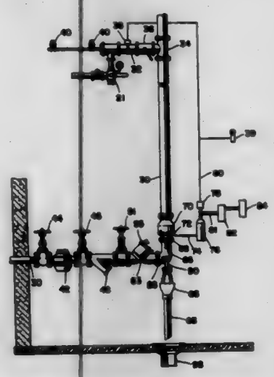
a first check valve provided in said main conduit upstream of said arrangement of individual sprinklers, said first check valve being spring based and having a valve member and a valve seat;

an alarm valve formed by a second check valve provided in said main conduit downstream of said first check valve and upstream of said arrangement of individual sprinklers, said second check valve being spring biased and said first and second check valves together providing a backflow prevention device;

alarm means for indicating when the second check valve is open;

means for providing fluid communication between said first check valve and said alarm valve through a passageway;

bypass meter piping means for recording a flow through the main conduit, said bypass meter piping means having a check valve means for maintaining the integrity of the backflow prevention arrangement;



whereby said alarm and backflow prevention arrangement includes only two check valves which are provided in said main conduit, said only two check valves being said first check valve and said second check valve.

5,297,636

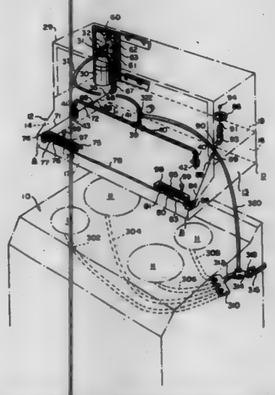
FIRE EXTINGUISHING SYSTEM FOR COOKSTOVES AND RANGES

Grady North, Grapevine, Tex., assignor to Twenty First Century, Irving, Tex.

Continuation-in-part of Ser. No. 634,357, Dec. 31, 1990, Pat. No. 5,127,479. This application Mar. 31, 1992, Ser. No. 860,726

Int. Cl.[5] A62C *3/00*

U.S. Cl. 169—65 3 Claims



1. In a combination, a residential cookstove with gas burners, a gas supply line connected to the gas burners and a fire extinguisher system including a fire extinguisher containing a pressurized fire extinguishing material, means for sensing a fire occurring on the residential cookstove and means for initiating discharge of the fire extinguisher upon detection of the fire, the fire extinguishing system further comprising a pneumatically operated valve disposed between the gas supply line and the gas burners, the pneumatically operated valve being connected directly to the outlet of the fire extinguisher and having means associated therewith for closing the valve upon discharging the fire extinguisher.

5,297,637

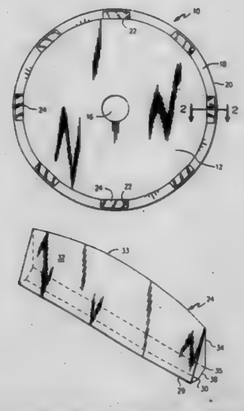
AGRICULTURAL DISC BLADE

Don C. Rowlett, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Jun. 15, 1992, Ser. No. 898,640

Int. Cl.[5] A01B *23/06*

U.S. Cl. 172—604 6 Claims



1. An agricultural tool including a disc blade for attachment to an axial member of the agricultural tool for rotation through the soil, the disc blade comprising parallel spaced flat front and rear circular surfaces having a central cylindrical opening, said front surface tapering radially outwardly to said rear surface thereby defining a common outer rim having an outer knife edge, a plurality of notches spaced circumferentially along the front surface of said disc blade and inwardly from said outer knife edge of said front surface of said disc blade, said notches configured to receive therein a plurality of hard wear resistant inserts, each insert having a horizontal planar bottom surface including a front edge and a rearward edge, a planar front surface including an arcuate top edge and extending at an angle upwardly and inwardly from said front edge of said bottom surface, a planar back surface including a linear bottom edge positioned vertically below said arcuate top edge of said front surface and a corner surface extending at an angle downwardly from said bottom edge of said back surface to said rearward edge of said bottom surface.

5,297,638

DRIVEPIPE GUIDE AND INSTALLATION METHOD FOR WELLS

Thomas W. Dolence, Jr., Houston, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 8, 1992, Ser. No. 987,935

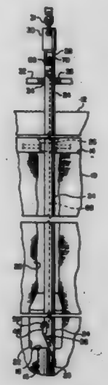
Int. Cl.[5] E21B *7/08*

U.S. Cl. 175—61 17 Claims

11. A method of installing a drivepipe to recover a well slot for an offshore subterranean formation, said formation including a previously-installed pipe section having an upwardly-facing stub end, said method comprising the steps of:

forming a scarfed lower end of said drivepipe and installing a device for shielding said scarfed lower end and for guiding said drivepipe off of said stub end, said device including means engageable with said stub end for locating said drivepipe with respect to said pipe section;

lowering said drivepipe into engagement with said stub end and positioning said drivepipe for engagement of said means on said device with said stub end; and



applying sufficient force to said new drivepipe to release said new drivepipe from said device for movement in a generally downward direction alongside said pipe section.

5,297,639

METHOD AND APPARATUS FOR USING MULTIPLE JETS

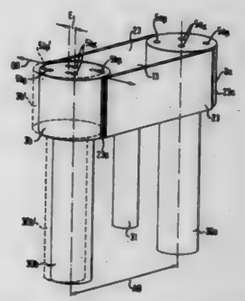
Francine Schneider, 10, Rue des Poiriers, F-67340 Ingwiller; Patrick Loegel, 8, Chemin du Zollstock, F-67340 Lichtenberg; Sylvie Reichert, 115, Rue du Gal Goureau; Isabelle Durr, 1a, Rue des Poiriers, both of F-67340 Ingwiller, and Charles Loegel, 7, Rue des Cochers, F-67340 Lichtenberg, all of France

Filed Aug. 11, 1992, Ser. No. 928,519

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128422

Int. Cl.[5] E21B *7/18*

U.S. Cl. 175—65 20 Claims



1. The method of erosively working a hard object, as of rock, ore, coal, concrete or the like, by means of a pressure medium which is delivered in the form of plural jets, directed toward the object at different angles of incidence, the delivery being with high pressure of the medium on the object and advanced in one direction along a predetermined path, said method comprising the steps of:

providing two clusters of such jets in spaced relation such

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that one cluster precedes the other in the said one direction of movement; and

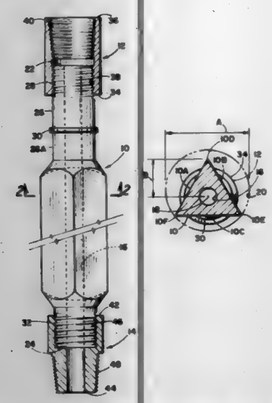
oscillating one to the exclusion of the other of said clusters in a direction generally transverse to the said one direction of movement.

5,297,640

DRILL COLLAR FOR USE IN HORIZONTAL DRILLING

Tom Jones, 4608 Greentree Blvd., Midland, Tex. 79707

Filed Oct. 29, 1992, Ser. No. 968,582
Int. Cl.[5] E21B *7/08*
U.S. Cl. 175—73 **2 Claims**



1. An improved drill collar particularly for use in drilling horizontal holes employing a fluid driven drill, comprising:

an elongated intermediate portion of at least substantially triangular cross-sectional configuration and having a central passageway therethrough and having an externally threaded first and second end, the intermediate portion being formed of a lightweight metal selected from the group comprising aluminum, magnesium and alloys thereof;

a first tubular tool joint member having first and second internally threaded ends, the first threaded end being threadably secured to said intermediate portion first end; and

a second tubular tool joint member having first and second ends, the first end being internally threaded and threadably secured to said intermediate portion second end, said second tool joint second end being externally threaded with a threading size and configuration matching said first tool joint member second end, said tool joint members being of a metal dissimilar to the metal of which said intermediate portion is formed.

5,297,641

DRILLING DEVIATION CONTROL TOOL

Thomas E. Falgout, Sr., 110 Charles Read St., Lafayette, La. 70503

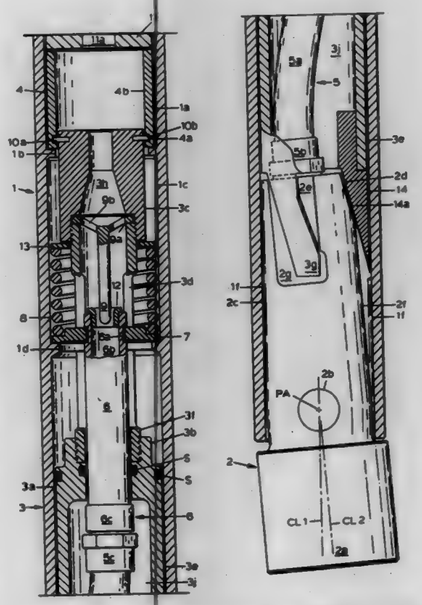
Filed Dec. 28, 1992, Ser. No. 997,162
Int. Cl.[5] G21B *7/08*
U.S. Cl. 175—73 **16 Claims**

1. A directional down hole drilling tool for use as an element of a pipe string in a well for selecting from the surface the choice of straight configuration or deflected configuration by selectively cycling the rate of flow of fluid down the pipe string, a cycle comprising increasing the flow rate from less than a first preselected rate to more than a second preselected rate and then decreasing the rate to less than said first rate, the tool comprising:

a) a body comprising a first and a second portion, each portion having an independent longitudinal axis, one portion telescoped into the other and the two portions axially and rotationally secured together for relative flexing about a pivot axis generally transverse both said axes with means at each end of the assembled body for fluid tight attachment to a continuing pipe string to serve as an element thereof with a fluid channel extending longitudinally therethrough;

b) shuttle means situated in an opening in said body for limited longitudinal movement therein having a piston arranged to cooperate with said opening to provide a fluid power cylinder and at least one spring arranged to move said shuttle means to a first longitudinal position;

c) stop means situated in said opening arranged to rotate incrementally to a plurality of stop positions, at least one increment position permitting said shuttle to move to a second position and at least one increment position permitting said shuttle to move, farther, to a third position;



d) incremental rotation cam means, responsive to movement of said shuttle means to rotate said stop means one increment each time said shuttle moves from said first position to said second position and back to said first position;

e) deflector cam means comprising cam means carried by said shuttle and cam follower means on said second portion to hold said second portion in longitudinal alignment with said first portion when said shuttle means is in said first and said second positions and to deflect the axis of said second portion from the axis of said first portion when said shuttle is in said third position;

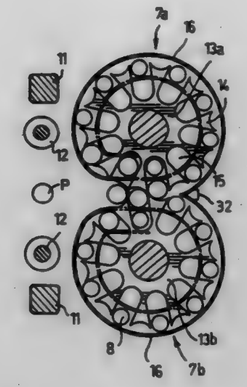
f) actuator channels in said body arranged to communicate fluid pressure from said channel to one side of said piston and to communicate fluid pressure from outside said tool to the opposite side of said piston such that pressure in said channel, greater than pressure in the well, will urge said piston to oppose said spring to move said shuttle from said first position.

5,297,642

APPARATUS FOR STORING DRILL RODS

Pauli Rajakallio, Siivikkala; Jouko Kaakkurivaara, Vuorentausta; Leo Häkkinen, Tampere; Pekka Koskelo, Ylöjärvi, and Markku Launiemi, Tampere, all of Finland, assignors to Tamrock Oy, Tampere, Finland

PCT No. PCT/FI91/00185, § 371 Date Dec. 22, 1992, § 102(e) Date Dec. 22, 1992, PCT Pub. No. WO91/19880, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 958,102
Claims priority, application Finland, Jun. 15, 1990, 903025
Int. Cl.[5] F21B *19/14*
U.S. Cl. 175—85 **7 Claims**



1. Apparatus for storing drill rods, comprising two drill rod cartridges, each comprising a rotating rotor provided with finger boards, means for guiding the drill rods into gaps formed by the finger boards circumferentially around the axis of the rotor, a feed opening for both drill rod cartridges for feeding the drill rods into the cartridge, and means for displacing the drill rods into the cartridges and out therefrom, characterized in that:

the two cartridges have a common feed opening positioned substantially midway between the cartridges in such a way that the central line of the feed opening is substantially in the middle of the distance between the axes of the rotors, the drill rods being fed through the common feed opening alternatively into the two cartridges or removed therefrom;

the rotors of the cartridges are interconnected so as to rotate in opposite directions with respect to each other at the same speed;

the cartridges are so mounted with respect to each other that projections in the finger boards of their rotors alternately pass by the line between the axes of the rotors during the rotation of the rotors so that the projection of the finger board of one rotor is always in alignment with the gap of the finger board of the other rotor;

the distance between the rotors is such that when the projection and the opposite gap are substantially in alignment, the projection pushes the drill rod into the gap with the axis of the drill rod located on one side of the central line of the feed opening; and

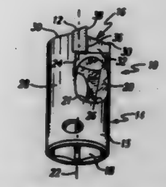
a guide is provided on the opposite side of a plane extending through the axes of the rotors with respect to the feed opening, the guide being positioned substantially on the central line of the feed opening and guides the drill rod in the gap to the side of the corresponding cartridge to the circumference defined by the guiding means.

5,297,643

COLD HEADED CENTER VACUUM DRILL BIT

Robert H. Montgomery, Jr., Everett; Daniel C. Sheirer, Bedford, both of Pa.; James E. Elam, Livonia, and Paul E. Ewing, Farmington Hills, both of Mich., assignors to Kennametal Inc., Latrobe, Pa. and NSS Industries, Plymouth, Mich.

Continuation-in-part of Ser. No. 630,139, Dec. 19, 1990. This application Nov. 12, 1991, Ser. No. 791,755
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—393 **17 Claims**



1. A drill bit for drilling holes in a work surface comprising:

(a) a hard wear-resistant insert; and

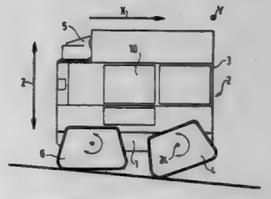
(b) a metal body including a top working surface of an irregular surface configuration having a slot for retaining said hard wear-resistant insert, said body having a metal grain flow pattern substantially aligned with the contour of said body.

5,297,644

VEHICLE WITH TILTABLE PROPULSION UNITS

Georges Clar, Lyon; Olivier Carra, Peyrins, and Patrice Feuillet, Marcy L'Etoile, all of France, assignors to Framatome, Courbevoie, France

Filed Jul. 9, 1991, Ser. No. 727,046
Claims priority, application France, Jul. 9, 1990, 90 08691
Int. Cl.[5] B62D *55/06*
U.S. Cl. 180—9.32 **6 Claims**



1. Vehicle comprising a vehicle body (2) having a longitudinal axis (X) and a transverse axis (Y), and propulsion units (4, 6, 7) to support said vehicle body and to propel it in a longitudinal direction, each of said propulsion units (4) comprising

(a) a propulsion unit body (26) to support component parts of said propulsion unit;

(b) a ground bearing system (12, 14, 16) supporting said propulsion unit body and having a ground bearing area (14, 16) extending in said longitudinal direction and having two ends to each of which a ground bearing point of said ground bearing system can move;

(c) a drive motor (28) driving said ground bearing system to propel said propulsion unit body;

(d) a propulsion unit coupling structure (20) coupling said propulsion unit body (26) to said vehicle body (2) to support said vehicle body while enabling said propulsion unit body to tilt relative to said vehicle body by rotating about a tilt axis (24) parallel to said transverse direction, which tilting movement displaces said ground bearing point;

(e) a tilt motor (22) adapted to bear on said coupling structure (20) to drive said tilting movement of said propulsion unit body (26);

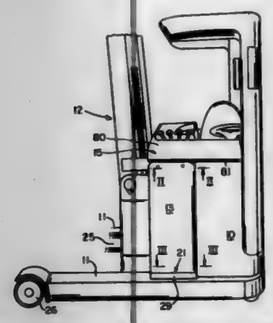
(f) force sensors (20B) adapted to provide force signals representative of forces applied to said propulsion unit (4);
(g) signal processing means (19) receiving said force signals from all of said propulsion units and commanding actuator devices in such a way as to ensure at least the safety of said vehicle, said actuator devices comprising at least said drive motor (28) and said tilt motor (22) of said propulsion units;
(h) said coupling structure (20) of at least one of said propulsion units (4) comprising an attachment part (20A) attached to said vehicle body (2), a support part (20C) carrying said propulsion unit body (26) by means of bearings (30) to enable said tilting movement, said support part having a tilt bearing toothed sector (34) to enable said tilt motor (22) to drive said movement, and a measurement part (20B) coupling said attachment and support parts and comprising a plurality of said force sensors.

5,297,645

INDUSTRIAL LIFT TRUCK

Paul J. Eckersley, and Keith E. Messer, both of Basingstoke, United Kingdom, assignors to Linde Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 19,090
Claims priority, application United Kingdom, Feb. 19, 1992, 9203545; Dec. 15, 1992, 9226126
Int. Cl.[5] B60R *16/04*
U.S. Cl. 180—68.5 **20 Claims**



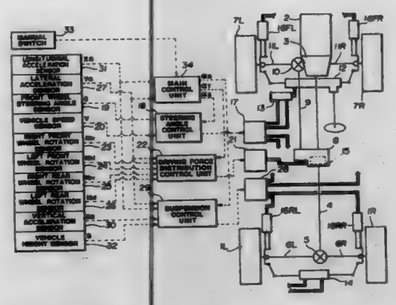
1. An industrial lift truck having a body including an operator's seat and a cover means, spaced straddle legs projecting from said body, a lift mast movable along said spaced straddle legs, means for moving said lift mast along said straddle legs, a battery for operating said means for moving said lift mast, a container for said battery having end walls, a front wall, a rear wall and a bottom wall, means for supporting said battery container on said spaced straddle legs, shift means for moving said battery container along said spaced straddle legs between a rear stored position and a forward open position, the end walls of said battery container extending parallel to said spaced straddle legs and guide means located below said cover means and disposed internally of said end walls of said battery container for contacting the inner surfaces of said end walls, whereby said guide means directs said battery container during movement into said rear stored position and prevents movement of said battery container transversely of said spaced straddle legs when in said rear stored position.

5,297,646

CONTROL SYSTEM FOR OPTIMIZING OPERATION OF VEHICLE PERFORMANCE/SAFETY ENHANCING SYSTEMS SUCH AS 4WS, 4WD ACTIVE SUSPENSIONS, AND THE LIKE

Tomohiro Yamamura, Yokosuka; Fukashi Sugasawa, and Masatsugu Yokote, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 17, 1991, Ser. No. 686,341
Claims priority, application Japan, Apr. 18, 1990, 2-104044; Apr. 18, 1990, 2-104045; Apr. 18, 1990, 2-104046
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—142 **14 Claims**



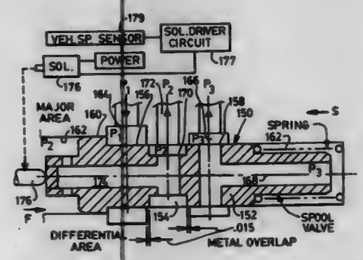
1. In a vehicle:
a first control system which controls an auxiliary steering arrangement;
a second control system which controls; a drive power distribution arrangement;
acceleration sensor means for sensing longitudinal acceleration of the vehicle; and
control sensitivity setting means responsive to said acceleration sensor means for setting first and second control sensitivities of the first and second systems in a manner wherein the second control sensitivity of said second control system is increased with respect to the first control sensitivity of said first control system in response to an increase in the magnitude of the output of said acceleration sensor means.

5,297,647

VARIABLE ASSIST POWER STEERING GEAR WITH HYDRAULIC REACTION CONTROLS

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 18, 1993, Ser. No. 33,728
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—143 **4 Claims**



1. A fluid pressure operated power steering gear mechanism for a vehicle comprising:
a fluid pressure source, a steering pressure movable part adapted to be connected to a steering linkage for a vehicle, a drive member connected to said pressure movable part, a driving shaft connected to said drive member and adapted to transfer steering torque to said drive member;
a valve housing, a rotary steering valve means situated in said housing and partly defining pressure distribution and flow return passages extending between said pressure source and said pressure movable part for establishing steering pressure and steering pressure differential forces on said pressure movable part;
said steering valve means comprising an internal steering valve member and a surrounding sleeve steering valve member, said internal steering valve member and said sleeve steering valve member having registering valve lands, one of said steering valve members being connected to said driving shaft and the other being drivably connected to said drive member whereby relative rotary displacement of said steering valve members effects a change in the flow area through said steering valve means and a corresponding pressure differential change acting on said pressure movable part;
at least two pressure reaction pistons in one of said steering valve members, passage structure in said steering valve means for distributing reaction pressure for said pressure movable part to said reaction pistons thereby establishing opposed steering torque reaction forces;
means for applying said reaction forces to one of said steering valve members whereby relative angular displacement of said steering valve members is resisted;
reaction pressure control valve means communicating with said steering valve means for modifying said steering pressure to thereby establishing a value for said reaction pressure to increase the magnitude of said reaction pressure for a given relative angular displacement of said steering valve members when said steering torque exceeds a calibrated breakpoint value, and vehicle speed responsive means for applying an actuating force to said control valve means whereby said control valve means modifies said steering pressure when said steering torque exceeds a breakpoint value less than said calibrated value;
said control valve means comprising a movable valve spool having pressure regulating valve lands of differential diameters, said differential diameters defining a pressure area that is subjected to steering pressure, a valve spring acting on said valve spool in one direction, said actuating force of said vehicle speed responsive means opposing the force of said spring, a pressure force acting on said differential area of said valve spool supplementary to said actuating force of said vehicle speed responsive means.

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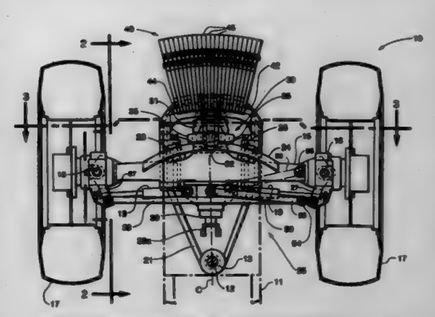
COMPOUND STEERING MECHANISM

Charles A. Hansen, and Joseph C. Hurlburt, both of Lancaster, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed May 17, 1993, Ser. No. 61,470
Claims priority, application European Pat. Off., Mar. 16, 1992, 92.200743
Int. Cl.[5] B62D *5/00*
U.S. Cl. 180—144 **14 Claims**

11. In a vehicle having a chassis; a transverse axle pivotally supported from said chassis for lateral movement relative thereto, said transverse axle having a pair of steerable wheels pivotally connected by king pins to the opposing transverse ends of said axle, each said steerable wheel having a steering arm associated therewith to effect pivotal movement of the corresponding steerable wheel about the respective king pin; and a steering mechanism operably connected to said steerable wheels to control the pivotal movement thereof relative to said axle for controlling the direction of travel of said vehicle, said steering mechanism including means for effecting relative pivotal movement between said axle and said chassis in response to the pivotal movement of said steerable wheels, an improved steering mechanism comprising:

a first tie rod interconnecting the opposing said steering arms to couple the movements thereof; and
a second tie rod interconnecting said chassis and said steering mechanism to couple the pivotal movements of said steerable wheels to said chassis, said second tie rod having



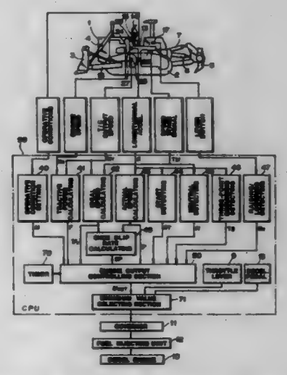
a first end pivotally connected to said chassis and a remote second end pivotally connected to said first tie rod, whereby a pivotal movement of said steerable wheels will effect a movement of said chassis relative to said transverse axle.

5,297,649

APPARATUS FOR CONTROLLING OUTPUT FROM ENGINE ON CRAWLER TYPE TRACTOR

Shigeru Yamamoto, c/o Kabushiki Kaisha Komatsu Seisakusho, Osaka Works, 3-1-1, Ueno, Hirakata-shi Osaka 573, and Hideki Yamada, 7E14-104, Otokoyama-Yutoku, Yawata-shi, Kyoto 614, both of Japan

PCT No. PCT/JP89/00862, § 371 Date Jun. 15, 1990, § 102(e) Date Jun. 15, 1990, PCT Pub. No. WO90/02257, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 23, 1989, Ser. No. 476,419
Claims priority, application Japan, Aug. 23, 1988, 63-208774
Int. Cl.[5] B60K *41/00*
U.S. Cl. 180—197 **3 Claims**



1. An apparatus for controlling output from an engine installed on a crawler type vehicle provided with a ripper shank, wherein said vehicle runs by means of left and right crawler belts to which output of the engine is transmitted via a torque converter, a transmission, a driving shaft, comprising:
tractive power characteristic outputting means for outputting a basic tractive power characteristic having a characteristic of decreasing a tractive power of the vehicle as an

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ideal vehicle speed increases with a first gradient within a range where the ideal vehicle speed is lower than a predetermined speed and a characteristic of decreasing the tractive power as the ideal vehicle speed increases with a second gradient smaller than the first gradient within a range where the ideal vehicle speed is larger than the predetermined speed and for outputting a starting tractive power characteristic in which the output of the engine is lowered by a predetermined value from the output of the engine in the basic tractive power characteristic;

starting movement detecting means for detecting starting movement of the vehicle;

means for selecting the starting tractive power characteristic and reducing the output of the engine when starting movement of the vehicle is detected by the starting movement detecting means;

means for gradually raising the output of the engine from the starting tractive power characteristic to the basic tractive power characteristic within a preset period of time after the output of the engine is reduced;

ripper operation detecting means for detecting the lowering operation of the ripper shank; and

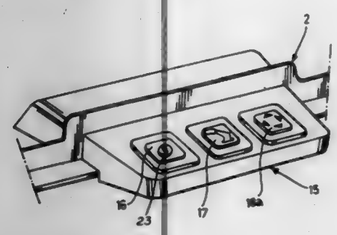
means for raising the output of the engine by outputting a modified tractive power characteristic in which the starting tractive power characteristic is raised by a preset value when the lowering operation of the ripper shank is detected by the ripper operation detecting means.

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ELECTRICALLY-DRIVEN MOTOR CAR WITH AN EXTERNALLY-OPERATED PARKING DEVICE

Romolo Gandiglio, Cambiano, and Luigi Filtri, Turin, both of Italy, assignors to Fiat Auto Spa, Turin, Italy

Filed Sep. 23, 1991, Ser. No. 763,834
Claims priority, application Italy, Oct. 3, 1990, 67752A/90
Int. Cl.[5] B60S *11/00*
U.S. Cl. 180—204 **17 Claims**



1. A motor car, comprising:

a body;

an electrical supply;

an electric drive unit;

a steering system;

a parking brake;

control means inside the body for causing the drive unit to be operated by the electrical supply and the motor car to be electrically-propelled; and

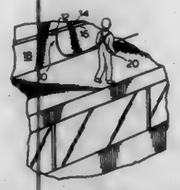
external control means for operating the drive unit, wherein the external control means further comprises a control unit fitted to the outside of the body and having manual control members.

5,297,651

SAFETY LOAD TRANSFER DEVICE AND SYSTEM

Henry Vandelinde, Scarborough, Canada, assignor to Swingstage Limited, Scarborough, Canada

Filed Apr. 28, 1993, Ser. No. 53,289
Int. Cl.[5] A62B *37/00*
U.S. Cl. 182—3 **3 Claims**



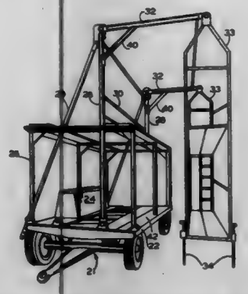
1. A load transfer device for travelling along a pair of safety cables and past a support bracket comprising a rectangular plate having an eye secured thereto on a side of the plate for receiving a lanyard, said plate having a pair of longitudinal side edges, and an elongated hook-shaped jaw hingedly secured to each longitudinal side edge of the rectangular plate for receiving a safety cable therein on a side of the plate opposite to the side having the eye, each said elongated hook-shaped jaw having a longitudinal edge adapted to mate with a longitudinal side edge of the rectangular plate for receiving a hinge connection, whereby the said mating jaw edge is substantially planar with the plate and the opposite distal longitudinal jaw edge is spaced from the plate during no-load conditions to allow the load transfer device to pass a support bracket, and the mating jaw edge is out of alignment with the plate and the distal longitudinal jaw edge substantially abuts the rectangular plate to prevent the load transfer device from passing a support bracket when under load.

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MOBILE TRANSCENDING SCAFFOLD APPARATUS

Alex Armond, and Carolyn Armond, both of 1201 S. Prescott Dr., Morgan City, La. 70380

Filed Jul. 6, 1992, Ser. No. 909,304
Int. Cl.[5] E04G *1/20*
U.S. Cl. 182—63 **3 Claims**



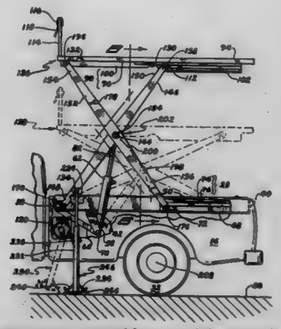
1. In combination with scaffold boards, an apparatus comprising: a set of wheels with two or more axles with steering connections to the front axle; a frame supported by said set of wheels; said frame including required lighting and other safety features; said frame including a rear trailer hitch; said frame covered with a wooden deck; said deck supporting a movable ballast tank that may be filled with various amounts of liquid for desired weight; said frame piped with various conduits having end connectors to provide flow of air, water, power and supplies from carried sources or from trailed vehicles; said frame including a scaffold rack to support the scaffold boards directly above either side of said frame; said frame also having pad eyes to attach reversible scaffold supports to enable suspended scaffolds to be erected on either side of said frame; said scaffold support having pin hinged legs attached to said pad eyes, and adjustable arms for lateral positioning to compensate for ground tilt of the frame; said scaffold supports having removable safety rails adjacent to said scaffold boards; said scaffold rack having guide railings to prevent horizontal sway of the support legs; said support legs supporting removable outriggers to transcend work projects; said outriggers supporting hanging scaffold ladders on a side of said work project opposite to said frame; said hanging scaffold ladders having ground stabilizer pins to eliminate sway; whereby, said apparatus may be towed to a job site in a partially disassembled form, erected at the job site into a towable scaffold system that is dual sided to straddle fence-like work projects, connected to other trailers carrying equipment and supplies, and towed in a train-like fashion along the project as work is performed without requiring dismantling and re-erection between progressive work areas.

5,297,653

PICKUP TRUCK MOUNTED LIFT APPARATUS

Henry J. Wurtz, and David J. Wurtz, both of R.R. 2, Box 123, Artesian, S. Dak. 57314

Filed Apr. 5, 1993, Ser. No. 42,729
Int. Cl.[5] E04G *1/22*
U.S. Cl. 182—63 **7 Claims**



1. A lift apparatus mountable on a pickup truck for upward extension therefrom, comprising:

a base assembly comprising:

opposing left and right side rails configured for supportable mounting on the upper surfaces of opposing cargo carrier side walls of a pickup truck, said side rails having front and rear ends;

transverse members joining the opposing side rails at the front and rear ends of the base assembly;

a transverse cylinder supporting cross beam having opposing ends joined to the opposing side rails forwardly of the center between the front and rear ends thereof;

two cylinder support assemblies suspended downwardly from said cross beam, said cylinder support assemblies transversely spaced apart and suspended downwardly to have pivotal cylinder mounting means attached thereto at a level below the side rails;

two enclosed lower wheel channels, each lower wheel channel attached to the rearward portion of a side rail and parallel thereto;

a liftable horizontal platform assembly having a framework, a floor and parallel spaced-apart enclosed left and right upper wheel channels, each wheel channel extending along a major portion of the rear one-half of the platform assembly beneath the floor; and

a lifting assembly interposed between the base assembly and the platform assembly, said lifting assembly comprising:

a left scissor assembly having first and second lifting arms pivotably joined in a central portion thereof, said first lifting arm having a forward end pivotably attached to the front end of said left rail and a rearward end with a rotatably attached wheel configured to supportably ride in said left upper wheel channel, and said second lifting arm having a forward end pivotably attached to the left front portion of said platform assembly and a rearward end with a rotatably attached wheel configured to supportably ride in said left lower wheel channel;

a right scissor assembly having first and second lifting arms pivotably joined in a central portion thereof, said first lifting arm having a forward end pivotably attached to the front end of said right rail and a rearward end with a rotatably attached wheel configured to supportably ride in said right upper wheel channel, and said second lifting arm having a forward end pivotably attached to the right front portion of said platform assembly and a rearward end with a rotatably attached wheel configured to supportably ride in said right lower wheel channel;

a central shaft having a left end pivotably joining the lifting arms of said left scissor assembly and a right end pivotably joining the lifting arms of said right scissor assembly; and

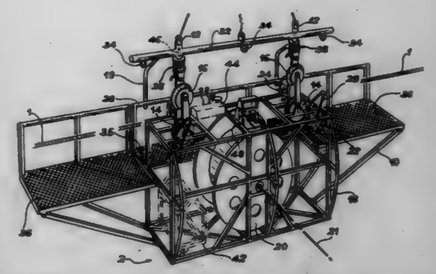
a pair of hydraulic cylinders mounted in said cylinder support assemblies, said hydraulic cylinders having hydraulic power-extensible cylinder rods attached to said central shaft for lifting said central shaft to elevate said platform assembly.

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HELICOPTER-CARRIED NACELLE AND ITS USE PROCESS FOR THE REPLACEMENT OF AN OVERHEAD CABLE PORTION

Robert De Forges De Parny, Cadolive; Gérard Moudin, Albertville, and Philippe Ruaux, Rognac, all of France, assignors to Electricite De France Service National, France

Filed Apr. 27, 1992, Ser. No. 874,712
Claims priority, application France, Apr. 29, 1991, 91 05256
Int. Cl.[5] E04G *3/10*
U.S. Cl. 182—150 **14 Claims**



1. Helicopter-carried nacelle (2) movable along an overhead cable (1) and guided by the latter, intended for the replacement of an old section (3) of said cable (1) by a new section of cable (4) comprising a metal structure (10) defining a working volume, which carries anchoring means (12) for fixing the nacelle (2) to a helicopter support rope (11), a drum (20) around which can be wound and unwound the new section (4) and around which can be wound subsequently the old section (3) to be replaced and means for guiding the nacelle (2) by the cable (1), the guidance means comprising two pairs of pulleys, each pair comprising an upper pulley (16), having a groove (17) defined

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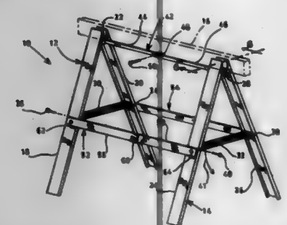
by a pair of flanges, whereby one of said flanges having a diameter that is less than a diameter of the other of said flanges, to facilitate release of the cable of the cable (1) when the latter rises against it at the end of operations carried out by means of the nacelle (2) and a lower pulley (14) for receiving the cable (1), when the nacelle (2) is operational, i.e. when it is pulled up by the helicopter.

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COLLAPSIBLE SAWHORSE

Danny K. Wolfe, Rte. 3, Box 382D, Bean Station, Tenn. 37708

Filed Sep. 24, 1992, Ser. No. 950,283
Int. Cl.[5] B27B *21/00*
U.S. Cl. 182—153 11 Claims



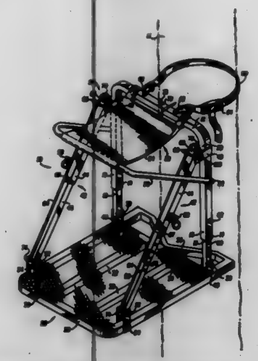
1. A collapsible sawhorse unit for receiving a replaceable crosspiece, said sawhorse unit comprising:
a first A-shaped end support having a pair of leg members, said leg members pivotally joined proximate a first end with a transverse bracket having one end attached to one leg and pivotally joined to a second leg, said first end of said leg members for grasping a replaceable crosspiece, said first end support provided with a pivotal transverse brace intermediate said first end of said leg members and an opposite end of said leg members;
a second A-shaped end support having a pair of leg members, said leg members pivotally joined proximate a first end with a second transverse bracket having one end attached to one leg and pivotally joined to a second leg, said first end of said leg members for grasping the replaceable crosspiece, said second end support provided with a pivotal transverse brace intermediate said first end of said leg members and an opposite end of said leg members;
a first folding longitudinal brace having opposite ends and a midpoint, one of said opposite ends pivotally joined to said transverse bracket of said first end support and a second of said opposite ends pivotally joined to said second transverse bracket of said second end support, said first folding longitudinal brace member provided with a pivot element at said midpoint, adjoining ends of said first folding longitudinal brace provided with aligned holes near said midpoint to receive a removable pin member, said pin member providing stiffening of said first folding longitudinal brace by preventing pivoting at said pivot member thereof; and
a pair of further folding longitudinal braces positioned on opposite sides of said sawhorse unit, each having opposite ends and a midpoint, one of said opposite ends pivotally attached to a leg of said first end support and a second of said opposite ends pivotally attached to a leg of said second end support, each said further folding longitudinal braces provided with a pivot element at said midpoint.

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FIXED POSITION TREE STAND HAVING ADJUSTABLE FOOTREST

Joseph A. Amacker, 1212 Main St., Delhi, La. 71232

Continuation-in-part of Ser. No. 818,120, Jan. 8, 1992. This application Dec. 31, 1992, Ser. No. 999,166
Int. Cl.[5] A01M *31/00*
U.S. Cl. 182—187 24 Claims



1. A fixed position tree stand comprising:
a vertically extendable and retractable frame for mounting the tree stand to a tree;
a seat mounted to said frame;
a footrest pivotally attached to said extendable and retractable frame; and
at least one extendable and retractable support member diagonally disposed between and pivotally connected to said frame and said footrest, wherein said footrest is pivotally mounted relative to said extendable and retractable support member, such that height and inclination of said footrest may be adjusted by cooperation of said extendable end retractable frame and said extendable and retractable support member.

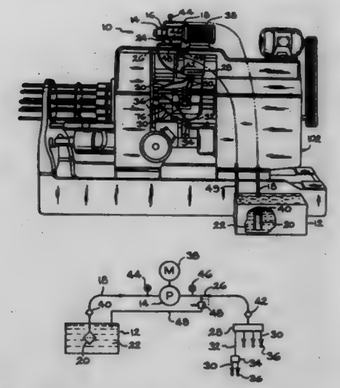
5,297,657

HIGH PRESSURE COOLANT SYSTEM FOR MACHINE TOOLS

James W. McConkey, Delta, Ohio, assignor to Brittani-7, Inc., Delta, Ohio

Filed Jul. 25, 1991, Ser. No. 736,027
Int. Cl.[5] B23B *51/06*
U.S. Cl. 184—6.14 20 Claims

1. Coolant system for a machine performing a material removal operation, said machine including a reservoir for collection of a coolant fluid used to cool and lubricate a workpiece and cutting tool during the material removal operation, said coolant system comprising:
a positive displacement pump having an inlet and an outlet;
connecting means for connecting said inlet to the coolant reservoir to enable said pump to receive coolant through said inlet;
check valve means disposed within said connecting means to prevent substantial drainage of coolant form said connecting means when said pump is not in operation;
means forming a coolant discharge passage from said pump outlet to said workpiece and cutting tool;
said discharge passage means terminating in at least one spray nozzle adjacent said workpiece and cutting tool, said at least one nozzle having a restricted orifice compared to said discharge passage means immediately upstream from said nozzle whereby the average velocity of coolant spray through said nozzle is increased compared



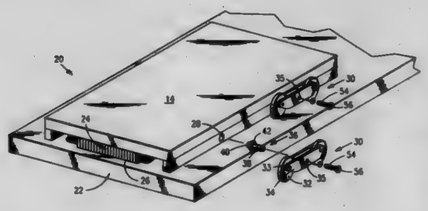
to the average velocity of coolant flow immediately upstream from said nozzle.

5,297,658

ROLLER CAM ADJUSTER FOR LINEAR MOTORS

Timothy J. Grinaski, East Hartford, and Robin M. Miller, Ellington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 7, 1992, Ser. No. 957,496
Int. Cl.[5] B66B *17/12*
U.S. Cl. 187—94 3 Claims



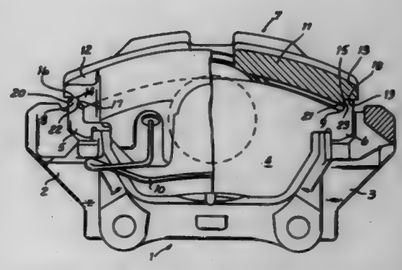
1. An elevator linear motor, comprising:
a stationary element,
a moving element separated from said stationary element by an air gap, said moving element having an aperture disposed on a side thereof, and
an adjusting means for maintaining and adjusting said air gap between said stationary element and said moving element comprising;
a roller,
a plate having a pivot opening disposed therein and means for rotatably supporting said roller,
a cam for adjusting said air gap, said cam fitting into said aperture of said moving element on one side and into said pivot opening formed within said metal plate so that position of said stationary element in relation to said moving element can be adjusted by adjusting said cam and said plate pivoting about said cam, and
a fastening means to secure said plate onto said moving element.

5,297,659

FLOATING CALIPER AND BRAKE SHOE FOR SPOT-TYPE DISC BRAKES

Rudolf Thiel, Frankfurt am Main; Ulrich Klimt, Gross-Umstadt, and Andreas Doell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/01309, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO92/04553, PCT Pub. Date Mar. 19, 1992
PCT Filed Jul. 12, 1991, Ser. No. 852,137
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027563
Int. Cl.[5] F16D *65/092, 65/38*
U.S. Cl. 188—73.31 5 Claims



1. In a floating caliper spot-type disc brake, in particular for automotive vehicles, with a brake carrier which is furnished with two carrier arms substantially extending in an axial direction and positioned at a distance form each other in the circumferential direction, an external brake shoe provided with a lining carrier plate axially slidingly guided on said carrier arms of said brake carrier by two carrier elements, each projecting substantially in said circumferential direction from each side of said lining carrier plate, which carrier elements engage and interact with said carrier arms so that circumferential contact forces imposed on said external brake shoe are transmitted to both carrier arms upon the development of increasing brake contact forces, with a fist-shaped floating caliper being guided axially slidingly on said brake carrier, said floating caliper having a caliper bridge extending axially over said external brake shoe, a housing spring clamping said floating caliper bridge against said lining carrier plate of said external brake shoe, said floating caliper bridge formed with two extension portions, each extending circumferentially outwardly over and past a respective carrier element of said external brake shoe and extending in an axial direction along said carrier arms of said brake carrier the radial inside of said extension portions each formed with a groove extending in an axial direction and having surfaces facing radially inwardly towards said carrier elements of said external brake shoe, said carrier elements of said axially external brake shoe formed with projections which extend into said grooves to be abutted against said facing surfaces, said floating caliper bridge thereby being supported in a circumferential direction and radially on said brake carrier by engagement of said grooves with said projections of said two carrier elements of said external brake shoe.

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5,297,660

BRAKE RING/HUG CONNECTION VIA CLAMPING NOTCHES

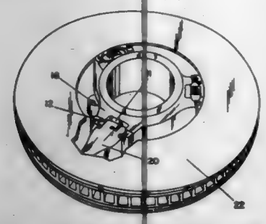
Wolfgang Wiebelhaus, Mülheim-Ruhr; Jürgen Schneider, Bochum; Manfred Gronemann, and Hans Rocholl, both of Remscheid, all of Fed. Rep. of Germany, assignors to Bergische Stahl-Industrie, Remscheid, Fed. Rep. of Germany

Continuation of Ser. No. 846,728, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 518,913, May 4, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,987

Claims priority, application Fed. Rep. of Germany, May 11, 1989, 3915415

Int. Cl.[5] F16D *65/12*

U.S. Cl. 188—218 XL 6 Claims



1. In a brake ring/hub connection via clamping notches for a rail vehicle, with a hub having at least three clamping notches that extend radially between clamping arms, and with connecting strips that are disposed on a brake ring being pressed into said clamping notches and said hub being pressed onto an axle, the improvement wherein:

in a state when a connecting strip of said brake ring is pressed in to thereby provide a clamping connection between said connecting strip and said clamping arms of the pertaining clamping notch, the smallest cross-sectional configuration of said hub in a base of said clamping notch is greater than the cross-sectional configuration of said clamping arms in that region thereof that is exposed to the greatest stress, and the cross-sectional configuration of said hub beyond said clamping arms and said clamping notches is at least at certain locations smaller than said smallest cross-sectional configuration in said base of said clamping notch.

5,297,661

POWER SUPPLY MEANS FOR ELECTRICALLY OPERATED APPARATUSES AND A SWITCH FOR THE POWER SUPPLY MEANS

Aleksei Tschurbanoff, Turku, Finland, assignor to Tamrock Oy, Tampere, Finland

PCT No. PCT/FI91/00145, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/17905, PCT Pub. Date Nov. 28, 1991

PCT Filed May 9, 1991, Ser. No. 945,973

Claims priority, application Finland, May 18, 1990, 902467

Int. Cl.[5] B60M *1/18*

U.S. Cl. 191—38 6 Claims

1. Power supply means for electrically operated moving apparatuses comprising:

a trolley track comprising bus bars positioned at least over a portion of the length of the trolley track and above a space where the apparatuses move;

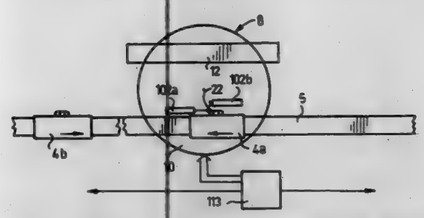
trolleys movable on the trolley track, the trolleys comprising contacts arranged in contact with the bus bars, each trolley being connected to a respective apparatus by an electric cable;

a first turntable-type switch, rotatable about a turning axis, installed in the trolley track above the space where the apparatuses move and comprising a first coupling portion forming part of the trolley track whereby, when said first coupling portion extends in the same direction as the trolley track and in alignment with the trolley track, the first coupling portion forms, together with the trolley track, a continuous trolley track along which a trolley is movable, said first coupling portion being pivotable about the turning axis away from the trolley track to another position, whereby the trolley is turnable with the first coupling portion by means of said first switch to another position;

said first switch also comprising a second coupling portion, parallel to said first coupling portion, positioned reversely symmetrically with respect to said turning axis of said first switch, with each of said first and second coupling portions having bus bars;

said bus bars of said first and second coupling portions having a phase sequence reversely symmetrical with respect to said turning axis;

the coupling portions being spaced from one another such



that a trolley can be positioned simultaneously on both coupling portions;

both coupling portions of said first switch being turnable into alignment with said trolley track to form a continuous trolley track;

said first switch being installed in the trolley track to form a shunting switch whereby, when two apparatuses pass by each other, the trolley of a first apparatus is stopped on said first coupling portion of said first switch forming a continuous trolley track and turned together with said first coupling portion away from the trolley track while said second coupling portion is correspondingly turned to form a continuous trolley track along which the trolley of a second apparatus is able to pass by said first switch, said first switch including braking and locking means for stopping a trolley at said first switch and for locking it in position during the turning movements of the first switch.

5,297,662

TRACTION CONTROL SYSTEM FOR VEHICLE

Toshiaki Tsuyama; Toru Onaka; Kazutoshi Nobumoto; Fumio Kageyama, and Makoto Kawamura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 21, 1991, Ser. No. 718,638

Claims priority, application Japan, Jun. 21, 1990, 2-163364; Sep. 18, 1990, 2-247919

Int. Cl.[5] B60K *41/20*

U.S. Cl. 192—1.22 6 Claims

1. A traction control system for a vehicle having an engine comprising

a slip detecting means which detects slip value of driving wheels of the vehicle relative to a road surface,

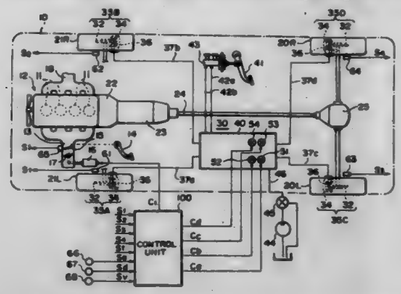
a sub-throttle valve provided in an intake passage of the engine in series to a main throttle valve which is operatively connected to an accelerator pedal to open and close in response to operation of the accelerator pedal,

a throttle opening detecting means which detects opening of the main throttle valve, and

an engine output control means which controls opening of the sub-throttle valve to control the output of the engine so that the slip value of the driving wheels converges on a target slip value,

wherein the improvement comprises that

said engine output control means once moves the sub-throttle valve to an initial opening when the slip value of the driving wheels exceeds the target slip value and then controls the opening of the sub-throttle valve to control the output of the engine so that the slip value of the driving wheels converges on a target slip value, the initial opening being set to be a fixed value when the opening of the main throttle valve is not larger than a predetermined opening and to be substantially equal to the opening of the main throttle valve when the opening of the main throttle valve is larger than the predetermined opening, the fixed



value being not smaller than the predetermined opening of the main throttle valve.

3. A traction control system as defined in claim 1 which further comprises a braking control means which controls braking force applied to the driving wheels so that the slip value of the driving wheels converges on the target slip value when the slip value of the driving wheels exceeds a predetermined slip value larger than the target slip value and in which said engine output control means starts the control of the sub-throttle valve a predetermined time later than normal when the vehicle is running on a road having a large friction coefficient.

5,297,663

CONVEYOR BALL UNIT

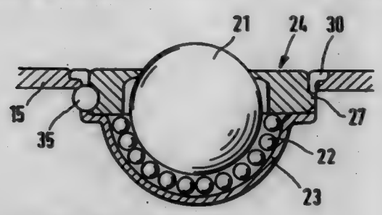
Jarl Sundseth, Neuhaus, Fed. Rep. of Germany, assignor to Electro Pneumatic International GmbH, Fed. Rep. of Germany

Division of Ser. No. 882,412, May 13, 1992, Pat. No. 5,219,057. This application Jun. 14, 1993, Ser. No. 76,354

Claims priority, application Fed. Rep. of Germany, May 14, 1991, 4115707

Int. Cl.[5] B65G *13/00*

U.S. Cl. 193—35 MD 7 Claims



1. A conveyor ball unit comprising

a conveyor ball;

a mounting shell for the conveyor ball;

a plurality of mounting balls for supporting the conveyor ball in the mounting shell;

a retaining ring to keep the conveyor ball in position on the mounting balls within the mounting shell; and

a first locking element which is inverted into an opening defined by the mounting shell so that it partly projects beyond the outer surface defined by the mounting shell to attach the mounting shell to a supporting structure and to brace a rim of the mounting shell against the supporting structure, and which projects into a radial recess defined by the retaining ring to fix the retaining ring within the mounting shell.

5,297,664

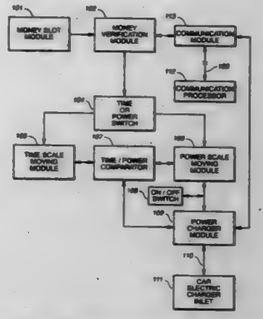
ELECTRIC CHARGING/PARKING METER

Ling-Yuan Tseng, and David Tseng, both of 13772 Calle Tacuba, Saratoga, Calif. 95070

Filed Jun. 26, 1992, Ser. No. 904,952

Int. Cl.[5] G07F *15/12, 17/24*

U.S. Cl. 194—217 3 Claims



1. A combination parking meter and electric charging meter, comprising:

means for receiving and verifying a medium of payment;

means for selecting and visibly indicating some combination of parking time and electric power to be had in exchange for said medium of payment;

charging means for connecting to and supplying power to an electric car charger inlet; and

fast-charge setting means for causing said charging means to operate in a fast-charge mode when said fast-charge setting means determines that an amount of parking time selected is insufficient in accordance with a normal charging mode to supply an amount of electric power selected.

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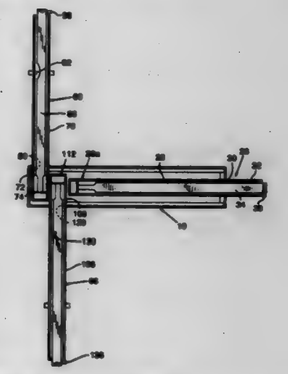
VEHICLE WITH MULTIPLE SERVING CONVEYORS

Roger G. Smith, 17693 SW. Blue Heron Rd., Lake Oswego, Oreg. 97034

Filed Mar. 29, 1993, Ser. No. 38,255

Int. Cl.[5] B65G *15/26*

U.S. Cl. 198—313 8 Claims



1. A conveyor vehicle comprising:

an elongate vehicle frame and wheel support for the frame

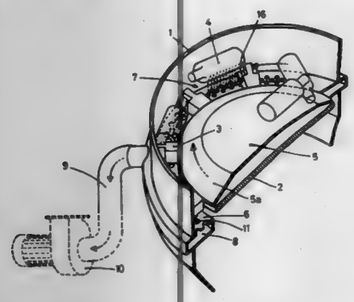
accommodating movement of the frame over the ground,
first and second elongate lateral-feeding conveyors disclosed in a road transport position where the conveyors extend longitudinally of the vehicle frame,
an elongate longitudinal-feeding conveyor disposed in a road transport position where the conveyor extends longitudinally of the conveyor frame and parallels the lateral-feeding conveyors,
said lateral-feeding and longitudinal-feeding conveyors each having a pivoted end and a free end, and said pivoted ends of the respective conveyors being located adjacent one end of the vehicle frame,
a mounting for the pivoted end of the first lateral-feeding conveyor providing for swinging of the conveyor to place it in a set up position with the conveyor swinging about an upright axis and about a horizontal axis,
a mounting for the pivot end of the second lateral-feeding conveyor providing for swinging of the conveyor to place it in a set up position with the conveyor swinging about an upright axis and swinging about a horizontal axis,
and a mounting for the longitudinal-feeding conveyor for swinging of the conveyor to place it in a set up position where the conveyor swings about a horizontal axis.

5,297,666

MACHINE FOR AUTOMATICALLY ORIENTING CONTAINERS

Jaime Marti Sala, C/Emancipación, 8, 08017 Barcelona, Spain

Filed Feb. 1, 1993, Ser. No. 11,752
Claims priority, application France, Jan. 30, 1992, 92 01246
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—380 **5 Claims**



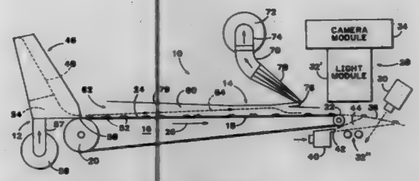
1. Machine for automatically orienting containers, such as plastic bottles, comprising:
a hopper for receiving a plurality of randomly positioned containers;
a side wall on said hopper;
a bottom in said hopper having a peripheral portion spaced from said side wall to provide a space through which containers on said bottom can pass;
container holder support means having a peripheral portion and supported below said hopper for movement of said peripheral portion thereof in a path adjacent said peripheral portion of said bottom;
means for driving said container holder support means in said path;
container holder means mounted on said container holder support means for movement therewith and forming recesses for receiving and holding the containers in a lying position from said peripheral portion of said bottom;
discharge openings in said container holder means for allowing the containers to pass therethrough;
a container support shelf means extending below said holders for supporting the containers in a lying position in said receiving recesses during movement of said container holder means;
a discharge section in said support shelf means for discontinuing support of the containers at a predetermined location so that containers in said container holder means pass through said openings at said discharge section;
tilting means on said container holder means engaging one part of each container for tilting the container into a predetermined position as the container passes through said openings at said discharge section;
chute means mounted below and movable with said discharge openings for receiving, orientating and guiding containers passing through said discharge openings into a predetermined position, each chute means having a lower exit portion;
said container support shelf means for supporting the containers in a lying position in said receiving recesses is carried out from a duct connected through at least one conduit to a source of negative pressure and provided in a wall acting as support plane for the containers with a plurality of holes saitable to cooperate, through the air they suck, to the positioning and upholding of the containers inside said peripheral recesses.

5,297,667

SYSTEM FOR STABILIZING ARTICLES ON CONVEYORS

Philip L. Hoffman; David A. Welbon, both of Medford, and Richard J. Signorello, Grants Pass, all of Oreg., assignors to Simco/Ramic Corporation, Medford, Oreg.

Filed Nov. 12, 1992, Ser. No. 974,410
Int. Cl.[5] B65G *47/22*
U.S. Cl. 198—493 **17 Claims**



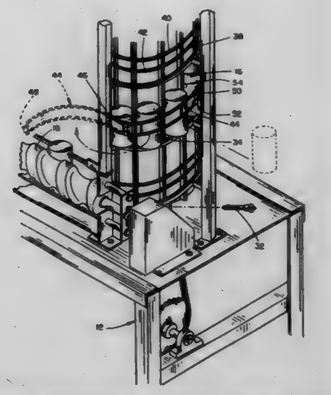
1. A conveyor system, comprising:
a conveyor surface moveable to carry in a selected direction articles positioned on the conveyor surface;
a driving mechanism coupled to the conveyor surface for moving it in the selected direction;
a conveyor hook positioned apart from the conveyor surface to form a tunnel through which the conveyor surface carries the articles, the tunnel having an upstream end and a downstream end past which the conveyor surface carries articles into and out of the tunnel, respectively;
a blower having an input through which a gas is drawn and an output through which passes the gas drawn through the input; and
a nozzle adjacent the downstream end of the tunnel in communication with the input of the blower and positioned to draw a flow of gas in the tunnel along the conveyor surface in the selected direction to stabilize the articles on the conveyor surface.

5,297,668

CONVEYOR FOR RAISING AND LOWERING CONTAINERS INCLUDING MEANS FOR MANUALLY REMOVING CONTAINERS THEREFROM

Arden K. Zink, Louisville, Nebr., assignor to Millard Mfg. Corp., Omaha, Nebr.

Filed Jan. 29, 1993, Ser. No. 84,419
Int. Cl.[5] B65G *35/00*
U.S. Cl. 198—724 **2 Claims**



1. A vertical conveyor for conveying articles between vertically disposed locations, comprising:
a vertically disposed first support means rotatable about a vertical axis and having upper and lower ends;
a spiral support bed means having upper, lower, inner and outer ends extending around said first support means in a spaced-apart relationship for supporting the articles to be moved from the lower end to the upper end thereof or from the upper end to the lower end thereof, said spiral support bed means having a top surface upon which the articles are supported,
drive means for rotating said first support means with respect to said spiral support bed means,
means on said first support means for engaging the articles on said spiral support bed means whereby rotation of said first support means will cause the articles on said spiral support bed means to be moved along said spiral support bed means,
a supporting rail means of helical form at the outer end of said spiral support bed means for maintaining the articles on said spiral support bed means as the articles are moved along the length of said spiral support bed means,
and a gate means in said supporting rail means which is normally closed but which may be opened as desired to permit the removal therethrough of the articles on the spiral support bed means.

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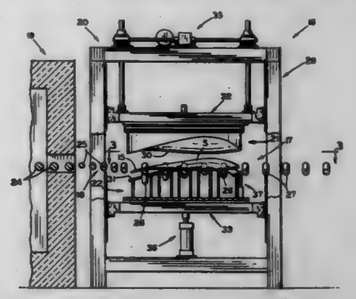
METHOD AND APPARATUS FOR CONVEYING CURVED GLASS SHEETS

H. Christoph Neuendorf, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Jan. 14, 1993, Ser. No. 4,445
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—782 **10 Claims**

1. A method of conveying a bent glass sheet having a first portion and a second portion terminating in a downwardly extending edge in a generally horizontal path on a series of longitudinally spaced conveyor rolls having aligned sheet supporting surfaces, comprising positioning said glass sheet on said longitudinally spaced conveyor rolls with said first portion downstream to the horizontal path and said second portion upstream to the horizontal path in a manner wherein said first portion is supported by a plurality of said aligned sheet supporting surfaces and the lowermost point of said downwardly extending edge of said second portion is disposed below said aligned sheet supporting surfaces, advancing said glass sheet on said longitudinally spaced conveyor rolls while systematically lowering each of said aligned sheet supporting surfaces in sequence below the lowermost point of said downwardly extending edge of said advancing glass sheet to preclude contact therewith.

5. A roll conveyor system for conveying in a generally horizontal path bent glass sheets each having a first leading edge portion and a second portion terminating in a downwardly extending edge, comprising a series of longitudinally spaced conveyor rolls having central sheet supporting surfaces, means mounting each of said rolls for independent vertical displacement from a first position in which said sheet supporting surfaces define said path to a lowered position below the path, and means individually programming and controlling said vertical displacement of each roll in sequence from said first position to said lowered position as said downwardly extending edges of the sheets approach each roll, whereby contact of said edges with said rolls is avoided, and then to return each roll to said first position after travel of said downwardly extending edges therepast.

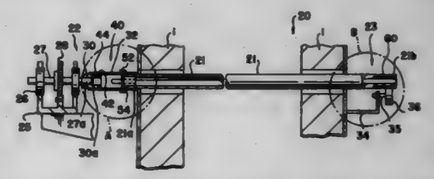


5,297,670

APPARATUS FOR DRIVING ROLLERS IN ROLLER HEARTH KILN

Minoru Yamaguchi, Ichinomiya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 488,838, Mar. 6, 1990, Pat. No. 5,119,922.
This application Feb. 28, 1992, Ser. No. 843,231
Claims priority, application Japan, Mar. 17, 1989, 1-31224; Sep. 7, 1989, 1-105246; Sep. 11, 1989, 1-106314
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] B65G *13/06*
U.S. Cl. 198—789 **5 Claims**



1. A roller driving apparatus for use in a roller hearth kiln having a kiln tunnel and kiln side walls, comprising:
a rotary drive shaft receiving drive power from a source;
a holder fixedly mounted at one end thereof on said rotary drive shaft;

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a connection pipe of metal detachably mounted on the other end of said holder and including a positioning aperture formed therein, said positioning aperture extending along the longitudinal axis of said connection pipe;

a ceramic roller arranged across a path of conveyance for articles to be heat treated, being mounted at a drive end thereof on an end of said connection pipe opposite to said holder for receiving drive power from said rotary drive shaft, said ceramic roller having another, driven end; said ceramic roller extending through the kiln tunnel through one of the kiln side walls of the roller hearth kiln;

engaging means fixedly mounted at one end of said holder, for selectively engaging with said positioning aperture of said connection pipe wherein said engaging means includes a leaf spring fixedly mounted at one end thereof on said holder, and wherein the other end of said leaf spring extends radially and is engageable with said positioning aperture in said connection pipe, and wherein a side portion of said leaf spring transmits rotational forces between said roller and said connection pipe;

a metallic coil spring wound on an outer periphery of said driven end of said ceramic roller; and

a metallic receiver roller rotatably supporting said driven end of said ceramic roller through said metallic coil spring.

5,297,671

CADDY FOR THE INDEPENDENT INDIVIDUAL TRANSPORTING OF COPS AND COP TUBES IN A TRANSPORT SYSTEM OF A TEXTILE MACHINE

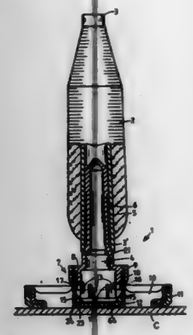
Gregor Rüth, Moenchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Sep. 16, 1992, Ser. No. 945,688

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131527

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—803.12 **6 Claims**



1. A caddy for the independent individual transporting of cops and cop tubes in a transport system of a textile machine, comprising a base plate for removable resting disposition on moving transport means and a mounting mandrel upstanding from the base plate for mounting the cops, the mandrel and the base plate being formed as separable component parts which can be selectively connected securely, but releasably, to one another to enable the mandrel to be replaced by mandrels of differing dimensions for corresponding tube diameters.

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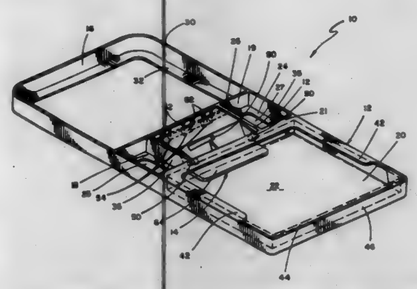
SECURITY PACKAGE FOR COMPACT DISCS

William D. MacTavish, 1201 Shallow Creek Cir., Hopkinsville, Ky. 42240

Filed Jan. 27, 1993, Ser. No. 9,688

Int. Cl.[5] B65D *85/57, 85/672*

U.S. Cl. 206—1.5 **6 Claims**



1. A reusable security package for audio media comprising:

a. a media receiving structure having a handle, a lock section, and a storage compartment;

b. a retainer plate pivotally attached to said lock section and movable to locked and unlocked positions;

c. said storage compartment shaped to receive and contain said media;

d. said lock section having at least one latch port and a keyhole aligned with said latch port to receive a key;

e. said retainer plate having at least one latch receivable by said latch port when said retainer plate is in said locked position, and said retainer plate including a flange for holding said media in said storage compartment when said retainer plate is in said locked position; and

f. said latch releasable from said latch port only by insertion of said key through said keyhole.

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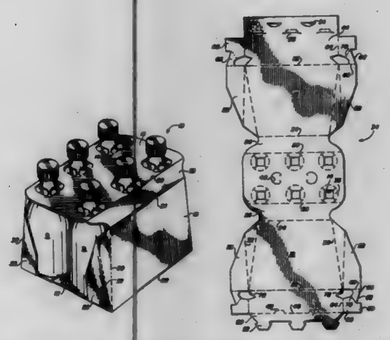
WARP-AROUND CARRIER WITH END PANELS

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed May 17, 1993, Ser. No. 61,880

Int. Cl.[5] B65D *75/08*

U.S. Cl. 206—147 **4 Claims**



1. A package comprised of a wrap-around carrier containing a plurality of articles, comprising:

opposite side panels, each side panel being connected along an upper fold line to a top panel and along a lower fold line to a bottom panel flap, the bottom panel flaps being connected to each other to form the bottom panel of the carrier;

each side panel being connected along a fold line at each end thereof to an end panel flap;

each end panel flap being connected along a first fold line at a lower end edge thereof to a gusset panel;

each gusset panel being connected along a second fold line to an adjacent end edge of an associated bottom panel flap;

each gusset panel having an intermediate diagonal fold line dividing the gusset panel into a first portion extending between the intermediate fold line and said first fold line and a second portion extending between the intermediate fold line and said second fold line;

each gusset panel including an opening defined by interior edges of the first and second portions of the gusset panel, a portion of said lower end edge of the associated end panel flap and a portion of the adjacent end edge of the associated bottom panel flap, the intermediate diagonal fold line terminating at the opening;

the second portion of each gusset panel extending beyond the intermediate diagonal fold line of the gusset panel;

each gusset panel being folded about its intermediate fold line and second fold line so that one face of the second portion thereof is in contact with the bottom panel and the opposite face of the second portion is in contact with the first gusset panel portion, and;

bottom surfaces of packaged articles adjacent the end panel flaps resting separately on the first and second portions of the gusset panels to lock the gusset panels and end panels in place.

5,297,674

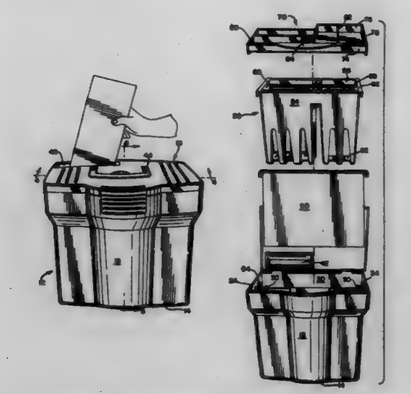
MOLDED BILL PAYMENT CENTER CONTAINER WITH REMOVABLE TRAYS

Andrius S. Birutis, DuPage County; Michael Jaron, Cook County, both of Ill., and W. Robert Worrell, Hennepin County, Minn., assignors to Fellowes Manufacturing Company, Itasca, Ill.

Filed Nov. 4, 1992, Ser. No. 973,961

Int. Cl.[5] B65D *90/04, 91/00*

U.S. Cl. 206—214 **11 Claims**



1. A molded plastic portable bill payment center container comprising:

a. a bin with a bottom, an open top opposite the bottom, and four walls extending substantially vertically upward and including a front wall, a rear wall spaced from and substantially parallel to the front wall, a first side wall at a substantially right angle to the front wall, and a second side wall spaced from and substantially parallel to the first side wall;

b. a cover having a rear hinged to the rear wall of the bin, the cover further having a slot therein to receive an object through it and into the bin;

c. a removable vertical tray supported by the bottom of the bin, the tray having four tray walls extending substantially vertically upward. the walls including a front wall, a rear wall spaced from and substantially parallel to the front wall, a first side wall at a substantially right angle to the front wall, and a second side wall spaced from and substantially parallel to the first side wall, and when the vertical tray is disposed within the bin, the tray walls extend upward a substantial portion of the vertical height of the bin walls and a portion of the tray is located beneath the slot so that the object passing through the slot is received by the tray; and,

d. a removable horizontal tray having four tray walls extending substantially vertically upward, the horizontal tray walls including a front wall, a rear wall spaced from and substantially parallel to the front wall, a first side wall at a substantially right angle to the front wall, and a second side wall spaced from and substantially parallel to the first side wall, the walls of the horizontal tray having a vertical height less than the vertical height of the walls of the vertical tray wherein when the vertical tray and the horizontal tray are disposed within the bin, the horizontal tray is located above the vertical tray and wherein the combined vertical height of the walls of the vertical tray and horizontal tray is substantially the same as the vertical height of the walls of the bin.

5,297,675

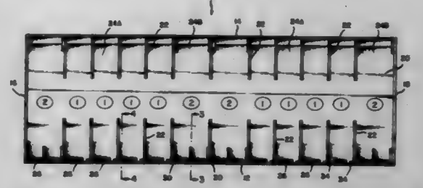
STORAGE TRAY FOR AUDIO/VIDEO CASSETTE AND GAME CARTRIDGES

Thomas Martucci, 701 Richmond Ave., Point Pleasant Beach, N.J. 08742

Filed Mar. 2, 1992, Ser. No. 844,766

Int. Cl.[5] B65D *85/57, 85/672*

U.S. Cl. 206—309 **10 Claims**



1. A storage tray having a plurality of compartments for storing a plurality of boxed or unboxed audio cassettes, boxed or unboxed video cassettes and game cartridges, wherein said cassettes or cartridges, in boxed or unboxed form, are defined by a front panel and a rear panel in parallel relationship with each other, parallel side panels and parallel end panels, said storage tray comprising:

a front wall and a rear wall in parallel relationship with each other, parallel opposing sidewalls, and a base secured to said front wall, rear wall and sidewalls;

a first plurality of dividers secured to said front wall and said base, and a second plurality of dividers secured to said rear wall and said base, said first plurality of dividers aligned with said second plurality of dividers thereby defining a plurality of compartments within said storage tray;

a first support surface positioned and extending between said second plurality of dividers, said first support surface defining a horizontal, elevated step from said base of said storage tray on said rear wall;

a second support surface positioned adjacent said first plurality of dividers on said front wall, said second support

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surface positioned at the intersection of said first plurality of dividers and said front wall;

a resilient engagement member associated with each compartment, each said resilient engagement member formed in said front wall of said storage tray, each said resilient engagement member positioned between said first plurality of dividers and depending inwardly from said front wall, each said resilient engagement member being displaceable outwardly, towards said front wall upon insertion of a boxed or unboxed cassette into a said compartment, each said resilient engagement member being displaced outwardly upon engagement with one of said side panels of an inserted boxed or unboxed cassette, the opposing side panel of said boxed or unboxed cassette to engage with said first support surface extending between said second plurality of dividers on said rear wall of said storage tray.

9. A storage tray for storing boxed or unboxed compact or floppy discs, each of said compact or floppy disc defined by a front panel, rear panel, parallel side panels and parallel end panels, said storage tray comprising:

a front wall and a rear wall in parallel relationship with each other, parallel opposing sidewalls, and a base secured to said front wall, rear wall and sidewalls;

a first plurality of dividers secured to said front wall and said base and a second plurality of dividers secured to said rear wall and said base, said first plurality of dividers aligned with said second plurality of dividers thereby defining a plurality of disc-receiving compartments;

a recessed channel formed in said base of said storage tray in each of said disc-receiving compartments, each said recessed channel having a first end coincidental with said front wall of said storage tray, each said recessed channel extending from said front wall towards said rear wall a distance equal to a length of an end panel of a floppy disc, each said recessed channel terminating in a second end formed in said base of said storage tray; and

a resilient engagement member associated with each disc-receiving compartment, each said resilient engagement member formed in said front wall of said storage tray, each said resilient engagement member positioned between said first plurality of dividers and depending inwardly from said front wall, each said resilient engagement member being displaceable outwardly towards said front wall upon insertion of a disc into a disc-receiving compartment, an opposing end panel of an inserted compact disc frictionally engaging said rear wall of said storage tray thereby frictionally securing said inserted compact disc in a disc-receiving compartment of said storage tray, an opposing end panel of an inserted floppy disc engaging said second end of said recessed channel and a side panel of said inserted floppy disc engaging said base of said recessed channel thereby frictionally securing said inserted floppy disc in a recessed channel of a disc-receiving compartment of said storage tray.

5,297,676

ROD MOUNTED FISHING TACKLE BOX/CYLINDER

Bruce Coleman, Nostrand Ave., Apartment 1D, New York, N.Y. 11206

Filed Jul. 9, 1993, Ser. No. 89,230
Int. Cl.[5] A01K *97/04, 97/06, 97/10*
U.S. Cl. 206—315.11 **9 Claims**

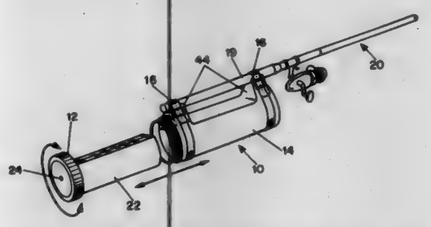
1. A fishing tackle box which mounts onto the handle of a fishing rod comprising:

a hollow cylindrical housing having a top, a bottom, a closed end and an open threaded end;

a compartmentalized drawer for holding fishing paraphernalia having a first end and a second end, the drawer being slidably engaged with the cylindrical housing so that the first end slides in first and the second end remains exposed at the open end of the cylindrical housing;

a threaded screw cap rotatably mounted on the second end of the drawer so that when the drawer is slid into the housing, the threaded end of the housing receives the threaded screw cap;

a flat rider mounted along the top of the interior of the cylindrical housing leaving enough space between the rider and the bottom of the housing to allow the drawer to slide in and out such that when the drawer is slid in, the



rider prevents any fishing paraphernalia which may be contained in the drawer from falling out of the drawer within the cylindrical housing;

a pair of mounting areas projecting from the top of the cylindrical housing; and

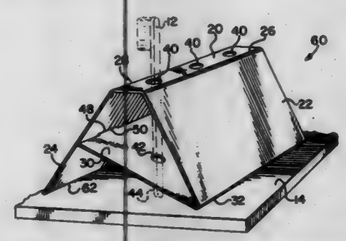
means for securing the fishing rod handle to the mounting areas.

5,297,677

SANITARY TOOTHBRUSH HOLDER

Alfred Burian, and Edith E. Burian, both of 8 Putter La., Middle Island, N.Y. 11953

Filed Mar. 15, 1993, Ser. No. 32,854
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—362.4 **11 Claims**



1. A sanitary toothbrush holder of unitary construction capable of occupying either of a first position wherein said holder is substantially flat for shipping and storage and a second position wherein said holder holds and positions at least a portion of a toothbrush away from a support surface upon which said holder rests, comprising:

(a) a first panel having an outer surface facing substantially upwardly away from said support surface;

(b) an opening in said first panel sized to loosely receive said toothbrush;

(c) a second panel having a pair of opposite edges, one of which is hingedly attached to an edge of said first panel thereby forming a first fold line, and one of which is in supported contact with said support surface; and

(d) additional support means in contact with said support surface for supporting said toothbrush holder in cooperation with one of said pair of opposite edges and for holding said toothbrush holder in said second position including a third panel having a pair of opposite edges, one of which is hingedly attached to an edge of said first panel that is opposite said first fold line thereby forming a second fold of which is hingedly attached to an edge of said second panel that is opposite said first fold line thereby forming a third fold line and the other of which is attached to said third panel away from both said opposite edges of said third panel when said holder is in said second position.

5,297,678

FILM CASSETTE

Allen B. Cullen, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 28, 1993, Ser. No. 68,813
Int. Cl.[5] B65D *81/30*
U.S. Cl. 206—455 **32 Claims**



1. A cassette for a photosensitive element, such as an x-ray film, said cassette comprising:

a first cassette portion having an inner surface;

a second cassette portion secured to said first cassette portion for movement between open and closed positions, said first and second cassette portions forming a light tight space therebetween for receiving a photosensitive element when said cassette is in the closed position;

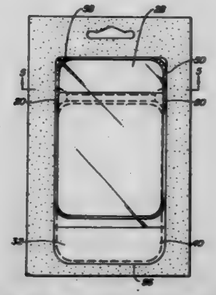
a cushion pad assembly secured to the inner surface of said first cassette portion, said cushion pad assembly comprising a first inner layer and a second outer layer, said first inner layer being adjacent the inner surface of said first cassette portion, said inner layer being made of a material having a first load deflection value, said second outer layer being superimposed over said first inner layer, said second layer being made of a material having a load deflection value greater than that of said first inner layer.

5,297,679

BLISTER PACKAGE AND STORAGE DEVICE

Sam Roadone, La Mirada, and John T. Franck, Jr., La Habra Heights, both of Calif., assignors to House of Packaging, Inc., City of Industry, Calif.

Filed Mar. 19, 1993, Ser. No. 34,437
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—468 **14 Claims**



1. A blister package for storing and dispensing a product comprising:

a tub forming a concavity for holding the product and having an open side, and first and second, substantially parallel flanges extending laterally from the open side of the tub;

a base for placing over and closing the open side of the tub to thereby retain the product in the package, the base comprising;

track means defining spaced-apart, substantially parallel tracks shaped to slidably engage the flanges so that the tub and the base can be moved relative to each other along the tracks,

means limiting relative slidable movements of the tub between storage and removal positions of the tub, and

an access aperture located to be in direct communication with the concavity when the tub is in the removal position so that product can be removed from the package through the aperture; and

a cover attached to the base, closing the aperture and being selectively movable relative to the base for opening the aperture;

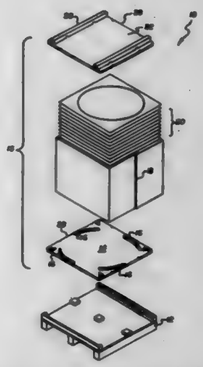
whereby the product can be dispensed from the package upon moving the cover to open the aperture and positioning the tub in the removal position, and whereby the product is retained within the tub when the tub is in the storage position.

5,297,680

RETURNABLE/REUSEABLE SENSITIVE PHOTOGRAPHIC PRODUCTS PACKAGING SYSTEM

Stephen H. Butterfield; Fred W. Muhleman, and Donald S. Taylor, all c/o Eastman Kodak Company, Rochester, N.Y. 14650-2201

Filed Jan. 19, 1993, Ser. No. 5,687
Int. Cl.[5] B65D *85/62, 85/30*
U.S. Cl. 206—499 **14 Claims**


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space, said enclosure further being releasably mounted at said top end edge to said second platform assembly, said positioning means of said second platform assembly being directed downwardly into said interior space, whereby said positioning means of said first and second platform assemblies engage the bottom and top ones, respectively, of said stacked articles within said interior space so as to facilitate stacking and resist motion of said articles;

c) a first means for urging said first platform assembly and said second platform assembly into a compressed relation thereby securing said articles from random movement, and wherein said compressed relation further defines a unitized package arrangement;

d) a second means for urging said unitized package arrangement into a compressed relation with said carrying means thereby restricting motion of said unitized package arrangement during storage and transport, and

e) a stretchable material layer enclosingly wrapped circumferentially around said carrying means and said unitized package arrangement to protect said articles from contamination.

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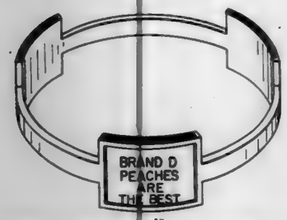
COMBINED CAN STACKER/ADVERTISING DEVICE

Mervin D. Gourley, 40247 177th St. East, Palmdale, Calif. 93550

Continuation-in-part of Ser. No. 569,977, Aug. 20, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,048

Int. Cl.[5] B65D *21/02*

U.S. Cl. 206—503 **10 Claims**



1. A combination can stacker/advertising-informational device comprising:

a flexible resilient ring having a circumference, an inward-facing side and an outward-facing side, said ring including at least one first type section having a vertical dimension, and at least one second type section having a vertical dimension; each second type section having said vertical dimension greater than the vertical dimension of each said first type section; said first and second sections alternating along the circumference of said ring, at least one said second section comprising a back, a 3-sided frame, and a windowed front; said frame comprising 2 opposing sides and a side which is non-opposing, but is physically connected to the opposing sides; said back and front opposing each other, said back being inward facing, said front being outward facing, and said frame physically joining and connecting said front and back; said 3-sided frame, front, and back foring an enclosed void within which said 2 opposing sides of said 3-sided frame serves as opposing guideways for the reception of information panels with said non-opposing side serving as a stop for said panel, said second section having said frame permitting removability of said panel at will;

at least one said second type section having said frame further permitting the insertion and removal of said information panels, said panels viewable on the outward-facing side of said ring; said ring permitting vertical stacking of cans; said panels having indicia thereon.

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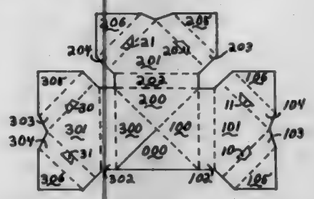
VOLUMETRIC CORNER PROTECTOR

Charles W. Miltenberger, 29208 San Francisquito Cyn, Saugus, Calif. 91350

Filed Mar. 17, 1993, Ser. No. 31,541

Int. Cl.[5] B65D *69/00, 71/00*

U.S. Cl. 206—586 **1 Claim**



1. A corner protector formed from a blank of paper-board material to be applied to the outside corner of an article, said corner protector being folded and formed from a flat blank of pre-cut and pre-scored board material, said corner protector in the flat blank form consisting of six outer triangular panels, six outer rectangular panels, three middle triangular panels, three middle rectangular panels, and four center triangular panels laid-out in a center rectangular pattern, said panels being connected along an edge by pre-scored fold lines forming hinged panels which can be folded relative to each other, said center triangular panels are arranged in a center rectangular pattern which has its sides and intersecting diagonals formed from pre-scored and pre-cut lines forming four center triangular panels three of, said center triangular panels being connected by pre scored fold lines, and two adjacent of said center triangular panels being separated by a pre-cut line and one of said adjacent center triangular panels having a second edge formed by a pre-cut line which is an outer edge of the center rectangular pattern, said center triangular panels having at least two pre-scored fold lines each being connected by one of those lines to one of the three middle rectangular panels, said middle rectangular panels having two pre-scored lines opposite each other and two pre-cut lines each adjacent to two pre-scored fold lines each of said middle rectangular panels being connected to one of said three middle triangular panels opposite a center triangular panel, said middle triangular panels each being connected to two of the six outer rectangular panels along two different pre-scored fold lines and opposite a middle triangular panel, said outer rectangular panels having two pre-scored fold lines opposite each other and two pre-cut lines each adjacent to said two pre-scored fold lines each of said outer rectangular panels being connected along a pre-scored fold line to one of the six outer triangular panels, said outer triangular panels having one pre-scored fold line and two adjacent pre-cut lines and connected opposite a middle triangular panel, said middle triangular and outer rectangular panels having pre-scored and pre-cut regions forming locking tabs to hold the form together after folding.

5,297,683

PROCESS AND APPARATUS FOR PROCESSING RESINS

Alfred Stengel, III, Richmond, Va., assignor to AKS, Inc.

Filed Apr. 7, 1992, Ser. No. 864,651

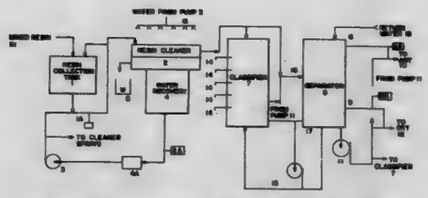
Int. Cl.[5] B03B *7/00*

U.S. Cl. 209—17 **21 Claims**

1. A method of separating a mixture of resins, comprising a first and second type of resins which have different settling velocities, from each other comprising the steps of:

a) introducing said mixture of resins at an entry height into a separator column having an upper and lower region wherein both regions have an outlet and between these outlets is a separation zone;

b) flowing a carrier fluid upwardly through said column at a velocity less than the settling velocity of the first type of resins and greater than the settling velocity of the second type of resins, wherein said carrier fluid is introduced into said separator column as a fluid having a laminar or essentially laminar flow, and wherein the carrier fluid maintains



this laminar or essentially laminar flow through the separation zone of said separator column; and

c) removing said second type of resins from said upper region and removing said first type of resins from said lower region.

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AVIONIC TRAY

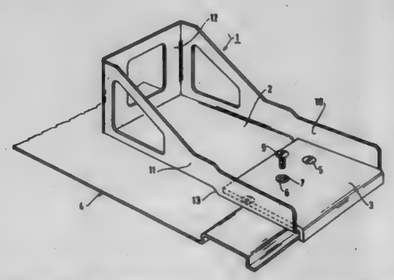
Bernard Meunier, Boutigny-sur-Essonne; Denis Pavie, Ballancourt-sur-Essonne, and Michel Pompei, Villiers-sur-Orge, all of France, assignors to Vibrachoc, Evry Cedex, France

Filed Jul. 20, 1993, Ser. No. 93,711

Claims priority, application France, Jul. 24, 1992, 9209172

Int. Cl.[5] G12B *9/00*

U.S. Cl. 211—26 **2 Claims**



1. Avionic tray adapted to be fixed to a shelf and comprising a base plate, side rails and a back plate, wherein at least a forward end of said base plate of said tray is reinforced by a reinforcing plate fixed to the upper surface of said base plate, the part of said base plate carrying said reinforcing plate is stepped downwards so that the upper surface of said reinforcing plate is level with the surface of said base plate to the rear of said reinforcing plate, and fixing holes are provided in said reinforcing plate and said base plate for fixing said tray to said shelf by means of screws whose heads are housed in housings in said reinforcing plate.

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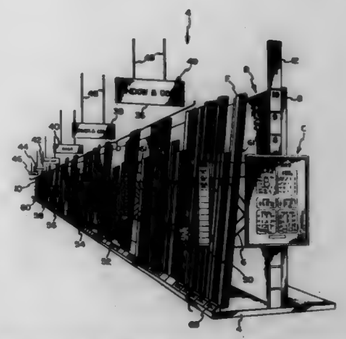
METHOD AND APPARATUS FOR DISPLAYING A PLURALITY OF ARTICLES

Arthur J. Ramey, 870 Fairway Dr., Abingdon, Va. 24210

Continuation of Ser. No. 880,853, May 11, 1992, Pat. No. 5,234,113, which is a continuation-in-part of Ser. No. 643,494, Jan. 22, 1991, Pat. No. 5,111,943. This application Jul. 16, 1993, Ser. No. 92,100

Int. Cl.[5] B65D *71/00*

U.S. Cl. 211—59.4 **20 Claims**



1. An apparatus for displaying a plurality of moulding strips, comprising:

a) a support member having at least first and second groups of moulding strips positioned thereon;

b) at least first and second display panels, said first display panel includes indicia identifying the first group of moulding strips, said second display panel includes indicia identifying the second group of moulding strips, said first display panel being positioned adjacent said first group of moulding strips and said second display panel being positioned adjacent said second group of moulding strips;

c) a plurality of first card members having indicia identifying the moulding strips in said first group of moulding strips, said plurality of first card members being positioned adjacent the corresponding moulding strips in the first group; and

d) a plurality of second card members having indicia identifying the moulding strips in said second group of moulding strips, said plurality of second card members being positioned adjacent the corresponding moulding strips in the second group.

5,297,686

BOTTLE WITH EAR

Setsuyuki Takeuchi, Nagano, Japan, assignor to A.K. Technical Laboratory, Inc., Japan

Continuation of Ser. No. 814,112, Dec. 26, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,823

Claims priority, application Japan, Dec. 29, 1990, 2-406068; Dec. 29, 1990, 2-417079; Aug. 30, 1991, 3-077101

Int. Cl.[5] B65D *23/10*

U.S. Cl. 215—100 A **12 Claims**

1. A bottle with an ear, comprising:

a mouth portion;

a body disposed below said mouth portion;

a mounting groove formed at a predetermined height on said body at a location spaced from said mouth portion, said mounting groove having a predetermined diameter and an upper edge formed of a plurality of notches spaced at equal intervals; and

a mounting ring formed integrally with an end of said ear, said mounting ring being positioned on said mounting groove, said mounting ring having an inner side provided

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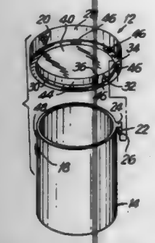
with a plurality of projecting surface facing said mounting groove, the projecting surfaces of said mounting ring being fitted under the upper edge of said mounting groove to secure the ear to the bottle, wherein each of the projecting surfaces of the mounting ring have an upper edge provided with a recess which is fitted into a corresponding attachment projection on the upper edge of the mounting groove to prevent a lateral deviation of the mounting ring.

5,297,687

VIRTUAL HINGE

Anna B. Freed, 185 E. 85th St., Ste. 2-L, New York, N.Y. 10028

Filed Mar. 12, 1992, Ser. No. 850,029
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—206 **23 Claims**



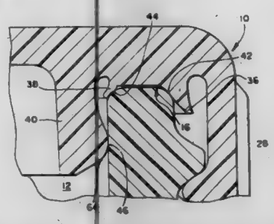
1. A virtually hinged closure, comprising:
(a) a substantially cylindrical lid;
(b) a substantially cylindrical container, said lid being movable between a closed and an opened position, said closed position including a locked position and a released position, wherein in said locked position said lid is immovable to said opened position and in said released position said lid is movable to said opened position, said lid being rotatable relative to said container about an entire circumference of said container in said closed position only including in said locked position and in said released position;
(c) at least one marker position being associated with one of said lid and said container;
(d) pointer means for indicating said at least one marker position, said pointer means being associated with the other one of said lid and said container;
(e) locking means for rotatably locking said lid to said container in said closed position;
(f) selective release means for allowing selective release of said locking means; and
(g) dynamic selective engagement means which dynamically cooperates with said selective release means for selectively engaging said lid to said container during movement of said lid from said closed to said opened position, said dynamic selective engagement means selectively fixing one of said at least one marker position with respect to said pointer means.

5,297,688

CLOSURE FOR SEALING A CONTAINER RIM

James M. Beck, Carol Stream; Terry E. Kubitz, Cary, and Alex Kutaj, Vernon Hills, all of Ill., assignors to Creative Packaging Corp., Buffalo Grove, Ill.

Continuation-in-part of Ser. No. 845,373, Mar. 3, 1992, abandoned. This application Dec. 17, 1992, Ser. No. 992,136
Int. Cl.[5] B65D *53/00*
U.S. Cl. 215—344 **11 Claims**



1. A closure for sealing a rim of an open mouth of a container, the rim having a top surface, an outside surface, an inside surface, a first transitional corner between said top surface and said outside surface and a second transitional corner between said top surface and said inside surface, the closure comprising:
a substantially cylindrical end cap closed at a first end thereof by a top surface, open at a second opposite end thereof and including an annular side wall having a predetermined width extending between said first and second ends, said top surface including a first inside surface facing an interior of said end cap and a second exterior surface facing an exterior of said end cap;
first flexible seal means connected to and depending a predetermined distance from said first inside surface of said top surface proximate said annular side wall for cooperative sealing engagement with said first corner of said container rim and for inhibiting outward distortion of said container rim and a space defined between said side wall and said first seal means;
second flexible seal means connected to and depending a predetermined distance from said first inside surface of said top surface and within the confines of said first seal means for cooperative sealing engagement with said second corner of said container rim and for inhibiting inward distortion of said container rim, said first and second seal means forming a channel therebetween for receiving said container rim therein to prevent leakage of container contents, contamination of the contents from elements outside the container and inhibiting outward and inward distortion of the container rim;
third flexible seal means connected to and depending a predetermined distance from said first inside surface of said top surface and within the confines of said second seal means for sealing engagement with an internal surface of the container mouth and for inhibiting inward distortion of a container neck, and a space defined between said second seal means and said third seal means; and
said channel being radially larger than the space between the side wall and the first seal means, and said channel being radially larger than the space between the second seal means and the third seal means, the first and second seal means being sufficiently spaced from the side wall and the third seal means, respectively, so that they remain free of contact with the side wall and third seal means at all times.

5,297,689

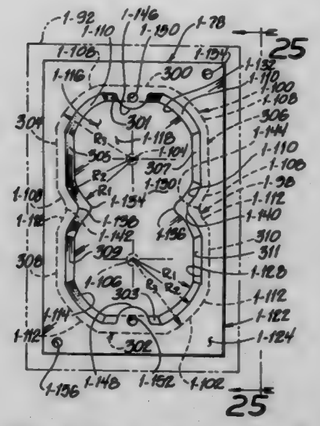
Patent Not Issued For This Number

5,297,690

ELECTRICAL JUNCTION AND SWITCH BOXES

George A. Bardaville, 3201 Townline Rd., Traverse City, Mich. 49684

Continuation-in-part of Ser. No. 640,286, Jan. 11, 1991, Pat. No. 5,143,238. This application Jun. 15, 1992, Ser. No. 898,429
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] H02G *3/08*
U.S. Cl. 220—3.2 **20 Claims**



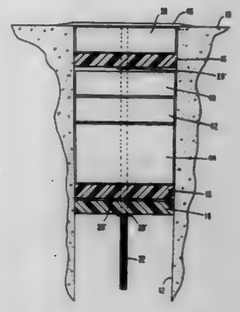
1. An electrical service housing mountable in walls and ceilings, comprising a unitary integrally formed main body, said main body comprising at least first and second longitudinally extending body portions in fixed relationship to each other, said first body portion comprising a first outer surface, wherein said first outer surface comprises a first arcuate outer surface portion and at least a first generally flat surface portion, said second body portion comprising a second outer surface, wherein said second outer surface comprises a second arcuate outer surface portion, wherein said first and second body portions meet each other as to form at least first and second longitudinally extending junctures fixedly spaced from each other, an end wall of fixed configuration integrally formed with both said first and second longitudinally extending body portions and to said at least first and second longitudinally extending junctures as well as to said first generally flat surface portion, said end wall being joined to said first and second longitudinally extending body portions and to said at least first and second longitudinally extending body portions, wherein said first and second longitudinally extending body portions and said end wall collectively at least in part define a chamber which extends from the interior of said first longitudinally extending body portion between said first and second longitudinally extending junctures and into the interior of said second longitudinally extending body portion, wherein said chamber has an access opening at an end thereof which is relatively forward and oppositely disposed to said first relatively rearward end and said end wall, wherein said access opening and said chamber are effective for at least the partial reception therein of at least one associated electrical device, wherein said at least first and second longitudinally extending junctures somewhat project inwardly into said chamber, and wherein the distance by which said longitudinally extending junctures project inwardly into said chamber is such as to permit the passage everywhere therebetween of said at least one associated electrical device.

5,297,691

CLOSURE PLUG AND METHODS OF EMPLOYING THE SAME TO MAINTAIN A FIRE-RATED BARRIER

William R. Bottcher, 515 Garfield Ave., Somerset, N.J. 08873

Continuation of Ser. No. 899,022, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 830,746, Feb. 7, 1992, abandoned, which is a continuation of Ser. No. 630,440, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 310,927, Feb. 16, 1989, abandoned. This application Apr. 27, 1993, Ser. No. 52,990
Int. Cl.[5] B65D *53/00*
U.S. Cl. 220—237 **6 Claims**



1. A closure plug for installation in a generally circular opening in a fire-rated barrier to maintain the integrity of the barrier wherein said opening is at least in part defined by cylindrical side walls of a barrier material extending at least a portion of the way between a circular entrance opening at one surface of said barrier material and a circular exit opening in the opposite surface of the same or similar barrier or support material, wherein the surface dimensions of said barrier or support materials are relatively large with respect to the length of said opening, between the entrance and exit surfaces, in the direction transverse to the lengthwise axis of said opening, said closure plug comprising the combination of:
(a) a plurality of generally annular radially expandably gripping o-ring means, each o-ring means having a continuous circular peripheral surface of compressible elastomeric material for gripping and engaging the interior surface of said opening passing through said barrier material thereby fixing the position of said plug within said barrier material, each said o-ring means having an outer diameter equal to or less than that of the opening passing through said barrier when in an uncompressed state and having a lengthwise, longitudinal axial thickness significantly less than that of the barrier;
(b) a rigid pressure plate member having an outer diameter greater than the diameter of said opening through said barrier material, said plate member having an interior face, an outer portion of said interior face adapted to contact said one surface of said barrier material;
(c) a plurality of insulating members, at least one insulating member comprising a concrete cylinder being disposed between a first one of said o-ring means and said pressure plate member, and said other insulating members being disposed between said first one of said o-ring means and a second one of said o-ring means, said second one of said o-ring means being disposed on an opposite end of said closure plug from said rigid pressure plate member, said other insulating members including a ceramic cylindrical member, a carbon-graphite composite cylindrical member and a cylindrical canister containing fire retardant and suppressant material; and
(d) means extending from said pressure plate member to and beyond said opposite end of said closure plug for urging said second one of said o-ring means toward said pressure

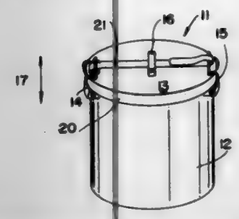
plate member to provide lateral forces to axially compress and radially expand said o-ring means against the internal surface of said cylindrical side walls of said barrier material whereby subsequent to the placement of the said closure plug into the opening in said barrier material the positive adjustment of said means for urging extending from said pressure plate member to and beyond said opposite end of said closure plug causes the o-ring means to expand outwardly to form a seal with the interior wall surfaces of the opening through said barrier material.

5,297,692

COVER RETAINER MEANS

Leroy M. Kronmiller, 7568 Ridge Ave., Philadelphia, Pa. 18128

Filed Dec. 16, 1992, Ser. No. 991,563
Int. Cl.[5] B65D *45/08*
U.S. Cl. 220—318 5 Claims



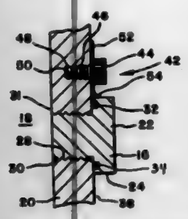
1. Retainer means of use in removably securing a trash barrel cover in place on a trash barrel of the type having at least one pair of oppositely disposed open handles which are adjacent the cover when the cover is in place, the retainer means comprising:
a flat, elongated band made of flexible material;
self-gripping fastener means disposed adjacent one end of said band, the self gripping fastener means comprising a hook section and a loop section each positioned on the same surface of the band, the band and the hook and loop section each being dimensioned to permit passage through one of said open handles for the purpose of the band forming a loop around the handle;
a closed loop formed on the opposite end of said band; and
an attaching ring loosely mounted on said closed loop, the attaching ring being dimensioned to provide space for said band and said hook and loop sections to be passed through the attaching ring for the purpose of the band forming a loop around the other of said open handles.

5,297,693

CLOSURE MEMBER LOCKING RETAINER

Russell C. Perkey, Granger, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 7, 1992, Ser. No. 957,564
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—328 4 Claims



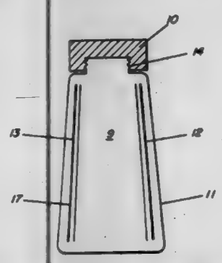
1. In a housing having a cavity therein with first and second openings therein, a first closure member located in said first opening and a second closure member located in a second opening for sealing said cavity from a surrounding environment, said first closure member having a first end section with a first irregular radial surface thereon through which a first torque is applied to move threads on the first closure member into corresponding threads in the housing to join the first closure member with the housing, said second closure member having a second end section with a second irregular radial surface thereon through which a second torque is applied to move threads on the second closure member into corresponding threads in the housing to join the second closure member with the housing, the improvement comprising:
a first self locking fastener member having a first head with a first stem extending therefrom, said first stem having threads thereon that engage the housing to locate said first self locking fastener member adjacent said first and second openings;
a first washer retained on said first stem extending from said first head of said first self locking fastener member, said first washer engaging said first irregular surface on said first closure member and said second irregular surface on said second closure member, said first washer being proportionally deformed as a third torque is applied to said first head to locate said first locking fastener member on said housing, said proportionally deformed first washer preventing relative rotation between said first and second closure members and housing to assure that said cavity remains sealed through said first and second openings.

5,297,694

DEVICE WITH CONSTANT MAGNETIC FIELD TO PRESERVE PERISHABLE SUBSTANCES

Raymond Bontemps, 5, Av. de La Grande Armee, 75116 Paris, France

Filed Sep. 30, 1992, Ser. No. 954,003
Claims priority, application France, Nov. 13, 1991, 91 13931
Int. Cl.[5] B65D *35/28*
U.S. Cl. 220—666 5 Claims



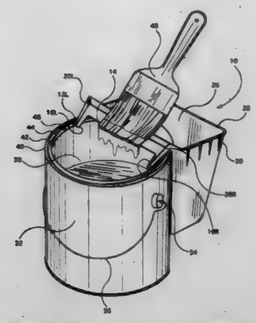
1. A container made of a substantially dielectric material adapted to contain and preserve a perishable substance, comprising:
a substantially elongated tubular portion defining an enclosure adapted to contain a perishable substance, the tubular portion being made from a flexible dielectric material, and defining an opening adapted to release said perishable substance through the opening by squeezing the tubular portion;
a first magnet coupled to an interior wall of the tubular portion and extending substantially the length of the tubular position;
a second magnet coupled to said interior wall of the tubular portion of a substantially opposite side of the tubular portion relative to the first magnet and facing the first magnet defining a magnetic field between the first and second magnets, said magnetic field adapted to substantially encompass said perishable substance; and
a porous material located between the first and second magnets to prevent contact between the first and second magnets.

5,297,695

PAINTBRUSH WIPER AND APPARATUS HOLDER

Jeffrey Provence, 2302 Via Dieguenos, Alpine, Calif. 91901

Filed Jun. 24, 1993, Ser. No. 83,881
Int. Cl.[5] B01D *35/28*
U.S. Cl. 220—697 6 Claims



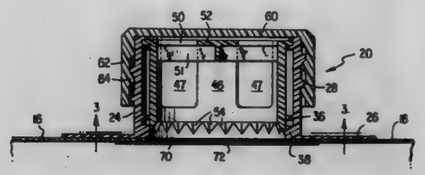
1. A paintbrush wiper and apparatus holder designed to be removably mounted to the upper rim of a conventional circular paint can, comprising:
a pair of opposing angled arms attached to said apparatus holder and extending therefrom, each with an outwardly extending tang, located at an end remote from the apparatus holder, for mounting engagement under the upper rim of and inside of said 1 paint can;
a linear, horizontal wiping surface interconnecting said angled arms;
a pair of opposing secondary wiping surfaces extending from said angled arms and said horizontal wiping surface, each secondary wiping surface extending towards said opposing secondary wiping surface;
said wiping surfaces angled downwardly towards the paint can interior to facilitate the dripping of paint into said paint can;
a dam extending upward above said wiping surfaces;
an apparatus holder, having a compartment for holding paint tools, conforming to the circular outer wall of said paint can, and lying adjacent said outer wall when mounted thereto.

5,297,696

POUR SPOUT WITH PIERCING INSERT

Linda A. Bernstein, Campbell Hall, and Robert L. Gordon, Monroe, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,161
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 1 Claim



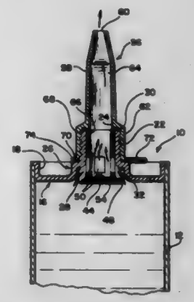
1. A pour spout fitment construction including a pour spout having an upper and a lower portion, a flange integrally secured to said spout lower portion, said pour spout having an interior passage, said interior passage having at least three integral, radially inwardly extending ribs axially spaced along said passage to thereby define three vertically disposed ribs, including an uppermost and a lowermost rib, a hollow, annular piercing insert slidably mounted within said spout interior passage, said piercing insert having an upper and a lower portion, said upper piercing insert portion having at least one integral, radially outwardly extending protrusion, said protrusion positioned between the uppermost and the next uppermost of said ribs of said spout, the lower portion of said piercing insert having teeth which project downwardly, said pour spout ribs normally selectably engagable with said at least one insert protrusion to normally prevent axial movement of said insert within said spout, at least one of (A) said at least one piercing insert protrusion and (B) said uppermost spout rib and said spout ribs between said uppermost and said lowermost spout ribs, being radially movable, to thereby permit said at least one piercing insert protrusion to pass over said uppermost spout rib and said spout ribs which are located between said uppermost and said lowermost spout ribs, whereby said piercing insert can assume a plurality of normal axial positions in said pour spout, said piercing insert carries a pushing abutment, said abutment radially located substantially centrally of said pour spout passageway wherein said pushing abutment is integral with a plurality of angularly spaced, radially extending arms, the radially outermost portion of at least one of said arms provided with said at least one insert protrusion.

5,297,697

CAULK CARTRIDGE WITH VALVE CONTROL

David E. Boring, East Berlin, Pa., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jul. 23, 1993, Ser. No. 95,467
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 23 Claims



1. For use in a tubular dispensing cartridge defining a container for flowable material and having a discharge end; an end closure for the discharge end including a closure plate having opposed inner and outer sides, and a mounting stub fixed to said plate and extending laterally therefrom, said mounting stub having inner and outer ends opening respectively to the inner and outer sides of said closure plate, a passage defined longitudinally through said mounting stub between and through said inner and outer ends thereof and providing flow communication through said end closure; a valve longitudinally reciprocal within said passage between a closed position precluding flow through said passage and an open position allowing flow through said passage, and a valve seat on said end closure, said valve, in said closed position, sealing to said valve seat, said valve, in said open position, being remote from said valve seat; and dispensing nozzle means, said nozzle means and said mounting stub including cooperating means for mounting said nozzle means to said stub in alignment with said

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passage and for reciprocal movement of said nozzle means on said stub to and between first and second positions, said nozzle means in said second position being forcibly engaged with said valve and retaining said valve in said open position thereof, said nozzle means in said first position being retracted from said valve and allowing movement of said valve to said closed position

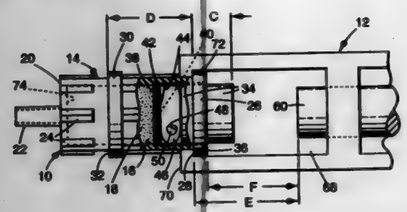
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5,297,698

TWO-STAGE MIXING AND DISPENSING ASSEMBLY FOR PREPARATIONS SUCH AS DENTAL CEMENTS

Thomas W. Martin, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 735,995, Jul. 25, 1991, abandoned. This application Apr. 16, 1992, Ser. No. 869,872
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—95 **14 Claims**



1. An assembly for mixing and dispensing a preparation comprising:

a capsule including a body having a chamber and a front end portion with outlet structure, said capsule including a piston received in said chamber, said piston being movable in said chamber along a limited path of travel toward said front end portion, said capsule including a barrier in said chamber; and

a dispensing device including a housing having a receptacle with a reference axis, said receptacle including structure for detachably receiving said capsule in either a first orientation or a second orientation spaced from said first orientation in a direction along said axis, said device including a lever movably coupled to said housing and a ram connected to said lever, said ram being operable to move said piston in a direction along said axis when said capsule is received in said receptacle and said lever is moved relative to said housing,

said ram when said capsule is received in said first orientation being operable to move said piston to a certain location wherein said barrier opens as said piston reaches said certain location, said ram when said capsule is received in said second orientation being operable to move said piston to a certain position that is substantially the same as the forwardmost limit of the path of travel of said piston in said chamber, said first orientation being spaced from said second orientation a distance that is at least as great as the distance between said certain location and said certain position.

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INTERNALLY-COUPLED DUAL ROLLER TUBE SQUEEZING DEVICE

David D. Barchus, 3673 Taft Ct., Wheat Ridge, Colo. 80033

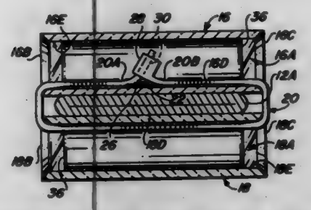
Filed Apr. 2, 1993, Ser. No. 42,613
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—102 **20 Claims**

12. A flexible tube squeezing device, comprising:

(a) a pair of elongated hollow rollers, each roller being made of substantially rigid material and defining an elongated interior bore extending between and open at a pair of opposite ends of said roller;

(b) an elongated coupling strap made of a substantially resilient flexible inelastic material and being formed into a looped configuration and inserted through said bores of said rollers, said strap having a pair of opposite ends and being of a length sufficient to permit said opposite ends of said strap to extend beyond an adjacent one pair of said pairs of opposite ends of said rollers; and

(c) means for connecting said opposite ends of said strap together so as to close said strap in said looped configuration about adjacent longitudinal portions of said rollers, said coupling strap having a cross-sectional size substantially smaller than a crosssectional size of said interior bore of at least one of said rollers so as to define sufficient clearance in said interior bore of said one roller to one side



of said coupling strap to permit said strap to be slidably moved relative to said roller along said endless path defined about said adjacent longitudinal portions of said rollers by said looped strap to relocate said connecting means into said interior bore of said one roller and adjacent to and offset from said one side of said endless path;

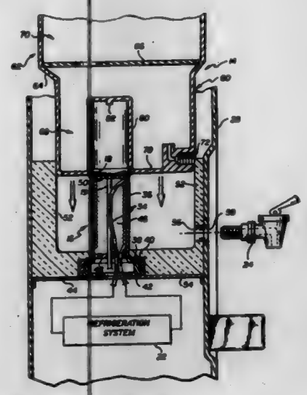
(d) said length of said strap also being sufficient to retain said rollers in a spaced apart relationship in which a narrow gap is defined between said rollers being adapted to receive therethrough a closed end of a flexible fluid-dispensing tube, said material of said strap being sufficiently resilient to urge said rollers toward one another to apply squeezing forces to opposite sides of the tube.

5,297,700

BOTTLED WATER STATION WITH REMOVABLE RESERVOIR

Bruce D. Burrows, Valencia, Calif., and Louis M. Busick, Columbus, Ohio, assignors to Ebtech, Inc., Columbus, Ohio

Filed Aug. 2, 1993, Ser. No. 100,296
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—146.6 **11 Claims**



1. A water station, comprising:

a reservoir having a hollow interior for receiving and storing a supply of water, said reservoir having a bottom wall with an inverted receiver cup formed therein;

a station housing having support means for receiving and supporting said reservoir;

a chiller probe mounted within said station housing and projecting upwardly from said support means for slide-fit reception into said receiver cup when said reservoir is mounted within said station housing, said chiller probe defining a chilled surface for contacting said reservoir to chill water within said reservoir;

vapor seal means for preventing air circulation between said receiver cup and said chiller probe when said reservoir is mounted within said station housing;

vent means including means defining a vent path communicated with the space between said receiver cup and said chiller probe, and valve means for closing said vent path when said reservoir is mounted into said station housing; and

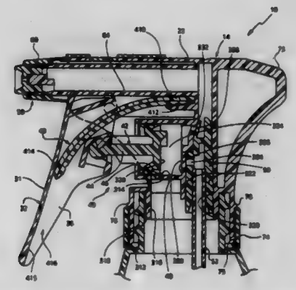
faucet means for dispensing water from said reservoir.

5,297,701

ALL PLASTIC TRIGGER SPRAYER

Emile B. Steljns, Lierop; Wilhelmus J. J. Maas, and Petrus L. W. Hurkmans, both of Someren, all of Netherlands, assignors to AFA Products, Inc., Forest City, N.C.

Filed Feb. 24, 1992, Ser. No. 840,759
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—153 **8 Claims**



1. A trigger operated dispensing device for mounting to a container, said device comprising:

a body made of plastic material and having a pumping chamber therein;

said pumping chamber having an open outer end and an inner back wall;

a pumping mechanism associated with said body and including a plastic piston situated in said pumping chamber and a plastic trigger coupled to said body,;

non-metal biasing means situated between said trigger and a position on said body located rearwardly of said trigger exterior of said pumping chamber for biasing said piston out of said pumping chamber;

non-metal fluid inlet means and non-metal fluid outlet means associated with said pumping chamber and at least one of said inlet means and outlet means being a plastic flap valve;

non-metal means for coupling said body to the container; and

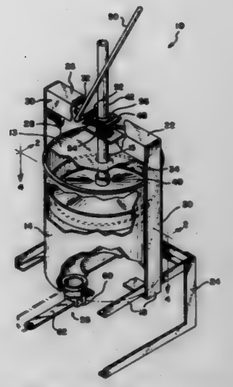
said trigger operated dispensing device having only parts made of non-metal material therein.

5,297,702

DEVICE FOR DISPENSING VISCOUS MATERIAL FROM A CONTAINER

Dana B. Crosby, and Ronald C. Dreyer, both of Cincinnati, Ohio, assignors to Fibre Glass-Evercoat Company, Inc., Cincinnati, Ohio

Filed Apr. 19, 1993, Ser. No. 49,575
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—185 **14 Claims**



1. A device for dispensing a viscous material from a container having an outlet on the bottom thereof, comprising:

a frame having a base adapted to support a container containing a viscous material, a container containing a viscous material having an outlet on the bottom thereof, a pair of side members attached to said base, and a cross member supported by said side members and positioned above the container such that the container is substantially centered beneath said cross member, said cross member having top, bottom, and side portions to define an internal chamber therewithin;

a seal member having upper and lower major surfaces, said lower surface being in contact with the viscous material in said container along substantially the entire uppermost surface thereof;

a drive plate in contact with said upper surface of said seal member;

a drive rod attached to said drive plate and extending vertically through said cross member, said top and bottom portions of said cross member having a pair of vertically aligned apertures to slidably accommodate said drive rod such that said drive rod and said drive plate are vertically translatable within said dispensing device;

at least one gripping plate positioned within said internal chamber of said cross member and having a bore through which said drive rod extends, said bore being in an off-center position on said gripping plate to provide said gripping plate with an extended contact surface;

a drive lever pivotally mounted to said cross member and having an actuating member attached thereto, said actuating member contacting said extended contact surface of said gripping plate when said drive lever is pivoted in a downward direction such that said gripping plate locks onto said drive rod and thereby allows said drive lever to forcibly translate said drive rod, drive plate, and seal member in a downward direction against said viscous material in said container to dispense at least a portion of said viscous material from said container via said outlet;

resilient biasing means for biasing said gripping plate towards said top portion of said cross member such that when said gripping plate unlocks from said drive rod, said gripping plate is translated along said drive rod and

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pressed against said top portion, thereby pivoting said drive lever in an upward direction; and

means for positioning said gripping plate, when pressed against said top portion of said cross member, such that said actuating member of said drive lever can be made to contact said extended contact surface of said gripping plate when said drive lever is pivoted in a downward direction, said positioning means allowing said drive rod to be vertically translated in said dispensing device without interference when said gripping plate is pressed against said top portion.

5,297,703

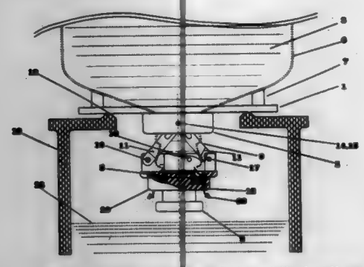
NON-SPILL LOADING DEVICE FOR THE LOADING OF BOTTLED FLUID INTO A DISPENSER

Chein-Hwa Tsao, and Emily M. Tsao, both of 19601 Ladera Ct., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 834,800, Feb. 13, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 30,695

Int. Cl.[5] B67D *3/02*

U.S. Cl. 222—507 **10 Claims**



1. A device to prevent spilling fluid while loading a fluid filled container onto a fluid dispenser, said container having a body portion and a neck portion with an opening for fluid to pass through, said device comprising:

a body member having an opening of sufficient diameter to allow passage of said neck portion of said container,

a valve member having a sealing means for sealing said opening in said neck of said container,

and a pair of clamp levers each having two ends, the first end of said clamp levers being rotatably attached to said valve member, the second end of said clamp levers being rotatably and slidably attached to said body member, said clamp levers each having a locking jaw proximate said first end,

said device having two positions,

a first position in which said body member is adjacent to said valve member and said clamp levers are rotated toward said body member and said locking jaws engage said neck portion of said container, thereby holding said sealing means in sealing engagement with said opening in said neck of said container,

and a second position in which said body member is spaced apart from said valve member and said clamp levers are rotated away from said body member, thereby holding said sealing means apart from said opening in said neck of said container and allowing fluid to flow from said container.

5,297,704

NOZZLE SAVER

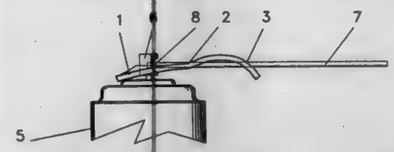
Laurence T. Stollmeyer, 1359 Singingwood, Pomona, Calif. 91767

Filed Jun. 25, 1993, Ser. No. 81,697

Int. Cl.[5] B65D *5/72*

U.S. Cl. 222—567 **2 Claims**

1. In combination, a nozzle cap for a spray dispenser, an elongate spray tube inserted into a recessed seat of said nozzle cap, and means for preventing the dislodgement of and the separation of said elongate spray tube from the nozzle cap; said means comprising a flat strip of flexible material having an in-line pattern of spaced openings, a first of said openings being



of a size to allow stretching of the material over the nozzle cap, the remaining openings being smaller than said first opening and said elongate spray tube passing through said remaining openings in a weaving-type pattern.

5,297,705

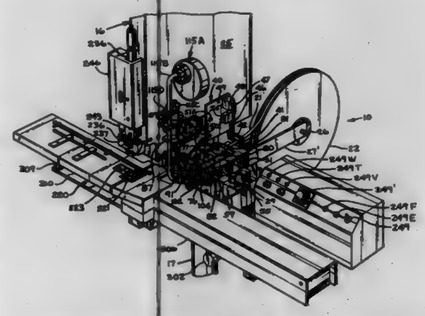
BOW FORMING APPARATUS

Erich A. Schmidt, 2415 Liberty Rd., Lexington, Ky. 40509

Filed Dec. 23, 1991, Ser. No. 811,993

Int. Cl.[5] A41H *43/00*; B21J *15/28*

U.S. Cl. 223—46 **19 Claims**



1. An apparatus for forming a bow from a strip of material having a middle portion joining first and second outer portions to each other including:

holding means for holding the middle portion of the strip of material;

first folding means for folding the first outer portion of the strip of material at an angle to the middle portion of the strip of material and adjacent the middle portion of the strip of material while said holding means holds the middle portion of the strip of material, said first folding means holding the first outer portion of the strip of material at the angle to the middle portion of the strip of material and adjacent thereto after the first outer portion of the strip of material is folded by said first folding means;

second folding means for folding the second outer portion of the strip of material at an angle to each of the first outer portion and the middle portion of the strip of material after said first folding means is holding the first outer portion of the strip of material at the angle to the middle portion of the strip of material and adjacent thereto, said second folding means folding the second outer portion of the strip of material adjacent the first outer portion of the strip of material, said second folding means holding the second outer portion of the strip of material at the angle to each of the first outer portion and the middle portion of the strip of material and adjacent the first outer portion of the strip of material after the second outer portion of the strip of material is folded by said second folding means;

and attaching means for attaching the folded first outer portion, the middle portion, and the folded second outer portion of the strip of material to each other to form a bow while said holding means holds the middle portion of the strip, said first folding means holds the first outer portion of the strip, and said second folding means holds the second outer portion of the strip.

5,297,706

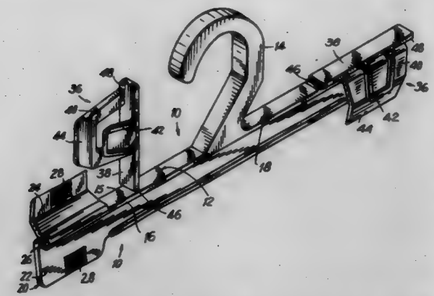
CLOTHES HANGER CONSTRUCTION WITH ATTACHED LOCKING DEVICE

Leslie Blitz, New Hyde Park, N.Y., assignor to Mode Plastics, Inc., New York, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,664

Int. Cl.[5] A47G *25/48*

U.S. Cl. 223—96 **9 Claims**



1. A clothes hanger comprising, a transversely extending support member having midway thereof means for suspending said hanger, at least one clamp carried by said support member, said clamp comprising a pair of jaws for holding therebetween the free end of an article of clothing; and locking means for maintaining said two clamping jaws biased against each other for retaining the article of clothing between said jaws; said locking means comprising a base having an inner end secured by means of a narrow webbing to said transversely extending support member at a location intermediate said hanger suspending means and said clamp, said base being pivotally movable about said webbing which functions as the axis of rotation for said base, said locking means comprising a pair of legs extending from opposite sides of said base and defining with said base a saddle shaped member pivotally movable above said webbing in unison with said base into a first position in engagement with said clamp to straddle the underlying jaws of the clamp so as to maintain said jaws in biased confronting relation and a second position released free of said clamp to release said jaws, said locking device being formed with said hanger from a one piece molding operation.

5,297,707

CONTAINER AND VEHICLE COMBINATION AND A METHOD FOR CARRYING SPORTING EQUIPMENT AND CLOTHES

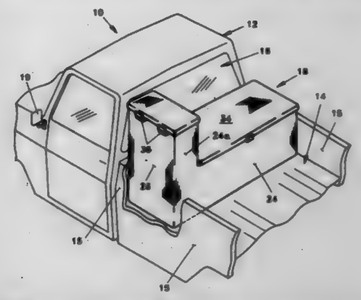
Lee Weber, R.R. #3, Box 385A, Ponca City, Okla. 74604

Filed Nov. 27, 1992, Ser. No. 982,587

Int. Cl.[5] B60R *7/00*

U.S. Cl. 224—42.42 **13 Claims**

1. In combination a vehicle and a storage container for storing sporting equipment and clothes; the combination comprises a truck having a cab including a rear cab glass and a truck bed coupled to the cab, and a container means supported by the truck bed for storing sporting equipment and clothing; said container storage means comprising a bottom; a pair of generally L-shaped sides secured to the bottom, and a first end member secured to the generally L-shaped sides, and a second end member secured to the generally L-shaped sides, and a partition member secured to said bottom and to said pair of generally L-shaped sides; a first top member pivotally secured to said first end member; a second top member pivotally secured to one of said L-shaped sides; and a generally horizontal support member removably engaged to the first end member and to the partition member, said horizontal support member having a structure defining at least one opening for inserting a



golf club bag containing golf clubs between the first end member and the partition member and for being supported by said bottom, said partition member further comprising a structure defining at least one aperture for supporting at least one gun in a generally vertical position.

5,297,708

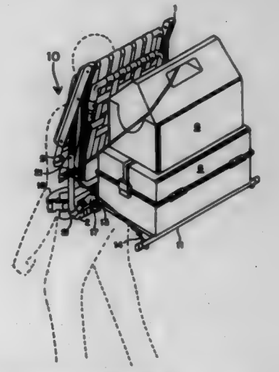
LAWN CHAIR BACKPACK

Howard A. Carpenter, 4920 Targee St., Boise, Id. 83705

Filed Sep. 16, 1992, Ser. No. 946,174

Int. Cl.[5] A45F *4/02*

U.S. Cl. 224—155 **13 Claims**



1. A chair/backpack comprising:

a folding chair including a pair of upright members held in parallel spaced relation by a bottom crosspiece;

a cargo platform being rotatably attached about the bottom cross piece and being rotatable between a folded up position where the platform is roughly parallel to the upright members and a folded down position where the platform is roughly perpendicular to the upright members;

a pair of shoulder straps; and

attachment means for attaching the shoulder straps to the folding chair and holding the straps in parallel spaced apart relation.

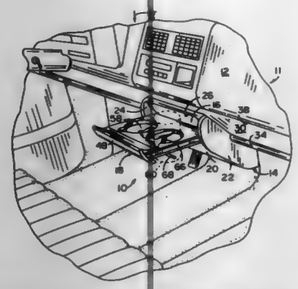
VOL 1160 ISS 5 MR 29 1994

5,297,709

CONTAINER HOLDER

Ronald A. Dykstra, Grandville, and Michael M. Warsaw, Holland, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 3, 1992, Ser. No. 863,076
Int. Cl.[5] B60R 7/06
U.S. Cl. 224—281 16 Claims



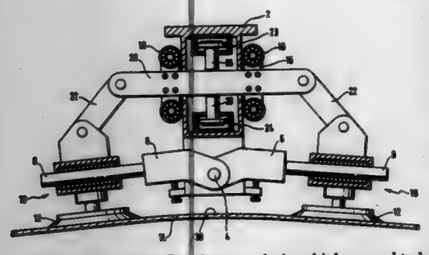
6. A container holder for a vehicle comprising:
a housing including means for mounting said housing to an inclined surface of a vehicle, said housing including a slot formed therein, said housing being shaped to fit against an exposed portion of an instrument panel of a vehicle, said housing including a notch adapted to engage a mating lip on the instrument panel, said notch positioning and supporting said housing on the instrument panel; and
a drawer dimensioned to fit within said slot including at least one aperture for holding a container therein, said drawer further including means for movably mounting said drawer in said slot to move sequentially between a retracted position within said slot, an intermediate extended position aligned with said slot, and a downwardly pivoted use position in which said aperture is positioned horizontally for use.

5,297,710

METHOD AND APPARATUS FOR DIVIDING FLAT GLASS PANELS

Karl-Heinz Juras, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 15, 1992, Ser. No. 914,709
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4123929
Int. Cl.[5] C03B 33/033
U.S. Cl. 225—2 15 Claims



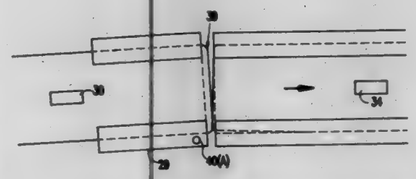
1. Method of dividing flat glass panels, in which a panel to be divided is scored at the intended separation point and then broken along the score line by the action of mechanical force into two part panels, the method comprising the steps of:
securely gripping the panel (14) on each side of said score line in the region of each part panel (14*a*, 14*b*) by a respective pair of clamping means (10, 12); and
simultaneously subjecting the glass panel to a bending stress and a tensile stress by pivoting each of the clamping means (10, 12) about a respective pivot axis located between the clamping means and substantially parallel to the score line (30) while exerting a force on said clamping means (10, 12) substantially in the direction of an imaginary connection line between the clamping means;
wherein said panel is divided into two part panels (14*a*, 14*b*) which move apart upon breaking to prevent broken edges of the part panels from striking against one another.

5,297,711

PERFORATED WEB TRANSPORT SYSTEM

Eduard Kogan, Queens, N.Y., assignor to Miltope Corporation, Melville, N.Y.

Filed May 24, 1993, Ser. No. 66,998
Int. Cl.[5] B27B 3/02
U.S. Cl. 225—98 8 Claims



1. A system for transporting a perforated web and for separating the web along a row of perforations that extend in a direction orthagonal to the direction in which the web is transported, comprising in combination:
a upstream platen for guiding said web and a downstream platen for guiding said web, said upstream and downstream platens meeting along a web parting line;
means to tension said web across said web parting line; and
means to rotate said upstream platen relatively to said downstream platen about an axis substantially perpendicular to the surface of the web in order to part said web along a row of perforations by combined stresses generated by said means to tension said web and said means to rotate said upstream platen relatively to said downstream platen.

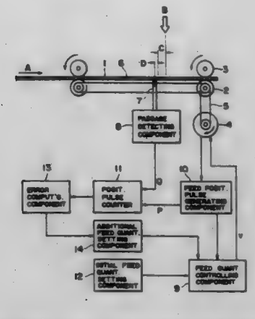
5,297,712

SYSTEM FOR FEEDING AND POSITIONING ARTICLES BEING PROCESSED

Hiroaki Kobayashi, Yokohama, and Masahito Nagaoka, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 617,946, Nov. 27, 1990, abandoned, which is a continuation of Ser. No. 252,922, Oct. 4, 1988, abandoned. This application Jul. 9, 1992, Ser. No. 912,131
Claims priority, application Japan, Oct. 6, 1987, 62-252198
Int. Cl.[5] B65H 23/16
U.S. Cl. 226—24 6 Claims

1. A system for feeding and positioning an article, the system comprising:
a conveying device for driving and conveying said article, said article having a fixed reference in the form of a pilot hole and said conveying device temporarily stopping said article such that said reference is positioned in front of an ultimate objective stopping position;
a passage detecting component, located at a forward mark point which has been set at a position at a specific distance in front of said ultimate objective stopping position, for detecting passage of said reference;
a position pulse counter for counting a first number of pulses corresponding to a time period between passage of one rim of said pilot hole and said temporary stopping of said article and a second number of pulses corresponding to a time period between passage of an opposite rim of said pilot hole and said temporary stopping of said article, and for determining a distance between a center of said pilot hole of said article temporarily stopped and said forward mark point in accordance with said first and second numbers of pulses;
an initial feed quantity setting component for setting an initial feeding quantity of said article at less than a predetermined pitch and at more than said pitch minus said specific distance;
an additional feed quantity setting component for setting an additional feeding quantity of said article up to said ultimate objective stopping position which is calculated in accordance with said distance between said center of said pilot hole and said forward mark point determined in said position pulse counter; and
a feed quantity control component for controlling a driving quantity of said conveying device in accordance with said quantities of feeding thus set.

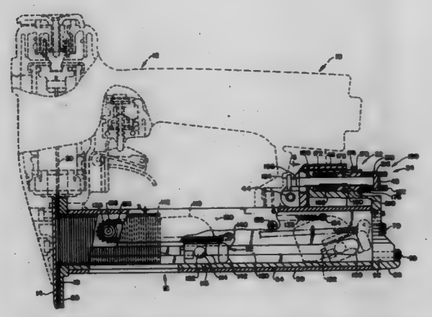


5,297,713

REAR LOAD MAGAZINE ASSEMBLY

Arthur E. Perra, Hope Valley; Brian M. White, Riverside, both of R.I., and Thomas E. Babington, Seekonk, Mass., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Mar. 31, 1993, Ser. No. 40,996
Int. Cl.[5] B25C 1/00
U.S. Cl. 227—123 16 Claims



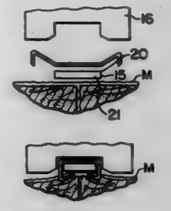
1. A device for driving successive fasteners from a stick of fasteners, said device comprising:
a housing structure including a handle portion defining a manually engageable handle for enabling a user to portably operate said device and a nosepiece portion disposed forwardly thereof,
a magazine assembly extending rearwardly from said nosepiece portion and defining therewith a drivetrack,
a fastener driving element slidably mounted in said drivetrack,
power operated means for moving said fastener driving element within said drivetrack through successive operative cycles each including a drive stroke in one direction and a return stroke in an opposite direction,
said magazine assembly including structure defining a fastener stick receiving feedtrack and means for biasing a stick of fasteners in said feedtrack so as to move a leading fastener of said stick into said drivetrack to be driven therefrom during the drive stroke of said fastener driving element into a workpiece,
means for mounting said magazine assembly with respect to said housing structure in an operative position with respect to said nosepiece portion and for movement away from and toward said operative position,
means for resiliently biasing said magazine assembly into said operative position and for allowing said magazine assembly to be moved through a first range of movement including resilient movement of said magazine assembly away from said nosepiece portion during an unwanted fastener deformation so as to allow the deformed fastener to self clear after which said magazine assembly is returned to said operative position, and
a manual actuator mounted for manual movement between (1) a normal operating position wherein said resilient movement within said first range takes place and (2) a release position wherein said magazine assembly is enabled to be moved through a second range of movement beyond said first range so as to clear a deformed fastener which does not self clear by virtue of said resilient movement within said first range.

5,297,714

SURGICAL STAPLE WITH MODIFIED "B" SHAPED CONFIGURATION

Frank Kramer, Edgewood, Ky., assignor to Ethicon, Inc., Somerville, N.J.

Filed Apr. 17, 1991, Ser. No. 686,646
Int. Cl.[5] A61B 17/00
U.S. Cl. 227—175 6 Claims



1. In combination:
a surgical stapler having an anvil, and a driver for forming staples about said anvil, and
a plurality of staples contained in said stapler, each said staple having:
a preformed configuration with a straight crown having a driver facing side and an anvil facing side, and said crown having two ends; a pair of intermediate straight portions, each said intermediate straight portion extending from an end of said crown, and each said intermediate portion forming an obtuse angle with said crown on the driver facing side of said staple; and a pair of straight leg portions, each said leg portion with two ends and attached to an intermediate portion at one of said leg portion ends, said intermediate portions and said leg portions forming

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an acute angle toward said anvil facing side of said crown; and said leg portions having a sharpened tip at the second of said ends;

said staples engageable with said anvil and said driver, such that said river is capable of causing a said staple to end about said anvil; and

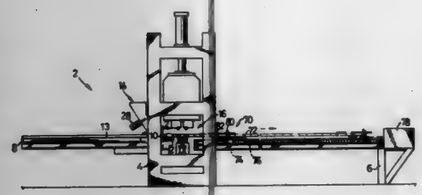
wherein a staple formed by said driver has a B shape, with said B shape having only straight segments.

5,297,715

MACHINE FOR MAKING STEEL GRIDS

Sim-Mu Ou, No. 122, Pei Ping Rd., Feng Shan, Kaohsiung Hsien, Taiwan

Filed Dec. 22, 1992, Ser. No. 995,194
Int. Cl.[5] B23K *11/00*
U.S. Cl. 228—4.1 **1 Claim**



1. A machine for making metal grids, comprising:

a table for bearing metal strips;

two plates mounted on two opposite sides of said table, each of said plates defining at least one channel for storing-/loading steel rods, each of said channels comprising an upper subchannel comprising an upper end and a lower end, a middle subchannel comprising a front end and a rear end and a lower subchannel comprising an upper end and a lower end, said lower end of said upper subchannel communicating with said front end of said middle subchannel, said rear end of said middle subchannel communicating with said upper end of said lower subchannel, said front end of said middle subchannel retained on a higher level than said rear end of the same so that the steel rods are piled in said upper subchannel by means of said middle subchannel;

two fingers being slidable in said middle subchannels, for moving the lowest one of the steel rods throughout said middle subchannels so that the lowest steel rod falls throughout said lower subchannels onto the steel strips;

means for inducing a current through the metal rods for producing heat for softening the metal strips when the metal rods are disposed on the metal strips;

means for pressing the metal rods into the metal strips when the metal strips are softened; and

means for feeding metal strips along said table.

5,297,716

SOLDERING TOOL WITH ATTACHED THERMOCOUPLE

Tyler W. Smith, Stephenson County, and Thomas A. Young, Carroll County, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

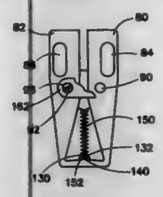
Filed Apr. 12, 1993, Ser. No. 45,956
Int. Cl.[5] B23K *3/02*
U.S. Cl. 228—8 **12 Claims**

1. A soldering tool, comprising:

a current conducting member shaped to form a generally U-shaped configuration having first and second generally parallel legs which are connectable to a power supply and a central region having a cross sectional area which is less than that of said first and second generally parallel legs;

a protrusion extending from said central region, said protrusion having an opening extending therethrough;

a pair of wires disposed in electrical communication with



each other to form a thermocouple, said pair of wires being disposed in said opening of said protrusion; and

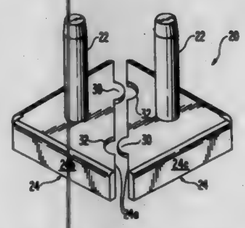
means for pressing said pair of wires into intimate thermal contact with said central region.

5,297,717

SELF-ALIGNING TIP ELEMENTS FOR TWEEZER-TYPE SOLDERING HANDPIECE

Corey A. Parry, Laguna Niguel, Calif., assignor to Pace Incorporated, Laurel, Md.

Filed Apr. 5, 1993, Ser. No. 43,458
Int. Cl.[5] B23K *3/02*
U.S. Cl. 228—55 **16 Claims**



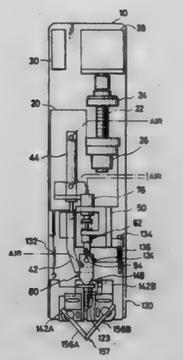
1. A self-aligning tip element for a tweezer handpiece of a soldering tool of the type having a pair of legs which are hinged together and have a mounting unit at a free end of each leg, comprising an attachment pin portion for insertion into the mounting unit of each leg of a tweezer handpiece, and a conductive heating element tip portion which is affixed on an end of the attachment pin portion, said conductive heating element tip portion having an attachment part secured to an end of the attachment pin portion in an orthogonal orientation with respect thereto, and having a plurality of upstanding heating surfaces extending outward from said attachment part and which, when aligned relative to heating surfaces of a second tip element, correspond in size and shape to a component to be soldered; wherein, as a means for transversely and rotationally aligning the tip element with respect to a second tip element when said tip elements are inserted into the mounting units of the tweezer handpiece and the tip elements are brought together by squeezing-together the legs of the tweezer handpiece, an edge surface of the attachment part of the tip element is provided with key and notch formations which will interfit with key and notch formations of the second tip element in a prescribed orientation when the tip elements are brought together.

5,297,718

SOLDERING METHOD AND SOLDERING APPARATUS

Eishu Nagata, 453-23, Wakabadai, Nagareyama-shi, Chiba 270-01, Japan

Filed Jun. 8, 1993, Ser. No. 73,664
Claims priority, application Japan, Jun. 8, 1992, 4-171490
Int. Cl.[5] B23K *3/00*; H05K *3/34*
U.S. Cl. 228—102 **14 Claims**



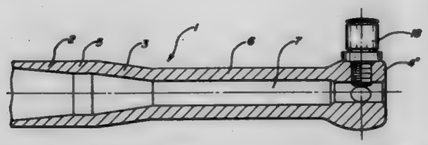
1. In the soldering method of soldering a workpiece comprising the steps of forming a solder melting pot by engaging plural trowel members, each of said trowel members having a surface made of a solder repellent material at least the portion contacting with the solder, supplying a solder tip having a constant volume to said solder melting pot, melting said solder tip and holding the molten solder temporarily in said solder melting pot and then separating said plural trowel members to allow the molten solder to drop onto said workpiece, an improved method wherein melting of said solder tip is detected by sensing the change in intensity of the light reflected by the surface of said molten solder, and wherein said molten solder is additionally heated for a predetermined time period after the completion of melting of said solder tip.

5,297,719

METHOD OF PRODUCING THE INNER PART OF A TRIPOD JOINT

Rolf Cremerius, Bonn, Fed. Rep. of Germany, assignor to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,136
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1991, 4137988
Int. Cl.[5] B23K *20/12*
U.S. Cl. 228—114 **12 Claims**



1. A method of producing an inner part of a tripod joint, comprising the steps of

providing arms and a tubular shaft;

deforming one end of the tubular shaft in a non-chip forming way by increasing the wall thickness of the shaft at the deformed end so as to form a thickened region at the deformed end;

providing said thickened region with three circumferentially distributed connecting surfaces; and

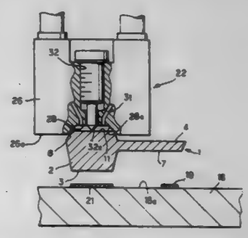
connecting the arms to the tubular shaft end at the connecting surfaces such that the arms are radially extending to the shaft axis.

5,297,720

METHOD OF ASSEMBLING A MECHANICAL PART INCLUDING A SENSITIVE ELEMENT ON A SUPPORT TO DEFINE A VARIABLE CAPACITOR, A MECHANICAL PART, AND A TOOL FOR IMPLEMENTING THE METHOD

Alfred Permuy, Paris, France, assignor to Societe Anonyme: Vectavib and Societe d'Applications Generales d'Electricite et de Mecanique SAGEM, both of France

PCT No. PCT/FR90/00962, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/10347, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 28, 1990, Ser. No. 917,029
Claims priority, application France, Dec. 28, 1989, 8917545
Int. Cl.[5] G01D *5/24*; H01G *5/16*; B23K *31/02, 101/36*
U.S. Cl. 228—123.1 **10 Claims**



1. A method of assembling on an insulating support a mechanical part such as a sensor or a membrane of the type constituted by a monolithic semiconductor substrate forming firstly an anchor block including a connection face extending in a reference plane and secondly at least one flexible element including first and second opposite faces and cantilevered out from the anchor block, with said first face situated in a plane that is offset relative to the reference plane, the first face defining a moving plate which is positioned in a distance relationship relative to a stationary plate carried by the support, thereby constituting an empty gap co-operating with the moving and stationary plates to define a variable capacitor;

said method comprising the following steps:

making a thickening that projects relative to said second face of the flexible element and that is situated substantially over the connection face of the anchor block;

depositing a layer of one of the components of a eutectic at least on a fixing zone of the support for receiving the connection face of the anchor block;

using a grasping tool suitable for holding the mechanical part by means of the thickening thereof to move the part so that the connection face co-operates with the fixing zone of the support;

causing a rise in temperature to the eutectic point of the eutectic whose second component is formed by the part;

exerting a localized force on the thickening to ensure plane contact between the connection face and the fixing zone; and

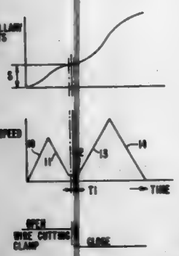
simultaneously with the application of the localized force, subjecting at least one of the part or the support to mechanical stresses enabling the part to be anchored on the support by soldering.

VOL 1160 ISS 5 MR 29 1994 UMI

5,297,721
NO-CLEAN SOLDERING FLUX AND METHOD USING THE SAME
Alvin F. Schneider, Edison, N.J.; David B. Blumel, New York, N.Y., and John V. Tomczak, Dolton, Ill., assignors to Fry's Metals, Inc., Providence, R.I.
Filed Nov. 19, 1992, Ser. No. 976,931
Int. Cl.[5] B23K *35/363*
U.S. Cl. 228—180.1 22 Claims

1. A no-clean soldering flux which is substantially VOC-free and which consists essentially of one or more halide-free, water soluble activators in an aggregate amount not exceeding about 5% by weight of the flux, a water soluble fluorinated surfactant in an amount not exceeding about 1% by weight of the flux, and water.

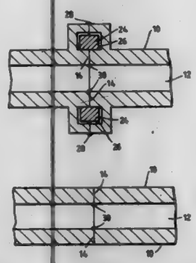
5,297,722
WIRE BONDING METHOD AND APPARATUS
Kuniyuki Takahashi, and Noboto Yamazaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Continuation of Ser. No. 869,633, Apr. 16, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 92,032
Claims priority, application Japan, Apr. 19, 1991, 3-113826
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—180.5 3 Claims



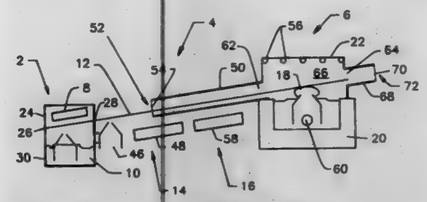
1. A wire bonding method in which a capillary and a wire cutting clamp are raised after a wire is bonded to a second bonding point, and a wire cutting clamp is closed during this ascending movement to cut said wire, said method being characterized in that an ascending movement of said capillary and wire cutting clamp is slowed to a predetermined slow speed when said wire cutting clamp is closed.

5,297,723
DIFFUSION BONDING TURBINE FAN DISC
Bryan L. Benn, Bristol; James E. Boardman, Colne; Arnold J. S. Pratt, Etwall, and Anthony L. Pratt, Bristol, all of England, assignors to Rolls-Royce plc, London, England
Continuation of Ser. No. 909,758, Jul. 7, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 44,109
Claims priority, application United Kingdom, Jul. 11, 1991, 9114999.7
Int. Cl.[5] B23K *20/00, 20/24*
U.S. Cl. 228—186 5 Claims

1. A method of making a titanium fan disc for a gas turbine engine, the method comprising the steps of providing at least first and second forged titanium cylinders, each cylinder having an axial bore and a flat end surface at right angles to the central axis of the cylinder, preparing a said flat end surface of each cylinder to a high degree of smoothness, abutting the prepared surfaces of the cylinders one against the other in axial alignment, removing air from between said surfaces, welding the cylinders together, first at their central bores by inert gas welding, and then at their peripheries by electron beam welding, and diffusion bonding the electron-beam welded cylinders end-to-end by hot isostatic pressing to form the disc.



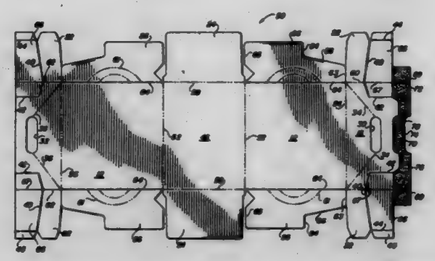
5,297,724
WAVE SOLDERING METHOD AND APPARATUS
Apurva Mehta, Piscataway, N.J., and Sean M. Adams, Bethlehem, Pa., assignors to The BOC Group, Inc., Murray Hill, N.J.
Filed May 26, 1993, Ser. No. 67,764
Int. Cl.[5] B23K *20/14, 1/08*
U.S. Cl. 228—219 19 Claims



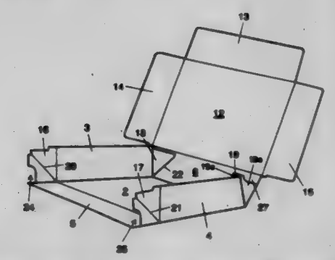
1. A wave soldering method comprising:
(a) fluxing a substrate in a low oxygen containing atmosphere;
(b) preheating the fluxed substrate at least partially in a non-low oxygen containing atmosphere;
(c) contacting the preheated substrate with a solder wave in a low oxygen containing atmosphere; and
(d) detaching the soldered substrate from the solder wave.

5,297,725
CARRIER FOR STACKED ARTICLES
Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Jul. 1, 1993, Ser. No. 87,567
Int. Cl.[5] B65D *5/46, 5/54*
U.S. Cl. 229—117.13 18 Claims

1. An article carrier containing a plurality of layers of stacked articles, comprising:
two side panels having upper and lower edges;
a bottom panel connected to the lower edges of the side panels said bottom panel having an interior and an exterior surface;
a top panel connected to the top edges of the side panels said top panel having an interior and an exterior surface;
end panels comprised of adhered flaps connected at the top, bottom and side panels, the flaps connected to the side panels including upper and lower edges which are substantially in contact with and parallel to the interior surfaces of the top and bottom panels so that the side end panel flaps extend substantially the entire distance from the top panel to the bottom panel; and
the plurality of layers of articles having top and bottom ends, the articles of each layer being arranged in stacked end-to-end relationship with the articles in a next adjacent of said layers, the bottom ends of the articles in a lowermost layer of said plurality of layers being adjacent the bottom panel of the carrier and the top ends of the articles in an uppermost layer of said plurality of layers being adjacent the top panel of the carrier when the carrier is resting on the bottom panel.

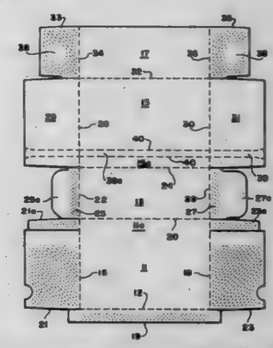


5,297,726
BOARD BLANK FOR THE PRODUCTION OF A FOLDING CARTON
Josef Detzel, Kempten, Fed. Rep. of Germany, assignor to Nicolaus Kempten GmbH, Kempten, Fed. Rep. of Germany
Filed Mar. 3, 1993, Ser. No. 25,840
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1992, 4207870
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—186 5 Claims



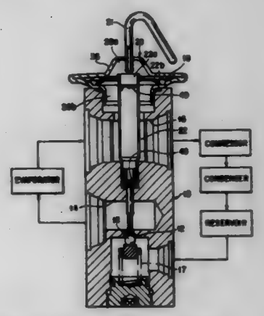
1. Board blank for production of a folding carton, with a base, two side panels and also a front panel and a back panel hinged to the base, and a top panel hinged to the back panel, where the panels hinged to the base are connected by intermediate sections, each of which is divided by a folding line, wherein each of the intermediate sections is provided with a cut-out section in an area adjacent to the front panel and the back panel, so that an area of the intermediate sections adjacent to the side panels rests directly against the front panel and the back panel in an area of said cut-out section when the intermediate sections are folded into position against the front panel and the back panel, said cut-out section being substantially rectangular and forming substantially a rectangle with one narrow side abutting against an adjacent one of the front panel and the back panel, the cut-out section having an inner corner facing away from one of the front and back panels and being rounded at a distance from said folding line.

5,297,727
CARTON
Murray J. Brioux, 11 Royal Doulton Drive, Don Mills, Ontario, Canada M3A1N3
Filed May 29, 1992, Ser. No. 890,448
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—227 14 Claims



1. A carton comprising a front panel hingedly connected to a bottom panel and to a top panel, a rear panel hinged to said top panel, and side flaps hingedly attached to each of said front panel and said rear panel for defining side panels of said carton, a tear strip attached to said front panel and to the side flaps attached to said front panel but free of any attachment to the rear panel and the side flaps attached to the rear panel, and said bottom panel being adhesively attached to said rear panel.

5,297,728
THERMAL EXPANSION VALVE
Masamichi Yano, Tokyo; Kazuhiko Watanabe, Sagamihara, and Tetsuroo Ikoma, Kawasaki, all of Japan, assignors to Fuji Koki Manufacturing Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1992, Ser. No. 967,338
Claims priority, application Japan, Mar. 11, 1992, 4-52677
Int. Cl.[5] F25B *41/04*
U.S. Cl. 236—92 B 6 Claims



1. A thermal expansion valve comprising:
a valve housing in which a first refrigerant passage, having a valve seat and adapted to communicate with a refrigerant inlet port of an evaporator, and a second refrigerant passage, independent from the first refrigerant passage and adapted to communicate with a refrigerant outlet port of the evaporator, are formed;
a valve body which is disposed in said valve housing to sit freely on and to separate from the valve seat;

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valve body urging means for urging said valve body toward the valve seat in said valve housing;

a power element which is disposed adjacent to said valve housing and which has a diaphragm partitioning an inner space of said power element into a heat sensitive working chamber and a refrigerant vapor working chamber, the heat sensitive working chamber holding heat sensitive working fluid in a sealed manner and the refrigerant vapor working chamber being independent of the heat sensitive working chamber and communicating with the second refrigerant passage;

a valve body drive member which is fixed to the center of the diaphragm of said power element and which is exposed to the second refrigerant passage, wherein the valve body drive member has a blind hole opened to the heat sensitive working chamber of said power element, and wherein the valve body drive member transmits a deflection of the diaphragm to said valve body to make said valve body sit on and separate from the valve seat; and

a heat ballast which is contained in the blind hole of said valve body drive member and which retards at least the rate of gas pressure rise of the heat sensitive working fluid in the heat sensitive working chamber, caused by a temperature rise of refrigerant vapor flowing in the second refrigerant passage at the refrigerant outlet port of the evaporator;

wherein:

a central opening for receiving an end portion of said valve body drive member is formed in a center of the diaphragm;

an inner peripheral portion of the diaphragm surrounding the central opening forms a tubular projection which extends toward an end of an end portion along an outer peripheral surface of the end portion of said valve body drive member inserted into the central opening of the diaphragm;

an annular diaphragm catch is fitted on an outer peripheral surface of the tubular projection of the diaphragm; and

a projecting end of the tubular projection of the diaphragm, the end of the end portion of said valve body drive member and an end surface of said diaphragm catch at the side of the projecting end of the tubular projection of the diaphragm are airtightly welded together.

5,297,729

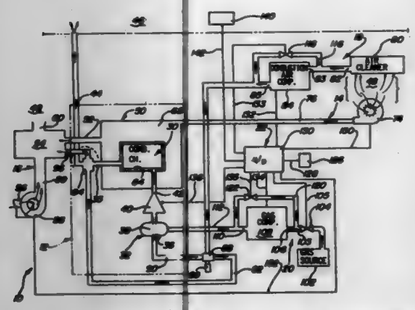
FURNACE APPARATUS

Patrick J. Scullion, Taylor, Mich., assignor to Combustion Concepts, Inc., Detroit, Mich.

Filed Aug. 28, 1992, Ser. No. 936,527

Int. Cl.[5] F24D *5/00*

U.S. Cl. 237—53 **23 Claims**



1. A heating system for heating a space, said heating system comprising:

air heating means including a combustion chamber with means for burning a mixture of combustion air and fuel in order to produce heat therein, intake means in fluid communication with said combustion chamber for supplying said mixture of combustion air and fuel thereto, and exhaust means in fluid communication with said combustion chamber for discharging products of combustion therefrom;

cold air supply means for conveying cold air from said space to said air heating means;

a combustion chamber heat exchanger in fluid communication with said cold air supply means for transferring heat from said combustion chamber to said cold air from said cold air supply means in order to produce heated air;

air circulating means for withdrawing cold circulating air from said space, said air circulating means being separate from said cold air supply means, said air circulating means including air mixing means in fluid communication with said combustion chamber heat exchanger for mixing said heated air from said combustion chamber heat exchanger with said cold circulating air from said space in order to produce heated circulating air, and means for conveying said heated circulating air from said mixing means to said space; and

said combustion chamber heat exchanger including a heat transmissive enclosure wall defining said combustion chamber, said enclosure wall being generally surrounded by an inner helical cold air chamber, said inner helical cold air chamber being surrounded by at least an outer helical cold air chamber with said inner and outer helical cold air chambers being separated by a heat transmissive wall, said inner and outer helical cold air chambers being in fluid communication with one another for flow of said cold air serially therethrough from said outer helical cold air chamber to said inner helical cold air chamber, said heat in said combustion chamber being transferred outwardly from said combustion chamber serially through said heat transmissive enclosure wall and serially through said cold air chambers from said inner helical cold air chamber to said outer helical cold air chamber in order to transfer said heat to said cold air.

5,297,730

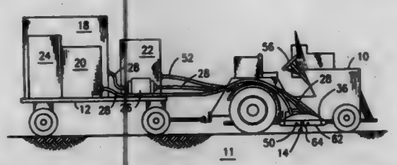
APPARATUS AND METHOD FOR CONTROLLING WEEDS AND UNDERGROWTH

James E. Thompson, Winter Haven, Fla., assignor to Aquaheat Technology, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 906,032, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 583,576, Sep. 14, 1990, abandoned. This application Aug. 26, 1992, Ser. No. 935,865

Int. Cl.[5] B05B *1/24, 1/20*

U.S. Cl. 239—13 **16 Claims**



16. A method for controlling weeds and undergrowth, said method comprising the steps of:

a. preparing a liquid spray material;

b. heating said spray material to a temperature of about 100° F. to about 240° F.;

c. spraying said heated liquid spray material onto the substance to be controlled; and

d. covering said sprayed substance for a predetermined period of time before exposing said sprayed substance to ambient conditions.

5,297,731

SNOW MAKING APPARATUS

Alfio Bucceri, 15 Yarradale Street, Newmarket, Queensland, 4051, Australia

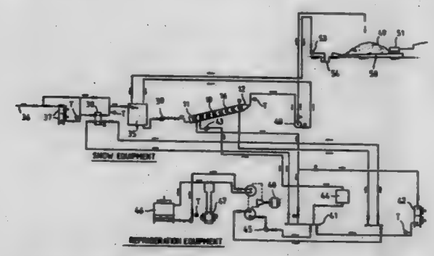
PCT No. PCT/AU90/00610, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO91/10104, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 24, 1990, Ser. No. 877,168

Claims priority, application Australia, Jan. 2, 1990, PJ8063; May 22, 1990, PK0274

Int. Cl.[5] F25C *3/04*

U.S. Cl. 239—14.2 **16 Claims**



1. Apparatus for making artificial snow, comprising at least one flexible conduit adapted to hold water;

cooling means for cooling the conduit so that ice crystals form in the water on the surface of the conduit;

means for temporarily deforming the conduit to dislodge the ice crystals so formed from the surface wherein the cooling means comprises a coolant liquid in thermal contact with the conduit; and

a pipe containing a plurality of the conduits extending longitudinally therein, each of the conduits being a tube adapted to carry water, wherein in use the coolant liquid is passed through the pipe in thermal contact with the exterior surfaces of the tubes,

wherein the pipe comprises a header portion at each end thereof communicating with respective end openings of each tube, one of said header portions communicating with an inlet pipe and the other header portion communicating with an outlet pipe.

5,297,732

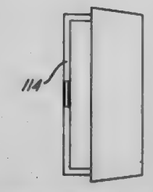
FRAGRANCE-EMITTING CONTAINER

Gary S. Hahn, 2371 Lagood View Dr., Cardiff by the Sea, Calif. 92007

Continuation-in-part of Ser. No. 666,872, Mar. 8, 1991, Pat. No. 5,165,603. This application Oct. 16, 1992, Ser. No. 942,064

Int. Cl.[5] A61L *9/04*

U.S. Cl. 239—55 **7 Claims**



4. A fragrance emitting container comprising:

a container body substantially enclosing a container space;

a container lid pivotably attached to the container body;

a fragrance reservoir containing a fragrance positioned in a recess in the container lid, the container lid movable from a closed position wherein the recess is at least partially sealed off, to an open position wherein recess is open such that fragrance can disperse from the channel.

5,297,733

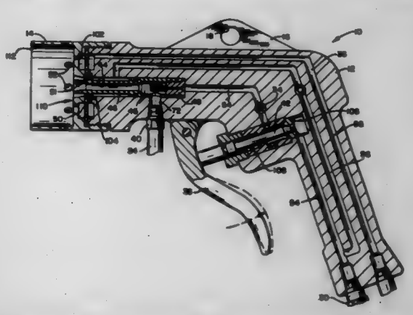
FLAME SPRAY GUN

Leonard R. Burks, and Mark T. Dobek, both of Big Spring, Tex., assignors to Plastic Flamecoat Systems, Inc., League City, Tex.

Continuation-in-part of Ser. No. 760,866, Sep. 16, 1991. This application Jun. 2, 1993, Ser. No. 70,283

Int. Cl.[5] B05B *1/24, 7/02, 7/06*

U.S. Cl. 239—85 **3 Claims**



1. Apparatus for applying a flame-sprayed coating of a powdered material to a substrate, the apparatus comprising a flame spray having a body, a powder nozzle disposed inside the body, an eductor nozzle extending the powder nozzle and having an inlet and outlet, a fluidized powder supply port within the powder nozzle adjacent to the eductor nozzle outlet, a first passageway flow of pressurized conveying gas to the eductor nozzle inlet, a valve disposed inside the body for selectively controlling the flow of conveying gas the first passageway, an annulus around the powder nozzle, a second providing fluid communication between the annulus and the first passageway at a point in first passageway that is upstream of the trigger-operated valve, the second passageway supplying a flow of pressurized combustion gas to the annulus, and a valve the flow of combustion gas through the second passageway, wherein the powder nozzle comprises a radially extending flange blocking the a plurality of orifices in the flange permitting the pressurized combustion gas to flow the flange through the annulus.

5,297,734

ULTRASONIC VIBRATING DEVICE

Kohji Toda, 1-49-18, Futaba, Yokosuka, Japan

Filed Oct. 11, 1991, Ser. No. 774,098

Claims priority, application Japan, Oct. 11, 1990, 2-273001; Nov. 30, 1990, 2-339179; Nov. 30, 1990, 2-339180; Nov. 30, 1990, 2-339181

Int. Cl.[5] B05B *1/08*

U.S. Cl. 239—102.2 **43 Claims**

1. An ultrasonic device comprising:

piezoelectric vibrator means including a piezoelectric vibrator and a vibrating plate mounted on said piezoelectric vibrator, said piezoelectric vibrator means for atomizing a liquid by the acoustic vibration generated by said vibrating plate in response to actuation by said piezoelectric vibrator, said piezoelectric vibrator and said vibrating plate cooperatively forming a vibrating assembly;

means for supplying the liquid to said vibrating plate of said piezoelectric vibrator means, said vibrating plate having a plurality of holes so that the liquid penetrates said plurality of holes during atomizing of the liquid; and

a pair of electrodes oppositely disposed along two surfaces of said piezoelectric vibrator, said two surfaces running

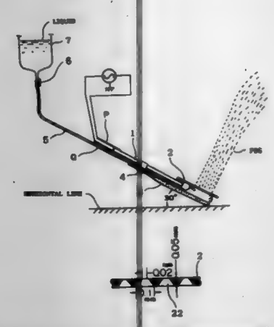
VOL 1160 ISS 5 MR 29 1994 UMI

perpendicular to the direction of thickness of said piezoelectric vibrator, said pair of electrodes receiving a signal and causing said piezoelectric vibrator to vibrate;

wherein said means for supplying said vibrating plate with said liquid comprises a supporting board positioned parallel to said vibrating plate and at a fixed distance from said vibrating plate; and means for maintaining said ultrasonic device at a fixed, inclined angle relative to the surface of the liquid, said liquid being accommodated by a liquid bath, and by positioning the vibrating plate over the top surface of said supporting board, said supporting board being made from a material having an acoustic impedance which is low compared with the acoustic impedance of the piezoelectric vibrator.

12. An ultrasonic device comprising:

piezoelectric vibrator means including a piezoelectric vibrator and a vibrating plate mounted on said piezoelectric



vibrator, said piezoelectric vibrator means for atomizing a liquid by the acoustic vibration generated by said vibrating plate in response to actuation by said piezoelectric vibrator, said piezoelectric vibrator and said vibrating plate cooperatively forming a vibrating assembly;

means for supplying the liquid to said vibrating plate of said piezoelectric vibrator means, said vibrating plate having a plurality of holes so that the liquid penetrates said plurality of holes during atomizing of the liquid, the circumference of an inlet opening portion of each of the plurality of holes disposed on said vibrating plate being different from the circumference of each respective outlet opening portion corresponding thereto; and

a pair of electrodes oppositely disposed along two surfaces of said piezoelectric vibrator, said two surfaces running perpendicular to the direction of thickness of piezoelectric vibrator, said pair of electrodes receiving a signal and causing said piezoelectric vibrator to vibrate.

5,297,735

HAND SHOWER

Bruno Heimann, Fröndenberg-Ardey; Eckhard Gransow, Fröndenberg; Rudolf Hanke, Menden, and Bernd Bischoff, Iserlohn, all of Fed. Rep. of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Filed May 15, 1992, Ser. No. 884,396

Claims priority, application Fed. Rep. of Germany, May 24, 1991, 4116932

Int. Cl.[5] B05B *9/00*

U.S. Cl. 239—120 **14 Claims**

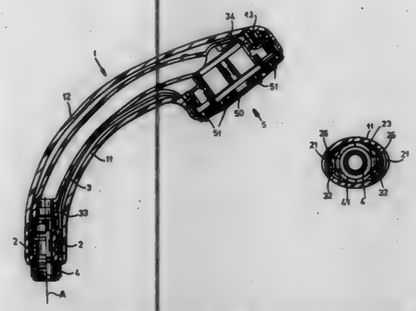
1. A hand shower comprising:

a shower housing having an inner end formed centered on an axis with an axially open central recess and an outer end;

a shower head on the outer end;

a male coupling part adapted to be fixed to the end of a supply hose and having a tubular outlet end engageable axially in the housing inner end; and

a pair of latch elements unitarily formed of a resilient synthetic resin and displaceable radially of the axis in the inner end and opposite to each other between a holding position engaging and axially retaining the coupling part in the recess and a freeing position allowing the coupling part to move axially freely into and out of the recess, each element being basically annular and being formed unitarily with



a pair of relatively thin and easily deformable curved side parts each having two ends,

a relatively thick latch part bridging the side parts between two of the ends thereof, and

a pushbutton on the side parts at the other two ends thereof.

5,297,736

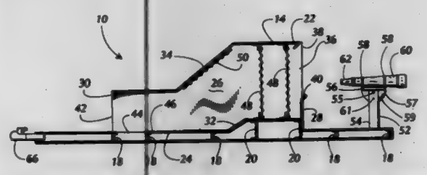
FLOW TEST CHAMBER

Henry Vickery, Thonotosassa, Fla., assignor to Vickery & Company, Thonotosassa, Fla.

Filed Nov. 9, 1992, Ser. No. 973,688

Int. Cl.[5] B05B *1/28*

U.S. Cl. 239—122 **17 Claims**



1. Apparatus for receiving and diverting a high pressure stream of fluid comprising:

a hollow chamber positionable for receiving the stream of fluid therein;

an inlet in the chamber for entry of the fluid stream into the chamber;

at least one screen positionally aligned within the chamber perpendicular to the flow of fluid stream for diminishing the rate of flow of the fluid stream; and

a discharge opening in the chamber for discharge of the diminished fluid stream from the chamber.

5,297,737

SPRINKLER FROST CLIP

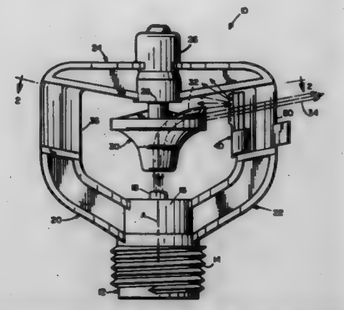
Paul D. Davisson, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Mar. 30, 1993, Ser. No. 40,033

Int. Cl.[5] B05B *3/04*

U.S. Cl. 239—222.17 **15 Claims**

1. In a rotary sprinkler having a body portion mounting a nozzle for emitting a substantially solid stream along a center axis of the nozzle and a rotary distributor plate spaced form said nozzle for redirecting the stream to achieve a desired sprinkling pattern, said sprinkler body portion including a pair of arms extending upwardly on opposite sides of said nozzle and wherein said rotary distributor plate is supported above said nozzle by said pair of arms, the improvement comprising



a deflector for intermittently deflecting at least a portion of the substantially solid stream redirected by said distributor plate back onto said distributor plate, said deflector attached to one of said pair of arms, and having a channel extending substantially parallel to said center axis and facing the distributor plate so as to intermittently engage said substantially solid stream during rotation of the rotary distributor plate.

5,297,738

APPARATUS FOR ELECTROSTATIC ATOMIZATION OF LIQUIDS

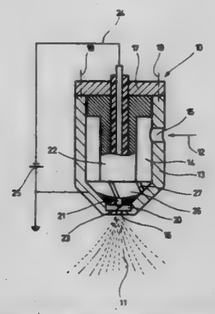
Walter Lehr, Stuttgart, and Guenter Schirmer, Ingersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 21, 1992, Ser. No. 839,151

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106563

Int. Cl.[5] B05B *5/025*

U.S. Cl. 239—708 **2 Claims**



1. An apparatus for electrostatic atomization of liquids having an injection nozzle (10), sad injection nozzle has an electrically conductive nozzle body (13), said nozzle body includes a nozzle opening (16) from which a volume of fluid under pressure emerges, an electrode (21) int he nozzle body, said electrode is secured near and coaxially opposite the nozzle opening, a power supply means connected to said electrode and said nozzle and adapted to supply a high-voltage potential relative to the electrode (21) and the nozzle body, nonelectrical means are disposed within an interior of said injection nozzle relative to the nozzle opening (16) for atomizing the liquid volume upon its emergence from the nozzle, said nonelectrical means are embodied by swirl conduits (27) which extend in an inclined fashion relative to a longitudinal axis of the nozzle body (13) and carry a liquid from a liquid-filled nozzle chamber (14) to the nozzle opening (16), the swirl conduits (27) are embodied in a truncated cone (26) inserted into the nozzle body (13), in which the truncated cone in the nozzle body (13) separates an antechamber (20) located immediately in front of the nozzle opening (16) from the nozzle chamber (14) that can be filled with liquid, said nonelectrical means are embodied such that mechanical breakaway forces generated by said nonelectrical means int he liquid volume are effective sooner than the forces of electrostatic repulsion prevailing between liquid droplets are formed.

5,297,739

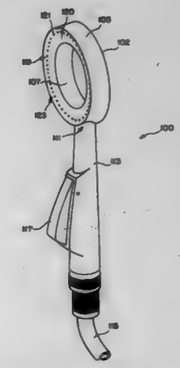
ENHANCED RISING DEVICE WITH CIRCULAR ARRAY OF ORIFICES

Donovan J. Allen, Taylors, S.C., assignor to Torus Corporation, Greenville, S.C.

Continuation of Ser. No. 653,615, Feb. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 338,489, Apr. 13, 1989, Pat. No. 4,991,314, which is a continuation of Ser. No. 157,053, Feb. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 124,051, Nov. 23, 1987, Pat. No. 4,836,702. This application Mar. 12, 1993, Ser. No. 30,561

Int. Cl.[5] B05B *1/06, 1/14, 13/00*

U.S. Cl. 239—530 **22 Claims**



1. A rinsing apparatus comprising:

(a) a tubular body defining a fluid passageway therewithin and a circular opening therethrough;

(b) fluid outlet means located about said opening and being in fluid communication with said passageway, said fluid outlet means being arranged in a circular array which is symmetrical about an axis passing through the center of and perpendicular to the circular opening, and at an angle of approximately 25° to an axis passing through each said fluid outlet means parallel to said center axis so as to focus fluid passing therethrough symmetrically towards a common point away from said tubular body with fluid passing through said fluid outlet means collectively following a conical pattern; and

(c) means for supplying fluid through said passageway and out of said fluid outlet means at adequate pressure that upon striking a surface to be rinsed that is apart from said body but short of said common point, substantially all of the fluid will be reflected rearwardly towards and pass through the opening producing a lifting effect in the direction of the opening and an enhanced rinsing effect.

5,297,740

PROCESS FOR THE PRODUCTION OF POLYACRYLIC ACIDS

Alfons Landscheidt, Lefarthstr. 11, and Andreas Gebauer, Schreinerstr. 4, both of 4150 Krefeld, Fed. Rep. of Germany

Division of Ser. No. 917,014, Aug. 7, 1992, Pat. No. 5,241,011.
This application Jun. 17, 1993, Ser. No. 78,713
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1990, 4004953
Int. Cl.[5] B02C *1/00*
U.S. Cl. 241—16 6 Claims

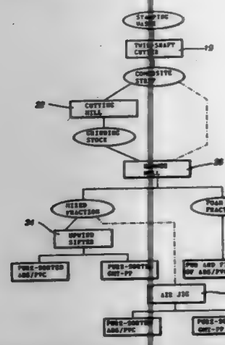
1. In the grinding of calcium carbonate in water employing a dispersing aid, the improvement wherein such dispersing aid comprises a polyacrylic acid or copolymer of acrylic acid with up to 50 mol-% of comonomers and having a molecular weight of less than 100,000 measured at a pH-value of 8.0, and being neutralized by 10 to 60 mol-% with calcium hydroxide, wherein the acrylic acid is partially neutralized with calcium hydroxide prior to polymerization and the further neutralization is carried out with monovalent bases after the polymerization.

5,297,741

PROCESS FOR DISINTEGRATION AND PURE-SORTED SEPARATION OF RECYCLABLE DIFFERENT PLASTICS OF COMPOSITE STRUCTURAL PARTS

Jörg Zürn, Ulm; Michele Melchiorre, Blaustein; Karsten Löhr, and Martin Güldenpfennig, both of Ulm, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed May 20, 1993, Ser. No. 63,771
Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216638
Int. Cl.[5] B03B *9/06*; B02C *13/04*, *19/06*; B07B *9/00*
U.S. Cl. 241—14 6 Claims



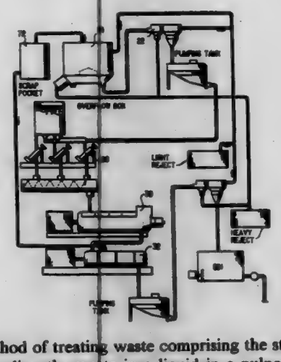
1. A process for disintegration and pure-sorted separation of different plastics of recyclable composite structural parts containing a core of at least foam material and a flexible outer foil adhering firmly thereto and a support made thicker-walled than the outer foil and composed of a hard plastic, firmly adhered to the core in the form of an intermediate layer, comprising the steps of comminuting the composite structural parts into approximately cuboid particles of different plastics, disintegrating the particles into individual materials by selectively comminuting the foam of the particles mechanically into substantially smaller crumbs than the remaining pieces of the particles in a dry treatment, and separating the particles in a pure-sorted manner by a grain-size-selective separation such that the smaller foam crumbs are screened off from the coarser remaining particle pieces, wherein the step of selective comminution of the foam takes place by an impact stressing of the particles, and, after the removal of the foam fraction, the initially remaining mixture of thicker-walled hard-plastic particles and of thinner-walled foil chips is separated into a hard-plastic fraction and into a foil fraction by a vertical low-turbulence upwind sifter, an approximately vertically rising low-turbulence air stream flowing from below against the particles of the mixture which lie flat and individually without overlap, on an air-permeable approximately horizontal base, with only the foil chips being lifted and carried upwards, and the hard-plastic particles remaining being removed laterally at screen level.

5,297,742

METHOD AND DEVICE FOR THE TREATMENT OF WASTE

Leif Grandits, and Odd Karlsen, both of Roslagsvagen 101, Hus 15, Stockholm S-104 05, Sweden

Continuation of Ser. No. 778,070, filed as PCT/SE90/00318, May 11, 1990. This application May 3, 1993, Ser. No. 55,756
Claims priority, application Sweden, Jun. 5, 1989, 8902048
Int. Cl.[5] B02C *23/10*
U.S. Cl. 241—20 7 Claims



1. A method of treating waste comprising the steps of:
A. suspending the waste in a liquid in a pulper to form a waste pulp;
B. initially sorting heavy objects from the waste pulp to form a resultant waste pulp having heavy and light fractions;
C. separating and removing the heavy and light fractions from the waste pulp;
D. thereafter, at least partially dewatering the waste pulp;
E. kneading the at least partially dewatered waste pulp through a grinding means to thereby obtain a kneaded waste pulp containing free fibers and unground fractions;
F. delivering hot water or steam to the grinding means so as to maintain the at least partially dewatered waste pulp being kneaded therein at a temperature of at least 60° C.;
G. washing the kneaded waste pulp to separate the unground fractions therefrom to form a fiber pulp suspension; and
H. conveying the fiber pulp suspension for further treatment.

5,297,743

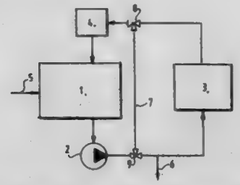
DEVICE FOR PROCESSING CHOCOLATE MASS

Jan C. Tadema, Bergen, Netherlands, assignor to Wiener & Co. Apparatenbouw B.V., Amsterdam, Netherlands

Division of Ser. No. 635,860, Dec. 19, 1990, Pat. No. 5,156,878.
This application Jul. 2, 1992, Ser. No. 907,719
Claims priority, application Netherlands, Jan. 16, 1990, 9000105
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—80 6 Claims

4. A device for mixing and grinding chocolate, fats or the like which is pre-mixed into a process mass comprising:
a grinding device means for grinding said process mass to a certain particle size,

a ball mill means coupled by a plurality of passage means to said grinding device means to further grind said process mass,
said plurality of passage means including a first passage extending from an outlet of said grinding device means to an inlet of said ball mill means and a second passage means extending from an outlet of said ball mill means to an inlet of said grinding device means,



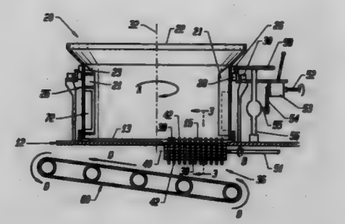
a circulating means coupled to said passage means between said ball mill means and said grinding device means for circulating said process mass between said grinding device means and said ball mill means through said passage means, and
a taste-changer means coupled to said second passage means between said outlet of said ball mill means and said grinding device means for changing the taste of said process mass.

5,297,744

MAGNETIC TUB GRINDER

L. Powell Clinton, Midland, Tex., assignor to Fuel Harvesters Equipment, Inc., Midland, Tex.

Filed Sep. 6, 1991, Ser. No. 755,944
Int. Cl.[5] B02C *13/286*
U.S. Cl. 241—81 6 Claims



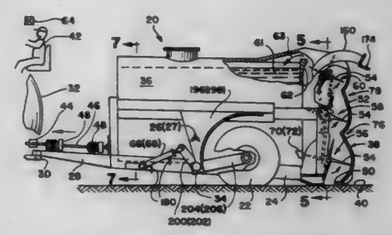
1. An apparatus for grinding waste material, comprising:
a floor member having an upper surface including an aperture therethrough;
means mounted below said floor member for grinding the waste material, said grinding means including a plurality of grinding elements mounted to rotate in a closed path extending through said aperture;
a generally cylindrical tub member including an interior wall and having an open end for receiving the waste material, said tub member having a central axis generally perpendicular to said floor member, and at least one elongated protrusion extending from said wall toward said central axis for engaging the waste material;
said tub member extending above said floor member and mounted for rotation about said axis in at least one direction of rotation relative to said floor member;
at least one magnet mounted on said wall above said floor member for attracting and retaining tramp iron included in said waste material, said magnet mounted in close proximity to said elongated protrusion on one side thereof, so that said magnet immediately follows said elongated protrusion during said rotation; and
rotating means for rotation of said tub member in said one direction of rotation so said elongated protrusion precedes said magnet during said rotation, whereby when said tub member is rotated, said magnet and tramp iron retained thereon is protected by said protrusion from impact with waste material.

5,297,745

REAR-MOUNTED MANURE GATHERING MACHINE AND METHOD OF HANDLING MANURE

Owen Vinyard, 4947 Highway 190 E, Hammond, La. 70401

Filed Dec. 23, 1991, Ser. No. 812,029
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—101.7 21 Claims



1. A manure gathering machine for a feedlot or barnyard comprising:
a mobile manure tank for movement in a forward direction over the ground through an area to be cleaned, said tank having a rear end defined by a rear wall with a filling opening at an upper portion of said rear wall; and
means for picking up manure from the ground, in a zone behind said rear wall of said tank as said tank moves forwardly through the area, and for lifting the picked up manure and directing the picked up manure forwardly to said filling opening of said tank, whereby picked up manure which does not reach said tank falls to the ground between said rear wall of said tank and said manure picking up means and is again picked up as said tank moves through the area.

5,297,746

GRANULATOR KNIFE

Thomas D. McBride, Shrewsbury, Mass., and James L. Young, Cumberland, R.I., assignors to Nelmor Company, Inc., North Uxbridge, Mass.

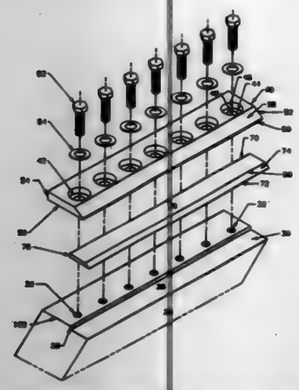
Continuation-in-part of Ser. No. 831,620, Feb. 6, 1992, abandoned. This application Dec. 30, 1992, Ser. No. 998,462
Int. Cl.[5] B02C *19/18*
U.S. Cl. 241—242 4 Claims

1. A granulator which has a rotor knife seat having a plurality of tapped holes and a clamp to secure a knife to the rotor seat, which comprises:
a floor formed in the rotor seat, the floor extending from the outer surface of the rotor inwardly and terminating in a fixed rear wall;
a trapezoidal shaped knife having a rear wall, the knife seated on the floor of the rotor seat, the rear wall of the knife butted to the rear wall of the rotor seat, the knife including an upper surface and a forward sloping surface, the sloping surface terminating at one end in a cutting edge and intersecting at its other end the upper surface and defining at said intersection a knife alignment edge;
an adjustable clamp having a plurality of bolt holes therethrough, the bolt holes greater in diameter than bolts which will pass through the clamp such that the clamp may be moved with reference to the rotor seat within the limits defined by the diameters of the bolt holes, the clamp including a forward portion, the forward portion compris-

VOL 1160 ISS 5 MR 29 1994 UMI

ing an upper sloped surface and a lower flat surface, the lower flat surface engaging the upper surface of the knife, the upper sloped surface defining with the lower flat surface a clamp alignment edge;

a plurality of bolts adapted to pass through the holes in the



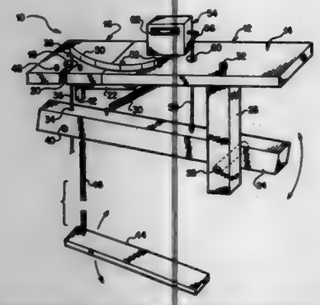
clamp to secure the clamp to the rotor seat such that the sloped surface of the clamp and the sloped surface of the knife are in substantially the same plane and the alignment edge of the knife and the alignment edge of the clamp are substantially adjacent to one another to provide maximum support to the clamped knife.

5,297,747

INDUCTION CORE WINDING DEVICE

Drewry B. Long, 15,500 N. Fifth Ave., P.O. Box 26, Lyons, Colo. 80540

Filed May 8, 1991, Ser. No. 696,865
Int. Cl.[5] B65H *81/02*
U.S. Cl. 242—4 R 11 Claims



1. An induction core winding device comprising:

a base plate having a winding aperture therethrough and a winding slot leading from an edge of said plate to said aperture;

a pivot arm mounted under said base plate for reciprocating movement toward and away from said base plate;

means for controllably reciprocating said pivot arm;

a wire pulling hook mounted on said pivot arm in alignment with said winding aperture such that when said pivot arm is pivoted toward said base plate, said hook will project a desired distance through said aperture, and when said pivot arm is pivoted away from said base plate, said hook will be withdrawn from said aperture; and

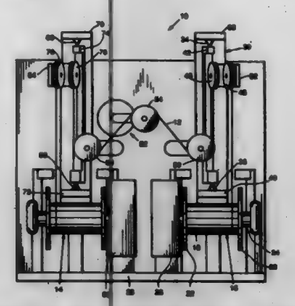
a clamp for holding a core to be wound over said aperture on a side of said base plate opposite said pivot arm.

5,297,748

FILAMENT AUTOWINDER WITH FAULT DETECTION

George W. LeCompte, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 739,566, Aug. 2, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 23,156
Int. Cl.[5] B65H *54/00, 57/28*
U.S. Cl. 242—18 R 8 Claims



1. Apparatus for taking a filament from a supply spool and winding it onto a bobbin, comprising:

first free-arm means mounted spaced above the supply spool for swinging movement along a path in a plane generally parallel to a plane including the supply spool axis of rotation;

first rotatable pulley means rotatably mounted on said first free-arm means for guiding filament taken from the supply spool in a generally upwardly direction;

second free-arm means mounted spaced above the bobbin for swinging movement generally parallel to the bobbin winding axis;

second pulley means rotatably mounted on said second free-arm means for guiding filament from the first pulley means and redirecting the filament downwardly to be wound onto the bobbin; and

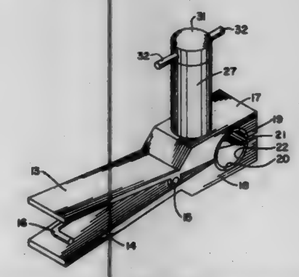
means for drivingly rotating both the supply spool and the bobbin.

5,297,749

BED MOUNTED TISSUE ROLL HOLDER APPARATUS

Mark E. White, 16 Hacker St., Fairhaven, Mass. 02719-1808

Filed Nov. 30, 1992, Ser. No. 982,909
Int. Cl.[5] A47K *10/22, 10/32*
U.S. Cl. 242—55.2 1 Claim



1. A bed mounted tissue roll holder apparatus arranged for

mounting to a bed member rail tube of a bed member, wherein the apparatus comprises,

a spring clamp assembly, including a first clamp leg and a second clamp leg, and

the first clamp leg and the second clamp leg pivotally mounted relative to one another at intermediate locations with a pivot axle directed and mounted between the first clamp leg and the second clamp leg, with a clamp leg spring interposed between the first clamp leg and the second clamp leg, with the clamp leg spring wound about the pivot axle, and

a first jaw mounted to the first clamp leg and a second jaw mounted to the second clamp leg, the first jaw having a first jaw semi-cylindrical recess, the second jaw having a second jaw semi-cylindrical recess, wherein the first jaw semi-cylindrical recess and the second jaw semi-cylindrical recess are coaxially aligned relative to one another, wherein the first jaw and the second jaw are in continuous communication relative to one another in a first position, wherein said clamp leg spring biases said first and second jaws toward said first position, with the first jaw and the second jaw arranged in a spaced relationship relative to a second position to receive the rail tube therebetween, and

the first jaw having a first jaw top wall spaced from the first jaw semi-cylindrical recess, with the first jaw top wall including mounting means for mounting a tissue roll thereabout, and

the first jaw semi-cylindrical recess includes a first semi-cylindrical resilient insert mounted coextensively with the first jaw semi-cylindrical recess, and the second jaw semi-cylindrical recess includes a second semi-cylindrical resilient insert mounted coextensively therewithin in confronting relationship relative to the first semi-cylindrical resilient insert, and

the first semi-cylindrical resilient insert and the second semi-cylindrical resilient insert each includes engaging ribs parallel to each other and of resilient construction for enhanced engagement of the rail tube, and

the top wall includes a cylindrical opening, and the first jaw having a first jaw cavity within the first jaw below the top wall in surrounding relationship relative to the cylindrical opening, and the mounting means includes a mounting cylinder for rotatably mounting said roll and having a mounting cylinder first end and a mounting cylinder second end, the mounting cylinder first end includes a plurality of spring-biased legs extending radially beyond the mounting cylinder and fixedly mounted to the mounting cylinder first end, with the spring-biased legs arranged for reception within the first jaw cavity, and

a resilient "O" ring interposed between the mounting cylinder first end and the first jaw top wall, and

the mounting cylinder second end is externally threaded, and a cylindrical cap threadedly mounted to the mounting cylinder second end, and the cylindrical cap and the mounting cylinder symmetrically oriented about a cylinder axis, and the cap having a plurality of rods longitudinally aligned relative to each other and orthogonally oriented relative to the cylinder axis, the rods project radially beyond the cap, and

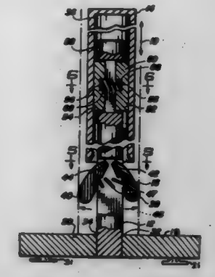
the cap is transparent, and includes a mounting plate therewithin, and an illumination bulb mounted to the mounting plate within the cap, and at least one battery member mounted within the mounting cylinder, and a mounting cylinder spring interposed between the battery member and the mounting cylinder first end, and an electrical communication cable directed from the mounting cylinder spring to the illumination bulb, with the battery member in simultaneous electrical communication with the illumination bulb for effecting illumination of the illumination bulb through the cap.

5,297,750

HOLDER FOR ROLLS OF MATERIAL

Jack E. Hunt, 3103 Tanglebriar, Pasadena, Tex. 77503

Filed Dec. 16, 1992, Ser. No. 991,396
Int. Cl.[5] A47K *10/22;* B65H *23/08*
U.S. Cl. 242—55.54 8 Claims



1. An apparatus for rotatably supporting a roll of sheet material having:

a base;

a cylindrical inner post attached at a first end to said base;

a hollow cylindrical outer post slidably extended over a second end of said inner post;

said inner post having a first friction means and a second friction means, each of said first friction means and said second friction means extending resiliently outwardly beyond the diameter of said inner post;

said first friction means comprising

a first arm pivotally connected to said inner post and a spring means biasing said first arm outwardly from said inner post;

said second friction means comprising a first abutment member having a surface in resilient abutment with an inner surface of said outer post and spring means biasing said abutment member against said outer post inner surface;

said outer post slidable between a first outer post position in juxtaposition with said base and a second outer post position distal of said base, said outer post extending over said first friction means in said first outer post position, said first friction means extending outwardly beyond an outer diameter of said outer post in said second outer post position;

whereby relatively free rotation of said roll is maintained in said first outer post position, and rotation of said roll is frictionally limited by said first friction means in said second outer post position.

5,297,751

METHOD OF REPLACING STRIP MATERIAL ON A MANUFACTURING MACHINE

Fulvio Boldrini, Ferrara, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D. Societa' Per Azioni, Bologna, Italy

Filed Apr. 22, 1991, Ser. No. 688,293
Claims priority, application Italy, May 3, 1990, 3473 A/90
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] B65H *23/02;* B26D *5/22*
U.S. Cl. 242—58 10 Claims

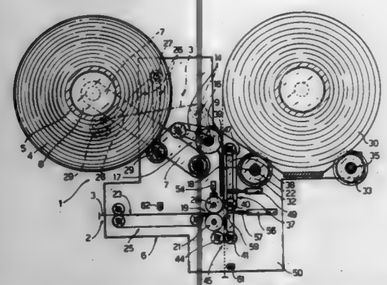
1. A method of replacing strip material on a manufacturing machine such as for replacing a first run-off strip (3) with a second run-off strip (31) on a manufacturing machine (2) having a strip traction device (19), the method comprising:

feeding a first strip (3) to said machine (2) along a given route comprising a first portion (22) and a second portion (23) at an angle to the first portion;

the second portion (23) extending through said traction device (19);

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positioning a lead portion of the second strip (31) along and beyond the first route portion (22);
accelerating the second strip (31) up to the speed of the first strip (3) along the first route portion (22);
cutting the first strip (3) along the first route portion (22) thereby forming a first strip trailing portion in the first route portion located adjacent the second strip portion in the first route portion;



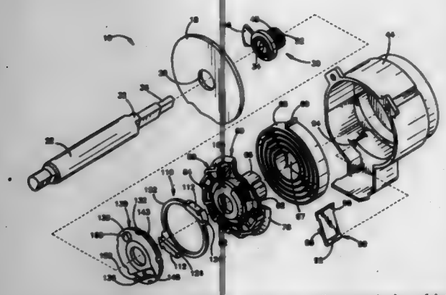
engaging the second strip (31) along the first route portion (22) by cutting and guide means (57); and
reciprocating said cutting and guide means (57) to and from an operating position to cut the second strip and, at the same time, to guide a cut free end so formed of the second strip (31) into engagement with said traction device (19) together with the trailing portion of the first strip.

5,297,752

SEAT BELT RETRACTOR WITH AN AUTOMATIC BELT TENSION REDUCER

Louis R. Brown, and Steven G. Corrion, both of Oxford, Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Sep. 28, 1992, Ser. No. 951,898
Int. Cl.[5] B60R *22/44*
U.S. Cl. 242—107 **31 Claims**



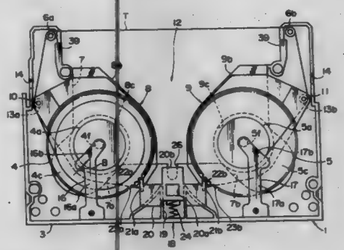
1. A seat belt retractor having a low tension mode in which belt webbing engages an occupant of a vehicle with a relatively small force, said retractor comprising:
a frame;
a spool on which said belt webbing is wound and which is rotatable in said frame in belt withdrawal and belt retraction directions;
a spring biasing said spool in the belt retraction direction;
a sun gear;
a planet carrier rotatable relative to said sun gear;
gear means rotatably supported on said planet carrier for meshing with said sun gear;
a ring gear rotatable relative to said planet carrier, said ring gear having internal teeth in meshing engagement with said gear means rotatably supported on said planet carrier and also having external ratchet teeth,
said sun gear, said planet carrier, said gear means and said ring gear interconnecting said spring and said spool;
a pawl movable between a first position engaging said external ratchet teeth of said ring gear and blocking rotation of said ring gear in the belt retraction direction to hold said retractor in the low tension mode and a second position in which said pawl does not block rotation of said ring gear in the belt retraction direction; and
means for moving said pawl from the first position to the second position to shift said retractor out of the low tension mode.

5,297,753

TAPE CASSETTE

Masanori Abe, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,041
Claims priority, application Japan, May 21, 1990, 2-130751
Int. Cl.[5] G11B *23/08*
U.S. Cl. 242—198 **8 Claims**



1. A tape cassette comprising:
a cassette case;
a pair of rotatable tape reels accommodated in said cassette case for winding a magnetic tape therearound, said tape reels having a diameter;
a mouth section formed between and in front of said tape reels in said cassette case for receiving a head drum of a recording/reproducing device;
means for allowing swinging movement of said tape reels to a rear portion of said cassette, whereby when said tape cassette is loaded into said recording/reproducing device, said tape reels are moved to the rear portion of said cassette case, thereby expanding said mouth section; and
a spring for biasing said tape reels, said spring having a substantially S-shaped cross section, so as to provide a biasing force of said spring against said tape reels before swinging movement of said tape reels substantially equal to the biasing force after swinging movement of said tape reels;
wherein said means for allowing swinging movement of said tape reels comprises a pair of reel retainers for rotatably retaining said tape reels, a pair of pivot shafts provided on an inner surface of said cassette case for respectively pivotably supporting said reel retainers for swinging motion, and a pair of recesses formed through a lower wall of said cassette case for respectively receiving said reel retainers following said swinging motion of said tape reels.

5,297,754

TAPE REEL WITH BRAKE AND DUST SHIELD

Thomas R. Albrecht, San Jose, Calif.; Armando J. Argumedo, Tucson, Ariz.; James H. Eaton, Morgan Hill, Calif.; Don G. East, Tucson, Ariz.; Steven L. Felde, Tucson, Ariz., and Douglas W. Johnson, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,094
Int. Cl.[5] G11B *23/04, 23/087*
U.S. Cl. 242—198 **19 Claims**



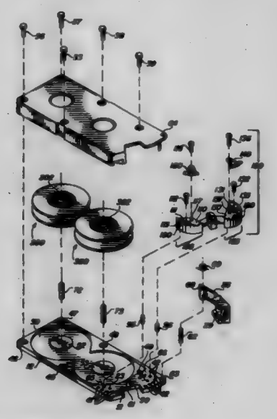
1. A tape reel comprising:
a circular hub including a first portion of a relatively large diameter and a second portion of a relatively small diameter, the hub having a top and a bottom;
a well in the top of the hub inside the first portion; and
a brake including a ring-shaped body compliantly mounted in the well, the brake biased against a fixed surface separate from the tape reel, yet able to move against the bias deeper into the well, the second portion positioned inside the ring-shaped body.

5,297,755

TAPE CARTRIDGE TAPE PATH

Steven L. Felde; Paul Y. Hu; Guy F. Hudson; Douglas W. Johnson; Kenneth J. Lusk; Guillermo S. Robles, and Robert R. Sidebotham, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1992, Ser. No. 902,243
Int. Cl.[5] G11B *23/087*; B65H *20/14*
U.S. Cl. 242—199 **18 Claims**



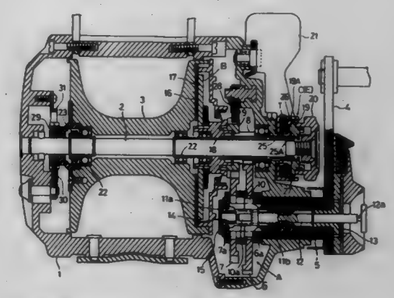
1. A tape cartridge comprising:
a box-like housing having a gas entrance therethrough;
a first rotatable tape reel mounted within the housing;
a gas bearing assembly mounted within the housing, the gas bearing assembly including a foil having perforations therein bonded to a plenum having a first opening therein and a second opening therein, the first opening aligned with the perforations, the second opening coupled to the gas entrance; and
a tape having a first end wound upon the first rotatable tape reel and a second end wound upon the second rotatable tape reel, the tape guided between the first and second rotatable tape reels by the gas bearing assembly.

5,297,756

FISHING REEL WITH ADJUSTABLE DRAG FORCE CHARACTERISTICS

Takeshi Ikuta, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Sep. 4, 1991, Ser. No. 754,669
Claims priority, application Japan, Sep. 25, 1990, 2-100397[U]
Int. Cl.[5] A01K *89/033,*
U.S. Cl. 242—270 **7 Claims**



1. A fishing reel comprising:
a reel body;
a spool for winding up a fishing line;
a handle;
a drive mechanism for winding a line on said spool in response to rotation of said handle;
a drag mechanism for applying a drag force against rotation of said spool, said drag mechanism including a movable drag controller for varying the amount of drag force applied by said drag mechanism to said spool; and
a drag force characteristics varying means, said drag force characteristics varying means being adjustable to increase and decrease an amount of variance of a drag force which is applied for a given unit of movement operation of said drag controller; and
wherein said characteristics varying means includes a movable disk driven by a turning force of an adjusting dial transmitted through a transmission, said adjusting dial being operable to select drag variation characteristics, and a plurality of movable cams tiltable to varied degrees as engaged and supported by a holder as a result of variations in positions of contact with a plurality of projections formed on said movable disk, whereby said characteristics varying means is operable to adjust tilting amounts of said movable cams.

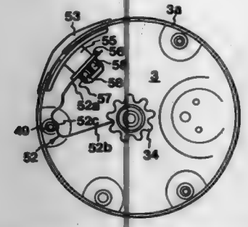
VOL 1160 ISS 5 MR 29 1994

5,297,757

BUZZER MECHANISM IN A FISHING REEL

Arne Johansson, Mörrum, and Bengt-Åke Henriksson, Svängsta, both of Sweden, assignors to Abu Garcia Produktion AB, Svangsta, Sweden

Filed Jul. 8, 1992, Ser. No. 910,594
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—306 3 Claims



1. A buzzer mechanism in a fishing reel having a frame, a shaft extending through the frame, and a line spool rotatably mounted on the shaft, with the frame having a side plate with an axially directed circumferential flange having a free edge and a circumferentially directed slot,

the buzzer mechanism comprising:

a gear wheel non-rotatably connected to the line spool;

a trigger mounted on the circumferential flange of the side plate and having a substantially radial projection extending into the side plate through the slot in the circumferential flange;

said trigger being displaceable along the slot between a first position and a second position;

a substantially U-shaped spring leaf having a first and a second leg and an intermediate web portion;

and a rod projecting from the frame being positioned in contact with said spring leaf;

said first leg being supportably carried on said projection of said trigger;

said web portion being in contact with said rod putting said second leg in engagement with said gear wheel to produce a buzzing sound when the line spool rotates when said trigger is in said first position;

said second leg being disengaged from said gear wheel when said trigger is in said second position.

5,297,758

FISHING REEL WITH CLICK SOUND GENERATOR

Yasuhiro Hitomi, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 28, 1990, Ser. No. 635,650
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—307 6 Claims

1. A baitcasting fishing reel with a click sound generator, the reel comprising:

a pair of side frames;

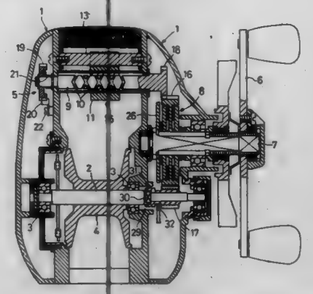
a spool rotatably fitted on a support shaft extending between the side frames;

a level wind mechanism disposed radially outside said spool and including a drive shaft, said drive shaft being parallel to said support shaft, said drive shaft having an end portion;

means for simultaneously rotating said spool and said drive shaft;

a click sound generator including a clicking wheel and a stopper element, said clicking wheel having a jagged portion on an outer periphery thereof, said stopper element being engageable with said jagged portion of said clicking wheel, said clicking wheel being mounted on said end portion of said drive shaft;

a one-way clutch mechanism for allowing rotational force to be transmitted from said drive shaft to said clicking wheel only in a direction for unwinding a fishing line from said spool, said drive shaft and said clicking wheel being connected to each other through said one-way clutch mechanism, said drive shaft functioning both as a drive shaft for said level wind mechanism and as a support shaft for said clicking wheel; and



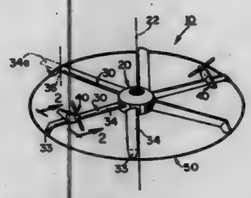
wherein said one-way clutch mechanism is arranged such that said clicking wheel rotates to generate a clicking sound when said drive shaft rotates in a spool line unwinding direction, and such that said clicking wheel is not rotated and a clicking sound is not generated when said drive shaft rotates in a spool line winding direction.

5,297,759

ROTARY AIRCRAFT PASSIVELY STABLE IN HOVER

Neil Tilbor, Six Taunton Rd., Medford, N.J. 08055; Herman M. Drees, 4056 Angela St., Simi Valley, Calif. 93063; William D. Watson, 1630 E. Wilton St.; Charles J. Sink, 1552 Patricia Ave., both of Simi Valley, Calif. 93065; Jeffrey Corsiglia, 6142 Via Escondido Dr., Malibu, Calif. 90265, and Warren E. Bosch, 6000 Midlantic Dr., Mount Laurel, N.J. 08054

Filed Apr. 6, 1992, Ser. No. 863,998
Int. Cl.[5] B64C *27/00*
U.S. Cl. 244—17.11 32 Claims



1. A rotary aircraft comprising:

a hub having a central axis;

a plurality of blades extending generally outwardly from the hub, the blades being spaced generally uniformly around the hub, each of the blades being essentially fixed in pitch with respect to the hub, the blades being configured to generate lift in a general lift direction parallel to the central axis when the blades and hub are rotated about the central axis in a given rotational direction in a plane of rotation perpendicular to the central axis;

means for rotating the hub and blades sufficiently quickly to generate at least a major proportion of the lift generated by the aircraft through the blades; and

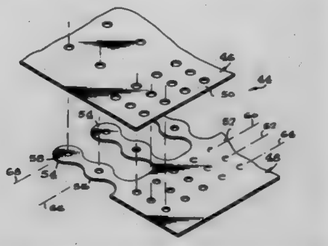
at least a plurality of blade outer tips remote from the hub being turned sufficiently transversely away from the plane of rotation and away from the lift direction and sufficiently outwardly turned with respect to tangents to radii extending from the central axis towards each of the turned outer tips, to improve passive stability of the aircraft in hover in a cross-wind.

5,297,760

AIRCRAFT SKIN LAP SPLICE

Leonard J. Hart-Smith, Long Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 21, 1992, Ser. No. 933,255
Int. Cl.[5] B64C *1/12*
U.S. Cl. 244—132 20 Claims



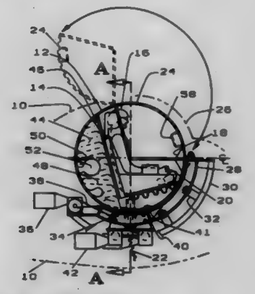
1. In a skin lap splice between adjacent skin panels of aircraft which comprises an outer skin having a longitudinal edge portion and an inner skin having a longitudinal edge portion, said edge portions being in contact and overlapping, and a plurality of first longitudinal rows of fasteners connecting said edge portions; the improvement which comprises means on said inner skin adjacent the longitudinal edge portion thereof and forming a part of said inner skin to provide flexibility at said longitudinal edge portion of said inner skin, and at least one second longitudinal row of fasteners passing through said flexibilizing means and connecting the longitudinal edge portion of said outer skin and the longitudinal edge portion of said inner skin.

5,297,761

MULTI-AXIS G-COMPENSATING ESCAPE COCKPIT CAPSULE

Robert T. Kendall, Jr., 1381 Rounds Ave., Grants Pass, Oreg. 97527, and Robert T. Kendall, Sr., 752 Via Somonte, Palos Verdes, Calif. 90274

Filed Jun. 15, 1992, Ser. No. 898,708
Int. Cl.[5] B64D *25/12*
U.S. Cl. 244—140 27 Claims



1. A manned vehicle comprising:

a control cockpit capsule mounted within said vehicle containing an instrument panel and control means and having means for allowing ingress and egress by a crewman,

sensor means located within said vehicle and connected to supply data to said instrument panel,

means for operating said vehicle connected to said control means in said capsule to enable said crewman to operate and control said vehicle; and

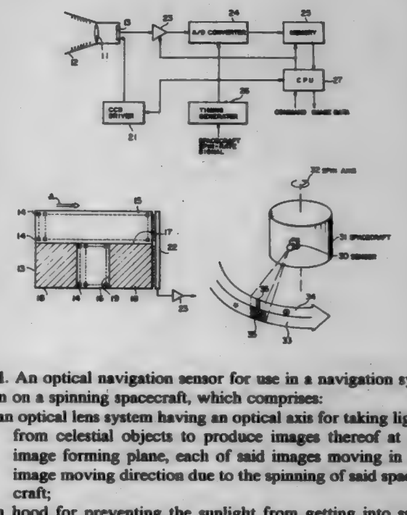
motorized means mounted in said vehicle for rotating said capsule within said vehicle to maintain said crewman in an "eyes-in" position; said "eyes-in" position being the position where the crewman can best withstand acceleration forces.

5,297,762

OPTICAL NAVIGATION SENSOR WITH SINGLE TWO-DIMENSIONAL CCD

Noboru Muranaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,160
Claims priority, application Japan, Aug. 26, 1991, 3-213869
Int. Cl.[5] B64G *1/66*; G01S *3/78*
U.S. Cl. 244—171 3 Claims



1. An optical navigation sensor for use in a navigation system on a spinning spacecraft, which comprises:

an optical lens system having an optical axis for taking light from celestial objects to produce images thereof at an image forming plane, each of said images moving in an image moving direction due to the spinning of said spacecraft;

a hood for preventing the sunlight from getting into said optical lens system; and

an electronic device for converting said images into an electric digital data signal;

said electronic device comprising:

a single two-dimensional charge-coupled device (CCD) positioned on said optical axis at said image forming plane and having an exposure surface with a matrix of pixels for producing photo electron charges induced by said images, the exposure surface of said CCD being previously divided into a first and a second region by a line in said image moving direction, said first region being for dark images of dark stars of said celestial objects, said second region being for a bright images of a particular bright one of said celestial objects such as a particular planet or the moon and being implemented with means for reducing the light exposure by the bright object to an adequate level for said CCD;

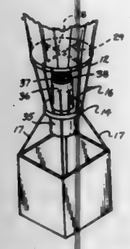
a CCD driving circuit coupled to said CCD for driving said CCD to shift said charges from one to the adjacent one of said pixels in the image moving direction by a charge shift clock signal synchronous with the spinning of the spacecraft so as to time-delay and integrate said charges to thereby produce an electric signal of said dark and bright images; and

a signal processing circuit coupled to said CCD for process-

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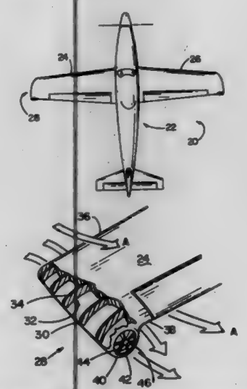
ing said electric signal to produce said electric digital data signal.

5,297,763
SAFETY BALLOON APPARATUS
Brad A. Cazort, 8200 Alvin La., Little Rock, Ark. 72207
Filed Mar. 1, 1993, Ser. No. 24,377
Int. Cl.[5] B64B *1/40, 1/58, 1/62*
U.S. Cl. 244—31 2 Claims



1. A safety balloon apparatus, comprising,
a flexible balloon member having a lowermost entrance opening including a rigid entrance ring mounted to the entrance opening, and the balloon member coaxially aligned about a balloon axis, with the entrance ring coaxially and symmetrically oriented relative to the balloon axis at the balloon entrance opening, and
the entrance ring including a first mounting bar and a second mounting bar, wherein the first mounting bar and the second mounting bar orthogonally intersect one another, and the first mounting bar and the second mounting bar are diametrically aligned within the entrance ring, and
a support disc positioned below the entrance ring coaxially aligned along the balloon axis, and a support container positioned below the support disc coaxially aligned relative to the balloon axis, wherein first tether lines arranged in a conical array extend from the entrance ring to the support disc, and second tether lines extend from the support disc to the support container, and
the support disc mounting a burner assembly, with the burner assembly including a nozzle tube in a facing relationship relative to the entrance opening, and the burner assembly and the nozzle tube are coaxially aligned along the balloon axis, and
the balloon member includes a balloon cavity therewithin, and the balloon cavity having a first partition web, a second partition web, a third partition web, and a fourth partition web joined at a partition web junction, the partition web junction arranged coextensively within the balloon member, and coaxially aligned along the balloon axis, and the first partition web, the second partition web, the third partition web, and the fourth partition web secured within the balloon member dividing the balloon member into four pneumatic distinct chambers, and the first partition web having a first web lowermost edge, the second partition web having a second partition web lowermost edge, the third partition web having a third partition web lowermost edge, and the fourth partition web having a fourth partition web lowermost edge, wherein each lowermost edge is positioned in adjacency to the entrance ring, with the partition web lowermost edge and the fourth partition web lowermost edge aligned with the first mounting bar coextensive therewith, and the second partition web and the third partition web aligned with the second mounting bar coextensive therewith, wherein the first partition web lowermost edge includes a plurality of first support rings mounting the first partition web pivotally to the first mounting bar, the third partition web lowermost edge including third support rings pivotally mounting the third partition web lowermost edge in adjacency to the first mounting bar, the second partition web lowermost edge having second support rings mounting the second partition web pivotally to the second mounting bar, and the third partition web lowermost edge having third support rings pivotally mounting the third partition web pivotally to the second mounting bar.

5,297,764
AIR FOIL PROVIDING VORTEX ATTENUATION
William R. Haney, 6507 Foxboro Dr., Mayfield Village, Ohio 44143
Filed Mar. 15, 1993, Ser. No. 31,783
Int. Cl.[5] B64C *23/06*
U.S. Cl. 244—199 17 Claims

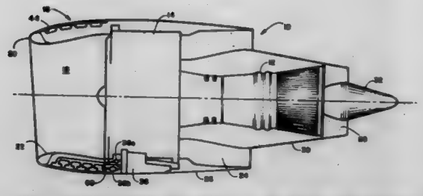


1. An airfoil including vortex attenuation mean, said airfoil having a relatively high pressure side and a relatively low pressure side upon movement of said foil in a forward direction relative to surrounding air, said airfoil having a trailing edge relative to airflow past said foil, and an outboard area, said vortex attenuation means comprising:
a foil extension portion on said foil in said outboard area, said foil extension portion having a high pressure surface adjacent to and as a smooth continuation of said high pressure said of said foil, said high pressure surface extending arcuately and concavely towards said high pressure side, the spanwise arcuate cross sectional length of said high pressure surface increasing with proximity to said
an orifice portion on said airfoil, said orifice portion adjacent said trailing edge and including an opening extending generally traverse of the forward direction and adapted for passing air therethrough, said opening including an arcuate surface portion bounding said opening, said arcuate surface portion in conforming contour with said adjacent high pressure surface and a smooth continuation thereof.

5,297,765
TURBINE ENGINE NACELLE LAMINAR FLOW CONTROL ARRANGEMENT
Kevin A. Hughes, and Chih F. Shieh, both of San Diego, Calif., assignors to Rohr, Inc., Chula Vista, Calif.
Filed Nov. 2, 1992, Ser. No. 970,058
Int. Cl.[5] B64C *21/06*
U.S. Cl. 244—209 15 Claims

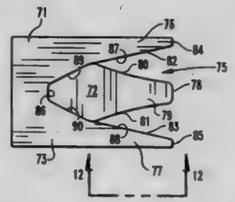
1. A laminar flow control aircraft turbine engine nacelle arrangement which comprises:
a microporous nacelle outer skin;

a honeycomb core bonded to the inner surface of said nacelle skin;
a perforated back skin bonded to said core;
a plurality of closely spaced circumferential flutes open to said back skin and fastened thereto;
at least one longitudinal collector duct operatively connected to said flutes; and



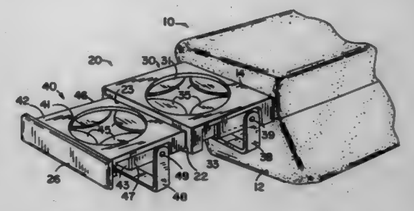
suction pump means for drawing air from said collector duct;
whereby air is drawn through said microporous skin, core, skin, flutes and collector duct to maintain laminar air flow over said outer skin during aircraft operation.

5,297,766
POT LID HOLDER
Frederick A. Hoffman, 602 Apollo Pkwy., Westfield, Ind. 46074
Continuation-in-part of Ser. No. 818,335, Jan. 9, 1992, Pat. No. 5,170,978. This application Oct. 26, 1992, Ser. No. 966,293
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—309.1 11 Claims



1. A bracket for hanging to a wall a lid with a handle comprising:
a main body mountable to said wall and including an upper portion, said main body further including a lower portion spaced apart by a gap from said upper portion with said lower portion having a first end portion and a second end portion, said lower portion including hanging means located at an end of said lower portion with said hanging means having an upwardly facing stop surface operable by gravity to removably hold and retain said handle in said gap to secure said lid to said wall; and,
mounting means operable to secure said main body to said wall; and wherein:
said lower portion extends upwardly from said first end portion to said second end portion with said handle resting against said stop surface when mounted by said hanging means, said hanging means includes a slot at said second end portion in said lower portion to vertically receive a handle of a lid and wherein said main body is a four sided channel with an upper wall extending in an upper plane, a lower wall and a pair of side walls joining said upper wall to said lower wall and defining a hollow interior, said lower wall including an outwardly opening slot to receive and hold a handle and position said handle within said hollow interior.

5,297,767
MULTIPLE CONTAINER HOLDER
Gordon Miller; Ronald Dykstra; David Spykerman, and Joseph Buonodono, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Division of Ser. No. 764,456, Sep. 24, 1991, Pat. No. 5,195,711, which is a division of Ser. No. 627,554, Dec. 10, 1990, Pat. No. 5,087,008, which is a continuation of Ser. No. 379,816, Jul. 14, 1989, abandoned. This application Dec. 8, 1992, Ser. No. 986,926
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.
Int. Cl.[5] A47C *7/62*
U.S. Cl. 248—311.2 12 Claims



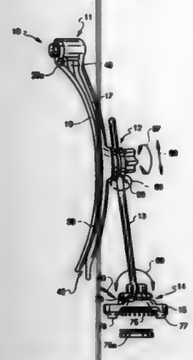
1. A multiple container holder for use in a vehicle comprising:
a support member mounted within a vehicle for concealably storing a container holder assembly therein;
a container holder assembly comprising a base having a first and second member slideably mounted therein, each member defining at least a portion of a container holding aperture and being slideably and telescopically mounted with respect to said support member and to one another, said container holder assembly being movable from a storage position to a first and then a second extended use position in which in said first extended use position said first and second members are aligned with respect to one another to define a single container holding aperture and in said second extended use position said first and second members are moved away from each other in parallel planes to be horizontally spaced from one other to define separate first and second container holding apertures; and
means for mounting said container holder assembly to said support member such that both of said members can be moved into said storage position in said support member when not in use for concealed storage thereof and moved to either said first or second extended use positions.

5,297,768
UNIVERSALLY ADJUSTABLE COPYHOLDER
Frank Denton, 2965 Johnson Pl., Wantagh, N.Y. 11793, assignor to Frank Denton, Wantagh, N.Y.
Filed Dec. 16, 1991, Ser. No. 807,479
Int. Cl.[5] B41J *13/00*
U.S. Cl. 248—442.2 32 Claims

1. A copyholder for positioning a sheet of paper at a desired viewing angle, comprising:
means for holding a sheet of paper wherein the holding means comprises complementary front and rear elongated members each having an arcuate shape and being configured and dimensioned to define a slot therebetween for receiving paper therein, and means for aligning the front and rear members in a predetermined orientation,
wherein the aligning means comprises a tubular extension associated with the front member and a tubular extension associated with the rear member, wherein one of the tubular extensions is configured and dimensioned to receive at least a portion of the other tubular extension therein, and means for retaining the tubular extensions in

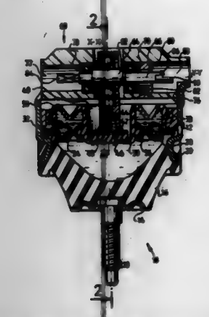
VOL 1160 ISS 5 MR 29 1994 UMI

contact with each other, thus placing the front and rear elongated members in adjacent relation;
first means for rotating the holding means in a first plane;
second means operatively associated with the first means for rotating the holding means in a second plane which has a



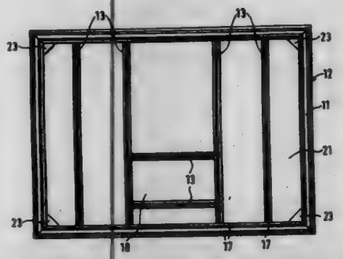
fixed angular disposition with respect to the first plane; and
means operatively associated with the first means for mounting the holding means in any one of a plurality of vertical positions, said first and second rotating means capable of rotating without obstruction from the mounting means.

5,297,769
HYDROELASTIC SUPPORT ESPECIALLY FOR THE SUSPENSION OF A MOTOR VEHICLE ENGINE
Marcel Le Fol, Domloup, and Pascal Robic, Rennes, both of France, assignors to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly Sur Seine, both of France
Filed Apr. 30, 1993, Ser. No. 54,243
Claims priority, application France, May 7, 1992, 92 05655
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **15 Claims**



1. Hydroelastic support (10) intended to be interposed between two assemblies to be suspended one with regard to the other, especially for the suspension of an engine in a motor vehicle, of the type comprising two armatures (12, 14) connected respectively to the two assemblies, these two armatures being joined by a block of elastomer material (16), the support comprising at least one working chamber (26) delimited at least in part by the block of elastomer material (16), and an expansion chamber (33), these two chambers being filled at least partially with liquid and connected together by a communication passage (34), and of the type in which the working chamber (26) is also delimited in part by a movable diaphragm (30) in elastic material and whose external face (42) comprises a push-rod (44) with which a drive device of the movable diaphragm (30) cooperates in order to apply to the latter displacements controlled in such a way as to create in the working chamber (26) pressure forces synchronous with the harmonics of the vibrations of one of the said two assemblies, characterised in that the drive device is of the connecting-rod (50) and crank (62, 66) type in which the small end (54) of the connecting-rod (50) is connected to the push-rod (44) and in which the shaft (66) for driving the crank (62) in rotation is mounted so as to turn in a bearing bush (70) fixed to one (12) of the two armatures.

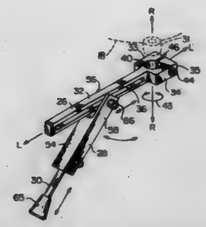
5,297,770
SUPPORTING PLATE AND METHOD OF PRODUCING THE SAME
Peter Drexel, Steinenbronn; Werner Arleth, Esslingen/N, and Horst-Dieter Lange, Baltmannsweiler, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE91/00346, § 371 Date Nov. 22, 1991, § 102(e) Date Nov. 22, 1991, PCT Pub. No. WO91/18238, PCT Pub. Date Nov. 28, 1991
PCT Filed Apr. 25, 1991, Ser. No. 773,600
Claims priority, application Fed. Rep. of Germany, May 16, 1990, 4015693
Int. Cl.[5] F16M *1/00*
U.S. Cl. 248—679 **13 Claims**



1. A supporting plate for setting up fabrication, assembly and/or test equipment, comprising a framework having an upper side; a mineral casting; and a plurality of struts having upper surfaces which terminate flush with said upper side of said framework, said framework and said struts having a profile cross-section with undercut grooves which form both means for receiving fastening elements for the fabrication, assembly and/or test equipment and means for anchoring said mineral casting so that in order to provide anchoring said mineral casting can flow into said undercut grooves, so that said framework and said mineral casting together form a solid plate.

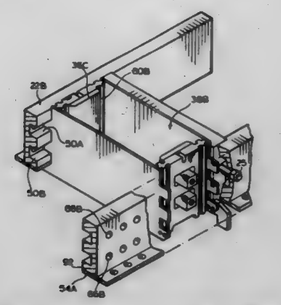
5,297,771
SUPPORT ASSEMBLY FOR STANDING MUSICAL INSTRUMENTS
Mark Gilbert, 8320 Pine Cross La., Ann Arbor, Mich. 48103
Filed Dec. 10, 1992, Ser. No. 988,979
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—688 **10 Claims**

1. A selectively adjustable support assembly for a musical instrument which rests upon the floor when being played, said instrument including a longitudinal axis extending through a body portion having a bottom wall including an anchoring element substantially centrally positioned thereon, said support assembly comprising:
a) an elongated, rigid crossbar having a longitudinal axis and first and second opposite ends, said crossbar including means at said first end thereof adapted to removably attach said crossbar to said anchoring element on said instrument with said crossbar longitudinal axis extending substantially perpendicular to said instrument longitudinal axis;
b) an elongated endpin holder having first and second ends, and including means pivotally connecting said endpin holder first end to said crossbar between said crossbar first



and second ends, said endpin holder further including a longitudinally elongated endpin having first and second ends, said endpin first end attached to said endpin holder second end and extending colinearly outwardly from said second end thereof, said endpin second end adapted to frictionally engage said floor with said support assembly thereby raising and supporting said instrument above said floor.

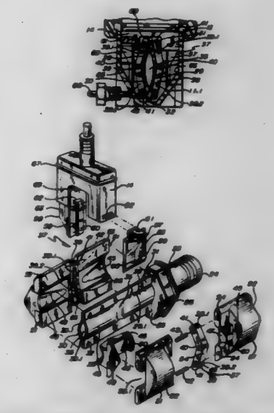
5,297,772
IMPROVEMENTS ON MOLDS FOR MAKING COMPOSITE BLOCKS
William F. Stefanick, 15 Torrance Road, Apartment 1606, Scarborough, Ontario, Canada M1J 3K2
Filed Feb. 24, 1992, Ser. No. 840,098
Int. Cl.[5] B28B *7/00*
U.S. Cl. 249—102 **4 Claims**



1. Mould for making composite blocks having:
mould bar frame including opposed mould bars, arranged to support a plurality of individual moulds side-by-side,
pairs of end core liners arranged in opposition each attached to one of the mould bars,
each pair corresponding to an individual mould of said plurality,
divider plates extending between corresponding side edges of adjacent end core liners,
wherein an opposed pair of said end core liners and the divider plates on each side thereof form individual side walls of the mould,
wherein a pallet is arranged to contact lower edges of said divider plates and end core liners to form a bottom of said mould,
each end core liner including an end liner extending between said divider plates,

an aperture in said end liner,
an end core designed to rest against an inner face of the end liner, provided with a shank designed to extend through said aperture,
means for attaching said shank to said mould bar,
said end core and end liner being adapted, when said shank is attached to said mould bar, so that said end core and inwardly exposed surfaces of said end liner, will shape an end face of a block in said mould,
said end liner being adapted to have either face turned toward said mould.

5,297,773
PLASTIC VALVE WITH FLEXIBLE TUBE AND TUBE SQUEEZING APPARATUS
Timothy R. Collins, Cologne; Robert T. Chinnock, Victoria, and Dean T. Hamilton, Cologne, all of Minn., assignors to Fluoroware, Inc., Chaska, Minn.
Filed Jul. 16, 1993, Ser. No. 92,690
Int. Cl.[5] F16K *7/00*
U.S. Cl. 251—4 **22 Claims**



1. A plastic valve for connection to flow ducts for controlling liquids flowing therethrough comprising,
a valve body portion comprising an elongate open interior portion and also comprising end portions with access ports opening into said open interior,
plastic valving duct means extending through the open interior of the body portion and comprising stiff plastic tubular end portions and an elongate tubular plastic collapsible and distensible valving portion affixed to and between said tubular end portions, said tubular end portions extending out of the access ports for connection to such flow ducts, said collapsible valving portion comprising a pair of flexible wall portions and a closable flow passage between said wall portions and the valving portion also comprising a pair of stiff and resilient side rib portions adjoining the wall portions, the flexible wall portions being opposite to each other and in confronting relation to each other, said flexible wall portions having wall end portions affixed to said tubular end portions, said flexible wall portions comprising a multiplicity of flexible laminae of plastic film lying against each other and being free of each other to permit relative movement between adjacent laminae, each of said wall portions comprising side edge portions each joined and affixed to the adjoining side edge portion of the opposite wall portion, the joined side edge portions of said wall portions defining said side rib portions, said flexible laminae comprising laminae side

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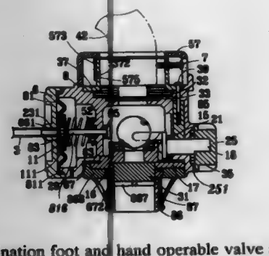
portions affixed to each other in said side rib portions and being immovable with respect to each other,
and squeezing means in the open interior of said body portion and engaging said flexible wall portions, said squeezing means applying convergent squeezing pressure onto said flexible wall portions and deforming the wall portions to close the flow passage and restrict the liquid flow through the flow passage, and said squeezing means alternately relieving the squeezing pressure on the wall portions to permit the flow passage to reopen.

5,297,774

COMBINATION FOOT AND HAND OPERATED FAUCET ATTACHMENT

Huo-Lien Chuang, 4 Fl. No. 17, Lane 281, Hsian St. Sec. 1, Peitou, District Taipei, Taiwan

Filed Mar. 30, 1993, Ser. No. 39,823
Int. Cl.[5] F16K *31/12*
U.S. Cl. 251—57 5 Claims



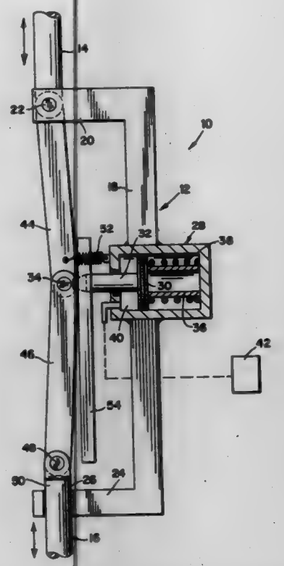
1. A combination foot and hand operable valve attachment comprising:
a) a valve body defining an inlet, a valve chamber communicating with the inlet and an outlet communicating with the valve chamber and having a valve seat adjacent to the outlet;
b) a ball plug located in the valve chamber such that it is biased against the valve seat by gravity to close the outlet;
c) a first valve actuation means comprising:
i) a push rod slidably located in the valve body so as to be movable between a retracted position in which it is out of contact with the ball plug and an extended position in which it displaces the ball plug off the valve seat to open the outlet;
ii) a flexible membrane operatively connected to the push rod and to the valve body; and,
iii) foot operated pneumatic bulb means operatively associated with the flexible membrane so as to move the push rod between its retracted and extended positions; and,
d) a second valve actuation means comprising:
i) a lever actuator rotatably attached to the valve body, the lever movable between a first position in which the ball plug is permitted to seat on the valve seat to close the opening and a second position in which the lever displaces the ball plug from the valve seat so as to open the opening; and,
ii) manually manipulable handle means located externally of the valve body and operatively connected to the lever actuator so as to move the lever between its first and second positions.

5,297,775

LINKAGE ARRANGEMENT FOR STEAM TURBINE VALVES

Russell A. Gray, Marblehead, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1992, Ser. No. 994,995
Int. Cl.[5] K16K *31/12*
U.S. Cl. 251—73 17 Claims



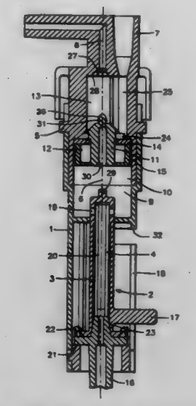
1. A linkage device for a steam turbine stop valve comprising:
a support member having a pair of transverse sections separated by a substantially vertical portion;
a stop valve stem mounted for reciprocating motion along a longitudinal axis of the stem and fixed to one of said transverse sections, said stop valve stem extending substantially parallel to but laterally offset from said vertical portion, such that said support member is movable with said stop valve stem;
an actuator rod arranged in substantial axial alignment with said stop valve stem for reciprocating movement with said valve stem under a normal valve closing condition, one end of said actuator rod extending through a hole in the other of said transverse sections;
a multi link assembly extending between said stop valve stem and said actuator rod, including a first link pivotally secured at a first end to said one transverse section, and a second link pivotally secured at a first end to said actuator rod; and wherein second ends of said first and second links are pivotally secured to each other by a pivot pin; and means for moving said pivot pin in a direction substantially perpendicular to said longitudinal axis under an abnormal valve closing condition when said actuator rod does not move with said valve stem to thereby collapse said multi-link assembly and permit said stop valve stem and said support member to move relative to said actuator rod, with said other of said transverse sections of said support member moving along said actuator rod via said hole.

5,297,776

COUPLING DEVICE FOR THE CONNECTION OF TUBE LINES USED FOR MEDICAL PURPOSES

Franz A. Dieringer, Prinz Eugenstrasse 18/11/18, A-1040 Vienna, Austria

PCT No. PCT/AT92/00007, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO92/12760, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 22, 1992, Ser. No. 930,437
Claims priority, application Austria, Jan. 22, 1991, 135/91
Int. Cl.[5] A61M *39/00*
U.S. Cl. 251—149.1 18 Claims



1. Coupling device for the connection of tubes for medical purposes, with a first coupling part for the attachment of an initial tube piece, said first coupling part having mounted therein an axially adjustable hollow pin provided with inlet openings, which hollow pin when in an operating position runs through an absorbent insert impregnated with disinfectant and opens by way of its inlet openings into a second coupling part connected in detachable fashion to the first coupling part, while the second coupling part includes at least an attachment opening and a vent; wherein the second coupling part includes a longitudinally adjustable sealing component for the vent, said vent being centrally positioned; wherein the hollow pin includes a stop face for providing straight alignment of the sealing component; and wherein the sealing component includes a conical extension which interacts with the centrally positioned vent, said vent having a hollow-conical portion.

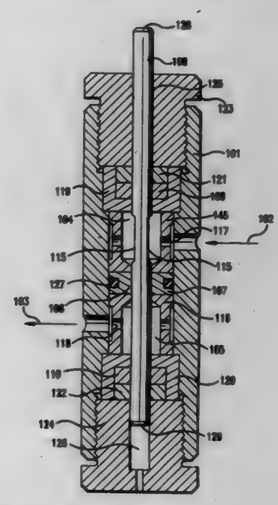
5,297,777

INSTANT ON-OFF VALVE FOR HIGH-PRESSURE FLUIDS

Gene G. Yie, Auburn, Wash., assignor to Jetec Company, Auburn, Wash.

Continuation-in-part of Ser. No. 871,895, Apr. 21, 1992, Pat. No. 5,241,986, and Ser. No. 891,568, May 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 701,534, May 16, 1991, Pat. No. 5,117,872, said Ser. No. 871,895, is a continuation-in-part of Ser. No. 794,581, Nov. 19, 1991, Pat. No. 5,186,393, which is a continuation-in-part of Ser. No. 630,560, Dec. 20, 1990, Pat. No. 5,092,362. This application Feb. 25, 1993, Ser. No. 22,123
Int. Cl.[5] F16K *39/02, 1/12*
U.S. Cl. 251—214 21 Claims

1. An on-off valve comprising:
a valve body having a fluid inlet, an upstream chamber, a downstream chamber, and a fluid outlet, in an open position of the on-off valve said fluid inlet, said upstream chamber, said downstream chamber and said fluid outlet in communication with each other;
a valve stem slidably mounted with respect to said valve body, said valve stem having an upstream portion and a downstream portion, said upstream portion having a reduced cross-sectional area portion forming at least one fluid passage in communication with said upstream chamber, in a closed position of the on-off valve communication being prevented between each said fluid passage and said downstream chamber;
central seal means for preventing communication between said upstream chamber and said downstream chamber about said downstream portion of said valve stem in said closed position, said central seal means comprising a rigid seal assembly sealably mounted between said upstream chamber and said downstream chamber, said rigid seal assembly having a seal assembly through hole, and said valve stem sealably mounted within said seal assembly through hole, an upstream bushing positioned within said upstream chamber, said upstream bushing having an upstream bushing through hole and a downstream bushing



face abutting an upstream seal face of said rigid seal assembly, said upstream portion of said valve stem positioned within said upstream bushing through hole, a rigid entry ring mounted between and contacting said rigid seal assembly and said upstream bushing, a downstream bushing positioned within said downstream chamber, said downstream bushing having a downstream bushing through hole and an upstream bushing face abutting a downstream seal face of said rigid seal assembly, said downstream portion of said valve stem positioned within said downstream bushing through hole, a rigid exit ring mounted between and contacting said rigid seal assembly and said downstream bushing;
end seal means for sealing said upstream chamber about said upstream portion of said valve stem and for sealing said downstream chamber about said downstream portion of said valve stem;
positioning means for urging said valve stem into one of a normally-open position and a normally-closed position; and
displacement means for moving said valve stem between said closed position and said open position.

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5,297,778

VALVE DISC AND DRIVE SHAFT ASSEMBLY

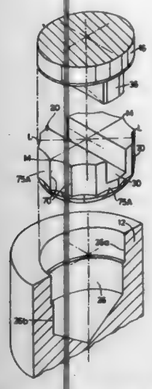
Michael P. Morris, Birmingham, and Phillip J. Haseley, Newport, both of England, assignors to BTR plc, United Kingdom

Filed Jan. 5, 1993, Ser. No. 736

Claims priority, application United Kingdom, Jan. 8, 1992, 9200339.1

Int. Cl.[5] F16K 1/22

U.S. Cl. 251—351 12 Claims



1. An assembly comprising a valve disc, a drive shaft and a member wherein

the valve disc has a periphery and is formed with a blind bore of circular cross-section extending radially inwardly of the periphery,

the member has a polygonal cross-section being formed with a plurality of alternate edges and sides, is non-rotatably located within the blind bore, and has a non-circular cross-section aperture, and

the shaft is of circular cross-section, is received in the bore and has an end of non-circular cross-sectional shape corresponding to the cross-section of the aperture of the member and is received in said aperture,

the construction and arrangement of the assembly being such that a torque applied to the shaft is transmitted to the member and thence to the disc.

5,297,779

JACK MECHANISM HAVING SAFETY PROTECTION FOR WORKERS

Robert H. Collins, Jr., Incline, Nev., and Wilbert Jollivette, Houston, Tex., assignors to Sumner Manufacturing, Co., Inc., Houston, Tex.

Filed Jan. 13, 1993, Ser. No. 3,793

Int. Cl.[5] B66F 3/08

U.S. Cl. 254—98 17 Claims

1. A safety jack stand mechanism for supporting and positioning pipes and other objects such as during construction operations, comprising:

(a) a base structure having a vertically oriented outer tubular member;

(b) an inner tubular member defining upper and lower ends being disposed in telescoping relation within said outer tubular member, said inner tubular member having a thrust surface at the upper end thereof;

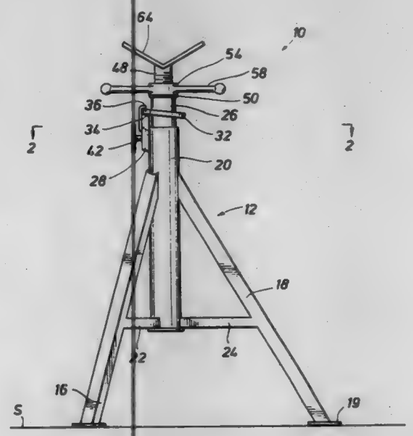
(c) an adjustment screw being received in telescoping relation within said inner tubular member and defining external threads, said adjustment screw having a support member at the upper extremity thereof for support of objects;

(d) an adjustment nut being threadedly received by said adjustment screw and being disposed in supported engagement with said thrust surface of said inner tubular member, said adjustment nut being rotatable relative to said adjustment screw and said inner tubular member for vertical adjustment of said inner tubular member and said support member;

(e) a thrust washer positioner being fixed to said outer tubular member and having an upper end portion thereof projecting above said outer tubular member;

(f) a thrust washer retainer element being fixed to said thrust washer positioner and having a portion thereof overlying and being disposed in spaced relation with said upper end portion of said thrust washer positioner;

(g) A thrust washer being located in loose fitting relation about said inner tubular member and, when disposed in predetermined angulated relation with said inner tubular member, establishing binding with said inner tubular



member and restraining downward movement of said inner tubular member relative thereto, an outer peripheral portion of said thrust washer being located between said thrust washer positioner and said thrust washer retainer element and having positioned and supported engagement with said upper end portion of said thrust washer positioner; and

means for limiting downwardly telescoping movement of said inner tubular member relative to said outer tubular member to the extent that, at the maximum downward position of said inner tubular member, said thrust surface of said inner tubular member and said adjustment screw have sufficient vertical clearance relative to said thrust washer and thrust washer retainer that the hand or fingers of a worker cannot become pinched therebetween.

5,297,780

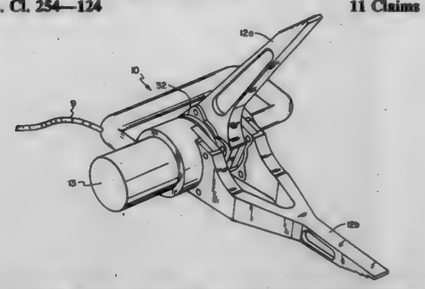
RESCUE SPREADING TOOL

William Hickerson, Hamburg, N.J., assignor to Curtiss Wright Flight Systems Inc., Fairfield, N.J.

Filed Sep. 29, 1992, Ser. No. 952,688

Int. Cl.[5] B66F 3/00

U.S. Cl. 254—124 11 Claims



1. A light weight portable rescue device having spreading arms for delivering a rotational spreading motion under very high loads, comprising a portable heavy duty motor, and means for converting the output of the motor to a low controllable speed and high torque to at least one of said spreading arms, wherein said means for converting the output of the motor to a low controllable speed and high torque to at least one of said spreading arms comprises a rotary multiple stage gear box having a compound planetary output stage.

5,297,781

HYDRAULIC ANTI-VIBRATION DEVICES

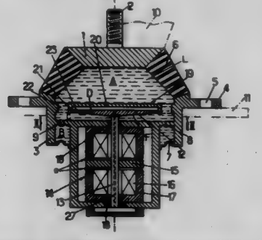
André Geneneseaux, Chalette Sur Loing, France, assignor to Hutchinson, Paris, France

Filed Mar. 18, 1993, Ser. No. 34,519

Claims priority, application France, Mar. 20, 1992, 92 03392

Int. Cl.[5] F16M 1/00

U.S. Cl. 267—140.14 10 Claims



1. A hydraulic anti-vibration device which is placed between two rigid elements comprising:

a rigid annular frame which is secured to one of the two elements;

a rigid head which is secured to the other of the two elements;

an annular elastomer wall having a good resistance to axial compression which interconnects said frame and said head in a sealed manner;

a sealed flexible membrane which is carried by said frame and which cooperates with said frame, said wall and said head to define a sealed enclosure;

a rigid partition which is carried by said frame inside of said sealed enclosure and which divides said sealed enclosure into a working chamber adjacent said wall and a compensation chamber adjacent said membrane;

a throttled passage providing permanent communication between said working chamber and said compensation chamber;

a mass of liquid filling said passage, said working chamber and said compensation chamber;

a rigid piston mounted on one of said frame and said head which is capable of moving with limited amplitude relative to said one of said frame and said head, said piston including a periphery;

an electrical exciter member mounted on said one of said frame and said head which applies a reciprocating force on said piston tending to attenuate vibrations transmitted from the other of said frame and said head to said one of said frame and said head;

a sealed capsule immersed in said working chamber and filled with air, said capsule including (a) a rigid wall secured to said one of said frame and said head and (b) a deformable sealed annular gasket securing said periphery of said piston to said rigid wall axially between said rigid wall and said exciter member such that the air is located between said piston and said rigid wall; and

a liquid-filled space forming part of said working chamber interposed between said piston and said exciter member.

5,297,782

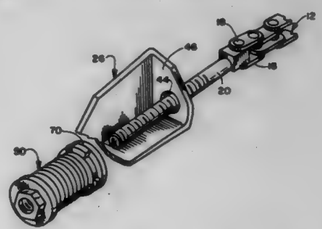
MODULAR SNUBBER APPARATUS

Kenneth J. Dombrowski, Wheaton, and Roger W. Lhotak, Elburn, both of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.

Filed Oct. 10, 1991, Ser. No. 774,210

Int. Cl.[5] F16F 1/12; G05F 5/06

U.S. Cl. 267—177 6 Claims



1. Modular snubber apparatus for securing one end of a flexible drive member to a wall mounted on a trolley which is moved by the flexible drive member, the one end of the flexible drive member having a threaded shaft extending toward the wall, and the wall having an aperture for receiving the threaded shaft, said apparatus comprising:

a double-ended spindle having an upstanding wall at a first end and an internal threaded bore for engagement with the threaded shaft extending between the first end and an opposed second end of the spindle;

double-ended spring means carried on said spindle having a first end in contact with said spindle wall and a second free end; and

retention means removably mounted on the second end of the spindle engaging the second end of the spring so as to retain the spring means in a compressed state on said spindle.

5,297,783

APPARATUS AND SYSTEM FOR HANDLING CUT SHEETS AND WEB FORMS TO FORM DISCRETE BATCHES

Linda A. Howard, Stratford, and Karel J. Janatka, Southbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 12, 1991, Ser. No. 790,054

Int. Cl.[5] B65H 43/00, 3/44

U.S. Cl. 270—52.5 13 Claims

1. Apparatus for separating forms of a web along a first paper path and conveying individual sheets of paper along a second paper path and subsequently processing the individual

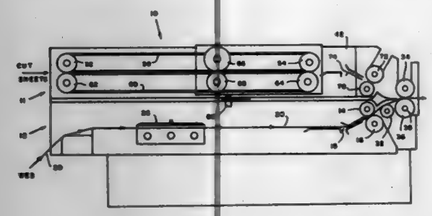
VOL 1160 ISS 5 MR 29 1994 UMI

sheets and separated forms along a single paper path, comprising:

a longitudinally extending support structure;

a bursting section located at an upstream end of said support structure, said bursting section including means for advancing the web of forms along the first paper path and means for separating the web of forms into separated forms and subsequently conveying the separated forms along the first paper path;

a transport section, superposed over said bursting section,



said transport section including at least one upper and lower belt and pulley assembly for conveying the individual sheets along the second paper path; and

means for merging the second paper path into the first paper path at a merge location, wherein said transport section further includes means for detaining the individual sheets at a detaining position along the second paper path when the separated forms are being separated and conveyed past said merge location, whereby said individual sheets and said separated forms are thereafter processed along the first paper path.

5,297,784

METHOD AND APPARATUS FOR LIFTING AND DIE-CUTTING SIGNATURES IN SADDLE FORMAT

Joerg Wagner, Vancouver, Canada, assignor to Wagner & Teldon, Richmond, Canada

Continuation of Ser. No. 680,906, May 5, 1991, Pat. No. 5,158,273. This application Oct. 26, 1992, Ser. No. 966,638

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] B42B *2/00*; B65H *39/02*

U.S. Cl. 270—53 **18 Claims**



1. A method of cutting common, formed openings in folded sheets, comprising the steps of:

a) placing a series of folded sheets on a conveyor means, each sheet being supported at its fold line;

b) aligning a plurality of said sheets together;

c) cutting a common, formed opening in said plurality of sheets; and,

d) joining said sheets to form a set.

5,297,785

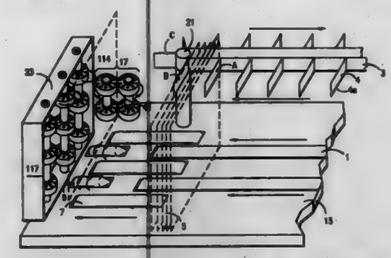
PRE-FEED SHINGLING DEVICE FOR FLAT-ARTICLE FEEDER

Mario Ricciardi, Glenview, Ill., assignor to Bell & Howell Phillipsburg Company, Evanston, Ill.

Filed Aug. 28, 1992, Ser. No. 935,775

Int. Cl.[5] B65H *3/00, 5/00*

U.S. Cl. 271—3 **6 Claims**



1. A transport section for transporting flat documents placed therein on-edge, comprising:

first transport means for accepting and conveying said flat documents in an upright, vertical orientation in a first feeding direction substantially perpendicular to the plane of said flat documents;

at least one tapered roller disposed at an end portion of said first transport means and oriented so as to have a feeding direction substantially perpendicular to said first feeding direction for receiving said flat documents and for imparting to said flat documents a gradual velocity in a direction substantially perpendicular to said first feeding direction, whereby said flat documents are caused to be transmitted in a shingled form; and

means for accepting said flat documents in said shingled form and for delivering said documents in a second feeding direction parallel to the plane in which said flat documents then lie, said second feeding direction being substantially perpendicular to said first feeding direction.

5,297,786

CLEATED WHEEL ASSEMBLY AND METHOD OF SEPARATING A SHEET USING A CLEATED WHEEL ASSEMBLY

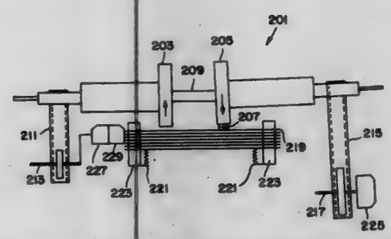
Philip S. LaChapelle, Tega Cay, and Ralph S. Goldstein, Lake Wylie, both of S.C., assignors to Roberts Systems, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 788,535, Nov. 6, 1991, Pat. No. 5,145,162. This application Jun. 4, 1992, Ser. No. 893,727

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—119 **5 Claims**



1. An apparatus for separating a single article from a stack of articles comprising:

a roller having a first wheel and a second wheel, said second wheel adjacent to said first wheel and carrying a cleat upon an outer rim;

a first means for rotating said first wheel in a first direction and a second means for rotating said second wheel in a second direction counter to that of said first wheel;

wherein said cleat of said second wheel engages a first article from a stack of articles, biasing said first article in a first direction while said first wheel applies an opposing securing force to a second article.

5,297,787

SHEET CASSETTE

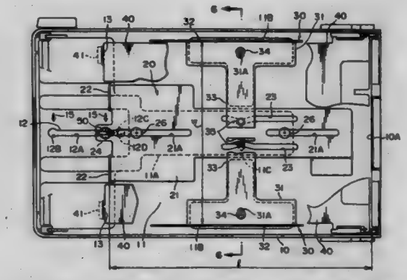
Masami Shirai, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,497

Claims priority, application Japan, Feb. 27, 1992, 4-018414[U]

Int. Cl.[5] B65H *1/00*

U.S. Cl. 271—171 **9 Claims**



1. A sheet cassette for accommodating cut sheets, detachably coupled to an apparatus, said sheet cassette comprising:

a cassette body in which the cut sheets are accommodated, an uppermost one of the cut sheets being successively picked up to said apparatus in a predetermined pick up direction;

first wall means for regulating a trailing edge of the cut sheet relative to said predetermined pick up direction, said first wall means being movable in said predetermined pick up direction; wherein said first wall means includes:

a first wall to which the trailing edge of the cut sheets is contacted; and

first restricting means for restricting movement of said first wall in said predetermined pick up direction;

second wall means for regulating both side edges of the cut sheets in said predetermined pick up direction, said second wall means being movable in a direction perpendicular to said predetermined pick up direction; wherein said second wall means includes:

a pair of second walls to which the both side edges of the cut sheets are contacted, respectively; and

second restricting means for restricting movement of paired second walls in a direction perpendicular to said predetermined pick up direction; and

interconnecting means for interconnecting movement of said first wall means with that of said second wall means in a predetermined relation; wherein said interconnecting means includes:

a first connecting plate integrally formed to said first wall and extending in said predetermined pick up direction between said paired second walls;

a pair of second connecting plates integrally formed to said paired second walls, respectively, extending to the direction perpendicular to said predetermined pick up direction so as to be transverse to said first connecting plate;

a pair of cam grooves formed on said first connecting plate; and

a pair of cam followers coupled to said paired second connecting plates, respectively, and inserted into said cam grooves, respectively;

wherein said paired second walls are moved in the direction perpendicular to said pick up direction in accordance with the movement of said first wall through a cam profile of said cam groove.

5,297,788

GRIPPER CONTROL DEVICE IN A CHAIN DELIVERY OF A SHEET-FED PRINTING PRESS

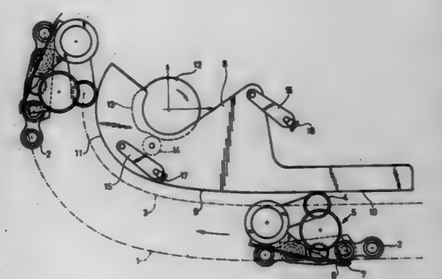
Norbert Thünker, Hirschberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 22, 1993, Ser. No. 34,899

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1992, 4209354

Int. Cl.[5] B65H *29/04*

U.S. Cl. 271—204 **7 Claims**



1. Gripper control device in a chain delivery of a sheet-fed printing press, wherein a cam segment has a control cam for respective control rollers provided on gripper systems and is adjustably disposed for opening grippers of the gripper systems as sheets are delivered, the control cam being formed with a rectilinear on-running region aligned for rectilinear movement of the respective control rollers in a given direction, comprising an adjusting element operatively engageable with the cam segment for effecting a phase displacement of the grippers between a closed and an open condition thereof, the control cam of the cam segment, in an inactive basic position thereof, being aligned, with the on-running region thereof parallel to the given direction of rectilinear movement of the respective control rollers for the gripper systems, in an imaginary plane through apices of the respective control rollers, said apices being most distal from the respective grippers of the gripper systems, and a cam roller rotatably mounted on the cam segment, said adjusting element having a rotatably mounted control cam in operative engagement with said rotatably mounted cam roller.

5,297,789

DEVICE FOR ALIGNING A LEADING EDGE OF A SHEET

Karl-Heinz Filsinger, Wiesloch, and Michael Gieser, Ofterheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 22, 1992, Ser. No. 964,938

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1991, 4134767

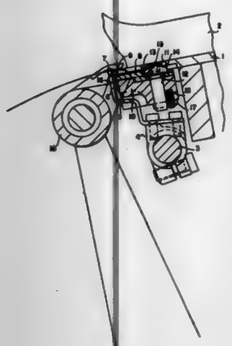
Int. Cl.[5] B65H *9/04*

U.S. Cl. 271—245 **12 Claims**

1. Device for aligning a leading edge of sheets, comprising a plurality of front lays cyclically movable into an operating position, aligned engagement means formed on a single stationary member and being engageable in common by said plurality

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of front lays in said operating position thereof, force-storage means for bringing said plurality of front lays into engagement with said engagement means in said operating position of said



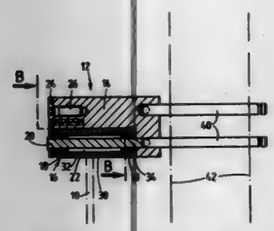
plurality of front lays, and means, independent of said engagement means, for disabling individual front lays of said plurality of front lays from engagement with said aligned engagement means.

5,297,790

DRIVER FOR FEEDING THIN METAL SHEETS ON A CAN WELDING MACHINE

Hans-Wilhelm Hoffmann, Widen, and Niklaus Portmann, Bellikon, both of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Jul. 7, 1992, Ser. No. 909,970
Claims priority, application Switzerland, Jul. 19, 1991, 02159/91-6
Int. Cl.[5] B65H *5/16*
U.S. Cl. 271—271 7 Claims



1. Driver for feeding thin metal sheets on a can welding machine, having a carrier for attachment to a conveyor, and a pusher made of hard-wearing material and attached to the carrier in such a way that when the latter moves forwardly it engages a rear edge of a metal sheet to be fed, characterized in that the pusher is supported on the carrier in a rearwardly resilient manner by at least one spacer holding the pusher in spaced relationship from the carrier and formed by an elastic material.

5,297,791

GOLF CLUB SHAFT AND METHOD OF PRODUCING THE SAME

Isamu Negishi, Tokyo, Japan, assignor to Fujikura Rubber Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 708,746, May 31, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,240
Claims priority, application Japan, Jun. 4, 1990, 2-144379
Int. Cl.[5] A63B *53/10, 53/12*
U.S. Cl. 273—80 R 4 Claims



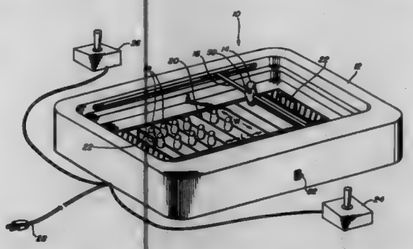
1. In a plastic golf club shaft for a golf club having opposite tip and butt ends, the improvement comprising:
at least one vibration preventing piece made of a metal alloy disposed at a position along said shaft located within a distance range defined by an inequality of $1.8 \geqq c/d \geqq 0.35$ wherein c designates a distance between the tip end of said golf club shaft and a center of said vibration preventing piece and d designates a distance between the butt end of said golf club shaft and said center of said vibration preventing piece wherein said vibration preventing piece is located generally coincident with the kickpoint of the shaft for suppressing the transmission of vibrations to a player's hands during ball impact.

5,297,792

FOOTBALL SIMULATION GAME

Ira Friedman, West Palm Beach, Fla., assignor to Tri-Tec Industries, Boston, Mass.

Filed Mar. 20, 1992, Ser. No. 855,718
Int. Cl.[5] A63F *7/06*
U.S. Cl. 273—94 11 Claims



1. A human controlled sport simulation game comprising:
a two dimensional playing field having a length and a width;
an offensive player operable and controllable to move lengthwise and widthwise over said playing field;
an array of defensive players, attached to said playing field, operable to move at least widthwise, wherein a person controlling movement of said offensive player attempts to move said offensive player fully along the playing field lengthwise while avoiding engagement with any of the defensive players;
an electric hand control means for controlling movement of said offensive player;
means, responsive to said electric hand control means, for moving said offensive player lengthwise;
means, responsive to said electric hand control means, for moving said offensive player widthwise;
means for moving said array of defensive players widthwise;

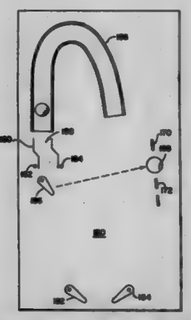
an electric hand control means for controlling movement of said array of defensive players;
wherein said offensive player further includes a means for carrying a ball; and
a means for disengaging the ball from said offensive player when said means comes in contact with a defensive player.

5,297,793

AUTOMATIC FLIPPER CONTROL CIRCUIT FOR PINBALL GAMES

Lawrence E. DeMar, Winnetka, and Patrick Lawlor, Marengo, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 841,402, Feb. 25, 1992, abandoned. This application Dec. 1, 1992, Ser. No. 983,684
Int. Cl.[5] A63F *7/30, 9/24*
U.S. Cl. 273—129 V 16 Claims



1. An automatic propelling feature for a rolling ball game having an inclined playfield and a ball which can roll thereon, the feature comprising:
a) targets intended to be hit by said ball;
b) processor means including memory for controlling operation of the game;
c) a ball propelling means, selectively controlled by the processor means, for shooting the ball at said targets;
d) means for signalling the processor means which, if any, targets are hit responsive to operation of the ball propelling means; and
e) said processor means including means, responsive to the signalling means, for altering the timing of shots made by the ball propelling means under processor means control, thereby to improve and maintain the accuracy of the shots.

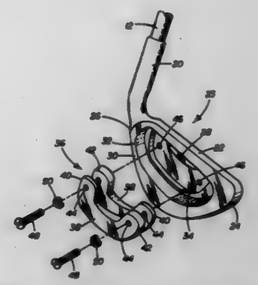
5,297,794

GOLF CLUB AND GOLF CLUB HEAD

Clive S. Lu, 282 Newbridge Rd., Hicksville, N.Y. 11801

Filed Jan. 14, 1993, Ser. No. 4,546
Int. Cl.[5] A63B *53/08*
U.S. Cl. 273—171 20 Claims

8. A golf club for efficiently striking a golf ball so as to allow shot making with improved accuracy and resulting distance, comprising:
a flexible shaft having a proximal end and a distal end;
a grip, connected to said proximal end of said shaft, for holding said golf club;
a club head, connected to said distal end of said shaft, said club head including a body portion and a weight, said body portion and weight having an overall mass M with said weight having a mass of at least 0.15 M;
means for mounting said weight on said body portion while providing limited relative movement therebetween; and
means for decoupling said weight from direct contact with the golf ball during striking of the golf ball whereby the



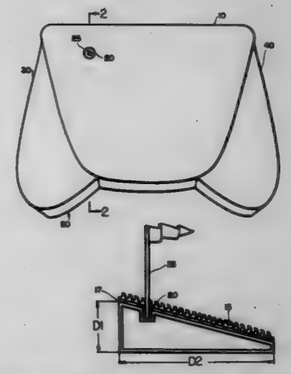
potential for applying hook or slice spin to the golf ball is substantially reduced.

5,297,795

TARGET GREEN FOR GOLF PRACTICE

John B. Meikle, 5 Ellis Ct., Rye, N.Y. 10580

Filed Sep. 11, 1992, Ser. No. 943,498
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—181 R 6 Claims



1. An apparatus configured and constructed to give the outward appearance of a golf green comprising a portable shape defining means having an appearance of a standard size golf green when viewed from a distance of at least 100 yards for supporting a large, stationary and relatively flat continuous landing surface at an inclined angle of at least 15 degrees; a cup location placed on said landing surface with a flagstick extending from said cup upwards away from said landing surface a distance of at least three feet; and a landing surface cover having an outward appearance of a grass covered surface, wherein said inclined landing surface has a surface area appearance that is visually perceived as larger when viewed from a distance, wherein said shape defining means is constructed from an inflatable material.

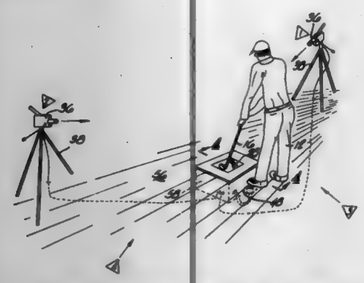
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5,297,796

GOLF SWING MONITORING SYSTEM

Jon R. Peterson, 1250 Long Beach Ave. # 204, Los Angeles, Calif. 90021

Filed Apr. 3, 1992, Ser. No. 863,110
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—183.1 5 Claims



1. A golf swing monitoring system for a golfer to view simultaneously with the swing being made by the golfer holding a golf club to assist the golfer in determining the correctness or faults thereof of the golf swing, said system comprising:

a base surface upon which a golfer stands to address an imaginary golf ball and said surface includes a window of transparent material upon which the golfer takes practice swings;

a video monitoring means mounted beneath said window, said monitoring means viewable by said golfer during the addressing of and swinging at said imaginary golf ball on said window without moving the head or shifting the eyes from the line of said imaginary golf ball while viewing the swing in said monitoring means;

at least one video camera mounted to focus on said golfer and connected to said video monitoring means to convey the image of said golfer to said monitoring means; and

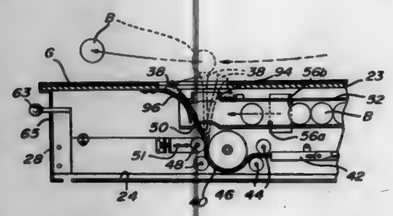
foot control switch means on said base surface to activate said camera and said video monitoring means for effecting the simultaneous viewing of said swing during the execution of said swing, said switch is activated by a foot of said golfer for individual control.

5,297,797

GOLF BALL STEP-FEEDING SELF-TEEING DEVICE

Alain Lamontagne, 44, Des Hirondelles Street, La Plaine, Canada J0N 1B0

Filed Feb. 22, 1993, Ser. No. 20,808
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 8 Claims



1. A ball step-feeding, self-teeing device for use in golf training, comprising:

(a) a base frame, having a generally horizontal top platform over which a golfer is to swing a golf club, said top platform having a through-bore for vertical through-passage of a golf ball, said top platform defining an inner edge portion circumscribing said through-bore;

(b) a push-pull, reciprocatable, mechanical coupling means, having transmitter and receiver ends and a flexible means associated with said receiver end, said coupling means having a sturdy, impact-resistant tee member mounted at said receiver end thereof, said tee member destined to stably support a selected golf ball;

(c) drive means, operatively connected to the transmitter end of said coupling means to power operate said transmitter end in its reciprocating motion;

d) control means, to impart a generally vertical, sequential, reciprocating movement to said tee member through said platform through-bore between a lower, ball-receiving, limit position, located beneath said top platform, and a top, ball-hitting, limit position, located above said top platform, said flexible means enabling resilient lateral sway of said tee member from said top limit position yieldingly upon the tee member sustaining a lateral striking blow at said top limit position;

(e) a ball conveying means, for transporting balls to said tee member when said tee member stands in its said lower position;

(f) ball step-feeding means, associated with said ball conveying means for incrementally feeding a selected one of said balls, one at a time, from said ball conveying means to said tee member, when said tee member is at its said lower limit position, a single ball being fed to said tee member for each complete reciprocating cycle of said tee member; and

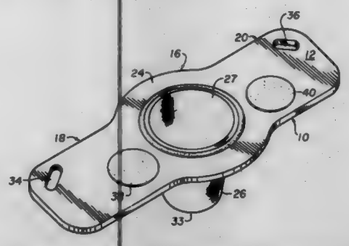
(g) dampening means, mounted to said platform inner edge portion and cooperating with said flexible means in dampening the lateral sway motion of said tee member in said top limit position, upon the tee member sustaining a transverse impact blow from the golfer's swinging club, wherein said tee member will remain undamaged from this transverse impact blow and wherein said tee member clears said platform inner edge portion and thus escapes undamaged from said club impact blow.

5,297,798

BALL GAME APPARATUS FOR BATTING A BALL

Felipe Davila-Hernandez, Humacao, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.

Continuation of Ser. No. 11,786, Feb. 1, 1993, abandoned. This application Jun. 29, 1993, Ser. No. 83,325
Int. Cl.[5] A63B *59/00*
U.S. Cl. 273—342 4 Claims



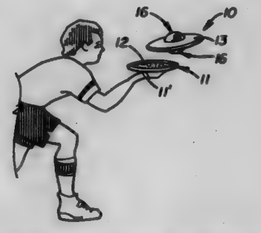
1. Ball game apparatus for batting a ball comprising a unitary, planar, substantially rigid plate defining a bat having flat upper and lower surfaces, said plate having a central part flanked by oppositely extending wing parts having less breadth than said central part, an opening passing symmetrically through said central part of said plate and of a size as to leave between its periphery and the periphery of said central part an annular region of said central part surrounding said opening, said wing parts being joined to said central part on diametrically opposite sides of said opening, a net having an open outer end and a rim surrounding said open end connected to the flat upper surface of the central part of said plate, said net extending from said flat upper surface of said central part, through said opening to terminate in a closed end beyond said flat lower surface of said plate, and oppositely sloping hand-holes adjacent respective corresponding outer extremities of said wing parts remote from said opening, said flat upper surface of said plate beyond said opening and net defining a batting area for batting a ball away from said plate when the latter is grasped by the hands of a player in both said hand-holes.

5,297,799

DISC FOR CATCH AND THROW GAMES

Christopher N. Slater, and Paula B. Slater, both of 8 Crestview Dr., San Rafael, Calif. 94903

Filed Jun. 29, 1993, Ser. No. 85,648
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—346 19 Claims



1. A disk adapted to be thrown and caught by a catcher's mitt having first fastening means for catching and releasably holding said disc thereon, said disc comprising

a disc-shaped member having upper and lower surface means defined on upper and lower sides thereof, respectively, for permitting said disc to be thrown over a substantial distance and received by said catcher's mitt, and

arcuately shaped second fastening means positioned at least substantially centrally on said member and further positioned on and projecting substantially above at least one of the upper and lower sides of said member for engaging and releasably interlocking with said first fastening means to releasably attach said disc to said catcher's mitt when it is caught thereby, said member further comprising an annular outer edge intersecting and circumferentially bounding said upper and lower sides and wherein said second fastening means is positioned radially inwardly from said outer edge.

5,297,800

ULTRA-ENIGMA CODE GAME

Gordon J. Delaney, 2002 Maple Ave., Downers Grove, Ill. 60515

Filed May 18, 1993, Ser. No. 62,598
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—429 20 Claims

1. An electronic cryptography game which offers a variety of code possibilities, the game comprising;

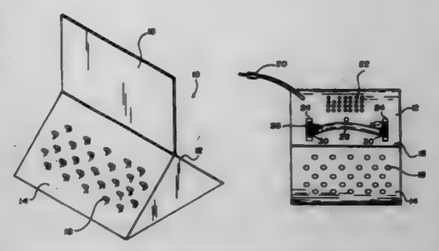
a transmitting panel having a plurality of electrical jacks, each jack identifying a letter of the alphabet and a space;

an electronic probe on the sending panel configured for engagement within one jack at a time;

a receiving panel having a plurality of light emitting diodes thereon, each light emitting diode identifying a letter of the alphabet and a space;

said light emitting diodes and said jacks being interconnected via a cable having a multiple slotted connector at each end thereof, one of the multiple slotted connectors seating over a first board mounted multiple pin connector engaged to said jacks and the other multiple pin slotted connector seating over a second board mounted multiple pin connector engaged to said light emitting diodes;

a power supply having a resistance in a line thereof, said line feeding said light emitting diodes and said probe in a manner where a complete circuit is formed between one jack and one diode when said probe is brought into contact with said one jack.



5,297,801

SYNONYM AND ANTONYM QUESTION AND ANSWER BOARD GAME

John H. Croker, 7461-D Ohana Nui Cir., Honolulu, Hi. 96818

Filed Sep. 28, 1992, Ser. No. 952,596
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—430 13 Claims



1. A home word bound board game which comprises a plurality of game boards, one for each of a plurality of players, each said game board having a center start space with a plurality of paths extending from said center start space, each said path having indicia to make it uniquely identifiable from the others and having a plurality of descending consecutive numbered spaces form said center start space, said paths meet at said center start space of each board but neglect to touch each other, each path further having a space having a number value for said respective path and a home space, said game further including a plurality of game pieces, in which each game player receives a matching number of said game pieces, each said game pieces having said path indicia such that they will match with one said path on said game board, said game further including a plurality of decks of game cards, each said deck of game cards having said path indicia such that they match with one said paths on said game board, each said game card having a word to guess and a plurality of antonyms and synonyms for the word.

5,297,802

TELEVISED BINGO GAME SYSTEM

Terrence Pocock, and Andrew Pocock, both of 92 Main Street, Delaware, Ontario, Canada N0L 1E0

Filed Jun. 5, 1992, Ser. No. 894,744
Int. Cl.[5] A63F *3/06, 9/22*
U.S. Cl. 273—439 40 Claims

33. A television game show system comprising:

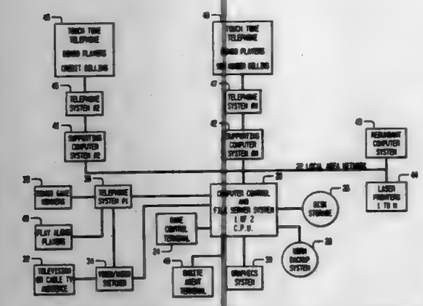
(A) a computer system for generating a required number of

sheets each containing a preselected number of unique values from the pool of all potential values for play of the game, for distribution to game players in a television station's viewing area, with each sheet having a unique identification number assigned thereto;

(B) at least one variable content printing means to print out each sheet of values;

(C) a telephone system for providing to the computer system information received via a telephone connection which pertains to at least an identification of a player and the sheet identification number for an associated sheet of values;

(D) means responsive to receipt of a sheet identification number for regenerating the contents of the associated sheet and for storing information in a first database relating to the regenerated contents of the associated sheet and



the associated player identification that was received via the telephone connection;

(E) means to inform a television audience of game play values as they are selected;

(F) means to enter the selected values into the computer system;

(G) means to determine if a selected value matches a value that is included in each set of values that is stored in said first database;

(H) means to determine whether matched values for each sheet whose regenerated contents are stored in said first database comprise a winning set of values;

(I) means to determine the identification of players associated with winning sets of values; and

(J) means to inform the television audience of the player identification of the winners.

5,297,803

WEIGHTED CAVITY BACK GOLF CLUB SET

Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 749,553, Aug. 23, 1991, Pat. No. 5,193,805. This application Jan. 21, 1993, Ser. No. 7,195

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

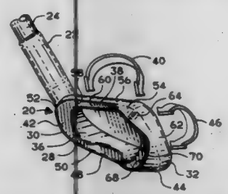
Int. Cl.[5] A63B *53/00*

U.S. Cl. 273—77 A **25 Claims**

1. A golf club iron-type head comprising:

a blade element having a front face, a back face spaced apart from in a generally rearward direction and oriented substantially parallel to the front face, and a central area on the back face circumscribed by a back perimeter surface; and

a substantially ring-shaped, variable mass perimeter weighting element extending from the back perimeter surface of the blade element in the generally rearward direction and including a sole and a top rail located above the sole in a generally vertical direction, the top rail having a middle portion and a toe portion, each of the top rail portions having a depth measured in the generally rearward direction, and the toe portion depth exceeding the middle portion depth.



5,297,804

SEALING SYSTEM

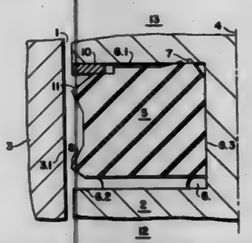
Uwe Siegrist, Ottrau, and Edgar Freitag, Schwalmstadt, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 909,905, Jul. 7, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 55,932

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137461

Int. Cl.[5] F16J *15/16*

U.S. Cl. 277—25 **7 Claims**



1. A self-emptying separator comprising: (1) a housing having a circular inner surface; (2) a rotating component having opposite sides and a circumferential edge, said component being arranged to rotate and move axially back and forth inside the housing in response to fluid pressure differential on its opposite sides, there being a circumferential gap between the circumferential edge of the component and the inner surface of the housing, the housing having at least one radial outlet that is opened and closed by the axially moving, component, said component having a circumferential groove around its circumferential edge facing the gap, said groove having two sides and a bottom; and (3) a centrifugal seal secured in the groove by axial resilience, an axial lip around one side of the seal resting against at least one of the groove's sides, there being at least one radial lip along the outer circumference of the seal, the centrifugal force increasingly exerted on a fluid as the rotation of the component increases forcing the seal to expand radially as well until at least one lip along its outer circumference comes into contact with the inner surface of the housing, sealing off the gap, the axial lip and the radial lip defining a diagonal plane at an angle of 15° to 75° to the axis of rotation.

5,297,805

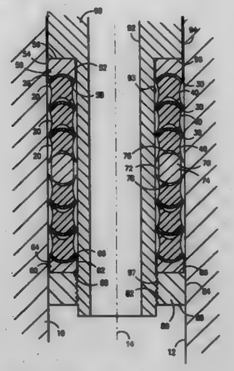
SEALING RING

Robert A. Merkin; Thomas R. Smith, and John G. Cechin, all of Nacogdoches County, Tex., assignors to J.M. Clipper Corp., Denver, Colo.

Filed Oct. 1, 1992, Ser. No. 955,014

Int. Cl.[5] F16J *15/18*

U.S. Cl. 277—124 **20 Claims**



17. A sealing ring, comprising:

an elastomeric body having a waisted cross section; and

a reinforced face such that a portion of said sealing ring is less flexible than the remainder of said sealing ring;

wherein said elastomeric body provides a first set of contact surfaces for forming a seal, and wherein said reinforced face provides a second set of contact surfaces for forming a seal distinct and spaced apart from said first set of contact surfaces; and

wherein at least one of said first set of contact surfaces and said second set of contact surfaces is substantially flat and parallel to an axis of said sealing ring.

5,297,806

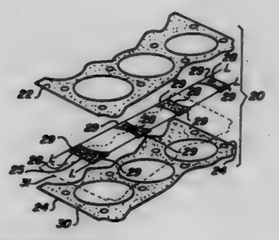
METHOD OF MAKING MULTI-DENSITY COMPOSITE GASKETS

Michael J. Kestly, Bollingbrook, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 8, 1991, Ser. No. 742,119

Int. Cl.[5] F16J *15/12*

U.S. Cl. 277—233 **5 Claims**



1. A gasket comprising:

a generally planar body having an outer circumference, said body being formed of a gasket material and having a first portion of a first density in a depth defined perpendicular to the plane of said body, a higher density portion of said gasket material being defined over a portion of said body, said higher density portion extending to at least two points on said outer circumference;

said body being generally rectangular, and having two spaced axial ends and two spaced lateral sides, said higher density portion extending to said outer circumference at both of said spaced axial ends, said higher density portion extending over only a portion of the lateral width of said body, said higher density portion having a pair of linear lateral edges:

said higher density portion being discontinuous in said axial direction, with openings formed through said body which separates said higher density portion into a plurality of axially spaced portions; and

said gasket being defined by a plurality of layers, said higher density area being defined by an additional layer of said gasket material which extends axially between said axial ends over a lateral distance which is less than the lateral width of said body, and wherein outer layers are positioned on each side of said additional layer, and extend between the lateral edges of the gasket.

5,297,807

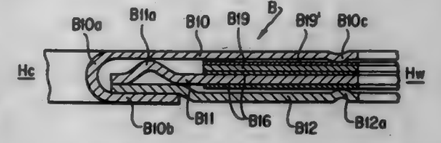
STEEL LAMINATE GASKET

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 449,216, Dec. 12, 1989, abandoned. This application Dec. 28, 1992, Ser. No. 996,876

Int. Cl.[5] F16J *15/06*

U.S. Cl. 277—235 B **8 Claims**



1. A steel laminate gasket for an internal combustion engine having at least one cylinder hole and at least one through hole therein, comprising:

a first plate having at least one first hole corresponding to the cylinder hole of the engine, and at least one second hole corresponding to the through hole of the engine,

a second plate situated under the first plate and having at least one third hole larger than the cylinder hole of the engine, and at least one fourth hole corresponding to the through hole of the engine,

a third plate situated under the second plate and having at least one fifth hole larger than the cylinder hole of the engine, and at least one sixth hole corresponding to the through hole of the engine,

first means for sealing around the cylinder hole of the engine, said first means being integrally formed with the first plate as one unit so that when the gasket is tightened, an area around the cylinder hole is securely sealed, said first means including a base portion near the cylinder hole to surround the same, a curved portion situated around the cylinder hole and a flange situated near the cylinder hole to surround the same and spaced apart from the base portion, said curved portion interconnecting and being located between the flange and the base portion, said base portion and flange extending radially outwardly from the curved portion,

second means for sealing around the cylinder hole, said second means being a bead formed with the second plate and situated between the base portion and the flange of the first means around the curved portion so that the second means and the second plate are not directly exposed to the cylinder hole,

third means for sealing around the through hole of the engine, said third means being at least one bead formed on at least one of the first, second and third plates to securely seal around the through hole when the gasket is tightened,

a fourth plate located between the first and second plates and

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situated outside the first and second means to operate as a surface pressure regulation plate for the second means, and

sealing layers located between the plates to seal therebetween, at least one sealing layer being provided only on a portion of one side of the second plate that is located outside the second means relative to the cylinder hole, said sealing layers being arranged outside the first and second means relative to the cylinder hole so that the sealing layers are not directly exposed to the cylinder hole, are not excessively heated by the first plate exposed to the cylinder hole and are not compressed by the first and second means thereby preventing creep relaxation of the sealing layers and fluid from flowing between the plates.

5,297,808

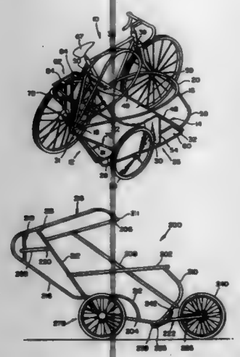
SIDECAR FOR BICYCLES

Terence R. Ellard, 6717 Palatine Ave. North, Seattle, Wash. 98103

Continuation-in-part of Ser. No. 732,463, Jul. 18, 1991. This application Mar. 13, 1992, Ser. No. 850,571

Int. Cl.[5] B62B *1/04*

U.S. Cl. 280—30 **12 Claims**



1. A sidecar/stroller for use with a bicycle, comprising:

a sidecar/stroller assembly, including a portion thereof which is adapted to support a passenger, wherein the sidecar/stroller assembly includes a first wheel support assembly, including a first wheel, the first wheel support assembly mounted to move between two positions, wherein in a first position the first wheel is located so that the apparatus functions as a sidecar when attached to a bicycle, while in a second position the first wheel support assembly is moved such that the first wheel moves relatively forwardly of its first position, the sidecar/stroller assembly further including a rear wheel assembly and means for receiving said rear wheel assembly when the first wheel support assembly is in its second position, whereby the sidecar/stroller apparatus functions as a stroller;

means for receiving a lower connecting member extending between the sidecar/stroller assembly and a bicycle in the vicinity of the axles of the first wheel and the wheels of the bicycle; and

means for receiving an upper connecting member extending between the sidecar/stroller assembly and the bicycle a distance above the lower connecting member.

5,297,809

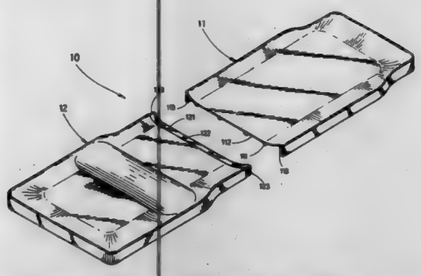
MECHANICS CREEPER

Ming J. Chen, 3rd Floor, 43 Chungshan Road, Sanchung City, Taipei Hsien, Taiwan

Filed Mar. 13, 1992, Ser. No. 851,533

Int. Cl.[5] B25H *5/00*

U.S. Cl. 280—32.6 **2 Claims**



1. An improved mechanics creeper, comprising:

a fore creeper having two sides, a front end and a rear end, and a conventional castor provided on each of said sides adjacent said front end of the fore creeper;

a rear creeper having two sides, a front end and a rear end, and a conventional castor provided on each of said sides adjacent said rear end of the rear creeper;

a lower junction edge provided on the front end of the rear creeper, said lower junction edge having two sides and a plurality of holes and a dovetail mortise provided on each of said two sides of the lower junction edge;

an upper junction edge provided on the rear end of the fore creeper to correspond to the lower junction edge, said upper junction edge having an inner side, two sides, and a plurality of pillars provided on said inner side of the upper junction edge to be inserted in corresponding holes on the lower junction edge, and a dovetail tenon provided on each of said two sides of the upper junction edge to be inserted in each of said dovetail mortises;

wherein assembly of the lower junction edge of the rear creeper with the upper junction edge of the fore creeper forms an integral mechanics creeper which can be disassembled and then assembled anew.

5,297,810

TRANSPORT MEANS FOR INVALIDS

Sergei N. Lukyanov, Moscow, U.S.S.R., assignor to Mezhdunarodny Fond Miloserdia I Zdorovya, Moscow, U.S.S.R.

PCT No. PCT/SU90/00257, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/10156, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 3, 1990, Ser. No. 924,033

Claims priority, application U.S.S.R., Aug. 20, 1987, 4299457

Int. Cl.[5] A61G *5/02*; B62M *1/12, 1/14*

U.S. Cl. 280—250.1 **7 Claims**

1. An invalid vehicle comprising:

a frame with a seat;

a driven wheel by which said frame is supported;

a driving wheel by which said frame is also supported;

a bearing of said frame;

a fork of said driving wheel secured in said bearing;

a second driving wheel;

a hand lever mounted on said frame for swinging movement;

said hand lever including a handle to produce turning of said first driving wheel, said handle being connected to said fork of said first driving wheel;

bevel gears connecting said handle to said fork of said first driving wheel;

shafts on which said bevel gears are mounted;

a second hand lever mounted to said frame;

said second hand lever including a handle connected to the fork of said second driving wheel;

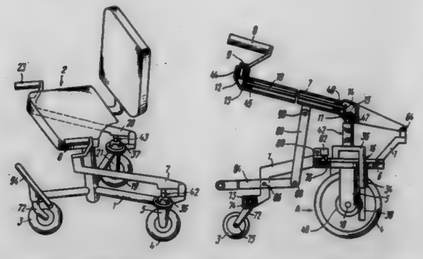
further bevel gears connecting the fork of said second driving wheel to said handle of said second hand lever;

further shafts on which said further bevel gears are mounted;

a guide in each of said forks for the respective driving wheel;

a rod disposed in said guide and extending through said bearing of said frame;

a rack on said rod;



a pinion mounted on each axle of the driving wheels and engaged with a respective said rack;

an overrunning clutch on each driving wheel engaged with said pinion, said guide, said rod and rack, said pinion and said overrunning clutch forming a transmission mechanism for converting the swinging motion of said associated hand lever into rotary motion of the associated said driving wheel; and

a further clutch connecting one of said shafts to said rod; said driven wheel being self-orientable.

5,297,811

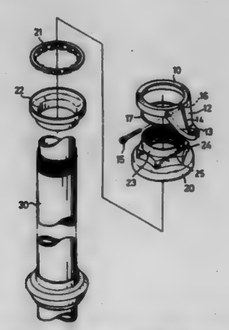
JOURNAL OF A BICYCLE HEAD SET

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Nov. 12, 1992, Ser. No. 974,880

Int. Cl.[5] B62K *19/32*

U.S. Cl. 280—280 **1 Claim**



1. A journal comprising a cap engaged on a steerer tube, a bearing engaged on said cap, a compression nut threadedly engaged on said steerer tube and including an annular flange extended upward therefrom, an inverted T-shaped gap formed in said annular flange and arranged such that a pair of fins are formed in said annular flange, and a split ring engaged on said annular flange of said compression nut and including two half-appendages, and means coupling said two half-appendages together so as to clamp said fins and so as to compress said fins radially inwards to compress said steerer tube, whereby, said compression nut is fixed to said steerer tube.

5,297,812

INTERFACE PLATE FOR THE SLIDE-RAIL OF A MOBILE SKI BINDING, IN PARTICULAR OF AN ALPINE SKI BINDING

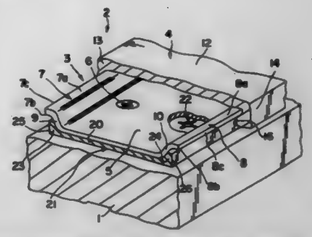
Vincent Dogat, Annecy, and Pascal Thomas, Chambery, both of France, assignors to Salomon S.A., Chavanod, France

Filed Dec. 14, 1992, Ser. No. 990,284

Claims priority, application France, Dec. 13, 1991, 91 15832

Int. Cl.[5] A63C *9/00, 9/22*

U.S. Cl. 280—633 **9 Claims**



1. Interface plate for a slide-rail associated with a binding of a ski, said slide-rail comprising a stationary base shaped like an inverted Ω and having a central portion fastened to said ski, two lateral wings raised in relation to an upper surface of said ski and extending parallel to a longitudinal axis of said ski, said slide-rail further comprising a moveable base plate having a central part and two lateral return-shaped members forming two symmetrical C-shaped grooves having openings which face each other and inside which said lateral wings belonging to said base are engaged, said interface plate being inserted between said base and said upper surface of said ski and incorporating a central zone having a width substantially equal to a width of said base plate of said slide-rail, said central zone of said plate being bounded laterally by two parallel shoulders, each of which has an outwardly facing vertical surface constituting a guide and friction surface against which lower edges of said return-shaped members of said movable base plate are supported and rub during translational movement of said base plate.

5,297,813

AIR BAG DEVICE HAVING A CONNECTING ARRANGEMENT TO FACILITATE ASSEMBLY

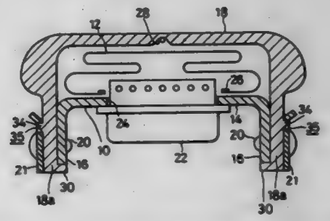
Yoshiyuki Baba, and Yoshikazu Nakayama, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 688,455, Apr. 22, 1991, Pat. No. 5,167,427. This application Nov. 2, 1992, Ser. No. 968,869

Claims priority, application Japan, Nov. 11, 1991, 3-294273

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—743 R **8 Claims**



1. An air bag device for protecting an occupant comprising:

a retainer having a flat plate portion and an erected piece projecting oppositely to the occupant from the flat plate portion,

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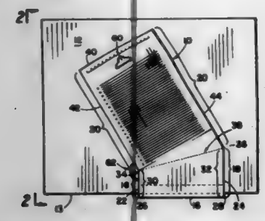
a folded air bag fixed to said flat plate portion of said retainer,
an inflator fixed to said flat plate portion for injecting an air bag development gas,
a module cover covering said air bag and having a leg which is faced and fixed to said erected piece,
a plate covering said leg at an opposite side to said erected piece,
a fixer for fixing said plate and said leg to said erected piece,
a projection projecting from one of said leg and said plate, said projection being located above a lower edge and having a slit extending rearwardly from a front end to a rear end thereof and a pair of side portions extending sidewards from a front portion thereof, and
an engaging portion in a form of an opening provided at the other of said plate and said leg at a position above a lower edge thereof and corresponding to said projection so that said projection is engaged with said engaging portion to thereby easily hold the plate at a predetermined position during a process of fixing said leg and said plate to said erected piece.

5,297,814

CLIPBOARD FOR TEACHING CHILDREN TO WRITE CORRECTLY

Eddie R. Peters, 6207 Davidson Dr., Sand Springs, Okla. 74063

Filed Nov. 20, 1992, Ser. No. 979,587
Int. Cl.[5] B42F *9/00*; B42D *15/00*
U.S. Cl. 281—45 **20 Claims**



1. A clipboard attachable to a desktop for teaching children how to write correctly comprising:
means to secure said clipboard to said desktop so that said clipboard lies flat against said desktop;
an upper area provided on the clipboard and angled with respect to a front edge of said desktop;
means for securing writing paper to said upper area.

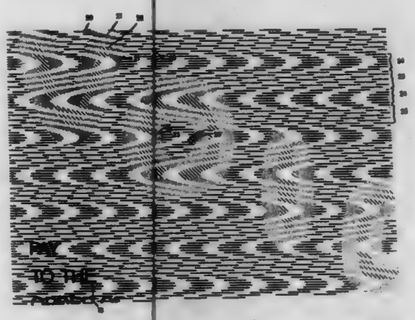
5,297,815

SECURITY PRINTED DOCUMENTS

Mark J. Anderson, Seaham, and Arnold Roseberry, Sunderland, both of Great Britain, assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 10, 1992, Ser. No. 926,692
Claims priority, application United Kingdom, Dec. 7, 1991, 9126132
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—93 **21 Claims**

1. A security document that if copied by a photocopy machine, provides an indication that it has been copied comprising:
a substrate having a surface receiving printing;
a first plurality of printed elements visible to the human eye as lines extending in a first direction parallel to each other, and dimensioned so that they can be resolved by a photocopy machine;
a second plurality of printed elements visible to the human eye as lines extending in said first direction and parallel to each other, and appearing to the human eye as continuations of said first plurality of printed elements, and dimensioned so that they cannot be resolved by a photocopy machine, said second plurality of elements disposed in a configuration forming invalidating indicia if said document is copied by a photocopy machine;
said printed elements having a density of less than 20%; and
said printed elements disposed in a pattern that is continuous



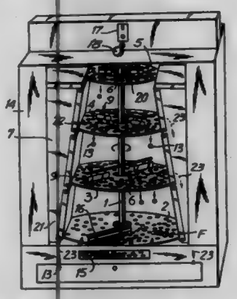
over the majority of said surface, interspersed with blank areas of said surface, so that said elements collectively establish a pattern that is seen by the human eye as a continuous pattern in which said invalidating indicia are not visible unless said document is copied by a photocopy machine.

5,297,816

GYRATING MACHINE FOR AN ENTERTAINMENT GAME

Carlos A. Becchio, Brandsen 2235, Virreyes, Province of Buenos Aires, Argentina

Filed Jul. 12, 1993, Ser. No. 90,893
Claims priority, application Argentina, Oct. 16, 1992, 323437
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—459 **5 Claims**



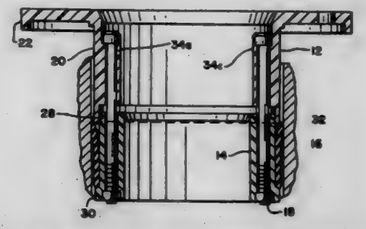
1. A gyrating machine for an entertainment game, of a type including a cabinet which contains in its interior the machine proper, and which said machine is operated by the introduction of an authorized chip, which starts the game, comprising:
said machine being located inside the cabinet, said machine including a vertical gyrating axle, which said axle supports, at different heights a plurality of sweeping elements, each said sweeping element being located respectively across from an upper surface of each of a plurality of corresponding fixed discoidal platforms, said fixed discoidal platforms being supported by lateral columns; each said platform having a smaller diameter than the following lower platform, whereby a first upper platform of said plurality of fixed discoidal platforms constitutes a surface which receives the chip falling towards an interior of the machine when the game starts.

5,297,817

STREET COMPRESSION CLOSET FLANGE

B. Eugene Hodges, Greenville, Mich., assignor to James Bruno, Ada, Mich.

Filed Dec. 3, 1992, Ser. No. 985,598
Int. Cl.[5] F04B *5/48*; F16L *23/09*
U.S. Cl. 285—15 **5 Claims**



1. A street compression closet flange for installation on top of a drain pipe, said flange comprising:
an upper section having a substantially cylindrical body, a shoulder extending radially outward from one end of the body at a substantially right angle thereto, said shoulder having a plurality of openings therein for receiving attachment means, and an end portion opposite the shoulder having a recessed area for receiving a lower section, said lower section fitting inside the end portion of the upper section;
said lower section having a substantially cylindrical body with a lip at one end for seating a substantially cylindrical seal, said lip having an outside diameter substantially the same as the outside diameter of the upper section body;
said upper and lower sections having integrally formed channels located on the inside walls of the upper and lower section bodies for receiving fastening means, said channels being recessed away from the shoulder of the upper section;
said substantially cylindrical seal having an outside diameter slightly greater than the outside diameter of the upper section body and the lower section lip, and having a slight outward flair at one end to accommodate a portion of the upper section body; and
fastening means displaced in said channels, wherein tightening said fastening means draws the upper section inside the flair of the cylindrical seal forcing the seal outward, thereby providing a compression fit between the cylindrical seal and the inside of said pipe.

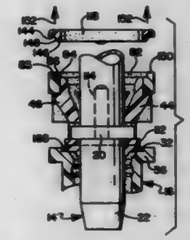
5,297,818

RETAINER FOR POP-TOP INDICATOR

Gary Klinger, Allen Park, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,826
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—93 **29 Claims**

1. A quick connect insertion indicator comprising:
a generally annular base member carried with a connector housing adapted for positioning about a conduit;
a plurality of leg members extending axially from said base member and terminating adjacent an axial housing opening; a generally annular indicator member for visually indicating proper coupling of said conduit disposed substantially adjacent said opening releasably engaging said leg member terminations;
means operative to axially displace said base member upon engagement of said conduit and connector housing to effect separation of said base and indicator members; and



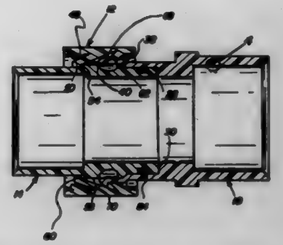
guide means operative to maintain concentric positioning of said indicator with said connector housing.

5,297,819

QUICK CONNECT/DISCONNECT PIPE COUPLING

David R. Harder, 2 Colville Rd., Wayne, N.J. 07470

Filed Oct. 16, 1992, Ser. No. 961,667
Int. Cl.[5] F16L *39/02*
U.S. Cl. 285—93 **5 Claims**



1. A quick connect/disconnect pipe coupling for connecting together first and second sections of pipe comprising:
a female receptacle member,
a locking collar adapted to be slidably engaged over one end of the female receptacle member, and
a male plug member adapted to be inserted into the collar engaged female receptacle member to form a tight connection therebetween, said collar including first and second radial locking flanges for engaging cooperating annular ridges on the plug and receptacle members, respectively, wherein slidable movement of the collar toward the receptacle member is adapted to disengage the locking flange on the collar from the annular ridge on the male plug member thereby enabling a quick disconnect of the female receptacle member and collar from the male plug member,
wherein said first and second radial locking flanges are axially spaced from each other to define an annular groove on the inside surface of said collar and the cooperating annular flange on said receptacle member extends into said annular groove,
wherein said cooperating annular flange on said receptacle includes a chamfered edge adapted to cam against the first radial locking flange engaging said cooperating annular ridge on said plug member to disengage said first flange from said plug member annular ridge upon slidable displacement of said collar toward said receptacle member thereby to effect said quick disconnect of the female receptacle member and collar from the male plug member, and
wherein said first and second sections of pipe are connected

to said receptacle member and said plug through corresponding recessed bore portions in said receptacle member and said plug member, respectively.

5,297,820

LINE COUPLING SYSTEM

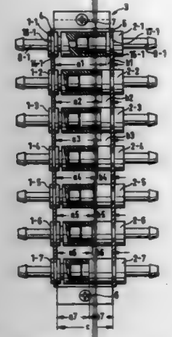
Karl-Heinz Martin, Grafrath, Fed. Rep. of Germany, assignor to Kreuzer GmbH & Co. oHG, Puchheim, Fed. Rep. of Germany

Filed Oct. 9, 1992, Ser. No. 959,139

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1991, 4138064

Int. Cl.[5] F16L *39/00*

U.S. Cl. 285—137.1 **14 Claims**



1. A line coupling system comprising

a plurality of first coupling members for connection with respective first lines,

and a plurality of second coupling members for connection with respective second lines,

said first coupling members and said second coupling members having a match code in the form of a length which differs from the lengths of the other first and second coupling members respectively, and which is selected such that the sum of the lengths of matching or corresponding first and second coupling members when connected to each other has a predetermined constant value.

5,297,821

HOSE CONSTRUCTION AND FASTENING MEMBER THEREFOR

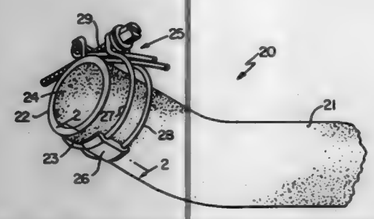
Manuel Campo, Fairfax, Va.; Charles S. Pearson, Waynesville, and Jon H. Snyder, Hazelwood, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 771,080, Oct. 2, 1991, Pat. No. 5,185,913. This application Dec. 11, 1992, Ser. No. 988,982

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] F16L *33/04*

U.S. Cl. 285—253 **16 Claims**



1. In a hose construction comprising a tubular flexible hose having opposite ends and an outer peripheral surface means, fastening means, and a clamping means fastened to one of said ends of said hose with said fastening means for substantially circumferentially and radially inwardly clamping said one end onto a member that has been inserted into said one end, said fastening means comprising a fastening member having a part thereof secured to said outer peripheral surface means of said hose and having recess means therein that receives part of said clamping means therein, the improvement wherein said fastening member has means for holding said part of said clamping means in said recess means before said fastening member is secured to said hose, said means for holding said part of said clamping means in said recess means comprising snap-fit means on said fastening member, said fastening member having opposite ends, said recess means interrupting said opposed ends of said fastening member.

5,297,822

HOSE CONSTRUCTION AND COUPLING THEREFOR

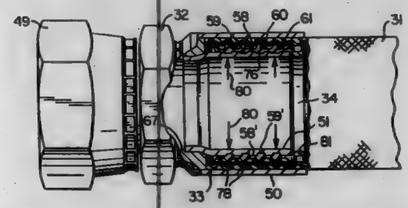
John D. Sanders, Springfield, Mo.; Homer N. Holden, Sylva, N.C., and Randy C. Foster, Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 875,865, Apr. 29, 1992, Pat. No. 5,199,752, which is a division of Ser. No. 693,109, Apr. 25, 1991, Pat. No. 5,129,686, which is a division of Ser. No. 408,161, Sep. 15, 1989, Pat. No. 5,037,143. This application Dec. 11, 1992, Ser. No. 988,983

The portion of the term of this patent subsequent to Aug. 6, 2003, has been disclaimed.

Int. Cl.[5] F16L *33/213*

U.S. Cl. 285—258 **10 Claims**



1. In a coupling for a hose construction comprising a tubular hose having an inner peripheral surface means and an outer peripheral surface means, said coupling being adapted to be secured to one end of said tubular hose, the improvement wherein said inner peripheral surface means of said hose comprises an inner corrugated hose made of polymeric material and having inwardly directed projections with recesses therebetween and extending from said one end of said tubular hose to the other end thereof and wherein said coupling has an insert means adapted to be disposed in said one end of said tubular hose and be radially outwardly expanded into sealing relation with said inner corrugated hose, said insert means having an outer peripheral surface means defined by a plurality of outwardly directed projections with recesses therebetween, said projections of said insert means being adapted to be respectively received in said recesses of said inner hose and said projections of said inner hose being adapted to be respectively received in said recesses of said insert means whereby the interior of said tubular hose is adapted to be substantially sealed to the interior of said coupling, said projections of said insert means each having a transverse cross-sectional configuration of a certain length and said recesses of said insert means each having a transverse cross-sectional configuration of a predetermined length that is different than said certain length.

5,297,823

DEVICE FOR FIXING A TUBULAR ELEMENT ON A TUBULAR CONNECTING SPIGOT OF A COMPONENT OF IN PARTICULAR AN AUTOMOBILE VEHICLE

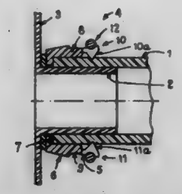
Dominique Dubost, La Celle Saint Cloud, France, assignor to ATTAX, Chatou, France

Filed Feb. 19, 1992, Ser. No. 836,833

Claims priority, application France, Feb. 20, 1991, 91 02038

Int. Cl.[5] F16L *37/00*

U.S. Cl. 285—317 **8 Claims**



1. Device for fixing a tubular element on a tubular connecting spigot of a component, in which device maintaining and sealing means are cooperative with said tubular element and said spigot for fixing said tubular element on said spigot, said maintaining and sealing means comprising two sleeves which are coaxial with said spigot, one of said sleeves being an outer sleeve connected to said component and comprising resiliently deformable branches biased in a direction toward said spigot, a hooking portion projecting inwardly of said outer sleeve being provided at the end of each of said branches, the other of said sleeves being an inner sleeve and comprising an abutment surface and mounted to be axially movable between said outer sleeve and said spigot by a bearing of said tubular element against said abutment surface of said inner sleeve, between a mounting position in which said inner sleeve maintains said branches of said outer sleeve spaced further away from said spigot, and a hooking position in which said inner sleeve releases said branches of said outer sleeve, so that said hooking portions of said branches become cooperative with said tubular element and thereby maintain it in position on said spigot.

5,297,824

SPIGOT-AND-SOCKET JOINT SECURED AGAINST SLIDING

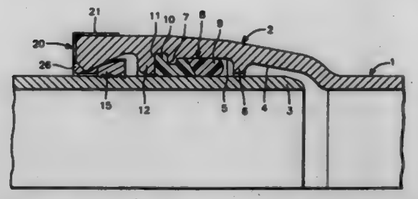
Erich Imhof, Laufach; Karl-Heinz Bergmann, Hoesbach, and Manfred Vorbeck, Laufach, all of Fed. Rep. of Germany, assignors to Eisenwerke Fried. Wilh. Dueker GmbH & Co., Karlstadt, Fed. Rep. of Germany

Filed Oct. 15, 1992, Ser. No. 961,272

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134089

Int. Cl.[5] F16L *21/06*

U.S. Cl. 285—322 **6 Claims**



1. A spigot-and-socket joint secured against sliding, for moulded components and for socket pipes (1) produced by a centrifugal casting technique, wherein a spigot end (3) of one pipe is fitted, with radial play, into a socket end (3) of another pipe, said socket end having a front face, an inner edge and having an inner surface conically tapering toward said front face in a diverging manner wherein a sealing ring (8) and a separate clamping ring (14) are arranged in the socket end, with the clamping ring (14) composed of a plurality of circumferentially extending, spaced clamping segments (15) which have a convex outer surface (917), joined in a circumferential direction by a vulcanization-bonded intermediate layer, and which each have an inner surface (18) with a tooth system (19) radially pressing against the spigot end (3) and which by the convex surface (17) cooperate with said conically tapering inner surface (18) of the pipe socket when axial forces are present, wherein an elastomeric support member (20) is affixed to a front face of the socket and is applied onto the clamping ring (14), which support member comprises an annular disk-shaped portion (23) bearing against said front face (22) and an approximately conically tapering connecting portion (24) extending from an inner edge of said front face (22) to the clamping ring (14), with the connecting portion (24) being adapted to be widened together with the clamping ring (14) in dependence upon the outer dimensions of the spigot end (3) and to be stretched in the axial direction, characterized in that the annular disk-shaped portion (23) bearing against said front face (22) has, in a region of the inner edge of the front face (22), a reinforced transition region (26) of increased flexural strength, from which region the connecting portion (24) extends, and that the inner edge of the front face (22) has a recess region matching the cross section of the reinforced transition region (26).

5,297,825

POLE SPLICING JOINT

Gary P. King, Richfield, Minn., assignor to Lexington Standard Corporation, St. Paul, Minn.

Division of Ser. No. 669,481, Mar. 14, 1991, Pat. No. 5,138,760. This application Jul. 29, 1992, Ser. No. 922,062

Int. Cl.[5] F16L *25/00, 35/00*

U.S. Cl. 285—331 **4 Claims**



1. A tapered pole splicing joint system for large diameter poles which are in excess of 40 feet long when assembled, said system comprising:

a lower pole section having a top and bottom with a larger end at the bottom to form a base and a smaller end at the top thereof,

an upper pole section,

a reduced diameter splicing section at the top of the lower pole section with an upper end and a lower end and forming a sharply curved abutment shoulder at the lower end of the splicing section for positive mating engagement with the lower end of the upper pole section when joined therewith, and having the same mating outside diameter as the lower end of the upper section, and

the upper pole section having a lower circumferential end beveled to conform to the sharply curved abutment shoulder and mate therewith to produce a positive substantially invisible circumferential abutment joint between the two joined together sections.

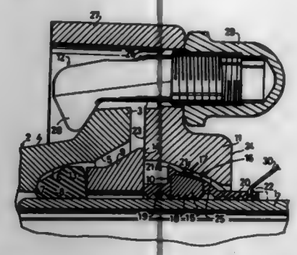
VOL 1160 ISS 5 MR 29 1994 UMI

5,297,826

LOCKING JOINT FOR PIPE SYSTEMS

Alain Percebois; Andre Remy, both of Blenod les Pont-A-Mousson, and Jean-Pierre Vitel, Thiaucourt-Regnieville, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Nov. 6, 1992, Ser. No. 972,900
Claims priority, application France, Nov. 7, 1991, 91 13753
Int. Cl.[5] F16L *21/04*
U.S. Cl. 285—232 9 Claims



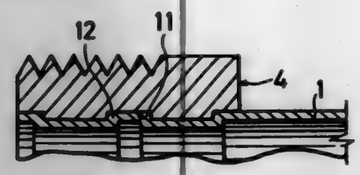
1. A locking joint for joining a smooth end (1) of a first tubular element and a socket (2) of a second tubular element, said joint comprising: an annular sealing gasket (8) housed in the socket, an annular locking ring (15) incorporating interior teeth (18) surrounding the smooth end, an annular counter-flange (11) fitted with means (12) for attachment to the socket and configured to implement position-retention of the locking ring opposing any backward movement thereof in a direction away from the smooth end of the first tubular element, a rigid annular stop ring (9) which encloses the smooth end and abuts the gasket, and an annular collar (16) made of elastomer and duplicate molded on the locking ring, enclosing the locking ring on all sides except on an interior toothed face thereof, said collar being disposed within the counter-flange, between the counter-flange and the smooth end, and comprising, on a front end facing the socket, at least one annular elastic lip (19) disposed longitudinally between the locking ring and a rear face (14) of the rigid annular stop ring.

5,297,827

METAL PIPE COUPLING

Jeong-Yoon Choi, No. Na-305 Yeonhi Villa, 1128-28 Whakok-dong, Kangseo-gu, Seoul 157-010, Rep. of Korea

Continuation-in-part of Ser. No. 777,126, Oct. 16, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,224
Int. Cl.[5] F16L *17/00*
U.S. Cl. 285—351 6 Claims



1. A pipe assembly with a coupling, said assembly comprising:

a hollow cylindrical body for receiving an end of a metal pipe, said hollow cylindrical body having an inner surface and an outer surface, said outer surface having a threaded region, said inner surface having at least one annular groove aligned perpendicular to the longitudinal axis of said hollow cylindrical body; and

a metal pipe having an outer diameter slightly less than the inner diameter of said hollow cylindrical body, and an end portion inserted in said hollow cylindrical body, wherein said inserted end portion of said metal pipe is expanded in a radial direction so that the entire outer surface of said inserted end portion of said metal pipe is pressed against said inner surface of said hollow cylindrical body in an airtight manner.

5,297,828

VEHICLE TRUNK LID SECURING APPARATUS

Thomas I. Chung, 7955 Dunbrook Rd., Suite A, San Diego, Calif. 92126

Filed Dec. 31, 1992, Ser. No. 999,126
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—258 20 Claims



1. A vehicle trunk lid securing apparatus, comprising:

(a) an elongated flexible strap;

(b) a first connector connected to said elongated flexible strap and being operable to attach to a hook of a trunk lid locking mechanism;

(c) a second connector connected to said elongated flexible strap, said second connector including an elongated handle portion having a pair of opposite ends and an elongated gripping section connected to and extending in a substantially linear relationship between said opposite ends, said second connector also including an insert portion attached to one of said opposite ends of said handle portion and being operable to attach to a latch of the trunk lid locking mechanism by gripping said substantially linear elongated gripping section of said handle portion and pulling on said strap toward the latch, said strap being connected to the other of said opposite ends of said handle portion; and

(d) means for adjusting the effective length of said elongated flexible strap to establish a set distance between said first and second connectors which matches the distance between the hook and latch of the trunk lid locking mechanism.

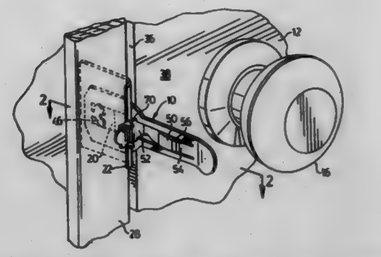
5,297,829

SECURITY LOCK FOR DOOR

Stanley G. Richardson, 504 Barton Street East, Unit 32, Stoney Creek, Ontario, Canada L8E 2L6

Filed Nov. 12, 1992, Ser. No. 974,771
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—289 19 Claims

1. A security lock for a door used to open and close an opening defined by a door frame, said door having a reciprocable bolt movable into and out of a hole in said door frame, said lock comprising an elongate lock member having a flat end section with a central opening at one end of the lock member and a shank portion at the opposite end thereof, said lock member being formed from a single piece of spring steel, said flat end section being insertable between an edge of the door and said door frame with the shank portion projecting outwardly from one side of the door, a rigid hook element connected to said first end section and located adjacent said central opening so as to project into said hole in said door frame during use of the lock, said hook element extending substantially at an acute angle to the plane of said flat end section and towards said opposite end of the lock member, and an integral tongue element having one end thereof connected to said



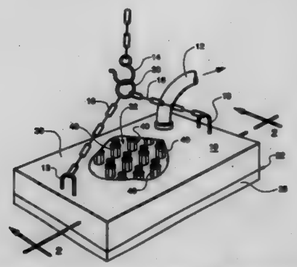
shank portion, said tongue element having a door engaging portion biased by spring action of the tongue element to move from the first position wherein said door can be opened or closed to a second position where said door is blocked and prevented from opening.

5,297,830

AUTOMATIC LOAD SENSING VACUUM VALVE

Thomas A. Hoke, R.D. #2, Box 606, Red Lion, Pa. 17356

Filed Apr. 5, 1993, Ser. No. 42,885
Int. Cl.[5] B66C *1/02*
U.S. Cl. 294—65 10 Claims



1. A vacuum lifting system for use in lifting a load with predetermined surface characteristics, comprising:

a) a vacuum pad comprising a plurality of walls sealingly joined to form a manifold chamber having an outlet port formed in one of said walls and a plurality of vacuum ports formed in a second of said walls, the outer surface of said second wall being covered with a sealing member formed with ports in registry with said vacuum ports, the properties of the sealing member being such that when the sealing member around any of said ports is in contact with the load surface a vacuum seal can be formed and held at that port;

b) vacuum generating means; and

c) a vacuum conduit having two ends, one end being connected to the vacuum generating means and the other end being connected to said outlet port in said vacuum pad wall, the vacuum generating means, when activated, causing air to flow along an air flow path from the vacuum ports through the manifold chamber and vacuum conduit at a predetermined initial flow rate, the flow rate dropping to effectively zero when a vacuum seal is established at the vacuum ports,

wherein the improvement comprises a plurality of valves mounted within the manifold chamber, one valve being attached to the manifold chamber wall at each vacuum port in the air flow path between the vacuum port and the vacuum conduit, each valve comprising:

d) a housing defining a flow passage having an interior wall, a load end in the direction of the vacuum port, a vacuum end in the direction of the vacuum conduit, and an orifice at each of said ends;

e) an air impermeable float member within the flow passage and freely moveable therein, the float member being larger than either of the vacuum end and load end orifices, whereby the float member is retained within the flow passage;

f) means causing the float member to assume a rest position at the load end of the flow passage when vacuum is not being applied;

g) the float member being of such density that air flow along the air flow path at the initial flow rate causes it to move from the rest position to the vacuum end of the flow passage at a predetermined rate of speed;

h) the float member and vacuum end orifice being cooperatively configured such that when the float member engages the vacuum end orifice under the influence of air flow toward the vacuum end at the initial flow rate they form a seal which stops further air flow through the valve in the direction of the vacuum end to thereby maintain a vacuum;

i) the load end orifice having a configuration which allows air flow through the valve in the direction of the load end even when the float member is in its rest position; and

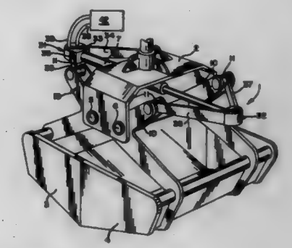
j) means for varying the length between the load end and the vacuum end of the flow passage, whereby for a given initial flow rate said length can be adjusted to a value such that when the sealing member around the vacuum port at which the valve is attached is in operative contact with the load surface, activation of the vacuum generating means will result in formation of a vacuum seal between the sealing member and the load surface before the float member reaches and engages the vacuum end orifice.

5,297,831

PINCER GRAB

Harm Bakker, Huissen, Netherlands, assignor to Bakker Hydraulic B.V., Netherlands

Filed Sep. 18, 1991, Ser. No. 761,683
Claims priority, application Netherlands, Jul. 23, 1991, 9101289; Aug. 8, 1991, 9101365
Int. Cl.[5] B66C *3/16*
U.S. Cl. 294—68.23 10 Claims



1. A pincer grab, comprising:

a frame with a pivot joint;

a first jaw pivotably mounted by said pivot joint, wherein said first jaw comprises two arms;

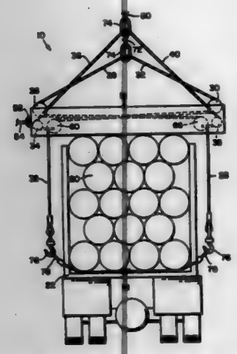
a U-shaped coupling member comprising legs and a block, wherein said legs comprise two force transmitting rods which are separate from one another and are each coupled to said block;

said two force transmitting rods pivotably connected to a corresponding arm of said first jaw;

VOL 1160 ISS 5 MR 29 1994 UMI

a second jaw mounted to said frame and facing said first jaw;
a drive cylinder coupled to said block; and
a drive unit coupled to said drive cylinder, wherein activation of aid drive unit results in said drive cylinder imparting a force on said block which in turn results in said two force transmitting rods pivoting said first jaw from an open position in which said first and said second jaws are not in contact to a closed position in which said first and said second jaws are in contact with one another.

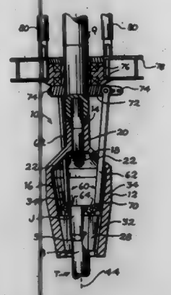
5,297,832
LOG LIFTING BEAM ASSEMBLY
Fred Dewey, R.D. 1 Box 468, Valatie, N.Y. 12184, and Patrick Dewey, P.O. Box 132, Victory Mills, N.Y. 12884
Filed Jan. 7, 1993, Ser. No. 1,537
Int. Cl.[5] B66C *1/12*
U.S. Cl. 294—81.55 **19 Claims**



1. An apparatus for unloading a tier of logs from a truck comprising:
sling means for receiving said tier of logs, wherein said sling means is adapted to be transversely positioned under said tier of logs;
a beam assembly including first and second longitudinally displaceable trolley systems, wherein said beam assembly is adapted to be transversely positioned over said tier of logs with a first end portion of said sling means coupled to said first longitudinally displaceable trolley system, and a second, opposing end portion of said sling means coupled to said second longitudinally displaceable trolley system; and
means, operatively connected to said sling means, for controlling the longitudinal displacement of said first and second trolley systems along said beam assembly, wherein said sling means is secured against said tier of logs or is released from against said tier of logs in response to the relative longitudinal displacement of said first and second trolley systems along said beam assembly.

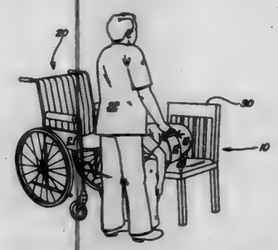
5,297,833
APPARATUS FOR GRIPPING A DOWN HOLE TUBULAR FOR SUPPORT AND ROTATION
Clyde A. Willis, Wichita Falls, Tex., and Clyde D. Durrett, Lexington, Ky., assignors to W-N Apache Corporation, Wichita Falls, Tex.
Continuation-in-part of Ser. No. 975,086, Nov. 12, 1992, abandoned. This application Feb. 25, 1993, Ser. No. 22,235
Int. Cl.[5] B66C *1/42*; B25B *13/18*
U.S. Cl. 294—102.2 **14 Claims**

1. An apparatus for gripping a down hole tubular for support and rotation, said apparatus comprising:
a body element configured for mounting to an earth drilling machine for rotation by the earth drilling machine about an axis, said body element defining a downwardly open central cavity;
a plurality of gripping elements, each comprising a lower gripping portion and an upper gripping portion;
said lower gripping portions shaped to engage a tapered shoulder of a down hole tubular to support the down hole tubular;
said upper gripping portions shaped to engage a tool joint of the down hole tubular to rotate the down hole tubular;
a plurality of first guides, each secured between the body element and a respective one of the gripping elements in the central cavity, said first guides oriented to approach one another toward a lower portion of the body element;



a plurality of second guides, each secured between respective upper and lower gripping portions, said second guides oriented to approach one another at a non-zero acute angle with respect to the axis; and
a plurality of links secured to the gripping elements to move the upper and lower gripping portions (1) to force the lower gripping portions radially inwardly along one of the guides against a first surface of the down hole tubular and (2) to force the upper gripping portions radially inwardly along the other of the guides against a second surface of the down hole tubular.

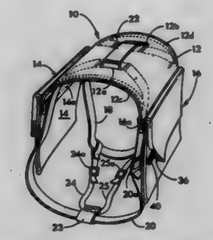
5,297,834
METHOD FOR LIFTING AND TRANSFERRING A DISABLED PERSON TO AND FROM A WHEELCHAIR
Heidi L. Vanarnem, 6139 Dakota Cir., Birmingham, Mich. 48010
Filed Oct. 3, 1991, Ser. No. 770,418
Int. Cl.[5] A61G *1/00*
U.S. Cl. 294—140 **5 Claims**



1. A method of lifting and transferring a disabled person by an attendant using an elongated sheet of material having two ends, comprising the steps of:
placing the person in a sitting position with the elongated sheet of material beneath the buttocks of the person so that each end of the elongate sheet is at a respective side of the person seated;

bending the person over so that the person's shoulder is against the attendant's thigh;
the attendant grabbing the ends of the elongate sheet of material on each side of the person seated and lifting the person by pulling up on said ends of the elongate sheet of material, with said shoulder against the attendant's thigh while the attendant straightens to a standing posture;
the attendant pivoting on one foot to the direction of a place to which the person will be transferred;
the attendant depositing the person so that the person is seated in said place; and
the attendant releasing the ends of the sheet of material so that the person is now seated in a new position.

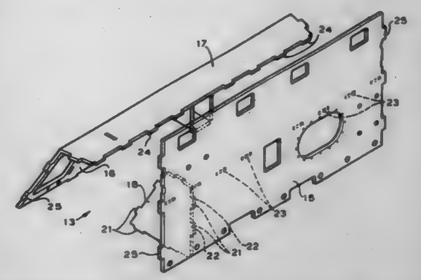
5,297,835
STRAP STYLE ARTICLE CARRIER
James J. Wengler, 2328 Monroe St. NE., Minneapolis, Minn. 55418
Filed Apr. 5, 1993, Ser. No. 43,011
Int. Cl.[5] A45F *5/10*; B65D *63/18*
U.S. Cl. 294—146 **11 Claims**



1. An article carrier having a top and a bottom, comprising:
a flexible carrying handle at the top of the article carrier,
a pair of downwardly extending straps connected to the handle and including a first strap and a second strap, each strap is adapted to be placed to extend around at least a portion of the article,
releasable fasteners connected to the straps for securing the straps in place around the article,
each strap has a top surface and a bottom surface and each of the straps has a 180° twist therein adjacent to the carrying handle with each of the straps being folded against itself at the 180° twist so that the top surface of each strap faces upwardly on one side of the handle and the bottom surface of each strap faces upwardly on an opposite side of the handle, and
parts of each strap on opposite sides of the carrying handle are oriented at an oblique angle relative to one another so that upper portions of the strap that pass through the handle are relatively close together and lower portions of the straps diverge from one another and are located further apart than the upper portions.

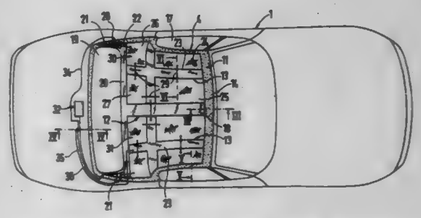
5,297,836
MOTOR CAR CHASSIS STRUCTURE
Daniel Parry-Williams, Banbury, United Kingdom, assignor to Jaguar Cars Limited, United Kingdom
Filed Jun. 30, 1992, Ser. No. 906,799
Claims priority, application United Kingdom, Jul. 3, 1991, 9114433
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—203 **10 Claims**

1. A motor car structure comprising first and second flat panels joined together; each panel comprising first and second mutually parallel spaced apart structural skins, and a core of expanded material united to both the first and second skins and bracing the first skin with respect to the second skin of each panel; a joint between the first and second panels forming part of the structure comprising a plurality of integral projections formed on the first panel by cutting the first panel to a required shape, a corresponding plurality of recesses in the second panel corresponding to the projections, the projections being in-



serted into the recesses, and adhesive bonding the projections into the recesses; wherein roots defined between said projections are bonded to one skin of the second panel between the recesses.

5,297,837
INFLATABLE ROOF FOR A MOTOR VEHICLE
Hermann Burst; Dieter Raisch, both of Rutesheim; Matthias Aydt, Eberdingen; Walter Braun, Sindelfingen, and August-Wilhelm Goesse, Mönsheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany
PCT No. PCT/EP91/01263, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO92/01581, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 6, 1991, Ser. No. 934,657
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1990, 4023348
Int. Cl.[5] B60J *7/00*
U.S. Cl. 296—212 **22 Claims**



1. An inflatable roof for a vehicle, which extends in an inflated condition between a windshield frame and a rear area of the vehicle body, the roof being divided into a plurality of air chambers, wherein the roof has air chambers with different operating pressure levels, all of said different operating pressure levels being greater than an atmospheric pressure level.

5,297,838
CONVERTIBLE TOP FOR VEHICLE
Kurt Cziptschirsch, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Wuppertal, Fed. Rep. of Germany
Filed Nov. 5, 1992, Ser. No. 973,828
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1992, 4218607
Int. Cl.[5] B62D *25/06*
U.S. Cl. 296—214 **15 Claims**

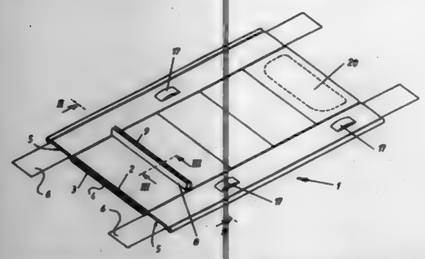
1. A convertible top for a vehicle having a canopy which

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can be arranged below a cover material, wherein the canopy is comprised of:

a knitted fabric having two external webs of knitted material and a spacing structure between the webs, one of the webs forming a top side of the canopy;

the fabric having opposite longitudinal edges and each edge having an integrated channel formed at the edge;



longitudinal tensioning elements for the canopy received in the channels; and

connecting elements extending in a transverse direction on the canopy are arranged on the top side of the canopy, by which the canopy can be fastened to hoops disposed on an inner surface of the covered material by clip mounting.

5,297,839

RECLINING SEAT WITH MOVABLE ARMRESTS

Mitsuru Fukushima, Akishima, Japan, assignor to Tochi-S Co., Ltd., Akishima, Japan

Filed Nov. 17, 1992, Ser. No. 977,656

Int. Cl.[5] A47C *13/00*

U.S. Cl. 297—117 **8 Claims**



1. A reclining seat comprising:

a seat cushion;

a seat back which is connected to said seat cushion via a reclining device;

said reclining device including a movable arm and a fixed arm;

an armrest provided rotatably at said seat back; and

a connecting means extending from said seat back to said movable arm, said connecting means extending from a first side of said armrest to a side of said armrest opposite to said first side, said connecting means having a width generally equal that of said armrest, said connecting means being at one end thereof fixed to said movable arm of said reclining device and at another end thereof connected to said seat back so that said reclining device is connected by said connecting means to said seat back, thereby allowing said armrest to be mounted at said seat back without need for narrowing a width of said seat back.

5,297,840

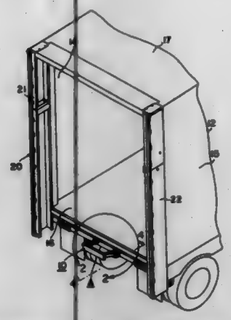
LATCH FOR TRUCK SWING DOOR LOCK

Harrie A. Size, Akron, Ohio, and Jack R. Wyatt, Marietta, Ga., assignors to Waltco Truck Equipment Co., Tallmadge, Ohio

Filed Jan. 21, 1993, Ser. No. 7,136

Int. Cl.[5] B62D *25/00*

U.S. Cl. 296—50 **3 Claims**



1. In combination with a truck body having a rear entry, a floor, two side panels and a roof, a tailgate lift mechanism mounted to said truck body at said rear end having a pair of vertical rails along which a portion of the lift moves in shear relationship to the rear entry and its floor, and closure means hinged at said rear entry to close said rear entry and enclose said tailgate lift mechanism, said closure means including lock means, the improvement comprising:

latch plate means carrying latch means complementary to said lock means, lever means fixed to said latch plate means and hinged to said truck body, said hinge means having a hinge axis, said latch plate means being enabled by said lever means to move to an active latch position where it is engageable by said lock means, said lever means then being in the path of said lift, and an inactive stowed position beneath said floor and forwardly of said lift means wherein said lock means are disengaged from said latch means, said closure means are released so as to be opened, and said latch plate means is not in the path of said lift mechanism.

5,297,841

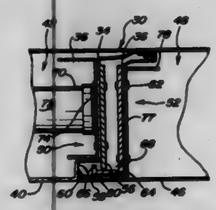
CARGO DOOR ASSEMBLY

Tadeusz J. Siedlecki, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1992, Ser. No. 997,067

Int. Cl.[5] B60J *5/04*

U.S. Cl. 296—146.6 **10 Claims**



1. A cargo door assembly for closing an aperture in the side of a vehicle body, comprising:

a first door hingedly connected to the vehicle body for movement about a first vertical hinge axis between an open position and a closed position;

a second door hingedly connected to the vehicle body for movement about a second vertical hinge axis between an open position and a closed position, the first and second doors being adapted to be latchingly secured in the closed position; and

means defining a pair of vertically spaced catch assemblies carried between the first and second doors and operative to resist movement of the doors laterally inwardly from the closed position with respect to the vehicle side.

5,297,842

LINING FOR INTERIOR OF STRUCTURAL BODY AND METHOD OF PRODUCING SAME

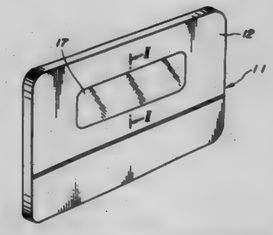
Yoshihisa Hayashi, Tarui, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Feb. 22, 1993, Ser. No. 20,703

Claims priority, application Japan, Feb. 28, 1992, 4-079199; May 25, 1992, 4-158663

Int. Cl.[5] B62D *25/00*

U.S. Cl. 296—146.7 **6 Claims**



1. A lining for an interior portion of a structural body, comprising:

a lining base panel including a base material, and a first skin material laminated to said base material, said lining base panel being partitioned into a plurality of contiguous surface areas by at least one groove, at least one of said surface areas serving as an installation section; and

at least one decorative member including at least one rigid base panel formed in a shape corresponding to said installation section, and at least one second skin material covering said base panel, said decorative member being formed at its peripheral section with a flange which is tightly fitted in said groove of said lining base panel, said flange including said rigid base panel, said decorative member being bonded to said lining base panel.

5,297,843

WINDOW MOLDING FOR AUTOMOBILE

Yukihiko Yada, and Yasuhiro Wato, both of Ohbu, Japan, assignors to Tokai Kogyo Co. Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 907,837, Jul. 2, 1992, abandoned, which is a division of Ser. No. 719,834, Jun. 24, 1991, Pat. No. 5,149,168. This application Apr. 22, 1993, Ser. No. 51,574

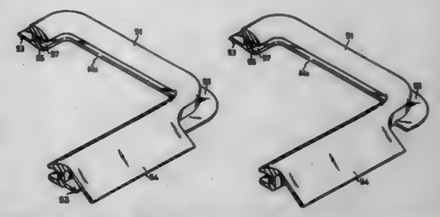
Claims priority, application Japan, Jun. 25, 1990, 2-166138; Jun. 25, 1990, 2-166139

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[5] B60J *10/02*

U.S. Cl. 296—146.15 **12 Claims**

1. In an automobile having a rear window mounted in a rear window opening of the automobile body, a window molding mounted in a space between an outer periphery of the rear window of the automobile and an inner periphery of the rear window opening of the automobile body, said molding having wall means sealingly engaged with said inner periphery and said outer periphery along upper, lower and side edges of said rear window so as to seal and trim said space, said molding having a substantially planar, elastic, flange portion projecting from only a section of said molding that extends along the lower edge of said rear window, said flange portion elastically abutting against a panel forming the lower edge of said rear window opening, said molding also having a column portion extending alongside the edge of and perpendicular to said rear window and a lower, outwardly extending flange sealingly engaging an upright wall on the inner periphery of the rear



window opening of the automobile, said lower, outwardly extending flange and said column portion defining an upwardly opening channel along an upper edge and two opposite side edges of said rear window opening, said section of said molded body being free of said lower, outwardly extending flange.

5,297,844

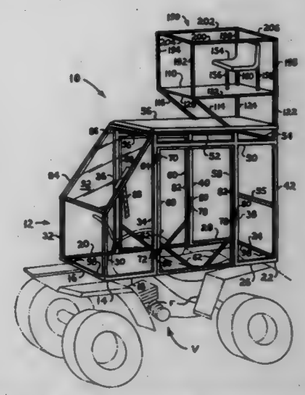
REMOVABLE CAB AND STAND FOR ALL TERRAIN VEHICLES

Herbert H. Haustein, 5712 Camp Robinson Rd., N. Little Rock, Ark. 72118

Filed Jul. 2, 1993, Ser. No. 85,825

Int. Cl.[5] B62D *33/06*

U.S. Cl. 296—190 **16 Claims**



1. A portable, quickly and easily installable and removable cab for temporary installation upon a lightweight, open all terrain vehicle, with said all terrain vehicle including front and rear racks rigidly and permanently affixed thereto, said cab comprising:

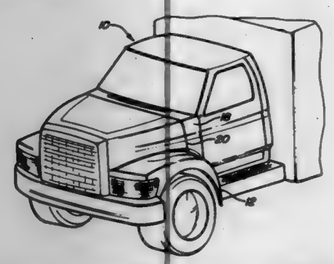
a rigid, permanently assembled monolithic structure comprising a front portion and a rear portion having left side and right side openings therebetween and having a common roof extending across said front portion, said rear portion and said left and right side openings;

said front portion and said rear portion respectively cooperating with said front and rear racks of said all terrain vehicle and defining an enclosure along with said common roof, with said openings providing left side and right side access to said enclosure, whereby;

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said cab is temporarily secured to said front and rear racks of said all terrain vehicle to provide enclosed shelter for an operator of said all terrain vehicle;
said cab including left and right doors hingedly attached to said front portion of said cab and latchable to said front portion of said cab and latchable to said rear portion of said cab, whereby;
said left and right openings between said front portion and said rear portion of said cab are closable.

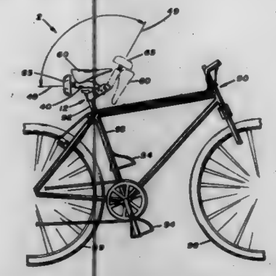
5,297,845
MOUNTING ARRANGEMENT FOR AUTOMOTIVE VEHICLE BODY PANELS
William V. Smartt, Southfield; Joel T. Pierce, Dearborn, and Peter L. Jensen, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Apr. 8, 1993, Ser. No. 43,684
Int. Cl.[5] B62D *25/16*
U.S. Cl. 296—191 **16 Claims**



1. In a body assembly for an automotive vehicle having a inner panel and an outer panel, an improved mounting assembly comprising:
a first mounting plate fixedly secured to the inner panel and including first means for adjustably fixing the position of the first plate with respect to the inner panel longitudinally of the vehicle;
a second slide plate fixedly secured to the outer panel and including second means for adjustably fixing the position of the second plate with respect to the outer panel vertically of the vehicle;
means defining a channel in the first plate; and
means defining slide surfaces on the second plate, slidably received in the channel for longitudinal and vertical movement therewithin.

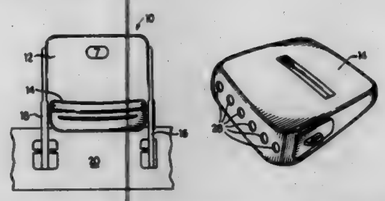
5,297,846
PIVOTING BICYCLE SEAT ASSEMBLY
Michael W. Rafter, 633 33rd Ave. E., #2, Seattle, Wash. 98112
Filed Dec. 14, 1992, Ser. No. 989,209
Int. Cl.[5] B60N *2/38*
U.S. Cl. 297—195.12 **16 Claims**

1. A bicycle seat assembly capable of being attached to a seat tube on a bicycle, comprising;
a. a rigid support member, said support member having attachment means capable of aligning and attaching said support member in an upward, forward extending position from said seat tube on a bicycle;
b. an angled extension arm, said extension arm having a first leg segment and a second leg segment, said first leg segment being pivotally attached to said support member by a pivoting means, said second leg segment having a top surface and a rear surface, said top surface having a first seat attachment means;
c. a primary seat structure attached to said first seat attachment means;
d. a secondary seat structure attached to said rear surface of said extension arm;
e. a first stop means manufactured on said support member, said first stop means being capable of aligning said extension arm in a rearward extended position with said primary seat structure being disposed in a normal riding position on said bicycle, and;



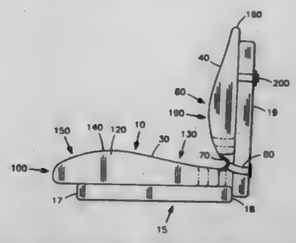
f. a second stop means manufactured on said support member, said second stop means being capable of aligning said extension arm when said extension arm is rotated into a forward extended position so that said secondary seat structure is able to support a forward leaning rider when riding said bicycle up an incline surface.

5,297,847
FIRE RETARDANT SEATING
Vaughn L. Clark, Martin, Mich., assignor to Interkal, Inc., Kalamazoo, Mich.
Continuation of Ser. No. 568,791, Aug. 16, 1990, Pat. No. 5,127,706. This application Mar. 9, 1992, Ser. No. 848,485
Int. Cl.[5] A47C *31/00*
U.S. Cl. 297—217 **4 Claims**



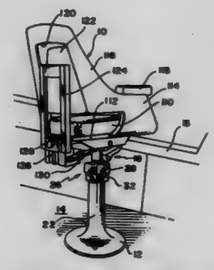
1. A seating component comprising a blow molded plastic enclosure having generally thin walls, said walls forming the structural elements of said seating component, at least a portion of the interior surface of said walls being in contact with a generally non-combustible material selected from the group consisting of foamed concrete, neoprene foam, fire-resistant cellulose fiber and fiberglass, said generally non-combustible material prevents initiation of combustion at said interior surfaces by insulating said interior surfaces of said walls from heat and oxygen,
said blow molded plastic enclosure containing the generally non-combustible material during a fire,
the generally non-combustible material remaining in the seating component and not migrating out thereof if the generally non-combustible material is exposed to heat.

5,297,848
PORTABLE, ORTHOPEDICALLY CORRECT, ADJUSTABLE SEATING CUSHION
Sandra H. Grinnell, 331 Anita Dr., Pasadena, Calif. 91105
Filed Jul. 13, 1992, Ser. No. 912,739
Int. Cl.[5] A47C *27/00*
U.S. Cl. 297—219.1 **9 Claims**



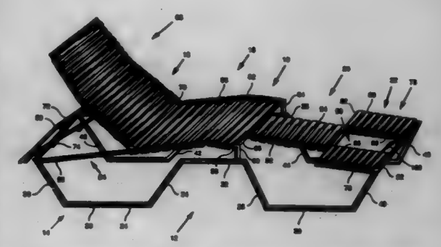
1. An apparatus for supporting a seated person comprising:
a seatrest cushion for placement on a chair seat, the cushion having a back edge and an upward facing convex surface for receiving the thighs and buttocks of the seated person;
a backrest cushion having a horizontal bottom edge, and an outward facing convex surface for receiving the back of the seated person; and
a flexible attachment strip tethering the back edge of the seatrest cushion to the bottom edge of the backrest cushion, the strip capable of being folded for moving the cushions closer together, and of being unfolded for moving the cushions further apart, so that the backrest cushion may be held at various heights above the seatrest cushion, and the seatrest cushion may be held at various horizontal positions relative to the backrest cushion depending on the extension of the strip, the backrest cushion being positionable over a wide range of angles with respect to the seatrest cushion for supporting a person in a partially reclined orientation, the strip supporting the cushions in alignment, whereby the weight of the seated person is directed onto the thighs alleviating pressure on the coccyx area while the lower back of the seated person receives improved support.

5,297,849
VERTICALLY ADJUSTABLE SWIVEL SUPPORT WITH LOCK FOR USE WITH SEATING
Charles W. Chancellor, P.O. Box 15, Midland, Tex. 79702
Filed Oct. 7, 1991, Ser. No. 772,672
Int. Cl.[5] A47C *1/06*
U.S. Cl. 297—344.12 **9 Claims**



1. A lock for a vertically adjustable swivel support which includes a non-rotatable base member and a rotatable member supported from the non-rotatable base member at a rotational interface, said lock comprising a lock member mounted on the non-rotatable base member and a lock member mounted on the rotatable member, said support including manually controlled means to elevate and lower the rotatable member in relation to the base member and maintain the rotatable member in either position solely by said manually controlled means independently of the presence of any other externally applied force on the rotatable member, said lock members including means bridging the rotational interface between lock members when the rotatable member is in lowered position thereby preventing swivel movement of the support.

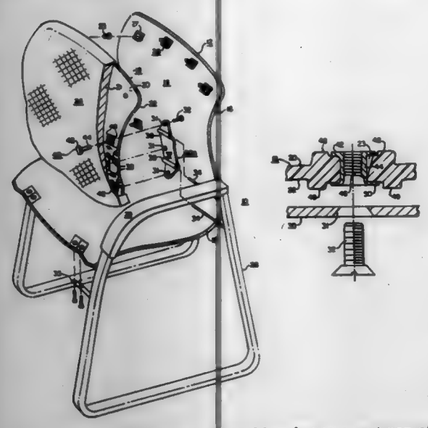
5,297,850
ORTHOPEDIC LOUNGE CHAIR
Armen D. Gulesserian, 377 Carolet La., Orange, Calif. 92669
Continuation-in-part of Ser. No. 741,035, Aug. 16, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 898,712
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—377 **4 Claims**



1. A lounge chair or the like having frame that includes a seat section of a selected width and a seatback section mounted to the seat section to provide adjustment of the angle therebetween so that a user may either sit upright in the chair or lie on the chair in either the prone or supine positions, comprising:
a chest support section connected to the seat section, the chest support section including a pair of generally parallel frame members spaced apart such that the chest support section has a width that is less than the width of the seat section so that a user sitting in the lounge chair may place his feet on a surface upon which the lounge chair sits, and a user lying face down on the lounge chair may extend his arms around the pair of generally parallel frame members of the chest support section so that the user's hands extend under the chair;
an end section connected to the chest support section such that the chest support section is between the end section and the seat section, the end section including extensions of the pair of generally parallel frame members and a pair of crossbars connected perpendicular to the extensions of the pair of generally parallel frame members and spaced apart to define a rectangular face opening therethrough so that a user lying face down on the lounge chair may place his face through the face opening, the end section and the chest support sections being arranged such that the user has manual access to reading material or the like placed under the face opening; and
the chest support section having a width less than the width of the end section so that one of the crossbars is adjacent the chest support section, the crossbar having a pair of end portions that extend beyond the width of the chest support section to form a foot rest so that the user may sit in the chair and place his feet on the foot rest.

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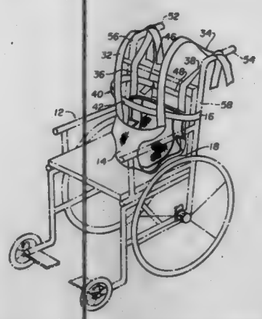
5,297,851
CHAIR FASTENING DEVICE
Hendrik R. Van Hekken, Allentown, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 5, 1991, Ser. No. 802,591
Int. Cl.[5] A47C 7/02
U.S. Cl. 297—452.14 8 Claims



1. A fastener for securing a metal bracket to a seat pan of a chair comprising:
an injection molded plastic seat pan having a front side, a back side and including a plurality of predeterminately spaced oval drafted angle holes and parallel standing rib members formed in the plastic on the front side of said plastic seat pan, said standing rib members surrounding said oval holes; and
a slab base weld nut having a slab base head which is captured and retained by said standing rib members thereby preventing rotation of said slab base nut and an elongated barrel having internal threads and extending through at least one of said oval holes and being peened over to form a rivet connection with the back side of said plastic seat pan.

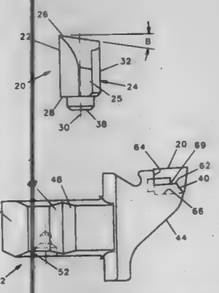
5,297,852
SECURITY HARNESS FOR ENFEEBLED ADULT PATIENTS
Carmen D. Morales-Quintero, Carolina, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.
Filed Feb. 2, 1993, Ser. No. 12,378
Int. Cl.[5] B60R 22/12
U.S. Cl. 297—467 2 Claims

1. A security harness for preventing a patient from falling from a unit supporting said patient comprising: front and rear panels joined together by a crotch panel, said front and rear panels having respective laterally spaced parallel side edges and free outer end edges defining pairs of laterally spaced corners with said side edges, an elongated strap having an inner end fixed to each of said corners and extending outwardly therefrom parallel to said side edges, a waist strap having a central part spaced outwardly from the free outer end edge of said front panel and secured at right angles to both of the front panel straps, said waist strap having elongated end parts extending in opposite directions away from said front panel straps, said front and rear panel straps being of a length that when said harness is in its position of use on a patient carried on a support unit said straps may be secured around anchoring points disposed behind the patient and above at least his waist, and the end parts of said waist strap being of a length



for connection around other anchoring points disposed to either side of said patient.

5,297,853
INSERT FOR RADIAL CUTTER
Phillip A. Sollami, Herrin, Ill., assignor to The Sollami Company, Herrin, Ill.
Filed Mar. 29, 1993, Ser. No. 38,327
Int. Cl.[5] E21C 27/44, 35/18
U.S. Cl. 299—79 10 Claims

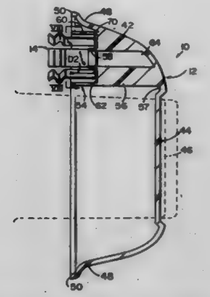


6. The combination comprising:
a body for attachment to a radial cutter, the body having means for attaching said body to a radial cutter, and a seat, said seat including a lower surface and an inner face, said lower surface having a recess therein, and said inner face having a hole therein,
an insert on said seat, said insert having a cutting face, a back with a longitudinal protrusion, said back fitted against said lower surface and said longitudinal protrusion fitted into said recess, and
said insert having an inner end with a stub extending therefrom, said inner end of said insert fitted against said inner face of said seat, and said stub fitted in said hole.

5,297,854
WHEEL COVER RETENTION SYSTEM
Gerald A. Nielsen, Big Rapids, and Gregory R. Hauler, Grand Rapids, both of Mich., assignors to Big Rapids Products, Inc., Big Rapids, Mich.
Filed Oct. 19, 1992, Ser. No. 962,877
Int. Cl.[5] B60B 7/06
U.S. Cl. 301—37.37 44 Claims

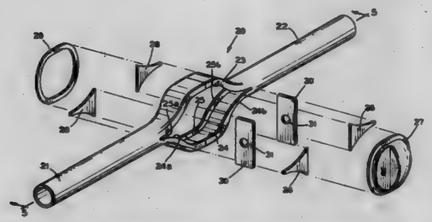
1. A wheel cover comprising:
a wheel cover base including a front and back;

a plurality of wheel nut engaging retainers each including a nut embracing portion; and
a plurality of cups on the back of the wheel cover base, said cups each being defined by a wall extending at least partially around and embracing said retainer including a part



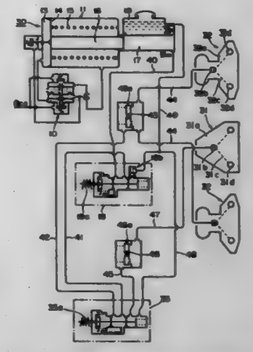
of the axial length of said nut embracing portion, whereby the cup wall not only holds said retainer in place, but also stiffens said nut embracing portion thereof, yet leaves another part of said nut embracing portion projecting beyond said cup wall such that the other part can flex over a wheel nut.

5,297,855
BANJO-TYPE AXLE HOUSING
Kuan-Jen Jeng, Taipei, Taiwan, assignor to Dana Corporation, Toledo, Ohio
Filed Jul. 16, 1992, Ser. No. 914,787
Int. Cl.[5] B60B 35/16
U.S. Cl. 301—124.1 12 Claims



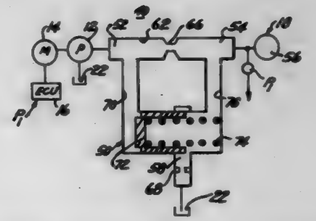
1. A baffle plate adapted to be disposed within a central member of an axle assembly, the axle assembly including first and second openings formed therethrough having respective side portions and including first and second hollow tubes extending outwardly therefrom, the baffle plate comprising:
a central baffle portion adapted to be secured to one of the first and second tubes; and
a pair of side portions extending generally perpendicular to said central baffle portion, said side portions adapted to be secured to the central member to close the side portions of the openings formed therethrough.

5,297,856
TWO SEPARATE HIGH SPEED AND LOW SPEED DISC BRAKE UNITS FOR RAILWAY VEHICLES
Yoshio Asano, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan
Filed Nov. 27, 1992, Ser. No. 982,538
Claims priority, application Japan, Dec. 12, 1991, 3-352213
Int. Cl.[5] B60T 13/00
U.S. Cl. 303—9.61 11 Claims



1. A railroad car brake arrangement comprising; a pneumatic-to-hydraulic brake pressure transducer hydraulically connected to a brake control unit for developing braking pressure in response to a particular brake command request, a plurality of disc brake unit connected to said brake transducer, and being characterized by the fact that said disc brake units are divided into high speed and low speed disc brake units, and a control valve connected between said brake pressure transducer and said disc brake units, said control valve includes a solenoid, said solenoid is energized by the presence of an electrical control signal when the speed of the railroad car is greater than a predetermined value so that pressurized fluid is supplied from said brake pressure transducer to said high speed disc brake unit, and said solenoid is de-energized by the absence of said electrical control signal when the speed of the railroad car is less than the predetermined value so that pressurized fluid is supplied from said brake pressure transducer to said low speed disc brake units.

5,297,857
DIRECT ACTING ELECTRO-HYDRAULIC BRAKING SYSTEM WITH REGULATED LEAK RATE
Gary L. Casey, Troy, and Daniel J. Patient, Sterling Hgts., both of Mich., assignors to Allied-Signal Inc., Morristown, N.J.
Filed May 31, 1991, Ser. No. 708,413
Int. Cl.[5] B60T 13/18
U.S. Cl. 303—11 8 Claims



1. A method of controlling pressure in a wheel brake cylin-

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der of a brake, the wheel cylinder connected to an electrically driven pump and wherein a flow control valve is communicated with the pump and the wheel cylinder and an exhaust port connected to a sump, the flow control valve includes a valving element biased by a bias spring, the method comprising the steps of:

(a) regulating the speed of a motor driven pump to generate a desired pressure in the cylinder of the brake;

(b) generating a pressure differential across the valving element, as a function of pump flow and communication same to the spring biased valving element;

(c) permitting the valving element to move, in response to pressure forces acting on the valving element, generated by the pressure differential, and the force of the bias spring, so as to selectively open and close the exhaust port, such that in the steady state an equilibrium condition is achieved where the pressure forces balance the spring force and the pressure in the cylinder is constant wherein step (a) of regulating includes:

(d) reducing the desired pressure from a given level and

(e) slowing the speed of the pump to reduce the pressure differential thereby permitting the valving element to move to a position to more fully open the exhaust port enabling fluid in the cylinder to flow through the exhaust port and reduce pressure in the cylinder to the now desired reduced pressure level.

5,297,858

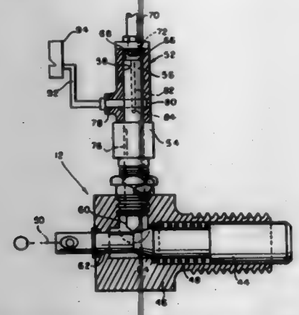
SAFETY COUPLER-AIR BRAKE INTERLOCK

Peter F. Zupan, Ottobrunn, Fed. Rep. of Germany, assignor to Wabash National Corporation, Lafayette, Ind.

Filed Jun. 11, 1992, Ser. No. 897,290

Int. Cl.[5] B60F 1/04; B60T 8/18

U.S. Cl. 303—22.6 **5 Claims**



1. A safety interlock for an air brake system having a brake pipe of an-intermodal train including a plurality of trailers coupled together with a coupling element shiftable between a coupling position and a decoupling position, said interlock comprising a locking element shiftable between a locking position operatively interconnected with said coupling element in a coupling position and an unlocking position, a first valve connectable with a source of air under pressure and including a valve element responsive to said locking element when the locking element is in said unlocked position to provide an air pressure signal, and a second valve responsive to said air pressure signal received from said first valve and connectable with the air pipe for venting the air pipe in response to said signal and thereby energizing the air brake.

5,297,859

METHOD OF CORRECTING TARGET SLIP RATIOS WITH A CORRECTION COEFFICIENT BASED ON VEHICLE DECELERATION

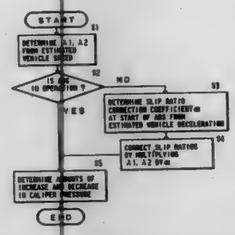
Osamu Suzuki, and Atsuo Ota, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,906

Claims priority, application Japan, Oct. 14, 1991, 3-264992

Int. Cl.[5] B60L 7/00

U.S. Cl. 303—102 **4 Claims**



1. A method of controlling brakes of a vehicle comprising the steps of:

detecting respective rotational speeds of at least two wheels of the vehicle;

determining a vehicle running speed of said vehicle from said rotational speeds;

calculating target slip ratios of said at least two wheels from said vehicle running speed;

detecting a vehicle deceleration of said vehicle before initiating said antilock control;

determining a correction coefficient based on said vehicle deceleration;

correcting said target slip ratios by multiplying said target slip ratios by said correction coefficient; and

initiating said antilock control to control the brakes of said vehicle using the corrected target slip ratios.

5,297,860

BRAKE CONTROL DEVICE

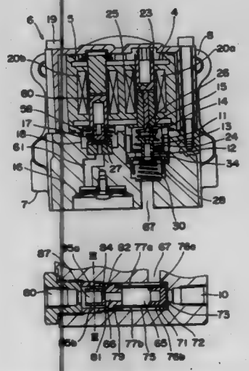
Hirotaka Nakamura, Tokyo, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 914,474

Claims priority, application Japan, Jul. 19, 1991, 3-179888

Int. Cl.[5] B60T 8/40

U.S. Cl. 303—113.2 **11 Claims**



1. A brake control device for providing brake control and traction control for a motor vehicle having a plurality of wheel cylinders, comprising:

a modulator for supplying a braking pressure to at least one of said wheel cylinders;

a brake valve for supplying a first fluid pressure to said modulator for said brake control of said at least one of said wheel cylinders;

a traction control valve for supplying a second fluid pressure to said modulator for said traction control of said at least one of said wheel cylinders;

a valve unit provided between said modulator and said brake and traction control valves and having a shuttle valve and a throttle valve, wherein

said shuttle valve selects the higher one of said first fluid pressure or said second pressure and supplies said higher fluid pressure to said modulator; and

said throttle valve decreases the fluid flow from said traction control valve to said modulator during traction control while increasing the fluid flow from said modulator to said traction control valve upon release of the brakes of the vehicle.

tioning valves when the braking degree is stronger than the setting degree, and correcting the setting value to a lower value when operation of said rear wheel antiskid brake system is detected.

5,297,862

HYDRAULIC BRAKE SYSTEM CONTROLLING SLIP

Hans D. Reinartz, Frankfurt am Main, and Helmut Steffes, Hattersheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

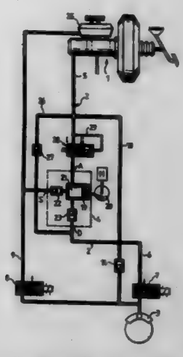
PCT No. PCT/EP91/01243, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO92/04215, PCT Pub. Date Mar. 19, 1992

PCT Filed Jul. 3, 1991, Ser. No. 852,136

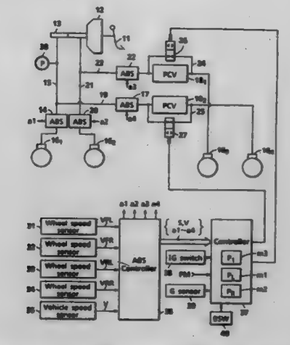
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 4027565

Int. Cl.[5] B60T 8/48, 8/32

U.S. Cl. 303—116.1 **10 Claims**



1. A hydraulic brake system including means for controlling wheel slip, comprising: a brake pedal, a brake pedal-actuated master brake cylinder, at least one wheel brake cylinder, a brake conduit placing said wheel brake cylinder in communication with said master brake cylinder; pressure fluid in said system, which pressure fluid, upon actuation of said brake pedal, is displaced from said master brake cylinder through said brake conduit, and into said wheel brake cylinder; further comprising a hydraulic pump installed into said brake conduit, said pump including a pump chamber connected by a first section of said conduit to said master brake cylinder and by a second section of said brake conduit to said wheel brake cylinder, said pump chamber thereby connected in series in said brake conduit between said master cylinder and said wheel cylinder to cause pressurization thereof upon actuation of said brake pedal, a switch valve provided in said first section of said brake conduit between said master brake cylinder and said pump chamber, said switch valve having a first position opening said first section of said brake conduit and, a second position blocking said first section of said brake conduit against fluid flow towards said pump chamber, said switch valve including means responsive to development of a predetermined master brake cylinder fluid pressure to be switched from said first swithing position into said second switching position, and a secondary conduit connected to said brake conduit to allow bypassing of said pump chamber of said fluid displaced by said master cylinder by actuation of said brake pedal when said switch valve is in said second position.



1. A rear wheel braking force control apparatus of a vehicle comprising:

proportioning valves disposed in passages for supplying a hydraulic pressure generated by a master cylinder to wheel cylinders of rear wheels for controlling wheel cylinder pressure so that increasing rate of the wheel cylinder pressure is smaller than increasing rate of master cylinder pressure;

electromagnetic valves disposed in the passages to affect or invalidate the action of said proportioning valves;

a rear wheel antiskid brake system for preventing locking of the rear wheels;

braking degree detection means for detecting a braking degree during braking of the vehicle; and

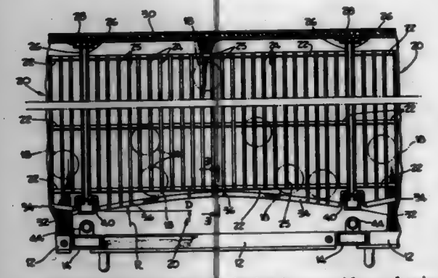
control means for operating said electromagnetic valves to invalidate the action of said proportioning valves when the braking degree detected by said braking degree detection means is weaker than a setting value, operating said electromagnetic valves to effect the action of said propor-

5,297,863

DISPLAY CASE WITH SHAPED LIGHTED SHELVES

Richard J. Richardson, Simi Valley, and Charles E. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Mar. 13, 1992, Ser. No. 850,868
Int. Cl.[5] A47F *5/08, 3/06*
U.S. Cl. 312—128 12 Claims



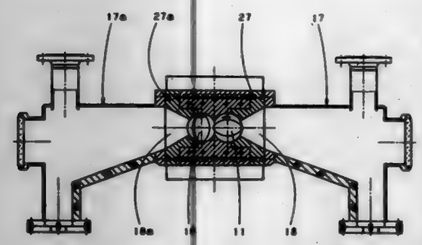
1. A display case used for displaying items, said case having lights mounted therein, said display case comprising:
a case structure; and
at least one shelf mounted inside said case structure, each of said shelves having ends and front end corners, said lights being mounted near said front end corners, each of said shelves including:
a. a shelf portion used to support items, and
b. means mounted at a front of said shelf portion for retaining a certain number of said items near a front and middle of said shelf so that said certain number of said items are substantially illuminated by said lights, said means being formed so that said certain number of said items are retained a selected distance from said front of said shelf portion toward the back of said shelf portion, said selected distance changing along a length of said shelf, reaching a minimum value near said ends of said shelf.

5,297,864

DEGASSING MEANS FOR A TWIN SCREW EXTRUDER FOR PLASTIC MATERIALS

Arno Knoll, Stuttgart, and Wolfgang Woerz, Illingen, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 26, 1993, Ser. No. 97,194
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1992, 4228468
Int. Cl.[5] B29B *1/10*; B01F *15/02, 15/06*
U.S. Cl. 366—75 17 Claims



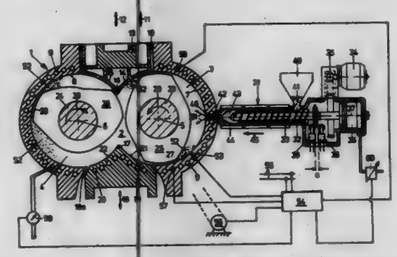
1. In a twin screw extruder for processing plastic material having a housing provided with a plurality of juxtaposed housing segments arranged axially in succession and defining two longitudinal, overlapping bores respectively containing two coaxially arranged extruder screws, rotatable about respective longitudinal axes, and having intermeshing threads, one of said housing segments serving for degassing the plastic material and communicating with a degassing chamber, said one housing segment having a transverse, radial opening in which an insert member is fitted, said insert member having a degassing opening providing communication between the degassing chamber and the bores in said housing, the improvement wherein said degassing opening in said insert member tapers in widening fashion in the direction from said longitudinal bores to said degassing chamber, said degassing opening having a longitudinal axis disposed in a plane passing through the longitudinal axes of said screws.

5,297,865

METHOD AND APPARATUS FOR THE MIXING OF MIXING MATERIAL WITH THERMOPLASTIC MATERIAL

Wolfgang Engel, Freudenberg-Oberfischbach; Andreas Limper, Wenden-Schönau, and Walter Hilder, Olpe, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer Gummitechnik GmbH, Fed. Rep. of Germany

Filed Aug. 22, 1991, Ser. No. 748,647
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028064
Int. Cl.[5] B28C *7/10*; B01F *15/02*
U.S. Cl. 366—76 7 Claims



1. A mixing apparatus for the mixing of mixing material, such as fillers and/or cauotchouc, with thermoplastic material, the thermoplastic material being melted and the mixing material and the molten thermoplastic material being subjected to a common mixing process, which mixing apparatus comprises
an internal mixer with a mixing chamber (2),
a plastics processing machine (31) with an injection unit,
an injection channel (42) connecting the injection unit of the plastics
processing machine (31) with said mixing chamber (2), and
a valve (46) in the injection channel (42) adjacent to the mixing chamber (2).

5,297,866

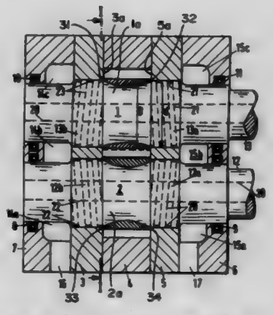
APPARATUS FOR PRODUCING A CONTROLLABLE UNIFORM CONVEYING PRESSURE FOR PROCESSING HIGHLY VISCOUS RUBBER OR THERMOPLASTICS

Gerd Capelle, Langenhagen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 944,333
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130312
Int. Cl.[5] B29B *1/06*
U.S. Cl. 366—097 7 Claims

1. An apparatus for producing a controllable uniform conveying pressure for processing highly viscous rubber or thermoplastic material, the apparatus comprising:

a housing having an inlet opening for receiving the material and an outlet for passing the material from the housing;
two shafts rotatably journalled in said housing and defining respective longitudinal axes;
each of said shafts being subdivided into a left-hand section, a center section and a right-hand section;
said shafts having respective toothed profiles at said respective center sections thereof;
said shafts being arranged side by side so as to cause said toothed profiles to intermesh in seal-tight contact while rotating to thereby receive the material from said inlet and convey the material to said outlet;
first mounting means for holding said left-hand sections of said shafts and second mounting means for holding said right-hand sections of said shafts thereby guiding and keeping said toothed profiles in alignment with each other as they rotate to convey the material;
said shafts having a diameter (d) at said left-hand and right-hand sections and said toothed profiles each having a root circle diameter (D) corresponding approximately to said diameter (d);



said root circle diameter (D) being slightly greater than said diameter (d);
said left-hand section and said center section of each shaft conjointly defining a left-hand annular surface in a plane perpendicular to the axis of the shaft;
said right-hand section and said center section of each shaft conjointly defining a right-hand annular surface in a plane perpendicular to the axis of the shaft;
said annular surfaces each having a width corresponding to one half of the difference of said diameters;
said first mounting means including a first plate for rotatably holding the left-hand section of each of said shafts;
said first plate having a surface in contact engagement with both of said left-hand annular surfaces thereby preventing a portion of the material from getting therebetween;
said second mounting means including a second plate for rotatably holding the right-hand section of each of said shafts; and,
said second plate having a surface in contact engagement with both of said right-hand annular surfaces thereby preventing a portion of the material from getting therebetween.

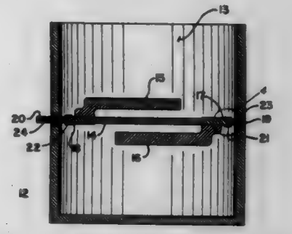
5,297,867

MIXER APPARATUS

Lanny D. Holman, 340 Linden, Excelsior Springs, Mo. 64024

Filed Mar. 8, 1993, Ser. No. 27,421
Int. Cl.[5] B01F *7/02*
U.S. Cl. 366—349 2 Claims

1. A mixer apparatus, comprising,
a container, the container including a continuous side wall and a container cavity, with the side wall in surrounding relationship relative to the container cavity,
and
a rigid first shaft positioned within the container cavity diametrically aligned with the container side wall, with the rigid first shaft having a first mixing blade and a second mixing blade fixedly mounted to the first shaft in a spaced relationship, with the first mixing blade and the second mixing blade extending in a parallel relationship in adjacency to the first shaft, with the first mixing blade and the second mixing blade arranged in a substantially coplanar relationship relative to one another, and
the first shaft includes a first shaft first end having a right hand thread, and a first shaft second end having a left hand thread, and a second shaft mounted in a coaxially aligned relationship relative to the first shaft first end, and a third shaft mounted coaxially in relationship to the first shaft second end, with the second shaft having a second shaft collar threadedly receiving the first shaft first end, the



third shaft having a third shaft collar threadedly receiving the first shaft second end, with the second shaft collar arranged in a sliding relationship relative to the second shaft and the third shaft collar arranged in a sliding relationship relative to the third shaft, and
the second shaft includes a right hand thread extending from the container side wall, the third shaft includes a left hand thread extending from the container side wall, with the third shaft projecting through the container side wall permitting rotation simultaneously of the third shaft, the second shaft, and the first shaft, and
the first blade includes a first blade slot, the second blade includes a second blade slot, and a third blade mounted to the first blade, including a first fastener directed through the third blade and the first blade slot, and a fourth blade, the fourth blade including a fourth blade fastener directed through the second blade slot adjustably securing the fourth blade to the second blade.

5,297,868

MEASURING THERMAL CONDUCTIVITY AND APPARATUS THEREFOR

John E. Graebner, New York, N.Y., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 23, 1993, Ser. No. 81,726
Int. Cl.[5] G01N *25/20, 25/18*
U.S. Cl. 374—44 19 Claims

1. Apparatus for measuring thermal conductivity comprising:
(a) a heat sink body having an open cavity;
(b) a body of thermally-insulating resilient material substantially filling the cavity;
(c) a thin membrane located on an exposed portion of the body of thermally-insulating resilient material;
(d) first and second spaced-apart temperature sensors located on, and attached to, first and second spaced-apart localized portions, respectively, of the thin membrane;
(e) a heat source located on and attached to a third localized portion of the thin membrane; and
(f) an auxiliary thermally conducting plate having a first end portion thermally attached to the heat sink body and a

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second end portion located on a fourth localized portion of the thin membrane, both the first and the second localized portions of the thin membrane being located between the third and fourth localized portions thereof.

6. A method of measuring the thermal conductivity of a sample body including the steps of:

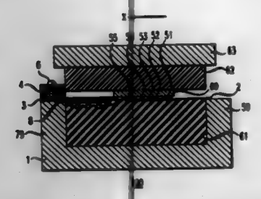
(a) providing an apparatus comprising:

(1) a heat sink body having an open cavity,

(2) a body of thermally-insulating resilient material substantially filling the cavity,

(3) a thin membrane located on an exposed portion of the body of thermally-insulating resilient material,

(4) first and second spaced-apart temperature sensors located on, and attached to, first and second spaced-apart localized portions, respectively, of the thin membrane,



(5) a heat source located on and attached to a third localized portion of the thin membrane, and

(6) an auxiliary thermally conducting plate having a first end portion thermally attached to the heat sink body and a second end portion located on a fourth localized portion of the thin membrane, both the first and the second localized portions of the thin membrane being located between the third and fourth localized portions thereof;

(b) placing the sample body in a position overlying the thin membrane and in thermal contact with the first and second temperature sensors, with the heat source, and with the auxiliary plate; and

(c) placing a thermally insulating medium on the sample body.

5,297,869

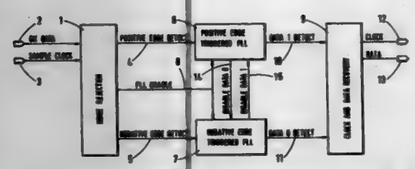
APPARATUS AND METHOD FOR SYNCHRONISING A DIGITAL DATA CLOCK IN A RECEIVER WITH A DIGITAL DATA CLOCK IN A TRANSMITTER

Simon Benham, Reading, England, assignor to Research Machines PLC, Oxford, England

Filed Mar. 26, 1992, Ser. No. 858,344

Int. Cl.[5] H03D *3/24*; H04L *7/00*

U.S. Cl. 375—110 **11 Claims**



1. A receiving apparatus for synchronising a digital data clock in a receiver with a digital data clock in a transmitter, said receiver being for receiving encoded data formed by a plurality of bits, each said bit having a predetermined period, said receiver including means for detecting positive and negative going edges of said encoded data and to provide positive and negative edge detection signals indicative thereof, a first phase locked loop for receiving said positive edge detection signals, a second phase locked loop for receiving said negative edge detection signals, said first and second phase locked loops including means for determining whether an edge is in substantially the middle of a bit period indicative of a data edge or an edge at the end of a bit period indicative of a non-data edge, and clock and data recovery means connected to receive an output signal indicative of a data edge from said first and second phase locked loops respectively, said recovery means reproducing said transmitted data bits in dependence upon output signals from the first and second phase locked loops, whereby an output signal from said first phase locked loop indicates to said recovery means a logical "1" was transmitted and an output signal from said second phase locked loop indicates to said recovery means a logical "0" was transmitted.

5,297,870

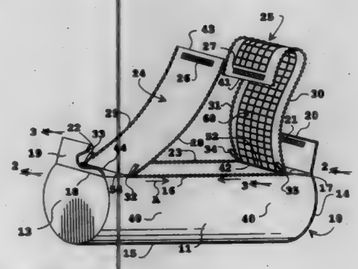
BAG WITH OVERLAPPING CLOSURE FLAPS

Henry H. Weldon, 17207 N. 49th Ave., Glendale, Ariz. 85308

Filed Aug. 3, 1992, Ser. No. 923,609

Int. Cl.[5] B65D *33/16*

U.S. Cl. 383—59 **6 Claims**



1. A bag including

(a) a bottom;

(b) a top with an opening formed therethrough, said opening including first and second spaced apart opposing end edges (42,44) and first and second spaced apart opposing side edges (16,23) each extending between said opposing end edges;

(c) a pair of opposed spaced apart ends extending downwardly from said top and upwardly from said bottom;

(d) a pair of opposed spaced apart sides each extending upwardly from said bottom, downwardly from said top, and laterally from said ends;

(e) a first tongue (25) having a proximate end attached adjacent said first end edge (42) of said opening and having a free distal end extending outwardly from said first end edge;

(f) a second tongue having a proximate end attached adjacent said second end edge (44) of said opening and having a free distal end extending outwardly from said second edge, said first and second tongues normally overlapping and each being sized to completely close said opening;

(g) attachment means for detachably securing said distal end of

(i) said first tongue to said side edges (16,23) of said opening to close completely said opening and cover and extend over said second tongue when said free distal end of said second tongue is inside said bag intermediate said first tongue and said bottom; and,

(ii) said second tongue to said side edges (16,23) of said opening to close completely said opening and cover and extend over said first tongue when said free distal end of said first tongue is inside said bag intermediate said second tongue and said bottom;

said attachment means detachably securing to said side edges at any given time only one of said first and second tongues.

5,297,871

PAPER FEEDING CONTROL APPARATUS AND METHOD FOR PRINTERS

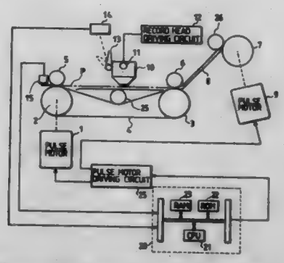
Satoshi Fujioka, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,106

Claims priority, application Japan, Nov. 30, 1990, 2-337279; Aug. 9, 1991, 3-225214

Int. Cl.[5] B41J *19/92*

U.S. Cl. 400—568 **7 Claims**



5. A printing method comprising the steps of:

scanning a print head having a plurality of dot forming elements arranged with a predetermined dot pitch as measured in a paper advancing direction over the surface of a recording sheet in a print head scanning direction;

driving said print head with a recording signal to cause said printing head to print dots on said recording sheet in a line in a pattern determined by said recording signal;

advancing said recording sheet in the paper advancing direction by applying pulses to a pulse motor driving a paper-advancing mechanism;

determining a number of pulses applied to said pulse motor in accordance with both a predetermined line spacing between adjacent lines to be printed by said print head and a correction amount corresponding to a fraction of the dot pitch so as to eliminate blank spaces, overlapping and misalignment between adjacent lines printed by said print head.

5,297,872

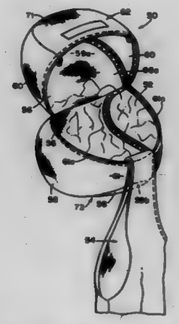
SHOPPING BAG AND POUCH THEREFOR

Theodore L. Caliguri, 436 Ardmore Ave., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 845,231, Mar. 3, 1992, abandoned. This application Mar. 5, 1993, Ser. No. 27,014

Int. Cl.[5] B65D *30/10*

U.S. Cl. 383—86 **7 Claims**



1. A generally ball shaped enclosure for carrying articles, comprising first and second elongated, flexible panels each having curved end margins and spaced apart, inwardly curved central margins, one of said end margins of said first panel being interconnected with one of said curved central portions of said second panel the other end margin of said first panel being spaced and unconnected with said second panel; and said curved end portions of said second panel being interconnected with said curved central portion of said first panel to define a generally spherical-shaped hollow body.

5,297,873

STOPPER ASSEMBLY FOR USE IN A LINEAR MOTION GUIDE UNIT

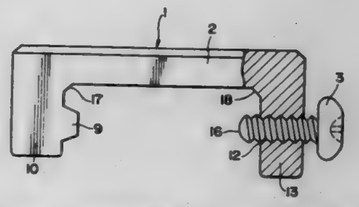
Yoshiyuki Komiya, Kawasaki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 947,321

Claims priority, application Japan, Sep. 20, 1991, 3-268972

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—45 **3 Claims**



1. A stopper assembly for use in a linear motion rolling contact guide unit including a rail formed with a pair of inner guide grooves on its opposite surfaces, a slider slidably mounted on said rail and formed with a pair of outer guide grooves, each located opposite to a corresponding one of said pair of inner guide grooves to thereby define a guide channel therebetween and a plurality of rolling members provided in said guide channel, said assembly comprising:

a main body; and

a bolt,

said main body including a horizontal section extending transversely across said rail and spaced apart therefrom and a pair of vertical sections, each extending along a corresponding one of said pair of side surfaces of said rail as spaced apart therefrom, one of said pair of vertical sections including a projection which may project into one of said pair of inner guide grooves of said rail and the other of said pair of vertical sections being formed with a threaded hole at a predetermined location, and

said bolt, when threaded into and through said threaded hole, extending into the other of said pair of inner guide grooves of said rail.

5,297,874

ELASTOMERIC BEARING

Kenneth W. J. Raines, Leicestershire, England, assignor to Dunlop Limited, a British Company, United Kingdom

Continuation-in-part of Ser. No. 704,399, May 23, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 971,228

Claims priority, application United Kingdom, Jan. 6, 1990, 9012278

Int. Cl.[5] F16C *27/06*; F16M *13/00*; F16F *7/00*; B64C *11/12*

U.S. Cl. 384—221 **21 Claims**

1. An annular elastomeric bearing for withstanding high compression load in a longitudinal direction of the bearing comprising a pair of rigid members defining a pair of confronting and spaced apart annular bearing surfaces which are disposed symmetrically about a longitudinal axis parallel with said longitudinal direction, a non-planar annular element of elastomeric material provided between said confronting sur-

faces, the elastomeric material having embedded therein a plurality of annular reinforcing interleaves of substantially rigid material each arranged to lie in a respective plane which is generally parallel in cross-section with said confronting surfaces and arranged to be acted upon only by forces from said elastomeric material, at least one of the reinforcing interleaves lying substantially mid-way between the confronting



surfaces of the rigid members having a greater thickness than at least one of the reinforcing interleaves which lies closest to at least one of said confronting surfaces and the element of elastomeric material and the embedded reinforcing interleaves each having, as considered about said longitudinal axis, a radial extent which is greatest at one axial end and a minimum at the other axial end.

5,297,875

HEAD STRUCTURE FOR ROTATABLY SUPPORTING SHAFTS

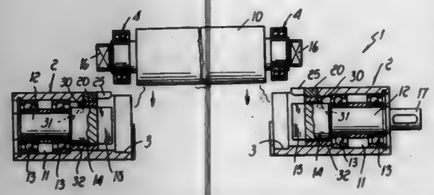
Giovanni Gattrugeri, Viale Famagosta 38, 20142 Milan, Italy

Filed Mar. 16, 1993, Ser. No. 31,986

Claims priority, application Italy, Mar. 24, 1992, MI92A000693

Int. Cl.[5] F16C *13/02, 43/04*

U.S. Cl. 384—419 **7 Claims**



1. Head structure for rotatably supporting shafts, comprising:

a pair of fixed head bodies (2) each of which defines a partially open seat (3) for removably accommodating bearing elements (4) connected to opposite ends of a shaft (10) to be supported;

a pin element (12) rotatably supported in an axial cavity (11) of one of said head bodies, said pin element having a first end (17) for connection to means for driving the pin and a second end (15) for connection to an end (16) of the shaft; and

a slider-like portion (20) for each of said fixed head bodies and slidably connected thereto, said slider-like portion being slidably moveable between an open position in which said seat (3) is able to receive the bearing elements (4) of the shaft and a closed position in which said slider-like portion closes said seat so that said bearing elements are supported by said seat and by said slider-like portion.

5,297,876

PAGE PRINTER WITH INTERNAL AND EXTERNAL MEMORIES

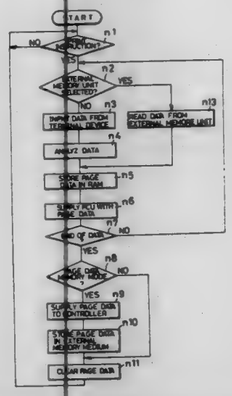
Shinji Imagawa, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1992, Ser. No. 896,098

Claims priority, application Japan, Jun. 10, 1991, 3-137844

Int. Cl.[5] B41J *5/48*

U.S. Cl. 400—61 **7 Claims**



1. A page printer for printing a document by a page on receiving printing data sent from an external device, said printer comprising:

printing means for performing a printing process based on page data;

page data preparing means for preparing page data based on printing data input received from the external device;

external memory means having a capacity for storing said prepared page data;

storage controlling means for supplying said prepared page data to said external memory means after printing the document to store said prepared page data into said memory means;

selecting means for alternatively selecting either said external memory to print out page data which have once been printed or said page data preparing means to print out newly prepared page data; and

supply means for supplying said printing means with page data from a selected one of said page data preparing means and external memory means based on the selection by said selecting means.

5,297,877

PRINTER HAVING COLOR DUMPING FUNCTION

Naoyuki Nishikawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,500

Claims priority, application Japan, Dec. 28, 1990, 2-409291; Nov. 25, 1991, 3-309236

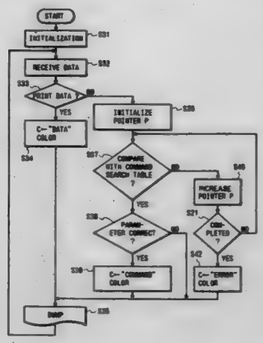
Int. Cl.[5] G06F *13/00*

U.S. Cl. 400—76 **24 Claims**

1. An information generating method, comprising the steps of:

receiving a group of code information;

detecting consumption amounts of coloring materials which can be used when outputting the code information group; and



determining a color to output the code information group in accordance with consumption amounts detected in said detecting step.

5,297,878

METHOD OF THERMAL WAX TRANSFER PRINTING

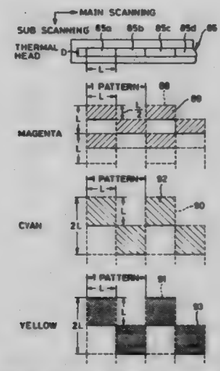
Hitoshi Saito; Masamichi Sato; Kenji Yamakawa, and Yasuko Sonoda, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 699,581, May 14, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,813

Claims priority, application Japan, May 15, 1990, 2-124474; May 24, 1990, 2-134345; Jun. 21, 1990, 2-163726

Int. Cl.[5] B41J *2/32*

U.S. Cl. 400—120 **18 Claims**



1. A color image printing method for printing a half tone color image onto recording paper with ink dots of at least three colors yellow, magenta, and cyan, said ink dots being recorded in picture cells by a recording head in which a plurality of recording elements are arranged along a main scan direction perpendicular to a sub scan direction, and a length of said ink dots in said sub scan direction being changes in accordance with a predetermined picture cell density, said method comprising the steps of:

controlling the length of the picture cells of two of said three colors in said sub scan direction so as to be twice as long as the length of the picture cells of the one remaining color in said sub scan direction; and

shifting respective positions for said three colors of adjacent picture cells in said main scan direction by half said length of said respective picture cells in said sub scan direction.

5,297,879

MECHANISM FOR PREVENTING SLACK IN PRINTER CARBON RIBBON

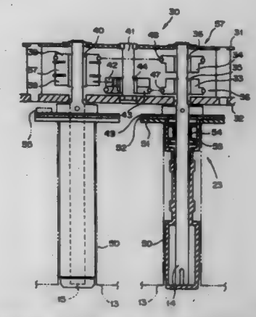
Tadahisa Oikawa, Iwate, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Apr. 15, 1993, Ser. No. 47,820

Claims priority, application Japan, Apr. 27, 1992, 4-131350

Int. Cl.[5] B41J *31/14*

U.S. Cl. 400—234 **11 Claims**



1. A mechanism for preventing slack in a printer carbon ribbon wherein a carbon ribbon feed shaft is always provided with a rotational force acting in reverse direction to a carbon ribbon feed direction irrespective of the direction of rotation of a carbon ribbon take-up shaft, the mechanism comprising:

a printing mechanism for printing characters on a printable medium as the printable medium is fed thereto;

a carbon ribbon feed shaft for feeding a carbon ribbon to enable the printing on the printable medium;

a carbon ribbon take-up shaft for taking up the carbon ribbon;

a slip mechanism provided on the carbon ribbon feed shaft; and

a reverse rotation mechanism for applying a rotational force to the carbon ribbon feed shaft in a reverse direction from that for feeding the carbon ribbon, the reverse rotation mechanism having a first reverse rotation sub-mechanism for applying a rotational force to the carbon ribbon feed shaft in the reverse direction from that for feeding the carbon ribbon when the printable medium is being fed in the forward direction and a second reverse rotation sub-mechanism for applying a rotational force to the carbon ribbon feed shaft in the reverse direction from that for feeding the carbon ribbon when the printable medium is being retracted in the reverse direction;

the first reverse rotation sub-mechanism comprising a first drive means disposed on said carbon ribbon take-up shaft and driving said take-up shaft through a first one-way clutch, and further comprising an intermediate means, the first drive means driving the intermediate means, said intermediate means driving a first belt member, said first belt member being coupled to said carbon-ribbon feed shaft through a second one-way clutch, whereby when said first drive means rotates in a first direction so as to take up carbon ribbon on said take-up shaft, said first one-way clutch drives said take-up shaft to take-up carbon ribbon and said intermediate means drives said carbon-ribbon feed shaft through said second one-way clutch in a direction opposite to the direction for feeding carbon ribbon from said feed shaft to prevent slack in said carbon ribbon, and when said first drive means rotates in a second direction opposite said first direction, said first one-way

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clutch does not drive said take-up shaft and said second one-way clutch does not drive said feed shaft;

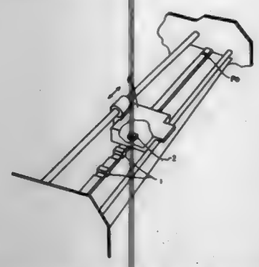
said second reverse rotation sub-mechanism comprising said first drive means driving a second belt member, said second belt member coupled to said carbon-ribbon feed shaft through a third one-way clutch, whereby when said first drive means rotates in the first direction so as to drive said take-up feed shaft to take-up carbon ribbon, said third clutch prevents driving of said feed shaft by said second belt member, and when said first drive means rotates in the second direction opposite to the first direction, said third clutch drives said feed shaft in a direction opposite to the direction for feeding carbon ribbon.

5,297,880

METHOD FOR SETTING AN APPARATUS HAVING A SENSOR

Hiroyuki Kawanishi; Kazuaki Ikeda, and Yoichi Kimura, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 762,816
Claims priority, application Japan, Sep. 12, 1990, 2-242258
Int. Cl.[5] B41J *29/42*
U.S. Cl. 400—703 **11 Claims**



1. A function setting method for an apparatus having a sensor mounted to be displaceable in a given direction during operation of the apparatus, and a detection object having first and second different positions spaced in said direction, said detection object being selectively settable to either of said first and second different positions, said first and second positions corresponding to first and second states of a given function of said apparatus, whereby said sensor can detect the position of said detection object during displacement of said sensor, said method comprising

selectively setting said detection object at one of said first and second positions,

sensing each of said first and second positions to determine the presence or absence of the detection object thereat while displacing the sensor in said direction, and, in response to said sensing of said object at one of said first and second positions and the absence of said object at the other of said first and second positions:

setting the state of said function in said apparatus to the state corresponding to said one position,

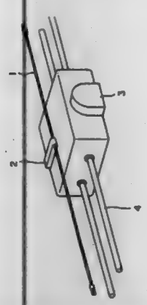
wherein said sensor produces an output signal in response to detection of a position of said detection object, and further comprising determining a middle point of a range defined by positions at which the output signal from said sensor rises above and falls below a predetermined amplitude, determining the output signal corresponding to the nearest one of said first and second positions to said middle point, and setting said function to the state corresponding to said nearest position.

5,297,881

PRINTING MACHINE CARRIAGE HAVING A MAGNETIC ENCODER

Noritaka Ishiyama, Kawasaki, Japan, assignor to Mitsubishi Steel Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 874,804, Apr. 28, 1992, abandoned. This application Dec. 22, 1992, Ser. No. 995,545
Claims priority, application Japan, May 16, 1991, 3-139413
Int. Cl.[5] B41J *19/00*
U.S. Cl. 400—705 **16 Claims**



1. A printing machine for printing at printing positions along a line, and for performing a positional control by a linear encoder, the printing machine comprising:

a linear encoder memory having a line-shaped magnetic recording medium formed of an alloy consisting essentially of iron, chromium and cobalt, said alloy not containing more than 0.03 weight % carbon, said linear encoder memory extending parallel along a line of printing positions; and

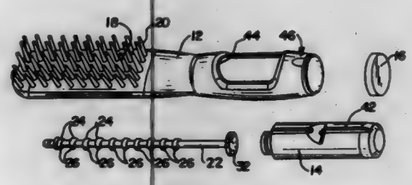
detecting means, coupled to said magnetic recording medium and being movable relative to said magnetic recording medium for detecting a magnetic record on said magnetic recording medium, said detecting means comprising a magnetic head which includes a magnetic sensor element and a supporting mount, said supporting mount being disposed opposite the magnetic sensor element and being in contact with the magnetic sensor element, said supporting mount and magnetic sensor element together forming means for surrounding said line-shaped magnetic recording medium and for transversely and slidably receiving said line-shaped magnetic recording medium between said supporting mount and said magnetic sensor element.

5,297,882

LIQUID DISPENSING BRUSH WITH CAM VALVE

James R. Kornides, 1913 Fairwood La., State College, Pa. 16803

Filed Jan. 28, 1993, Ser. No. 10,345
Int. Cl.[5] A46B *11/02*
U.S. Cl. 401—184 **17 Claims**



1. A liquid dispensing brush comprising:

a housing having a head, a hollow head chamber contained within said head and a handle attached to said head, said handle including an open-topped container receiving section;

a first bristle having a passageway passing therethrough attached to said head, said passageway including an inlet portion and an outlet portion, said inlet portion of said passageway intersecting said head chamber;

a shaft received by said head chamber having a longitudinal axis passing therethrough;

a cam attached to said shaft and received in said head chamber and positioned adjacent to said inlet portion of said bristle passageway;

an open-topped container for holding a fluid received by said handle in said container receiving section, said container having a flexible portion, whereby said flexible portion of said container exposed by said open-topped container receiving section, wherein said shaft is positioned externally of said open-topped container;

means for coupling said container to said head chamber so that said container is in fluid communication with said head chamber; and

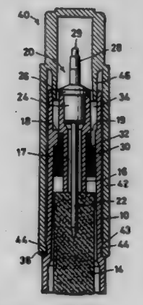
means for rotating said shaft about the longitudinal axis and adjusting the cam position with respect to said inlet portion of said first bristle passageway positioned externally of said open-topped container, so that when said cam is in a first position, said cam blocks [and]said inlet portion of said passageway of said first bristle and when said cam is in a second position, said cam is spaced apart from said inlet portion of said first bristle passageway so that said container, said head chamber and said bristle passageway are in fluid communication and when said exposed flesible portion of said container is depressed, a fluid can be forced from said container through said chamber and said first bristle passageway so that the fluid can exit said outlet portion of said passageway.

5,297,883

LIQUID APPLICATOR WITH DRYING PREVENTION AGENT

Tatsuya Ozu, Kadoma, Japan, assignor to Kabushiki Kaisha Sakura Kurepasu, Osaka, Japan

Filed Dec. 1, 1992, Ser. No. 983,752
Claims priority, application Japan, Dec. 10, 1991, 3-109568[U]; Dec. 10, 1991, 3-109569[U]; Aug. 10, 1992, 4-213039
Int. Cl.[5] B43K *9/00, 8/02, 7/00*
U.S. Cl. 401—202 **12 Claims**



1. A liquid applicator comprising:

a main body container having a liquid reservoir portion for containing liquid to be applied;

applicator shaft supporting means provided inside of the main body container and in a forward position of the liquid reservoir portion for supporting an applicator shaft communicating with the liquid reservoir portion and having a nib;

the applicator shaft supporting means comprising a hollow cylinder provided inside of a lead end portion of the main body container and adapted for holding the applicator shaft therein, the hollow cylinder having an outer diameter smaller than an inner diameter of the liquid reservoir portion of the main body container, and defining a space between the hollow cylinder and main body container;

a cap mountable on the main body container for covering the nib of the applicator shaft; and

a mass of volatile drying prevention agent provided in the space between the main body container and the hollow cylinder;

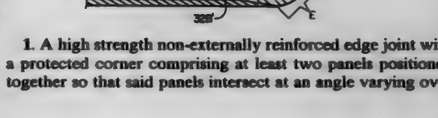
whereby vapor of the drying prevention agent oozes to the nib of the applicator shaft and prevents the nib of the applicator shaft from drying out.

5,297,884

TOOTHBRUSH CLEANING SYSTEM

Alberto Cubillas, Box 7, Guaymas, Sonora, Mexico 85400

Filed Dec. 28, 1992, Ser. No. 997,315
Int. Cl.[5] A46B *11/00, 11/06*
U.S. Cl. 401—268 **4 Claims**



1. A toothbrush cleaning system for a toothbrush having a handle, a head and a plurality of bristle tufts extending from said head, said cleaning system comprising:

a) said handle and said head having a longitudinal conduit extending therethrough;

b) said handle having a water inlet port fluidly connected to one end of said conduit on an opposite side of said handle from said bristle tufts;

c) said head having a plurality of water outlet ports fluidly connected to an opposite end of said conduit on a same side with said bristle tufts; and

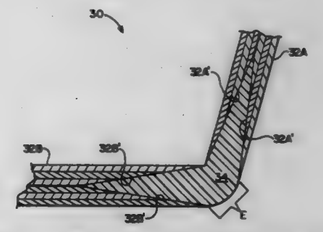
d) a resilient washer having a tapered neck which extends into said water inlet port, whereby said washer can be pressed against a water faucet to form a seal thereabout and allow a force of water from said water faucet to enter said water inlet port, travel through said conduit and exit said water outlet ports to clean toothpaste and debris from said bristle tufts.

5,297,885

HIGH STRENGTH EDGE JOINT WITH PROTECTED CORNER

Warren G. Hall, 407 Watts St., Durham, N.C. 27701

Continuation of Ser. No. 776,583, Oct. 11, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,548
Int. Cl.[5] F16B *12/46*
U.S. Cl. 403—231 **19 Claims**



1. A high strength non-externally reinforced edge joint with a protected corner comprising at least two panels positioned together so that said panels intersect at an angle varying over

the length of the intersection from about 60°–170°, said panels each defining a V-shaped groove having first and second spaced-apart legs along one side thereof wherein said first legs of said V-shaped grooves are in contact one with the other so as to form said variable angle and the second legs of said grooves are spaced-apart one from the other so as to form an open cavity at the juncture of said panels which is defined by the grooves within said adjacent panels and the open space between said second legs of said grooves, and a cementitious material filling said cavity to form said edge joint and protected corner thereof.

10. A method for making a high strength and non-externally reinforced edge joint with a protected corner comprising the steps of:

providing at least two edge joint panels wherein each of said panels defined a V-shaped groove having first and second spaced-apart legs along one side thereof;

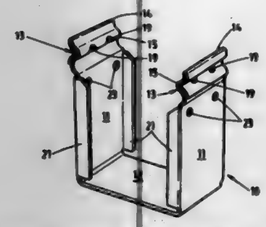
positioning said at least two edge join panels in abutting relationship wherein said panels intersect at an angle varying over the length of the intersection from about 60°–170° and wherein said first legs of said V-shaped grooves are in contact one with the other so as to form said varying angle and the second legs of said grooves are spaced apart one from the other so as to form an open cavity at the juncture of said panels which is defined by the grooves within said adjacent panels and the open space between said second legs of said grooves; and

filling said cavity with a cementitious material to form said edge joint and protected corner thereof.

5,297,886
CONNECTOR BRACKET

James M. Jansen; Simon J. Cooke, and Kym Males, all of Richmond, Australia, assignors to Stratco (Australia) Pty Limited, Richmond, Australia

Filed Nov. 20, 1992, Ser. No. 979,159
Claims priority, application Australia, Nov. 20, 1991, PK9584
Int. Cl.[5] F16B *7/00*
U.S. Cl. 403—232.1 6 Claims



1. A connector bracket for connecting an end of a first tubular frame member to a second frame member having two opposite sides and a pair of elongate recesses respectively located in and extending along said opposite sides, the connector bracket comprising

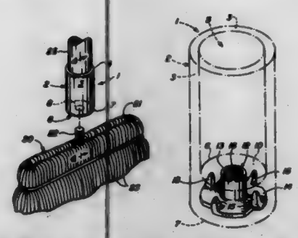
a U-shaped connector bracket having a pair of side arms and an end member extending between a first end of each said side arm at a dependent end of the bracket, which dependent end may be located within the end of said first tubular frame member, and

coupling means at a second end of each said side arm comprising a projection, each said projection directed inwardly, towards one another, said projections of said pair of sidearms being securable concurrently to said two opposite sides of the second frame member by each said projection being located within a respective said recess of the second frame member.

5,297,887
INJECTION-MOLDED RECEIVER

Stephen R. Williams, 530 Turkey Trail, Shreveport, La. 71115

Filed Aug. 21, 1992, Ser. No. 934,104
Int. Cl.[5] B25G *3/00*; A47K *5/02*; A47L *13/24*
U.S. Cl. 403—299 13 Claims

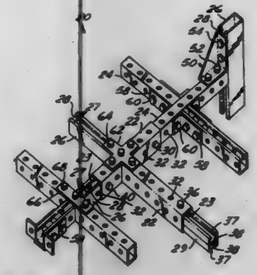


1. A handle-to-implement injection-molded receiver/connector comprising a receiver cap having a cap opening for receiving the handle and an insert barrel, barrel threads provided in said insert barrel, a barrel flange terminating one end of said insert barrel and flange cleats projecting from said barrel flange in spaced relationship with respect to said insert barrel, with said insert barrel, said barrel flange and said flange cleats embedded in said receiver cap for threadably receiving the implement.

5,297,888
TUBULAR FRAMING SYSTEM

Charles O. Nehls, Allen Park, Mich., assignor to Unistrut International Corp., Ann Arbor, Mich.

Continuation of Ser. No. 876,248, Apr. 30, 1992, Pat. No. 5,188,479. This application Jan. 21, 1993, Ser. No. 6,561
Int. Cl.[5] E04G *7/00*
U.S. Cl. 403—306 2 Claims



1. A framing system comprising:

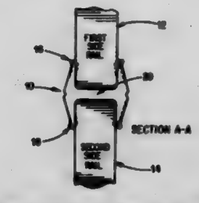
a closed tubular member having a generally polygonal cross-section with closed sides along the majority of its length defining a bore, said closed tubular member having a plurality of holes formed through at least two of the spaced sides, said holes spaced incrementally along said closed tubular member; and

an open channel member received within said closed tubular member and having a polygonal cross-section with closed sides along the majority of its length and at least one open side along the majority of its length defining a channel to receive an infinitely adjustable securement member, said open channel member having a plurality of holes formed through at least two of the spaced sides, said holes spaced incrementally along said open channel member, wherein the incremental spacing between said holes in said open channel member is equal to the spacing of said holes in said closed tubular member.

5,297,889
PACKAGING CLIP

Stephanie P. Crouse, Anderson, Ind., and Harold L. Bernard, Transfer, Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Continuation of Ser. No. 605,147, Oct. 29, 1990, Pat. No. 5,161,909, which is a continuation of Ser. No. 362,003, Jun. 6, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 970,676
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] F16B *2/20*; E06C *1/10*
U.S. Cl. 403—391 26 Claims



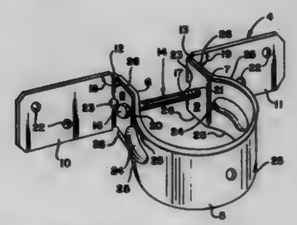
1. A clip for maintaining a first side rail of a stepladder adjacent to a second side rail of a stepladder which is in series with the first side rail comprising:

a first portion connected to a support element and a second portion connected to the support element, said first portion, second portion and support element are one continuous piece, said first and second portions define first and second essentially rectangular-shaped inner surfaces opening from opposite sides of said support element, respectively, which conform to the portion of the respective side rail that it receives for removably and frictionally holding the respective side rails in a self-gripping and form-fitting manner such that the side rails are maintained adjacent and in series to each other so that no damage is possible to the ladder by relative movement of the side rails under dynamic conditions brought about by motion during transportation.

5,297,890
WOOD-TO-PIPE CONNECTION

Alfred D. Commins, Danville, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Continuation of Ser. No. 839,127, Feb. 20, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,426
Int. Cl.[5] F16B *2/06*
U.S. Cl. 403—398 2 Claims



1. A wood-to-pipe connection comprising:

a. an elongated pipe member having a radius dimension;

b. a wood frame member disposed closely adjacent to said elongated pipe member;

c. a single piece sheet metal connector having a thickness of at least 12 gauge for attaching said wood frame member and said elongated pipe member including:

(1) a curvilinear portion having a radius dimension substantially equal to or greater than said radius dimension of said elongated pipe member for registering with and partially encircling said elongated pipe member and having first and second ends spaced one from the other and having edges formed with stiffening flanges on portions adjacent said first and second ends and mid portion indentations formed in said curvilinear portion adjacent said first and second ends for holding first and second lug members generally planar and parallel;

(2) said first lug member formed with an opening dimensioned to receive a headed bolt having a threaded distal end here through and to prevent said headed end from passing there through and said second lug member formed with a threaded opening dimensioned to threadably receive and engage said threaded distal end for holding said second lug member at a right angle to a second generally planar foot member, and said first and second lug members each having inner and outer ends and, each integrally and respectively connected at said inner ends to said first and second spaced ends of said curvilinear member;

(3) a first generally planar foot member and said second generally planar foot member each having inner and outer ends respectively integrally connected at said inner ends respectively to said outer ends of said first and second lug members along first and second bend lines at substantially right angles;

(4) said first and second lug members are formed as generally straight members extending respectively from said first and second spaced ends of said curvilinear portions to said connection with said inner ends of said first and second foot members; and said first and second lug members are each formed with side edges formed with stiffening flanges extending substantially along the entire length of both of said respective side edges and

(5) said headed bolt releasably attached to said first and second lug members for drawing said lug members toward one another thereby decreasing said radius dimension of said curvilinear portion and causing said curvilinear portion to frictionally engage said elongated pipe member;

d. said foot members are each formed with at least two longitudinally and transversely spaced openings;

e. at least four fastener means inserted through said openings in said foot members and attaching said foot members to said wood frame member causing said first and second generally planar foot members to remain generally planar during installation and use of said wood-to-pipe connection;

f. tightening means for engaging and turning said headed bolt; and

g. said first and second lug members have a limited length permitting only said tightening means to engage and turn said headed bolt.

5,297,891
CORNER CLIP FOR FRAME MEMBERS OF SCREEN DOORS AND THE LIKE

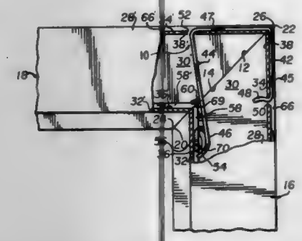
Jesus R. Rosa, Luquillo, P.R., assignor to Commonwealth of Puerto Rico, San Juan, P.R.

Filed Oct. 28, 1992, Ser. No. 967,735
Int. Cl.[5] F16B *12/50*
U.S. Cl. 403—402 7 Claims

1. A corner clip for releasably hooking together mitered corners of first and second frame members, each having a hollow interior which is rectangular in cross section and including a pair of side panels having inner faces spaced laterally apart a predetermined distance and joined together at their inner and outer edges by a pair of inner and outer edge panels having inner faces spaced vertically apart a predetermined distance, said clip comprising a U-shaped member of resilient flat material having a transverse width less than the transverse spacing between the inner faces of said side panels, said clip having first and second leg parts each having a free outer end

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and an inner end, said inner ends being integrally joined together by an intermediate part, the free outer end of said first leg part being bent to define an inwardly projecting hook engageable in a first opening in the outer edge panel of said first frame member, said second leg part being insertable into a second opening through the outer edge panel of said second frame member and having a length substantially greater than said predetermined vertical spacing between said inner faces of said inner and outer edge panels so that when the miters of said



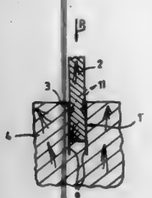
frame members are brought into abutting matching relationship, said hook of said first leg part is inserted into said first opening and said second leg part is inserted into said second opening, the free outer end of said second leg part will extend from the interior of said second frame member into the interior of said first frame member, said second leg part being biased so that at least a portion thereof will bear resiliently on a region of the inner face of the inner edge panel of said first frame member.

5,297,892

STRIP FOR JOINING TWO PIECES OF WOOD

Christian Prezioso, 6 rue Ambroise de St. Pol., Pexy 28150-Voves, France

Filed Aug. 13, 1992, Ser. No. 930,241
Claims priority, application France, Aug. 13, 1991, 91 10453
Int. Cl.[5] F16B *12/00*
U.S. Cl. 403—406.1 5 Claims



1. In combination with an edge of a first piece of wood and a second piece of wood formed with a transversely open groove having a longitudinally extending floor, a joining strip securing the edge in the groove, the strip being of U-section with a base and a pair of sides projecting from outer edges of the base, the strip being fitted over the edge of the first piece and into the groove of the second piece with the base lying flat on the floor, the strip being formed with

inner teeth projecting inward from the sides of the strip and poking substantially perpendicular to the sides into the first piece of wood, and

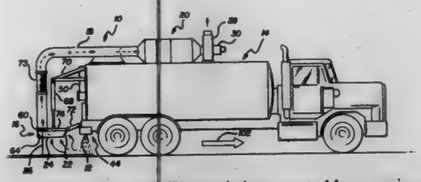
outer teeth projecting transversely outward from the strip past the base of the strip and into the floor of the groove and poking transversely into the second piece of wood.

5,297,893

SYSTEM AND METHOD FOR CONTROLLING EMISSIONS CREATED BY SPRAYING LIQUIDS FROM MOVING VEHICLES

John Corcoran, Los Angeles; Joseph W. Hower, Long Beach, and William A. Moseley, Redondo Beach, all of Calif., assignors to Manhole Adjusting Contractors Inc., Monterey Park, Calif.

Filed Jan. 5, 1993, Ser. No. 748
Int. Cl.[5] B01D *45/00*; E01C *23/00*
U.S. Cl. 404—72 26 Claims



1. A system for controlling emissions created by spraying a heated liquid paving composition from at least one nozzle of a moving vehicle onto a pavement surface, comprising:

a vacuum hood mountable to the vehicle in a supporting relationship at a location behind said at least one nozzle and above the pavement surface, said vacuum hood having at least one inlet and at least one outlet;

a fan communicating with said at least one outlet to create a partial vacuum within the vacuum hood and draw air containing said emissions through said at least one inlet; and

apparatus for receiving said air and extracting said emissions therefrom.

5,297,894

MACHINE AND METHOD FOR REPETITIVELY CUTTING EQUALLY SPACED AND DIMENSIONED HIGHWAY SURFACE DEPRESSIONS

Gerald A. Yenick, Zelienople, Pa., assignor to Safety Grooving & Grinding, Inc., Wauseon, Ohio

Filed Jul. 14, 1992, Ser. No. 913,553
Int. Cl.[5] E01C *23/09*
U.S. Cl. 404—90 19 Claims

19. A method of repetitively cutting depressions of substantially equal dimensions and at equal spacings between the depressions in a highway surface, said method comprising the steps of:

(a) continuously moving in a given direction on a highway surface a mobile chassis supporting a cutter mechanism having a cutting head rotatable about a first axis extending transversely to the given direction and capable of cutting a depression in the highway surface;

(b) concurrently with continuous movement of the mobile chassis, continuously rotating the cutting head relative to the mobile chassis about said first axis;

(c) continuously gauging the movement of the mobile chassis by engaging a rotatable gauge wheel with the highway surface to cause rotation of the wheel above a second axis in correspondence with the movement of the chassis; and

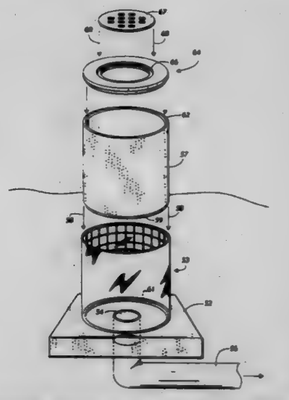
(d) repetitively moving, in response to rotation of the gauge wheel in gauging of the continuous movement of the mobile chassis, the continuously rotating cutting head in a preset sequence between a lowered cutting position and raised noncutting position relative to the highway surface to repetitively cut depressions in the highway surface having the substantially equal desired dimensions at the substantially equal desired spacings, said preset sequence defining the repetitive movement of the cutting head being defined by providing circumferentially displaced peripheral portions on a periphery of at least one cam, said at least one cam being rotatably driven above a third axis by rotation of the gauge wheel, said third axis being spaced from said first and second axes.

5,297,895

METHOD AND APPARATUS FOR CONTROLLING SILT EROSION

Ron Johnson, 1295 Villa Rica Rd., Powder Springs, Ga. 30073

Filed Sep. 16, 1991, Ser. No. 760,367
Int. Cl.[5] E02B *11/00*
U.S. Cl. 405—41 10 Claims



8. An apparatus for use in conjunction with a silt collecting pond to prevent silt from being washed by rainwater from land surrounding the collecting pond and for providing permanent rainwater drainage from the land after the silt collecting pond has filled with collected silt, said apparatus comprising:

a vertically extending upwardly open cage positionable within the collecting pond with the cage defining an interior volume;

control means on said cage with said control means being adapted to pass water into said interior volume at a predetermined flow rate while preventing passage of silt into said interior volume;

drain means communicating between said interior volume and a remote location outside of the silt collecting pond for draining water from the interior volume;

a sleeve having a shape corresponding substantially to the shape of said cage and being sized to be positioned in and to fit snuggly within said cage; and

grate means on the top of said sleeve for permitting ingress of water into the sleeve when the sleeve is in position within said cage;

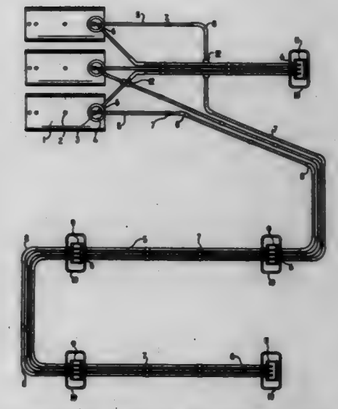
whereby silt bearing water flows into the collecting pond where the silt precipitates to and collects on the bottom of the pond while the water flows into the interior volume of the cage and is drained away from the pond and when the pond has filled with collected silt, the sleeve can be slid into position within the cage thus creating a permanent drain for collecting rainwater and directing it away from the filled silt pond.

5,297,896

ENVIRONMENTALLY SAFE UNDERGROUND PIPING SYSTEM

Michael C. Webb, Chester Springs, Pa., assignor to Environ Products, Inc., Lionville, Pa.

Continuation-in-part of Ser. No. 838,615, Feb. 19, 1992. This application Mar. 25, 1992, Ser. No. 857,361
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—52 32 Claims



1. A secondarily contained underground piping system which connects the dispensing pump of an underground storage tank to an above ground dispensing unit, comprising:

a) a originating chamber installed around the dispensing pump located at the beginning of a piping line providing a means of surface access, secondary containment, leak collection and having at least one opening in one of its side walls for pipeline access;

b) a terminating chamber installed under an above ground dispensing unit located at the end of a piping line, providing a means of surface access, secondary containment, leak collection and having at least one opening in one of its side walls for pipeline access;

c) a non-flexible containment piping section which is non-continuous comprising two or more straight non-flexible pipe lengths joined together by couplings, having an inside diameter of sufficient size, and a directional bend radius of sufficient length to permit a flexible supply section to be inserted from one end to the other, said sections interconnecting one chamber to the next through the openings in the side wall of the chambers;

d) a sealing device providing a means of sealing all pipe entry and exit openings in the side wall of the chambers, to the annular wall of the non-flexible containment pipe, whereby the joint is liquid tight and secure;

e) an originating plumbing assembly, providing a means of fluid shut-off and pump and flexible supply pipe interface, which is connected to the dispensing pump contained in the originating chamber;

f) a terminating plumbing assembly, providing an interface for the dispensing unit and a flexible supply pipe section, connected to the above ground dispensing unit by means of a safety valve in the terminating chamber; and

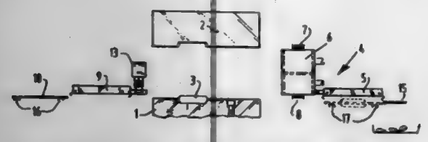
g) a flexible supply pipe section having couplings installed on each end as a means of interconnecting one plumbing assembly to the next through a non-flexible containment pipe section.

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5,297,897
SINGLE-STRIP MOLDING APPARATUS

Johannes L. G. M. Vesrooij, KG Duiven; Wouter B. Verwoerd, RK Malden, and Wilhelmus H. J. Harmsen, Al Wehl, all of Netherlands, assignors to ASM Fico Tooling B.V., Netherlands

PCT No. PCT/EP90/02032, § 371 Date May 20, 1992, § 102(e) Date May 20, 1992, PCT Pub. No. WO91/08095, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 23, 1990, Ser. No. 858,979
Claims priority, application European Pat. Off., Nov. 24, 1989, 89203003; Netherlands, Dec. 7, 1989, 8903015
Int. Cl.[5] B29C *45/02, 45/42, 45/76*
U.S. Cl. 425—116 **21 Claims**



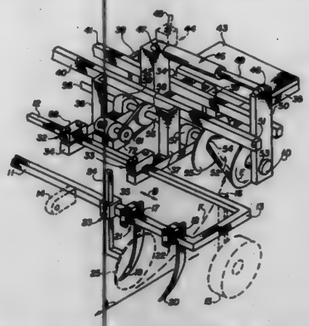
1. A single-strip molding apparatus, comprising:
a mold formed by an upper mold half and a lower half vertically movable relative to one another and closable onto one another;
means for placing a leadframe supporting an electronic component into a recess in one of the mold halves;
means for carrying molding material into a cavity of the mold;
means for exerting pressure and supplying heat to said cavity to liquify the molding material;
channels for supplying said liquified molding material to said recess;
means for heating the mold halves;
means for cleaning the mold halves; and
means for removing a molded product from the mold, wherein the means for cleaning and for removing the molded product are unified into a cleaning-discharge unit which removes the product from one side of the mold while said means for placing the leadframe supplies said leadframe from another side of the mold, and further, wherein said cleaning discharge unit and said means for placing the leadframe perform reciprocating movements into the mold.

5,297,898
APPARATUS FOR EXTRACTING DRIP IRRIGATION TUBING

Howard A. Wuertz, 3227 West Bechtel Rd., Coolidge, Ariz. 85228

Filed Jul. 10, 1992, Ser. No. 911,720
Int. Cl.[5] F16L *1/032*
U.S. Cl. 405—154 **3 Claims**

1. Apparatus for extracting an elongate strip of tubing from a bed in a field, said bed being bounded on either side by a furrow, said apparatus comprising
(a) a frame;
(b) at least one elongate member carried on said frame and having a distal end carrying a tooth for breaking up the ground in the bed and at the surface of one of the furrows along a line of travel generally spaced apart from and parallel to said elongate strip of tubing in a direction of travel generally parallel to said elongate strip of tubing;
(c) a disk intermediate and spaced apart from said elongate member and said tubing for breaking up the ground in the bed in a direction of travel generally parallel to said elongate strip of tubing;
(d) an assembly mounted on said frame to draw said strip of tubing from the ground while said apparatus moves in said direction of travel, said assembly including
(i) a take-up roll having a distal end and rotating about a selected axis, and
(ii) a plate adjacent said distal end, perpendicular to said

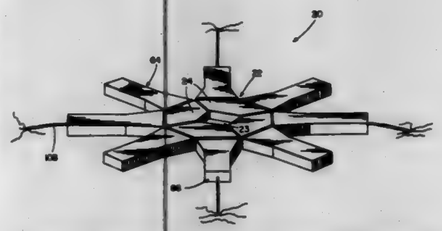


axis, and extending outwardly from said distal end and said axis to prevent tubing wound on said take-up roll from sliding off of said distal end in a direction parallel to said axis.

5,297,899
MODULAR FLOATING ENVIRONMENTAL MOORING SYSTEM

John T. Culley, Mystic, Conn., assignor to Sea Star Atlantic, Inc., Mystic, Conn.

Filed Dec. 5, 1991, Ser. No. 803,150
Int. Cl.[5] B63B *35/38*
U.S. Cl. 405—219 **19 Claims**



1. A modular environmental mooring system for flotation on a body of water comprising:
a central dock member of generally annular configuration including a plurality of segments, each having at least one planar outwardly facing endwall and a pair of planar sidewalls lying in spaced apart angularly disposed planes, said segments being arranged in a contiguous side-by-side relationship;
first connection means joining each adjacent pair of said segments at said mutually facing sidewalls;
a plurality of elongated finger dock members, each having proximal and distal ends and extending radially outwardly from said proximal end disposed at said end wall of an associated one of said segments to said distal end; and
second connection means joining said proximal end of each of said finger dock members to said endwall of its associated one of said segments;
wherein each of said segments has a generally flattened inner surface spaced from said planar end wall, said inner surfaces of all of said segments comprising said central dock member together defining a generally squared opening for unrestricted access to the water.

8. An elongated component of high aspect ratio for a modular floating docking system comprising:

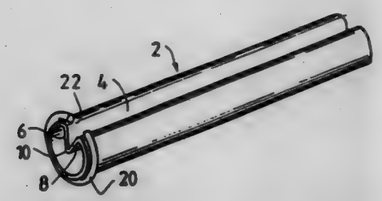
an elongated plastic foam core member of substantially uniform thickness with substantially flat upper and lower surfaces;
an upper planar structural sheet member coterminously overlying said plastic foam core member and bonded thereto; and
a lower planar structural sheet member coterminously underlying said plastic foam core member and bonded thereto; and
absent any structural sheet member contiguous to said plastic foam core and lying in planes transverse of said upper and lower planar sheet members, an elastomeric outer coating totally encapsulating, with no discontinuities, said plastic foam core member and said structural sheet members resulting in maximized structural and environmental integrity at a minimum weight.

9. A method of fabricating an elongated component of high aspect ratio for a modular floating docking system comprising the steps of:
forming an elongate plastic foam core member having substantially uniform thickness and substantially flat upper and lower surfaces, substantially flat sidewalls lying in spaced apart planes generally perpendicular to the upper and lower surfaces, and substantially flat endwalls lying in spaced apart planes generally perpendicular to the upper and lower surfaces;
bonding to the upper surface a planar structural sheet member coterminous with the upper surface;
bonding to the lower surface a planar structural sheet member coterminous with the lower surface; and
while leaving the flat sidewalls free of contiguous structural sheet members, applying to the entire outer surface of said plastic foam core member and said planar structural sheet members an elastomeric outer coating of substantially uniform thickness totally encapsulating, with no discontinuities, said plastic foam core member and said structural sheet members whereby maximized structural and environmental integrity is achieved at a minimum of weight.

5,297,900
ROCK STABILIZER

Hendrik H. Witzand, 13 Cedar Street, Langwarrin 3910 Victoria, Australia

PCT No. PCT/AU89/00419, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/04085, PCT Pub. Date Apr. 19, 1990
PCT Filed Sep. 29, 1989, Ser. No. 671,852
Claims priority, application Australia, Oct. 10, 1988, PJ0873
Int. Cl.[5] E21D *20/00*
U.S. Cl. 405—259.3 **9 Claims**

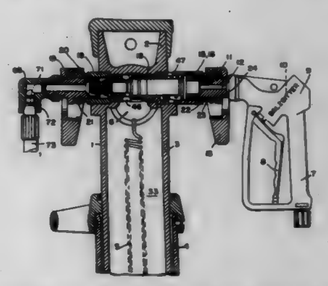


1. A stabilizer for stabilizing earth, rock or other structures, said stabilizer comprising a generally hollow elongate body in which a portion of the wall forming said body is provided with a flute means for hinging, said body defining a tube having a generally circular cross-section and said wall forming said body being continuous, said flute means including two opposed side wall portions interconnected together at their respective inboard edges, said two opposed side wall portions extending generally parallel to the longitudinal axis of said body over substantially the entire length of said body and extending generally radially inwardly into said body to substantially the central axis thereof, said opposed side wall portions being capable of moving relative to each other so as to vary the outside diameter of said body when said body is received in a bore in use.

5,297,901
INDIVIDUAL HYDRAULIC PROP WITH FILLING/DRAWING VALVE AND PRESSURE FLUID RETURN

Richard Voss, Schwerte, Fed. Rep. of Germany, assignor to Grubenausbau GmbH, Schwerte, Fed. Rep. of Germany

Filed Nov. 9, 1992, Ser. No. 973,737
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140317
Int. Cl.[5] E21D *15/44*
U.S. Cl. 405—290 **12 Claims**



1. A hydraulic prop for individual prop supports in underground mining and tunnel construction, comprising a case integrally formed with a prop head for filling and drawing, a first valve on an end side of the case, first and second coupling pieces on the end side for receiving a nozzle of a setting gun and a hose connection respectively, a second valve on an inner end of the nozzle, a third valve at an opposite end of the nozzle for non-returning, and a fourth valve for pressure-limiting and for securing the prop against overload, a valve case of the fourth valve simultaneously forming a piston for the third valve, the piston having a seal shoulder formed adjacent a seal seat on an inside wall of the case and the hose connection being connectable by clamping to the coupling piece for removing the pressure medium in an environmentally harmless manner, wherein on the first and second identically formed coupling pieces are on first and second sides of the case, the first and second coupling pieces having first and second gripping grooves respectively, and first and second locking shoulders, further wherein the valve case is associated with a push bolt movable against a force of a return spring against a back wall of the valve case of the fourth valve thereby influencing movement of the fourth valve, the push bolt being insertable in a coupling mouth of the setting gun, further wherein the hose connection comprises a drop latch connected to a suction pump connection having a coupling opening surrounding a piston case of the first valve thereby forming an annular channel around the piston case.

5,297,902
CUTTER INSERTS FOR SIGN ENGRAVING MACHINE

George F. Jambor, Cedarburg, and Keith W. Schroeder, Milwaukee, both of Wis., assignors to Brady USA, Inc., Milwaukee, Wis.

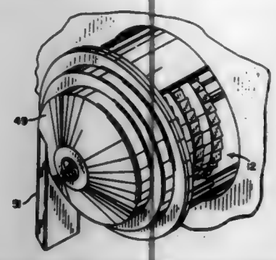
Filed Mar. 2, 1993, Ser. No. 25,013
Int. Cl.[5] B23C *5/02, 5/24*
U.S. Cl. 407—42 **4 Claims**

1. One of a pair of cutter inserts for use in a sign engraving machine, the cutter insert comprising:
a body with a top edge and a bottom edge;

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a cutter tip projecting longitudinally from the bottom edge of the body and substantially parallel to a longitudinal axis of the cutting tip;

wherein the cutter tip is formed as approximately one-quarter of a conical section around its longitudinal axis;



wherein the body of the cutter insert has a side edge running from the top edge towards the bottom edge at an angle of approximately 15° relative to the longitudinal axis of the cutter tip; and

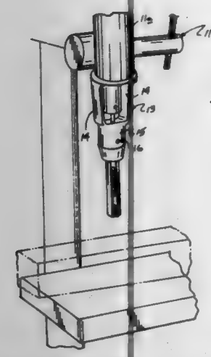
wherein the cutter tip is formed with an inverted right angle cutout portion from the side edge of the body.

5,297,903

POLYGONAL MORTISING DRILL TOOL ARRANGEMENT

Gordon K. Hilton, 721 W. Person #5, Phoenix, Ariz. 85013

Filed Feb. 8, 1993, Ser. No. 14,751
Int. Cl.[5] B23B *51/08*
U.S. Cl. 408—30 6 Claims



1. A polygonal mortising drill tool arrangement, comprising,

a drill press assembly, having a stationary drill press head, and a drill chuck rotatably mounted relative to the drill press head, with a drill bit mounted within the drill chuck coaxially aligned relative to the drill chuck and the drill press head, and

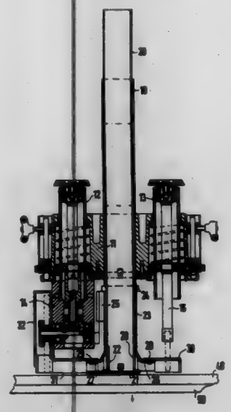
a collar head fixedly mounted to the drill press head, the collar head including spaced flanges mounted to the drill press head extending below the drill press head terminating in a support head, with the support head coaxially aligned with the drill press head and the drill chuck, with the support head mounting a polygonal guide tube, with the drill rotatably and complementarily mounted within the guide tube.

5,297,904

MULTI-SPINDLE BORING MACHINE

Siegfried Kensch, Plochingen, Fed. Rep. of Germany, assignor to Reich Spezialmaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 8, 1992, Ser. No. 958,493
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 4133786
Int. Cl.[5] B23B *47/34*
U.S. Cl. 408—67 8 Claims



1. A boring machine comprising:

(a) a plurality of rotatable spindles held on a carrier mounted for rotation by a hollow drive shaft, said spindles adapted for carrying tools for engaging a workpiece supported by a machine table in a working position;

(b) a suction apparatus including an extractor fan for removing workpiece debris from the area of the spindles, said suction apparatus comprising:

(c) a suction pipe communicating with the area of the working position of the spindles above the surface of the machine table;

(d) said suction pipe being non-rotatably mounted within said hollow drive shaft, said suction pipe having a closed end for being positioned over the workpiece;

(e) a suction port formed in a sidewall of said suction pipe for receiving workpiece debris; and

(f) a covering distrubutor rotatably mounted on said suction pipe and communicating with said suction port, said covering distributor including connecting duct means communicating with said suction port and, upon rotation of the covering distributor, said connecting duct means being thereby rotated to a position adjacent the spindles for removing workpiece ebris from the area of the workpiece and conveying the workpiece ebris to the suction pipe.

5,297,905

TOOL FOR PROCESSING DRILLED HOLES

Hermann Schmidt, Reutlingen; Dieter Aulich, Gomaringen, and Peter Essig, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00986, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992
PCT Filed Dec. 22, 1990, Ser. No. 867,110
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1990, 4000403
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—145 15 Claims

1. A tool for processing holes, comprising a shaft which can be clamped in a drive element for executing a forward stroke into a working position within a hole, a return stroke, and an at least rotating working motion of the tool; two support elements arranged on the shaft; wires clamped at one end of the shaft between said support elements and being sprung bowing away from said shaft in an arc shape, said wires being coated with a cutting medium, one of said support elements being axially adjustable relative to said shaft, said shaft having axially



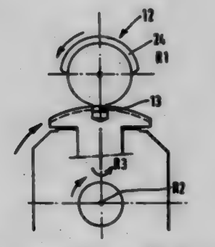
positioned slots distributed on a circumference in two regions axially offset from one another, said shaft also having an axial hole leading out from both ends of said shaft and extending into said regions, said support elements being formed as limit stops inserted in said axial hole and each ending just short of an entry of said hole into an area of said slots, said wires having ends extending through said slots and coming to rest on said limit stops.

5,297,906

METHOD AND DEVICE FOR PRODUCING A COAXIAL CONNECTOR ELEMENT EQUIPPED WITH AT LEAST ONE STUD

Jean-Claude Durand, Voiron, France, assignor to Radiall, Rosny-sous-Bois, France

Filed Jul. 9, 1992, Ser. No. 911,019
Claims priority, application France, Jul. 12, 1991, 91 08810
Int. Cl.[5] B23C *3/00, 5/00*
U.S. Cl. 409—131 8 Claims



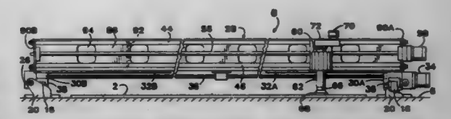
1. A method for producing a cylindrical body comprising at least one stud having a cylindrical base portion projecting from its rotating surface in which a cylindrical body blank is produced comprising a peripheral collar of external diameter equal to that of the stud or studs to be obtained, and of width greater than the diameter of the base of the stud or studs to be obtained, the stud or studs are produced by milling and the excess material from the collar is removed thereby leaving the stud or studs, wherein the stud or studs (13) are produced and the excess material of the collar (24) is removed during a single machining operation using at least one milling cutter (14) comprising a hollow shape (15) and rotating about an axis (R3) perpendicular to the longitudinal axis (R1) of the blank (12), by rotatably driving the blank (12) about its longitudinal axis (R1) and by rotatably driving the milling cutter or cutters (14) in the opposite direction about a second axis (R2) parallel to the longitudinal axis (R1) of the blank (12), said milling cutter or cutters (14) having a substantially spherical peripheral cutting surface in contact with the surface of the blank (12), the rotational speed (V2) tangential to said peripheral surface about said second axis (R2) being equal to the rotational speed (V1) tangential to the external surface of the blank (12) about its longitudinal axis (R1).

5,297,907

PORTABLE MACHINE TOOL

David S. Strait, Newberg, and Arlan W. Way, Gladstone, both of Oreg., assignors to Climax Portable Machine Tools, Inc., Newberg, Oreg.

Filed Feb. 14, 1992, Ser. No. 836,094
Int. Cl.[5] B23C *1/20*; B23B *39/14*
U.S. Cl. 409—238 10 Claims



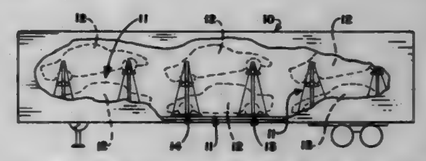
1. A machine tool comprising an elongated beam adapted to be supported in a horizontal orientation at two locations spaced apart therealong and adapted to support a movable machining head, and tensioning members extending in parallel relation to the beam and engaging the beam proximate opposite ends thereof, wherein at least one of the tensioning members for the length thereof is located below the medial plane of the beam, said at least one of said tensioning members being selectively operable in compressive relation to the beam below said medial plane for substantially reducing deflection in the vertical position of said machining head with changes in the horizontal position of said machining head along the beam.

5,297,908

APPARATUS AND METHOD FOR TRANSPORTING AUTOMOBILES IN AN ENCLOSED SEMI-TRAILER

James M. Knott, Springdale, Ark., assignor to J. B. Hunt Transport Services, Inc., Lowell, Ark.

Filed Feb. 4, 1993, Ser. No. 13,042
Int. Cl.[5] E04H *6/06*
U.S. Cl. 410—26 8 Claims



1. An automobile-powered automobile lift for use in converting an enclosed semi-trailer to the transportation of automobiles, comprising:

(a) a front lift assembly comprising: a front wheels carriage and a pair of front support columns, each of said front support columns having a front ball screw assembly comprising a front screw, a front ball nut, means for attachment of each of said front ball nuts to said front wheels carriage; and a front column gear box operatively connected to each of said front screws;

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(b) a rear lift assembly comprising: a rear wheels carriage and a pair of rear support columns, each of said rear support columns having a rear ball screw assembly comprising a rear screw, a rear ball nut, means for attachment of each of said rear ball nuts to said rear wheels carriage; and a rear column gear box operatively connected to each of said rear screws;

(c) a roller assembly, means for removably mounting said roller assembly to said front lift assembly, said roller assembly comprising a pair of drive wheels cradles adapted to receive the drive wheels of an automobile, means for maintaining said drive wheels cradles in a spaced relationship, each of said drive wheels cradles comprising a drive roller and a pair of idler rollers disposed so as to form a well to receive and support the drive wheels of an automobile such that rotation of said drive wheels causes said drive roller to rotate, a shaft interconnecting said drive rollers, and a drive roller gear box operatively connected to each of said drive rollers;

(d) a pair of power takeoff shafts operatively connecting each of said front column gear boxes to a respective one of said rear column gear boxes; and

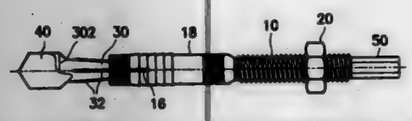
(e) a pair of flexible shafts operatively connecting each of said drive roller gear boxes to a respective one of said front column gear boxes, whereby rotational motion of said drive rollers is mechanically transferred to said front column gear boxes and said rear column gear boxes for elevating said front lift assembly and said rear lift assembly.

5,297,909

SELF-DRILLING EXPANSION DRILL

Lou-Wen Tsay, 2nd. Fl., No. 10, 11th Alley, Lane 59, Mu-Cha Rd.; Fu-Liang Lang, 7-3, Lane 2, Ching-Feng St., and Yu-Lung Luo, 154, Shih-Ta Rd., all of Taipei, Taiwan

Filed Apr. 13, 1993, Ser. No. 45,185
Int. Cl.[5] F16B *13/04, 13/06*
U.S. Cl. 411—29 4 Claims



1. A self-drilling expansion screw capable of being driven by a screw driving means, comprising:

(a) a screw shank having a first end and a second end, including:

(1) an expansion hole extending a distance along the axis of said screw shank from said first end toward said second end;

(2) a slot located on said expansion hole, for communicating said expansion hole with the outer periphery of said screw shank;

(3) a holding portion, formed by a plurality of strip grooves provided at the outer periphery of said screw shank with respect to said expansion hole; and

(4) a screw threaded portion provided between said second end and said holding portion, and having continuous threads around the outer periphery thereof;

(b) a nut member screwed onto said screw threaded portion;

(c) a taper head having a coarse end and a small end, said small end inserted into said expansion hole, said holding portion expanding outwards while said taper head is pushed into said expansion hole;

(d) a drilling bit provided at said coarse end; and

(e) a coupling portion provided at said second end, for engaging with a screw driving tool so as to drive said self-drilling expansion screw to rotate around the axis of said screw shank;

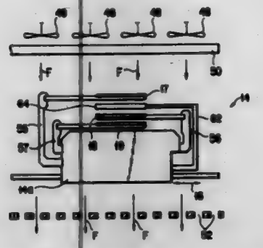
wherein there are a series of anti-torsion wings at the outer periphery along the axis of said taper head for locking the taper head to said screw shank and supporting taper head.

5,297,910

TRANSPORTATION-TRANSFER DEVICE FOR AN OBJECT OF TREATMENT

Kazutoshi Yoshioka, Kumamoto; Kenji Yokomizo; Masami Akimoto, both of Kumamoto, and Yuji Yoshimoto, Kikuchi, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan

Filed Feb. 13, 1992, Ser. No. 834,819
Claims priority, application Japan, Feb. 15, 1991, 3-44403; Sep. 17, 1991, 3-262621; Nov. 19, 1991, 3-330041
Int. Cl.[5] B65H *5/08*
U.S. Cl. 414—225 10 Claims



1. A device for transporting and transferring objects to be treated arranged in a down flow to a plurality of treatment sections for treating the objects, comprising:

a transportation section movable between the treatment sections;

first drive means for moving the transportation section;

a first arm movably attached to the transportation section and used for those objects to be treated which are adjusted to a predetermined temperature in the treatment sections;

a second arm movably attached to the transportation section and used for the other objects to be treated than the ones adjusted in temperature;

second drive means for separately moving the first and second arms; and

heat insulation means arranged between the first and second arms, the heat insulation means being provided to face the first and second arms for preventing a transmission of radiation heat from an object supported by the second arm to an object supported by the first arm;

wherein said first arm is located on the upper-course side of the second arm with respect to the down flow.

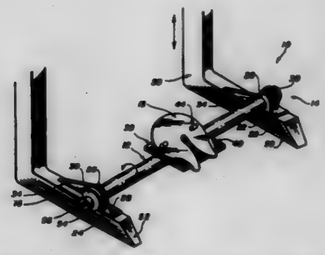
5,297,911

METHOD AND APPARATUS FOR HANDLING WASTE

Jay W. Powell, Chesterfield, Va., assignor to Chambers Development Co., Inc., Pittsburgh, Pa.

Filed Feb. 27, 1992, Ser. No. 842,438
Int. Cl.[5] B65G *67/30*
U.S. Cl. 414—422 20 Claims

10. A system for tilting a container comprising: a fifth wheel plate; and means for lifting the fifth wheel plate when it is lockingly engaged with the container, said fifth wheel plate attached to the lifting means such that as the container is tilted through an angle of at least 24° by the lifting means through the fifth wheel plate, the fifth wheel plate remains lockingly engaged with the container.

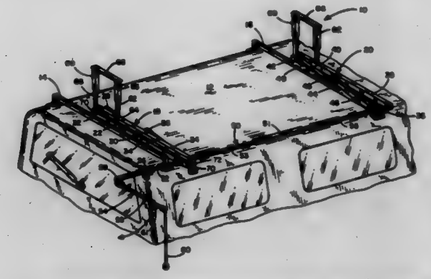


5,297,912

LADDER RACK FOR MOTOR VEHICLES

Avraham Y. Levi, St. Paul, Minn., assignor to JAJ Products, Inc., Bloomington, Minn.

Filed Jun. 3, 1992, Ser. No. 892,849
Int. Cl.[5] B60P *9/00*
U.S. Cl. 414—462 14 Claims



1. Apparatus for facilitating the loading and unloading of a ladder from the roof of a motor vehicle, comprising, in combination:

(a) a first and a second 4-bar linkage assembly, each including a stationary bar member attached to the roof of a motor vehicle in parallel, spaced-apart relation so as to extend transverse to the longitudinal axis of said motor vehicle and a movable bar member comprising a ladder rest pivotally coupled to said stationary bar member by a pair of rigid links of unequal length, said pair of rigid links sized and positioned such that rotation of one of said pair of rigid links on each of said first and second 4-bar linkage assemblies results in said movable bar members comprising said ladder rests moving between a first disposition which is generally parallel to said roof and a second disposition aligned with and spaced from one side of said vehicle;

(b) a connector rod of adjustable length extending longitudinally between said first and second 4-bar linkage assemblies with said connecting rod journaled for rotation in said stationary bar member of each of said 4-bar linkage assemblies and operatively coupled to said one of said pair of rigid links in each of said 4-bar linkage assemblies; and

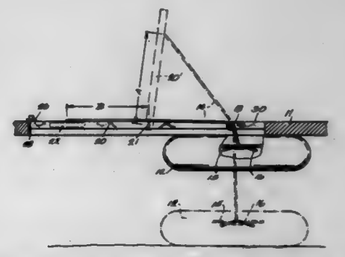
(c) means for rotating said connecting rod and thereby rotating said one of said pair of rigid links on each of said first and second 4-bar linkage assemblies.

5,297,913

SPARE TIRE HOIST AND CARRIER

Fernando An, 3521 W. Mangold, Greenfield, Wis. 53221

Filed Dec. 22, 1992, Ser. No. 994,767
Int. Cl.[5] B62D *43/10*
U.S. Cl. 414—463 6 Claims



1. A motor vehicle spare tire lifting and retaining device comprising

a flexible cable having means on one end thereof to attach the same to the spare tire of the vehicle, said cable passing upwardly through an opening in the bottom surface of the motor vehicle, a pulley located adjacent said opening,

a lever arm pivotally connected to the floor of said motor vehicle at a pivotal connection, the end of said cable opposite said tire being attached to said lever arm at a point displaced from said pivotal connection, and

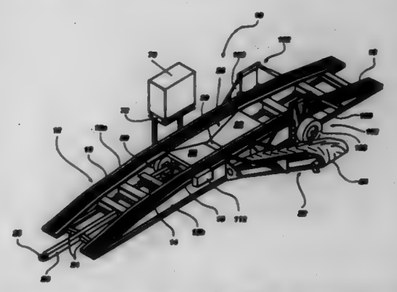
means on said lever arm to resiliently yieldably attach said end of said cable to said arm, said resilient attachment means being biased toward the free end of said arm so that the point of attachment of said cable to said arm moves toward said pivotal connection when said arm is rotated about said pivotal connection to raise said tire.

5,297,914

MOBILE RAMP FOR UNLOADING TRUCKS

Lloyd Ash, 294 E. 300 South, Pleasant Grove, Utah 84062

Filed Jun. 1, 1992, Ser. No. 892,548
Int. Cl.[5] B65G *67/24*
U.S. Cl. 414—574 14 Claims



1. Apparatus for receiving and handling material unloaded from a dump truck and adapted for convenient transportation comprising:

an elongate ramp adapted to receive the dump truck driving thereon, the ramp further including

a stationary top surface substantially defined by a continuously rigid and integral structural member such that no substantial portion of said top surface can move relative to another portion thereof, said top surface defining a continuous drive path and having first and second end portions and a middle portion, the height of said top

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surface gradually increasing from the first end portion to the middle portion and gradually decreasing from the middle portion to the second end portion;

receiving means disposed in the ramp for receiving material from the dump truck and conveying it to a location adjacent the apparatus;

a wheel operatively mounted to the ramp to enable roadworthy transportation of the apparatus in the same direction as the drive path of the ramp; and

raising means for selectively raising the entire apparatus relative to the wheel for transport and lowering the entire apparatus relative to the wheel for receiving unloaded material.

5,297,915

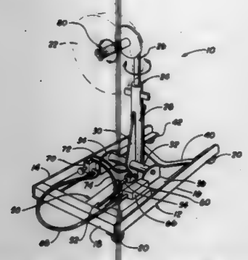
APPARATUS FOR LIFTING AND MOVING HEAVY OBJECTS

Francis L. Bach, P.O. Box 40, Custer City, Okla. 73639

Filed Nov. 12, 1991, Ser. No. 790,942

Int. Cl.[5] B66F *5/04*

U.S. Cl. 414—590 **15 Claims**



1. An apparatus for moving and lifting an object over a surface, comprising:

a frame;

an elongate support member having an upper portion and a lower portion;

wherein the lower portion of the support member is attached to the frame for pivotal movement of the support member in a vertical plane between a first position in which the support member is generally horizontal and a second position in which the support member is generally vertical;

means for securing the object to the upper portion of the support member, such means comprising: an adapter comprising a plate with two sides; means on one side of the plate for securing the object to the adaptor; and a connector extending from the other side of the plate for attaching the adaptor to the upper portion;

wherein the upper portion and the lower portion of the support member are constructed so that the upper portion may be retracted and extended relative to the lower portion whereby the length of the support member is decreased and increased for raising and lowering the object;

wherein the upper portion of the support member and the means for securing the object to the upper portion of the support are characterized as permitting the object, while secured to the upper portion, to be rotated in a first plane generally perpendicular to the longitudinal axis of the support member;

means for limiting the range of rotation of the object in the plane perpendicular to the longitudinal axis of the support member while it is secured to the upper portion of the support member and while the upper portion is retracted relative to the lower portion, such means comprising a pair of ears extending from the sides of the support member and positioned thereon so that when the upper portion is retracted the ears engage the plate when the adapter is rotated to either side of the support member and so that when the upper portion is at least partially extended the plate clears the ears and a full range of rotation is permitted;

means for driving the retraction and extension of the upper portion relative to the lower portion of the support member; and

means for driving the pivotal movement of the support member relative to the frame and for selectively positioning the support member at any point between the first position and the second position.

5,297,916

CARGO HANDLING VEHICLE HAVING PUSH-PULL UNIT

Shinsuke Fujikawa, Funabashi; Haruo Kanauchi, and Hiroshi Tsukiyasu, both of Yuuki, all of Japan, assignors to Komatsu Forklift Kabushiki Kaisha, Japan

Filed Jan. 24, 1990, Ser. No. 469,256

Claims priority, application Japan, Jan. 26, 1989, 1-6959[U]; May 2, 1989, 1-5164[U]; May 2, 1989, 1-51645[U]; May 12, 1989, 1-53912[U]; May 31, 1989, 1-62378[U]; Jul. 26, 1989, 1-86822[U]

The portion of the term of this patent subsequent to Aug. 29, 2008, has been disclaimed.

Int. Cl.[5] B66F *9/20*

U.S. Cl. 414—661 **7 Claims**



1. In a cargo handling vehicle with forks having a push-pull unit for loading cargo onto or discharging said cargo from the forks of said vehicle, comprising:

a mast mounted on a front portion of a vehicle body of said vehicle;

a face member so mounted on said mast as to be movable along said mast up and down and movable along said forks of said vehicle back and forth; and

a sheet-pallet gripper constructed of a sheet-pallet receiving piece and a presser foot means for gripping said sheet pallet so mounted on said face member as to be movable up and down relative to said sheet-pallet receiving piece which is fixedly mounted on a lower-end surface of said face member,

the improvement comprising:

an electric motor for driving a link mechanism to perform a back and forth movement of said face member;

a power transmission means connected with said electric motor; and

an electric-motor rotational speed control means for controlling a rotational speed of said electric motor according to an external force applied to a push-pull unit control lever for controlling said push-pull unit.

5,297,917

METHOD OF ACTING REMOTELY IN A MINE SHAFT, IN PARTICULAR IN A SITE FOR DEEP STORAGE OF NUCLEAR WASTES

Gérard Freneix, St-Sebastien, France, assignor to ACB, Paris, France

Filed Jul. 31, 1992, Ser. No. 922,500

Claims priority, application France, Aug. 1, 1991, 91 09811

Int. Cl.[5] G21F *9/00*; B66B *17/28*

U.S. Cl. 414—786 **5 Claims**

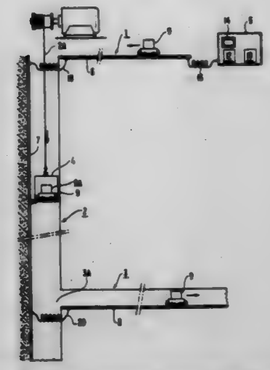
1. A method for remote control of a mobile robot carriage in an underground gallery connected to the surface by a shaft provided with an elevator for carrying said mobile robot carriage during vertical ascent and descent of the elevator and

permitting deep storage of radioactive waste, said method comprising: providing a plurality of waveguides running from a control station including a signal generator and a signal receiver and situated on a surface above the underground gallery by disposing:

at least one first waveguide at said surface extending from the control station to an entrance to the shaft;

at least one second waveguide along the shaft and connected at a top end of paid record waveguide to the first waveguide;

and at least one third waveguide along the gallery and connected to the second waveguide in the vicinity of an entrance to the gallery; and wherein



said method further comprises transmitting control signals from said control station at said surface, to said robot carriage for controlling movement of the robot carriage from said control station;

said control signals travelling via said first waveguide during travel of the robot carriage over the surface;

said control signals travelling via said first waveguide and said second waveguide during loading of the robot carriage into the elevator and during lowering of the robot carriage down the shaft by descent of the elevator; and,

said control signals travelling via said first waveguide, said second waveguide and said third waveguide during unloading of the robot carriage from the elevator at a level of the gallery and during movement of the robot carriage along the gallery.

5,297,918

AUTOMATIC PARKING DEVICE FOR A MULTI-DECK PARKING LOT

Liu S. Ding, No. 8, Lane 175, Sec. 1, Kang Ning Rd., Ne Hu Dist., Taipei, Taiwan

Filed Apr. 7, 1992, Ser. No. 864,777

Int. Cl.[5] E04H *6/00*

U.S. Cl. 414—240 **1 Claim**

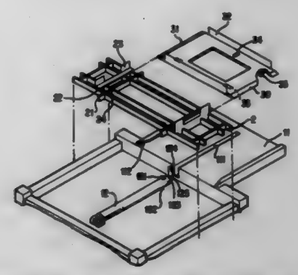
1. An automatic parking device of a multi-deck parking lot for motor vehicles, comprising:

a base having a fixed platform horizontally disposed at one side and a hydraulic cylinder at a middle portion thereof, said fixed platform having an elongated groove at a middle portion thereof and two sliding ways at two opposite ends thereof, said hydraulic cylinder having a movable rod to move back and forth alternatively and having a triangular block at a top portion adjacent to a front end thereof and a plate spring at a bottom portion opposite said triangular block, said movable rod having a hooked front end aligned with said elongated groove on said fixed platform, said hooked front end having an inductor attached thereto to control an electromagnetic switch;

a carrier made from crossed steel channel members, said carrier comprising two rails at two opposite ends, two sliding ways spaced from and outside of said two rails, two stop plates spaced from and outside of said two sliding ways, and two retaining iron strips spaced from and in between said two rails;

a movable platform for loading motor vehicles thereon, said movable platform having two sloping edges at two opposite ends, two vertical side walls at two opposite sides, two retaining slots at said two opposite ends adjacent to one of said vertical side walls, a retaining hole at the middle adjacent to the other vertical side wall, and a plurality of rollers on a bottom portion at the four corners thereof; and

wherein said retaining iron strips are respectively engaged in said retaining slots to firmly secure said movable platform to said carrier when said movable platform is placed thereon; said movable platform is carried by said carrier and is movable from said fixed platform toward said hydraulic cylinder to force the hydraulic cylinder downward and once said carrier has passed over said triangular block, said plate spring automatically forces said hydraulic cylinder to move back to its original position, causing said hooked front end to hook in said retaining hole; said hooked front end of said movable rod is directly inserted in said retaining hole when said movable platform is carried by said carrier and loaded on said base from the top, causing said inductor to trigger said electromagnetic switch to an on position so as to drive said retaining iron strips out of said retaining slots and simultaneously drive said hydraulic cylinder to move said movable platform outwards along said elongated groove for loading or unloading a motor vehicle; said movable rod is moved backwards to pull said movable platform from said fixed platform back to said carrier, causing said inductor to cut off the power supply to said electromagnetic switch so that said retaining iron strips are released from said electromagnetic switch and engaged in said retaining slots to retain said movable platform to said carrier again.



5,297,919

APPARATUS FOR TRANSPORTING AND STORING SHEET MATERIAL

A. N. Reichental, Southbury, and Alexander Shafir, Watertown, both of Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Division of Ser. No. 716,634, Jun. 17, 1991. This application Jul. 10, 1992, Ser. No. 911,770

Int. Cl.[5] B31F *1/10*; B65H *19/30*

U.S. Cl. 414—349 **17 Claims**

2. A cart for receiving, transporting and storing rolls of sheet material wound on hollow cores, comprising:

a frame;

a plurality of wheels extending from said frame;

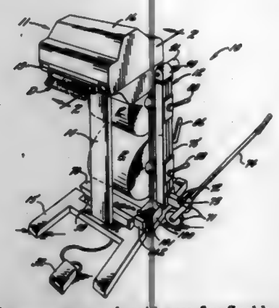
means for moving said cart to a desired location;

a support plyon extending upwardly from said frame;

upper and lower substantially horizontal, vertically spaced apart cantilevered arms extending from said pylon for

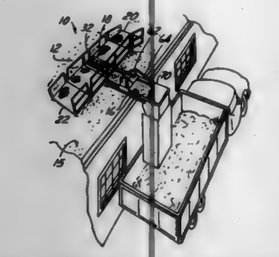
VOL 1160 ISS 5 MR 29 1994 UMI

insertion into hollow cores of rolls of sheet material, each said arm being slidably mounted on said pylon;
means for adjusting the vertical spacing between said arms;



releasable means on each said arm for fixably locking said arms at desired positions on said pylon; and
drive means for lifting and lowering said arms, whereby said arms may lift the rolls.

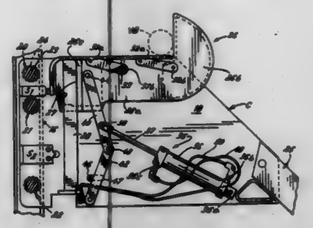
5,297,920
APPARATUS AND METHOD FOR REMOVING BALLAST STONES FROM A ROOF
Thomas E. Pomerville, Midland; Mathew J. Pacek, St. Charles, and Joseph E. Kauffman, Hemlock, all of Mich., assignors to Magnum Construction Company, Inc., Midland, Mich.
Filed Mar. 8, 1993, Ser. No. 28,554
Int. Cl.[5] B65G *67/08*
U.S. Cl. 414—376 **22 Claims**



1. A conveyor system for removing ballast stones from a building roof that comprises:
a platform including means for positioning said platform above and spaced from the building roof, and means for receiving a ballast transport cart onto said platform, and
a conveyor positioned beneath said platform for receiving ballast stones unloaded from the cart on said platform and conveying the stones over an edge of the building roof.

5,297,921
RELEASABLE LOCKING DEVICE
Scott L. Springer, and David A. Spence, both of Milwaukee, Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.
Continuation of Ser. No. 744,338, Aug. 13, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 89,404
Int. Cl.[5] B65G *69/00*
U.S. Cl. 414—401 **15 Claims**

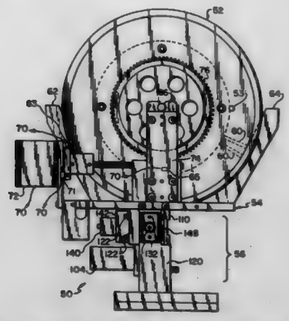
1. A releasable locking device for securing a parked vehicle to an adjacent structure, said device comprising a carriage having a first section adapted to be affixed to the adjacent structure, and a second section including an interior space and mounted for substantially vertical movement on said first section and biased to yieldably assume a predetermined elevated position, said second section being movable downwardly from said elevated position upon an external force of a predetermined magnitude being exerted on said second section; a first means mounted on and carried with said carriage second section for relative substantially rectilinear movement with respect thereto between an operative vehicle-locking mode and an inoperative vehicle-release mode wherein said first means is housed within the interior space of the second section; power-actuated second means mounted on, carried with, and housed within the interior space of said carriage second section for effecting movement of said first means between said operative and inoperative modes; linkage assembly disposed on, carried with, and housed within the interior space of said carriage second section and interconnecting said first and second means, said assembly including a first linear link having one



end portion thereof connected for pivotal movement with respect to said first means and depending therefrom, and a second linear link having one end portion thereof connected for pivotal movement with respect to a depending second end portion of said first linear link and having a second end portion connected for pivotal movement with respect to said carriage second section at a location spaced beneath said first means when the latter is in either of said modes, one of said links being connected intermediate said first and second ends to said second means, said connection providing pivotal movement with respect to said second means, said second means when actuated in one direction causing said links to assume and be retained in a predetermined angular relation whereby said first means is disposed in said operative mode; and third means operatively connected to said second means for indicating the mode of said first means.

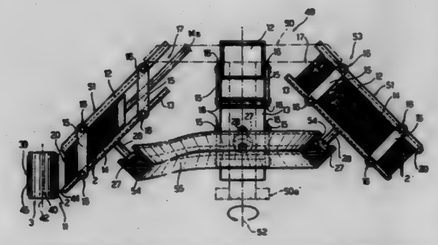
5,297,922
TEST SAMPLE CHANGER
Christopher Sieg, Hillsborough, N.H., assignor to Plexx Company
Filed May 22, 1991, Ser. No. 704,088
Int. Cl.[5] B65G *1/12*
U.S. Cl. 414—416 **6 Claims**

1. Apparatus for selectively presenting a standardized object into an environment and at a precise location, comprising
a removable cassette rotatable about an axis and having a plurality of positions each operable to receive, radially to said axis, one of said standardized objects therein;
receiver means for selectively receiving one of said standardized objects from said cassette, disposed radially outward of and substantially below said cassette, and including
guide means having a single-object aperture for retaining said standardized objects within said cassette,
object elevator means for selectively vertically moving said received standardized object into said receiver means, and



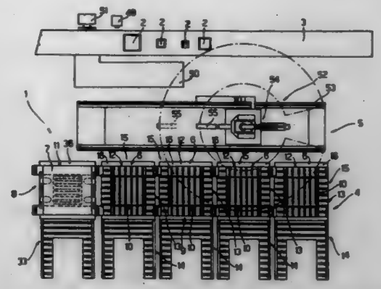
position securing means for positionally locating and securing said standardized object within said receiver means.

5,297,923
DEVICE FOR PARTING AND SUCCESSIVELY FEEDING STACKED ELEMENTS OF SHEET MATERIAL TO A USER MACHINE
Silvano Boriani, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy
Filed Feb. 3, 1993, Ser. No. 12,928
Claims priority, application Italy, Feb. 7, 1992, BO92A 000035
Int. Cl.[5] B65H *3/00*
U.S. Cl. 414—795.4 **6 Claims**



1. A device for parting and successively feeding stacked elements of sheet material to a user machine, the device (1; 49) comprising at least one feedbox (5, 6; 51) designed to receive a stack (7; 8) of said elements (2); characterized by the fact that said feedbox (5, 6; 51) comprises a first (12) and, second (13) wall parallel to each other; and that adjusting means (21; 27, 55) are provided for moving said two walls (12; 13), in relation to and parallel to each other, between a first and second relative position, and so as to define a channel (14) varying in width between a maximum and minimum value; the section of the channel (14), when said width is maximum, being approximately equal to but no smaller than the surface of said element (2).

5,297,924
APPARATUS FOR THE SELECTIVE PALLETIZATION OF ARTICLES HAVING DIFFERENT CHARACTERISTICS
Armando Neri, Bologna, and Verter Cesari, Granarolo Emilia, both of Italy, assignors to G.D. S.p.A., Bologna, Italy
Filed May 15, 1992, Ser. No. 883,442
Claims priority, application Italy, May 22, 1991, 000169 A/91
Int. Cl.[5] B65G *1/18*
U.S. Cl. 414—799 **21 Claims**



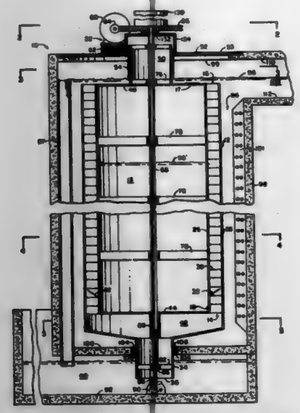
7. Apparatus for the selective palletization of articles which have different characteristics and which are identified by respective codes defining a set number of families of articles, the apparatus comprising a common feed conveyor for said articles, a reader for the related codes, and a palletization unit for the articles, wherein the palletization unit comprises: a plurality of processing stations, whose number is at least equal to the number of said families, for loading respective pallets and for removing the loaded pallets; an accumulation unit for accumulating unloaded pallets; exit conveyor means for transferring the unloaded pallets from said accumulation unit to said processing stations which are distributed along and above said exit conveyor means; elevator means for the unloaded pallets which are interposed between said exit conveyor means and each processing station; the apparatus further comprising automatic transfer means, controlled by said reader, for selectively transferring the articles from said common feeder conveyor to respective ones of said processing stations; and said exit conveyor means being divided into segments, each of which is connected to each adjacent segment and each of which comprises a final portion which is arranged below a respective said processing station, each one of said segments being provided with independent actuation means, said exit conveyor means comprising a further segment which extends through said accumulation unit, and independent actuation means for said further segment.

5,297,925
WATER COLUMN FLOATING PUMP
Sek-Wah Lee, 734 22nd Ave., San Francisco, Calif. 94121, and John C. Lee, 990 Kelley Ct., Lafayette, Calif. 94549
Filed Dec. 20, 1991, Ser. No. 812,562
Int. Cl.[5] F01D *25/28*
U.S. Cl. 415—7 **14 Claims**

1. A fluid pump comprising
an inlet reservoir for holding a fluid to be pumped,
a pump flotation chamber for holding a volume of fluid,
a rotationally symmetric container having an axis of rotation, an inlet end and an outlet end, said rotationally symmetric container floating with its axis of rotation disposed substantially vertically in said fluid contained in said pump flotation chamber,
at least one conduit spiralling helically from said inlet end to said outlet end proximate the periphery of said rotationally symmetric container, and

means for rotating said rotationally symmetric container in a direction to cause said fluid to flow upwardly in said conduit spiralling helically from said inlet end to said outlet end of said rotationally symmetric container and be discharged therefrom.

12. A device for use in pumping fluid, comprising:



a rotationally symmetric container having an inlet end and an outlet end and an axis of rotation, said rotationally symmetric container adapted to float in a fluid with said axis disposed in a upright direction, and

at least one channel suitable for conveying fluid from said inlet end to said outlet end proximate the periphery of said rotationally symmetric container, wherein said channel spirals helically from said inlet end to said outlet end.

5,297,926

FLOW GENERATING APPARATUS AND METHOD OF MANUFACTURING THE APPARATUS

Masataka Negishi, Urawa, Japan, assignor to Nissho Giken Kabushiki Kaisha, Saitama, Japan

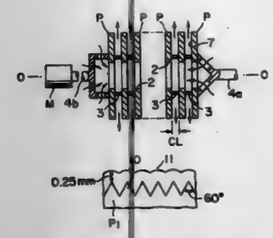
PCT No. PCT/JP91/00281, § 371 Date Nov. 1, 1991, § 102(e) Date Nov. 1, 1991, PCT Pub. No. WO91/13257, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 2, 1991, Ser. No. 772,371

Claims priority, application Japan, Mar. 2, 1990, 2-49468

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **13 Claims**



1. A flow generating apparatus comprising:

a casing;

a plurality of circular flow generating plates disposed within said casing with clearances established between adjacent ones of said plates, said flow generating plates defining a rotational axis extending perpendicularly to each of the plates, each of said flow generating plates having a major surface for moving a fluid by only adhesion between the surface and the fluid in contact with the surface, said major surface defining waves having tops thereof extending longitudinally in generally radial directions of the plates, and each cross section of a portion of each of the plates taken through each of said waves perpendicular to the top thereof having a triangular shape; and

means for rotating the flow generating plates in a direction of rotation about said rotational axis.

5,297,927

VERTICAL SHAFT TYPE PUMP

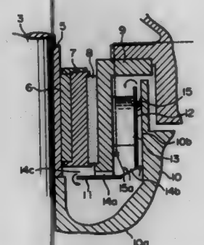
Kooji Aizawa; Katsutoshi Nii, both of Hitachi; Ryoji Okada, Ibaraki; Masayuki Yamada, Tsuchiura, and Kunio Takada, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,079

Claims priority, application Japan, Jan. 29, 1992, 4-013688

Int. Cl.[5] F01D *25/18*

U.S. Cl. 415—110 **11 Claims**



1. A vertical shaft type pump including a bearing in a pumped water passage, wherein a rotatable lubricating water tank for receiving said bearing therein is provided within said pumped water passage, said water tank having an opening portion in communication with said pumped water passage.

5,297,928

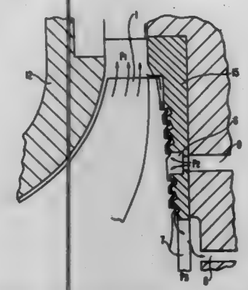
CENTRIFUGAL COMPRESSOR

Koichiro Imakiire; Keiichi Shiraishi; Masanori Kimura, and Masayoshi Tagawa, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 898,402

Int. Cl.[5] F01D *11/00*

U.S. Cl. 415—112 **6 Claims**



1. A centrifugal compressor comprising: an impeller having an outlet through which gas is discharged; a fixed structure disposed to the back of said impeller in the compressor, the back of said impeller and said fixed structure defining a space therebetween; a labyrinth seal including fins forming a labyrinth of the seal, said seal defining an annular space between respective groups of said fins, and said seal being interposed between the outlet of said impeller and said space; and said fixed structure having a passage extending therethrough and open to the labyrinth of said seal via said annular space defined between respective groups of the fins of said seal, whereby cold gas under a higher pressure than that at the outlet of the impeller can be fed into the annular space through the passage.

5,297,929

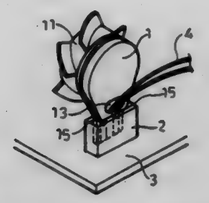
SUPER THIN SMALL HEAT DISPERSING FAN

Alex Horng, No. 149, Yi-Yung Rd., Lin Ya Dist., Kaohsiung, Taiwan

Filed Dec. 30, 1992, Ser. No. 999,372

Int. Cl.[5] F01D *15/00*

U.S. Cl. 415—121.3 **4 Claims**



1. A super thin small heat dispersing fan for connection to a base plate having a socket with two contact plates therein, the fan comprising:

an electrically powered fan blade member oriented for rotation in a plane transverse to said base plate;

a plate foot;

positive and negative poles comprised of copper foil strips attached on the plate foot for connection to electrical power supply to energize said fan blade member;

an abutting surface disposed on said plate foot and oriented substantially parallel to an upper surface of said socket;

the plate foot for insertion into said socket and thereby secured to said base plate, the abutting surface resting on the upper surface of said socket so as to provide sufficient clearance between said fan blade member and said socket, said positive and negative poles making contact with said two contact plates, respectively, in said socket; and

a lead wire for conducting electrical power, and a positioning opening in said plate foot through which said lead wire passes and which is soldered to said copper foil strips, said positioning opening being shaped to retain and substantially fix said lead wire at said plate foot.

5,297,930

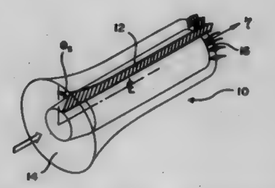
ROTATING STALL SUPPRESSION

Franklin K. Moore, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,028

Int. Cl.[5] F04D *29/40*

U.S. Cl. 415—182.1 **12 Claims**



1. An assembly for suppression of rotating stall in an axial-flow compressor comprising:

an inlet duct for directing flow of fluid to an axial flow compressor, said inlet duct having a central axis;

an annular flow passage in said inlet duct, said annular flow passage having an inlet opening located upstream of said axial-flow compressor and extending from said inlet opening to a first stage of said axial flow compressor; and

an inlet flow divider positioned completely within said annular flow passage, said inlet flow divider being generally planar and being on a plane which passes through and extends along said central axis of said inlet duct, said inlet flow divider further being aligned with the flow of fluid through said inlet duct to interfere with the formation of any rotating wave in said flow of fluid in said flow passage.

5,297,931

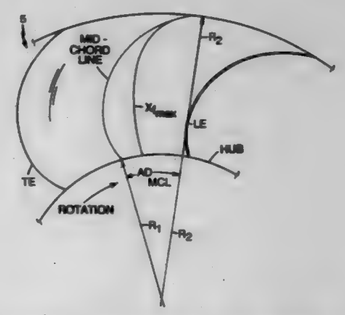
FORWARD SKEW FAN WITH RAKE AND CHORDWISE CAMBER CORRECTIONS

Martin G. Yapp, Needham; Robert Van Houten, Winchester, both of Mass., and Robert I. Hickey, Concord, N.H., assignors to Airflow Research and Manufacturing Corporation, Watertown, Mass.

Continuation of Ser. No. 753,418, Aug. 30, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 52,811

Int. Cl.[5] E01D *1/02*

U.S. Cl. 415—208.1 **12 Claims**



1. An axial flow fan comprising a hub rotatable on an axis and blades extending in a generally radial direction from said hub to a circular band connecting tips of said blades, each of said blades terminating at a leading edge which is forwardly swept at least in the region defined by $r/R>0.90$ where r=radial position and R=fan radius, and each of the blades having a trailing edge which is forwardly swept in that region, and each of the blades being characterized in that:

a) in an axial projection of the blade, a line defined by the points of maximum camber (f_{max}) as a function of changing radial position (r) is on the leading edge side of the mid-chord line M_{CL} at the root of the blade, said f_{max} radial function being less forwardly skewed than the leading edge, the mid-chord line, and the trailing edge of said blade;

b) the blade is raked forwardly so that the trailing edge of the tip of the blade is axially forward of the trailing edge at the root; the absolute value of said rake (k) increases monotonically as r increases from 0.75R to 1.0R, where R is the fan radius;

c) the blade has a pitch (ratio (P/D)) of at least 0.6 (where P=pitch and D=fan diameter) generally throughout the extent of the blade; and

d) the rake (k) where $r/R>0.75$ is a linear function of the midchord axial displacement (AD_{MC}) at radius r expressed in degrees is corrected to reflect the chordwise position of maximum camber.

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5,297,932

FASTENER FOR MULTI-STAGE COMPRESSOR

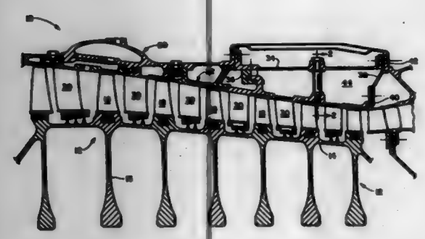
Thomas G. Johnson, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 12, 1990, Ser. No. 581,223

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] F04D *29/60*

U.S. Cl. 415—209.2 6 Claims



1. For a gas turbine engine having a plurality of compressor stages, a first outer case being axially split rotatably supporting a first group of said compressor stages, a second outer case formed from a full hoop axially disposed to and attached to said first outer case, segmented stator members surrounding a second group of said compressor stages and defining an inner case, spool/bolt means having a spool element supported to said inner case and extending radially to bear against the inner surface of said first outer case, and having a bolt element extending radially through an opening in said outer case, said bolt element having a head portion bearing against the outer surface of said second outer case, said spool element having threads formed on the inner diameter thereof, said bolt element extending through an axial bore in said spool element and threadably engaging said spool element threads for tying said stator member to said second case.

5,297,933

CANTILEVER PADDLEWHEEL APPARATUS

Bruce S. Morgan, Embassy Park, 3188 Lake Shore Dr., Pembroke Park, Fla. 33009

Continuation-in-part of Ser. No. 549,952, Jul. 19, 1990, Pat. No. 5,082,423, and a continuation-in-part of Ser. No. 737,336, Jul. 29, 1991, Pat. No. 5,195,872. This application Dec. 16, 1992, Ser. No. 991,278

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] B63H *1/10*

U.S. Cl. 416—111 16 Claims

1. A paddlewheel apparatus comprising:

a fixed support located on a predetermined axis;

a sun gear supported from said support on said axis;

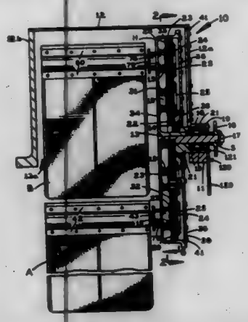
a holder rotatable on said axis and extending around said sun gear;

a drive member drivably connected to said holder and rotatable in unison with said holder;

a set of additional gears forming an epicyclic gear train with said sun gear and rotatably mounted within said holder, said set of additional gears comprising planet gears spaced apart circumferentially around said sun gear;

a plurality of cantilevered paddles located adjacent to said holder, each said paddle comprising a free end and a supported end, and each being coupled at its supported end to a corresponding planet gear of said epicyclic gear train, each of said paddles hanging down substantially vertically and being unobstructed adjacent to said holder in all rotational positions of said holder;

and a lost-motion coupling between each of said paddles and



said corresponding planet gear at its supported end, said lost-motion coupling permitting rotational lost-motion between each said paddle and said corresponding planet gear.

5,297,934

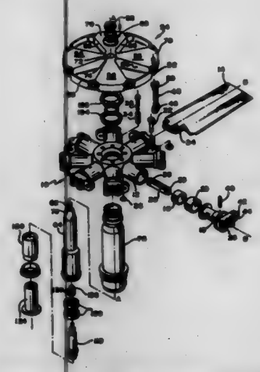
COMPENSATION FOR KINEMATIC FORESHORTENING EFFECT IN PITCH CONTROL SYSTEM FOR ROTARY WING AIRCRAFT

Rene A. Desjardins, Newtown Square, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 2, 1991, Ser. No. 739,499

Int. Cl.[5] B64C *27/78*

U.S. Cl. 416—163 11 Claims



1. In a helicopter rotor defining a rotor axis and supporting a plurality of rotor blades each adapted for variable pitch, a device for compensating for the presence of centrifugal force on components of the rotor, comprising:

a plurality of pitch shafts angularly spaced about the rotor axis, each pitch shaft defining a pitch axis and extending radially outwardly from the rotor axis along the pitch axis, each pitch shaft being mounted for movement about its respective pitch axis, and having an attachment offset laterally from its respective pitch axis and radially from the rotor axis;

a pitch beam mounted for rotation about the rotor axis and displacement along said rotor axis; and

a plurality of flexure means, each flexure means comprising a first end rigidly connected to the pitch beam, a universal joint supported at a second end, connected to an attachment of a respective pitch shaft, the radial location of each universal joint relative to said rotor axis being displaced a predetermined radial distance to effect connection to the attachment of a respective pitch shaft from its location before connection to the attachment of the respective pitch shaft, for changing the angular position of each pitch shaft about the respective pitch axis in response to axial displacement of the pitch beam.

5,297,935

ROTOR HAVING AT LEAST ONE SPLIT BLADE PARTICULARLY FOR MIXING MACHINES OF INTERNAL TYPE

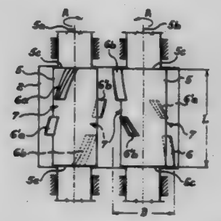
Gian C. Passoni, Monza, Italy, assignor to Pomini Farrel S.P.A., Italy

Filed Dec. 29, 1992, Ser. No. 998,409

Claims priority, application Italy, Jan. 21, 1992, MI92A 000094

Int. Cl.[5] F01D *5/12*

U.S. Cl. 416—183 8 Claims



1. A rotor particularly for mixing machines of the internal type for elastomers and plastomers, comprising at least one pair of blades each projecting from a cylindrical hub of the rotor starting from a flank of the rotor and set helically thereon, wherein at least one of said blades is split into at least two blade sections located parallel to one another, one of said sections having one of its ends located at the flank of the rotor and at least a second section being separated from the said one section and located on the same helix thereof to create at least one opening capable of bringing about diversion of the flow of material through the opening during mixing.

5,297,936

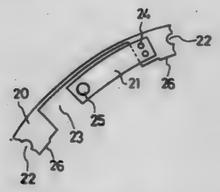
COUPLING FAN

Youji Sato, Seto, Japan, assignor to Aisin Kako Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 828,568, Jan. 31, 1992. This application May 24, 1993, Ser. No. 64,938

Int. Cl.[5] F04D *29/32*

U.S. Cl. 416—204 R 2 Claims



1. A coupling fan, comprising:

a fan body including a substantially cylinder-shaped boss, and a plurality of blades disposed on an outer peripheral surface of the boss at predetermined intervals in a circumferential direction and projecting substantially radially;

a coupling including a driving member connected to a rotary driving source, and an operating member connected to the driving member by way of a viscous substance whose viscous resistance transmits rotation of the driving member to the operating member so as to rotate the operating member; and

a substantially ring-shaped mounting plate fixed to said boss of said fan body and said operating member of said coupling so as to transmit rotation of said operating member to said fan body, and including a substantially ring-shaped base member and a substantially strip-shaped movable member cut out of and projected from the base member integrally, the base member including a first fixing portion connected to one of said boss of said fan body and said operating member of said coupling, the movable member including a second fixing portion connected to another one of said boss of said fan body and said operating member of said coupling, and the first fixing portion of the base member and the second fixing portion of the movable member being disposed on an identical circumference.

5,297,937

HOLLOW FAN MOVING BLADE

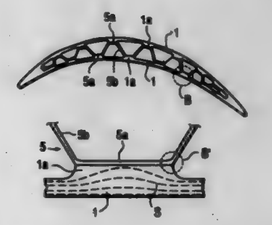
Masahiko Umetani, and Harusomi Makita, both of Komaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,075

Claims priority, application Japan, Aug. 23, 1991, 3-212125

Int. Cl.[5] F01D *5/18*

U.S. Cl. 416—233 10 Claims



1. A gas turbine rotor blade comprising: two outer skins disposed at the front and the rear of the blade, respectively, and defining a space therebetween, said skins having respective outer surfaces forming the blade outer surface, and respective inner surfaces bounding opposite sides of the space, said inner surfaces each defining a plurality of protrusions projecting in a direction of thickness of the blade; and a core of shaped sheet metal interposed between said skins within said space, said core including a plurality of wall portions extending across said space in the direction of thickness of the blade from said protrusions projecting at the inner surface of one of said skins to said protrusions projecting at the inner surface of the other of said skins, each of said wall portions being jointed to the protrusions from which and to which the wall portion extends, whereby stresses in the skins will not be concentrated at regions where said wall portions are joined to the protrusions.

5,297,938

HYDROFOIL IMPELLER

John A. Von Essen, Palmyra; Ronnie G. Thompson, Annville; Ravi K. Sharma, and Edward C. Schrom, both of Palmyra, all of Pa., assignors to Philadelphia Mixers Corporation, Palmyra, Pa.

Continuation of Ser. No. 498,843, Mar. 26, 1990, abandoned. This application Mar. 18, 1992, Ser. No. 855,121

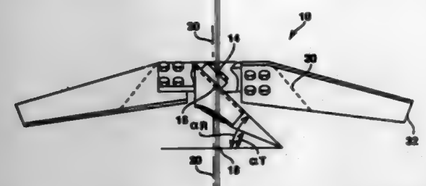
Int. Cl.[5] B01F *7/20*

U.S. Cl. 416—237 6 Claims

1. An impeller for mixing fluid in a vessel, which comprises

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a hub and a plurality of blades mounted on said hub, each blade formed of a plate of substantially constant thickness and a camber which increases from the tip of the blade inward



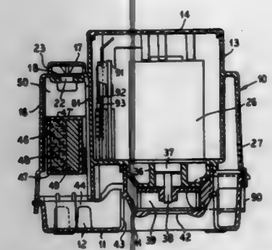
toward a bend line, beyond which the blade is flat, and a blade angle which increases from the tip inward to said bend line, beyond which the angle is constant.

5,297,939

AUTOMATIC CONTROL FOR BILGE & SUMP PUMP

Stephen R. Orth, Chicago, and Burton L. Siegal, Skokie, both of Ill., assignors to Johnson Pumps of America, Inc., Schiller Park, Ill.

Filed Feb. 1, 1993, Ser. No. 11,810
Int. Cl.[5] F04D *15/00*
U.S. Cl. 417—40 **8 Claims**



1. A control for a pump comprising, a housing, a pump motor mounted in said housing, an impeller attached to said pump motor and mounted in a lower portion of said housing so as to impel liquid through a discharge opening in said housing, a float chamber attached to said housing, a float moveably mounted in said float chamber, a magnet mounted in said float, a magnetic responsive switch mounted adjacent said float chamber so that it can be actuated by said magnet as said float moves in said float chamber to turn on and off said pump motor, a one-way valve mounted in an upper portion of said float chamber so as to allow air to pass out of the float chamber as the liquid level in the float chamber rises, but which prevents air from entering the float chamber as the liquid level outside the float chamber falls, said float chamber's lower portion having an opening to receive and discharge liquid.

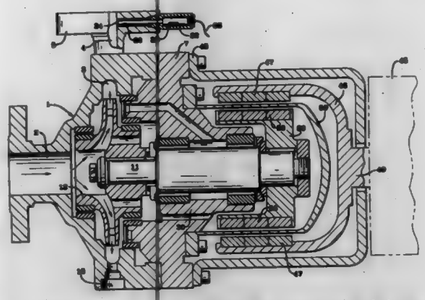
5,297,940

SEALLESS PUMP CORROSION DETECTOR

Frederic W. Buse, Allentown, Pa., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Dec. 18, 1992, Ser. No. 997,441
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—63 **14 Claims**

1. A sealless centrifugal pump comprising:
a pump housing containing a pumping chamber and having an inlet, an outlet and a bore;
a shaft mounted in the pump housing for rotation;
a pump impeller attached to the shaft for rotation with the shaft in the pumping chamber;
a shell enclosing the shaft and pump impeller; and
a means for detecting corrosion, the means for detecting corrosion comprising a corrosion probe mounted in the pump housing bore, an end portion of the corrosion probe being formed of material having known corrosion properties, the end portion of the corrosion probe being in fluid



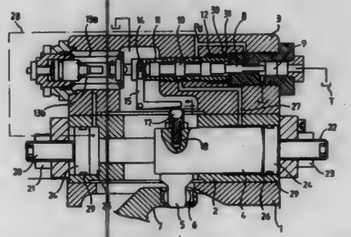
contact with the pumped fluid, the thickness of the end portion of the corrosion probe being two thirds the thickness of the shell, and a means for indicating leakage within the corrosion probe, the means for indicating leakage being responsive to any leakage through the end portion of the corrosion probe.

5,297,941

CONTROL SYSTEMS FOR HYDRAULIC PUMPS OF THE VARIABLE DISPLACEMENT TYPE

An H. Park, Changwon, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Changwan, Rep. of Korea

Filed Nov. 23, 1992, Ser. No. 980,269
Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21878
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—218 **1 Claim**



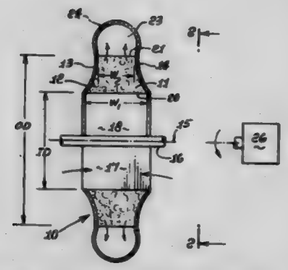
1. In a control system for a hydraulic pump of the variable displacement type, comprising a movable servo piston for varying inclination angle of pump swash plate in order to control pump delivery, said servo piston being movably received in a servo cylinder and providing, in cooperation with said servo cylinder, variable smaller and larger cylinder chambers, said smaller cylinder chamber being always applied with pump delivery pressure and said larger cylinder chamber being selectively applied with the pump delivery pressure through a conduit, the improvement comprising;
a servo valve for controlling said conduit in response to the pump delivery pressure and external pilot pressure in order to control movement of said servo piston, said servo valve being movable between three position, a drain position wherein the pump delivery pressure in said larger cylinder chamber is drained to an oil reservoir through said conduit, a neutral position wherein said conduit is blocked, and a feeding position wherein said larger cylinder chamber is applied with the pump delivery pressure through said conduit; further comprising:
a servo spool for controlling said conduit in order to control the pump delivery pressure applied to said larger cylinder chamber, said servo spool being movable in response to said pump delivery pressure and said external pilot pressure in order to be displaced between said three positions;
a servo sleeve for movably receiving said servo spool, said servo sleeve being displaceable in response to the movement of the servo piston in order to control, in cooperation with said servo spool, said conduit;
a pump delivery pressure responding piston for biasing said servo spool in response to the pump delivery pressure applied thereto;
an external pilot pressure responding piston for biasing said servo spool in response to the external pilot pressure applied thereto, said external pilot pressure responding piston being coaxially arranged with said pump delivery pressure responding piston;
a pair of first biasing members for biasing said servo spool against biasing force acting on said servo spool owing to the pump delivery pressure and the external pilot pressure; and,
a second biasing member for biasing said servo sleeve; and,
a lever assembly for causing said servo sleeve to move in accordance with the movement of said servo piston, said lever assembly comprising:
a hinged lever for causing said servo sleeve to move, said lever being pivoted at one end thereof to said servo spool and being turnable about its hinged point; and
a push pin for causing said lever to be turned in accordance with the movement of said servo piston, said pin being connected to said servo piston;
said hinged lever having an inclined surface for movably contacting with said push pin, said inclined surface causing displacement of said servo piston as a function of displacement of said pressure responding pistons to show a characteristic hyperbola.

5,297,942

POROUS ROTOR

Roc V. Fleishman, 320 Market St., Venice, Calif. 90291; John M. Popovich, 650 Pheasant Dr., Los Angeles, Calif. 90065, and Carsten H. Idland, 3526 Centinela Ave., #8, Los Angeles, Calif. 90066

Filed Aug. 12, 1992, Ser. No. 928,333
Int. Cl.[5] F04B *39/00*
U.S. Cl. 417—354 **29 Claims**



1. A quiet fluid passing apparatus, comprising:
a) a fluid passing rotor comprising open porous structure extending along an annular path, the rotor forming passage means to pass fluid through the rotor open cellular structure as the rotor rotates,
b) said path having an inner circumference with diameter ID and an outer circumference with diameter OD, and wherein

$$\frac{ID}{OD} < .65$$

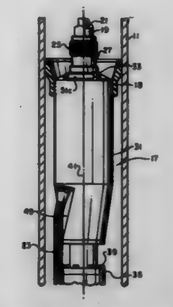
c) and wherein said path has substantially continuously decreasing width between said inner and outer circumferences.

5,297,943

ELECTRICAL SUBMERSIBLE PUMP DISCHARGE HEAD

Fred S. Martin, Claremore, Okla., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 26, 1993, Ser. No. 37,762
Int. Cl.[5] F04B *17/00*
U.S. Cl. 317—422 **15 Claims**



1. A discharge head for an electrical submersible pump assembly which is installed on metal coiled tubing within casing of a well, the pump assembly having an electrical motor secured to a lower end of a submersible pump, comprising in combination:
a body having an upper end, a lower end, and a longitudinal axis;
a neck located on the upper end of the body;
coupling means for coupling the coiled tubing to the neck;
a cable passage extending through the body for receiving a power cable for supplying power to the motor;
a flow passage extending through the body separate from the cable passage, the flow passage having a lower end that is located on the longitudinal axis at the lower end of the body and an upper end that is laterally offset relative to the longitudinal axis for discharging well fluid into the casing;
means at the lower end of the flow passage for securing the pump to the lower end of the body; and
seal means mounted to the discharge head for sealing the discharge head to the casing, isolating fluid in the casing above the discharge head from fluid in the casing below the discharge head.

5,297,944

INFLATABLE PUMP AND ARTICLE

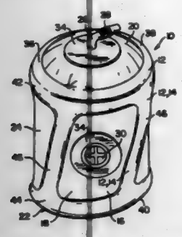
Paul E. Pomeroy, Lake Elsinore, Calif., assignor to Survival Resources, Inc., Lake Elsinore, Calif.

Filed Jul. 7, 1992, Ser. No. 909,756
Int. Cl.[5] F04B *45/06*
U.S. Cl. 417—437 **30 Claims**

1. A pump, comprising:
an inflatable housing which defines an inner pump chamber and has a first end and a second end;
an inflatable spring which extends between said first end and said second end at an angle oblique to said housing ends;

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housing valve means for allowing fluid to enter and exit said inner pump chamber; and,

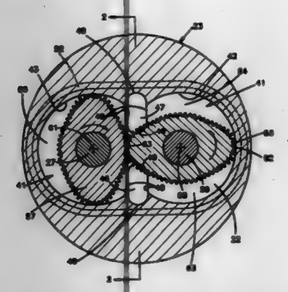


spring valve means for allowing said inflatable spring to be inflated and deflated.

5,297,945
PUMP FOR VISCOUS FLUIDS

Robert J. Loubier, Roanoke, and Lawrence P. Zepp, Fort Wayne, both of Ind., assignors to Xolox Corporation, Fort Wayne, Ind.

Continuation of Ser. No. 518,803, May 4, 1990, Pat. No. 5,169,292. This application Oct. 19, 1992, Ser. No. 963,136
Int. Cl.[5] F01C *1/18*
U.S. Cl. 418—206 **7 Claims**



1. A pump comprising a gear chamber having first and second generally circular wall sections, first and second gears located within said chamber and disposed adjacent, respectively, the first and second wall sections, said gears being generally oval in shape and having teeth located about their periphery, wherein more than two teeth adjacent each longitudinal end of each gear are formed so as to sealingly engage a surface of said generally circular wall sections as the gears rotate within the gear chamber.

5,297,946
MULTILAYER PARISON EXTRUDER

Toshiji Yoshida; Hideaki Fukuda; Toshio Kagitani, all of Kanagawa, and Keiji Fukuhara, Hiroshima, all of Japan, assignors to The Japan Steel Works, Ltd., Tokyo and Mazda Motor Corporation, Hiroshima, both of Japan

Continuation of Ser. No. 769,504, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 554,762, Jul. 20, 1990, abandoned. This application Nov. 4, 1992, Ser. No. 971,683
Claims priority, application Japan, Jul. 21, 1989, 1-187428
Int. Cl.[5] B29C *47/06, 47/26*
U.S. Cl. 425—132 **4 Claims**

1. A multilayer parison extruder which is intermittently driven in accordance with a closing movement of a cavity, comprising:

a cylinder;

an annular piston movably fitted in said cylinder;

a material accumulation chamber in which said piston is moved;

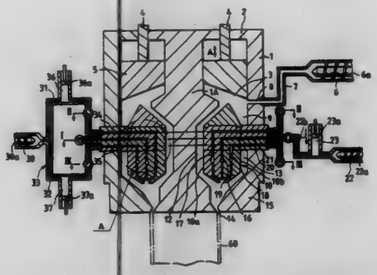
an annular material conduction chamber communicating with said accumulation chamber;

an annular multilayer head provided in said conduction chamber, said annular multilayer head being positioned in said conduction chamber so as to define an inner layer material passage and an outer layer material passage;

a die slot provided under said conduction chamber;

a main material extruder for supplying a main material to said accumulation chamber; and

a plurality of auxiliary material extruders for supplying a plurality of auxiliary materials to said annular multilayer head; wherein said annular multilayer head includes three cylindrical slots, with each slot receiving a corresponding one of said auxiliary materials, said three cylindrical slots being arranged such that one of said slots is centrally located for receiving one of said plurality of auxiliary materials and the other two slots are respectively positioned radially inwardly and outwardly of said one slot which is centrally located, the auxiliary material which is supplied to the other two slots comprising an adhesive, such that the auxiliary material supplied to said one slot which is centrally located is sandwiched between two adhesive layers thereby increasing a precision of a thickness of the auxiliary material supplied to said one slot which is centrally located; and means for communicating



each of said three cylindrical slots with a corresponding one of said plurality of auxiliary material extruders, said communicating means comprising:

a pair of diametrically opposed feed ports;

a separate arc-shaped passage connected to each of said feed ports such that each said arc-shaped passage extends in opposite directions by nearly equal distances from the corresponding feed port along a circumference of said annular multilayer head to opposite end portions; and

at least one pair of inlet ports for each arc-shaped passage such that a separate inlet port communicates with a corresponding one of said opposite end portions of each arc-shaped passage, said inlet ports being connected to a corresponding one of said three cylindrical slots to thereby provide at least four inlet ports for the corresponding cylindrical slot so that the inlet ports for the corresponding cylindrical slot are located at nearly equiangular intervals along the circumference of said annular multilayer head;

wherein said inlet ports for the cylindrical slot positioned radially inwardly in relation to the centrally located cylindrical slot are positioned at the same angular location along the circumference of said cylinder as said inlet ports for the cylindrical slot positioned radially outwardly in relation to the centrally located cylindrical slot;

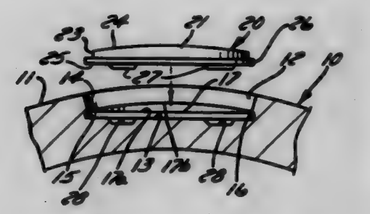
wherein said communicating means further comprises a plurality of semicircular passages disposed exteriorly of said cylinder and which follow along an outer circumference of said cylinder, each said semicircular passage communicating a corresponding one of said pair of diametrally opposed feed ports with a corresponding one of said plurality of auxiliary material extruders; said communicating means further comprising a pair of injection passages having first ends connected to one of said plurality of auxiliary material extruders, each of said injection passages having an accumulator therein and having a second end connected to a corresponding one of said plurality of semicircular passages; and

further wherein during extrusion, said main material flows into said inner layer material passage and said outer layer material passage so as to sandwich said plurality of auxiliary materials therebetween before exiting said die slot.

5,297,947
ROTARY DIE MOULDING INSERT SYSTEM

Joseph Cardinali, Millington, N.J., assignor to Tiefenthaler Machinery Co., Inc., Brookfield, Wis.

Filed May 5, 1992, Ser. No. 878,558
Int. Cl.[5] B29C *43/06*
U.S. Cl. 425—194 **5 Claims**



1. A rotary die moulding machine for moulding bakery dough for baked goods comprising:

a die roll having a curved outer surface with a plurality of moulding cavities therein;

each moulding cavity having a first wall section with a shape and depth corresponding to a shape and thickness of the baked goods to be moulded, respectively, and having a second wall section with an under cut edge beneath the first wall section, and having a flat bottom surface, whereby the first wall section meets the undercut edge at first and second peripheral areas of the cavity, and in a middle area of the cavity an intermediate wall section extends from the first wall section inwardly to the undercut edge of the second wall section;

plastic inserts snugly insertable into the moulding cavities for imprinting designs into the bakery dough with each insert comprising:

a face portion having a shape corresponding to the shape of the first wall section of the moulding cavity;

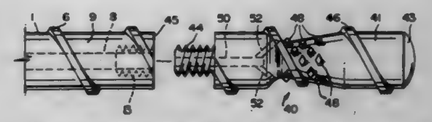
a base portion having a shape corresponding to the shape of the undercut edge of the second wall section of the moulding cavity, and the base portion having a flat base surface complementary to the flat bottom surface of the mounding cavity; and

a designed surface on the face portion of the insert with a design to be imprinted into the baked goods and the designed surface being concentrically curved relative to the outer surface of the die roll thereby forming a space for moulding the bakery dough to a uniform thickness.

5,297,948
EXTRUDER SCREW FOR USE IN FOAM PLASTIC EXTRUDER

Changize Sadr, Toronto, Canada, assignor to ABC Group, Rexdale, Canada

Continuation of Ser. No. 611,765, Nov. 13, 1990, abandoned. This application Sep. 24, 1992, Ser. No. 950,778
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—208 **4 Claims**

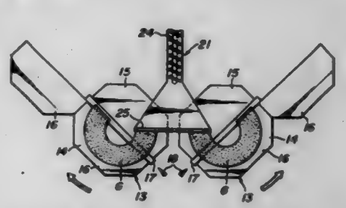


1. An extruder screw for use in an extruder including an elongated barrel, an inlet for introducing solid plastic into the barrel near one end thereof, and an outlet at the other end of the barred for discharging molten plastic from the barrel, the screw comprising substantially continuous elongated cylindrical body means for rotation in the barrel; helical flight means on substantially the entire length of said body means for receiving material from said inlet and for feeding molten plastic through the barrel during rotation of said body means; first axial passage means in said body means extending from said one end to the other end of said body means for carrying gaseous foaming agent through said body means; thread means in said first axial passage means at said other end of the body means for receiving head means on said other end of said body means; bolt means on said head means at the upstream end thereof in the direction of foaming agent flow for engaging said thread means, permitting removable mounting of the head means on said body means; second axial passage means in said head means forming a continuation of said first axial passage means; third, generally radially extending passage means in said head means proximate the outlet end of the extruder barrel for discharging the gaseous foaming agent from the screw for intimate mixing with the molten plastic immediately prior to extrusion from the barrel.

5,297,949
ANNULAR MEMBER FORMING APPARATUS

Takashi Yokoi, and Yukihiko Hoso, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 814,459, Dec. 30, 1991, Pat. No. 5,167,892. This application Aug. 21, 1992, Ser. No. 933,311
Claims priority, application Japan, Dec. 29, 1990, 2-416173
Int. Cl.[5] B29C *65/78, 69/00*
U.S. Cl. 425—297 **9 Claims**

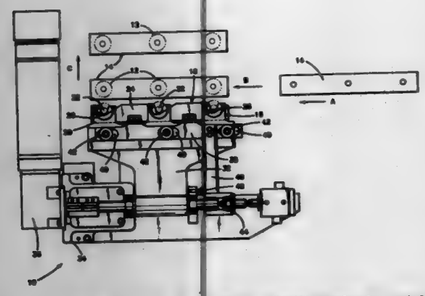


1. An apparatus for forming an annular member, comprising at least one lower mold having a receiving top surface and comprised of at least two separable lower mold segments, a support means for rotatably supporting the lower mold, rotating means for rotating the lower mold about a vertical rotating axis, and an extruder having an extrusion opening arranged closely adjacent the receiving top surface of the lower mold for extruding a crude rubber material directly on the receiving surface from the opening to adhere and form an arcuately

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curved annular member of crude rubber on the receiving surface of the lower mold.

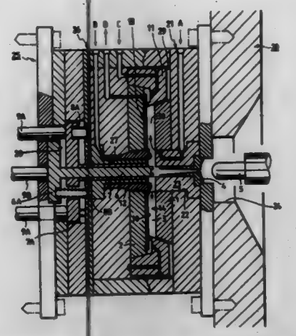
5,297,950
STRIPPING STATION
Paul F. Krosak, Newmarket, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada
Filed Sep. 23, 1992, Ser. No. 949,588
Int. Cl.[5] B29C *33/44*
U.S. Cl. 425—436 R 14 Claims



1. A stripping station for stripping hollow plastic articles from a holding means, comprising:
nest means for receiving neck portions of said articles;
means for admitting, trapping and ejecting said articles in said nest means, said means for admitting, trapping and ejecting including at least one cutout and being slidably mounted relative to said nest means and being displaceable between an admitting position, wherein said articles can be admitted into said nest means, a trapping position including a trapping means on said cutout of said means for admitting, trapping and ejecting and arranged so that in said trapping position said articles are trapped in said nest means for transport, and an ejecting position including an ejecting cam on said cutout of said means for admitting, trapping and ejecting, said ejecting cam pushing said articles out of said nest of said nest means.

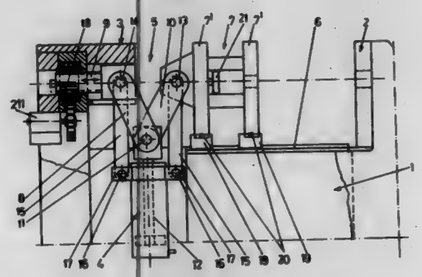
5,297,951
MOLD FOR PRODUCING MOLDED DISCS
Ikuo Asai, Ohbu, Japan, assignor to Kabushiki Kaisha Meiki Seisakusho, Ohbu, Japan
Filed May 13, 1992, Ser. No. 882,012
Int. Cl.[5] B29C *45/00*
U.S. Cl. 425—556 4 Claims

1. A mold for molding discs, comprising:
a stationary mold half having a stationary-side air hole opening into a central portion of a cavity for molding a disk;
a movable mold half having a first movable-side air hole opening toward the central portion of the cavity;
a second movable side air hole opening through said movable mold half and an outer peripheral ring toward an outer peripheral surface of a stamper fixed onto a mirror surface of the movable mold half;
an annular vacuum groove opening at an outer peripheral reverse side of said stamper; and
ejection means provided in said movable mold half for ejecting a disc molded in said cavity, wherein said annular vacuum groove opening holds said stamper in close contact with said movable mold half thereby preventing



air from said second movable side air hole from flowing to a reverse side of said stamper.

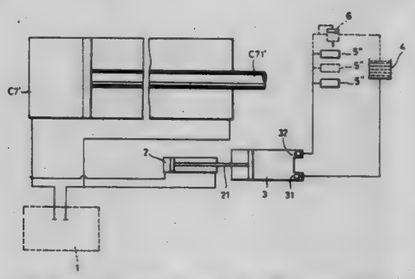
5,297,952
INJECTION MOLDING MACHINE WITH ARTICULATED CLOSURE
Heinrich Leonhartsberger, Schwertberg, Austria, assignor to Engel Maschinenbau Gesellschaft m.b.H., Schwertberg, Austria
Filed Sep. 9, 1992, Ser. No. 942,732
Claims priority, application Austria, Sep. 12, 1991, A1822/91
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—593 13 Claims



1. An injection molding machine comprising:
a machine frame;
a stationary die platen connected to the machine frame;
a front plate connected to the machine frame at a location spaced from the stationary die platen, the front plate being connected without bars to the stationary die platen and exclusively by the machine frame so that closing forces occurring during a closing process and lifting forces occurring during an injection process between the front plate and the stationary die platen are borne only by the machine frame;
at least two rails on the machine frame between the front plate and the stationary die platen;
a movable die platen guided on the at least two rails and supported on the machine frame; and
closure means connected between the front plate and the movable die platen for moving the movable die platen toward and away from the stationary die platen, the closure means comprising a toggle joint rotatably articulated between the movable die platen and the front plate;

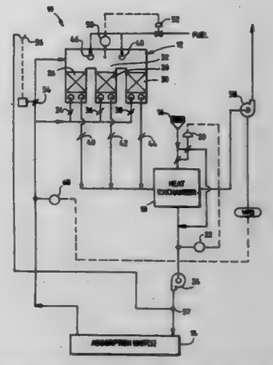
the movable die platen being resiliently mounted to the at least two rails for bracing the movable die platen against being lifted from the rails.

5,297,953
TOGGLED INJECTION MOLDING MACHINE HAVING A LUBRICATING SYSTEM
Po-Li Wang, Tainan City, Taiwan, assignor to Fu Chun Shin Machinery Manufacture Co., Ltd., Bay-Tow Village, Taiwan
Filed Dec. 22, 1992, Ser. No. 994,999
Int. Cl.[5] B29C *45/66*
U.S. Cl. 425—593 2 Claims



1. An injection molding machine, said injection molding machine including a stationary mold half unit, a movable mold half unit which can be moved towards and away from said stationary mold half unit, a toggle mechanism coupled with said movable mold half unit so as to be driven to move said movable mold half unit towards and away from said stationary mold half unit, a mold pressing hydraulic cylinder having a piston rod coupled with said toggle mechanism so as to drive said toggle mechanism, an oil feed system coupled with said mold pressing hydraulic cylinder so as to provide hydraulic pressure for said mold pressing hydraulic cylinder to drive said toggle mechanism, and a lubricating system said lubricating system comprising:
a pump driving hydraulic cylinder coupled with said oil feed system in such a manner that said pump driving hydraulic cylinder can be activated synchronously with said mold pressing hydraulic cylinder, said pump driving hydraulic cylinder having a cylinder body and a piston rod extending outward from said cylinder body, said piston rod having an outer end which can be moved hydraulically toward and away from said cylinder body;
an oil tank for storing lubricating oil; and
a lubricating oil pump having an oil inlet unit coupled with said oil tank and an oil outlet unit coupled with said toggle mechanism, said oil pump being coupled with said piston rod of said pump driving hydraulic cylinder; whereby, when said outer end of said piston rod of said pump driving hydraulic cylinder is moved toward said cylinder body of said pump driving hydraulic cylinder, said oil pump is activated to receive lubricating oil through said inlet unit; when said outer end of said piston rod of said pump driving hydraulic cylinder is moved away from said cylinder body of said pump driving hydraulic cylinder, said oil pump is activated to force lubricating oil from said oil pump to said toggle mechanism through said outlet unit so as to lubricate said toggle mechanism.

5,297,954
VOLATILE ORGANIC COMPOUND ABATEMENT SYSTEM
Frank M. Colsgiovanni, Washington, Mich., assignor to Haden Schweitzer Corporation, Madison Heights, Mich.
Filed Mar. 11, 1993, Ser. No. 29,692
Int. Cl.[5] F23D *14/00*
U.S. Cl. 431—5 8 Claims



1. A volatile organic compound abatement system comprising:
(a) at least one volatile organic compound adsorption unit;
(b) supply means for inputting a desorption gas flow into said adsorption unit;
(c) heat exchange means associated with said supply means for heating said desorption gas flow in said supply means;
(d) transfer means for carrying a gas flow effluent from said adsorption unit;
(e) a thermal regenerative oxidizing unit comprising a combustion chamber and a plurality of thermal regeneration beds, said unit connected to said transfer means to thereby receive said gas flow effluent in at least one of said regeneration beds;
(f) bypass means coupled with said transfer means for allowing a predetermined portion of said gas flow effluent to circumvent said thermal regeneration beds and pass directly into said combustion chamber;
(g) control means for sensing the temperature of said gas flow in said supply means and selectively activating said bypass means responsive to the temperature sensed; and
(h) exhaust means coupled with said thermal regenerative oxidizing unit and associated with said heat exchange means for transferring thermal energy from the exhaust of said thermal regenerative oxidizing unit to said desorption gas flow prior to discharging said exhaust into the atmosphere.

5,297,955
JET BURNER CONSTRUCTION, HEATING APPARATUS UTILIZING THE JET BURNER CONSTRUCTION, AND METHODS OF MAKING THE SAME
Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 880,725, May 8, 1992, Pat. No. 5,188,526, which is a division of Ser. No. 710,658, Jun. 5, 1991, Pat. No. 5,131,839. This application Oct. 28, 1992, Ser. No. 967,834
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] F23D *14/58*
U.S. Cl. 431—286 20 Claims

1. In a jet burner construction comprising a burner body means having a chamber means therein and having an inlet

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means leading to said chamber means for directing fuel from a fuel source therein and an outlet means leading from said chamber means and defining an outlet opening means through which said fuel is adapted to issue from said chamber means to burn externally to said burner body means, said burner body means having wing-like extensions respectively disposed on opposite sides thereof for respectively interconnecting with adjacent wing-like extensions of adjacent burner constructions, said wing-like extensions each being separated from the other wing-like extension by said burner body means and having a side edge means and an elongated outlet slot means extending



along said side edge means thereof and interconnecting with said outlet opening means and through which fuel is adapted to issue so as to burn external to said wing-like extensions, each said slot means having a certain height throughout the elongated length thereof, each said wing-like extension having a chamber therein that interconnects with said chamber means of said body means and is adapted to feed fuel from said chamber means to the respective said slot means thereof along a major portion of said elongated length thereof, the improvement wherein each said chamber has a height throughout substantially the entire area thereof that is greater than said certain height of its respective slot means.

5,297,956

METHOD AND APPARATUS FOR HEAT TREATING

Kikuo Yamabe, Yokohama; Keitaro Imai, Kawasaki; Katsuya Okumura, Yokohama; Kei Nakao, Sagamihara, and Seikou Ueno, Mizusewa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Tokyo Electron Sagami Limited, Kanagawa, both of Japan

Filed Nov. 29, 1991, Ser. No. 799,931

Claims priority, application Japan, Nov. 30, 1990, 2-340622; Nov. 8, 1991, 3-292725

Int. Cl.[5] F23D *5/00*

U.S. Cl. 432—5 **3 Claims**

1. A method of heat treating a plurality of substrates to be treated comprising:

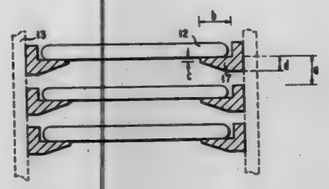
providing a heat treating apparatus having said substrates to be heat treated, a plurality of jigs for supporting said substrates in parallel with each other, and a heater for supplying heat to said substrates such that said heater is disposed at a position surrounding said substrates to be treated in parallel through a predetermined distance between said heater and said substrates;

the method further comprising a predetermined shape determining step for determining the shape of said jigs so as to make the temperature distribution in a radial direction of said substrates uniform during heat treatment thereof and after said shape determining step, the method including providing jigs of the determined shape in said apparatus;

said shape determining step comprising:

an initializing step of previously setting the setting condition of said heater as a prerequisite of determining shape of said jigs and shape conditions of said substrates;

a preliminary experimental step of heating said heat treating apparatus of a state having no said jigs under setting conditions of said initializing step to experimentally obtain presence or absence of a slip of each of said substrates with a pitch of said substrates;



a simulation calculating step of obtaining the radial distribution of the quantity of radiation heat from said heater by simulation with a pitch of said substrates;

a step of obtaining a maximum gradient ratio r of a maximum gradient of said jigs having a one time pitch to be actually carried out to the maximum gradient of said jigs having a four times pitch confirmed that no slip occurs in said preliminary experimental step on a basis of a predetermined graph;

a predetermined procedure of determining a preferable "thickness" of said jig by using said maximum gradient ratio r in a case where a thickness thereof is constant; and

a predetermined procedure of determining a preferable "width in a direction to a center of said substrates" of jigs by using said maximum gradient ratio r in the case where the thickness thereof is constant.

5,297,957

ORGANIC WASTE INCINERATOR

David F. Brashears, Belle Isle, Fla., assignor to Thermotech Systems Corp., Orlando, Fla.

Filed Jun. 11, 1992, Ser. No. 897,051

Int. Cl.[5] F27D *7/00*

U.S. Cl. 432—14 **21 Claims**

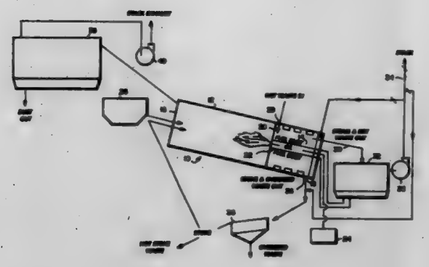
1. In a waste incinerator system having a rotary drum including a heating zone, a drying zone and a burner between said zones for generating hot gases of combustion, a method of incinerating high moisture content waste material comprising the steps of:

flowing surrogate heat transfer medium in said heating zone of said drum in countercurrent heat transfer relation to the flow of the hot gases of combustion;

introducing the heated surrogate medium into the drying zone for flow therethrough;

introducing the high moisture content waste material into the drying zone for cocurrent flow with the high moisture content waste material in the drying zone;

rotating the drum to enhance the heat transfer relation between the hot gases of combustion and the surrogate medium in the heating zone and between the heated surrogate medium and the high moisture content waste material in the drying zone such that at least some of the moisture of the waste material in the drying zone is evaporated into steam and the waste material is dried, the rotation of the drum also causing a first portion of the waste material dried in said drying zone to become entrained in the steam in said drying zone;



separating the steam and the first portion of the dried waste material one from the other in a separator;

conveying the separated first portion of the dried waste material to the burner to serve as fuel for the burner for the generation of the hot gases of combustion; and

discharging the separated steam from the separator.

5,297,958

Patent Not Issued For This Number

5,297,959

HIGH TEMPERATURE FURNACE

Klaus H. Hemseth, Toledo, Ohio, assignor to Indugas, Inc., Toledo, Ohio

Division of Ser. No. 805,580, Dec. 10, 1991, Pat. No. 5,207,972, which is a continuation-in-part of Ser. No. 520,244, May 7, 1990, Pat. No. 5,078,368. This application Apr. 15, 1993, Ser. No. 47,950

Int. Cl.[5] F27B *9/16*

U.S. Cl. 432—138 **9 Claims**

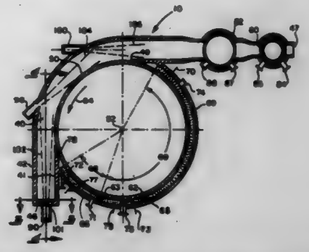
1. An industrial furnace for indirectly heating fluids to high temperatures comprising:

a) a ceramic furnace casing having a longitudinally extending heat track conduit section and a cylindrical wall section adjacent said heat track conduit section;

i) said heat track conduit section having an arcuately shaped outer wall, an inner heat track wall spaced from said outer wall with an opening formed therein, said inner heat track wall adjacent said cylindrical wall section, said heat track conduit section having an inlet end and an outlet end;

ii) said cylindrical wall section defined by an arcuate wall circumferentially extending a predetermined arcuate distance with circumferential ends thereof terminating generally adjacent said inner heat track wall;

b) a longitudinally-extending heat transfer cylinder disposed within said cylindrical outer wall section and having a first surface portion of its circumferential surface extending into said opening to comprise a portion of said heat track conduit; said heat transfer cylinder having a second circumferential surface portion disposed within and spaced radially inwardly from said outer cylindrical wall to define an annular heat transfer space therebetween; a



plurality of heat exchange tubes within said annular heat transfer space carrying a fluid medium to be heated;

c) burner means at said inlet end firing products of combustion into said heat track conduit section to heat said portion of said heat transfer cylinder extending into said opening; and

d) means for rotating said heat transfer cylinder whereby said first surface portion rotates to a position adjacent to said cylindrical outer wall for heating said heat exchange tubes while said second surface portion rotates into said opening to be heated by said burner means.

5,297,960

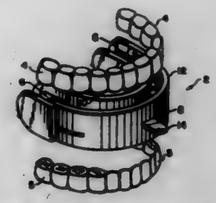
EXPANDABLE DUAL DENTAL IMPRESSION TRAY

William F. Burns, 21 Brooklawn Dr. Box 262, Pompton Plains, N.J. 07444

Filed Nov. 23, 1992, Ser. No. 980,346

Int. Cl.[5] A61C *9/00*

U.S. Cl. 433—41 **6 Claims**



1. An adjustable dual dental impression tray comprising an anterior section having a pair of spaced apart vertical walls joined by a mesh cloth extending horizontally therebetween, left and right branches of said anterior section extending rearwardly, left and right posterior extension sections each comprising spaced apart vertical inner and outer walls joined by mesh cloth extending horizontally between inner surfaces of said inner and outer wall of said posterior sections, and securing means securing said posterior extension sections to said anterior section in sliding connection with said anterior section, and wherein said mesh of said anterior section extends between said walls at the approximate mid height of said walls, horizontal slots extending through said walls forwardly from the rear ends and located slightly below said mesh cloth of said anterior section to permit the mesh of said posterior extensions to move forward to overlap the mesh of said anterior section.

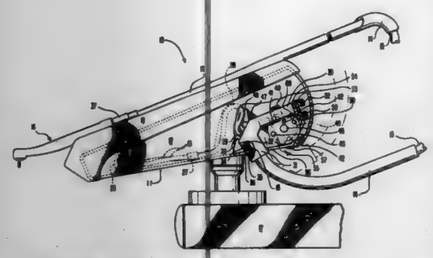
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5,297,961

DENTAL CONTROL UNIT WITH ARTICULATED WHIP ARMS

Richard W. Hanson, Sherwood, Oreg., assignor to MDT Corporation, Torrance, Calif.

Filed Apr. 20, 1993, Ser. No. 50,868
Int. Cl.[5] A61G *15/00*
U.S. Cl. 433—77 20 Claims



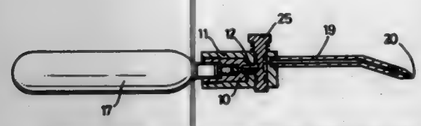
1. A dental control unit comprising:
a base having a top surface, a front edge, a rear edge, and at least one slot formed through said base at said rear edge thereof;
a housing covering said top surface of said base;
at least one whip arm mounting means on said top surface of said base pivotally mounting a whip arm to swing through a said slot at said rear edge of said base from a rest position to a use position;
a conduit for each said whip arm, each said conduit having one end entering said whip arm in said housing, extending through said whip arm and having the other end of said conduit projecting from said whip arm;
a connector member on said other end of said conduit;
a dental handpiece connected to said connector member; and
means on the housing to position each said connector member and dental handpiece connected thereto, when said whip arm is in the rest position.

5,297,962

DENTAL CLEANING DEVICE

James D. O'Connor, and Cornelius P. O'Connor, both of Hartlepool, England, assignors to Air-Brush Ltd., Cleveland, England

Filed May 18, 1992, Ser. No. 884,438
Claims priority, application United Kingdom, May 20, 1991, 9110833; Aug. 30, 1991, 9118574
Int. Cl.[5] A61C *5/04*; A61G *17/02*
U.S. Cl. 433—89 5 Claims



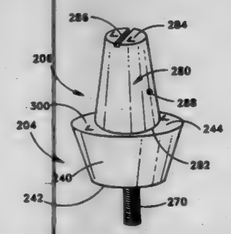
1. A dental device which comprises a rigid body having a fluid inlet, a fluid outlet and a passage connecting said inlet to said outlet, a valve to control fluid flow from said inlet to said outlet, manual means for operating the valve, a rigid tube extending from the outlet and forming a discharge orifice at its distal end, and pressure relief means between said outlet and said discharge orifice, said operating means being mounted for movement between a first position in which a chamber within said device is placed in communication with said fluid inlet, whereby fluid can flow into said chamber from said inlet, and a second position in which said chamber is placed in communication with said outlet, whereby fluid can flow from said chamber to said outlet.

5,297,963

ANATOMICAL RESTORATION DENTAL IMPLANT SYSTEM WITH INTERLOCKABLE ELLIPTICAL HEALING CAP ASSEMBLY AND MATCHING ABUTMENT MEMBER

Fereidoun Dafatry, 50 N. La Cienega Blvd., No. 206, Beverly Hills, Calif. 90211

Filed May 17, 1993, Ser. No. 61,746
Int. Cl.[5] A61C *13/12, 13/225, 8/00*
U.S. Cl. 433—172 30 Claims



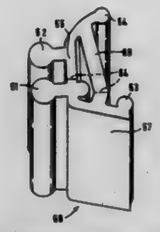
1. An interlockable healing cap assembly attachable to an exposed end of a dental implant fixture which has a hollow with inner screw threads, the healing cap assembly comprising:
a. an integral bolt member having a widened head segment and an elongated shaft segment, the shaft segment having a proximal section with screw threads and a smooth distal section;
b. a healing cap member having a divergent body with a smaller proximal end, a larger distal end, and a stepped interior bore extending from the distal end to the proximal end and having a smooth proximal section and a threaded distal section;
c. said healing cap member and said bolt member being interlockable by threading said proximal section of said shaft segment of said bolt member into said distal section of said interior bore of said healing cap member;
d. said distal section of said shaft segment of said bolt member being longer than said distal section of said interior bore of said healing cap member, such that after said proximal section of said shaft segment of said bolt member is completely threaded through said distal section of said interior bore of said healing cap member from said distal end of said healing cap member, said healing cap member and said bolt member are no longer threadably engaged; and
e. said shaft segment of said bolt member being longer than said interior bore of said healing cap member, such that after said shaft segment of said bolt member extends through said interior bore of said healing cap member from said distal end of said healing cap member, there is still a substantial portion of said proximal section of said shaft segment of said bolt member which can be threadably engaged with said implant fixture for fastening said healing cap member to said exposed end of said implant fixture.

5,297,964

DENTAL CROWN AND RIGID CONNECTOR

Adam Oberst, Logenstrasse 4, 6750 Kaiserslautern, Pfalz, Fed. Rep. of Germany

Division of Ser. No. 839,251, Feb. 20, 1992, Pat. No. 5,266,032. This application May 27, 1993, Ser. No. 68,215
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1991, 9102106
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—218 7 Claims



1. A core for manufacturing a dental crown wherein the crown has the following features:
a dental crown as a matrix for being telescopingly applied to and removably secured to a rigid connector as patrix, for providing a removable prosthetic tooth, the dental crown matrix comprising:
a plurality of parallel walls adapted for telescopingly passing over and meeting with corresponding parallel walls on the connector;
a first and a second friction grooves defined by respective ones of the walls;
a lingual functional surface, generally extending between the first and second friction grooves; an outer surface on the opposite side from the lingual functional surface;
a supergingival cervical offset in the vicinity of the lingual functional surface;
the connector including a saddle by which the connector is secured in the mouth; the crown matrix including a supporting surface generally adjacent and facing toward the saddle; the first friction groove being defined in and along the supporting surface; the second friction groove being away from the surface of which the first friction groove is formed; a third friction groove in the lingual functional surface;
an intracoronal channel extending across the crown, generally parallel to the lingual functional surface and displaced from both of the first and the second friction grooves toward the lingual functional surface;
all of the grooves, the channel and the cervical offset being defined by the parallel walls;
the core having a cross section which is complementary to the cross section of the crown, and the core having projecting elements corresponding to the grooves and the channel in the crown.

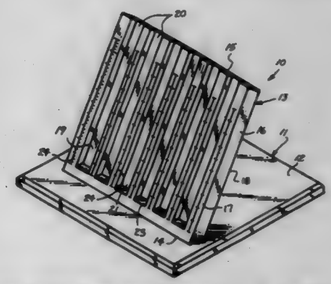
5,297,965

MATHEMATICAL AND SPATIAL TOY APPARATUS

Sergio O. Manasacero, 7103 Trenton La. North, Maple Grove, Minn. 55369-5609

Filed Apr. 12, 1993, Ser. No. 44,767
Int. Cl.[5] G09B *1/00, 19/02, 19/00*
U.S. Cl. 434—195 2 Claims

1. A mathematical and spatial toy apparatus, comprising,
a base housing, the base housing including a base housing top wall and spaced base housing side walls, and a base housing rear wall spaced from a base housing front wall, with a rack housing mounted to the base housing top wall, the rack housing including a rack housing bottom wall spaced from a rack housing top wall, spaced rack housing side walls, a rack housing front wall, and a rack housing rear wall, with a plurality of parallel grooves arranged coextensively relative to one another orthogonally oriented to the rack housing top wall and extending through the rack housing top wall, wherein the rack housing top wall includes a groove entrance relative to each of the parallel grooves, each of the parallel grooves includes a groove floor coextensive with each of the parallel grooves, and a grove end wall positioned in adjacency to and spaced from the rack housing bottom wall,
and
each of the grooves includes an individual indicia line arranged parallel to and coextensive relative to each of said parallel grooves, wherein each indicia line is demarcated at predetermined increments,
and
a plurality of block members of varying lengths, wherein the varying lengths are multiples of said predetermined increments permitting complementary positioning of at lest one of said block members within one of said grooves, and



the base holding top wall includes at op wall slot, and a support leg, the support leg having a first end having a first axle positioned within said top wall slot, the support leg having a support leg second end, and a second axle through the support leg second end, wherein the first axle is parallel to the second axle, and a latch flange fixedly and orthogonally mounted to the rack housing rear wall, with the latch flange having a latch flange slot receiving the second axle orthogonally therethrough, and the latch flange further including a plurality of intersecting spaced recesses, wherein each of said spaced recesses is arranged to receive the second axle selectively, and a plurality of rack housing support flanges fixedly and orthogonally mounted to the base housing top wall, wherein the support flanges each include a support flange axle, and each support flange axle is orthogonally oriented relative to the latch flange slot permitting pivoting of the rack housing about each support flange axle.

5,297,966

MOUNTING BRACKET FOR AN ELECTRICAL CONNECTOR

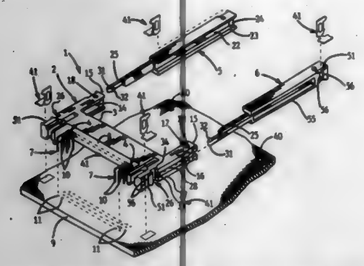
Ronald W. Brennian, Jr., Columbia; Robert S. Correll, Jr., Harrisburg, and Jon A. Fortuna, Mechanicsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 926,628, Aug. 10, 1992. This application Dec. 8, 1992, Ser. No. 987,225
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—64 11 Claims

1. An electrical connector comprising: a housing; a card receiving mouth in the housing; electrical contacts carried by the housing in the mouth; prong receiving sockets on the housing; guide arms on opposite sides of the mouth; a card receiving groove on each of the guide arms; a prong on each of the guide arms being constructed for locking engagement with the sockets; channels in the housing and the guide arms; a mounting bracket in selected channels, each mounting bracket

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comprising; spaced arms projecting from a base providing a solder connection to a circuit board, projections on one of the arms, and a hold down finger extending laterally from one of the arms; each mounting bracket being slidable in the selected channel with the projections biasing the arms against opposite



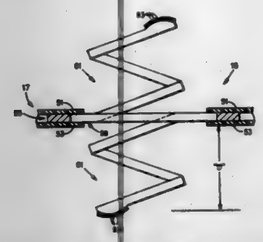
sides of the channel, each of the channels being widened at opposite ends to provide a first ledge and a second inverted ledge at the opposite ends, and the hold down finger overlapping a selected one of the first ledge and the inverted ledge to position the base in a first noninverted position or in a second, inverted position.

5,297,967

ELECTRICAL INTERCONNECTOR WITH HELICAL CONTACTING PORTION AND ASSEMBLY USING SAME

John G. Baumberger, Johnson City; Fraser P. Donlan, Jr., and James R. Petrozello, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,839
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **35 Claims**



1. An interconnector for electrically interconnecting a plurality of electrical conductors on a first electrical circuit member to a plurality of electrical conductors on a second electrical circuit member, said interconnector comprising:

a dielectric member adapted for being positioned between said first and second electrical circuit members; and

a plurality of electrical conductive elements formed from a single sheet of material, each element including

a relatively flat base portion located within or upon said dielectric member in a substantially planar orientation with the others of said base portions,

a first resilient helical portion extending in a direction away from said flat base portion and said dielectric member and adapted for engaging a respective one of said electrical conductors on said first of said electrical circuit members in a non-wiping form of engagement, and

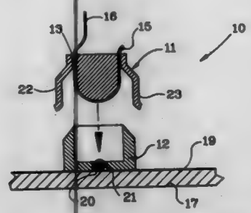
means located on said flat base portion for electrically contacting a respective one of said electrical conductors on said second of said electrical circuit members.

5,297,968

PLUGGABLE CONNECTOR SYSTEMS FOR FLEXIBLE ETCHED CIRCUITS

David C. Johnson, Winston Salem; Keith L. Volz, Jamestown; Warren A. Bates, Winston Salem; Frederick R. Deak, Kernersville, and Robert M. Renn, Pfafftown, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 12, 1993, Ser. No. 3,161
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **12 Claims**



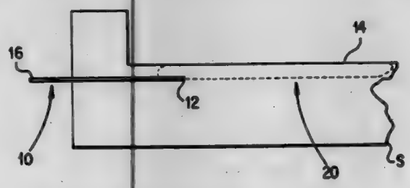
1. A pluggable connector system including at least one flexible etched circuit, comprising a first housing, a flexible etched circuit carried by the first housing, a second housing receiving the first housing in at least a partially nested relationship therebetween, quick-disconnect retaining means for releasably retaining the first and second housings as the housings are nested, circuit means associated with the second housing, wherein said circuit means comprises at least one circuit pad on a printed circuit board, wherein the second housing comprises a connector housing secured to the printed circuit board and having an opening formed therein, and wherein a flexible electrical connector is received in the opening in the connector housing, the flexible electrical connector interfacing between a flexible etched circuit and the circuit pad, and means for establishing electrical contact between the flexible etched circuit and the circuit means when the housings are in their nested relationship.

5,297,969

ELECTRICALLY CONNECTABLE MODULE WITH EMBEDDED ELECTRICAL CONNECTORS ELECTRICALLY CONNECTED TO CONDUCTIVE TRACES

David A. Mantell, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 721,080, Jun. 26, 1991, Pat. No. 5,220,726.
This application Jun. 1, 1993, Ser. No. 69,465
Int. Cl.[5] H05K *3/00*
U.S. Cl. 439—86 **8 Claims**



1. An electrically connectable module comprising:

a substrate formed from an electrically insulating polymer matrix doped with an electrically insulating fibrous filler capable of heat conversion to an electrically conductive fibrous filler;

an electrical connector embedded into the substrate and having one end adjacent a surface of the substrate and an opposite end exposed from the substrate;

a continuous electrically conductive trace formed on the surface of the substrate by in-situ heat conversion of the electrically insulating fibrous filler; and

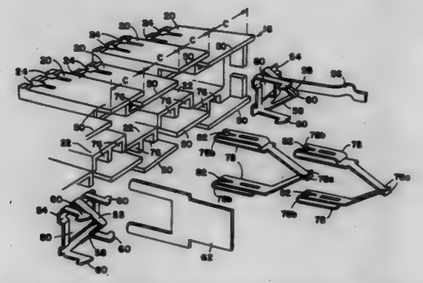
a connection formed between the one end of the electrical connector and the conductive trace by the in-situ heat conversion of the electrically insulating fibrous filler in the polymer matrix surrounding the one end of the electrical connector.

5,297,970

CONNECTOR BLOCK AND CONNECTOR BLOCK ASSEMBLY WITH OFFSET CONTACTS

William V. Carney, Oyster Bay, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,460
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—108 **5 Claims**



1. A connector block formed of insulative material and comprising a plurality of adjacent hollow cells, each configured to hold at least one electrical connector therein, said cells being arranged side by side along a longitudinal line with each cell occupying a separate portion of said line and adjacent cells being displaced from one another in a first direction transversely of said line, each cell being configured to have at least one first opening to the exterior of said block, each said first opening being formed and arranged to accept a wire conductor, said first openings extending in said first direction transversely of said longitudinal line, each cell being further configured with a second opening extending from said cell to the exterior of said block in a second direction transversely of said longitudinal line and transversely of said first direction.

5,297,971

SPARK PLUG CAP

Shigemitsu Nitta, Kakogawa, and Mikio Kamitake, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

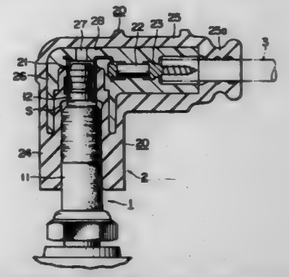
Filed Jan. 15, 1993, Ser. No. 5,215
Claims priority, application Japan, Jul. 17, 1992, 4-213305
Int. Cl.[5] H01R *11/28*
U.S. Cl. 439—125 **6 Claims**

1. A spark plug cap comprising:

a metal connection member for electrically connecting a spark plug to a high-voltage cord;

a tubular rubber body for mounting on an end of the high-voltage cord and on an insulating portion of the spark plug to seal the end and the insulating portion; and

a core member within said rubber body surrounding said metal connection member, said core member including a



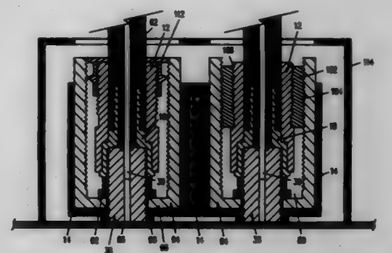
through hole defining a first volume between a terminal of the spark plug and the rubber body.

5,297,972

COAXIAL CABLE CONNECTION PROTECTION SYSTEM

Corey McMills, Los Altos, and John Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 10, 1992, Ser. No. 912,106
Int. Cl.[5] H01R *13/639, 17/04*
U.S. Cl. 439—133 **30 Claims**



1. A system for protectively connecting a coaxial cable terminus to a standard coaxial cable connection jack, wherein the connection jack comprises (1) an externally threaded body with a connection jack aperture, and (2) an internal electrical conductor disposed within, but insulated from, the body proximate to the connection jack aperture, the system comprising:

a. an electrically conductive connection jack connector comprising a connection jack attachment moiety and a cable attachment moiety, the connection jack attachment moiety having a collet structure with a base, a base aperture and a plurality of flared fingers, and the cable attachment moiety having an open ended hollow cylinder which communicates with the collet base aperture, wherein the connection jack attachment moiety is attached tightly around the threaded body of the connection jack and the cable attachment moiety is attached to the coaxial cable terminus in such a way that the cable attachment moiety is in electrical contact with the concentric conductor and in such a way that the central conductor protrudes axially through the collet base aperture, through the connection jack aperture, and is in electrical contact with the internal electrical conductor;

b. a hollow, open-ended swagging shell comprising a compression moiety and a retraction moiety, the compression moiety being disposed tightly over the flared fingers of the connection jack connector thereby applying hoop stress to the flared fingers so as to urge the flared fingers into

tight connection with the threaded body of the connection jack; and

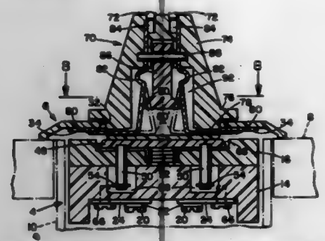
c. a hollow locking shroud having elongated side walls which define a locking shroud chamber with an open end, the locking shroud being disposed with respect to the connection jack in such a way that the side walls surround the connection jack, the connection jack connector and the swagging shell.

5,297,973

SAFETY ELECTRICAL CONNECTION APPARATUS

Michael P. Gorman, 3430 Highland Dr., Carlsbad, Calif. 92004

Filed Sep. 15, 1992, Ser. No. 945,816
Int. Cl.[5] H01R *13/15*
U.S. Cl. 439—265 8 Claims



1. A safety electrical connection apparatus comprising:

a connection box having sides and a bottom and being open at the top;

a cover having front and back surfaces and adapted to having said back surface removably engage said sides and substantially close said top, said cover having at least one opening therethrough adapted to receive a plug, said cover further comprising electrical conductor means on said back surface thereof, said electrical conductor means extending to a periphery of said opening;

electrical connection means within said box contacting electrical wiring external to said box;

conduit means within said box to provide an electrical path from said electrical connection means to said electrical conductor means on said back surface of said cover;

a plug having movable electrical contacts which retractably extend outwardly therefrom and are adapted, when said plug is inserted through said opening, to engage said electrical conductor means on said back surface of said cover at said periphery of said opening and complete and electrical circuit therewith; and

closure means adapted to be seated in and close said opening when said plug is not inserted through said opening and to be urged away from said opening when said plug is inserted therethrough.

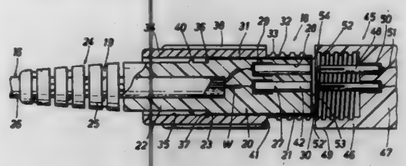
5,297,974

POSITIVELY RELEASED SEISMIC CABLE CONNECTOR

Don L. Fussell, 6209 Windfern, Houston, Tex. 77040

Filed Sep. 14, 1992, Ser. No. 944,305
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—320 5 Claims

1. In an electrical connector assembly having a pair of connector body members with confronting end faces, said members having pin and socket means for making electrical connections, one of said members having first axial cam means, comprising: tubular means rotatably mounted on the other of said body members and having second axial cam means cooperable with said first axial cam means to force said tubular means axially toward said one body member in response to relative rotation in one hand direction to engage said socket and pin means; coengageable first drive means on said tubular means and said other body member for pushing said other body member axially toward said one body member to cause engagement of said pin and socket means with one another and to forcefully engage said confronting faces in response to said relative rotation, said first drive means including a rearwardly facing shoulder on said other body member, an internal radial groove in said tubular means, and a drive ring mounted partially in said groove and arranged to engage said shoulder; coengageable second drive means on said tubular means and said other body



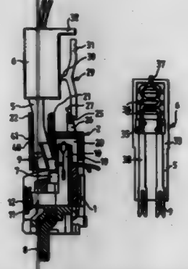
member for pulling said other body member away from said one body member to at least partially release said pin and socket means in response to relative rotation in the opposite hand direction; and means forming a lost-motion coupling in connection with said first and second drive means to allow partial release of said axial cam means before the said pulling of said other body member away from said one body member begins.

5,297,975

TERMINAL BANK FOR THE TELECOMMUNICATION AND DATA TECHNOLOGY

Dieter Gerke; Manfred Müller, and Harald Bülow, all of Berlin, Fed. Rep. of Germany, assignors to Krone Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 934,862
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127896
Int. Cl.[5] H01R *9/00*
U.S. Cl. 439—358 14 Claims



1. A connection system for switching connections between a plurality of incoming and outgoing wires, the system comprising:

a cable connecting member including a plurality of cutting/-clamping means for electrically connecting to the plurality of incoming wires, each of said plurality of said cutting/clamping means electrically connecting to a separate one of the plurality of incoming wires, each of said cutting/clamping means being electrically connected to a separate contact lug and each of said plurality of cutting/-clamping means having an opening for receiving one of said incoming wires when moved in a first direction;

a plug receiver having means for latching onto said cable connecting member when moved in said first direction, said plug receiver defining a plurality of chambers, each of said plurality of chambers being in communication with a separate group of said contact lugs of said cable connecting member said plug receiver also defining a channel, a portion of said channel covering said opening of said cutting/clamping means and securing the plurality of incoming wires in said cutting/clamping means when said plug receiver is latched to said cable connecting member; and

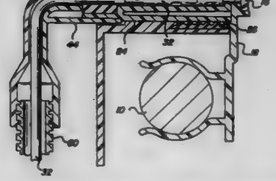
a plurality of plug connectors, each of said plurality of plug connectors having foot means for inserting into one of said chambers, each foot means of said plurality of plug connectors having a plurality of bifurcated contact means for electrically connecting with said separate group of said contact lugs when said plug receiver is latched onto said cable connecting member, each of said plurality of bifurcated contact means forming a separate electrical connection with each of said contact lugs, each of said plurality of plug connectors having a plurality of cutting/clamping means for electrically connecting to said plurality of bifurcated contact means, each of said plurality of cutting/-clamping means separately connecting to each of said plurality of bifurcated contact means, each of said cutting/clamping means also separately connecting to the plurality of incoming wires, each of said plug connectors being insertable into and switchable between any of said chambers for selectively electrically connecting one of the plurality of incoming wires with one of the plurality of outgoing wires.

5,297,976

SEALABLE ELECTRICAL CONNECTOR FOR AN AIRBAG SENSOR

Allen VanDerStuyf, Novi; Shane Vartti, Berkeley, and Dewey Mobley, Lake Orion, all of Mich., assignors to Electro-Wire Products, Inc., Dearborn, Mich.

Filed May 17, 1993, Ser. No. 62,818
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—271 24 Claims



1. An environmentally sealable electrical connector assembly for a sensor including:

a terminal member having a first end configured to establish electrical communication with the sensor and a second end configured to establish electrical communication with a mating connector;

a grip member configured to support said terminal member so that the second end of the terminal member projects therefrom;

housing member having an interior surface which defines a passageway therethrough, said passageway being open at a first end and at a second end of the housing, a first length of said passageway having a first circumference and a second length of said passageway having a second circumference greater than said first circumference, said second length defining a seal retaining region of said interior surface, said seal retaining region including an undercut edge at the junction of the first and second length;

an elastomeric ring seal having an interior circumference which corresponds generally to the first circumference of the passageway and an exterior circumference which corresponds generally to the second circumference of the passageway, said ring seal including a first edge configured to engage, and be retained by, the undercut edge;

wherein the first end of said housing is configured to be fastened to, and closed by, the grip member so that the second end of said terminal member projects into the interior passage of the housing.

5,297,977

PACKAGED SAFETY JUMPER ABLE

Maurice Lamper, 20 Harding Ave., Gonic, N.H. 03839

Filed Oct. 21, 1991, Ser. No. 780,125
Int. Cl.[5] H01R *11/00*
U.S. Cl. 439—504 4 Claims



1. A package safety jumper cable comprising:

two sets of cables, each set having a ground (negative) wire and a power (positive) wire and each of said ground and power wires being of a heavy enough gauge to serve as a jumper cable and having an inner and an outer end with said outer end of each terminating in a clamp adapted to attach to a terminal of a battery;

a container sized to hold said cables and clamps and having therein a junction plate with electrical attachment points securing said inner ends of said ground and power wires of each said set such that in operation the current can flow there between; and

a manual switch carried by said junction plate and being capable of carrying the amperage necessary for jump starting a vehicle and interposed between and operably connected to said inner end of one of the wires of each of said sets such that when said manual switch is closed in operation current can flow between said wires of each set of the same polarity.

5,297,978

TOTE 'N FLOTE WATER VEHICLE

James W. Ramsey, 2870 St. Michael Dr., Missoula, Mont. 59803

Filed Apr. 1, 1992, Ser. No. 861,750
Int. Cl.[5] B63B *17/00*
U.S. Cl. 441—131 12 Claims

1. A water vehicle comprising, in combination:

an ovoid, inflatable tube which is internally divided into a forward and an aft independently inflatable chamber;

a rigid seat platform;

a means of attaching the rigid seat platform to the ovoid, inflatable tube;

a dry duffel stowage compartment;

a means of attaching a dry duffel stowage compartment to the ovoid, inflatable tube;

a removable, dry, duffel day-pack;

a means of attaching the removable, dry, duffel day-pack to the dry duffel stowage compartment;

a plurality of removable wet wells;

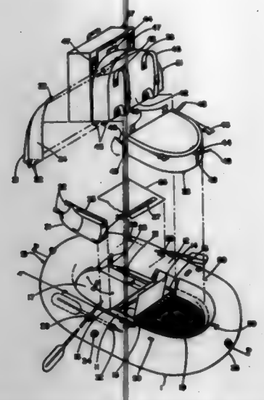
a means of attaching the removable wet wells to the ovoid, inflatable tube;

a backpack;

a means of securing the backpack within the dry duffel stowage compartment;

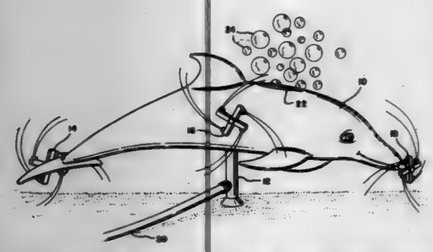
a plurality of circular oar locks;

a plurality of oar clips complimentary to the circular oar locks;
a means of attaching the oar locks to the ovoid, inflatable tube;
a fly apron;



a means of attaching the fly apron to the ovoid, inflatable tube;
a means of attaching the removable wet wells to the removable, dry, duffel day-pack;
a means of attaching the removable, dry, duffel day-pack and removable wet wells to the backpack.

5,297,979
BUBBLE MAKER
Alan B. Amron, 170 Berryhill Rd., Syosset, N.Y. 11797
Filed May 3, 1993, Ser. No. 58,513
Int. Cl.[5] A63H *33/28*; B05B *17/00*
U.S. Cl. 446—16 4 Claims



1. A device for producing bubbles from water pressure, including a turbine, means for connecting said turbine to a source of pressurized water for rotating said turbine, a fan for forming a flow of air, means for rotating said fan upon rotation of said turbine, a container for a solution capable of forming bubbles, a dipper having at least one opening adapted to be positioned within said container and then withdrawn into the flow of air created by such fan, and means connecting said turbine to said dipper for placing said at least one opening into said container for receiving said solution therewithin and withdrawing said at least one opening into the flow of said air upon rotation of said turbine.

5,297,980
SUCTIONING AND PUMPING TOY FOR MALLEABLE PLAY MATERIALS
Mark J. Barthold, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Jan. 24, 1992, Ser. No. 825,472
Int. Cl.[5] A63H *33/40, 33/30*; B05B *1/20*; A61M *5/178*
U.S. Cl. 446—180 3 Claims

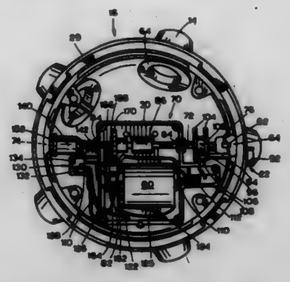


1. A suctioning and pumping activity play set for use in combination with a malleable play material comprising:
a suction and pumping device including a hollow body, a nozzle extending from said body defining a nozzle end having a first snap-fit engagement means supported thereon and means for drawing malleable material into said hollow body and expelling it therefrom through said nozzle; and
at least one interrelated toy article having a body portion defining a recess for receiving said nozzle end of said nozzle and a second snap-fit engagement means within said body and having an unobstructed aperture formed in said body portion and a passage extending from said second snap-fit engagement means in said recess outwardly from said toy article to said opening,
said toy being snap-fit secured to said nozzle to enclose said nozzle end within said body portion and said suction and pumping device and said toy article cooperating to cause a quantity of said malleable play material to be passed through said passage of said toy article and said nozzle to give the appearance of expelling and ingesting said play material by said toy article.

5,297,981
SELF-PROPELLED BOUNCING BALL
John Maxim, Danbury, Conn.; Christopher Thompson, Garnavillo, and Mark F. Reyner, Oelwein, both of Iowa, assignors to The Ertl Company, Inc., Dyersville, Iowa
Filed Feb. 4, 1993, Ser. No. 13,762
Int. Cl.[5] A63H *17/00, 29/00, 29/02*
U.S. Cl. 446—437 34 Claims

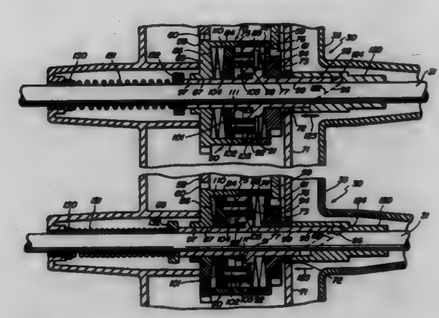
1. A self-propelled bouncing ball comprising:
(a) a hollow sphere having interlocking first and second hemispheres;
(b) a plurality of spaced apart bounce means joined to and extending outwardly from said hollow sphere; and
(c) rotating means featuring self contained drive and off-center mass, said rotating means mounted inside said hollow sphere;

(d) whereby when said rotating means is activated said bouncing ball is caused to leave a support surface to fall



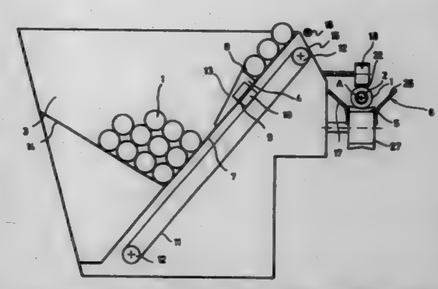
back upon one or more of said bounce means causing said ball to rebound in an unexpected direction.

5,297,982
TOY VEHICLE HAVING LOAD RESPONSIVE TRANSMISSION
Miva A. Filoseta, Los Angeles, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Feb. 10, 1992, Ser. No. 833,188
Int. Cl.[5] A63H *29/00*
U.S. Cl. 446—448 5 Claims



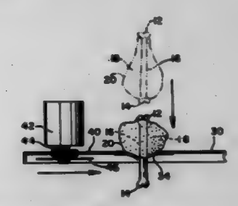
1. A toy vehicle comprising:
a toy vehicle body having at least one drive wheel;
a motor; and
a load responsive transmission coupling said motor to said at least one drive wheel having means for changing the gear ratio thereof in response to resisting load, said transmission including:
a drive axle couple to said at least one drive wheel;
a pair of half portions defining a pair of gears having different gear diameters commonly coupled to said motor and having inwardly facing engagement surfaces in a spaced apart relationship defining a space therebetween;
a shifting gear interposed between said pair of spaced apart gears and having a pair of outwardly facing engagement surfaces engaging either of said inwardly facing engagement surfaces; and
a load responsive coupler coupled between said drive axle and said shifting gear, said load responsive coupler causing said shifting gear to move into engagement with one of said pair of spaced apart gears in response to increased load and to the other of said pair of spaced apart gears in response to decreased load without loss of engagement.

5,297,983
PROCESS AND DEVICE FOR SEPARATING AND PLACING A GUT CATERPILLAR ON A FILLING TUBE
Gerhard Mueller, and Jochen Stoehr, both of Schemmerhofen, Fed. Rep. of Germany, assignors to Albert Handtmann Maschinenfabrik GmbH & Co., KG, Biberach/Riss, Fed. Rep. of Germany
Filed Jul. 14, 1992, Ser. No. 913,068
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123432
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—33 15 Claims



1. A process for feeding a longitudinally extending, annular shaped caterpillar gut onto an end of a filling tube for filling the gut comprising withdrawing caterpillar guts from a storage vessel holding a plurality of said guts and delivering them one at a time to a position in front of said end of said filling tube so that an end of said longitudinally extending gut is in alignment with the axis of said tube, contacting the circumferential surface of said aligned gut at at least two separate points with two guide surfaces and moving both said guide surfaces at the same speed toward said filling tube to thereby feed said gut axially onto said tube.

5,297,984
METHOD FOR MAKING A FOOD PRODUCT FROM THE LEG OF A BIRD OR OTHER ANIMAL AND A FOOD PRODUCT RESULTING THEREFROM
Eugene D. Gagliardi, Jr., West Chester, Pa., assignor to Designer Foods, Inc., Wilmington, Del.
Filed Feb. 12, 1992, Ser. No. 834,759
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—136 11 Claims



1. A method of making a food product from the leg of a bird, the leg having a thigh end, a foot end, an elongated bone extending generally from the thigh end to the foot end and meat surrounding and attached to the bone, the method comprising the steps of:
severing at least a first portion of the meat from the bone proximate the thigh end while leaving a second portion of the meat distal from the thigh end attached to the bone;
moving the first portion of the meat toward the foot end to detach said first meat portion from a portion of the bone

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and expose said portion of the bone at least proximate the thigh end; and

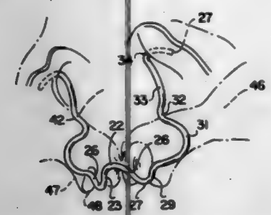
severing and removing at least part of the exposed portion of the bone.

5,297,985

CLAMP FOR POULTRY THIGHS AND CARTRIDGE FOR SAME

Donald J. Volk, c/o Volk Enterprises, Inc., 1232 South Ave., Turlock, Calif. 95380

Filed Feb. 1, 1993, Ser. No. 11,941
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—176 **10 Claims**



1. In a trussing clamp for poultry formed of a single wire comprising a U-shaped central portion and on either side of said central portion lying in a first plane, a rearward extending stretch in second plane disposed at an angle to said central portion, and a leg portion disposed at an angle to said rearward stretch,

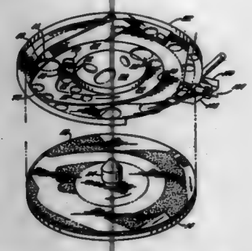
the improvement comprising in said leg portion an outward-downward stretch, a convex stretch below said outward-downward stretch, a concave stretch below said convex stretch, a relatively straight stretch below said concave stretch and a hook disposed about 90° outward from the lower end of said straight stretch.

5,297,986

COIN SORTING APPARATUS WITH ROTATING DISC

Victor G. Ristvedt, and Mark E. Ristvedt, both of Manchester, Tenn., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Continuation of Ser. No. 514,299, Apr. 26, 1990, Pat. No. 5,176,565, which is a continuation of Ser. No. 79,683, Jul. 30, 1987, Pat. No. 4,966,570. This application Nov. 10, 1992, Ser. No. 976,144
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] G07D *3/16*
U.S. Cl. 453—6 **46 Claims**



45. A stationary guide plate for use with a rotatable-disc coin-sorting system for receiving coins and imparting rotational movement to said coins, the stationary guide plate comprising:

a contoured surface including a guiding recess against which said coins placed therein form a first prescribed path;

means for simultaneously engaging and sensing a coin of at least one selected denomination such that in response to said coin being engaged and sensed said coin crosses onto a second prescribed path that is different from said first prescribed path; and

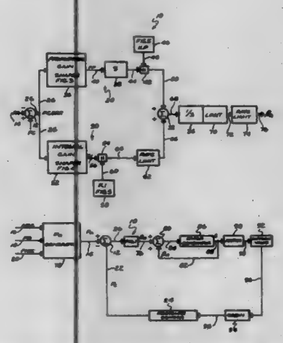
a plurality of discharge recesses constructed and arranged to fit coins of different denominations and located at different circumferential locations around the periphery of said guide plate.

5,297,987

PRESSURE CONTROL SERVO LOOP

F. Richard Emmons, West Hartford, and Thomas W. Donahue, Rocky Hill, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 1, 1992, Ser. No. 890,808
Int. Cl.[5] B64D *13/00*
U.S. Cl. 454—74 **16 Claims**



1. In a control system for regulating aircraft cabin pressure having a first summation network for summing a desired cabin pressure signal with an actual cabin pressure signal, and a second summation network which generates an output signal, wherein the improvement comprises a proportional path and a derivative path separate from the proportional path, and means for connecting the proportional path between the first summation network and the second summation network and means for connecting the derivative path between the first summation network and the second summation network, wherein the output signal of the second summation point passes through an integrator.

5,297,988

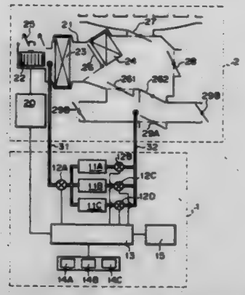
FRAGRANCE SUPPLYING APPARATUS FOR VEHICLE

Tomohide Nishino; Toshiaki Fukuta; Yukiya Sasa, all of Nagoya; Kunio Okamoto, Okazaki, and Hajime Akado, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 786,774, Nov. 1, 1991, abandoned. This application Nov. 5, 1992, Ser. No. 971,614
Claims priority, application Japan, Nov. 2, 1990, 2-298105; Jan. 18, 1991, 3-4689; Nov. 6, 1991, 3-318516; Sep. 29, 1992, 4-283856
Int. Cl.[5] B60H *3/00*
U.S. Cl. 454—75 **30 Claims**

22. A fragrance supplying apparatus for a vehicle for supplying an interior of an air-conditioning duct of the vehicle with a fragrance or deodorant so that the fragrance or deodorant is carried by a flow of air from a blower of the air-conditioning system into the cabin of the vehicle, the air fragrance apparatus comprising:

a fragrance supplying means having control valves for controlling the supply of the fragrance or deodorant into the air-conditioning duct and



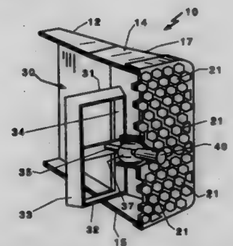
means for randomly controlling the control valves to set varying patterns of supply and cessation of the fragrance or deodorant.

5,297,989

NOZZLE FOR DISCHARGING AIR AND METHOD

Ronald D. Stouffer, Silver Spring; Ernest W. Cheenutis, Jr., and Milan Kuklik, both of Columbia, all of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Jan. 13, 1993, Ser. No. 3,702
Int. Cl.[5] B60H *1/34*
U.S. Cl. 454—155 **19 Claims**



1. In a nozzle for discharging air to ambient and having an axial center and upstream and downstream ends, upstream end means for directing air in different directions relative to said axial center and a grill at the downstream end of said nozzle, the improvements comprising, said grill being comprised of a monolayer of polygonal cells in an array of cells bounded by planar walls having a depth L, interstitial thickness T, and said cells having a major diameter D, and wherein:

L is short enough such that said planar walls do not significantly affect directionality of the air as imparted by said upstream means for directing, and

T has a value such that the impedance to air flow is very low,

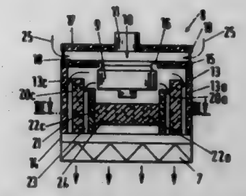
the length L to diameter D ratio (L/D) is no greater than about 0.7 and no less than about 0.3, such that the degree of opacity of said grill is relatively high.

5,297,990

FILTER-VENTILATOR-ARRANGEMENT

Manfred Renz, Ditzingen, and Helmut Bauer, Tamm, both of Fed. Rep. of Germany, assignors to Meissner & Wurst GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 828,154
Claims priority, application Japan, Feb. 1, 1991, 4103026; Fed. Rep. of Germany, Oct. 5, 1991, 4133093
Int. Cl.[5] F24F *13/24*
U.S. Cl. 454—187 **8 Claims**



1. A filter-ventilator-arrangement for employment with clean chambers, including at least one ventilator means having a pressure side located toward an air flow chamber means limited by boundary walls thereof, comprising said flow chamber means being formed by at least one annular duct means, of which at least one of two boundary walls consists of a noise-damping material,

a ceiling part and a ventilator means located centrally thereof in relation to the annular duct means, and

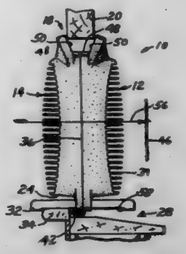
several annular duct means being provided and having boundary walls decreasing in height from outside to the inside.

5,297,991

PORTABLE ELECTRIC FLOOR AND WINDOW FAN

Barry W. Smith, Dublin, Ohio, assignor to The W. B. Marvin Manufacturing Company, Urbana, Ohio

Filed Aug. 11, 1993, Ser. No. 105,868
Int. Cl.[5] F24F *7/013*
U.S. Cl. 454—208 **8 Claims**



1. In a combination portable electric floor and window fan unit having a housing including opposing louvered front and rear walls, end walls and top and bottom surfaces, an electric motor, a fan driven by said motor, a cord for connecting said motor to an electrical supply, and a manually-operable control intermediate said supply and said motor for controlling said motor, the improvement comprising:

an upwardly-directed, V-shaped, fixed-width channel extending longitudinally of said elongate fan unit and atop said top surface for receiving, when said fan is mounted on a horizontal window sill below a vertically movable window, the lower horizontal portion of a frame of said window to restrain the fan against tipping; and,

the width and angle of said V-shaped channel being adapted

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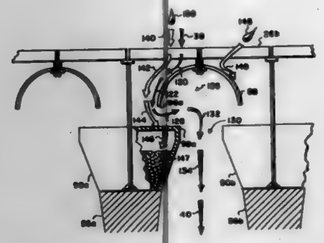
to accommodate receipt of a variety of different thickness window frames.

5,297,992

METHOD AND APPARATUS FOR LIQUID SPILL CONTAINMENT

Douglas A. Bailey, Concord, Mass.; Peter M. Martino, Derry, N.H., and Barry R. Arsenault, Burlington, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 4, 1992, Ser. No. 58,076
Int. Cl.[5] F24F *7/10*
U.S. Cl. 454—339 **19 Claims**



1. A liquid spill containment apparatus for use in structures which include an upper orifical partition through which air flows, comprising:

a) a deflector located below said upper partition, said deflector positioned to direct simultaneously both airflow and liquid particles which pass into and through the upper partition, and

b) a first container and a second container, each container located below the deflector and having an upper extremity opening for capturing liquid directed thereinto from said deflector, said first container and said second container each having side surfaces wherein one of said side surfaces of said first container being paired adjacent to one of said side surfaces of said second container such that said adjacent side surfaces channel exiting airflow while said upper extremity openings of said containers simultaneously capture and contain liquid entering said openings.

5,297,993

PACKING LIST MANIFEST

J. Robert Gullett, Quakertown, Pa., and Raymond M. Goodspeed, Lauderhill, Fla., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,191
Int. Cl.[5] B41L *1/20*
U.S. Cl. 462—6 **20 Claims**

1. A business form comprising:

a first, top paper ply;

a second, transparent material, ply, underlying the first ply;

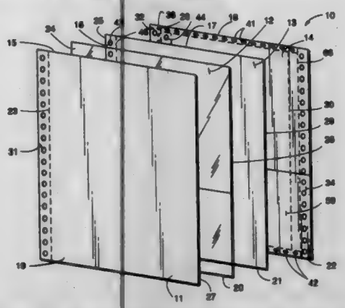
a third ply underlying the second ply and having a first face abutting the second ply and a second face of transfer material opposite the first face;

a fourth paper ply underlying the third ply, and having a first face capable of receiving indicia transfered from the third ply second face transfer material, and a second face opposite the first face;

selectively activatable adhesive means formed on the second face of the fourth ply for attaching the fourth ply to another object;

each of said plies having opposite parallel first and second, and opposite parallel third and fourth, edges, the spacing between the first and second edges of said second and fourth plies being greater than the spacing between the first and second edges of said third ply;

means for connecting the second and fourth plies together adjacent the first and second edges thereof but so the first and second edges of the third ply are not connected thereto, and the second and fourth plies being unconnected at the fourth edges thereof;



means for readily removably connecting the third ply to at least one of the second and fourth plies adjacent the third edges thereof; and

means for readily removably connecting the first ply to at least one other ply

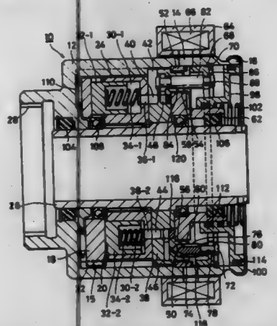
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5,297,994

HYDRAULIC POWER TRANSMISSION JOINT WHICH IS USED IN VEHICLES

Satoru Suzuki, Kosai, and Takehisa Yamada, Maisaka, both of Japan, assignors to Fuji Uuivance Corporation, Shizuoka, Japan

Filed Dec. 18, 1992, Ser. No. 993,046
Claims priority, application Japan, Dec. 20, 1991, 3-338216; Dec. 20, 1991, 3-338217; May 6, 1992, 4-113279
Int. Cl.[5] F04B *21/00*; F16D *25/06*
U.S. Cl. 464—27 **18 Claims**



1. A hydraulic power transmission joint comprising:

a joint main body adapted to couple input and output shafts so as to be rotatable relative to one another;

a hydraulic pump disposed in the joint main body so as to become operatively interposed between said input shaft and said output shaft at a position at which the pump will be driven by a differential rotation between the shafts, said pump transmitting torque between said shafts, the torque having a characteristic corresponding to pressure of oil generated in the pump;

a member defining an orifice in a passage connecting a discharge side and an intake side of said hydraulic pump so as to offer resistance to the flow of oil through said pump;

a relief mechanism including a spring, said relief mechanism having a locking position at which said relief mechanism blocks the orifice, the joint assuming a locked state when oil is prevented from flowing from the discharge side to the intake side of said pump, the ability of said input and output shafts to rotate relative to one another being suppressed when the joint is in said locked state, said spring exerting a load which keeps said orifice blocked while said relief mechanism is in said locking position and until oil pressure at the discharge side of said pump reaches a relief pressure exerting a force on said relief mechanism sufficient to move the relief mechanism off of said orifice,

an electromagnetic actuator extending around an outer peripheral portion of said joint main body and spaced therefrom so as to out of contact with the joint main body, said electromagnetic actuator including a solenoid coil and generating an electromagnetic fieled acting within said joint main body when an electric current is supplied to said solenoid coil; and

a driving member supported in the joint main body so as to be movable in an axial direction, said driving member being operatively associated with said electromagnetic actuator so as to receive a driving force produced thereby urging the driving member in said axial direction, the force received by said driving member corresponding to the strength of the electromagnetic field generated by said electromagnetic actuator, and said driving member being operatively connected to said relief mechanism so as to establish said relief pressure with said relief mechanism based on said force received by the driving member.

5,297,995

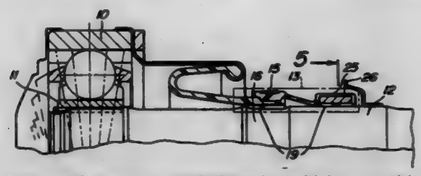
Patent Not Issued For This Number

5,297,996

ROLLING OR CONVOLUTED BOOT FOR A CONSTANT VELOCITY UNIVERSAL JOINT WITH PRESSURE BALANCE BEING ENSURED IN THE JOINT SPACE

Eckhard Draga, Dietzenbach, Fed. Rep. of Germany, assignor to Lohr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 17, 1991, Ser. No. 778,572
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033275
Int. Cl.[5] F16D *3/84*
U.S. Cl. 464—175 **21 Claims**



1. A boot for a constant velocity universal joint comprising:

a rotational member tapering from a first end to a second end, said first end adapted for coupling with an outer member of the constant velocity joint and said second end adapted to be coupled with a shaft of the constant velocity joint;

a pressure balancing region on said member adjacent said second end, said pressure balancing region including centrifugal weights, said pressure balancing region being adapted to be tightly fit against the shaft when said shaft is at rest and being adapted to lift off of said shaft during rotation of said shaft in response to predetermined centrifugal forces when said shaft is rotated at a desired speed and returning to said tightly fit position upon removal of said centrifugal forces; and

at least one pressure balancing opening located at said pressure balancing region for enabling pressure balance between a joint space covered by the boot and surrounding atmospheric pressure.

5,297,997

HAND HELD THREADING DEVICE FOR EARRING POST

Timothy J. Covi, 3710 Coachlantern Dr., Wisconsin Rapids, Wis. 54494

Filed Jan. 15, 1993, Ser. No. 5,240
Int. Cl.[5] B23G *5/00*
U.S. Cl. 470—67 **20 Claims**



1. A hand held tool for applying threads to an elongate post associated with an item of jewelry, such that the post can thereafter receive a clutch member in a non-slip, threaded relationship, said tool comprising an elongate member having at least one end, in which end, die-receiving means are defined, said die-receiving means comprising a recess and serving to non-rotatively support a die equipped with centrally disposed female threads into which an elongate post can be inserted, centrally-disposed guide means supported by said tool and providing an aperture only slightly larger than the elongate post to be inserted, such aperture in said guide means being disposed on the same centerline as the female threads of the die and serving to provide precise alignment for the elongate post with the threads at such time as the post is inserted into the die, whereby during relative rotation, threads can be formed upon the elongate post inserted into the female threads of the die the end of said elongate member being circular, and said centrally-disposed guide means is a cap that is sized to fit on the circular end of said elongate member, said cap serving to secure the die in a non-rotative position in said recess, and to retain the shavings created as threads are formed on the elongate post.

5,297,998

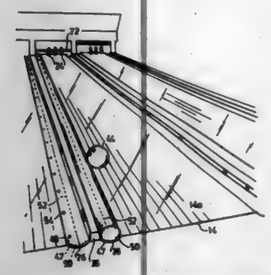
BUMPERING DEVICE FOR BOWLING LANES

Brian D. Greiner, 3795 Broadway, Cheektowaga, N.Y. 14227

Filed Jun. 11, 1992, Ser. No. 897,219
Int. Cl.[5] A63D *5/00, 1/04*
U.S. Cl. 473—115 **16 Claims**

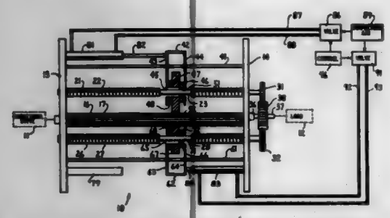
1. A convertible bowling channel liner for use in a bowling channel, the bowling channel positioned between a bowling alley bed and a guide member with a lip, said convertible bowling channel liner comprising at least one deformable elongated strip, a means for securing a portion of the strip to the channel and a means for deforming the attached elongated strip from a first configuration that is crescent-shaped in cross-section in which the liner extends above a plane of the alley bed to a second retracted configuration that is crescent shaped in cross-section and is substantially below the plane of the alley

bed, whereby in the first configuration a bowling ball is prevented from entering the channel of the bowling alley and in



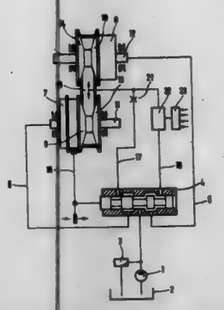
the second retracted configuration the bowling ball is allowed to enter into the channel on top of the liner and travel along it.

5,297,999
CONTINUOUS DRIVE TRANSMISSION
Burton E. Guthrie, 9470 Huckleberry Rd., Berrien Center, Mich. 49102
Filed Mar. 25, 1993, Ser. No. 36,801
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—19 **16 Claims**



1. An apparatus, comprising: first and second members supported for independent rotation about an axis; drive means for effecting rotation of said first member about said axis in a rotational direction; a cam supported on one of said first and second members and a cam follower supported on the other thereof, said cam follower being movable between positions disengaged from and engaged with said cam and said cam follower moving along said cam in response to rotation of said first member in said rotational direction relative to said second member when said cam follower is engaged with said cam; and means for resisting movement of said cam follower along said cam beyond a predetermined position and for causing a force in said rotational direction to be transferred from said first member to said second member through said cam follower and said cam when said cam follower is at said predetermined position along said cam, so that said second member is rotated in said rotational direction synchronously with said first member.

5,298,000
INFINITELY VARIABLE CONE PULLEY TRANSMISSION
Manfred Rattunde, and Gert Schonnenbeck, both of Bad Homburg, Fed. Rep. of Germany, assignors to Reniers Getriebe AG, Zug, Switzerland
Filed Aug. 26, 1992, Ser. No. 935,427
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1991, 4128457
Int. Cl.[5] F16H *55/56*
U.S. Cl. 474—24 **6 Claims**

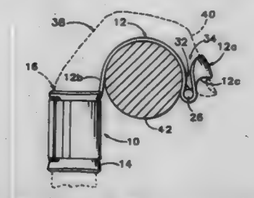


1. In an infinitely variable cone pulley transmission including two pairs of cone pulley discs (9, 13 and 10, 14) that are disposed on the drive shaft (11) and on the driven shaft (12) and a transmission means (15) that rotates therebetween, with the cone pulley discs being connected to rotate together with the shaft supporting them and one cone pulley disc is also axially fixed on each shaft, while the associated second cone pulley disc is configured as an axially displaceable component of a cylinder-piston assembly (7, 8) that is fixed to the shaft, with the cylinder-piston assembly receiving a pressure medium for setting and maintaining the transmission ratio that is measured out by way of an inlet (5, 6) through a four-sided sliding control valve (4) which is provided with an outlet (17) for excess quantities of pressure medium, in which a possibly adjustable throttle (20) is disposed and wherein the four-sided sliding control valve is in communication by way of an adjustment member (16), for example, with one of the displaceable cone pulley discs (9), the improvement wherein the pressure chargeable surface of the cylinder-piston assembly associated with the drive shaft is greater than the pressure chargeable surface of the cylinder-piston assembly associated with the driven shaft; the four-sided sliding control valve is provided with a separate outlet (17, 18) for excess quantities of pressure medium for each cylinder-piston assembly; at least one throttle (19, 20) is disposed in each outlet (18, 17) and the throttles (19, 20) perform a different throttling effect.

5,298,001
GYMNASTICS SAFETY GRIP APPARATUS
Mark P. Goodson, Kihei, Hi., assignor to G. S. Gripe, Inc., Roseburg, Oreg.
Filed Aug. 14, 1992, Ser. No. 929,979
Int. Cl.[5] A63B *26/00*
U.S. Cl. 482—23 **2 Claims**

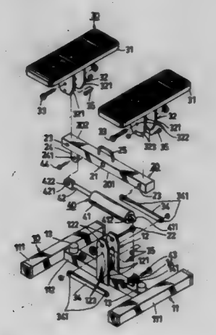
1. A gymnastics safety grip apparatus comprising
an elongate palm element made of a material allowing slippage on a gymnastics bar during use and having a palm face against which the palm of a user faces during use, a bar face opposite from the palm face for contacting the gymnastics bar, a wrist end and a finger end, the finger end having at least one finger hole for receiving the two middle fingers of a hand of a user, the finger end extending beyond the at least one finger hole,

a wrist strap attached to the wrist end for securing the palm element to the wrist of a user,
a rod member attached along one edge to the palm face of the finger end to extend laterally along the palm element and at a position adjacent to and toward the wrist end from the at least one finger hole, the finger end of the palm element extending freely beyond the rod member, and
a resilient finger strap attached to the finger end of the palm face of the palm element distally of and adjacent to the at



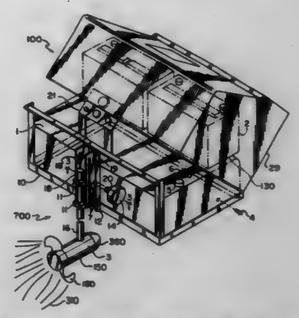
least one finger hole, the finger strap frictionally holding the tips of the two middle fingers of the hand of a user against the palm element with the distal end of the palm face of the palm element wrapped around the rod member with the palm side of the finger tips extending between the overlapping palm faces of the palm element, through the finger straps and through the finger holes adjacent to the rod member, whereby the fingers are held in position by both the at least one finger hole and the resilient finger strap.

5,298,002
STEPPER
Lan-Fa Lin, No. 20, Alley 28, Lane 37, Jen-Ho Rd., Tan-Tzu Hsiang, Taichung Hsien, Taiwan
Filed Jul. 9, 1993, Ser. No. 89,804
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—53 **4 Claims**



1. A stepper, comprising:
a base frame having a pivot portion located at an intermediate section thereof;
a parallel-crank linkage including: a pedal assembly having two horizontal pedals, each of which having an inverted U-shaped bracket secured to a bottom surface thereof; a reciprocating lever having a middle section mounted pivotally on an upper section of said pivot portion of said base frame and two end sections mounted pivotally and respectively on said inverted U-shaped brackets, of said pedal assembly; and two parallel cranks disposed under said reciprocating lever, one of said cranks pivotally interconnecting said pivot portion of said base frame and one of said inverted U-shaped brackets of said pedal assembly, the other one of said cranks pivotally interconnecting said pivot portion of said base frame and the other one of said inverted U-shaped brackets of said pedal assembly; and
a resistance device interposed between said reciprocating lever and said base frame and adapted to provide a resistance to pivotal movement of said reciprocating lever.

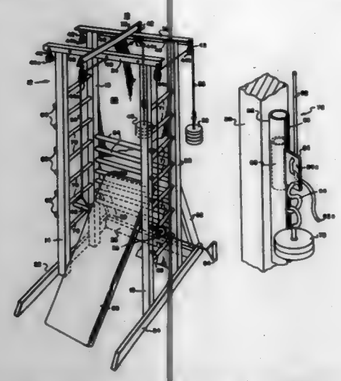
5,298,003
APPARATUS FOR CREATING A SWIM-IN-PLACE CURRENT IN A SWIMMING POOL
Clyde R. Weihe, 17 Lindbergh Ave., Needham Heights, Mass. 02194, and Thomas H. Larsen, 44 Robin Rd., Weston, Mass. 02193
Continuation-in-part of Ser. No. 898,472, Jun. 15, 1992, abandoned. This application Sep. 3, 1992, Ser. No. 940,036
Int. Cl.[5] A63B *1/00*
U.S. Cl. 482—55 **20 Claims**



1. Apparatus for creating a current in a swimming pool against which a swimmer can swim in place in the pool, the pool comprising a water basin having an upper rim and being filled with water up to a predetermined upper level below the rim, the apparatus comprising:
a propeller and a motor means for driving the propeller; means connected to the propeller for positioning the propeller at selected depth below the upper level of water in the basin such that when the propeller is driven the propeller generates a current of water flowing in a selected direction between about 0.1 and about 4 feet below the upper level of water in the basin;
means for immovably mounting the positioning means at a selected position around the rim of the basin, the positioning means being connected to the mounting means;
the means for mounting being portable such that the propeller and positioning means are transportable to and away from the rim of the basin;
the mounting means being immovably mountable at the selected position around the rim of the pool;
a rigid protective housing mounted around the propeller such that the propeller is completely surrounded by the housing, the housing being impenetrable by a human body part and being permeable to the current of the water flow generated by the propeller when driven; wherein the means for mounting the positioning means comprises a portable housing connected to the positioning means, the portable housing having means for receiving and containing a selected volume of water sufficient to immovably seat the housing by weight force on a surface above and around the rim of the basin at a selected position; and means for detecting the volume of water contained within the housing, the means for detecting including means for automatically stopping the motor means when the volume of water contained within the housing is less than a selected minimum volume.

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5,298,004
EXERCISE APPARATUS
Chris L. Davis, P.O. Box 388, Edgewood, Tex. 75117
Filed Jul. 14, 1992, Ser. No. 913,226
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—99 4 Claims



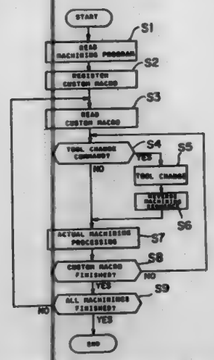
1. An exercise apparatus comprising, in combination:
a generally upstanding frame;
moveable weight means supported by said frame for vertical lifting;
flexible cable means;
pulley means supported by said frame for receiving said cable means;
handle means attached to one end of said cable means, whereby said weight means is moveable by a force applied by a person grasping said handle means; and
guide means for guiding said cable means to move said weight means substantially along a vertical axis, said guide means comprising:
a first hollow member attached to said frame, said first hollow member having a slot;
a second hollow member received within said first hollow member;
a projecting member projecting from said second hollow member into said slot, such that said projecting member is in mating engagement with said slot, said cable means being attached to said projecting member, said weight means being carried on said projecting member, said weight means being constrained to move along an axis parallel to said slot with the movement of said projecting member within said slot.

5,298,005

Patent Not Issued For This Number

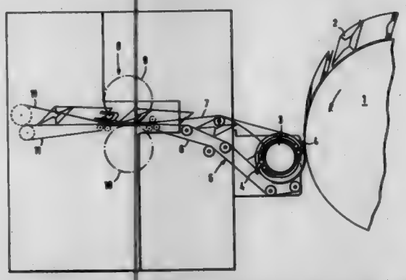
5,298,006
MACHINING METHOD OF PUNCH PRESS MACHINE
Keiichiro Miyajima, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP92/01262, § 371 Date May 13, 1993, § 102(e) Date May 13, 1993, PCT Pub. No. WO93/07546, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 30, 1992, Ser. No. 50,335
Claims priority, application Japan, Oct. 3, 1991, 3-256365
Int. Cl.[5] B23Q *3/155*; G05B *19/18*; B21D *31/00*
U.S. Cl. 483—1 2 Claims

1. A machining method of a punch press machine for punching a plurality of products from a single piece of a raw material sheet, comprising the steps of:
fixing a tool and punching said raw material sheet at grid positions in a particular sequence;
executing a tool change when a machining by said tool has been finished; and



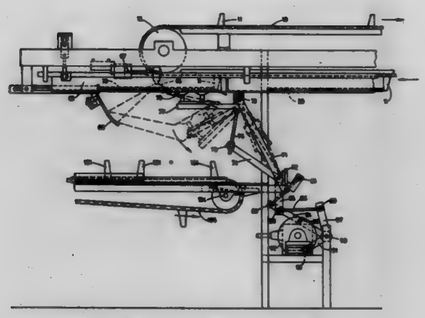
executing a machining in a sequence opposite to said sequence.

5,298,007
METHOD AND APPARATUS FOR MANUFACTURING CARRIER BAGS OF PAPER
Fritz Achelpohl, Lengerich/Westf; Friedhelm Brinkmeier, Lengerich; Aloys Winnemoeller, Rheine, and Wilfried Lotz, Lengerich, all of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich/Westf, Fed. Rep. of Germany
Filed Apr. 13, 1992, Ser. No. 866,643
Claims priority, application Fed. Rep. of Germany, May 8, 1991, 4115161
Int. Cl.[5] B31B *29/86, 31/86*
U.S. Cl. 493—226 9 Claims



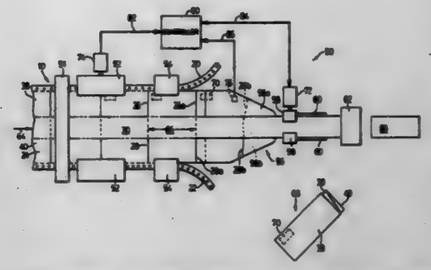
1. A method for manufacturing carrier bags of paper with paper handles glued to outsides of the bags in a continuous working cycle, comprising:
making carrier bags of paper without handles in a bag machine;
and gluing a handle onto the top of each carrier bag in a handle application unit;
feeding the carrier bags from the bag machine to the handle application unit with bottoms of the bags leading, and after the handles have been glued thereto, and moving the bags away from the handle application unit with the bottoms leading.

5,298,008
CASE OPENING APPARATUS
Dennis Decker; Melvin Salwasser, and Leslie Salwasser, all of P.O. Box 548, Reedley, Calif. 93654
Division of Ser. No. 744,698, Aug. 13, 1991, Pat. No. 5,207,630. This application Feb. 3, 1993, Ser. No. 13,019
Int. Cl.[5] B31B *1/80*
U.S. Cl. 493—313 17 Claims



1. A case opening apparatus comprising:
a. a vertical loading bay from which the uppermost flattened container blank of a stack may be removed by suction means attached to an overhead piston mechanism;
b. a pair of horizontal overhead transfer rails including a conveyor mechanism mounted above said loading bay into which a flattened container blank may be placed and moved horizontally, said rails extending beyond said loading bay; and
c. a container blank opening mechanism disposed below the extended ends of said overhead transfer rails, said blank opening mechanism comprising:
(1) an overhead suction means, and
(2) a plurality of opposing suction means attached to a pair of dually pivotal arms such that said arms may swing upward to attach to said container blank, and thereafter swing downward in two separate motions to open and erect said container blank for subsequent loading and sealing,
wherein said dually pivotal arms form at least one elbow-shaped structure such that the forearm of such structure is attached at one end to a second arm to form an elbow-shaped pivot, and the opposite end of said second arm is attached at a separate shoulder pivot, and a plurality of adjustable suction cup means are attached on the upper side of said forearm near the end of said forearm opposite said elbow pivot, wherein said arms move in a two-step cycle, the first step of which includes a downward rotation of the forearm around the elbow pivot from a horizontal position to a downward-angled position of between 30° and 60° around said elbow pivot; and, the second step includes the rotation of said other arm around said shoulder pivot from a nearly vertical position downward between 30° and 60°, which has the result of bringing said forearm downward a total of 90° to a vertical position.

5,298,009
LETTER SHEET FORMING APPARATUS AND METHOD
John A. Long, 41 Lamont Avenue, Scarborough, Ontario, M1S 1A8, Canada
Continuation of Ser. No. 859,879, Mar. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,712, Jan. 3, 1992, Pat. No. 5,275,857, which is a continuation-in-part of Ser. No. 800,288, Nov. 29, 1991, Pat. No. 5,228,657. This application Aug. 3, 1993, Ser. No. 101,090
Int. Cl.[5] B65H *35/10, 45/22, 45/28*
U.S. Cl. 493—342 10 Claims



1. A method for forming folded letter sheets from a paper web over a short distance, comprising the following steps:
feeding a paper web;
at regularly spaced intervals representative of the width of a desired letter sheet, forming opposed pairs of transverse cuts in marginal portions of said web to separate all but a middle portion of said web provided such transverse cuts have not previously been formed in such web, each said transverse cut having a length at least about as great as the width of said middle portion of said web represented by the distance between the inner ends of opposed transverse cuts;
folding one of said marginal portions of said web over said middle portion of said web and the other of said marginal portions of said web under said middle portion of said web so that the middle portion of said web is at least substantially covered by said marginal portions, said folding occurring over a short distance of no more than twice the distance between adjacent pairs of transverse cuts, said transverse cuts facilitating the folding over said short distance;
feeding the folded web;
separating the middle portion of said web at said transverse cuts to form folded letter sheets.

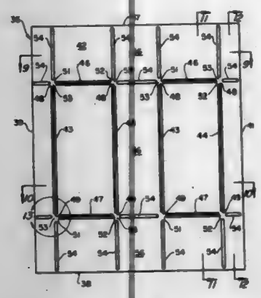
5,298,010
TWO-PART DIE FOR PRODUCING SHEET MATERIAL INCORPORATING SMALLER AREAS DEFINED BY ELONGATED SLITS AND MEANS OF ATTACHMENT
William A. Levine, 2984 Fresno St., Santa Clara, Calif. 95051
Division of Ser. No. 709,097, May 30, 1991, Pat. No. 5,238,269. This application May 19, 1993, Ser. No. 63,855
Int. Cl.[5] B26D *3/00, 7/27*; B31B *1/20*
U.S. Cl. 493—354 8 Claims

1. A two-part metal die for producing uninterrupted elongated slits in a primary flat planar sheet of material to substantially define by said slits the perimeter of at least one subsidiary sheet portion smaller in size than said primary planar sheet of material, the configuration of said subsidiary sheet portion being determined by one or more changes of direction of the perimeter, comprising:
a) a first flat planar metal platen member on which the primary planar sheet of material to be slit may be supported while being slit;

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b) a second flat metal platen member movable in relation to said first planar platen member to effect slitting of said primary planar sheet of material, said second platen member having a flat forming face defined by spaced top and bottom edges intercepted by spaced lateral side edges;

c) a first plurality of elongated material-slitting knife edges projecting perpendicularly from said forming face and extending longitudinally toward said top and bottom edges for a finite length defined by opposite end edges;



d) a second plurality of elongated material-slitting knife edges projecting perpendicularly from said forming face and extending transversely toward said spaced lateral side edges for a finite length defined by opposite end edges;

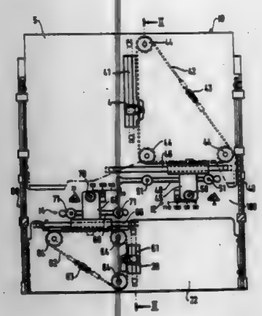
e) said first and second plurality of knife edges being arranged on said forming face so that corresponding opposite end edges of two of said longitudinally extending knife edges lie adjacent to but spaced from the opposite end edges of one of said transversely extending knife edges.

5,298,011

ADJUSTMENT DEVICE FOR ADJUSTING THE FOLD DIMENSION OF DOCUMENTS, IN PARTICULAR FOR A FOLDING MACHINE HAVING POCKETS

Marek Krasuski, Fontenay Aux Roses, France, assignor to Alcatel Satmam, Bagneux, France

Filed Dec. 23, 1991, Ser. No. 811,663
Claims priority, application France, Dec. 28, 1990, 90 16472
Int. Cl.[5] B65H *45/14*
U.S. Cl. 493—420 **4 Claims**



1. In a folding machine having a folding pocket guide plate for guiding a material to be folded along a feed direction from a front edge of said guide plate to an abutment spaced therefrom which stops said material at a stop location, said abutment being slidably mounted on a first face of said guide plate, the improvement comprising;

transmission means for moving said abutment along said feed direction for adjusting the stop location, said transmission means comprising:

first, second and third pulleys rotably mounted on a second face of said guide plate opposite to said first face, said first and second pulleys being spaced apart from each other along said feed direction, said second pulley being nearer to said front edge of the guide plate than the first pulley, said second and third pulleys being spaced apart from each other along the front edge of the guide plate, and at right angles to a plane defined by said first, and second pulleys,

a looped cable led over said first, second and third pulleys, means for keeping said looped cable taut,

said abutment projecting through a slot provided in said guide plate and gripping a first straight portion of said cable extending between said first and second pulley,

a tray disposed in the proximity of the front edge of said guide plate,

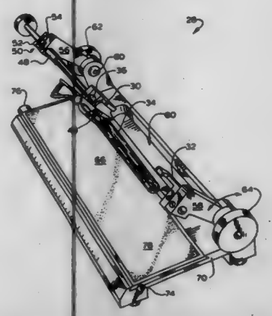
an actuator device slidably mounted on said tray for movement in a direction parallel to the front edge of said guide plate, and said actuator device including means coupled to a second straight portion of said cable for driving in translation said second straight portion of the cable between said second and third pulley to cause the displacement of said abutment in the material feed direction.

5,298,012

TENDON GRAFT PREPARATION WORKSTATION

Kurt E. Handlos, Crestline, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 768,492, Sep. 30, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,046
Int. Cl.[5] A61B *19/00*
U.S. Cl. 600—36 **22 Claims**



1. A device for tendon graft preparation, comprising:

a pair of tension arms for positioning and tensioning a tendon graft, at least one of said tension arms being movable in a horizontal plane to place tension on said graft, and both of said tension arms being movable in a vertical plane to position said graft;

a pair of height-adjusting arms, each of said height-adjusting arms being attached to one of said tension arms, said height-adjusting arms being independently rotatable, from each other, about a central axis to provide a means for adjusting the vertical position of each of said tension arms;

a base to which said height adjusting arms are pivotally mounted, said base being positionable on a table;

a surface preparation area supported by said base, said surface preparation area being suitable for supporting said graft while said graft is being scraped or sutured; and

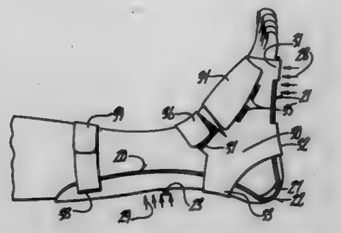
said height adjusting arms being rotatable to position said tension arms and said graft in contact with said surface preparation area

5,298,013

METHOD OF HEALING THE DECABITUS ON THE HEEL OF A BEDFAST PATIENT

Robert Lonardo, Treasure Island, Fla., assignor to Restorative Care of America Incorporated, Clearwater, Fla.

Division of Ser. No. 20,222, Feb. 16, 1993, Pat. No. 5,269,748, which is a continuation of Ser. No. 399,365, Sep. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 237,643, Mar. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 86,647, Nov. 4, 1970, abandoned. This application Apr. 29, 1993, Ser. No. 52,517
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—28 **6 Claims**



1. The method of healing or preventing decubitus on the heel of a bedfast patient, comprising,

placing on the leg and foot of said patient an L-shaped member having a leg portion, a heel portion on one end of said leg portion, and a foot portion extending from said heel portion at right angles to said leg portion,

forming the shape of said heel portion so that the shape alone of said heel portion will provide a space between the patient's heel and said heel portion to prevent the application of pressure to the patient's heel by said heel portion when the lower leg and the sole of the foot of said patient are in intimate contact with said leg portion and said foot portion, respective,

and securing said L-shaped member to the leg and foot of said patient by using a sandal extending substantially over said foot portion and the foot of the patient, and cutting out a heel portion of said sandal adjacent said heel portion of said L-shaped member and said space.

5,298,014

Patent Not Issued For This Number

5,298,015

WOUND DRESSING HAVING A POROUS STRUCTURE

Shigeru Komatsuzaki; Toshinobu Hirayama, and Tetsuo Toyokawa, all of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 545,734, Jun. 29, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 854,765
Claims priority, application Japan, Jul. 11, 1989, 178833
Int. Cl.[5] A61F *13/00, 15/00*
U.S. Cl. 602—46 **10 Claims**

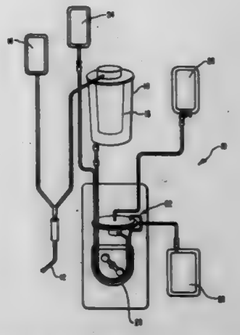
1. A dressing for a wound comprising a porous structure of continuous pores throughout the dressing made of minute filaments arranged in three dimensions, and filmy links, viewed at a magnification of about 35 to 350, connecting the filaments, the porous structure having pores defined by the filmy interconnections.

5,298,016

APPARATUS FOR SEPARATING PLASMA AND OTHER WASTES FROM BLOOD

Lucas S. Gordon, The Woodlands, Tex., assignor to Advanced Haemotechnologies, The Woodlands, Tex.

Filed Mar. 2, 1992, Ser. No. 844,232
Int. Cl.[5] A61M *1/00*
U.S. Cl. 609—4 **19 Claims**



1. An apparatus for separating cellular components of blood from plasma and other waste components of blood, comprising:

a first chamber, said first chamber having inlet means for admitting blood requiring separation of cellular components from waste components, and outlet means for discharging cellular components of blood processed in said first chamber;

first filter means situated within the first chamber for separating cellular components from waste components of blood, said first filter means including

at least one filter element having a pore size suitable for passing plasma and other waste components of blood but not cellular components of blood, and

first waste outlet means for discharging plasma and other waste components of blood passing through said at least one filter element;

first rotating means for producing movement of cellular components of blood passing between the inlet means and the outlet means of the first chamber in order to substantially prevent obstruction of the first filter means by said cellular components of blood;

a second chamber, said second chamber having inlet means in communication with the outlet means of the first chamber for admitting cellular components of blood processed in the first chamber, and outlet means for discharging cellular components of blood processed in said second chamber;

second filter means situated within the second chamber for separating cellular components from waste components of blood, said second filter means including

at least one filter element having a pore size suitable for passing plasma and other waste components of blood but not cellular components of blood, and

second waste outlet means for discharging plasma and other waste components of blood passing through said at least one filter element;

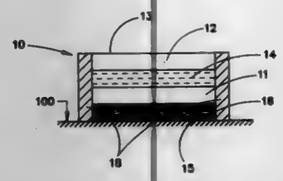
wash inlet means in direct communication with the second chamber for admitting wash solution for mixing with cellular components of blood in the second chamber;

second rotating means for producing movement of cellular components of blood passing between the inlet means and the outlet means of the second chamber in order mix wash solution introduced into the second chamber with cellular components of blood, and to substantially prevent ob-

VOL 1160 ISS 5 MR 29 1994 UMI

struction of the second filter means by cellular components of blood.

5,298,017
LAYERED ELECTROTRANSPORT DRUG DELIVERY SYSTEM
Felix Theeuwes, Los Altos Hills; J. Richard Gyory, and Ronald P. Haak, both of San Jose, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.
Filed Dec. 29, 1992, Ser. No. 998,154
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—20 25 Claims



1. A device for delivering a biologically active agent through a body surface by electrotransport, which surface in its natural in vivo state is exposed to a body fluid, said device comprising a plurality of essentially parallel elements, including:
(a) a counter electrode having an ion-transmitting surface, adjacent said counter electrode, through which ions are transmitted to or from the counter electrode;
(b) a donor electrode in electrical contact with said counter electrode; and
(c) a donor reservoir containing said agent to be delivered through said body surface, said donor reservoir being in electrical contact with said donor electrode, said donor reservoir having an ion-transmitting surface through which said agent is transmitted to the body surface, wherein said donor electrode is positioned between said counter electrode and said donor reservoir;
said device further comprising:
(d) a means for preventing ion flow along a pathway external to said device and between (i) said donor electrode or said donor reservoir and (ii) said counter electrode, which pathway includes said body fluid and excludes said body surface.

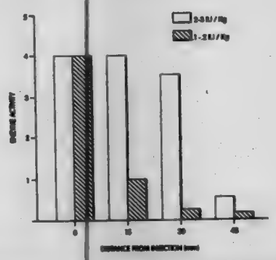
5,298,018
METHOD FOR TREATING CARDIOVASCULAR DISEASE THROUGH ADJUNCTIVE PHOTODYNAMIC THERAPY
Hugh L. Narciso, Jr., Santa Barbara, Calif., assignor to PDT Cardiovascular, Inc., Goleta, Calif.
Filed Aug. 14, 1992, Ser. No. 930,860
Int. Cl.[5] A61N *1/30*
U.S. Cl. 604—21 14 Claims

1. A method for treatment of atherosclerosis comprising the steps of:
administering an effective amount of a photosensitizing agent into a mammal such that the agent accumulates in atherosclerotic smooth muscle cells at a specific location and atherosclerotic plaque adjacent said cells;
readministering said agent to prevent photosensitizing agent from being substantially cleared from said atherosclerotic smooth muscle cells for a period of at least about 5 days; and



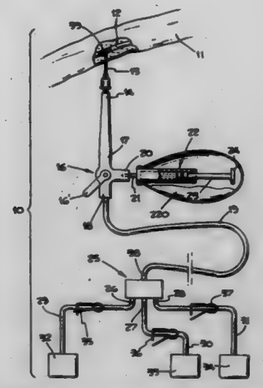
exposing the photosensitizing agent within said atherosclerotic smooth muscle cells and plaque to light such that said cells and plaque are lysed.

5,298,019
CONTROLLED ADMINISTRATION OF CHEMODENERVATING PHARMACEUTICALS
Gary E. Borodic, Canton, Mass., assignor to Associated Synapse Biologics, Boston, Mass.
Continuation of Ser. No. 570,395, Aug. 21, 1990, Pat. No. 5,183,462. This application Jan. 13, 1993, Ser. No. 4,090
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 3 Claims



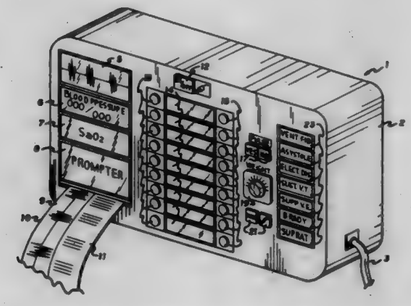
1. A method of preserving teeth in vivo by decreasing spasm of involuntary contraction in a muscle or group of muscles of a patient induced by pathologic neutral stimulation caused by involuntary jaw clenching, the method comprising:
providing a chemodenervating pharmaceutical characterized in that a unit quantity of said pharmaceutical has been determined to denervate a predetermined volume of said muscle or said group of muscles;
determining a dose of said pharmaceutical required to denervate the predetermined volume of muscle without inducing significant paresis in muscle tissue adjacent said predetermined volume; and
injecting a chemodenervating preparation into at least one of the muscles selected from the group consisting of the masseter, temporalis, and pterygoid in an amount sufficient to diminish involuntary jaw clenching while permitting voluntary muscle stimulation, thereby retarding premature tooth wear.

5,298,020
NEONATAL AUTOTRANSFUSION APPARATUS AND METHOD
Joseph J. Stone, 656 Hightree Rd., Santa Monica, Calif. 90402
Division of Ser. No. 591,958, Oct. 2, 1990, Pat. No. 5,059,168.
This application Aug. 14, 1991, Ser. No. 744,874
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—53 1 Claim



1. A method for collecting neonatal blood from the umbilical cord of a newborn infant comprising the steps of:
coupling a hollow needle having a sharp end for piercing said cord to a syringe;
sealing said syringe within a flexible bag to seal said syringe off from the atmosphere;
piercing said cord with the end of said needle until said end enters the interior of said cord and into the umbilical vein in said cord;
aspirating said syringe to draw blood out of said vein and into said syringe;
shutting off fluid flow from said needle through said syringe; and
transferring blood from said syringe into said bag.

5,298,021
ACLS INFUSION PUMP SYSTEM
David J. Sherer, 8520 W. Howell Rd., Bethesda, Md. 20817
Filed Sep. 24, 1992, Ser. No. 950,281
Int. Cl.[5] A61M *31/00*; G06F *15/00*
U.S. Cl. 604—66 14 Claims



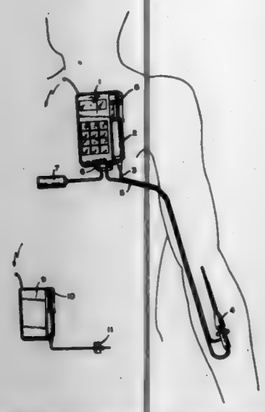
1. An emergency infusion pump system for the rapid and accurate delivery of therapeutic agents to a patient requiring emergency care comprising:
therapeutic agent delivery means for delivering a plurality of therapeutic agents to the patient via an intravenous connection;
controller means for controlling said therapeutic agent delivery means and including a memory storage area;
a plurality of physiological sensors connected to said controller means;
a plurality of physiological condition continuous displays connected to said controller means, each of said physiological condition continuous displays further connected to one of said physiological sensors and for continuously displaying a sensed physiological condition of the patient;
comparing means for comparing sensed physiological data received from said physiological sensors with acceptable ranges of physiological data stored in said memory storage area;
alarming means for actuating an alarm when the sensed physiological data is not within an acceptable range of physiological data as determined by said comparing means;
a printer connected to said controller means and configured so a continuous printout of each of the sensed physiological conditions, and the time, quantity and name of each therapeutic agent delivered is produced;
protocol display means for displaying a series of instructions in accordance with an emergency code;
display control switching means for selectively setting said emergency infusion pump system in one of a manual mode of operation, wherein said protocol display means is deactivated; and an automatic mode of operation wherein said protocol display means is activated; wherein said protocol display means is further configured for displaying a plurality of protocols in accordance with an established advanced cardiac life support code, each of the protocols being associated with a particular heart disorder a patient may exhibit; and
a plurality of diagnostic switches electrically connected to said controller means and configured so a user indicates a diagnosed heart disorder of the patient, each of said diagnostic switches initializes one of said protocols associated with the diagnosed heart disorder so said protocol display means displays only those series of instructions associated with the diagnosed heart disorder of the patient as indicated by the user.

5,298,022
WEARABLE ARTIFICIAL PANCREAS
Luigi Bernardi, Milan, Italy, assignor to Amplifon SpA, Milan, Italy
Continuation-in-part of Ser. No. 527,129, May 22, 1990, Pat. No. 5,176,632. This application Jan. 4, 1993, Ser. No. 238
Claims priority, application Italy, May 29, 1989, 48005 A/89
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—66 2 Claims

1. A device for the continuous quantitative determination of glucose in the blood of a diabetic patient over a period of 24–36 hours, which comprises a container for a saline solution containing heparin, a microdialyzing needle inserted into a vein of said diabetic patient, pumping means for injecting said solution through said microdialyzing needle which contains a semipermeable plastic hollow fiber membrane located on its outer surface whereby dialysis occurs between the blood in the vein and said solution and only glucose and other substances of low molecular weight below 100,000 daltons go through said semipermeable fiber membrane and the concentration of said glucose and other substances of low molecular weight below 100,000 daltons reaches an equilibrium which is proportional to the actual concentration of glucose in the blood, and a glucose-containing saline solution is obtained, said microdi-

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alyzing needle being provided with an outgoing conduit, said conduit leading to a sensor, said sensor comprising a platinum silver electrode and an enzymatic membrane containing glucose oxidase, said glucose containing saline solution goes into said conduit, oxidation of glucose to gluconic acid and hydrogen peroxide occurs and said hydrogen peroxide is decom-



posed with the liberation of two electrons whereby electric current is produced, the concentration of glucose in the blood is determined by determining the amount of current produced, without recirculation of blood, said glucose containing saline solution contains about ½-1/20 of the glucose concentration in the blood and said saline solution is discarded.

5,298,023

MULTIPLE PHARMACEUTICAL DISPENSER WITH ACCUMULATOR

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation-in-part of Ser. No. 718,398, Jun. 21, 1991, Pat. No. 5,199,949, which is a continuation-in-part of Ser. No. 667,319, Mar. 8, 1991, Pat. No. 5,147,323, and a continuation-in-part of Ser. No. 668,278, Mar. 8, 1991. This application Sep. 22, 1992, Ser. No. 949,265

Int. Cl.[5] A61M *37/00, 5/00*

U.S. Cl. 604—90 28 Claims

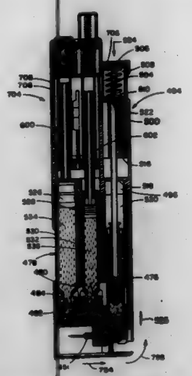
1. A pharmaceutical dispenser comprising:

at least two pharmaceutical cartridges each having a barrel, the barrel having a cartridge interior, an open end and an accessible end, a piston within the barrel and a liquid within the cartridge interior between the piston and the accessible end;

a body configured of house the cartridges therein;

an accumulator/dispensing assembly mounted to the body and including an accumulator chamber fluidly coupled to the cartridge interiors;

means for selectively driving amounts of the liquids within the cartridge interiors into the accumulator chamber; and



the accumulator/dispensing assembly including means for dispensing liquid from the accumulator chamber.

5,298,024

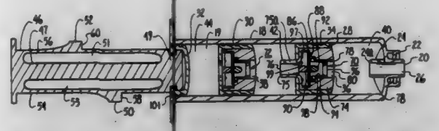
MULTI-LIQUID MEDICAMENT DELIVERY SYSTEM WITH REFLEX VALVES

Frank Richmond, 205 A Grant St., Harvard, Ill. 60033

Filed Dec. 28, 1992, Ser. No. 997,522

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—90 20 Claims



1. A multi-liquid medicament delivery system, comprising:

a syringe vessel having a wall and an injection port formed through the wall, the injection port being configured for engaging a needleless IV fitting;

a syringe plunger slidably disposed in the syringe vessel;

a barrier plunger slidably disposed in the syringe vessel between the syringe plunger and the injection port, the barrier plunger including a channel; and

valve means for blocking the channel of the barrier plunger, the valve means having an open configuration, wherein fluid communication through the channel is permitted, and a closed configuration, wherein no fluid communication through the channel is permitted.

5,298,025

SEQUENTIAL FLOW RATE INFUSION RATE

Steve Hessel, Fountain Valley, and William C. Brown, Huntington Beach, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 726,475, Jul. 8, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,516

Int. Cl.[5] A61M *11/00, 1/00, 37/00*

U.S. Cl. 604—93 16 Claims

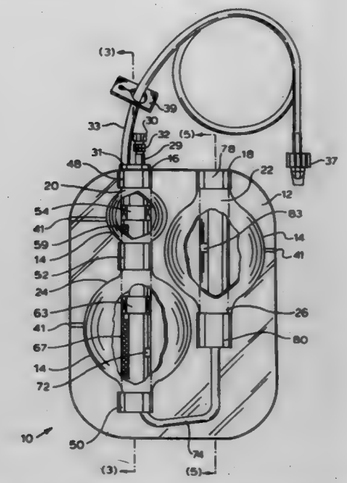
1. A device for infusing liquid into a patient comprising:

casing defining a plurality of cavities;

resilient elastomeric bladders corresponding to each of the defined cavities, the elastomeric bladders and the defined

cavities defining fluid chambers within the interior of the bladders;

elongated prestress member contained within the fluid chamber of at least one elastomeric bladder, the prestress member having a substantially uniform, circular cross-sectional shape;



the casing further defining fluid communication means adapted for providing fluid communication between the plurality of elastomeric bladders to provide a fluid system; and

housing defining a fill port and an exit port in fluid communication with the plurality of elastomeric bladders.

5,298,026

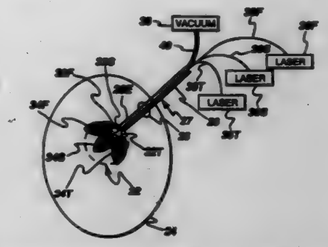
METHOD AND APPARATUS FOR LASER MEDICAL TREATMENT

Hsuan Chang, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 23, 1992, Ser. No. 917,884

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—15 21 Claims



1. A medical treatment apparatus comprising an outer tube having a treatment end for disposal at a treatment zone in a patient and remote end opposite to the treatment end, and a plurality of flexible inner tubes disposed in a high energy retracted state at least partially within said outer tube, each inner tube having an optical fiber accommodating hole extending lengthwise therein, each inner tube being non-linear when unconstrained, the high energy retracted state corresponding to each inner tube being constrained by said outer tube, the high energy retracted state of each inner tube corresponding to each inner tube having a shape different from its shape when unconstrained, and wherein said inner tubes are movable relative to said outer tube to cause each inner tube to assume a non-linear extended position at least partly within said outer tube for application of laser energy using a beam which is not parallel with the outer tube, and further comprising a plurality of optical fibers, each optical fiber corresponding to one of said inner tubes and disposed within the optical fiber accommodating hole of said corresponding one of said inner tubes.

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5,298,027

METHODS OF BLEACHING JEANS

Hiroaki Kuno; Kiyotaka Kawanishi, both of Aichi; Hisayuki Komaki, Kanagawa, and Yukito Muraguchi, Aichi, all of Japan, assignors to Inax Corporation, Tokoname, Japan

Filed Feb. 4, 1988, Ser. No. 152,122

Claims priority, application Japan, Mar. 13, 1987, 62-58056; Mar. 13, 1987, 62-58057

Int. Cl.[5] D06L *3/06, 3/08*

U.S. Cl. 8—108.1 11 Claims

1. A method of bleaching jeans, comprising rotating foamed glass-ceramics, water and jeans in a rotary tank, each ceramic having a silicate glass type composition with closed pores, bulk specific gravity of 0.7 to 1.2, 24 hour water absorption of not greater than 5% and the maximum diameter of not greater than 150 mm, the most of the ceramics having the diameter more than 5 mm.

5,298,028

METHOD OF MAKING A YARN OF PARTICULATE-IMPREGNATED ARAMID FIBERS

Che-Hsiung Hsu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 17, 1992, Ser. No. 899,897

Int. Cl.[5] C09B *44/00*

U.S. Cl. 8—130.1 8 Claims

1. A process for manufacturing a yarn of a multitude of individual filaments of poly(p-phenylene terephthalamide) polymeric material having the individual filaments separated from each other and having finely-divided particulate material partially embedded in the surface of the individual filaments comprising the steps of:

a) establishing a liquid system of (i) a first liquid of sulfuric acid in a concentration of 70 to 88 percent capable of swelling the poly(pphenylene terephthalamide) polymeric material and (ii) the finely-divided particulate material dispersed therein;

b) contacting a yarn of a multitude of individual filaments of the polymeric material with the liquid system for a time adequate to swell the polymeric material at the surface of the filaments; and

c) contacting the swollen polymeric material with a second liquid which is a solvent for the first liquid and nonsolvent for the polymeric material.

5,298,029

NITROPHENYLENEDIAMINE DYES HAVING A QUATERNARY CENTER WITH A LONG ALIPHATIC CHAIN

Alexander Chan, Mineola, N.Y., and Yuh-Guo Pan, Stanford, Conn., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 786,860, Nov. 1, 1991, Pat. No. 5,169,403. This application Sep. 1, 1992, Ser. No. 938,783

Int. Cl.[5] A61K *7/13;* C07C *211/46*

U.S. Cl. 8—405 12 Claims

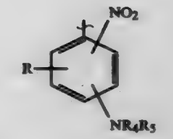
1. A dye composition comprising:

(a) a tinctorially effective amount of at least one nitrophenylenediamine dye compound of the formula (I):

$$Q{-}NR_6(CH_2)_n{-}N^+R_1R_2R_3\ \ X^-$$

or cosmetically acceptable salts thereof, wherein

Q is a nitroaniline of the formula (III):



(III)

n is 2 or 12;

R is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, C_{1-6} polyhydroxyalkyl, halogen, C_{1-6} alkoxy, halogenated C_{1-3} alkyl, polyhalogenated C_{1-3} alkyl, CN, $CONH_2$, SO_3H or COOH;

R_1 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl;

R_2 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl;

R_3 is a C_{8-22} aliphatic chain;

R_4 and R_5 are:

independent of each other, hydrogen, C_{1-6} alkyl; C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl, or together with N, a 5 or 6 member heterocyclic ring,

R_6 is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl; and

X^- is a monovalent or divalent anion;

(b) a cosmetically acceptable carrier that is compatible with the dye compound of formula (I); and

(c) at least one adjuvant or additive selected from the group consisting essentially of surface active agents, alkalizing agents, chelating agents and perfumes.

5,298,030

PROCESS FOR THE PHOTOCHEMICAL AND THERMAL STABILIZATION OF UNDYED AND DYED OR PRINTED POLYESTER FIBER MATERIALS

Kurt Burdeska, Basel; Gerhard Reinert, Allschwil, both of Switzerland, and Dieter Reinehr, Knudern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

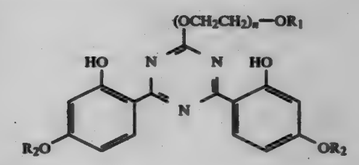
Filed Feb. 10, 1993, Ser. No. 15,948

Claims priority, application Switzerland, Feb. 21, 1992, 541/92-0

Int. Cl.[5] D06P *5/04;* D06M *13/325*

U.S. Cl. 8—442 8 Claims

1. A process for photochemical and thermal stabilization of undyed and dyed or printed polyester fiber materials, which comprises treating said materials with a compound of formula



(I)

wherein

R_1 is hydrogen or C_1–C_5alkyl,

R_2 is C_1–C_{12}alkyl, and

n is 0 to 5.

VOL 1160 ISS 5 MR 29 1994 UMI

5,298,031

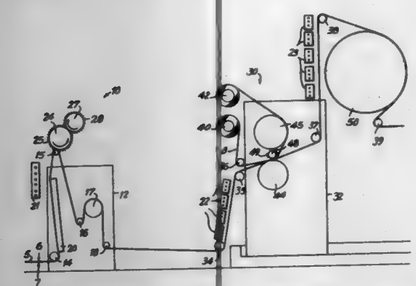
METHOD FOR TREATING VELVET-LIKE FABRIC WHICH IS SIMULTANEOUSLY EMBOSSED AND DECORATED

Amnon Gabay, Newtonville; Amiram Inbal, Brookline; Moshe Rock, Andover; Lloyd Pease, Westford, all of Mass.; Robert Ryan, Tuftenboro, N.H., and Yechiel Naor, Brookline, Mass., assignors to Malden Mills Industries Inc., Lawrence, Mass.

Continuation of Ser. No. 679,676, Apr. 4, 1991, abandoned. This application Nov. 4, 1992, Ser. No. 971,703

Int. Cl.[5] D06M *5/00*

U.S. Cl. 8—471 **52 Claims**



1. A method for embossing and printing on a fabric having a base and a pile formed essentially of thermoplastic fibers and capable of being embossed by a heated embossing roll and printed by transfer printing means using a sublimatable dyestuff, comprising the steps of:

heating a fabric including a base and a pile of thermoplastic fibers so that the thermoplastic fibers are at least partially plasticized to permit thermal deformation;

brushing the fabric to erect the fiber ends not attached to the fabric base;

simultaneously passing the brushed fabric and a thermal transfer sheet supporting at least one sublimatable dyestuff between two rolls under pressure with respect to each other, the thermal transfer sheet being on the pile side of the fabric with the at least one sublimatable dyestuff facing the pile; the roll on the pile side of the fabric being the embossing roll and heated, the embossing roll having a surface which is engraved, the thermal transfer sheet and fabric being passed between the rolls at a temperature and pressure sufficient to both emboss the fabric by thermal deformation of at least the pile of the fabric and transfer the sublimatable dyestuff to the fabric by the action of the heated non-engraved portions of the surface of the embossing roll, the sublimatable dyestuff not being transferred to the non-embossed portions of the fabric.

5,298,032

PROCESS FOR DYEING CELLULOSIC TEXTILE MATERIAL WITH DISPERSE DYES

Wolfgang Schleuker, Basel; Peter Liechti, Arisdorf; Dieter Werthemann, Basel, and Angelo D. Casa, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 8, 1992, Ser. No. 941,581

Claims priority, application Switzerland, Sep. 11, 1991, 2668/91

Int. Cl.[5] D06P *1/02*

U.S. Cl. 8—475 **20 Claims**

1. A process for dyeing cellulose textile material with disperse dyes, which comprises pretreating the textile material at least 5% by weight, based on the weight of the textile material of an auxiliary that promotes dye uptake and subsequently dyeing the pretreated material with a disperse dye under pressure and at a temperature of at least 90 degrees celsius from supercritical CO_2, said auxiliary being selected from the group consisting of a polyalkylene glycol, an alkanolamine and an aromatic compound with several hydroxyl groups.

5,298,033

ULTRAVIOLET ABSORBING LENSES AND METHODS OF MANUFACTURING THEREOF

William M. Hung, and Kai C. Su, both of Alpharetta, Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 707,515, May 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 468,386, Jan. 22, 1990, Pat. No. 5,098,445, which is a continuation-in-part of Ser. No. 323,354, Mar. 14, 1989, Pat. No. 4,929,250, and Ser. No. 323,327, Mar. 14, 1989, Pat. No. 4,963,160. This application Jan. 12, 1993, Ser. No. 3,674

Int. Cl.[5] D06P *3/52, 5/20*

U.S. Cl. 8—509 **2 Claims**

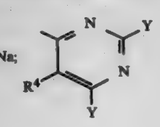
1. An ultraviolet radiation absorbing lens comprising an effective amount of an ultraviolet absorbing agent bonded to a lens comprised of hydroxyethyl methacrylate polymer, wherein said agent comprises the formula:

A—NH—B

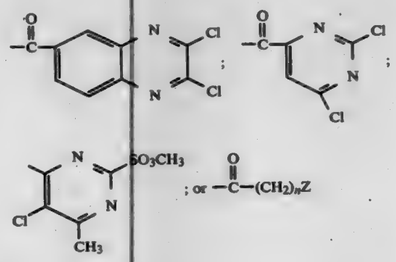
wherein A is an ultraviolet radiation absorbing component and

wherein B is a reactive group or a moiety containing reactive group selected from the group consisting of

$-SO_2CH_2CH_2-X$; $-SO_2CH_2CH_2-OSO_3Na$;



$-SO_2NHCH_2CH_2OSO_3Na$;



wherein

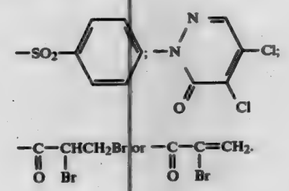
X=a halogen;

R^4=H or Cl;

Y=Cl or F;

n=1 or 2 and

Z=a halogen,



5,298,034

SOLVENT DYE PREPARATIONS

Klaus Bast, Bad Duerkheim; Ronald Sawa, Hockenheim, and Wolfgang Keil, Birkenheide, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 30, 1992, Ser. No. 983,365

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140085

Int. Cl.[5] D06P *3/82*; C09B *67/00*

U.S. Cl. 8—552 **3 Claims**

1. Pulverulent dye preparations comprising from 70 to 99% by weight of one or more solvent dyes and from 1 to 30% of an auxiliary selected from the group consisting of polybutylene glycols having a molecular weight of from 1000 to 5000 and addition products of ethylene oxide with polybutylene glycols, said addition products having a molecular weight of from 1000 to 5000, based on the weight of the preparation.

5,298,035

PROCESS FOR PREPARING THERMOSENSITIVE FIBROUS STRUCTURE

Masao Okamoto, Osaka, Japan, assignor to OG Kabushiki Kaisha, Osaka and Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, both of Japan

Filed Dec. 24, 1992, Ser. No. 994,873

Claims priority, application Japan, Dec. 27, 1991, 3-347430

Int. Cl.[5] C09B *67/00, 67/18*; D06M *13/322*; D06P *5/06*

U.S. Cl. 8—554 **4 Claims**

1. A process for preparing a colored thermosensitive fibrous structure which comprises: adding a fibrous substrate mainly composed of cellulosic fiber, microcapsules containing a thermochromic material, a cationic surfactant and a nonionic surfactant to a dye bath maintained at a temperature of not higher than 90° C. and then adding an amino-modified polyorganosiloxane exhaustion agent to said bath at a pH not more than 7, thereby causing said fibrous substrate to exhaust said microcapsules from said bath, and obtaining said colored thermosensitive fibrous structure.

5,298,036

MIXTURE OF DISAZO DYES CONTAINING SULFO-SUBSTITUTED 1,4-NAPHTHALENE MIDDLE COMPONENTS

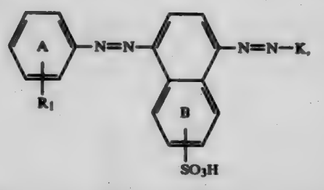
Dieter Mäusezahl, Biel-Benken, and Urs Lehmann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 14, 1992, Ser. No. 914,178

Int. Cl.[5] C09B *67/22, 31/043, 31/057*; D06P *3/24*

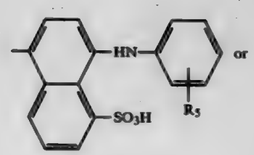
U.S. Cl. 8—641 **11 Claims**

1. A dye mixture which contains at least two dyes of the formula

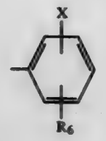


(1)

in which R_1 is a radical of the formula —NH—CO—R_2 or —CO—N(R_3)R_4, R_2 is amino or unsubstituted or halogen-, hydroxyl- or C_1–C_4alkoxy-substituted C_1C_4alkyl, R_3 and R_4, independently of one another, are hydrogen, C_1–C_4alkyl or C_2–C_4hydroxyalkyl, and K is a radical of the formula



(2)



(3)

R_5 and R_6 are hydrogen or C_1–C_4alkyl, X is C_1–C_4alkoxy, C_2–C_4hydroxyalkoxy or a radical of the formula —N(R_7)R_8 and R_7 and R_8, independently of one another, are C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl or by phenyl which may be further substituted, in which, if R_1 is the group —NH—CO—R_2 and K is a radical of the formula (2), the group —NH—CO—R_2 is bound to the benzene ring A in the 3 position, relative to the azo group.

5,298,037

METAL HYDRIDES

Donald W. Murphy, Green Brook, and Brijesh Vyas, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1992, Ser. No. 954,647

Int. Cl.[5] H01M *10/04*

U.S. Cl. 29—623.1 **11 Claims**

1. A process for activating a metal comprising the steps of subjecting said metal to a reagent comprising a material chosen from the group consisting of BH_3·Z and $A^+(BR_{3-n}H_{n+1})^-$ where A^+ is a cation, B is a boron, H is hydrogen, R is hydrogen or an organic substituent, Z is a Lewis base, and n is 0 to 3.

5,298,038

GUERBET BRANCHED ALKOXYLATED AMINE DETERGENT ADDITIVES

Jiro Hashimoto, and Shogo Nomoto, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

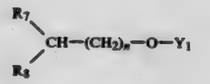
Continuation of Ser. No. 383,044, Jul. 21, 1989, abandoned. This application Sep. 25, 1991, Ser. No. 764,955

Claims priority, application Japan, Aug. 5, 1988, 63-195799; Mar. 3, 1989, 1-51222

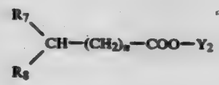
Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—433 **4 Claims**

1. A gasoline composition comprising gasoline and an additive for gasoline, which comprises a compound defined by formula (7), (8) or (9):



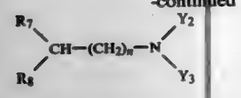
(7)



(8)

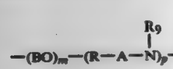
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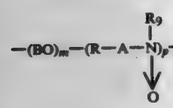


(9)

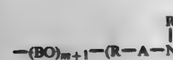
in which R7 and R8 are each a hydrocarbon group having 3 to 18 carbon atoms, provided that the sum total of the carbon number in R7 and R8 ranges from 8 to 36, n is zero or an integer of 1 to 4, Y1 is an amine group having formula (10) or an amineoxide group having formula (11), Y2is hydrogen or has formula (12) or (13), with the proviso that Y2 cannot be hydrogen in formula (8), and Y3 has formula (12) or (13):



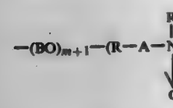
(10)



(11)



(12)



(13)

in which B is an alkylene having 3 to 4 carbon atoms, m is zero or an integer of 1 to 3 , R does not exist or is —CH2CONH—, —CH2Ch(OH)—or —CH2CO—, A does not exist or is an alkylene having 1 to 4 carbon atoms, R9 and R10 are each hydrogen, an alkyl having 1 to 4 carbon atoms or a hydroxyalkyl having 1 to 4 carbon atoms and p is 1 or 2.

5,298,039

FUELS FOR GASOLINE ENGINES

Juergen Mohr, Gruenstadt; Knut Oppenlaender, Ludwigshafen; Juergen Thomas, Fussgoenheim, and Peter Schreyer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 993,054

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 4142241

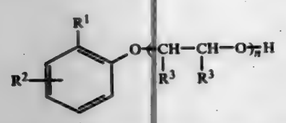
Int. Cl.[5] C10L *1/18, 1/22*

U.S. Cl. 44—443 5 Claims

1. A composition comprising an internal combustion fuel and a combination of

a) from 10 to 5,000 ppm of a nitrogen-containing detergent component which is or contains a polyisobutylamine and

b) from 10 to 5,000 ppm of an alkoxylate of the following formula I



I

where R^1 and R^2 independently of one another are each branched or straight-chain C_6–C_{30}-alkyl, one of the to radicals R^3 is methyl and the other is hydrogen and n is from 1 to 100.

5,298,040

PROCESS FOR THE PREPARATION OF A WATER-RESISTANT FUEL AGGLOMERATE

Serge Gosset, Lestrem, and Jean-Pierre Graux, Lillers, both of France, assignors to Roquette Freres, Lestrem, France

Continuation-in-part of Ser. No. 534,642, Jun. 7, 1990, abandoned. This application May 29, 1992, Ser. No. 890,207

Claims priority, application France, Jun. 9, 1989, 89 07679

Int. Cl.[5] C10L *5/14*

U.S. Cl. 44—560 15 Claims

1. A process for the preparation of a water-resistant fuel agglomerate, comprising:

selecting a finely divided fuel material,

mixing said fuel material with 0.2 to 25% by weight, with respect to the weight of the finely divided fuel material, of organic binder selected from the group consisting of molasses, flours, starches, derivatives of these products and their mixtures, and with 0.01 to 3% by weight, with respect to the weight of the finely divided fuel material, of water-soluble oxidizing agent selected from the group consisting of perborates, persulfates, percarbonates, peroxides and their mixtures,

subjecting the mixture so obtained to agglomeration treatment, and

subjecting the agglomerate obtained at the end of the agglomeration treatment to stoving treatment at a temperature in the range between about 170° C. and about 300° C., thereby oxidatively converting the binder into binding water-insoluble compounds, and thereby rendering the fuel agglomerate water-resistant.

5,298,041

PLANT TRAY WITH DETACHABLE BOTTOM

Barney K. Huang, Raleigh, N.C., assignor to Barney K. Huang, Raleigh, N.C.

Filed Jan. 22, 1991, Ser. No. 643,330

Int. Cl.[5] A01B *79/02*

U.S. Cl. 47—58 1 Claim



1. A method of air-pruning plants within a plant tray and readying the plant tray for transplanting comprising the steps of:

a) filling the plant tray with a plant growing medium;

b) detachably securing a screen to the bottom of the plant tray so that the screen and tray become an integral structure;

c) planting at least one seed or plant in said growing medium and growing the seed or plant in the growing medium to form roots;

d) retaining the plant growing medium within the plant tray as the screen serves to hold and retain the plant growing medium within the tray and further air-pruning the plants as a result of the open screen being disposed about the bottom of the plant tray by permitting air to circulate below said screen to cause air pruning of said roots; and

e) detaching the screen from the bottom of the plant tray such that plant material can be extracted downwardly from the bottom of the plant tray.

5,298,042

Patent Not Issued For This Number

5,298,043

FILTER SYSTEM FOR SMOKE OR POLLUTED AIR

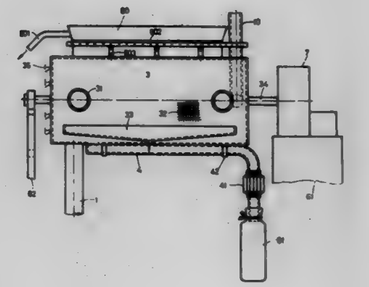
Sung-chuan Mai, 87 Tso-yin Big Road, and Kung-ming Mai, 355 Shih-chuan second Road, both of Kaohsiung City, Taiwan

Filed Sep. 10, 1992, Ser. No. 943,389

Claims priority, application China, May 19, 1992, 92103597

Int. Cl.[5] B01D *47/12*

U.S. Cl. 55—223 34 Claims



1. A filter system for smoke or polluted air, comprising:

a) a liquid power sprayer filter device through which said smoke or polluted air is directed, which comprises

A) a sinuously upwardly extending duct formed by a plurality of transverse duct sections interconnected by a plurality of end connectors forming a plurlaity of bends, the lowest duct section having an open end forming a draft intake opening proximate to a smoke inlet port and the topmost duct section exhausting to the atmosphere at an unconnected end thereof;

B) a plurality of liquid power sprayer sets disposed vertically in said end connectors and transversely in said duct sections; and

C) a power blowing fan disposed at the draft intake opening of the lowest duct section of said upwardly extending duct;

b) a bag filter device communicating with said liquid power sprayer filter device for cleansing the waste liquid received from said liquid power sprayer filter device; and

c) a water treatment device communicating with said bag filter device for receiving from said bag filter device the liquid treated thereby and further treating said liquid so as to render said liquid suitable to be recirculated for repeated use.

5,298,044

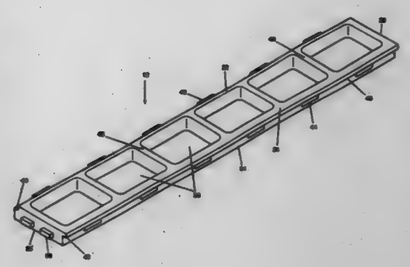
EXTENDED SURFACE POCKET TYPE AIR FILTER

Darrel Sutton, Sherwood Park; Michael Benoit, and Daniel Gagne, both of Edmonton, all of Canada, assignors to B.G.E. Service & Supply Ltd., Edmonton, Canada

Filed Jun. 1, 1993, Ser. No. 69,374

Int. Cl.[5] B01D *46/02*

U.S. Cl. 55—378 8 Claims



1. An extended surface pocket type air filter comprising:

a plurality of header plates, each header plate including a first rigid side, a second rigid side and first and second ends extending between the first and second rigid sides to define at least one interior aperture;

the first rigid side and the second rigid side of each header plate having first and second exterior edges respectively;

the first exterior edge of each header plate including a set of tongues;

the second exterior edge including a set of complementary grooves corresponding to the set of tongues;

a generally rectangular frame having dimensions suitable to enclose and hold the header plates; and

means to lock the frame about the header plates.

5,298,045

FILTER FOR AVIONIC LINE REPLACEMENT UNIT

Frederick A. Whitson, Oconomowoc, and William K. Siebert, West Bend, both of Wis., assignors to Electronic Cable Specialists, Inc., Franklin, Wis.

Filed Mar. 16, 1993, Ser. No. 33,158

Int. Cl.[5] B01D *46/10*

U.S. Cl. 55—385.6 7 Claims

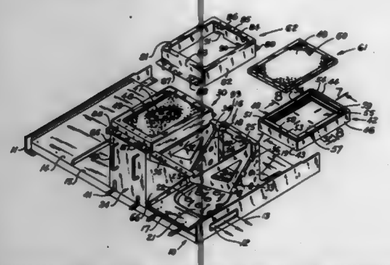
1. A filter assembly for prefiltering coolant air that enters an avionic line replaceable unit (LRU) box through holes in the top surface of the box and exits through at least one hole in the bottom of the box which is coupled in airflow communication with a negative pressure plenum when said LRU box is in an avionic tray, said avionic tray providing support members arranged, respectively, proximate to opposite ends of said top surface of the box, said filter assembly comprising:

a frame comprised of side and end wall members that have upper and lower rims, said wall members arranged to define a plenum opening for passage of coolant air into the LRU and the frame is adapted for being positioned with

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the wall members superimposed on the margins of said top surface of the LRU box with sealing means between said frame and the top surface,

a filter element supported in said frame for spanning across said opening at a distance from the LRU box top surface such that the filter element, the top surface and the walls of the frame define a plenum under the filter element,



a hold-down cover for being superimposed in compressive relation on said filter element and having an open area for filtered air to flow into the plenum, and

means for releasably attaching said hold-down cover to said support members provided by the tray such that when said hold-down cover is released said filter element is accessible without removing said LRU box from said avionic tray.

5,298,046

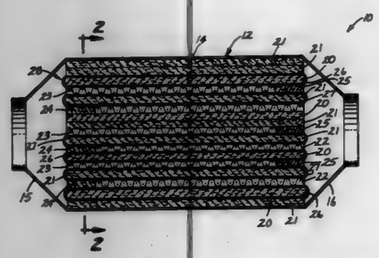
DIESEL PARTICULATE FILTER ELEMENT AND FILTER

Joseph C. Peisert, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 6, 1993, Ser. No. 1,299

Int. Cl.[5] B01D *27/06, 53/36*

U.S. Cl. 55—486 **20 Claims**



1. A spirally wound filtering element for a diesel particulate filter, said filter element comprising:

(i) a plurality of layers of filter material comprising inorganic fibers, said plurality of layers being wound to provide a spirally wound roll, each layer extending substantially the full axial dimension of said spirally wound roll;

(ii) a plurality of layers of open mesh material each having widths less than the widths of said layers of filter material and are alternately interposed between successive layers of said filter material, said open mesh material positioned between opposite sides of said spirally wound roll to provide spiral inlet and outlet exhaust channels opening into said spirally wound roll from alternate sides of said roll, each layer of filter material extending beyond said layers of open mesh material to close each of the radially inner and outer ends of said spiral channels; and

(iii) a resilient stuffer strip extending between one side of said roll and an interior edge of each of said layers of open mesh material, such that each spiral channel is blocked so that exhaust entering said exhaust inlet channel passes radially through said layers of filter material before exiting through said exhaust outlet channel.

5,298,047

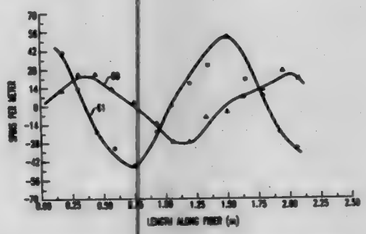
METHOD OF MAKING A FIBER HAVING LOW POLARIZATION MODE DISPERSION DUE TO A PERMANENT SPIN

Arthur C. Hart, Jr., Chester; Richard G. Huff, Basking Ridge, and Kenneth L. Walker, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1992, Ser. No. 924,278

Int. Cl.[5] C03B *37/025*

U.S. Cl. 65—3.11 **4 Claims**



1. A method of making an optical fiber comprising

a) providing an optical fiber preform;

b) heating at least a portion of said preform; and

c) drawing optical fiber from the heated preform such that a spin is impressed on the fiber; wherein

d) step c) comprises, while maintaining the preform rotationally stationary, applying a torque to the fiber, said torque causing the fiber to undergo rotation around the longitudinal axis of the fiber such that the spin is impressed on the fiber as it is drawn from the preform, wherein the torque is applied such that the spin impressed on the fiber does not have a constant spatial frequency.

5,298,048

HEAT TREATABLE SPUTTER-COATED GLASS SYSTEMS

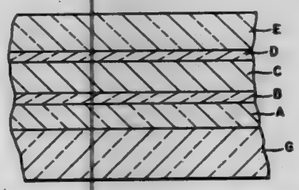
Philip J. Lingle, Lambertville; Raymond Nalepka, Westland, and Klaus W. Hartig, Brighton, all of Mich., assignors to Guardian Industries Corp., Northville, Mich.

Division of Ser. No. 804,017, Dec. 9, 1991, Pat. No. 5,229,194.

This application Jun. 24, 1993, Ser. No. 80,787

Int. Cl.[5] C03C *25/02*

U.S. Cl. 65—60.2 **16 Claims**



1. A method of forming a heat treatable coated glass article comprising sputter-coating onto said glass in the sequence given from glass outwardly the following layers:

a) a first layer having a thickness of about 5–100Å and comprised of an oxide or nitride of a metal selected from the group consisting of nickel and a nickel alloy having at least about 50% by weight nickel;

b) a second layer having a thickness of about 20–250Å and comprised of a metal selected from the group consisting of nickel and a nickel alloy having at least about 50% by weight nickel;

c) a third layer having a thickness of about 5–100Å and comprised of an oxide or nitride of a metal selected from the group consisting of nickel and a nickel alloy having at least about 50% by weight nickel; and

d) a fourth layer having a thickness of about 20–1000Å and comprised of an oxide of a metal selected from the group consisting of tin, zinc, titanium and alloys thereof.

5,298,049

TROUGH SYSTEM

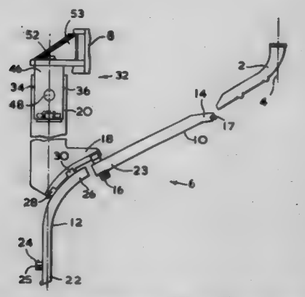
Willi Meyer, Effretikon, Switzerland, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Mar. 5, 1993, Ser. No. 27,074

Claims priority, application United Kingdom, Mar. 28, 1992, 9206830

Int. Cl.[5] C03B *7/16*

U.S. Cl. 65—225 **4 Claims**



1. An assembly for guiding a gob of molten glass comprising

an upwardly facing inclined trough for receiving a gob at the upper end thereof,

a downwardly facing deflector for deflecting a gob received from the lower end of said trough into a vertical downward path,

a vertical support bracket,

means for securing said deflector on said vertical support bracket,

a block,

means for mounting said vertical support bracket on said block for pivotal displacement about a first horizontal axis,

means for restraining pivotal displacement of said vertical support bracket from a selected pivotal position relative to said block,

a yoke,

means for mounting said block on said yoke for pivotal displacement about a second horizontal axis perpendicular to said first horizontal axis,

means for restraining pivotal displacement of said block from a selected pivotal position relative to said yoke, and

means for supporting said yoke for displacement about a vertical axis perpendicular to said first and second horizontal axes.

5,298,050

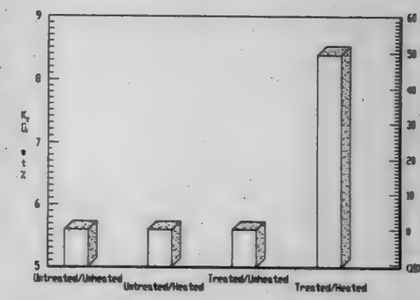
HIGH WATER SOLUBILITY POTASSIUM SULFATE AND METHOD OF PRODUCING SAME

J. C. McLaughlin, Brigham, Utah; Danton S. Nason, and John R. Prest, Jr., both of Overland Park, Kans., assignors to Great Salt Lake Minerals Corporation, Overland Park, Kans.

Filed Oct. 9, 1992, Ser. No. 959,111

Int. Cl.[5] C01D *5/00;* **C05D** *1/00, 1/02*

U.S. Cl. 71—63 **29 Claims**



1. A potassium sulfate salt product having enhanced water solubility and consisting essentially dry potassium sulfate salt having applied onto the surface thereof a surfactant for increasing the solubility of the potassium sulfate in water, together with a minor amount of a magnesium ion source selected from the group consisting of sources of magnesium chloride, magnesium sulfate, and mixtures thereof, said surfactant being present at a level of at least about 0.1% by weight, based upon the weight of said dry potassium sulfate salt, said product, when mixed with sufficient water to form a solution and heated, having a potassium sulfate solubility calculated as K_2O of at least about 8%.

9. An aqueous potassium sulfate salt solution comprising water, dissolved potassium sulfate and a surfactant for increasing the solubility of said dissolved sulfate, said surfactant being present at a level of at least about 0.1% by weight, based upon the weight of said potassium sulfate said water being present in an amount by weight greater than the weight amounts of said potassium sulfate and surfactant, the potassium salt fraction of said solution consisting essentially of potassium sulfate, said potassium sulfate solution having a potassium sulfate solubility calculated as K_2O of at least about 8%.

18. A method of increasing the solubility of potassium sulfate in water, comprising the steps of heating a mixture including water, a quantity of potassium sulfate slat, and at leas about 0.1% by weight surfactant, based upon the weight of said potassium sulfate salt, to a temperature of from about 100°–210° F. for increasing the solubility of said potassium sulfate in said water, said water being present in an amount by weight greater than the weight amounts of said potassium sulfate and surfactant, the potassium salt fraction of said mixture consisting essentially of potassium sulfate, said potassium sulfate mixture having a potassium sulfate solubility calculated as K_2O of at least about 8%.

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5,298,051

METHOD OF MODIFYING CERAMIC COMPOSITE BODIES BY A POST-TREATMENT PROCESS AND ARTICLES PRODUCED THEREBY

Terry D. Claar, Newark; Gerhard H. Schiroky, Hockessin, and William B. Johnson, Newark, all of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Division of Ser. No. 700,349, May 7, 1991, Pat. No. 5,162,098, which is a continuation of Ser. No. 296,239, Jan. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 137,382, Dec. 23, 1987, Pat. No. 4,915,736. This application Nov. 9, 1992, Ser. No. 973,449

Int. Cl.[5] C22C *29/04*

U.S. Cl. 75—238 20 Claims

1. A self-supporting body comprising at least one metal phase selected from the group consisting of zirconium, titanium, and hafnium; at least one three-dimensionally interconnected ceramic phase extending to boundaries of said self-supporting body, said ceramic phase comprising at least one carbide selected from the group consisting of a carbide of zirconium, a carbide of titanium, and a carbide of hafnium; and at least boride of a metal corresponding to said carbide, said boride having a platelet-like structure, and said self-supporting body further comprising at least one core comprising said at least one metal phase; and at least one modified zone or layer on at least one exterior surface of said at least one core, wherein said at least one metal phase of said at least one core comprises about 4.5–40 percent by volume and said at least one metal phase of said at least one modified zone or layer comprises about 0–2 percent by volume.

5,298,052

HIGH TEMPERATURE BEARING ALLOY AND METHOD OF PRODUCING THE SAME

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Kenji Sakai, Ichinomiya, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jun. 11, 1992, Ser. No. 897,141

Claims priority, application Japan, Jul. 12, 1991, 3-172563

Int. Cl.[5] C22C *20/00*; B22F *9/00*

U.S. Cl. 75—243 12 Claims

1. A high temperature bearing alloy superior in both wear resistance and oxidation resistance at a temperature of 700°–900° C. in an oxidizing atmosphere, consisting, by weight, of 9–30% Cr; 5–19% Fe; 0.1–1.5% Si; 2–22% Co; 1.4–11.0% Mo; and the balance Ni and incidental impurities, said alloy having a structure in which hard particles of a Co-Mo-Cr-Si alloy are uniformly dispersed.

5,298,053

CONSUMABLE LANCE FOR OXYGEN INJECTION AND DESULFURIZATION AND METHOD

Neal R. Griffing, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 12, 1993, Ser. No. 105,274

Int. Cl.[5] C21C *5/32*, *7/064*

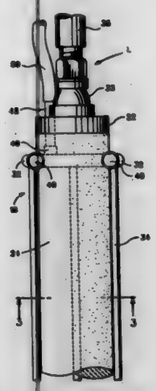
U.S. Cl. 75—533 24 Claims

1. A consumable lance, comprising:

a) a longitudinally extending body having a first end and a second end;

b) at least a first bore extending through said body and terminating at said second end for supplying a first material to a ladle containing molten metal and into which said lance is to be selectively positioned; and

c) at least a first tube extending externally along said body and terminating intermediate said ends for supplying a



second material to the ladle, said first tube formed from a composition consumable by the molten metal in the ladle.

5,298,054

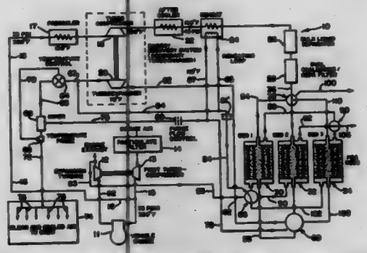
PRESSURE AND TEMPERATURE SWING ADSORPTION SYSTEM

Ram L. Malik, Fremont, Calif., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 863,335, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 753,023, Aug. 26, 1991, abandoned, which is a continuation of Ser. No. 590,750, Oct. 1, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 970,525

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—99 4 Claims



1. A method for purging contaminants from intake air and providing clean air, comprising the steps of:

directing intake air to a first adsorption bed at a first pressure wherein the intake air passes through the first adsorption bed in a first direction producing a clean air output;

stopping the flow of intake air to the first adsorption bed;

heating the first adsorption bed;

passing a portion of the clean air through the first adsorption bed in a second direction, wherein the second direction is opposite to the first direction and wherein the portion of the clean air is at a second pressure which is lower than the first pressure;

stopping the heating of the first adsorption bed;

cooling the first adsorption bed;

cooling the clean air to provide cooled clean air and wherein the step of cooling the first adsorption bed, comprises the step of passing the cooled clean air through the first adsorption bed at a third pressure which is lower than the first pressure; and

heating a portion of the intake air, creating heated intake air and wherein the step of heating the first adsorption bed, comprises the steps of providing channels in the first adsorption bed, and passing the heated intake air through the channels in the first adsorption bed.

3. An apparatus for purging contaminants from intake air and providing clean air, comprising:

a first adsorption bed;

means for directing intake air to the first adsorption bed at a first pressure wherein the intake air passes through the first adsorption bed in a first direction producing a clean air output;

means for stopping the flow of intake air to the first adsorption bed and heating the first adsorption bed and passing a portion of the clean air through the first adsorption bed in a second direction, wherein the second direction is opposite to the first direction and wherein the portion of the clean air is at a second pressure which is lower than the first pressure;

means for stopping the heating of the first adsorption bed, and cooling the first adsorption bed;

means for cooling the clean air to provide cooled clean air and wherein the means for stopping the heating of the first adsorption bed, comprises a means for passing the cooled clean air through the first adsorption bed at a third pressure which is lower than the first pressure; and

means for heating a portion of the intake air, creating heated intake air and wherein the means for stopping the flow of intake air to the first adsorption bed and heating the first adsorption bed, comprises channels in the first adsorption bed, and means for passing the heated intake air through the channels in the first adsorption bed.

5,298,055

IRON-BASED POWDER MIXTURES CONTAINING BINDER-LUBRICANT

Frederick J. Semel, Riverton, N.J., and Sydney Luk, Lafayette Hill, Pa., assignors to Hoeganaes Corporation, Riverton, N.J.

Filed Mar. 9, 1992, Ser. No. 848,264

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—252 14 Claims

1. In an improved metallurgical powder composition of the kind comprising (a) an iron-based powder, (b) a minor amount of at least one alloying powder, and (c) at least about 0.005% by weight, based on the combined widths of (a) and (b), of an organic binder for the iron-based and alloying powders, the improvement comprising that at least 40% by weight of said organic binder is a polyalkylene oxide of the general formula

$$HO-(CH_2\underset{\displaystyle R}{\underset{|}{C}}H-O)_n-H$$

where R is H, CH_3, or C_2H_5, and n is the average number of repeating oxyalkylene unit sufficient to provide a number average molecular weight of at least about 7,000.

5,298,056

DIRECT STEEL-MAKING PROCESS

Patrick E. Cavanagh, Toronto, Canada, assignor to Virgin Metals (Canada) Limited, Toronto, Canada

Filed Jan. 8, 1993, Ser. No. 2,011

Claims priority, application United Kingdom, Jan. 9, 1992, 9200423

Int. Cl.[5] C22B *1/16*

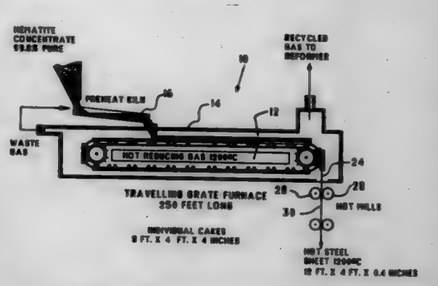
U.S. Cl. 75—436 14 Claims

1. A method of making steel, which comprises:

forming a gas-permeable bed of particulate iron ore or concentrate,

passing a reducing gas through said particulate iron ore or concentrate to form a coherent porous hot cake of metallic iron in which sintered metal particles are fused to one another, and

compacting the hot cake to a metal sheet.



5,298,057

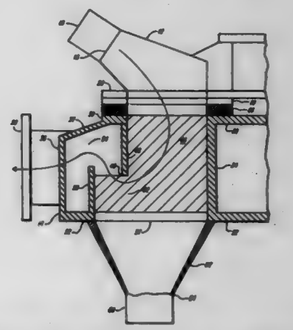
DISTRIBUTOR VALVE FOR MULTIPLE CELL FILTER

Arthur W. Burt, Lakeland, Fla., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 4, 1993, Ser. No. 72,340

Int. Cl.[5] B01D *19/00*

U.S. Cl. 96—197 6 Claims



1. A distribution system for use with a filtering cell, the system comprising:

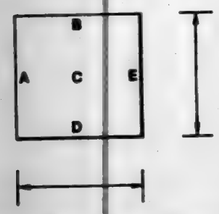
an inlet manifold rotatably mounted substantially concentrically above a stationary separator, the separator including an upper surface, a lower surface, an inner wall and an outer wall;

at least one separation chamber inside the separator connected to a vacuum source;

a first baffle extending downwardly from the upper surface of the separator in the separation chamber and located between the inner wall and the outer wall; and

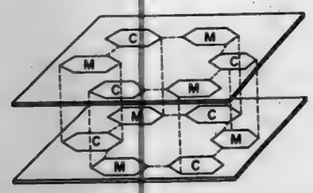
a second baffle located in the separation chamber between the first baffle and the outer wall, extending upwardly from the lower surface of the separator in the separation chamber to a point above the lowest portion of the first baffle.

5,298,058
ELECTROLESS COPPER PLATING BATH
Fujio Matsui, and Yasuyuki Yamamoto, both of Tokyo, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan
Filed Nov. 30, 1992, Ser. No. 982,892
Claims priority, application Japan, Nov. 28, 1991, 3-339954
Int. Cl.[5] C23C *18/40*
U.S. Cl. 106—1.23 4 Claims



1. An electroless copper plating bath comprising in water
a water soluble salt of copper
a complexing agent, and
a reducing agent consisting of a phosphorous acid or a phosphite, said bath having an acidic pH.

5,298,059
ANTICORROSIVE COATING COMPOSITION
Masaaki Takimoto, Kadoma, and Hisataka Yamamoto, Setagaya, both of Japan, assignors to Nippon Paint Co., Ltd. and Sumitomo Metal Industries Ltd., both of Osaka, Japan
Filed Mar. 30, 1992, Ser. No. 859,942
Claims priority, application Japan, Mar. 29, 1991, 3-66073
Int. Cl.[5] C09D *5/08*
U.S. Cl. 106—14.17 19 Claims



1. An anticorrosive coating composition consisting essentially of 0.05 to 20% by weight of melamine cyanurate, 5 to 30% by weight of a thermosetting resin, 0 to 20% by weight of a curing agent, 40 to 95% by weight of a solvent, and 0.05% to 20% by weight of fumed silica.

5,298,060
USE OF SILICONE RESINS AND FLUIDS TO RETARD MARINE LIFE BUILDUP ON SUBMERGED SURFACES
Mark E. Harakal, Hamburg, and Dieter R. Nollen, Ahrensburg, both of Fed. Rep. of Germany, assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Apr. 3, 1992, Ser. No. 862,875
Int. Cl.[5] C09D *5/14*
U.S. Cl. 106—15.05 16 Claims

1. In a method for preventing or reducing the marine life buildup on a submerged surface by applying an antifouling coating to the surface, the improvement which comprises applying a silicone-containing coating consisting essentially of 5 to 40 wt % of a silicone resin which is a three dimensional, crosslinked, trifunctional siloxane and 60 to 95 wt % of a silicone fluid which is a polymeric difunctional siloxane.

5,298,061
GEL-FREE PAINT CONTAINING ZINC PYRITHIONE, CUPROUS OXIDE, AND AMINE TREATED ROSIN
Craig Waldron, Waterbury; Douglas A. Farmer, Jr., Madison, and Rahim Hani, Cheshire, all of Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed May 14, 1993, Ser. No. 61,124
Int. Cl.[5] C09D *5/14*
U.S. Cl. 106—18.33 10 Claims

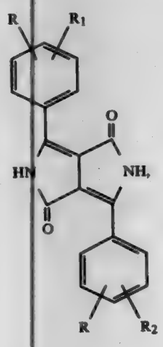
1. A paint or paint base composition characterized by enhanced biocidal efficacy and gelation resistance wherein the paint or paint base contains a biocide consisting essentially of cuprous oxide and zinc pyrithione, said zinc pyrithione being present in an amount of between about 1% and about 25%, and said cuprous oxide being present in an amount of between about 20% and about 70%, wherein the total amount of said zinc pyrithione plus said cuprous oxide is between about 20% and about 80%, based upon the total weight of the paint or paint base composition, wherein the paint or paint base additionally contains rosin amine or rosin amide in an amount sufficient to stabilize said paint or paint base against gelation, and wherein the amount of said rosin amine or rosin amide is between about 1% and 20% based upon the total weight of the paint or paint base composition.

5,298,062
EUTECTIC COMPOSITIONS FOR HOT MELT JET INKS
Nicholas A. Davies, Elgin, Ill., and Beatrice M. Nicholas, Tring, United Kingdom, assignors to Videojet Systems International, Inc., Wood Dale, Ill.
Filed Aug. 19, 1992, Ser. No. 932,346
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 R 16 Claims

1. A hot melt ink comprising, a eutectic composition and an image-forming agent, wherein the melting point of the eutectic composition is from about 80° C. to about 130° C. and the compounds present in the eutectic compositions have melting points of at least about 100° C.

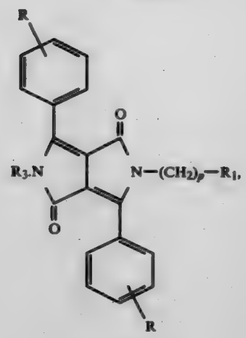
5,298,063
NOVEL ELECTROCHROMIC COMPOSITIONS BASED ON DIKETOPYRROLOPYRROLES
Jin Mizuguchi, and Alain C. Rochat, both of Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Division of Ser. No. 730,418, Jul. 16, 1991, Pat. No. 5,169,953.
This application Sep. 15, 1992, Ser. No. 945,075
Claims priority, application Switzerland, Jul. 20, 1990, 2418/90
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—21 D 6 Claims

1. A composition containing
(a) at least one 1,4-diketopyrrolo[3,4-c]pyrrole of the formula I, II, IIa, III or IV

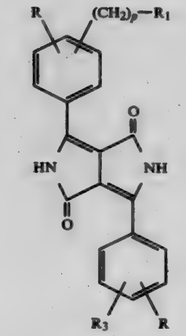


(I)

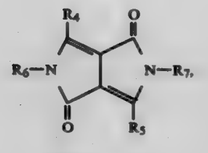
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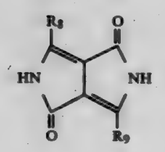
(II)



(IIa)



(III)



(IV)

and

(b) an auxiliary redox system which comprises sodium ferrocyanide, potassium ferrocyanide, calcium ferrocyanide, magnesium ferrocyanide, ammonium ferrocyanide or $(NH_3)_2Fe(SO_4)_2.6H_2O$ in combination with at least one conductive salt (c) from salts wherein the cation is selected from Li^+, Na^+, K^+ and $N^+(C_nH_{2n+1})_4$, where n is 1, 2, 3 or 4 and the anion is selected from Cl^-, Br^-, I^-, ClO_4^-, BF_4^-, SCN^-, $CF_3SO_3^-$, $H_2PO_2^-$, HPO_3^{2-}, $H_2PO_4^-$ and HCO_3^-; where, in the formulae I, II and IIa, the groups R, independently of one another are —H, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4mercaptoalkyl, —CH, $—CF_3$ or phenyl, R_2 is —H or R_1, and R_3 is —H or a group of the formula $—(CH_2)_p—R_1$, p is an integer from 1 to 6, and R_1 is a group of the formula $—CO_2L$, $—SO_3L$, $—PO_3L$ or $—N^+(R_{10})(R_{11})(R_{12})X^-$ in which X is a halogen ion, $(SO_4)^{2-}$, $(SO_3OCH_3)^-$ or $(SO_2OC_2H_5)^-$ and L is —H, a group of the formula M^{+n}/n or $+NH(R_{10})(R_{11})(R_{12})$ where M is a monovalent, divalent or trivalent metal cation, n is the number 1, 2 or 3, and R_{10}, R_{11} R_{12}, independently of one another, are —H, C_1–C_{18}alkyl, C_7–C_{12}phenylalkyl, C_5–C_6cycloalkyl, or phenyl or naphthyl which is unsubstituted or substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, or R_{10} and R_{11}, together with the nitrogen atom to which they are bonded , form a 5–6-membered heterocyclic radical which is pyrrolidino, morpholino or piperidino; or R_{10}, R_{11} and R_{12}, together with the nitrogen atom to which they are bonded, form a 5–6-membered aromatic heterocyclic radical which is a quaternized pyrrolyl, pyridyl, picolyl, pyrazinyl, quinolyl or isoquinolyl group; in the formula III, R_4 and R_5, independently of one another, are unsubstituted or halogen-, C_1–C_4alkyl- or C_1–C_4alkoxy-substituted naphthyl, phenyl or pyridyl, which in turn can be substituted by one or two halogen atoms, one or two C_1–C_4alkyl or C_1–C_4alkoxy groups, furthermore by C_1–C_4alkylmercapto, —CN, CF_3, $—CCl_3$, $—CONH_2$, C_2–C_5alkoxycarbonyl or unsubstituted or halogen-, CH_3- or OCH_3-substituted phenyl, phenoxy, thiophenoxy or N-phenylcarbamoyl, and R_6 and R_7, independently of one another, are C_1–C_{12}alkyl, C_1–C_{12}alkoxy, C_1–C_{12}alkylmercapto, C_1–C_{12}alkyl-C_2–C_5alkoxycarbonyl, C_1–C_{12}alkyl-C_1–C_6-N-alkylcarbamoyl or unsubstituted or halogen-, C_1–C_4alkyl-, C_1–C_4alkoxy-, C_1–C_4alkylmercapto-, CN- or CF_3-substituted phenyl, benzyl or benzoyl, and in the formula IV, R_8 and R_9, independently of one another, are C_1–C_8alkyl, C_3–C_6cycloalkyl, C_7–C_{12}phenylalkyl, which may be substituted in the phenyl radical by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylmercapto, —CN, $—CF_3$, $—CH_3$, $—CONH_2$ or phenyl, or R_8 and R_9 are furthermore unsubstituted or halogen-, C_1–C_4alkyl- or C_1–C_4alkoxy-substituted naphthyl or unsubstituted or halogen-, C_1–C_4alkyl-, C_1–C_4alkoxy-, C_1–C_4alkylmarcapto-, —CN, $—CF_3$, $—CCl_3$, $—CONH_2$ or phenyl-substituted phenyl, or are pyridyl.

5,298,064
WATER-CONTAINING ORGANOPHILIC PHYLLOISILICATES
Guido Deassauer, Tutzing, and Ute Hora, Dornburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Dec. 4, 1991, Ser. No. 803,345
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1990, 4038886
Int. Cl.[5] C08K *3/36*
U.S. Cl. 106—287.34 16 Claims

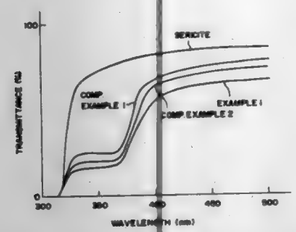
1. An organic medium containing a water-containing organophilic phyllosilicate obtained by the reaction of a cation-exchanging phyllosilicate, which has been completely delaminated colloidally in water, with an organic onium salt in aqueous suspension, the cation-exchanging phyllosilicate having undergone cation exchange during the reaction and subsequent removal of the water which removal consists essentially of a mechanical water removal step, said removal leaving the cation-exchanging phyllosilicate with some residual water.

5,298,065
ULTRAVIOLET-SCREENING SCALE PIGMENT, PROCESS FOR PREPARING THE PIGMENT AND COSMETICS CONTAINING THE PIGMENT
Nobumoto Hiraoka; Norihiro Tanimoto, and Mayumi Mandai, all of Okayama, Japan, assignors to Tayca Corporation, Osaka, Japan
Filed Jan. 4, 1993, Ser. No. 218
Claims priority, application Japan, Mar. 5, 1992, 4-84557
Int. Cl.[5] C04B *14/20*; C08J *7/04*; A61K *7/42*
U.S. Cl. 106—425 22 Claims

1. An ultraviolet-screening scale pigment comprising scaly inorganic particles and a zinc oxide coating layer of 50 to 250 wt% (calculated as ZnO) based on the scaly inorganic parti-

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cles, the ratio of zinc exposed on the surfaces of the pigment particles, as measured by X-ray photoelectron spectroscopy, being not less than 50 atom% based on all atoms exclusive of oxygen exposed on the surfaces of the pigment particles, and obtained by preparing a suspension of the scaly inorganic particles containing a water-soluble zinc compound, hydrolyz-



ing the water-soluble zinc compound by lowering the pH of the resultant suspension from a range of 9 to 11 to a range of 5.5 to 7.5 over a period of 1 to 10 hours and baking the obtained scaly inorganic particles coated with the zinc compound hydrolyzate, the water content of said zinc oxide coating layer being not more than 7 wt%.

5,298,066

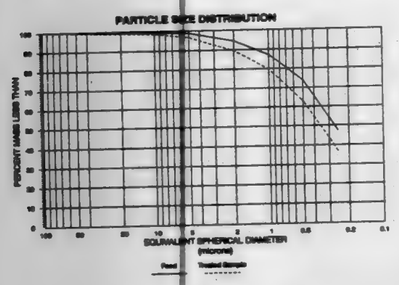
METHOD OF PRODUCING AGGREGATED KAOLINITE PIGMENT USING ORGANIC SILICON COMPOUNDS

Dickey S. Shurling, Jr., Sandersville, Ga.; Alan J. Brown, Vancouver, Wash., and E. Wayne Andrews, Sandersville, Ga., assignors to ECC International Inc., Atlanta, Ga.

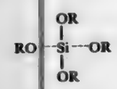
Continuation-in-part of Ser. No. 877,544, May 1, 1992, Pat. No. 5,232,495. This application Feb. 22, 1993, Ser. No. 20,982

Int. Cl.[5] C09C *3/12*; C08K *3/34, 9/08, 9/06*

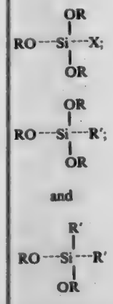
U.S. Cl. 106—487 **32 Claims**



1. A method for producing a chemically aggregated kaolin pigment providing enhanced optical and printability properties when used in paper manufacture, which comprises contacting a substantially dry fine particle size feed kaolin with a solution of an aggregating agent comprising a previously hydrolyzed organic silicon compound selected from the group consisting of symmetric compounds having the formula



where R=CH_3, C_2H_5, C_3H_7, n-C_4H_9 sec-C_4H_9 and C_6H_5 and asymmetric compounds having the formula



where R=C_2H_5, X=Cl or Br, and R'=H, and recovering an aggregated particulate kaolin pigment as product.

5,298,067

COATING MATERIALS STABILIZED AGAINST LIGHT-INDUCED DEGRADATION

Andreas Valet, Eimeldingen, Fed. Rep. of Germany; Jean-Luc Birbaum, Fribourg, and Mario Slongo, Tafers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 13, 1992, Ser. No. 835,657

Claims priority, application Switzerland, Feb. 21, 1991, 527/91

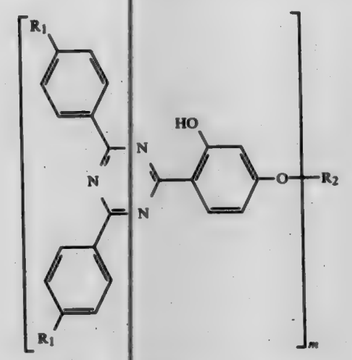
Int. Cl.[5] C08K *15/3492*

U.S. Cl. 106—506 **14 Claims**

1. A coating material stabilised against degradation induced by light, oxygen and heat, comprising:

a) a film-forming binder,

b) as a stabiliser, at least one hydroxyphenyltriazine of formula I



wherein R_1 is hydrogen or methyl,

m is 1 or 2,

wherein when m is 1, R_2 is

a) hydrogen,

b) C_1–C_{18} alkyl,

c) C_1–C_{12} alkyl which is substituted by a halogen, —COOH, —COO(C_1–C_{12} alkyl) or —CN,

d) C_2–C_6 alkenyl,

e) C_5–C_8 cycloalkyl,

f) C_6–C_{20} alkylcycloalkyl,

g) C_7–C_{11} phenylalkyl,

h) —CH_2CO-phenyl, or

i) a group —CO—R_3,

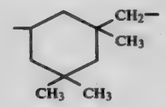
in which R_3 is C_1–C_{18} alkyl, cyclohexyl or phenyl, and

when m is 2, R_2 is

a) —CO—R_4—CO—, or

b) —CO—NH—R_5—NH—CO—,

in which R_4 is C_2–C_{10} alkylene, phenylene, diphenylene or C_2–C_6 alkenylene, and R_5 is C_4–C_{10} alkylene, phenylene, tolylene, diphenylmethane or



5,298,068

INORGANIC FOAM BODY AND PROCESS FOR PRODUCING SAME

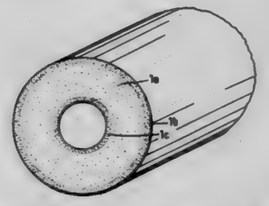
Herbert Giesemann, Rheinalde 5, D-7891 Hohentengen, Fed. Rep. of Germany

Continuation of Ser. No. 552,176, Jul. 13, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 911,390

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1989, 3923284

Int. Cl.[5] C04B *38/00*

U.S. Cl. 106—604 **9 Claims**



1. An inorganic foam body comprising an at least partially open-cell foam formed by thermally foaming and hardening a mixture comprising azodiacarbonamide as a foaming agent in amounts from about 5 to 15% by weight, an alkali water glass and a filler in a ratio of from about 1:1 to 1:5 by weight of filler to glass, wherein said glass and filler are selected from the group consisting of aluminum oxide, silicon dioxide, aluminous cement, crushed rocks, graphite and mixtures thereof, wherein said foam body has a bulk density within the range of from about 50 to about 500 kg/m^2, and a coefficient of thermal conductivity within the range of from 0.035 to 0.055 W/kM and a thermal (dimensional) stability of up to 1200° C.

5,298,069

ACID REMOVABLE LOW DENSITY WELL CEMENT COMPOSITIONS AND METHODS

Bobby J. King, and Patty L. Totten, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 838,632, Feb. 19, 1992. This application Mar. 23, 1993, Ser. No. 35,827

Int. Cl.[5] C04B *9/02*; E21B *33/13*

U.S. Cl. 106—686 **6 Claims**

1. An acid soluble cement composition which sets into a hard substantially impermeable mass consisting essentially of magnesium oxide, an aqueous magnesium chloride solution, an acid soluble filler, a foaming agent, a foam stabilizer and a gas entrained in said composition in an amount sufficient to obtain a density in the range of from about 6 to about 13.5 pounds per gallon of said composition:

wherein said aqueous magnesium chloride solution contains from about 25% to about 34% by weight magnesium chloride and is present in said composition in an amount in the range of from about 0.05 gallon to about 0.3 gallon per pound of magnesium oxide in said composition;

wherein said acid soluble filler is present in said composition in an amount up to about 4 pounds per pound of said magnesium oxide;

wherein said foaming agent is present in said composition in an amount in the range of from about 1% to about 4% by weight of said aqueous magnesium chloride solution in said composition; and

wherein said foam stabilizer is cocoamine betaine present in said composition in an amount in the range of from about 0.5% to about 2.5% by weight of said aqueous magnesium chloride solution present in said composition.

5,298,070

CEMENT FLUID LOSS REDUCTION

Kenneth M. Cowan, Sugarland, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 825,732, Jan. 27, 1992, Pat. No. 5,207,831, which is a continuation of Ser. No. 614,048, Nov. 9, 1990, abandoned. This application Dec. 18, 1992, Ser. No. 993,273

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] C04B *24/00*

U.S. Cl. 106—724 **3 Claims**

1. A method for preparing an aqueous oil field cement slurry for injection between a borehole and a pipe within the borehole, comprising:

preparing an effective quantity of a water-soluble polymer functional to reduce fluid loss of the cement slurry;

preparing an effective quantity of a surfactant functional 1) to interact with said polymer to reduce fluid loss of the cement slurry, 2) to disburse the cement in the slurry, and 3) to improve interfacial sealing between the cement and at least one of a) the pipe, and b) the borehole, said surfactant reducing the surface tension of the aqueous phase of the slurry by from about 20 to 55 dynes/centimeter; and

blending the polymer, surfactant, water, and cement to form the cement slurry which is substantially free of naphthalene sulfonate formaldehyde condensate, phenol sulfonate formaldehyde condensate, calcium and sodium lignosulfonate blends, sodium salt of naphthalene sulfonate condensed with formaldehyde and sodium salt of phenol sulfonate condensed with formaldehyde.

5,298,071

INTERGROUND FIBER CEMENT

Gary L. Vondran, Los Altos, Calif., assignor to Vontech International Corporation, Los Altos, Calif.

Continuation of Ser. No. 934,589, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 801,972, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 580,831, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 498,223, Mar. 23, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 92,582

Int. Cl.[5] C04B *2/10, 7/52*

U.S. Cl. 106—757 **19 Claims**

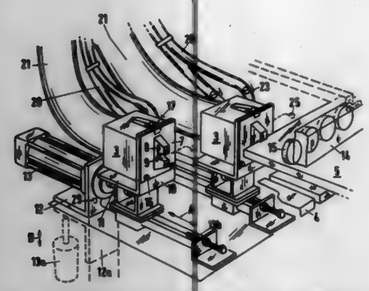
1. A method for preparing an interground reinforcing fiber-hydratable cement composition comprising introducing at least one fiber precursor and cement clinkers to a grinding mill and grinding the mixture until the clinker has been reduced to a fine powder, the amount of the fiber precursor added being sufficient to yield from 0.0001 to 10 volume percent interground fiber in the ground product, wherein the fiber is selected from the group consisting of steel, alkaline resistant glass, ceramic, carbon, polyolefin, polyamide and mixtures thereof.

VOL 1160 ISS 5 MR 29 1994 UMI

5,298,072
EDGE-COATING APPARATUS FOR PANEL WORKPIECES

Josef Schiele, deceased, late of Niederzissen; by Anneliese Schiele, heiress, Brohltalstrasse 153, 5476 Niederzissen; by Birgit M. Gros, heiress, Brohltalstrasse 153, 5476 Niederzissen; by Stefan G. Schiele, heir, Brohltalstrasse 153, 5476 Niederzissen, and Gerhard Stahl, Gierenzheimer Strasse 28, 5483 Bad Neuenahr-Ahrweiler, all of Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 27,142
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1992, 4207090
Int. Cl.[5] B05C *5/02*
U.S. Cl. 118—681 8 Claims



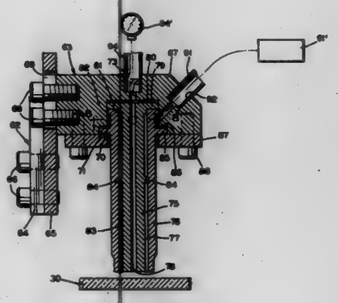
1. An apparatus for painting an edge of a workpiece that is moving in a travel direction generally parallel to the edge past a painting station, the apparatus comprising:
- a support movable horizontally transversely of the direction in the station;
- actuator means connected to the support for displacing the support transversely of the direction;
- a generally tubular casing mounted on the support and having a rear end and a front end;
- a front plate engaged over the front end of the casing and formed with a narrow nose which is in turn formed with a notch having a shape complementary to the workpiece edge, the casing and front plate together forming a vacuum applicator head;
- means for releasably securing the front plate over the front end of the casing;
- means including a vacuum tank adjacent the station having a large-diameter flexible vacuum hose connected to the rear end of the casing for drawing in air through the nose at the notch, the vacuum hose and casing being of generally the same flow cross section; and
- means including a paint supply adjacent the station having a pair of flexible paint-supply hoses connected to the front plate adjacent the notch for supplying coating liquid to the plate at the notch.

5,298,073
TWO SENSOR FOR DETERMINING SPACING BETWEEN SURFACES

R. Scott Wilson, Maumee, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Feb. 28, 1992, Ser. No. 843,828
Int. Cl.[5] B05C *11/00*; G01B *13/12*
U.S. Cl. 118—712 5 Claims

1. Apparatus for determining the distance between the surface of a ribbon of glass and a coater assembly disposed in spaced relationship thereto for directing coating materials against the surface of the ribbon, comprising a coater assembly, at least one sensing unit attached to said coater assembly, said at least one sensing unit including a head block, an elongated cylindrical outer housing affixed to said head block and having an end facing said glass surface in spaced relationship thereto, a tubular central member affixed to said head block and disposed axially within said cylindrical outer housing, said tubular member having an end remote from said head block coplanar with said end of said outer housing, a bore extending axially within said central member, a plurality of radially extending tabs on the outer surface of said tubular member for positioning said tubular member in spaced axial alignment within said outer housing so as to define an elongated annular space between the outer housing and the central member, an enclosed annular chamber surrounding said cylindrical housing within said head block, a passageway in said head block communicating with said annular chamber, first conduit means connected to said passageway providing a controlled supply of pressurized gas to said annular chamber, a pair of diametrically opposed openings extending through said cylindrical housing



providing communication between said annular chamber and said elongated annular space, said opposed openings being offset 90 ° from said passageway, a second bore extending through said head block in communication with said bore in said central member, back pressure measuring means, and second conduit means operably connecting said second bore and said back pressure measuring means, whereby said pressurized gas supplied through said first conduit means is distributed around said annular chamber and admitted to said annular space through said opposed openings to flow along said elongated annular space for discharge in a laminar annular pattern against said surface, said laminar annular pattern creating a back pressure within said bore which is indicative of the distance between the ribbon surface and the end of the at least one sensing unit and thus of the coater assembly from the ribbon surface.

5,298,074

Patent Not Issued For This Number

5,298,075
FURNACE TUBE CLEANING PROCESS

André Lagendijk, Oceanside; Arthur K. Hochberg, Solana Beach, and David A. Roberts, Carlsbad, all of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 898,857, Jun. 15, 1992. This application Jul. 28, 1993, Ser. No. 98,496
Int. Cl.[5] B08B *9/00*
U.S. Cl. 134—2 5 Claims

1. A process for cleaning furnace tubes used in the manufacture of semiconductor devices comprising the steps of:

heating the furnace tube to a temperature in excess of 800° C.;

flowing a gaseous mixture of oxygen and a chlorohydrocarbon having the general formula $C_xH_yCl_x$ wherein x is 2, 3 or 4 in a carrier gas through said tube, said chlorohydrocarbon being selected based upon its being readily and completely oxidized under the stated conditions; and

maintaining said tube at temperature and in contact with said mixture in said carrier gas until said tube is sufficiently clean.

5,298,076
CARBAZOLE DIOXAZINE-PIGMENTED PLASTICS AND COATINGS

Fridolin Bäbler, Hockessin, Del., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1993, Ser. No. 36,131
Int. Cl.[5] C08K *5/16*
U.S. Cl. 106—498 17 Claims

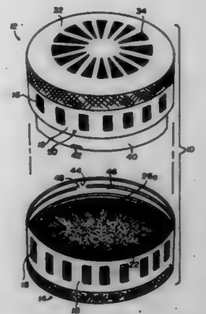
1. A process for coloring a high molecular weight organic material which comprises incorporating an effective pigmenting amount of carbazole dioxazine crude pigment having a specific surface area of from about 2 to 20 m^2/g and an average particle size of 0.5 to 20 μm, into the high molecular weight organic material.

5,298,077
CLEANING DEVICE FOR DENTAL APPLIANCE AND METHOD

Wayne E. Saarela, and Virginia M. Saarela, both of 32316 Pine, Grayslake, Ill. 60030

Filed Aug. 28, 1992, Ser. No. 937,958
Int. Cl.[5] A46B *15/00*
U.S. Cl. 134—6 18 Claims

1. A device for cleaning a dental appliance by producing a scrubbing action thereagainst, the device comprising a hollow, circular case formed of two coacting elements comprising a top half and a bottom half, each half including a planar circular wall and an upstanding peripheral wall, each upstanding peripheral wall having a plurality of spaced apart slots therein and each wall further having bristle tufts extending inwardly



therefrom, from an interior surface thereof, tufts which rise from the circular wall being shorter than the peripheral bristle tufts to create a small cavity therebetween within which a dental appliance may be accommodated, and the halves being oppositely rotatable relative to one another.

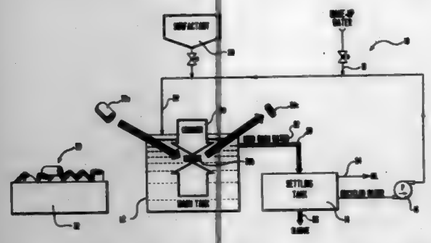
5,298,078
CLEANING COMPOSITION FOR A MOLDING MACHINE AND A CLEANING METHOD

Mikihiko Itoh, Yokohama, and Narimichi Murahara, Yokosuka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 19, 1991, Ser. No. 794,062
Claims priority, application Japan, Nov. 20, 1990, 2-312694
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—9 10 Claims

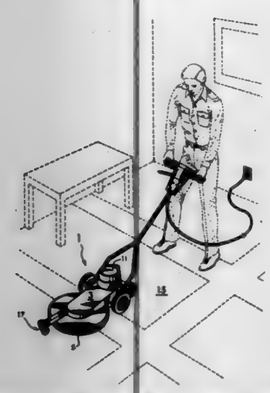
1. A method for cleaning the interior of a molding machine having residual molding resin retained therein, which comprises:
- (1) charging a molding machine having a residual molding resin retained in the interior thereof with a cleaning composition, said cleaning composition consisting essentially of (a) a graft polymer comprised of a main chain comprising an olefin polymer and having, grafted thereto, a side chain comprising a styrene polymer and (b) a thermoplastic styrene polymer, said graft polymer (a) being present in an amount of from 2 to 160 parts by weight per 100 parts by weight of said thermoplastic styrene polymer (b),
- (2) operating said molding machine to pass said cleaning composition through said molding machine, thereby removing and withdrawing substantially all of said residual molding resin to the outside of said molding machine and causing a part of said cleaning composition to be retained as a residual cleaning composition in the interior of said molding machine,
- (3) charging said molding machine having said residual cleaning composition retained therein with a fresh molding resin, and
- (4) operating said molding machine to replace said residual cleaning composition with said fresh molding resin, thereby removing and withdrawing said residual cleaning composition to the outside of said molding machine.

5,296,079
PROCESS FOR CLEANING USED OIL FILTERS
E. Park Guymon, 4085 Eccles Ave., Ogden, Utah 84403
Filed Jan. 8, 1993, Ser. No. 2,228
Int. Cl.[5] B01D *24/46, 41/00*; B08B *7/00*; B30B *9/02*
U.S. Cl. 134—16 15 Claims



1. A process for removing residual oil from a used oil filter comprising the steps of:
obtaining a used oil filter having residual oil therein;
preparing a wash water comprising a surfactant to remove said residual oil, said surfactant comprising less than about 0.5% by volume of said surfactant to inhibit emulsification of said residual oil; and
simultaneously crushing and washing said used oil filter thereby removing an increased quantity of said residual oil than by either washing said used oil filter with said wash water only or crushing said used oil filter only.

5,296,080
METHOD OF DETECTING A MISSING PAD FOR A FLOOR POLISHING TOOL
Peter W. Von Vett, Englewood, Colo., assignor to Windsor Industries, Inc., Englewood, Colo.
Division of Ser. No. 747,383, Aug. 20, 1991, Pat. No. 5,177,828. This application Nov. 19, 1992, Ser. No. 978,751
Int. Cl.[5] B08B *7/04*
U.S. Cl. 134—18 10 Claims

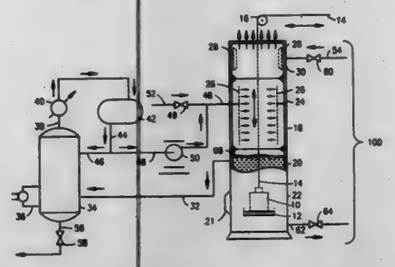


1. A method for detecting an absence of a surface treating member on a surface treating tool, said method including the steps of:
(a) providing a surface treating member,
(b) providing a frame having a support means for said surface treating member, means for removably mounting said surface treating member to said support means, and meansfor moving said support means toward and away from a surface to be treated between at least a first position in whichsaid surface treating member is spaced from said surface and a second position in which said surface treating member when mounted on said support means is engaged with said surface, and
(c) providing means for automatically detecting an absence of said surface treating member on said support means and providing means for automatically preventing said moving means from moving said support means to said second position in response to detecting the absence of said surface treating member on said support means.

5,296,081
PROCESS FOR REMOVING CURED FIBERGLASS RESIN FROM SUBSTRATES
Edward T. Marquis, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.
Filed Nov. 19, 1990, Ser. No. 615,188
Int. Cl.[5] B08B *3/08*; C09D *9/00*; C11D *7/50*
U.S. Cl. 134—38 20 Claims

1. A process for removing cured polyester resin from a substrate, consisting essentially of contacting a cured polyester resin with a co-solvent system comprising a mixture of alkylene carbonate and at least one non-alkylene carbonate solvent selected from the group consisting of aromatic hydrocarbons, ketones, imidazoles, tetramethyl urea, N,N'-dimethyl ethylene urea, and N-methyl pyrrolidone.

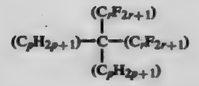
5,296,082
METHOD FOR DEGREASING SOLID OBJECTS
Gene Weitz, 5498 Worthington Loop, Palm Harbor, Fla. 34685
Continuation-in-part of Ser. No. 863,939, Apr. 6, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,332
Int. Cl.[5] B08B *3/00, 3/04*; C23G *5/00*
U.S. Cl. 134—40 6 Claims



1. A method of degreasing the surface of solid objects, comprising the steps of:
preparing a liquid bath having a relatively impure but effective solvent;
said relatively impure solvent being contaminated with sludge that may be as high as 40% of said relatively impure solvent by volume;
immersing a contaminated object in said liquid bath;
removing the object from the liquid bath;
preparing a liquid spray rinse having a relatively pure solvent;
said relatively pure solvent being contaminated with sludge that may be as high as 10% of said relatively pure solvent by volume;
subjecting the object to said liquid spray rinse so that said liquid spray rinse enters into said liquid bath after it has rinsed said object;
continuously removing a portion of the relatively impure solvent from the liquid bath and purifying such removed portion by distilling therefrom relatively pure solvent; and
returning the distilled relatively pure solvent to the liquid spray rinse so that said relatively pure solvent, after being sprayed onto said object, is added to said liquid bath to recharge said liquid bath so that the percentage of contaminants in said liquid bath remains within said volumetric range;
all of said steps being performed in a substantially closed liquid system.

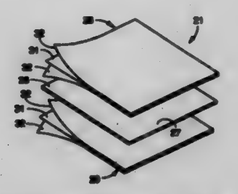
5,296,083
METHOD OF DISSOLVING CONTAMINANTS FROM SUBSTRATES BY USING HYDROFLUOROCARBON SOLVENTS HAVING A PORTION WHICH IS FLUOROCARBON AND THE REMAINING PORTION IS HYDROCARBON
Michael Van Der Puy, Cheektowaga; Phillip J. Persichini, Hamburg; Andrew J. Poss, Amherst; Lois A. Shorts, and Richard E. Eibeck, both of Orchard Park, all of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Division of Ser. No. 745,273, Aug. 15, 1991. This application Jul. 28, 1993, Ser. No. 98,544
Int. Cl.[5] B08B *3/00*; C11D *7/30, 7/50*; C23G *5/028*
U.S. Cl. 134—42 4 Claims

1. A method of dissolving or removing contaminants from the surface of a substrate which comprises the step of:
exposing said substrate to a hydrofluorocarbon of the formula



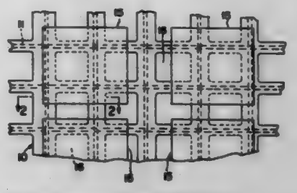
wherein p is 1,2, or 3 and r is 1,2, or 3.

5,296,084
ELECTRICAL INSULATOR ASSEMBLY WITH OXYGEN PERMEATION BARRIER
Roland R. Van Der Beck, Lansdale, and James A. Bond, Exton, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Dec. 11, 1992, Ser. No. 989,609
Int. Cl.[5] H01L *35/02*
U.S. Cl. 136—230 8 Claims



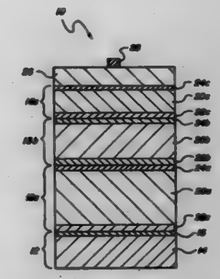
1. A high voltage insulator having high thermal conductance and adapted to be placed in contact with a heat exchanger having an oxygen-permeable refractory metal container or wall with liquid lithium therein, said insulator including:
a single crystal alumina layer a surface adapted to face towards said refractory metal container when said insulator is in contact therewith,
a niobium layer on said surface of said alumina layer,
an oxygen permeation barrier layer covering said niobium layer, said barrier layer having a low oxygen permeability, a high thermal conductance, a high melting point, a thermal expansion coefficient close to that of niobium and a slow interdiffusion with niobium.

5,296,085
SUPPORT BLANKET FOR SOLAR CELL ARRAYS
T. Jeffrey Harvey, Lompoc, and P. Alan Jones, Santa Barbara, both of Calif., assignors to AEC-Able Engineering Company, Inc., Goleta, Calif.
Filed Mar. 24, 1992, Ser. No. 857,542
Int. Cl.[5] H01L *31/042*
U.S. Cl. 136—244 8 Claims



1. A solar array consisting essentially of:
an array of solar cells each said cell having a pair of oppositely facing faces; and a substrate blanket comprising a cloth formed of crossed bundles of glass fibers, and flexible cured silicone enclosing said bundles, one face of each of said solar cells being adhered to said blanket by cured silicone, said fibers being gathered in bundles, there being open interstices between said adjacent bundles, at least a central portion of said interstices not being occluded by said silicone so as to form apertures therethrough, whereby said one face of the cells is completely exposed, and the other said face is partially exposed through said interstices.

5,296,086
METHOD FOR THE MANUFACTURE OF IMPROVED EFFICIENCY TANDEM PHOTOVOLTAIC DEVICE AND DEVICE MANUFACTURED THEREBY
Subhendu Guha, and Chi C. Yang, both of Troy, Mich., assignors to United Solar Systems Corporation, Troy, Mich.
Continuation-in-part of Ser. No. 884,372, May 15, 1992, abandoned. This application Dec. 14, 1992, Ser. No. 990,085
Int. Cl.[5] H01L *31/075, 31/18*
U.S. Cl. 136—249 15 Claims



8. A tandem photovoltaic device of the type comprising a stacked array of P-I-N photovoltaic cells disposed in an optical and electrical series relationship, said device comprising:
an electrically conductive bottom electrode;
a first P-I-N type photovoltaic cell disposed upon the bottom electrode, said first cell comprising a first layer of substantially intrinsic semiconductor material interposed between a first layer of P-doped semiconductor material and a first layer of N-doped semiconductor material, said first cell being operative, when it is incorporated in said tandem photovoltaic device and said device is subjected

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to illumination to generate a first photocurrent in response to the absorption of light thereby;

a second P-I-N type photovoltaic cell disposed in a superposed relationship with said first cell and in a series electrical relationship therewith, said second cell comprising a second layer of substantially intrinsic semiconductor material of a preselected thickness, interposed between a second layer of P-doped semiconductor material and a second layer of N-doped semiconductor material, said second cell being operative, when it is incorporated in said tandem device and said device is subjected to illumination, to generate a second photocurrent in response to the absorption of illumination thereby, the thickness of said first and second layers of substantially intrinsic semiconductor material being selected so that the second photocurrent is less than the first photocurrent and the material quality of the second layer of substantially intrinsic semiconductor material is greater than the material quality of the first layer of substantially intrinsic material; and

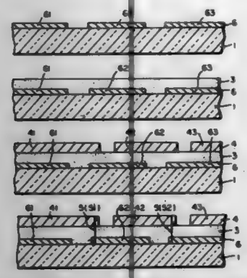
a top electrode disposed in electrical communication with said second photovoltaic cell.

5,298,087

PHOTOVOLTAIC DEVICE USEFUL AS A MIRROR

Porponth Sichanugrist, and Norimitsu Tanaka, both of Tokyo, Japan, assignors to Showa Shell Sekiyu K.K., Tokyo, Japan

Continuation of Ser. No. 699,537, May 14, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,456
Claims priority, application Japan, May 15, 1990, 2-123070
Int. Cl.[5] H01L *31/05, 31/052*
U.S. Cl. 136—249 **2 Claims**



1. A photovoltaic device comprising an insulating transparent substrate coated with an incident light-receiving surface electrode formed of a thin metal filmof aluminum, said surface electrode overlaid with an amorphous semiconductor layer and a back electrode, said thin metal film being adapted for use as a mirror, and said thin metal film and said back electrode being connected by a conductive path, wherein said thin film and said back electrode are segmented to forma plurality of linearly arranged unit cells and the conductive path is between the back electrode of one unit cell and the thin metal film of an adjacent unit cell.

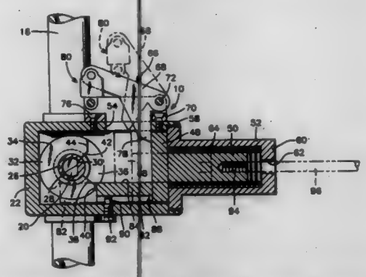
5,298,088

ONE-QUARTER TURN BALL VALVE CLOSER

Charles H. Gray, Jr., 5015 Memorial Blvd., Kingsport, Tenn. 37664

Filed Mar. 12, 1993, Ser. No. 30,546
Int. Cl.[5] F16K *31/64*
U.S. Cl. 137—75 **9 Claims**

1. A closer for a valve having a rotatable valve body with flow passage therethrough adapted to be connected to a flow line through which flammable material flows with the valve body normally being in an open position with the flow passage therethrough aligned with the flow line, said valve body including a valve stem extending outwardly of a valve housing, said closer comprising a housing in which the valve stem is rotatably positioned, said valve stem including a generally circular cam rigid with the stem and in perpendicular relation thereto, said cam including an arcuate peripheral notch, said closer housing including a spring biased actuating member reciprocally mounted therein for movement toward and away from the valve stem and cam, latch means retaining the actuating member in retracted position in spaced relation to the valve



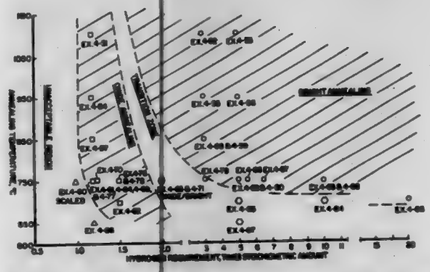
stem and cam, a temperature responsive means releasing the latch means in response to predetermined high temperature conditions to enable the actuating member to move toward said stem and cam, and means on said actuating member to engage an edge portion of said notch in spaced relation to the rotational axis of the stem for rotating the stem to move the valve from open position to closed position to terminate flow of flammable material through the flow line.

5,298,089

IN-SITU GENERATION OF HEAT TREATING ATMOSPHERES USING NON-CRYOGENICALLY PRODUCED NITROGEN

Donald J. Bowe, Macungie; Brian B. Bonner, Nesquehoning, and Diwakar Garg, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 727,806, Jul. 8, 1991, Pat. No. 5,211,369. This application Oct. 26, 1992, Ser. No. 966,258
Int. Cl.[5] F27D *23/00*; C21D *1/00*
U.S. Cl. 148—208 **22 Claims**



1. A method for annealing copper or copper alloy parts comprising the steps of

heating said parts in a furnace having a hot zone maintained at a temperature above 600° C.;

injecting into said furnace gaseous nitrogen containing from 0.05% to 5% by volume oxygen together with a reducing gas, said reducing gas injected into said furnace with a flow rate above about 1.10 times the stoichiometric amount required for the complete conversion of residual oxygen, said gaseous nitrogen and said reducing gas introduced into said furnace by directing said gaseous nitrogen and said reducing gas away from direct impingement on said parts in order to permit said reaction of oxygen and said reducing gas to be essentially complete prior to said mixture contacting said parts; and

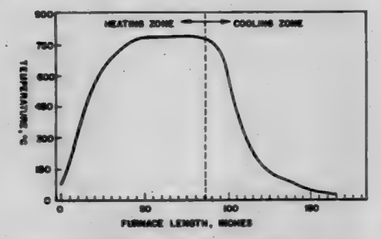
moving said parts through said furnace for a time sufficient to achieve the desired as annealed properties in said parts.

5,298,090

ATMOSPHERES FOR HEAT TREATING NON-FERROUS METALS AND ALLOYS

Diwakar Garg, Macungie; Brian B. Bonner, Nesquehoning; Donald P. Eichelberger, Macungie, and Kerry R. Berger, Lehighton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1992, Ser. No. 995,617
Int. Cl.[5] F27D *23/00*; C21D *1/00*
U.S. Cl. 148—208 **7 Claims**



1. A process for generating an atmosphere for use in a heat treating furnace used for annealing, brazing, or sintering non-ferrous metals and alloys comprising the steps of:

pre-heating a non-cryogenically produced nitrogen stream containing up to 5% by volume residual oxygen to a temperature between 200° C. and 400° C.;

mixing the pre-heated non-cryogenically produced nitrogen stream with a hydrocarbon gas said hydrocarbon gas present in an amount in excess of that required for stoichiometric conversion of oxygen contained in said nitrogen stream;

passing said mixture over a platinum group metal catalyst contained in a reactor;

recovery from said reactor an effluent consisting essentially of nitrogen containing carbon dioxide, moisture, unreacted hydrocarbons and less than 10 ppm oxygen; and

introducing said effluent into the furnace used to heat treat metals and alloys where the presence of unreacted hydrocarbons, carbon dioxide and moisture in the nitrogen will not affect inerting properties of the nitrogen.

5,298,091

INHIBITING COKE FORMATION BY HEAT TREATING IN NITROGEN ATMOSPHERE

William H. Edwards, III, Port St. Lucie; John A. Harris, III, West Palm Beach, and Edward S. Smith, Lake Worth, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1991, Ser. No. 811,347
Int. Cl.[5] C23C *8/24*
U.S. Cl. 148—232 **13 Claims**

5. In a method for reducing carbon deposition on a high temperature alloy selected from the group consisting of titanium, titanium alloys, stainless steel, and nickel base superalloys, the improvement comprising applying to said alloy a coke-inhibiting barrier layer of absorbed nitrogen by heat treating said alloy in an atmosphere selected from nitrogen, mixtures of nitrogen and hydrogen, and ammonia, at a temperature of from about 1800° to about 1850° F. for about one hour, cooling to a temperature of from about 1525° to about 1575° F. and holding for about four hours, and cooling to a temperature of from about 1375° to about 1425° F. and holding for about sixteen hours, to provide a surface absorbed nitrogen layer of from about 0.00001 inches to about 0.0005 inches in depth.

5,298,092

NON-CHROMATED OXIDE COATING FOR ALUMINUM SUBSTRATES

Matthias P. Schriever, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 17, 1990, Ser. No. 525,800
Int. Cl.[5] C23C *22/56*
U.S. Cl. 148—275 **51 Claims**

14. A process for forming an oxide film cobalt conversion coating exhibiting corrosion resistance and paint adhesion properties on a metal substrate, wherein said substrate is selected from the group consisting of aluminum, aluminum alloy, Cd plating, Zn plating, Zn-Ni plating, and steel, said process comprising the steps of:

(a) providing an oxide film forming cobalt conversion solution comprising an aqueous, alkaline reaction solution comprising a soluble cobalt-III hexammine complex, where said cobalt-III hexammine complex is present in the form of $(Co(NH_3)_6)X_3$, where X is one or more selected from the group consisting of Cl, Br, NO_3, CN, SCN, $\frac{1}{3}PO_4$, $\frac{1}{2}SO_4$, $C_2H_3O_2$, or $\frac{1}{2}CO_3$, and where said cobalt-III hexammine complex is made by reacting

(1) a cobalt-II salt CoX_2, where X is one or more selected from the group consisting of Cl, Br, NO_3, CN, SCN, $\frac{1}{3}PO_4$, $\frac{1}{2}SO_4$, $C_2H_3O_2$, or $\frac{1}{2}CO_3$, and

(2) an ammonium salt NH_4X, where X is one or more selected from the group consisting of Cl, Br, NO_3, CN, SCN, $\frac{1}{3}PO_4$, $\frac{1}{2}SO_4$, $C_2H_3O_2$, or $\frac{1}{2}CO_3$, and

(3) ammonium hydroxide (ammonia),

such that the concentration of said cobalt-III hexammine complex is from about 0.1 mole per liter of said aqueous reaction solution up to the saturation limit of said cobalt-III hexammine complex; and

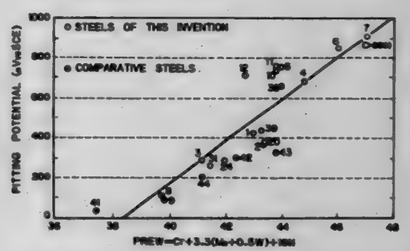
(b) contacting said substrate with said aqueous reaction solution for a sufficient amount of time to oxidize the surface of said substrate, whereby said oxide film cobalt conversion coating is formed, thereby imparting corrosion resistance and paint adhesion properties to said substrate.

5,298,093

DUPLEX STAINLESS STEEL HAVING IMPROVED STRENGTH AND CORROSION RESISTANCE

Hiroshi Okamoto, Mineo, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 10, 1992, Ser. No. 974,231
Claims priority, application Japan, Nov. 11, 1991, 2-294016
Int. Cl.[5] C22C *38/44*
U.S. Cl. 148—325 **8 Claims**



1. A high-strength duplex stainless steel with improved corrosion resistance, which has a chemical composition consisting essentially, on a weight basis, of:

C: 0.03% or less,	Si: 1.0% or less,
Mn: 1.5% or less,	P: 0.040% or less,
S: 0.008% or less,	sol.Al: 0.040% or less,
Ni: 5.0–9.0%,	Cr: 23.0–27.0%,
Mo: 2.0–4.0%,	N: 0.24–0.32%,
W: greater than 1.5% and at most 5.0%,	

at least one element selected from the group consisting of Cu:0–2.0% and V:0–1.5%,

at least one element selected from the group consisting of Ca:0–0.02%, Mg:0–0.02%, B:0–0.02%, and one or more rare earth metals: 0–0.02% in total, and

a balance of Fe and incidental impurities, said chemical composition having a value of at least 40 for PREW defined by the following formula (a):

$$PREW=[\%Cr]+3.3([\%Mo]+0.5[\%W])+16[\%N] \quad (a)$$

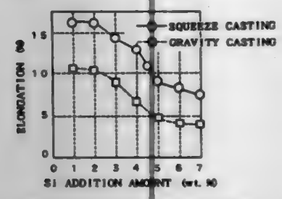
where the percent of each element is by weight.

5,298,094

ALUMINUM ALLOY CASTING HAVING HIGH STRENGTH AND HIGH TOUGHNESS AND PROCESS FOR PRODUCING THE SAME

Atsushi Ota, Toyota; Minoru Uozumi, Aichi; Hirokazu Oonishi, Toyota; Yoji Awano; Yoshihiro Shimizu, both of Aichi, and Hiroshi Kawahara, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Toyota Chuo Kenkyusho, both of Japan

Filed Nov. 29, 1991, Ser. No. 799,977
Claims priority, application Japan, Nov. 30, 1990, 2-338791
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—549 **11 Claims**



1. A process for producing an aluminum alloy casting having a high strength and a high toughness, the process comprising the steps of:

melting a raw material comprising:

silicon (Si) in an amount of 2.5 to 4.4% by weight;

copper (Cu) in an amount of 1.5 to 2.5% by weight;

magnesium (Mg) in an amount of 0.2 to 0.5% by weight; and

the balance of aluminum (Al);

squeeze casting a molten metal of said raw material with a mold while applying a pressure of 250 to 1500 kgf/cm^2 thereto; and

carrying out a solution treatment onto a cast product.

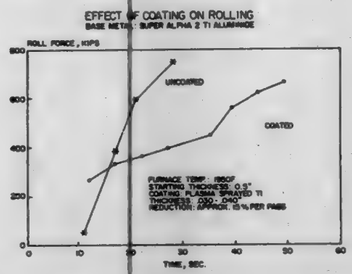
5,298,095

ENHANCEMENT OF HOT WORKABILITY OF TITANIUM BASE ALLOY BY USE OF THERMAL SPRAY COATINGS

Patrick A. Russo, Boardman, and Stanley R. Seagle, Warren, both of Ohio, assignors to RMI Titanium Company, Niles, Ohio

Filed Dec. 20, 1991, Ser. No. 810,827
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—670 **9 Claims**

1. A process for hot working a crack-sensitive titanium base alloy comprising (i) prior to hot-working the base alloy, applying a metal or metal alloy coating to the base alloy by thermally coating the base alloy with a layer of titanium or a titanium alloy which is more easily hot workable than the base



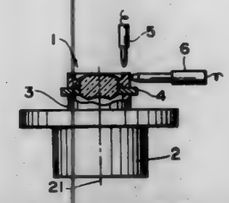
alloy, and then (ii) hot working the thermally coated base alloy.

5,298,096

METHOD OF PRODUCING A LENS

Hisakazu Yoshino; Yukio Ishiba, and Kunihiro Hayashi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 609,827, Nov. 6, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 902,412
Claims priority, application Japan, Nov. 14, 1989, 1-295369
Int. Cl.[5] B29D *11/00*
U.S. Cl. 156—64 **5 Claims**



1. A method of producing an objective lens made up of a plurality of lens sections, each comprising a lens element supported within an annular metal frame, and assembled one upon another, comprising the steps of:

(a) attaching an annular metal frame around the outer periphery of each of a plurality of circular lens elements to form a plurality of lens sections;

(b) centering the lens element relative to the metal frame by precisely shaping the metal frame such that the outer periphery of the metal frame of each lens section is positioned at a prescribed distance from the optical axis of the lens element;

(c) placing a first of said plurality of lens sections on a table which is rotatable about a vertical rotational axis with the optical axis of its lens element in parallel with the rotational axis of the table;

(d) while rotating the table, positioning the outer periphery of the metal frame of said first lens section at a prescribed radial distance from the rotational axis of the table to align the optical axis of the lens element with the rotational axis of the table, wherein a first displacement sensor indicates whether the first lens section is inclined, and variation of the outer periphery of the first lens section is measured by a second displacement sensor, and wherein fine adjustment is effected to minimize the measured value;

(e) stacking at least one additional lens section on said first lens section;

(f) while rotating the table, positioning the outer periphery of the metal frame of said at least one additional lens section at a prescribed radial distance from the rotational axis of the table to align the optical axis of its lens element with the rotational axis of the table; and

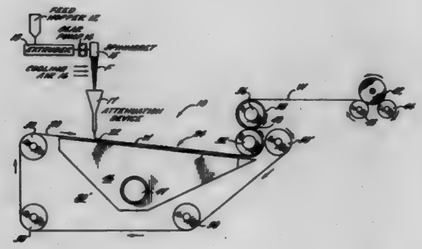
(g) securing the metal frames of said first and said at least one additional lens sections together.

5,298,097

APPARATUS AND METHOD FOR THERMALLY BONDING A TEXTILE WEB

Roberto Zanferrari, Bergamo, Italy, assignor to Neuberger S.p.A., Trezzano Rosa, Italy

Filed Mar. 31, 1992, Ser. No. 861,295
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—62.2 **33 Claims**



1. An apparatus for thermally bonding a textile web comprising:

a) an endless moving belt for receiving thereon a web of thermally bondable textile strands;

b) a transfer roll having a heated peripheral surface, a first portion of said surface being positioned adjacent said belt for engaging the web of textile strands and transferring the web from said belt to said transfer roll; and

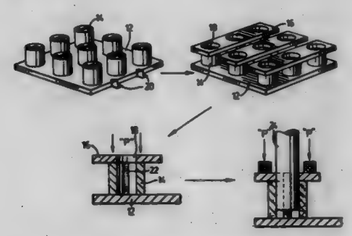
c) a calender roll having a peripheral surface positioned adjacent a second portion of said transfer roll surface to form a calender nip to thermally bond the web of textile strands as it passes through said nip, the thermally bonded web being directed along said calender roll surface upon leaving said nip.

5,298,098

INDUSTRIAL PALLETS AND METHODS OF MANUFACTURE OF PANEL STRUCTURES

Herbert K. Hoedl, R.R. #3, Newmarket, Ontario, Canada L3Y 4W1

Filed Jun. 17, 1991, Ser. No. 716,839
Int. Cl.[5] B23B *31/00*
U.S. Cl. 156—73.1 **8 Claims**



1. A process of manufacturing an industrial pallet having a platform, a planar reinforcement and a plurality of hollow cylindrical spacers disposed therebetween, said spacers having thermoplastic end portions and said platform and reinforcements having thermoplastic portions to contact the ends of the spacers, said process comprising:

placing opposed ends of at least one of said cylindrical spacers in thermoplastic contact with the thermoplastic portion of the platform and the thermoplastic portion of the reinforcement;

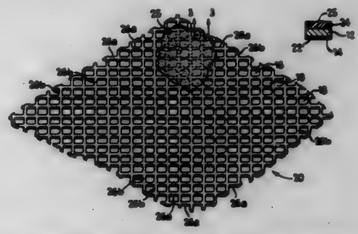
and holding the platform and the reinforcement stationary whilst the cylindrical spacer is rotated relatively thereto under pressure, about its longitudinal axis, to effect simultaneous friction welding of the cylindrical spacer to the platform and the reinforcement.

5,298,099

CONTOURABLE SURFACE REPAIR COMPOUND REINFORCEMENT AND POSITIONING MATRIX

Dennis Hoffmann, Sr., Palatine, Ill., assignor to Pro Patch Systems, Inc., Palatine, Ill.

Continuation of Ser. No. 744,258, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 404,491, Sep. 8, 1989, abandoned. This application Mar. 17, 1993, Ser. No. 32,745
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—94 **2 Claims**



1. A method of using a deformable and contourable metallic mesh together with a curable repair compound to repair a hole in a surface, the method comprising the steps of

forming a first sheet of metallic mesh, the mesh being comprised of linkages arranged to form a series of similar parallelogramic openings which are omnidimensionally deformable in order to allow the mesh to accommodate non-planar surfaces and partially non-planar surfaces, the mesh further having a pressure sensitive adhesive applied to a first side thereof to a size greater than the size of the hole,

using the pressure sensitive adhesive on the first side to firmly anchor the first sheet to areas of the surface adjacent to the hole and contouring the first sheet to the shape of the surface,

placing a curable repair compound over the first sheet so as to cover the first sheet and the hole,

contouring the repair compound to the shape of the surface,

allowing the repair compound to cure, and

sanding the outer surface portions of the repair compound after it is cured to obtain a desired surface finish.

5,298,100

PROCESS TO APPLY IDENTIFICATION INSCRIPTIONS ON SLEEVES MADE OF ELASTOMERIC MATERIAL IN THE MANUFACTURE OF DRIVING BELTS

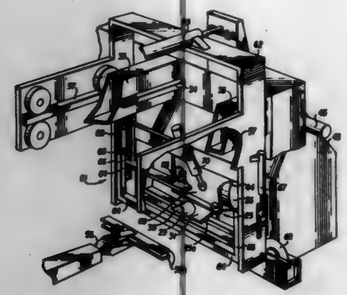
Fulvio Franchino, Francavilla A Mare; Giovanni Alberti, Milan, and Alessandro Pisoni, Pescara, all of Italy, assignors to Pirelli Trasmissioni Industriali S.p.A., Chieti, Italy

Division of Ser. No. 792,876, Nov. 21, 1991, Pat. No. 5,198,068. This application Dec. 21, 1992, Ser. No. 994,282
Int. Cl.[5] B41F *17/00*
U.S. Cl. 156—238 **6 Claims**

1. A process for applying identification inscriptions to sleeves made of elastomeric material for the production of driving belts, comprising the following steps:

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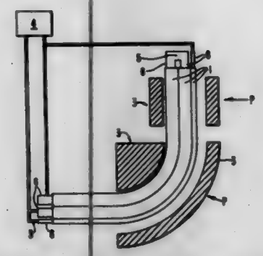
fitting a sleeve on a supporting board;
longitudinally disposing on the sleeve a ribbon manufactured article having a paper substrate to which a transferable film carrying said identifying inscriptions is applied, said transferable film being oriented towards an outer surface of the sleeve to which the inscription is to be applied;
pressing and heating the ribbon manufactured article onto the sleeve so as to cause the transferring of the transferable film to an outer surface of a sleeve and simultaneously detaching of the paper substrate from said film, wherein said process includes:
a) disposing the ribbon manufactured article in a coil;
b) giving the manufactured article a configuration when operatively positioned for use comprising at least:
a first rectilinear portion outgoing from the coiled position towards a front area;
a curvilinear portion from the front area towards a direction opposite the first portion;
second rectilinear portions defining with said first position a space inside which a heating roller is disposed in spaced relationship from the manufactured article;



c) causing passage of the outgoing manufactured article from the second portion to a position in which opposite locking forces are applied to opposed portions of the manufactured article during an application step in order to recover a paper substrate corresponding to the film laid on the sleeve;
d) moving the curvilinear portion of said configuration to the beginning of the sleeve and lowering said heating roller onto the manufactured article;
e) applying locking forces to said positions for locking the manufactured article and moving said configuration and the roller along the sleeve and over the manufactured article so that the film of the manufactured article is transferred to the sleeve over the whole length thereof;
f) raising the heating roller from the manufactured article and simultaneously applying tractive forces to the manufactured article in said configuration in the opposite direction to the direction used for applying said film in order to recover the paper substrate corresponding to the film applied to the sleeve.

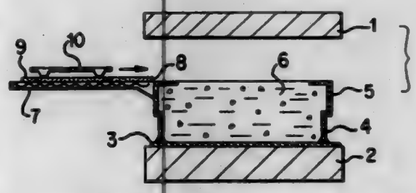
5,298,101
METHOD OF WELDING TOGETHER CABLE INSULATION
Gerhard Babiel, Moers; Thomas Brenken, Mülheim, and Dieter Kühnold, Hertea, all of Fed. Rep. of Germany, assignors to Telefunken Kabelsatz GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 21, 1991, Ser. No. 823,537
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1991, 4101663
Int. Cl.[5] B29C *65/22*
U.S. Cl. 156—273.9 **12 Claims**

1. A method of welding together selected portions of cable insulation of a plurality of cables having cores insulated by a sheath of insulation material which is polymeric and which is capable of at least softening when heated, the method comprising, in the order recited:
a. placing a plurality of cables to be joined in a molding tool;
b. electrically connecting the cores of the plurality of cables to be joined;
c. immersing the plurality of cables and the molding tool in a cooling bath;



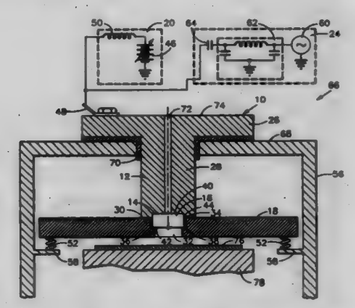
d. heating the cable insulations by passing a current through the cores of the electrically connected plurality of cables effective to provide Joule heating sufficient to cause at least the selected portions of cable insulation to at least soften; and
e. pressing at least the selected portions of cable insulation together during heating with a pressure sufficient to cause the selected portions of cable insulation to join together.

5,298,102
EXPANDING PRESSURE CHAMBER FOR BONDING SKINS TO FLAT AND SHAPED ARTICLES
Andrew P. Pohl, Virginia Beach, Va., assignor to Sorbilite Inc., Virginia Beach, Va.
Filed Jan. 8, 1993, Ser. No. 2,376
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—285 **10 Claims**



9. A method for forming and bonding skins to a shaped article, comprising the steps of:
providing an apparatus for forming and bonding skins to shaped articles, comprising
a first sleeve having two ends, said first sleeve being open at a first end and closed at a second end by a bottom plate,
a second sleeve having two ends, said second sleeve being open at a first end, and slidable and coaxially connected with said first sleeve at a second end,
a forming and bonding means comprising a forming medium, having a nonpressurized substantially horizontal top level, disposed within said first sleeve and said second sleeve, for forming and bonding a skin to a shaped article,
a top plate movable into pressurized engagement with said first end of said second sleeve, whereby said top plate fits tightly against and seals said first end of said sleeve so as to pressurize the forming medium, and
at least one temperature controllable work table which is substantially coplanar with said nonpressurized substantially horizontal top level of said forming medium;
placing a laminate skin on said at least one temperature controllable work table;
placing a shaped article on said laminate skin;
providing a predetermined amount of thermal energy to soften said laminate skin;
moving said laminate skin and the shaped article on top of said forming medium;
moving said top plate into pressurized engagement with said first end of said second sleeve, whereby said top plate fits tightly against and seals said first end of said sleeve; and
pressurizing the forming medium so that the laminate skin is formed and bonded to the shaped article by the forming medium,
wherein the forming medium is capable of absorbing thermal energy from said laminate skin.

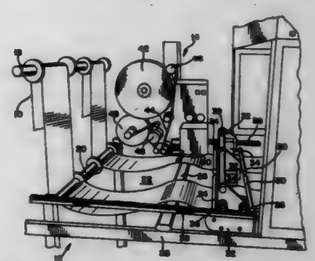
5,298,103
ELECTRODE ASSEMBLY USEFUL IN CONFINED PLASMA ASSISTED CHEMICAL ETCHING
George N. Steinberg, Westport, and Charles B. Zarowin, Roway-ton, both of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 15, 1993, Ser. No. 93,120
Int. Cl.[5] B44C *1/22;* **H01L** *21/306*
U.S. Cl. 156—345 **13 Claims**



1. An electrode assembly useful in confined plasma assisted chemical etching; comprises:
an electrode holder, said electrode holder having means for receiving an electrode;
means for laterally confining a plasma discharge established at said electrode; and
means for establishing a D.C. bias voltage on said electrode.

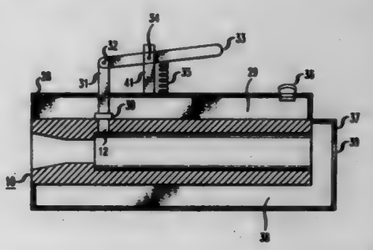
5,298,104
FLEXIBLE BAG WITH A REMOVABLE COUPON AND A METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF
Scott Absher, 320 Gentry, Park Forest, Ill. 60466
Filed Sep. 30, 1991, Ser. No. 769,931
Int. Cl.[5] B65H *61/00;* **B65C** *9/00;* **B26D** *1/00;* **B31B** *19/00*
U.S. Cl. 156—363 **22 Claims**

1. A method of applying a coupon assembly to a bag formed of flexible material comprising:
feeding a continuous web of bag stock in a longitudinal direction;
sensing preprinted material on said bag stock for cutting said bag stock to form an individual shopping bag and sequentially providing a coupon assembly to said bag stock, said coupon assembly having an adhesive portion and a coupon portion, said adhesive portion being secured to said bag stock and said coupon portion being removable from said adhesive portion; and
cutting said bag stock as a step in forming said shopping bag said coupon assembly being on an exterior surface of said



shopping bag to be formed wherein said coupon assembly is provided to said bag stock when cutting said bag stock.

5,298,105
STRIPPER FOR REMOVING COATING FROM OPTICAL FIBERS
Carl S. Dorsey, Bethlehem Township, Northampton County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 1, 1992, Ser. No. 877,005
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—584 **2 Claims**



1. Apparatus for stripping coating from an optical fiber, comprising:
a body comprising an elongate interior passage having an interior end for receiving a fiber length and for receiving stripping fluid;
said passage having a substantially greater volume than that of the coated fiber after said coating expands following application of stripper fluid;
inlet means for injecting stripping fluid into said passage;
a first reservoir mounted on said body and communicating with said inlet means, for containing a supply of stripper fluid;
means for flowing a measured amount of said fluid from said first reservoir into said passage; and
a cylindrical neck formed at said interior end of said passage and having a diameter only slightly greater than that of said coated fiber;
the entrance to said neck forming a relatively sharp shoulder at said interior end;
whereby when a received fiber is withdrawn from said passage said shoulder strips away expanded fiber coating.

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5,296,106

METHOD OF DOPING SINGLE CRYSTAL DIAMOND FOR ELECTRONIC DEVICES

Lawrence T. Kabacoff, Columbia, and John Barkyoumb, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 8, 1991, Ser. No. 726,489
Int. Cl.[5] C30B *30/00*
U.S. Cl. 156—605 19 Claims

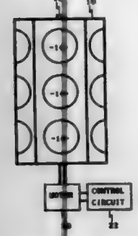
1. A method of doping diamond by ion implantation comprising:
(1) ion implanting carbon into the diamond to create a damage zone of opaque, nondiamond carbon material;
(2) ion implanting a semiconductor dopant material that is a pentavalent donor dopant material or a trivalent acceptor dopant material into the damage zone of opaque, nondiamond carbon material;
(3) melting the opaque nondiamond carbon material by lased light of a wavelength that the diamond is transparent to;
(4) allowing the carbon melt to cool and crystallize homoepitaxially as diamond starting from the diamond surfaces; and
(5) repeating steps (3) and (4) until all of the opaque, nondiamond material has been converted to diamond.

5,298,107

PROCESSING METHOD FOR GROWING THICK FILMS

Lance A. Scudder, Mountain View; Norma Riley, Pleasanton, and Jon M. Schalla, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 27, 1992, Ser. No. 843,987
Int. Cl.[5] C30B *25/12*
U.S. Cl. 156—610 6 Claims



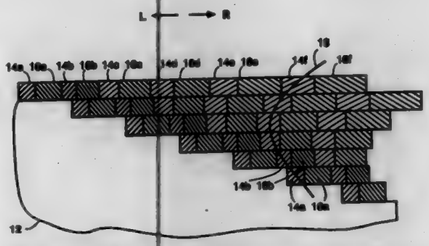
1. A method for impeding the formation of bonds between workpieces and a carrier on which the workpieces are supported for a thick film deposition process, the method comprising the steps of:
placing one or more workpieces on a rotatable carrier;
placing the carrier and the workpieces in a processing environment;
initiating a process wherein a thick film of material is deposited on the workpieces in the processing environment;
continuing the deposition process for a total time long enough to result in the formation of bonds between the wafers and the susceptor;
rotating the carrier, for uniformity of processing; and
abruptly changing the speed or direction of rotation of the carrier at least once during processing, to cause the workpieces to move momentarily with respect to the carrier, thereby breaking any of said bonds that have formed between the workpieces and the carrier, and preventing any strong bonds from forming.

5,298,108

SERPENTINE SUPERLATTICE METHODS AND DEVICES

Mark S. Miller, Lund, Sweden, assignor to The University of California, Alameda, Calif.

Filed Jul. 3, 1991, Ser. No. 726,034
Int. Cl.[5] C30B *25/14*
U.S. Cl. 156—612 27 Claims



21. A method for growing a serpentine superlattice on a substrate comprising the steps of:
(i) creating a periodic array of adjacent steps on the surface of said substrate;
(ii) depositing a first layer on said surface, said first layer having a plurality of first material regions, said plurality of first material regions having a coverage ratio of m_1, each of said first material regions located similarly to a respective step of said surface, said first layer having a plurality of second material regions, said plurality of second material regions having a coverage ratio of n_1, each of said second material regions located similarly to a respective step surface and located adjacent to a respective first material region, said first layer having a first layer coverage ratio of $p_1=m_1+n_1$;
(iii) depositing a plurality of ith layers lying above said first layer, each of said ith layers located such that an ith layer is below an (i+1)th layer and above an (i−1)th layer, each of said ith layers having a plurality of first material regions, said plurality of first material regions for said ith layer having a coverage ratio of m_i, each of said first material regions for said ith sheet located similarly to a respective step of said surface, each of said ith layers having a plurality of second material regions, said plurality of second material regions for said ith sheet having a coverage ratio of n_i, each of said second material regions for said ith sheet located similarly to a respective step surface and located adjacent to a respective first material region, each of said ith layers having an ith layer coverage ratio of $p_i=m_i+n_i$,
(iv) varying said layer coverage ratio with the index i of each layer such that for a first set of a plural number of contiguous layers, said first set of contiguous layers having either all coverage ratios p_i less than 1.0 or all coverage ratios p_i greater than 1.0, said layer coverage ratio p_i monotonically changes with i.

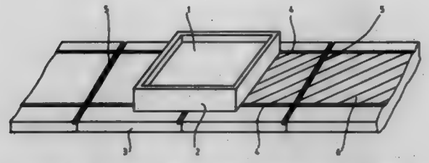
5,298,109

PROCESS FOR THE PRODUCTION OF METAL WAFERS AND THE USE OF SILICON WAFERS

Philippe Knauth, Marseille Cedex, and Ingo Schwirtlich, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,104
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102484
Int. Cl.[5] C30B *13/30*
U.S. Cl. 156—620.1 4 Claims

1. In the process for the production of wafers of metal or semiconductor material of required dimensions by the sheet drawing process in which a melt of the wafer material is crystallized on a substrate,
the improvement comprises modifying the surface of the substrate corresponding to the required dimensions of the



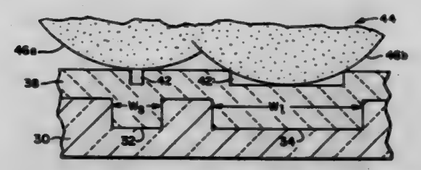
wafers by changing the wetting behavior of the substrate toward the molten wafer-forming material, and wherein the wetting behavior of the substrate is changed by providing surface indentations in the substrate and thereby interrupting the melt meniscus.

5,298,110

TRENCH PLANARIZATION TECHNIQUES

Philippe Schoenborn, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 711,624, Jun. 6, 1991. This application Nov. 20, 1992, Ser. No. 979,792
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—626 9 Claims



1. A method of polishing irregular features of a semiconductor device top surface topography, comprising:
polishing a sample specimen having first trench features;
measuring the height (h) and width (W) of the first trench features during polishing;
calculating the feature aspect ratio (FAR=h/w) of the first trench features;
measuring the rate of removal (Ri) inside the first trench features and outside (Ro) the first trench features during polishing;
calculating a Relative Polish Rate (RPR=Ri/Ro);
plotting first feature width (W), RPR, and FAR; and
polishing a semiconductor device having second features similar to the first trench features of the sample specimen, based on results graphically observed in the plot of first feature polishing.

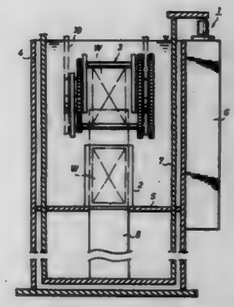
5,298,111

AUTOMATIC WAFER TRANSFER APPARATUS AND A METHOD FOR TRANSFERRING WAFERS AND AN ETCHING DRUM

Fumihiko Hasegawa, Saitama; Tatsuya Yamamoto, and Shinji Sato, both of Fukushima, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,192
Claims priority, application Japan, May 31, 1991, 3-156089; May 31, 1991, 3-156092
Int. Cl.[5] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—639 9 Claims

9. A method for automatically transferring a plurality of wafers at a time, from a wafer basket to an etching drum which can assume an open posture whereby it can receive wafers and a closed posture whereby wafers cannot escape from the etching drum, comprising the steps of:
transporting the wafer basket containing the wafers to a location below said etching drum,
causing the etching drum to open downwardly,



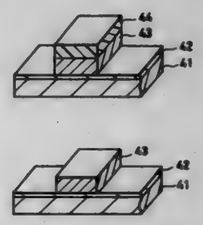
elevating the wafers from the wafer basket into the etching drum by means of an elevator means,
causing the etching drum to close sufficiently to prevent the wafers from dropping, while supporting the wafers, and removing the elevator means from the etching drum, and completely closing the etching drum.

5,298,112

METHOD FOR REMOVING COMPOSITE ATTACHED TO MATERIAL BY DRY ETCHING

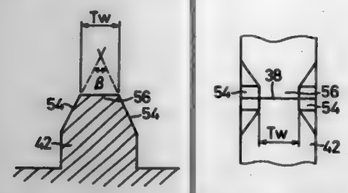
Nobuo Hayasaka, Kanagawa; Tsunetoshi Arikado; Haruo Okano, both of Tokyo, and Keiji Horioka, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 531,399, Jun. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 237,031, Aug. 29, 1988, abandoned. This application Dec. 15, 1992, Ser. No. 996,864
Claims priority, application Japan, Aug. 28, 1987, 62-213082; Sep. 29, 1987, 62-242660; Feb. 5, 1988, 63-025155; May 30, 1988, 63-130385
Int. Cl.[5] H01L *21/306*; B44C *1/22*; C23F *1/00*; B29C *37/00*
U.S. Cl. 156—643 36 Claims



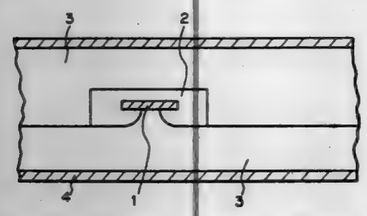
1. A method of generating a first pattern on a surface comprising the steps of:
a) forming a second pattern of a resist on said surface;
b) etching said surface through said second pattern in order to generate said first pattern; and
c) removing said second pattern by a reactive gas mainly comprised of fluorine radicals and a second gas selected from the group consisting of hydrogen or a compound comprising two or more hydrogen atoms or at least one OH group.

5,298,113
METHOD OF PRODUCING MAGNETIC HEAD CORE HAVING MAGNETIC GAP AND NARROW TRACK
Soichiro Matsuzawa, Kuwana, and Yayo Akai, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Feb. 16, 1993, Ser. No. 18,436
Claims priority, application Japan, Feb. 20, 1992, 4-070229
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—643 6 Claims



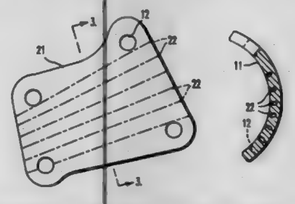
1. A method of producing a magnetic head core for use with a magnetic recording medium, the magnetic head core having a coil-winding groove around which an annular magnetic path is formed, and a magnetic gap and a track formed in a medium-sliding surface of the head core which is to be opposed to the magnetic recording medium, said magnetic gap intersecting said magnetic path, said track having a predetermined track width and extending in a direction perpendicular to said magnetic gap, comprising the steps of:
forming a track precursor in a surface of a core body which gives said medium-sliding surface of the head core, said track precursor having a width which is larger than said predetermined track width, and extending across said magnetic gap in a longitudinal direction of the core body; and
pressing a shearing tool against said track precursor, and applying a force to the shearing tool to thereby remove by shearing at least one of widthwise opposite portions of the track precursor adjacent to said magnetic gap, so as to form said track having the predetermined track width in the vicinity of said magnetic gap.

5,298,114
THIN FILM CIRCUIT SUBSTRATE AND PROCESS FOR THE MANUFACTURE THEREOF
Shuji Takeshita, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 832,348, Feb. 7, 1992. This application Mar. 29, 1993, Ser. No. 38,272
Claims priority, application Japan, Feb. 7, 1991, 3-016355
Int. Cl.[5] B44C *1/22*; B29C *37/00*; C23F *1/00*
U.S. Cl. 156—643 3 Claims



1. A process for manufacture of a thin film circuit substrate, comprising the steps of:
(a) forming a signal transmission path on a surface of a first insulator layer having a first dielectric constant;
(b) eliminating, by isotropic etching, a surface layer of the first insulator layer having the signal transmission path formed on the surface thereof, except for a portion of the first insulator layer supporting the signal transmission path in an undercut state;
(c) coating, after said etching in step (b), the surface of the first insulator layer and the signal transmission path with a second insulator layer having a second dielectric constant lower than the first dielectric constant;
(d) eliminating, by etching, the second insulator layer, except within a predetermined distance of the signal transmission path, to substantially surround the signal transmission path with the second insulator layer; and
(e) coating the surface of the first and second insulator layers with a third insulator layer having more adhesiveness than the second insulator layer.

5,298,115
PRODUCING PROSTHESES
Ian Leonard, 62 Thorns Road, Bolton Lancashire BL1 6PD, Great Britain
PCT No. PCT/GB90/01622, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992, PCT Pub. No. WO91/07139, PCT Pub. Date May 30, 1991
PCT Filed Oct. 23, 1990, Ser. No. 856,029
Claims priority, application United Kingdom, Nov. 9, 1989, 8925380
Int. Cl.[5] B44C *1/22*; B29C *37/00*; C23F *1/00*
U.S. Cl. 156—645 15 Claims



1. A method for production of a shaped article, comprising the steps of:
predetermining the shape of the article required,
selecting a sheet material blank from which the article is formed,
processing the blank by removing material therefrom to leave an article of the predetermined shape or a processed blank from which an article of the predetermined shape is made by bending the blank,
the material being removed using an etching process in which a resist is removed by computer aided design.

5,298,116
PROCESS FOR PRODUCING A MATTED EMBOSSING SURFACE FOR AN EMBOSSING TOOL FOR MAKING PRESS-FORMED LAMINATES
Wilfried Werthmann, Krefeld, and Manfred Posselt, Nettetal, both of Fed. Rep. of Germany, assignors to Standex International Engraving GmbH, Viersen, Fed. Rep. of Germany
PCT No. PCT/EP91/02304, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO92/19461, PCT Pub. Date Nov. 12, 1992
PCT Filed Nov. 28, 1991, Ser. No. 946,492
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1991, 4113937
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—645 3 Claims

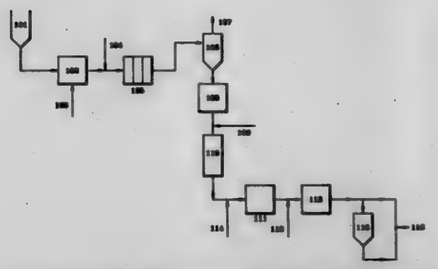
1. A method for producing a matted embossing surface for an embossing tool used for embossing a surface of press-formed laminates by mat chromium plating or by sandblasting and subsequently mat chromium plating, forming a fine, non-oriented 10 μm to 25 μm deep sub-structure on the embossing surface prior to matting and thereafter finely matting the surface so that its gloss level measured on the Lange reflectometer at 60° is 6 to 16 points.

5,298,117
ETCHING OF COPPER-CONTAINING DEVICES
Karrie J. Hanson, Westfield; Barry Miller, Murray Hill; Barbara J. Sapjeta, Parsippany; Akshay V. Shah, Berkeley Heights, and Ken M. Takahashi, Warren, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 19, 1993, Ser. No. 94,650
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—666 7 Claims



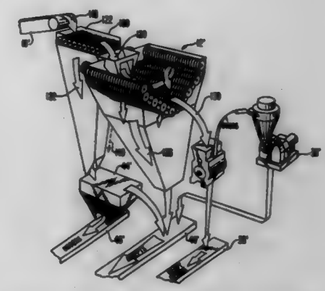
1. A process for fabricating a substrate having metallic electrical interconnects, wherein said interconnects comprise a first metal overlying a second metal, said process comprising the steps of etching a region comprising a first layer of said first metal overlying a second layer of said second metal characterized in that both said first and second layers are etched using a solution comprising HF, cupric chloride, and a chloride salt.

5,298,118
PREPARATION OF BLEACHED CHEMITHERMOMECHANICAL PULP
Michel Devic, Sainte-Foy-Les Lyon, France, assignor to ATOCHEM, Puteaux, France
Continuation of Ser. No. 695,321, May 3, 1991, abandoned, which is a continuation of Ser. No. 378,995, Jul. 12, 1989, abandoned. This application Jul. 29, 1992, Ser. No. 919,389
Claims priority, application France, Jul. 12, 1988, 88 09703
Int. Cl.[5] D21C *1/06, 9/16*
U.S. Cl. 162—26 12 Claims



1. A process for the preparation of bleached chemithermomechanical wood pulp having yields greater than 85% by weight relative to weight of the lignocellulosic material in the dry state, comprising mechanically disintegrating and chemically digesting a lignocellulosic material with a sulfite at a temperature of at least 100° C. under saturated water vapor pressure to produce a pulp containing residual sulfite and thereafter bleaching the pulp thus treated with hydrogen peroxide in an alkaline medium in the presence of the residual sulfite, wherein no solids or liquids are removed from the pulp from the outset of treatment through completion of the bleaching step.

5,298,119
SCREENING SYSTEM FOR FRACTIONATING AND SIZING WOOD CHIPS
Robert A. Brown, Wenatchee, Wash., assignor to James River Corporation of Virginia, Richmond, Va.
Continuation of Ser. No. 606,890, Oct. 31, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,240
Int. Cl.[5] D21D *5/02, 5/20, 5/22*
U.S. Cl. 162—55 4 Claims



1. A screening system for fractioning and sizing wood chips for use in a pulping digester, comprising:
feeding means for providing a first incoming flow of wood chips at a variable flow rate, said first incoming flow including accepts, overs and unders;
flow management screen means including a horizontal disc screen having a plurality of spaced apart, rotating discs for receiving the first incoming flow and dividing said first flow into a second flow of primarily accepts and overs and a third flow of primarily accepts and unders with the proportion between said first and second flows being variable in response to a control signal that determines the rotational speed of said discs;
a V-disc screen for receiving only the second flow and separating said second flow into a fourth flow of primarily accepts and a fifth flow of primarily overs, said V-disc screen including a plurality of parallel rotatable shafts carrying spaced discs with said shafts being arranged to form a V-shaped configuration to cause said overs to flow generally parallel to the axis of rotation of said shafts and out of said V-disc screen; and
control means connected to said flow management screen means for controlling said flow management screen means by generating said control signal to cause said screen means to achieve a desired proportion between said first and second flows, said control means including a means for selecting a speed that the discs of said first screening station should rotate in order to achieve said desired proportions between said first and second flow and, a means for adjusting the selected speed to compensate for differences in the distances between the spaced apart discs of said disc screen resulting from wear.
wherein said first screening station reduces the wear that said flow of chips causes in the V-disc screen by removing unders from said second flow of wood chips.

5,298,120
COMPOSITION FOR ENHANCING THE PULPING OF WOOD CHIPS
Michael Blackstone, P.O. Box 260, Ridgeland, S.C. 29936
Filed Jun. 9, 1992, Ser. No. 896,068
Int. Cl.[5] D21C *3/20*
U.S. Cl. 162—76 7 Claims

1. A composition for adding to a process for cooking wood to form pulp to enhance the uniformity of the cook and reduce pulp rejects, said composition comprising esters made by react-

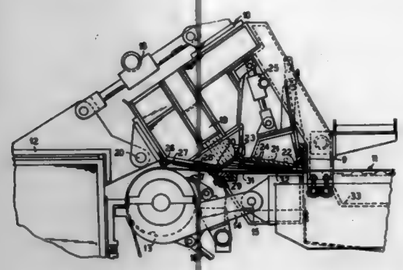
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ing a fatty acid having from about 4 to about 22 carbon atoms with one or more block polymers having the general formula

$$HO(CH_2CH_2O)_x(CHCH_2O)_y(CH_2CH_2O)_zH$$
$$\quad\quad\quad

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tion where the stock layer is deposited, said means for creating a layer of water being structured and arranged to deposit the layer of water between said wire guides, said upper guide positioned below the headbox and above the water layer, and said lower guide positioned beneath the fourdrinier wire.



5,298,126

HEADBOX FOR A PAPER-MAKING MACHINE

Hans Dahl, Ravensburg, Fed. Rep. of Germany, assignor to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 5, 1992, Ser. No. 972,004
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1991, 4136530
Int. Cl.[5] D21F *1/02*
U.S. Cl. 162—342 19 Claims



1. A headbox for a paper machine for producing a paper web of a desired width, said headbox comprising a distributor, a stationary hydraulic turbulence generator following said distributor, a flow channel following said turbulence generator and having an inflow end, a floor, an outflow end and a length, at least one movable apertured roller positioned at said outflow end of said flow channel and a nozzle channel following said movable apertured roller, wherein said stationary hydraulic turbulence generator is a stepped diffuser block with a plurality of outflow channels each having a flow direction and a diameter which enlarges stepwise in said flow direction, and wherein said flow channel has, at least over a substantial part of said length, a cross section through which flow takes place and which broadens from said inflow end towards said outflow end up to said roller.

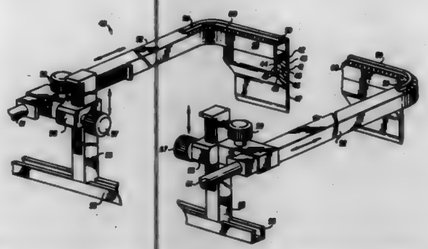
5,298,127

PAPER MACHINE DECKLE SUPPORT AND FLUSHING MEANS

Robert L. Beran, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 23, 1992, Ser. No. 965,006
Int. Cl.[5] D21F *1/56*
U.S. Cl. 162—353 3 Claims

1. A paper machine deckle means comprising elongated deckle board assembly structurally unitized with flushing fountain means, said fountain means comprising elongated fluid manifold having opposite ends operatively connected to respective, structurally supportive flu conduits, said fluid conduits being transversely projected from sa elongated fluid manifold, said fluid manifold and said fluid conduits being respective segments of a singular, integrated flow channel, said fluid manifold being structured to distribute a fluid film to flush external surfaces of said deckle board assembly, and means for adjustably securing each said fluid conduit segment to a frame means points remote from said manifold whereby said deckle board assem is positionally adjusted relative to said frame means positionally adjusting said fluid conduit segments at said remote points.



5,298,128

PROCESS FOR RECOVERING POLYURETHANE FROM POLYURETHANE WASTE PASTES

Jörg Hausdorf, Fürth; Bardo Anselm, Laudenbach, and Steffen Kosack, Hassloch, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Apr. 9, 1992, Ser. No. 865,898
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113282
Int. Cl.[5] B01D *3/38*
U.S. Cl. 203—47 4 Claims

1. A distillation process for recovering polyurethane from solvent-containing or solvent-free polyurethane waste pastes, comprising the steps of: adding a solvent to a waste paste to adjust the waste paste dry solids weight to about 30%, then adding an acylpolyethyleneglycolester emulsifier in a ration of 1 part by weight emulsifier to 10 parts solvent adjusted paste; and subsequently mixing in twelve times the solvent adjusted paste weight of water;
mixing the resulting emulsion for one hour at room temperature;
then expelling the solvent from the emulsion using steam to liberate a two-phase water and solvent distillate from the emulsion; and
filtering off a fine grained polyurethane granular material, floating in water phase; and
drying the granular material.

5,298,129

METHOD OF SELECTIVELY MONITORING TRACE CONSTITUENTS IN PLATING BATHS

Bruce M. Elash, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 976,118
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 11 Claims

1. A method of selectively monitoring the concentration of an organic addition agent present in a plating bath solution containing multiple trace constituents and metal ions wherein said organic addition agent is more rapidly absorbed than said trace constituents, said method comprising the steps of:
providing at least one sensing electrode in contact with said solution;
applying a pretreatment signal of an amplitude and duration to said sensing electrode in contact with said solution in order to remove contaminants from said sensing electrode to provide a substantially contaminant-free electrode;
applying a plating signal of an amplitude and duration to said electrode, such that a portion of said metal ions from said solution form a plating on the surface of said electrode to form a plated electrode, and such that a portion of said organic addition agent is absorbed on said electrode surface;
applying a stripping signal of an amplitude and duration to said plated electrode, such that said plating on said surface of said plated electrode is removed, and further such that a stripping signal response current is produced, said stripping signal response current having signal characteristics responsive to said organic addition agent absorbed on said electrode surface; and
monitoring said signal characteristics of said stripping response current;
wherein variations in said stripping response current characteristics provide an accurate indication of the concentration level of said organic addition agent.

5,298,130

METHOD OF MONITORING MAJOR CONSTITUENTS IN PLATING BATHS CONTAINING CODEPOSITING CONSTITUENTS

Frank A. Ludwig, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 976,117
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 11 Claims

1. A method of monitoring the concentration of metal ions comprising a major constituent present in a plating bath solution, said method comprising the steps of:
providing at least one sensing electrode in contact with said solution;
applying a pretreatment signal having an amplitude and duration to said sensing electrode in contact with said solution in order to remove contaminants from said sensing electrode to provide a substantially contaminant-free sensing electrode;
applying a plating signal of an amplitude and duration to said contaminant-free sensing electrode, such that a portion of said metal ions from said solution form a plating on the surface of said sensing electrode to form a plated electrode wherein said plating signal is a dc pulse signal having potential which is cathodic to produce an average amplitude of about 100 to 1000 ma/cm^2 for a duration of about 500 to 700 ms;
applying a stripping signal of an amplitude to said plated electrode, such that said plating on said surface of said plated electrode is removed, and further such that a stripping signal response current is produced, said stripping signal response current having signal characteristics indicative of the said major constituent concentration; and
monitoring said signal characteristics of said stripping response current;
wherein variations in said stripping response current signal characteristics provide an accurate indication of said major constituent concentration level.

5,298,131

METHOD OF MONITORING METAL ION CONTENT IN PLATING BATHS

Bruce M. Elash, Los Angeles; Frank A. Ludwig, Rancho Palos Verdes; Nguyet H. Phan, Los Angeles, all of Calif., and Vilambi N. Reddy, Jamaica, N.Y., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 28, 1993, Ser. No. 68,030
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 16 Claims

1. A method of monitoring the concentration of metal ions within a plating bath solution, said method comprising the steps of:
applying at least one pretreatment signal to a sensing electrode positioned within said plating bath solution, producing a pretreated sensing electrode;
applying a sweep signal to said pretreated sensing electrode to thereby produce a response signal having a voltammetric peak current, said voltammetric peak current having a magnitude proportional to said concentration of metal ions; and
measuring said magnitude of said voltammetric peak current.

5,298,132

METHOD FOR MONITORING PURIFICATION TREATMENT IN PLATING BATHS

Vilambi N. R. K. Reddy, Lakewood; Bruce M. Elash, Los Angeles; Frank A. Ludwig, Rancho Palos Verdes, and Nguyet H. Phan, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 25, 1993, Ser. No. 37,159
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 14 Claims

1. A method for monitoring a purification treatment cycle within a plating bath solution, said method comprising the steps of:
providing at least one electrode in contact with said plating bath solution;
applying a dc pretreatment signal to said electrode, said dc pretreatment signal having a selected potential and selected duration to pretreat said electrode by removing any adsorbed organic materials or other contaminants from said electrode;
applying a swept dc measurement signal to said pretreated electrode, said dc measurement signal having a sweep potential, a sweep rate and a reversal potential, and producing a response current signal; and
monitoring the characteristics of said response current signal;
wherein said response current signal characteristics provide an accurate indication of the status of said plating bath purification treatment cycle.

5,298,133

METHOD OF RECYCLING ORGANIC LIQUIDS AND A METHOD OF MANUFACTURING ARTICLES BY ELECTROPHORETIC DEPOSITION

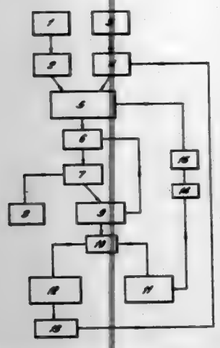
Stephen Heavens, Sanghall, Great Britain, assignor to Chloride Silent Power Limited, Runcorn, Great Britain

PCT No. PCT/GB88/01074, § 371 Date Jun. 28, 1990, § 102(e) Date Jun. 28, 1990, PCT Pub. No. WO89/05364, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 2, 1988, Ser. No. 474,140
Claims priority, application United Kingdom, Dec. 3, 1987, 8728300
Int. Cl.[5] C25D *13/00*
U.S. Cl. 204—180.8 23 Claims

9. A method of manufacturing articles by electrophoretic deposition, the method comprising the steps of:
preparing a slurry of particles suspended in a carrier liquid; and passing the slurry between a pair of electrodes, one of the electrodes serving as a mandrel on which the particles are deposited to form an article, said step of preparing the slurry comprising the steps of:
separating at least some of the slurry which has passed between the electrodes into recovered powder and recovered carrier liquid;
treating the recovered carrier liquid by the steps of first de-ionising the recovered carrier liquid, and then drying

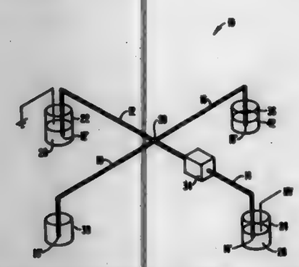
VOL 1160 ISS 5 MR 29 1994 UMI

the de-ionised carrier liquid to provide treated carrier liquid; and



adding powder to the treated carrier liquid to provide fresh slurry.

5,298,134
CAPILLARY DEVICE
Richard N. Zare, Stanford; Xiaohua Huang, Mountain View, and Stephen L. Pentoney, Jr., Yorba Linda, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.
Continuation of Ser. No. 902,915, Jun. 23, 1992, abandoned, which is a division of Ser. No. 235,953, Aug. 24, 1988, abandoned. This application May 20, 1993, Ser. No. 64,849
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—180.1 9 Claims

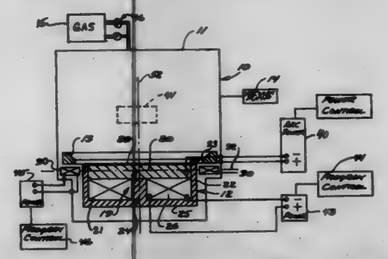


1. A method for separation in a capillary comprising:
providing a sample to the capillary;
providing to the capillary at a location along the capillary a reagent that will react chemically in the capillary with the sample to aid the detection or separation of the sample, said sample having components, thereby rendering at least a component of the sample detectable or enhancing the separation of the sample;
applying an electrical potential across the capillary, causing the sample to migrate through the capillary and to separate in the capillary into its components; and
detecting at a second location along the capillary downstream from said first location at least one of said components of the sample.

5,298,135
PRODUCTION OF ELECTROPHORETICALLY-HOMOGENOUS PROTEIN-COLLOIDAL GOLD COMPLEXES
William D. Geoghegan, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Filed Jul. 7, 1992, Ser. No. 909,409
Int. Cl.[5] C25B *7/00*
U.S. Cl. 204—182.8 17 Claims

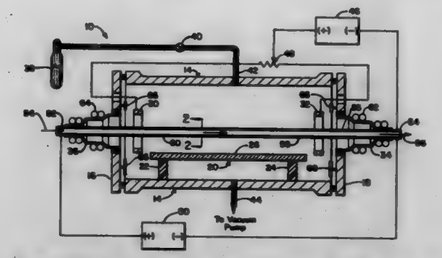
1. A method for defining reaction conditions producing a homogeneous protein-colloidal gold complex, the method comprising:
(a) reacting colloidal gold particles with a protein at a series of protein concentrations between 10 μg/ml and 500 μg/ml and at various pH values between 5.0 and 7.0 to produce a set of protein-colloidal gold complex suspensions; and
(b) electrophoretically analyzing samples of said suspensions on a gel to identify reaction conditions of pH and protein concentration resulting in homogeneity, said homogeneity being defined as the protein-colloidal gold complexes having a uniform size, shape, charge, and ratio of size to charge.

5,298,136
STEERED ARC COATING WITH THICK TARGETS
Subbiah Ramalingam, Roseville, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Aug. 18, 1987, Ser. No. 86,552
Int. Cl.[5] C23C *14/22*
U.S. Cl. 204—192.38 28 Claims



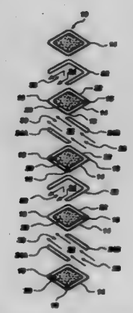
1. An apparatus for depositing a metal film onto a substrate using arc deposition techniques including a cathode target having an active surface, and a peripheral edge surface defining a perimeter, said edge surface defining a thickness of the cathode, an anode, power supply means for forming an arc between the anode and cathode which arc travels on the cathode active surface, magnet means mounted adjacent said cathode, including a magnetic peripheral pole piece representing one magnetic pole that surrounds the peripheral edge surface of the cathode and at least partially overlaps the peripheral edge surface, and a second magnetic pole piece positioned within the peripheral pole piece to establish a magnetic field between the pole pieces across the cathode active surface on which the arc is formed at a locus of points defining a closed path where components of the magnetic field normal to the cathode active surface go substantially to zero on the cathode active surface for forcing the arc to move in such closed path, and coil means for adjusting the magnetic field to change the location of the closed path where the normal components of the magnetic field go to zero on the surface of the cathode and for providing sufficient magnetic flux to control the arc for movement on the cathode active surface only in such path.

5,298,137
METHOD AND APPARATUS FOR LINEAR MAGNETRON SPUTTERING
John Marshall, III, Longmont, Colo., assignor to Surface Solutions, Inc., Boulder, Colo.
Continuation of Ser. No. 688,914, Apr. 19, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,250
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 47 Claims



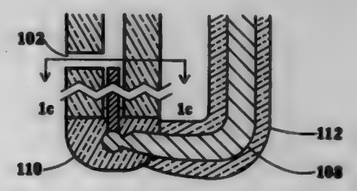
1. Sputtering apparatus for producing a thin film on the surface of an object, comprising:
an elongated cathode terminating in first and second end sections;
a target material surrounding said elongated cathode as a sputtering surface;
electron emission enhancing means in radially spaced relation to the first end section of said elongated, wherein said electron emission enhancing means includes a surface positioned in substantially radially opposed relation to the first end section of said elongated cathode, whereby the surface substantially faces and is exposed to the first end section of said elongated cathode, for creating electron saturation at the sputtering surface of said target material that is adjacent said electron emission enhancing means; and
means for applying an electric current through said elongated cathode for generating a magnetic field having magnetic force vectors directed circumferentially around said elongated cathode and said target material.

5,298,138
SOLID ELECTROLYTE ION CONDUCTING DEVICE
Jesse A. Nachles; Kelly B. Powers, and James R. McJunkin, all of Salt Lake City, Utah, assignors to Ceramatec, Inc., Salt Lake City, Utah
Filed Feb. 28, 1992, Ser. No. 843,004
Int. Cl.[5] C25B *9/04;* H01M *2/24, 2/26*
U.S. Cl. 204—267 13 Claims



1. An electrochemical ion conducting device comprising:
a plurality of solid ion conducting electrolyte plates arranged into a monolithic stack, said electrolyte plates having a pair of generally flat opposed surfaces with electrode material adherent to a significant portion of said flat surfaces;
a plurality of spacers diaposed between successive electrolyte plates with an individual spacer spacing adjacent electrolyte plates apart;
a plurality of chambers defined by the spaces between a plurality of successive pairs of spaced apart adjacent electrolyte plates;
means for electrically connecting in series said electrode material on said flat electrolyte surfaces wherein said electrodes on every other said electrolyte plate are electrically connected in series from one end of said stack to the other in a first electrical path, whereupon the electrical path wraps around said stack and every other electrode not connected is electrically connected in series in a second electrical path, said first and second electrical paths and electrodes connected thereto forming a complete electrical circuit.

5,298,139
END-COLUMN CONDUCTIVITY DETECTOR FOR CAPILLARY ZONE ELECTROPHORESIS
Xiaohua Huang, Mountain View, and Richard N. Zare, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Continuation-in-part of Ser. No. 580,259, Sep. 10, 1990, Pat. No. 5,126,023. This application Oct. 4, 1991, Ser. No. 771,345
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—299 R 12 Claims

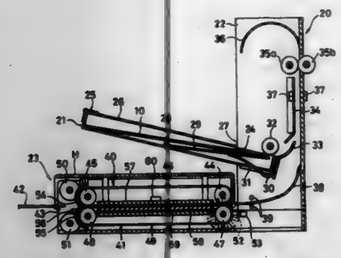


1. A method of fabricating an end-column detector for electrophoresis which comprises the steps of:
providing an elongated tube having a sidewall and a first opening and a second opening that are in fluid communication with a bore within the tube wherein the bore is defined by an inner surface of the tube;
drilling an eluent hole through said tube sidewall between the first and second opening so that the the eluent bole is in fluid communication with said bore;
inserting an elongated sensing electrode having a tip through the second opening so that the tip is adjacent to said eluent hole; and
sealing the second opening between the inner surface of the tube and sensing electrode.

5,298,140
REACTION APPARATUS FOR BIOCHEMICAL EXAMINATION
Tokiya Nakazato, Urawa, Japan, assignor to Helena Laboratories Co., Ltd., Japan
Filed Sep. 9, 1992, Ser. No. 942,180
Claims priority, application Japan, Sep. 13, 1991, 3-235024
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R 7 Claims

1. A reaction apparatus for a biochemical examination at least comprising:
a pair of band-shaped conveying members, a portion of each of which proceeds over a predetermined distance in the

same direction in a closely contacted state, and which convey an electrophoresed sample-supporting thin film while sandwiching said sample-supporting thin film between said closely supported contacted portions; and



a heat source which is provided in the vicinity of said closely contacted portions of said pair of band-shaped conveying members, and which maintains at a predetermined temperature said sample-supporting thin film sandwiched between said closely contacted portions.

5,298,141

APPARATUS FOR MEASURING CONCENTRATION OF NON-VOLATILE INGREDIENTS

Tomoyuki Irie, Osaka, and Ikuo Tochizawa, Kawanishi, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

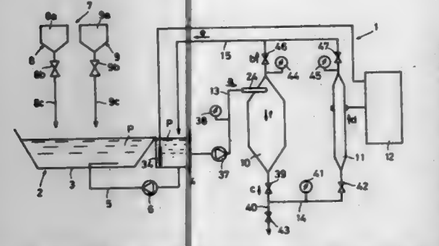
PCT No. PCT/JP92/00654, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/21022, PCT Pub. Date Nov. 26, 1992

PCT Filed May 21, 1992, Ser. No. 960,398

Claims priority, application Japan, May 23, 1991, 3-149700

Int. Cl.[5] C25D *13/24*

U.S. Cl. 204—299 EC **19 Claims**



1. A method for measuring concentration of non-volatile ingredients in electrodeposition paint, comprising the steps of:

passing ultrasound through said electrodeposition paint and measuring an ultrasonic damping factor thereof; and

obtaining a concentration measurement of said non-volatile ingredients from said ultrasonic damping factor by calculating according to the following expression:

$$NV\,(\%)=\{db+\beta(\Delta t)+\gamma(\Delta pH)+\delta(\Delta C)\}/\alpha$$

wherein

NV is present concentration of non-volatile ingredients;

α is a coefficient db/NV of the damping factor;

β is a temperature-correction coefficient, $dB_\beta/\Delta\ t_\beta$,

τ is a pH-correction coefficient, $dB_\gamma/\Delta\ dH_\gamma$;

δ is a solvent-concentration correction coefficient, $dB_\delta/\Delta\ C_\delta$;

Δ t is the difference between a reference temperature for said liquid material, and an actual temperature thereof, measured when said concentration measurement of non-volatile ingredients is to be obtained;

Δ pH is the difference between a reference pH for said liquid material and an actual pH thereof, measured at said time; and

Δ C is the difference between a reference solvent concentration for said liquid-type material and an actual solvent concentration thereof, measured at said time.

5,298,142

CLEANING DEVICE FOR A CONTACT ELEMENT OF A CAR-BODY SKID IN A PAINT PLANT

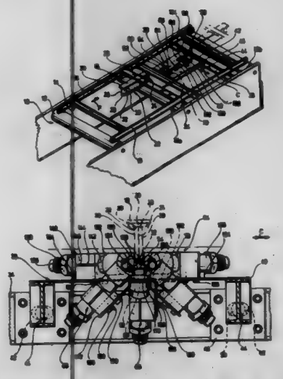
Franz Gassner, Stuttgart, Fed. Rep. of Germany, assignor to Durr GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 781,120

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1991, 4103171

Int. Cl.[5] C25D *13/00, 13/12*; B65G *45/16*

U.S. Cl. 204—300 EC **21 Claims**



1. The combination of a conveyor for use in a plant for cathodic dip electropriming of vehicle-bodies, a vehicle-body skid to be carried by and moved in a conveying direction along said conveyor, said skid having a rib-like or blade-like contact element thereon for travelling along a first path extending in said conveying direction with said contact element having an electrically conductive surface portion, and cleaning means operably associated with said conveyor for removing paint from said conductive surface portion of the contact element, said conductive surface portion extending at least substantially parallel to said conveying direction and said cleaning means having a holder on which at least one scraper blade is mounted for resiliently engaging the conductive surface portion of the contact element of the skid passing said cleaning means.

5,298,143

ELECTROPHORETIC PROCESSING

Cornelius F. Ivory, and William A. Gobie, both of Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Continuation-in-part of Ser. No. 782,692, Oct. 15, 1991, Pat. No. 5,200,050. This application Jan. 15, 1993, Ser. No. 3,979

Int. Cl.[5] G01N *27/26, 27/447*; B01D *57/02*

U.S. Cl. 204—301 **38 Claims**

1. An electrophoretic processor comprising:

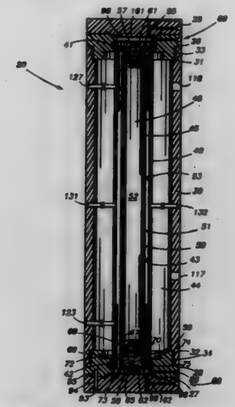
a stator;

a rotor mounted for rotation about an axis of rotation;

a rotor drive for rotating said rotor;

a processing chamber at least partially defined between the stator and rotor;

multi-zone electric field generator for creating at least two processing zones having different field strengths within the processing chamber;



at least one fluid access port allowing fluid communication to or from said processing chamber.

5,298,144

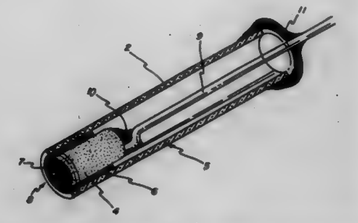
CHEMICALLY WIRED FRUCTOSE DEHYDROGENASE ELECTRODES

Robert B. Spokane, Bellbrook, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Sep. 15, 1992, Ser. No. 944,963

Int. Cl.[5] G01N *27/327*

U.S. Cl. 204—403 **8 Claims**



1. An enzyme electrode for measuring D-fructose concentration in liquids comprising:

(a) a fructose dehydrogenase enzyme containing pyrrolo quinoline quinone cofactor;

(b) a conductive polymer comprising a water soluble polyvinylpyridine complex of $Os(bipyridine)_2\ Cl$; and

(c) an electron collector, said conductive polymer being chemically bonded to said enzyme and adsorbed on said electron collector, said enzyme electrode being devoid of electron mediator save for said conductive polymer.

5,298,145

SIGNAL SUBTRACTION APPARATUS AND METHOD

Marcus A. Garraway, Venice; Martin M. Hamano, Torrance, and Maynard M. Kepler, Jr., Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 13, 1992, Ser. No. 959,577

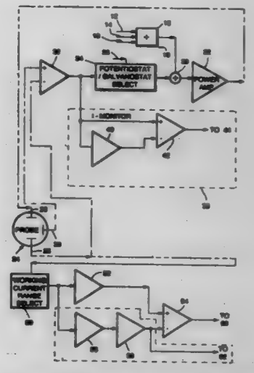
Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—406 **20 Claims**

1. An apparatus for monitoring the electrical characteristics of a plating bath comprising:

a probe having a counter-electrode, a reference electrode, and a working electrode;

an input signal generator means electrically connected to said counter-electrode which provides a combined DC and AC signal to said counter-electrode wherein said DC signal comprises a voltage and said AC signal comprises an amplitude and frequency;



a first signal detection means electrically connected to said working electrode which detects a composite; signal comprising a DC signal, AC signal, and current;

said first signal detection means further monitoring the current detected by said working electrode; and

said first signal detection means further comprising at least one current filter network having a filter range.

5,298,146

DEVICE FOR THE SIMULTANEOUS DETECTION OF DISSIMILAR GAS COMPONENTS

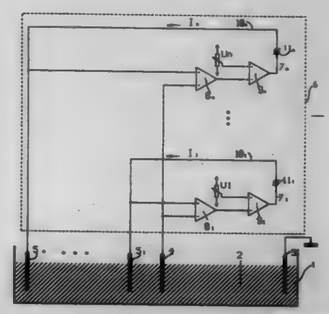
Christoph Braden, Cologne, and Jacques Deprez, Frechen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1992, Ser. No. 966,229

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1991, 4136779

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—406 **7 Claims**



1. A device for the simultaneous detection of dissimilar gas components, comprising:

a. at least two three-electrode measuring cells, wherein each measuring cell comprises one working electrode, one counter-electrode and one referenced electrode and wherein the at least two measuring cells having a common

counter-electrode, a common reference electrode and the working electrodes all in a common electrolyte;

b. A potentiostatic evaluation circuit comprising a separate control loop for each cell for maintaining a constant potential across each working electrode with respect to the reference electrode, the constant potential of one working electrode being individual and independent of the constant potential across other working electrodes; and

c. wherein the evaluation circuit further comprises means for separately detecting electric current flowing in each working electrode, each current corresponding to a gas concentration of a different gas component.

5,298,147

OXYGEN CONCENTRATION SENSOR

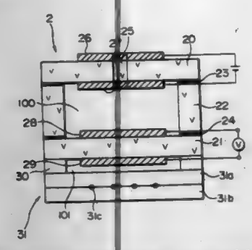
Makoto Nakae; Masahiro Shibata, both of Nagoya, and Yoshiki Chujo, Mishima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed May 26, 1992, Ser. No. 888,107

Claims priority, application Japan, May 27, 1991, 3-121278; May 8, 1992, 4-116292

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—424 **3 Claims**



1. An oxygen concentration sensor, comprising:

an element, adapted to be exposed to a gas to be measured and having a chamber portion formed together with an oxygen ion conductive solid electrolyte having confronting electrodes formed on the opposite surfaces thereof, for measuring an oxygen concentration of said gas to be measured at least during a time when pressure of said gas to be measured varies; and

means for defining a restricted diffusion hole for restricting the flow of said gas to be measured into said chamber portion, wherein said restricted diffusion hole has the relationship $1 \leqq S/(L \cdot V) \leqq 5$ with respect to said restricted diffusion hole and said restricted diffusion hole having a cross sectional area S (mm^2) and a length L (mm) and said chamber portion having a volume V (mm^3).

5,298,148

ELECTRODEPOSITION PAINT COMPOSITIONS

Yoshio Yasuoka, Fujisawa; Kazuyuki Morimoto, Nagoya, and Masafumi Kume, Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Feb. 23, 1993, Ser. No. 21,528

Claims priority, application Japan, Feb. 28, 1992, 4-75919

Int. Cl.[5] C25D *9/02*

U.S. Cl. 205—50 **15 Claims**

1. A cationic electrodeposition paint composition comprising a polyamine, resin, a blocked polyisocyanate compound, and a lanthanum compound selected from the group consisting of lanthanum acetate, lanthanum butyrate, lanthanum oxalate, lanthanum nitrate, lanthanum hydroxide, lanthanum oxide and lanthanum tungstate, said lanthanum compound being present in an amount ranging from 0.1 to 10% by weight in terms of metal content, based on the solid content of the paint composition.

5,298,149

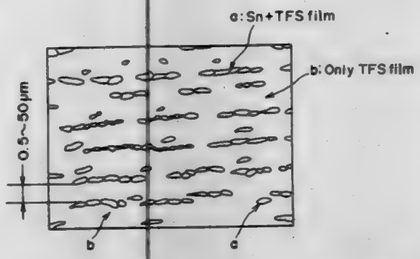
METHOD FOR MAKING A TIN-PLATED STEEL SHEET WITH A CHROMIUM BILAYER AND A COPOLYESTER RESIN LAMINATE

Hiroaki Kawamura, Kudamatsu; Masatoki Ishida; Atsuo Tanaka, both of Tokuyama; Terunori Fujimoto, Kudamatsu; Tsuneo Inui, Tokuyama, and Yoshikazu Kondo, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Division of Ser. No. 869,904, Apr. 15, 1992, Pat. No. 5,213,903, which is a continuation of Ser. No. 543,036, Jun. 22, 1990, abandoned. This application Feb. 17, 1993, Ser. No. 18,875

Int. Cl.[5] C25D *5/10*

U.S. Cl. 205—112 **8 Claims**



1. A method for production of a copolyester-resin-film laminated tin-plated steel sheet having a chromium bilayer comprising

electroplating the steel sheet with tin using an electrolyte comprising 20 to 100 g/l of stannous sulfate, 20 to 80 g/l of phenolsulfonic acid and 0.05 to 0.12 g/l of ethoxylated α-naphthol or ethoxylated α-naphthol sulfonic acid in water under a cathodic current density of 15 to 40 A/dm^2 at an electrolyte temperature of 40° to 60° C. to produce a discontinuous tin-plated steel sheet wherein the covering ratio of the steel surface by plated tin is 5 to 30%, the space between plated tin particules is 0.5 to 5 μm and the amount of plated tin is more than 1300 mg/m^2 and less than 4300 mg/m^2;

treating the discontinuous tin-plated steel sheet to form a uniform chromium bilayer thereon by using an electrolyte containing 50 to 100 g/l of chromic acid and an amount of sulfuric acid or fluorine compound, which is 1 to 5% of the amount of chromic acid, in water under a cathodic current density of 40 to 80 A/dm^2 at an electrolyte temperature of 40° to 60° C. wherein the chromium bilayer consists of a lower layer of 30 to 300 mg/m^2 of metallic chromium and an upper layer of 5–30 mg/m^2 of hydrated chromium oxide;

laminating a biaxially oriented copolyester resin film to said surface treated steel sheet heated to a temperature of about (Tm) to Tm+50° C., where Tm is the melting temperature of the copolyester resin film and above the melting temperature of tin wherein the resin film is laminated onto the chromium bilayer; and

cooling the laminate.

5,298,150

GASOLINE UPGRADING PROCESS

David L. Fletcher, Turnersville; Michael S. Sarli, Haddonfield; Stuart S-S. Shih, Cherry Hill, all of N.J.; Kathleen M. Keville, Beaumont, Tex., and Daria N. Liasy, Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Aug. 13, 1992, Ser. No. 929,544

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—89 **20 Claims**

1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range which comprises:

contacting the sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone at less than about 675° F. with a catalyst of acidic functionality comprising a zeolite sorbing 10 to 40 mg 3-methylpentane at 90° C., 90 torr, per gram dry zeolite in the hydrogen form, to convert said portion to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,298,151

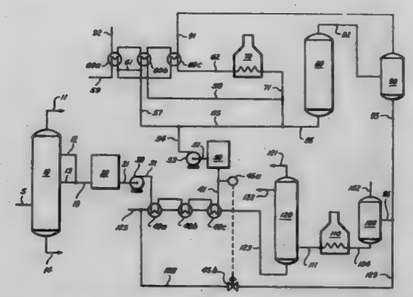
EBULLATED BED HYDROPROCESSING OF PETROLEUM DISTILLATES

Robert M. Steinberg; Jacquelyn G. Niccum, and John C. Strickland, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,615

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—95 **7 Claims**



1. A method of hydroprocessing a distillate hydrocarbon feedstock with a hydrogen-containing gas in an ebullated bed of particulate catalyst at a reaction temperature of 650° F. (343° C.) to 950° F. (510° C.) and reaction pressure of 600 psia (41 atm) to 3000 psia (204 atm) and separating to yield an unreacted hydrogen-containing gas and a liquid hydrocarbon reactor effluent comprising:

a. heating the hydrogen-containing gas to a temperature of about 800° F. (427° C.) to 1000° F. (538° C.) at a pressure of about 600 psia (41 atm) to 3000 psia (204 atm) by first heat exchange with the unreacted hydrogen-containing gas and second heat exchange in a fired heater, and then flowing the gas to the ebullated bed;

b. heating the liquid hydrocarbon reactor effluent and fractionating to yield at least two fractions comprising:

(i) a hydrotreated lighter product, and

(ii) a hot hydrotreated bottoms fraction;

c. heating the distillate hydrocarbon feedstock to a feedstock temperature of about 500° F. (260° C.) to 600° F. (315° C.) at a pressure of about 20 psia (1.4 atm) to 200 psia (13.6 atm) by heat exchange with the hot hydrotreated bottoms fraction to produce a cooled bottoms fraction and then flowing the feedstock to the ebullated bed;

d. recycling the cooled bottoms fraction of step c. to the heating of step b. in an amount proportional to the difference between the feedstock temperature and a selected temperature in the range of about 500° F. (260° C.) to 600° F. (315° C.).

5,298,152

PROCESS TO PREVENT CATALYST DEACTIVATION IN ACTIVATED SLURRY HYDROPROCESSING

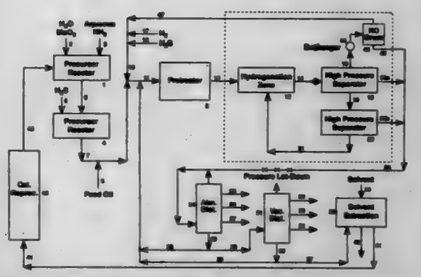
David C. Kramer, San Anselmo, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jun. 2, 1992, Ser. No. 893,219

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[5] C10G *47/26*

U.S. Cl. 208—108 **13 Claims**



1. In an improved catalytic slurry hydroprocess having at least a hydrogenation zone the improvement which comprises the following steps and conditions:

(1) concentrating at least a portion of recyclable active catalyst in the liquid hydrogenation product eluted from said hydrogenation zone of said hydroprocess;

(2) separating at least a portion of said concentrated catalyst from the liquid hydrogenation product; and

(3) recycling at least a portion of said separated active catalyst to said hydrogenation zone;

wherein said steps are carried out while maintaining said active catalyst under conditions substantially the same as those encountered in said hydrogenation zone.

5,298,153

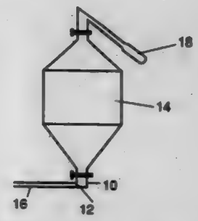
CRACKING PROCESS USING AN ATTRITION RESISTANT CATALYST

Julius Scherzer, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 359,112, May 31, 1989, Pat. No. 4,987,110, which is a continuation-in-part of Ser. No. 312,625, Feb. 17, 1989, Pat. No. 4,880,521, which is a continuation-in-part of Ser. No. 47,852, May 7, 1987, Pat. No. 4,810,369. This application Oct. 31, 1990, Ser. No. 606,180

Int. Cl.[5] C10G *11/05, 11/18*

U.S. Cl. 208—120 **32 Claims**



1. A process for the catalytic cracking of a hydrocarbon feedstock which comprises contacting said feedstock with an attrition resistant cracking catalyst under cracking conditions in the substantial absence of added molecular hydrogen in a cracking zone to convert said feedstock into lower molecular weight constituents, wherein said cracking catalyst comprises

greater than about 25 weight percent of a molecular sieve dispersed in a matrix comprising a clay and a synthetic silica-alumina component and is made by the process comprising:

(a) combining said molecular sieve with said clay, a silica sol, and aluminum chlorhydroxide to form an aqueous mixture; and

(b) spray drying said mixture.

5,298,154

A PROCESS FOR REFORMING A GASOLINE FRACTION

Gyanesh P. Khare, 1201 Saddle La., Bartlesville, Okla. 74006, and Roland von Ballmoos, 52 Livingston Dr., Belle Meade, N.J. 08502

Division of Ser. No. 732,422, Jul. 16, 1991, Pat. No. 5,166,227, Continuation of Ser. No. 525,610, May 21, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 912,536

Int. Cl.[5] C10G *35/085, 35/09*

U.S. Cl. 208—139 **2 Claims**

1. A process for reforming a gasoline fraction using conventional reforming conditions which comprises contacting the gasoline fraction and hydrogen gas with a catalytic component comprising a combination of a platinum component, optionally a second metal component selected from tin, cobalt, nickel, copper, palladium, germanium, or rhenium, and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the catalytic composite containing, on an elemental basis, about 0.06 to about 1 wt. percent platinum metal, about 0.1 to about 1 wt. percent of said second metal if present, and about 0.1 to about 3.5 wt. percent halogen, wherein the metallic components are substantially uniformly distributed throughout the porous carrier support material, and wherein the porous carrier material is a spherical gamma alumina having a total mercury pore volume of about 0.60 to about 0.95 cc/g, a total nitrogen pore volume of about 0.35 to about 0.65 cc/g, a fresh BET surface area of about 170 m^2/g to about 240 m^2/g, and wherein the porous carrier material further comprises a pore structure having super pores with a pore diameter of about 200–10,000 or greater nm and mesospores with a pore diameter of about 5–20 nm interconnected therewith, and wherein at least 80% of the total nitrogen pore volume resides in pores under 150 Å in diameter at reforming conditions.

5,298,155

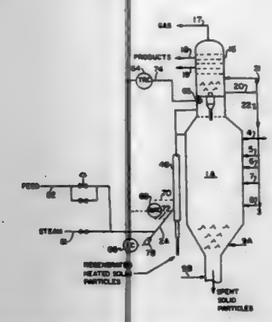
CONTROLLING YIELDS AND SELECTIVITY IN A FLUID CATALYTIC CRACKER UNIT

Craig Y. Sabottke, Morris Township, Morris County, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 488,701, Feb. 27, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 908,635

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—157 **11 Claims**



1. A process for obtaining desired product yield, product quality, or both, of a fluid catalytic cracking unit, wherein a hydrocarbonaceous feed is introduced into a reaction zone, by atomizing said feed first mixing it with an atomizing vapor, the feeding said mixture through two or more feed injectors which are comprised of a nozzle having an internal throat section in fluid communication with the reaction zone ad the source of the feed, wherein the cross-sectional flow area of said throat section is variable by moving a throat insert member therein, wherein the atomization of said feed is effectively varied by varying the pressure drop across the two or more feed injectors by varying the cross-sectional flow area of the one or more feed injectors by causing the throat insert member to be moved, in real time, in response to a signal based on the difference between a measured product yield, measured product quality, or both, of the reaction zone and a predetermined set point of product yield, product quality, or both.

5,298,156

SIMULTANEOUS DECARBONATION AND GASOLINE STRIPPING OF HYDROCARBONS

Claude Blanc, Pau, and Henri Paradowski, Cergy, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

PCT No. PCT/FR89/00584, § 371 Date Jul. 14, 1990, § 102(e) Date Jul. 14, 1990, PCT Pub. No. WO90/05766, PCT Pub. Date May 31, 1990

PCT Filed Dec. 14, 1989, Ser. No. 543,714

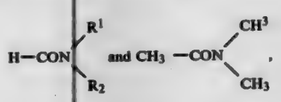
Claims priority, application France, Nov. 15, 1988, 88 14784

Int. Cl.[5] C10G *5/04, 5/06*

U.S. Cl. 208—341 **28 Claims**

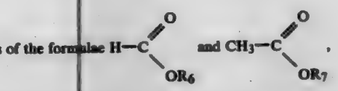
1. A process for the simultaneous decarbonation and gasoline stripping of a gaseous mixture containing methane, C_2 and higher hydrocarbons and CO_2, at an absolute pressure higher than the 0.5 MPa, which comprises the steps of:

a) contacting the gaseous mixture in a decarbonation and gasoline stripping zone, with a liquid solvent which dissolves CO_2 and C_2 and higher hydrocarbons preferentially and which has a boiling temperature at atmospheric pressure higher than about 40° C. and a viscosity at about −30° C. lower than about 0.1 Pa's, said liquid solvent comprised of at least one liquid organic absorbent employed in anhydrous form or as a mixture with water, the at least one absorbent being selected from the group consisting of amides of the formula

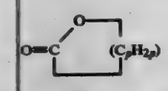




aldehydes of the formula $R_3—C(=O)—H$,



C_1–C_4 alkanols, diethers of the formula $CH_3O—(—C_2H_4O—)_n—CH_3$, diether alcohols of the formula $R_9O—C_2H_4—O—C_2H_4—OH$, lactones of the formula



and propylene carbonate, wherein R_1 and R_2, which are identical or different, denote a hydrogen atom or a C_1 or C_2 alkyl radical, R_3 being a C_3 or C_4 alkyl radical, R_6 being a C_2–C_4 alkyl radical or a $—(—C_2H_4O—)_n—R_8$ radical with R_8 denoting a C_1 or C_2 alkyl radical and n representing 1 or 2, R_7 being a C_1 or C_2 alkyl radical or a $—(—C_2H_4O—)_n—R_8$ radical, R_9 denoting C_1–C_4 alkyl radical and p being an integer ranging from 2 to 4; said contacting being carried out at a low temperature and with a ratio of the flow rates of the gaseous mixture to be treated and of the solvent sufficient to produce a treated gas containing a major portion of methane and a CO_2 molar content not exceeding about 2% and a liquid phase, rich, solvent containing CO_2 and C_2 and higher hydrocarbons containing at least about 80 mol % of C_3 and higher hydrocarbons which were present in the gaseous mixture to be treated;

b) subjecting the liquid phase rich solvent to at least partial demethanization treatment by expanding said liquid phase rich solvent so as to produce a methane-depleted, liquid phase, demethanized, rich solvent and a methane-rich gaseous phase;

c) extracting in liquid form the C_2 and higher hydrocarbons contained in the demethanized rich solvent by bringing a cooled, demethanized, rich solvent into contact with a hydrocarbon solvent, in an extraction zone, to produce a purified solvent which contains substantially all of the CO_2 present in the demethanized rich solvent and has a hydrocarbon content, expressed as methane equivalent, lower than about 10 mol % relative to CO_2, and an enriched hydrocarbon solvent enriched in C_2 and higher hydrocarbons;

d) regenerating the purified solvent by stripping to produce a regenerated solvent, which is recycled to the decarbonation and gasoline stripping zone, and a CO_2- rich acidic gas stream containing less than about 10 mol % of hydrocarbons, expressed as methane equivalent, in relation to CO_2; and

e) fractionating the enriched hydrocarbon solvent by distillation to form a hydrocarbon cut comprised of a mixture of C_2 and higher hydrocarbons containing at least about 80 mol % of the C_3 and higher hydrocarbons which were present in the gaseous mixture to be treated and a regenerated hydrocarbon solvent which is recycled, after refrigeration, to the extraction zone of step (c).

5,298,157

COAL DEPOLYMERIZATION UTILIZING HARD ACID/SOFT BASE

George M. Kramer, Berkeley Heights; Edwin R. Ernst, Belle Meade, and Chang S. Hsu, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 4, 1992, Ser. No. 925,337

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[5] C10G *1/00*

U.S. Cl. 208—400 **6 Claims**

1. A process for the depolymerization of finely divided coal particles which comprises:

mixing finely divided coal particles with a hard acid in the presence of a soft base at temperatures of from 0° to 100° C., said hard acid being characterized by a heat of reaction with dimethylsulfide of from 10 kcal/mol to 30 kcal/mol and said soft base being characterized by a heat of reaction with boron trifluoride of from 10 kcal/mol to 17 kcal/mol; and

extracting the depolymerized coal with a polar solvent to remove hard acid and soft base.

5,298,158

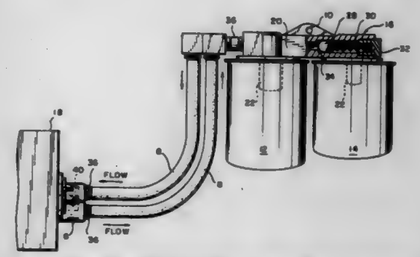
REMOTE DUAL FILTRATION SYSTEM

David R. Anderson, Duluth, Minn., assignor to A. J. Amatuzio Filter Co., Superior, Wis.

Filed Aug. 11, 1992, Ser. No. 928,032

Int. Cl.[5] B01D *27/00*

U.S. Cl. 210—168 **6 Claims**



1. A remote dual filtration system for an internal combustion engine having an external mounting member, comprising:

an adaptor for mounting on said external mounting member and through which unfiltered oil is directed from said engine and filtered oil flows to said engine;

a remote dual filter mount;

hoses for carrying said unfiltered oil from said adapter to said remote filter mount, and for carrying filtered oil from said remote filter mount to said adaptor;

a full flow filter mounted on said remote filter mount;

a high efficiency partial flow filter mounted on said remote filter mount parallel to said full flow filter, said partial flow filter being more resistant to the flow of oil than said full flow filter;

said remote dual filter mount including a bracket for mounting the remote dual filter mount at a remote location; said remote dual filter mount further comprising first and second parallel passages, said first passage fluidly communicating said hose carrying said unfiltered oil with inlet portions of said partial and said full flow filters, said inlet portion of said partial flow filter being disposed in an upstream direction from said inlet portion of said full flow filter; said second passage fluidly communicating outlet portions of said partial and said full flow filters with said hose carrying said filtered oil, and

means for restricting the flow of oil into said full flow filter relative to said partial flow filter, said restricting means being disposed in said first passage between said inlet portions of said partial and said full flow filters, whereby oil flow into said partial flow filter is increased.

5,298,159

FILTER-COLLECTOR APPARATUS

William R. Peterman, Muncy, Pa., assignor to The Young Industries, Inc., Muncy, Pa.

Filed Aug. 22, 1991, Ser. No. 748,448

Int. Cl.[5] B01D *24/46*

U.S. Cl. 210—232 **54 Claims**

1. A filter-collector apparatus comprising:

a closed vessel having an inlet for introducing pneumatically conveyed material thereinto and an outlet for discharging material therefrom:

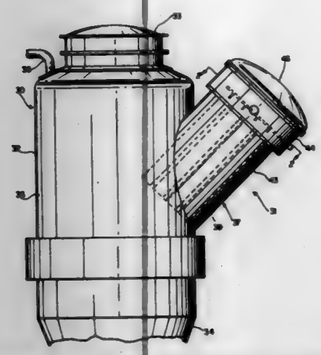
a detachable tube sheet disposed in said vessel and cooperating with said vessel to provide a material collector chamber and a plenum chamber;

wedging means for detachably securing said tube sheet to said vessel and camming said tube sheet against said vessel;

at least one filter tube extending through an opening in said tube sheet and into said collector chamber, having the

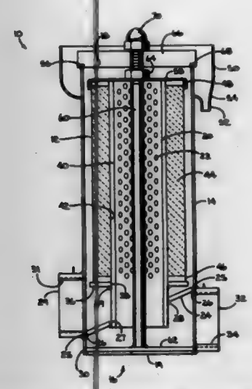
VOL 1160 ISS 5 MR 29 1994 UMI

interior thereof communicating with said plenum chamber;
wedging means for detachably securing said filter tube to said tube sheet and camming said filter tube against said tube sheet;
means disposed in said plenum chamber for selectively in-



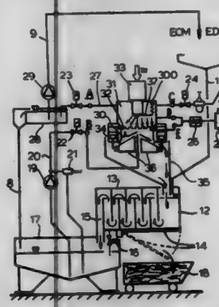
jecting a stream of fluid under pressure into said filter tube for dislodging filtered material deposited on said filter tube;
means for detachably securing said fluid injecting means to said tube sheet; and
said vessel having outlet means communicating with said plenum chamber.

5,298,160
FILTER HOUSING WITH MEANS TO PROHIBIT FLUID FLOW
William R. Ayers, and Jerald R. Rexroad, both of Bement, Ill., assignors to Central Illinois Manufacturing Co., Bement, Ill.
Filed Dec. 13, 1991, Ser. No. 807,077
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—232 **20 Claims**



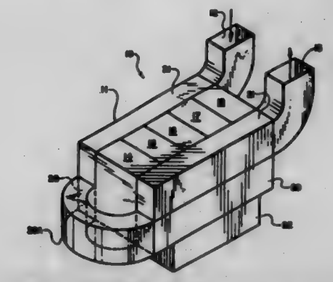
1. A filtration system for use to separate contamination from a fluid comprising:
an elongate tubular housing having a closed end and an open end;
an elongate perforated tubular member having apertures, said member encapsulated within said housing;
a separating means for prohibiting flow between said housing and said tubular member located near said closed end of said housing;
a first fluid opening in said housing located between said separating means and said open end;
a second fluid opening in said housing located between said separating means and said open end;
a filter element located between said housing and said member; and
a cover located on said open end of said housing whereby fluid is contained within said housing;
a reservoir located at said open end of said housing whereby liquid escaping from said housing may be contained; and
said reservoir opening upwardly and extending at least partially about said open end and being positioned to contain fluid escaping from the filtration system during change of said filter element.

5,298,161
APPARATUS FOR CLEANING THE WORKING LIQUID OF AN EDM OR ECM MACHINE
Arno Sieg, Minusio, Switzerland, assignor to Erosonic AG, Wattwil, Switzerland
PCT No. PCT/CH91/00275, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/11923, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 20, 1991, Ser. No. 924,026
Claims priority, application Switzerland, Jan. 7, 1991, 31/91
Int. Cl.[5] B01D *63/06*
U.S. Cl. 210—321.78 **17 Claims**



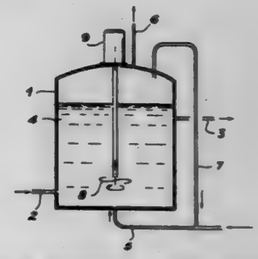
1. An apparatus comprising: means for cleaning a machining liquid of an electroerosive or electrochemical machining device, including,
a device for sedimenting contaminants from the machining liquid, said sedimenting device having a liquid entrance and a liquid exit;
a filter unit comprising a housing that is subdivided by a stationary membrane filter into a concentrate chamber and a permeate chamber;
a pump for supplying fluid from the liquid exit of the sedimenting device to the concentrate chamber;
a conduit for supplying liquid from the permeate chamber to the machining device, said conduit containing a shut off valve;
a collecting means for collecting the liquid from the machining device, said collecting means being connected with said liquid entrance of said sedimenting device;
a pressure means connected with said permeate chamber for backwashing said membrane filter;
means for selectively connecting said concentrate chamber with said liquid entrance of said sedimenting device during backwashing of said membrane filter; and
an ultrasonic vibrator mounted on said filter unit, said vibrator having a radiating surface submerged in the liquid for vibrating said membrane filter, said pump being dimensioned so that, during filtering, an entire output flow of said pump is passed through said membrane filter.
10. A filter unit comprising: means for cleaning machining liquid of an electroerosive or electrochemical machining device, including,
a housing
a stationary membrane filter subdividing said housing into a concentrate chamber and a permeate chamber;
a supply connection for supplying contaminated liquid to said concentrate chamber;
an output connection on said permeate chamber for supplying clean liquid to said machining device;
a pressure means connected to said permeate chamber for selectively backwashing liquid from said permeate chamber through said membrane filter into said concentrate chamber;
a flushing means for flushing said concentrate chamber; and
an ultrasonic vibrator mounted on said housing and having a radiating surface submerged in said liquid for vibrating said membrane filter.

5,298,162
MULTI-STAGE FLUID FILTER
Kurt W. Niederer, 3021 Mountainbrook Rd., Charlotte, N.C. 28210, and Cedric R. Jones, Stafford, England, assignors to Kurt W. Niederer, Charlotte, N.C.
Continuation-in-part of Ser. No. 67,236, Jun. 25, 1987, abandoned, which is a continuation-in-part of Ser. No. 856,964, Apr. 29, 1986, Pat. No. 4,681,604. This application Aug. 27, 1991, Ser. No. 750,520
Int. Cl.[5] B01D *35/12*
U.S. Cl. 210—418 **16 Claims**



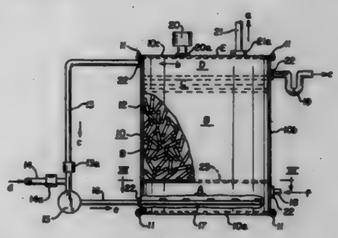
1. A multi-stage fluid filter for filtering entrained particulate matter from a moving fluid stream, in which filter particulate matter may undergo primary and secondary filtration stages, the secondary filtration stage being through a filter medium which comprises a layer of accumulated particulate matter, the first filtration stage being through a filter medium on which a layer of particulate matter is accumulating, for use subsequently in a said second filtration stage, the filter comprising:
first and second filtration chambers, each filtration chamber having a filtration medium positioned therein from an upstream side to a downstream side thereof;
an inlet into the fluid filter;
an outlet from the fluid filter;
first conduit means leading from said inlet;
second conduit means leading from the first conduit means to the first chamber on the upstream side relative to the filter medium thereof;
third conduit means leading from the first conduit means to the second chamber on the upstream side relative to the filter medium thereof;
a node at which the first, second and third conduit means meet; valve means associated with the node and having a first control position in which it permits fluid to flow from the first conduit means to the second conduit means, and a second control position in which it permits fluid to flow from the first conduit means to the third conduit means; and means for directing fluid which has flowed through the first or second chamber in a primary filtration stage, to the second or first chamber for a secondary filtration stage, and then to the outlet.

5,298,163
PROCESS FOR THE TREATMENT OF EFFLUENTS
Frédéric Ehlinger, Le Pecq, France, assignor to Degremont, Rueil Malmaison Cedex, France
Continuation of Ser. No. 580,548, Sep. 11, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,286
Claims priority, application France, Sep. 14, 1989, 89 12047
Int. Cl.[5] C02F *3/28*
U.S. Cl. 210—603 **5 Claims**



1. A process for the treatment, using anaerobic fermentation, of effluents, for the removal of both the organic matter and of the sulfates contained therein, carried out by means of a single reactor into which is introduced, within the biomass, contained in said single reactor a neutral gas for displacing the H_2S formed, and wherein the reactor employed is a free-culture, infinitely mixed reactor; wherein the pH is self regulated at around 6.9; and wherein no methane is produced in said single reactor.

5,298,164
EMISSION REDUCTION OF ORGANIC VOLATILES FROM AEROBIC BIOLOGICAL REACTORS
Gary S. Hapach, Valencia; Stanley R. Karrs, Gibsonia, and Kenneth E. Ondrusek, Freedom, all of Pa., assignors to United States Filter Corporation, Rancho Mirage, Calif.
Filed Jul. 28, 1992, Ser. No. 920,781
Int. Cl.[5] C02F *3/06*
U.S. Cl. 210—604 **15 Claims**



1. A submerged biological process for aerobic treatment of waste water within a single closed vessel to, after one preliminary throughput therethrough, in subsequent waster water through-puts therethrough, maximize a reduction in atmospheric emission of biodegradable volatile organic compounds contained in the waste water wherein the vessel has an enclosed bottom sparging chamber surmounted by an upper

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cross-extending grid whose upper reaches define the bottom of an enclosed intermediate chamber containing microorganism-coated packing material, the intermediate chamber is in turn surmounted by an enclosed upper chamber having a lower level open to the intermediate chamber for in its lower reaches receiving, collecting and discharging treated waste water therefrom and having an upper level for receiving volatile organics released from the waste water and also for receiving an inert and oxygen containing treating gas mixture that has been introduced along with the waste water into the sparging chamber which comprises, initially introducing an oxygen and inert gas mixture into the bottom sparging chamber through course bubble distributor while simultaneously introducing contaminated waste water into the same chamber and thoroughly mixing the gas mixture and waste water therein while forming bubbles in the waste water, moving the mixture of gas and waste water upwardly through the grid into the intermediate chamber and through the packing material therein while subjecting said gas and water mixture to biological treatment therein, moving said gas and water mixture as well as biodegradable organic gas released from the waste water upwardly from the intermediate chamber into the upper chamber while separating said gases from the waste water, and taking a portion of a mixture of the now processed oxygen containing gas and released biodegradable organic gas from the upper chamber and introducing them with a make-up amount of oxygen-containing gas into the sparging chamber and repeating the previously defined treating and upward movement of the waste water within the chambers, and discharging a remaining portion of the final gas mixture from the upper chamber, all in such a manner as to effectively reduce and minimize the volatile organic gas content of the treated waste water as well as degrade the amount of volatile organic gas in the oxygen and inert gas mixture that is collected in and then discharged from the upper chamber.

5,298,165

METHOD FOR REMOVING LEUKOCYTES AND A FILTER SYSTEM FOR REMOVING THE SAME

Shin-Ichiroh Oka, and Takao Nishimura, both of Oita, Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01277, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO92/04906, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 838,268

Claims priority, application Japan, Sep. 25, 1990, 2-251998

Int. Cl.[5] B01D *27/02, 36/02, 39/00, 21/26*

U.S. Cl. 210—645 **9 Claims**

1. A method for removing leukocytes from a leukocyte-containing blood product by means of a filter system having an internal space volume of from 3 to 35 ml per unit of whole blood or a red cell product or per 5 units of a platelet product and an effective filtration area of from 3 to 110 cm^2, which comprises:

subjecting a leukocyte-containing blood product to a first stage leukocyte-removing treatment to remove at least 60% of all leukocytes contained in said leukocyte-containing blood product, thereby obtaining a leukocyte-depleted blood product; and

passing said leukocyte-depleted blood product through a microfilter element to perform a second stage leukocyte-removing treatment, said microfilter element comprising a non-woven or a woven fabric comprised of fibers having an average diameter of from 0.3 to 1.6 μm.

wherein said first stage leukocyte-removing treatment comprises passing said leukocyte-containing blood product through a filter element comprising a non-woven or a woven fabric comprised of fibers having an average diameter which is from 0.8 to 2.0 μm and wherein said average diameter is at least 1.2 times the average diameter of the fibers of said microfilter element used in said second stage leukocyte-removing treatment.

5,298,166

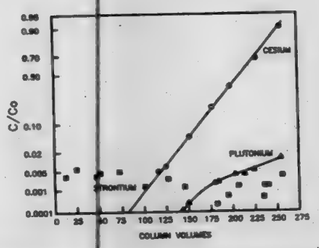
METHOD FOR AQUEOUS RADIOACTIVE WASTE TREATMENT

Lane A. Bray, and Leland L. Burger, both of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Oct. 11, 1991, Ser. No. 775,165

Int. Cl.[5] C02F *1/42*

U.S. Cl. 210—679 **5 Claims**



1. A method for removing plutonium, strontium, and cesium from an alkaline aqueous solution comprising contacting said solution with a titanium-treated zeolite ion exchange medium.

5,298,167

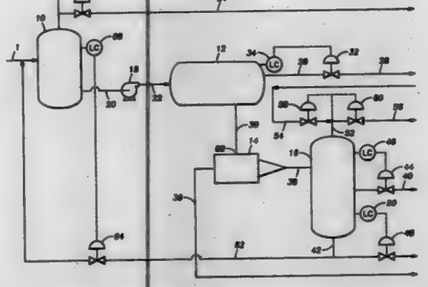
METHOD FOR SEPARATING IMMISCIBLE LIQUID

Kenneth E. Arnold, 3031 Shadowdale, Houston, Tex. 77043

Filed Dec. 10, 1992, Ser. No. 988,660

Int. Cl.[5] C02F *1/24*

U.S. Cl. 210—703 **10 Claims**



1. A method of reducing the concentration of a first liquid in a mixture containing the first liquid and a second liquid which is immiscible with the first liquid, comprising the steps of:

first separating a first portion of the first liquid by gravity or flotation from the mixture in a primary separator to form a remaining mixture;

flowing the remaining mixture to a hydrocyclone;

second separating a second portion of the first liquid from the remaining mixture in the hydrocyclone to form a second remaining mixture;

removing from the hydrocyclone the second portion of the first liquid through an overflow outlet at a first pressure and the second remaining mixture through an under flow outlet at a second pressure that is higher than said first pressure and is at least atmospheric; and

third separating a third portion of the first liquid from the second remaining mixture in a secondary separator to form a third remaining mixture without reducing the pressure of the second remaining mixture from the second pressure wherein said third separation is carried out at a pressure approximately equal to said second pressure and

coalesced droplets of said first liquid that are present in said second remaining mixture are not subject to shear.

5,298,168

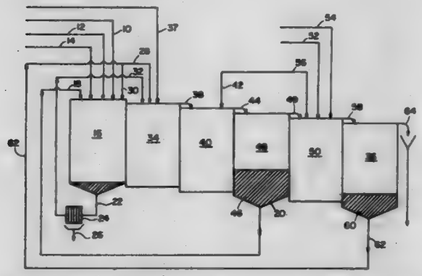
FERROUS DITHIONITE PROCESS AND COMPOSITION FOR REMOVING DISSOLVED HEAVY METALS FROM WATER

Robert G. Guess, Beverly, Mass., assignor to Romar Technologies, Inc., Beverly, Mass.

Continuation-in-part of Ser. No. 682,129, Apr. 8, 1991, Pat. No. 5,122,279. This application Jun. 3, 1992, Ser. No. 893,978

Int. Cl.[5] C02F *1/62, 1/70*

U.S. Cl. 210—713 **54 Claims**



1. The process for removing dissolved heavy metals from aqueous solutions containing said heavy metals which comprises: (a) in a first reaction step, admixing and reacting a first aqueous solution containing dissolved heavy metal ions with a source of ferrous ion and dithionite ion at a pH between about 1 and 7 to effect reduction and precipitation of said heavy metals from said first solution, separating said reduced heavy metals from said first solution, to form a first liquid effluent from said first reaction step, (b) in a second step, admixing said first liquid effluent with an aqueous composition selected from the group consisting of water and an acidic aqueous solution of heavy metals to produce a second liquid effluent, (c) in a third reaction step, admixing and reacting said second liquid effluent with a water soluble alkali composition to produce a slurry and a third liquid effluent, and (d) recycling said slurry to at least one of said first reaction step, said second step, or said third reaction step.

5,298,169

TREATMENT OF WASTE SULFURIC ACID BY GYPSUM PRECIPITATION IN A TITANIUM DIOXIDE PROCESS

Roger Laferrière, Varennes, and Pierre Beaupré, both of Varennes, Canada, assignors to Kronos, Inc., Hightstown, N.J.

Filed Aug. 21, 1992, Ser. No. 933,227

Int. Cl.[5] C02F *1/58*

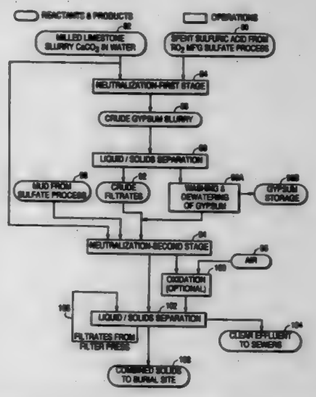
U.S. Cl. 210—713 **7 Claims**

1. For use in conjunction with a process for the production of titanium dioxide pigment and which produces as waste products clarification solids and waste sulfuric acid, a process for treating said waste sulfuric acid comprising:

a) mixing said waste sulfuric acid with a calcium-containing material to make a first mixture, thus producing a gypsum suspension,

b) treating the gypsum suspension so as to remove therefrom a liquid portion in the form of a filtrate, and

c) mixing said filtrate with a calcium-containing substance to make a second mixture, thereby producing a precipitate which is subsequently filtered, wherein step c) further includes mixing a predetermined quantity of said clarification solids with said filtrate and said calcium-containing



substance in order thus to improve the consistency of said precipitate and render it suitable for disposal in a landfill.

5,298,170

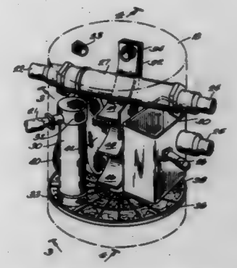
EFFLUENT NEUTRALIZATION PROCESS AND CHAMBER

Gunter Woog, 5435 Bauers Dr., West Bend, Wis. 53095

Filed Jan. 19, 1993, Ser. No. 5,642

Int. Cl.[5] C02F *1/66*

U.S. Cl. 210—719 **8 Claims**



1. An effluent precipitation and neutralization chamber for treating spent photographic fixer and developer comprising:

a vessel having a wall and an open top;

a cover for removably covering the vessel open top;

inlets in the vessel wall for introducing the spent photographic developer and fixer into the vessel;

an outlet in the vessel wall;

the fixer inlet discharging into a vertically oriented conduit located within the vessel, said conduit containing an iron containing material therein in an amount effective to precipitate silver from said fixer solution and defining a gravity flow path for flow of the fixer within the vessel from the inlet to the bottom of the vessel;

a layer of steel wool positioned on the bottom of the vessel in the flow path of said fixer;

the inlet for said developer being located adjacent to the top of the vessel;

the flow path through the vessel between the inlet means and the outlet providing mixing of the developer and fixer as they flow from the inlets to the outlet to thereby neu-

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tralize the developer and fixer, said flow path comprising a plurality of baffles;

a wash water inlet for introducing wash water into the vessel adjacent to the outlet to dilute the mixed photographic developer and fixer discharged from the vessel through the outlet.

5,298,171

METHOD AND APPARATUS FOR SEPARATION OF BLOOD INTO ITS COMPONENTS

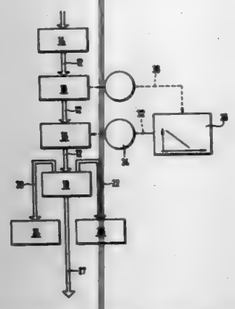
Wolfgang Biesel, Ottweiler, Fed. Rep. of Germany, assignor to Fresenius AG, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 927,101

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126341

Int. Cl.[5] B01D *21/30, 21/26*

U.S. Cl. 210—739 **16 Claims**



11. A process for maintaining a constant hematocrit value of the erythrocyte fraction of a blood separator, the separator having an intake line, discharge lines for outputting at least an erythrocyte fraction and a cell-poor plasma fraction and a return line for returning at least one component to a donor or patient, the process comprising the steps of:

regulating the flow of blood supply to the separator by a pump,

sensing hematocrit value of incoming blood at the intake line,

separating blood into said fractions by the separator, and

adjusting the pump in response to the hematocrit value of the incoming blood to maintain constant hematocrit value of erythrocyte fraction returned from the separator.

5,298,172

METHOD AND APPARATUS FOR REMOVING GRIT FROM SEWAGE

Bryan Smith, Leeds, United Kingdom, assignor to Hydraulic Design Limited, Leeds, England

PCT No. PCT/GB91/00370, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/14053, PCT Pub. Date Sep. 19, 1991

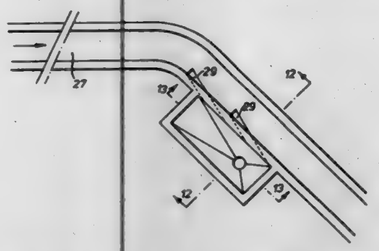
PCT Filed Mar. 8, 1991, Ser. No. 943,339

Claims priority, application United Kingdom, Mar. 10, 1990, 9005418

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—747 **16 Claims**

1. A method of removing grit from sewage comprising passing sewage containing grit along a channel, the sewage passing initially through a generally straight elongate first channel portion of length sufficient to stabilize the flow and of generally constant width, and subsequently passing the sewage around a bend formed as part of said channel and having an angle of between 10 degrees and 180 degrees from the first channel portion, removing grit from the flow via a port situated downstream of and at the inside of the bend at the base of the channel, and passing the sewage through a second channel portion extending downstream of the bend and having a length not less than twice the width of said first channel portion such



that the velocity of the flow of sewage through the channel including the second channel portion is less than 1.3 meters per second.

5,298,173

METHOD OF NEUTRALIZING ACIDIFIED SURFACE WATER

W. Roy Burke, Tonawanda, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Division of Ser. No. 921,775, Jul. 30, 1992, which is a division of Ser. No. 456,752, Dec. 26, 1989, Pat. No. 5,158,835. This application Jul. 12, 1993, Ser. No. 90,449

Int. Cl.[5] C02F *1/66*

U.S. Cl. 210—747 **6 Claims**

1. The method of treating surface water which is being detrimentally affected by acid rain comprising the step of placing gypsum-alkaline material blocks weighing at least about two pounds and having a wet density suitable for placement on the bottom of lakes and streams and a height of at least about three inches in said water, said blocks consisting essentially of a homogeneous mixture of set gypsum and an alkaline material, formed without consolidation at atmosphere pressures or equivalent, with a weight ratio of gypsum to alkaline material of from about 80:20 to about 65:35.

5,298,174

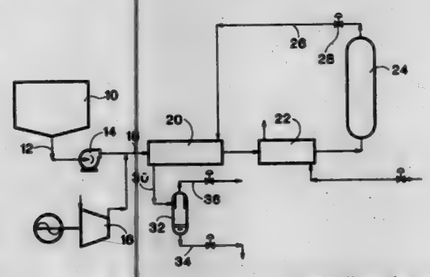
LOW TEMPERATURE CAUSTIC SULFIDE WET OXIDATION PROCESS

Joseph A. Momont, Mosinee; David A. Beula, Weston, and William M. Copa, Schofield, all of Wis., assignors to Zimpro Environmental, Inc., Rothschild, Wis.

Filed May 7, 1993, Ser. No. 57,931

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—761 **6 Claims**



1. A process for treatment of a caustic sulfide liquor by wet oxidation in a ferrous-based alloy system comprising the steps:

a) analyzing the caustic sulfide liquor for initial concentrations of total alkalinity, total sulfides, mercaptans, COD, thiosulfate, total carbonate and pH to determine the amount of nonsulfidic alkalinity consumed by said liquor upon wet oxidation treatment;

b) adding sufficient additional nonsulfidic alkalinity to said caustic sulfide liquor whereby the initial nonsulfidic alkalinity concentration plus additional nonsulfidic alkalinity concentration exceeds the nonsulfidic alkalinity consumed upon wet oxidation treatment as determined in step a; and

c) carrying out said treatment process of wet oxidation upon said caustic sulfide liquor within said ferrous-based alloy system at temperatures less than about 175° C. to destroy sulfides and mercaptans and produce a treated liquor with excess nonsulfidic alkalinity concentration thereby preventing excessive corrosion to said ferrous-based alloy wet oxidation system.

5,298,175

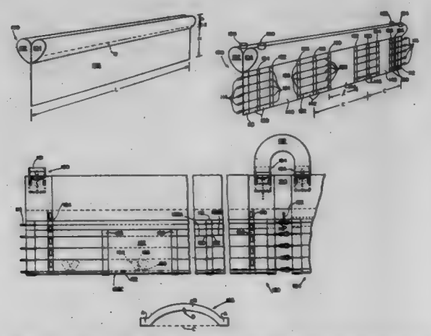
METHOD OF DIVIDING OIL SPILL AND TENDER VESSEL ESPECIALLY SUITABLE THEREFOR

Malcolm B. Whidden, Jr., P.O. Box 280, South Harpswell, Me. 04079

Division of Ser. No. 571,148, Aug. 23, 1990, Pat. No. 5,087,152. This application Dec. 10, 1991, Ser. No. 804,986

Int. Cl.[5] E02B *15/04*

U.S. Cl. 210—776 **16 Claims**



10. A method of dividing a large spill area of oil or other substance floating on water into at least a first smaller area, the method comprising the steps of:

a) deploying a plurality of first boom sections to substantially encompass at least a portion of the large spill area;

b) causing a vessel to simultaneously tow two substantially parallel sets of towed boom sections by pulling respective first ends of the sets of towed boom sections from a first side of the substantially encompassed portion to a second side of the substantially encompassed portion, while keeping respective second ends of the towed boom sections aboard a second vessel remaining at or near the first side of the substantially encompassed portion, to divide the large spill area into the first and second smaller areas having an initial boundary strip formed by the two sets of towed boom sections; and

c) connecting a first boom section as originally deployed with a towed boom section, thereby at least partially sealing the first smaller area.

5,298,176

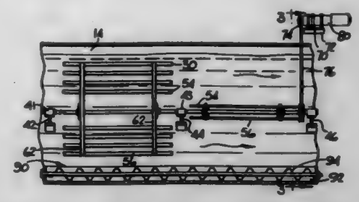
CONTROLLED VELOCITY SETTLING TANK

C. M. Schloss, Englewood, Colo., assignor to Schloss Engineered Equipment, Inc., Aurora, Colo.

Filed Aug. 10, 1992, Ser. No. 927,857

Int. Cl.[5] B01D *21/00*

U.S. Cl. 210—803 **8 Claims**



5. A method for settling solids from a fluid stream, comprising flowing the fluid through a channel; inducing a flow in the channel using a mixer, the mixer being positioned in the channel such that the fluid spirals through the channel; and removing settled solids from the bottom of the channel; wherein the amount of induced flow is adjusted to achieve a desired balance between the settling of organic solids and inorganic solids.

5,298,177

FUNCTIONAL FLUID WITH TRIGLYCERIDES, DETERGENT-INHIBITOR ADDITIVES AND VISCOSITY MODIFYING ADDITIVES

John V. Stoffa, North Olmstead, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 743,536, Aug. 9, 1991. This application May 5, 1993, Ser. No. 58,614

Int. Cl.[5] C10M *141/00*

U.S. Cl. 252—18 **61 Claims**

1. A functional fluid composition, comprising:

(A) from about 60–90% by weight of at least one triglyceride;

(B) from about 1–12% by weight of at least one detergent-inhibitor additive free from phosphorus and zinc and comprising at least one metal overbased composition B-1 and/or at least one carboxylic dispersant composition B-2, diaryl amine B-3, sulfurized composition B-4, and metal passivator B-5; and

(C) from about 1–8% by weight of at least one viscosity modifying additive comprising a nitrogen-containing mixed ester characterized by low-temperature viscosity modifying properties of a carboxy-containing interpolymer, said interpolymer having a reduced specific viscosity of from about 0.05 to about 2 and being derived from at least two monomers, one of said monomers being a low molecular weight aliphatic olefin or styrene and the other of said monomers being an alpha, beta-unsaturated aliphatic acid, anhydride or ester thereof, said nitrogen-containing ester being substantially free of titratable acidity and being characterized by the presence within its polymeric structure of at least one of each of three pendant polar groups which are derived from the carboxy groups of said nitrogen containing ester:

(A) a relatively high molecular weight carboxylic ester group, said carboxylic ester group having at least 8 aliphatic carbon atoms in the ester radical,

(B) a relatively low molecular weight carboxylic ester group having no more than 7 aliphatic carbon atoms in the ester radical,

(C) a carbonyl-polyamino group derived from a polyamino compound having one primary or secondary amino group, wherein the molcar ratio of (A):(B):(C) is 60–90):(-10–30):(2–15) or

a nitrogen-containing ester of a carboxy-containing inter-

polymer, said interpolymer having a reduced specific viscosity of from about 0.05 to about 1 and being derived from at least two monomers, one of said monomers being a low molecular weight aliphatic olefin or sytrene and the other of said monomers being an alpha, beta-unsaturated aliphatic acid, anhydride or ester thereof, said nitrogen-containing ester being substantially free of titratable acidity and being characterized by the presence within its polymeric structure of each of the following groups which are derived from the carboxy groups of said interpolymer:

(A') a carboxylic ester group, said carboxylic ester group having at least eight aliphatic carbon atoms in the ester radical, and

(B') a carbonyl-polyamino group derived from a polyamino compound having one primary or secondary amino group and at least one monofunctional amino group, wherein the molar ratio of carboxy groups of said interpolymer esterified to provide (A') to carboxy groups of said interpolymer neutralized to provide (B') is in the range of about 85:15 to about 99:1.

5,298,178

TRIAZOLE COMPOUNDS USEFUL AS METAL DEACTIVATORS

Robert M. O'Neil, Flixton, England, and Paul Dubs, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 713,943, Jun. 12, 1991, Pat. No. 5,133,890. This application May 7, 1992, Ser. No. 879,484

Claims priority, application United Kingdom, Jun. 13, 1990, 9013142

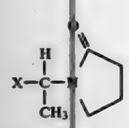
Int. Cl.[5] C10M *178/00, 173/02, 133/44*

U.S. Cl. 252—49.3 **8 Claims**

1. An aqueous or partially aqueous composition comprising

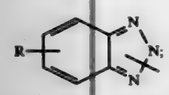
(a) an aqueous or partially aqueous functional fluid in contact with metal, and

(b) an effective amount of a metal deactivator compound of formula I



(I)

in which X is a group of formula II



(II)

in which R is hydrogen or C_1–C_4-alkyl.

5,298,179

WATER ABSORBENT, COMPRISING MAGNETIC MATERIAL AND WATER ABSORBENT RESIN

Keizo Ukita; Shinji Hirota, and Masaaki Inoue, all of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,425

Claims priority, application Japan, Jul. 4, 1990, 2-177060

Int. Cl.[5] C04B *35/04*

U.S. Cl. 252—62.54 **2 Claims**

1. A pulverulent water absorbent having a diameter of 1 to 3 mm comprising

a magnetic material selected from the group consisting of pure iron and iron alloy and

a water-absorbent resin obtained by crosslinking either physically or chemically at least one water-soluble high-molecular weight compound selected from the group consisting of a starch-acrylonitrile copolymer hydrolyzate, a vinyl alcohol-acrylic acid salt copolymer, a polyacrylic acid salt and an olefin-maleic anhydride copolymer hydrolyzate, said water-absorbent resin having an absorbability such as to absorb distilled water in a weight which is 5–1000 times its own weight.

5,298,180

LINEAR VISCOELASTIC AQUEOUS LIQUID AUTOMATIC DISHWASHER DETERGENT COMPOSITION

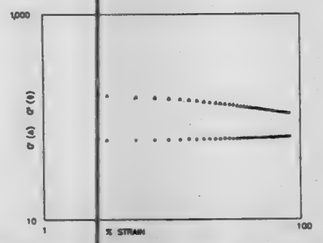
Nagaraj S. Dixit, Plainsboro, N.J., assignor to Colgate Palmolive Co., New York, N.Y.

Continuation of Ser. No. 726,089, Jul. 5, 1991, Pat. No. 5,205,953, which is a continuation-in-part of Ser. No. 353,712, May 18, 1989, Pat. No. 5,064,553. This application Mar. 25, 1993, Ser. No. 37,153

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] C11D *9/00*

U.S. Cl. 252—94 **11 Claims**



1. A linear viscoelastic aqueous liquid automatic dishwasher detergent composition having a G''/G' value of less than one comprising approximately by weight:

(a) 10 to 35% of at least one alkali metal detergent builder salt, said alkali metal detergent builder salt being selected from the group consisting of alkali metal tripolyphosphate, alkali metal pyrophosphate, alkali metal metaphosphate, alkali metal carbonate, alkali metal citrate and alkali metal nitrilotriacetate and mixtures thereof;

(b) 5 to 15% alkali metal silicate;

(c) 0 to 6% alkali metal hydroxide;

(d) 0 to 3.0% chlorine bleach stable, water-dispersible, organic detergent active material;

(e) 0 to 1.5% chlorine bleach stable foam depressant;

(f) chlorine bleach compound in an amount to provide 0.2 to 4% of available chlorine;

(g) 0.1 to 2.0% of an alkali metal neutralized cross-linked polyacrylic acid thickening agent having a molecular weight of from about 500,000 to 10,000,000;

(h) 0 to 2% of a long chain fatty acid having about 8 to about 22 carbon atoms or a metal salt of said fatty acid;

(i) 0.1 to 10% of a non-crosslinked polymeric chelatin agent having a molecular weight of about 1,000 to 20,000; and

(j) balance being water, wherein said polyacrylic acid thickening agent is selected from the group consisting of acrylic acid or methacrylic acid, water-dispersible or water soluble salts, esters, or amides thereof, and water-soluble copolymers of these acids or their salts, ester or amides with each other or with one or more other ethyleneically unsaturated monomers, wherein substantially all of the water in the composition is tightly bound to the alkali metal cross-linked polyacrylic acid thickening agent and said composition does not exhibit phase separation and remains homogenous, when said composition is centrifuged at 1000 rpm for 30 minutes.

5,298,181

THICKENED POURABLE AQUEOUS ABRASIVE CLEANSER

Clement K. Choy, Walnut Creek; Aram Garabedian, Fremont, and Frederick I. Keen, Manteeca, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 456,612, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 176,636, Apr. 1, 1988, abandoned. This application Dec. 12, 1991, Ser. No. 808,037

Int. Cl.[5] C11D *3/395, 7/54, 7/18*

U.S. Cl. 252—95 **9 Claims**

1. A thickened aqueous hard surface abrasive scouring cleanser characterized by being smoothly flowable or plastic and being stably abrasive-suspending, comprising:

(a) a particulate abrasive having an average particle size greater than about one micron to provide scouring action wherein the particulate abrasive comprises from about 5 to about 70% by weight of the cleanser;

(b) at least one of an anionic, nonionic, amphoteric or zwitterionic surfactant being present in a cleaning-effective and abrasive-suspending amount;

(c) an electrolyte/buffer forming about 0.1 to about 10% by weight of the cleanser;

(d) a colloidal alumina thickener having an average particle size, in dispersion, of no more than about one micron, the colloidal alumina thickener forming about 1 to about 15% by weight of the cleanser;

(e) a fatty acid soap being present from about 0.1 to about 5% by weight of the cleanser; and

(f) either terpene hydrocarbon, C_{4-18} ester or C_{4-18} ether, as the sole solvent present from about 0.1 to about 10% by weight of the cleanser.

5,298,182

RAPID OPHTHALMIC GLYCOL/LOWER ALKANOL CLEANING AND DISINFECTING SOLUTION AND METHOD

Fu-Pao Tsao, Lawrenceville; Susan A. Littlefield, Norcross, and John H. Stone, Conyers, all of Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 825,757, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 456,058, Dec. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 304,672, Jan. 31, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 971,699

Int. Cl.[5] A61L *2/18;* **C11D** *3/20, 3/44, 3/48*

U.S. Cl. 252—106 **6 Claims**

1. A contact lens polymer material cleaning and disinfecting solution comprising:

a) about 21% by weight of a C_3–C_8 alkylene glycol,

b) about 16% by weight of a lower alkanol,

c) about 5% by weight of an ophthalmic device material compatible surfactant,

d) about 1% by weight of a pH adjusting or regulating agent,

e) about 1% by weight of a tonicity builder,

f) about 0.1% of a viscosity enhancing agent, and

g) the balance water.

2. A method of disinfecting and cleaning a contact lens polymer material comprising rubbing the surface of said polymer material with an effective disinfecting and cleaning amount of a solution of claim 1, followed by rinsing said polymer material with normal saline.

5,298,183

SOAP POWDER COMPOSITIONS

Jeffrey H. Connor, Wirral; Robert Donaldson, Birkenhead; Andrew T. Hight, Wirral; Gordon G. McLeod, Chester; Donald Peter, Wirral, all of England, and Peter J. Russell, Yokohama, Japan, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jun. 6, 1991, Ser. No. 711,481

Claims priority, application United Kingdom, Jun. 6, 1990, 9012613

Int. Cl.[5] B29C *67/24;* **C11D** *17/00*

U.S. Cl. 252—121 **16 Claims**

1. A soap powder having a bulk density of at least 600 g/liter and comprising:

(a) from 35 to 80 wt % of organic detergent-active material consisting essentially of:

(a1) a fatty acid soap, in an amount of from 70 to 100 wt % of said organic detergent-active material, said fatty acid soap having a Krafft temperature, not greater than 20° C., and said fatty acid soap being a mixture of water-soluble salts of C_{12}–C_{22} fatty acids comprising:

(1) from 5 to 60 wt % of one or more saturated or unsaturated fatty acids having 14 or fewer carbon atoms,

(ii) from 5 to 32 wt % of one or more saturated fatty acids having more than 14 carbon atoms, and

(iii) from 35 to 90 wt % of one or more unsaturated fatty acids having 14 or more carbon atoms;

(a2) a non-soap detergent-active compound in an amount of from 0 to 30 wt % of said organic detergent-active material;

(b) from 20 to 65 wt % of inorganic salts and/or builder salts;

(c) optionally other detergent ingredients to 100 wt %.

11. A process for the preparation of a soap powder, which includes the step of treating a particulate starting material comprising:

(a) from 35 to 80 wt % of organic detergent-active material consisting essentially of:

(a1) a fatty acid soap, in an amount of from 70 to 100 wt % of said organic detergent-active material, said fatty acid soap having a Krafft temperature, not greater than 20 ° C., and said fatty acid soap being a mixture of water-soluble salts of C_{12}–C_{22} fatty acids comprising:

(i) from 5 to 60 wt % of one or more saturated or unsaturated fatty acids having 14 or fewer carbon atoms,

(ii) from 5 to 32 wt % of one or more saturated fatty acids having more than 14 carbon atoms, and

(iii) from 35 to 90 wt % of one or more unsaturated fatty acids having 14 or more carbon atoms;

(b) from 20 to 65 wt % of inorganic salts and/or builder salts,

(c) optionally other detergent ingredients to 100 wt %, in a high-speed mixer/granulator having both a stirring action and a cutting action, and granulating and densifying the material to a bulk density of at least 600 g/liter.

5,298,184

PAINT STRIPPER COMPOSITION

Chester P. Jarema, Sterling Heights, Mich., assignor to Specialty Environmental Technologies, Inc., Auburn Hills, Mich.

Filed Jul. 9, 1992, Ser. No. 911,188

Int. Cl.[5] C11D *7/22, 7/26, 7/32*

U.S. Cl. 252—171 **4 Claims**

1. A paint stripper composition having good shelf life and good odor properties, consisting essentially of:

from about 28% to about 34% d-limonene;

from about 65% to about 70% n-methylpyrrolidone; and

from about 1% to about 2% of a cellulosic thickener.

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5,298,185
AQUEOUS STABLE SUSPENSION OF WATER-INSOLUBLE SILICATES CAPABLE OF BINDING CALCIUM IONS AND THEIR USE FOR THE PRODUCTION OF WASHING AND CLEANING AGENTS

Wolfgang Leonhardt, Frankfurt, and Roland Bergmann, Gross-Krotzenburg, both of Fed. Rep. of Germany, assignors to Degussa AG, Fed. Rep. of Germany

Filed Mar. 17, 1992, Ser. No. 853,179
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109501
Int. Cl.[5] C11D *3/08, 3/16*
U.S. Cl. 252—174.25 **6 Claims**

1. An aqueous pumpable stable suspension of a water-insoluble silicate capable of binding calcium ions, which contains, based on the total weight of the aqueous suspension,

A) as silicate capable of binding calcium, from 0.5 to 80 percent by weight of a finely divided, synthetically produced, water-insoluble compound containing bound water, corresponding to the general formula I

$$(Cat_{2/n}O)_x \cdot Me_2O_3 \cdot SiO_2)_y \quad (I)$$

wherein Cat denotes a cation of valency n which is replaceable by calcium, x denotes a number from 0.7 to 1.5, Me stands for boron or aluminum and y denotes a number from 0.8 to 6 and

B) as dispersing component, a mixture of two oxoalcohol ethoxylates corresponding to formula II

$$R—(OCH_2CH_2)_n—OH \quad (II)$$

wherein R = C_{10}–C_{15} alkyl having a degree of branching of from 1 to 90% linear and from 100 to 10% of single methyl branches, n=3–5 25 mol of ethoxy groups in the first of said components B, said first component B being an oxoalcohol ethoxylate having a turbidity point of 56°–68.5° C. and a carbon chain R containing 10–15 carbon atoms and n=5.5–7.0 mol of ethoxy groups in the second of said components B, said second component B being an oxoalcohol ethoxylate haivng a turbidity point of from 70.5° to 50° C. and a carbon chain R containing 10–15 carbon atoms, and

C) a polyethylene glycol having an average molecular weight of from 200 to 2000, the amount of said Component C being from 3 to 20% by weight based on the quantity of stabilizer consisting of components B and C,

components B and C amounting to 0.5 to 6% by weight, based on the suspension.

5,298,186
PAINT SPRAY BOOTH ORGANIC DETACKIFICATION TREATMENT

David B. Mitchell, Arlington Heights; Thomas P. Curran, Round Lake; Wun T. Tai, Palos Hills, all of Ill., and Gary G. Engstrom, Kenosha, Wis., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 523,698, May 15, 1990, abandoned. This application Sep. 11, 1992, Ser. No. 944,136
Int. Cl.[5] C02F *5/10*
U.S. Cl. 252—180 **18 Claims**

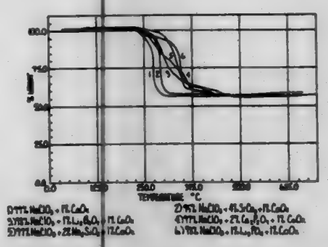
1. A composition of matter which is useful for detackifying paint particles in spray booth water comprising a melamine polymer obtained from a reaction of melamine, aldehyde and dicyandiamide and wherein the molar rations of melamine: aldehyde:dicyandiamide are in the range of (0.25–0.40):(1): (0.02–0.03).

8. A composition of matter for use in detackifying paint particles in spray booth water comprising a melamine copolymer obtained from a reaction of melamine, aldehyde and dicyandiamide wherein the mole ratio of melamine:dicyandiamide is between 2.0–2.5:1 and which is blended with a nonionic or anionic polyacrylamide having a molecular weight less than 15 million or with a cationic polyacrylamide having a molecular weight less than 7 million and wherein the weight ratio of melamine copolymer:polyacrylamide is in the range of 5000–200:1.

5,298,187
NON-TOXIC CHEMICAL OXYGEN GENERATING COMPOSITIONS

Yunchang Zhang, Lenexa, and James C. Cannon, Olathe, both of Kans., assignors to Puritan-Bennett Corporation, Lenexa, Kans.

Filed Mar. 13, 1992, Ser. No. 851,171
Int. Cl.[5] C01B *11/14; A62B 21/00*
U.S. Cl. 252—187.31 **28 Claims**

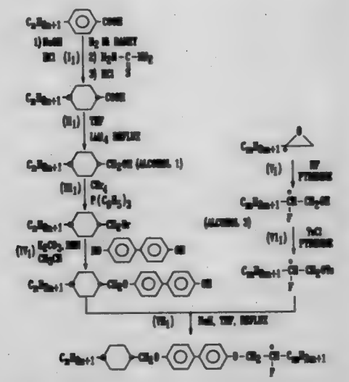


1. In an oxygen-generating candle composition that includes a preponderant amount on a weight basis of an alkali metal chlorate or perchlorate oxygen source other than lithium perchlorate alone, together with from about 1.2–30% by weight of a metal fuel powder, selected from the group consisting of iron, cobalt and manganese, and which upon ignition and decomposition thereof will yield oxygen and residual chlorine, the improvement which comprises a non-toxic additive incorporated into the candle composition at a level of from about 0.05–10% by weight for suppression of the residual chlorine and to enhance uniform oxygen generation and evolution, said additive being an alkaline compound selected from the group consisting of compounds of the formula $M_aH_bX_cO_d$ where M=an alkali metal or alkaline earth metal, a=a number which is one or more, H=hydrogen, b=a number which is 0, or one or more, X=an element chosen from the group consisting of the elements of Group IIIA, the elements of Group IVA, the elements identified by the numbers 15 and 51 of Group VA, the elements of Group IVB, the elements of Group VB, the elements of Group VIB, and the element identified by the number 25 of Group VIIB of the Periodic Table, c=a number which is one or more, O=oxygen, and d=a number which is one or more.

5,298,188
FLUORINATED LIQUID CRYSTALS

Marie Vergnolle, Palaiseau; Francoise Soyer, Villebon Sur Yvette; Pierre Le Barny, Orsay, and Jean-Claude Dubois, St. Remy Les Chevreuse, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Feb. 24, 1992, Ser. No. 840,311
Claims priority, application France, Feb. 26, 1991, 91-02257
Int. Cl.[5] C09K *19/30, 19/12; C07C 41/00, 22/00*
U.S. Cl. 252—299.63 **6 Claims**



1. A liquid crystal chiral compound of the formula

wherein
$1 \leq n \leq 14$
Y is $—CH_2—$ or

with the proviso that when Y is $—CH_2—$ R is C_mH_{2m+1} and
$5 \leq m \leq 16$,
when Y is

R is

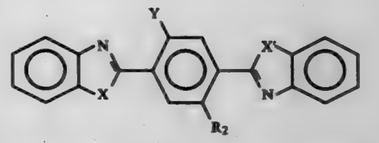
or $—C_4H_9$.

5,298,189
PROTON TRANSFER BIS-BENZAZOLE FLUORS AND THEIR USE IN SCINTILLATOR DETECTORS

Joel M. Kauffman, Wayne, Pa., assignor to Nanoptics Incorporated, Gainesville, Fla.

Filed Apr. 24, 1992, Ser. No. 873,166
Int. Cl.[5] C09K *11/06*
U.S. Cl. 252—301.17 **26 Claims**

1. A high efficiency, radiation hard scintillator comprising a scintillator composition comprising a matrix material which is transparent in at least a portion of the visible electromagnetic radiation spectrum and an organic, fluorescent compound dispersed in the matrix material, the organic, fluorescent compound being a 1,4-bis(2-benzazolyl)-benzene having the structure:



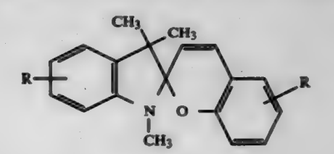
wherein X and X' each individually is a $N(R_3)—$ group, —O—, or —S—; Y is a proton donating group; R_2 is a H or a C_1 to C_{10} alkyl group; R_3 is a H or a C_1 to C_{10} alkyl group and each benzazolyl is substituted or unsubstituted wherein the organic fluorescent compound has an extinction coefficient of about 40,000 or greater in the spectral region of about 420 nm or shorter and has a fluorescence quantum yield of about 0.3 or greater in the visible spectral region of about 480 nm or longer, and wherein the fluorescence of the organic, fluorescent compound is substantially unchanged during an exposure to high energy radiation of 10^5 Gy/yr.

5,298,190
PHOTOCHROMIC FLUORESCENT COMPOSITIONS

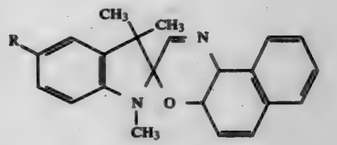
John G. Mone, Crockett, and Thomas C. Molloy, San Pablo, both of Calif., assignors to Magruder Color Company, Elizabeth, N.J.

Filed Sep. 14, 1992, Ser. No. 944,512
Int. Cl.[5] C09K *11/06*
U.S. Cl. 252—301.26 **6 Claims**

1. A coloring composition comprising, dispersed in combination in a plasticizer, a fluorescent pigment and a photochromic compound of the formula (I) or (II) or a mixture thereof



(I)



(II)

wherein R in each formula represents an alkyl or 1 to 12 carbon atoms, and wherein the ratio of photochromic compound to fluorescent pigment in the composition is between 1:200 to 1:10.

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5,298,191

NON-IONIC SURFACE ACTIVE COMPOUNDS

Alan R. Pitt, Sandridge, and Ian M. Newington, Hazlemere, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/00453, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/15554, PCT Pub. Date Sep. 17, 1992

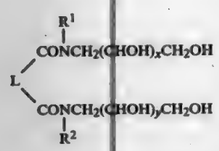
PCT Filed Mar. 2, 1992, Ser. No. 945,631

Claims priority, application United Kingdom, Mar. 8, 1991, 9104957

Int. Cl.[5] B01J *13/00*; **C07C** *233/04*

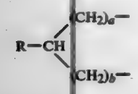
U.S. Cl. 252—308 **9 Claims**

1. A water-soluble or water-dispersible compound having the formula



wherein

L is



R is a hydrophobic alkyl containing 6 to 36 carbon atoms

each of R^1 and R^2 independently is hydrogen or an alkyl group having from 1 to 4 carbon atoms;

each of a and b independently is 0 or an integer from 1 to 3, provided that the sum of a and b is not greater than 3; and,

each of x and y independently is an integer from 3 to 7.

5,298,192

SUBBING COMPOSITION FOR POLYESTER

Yasuhi Hattori, Kanagawa; Nobuyuki Sugiyama, Shizuoka, and Akira Hatakeyama, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 863,235, Apr. 13, 1992, Pat. No. 5,232,825. This application May 10, 1993, Ser. No. 58,215

Claims priority, application Japan, Apr. 5, 1991, 3-99678

Int. Cl.[5] B01J *13/00*

U.S. Cl. 252—311 **5 Claims**

1. A subbing composition for polyesters comprising a dye, a hydrophilic colloid, and a latex, wherein said dye is dispersed in the form of fine solid grains which are substantially insoluble in water at a pH of 6 or less, and are substantially soluble in water at a pH of 8 or more, and said latex has a glass transition temperature of 35° C. or lower.

5,298,193

LOW-FOAMING AND LOW-TEMPERATURE-STABLE LIQUID SURFACTANT COMPOSITIONS COMPOSED OF WATER AND NONIONIC, ANIONIC AND CATIONIC SURFACTANTS AND THE USE THEREOF

Wolfgang Klinger, Altötting, and Eckhard Milewski, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 504,232, Apr. 4, 1990, abandoned. This application May 28, 1992, Ser. No. 890,431

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1989, 3911098

Int. Cl.[5] B01F *17/00*; **C11D** *1/65, 1/86*; **B01J** *13/00*

U.S. Cl. 252—355 **9 Claims**

1. A process for preparing of low-foaming and low-temperature-stable liquid surfactant composition which comprises mixing together 1 part by weight of at least one nonionic surfactant and 0.3 to 9 parts by weight of an aqueous surfactant formulation to form a homogeneous and essentially clear liquid, said aqueous surfactant formulation being made by

a) mixing an anionic surfactant and a cationic surfactant in a mole ratio of 1:(0.3 to 5) with water in an amount of from 50 to 80% by weight at a temperature of 25° to 95° C., the percentages by weight being based on the total weight of anionic surfactant, cationic surfactant and water, said cationic surfactant being quaternary ammonium salt of the formula $N^{30}(R^1,R^2, R^3, R^4)X^-$ (1) in which R^1 and R^2 are the same or different and are selected from the group consisting of an alkyl radical having 1 to 4 carbon atoms, an oxyalkylene radical having 1 to 10 ethylene oxide units, an oxyalkylene radical having 1 to 10 propylene oxide units and an oxyalkylene radical having 1 to 10 ethylene oxide and propylene oxide units, R^3 is an alkyl radical or an alkenyl radical having 6 to 22 carbon atoms, R^4 is a alkyl radical or an alkenyl radical having 6 to 22 carbon atoms or the benzyl radical and X^- is an anion or an inorganic or organic acid,

allowing the mixture obtained in step a) to separate in two sharply distinguished liquid phases, and separating off said aqueous surfactant formulation in the upper phase.

5,298,194

ELECTRICALLY CONDUCTIVE POLYMER COMPOSITION

Richard Carter, and Derrick Collett, both of Swindon, England, assignors to Raychem Limited, Swindon, England

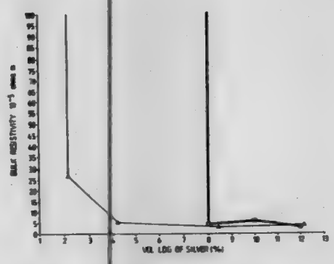
PCT No. PCT/GB90/01677, § 371 Date Apr. 28, 1992, § 102(e) Date Apr. 28, 1992, PCT Pub. No. WO91/06961, PCT Pub. Date May 16, 1991

PCT Filed Nov. 1, 1990, Ser. No. 852,141

Claims priority, application United Kingdom, Nov. 1, 1989, 8924616; Jul. 17, 1990, 9015709

Int. Cl.[5] H01B *1/00, 1/20, 1/22*

U.S. Cl. 252—512 **19 Claims**



1. An adhesive composition which comprises

(a) a solid fusible particulate thermoplastic polymer material and

(b) at least 4% by volume of metal particles that have been blended with the particles of polymer material to render the composition electrically conductive, the composition having (i) been consolidated by heat and/or pressure, (ii) a degree of inhomogeneity of at least 400 μm^2, and (iii) a resistivity not more than about 8×10^{-3} ohm-cm.

5,298,195

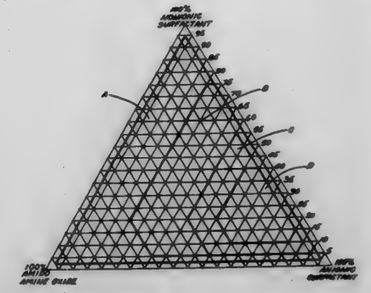
LIQUID DISHWASHING DETERGENT

Ernest H. Brumbaugh, Rockford, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Mar. 9, 1992, Ser. No. 848,449

Int. Cl.[5] C11D *1/12, 1/75, 1/83, 3/30*

U.S. Cl. 252—547 **6 Claims**



1. A liquid dishwashing detergent composition consisting essentially of per 100 parts by weight:

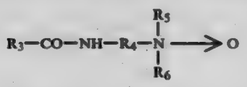
(a) 5 to 60 parts by weight of a three component mixture containing 2.5–95% anionic surfactant, 2.5–95% nonionic surfactant, and 2.5–95% amido amine oxide;

(b) 0 to 20 parts of additives; and

(c) water comprising the balance, wherein the anionic surfactant is selected from the group consisting of C_8–C_{20} secondary alkane sulfonates and mixtures thereof; the nonionic surfactant is an amide selected from the group consisting of amides of the formula

$$R_1—CO—N(H)_{m-1}(R_2OH)_{2-m}$$

wherein R_1 is a saturated or unsaturated aliphatic hydrocarbon radial having from 8 to 18 carbon atoms; R_2 is a methylene, ethylene, or propylene group; and m is 1, 2 or 3, and mixtures thereof; and the amido amine oxide is selected from the group consisting of the formula



wherein R_3 is a C_{8-18} alkyl, R_4 is a C_{2-4} alkyl, and R_5 and R_6 are a C_{1-5} alkyl or hydroxy alkyl, and mixtures thereof.

5,298,196

METHOD AND APPARATUS FOR EXTRACTING TRITIUM AND PREPARING RADIOACTIVE WASTE FOR DISPOSAL

Leung K. Heung, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 18, 1992, Ser. No. 883,997

Int. Cl.[5] G21F *9/12*

U.S. Cl. 252—633 **18 Claims**

12. A method for processing an object for disposal, said object generating recoverable gases when heated and occupying a smaller volume after being heated than before being heated, said method comprising the steps of:

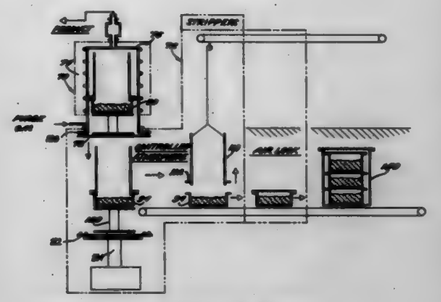
lowering a sleeve onto a crucible to form a sleeve/crucible assembly, said sleeve/crucible dimensioned to enclose laterally said object within said sleeve/crucible after said object is placed in said sleeve/crucible;

placing said object in said sleeve/crucible, said crucible dimensioned to hold and laterally enclose said object after said object has been heated;

placing said enclosed object into a furnace;

sealing said furnace;

heating said object;



extracting said gases from said furnace;

opening said furnace;

removing said object from said furnace;

removing said sleeve from said crucible; and

covering said crucible.

5,298,197

CHEMILUMINESCENT MICROEMULSIONS

Richard Thompson, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1988, Ser. No. 253,635

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—700 **10 Claims**

1. A composition for producing light by peroxyoxalate chemiluminescence comprising a microemulsion which is optically transparent to light produced by peroxyoxalate chemiluminescence, said microemulsion comprising:

an oil phase containing at least a fluorescer compound and an oxalate derivative,

an aqueous phase containing at least an oxidizing agent, and a surfactant/cosurfactant pair present in an amount sufficient to form said microemulsion.

5,298,198

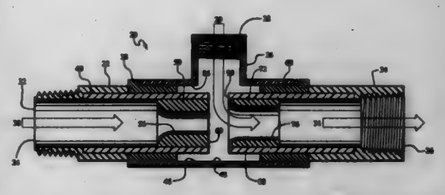
AERATOR

Gaylen R. LaCrosse, Brussels, Wis., assignor to JLBD, Inc., Brussels, Wis.

Filed May 17, 1993, Ser. No. 63,009

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—76 **10 Claims**



1. An aerator for treatment of contaminated liquid, comprising:

a) a housing having a generally cylindrical interior and an inlet for the entrance of liquid, and an outlet for the exit of liquid;

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b) an air inlet located in the housing between the liquid inlet and liquid outlet;

c) an inlet nozzle located in the housing between the liquid inlet and the air inlet, the inlet nozzle having an entrance face and a bore which extends through the nozzle to an exit face, wherein the bore has a substantially cylindrical exit portion of a first diameter which discharges at the exit face, and wherein the bore has an inlet portion of a second greater diameter than the first diameter and said bore is flared towards the housing liquid inlet, the bore inlet portion being joined to the bore exit portion and providing a smooth transition from said second diameter to said first diameter;

d) a discharge nozzle located in the housing between the air inlet and the liquid outlet, the discharge nozzle having an entrance face and a bore which extends through the discharge nozzle to a discharge nozzle exit face, wherein the discharge bore has a substantially cylindrical exit portion of a third diameter which discharges at the discharge nozzle exit face, and wherein the discharge nozzle bore has an inlet portion of a fourth diameter which is greater than the third diameter and which is flared towards the inlet nozzle, and wherein the third diameter is greater than the first diameter; and

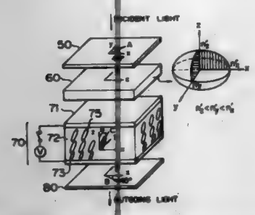
e) an expansion chamber defined within the housing beneath the air inlet and between the inlet nozzle and the discharge nozzle, the expansion chamber having a gap between the inlet nozzle and the discharge nozzle which communicates with an annular region defined between the nozzles and the interior of the housing.

5,298,199

OPTICAL BIREFRINGENCE COMPENSATOR ADAPTED FOR LCD

Shinichi Hirose, Isehara, and Jean F. Clerc, Machida, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 774,870
Claims priority, application Japan, Oct. 17, 1990, 2-278308
Int. Cl.[5] G02F *1/1333*
U.S. Cl. 264—2.6 **5 Claims**



1. A method of producing a biaxial optical compensator, comprising the successive steps of:

(a) stretching an ion-containing polymer sheet to impart optical anisotropy thereto;

(b) sandwiching the thus stretched ion-containing polymer sheet between two substrates while maintaining the optical anisotropy;

(c) heating the ion containing polymer sheet;

(d) discontinuing heating before the stretched ion-containing polymer sheet becomes optically isotropic; and thereafter

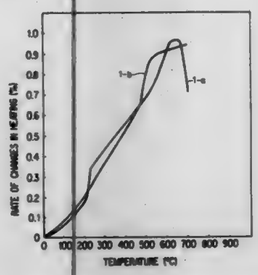
(e) cooling the ion-containing polymer sheet thereby obtaining an optically biaxial sheet.

5,298,200

DENTAL REFRACTORY MODEL MATERIALS

Fuminobu Kubo, Katano; Hiroyuki Hino, Ichinomiya, and Tsutomu Shibata, Funabashi, all of Japan, assignors to G-C Dental Industrial Corp., Tokyo and Taisei Dental Mfg. Co., Ltd., Osaka, both of Japan

Continuation of Ser. No. 825,316, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 560,274, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 271,445, Nov. 15, 1988, abandoned. This application Jun. 15, 1993, Ser. No. 76,688
Claims priority, application Japan, Nov. 18, 1987, 62-289604
Int. Cl.[5] A61C *5/10, 13/00, 13/083*
U.S. Cl. 264—16 **5 Claims**



1. A process for making dental porcelain restoratives by a building-up method which comprises casting a dental refractory model material within an impression of formed teeth, said dental refractory model material comprising a component of 5–20% by weight of a soluble phosphate and 5–20% by weight of magnesium oxide, the balance of said component being at least one selected from the group consisting of alumina, zirconia, fused quartz, mullite, spinel and cordierite, curing to prepare a refractory model, building a finely divided porcelain slush directly upon the model, and placing in a furnace to burn the porcelain.

5,298,201

METHOD FOR IMPROVING DYEABILITY OF FIBER AND ASSOCIATED FABRIC UTILIZING RADIATION

Louis Dischler, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 631,920, Dec. 21, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,506
Int. Cl.[5] B29C *71/04*
U.S. Cl. 264—22 **6 Claims**

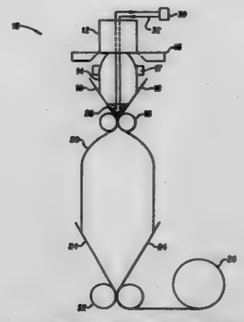
1. A method for improving the dyeability of a polyaramid fiber having a highly oriented, crystalline skin and an inner fiber core which comprises annealing said highly oriented, crystalline skin by the application of short bursts of radiation from a flash tube followed by quenching said highly oriented, crystalline skin by said inner fiber core having a relatively cooler temperature than said highly oriented, crystalline skin.

5,298,202

DOUBLE BUBBLE PROCESS FOR MAKING STRONG, THIN FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 643,591, Jan. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,699, Mar. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 387,056, Jul. 28, 1989, abandoned. This application Dec. 11, 1992, Ser. No. 989,965
Int. Cl.[5] B29C *55/28*
U.S. Cl. 264—22 **6 Claims**



1. A method of making a thin oriented polymeric film comprising:

a) extruding the polymer as a melt stream through a tubular die;

b) hot blowing the extruded film downward to a first set of pinch rolls, the film forming a primary bubble;

c) passing the hot blown film in contact with a heated liquid medium located in a reservoir disposed at a lower end of the primary bubble;

d) heating the hot blown film to a temperature above its orientation temperature;

e) directing the heated film downward through a first set of pinch rolls;

f) reinflating the hot blown film below said first set of pinch rolls by a blown bubble process; and

g) collapsing the reinflated film through a second set of pinch rolls.

5,298,203

PROCESS FOR PRODUCING FIBER AGGREGATE

Takashi Yoshida; Tomohito Ito; Fukuo Gomi, and Hidetoshi Hirai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

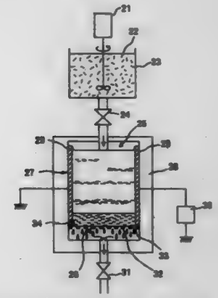
Filed Sep. 10, 1992, Ser. No. 942,954
Claims priority, application Japan, Sep. 21, 1991, 3-242144
Int. Cl.[5] B29C *35/08*
U.S. Cl. 264—24 **6 Claims**

1. A process for producing fiber aggregate which comprises the steps of:

coating fibers with a conductive material which is insoluble in a dielectric fluid;

dispersing said coated fibers in said dielectric fluid to obtain a fiber suspended fluid;

introducing said fiber suspended fluid into an electric field which is generated in a space between a positive electrode and a negative electrode, thereby causing said fibers to individually electrostatically and one-dimensionally orient; and



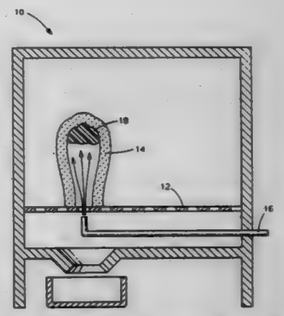
aggregating said oriented fibers, thereby producing fiber aggregate in which said fibers are oriented.

5,298,204

METHOD OF BURNING OUT POLYCARBONATE PATTERNS FROM CERAMIC MOLDS

Kurt F. O'Connor, Carmel, and James R. Stewart, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1992, Ser. No. 834,760
Int. Cl.[5] B29C *67/00, 33/40*
U.S. Cl. 264—25 **3 Claims**



1. A method of burning a polycarbonate pattern out of a ceramic casting mold comprising the steps of:

providing a ceramic casting mold around a polycarbonate pattern wherein the ceramic casting mold conforms to the outer surface of the polycarbonate pattern; and

heating the polycarbonate pattern in a flash flame oven at a temperature ranging from about 1600° F. to about 2100° F. to burn out the polycarbonate pattern without causing the ceramic casting mold to explode.

5,298,205

CERAMIC FILTER PROCESS

Kevin G. Hayes, and Peter A. Roberts, both of Alfred, N.Y., assignors to PolyCeramics, Inc., Alfred, N.Y.

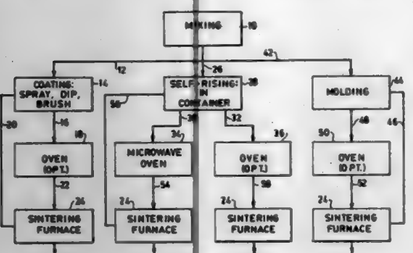
Continuation-in-part of Ser. No. 881,056, May 11, 1992. This application Aug. 27, 1992, Ser. No. 936,762
Int. Cl.[5] C04B *38/06*
U.S. Cl. 264—25 **17 Claims**

1. A process for preparing a porous ceramic material, comprising the steps of sequentially:

(a) providing an organic sponge material which, after being

heated to a temperature of 800 degrees Celsius for at least 60 minutes, will have at least 95 weight percent of its content of solid material converted to gas;

(b) providing a slurry comprised of liquid, gluten, and ceramic material, wherein said slurry is comprised of at least about 60 weight percent of said ceramic material and from about 1 to about 40 weight percent of glutent, by combined weight of ceramic material and gluten, and from about 45 to about 75 weight percent of liquid, by combined weight of liquid, ceramic material, and gluten;



(c) applying said slurry to said organic sponge so that said organic sponge contains from about 95 to about 100 weight percent of the maximum amount of said slurry it is capable of holding, thereby providing a substantially saturated organic sponge;

(d) dehydrating said substantially saturated organic sponge so that said sponge contains less than about 5.0 weight percent of said liquid, thereby providing a dehydrated organic sponge; and

(e) subjecting said dehydrated organic sponge to a temperature of from about 1,100 to about 3,500 degrees Fahrenheit.

5,298,206

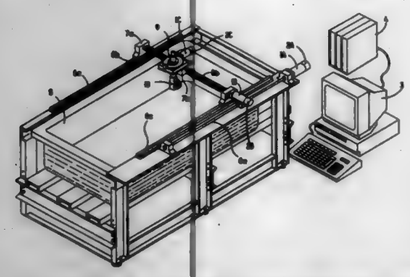
METHOD AND APPARATUS FOR CASTING HOLLOW FIBER MEMBRANES

Robert D. Millikes; David R. Barnes, both of Columbia, Md.; Amy L. Foley, Natick, Mass.; Karen E. Dunleavy, Billerica, Mass., and Edward J. Doherty, Mansfield, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 831,142, Feb. 4, 1992, abandoned. This application Dec. 3, 1992, Ser. No. 984,829

Int. Cl.[5] B29C *47/92*; D01D *5/24*

U.S. Cl. 264—40.7 **12 Claims**



1. A method for automatically casting hollow fiber membranes of prescribed shapes, comprising the steps of:

(a) forcing a polymeric fluid out of an annular orifice of a nozzle of a co-extrusion die while forcing a coagulating fluid out of a center core of said nozzle; and

(b) automatically effecting movement of said nozzle in a plane above and parallel to a surface of a coagulation bath while so controlling said movement as to form in said bath hollow fiber membranes of said prescribed shapes.

6. Apparatus for automatically casting hollow fiber membranes of prescribed shapes, comprising:

(a) a co-extrusion die having a nozzle with an offset annular orifice and a center core;

(b) means for forcing a polymeric fluid out of said annular orifice of said nozzle while forcing a coagulating fluid out of said center core; and

(c) means for automatically moving said nozzle in a plane above and parallel to a surface of a coagulation bath while so controlling said movement as to form in said bath hollow fiber membranes of said prescribed shapes.

5,298,207

METHOD OF PRODUCING A MICROCELL POLYMER FILTER FOR USE IN FLOW RATE REGULATING MECHANISMS FOR GAS LIGHTERS AND SIMILAR DEVICES

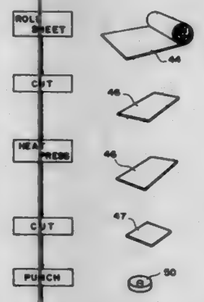
Hideo Mifune; Masato Seki, and Tsutomu Shike, all of Shizuoka, Japan, assignors to Tokai Corporation, Kanagawa, Japan

Division of Ser. No. 685,638, Apr. 16, 1991, Pat. No. 5,186,619. This application Mar. 19, 1992, Ser. No. 854,534

Claims priority, application Japan, Jun. 20, 1990, 2-159990; Mar. 25, 1991, 3-60350

Int. Cl.[5] B29C *67/20*

U.S. Cl. 264—41 **6 Claims**



1. A method for producing a filter for use in a fuel flow rate regulating mechanism comprising the steps of:

(a) providing a sheet of microcellular polymer material having fused upper and lower surfaces, each of the surfaces being fused to prevent fuel flow through said surfaces, said sheet also having formations of continuous air bubbles between the upper and lower surfaces;

(b) heat pressing in the direction of thickness to rearrange certain of the air bubbles redefining same as independent, non-connected air bubbles; and

(c) transversely punching from the sheet a filter element of prescribed configuration.

5,298,208

METHOD FOR MOLDING A PROTECTIVE HELMET

Kent V. Sibley, Keller, Tex., and Donald E. Ponzer, Imperial, Mo., assignors to Athletic Helmet, Inc., Knoxville, Tenn.

Filed Nov. 1, 1991, Ser. No. 785,348

Int. Cl.[5] B29C *67/22*

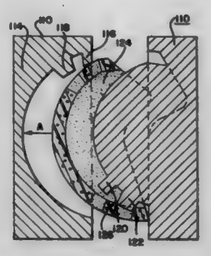
U.S. Cl. 264—51 **10 Claims**

1. A process for producing a one-piece element for use in a protective helmet, comprising the steps of:

introducing compressed, resilient polymeric beads into a pressurized mold having a cavity element, said cavity element having at least one first projection for forming a void extending through the one-piece element on a first lateral side and a core element, the core element having a generally hemispherical surface and an undercut surface, the undercut surface extending from at least part of the hemispherical surface and angled towards the center of the maximum perimeter of the hemispherical surface, said core element further having at least one second projection for forming a void extending through the one-piece element on a second opposite lateral side;

venting the mold the cause expansion of the beads;

applying steam to the polymeric beads thereby causing the polymeric beads to fuse to each other to form a one-piece element;



permitting the mold to cool;

separating the cavity element from the core element by retracting the cavity element a first distance such that the first projection engages the first lateral side of the one-piece element and removes the first lateral side of the one-piece element from the core element, continuing to retract the cavity element through a second distance such that the first lateral side of the one-piece element is disengaged from the first projection; and

retracting the cavity element fully.

5,298,209

METHOD OF FABRICATING HIGHLY COMPRESSED COVERING MATERIAL FROM A PLASTICS MATERIAL

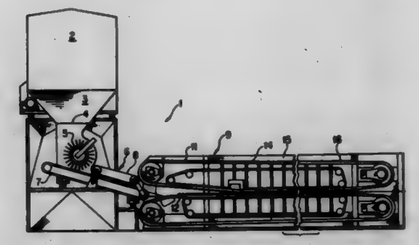
Pierluigi Pagani, Locarno, and Roberto Bianchi, Minusio, both of Switzerland, assignors to Forbo-Giubiasco SA, Giubiasco, Switzerland

Filed Sep. 23, 1991, Ser. No. 763,600

Claims priority, application Switzerland, Oct. 3, 1990, 03179/90

Int. Cl.[5] B29C *31/06, 43/48*

U.S. Cl. 264—105 **18 Claims**



1. A continuous method of fabricating highly compressed plastic floor covering material from a lumpy plastics material, comprising the steps of:

feeding the lumpy plastics material into a double-belt press by continuously and closedly feeding the lumpy plastics material into a region formed by lateral delimitations at the lower belt of the double-belt press;

subjecting the lumpy plastics material to continuous heating and to continuously increasing pressure thereby removing along a first section of the pressing stretch of the double-belt press the air existing in developing covering material under increasing pressure.

5,298,210

METHOD FOR SUPPRESSING BUBBLES IN CALENDERED ELASTOMER

Klaus Heckel, Gorxheimertal; Herbert Arnold, Morlenbach, and Gerhard Graab, Mannheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Dec. 13, 1990, Ser. No. 626,915

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1989, 3942505

Int. Cl.[5] B29C *43/24*

U.S. Cl. 264—112 **8 Claims**

1. A method for suppressing bubble formation in a calendered elastomer sheet, comprising the steps of: preparing a mixture of uncured elastomer including about 1 to about 4% wt (based on the weight of the mixture) of uniformly distributed, irregularly-shaped, cured elastomer particulate having a sieve size of about 0.7 mm +/—0.1 mm, forming said mixture into a calendered elastomer sheet, and vulcanizing said sheet to a specified thickness.

5,298,211

METHOD FOR PRODUCING THERMOPLASTIC ELASTOMER COMPOSITION

Tatsuo Hamanaka; Noboru Kosine; Tadashi Hikasa; Yuji Gotoh, and Keitaro Kojima, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited

Filed Dec. 3, 1992, Ser. No. 985,269

Claims priority, application Japan, Dec. 19, 1991, 3-355273

Int. Cl.[5] B29C *35/04*

U.S. Cl. 264—211.240 **6 Claims**

1. A method for producing a thermoplastic elastomer composition which comprises directly feeding a particulate olefinic copolymer rubber (A), wherein said particulate olefinic copolymer rubber (A) is a particulate oil-extended olefinic copolymer rubber containing 20–150 parts by weight of a mineral oil softener for 100 parts by weight of the olefinic copolymer rubber, having a particle shape index α defined below of 0.1–0.9, wherein the particulate olefinic copolymer rubber has a Mooney viscosity ML_{1+4} 10° C. of 80–350, and an olefinic plastic (B) to a continuous kneading extruder to carry out melt kneading, wherein the weight ratio (A)/(B) of the particulate olefinic copolymer rubber (A) and the olefinic plastic (B) is 20-95/80-5, and then feeding an organic peroxide into said extruder at a position downstream from the location where (A) and (B) are introduced into said extruder to carry out dynamic cross-linking, wherein the dynamic crosslinking is carried out at a maximum shear rate of 500/sec or higher:

$$\alpha = D_A/D_B$$

wherein D_A denotes bulk density of the particulate olefinic copolymer rubber (A) and D_B denotes bulk density of the olefinic plastic (B).

5,298,212

METHOD FOR FORMING A LAMINATED SUBSTRATE

William M. Stecker, Chapel Hill, N.C., assignor to Surface Technologies, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 642,062, Jan. 16, 1991. This application Mar. 18, 1992, Ser. No. 853,404

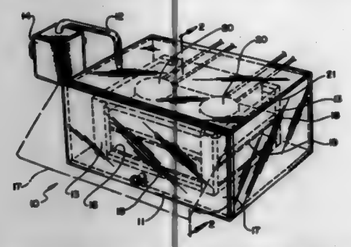
Int. Cl.[5] B29C *39/42*

U.S. Cl. 264—571 **4 Claims**

1. A method of forming a substrate having an imprinted surface on an outmold side of a thermosetting casting, the method, comprising the steps of:

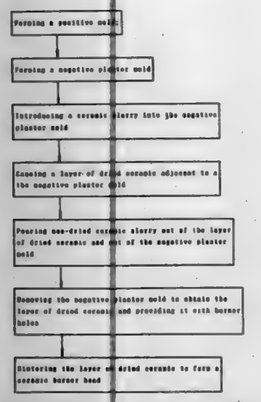
VOL 1160 ISS 5 MR 29 1994 UMI

(a) casting a first laminae having a first outmold surface by applying a curable thermosetting resin material onto a substrate or mold;
(b) providing a second laminae having an imprinted surface;
(c) positioning the first outmold surface and the imprinted surface of the second laminae in face-to-face registration with one another;
(d) generating substantial vacuum conditions in the area between said first outmold surface and said imprinted surface of the second laminae;
(e) pressing said first surface and said imprinted surface together under said substantial vacuum conditions of at



least about 25 inches of mercury, to maintain face-to-face registration thereof such that said first outmold surface and said imprinted surface are substantially stationary during curing, and to transfer the imprint of said imprinted surface to the first outmold surface, and to contain any volatile components of the curable thermosetting resin material of the first laminae while allowing said resin material to cure; and
(f) separating the first outmold surface and second laminae having said imprinted surface thereon, to provide a substrate comprising the first laminae having the imprinted surface of the second laminae.

5,298,213
METHOD OF MAKING A CERAMIC BURNER HEAD
Wan-Tsai Shyu, Nan-Tou Hsien, Taiwan, assignor to Yan-Fei Ju, Taichung Hsien, Taiwan
Filed May 5, 1993, Ser. No. 57,155
Claims priority, application Taiwan, Jan. 13, 1993, 82100/88
Int. Cl.[5] C04B *33/28*
U.S. Cl. 264—62 **2 Claims**

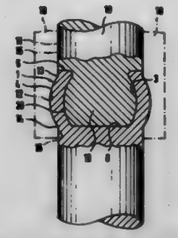


1. A method of making a ceramic burner head comprising the steps of:
(1) forming a positive mold that conforms to the outline of a burner head and forming a partition plate around said positive mold so as to divide said positive mold into an upper section and a lower section;
(2) forming a negative plaster mold which is wrapped around said positive mold and which is divided into two mold pieces by said partition plate, each of said mold pieces having a first mold cavity, said first mold cavities conforming respectively to the outlines of said upper and lower sections of the positive mold and forming cooperatively a second mold cavity with a surrounding wall confining said second mold cavity and which conforms to the outline of said burner head, one of said mold pieces having a channel which communicates said second mold cavity of said negative plaster mold to an exterior of the same;
(3) introducing a ceramic slurry into said second mold cavity of said negative plaster mold via said channel;
(4) allowing said ceramic slurry to contact said surrounding wall of said negative plaster mold in order to form a layer of dried ceramic with a predetermined thickness adjacent to said surrounding wall of said negative plaster mold and a hollow portion which is confined by said layer of dried ceramic, said hollow portion being filled with a non-dried ceramic slurry;
(5) pouring said non-dried ceramic slurry out of said hollow portion via said channel and out of said negative plaster mold to empty said hollow portion;
(6) removing said layer of dried ceramic from said negative plaster mold and providing said layer of dried ceramic with burner holes; and
(7) sintering said layer of dried ceramic to form a ceramic burner head.

5,298,214
METHOD OF DERIVING POLYSTYRENE AND POLYOLEFIN PLASTICS COMPOSITE FROM RECYCLED PLASTICS
Darrell R. Morrow, East Brunswick; Thomas J. Nosker, Somerset, both of N.J.; Kenneth E. VanNess, Lexington, Va., and Richard W. Renfree, Westfield, N.J., assignors to Rutgers, The State University, Piscataway, N.J.
Filed Oct. 30, 1990, Ser. No. 605,677
Int. Cl.[5] B29C *47/36*
U.S. Cl. 264—211.12 **20 Claims**

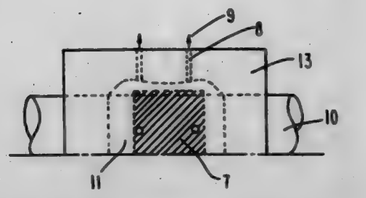
1. A method of making a plastics composite comprising the steps of:
a. making a mixed melt consisting essentially of a polystyrene having a storage modulus of at least about 10^6 Pascals and a polyolefin component incorporating one or more polyolefins, said polystyrene and said polyolefin component being in intimate admixture with one another;
b. forming said mixed melt so that said melt flows during said forming step; and
c. cooling said formed mixed melt to solidify the same and thereby form a solid product.

5,298,215
METHOD FOR INJECTION MOLDING OBJECTS OF AT LEAST TWO PARTS
Reinhard Krause, Brand bie Marktredwitz, Fed. Rep. of Germany, assignor to Hickenscher & Co. GmbH Werkzeugund Formenbau, Selb, Fed. Rep. of Germany
Filed Jan. 22, 1993, Ser. No. 7,428
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1992, 4202351
Int. Cl.[5] B29C *45/00*
U.S. Cl. 264—242 **6 Claims**
1. A method for the injection molding of objects of at least two independent parts such that the parts are rotatable relative to each other and are not detachable from each other, the method comprising the steps of:
molding a first one of said parts such that said first part includes a hollow, approximately cylindrical element defining a mold recess;
surrounding said hollow, approximately cylindrical element with a mold; and



injection molding a subsequently produced second one of said parts partially into the mold recess of the first part so as to outwardly deform said hollow, approximately cylindrical element in a rotationally symmetric manner by means of pressure from material injected into said mold recess that is used to form said second part, wherein said first and second parts are rotatable relative to each other and are not detachable from each other.

5,298,216
METHOD FOR MOLDING A TIRE TREAD BY INJECTION
Chun-Sik Kim; Jong-Dae Han, and Gyoung-Su Kim, all of Kwangju, Rep. of Korea, assignors to Kumho & Co., Inc., Seoul, Rep. of Korea
Filed Jun. 17, 1992, Ser. No. 899,680
Claims priority, application Rep. of Korea, Jun. 26, 1991, 10716/1991
Int. Cl.[5] B29C *45/14*; B29D *30/22*
U.S. Cl. 264—249 **15 Claims**



1. A method for forming only a tread element, to be used in assembly with other elements to form a green tire case, comprising the steps of:
providing an inflatable cylindrical drum which can be inflated to provide an outer surface of a predetermined first diameter "D" about a drum axis;
assembling a circular mold by moving first and second annular cylindrical mold sections toward each other and toward the outer surface and the axis of the cylindrical drum to form a cavity around the cylindrical drum, said first and second mold sections each having respective arcuate surfaces of said first diameter "D" to fit sealingly to said outer surface of the cylindrical drum to define said cavity therearound, each mold section also having respective injection holes to enable injection of a pressurized rubber mixture therethrough into said cavity and an inside surface of predetermined shape and size and communicating with said respective injection holes, said cavity thereby defining a molding space for molding a quantity of said pressurized injected rubber mixture to form a tread element of predetermined cross-section and length.

5,298,217
IMPACT ATTENUATION SAFETY CUSHION AND SYSTEM
Chester L. Mitchell, Covina, Calif., assignor to Mitchell Rubber Products, Inc., City of Industry, Calif.
Filed Feb. 28, 1992, Ser. No. 825,243
Int. Cl.[5] B29C *45/00*
U.S. Cl. 264—331.13 **35 Claims**
1. A method for forming anchoring bolt to secure a safety cushion that can be used to reduce the impact g-force to a headform to less than 200 g's from a dropheight of up to seven feet comprises the steps of:
1. molding a composition comprising:
(a) 90–110 parts by weight of a natural rubber;
(b) an effective amount of processing aid agent sufficient to assist processing of said composition under molding conditions in an amount of 2–20 parts by weight;
(c) an effective amount of a plasticizer to give the desired plasticizing efficiency and performance under molding condition in an amount of 0.5–10 parts by weight;
(d) about 10–100 parts by weight of a filler;
(e) an effective amount of an antioxidant to provide sufficient resistance to air oxidation in an amount of 1–10 parts by weight;
(f) an effective amount of an antiozonant to provide sufficient resistance to sunlight and weather in an amount of 1–10 parts by weight;
(g) an effective amount of an activator to provide processing and long term stability in an amount of 3–10 parts by weight;
(h) between 1–6 parts by weight of an accelerator;
(i) between 0.1–3 parts by weight of a vulcanizer; and
(j) between 0.01–3 parts by weight of a pre-vulcanized inhibitor;
2. heating said composition to a temperature of 270° to 360° F.
3. compressing said composition at a pressure of 300–2000 psi per cavity area; and
4. curing said composition for 5–60 minutes.

5,298,218
PALLADIUM BASED ALLOY FOR DENTAL APPLICATIONS
Werner Groll, Alzenau; Doris Hatheway, Hanau; Bernd Kempf, Freigericht, and Gernot Schlick, Bruchköbel, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Sep. 4, 1992, Ser. No. 939,477
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1991, 4129592; Aug. 11, 1992, 4226484
Int. Cl.[5] C22C *5/00*
U.S. Cl. 420—463 **11 Claims**
1. A palladium alloy free of copper, tantalum, tungsten and yttrium, for the preparation of dentures admixable with dental ceramics, said alloy comprising 66–85% by weight palladium, 1–20 % by weight gold, 0–4% by weight silver, 0–4% by weight of each of platinum, iron and/or cobalt; 0.5–7% by weight of each of gallium, tin and indium, whereby the amount of said gallium, tin and indium totals 9–14% by weight; 0–2% by weight of germanium and/or zinc, and 0–1% by weight of iridium, ruthenium and/or rhenium.

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5,298,219
HIGH PURITY GOLD BONDING WIRE FOR SEMICONDUCTOR DEVICE
Katsuyuki Toyofuku; Ichiro Nagamatsu; Shinji Shirakawa; Hiroto Iga; Takeshi Kujiraoka, and Kensei Murakami, all of Tokyo, Japan, assignors to Tanaka Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 31, 1991, Ser. No. 708,204
Claims priority, application Japan, Jun. 4, 1990, 2-146498; Jun. 4, 1990, 2-146499
Int. Cl.[5] C22C *5/02*
U.S. Cl. 420—507 **6 Claims**

1. A bonding wire for a semiconductor device, said bonding wire consisting essentially of:
high purity Au or Au alloy as a base metal; and
25–10000 atppm of low boiling point element I, said low boiling point element I having a boiling point lower than a melting point of the base metal, being soluble in Au, wherein said element I includes at least one member selected from the group consisting of Zn, Cd and Hg.

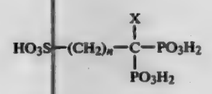
3. A bonding wire for a semiconductor device, said bonding wire consisting essentially of:
high purity Au or Au alloy as a base metal; and
5–500 atppm of low boiling point element II, said low boiling point element II having a boiling point lower than a melting point of the base metal, being insoluble in Au, wherein said element II includes at least one member selected from the group consisting of P, S, Se, Rb and Cs.

5,298,220
METHOD OF PREVENTING POLYMER SCALE FORMATION
Toshihide Shimizu, Urayasu; Ichiro Kaneko, Hazaki, and Mikio Watanabe, Kamisu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 391,199, Aug. 9, 1989, Pat. No. 5,196,164. This application Jan. 5, 1993, Ser. No. 703
Claims priority, application Japan, Aug. 10, 1988, 199119; Aug. 10, 1988, 199120
Int. Cl.[5] C08F *2/02*
U.S. Cl. 422—1 **21 Claims**

1. A method of preventing polymer scale formation in a polymerization vessel during the polymerization of a chlorine-free monomer or monomer mixture comprising at least one monomer selected from the group consisting of styrene, α-methylstyrene, acrylates and acrylonitrile, comprising:
coating an inner wall surface of a polymerization vessel with a water-based coating solution containing (A) a water-soluble anionic dye and (B) at least one member selected from the group consisting of water-insoluble cationic dyes and water-insoluble nitrogen containing organic compounds and having a pH of 7 or less; and
drying to form a coating.

5,298,221
INHIBITION OF SCALE FORMATION AND CORROSION BY SULFONATED ORGANOPHOSPHONATES
Charles Garvie Carter, Silver Spring, Md., assignor to W. R. Grace & Co. - Conn., New York, N.Y.
Division of Ser. No. 782,843, Oct. 24, 1991, Pat. No. 5,221,487. This application Mar. 17, 1993, Ser. No. 32,457
Int. Cl.[5] C23F *11/167*
U.S. Cl. 422—15 **12 Claims**

1. A method for inhibiting corrosion of a ferrous based metal in contact with an aqueous system which comprises adding to the aqueous system, in an amount effective to inhibit corrosion, a sulfonated organophosphonate compound having the formula:

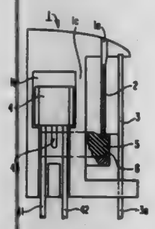


wherein n is an integer from 3 to 10; X is OH or NH_2; and water soluble salts thereof and wherein the sulfonated organophosphonate compound has a cloud point of at least 50 ppm as determined by a CA500 cloud point test.

5,298,222
PROCESS FOR DISINFECTING MUSCULOSKELETAL TISSUE AND TISSUES PREPARED THEREBY
Robert K. O'Leary, Spring Lake, N.J., assignor to Osteotech, Inc., Shrewsbury, N.J.
Filed Aug. 9, 1989, Ser. No. 391,233
Int. Cl.[5] A61L *2/18*
U.S. Cl. 422—28 **13 Claims**

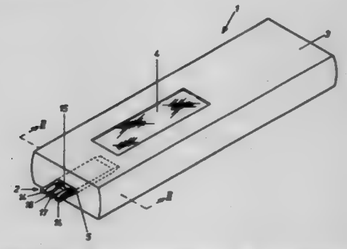
1. A process for treating bone with both an effective amount of at least one treating agent selected from the class consisting of antibiotics and disinfectants, and an agent to increase diffusion of the treating agent into the bone, said agent being selected from the group consisting of surfactants and permeation enhancers.

5,298,223
IONIZATION FIRE DETECTOR
Horst Berger, Kaarst; Michael Pastors, Neuss; Mario Pussin, Mönchengladbach; Heiner Politze, Neuss, and Georg Pollmann, Willich, all of Fed. Rep. of Germany, assignors to Esser Sicherheitstechnik GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 931,262, Aug. 17, 1992, abandoned. This application Aug. 10, 1993, Ser. No. 104,997
Int. Cl.[5] G08B *21/00*
U.S. Cl. 422—54 **6 Claims**



1. An ionization fire detector including a measuring chamber and a reference chamber having a common electrode connected to the gate terminal of a field-effect transistor, said ionization detector comprising:
an insulation carrier having a front side supporting said common electrode and a back side provided with a cavity which is separated from said electrode by a wall section and accommodates said field-effect transistor; and
a profile piece made of conductive caoutchouc and traversing a bore in said wall section for contacting with one end said gate terminal and with another end said common electrode for providing a connection between said common electrode and said gate terminal and allowing insulation of said field-effect transistor from said electrode, said profile piece being dimensioned to form a low pass filter comprised of a high resistance series resistor represented by said profile piece and unavoidable capacitances.

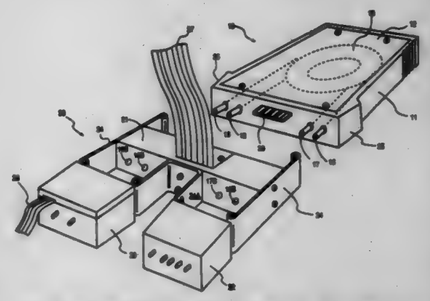
5,298,224
APPARATUS FOR DETERMINATION OF THE COAGULATION TIME OF A BLOOD SAMPLE
Thomas M. Plum, Skodsborg, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark
PCT No. PCT/DK88/00224, § 371 Date Sep. 5, 1990, § 102(e) Date Sep. 5, 1990, PCT Pub. No. WO89/06803, PCT Pub. Date Jul. 27, 1989
Continuation of Ser. No. 536,571, Sep. 5, 1990, abandoned. This PCT application Dec. 29, 1988, Ser. No. 957,643
Claims priority, application Denmark, Jan. 14, 1988, 157/88
Int. Cl.[5] G01N *21/00, 33/48*
U.S. Cl. 422—73 **5 Claims**



1. Apparatus for the measuring of a blood sample comprising:
a support plate piece having mounted thereon and secured thereto transparent glass or plastic capillary tubes for the taking up of a blood sample from a user, said support plate piece being formed so as to enable insertion into an opening on a separate housing means;
said support plate piece further being formed with an opening adjacent each capillary tube, with each opening being aligned substantially perpendicular to the axis of said capillary tubes piece so as to allow the passage of light through the support plate piece and said transparent capillary tube and
a separate housing means comprising a light source and light detector for each of said transparent capillary tubes, said light source and light detector being used to determine the light permeability of a blood sample in said transparent capillary tube, said light source being mounted opposite said light detector being mounted within said separate housing means so as to be aligned on opposite sides of said openings on said support plate piece upon the insertion of said support plate piece into an opening formed on said separate housing means, said light source and light detector further being connected to a computer whereby said computer calculates said blood sample's coagulation time based on the light permeability of said blood sample in said capillary tubes.

5,298,225
DETACHABLE COLUMN CARTRIDGE GAS CHROMATOGRAPH
William R. Higdon, Pleasanton, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 812,532, Dec. 23, 1991, Pat. No. 5,236,668. This application Jul. 30, 1993, Ser. No. 100,022
The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.
Int. Cl.[5] G01N *30/54*
U.S. Cl. 422—89 **11 Claims**

1. A gas chromatograph including a detachable column cartridge, said gas chromatograph comprising:
a base unit, said base unit comprising:
an injector and a detector; and
a first male connector and a second male connector projecting from said base unit, a first capillary tube extending between said first male connector and said injector and a second capillary tube extending between said second male connector and said detector;
a detachable column cartridge, said column cartridge comprising;
a housing including a first cavity and a second cavity, each of said first and second cavities opening to a face of said housing; and
a capillary flow channel, said capillary flow channel comprising a capillary column disposed in said housing, said capillary flow channel having a first end which terminates at a rear wall of said first cavity and a second end which terminates at a rear wall of said second cavity, each of said first and second cavities having an internal surface which is sized and shaped so as to provide a sliding fit with an external surface of a corresponding one of said first and second male connectors;

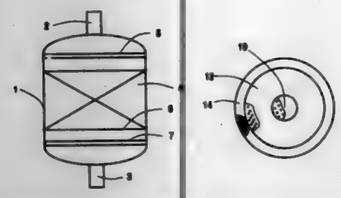


means for attaching said base unit and said column cartridge, said means allowing said column cartridge to be detached from said base unit;
each of said first and second male connectors projecting into a corresponding one of said first and second cavities when said base unit and said column cartridge are attached, said first capillary tube lining up with the first end of said capillary flow channel and said second capillary tube lining up with the second end of said capillary flow channel; and
biasing means for maintaining a pressure between the end surfaces of each of said first and second male connectors and the rear walls of said first and second cavities, respectively, when said base unit and said column cartridge are attached, the pressure being sufficient to prevent leakage of a gas flowing through said capillary flow channel and said first and second capillary tubes.

5,298,226
PERFORATED PLATE FLUID DISTRIBUTOR AND ITS ASSOCIATED FIXED BED VESSEL
Jeffert J. Nowobilski, Orchard Park, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Filed Oct. 2, 1992, Ser. No. 955,787
Int. Cl.[5] B01D *50/00*
U.S. Cl. 422—171 **11 Claims**

2. A vessel comprising:
a) an inlet means for introducing fluid;
b) at least one fixed bed of particles or packing materials; and
c) at least two perforated plate fluid distributors positioned transversely with respect to a longitudinal axis of said vessel, said at least two perforated plate fluid distributors each having top and bottom sides, with at least one perforated plate fluid distributor's bottom side facing said at least one fixed bed which is placed between said at least two perforated plate distributors and at least one perforated plate fluid distributor being located at about at least 1 inch above or below its closest fixed bed, wherein said at least two perforated plate fluid distributors each com-

prises interior, middle and outer sections, said interior section being an area surrounding the central point at which fluid from said inlet means is impinged, said middle section being an area at least partially surrounding said interior section, and said outer section being an area at least partially surrounding said middle section, wherein the perforation densities and/or the sizes of openings or perforations on said interior, middle and outer sections are varied such that said middle section has a smaller total



open or perforated area than the outer section but a larger total open area than the interior section, with the total open or perforated area of said interior section being 0% to 20% based on the total surface area on the top side of the interior section, the total open or perforated area of said middle section being about 2% to about 60% based on the total surface area on the top side of the middle section and the total open or perforated area of said outer section being about 4% to 100% based on the total surface area on the top side of said outer section.

5,298,227

PROCESS FOR SEPARATING VAPOROUS HEAVY METAL COMPOUNDS FROM A CARRIER GAS AND APPARATUS FOR CARRYING OUT THE PROCESS

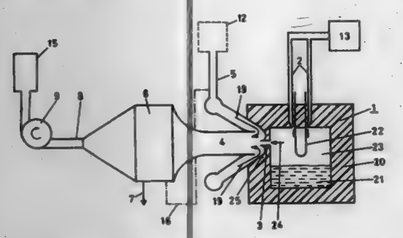
Michael Hirth, Mellingen; Joachim Jochum, Baden, both of Switzerland; Harald Jodeit, Waldshut, Fed. Rep. of Germany, and Christian Wieckert, Baden, Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Aug. 18, 1989, Ser. No. 395,502

Claims priority, application Switzerland, Sep. 5, 1988, 3311/88-5; Feb. 2, 1989, 359/89-3

Int. Cl.[5] C01F *1/00*; C01G *1/00*; B01D *51/00*

U.S. Cl. 423—1 **16 Claims**



1. A process for separating vaporous heavy metal compounds from a carrier gas and desubliming the vaporous heavy metal compounds, comprising the steps of:

discharging vaporous heavy metal compounds formed in at least one melting furnace together with a carrier gas as a gas/vapor mixture;

turbulently mixing the gas/vapor mixture with a cooling gas medium immediately after the discharging step, the turbulently mixing step being performed in at least one mixing section, the gas/vapor mixing being fed through a discharge conduit into the mixing section and the cooling gas medium being fed into the mixing section by a distribution conduit which surrounds the discharge conduit and distributes the cooling gas medium such that the cooling gas medium turbulently mixes with the gas/vapor mixture;

increasing flow velocity of the gas/vapor mixture flowing out of the melting furnace by reducing pressure in the mixing section;

forming particles in the mixing section by desublimation of the vaporous heavy metal compounds, the particles and residues of the gas/vapor mixture forming a fluid; and

passing the fluid through at least one filter which absorbs the particles.

5,298,228

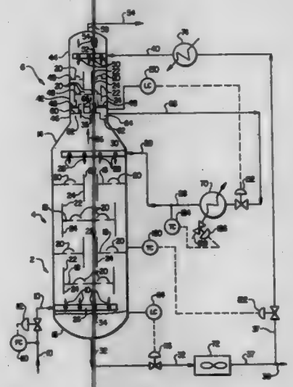
METHOD AND APPARATUS FOR TREATING HYDROCARBON GAS STREAMS CONTAMINATED WITH CARBONYL SULFIDE

S. Travis Palomares, Aliso Viejo, and Thomas G. Morrison, Placentia, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 8, 1992, Ser. No. 941,509

Int. Cl.[5] C01B *17/00*

U.S. Cl. 423—210 **27 Claims**



1. A method of reducing the concentration of carbonyl sulfide in a hydrocarbon gas containing carbonyl sulfide, said method comprising:

a. feeding said hydrocarbon gas containing carbonyl sulfide to a hydrolysis section to contact, under pressure, for the duration of a contact period, said hydrocarbon gas with hot aqueous absorbent at a reaction temperature to heat said hydrocarbon gas to form hydrolysis section effluent absorbent and hydrolysis section effluent gas containing carbon dioxide and hydrogen sulfide and having a lower concentration of carbonyl sulfide than said hydrocarbon gas;

b. withdrawing and cooling said hydrolysis section effluent absorbent to form a cool aqueous absorbent having a temperature less than said reaction temperature;

c. cooling said hydrolysis section effluent gas in a cooling section by contacting said hydrolysis section effluent gas with said cool aqueous absorbent to form warm aqueous absorbent and a cooling section effluent gas containing hydrogen sulfide and carbon dioxide;

d. heating said warm aqueous absorbent to form hot aqueous absorbent having a temperature of said reaction temperature;

e. feeding said hot aqueous absorbent to said hydrolysis section; and,

f. recovering said cooling section effluent gas as product.

5,298,229

PURIFICATION OF SULFUR HEXAFLUORIDE

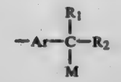
Steven J. Hardwick, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 688,772, Apr. 22, 1991, Pat. No. 5,252,259. This application Jul. 8, 1993, Ser. No. 88,060

Int. Cl.[5] B01D *53/34*

U.S. Cl. 423—210 **16 Claims**

1. A process for removing impurities from sulfur hexafluoride comprising (1) contacting sulfur hexafluoride with a macroreticulate polymer scavenger comprising the reaction product of (a) sulfur hexafluoride and (b) a metallated macroreticulate polymer having a plurality of pendant functional groups or mixtures of functional groups having the general formula:



where Ar is an aromatic hydrocarbon radical containing from one to three rings, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen and alkyl hydrocarbon radicals containing from 1 to 12 carbon atoms, and M is lithium, said metallated macroreticulate polymer having within its pores a compound selected from the group consisting of a 1–12 carbon alkyl compound of lithium, a hydride of lithium, and mixtures thereof and (2) separating purified sulfur hexafluoride from the composition.

5,298,230

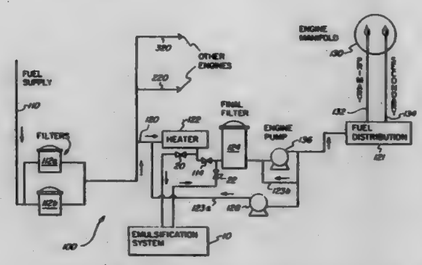
PROCESS FOR THE EFFICIENT CATALYTIC REDUCTION OF NITROGEN OXIDES

Steven C. Argabright, St. Charles, and Roy A. Johnson, Glen Ellyn, both of Ill., assignors to Nalco Fuel Tech, Naperville, Ill.

Filed May 1, 1992, Ser. No. 876,973

Int. Cl.[5] B01J *8/00*; C01B *21/00*

U.S. Cl. 423—239.1 **11 Claims**



1. A process for the reduction of nitrogen oxides in the effluent from the combustion of a gas turbine having a combustion zone, the process comprising:

a) forming an emulsion which comprises water and fuel oil, wherein said emulsion comprises about 5% to about 50% water in a water-in-fuel oil emulsion and about 50% to about 80% water in a fuel oil-in-water emulsion, and feeding said emulsion to the combustion zone of a gas turbine;

b) combusting said emulsion in the combustion zone to form an effluent; and

c) disposing a catalyst effective for the reduction of nitrogen oxides in an effluent such that the effluent flows thereover.

5,298,231

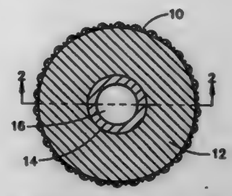
METHOD FOR ACHIEVING HIGH REACTION RATES IN SOLID-GAS REACTOR SYSTEMS

Uwe Rockenfeller, Boulder City, Nev., assignor to Rocky Research, Boulder City, Nev.

Continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned. This application Nov. 13, 1992, Ser. No. 975,973

Int. Cl.[5] B01D *53/04*, *53/14*

U.S. Cl. 423—299 **44 Claims**



1. A method of increasing reaction rates in a chemisorption reaction process in which a gaseous reactant is alternately adsorbed and desorbed on a complex compound formed by adsorbing said gaseous reactant on a solid reactant, said complex compound having a substantially increased volume as compared to unreacted solid reactant, said method comprising restricting the volumetric expansion and controlling the density of said complex compound during said reaction whereby the reaction rates at which said gaseous reactant are capable of being adsorbed and desorbed on said complex compound are increased as compared to reaction rates using a complex compound formed without restricting the volumetric expansion and controlling the density during said reaction, and carrying out said reaction process at said increased reaction rates using the complex compound formed by restricting the volumetric expansion and controlling the density in said reaction.

5,298,232

PROCESS FOR PREPARING SMALL PARTICLE SIZE SILVER CHLORIDE

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, Stamford, Conn.

Filed Oct. 29, 1990, Ser. No. 605,202

Int. Cl.[5] C01B *9/02*

U.S. Cl. 423—491 **1 Claim**

1. A process for making silver chloride particles having an average particle size of less than about 10 microns comprising:

(a) reacting in the absence of light silver metal particles having an average particle size of less than about 10 microns with a stoichiometrical molar excess of chlorine gas in chloroform for sufficient amount of time to convert substantially all of said silver metal particles to silver chloride particles;

(b) vacuum filtering in the absence of light said silver chloride particles from said chloroform after said reaction (a) has stopped; and

(c) vacuum drying in the absence of light said filtered silver chloride at a temperature from about 30° C. to about 60° C. for a sufficient time to remove substantially all residual chloroform.

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5,298,233

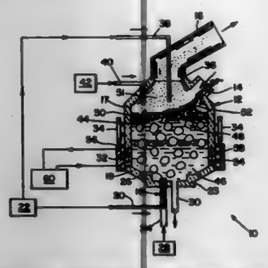
METHOD AND SYSTEM FOR OXIDIZING HYDROGEN- AND CARBON-CONTAINING FEED IN A MOLTEN BATH OF IMMISCIBLE METALS

Christopher J. Nagel, Wayland, Mass., assignor to Molten Metal Technology, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 827,373, Jan. 29, 1992, abandoned, which is a division of Ser. No. 557,561, Jul. 24, 1990, Pat. No. 5,177,304. This application Oct. 16, 1992, Ser. No. 963,306

Int. Cl.[5] C01B *3/02, 5/00*

U.S. Cl. 423—580.1 20 Claims



1. A method for converting a hydrogen component in a hydrogen- and carbon-containing feed to dissolved hydrogen and for oxidizing the dissolved hydrogen to form water, comprising the steps of:

a) introducing the feed to a molten bath system having,

1) a first molten metal phase for converting hydrogen and carbon components in the feed to dissolved hydrogen and dissolved carbon, said first molten metal phase comprising a first metal having a free energy of oxidation, at the molten bath system conditions, which is less than that of the oxidation of hydrogen to form water and greater than that of the oxidation of carbon to form a carbon oxide, and

2) a second molten metal phase for oxidizing the dissolved hydrogen formed in the first molten metal phase to form water, the second molten metal phase being substantially immiscible in the first molten metal phase and in contact with the first molten metal phase, the second molten metal phase being distributed, relative to the first molten metal phase, to cause a substantial portion of the dissolved hydrogen formed in the first molten metal phase to migrate to the second molten metal phase, said second molten metal phase comprising a second metal having a free energy of oxidation, at the molten bath system conditions, which is greater than that of the oxidation of hydrogen to form water, and in which the solubility of carbon is lower than in the first molten metal phase,

wherein the first molten metal phase causes a greater amount of the carbon component in the feed to be converted to dissolved carbon in the molten bath system than in a molten bath of about equal volume to that of the molten bath system, but which includes only the second molten metal phase, said conversion of the carbon in the first molten metal phase increasing the rate of conversion of hydrogen in the molten bath system to dissolved hydrogen; and

b) introducing an oxidant to the first molten metal phase and the second molten metal phase of the molten bath system at a rate which is sufficient to cause the dissolved carbon in the first molten metal phase to be oxidized to form a carbon oxide gas, whereby at least a substantial portion of the carbon component in subsequent feed converts to dissolved carbon in the first molten metal phase, and which rate is also sufficient to cause dissolved hydrogen in the second molten metal phase to oxidize and form water, whereby dissolved hydrogen in the first molten metal phase will migrate to the second molten metal phase for subsequent oxidation, thereby converting hydrogen in the hydrogen- and carbon-containing feed to dissolved hydrogen and oxidizing the dissolved hydrogen to form water.

19. An apparatus for converting a hydrogen component in a hydrogen- and carbon-containing feed to dissolved hydrogen and for oxidizing the dissolved hydrogen to form water, comprising:

a) a vessel;

b) a molten bath system disposed in the vessel having,

1) a first molten metal phase for converting hydrogen and carbon components in the feed to dissolved hydrogen and dissolved carbon, said first molten metal phase comprising a first metal having a free energy of oxidation, at the molten bath system conditions, which is less than that of the oxidation of hydrogen to form water and greater than that of oxidation of carbon to form a carbon oxide, and

2) a second molten metal phase for oxidizing the dissolved hydrogen formed in the first molten metal phase to form water, the second molten metal phase being substantially immiscible in the first molten metal phase and in contact with the first molten metal phase, the second molten metal phase being distributed, relative to the first molten metal phase, to cause a substantial portion of the dissolved hydrogen formed in the first molten metal phase to migrate to the second molten metal phase, said second molten metal phase comprising a second metal having a free energy of oxidation, at the molten bath system conditions, greater than that of the oxidation of hydrogen to form water, and in which the solubility of carbon is lower than in the first molten metal phase,

whereby the first molten metal phase causes a greater amount of the carbon component in the feed to be converted to dissolved carbon in the molten bath system than in a molten bath of about equal volume to that of the molten bath system, but which includes only the second molten metal phase, said conversion of the carbon in the first molten metal phase increasing the rate of conversion of hydrogen in the molten bath system to dissolved hydrogen; and

c) means for introducing an oxidant to the first molten metal phase and the second molten metal phase of the molten bath system at a rate which is sufficient to cause the carbon in the first molten metal phase to be oxidized to form a carbon oxide gas, whereby at least a substantial portion of the carbon component in subsequent feed converts to dissolved carbon in the first molten metal phase, and which rate is also sufficient to cause hydrogen in the second molten metal phase to oxidize and form water, whereby hydrogen in the first molten metal phase will migrate to the second molten metal phase for subsequent oxidation, thereby converting the hydrogen component in the hydrogen- and carbon-containing feed to dissolved hydrogen and oxidizing the hydrogen to form water; and

d) means for removing water formed in the molten bath system from the vessel.

5,298,234

ALUMINA-SILICA RESIN ADDITIVE

Tadahisa Nakazawa, Tokyo; Masahide Ogawa, Shibata; Kiyoshi Abe, Shibata, and Kazuhiko Suzuki, Shibata, all of Japan, assignors to Mizusawa Industrial Chemicals, Ltd., Tokyo, Japan

Continuation of Ser. No. 938,843, Dec. 8, 1986, abandoned. This application Sep. 14, 1988, Ser. No. 246,018

Claims priority, application Japan, Dec. 12, 1985, 60-275007; Aug. 29, 1986, 61-201824

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—714 9 Claims

1. A process for the preparation of an alumina-silica resin additive, which comprises preparing an aqueous slurry of a synthetic zeolite consisting of fine cubic particles having an Al_2O_3/SiO_2 molar ratio of from 1/1.8 to 1/5.0 and an average primary particle size smaller than 0.6 μm, contacting the synthetic zeolite in the aqueous slurry with an acid in an aqueous medium containing an acid and a water-soluble alkali metal salt



in an amount of at least 1.0 mole % based on the acid under such a buffer condition that local reduction of the pH value is avoided and under such a condition that the final pH value is not lower than 5, thereby to effect an acid treatment of the synthetic zeolite, and calcining the acid-treated zeolite at a temperature higher than 300° C.

5,298,235

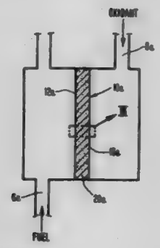
ELECTROCHEMICAL DEVICES BASED ON SINGLE-COMPONENT SOLID OXIDE BODIES

Wayne Worrell, Narberth, and Peter K. Davies, Yardley, both of Pa., assignors to The Trustees of The University Of Pennsylvania, Philadelphia, Pa.

Filed Dec. 16, 1991, Ser. No. 808,432

Int. Cl.[5] H01M *8/10*

U.S. Cl. 429—33 39 Claims



1. A fuel cell, comprising:

a single-component body having first and second non-adjacent sides, comprising:

an anodic region formed at said first side;

a cathodic region formed at said second side; and

an oxygen ion-conducting region substantially free from anodic or cathodic character disposed between said anodic and cathodic regions;

means for contacting fuel with said first side; and

means for contacting oxidant with said second side.

5,298,236

LIQUID ANTIPERSPIRANT COMPOSITION

Thomas V. Orr, and Patricia J. Newcomer, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 611,231, Nov. 8, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 28,754

Int. Cl.[5] A61K *7/34, 7/36, 7/38, 9/12*

U.S. Cl. 424—47 20 Claims

1. A liquid antiperspirant composition with reduced incidence of skin irritation comprising:

(a) from about 10% to about 70%, by weight, of an antiperspirant active material;

(b) from about 1% to about 15%, by weight, of a suspension agent component;

(c) from 0% to about 15%, by weight, of a volatile silicone fluid; and

(d) from about 25% to about 75%, by weight, of a non-volatile silicone fluid having an average viscosity of from about 10 centistokes to about 50 centistokes at 25° C.

5,298,237

GEL COMPOSITION FOR REDUCTION OF GINGIVAL INFLAMMATION AND RETARDATION OF DENTAL PLAQUE

Daniel H. Fine, Leonia, N.J., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jan. 24, 1992, Ser. No. 826,482

Int. Cl.[5] A61K *7/16, 31/375, 33/34*

U.S. Cl. 424—49 11 Claims

1. A gel composition useful for the prevention or treatment of gingivitis, periodontal disease, and dental plaque consisting essentially of (a) a gel carrier, and (b) ascorbic acid and copper sulfate, and essentially no oxidizing agent, in concentrations sufficient for the prevention or treatment of gingivitis, periodontal disease, and dental plaque, with the proviso that the gel composition comprises both ascorbic acid and copper sulfate no earlier than just prior to the application thereof said ascorbic acid and copper sulfate being kept in separate gel carriers until time of application to prevent premature reaction of the ascorbic acid and copper sulfate, the two gel carriers being mixed just before application, each gel carrier containing a buffer effective to maintain a pH of from about 5.8 to about 7.0.

5,298,238

LIQUID ORAL COMPOSITIONS COMPRISING DETERPENATED AND FRACTIONATED FLAVOR OILS

Mamoun M. Hussein, Mountain Lakes; Shirley A. Barcelon, and Edward J. Carlin, Secaucus, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 7, 1991, Ser. No. 790,620

Int. Cl.[5] A61K *7/16, 7/26*

U.S. Cl. 424—49 5 Claims

1. A liquid oral composition wherein all of the components are in liquid form comprising a liquid carrier and a peppermint oil comprising about 0.11% or less L-Limonene; about 0.37% or less 1,8-cineole; about 0.08% or less cis-ocimene; about 0.2% or less G-terpinene; about 0.14% or less terpinolene; about 0.14% or less 3-octanol; about 0.11% or less 1-octen-3-ol; about 10.8 to 23.1% L-methone; about 0.5 to 2% menthofuran; about 5.15 to 7.54% menthyl acetate; about 5 to 6.48% neo-menthol; about 48 to 65% L-menthol; and about 0.7% or less germacrene-D.

5,298,239

MUTATIONS RENDERING PLATELET GLYCOPROTEIN IB α LESS REACTIVE

Jonathan L. Miller; David Cunningham; Vicki A. Lyle, all of Syracuse, and Clara N. Finch, Webster, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 770,968, Oct. 7, 1991. This application Jan. 15, 1992, Ser. No. 821,717

Int. Cl.[5] C12N *15/12;* A61K *37/547, 37/02*

U.S. Cl. 424—94.63 8 Claims

1. A purified polypeptide encoded by a DNA sequence, said DNA sequence comprising DNA encoding naturally-occurring wild-type platelet glycoprotein Ib alpha having a mutation which renders said polypeptide encoded by said DNA less reactive with Von Willebrand factor, said mutation comprising an amino acid substitution for a leucine residue at amino acid 57.

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5,298,240

HAIR CARE COMPOSITION IN THE FORM OF A MICROEMULSION

Friedel Schröder, Darmstadt, and Günther Lang, Reinheim, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 791,984, Nov. 14, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,341

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039063

Int. Cl.[5] A61K *7/075*

U.S. Cl. 424—70 4 Claims

1. A hair care composition in the form of a microemulsion consisting essentially of:

a) from 5 to 20 percent by weight of a nonionic surfactant selected from the group consisting of C_{12} to C_{18} fatty alcohols ethoxylated from 1 to 6 ethylene oxide groups; polyglyceryl ethers of saturated and unsaturated C_{12} to C_{18} fatty acids with 1 to 5 glyceryl groups; glycerides of C_{12} to C_{18} fatty acids with 1 to 5 glyceryl groups; Sorbitan fatty acid esters of C_{12} to C_{18} fatty acids; C_{12} to C_{18} fatty acids glycosides with 1 to 3 sugar groups; and mixtures thereof;

b) from 11 to 19 percent by weight of at least one oil selected from the group consisting of paraffin oils, straight chain and branched chain fatty acid esters, silicone oil, squalene and vegetable oils;

c) from 1.5 to 6 percent by weight of at least one cationic surfactant selected from the group consisting of benzyldialkylammonium chlorides, benzyldialkylammonium bromides; alkyltrimethylammonium salts; alkyldimethylhydroxyethylammonium chlorides, alkyldimethylhydroxyethylammonium bromides; dialkyldimethylammonium chlorides, dialkyldimethylammonium bromides; alkylamidethialtrimethylammonium ether sulfates; alkylpyridinium salts; imidazoline compounds and amine oxides; and

d) from 60 to 80 percent by weight water, and not containing one of said nonionic surfactants with an HLB-value of greater than 12.

5,298,241

SPIROGYRA CONTROLLING AND DEODORANT COMPOSITION

Hisashi Obayashi, Shiga; Yasuhiro Matsumura, Osaka, and Akitoshi Mochida, Chiba, all of Japan, assignors to Takeda Garden Product Co., Ltd., Tokyo, Japan

Division of Ser. No. 556,182, Jul. 23, 1990, Pat. No. 5,149,534. This application Apr. 2, 1992, Ser. No. 862,175

Claims priority, application Japan, Jul. 24, 1989, 192088/1989

Int. Cl.[5] A61L *9/00, 2/16;* A61K *35/78*

U.S. Cl. 424—76.1 4 Claims

1. A filter for preventing occurrence of spirogyra and bad odor comprising the cortex of Japanese cedar, Japanese cypress, or a mixture thereof in a feathery form or in a milled form wherein the feathery or milled form of the cortex is molded into a plate.

5,298,242

POLYFLUOROALKYLTHIOPOLY(E-THYLIMIDAZOLIUM) COMPOUNDS, PREPARATION PROCESS AND THEIR USE AS BIOCIDAL AGENTS

Guy Vanierberghe, Claye-Souilly; Eric Bolleau, Saint-Maurice; Claude Mahieu, and Henri Sebag, both of Paris, all of France, assignors to L'Oreal, Paris, France

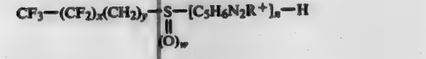
Filed Jun. 23, 1992, Ser. No. 903,023

Claims priority, application France, Jun. 24, 1991, 91 07734

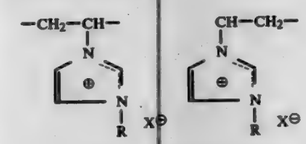
Int. Cl.[5] A61K *31/74;* C07D *233/00*

U.S. Cl. 424—78.36 6 Claims

1. A composition for the care or the treatment of human keratinous materials, in particular the hair, the skin, the nails or the mucosa, which contains, in a physiologically acceptable medium an effective amount of a compound of formula (I)



w is 0, 1 or 2;
x is between 2 and 10;
y is between 0 and 5;
R denotes a methyl, ethyl, hydroxyethyl or benzyl radical;
$X^{\ominus}$ denotes an inorganic or organic anion; and
n is an integer or decimal number between 1 and 15;
the group representing the following structures, taken as a mixture or individually:



as a preservative or biocidal agent.

5,298,243

COLONY STIMULATING FACTOR-GELATIN CONJUGATE

Yoshito Ikada; Yasuhiko Tabata, both of Uji, and Hiroyasu Suzuki, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1989, Ser. No. 422,701

Claims priority, application Japan, Oct. 20, 1988, 63-262787; Jan. 24, 1989, 1-13299

Int. Cl.[5] C07K *15/00, 3/02*

U.S. Cl. 424—85.1 4 Claims

1. A conjugate comprising CSF and gelatin, wherein the conjugate is a water-soluble CSF-gelatin conjugate.

5,298,244

ASSEMBLED VIRAL PARTICLES AND THEIR USE IN A VACCINE TO ROTAVIRAL DISEASE

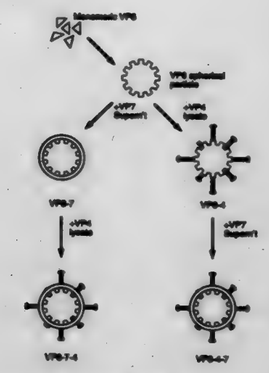
Mark J. Redmond; Mohammed K. Ijaz, and Michael D. Parker, all of Saskatoon, Canada, assignors to University of Saskatchewan, Saskatoon, Canada

Filed Oct. 25, 1990, Ser. No. 603,133

Int. Cl.[5] A61K *39/15;* C07K *13/00;* C12N *15/46*

U.S. Cl. 424—89 8 Claims

1. A viral particle assembly capable of eliciting a protective immunological response in a vertebrate subject, said viral particle assembly consisting of:



(a) an inner capsid protein, VP6; and
(b) outer capsid proteins VP4 and VP7.

5,298,245

BACILLUS THURINGIENSIS ISOLATES ACTIVE AGAINST DIPTERAN PESTS

Jewel M. Payne; Kendrick A. Uyeda, both of San Diego; Christine J. Stalder, La Mesa, and Tracy E. Michaels, Escondido, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 708,266, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,399, Jan. 29, 1991, abandoned. This application Aug. 21, 1991, Ser. No. 746,751

Int. Cl.[5] A01N *63/00;* A61K *37/00;* C12N *1/20, 1/12*

U.S. Cl. 424—936 19 Claims

1. A process for controlling dipterm insect pests which comprises contacting said insect pests with an insect-controlling effective amount of a microbe selected from the group consisting of *Bacillus thuringiensis* PS92J, having all the identifying characteristics of deposit NRRL B-18747; *Bacillus thuringiensis* PS196S1, having all the identifying characteristics of deposite NRRL B-18748; *Bacillus thuringiensis* PS201L1, having all the identifying characteristics of deposit NRRL B-18749; and *Bacillus thuringiensis* PS201T6, having all the identifying characteristics of deposit NRRL B-18750.

5,298,246

STABLE PHARMACEUTICAL COMPOSITION AND METHOD FOR ITS PRODUCTION

Yano Yoshiaki, Kakogawa; Masuda Shigeki, Takasago, and Takayoshi Hidaka, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 31, 1991, Ser. No. 815,189

Int. Cl.[5] A61K *37/48, 37/22, 37/00, 37/12*

U.S. Cl. 424—94.1 8 Claims

1. A method for producing a pharmaceutical composition comprising the steps of emulsifying a pharmaceutically effective amount of a lipophilic drug with a fat globule membrane of mammalian milk and centrifuging it under two different sets of centrifugal conditions so as to obtain a desired grain size fraction of about 1–5 μm by fractionation; one set of centrifuging conditions being about 1500 to 2500×g for about 60 minutes or more, and the other set of said centrifuging conditions being about 50 to 150× g for about 10 minutes or more.

5,298,247

NEEM OIL FATTY ACID DISTILLATION RESIDUE BASED PESTICIDE

Nadir B. Godrej; Keki B. Mistry, and Brahmanand A. Vyas, all of Bombay, India, assignors to Godrej Soaps Limited, Bombay, India

Filed May 7, 1992, Ser. No. 879,606

Int. Cl.[5] A61K *35/78, 31/35*

U.S. Cl. 424—195.1 11 Claims

1. A process for the preparation of neem oil fatty acid distillation residue based pesticide consisting of:

i) saponifying neem oil fatty acid distillation reside with an aqueous alkali at 85°–140° C. and atmospheric pressure, the alkali in water having a concentration of 10 to 50% by weight and the molar ratio of the residue and alkali being 1:1.05 to 1:1.2;

ii) drying the resulting soap cake at 100°–100° C.;

iii) allowing the resulting soap cake to cool down to room temperature;

iv) pulverizing the soap cake to produce fines;

v) fortifying the resulting fines by mixing with 5 to 10% by weight of neem oil; and

vi) allowing the fines to dry at room temperature and obtain the pesticide.

5,298,248

METHOD FOR CONTINUOUS LIBERATION OF ACTIVE CONSTITUENTS INTO WATER

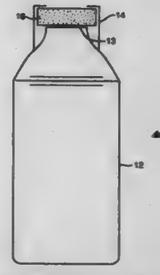
Porte Hugues, Caluire, and Torres Ghislaine, Lyons, both of France, assignors to Rhone-Poulenc Sante, Antony, France

Division of Ser. No. 580,455, Sep. 11, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 835,079

Claims priority, application France, Sep. 11, 1989, 89 11823

Int. Cl.[5] A61K *9/00*

U.S. Cl. 424—400 5 Claims



1. A method for continuous and regular liberation of a vitamin into a well or borehole, the method comprising the steps of:

introducing a vitamin into a receptacle having an aperture and a body portion, the body portion being formed of a material impermeable to water and to the vitamin;

closing the aperture with a membrane that is permeable to the vitamin and to water; and

immersing the receptacle in a well or borehole to permit diffusion of the vitamin through the membrane into the well or borehole over at least a month.

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5,298,249
COMPOSITIONS COMPRISING N-HYDROXYQUINAZOLINONE AND 2-N-HYDROXYTHIOUREA BENZOATE COMPOUNDS AS BIOCIDES

Rahim Hani, Cheshire; Phillip T. Berkowitz, Woodbridge, and John L. Peterson, Milford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

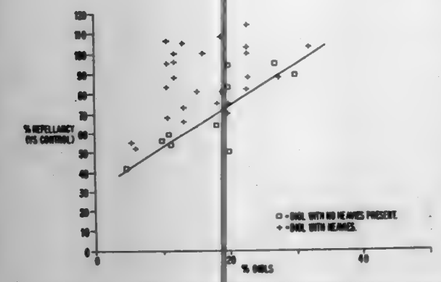
Filed Oct. 4, 1991, Ser. No. 770,834
Int. Cl.[5] A01N *25/00, 43/54, 47/28;* C07D *239/95*
U.S. Cl. 424—405 1 Claim

1. A paint composition comprising a resin, a pigment and a biocide, said resin being selected from the group consisting of vinyl, alkyl, epoxy, acrylic, polyurethane and polyester resins, and combinations thereof, and said biocide being present in an antimicrobial effective amount and being selected from the group consisting of 2-N-hydroxythiourea benzoates and 1-hydroxy-2-thio-quinazolinones selected from the group consisting of 1-hydroxy-3-methyl-2-thio-1,2-dihydroquinazoline-4(3H)-one and sodium salts and zinc salts thereof, methyl 2-[N[1]-hydroxy-N[3]-methylthioureido]-benzoate, 1-methyloxy-3-methyl-2-thioxo-1,2-dihydroquinazoline-4(3H)-one, 1-acetoyloxy-3-methyl-2-thioxo-1,2-dihydroquinazoline-4(3H)-one, 1-carbonic acid-3-methyl-2-thioxo-1,2-dihydroquinazoline-4(3H)-one, 1-N-methylcarbamate-3-methyl-2-thio-1,2-dihydroquinazoline-4(3H)-one, and combinations thereof.

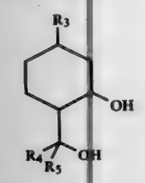
5,298,250
INSECT REPELLENT

Bryan D. Lett, Bilgola Plateau, and Harold S. Kraus, Dural, both of Australia, assignors to R & C Products Pty Ltd., Ermington, Australia

PCT No. PCT/AU91/00343, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/02136, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 5, 1991, Ser. No. 983,572
Claims priority, application Australia, Aug. 6, 1990, PK 1581
Int. Cl.[5] A01N *31/06*
U.S. Cl. 424—405 13 Claims

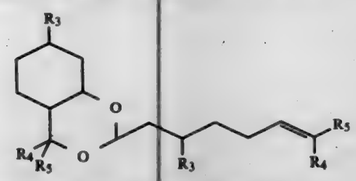


1. An insect-repellent composition comprising one or more insect repellents of the formula X:



X

wherein R_3 is hydrogen or an alkyl group containing 1–4 carbon atoms; and R_4 and R_5 are the same or different and are alkyl groups containing 1–4 carbon atoms; and a synergistic amount of at least one compound of the formula Z:



Z

wherein R_3, R_4 and R_5 are as defined above,
characterized in that the composition is substantially free of insect repellents having a boiling point of less than about 80° C. at a pressure of 4 mm Hg.

5,298,251
FUNGICIDE COMPOSITIONS DERIVED FROM NEEM OIL AND NEEM WAX FRACTIONS

James C. Locke, Silver Spring; James F. Walter, Ashton, and Hiram G. Larew, III, Hyattsville, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 959,860, Oct. 13, 1992, which is a continuation of Ser. No. 949,180, Sep. 21, 1992, which is a continuation-in-part of Ser. No. 866,968, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 818,748, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 637,027, Jan. 3, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 94,287
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—405 10 Claims

1. A method of preparing fungicides derived from neem seeds or expressed neem oil, which fungicides are substantially free of azadirachtin, comprising
(a) extracting neem seeds with a non-polar, hydrophobic solvent to obtain a neem oil extract;
(b) removing the solvent from the neem oil extract to obtain a neem oil;
(c) cooling the neem oil to a temperature sufficient to partially solidify and precipitate a neem wax having fungicidal activity;
(d) separating and recovering the neem wax from the neem oil to obtain a clarified neem oil having fungicidal activity; and
(e) recovering the clarified neem oil.

5,298,252
ANTIMICROBIAL COMPOSITION HAVING RESISTANCE TO HEAT AND WEATHERS

Zenji Hagiwara, Shiga, and Masao Okubo, Hyogo, both of Japan, assignors to Hagiwara Research Corp., Kusatsu and Japan Electronic Materials Corporation, Amagasaki, both of Japan

Filed Aug. 29, 1991, Ser. No. 751,969
Claims priority, application Japan, Mar. 22, 1991, 3-058956
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] A01N *25/08;* B32B *5/16*
U.S. Cl. 424—409 5 Claims

1. An antimicrobial composition composed of silica gel having a metal aluminosilicate layer on its surface area characterized in that said silica gel has a pore volume of at least 0.3 cm^3/g and a specific surface area of at least 100 m^3/g, and in that said layer is stably bonded on the surface of the matrix of silica gel and on the active surfaces of the pores in the silica gel, wherein said metal aluminosilicate coat layer is characterized in that antimicrobial metal completely or partially substitutes for the ion-exchangeable metal (M) in an aluminosilicate solid coating layer represented by the formula

$$xM_{2/3}O.Al_2O_3.ySiO_2.ZH_2O$$

where x and y represent the numbers of molecules of the metal oxide and silicon dioxide, respectively; M is an ion-exchangeable metal; n is the atomic valence of M; and z is the number of molecules of water, said ion-exchangeable metal having been selected from the group consisting of lithium, sodium, potassium and mixtures thereof in an amount of up to 2.57 mmol per gram of said composition on an anhydrous basis and wherein said antimicrobial metal is selected from the group consisting of silver, silver and copper, silver and zinc, silver and mercury, silver and tin, silver and lead, silver and bismuth, silver and cadmium, silver and chromium, and mixtures thereof; and
wherein said composition is stable at less than 500° C. and does not show deterioration of antimicrobial ability in a temperature range of 100° C.–500° C.

5,298,253
COPPER HYDROXIDE DRY FLOWABLE BACTERICIDE/FUNGICIDE AND METHOD OF MAKING AND USING SAME

James H. LeFlies, Valdosta; Evelyn J. Taylor, Hahira, and Mark A. Crawford, Valdosta, all of Ga., assignors to Griffin Corporation, Valdosta, Ga.

Continuation of Ser. No. 591,288, Oct. 1, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,148
Int. Cl.[5] A01N *59/20;* A61K *31/78*
U.S. Cl. 424—409 30 Claims

1. A method of producing a dry flowable bactericide/fungicide for agricultural uses which is substantially nonphytotoxic and which has improved biological activity and rainfastness comprising the steps of:
forming an aqueous slurry by combining with water:
between approximately 5% and 20% by weight (based on the total weight of all dry ingredients) of a first dispersant consisting of partially neutralized polyacrylic acid having a pH of between approximately 5 and 10 and an average molecular weight of between approximately 1,000 and 10,000 and also containing between 0 and 20 percent of lignin sulfonate;
between approximately 0% and 5% by weight (based on the total weight of all dry ingredients) of a second dispersant for bentonite clay;
between approximately 40% and 80% by weight (based on the total weight of all dry ingredients) phosphate stabilized cupric hydroxide; and
between approximately 6% and 30% by weight (based on the total weight of all dry ingredients) bentonite clay;
mixing said slurry to form a substantially homogeneous slurry; and
drying said slurry to thereby form a free flowing granular material having less than 10% moisture, said granular material being dispersible in aqueous medium.

5,298,254
SHAPED, SWOLLEN DEMINERALIZED BONE AND ITS USE IN BONE REPAIR

Annamarie B. Prewett, Little Silver, N.J.; Roger C. Stikeleather, Doylestown, Pa.; Simon Bogdansky, Marlboro, and Robert K. O'Leary, Spring Lake, both of N.J., assignors to Osteotech, Inc., Shrewsbury, N.J.

Continuation-in-part of Ser. No. 573,458, Aug. 27, 1990, which is a continuation-in-part of Ser. No. 410,596, Sep. 21, 1989, Pat. No. 5,073,373. This application Dec. 17, 1991, Ser. No. 809,580
Int. Cl.[5] A61K *35/32*
U.S. Cl. 424—422 30 Claims

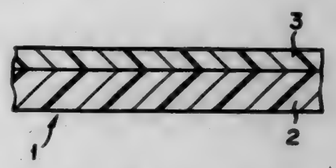
1. A shaped piece of swollen demineralized bone having substantially regular geometry and/or greater than 12 mm. in size along at least one dimension thereof, the bone being combined with a biocompatible swelling agent,
wherein the swelling agent is selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, 1,2-propanediol, trimethylolethane, trimethylolpropane, erythritol, pentaerythritol, polyethylene glycols, xylitol, sorbitol, mannitol, dulcitol, arabinose, xylose, ribose, adonitol, arabitol, rhamose, inositol, fructose, galactose, glucose, mannose, sorbose, sucrose, maltose, lactose, maltitol, lactitol, stachyose, maltopentaose, cyclomaltohexaose, carrageenan, agar, alginic acid, guar gum, gum tragacanth, locust bean gum, gum arabic, xanthan gum, amylose and mixtures thereof.



5,298,255
ANTITHROMBIC MEDICAL MATERIAL, ARTIFICIAL INTERNAL ORGAN, AND METHOD FOR PRODUCTION OF ANTITHROMBIC MEDICAL MATERIAL

Jiro Sawamoto; Yoshihito Takano, and Yuzo Ezaki, all of Fuji, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 427,643, Oct. 27, 1989, abandoned. This application Aug. 14, 1991, Ser. No. 746,803
Claims priority, application Japan, Oct. 28, 1988, 63-270788; May 22, 1989, 1-129826; Sep. 26, 1989, 1-249752
Int. Cl.[5] A61K *37/547;* A61F *2/00, 2/06*
U.S. Cl. 424—423 7 Claims

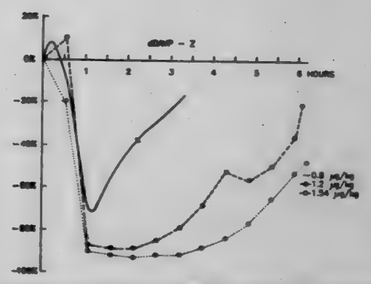


1. An antithrombic medical material which comprises a polymeric substrate, and a fibrin layer, the surface of which has been hydrolyzed by plasmin and is on the surface of said substrate.

5,298,256
DESMOPRESSIN BUCCAL PATCH COMPOSITION

Ian R. Flockhart, Cottingham, United Kingdom, and Joseph H. Cort, Bad Krozingen, Fed. Rep. of Germany, assignors to Corint, Ltd., Geneva, Switzerland

Filed Apr. 28, 1992, Ser. No. 875,072
Int. Cl.[5] A61K *9/26*
U.S. Cl. 424—435 14 Claims



1. A pharmaceutical composition containing desmopressin

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as at least one of the active ingredients thereof, said composition being in the form of a buccal patch wherein the desmopressin is contained in an erodible matrix and of a configuration and size a to fit into the buccal cavity and adhere firmly to the mouth mucosa so as to disperse said desmopressin through transmucosal absorption into the bloodstream and wherein said matrix absorbs fluid from saliva and dissolves within about 20–30 minutes to thereby permit said desmopressin to reach its peak activity within 60–90 minutes after insertion of said buccal patch and thereafter provide a therapeutic level in the blood stream for a period of from 2 to 20 hours, as measured by its antidiuretic effect, and wherein said matrix consists essentially of the following composition:

Component	Weight %
a) Polyvinylpyrrolidone (mol. wt. 30,000)	20–30
b) Crodesta sucrose ester(s)	0.1–3.0
c) Propan 1,2-diol	1–10
d) C_{12}–C_{18}, alcohol	1–10
e) PEG 1000	9–12
f) PEG 1500	1–2
g) PEG 4000	30–45
h) PEG 8000	3–4
j) Terpene ether,	0.2–0.5.

5,298,257

METHOD FOR THE TREATMENT OF WITHDRAWAL SYMPTOMS ASSOCIATED WITH SMOKING CESSATION AND PREPARATIONS FOR USE IN SAID METHOD

Yvonne B. Bannon, Naas; John Corish, Leopardstown; Owen I. Corrigan, Howth; Edward J. Geoghegan, Athlone, and Joseph G. Masterson, Clonsilla, all of Ireland, assignors to Elan Transdermal Limited, Athlone, Ireland

Continuation of Ser. No. 744,955, Aug. 14, 1991, abandoned, which is a continuation of Ser. No. 508,920, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 188,226, Apr. 29, 1988, Pat. No. 4,946,853. This application Mar. 19, 1992, Ser. No. 855,457

Claims priority, application Ireland, May 1, 1987, 1119/87; Jul. 17, 1987, 1946/87

The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[5] A61K *9/70, 9/14, 31/44*

U.S. Cl. 424—449 **8 Claims**

1. A once-daily transdermal preparation for the controlled release of nicotine comprising an amount of nicotine distributed in a solid, semi-solid or mucilaginous medium and being effective to treat symptoms associated with tobacco smoking cessation and an amount of an anti-irritant effective to alleviate irritation associated with the transdermal delivery of nicotine.

5,298,258

ACRYLIC OILY GEL BIOADHESIVE MATERIAL AND ACRYLIC OILY GEL PREPARATION

Hitoshi Akeni; Takashi Kinoshita; Saburo Otsuka; Yoshifumi Hosaka, and Yoshihisa Nakano, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 635,007, Dec. 28, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,278

Claims priority, application Japan, Dec. 28, 1989, 1-344639; Sep. 6, 1990, 2-237382

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—484 **9 Claims**

1. An acrylic oily gel bioadhesive material comprising a substrate having on one surface thereof a crosslinked gel layer which is a non-aqueous system formed by crosslinking a composition comprising an acrylate polymer comprising as a main component an alkyl (meth)acrylate having four or more carbon atoms in the alkyl moiety and a liquid ingredient compatible with said acrylate polymer, wherein the weight ratio of said acrylate polymer to said liquid ingredient is from 1.0/0.25 to 1.0/2.0; said crosslinking is effected by using a crosslinking agent selected from the group consisting of a metal alcoholate and a metal chelate each comprising titanium or aluminum, and trifunctional isocyanate; and said acrylate polymer is selected from the group consisting of:

(a) a copolymer obtained by copolymerizing the alkyl (meth-)acrylate with at least one monomer represented by at least one of formulae (I) and (II):

$$CH_2{=}CHX \quad (I)$$

$$CH_2{=}CRY \quad (II)$$

wherein R represents a hydrogen atom or a methyl group; X represents a group having at least one nitrogen atom or a nitrogen atom and an oxygen atom; Y represents a hydrogen atom or —COOR′; and R′ represents a group having at least one nitrogen atom or a nitrogen atom and an oxygen atom, or a hydroxy lower alkyl group, and wherein the weight ratio of the alkyl (meth)acrylate to the at least one monomer represented by at least one of formulae (I) and (II) is (40–99)/(1–60);

(b) a copolymer obtained by copolymerizing the alkyl (meth)acrylate with ate least one monomer containing at least one of a carboxyl group and a hydroxyl group, and wherein the weight ratio of the alkyl (meth)acrylate to the at least one monomer containing at least one of a carboxyl group and a hydroxyl group is (90–99)/(1–10); and

(c) a copolymer obtained by copolymerizing the alkyl (meth)acrylate with at least one monomer represented by at least one of formulae (I) and (II):

$$CH_2{=}CHX \quad (I)$$

$$CH_2{=}CRY \quad (II)$$

wherein R represents a hydrogen atom or a methyl group; X represents a group having at least one nitrogen atom or a nitrogen atom and an oxygen atom; Y represents a hydrogen atom or —COOR′; and R′ represents a group having at least one nitrogen atom or a nitrogen atom and an oxygen atom, or a hydroxy lower alkyl group, and at least one monomer containing at least one of a carboxyl group and a hydroxyl group, wherein the amount of said at least one monomer containing at least one of a carboxyl group and a hydroxyl group is 1 to 10% by weight based on the weight of the copolymer, and wherein the weight ratio of the alkyl (meth)acrylate, the at least one monomer represented by formulae (I) and (II), and the at least one monomer containing at least one of a carboxyl group and a hydroxyl group is (50–90)/(0–40)/(1–10).

5,298,259

SUBUNIT DELIVERY COMPOSITION AND METHOD

David H. Lloyd, San Francisco, and Robert J. DeFranco, San Carlos, both of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Nov. 5, 1991, Ser. No. 788,322

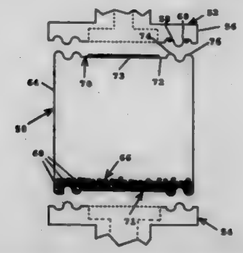
Int. Cl.[5] A61K *9/10, 9/16;* **C07K** *1/06;* **B65D** *3/26*

U.S. Cl. 424—486 **17 Claims**

1. A polymer composition for adding a solution of a biopolymer subunit in a biopolymer synthesis operation, comprising

a dried polymer substrate which (i) is swellable, but insoluble in an organic solvent, and (ii) has an internal polymer matrix through which molecules of the biopolymer subunit can diffuse when the substrate is in a swollen state; and

molecules of the biopolymer subunit entrapped within the matrix, such that suspension of the substrate in such organic solvent produces swelling of the substrate and diffusion of the subunit molecules through the matrix and into the solvent, where the biopolymer subunit is selected from



the group consisting of an N-protected amino acid and an activated 5′-protected nucleotide.

5,298,260

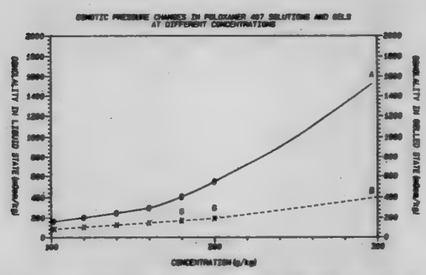
TOPICAL DRUG DELIVERY WITH POLYOXYALKYLENE POLYMER THERMOREVERSIBLE GELS ADJUSTABLE FOR PH AND OSMOLALITY

Tacey X. Viegas, Canton; Lorraine E. Reeve, Dexter, both of Mich., and Robert S. Levinson, Chesterfield, Mo., assignors to Medventures, Inc., Dearborn, Mich.

Continuation-in-part of Ser. No. 517,282, May 1, 1990, abandoned. This application Jun. 9, 1992, Ser. No. 895,949

Int. Cl.[5] A61K *9/10, 47/34*

U.S. Cl. 424—486 **23 Claims**



1. A process for treating a condition requiring the use of a medical device or pharmacological treatment which comprises administering to the skin of a mammal a hypo-osmotic, iso-osmotic, or hyperosmotic composition comprising an aqueous gel, having a buffered pH and a desired osmolality, which is a liquid at room temperature or below and a gel at mammalian body temperature, said aqueous gel containing

(1) about 80% to about 20% by weight of water and

(2) about 10 to about 50% by weight of a polyoxyalkylene block copolymer of formula

$$Y[(A)_n{-}E{-}H]_x \quad (I)$$

wherein A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 1, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E is a polyoxyethylene moiety, n has a value such that the minimum molecular weight of A is between about 500 to about 900, as determined by the hydroxyl number of an intermediate of formula

$$Y[(A)_n{-}H]_x \quad (II)$$

and the total average molecular weight of the polyoxyalkylene block copolymer is between about 15000;

wherein the osmolality of the composition in the liquid state is adjusted to achieve the desired value of the osmolality of the aqueous gel by assuming that the polyoxyalkylene block copolymer does not contribute to the osmolality in the aqueous gel.

5,298,261

RAPIDLY DISTINTEGRATING TABLET

Walter S. Pebley; Norman E. Jager, and Sally J. Thompson, all of Albany, Oreg., assignors to Oregon Freeze Dry, Inc., Albany, Oreg.

Division of Ser. No. 871,556, Apr. 20, 1992. This application Dec. 24, 1992, Ser. No. 995,196

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—488 **9 Claims**



1. A method of preparing a shaped pharmaceutical dosage form for oral administration as a solid that rapidly disintegrates in an aqueous solution, the method comprising the steps of:

preparing a mixture comprising sufficient amounts of a pharmaceutical compound, a gum, a carbohydrate base, and a solvent to form a partially collapsed matrix network when the mixture is frozen and vacuum dried to remove the solvent above a collapse temperature of the matrix for a sufficient period of time to form the matrix;

shaping the mixture into a desired pharmaceutical dosage form shape;

freezing the mixture; and

vacuum drying the frozen mixture above the collapse temperature of the mixture for a sufficient period of time to form the partially collapsed matrix network.

5,298,262

USE OF IONIC CLOUD POINT MODIFIERS TO PREVENT PARTICLE AGGREGATION DURING STERILIZATION

George C. Na, Fort Washington, and Natarajan Rajagopalan, Phoenixville, both of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 4, 1992, Ser. No. 987,904

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 **15 Claims**

1. A compound comprised of nanoparticles consisting essentially of a crystalline diagnostic or therapeutic agent and a non-crosslinked nonionic surfactant adsorbed on the surface thereof and an anionic or cationic cloud point modifier associated therewith, which cloud point modifier is present in an amount of 0.005–20% by weight based on the total weight of the composition and sufficient to increase the cloud point of the surface modifier, wherein said nanoparticles are resistant to particle size growth when said composition is heat sterilized at 121° C. for 15 minutes.

VOL 1160 ISS 5 MR 29 1994 UMI

5,298,263

CHEWING GUM COATED WITH PALATINOSE OR PALATINOSE OLIGOSACCHARIDE

Robert J. Yatka, Orland Park, and Lindell C. Richey, Lake Zurich, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Oct. 30, 1992, Ser. No. 969,476
Int. Cl.[5] A23G 3/30
U.S. Cl. 426—5 19 Claims

1. A coated chewing gum product comprising a gum pellet coated with a coating comprising palatinose, palatinose oligosaccharide or mixture thereof.

5,298,264

OXYGEN REMOVAL WITH IMMOBILIZED DRIED *SACCHAROMYCES CEREVISIAE*

Luppo Edens, Vlaardingen; Farrokh Farin, Hazerswoude-Rijndijk; Antonius F. Ligtvoet, Delft, and Johannes B. Van Der Plaat, Leiderdorp, all of Netherlands, assignors to Gist-Brocades, N.V., Delft, Netherlands

Continuation of Ser. No. 639,363, Jan. 10, 1991, Pat. No. 5,106,633, which is a continuation of Ser. No. 235,584, Aug. 24, 1988, abandoned. This application Dec. 13, 1991, Ser. No. 806,311
Claims priority, application European Pat. Off., Aug. 25, 1987, 87201604.3
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] C12G 3/00; C12C 11/04; C12N 11/02, 11/04
U.S. Cl. 426—8 7 Claims

1. The combination comprising a closed container, a water-containing beverage or food product contained in the container and dried Saccharomyces cerevisiae having about 94–96% dry matter immobilized in a solid material comprising a polymer acceptable for use in direct contact with beverages or food products for human consumption, the solid material containing the immobilized dried Saccharomyces cerevisiae not being in contact with the beverage or food product in the container and the solid material having a permeability to water vapor of less than 100 units P_{H_2O} and a transmission ratio for oxygen of greater than 0.01 units P_{O_2}, and the Saccharomyces cerevisiae contacting only water that penetrates through the solid material to activate same to remove oxygen from the closed container.

5,298,265

ENZYME ASSISTED DEGRADATION OF SURFACE MEMBRANES OF HARVESTED FRUITS AND VEGETABLES

Ayrookaran J. Poulose, San Bruno, and Matthew Boston, San Carlos, both of Calif., assignors to Genencor International, Inc., South San Francisco, Calif.

Continuation of Ser. No. 740,625, Aug. 5, 1991, abandoned, which is a continuation of Ser. No. 370,901, Jun. 23, 1989, Pat. No. 5,037,662. This application Sep. 23, 1992, Ser. No. 948,618
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] A23B 4/22
U.S. Cl. 426—52 11 Claims

1. A method for preparing dehydrated fruits and vegetables from unmacerated harvested fruits and vegetables wherein said harvested fruits and vegetables have a water activity (a_w) of greater than 0.80 and further have a surface membrane which contains one or more types of water insoluble components selected from the group consisting of cutin, cellulose, pectin, triglycerides and waxy esters, which method comprises:

(a) exposing the surface membrane of said harvested fruit or vegetable to a composition comprising a sufficient concentration of a degradation enzyme selected from the group consisting of cutinase, cellulase, pectinase and lipase for a sufficient period so as to provide for an increase in water permeability across said membrane of at least fifty percent as compared to said fruits and vegetables prior to exposure to said composition; and

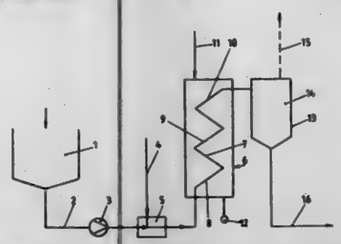
(b) dehydrating the fruit or vegetable product produced by step (a) above under conditions sufficient to reduce its a_w to 0.80 or less.

5,298,266

PROCESS TO SUBJECT PUMPABLE CANDY STOCK TO HEAT

Reinhard Mergelsberg, Garbsen; Wolfgang Pamp, Bad Salzuflen, and Jose-Maria de Vilchez-Kehr, Hanover, all of Fed. Rep. of Germany, assignors to Klockner Hansel GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 15, 1992, Ser. No. 944,964
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1991, 4130721
Int. Cl.[5] A23G 7/00
U.S. Cl. 426—511 4 Claims



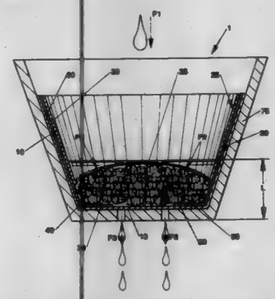
1. Process to subject pumpable candy stock to heat by conveying the candy stock through the heating coil of a heat exchanger having a steam heated chamber, comprising: adding a medium to the candy stock upon the entry of the candy stock into the heat exchanger; and guiding the candy stock exiting the heat exchanger into a receiving tank which allows for the medium to escape the candy stock, wherein said medium which is added to the candy stock is steam and that by the condensation of the steam the temperature of the candy stock is elevated to a temperature that is approximately equal to or greater than the boiling point of the candy stock.

5,298,267

COFFEE FILTER PACK

Dana P. Gruenbacher, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 726,429, Jul. 5, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 907,761
Int. Cl.[5] A47G 19/16; A47J 31/00; B65D 85/00
U.S. Cl. 426—77 8 Claims



1. A conformable, high extraction efficiency, coffee filter pack containing a predetermined volume V_1 of dry roast and ground coffee having extractable flavor solids therein, said coffee filter pack being suitable for use in combination with a coffee maker having a porous means for supporting said conformable filter pack in an upwardly concave configuration and

means for delivering a predetermined volume V_2 of hot water into said upwardly concave filter pack at a predetermined water delivery flow rate F_1 to produce a brewed coffee product of substantially consistent brew strength from one pot to the next, said coffee filter pack comprising:

(a) a bottom layer comprised of a flexible, porous material, said bottom layer having inner and outer faces;

(b) a top layer comprised of a flexible, porous material, said top layer having inner and outer faces, said inner face of said top layer being centered and continuously secured to said bottom layer about said top layer's outer perimeter, thereby defining a brew chamber between their centrally located non-joined areas, said brew chamber containing said predetermined volume V_1 of roast and ground coffee, said brew chamber having a maximum volume V_3 that is between about 25% and about 300% larger than the volume V_1 of said dry roast and ground coffee;

(c) a conformable side wall defined by the portions of said top and bottom layers extending outwardly from the outer perimeter of said brew chamber, said filter pack further including a means for making said side wall substantially impervious to the passage of water, said side wall, upon insertion into said support means in said coffee maker, being substantially vertically oriented about its entire periphery so as to retain incoming hot water from the coffee maker therein, the vertical height of said substantially water impervious vertically extending side wall being at least sufficient to retain enough incoming hot water to totally immerse said brew chamber when said brew chamber is in its flooded and fully expanded condition;

(d) a porous inlet orifice in said top layer of said brew chamber to prevent the passage of roast and ground coffee therethrough yet allow incoming hot water, which is retained by said substantially vertically oriented substantially water impervious side wall, to pass therethrough at a predetermined flow rate F_2 at least until a substantially steady state brewing condition is reached inside said brew chamber; and

(e) a porous discharge outlet orifice in said bottom layer of said brew chamber to prevent the passage of roast and ground coffee therethrough yet allow brewed coffee to pass therethrough at a predetermined maximum outlet flow rate F_3 once a steady state brewing condition is reached inside said brew chamber, said porous discharge outlet orfice in said bottom layer being of lesser area than said porous outlet orifice in said top layer such that said maximum outlet flow rate F_3 being less than said flow rate F_1 of said incoming hot water from said coffee maker and less than said inlet flow rate F_2 into said brew chamber, the difference between said inlet flow rate F_2 and said outlet flow rate F_3 being sufficiently great that said brew chamber becomes flooded to produce a steady state brewing condition wherein the combined volume of the water and the roast and ground coffee contained in said brew chamber are substantially equal to the maximum column V_3 of said brew chamber before a significant portion of the total volume V_2 of incoming hot water has exited said brew chamber, and wherein said means for making said side wall substantially impervious to the passage of water extends onto the inner face of said bottom layer in said brew chamber so as to define the area of said discharge outlet orifice and control the maximum discharge flow rate F_3.

5,298,268

SEASONED SNACK FOODS AND METHODS FOR PRODUCTION THEREOF

Jack W. Maegli, Beloit, Wis., assignor to Beatreme Foods Inc., Beloit, Wis.

Filed Aug. 21, 1992, Ser. No. 933,236
Int. Cl.[5] A23G 3/00; A23L 1/09
U.S. Cl. 426—93 37 Claims

1. In a low fat content, seasoned, cereal-based snack food having a low fat and low moisture content edible adhesive on surfaces thereof and edible dry solids seasoning adhered to the surfaces by the adhesive, the improvement wherein the adhesive comprises an at least partially amorphous form of a mixture of at least one monosaccharide and at least one polyhydric, aliphatic, saturated alcohol having 3 to 6 carbon atoms.

5,298,269

Patent Not Issued For This Number

5,298,270

BARBECUE COOKING, PROCESSING, PACKAGING AND STORAGE SYSTEM

Doug Morgan, 2201 Scenic Highway 0-7, Pensacola, Fla. 32503

Filed Mar. 30, 1992, Ser. No. 860,463
Int. Cl.[5] A23L 1/31, 1/315; B65B 55/00
U.S. Cl. 426—234 14 Claims

1. A triple cook barbecue meat cooking, processing, packaging and storage system comprising the steps of:

a) trimming the fat and cutting off brisket from the meat to be barbecued;

b) barbecue cooking said meat for a 'first cook' for approximately two hours in non-smoke 190 degrees 100% humid environment;

c) barbecue cooking said meat for a 'Second Cook' and smoking said meat for approximately 45 minutes in smokey 150 degrees dry bulb, 137 degrees wet bulb setting;

d) applying a special meat dependent sauce having a pH factor between 3.4 to 3.7 to said meat;

e) individually bagging and hermetically sealing said meat in heavy transparent cryovac bag;

f) barbecue cooking said meat for a 'Third Cook' in the bag at 190 degrees for two hours while checking for tenderness every 15 minutes;

g) cooling and marinating said meat in refrigerator for ten to 14 days; and

h) freezing and shipping said meat to the end user through the established marketing channels.

5,298,271

METHOD OF PREVENTING EDIBLE OILS AND FATS FROM DETERIORATING

Shoichi Takashina; Takashi Hazama; Akira Kurooka, all of Osaka; Norio Maruguchi, Sakai; Hiroshi Iwase, Osaka, and Masayoshi Saito, Sakai, all of Japan, assignors to Fuji Oil Co., Ltd., Osaka, Japan

Continuation of Ser. No. 723,654, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 509,506, Apr. 16, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 922,648
Claims priority, application Japan, Apr. 14, 1989, 1-95890
Int. Cl.[5] A23D 9/00
U.S. Cl. 426—312 3 Claims

1. A method of preventing refined edible oils and fats from deteriorating during storage and transportation thereof, comprising the steps of:

introducing nitrogen gas into said refined edible oils and fats in an amount of not lower than 20 volume % relative to the quantity of said oils and fats to supersaturate said oils and fats with nitrogen gas;

introducing nitrogen gas into piping and, also, into a tank through the bottom of said tank, to fill said piping and tank with nitrogen gas upon removing away air in said piping and tank;

charging said oils and fats supersaturated with nitrogen gas through said piping into said tank having been filled with the nitrogen gas;

adjusting the pressure inside said tank in dependence on a change in pressure inside said tank resulting from a change in temperature during the storage or transportation of the refined edible oils and fats in said tank, said adjustment being carried out by blowing nitrogen gas into said tank to

maintain a positive pressure inside said tank and maintain the atmosphere of nitrogen gas of not lower than 99.5%; and

discharging said oils and fats from said tank while introducing nitrogen gas into said oils and fats in an amount of not lower than 20 volume % relative to the quantity of said oils and fats to supersaturate said oils and fats with nitrogen gas, and concurrently introducing nitrogen gas into said tank without any air entering into said tank;

wherein said oils and fats are placed under an atmosphere of nitrogen gas to supersaturate said oils and fats with nitrogen gas at all times during the storage and transportation, said atmosphere of nitrogen gas always having a concentration of not lower than 99.5% of nitrogen gas.

5,298,272

BRIDGED CARBOXYLIC ORTHO ESTER SWEETENER

Murray Goodman, La Jolla, Calif., and Yeong S. Oh, Daejeon, Rep. of Korea, assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 2, 1992, Ser. No. 984,879
Int. Cl.[5] A23L *1/236*; C07D *319/14*
U.S. Cl. 426—548 10 Claims

1. A composition of matter comprising a compound identified as N-(L)-aspartyl-1-(1'-aminoethyl)-4-methyl-2,6,7-trioxabicyclo[2,2,2]octane.

3. A composition of matter which comprises a sufficient amount of a compound identified as N-(L)-aspartyl-1-(1'-aminoethyl)-4-methyl-2,6,7-trioxabicyclo[2,2,2]octane to impart a sweet taste to said composition of matter.

5,298,273

METHOD OF PRODUCING AN EDIBLE CONTAINER

Sadaharu Ito, 30-5, Saginomiya 1-chome, Nakano-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 921,324, Jul. 29, 1992. This application Dec. 3, 1992, Ser. No. 983,437
Claims priority, application Japan, Jul. 10, 1992, 4-207274
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] A21D *13/08*
U.S. Cl. 426—549 15 Claims



1. A method of producing an edible container comprising the steps of:

(a) initially baking a farinaceous batter mixture consisting essentially of sugar, oil and flour by sandwiching an amount of the batter mixture between a pair of heated platens and then heating and baking the batter mixture sandwiched between the heated platens to effect alphatization of starch in the batter mixture and to evaporate moisture to obtain a de-watered initially baked edible sheet;

(b) moisturizing the initially baked edible sheet;

(c) sealing the moisturized initially baked edible sheet within a non-water-absorptive packaging material;

(d) allowing the moisturized sheet to become softened within the sealed packaging material;

(e) removing the softened and moisturized sheet from the packaging material;

(f) finally baking the softened sheet removed from the packaging material; and

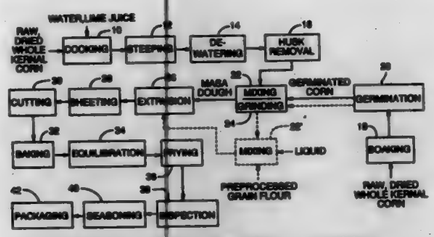
(g) forming the baked softened sheet into an edible container.

5,298,274

METHODS FOR MAKING TORTILLA CHIPS AND TORTILLA CHIPS PRODUCED THEREBY

Nirbhao S. Khalsa, 3141 NW. Greenbriar Ter., Portland, Oreg. 97210

Filed Apr. 10, 1992, Ser. No. 867,262
Int. Cl.[5] A23L *1/10*, *1/185*
U.S. Cl. 426—560 26 Claims



1. A method for making tortilla chips, comprising:

mixing a raw, germinated grain fraction with a non-germinated grain fraction to produce a grain mixture;

grinding the grain mixture to produce a dense dough;

sheeting the dough to form a dough sheet;

cutting the dough sheet to provide desired dough shapes; and

heating the dough shapes to produce tortilla chips.

5,298,275

JUICE PROCESSING METHODS

Amaranathan Balasingham, 79 Kayes Road, Pukekohe, Auckland; Patrick J. Clement, 1a Irene Avenue, Mount Eden, Auckland, and Bruce W. Donaldson, Applefarm, Sutton Road, RD 4, Papakura, Auckland, all of New Zealand

Filed Nov. 6, 1991, Ser. No. 788,783
Claims priority, application New Zealand, Nov. 6, 1990, 235972
Int. Cl.[5] A23L *2/02*
U.S. Cl. 426—599 23 Claims

1. A process for the preparation of a fruit product from the genus Actinidia comprising the steps of:

obtaining a fruit pulp or juice fraction substantially free of skin from a soft pulping or comminution method causing little seed or cell disintegration, said method excluding chemical and/or enzyme lysis methods, thermal techniques, techniques directed to the breaking down of cells or mechanical techniques which involve excessive pulverization of fruit material;

removing the skin from the fruit prior to or during said soft pulping or comminution method;

adding a sweetening agent having a pH of less than 7 to said fruit pulp or juice;

cooling the fruit pulp or juice fraction to 10° C. or less; and

maintaining the fruit pulp or juice at a temperature of 40° C. or less throughout the entire process of producing the fruit product.

5,298,276

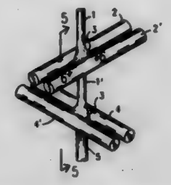
PROCESS FOR PRODUCING ARTIFICIAL BLOOD VESSELS OF CONTROLLED PERMEABILITY AND PRODUCT PRODUCED THEREBY

Swaminathan Jayaraman, 6703 Pemberton Oaks Ct., Seffner, Fla. 33584

Continuation-in-part of Ser. No. 571,933, Aug. 24, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 859,909
Int. Cl.[5] A61F *2/06*; A61K *9/70*
U.S. Cl. 427—2 21 Claims

1. A process for preparing an artificial blood vessel, comprising: providing a base tube having a crimped external surface,

said base tube being made of fibers having interstices therebetween, coating the external surface of the base tube with at least one layer of a polymeric material selected from the group consisting of polyurethanes, polysiloxanes, block copolymers of polysiloxane and polyurethane, and combinations thereof, while at the same time maintaining a sufficient pressure to cause said polymeric material to enter the interstices between



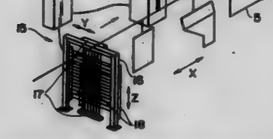
the fibers of the base tube until a coated tube has a reduced permeability of about 1–25 cubic centimeters of water per square centimeter of exterior surface of said tube per minute measured under 120 millimeters of Hg, provided that where said at least one layer of the polymeric material is a polysiloxane a layer of one other of the polymeric materials of said group other than a polysiloxane is applied to the layer of polysiloxane while maintaining said pressure.

5,298,277

METHOD FOR DECREASING SPRAY COATING NONUNIFORMITY AT AN END PORTION OF A MOVING WORKPIECE

Akio Hirose, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 7, 1992, Ser. No. 926,176
Claims priority, application Japan, Aug. 9, 1991, 3-200437
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—8 3 Claims



1. A method of coating a workpiece carried on a conveyor, comprising the steps of:

conveying the workpiece in a conveying direction;

moving a spray gun along a locus in a direction transverse to the conveying direction;

detecting the dimensions of the workpiece;

spraying a first amount of coating material from the moving spray gun onto the workpiece as the workpiece is conveyed opposite the spray gun;

determining passage of an end portion of the workpiece past the spray gun, said end portion being at an end of said workpiece in the conveying direction; and

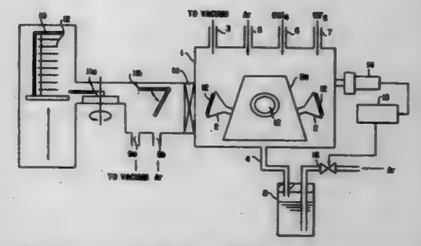
spraying a reduced amount of coating material, as compared to said first amount, from the moving spray gun opposite the end portion of the workpiece as the end portion is conveyed past the spray gun in response to a determination of passage of the end portion past the spray gun.

5,298,278

CHEMICAL VAPOR PHASE GROWTH METHOD AND CHEMICAL VAPOR PHASE GROWTH APPARATUS

Akito Mifune, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 6, 1992, Ser. No. 972,390
Claims priority, application Japan, Nov. 12, 1991, 3-295587
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—8 10 Claims



1. A chemical vapor phase growth method comprising the steps of:

evacuating a container in which at least one substrate is installed and which can be evacuated;

supplying a gaseous silicon compound and a gaseous heat-resistant metal compound to the inside of said container evacuated so as to grow a silicide film of said heat-resistant metal on said substrates; and

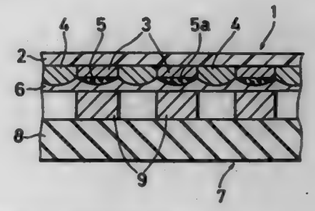
supplying water vapor to establish a partial pressure of water vapor within said container sufficient to cause the resistivity of said silicide film to be substantially constant from batch to batch.

5,298,279

METHOD FOR CONNECTING TERMINALS OF HEAT SEAL FILM SUBSTRATE

Tokumi Hayashi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1992, Ser. No. 975,712
Claims priority, application Japan, Nov. 14, 1991, 3-326971
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—96 4 Claims



1. A method for connecting terminals formed on a heat seal film substrate comprising the steps of:

printing an anisotropic film mixing nickel particles on the terminals,

printing a first layer of hot melt agent comprising an adhesive resin between terminals of a heat seal film substrate having a circuit printed of a conductive material on a base film of polyester and forming a substantially flat upper surface thereat; and

thermo-compression bonding by printing a second layer of hot melt agent comprising an adhesive resin on said substantially flat upper surface.

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5,298,280

PROCESS FOR PRODUCING AN ELECTRODE BY ELECTROLESS DEPOSITION

Jerry J. Kaczur; David W. Cavifield, both of Cleveland, and Julian F. Watson, Delano, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 456,437, Dec. 26, 1989, Pat. No. 5,041,196. This application Aug. 1, 1991, Ser. No. 739,041
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—125 17 Claims

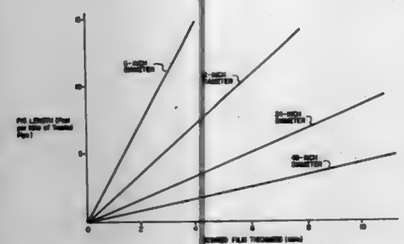
1. A method of fabricating a porous, high surface area electrode used as an anode comprising the steps of:
(a) removing any oxide film coating from a valve metal substrate wherein said substrate has a porous, geometrically structured surface area;
(b) forming a plating solution comprising a solution of a precious metal salt and a reducing agent wherein the molar ratio of said reducing agent to said precious metal salt is from about 0.1:1 to about 500:1 and the pH of said plating solution is from about 0.025 to about 5;
(c) forming an electrocatalytic precious metal-plated electrode substrate having a porous, geometrically structured surface area by electrolesaly plating said precious metal onto the oxide-free surfaces of said electrode substrate for a time to cover about 10 to about 95% of the surface area of said electrode substrate with said electrocatalytic precious metal; said electrocatalytic precious metal coating having grain crystals distributed on the surface of said substrate and said plated electrode substrate having a fill density of less than 60% and a surface area to volume ratio of greater than 10 cm^2/cm^3;
(d) removing said plated electrode substrate from said plating solution; and
(e) subjecting said plated electrode to rinsing and drying.

5,298,281

METHOD OF TREATING TUBULARS WITH A PLURALITY OF ABLATING GELATIN PIGS

Frank E. Lowther, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 1, 1992, Ser. No. 876,989
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—128 16 Claims



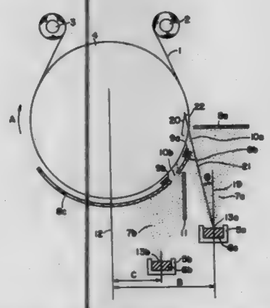
1. A method for treating a length of tubular having at least first and second contiguous portions, said method comprising:
passing a first ablating gelatin pig through said tubular, said first gelatin pig having a first mass of gelatin sufficient to contact the interior wall of said tubular only until it passes through said first portion of said tubular to ablate and deposit a layer of gelatin onto said wall of said first portion; and
passing a second ablating gelatin pig through said first and said second portions of said tubular, said second gelatin pig having a second mass of gelatin sufficient to pass through said first portion of said tubular and through said second portion to contact the interior wall of said second portion and ablate to deposit a layer of gelatin onto said wall of said second portion of said tubular.

5,298,282

PRODUCTION OF MAGNETIC RECORDING MEDIUM

Ryuji Sugita; Kiyokazu Tohma, both of Hirakata, and Tatsuaki Ishida, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 20, 1993, Ser. No. 93,748
Claims priority, application Japan, Jul. 24, 1992, 4-198589; Sep. 9, 1992, 4-240537
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—131 5 Claims



1. A method for producing a magnetic recording medium having a magnetic layer having a two-layered structure positioned on a substrate, which comprises forming the magnetic layer on the substrate by a vacuum deposition process during the travel of the substrate on a cylindrical can, wherein a first evaporation source and a second evaporation source are positioned on the same side of a vertical line passing across a longitudinal axis of the cylindrical can while confronting the cylindrical can, a shield plate having a first opening and a second opening is positioned between the cylindrical can and the first and second evaporation sources, each of vapors evaporated from the first and second evaporation sources passes through the first and second openings, respectively, a distance between the vertical line passing across the longitudinal axis of the cylindrical can and a center of an evaporation part of the first evaporation source is longer than a radius of the cylindrical can, and a distance between the vertical line passing across the longitudinal axis of the cylindrical can and a center of an evaporation part of the second evaporation source is shorter than a radius of the cylindrical can.

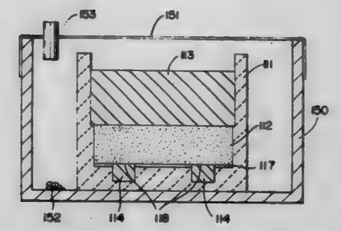
5,298,283

METHOD FOR FORMING METAL MATRIX COMPOSITE BODIES BY SPONTANEOUSLY INFILTRATING A RIGIDIZED FILLER MATERIAL

Michael A. Rocazella; Kurt J. Becker, both of Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 521,200, May 9, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,430
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—181 14 Claims

1. A method for making a metal matrix composite, comprising:
providing a rigidized permeable mass, said permeable mass comprising (1) a filler material or a preform and (2) a three-dimensionally interconnected skeleton of an oxide derived from a colloidal precursor, which oxide embeds said filler material or preform; and



spontaneously infiltrating at least a portion of said rigidized mass with a molten matrix metal.

5,298,284

METHOD OF MAKING A SWELLING CABLE WRAP

Holger Buckwald, Hemsbach; Ingrid Schaffert, Hirschberg-Leutershausen, and Werner Schäfer, Birkenau, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinheim/-Bergstrasse, Fed. Rep. of Germany

Filed Oct. 14, 1992, Ser. No. 960,891
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1991, 4134370
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—203 2 Claims

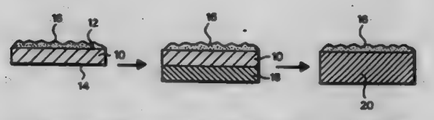
1. The method of manufacturing a swelling cable wrap, which comprises applying no more than 3 g/m^2 of a polyvinyl alcohol binding agent in aqueous 5 wt.-% solution to one face of a nonwoven fabric support which is sufficiently thin to be wrapped tightly around a cable and which has a longitudinal tensile strength of 150 to 200 N/5 cm by spraying or in the form of an aqueous foam mixture, sprinkling 15 to 40 g/m^2 of a superabsorber powder onto said binding agent while still wet to form a coated nonwoven fabric support, drying the coated nonwoven fabric support between contact surfaces at 120° to 160° C. whereby said superabsorber is smoothly fixed on the nonwoven fabric support, applying a polyacrylate binding agent to the superabsorber surface by imprinting it upon the superabsorber surface as an aqueous paste with a viscosity of 16,000 to 20,000 cP by means of a rotary printing screen having a print area of 10 to 20% to form a repeating pattern in the form of dots, lines or bars to form an impregnated product, and drying said impregnated product.

5,298,285

METHOD OF PRODUCING A TOOL COMPONENT

Barbara L. Jones, 80 Chisbury Close, Forest Park, Bracknell, RG12 3TX, and Timothy J. Valentine, Pear Tree House, Folly Hill, Farnham, Surrey, GU9 OBD, both of England

Filed Jun. 10, 1992, Ser. No. 896,157
Claims priority, application United Kingdom, Jun. 10, 1991, 9112408
Int. Cl.[5] C23C *16/26*; C04B *35/56*; B24D *17/00*
U.S. Cl. 427—249 8 Claims



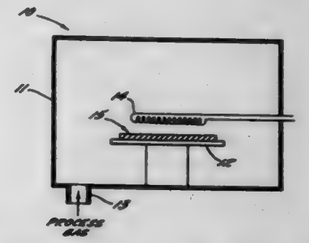
1. A method of producing a tool component comprising a diamond layer bonded to a cemented carbide substrate which comprises a mass of carbide particles cemented with a metal binder, the method including the steps of:
(i) providing a porous, bonded mass of carbide particles;
(ii) depositing a layer of diamond by chemical vapor deposition (CVD) on a surface of the porous mass;
(iii) placing the porous mass in contact with a mass of binder metal; and
(iv) heating the product of step (iii) to an elevated temperature which is effective to allow the metal binder to melt and infiltrate the carbide particles and produce a cemented carbide substrate for the CVD diamond layer.

5,298,286

METHOD FOR FABRICATING DIAMOND FILMS ON NONDIAMOND SUBSTRATES AND RELATED STRUCTURES

Peichun Yang; Wei Zhu, both of Raleigh, and Jeffrey T. Glass, Apex, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Nov. 9, 1992, Ser. No. 973,633
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—249 50 Claims



1. A method for forming an oriented diamond film on a nondiamond substrate, the method comprising steps of:
providing a nondiamond substrate comprising a transition metal capable of dissolving carbon;
forming a plurality of diamond seeds on a face of the substrate;
heating the seeded substrate to a sufficient temperature and for a sufficient time period to dissolve portions of the diamond seeds into the face of the substrate and orient the diamond seeds with respect to the substrate while suppressing graphite formation; and
depositing diamond onto the thus oriented diamond seeds to form an oriented diamond film on the nondiamond substrate.

5,298,287

METHOD OF MAKING CVD Si_3N_4

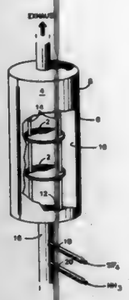
Richard D. Veltri, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 5, 1993, Ser. No. 13,862
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—255.2 12 Claims

1. A method of making CVD Si_3N_4, comprising the steps of:
(a) placing a substrate inside a CVD reactor having an interior and interior walls, wherein the interior walls of the reactor consist essentially of a high temperature metal selected from the group consisting of Mo, Nb, Rh, Hf, Ta, W, Re, and Ir,
(b) flowing an inert gas through the reactor,
(c) reducing the pressure inside the reactor to a reaction pressure less than about 40 kPa,
(d) heating the substrate and interior of the reactor to a reaction temperature between about 1200° C. and about 1700° C., and
(e) flowing a reactant gas mixture comprising about 40 volume % to about 90 volume % of a nitrogen-containing compound, balance silicon halide, into the reactor such

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that the silicon halide reacts with the nitrogen-containing compound to form Si_3N_4.



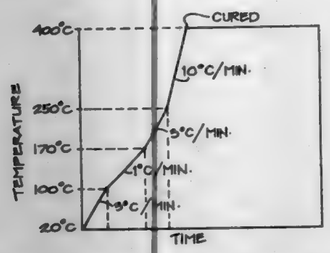
whereby the high temperature metal inhibits the formation of Si_3N_4 on the interior walls of the reactor.

5,298,288

COATING A HEAT CURABLE LIQUID DIELECTRIC ON A SUBSTRATE

John W. Curry, II, and Douglas A. Pietila, both of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation of Ser. No. 655,861, Feb. 14, 1991, abandoned.
This application Dec. 7, 1992, Ser. No. 987,502
Int. Cl.[5] B05D *3/02, 5/12*
U.S. Cl. 427—379 28 Claims



28. A method for coating a polymeric dielectric on a substrate, comprising the following steps:

removing contaminants from the substrate that might otherwise substantially interfere with adhesion or curing of the polymeric dielectric on the substrate;

heating the substrate to remove moisture that might otherwise substantially interfere with the adhesion or curing of the polymeric dielectric on the substrate;

curtain coating the substrate with a single coating of a heat curable liquid polymeric dielectric before the substrate receives sufficient contaminants or absorbs sufficient moisture to substantially interfere with the adhesion or curing of the polymeric dielectric, said curtain coating including

i) forcing the liquid polymeric dielectric through a slit in a dispenser spaced above the substrate onto the substrate, and

ii) moving the substrate linearly with respect to the dispenser so that the liquid polymeric dielectric is deposited on the entire substrate; and

heating the liquid polymeric dielectric at most 15° C. per minute to a cure temperature above 170° C. but not exceeding 450° C., wherein the liquid polymeric dielectric is heated at least three different rates of temperature increase, a first rate being greater than a second rate, a third rate being greater than the first rate, thereby providing from the single coating a cured polymeric dielectric film at least 15 microns thick with a uniformity of less than 5 microns which adheres to the substrate.

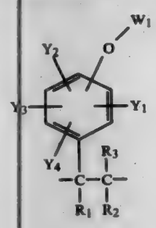
5,298,289

POLYPHENOL COMPOUNDS AND TREATMENT AND AFTER-TREATMENT OF METAL, PLASTIC AND PAINTED SURFACES THEREWITH

Andreas Lindert; Gerald J. Cormier, both of Troy, and John R. Pierce, Huntington Woods, all of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 993,144, Dec. 18, 1992, which is a continuation of Ser. No. 853,479, Mar. 18, 1992, Pat. No. 5,266,410, which is a division of Ser. No. 710,885, Jun. 6, 1991, Pat. No. 5,116,912, which is a continuation of Ser. No. 128,672, Dec. 4, 1987, Pat. No. 5,039,770. This application Jul. 8, 1993, Ser. No. 89,164
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—388.4 20 Claims

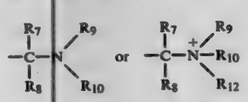
1. A process for treating a surface selected from the group consisting of plastic and painted surfaces and chromate or chrome-phosphate conversion coated aluminum and aluminum alloy surfaces with a liquid surface treatment composition comprising water and a water dispersible or soluble polyphenol polymer with recurring units according to the formula:



wherein:

each of R_1, R_2, and R_3 is independently selected for each repeating unit from hydrogen, an alkyl group having from 1 to 5 carbon atoms, or an aryl group having 6 to 18 carbon atoms;

each of Y_1 through Y_4 is independently selected for each repeating unit from hydrogen; "Z" as defined below; $—CR_{11}R_5OR_6$ wherein each of R_5 and R_6 is independently selected from hydrogen, an alkyl, an aryl, a hydroxy- or polyhydroxy-alkyl, an amino-alkyl, a mercapto-alkyl, or a phospho-alkyl moiety; $—CH_2Cl$; or an alkyl or aryl group having from 1 to 18 carbon atoms, subject to the constraint that at least one sixth of the Y_2 groups in the recurring units are Z; and Z is:



wherein each of R_7 through R_{12} (with a possible exception for R_{12} as noted below) is independently selected within each repeating unit for each of R_7 through R_{12} from hydrogen, an alkyl, an aryl, a hydroxy- or polyhydroxy-alkyl, an amino-alkyl, a mercapto-alkyl, or a phospho-alkyl moiety, and R_{12} may also be $—O^{(-1)}$ or —OH in order to form an amine oxide or hydroxyl amine, with the proviso that at least one of R_9, R_{10}, and R_{12} must be a polyhydroxy-alkyl group such as would be contained in an amine formed by reaction of ammonia or a primary amine containing only hydrogen and carbon in addition to nitrogen with a ketose, aldose, or other carboxyl group-

containing polyhydroxy compound having from about 3 to about 8 carbon atoms and subsequently reducing the intermediate product of this reaction by hydrogenation to an amine; and

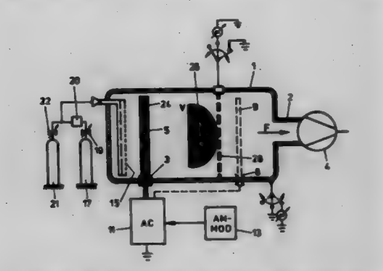
W_1 is independently selected for each repeating unit from the group consisting of a hydrogen; an acyl moiety; an acetyl; a benzoyl; a 3-allyloxy-2-hydroxy-propyl-; a 3-benzyloxy-2-hydroxy-propyl; a 3-alkylbenzyloxy-2-hydroxy-propyl; a 3-phenoxy-2-hydroxy-propyl-; a 3-alkyl-phenoxy-2-hydroxy-propyl-; a 3-butoxy-2-hydroxy-propyl-; a 3-alkyloxy-2-hydroxy-propyl-; a 2-hydroxyoctyl-; a 2-hydroxyalkyl-; a 2-hydroxy-2-phenyl-ethyl-; a 2-hydroxy-2-alkyl-phenylethyl-; a benzyl-; an alkyl-; an allyl-; an alkylbenzyl-; a haloalkyl-; or a haloalkenyl such as 2-chloropropenyl-; or a condensation product of ethylene oxide, propylene oxide, or a mixture or copolymer thereof.

5,298,290

PROTECTIVE COATING ON SUBSTRATES

Stephen Jost, Trübbach, Switzerland, and Leonhard Sens, Mauren, Liechtenstein, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Sep. 18, 1992, Ser. No. 947,709
Claims priority, application Switzerland, Sep. 20, 1991, 2793/91
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—489 24 Claims



1. A method of applying a protective coating onto a substrate in a vacuum chamber, the coating being free of powdery portions and the coating being applied at a high coating rate, the method comprising:

supplying at least one gas containing at least one silicon-organic compound to the vacuum chamber;

generating a plasma in the chamber for plasma polymerizing the compound to form a coating on the substrate at a coating rate which is determined by at least one of a plurality of process parameters, the plasma being generated by an alternating electromagnetic field;

amplitude-modulating the alternating electromagnetic field so that the coating is formed without powdery portions; and

setting the at least one process parameter to a level which is sufficiently high so that upon a stopping of the amplitude-modulating of the field at a constant maximum amplitude for the electromagnetic field, substantial powdery portions of the coating form.

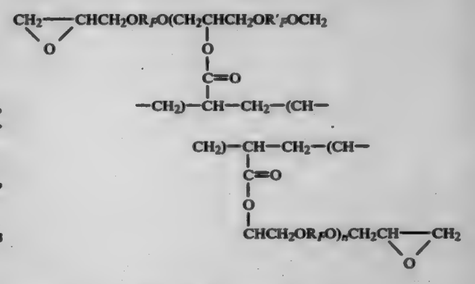
5,298,291

EPOXY-FUNCTIONAL FLUOROPOLYOL POLYACRYLATE COATING OF OPTICAL FIBERS

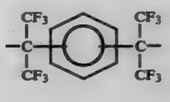
Liliana Klinger, Jackson, N.J., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 530,509, May 31, 1990, abandoned, which is a continuation of Ser. No. 273,444, Nov. 18, 1988, abandoned.
This application Mar. 19, 1993, Ser. No. 34,843
Int. Cl.[5] B05D *3/06, 5/06*; C08L *33/14*
U.S. Cl. 427—513 6 Claims

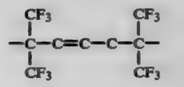
1. A u.v. photocured fluoropolyol polyacrylate optical fiber coating which has been produced by in-line coating of an optical fiber with a mixture comprising a photocurable cis-trans fluoropolyol polyacrylate resin in admixture with a vinyl monomer, in an amount effective to reduce the viscosity of said photocurable fluoropolyol polyacrylate resin to between 300 and 10,000 cP prior to copolymerization therewith, and an amount of a benzophenone or 1-hydroxycyclohexylphenyl ketone photoinitiator effective to render said mixture u.v.-photocurable and curing said mixture with u.v. radiation in the presence of oxygen to provide an infinite network polymer comprising a copolymer of a cis-trans fluoropolyol polyacrylate containing the following structure:



wherein n is an integer from 4 to 10 and R_F is



and R'_F is



and said monomer.

5,298,292

METHOD FOR APPLYING A COATING SOLUTION

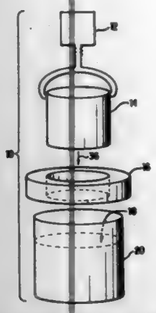
John T. Dilko; Robert S. Foltz, both of Rochester; Gene O'Dell, Williamson; David Rich, Brockport; Richard J. Manzolati, Rochester, and John J. Darcy, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1992, Ser. No. 891,091
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—543 6 Claims

1. A method for applying a coating solution onto a substrate to form a coated portion thereon, the method comprising the steps of:

dipping the substrate into the coating solution, the substrate being circularly disposed;

removing the substrate from the coating solution;
inductively heating the substrate while the substrate is being removed from the coating solution to uniformly dry an inner surface of the coated portion, the inner surface being adjacent to the substrate; and



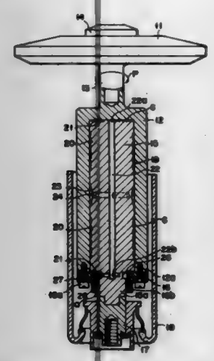
blowing hot gases evenly onto a periphery of the coated portion to uniformly dry an outer surface of the coated portion and squeeze the coated portion to a uniform thickness while the substrate is being removed from the coating solution.

5,298,293

METHOD OF MANUFACTURING A ROTARY ANODE TYPE X-RAY TUBE

Katsuhiro Ono, Utsunomiya; Hidero Anno; Hiroyuki Sugiura, both of Ootawara; Takayuki Kitami, Tochigi, and Minoru Shida, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1991, Ser. No. 799,162
Claims priority, application Japan, Nov. 28, 1990, 2-323285
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—560 **13 Claims**



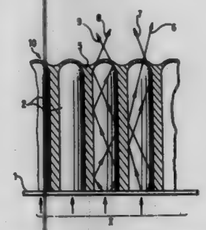
1. A method of manufacturing a rotary anode type X-ray tube comprising an anode target, a rotary structure to which the anode target is fixed, a stationary structure for rotatably supporting the rotary structure, a sliding bearing portion defined between the rotary and stationary structures including a bearing gap, spiral grooves, and a liquid metal lubricant applied to the spiral grooves and the bearing gap, and a vacuum envelope in which the rotary and stationary structures are mounted, the manufacturing method comprising the steps of:
disposing the rotary and stationary structures in a vacuum jar before assembling the rotary anode type X-ray tube;
applying the liquid metal lubricant to at least one of the rotary and stationary structures;
exhausting the vacuum jar;
heating rotary and stationary structures to a temperature to evacuate gas from the rotary and stationary structures and the liquid metal lubricant while the rotary and stationary structures are disposed in the vacuum jar; and
fitting the rotary and stationary structures together.

5,298,294

INPUT SCREEN SCINTILLATOR FOR AN X-RAY IMAGE INTENSIFIER TUBE AND MANUFACTURING PROCESS OF THIS SCINTILLATOR

Gérard Vieux, Grenoble; Henri Rougeot, Saint Nazaire les Eymes; Paul de Groot, St Ismier, and Francois Chareyre, St Egreve, all of France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 892,653, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 598,977, Oct. 17, 1990, abandoned, which is a division of Ser. No. 295,391, Jan. 10, 1989, Pat. No. 4,980,561. This application May 24, 1993, Ser. No. 65,524
Claims priority, application France, Jan. 13, 1988, 88 00297
Int. Cl.[5] B05D *3/06, 5/12, 3/02;* B05B *5/00*
U.S. Cl. 427—583 **8 Claims**



1. A process for manufacturing a scintillator comprising the steps of:
providing an electrically conductive substrate as a substrate for said manufactured scintillator;
forming light-conductive cesium iodide needles on said substrate with a space between needles;
coating each needle with a material so that the space between needles is filled with said material which acts as an optical barrier to visible light by reflecting visible light traveling within the needles towards the inside of said needles, said material forming an electrical contact with said substrate;
wherein said coating material is a reflective metal or a semiconductor to the exclusion of metal oxides and is at a similar electrical potential as said substrate; and
heat-treating said coated needles after said coating operation to make the needles luminescent.

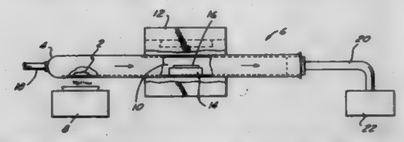
5,298,295

CHEMICAL VAPOR DEPOSITION OF METAL CHALCOGENIDE FILMS

Charles H. Winter, Grosse Point Park, and T. Suren Lewkebandara, Detroit, both of Mich., assignors to Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 683,273, Apr. 10, 1991, Pat. No. 5,112,650. This application Apr. 8, 1992, Ser. No. 865,324
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—585 **21 Claims**

1. A process for depositing a film of a metal chalcogenide comprising the steps of:
providing a single source of the metal chalcogenide;
heating the single source to a temperature sufficient to sublime the single source at a pressure ranging from 0.0001 to 760 torr so that a sublimate is delivered into a reaction zone;
affording a substrate within the reaction zone to define a surface upon which deposition may occur;



heating the reaction zone to about 200°–800° C.; and
passing the sublimate over the substrate to produce a film of the metal chalcogenide which is deposited on the substrate.

5,298,296

PROCESS FOR THE ELABORATION OF POWDERS UNIFORMLY COATED WITH ULTRAFINE SILICON-BASE PARTICLES USING CHEMICAL VAPOR DECOMPOSITION IN THE PRESENCE OF CORE POWDERS

Toshinori Kojima, Musashino; Masahiko Matsukata, Tokyo; Eiichi Ozawa, Katsushika, and Jean-Marie Friedt, Funakawara, all of Japan, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Continuation of Ser. No. 724,917, Jul. 2, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,362
Int. Cl.[5] C23C *16/44*
U.S. Cl. 427—600 **11 Claims**

1. A process for coating powders with ultrafine particles of silicon, silicon oxide, silicon nitride or alloys thereof, which comprises:
a) introducing into a chemical vapor deposition (CVD) reactor a reactant gas consisting of one or more silicon carrier compounds selected from the group consisting of SiH_4, Si_2H_6, Si_3H_9, $SiClF_{4-x}H_x$, wherein x is 0 to 3; and $SiF_{4-x}H_x$, wherein x is 0 to 3; or a reactant gas consisting of one or more of the silicon carrier compounds in combination with another reactant gas selected from the group consisting of N_2, NH_3, N_2H_4, O_2, N_2O, NO, NO_2, CO, CO_2 and a mixture thereof;
b) entraining core powders into the CVD reactor so as to uniformly suspend the core powders in the reactant gas; and
c) introducing an inert gas into the uniformly suspended core powders in the reactant gas, which inert gas is at a higher temperature than said reactant gas containing the uniformly suspended core powders and at a temperature of from about 200° C. to about 1,200° C., which temperature is sufficient to effect homogeneous decomposition of the reactant gas, thereby selectively forming in the CVD reactor ultrafine particles of silicon, silicon oxide, silicon nitride or alloys thereof, while inhibiting growth of core powders by CVD at surfaces of the suspended core powders, thereby coating the core powders with the ultrafine particles formed.

5,298,297

LIQUID CRYSTAL DISPLAY DEVICE

Manabu Takei, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 634,083, Dec. 26, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 984,245
Claims priority, application Japan, Dec. 28, 1989, 1-343601
Int. Cl.[5] G02F *1/1337*
U.S. Cl. 428—1 **12 Claims**



1. A liquid crystal display device comprising:
a first substrate having a plurality of first electrodes formed thereon;
a second substrate having at least one second electrode opposed to at least one of the plurality of first electrodes;
an aligning film covering at least one of first and second regions said first region including a portion of surfaces of the first electrodes and a portion of a surface of said first substrate and said second region including a portion of a surface of the second electrode and a portion of a surface of said second substrate, and said aligning film having surface energy higher than 47 dyn/cm;
a sealing member formed along peripheries of said first and second substrates to surround substantially said first and second regions, and bonding said first and second substrates with said substrates opposing each other and with a predetermined gap between said substrates, so that surfaces of said first and second substrates on which the first and second electrodes are formed respectively are opposed to each other; and
a liquid crystal material sealed in an area between said opposed first and second substrates and encircled by said sealing member, said liquid crystal material being a liquid crystal composition whose resistivity is equal to or larger than 1.5×10^{10} Ω-cm.

5,298,298

MICROSCOPIC TUBE MATERIAL

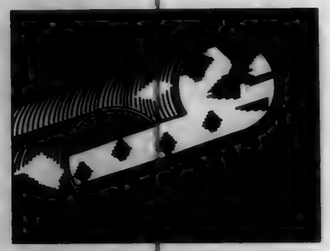
Wesley P. Hoffman, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 324,280, Mar. 15, 1989, Pat. No. 5,011,566. This application Jan. 30, 1991, Ser. No. 649,090
Int. Cl.[5] C03C *25/06;* B32B *5/12*
U.S. Cl. 428—34.4 **18 Claims**

1. A tube preform, comprising:
a plurality of microscopic hollow tubes, said microscopic hollow tubes being oriented in a predetermined configuration and having an inner diameter in the size range of about 1 micron to less than 50 microns, said microscopic hollow tubes having a wall thickness in the size range of from about 0.01 microns to about 10,000 microns, said

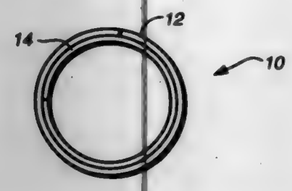
VOL 1160 ISS 5 MR 29 1994 UMI

tubes being formed on fibers having an outer diameter equal to said inner diameter of said tubes, the fibers being removed to leave said tubes, said tubes being originally formed in its final shape and diameter, and



a bonding material, said bonding material holding said hollow tubes in the shape of said preform.

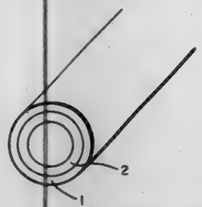
5,298,299
DOUBLE WALL FIRE PROOF DUCT
Lawrence E. Shea, 165 Lake Drive, San Bruno, Calif. 94066
Filed May 24, 1990, Ser. No. 528,803
Int. Cl.[5] F16L *11/08*
U.S. Cl. 428—34.5 15 Claims



1. A composite fire resistant plastic duct structure for carrying corrosive vapors and gases comprised of concentric contiguous inner and outer layers forming a rigid tubular wall, said outer layer comprising a fabric material impregnated with a fire-resistant cured resin material and said inner liner layer comprising a fabric material impregnated with a chemically corrosion resistant cured resin material and having a thickness in the range of 30–70- mils.

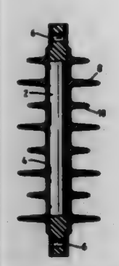
5,298,300
HEAT-SHRINKABLE TUBING AND PROCESS FOR PRODUCING THE SAME
Norihiro Hosoi, and Tomoyoshi Kishimoto, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Dec. 31, 1991, Ser. No. 815,186
Claims priority, application Japan, Jan. 9, 1991, 3-011651
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—34.9 6 Claims

1. Heat-shrinkable two-layer tubing comprising:
(a) an outer layer comprising a crosslinked fluorine-containing resin composition comprising a fluorine-containing resin containing a vinylidene fluoride unit as a base polymer and a polyfunctional monomer containing at least two unsaturated double bonds in the molecule thereof, and
(b) an inner layer provided on the inner wall of said outer layer consisting essentially of a fluorine-containing resin composition which (1) has a melting point of not higher than 110° C. as measured by means of a differential scanning calorimeter with a rise in temperature, (2) has a



fluorine-containing resin containing a vinylidene fluoride unit, and (3) is non-crosslinked.

5,298,301
ELECTRICAL INSULATOR
John Midgley, San Carlos, Calif., and David W. M. Thornley, Malmesbury, England, assignors to Raychem Limited, London, England
PCT No. PCT/GB90/01594, § 371 Date Apr. 15, 1992, § 102(e) Date Apr. 15, 1992, PCT Pub. No. WO91/06106, PCT Pub. Date May 2, 1991
PCT Filed Oct. 16, 1990, Ser. No. 852,196
Claims priority, application United Kingdom, Oct. 17, 1989, 8923408
Int. Cl.[5] H01B *17/32*
U.S. Cl. 428—34.9 10 Claims



1. An electrical insulator comprising:
(a) an outer component, and
(b) an inner component, in which
(i) said inner component mechanically supports said outer component,
(ii) said outer component is of generally tubular configuration formed from electrically insulating, non-tracking weather resistant, polymeric material, and
(iii) said inner component is formed from a substantially homogeneous, non-hygroscopic, electrically insulating polymeric material having a Flexural Modulus of between 0.5 and 20.0 GPa at 23° C.

5,298,302
FILM WITH IMPROVED LAP SEAL
Peter R. Boice, Taylors, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed Aug. 21, 1992, Ser. No. 935,696
Int. Cl.[5] B65B *53/00*
U.S. Cl. 428—34.9 9 Claims

1. A multilayer film with improved lap seal strength comprising:
a) a core layer comprising a linear ethylene alpha olefin copolymer; and
b) two skin layers comprising a polymeric material selected from the group consisting of:

i) a blend of ethylene propylene copolymer and polybutylene,



ii) a blend of propylene polymer or copolymer and propylene butene copolymer; and
iii) propylene butene copolymer.

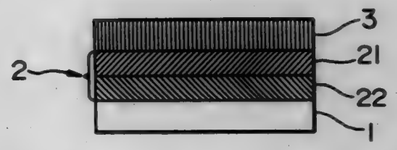
5,298,303
FABRIC STRUCTURE FOR SEVERE USE APPLICATIONS
Richard C. Kerr, Rutherfordton, N.C.; John R. Dunewood; Jill R. Meunzel, both of Spartanburg, S.C.; Eddie L. Jarvis, Charlotte, N.C., and Bert A. Ross, Conyngham, Pa., assignors to Reeves Brothers, Inc., Spartanburg, S.C.
Continuation-in-part of Ser. No. 695,852, May 6, 1991, Pat. No. 5,110,666, which is a continuation-in-part of Ser. No. 326,183, Mar. 20, 1989, Pat. No. 5,013,811. This application Nov. 6, 1991, Ser. No. 788,653
Int. Cl.[5] B32B *27/08, 27/40, 33/00;* B64D *37/02;* B65D *85/84*
U.S. Cl. 428—35.7 44 Claims

1. A coated fabric having abrasion resistance, flexibility toughness and chemical resistance suitable for use in flap peening devices or aircraft fuel cells comprising a fabric substrate and a coating thereupon, said coating comprising a plurality of layers wherein at least one of the layers comprises a first linear polyurethane elastomer formed from a polyol; a diisocyanate compound; a first extender component having a molecular weight of below about 500; and a second extender component; wherein the diisocyanate compound is initially reacted with the first extender component in a molar ratio of above 2:1 to form a modified diisocyanate component having a functionality of about 2 prior to reaction with the other components to provide relatively low temperature processing properties to the composition; and another of said layers comprises a polyester polyurethane.

21. An article comprising the coated fabric of claim 1 and a plurality of rivets attached thereto.

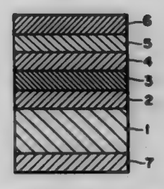
26. An aircraft fuel cell comprising:
an inner ply configured and adapted for retaining fuel therein;
an outer ply configured and adapted to provide handling and abrasion resistance to the fuel cell; and
a fuel barrier ply located between said inner and said outer plies to reduce the permeability of the cell to hydrocarbon fuel;
wherein at least one of said inner and outer plies comprises a linear polyurethane formed from a polyol; a diisocyanate compound; a first extender component having a molecular weight of below about 500; and a second extender component; wherein the diisocyanate compound is initially reacted with the first extender component in a molar ratio of above 2:1 to form a modified diisocyanate component having a functionality of about 2 prior to reaction with the other components to provide relatively low temperature processing properties to the composition, said polyurethane configured and adapted to provide improved chemical and hydrolytic resistance to the cell.

5,298,304
ADHESIVE TAPES FOR TAPE AUTOMATED BONDING
Hitoshi Naraoshima; Yoshikazu Tsukamoto; Tadahiro Ohshi, and Atsushi Koshimura, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan
Division of Ser. No. 761,939, Sep. 20, 1991. This application Nov. 23, 1992, Ser. No. 980,230
Claims priority, application Japan, Jan. 23, 1990, 2-117444; Jan. 30, 1990, 2-19265
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 3 Claims



1. An adhesive tape for tape automated bonding (TAB), comprising a protective film and an adhesive layer laminated on an organic-insulating film, wherein said adhesive layer comprises at least two layers:
one layer comprising at least a polyamide resin which is laminated on one surface of said organic-insulating film; and
another layer comprising at least a polyamide resin and a resol-type resin which is laminated on a surface of said protective film.

5,298,305
PHASE-CHANGE TYPE INFORMATION RECORDING MEDIUM
Michiaki Shinozuka, Yokohama; Makoto Harigaya, Hiratsuka; Yukio Ide, Mishima; Yoshiyuki Kageyama, Yokohama, and Hiroko Iwasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 998,398
Claims priority, application Japan, Jan. 8, 1992, 4-001488
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 7 Claims



1. A phase-change type information recording medium comprising a substrate and a recording layer formed thereon, comprising a recording material with the composition thereof in terms of atomic percentage being represented by general formula:

$$Ag_\alpha In_\beta Te_\gamma Sb_\delta + M_x$$

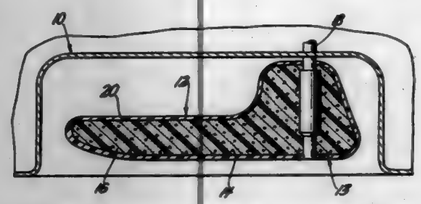
wherein $5 \leqq \alpha \leqq 17$, $6 \leqq \beta \leqq 18$, $13 \leqq \gamma \leqq 36$, $33 \leqq \delta \leqq 77$, $0.5 \leqq x \leqq 10$, $\alpha+\beta+\gamma+\delta+x=100$, and M is one additional element selected from the group consisting of B, N, C, P and Si.

5,298,306

SOFT-FEEL VEHICLE DOOR HANDLE

Leonard G. Miller, Orchard Lake, Mich., assignor to Molmec Inc., Walled Lake, Mich.

Filed Jul. 10, 1992, Ser. No. 912,338
Int. Cl.[5] B32B *1/06*
U.S. Cl. 428—68 2 Claims



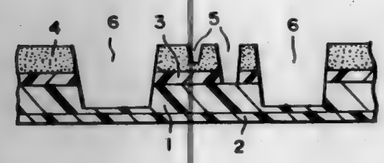
1. A soft-feel vehicle door handle (12) connected through rotatable or pivotal means (18) to a door latching linkage to permit latching and unlatching action of a door in response to movement of said door handle, said door handle (12) comprising a hand gripping portion (16) formed of a rigid plastic core element (13), a soft plastic skin (20) chemically compatible with and mold bonded about said hand gripping portion 16, said skin having a durometer hardness in the range of 50 to 100 and thickness in the range of 0.2 to 2.0 millimeters.

5,298,307

ENGRAVING SHEET STRUCTURE

Akira Suzuki; Shoji Misonoo; Kozo Fukuda, and Naoyuki Ishii, all of Tokyo, Japan, assignors to EPC Technology Co., L.T.D., Tokyo, Japan

Continuation-in-part of Ser. No. 894,943, Jun. 8, 1992, abandoned. This application Oct. 8, 1992, Ser. No. 928,042
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—141 13 Claims



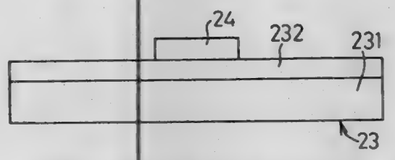
1. An engraving sheet structure, comprising: a substrate made of a plastic sheet having an opacity not greater than 70%, and an engraving layer formed on said substrate and having an opacity not less than 40%; wherein the opacity of said substrate is lower than that of said engraving layer and the difference in the opacity between said substrate and said engraving layer is not less than 30%, said engraving layer being adapted to be engraved to form an image from its surface down to the level of said substrate.

5,298,308

IMAGE-RETRANSFERABLE SHEET HAVING A LAYER OF A SURFACE TREATING AGENT

Mitsuo Yamane, Yokkaichi, and Takashi Kawaguchi, Aichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 666,743, Mar. 8, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 820,007
Claims priority, application Japan, Mar. 16, 1990, 2-67973; Mar. 16, 1990, 2-67974; Feb. 27, 1991, 3-32689; Feb. 27, 1991, 3-32690
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 18 Claims



1. An image-retransferable sheet for retransferring an image of a transferred ink by a heat sensitive transferring method onto an image receiving member comprising:

a substrate having a first surface and a second surface which is opposed to the first surface;

a layer of a surface treating agent coated on the first surface of said substrate, said layer having an exposed surface and a tensile strength of from about 1 kg/cm^2 to about 100 kg/cm^2; and

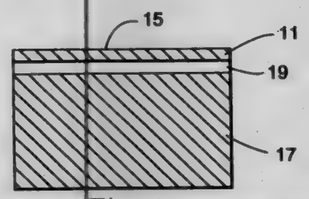
an ink image on the exposed surface of said layer of surface treating agent coated on the first surface of said substrate, said ink image being transferred by the heat sensitive transferring method onto the exposed surface of said layer, whereby the ink image is retransferred onto the image receiving member together with said layer of said surface treating agent, substantially the entire portion of said layer of said surface treating agent which underlies the ink image releasing from said first surface of said substrate by application of pressure to the second surface of said substrate, so that said layer of said surface treating agent covers said ink image retransferred on the image receiving member.

5,298,309

FILM CONSTRUCTION FOR USE IN A PLAIN PAPER COPIER

Joseph C. Carls; Alan J. Herbert, and Donald J. Williams, all of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 788,138, Nov. 5, 1991, Pat. No. 5,208,093.
This application Feb. 24, 1993, Ser. No. 22,729
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 9 Claims



1. An electrographic article comprising a transparent sheet having attached releasably thereto an overlay, at least a portion of such overlay being opaque, said overlay consisting of a sensing stripe and a tab, said sensing stripe being along and in

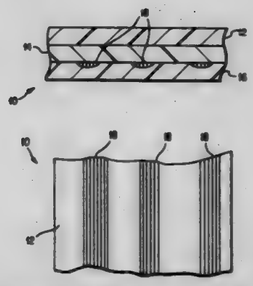
register with a leading edge of said transparent sheet and having a width of from about 5 to about 20 mm, wherein said tab and said sensing stripe are separated by a transparent window, said transparent window being parallel to said leading edge of said transparent sheet, said transparent window being from about 5 to about 15 mm wide.

5,298,310

STRIPED FILM AND APPARATUS AND METHOD

Marvin R. Havens, Greer, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 579,009, Sep. 7, 1990, Pat. No. 5,110,530.
This application Jan. 24, 1992, Ser. No. 825,471
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—204 6 Claims



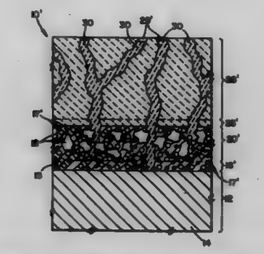
1. A film comprising at least three layers, of which at least one interior layer comprises a pigmented resin distributed so that the resulting film has a striped appearance; each of the layers comprising a polymeric resin.

5,298,311

MOISTURE AND OXIDATION RESISTANT CARBON/CARBON COMPOSITES

Larry D. Beatson, Brecksville; Robert J. Price, Hudson; Mark J. Purdy, and Edward R. Stover, both of Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 13, 1989, Ser. No. 450,145
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—216 23 Claims



1. An oxidization-resistant structure comprising a carbon/carbon substrate formed with interstices throughout, the substrate having in its as-manufactured (carbonized) state prior to substantial exposure in an oxidizing atmosphere at elevated temperatures, a multi-layer oxidation protection system including

a) an inner sealant layer having boron and other metals, in elemental form or as an oxide or oxidizable moiety or mixture of any of the foregoing chemical forms, dispersed throughout a carbonaceous binder, the boron expressed as boron being present in amount of from about 50 to 100 weight percent excluding binder, the other metals when expressed as oxides being present in amount of from about 0 to 50 weight percent excluding binder, the carbonaceous binder being present in amount of 15–40% by weight of the total inner sealant layer prior to carbonization, the carbonaceous binder forming pores upon carbonization to provide the inner sealant layer in its carbonized form with from about 20 to about 50 volume percent porosity, said boron and said metal oxidizing when exposed to a high temperature, oxidizing environment to form boron oxide and one or more metal oxides within the pores of the inner sealant layer, at high temperatures the metal oxide or oxides which form stabilizing the viscosity of the molten borate glass which forms; and adjacent thereto

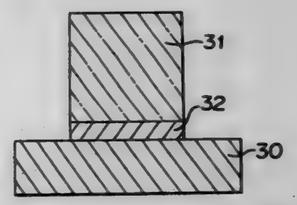
b) an outer sealant layer comprising boron, silicon, and zirconium, in elemental form or as an oxide or oxidizable moiety or mixture of any of the foregoing chemical forms, and lithium as an oxide or oxidizable moiety or mixture of the foregoing chemical forms, and refractory granules having a size from about 250 micrometers to about 50 micrometers dispersed in a carbonaceous binder, the boron expressed as boron being present in amount of from about 10 to 50 weight percent, the silicon expressed as silicon dioxide present in amount of from about 0 to 25 weight percent, lithium expressed as lithium oxide (Li_2O) in amount of from about 0 to about 10 weight percent and zirconium expressed as zirconia in amount from about 0 to about 30 weight percent and refractory granules in amount of about 20 to 80 weight percent, all of the foregoing expressed in percent by weight of the total outer sealant exclusive of the carbonaceous binder, the carbonaceous binder being present in amount from about 15 weight percent to about 40 weight percent of the total outer sealant prior to carbonization, the carbonaceous binder forming pores upon carbonization to provide the outer sealant layer exclusive of the volume occupied by the refractory granules with from about 20 to about 50 volume percent porosity, said boron, silicon, zirconium, and lithium oxidizing when exposed to a high temperature, oxidizing environment to form boron oxide and a metal oxide within the pores of said outer sealant layer, and at high temperatures stabilizing the viscosity of the molten borate glass which forms and reducing loss of boron due to exposure to moisture.

5,298,312

NON-IRIDESCENT TRANSPARENT PRODUCT

Takuji Oyama, and Yasuhiko Akao, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,582
Claims priority, application Japan, Apr. 4, 1991, 3-99634
Int. Cl.[5] L03C *17/23*
U.S. Cl. 428—216 15 Claims



1. A non-iridescent transparent product comprising a transparent substrate, a transparent film having a refractive index of at least 1.6 and a thickness of at least 0.15 μm formed on the substrate, and an underlying layer, having a thickness of 10 to 500 Å, formed at the boundary between the substrate and the film, wherein the underlying layer is an absorbing layer with

VOL 1160 ISS 5 MR 29 1994 UMI

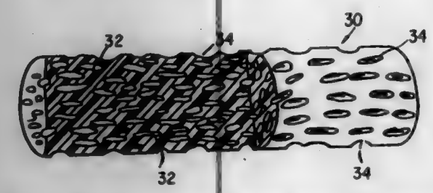
an extinction coefficient k being at lest 0.01; and wherein when the product is observed from the side of the transparent substrate opposite to the side the transparent film is applied on, the minimum value of the ripple ratio of the spectral reflectance curve in the visible light region is within ±30%.

5,298,313

ABLATIVE AND INSULATIVE STRUCTURES AND MICROCELLULAR CARBON FIBERS FORMING SAME

Robert L. Noland, Glenbrook, Nev., assignor to Ketema Inc., Odenton, Md.

Filed Jan. 31, 1990, Ser. No. 476,050
Int. Cl.[5] D03D *3/00*; B32B *7/00, 9/00*; D01C *5/00*
U.S. Cl. 428—229 **17 Claims**



1. An improved carbon fiber formed from a polyacrylonitrile polymer or co-polymer having a microcellular closed cell structure and a specific gravity no greater than about 1.5.

5,298,314

MC4 UNSATURATED POLYESTER RESIN SYSTEM

Thomas E. Even, Memphis; Stephen K. Bishop, Ardmore, both of Tenn., and Lewis M. Perbey, Chesterland, Ohio, assignors to Glasteel Industrial Laminates, Inc., Collierville, Tenn.

Filed Sep. 10, 1991, Ser. No. 756,203
Int. Cl.[5] C08L *67/06*
U.S. Cl. 428—245 **12 Claims**

1. A curable unsaturated polyester resin blend comprising a mixture of:

(a) from about 30 percent to about 80 percent by weight of a first unsaturated polyester resin, and

(b) from about 70 percent to about 20 percent by weight of a second unsaturated polyester resin, having a degree of unsaturation of from about 20 percent to about 70 percent, wherein said first and second polyester resins are derived from glycols and dibasic acids and said first polyester resin has a higher degree of unsaturation than said second polyester resin,

(c) a brominated vinyl monomer in an amount such that the weight bromine is from about 5 to about 40 percent by weight as compared to the total weight of said resin blend; and

(d) an effective amount of a multi-tier, free-radical generating catalyst system for curing said curable polyester resin blend, said catalyst system comprising at least three catalysts wherein,

(i) a first catalyst has a half-life of about 15 minutes at 105° C. and a half life of about 20 seconds at 145° C.,

(ii) a second catalyst has a half-life of about 10 hours at 105° C. and a half-life of about 8 minutes at 145° C., and

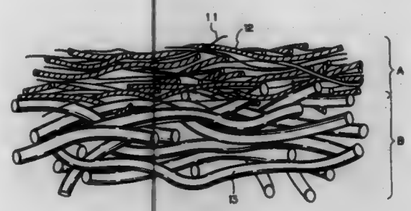
(iii) a third catalyst has a half-life of greater than about 40 hours at 105° C. and a half-life of about 30 minutes at 145° C.

5,298,315

COMPOSITE NONWOVEN FABRIC

Minoru Fukui, Suita, and Toshiko Kiyotaki, Kawanishi, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 968,066, Oct. 29, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 79,859
Claims priority, application Japan, May 2, 1991, 3-100794; May 1, 1992, 4-112026; Jun. 3, 1992, 4-142776
Int. Cl.[5] B32B *5/06*
U.S. Cl. 428—298 **6 Claims**



1. A composite nonwoven fabric comprising a staple fiber nonwoven fabric (A) having the following constitutions (1) to (3) and a filament nonwoven fabric (B) formed such that filaments are partially bonded with each other, wherein a part of the staple fibers constituting the staple fiber nonwoven fabric (B) and interlaced with the filaments constituting the filament nonwoven fabric (B) so as to produce a layered body of the staple fiber nonwoven fabric (A) and the filament nonwoven fabric (B), and the number N of the staple fibers inserted to a depth of one to two or more of the thickness of the filament nonwoven fabric (B) in a region having a length of 500 μm in an optional cross section of the composite nonwoven fabric is 20 or less;

(1) F+G≧50% by weight

1/7≦F/G≦4/3

wherein

F: ratio of a staple fiber having a fineness of 0.3 denier or less in all the staple fibers

G: ratio of a staple fiber having a fineness of 0.5 denier or more in all the staple fibers

(2) Weight per unit area: 10 g/m^2 to 40 g/m^2

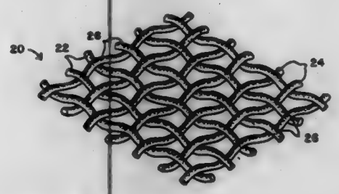
(3) Mean orientation degree (Z) of the staple fibers: 2.0 to 10.

5,298,316

COATED TEXTILE FOR APPAREL

Thomas E. Coughlin, Tyngsboro, Mass., assignor to Worthen Industries, Inc., Nashua, N.H.

Division of Ser. No. 968,040, Oct. 27, 1992. This application Jun. 22, 1993, Ser. No. 81,396
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—265 **3 Claims**



1. A coated textile comprising:

a textile formed of threads; and

a clear fused resin coated on said threads, the resin characterized in that when the textile is stressed the resin fractures, importing a worn look to the stressed area and the coated textile has substantially the same feel, vapor transmission and moisture repellancy properties as the uncoated fabric.

5,298,317

AIR BAG COATING COMPOSITION, AIR BAG AND PREPARATION THEREOF

Masaharu Takahashi, and Kazuma Momii, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,839
Claims priority, application Japan, Oct. 8, 1991, 3-289195
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—266 **7 Claims**

1. An air bag comprising a base fabric having applied thereon a cured coating of an air bag coating composition,

said fabric being plain weave fabric,

said coating composition having a viscosity of 10,000 to 50,000 cs at 25° C. comprising:

100 parts by weight of an organopolysiloxane of the following average compositional formula (1):

$$R_aSiO_{(4-a)/2} \quad (1)$$

wherein R is a substituted or unsubstituted monovalent hydrocarbon group and letter a is a number of 1.98 to 2.01, having a degree of polymerization of 1,000 to 10,000 and a molecular weight distribution index (Mw/Mn) of less than 5, and

about 10 to 1,000 parts by weight of an organic solvent, and

said air bag having no strike-through of the coating composition.

5,298,318

POLY(ARYLENE SULFIDE) RESINS REINFORCED WITH GLASS FIBERS

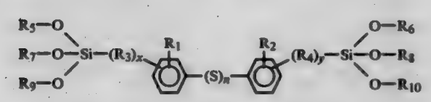
David A. Soules; Randy L. Hagenson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1990, Ser. No. 796,756
Int. Cl.[5] B32B *17/04*; C08K *3/36, 3/40*
U.S. Cl. 428—273 **34 Claims**

24. A woven glass fiber reinforced composite comprising:

(a) poly(arylene sulfide) having a melt flow within the range of about 1 to about 800 grams per 10 minutes;

(b) at least one silane within the formula:



wherein n is an integer from 1 to 30; wherein each of R_1 and R_2 is H or an alkyl group having 1 to 30 carbon atoms; wherein each of R_5, R_6, R_7, R_8, R_9 and R_{10} is an alkyl group having from 1 to 30 carbon atoms; wherein x is 0 or 1; wherein y is 0 or 1; and wherein each of R_3 and R_4 is an alkylene group having from 1 to 30 carbon atoms; and

(c) a woven glass fabric.

5,298,319

MOLDABLE AUTOMOTIVE TRUNK LINER

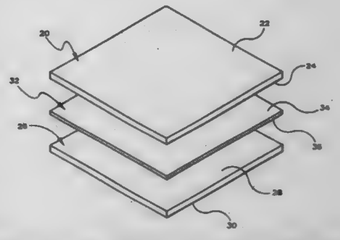
John M. Donahue; Christopher H. Gardner, both of Easley, and John Owens, Seneca, all of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 13, 1992, Ser. No. 850,755
Int. Cl.[5] B32B *27/36, 5/06, 5/22*
U.S. Cl. 428—284 **18 Claims**

1. A moldable fibrous composite comprising:

a first layer having a first face and a second face wherein said first layer comprises a non-woven fabric consisting essentially of polypropylene staple fiber;

a second layer having a first face and a second face wherein said first face of said second layer is adjacent to said second face of said first layer and wherein said second layer comprises an extruded thermoformable material comprising polypropylene; and



a third layer having a first face and a second face wherein said first face of said third layer is adjacent to said second face of said second layer and wherein said third layer comprises a non-woven fabric consisting essentially of polypropylene staple fiber.

5,298,320

NON-WOVEN MATERIAL CONTAINING WOOL

Robert R. S. Geoffrey, Ocean Grove, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Australian Commonwealth Territory, Australia

Continuation of Ser. No. 444,160, filed as PCT/AU88/00100, Apr. 8, 1988, published as WO88/08049, Oct. 20, 1988, abandoned. This application Jun. 26, 1992, Ser. No. 905,203
Claims priority, application Australia, Apr. 10, 1987, PI1370/87
Int. Cl.[5] D04H *1/62*
U.S. Cl. 428—288 **13 Claims**

1. A non-woven material comprising a web of both synthetic and wool fibres stabilised by dispersed bonds between the fibres provided by a thermoplastic bonding medium, wherein said wool fibers have been subjected to an acid chlorination treatment comprising exhaustion of at least about 3% of chlorine, based on the weight of wool, from a solution having a pH lower than about 5.5, the amount of chlorine and the pH being selected so that said treatment is effective to modify the epicuticle of the wool so as to substantially increase the surface free energy of the wool fibres without destroying their integrity to an extent sufficient for the wool fibres to accept the thermoplastic bonding medium of the web, whereby said dispersed bonds include bonds with wool fibres of the web substantially effect to hold the wool fibers of the material in the web.

5,298,321

RECYCLABLE VEHICULAR CUSHIONING MATERIAL AND SEAT

Hideo Isoda, Ootsu; Mitsuhiro Sakuda, Iwakuni; Yoshihiro Amagi, Osaka; Kenji Tanaka, Iwakuni; Kunio Kimura, Ootsu; Michio Kobayashi, Iwakuni; Tadaaki Hamaguchi, Iwakuni, and Seiji Sawahara, Iwakuni, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1992, Ser. No. 907,543
Claims priority, application Japan, Jul. 5, 1991, 3-060639[U]; Feb. 26, 1992, 4-076040; Feb. 27, 1992, 4-076217; Feb. 27, 1992, 4-076218; Mar. 16, 1992, 4-091939
Int. Cl.[5] D04H *1/58*
U.S. Cl. 428—288 **6 Claims**

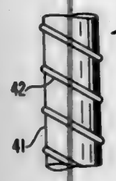
1. A vehicular cushioning material which is thermoformed from a web composed of

(A) three-dimensionally crimped polyester fiber
(1) having a fineness lower than 45 denier per filament,
(2) having an initial tensile strength (IS) higher than 35 g/d,
(3) having a crimp index (Ci) higher than 15%,
(4) having a crimp number (Cn) greater than 10/inch, and
(5) satisfying the following condition:

$$IS \geq (\Delta\epsilon + 0.6)^{-2.8} \times 10^3 + 10$$

where $\Delta\epsilon$ denotes the elongation (%) at the elastic limit, including the elongation of crimp, which is measured after dry-heat treatment at 200° C. for 5 minutes under no load; and
(B) a heat-bonding fiber of the sheath-core type containing p2 (1) a polyester elastomer comprising a block copolymer as the heat-bonding component, and
(2) a non-elastomeric core,
which are mixed and dispersed and, optionally interlaced; said cushioning material having a layer whose bulk density is 0.02–0.06 g cm^3.

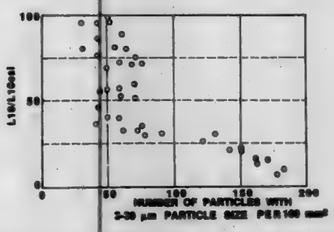
5,298,322
PRESS PAD FOR HIGH-PRESSURE PRESSES
Bruno Hennecken, and Paul Schmitz, both of Aachen, Fed. Rep. of Germany, assignors to Rheinische Filztuchfabrik GmbH, Stolberg, Fed. Rep. of Germany
Filed Jun. 11, 1991, Ser. No. 713,066
Claims priority, application European Pat. Off., Dec. 31, 1990, 90125833.5
Int. Cl.[5] B30B *15/02*; D03D *15/00*
U.S. Cl. 428—285 **5 Claims**



1. A press pad which is asbestos-free and which can withstand pressures ranging between 85 and 100 kP/cm^2 and temperatures ranging between 130 and 160° C. for high-pressure multi-story presses for the production of high-pressure laminates, comprising:
a textile fabric comprised of a plurality of yarns comprising aromatic polyamide; and
a plurality of metal filaments disposed in the textile fabric in an amount ranging from 10 to 25 weight percent based on the total weight of the press pad, the metal filaments being helically wound around each of the aromatic polyamide yarns so that a proportion of the metal filaments is disposed on an outer surface of the textile fabric.

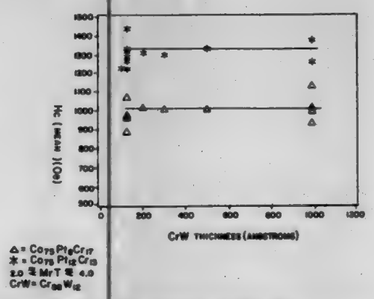
5,298,323
BEARING STEEL AND ROLLING BEARING MADE THEREOF
Hiroshi Narai; Tsutomu Abe, both of Fujisawa, and Shigeru Okita, Yokohama, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1990, Ser. No. 594,369
Claims priority, application Japan, Oct. 11, 1989, 1-264792; Mar. 22, 1990, 2-73117; Jul. 31, 1990, 2-202836
Int. Cl.[5] B32B *18/00*
U.S. Cl. 428—325 **36 Claims**

1. A bearing steel having inclusion particles composed of oxides, inclusion particles composed of oxide-based materials or inclusion particles composed of mixtures of oxides and oxide based materials, such that, in a given area of 160 mm^2, the number of inclusion particles having an average particle size between 3 to 30 μm is less than about 80 and the amount of inclusion particles having an average particle size greater than about 10 μm is less than 2% of the total number of inclusion



particles having an average particle size between 3 to 30 μm, wherein the number of inclusion particles per 100 mm^3 having an average particle size of 15 to 30 μm less than about 10.

5,298,324
MAGNETIC RECORDING MEDIUM HAVING A COBALT-PLANTINUM-CHROMIUM ALLOY MAGNETIC LAYER AND A CHROMIUM-TUNGSTEN UNDERLAYER A SPECIFIED UNDERLAYER THICKNESS RANGE
Peter R. Ivett, Totton, England; Kenneth E. Johnson, and Richard E. Nelson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 631,564, Dec. 21, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 975,207
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—336 **6 Claims**



1. Magnetic recording medium, comprising;
a nonmagnetic substrate member, a binary chromium-tungsten alloy, nonmagnetic underlayer formed on said substrate member, said chromium-tungsten underlayer comprising about 12% tungsten by atomic percent, the remainder of said underlayer being chromium,
said underlayer having a thickness range between 100 Å and 1000 Å, said medium having a coercivity varying less than 20% over the thickness range of said binary chromium-tungsten alloy, and
a magnetic layer comprising a $Co_{75}PtCr$ alloy formed on said underlayer, said magnetic layer alloy containing platinum in the range of from about 08 to about 12 atomic percent, the remainder being chromium.

5,298,325
PRIMER COATING COMPOSITION AND POLYMERIC FILM COATED WITH PRIMER COATING FOR SILICONE RELEASE APPLICATIONS
Edwin C. Culbertson, Greer, S.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.
Division of Ser. No. 783,308, Oct. 28, 1991, Pat. No. 5,212,012, which is a division of Ser. No. 609,869, Nov. 7, 1990, Pat. No. 5,077,353. This application Feb. 10, 1993, Ser. No. 15,745
Int. Cl.[5] B32B *27/34, 27/36*
U.S. Cl. 428—336 **12 Claims**

1. A silicone release film for providing temporary support to an adhesive backed article, comprising
a) a polymeric film;
b) an effective amount of a primer coating applied to at least one side of said polymeric film; and
c) an effective amount of a silicone overcoating applied to said primer coating sufficient to prevent adhesion between said polymeric film and said adhesive backed article, wherein said primer coating comprises
i) from 25 to 75% by weight of a glycidoxysilane; and
ii) from 75% to 25% by weight of a copolyester mixture, said copolyester mixture comprising
a) from about 65 to 98 mol percent isophthalic acid;
b) from about 0 to 30 mol percent of an aliphatic dicarboxylic acid;
c) from about 2 to about 20 mol percent of at least one sulfomonomer containing a sulfonate group attached to a dicarboxylic nucleus; and
d) stoichiometric quantities of about 100 mol percent of at least one glycol having about 2 to 11 carbon atoms.

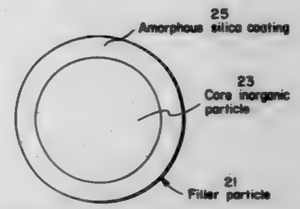
5,298,326
COOK IN FILM WITH IMPROVED SEAL STRENGTH AND OPTICS
Lawrence R. Norpoth, and Doana S. Bentley, both of Simpsonville, S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed Mar. 27, 1992, Ser. No. 858,825
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—349 **35 Claims**

1. A multiple layer film, comprising:
a sealing layer;
a core layer, comprising a blend of a polymeric material of a fractional melt index and an ethylene alpha-olefin copolymer; and
an abuse layer, comprising a polymeric material of a fractional metal index.

5,298,327
HIGH TEMPERATURE PLASTIC LIGHT CONDUIT AND COMPOSITION OF MATTER THEREFOR
Jamshid J. Zarian, Woodland Hills, and John A. Robbins, Canoga Park, both of Calif., assignors to Lumenyte International Corporation, Costa Mesa, Calif.
Continuation of Ser. No. 883,350, Jul. 8, 1986, abandoned. This application Jan. 23, 1989, Ser. No. 300,202
Int. Cl.[5] B32B *27/00*; C08F *20/14, 22/10*
U.S. Cl. 428—373 **37 Claims**

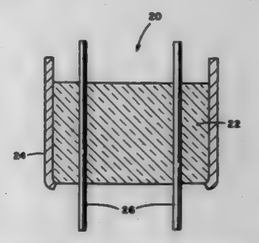
1. A monofilament fiber optic pipe, wherein the improvement comprises:
a substantially transparent, solid, flexible, essentially impurity free, thermoset polymer,
said polymer being the polymerization reaction product of at least one monomer selected from the group consisting of esters, vinyl esters, styrenes and hydrocarbon derivatives of styrene and whereby said pipe has the property of being able to transmit substantially white light throughout its length.

5,298,328
PACKING MATERIAL AND METHOD OF MAKING SAME
Hajime Abe; Tsutomu Nishiwaki, and Yoji Nagano, all of Tokyo, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan
Filed Aug. 12, 1991, Ser. No. 743,514
Claims priority, application Japan, Aug. 10, 1990, 2-212120
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—403 **5 Claims**



1. A packing material comprising:
a thermosetting resin; and
a filler particle dispersed in the thermosetting resin, the filler particle comprising a core inorganic material consisting essentially of a material selected from the group consisting of crystalline silicon dioxide and silicon nitride, the particle having an average diameter of from about 10 μm to about 50 μm and having a thermal conductivity higher than that of amorphous silica, the core inorganic particle being coated with an amorphous silica coating thereon, the amorphous silica coating having a thickness of from about 0.01% to about 1% of the core inorganic particle diameter.

5,298,329
ALKALI-LEAD-IRON PHOSPHATE GLASS AND ASSOCIATED METHOD
Lynn A. Boatner, Oak Ridge; Brian C. Sales, Knoxville, both of Tenn., and Sofia C. S. Franco, Santafé de Bogotá, Colombia, assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Apr. 28, 1992, Ser. No. 875,224
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—432 **3 Claims**



1. In a glass-to-metal seal application including a metal surface against which the glass is in contact, the improvement comprising:
a composition of glass consisting essentially of about 40 to 49 molar percent phosphorus oxide, about 10 to 25 molar percent lead oxide, about 10 to 17 molar percent iron oxide and about 23 to 30 molar percent alkali oxide which have been mixed and melted for placement in contact with a metal surface to provide the glass with a coefficient of thermal expansion between about 9×10^{-6}/°C. and about

20×10^{-6}/°C. which approximates that of said metal surface.

5,298,330

THICK FILM PASTE COMPOSITIONS FOR USE WITH AN ALUMINUM NITRIDE SUBSTRATE

Edward Stadnicar, Jr., Parma, Ohio; Kevin W. Allison, Goleta; Dana L. Haskey, Santa Barbara, both of Calif., and Gordon J. Roberts, Parma, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 620,437, Nov. 30, 1990, abandoned, which is a division of Ser. No. 91,080, Aug. 31, 1987, abandoned. This application Apr. 21, 1993, Ser. No. 50,751

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—432 10 Claims

1. An aluminum nitride substrate having bonded to at least a portion of one surface thereof a thick film composition, said thick film comprising a glass composition and an electrical property modifier, the addition of said electrical property modifier rendering said thick film composition a resistor, a conductor or a dielectric, said glass composition comprising:

in weight percent, from about 27.0 to about 56.5 percent silicon dioxide, from about 20 to about 47.0 percent barium oxide, from about 4.5 to about 25.0 percent boron oxide, from about 0 to about 18.0 percent lead oxide, from about 0 to about 15.0 percent zinc oxide, from about 3.0 to about 14.0 percent aluminum oxide, at least a trace amount of zirconium oxide, said zirconium oxide being present up to about 3.0 percent, from about 0 to about 8.0 percent magnesium oxide, from about 0 to about 12.0 percent calcium oxide, from about 0 to about 3.0 percent fluorine, from about 0 to about 3.0 percent potassium oxide, from about 0 to about 3.0 percent sodium oxide, from about 0 to about 4.0 percent tungsten oxide, and from about 0 to about 4.0 percent lithium oxide, wherein barium oxide plus lead oxide is present in an amount at least equal to about 15.0 percent, zinc oxide plus calcium oxide plus aluminum oxide is present in an amount at least equal to about 5.0 percent, calcium oxide plus magnesium oxide plus barium oxide is present in an amount at least equal to about 7.0 percent, calcium oxide plus magnesium oxide plus zirconium oxide is present in an amount at least equal to about 1.0 percent, zirconium oxide plus calcium oxide plus barium oxide is present in an amount at least equal to about 7.0 percent, potassium oxide plus sodium oxide plus lead oxide or barium oxide is present in an amount at least equal to 10.0 percent.

5,298,331

FLEXIBLE MULTI-LAYER POLYIMIDE FILM LAMINATES AND PREPARATION THEREOF

Kuppusamy Kanakarajan, Dublin, and John A. Kreuz, Columbus, both of Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

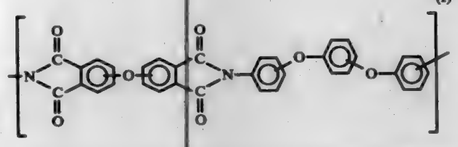
Continuation-in-part of Ser. No. 571,913, Aug. 27, 1990, abandoned. This application May 5, 1992, Ser. No. 878,483

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—458 16 Claims

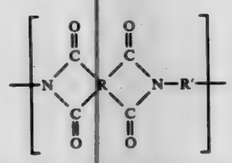
1. A flexible polyimide metal-clad laminate adapted for use in a flexible printed circuit and in tape automated bonding comprising at least one layer of a metallic substrate and at least one layer of an aromatic polyimide, said layer of aromatic polyimide being bonded on at least one side to said layer of metallic substrate with a peel strength of at least 4 pli as determined by ASTM Method IPC-TM-650, Method No. 2.4.9B, through an adhesive layer of a heat-sealable copolyimide comprising from 60 to 98 mole % of repeating imide units of the formula

(I)



and from 2 to 40 mole % of other repeating imide units of the formula

(II)



wherein R is the radical of a tetravalent organic carboxylic dianhydride selected from the group consisting of pyromellitic dianhydride, 4,4'-oxydiphthalic dianhydride, 3,3',4,4'-benzophenone tetracarboxylic dianhydride, 2,2',3,3'-benzophenone tetracarboxylic dianhydride, 3,3',4,4'-biphenyl tetracarboxylic dianhydride, 2,2',3,3'-biphenyl tetracarboxylic dianhydride, 2,2-bis(3,4-dicarboxyphenyl)hexafluoropropane dianhydride, bis(3,4-dicarboxyphenyl)sulfone dianhydride and m-phenylene bis(trimellitate)dianhydride; and wherein R' is the radical of a divalent aromatic or aliphatic diamine selected from the group consisting of p-phenylene diamine, hexamethylene diamine, heptamethylene diamine, octamethylene diamine, 4,4'-diaminodiphenyl ether, 3,4'-diaminodiphenyl ether, 1,3-bis(4-aminophenoxy)benzene, 1,2-bis(4-aminophenoxy)benzene, 1,3-bis(4-aminobenzoyloxy)benzene, 4,4'-diaminobenzanilide, 4,4'-bis(4-aminophenoxy)-phenyl ether and a polysiloxane diamine, provided that said repeating imide units of formula (I) are different from said repeating imide units of formula (II).

5,298,332

GLASS-CERAMIC COATINGS FOR TITANIUM-BASED METAL SURFACES

Ronald L. Andrus, Elmira, and John F. MacDowell, Penn Yan, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 409,506, Aug. 21, 1989, abandoned. This application Nov. 15, 1991, Ser. No. 792,646

Int. Cl.[5] B32B *15/04;* B05D *3/02*

U.S. Cl. 428—469 5 Claims

1. A method for protecting a substrate formed of a metal selected from the group consisting of titanium, titanium aluminides and titanium alloys from oxidation and chemical attack which comprises the steps of:

applying to a surface of the substrate a continuous glassy coating of an alkaline earth silicate glass having a composition consisting essentially, in weight percent on the oxide basis, of about 20–75% total of oxides selected in amounts not exceeding the indicated proportions from the group consisting of up to about 50% BaO, 55% SrO, and 35% CaO, 25–60% of SiO_2 and, as optional constituents, 0–25% MnO, 0–20% MgO, and 0–30% total of other compatible bivalent and trivalent metal oxides; and

crystallizing the continuous glassy coating by heat treatment to provide an adherent, densely crystalline glass-ceramic coating on the substrate surface.

5,298,333

CONDUCTIVE SURFACE LAYER

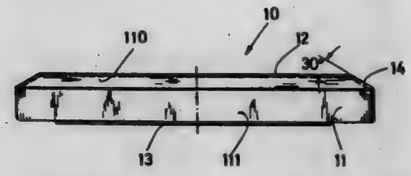
Uwe Maixner, Barum, and Dieter Milferstädt, Teupe, both of Fed. Rep. of Germany, assignors to GKSS-Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Continuation of Ser. No. 403,750, Sep. 6, 1989, abandoned. This application Apr. 19, 1991, Ser. No. 688,380

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1988, 3830174

Int. Cl.[5] H01L *41/08*

U.S. Cl. 428—472 11 Claims



1. A component comprising a substrate having properties selected from the group consisting of piezoelectric, pyroelectric, ferroelectric, and piezoceramic, and a homogeneous conductive surface layer comprising a hard product of at least one metal compound, wherein the metal in said metal compound is at least one of the metals in the Groups IIIA to VIIIA and IIIB to VIIIB of the Period Table of elements.

5,298,334

SAPONIFIED ETHYLENE-VINYL ACETATE COPOLYMER COMPOSITION AND THE USE THEREOF

Takamasa Moriyama, Suita; Hiroshi Takida, Takatsuki, and Tomoyoshi Uemura, Ibaraki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 648,801, Jan. 31, 1991, abandoned. This application Aug. 21, 1991, Ser. No. 748,144

Claims priority, application Japan, Feb. 1, 1990, 2-23015; Oct. 29, 1990, 2-293070

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] C08L *23/04, 29/02*

U.S. Cl. 428—474.4 2 Claims

1. A laminated structure comprising a plurality of layers, at least one layer of which is comprised of a saponified ethylene-vinyl acetate-containing copolymer composition comprising

(A) 50 to 99.5 weight % of a saponified ethylene-vinyl acetate copolymer with an ethylene content of 20 to 60 mole % and a degree of saponification of its vinyl acetate component being not less than 95 mole %,

(B) 0.4 to 50 weight % of an ethylene copolymer different from copolymer (A) and which has a density of 0.90–0.94 g/cm^3, and

(C) 0.1 to 15 weight % of a graft polymer obtained by grafting 0.05 to 10 parts by weight of an ethylenically unsaturated carboxylic acid or a derivative thereof to 100 parts by weight of a polyolefin resin to produce an adduct and reacting the adduct with a polyamide having a degree of polymerization of 350 to 500 where the reaction ratio of the polyamide to the adduct is 0.01 to 1 mole per mole of carboxyl group of the adduct.

5,298,335

METHOD FOR MAKING COATED PAPER AND A PAPER COATING COMPOSITION

W. Michael Reed, York, and Jan E. Smith, Greenville, both of Pa., assignors to P. H. Glatfelter Company, Spring Grove, Pa.

Filed Aug. 28, 1992, Ser. No. 936,308

Int. Cl.[5] B32B *23/08, 27/10*

U.S. Cl. 428—511 13 Claims

8. In a coated paper or paperboard having a coating comprising at least one natural pigment, a binder in an amount of about 1 to about 30 dry weight percent of said pigment and a rheological modifier imparting high and low shear viscosity properties to said composition to enable it to be applied to paper or paperboard by high speed coaters, the improvement providing said paper or paperboard with a coating weight of at least 8 pounds per ream per run per side on a dry basis of a composition and having a high matte gloss and smoothness, comprising the inclusion as rheological modifier poly(ethylene oxide) having a molecular weight of at least 500,000 in an amount of about 0.001 to about 10 dry weight percent of said pigments.

5,298,336

MULTILAYER COMPOSITE SLIDING MATERIAL HAVING EXCELLENT SEIZURE RESISTANCE PROPERTY

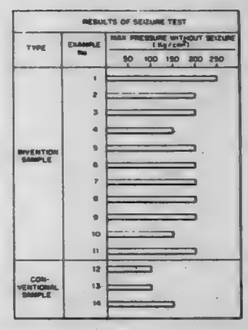
Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Tsukimitsu Higuchi, Gifu, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Filed Feb. 17, 1993, Ser. No. 18,719

Claims priority, application Japan, Feb. 18, 1992, 4-030495

Int. Cl.[5] B22F *3/16, 3/18*

U.S. Cl. 428—552 15 Claims



1. A multilayer composite sliding material with excellent seizure resistance property comprising a steel plate or a steel plate having a surface plated with copper; a bond layer having a thickness of 0.05 to 0.5 mm, formed on said steel plate, and make of a sintered powder material consisting of, by weight, 5 to 16% of tin, 0 to 15% of lead, 0 to 0.5% of phosphorus and balance essentially copper; and an alloy layer having a thickness of 0.1 to 1.0 mm, formed on said bond layer, and made of a sintered powder material consisting of, by weight, 5 to 16% of tin, 1 to 12% of MoS_2, and balance essentially copper.

5,298,337

PERFORATED PLATES FOR CRYOGENIC REGENERATORS AND METHOD OF FABRICATION

John B. Hendricks, Huntsville, Ala., assignor to Alabama Cryogenic Engineering, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 530,873, May 29, 1990, which is a continuation-in-part of Ser. No. 375,709, Jul. 5, 1989, Pat. No. 5,101,894. This application Nov. 27, 1991, Ser. No. 800,220

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

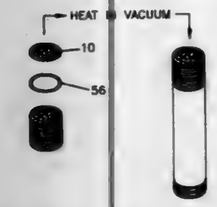
Int. Cl.[5] H01F *3/04;* B22F *5/00*

U.S. Cl. 428—566 22 Claims

1. A process for making perforated plates having holes with a uniform diameter throughout the thickness thereof which comprises:

providing a first extrusion can of a selected plate metal;

disposing a cylindrical billet of a selected sacrificial metal within said can and in axial alignment with the can;
extruding or drawing the billet-containing can whereby the can and billet are elongated and reduced in diameter;
stacking a plurality of reduced-diameter, extruded or drawn billet-containing cans in a second extrusion can of said plate metal, with the extruded or drawn cans in axial alignment with one another and with the second can;
extruding or drawing the second can whereby the sacrificial



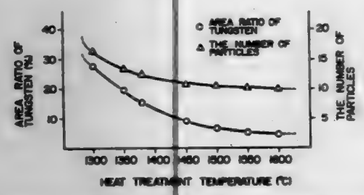
metal billets therein are further elongated and reduced in diameter to form wires;
repeating said stacking and drawing or extrusion steps a plurality of times until the diameter of said wires is reduced to correspond to a desired perforation diameter;
slicing the resulting final extruded or drawn can perpendicular to the axis thereof to obtain wafers of a desired thickness; and
selectively etching the wafers to remove the sacrificial metal wires whereby holes through the wafers are produced.

5,298,338

TITANIUM-TUNGSTEN TARGET MATERIAL AND MANUFACTURING METHOD THEREOF

Akitoshi Hiraki, Yasugi, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 708,340, May 31, 1991. This application Jul. 16, 1992, Ser. No. 914,545
Claims priority, application Japan, Jun. 15, 1990, 2-157287; Nov. 27, 1990, 2-324910; Feb. 12, 1991, 3-040999
Int. Cl.[5] B22F *7/00*
U.S. Cl. 428—569 **7 Claims**



1. A titanium-tungsten target material consisting essentially of a tungsten phase and a titanium-tungsten alloy phase surrounding the tungsten phase.

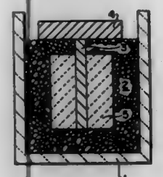
4. A method of manufacturing a titanium-tungsten target, comprising the steps of:
blending and milling a tungsten powder and a hydrogenated titanium powder having a grain size not greater than 25 μm so that a milled powder having an average grain size smaller than 5 μm and a maximum grain size smaller than 10 μm are obtained;
press-sintering the powder after or during a dehydrogenation treatment to form a sintered material; and
heating the sintered material at 1300° to 1550° C. to form a target consisting essentially of a tungsten phase and a titanium-tungsten alloy phase surrounding the tungsten phase.

5,298,339

ALUMINUM METAL MATRIX COMPOSITES

Michael K. Aghajanian, and Marc S. Newkirk, both of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 759,745, Sep. 12, 1991, abandoned, which is a continuation of Ser. No. 517,541, Apr. 24, 1990, abandoned, which is a continuation of Ser. No. 168,284, Mar. 15, 1988, abandoned. This application Dec. 18, 1992, Ser. No. 994,064
Int. Cl.[5] C22C *1/10*
U.S. Cl. 428—614 **20 Claims**



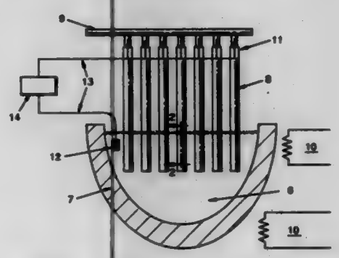
15. A complex composite article comprising:
(a) at least one filler material comprising at least one material selected from the group consisting of particles, platelets, whiskers, spheres, tubules, pellets, refractory fiber cloth, and fibers, said filler material being embedded by a matrix comprising an aluminum matrix metal , said at least one filler material containing at least some aluminum nitride on a surface thereof, at least said matrix metal being three dimensionally interconnected about said filler material, thereby forming a predominantly metal matrix composite body; and
(b) a body of metal contacting at least a portion of said metal matrix composite body, said body of metal being integrally bonded to said metal matrix composite body to form a complex composite article.

5,298,340

CARBON-ION ON FUEL CELL FOR THE FLAMELESS COMBUSTION OF COAL

Franklin H. Cocks, 5 Learned Pl., and Henry LaViers, 209 Alexander Ave., Apartment D, both of Durham, N.C. 27705

Filed Aug. 5, 1992, Ser. No. 925,506
Int. Cl.[5] H01M *8/12*
U.S. Cl. 429—13 **5 Claims**



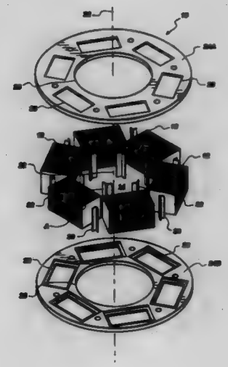
1. An improved process for the flameless combustion of carbon to produce electric power in which carbon is dissolved into a molten metal, said molten metal acting as an anode by converting part of said carbon to an ionized state to produce carbon-ions and electrons, the passage of a current of said electrons through a power generating circuit to a cathode where said electrons react with oxygen to produce oxygen-ions, and wherein the improvement comprises the diffusion of said carbon-ions through a carbon-ion electrolyte to said cathode, where said carbon-ions react with said oxygen-ions to produce oxidized carbon.

5,298,341

MULTIPLE STACK ION CONDUCTING DEVICES

Ashok C. Khandkar, Salt Lake City; Singaravelu Elangovan, Sandy, and Joseph J. Hartvigsen, Kaysville, all of Utah, assignors to Cerramatec, Inc., Salt Lake City, Utah

Filed Aug. 20, 1992, Ser. No. 932,962
Int. Cl.[5] H01M *8/24*; B01D *13/08*
U.S. Cl. 429—32 **19 Claims**



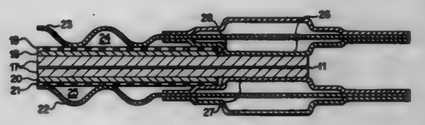
1. A module for an ion conducting device comprising:
a plurality of solid state ion conducting electrolyte elements arranged into a plurality of stacks, successive said electrolyte elements in each of said stacks being positioned and arranged on edge in generally parallel relationship and spaced apart by a plurality of spacers, said stacks being arranged at regular intervals in a generally circular array around a central plenum having a plenum longitudinal axis;
a plurality of longitudinal and transverse gas flow passageways in the spaces between said spaced apart electrolyte elements, wherein said longitudinal gas flow passageways are generally aligned with said plenum longitudinal axis, and said transverse gas flow passageways are generally transverse to, and radiating from said plenum longitudinal axis, said transverse gas flow passageways being in fluid communication with said central plenum;
a plurality of seals disposed between adjacent stacks of ion conducting elements, said seals sealing the joints between adjacent stacks;
a pair of manifold plates sealed against and sandwiching said stacks and said seals therebetween, said manifold plates having a plenum aperture therein in fluid communication with said plenum, and a plurality of gas flow apertures therein in fluid communication with said longitudinal gas flow passageways; and
means for electrically connecting said stacks in electrical series or parallel.

5,298,342

FUEL CELL CROSSOVER ARRESTOR AND PRESSURE SEAL

Rene M. Laureau, Naperville; Thomas G. Benjamin, Downers Grove, and Robert P. Bachta, Chicago, all of Ill., assignors to M-C Power Corporation, Burr Ridge, Ill.

Filed Oct. 20, 1992, Ser. No. 964,145
Int. Cl.[5] H01M *2/08*
U.S. Cl. 429—35 **34 Claims**



1. In a fuel cell stack comprising a plurality of fuel cell units, each said fuel cell unit comprising an anode, a cathode, an electrolyte in contact on one side with the electrolyte facing face of said anode and in contact on its opposite side with the electrolyte facing face of said cathode, and a separator plate separating said cell units between an anode and a cathode forming an anode chamber between the anode facing face of said separator plate and said anode and forming a cathode chamber between the opposite cathode facing face of said separator plate and the cathode of an adjacent said fuel cell unit, said anode chamber in gas communication with fuel gas supply and outlet means and said cathode chamber in gas communication with oxidant gas supply and outlet means, said fuel cell unit having a peripheral seal to maintain substantially gas-tight relation of said unit cell, the improvement comprising: said electrolyte having a substantially gas impervious metallic foil in the central region of its thickness extending around its periphery over at least a portion of said peripheral seal area and into the electrolyte active area reducing gas crossover between said anode and cathode chambers while providing passage of ions and chemicals for fuel cell operation in said electrolyte active area.

5,298,343

ELECTROCATALYSTS FOR H_2/O_2 FUEL CELLS CATHODE

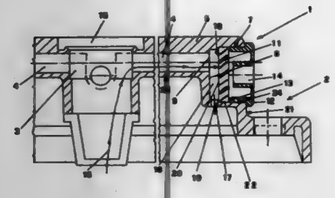
Oumarou Savadogo, Montreal, and Abdeltif Essalik, St-Romuald, both of Canada, assignors to Ecole Polytechnique de Montreal, Montreal, Canada

Filed Jun. 19, 1992, Ser. No. 901,011
Int. Cl.[5] H01M *8/02, 4/86, 4/88*
U.S. Cl. 429—44 **17 Claims**

1. A polycomponent electrocatalyst, comprising a metallic component comprising at least one metal selected from the group consisting of platinum, palladium, ruthenium, rhodium, iridium and osmium dispersed on a suitable conductive carrier and wherein said chemical component comprises at least one compound selected from the group consisting of tungstic acid, molybdic acid, ammonium tungstate, ammonium molybdate, sodium tungstate or sodium molybdate, said metallic component being mechanically admixed with said chemical component.

VOL 1160 ISS 5 MR 29 1994 UMI

5,298,344
DEVICE FOR EXHAUSTING THE FUMES FORMING INSIDE ACCUMULATION BATTERIES
Olimpio Stocchiero, 5 Via Kennedy, 36050 Montorso Vicentino (VI), Italy
Filed Sep. 25, 1992, Ser. No. 950,890
Int. Cl.[5] H01M *02/12*
U.S. Cl. 429—53 7 Claims

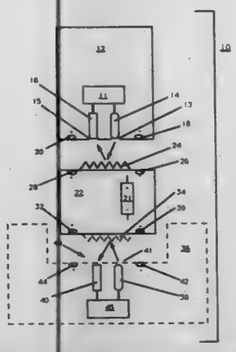


1. A device for exhausting fumes formed within the lid of an accumulator comprising: a chamber formed in the accumulator lid having inlet opening and an outlet opening and said lid having an exhaust duct in communication with one side of the chamber through the inlet opening and on the opposite side of the chamber, communicating with the outside environment through the outlet opening:
an anti-explosion paste located within the chamber in spaced relation with the inlet opening;
a removable cap having a central through opening located in the outlet opening of the chamber and adhering against the paste such that the cap forms a pre-chamber between the paste and the inlet opening, said pre-chamber for collecting condensed electrolyte vapors from the accumulator, said pre-chamber having a drain hole formed in a wall portion below the inlet opening, said drain hole being located remote from the inlet and indirect serial flow communication with the interior of the accumulator from the pre-chamber for returning vapor condensate thereto without back flow of said condensate through the inlet.

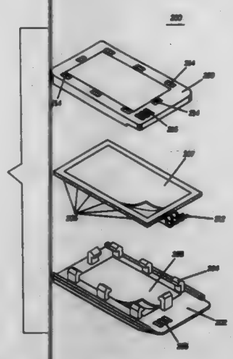
5,298,345
Patent Not Issued For This Number

5,298,346
BATTERY IDENTIFICATION SYSTEM
Russell E. Gyenes, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 27, 1992, Ser. No. 919,667
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—90 18 Claims

1. A battery package identification system, comprising:
an electronic device having an electromagnetic wave generator for generating electromagnetic waves and a detecting means for detecting electromagnetic waves; and
a battery package for attachment to the electronic device having a reflecting means for directing the electromagnetic waves from the electromagnetic wave generator to the detecting means.



5,298,347
BATTERY PACK
Adnan Aksoy, Boca Raton, and Mark S. Bresin, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 14, 1992, Ser. No. 944,610
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—98 19 Claims



1. A battery pack, comprising:
a first housing member having an integrated latch feature;
a header frame, detachably mounted to the first housing member;
a plurality of cells for insertion into the header frame and first housing member;
circuitry means on the header for coupling the plurality of cells and providing charger and power contacts; and
a second housing member being substantially laminar and being attached to said first housing member.

5,298,348
BATTERY SEPARATOR FOR NICKEL/METAL HYDRIDE BATTERIES
James K. Kung, Lexington, Mass., assignor to W. R. Grace A& Co.-Conn., New York, N.Y.
Filed Apr. 16, 1993, Ser. No. 48,626
Int. Cl.[5] H01M *2/16*
U.S. Cl. 429—101 13 Claims

1. A separator for a nickel/metal hydride alkaline battery system comprising a sheet formed of a first polyvinyl alcohol fiber which is water swellable, a second polyvinyl alcohol fiber which is not water swellable and at least one other fiber selected from the group consisting of polyethylene, nylon, acrylic, amides, polypropylene, bicomponent fibers and mixtures thereof, the sheet being formed as a synthetic paper and being saturated with an acrylic resin binder, present in an amount of from about 0.0001 to 1% by weight of the sheet.

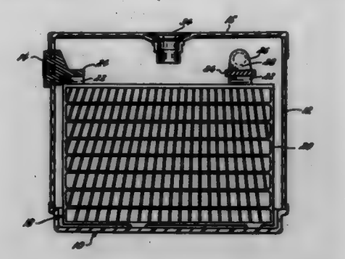
5,298,349
METHOD OF PRETREATING A CATHODE FOR ATTAINING A STABLE VOLTAGE UPON CELL ASSEMBLY
Esther S. Takeuchi, Williamsville, N.Y., assignor to Wilson Greatbatch, Ltd., Clarence, N.Y.
Filed Mar. 2, 1992, Ser. No. 844,220
Int. Cl.[5] H01M *4/00*
U.S. Cl. 429—219 6 Claims

1. A process for constructing an electrochemical cell wherein the need to discharge the high voltage portion of the cell's capacity after assembly is obviated, said process comprises: (a) chemically pretreating the cathode prior to cell assembly, wherein the active material of the cathode comprises silver vanadium oxide, by contacting the active material with a compound capable of inserting a lithium species into the active material resulting in a treated cathode active material represented by the formula:

$$Li_xAg_yV_2O_z$$

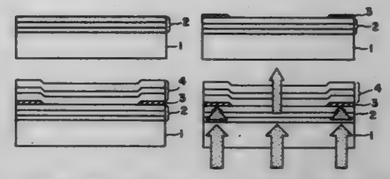
where x has a value between 0.02 and 0.10, y has a value between 0.5 and 2.0, and z has a value between 4.5 and 6.0.

5,298,350
CALCIUM-TIN-SILVER LEAD-BASED ALLOYS, AND BATTERY GRIDS AND LEAD-ACID BATTERIES MADE USING SUCH ALLOYS
Purushothama Rao, Eagan, Minn., assignor to GNB Incorporated, Mendota Heights, Minn.
Continuation-in-part of Ser. No. 675,298, Mar. 26, 1991, abandoned. This application Mar. 17, 1992, Ser. No. 852,803
Int. Cl.[5] H01M *4/68*
U.S. Cl. 429—245 16 Claims



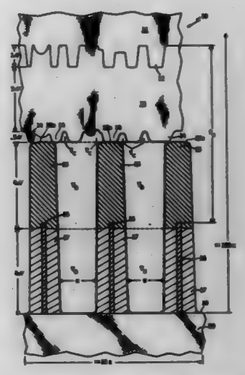
1. An automotive SLI battery comprising a battery container having a plurality of cells and an electrolyte contained in the cells, each cell having a plurality of positive and negative electrodes disposed therein comprising a grid supporting structure having a layer of active material pasted thereto, said grid supporting structures for the positive electrodes being a cast structure of a lead-based alloy consisting essentially of lead, from about 0.025 to 0.06% calcium, from about 0.3 to 0.7% tin and from about 0.015 to 0.045% silver, the percentages of calcium, tin and silver being based upon the weight of the alloy prior to casting.

5,298,351
ABLATION MASK AND USE THEREOF
Norman Bobroff, Katonah, and Alan E. Rosenbluth, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 543,243, Jun. 25, 1990, abandoned. This application Dec. 28, 1992, Ser. No. 996,877
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 11 Claims



1. A patterned mask comprising a transparent substrate; first unpatterned dielectric transparent material coating on a major surface of said substrate, said first coating being composed of multiple layers with each layer having a thickness of about $\lambda/8$ to about $3\lambda/4$; patterned layer of a predetermined material located on said first dielectric transparent material coating, said patterned layer having regions where said predetermined material is present at a first thickness and regions where said predetermined material is omitted or present at a second thickness; and a second unpatterned dielectric transparent material coating on said patterned layer which is composed of multiple layers.

5,298,352
EMULSION PRINTING PLATES AND EVACUATION CHANNELS
Roland H. Thoms, Cortland, N.Y., assignor to BMC Industries, Inc., Minneapolis, Minn.
Filed Dec. 13, 1991, Ser. No. 806,919
Int. Cl.[5] G03F *5/00*
U.S. Cl. 430—5 9 Claims



1. An Emulsion coated printing plate for laying out a

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shadow mask pattern in etchant resist on a metal web comprising:

a metal web having a surface to be etched;

a layer of etchant resist located on said surface to be etched, said layer of etchant resist having a top surface;

a transparent plate for projecting light energy therethrough to project an image carried by said transparent plate onto the layer of etchant resist located on said metal web, said transparent plate having a top surface;

a transparent layer of emulsion located on said top surface of said transparent plate, said layer of emulsion having a first surface;

a first opaque master pattern carried by said transparent plate so as to prevent light from projecting into said layer of etchant resist through said transparent plate and said first opaque master pattern, said first opaque master pattern having a top surface, said transparent layer of emulsion having a plurality of regions projecting upward from said top surface of said transparent plate, said plurality of regions in said transparent layer of emulsion defining therebetween a first partial evacuation channel for partial evacuation of air between said top surface of said transparent plate and said top surface of said layer of etchant resist;

a plurality of transparent spacers located on said top surface of aid first opaque master pattern to space said first opaque master pattern from the top surface of aid layer of etchant resist to form a second partial evacuation channel between said plurality of pacers and proximate said first partial evacuation channel, said second partial evacuation channel, said first partial evacuation channel and said top surface of said layer of etchant resist coating to define a passage for rapid evacuation of air from between said transparent plate and said top surface of said layer of etchant resist, said top surface of said first opaque master pattern carried by said top surface of said transparent plate and spaced a distance (P_o) from said surface of said metal web with (P_o) being on the order of about 10 microns or less to thereby enable a user to precisely project an image into said layer of etchant resist located on said metal web and to evacuate the air from between said top surface of said transparent plate and said top surface of said layer of etchant resist in less than 60 seconds.

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ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Hiroyuki Ohmori, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 625,003, Dec. 11, 1990, abandoned. This application Mar. 11, 1993, Ser. No. 29,995

Claims priority, application Japan, Dec. 13, 1989, 1-321281

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—78 **10 Claims**

1. An electrophotographic photosensitive member comprising a conductive support and a photoaensitive layer provided on the conductive support, wherein said photosensitive layer contains an I-type oxytitanium phthalocyanine having most intense four peaks at 9.0°, 14.2°, 23.9° and 27.1 ° in the Bragg angle ($2\theta \pm 0.2°$) of CuKα characteristics X-ray diffraction or an N-type oxytitanium phthalocyanine having intense peaks at 7.4°, 9.2°, 10.4°, 11.6°, 13.0°, 14.3°, 15.0°, 15.5°, 23.4°, 24.1°, 26.2° and 27.2° in the Bragg angle ($2\theta \pm 0.2$) of CuKα characteristics X-ray diffraction, wherein the most intense four peaks are at 9.2°, 15.0°, 26.2° and 27.1° in the Bragg angle and further contains a non-metallic phthalocyanine.

9. An electrophotographic apparatus, comprising an electrophotographic photoaensitive member, a means for forming an electrostatic latent image, a developing means for developing the electrostatic latent image formed, and a transfer means for transferring the developed image, said electrophotographic photoaensitive member comprising a conductive support and a photoaensitive layer provided on the conductive support, wherein said photoaensitive layer contains an I-type oxytitanium phthalocyanine having most intense four peaks at 9.0°, 14.2°, 23.9° and 27.1° in the Bragg angle ($2\theta \pm 0.2°$) of CuKα characteristics X-ray diffraction or an N-type oxytitanium phthalocyanine having intense peaks at 7.4°, 9.2°, 10.4°, 11.6°, 13.0°, 14.3°, 15.0°, 15.5°, 23.4°, 24.1°, 26.2° and 27.2° in the Bragg angle ($2\theta \pm 0.2°$) of CuKα characteristics X-ray diffraction, wherein the most intense four peaks are at 9.2°, 15.0°, 26.2° and 27.2° in the Bragg angle, and further contains a non-metallic phthalocyanine.

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ELECTROSTATIC IMAGE DEVELOPING TONER AND FIXING METHOD

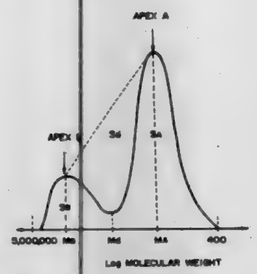
Satoshi Matsunaga; Takashige Kasuya, both of Tokyo; Hiroaki Kawakami, Kawasaki; Kiyoko Tsuchiya; Yusuke Karami, both of Yokohama, and Shinji Doi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 642,782, Jan. 18, 1991, Pat. No. 5,135,833. This application Mar. 23, 1992, Ser. No. 856,298

Claims priority, application Japan, Jan. 19, 1990, 2-010340; Jan. 23, 1990, 2-011724

Int. Cl.[5] G03G *13/10*

U.S. Cl. 430—99 **40 Claims**



1. A heat fixing method comprising;

imparting a toner image onto a recording medium, wherein a toner that forms said toner image comprises a binder resin and a colorant, wherein said binder resin contains a THF-insoluble component in an amount of less than 10 wt. % based on the binder resin, and, in the molecular weight distribution measured by GPC (gel permeation chromatography) of a THF-soluble component, has a weight average molecular weight/number average molecular weight (Mw/Mn) of ≧18, a molecular weight peak MA in the region of a molecular weight of from 3,000 to 20,000, a molecular weight peak MB in the region of a molecular weight of from 380,000 to 1,000,000, a molecular weight minimum Md in the region of a molecular weight of from 20,000 to 380,000, provided that MB/MA is in the range of from 30 to 150, and a molecular weight distribution curve area ratio SA:SB:Sd of 1:0.3 to 0.8:0.35 to 0.8 when the area of a molecular weight distribution curve of a molecular weight of from 400 to the Md is represented by SA, the area of a molecular weight distribution curve of a molecular weight of from the Md to 5,000,000 by SB, and the area of the region defined by a straight line connecting the apex A corresponding to the molecular weight peak MA and the apex B corresponding to the molecular weight peak MB and a molecular weight distribution curve by Sd; and

heat-fixing said toner image to said recording medium by means of a heater element stationarily supported and a pressure member that stands opposite to said heat element in pressure contact and brings said recording medium into close contact with said heater element through a film interposed between them.

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TONER COMPOSITION WITH SEMI-CRYSTALLINE POLYESTER WAX AND METHOD OF PREPARATION

Dinesh Tyagi, Fairport; Donna A. Di Prima, and Louis J. Sorriero, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1992, Ser. No. 975,741

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **19 Claims**

1. A method for the preparation of electrostatographic toner comprising the steps of:

(a) dissolving at ambient temperature a low melting point hydrophobic semi-crystalline polyester wax in a first solvent capable of dissolving the wax at ambient temperature, thereby forming a solution;

(b) forming a pigment dispersion at ambient temperature by mixing a pigment, a first polymer material and a second solvent in which the hydrophobic wax is insoluble at ambient temperature;

(c) admixing the wax solution with the pigment dispersion so resulting in precipitation of the wax upon the surface of the pigment;

(d) mixing the wax coated pigment dispersion thus formed with a solvent in which the hydrophobic wax is insoluble at ambient temperature, and optionally, a second polymer material and, optionally, a charge-control agent to form an organic phase;

(e) dispersing the organic phase in an aqueous phase comprising a particulate stabilizer and, optionally, a promoter and homogenizing the resultant mixture; and

(f) evaporating the solvent and washing and drying the resultant product.

18. Electrostatographic toner prepared in accordance with the method of claim 1.

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TONER COMPOSITION WITH ELASTOMERIC THERMOPLASTIC POLYMER AND PROCESS OF PREPARING

Dinesh Tyagi, Fairport, and Donna A. DiPrima, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1992, Ser. No. 975,745

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **18 Claims**

1. A method for the preparation of electrostatographic toner comprising the steps of:

(a) dissolving at ambient temperature an elastomeric thermoplastic polymer selected from the group consisting linear styrene-isoprene-styrene triblock copolymers, linear styrene-ethylene-butylene-styrene triblock copolymers, linear styrene-isoprene diblock copolymers and linear styrene-ethylene-propylene diblock copolymers in a first solvent capable of dissolving the polymer at ambient temperature, thereby forming a polymer solution;

(b) forming a pigment dispersion at ambient temperature by mixing a pigment, a first polymer material and a second solvent in which the elastomeric thermoplastic polymer is insoluble at ambient temperature;

(c) admixing the resultant polymer solution at ambient temperature with the pigment dispersion so resulting in the precipitation of the elastomeric thermoplastic polymer upon the surface of the pigment;

(d) mixing the polymer coated pigment dispersion thus formed at ambient temperature with a solvent in which the elastomeric thermoplastic polymer is insoluble at ambient temperature and, optionally, a second polymer material and, optionally, a charge-control agent to form an organic phase;

(e) dispersing the organic phase in an aqueous phase comprising a particulate stabilizer and, optionally, a promoter and homogenizing the resultant mixture; and

(f) evaporating the solvent and washing and drying the resultant product.

17. Electrostatographic toner prepared in accordance with the method of claim 1.

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LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY AND DUPLICATING METHOD USING THE SAME

Hideyuki Hattori; Eiichi Kato, and Kazuo Ishii, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1992, Ser. No. 856,726

Claims priority, application Japan, Mar. 26, 1991, 3-86262

Int. Cl.[5] G03G *9/135, 13/10*

U.S. Cl. 430—115 **14 Claims**

1. A combination of a liquid developer and a replenisher for the liquid developer for use in electrostatic photography, wherein the liquid developer comprises a non-aqueous solvent having an electric resistance of at least 10^9 Ω-cm and a dielectric constant of not higher than 3.5, toner grains comprising a resin as a main component, and (a) at least one compound (A) in an amount of about 0.0001 to about 1 part by weight per 1,000 parts by weight of the non-aqueous solvent and having an effect of increasing the amount of charge, and (b) at least one compound (B) in an amount of about 1 to about 500 parts by weight per 1,000 parts by weight of the non-aqueous solvent and having an effect of reducing the amount of charge; and

wherein the replenisher for the liquid developer comprises said at least one compound (A) and said at least one compound (B) in a weight ratio (A)/(B) of at least 0.1 time, but less than 1.0 time the weight ratio (A)/(B) of said at least one compound (A) to said at least one compound (B) contained in the liquid developer used at commencement of development.

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METHOD AND APPARATUS FOR REPRODUCING IMAGE INFORMATION

Bruce J. Rubin; William Mey, both of Rochester, and Dennis R. Kaup, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 905,942

Int. Cl.[5] G03G *13/16*

U.S. Cl. 430—126 **18 Claims**

1. A method of reproducing image information, comprising the steps of:

applying a substantially uniform layer of toner particles to a surface;

placing a receiver sheet, having a thermoplastic outer layer, over said layer of particles, said thermoplastic layer contacting said layer of particles;

establishing an electrostatic attraction between said layer of particles and said receiver sheet; while

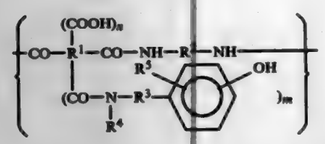
imagewise exposing said thermoplastic layer to heat such that the thermoplastic layer is selectively softened, allowing toner particles opposite the softened thermoplastic to migrate into the thermoplastic, thereby producing a toner image in said thermoplastic layer; and

removing said receiver sheet from said surface.

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PHOTOSENSITIVE HEAT-RESISTANT POLYMER HAVING HYDROXYPHENYL GROUP FOR FORMING A PATTERNED IMAGE
Hirotoshi Maeda, Kanagawa, and Kouichi Kunimune, Chiba, both of Japan, assignors to Chisso Corporation, Tokyo, Japan
Filed Apr. 29, 1991, Ser. No. 693,008
Claims priority, application Japan, May 10, 1990, 2-118805
Int. Cl.[5] G03F 7/012, 7/037
U.S. Cl. 430—197 18 Claims

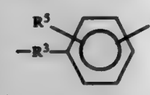
1. A photosensitive polymer composition comprising the following components (a), (b), (c) and (d) and a solvent:

(a) a photosensitive polymer comprising a repeating unit represented by the following formula (I) and having a logarithmic viscosity number of from 0.1 to 5 dl/g as measured in a solvent at a temperature of 30°±0.01° C. at a concentration of 0.5 g/dl:



(I)

wherein R^1 is a trivalent or tetravalent carbocyclic aromatic group or heterocyclic group, R^2 is an aliphatic group having at least two carbon atoms, an alicyclic group, an aromatic aliphatic group, a carbocyclic aromatic group, a heterocyclic group or a polysiloxane group, R^3 is a divalent organic group, R^4 is



a hydrogen atom or a monovalent organic group, R^5 is a hydrogen atom or a monovalent organic group, m is independently 1 or 2, n is independently 0 or 1, and m and n meet the relationship $1 \leq m+n \leq 2$,

(b) a photopolymerization initiator or a sensitizer in an amount of from 0 to 20% by weight based on the weight of said photosensitive polymer,

(c) a azide compound in an amount of from 0.1 to 50% by weight based on the weight of said photosensitive polymer, and

(d) a compound having a carbon-carbon double bond in an amount of from 0 to 10% by weight based on the weight of said photosensitive polymer.

5,298,360
IMAGE FORMATION PROCESS AND TRANSFER MATERIAL
Morimasa Sato; Masayuki Iwasaki, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 29, 1991, Ser. No. 800,110
Claims priority, application Japan, Dec. 1, 1990, 2-400047
Int. Cl.[5] G03C 11/12
U.S. Cl. 430—256 6 Claims

1. A process for forming images using a layer transfer material comprising a light-sensitive resin layer coated on a temporary support, said process comprising the steps of contacting the surface of said light-sensitive resin layer with the surface of a final support at least with heating, removing the temporary support by separation and subsequently subjecting said light-sensitive resin layer to pattern exposure and development to form an image on the final support, wherein a separation layer is interposed between said light-sensitive resin layer and said temporary support of said layer transfer material with the separation layer having a stronger adhesion to said light-sensitive resin layer than to said temporary support, a low oxygen permeability and a softening point of about 80° C. or below.

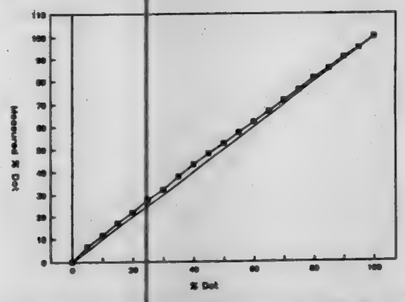
5,298,361
LIGHT-SENSITIVE ARTICLE CONTAINING MIGRATION-RESISTANT HALOMETHYL-1,3,5-TRIAZINE PHOTOINITIATOR
James A. Bonham, Grant Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 30, 1991, Ser. No. 752,775
Int. Cl.[5] G03C 1/805, 7/46; C08F 2/46
U.S. Cl. 430—260 26 Claims

1. A multilayer, light-sensitive article comprising:

(a) a layer containing a photopolymerizable material containing a chromophore-substituted halomethyl-1,3,5-triazine photopolymerization initiator and a polymerizable compound having at least one ethylenically unsaturated group, and

(b) a layer containing a thermoplastic resin in contact with the layer of photopolymerizable material, said chromophore-substituted halomethyl-1,3,5-triazine photopolymerization initiator capable of resisting migration to said layer of thermoplastic resin.

5,298,362
PHOTOGRAPHIC HIGH-CONTRAST SILVER HALIDE MATERIALS
David Beaumont, Giles; Philip J. Coldrick, Hayes, and Nicholas Fighting, Harrow, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 5, 1993, Ser. No. 43,119
Claims priority, application United Kingdom, Jun. 4, 1992, 9211812
Int. Cl.[5] G03C 1/06
U.S. Cl. 430—264 11 Claims



1. A high contrast photographic material comprising a support, a silver halide emulsion layer having a chloride content of at least 50 mole percent, and a non-electroconductive hydrophilic colloid layer interposed between said support and said silver halide emulsion layer which serves to provide improved accuracy in image reproduction, said photographic material having both a hydrazine nucleating agent and an amino compound that functions as a booster in or adjacent to said silver halide emulsion layer, said non-electroconductive hydrophilic colloid layer containing a vinyl polymer and a hydrophilic colloid in a weight ratio of polymer to colloid in the range of 0.1 to 2.5 and having a coating weight of from 0.4 to 2.5 g/m^2.

5,298,363
PHOTOLITHOGRAPHICALLY PATTERNED FLUORESCENT COATING
Armin K. Weiss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 17, 1991, Ser. No. 716,462
Int. Cl.[5] G03C 5/56
U.S. Cl. 430—296 19 Claims

1. A method of lithographically patterning a coating on a support, such coating containing fluorescent organic compounds, comprising the steps of:

(a) forming a coating containing fluorescent organic compounds on a support;

(b) providing a patternwise exposure to said coating registratively oriented in relationship to features on said support, so as to cause a patternwise chemical reaction in the coating, thereby rendering the fluorescent coating patternwise developable; and

(c) developing the patternwise exposed fluorescent coating to provide fluorescent patterns registratively oriented in relationship to features on said support.

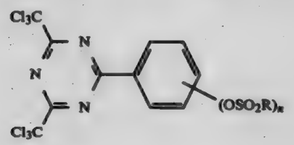
5,298,364
RADIATION-SENSITIVE SULFONIC ACID ESTERS AND THEIR USE
Georg Pawlowski, Wiesbaden; Horst Roeschert, Ober-Hilbersheim; Walter Spiess, Dieburg, and Klaus-Juergen Przybilla, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 9, 1992, Ser. No. 895,679
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1991, 4120174
Int. Cl.[5] G03C 1/71, 1/76
U.S. Cl. 430—280 15 Claims

1. A negative-working radiation-sensitive mixture comprising

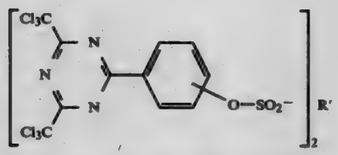
(a) a compound which forms strong acid on exposure to actinic radiation,

(b) a compound containing at least two acid-crosslinkable groups, and

(c) a water-insoluble polymeric binder which is soluble or at least swellable in aqueous alkaline solutions, in an amount sufficient to produce a uniform film when a layer of the mixture is coated on a base, wherein the compound (a) is a radiation-sensitive ester of a sulfonic acid of the formula $R—SO_3H$ or $R'(—SO_3H)_2$ with 2,4-bistrichloromethyl-6-(mono- or dihydroxyphenyl)-1,3,5-triazines, said ester being represented by one of formulae I and II



(I)

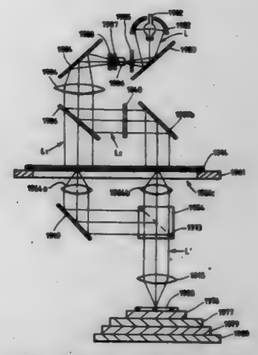


(II)

where R is an optionally further substituted (C_1–C_{10}alkyl, (C_5–C_{10})cycloalkyl, (C_6–C_{10})aryl, (C_6–C_{10})aryl-(C_1–C_{10})alkyl or (C_3–C_9)heteroaryl radical, R′ is an optionally substituted (C_1–C_{10})alkylene, (C_6–C_{10})arylene or (C_3–C_9)heteroarylene radical, and n may be 1 or 2, and

wherein compounds (a) and (b) are present in amounts sufficient to produce insoluble, crosslinked regions when a layer of the mixture is exposed to actinic radiation.

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PROCESS FOR FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, AND EXPOSING SYSTEM AND MASK INSPECTING METHOD TO BE USED IN THE PROCESS
Yoshihiko Okamoto, Ohme, and Nobuo Moriuchi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 699,703, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 610,422, Nov. 7, 1990, abandoned. This application Feb. 26, 1993, Ser. No. 26,200
Claims priority, application Japan, Mar. 20, 1990, 2-71266; May 18, 1990, 2-126662; Sep. 19, 1990, 2-247100
Int. Cl.[5] G03F 7/20
U.S. Cl. 430—311 7 Claims



4. An exposure method for transferring a pattern of a mask onto a photoresist film located on a wafer by a size-reducing projection exposure optical system, comprising:

(a) dividing an exposure luminous flux coming from an exposing ultraviolet or far ultraviolet monochromatic light into a main luminous flux and an auxiliary luminous flux;

(b) irradiating the first principal plane of a main portion of a mask, which has a main opening pattern of minimum size corresponding to the vicinity of the resolution limit of said size-reducing projection exposure optical system corresponding to an odd array, with said main luminous flux generally at a right angle to the main portion, to emit the transmitted main luminous flux from the second principal plane of said main portion, wherein said main opening pattern is periodic in at least one axial direction;

(c) irradiating the first principal plane of an auxiliary portion of the mask, which has an auxiliary opening pattern of minimum size in the vicinity of the resolution limit of said size-reducing projection exposure optical system with said auxiliary luminous flux generally at a right angle of the auxiliary portion to emit the transmitted auxiliary luminous flux from the second principal plane of said auxiliary portion, wherein said auxiliary opening pattern is periodic in at least one axial direction and corresponds to an even array;

(d) composing the emanating main luminous flux and auxiliary luminous flux with a desired phase difference to emit a composed luminous flux; and

(e) projecting said emanated composed luminous flux on the photoresist film on the principal plane of said wafer by the size-reducing projection lens system of said size-reducing projection exposure optical system so that said main luminous flux and said auxiliary luminous flux interfere with

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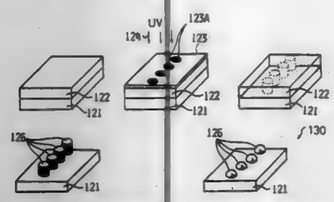
each other to focus a clear image corresponding to said periodic pattern.

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METHOD FOR PRODUCING A MICROLENS ARRAY

Takeo Iwasaki, Nagoya; Hideo Maruyama, Kuwana; Kouji Inaishi, Okazaki; Chisato Yoshimura, Nagoya, and Yuji Shinkai, Kounan, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 811,965, Dec. 23, 1991, Pat. No. 5,230,990, which is a continuation-in-part of Ser. No. 773,542, Oct. 9, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 10,764
Claims priority, application Japan, Oct. 9, 1990, 2-271657; Oct. 22, 1990, 2-283703
Int. Cl.[5] G03F *7/40*; B29D *11/00*
U.S. Cl. 430—321 9 Claims



1. A method for manufacturing a microlens array, comprising the steps of:

forming an intermediate material of photoresist on a flat sheet, the intermediate material comprising at least one projection formed in the shape of a predetermined pattern;

forming a resist master by heating the intermediate material to a temperature whereby the surfaces of the at least one projection are smoothed under the influence of surface tension;

forming a stamper having an inverted surface shape of said resist master; and

forming a microlens array using said stamper and a light-transmitting material.

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PRODUCTION OF MICROMOLDINGS HAVING A HIGH ASPECT RATIO

Peter Hoessel, Schifferstadt; Gerhard Hoffmann, Otterstadt; Thomas Wuensch, Bad Durkheim, and Juergen Langen, Bonn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,125
Int. Cl.[5] G03F *7/30*; G03C *5/16*
U.S. Cl. 430—326 1 Claim

1. A process for the production of microstructures which comprises:

imagewise irradiating with high-energy, parallel X-ray radiation from a synchrotron, a copolymer of the formula $[SO_2]_m[M]_n$ prepared by reacting SO_2 and one or more ethylenically unsaturated organic compounds where M are identical or different polymerized monomer units of ethylenically unsaturated organic compounds as the copolymerized constituent of the copolymer and m and n are integers, where m+n=50 to 10,000 and m=5 to 50% of m+n, and M is identical or different polymerized units of the formula



where R^1, R^2, R^3 and R^4 may be identical or different and are H, alkyl having 1 to 10 carbon atoms, or isoalkyl having 3 to 10 carbon atoms, or R^2 and R^4 are bonded together to form a 6- to 7-membered ring, and

exposing the irradiated co-polymer to the action of a selective developer, thereby structuring the co-polymer to a depth of from 50 μm to 1000 μm with lateral dimensions of less than 10 μm.

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PHOTOGRAPHIC COUPLER COMPOSITIONS AND METHODS FOR REDUCING CONTINUED COUPLING

Paul B. Merkel, Rochester; Edward Schofield, Penfield, and Stephen P. Singer, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1991, Ser. No. 689,436
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/34, 7/384, 7/42*
U.S. Cl. 430—372 16 Claims

1. A color photographic material, comprising a supporting substrate coated with a silver halide emulsion and a magenta coupler composition comprising (a) a pyrazolone magenta dye-forming coupler compound, and (b) a sulfoxide compound in an amount sufficient to reduce continued coupling of the coupler compound during the bleach step of a color photographic process, the sulfoxide compound being of the formula



wherein R_1 and R_2 are individually selected from the group consisting of unsubstituted straight and branched chain alkyl groups and unsubstituted straight and branched chain alkenyl groups; straight and branched chain alkyl groups, straight and branched chain alkenyl groups and straight and branched chain alkylene groups, containing at least one substituent selected from the group consisting of alkoxy, aryloxy, aryl, alkoxycarbonyl, aryloxycarbonyl, acyloxy, carbonamido and carbamoyl groups and halogen atoms; an unsubstituted phenyl group; and a phenyl group containing at least one substituent selected from the group consisting of alkyl, alkoxy, aryloxy, aryl, alkoxycarbonyl, aryloxycarbonyl, acyloxy, carbonamido and carbamoyl groups and halogen atoms; wherein R_1 and R_2 combined contain at least 12 carbon atoms; and further wherein R_1 and R_2 do not form a ring with the sulfur atom; said magenta coupler composition being free of phenol compounds.

5,298,369

USE OF COLLOIDAL SILVER TO IMPROVE PUSH PROCESSING OF A REVERSAL PHOTOGRAPHIC ELEMENT

Jai F. Munshi, Rochester; Henry J. Sniadoch, Canandaigua, and Richard C. Tuites, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 810,044, Dec. 19, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 76,334
Int. Cl.[5] G03C *1/09, 1/494*
U.S. Cl. 430—379 19 Claims

1. A method for increasing the speed of a color record in a color reversal film upon prolonged processing time, said process comprising; subjecting,

an exposed silver halide-based, color reversal film, having at least one color record, and having from about 0.01 to less than 20 milligrams per square meter of colloidal elemental silver in an interlayer that is operatively associated with, and below, a light sensitive, silver halide emulsion layer of said record,

to black and white development, by contacting said exposed film with a black and white developing agent for a prolonged time, which time is sufficient to confer, in said record, a photographic speed that is faster than the speed achieved by subjecting said film, without said amount of colloidal silver to development, under substantially similar process conditions, with said black and white developing agent for said prolonged time.

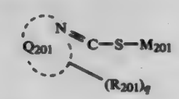
5,298,370

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC BLEACH-FIXING COMPOSITION

Tetsuro Kojima; Hisashi Okada, and Nobuo Watanabe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1992, Ser. No. 882,492
Claims priority, application Japan, May 14, 1991, 3-137064
Int. Cl.[5] G03C *7/00, 5/44, 5/38, 5/18*
U.S. Cl. 430—393 6 Claims

1. A method of processing an imagewise exposed silver halide color photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, comprising the steps of developing in a developing bath, bleaching in a bath having a bleaching ability and fixing in a bath having a fixing ability, wherein the bath having a bleaching ability contains at least one metal chelate compound of any of compounds represented by formulae (VI), (VII), (VIII), (IX), (X), (XI), (XIV), (XV) and (XVI) and the bath having a fixing ability contains at least one compound selected from the group consisting of compounds represented by formulae (A), (B) and (C):



(A)

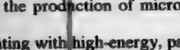
where

Q_{201} represents an atomic group necessary for forming a 5-membered or 6-membered hetero ring, which ring may be condensed with one or more carbon-aromatic rings or hetero-aromatic rings; R_{201} represents an alkyl, alkenyl, aralkyl, aryl or heterocyclic group substituted by at least one substituent selected from the group consisting of a carboxylic acid group or salt thereof, a sulfonic acid group or salt thereof, a phosphoric acid group or salt thereof, an amino group and an ammonium salt, or R_{201} represents a carboxylic acid group or salt thereof, a sulfonic acid group or salt thereof, a phosphoric acid group or salt thereof, an amino group or an ammonium salt directly bonded to Q_{201};

q represents an integer of from 1 to 3; and

M_{201} represents a cationic group;

(B)



where

Q_{301} represents a 5-membered or 6-membered mesoionic ring composed of carbon, nitrogen, oxygen, sulfur and/or selenium atoms;

X_{301}^- represents $—O^-$, $—S^-$, or $—N^-R_{301}$; and

R_{301} represents an alkyl group, a cycloalkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group, or a heterocyclic group;

$$L_{401}—(A_{401}—L_{402})_r—A_{402}—L_{403} \quad (C)$$

where

L_{401} and L_{403} may be same or different and each represents an alkyl group, an aryl group, an aralkyl group, an alkenyl group, or a heterocyclic group;

L_{402} represents an alkylene group, an arylene group, an aralkylene group, a heterocyclic linking group, or a linking group comprising a combination of these groups;

A_{401} and A_{402} may be same or different and each represents —S—, —O—, $—NR_{420}—$, —CO—, —CS—, $—SO_2—$, or a group comprising a combination of these groups;

r represents an integer of from 1 to 10;

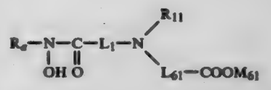
provided that at least one of L_{401} and L_{403} must be substituted by $—SO_3M_{401}$, $—PO_3M_{402}M_{403}$, $—NR_{401}(R_{402})$, $N^+R_{403}(R_{404})—(R_{405}).X_{401}^-$, $—SO_2NR_{406}(R_{407})$, $—NR_{408}SO_2R_{409}$, $—CONR_{410}(R_{411})$, $—NR_{412}COR_{413}$, $—SO_2R_{414}$, $—PO(—NR_{415}(R_{416}))_2$, $—NR_{417}CONR_{418}—(R_{419})$, $—COOM_{404}$ or a heterocyclic group;

M_{401}, M_{402}, M_{403} and M_{404} may be same or different and each represents a hydrogen atom or a pair cation;

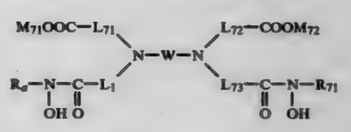
R_{401} to R_{420} may be same or different and each represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, or an alkenyl group; and

X_{401}^- represents a pair anion;

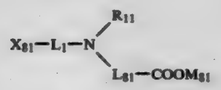
provided that at least one of A_{401} and A_{402} must be —S—;



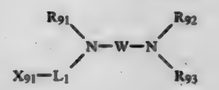
(VI)



(VII)



(VIII)



(IX)

where

R_{11}, R_{91}, R_{92} and R_{93} each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

R_a and R_{71} each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

L_1, L_{67}, L_{71}, L_{72}, L_{73} and L_{81} each represents a divalent linking group containing an aliphatic group, an aromatic group, a heterocyclic group or a group comprising a combination of these groups;

M_{61}, M_{71}, M_{72} and M_{81} each are a hydrogen atom or a cation;

X_{81} and X_{91} each are $—SO_2NR_c(R_d)$ or $—NR_3—SO_2R_f$, in which R_c, R_d and R_e may be the same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group, and

R_f is an aliphatic group, an aromatic group, or a heterocyclic group;

R_{91}, R_{92}, R_{93} and $X_{91}—L_1$ may be the same or different from one another, and at least one of R_{91}, R_{92} and R_{93} is $L_{x1}—COOM^{x1}$ or $L_{x2}—X_{92}$;

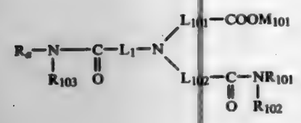
L_{x1} and L_{x2} each represents a divalent linking group containing an aliphatic group, an aromatic group, a heterocyclic group or a group comprising a combination of these groups;

X_{92} has the same meaning as X_{91};

M^{x1} is a hydrogen atom or a cation; and

W represents a divalent linking group;

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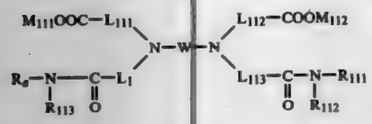


where

R_{e}, R_{101}, R_{102} and R_{103} each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

L_1, L_{101} and L_{102} each represents a divalent linking group containing an aliphatic group, an aromatic group, a heterocyclic group or a group comprising a combination of these groups; and

M_{101} is a hydrogen atom or a cation;



(XI)

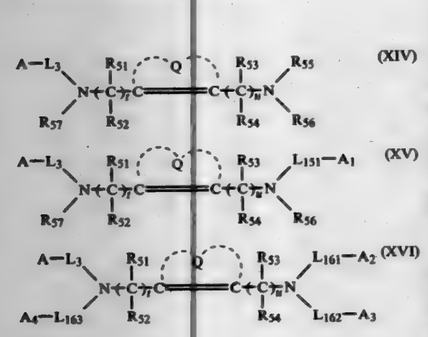
where

R_{e}, R_{111}, R_{112} and R_{113} each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

L_1, L_{111}, L_{112} and L_{113} each represents a divalent linking group containing an aliphatic group, an aromatic group, a heterocyclic group or a group comprising a combination of these groups;

M_{111} and M_{112} each represent a hydrogen atom or a cation; and

W represents a divalent linking group;



(XIV)

(XV)

(XVI)

where

A, A_1, A_2, A_3 and A_4 each represents a carboxyl group, a phosphono group, a sulfo group, or a hydroxyl group;

L_3, L_{151}, L_{161}, L_{162} and L_{163} each represents a divalent linking group containing an aliphatic group, an aromatic group, a heterocyclic group or a group comprising a combination of these groups;

R_{51}, R_{52}, R_{53}, R_{54}, R_{55}, R_{56} and R_{57} may be same or different and each represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

Q represents a non-metallic atomic group capable of forming a 5-membered or 6-membered ring; and

t and u each represents 0 or 1.

5,298,371

METHOD FOR PROCESSING A SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

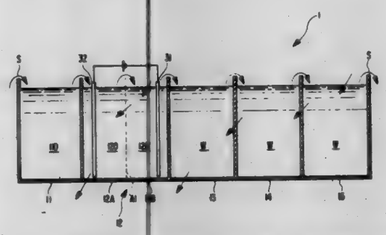
(X) **Takashi Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan**

Filed Aug. 20, 1992, Ser. No. 932,966

Claims priority, application Japan, Aug. 22, 1991, 3-235392

Int. Cl.[5] G03C *5/44, 5/395*

U.S. Cl. 430—393 **7 Claims**



1. A method for processing a silver halide light-sensitive material comprising the steps of:

(A) subjecting an image-wise exposed silver halide light-sensitive material to color development processing and

(B) subjecting the resulting processed material to bleach-fixing processing in a bleach-fixing bath containing a bleach-fixing solution,

wherein said bleach-fixing bath containing the bleach-fixing solution is divided into plural parts along the path of the carried light-sensitive material by at least one anion exchange membrane, wherein an anode is disposed in the upstream part and a cathode is disposed in the downstream part; and

wherein electrification is carried out between the anode and the cathode in the bleach fixing bath during processing of the light-sensitive material.

5,298,372

METHOD FOR PROCESSING BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Eiichi Okutsu; Takashi Toyoda, and Tadashi Ito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1993, Ser. No. 85,175

Claims priority, application Japan, Jul. 3, 1992, 4-177108; Mar. 26, 1993, 5-68631

Int. Cl.[5] G03C *5/31*

U.S. Cl. 430—401 **11 Claims**

1. A method for processing a transmission type black-and-white silver halide photographic material which comprises processing an imagewise exposed silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer comprising a silver halide emulsion, wherein said silver halide photographic material comprises silver chlorobromide, silver chloroiodide or silver chloroiodobromide grains having a silver chloride content of at least 90 mol % and a mean grain size of 0.1 to 0.4 μm or silver chloride grains having a mean grain size of 0.1 to 0.4 μm; said processing comprises developing in a developing bath and fixing in a fixing bath and the developing bath contains sodium ion in an amount comprising at least 70 mol % of the entire cation content of the developing bath; the developing bath and the fixing bath are each replenished in an amount of not more than 150 ml per m^2 of the photographic material processed; and the processing is carried out in an automatic processor.

5,298,373

PROCESS AND COMPOSITION FOR FIXING BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC MATERIALS

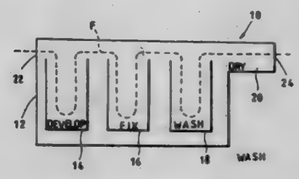
Senzo Sasaoka; Katsumi Hayashi; Kota Fukui, and Tetsuro Kojima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1991, Ser. No. 803,039

Claims priority, application Japan, Dec. 6, 1990, 2-405345; May 21, 1991, 3-144226

Int. Cl.[5] G03C *5/18, 5/26, 5/38, 1/76*

U.S. Cl. 430—429 **10 Claims**



1. A method for processing an imagewise exposed silver halide black-and-white photosensitive material, comprising the steps of developing in a developing solution and fixing in a fixer solution,

the fixer solution containing 0.5 to 2.0 mol/liter of a thiosulfate and 0.003 to 0.3 mol/liter of a meso-ionic compound of general formula (I):



(I)

wherein Z is a five or six-membered ring composed of atoms selected from the group consisting of carbon, nitrogen, oxygen, sulfur, and selenium atoms, and X^- is $—O^-$, $—S^-$ or $—NR^-$,

wherein R is selected from the group consisting of an alkyl, cycloalkyl, alkenyl, alkynyl, aralkyl, aryl, and heterocyclic group,

the moles of the compound of formula (I) divided by the moles of the thiosulfate being from 0.003 to 0.2.

5,298,374

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hideki Tomiyama, and Akira Kase, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 20, 1991, Ser. No. 747,669

Claims priority, application Japan, Aug. 20, 1990, 2-218597; Sep. 26, 1990, 2-256087

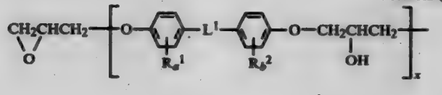
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/46*

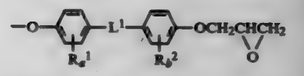
U.S. Cl. 430—502 **34 Claims**

1. A silver halide color photographic material which comprises in a hydrophilic colloid layer on a paper base at least one compound selected from the group consisting of sparingly water-soluble epoxy compounds represented by the following formula (I) wherein the pH of the raw paper of said paper base is between 5 and 9:

Formula (I)



-continued



wherein R^1 and R^2 each represent an alkyl group or a halogen atom, each L^1 represents a bivalent aliphatic organic group, a and b each are an integer of 0 to 4, and x is a real number of 0 to 20.

5,298,375

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL HAVING REDUCED MAGENTA COLOR STAIN

Yasuaki Deguchi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 17, 1992, Ser. No. 977,838

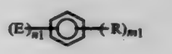
Claims priority, application Japan, Nov. 19, 1991, 3-329892

Int. Cl.[5] G03C *1/46*

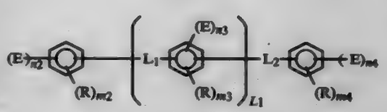
U.S. Cl. 430—503 **19 Claims**

1. A silver halide color photographic material comprising on a support a yellow coupler-containing light-sensitive silver halide emulsion layer, a magenta coupler-containing light-sensitive silver halide emulsion layer, a cyan coupler-containing light-sensitive silver halide emulsion layer and a light-insensitive hydrophilic colloid layer, said photographic material comprising (i) at least one epoxy compound which is slightly soluble in water and represented by the following general formula (AE-1), (AE-2), (AE-3) or (AE-4), (ii) an acylacetamide type yellow coupler containing the acyl group represented by the general formula (I) and (iii) a pyrazolotriazole type magenta coupler of the formula (II) or (III):

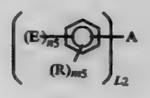
(AE-1)



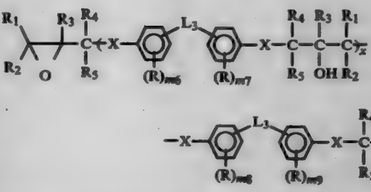
(AE-2)



(AE-3)

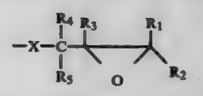


(AE-4)



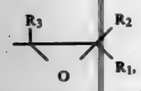
wherein E represents the following general formula (AO-2),

(AO-2)



wherein R_1, R_2, R_3, R_4 and R_5 are same or different, and each represents a hydrogen atom, an alkyl group or an aryl group; R represents a substituent group; n represents 0 or an integer of 1 to 4; —X— represents —O—, —S— or —N(R^1)—; R^1 repre-

sents a hydrogen atom, an acyl group, an alkylsulfonyl group, an arylsulfonyl group, an aryl group, a heterocyclic group or —C(R_6) (R_7) (R_8), wherein R_6, R_7 and R_8 are same or different, and each represents an alkyl group or a group represented by the following general formula (AO-1),



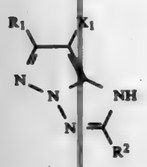
(AO-1)

and further R_6 and R_7 each may be a hydrogen atom; when n is 2, 3 or 4, R's may be same or different; and any two of R_1, R_2, R_3, R_4 and R_5, R' and R_6 or two R's may combine with each other to complete a 5-to 7-membered ring; provided that the total number of carbon atoms contained in said compound is at least 15 when X is —S—; L_1, L_2 and L_3 may be same or different, and each represents a divalent linkage group; n_1 represents an integer of 3 to 6; m_1 represents an integer of 0 to 3; n_2 represents an integer of 1 to 5; n_3 represents an integer of 1 to 4; n_4 represents an integer of 1 to 5; m_2 represents an integer of 0 to 4; m_3 represents an integer of 0 to 3; m_4 represents an integer of 0 to 4; m_5 represents an integer of 1 to 5; m_5 represents an integer of 0 to 4; m_6, m_7, m_8 and m_9 each represent an integer of 0 to 4; l_1 and x each represent a real number from 0 to 20; l_2 represents 3 or 4; and A represents a tri- or tetravalent organic group; and wherein when the foregoing epoxy compounds each have a plurality of E's and/or a plurality of R's, those E's may be same or different and those R's also may be same or different:

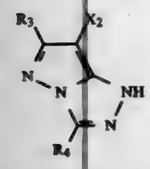


(I)

wherein R_1 represents a monovalent group, and Q represents nonmetallic atoms necessary to form a 3- to 5-membered hydrocarbon ring or a 3- to 5-membered heterocyclic ring which contains at least one hetero atom selected from N, O, S and P in the ring; provided that R_1 is neither a hydrogen atom nor atoms completing a ring combining with Q:



(II)



(III)

wherein R_1 and R_2 each represent an alkyl group, R_2 and R_4 each represent an alkyl group or an aryl group, and X_1 and X_2 each represent a halogen atom or an aryloxy group.

5,298,376

PHOTOGRAPHIC SILVER HALIDE MATERIAL WITH IMPROVED COLOR SATURATION

Richard P. Szajewski, and Allan F. Sowinski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1991, Ser. No. 771,016

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **12 Claims**

1. A color photographic element comprising a support, a first and a second silver halide emulsion layer each sensitized to a different region of the spectrum, at least one of the emulsion layers being in reactive association with a DIR compound which releases an anionic development inhibitor, and a barrier layer comprising an anionic latex polymer such that the barrier layer reflects the development inhibitor released from the DIR compound, the barrier layer being positioned further from the support than the first and second silver halide emulsion layers.

5,298,377

PHOTOGRAPHIC ELEMENT WITH 2-EQUIVALENT MAGENTA DYE-FORMING COUPLER AND FILTER DYE

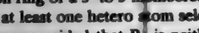
Arlyce T. Bowne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 28, 1991, Ser. No. 750,970

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—507 **24 Claims**

1. A photographic element, comprising:
a photographic support;
a green sensitive silver halide emulsion layer on said photographic support and having a magenta dye-forming coupler; and
a filter layer on said photographic support and associated with said green sensitive layer,
wherein said magenta dye-forming coupler is a 2-equivalent magenta dye-forming coupler, and
said filter layer comprises a filter dye molecule having the formula:



(I)

wherein D is a group which, with the remainder of the molecule, forms a dye having an absorption maximum in the blue or green region of the visible spectrum,
M is a five-membered or six-membered unsaturated heterocyclic ring, which may be fused with another five-membered or six-membered ring system, and which is unsubstituted or substituted with a lower alkyl group having from 1 to 10 carbon atoms, or an electron withdrawing group.

5,298,378

PHOTOGRAPHIC ELEMENTS WITH REDUCED PRINT-THROUGH

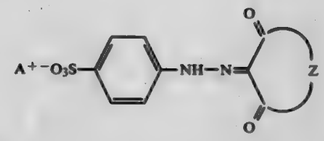
Dietrich M. Fabricius, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 811,771, Dec. 20, 1991. This application Mar. 19, 1993, Ser. No. 39,571

Int. Cl.[5] G03C *1/815, 1/825*

U.S. Cl. 430—510 **7 Claims**

1. A photographic element comprising at least one hydrophilic colloid layer wherein said hydrophilic colloid layer comprises a dye of the formula:



wherein:
A represents a counterion chosen from the set consisting of lithium, sodium, potassium, ammonium and alkylammonium of 1 to 15 carbons;
Z represents the atoms chosen from the group consisting of carbon, sulfur, nitrogen, oxygen and selenium necessary to form an unsubstituted or substituted five or six-membered ring.

5,298,379

RADIATION SENSITIVE ELEMENT WITH ABSORBER DYE TO ENHANCE SPECTRAL SENSITIVITY RANGE

Anthony Adin, Rochester, and Richard L. Parton, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,621

Int. Cl.[5] G03C *1/815*

U.S. Cl. 430—510 **20 Claims**

1. A photographic element comprising:
a silver halide emulsion sensitized with one or more sensitizing dyes; and
an absorber dye disposed in the emulsion or thereabove to be closer to a source of radiation to be detected by the element;
wherein the element has a wavelength of peak sensitivity measured without the absorber dye present, λpeaksens, and decreasing sensitivity therearound, and the absorber dye has a wavelength of peak absorption, λpeakabs, within 10 nm of λpeaksens and a profile of decreasing absorption around λpeakabs so as to decrease the change in sensitivity which the element otherwise has around λpeaksens without the absorber dye present.

5,298,380

PHOTOGRAPHIC MATERIAL WHICH CONTAINS A UV ABSOBER

David G. Leppard, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

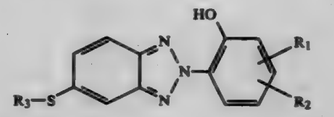
Filed Sep. 1, 1992, Ser. No. 939,289

Claims priority, application Switzerland, Sep. 5, 1991, 2606/91-5

Int. Cl.[5] G03C *1/815*

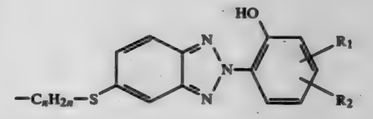
U.S. Cl. 430—512 **11 Claims**

1. Photographic film material containing on a transparent substrate at least one silver halide emulsion layer and at least one light-insensitive layer, which material contains as UV absorber a compound of formula



(I)

wherein
R_1 is hydrogen, alkyl of 1 to 18 carbon atoms, phenylalkyl containing 1 to 4 carbon atoms in the alkyl moiety, cyclopentyl or cyclohexyl,
R_2 is alkyl of 1 to 18 carbon atoms, phenylalkyl containing 1 to 4 carbon atoms in the alkyl moiety, cyclopentyl or cyclohexyl, hydroxyl or —OR_4, wherein R_4 is alkyl of 1 to 18 carbon atoms, hydroxyalkyl of 1 to 18 carbon atoms, or hydroxyalkyl of 4 to 18 carbon atoms which is interrupted by oxygen, or
R_2 is —$CH_2CH_2COR_5$, wherein
R_5 is —OR_6 or —NR_7R_8, wherein
R_6 is hydrogen, alkyl of 1 to 18 carbon atoms, hydroxyalkyl of 1 to 18 carbon atoms or hydroxyalkyl of 4 to 18 carbon atoms which is interrupted by oxygen, or is alkyl of 2 to 18 carbon atoms which is interrupted by oxygen and substituted by —OR_9, wherein
R_9 is alkyl of 1 to 12 carbon atoms, or
R_6 is alkenyl of 3 to 18 carbon atoms, and R_7 and R_8 are each independently of the other hydrogen or alkyl of 1 to 18 carbon atoms or, when taken together, are alkylene of 4 to 6 carbon atoms, 3-oxapentamethylene, 3-iminopentamethylene or 2-methyliminopentamethylene, and
R_3 is phenyl, phenyl which is substituted by one or two alkyl groups, each of 1 to 4 carbon atoms, or is a radical of formula



wherein n is 0 to 8, and R_1 and R_2 have the given meanings.

5,298,381

DIRECT POSITIVE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuaki Inoue, and Takahiro Goto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 5, 1992, Ser. No. 846,069

Claims priority, application Japan, Mar. 6, 1991, 3-63701; Apr. 3, 1991, 3-96072

Int. Cl.[5] G03C *1/485*

U.S. Cl. 430—517 **6 Claims**

1. A direct positive type silver halide photographic light-sensitive material comprising a support having thereon at least one pre-fogged light-sensitive silver halide emulsion layer containing fogged silver halide grains and at least one light-insensitive hydrophilic colloid layer provided farther from the support than the light-sensitive silver halide emulsion layer, wherein the light-insensitive hydrophilic colloid layer contains a dye dispersed therein in the form of microcrystalline particles.

5,298,382

PROCESSING OF PHOTOGRAPHIC SILVER HALIDE PHOTOSENSITIVE MATERIAL AND FIXER USED THEREIN

Takashi Toyoda, and Itsuo Fujiwara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1993, Ser. No. 22,105

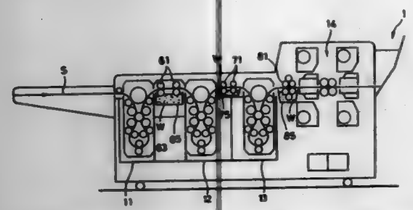
Claims priority, application Japan, Feb. 26, 1992, 4-75206

Int. Cl.[5] G03C *1/73*

U.S. Cl. 430—539 **4 Claims**

1. A method for processing a photographic silver halide photosensitive material having at least one silver halide emulsion layer on a support after exposure comprising the step of treating the material with a working fixer solution, wherein
said working fixer solution is prepared by
furnishing a fixer concentrate of at least pH 5 containing a thiosulfate as a fixing agent, 0.05 to 0.8 mol/liter of a sulfite and up to 0.01 mol/liter of a water-soluble aluminum salt, and
diluting the fixer concentrate with water at a volume ratio of water to the concentrate of at least 0.5/1, thereby forming the working fixer solution containing up to 0.1 mol/liter

of ammonium thiosulfate and 0.5 to 2.5 mol/liter of sodium thiosulfate; and
said photosensitive material contains at least 10% by weight

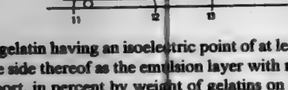


of a gelatin having an isoelectric point of at least 5.0 on the same side thereof as the emulsion layer with respect to the support, in percent by weight of gelatins on the emulsion layer side.

5,298,383
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL
Keiji Mihayashi; Naoki Saito, and Shunichi Aida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 25, 1992, Ser. No. 840,949
Claims priority, application Japan, Feb. 26, 1991, 3-53263
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/08, 7/26, 7/32*
U.S. Cl. 430—557 22 Claims

1. A silver halide color photographic material having at least one light-sensitive emulsion layer on a support, in which at least 50%, as the total projected area, of all the silver halide grains in at least one light-sensitive emulsion layer are tabular grains having a mean aspect ratio of 2 or more and at least one layer constituting the material contains a coupler selected from the group consisting of a coupler of the following formula (I), a coupler of the following formula (II) and combinations thereof:

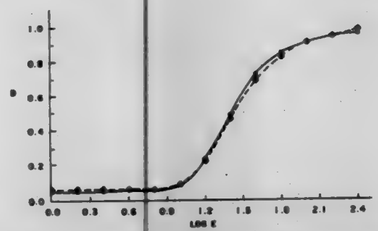
(I)



(II)

wherein X^1 and X^2 each represents an alkyl group, an aryl group, or a heterocyclic group;
X^3 represents an organic residue forming a nitrogen-containing heterocyclic group along with >N— in the formula;
Y represents an aryl group or a heterocyclic group; and
Z represents a group capable of being released from the formula when the coupler of the formula reacts with an oxidation product of a developing agent.

5,298,384
PRESSURE FOG-RESISTANT PHOTOGRAPHIC ELEMENT
Keaneth J. Lushington, Rochester, and Sucheta Tandon, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 634,449, Dec. 27, 1990, Pat. No. 5,168,035.
This application Oct. 1, 1992, Ser. No. 955,345
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] G03C *1/035*
U.S. Cl. 430—567 14 Claims



1. A photosensitive element, comprising a support and a colloid-silver halide photographic emulsion coated on said support, said emulsion containing octahedral or cubooctahedral grains, the interior of said grains consisting essentially of AgBr and the exposed exterior surface thereof consisting essentially of AgBrI, the AgBrI being deposited mainly on cubic faces of an underlying cubic or cubooctahedral AgBr gain so as to improve the pressure fog resistance of the photosensitive element.

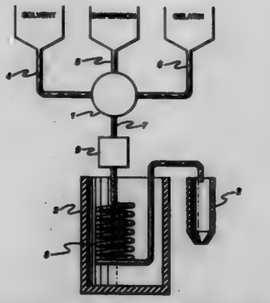
5,298,385
HIGH CHLORIDE FOLDED TABULAR GRAIN EMULSIONS
Yun C. Chang, and Donna J. McPhillips, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 898,613, Jun. 15, 1992, abandoned. This application May 12, 1993, Ser. No. 60,945
Int. Cl.[5] G03C *1/035*
U.S. Cl. 430—567 4 Claims



1. A photographic emulsion comprised of a dispersing medium and radiation sensitive silver halide grains, wherein at least 50 percent of the total grain projected area is accounted for by folded tabular grains containing at least 95 mole percent chloride, based on silver.

5,298,386
IN-LINE SOLVENT INCORPORATION FOR AMORPHOUS PARTICLE DISPERSIONS
David A. Cusksi, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 9, 1992, Ser. No. 895,922
Int. Cl.[5] G03C *1/015*
U.S. Cl. 430—569 11 Claims

9. A process for preparing a solvent-activated amorphous particle dispersion of a photographic coupler or dye in a continuous process comprising the steps of:
(a) introducing an amorphous particle dispersion of a photographic coupler or dye into a high-shear mixer;
(b) simultaneously introducing into said high-shear mixer a flow of activating solvent:
(c) simultaneously introducing into said high-shear mixer a flow of peptizing agent;



(d) mixing said dispersion, said activating solvent and said peptizing agent under continuous-flow conditions to provide an emulsion;
(e) conveying said emulsion to a plug-flow reactor; and
(f) providing a controlled residence time in said reactor for said dispersion and said solvent to achieve a uniform degree of diffusion.

5,298,387
PROCESS FOR THE PREPARATION OF A GRAIN STABILIZED HIGH CHLORIDE TABULAR GRAIN PHOTOGRAPHIC EMULSION (II)
Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1992, Ser. No. 935,802
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/07, 1/12*
U.S. Cl. 430—569 12 Claims

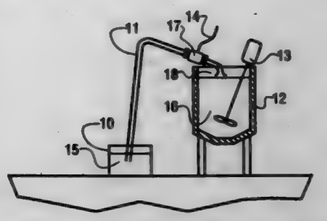


1. A process of preparing an emulsion for photographic use comprising
(1) forming an emulsion comprised of silver halide grains and a gelatino-peptizer dispersing medium in which morphologically unstable tabular grains having {111} major faces account for greater than 50 percent of total grain projected area and contain at least 50 mole percent chloride, based on silver, the emulsion additionally containing at least one 2-hydroaminoazine adsorbed to and morphologically stabilizing the tabular grains, and
(2) adsorbing to surfaces of the tabular grains a photographically useful compound, wherein
(a) 2-hydroaminoazine adsorbed to the tabular grain surfaces is protonated and thereby released from the tabular grain surfaces into the dispersing medium,
(b) the released 2-hydroaminoazine is replaced on the tabular grain surfaces by adsorption of a photographically useful 5-iodobenzoxazolium compound, thereby concurrently morphologically stabilizing the tabular grains and enhancing their photographic utility, and
(c) released 2-hydroaminoazine is removed from the dispersing medium.

5,298,388
PROCESS FOR THE PREPARATION OF A GRAIN STABILIZED HIGH CHLORIDE TABULAR GRAIN PHOTOGRAPHIC EMULSION (III)
Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1992, Ser. No. 935,806
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] G03C *1/07, 1/12*
U.S. Cl. 430—569 11 Claims

1. A process of preparing an emulsion for photographic use comprising
(1) forming an emulsion comprised of silver halide grains and a gelatino-peptizer dispersing medium in which morphologically unstable tabular grains having {111} major faces account for greater than 50 percent of total grain projected area and contain at least 50 mole percent chloride, based on silver, the emulsion additionally containing at least one 2-hydroaminoazine adsorbed to and morphologically stabilizing the tabular grains, and
(2) adsorbing to surfaces of the tabular grains a photographically useful compound,
wherein
(a) 2-hydroaminoazine adsorbed to the tabular grain surfaces is protonated and thereby released from the tabular grain surfaces into the dispersing medium,
(b) the released 2-hydroaminoazine is replaced on the tabular grain surfaces by adsorption of a cationic or zwitterionic benzimidazolium dye, and
(c) released 2-hydroaminoazine is removed from the dispersing medium.

5,298,389
DRY GELATIN ADDITION TO AN EMULSION/DISPERSION MIXTURE
Steven D. Possanza, Penfield; Donald E. Eaton, Walworth; Lawrence D. Mestos, Rush, and Edgar P. Lougheed, Byron, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 29, 1992, Ser. No. 952,936
Int. Cl.[5] G03C *1/015*
U.S. Cl. 430—569 9 Claims



1. A method of producing a photographic emulsion comprising a mixture of gelatin, silver halide and optionally chemical addenda for use at a coating station comprising:
preparing a liquid solution of emulsion wherein the gelatin content in the solution is from approximately 3% to approximately 5%; and

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dispersing dry gelatin into the liquid solution by entraining dry gelatin having an average diameter of less than ¼ of an inch in a gaseous stream and directing said stream into said solution until the final gelatin content in the liquid solution is from approximately 10% to about 15%.

5,298,390

SPEED ENHANCERS AND STABILIZERS FOR PHOTOTHERMOGRAPHY

Kumars Sakizadeh, Woodbury; Frank J. Manganiello, St. Paul; Sharon M. Simpson, Lake Elmo, all of Minn., and Alan R. Katritzky, Gainesville, Fla., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 7, 1993, Ser. No. 72,046
Int. Cl.[5] G03C *1/06, 1/00*
U.S. Cl. 430—619 **21 Claims**

20. A photothermographic element comprising one layer or two layers on the same side of a substrate, wherein said one or two layers comprise a photographic silver halide, an organic silver salt, a reducing agent for said organic silver salt, an organic polymeric binder, and a compound having the formula:

$$A—(CH_2)_n—X—(CH_2)_n—A$$

wherein

A is a monovalent group for which a corresponding compound AH is a post-processing stabilizer selected from the group consisting of benzimidazoles, imidazoles, triazoles, benzotriazoles, piperidones, purines, indazoles, thiazolines, 3-pyrazolidinones, triazines, tetraazaindenes, and hypoxanthines

X is X, SO, or SO_2, and

n is 1 to 10.

5,298,391

USE OF THE SP-2 MONOCLONAL ANTIBODY FOR THE CLINICAL DIAGNOSTICS AND FOR THE MONITORING OF THE HIV INFECTION PROGRESS

Stefano Iacobelli, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Apr. 22, 1991, Ser. No. 688,312
Claims priority, application Italy, Apr. 23, 1990, 20113 A/90; European Pat. Off., Apr. 17, 1991, 91830153.2
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—5 **3 Claims**

1. A method for in vitro immunoassaying an antigen from biological fluids or tissues, said antigen being present in individuals infected with the AIDS virus, said antigen being of cytoplasmic origin and being recognized by an SP-2 monoclonal antibody produced by a hybridoma cell line deposited at the Collection Nationale de Cultures de Microorganismes, Accession No. I-1083, said method comprising the steps of:

(a) taking a sample of biological fluid or tissue from a person;

(b) contacting said biological fluids or tissues with said SP-2 monoclonal antibody;

(c) removing an amount of said SP-2 monoclonal antibody not binding with said antigen; and

(d) determining the amount of said SP-2 monoclonal antibody bound with said antigen utilizing at least one revealing system selected from the group consisting of enzyme, radioisotope, and chemiluminescent labels.

5,298,392

PROCESS FOR DETECTION OF WATER-BORNE MICROBIAL PATHOGENS AND INDICATORS OF HUMAN FECAL CONTAMINATION IN WATER SAMPLES AND KITS THEREFOR

Ronald M. Atlas; Asim K. Bej; Meena H. Mahbubani, all of Louisville, Ky.; Richard Miller, Pekin, Ind., and Robert J. Steffan, Bismarck, N. Dak., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 467,813, Jan. 19, 1990, abandoned. This application May 13, 1992, Ser. No. 883,815
Int. Cl.[5] C12G *00/68*
U.S. Cl. 435—600 **27 Claims**

1. A process for detecting the presence of water-borne pathogens and indicator microorganisms of bacteria primarily of fecal origin in an environmental water sample, said process comprising:

(1) recovering from a water sample and concentrating into a suitably sized concentrated test sample of target cells substantially all water-borne pathogens and indicator microorganisms in said water sample;

(2) treating the concentrated test sample to lyse the target cells and recover substantially undegraded target cells DNAs;

(3) selecting a target gene carried in said target cells and selecting a target DNA nucleotide sequence in said target gene and incubating said target DNA nucleotide sequence under amplification conditions with two selected oligonucleotide primers and DNA polymerase such that each primer sequence is complementary to and hybridizes to one of two separated strands of the target DNA nucleotide sequence and the polymerase extends the primers to make fully double-stranded replicas of the target DNA nucleotide sequence, and

(4) detecting amplified target DNA to determine the presence or absence in the test sample of said water-borne pathogens or indicator microorganisms carrying the selected target DNA nucleotide sequence;

wherein the target genes and bacteria are selected from the groups consisting of:

the lacZ gene to detect all species from the genera Escherichia, Enterobacter, Citrobacter and Klebsiella;

the lamB gene to detect *Escherichia coli* and all species from the genera Salmonella and Shigella in combination and,

the Uida gene to detect *Escherichia coli, Shigella sonnei* and *Shigella flexineri* in combination.

5,298,393

MONOCLONAL ANTIBODY FOR HUMAN ACID-GLUTATHIONE S-TRANSFERASE AND PROCESS FOR PREPARATION THEREOF

Ichiro Urushizaki; Yoshiro Niitsu; Hiroshi Maruyama, all of Sapporo; Hideaki Sazuki, Koganei; Kenji Hosoda, Kawagoe; Hitomi Honda, and Yasuhiko Masuho, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP86/00592, § 371 Date Jul. 21, 1987, § 102(e) Date Jul. 21, 1987, PCT Pub. No. WO87/03377, PCT Pub. Date Jun. 4, 1987
Continuation of Ser. No. 86,129, Jul. 21, 1987, abandoned. This PCT application Nov. 19, 1986, Ser. No. 759,808
Claims priority, application Japan, Nov. 21, 1985, 60-259858
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—7.1 **12 Claims**

9. A method for diagnosing cancer which is accompanied by the presence of acid glutathione S-transferase in blood by measuring human acid glutathione S-transferase in a sample comprising the steps of:

(a) reacting a monoclonal antibody that specifically binds to human acid glutathione S-transferase with a sample;

(b) quantifying the amount of said reacted monoclonal antibody from step (a); and

(c) calculating said human acid glutathione S-transferase from said quantified amount from step (b) in said sample.

5,298,394

NON-A, NON-B HEPATITIS VIRUS ANTIGEN PEPTIDE

Terukatsu Arima, Okayama, and Konosuke Fukai, Toyonaka, both of Japan, assignors to The Research Foundation for Microbial Diseases, Osaka, Japan

Division of Ser. No. 401,271, Aug. 31, 1989, Pat. No. 5,191,064. This application Mar. 2, 1993, Ser. No. 24,976
Claims priority, application Japan, Mar. 4, 1989, 1-52642; Jun. 14, 1989, 1-153257; Jul. 25, 1989, 1-193233
Int. Cl.[5] C12Q *1/00*; C12P *21/06*; A61K *5/00*; C07H *19/00*
U.S. Cl. 435—7.1 **2 Claims**

1. A method of diagnosing non-A, non-B hepatitis, which comprises:

contacting serum from a patient with a non-A, non-B hepatitis virus antigen peptide which peptide exhibits an antigen-antibody reaction with at least one member selected from the group consisting of serum from a convalescent patient having acute non-A, non-B hepatitis and serum from a patient having chronic non-A, non-B hepatitis, and which does not exhibit an antigen-antibody reaction either with serum from a human clinically diagnosed as negative to hepatitis or with serum from a patient having hepatitis diagnosed as other than non-A, non-B hepatitis;

determining whether said serum reacts with said non-A, non-B hepatitis virus antigen peptide; and

classifying said serum as positive or negative to non-A, non-B hepatitis based on said reactivity; wherein said non-A, non-B hepatitis virus antigen peptide is obtained by expression of at least a part of a deoxyribonucleic acid comprising at least one nucleotide sequence selected from the group consisting of formulae (I) to (VI):

GAATTCCAAAAAGAGCAAAACAAACC (I)

GCCGAAGAAAAAACTAATAAGAGAAG

AAAAGGCGAAGAGACACAGGAAAAAA

AAAACAGAGACGAAGGTCAGATAGAA

AAAAAGCAAGGAATTC;

GAATTCCGAGAACAAGACCAGATAAA (II)

AACCAAAGACAGAACACAACAGAGAA

AGACGAAAAGAAGCACCAATCGCAGG

CGAAGCAAAAACGAAAAAAAAAAAAA

AAAGGAATTC;

GAATTCCAAGAAAAAAAGGGAGAAGC (III)

CAGCAATGGAGAAGCCGAAAACGACA

CACACAAGAAACAAAGGAGGTACAAA

GAAAAAGAAAAAACGGCAACAAATAA

CCCAGGAAAGAACAAAAAGCCAAGAG

TGGGCAGAATAAAAAACTGGAACCGG

GAGGGAAGGAAGGACGCATATCAGAT

TAGAAAAAGGAGGGAATTC;

GAATTCCTAAGAAATGGCTAGCCCTA (IV)

GGAGAGGCAGTCTTTCCCCAGTCAGT

TAGCCCGCAAATGCCAGAGCATCAAG

AATTCAGAAAAGGAGAAAATATAGTT

AATATCAAAGTGGTCGAAGCCTAAGA

TAGAGAGGTAGAGAGTATGAAGAGTA

-continued

AGACGAATACAAACCAAAATTCTGGA

ATGATCATTAAAAACATTATTGATAG

GTACTTAGAAGGGCAAGAGAGGAAGA

AGAAAGTAATGAGAAATGCTTATGGA

AGCCAAAGGACCTTTCCAGGAGAAGAAAGGGAATTC; (V)

GAATTCCCAACGCGTCGGCTTGGCCC

GCGCCTTGGCCGCCGACCCGCGCTGA

TGGCCGTGGAATTC; (VI)

GAATTCCGGGGTATTTGCCTCGATCT

GCCTGCTCAGCGCTTCGGCCCTCGGC

TTGGGCGCCCTGCTGCTGGCTTCCGA

GCAGCTATTCAGCGCCTTGAAAGTGG

TTGGCGCGGCGTACGTGTCCGGGAATTC;

wherein the left and right ends of each nucleotide sequence represent the 5'-terminus and 3'-terminus respectively, and nucleotide sequences individually obtained by substituting at least one nucleotide of each of said nucleotide sequences of formulae (I) to (VI) in accordance with degeneracy of genetic code;

said non-A, non-B hepatitis virus antigen peptide obtained by expression of said part of the deoxyribonucleic acid being reactive to a non-A, non-B hepatitis virus antibody.

5,298,395

HYPERGLYCOSYLATED CYTOKINE CONJUGATES

Linda S. Park, Seattle, Wash., assignor to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 827,517, Jan. 24, 1992, Pat. No. 5,217,881, which is a continuation of Ser. No. 343,471, Apr. 25, 1989, abandoned. This application Nov. 5, 1992, Ser. No. 972,010
Int. Cl.[5] G01N *33/567*
U.S. Cl. 435—7.21 **8 Claims**

1. A method for detecting cells in a population which express a selected cytokine receptor, comprising contacting the population with a ligand reagent that specifically binds the receptor, said ligand reagent being a hyperglycosylated recombinant cytokine conjugated to a detectable, functional moiety via an oligosaccharide residue, and identifying the cells expressing the receptor by detecting cells which have bound the ligand reagent.

5,298,396

METHOD FOR IDENTIFYING T CELLS DISEASE INVOLVED IN AUTOIMMUNE DISEASE

Brian L. Kotzin; Philippa Marrack; John Kappler, and Xavier Paliard, all of Denver, Colo., assignors to National Jewish Center for Immunology and Respiratory Medicine, Denver, Colo.

Continuation-in-part of Ser. No. 488,353, Mar. 2, 1990, which is a continuation-in-part of Ser. No. 437,370, Nov. 15, 1989. This application Jul. 18, 1991, Ser. No. 732,114
Int. Cl.[5] G01N *33/564*
U.S. Cl. 435—7.24 **2 Claims**

1. Method for identifying an agent involved in an autoimmune disease, comprising:

(i) identifying and quantifying a T cell population characterized by a particular Vβ element implicated in said autoimmune disease,

(ii) administering an agent believed to be associated with said autoimmune disease to a control,

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(iii) assaying a T cell containing sample of said control to determine level of expression of a Vβ element paralleling the Vβ element of (i), and

(iv) comparing levels of Vβ element in (i) and (iii), wherein comparable levels are indicative of involvement of said agent in said autoimmune disease.

5,298,397

METHOD OF ASSAYING D-VANILLYLMANDELIC ACID

Manami Kuroda, Choshi, and Masahito Sugi, Oi, both of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

PCT No. PCT/JP90/01344, § 371 Date Jun. 19, 1991, § 102(e) Date Jun. 19, 1991, PCT Pub. No. WO91/06005, PCT Pub. Date May 2, 1991

PCT Filed Oct. 10, 1990, Ser. No. 690,971

Claims priority, application Japan, Oct. 19, 1989, 1-272538

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—7.93 **4 Claims**

1. A method of assaying the amount of D-vanillylmandelic acid (D-VMA) in a liquid specimen, comprising the steps of:

(a) conducting a competitive reaction of D-VMA in the liquid specimen and D-VMA in a solid phase against a solution containing an anti-D-VMA antibody,

(b) separating the liquid phase from the solid phase,

(c) measuring the quantity of anti-D-VMA antibody bound to the solid phase, and

(d) determining the quantity of D-VMA in the liquid specimen based upon the amount of anti-D-VMA antibody bound to the solid phase utilizing a standard curve prepared by conducting steps (a)–(c) using a standard sample containing a known amount of D-VMA in place of the specimen,

wherein the anti-D-VMA antibody is capable of specifically binding to D-VMA and has a cross reactivity with L-VMA of 1% or lower based upon a reactivity with D-VMA of 100%.

5,298,398

PREPARATION OF 9-ALPHA-HYDROXY-17-KETO STEROIDS USING *MYCOBACTERIUM* SPECIES CBS 482.86

Harmen Slijkhuis, AE Berkel En Rodenrijs, and Arthur F. Marx, GM Delft, both of Netherlands, assignors to Gist-Brocades NV, Delft, Netherlands

Division of Ser. No. 729,892, Jul. 15, 1991, Pat. No. 5,166,055, which is a continuation of Ser. No. 289,057, Dec. 23, 1988, abandoned. This application Aug. 6, 1992, Ser. No. 925,107

Claims priority, application European Pat. Off., Dec. 23, 1987, 87202619.0

Int. Cl.[5] C12N *1/20*; C12P *33/00, 33/06, 33/02*

U.S. Cl. 435—52 **5 Claims**

1. Process for the preparation of 9α-hydroxy-17-keto steroids comprising subjecting in an aqueous nutrient culture medium under aerobic fermentation conditions one or more steroid compounds having at least a C-17-carbon side chain containing from 5–10 carbon atoms inclusive, to the action of a C-17-side chain degrading microorganism or to one or more enzymes thereof to produce said steroid and recovering the 9α-hydro -17-keto steroid from the culture medium, wherein said microorganism is Mycobacterium species CBS 482.86, or a mutant thereof that produces said steroid under the same culture conditions as said microorganism.

5,298,399

GENE AND PROCESS FOR PRODUCING A THERMOSTABLE UREASE

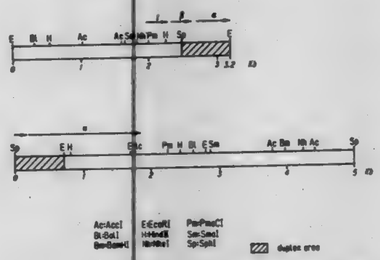
Takeshi Uozumi, Tokyo; Haruhiko Masaki, Chiba; Makoto Hidaka, Tokyo; Akira Nakamura, Kamifukuoka; Michihisa Maeda, Tokyo, and Yasuo Yoneta, Yaizu, all of Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan

Filed Jul. 18, 1991, Ser. No. 732,242

Claims priority, application Japan, Aug. 10, 1990, 2-10178

Int. Cl.[5] C12N *15/57, 15/31, 15/11*; C12P *21/00*

U.S. Cl. 435—69.1 **12 Claims**



1. An isolated structural Bacillus sp. TB-90 (FERM BP-795) urease gene, which comprises base sequences encoding the amino acid sequences of three subunits of urease as defined in the Sequence Listing by SEQ ID NO.1, SEQ ID NO:2 and SEQ ID NO:3.

5,298,400

POLYNUCLEOTIDE CONSTRUCTS FOR SECRETED GLYCOSYLATED PLASMINOGEN ACTIVATOR INHIBITOR-2 (PAI-2)

Peter L. Whitfeld, Glebe; Michael A. Richardson, Belrose, and Clive L. Bunn, West Ryde, all of Australia, assignors to Biotechnology Australia Pty. Ltd., New South Wales, Australia

PCT No. PCT/AU90/00396, § 371 Date May 6, 1991, § 102(e) Date May 6, 1991, PCT Pub. No. WO91/03556, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 4, 1990, Ser. No. 679,052

Claims priority, application Australia, Sep. 5, 1989, PJ6179

Int. Cl.[5] C12N *15/15, 15/03, 15/06*; C12P *21/02*

U.S. Cl. 435—69.8 **11 Claims**

1. A process for the preparation of recombinant, glycosylated, secreted PAI-2 or recombinant, glycosylated, secreted PAI-2 without its N-terminal methionine, which process comprises:

providing a construct comprising a first polynucleotide molecule encoding PAI-2 or PAI-2 without its N-terminal methionine;

attaching a polynucleotide molecule encoding a transient signal sequence directly to the 5' end of the first polynucleotide molecule, such that the resulting hybrid protein expressed from the construct will consist of said transient signal sequence attached directly to the NH_2-terminal of said PAI-2 or PAI-2 without its N-terminal methionine; and

expressing the construct in a eukaryotic host cell,

wherein said transient signal sequence is MKCLLLALG-LLAFVPLVRA (SEQ ID NO: 1).

5,298,401

PROCESS FOR THE QUANTITATIVE DETERMINATION OF THE FUNCTION AND ANTIGENIC CONCENTRATION OF A SUBSTANCE CONTAINED IN A BIOLOGICAL LIQUID

Bernd Binder, Freyung 6, A-1010 Vienna, Austria

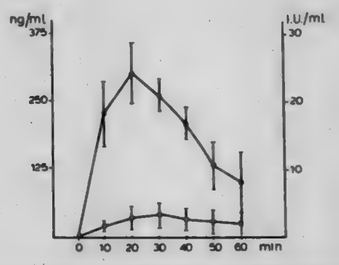
PCT No. PCT/AT88/00027, § 371 Date Jan. 5, 1989, § 102(e) Date Jan. 5, 1989, PCT Pub. No. WO88/08883, PCT Pub. Date Nov. 17, 1988

PCT Filed May 5, 1988, Ser. No. 310,724

Claims priority, application Austria, May 5, 1987, 1127/87

Int. Cl.[5] G01N *33/53, 33/566*; C12Q *1/56*; C12N *9/74*

U.S. Cl. 435—7.4 **6 Claims**



1. A process for the determination of specific activity based upon function and concentration of a plasminogen activator contained in the same single sample of blood plasma or urine, which comprises the steps of:

(a) immobilizing the plasminogen activator by binding same to a monoclonal antibody or a polyclonal antibody that binds therewith so as to not interfere with its functional domain thereby allowing its function and concentration to be subsequently determined;

(b) quantitatively determining the biological function of the plasminogen activator immobilized during step (a) by reacting same with an enzyme substrate capable of reaction therewith;

(c) consecutively following step (b), removing the enzyme substrate by washing and quantitatively determining in said same single sample the immunological concentration of the plasminogen activator whose biological function was determined during step (b) by applying an antibody or a binding protein, specifically binding thereto, to measure total concentration of the plasminogen activator; and

(d) correlating the determined function and concentration of the plasminogen activator to determine its specific activity.

5,298,402

CELL LINES PRODUCED BY TRANSFORMING LEUKOCYTES OF FISH WITH ONCOGENES AND PHYSIOLOGICALLY ACTIVE SUBSTANCES PRODUCED BY THE CELL LINES

Tadakazu Tamai, Tsukuba; Hiroki Murakami, Fukuoka; Nobuyuki Sato, Tsukuba; Shoji Kimura, Tsukuba, and Yasuhiko Sasamoto, Tsukuba, all of Japan, assignors to Taiyo Fishery Co., Ltd., Tokyo, Japan

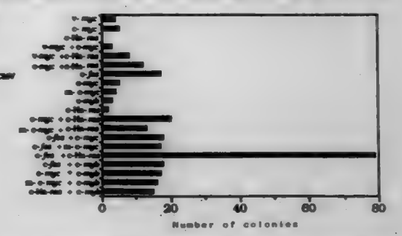
Filed Mar. 3, 1992, Ser. No. 844,851

Claims priority, application Japan, Mar. 4, 1991, 3-37541

Int. Cl.[5] C12N *15/06, 5/16*

U.S. Cl. 435—172.3 **4 Claims**

1. A method of establishing a cell line capable of indefinite growth comprising the steps of isolating a leukocyte from peripheral blood of fish, transforming the leukocyte with at least one expression plasmid containing h-c-myc and c-Ha-ras



oncogenes and continuously culturing the cell containing the plasmid.

5,298,403

LABELED DRUG HAPTEN ANALOGUES FOR IMMUNOASSAYS

Susan J. Danielson; Barbara A. Brunmond; Marsha D. B. Oenick, all of Rochester; Ignazio S. Ponticello, Pittsford, and David A. Hilborn, Hearietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

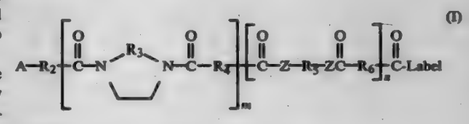
Continuation-in-part of Ser. No. 712,330, Jun. 7, 1991, abandoned. This application Mar. 16, 1992, Ser. No. 851,439

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] C07D *235/30*; C12N *9/02, 9/08*; C12Q *1/00*

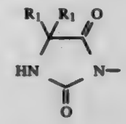
U.S. Cl. 435—192 **3 Claims**

1. A labeled drug hapten analogue conforming to the structure (I)

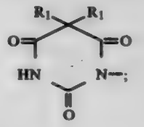


wherein

A represents a hydantoin nucleus of the



structure; or a barbiturate nucleus of the



structure; wherein

R^1 each independently represents hydrogen, alkyl of 1 to 10 carbon atoms, or phenyl;

R^2 represents C_1 to C_{10} alkylene or such alkylene groups interrupted with at least one or more ester groups, amide groups, —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R^4, R^5, and R^6, each independently, represents phenylene, C_1 to C_{10} alkylene or such alkylene groups interrupted with ester groups, amide groups, —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;

R^3 represents C_1 to C_3 alkylene;

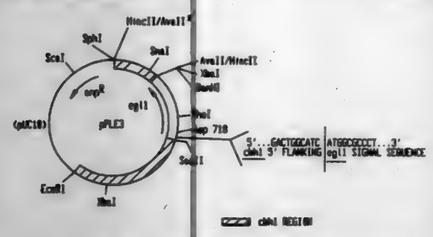
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Z represents —O—, —S—, or —NR—, wherein R represents hydrogen or C_1 to C_6 alkyl;
Label represents an enzyme
m is 0, 1, or 2; and
n is 0, 1, or 2; and
the total number of atoms comprised in m, n and R_2 is 5 to 40;
and further provided that (i) at least one of the R^1 groups is phenyl; (ii) the bracketed components of structure I can appear therein in any order and (iii) the linking group is other than a derivative of a saturated or unsaturated monocarboxylic acid having from to 2 to 12 carbon atoms.

5,298,404
METHOD FOR PRODUCING THE HPA I RESTRICTION ENDONUCLEASE AND METHYLASE
Jack S. Benner, Hamilton, Mass., and Phyllis Rees, Tallahassee, Fla., assignors to New England Biolabs, Inc., Beverly, Mass.
Filed Oct. 13, 1989, Ser. No. 421,272
Int. Cl.[5] C12N *9/22, 15/55*
U.S. Cl. 435—199 **7 Claims**

1. Isolated DNA coding for the HpaI restriction endonuclease, wherein the isolated DNA is obtainable from the vector p(pBIIHI.2KI)HpaIRM10.5-45.

5,298,405
ENZYME PREPARATIONS WITH RECOMBINANTLY-ALTERED CELLULOSE PROFILES AND METHODS FOR THEIR PRODUCTION
Helena Nevalainen, Espoo; Jonathan Knowles, Helsinki; Pirkko Suominen, Vantaa; Merja Penttilä, Helsinki, and Arja Mäntylä, Espoo, all of Finland, assignors to Alko Limited, Helsinki, Finland
Continuation-in-part of Ser. No. 496,155, Mar. 19, 1990, which is a continuation of Ser. No. 44,077, Apr. 29, 1987. This application May 15, 1990, Ser. No. 524,308
Int. Cl.[5] C12N *15/00, 15/56, 15/80, 15/90*
U.S. Cl. 435—209 **31 Claims**



1. A method for producing an enzyme preparation in a culture medium, said method comprising the steps of:
(a) modifying a Trichoderma host cell such that said host cell is partially or completely deficient in expressing one or more endogenous cellulase enzymes;
(b) transforming the host cell of part (a) with a genetic construct comprising a nucleotide sequence encoding a protein selected from the group consisting of a hemicellulase, a pectin degrading enzyme, a lignin degrading enzyme other than lignin peroxidase LIII of *P. radiata*, and a cellulolytic enzyme, wherein the transformation inserts said nucleotide sequence into the chromosome of said host cell;
(c) screening said host cell of part (b) and identifying a host cell which expresses said protein;
(d) cultivating said transformed Trichoderma host cell of part (c) under conditions which allow the expression of said protein; and
(e) recovering the culture medium from the cultivation of part (d), wherein said culture medium contains said protein and the enzymes secreted by said transformed Trichoderma host cell during the cultivation of part (d).

5,298,406
FORMULATION FOR STABILIZING ENZYMATIC ACTIVITY AND IMMUNOREACTIVITY OF CREATINE KINASE AND CREATINE KINASE ISOENZYMES
Joseph E. Loyd, Landenberg, Pa., and Barbara A. Search, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 14, 1992, Ser. No. 939,861
Int. Cl.[5] C12Q *1/50;* C12N *9/96, 9/12*
U.S. Cl. 435—17 **8 Claims**

7. A blood collection tube additive for stabilizing enzymatic activity and immunoreactivity of creatine kinase or creatine kinase isoenzymes contained in human serum samples comprising:
(a) an effective amount of a buffer having a pKa in the range of 6.2–7.6 to maintain pH of the formulation at 6.7±0.1;
(b) an effective amount of ascorbic acid to prevent oxidation of creatine kinase or creatine kinase isoenzyme thiol groups;
(c) an effective amount of a non-reducing polyol to stabilize immunoreactivity of creatine kinase or creatine kinase isoenzymes; and
(d) an effective amount of an antimicrobial to prevent microbial growth in the formulation.

5,298,407
DNA ENCODING A PROTEIN ACTIVE IN LYMPHOCYTE-MEDIATED CYTOTOXICITY
Paul J. Anderson, Watertown; Michel Streuli, Somerville, and Stuart F. Schlossman, Newton Centre, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.
Continuation-in-part of Ser. No. 460,678, Jan. 5, 1990, abandoned. This application Jul. 10, 1991, Ser. No. 726,607
Int. Cl.[5] C12Q *1/68;* C12N *15/00;* C07K *13/00*
U.S. Cl. 435—69.1 **15 Claims**

1. Isolated DNA comprising a sequence encoding a polypeptide that is immunologically reactive with the monoclonal antibody produced by the hybridoma designated ATCC #HB 10319.

5,298,408

Patent Not Issued For This Number

5,298,409
ANTIBODY-ENHANCED STEREOSPECIFIC HYDROLYSES
Peter G. Schultz, Oakland, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 574,674, Aug. 29, 1990, Pat. No. 5,190,865, which is a continuation-in-part of Ser. No. 383,465, Jul. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 273,455, Nov. 18, 1988, abandoned. This application Dec. 11, 1992, Ser. No. 989,450
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] C12P *13/00, 7/62*
U.S. Cl. 435—106 **17 Claims**

1. A method for the production of an optically active carboxylic acid by stereospecific hydrolysis of an ester at a preselected —CO_2—group thereof, said ester having a chiral center on the acid portion thereof and said ester being present in a mixture of D- and L-diastereomers defined by a difference in configuration at said chiral center on said acid portion of said ester, said method comprising:
(a) contacting said D- and L-ester diastereomer mixture with antibody elicited by a mixture of antigen diastereomers which are stable analogs of unstable transition states of said ester diastereomers tending to decompose by cleaving at said preselected —CO_2—group to form hydrolysis products thereof, said antibody being one which promotes said hydrolysis; and
(b) recovering said optically active carboxylic acid from said hydrolysis products, such that a preponderance of said optically active carboxylic acid is the D-siomer thereof.

5,298,410
LYOPHILIZED FORMULATION OF POLYETHYLENE OXIDE MODIFIED PROTEINS WITH INCREASED SHELF-LIFE
Christopher P. Phillips, Brandamore, and Robert A. Snow, West Chester, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.
Filed Feb. 25, 1993, Ser. No. 23,182
Int. Cl.[5] C12N *9/96, 9/02;* C12Q *1/16;* A61K *31/715*
U.S. Cl. 435—188 **8 Claims**

1. A reconstituted lyophilized formulation of polyethylene glycol and a biologically active superoxide dismutase protein conjugate comprising:
a) polyethylene glycol having a molecular weight of from about 1,000 to about 15,000 daltons and consisting of less than about 10% w/w non-monomethoxylated polyethylene glycol and more than 90% w/w monomethoxylated polyethylene glycol; said conjugate having an enzymatic activity of from about 150 to about 150,000 U/ml;
b) from about 0.1 to about 20% w/v of β-cyclodextrin; and
c) from about 0.01 to about 50 nM buffer, said formulation having a pH of from about 5.7 to about 6.5.

5,298,411
GLUCOSE DEHYDROGENASE FROM PSEUDOMONAS
Atsushi Sogabe; Michiyo Minami; Yukihiro Sogabe, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan
Filed Sep. 17, 1991, Ser. No. 761,280
Claims priority, application Japan, Sep. 25, 1990, 2-256462
Int. Cl.[5] C12N *9/04, 1/20*
U.S. Cl. 435—190 **4 Claims**

1. A substantially purified glucose dehydrogenase, having activity at a temperature of from about 30° C. to about 65° C. at a pH of from about pH 6 to about pH 10, having an optimum activity at a temperature from about 50° C. to about 60° C. and at a pH of from about 8.5 to about 9.0, and retaining at least 90% residual activity after treatment at 50° C. for 15 minutes said glucose dehydrogenase being NAD or NADP dependent, having a molecular weight of about 101,000 daltons by gel filtration using TSK gel and having an isoelectric point of about 4.5 by ampholyte isoelectric focusing, and having a specificity for at least β-D-glucose and 2-deoxyglucose.

5,298,412

Patent Not Issued For This Number

5,298,413
ATTENUATED POLIOVIRUSES
Jeffrey W. Almond, Reading; Philip D. Minor, Potters Bar, and Michael A. Skinner, Cambridge, all of United Kingdom, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB90/00078, § 371 Date Jul. 16, 1991, § 102(e) Date Jul. 16, 1991, PCT Pub. No. WO90/08186, PCT Pub. Date Jul. 26, 1990
Continuation of Ser. No. 721,439, Jul. 16, 1991, abandoned. This PCT application Jan. 18, 1990, Ser. No. 62,045
Claims priority, application United Kingdom, Jan. 18, 1989, 8901093
Int. Cl.[5] C12N *7/04, 15/09, 7/01;* A61K *39/13*
U.S. Cl. 435—236 **7 Claims**

1. An attenuated poliovirus having an attenuating mutation at least at a position which is, or corresponds with, position 471 of the genome of poliovirus type 3 Leon strain.

5,298,414
DETECTION OF MORPHINE USING MORPHINE DEHYDROGENASE
Neil C. Bruce, Cambridge; Lauren D. G. Stephens, Royston, and Christopher R. Lowe, Saffron Walden, all of England, assignors to British Technology Group Limited, London, England
PCT No. PCT/GB90/00727, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO90/13634, PCT Pub. Date Nov. 15, 1990
PCT Filed May 11, 1990, Ser. No. 784,445
Claims priority, application United Kingdom, May 12, 1989, 8910958
Int. Cl.[5] C12Q *1/32;* C12N *9/04*
U.S. Cl. 435—26 **8 Claims**

1. A morphine dehydrogenase enzyme wherein:
(1) its first 25 amino acids from the N-terminus have sequence ID NO: 1:

Ala Gly Lys Ser Pro Leu Ile Asn Leu Asn Asn Gly Val Lys Met
1 5 10 15

Pro Ala Leu Gly Leu Gly Val Phe Ala Ala ;
20 25

(2) with the NADP+ cofactor it oxidises morphine to morphinone;
(3) with the same cofactor it also oxidises codeine and ethylmorphine but has not significant enzymatic action on heroin, 6-acetylmorphine, thebaine, oxycodone, morphine glucuronide pholcodeine or ethanol;
(4) its molecular weight is about 32,000 Daltons, as determined by gel filtration;
(5) in glycine-NaOH buffer it exhibits optimal reactivity with morphine at pH about 9.5; and
(6) its isoelectric point, determined by flat bed isoelectric focussing in a gel, is 4.2.

5,298,415

Patent Not Issued For This Number

5,298,416
ATTENUATED POLIOVIRUSES
Jeffrey W. Almond, Reading; Philip D. Minor, Potters Bar; Michael A. Skinner, Cambridge, all of United Kingdom, and Colin R. Young, College Station, Tex., assignors to British Technology Group Ltd., London, England
Filed May 17, 1993, Ser. No. 62,162
Claims priority, application United Kingdom, Jan. 18, 1989, 8901094
Int. Cl.[5] C12N *7/04, 7/01, 15/09;* A61K *39/13*
U.S. Cl. 435—236 **7 Claims**

1. An attenuated poliovirus in which there is a reversal of a base pairing in the part, or in a part corresponding to the part, of the 5' non-coding region of the genome of poliovirus type 3 Leon strain shown below:

471	477	483
...U C C...	C C A U G G	A....
...A G G....	G G U G C C	U....
538	534	528

wherein the bases at positions 472 and 537 of the genome of poliovirus type 3 Leon strain, or at positions corresponding to the said positions 472 and 537, are G and C respectively.

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5,298,417
CRYOPRESERVED IN VITRO CULTURED EPITHELIAL TISSUE AND METHOD
Ranieri Cancedda, and Michele De Luca, both of Genoa, Italy, assignors to Istituto Nazionale per la Ricerca Sul Cancro, Genoa, Italy
Continuation of Ser. No. 165,478, Mar. 8, 1988, abandoned. This application Nov. 25, 1991, Ser. No. 799,752
Claims priority, application Italy, Jun. 23, 1987, 21005 A/87
Int. Cl.[5] A01N *1/02, 37/18*; C12N *5/00*; A61K *37/00*
U.S. Cl. 435—240.1 **13 Claims**



1. A cryopreserved epithelial wound repair tissue comprising a frozen, confluent sheet of allogenic in vitro cultured epithelial tissue which, after being stored at a temperature of about −80° C., thawed and applied to the surface of a wound in a patient, maintains morphological and functional characteristics sufficient to induce wound healing in said patient.

5,298,418
CELL LINE ISOLATED FROM LARVAL MIDGUT TISSUE OF *TRICHOPLUSIA NI*
Robert R. Granados, Ithaca, N.Y., assignor to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.
Continuation-in-part of Ser. No. 760,697, Sep. 16, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 839,918
Int. Cl.[5] C12N *5/00*
U.S. Cl. 435—240.2 **1 Claim**

1. An isolated cell line from the larval midgut tissue of *Trichoplusia ni*, having all the identifying characteristics of BTI-TN-MG1, ATCC CRL 10860.

5,298,419
HUMAN HYBRIDOMAS AND MONOCLONAL ANTIBODIES WHICH BIND BOTH GP41 AND GP120 ENVELOPE PROTEINS OF HUMAN IMMUNODEFICIENCY VIRUS
Yasuhiko Masuho; Toru Segawa; Yoh-ichi Matsumoto, all of Tokyo, Japan; Evan M. Hersh, and Eskild A. Peterson, both of Tucson, Ariz., assignors to The Arizona Board of Regents on behalf of the University of Arizona, Tucson, Ariz. and Teijin Limited, Osaka, Japan
Filed Mar. 31, 1988, Ser. No. 176,159
Int. Cl.[5] C12N *5/24*; C07K *15/28*; A61K *39/42*
U.S. Cl. 435—240.27 **2 Claims**

1. A hybridoma having all of the identifying characteristics of the hybridoma designated MCA 86 having A.T.C.C. Accession No. HB 9669.

5,298,420
ANTIBODIES SPECIFIC FOR ISOTYPE SPECIFIC DOMAINS OF HUMAN IGM AND HUMAN IGG EXPRESSED OR THE B CELL SURFACE
Tse W. Chang, Houston, Tex., assignor to Tanox Biosystems, Inc., Houston, Tex.
Continuation of Ser. No. 562,201, Aug. 3, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 902,449
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] C07K *15/28*; C12N *1/21, 5/12*; C12P *21/08*
U.S. Cl. 435—240.27 **8 Claims**

1. A monoclonal antibody or antigen binding fragment thereof which binds to a peptide segment represented by the sequence.

EGEVS.ADEEG.FEN.

5,298,421
PLANT MEDIUM-CHAIN-PREFERRING ACYL-ACP THIOESTERASES AND RELATED METHODS
Huw M. Davies, and Toni A. Voelker, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.
Continuation-in-part of Ser. No. 514,030, Apr. 26, 1990, abandoned. This application Nov. 30, 1990, Ser. No. 620,426
Int. Cl.[5] C12N *15/82, 15/29*
U.S. Cl. 435—320.1 **8 Claims**

1. A recombinant nucleic acid construct comprising an expression cassette capable of producing a plant C12-preferring acyl-ACP thioesterase in a host cell comprising, in the 5' to 3' direction of transcription, a transcriptional initiation regulatory region functional in said host cell, a translational initiation regulatory region functional in said host cell, a DNA sense sequence encoding an *Umbellularia californica* C12-preferring acyl-ACP thioesterase, and a transcriptional termination regulatory region functional in said host cell, wherein said thioesterase encoding sequence is under the control of said regulatory regions, and wherein at least one of said transcriptional initiation and transcriptional termination regions is not naturally linked to said DNA sense sequence.

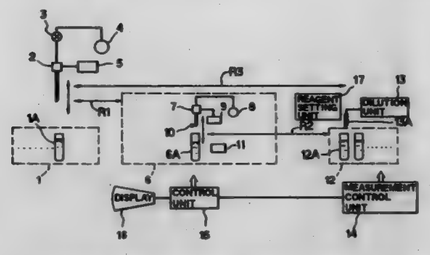
5,298,422
MYOGENIC VECTOR SYSTEMS
Robert J. Schwartz; Franco J. DeMayo, and Bert W. O'Malley, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.
Filed Nov. 6, 1991, Ser. No. 789,919
Int. Cl.[5] C12N *15/63*
U.S. Cl. 435—320.1 **32 Claims**

1. A myogenic vector system (MVS) for the expression of a nucleic acid sequence in myogenic tissue, comprising a promoter; a cassette whose 5' end is attached to the 3' end of the promoter, said cassette containing a nucleic acid sequence which is to be expressed; a myogenic specific 3' untranslated region (3'UTR) and a non-coding region (NCR) contiguous to the 3' end of the 3' UTR, said NCR containing a transcriptional termination signal, wherein the 5' end of the 3' UTR is attached to the 3' end of the cassette.

5,298,423
NUCLEOTIDE SEQUENCES ENCODING THE EXPRESSION OF A HANTAAN VIRUS NUCLEOCAPSID PROTEIN AND G1 AND G2 GLYCOPROTEINS
Joel M. Dalrymple, Myersville, and Connie S. Schmaljohn, Frederick, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation of Ser. No. 125,105, Nov. 25, 1987, abandoned. This application Nov. 14, 1991, Ser. No. 799,479
Int. Cl.[5] C12N *15/00, 15/33*
U.S. Cl. 435—320.1 **13 Claims**

1. A vector comprising a nucleotide molecule selected from the group consisting of a nucleotide molecule coding for a Hantaan virus nucleocapsid N protein and a nucleotide molecule coding for a precursor of Hantaan virus G1 and G2 glycoproteins.

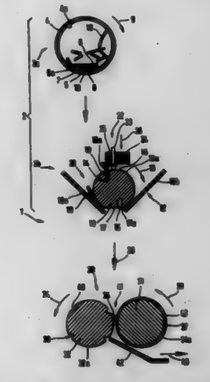
5,298,424
AUTOMATIC CHEMICAL ANALYSIS SYSTEM AND AUTOMATIC CHEMICAL ANALYSIS METHOD
Hiroo Shinohara, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 26, 1992, Ser. No. 858,082
Claims priority, application Japan, Mar. 26, 1991, 3-61669
Int. Cl.[5] G01N *35/00*
U.S. Cl. 436—43 **7 Claims**



1. A chemical analysis system in which a sample and a reagent supplies in a reaction vessel disposed in a measurement line are subjected to analysis treatment and an analyzed result is then reported, comprising:
means for sucking the sample from a sample vessel;
means for detecting a fact as to whether a sucked amount of the sample is sufficient or insufficient for the analysis treatment;
means for calculating an insufficient amount of the sucked sample when it is detected by the detecting means that an insufficient amount of the sample necessary for the analysis is sucked and for obtaining an information regarding an amount of a dilution solution necessary for compensating for the insufficient amount of the sample;
means for adding said amount of said dilution solution to said insufficient amount of the sample necessary for compensating for said insufficient amount of the sample;
means for carrying out an analysis treatment of the diluted sample in accordance with the information of the amount of the dilution solution added to said insufficient amount of the sample; and
means for compensating for said analyzed result of the analysis treatment in accordance with the information of the amount of the dilution solution.

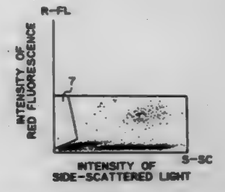
5,298,425
DEVICE FOR THE POSITIONALLY CORRECT FEEDING OF TEST STRIPS TO AN ANALYSIS UNIT
Hans-Jürgen Kuhn; Horst Meuzler, both of Berwried, and Stephan Sattler, Peissenberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany
Filed Feb. 9, 1993, Ser. No. 15,373
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204245
Int. Cl.[5] G01N *35/00*; B23Q *7/12*; B65H *9/00*
U.S. Cl. 436—43 **11 Claims**

11. An apparatus for the positionally correct feeding of test strips to an analysis unit, comprising the steps of:
providing a plurality of test strips which include a base layer and at least one test field disposed on one side of the base layer, said at least one test field being raised with respect to the one side of the base layer, said test strips being disordered with respect to their longitudinal axis rotation position in a storage container;
providing a separation and position correcting device for feeding the test strips individually in a defined position with respect to a longitudinal axis rotation position of the analysis unit;
providing a first roll having a plurality of peripheral raised webs on a surface thereof, said webs being disposed to be in alignment with regions of the test strips which are free of test fields, and also providing a second roll which is disposed adjacent to said first roll wherein said first and second rolls rotate next to each other with a gap therebetween, and wherein said second roll includes a plurality of running driver portions, said running driver portions being substantially parallel to said gap;
rotating said first roll and said second roll in a same direction



of rotation wherein an outer peripheral surface of said first roll adjacent said gap moves downward with respect to said gap, and an outer peripheral surface of said second roll adjacent said gap moves upward; and
feeding at least one of said plurality of test strips toward said gap, whereby said first and second rolls having said peripheral raised webs and said running driver portions, respectively, cooperate to correct a position of each of the test strips such that said test fields face the outer peripheral surface of said first roll.

5,298,426
METHOD OF DIFFERENTIATING ERYTHROBLASTS FROM OTHER CELLS BY FLOW CYTOMETRY
Keiichi Inami, and Hideaki Matsumoto, both of Hyogo, Japan, assignors to TOA Medical Electronics Co., Ltd., Japan
Filed Nov. 7, 1991, Ser. No. 790,598
Claims priority, application Japan, Feb. 22, 1991, 3-028521
Int. Cl.[5] G01N *1/30*
U.S. Cl. 436—63 **6 Claims**



1. A method of differentiating erythroblasts from other cells by flow cytometry which comprises the following steps:
(a) a first step of forming a first sample fluid by mixing a sample of body fluid with a first hypotonic fluid comprising a dye for specifically staining erythroblasts that is a fluorescent dye capable of diffusing into erythroblasts to stain their nuclei and a buffer for maintaining an acidic pH;

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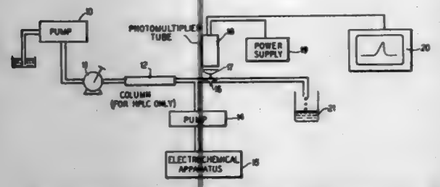
(b) a second step of forming a second sample fluid by mixing the first sample fluid obtained in step (a) with a second sample fluid comprising a buffer for maintaining the pH of the second sample fluid at a staining pH and an osmolarity adjusting agent for adjusting the osmolarity of the second sample fluid to a value at which leukocytes remain unchanged in shape;
(c) then loading the second sample fluid in a flow cytometer and obtaining at least one signal for parameters including fluorescence and scattered light in association with individual cell types;
(d) constructing a two-dimensional plot of the intensities of fluorescence and scattered light from the detected signals; and
(e) differentiating a distribution zone of erythroblasts on the constructed two-dimensional plot and counting the number of cells in that zone.

5,298,427

CHEMILUMINESCENT DETECTION OF AMINO ACIDS

Donald R. Bobbitt, and Stephen N. Brune, both of Fayetteville, Ark., assignors to The Board of Trustees of the University of Arkansas, Little Rock, Ark.

Continuation of Ser. No. 513,753, Apr. 24, 1990, abandoned. This application Aug. 4, 1992, Ser. No. 922,004
Int. Cl.[5] G01N *33/68, 33/52, 21/75, 21/76*
U.S. Cl. 436—89 **6 Claims**



1. The method of detecting amino acid in volumes >1 microliter in a stream which includes the steps of:
(a) introducing a liquid sample in the form of a stream flowing through a circuit,
(b) selectively establishing the flow rate of said stream by the use of a pump,
(c) separating the amino acid from other constituents in said stream to form an amino acid stream,
(d) buffering said amino acid stream to achieve a selected pH level, wherein said selected pH level ranges from pH 10 to pH 11,
(e) electrochemically generating $Ru(bpy)_3^{3+}$ on site,
(f) merging the $Ru(bpy)_3^{3+}$ with said buffered amino acid stream to produce immediate spontaneous luminescence in the presence of various concentrations of amino acid, and
(g) photometrically measuring the quantity of amino acid present as a function of the luminescence.

5,298,428

SELF-REFERENCING SPECTROPHOTOMETRIC MEASUREMENTS

Patrick E. O'Rourke, Martinez, Ga., and David R. Van Hare, Aiken, S.C., assignors to United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 478,326, Feb. 12, 1990, abandoned. This application Oct. 7, 1992, Ser. No. 957,133
Int. Cl.[5] G01N *21/00*
U.S. Cl. 436—171 **14 Claims**

1. A method for measuring the concentration of a photoreactive chemical substance, said method comprising the steps of:
transmitting light having an intensity through a photoreactive chemical substance, said light intensity effective to decompose said photoreactive chemical substance;
measuring a first absorption of said photoreactive chemical substance from transmitted light;
after an interval of time, measuring a second absorption spectrum of decomposed photoreactive chemical substance from transmitted light;
comparing said first and said second absorption spectra to determine an amount of said photoreactive chemical substance that has decomposed; and
determining the original concentration of said photoreactive chemical substance form said amount, said interval and said intensity of light.

5,298,429

BIOASSAY FOR IDENTIFYING LIGANDS FOR STEROID HORMONE RECEPTORS

Ronald M. Evans, La Jolla, Calif.; Stanley M. Hollenberg, Seattle, Wash., and Vincent Giguere, Etobicoke, Canada, assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Division of Ser. No. 108,471, Oct. 20, 1987, Pat. No. 5,071,773, which is a continuation-in-part of Ser. No. 922,585, Oct. 24, 1986, abandoned. This application Dec. 10, 1991, Ser. No. 807,135
Int. Cl.[5] C12N *15/12*; G01N *30/00*
U.S. Cl. 436—501 **28 Claims**

1. A bioassay for evaluating whether compound(s) are functional ligands for hormone receptor protein(s), or functional engineered or modified forms thereof, said bioassay comprising:
(a) culturing cells which contain:
non-endogenous DNA which expresses said hormone receptor protein, or functional engineered or modified forms thereof, and
DNA which encodes an operative hormone response element linked to a reporter gene,
wherein said culturing is conducted in the presence of at least one compound whose ability to function as a ligand for said hormone receptor protein, or functional engineered or modified forms thereof, is sought to be determined, and
(b) assaying for evidence of transcription of said reporter gene in said cells.

5,298,430

IMMUNOASSAY PROCESS UTILIZING A CELLULOSE ORGANIC ESTER FIBRET SUPPORT ELEMENT

Thomas J. Myers, Jr., Charlotte, and Lessie C. Phillips, Huntersville, both of N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 13, 1988, Ser. No. 243,746
Int. Cl.[5] G01N *33/544*; C12N *11/12, 11/08*; C12M *1/00*
U.S. Cl. 436—530 **8 Claims**

1. A support element for use in immunoassays comprised of a blend of from about 5 to about 95 percent cellulose organic ester fibrets and from about 95 to about 5 percent by weight of dispersible cut fibers molded and compressed into a predetermined shape.

5,298,431

PROCESS FOR PRODUCING LOW VISCOSITY ISOCYANATE TRIMERS

Stephen L. Goldstein, and Edward A. Barsa, both of Cheshire, Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Sep. 30, 1991, Ser. No. 767,946
Int. Cl.[5] C08F *6/00, 6/10*
U.S. Cl. 528—491 **8 Claims**

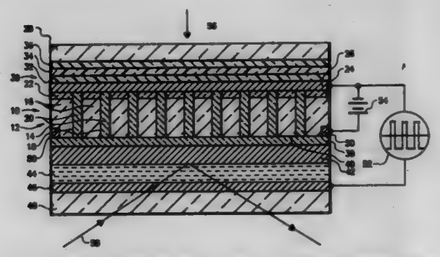
1. A process for isolating a low molecular weight, low viscosity, "monomeric" cyclotrimerized isocyanate selected from the group consisting of hexamethylene diisocyanate trimer, isophorone diisocyanate trimer, and combinations thereof, from a mixture containing said cyclotrimerized isocyanate plus high molecular weight, high viscosity, oligomeric polyisocyanurate polyisocyanates which comprises the steps of:
(a) contacting said mixture with a liquid solvent selected from the group consisting of pentane, hexane, heptane, cyclopentane, cyclohexane, methylcyclohexane, and combinations thereof, to provide a solvent-containing mixture,
(b) extracting said solvent-containing mixture by liquid-liquid extraction to cause said solvent-containing mixture to elute into an extractate and a residue, wherein said extractate is a cyclotrimerized isocyanate selected from the group consisting of pentane, hexane, heptaine, cyclopentane, cyclohexane, methylcyclohexane, and combinations thereof, that is essentially free of higher oligomers and is further characterized by having a reduced viscosity relative to said solvent-containing mixture, and
(c) separating the solvent and any residual, unreacted monomer from said extractate, using a wiped film evaporator at an elevated temperature of between 80 and 180 degrees Centegrade, to provide a reduced viscosity trimer product that is essentially free of solvent and unreacted monomer.

5,298,432

METHOD OF FABRICATING AN ISOLATED PIXEL PHOTOCONDUCTIVE STRUCTURE

Keyvan Sayyah, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 421,449, Oct. 13, 1989, Pat. No. 5,076,670. This application Oct. 17, 1991, Ser. No. 779,437
Int. Cl.[5] H01L *27/14, 21/02*
U.S. Cl. 437—2 **18 Claims**



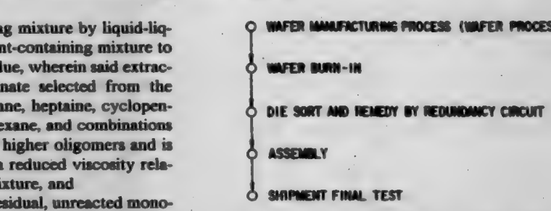
1. A method of fabricating a photoconductive structure for a liquid crystal light valve, comprising the steps of:
(a) providing a voltage modulating, photoconductive substrate having first and second surfaces; and
(b) forming electrically insulative partition means extending through the substrate between first and second surfaces thereof for partitioning the substrate into a plurality of electrically isolated pixels, in which step (b) comprises the substeps of:
(c) forming an interconnecting network of trenches in the first surface of the substrate;
(d) filling the trenches with an electrically insulating material; and
(e) removing a sufficient thickness from the second surface of the substrate to expose the insulating material in the trenches.

5,298,433

METHOD FOR TESTING SEMICONDUCTOR DEVICES

Toru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,511
Claims priority, application Japan, Dec. 27, 1990, 2-418780
Int. Cl.[5] H01L *27/08*; G11C *7/00*
U.S. Cl. 437—8 **26 Claims**



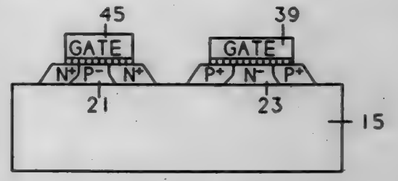
1. A method for manufacturing semiconductor devices, comprising:
a wafer manufacturing step of forming an integrated circuit with a redundant circuit and a power supply terminal in each of a plurality of chip areas on a semiconductor wafer and also forming at least one stress testing terminal that applies a stress testing voltage or stress testing signal to the interconnections other than those for power supply in said integrated circuit for each of the chip areas;
a step of, after the wafer manufacturing step, screening failures by applying a specified stress testing control signal or stress voltage to a certain number of chip areas with said stress testing terminal in contact with a contact terminal of a tester in the wafer state;
a step of, after the screening step, judging whether or not the electrical characteristics of each chip area are acceptable through test;
a step of remedying an integrated circuit in a chip area judged to be defective in the judging step, by means of said redundant circuit; and
an assembly step of, after the remedying step, separating said chip areas into individual elements and then assembling them into an integrated circuit device.

5,298,434

SELECTIVE RECRYSTALLIZATION TO REDUCE P-CHANNEL TRANSISTOR LEAKAGE IN SILICON-ON-SAPPHIRE CMOS RADIATION HARDENED INTEGRATED CIRCUITS

Kurt Strater, Brookside, N.J.; Edward P. Hand, Raleigh, N.C., and William H. Speece, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 7, 1992, Ser. No. 832,694
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—21 **3 Claims**



1. A method of reducing leakage in a P-channel device of a CMOS integrated circuit formed within a highly defective structure crystalline silicon layer epitaxially grown on a sapphire substrate, while retaining the high radiation hardness characteristics of an N-channel device within a P-well region of the silicon layer comprising the steps of:

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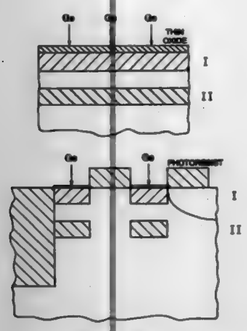
(a) introducing a recrystallization-inducing element into only that portion of said highly defective structure crystalline silicon layer where an N-conductivity well region is to be formed, while masking said P-well region of said highly defective structure crystalline silicon layer against the introduction of said recrystallization-inducing element, so that si P-well region remains free of said recrystallization-inducing element;
(b) introducing an impurity of N-conductivity type into said that portion of said highly defective structure crystalline silicon layer to form said N-conductivity well region; and
(c) annealing the resulting structure at a temperature sufficient to activate said impurity of N-conductivity type within the preamporphized portion of said silicon layer, so as to cause recrystallization of only the preamorphized portion of said silicon layer, exclusive of said P-well region which remains free of said recrystallization-inducing element, and without essentially causing a redistribution of the impurity of said N-conductivity type introduced in step (b).

5,298,435

APPLICATION OF ELECTRONIC PROPERTIES OF GERMANIUM TO INHIBIT N-TYPE OR P-TYPE DIFFUSION IN SILICON

Sheldon Aronowitz, San Jose; Courtney L. Hart, Los Gatos, and Sang T. Ahn, Albany, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 738,798, Jul. 31, 1991, Pat. No. 5,280,185, which is a continuation-in-part of Ser. No. 510,742, Apr. 18, 1990, Pat. No. 5,095,358. This application Sep. 3, 1992, Ser. No. 939,982
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **15 Claims**



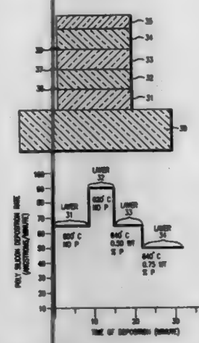
1. A method of inhibiting diffusion of electrically-active dopant atoms and producing a desired dopant distribution within a silicon lattice using germanium, the dopant distribution defining a junction having a desired profile between the dopant atoms and silicon atoms within the silicon lattice, the method comprising introducing germanium atoms in substitutional sites in the silicon lattice to form a germanium-rich region where the dopant atoms are to be introduced, wherein the germanium distribution profile is such that the location of the introduced germanium atoms substantially defines the desired junction profile within the silicon lattice, whereby the germanium-rich region acts as a diffusion barrier to the dopant atoms, resulting in the formation of the desired dopant distribution and junction profile.

5,298,436

FORMING A DEVICE DIELECTRIC ON A DEPOSITED SEMICONDUCTOR HAVING SUB-LAYERS

Joseph R. Radosevich, Bethlehem, and Pradip K. Roy, Allentown, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 749,765, Aug. 26, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 76,949
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—29 **26 Claims**



1. A method of making a semiconductor device comprising the steps of depositing a semiconductor layer from a deposition gas, including a conductivity-enhancing dopant in said semiconductor layer, providing electrical contact to said semiconductor layer, and forming a dielectric on the exposed surface of said semiconductor layer.

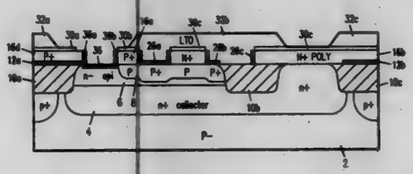
Characterized in the said step of depositing a semiconductor layer is accomplished by varying the deposition rate of the semiconductor, wherein said varying is accomplished by changing at least one of the factors selected from the group consisting of: partial pressure and flow rate of the deposition gas, whereby at least four sub-layers of said semiconductor layer are formed.

5,298,437

FABRICATION PROCESS FOR SCHOTTKY BARRIER DIODES ON A SINGLE POLY BIPOLAR PROCESS

Brian McFarlane, Campbell; Frank Marazita, and John E. Readdie, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 627,160, Dec. 13, 1990, abandoned. This application Jul. 28, 1992, Ser. No. 922,341
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **17 Claims**



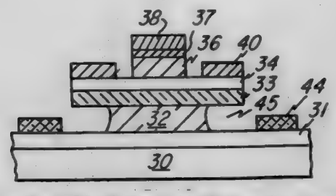
1. A process for forming a diode on an integrated circuit substrate having a top surface, in which there has been formed at a selected location an N conductivity type region, the process comprising the steps of:
(a) forming an oxide layer over the top surface of the substrate;
(b) depositing a layer of material having a chemical composition different from said oxide layer over the top surface of said substrate and said oxide layer;
(c) removing said material by an anisotropic dry etch having an end point process at least in a selected region where a diode anode is to be formed and wherein the removal of said material is halted on said oxide layer;
(d) removing said oxide with a nonplasma process to expose said N region at least over a given portion of said N region which contacts the surface of said substrate; and
(e) depositing a metal on said exposed portion of said N region to form a diode anode.

5,298,438

METHOD OF REDUCING EXTRINSIC BASE-COLLECTOR CAPACITANCE IN BIPOLAR TRANSISTORS

Darrell G. Hill, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1992, Ser. No. 938,190
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **6 Claims**



1. A method of fabricating a bipolar transistor comprising:
a. forming a doped collector layer on a substrate;
b. forming a doped base layer on top of said collector layer, said base layer doped conductivity type opposite of said collector layer;
c. forming a doped emitter layer, said emitter layer doped conductivity type opposite of said base layer to form said bipolar transistor;
d. forming an emitter contact on top of said emitter layer;
e. forming a base contact on top of said base layer;
f. forming a collector contact on top of said collector layer; and
g. etching said collector layer to produce an undercut beneath portions of said base layer, wherein said etching is conductivity type selective etching.

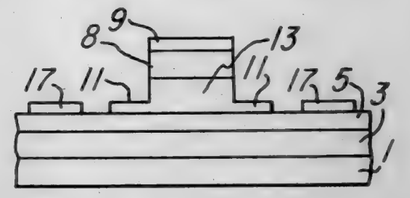
5,298,439

1/F NOISE REDUCTION IN HETEROJUNCTION BIPOLAR TRANSISTORS

William U.-C. Liu, Dallas, and Shou-Kong Fan, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 913,600, Jul. 13, 1992. This application Dec. 31, 1992, Ser. No. 999,076
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **20 Claims**

1. A method of making a heterojunction bipolar transistor comprising the steps of:
(a) providing a structure having a collector layer, a base layer and an emitter layer, one atop the other;
(b) forming a contact on said emitter layer;
(c) removing a portion of said emitter layer to leave a mesa region having a first thickness with said contact thereon and a surrounding thin ledge region having a second thickness, said first thickness being thicker than said second thickness;
(d) covering said mesa region and a portion of said ledge region with a protective layer, wherein said protective layer is thicker than said first thickness, and removing said ledge region from areas not covered by said protective layer to expose a portion of said base layer; and



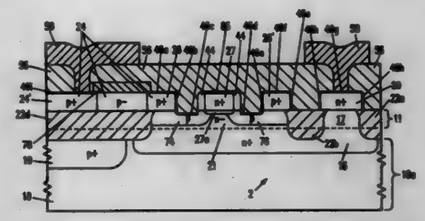
(e) forming a base contact on said exposed portion of said base layer, wherein an edge of said base contact is defined by an edge of said protective layer.

5,298,440

METHOD OF FABRICATION OF TRANSISTOR DEVICE WITH INCREASED BREAKDOWN VOLTAGE

Rick C. Jerome, Puyalup, Wash.; Brian McFarlane, Campbell, and Frank Marazita, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 503,419, Apr. 2, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 8,054
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—32 **11 Claims**



1. A method of forming a lateral bipolar device, comprising:
doping a first portion of a substrate to produce a collector region;
doping a second portion of said substrate to produce an emitter region;
doping a third portion of said substrate to produce a base region between said collector region and said emitter region;
positioning polysilicon on the surface of said substrate at least in first, second, and third portions of the substrate to produce first, second and third polysilicon regions, said first region contacting said first portion of said substrate, said second region, laterally spaced from said first region and said third region, contacting said second portion of said substrate and said third region contacting said third portion of said substrate, said first, second and third polysilicon regions being deposited substantially simultaneously in a single polysilicon deposition step;
doping said polysilicon in said first and second regions with a dopant of a first conductivity type;
forming a metal silicide layer over said first and second polysilicon regions; and
maintaining said third polysilicon region substantially free from a layer of metal silicide.

UMI

5,298,441

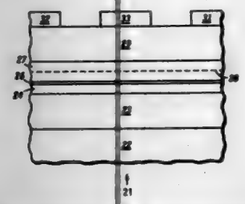
METHOD OF MAKING HIGH TRANSCONDUCTANCE HETEROSTRUCTURE FIELD EFFECT TRANSISTOR

Herbert Goronkin, Tempe; Jun Shen, Phoenix; Saied N. Tehrani, Scottsdale, and X. Theodore Zhu, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1991, Ser. No. 709,741

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **12 Claims**



1. A method of forming a high transconductance field effect transistor comprising:

providing a substrate;

forming a first barrier layer on the substrate wherein the first barrier layer is a non-alloy material having a first lattice structure and a first band gap;

forming a thin channel layer on the first barrier layer wherein the channel layer has a second lattice structure and a second band gap that forms a quantum well, and wherein the thin channel layer is a non-alloy material for reducing alloy scattering in the channel layer; and

forming a second barrier layer on the channel layer wherein the second barrier layer is a non-alloy material having a third lattice structure and a third band gap wherein the first lattice structure and the third lattice structure are smaller than the second lattice structure for the purpose of applying strain to the second lattice structure and increasing light hole concentrations in the thin channel layer thereby increasing carrier mobility in the thin channel layer.

5,298,442

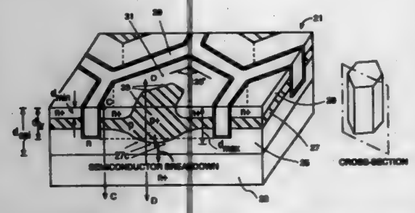
TRENCH DMOS POWER TRANSISTOR WITH FIELD-SHAPING BODY PROFILE AND THREE-DIMENSIONAL GEOMETRY

Constantin Bulucea, Sunnyvale, and Rebecca Rossen, Palo Alto, both of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Division of Ser. No. 290,546, Dec. 27, 1988, Pat. No. 5,072,266. This application Sep. 18, 1991, Ser. No. 762,103

Int. Cl.[5] H01L *21/335*

U.S. Cl. 437—40 **24 Claims**



17. A method for providing a transistor, said method comprising the steps of:

providing a first region of a first conductivity type;

providing a second region of a second conductivity type over said first region;

providing a third region of said first conductivity type such that said first and third regions are separated by said second region;

providing a trench through said third and second regions; and

providing a gate in said trench;

wherein a portion P of said second region, which portion is spaced from said trench, extends deeper than said trench so that, if a predetermined voltage is applied to said gate and to said third region and another predetermined voltage is applied to said first region, an avalanche breakdown occurs away from a surface of said trench.

5,298,443

PROCESS FOR FORMING A MOSFET

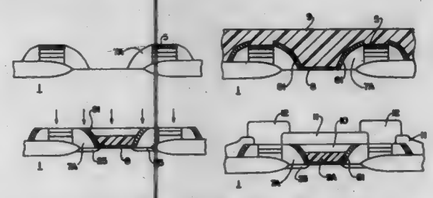
Seong J. Jang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 13, 1992, Ser. No. 959,882

Claims priority, application Rep. of Korea, Oct. 10, 1991, 17727

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **2 Claims**



1. A process for forming a MOSFET, comprising:

(1) defining an active region by forming a field oxide layer on a silicon substrate, and depositing a pad oxide layer, an undoped polysilicon or polycide layer and a CVD oxide layer in the cited order on the silicon substrate;

(2) etching the CVD oxide layer, the undoped polysilicon or polycide layer and the pad oxide layer by applying a reactive ion etching process to form an electrical connection element, and implanting ions into the active region;

(3) depositing an undoped polysilicon layer, etching back the undoped polysilicon layer to form side walls of the undoped polysilicon layer beside the electrical connection element by applying a reactive ion etching process;

(4) performing an annealing process to remedy silicon etch damage, removing an oxide layer grown during the annealing process, performing an oxidation process, and depositing a gate polysilicon;

(5) forming a gate electrode by patterning the gate polysilicon by a reactive ion etching process, and depositing an oxide layer to insulate the gate electrode;

(6) etching back the oxide layer and etching a top portion of the side wall of the undoped polysilicon layer by a reactive ion etching process to flatten the surface, wherein a cap gate oxide remains over the gate electrode, and carrying out a source/drain ion implantation to form source/drain regions under the undoped polysilicon side wall and to make the undoped polysilicon side wall conductive; and

(7) forming a contact wiring by depositing an oxide layer, forming a contact hole in the oxide layer, depositing a metal layer, and patterning the metal layer.

5,298,444

METHOD FOR MANUFACTURING A FIELD EFFECT TRANSISTOR

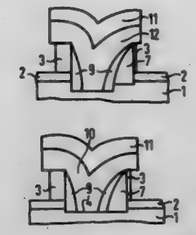
Dietrich Ristow, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 52,549

Claims priority, application Fed. Rep. of Germany, May 14, 1992, 4125985

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **10 Claims**



10. A method of forming a field effect transistor, comprising the steps of:

providing a substrate having an upper layer sequence of at least a gate layer and a contact layer thereover;

providing a recess through the contact layer to the gate layer in a gate region lying between a source region and a drain region;

providing in the recess one more spacer adjacent a sidewall of the drain region than adjacent a sidewall of the source region; and producing a metallization layer filing the recess to form a gate.

5,298,445

METHOD FOR FABRICATING A FIELD EFFECT TRANSISTOR

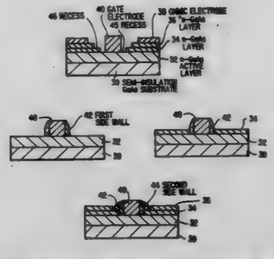
Kazunori Asano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 21, 1993, Ser. No. 65,622

Claims priority, application Japan, May 22, 1992, 4-130918

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **2 Claims**



1. A method for fabricating a FET (field effect transistor), comprising the steps of:

providing a semiconductor substrate on which a semiconductor active layer is formed;

forming a gate electrode on said semiconductor active layer;

forming a first side wall on a side surface of said gate electrode;

forming a first semiconductor layer on said semiconductor active layer by selective growth using said gate electrode and said first side wall as a mask;

forming a second side wall on a side surface of said gate electrode covered with said first side wall;

forming a second semiconductor layer on said first semiconductor layer by selective growth using said gate electrode and said first and second side walls as a mask;

removing said first and second side walls from said side surface of said gate electrode to provide a recess structure; and

forming an ohmic electrode on said second semiconductor layer.

5,298,446

PROCESS FOR PRODUCING SEMICONDUCTOR DEVICE

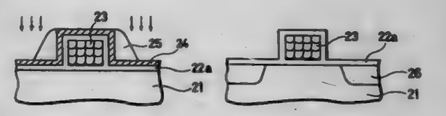
Shigeo Onishi, Nara; Akitsu Ayukawa, Tenri, and Kenichi Tanaka, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 658,345, Feb. 20, 1991, abandoned. This application Aug. 25, 1992, Ser. No. 932,746

Claims priority, application Japan, Feb. 20, 1990, 2-40084; Dec. 14, 1990, 2-417711; Dec. 14, 1990, 2-417713; Jan. 9, 1991, 3-12952

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—41 **8 Claims**



1. A process for producing a semiconductor device comprising the steps of:

(a) on a semiconductor Si substrate having a gate electrode formed thereon through the intermediary of an SiO_2 film, forming on the entire surface of said substrate including said gate electrode, an SiO_2 film and a SiN film in sequence, followed by formation of a side wall of SiO_2 on the side of said gate electrode, the formation of the SiO_2 film being conducted by a heat oxidation method and the formation of the SiN film being conducted by a nitriding method;

(b) injecting ions into said substrate through said SiO_2 film and said SiN film formed in sequence; and

(c) removing the side wall of SiO_2, followed by removal of the SiN film, the ion injection being conducted at an acceleration energy level of 20 KeV to 50 KeV and a dosage of about 3 to 5×10^{15} cm^{-2}; and,

(d) subjecting said substrate to heat treatment to form a diffusion region therein.

5,298,447

METHOD OF FABRICATING A FLASH MEMORY CELL

Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 22, 1993, Ser. No. 94,744

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—43 **18 Claims**

1. A method of forming a self-aligned flash MOS field effect transistor structure on a silicon semiconductor substrate having an upper surface,

a) forming a source region and a drain region in said substrate on said upper surface,

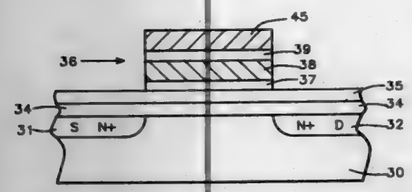
b) forming a tunnel oxide structure over the surface of said substrate including the surface of said source and said drain regions,

c) said tunnel oxide structure including a thermal oxide layer formed on the surface said substrate and a film of silicon rich oxide deposited upon said thermal oxide layer, and

e) depositing a gate structure composed of a stack upon said

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silicon rich oxide film, said stack comprising a first polysilicon layer, a dielectric layer deposited upon said



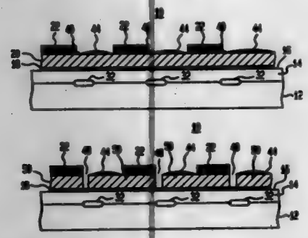
polysilicon layer and a second polysilicon layer deposited upon said dielectric layer.

5,298,448

METHOD OF MAKING TWO-PHASE BURIED CHANNEL PLANAR GATE CCD

Eric G. Stevens, and Stephen L. Kosman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 995,393
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—53 **20 Claims**



1. A method of making a planar CCD comprising the steps of:

forming a layer of a conductive material on and insulated from a surface of a body of a semiconductor material of one conductivity type;

forming sections of a first masking layer directly on the conductive layer with the sections being spaced apart along the conductive layer;

forming a second masking layer at one end of each of the first masking layer sections with the second masking layers all being at the same end of their respective first masking layer section, each of the second masking layers having a portion extending across the space between its respective first making layer section and the adjacent first masking layer section;

forming a third masking layer on the surface of the conductive layer in the space between the second masking layer and the adjacent first masking layer section;

removing the second masking layer to expose a portion of the conductive layer between each first masking layer section and the adjacent third masking layer; and

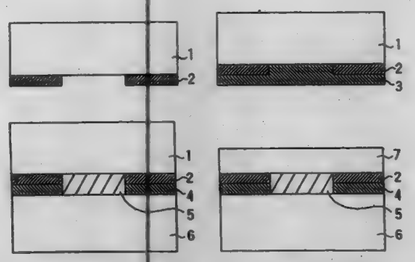
removing the exposed portions of the conductive layer to divide the conductive layer into gate electrodes having gaps therebetween.

5,298,449

SEMICONDUCTOR SUBSTRATE HAVING A SILICON-ON-INSULATOR STRUCTURE AND METHOD OF FABRICATION THE SAME

Hiroaki Kikuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 28,932
Claims priority, application Japan, Mar. 6, 1992, 4-49933
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—63 **12 Claims**



1. A method of fabricating a semiconductor substrate having a silicon-on-insulator structure comprising the steps of:

forming selectively an insulation film on one surface of a first silicon substrate so as to expose said one surface in a predetermined region of said first silicon substrate;

forming an amorphous silicon film so as to cover both said insulation film and said exposed surface of said first silicon substrate;

contacting said first silicon substrate with a second silicon substrate through said amorphous silicon film;

subjecting said first and second silicon substrates to a heat treatment so that said amorphous silicon film becomes both a mono-crystalline silicon film in contact with said exposed surface of said first silicon substrate and a poly-crystalline silicon film in contact with said insulator film, thereby electrically connecting between said first and second silicon substrates through said mono-crystalline silicon film; and

subjecting said first silicon substrate to a polishing treatment at opposite surface so as to have a predetermined thickness.

5,298,450

PROCESS FOR SIMULTANEOUSLY FABRICATING ISOLATION STRUCTURES FOR BIPOLAR AND CMOS CIRCUITS

Douglas P. Verret, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

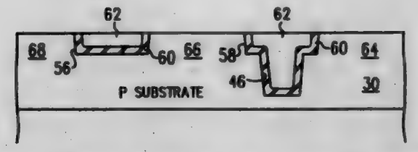
Continuation of Ser. No. 818,489, Jan. 19, 1992, abandoned, which is a continuation of Ser. No. 612,030, Nov. 13, 1990, abandoned, which is a division of Ser. No. 544,812, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 131,496, Dec. 10, 1987, abandoned. This application Apr. 8, 1993, Ser. No. 44,906
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **11 Claims**

1. A method for fabricating an isolating structure for MOS and bipolar circuits, comprising the steps of:

forming a shallow recess in a semiconductor substrate;

forming a deep trench in the semiconductor substrate, said deep trench having a surface area substantially the same as a surface area of said shallow recess, said deep trench having a stepped sidewall so that an upper portion of said trench has a width greater than a lower portion of said trench, wherein said lower trench portion is formed, and wherein said upper portion of said trench is formed simultaneously with said shallow recess;

forming a thin insulation on the surface of said recess and said deep trench; and



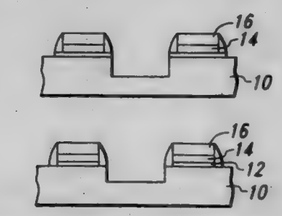
filling said recess and said deep trench with a polysilicon material.

5,298,451

RECESSED AND SIDEWALL-SEALED POLY-BUFFERED LOCOS ISOLATION METHODS

Kalipatnam V. Rao, Avezzano, Italy, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 30, 1991, Ser. No. 693,747
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 **8 Claims**



1. A method for forming a semiconductor device, comprising the steps of:

(a) providing a semiconductor body;

(b) forming a pad oxide layer on said semiconductor body;

(c) forming a polysilicon nitride layer on said polysilicon layer;

(d) forming a silicon nitride layer on said polysilicon layer;

(e) coating a masking material over said silicon nitride layer;

(f) placing a mask over said silicon nitride layer, wherein said mask shields certain portions of said masking material;

(g) removing said masking material not shielded by said mask, thereby defining a plurality of inverse moat regions and a plurality of active moat regions, said plurality of inverse moat regions lacking said masking material over said silicon nitride layer and said plurality of active moat regions having said masking material over said silicon nitride layer;

(h) plasma etching to remove said polysilicon layer and said silicon nitride layer in said plurality of inverse moat regions;

(i) striping said masking material from said silicon nitride layer in said plurality of active moat regions;

(j) forming by low-pressure chemical vapor deposition a conformal silicon nitride layer over said pad oxide layer on said semiconductor body in said plurality of inverse moat regions;

(k) anisotropically etching said conformal silicon nitride layer, leaving a plurality of silicon nitride sidewalls on edges of said polysilicon layer and said silicon nitride layer;

(l) forming trenches in said semiconductor body adjacent to said silicon nitride sidewalls in said inverse moat regions;

(m) forming a first channel-stop implant in said inverse moat regions; and

(n) growing a field oxide in said inverse moat regions in said trenches, wherein steps (j) and (k) are performed before step (l).

5. A method for forming a semiconductor device, comprising the steps of:

(a) providing a semiconductor body;

(b) forming a pad oxide layer on said semiconductor body;

(c) forming a polysilicon layer on said pad oxide layer;

(d) forming a silicon nitride layer on said polysilicon layer;

(e) coating a masking material over said silicon nitride layer;

(f) placing a mask over said silicon nitride layer, wherein said mask shields certain portions of said masking material;

(g) removing said masking material not shielded by said mask, thereby defining a plurality of inverse moat regions and a plurality of active moat regions, said plurality of inverse moat regions lacking said masking material over said silicon nitride layer and said plurality of active moat regions having said masking material over said silicon nitride layer;

(h) plasma etching to remove said polysilicon layer, said silicon nitride layer and said pad oxide layer in said plurality of inverse moat regions;

(i) striping said masking material from said silicon nitride layer in said plurality of active moat regions;

(j) forming by low-pressure chemical vapor deposition a conformal silicon nitride layer over said pad oxide layer on said semiconductor body in said plurality of inverse moat regions;

(k) anisotropically etching said conformal silicon nitride layer, leaving a plurality of silicon nitride sidewalls on edges of said polysilicon layer and said silicon nitride layer;

(l) forming trenches in said semiconductor body adjacent to said silicon nitride sidewalls in said inverse moat regions;

(m) growing a field oxide in said inverse moat regions in said trench; and

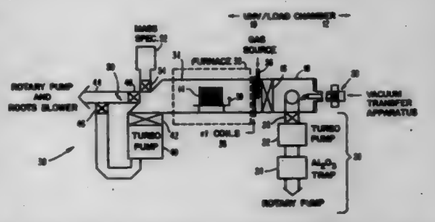
(n) forming a first channel-stop implant in said inverse-moat regions, wherein steps (j) and (k) are performed before step (l).

5,298,452

METHOD AND APPARATUS FOR LOW TEMPERATURE, LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF EPITAXIAL SILICON LAYERS

Bernard S. Meyerson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 622,309, Dec. 5, 1990, abandoned, which is a continuation of Ser. No. 342,630, Apr. 19, 1989, abandoned, which is a continuation of Ser. No. 906,854, Sep. 12, 1986, abandoned. This application Feb. 21, 1992, Ser. No. 841,192
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—81 **30 Claims**



1. A method for forming a silicon containing film having less than approximately 500 defects/cm^2 on a substrate, comprising:

introducing said substrate into a vacuum chamber, said vacuum chamber having a thermal region, said substrate being contained within said thermal region;

maintaining said thermal region at a temperature of less than approximately 650° Celsius; and

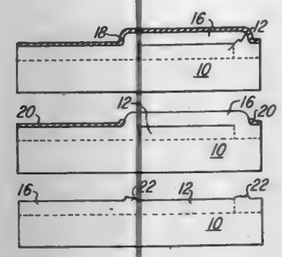
introducing a silicon source gas into said vacuum chamber, said silicon source gas containing silicon, said silicon source gas interacting with said substrate to form said silicon containing film having less than 500 defects/cm^2 on said substrate.

5,298,453

INTEGRATION OF EPITAXIAL STRUCTURES

Darrell Hill, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1991, Ser. No. 810,993
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—89 18 Claims



1. A method for forming epitaxial structures on a substrate comprising:

a. forming a first epi layer on said substrate;

b. removing one or more substantial portions of said first epi layer;

c. forming a second epi layer over said first epi layer and adjacent said first epi layer;

d. forming a masking layer over portions of said second epi layer which are not over said first epi layer; and

e. substantially removing a portion of said second epi layer which is over said first epi layer to provide a substantially planar structure having different properties.

5,298,454

METHOD FOR MAKING SELF-ELECTRO-OPTICAL DEVICE AND DEVICES MADE THEREBY

Lucian A. D'Asaro, Madison; Jean-Ming Kuo, Edison, and Shin-Shem Pei, New Providence, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 969,685
Int. Cl.[5] H01L *21/203*
U.S. Cl. 437—105 7 Claims



1. A method for making an electro-optical device of the type comprising a reflector stack, a quantum well region overlying the reflector stack and a cap layer overlying the quantum well region comprising the steps of:

providing a substrate,

growing a reflector stack and a quantum well region on the substrate,

measuring the optical thickness of the region above the reflector stack, and

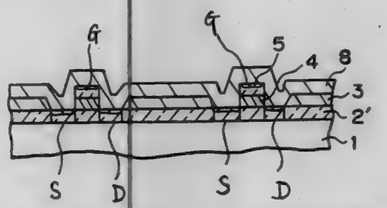
growing said cap layer above said quantum well region of optical thickness sufficient when combined with said measured optical thickness to form a Fabry-Perot cavity with respect to said reflector stack.

5,298,455

METHOD FOR PRODUCING A NON-SINGLE CRYSTAL SEMICONDUCTOR DEVICE

Michio Arai; Masaaki Ikeda; Kazushi Sugiura; Nobuo Furukawa, all of Tokyo; Mitsufumi Kodama, Kanagawa; Yukio Yamauchi, Kanagawa; Naoya Sakamoto, Kanagawa; Takeshi Fukada, Kanagawa; Masaaki Hiroki, Kanagawa, and Ichirou Takayama, Kanagawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 825,552
Claims priority, application Japan, Jan. 30, 1991, 3-029411; Jan. 30, 1991, 3-029412
Int. Cl.[5] H01L *21/00, 21/02, 21/20*
U.S. Cl. 437—109 4 Claims



1. A method for producing a non single crystal semiconductor device comprising the steps of;

placing amorphous silicon film on a glass substrate through low pressure CVD process using disilane gas,

effecting solid phase growth to said amorphous silicon film by heating said substrate together with said film in nitrogen gas atmosphere to obtain a film having a thickness in the range 500 Å to 200 Å, and crystal grains in said silicon film having an average diameter int he range 250 Å to 8000 Å, and an oxygen density in said film of less than $2\times10^{19}/cm^3$,

producing an insulation film on said solid phase growth film,

implanting donor into said solid phase growth film around said insulation film for a source and a drain of a transistor, and

placing a conductive film on said insulation film as a gate electrode.

5,298,456

METHOD OF MANUFACTURING SEMICONDUCTOR LASER

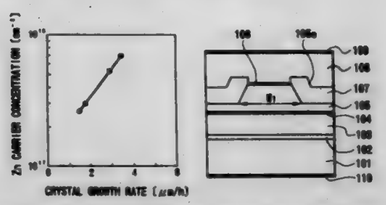
Kosei Unozawa, c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,757
Claims priority, application Japan, Sep. 27, 1991, 3-248591
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—126 4 Claims

1. A method of manufacturing a semiconductor laser, comprising the steps of:

sequentially crystal-growing an n-type $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ $(0.5\leqq y\leqq 1)$ cladding layer, an $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ $(0\leqq z\leqq 0.3)$ active layer, a p-type $(Al_yGa_{1-y})_{0.5}In_{0.5}P$ cladding layer, and a p-type $Ga_{0.5}In_{0.5}P$ layer on a semiconductor substrate by metal organic-vapor phase epitaxy at a crystal growth rate of not less than 2.5 μm/h to form a multi-layered structure;

forming a stripe structure on said multi-layered structure, said stripe structure being sandwiched by an n-type GaAs current blocking layer on both sides; and



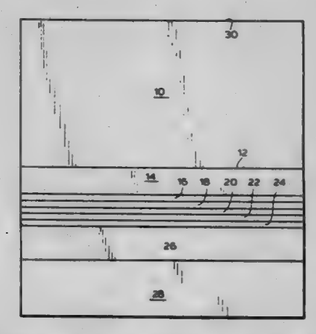
flatly growing a p-type GaAs contact layer on said stripe structure and said n-type GaAs current blocking layer.

5,298,457

METHOD OF MAKING SEMICONDUCTOR DEVICES USING EPITAXIAL TECHNIQUES TO FORM SI/SI-GE INTERFACES AND INVERTING THE MATERIAL

William G. Einthoven, Belle Mead, N.J.; Joseph Y. Chan, Kings Park, and Dennis Garbis, Huntington Station, both of N.Y., assignors to G. I. Corporation, Hatboro, Pa.

Filed Jul. 1, 1993, Ser. No. 82,952
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—131 16 Claims



1. A method for making material useful in fabricating a semiconductor device of the type having a base with a given base width, the method comprising the steps of preparing the surface of a relatively high resistivity silicon layer; growing a multilayer silicon region by vapor deposition adjacent the prepared surface, under conditions which result in localized misfit dislocations; growing a relatively low resistivity silicon layer adjacent the multilayer region; inverting the material; and reducing the thickness of the high resistivity layer to a thickness, such that part of the device can be formed in the material using the high resistivity silicon layer and enough is left to serve as the base of the device.

5,298,458

METHOD OF FORMING TUNGSTEN FILM

Fumitake Mieno; Yuji Furumura, and Toshihiko Ono, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 28, 1992, Ser. No. 967,065
Claims priority, application Japan, Oct. 31, 1991, 3-286202
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—187 8 Claims

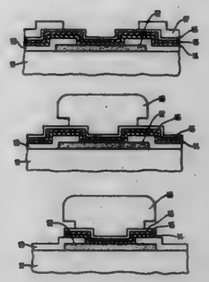
1. A method of forming a tungsten film on a substrate by a chemical vapor deposition (CVD) process using a source gas, wherein a gaseous mixture comprising tungsten hexafluoride gas, a gas whose molecules consist of silicon and hydrogen, and hydrogen fluoride or fluorine gas is used as the source gas.

5,298,459

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE TERMINAL HAVING A GOLD BUMP ELECTRODE

Shinichiro Arikawa, and Hiroaki Murakami, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 439,090, Nov. 20, 1989, abandoned. This application Mar. 5, 1991, Ser. No. 665,234
Claims priority, application Japan, Nov. 21, 1988, 63-294000; Apr. 13, 1989, 1-94120; May 19, 1989, 1-125825
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—183 3 Claims



1. A method of manufacturing an external connection terminal composed of a metal bump electrode on a semiconductor device, said method comprising the steps of:

forming a first film of Ti metal on the entire surface of said semiconductor device;

forming a second file of Pt metal on said first metal film;

forming a third film of Au metal on said second metal film;

selectively forming, on said third metal film, a resist film having an opening via which a portion of said third metal film is exposed;

forming a bump electrode of Au metal on said exposed portion of said third metal film by electrolytic plating while using said third metal film as a conductive plating electrode and said resist film as a mask;

removing said resist film; and

etching said third metal film by wet etching and said second metal film by ion beam etching and said first metal film by ion beam etching while using said metal bump electrode as a mask.

5,298,460

SUBSTRATE FOR PACKAGING A SEMICONDUCTOR DEVICE

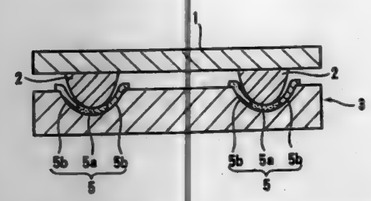
Masanori Nishiguchi, and Atsushi Miki, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 644,846, Jan. 23, 1991, Pat. No. 5,196,726. This application Dec. 18, 1992, Ser. No. 993,006
Claims priority, application Japan, Jan. 23, 1990, 2-13414; Jan. 23, 1990, 2-13415; Jan. 23, 1990, 2-13416
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—183 6 Claims

1. A method for packaging a semiconductor device on a packaging substrate by directly connecting a bump of the semiconductor device to an electrode terminal of the packaging substrate, comprising the steps of:

preparing the packaging substrate with electrode terminal, said electrode terminal having a recess for receiving at least a top of said bump, said electrode terminal including

a first member and a second member, said first member having lower melting point than the bump and formed at a central portion of said recess, and said second member having higher melting point than said first member and formed in a peripheral portion of the recess;



contacting the bump of said semiconductor device with the recess of said packaging substrate; and

heating said first member at a temperature between the lower melting point and the higher melting point to melt said first member.

5,298,461

METHOD OF FORMING OHMIC CONTACT ELECTRODES FOR N-TYPE SEMICONDUCTOR CUBIC BORON NITRIDE

Tadashi Tomikawa; Tunesobu Kimoto, and Nobuhiko Fujita, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 705,594, May 24, 1991. This application Jul. 23, 1991, Ser. No. 734,561

Claims priority, application Japan, May 24, 1990, 2-134720; May 24, 1990, 2-134721; May 24, 1990, 2-134722; May 24, 1990, 2-134723

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—184 **4 Claims**

1. A method of forming an ohmic electrode comprising coating an n-type cubic boron nitride with at least one layer of a material selected from the group consisting of: a Group IVB metal; an alloy with a Group IVB metal; a metal with Si or S; an alloy with Si or S; a metal with B, Al, Ga, or In; an alloy with B, Al, Ga or In; a Group VB metal; and an alloy with a Group VB metal at a substrate temperature from 300° C. to 1800° C. by vacuum evaporation, sputtering or alloying.

5,298,462

METHOD OF MAKING METALLIZATION FOR SEMICONDUCTOR DEVICE

Gerhard Conzelmann, Leinfelden-Echterdingen, and Karl Nagel, Gomaringen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

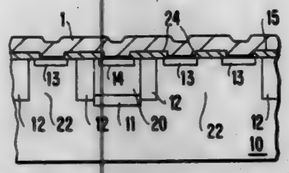
Continuation-in-part of Ser. No. 691,067, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 282,931, Dec. 7, 1988, abandoned, which is a continuation of Ser. No. 120,212, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 857,742, Mar. 11, 1986, Pat. No. 5,205,243. This application Sep. 9, 1991, Ser. No. 756,833

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1984, 3443771

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—187 **5 Claims**

1. A method of producing a semiconductor device, comprising of providing a semiconductor body; arranging a first continuous oxide layer on a surface of the semiconductor body; producing holes in said first oxide layer; applying diffusion zones and auxiliary diffusion zones in the semiconductor body through the holes by a diffusion process; coating the holes with a second oxide layer which is thinner than said first oxide layer in a diffusion process; forming contact openings in a part of the holes in the second oxide layer; applying a metallization so that at least one diffusion zone contacts with the metallization through the contact openings, so that holes with the auxiliary diffusion zone are arranged under a part of the metallization and a waviness of the metallization is thereby obtained by the



auxiliary diffusion zones while the auxiliary diffusion zones do not perform electrical functions during an operation of the semiconductor device.

5,298,463

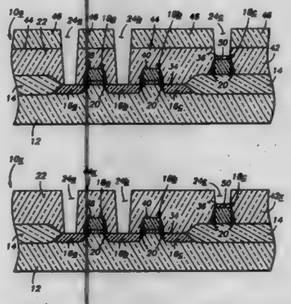
METHOD OF PROCESSING A SEMICONDUCTOR WAFER USING A CONTACT ETCH STOP

Gurtej S. Sandhu, and David A. Cathey, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 812,063, Dec. 17, 1991, Pat. No. 5,206,187, which is a continuation-in-part of Ser. No. 753,356, Aug. 30, 1991, abandoned. This application Apr. 16, 1992, Ser. No. 870,603

Int. Cl.[5] H01L *21/465*

U.S. Cl. 437—192 **31 Claims**



1. A method of processing a semiconductor wafer comprising the following steps:

fabricating a wafer to define a plurality of conductive regions, the conductive regions having outer surfaces positioned at varying elevations on the wafer thereby defining at least one high elevation conductive region and at least one low elevation conductive region;

providing a planarized insulating dielectric layer atop the wafer;

patterning the insulating dielectric layer for defining a plurality of contact openings through the insulating dielectric to selected conductive regions at the varying elevations;

first etching the plurality of contact openings into the patterned insulating layer downwardly to stop at the high elevation conductive region outer surface to which electrical contact is to be made;

after first etching, selectively depositing a layer of an etch stop material to a thickness atop the outer surface of the high elevation conductive region; and

second etching the plurality of contact openings into the patterned insulating material to the low elevation conductive region outer surface to which electrical contact is to be made using the selectively deposited etch stop material layer over the high elevation conductive region as an etch stop protecting layer during such second etching.

5,298,464

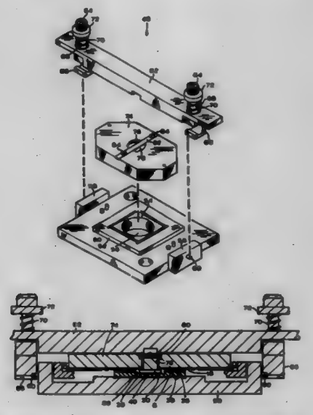
METHOD OF MOUNTING A TAPE AUTOMATED BONDED SEMICONDUCTOR IN A HOUSING USING A COMPRESSOR

Randall L. Schlesinger, Oakham; Ralph W. Doe; Richard D. Gates, both of Auburn; Dennis P. Goddard, Athol, and Shih C. Hsu, Weston, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 427,413, Oct. 26, 1989, Pat. No. 5,156,983. This application May 29, 1992, Ser. No. 890,984

Int. Cl.[5] H01L *21/52, 21/58, 21/603*

U.S. Cl. 437—216 **9 Claims**



1. A method for manufacturing a semiconductor package comprising a semiconductor chip disposed within a housing including a base and a lid secured to said base, and a tape automated bonding (TAB) section mounted to a carrier frame, said TAB section having (i) a central aperture in which said semiconductor chip is disposed, (ii) a plurality of inner leads connected to a plurality of contact pads on said semiconductor chip, and (iii) a plurality of outer leads distally located from said inner leads, said TAB section and semiconductor chip forming a chip subassembly; said method comprising the steps of:

A) using a compressor unit comprising a mounting fixture provided with a base seating space, a compressor block, and a compressor bar capable of being secured to said mounting fixture by a clamping assembly;

B) mounting said base in said base mounting space

C) applying a first adhesive to a portion of said base to form a prepared base;

D) mounting said chip subassembly on said prepared base;

E) mounting said compressor block over said chip subassembly;

F) clamping said compressor block between said compressor bar and said mounting fixture;

G) urging said compressor block against the chip subassembly with a force that causes a fraction of said first adhesive to flow out from between said TAB section and base and around an inner portion of said outer leads;

H) removing said base and chip subassembly from said compressor unit;

I) attaching said lid to said base using a second adhesive to form said semiconductor package; and

J) heating said semiconductor package at a sufficient temperature and duration so as to cure said first and second adhesives, thereby embedding said inner portion of said outer leads in said first adhesive so as to maintain alignment and electrical isolation of said outer leads.

5,298,465

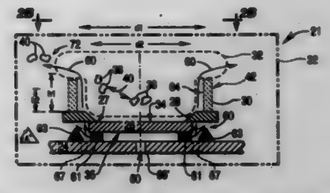
PLASMA ETCHING SYSTEM

Karl B. Levy, Los Altos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 568,388, Aug. 16, 1990, abandoned. This application May 3, 1993, Ser. No. 56,981

Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*

U.S. Cl. 437—225 **10 Claims**



1. A method for enhancing a plasma etch process of the type carried out in a housing for processing a semiconductor substrate having a substrate diameter, a top surface and a bottom surface, the plasma etch process including the use of a plasma positioned substantially coaxially with the semiconductor substrate and having a time averaged plasma diameter which is larger than the substrate diameter, the method comprising the steps of:

a) releasing an inert gas beneath the substrate such that the inert gas impinges upon the bottom surface of said substrate, and then moves in a substantially horizontal direction beneath the substrate's bottom surface, and

b) deflecting the inert gas, proximate to the perimeter of the substrate's bottom surface, to change the gas flow direction from the horizontal direction to an upward direction, to flow between the wafer diameter and the plasma diameter in a quantity comprising from about 5–50% by volume of the total plasma precursor gases and inert gases supplies to said housing, thereby preventing deposition of particulates on said substrate top surface.

5,298,466

METHOD AND APPARATUS FOR DRY ANISOTROPICALLY ETCHING A SUBSTRATE

Guy J. J. Brasseur, Tienen, Belgium, assignor to Cobrain N.V., Belgium

PCT No. PCT/EP88/00719, § 371 Date Apr. 6, 1989, § 102(e) Date Apr. 6, 1989, PCT Pub. No. WO89/01701, PCT Pub. Date Feb. 23, 1989

PCT Filed Aug. 8, 1988, Ser. No. 348,664

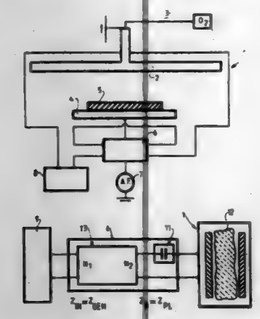
Claims priority, application Netherlands, Aug. 7, 1987, 8701867

Int. Cl.[5] H01L *21/00, 21/02, 21/465;* B44C *1/22*

U.S. Cl. 437—228 **8 Claims**

1. A method for anisotropically dry processing or etching a substrate, comprising the steps of arranging the substrate in the vicinity of one of two electrodes, the electrodes being an anode and a cathode, introducing an etchant gas between the two electrodes and bringing the etchant gas into a plasma state as a result of an applied voltage between the two electrodes, wherein the plasma is created by using a generator for applying an audio frequency alternating voltage between the anode and the cathode, and wherein a matching network is used, the matching network including a transformer connected to the generator for matching the impedances of the generator and the plasma for the audio frequencies, and including a capacitor connected between the transformer and the cathode, the capacitor having a capacitance value such that a dc self bias is

provided at the cathode for the audio frequencies, wherein the plasma has a power density substantially greater than 0.01



W/cm^3, and wherein the capacitance value is about 1 μF and the self bias has a value of 1000–2000 V.

5,298,467

GRANULATED PRODUCT COMPOSED OF SILICON CARBIDE POWDER AND SILICON CARBIDE CERAMIC FORMED THEREFROM

Antonio M. Hurtado, Aachen; Hans R. Dose, Bürstadt; Zeynel Alkan, Aachen; Wolfgang Habel, Duesseldorf; Christoph Nover, Gladbeck, and Hans Meyer, Wunstorf, all of Fed. Rep. of Germany, assignors to Solvay Deutschland GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 12, 1992, Ser. No. 928,473

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1991, 4127354

Int. Cl.^{5} C04B *35/56*

U.S. Cl. 501—90 **25 Claims**

1. A granulated silicon carbide powder product consisting essentially of the following homogeneously distributed constituents:

(a) 67 to 95% by weight SiC powder,

(b) 3 to 30% by weight binder composed of at least one binder ingredient selected from the group consisting of

(b1) a directly synthesized polycarbosilane or polycarbosilane mixture and

(b2) a directly synthesized polyborocarbosilane or polyborocarbosilane mixture,

wherein at least 20 mole % of the carbosilane substituents in the binder are phenyl substituents and, if the binder contains polyborocarbosilane, the proportion of the polyborocarbosilane is such that the boron content of the granulated product is 0.1 to 3.0% by weight, and

(c) from 0 to 3.0% by weight of an oxygen-free sintering aid.

5,298,468

BORON CARBIDE-ALUMINUM CERMETS HAVING MICROSTRUCTURES TAILORED BY A POST-DENSIFICATION HEAT TREATMENT

Aleksander J. Pyzik, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 789,380, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 609,322, Nov. 2, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,612

Int. Cl.^{5} C04B *35/56*

U.S. Cl. 501—87 **6 Claims**

1. A method for preparing a densified boron carbide-aluminum, ceramic-metal composite comprising: a) consolidating a powdered admixture of boron carbide and a metal selected from the group consisting of aluminum and aluminum alloys at a pressure of from about 34 to about 827 MPa and a temperature of from about 550° C. to less than 800° C. to produce a densified composite having a density of greater than about 98 percent of theoretical density based upon the powdered admixture; and b) subjecting the densified composite to a heat treatment at a temperature of from about 450° C. to less than 800° C. for a time of from about 1 to about 50 hours to produce a densified boron carbide-aluminum, ceramic-metal composite that is substantially free of AlB_{12}, $AlB_{12}C_2$ and Al_4C_3.

5,298,469

FLUXED LANTHANUM CHROMITE FOR LOW TEMPERATURE AIR FIRING

Stephen Haig, Piscataway; Beili L. Wu, and Jean Yamanis, both of Morristown, all of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 643,255, Jan. 22, 1991, Pat. No. 5,169,811. This application Nov. 25, 1992, Ser. No. 981,444

The portion of the term of this patent subsequent to Dec. 9, 2008, has been disclaimed.

Int. Cl.^{5} C04B *35/04, 35/51;* **C01G** *39/00*

U.S. Cl. 501—117 **10 Claims**

1. A lanthanum chromite ceramic powder mixture which sinters at temperatures of about 1400° C. and which consists essentially of 1 mol of $LaCr_{1-x}M_xO_3$, where M is a divalent metal selected from the group of zinc, copper or mixtures thereof and x ranges from 0.02 to 0.2, y mols of B_2O_3, where y ranges from 0.0005 to 0.04, and z mols of La_2O_3, where the ratio z/y ranges from 1.4 to 2.

5,298,470

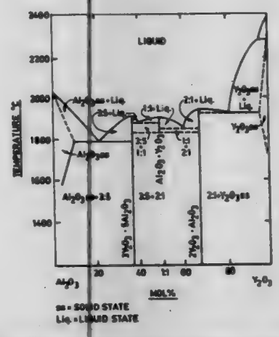
SILICON CARBIDE BODIES HAVING HIGH TOUGHNESS AND FRACTURE RESISTANCE AND METHOD OF MAKING SAME

Kai Y. Chia, Lewiston, N.Y.; Wolfgang D. G. Boecker, Frankfurt am Main, Fed. Rep. of Germany, and Roger S. Storm, Clarence, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 640,675, Jan. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 411,070, Sep. 22, 1989, abandoned. This application Oct. 9, 1992, Ser. No. 960,178

Int. Cl.^{5} C04B *35/56*

U.S. Cl. 501—89 **49 Claims**



1. A process for producing a sintered silicon carbide ceramic body having superior fracture toughness comprising:

a) forming a homogeneous mixture comprising:

1) one or more nitrogen containing aluminum compounds in an overall amount of from 0.5 weight percent to about 15 weight percent, based upon the total wight of the mixture;

2) one or more rare earth oxides in an overall amount of from about 0.1 weight percent and 15 weight percent, based upon the weight of the mixture;

3) silicon carbide, in an amount of from about 70 weight percent to about 99.4 weight percent, based on the weight of the mixture, and having a specific surface area of from about 1 to about 100 square meters per gram; wherein said mixture includes more than 0.01 weight percent, to about 10 weight percent, of either non-crystalline reactive oxygen from the surface of said silicon carbide or reactive oxygen in any form from said one or more nitrogen containing compound and/or from said one or more rare earth oxides, or both said reactive oxygen being in elemental or in a compound or both;

b) combining said mixture with a temporary binder;

c) forming the mixture and binder in such a way as to produce a shaped object; and

d) firing the shaped mixture under such conditions of time and temperature in an atmosphere inert to silicon carbide or in a vacuum at a temperature of between about 1775° C. and about 2200° C. until a sintered ceramic body having a predominantly homogeneous, predominantly equiaxed and predominantly fine-grain microstructure is formed having a fracture toughness, as measured by the single edge notched beam test, of at least 7 MPam$^{\frac{1}{2}}$.

5,298,471

PURE TUNGSTEN OXYPHENOLATE COMPLEXES AS DCPD POLYMERIZATION CATALYSTS

Andrew Bell, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 780,693, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 596,265, Oct. 12, 1990, Pat. No. 5,082,909. This application Nov. 20, 1992, Ser. No. 979,696

Int. Cl.^{5} B01J *31/00*

U.S. Cl. 502—167 **17 Claims**

1. A catalyst composition comprising (a) a tungsten compound represented by the formula $WOX_{4-x}(OAr)_x$, wherein X is selected from the group consisting of chlorine, bromine and fluorine; x is 1, 2, or 3 and Ar is a mono-, di-, tri-, tetra-, or penta-substituted phenyl ring with substituents selected from the group consisting of nitro, cyano, aldehyde, carboxy, hydroxymethyl, alkoxy, alkylthio, arylthio, acyl, aroyl, acyloxy, alkoxycarbonyl, cycloalkane, dialkylamino, diarylamino, alkyl sulfonyl, aryl sulfonyl, alkyl sulfonate, aryl sulfonate, aryl, aralkyl, aryloxy, alkyl groups containing 8–20 carbon atoms, and allyl group and (b) a catalyst activator selected from the group consisting of trialklyaluminums, dialkylaluminum halides, alkylaluminum dihalides, dialkyl(alkoxy)aluminums, alkyl(alkoxy)aluminum halides, dialkylzines, alkylzine halides, diarylzines, arylzin halides, alkylsilanes, tetraalkyltins, trialkyltin hydrides, dialkyltin dihydrides, triaryltin hydrides, tetraalkylleads, trialkyllead hydrides, dialkyllead dihydrides, triaryllead hydrides, and mixtures thereof.

5,298,472

HYDROGENATION WITH CU-AL CATALYSTS

Richard W. Wegman, and David R. Bryant, both of South Charleston, W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 825,339, Jan. 27, 1992, Pat. No. 5,191,091, which is a continuation of Ser. No. 719,932, Jun. 24, 1991, abandoned, which is a division of Ser. No. 454,457, Dec. 21, 1989, Pat. No. 5,053,380. This application Dec. 3, 1992, Ser. No. 985,564

Int. Cl.^{5} B01J *23/72, 21/04, 37/16, 37/18*

U.S. Cl. 502—346 **1 Claim**

1. A method for preparing a copper and aluminum catalyst useful for hydrogenating an oxygen-containing hydrocarbon feed, said method comprising:

coprecipitating copper and aluminum from their water soluble salts to form a precipitate;

drying and calcining the precipitate to form a calcined catalyst; and

activating the calcined catalyst by heating said calcined catalyst in the presence of a reducing gas under activation conditions which comprise a reducing temperature that gradually increases from an initial reducing temperature of about 50° C. to a final reducing temperature of about 180° C. at a rate of about 3° to 6° C./hr.

5,298,473

HYDRATED LIME CLAY COMPOSITES FOR THE REMOVAL OF SO_x FROM FLUE GAS STREAMS

Thomas J. Pinnavaia, and Jayantha Amarasekera, both of East Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 553,254, Jul. 16, 1990, Pat. No. 5,219,536, and a continuation-in-part of Ser. No. 779,645, Oct. 21, 1991, Pat. No. 5,160,715, and a continuation-in-part of Ser. No. 846,583, Mar. 5, 1992. This application Oct. 15, 1992, Ser. No. 961,367

Int. Cl.^{5} B01J *20/12, 21/16*

U.S. Cl. 502—84 **89 Claims**

1. A method for preparing a composite material useful for SO_x removal from the flue gas of a coal-burning power plant and other gas streams which comprises:

(a) providing a homogeneous dry physical mixture of a powdered smectite clay, a powdered basic compound which is an alkaline earth metal oxide, a second metal ion selected from the group consisting of a powdered metal oxide and metal oxide precursor which catalyzes oxidation of sulfur dioxide to sulfur trioxide in amounts so that the composite composition promotes the oxidation of the sulfur dioxide to sulfur trioxide at sulfur dioxide oxidation conditions;

(b) adding an amount of water to the homogeneous dry physical mixture so that the alkaline earth metal oxide is hydrated to an alkaline earth metal hydroxide while retaining a particulate mixture; and

(c) mixing the particulate mixture for a additional period of time to complete the hydration process to provide the composite material, wherein when the composite is heated to a temperature of 500° C. or above.

4. The method in accordance with claim 1 wherein the alkaline earth oxide is selected from the group consisting of magnesium and calcium and mixtures thereof.

6. A method in accordance with claim 1 wherein the second metal is selected from the group consisting of vanadium, iron, chromium, copper and titanium.

5,298,474

SUPPORTED CATALYST FOR THE (CO)POLYMERIZATION OF ETHYLENE

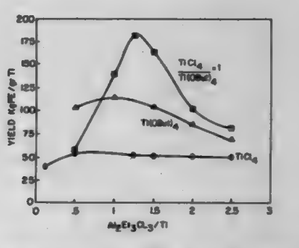
Luciano Luciani, Ferrara; Federico Milani, S. Maria Maddalena; Renzo Invernizzi, Milan, and Maddalena Pondrelli, Budrio, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Jul. 10, 1992, Ser. No. 911,419

Claims priority, application Italy, Jul. 12, 1991, 001938 A/91

Int. Cl.^{5} C08F *4/64*

U.S. Cl. 502—115 **19 Claims**



1. Solid component of catalyst for the (co)polymerization of ethylene, comprised of a support of silica in small particles

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(50–90% by weight) and a catalytically active part (50–10% by weight) containing titanium, magnesium, chlorine, aluminium and alkoxy groups, obtained by:

(i) activating a silica support by contact with a solution of magnesium dialkyl, or magnesium alkyl chloride, in a liquid aliphatic hydrocarbon solvent;

(ii) impregnating the silica thus activated with a solution, in a liquid aliphatic or aromatic ester, of magnesium chloride and titanium tetrachloride and titanium tetra-alkoxide, operating with equimolecular, or almost equimolecular quantities of titanium tetrachloride and titanium tetra-alkoxide and with a molar ratio between the magnesium chloride and the titanium compounds of 1 to 10;

(iii) treating the impregnated silica by contact with aluminium alkyl sesquichloride, operating with a molar ratio between the titanium compounds and the aluminium alkyl sesquichloride of 0.9:1 to 1.9:1; and

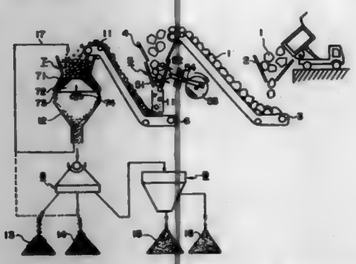
(iv) recovering the solid component of catalyst from the reaction products of step (iii).

5,298,475

CARBON DIOXIDE ABSORBER AND METHOD FOR MANUFACTURING SAME FROM BUILDING INDUSTRIAL WASTE

Hitoshi Shibata; Young-Il Im, and Kang-Haeng Lim, all of Shiga, Japan, assignors to Kyoei Bussan Kabushiki Kaisha, Japan

Filed Jan. 21, 1993, Ser. No. 6,508
Claims priority, application Japan, Feb. 7, 1992, 4-056051
Int. Cl.[5] B01J *20/04, 38/72;* C01B *31/20*
U.S. Cl. 502—400 7 Claims



1. A method for manufacturing a carbon dioxide absorber from building industrial waste, comprising:

a first crushing step for crushing concrete fragments under a pressure and for obtaining primary-crushed concrete fragments;

a second crushing step for crushing said primary-crushed concrete fragments with a grinding motion in a highly dense and pressurized condition and for obtaining mixture of reproduced products; and

screening and separating fine cement mortar component from said mixture of reproduced products.

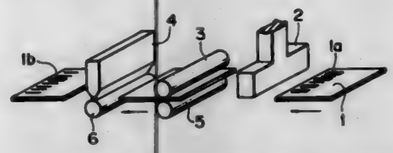
5,298,476

REWRITABLE BAR CODE DISPLAY MEDIUM, AND IMAGE DISPLAY METHOD AND IMAGE DISPLAY APPARATUS USING THE SAME

Yoshihiko Hotta, Mishima; Keishi Kubo; Shoji Maruyama, both of Yokohama; Takashi Yano, and Hajime Takayama, both of Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 5, 1991, Ser. No. 726,210
Claims priority, application Japan, Jul. 6, 1990, 2-179354; Jun. 19, 1991, 3-174433
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—201 11 Claims

10. An image display method of forming an image in a white opaque state or in a transparent state comprising the step of applying heat to a rewritable bar code display medium comprising a support and a reversible thermosensitive recording layer formed thereon which is reversibly altered between a



transparent state and a white opaque state with change in temperature and which comprises a resin matrix and a low-molecular weight organic compound dispersed in said resin matrix.

5,298,477

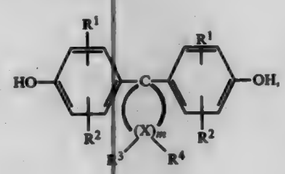
DYE ACCEPTOR ELEMENT FOR THERMOSUBLIMATION PRINTING

Rolf Wehrmann, Krefeld; Robert Bloodworth, Köln, both of Fed. Rep. of Germany; Geert Defleuw, Kessel, and Herman Uytterhoeven, Bonheiden, both of Belgium, assignors to Agfa Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,312
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1991, 4123546
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 5 Claims

1. A dye acceptor element for thermosublimation printing in combination with a dye donor element, said dye acceptor element comprising a support and a dye acceptor layer arranged on the support wherein said dye acceptor layer contains

a) a polycarbonate containing at least 10 recurring structural units formed from a bis-(hydroxyphenyl)cycloalkane corresponding to formula I:



in which

R^1 and R^2 independently of one another represent hydrogen, halogen, C_{1-8} alkyl, C_{5-6} cycloalkyl, C_{6-10} aryl C_{7-12} aralkyl,

X represents a carbon atom,

m is an integer of 4 to 7,

R^3 and R^4 can be individually selected for each X and independently of one another represent hydrogen or C_{1-6} alkyl with the proviso that, at at least one atom X, R^3 and R^4 are both alkyl;

in admixture with

b) at least one other polymer selected from the group consisting of: polymers containing ester bonds, polymers containing urethane bonds, polymers containing amide bonds, polymers containing urea bonds, polycaprolactone, polystyrenes, polyvinyl alcohol, polyvinyl chloride, polyacrylonitrile, polyethers, polysulfones, polyether ketones, polyhydantoin, polyimides, styrene/maleic acid copolymers, and cellulose-containing polymers, or

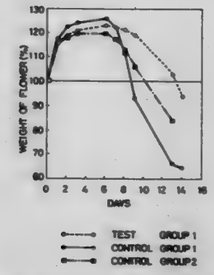
c) a low molecular weight plasticizer, wherein said polycarbonate formed from said bis-(hydroxyphenyl)-cycloalkane is present in the dye acceptor layer in a quantity of at least 2% by weight.

5,298,478

PRESERVATIVE FOR PLANTS COMPRISING DIPICOLINIC ACID

Kazuhiro Yamamoto; Noriko Yoshioka, both of Tokyo, Japan, and Tadayasu Furukawa, Chesterfield, Mo., assignors to Kyowa Hakko Kagyo Co., Japan

Division of Ser. No. 831,262, Jan. 28, 1992, Pat. No. 5,171,351, which is a division of Ser. No. 507,332, Apr. 10, 1990, Pat. No. 5,112,380. This application Dec. 15, 1992, Ser. No. 991,030
Claims priority, application Japan, Apr. 10, 1989, 1-90379; Aug. 15, 1989, 1-209666
Int. Cl.[5] A01N *3/00, 3/02*
U.S. Cl. 504—115 7 Claims



1. A method for maintaining the freshness of a harvested plant or plant part which comprises treating the plant or plant part with a preservative containing dipicolinic acid or a derivative or salt thereof.

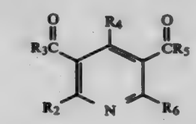
5,298,479

SUBSTITUTED PYRIDINE COMPOUNDS WHICH HAVE HERBICIDAL UTILITY

Len F. Lee, St. Charles; Yuen-Lung L. Sing, St. Louis, and Sai C. Wong, Chesterfield, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 802,924, Dec. 6, 1991, Pat. No. 5,260,262. This application May 17, 1993, Ser. No. 61,962
Int. Cl.[5] 546 *275;* C07D *213/02;* A01N *43/40*
U.S. Cl. 504—130 33 Claims

1. A compound represented by the formula



wherein:

R_2 and R_6 are independently lower alkyl, fluorinated methyl, chlorofluorinated methyl, or chlorinated methyl, provided that one of R_2 and R_6 is fluorinated methyl or chlorofluorinated methyl;

R_3 is alkoxy or alkylthio;

R_4 is hydrogen, alkyl, cycloalkyl, or cycloalkylalkyl; and

R_5 is a heterocyclic radical selected from isoxazolyl, oxazolyl, and 4,5-(dihydro)oxazolyl which is optionally substituted with one or more radicals selected from halo, amino, aminocarbonyl, cyano, alkoxy, alkyl, alkoxyalkyl, alkoxycarbonyl, alkylamino, and dialkylamino.

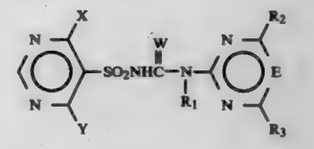
5,298,480

HERBICIDAL SULFONYLUREA DERIVATIVES

Keith Watson, Blackburn, and Wayne Best, Avondale Heights, both of Australia, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

Filed May 17, 1991, Ser. No. 701,166
Claims priority, application Australia, May 17, 1990, PK 0181
Int. Cl.[5] C07D *403/12;* A01N *43/66*
U.S. Cl. 504—213 7 Claims

1. A compound of formula I and salts thereof



I

wherein:

X and Y are independently selected from ethoxy, propoxy, isopropoxy, n-butoxy, difluoromethoxy, 2,2,2-trifluoroethoxy, 2,2,2-trichloroethoxy, allyloxy and propargyloxy; W is oxygen; E is nitrogen; R_1 is hydrogen; R_2 and R_3 are independently selected from methyl, methoxy, chloro or difluoromethoxy.

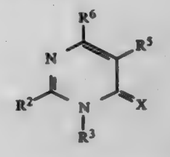
5,298,481

6-ARYLPYRIMIDINES AND HERBICIDAL USE

Colin M. Tice, Melrose Park, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 17, 1992, Ser. No. 916,315
Int. Cl.[5] C07D *239/32, 239/46, 401/04;* A01N *43/54*
U.S. Cl. 504—242 9 Claims

1. A compound of the formula



wherein

(a) R^2 is a hydrogen, straight (C_1–C_6)alkyl, branched (C_3–C_8)alkyl, (C_2–C_6)alkenyl, (C_2–C_6)alkynyl, halo(C_1–C_6)alkyl, polyhalo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, polyhalo(C_2–C_6)alkenyl, halo(C_2–C_6)alkynyl, polyhalo(C_2–C_6)alkynyl, (C_1–C_4)alkoxy(C_1–C_4)alkyl, (C_1–C_6)alkylthio, (C_1–C_6)alkoxy, (C_1–C_3)alkoxycarbonyl, (C_1–C_3)alkoxycarbonyl(C_1–C_3)alkyl, ar(C_1–C_4)alkyl, cyclo(C_3–C_7)alkyl, (C_1–C_3)alkylamino, di(C_1–C_3)alkylamino, di(C_1–C_3)alkylaminocaryl, halo or cyano group; and

(b) R^3 is a (C_1–C_4)alkyl, (C_3–C_6)alkenyl, (C_3–C_6)alkynyl, halo- or polyhalo(C_1–C_6)alkyl group; and

(c) R^5 is a (C_1–C_4)alkyl; (C_2–C_6)alkenyl; or (C_2–C_6)alkynyl group; or (C_3–C_6)alkenylnyl group, or (C_1–C_4)alkoxy(C_1–C_4)alkyl group; provided that when R^6 is phenyl or substituted phenyl, then R^5 is not (C_1–C_4)alkyl; and

(d) R^6 is a furyl, phenyl, pyridyl, or thienyl group, each of said group is optionally substituted with up to three substituents independently selected from bromo; chloro; fluoro; (C_1–C_{12})alkyl, cyclo(C_3–C_8)alkyl, (C_2–C_{12})alkenyl, cyclo(C_3–C_8)alkenyl, (C_2–C_{12})alkynyl, halo(C_1–C_{12})alkyl, polyhalo(C_1–C_{12})alkyl, halo(C_2–C_{12})alkenyl, polyhalo(C_2–C_{12})alkenyl, halo(C_2–C_6)alkynyl; polyhalo(C_2–C_6)alkynyl; (C_1–C_{12})alkylthio, (C_1–C_{12})alkylsulfonyl; (C_1–C_{12})alkylsulfinyl; phenyl; phen(C_1–C_{12})alkyl; phen(C_2–C_{12})alkenyl; phen(C_2–C_{12})alkynyl; cyano; ha-

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lo(C_1–C_6)alkoxy, carbo(C_1–C_6)alkoxy, and nitro group; and

(e) X is oxygen or sulfur.

5,298,482

METHOD FOR PROMOTING PLANT GROWTH USING 5-AMINOLEVULINIC ACID OR A SALT THEREOF

Toru Tanaka; Kiyoshi Takahashi; Yasushi Hotta, all of Saitama; Yasutomo Takeuchi, and Makoto Konnai, both of Tochigi, all of Japan, assignors to Cosmo Research Institute, Tokyo, Japan

Filed May 12, 1992, Ser. No. 881,705

Claims priority, application Japan, May 14, 1991, 3-107987

Int. Cl.[5] A01N *37/44*

U.S. Cl. 504—320 29 Claims

1. A method for promoting the growth of a plant which comprises treating said plant with 1 to 1,000 ppm and 10 to 1,000 l/10 a, in the case of foliage treatment, 1 to 1,000 g/10 a, in the case of soil treatment, or 0.001 to 10 ppm, in the case of soaking treatment, of 5-aminolevulinic acid or a salt thereof.

5,298,483

NEW MATTER OF COMPOSITION AND METHOD FOR USING THE SAME AS PLANT BIOREGULATORS

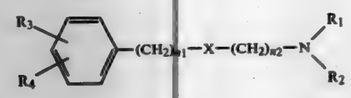
Henry Yokoyama; James H. Keithly, both of Pasadena, Calif., and Harold W. Gausman, Amarillo, Tex., assignors to Tropicana Products, Inc., Bradenton, Fla. and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 30, 1992, Ser. No. 860,413

Int. Cl.[5] A01N *33/08*

U.S. Cl. 504—326 24 Claims

1. A method for enhancing plant growth comprised of the steps of applying to a plant a compound selected from the group having the structure:



wherein:

X is either oxygen or sulfur;

R_1 and R_2 are lower alkyl containing 1 to 6 carbon atoms, n_1 and n_2 being integers from 1 to 6 each, n_1 and n_2 being independent of each other;

R_3 and R_4 are independently hydrogen, chlorine, fluorine bromine, iodine, lower alkyl containing 1 to 6 carbon atoms, lower alkoxy compounds containing 1 to 6 carbon atoms, or

condensed mono-and polycyclic aromatic ring systems, and wherein:

if R_3 and R_4 are 3,5,-substituents, then the lower alkyl or alkoxy group must contain 3 to 6 carbon atoms; and wherein:

if R_3 is hydrogen, then R_4 must be a 4-substituent, with the proviso that R_4 is other than hydrogen;

or an acid addition salt thereof,

said compounds being applied to the plant immediately prior to or at a time when cell differentiation and growth of the plant or flower buds are great, that is, to seeds, to plant seedlings, or to trees during flower bud initiation, bud swell, or during a period of exponential vegetative growth, said compounds being applied in an amount enhancing plant growth but not harming the plant and being applied in an amount of approximately 0.001 to 0.3 mg active ingredient per plant seedling or about 1 to 10 grams active ingredient per tree, said enhancing of plant growth consisting of an increase in photosynthesis, total plant biomass and plant constituents selected from the group consisting of protein, lipid, sugar, and essential oil whereby the compounds biodegrade to elemental form after application to plant tissue.

5,298,484

HIGH TC COPPER-OXIDE SUPERCONDUCTORS COMPRISING TL-SR-CA-CU-O

William L. Lechter, Rockville; Michael S. Osofsky, Burtonsville, both of Md.; Earl F. Skelton, and Louis E. Toth, both of Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 433,245, Nov. 8, 1989, Pat. No. 5,120,704. This application Mar. 31, 1992, Ser. No. 860,721

Int. Cl.[5] C01F *11/02*; C01G *3/02, 15/00*; H01L *39/12*

U.S. Cl. 505—1 3 Claims

1. A superconducting body made by a process comprising the steps of:

forming a reaction mixture of oxides of Sr, Cu, Ca, and Tl in stoichiometric proportions to make a Tl-Sr-Ca-Cu-oxide high T_c superconducting compound;

compressing the reaction mixture into a hard body;

placing the hard body into a container for containing thallium vapor;

evacuating and sealing the hard body in the container;

heating the hard body and the container at a temperature of about 800° C. to about 950° C. and under pressure of at least about 30,000 psi until the oxides of Tl, Sr, Ca, and Cu react to form a superconducting compound; and

cooling the superconducting compound to room temperature and returning the superconducting compound to atmospheric pressure;

said superconducting compound being selected from the group consisting of $TlSr_2CaCu_2O_x$ and $TlSr_2Ca_2Cu_{3-4}O_x$ wherein x is from about 7 to about 11, said superconducting body having a resistance of about 0 mΩ at about 104 K.

5,298,485

SUPERCONDUCTIVE LOGIC DEVICE

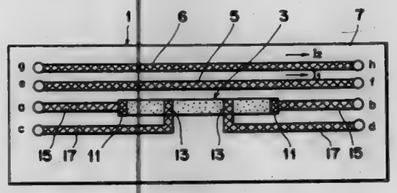
Shoei Kataoka, Tokyo, Japan; Hiroya Sato, Watertown, Mass.; Shuhei Tsuchimoto, Nara, Japan; Hideo Nojima, Nara, Japan; Shinji Toyoyama, Nara, Japan; Masayoshi Koba, Nara, Japan; Nobuo Hashizume, Nara, Japan; Eizo Ohno, Nara, Japan, and Susumu Saitoh, Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 821,284, Jan. 10, 1992, abandoned, which is a continuation of Ser. No. 559,375, Jul. 26, 1990, abandoned, which is a continuation of Ser. No. 309,228, Feb. 10, 1989, abandoned. This application Nov. 30, 1992, Ser. No. 983,290

Claims priority, application Japan, Feb. 10, 1988, 63-29526; Mar. 31, 1988, 63-81993; Apr. 30, 1988, 63-108773; May 13, 1988, 63-117471; May 31, 1988, 63-134794; May 31, 1988, 63-134797; May 31, 1988, 63-134798; Aug. 12, 1988, 63-202351

Int. Cl.[5] H03K *19/195, 17/92*

U.S. Cl. 505—1 17 Claims



1. A logic circuit comprising:

a film superconductive body made of a ceramic superconductive material which has a critical temperature and grain boundaries which act as weak couplings, said superconductive body capable of passing from a resistance state of zero to a finite resistance state said film conductor body being connectable to a power supply for applying a constant current to said film superconductive body, said film superconductive body showing a magneto-resistive property in accordance with a magnetic film applied thereto while keeping the film superconductive body at a temperature near to the critical temperature thereof;

a first film conductor for applying a magnetic field to said superconductive body when a signal current is applied to said first conductor, said film superconductive body functioning to generate an output voltage in responses to the signal current applied to the first film conductor;

a second film conductor for applying a magnetic field to said superconductive body when a signal current is applied to said second film conductor, said film superconductive body functioning to generate an output voltage in responses to the signal current applied to the second film conductor;

said film superconductive body and each of said film conductors formed on a substrate and said film superconductor body and said film conductors being substantially parallel to each other and spaced from each other in a lateral direction on one surface of said substrate; and

voltage detector electrodes electrically connected and physically extending across said film superconductive body, said voltage detector electrodes for facilitating sensing a voltage drop across said superconductive body;

the grain boundaries of said superconductive material causing the voltage drop across said superconductive material causing the voltage drop across said superconductive material to vary corresponding to varying signal currents applied to said first and second conductor films.

5,298,486

USE OF PYRIDINES AS PERFUMING AND FLAVORING INGREDIENTS

Alan F. Thomas, Borex, and Frederico Bassols, Onex, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

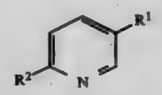
Filed Jul. 17, 1991, Ser. No. 731,582

Claims priority, application Switzerland, Aug. 10, 1990, 260690

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—10 17 Claims

1. A process to confer, improve, enhance or modify the citrus or marine type organoleptic properties of a perfuming or flavoring composition, or of a perfumed or flavored article, which process comprises adding to said composition or article a compound of formula



(I)

wherein R^1 stands for a saturated linear alkyl radical having 6 to 8 carbon atoms, or for a 4-methylhexyl radical, and R^2 represents either a hydrogen atom or, when R^1 has 6 carbon atoms, a hydrogen atom or a methyl radical.

5,298,487

EFFECTIVE OPHTHALMIC IRRIGATION SOLUTION

Chung-Ho Chen, and Sumi C. Chen, both of Phoenix, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 346,700, May 3, 1989, Pat. No. 5,116,868. This application Feb. 10, 1992, Ser. No. 833,027

Int. Cl.[5] A61K *37/00, 31/70, 31/22*

U.S. Cl. 514—2 4 Claims

1. A formulation for the preparation of tissues for organ transplant comprising an ophthalmic irrigation solution comprising an aqueous phosphate-buffered balanced salt solution including glucose, an antioxidant, and at least one of ketone bodies and precursors thereof; and a synergistically effective mixture of VEGF, uridine, thymidine and serum-derived factor.

5,298,488

CM-CHITIN DERIVATIVES AND USE THEREOF

Masayoshi Kojima, Minami-Ashigara, and Hiroyuki Komazawa, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1991, Ser. No. 780,790

Claims priority, application Japan, Oct. 26, 1990, 2-89491; Nov. 30, 1990, 3-33718; Mar. 29, 1991, 66-156

Int. Cl.[5] A61K *37/02*; C07K *5/08, 7/06, 9/00*

U.S. Cl. 514—8 18 Claims

1. A CM-chitin derivative or a salt thereof, having, as an essential unit, a cohesive peptide represented by the following general formula (I), bonded to the side chain of CM-chitin, wherein the bond connecting CM-chitin and said peptide is selected from the group consisting of an amido bond, an ester bond, an ether bond and a urethane bond:

$$-[R^1]-[CO]-([X]-Arg-Gly-Asp-[Y])_n-[Z]-[R^2]-\ldots \quad \text{(I)(SEQ ID NO: 1)}$$

wherein the bracket [ ] means that the corresponding group or residue in the bracket may be present or absent and if they are present, X and Y each represents an amino acid residue selected from the group consisting of Ser, Gly, Val, Asn and Pro or a peptide residue consisting of at least two of said amino acids; Z represents —O— or —NH—; one of R^1 and R^2 represents a hydrogen atom, or a substituted or unsubstituted alkyl group having 1 to 9 carbon atoms or an aryl group having 6 to 9 carbon atoms and the other represents a hydrogen atom, a linear or branched alkylene group having 1 to 9 carbon atoms or an arylene group having 6 to 9 carbon atoms wherein the alkylene and arylene groups may have substituents; and n is an integer ranging from 1 to 5.

5,298,489

DNA SEQUENCES RECOMBINANT DNA MOLECULES AND PROCESSES FOR PRODUCING LIPOCORTINS III, IV, V AND VI

Barbara P. Wallner, Cambridge; R. Blake Pepinsky, Watertown, and Jeffrey L. Browning, Cambridge, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Continuation of Ser. No. 160,866, Feb. 26, 1988. This application Mar. 13, 1991, Ser. No. 668,744

Int. Cl.[5] C07K *13/00*; C12N *15/12*

U.S. Cl. 514—12 5 Claims

1. An essentially pure lipocortin III selected from the group consisting of the amino acid sequences:

(a) MetAlaSerIleTrpValGlyHisArgGlyThrValArgAsp TyrProAspPheSerProSerValAspAlaGluAlaIleGlnLysAlaIleArgGlyIleGly ThrAspGluLysMetLeuIleSerIleLeuThrGluArgSerAsnAlaGlnArgGlnLeuIle ValLysGluTyrGlnAlaAlaTyrGlyLysGluLeuLysAspAspLeuLysGlyAspLeuSer GlyHisPheGluHisLeuMetValAlaLeuValThrProProAlaValPheAspAlaLysGln LeuLysLysSerMetLysGlyAlaGlyThrAsnGluAspAlaLeuIleGluIleLeuThrThr ArgThrSerArgGlnMetLysAspIleSerGlnAlaTyrTyrThrValTyrLysLysSerLeu GlyAspAspIleSerSerGluThrSerGlyAspPheArgLysAlaLeuLeuThrLeuAlaAsp GlyArgArgAspGluSerLeuLysValAspGluHisLeuAlaLysGlnAspAlaGlnIleLeu TyrLysAlaGlyGluAsnArgTrpGlyThrAspGluAspLysPheThrGluIleLeuCysLeu ArgSerPheProGlnLeuLysLeuThrPheAspGluTyrArgAsnIleSerGlnLysAspIle ValAspSerIleLysGlyGluLeuSerGlyHisPheGluAspLeuLeuLeuAlaIleValAsn CysValArgAsnThrProAlaPheLeuAlaGluArgLeuHisArgAlaLeuLysGlyIleGly ThrAspGluPheThrLeuAsnArgIleMetValSerArgSer-

GluIleAspLeuLeuAspIle ArgThrGluPheLysLysHisTyr-GlyTyrSerLeuTyrSerAlaIleLysSerAspThrSer GlyAsp-TyrGluIleThrLeuLeuLysIleCysGlyGlyAspAsp or,

(b) AlaSerIleTrpValGlyHisArgGlyThrValArgAspTyr ProAspPheSerProSerValAspAlaGluAlaIleGl-nLysAlaIleArgGlyIleGlyTyr AspGluLysMet-LeuIleSerIleLeuThrGluArgSerAsnAlaGlnArgGl-nLeuIleVal LysGluTyrGlnAlaAlaTyrGlyLys-GluLeuLysAspAspLeuLysGlyAspLeuSerGly HisPhe-GluHisLeuMetValAlaLeuValThrProProAlaValPheAs-pAlaLysGlnLeu LysLysSerMetLysGlyAlaGlyThrAsn-GluAspAlaLeuIleGluIleLeuThrThrArg ThrSerArgGl-nMetLysAspIleSerGlnAlaTyrTyrThrValTyrLysLysSer-LeuGly AspAspIleSerSerGluThrSerGlyAspPheAr-gLysAlaLeuLeuThrLeuAlaAspGly ArgArgAspGluSer-LeuLysValAspGluHisLeuAlaLysGlnAspAlaGl-nIleLeuTyr LysAlaGlyGluAsnArgTrpGlyThrAsp-GluAspLysPheThrGluIleLeuCysLeuArg SerPheProGl-nLeuLysLeuThrPheAspGluTyrArgAsnIleSerGl-nLysAspIleVal AspSerIleLysGlyGluLeuSerGlyHisPhe-GluAspLeuLeuLeuAlaIleValAsnCys ValArgAsnThr-ProAlaPheLeuAlaGluArgLeuHisArgAlaLeuLysGlyIle-GlyThr AspGluPheThrLeuAsnArgIleMetValSerArg-SerGluIleAspLeuLeuAspIleArg ThrGluPheLysLysHis-TryGlyTyrSerLeuTyrSerAlaIleLysSerAspThrSerGly AspTyrGluIleThrLeuLeuLysIleCysGlyGlyAspAsp,

from amino to carboxy terminal amino acids.

5,298,490

TETRA AND PENTA-PEPTIDES USEFUL IN REGULATING THE IMMUNE SYSTEM

George Heavner, Flemington; Gideon Goldstein, Short Hills, and Tapan Audhya, Bridgewater, all of N.J., assignors to Immunobiology Research Institute, Inc., Annandale, N.J.

Continuation-in-part of Ser. No. 268,692, Nov. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 196,138, May 19, 1988, abandoned. This application Jan. 9, 1990, Ser. No. 462,743

Int. Cl.[5] A61K *37/02*; C07K *5/10, 7/06*

U.S. Cl. 514—17 30 Claims

1. A tetrapeptide having the formula

R—Arg—X—Y—Z—R^1

or a pharmaceutically acceptable acid or base addition salt thereof, wherein

R is H, lower alkyl, acetyl, formyl, lower alkanoyl;

X is Pro, dehydro-Pro, hydroxyl-Pro, D-Lys, Aib or Lys;

Y is a D or L form of an amino acid selected from Ala, Asp, Glu, Gln, Asn, beta-Asp, Val or Ile;

Z is Gly or a D or L form of an amino acid selected from Val, Ala, Leu or Ile;

R^1 is NR^2R^3, wherein R^2 or R^3 are H or a straight chain or branched alkyl or alkenyl having 1 to 6 carbon atoms, optionally substituted with an aryl group or aryl substituted with either a halogen or a straight chain or branched alkyl or alkenyl having 1 to 6 carbon atoms or wherein R^2 or R^3 together comprise a cyclic methylene group of 3 to 7 carbon atoms, provided that when X is Lys, and Z is Val, Y is other than Asp, Asn, Ala or Glu, and when X is Lys, Y is other than Asp.

5,298,491

DERIVATIVES OF ENDOGENOUS MEDIATORS, THEIR SALTS, METHOD OF PREPARATION, APPLICATIONS AND COMPOSITIONS IN WHICH THEY ARE PRESENT

Jacques Chauveau; Michel Delaage; Anne Morel, and Louis Segu, all of Marseille, France, assignors to Immunotech, Marseille, France

Filed May 13, 1991, Ser. No. 699,027

Claims priority, application France, May 15, 1990, 9006292; Jan. 30, 1991, 9101292

Int. Cl.[5] A61K *31/405*; C07D *209/16*; G01N *21/75*

U.S. Cl. 514—17 18 Claims

1. A dimer of the formula:

$$R'R''N—A—B—O—CH_2—CO—NH—R—N-H—CO—CH_2—O—B—A—N—R'R'' \quad (I')$$

wherein

A is a linear or branched alkylene chain of 1 to 5 carbon atoms;

B is an optionally substituted aromatic nucleus of 6 to 10 carbon atoms and optionally a heteroatom;

R is an amino acid or a polypeptide consisting of at most 5 amino acids, or an amide thereof, or an addition salt thereof with mineral or organic acid; and

R' and R'' are each an alkyl radical of 1 to 5 carbon atoms or a hydrogen atoms, or an addition salt thereof with a mineral or organic acid.

5,298,492

DIAMINO ACID DERIVATIVES AS ANTIHYPERTENSIVES

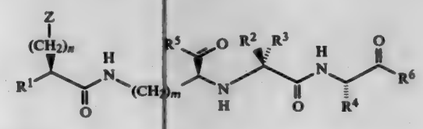
Bernard R. Neustadt, West Orange; Elizabeth M. Smith, Verona, and Deen Tulshian, Rockaway, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Aug. 4, 1992, Ser. No. 925,338

Int. Cl.[5] A61K *31/17*

U.S. Cl. 514—19 11 Claims

1. A compound of the formula



wherein

Z is amino, lower alkylamino, di-(lower alkyl)amino $R^9C(O)NH$— or a guanidino group of the formula $R^{11}R^{12}NC(=NR^{13})N(R^{14})$— or $R^{11}R^{12}NC(NR^{13}R^{14})=N$—, wherein R^{11}, R^{12}, R^{13} and R^{14} are independently hydrogen or alkyl, or wherein R^{11} and R^{12}, or R^{13} and R^{14}, taken together with the nitrogen atom to which they are attached, comprise a 5- or 6-membered ring;

R^1 is hydrogen or lower alkyl-SO_2—NH—;

R^2 is hydrogen, lower alkyl, cyclolower alkyl or benzyl; and R^3 is hydrogen, lower alkyl or cyclolower alkyl; or R^2 and R^3, together with the carbon to which they are attached, comprise a 3–7 membered carbocyclic ring;

R^4 is hydrogen, lower alkyl, aryl lower alkyl or heteroaryl-lower alkyl, wherein the aryl portion of said aryl lower alkyl is a phenyl group and the heteroaryl portion of said heteroaryllower alkyl is an indolyl group, and said phenyl or indolyl groups are substituted by 0 to 1 substituents selected from hydroxy, lower alkoxy or loweralkyl sulfonamido;

R^9 is lower alkyl, lower alkoxy, aryllower alkoxy wherein the aryl portion of said aryllower alkoxy is a phenyl group, amino, alkylamino or dialkylamino;

n is 4;

m is 1; and

R^5 and R^6 are independently selected from the group consisting of hydroxy, lower alkoxy or aryllower alkoxy wherein the aryl portion of said aryllower alkoxy is a phenyl group;

or a pharmaceutically acceptable addition salt thereof.

5,298,493

COMPOUND FOR USE IN DIETETICS, REANIMATION AND THERAPEUTICS CONTAINING PROTEIN FRACTIONS BASED ON THREE TYPES OF MINIPEPTIDES

Francois Meady, Boulogne, France, assignor to Clintec Nutrition Co., Deerfield, Ill.

Continuation of Ser. No. 929,854, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 809,025, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 622,408, Dec. 4, 1990, abandoned, which is a continuation of Ser. No. 318,415, Feb. 28, 1989, abandoned, which is a continuation of Ser. No. 909,566, Sep. 22, 1986, abandoned, which is a continuation of Ser. No. 602,493, Apr. 20, 1984, abandoned. This application Feb. 5, 1993, Ser. No. 14,099

Claims priority, application France, Apr. 20, 1983, 83 06444

Int. Cl.[5] A61K *37/02, 37/16, 37/18*

U.S. Cl. 514—21 12 Claims

1. A method of treating pathological ailments of the alimentary canal comprising the step of administering to the alimentary canal a therapeutically effective amount of a composition comprising lactoserum minipeptides, casein minipeptides, and casein minipeptides without phosphopeptide wherein the quantity of the selected minipeptides is chosen to assure a proper balance between sulfur-containing amino acids and phosphorus bound to proteins.

5,298,494

MONOSACCHARIDES HAVING ANTI-PROLIFERATION AND ANTI-INFLAMMATORY ACTIVITY, COMPOSITIONS AND USES THEREOF

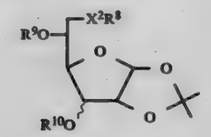
Sudershan K. Arora, Lansdale, Pa.; Roy L. Whistler, West Lafayette, Ind., and Albert V. Thomas, Vernon Hills, Ill., assignors to Greenwich Pharmaceuticals Incorporated, Fort Washington, Pa.

Continuation of Ser. No. 8,012, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 757,817, Sep. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 581,542, Sep. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 294,838, Jan. 9, 1989, Pat. No. 4,996,195. This application Jun. 30, 1993, Ser. No. 83,879

Int. Cl.[5] A61K *31/00, 31/70*; C07H *15/00*

U.S. Cl. 514—23 11 Claims

1. A compound of formula III:



(III)

wherein:

X^2 is O,

R^9 and R^{10} are hydrogen or form an isopropylidene group,

R^8 is C_8–C_{20} alkyl, or $C_nH_{2n}Y$, wherein n=1,2,3 or 4 and Y is selected from phenyl, cyano, pyrrolyl, methylpyrrolidinyl, pipecolinyl, imidazolyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, oxazolyl, oxazolidinyl, isooxazolyl, isooxazolidinyl, imidazolidinyl, piperidinyl, piperazinyl, morpholinyl, $O(CH_2)_3N(CH_3)_2$, (C_5–C_{10} alkoxy), NH_2 and $N(CH_3)_2$; or

X^2 is NH,

R^9 and R^{10} are hydrogen or form an isopropylidene group, and

R^8 is $C_nH_{2n}Y$, wherein n=1,2,3 or 4 and Y is selected from OH, cyano, pyrrolyl, pyrrolidinyl, (N-methylpyrrolidinyl)amino, methylpyrrolidinyl, pipecolinyl, imidazolyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, oxazolyl, oxazolidinyl, oxazolidinyl, isooxazolyl, isoozazolidinyl, imidazolidinyl, piperidinyl, piperazinyl, morpholinyl, $O(CH_2)_3N(CH_3)_2$, (C_5–C_{10} alkoxy) and

with the exception of the compound wherein R^9 and R^{10} are hydrogen and R^8 is $C_nH_{2n}Y$, wherein n=1 and Y is phenyl; or

X^2 is S,

R^9 and R^{10} are hydrogen or form an isopropylidene group, and

R^8 is C_5–C_{10} alkyl or $C_nH_{2n}Y$ wherein n=1,2,3 or 4 and Y is selected from OH, phenyl, cyano, pyrrolyl, pyrrolidinyl, methylpyrrolidinyl, pipecolinyl, imidazolyl, pyrazolyl, pyrazolinyl, pyrazolidinyl, oxazolyl, oxazolidinyl, isooxazolyl, isooxazolidinyl, imidazolidinyl, piperidinyl, piperazinyl, morpholinyl, $CH(CH_3)CH_2N(CH_3)_2$, $O(CH_2)_3N(CH_3)_2$ or (C_5–C_{10} alkoxy), with the exception of the compound wherein R^9 and R^{10} are hydrogen and R^8 is $C_nH_{2n}Y$, wherein n=1 and Y is phenyl.

5,298,495

PARTRICIN DERIVATIVES

Tiberio Bruzzese; Massino Signorini, both of Milan, and Franco Ottoni, Pieve Emanuele, all of Italy, assignors to SPA Societa' Prodotti Antibiotici SpA, Milan, Italy

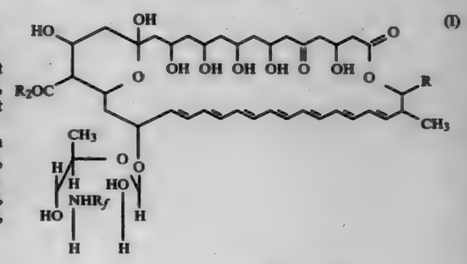
Filed Dec. 3, 1991, Ser. No. 801,253

Claims priority, application Italy, Dec. 3, 1990, 22268 A/90

Int. Cl.[5] A61K *31/70*; C07H *17/08*

U.S. Cl. 514—31 12 Claims

1. A compound of the formula (I):



(I)

wherein

R' is a hydrogen atom or a methyl group;

R_1 represents a —$CO(CH_2)_mNR_3R_4$ aminoacyl radical, wherein m=1, 2 or 3, R_3 and R_4 which can be the same or different, represent a C_1–C_3 alkyl group or together form with the nitrogen atom to which they are bound, a five or six-membered heterocyclic ring that may contain an additional nitrogen atom substituted by a methyl or 2-hydroxyethyl group;

R_2 represents an —NR_3R_4 amino or —NH—$(CH_2)_m$—NR_3R_4 aminoalkylamino group, wherein m is 1, 2 or 3, R_3 and R_4 independently are C_1–C_3 alkyl group or together form a heterocyclic ring as defined above, or an —NH—$(CH_2)_m$—R_5 alkylamino group, wherein m has the same meaning as above and R_5 represents a five-or six-membered heterocyclic ring wherein the hetero atom is nitrogen substituted by methyl or ethyl;

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X represents the anion of a pharmaceutically acceptable, organic or inorganic acid, and n i 0, 1 or 2.

5,298,496
INCLUSION COMPLEXES OF 3-MORPHOLINO-SYDNONIMINE OR ITS SALTS OR ITS TAUTOMER ISOMER, PROCESS FOR THE PREPARATION THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Mária Vikmon; József Szejtli, Lajos Szente; József Gaál; István Hermecz; Agnes Horváth, all of Budapest; Katalin Mármarosi, Biatorbágy; Gábor Horváth, and Irén Munkácsi, both of Budapest, all of Hungary, assignors to Chinoin Gyogyszer- ES Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

PCT No. PCT/HU91/00013, § 371 Date Jan. 2, 1992, § 102(e) Date Jan. 2, 1992
PCT Filed Mar. 28, 1991, Ser. No. 793,389
Claims priority, application Hungary, Mar. 28, 1990, 1869/90; Jun. 27, 1990, 1869/90/MODIFI
Int. Cl.[5] C07D *271/04, 295/30;* **A61K** *31/41;* **C08B** *37/16*
U.S. Cl. 514—58 **17 Claims**

1. An active inclusion complex of 3-morpholino-sydnonimine or of its pharmaceutically acceptable salt or tautomer isomer formed with a cyclodextrin.

5,298,497
METHOD FOR PREVENTING ONSET OF HYPERTENSION EMPLOYING A CHOLESTEROL LOWERING DRUG

Werner Tscholiar, Lawrenceville, N.J.; Cary S. Yonce, Newtown, Pa.; James L. Bergey, Lansdale, Pa., and James C. Kawano, Narberth, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 524,269, May 15, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 891,243
Int. Cl.[5] A61K *31/675, 31/40, 31/35, 31/21*
U.S. Cl. 514—91 **15 Claims**

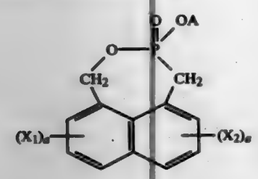
1. A method for preventing or reducing the risk of hypertension in a normotensive mammalian species having insulin resistance, which comprises administering to a mammalian species in need of such treatment an effective amount of a cholesterol lowering drug which is an HMG CoA reductase inhibitor.

5,298,498
PHOSPHONIC ACID DERIVATIVES USEFUL AS ANTI-INFLAMMATORY AGENTS

Roy A. Johnson, and Herman W. Smith, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 624,119, Dec. 7, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 71,289
Int. Cl.[5] A61K *31/665;* **C07F** *9/6574*
U.S. Cl. 514—111 **4 Claims**

1. A compound of Formula VII



VII

wherein
A is hydrogen, C_1–C_6 alkyl, phenyl, or C_7–C_{10} aralkyl;
X_1 and X_2 may be the same or different and are hydrogen, —Cl, —Br, —F, C_1–C_3 alkyl, —OR_5, —$(CH_2)_mCO_2A$, —$(CH_2)_mCH_2OR_5$, —NO_2, —NH_2, —SR_6, —CH_2NHR_7or —$CH_2N(R_7)(R_8)$;
a is one or two, provided that a is one when either X_1 or X_2 is —NO_2;
R_5 is hydrogen, C_1—C_{10} alkyl, allyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl;
R_6 is hydrogen, C_1—C_6 alkyl, allyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl;
R_7 and R_8 may be the same or different and are hydrogen, C_1–C_6 alkyl, phenyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl;
m is one to five;
or the pharmacologically acceptable salts thereof.

5,298,499
S-2-(SUBSTITUTED ETHYLAMINO)ETHYL PHOSPHOROTHIOATES

Frank I. Carroll, Durham, and Philip Abraham, Cary, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Jul. 5, 1991, Ser. No. 726,286
Int. Cl.[5] A61K *31/66;* **C07C** *229/00, 69/66;* **C07D** *285/01*
U.S. Cl. 514—114 **11 Claims**

1. A phosphorothioate compound of formula 5



5

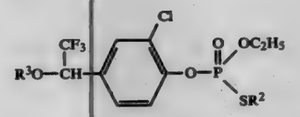
wherein
X equals S, N—R′;
Y equals N—(R″)R‴, S—R″;
R equals H, $C_{1\text{-}20}$ alkyl, benzyl, or phenyl;
R′, R″, and R‴ is each independently H, $C_{1\text{-}6}$ alkyl, halosubstituted $C_{1\text{-}6}$ alkyl, $C_{3\text{-}6}$ cycloalkyl, $C_{3\text{-}6}$ cycloalkyl substituted $C_{1\text{-}6}$ alkyl, $H_2NC(O)$ or SO_2R'''';
wherein R‴′ is phenyl, p-anisyl, p-chlorophenyl, tolyl, $C_{1\text{-}6}$ alkyl or amino;
m and n are each independently an integer from 1–4;
A and B are each independently H, $C_{1\text{-}6}$ alkyl or Li; or hydrates thereof.

5,298,500
PESTICIDAL O,S-DIALKYL-O-[4-(1-ALKOXY-2,2,2-TRIFLUOROETHYL)PHENYL]PHOSPHORO(DI) THIOATE DERIVATIVES

Hisashi Takao, Tokushima, Japan, assignor to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1992, Ser. No. 852,949
Claims priority, application Japan, Mar. 22, 1991, 3-059154
Int. Cl.[5] A61K *31/66;* **C07F** *9/18*
U.S. Cl. 514—129 **2 Claims**

1. A phosphoric acid ester derivative represented by the general formula



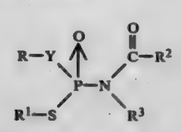
wherein R_2 is C_3 or C_4 alkyl and R^3 is methyl or ethyl.

5,298,501
CHEMICALLY STABLE GRANULES CONTAINING INSECTICIDAL PHOSPHOROAMIDOTHIOATES

Gary Cummings, Moraga, Calif., assignor to Valent U.S.A. Corporation, Walnut Creek, Calif.

Continuation of Ser. No. 674,857, Mar. 25, 1991, abandoned. This application Feb. 9, 1993, Ser. No. 15,673
Int. Cl.[5] A01N *57/12*
U.S. Cl. 514—120 **20 Claims**

1. A granular insecticidal composition comprising at least about 2 weight percent of an insecticidal compound or mixture of compounds of the formula:



where R and R^1 individually are alkyl, alkenyl or alkynyl containing up to 6 carbon atoms, R^2 is hydrogen, alkyl containing 1 to 18 carbon atoms, cycloalkyl containing 3 to 8 carbon atoms, alkenyl containing 2 to 18 carbon atoms or alkynyl containing 3 to 18 carbon atoms, R^3 is hydrogen or alkyl containing 1 to 6 carbon atoms, and Y is oxygen or sulfur;
at least about 83 weight percent of ammonium sulfate; and
one or more additives selected from the group consisting of:
(a) from about 0.5 to about 5 weight percent of a colloidal silica particle;
(b) from about 0.5 to about 5 weight percent of magnesium stearate; and
(c) from about 1 to about 5 weight percent of corn starch, with the proviso that the total weight percent of additives (a), (b) and (c) in said composition ranges from at least 1 weight percent to less than 6 weight percent.

5,298,502
METHOD AND COMPOSITION FOR PHOTODYNAMIC TREATMENT AND DETECTION OF TUMORS

Blaik P. Halling, Yardley, Pa., and Debra A. Witkowski, Parlin, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 622,303, Dec. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 535,076, Jun. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 351,331, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 335,007, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 285,151, Dec. 12, 1988, abandoned. This application Dec. 23, 1991, Ser. No. 814,305
Int. Cl.[5] A61K *31/24, 31/41, 31/44, 31/50*
U.S. Cl. 514—185 **22 Claims**

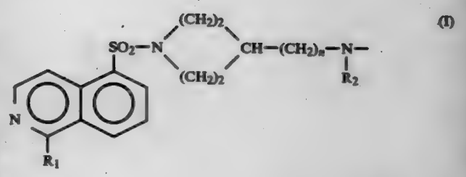
1. Method for killing mammalian tumor cells by subjecting said cells to light in the presence of a light-activatable tetrapyrrole, in which the improvement comprises treating said cells with a compound which is a specific inhibitor of the enzymatic conversion of protoporphyrinogen to protoporphyrin IX by protoporphyrinogen oxidase.

5,298,503
N-(ISOQUINOLIN-5-YLSULPHONYL) AZACYCLOALKANES

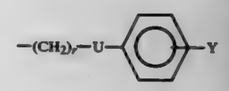
Jean-Louis Peglion, Le Vesinet; Jean-Paul Vilaine, Chatenay Malabry; Nicole Villeneuve, Rueil Malmaison, and Philip Janiak, Clichy, all of France, assignors to Adir et Compagnie, Courbevoie, France

Filed Jul. 30, 1992, Ser. No. 922,992
Claims priority, application France, Jul. 31, 1991, 91 09720
Int. Cl.[5] C07D *401/12;* **A61K** *31/47*
U.S. Cl. 514—212 **8 Claims**

1. A compound selected from those of formula (I):



(I)



in which:
n is 0 or 1 to 3 inclusive,
r is 1 to 6 inclusive,
R_1 represents hydrogen, hydroxy, or chlorine,
R_2 represents:
hydrogen
formyl,
—A, —CO—A or —CO—O—A, wherein A represents lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, or cycloalkyl-lower alkyl,
—$(CH_2)_q$-phenyl or substituted —$(CH_2)_q$-phenyl, wherein q represents 0 to 1 to 4 inclusive,
—CO-phenyl or substituted —CO-phenyl,
—CO—O-phenyl or substituted —CO—O-phenyl, or
—CO—NR_4R_5 wherein R_4 and R_5
which may be identical or different, each represent hydrogen or a group selected from lower alyl, lower alkenyl, lower alkynyl, phenyl and phenyl-lower alkyl, or
together with the nitrogen atom carrying them, form a saturated ring having 4 to 7 ring members, inclusive,
Y is para-fluoro,
U represents oxygen or carbonyl,
wherein:
the term "substituted " relating to the groups —$(CH_2)_q$—phenyl, —CO-phenyl, or —CO—O-phenyl means that those groups may be substituted by one or more radicals selected from: lower alkyl, lower alkoxy, hydroxy, halogen, and trifluoromethyl,
the terms "lower alkyl" and "lower alkoxy" indicate straight-chain or branched saturated carbon-containing groups having 1 to 6 carbon atoms, inclusive,
the terms "lower alkenyl" and "lower alkynyl" designate straight-chain or branched unsaturated groups having 2 to 6 carbon atoms, inclusive, and
the term "cycloalkyl" designates a saturated carbon-containing ring having 3 to 8 ring members, inclusive, optical isomers thereof and, where applicable, the addition salts thereof with a pharmaceutically-acceptable acid.

5,298,504
NERVE GAS ANTIDOTE

Armin Sömmer, Thomas-Mann-Strasse 8, 0-8122 Radebeul, and Holm Bleyer, Trelleborger Weg 16, 0-200 Greifswald, both of Fed. Rep. of Germany

Filed May 13, 1992, Ser. No. 882,591
Claims priority, application Fed. Rep. of Germany, May 13, 1991, 4115558
Int. Cl.[5] A61K *31/445, 31/40, 31/55, 31/275*
U.S. Cl. 514—221 **3 Claims**

1. A method of providing protection to a person likely to be exposed to toxic phosphorus compounds such as nerve gas or pesticides which comprises administering a dose of a prophylactic antidote for phosphororganic toxins comprising at least one compound from each of the groups a, b and c,
a. 30–60 mg Pyridostigmine (pyridostigmine bromide) or 0.5–2.0 mg physostigmine

b. 3–5 mg Diazepam or 0.5–2.0 mg clonazepam
c. 3–8 mg G3063, 5.0–15 mg Arnepal, 2–10 mg Sycotrol (pipetabanate hydrochloride), 5.0–15 mg caramiphen (caramiphene hydrochloride) or 3–20 mg benactyzine (benactyzine hydrochloride)

the amount of component a being effective to lower serum cholinesterase activity to 70–80% of the initial value.

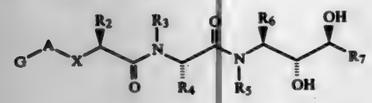
5,298,505

ETHYNYL ALANINE AMINO DIOL COMPOUNDS HAVING A PIPERAZINYL-TERMINATED GROUP OR A PIPERAZINYL-ALKYLAMINO-TERMINATED GROUP FOR TREATMENT OF HYPERTENSION

Gunnar J. Hanson, Skokie, Ill., assignor to G. D. Searle & co., Chicago, Ill.

Filed Aug. 14, 1992, Ser. No. 930,065
Int. Cl.[5] A61K 31/495; C07D 295/18, 295/145, 487/08
U.S. Cl. 514—255 **29 Claims**

1. A compound of Formula I:



(I)

wherein A is selected from CO and SO_2; wherein X is selected from oxygen atom and methylene; wherein G is B or Formula II:



(II)

wherein R_1 is selected from hydrido and alkyl; wherein B is a piperazinyl ring, wherein the point of attachment of B to the backbone of the structure of Formula I or Formula II may be through a bond to any substitutable position of B and wherein any substitutable position of B may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, acetyl, alkynyl, halo, trifluoromethyl, oxo, cyano and phenyl, and wherein the said heterocyclic ring nitrogen atom may be combined with oxygen to form an N-oxide; wherein R_2 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl and naphthylalkyl, and wherein the cyclic portion of any of said phenylalkyl, cycloalkylalkyl and naphthylalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_3 and R_5 is independently selected from hydrido and alkyl; wherein R_4 is selected from



wherein V is selected from hydrido, alkyl, benzyl and phenyl; wherein each of R_8 and R_9 is a radical independently selected from hydrido, alkyl, alkenyl and phenyl; wherein R_6 is selected from alkyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy and alkoxy; wherein R_7 is selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl and alkenyl; wherein p is a number selected from zero through five, inclusive; wherein q is a number selected from zero through five, inclusive; and wherein n is a number selected from zero through five, inclusive; or a pharmaceutically-acceptable salt thereof.

5,298,506

USE OF GUANYLATE CYCLASE INHIBITORS IN THE TREATMENT OF SHOCK

Jonathan Stamler, Boston, and Joseph Loscalzo, Dedham, both of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed May 8, 1992, Ser. No. 880,444
Int. Cl.[5] A61K 31/07, 31/19, 31/47, 31/54
U.S. Cl. 514—226.2 **10 Claims**

1. A method for the treatment of shock, comprising the administration of a therapeutically effective amount of a guanylate cyclase inhibitor to a human patient in need thereof.

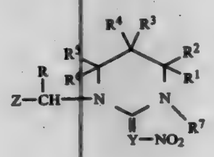
5,298,507

HETEROCYCLIC COMPOUNDS

Kozo Shiokawa, Kasugaya; Shinichi Tsuboi, Tokyo; Shinso Kagabu, Tokyo, and Koichi Moriya, Tokyo, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

Division of Ser. No. 557,292, Jul. 24, 1990, Pat. No. 5,204,360, which is a division of Ser. No. 347,836, May 4, 1989, Pat. No. 5,001,138, which is a division of Ser. No. 68,991, Jul. 1, 1987, Pat. No. 4,845,106, which is a division of Ser. No. 821,621, Jan. 21, 1986, Pat. No. 4,742,050. This application Feb. 6, 1992, Ser. No. 832,174
Claims priority, application Japan, Feb. 4, 1985, 60-18627; Feb. 4, 1985, 60-18628; Feb. 12, 1985, 60-23683; May 21, 1985, 60-106853; May 21, 1985, 60-106854; Oct. 3, 1985, 60-219082
Int. Cl.[5] C07D 239/12, 239/06; A01N 43/54
U.S. Cl. 514—256 **17 Claims**

1. A compound formula



(I)

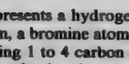
in which

R^1, R^2, R^5 and R^6 independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R^3 and R^4 independently represent a hydrogen atom, a hydroxy group or an alkyl group having 1 to 4 carbon atoms,

R^7 represents a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom, a hydroxy group, an alkoxy group having 1 to 4 carbon atoms, a benzyloxy group, an alkyl group having 1 to 4 carbon atoms which may be substituted by at least one member selected from the class consisting of alkoxy groups having 1 to 4 carbon atoms, alkylthio groups having 1 to 4 carbon atoms, a cyano group, a fluorine atom, a chlorine atom, a bromine atom, a dimethylamino group and trimethylsilyl, an alkenyl group having 2 to 3 carbon atoms which may be substituted by a chlorine atom, an alkynyl group having 2 to 3 carbon atoms, a benzyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a methoxy group, a fluorine atom, a chlorine atom, a bromine atom and a nitro group, a formyl group, an alkenylcarbonyl group having an alkenyl with 2 to 3 carbon atoms, an alkyl carbonyl group having 1 to 5 carbon atoms which may be substituted by at least one member selected from the class consisting of a methoxy group, a phenoxy group, a fluorine, chlorine and bromine atom, a benzoyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, a methyl group, a trifluoromethyl group, a methoxy group, a difluoromethoxy group, a trifluoromethoxy group and a nitro group, a benzylcarbonyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom and a bromine atom, an alkoxycarbonyl group having an alkyl with 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom, an alkylthiocarbonyl group having an alkyl with 1 to 4 carbon atoms, a phenoxycarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, a phenylthiocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, a benzyloxycarbonyl group, a dimethylaminocarbonyl group, a phenylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom, and a bromine atom, a benzoylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, a phenylsulfonylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom and a bromine atom, a phenylthio group, an alkylsulfonyl group which may be substituted by a fluorine atom and/or a chlorine atom, a phenylsulfonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom, a bromine atom and a nitro group, a methylcarbonylmethyl group, a phenacyl group which may be substituted by a fluorine atom and/or a chlorine atom, an organophosphono group, an organothionophosphono group, $—CH_2—W$ or —CO—W;

W represents a 5 to 6 membered hetercyclic group, containing one or two hetero atoms selected from the class consisting of an oxygen atom, a sulfur atom and a nitrogen atom, which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom and alkyl groups having 1 to 4 carbon atoms,

Y represents a nitrogen atom or the following



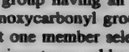
R^9 represents a hydrogen atom, a fluorine atom, a chlorine atom, a bromine atom, a hydroxy group, an alkoxy group having 1 to 4 carbon atoms, a benzyloxy group, an alkyl group having 1 to 4 carbon atoms which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a hydroxy group, an alkoxy group having 1 to 2 carbon atoms, alkylthio groups having 1 to 2 carbon atoms, a cyano group, a dimethylamino group, alkylcarbonyl groups having an alkyl with 1 to 2 carbon atoms and alkoxycarbonyl groups having an alkyl with 1 to 2 carbon atoms, an alkenyl group having 2 to 3 carbon atoms, a phenyl group, an alkylcarbonyl group having an alkyl with 1 to 4 carbon atoms which may be substituted by at least one member selected from the class consisting of a methoxy group, a chlorine atom and a fluorine atom, an alkenylcarbonyl group having an alkenyl with 2 to 3 carbon atoms, a benzoyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, a methoxy group and a methyl group, an alkoxycarbonyl group which may be substituted by a fluorine atom and/or a chlorine atom, an alkylthiocarbonyl group having an alkyl with 1 to 4 carbon atoms, a phenoxycarbonyl group which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, a methyl group, a methoxy group and a nitro group, a phenylthiocarbonyl group, a benzyloxycarbonyl group, a benzoylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, a phenylsulfonylaminocarbonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, an alkylsulfonylaminocarbonyl group having an alkyl with 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, an alkylsulfonyl group which may be substituted by a fluorine atom and/or a chlorine atom, a phenylthio group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom, or a phenylsulfonyl group which may be substituted by at least one member selected from the class consisting of a methyl group, a fluorine atom, a chlorine atom and a bromine atom,

in addition, R^9 may form a bis-form of the formula (I), via a methylene group,

R represents a hydrogen atom or a methyl group, and

Z represents a 5 to 6 membered heterocyclic group, containing one to three hetero atoms selected from the class consisting of an oxygen atom, a sulfur atom and a nitrogen atom, at least one of which is a nitrogen atom, which may be substituted by at least one member selected from the class consisting of a fluorine atom, a chlorine atom, a bromine atom, alkyl groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom, a nitro group, a cyano group, alkylsulfinyl groups having 1 to 4 carbon atoms, alkylsulfonyl groups having 1 to 4 carbon atoms, alkoxy groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom, alkylthio groups having 1 to 4 carbon atoms which may be substituted by a fluorine atom and/or a chlorine atom; alkenyl groups having 2 to 3 carbon atoms which may be substituted by a chlorine atom, an acetamide group which may be substituted by a fluorine atom and/or a chlorine atom, alkoxycarbonyl groups having an alkyl with 1 to 4 carbon atoms, a thiocyanato group, alkynyl groups having 2 to 4 carbon atoms, an amino group, a methylamino group, a dimethylamino group, an acetyl group, a formyl group, a carboxy group, a hydroxy group, a mercapto group, cycloalkyl groups having 3 to 7 carbon atoms, an oxo group, a thioxo group, alkenylthio groups substituted by a fluorine atom, a chlorine atom and/or a bromine atom, alkoxyalky groups having 2 to 4 carbon atoms in total, alkylaminocarbonyl groups having an alkyl with 1 to 2 carbon atoms, dialkylaminocarbonyl groups having an alkyl with 1 to 2 carbon atoms, a phenyl group, a phenoxy group and a benzyl group, provided that where R^1, R^2, R^3, R^4, R^5 and R^6 represent hydrogen atoms simultaneously, and

Y represents



then Z does not represent a pyridyl group which may optionally be substituted.

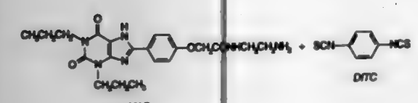
5,298,508

IRREVERSIBLE INHIBITORS OF ADENOSINE RECEPTORS

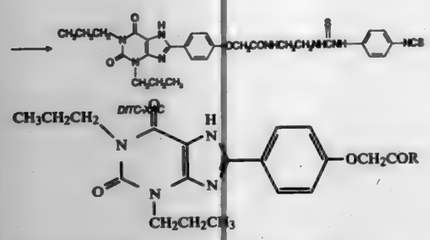
Kenneth A. Jacobson, Silver Spring, Md., and Gary Stiles, Chapel Hill, N.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C. and Duke University, Durham, N.C.

Continuation of Ser. No. 221,413, Jul. 19, 1988, abandoned. This application Feb. 18, 1992, Ser. No. 837,105
Int. Cl.[5] A61K 31/52; A01N 43/90; C07D 473/06, 473/34
U.S. Cl. 514—263 **18 Claims**

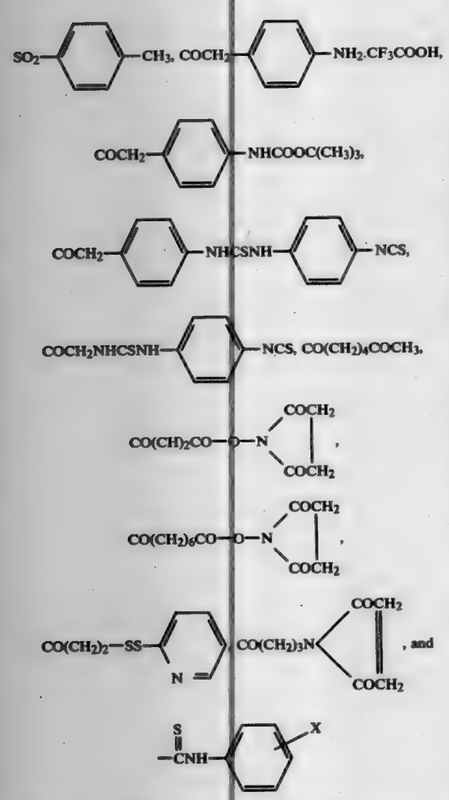
1. 8-aryl-substituted xanthine ligand compounds selected from the group consisting of



XAC DITC



wherein R is selected from the group consisting of —$NHCH_2$-CHO and —$NH(CH_2)_2NHR'$, wherein R' is selected from the group consisting of



wherein X is selected from the group consisting of NCS, CH_3, OCH_3, F_n, Br, NO_2, SO_3Na wherein n is an integer of from 1 to 5.

5,298,509

OCTAHYDRONAPHTHOQUINOLIZINES, AND METHODS OF MAKING AND USING THEREOF

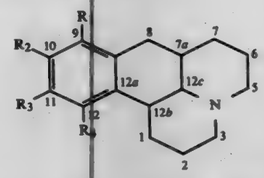
David I. Schuster, Wilton, Conn.; Randall B. Murphy, Irvington, and Bing Cai, Rego Park, both of N.Y., assignors to New York University, New York, N.Y.

Filed Sep. 25, 1992, Ser. No. 950,550

Int. Cl.[5] C07D *215/16*; A61K *31/47*

U.S. Cl. 514—284 **14 Claims**

1. An octahydronaphthoquinolizine compound or stereoisomer of a compound of formula (I):



wherein R^1, R^2, R^3 and R^4 are the same or different, as hydrogen, hydroxy, fluoro, trifluoromethyl, or a substituted or unsubstituted C_{1-10} alkoxy which can be substituted with alkyl or phenyl groups, or a pharmaceutically acceptable ester, ether, sulfate, carbonate, glucuronide, cyclodextrin complex or salt thereof.

5,298,510

MEDICAMENTS

Michael B. Tyers, Welwyn, England, assignor to Glaxo Group Limited, London, England

Division of Ser. No. 734,281, Jul. 16, 1991, Pat. No. 5,198,447, which is a continuation of Ser. No. 475,010, Feb. 5, 1990, abandoned, which is a division of Ser. No. 246,550, Sep. 9, 1988, Pat. No. 4,948,803. This application Jan. 7, 1993, Ser. No. 1,665

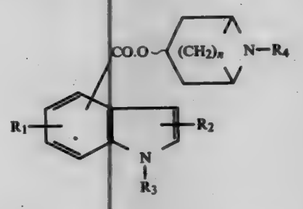
Claims priority, application United Kingdom, Nov. 21, 1986, 8627881; Nov. 21, 1986, 8627883; Nov. 21, 1986, 8627909; Mar. 25, 1987, 8707177; PCT Int'l Appl., Nov. 20, 1987, PCT/GB87/00826; United Kingdom, Dec. 17, 1987, 8630083

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—304 **11 Claims**

1. A method of treatment for the relief or prevention of a withdrawal syndrome resulting from addiction to a drug or substance of abuse and/or for the suppression of dependence of drugs or substances of abuse, which comprises administering to a human or animal subject suffering from a liable to suffer from said withdrawal syndrome and/or dependent on a drug or substance of abuse an effective amount of a compound of formula (I):

(I)



wherein

R_1 and R_2 independently represent hydrogen, halogen, C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, amino, C_{1-4}alkylamino, di(C_{1-4})alkylamino, mercapto or C_{1-4}alkylthio;

R_3 represents hydrogen, C_{1-4}alkyl, C_{3-5}alkenyl, aryl or aralkyl;

R_4 represents hydrogen, C_{1-7}alkyl, C_{3-5}alkenyl or aralkyl;

n is 2 or 3;

the free valence is attached to either fused ring, and the azabicyclic ring is in either the exo and endo configuration; or an acid addition salt or quaternary ammonium salt thereof.

5,298,511

ALKANOIC ACID DERIVATIVES

David Waterson, Bollington, England, assignor to Imperial Chemical Industries PLC, London, United Kingdom and I.C.I. Pharma, Cedex, France

Filed Sep. 23, 1992, Ser. No. 948,594

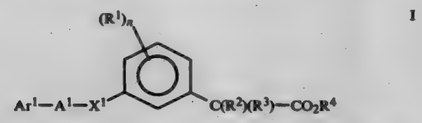
Claims priority, application European Pat. Off., Oct. 3, 1991, 91402638.0

Int. Cl.[5] C07D *215/14, 215/16*; C07C *69/76, 315/00, 321/00*

U.S. Cl. 514—311 **9 Claims**

1. An alkanoic acid derivative of the formula I

I



wherein Ar^1 is phenyl or naphthyl, or a 10-membered bicyclic heterocyclic moiety containing one or two nitrogen heteroatoms and optionally containing a further heteroatom selected from nitrogen, oxygen and sulphur, and Ar^1 may optionally bear up to four substituents selected from halogeno, hydroxy, cyano, oxo, thioxo, (1–4 C)alkyl (1–4 C)alkoxy, fluoro-(1–4 C)alkyl, phenyl, benzoyl, phenyl-(1–4 C)alkyl and α,α-difluorobenzyl, and wherein said phenyl substituent or any of said substituents which contain a phenyl group may optionally bear a substituent selected from halogeno, (1–4 C)alkyl and (1–4 C)alkoxy;

A^1 is a direct link to X^1 or is (1–3 C)alkylene;

X^1 is oxy, thio, sulphinyl or sulphonyl;

n is 0, 1 or 2, and R^1 is halogeno, (1–4 C)alkyl, (1–4 C)alkoxy or fluoro-(1–4 C)alkyl;

each of R^2 and R^3, which may be the same or different, is (1–4 C)alkyl, (2–4 C)alkenyl or (2–4 C)alkynyl; and

R^4 is hydrogen or (1–4 C)alkyl;

or a pharmaceutically-acceptable salt thereof.

5,298,512

SUBSTITUTED CHROMANS AND THEIR USE IN THE TREATMENT OF ASTHMA, ARTHRITIS AND RELATED DISEASES

James F. Eggler, Stonington; Anthony Marfat, Mystic; Hiroko Masamune, Noank, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US89/01457, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991

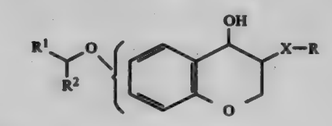
PCT Filed Apr. 7, 1989, Ser. No. 768,622

Int. Cl.[5] C07D *405/06, 405/12*; A61K *31/44, 31/47*

U.S. Cl. 514—314 **21 Claims**

1. A compound of the formula

(I)



wherein

X is CH_2 or O;

R is attached by means of heteroaromatic carbon and is pyridyl or pyridyl mono- or disubstituted on carbon with the same or different groups which are bromo, chloro, fluoro, hydroxy, hydroxymethyl, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, [(C_1–C_4)alkoxy]carbonyl, or substituted or adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; or substituted on tertiary nitrogen to form an N-oxide, and either

R^1 is 2-, 3-, 4- or 8-quinolyl, or one of said groups mono- or disubstituted on carbon with the same or different substituents which are bromo, chloro, fluoro, (C_1–C_4) alkyl, trifluoromethyl, hydroxy, hydroxymethyl or (C_1–C_4)alkoxy, or on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; and

R^2 is methyl, phenyl or phenyl mono- or disubstituted with the same or different substituents which are bromo, chloro, fluoro, (C_1–C_4)alkyl, trifluoromethyl, hydroxy, hydroxymethyl or (C_1–C_4)alkoxy, or on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; or

R^1 is 2-naphthyl or 2-naphthyl mono- or disubstituted with the same or different substituents which are bromo, chloro, fluoro, (C_1–C_4)alkyl, trifluoromethyl, hydroxy, hydroxymethyl or (C_1–C_4)alkoxy, or on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—; and

R^2 is hydrogen, methyl, phenyl or phenyl mono- or disubstituted with the same or different substituents which are bromo, chloro, fluoro, (C_1–C_4)alkyl, trifluoromethyl, hydroxy, hydroxymethyl or (C_1–C_4)alkoxy, or on adjacent carbons with trimethylene, tetramethylene, —CH_2—O—CH_2— or —O—CH_2—O—;

a pharmaceutically acceptable acid addition salt thereof when the compound contains a basic amine function; and a pharmaceutically acceptable cationic salt when the compound contains a carboxy group.

5,298,513

SUBSTITUTED BASIC 2-AMINOTETRALIN IN PHARMACEUTICALS

Rudolf Schohe, Wuppertal; Thomas Glaser, Röcrath; Jörg Traber, Lohmar, all of Fed. Rep. of Germany, and George S. Allen, Nashville, Tenn., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 682,823, Apr. 9, 1991, Pat. No. 5,153,225, which is a division of Ser. No. 378,733, Jul. 12, 1989, Pat. No. 5,026,857, which is a division of Ser. No. 130,373, Dec. 8, 1987, Pat. No. 4,880,802. This application May 29, 1992, Ser. No. 891,485

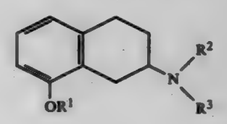
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1986, 3642192; Jun. 1, 1987, 2718371

Int. Cl.[5] A61K *31/445*; C07D *211/58*

U.S. Cl. 514—319 **7 Claims**

1. A substituted basic 2-aminotetralin of the formula

(I)

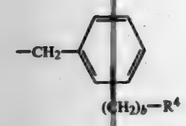


in which

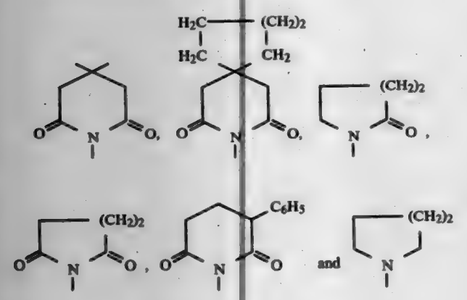
R^1 represents hydrogen or alkyl,

R^2 represents hydrogen, alkyl or acyl, and

R^3 represents a group of the formula —$(CH_2)_a$—R^4, —CH_2—CH=CH—$(CH_2)_b$—R^4, —CH_2—C≡C—$(CH_2)_b$—R^4 or



wherein
a denotes a number from 1 to 10, and
b denotes a number 0, 1, 2, 3, or 4,
R^4 denotes $—NR^{11}R^{12}$,
R^{11} and R^{12}, together with the nitrogen atom, form a ring selected from the group consisting of



or its salt.

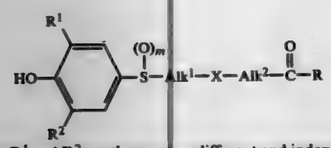
5,298,514

PHENOLIC THIOETHERAMIDES

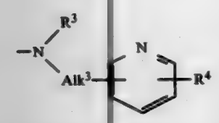
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 579,124, Sep. 7, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 943,166
Int. Cl.[5] A61K *31/44;* C07D *211/72*
U.S. Cl. 514—357 19 Claims

1. A compound of the formula:



wherein R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; Alk^1 represents straight or branched chain alkylene of 1 to 10 carbon atoms; X represents sulfur or oxygen; Alk^2 represents straight or branched chain alkylene of 1 to 4 carbon atoms; m is 0 or 1; and R represents:



wherein R^3 is hydrogen or alkyl of 1 to 4 carbon atoms; Alk^3 is straight or branched chain alkylene of 1 to 4 carbon atoms; and R^4 is hydrogen or alkyl of 1 to 4 carbon atoms, or a pharmaceutically acceptable salt or stereoisomer or geometric isomer thereof.

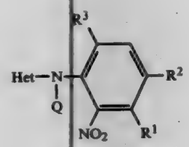
5,298,515

N-HETARYL-2-NITROANILINES

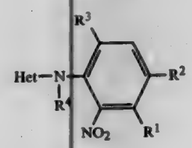
Juergen Schubert, Mannheim; Reiner Kober, Fussgoenheim; Gerhard Hamprecht, Weinheim; Hubert Sauter; Uwe Kardorff, both of Mannheim, and Christoph Kuenast, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 761,134, Sep. 17, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,054
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029771
Int. Cl.[5] C07D *277/42;* A01N *43/78*
U.S. Cl. 514—361 4 Claims

1. An N-hetaryl-2-nitroaniline of the formula Ia or Ib



Ia



Ib

where
R^1 is hydrogen, halogen or C_1–C_4-alkoxy;
R^2 is nitro, cyano, halogen, partially or completely halogenated C_1–C_4-alkyl;
R^3 is nitro, halogen, C_1–C_6-alkyl, partially or completely halogenated C_1–C_4-alkyl;
R^4 is —CO—R^5, —CO—OR^5 or —SO_2R_5, with R^5 being C_1–C_4-alkyl, phenyl or naphthyl, both of which can carry up to 3 halogen atoms and/or C_1–C_4-alkyl groups;
Q is hydrogen, an alkali metal or alkaline earth metal ion, an ammonium ion whose nitrogen can carry up to four C_1–C_4-alkyl, hydroxy-C_1–C_3-alkyl, phenyl and/or benzyl substituents, a phosphonium, sulfonium or sulfoxonium ion or an equivalent of a transition metal cation;
Het is thienyl, isothiazolyl or thiadiazolyl, each of which is linked via a ring carbon to the basic structure to which a non-aromatic C_5–C_8-ring can be fused and which can additionally carry on each other carbon one of the following substituents: cyano, thiocyanato, nitro, halogen, C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkyl, C_3–C_{10}-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenyl, naphthyl, benzyl or thienyl, where each aromatic ring can carry up to three halogen atoms and/or C_1–C_4-alkyl groups; CO—R^5, CO—OR^5, NR^6R^7, where R^6 and R^7 are C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, or the substituents on the two adjacent carbon atoms form a C_3–C_6-methylene chain excepting those compounds of Ia where simultaneously R^1 is hydrogen, R^2 and/or R^3 is nitro and Het is 1,3,4-thiadiazol-2-yl which is substituted by trifluoromethyl or tert-butyl.

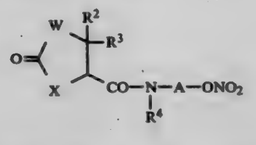
5,298,516

THIA ZOLIDONE COMPOUNDS AND METHOD OF USING THE SAME AS A VASODILATOR

Sadao Ishihara; Fujio Saito; Takao Yoshioka; Hiroyuki Koike; Shigeki Miyake, and Hiroshi Mizuno, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,491
Claims priority, application Japan, Mar. 27, 1991, 3-63088; May 8, 1991, 3-102751; Dec. 13, 1991, 3-330304
Int. Cl.[5] C07D *77/14;* A61K *31/425*
U.S. Cl. 514—369 29 Claims

1. A compound of formula (I):



(I)

wherein:
W represents a sulfur atom and X represents a group of formula —N(R^1)—, or W represents a group of formula —N(R^1)— and X represents a sulfur atom;
R^1 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an aralkyl group in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms;
R^2 and R^3 are independently selected from the group consisting of:
hydrogen atoms;
alkyl groups having from 1 to 6 carbon atoms;
aralkyl groups in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms;
aryl groups, as defined below;
aromatic heterocyclic groups having an aromatic ring containing 5 or 6 ring atoms of which from 1 to 3 are heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur atoms and the remaining ring atoms are carbon, said heterocyclic group being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents (a), defined below; and
fused ring systems in which an aromatic heterocyclic group, as defined above, is fused to a benzene ring;
R^4 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an aralkyl group in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms; and
A represents an alkylene group having from 2 to 6 carbon atoms in a straight or branched carbon chain and being unsubstituted or being substituted by one carboxy substituent;
said aryl groups have from 6 to 10 ring carbon atoms in at least one aromatic ring and are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents (b), defined below;
substituents (a) are selected from the group consisting of:
alkyl groups having from 1 to 6 carbon atoms; and groups of formula —NR^aR^b, where R^a and R^b are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 6 carbon atoms;
substituents (b) are selected from the group consisting of
alkyl groups having from 1 to 6 carbon atoms;
alkoxy groups having from 1 to 6 carbon atoms;
halogen atoms;
groups of formula —NR^aR^b, where R^a and R^b are defined above;
hydroxy groups; and
nitro groups;
and pharmaceutically acceptable salts and esters thereof.

5,298,517

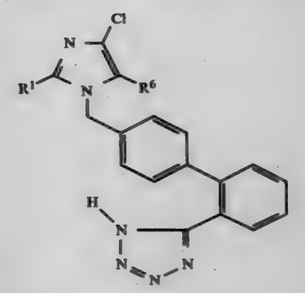
ANGIOTENSIN II RECEPTOR BLOCKING AGENTS

Jeremy I. Levin, Nanuet, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

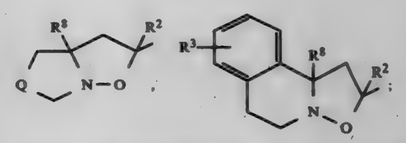
Filed Oct. 7, 1993, Ser. No. 133,686
Int. Cl.[5] A61K *31/42;* C07D *261/20*
U.S. Cl. 514—379 9 Claims

1. An imidazole compound having the formula:

FORMULA I



wherein:
R^1 is lower alkyl of 1 to 4 carbon atoms;
R^6 is



R^2 is hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridinyl, thienyl, furanyl;
R^8 is H, straight chain lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), —CO_2R^7;
R^7 is H, straight or branched chain lower alkyl of 1 to 4 carbon atoms;
Q is —(CR^8R^8)$_n$—;
n is 1 or 2;
R^3 is H, —CH_3, —CF_3, nitro, —OCH_3, F, Cl, Br; or the pharmaceutically acceptable salts thereof.

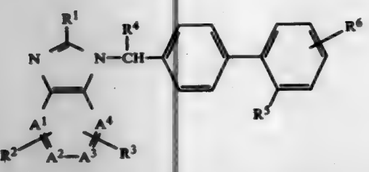
5,298,518

BIPHENYLMETHANE DERIVATIVE AND PHARMACOLOGICAL USE

Kazutoshi Miyake; Masayuki Matsukura; Naoki Yoneda, all of Ibaraki; Osamu Hiroshima, Chiba; Nobuyuki Mori, Ibaraki; Hiroki Ishihara, Ibaraki; Takashi Muske, Ibaraki; Toshiyuki Matsuoka, Ibaraki; Sachiyuki Hamano, Tokyo, and Norio Minami, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 675,155, Mar. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 583,025, Sep. 13, 1990. This application Mar. 6, 1992, Ser. No. 846,950
Claims priority, application Japan, Sep. 29, 1989, 1-251761; Dec. 27, 1989, 1-336640
Int. Cl.[5] A61K *31/415;* C07D *401/10, 235/28, 235/16*
U.S. Cl. 514—381 10 Claims

1. A biphenylmethane derivative having the formula (I):



in which R^1 is a cycloalkyl group having 3 to 6 carbon atoms, —S—R^7, or —SO_2R^7, wherein R^7 is hydrogen, a straight or branched chain alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms or a halogenated straight or branched chain alkyl group having 1 to 10 carbon atoms, —A^1=A^2—A^3=A^4— is —CH=CH—CH=CH—, R^2 and R^3 are each independently hydrogen, a halogen, a lower alkyl, a lower alkoxy, a carbamoyl or cyano, R^4 is hydrogen or a lower alkyl, R^5 is 1H-tetrazol-5-yl, carboxyl or an alkyl ester having 1 to 6 carbon atoms in the alkyl group, and R^6 is hydrogen, a halogen, hydroxyl or a lower alkoxy, or a pharmacologically acceptable salt thereof.

5,298,519

ACYLALS OF IMIDAZOLE-5-CARBOXYLIC ACID DERIVATIVES, AND THEIR USE AS ANGIOTENSIN (II) INHIBITORS

Dieter Binder, Wien, and Josef Weinberger, Bad Hall, both of Austria, assignors to Chemiah Pharmazeutische Forschungsgesellschaft m.b.H., Linz, Austria

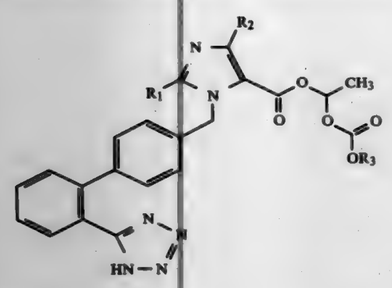
Filed Sep. 24, 1992, Ser. No. 950,181

Claims priority, application Austria, Oct. 4, 1991, A 1987

Int. Cl.[5] A61K *31/41, 31/415;* C07D *403/10*

U.S. Cl. 514—381 **8 Claims**

1. An imidazole-5-carboxylic acid acylal of the formula:



in which:

R_1 denotes a straight chain alkyl group having 1–6 carbon atoms or a straight chain alkenyl group having 2 to 6 carbon atoms,

R_2 denotes hydrogen, chlorine, bromine or CF_3

and R_3 denotes C_1–C_{10} alkyl; C_3–C_7 cycloalkyl or benzyl or their pharmaceutically acceptable salts.

5,298,520

TRIAZOLE CONTAINING INDOLE DERIVATIVES

Raymond Baker, Much Hadham; Victor G. Matassa, Furneux Pelham, and Leslie J. Street, Harlow, all of England, assignors to Merck Sharp & Dohme Limited, Hertfordshire, England

Filed Jan. 28, 1993, Ser. No. 827,187

Claims priority, application United Kingdom, Feb. 1, 1991, 9102222; Apr. 3, 1991, 9105917; Jun. 21, 1991, 9113415; Oct. 23, 1991, 9122451

Int. Cl.[5] A61K *31/41;* C07D *403/06*

U.S. Cl. 514—383 **6 Claims**

1. The compound which is N,N-dimethyl-2-[5-(1,2,4-triazol-1-ylmethyl)-1H-indol-3-yl]ethylamine, or a pharmaceutically acceptable salt thereof.

5,298,521

1,5-DIPHENYL-3-PYRAZOLYLALKYL-N-HYDROXYDITHIOCARAMATES, COMPOSITIONS AND USE

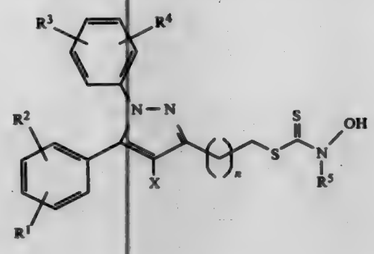
Michael Ferro, Bridgewater, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Aug. 30, 1993, Ser. No. 114,122

Int. Cl.[5] A61K *31/415;* C07D *231/12*

U.S. Cl. 514—406 **11 Claims**

1. An anti-inflammatory compound of the general formula:



wherein,

R^1 and R^2 are independently selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} perfluoroalkyl, halogen, C_{1-6} alkoxy, C_{1-6} alkylsulfinyl, C_{1-6} alkylsulfonyl and C_{1-6} alkylmercapto;

R^3 and R^4 are independently selected from the group consisting of hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, C_{1-6} perfluoroalkoxy, C_{1-6} alkylsulfinyl, C_{1-6} alkylsulfonyl and C_{1-6} alkylmercapto;

R^5 is selected from the group consisting of H, C_{1-6} alkyl, C_{1-6} cycloalkyl and phenyl;

n is 0, 1 or 2; and

X is selected from the group consisting of H, Cl, I and Br.

5,298,522

6-CHLORO-5-FLUORO-3-(2-THENOYL)-2-OXINDOLE-1-CARBOXAMIDE AS AN ANALGESIC AND ANTI-INFLAMMATORY AGENT WHILE MAINTAINING A NORMAL URINE PROTEIN/CREATININE RATIO

Kelvin Cooper, Nonal; Bruce H. Littman, Stonington; Christopher J. Pazoles, Waterford, and Keith D. Wilner, Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 22, 1993, Ser. No. 7,217

Int. Cl.[5] A61K *31/40*

U.S. Cl. 514—414 **1 Claim**

1. A method of eliciting an analgesic or anti-inflammatory response while maintaining a normal urine protein/creatinine ratio in a human subject suffering from pain or inflammatory condition, which human subject is susceptible to non-progressive, reversible proteinuria induced by 2-oxindole-1-carboxamide analgesics and antiinflammatories, which comprises administering to said human subject an effective analgesic or antiinflammatory and non-proteinuria eliciting amount of 6-chloro-5-fluoro-3-(2-thenoyl)-2-oxindole-1-carboxamide or a pharmaceutically accept-able base salt thereof.

5,298,523

METHOD FOR TREATING TRANSPLANT PATIENTS USING MYCALAMIDE COMPOUNDS

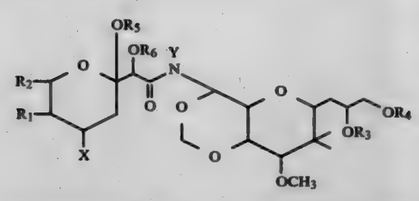
Ross E. Longley, Vero Beach, Fla., and Glynn T. Faircloth, Cambridge, Mass., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

Filed Dec. 14, 1992, Ser. No. 990,156

Int. Cl.[5] A61K *31/35;* A01N *43/32*

U.S. Cl. 514—452 **3 Claims**

2. A method for treating a transplant patient by effecting immune suppression in said patient said method comprising administering a therapeutically effective amount of a compound to said patient, said compound having the following structural formula:



wherein R^1 and R^2 are the same or different and are hydrogen or lower alkyl, particularly C1–C5 alkyl; R^{3-6} are the same or different and are hydrogen, lower alkyl, acyl, lower alkyl silyl, Bn, or Bz; X is =CH_2, —CH_3, or —O—CH_2; and Y is lower alkyl, Bn, or Bz.

5,298,524

ACIDIC POLYCYCLIC ETHER ANTIBIOTIC HAVING AN ANTICOCCIDIAL AND GROWTH PROMOTANT ACTIVITY

John P. Dirlam, Gales Ferry; Walter P. Cullen, East Lyme, both of Conn.; Hiroshi Maeda, and Junsuke Tone, both of Chita, Japan, assignors to Pfizer Inc., New York, N.Y.

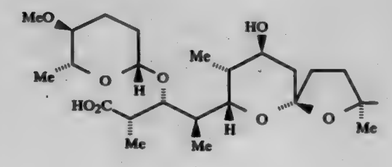
PCT No. PCT/US88/01954, § 371 Date Mar. 27, 1992, § 102(e) Date Mar. 27, 1992

PCT Filed Jun. 9, 1988, Ser. No. 655,440

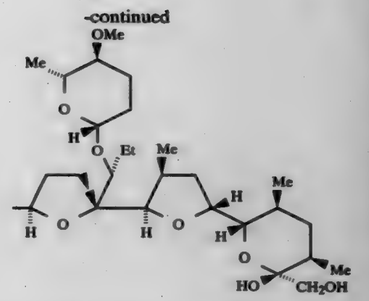
Int. Cl.[5] A01N *43/12*

U.S. Cl. 514—460 **9 Claims**

1. A compound having the formula



-continued



wherein Me=methyl and Et=ethyl, or a pharmaceutically acceptable cationic salt thereof.

5,298,525

DIABETES PREVENTION AND TREATMENT

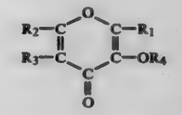
Ji-Won Yoon, and Tomoyuki Kawamura, both of Calgary, Canada, assignors to University Technologies International, Inc., Calgary, Canada

Filed Nov. 23, 1992, Ser. No. 978,958

Int. Cl.[5] A61K *31/35*

U.S. Cl. 514—460 **28 Claims**

1. A method for preventing type I diabetes in a mammal susceptible to developing said diabetes comprising administering to said mammal an effective amount of at least one compound of the formula I:



wherein R_1, R_2 and R_3 are independently selected from the group consisting of H, an alkyl of from 1 to 8 carbon atoms, an alkyl-o-alkyl of from 2 to 8 carbon atoms, a haloalkyl of from 1 to 8 carbon atoms and 1 to 3 halogen atoms, an alkenyl of from 2 to 8 carbon atoms with one site of unsaturation, ketones of from 2 to 8 carbon atoms, aldehydes of from 1 to 8 carbon atoms, and any of the above compounds which are alcohol-substituted; and R_4 is either H or —COR_5, wherein R_5 is an alkyl of from 1 to 5 carbon atoms; or a salt thereof.

5,298,526

OPTICALLY PURE STEREOGENICALLY LABILE 4-SUBSTITUTED-2-HYDROXYTETRONIC ACIDS AND PHARMACEUTICAL USE

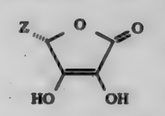
Donald T. Witiak, Mt. Vernon, Ohio, and Ashok K. Tehim, Montreal, Canada, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Division of Ser. No. 464,511, Jan. 12, 1990, Pat. No. 5,095,126. This application Mar. 6, 1992, Ser. No. 847,295

Int. Cl.[5] A61K *31/365;* C07D *307/62*

U.S. Cl. 514—473 **10 Claims**

1. An optically pure compound, 3,4-dihydroxy-5-substituted-2(5H)-furanone of the formula I:



wherein Z is selected from the group consisting of C_1–C_8

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straight or branched alkyl or alkoxy-substituted alkyl group, C_3–C_8 cycloalphatic group, a halo C_1–C_8 alkyl group, aryl or aralkyl group, and an aryl or aralkyl group substituted by one or more halogen, lower alkyl, alkoxy, or phenyl substituents, or a physiologically acceptable salt thereof.

5,298,527

ALPHA-PHENYLACRYLIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING PESTS AND HARMFUL FUNGI

Wassilios Grammenos, Ludwigshafen; Reinhard Kirstgen, Neustadt; Klaus Oberdorf, Heidelberg; Hubert Sauter, Mannheim; Franz Roehl, Ludwigshafen; Rainer Otter, Laudenbach; Eberhard Ammermann, Heppenheim; Gisela Lorenz, Neustadt; Uwe Kardorff, Mannheim, and Christoph Kuenast, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

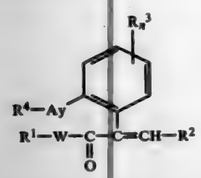
Continuation of Ser. No. 878,295, May 6, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 103,154

Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116090

Int. Cl.[5] A61K *31/085;* **C07C** *251/32*

U.S. Cl. 514—539 **9 Claims**

1. An α-Phenylacrylic acid compound of the formula I



I

where the variables have the following meanings:

n is 0, 1, 2, 3 or 4, the radicals R^3 being identical or different when n is 2, 3 or 4;

y is 1;

R is hydrogen;

C_1–C_{15}-alkyl, C_3–C_{15}-alkenyl, C_3–C_8-alkynyl or C_3–C_8-cycloalkyl, where these groups may carry from one to five halogen atoms; vinyl or ethynyl when W is a direct bond;

R^2 is cyano; C_2–C_4-alkenyl; C_2–C_4-alkynyl; C_5–C_6-cycloalkyl, where, in addition to carbon atoms, the ring may contain one or two heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, which in the case of oxygen and/or sulfur must not be adjacent to one another, and where the cyclic structure may additionally carry from one to three halogen or C_1–C_4-alkyl radicals;

C_1–C_4-alkyl which may be unsubstituted or partially or completely halogenated; C_1–C_2-alkyl which carries C_1–C_4-alkoxy, C_1–C_4-alkylthio or a 3-membered to 6-membered cyclic radical which, in addition to carbon atoms may contain one or two heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, which in the case of oxygen and/or sulfur must not be adjacent to one another, and where the cyclic structure may additionally carry from one to three halogen and C_1–C_4-alkyl radicals;

R^3 is hydrogen; nitro; cyano; halogen; C_1–C_4-alkyl; C_1–C_4-alkoxy; partially or completely halogenated C_1–C_4-alkyl; partially or completely halogenated C_1–C_4-alkoxy or C_1–C_4-alkylthio;

or, where n is 2, 3 or 4, two adjacent substituents R^3 together form a 1,3-butadien-1,4-diyl group which may carry from one to four halogen atoms and/or one or two of the following groups; nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, partially or completely halogenated C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkoxy or C_1–C_4-alkylthio;

R^4 is phenyl which carries a radical $—CR^7—NO—R^8$ and which may further carry one or two radicals R^9, where

R^7 denotes hydrogen; C_1–C_6-alkyl; or phenyl, naphthyl or anthranyl, where these radicals may carry from one to three of the following radicals; cyano, cyanato, thiocyanato, nitro, amino, hydroxyl, carboxyl, halogen, C_1–C_6-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio, and where the aromatic radicals may additionally carry a number of halogen atoms such that the total number of their substituents is 4 or 5;

R^8 is C_1–C_4-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl; where these groups may carry from one to five halogen atoms and one to three of the following radicals; cyano, nitro, C_1–C_4-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, C_3–C_4-cycloalkyl or a 5-membered or 6-membered aromatic or heteroaromatic system, where the cyclic radicals in turn may carry from one to three of the following radicals; cyano, nitro, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and C_1–C_4-alkylthio, and where the aromatic radicals may additionally carry a number of halogen atoms such that the total number of their substituents is 4 or 5; and

R^9 is cyano; halogen; C_1–C_4-alkyl; C_1–C_4-haloalkyl or C_1–C_4-alkoxy;

W is a direct bond; oxygen; sulfur or nitrogen, where the nitrogen may carry hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy;

A is —O—; —(=O)—; —O—(=O)—; —C(=O)—O—; —S—; —S(=O)—; —O—S(=O)—; —S(=O)—O—; —S(=O)$_2$—; —O—S(=O)$_2$—; —S(=O)$_2$—O—; —NR^5—; —O—NR^5—; —NR^5—; —C(=O)—; —C(=O)—NR^5—; —NR^5—C(=O)—NR^6—; —S(=O)—NR^5—; —NR^5—S(=O)$_2$—; —S(=O)$_2$—NR^5—; —N=N—; —NR^5—NR^6—; —NR^5—NR^6—C(=O)—; —C(=O)—NR^5—NR^6—; —NR^5—NR^6—S(=O)$_2$—; —O—(C$_2$–C$_4$-alkylene)—O—; —C(=O)—(C$_2$–C$_4$-alkylene)—O—; —O—C(=O)—(C$_2$–C$_4$-alkylene)—O—; —C(=O)—O—(C$_2$–C$_4$-alkylene)—O—; —S—(C$_2$–C$_4$-alkylene)—O—; —S(=O)$_2$—(C$_2$–C$_4$-alkylene)—O—; —O—S(=O)$_2$—(C$_2$–C$_4$-alkylene)—O—; —S(=O)$_2$—O—(C$_2$–C$_4$-alkylene)—O—; —NR^5—(C$_2$–C$_4$-alkylene)—O—; —O—NR^5—(C$_2$–C$_4$-alkylene)—O—; —NR^5—C(=O)—(C$_2$–C$_4$-alkylene)—O—; —C(=O)—NR^5—(C$_2$–C$_4$-alkylene)—O—; —NR^5—C(=O)—NR^6—(C$_2$–C$_4$-alkylene)—O—; —NR^5—NR^6—(C$_2$–C$_4$-alkylene)—O—; —NR^5—NR^6—C(=O)—(C$_2$–C$_4$-alkylene)—O—; —C(=O)—NR^5—NR^6—(C$_2$–C$_4$-alkylene)—O—; C_1–C_6-alkylene, C_2–C_6-alkenylene or C_2–C_6-alkynylene, where these carbon chains may carry from one to four radicals selected from the group consisting of C_1–C_4-alkyl and halogen, and may be interrupted by one of the following groups or bonded to R^4 or to the phenyl ring by ones of the following groups: —O—, —S—, —NR^5—, —C(=O)—, —C(=O)—O—, —O—C(=O)—, —S(=O)—, —S(=O)$_2$—, —S(=O)$_2$—O—, —O—S(=O)$_2$—, —NR^5—C(=O)—, —C(=O)—NR^5—, —NR^5—C(=O)—NR^6—, —N=N—, —NR^5—NR^6—, —NR^5—NR^6—C(=O)— and —C(=O)—NR^5—NR^5—NR^6—; and

R^5 and R^6 independently of each other are hydrogen; C_1–C_4-alkyl or C_1–C_4-alkoxy.

5,298,528

INSECT REPELLENT

Hans Evers, Sodertalje, Sweden, assignor to Baker Cummins Dermatologicals, Inc., Miami, Fla.

Filed Oct. 6, 1992, Ser. No. 957,435

Claims priority, application Sweden, Oct. 7, 1991, 9102890

Int. Cl.[5] A01N *37/18, 33/02, 25/00*

U.S. Cl. 514—626 **8 Claims**

1. A method of preventing mosquitoes from feeding on a human or non-human animal subject comprising applying to the skin of the subject a topical composition, comprising as the feeding preventive active ingredient from about 0.3 to about 5.0% by weight of a local anesthetic selected from the group consisting of lidocaine, prilocaine, etidocaine, mepivacaine, ketocaine, kinizocaine, procaine, tetracaine and mixtures thereof.

5,298,529

METHOD OF STABILIZING AQUEOUS MICROEMULSIONS USING A SURFACE ACTIVE HYDROPHOBIC ACID AS A BUFFERING AGENT

Kolazi S. Narayanan, Palisades Park, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 777,033, Oct. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Nov. 19, 1992, Ser. No. 978,599

Int. Cl.[5] A01N *25/00*

U.S. Cl. 514—788 **19 Claims**

1. A method of stabilizing an aqueous microemulsion containing a water-insoluble agriculturally active ingredient which aqueous microemulsion normally is chemically unstable due to hydrolysis under basic conditions and/or physically unstable due to precipitation of the active ingredient even when acid buffered with an inorganic acid comprising buffering the aqueous microemulsion to an acid condition with a hydrophobic acid which includes a surface active anion capable of entering the micelles of the microemulsion and a hydrogen ion to buffer the aqueous medium of the microemulsion to the desired acid condition without substantially increasing the ionic strength of the medium.

5,298,530

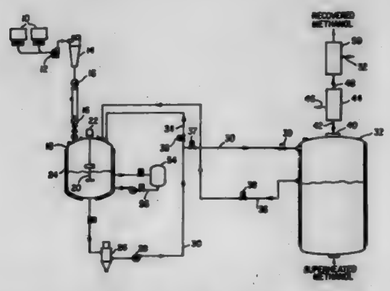
PROCESS OF RECOVERING COMPONENTS FROM SCRAP POLYESTER

William J. Gamble, Rochester; Andrius A. Naujokas, Webster, and Bruce R. DeBruin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,688

Int. Cl.[5] C08J *11/04*

U.S. Cl. 521—48.5 **8 Claims**



1. A process of recovering components from scrap polyester comprising polyethylene terephthalate, comprising the steps of:

(a) introducing glycol and terephthalic acid or dimethyl terephthalate oligomers to a first vessel and heating the oligomers;

(b) introducing scrap polyesters to the first vessel and forming a startup melt with the oligomers;

(c) transferring melt from the first vessel to a second vessel;

(d) passing super-heated methanol through the melt in the second vessel to form a final melt comprising low molecular weight polyesters and monomers;

(e) transferring final melt from the second vessel to the first vessel; and

(f) recovering components in the form of a vapor stream exiting the second vessel.

5,298,531

PROCESS FOR THE PREPARATION OF POLYIMIDE FOAM

Motoshi Ishikura, and Nobuyuki Watanabe, both of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 689,277, Jun. 12, 1991. This application Mar. 3, 1993, Ser. No. 25,896

Claims priority, application Japan, Jun. 19, 1990, 2-10118

Int. Cl.[5] C08J *9/02*

U.S. Cl. 521—184 **4 Claims**

1. A polyimide foam prepared by heating a polyimide precursor comprising an alkyl ester of 4,4'-oxydiphthalic acid and a diamine as the main components.

5,298,532

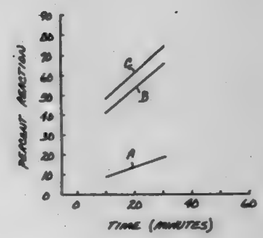
METHOD OF ACCELERATING PHOTOINIFERTER POLYMERIZATION, POLYMER PRODUCED THEREBY, AND PRODUCT PRODUCED THEREWITH

Mahfuza B. Ali, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 454,374, Dec. 21, 1989, Pat. No. 5,093,385. This application Feb. 28, 1992, Ser. No. 843,562

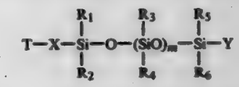
Int. Cl.[5] C08F *2/50, 293/00;* **C08G** *77/442;* **C08L** *83/10*

U.S. Cl. 522—27 **4 Claims**

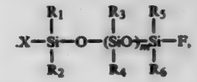


1. A method of making a vinyl-siloxane copolymer comprising

mixing (i) an iniferter represented by the general formula



wherein T and X are organic groups selected so that the T—X bond is capable of dissociating upon being subjected to a radiant energy source to form terminator free radical of the formula nT. and an initiator free radical of the formula $(I.)_n$ wherein $(I.)_n$ represents the formula



wherein n represents an integer of at least 1, said initiator free radical being sufficiently reactive to initiate free radi-

cal polymerization of free radically polymerizable monomer and said terminator free radical being insufficiently capable of initiating free radical polymerization of free radically polymerizable monomer but capable of rejoining with said initiator free radical or a free radical polymer segment free radically polymerized with said initiator free radical;

wherein T is



wherein R_7 and R_8 are monovalent moieties selected from the group consisting of hydrogen, C_{1-4} alkyl, C_{1-4} fluoroalkyl including at least one fluorine atom, aryl and substituted aryl, R_7 and R_8 being the same or different and being selected so that they will not prevent said initiator free radical from initiating free radical polymerization or the combining of said terminator free radical segment including said initiator free radical; or

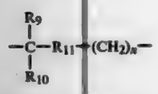
wherein T is



wherein R_{12} is a monovalent moiety selected from the group consisting of hydrogen, C_{1-4} alkyl, aryl and substituted aryl;

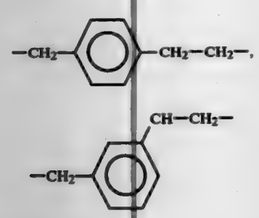
wherein —X— is a divalent species selected from the group consisting of alkylene, arylalkene, and arylene; or

wherein —X— is a divalent species having the general formula



wherein R_9 and R_{10} can be the same or different and are selected from the group consisting of hydrogen and C_{1-6} alkyl, R_{11} is a divalent species selected from the group consisting of C_{1-7} alkylene and phenylene, and n is an integer of at least 1; or

wherein X is selected from the group consisting of



and mixtures thereof;

R_1, R_2, R_5, and R_6 are monovalent moieties selected from the group consisting of hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy and aryl which can be the same or are different;

R_3 and R_4 are monovalent moieties which can be the same or different selected from the group consisting of C_{1-4} alkyl, C_{1-4} fluoroalkyl including at least one fluorine atom and aryl;

R_1, R_2, R_3, R_4, R_5, and R_6 are selected so that they do not prevent said initiator free radical from initiating free radical polymerization or the combining of said terminator free radical with said initiator free radical or a polymer free radical segment including said initiator free radical;

Y is selected from the group consisting of —X—T and —Z

wherein X and T are defined as above and Z is an organic moiety that will not dissociate to form free radicals when subjected to said energy source;

F is selected from the group consisting of —X. and —Z;

m is an integer of 10 or greater; and

(ii) a first monomer charge comprising free radically polymerizable monomer selected from the group consisting of styrene, methyl methacrylate, methyl acrylate, acrylic acid, vinyl acetate, acrylonitrile, isobornyl methacrylate, N-vinyl pyrrolidone, butyl methacrylate, isopropyl methacrylate, N-methyl perfluorooctance sulfonamido ethyl acrylate, N-ethyl perfluorooctane sulfonamido ethyl acrylate, hydroxy propyl acrylate, hydroxy ethyl acrylate, butyl acrylate, isooctyl acrylate, and mixtures thereof; in order to form a first mixture;

exposing the mixture to an energy source capable of forming free radicals $I(.)_n$ and nT.;

maintaining the exposure until said free radically polymerizable monomer of said first monomer charge polymerizes with $I(.)_n$ to form a free radical polymer segment represented by the formula $I(A'.)_n$,

wherein A' comprises a polymer block comprising polymerized free radically polymerizable monomer of said first monomer charge;

terminating said exposure, whereby $I(A'.)_n$ and nT. combine to form a polymer represented by the formula $I(A')_nT$ or alternatively maintaining the exposure of $I(A'.)_n$ and nT. to said energy source;

optionally mixing $I(A')_nT$ or mixing $I(A'.)_n$ and nT. with a second monomer charge comprising free radically polymerizable monomer selected from the group consisting of styrene, methyl methacrylate, methyl acrylate, acrylic acid, vinyl acetate, acrylonitrile, isobornyl methacrylate, N-vinyl pyrrolidone, butyl methacrylate, isopropyl methacrylate, N-methyl perfluorooctane sulfonamido ethyl acrylate, N-ethyl perfluorooctance sulfonamido ethyl acrylate, hydroxy propyl acrylate, hydroxy ethyl acrylate, butyl acrylate, isooctyl acrylate, and mixtures thereof, in order to form a second mixture;

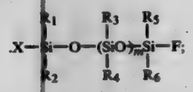
wherein said monomer selected for said second monomer charge differs from said monomer selected for said first monomer charge;

exposing the mixture of $I(A'T)_n$ and said second monomer charge to a radiant energy source capable of forming free radicals $I(A'.)_n$ and nT. or alternatively maintaining the exposure of $I(A'.)_n$ and nT., which is mixed with said second monomer charge, to said energy source;

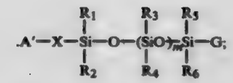
maintaining said exposure until the free radically polymerizable monomer of said second monomer charge polymerizes with the free radical $I(A'.)_n$ to form a free radical copolymer segment represented by the formula $I(A'A''.)_n$ wherein A'' comprises a polymer block comprising polymerized free radically polymerizable monomer of said second monomer charge;

and terminating said exposure whereby $I(A'A'')_n$ and nT. combine to form a block copolymer represented by the formula $I(A'A''T)_n$;

said exposing the first mixture to an energy source forms free radicals nT. and



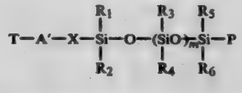
said maintaining the exposure results in the polymerization of said initiator radical and said free radically polymerizable monomer of said first monomer charge to form a free radical block copolymer segment represented by the formula



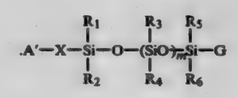
wherein A' represents a polymer block comprising polymerized free radically polymerizable monomer of said first monomer charge; and

G is selected from the group consisting of —Z and —X—A'.;

said terminating said exposure forms a block copolymer represented by the formula

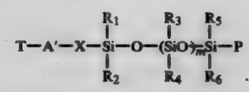


wherein P is selected from the group consisting of —X—A'—T and —Z, wherein X, A', T and Z are defined above or alternatively maintaining said exposure of

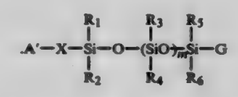


and nT.;

said optionally mixing

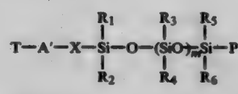


or said mixing nT. and

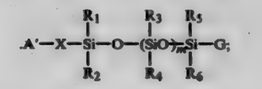


with said second monomer charge comprising free radically polymerizable monomer forms said second mixture;

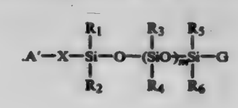
said exposing said mixture of



and said second monomer charge to a radiant energy source capable of forming free radical nT. and

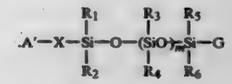


or alternatively maintaining said exposure of

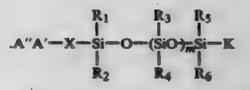


and nT., which is mixed with said second monomer charge, to said energy source;

said maintaining said exposure results in the polymerization of said free radically polymerizable monomer with the free radical



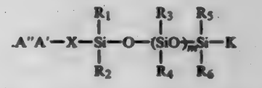
to form a free radical block copolymer segment represented by the formula



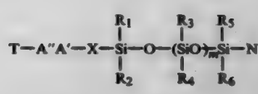
wherein A'' represents a polymer block comprising polymerized free radically polymerizable second monomer; and

K is selected from the group consisting of —X—A'—A''. and —Z; and

said terminating said exposure results in the combining of



and nT. to form a block copolymer represented by the formula



wherein N is selected from the group consisting of —X—A'A''T and —Z;

wherein the improvement comprises adding a polymerization accelerating amount of at least one metal compound, wherein said metal compound is present during the polymerization of at least one monomer charge, and wherein said metal compound does not interact with said free radically polymerizable monomer of said first monomer charge or said free radically polymerizable monomer of said second monomer charge in order to form an insoluble compound in an amount which would substantially interfere with the free radical polymerization of said free radically polymerizable monomer of said first monomer charge or said free radically polymerizable monomer of said second monomer charge and wherein $I(A.T)_n$ or $I(A'A''T)_n$ is characterized by including residual metal compound,

wherein the metal compound is represented by the general formula M_xL_z wherein

M is a cation having a valency of z of a metal which is selected from the group consisting of tin, zinc, cobalt, titanium, palladium, and lead;

x is an integer of at least 1;

L is an anion having a valency of x which is selected from the group consisting of C_{1-20} alkyl, aryl, —OR, —OC(=O)—R, NO_3, SO_4^{-2}, and PO_4^{-3};

R is selected from the group consisting of C_{1-20} alkyl, aryl; and

z is an integer of at least 1.

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5,298,533

POLYMER COMPOSITIONS FOR CONTACT LENSES

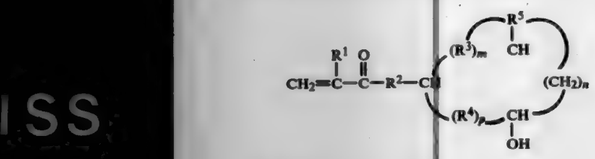
Mahendra P. Nanda, Rochester, and Jay F. Kunzler, Canandaigua, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,169
Int. Cl.[5] C08F *220/28, 220/26*
U.S. Cl. 523—106 3 Claims

1. A hydrogel shaped article which is the hydrated polymerization product of a mixture consisting of:

(a) N,N-dimethylacrylamide

(b) at least one monomer represented by the formula:



wherein:

R^1 is methyl or hydrogen;

R^2 is —O— or —NH—;

R^3 and R^4 are independently a divalent radical selected from the group consisting of $—CH_2—$, —CHOH— and $—CHR^6—$;

R^5 and R^6 are independently a branched C_3–C_8 alkyl group; and

n is an integer of at least 1, and m and p are independently 0 or an integer of at least 1, provided that the sum of m, p and n is 2, 3, 4 or 5;

(c) 2-hydroxyethyl methacrylate;

(d) at least one crosslinking monomer;

(e) at least one polymerization initiator; and optionally,

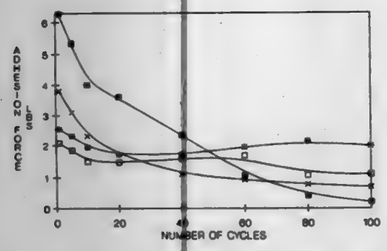
(f) a diluent.

5,298,534

DENTURE ADHESIVE

William E. Proske, Ramsey, and Mahmoud Amiu, Flemington, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 1, 1993, Ser. No. 24,135
Int. Cl.[5] A61C *13/23;* C08L *93/00*
U.S. Cl. 523—120 17 Claims



1. An improved denture adhesive composition having extended holding time and viscosity retaining properties consisting essentially of (a) from about 10 to about 35 wt. % lower alkyl vinyl ether-maleic acid copolymer wherein from about 0 to about 90 wt. % of the carboxyl units in the polymer is converted to a mixture of metal salts, which metals are selected from the group consisting of calcium, sodium, strontium, zinc, magnesium and potassium, (b) a natural-boron crosslinked guar gum in a weight ratio of between about 0.75:1and about 5:1with respect to said copolymer of component (a) and (c) from about 30 to about 70 wt. % of an oil carrier.

5,298,535

PIGMENT COMPOSITIONS FOR SOLVENT AND WATER-BASED INK SYSTEMS AND THE METHODS FOR PRODUCING THEM

Joseph Kammer, Warwick, R.I., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 5, 1992, Ser. No. 956,149
Int. Cl.[5] C08K *5/23*
U.S. Cl. 524—190 24 Claims

1. An azo pigment composition comprising an azo pigment selected from the group consisting of the monoazo and disazo pigments and a water-insoluble, metal salt of a water soluble polymer wherein said polymer in its water soluble form has sufficient acid group substitution to render said polymer soluble in water or aqueous base.

5,298,536

FLAME RETARDANT ORGANOSILICON POLYMER COMPOSITION, PROCESS FOR MAKING SAME, AND ARTICLE PRODUCED THEREFROM

Laura M. Babcock; John K. Bard, and Raymond T. Leibfried, Sr., all of New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 21, 1992, Ser. No. 839,610
Int. Cl.[5] C08L *83/00*
U.S. Cl. 523—201 34 Claims

1. An organosilicon composition comprising at least one member selected from the group consisting of an organosilicon polymer and an organosilicon prepolymer, wherein the organosilicon polymer or prepolymer comprises residues of at least one silicon-containing compound and at least one polycyclic polyene compound linked through carbon to silicon bonds, wherein the silicon-containing compound comprises at least one member selected from the group consisting of:

A. cyclic polysiloxane compounds containing at least two hydrosilation reactive ≡SiH groups;

B. tetrahedral siloxysilane compounds containing at least two hydrosilation reactive ≡SiH groups; and

C. linear poly(organohydrosiloxane) polymers containing at least two hydrosilation reactive ≡SiH groups,

wherein the polycyclic polyene compound contains at least two hydrosilation reactive carbon-carbon double bonds; wherein at least a substantial portion of at least one member selected from the group consisting of the silicon-containing compound and the polycyclic polyene compound has more than two reactive sites; wherein the composition further comprises at least one flame retardant composition which comprises at least one member selected from the group consisting of halogen containing compounds and halogen containing residues; and wherein 5 inch by ½ inch by ¼ inch crosslinked polymer specimens of the organosilicon composition exhibit flammability characteristics which meet the criteria for the UL94V-1 rating according to Underwriters Laboratories Tests for Flammability of Plastic Materials UL94 Vertical Burn Test.

5,298,537

POLYOXYMETHYLENE COMPOSITIONS CONTAINING AT LEAST ONE ENCAPSULATED NUCLEANT

Shailaja R. Vaidya, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 9, 1992, Ser. No. 865,880
Int. Cl.[5] C08K *9/10*
U.S. Cl. 523—205 7 Claims

1. A composition consisting essentially of

(a) at least one polyoxymethylene and

(b) at least one encapsulated nucleant, said encapsulated nucleant consisting essentially of

(b)(1) 50–90 weight percent of an encapsulant polymer selected from the group consisting of linear low density polyethylene, high density polyethylene, and polypropylene, and wherein the encapsulant polymer has a solid density of equal to or less than 1 gram per cubic centimeter, and

(b)(2) 10–50 weight percent of a nucleant, and wherein the weight percent of component (b)(1) and component (b)(2) is based upon the weight of component (b)(1) and component (b)(2) only,

and provided that the quantity of the component (b) encapsulated nucleant added to the composition is such that the quantity of the component (b)(2) nucleant in the polyoxymethylene composition is 0.001–0.5 weight percent, as based on the weight of the polyoxymethylene component only.

5,298,538

PLASTICIZING RESINS, AQUEOUS DISPERSIONS THEREOF AND METHODS OF MAKING THE SAME

Klaus Cibura, Munster, Fed. Rep. of Germany; Yali F. Hallock, Milford, Mich.; John A. Gilbert, Birmingham, Mich., and John D. McGee, Highland, Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Apr. 11, 1990, Ser. No. 507,927
Int. Cl.[5] C08K *3/20*
U.S. Cl. 523—404 17 Claims

1. An aqueous dispersion comprising a plasticizing resin comprising the reaction product of:

(1) a polyoxyalkylene polyamine, wherein the amount of triamine, if present, is no greater than 20% based on equivalence of reactive amine in the mixture;

(2) a formaldehyde;

(3) a phenol containing at least two active hydrogens; and

(4) a polyepoxide; wherein the polyepoxide reacts with either the polyoxyalkylenepolyamine to form an amine-functional adduct or with the phenol to form a phenol-functional adduct or with both to form both amine-functional and phenol-functional adducts, and

wherein the aqueous dispersion further comprises an additional cationic resin different from said plasticizing resin, and wherein said plasticizing resin is present in an amount ranging from 0.5 to 30 percent by nonvolatile weight of said dispersion.

5,298,539

ADDITIVES FOR IMPROVING TIRE CORD ADHESION AND TOUGHNESS OF VULCANIZED RUBBER COMPOSITIONS

Balwant Singh, and John A. Sedlak, both of Stamford, Conn., assignors to Cytec Industries, Inc., Stamford, Conn.

Filed Sep. 5, 1990, Ser. No. 578,489
Int. Cl.[5] C08K *5/34*
U.S. Cl. 524—92 43 Claims

1. A vulcanizable rubber composition comprising uncured rubber, a vulcanizing agent and at least one additive selected from the group consisting of derivatives of melamine, acetoguanamine, benzoguanamine, cyclohexylguanamine and glycoluril monomers and oligomers of these monomers, which has been substituted on average at two or more positions on the monomer or on each unit of the oligomer with vinyl terminated radicals, the vulcanizable rubber composition being free of resorcinol.

5,298,540

PROCESS FOR STABILIZING RECYCLED MIXED PLASTICS

Jean-Roch Pauquet, Kaiseraugst; Franciszek Sitek, Therwil, and Roberto Todesco, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 25, 1992, Ser. No. 856,238
Claims priority, application Switzerland, Mar. 27, 1991, 937/91-7
Int. Cl.[5] C08K *5/34, 5/13, 5/53*
U.S. Cl. 524—94 13 Claims

1. A process for stabilising a recycled mixture of thermoplastic polymers recovered from domestic and commercial waste, which mixture comprises 55–75% by weight of polyolefins, 5–25% by weight of polystyrene, 5–15% by weight of polyvinyl chloride and 0–10% by weight of other thermoplastic polymers, which process comprises

incorporating in said mixture 0.05 to 2% by weight, based on the weight of the mixture, of a combination of (a) at least one sterically hindered phenol, and (b) at least one phosphite or phosphonite, wherein the weight ratio of (a):(b) is 10:1 to 1:10.

5,298,541

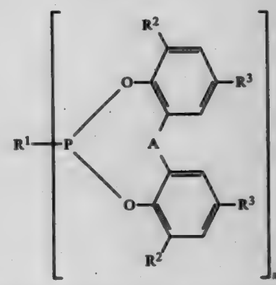
ARYL PHOSPHONITES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE FOR STABILIZING PLASTICS

Manfred Böhshar, Kelkheim; Hans-Jerg Kleiner, Kronberg, and Gerhard Pfahler, Augsburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/00787, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO90/14349, PCT Pub. Date Nov. 29, 1990
PCT Filed May 16, 1990, Ser. No. 776,387
Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916502; Jul. 15, 1989, 3923492
Int. Cl.[5] C08K *5/5393;* C07F *9/6574, 9/48*
U.S. Cl. 524—126 17 Claims

1. A process for the preparation of aryl phosphonites of the formula (V)

(V)



in which A is non-existent or a direct bond or a divalent hydrocarbon bridge having 1 to 6 carbon atoms which may be substituted by groups mentioned further below under R^1, or is a hetero atom, cycloalkylidene having 4 to 8 carbon atoms or phenylalkylidene having 7 to 12 carbon atoms, n is 1 or 2, R^1 as monovalent radical is a non-aromatic hydrocarbon radical having 1 to 18 carbon atoms, a phenyl or benzyl radical, each of which can carry 1 to 3 substituents, or is α-methylbenzyl, α,α-dimethylbenzyl, naphthyl or a naphthyl radical carrying 1 to 5 substituents, in which the substituents are identical or different and are a non-aromatic hydrocarbon radical, an alkoxy radical, an alkylthio radical or a dialkylamino radical, in which the alkyl radicals each have 1 to 8 carbon atoms, aryl or aryloxy each having 6 to 10 carbon atoms or halogen having an atomic number from 9 to 35, and as divalent radical a phenylene radical which is unsubstituted or is substituted by up to 2 non-aromatic hydrocarbon radicals each having 1 to 8 carbon atoms or a naphthylene radical which is unsubstituted or carries 1 to 4 non-aromatic hydrocarbon radicals each having 1 to 8 carbon atoms as substituents; or, if both phenyl radicals are bonded via A, can also be biphenylene,

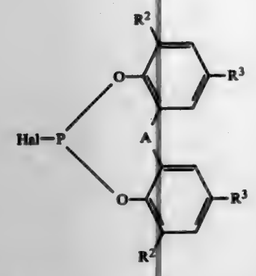
R^2 is a non-aromatic hydrocarbon radical having 1 to 18 carbon atoms, aryl, arylmethyl, arylethyl or arylisopropyl, in which the aryl in each case contains 6 to 10 carbon atoms, and

R^3 is hydrogen or a group mentioned under R^2,

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which comprises reacting in a first step a hydrocarbon halide $R^1(-Hal)_n$, in which R^1 has the above-mentioned meaning, n is=1 or 2 and the halogen has an atomic weight of at least 35, under Grignard conditions with at least molar amounts of magnesium to give the corresponding Grignard compounds $R^1(MgHal)_n$ and reacting these in a second step with bisaryl halophosphonites of the formula VI

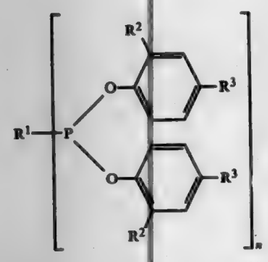
(VI)



in which A, R^2, R^3 and Hal have the above-mentioned meaning, with the formation of the aryl phosphonites (V).

8. An aryl phosphonite of the formula (I)

(I)



in which n is 1 or 2,

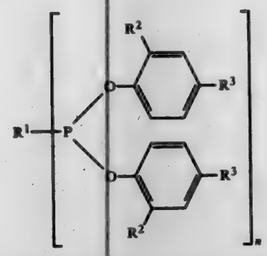
R^1 as monovalent radical is a naphthyl radical which is unsubstituted or is substituted by 1 to 5 substituents, which can be identical or different and are a non-aromatic hydrocarbon radical, an alkoxy radical, an alkylthio radical or a dialkylamino radical, in which the alkyl radicals each have 1 to 8 carbon atoms, aryl or aryloxy each having 6 to 10 carbon atoms or halogen having an atomic number from 9 to 35, and as divalent radical a naphthylene radical which is unsubstituted or carries 1 to 4 non-aromatic hydrocarbon radicals each having 1 to 8 carbon atoms as substituents or a phenylene radical which is unsubstituted or is substituted by up to 2 non-aromatic hydrocarbon radicals each having 1 to 8 carbon atoms,

R^2 is a non-aromatic hydrocarbon radical having 1 to 18 carbon atoms, aryl, arylmethyl, arylethyl or arylisopropyl, in which the aryl in each case contains 6 to 10 carbon atoms, and

R^3 is hydrogen or a group mentioned under R^2.

13. A plastic molding composition containing a thermoplastic or thermoset plastic and an aryl phosphonite of the formula (I)

(I)



in a ratio of (90 to 99.9):(0.1 to 10), in which in formula (I) n, R^1, R^2 and R^3 have the same meaning as in claim 8.

14. The plastic molding composition as claimed in claim 13, wherein the plastic is a polyolefin.

5,298,542

ACRYLIC ESTER COPOLYMER PLASTISOL COMPOSITION

Eitaro Nakamura, Tokyo; Toshio Nagase, Tsukuba; Akira Nakayama, Yokosuka; Yutaka Kagoshima, and Atsushi Tsukamoto, both of Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Japan

Filed Nov. 25, 1992, Ser. No. 981,724

Claims priority, application Japan, Nov. 27, 1991, 3-337760

Int. Cl.[5] C08K *5/12, 5/11*

U.S. Cl. 524—297 **18 Claims**

1. An acrylic ester copolymer plastisol composition comprising (A) copolymer particles comprising, as the major components thereof, (a) 98 to 50 weight % of an alkyl acrylate unit having an alkyl group 1 to 8 carbon atoms and/or an alkyl methacrylate unit having an alkyl group of 1 to 8 carbon atoms and (b) 2 to 50 weight % of a diene monomer unit and (B) a plasticizer.

5,298,543

STORAGE STABLE UNSATURATED THERMOSETTABLE RESINS AND CURED PRODUCTS

Paul L. Wykowski, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 861,685, Apr. 1, 1992, which is a continuation-in-part of Ser. No. 464,491, Jan. 12, 1990, abandoned. This application Jul. 28, 1993, Ser. No. 99,107

Int. Cl.[5] C08J *5/08*

U.S. Cl. 524—358 **9 Claims**

1. A curable composition comprising (I) a resin composition comprising (1) at least one vinyl ester resin resulting from reacting a polyepoxide with an unsaturated monocarboxylic acid; and (2) at least one 1,4-naphthoquinone substituted on the 2 or 3 or both the 2 and 3 positions with a Cl, Br, nitro or cyano substituent; wherein component (2) is present in an amount from about 5 to about 20,000 parts per million parts by weight based upon the combined weight of components (1) and (2); and (II) a curing amount of at least one curing agent for component (I).

5,298,544

NON-HALOGEN FLAME RETARDANT THERMOPLASTIC COMPOSITION

Leslie J. Goff, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 5, 1993, Ser. No. 102,606

Int. Cl.[5] C08K *3/38, 3/26*

U.S. Cl. 524—405 **7 Claims**

1. A non-halogen thermoplastic flame retarded molding composition consisting essentially of a thermoplastic resin selected from the group consisting of copolyetherimide esters and copolyether esters and mixtures thereof and an effective amount of a non-halogen flame retardant selected from the group consisting of magnesium carbonate and mixtures of magnesium carbonate and calcium carbonate in combination with a material selected from the group consisting of zinc borate, zinc oxide and mixtures thereof.

5,298,545

BASIC CALCIUM ALUMINUM HYDROXY PHOSPHITES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Coriolan Razvan; Reinhard Beck; Albert Puerzer; Alfred Kuerzinger, and Michael Rosenthal, all of Munich, Fed. Rep. of Germany, assignors to Boerlocher GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/EP90/02227, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/08984, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 18, 1990, Ser. No. 867,222

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1989, 3941902

Int. Cl.[5] C01B *25/45;* **C08K** *3/32*

U.S. Cl. 524—414 **7 Claims**

1. Basic calcium aluminum hydroxy phosphites of the general formula

$$Ca_xAl_2(OH)_{2(x+2)}HPO_3{\cdot}mH_2O$$

wherein

x=3–8 and

m=0–12.

5,298,546

THERMOPLASTIC MOLDING COMPOUNDS OF POLYALKYLENE TEREPHTHALATE, SPECIAL BARIUM SULFATE, PARTICULATE GRAFT POLYMERS AND, OPTIONALLY, REINFORCING MATERIALS

Jürgen Kirsch, Cologne; Karl-Erwin Piejko, Bergisch Gladbach; Christian Lindner, Cologne; Karsten-Josef Idel, Krefeld, and Hans-Georg Gehrke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1990, Ser. No. 580,073

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1989, 3931772

Int. Cl.[5] C08K *3/30*

U.S. Cl. 524—423 **4 Claims**

1. Thermoplastic molding compounds of

A) 1 to 99 parts by weight polyalkylene terephthalate,

B) 0.1 to 15 parts by weight barium sulfate having a chemoreactive surface produced by precipitation of barium ions with sulfate ions in aqueous medium in the presence of additional anions of water soluble compounds which can be precipitated with barium ions and form sparingly soluble barium compounds, the chemoreactive barium sulfate obtained, optionally aftertreated with coupling gents, having particle sizes of <0.1 μm, 80 to 5 m^2/g (BET)

C) 1 to 35 parts by weight of a particulate graft polymer of 35 to 95 parts by weight of an at least partly crosslinked rubber base of olefin, diene, acrylate and/or silicone rubbers grafted with 5 to 65 parts by weight vinyl monomers selected from styrenes, α-methyl styrenes, acrylonitrile, methacrylonitrile, C_{1-8} alkyl (meth)acrylate, C_{1-4} carboxylic acid vinyl ester, maleic anhydride, maleic acid imides, maleic acid semiesters, (meth)acrylates containing reactive groups in the alcohol radical or mixtures thereof and optionally,

D) 0.1 to 50 parts by weight, based on components A), B) and C), or fillers and/or reinforcing materials and/or flame retardant agents,

with the proviso that components A) to D) add up to 100 parts by weight.

5,298,547

FLAMEPROOF THERMOPLASTIC MOLDING MATERIALS

Brigitte Gareiss, Schillerstrasse 65, 6700 Ludwigshafen, and Karl Schlichting, Virchowstrasse 12, 6712 Bobenheim-Roxheim, both of Fed. Rep. of Germany

Filed Nov. 20, 1992, Ser. No. 979,320

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1991, 4138386

Int. Cl.[5] C08K *3/26*

U.S. Cl. 524—425 **3 Claims**

1. A thermoplastic molding material containing, as essential components,

A) from 30 to 80% by weight of a thermoplastic polyester and

B) from 20 to 70% by weight of a mixture of carbonates

wherein a mixture of

b_1) a magnesium calcium carbonate of the formula

$$MG_xCa_y(CO_3)_{x+y}\cdot m\ H_2O,$$

where

x and y are each from 1 to 5,

$x/y \geq 1$ and

$m \geq 0$,

and

b_2) a basic magnesium carbonate of the formula

$$MG_n(CO_3)_v(OH)_{2n-2v}\cdot W\ H_2O,$$

where

n is from 1 to 6,

v is greater than 0 and less than 6,

$n/v >$ and

$w \geq 0$,

is used as component B, the ratio of B_1) to b_2) being from 1:1 to 3:1.

5,298,548

EPOXY RESIN COMPOSITION AND SEMICONDUCTOR DEVICES ENCAPSULATED THEREWITH

Toshio Shiobara; Takayuki Aoki, both of Annaka; Kazutoshi Tomiyoshi, Takasaki; Hisashi Shimizu, Annaka, and Takashi Tsuchiya, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,965

Claims priority, application Japan, May 21, 1991, 3-145502

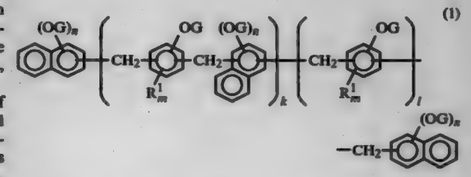
Int. Cl.[5] C08G *59/22;* **C08L** *63/00*

U.S. Cl. 523—443 **15 Claims**

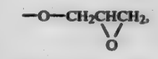
1. An epoxy resin composition comprising

(A) a naphthalene ring-containing epoxy resin of the following general formula (1):

(1)



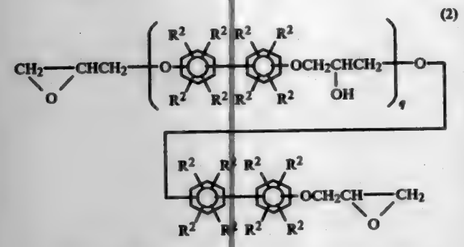
wherein R^1 is a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, OG is



letter k is an integer of from 0 t 5, l is an integer of from 0 to 3, m is an integer of from 0 to 2, and n is equal to 1 or

2, and the OG groups may be attached to either one ring or both rings of the naphthalene ring,

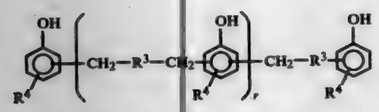
(B) a biphenyl-containing epoxy resin of the following formula (2):



(2)

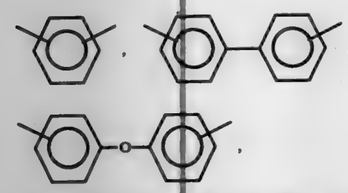
wherein R^2 is a hydrogen atom, a halogen atom or a monovalent hydrocarbon group having 1 to 5 carbon atoms, and letter q is an integer of from 0 to 5,

(C) a phenolic resin of the following formula (3):



(3)

wherein R^3 is selected from the group consisting of



and substituted derivatives thereof in which some or all of the hydrogen atoms in the phenyl ring or rings in R^3 are replaced by alkyl groups having 1 to 5 carbon atoms, R^4 is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and letter r is an integer of from 0 to 5, and

(D) an inorganic filler present in an amount of 100 to 1,000 parts by weight of filler per 100 parts by weight of components (A), (B) and (C) combined, wherein components (A) and (B) are present in a weight ratio of 1/1 to 9/1 and wherein components (A), (B) and (C) contain epoxy and phenolic hydroxyl groups in such quantities that the molar ratio of epoxy groups to hydroxyl groups in said composition ranges from ⅓ to 3/2.

5,298,549

REINFORCED POLYPROPYLENE MOLDING COMPOSITION

Thomas Mecklenburg, Butzbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 916,170

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1991, 4123965

Int. Cl.[5] C08K *3/34*; C08L *23/12*

U.S. Cl. 524—445 **14 Claims**

1. A reinforced polypropylene molding composition essentially consisting of

a) 30 to 95 parts by weight

of a partly crystalline isotactic propylene homopolymer having an isotactic content of >80%, a degree of crystallinity of >50% and a melt flow index (230/5) of 0.5 to 1000 g/10 minutes, or

of a partly crystalline syndiotactic propylene homopolymer having a syndiotactic content of >80%, a syndiotactic sequence length of >10, a degree of crystallinity of >30% and a melt flow index (230/5) of 0.5 to 1000 g/110 minutes, or

of a partly crystalline propylene-ethylene, propylene-1-olefin or propylene-ethylene-1-olefin block copolymer or terpolymer with C_4–C_8-1-olefins, having an ethylene and/or 1-olefin content of 2 to 30% by weight and a melt flow index (230/5) of 0.5 to 1000 g/10 minutes, or

of a partly crystalline random propylene-ethylene, propylene-1-olefin or propylene-ethylene-1-olefin copolymer or terpolymer having an ethylene or/and 1-olefin content of 0.5 to 30% by weight and a melt flow index (230/5) of 0.5 to 1000 g/10 minutes,

b) 0 to 30 parts by weight

of a thermoplastic ethylene-propylene or/and ethylene-propylene-diene rubber having an ethylene content of >45% by weight and a Mooney viscosity ML (1+8) at 127° C. of 20 to 70,

c) 0 to 10 parts by weight

of an unbranched polyethylene having a density of 0.94 to 0.965 g/cm³ and a degree of crystallinity of 60 to 80%, and

d) 5 to 60 parts by weight

of a clay mineral having an SiO_2 content of 55 to 80% by weight and an Al_2O_3 content of 10 to 30% by weight and a particle size top cut (at least 95%) of <20 μm.

5,298,550

MOLDING COMPOSITIONS BASED ON POLYESTER

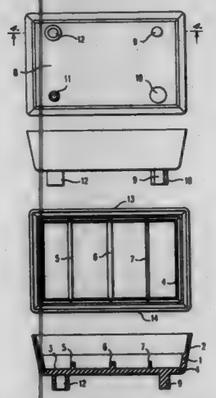
Nunzio Riccardi; Nicola De Mattia; Armando Mariano, all of Matera, and Aldemaro Ciaperoni, Bollate, all of Italy, assignors to ECP Enichem Polimeri S.r.l., Milan, Italy

Filed Feb. 5, 1992, Ser. No. 831,181

Claims priority, application Italy, Feb. 6, 1991, MI 91 A 000305

Int. Cl.[5] C08L *67/00*

U.S. Cl. 524—513 **16 Claims**



1. Molding compositions based on linear saturated polyester having high crystallization rate and suitable for being molded at a temperature of the mold not higher than 100° C. to manufacture molded articles having an optimal combination of mechanical, physical and thermal properties and of surface appearance, characterized in that they contain, incorporated in

the polyester resin (A), from 0.1 to 5% by weight, with respect to polyester (A), of a salt of a mono- or poly-carboxylic acid (B), from 1 to 20% by weight, with respect to polyester (A), of an ionomer copolymer (C) containing pendant carboxylic groups which are at least partially salified and from 0.01 to 1% by weight, with respect to polyester (A), of a solid inert inorganic substance (D) having a particle size not greater than 5 micrometers.

5,298,551

VINYL CHLORIDE RESIN COMPOSITIONS

Youzo Yamamoto, Kuga, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP91/01540, § 371 Date Apr. 28, 1992, § 102(e) Date Apr. 28, 1992, PCT Pub. No. WO91/08078, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 11, 1991, Ser. No. 849,075

Int. Cl.[5] C08L *45/00, 27/06*

U.S. Cl. 524—518 **3 Claims**

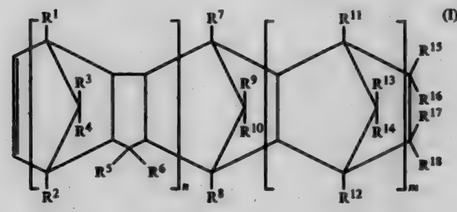
1. A vinyl chloride resin composition comprising:

(1) (A) a vinyl chloride resin having a polymerization degree of 200 to 5,000, a glass transition temperature (Tg) of 40° to 90° C. and a melt flow rate of 0.1 to 500 g/10 min as measured at 190° C. under a load of 2.16 kg; and

(2) (B) a hydrogenated product of a cycloolefin ring opening polymer or copolymer formed by ring opening polymerization of a cycloolefin represented by the following formula (I), said hydrogenated product having an intrinsic viscosity (η), as measured in decalin at 135° C., of 0.1 to 7 dl/g and a melt flow rate of 0.01 to 150 g/10 min as measured at 260° C. under a load of 2.16 kg, and/or

(C) a cycloolefin random copolymer of ethylene and a cycloolefin represented by the following formula (I), said copolymer having an intrinsic viscosity (η), as measured in decalin at 135° C., of 0.05 to 10 dl/g and a glass transition temperature (Tg) of at least 70° C.;

wherein the formulation ratio by weight of the total amount of the hydrogenated product of the cycloolefin ring opening polymer or copolymer (B) and the cycloolefin random copolymer (C) to the amount of the vinyl chloride resin (A) (((B)+(C))/(A)) is 75/25 to 5/95;



(I)

wherein n is 0 or 1, m is 0 or a positive integer, providing $m+n \geqq 1$, R^1–R^{18} are each independently a hydrogen, a halogen or a hydrocarbon group, with the proviso that R^{15}–R^{18}, linked together, may form a monocyclic ring or polycyclic ring which may have a double bond, and with the further proviso that R^{15} and R^{16} or R^{17} and R^{18} may together form an alkylidene group.

5,298,552

WATER BASED ADHESIVE COMPOSITIONS AND PRIMERS FOR POLYOLEFINS

Angelo Borghi, Varese, and Vincenzo Giannella, Milan, both of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Mar. 24, 1992, Ser. No. 856,789

Claims priority, application Italy, Mar. 27, 1991, 91 A 000815

Int. Cl.[5] C08L *27/24, 31/04*

U.S. Cl. 524—519 **4 Claims**

1. A predominantly water based adhesive composition for polyolefins comprising:

A) 2 to 50 parts by weight of a solution in a non-ionic surface-active agent of one or more chlorinated polyolefins comprising 5–25% chlorine by weight and having a number average molecular weight from 5,000 to 50,000;

B) 50 to 98 parts by weight of an aqueous dispersion comprising from 35 to 65 parts per hundred by weight of the aqueous dispersion of a vinylacetate-ethylene copolymer, wherein the ethylene constitutes from 25 to 35% of the copolymer by weight.

5,298,553

COMPOSITION FOR USE IN SCULPTURING AND A PROCESS FOR MANUFACTURING A SCULPTURED PRODUCT

Masami Kita, Kobe, Japan, assignor to Daicel-Huls Ltd., Tokyo, Japan

Continuation of Ser. No. 635,271, Dec. 28, 1990, abandoned. This application Jun. 17, 1992, Ser. No. 899,958

Claims priority, application Japan, Dec. 28, 1989, 1-343080; Nov. 26, 1990, 2-322139

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—579 **21 Claims**

1. In a process for manufacturing a sculptured product comprising sculpturing a sculpturing material composition the improvement comprising using as the sculpturing material composition a resin composition consisting essentially of non-vulcanized polyoctenamer resin and an inorganic filler.

5,298,554

POLYMERS OF OLEFINICALLY UNSATURATED MONOMERS AND SOLUTIONS OF THESE POLYMERS

Gerd Rehmer, Beindersheim; Juergen Barwich, Neustadt, and Gerhard Auchter, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 26, 1991, Ser. No. 721,836

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020767

Int. Cl.[5] C08F *2/06, 20/02, 20/56, 20/68*

U.S. Cl. 524—725 **7 Claims**

1. A process for preparing a polymer of olefinically unsaturated monomers or a solution of the polymer consisting essentially of:

separately taking at least a portion of solvent; or at least a portion of solvent and at least a portion of at least one olefinically unsaturated monomer selected from the group consisting of unsaturated esters of 3 to 24 carbon atoms of monoolefinically unsaturated carboxylic acids, α,β-monoolefinically unsaturated C_{3-6} mono- or dicarboxylic acids, acrylamide, methacrylamide, tetrahydrofururylacrylamide, tetrahydrofurfurylmethacrylamide, diacetoneacrylamide, hydroxyalkyl(meth)acrylates, 2-ketobutyl(meth)acrylamide, N-vinylformamide, N-vinylpyrrolidone, 2-methylene-1,3-dioxepan, 2-methylene-1,3-dioxolane, N-methyl-2-methyleneoxazolidine, 2-methylene-1,3-thiolene, (meth)acrolein, acetoacetoxyethyl acrylate, ethylene, propylene, isobutylene, butadiene, isoprene, vinyl methyl ether, vinyl isobutyl ether, vinylpyridine, β-aminoethyl vinyl ether, aminopentyl vinyl ether, tert-butylaminoethyl methacrylate, a vinylaromatic vinylcaprolactam, tetrahydrofurfur-2-yl(meth)acrylate, vinyl

esters of C_{1-18} alkanecarboxylic acids and monoethylenically unsaturated acetophenone or benzophenone derivatives to be solution polymerized; and optionally at least a portion of the polymerization initiator employed in the polymerization reaction, and placing the taken liquid material in a polymerization vessel;

heating the liquid components of the solution polymerization medium in the vessel to a predetermined polymerization temperature; and

continuously feeding any remaining solvent, a portion or all of the monomer and any radical initiator via one or more feedlines to said polymerization vessel in such a way that the orifice outlets of the feedlines are below the surface of agitated liquid polymerization medium which is agitated by an anchor stirrer, bar-stirrer, paddle stirrer, finger stirrer, grid stirrer, gyratory stirrer, crossbeam stirrer, scoop stirrer, propeller stirrer or impeller stirrer in the vessel and polymerizing the at least one monomer under said predetermined conditions in said polymerization medium.

5,298,555

LOW SETTLING WATER-IN-OIL EMULSIONS

Michael N. O'Connor, Norwalk; Lesley J. Barker, Shelton, and Roderick G. Ryles, Milford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 462,194, Jan. 9, 1990, abandoned. This application Jul. 30, 1992, Ser. No. 922,885

Int. Cl.[5] C08F *2/32*

U.S. Cl. 524—801 **9 Claims**

1. A stable, water-in-oil emulsion comprising an aqueous phase containing a water-soluble polymer and an oil phase containing a partially esterified lower N,N-dialkanol fatty amide emulsifier, the ratio of the aqueous phase to the oil phase ranging from about 2 to 1 about 3.5 to 1 and the polymer content of the emulsion being at least 20%, by weight, based on the total weight of the emulsion, wherein said oil phase also contains a second emulsifier comprising a non-ionic, reaction product of ethylene oxide and a long chain compound containing a reactive hydroxyl and/or carboxyl group and having an HLB above 5 but less than 14, the total weight of the emulsifiers comprises about 1–5% of the emulsion, and the second emulsifier constitutes from about 10 to 150% of the weight of the fatty amide and contains less than 0.1 weight percent of sorbitan, sorbital, mixtures thereof and derivatives thereof, wherein the polymer is a homopolymer of (meth)acrylamide or a copolymer of (meth)acrylamide and at least one monoethylenically unsaturated comonomer copolymerizable therewith.

5,298,556

MOLD RELEASE COMPOSITION AND METHOD COATING A MOLD CORE

William D. Stephens, Clearwater, Fla., assignor to TSE Industries, Inc., Fla.

Division of Ser. No. 917,772, Jul. 21, 1992, Pat. No. 5,219,925. This application Apr. 5, 1993, Ser. No. 43,038

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] C08L *83/06*

U.S. Cl. 3524—860 **12 Claims**

1. An aqueous mold release composition for use in coating compression transfer and injection molding core surfaces in contact with urethanes, silicones, natural rubber, neoprene and other synthetic elastomer, the composition comprising by weight:

-continued

0.5 to 12%	a silane selected from the group consisting of methyl triethoxy silane, methyl trimethoxy silane, vinyl triethoxy silane, vinyl trimethoxy silane, Gamma-ureidopropyltrialkoxy silane, where the alkoxy group has one to three carbon atoms, Gamma-glycidoxypropyltrimethoxy silane, octyltriethoxy silane, Gamma-amino propyltriethoxy silane, Gamma-isocyanatopropyltriethoxy silane, tetraethoxysilane, Gamma-methacryloxypropyl trimethoxysilane, Beta- (3, 4-epoxycyclohexyl) ethyltrimethoxy silane, Gamma-mercaptopropyltrimethoxy silane, and vinyl-tris (2-methoxyethoxy) silane,
1 to 8%	a multi functional polydimethyl siloxane emulsified polymer,
0.1 to 2.5%	a substituted nonyl and octyl phenol derivative surfactant,
0.05 to 4.0%	non-ionic fluorinated alkyl ester surfactant,
0.1 to 2.5%	a synthetic ethoxylated amine surfactant,
0.1 to 12.5%	a silanol terminated polydimethyl siloxane having a molecular weight of 400 to 310,000,
0.5 to 8%	a lower alkyl alcohol, wherein the alkyl has 1–3 carbon atoms,
0.5 to 1%	a weak acid to maintain the pH between 4.5–5.5, and
70 to 97%	water.

5,298,557

THERMOPLASTIC RESIN COMPOSITION

Yuji Fujita; Tetsuya Kawamura; Kouichi Yokoyama; Katsuyuki Yokomizo, and Shigeyuki Toki, all of Ooi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Feb. 1, 1991, Ser. No. 648,932

Claims priority, application Japan, Feb. 2, 1990, 2-24063; Feb. 2, 1990, 2-24064

Int. Cl.[5] C08L *23/12, 67/02*

U.S. Cl. 525—64 **1 Claim**

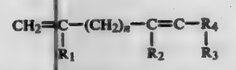
1. A thermoplastic resin composition comprising:

(a) 10–90 weight % of polypropylene;

(b) 90–10 weight % of polyethylene terephthalate or polybutylene terephthalate; and

(c) 5–30 parts by weight, per 100 parts by weight of the total of said (a)+said (b), of a polyolefin-polyester graft copolymer,

said polyolefin-polyester graft copolymer comprising (A) 10–80 parts by weight of polyethylene terephthalate having an intrinsic viscosity [η] of 0.30–0.80 and an end carboxyl group content of 20 15–200 milliequivalent/kg and/or polybutylene terephthalate having an intrinsic viscosity [η] of 0.30–1.20 and an end carboxyl group of 15–200 milliequivalent/kg; and (B) 90–20 part; by weight of a modified polypropylene prepared by grafting a polypropylene random copolymer containing an unconjugated diene comonomer represented by the following general formula:



wherein R_1–R_4 are H or alkyl groups having 1–6 carbon atoms, and n is an integer of 1–20, with an unsaturated carboxylic acid or an anhydride thereof, said modified polypropylene having a carboxyl group content of 0.2–5 mol % and a weight-average molecular weight of 8,000–140,000.

5,298,558

ELECTROSTATIC DISSIPATIVE BLENDS OF PVC, POLYETHERAMIDES AND AN IMPACT MODIFIER

Francis R. Sullivan, Cleveland Heights; Elaine A. Mertzel, Rocky River, and Craig L. Shoemaker, Avon, all of Ohio, assignors to The Geon Company, Independence, Ohio

Continuation-in-part of Ser. No. 723,701, Jun. 25, 1991, abandoned. This application Jun. 2, 1992, Ser. No. 888,927

Int. Cl.[5] C08L *27/06, 67/02, 71/02; B32B 1/08*

U.S. Cl. 525—66 **14 Claims**

1. An electrostatic dissipative polymeric composition as an impact modified, homogeneous mixture comprising:

100 weight parts of a polyvinyl chloride polymer, said polyvinyl chloride polymer having an inherent viscosity of from 0.2 to 0.6,

from about 10 parts to about 20 parts by weight of a co-condensate chain extended polymer said chain extended polymer comprising:

(A) from 45% to 55% of a polyether having two reactive moieties which will condense with (C), and having an average molecular weight from about 200 to about 20,000

(B) from about 0 moles to about 35 moles of a modifier for each mole of polyether;

(C) from 55% to 45% of a chain extender comprising a terminal reactive polyamide or co-polyamide selected from the group consisting of polyundecanolactam, polydodecanolactam, poly(11-aminoundecanoic acid) and (12-aminododecanoic acid); and

from 1 to 10 weight parts of a polymeric impact modifier.

5,298,559

MULTI-LAYERED POLYMERS

Tatsuo Fujii, Nagaokakyo; Shinji Tachibana, Nishinomiya; Junji Oshima, Toyonaka; Goro Shimaoka; Kazuhiko Ishii, both of Hiratsuka, and Makoto Mizutani, Kamisu, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo and Takeda Chemical Industries, Ltd., Osaka, both of Japan

Filed Dec. 3, 1992, Ser. No. 985,214

Claims priority, application Japan, Dec. 5, 1991, 3-321914

Int. Cl.[5] C08L *69/00, 67/02, 51/04*

U.S. Cl. 525—67 **12 Claims**

10. A method for the improvement of uniformity of color appearance by avoiding color shading in a molded resin article formed from a thermoplastic resin mixture containing pigments, polycarbonate resin and polyester resin which comprises incorporating into said resin mixture a multi-layered polymer having (a) a core layer of an aromatic vinyl polymer, (b) an intermediate layer of a butadienic rubbery polymer and (c) an outer layer of an aromatic vinyl glassy polymer, the amount of the components (a), (b) and (c) being 12 to 42 weight %, 48 to 78 weight % and 10 to 40 weight %, respectively based on the weight of the multi-layered polymer.

5,298,560

PARTIALLY CROSSLINKED THERMOPLASTIC RESIN COMPOSITION

Fuyuki Aida, Sumida; Masaaki Miyazaki, Yokohama, and Mamoru Nagai, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed May 14, 1991, Ser. No. 699,742

Claims priority, application Japan, May 14, 1990, 2-121113

Int. Cl.[5] C08L *23/26*

U.S. Cl. 525—192 **5 Claims**

1. A partially crosslinked thermoplastic resin composition comprising the product prepared by dynamically heat-treating, in the absence of a peroxide initiator, (A) a crystalline polyolefin resin and a rubbery substance in the presence of (B) a carbon radical inducing agent comprising a charge transfer complex or a combination of a hydrogen donating compound, said hydrogen donating compound selected from the group consisting of ether compounds, tetrahydroaromatic compounds, cyclopentane compounds and mixtures thereof, and a hydrogen accepting compound, said hydrogen accepting compound selected from the group consisting of bismaleamide compounds, polyol unsaturated ester compounds and mixtures thereof.

5,298,561

PROPYLENE POLYMER COMPOSITION HAVING GOOD TRANSPARENCY AND IMPROVED IMPACT RESISTANCE

Giuliano Cecchin, and Floriano Guglielmi, both of Ferrara, Italy, assignors to Himont Incorporated, Wilmington, Del.

Continuation of Ser. No. 450,780, Dec. 14, 1989, abandoned. This application Sep. 11, 1992, Ser. No. 998,261

Claims priority, application Italy, Dec. 14, 1988, 22940 A/88

Int. Cl.[5] C08L *23/08, 23/16, 23/14*

U.S. Cl. 525—240 **4 Claims**

1. A polymer composition obtained by sequential polymerization consisting essentially of:

a) 70–98% by weight of a crystalline copolymer of propylene with ethylene and/or with a CH_2=CHR alpha olefin, where R is a linear or branched alkyl radical with 2–8 carbon atoms containing 85 to 99.5% by weight of propylene, b) 2–30% by weight of elastomeric copolymer of ethylene with propylene and/or a CH_2=CHR olefin, where R is defined as above containing from 20 to 70% by weight of ethylene, said copolymer (b) being partially soluble in xylene at room temperature and being furthermore characterized by the fact that the ratio between the ethylene weight content in the copolymer and the weight of the portion of copolymer soluble in xylene is less than 1.5, while the intrinsic viscosity (I.V.2.) of the portion soluble in xylene satisfies the following relation:

$$0.2 \leq (I.V.2/I.V.1) \times (C_2^-) \leq 0.6$$

where I.V.1 is the intrinsic viscosity of the crystalline propylene copolymer a), I.V.1 and I.V.2 are expressed in dl/g and (C_2^-) is the ethylene weight content of the elastomeric copolymer b).

5,298,562

CALCIUM DI(METH)ACRYLATE CURED HALOGENATED POLYETHYLENE POLYMERS

Gary W. Ceska; C. Richard Costin, both of West Chester; Thomas W. Hazell, Swarthmore; Walter R. Nagel, West Chester, and Albert S. Taccio, Exton, all of Pa., assignors to Sartomer Company, Inc., Exton, Pa.

Filed Aug. 19, 1991, Ser. No. 747,760

Int. Cl.[5] C08F *275/00*

U.S. Cl. 525—244 **33 Claims**

1. A curable elastomer composition comprising:

(a) a halogenated polyethylene polymer;

(b) a crosslinking-effective amount of a crosslinking monomer selected from the group consisting of calcium diacrylate and calcium dimethacrylate; and

(c) a cure-effective amount of a free radical-generating compound.

5,298,563

PROCESS FOR PREPARING AN IMPACT RESISTANT RESIN

Narito Ishiga, Yokkaichi, and Yoshihiko Takeda, Mie, both of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Continuation of Ser. No. 434,184, Nov. 13, 1989, abandoned. This application Jan. 7, 1993, Ser. No. 72,216

Int. Cl.[5] C08F *4/40, 279/02*

U.S. Cl. 525—245 **9 Claims**

1. A process for preparing an impact resistant resin, which comprises:

a step of graft copolymerizing a monomer mixture comprising an aromatic vinyl monomer and a monomer copolymerizable therewith, to a butadiene rubber polymeric latex in the presence of a redox polymerization initiator to form a graft copolymer latex;

a step of coagulating the resulting graft copolymer latex by mixing an antioxidant thereto and adding an alkaline earth

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metal salt thereto to form an aqueous slurry containing a coagulated product of the graft copolymer;
a step of removing water from said aqueous slurry to obtain the coagulated product;
a step of washing the coagulated product by a first washing water having the pH adjusted to a level of at most 7;
a step of removing the first washing water from the coagulated product to form a washed coagulated product;
a step of further washing the washed coagulated product with a second washing water having the pH adjusted to a level of at least 7.5; and
a step of removing the second washing water from the washed coagulated product to form a further washed coagulated product.

5,298,564

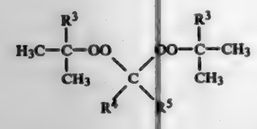
COMPOSITION FOR CROSS-LINKING OF ETHYLENE-POLYMER, METHOD FOR CROSS-LINKING ETHYLENE-POLYMER, AND CROSS-LINKABLE COMPOSITION

Shuji Sayama, and Hideyo Ishigaki, both of Aichi, Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

Division of Ser. No. 684,876, Apr. 15, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 53,342
Claims priority, application Japan, Apr. 16, 1990, 2-97686; Aug. 16, 1990, 2-215008; Mar. 22, 1991, 3-81263
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—263 **14 Claims**

1. A method for cross-linking an ethylene-polymer in the presence of at least one organic peroxide selected from the group consisting of dicumylperoxide, *t*-butylcumylperoxide, 2,5-bis(*t*-butylperoxy)-2,5-dimethylhexane, 2,5-bis(*t*-butylperoxy)-2,5-dimethylhexyne-3, isopropylcumyl-*t*-butylperoxide, bis(α-*t*-butylperoxyisopropyl)benzene and peroxides represented by the formula (II):

(II)



wherein two R^3's independently stand for one member selected from the group consisting of alkyl groups, aryl groups and alkyl-substituted aryl groups of 1 to 9 carbon atoms or jointly stand for an ethylene group, R^4 and R^5 independently stand for a linear or branched alkyl group of 1 to 6 carbon atoms or $-(CH_2)_mC(O)OR^6$, wherein R^6 represents an alkyl group of 1 to 4 carbon atoms and m represents an integer from 1 to 3 or jointly for an unsubstituted cyclohexane ring or an unsubstituted cyclododecane ring, wherein said method comprises carrying out said cross-linking in the presence of 2,4-diphenyl-4-methyl-1-pentene.

5,298,565

GRAFT COPOLYMERS AND LUBRICANTS CONTAINING SUCH AS DISPERSANT-VISCOSITY IMPROVERS

Richard M. Lange, Euclid, and Carmen V. Luciani, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 894,177, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 630,378, Dec. 18, 1990, abandoned, which is a continuation of Ser. No. 333,479, Apr. 5, 1989, abandoned. This application Jun. 1, 1993, Ser. No. 70,616
Int. Cl.[5] C08F *279/02*; C10M *107/14, 149/10*
U.S. Cl. 525—279 **22 Claims**

1. A graft polymer, prepared by grafting onto an oil soluble or dispersible substantially saturated hydrocarbon polymer backbone, a free radical-polymerizable vinyl nitrogen monomer in the presence of from about 15% to about 45% by weight based on the total weight of the reaction mixture, of a volatile aliphatic hydrocarbon-substituted aromatic solvent, capable of free-radical hydrogen atom chain transfer, selected from the group consisting of toluene, xylene, ethylbenzene, diethylbenzene, 1,2,4-trimethylbenzene, 1,2,3,5-tetramethylbenzene, 1,2,4,5-tetramethylbenzene, mesitylene, tetralin, alkyl benzene bottoms, alkyl tetralins, alkyl naphthalenes and alkyl toluenes containing a total of from 1 to about 4 alkyl groups, wherein each alkyl group contains from 1 to about 6 carbon atoms, and the total number of carbon atoms in all alkyl groups does not exceed about 10, and phenyl substituted alkanes, wherein the alkane contains from 4 to about 9 carbons.

8. A process for the preparation of a graft polymer, which process comprises reacting, at a temperature between about 80° C. and 200° C., a free radical-polymerizable vinyl nitrogen monomer with an oil soluble or dispersible hydrocarbon polymer backbone in the presence of a catalytic 6 amount of a free radical-generating reagent and from about 15% to about 45% by weight based upon the total weight of the reaction mixture, of a volatile aliphatic hydrocarbon-substituted aromatic solvent, capable of free-radical hydrogen atom chain-transfer, selected from the group consisting of toluene, xylene, ethylbenzene, diethylbenzene, 1,2,4-trimethylbenzene, 1,2,3,5-tetramethylbenzene, 1,2,4,5-tetramethylbenzene,mesitylene, tetralin, alkyl benzene bottoms, alkyl tetralins, alkyl naphthalenes and alkyl toluenes containing a total of from 1 to about 4 alkyl groups, wherein each alkyl group contains from 1 to about 6 carbon atoms, and the total number of carbon atoms in all alkyl groups does not exceed about 10, and phenyl substituted alkanes, wherein the alkane contains from 4 to about 9 carbons.

16. A lubricating oil additive prepared by a process comprising reacting at a temperature between about 80° C. and 200° C., a free radical-polymerizable vinyl nitrogen monomer with a substantially saturated hydrocarbon polymer in the presence of a catalytic amount of a free radical-generating reagent and from about 15% to about 45% by weight, based upon the total weight of the reaction mixture, of a volatile aliphatic hydrocarbon-substituted aromatic solvent capable of free radical hydrogen atom chain-transfer, selected from the group consisting of toluene, xylene, ethylbenzene, diethylbenzene, 1,2,4-trimethylbenzene, tetralin, alkyl benzene bottoms, alkyl tetralins, alkyl naphthalenes and alkyl toluenes, wherein the alkyl group contains from about 3 to about 9 carbon atoms, and phenyl substituted alkanes, wherein the alkane contains from about 4 to about 9 carbons.

20. A lubricating composition comprising a major amount of an oil of lubricating viscosity and a minor amount of the lubricating oil additive of claim 16.

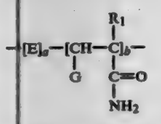
5,298,566

WATER SOLUBLE GRAFT COPOLYMERS AND METHODS OF USE THEREOF

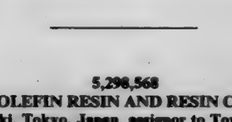
Wen P. Liao, Warminster, and Fu Chen, Newtown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 691,206, Apr. 25, 1991, Pat. No. 5,211,854. This application Jan. 5, 1993, Ser. No. 773
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] C08F *265/10*
U.S. Cl. 525—296 **11 Claims**

1. A water soluble graft copolymer having the structure:



wherein E is the repeat unit obtained after polymerization of an α, β ethylenically unsaturated compound, the molar percentage of a:b is from about 95:5 to 5:95, with the proviso that the sum of a and b equals 100%; G comprises the structure:



wherein R_1, R_2 and R_3 are the same or different and are hydrogen or a lower alkyl group having C_1 to C_3, F is the salt of an ammonium cation and the molar percentage of c:d is from 95:5 to 5:95 with the proviso that the sum of c and d equals 100%.

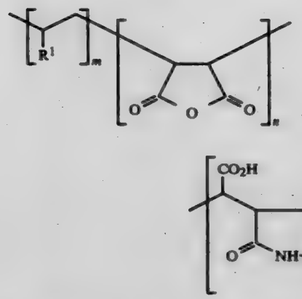
5,298,567

MULTIPLE ACETAL CONTAINING RESINS FOR CROSSLINKING AND ADHESION PROMOTION

William F. Burgoyne, Jr., Allentown; Jeremiah P. Casey, Emmaus, and Thomas A. Manuel, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 15, 1993, Ser. No. 77,696
Int. Cl.[5] C08F *8/32*
U.S. Cl. 525—327.6 **1 Claim**

1. A resin useful for crosslinking and adhesion promotion in coating and adhesive applications which resin comprises a polymer having members of the structural formula:



wherein R^1 is aryl, C_1–C_{20} alkyl, C_1–C_8 alkoxy, acetate, halide, or ester; R^2 is a C_1–C_6 alkyl group; X is from 1 to 6; m is from 0.05 to 0.95; n is from 0.00 to 0.25; and o is from 0.10 to 0.80.

5,298,568

MODIFIED OLEFIN RESIN AND RESIN COMPOSITION

Yoshiko Suzuki, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 830,323, Jan. 31, 1992, abandoned. This application Jul. 6, 1993, Ser. No. 86,375
Int. Cl.[5] C08F *8/32*
U.S. Cl. 525—327.6 **4 Claims**

1. A modified olefin resin which is capable of being rendered water-compatible by neutralization with an alkali and having an acid value of at least 30, which is produced by reacting a copolymer obtained from an α-olefin having at least 6 carbon atoms and maleic anhydride with at least one modifier selected from the group consisting of a compound having a hydroxyl group and a carboxyl group and a compound having an amino group and a carboxyl group.

5,298,569

METALLIC ESTER ACRYLIC COMPOSITIONS CAPABLE OF RELEASING BIOACTIVE SUBSTANCE AT A CONTROLLED RATE

Naoki Yamamori; Hiroharu Ohsugi; Yoshio Eguchi, all of Osaka, and Junji Yokoi, Nara, all of Japan, assignors to Nippon Paint Co., Osaka, Japan

Continuation of Ser. No. 622,112, Dec. 5, 1990, abandoned, which is a continuation of Ser. No. 267,698, Nov. 3, 1988, abandoned, which is a continuation of Ser. No. 924,823, Oct. 30, 1986, abandoned. This application Jan. 7, 1993, Ser. No. 1,417
Claims priority, application Japan, Oct. 30, 1985, 60-243593
The portion of the term of this patent subsequent to Sep. 27, 2005, has been disclaimed.
Int. Cl.[5] C08F *8/42, 220/04*
U.S. Cl. 525—329.5 **2 Claims**

1. A bioactive substance control-releasing resinous composition comprising an acrylic resin having both main chain and side chains, at least one side chain bearing at the end portion thereof, at least one group represented by the formula:

wherein:
X is



M is Al, Cu, Ti or Zn;
p is 1
m is an integer of 1 to 3
R_2 is a residue of organic acid having a biological activity which is connected through



to the metal M and the metal content of the resin being 0.9 to 21.0% by weight of the total weight of the resin.

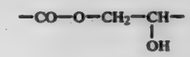
5,298,570

BIODEGRADABLE HYDROPHILIC CROSSLINKED POLYMER, PROCESS FOR PRODUCING IT, AND USES THEREOF

Hideyuki Tahara, Osaka; Hiroshi Ito, Takatsuki; Masahito Takagi, Takatsuki; Yoshio Irie, Himeji; Keishi Tsuboi, Akashi, and Shigeru Yamaguchi, Himeji, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

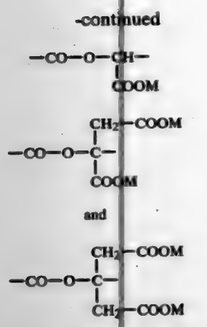
Filed Aug. 20, 1992, Ser. No. 932,551
Claims priority, application Japan, Aug. 23, 1991, 3-212335
Int. Cl.[5] C08F *8/14, 122/02*
U.S. Cl. 525—329.7 **11 Claims**

1. A biodegradable, hydrophilic crosslinked polymer, comprising
(1) main chains prepared from a water-soluble oligomer, said oligomer containing
(a) at least 50% by weight of a molecule having a maximum molecular weight of 5000 and
(b) a functional group having the formula —COOM, wherein M denotes hydrogen, monovalent metal, divalent metal, trivalent metal, an ammonium group and an organic amine group, and
(2) crosslinking bonds having at least one group selected from the group consisting of the groups represented by the following chemical formulas:



(I)

-continued



(II)

(III)

and

(IV)

wherein M is as previously defined, and
wherein a 20% by weight aqueous solution of said polymer has a maximum viscosity of 1,000 cps at 20° C.

5,298,571

HIGH-RESILIENCE IONOMERIC COMPOSITIONS FOR GOLF BALL COVERS

Robert J. Statz, Kennett Square, Pa., and John F. Hagman, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 829,849, Jan. 31, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 84,340
Int. Cl.[5] C08L *31/02*; A63B *37/12*
U.S. Cl. 525—330.2 10 Claims

1. A composition comprising a neutralized ethylene-acid copolymer, a neutralized blend of ethylene-acid copolymers or a blend of neutralized ethylene-acid copolymers wherein the acid is methacrylic acid or acrylic acid and wherein the average weight percent acid in the composition before neutralization is from 16 to 25%, and wherein at least 30% of the acid groups in the composition are neutralized with metal ions, comprising
(A) 20–90% equivalents of lithium ions
(B) 5–40% equivalents of zinc ions and
(C) 0–55% equivalents of sodium ions based on the total number of equivalents of metal ions present, with the proviso that the coefficient of restitution is greater than 0.700.

5,298,572

MOISTURE CURABLE POLYMERS

Lawrence E. Katz, Orange, Conn., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 935,318, Aug. 26, 1992, Pat. No. 5,227,434. This application Apr. 5, 1993, Ser. No. 43,124
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] C08L *75/04*
U.S. Cl. 525—419 25 Claims

1. A process for producing a moisture curable silyl-terminated polymer which comprises the steps of:
(a) reacting a terminally-unsaturated monol with a polyfunctional hydroxyl-reactive compound selected from the group consisting of polyisocyanates and organic polyacyl compounds, in a molar ratio of about one mole of monol for each equivalent of functionality on said polyfunctional hydroxyl-reactive compound, with the proviso that when said polyfunctional hydroxyl-reactive compound is a polyisocyanate and the monol is a polyether monol, then the polyether monol is other than an allyl-started monol, to provide a terminally-unsaturated polymer having terminal unsaturation at each end thereof; and
(b) reacting said terminally-unsaturated polymer with a dialkoxyalkylsilane to form a dialkoxyalkylsilyl-terminated polymer capable of curing upon contact with moisture.

5,298,573

POLY(ARYLENE SULFIDE SULFONE)/POLY(ARYLENE SULFIDE KETONE) BLOCK COPOLYMERS AND PREPARATION THEREOF

Dwayne R. Senn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1992, Ser. No. 976,237
Int. Cl.[5] C08F *283/00*; C08G *75/14*
U.S. Cl. 525—471 6 Claims

1. A process for preparing poly(arylene sulfide sulfone)/poly(arylene sulfide ketone) block copolymers consisting essentially of:
reacting a mixture consisting essentially of a poly(phenylene sulfide sulfone) prepolymer, 4,4'-dichlorobenzophenone, sodium hydrosulfide, sodium acetate, and N-methyl-2-pyrrolidone under polymerization conditions;
wherein said prepolymer is prepared by reacting a mixture consisting essentially of bis(p-chlorophenyl)sulfone, sodium hydrosulfide, sodium carbonate, and N-methyl-2-pyrrolidone under polymerization conditions prior to said contacting with said 4,4'-dichlorobenzophenone;
wherein said 4,4'-dichlorobenzophenone is present in an amount in the range of from 0.35 to 100 moles per mole of poly(phenylene sulfide ketone).

5,298,574

POLY(ARYLENE SULFIDE KETONE)/POLY(ARYLENE SULFIDE SULFONE) BLOCK COPOLYMERS AND PREPARATION THEREOF

Dwayne R. Senn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1992, Ser. No. 976,240
Int. Cl.[5] C08G *75/14*
U.S. Cl. 525—471 6 Claims

1. A process for preparing poly(arylene sulfide ketone)/poly(arylene sulfide sulfone) block copolymers consisting essentially of:
reacting a mixture consisting essentially of a poly(phenylene sulfide ketone) prepolymer, bis(p-chlorophenyl)sulfone, sodium hydrosulfide, sodium acetate, and N-methyl-2-pyrrolidone under polymerization conditions;
wherein said prepolymer is prepared by reacting a mixture consisting essentially of 4,4'-dichlorobenzophenone, sodium hydrosulfide, sodium carbonate, and N-methyl-2-pyrrolidone under polymerization conditions prior to said contacting with said bis(p-chlorophenyl)sulfone;
wherein said poly(phenylene sulfide sulfone) is present in an amount in the range of from 0.01 to 3 moles per mole of poly(phenylene sulfide ketone).

5,298,575

NITRO GROUP TERMINATED MESOGENIC EPOXY RESIN ADDUCTS

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 30, 1992, Ser. No. 982,804
Int. Cl.[5] C08G *59/14, 59/50, 75/32*; C08L *63/00*
U.S. Cl. 525—526 5 Claims

1. A curable composition comprising (1) at least one compound having an average of more than one vicinal epoxide group per molecule; and (2) a curing quantity of at least one amine group terminated adduct containing one or more mesogenic moieties per molecule, which adduct results from the reaction of (A) one or more compounds containing an average of more than one vicinal epoxide group per molecule and (B) one or more compounds containing one or more nitro or nitroso groups and one hydrogen atom per molecule which is reactive with an epoxide group thereby forming an adduct essentially free of epoxy groups and containing nitro or nitroso groups followed by (C) reaction of a part or all of the backbone aliphatic hydroxyl groups contained therein wherein said reaction is an etherification of the hydroxyl group, an esterification of the hydroxyl group, conversion of the hydroxyl group to a halogen, a urethanation of the hydroxyl group or an oxidation of the hydroxyl group to the ketone carbonyl group which is optionally reduced to provide the alkane, and (D) reduction of the nitro or nitroso groups contained therein to amine groups; with the proviso that at least one or more mesogenic moieties per molecule are present in either component (A) or (B) or in both (A) and (B) wherein components (A) and (B) are employed in amounts which provide a ratio of equivalents of hydrogen reactive with an epoxide group, excluding secondary hydroxyl groups formed by epoxide ring opening reaction to form the adduct, per equivalent of epoxide reacted of from about 1:1 to about 100:1.

5,298,576

SIZING AGENT FOR CARBON FIBER AND CARBON FIBER TREATED WITH SAID SIZING AGENT

Atsushi Sumida; Toyokazu Minakuchi; Motoi Itoh, all of Ehime; Itsuki Taniguchi, Kyoto; Hiroshi Hasegawa, Kyoto, and Manabu Saito, Kyoto, all of Japan, assignors to Toray Industries, Inc., Tokyo and Sanyo Chemical Industries, Ltd., Kyoto, both of Japan

Filed Feb. 24, 1992, Ser. No. 840,235
Claims priority, application Japan, Feb. 25, 1991, 3-30269
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—528 13 Claims

1. A sizing agent for carbon fibers which comprises, as the indispensable ingredients, an epoxy resin having a viscosity of more than 1,000 P but up to 20,000 P at 50 ° C. and a urethane compound having a hydroxyl group prepared from a polyol having an oxyalkylene unit with a polyisocyanate, wherein the amount of urethane is 1 to 100% by weight based on the epoxy resin.

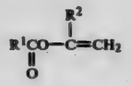
5,298,577

CONTINUOUS PROCESS FOR THE PRODUCTION OF ETHYLENE/VINYL ESTER TERPOLYMERS

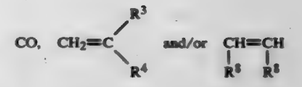
Wolfgang Baade, Dormagen; Werner Obrecht, Moers; Christian Ohm; Rudolf Casper, both of Leverkusen; Kurt P. Neurer, Koenigswinter, and Gerd Sylvester, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 448,908
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843563; Jun. 30, 1989, 3921479
Int. Cl.[5] C08F *2/06, 218/08*
U.S. Cl. 526—65 3 Claims

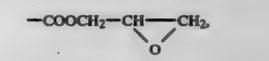
1. Continuous solution polymerisation process for the production of gel-free ethylene terpolymers having a molecular weight M_w, determined as a weight average, of 100,000 to 1,500,000, and containing
a) 1 to 59% by weight of copolymerized ethylene,
b) 40 to (99-c)% by weight of copolymerized units of at least one vinyl ester of the formula



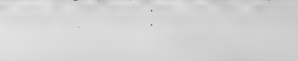
wherein
R^1 denotes C_1–C_6-alkyl and
R^2 denotes hydrogen; C_1–C_6-alkyl which can be substituted by —CN, —SCN or halogen (fluorine, chlorine or bromine) and
c) 1 to 59% by weight of copolymerized units of at least one monomer of the formulae



wherein
R^3 denotes hydrogen, $C_1$$C_6$-alkyl, —CN or halogen (fluorine, chlorine or bromine) or —$COOR^5$,
R^4 denotes —COOH, —$CONH_2$, —$COOCH_2OH$,



—$COOCH_2CH{=}CH_2$, —$COOCH_2CH_2Cl$, —$CONHCH{=}CH_2$, —$COOCO{-}C(CH_3){=}CH_2$, —$COOR^5$, —CN or halogen (fluorine, chlorine, or bromine),
R^5 denotes $[R^6O]_nR^7$,
R^6 denotes C_1–C_6-alkylene,
R^7 denotes hydrogen, C_1–C_6-alkyl, —CN, —OR^9, —COR^9 or halogen (fluorine, chlorine or bromine)
R^8 denotes —CO_2R^5, —CN or halogen (fluorine, bromine or chlorine), or both R^8 substituents together denote —CO—O—CO—, —CO—NH—CO— or



R^9 denotes hydrogen or C_1–C_6-alkyl and
n denotes an integer from 1 to 10,
the percentages in each case relating to the sum of components a+b+c, characterized in that the reaction is carried out
in a cascade of 3 to 10 reactors,
in a polar organic solvent with a solvent concentration, based on the sum of monomers+solvent, of between 20 to 75% by weight,
under pressures of 100 to 1,000 bar,
at temperatures of 30° to 150° C.,
in the presence of 0.02 to 1.5% by weight, based on the quality of monomers employed, of a polymerisation initiator,
until a degree of conversion, based on the vinyl ester b), of 40 to 90% by weight is reached.
and wherein the polymerisation is carried out in the presence of 50 ppm to 1% by weight, based on the quantity of polymerizable monomers employed, of (meth)acryloyl compounds containing at least 2 acryloyl or methacryloyl groups per molecule.

5,298,578

USE OF PHENOTHIAZINE DERIVATIVES TO INHIBIT SCALE BUILD UP DURING POLYMERIZATION OF VINYL CHLORIDE

Raymond C. DeWald, Douglassville, and Paul O. Hong, Wayne, both of Pa., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 344,169, Feb. 16, 1989, Pat. No. 4,960,885, which is a continuation-in-part of Ser. No. 79,315, Jul. 30, 1987, Pat. No. 4,855,424. This application Oct. 20, 1989, Ser. No. 424,415
The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.
Int. Cl.[5] C08F *2/16*
U.S. Cl. 526—74 6 Claims

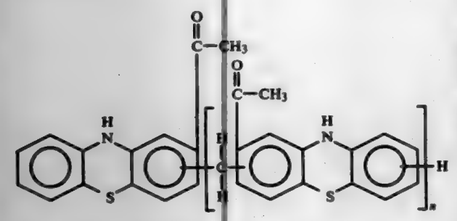
1. In a microsuspension polymerization process for polymerizing vinyl chloride to polyvinyl chloride, the improvement

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comprising conducting the polymerization in the presence of a composition having the formula



wherein n has an average value of about one to about five, and R is —CH_3 or



wherein n has an average value of about one to about five.

5,298,579

OLEFIN POLYMERIZATION PROCESS

Raymond E. Hoff, West Chester, Ohio, and Leonard V. Cribbs, Houston, Tex., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 822,440, Jan. 17, 1992, Pat. No. 5,198,399. This application Nov. 13, 1992, Ser. No. 976,194

Int. Cl.[5] C08J *9/00*

U.S. Cl. 526—116 75 Claims

1. A polymerization process comprising contacting at least one 1-olefin in a reaction zone under polymerization conditions with a solid catalyst component and an alkylaluminum cocatalyst, said catalyst component being prepared by a method comprising the steps of:

a) contacting the interior and exterior surfaces of a particulate porous biodegradable substrate having surface hydroxyl groups with an organometallic compound selected from the group consisting of Group IIA organometallic compounds, Group III organometallic compounds, Group IIA-Group III organometallic complexes, and combinations thereof, in the presence of a solvent, to form a modified biodegradable substrate; and

b) contacting the interior and exterior surfaces of the modified biodegradable substrate with a transition metal compound, in the presence of a solvent, whereby catalytically active sites are provided on the interior and exterior surfaces of the biodegradable substrate to form a solid catalyst component susceptible to fragmentation caused by polymer forming in the interior surfaces during polymerization.

5,298,580

PROCESS FOR THE PRODUCTION OF VULCANIZABLE MERCAPTAN-AND/OR XANTHOGEN DISULFIDE-REGULATED POLYCHLOROPRENE RUBBERS WITH MINIMAL MOLD FOULING

Peter Wendling, Leverkusen; Werner Obrecht, Moers; Michael Happ, Dormagen; Rüdiger Musch, Bergisch Gladbach, and Eberhard Müller, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 946,655

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1991, 4132463

Int. Cl.[5] C08F *2/24*

U.S. Cl. 526—213 10 Claims

1. A process for the production of at least one of vulcanizable mercaptan-regulated polychloroprene rubber and vulcanizable xanthogen-disulfide regulated polychloroprene rubber wherein the process comprises the emulsion polymerization of chloroprene and, based on polymerizable monomer used, 0 to 30 parts by weight ethylenically unsaturated, other monomers copolymerizable with chloroprene in an alkaline medium, wherein

(1) 0.1 to 10 parts by weight of a tricyclic diterpene carboxylic acid containing at least two conjugated C=C double bonds per molecule, based on the polymerizable monomer used, and

(2) 0.1 to 5 parts by weight, based on polymerizable monomer used, of fatty acid esters based on unsaturated carboxylic acids containing 11 to 22 carbon atoms and mixtures thereof,

are used in the production process.

5,298,581

SHEET-LIKE ARTICLES FROM ORIENTABLE POLYMERS AND POLYMER MICROBEADS

Paul Mitacek; Anne M. Fischer, and Dennis E. Smith, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1992, Ser. No. 925,004

Int. Cl.[5] C08F *4/32*; B32B *5/16*

U.S. Cl. 526—232 8 Claims

1. A sheet article comprising a continuous oriented polymer phase having dispersed therein from about 5–50% by weight of cross-linked polymeric microparticles based on the weight of the oriented polymer, the microparticles being partially bordered by void space, the void space occupying about 2 to 60% by volume of the sheet article, the cross-linked polymeric microparticles having been prepared by the free radical polymerization of an ethylenically mono-unsaturated monomer and an ethylenically poly-unsaturated monomer in the presence of an effective amount of a diacyl peroxide to catalyze the reaction.

5,298,582

EXTRUDABLE/COATABLE ETHYLENE (CO)POLYMERS

Michel Brasson, Lambersart, and Jean Lebez, Lens, both of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 682,372, Apr. 9, 1991. This application Aug. 13, 1993, Ser. No. 105,660

Claims priority, application France, Apr. 9, 1990, 90 04504

Int. Cl.[5] C08F *222/40, 222/04, 224/00, 220/10, 110/02*

U.S. Cl. 526—262 16 Claims

1. A process for the preparation of a coatable (co)polymer of ethylene, comprising radical (co)polymerizing ethylene, or admixture thereof with at least one ester of an unsaturated carboxylic acid, in the presence of an effective chain-transfer amount of at least one unconjugated diene having an acyclic backbone chain.

5,298,583

POLYMER DYESTUFFS AND PREPARATION AND USE THEREOF

Ludger Heiliger, Leverkusen; Hans-Ulrich Siegmund, Krefeld; Herbert Hugl, Bergisch Gladbach; Antonius Löbberding, Wuppertal; Eberhard Kuckert, Leverkusen; Bruno Bömer, Bergisch-Gladbach; Thomas Böcker, Düsseldorf, and Günther Franke, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 28, 1992, Ser. No. 875,167

Claims priority, application Fed. Rep. of Germany, May 3, 1991, 4114482

Int. Cl.[5] C08F *228/02, 220/56, 220/10, 220/06*

U.S. Cl. 526—286 6 Claims

1. A polymer dyestuff of the formula (I):

$$[A]_a—[B]_b—[C]_c—[D]_d \quad (I)$$

in which

A denotes a water-solubilizing building block;

B denotes a fluorescent dyestuff molecule covalently bound via an ester, acid amide, urethane, urea and/or thiourea grouping;

C denotes an aromatic building block or a second fluorescent dyestuff which is covalently bound via an ester, acid amide, urethane, urea and/or thiourea grouping and is complementary to fluorescent dyestuff B;

D denotes a monomer building block which makes a covalent linkage to a protein and, optionally, to components B and/or C possible; and

a,b,c and d represent the percentages by weight of components A, B, C and D, wherein:

a is between 0 and 90% by weight;

b is between 5 and 50% by weight;

c is between 5 and 89.99% by weight; and

d is between 0.01 and 10% by weight;

the sum of a+b+c+d being 100% by weight.

5,298,584

ANIONICALLY DYEABLE SMOOTH-DRY CROSSLINKED CELLULOSIC MATERIAL CREATED BY TREATMENT OF CELLULOSE WITH REACTIVE SWELLING AGENTS AND NITROGEN BASED COMPOUNDS

Eugene J. Blanchard, Metairie, and Robert M. Reinhardt, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 14, 1990, Ser. No. 627,470

Int. Cl.[5] D06M *13/00, 13/325, 13/35*; C08B *15/00*

U.S. Cl. 527—300 35 Claims

1. A process comprising contacting a non-dyed cellulosic substrate with: a crosslinking agent, comprising an aqueous composition, in an amount ranging from about 3% to about 15% by weight of the composition selected from the group consisting of methylolamides, methylolated ureas, cyclic ureas, urons, triazones, carbamates, triazines and alkylated and hydroxyalkylated derivatives thereof, at least one glycol, in an amount ranging from about 2% to about 50% by weight of the formulation, selected from the group consisting of glycerol, ethylene glycol and polyethylene glycol at least one salt of a hydroxyalkylamine compound or a hydroxyalkyl quaternary ammonium salt, in an amount ranging from about 3% to about 15% by weight of the composition, and a catalyst which catalyzes both the binding of said methylolamide crosslinking agent to said substrate and the binding of said glycols and hydroxyalkylamine from said salt of a hydroxyalkylamine compound or a hydroxyalkyl quaternary ammonium compound from said hydroxyalkyl quaternary ammonium salt to said methylolamide crosslinking agent; under conditions whereby said methylolamide crosslinking agent binds to said substrate, and at least one of said glycols and at least one of said hydroxyalkylamine from said salt of a hydroxyalkylamine compound or said hydroxyalkyl quaternary ammonium compound from said hydroxyalkyl quaternary ammonium salt, bind to said methylolamide to produce a crosslinked cellulose.

5,298,585

AMINE-THIOL CHAIN TRANSFER AGENTS

Thomas F. McCallum, III, Philadelphia, and Barry Weinstein, Dresher, both of Pa., assignors to Rohm and Haas Company, Phila., Pa.

Filed Mar. 24, 1993, Ser. No. 36,595

Int. Cl.[5] C08F *20/06, 2/38*

U.S. Cl. 526—317.1 9 Claims

1. A polymer, comprising, as polymerized units:

at least 20 percent by weight of one or more monoethylenically unsaturated acids, or salts thereof, and

an amine-sulfide terminal moiety,

wherein the amine-sulfide terminal moiety is a residue of an amine-thiol resulting from the attachment of a sulfur group of the amine-thiol to the polymer.

5,298,586

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ANHYDRIDES

Robert G. Beevor; Neil A. Greener; David J. Gulliver, and Robert M. Sorrell, all of Hull, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 763,911, Sep. 23, 1991, abandoned. This application Oct. 22, 1992, Ser. No. 965,611

Claims priority, application United Kingdom, Oct. 23, 1990, 90/21454.5

Int. Cl.[5] C07C *53/12, 53/08*

U.S. Cl. 562—891 11 Claims

1. A process for the production of a carboxylic acid anhydride comprising reacting in a reaction zone under substantially anhydrous conditions, carbon monoxide with a carboxylic acid ester or an alkyl ether in the presence of a rhodium catalyst, an iodide promoter and a co-promoter, and separating the carboxylic acid anhydride product from the rhodium catalyst and promoters under conditions deficient of carbon monoxide relative to the reaction zone, in which process the co-promoter is selected from the group consisting of:

1,3-dialkyl-4-methylimidazolium iodide

1,3-dialkyl-4-ethylimidazolium iodide

1,3-dialkyl-4-n-propylimidazolium iodide

1,3-dialkyl-4-isopropylimidazolium iodide

1,3-dialkyl-4-n-butylimidazolium iodide

1,3-dialkyl-4-sec-butylimidazolium iodide

1,3-dialkyl-4-tert-butylimidazolium iodide

1,3-dialkyl-2,4,5-trimethylimidazolium iodide and mixtures thereof where the alkyl groups are independently C1 to C20 alkyl.

5,298,587

PROTECTIVE FILM FOR ARTICLES AND METHOD

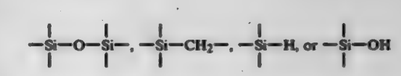
Ing-Feng Hu, and James C. Tou, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1992, Ser. No. 994,381

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—10 5 Claims

1. A composition which comprises a silicon-carbon polymer of $SiO_{1.8\text{-}2.4}$ $C_{0.3\text{-}1.0}$ and $H_{0.7\text{-}4.0}$ containing at least one of the following



functional groups and trapped water.

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5,298,588

ORGANOSILICON POLYMERS, AND DYES, EXHIBITING NONLINEAR OPTICAL RESPONSE

Wayne M. Gibbons; Robert P. Grasso; Michael K. O'Brien, all of New Castle County, Del.; Paul J. Shannon, Chester County, Pa., and Shao-Tang Sun, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 831,609, Feb. 5, 1992, Pat. No. 5,254,655.
This application Jul. 26, 1993, Ser. No. 96,389
Int. Cl.[5] C08G 77/08
U.S. Cl. 528—15 19 Claims

1. An organosilicon crosslinked polymer or crosslinkable prepolymer which comprises the hydrosilation reaction product of reactants comprising the following:
(a) at least one cyclic polysiloxane having at least two hydrosilation reactive ≡SiH groups;
(b) at least one organic dye having:
(i) an absorption maximum between 300 and 2000 nm;
(ii) an extinction coefficient, at the absorption maximum, greater than 2×10^3 L/mol cm; and
(iii) at least one hydrosilation reactive carbon-carbon double bond;
(c) at least one polyene having at least two hydrosilation reactive carbon-carbon double bonds;
wherein at least one of said at least one cyclic polysiloxane, said at least one organic dye, and said at least one polyene has more than two hydrosilation reactive sites.

5,298,589

HIGHLY FUNCTIONALIZED POLYCYCLOSILOXANES AND THEIR POLYMERIZATION INTO THERMALLY REVERSIBLE LIVING RUBBERS

Mark A. Buese, Upper Darby, and Pao-Sun Chang, Philadelphia, both of Pa., assignors to Temple University-Of The Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Jul. 16, 1992, Ser. No. 915,487
Int. Cl.[5] C08G 77/08
U.S. Cl. 528—21 70 Claims

1. A process for preparing a thermally reversible rubber comprising
reacting a mixture comprising a strong acid catalyst having a pK_a of less than about −9, at least one polycyclosiloxane containing at least one polyfunctional siloxane unit, and at least one polysiloxane selected from the group consisting of
linear polydimethylsiloxane
polydimethylcyclosiloxane containing from about 6 to about 50 silicon-oxygen bonds,
linear or cyclic block copolymer of polydimethylsiloxane and a non-siloxane organic polymer, and
linear or cyclic random copolymer of a siloxane of the formula $Si(R)(R^1)O$ wherein R and R^1 are different and are selected from the group consisting of hydrogen, C_1–C_{18} hydrocarbon and C_2–C_{18} hydroxyalkyl, wherein
the catalyst comprises from about 0.05 to about 0.5 wt % of the reaction mixture, and
the concentration of polyfunctional siloxane units contributed by the polycyclosiloxane to the reaction mixture is at least about two times the catalyst concentration in the reaction mixture, but no more than about 0.27 molar.

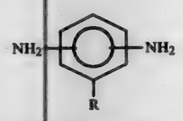
5,298,590

LIQUID CRYSTAL ALIGNMENT TREATING AGENT

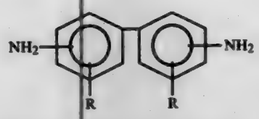
Hideyuki Isogai; Toyohiko Abe; Yoshihiro Tsuruoka, and Hiroyoshi Fukuro, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 13, 1992, Ser. No. 929,012
Claims priority, application Japan, Aug. 13, 1991, 3-202916
Int. Cl.[5] C08G 73/10
U.S. Cl. 528—188 4 Claims

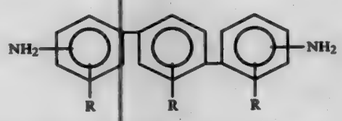
1. A nematic liquid crystal alignment treating agent which comprises a polyimide resin comprising a diamine including an aromatic diamine having at least one linear alkyl group of at least 12 carbon atoms per benzene ring as the essential diamine component and a tetracarboxylic acid and its derivative, which diamine is selected from the group consisting of a diaminobenzene derivative of the formula,



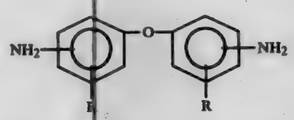
a diaminobiphenyl derivative of the formula,



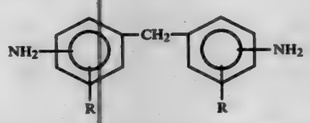
a diaminoterphenyl derivative of the formula,



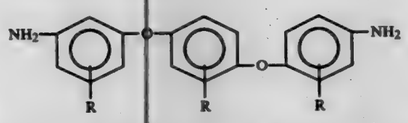
a diaminodiphenylether derivative of the formula,



a diaminodiphenylmethane derivative of the formula,



and a bis(aminophenoxy)phenyl derivative of the formula,



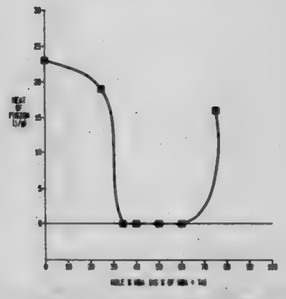
wherein R is a linear alkyl group, an alkoxy group or an alkyloxymethylene group, respectively having at least 12 carbon atoms, and which tetracarboxylic acid is selected from the group consisting of pyromellitic acid, 2,3,6,7-naphthalenetetracarboxylic acid, 1,2,5,6-naphthalenetetracarboxylic acid, 1,4,5,8-naphthalenetetracarboxylic acid 2,3,6,7-anthracenetetracarboxylic acid, 1,2,5,6-anthracenetetracarboxylic acid, 3,3',4,4'-biphenyltetracarboxylic acid, 2,3,3',4-biphenyltetracarboxylic acid, bis(3,4-dicarboxyphenyl)ether, 3,3',4,4'-benzophenonetetracarboxylic acid, bis(3,4-dicarboxyphenyl)sulfone, bis(3,4-dicarboxyphenyl)methane, 2,2-bis(3,4-dicarboxyphenyl)propane, 1,1,1,3,3,3-hexafluoro-2,2-bis(3,4-dicarboxyphenyl)propane, bis(3,4-dicarboxyphenyl)dimethylsilane, bis(3,4-dicarboxyphenyl)diphenylsilane, 2,3,4,5-pyridine tetracarboxylic acid and 2,6-bis(3,4-dicarboxyphenyl)pyridine, and their dianhydrides, and their dicarboxylic acid diacid halides; cyclobutane tetracarboxylic acid, cyclopentane tetracarboxylic acid, cyclohexane tetracarboxylic acid, 2,3,5-tricarboxycyclopentylacetic acid and 3,4-dicarboxy-1,2,3,4-tetrahydro-1-naphthalene succinic acid, and their dianhydrides, and their dicarboxylic acid diacid halides; and butane tetracarboxylic acid, and their dianhydrides, and their dicarboxylic acid diacid halides.

5,298,591

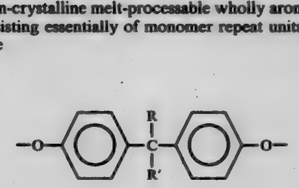
NON-CRYSTALLINE WHOLLY AROMATIC POLYESTERS

Eui W. Choe, Randolph, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

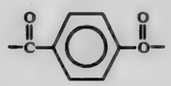
Filed Nov. 20, 1992, Ser. No. 979,098
Int. Cl.[5] C08G 63/00, 63/02, 63/18
U.S. Cl. 528—190 19 Claims



1. A non-crystalline melt-processable wholly aromatic polyester consisting essentially of monomer repeat units I, II, and III, where
I is



II is



and
III is



where R and R' are alike or different and are each selected from the group consisting of H, F, Cl, phenyl, alkyl side chains having the formula $C_nH_xF_{2n+1-x}$, n being an integer from 1 to 6 and x being an integer from 0 to 2n+1;
wherein Ar is an aromatic moiety selected from the group consisting of 1,4-phenylene, 1,4-, 1,5-, 1,6-, 1,7-, 1,8-, 2,5-, 2,6- and 2,7-naphthalenediyl, and mixtures thereof;
wherein some or all of said monomer repeat units I, II and III are optionally substituted on the aromatic ring with F, Cl and lower alkyl and fluoralkyl groups having 1–4 carbons;
wherein the number of said monomer repeat units I and II is about equal;
wherein the number of said monomer repeat units III is selected so that the wholly aromatic polyester has a heat of fusion of about zero as measured by differential scanning calorimetry and a softening temperature range less than about 340° C. when measured by heating in a melting point capillary, except that if Ar is 2,6-naphthalenediyl, the number of said monomer repeat units III comprises greater than 12% of the total number of said monomer repeat units I, II and III;
and wherein said monomer unit III comprises about 40% to about 60% of the total of said monomer repeat units I and III when R and R' are each methyl and Ar is 1,4-phenylene.

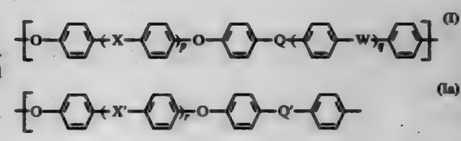
5,298,592

PREPARATION OF POLYARYL ETHERS WITH NITROGEN COMPOUND CATALYSTS

Alexander Aumueller, Neustadt; Wolfgang Eberle, Mainz; Gerhard Heinz, Weisenheim; Bernd Hupfeld, Speyer; Christiane Husemann, Neustadt; Juergen Koch, Neuhofen, and Helmut Reichelt, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 20, 1992, Ser. No. 932,991
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 4127507; Sep. 19, 1991, 4131143
Int. Cl.[5] C08G 65/40
U.S. Cl. 528—126 7 Claims

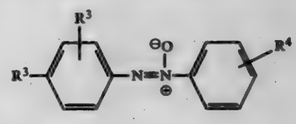
1. A process for preparing polyaryl ethers having repeating units of the formula I or IA



(I)

(Ia)

or the corresponding nuclear-substituted C_1–C_6-alkyl or c_1–C_6-alkoxy, aryl, chloro, fluoro substituted repeat units, where X, X', Q, Q', W and W' each independently of one another is a bond or X, X', Q, Q', W and W' represent a divalent radical selected of the group—SO_2—, —O—, —CO—and —CRR' where R and R' are each hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, aryl or fluoro or chloro derivatives thereof and p, q and r each 0 or 1, which process comprises: polycondensing at least one appropriate bisphenol with at least one appropriate aromatic dichloride in the presence of an alkali metal carbonate in a dipolar aprotic solvent, in the presence of a catalyst comprising an alkali metal nitrite or a mixture of the alkali metal nitrite and a compound of the formula II



II

where R^3 is hydrogen, C_7–C_{16}-phenylalkyl, C_1–C_{12}-alkoxy, fluorine, chloride, bromine, iodine or nitro, and R^4 is hydrogen, C_1–C_4-alkyl, fluorine, chlorine, bromine or iodine.

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5,298,593

METHOD OF PRODUCING THERMOTROPIC LIQUID CRYSTALLINE POLYESTER

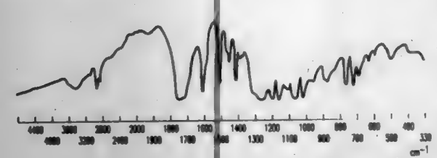
Eisuke Fujiwara, and Haruyo Kozaki, both of Inashiki, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,260

Claims priority, application Japan, Jun. 25, 1991, 3-153204; Jun. 25, 1991, 3-153205; Nov. 1, 1991, 3-288036; Nov. 1, 1991, 3-288037

Int. Cl.[5] C08G *63/78, 63/82, 63/87*

U.S. Cl. 528—277 4 Claims



1. A method of producing a thermotropic liquid crystalline polyester, comprising the step of carrying out a polycondensation of an ester monomer represented by the formula I-2, an aromatic dicarboxylic acid compound represented by the formula II, wherein the molar ratio of I-2/II ranges from 0.9 to 1.1, and an aromatic carboxylic acid compound represented by the formula III-2, the amount of which is not more than 20 times that of the ester monomer by mole:



[I-2]



[II]



[III-2]

(wherein, Ar^1, Ar^2, and Ar^3 are independently aromatic hydrocarbon groups of C6–18 which are unsubstituted or bear a member selected from the group consisting of an alkyl group, alkoxy group, phenyl group and halogen atom, R^1 is a saturated aliphatic hydrocarbon of C1–15, R^2 and R^3 are independently a hydrocarbon group of C1–6, X^1, X^2 and X^3 are independently a hydrogen atom or a saturated hydrocarbon group of C1–10).

5,298,594

PREPARATION OF NYLON 6 WITH ALKALI METAL HYPOPHOSPHITE CATALYST AND ORGANIC PHOSPHITE CATALYST

Wu-Bin Yue, Hsinchu; Gwo-Yang Chang, Tainan; Jeng-Yue Wu, and Mao-Song Lee, both of Hsinchu, all of Taiwan, assignors to Chinese Petrochemical Development Corp., Taipei, Taiwan

Filed Sep. 18, 1992, Ser. No. 948,128

Int. Cl.[5] C08G *69/20*

U.S. Cl. 528—313 15 Claims

1. A method for the preparation of Nylon 6 comprising the steps of:

(a) charging predetermined amounts of caprolactam, water, and a primary catalyst, which comprises an alkali metal hypophosphite, into first reactor;

(b) purging air from said first reactor;

(c) raising the temperature of said first reactor to 240° C. to 300° C. to effect the production of Nylon 6 prepolymer;

(d) charging said Nylon 6 prepolymer and a predetermined amount of an organic phosphite cocatalyst into a second reactor; and

(e) raising the temperature of said second reactor to between 200° C. and 250° C. to effect the production of said Nylon 6 polymer.

5,298,595

PARTLY AROMATIC COPOLYAMIDES OF REDUCED TRIAMINE CONTENT

Horst Reimann, Worms; Gunter Pipper, Bad Duerkheim; Hans-Peter Weiss, Mutterstadt; Christoph Plachetta, Limburgerhof, and Eckhard M. Koch, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 753,104, Aug. 30, 1991, Pat. No. 5,218,082, which is a continuation of Ser. No. 386,007, Jul. 25, 1989, Pat. No. 5,081,222, which is a continuation of Ser. No. 213,624, Jun. 30, 1988, abandoned. This application Feb. 10, 1993, Ser. No. 15,844

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723688

Int. Cl.[5] C08G *69/14*

U.S. Cl. 528—324 10 Claims

1. A partly aromatic copolyamide, consisting essentially of:

A) 40–90% by weight of monomer units derived from terephthalic acid and hexamethylene diamine,

B) monomer units derived from ε-caprolactam in an amount up to 50% by weight, and

C) in an amount up to 60% by weight monomer units derived from adipic acid and hexamethylene diamine, and

wherein the sum of components B) and C) is not less than 10% by weight of the total units, and wherein said copolyamide has a triamine content of less than 0.5% by weight, a melting point in the range from 260° C. to above 300° C. and a glass transition temperature higher than 75° C.

5,298,596

PEPTIDES AND ANALOGUES AND MIXTURES THEREOF FOR DETECTING AND ELICITING ANTIBODIES TO RUBELLA VIRUS

Martial Lacroix, Brossard; Maan Zrein, Laval, and Gervais Dionne, Ville St-Laurent, all of Canada, assignors to Biochem Immunosystems Inc., Montreal, Canada

Division of Ser. No. 397,767, Aug. 23, 1989, Pat. No. 5,164,481. This application Mar. 13, 1992, Ser. No. 850,510

Int. Cl.[5] A61K *39/12, 37/02;* C07K *3/00*

U.S. Cl. 530—326 11 Claims

1. A cyclic peptide having the formula

ti a—X—b

wherein:

X is a sequence of at least six amino acids taken as a block from the amino acid sequence of the E1 glycoprotein of a strain of rubella virus that corresponds to AA_{213}–AA_{252} of the E1 glycoprotein of the Judith strain of rubella virus as set forth in FIG. 1, which block maintains the sequence and N terminus to C terminus direction of the native amino acid sequence;

a is selected from the group consisting of:

(i) an amino terminus;

(ii) one to eight amino acids taken as a block from and maintaining the sequence and N terminus to C terminus direction of that portion of the native amino acid sequence of the E1 glycoprotein immediately N-terminal to X; and

(iii) a substituent effective to facilitate coupling of the peptide to another moiety; and

b is selected from the group consisting of:

(i) a carboxy terminus;

(ii) one to eight amino acids taken as a block from and maintaining the sequence and N terminus to C terminus direction of that portion of the native amino acid sequence of the E1 glycoprotein immediately C-terminal to X; and

(iii) a substituent effective to facilitate coupling of the peptide to another moiety.

5,298,597

AQUEOUS PREPARATION OF POLYAMIDE WITH CATALYST MIXTURE

Wu-Bin Yue; Ching-Pei Chen; Jeng-Yue Wu, and Mao-Song Lee, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 18, 1992, Ser. No. 948,173

Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—336 11 Claims

1. A method for the preparation of polyamide/copolyamide comprising the steps of:

(a) charging predetermined amounts of adipic acid, diamine, water, and a primary catalyst, which comprises an alkali metal hypophosphite, into first reactor;

(b) purging air from said first reactor;

(c) raising the temperature of said first reactor to 240° C. to 300° C. to effect the production of a prepolymer of said polyamide/copolyamide;

(d) charging said prepolymer and a predetermined amount of a cocatalyst into a second reactor, said cocatalyst comprising an inorganic salt which is other than a hypophosphite; and

(e) raising the temperature of said second reactor to between 240° C. and 270° C. to effect the production of said polyamide/copolyamide.

5,298,598

PREPARATION OF POLYAMIDE WITH MIXTURE OF PHOSPHORUS CATALYSTS

Wu-Bin Yue, Hsinchu; Der-Tarng Su, Chutung; Jeng-Yue Wu, and Mao-Song Lee, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 18, 1992, Ser. No. 949,221

Int. Cl.[5] C08G *69/28*

U.S. Cl. 528—336 14 Claims

1. A method for the preparation of polyamide/copolyamide comprising the steps of:

(a) charging predetermined amounts of adipic acid, diamine, water, and a primary catalyst, which comprises an alkali metal hypophosphite, into first reactor;

(b) purging air from said first reactor;

(c) raising the temperature of said first reactor to 240° C. to 300° C. to effect the production of a prepolymer of said polyamide/copolyamide;

(d) charging said prepolymer and a predetermined amount of an organic phosphite cocatalyst into a second reactor; and

(e) raising the temperature of said second reactor to between 260° C. and 340° C. to effect the production of said polyamide/copolyamide.

5,298,599

EXPRESSION AND PURIFICATION OF RECOMBINANT SOLUBLE TISSUE FACTOR

Alireza Rezaie, Moore; Charles T. Esmon, and James H. Morrissey, both of Oklahoma City, all of Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 730,040, Jul. 12, 1929, Pat. No. 5,202,253, which is a continuation of Ser. No. 292,447, Dec. 30, 1988, abandoned. This application Jan. 3, 1992, Ser. No. 816,679

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—350 6 Claims

1. A fusion protein comprising an epitope which is capable of binding in the presence of calcium to the monoclonal antibody designated as HPC-4 (ATCC No. HB 9892) and a protein to be isolated by binding of the fusion protein to HPC-4 antibody, wherein the epitope and the protein to be isolated are separated by a specific protease cleavage site.

5,298,600

FLUORINATED CONDENSATION COPOLYIMIDES

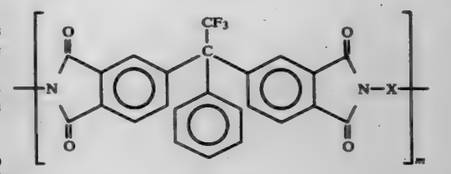
Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

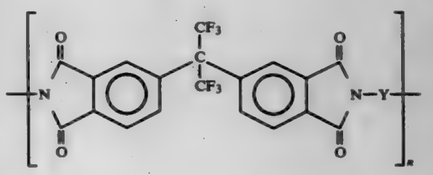
Filed Dec. 4, 1992, Ser. No. 985,701

Int. Cl.[5] C08C *69/26, 73/10*

U.S. Cl. 528—353 20 Claims

1. A fluorinated condensation copolyimide having repeating polymer units comprising:





wherein X and Y are aromatic or aliphatic diamines.

5,298,601

HIGH TEMPERATURE 3F-POLYIMIDES

Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 4, 1992, Ser. No. 985,702

Int. Cl.[5] C08G *69/26, 73/10*

U.S. Cl. 528—353 10 Claims

1. A method of making a high temperature fluorinated polyimide, comprising the steps of:

(a) forming a solution comprising

(i) a 3F-monomer, wherein the 3F-monomer comprises 4,4'-(2,2,2-trifluoro-1-phenylethylidene) diphthalic anhydride, a dialkylester of 4,4'-(2,2,2-trifluoro-1-phenylethylidene) diphthalic anhydride, 4,4'-(2,2,2-trifluoro-1-phenylethylidene) diphthalic acid, or mixtures thereof, and

(ii) an aromatic or aliphatic diamine, wherein the ratio of the 3F-monomer to the diamine is greater than 1.05; and

(b) mixing the solution so the 3F-monomer reacts with the diamine to form a 3F-polyimide.

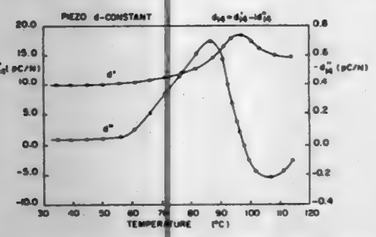
VOL 1160 ISS 5 MR 29 1994 UMI

5,298,602

POLYMERIC PIEZOELECTRIC MATERIAL

Yasuo Shikinami, and Kunihiro Hata, both of Osaka, Japan, assignors to Takiron Company, Ltd., Osaka, Japan

Filed Jan. 28, 1993, Ser. No. 10,165
Claims priority, application Japan, Nov. 6, 1992, 4-322519; Nov. 6, 1992, 4-322520
Int. Cl.[5] C08G *63/06;* A61F *2/28;* H04R *17/00*
U.S. Cl. 528—361 19 Claims



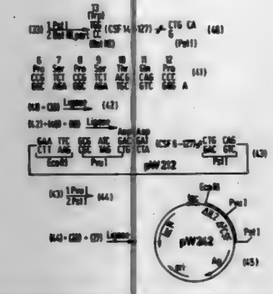
1. A polymeric piezoelectric material comprising a polylactic acid molded article having been uniaxially drawn to an extent causing no fibrillation.

5,298,603

GM-CSF PROTEIN, ITS DERIVATIVES, THE PREPARATION OF PROTEINS OF THIS TYPE, AND THEIR USE

Paul Habermann, Frankfurt am Main, and Hubert Müllner, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 627,552, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 341,248, Apr. 20, 1989, abandoned, which is a continuation of Ser. No. 943,432, Dec. 19, 1986, abandoned. This application Dec. 21, 1992, Ser. No. 993,859
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545568
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—351 1 Claim



1. A human GM-CSF derivative comprising an amino acid sequence of the formula

Pro—$(As)_x$—CSF(12-126)—Z,

wherein $(As)_x$ denotes all or some of the first 11 amino acids of natural human GM-CSF sequence without substitution, CSF(12-126) denotes 12th to 126th amino acids of the natural human GM-CSF sequence, and Z denotes Glu or Amp.

5,298,604

PARITAL PRIMARY AMINO ACID SEQUENCE OF THE ANTINEOPLASTIC PROTEIN (ANUP); A CYTOKINE PRESENT IN GRANULOCYTES

Nathan H. Sloane, 1842 Brookside Dr., Germantown, Tenn. 38138

Continuation of Ser. No. 919,885, Jul. 27, 1992. This application Sep. 2, 1993, Ser. No. 116,539
Int. Cl.[5] C07K *15/12*
U.S. Cl. 530—351 2 Claims

1. Deblocked Antineoplastic Urinary Protein (ANUP) for producing pharmacological antitumor activity, said deblocked ANUP having a partial free N-terminal L-amino acid sequence comprising:

leucinyl-lysinyl-cysteinyl-tyrosinyl-threoninyl-cysteinyl-lysinyl-glutamyl-prolinyl-methioninyl-threoninyl-threoninyl-alaninyl-alaninyl . . . .

5,298,605

ANTIBODIES TO ISLET AMYLOID POLYPEPTIDE (IAPP) AND SUBUNITS THEREOF

Per Westermark, Bälinge, Sweden, and Kenneth H. Johnson, Minnesota, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn., a part interest

Division of Ser. No. 658,442, Feb. 21, 1991, Pat. No. 5,112,945, which is a continuation of Ser. No. 105,267, Oct. 7, 1987, abandoned. This application Feb. 19, 1992, Ser. No. 838,043
Claims priority, application Sweden, Oct. 8, 1986, 8604270
Int. Cl.[5] C07K *15/06, 15/28;* A61K *39/395*
U.S. Cl. 530—387.9 11 Claims

1. A purified antibody which reacts with human islet amyloid polypeptide, which polypeptide is one subunit of islet amyloid and which is prepared by depolmerizing human islet amyloid, wherein said antibody does not significantly react with insulin or with calcitonin gene-related peptides selected from the group consisting of human CGRP1 and human CGRP2.

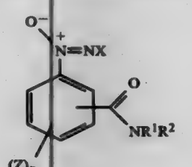
5,298,606

PROCESS FOR THE PREPARATION OF SUBSTITUTED AZOXYCYANIDES

William W. Wood, Sittingbourne, England, assignor to Shell Research Limited, United Kingdom

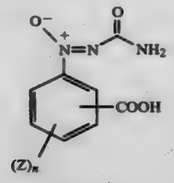
Filed May 28, 1992, Ser. No. 889,240
Claims priority, application United Kingdom, Jun. 13, 1991, 9112696
Int. Cl.[5] C07C *245/02, 245/20, 291/08, 255/67;* A01N *33/26*
U.S. Cl. 534—556 10 Claims

1. A process for the preparation of a compound of formula


(III)

wherein X represents cyano, —COOH or a metal salt thereof, —$COOR^3$ or $CONH_2$; R^1 represents hydrogen or alkyl, each unsubstituted or substituted by substituents selected from the group consisting of halogen, phenyl, alkoxy, hydroxy, cyano and alkylamino; R^2 represents alkyl either unsubstituted or substituted by substituents selected from the group consisting of halogen, phenyl, alkoxy, hydroxy, cyano and alkylamino or phenyl each unsubstituted or substituted by substituents selected from the group consisting of halogen, nitro, cyano, alkoxy, hydroxy, alkylamino, alkyl and haloalkyl; R^3 represents C_{1-4} alkyl, C_{2-4} alkenyl or C_{2-4} alkynyl; Z represents an

alkyl group or a halogen atom and n represents 0, 1, 2, 3 or 4, the process comprising reacting a compound of formula


(IV)

with a first reactant capable of both dehydrating the amide group of said compound of formula IV, to form a group X wherein X represents cyano, and halogenating the carboxy group of said compound of formula IV to form an acid halide group; reacting the resulting compound with a compound of formula R^1R^2NH to form a compound of formula III wherein X represents cyano; or further hydrolyzing a compound of formula III wherein X is cyano to form a compound of formula III wherein X is —COOH or —$CONH_2$; or further, esterifying a compound of formula III wherein X is —COOH to form a compound of formula III wherein X is —$COOR^3$; or further reacting a compound of formula III wherein X is —COOH with a metal or metal salt to form a compound of formula III wherein X is a metal salt of —COOH.

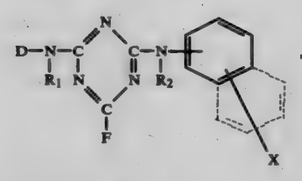
5,298,607

REACTIVE DYES CONTAINING FLUOROTRIAZINE AND VINYLSULFONYL RADICALS

Herbert Seiler, Reihen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 747,464, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 944,624, Dec. 19, 1986, abandoned, which is a continuation of Ser. No. 808,128, Dec. 12, 1985, abandoned, which is a continuation of Ser. No. 612,934, May 22, 1984, abandoned, which is a continuation of Ser. No. 498,681, May 31, 1983, abandoned, which is a continuation of Ser. No. 317,736, Nov. 3, 1981, abandoned, which is a continuation of Ser. No. 175,995, Aug. 7, 1980, abandoned, which is a continuation of Ser. No. 54,316, Jul. 2, 1979, abandoned. This application May 26, 1993, Ser. No. 63,848
Claims priority, application Switzerland, Jul. 6, 1978, 7380/78
Int. Cl.[5] C09B *62/04, 62/06, 62/08, 62/10;* D06P *1/38, 3/66*
U.S. Cl. 534—638 6 Claims

1. A reactive dye of the formula


(1)

wherein D is the radical of a mono- or polyazo, copper complex azo, anthraquinone, phthalocyanine, formazane, dioxazine or stilbene dye which contains sulfo groups, R_1 is hydrogen or C_1–C_4 alkyl, R_2 is hydrogen, methyl or ethyl, X is a radical of the formula —$SO_2CH_2CH_2Cl$, —$SO_2CH{=}CH_2$, —$SO_2CH_2CH_2OSO_3H$, —$SO_2CH_2CH_2OPO_3H$ or —$N(R_3)SO_2CH_2CH_2OSO_3H$, and R_3 is hydrogen, methyl or ethyl, and the benzene or naphthalene radical is not further substituted or is further substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, nitro, hydroxyl, carboxyl or sulfo.

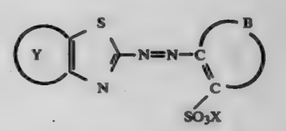
5,298,608

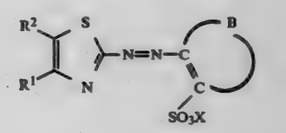
METAL CHELATE OF A MONOAZO COMPOUND AND OPTICAL RECORDING MEDIUM USING IT

Tetsuo Murayama, Machida; Shuichi Maeda, Hidaka; Chiyoko Fukabori, and Takumi Nagao, both of Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

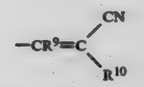
PCT No. PCT/JP91/00652, § 371 Date Jan. 16, 1992, § 102(e) Date Jan. 16, 1992, PCT Pub. No. WO91/18057, PCT Pub. Date Nov. 28, 1991
PCT Filed May 17, 1991, Ser. No. 809,509
Claims priority, application Japan, May 17, 1990, 2-127178; Sep. 11, 1990, 2-240917; Sep. 11, 1990, 2-240918; Nov. 28, 1990, 2-328425
Int. Cl.[5] C09B *29/042, 29/045, 29/09;* B41M *5/26*
U.S. Cl. 534—693 20 Claims

1. A metal chelate compound comprising a monoazo compound of the following formula (II) or (II'):

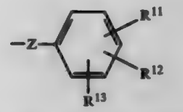

(II)


(II')

wherein each of R^1 and R^2, which are independent from one another, is a hydrogen atom, a C_{1-6} alkyl sulfonyl group, a C_{2-7} alkyl carbonyl group, a halogen atom, a formyl group,



(wherein R^9 is a hydrogen atom or a C_{1-6} alkyl group, and R^{10} is a C_{2-7} alkoxy carbonyl group), a nitro group,



(wherein each of R^{11} to R^{13} which are independent from one another, is a hydrogen atom or a nitro group, Z is a single bond, —SCH_2— —SO_2— or —SO_2CH_2—), a trifluoromethyl group, a trifluoromethoxy group, a cyano group, a C_{2-7} alkoxycarbonyl group, a C_{3-7} alkoxycarbonylalkyl group or a C_{1-6} alkylthio group, and wherein Y is a residue forming an aromatic ring or a hetero ring together with the two carbon atoms of the thiazole ring to which it is bonded, B is a residue forming an aromatic ring together with the two carbon atoms to which it is bonded, and X is a hydrogen atom or a cation), said monoazo compound having only one —SO_3X group, and a metal.

VOL 1160 ISS 5 MR 29 1994 UMI

5,298,609

DISAZO COMPOUNDS CONTAINING CYCLOALKYL ESTER OR CYCLOALKYLAMIDE GROUPS

Stefan Hari, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

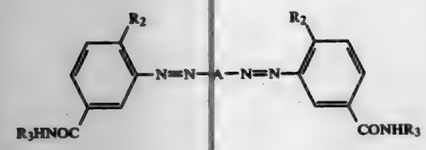
Continuation of Ser. No. 909,857, Jul. 7, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 92,023

Claims priority, application Switzerland, Jul. 11, 1991, 2064/91

Int. Cl.[5] C09B *33/147, 33/153;* D06P *3/79*

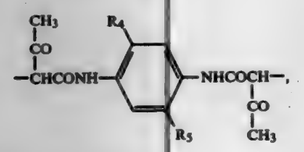
U.S. Cl. 534—748 2 Claims

1. A compound of the formula



wherein

A is a radical of formula VI



(VI)

R_2 is Cl, CH_3, or OCH_3

R_3 is C_5–C_6cycloalkyl

R_4 and R_5 are each independently of the other H, Cl, CH_3, OCH_3 or OC_2H_5.

5,298,610

THIAZOLEAZO DYES HAVING A COUPLING COMPONENT OF THE DIPHENYLAMINE SERIES

Erwin Hahn, Heidelberg; Matthias Wiesenfeldt, Mutterstadt; Helmut Reichelt, Neustadt, and Sabine Gruettner-Merten, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

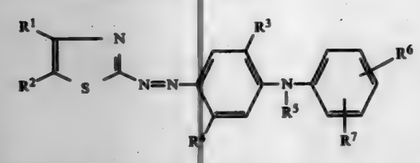
Filed Jun. 4, 1992, Ser. No. 893,843

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1991, 4120362

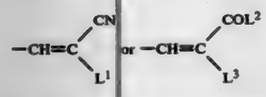
Int. Cl.[5] C09B *29/042, 29/09;* D06P *3/52*

U.S. Cl. 534—774 2 Claims

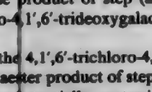
1. A thiazoleazo dye of the formula I



wherein R^1 is chlorine, bromine, C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenylthio, C_1–C_4-alkylsulfonyl, phenylsulfonyl or C_1–C_4-alkoxycarbonyl, R^2 is cyano, formyl or radical of the formula



where L^1 is cyano, C_1–C_4-alkanoyl or C_1–C_4-alkoxycarbonyl, L^2 is C_1–C_4-alkyl or C_1–C_4-alkoxy, and L^3 is C_1–C_4-alkoxycarbonyl, R^3 is hydrogen or C_1–C_6-alkoxy, which may be hydroxyl- or C_1–C_4-alkoxy-substituted, R^4 is C_1–C_6-alkoxy, which may be hydroxyl-, C_1–C_4-alkoxy- or C_1–C_4-alkanoyloxy-substituted, a radical of the formula



where X^1 and X^2 are identical or different and each is independently or the other C_1–C_6-alkyl, which may be C_1–C_4-alkoxy-substituted, or X^1 and X^2 together with the nitrogen atom joining them together are a five- or six-membered saturated heterocyclic radical with or without further hetero atoms, unsubstituted or hydroxyl-, chlorine-, cyano-, C_1–C_4-alkoxy- or phenoxy-substituted C_1–C_4-alkanoyloxy, unsubstituted or hydroxyl-, chlorine-, cyano-, C_1–C_4-alkoxy-, phenoxy- or C_1–C_4-alkanoyloxy-substituted C_1–C_4-alkanoylamino or unsubstituted or chlorine-, cyano-, nitro-, C_1–C_4-alkyl-, C_1–C_4-alkoxy-, C_1C_4–alkoxycarbonyl-or C_1–C_4-alkylsulfonyl-substituted phenyl, or C_1–C_4-alkanoylamino, which may be hydroxyl-, cyano- or C_1–C_4-alkoxy-substituted, R^5 is hydrogen, C_1–C_6-alkyl, which may be hydroxyl- or C_1–C_4-alkanoyloxy-substituted and can be interrupted by 1 or 2 oxygen atoms in either function, and R^6 and R^7 are each independently of the other hydrogen, halogen, C_1–C_4-alkyl, which may be hydroxyl- or C_1–C_4-alkanoyloxy-substituted, or C_1–C_6-alkoxy, which may be hydroxyl- or C_1–C_4-alkanoyloxy-substituted.

5,298,611

SUCRALOSE PENTAESTER PRODUCTION

Juan L. Navia, Athens; Robert E. Walkup, Watkinsville, both of Ga.; Nicholas M. Vernon, Durham, England, and Robert E. Wingard, Jr., Athens, Ga., assignors to McNeil-PPC, Inc., Milltown, N.J.

Filed Mar. 12, 1993, Ser. No. 30,518

Int. Cl.[5] C07H *13/04, 13/06, 13/08*

U.S. Cl. 536—4.1 17 Claims

1. A process for producing substantially pure sucralose pentaester from a mixture of 6-O-acyl-4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose in a reaction medium comprising a tertiary amide, wherein said process comprises the steps of:

(a) recovering the 6-O-acyl-4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose from said mixture;

(b) peracylating the 6-O-acyl-4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose product of step (a) to produce thereby 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose pentaester; and

(c) crystallizing the 4,1′,6′-trichloro-4,1′,640 -trideoxygalactosucrose pentaester product of step (b) from a mixture of water and a substantially water-immiscible solvent to produce substantially pure 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose pentaester.

5,298,612

ENDONUCLEASES

Philip A. Jennings, Chatswood West; Maxine J. McCall, Gladesville, and Philip Hendry, Roselle, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

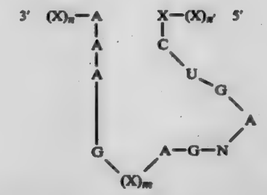
Filed Jun. 19, 1991, Ser. No. 717,602

Claims priority, application Australia, Jun. 19, 1990, PK0679/90; Dec. 21, 1990, PK4002/90

Int. Cl.[5] C12N *15/10*

U.S. Cl. 536—23.2 4 Claims

1. A compound having the structure:



wherein each X represents a ribonucleotide or a deoxyribonucleotide which is the same or different and may be modified in its phosphate;

wherein $(X)_n$ and $(X)_m$, represent oligonucleotides in which n and n′ are integers which define the number of nucleotides in the oligonucleotides, such oligonucleotides having predetermined sequences sufficiently complementary to a predefined RNA target sequence to be cleaved to allow hybridization to the RNA target sequence;

wherein N may be adenine, guanine, cytosine or uracil;

wherein each solid line represents a chemical linkage providing covalent bonds between the nucleotides located on either side thereof;

wherein m represents an integer from 2 to 20; and wherein none of the nucleotides $(X)_m$ are Watson-Crick base paired to any other nucleotide within the compound.

5,298,613

EIMERIA ACERVULINA 16S RDNA PROBES

Prasanta R. Chakraborty, Scotch Plains; Alex Elbrecht, Watchung; Michael Dashkevicz, Jamesburg; Scott D. Feighner, Scotch Plains; Paul A. Liberator, Jackson, all of N.J., and Helen Profous-Juchelka, Staten Island, N.Y., assignors to Merck and Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 706,817, May 29, 1991, abandoned. This application May 12, 1992, Ser. No. 879,644

Int. Cl.[5] C07H *21/04;* C12Q *1/68;* C12P *19/34*

U.S. Cl. 536—24.32 2 Claims

1. A DNA probe, the DNA probe consisting of 5′ TACGATAACCGAAGTTACCG 3′ (SEQ ID NO:35).

5,298,614

SIZE LIMITED DOUBLE STRANDED POLY I POLY(CYTIDYLATE/4-THIOURIDYLATE)

Junichi Yano, Nara, and Tadaaki Ohgi, Otsu, both of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Continuation-in-part of Ser. No. 212,899, Jun. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 174,985, Mar. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 672, Jan. 6, 1987, abandoned. This application Apr. 6, 1989, Ser. No. 319,062

Claims priority, application Japan, Jan. 6, 1986, 61-1076; Jul. 3, 1987, 62-167433; Jul. 3, 1987, 62-167434

Int. Cl.[5] C07H *21/02*

U.S. Cl. 536—25.5 3 Claims

1. A double stranded RNA, wherein one of the single stranded RNAs is poly I and the other strand is poly C wherein a part of the —NH_2 groups on the pyrimidine ring of cytidylic acid is substituted with —SH, and further, wherein the molecular size distribution of the RNA is within the range of from 50 to 10,000 as calculated as number of bases.

5,298,615

ULTRA-LIGHTWEIGHT, OPEN-PORE FOAMED CELLULOSE MATERIALS WITH LARGE SURFACE AREAS, HAVING ION-EXCHANGEABLE FUNCTIONAL GROUPS INTRODUCED THEREIN

Tomomi Matsui; Kimiaki Yasuda; Michiyo Nojiri, and Masanao Ohno, all of Fukui, Japan, assignors to Sakai Engineering Co., Ltd. and Agro-Systems Corporation Limited, both of Fukui, Japan

Filed Apr. 5, 1991, Ser. No. 680,829

Claims priority, application Japan, Apr. 6, 1990, 2-90258

Int. Cl.[5] C08B *1/00;* C08L *11/00*

U.S. Cl. 536—56 2 Claims

1. An ultra-lightweight, open-pore foamed cellulose material with an increased surface area, comprising a three-dimensional network structure which, when swollen, has a particle diameter of 0.5 to 12.0 mm, a mean pore diameter of 0.1 to 1.7 mm, a specific surface area of 1.0 to 10.0 m^2/g, a true density of 1.4 to 1.6 g/cm^3 and a porosity of 90% or greater, wherein ion-exchangeable functional groups are introduced therein.

5,298,616

SULFATED O-POLYSACCHARIDE-TREHALOSES

Markus Hoesang, Allschwil; Niggi Iberg, Basle, both of Switzerland; Michel Trumtel, Glen, France; Thomas B. Tschopp, Ettingen, Switzerland, and Hans P. Wessel, Heitersheim, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

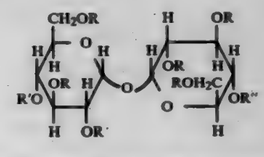
Filed Sep. 20, 1991, Ser. No. 764,511

Claims priority, application Switzerland, Oct. 3, 1990, 3177/90; Jul. 30, 1991, 2267/91

Int. Cl.[5] C07H *11/00*

U.S. Cl. 536—118 22 Claims

1. Oligosaccharides of the formula



I

wherein R is hydrogen or the sulfate residue —SO_3M; M is a cation; R′ is an equatorially or quasiequatorially linked mono- , di- or trisaccharide; and R″ is hydrogen or an equatorially or quasiequatorially linked mono- or disaccharide; with said mono-, di- or tri-saccharides which form R′ and R″: being sulfated with said sulfate residue;

said oligosaccharide containing a maximum of 6 monosaccharide units and an average of at least one —SO_3M per monosaccharide unit.

5,298,617

OXYTITANIUMPHTHALOCYANINE HYDRATE CRYSTAL AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR USING SAID CRYSTAL

Katsumi Nukada; Katsumi Daimon; Masakazu Iijima; Yasuo Sakaguchi; Hideni Nukada, and Akihiko Tokida, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,218

Claims priority, application Japan, Nov. 22, 1990, 2-316072

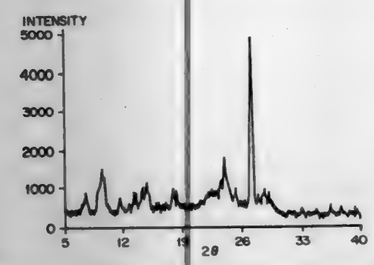
Int. Cl.[5] C09B *47/04*

U.S. Cl. 540—141 3 Claims

1. Oxytitanium phthalocyanine hydrate crystal having the

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structural formula, $TiOPc(H_2O)_n$, wherein Pc represents a phthalocyanine group, and n has a value from 0.15 to 1; and the



elemental analysis values of C, H and N are as follows: C: 65.0 to 66.3%; H: 2.5 to 3.1%; and N: 18.5 to 19.3%.

5,298,618

MACROCYCLIC OXAMIDES

George P. Speranza, Austin; Donald H. Champion, Pflugerville, and Martin J. Plishka, Austin, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

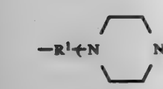
Filed Nov. 23, 1992, Ser. No. 979,737
Int. Cl.[5] C07D *273/08*
U.S. Cl. 540—454 7 Claims

1. Macrocyclic oxamides made by the reaction of an oxalic compound selected from the group consisting of oxalic acid and oxalic esters, with a diamine of the formula:

$$H_2N—R—NH_2$$

where R is selected from the group consisting of:

(a) $—R^1\!\left(\!—N(R^2)—R^1\!\right)_z—$;

(b)  ; and

(c) $—R^1—(O—R^3)_z—N(R^2)—(R^3—O)_z—R^1—$

where

R^1 is independently C_2–C_4 straight or branched alkylene;

R^2 is independently H and C_1–C_4 straight or branched alkyl;

R^3 is independently C_2–C_4 straight or branched alkylene; and

z averages about 1–5.

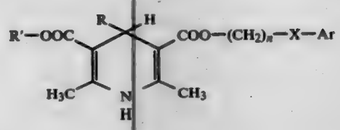
5,298,619

1,4-DIHYDROPYRIDINE COMPOUNDS WITH PAF-ANTAGONISTIC ACTIVITY

Carlos Sunkel; Miguel Fau de Casa-Juana; Luis Santos; Pilar Ortega, and Jaime Priego, all of Madrid, Spain, assignors to Alter, S.A., Madrid, Spain

Filed Aug. 3, 1992, Ser. No. 924,319
Claims priority, application Spain, Sep. 9, 1991, 91500103
Int. Cl.[5] C07D *211/86*
U.S. Cl. 544—124 4 Claims

1. 4-alkyl-1,4-dihydropyridines with antagonistic activity of the PAF-acether, of formula (I);



where:

R is a saturated alkyl chain of C1–C2;

R′ is an alkyl chain of C1–C16, where the chain can be linear, branched, or, if greater than three carbons in length, cyclic; the chain can be saturated or, if greater than two carbons in length, unsaturated; and the chain can contain oxygen and/or nitrogen components;

n is a number that can be 2 or 3;

X defines an oxygen atom (O), or a sulphur (S), or a SO_2 group;

Ar represents an unsubstituted naphthyl ring or an unsubstituted or substituted phenyl ring, wherein the substituents are selected from the group consisting of 4-nitro, 4-acetylamino, 4-chloro, 3,4,-dichloro, 4-methyl, 4-methoxy, 3-dimethylamino, 4-phenyl, 4-phenoxy, and 4-benzyl; with the proviso that if X=S and n=2 then Ar must be a substituted phenyl ring.

5,298,620

PROCESS FOR THE DESTRUCTION OF CYANURIC FLUORIDE IN THE RESIDUES OBTAINED DURING ITS PREPARATION

Georg Grötsch, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/01363, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO91/02727, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 18, 1990, Ser. No. 834,303
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1989, 3927951
Int. Cl.[5] C07D *251/28*
U.S. Cl. 544—217 20 Claims

1. A process for the reliable and quantitative destruction of the residual cyanuric fluoride which still remains in residues from the cyanuric fluoride preparation by reaction of cyanuric chloride with alkali metal fluorides in dipolar aprotic solvents after distillative removal of the majority of cyanuric fluoride, which comprises reacting the residue with an alkali metal hydroxide, bicarbonate or carbonate which is anhydrous apart from any water of crystallization present, or any desired mixture of these compounds, in an amount which is at least equivalent to the residual cyanuric fluoride at temperatures of 20° to 180° C.

5,298,621

OLIGOPEPTIDE DERIVATIVES OF IPOXANTINE ENDOWED WITH IMMUNOMODULATING ACTIVITY AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Mauro Marzi; Patrizia Minetti, both of Rome; Piero Foresta, Pomezia, and Mario O. Tinti, Rome, all of Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.P.A., Rome, Italy

Filed Jun. 28, 1991, Ser. No. 723,418
Claims priority, application Italy, Jun. 28, 1990, 48102 A/90
Int. Cl.[5] C07K *5/06*
U.S. Cl. 544—265 2 Claims

1. N-5-(ipoxantin-9-yi) pentyloxycarbonyl glycyl L-aspartate disodium salt.

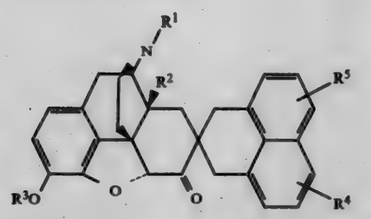
5,298,622

SPIROINDANE OPIATE ANALOGS

Philip S. Portoghese; Shigenori Ohkawa, both of St. Paul, Minn., and Scott T. Moe, Salt Lake City, Utah, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

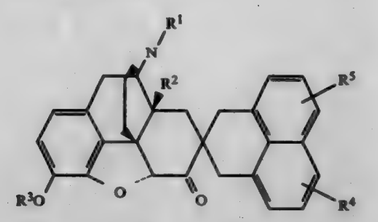
Filed May 12, 1993, Ser. No. 60,638
Int. Cl.[5] C07D *489/09*; A61K *31/485*
U.S. Cl. 546—15 17 Claims

1. A compound of the formula:



wherein R^1 is (C_1–C_5)alkyl, C_3–C_6(cycloalkyl)alkyl, C_5–C_7-(cycloalkenyl)alkyl, (C_6–C_{12})aryl, (C_6–C_{12})aralkyl, trans(-C_4–C_5)alkenyl, allyl or furan-2-ylalkyl, R^2 is H, OH or O_2C(-C_1–C_6)alkyl; R^3 is H, (C_6–C_{12})aralkyl, (C_1–C_6)alkyl; or (C_1–C_6) alkylCO; and R^4 and R^5 are individually H, F, Cl, Br, NO_2, NH_2, (C_1–C_5)alkyl, (C_1–C_5)alkoxy or together are dioxymethylene (—OCH_2O—) or benzo; and the pharmaceutically acceptable salts thereof.

12. A compound of the formula:



wherein R^1 is (C_1–C_5)alkyl, C_3–C_6(cycloalkyl)alkyl, C_5–C_7-(cycloalkenyl)alkyl, (C_6–C_{12})aryl, (C_6–C_{12})aralkyl, trans(-C_4–C_5)alkenyl, allyl or furan-2-ylalkyl, R^2 is H, OH or O_2C(-C_1–C_5)alkyl; R^3 is H, (C_6–C_{12})aralkyl, (C_1–C_5)alkyl; or (C_1–C_5)alkylCO; and R^4 and R^5 are individually H, F, Cl, Br, NO_2, NH_2, (C_1–C_5)alkyl, (C_1–C_5)alkoxy or together are dioxymethylene (—OCH_2O—) or benzo, wherein R^4 and R^5 can occupy any available site on the naphthyl ring; and the pharmaceutically acceptable salts thereof.

5,298,623

CU COMPLEXES OF BIS-OXAZOLINES AND THEIR USE

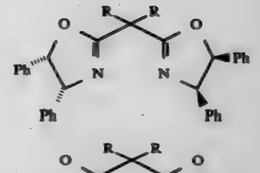
Satoru Masamune, Newton, and Richard E. Lowenthal, Waltham, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 8, 1991, Ser. No. 789,748
Int. Cl.[5] C07D *233/20*
U.S. Cl. 548—101 12 Claims

1. A compound of the formula

$$Cu.X_n$$

wherein X is a member selected from ligands of the formula



wherein R is hydrogen or methyl, Ph is phenyl or substituted phenyl, n is 1 or 2 and Cu is CuOTf, CuO-t-Bu, $Cu(ClO_4(CH_3CN)_2$ or Cu(II) followed by activation with the provision that when n is 1 Cu(II) is selected from $Cu(OTf)_2$, $Cu(OtBu)_2$ or $Cu(ClO_4)_2$.

5,298,624

ORGANOMETALLIC DIPHENYL HYDANTOIN

Sigmund E. Lasker, Roosevelt Island, New York, N.Y. 10044

Continuation of Ser. No. 765,460, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 363,288, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 862,160, May 12, 1986, abandoned, which is a continuation of Ser. No. 570,800, Jan. 16, 1984, abandoned. This application Nov. 12, 1992, Ser. No. 974,686
Int. Cl.[5] C07D *239/22*; C07F *1/10*
U.S. Cl. 548—107 4 Claims

1. A method for preparing a silver diphenyl hydantoin complex which comprises reacting diphenyl hydantoin and ammonium hydroxide to form the ammonium salt, adding a source of silver ions to form resulting diphenyl hydantoin complex and recovering said complex.

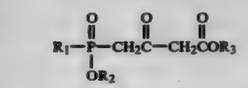
5,298,625

PROCESS FOR THE PREPARATION OF 4-PHOSPHINYL-3-KETO-CARBOXYLATE AND 4-PHOSPHONYL-3-KETO-CARBOXYLATE INTERMEDIATES USEFUL IN THE PREPARATION OF PHOSPHORUS CONTAINING HMG-COA REDUCTASE INHIBITORS

John K. Thottathil, Robbinsville, and Wen S. Li, Lincroft, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 7, 1992, Ser. No. 987,514
Int. Cl.[5] C07F *7/02, 9/02*
U.S. Cl. 548—406 2 Claims

1. A method for preparing a compound of the formula



I

or salt thereof where

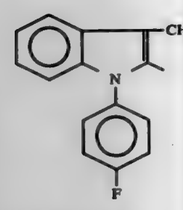
R_1 is —X—Z and X is —C≡C—,

R_2 is hydrogen, alkyl or trialkylsilyl;

R_3 is hydrogen or alkyl; and

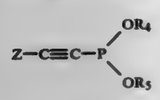
Z is a hydrophobic anchor which is

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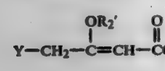


comprising the step of:

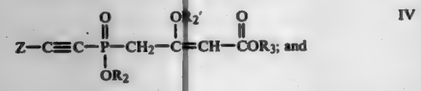
(A) reacting a compound of formula



where R_4 is alkyl, cycloalkyl or aryl; and R_5 is trialkylsilyl or triarylsilyl with a compound of formula



where Y is a halogen and R_2' is hydrogen, alkyl or trialkylsilyl, to form a compound of formula



(B) hydrolyzing the product of step (A) to obtain the compounds of formula I.

5,298,627

PROCESS FOR TRANS-6-[2-(SUBSTITUTED-PYRROL-1-YL)ALKYL]PYRAN-2-ONE INHIBITORS OF CHOLESTEROL SYNTHESIS

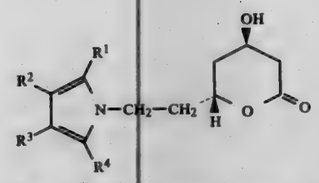
Donald E. Butler, Holland; Tung V. Le, Jenison, and Thomas N. Nanninga, Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 3, 1993, Ser. No. 25,701

Int. Cl.[5] C07D *207/323, 309/10*

U.S. Cl. 548—517 **12 Claims**

1. A process for the preparation of a compound of Formula I



and a dihydroxy acid and pharmaceutically acceptable salts thereof, corresponding to the opened lactone ring of a compound of Formula I wherein

R^1 is
- 1-naphthyl,
- 2-naphthyl,
- cyclohexyl,
- cyclohexylmethyl,
- norbornenyl,
- phenyl,
- phenyl substituted with
  - fluorine,
  - chlorine,
  - bromine,
  - hydroxyl,
  - trifluoromethyl,
  - alkyl of from one to four carbon atoms,
  - alkoxy of from one to four carbon atoms, or
  - alkanoyloxy of from two to eight carbon atoms,
- benzyl,
- 2-, 3-, or 4-pyridinyl, or
- 2-, 3-, or 4-pyridinyl-N-oxide;

R^2 or R^3 is independently
- hydrogen,
- alkyl of from one to six carbon atoms,
- cyclopropyl,
- cyclobutyl,
- cyclopentyl,
- cyclohexyl,
- phenyl,
- phenyl substituted with
  - fluorine,
  - chlorine,
  - bromine,
  - hydroxyl,
  - trifluoromethyl,
  - alkyl of from one to four carbon atoms, or
  - alkoxy of from one to four carbon atoms,
- cyano,
- trifluoromethyl, or —$CONR^5R^6$ where R^5 and R^6 are independently
  - hydrogen,
  - alkyl of from one to six carbon atoms,
  - phenyl,
  - phenyl substituted with
    - fluorine,
    - chlorine,
    - bromine,

5,298,626

SELECT CYCLOPENT[B]INDOLES

Helen H. Ong, Whippany, N.J.; Gerard J. O'Malley, Newtown; Michael C. Merriman, Hellertown, both of Pa., and Mark G. Palermo, Piscataway, N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Division of Ser. No. 818,703, Jan. 9, 1992, Pat. No. 5,192,789, which is a continuation-in-part of Ser. No. 642,952, Jan. 18, 1991, Pat. No. 5,100,891. This application Nov. 13, 1992, Ser. No. 976,067

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] C07D *209/80*

U.S. Cl. 548—439 **3 Claims**

1. 4-Methyl-3-(2propynyl)amino-1,2,3,4-tetrahydrocyclopent[b]-indol-7-yl methylcarbamate.

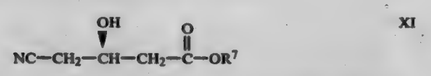
3. 1,2,3,3a,4,8b-Hexahydro-4-methyl-3-(N-phenylmethyl-N-methylaminocarbonyl)aminocyclopent[b]indol-7-yl phenylmethylcarbamate.

cyano, or
- trifluoromethyl;

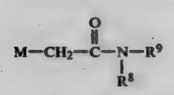
R^4 is
- alkyl of from one to six carbon atoms,
- cyclopropyl,
- cyclobutyl,
- cyclopentyl,
- cyclohexyl, or
- trifluoromethyl;

which comprises:

(a) reacting a compound of Formula XI



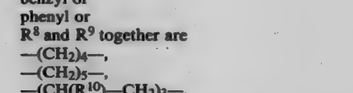
wherein R^7 is alkyl of from one to ten carbon atoms with a compound of Formula X



wherein R^8 or R^9 is independently
- alkyl of from one to ten carbon atoms,
- cyclopropyl,
- cyclobutyl,
- cyclopentyl,
- cyclohexyl,
- benzyl or
- phenyl or

R^8 and R^9 together are
- $—(CH_2)_4—$,
- $—(CH_2)_5—$,
- $—(CH(R^{10})—CH_2)_3—$,
- $—(CH(R^{10})—CH_2)_4—$,
- $—(CH(R^{10})—(CH_2)_2—CH(R^{10}))—$,
- $—(CH(R^{10})—(CH_2)_3—CH(R^{10}))—$,
- $—CH_2—CH_2—O—CH_2—CH_2—$,
- $—CH(R^{10})—CH_2—O—CH_2—CH_2—$,
- $—CH(R^{10})—CH_2—O—CH_2—CH(R^{10})—$,

wherein R^{10} is alkyl of from one to four carbon atoms provided R^8 and R^9 are not both methyl; and M is zinc, magnesium, sodium, or lithium in a solvent to afford a compound of Formula IX



wherein R^8 and R^9 are defined as above,

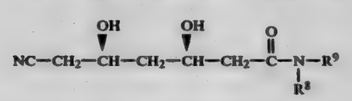
(b) reacting a compound of Formula IX with either a compound of formula

$R_2{}^{10}BOCH_3$

wherein R^{10} is as defined above or

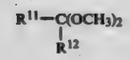
$R_3{}^{10}B$

wherein R^{10} is as defined above followed by $NaBH_4$ in a solvent to afford a compound of Formula VIII

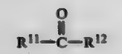


wherein R^8 and R^9 are as defined above;

(c) reacting a compound of Formula VIII with a ketal-forming reagent of Formula VII or Formula VIIa

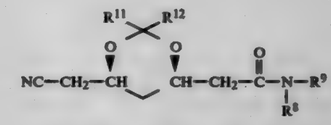


or



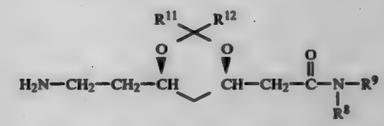
wherein R^{11} or R^{12} is independently alkyl of from one to three carbon atoms or phenyl or

R^{11} and R^{12} are taken together as $—(CH_2)_n—$ wherein n is 4 or 5 in the presence of an acid to afford a compound of Formula VI



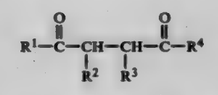
wherein R^8, R^9, R^{11}, and R^{12} are as defined above;

(d) reacting a compound of Formula VI with hydrogen in the presence of a catalyst and a solvent to afford a compound of Formula V

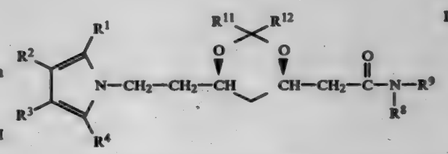


wherein R^8, R^9, R^{11}, and R^{12} are defined as above;

(e) reacting a compound of Formula V with a compound of Formula IV

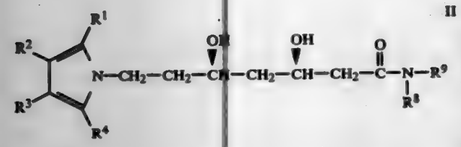


wherein R^1, R^2, R^3, and R^4 are as defined above in a solvent to afford a compound of Formula III



wherein R^1, R^2, R^3, R^4, R^8, R^9, R^{11}, and R^{12} are defined as above;

(f) reacting a compound of Formula III with an acid in a solvent to afford a compound of Formula II



II

wherein R^1, R^2, R^3, R^4, R^8, and R^9 are as defined above;

(g)
(1) hydrolyzing a compound of Formula II with a base,
(2) followed by neutralization with an acid, and
(3) dissolution and/or heating in a solvent with concomitant removal of water to afford a compound of Formula I;

(h) and if desired converting the resulting compound of Formula I to a dihydroxy acid corresponding to the opened lactone ring of structural Formula I by conventional hydrolysis and further, if desired converting the dihydroxy acid to a corresponding pharmaceutically acceptable salt by conventional means, and if so desired converting the corresponding pharmaceutically acceptable salt to a dihydroxy acid by conventional means, and if so desired converting the dihydroxy acid to a compound of Formula I by dissolution and/or heating in an inert solvent.

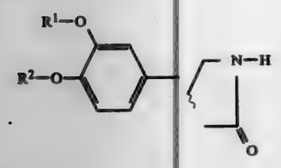
5,298,628

PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE 4-ARYL-2-PYRROLIDINONES

Johann H. Mulzer, and Ralf H. Zuhse, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE91/00773, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/06077, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 877,181
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1990, 4032055
Int. Cl.[5] C07D *207/26, 263/26*
U.S. Cl. 548—551 **20 Claims**

1. A process for production of an optically active 4-aryl-2-pyrrolidinone of formula I



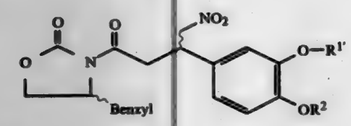
I

wherein

R^1 is hydrogen or a hydrocarbon radical with up to 7 carbon atoms and optionally interrupted with an oxygen atom; and

R^2 is C_{1-4}-alkyl, said process comprising: catalystically reducing with hydrogen and cyclizing, in

the presence of a hydrogenation catalyst, an optically active compound of formula II



II

wherein

$R^{1'}$ has the meaning of R^1 or is a cleavable hydroxy protective group, and

R^2 is C_{1-4}-alkyl, and

optionally cleaving off said cleavable hydroxy protective group and etherifying the resultant hydroxy group, to obtain a compound of formula I.

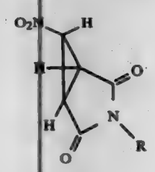
5,298,629

INTERMEDIATES IN THE SYNTHESIS OF QUINOLINE ANTIBIOTICS

Tamia F. Braish, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

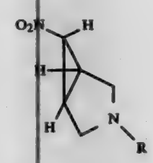
Continuation-in-part of Ser. No. 844,367, Mar. 2, 1992, Pat. No. 5,256,791. This application Aug. 4, 1993, Ser. No. 101,879
Int. Cl.[5] C07D *209/52*
U.S. Cl. 548—452 **7 Claims**

1. A compound having the formula



(III)

or



(IV)

wherein R is (C_1–C_6) straight or branched alkyl, benzyl, diphenylmethyl or triphenylmethyl, and wherein the phenyl moieties of said benzyl, diphenylmethyl and triphenylmethyl groups may be substituted, optionally, with one or more substituents independently selected from halo, nitro, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, amino and trifluoromethyl.

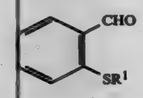
5,298,630

PROCESSES FOR PRODUCING 2-SUBSTITUTED BENZO[B]THIOPHENE

Hirokazu Kagano; Hiroshi Goda; Katsuhiko Yoshida, and Masahito Nakano, all of Hyogo, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

Filed Sep. 15, 1992, Ser. No. 945,084
Claims priority, application Japan, Jun. 3, 1992, 4-142716; Jun. 3, 1992, 4-142718
Int. Cl.[5] C07C *319/14*; C07D *333/70*
U.S. Cl. 549—57 **16 Claims**

1. A process for producing a 2-substituted benzo[b]thiophene of general formula (III) which comprises reacting an 2-alkylthiobenzaldehyde of general formula (I) with a halo compound of general formula (II):

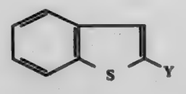


(I)

wherein R^1 means an alkyl group of 1 to 4 carbon atoms,

X^1CH_2Y (II)

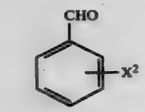
wherein X^1 means Cl or Br; Y means $—CO_2H$, $—CO_2R^2$, $—COR^2$, $—CONH_2$ or —CN; R^2 means an alkyl group of 1 to 4 carbon atoms,



(III)

wherein Y is as defined above.

11. A process for producing an alkylthiobenzaldehyde of general formula (VI) which comprises reacting a halobenzaldehyde of general formula (IV) with an alkanethiol of general formula (V) in the presence of a base and water in a heterogeneous phase:

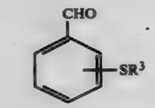


(IV)

wherein X^2 means Cl or Br,

R^3SH (V)

wherein R^3 means an alkyl group of 1 to 4 carbon atoms,



(VI)

wherein R^3 is as defined above.

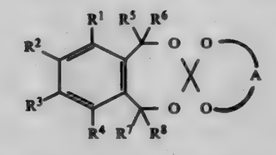
5,298,631

SPIROORTHOCARBONATE COMPOUND AND COPOLYMERS OBTAINED THEREFROM

Fumio Sanda, Okayama; Junichi Yamauchi, Kurashiki; Toshikazu Takata, and Takeshi Endo, both of Yokohama, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

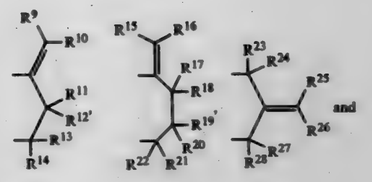
Filed Mar. 12, 1992, Ser. No. 850,274
Claims priority, application Japan, Mar. 12, 1991, 3-741541; Mar. 12, 1991, 3-741551; May 2, 1991, 3-130609; Aug. 2, 1991, 3-217998; Nov. 1, 1991, 3-315529
Int. Cl.[5] C07D *321/10*
U.S. Cl. 549—334 **7 Claims**

1. A polymerizable composition comprising an asymetric spiroorthocarbonate compound having only one exomethylene group and represented by the following formula (1)

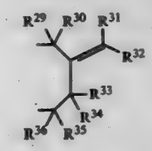


(1)

wherein A is selected from the group consisting of:



and



wherein R^1, R^2, R^3 and R^4 are each hydrogen, lower alkyl having not more than 8 carbon atoms, alkoxy, halogen, nitro, cyano, amino, amide, hydroxyl or alkyl ester having not more than 20 carbon atoms, and R^5, R^6, R^7 and R^8, R^9 through R^{14}, R^{15} through R^{22}, R^{23} through R^{28} and R^{29} through R^{36} are each hydrogen or a lower alkyl having not more than 8 carbon atoms and a polymerization catalyst selected from the group consisting of a cationic polymerization catalyst and a radical polymerization catalyst.

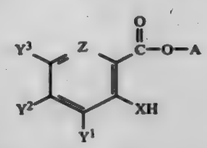
5,298,632

HERBICIDAL PYRIMIDINE COMPOUNDS, COMPOSITIONS CONTAINING THE SAME AND METHOD OF USE

Mitsunori Hiratsuka, Toyonaka; Naonori Hirata, Sando; Kazuo Saitoh, and Hideyuki Shibata, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 782,547, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 699,392, May 14, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,356
Claims priority, application Japan, May 15, 1990, 2-126454; Apr. 25, 1991, 3-125494
Int. Cl.[5] C07D *319/06, 317/24, 321/06*
U.S. Cl. 549—375 **10 Claims**

1. A compound having the formula,



wherein

A is a 5–7 membered saturated aliphatic hetero ring containing as the sole hetero atoms two non-adjacent oxygen atoms, which may be substituted with at least one member selected from the group consisting of C_1–C_6 alkyl and halogen, or C_1–C_6 alkyl having a 5–7 membered saturated aliphatic hetero ring containing as the sole hetero atoms two non-adjacent oxygen atoms, which may be substituted with at least one member selected from the group consisting of C_1–C_6 alkyl and halogen;

X is oxygen or sulfur;

Z is CY^4;

each of Y^1, Y^2 and Y^3, which may be the same or different, is hydrogen, halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy; and

Y^4 is hydrogen, hydroxyl, nitro, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, halo C_1–C_6 alkyl, $—CON(C_1$–C_6 alkyl)(C_1–C_6 alkyl), $—NH_2$, $—S(=O)_m—C_1$–C_6 alkyl (m=0, 1

or 2), halo C_1–C_6 alkoxy, cyano, C_1–C_6 alkoxycarbonyl, phenyl, phenyl substituted with at least one member selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, halo C_1–C_6 alkyl, C_1–C_6 alkoxycarbonyl and halogen.

5,298,633

INTERMEDIATES AND PROCESSES FOR PREPARING 4-SUBSTITUTED 2-5(H)-FURANONES AS ANTI-INFLAMMATORY AGENTS

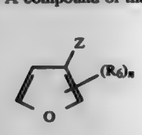
Gary C. M. Lee, Laguna Hills, and Michael E. Garst, Newport Beach, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 792,833, Nov. 15, 1991, Pat. No. 5,171,563, which is a division of Ser. No. 690,444, Apr. 24, 1991, Pat. No. 5,082,954, which is a division of Ser. No. 493,895, Mar. 15, 1990, Pat. No. 5,081,147, which is a division of Ser. No. 510,368, Apr. 17, 1990, Pat. No. 5,037,811, which is a division of Ser. No. 192,808, May 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 59,282, Jun. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 50,367, Apr. 17, 1990, Pat. No. 5,043,457, which is a continuation-in-part of Ser. No. 427,268, Oct. 25, 1989, Pat. No. 5,059,611, which is a continuation-in-part of Ser. No. 273,300, Nov. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 501,637, Oct. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 281,154, Dec. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 426,243, Oct. 25, 1989, Pat. No. 5,089,485, which is a continuation-in-part of Ser. No. 273,294, Nov. 18, 1988, abandoned. This application Oct. 28, 1992, Ser. No. 967,895

Int. Cl.[5] C07D *307/42, 307/48*

U.S. Cl. 549—484 7 Claims

1. A compound of the formula



where

Z is CH═O,

R_6 is phenyl or lower alkyl of 1 to 6 carbons, and n is 1 or 2 and where the R_6 groups are attached to the 2 and 4 positions or both, of the furane ring.

5,298,634

PROCESS FOR MAKING MALATE SALTS AND THEREBY, AMLIC ACID OR 2,2'-OXODISUCCINATES

Daniel S. Connor, and Herbert C. Kretschmar, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 10, 1987, Ser. No. 130,928

Int. Cl.[5] C07D *307/02;* C07C *59/245*

U.S. Cl. 549—485 25 Claims

1. A process for making malate by at least one step of maintaining, in a reaction vessel at a temperature of about 120° C. or above for a time of at least 10 minutes, an aqueous reaction mixture comprising:

I maleate, or mixtures thereof with one or more of 2,2'-oxodisuccinate, fumarate and malate;

II divalent cations selected from calcium, magnesium and mixtures thereof; and

III sufficient hydroxide excess to render said reaction mixture alkaline;

whereby said malate is obtained in yields up to and exceeding 90%.

5,298,635

TERTIARY AMIDES USEFUL AS LOW-FOAM WETTING AGENTS IN THE TEXTILE INDUSTRY

Eberhard Beckmann, Neustadt, Fed. Rep. of Germany; Ralf Braeckmann, Charlotte, N.C.; Johannes P. Dix, Weisenheim; Peter Freyberg, Ludwigshafen, and Erich Kromm, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

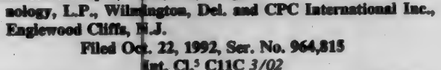
Filed May 14, 1993, Ser. No. 60,969

Claims priority, application Fed. Rep. of Germany, May 16, 1992, 4216316

Int. Cl.[5] C11D *3/30;* C11C *1/02*

U.S. Cl. 554—35 7 Claims

1. A process for manufacturing and finishing textiles, which comprises using tertiary amides of the general formula



I

where

R^1 is straight-chain or branched C_5–C_{17}-alkyl or -alkenyl,

R^2 is straight-chain or branched C_3–C_6-alkyl,

R^3, R^4 and R^5 are each independently of the others hydrogen, methyl or ethyl, and

n is from 3 to 15,

as low-foam wetting agents.

5,298,636

PROCESS FOR REDUCING THE LEVELS OF UNREACTED AMINO POLYOL CONTAMINANTS IN POLYHYDROXY FATTY ACID AMIDE SURFACTANTS

Daniel S. Connor, and Mark Hsiang-Kuen Mao, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1992, Ser. No. 950,390

Int. Cl.[5] C07C *231/00*

U.S. Cl. 554—70 5 Claims

1. In a process for preparing a polyhydroxy fatty acid amide surfactant by reacting a fatty acid ester and an N-alkylamino polyol said surfactant containing undesirable amounts of unreacted N-alkylamino polyol, the improvement which comprises dissolving said surfactant containing said unreacted N-alkylamino polyol in water and adding thereto an acid anhydride to acylate said unreacted N-alkylamino polyol, whereby the total level of unreacted N-alkylamino polyol present in said surfactant is substantially eliminated.

5,298,637

PROCESS FOR PRODUCING A REDUCED CALORIE LIPID COMPOSITION

Charles F. Cooper, Paoli, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del. and CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 22, 1992, Ser. No. 964,815

Int. Cl.[5] C11C *3/02*

U.S. Cl. 554—169 21 Claims

1. A process for producing a reduced calorie lipid composition comprising contacting a triglyceride containing at least one C_{20}–C_{24} saturated linear acyl group with an esterified alkoxylated polyol containing at least one C_6–C_{18} acyl group in the presence of a basic catalyst for a time and at a temperature effective to interchange at least one C_{20}–C_{24} saturated linear acyl group and at least one C_6–C_{18} acyl group.

5,298,638

ADSORPTIVE REMOVAL OF SULFUR COMPOUNDS FROM FATTY MATERIALS

Gabriella J. Toenseboehn, Columbia, and William A. Welsh, Highland, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 5, 1992, Ser. No. 878,944

Int. Cl.[5] C11B *3/10*

U.S. Cl. 554—191 11 Claims

1. A process for reducing total sulfur content of fatty materials containing commercially acceptable levels of phospholipids and chlorophyll by removal of sulfur-containing compounds from said fatty materials, said process comprising

(a) contacting the fatty material with a silica hydrogel said hydrogel having a volatiles content of at least 25 wt. %;

(b) allowing said sulfur compounds to be absorbed onto said silica hydrogel thereby lowering the total sulfur content in said fatty material; and

(c) separating said hydrogel from said lwoer total sulfur content fatty material.

5,298,639

MPR PROCESS FOR TREATING GLYCERIDE OILS, FATTY CHEMICALS AND WAX ESTERS

Gabriella J. Toenseboehn, Columbia; Walter M. Cheek, III, Baltimore; William A. Welsh, Highland, and James M. Bogdanor, Columbia, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 677,455, Apr. 3, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,648

Int. Cl.[5] C11B *3/10*

U.S. Cl. 554—192 15 Claims

1. A process for refining a fatty material selected from the group consisting of glyceride oils, fatty chemicals and wax esters, said fatty material containing free fatty acid and phospholipid, said process comprising:

(a) treating said material with a base to react a portion of the free fatty acid to form about 20–3000 ppm soap whereby said treated material contains a remaining portion of unreacted free fatty acid,

(b) contacting said treated material from step (a) with an amorphous silica adsorbent to adsorb phospholipid and soap onto said adsorbent,

(c) separating the adsorbent, the adsorbed phospholipid, and the adsorbed soap from the material to produce a partially refined material, and

(d) treating the partially refined material to remove said remaining portion of free fatty acid.

5,298,640

ANTIPERSPIRANT COMPOSITION

David T. Callaghan, Quincy; Alan M. Phipps, Framingham, both of Mass., and Stephen J. Provancal, Addison, Ill., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 846,016, Mar. 4, 1992, which is a continuation of Ser. No. 287,096, Dec. 20, 1988, Pat. No. 5,114,705, which is a continuation of Ser. No. 713,470, Mar. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 523,785, Aug. 16, 1983, abandoned. This application Sep. 3, 1992, Ser. No. 939,808

The portion of the term of this patent subsequent to Oct. 4, 2005, has been disclaimed.

Int. Cl.[5] A61K *7/34, 7/38;* B01D *11/00;* C07F *9/00*

U.S. Cl. 556—27 16 Claims

1. A method of making a high efficacy antiperspirant salt which comprises heating a 2% to 18% solution of aluminum chlorhydroxide in water at a temperature of at least 50° C. for at least two hours, adding zirconyl hydroxy chloride to said solution before, during or after said heating step in an amount to provide an atomic ratio of Al:Zr of from 6:1 to 1:1, and rapidly drying said solution to solid form.

5,298,641

METHOD OF PREPARING DISTANNANES

Ulrich Stewen, Schwerte, Fed. Rep. of Germany, assignor to Witco GmbH, Bergkamen, Fed. Rep. of Germany

Filed Jun. 30, 1993, Ser. No. 85,509

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1992, 4231083

Int. Cl.[5] C07F *7/22*

U.S. Cl. 556—82 15 Claims

1. A method of preparing hexaalkyl distannanes of general formula

$$R_1R_2R_3Sn—SnR_1R_2R_3$$

wherein R_1, R_2, and R_3 are the same or different and are branched or unbranched alkyls having from 1 to 18 carbon atoms, characterized by converting bis-[trialkyltin]oxide with a stabilized solution of sodium borohydride in alcohol in the presence of an inert solvent.

5,298,642

PROCESS OF OPTICALLY RESOLUTING OPTICALLY ACTIVE PLATINUM COMPLEX COMPOUND

Takeshi Tozawa; Yasunobu Komoda; Junji Ohuchi; Yukie Masuda; Junichi Tanuichi; Chihiro Nakazishi, and Koji Okamoto, all of Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Japan

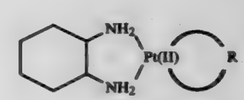
Filed Apr. 7, 1993, Ser. No. 43,577

Claims priority, application Japan, Apr. 22, 1992, 4-129668

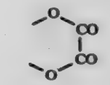
Int. Cl.[5] C07F *15/00*

U.S. Cl. 556—137 2 Claims

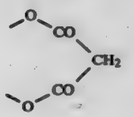
1. A process of optically resoluting an optically active platinum complex compound which comprises optically resoluting a d-isomer and an l-isomer of a cis-Pt(II) complex of a 1,2-cyclohexane-diamine isomer of Formula (3) [in this Formula, R designates one of Formulae (4), (5), (6), (7), (8) and (9)] characterized in that the mixture of the d-isomer and the l-isomer is optically resoluted by means of high performance liquid chromatography employing a column packed with a chiral filler



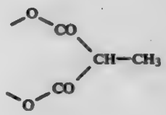
(3)



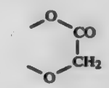
(4)



(5)



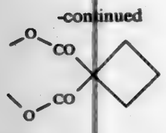
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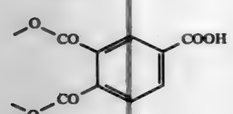
(7)

VOL 1160 ISS 5 MR 29 1994 UMI

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(8)



(9)

5,298,643

ARYL IMIDATE ACTIVATED POLYALKYLENE OXIDES

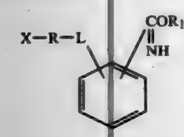
Richard B. Greenwald, Somerset, N.J., assignor to Enzon, Inc.

Filed Dec. 22, 1992, Ser. No. 995,585

Int. Cl.[5] C07C *249/00*

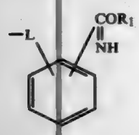
U.S. Cl. 558—6 **8 Claims**

1. A water-soluble aryl imidate activated polyalkylene oxide having a structure represented by (I):



(I)

wherein R is a water-soluble polyalkylene oxide;
L is NHC(O), such that the carbonyl is attached to the phenyl ring;
R_1 is a moiety selected from the group consisting of alkyl, phenyl, phenylalkyl and cycloalkyl moieties; and
X is a terminal moiety of said polyalkylene oxide selected from the group consisting of OH, C_{1-4} alkoxy moieties and aryl imidates corresponding to the structure:



wherein L and R_1 are defined as above.

5,298,644

ARYL PHOSPHINITES

Dieter Regnat, Frankfurt am Main, and Hans-Jerg Kleiner, Kronberg/Ts, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

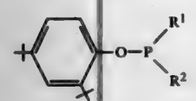
Filed May 19, 1993, Ser. No. 64,259

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216882

Int. Cl.[5] C07F *9/28*

U.S. Cl. 558—70 **7 Claims**

1. A compound of the formula (I)



(I)

in which
R^1 and R^2, independently of one another, are each a branched, unbranched or cyclic alkyl radical having 1 to 20 carbon atoms, or
R^1 is one of the alkyl radicals defined above and
R^2 is a phenyl or naphthyl radical, each of which can be unsubstituted or carry 1 to 5 substituents, the substituents being identical or different and a non-aromatic C_1–C_{12}-hydrocarbon radical, a C_1–C_{12}-alkoxy radical, C_1–C_{12}-alkylthio radical, di-C_1–C_{12}-alkylamino radical or an aryl radical or aryloxy radical each having 6 to 12 carbon atoms.

5,298,645

POLYMERIC BUFFERING COMPOSITION FOR FIBER-OPTIC PHYSIOLOGICAL PROBE

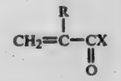
Lokanathan M. Iyer, Edmonds; Kenneth S. Lyon, Everett, and Vince Brotherton, Seattle, all of Wash., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 23, 1991, Ser. No. 813,276

Int. Cl.[5] C07C *69/96, 69/52*

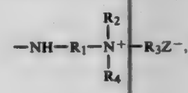
U.S. Cl. 558—267 **3 Claims**

1. A buffering composition comprising the formula:

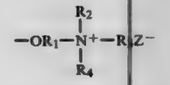


(3)

wherein R is hydrogen or methyl radical, and X is:



(4)



(5)

wherein R_1 is an alkyl or hydroxyalkyl group,
R_2, R_3, and R_4 are hydrogen, alkyl, or hydroxyalkyl, and
Z^- is bicarbonate.

5,298,646

SYNTHESIS OF MONOCHLOROETHYL CHLOROFORMATES BY FREE RADICAL INITIATED CHLORINATION OF ETHYL CHLOROFORMATE

Frederick F. Guzik, Export; James A. Manner, Moaroeville, and Suresh B. Damle, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 22, 1993, Ser. No. 96,326

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—283 **28 Claims**

1. In the method wherein ethyl chloroformate is chlorinated in a chlorination system to produce 1-chloroethyl chloroformate and 2-chloroethyl chloroformate, the improvement wherein:
(a) said chlorination system comprises a rectifying zone and a stripping zone,
(b) molecular chlorine is introduced to the top of said stripping zone,
(c) ethyl chloroformate is countercurrently contacted in said rectifying zone with molecular chlorine,
(d) overhead vapor from said rectifying zone is partially condensed to provide a liquid phase comprising liquid ethyl chloroformate and a gaseous phase comprising hydrogen chloride,
(e) substantially all of said liquid phase is introduced as reflux to said rectifying zone,

(f) said gaseous phase is removed from said chlorination system,
(g) bottoms liquid from said stripping zone is boiled to provide reboiled vapors, and
(h) liquid from said rectifying zone is countercurrently contacted in said stripping zone with said reboiled vapors.

5,298,647

AROMATIC COMPOUNDS OF AMIDE STRUCTURE DERIVED FROM AMINOBENZOIC ACIDS, HYDROXY-BENZOIC ACIDS, CINNAMIC ACIDS, UROCANIC ACIDS AND BENZIMIDAZOLES, ABSORBING UVB AND/OR UVA

Dominique Robert, 248, avenue de la Vaugine, 8300 Draguignan, and Louis Jung, 205, route d'Oberhausbergen, 67200 Strasbourg, both of France

PCT No. PCT/FR87/00039, § 371 Date Dec. 14, 1987, § 102(e) Date Dec. 14, 1987, PCT Pub. No. WO87/04923, PCT Pub. Date Aug. 27, 1987

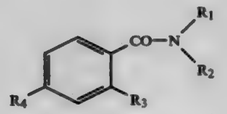
PCT Filed Feb. 13, 1987, Ser. No. 123,859

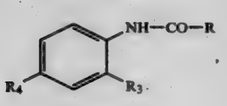
Claims priority, application France, Feb. 14, 1986, 86 02125

Int. Cl.[5] C07C *321/04, 229/06, 229/08, 229/14, 233/03, 233/04, 233/05, 233/07*; C07D *233/54*

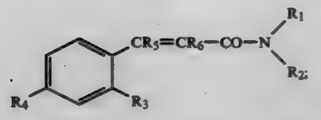
U.S. Cl. 560—16 **12 Claims**

1. A compound of the formula selected from the group consisting of



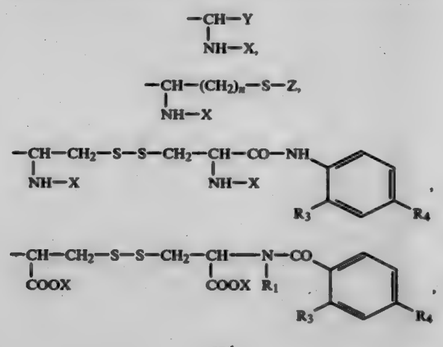


and



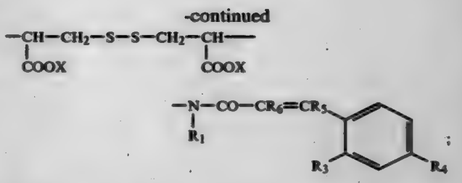
(III)

wherein R is a member selected from the group consisting of

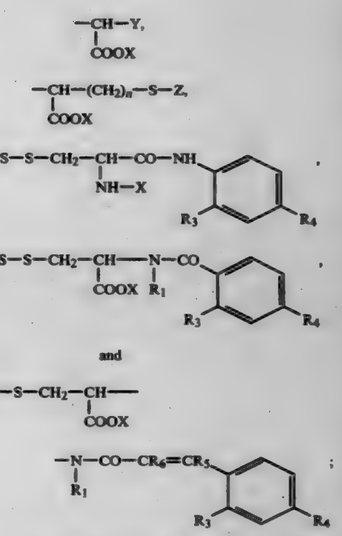


and

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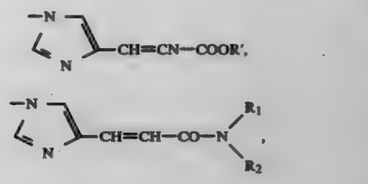
R_1 is hydrogen, alkyl or aryl;
R_2 is hydrogen, alkyl, aryl, or a member selected from the group consisting of



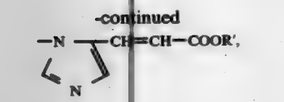
R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxy, CH_3—O—, an acid group, primary amino, —NHCOR, and —COOR'; and
R_5 and R_6 are each independently selected from the group consisting of hydrogen, alkyl, cyano and aryl;
or wherein



of Formulas (I) and (III) above is a member selected from the group consisting of



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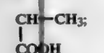




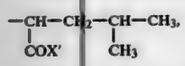
a peptide structure comprising at least two amino acid residues;

in which X and Y are each independently selected from the group consisting of hydrogen, alkyl, hydroxyalkyl, aryl, aminoalkyl and aminoaryl; Z is hydrogen, alkyl or aryl; n is an integer from 1 to 6; and R' is selected from the group consisting of hydrogen, alkyl, aryl, aminoalkyl, aminoaryl, and an organic or mineral salt;

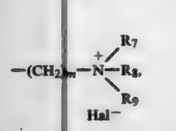
excluding compounds of the formula (I) wherein R_4 is H, R_3 is NH_2, R_1 is H and R_2 is $—CH_2—COOCH_3$; wherein R_4 is H, R_3 is NH_2, R_1 is H and R_2 is



wherein R_4 is NH_2, R_3 is H, R_1 is H, and R_2 is $—CH_2COX'$ or



in which X' is hydrogen or a peptide residue; wherein R_4 is H, R_3 is NH_2, R_1 is H and R_2 is —CH(COOH)—CH_3, —CH(COOH)—$CH(CH_3)_2$, —CH(COOH)—$CH_2CH(CH_3)_2$, —CH(COOH)—CH_2OH, —CH(COOH)—$(CH_2)_2$—S—CH_3, or —CH(COOH)—CH_2COOH; wherein R_4 is H, R_3 is OH, R_1 is H and R_2 is $—CH_2COOX$,



or $—C_6H_5$ in which Hal^- is Cl or Br, R_7 and R_8 are C_{1-5}alkyl, R_9 is C_{3-8}alkyl or benzylalkyl, and m is an integer from 2 to 12;

and excluding compounds of the formula (III) wherein R_4 is $—OCH_3$ and R_3, R_5 and R_6 are H.

5,298,648

METHOD OF CRYSTALLIZING ASPARTAME

Kazuyoshi Ebisawa; Rie Kawaoka; Nobuya Nagashima, and Satoshi Kumon, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,427

Claims priority, application Japan, May 9, 1991, 3-199736

Int. Cl.[5] C07C *101/02*

U.S. Cl. 560—41 **10 Claims**

1. A method of crystallizing aspartame, comprising crystallizing aspartame from a supersaturated aqueous solution of (i) aspartame and (ii) a compound selected from the group consisting of L-glycyl-L-valine, L-glycyl-L-isoleucine, L-glycyl-L-serine, L-glycyl-L-tyrosine, L-glycyl-L-glutamine, L-alanyl-L-tryptophan, L-alanyl-L-threonine, L-alanyl-L-tyrosine, L-alanyl-L-glutamine, L-aspartyl-L-valine, L-aspartyl-L-leucine, L-aspartyl-L-tyrosine, L-aspartyl-L-tyrosine methyl ester, L-aspartyl-L-glutamine, L-cysteine, L-glutamic acid, L-isoleucine, L-aspartic acid, L-asparagine, L-glutamine, L-lysine, L-tyrosine, L-tryptophan, saccharose, amylose, amylopectin, citric acid, and potassium chloride.

5,298,649

NAPHTHALENE DERIVATIVE

Makoto Okita, Tsuchiura; Hiroshi Shirota, Tsukuba; Masayuki Tanaka; Toshihiko Kaneko, both of Ushiku; Katsuya Tagami, Ibaraki; Shigeki Hibi; Yasushi Okamoto, both of Tsukuba; Seiichiro Nomoto; Takeshi Suzaki, both of Ushiku; Kenichi Chiba, Tsuchiura; Masaki Goto, Tsukuba; Ryoichi Hashida, Tsukuba; Hideki Ono, Tsukuba; Hideto Ohhara, Tsukuba; Hideki Sakurai, Tsukuba; Shigeru Sonda, Ushiku; Yoshimasa Machida; Kouichi Katayama, both of Tsukuba, and Isao Yamatsu, Ushiku, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 454,468, Dec. 15, 1989, Pat. No. 5,134,111.

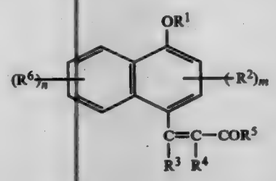
This application Oct. 10, 1991, Ser. No. 774,237

Claims priority, application Japan, Dec. 28, 1988, 63-331621

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—56 **22 Claims**

1. A naphthalene derivative having the formula and a pharmacologically acceptable salt thereof:

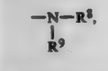


wherein R^1 represents a hydrogen atom, a lower alkyl group or an acyl group;

R^2 independently represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, a cycloalkyl group, a cycloalkylalkyl group, a hydroxyl group, an aryl group which may be substituted, an arylalkyl group whose aryl group may be substituted, a heteroaryl group, or a heteroarylalkyl group;

R^3 and R^4 are the same or different and represent a lower alkyl group, a lower alkenyl group, an aryl group which may have a substituent, an arylalkyl group whose aryl group may be substituted, an arylalkenyl group whose aryl group may be substituted, a cycloalkyl group, an alkoxyalkyl group, a heteroaryl group, a heteroarylalkyl group, a carboxyl group or R^3 is a hydrogen atom, a carboxyalkyl group, an aminoalkyl group, or a cyano group; provided R^3 is other than hydrogen when R^4 is lower alkyl;

R^5 represents a group of the formula, $—OR^7$, (wherein R^7 represents a hydrogen atom or a lower alkyl group), or a group of the formula,



(wherein R^8 and R^9 are the same or different and represent a hydrogen atom or a lower alkyl group, or R^8 and R^9 can form, along with the nitrogen atom bonded with R^8 and R^9, a ring which may contain an oxygen atom);

R^6 independently represents a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a hydroxyl group, an amino group, an arylalkyl group, or an aryl group; and

m is 0 or an integer of from 1 to 2, and n is 0 or an integer of from 1 to 4.

5,298,650

PROCESS FOR PRODUCING ORGANIC ESTERS BY REACTING A CARBOXYLIC ACID AND A DIALKYL ETHER

Francis J. Waller, and William F. Burgoyne, Jr., both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 15, 1992, Ser. No. 868,914

Int. Cl.[5] C07C *67/24*

U.S. Cl. 560—240 **12 Claims**

1. A process for producing an organic ester comprising reacting a carboxylic acid and a dialkyl ether in the presence of a catalyst consisting essentially of a solid phase Lewis acid catalyst selected from the group consisting of gamma-alumina and κ-alumina having an acidity factor of at least 0.30, under conditions sufficient to form the ester and recovering the ester.

5,298,651

PROCESS FOR PREPARING ISOCYANATES USING PHOSPHAZINE CATALYSTS

William D. McGhee, St. Louis, and Thomas E. Waldman, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 15, 1992, Ser. No. 961,238

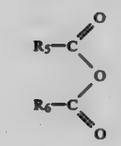
Int. Cl.[5] C07C *263/04*

U.S. Cl. 560—345 **24 Claims**

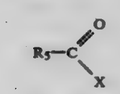
1. A process for preparing an isocyanate comprising:

(a) contacting CO_2 and a primary amine in the presence of an aprotic organic solvent and a base selected from the group consisting of a phosphazene compound and a mixture of a phosphazene compound and an organic, nitrogenous base wherein said organic, nitrogenous base is selected from the group consisting of guanidine compounds, amidine compounds, tertiary amines, pyridine and mixtures thereof, under reaction conditions of time and temperature sufficient to produce the corresponding ammonium carbamate salt, and

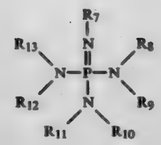
(b) reacting said ammonium carbamate salt with an electrophilic or oxophilic dehydrating agent selected from the group consisting of POX_3, PX_3, SOX_2, SO_2X_2, PX_5, P_2O_5, NO_y, NOX, ketene, acid anhydrides having the formula:



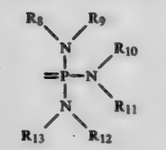
acid halides having the formula:



and halides or oxyhalides of metals selected from the group consisting of transition metals, Group III B metals, Group IV B metals, and Group V B metals, wherein R_5 and R_6 are independently selected from the group consisting of alkyl, fluoroalkyl, aryl, alkaryl and aralkyl radicals having 1 to about 22 carbon atoms, X is chlorine or bromine, halides are chlorides or bromides, and y is 1 or 2 under reaction conditions of time and temperature sufficient to produce the corresponding isocyanate wherein said phosphazene compound is represented by the formula:



wherein R_7, R_8, R_9, R_{10}, R_{11}, R_{12} and R_{13} are independently selected from the group consisting of alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals having 1 to about 22 carbon atoms; or one of R_8 or R_9 together with one of R_{10} or R_{11}, one of R_{12} or R_{13} together with one of R_{10} or R_{11}, and R_7 together with one of R_8 or R_9 or one of R_{12} or R_{13} independently form a nitrogen-containing heterocycle; or R_8 together with R_9, R_{10} together with R_{11}, and R_{12} together with R_{14} independently represent a radical represented by the formula:



5,298,652

N-SUBSTITUTED GLYCINES, INHIBITORS OF PHOSPHOLIPASE A_2

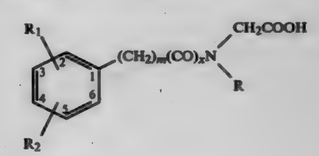
Mathew Carson, Nutley; Ru-Jen L. Han, Princeton Junction; Ronald A. LeMahieu, N. Caldwell, and Vincent S. Madison, Mountain Lakes, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 8, 1992, Ser. No. 987,229

Int. Cl.[5] C07C *229/34*

U.S. Cl. 562—444 **19 Claims**

1. A compound of the formula



wherein

R is $—CH_2COOH$;

m is 0–2,

x is 1–2, with the provision that when x is 2, m is always 0;

R_1 is $CH_3(CH_2)_nO—$, $CH_3(CH_2)_nCONH—$, $CH_3(CH_2)_nNHCONH—$, $CH_3(CH_2)_nNHCOO—$, $HOOC(CH_2)_pO—$ or $R_3(CH_2)_qO—$;

R_2 is hydrogen, carboxy, hydroxy, nitro, amino, $CH_3(CH_2)_nO—$, $CH_3(CH_2)_nCONH—$, $CH_3(CH_2)_nNHCONH—$, $CH_3(CH_2)_nNHCOO—$, $HOOC(CH_2)_pO—$, $R_3(CH_2)_qO—$ or $R_4[O(CH_2)_2]_rO—$,

wherein n is 0–17, p is 1–10, q is 1–12, r is 1–6,

R_3 is 1- or 2-naphthyloxy, 2,3- or 3,4-dihydroxyphenyl, phenyl, phenoxy or substituted phenyl or phenoxy, wherein the substituent is selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, nitro, amino, halo, carboxy or phenyl, and

R_4 is lower alkyl;

or a pharmaceutically acceptable salt thereof with a base.

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5,298,653

PROCESS FOR PREPARING 1,2,3,4-BUTANETETRACARBOXYLIC ACID

Eduardo A. Casanova, Ballwin, and Dennis J. Kalota, Fenton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 14, 1989, Ser. No. 450,760

Int. Cl.[5] C07C *55/00, 51/42*

U.S. Cl. 562—590 **23 Claims**

1. A process for preparing 1,2,3,4-butanetetracarboxylic acid which comprises:

(a) crystallizing tetraalkyl 1,2,3,4-butanetetracarboxylate from an alkanol solution containing same along with color-causing materials;

(b) separating the tetraalkyl 1,2,3,4-butanetetracarboxylate from the alkanol solution of Step (a),

(c) heating the tetraalkyl 1,2,3,4-butanetetracarboxylate to fuse same;

(d) extracting the fused tetraalkyl 1,2,3,4-butanetetracarboxylate with water at temperatures sufficient to maintain the tetraalkyl 1,2,3,4-butanetetracarboxylate in a liquid state and remove water-soluble impurities;

(e) treating the tetraalkyl 1,2,3,4-butanetetracarboxylate with water and an acid hydrolysis catalyst and heating the resulting mixture to temperatures sufficient to (i) hydrolyze the tetraalkyl 1,2,3,4-butanetetracarboxylate to yield a reaction mixture containing the 1,2,3,4-butanetetracarboxylic acid and alkanol corresponding to the alkylgroups of the tetraalkyl 1,2,3,4-butanetetracarboxylate and (ii) distill from the reaction mixture the alkanol produced in Step (e)(i) as the tetraalkyl 1,2,3,4-butanetetracarboxylate hydrolyzes; and

(f) treating the resulting aqueous mixture containing the 1,2,3,4-butanetetracarboxylic acid with aqueous hydrogen peroxide to remove the color-causing materials.

5,298,654

METHOD FOR PRODUCING COPRECIPITATED MULTICOMPONENT OXIDE POWDER PRECURSORS

Mark R. DeGuire, Cleveland Heights, and Warren H. Philipp, Olmsted Township, Cuyahoga County, both of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Continuation of Ser. No. 620,019, Nov. 30, 1990, Pat. No. 5,252,314. This application Mar. 1, 1993, Ser. No. 24,650

Int. Cl.[5] C07C *55/06*

U.S. Cl. 562—597 **11 Claims**

1. A method for coprecipitating metal oxalate precursors for multicomponent metal oxide powders, comprising the steps of:

synthesizing and isolating guanidine oxalate;

purifying the isolated guanidine oxalate by recrystallization;

dissolving purified guanidine oxalate in water at a temperature below about 25° C. to provide a guanidine oxalate solution;

mixing the guanidine oxalate solution with a solution comprising a soluble metal salt and water to form a resulting solution; and

precipitating a metal oxalate from the resulting solution.

5,298,655

FARNESYL PYROPHOSPHATE ANALOGS

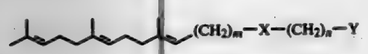
Neville J. Anthony, Hatfield; Ta-Jyh Lee; Robert L. Smith, both of Lansdale, and Gerald R. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 27, 1991, Ser. No. 766,981

Int. Cl.[5] C07C *57/02*; C07F *9/02*; A01N *27/00*

U.S. Cl. 562—598 **3 Claims**

1. A compound of the formula:



wherein:

X is CH(OH);

Y is COOH

m is 0, 1, 2 or 3; and

n is 0, 1, 2 or 3;

or the pharmaceutically acceptable salts thereof.

5,298,656

ESTER QUATERNARY COMPOUNDS

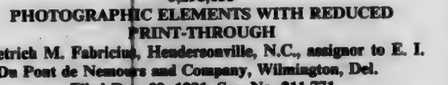
Anthony J. O'Lenick, Jr., 743 Ridgeview Dr., Lilburn, Ga. 30247

Continuation-in-part of Ser. No. 813,449, Dec. 26, 1991, Pat. No. 5,153,294. This application Jun. 19, 1992, Ser. No. 901,200

Int. Cl.[5] C07C *209/00*; C09F *5/00*

U.S. Cl. 554—224 **13 Claims**

1. A quaternary compound which conforms to the following structure:

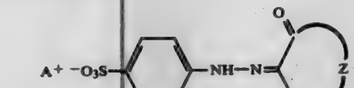


wherein:

R^2 is —C(O)—CH_2—R^{10};

a, b c and d are independently integers from 0 to 100, with the proviso that a+b+c+d be greater than 2;

R^{10} is



R6 is alkyl having from 6 to 20 carbon atoms;

R7 and R8 are independently selected from the group consisting of methyl and ethyl.

5,298,657

PREPARATION OF SUBSTITUTED GUANIDINES

Graham J. Durant, and Sharad S. Magar, both of Toledo, Ohio, assignors to Cambridge Neuroscience Inc., Cambridge, Mass.

Filed Mar. 20, 1992, Ser. No. 854,496

Int. Cl.[5] C07C *277/02*

U.S. Cl. 564—238 **23 Claims**

1. A process for the preparation of a substituted guanidine which comprises the step of reacting a substituted cyanamide with ammonia or a substituted amine in the presence of a Lewis acid catalyst.

5,298,658

PHOTOGRAPHIC ELEMENTS WITH REDUCED PRINT-THROUGH

Dietrich M. Fabricius, Hendersonville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1991, Ser. No. 811,771

Int. Cl.[5] C07C *109/12*; C07D *109/12, 491/00, 239/70, 211/40*

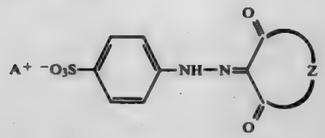
U.S. Cl. 564—251 **4 Claims**

1. A dye of the formula

wherein A is a counterion selected from the group consisting of lithium, sodium, potassium, ammonium, and alkylammonium;

Z represents the elements necessary to form a five or six member ring chosen from the set consisting of cycloalkyl, cycloalkenyl, piperidine, pyrrolidine, furan, and thiophene.

2. A dye of formula



wherein A is a counterion selected from the group consisting of lithium, sodium, potassium, ammonium, and alkylammonium; Z represents the elements necessary to form a five or six member ring chosen from the set consisting of 1,3-indandione, pyrazolone, 5,7-dioxo-6,7-dihydro-5-thiazolopyrimidine, 5,5-dialkyl 1,3-cyclohexanedione, 2-hydroxy-4H-pyridopyrimidin-4-one.

5,298,659

METHOD FOR THE PREPARATION OF AZOMETHINES

Reinhard Langer; Hans-Josef Buysch, both of Krefeld, and Paul Wagner, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

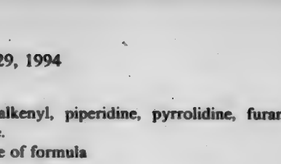
Filed Jan. 14, 1993, Ser. No. 4,349

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1992, 4201605

Int. Cl.[5] C07C *249/02*

U.S. Cl. 564—271 **18 Claims**

1. A method for the preparation of an azomethine of the formula



in which

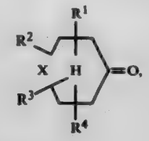
R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8, independently of one another, represent hydrogen, straight-chain or branched C_1–C_6-alkyl, C_3–C_6-cycloalkyl, benzyl or aryl, and

R^5, R^6, R^7 and R^8, independently of one another, additionally represent halogen, straight-chain or branched C_1–C_6-alkoxy, hydroxyl, amino, C_1–C_6-alkylamino, di-C_1–C_6-alkyl-amino, aryloxy or arylamino,

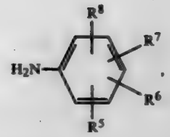
in which aryl represents phenyl or 5- or 6-membered heteroaryl having 1 or 2 heteroatoms from the group N, O and S which is linked in the 2-, 3- or 4-position, and

X represents —CH_2— or a bond connecting the neighboring C atoms,

by condensation of a cycloalkanone of the formula



with an aniline of the formula



in which R^1 to R^8 and X have the abovementioned meaning, comprising carrying out said condensation in a continuous reaction in a distillation column in the presence of an acid homogeneous catalyst having a pK_a value measured in H_2O of 1 to 6, while the water of reaction is removed azeotropically, the starting materials, the azeotropic agent and the catalyst or a catalyst mixture being fed separately at different locations, or together as a mixture at the same location, the cycloalkanone and analine being fed at a molar ratio of from 2:1 to 1:2 with respect to each other and the catalyst or catalyst mixture being fed at a molar ratio of from 10 to 0.001 mol % with respect to the total amount of feed, into the distillation column, and, of the reaction products, the water of reaction to be removed azeotropically being discharged from the low-temperature region and the azomethine produced being discharged from the high-temperature region, and wherein the temperature profile in the column-type reaction is in the range of from 10° to 300° C. and the pressure of from 0.5 mbar to 3 bar.

5,298,660

OPTICALLY ACTIVE SECONDARY AMINE COMPOUND, PROCESS FOR PRODUCING OPTICALLY ACTIVE SECONDARY AMINE COMPOUND AND PROCESS FOR PRODUCING OPTICALLY ACTIVE CARBOXYLIC ACID BY USING SAID COMPOUND

Yukio Yoneyoshi; Junko Kudo, both of Misawa, and Toshio Nishioka, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

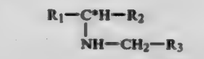
Filed Apr. 6, 1992, Ser. No. 863,976

Claims priority, application Japan, Apr. 8, 1991, 3-075096; Nov. 27, 1991, 3-312490

Int. Cl.[5] C07C *209/88, 209/40*

U.S. Cl. 564—302 **5 Claims**

1. Optically active secondary amine compounds or salts thereof having the general formula (I):



(I)

wherein R_1 represents a naphthyl or cyclohexyl group, or a phenyl group optionally substituted by halogen, nitro, lower alkyl or lower alkoxy, R_2 represents a lower alkyl group or a benzyl group optionally substituted by lower alkyl, R_3 represents a p-hydroxyphenyl or 2-hydroxy-3-lower alkoxyphenyl group when R_2 is lower alkyl, or R_3 represents a p-hydroxyphenyl group when R_2 is benzyl optionally substituted by lower alkyl, and C* represents an asymmetric carbon atom.

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5,298,661

CHARGE TRANSPORTING MATERIALS AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS USING THE SAME

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono, and Tamotsu Aruga, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

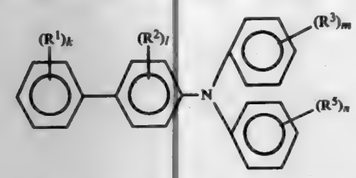
Continuation of Ser. No. 817,975, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 442,533, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,063, Oct. 28, 1988, Pat. No. 4,898,800. This application Jun. 18, 1993, Ser. No. 77,968

Claims priority, application Japan, Jan. 27, 1989, 1-18698; Jan. 27, 1989, 1-18699

Int. Cl.[5] C07C *211/54*

U.S. Cl. 564—307 6 Claims

1. Aminobiphenyl compounds having the formula:



wherein R^1 represents lower alkyl, alkoxy having 1 to 4 carbon atoms, phenoxy, phenyl lower alkyl, phenyl or halogen; R^2 represents lower alkyl, alkoxy having 1 to 4 carbon atoms or halogen; R^3 represents hydrogen, alkyl of 1 to 4 carbon atoms, lower dialkylamino, amino, thioalkoxy having 1 to 4 carbon atoms, methylenedioxy group or phenyl lower alkyl; k and m are each independently an integer of 0 to 5, n is an integer of 1–5, and l is an integer of 0 to 4; and R^5 represents methylenedioxy, phenyl lower alkyl or lower dialkylamino.

5,298,662

PHENYLENEDIAMINES AS HIGH TEMPERATURE HEAT STABILIZERS

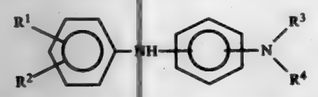
Bernard C. Smith, Naugatuck, and Mark C. Richardson, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation of Ser. No. 164,923, Mar. 4, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 539,286

Int. Cl.[5] C07C *211/44, 211, 54;* C09K *15/18*

U.S. Cl. 564—434 2 Claims

1. A method of stabilizing a polyol fluid against degradation between about 180° C. and 220° C. comprising adding to said fluid a stabilizing effective amount of a stabilizer composition comprising a compound having the formula



wherein R^1, R^2 and R^3 are hydrogen, and R^4 is C_{3-8} alkyl.

5,298,663

PROCESS FOR THE PREPARATION OF PROTECTED PHOSPHINE OXIDES

Roger G. Hall, Aesch, and Peter Riebli, Bucktea, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 840,353, Feb. 24, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 35,524

Claims priority, application United Kingdom, Feb. 27, 1991, 9104050

Int. Cl.[5] C07F *9/53*

U.S. Cl. 568—14 13 Claims

1. A process for the preparation of a phosphine oxide which comprises

(A) reacting a phosphinate ester having a protecting group on the phosphorus atom with an organomagnesium halide or an organolithium compound at a temperature of −70° C. to 65° C. to obtain a protected primary phosphine oxide,

(B) converting the protected primary phosphine oxide obtained into a protected secondary phosphine oxide by reaction either

(a) with a compound of formula VI

$$R^6Z \qquad VI$$

where R^6 denotes a monovalent organic group which is a C_1–C_{20} aliphatic group, a C_3–C_{12} cycloaliphatic group, a C_6–C_{18} aromatic group or a C_7–C_{16} araliphatic group, or

(b) with a silylating agent of formula VII

$$(R^7)_3SiX \qquad VII$$

in the presence of a tertiary base, followed by reaction of the silyl compound obtained with a compound of formula VI,

$$R^6Z \qquad VI$$

where R^6 is as defined above, each R^7 independently denotes a C_1–C_6 alkyl group, X denotes chlorine, bromine or iodine and Z denotes a leaving atom or group, and

(C) removing a protecting group from the protected secondary phosphine oxide by treatment with (i) an acid under hydrolytic conditions or (ii) an organic silyl halide followed by hydrolysis.

5,298,664

METHOD FOR PREPARING ARYL KETONES

Arlice E. Rains, Chattanooga, Tenn.; Terry E. Lea, Ringgold, Ga., and David I. Tempier, Arlington Heights, Ill., assignors to Velsicol Chemical Corporation, Rosemont, Ill.

Continuation of Ser. No. 707,643, May 30, 1991, abandoned. This application Apr. 30, 1992, Ser. No. 879,053

Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—323 28 Claims

1. A method for preparing benzophenone comprising the following steps:

(a) heating in a reaction vessel a reaction mixture comprising benzene, benzoyl chloride and a catalytic amount of iron (III) chloride to a temperature and for a time sufficient to substantially convert the benzoyl chloride to benzophenone and hydrochloric acid gas, under a pressure greater than atmospheric and sufficient to maintain benzene substantially in a liquid form, the pressure being from about 100 pounds per square inch to about 450 pounds per square inch; and

(b) venting the reaction vessel to permit the release of an amount of the hydrochloric acid gas sufficient to maintain the pressure in the reaction vessel between about 100 pounds per square inch to about 450 pounds per square inch.

5,298,665

PROCESS FOR PREPARING AN ALKANONE AND/OR ALKANOL

Ludovicus H. W. Janssen, Geleen; Peter Hoogendoorn, Sittard; Ubaldus F. Kragten, Beek, and Henricus A. C. Baur, Herten, all of Netherlands, assignors to DSM N.V., Netherlands

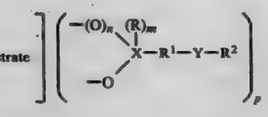
Continuation of Ser. No. 857,409, Mar. 25, 1992, abandoned. This application Mar. 15, 1993, Ser. No. 31,469

Claims priority, application Netherlands, Mar. 25, 1991, 9100521

Int. Cl.[5] C07C *45/53*

U.S. Cl. 568—342 21 Claims

1. A process for preparing an alkanone and/or alkanol by decomposing an alkyl hydroperoxide in a solvent in the presence of a metal compound immobilized on a carrier, said metal is at least one catalytic metal selected from the group consisting of cobalt, chromium, vanadium, molybdenum, ruthenium, titanium, manganese, iron, and mixtures thereof, said carrier having aliphatic or aromatic amine groups or sulphide groups, said carrier having the following structure,



wherein said structure

the substrate is silica, alumina, or titanate,

n represents 0, 1, or 2 and m represents 0, 1, or 2 and where n+m is 2,

p is greater than 1,

X is Si, Ti or Zr,

R is H or C_{1-12} alkyl or alkoxy

R^1 is C_{1-18} alkyl, aryl, alkaryl

Y is S or NR^3, and

R^2 and R^3 each independently represent H, C_1–C_{12} alkyl, or R^4—Z—R^5, where

R^4 is C_2–C_{12} alkyl

Z is NR^6 or S, and

R^5 and R^6 independently represent H, or C_1–C_6 alkyl, and where R^1 may contain ether groups and R^2, R^3, R^4, R^5 and R^6 may independently additionally contain 1 or 2 ether, alcohol or carboxyl groups.

5,298,666

SYNTHESIS OF ADAMANTANE-2,4-DIONE

Dong-Ming Shen, Langhorne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 18, 1992, Ser. No. 946,706

Int. Cl.[5] C07C *45/29*

U.S. Cl. 568—347 2 Claims

1. A method for converting 2-adamantanone to adamantane-2,4-dione comprising the steps of:

a) reacting 2-adamantanone with a peroxide in the presence of a catalyst comprising selenium dioxide;

b) recovering 4-oxahomoadamantan-5-one from the reaction mixture of step (a);

c) reacting said recovered 4-oxahomoadamantane-5-one with acetic anhydride in the presence of an acid selected from the group consisting of H_2SO_4, H_3PO_4, CH_3SO_3H, CF_3SO_3H, CF_3CO_2H, and $ArSO_3H$ wherein Ar is a substituted or unsubstituted aryl group at temperatures above ambient;

d) recovering 4-acetoxyadamontanone from the reaction mixture of step (c);

e) treating said recovered 4-acetoxyadamantanone of step (d) with aqueous base;

f) recovering 4-hydroxy-2-adamantanone from step (e);

g) contacting said recovered 4-hydroxy-2-adamantanone of step (f) with a solution comprising CrO_3, H_2SO_4, and water; and

h) recovering adamantaone-2,4-dione from step (g).

5,298,667

PROCESS FOR PRODUCING PHENOL AND METHYL ETHYL KETONE

Kiyoshi Iwanaga; Mitsuhisa Tamura, both of Ichihara; Toshio Nakayama; Masahiro Usui, both of Sodegaura; Hiroyuki Umida, Ibaraki, and Hirooki Nagaoka, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 23, 1992, Ser. No. 995,971

Claims priority, application Japan, Dec. 26, 1991, 3-344976; Dec. 26, 1991, 3-344977; Jul. 8, 1992, 4-180768; Jul. 14, 1992, 4-186538

Int. Cl.[5] C07C *45/53*

U.S. Cl. 568—385 9 Claims

1. A process for producing phenol and methyl ethyl ketone which comprises the steps of:

(A1) oxidizing sec-butylbenzene containing 0.01 to 0.5% by weight of ethyl hydroperoxide, not more than 0.01% by weight of carboxylic acids and not more than 0.001% by weight of phenol, by contacting liquid sec-butylbenzene with an oxygen-containing gas at a temperature of from 90° to 150° C. and a pressure of from 1 to 10 kg/cm^{2}G, to obtain a reaction liquid containing sec-butylbenzene hydroperoxide as the main product, and an exhaust gas,

(A2) cooling the exhaust gas obtained in the step (A1) to obtain a condensate containing sec-butylbenzene, ethyl hydroperoxide, carboxylic acids and phenol,

(A3) concentrating the reaction liquid obtained in the step (A1) by means of a distillation column to obtain a bottom liquid containing sec-butylbenzene hydroperoxide as the main component from the column bottom and a distillate containing sec-butylbenzene, ethyl hydroperoxide, carboxylic acids and phenol from the column top,

(A4) washing the condensate obtained in the step (A2) and the distillate obtained in the step (A3) with an aqueous alkali solution having a temperature of from 20° to 80° C., separating them into an oil layer and an aqueous layer and recycling the oil layer to the step (A1), the amount of the alkali in the aqueous alkali solution being from 2 to 7 moles per mole of the total of ethyl hydroperoxides, carboxylic acids and phenol present in the total of the condensate and the distillate and from 10 to 60 moles per mole of the total of the carboxylic acids and phenol present in the total of the condensate and the distillate, the concentration of said alkali being from 1 to 30% by weight, wherein said alkali is an alkali metal hydroxide or an alkali metal carbonate,

(A5) decomposing the bottom liquid obtained by the step (A3) containing sec-butylbenzene hydroperoxide as the main component to obtain phenol and methyl ethyl ketone.

5,298,668

CATALYTIC PREPARATION OF FORMALDEHYDE CONDENSATES

Eugen Gehrer, Ludwigshafen; Wolfgang Harder, Weinheim; Klaus Ebel, Ladwigshafen; Johann-Peter Melder, Mannheim, and Joaquim H. Teles, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,884

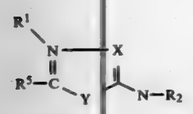
Int. Cl.[5] C07C *45/72*

U.S. Cl. 568—463 14 Claims

1. A process for the preparation of glycolaldehyde, glyceraldehyde, C_4-and C_5-sugars or mixtures thereof by self-condensation of formaldehyde which comprises:

reacting formaldehyde or a formaldehyde donor in the presence of a mesoionic catalyst of the formula

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wherein X is nitrogen or CR^3, Y is sulfur or selenium or NR^4, and R^1, R^2, R^3 and R^4 can be identical or different and each can represent an aliphatic, aryl, aralkyl or heteroaryl group which is unsubstituted or which bears substituents which have only a negligible effect on the catalytic activity of said mesoionic catalyst, with the proviso that R^2 together with R^4 can form a C_2–C_5-alkylene or alkenylene bridge or a C_6–C_{14}-arylene bridge, and wherein R^5 is hydrogen, the hydroxymethyl group —CH_2OH or the hydroxymethylhydroxymethyl group —$CH(OH)(CH_2OH)$.

5,298,669

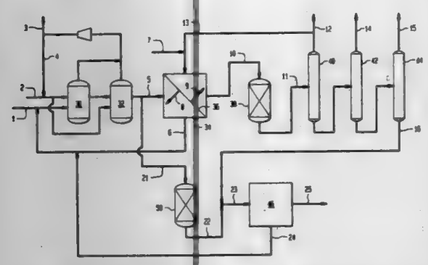
PERSTRACTION SWEEP STREAM FOR A MEMBRANE REACTOR

Francis J. Healy, Florham Park; Joel R. Livingston, Basking Ridge; Edmund J. Mozeleski, Califon, and John G. Stevens, Westfield, all of N.J., assignors to Exxon Chemical Patent Inc., Linden, N.J.

Filed Mar. 23, 1993, Ser. No. 35,851

Int. Cl.[5] C07C *45/78, 45/50*

U.S. Cl. 568—492 **49 Claims**



1. A method for separating a noble metal catalyst from a crude reaction product of a noble metal-catalyzed hydroformylation reaction by means of perstraction, said crude reaction product including a Group VIII noble metal-ligand complex catalyst, unreacted olefin feed and hydroformylation reaction product, which comprises: (a) contacting said crude reaction product under perstraction conditions with a membrane capable of allowing a substantial portion of said unreacted olefin feed and hydroformylation reaction product to pass therethrough as permeate while retaining a substantial portion of said Group VIII noble metal-ligand complex catalyst as retentate; (b) removing said permeate by sweeping it away from said membrane by means of a sweep stream which is the same as said olefin feed used in the hydroformylation reaction; and (c) retaining said Group VIII noble metal-ligand complex catalyst as retentate.

5,298,670

METHOD OF CONTROLLING MOLECULAR WEIGHT DISTRIBUTION OF POLYTETRAMETHYLENE ETHER GLYCOL

Wen-Fa Lin, and Jun-Yi Chen, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Apr. 2, 1993, Ser. No. 42,411

Int. Cl.[5] C07C *41/34, 41/38*

U.S. Cl. 568—617 **19 Claims**

1. A method for fractionating polytetramethylene ether glycols (PTMEG) which comprises:

a) contacting a feed PTMEG having a broad molecular weight distribution with a solvent comprising liquid propane in an extraction zone at a first comparatively low pressure to form a first mixture;

b) separating from said first mixture a propane phase containing a low molecular weight fraction of said PTMEG having a narrow molecular weight distribution phase and a residual PTMEG phase;

c) recovering said low molecular weight fraction from said propane phase;

d) contacting the residual PTMEG with additional liquid propane in said extraction zone at an increased pressure so as to form a second mixture;

e) separating from said second mixture a propane phase containing the next lowest molecular weight fraction and residual PTMEG;

f) recovering the next lowest molecular weight fraction from the propane phase formed in step (e); and

g) repeating steps (d) through (f) until the desired number of fractions of PTMEG are obtained.

5,298,671

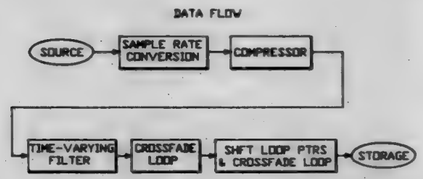
DATA COMPRESSION OF DECAYING MUSICAL INSTRUMENT SOUNDS FOR DIGITAL SAMPLING SYSTEM

Robert C. Bliss, Soquel, Calif., assignor to E-mu Systems, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 465,733, Jan. 18, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 893,942

Int. Cl.[5] G10H *1/057, 1/12*

U.S. Cl. 84—603 **6 Claims**



1. In a data compression method for compression decaying musical instrument sounds for a digital sampling instrument wherein the musical sounds have an upper frequency limit and amplitude, the method comprising the steps of

converting musical instrument sounds to a certain sample rate of approximately twice the upper frequency limit of the musical sounds to form sampled data including an attack portion,

level compressing using automatic gain control the sampled data after the attack portion of the musical sound ends to form amplitude compressed data after the attack characteristics of said attack portion while flattening the amplitude of the remaining portion of said musical sounds

filtering the level compressed data except said attack portion using a time varying filter having a predetermined cutoff frequency of between 1 KHz and 2 KHz to form harmonically compressed filtered data, and

cross/fade looping the filtered data, including blending said filtered data before said looping to form blended filtered data.

5,298,672

ELECTRONIC MUSICAL INSTRUMENT WITH MEMORY READ SEQUENCE CONTROL

Rainer Gallitzendörfer, Iltisstrasse 49, D-8000 München 82, Fed. Rep. of Germany

Continuation of Ser. No. 14,568, Feb. 13, 1987, abandoned. This application Feb. 2, 1993, Ser. No. 12,978

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1986, 3604686

Int. Cl.[5] G10H *1/06, 7/02, 7/12*

U.S. Cl. 84—603 **13 Claims**

1. A musical instrument comprising:

a memory unit (**14**) containing sampled values of least one of waveforms and spectral variations which are stored in a plurality of individually addressable memory locations;

a first bi-directional waveform memory address bus (**28**) connected to said unit;

a second bi-directional waveform memory data bus (**27**) connected to said unit;

a third bi-directional address bus (**26**);

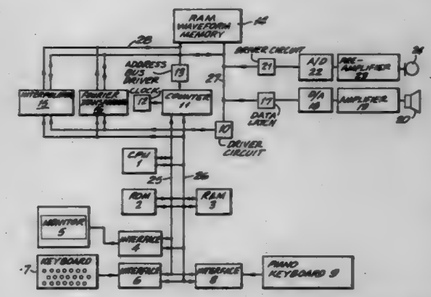
a fourth bi-directional system data bus (**25**);

a counter (**11**) connected at an input thereof to the third bus (**26**) and the fourth bus (**25**) and connected at an output thereof to said first bus;

first means (**17**) connected to said second bus (**27**) to read out waveform data therefrom;

second means (**7, 9**) connected to said third bus (**26**) and said fourth bus (**25**) to supply sampled values of at least one of waveforms and spectral variations thereto; and

third means including a central processing unit (**1**), a random access memory (**3**) and a read only memory (**2**), said third means being connected to said third bus (**26**) and said fourth bus (**25**), said third means and said counter determining, according to the stored sample values, the sequence in which the individually addressable memory locations and a sound information stored in the locations should be read.



5,298,673

ELECTRONIC MUSICAL INSTRUMENT USING TIME-SHARED DATA REGISTER

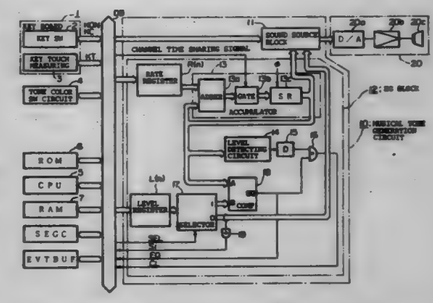
Akira Iizuka, and Keiji Kawakami, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 20, 1991, Ser. No. 673,133

Claims priority, application Japan, Mar. 20, 1990, 2-70268

Int. Cl.[5] G10H *1/057, 1/06, 1/18, 1/46*

U.S. Cl. 84—615 **9 Claims**



1. An electronic musical instrument comprising:

(a) performance data generating means for generating plural types of performance data;

(b) control means for generating plural types of musical tone control data in accordance with said plural types of performance data, wherein said plural types of musical tone control data including at least first and second musical tone control data; and

(c) musical tone signal generating means for generating a musical tone signal corresponding to said musical tone control data, said musical tone signal generating means comprising;

first storing means connected to said control means for storing said first musical tone control data and tone color control data in a time-sharing manner; and

second storing means connected to said control means for storing said second musical tone control data;

whereby said musical tone signal generating means generating

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said musical tone signal in accordance with said first and second musical tone control data.

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APPARATUS FOR DISCRIMINATING AN AUDIO SIGNAL AS AN ORDINARY VOCAL SOUND OR MUSICAL SOUND

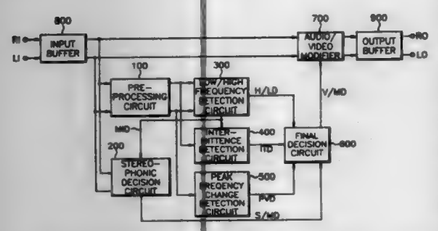
Sang-Lak Yun, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 3, 1991, Ser. No. 802,042

Claims priority, application Rep. of Korea, Apr. 12, 1991, 1991-5856

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—616 **30 Claims**



1. An apparatus for discriminating an audio signal as one of vocal sound and musical sound, said apparatus comprising:

pre-processing means for providing a vocal frequency band signal and a musical frequency band signal by separating said audio signal;

intermediate decision means, connected to said pre-processing means, for producing a plurality of decision signals respectively indicating whether the audio signal is one of said vocal sound and said musical sound, in response to detection of properties of said audio signal, said intermediate decision means comprising:

a first decision unit for producing a first decision signal by discriminating said audio signal as said vocal sound when said audio signal is monophonic;

a second decision unit for producing a second decision signal by desciminating said audio signal as said musical sound when said musical frequency band signal is detected having a sound pressure higher than a predetermined sound pressure;

a third decision unit for producing a third decision signal by discriminating said audio signal as said vocal sound when an envelope of said vocal frequency band signal is detected having an intermittence lower than a predetermined intermittence; and

a fourth decision unit for producing a fourth decision signal by discriminating said audio signal as said musical sound when said musical frequency band signal comprises a predetermined bandwidth; and

final decision means for producing a final decision signal indicating whether said audio signal is said one of said vocal sound and said musical sound by analyzing and comparing said first, second, third and fourth decision signals.

5,298,675

ELECTRONIC MUSICAL INSTRUMENT WITH PROGRAMMABLE SYNTHESIZING FUNCTION

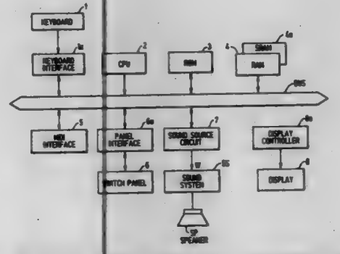
Tetsuo Nishimoto, and Yasuyoshi Nakajima, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 24, 1992, Ser. No. 951,146

Claims priority, application Japan, Sep. 27, 1991, 3-249876

Int. Cl.[5] G09B *15/02;* **G10H** *1/06*

U.S. Cl. 84—622 **6 Claims**



1. An electronic musical instrument comprising: synthesis means operative according to given tone control parameters for effecting a musical tone synthesis to generate a musical tone; register means for registering first data of a lower class and second data of an upper class in hierarchical data structure so as to constitute the tone control parameters, the first data being effective, at least, to define a timbre of a musical tone to be generated, the second data designating a plurality of the first data, effective to control the musical tone synthesis according to plural timbres which are defined by said plurality of the first data; edit means for revising selectively the registered first data; and display means for selectively indicating the second data which is associated to the first data to be revised in order for management of the hierarchical data structure.

5,298,676

TONE PARAMETER CONTROL APPARATUS

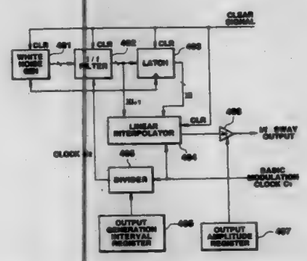
Hiroyuki Sasaki, Tokyo; Kohtaro Hanzawa, Iruma; Jun Yoshino, Tokyo; Toshiaki Kawanishi, Hiroshima, and Masatoshi Watanuki, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 850,685, Mar. 10, 1992. This application Jan. 12, 1993, Ser. No. 4,227

Claims priority, application Japan, Mar. 22, 1991, 3-059162

Int. Cl.[5] G01H *7/00, 1/04*

U.S. Cl. 84—624 **21 Claims**



1. A tone parameter control apparatus comprising:

tone parameters storing means for storing a plurality of groups of tone parameters, said groups respectively including a plurality of tone parameters of the same kind which control a same characteristic of a musical sound to be generated;

fluctuation signal outputting means for outputting a fluctuation signal;

tone parameter readout means for sequentially reading out said tone parameters of the same kind from the respective groups of tone parameters stored in said tone parameter storing means; and

parameter modulating means for modulating the respective tone parameters of the same kind read out by said tone parameter readout means with the same fluctuation signal generated at the same time by said fluctuation signal generating means and for re-storing the modulated tone parameters in said tone parameter storing means;

wherein said fluctuation signal generating means includes a 1/f fluctuation signal generating means for generating a 1/f fluctuation signal having a power spectrum substantially inversely proportional to the frequencies contained in said generated fluctuation signal.

5,298,677

AUTOMATIC PLAYING APPARATUS HAVING REDUCED MEMORY REQUIREMENTS

Yoshihisa Shimada, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Aug. 28, 1992, Ser. No. 937,808

Claims priority, application Japan, Aug. 30, 1991, 3-244084; Aug. 30, 1991, 3-244085

Int. Cl.[5] G10H *1/38, 1/42*

U.S. Cl. 84—635 **12 Claims**

1. An automatic playing apparatus having a plurality of automatic playing patterns for every rhythm, having storage means for storing a plurality of types of pattern data corresponding to said plurality of automatic playing patterns, having selecting means for selecting one of said plurality of automatic playing patterns and having means for reading said selected automatic playing pattern to perform automatic playing, comprising:

said storage means storing a predetermined number of types of first and second pattern data relating to a first and second automatic playing pattern, respectively, and said storage means storing a fewer number of types of said second pattern data than said predetermined number of types of first pattern data; and

control means for reading out said second pattern data and preselected parts of said first pattern data, when said second automatic playing pattern is designated by said selecting means, said preselected parts of said first pattern data being parts having no corresponding parts in said second pattern data so that no duplicative pattern data is read out, said reduced number of types of said second pattern data reducing the memory requirements of the apparatus.

5,298,678

MUSICAL TONE WAVEFORM SIGNAL FORMING APPARATUS HAVING PITCH CONTROL MEANS

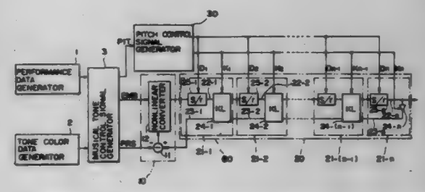
Iwao Higashi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 14, 1991, Ser. No. 656,580

Claims priority, application Japan, Feb. 14, 1990, 2-31366

Int. Cl.[5] G10H *5/02*

U.S. Cl. 84—659 **6 Claims**



1. A musical tone waveform signal forming apparatus comprising:

waveform signal transmission means including a plurality of signal transmission units which are connected in cascade one by one and each of which comprises a first signal line serving as a forward path of a waveform signal, a second signal line serving as a backward path of said waveform signal, and a node position for feeding back an output from said first signal line to an input side of said second signal line at least one of said first and second signal lines serving as a signal delay line;

musical tone control signal generating means for receiving performance information and for generating plural musical tone control signals;

musical tone control signal input means for receiving said waveform signal from said waveform signal transmission means, and receiving musical tone control signals from said musical tone control signal generating means for controlling musical tone parameters of a musical tone to be generated, and for changing the waveform signal in accordance with the musical tone control signals, and for outputting the changed waveform signal to said forward path of said waveform signal transmission means; and

pitch control means for changing delay times of said signal delay lines in accordance with a musical tone control pitch signal from said musical tone control signal generating means for controlling tone pitch.

5,298,679

CURRENT LEAD FOR CRYOSTAT USING COMPOSITE HIGH TEMPERATURE SUPERCONDUCTORS

Jiing-Liang Wu, Murrysville Borough; Jeffrey T. Dederer, and Sharad K. Singh, both of Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1992, Ser. No. 907,083

Int. Cl.[5] H01B *12/00*

U.S. Cl. 174—15.4 **15 Claims**

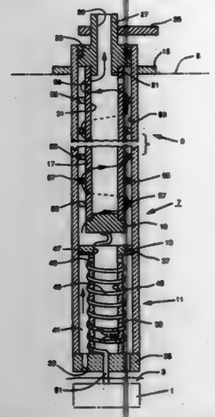
1. A current lead for a superconducting device contained in a cryostat at a superconducting operating temperature, said power lead comprising:

a normal conducting section comprising normal conductor means extending from outside said cryostat at an ambient temperature inward to an intermediate point;

a superconducting section having composite superconductor means connected between said superconducting device at a low temperature end and said normal conductor means at a high temperature end, and comprising a core of a ceramic high temperature superconductor material which is superconducting below an intermediate temperature between said ambient temperature outside said cryo-

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stat and said operating temperature of the superconducting device, and a metallic sheath having a given thermal conductivity encasing and supporting said core of ceramic high temperature superconducting material, said metallic sheath being stripped away at spaced apart intervals to form gaps, and including filler means in said gaps comprising a filler material supporting said core and having a thermal conductivity at least an order of magnitude below



said given thermal conductivity of said metallic sheath; and

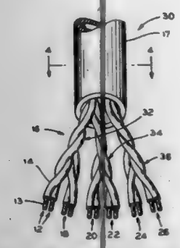
means maintaining said ceramic high temperature superconducting material below said intermediate temperature and cooling said normal conductor means to remove Joule heating from said normal conductor means and reduce thermal conduction through said normal conductor means and said composite high temperature superconducting lead.

5,298,680

DUAL TWISTED PAIRS OVER SINGLE JACKET

Robert D. Kenny, 4260 C Oxford Riley Rd., Oxford, Ohio 45056

Filed Aug. 7, 1992, Ser. No. 926,104
Int. Cl.[5] H01B *11/06*
U.S. Cl. 174—36 **18 Claims**



1. A cable suitable for balanced mode transmission with relatively low crosstalk, said cable comprising:

a first set of conductors twisted to form a first pair;

a second set of conductors twisted to form a second pair, wherein said second pair is twisted with said first pair to form a first dual twisted pair group;

a third set of conductors twisted to form a third pair; and

a fourth set of conductors twisted to form a fourth pair, wherein said fourth pair is twisted with said third pair forming a second dual twisted pair group,

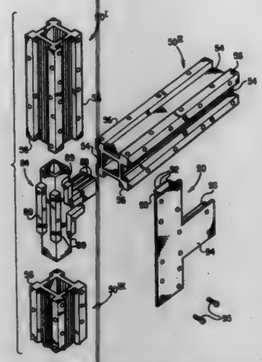
wherein said first group and said second group are twisted together.

5,298,681

FRAME MEMBER AND ASSEMBLY FOR CARRYING ELECTRICAL SIGNALS AND THE LIKE

Joseph A. Swift, Ontario, and Ross E. Schroll, East Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 20, 1992, Ser. No. 871,163
Int. Cl.[5] H05K *7/02*; H02B *1/01*
U.S. Cl. 174—48 **76 Claims**



1. A frame assembly that provides mechanical support and carries electrical conduction paths for connection to circuitry of a machine, comprising:

a plurality of pultrusions, each including an insulating body and reinforcing fibers within said insulating body, each said pultrusion having grooves in surface portions along an elongated dimension;

conductors on said surface portions of each said pultrusion, said conductors providing electrical conduction paths connectable to circuitry of said machine; and

at least one connector block, said connector block being attached to at least two of said pultrusions and having conductors that contact said conductors on the surface of said at least two pultrusions when said connector block is attached to said at least two pultrusions, wherein said connector block interconnects selected conductors of said at least two pultrusions when said connector block is attached to said at least two pultrusions.

5,298,682

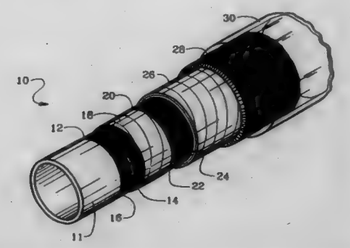
OPTIMIZED SYMMETRICAL COAXIAL CABLE

David B. Salz, Dania, Fla., assignor to Wireworld by David Salz, Inc., Fort Lauderdale, Fla.

Filed Aug. 20, 1992, Ser. No. 936,360
Int. Cl.[5] 174 *120 R*; H01B *7/18, 9/04*
U.S. Cl. 174—105 R **22 Claims**

1. A symmetrical coaxial cable, comprising: a core having an axis; a braided inner conductor constructed of a first quantity of wire strands, the first quantity of wire strands disposed along said core at an angle of approximately eighteen degrees with respect to the axis of the core, said core supporting said inner conductor; means for insulating said inner conductor, said means for insulating disposed along said inner conductor; a braided outer conductor constructed of a second quantity of wire strands, the second quantity of wire strands disposed along said means for insulating at an angle of approximately thirty eight degrees with respect to the axis of the core; and means for protecting said inner and outer conductors from

atmospheric elements disposed along said outer conductor; wherein said cable having a 5:6 overall ratio between the quantity of strands in said inner conductor and the quantity of strands in said outer conductor; wherein said quantities of



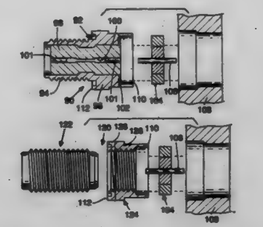
strands in said inner conductor and in said outer conductor and the angles that said inner conductor and said outer conductor are disposed at are chosen in order for said inner conductor and said outer conductor to have matching series impedances.

5,298,683

DISSIMILAR METAL CONNECTORS

Edward A. Taylor, Roseburg, Oreg., assignor to Pacific Coast Technologies, Wenatchee, Wash.

Filed Jan. 7, 1992, Ser. No. 817,592
Int. Cl.[5] H05U *01/00*
U.S. Cl. 174—152 GM **19 Claims**



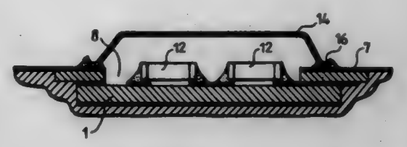
1. A connector body suitable for hermetically sealing a first apparatus comprising a first higher density metal and a second apparatus comprising a second lower density metal having thermal expansion properties different from those of the first metal, the connector comprising an integral layered metallic body portion having a first layer comprising a higher density metal that is thermally compatible with and hermetically sealable to the first metal and a second layer comprising a lower density metal that is thermally compatible with and hermetically sealable to the second metal, whereby the first and second layers of the connector body have an unequal volume and the second layer comprising the lower density metal has a larger volume than the first layer comprising the higher density metal.

5,298,684

CIRCUIT BOARD HAVING A LATERAL CONDUCTIVE PATTERN AND SHIELDED REGIONS AS WELL AS A METHOD OF MANUFACTURING SUCH A BOARD

Karl-Erik Leeb, Djurhamn, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 12, 1992, Ser. No. 897,829
Claims priority, application Sweden, Jun. 14, 1991, 9101837-4
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 **14 Claims**



1. A circuit board having a lateral conductive pattern and shielded regions, including

a first laminate comprising

an isolating or dielectric first substrate and

a conductive pattern of signal conductors and ground conductors located on a first side of the first substrate,

a second laminate comprising

an isolating or dielectric second substrate and

a second conductive layer arranged on the first side of the second substrate,

the first laminate being laminated, with the first side of the first substrate having the conductive pattern, to the second laminate, the first side of the second substrate being turned away from the first laminate, wherein

windows are arranged through the thickness of the second laminate, in order to enable mounting of components to the conductive pattern of the first laminate inside the windows, and

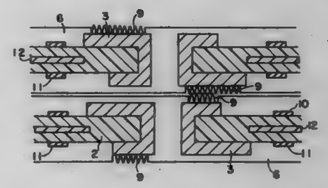
a third conductive layer is arranged to electrically connect the ground conductors of the conductive pattern of the first laminate and the conductive layer of the second laminate and to cover a second side of the first laminate.

5,298,685

INTERCONNECTION METHOD AND STRUCTURE FOR ORGANIC CIRCUIT BOARDS

Perminder S. Bindra, South Salem; Ross Downey Havens, Endicott; Voya R. Markovich, Endwell, and Jaynal A. Molla, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 605,615, Oct. 30, 1990, Pat. No. 5,129,142. This application Jul. 14, 1992, Ser. No. 913,086
Int. Cl.[5] H05K *1/100*
U.S. Cl. 174—250 **10 Claims**



1. A bonded composite of at least two organic polymeric subcomposites of a circuit board obtained by

(a) providing metallic dendrites on electrical contact pads of said two organic polymeric subcomposites wherein electrical contact pads of one of said organic polymeric subcomposites face electrical contact pads of the other of said organic subcompsites; and wherein an electrical contact

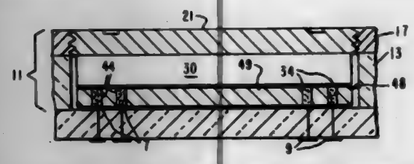
pad on one of the subcomposites is larger than the electrical contact pad it faces on the other subcomposite;
(b) contacting the electrical contact pads that face each other;
(c) heating said subcomposites while the said electrical contact pads that face each other are in contact with each other to form a bonded composite;
(d) and then permitting said bonded composite to cool.

5,298,686

SYSTEM AND METHOD FOR IMPLEMENTING WIRING CHANGES IN A SOLDERLESS PRINTED WIRING BOARD MODULE

Robert A. Bourdelaise, Crofton; David B. Harris, Columbia; David R. King, Woodlawn, all of Md., and Guy N. Hurst, West Carrollton, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1990, Ser. No. 601,558
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—254 **35 Claims**



1. A system for implementing a wiring change with respect to an electrical component detachably connected with the solderless printed wiring board module of the type having a connecting interface formed from a section of compliant, insulative sheet material that holds an array of resilient electrical connector means that electrically connects an array of contact pads disposed on a printed wiring board with a registrable array of contact pads disposed on said electrical component, comprising:
at least one unused via on said printed wiring board;
means for electrically disconnecting a selected contact pad of said component from a contact pad disposed on said printed wiring board, and
means including a conductive material mounted on a substrate formed form an insulative sheet material for electrically connecting said selected component contact pad to said unused via.

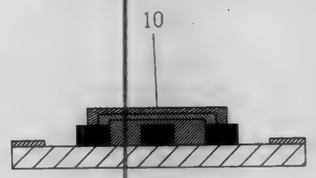
5,298,687

HIGH-DENSITY MULTILAYER INTERCONNECTION SYSTEM ON A CERAMIC SUBSTRATE FOR HIGH CURRENT APPLICATIONS AND METHOD OF MANUFACTURE

Nahum Rapoport, Canton, and Michael Curley, S. Lawrence, both of Mass., assignors to Remtec, Inc., Norwood, Mass.

Continuation of Ser. No. 634,382, Dec. 27, 1990. This application Apr. 7, 1993, Ser. No. 43,990
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—261 **6 Claims**

1. A high-density multilayer interconnection system
(a) an insulative substrate;
(b) a first layer circuit pattern having at least three conductive lines each of which consists of a seed and a plated portion, wherein said seed portion is a metal filled polymer material printed on the surface of said insulative substrate, said plated portion is an electroplated metal on surface of portion, provided that the cross-sectional area of the said portion is sufficient to achieve a standard copper thickness ounces within a reasonable time period (approximately two using a standard state-of-the-art plating process;
(c) an insulative isolation layer being positioned between at least two conductive lines and overlaying said at least one conductive line of said circuit pattern, wherein said is a low temperature polyimide or an epoxy based dielectric of less than 0.007 inches and exhibiting characteristics resistant to an electrodeposited process;
(d) second layer circuit pattern having at least one line consisting of said seed and plated portions wherein said portion is printed on surface of said insulative isolation between said at least two conductive lines of said first said plated portion of said second layer conductive line is electroplated on the surface of said seed portion with both said plated portion being extended on the surface of said at two conductive lines, provided that a cross-section area of second layer seed and plated portions is the same as first layer.

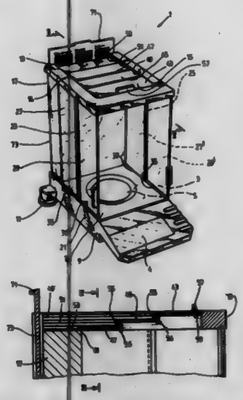


5,298,688

WEIGHING SCALE HOUSING HAVING MOVABLE PARALLEL WALL SEGMENTS

Paul Luechinger, Uster, and Eduard Fringeli, Bubikon, both of Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Filed Jan. 13, 1993, Ser. No. 2,752
Claims priority, application Switzerland, Feb. 18, 1992, 474/92
Int. Cl.[5] G01G *21/28*
U.S. Cl. 177—181 **13 Claims**



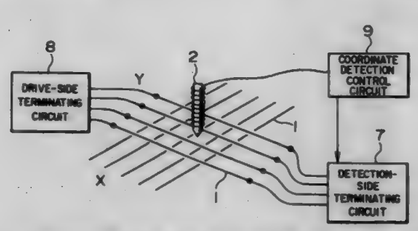
1. In a weighing scale housing having front (16), rear (17), side (23, 25), and top (15) walls cooperating with a base (9) to define a weighing chamber (3) in which is movably mounted a weighing pan (5); the improvement wherein at least one of said top and side walls contains an access opening, and a plurality of parallel window segments (43, 45, 47; 27, 29) connected with said one wall for sliding movement relative to each other between open and closed positions relative to said access opening, at least the longitudinal edge portions of said window segments being in continuous overlapping relation.

5,298,689

COORDINATE INPUT DEVICE USING MATTEUCCI EFFECT

Kaneo Mohri, Nagoya; Mitsunari Kano, Seto; Toshihiko Matsuda, Owariasahi; Jiro Kino, Seto; Morihiko Takashi; Yoshiharu Konishi, both of Owariasahi, and Junichi Oizumi, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,923
Claims priority, application Japan, Nov. 28, 1990, 2-322964; Nov. 28, 1990, 2-322965; Jan. 29, 1991, 3-008921
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 **13 Claims**



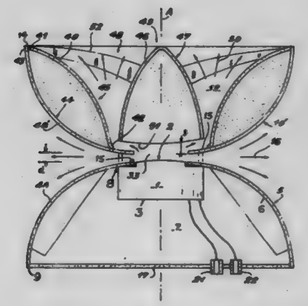
1. A coordinate input device based on Matteucci effect, comprising:
a magnetic wire matrix made of a plurality of magnetic wires arranged as equi-spaced in X and Y directions;
means for providing circumferential magnetization to said magnetic wires;
a coordinate designator for generating an A.C. magnetic field at its tip end;
means, when said coordinate designator approaches any one of said magnetic wires, for detecting a Matteucci-effect voltage developed between both ends of said magnetic wire; and
means for determining a coordinate position of said coordinate designator pointed on the basis of a coordinate position of at least one magnetic wire detected by said voltage detection means respectively in said X and Y directions.

5,298,690

SOUND DISTRIBUTOR WITH SYMMETRY OF REVOLUTION

Siegfried Klein, Paris, France, assignor to Commissariat A L'Energie Atomique, France

Continuation of Ser. No. 785,490, Oct. 31, 1991, abandoned. This application May 21, 1993, Ser. No. 66,338
Claims priority, application France, Nov. 8, 1990, 9013872
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—152 **11 Claims**



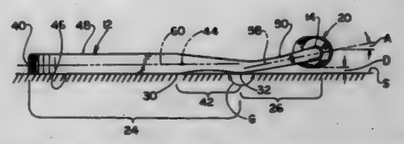
1. Sound distributor with symmetry of revolution with respect to a fictitious axis (A) comprising at least one first sound source located on the said axis, said sound source having a front face and a rear face, the sound being emitted by the front face and being irradiated in directions adjacent to the said axis; a first and a second cup for reflecting the sounds emitted by the source, each cup having a symmetry of revolution about the said axis and having a convex outer surface and an inner surface defining an inner portion of the cup, so that the cup has a bottom and a large opening defined by an edge, the two cups being oriented in accordance with said axis and arranged tail to tail, so that their convex surfaces face one another and their bottoms are spaced by a predetermined distance, the bottom of the first cup having a small opening centered on the said axis, said first sound source being positioned facing said small opening of the first cup, so that its front face is located in the vicinity of said small opening of the first cup and its rear face is located in the inner portion of the first cup, the sound being irradiated towards the outer surface of the second cup and reflected away from said axis A by the outer surfaces of the two cups, characterized in that the bottom of the second cup has a small opening centered on said axis (A), the second cup having in its inner portion a first trumpet-shaped sound reflector trumpet having a first opening and a second opening which is smaller than the first opening, one edge of the first opening of the trumpet bearing on the edge of the second cup and one edge of the second opening of the trumpet bearing on the inner face of the second cup, in the vicinity of the small opening of the second cup, the trumpet having an inner face with a convex surface shape which is an exponential surface of revolution about said axis, the second cup also having a second cone-shaped reflector with a convex outer surface which is an exponential surface of revolution about the said axis, said cone having a base and an apex, the apex being directed towards the large opening of the second cup and the base being positioned facing the small opening of the second cup, set back from said small opening, in the inner portion of the second cup, so that the sounds emitted by the sound source are also reflected by the inner face of the trumpet and by the outer face of the cone and are radiated towards the large opening of the second cup.

5,298,691

SOILING RESISTANT BANDED EARPLUG

Howard S. Leight, 4061 Glencoe Ave., Marina del Rey, Calif. 90292

Filed Sep. 11, 1992, Ser. No. 943,509
Int. Cl.[5] A61B *7/02*
U.S. Cl. 181—135 **4 Claims**



1. A noise-blocking band earplug apparatus for use in a noisy and dirty environment, comprising:
a band which can extend about halfway around a person's head, and which has opposite ends that can lie opposite the ears of the person and a middle lying halfway between said ends along said band;
a pair of earplug devices, each attached to a different one of said band ends, said band being resilient in movement of said band ends toward and away from each other and being constructed to urge said band ends and the earplug devices thereon toward the person's ears, and said earplug devices extending from said band ends toward each other and being constructed to block noise from entering the person's ear canal;
said band having an imaginary centerline which lies halfway between said earplug devices and passes through said band middle, and said band having a middle portion formed to rest stably on a flat horizontal surface which lies in a horizontal plane, and said band having end portions

that extend generally away from said middle as seen in a plan view when said band rests on a horizontal surface, said end portions each having a length (26) that is more than 10% of the horizontal length (26 plus 24) of the earplug and said end portions each extending at an upward incline of at least about 10° away from said horizontal surface as seen in a side view taken in the plane of said horizontal surface and perpendicular to said imaginary centerline, to hold said band ends and said earplug devices thereon away from said surface, whereby to avoid soiling of said earplug devices when said horizontal surface is dirty.

5,298,692

EARPIECE FOR INSERTION IN AN EAR CANAL, AND AN EARPHONE, MICROPHONE, AND EARPHONE/-MICROPHONE COMBINATION COMPRISING THE SAME

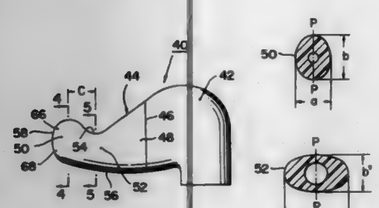
Yasuo Ikeda, and Yoshiuki Magara, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Pilot, Tokyo, Japan

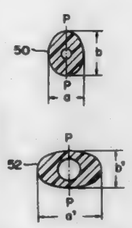
Filed Nov. 4, 1991, Ser. No. 787,225

Claims priority, application Japan, Nov. 9, 1990, 2-305836; Apr. 5, 1991, 3-102037

Int. Cl.[5] A61B *7/02*; H04R *25/00*

U.S. Cl. 181—135 **23 Claims**





1. An earpiece to be inserted in an ear canal as a part of an earphone, an ear mounted microphone, an earphone/microphone combination or the like, comprising:

(A) a body part;

(B) a canal insert joined to the body part and having a generally elongate shape to fit in an ear canal longitudinally thereof, the canal insert comprising:

(a) a rear portion joined directly to the body part;

(b) a front portion away from the body part, the front portion being of a substantially elliptical cross section; and

(c) a midportion intermediate the rear portion and the front portion, the midportion being of a substantially elliptical cross section;

(d) there being a median plane with respect to which the canal insert is substantially of bilateral symmetry;

(e) said canal insert, when seen in a direction perpendicular to said median plane, having a concavity at the midportion along one side of the canal insert and being convexed along the other side of the canal insert, said concavity being shaped to fit on a prominence on the inner wall of the ear canal to prevent the earpiece from slipping out of the canal;

(f) there being the following dimensional relationship between the front portion and the midportion of the canal insert;

$$b/a > b'/a'$$

where a=the cross sectional dimension of the front portion of the canal insert as measured in a first direction which is perpendicular to the median plane;

b=the cross sectional dimension of the front portion of the canal insert as measured in a second direction which is contained in the median plane and which is at right angles with the first direction;

a'=the cross sectional dimension of the midportion of the canal insert as measured in a first direction;

b'=the cross sectional dimension of the midportion of the canal insert as measured in the second direction.

5,298,693

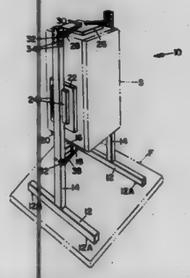
SPEAKER SUPPORT STAND

Roland A. Heijn, R.D. 2, Box 717, Woodstock, Vt. 05091

Filed Jun. 11, 1992, Ser. No. 896,994

Int. Cl.[5] A47B *81/06*

U.S. Cl. 181—199 **10 Claims**



1. A vibration damping support system for a sound reproduction speaker within an enclosure defining bottom and top and opposite side walls and comprising:

a framework including a pair of upright parallel standards shiftable toward and away from each other,

a horizontally-extending inwardly-facing support arm projecting from each standard toward the opposite arm,

a base mounted on the pair of support arms and having an upper planar surface upon which the bottom wall of the enclosure may seat,

a vertical side pad mounted on the inboard face of each standard for embracing a respective enclosure side wall as the standards are moved toward each other,

an upper pad,

an upper resilient tensioner strategically suspended between each standard and the upper pad for maintaining an downwardly bearing relationship of the upper pad upon the enclosure top wall,

a lower resilient tensioner strategically suspended between each standard and the base below the upper planar surface thereof for maintaining a taut relationship of the enclosure bottom wall with the base,

all adapted and arranged for minimizing vibratory effects in the achievement of speaker performance relatively free of spurious resonances.

5,298,694

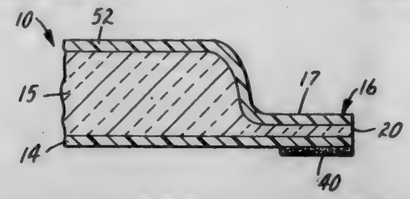
ACOUSTICAL INSULATING WEB

Delton R. Thompson, Mahtomedi, and Joseph A. Stroh, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 21, 1993, Ser. No. 6,415

Int. Cl.[5] E04B *1/82*

U.S. Cl. 181—286 **53 Claims**



1. A method for attenuating sound waves passing from a source area to a receiving area, comprising the steps of:

a) providing a nonwoven acoustical insulation web comprising thermoplastic fibers, said web having an average effective fiber diameter of less than about 15 microns, a thickness of at least about 0.5 cm, a density of less than about 50 kg/m^3, and a pressure drop of at least about 1 mm water at a flow rate of about 32 liters/min.; and

b) positioning said web between the source area and the receiving area such that a major face of said web intercepts and thereby attenuates sound waves passing from the source area to the receiving area.

5,298,695

ELEVATOR SYSTEM WITH VARYING MOTION PROFILES AND PARAMETERS BASED ON CROWD RELATED PREDICTIONS

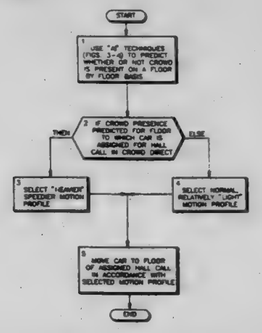
Zuhair S. Bahjat, Farmington, and Venkataramana S. Pullela, North Granby, both of Conn., assignors to Otis Elevator Company, Ten Farm Springs, N.J.

Continuation of Ser. No. 508,319, Apr. 12, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 15,065

The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.

Int. Cl.[5] B66B *1/28*, *1/24*

U.S. Cl. 187—118 **2 Claims**



1. An elevator dispatching system which uses selected elevator motion profiles having varied jerk, acceleration and deceleration to selectively provide faster service rather than a more comfortable ride, comprising:

means for measuring and storing information regarding passenger traffic at a predetermined stop during at least a predetermined time interval;

means for determining, based on said historical information, a passenger arrival rate at the predetermined stop for said predetermined time interval;

means for predicting, based on said determined passenger arrival rate, a crowd size at the predetermined stop for said predetermined time interval;

means for comparing said predicted crowd size with a predetermined crowd size threshold;

means for generating a crowd signal when said predicted crowd size exceeds said predetermined crowd size threshold; and

means for registering a hall call at said predetermined stop;

wherein the improvement comprises:

means responsive to a registered hall call at said predetermined stop for providing elevator motion control signals to define elevator motion profiles, one of which is a relatively light, normal profile characterized for passenger comfort and one of which is a relatively heavier, speedy profile characterized for elevator speed; and

means for dispatching an elevator car to said predetermined stop to answer said hall call using motion control signals defining said normal profile only in the absence of said crowd signal for said predetermined stop and for alternatively dispatching an elevator car to said predetermined stop using motion control signals defining said speedy profile only in the presence of said crowd signal for said predetermined stop.

5,298,696

ELEVATOR CAR ASSIGNMENT USING A PLURALITY OF CALCULATIONS

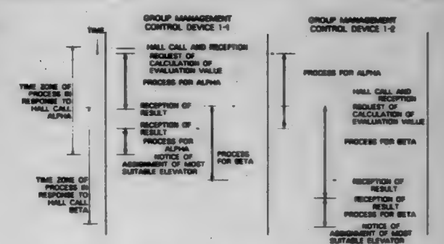
Yasukuni Okataku, and Susumu Kubo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1991, Ser. No. 723,070

Claims priority, application Japan, Jun. 29, 1990, 2-171417

Int. Cl.[5] B66B *1/18*, *1/14*

U.S. Cl. 187—127 **6 Claims**



1. An elevator group management system for managing a plurality of elevators, comprising:

a plurality of control means for executing overall assignments of said elevators in response to hall calls which take place on particular floors;

a plurality of calculation means, distributively disposed in said plurality of control means, for individually calculating times required for said plurality of elevators to respond to said hall calls;

wherein a first of said plurality of control means responds to a first hall call and activates a first calculation means disposed in said first control means to determine a most suitable elevator to respond to said first hall call;

wherein a second of said plurality of control means responds to a second hall call, only when the second hall call is received subsequent to the first hall call and while the first of said plurality of control means is responding to said first hall call, and activates a second calculation means disposed in said second control means to determine a most suitable elevator to respond to said second hall call; and

dispatching means for dispatching the most suitable elevators to respond to said first and second hall calls as calculated by the respective first and second calculation means.

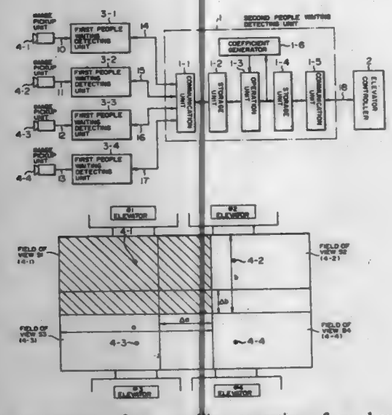
VOL 1160 ISS 5 MR 29 1994 UMI

5,298,697

APPARATUS AND METHODS FOR DETECTING NUMBER OF PEOPLE WAITING IN AN ELEVATOR HALL USING PLURAL IMAGE PROCESSING MEANS WITH OVERLAPPING FIELDS OF VIEW

Masato Suzuki, Ibaraki; Hiromi Inaba, Katsuta; Kiyoshi Nakamura, Katsuta; Naofumi Nakata, Katsuta; Hiroaki Yamani, Katsuta, and Naoto Oonuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,255
Claims priority, application Japan, Sep. 19, 1991, 3-266951
Int. Cl.[5] B66B *1/20*
U.S. Cl. 187—131 11 Claims



1. An apparatus for controlling operation of an elevator, based on detecting people waiting in an elevator hall, said apparatus comprising:

a plurality of image pickup devices for picking up a plurality of images of the elevator hall, each image pickup device picking up an image of a respective field of view of the elevator hall, the respective fields of view overlapping by a known amounts;

means for processing image signals from the plurality of image pickup devices to detect respective numbers of people waiting in each field of view;

means for generating a set of coefficients based on the amounts of overlap of the fields of view;

means for calculating the number of people waiting in the elevator hall, based on the generated coefficients and the respective detected numbers of people waiting in each field of view; and

means for controlling the operation of the elevator based on the number of people waiting.

5,298,698

ENCODER SWITCH WITH CONDUCTIVE PATTERNS AND LEADS

Yoshikazu Iida, Chigasaki; Toru Kosaka, Zama; Hiroyuki Tsuru, Tokyo, and Masaaki Hashimoto, Narashino, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 778,453
Claims priority, application Japan, Oct. 26, 1990, 2-111671[U]
Int. Cl.[5] H01H *19/58, 1/00;* G01D *5/02*
U.S. Cl. 200—11 DA 2 Claims

1. An encoder for producing a position signal in accordance with a position of a conductive slider, comprising:

a non-conductive substrate;

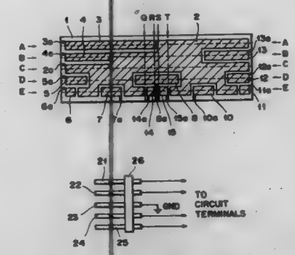
a first conductive pattern formed on said substrate; and

a plurality of at least three second conductive patterns formed on said substrate;

said second patterns being independent from said first pattern and spaced from each other, and each having a lead wire extending to an edge of said substrate;

said conductive slider being slidable along said substrate for producing a first electrical state signal when said conductive slider abuts against said first pattern and producing a second electrical state signal when said conductive slider abuts against one of a said second pattern and said substrate;

said position signal being generated based on whether said conductive slider produces said first electrical state signal or said second electrical state signal; and



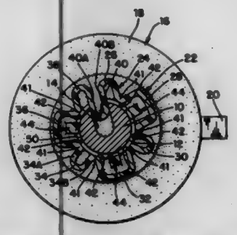
wherein one of said second patterns is substantially surrounded by said first pattern and the remaining said second patterns, with at least two of said remaining second patterns disposed outwardly to one side of said one second pattern in a space between portions of said first pattern which are adjacent in a sliding direction of said conductive slider, and wherein the lead wire extending from said one of said second patterns passes between said two of said remaining second patterns and extends exteriorly of said first pattern, such that said conductive slider cannot simultaneously contact either of said adjacent portions of said first pattern and said lead wire extending from said one second pattern.

5,298,699

ROTOR FOR AN IGNITION DISTRIBUTOR

Richard E. Ballentine, and James A. Boyer, both of Anderson, Ind., assignors to General Motors Corporation, Detorit, Mich.

Filed Feb. 25, 1993, Ser. No. 22,586
Int. Cl.[5] 200 *19 R;* H01R *39/00*
U.S. Cl. 200—19 DR 9 Claims



1. An ignition distributor rotor and rotor drive shaft comprising in combination, a drive shaft, said drive shaft having an axially and radially extending slot, a rotor formed of electrical insulating material, said rotor having an axially extending wall that has an undulated shape which is defined by circumferentially spaced undulated portions, said wall having a plurality of circumferentially spaced arcuate inner surfaces that tightly engage outer surface portions of said shaft, at least some of inner surfaces being located between certain of said undulated portions, a rib means on said rotor located in said slot to form

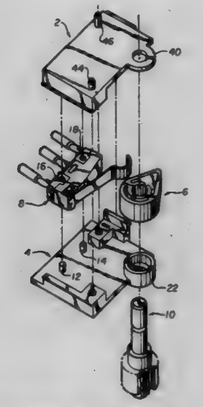
a driving connection between said rotor and said shaft and means for preventing said rotor from moving axially with respect to said shaft, said last named means comprising at a least one flexible latch arm that is carried by and is integral with said rotor, said latch arm having a surface that is engaged with a shoulder on said shaft.

5,298,700

LIMIT SWITCH MODULE AND CAM FOR USE IN THE SAME

Raymond P. Champagne, Oxford; Thomas V. Catacchio, W. Brookfield, and Michael A. Faticanti, Oxford, all of Mass., assignors to Neles-Jamesbury, Inc., Worcester, Mass.

Filed Jan. 30, 1992, Ser. No. 828,293
Int. Cl.[5] H01H *19/62;* F16H *52/04*
U.S. Cl. 200—30 R 26 Claims



1. A limit switch module, comprising:

a lower housing half separatably interconnected with a limit switch by a first arrangement of manually separatable and connectable snap-together projections and recesses;

an upper housing half separatably interconnected with at least one of said first housing half and said limit switch with a second arrangement of manually separatable and connectable snap-together projections and recesses;

means for rotatably receiving a cam between said upper and lower housing halves at a predetermined distance from said limit switch;

means for rotatably receiving a shaft and aligning the shaft for engagement with said cam;

wherein said means for rotatably receiving a cam includes a cylindrical bearing provided on one of said upper and lower housings halves, said cam including a spring collar integral with the cam for fictionally receiving a shaft;

said spring collar further including smooth inner surface means for providing infinitely variable angular adjustment relative to said shaft.

5,298,701

PLUG AND SWITCH INTERLOCK INCLUDING GEAR AND LATCH ASSEMBLY

John L. Sandor, Wallingford, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Dec. 7, 1992, Ser. No. 986,369
Int. Cl.[5] H01H *9/20, 13/70*
U.S. Cl. 200—50 B 14 Claims

1. An interlock mechanism for an electrical switch and receptacle comprising the combination of

a housing containing a switch and having a wall;

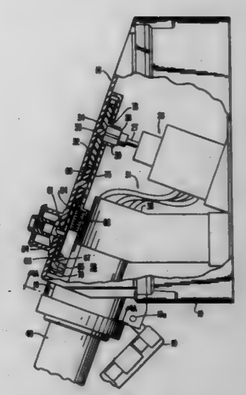
a rotatable switch operator on said switch;

a first gear coupled to said switch operator so that rotation of said first gear operates said switch between ON and OFF positions;

a movable handle on an outer surface of said wall, said handle being connected to a stem penetrating said wall;

a second gear attached to said stem inside of said housing and coupled to said first gear so that rotation of said second gear causes rotation of said first gear;

means on said second gear defining a recess;



a receptacle mounted on said housing, said receptacle having an end exposed for receiving a plug having a external key; and

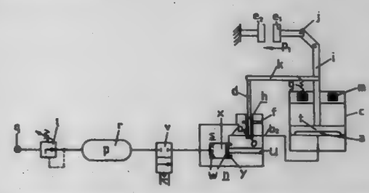
latch means for engaging said recess when said gear is in a position corresponding to said OFF position of said switch to prevent rotation of said gears, said latch means being located in a path to be moved out of said recess by said key when said plug is inserted into said receptacle whereby full insertion of said plug releases said gears and switch operator for rotation to said ON position.

5,298,702

PRESSURE MEDIUM DRIVE FOR CLOSING AND OPENING THE CONTACTS OF A CIRCUIT-BREAKER

Henri Duffour, Evian; Philippe Goerend, St. Genis-Pouilly, both of, and Dominique Loutan, Genève, Switzerland, assignors to Secheron SA, Geneva, Switzerland

Filed Sep. 4, 1992, Ser. No. 941,306
Claims priority, application Switzerland, Sep. 6, 1991, 2632/91
Int. Cl.[5] H01H *35/38*
U.S. Cl. 200—82 R 12 Claims



1. A pressure medium drive for opening and closing the contacts of a circuit-breaker, comprising:

a pressure medium reservoir;

a drive cylinder;

a drive piston sliding in the drive cylinder;

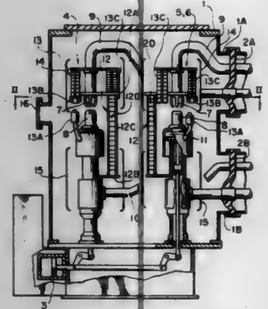
VOL 1160 ISS 5 MR 29 1994 UMI

a mechanism, acted on by the drive piston, to move one of the circuit-breaker contacts which is movable;
a reversing valve connecting the pressure medium reservoir to the drive cylinder when closing the contacts and connecting the drive cylinder to an outlet volume when opening the contacts;
an interposed valve disposed between the pressure medium reservoir and the reversing valve which when closing the contacts is open and passes pressure medium from the pressure medium reservoir via the reversing valve into the drive cylinder and after closing of the contacts is closed, and which after it has been closed establishes the connection between the drive cylinder and the outlet volume by reversing the reversing valve; and
a control device connected between the reversing valve and the drive cylinder in the path of the flow of the pressure medium for varying the flow of the pressure medium flowing between the reversing valve and the drive cylinder in dependence on the position of the drive piston.

5,298,703
GAS CIRCUIT BREAKER

Hirohiko Yatsuzuka; Tuneo Kishi; Takashi Minakawa, and Isao Nishida, all of Hitachi, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 758,679
Claims priority, application Japan, Sep. 14, 1990, 2-242397
Int. Cl.[5] H01H *33/16, 33/82*
U.S. Cl. 200—148 R **6 Claims**

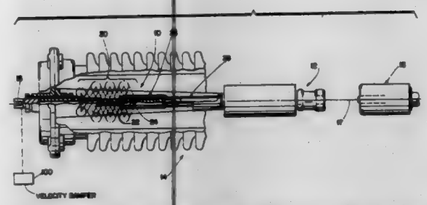


1. A three-phase common tank type gas circuit breaker comprising:
a grounded tank filled with an insulating gas;
interrupter assemblies for three phases of electrical power, said interrupter assemblies being disposed in said grounded tank and arranged in a circumferential direction thereof;
each interrupter assembly including an interrupter having a stationary contact and a movable contact, capacitor means, and closing resistor means having resistor elements and stationary and movable resistor contacts;
the interrupters of said interrupter assemblies being circumferentially spaced with respect to the grounded tank and having longitudinally extending axes extending substantially in parallel with a longitudinal axis of the grounded tank;
the capacitor means of each interrupter assembly being disposed on an inner side of the assembly as viewed radially of said grounded tank;
the closing resistor means of each interrupter assembly is disposed on a side of the interrupter, said side being adjacent a a peripheral wall of said grounded tank;
each interrupter assembly having stationary and movable sections;
shield members disposed around said stationary and movable sections of each of the respective interrupter assemblies.

5,298,704
CONTACT OPERATING ARRANGEMENT WITH SHOCK-REDUCING FEATURE FOR HIGH-VOLTAGE APPARATUS

John C. Opfer, Chicago, and Henry W. Kowalyshen, Niles, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Dec. 16, 1992, Ser. No. 990,869
Int. Cl.[5] H01H *33/42*
U.S. Cl. 200—148 F **8 Claims**

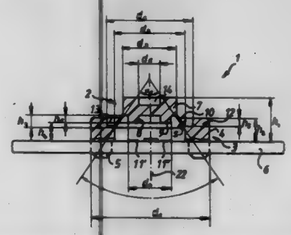


1. A moving contact operating mechanism for driving a moving contact member comprising:
an input member;
an output member connected to the moving contact member; and
driving means coupled between said input member and said output member for driving said output member in a first, contact-closing direction and a second, contact-opening direction, said driving means comprising a stroke multiplier mechanism and coupling means for coupling said stroke multiplier mechanism to said output member, said coupling means comprising means for transmitting movement of said stroke multiplier to said output member and for limiting forces transmitted from said output member to said stroke multiplier mechanism.

5,298,705
SNAP DISK TYPE SWITCH

Ekkehard Sachs, Spaichingen, Fed. Rep. of Germany, assignor to Marquardt GmbH, Rietheim-Weilheim, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,134
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112754
Int. Cl.[5] H01H *13/26*
U.S. Cl. 200—513 **17 Claims**

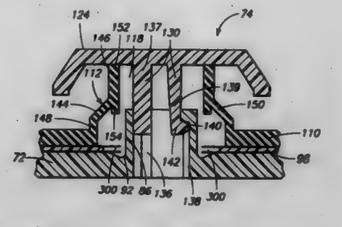


1. A snap dome type push button switch suitable for use as an actuating member for bridging fixed contacts as well as a resetting element and comprised of a block copolymer produced by an injection molding process, said block copolymer being comprised in part of a hard crystalline segment of polybutylene terephthalate and in part of a soft, amorphous segment based on long-chained polyether glycols, with a ratio of hard to soft segments of the block copolymer being selected in such a manner that a Shore hardness of D≈35 to 40 results, said switch comprising:
a switch cap having a shape of a conical frustum including: a broad base having a cylindrical ring shape, a narrow conical frustum tip having a frustocylindrical cover, and a thin-walled flexible cone face membrane connecting said base and said cover, said base and said frustocylindrical cover being made rigid in relation to said membrane, said cone face membrane having a wall thickness s and a height h_3, where s≈0.1 to 0.3 mm and a ratio of the height h_3 of the membrane to a switching stroke displacement h_4 being h_3: h_4≈1:1.3 to 2, with a surface of the cone face membrane being determined by an angle α_1 of approximately 60° measured at a projected conical frustum apex.

5,298,706
MEMBRANE COMPUTER KEYBOARD AND IMPROVED KEY STRUCTURE

George P. English, Coeur d'Alene, Id., and Stephen S. Damitio, Veradale, Wash., assignors to Key Tronic Corporation, Spokane, Wash.

Filed Aug. 13, 1992, Ser. No. 929,723
Int. Cl.[5] H01H *1/10*
U.S. Cl. 200—517 **14 Claims**

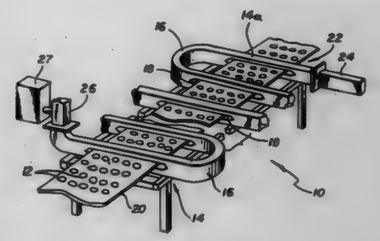


1. A computer keyboard comprising:
a monoblock having an upper surface and a plurality of key supports protruding upward from the surface;
a switch membrane disposed on the monoblock upper surface, the switch membrane having a plurality of associated apertures and switch contacts for corresponding key supports, the switch contacts positioned adjacent to associated apertures, the key supports of the monoblock extending through corresponding apertures;
the switch membrane having a flexible layer with annular apertures formed therein, the flexible layer having first and second conductive traces formed thereon adjacent to, but isolated from, one another about the annular apertures;
the monoblock having annular recesses formed around the key supports beneath associated first and second conductive traces, the recesses having surfaces, the monoblock also having a conductive material provided on the recess surfaces;
multiple key bodies operatively mounted in corresponding key supports of the monoblock, the key bodies having respective stems which are movably supported by corresponding key supports;
the key bodies being movable within the corresponding key supports from extended rest positions through intermediate positions to depressed activated positions;
a dome sheet positioned intermediate of the switch membrane and the multiple key bodies, the dome sheet having a plurality of resilient domes for corresponding key bodies for biasing the key bodies to the extended rest positions;
the domes having openings formed therein to provide access for the stems of the key bodies to the corresponding key supports; and
the domes having switch actuating means for actuating respective switch contacts of the switch membrane upon depression of the key bodies to the depressed activated positions, the dome switch actuating means deflecting the flexible layer into the monoblock recesses and forcing the first and second conductive traces of the flexible layer into electrical contact with the conductive material on the associated recess surfaces to electrically short the first and second conductive traces through the conductive material as the corresponding key bodies are depressed.

5,298,707
APPARATUS FOR PREPARING FAT FREE SNACK CHIPS

Peter Sprecher, Santa Barbara, Calif.; John Weidersatz, Louisville, Ky., and David Gaon, San Jose, Calif., assignors to TGTBT, Ltd., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 828,406, Jan. 31, 1992, Pat. No. 5,202,139, which is a continuation-in-part of Ser. No. 712,196, Jun. 7, 1991, Pat. No. 5,180,601. This application Jan. 6, 1993, Ser. No. 1,312
Int. Cl.[5] A23L *1/00;* **H05B** *6/00*
U.S. Cl. 219—693 **21 Claims**



1. An apparatus for the preparation of fat free chip-type snacks from product slices, comprising:
a microwave transparent conveyor belt for carrying product slices;
a first pair of microwave waveguides configured to repeatedly envelope at least one side of said conveyor belt;
a first microwave power source coupled to said waveguides so as to generally evenly distribute the microwave output of the power source into each waveguide; and
a drying oven,
wherein product slices carried by the conveyor belt are subjected to a microwave field of sufficient intensity to puff the slices and roughen their exterior surfaces and wherein these microwave exposed slices are later dried and crispened into chips in the drying oven.

5,298,708
MICROWAVE-ACTIVE TAPE HAVING A CURED POLYOLEFIN PRESSURE-SENSITIVE ADHESIVE LAYER

Gaddam N. Babu, Woodbury, Minn.; Susan S. Christopher, Spring Valley, Wis.; Pierre H. LePere, Cottage Grove, and James R. Peterson, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 7, 1991, Ser. No. 652,018
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—728 **20 Claims**

1. A food package comprising a piece of a microwave-active tape comprising layers of (a) an oriented backing material, (b) a microwave-active material, and (c) a pressure-sensitive adhe-

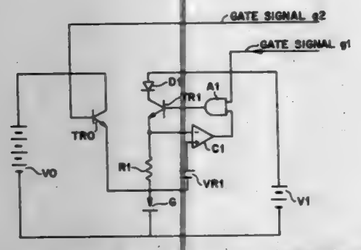
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sive, wherein said pressure-sensitive adhesive comprises a polymeric α-olefin that has been cured and has a "Peel" value



of at least 5 N/dm and a "Shrink Back" value at 220° C. of less than 5%.

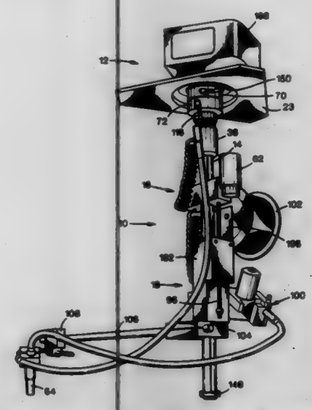
5,298,709
POWER SUPPLY SYSTEM FOR ELECTRIC DISCHARGE MACHINES
Yuji Kaneko, and Shinji Ito, both of Yokohama, Japan, assignors to Sodick Co., Ltd., Yokohama, Japan
Division of Ser. No. 429,794, Oct. 31, 1989, Pat. No. 5,126,525. This application Jan. 9, 1992, Ser. No. 818,536
Claims priority, application Japan, Nov. 1, 1988, 63-276957; Nov. 1, 1988, 63-276958; Nov. 10, 1988, 63-289837
Int. Cl.[5] B23H *7/14*
U.S. Cl. 219—69.18 **11 Claims**



1. A power supply for an electroerosion machine having in series a machining gap, a switching means responsive to first and second control signals, and a power source means, a controller responsive to a gate signal having an on time and off time for generating said first and second control signals, said switching means comprising a first switch connected between said power source and said machining gap and responsive to said first control signal to intermittently pass current through said machining gap during said gate signal on time and after initiation of a discharge in said machining gap, and a second switch connected between said power supply means and said gap and responsive to said second control signal to pass current through said machining gap during at least a portion of said gate signal on time after initiation of said discharge when said first switch means does not pass current.

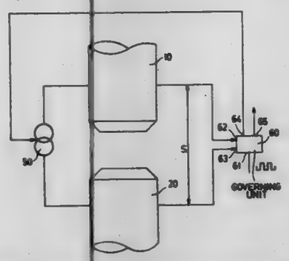
5,298,710
LARGE BORE WELDING APPARATUS
Rees Acheson, and Thomas H. Eslinger, both of Alstead, N.H., assignors to Bortech Corporation, Alstead, N.H.
Filed Mar. 24, 1992, Ser. No. 856,573
Int. Cl.[5] B23K *9/04*
U.S. Cl. 219—76.14 **26 Claims**

1. An apparatus for weld build-up on a surface of revolution within a bore, comprising
a head assembly comprising
a housing defining a chamber having an axis, said housing adapted for fixed mounting in a region spaced from a surface of revolution, with the axis of said chamber in alignment with an axis of revolution, and
a spindle mounted for rotation within said chamber, coaxial with said axis of revolution,
an elongated line shaft coupled to said spindle and extending for coaxial rotation within said bore in a region of said surface of revolution
a step assembly fixedly mounted upon said line shaft, and
a traveling assembly mounted upon said line shaft and disposed for rotation within said bore, said traveling assembly comprising
a wire reel,
a wire feeder, and



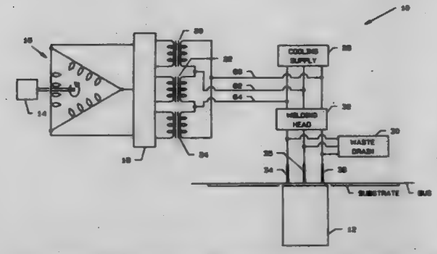
an electrical welding torch assembly that terminates in a torch nozzle,
said step assembly and said traveling assembly fixed for rotation upon said line shaft within said bore, and
said welding apparatus further comprising means for adjustment of the axial spacing between said step assembly and said traveling assembly along said line shaft.

5,298,711
CONTROL FOR SPOT WELDING MACHINE USING ELECTRODES AS THERMOCOUPLE
Paul Leon, 2, Impasse des Sablons, F-27630 Berthenonville, France
Filed Sep. 29, 1992, Ser. No. 953,479
Claims priority, application France, Nov. 18, 1991, 91 14371
Int. Cl.[5] B23K *11/25*
U.S. Cl. 219—110 **10 Claims**



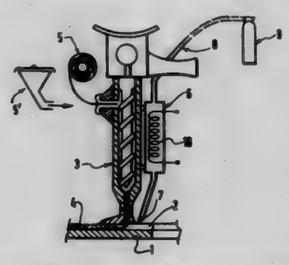
1. A process for controlling the parameters of a welding operation performed by a spot-welding machine, said processing comprising the steps of:
providing two movable electrodes respectively connected to a source of current that supplies a welding current;
applying a normal pressure to said electrode to a work piece during at least part of a welding operation; controlling said parameters of a welding operation on a basis of an electric signal that is a function of the temperature in the welding zone; and
taking said electric signal between terminals of the two electrodes, one of the electrodes being made of a material that is one element of a thermoelectric couple and other electrodes being made of a material which is a second element of said thermoelectric couple.

5,298,712
WELDING SYSTEM FOR A BATTERY PACK
Richard B. Alexandres, Clear Lake, Iowa, assignor to Alexander Manufacturing Company, Mason City, Iowa
Filed Aug. 6, 1992, Ser. No. 925,174
Int. Cl.[5] B23K *11/11*
U.S. Cl. 219—117.1 **13 Claims**



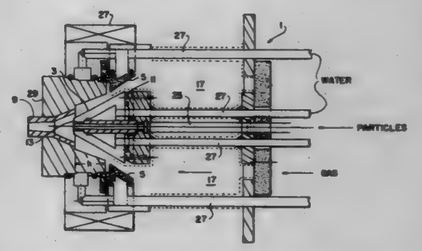
1. A process for welding a flat metal strip to a battery terminal, said flat metal strip having a thickness substantially less than that of the battery terminal, comprising the steps of:
a. providing a three-phase power source;
b. providing three resistance welding electrodes;
c. connecting each phase of said three-phase power source to a different pair of said three resistance welding electrodes, thereby forming three distant resistance welding electrode pairs;
d. engaging the flat metal strip and the battery terminal;
e. engaging the three resistance welding electrodes with the flat metal strip; and,
f. sequentially applying said three-phase power to the resistance welding electrode pairs.

5,298,713
PROCESS FOR WELDING THERMOPLASTIC MATERIALS WITH PROJECTION OF HOT GAS
Pascal Marlin, Cambes En Plaine, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges and La Soudure Autogene Francaise, Paris, France
Filed Jun. 18, 1992, Ser. No. 900,986
Claims priority, application France, Jun. 25, 1991, 91 07768
Int. Cl.[5] B23K *10/00*
U.S. Cl. 219—121.46 **10 Claims**



6. A method of joining together in a super-imposed relationship at least two layers of fiber-reinforced thermoplastic materials, comprising steps of:
forming a mixture of neutral gases comprising at least 20% helium;
circulating the gas mixture as a gas stream through a gas circuit terminating at an injection nozzle;
placing a first layer of fiber-reinforced thermoplastic material above a second layer of fiber-reinforced thermoplastic material leaving therebetween a confined space;
placing the injection nozzle adjacent the confined space;
heating the gas stream to a temperature not less than 700° C. while circulating the stream along the gas circuit;
directing the heated gas stream ejected by the nozzle into the confined space to heat locally the first and second layers to a welding temperature, and
coating said second layer with said first layer upon the application of pressure.

5,298,714
PLASMA TORCH FOR THE TREATMENT OF GASES AND/OR PARTICLES AND FOR THE DEPOSITION OF PARTICLES ONTO A SUBSTRATE
Roberto N. Szeate; Michel G. Drouet, both of Montréal, and Richard J. Munz, Westmount, all of Canada, assignors to Hydro-Quebec, Montreal, Canada
Filed Dec. 1, 1992, Ser. No. 983,739
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.48 **7 Claims**



1. A plasma torch for the treatment of gases or particles or for the deposition of particles onto a substrate, said torch comprising:
supporting means having a longitudinal axis;
a central electrode and a peripheral electrode coaxially mounted onto the supporting means, said electrodes being concentrically arranged and defining therebetween an annular passage opening into an outlet nozzle coaxially mounted onto the supporting means;
means for injecting in a given direction a plasma gas into the annular passage toward the outlet nozzle;
means for electrically connecting said electrodes to a D.C. voltage source in order to generate an electric arc between said electrodes and to ionize the plasma gas so as to form a plasma of given characteristics, said plasma escaping from the passage through the outlet nozzle in the form of a flame of a given temperature and velocity; and
means for injecting the gases or particles to be treated or deposited into the flame escaping from the outlet nozzle, said injecting means comprising an injection passage that is coaxial with the central electrode and opens centrally into the outlet nozzle so as to inject the gases or particles to be treated or deposited centrally and coaxially within the center of the flame without unduly affecting the characteristics of the plasma;
wherein, in normal use, said central electrode extends well downstream of said peripheral electrode with respect to said given direction in which the plasma gas is injected,

whereby the electric arc may not block the injection passage; and

wherein said torch also comprises means mounted onto said supporting means for generating a magnetic field external to the electrodes in a direction parallel to the annular passage in order to rotate said electric arc within said passage between the electrodes and thus reduce erosion of said electrodes while ensuring better mixing of said plasma gas.

5,298,715

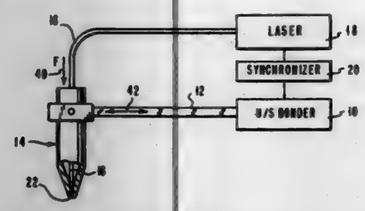
LASERSONIC SOLDERING OF FINE INSULATED WIRES TO HEAT-SENSITIVE SUBSTRATES

Pedro A. Chalco, Yorktown Heights, N.Y.; Wesley L. Hillman, Morgan Hill, Calif.; Richard H. Kurth, Palo Alto, Calif., and Nicholas T. Panousis, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1992, Ser. No. 874,666

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 **14 Claims**



1. A method of soldering an insulated wire to a pad comprising the steps of:

disposing a wire having a longitudinal axis and surrounded by a layer of insulation in juxtaposition with a solder covered pad;

contacting the insulation with a bonding tip;

applying a force to the tip in a direction along an axis substantially normal to the longitudinal axis of the wire urging the wire into forced intimate contact with the solder covered pad;

applying laser energy for heating the tip;

applying ultrasonic energy to the tip for causing the tip to undergo reciprocating vibratory motion in a direction along an axis substantially parallel to the longitudinal axis of the wire while the tip is in forced contact with the wire; and

ceasing said applying a force, said applying laser energy and said applying ultrasonic energy after a predetermined period of time when the insulation is melted away from the wire by action of the combined heating and vibratory steps; whereby, the solder melts and strips the insulation off the wire.

5,298,716

LASER PROCESSING HEAD AND METHOD FOR OPERATION THEREOF

Shuji Ogawa, and Atsuhiko Kawamura, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,450

Claims priority, application Japan, Sep. 22, 1992, 4-252743

Int. Cl.[5] B23K *26/14*

U.S. Cl. 219—121.67 **11 Claims**

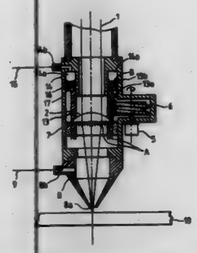
1. A laser processing head for directing a laser beam, having an optical axis, from a laser source side to a workpiece side and onto a workpiece together with cutting gas from a supply, comprising:

an external cylinder having an annular groove;

a cutting lens disposed transversely to said optical axis for condensing said laser beam;

a nozzle disposed at one end of said external cylinder for applying said condensed laser beam and injecting supplied cutting gas to a workpiece;

a moving holder, holding said cutting lens and inserted in said external cylinder;



drive means disposed adjacent said external cylinder for reciprocatively moving said moving holder along the optical axis of said laser beam;

an annular piston formed at the end of said laser source side of said moving holder and being sealingly inserted in the annular groove of said external cylinder;

means for supplying a drive gas to said annular groove; and

whereby said annular piston is pressed toward said nozzle by the pressure of drive gas supplied to said annular groove.

5,298,717

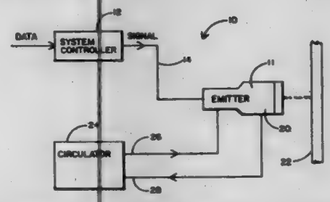
METHOD AND APPARATUS FOR LASER INSCRIPTION OF AN IMAGE ON A SURFACE

Thomas A. DeRossett, Jr., 7276 Sanctuary La., Amelia Island, Fla. 32034

Filed Aug. 17, 1992, Ser. No. 931,275

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.68 **12 Claims**



1. In a system for inscribing a pattern on a surface, said system consisting of an emitter including a laser for generating a high energy emission beam, a support system including a system controller for receiving data representing the pattern to inscribed on the surface and for converting said data to control signals, and beam direction means for controllably directing said emission beam responsive to the control signals from said system controller and power circuit means connecting said laser and said beam direction means to a source of power, the improvement comprising:

a marking head separate from said emitter and said system controller and adapted to be moved and positioned adjacent said surface to be etched, said marker head including a housing having an interior defined by top, bottom, side and end walls, one of said end walls defining the emission end of said marker head and having an emission port for the passage of the laser beam therethrough, said beam direction means being disposed in the interior of said marking head for directing said beam through said emission port, a hood surrounding said emission end of said marking head which serves as a light seal between said emission end of said marking head and the surface to reduce light loss while said laser is in operation;

means defining a flexible optical path between said emitter and said marking head for transmitting said emission beam from said laser to said marking head;

circuit means electrically connecting said marking head and said laser.

5,298,718

OPTICAL ELEMENT MANUFACTURING METHOD AND A WAFER

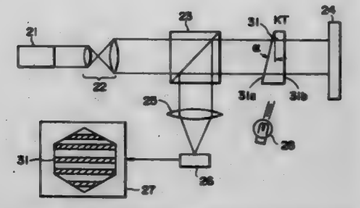
Hisashi Masuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,257

Claims priority, application Japan, Nov. 22, 1991, 3-334154

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.72 **8 Claims**



1. An optical element manufacturing method comprising steps of:

preparing a wafer having opposite surfaces the extension of which intersecting each other at a predetermined angle;

irradiating the wafer with a laser beam to form fringes on the wafer and displaying the fringes on a display for observation;

determining cutting lines on the wafer with reference to the positions of the fringes; and

cutting the wafer along the cutting lines to obtain a plurality of optical elements.

5,298,719

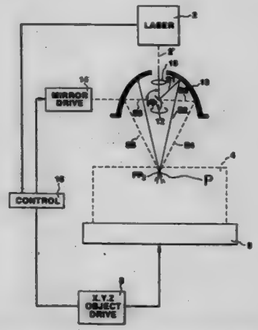
LASER BEAM HEATING METHOD AND APPARATUS

Aaron Shafir, 9 Leon Blum Street, 69 461 Tel Aviv, Israel

Filed Nov. 19, 1992, Ser. No. 978,580

Int. Cl.[5] B23K *26/06*

U.S. Cl. 219—121.73 **15 Claims**



1. A method of concentrating the heat energy of a laser beam at a predetermined point of an object to be heated, comprising:

directing the laser beam to an optical device located at a first point with respect to a reflector having a curved surface approximating that of an ellipsoid, said first point being approximately the first focal point of the ellipsoid, said optical device redirecting the laser beam from said first focal point to said curved surface of the reflector to cause the beam to be reflected to a second focal point of the reflector;

focussing the laser beam such that it comes substantially to a focus at said second focal point of the reflector;

driving said optical device at said first focal point to cause the laser beam to successively scan different portions of said curved surface of the reflector while the latter surface reflects the laser beam substantially to said second focal point;

and positioning the object such that its predetermined point to be heated is located substantially at said second focal point.

5,298,720

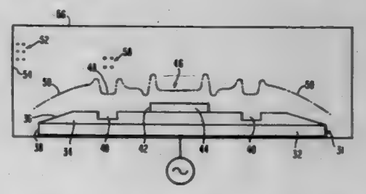
METHOD AND APPARATUS FOR CONTAMINATION CONTROL IN PROCESSING APPARATUS CONTAINING VOLTAGE DRIVEN ELECTRODE

Jerome J. Cuomo, Lincolndale; Michael V. Grazioso, Wappingers Falls; Charles R. Guarnieri, Somers; Kurt L. Haller, Peekskill; John E. Heidenreich, III, Yorktown Heights; Gary S. Selwyn, Hopewell Junction, and Stanley J. Whitehair, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1990, Ser. No. 514,916

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.43 **30 Claims**



28. An apparatus for processing a workpiece comprising:

a process chamber having a plurality of electrodes, at least one being a voltage driven electrode;

said workpiece being disposed on one of said electrodes;

means for directing particles generated within said chamber to predetermined locations within said chamber not over said workpiece to a means for extracting said particles from said process chamber; and

said means for directing said particles being a predetermined topographic pattern on least one of said electrodes in the vicinity of said workpiece.

5,298,721

POSITIVE TEMPERATURE COEFFICIENT COMPOSITION

Jack H. Smuckler, 9 Countryside Ln., Marblehead, Mass. 01945

Division of Ser. No. 610,795, Nov. 8, 1990. This application Oct. 21, 1992, Ser. No. 964,460

Int. Cl.[5] H05B *1/02, 3/16;* H01B *1/00;* H01C *1/00*

U.S. Cl. 219—505 **18 Claims**

1. A positive temperature coefficient composition having a preselected switching temperature, said composition comprising

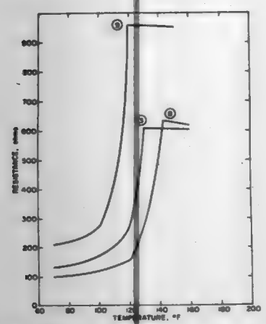
(a) a continuous, single phase solution of

(i) a polymer, wherein said polymer provides cohesion and flexibility to said positive temperature coefficient composition and comprises greater than 25% by weight of said single phase solution, and

(ii) a monomeric crystallizable organic compound misci-

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ble in said polymer, having between about 10–40 carbon atoms and a characteristic crystalline melt temperature, wherein said compound is selected from the group consisting of saturated hydrocarbons, organic acids and alcohols, and



(b) electrically conductive particles dispersed throughout said single phase solution,

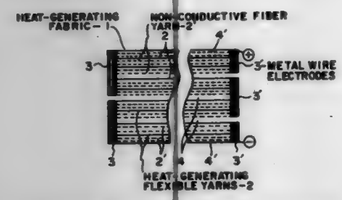
wherein said composition has a switching temperature in the vicinity of said characteristic crystalline melt temperature, and below about 150° Fahrenheit.

5,298,722

TIRE WARM-UP WRAP

Kunio Tanaka, Iberaki, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 854,977
Claims priority, application Japan, Mar. 22, 1991, 3-83109
Int. Cl.[5] B60B *39/00;* **B60C** *11/00;* **H05B** *3/03, 3/36*
U.S. Cl. 219—545 **13 Claims**



1. A tire warm-up wrap, comprising a heat-generating narrow fabric woven from a warp having:

(i) an electrically heat-generating flexible yarn which is made of a plurality of mixed yarn including between 20 and 60% by weight of discontinuous electrically conductive metal fibers and between 80 and 40% by weight of electrically non-conductive fibers; and

(ii) a yarn composed of electrically non-conductive fibers, and (b) a weft composed of a yarn composed of electrically non-conductive fibers,

wherein each of said mixed yarns includes at least 20 discontinuous electrically conductive metal fibers and is made by drafting a bundle of electrically conductive metal continuous filaments combined with a bundle of electrically non-conductive continuous filaments to stretch-cut at least the metal continuous filaments into a length of between 100 and 800 mm,

wherein said electrically heat-generating flexible yarn has a line resistivity of between 0.05 and 10 ohm/cm and a resistivity coefficient of variation (CV) not larger than 10% and is made by subjecting the mixed yarn to a first twisting and then subjecting a plurality of the first-twisted mixed yarns to a second twisting under conditions such that the first-twisted mixed yarn has a first twist coefficient of between 6,500 and 13,500 and the ratio of the first twist coefficient to the second twist coefficient is between 0.5 and 1.50,

wherein said heat-generating narrow fabric comprises in both of the lengthwise end portions thereof wefts which includes electrically conductive metal wires which are cut into a plurality of divided metal wire electrodes each having a short length, and

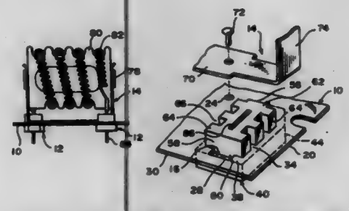
wherein said electrically heat-generating flexible yarns of the warp and the respective divided metal wire electrodes form a series circuit extending forward and backward alternately along the length of the heat-generating narrow fabric between sets of the electrically heat-generating flexible yarns and between the divided metal wire electrodes in both of the lengthwise end portions thereof, wherein each of the set has a substantially equal number of the electrically heat-generating flexible yarns.

5,298,723

HEATER ELEMENT SUPPORT ASSEMBLY

James E. Philpot, Cookeville, Tenn., assignor to Teledyne Industries Inc., Cookeville, Tenn.

Filed Jul. 2, 1992, Ser. No. 907,542
Int. Cl.[5] H05B *3/06;* **H01C** *3/10, 3/14, 7/22*
U.S. Cl. 219—532 **13 Claims**



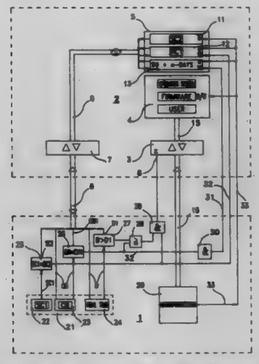
1. A support assembly for an electric heating coil, said assembly including a mounting plate having first and second opposed faces and at least one cutout defined therethrough, and an insulator engageable with said plate through said cutout; said insulator including a head portion selectively passable through said cutout from said first plate face to overlie said second plate face, a base configured to overlie said first plate face and preclude passage of said base through said cutout, and a neck positionable within said cutout and integrally joining said head portion and said base, said cutout having opposed inner and outer ends and opposed sides, said head portion being configured for free passage through said cutout in a first aligned position therewith, said insulator, upon passage of said head portion through said cutout, being longitudinally shiftable toward said outer end of said cutout to a second position with said head portion at least partially overlying said second face of said mounting plate whereby withdrawal of said head portion through said cutout is precluded, said cutout including areas of greater and lesser widths between said opposed sides, said opposed sides of said cutout including alternate recesses and projections to respectively define said areas of greater and lesser widths, said head portion including opposed sides having alternate projecting arms and notches therealong, said arms and notches of said head portion complementing said cutout recesses and projections respectively and freely passing thereby upon alignment therewith in said first aligned position, said projecting arms of said head portion, in said second position, overlying said projections of said cutout, and locking means for fixing said insulator in said second position against longitudinal movement from said second position to said first position.

5,298,724

METHOD FOR OPERATING INSTALLATIONS COMPRISING CHIP-CARD-DRIVEN CONTROL SYSTEMS

Peter Wratil, Rosengarten/Klecken, Fed. Rep. of Germany, assignor to Klockner-Moeller GmbH, Bonn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 1,391, Aug. 22, 1990. This application Feb. 25, 1992, Ser. No. 841,582
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 3928107
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 **23 Claims**



1. A method for the operation of installations comprising

furnishing a chip card as a memory storage medium in a chip card-controlled control system;

contacting the chip card in a communication device of the control system;

exchanging data between the chip card and the control system via a data bus;

coding the chip card during the initial operation of a control system by specifying the chip card to the same control system;

comparing supplier code data present as a first supplier code on the chip card and as a second supplier code in the control system, which supplier codes are compared relative to their identity during a first functional operation of the chip card with the control system;

transferring in case of identical supplier codes a system-specific control number onto the chip card, wherein the chip card can only be copied if it exhibits said control number; ensuring a coding of the chip card by the control system in such a manner that, in case of identical supplier codes, the control number, offered by a code memory storage of the control system via an information bus to an organization memory storage of the chip card, is written via a compensation line into a second memory storage of the organization memory storage of the chip card, wherein the control number can no longer be changed after inscription onto the chip card, and wherein the chip card copied from a master chipcard can only be operated with that control system with which the master chip card had been coded, wherein the chip card becomes the master chip card if a new control system is operated for the first time with the chip card;

limiting a functional operation of a chip card copied from the master chip card with a second control system, where the control number of the second control system does not coincide with the control number of the chip card, to a defined time period, wherein an actual date is written from a real time device of the second control system into a third memory storage region of the organization memory storage, and wherein a time period is added to the actual date, wherein the time period determines an operational availability time period of the chip card with the second control system;

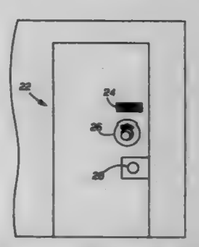
transmitting data relating to the supplier codes, the control numbers, the actual date, and the availability time period after limiting the functional operation of the chip card copied from the master chip card between the chip card and the control system through the information bus and the communication device.

5,298,725

BAR CODE SECURITY SYSTEM

Harold R. Fischer, San Diego, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 15, 1992, Ser. No. 990,910
Int. Cl.[5] G06V *5/00*
U.S. Cl. 235—382 **12 Claims**



1. A security management system for efficiently recording and memorializing security information relating to the storage of classified information comprising:

a noncopiable bar code label, a data scanner for scanning said bar code label, a personal computer, a data transmitter for transmitting data from said data scanner to said personal computer,

said bar code label being affixed to a surface area located near a locking means, said locking means being used to secure an area containing classified material wherein the location of said locking means corresponds to said bar code label,

said data scanner for recording the time and date that a particular bar code label was scanned and said data scanner also for recording the identity of the security officer making the scan,

said personal computer for generating a report that shows the date of the inspection, the time of the inspection, the location inspected and the identity of the inspecting officer.

5,298,726

FARE CARD READ-WRITER WHICH OVERWRITES OLDEST OR INVALID DATA

Kenneth R. Aubrey, San Diego, Calif., assignor to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Continuation of Ser. No. 607,305, Oct. 31, 1990, Pat. No. 5,191,195, which is a continuation of Ser. No. 274,355, Nov. 21, 1988, abandoned. This application Jan. 7, 1992, Ser. No. 817,601
Int. Cl.[5] G07B *15/02;* **G06K** *19/06, 7/08*
U.S. Cl. 235—384 **5 Claims**

1. A ticket read/write system, comprising:

a codable ticket having at least three data fields for codable information, data field one for magnetically encoded initial use information, and data fields two and three for magnetically encoded most recent and next most recent subsequent use information related to the sequence of the most recent and next most recent subsequent use of the ticket, data fields one, two and three being magnetically

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codable strips wherein data field one is not collinear with data fields two and three;
first encoding means for encoding initial use information in said first data field of said ticket;
second encoding means for controllably encoding subsequent use information in said second and third data fields of said ticket;
decoding means for decoding said information encoded on said first, second and third data fields;
first determining means for determining if said decoded information on said first, second and third data fields is valid;



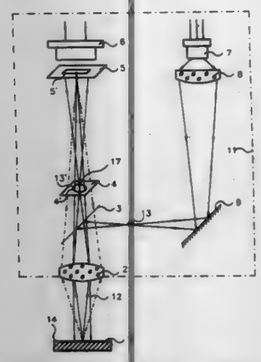
second determining means for determining if said decoded information on said second data field was recorded prior in time to said information on said third data field; and
third encoding means for selectively encoding new use information on said second data field, if said information on said second data field is determined by said second determining means to be recorded prior in time to said information on said third field, or selectively encoding new use information on said third data field if said information on said second data field is determined by said second determining means not to be recorded prior in time to said information on said third data field.

5,298,727

DEVICE FOR READING BAR CODES ON SEMICONDUCTOR SURFACES

Hans-Hermann Spratte, Kirchheim/Teck, and Norbert Aldiek, Schlierbach, both of Fed. Rep. of Germany, assignors to Leuze Electronic GmbH & Co., Owen-Teck, Fed. Rep. of Germany

Filed Mar. 6, 1992, Ser. No. 847,337
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 4107069
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 **10 Claims**



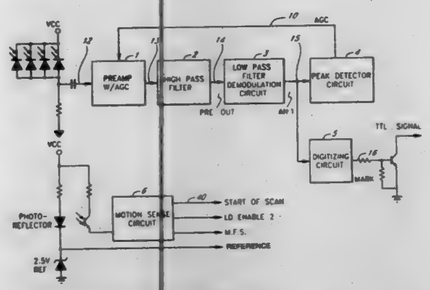
1. A device for a reading bar code applied to a surface of a semiconductor wafer, comprising:
a laser beam source for producing a coherent diverging light beam along a first optical path;
optical transmit/receive means having a first focal point on said first optical path upstream of said optical transmit/-receive means for producing collimated light downstream thereof;
focussing means for focussing the coherent diverging light beam into the first focal point of said optical transmit/-receive means so that a parallel light beam having a planar wavefront is created downstream of said optical transmit/receive means for scanning a semiconductor surface having a bar code thereon;
a beam divider mirror disposed optically between said transmit/receive means and the first focal point for allowing the light beam from said laser beam source to pass through said transmit/receive means and for allowing light reflected from the semiconductor surface through the transmit/receive means to pass into a second focal point of said transmit/receive means on a second optical path and on toward an image plane of said transmit/receive means on said second optical path for imaging the bar code;
first aperture means for creating a first aperture in a focal plane of said transmit/receive means at the second focal point, with diffracted light from the bar code creating a local frequency spectrum in the focal plane at the second focal point having its zero order diffraction component in the center of the first aperture;
a photosensitive light receiver; and
second aperture means for creating a second aperture in the bar code image plane spatially in front of said photosensitive light receiver.

5,298,728

SIGNAL PROCESSING APPARATUS AND METHOD

Randy D. Elliott, and Blaine F. Loris, both of Eugene, Oreg., assignors to Spectra-Physics Scanning System, Inc., Eugene, Oreg.

Filed Nov. 1, 1991, Ser. No. 786,290
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—463 **53 Claims**



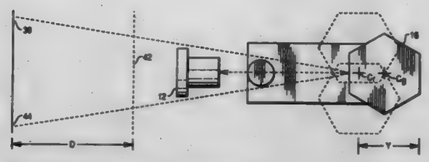
1. A digitizing circuit comprising:
first circuit means, configured to have a bandwidth in the range of between about 500 Hz–100 KHz, for forming a first signal representative of a derivative of an analog signal, the analog signal being representative of the intensity of the light reflected off a bar code symbol comprising alternating black and white bars each having a width, and for forming a second signal which is a complement of the first signal; and
second circuit means coupled to the first circuit means for generating digital pulses on a digital output signal by utilizing the first signal and the second signal to detect transition points on the analog signal, the transition points being determined by the intersection of the first signal and the second signal and representing transitions from black bars to white bars or vice-versa, and by starting and stopping the generation of digital pulses on or about the transition points;
whereby the width of the digital pulses corresponds to the widths of the bars making up the bar code symbol.

5,298,729

MULTIPLE DEPTH OF FIELD OPTICAL SCANNER

Charles K. Wike, Jr., Sugar Hill, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 14, 1992, Ser. No. 838,989
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 **14 Claims**



10. An optical scanner comprising:
a mirrored spinner which rotates about a predetermined point between the geometric center and the periphery of the spinner and spaced from the geometric center, including a polygon having a predetermined number of mirrored facets;
a laser for producing scanning light beams; and
means for rotating the mirrored spinner, including a motor, a shaft coupled to the motor and having a central axis, a support member mounted to the first shaft for rotation and having first and second sides, the spinner being mounted on the first side such that the rotation point of the spinner is in line with the axis, and a counterweight mounted on the first side of the support member;
wherein the predetermined rotation point comprises one which maximized variation in depth of field while being one at which the laser continuously illuminates the mirrored spinner as it rotates about the point.

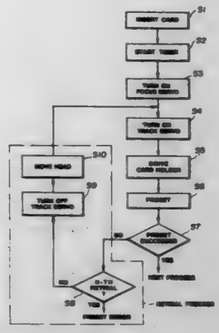
5,298,730

OPTICAL CARD APPARATUS IN WHICH RETRIAL OF LOCATING OPERATION OF OPTICAL CARD IS RETRIED ON ANOTHER TRACK AT THE TIME OF LOADING THE SAME

Takao Rokutan, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,285
Claims priority, application Japan, Jan. 29, 1991, 3-9170
Int. Cl.[5] G06K *13/067;* **G11B** *7/08*
U.S. Cl. 235—476 **21 Claims**

13. An optical card recording/reproducing apparatus comprising:
an optical head for recording/reproducing information by applying light beams to a rectangular optical card having linear tracks to which information is optically recorded;
card holding means for detachably holding said optical card;
card holder position detection means for detecting the relative position between said card holding means and said optical head in at least said track direction;
first moving means for relatively moving at least said light beam in said track direction;
second moving means for relatively moving at least said light beam in a track transversal direction which traverses said tracks of said optical card;
reference position signal detection means for detecting a reference position signal formed on said optical card;
correction means for correcting an output of said card holder position detection means in accordance with the output from said reference position signal detection means; and
control means for discriminating whether or not a correction operation performed by said correction means has failed and changing an optical spot in said track transversal direction in a case where a discrimination is made that



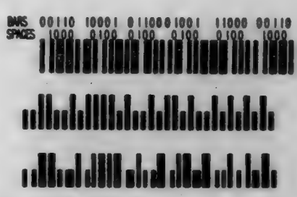
said correction operation has failed so as to again perform said correction operation.

5,298,731

METHOD FOR PRINTING AND READING FOR ORTHOGONAL BAR CODE PATTERNS

Allen H. Ett, Bethesda, Md., assignor to International Business Machines Corporation, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,292
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—494 **12 Claims**



8. In a data processing system a method of reading a bar code consisting of two components corresponding to two individual bar code patterns combined into a single bar code where the information is carried by orthogonal means of modulation, which permits the separation of the two elements of modulation into two separate data streams during the reading process without interaction, comprising the steps of:
scanning the said bar code pattern, converting said pattern into a bit image representation of said pattern;
locating the said bar code pattern within the scanned bit map image;
processing said bit map image to measure the widths and height of all code bars within said pattern and the width of all inter-bar spaces;
storing a first conversion table addressable by the resulting bar widths and space widths wherein is also stored the character codes corresponding to each pattern of bar and space width;
storing a second conversion table addressable by the said bar height information containing output codes for various combinations of bar height;
converting the said measured bar widths and spaces into a data character code by means of the said first conversion table;
converting the said measured bar heights into either a data character or a binary data stream by means of said second conversion table;

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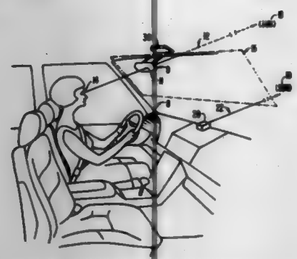
outputting the detected character codes to display means, or printing means or control means.

5,296,732

AUTOMATIC VISOR FOR CONTINUOUSLY REPOSITIONING A SHADING OBJECT TO SHADE A DESIGNATED LOCATION FROM A DIRECT RADIATION SOURCE

Sweetsun Chen, Los Altos Hills, Calif., assignor to EMEE, Inc., Mountain View, Calif.

Filed Feb. 18, 1993, Ser. No. 19,270
Int. Cl.[5] G01J 1/20
U.S. Cl. 250—203.4 25 Claims



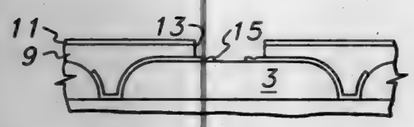
1. A method for continuously repositioning a shading element to shade an eyepoint from the direct rays originated from a source of radiation; said method comprising the steps of:
(a) finding a first geometric entity containing said eyepoint;
(b) finding a second geometric entity containing said eyepoint, preferably the intersection of said two geometric entities is a point in space;
(c) finding a point in said intersection; and
(d) continuously repositioning said shading element to shade said point in said intersection from said direct rays.

5,296,733

INFRARED FOCAL PLANE ARRAY WITH INTEGRAL SLOT SHIELD USING SPIN-ON EPOXY AND METHOD OF MAKING SAME

John C. Ehmke, Mesquite, and James C. Baker, Coppell, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1992, Ser. No. 988,513
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.1 21 Claims



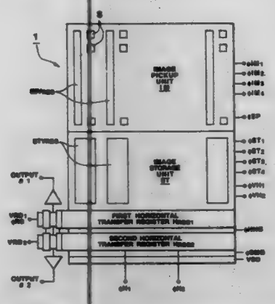
1. A method of fabricating a focal plane array having a slot shield, comprising the steps of:
(a) fabricating a focal plane array having a plurality of detector elements;
(b) forming over said array a layer of electrically insulating material having a planar top surface;
(c) forming a reflective layer over said layer of electrically insulating material; and
(d) forming slots over said detector elements through said electrically insulating layer and said reflective layer.

5,298,734

SOLID STATE IMAGE PICKUP APPARATUS WITH SHUTTER SIGNAL AND OVERFLOW DRAIN

Yuji Kokubo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,204
Claims priority, application Japan, Feb. 18, 1992, 4-060997
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.1 3 Claims



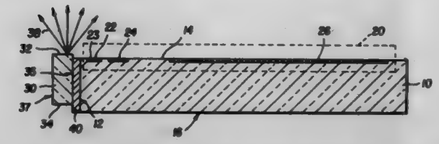
1. A solid-state image pickup apparatus comprising:
a solid-state image sensor having a plurality of photosensitive elements arranged in a matrix of rows and columns for accumulating electrical charges responsive to incident light thereon;
a plurality of vertical shift registers each coupled to a column of said photosensitive elements for receiving electrical charges from said photosensitive elements responsive to a sensor gate signal;
memory means coupled to said plurality of vertical shift registers for receiving electrical charges from said plurality of vertical shift registers responsive to a first transfer signal;
horizontal shift register means coupled to said memory means for receiving electrical charges from said memory means responsive to a second transfer signal for outputting electrical charges from said solid-state image sensor column by column;
an overflow drain coupled to said photosensitive elements for receiving electrical charges from said photosensitive elements responsive to a shutter signal for draining the electrical charges accumulated in said photosensitive elements in their entirety; and
driving means for supplying said shutter signal, said sensor gate signal and said first and second transfer signals to said solid-state image sensor, said driving means supplying said shutter signal to said image sensor for draining any ineffective electric charges accumulated in said photosensitive elements,
wherein said sensor gate signals are supplied after lapse of an effective accumulating period since the supply of said shutter signal for transferring effective electrical charges accumulated in said photosensitive elements to said vertical shift registers, and
wherein said first transfer signal is supplied before the supply of said shutter signal within a current vertical blanking period so that the effective electrical charges transferred to said vertical shift registers responsive to the shutter signal issued during a preceding vertical blanking period are transferred to said memory means, and said second transfer signal is supplied during a period defined by the supply of said shutter signal during the current blanking period and the supply of the next transfer signal supplied so that the effective electric charges are transferred to an output column by column.

5,298,735

LASER DIODE AND PHOTODETECTOR CIRCUIT ASSEMBLY

David L. Peterson, Pittsford; James G. Phalen; John P. Shepherd, both of Rochester, and Gilbert A. Hawkins, Mendon, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,115
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—214.1 8 Claims



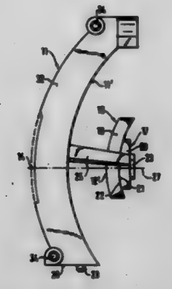
1. A laser diode and electronic circuit assembly comprising:
(a) a semiconductor die, having a top surface, a bottom surface, and a designated edge;
(b) an electronic circuit including a photodetector fabricated on said top surface of said die; and
(c) a laser diode, having an output facet and a back facet, placed in contact with said designated edge of said die and oriented such that said output facet is substantially parallel to said top surface of said die.

5,298,736

MIRROR COLLIMATOR HAVING A LARGE APERTURE RATIO

Hubertus Dreher, Elzach; Otmar Karle, Vörstetten, and Hans-Thomas Meinert, Emmendingen, all of Fed. Rep. of Germany, assignors to Erwin Sick GmbH, Waldkirch, Fed. Rep. of Germany

Filed Jul. 7, 1992, Ser. No. 909,943
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1991, 4122696
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—216 21 Claims



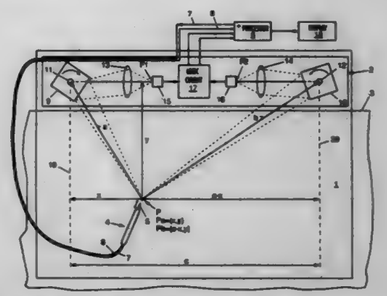
1. Mirror collimator with a larger concave mirror, and a smaller convexly formed capture mirror arranged on a concave side and on an optical axis of the concave mirror, the capture mirror being secured to the concave mirror by at least one carrying device which extends from the concave mirror to the capture mirror, the carrying device comprising at least one carrying arm, characterized in that the concave mirror has a throughgoing cut-out in the area of which a photo-element is arranged; the at least one carrying arm extending from the edge of the cut-out in the concave mirror to the edge of the capture mirror; and the cut-out having a size such that the capture mirror passes through it.

5,298,737

MEASURING APPARATUS FOR DETERMINING THE POSITION OF A MOVABLE ELEMENT WITH RESPECT TO A REFERENCE

R. J. Proper, Haarlemmerweg 77, 2334 GE Leiden, Netherlands

Filed Aug. 31, 1992, Ser. No. 937,402
Int. Cl.[5] G01V 9/04
U.S. Cl. 250—221 5 Claims



1. An apparatus for determining the position of a movable element comprising:
at least two spaced reflecting surfaces rotatable in opposite directions;
a pair of detectors;
a processing unit;
each of the reflecting surfaces being cooperable with one of said detectors to reflect propagation wave energy received by said reflecting surfaces to said one detector for generating a signal and supplying it to said processing unit;
a starting pulse generator for emitting a reference propagation energy wave, which starting pulse generator is located such that the reference propagation energy wave emitted by the starting pulse generator is reflected by said reflecting surfaces, when said reflecting surfaces lie in a first rotational position, for detection by said detectors cooperating with the reflecting surfaces and for generating signals for transmission to said processing unit, the position of the movable element relative to each of said reflecting surfaces being calculable by said processing unit from traversed angles α and β between a pair of angular positions of the reflecting surfaces, the reference propagation energy wave of the starting pulse generator being detected by said detectors in one angular position of said reflecting surfaces and the propagation energy wave of the movable element being detected by said detectors in the other angular position, the traversed angles α and β being a measure of the position of the movable element relative to the reflecting surfaces.

5,298,738

SYSTEM FOR MONITORING VEHICLES HAVING A START AND A STOP PAIR OF BEAMS

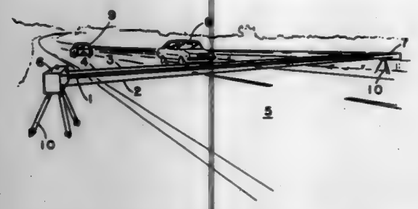
Ruediger H. Gebert, and Carl A. Van Maarseveen, both of P.O. Box 14183, Verwoerdburg, 0140, South Africa

Filed Sep. 3, 1992, Ser. No. 940,047
Int. Cl.[5] G01V 9/04
U.S. Cl. 250—222.1 9 Claims

1. A beam system for monitoring vehicles which comprises
a) a transmitter for a higher and a lower pair of beams, both beam pairs having a start beam and a stop beam, said start and said stop beams being spaced from each other by a known measuring distance,
b) a receiver for each beam,
c) electronic means which detect when reception of one or more of the beams by one of said receivers is interrupted,

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d) means for manipulating data derived from the receivers according to algorithms for monitoring vehicles and,



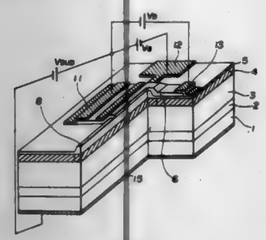
e) means for comparing and evaluating vehicle monitoring detections made between said higher and said lower pairs of beams.

5,298,739

PHOTODETECTOR CAPABLE OF SWEEPING OUT UNWANTED CARRIERS AND AN OPTICAL COMMUNICATION SYSTEM INCLUDING THE SAME

Tamayo Hiroki, Zama, and Hidetoshi Nojiri, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,922
Claims priority, application Japan, May 24, 1991, 4-149677; Apr. 24, 1992, 3-140089
Int. Cl.[5] H01J *40/14*; H01L *27/14*
U.S. Cl. 250—227.11 **31 Claims**



1. A photodetector comprising:
light guiding means for guiding a light;
light detecting means for receiving and detecting the light guided by said guiding means, said light detecting means including a light absorbing layer for absorbing the light to generate carriers; and
carrier-sweeping means for sweeping out carriers generated in regions other than said light absorbing layer.

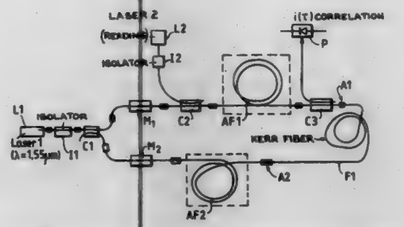
5,298,740

FREQUENCY CORRELATOR HAVING A NON-LINEAR OPTICAL FIBER

Jean-Luc Ayral, Antony; Daniel Dolfi, Orsay, and Jean-Pierre Huignard, Paris, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 30, 1992, Ser. No. 953,852
Claims priority, application France, Oct. 1, 1991, 91 12040
Int. Cl.[5] G03H *1/16*
U.S. Cl. 250—227.11 **6 Claims**

1. A frequency correlator comprising:
a monomode optical fiber having a non-linearity, possessing a first end and a second end;
at least one first light source emitting a first light wave;
a first light modulator receiving the first light wave, modulating it under the control of a first control signal to be correlated and transmitting this first modulated light wave to the first end of the optical fiber;
a second light modulator receiving the first light wave, modulating it under the control of a second control signal to be correlated and transmitting this second modulated light wave to the second end of the optical fiber;
a second light source emitting a reading light beam in the optical fiber by either one of its ends.



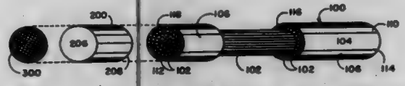
an intensity detector coupled to the same end of the fiber as the second light source.

5,298,741

THIN FILM FIBER OPTIC SENSOR ARRAY AND APPARATUS FOR CONCURRENT VIEWING AND CHEMICAL SENSING OF A SAMPLE

David R. Walt, Lexington, and Karen S. Bronk, Somerville, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Filed Jan. 13, 1993, Ser. No. 4,695
Int. Cl.[5] G01N *21/00*; G02B *6/24*; A61B *5/00*
U.S. Cl. 250—227.23 **15 Claims**



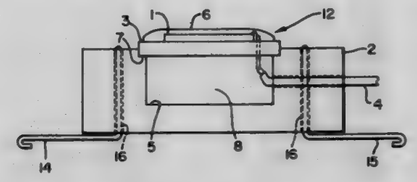
1. A fiber optic sensor useful in an apparatus for concurrently viewing the environs of and optically detecting at least one ligand of interest of a fluid sample, said fiber optic sensor being comprised of:
a preformed, unitary fiber optic array comprising a plurality of individually clad, fiber optical strands disposed co-axially along their lengths and having two discrete optic array ends each of which is formed of multiple strand end faces, said preformed, unitary fiber optic array being of determinable configuration and dimensions, said two discrete ends of said preformed, unitary fiber optic array presenting two discrete optic array surfaces for introduction and conveyance of light energy; and
a substantially uniform and uninterrupted thin film comprising at least one light energy absorbing dye positioned over one of said discrete optic array surfaces of said preformed, unitary fiber optic array, said thin film having a thickness ranging from about 1–50 microns, each light energy absorbing dye of said thin film reacting with a ligand of interest in a manner correlatable with an optical determination.

5,298,742

LIGHT SENSOR FOR PHOTO-DYNAMIC THERAPY HAVING A TRANSPARENT HOUSING

Walter S. Friauf, Bethesda, Md.; Harvey I. Pass, McLean, Va., and Joseph F. Fessler, Walkersville, Md., assignors to The United States of America as represented by Department of Health & Human Services, Washington, D.C.

Filed Feb. 24, 1993, Ser. No. 21,767
Int. Cl.[5] H01J *5/02*
U.S. Cl. 250—239 **8 Claims**



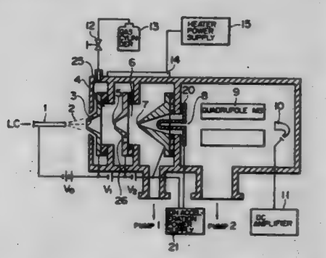
1. A photo-sensitive sensor comprising:
a transparent base having a top surface, a bottom surface, and an outer wall surface, said top surface having a recess thereby forming an inner wall surface, said transparent base having a bore extending from said outer surface to said inner surface;
a first photo-sensitive member having a light-sensitive region for generating an electrical signal corresponding to the intensity of light incident thereto, and conductive electrodes connected to said light-sensitive region, said first photo-sensitive member mounted on said top surface and disposed over said recess;
an insulated cable coaxially inserted in said bore, having conductive wires connected to said conductive electrodes;
an electrically insulating transparent adhesive compound filling said recess, thereby bonding said photoconductive member to said transparent base and sealing said conductive electrodes and said conductive wires.

5,298,743

MASS SPECTROMETRY AND MASS SPECTROMETER

Yoshiaki Kato, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,992
Claims priority, application Japan, Sep. 12, 1991, 3-232956
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—288 **16 Claims**



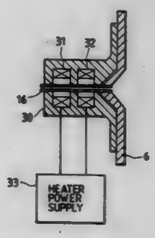
1. A mass spectrometry comprising the steps of: generating ions under an atmospheric pressure, evacuating low and intermediate vacuum chambers by a common vacuum system so that a vacuum of the former is lower than that of the latter, leading the generated ions to a high vacuum chamber having a vacuum higher than in said low and intermediate vacuum chambers via said low and intermediate vacuum chambers, and effecting a mass analysis therein.

5,298,744

MASS SPECTROMETER

Tadao Mimura, Katsuta; Yoshiaki Kato, Mito, and Kazumi Matsumura, Toukai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,469
Claims priority, application Japan, Feb. 4, 1992, 4-018121
Int. Cl.[5] H01J *49/10*
U.S. Cl. 250—288 **15 Claims**



1. A mass spectrometer comprising:
means for ionizing a sample so as to generate ions of the sample;
a first electrode having a first hole through which said generated ions pass;
a second electrode having a second hole through which said ions which have passed through said first hole pass;
means for subjecting said ions which have passed through said second hole to mass spectrometry; and
means for heating an inside of said first hole; wherein said first hole has a length of substantially at most 50 mm.

5,298,745

MULTILAYER MULTIPOLE

Jeffrey T. Kernan, Mountain View; Donald A. Johnson, Portola Valley, and Charles W. Russ, IV, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

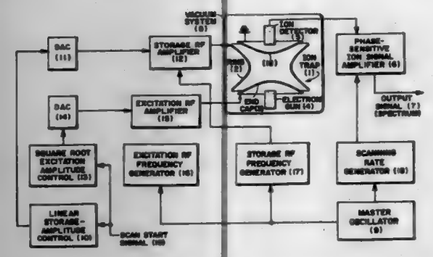
Filed Dec. 2, 1992, Ser. No. 984,610
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—292 **25 Claims**



1. A multipole, comprising:
a. a multipole substrate having an even number of pole substrates, each having an inner surface that has a generally hyperbolic cross section, the pole substrates being arranged in parallel opposing pairs, and bridges connecting adjacent pairs of pole substrates;
b. plating substrates that conform to the inner surfaces of the pole substrates; and
c. electroplated poles conforming to the plating substrates so that the electroplated poles have a generally hyperbolic cross-section.

VOL 1160 ISS 5 MR 29 1994 UMI

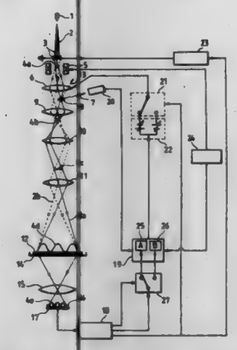
5,298,746
METHOD AND DEVICE FOR CONTROL OF THE EXCITATION VOLTAGE FOR ION EJECTION FROM ION TRAP MASS SPECTROMETERS
Jochen Franzen, and Reemt-Holger Gabling, both of Bremen, Fed. Rep. of Germany, assignors to Bruker-Franzen Analytik GmbH, Bremen, Fed. Rep. of Germany
Filed Dec. 23, 1992, Ser. No. 997,284
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142869
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—292 **8 Claims**



1. Method for recording the mass spectra of ions stored in a pure or multipole-superposed R.F quadrupole ion trap according to the principle of ejection of ions through holes in one of the end caps with the aid of absorption of energy by means of a resonance condition of the storage field which is made successively effective for the ions of various masses by alteration of the storage field amplitude, with excitation of the axial secular oscillation of the ion type to be ejected by an excitation frequency applied to the two end caps, becoming effective by excitation resonance shortly before or while the ions experience the storage field resonance, and measurement of the ions ejected outside the ion trap, characterized in that the voltage amplitude of the excitation field is controlled approximately proportionally to the root of the storage field amplitude during linear alteration of the voltage amplitude of the storage field for the mass scan.

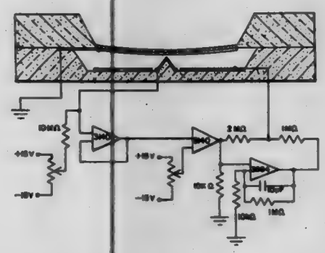
5,298,747
SCANNING INTERFERENCE ELECTRON MICROSCOPY
Masakazu Ichikawa, Tokyo; Yusuke Yajima, Kokubunji; Masatoshi Takeshita, Iruma, and Toshio Kobayashi, Hinode, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 19, 1991, Ser. No. 794,007
Claims priority, application Japan, Nov. 29, 1990, 2-325988
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 **8 Claims**

1. A scanning interference electron microscope comprising:
an electron source for emitting a primary electron beam in a vacuum;
an electron beam deflection system;
a focusing lens interposed between said electron beam deflection system and a sample to be scanned; and
a biprism interposed between said electron source and said electron beam deflection system for separating said primary electron beam into two parts so that one of the two separated electron beam parts is irradiated and focused by the focusing lens onto the surface of said sample;
wherein an irradiated spot of said one electron beam part on said sample is made to scan said sample surface by said electron beam deflection system while the other electron beam part bypasses the sample through the vacuum without irradiation onto said sample surface;
wherein any of reflected and secondary electrons emitted from said sample surface and said one electron beam part transmitted through said sample are so detected as to generate a signal, said signal being used to display a microscopic image of said sample;
wherein said one electron beam part after the interaction with said sample is arranged to interfere with said other electron beam part transmitted without said interaction in order to generate interference fringes; and



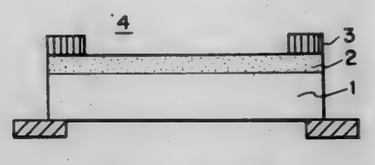
wherein said one electron beam part develops a phase difference with respect to said other electron beam part upon said interaction with said sample, said phase difference being accompanied by interference fringe intensity changes that are detected as said signal representing said microscopic image of said sample.

5,298,748
UNCOOLED TUNNELING INFRARED SENSOR
Thomas W. Kenny, Glendale; William J. Kaiser, West Covina; Judith A. Podosek, Arcadia, all of Calif.; Erika C. Vote, Golden, Colo.; Howard K. Rockstad, Thousand Oaks, and Joseph K. Reynolds, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Jun. 15, 1992, Ser. No. 898,682
Int. Cl.[5] G01J *5/00*; H01J *37/00*
U.S. Cl. 250—338.1 **17 Claims**



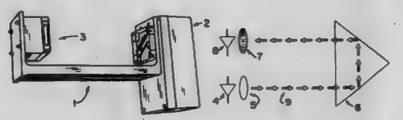
1. An infrared sensor comprising:
an enclosed chamber;
a gas in said chamber;
a metal closed flexible silicon nitride membrane forming a deflectable wall of said enclosed chamber;
a metal coated silicon tip within tunneling distance of said membrane for establishing a tunneling current therebetween depending upon said distance;
at least one electrode in spaced, opposing proximity to said membrane for electrostatically controlling the deflection of said membrane; and
a feedback circuit connected to said tip for sensing said tunneling current and to said electrode for maintaining the deflection of said membrane irrespective of the level of infrared radiation incident upon said chamber.

5,298,749
INFRARED DETECTOR UTILIZING DIAMOND FILM
Takashi Inushima, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Filed Sep. 29, 1992, Ser. No. 953,066
Int. Cl.[5] G01J *5/20*; H01L *31/0256*
U.S. Cl. 250—338.4 **13 Claims**



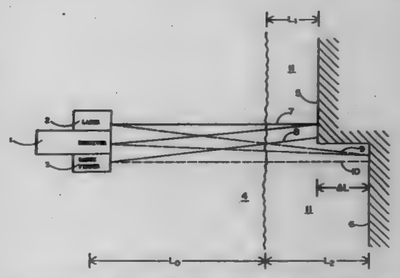
1. An infrared and/or farinfrared detector comprising:
a CVD formed diamond thin film of 1–100 microns thickness including a boron doped region of 500–1000 Å thickness provided in a surface region of said diamond thin film;
electrodes in contact with said boron doped region wherein said boron doped region continuously extends between said electrodes; and
a blackening layer formed on said boron doped region in order to absorb infrared and/or farinfrared radiations incident thereon.

5,298,750
LASER PRECIPITATION SENSOR
Frank M. Rericha, 6270 Highway 61-67, Imperial, Mo. 63052
Filed Jan. 15, 1992, Ser. No. 821,422
Int. Cl.[5] G01N *15/02*; G01W *1/14*; G06F *15/54*
U.S. Cl. 250—338.5 **10 Claims**



1. A laser precipitation sensor for detecting precipitation and for determining its type, whether it be a determination that the precipitation is rain, mist, snow, or snow flurries, and its intensity, said sensor including: a housing means, a light transmitting means embodies in said housing means and provided for transmitting a beam of light, light deflector means disposed a spaced distance from said light transmitting means and provided for deflecting said light beam, said light deflector means comprising a prism, structure means disposing said light deflector means said spaced distance from said light transmitting means, a bracket, said bracket connecting to said housing means at one end and said bracket connecting to said structure means at its other end, said bracket providing for said spaced distance between the light deflector means and the light transmitting means so that precipitation falling intermediate said light transmitting means and said light deflector means and interrupting said light beam is detected, said deflector means in combination with said light transmitting means providing for deflecting of said light beam and directing it back into said housing means, the deflected light beam being parallel to said transmitted light beam, thereby providing a pair of light beams for detecting the precipitation, a light receiving means provided in said housing means for reception of the interrupted light beam, said light transmitting means comprising a laser diode, and said light receiving means comprising a photo diode, both said laser diode and said photo diode being contained within said housing means, a microprocessor means also contained in said housing means and in combination with said light receiving means, said light receiving means providing for a conversion of the detected light beam into electrical signals, said microprocessor means processing said electrical signals to determine the presence of said precipitation, and its type and intensity.

5,298,751
REMOTE ACTIVE VAPOR CONCENTRATION MEASUREMENT SYSTEM AND METHOD THEREOF
Maurice L. Fee, Anaheim; Robert B. Lyons, Placentia, and Michael A. Truman, Anaheim, all of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.
Filed Mar. 20, 1992, Ser. No. 854,219
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—338.5 **6 Claims**

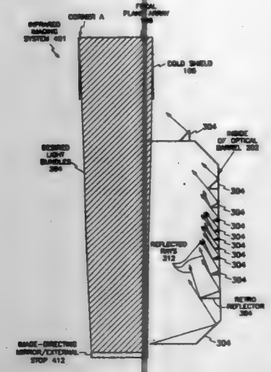


1. A system for remotely measuring the concentration of at least one constituent of a vapor or gas located adjacent to background surfaces; the system comprising:
a laser generating a beam of energy directed to said surfaces for heating said surfaces to a temperature higher than the temperature of said vapor or gas, said higher temperature causing said surfaces to radiate infrared energy through said vapor or gas;
a spectrally sensitive receiver positioned for receiving said infrared energy after said infrared energy has passed through said vapor or gas along two different paths of different respective lengths in said vapor or gas, a portion of said infrared energy having been absorbed at certain wavelengths along each said different path, said certain wavelengths of absorption identifying said at least one constituent of which the concentration is to be measured; and
a range finder adjacent said receiver for measuring the distance between said receiver and said surfaces along said two different paths.

5,298,752
RETROREFLECTORS FOR INCREASING COLD SHIELD EFFICIENCY
Ralph H. Wight, Northport, N.Y., assignor to Loral Fairchild Corporation, Syosset, N.Y.
Filed Sep. 30, 1992, Ser. No. 953,058
Int. Cl.[5] G01J *5/06*
U.S. Cl. 250—352 **19 Claims**

1. An imaging system, comprising:
(a) an optical barrel having a first end, a second end, and an inner side;
(b) insulating means, coupled to said first end, having an aperture;
(c) a focal plane array, located inside said insulating means, having a first field of view established by said aperture;
(d) focusing means, coupled to said second end, for defining a second field of view of said focal plane array, wherein

said second field of view is a subset of said first field of view; and



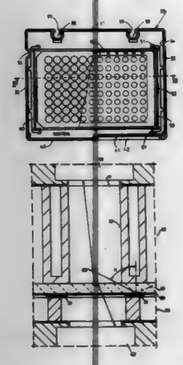
(e) reflecting means, coupled to said inner side of said optical barrel, for causing said focal plane array to detect a cold surface outside said second field of view but inside said first field of view.

5,298,753

ARRANGEMENT FOR COUNTING LIQUID SCINTILLATION SAMPLES ON BOTTOM-WINDOW MULTI-WELL SAMPLE PLATES

Vesa Soune, Vauhalinna; Markku Varjonen, Turku; Kauko Lehtinen, Raisio; Tapio Yrjönen, Turku, and Stefan Järnström, Pargas, all of Finland, assignors to Wallac Oy, Turku, Finland

Continuation of Ser. No. 974,624, Nov. 12, 1992. This application Feb. 12, 1993, Ser. No. 16,976
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[5] G01T *1/204*
U.S. Cl. 250—364 7 Claims



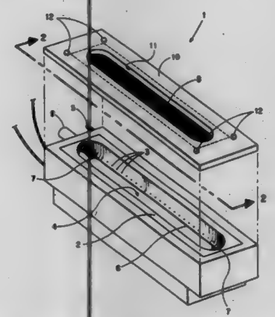
1. An apparatus for counting liquid scintillation samples, the apparatus comprising:
(a) a liquid scintillation counter comprising at least one photomultiplier tube,
(b) a sample plate comprising (i) a plurality of sample wells, each well having light impermeable side walls, and (ii) a light permeable bottom sheet which covers and forms the bottoms of said sample wells,
(c) an adapter having a first adaptation means for adapting for variations in size of said sample plate and a second adaption means for adapting for transportation of said sample plate in said liquid scintillation counter.

5,298,754

GAS FLOW GEIGER-MUELLER TYPE DETECTOR AND METHOD MONITORING IONIZING RADIATION

Charles W. Anderson, Quincy; John W. Nagy, Burlington, and Leonard R. Smith, Carlisle, all of Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 752,748, Aug. 30, 1991, abandoned.
This application Jan. 21, 1993, Ser. No. 7,385
Int. Cl.[5] G01T *1/185, 1/18*
U.S. Cl. 250—379 13 Claims



1. A substantially stable open-window gas flow Geiger-Mueller type detector capable of monitoring ionizing radiation and capable of being hand held which comprises:
a) an electrically conducting chamber having both (i) a chamber length greater than a chamber depth and (ii) having a plurality of fluid inlets spaced along a side wall of the chamber along the lower half of said side wall, wherein the inlets assist in continuously providing substantially uniform delivery of fluid to the chamber at a substantially constant flow rate, and an opening sized to receive said radiation:
b) fluid supply means connected to said inlets;
c) at least one insulated anode positioned in the chamber;
d) a radiation permeable cover substantially sealed over said opening;
e) electrical supply means connected to the chamber; and
f) means connected to said chamber for detecting electric pulses generated within the chamber when an ionization event is caused by the radiation entering the chamber.

5,298,755

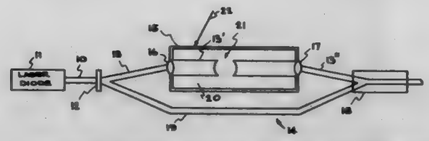
OPTICAL IONIZATION DETECTOR

Craig R. Wuest, Danville, and Mark E. Lowry, Castro Valley, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 1, 1993, Ser. No. 11,635
Int. Cl.[5] G01T *1/185*
U.S. Cl. 250—389 20 Claims

1. An optical ionization detector of ionizing radiation using optical interferometry, comprising:
means for splitting a beam of light into two arms;
an ionization chamber;
said ionization chamber having therein a cathode and an anode in spaced relation to form a gap there between;
an ionizable gas contained in said chamber;
means for producing an electric field within said gap;

a fiber optic with one end thereof positioned adjacent said beam splitting means;
means for combining said two arms of said beam of light after one of said arms has passed through said ionization chamber;
whereby one of the arms of a beam of light in passage through said ionization chamber and the other of the arms of the beam of light is passed through said fiber optic, such



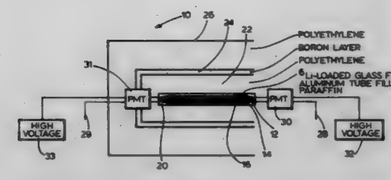
that upon a charged particle striking said ionization chamber an electron avalanche is generated causing a change in the index of refraction of the light beam arm passing through the ionization chamber, and where after the two arms of the light beam are recombined and the change of the index of refraction of the one light beam arm results in measurable interference fringe changes indicating the passage of a charged particle through the ionization chamber.

5,298,756

SCINTILLATOR FIBER OPTIC LONG COUNTER

Tom McCollum, Sterling, and Garry B. Spector, Fairfax, both of Va., assignors to Fibertek, Inc.

Filed Oct. 16, 1992, Ser. No. 961,661
Int. Cl.[5] G01T *3/06*
U.S. Cl. 250—390.07 7 Claims



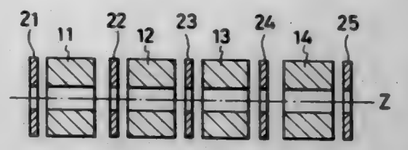
1. A flat response position sensing neutron detector for use in the collection of neutron spectroscopic data comprising:
(a) detection means located in a housing, said housing having first and second ends;
(b) first neutron moderation means surrounding said housing except for said first end defining an open end in said first neutron moderation means;
(c) neutron shield means surrounding said first neutron moderation means except for said open end in said first neutron moderation means;
(d) position sensing measurement means disposed at said first and second ends of said housing and connected to said detection means for determining the relative distance from said housing first end at which neutrons are detected, wherein neutrons enter said detection means exclusively through said open end to be moderated and sensed upon reaching thermalization level; and
(e) means to determine the energy levels of the detected neutrons from information of the sensed positions of said neutrons.

5,298,757

LENS FOR CHARGED PARTICLE BEAM

Shigeo Okayama, Tsukuba, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,264
Claims priority, application Japan, Feb. 18, 1992, 4-069231
Int. Cl.[5] H01J *37/153*
U.S. Cl. 250—396 R 4 Claims



1. A lens for charged particle beam comprising a first quadrupole, a second quadrupole placed behind and on the same optical axis as the first quadrupole, a third quadrupole placed behind and on the same optical axis as the second quadrupole, a fourth quadrupole placed behind and on the same optical axis as the third quadrupole, a first aperture electrode placed in front of the first quadrupole, a second aperture electrode placed between the first quadrupole and the second quadrupole, a third aperture electrode placed between the second quadrupole and the third quadrupole, a fourth aperture electrode placed between the third quadrupole and the fourth quadrupole, a fifth aperture electrode placed behind the fourth quadrupole, first voltage applying means for applying voltages to the first quadrupole and the fourth quadrupole to cause them to produce excitations of the same strength, second voltage applying means for applying voltages to the second quadrupole and the third quadrupole to cause them to produce excitations of the same strength, third voltage applying means for applying voltages to the first aperture electrode and the fifth aperture electrode to cause them to produce excitations of the same strength, fourth voltage applying means for applying voltages to the second aperture electrode and the fourth aperture electrode to cause them to produce excitations of the same strength, and fifth voltage applying means for applying a voltage to the third aperture electrode to cause it to produce an excitation of a prescribed independent strength, the excitations of the four quadrupoles causing the charged beam to converge to a line near the third aperture electrode and the excitations of the five aperture electrodes correcting aperture aberrations.

5,298,758

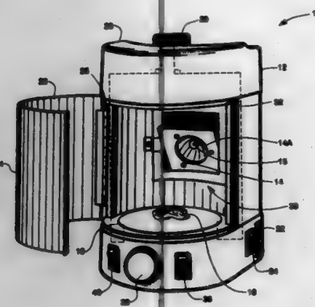
DENTURE CURING APPARATUS AND METHOD

Louis H. Tateosian, York, and Duane E. Barber, Shrewsbury, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation of Ser. No. 693,212, Apr. 30, 1991, abandoned.
This application Dec. 7, 1992, Ser. No. 987,101
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—492.1 35 Claims

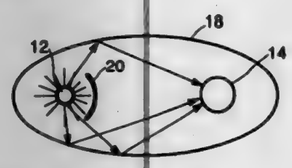
1. An apparatus to polymerize light curable materials, comprising:
a housing, and
a light source, said light source being supported and enclosed by said housing, said light source consisting essentially of a bulb enclosing a gas and a filament, said gas comprising a halogen, said filament providing sufficient electromagnetic radiation to maintain the temperature of light curable material positioned within said housing at

between 120° and 250° F. (48.9° and 121.1° C.) after at least 2 minutes with at least 50 milliwatts per square inch



of incident light to substantially evenly cure said light curable material while rotating said light curable material.

5,298,759
PHOTO-CRACKER CELL
Peter D. Brewer, Newbury Park, and John A. Roth, Ventura, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 19, 1993, Ser. No. 19,965
Int. Cl.[5] G21K 5/00
U.S. Cl. 250—492.1 26 Claims



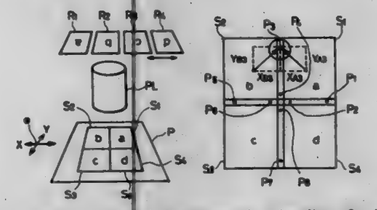
1. A photo-cracker cell for placement between a source cell and a growth chamber of apparatus for growth of III-V, IV, and II-VI semiconductor layers, comprising:
(a) a vacuum chamber provided with inlet means and outlet means, said inlet means operatively associated with said source cell and said outlet means operatively associated with said growth chamber, said inlet means and said outlet means opposite each other in said vacuum chamber so as to define a beam path for a beam of molecular species emitted from said source cell to said growth chamber; and
(b) a source of ultraviolet radiation oriented so as to impinge on said beam of molecular species along said beam path, said source of ultraviolet radiation having an intensity sufficient to dissociate said molecular species to atomic species.

5,298,760
PERFORMANCE OF LOCATION-SELECTIVE CATALYTIC REACTIONS WITH OR ON THE SURFACES OF SOLIDS IN THE NANOMETER OR SUBNANOMETER RANGE
Harald Fuchs, Carlsberg, and Thomas Schimmel, Hof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Aug. 4, 1992, Ser. No. 924,496
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126380
Int. Cl.[5] G11B 9/00
U.S. Cl. 250—492.3 13 Claims



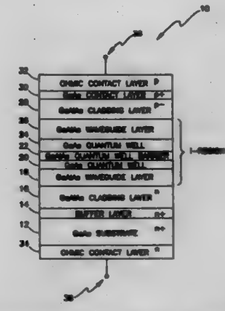
1. A process for the specific and location-selective performance of catalytic chemical reactions with or on the surface of a solid in the nanometer or subnanometer range, which consists essentially of locating as catalyst, a surface sensitive scanning probe which contains the catalytic material, during the reaction, directly above the part of the surface with which or on which the chemical reaction takes place.

5,298,761
METHOD AND APPARATUS FOR EXPOSURE PROCESS
Atsuyuki Aoki, Kanagawa, and Muneyasu Yokota, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jun. 16, 1992, Ser. No. 899,549
Claims priority, application Japan, Jun. 17, 1991, 3-170375
Int. Cl.[5] G01N 21/86; G01B 11/00
U.S. Cl. 250—548 18 Claims



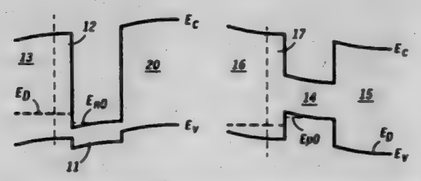
1. A method of using at least one of a plurality of original images each containing the same or a different pattern, and moving positions of a light-sensitive substrate and each of said original images relatively so as to successively expose said patterns in such a manner that a plurality of subdivision areas, each composed of an exposure area of each of said original images, are abutted and combined thereby exposing a composite pattern composed of said plurality of patterns stitched together on said light-sensitive substrate, whereby when aligning said original images and said light-sensitive substrate pattern by pattern in accordance with predetermined target position information, said method comprising the steps of:
preliminarily determining amounts of relative deviation in exposure position at abutting portions of said subdivision areas in said composite pattern;
adding compensating values to said target position information so as to reduce said amounts of deviation in exposure position at said abutting portions to less than a predetermined tolerance value; and
aligning said original images and said light-sensitive substrate pattern by pattern.

5,298,762
QUANTUM WELL SWITCHING DEVICE WITH STIMULATED EMISSION CAPABILITIES
Szutsun S. Ou, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Continuation of Ser. No. 755,886, Sep. 6, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 982,009
Int. Cl.[5] H01L 27/14
U.S. Cl. 257—13 23 Claims



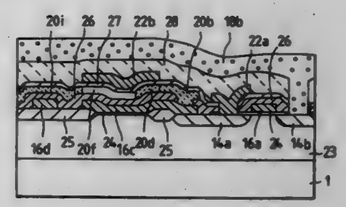
1. A semiconductor diode device having optoelectronic switching capabilities, said device comprising:
a substrate;
an n-type cladding layer disposed on top of said substrate;
an undoped i-region having at least one quantum well disposed on top of said n-type cladding layer;
a p-type cladding layer disposed on top of said i-region, said n-type layer, undoped i-region and p-type layer forming a p-i-n junction; and
a contact layer disposed on top of said p-type cladding layer, said p-type and contact layers having characteristics which form a heterojunction that provides a barrier for holes, wherein said p-i-n junction and said heterojunction exhibit negative differential resistance and provide for stimulated emission and optoelectronic switching capabilities.

5,298,763
INTRINSICALLY DOPED SEMICONDUCTOR STRUCTURE AND METHOD FOR MAKING
Jun Shen, Phoenix; Saied Tehrani, Scottsdale, and Herbert Goronkin, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 2, 1992, Ser. No. 970,456
Int. Cl.[5] H01L 29/161, 29/205
U.S. Cl. 257—22 13 Claims



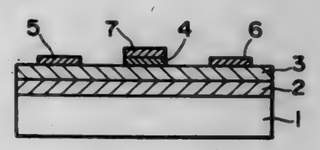
1. An intrinsically doped semiconductor structure comprising:
a quantum well including a narrow bandgap material having a low concentration of native defects sandwiched between two wide bandgap spacer layers, wherein the spacer layers have a low concentration of native defects;
at least one doping region having a high concentration of native defects positioned adjacent to one of the undoped spacer layers; and
wherein the quantum well is provided with charge carriers primarily from the native defects of the doping region.

5,298,764
SEMICONDUCTOR MEMORY DEVICE HAVING A FIELD EFFECT TRANSISTOR WITH A CHANNEL FORMED FROM A POLYCRYSTALLINE SILICON FILM
Toshiaki Yamanaka, Iruma; Takashi Hashimoto, Hachiouji, and Naotaka Hashimoto, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 6, 1992, Ser. No. 846,892
Claims priority, application Japan, Mar. 8, 1991, 3-043621
Int. Cl.[5] H01L 29/78
U.S. Cl. 257—67 20 Claims



1. A semiconductor memory device having a static random access memory including a flip-flop circuit and transfer field effect transistors connected to memory nodes of said flip-flop circuit, respectively, said flip-flop circuit comprising a pair of inverter circuits which are cross-coupled to each other and each inverter circuit including a driver field effect transistor and a load field effect transistor in series therewith,
wherein said load field effect transistor, which has a gate and source and drain regions, is a first channel conductivity type insulated gate field effect transistor with a channel region formed in a polycrystalline silicon film formed above a main surface of said semiconductor substrate, said channel region comprises a first channel region portion which is in direct contact with said drain region and a second, different channel region portion, and said second channel region portion has a second conductivity type impurity which is opposite said first conductivity type.

5,298,765
DIAMOND SCHOTTKY GATE TYPE FIELD-EFFECT TRANSISTOR
Kozo Nishimura, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Mar. 27, 1992, Ser. No. 858,493
Claims priority, application Japan, Mar. 29, 1991, 3-66483
Int. Cl.[5] H01L 49/00, 27/02; H02B 1/00
U.S. Cl. 257—77 7 Claims



1. A diamond Schottky gate type field effect transistor (FET) comprising:
an insulating diamond under-layer;
a doped semiconducting diamond active layer above said insulating diamond underlayer, which has electrode areas

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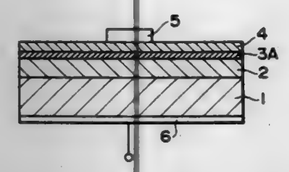
formed by ion implantation such that an interface level is formed near the surface of said active layer in each of said electrode areas;
an insulating diamond layer formed on a portion of said semiconducting diamond layer;
a source electrode comprising a degenerate diamond film disposed on a first one of said electrode areas of said semiconducting diamond layer, wherein an ohmic contact is formed between the source electrode and said semiconducting diamond layer;
a drain electrode comprising a degenerate diamond film disposed on a second one of said electrode areas of said semiconducting diamond layer, to form an ohmic contact between the drain electrode and said semiconducting diamond layer; and
a gate electrode comprising a degenerate diamond film formed on said insulating diamond layer, wherein a Schottky junction is formed between the gate electrode and said semiconducting diamond layer.

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DIAMOND HETEROJUNCTION DIODE

Koji Kobashi; Kozo Nishimura; Shigeaki Miyauchi; Kazuo Kumagai, and Rie Katoh, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 20, 1992, Ser. No. 854,910
Claims priority, application Japan, Mar. 22, 1991, 3-058914
Int. Cl.[5] H01L *29/48, 29/56*
U.S. Cl. 257—77 **1 Claim**



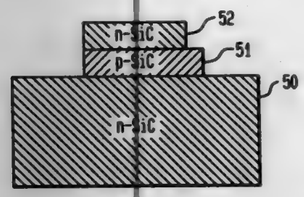
1. A diamond heterojunction diode having a tri-layer structure of a p-type semiconducting diamond layer, an intermediate insulating layer thinner than 1 μm, and an n-type semiconducting non-diamond layer, wherein said intermediate insulating layer is made up of at least one material selected from the group consisting of vapor-phase deposited diamond, silicon dioxide, silicon carbide, and silicon nitride.

5,298,767

POROUS SILICON CARBIDE (SIC) SEMICONDUCTOR DEVICE

Joseph S. Shor, Flushing, N.Y., and Anthony D. Kurtz, Teaneck, N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Filed Oct. 6, 1992, Ser. No. 957,519
Int. Cl.[5] H01L *29/00, 29/04, 21/20*
U.S. Cl. 257—77 **19 Claims**



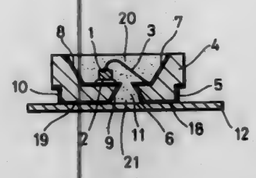
5. A semiconductor p-n junction comprising a layer of n-type SiC positioned on a p-type layer of SiC, with said p-type layer positioned on a layer of silicon dioxide, wherein at least one layer of SiC is porous, said at least one porous layer having an average pore spacing of less than one micron.

5,298,768

LEADLESS CHIP-TYPE LIGHT EMITTING ELEMENT

Jun Okazaki, Tondabayashi, and Masaaki Katoh, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1992, Ser. No. 998,746
Claims priority, application Japan, Feb. 14, 1992, 4-28477; Jun. 15, 1992, 4-154846
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—81 **21 Claims**



1. A light emitting element comprising:
an insulating substrate having a cavity at the center of a top surface thereof and a through-hole formed in the bottom of said cavity, sides of said cavity slope outward toward the top surface, said through-hole extending downward through said insulating substrate to a bottom surface;
a first electrode which is formed to continuously cover a first side of said cavity, a first portion of said through-hole, a first portion of said bottom surface and a first side surface of said substrate, wherein the first electrode does not cover the entire portion of said first side surface;
a second electrode which is formed to continuously cover a second side of said cavity, a second portion of said through-hole, a second portion of the bottom surface and a second side surface of said substrate, said second side of said cavity facing said first side of said cavity, said second side surface of said substrate facing said first surface of said substrate, wherein the second electrode does not cover the entire portion of said second side surface;
light emitting means, electrically joined to said first electrode, for emitting light when electricity is conducted;
connecting means for electrically connecting said light emitting means to said second electrode; and
translucent sealing means for filling said cavity and said through hole.

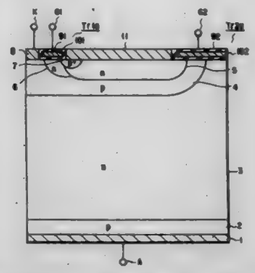
5,298,769

GTO THYRISTOR CAPABLE OF PREVENTING PARASITIC THYRISTORS FROM BEING GENERATED

Ichiro Omura, Yokohama, and Mitsuhiko Kitagawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1993, Ser. No. 40,595
Claims priority, application Japan, Mar. 31, 1992, 4-105674
Int. Cl.[5] H01L *29/74, 27/02, 29/10*
U.S. Cl. 257—138 **16 Claims**

1. A GTO thyristor comprising:
an emitter layer of a first conductivity type, a base layer of a second conductivity type, a base layer of said first conductivity type, and an emitter layer of said second conductivity type arranged to form a pnpn structure;
a first region formed of a semiconductor of said second conductivity type, said first region comprising a surface and being in contact with said emitter layer of said second conductivity type;
a second region formed of a semiconductor of said first conductivity type, and second region extending from said first region to said emitter layer of said second conductivity type;
a third region formed of a semiconductor of said first conductivity type, said third region being disposed opposite to said second region with said first region disposed therebetween, said third region being connected to said base layer of said first conductivity type;
a first main electrode connected to said emitter layer of said first conductivity type;
a second main electrode connected to said third region;
a conductive layer formed on said emitter layer of said second conductivity type and on said second region to form a connection therebetween;
a first gate electrode disposed on said first region with an insulating film interposed therebetween so as to form a first FET, said first FET utilizing the surface of said first region as a channel of said first conductivity type; and
a second gate electrode disposed on said base layer of said first conductivity type with an insulating film interposed therebetween so as to form a second FET, said second FET utilizing a surface of said base layer of said first conductivity type as a channel of said second conductivity type.

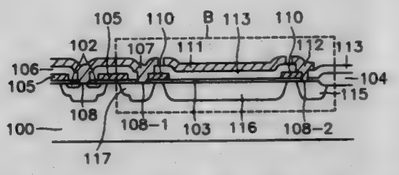


5,298,770

POWER SWITCHING MOS TRANSISTOR

Pil K. Im, Bucheon, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Aug. 11, 1992, Ser. No. 928,021
Claims priority, application Rep. of Korea, Aug. 22, 1991, 91-14568
Int. Cl.[5] H01L *29/78, 23/48, 29/46, 29/54*
U.S. Cl. 257—139 **8 Claims**



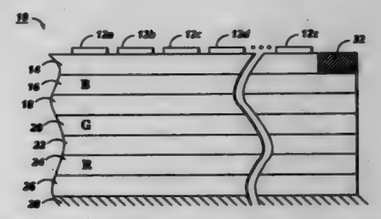
1. A power switching metal oxide semiconductor (PSMOSO) transistor, comprising:
a semiconductor substrate doped with an impurity having a first type conductivity;
a plurality of first semiconductive regions of a second type conductivity dispersed at predetermined intervals on said semiconductive substrate;
a second semiconductive region of said second type conductivity type formed on said semiconductive substrate and spaced from said plurality of first semiconductive regions;
a third semiconductive region of said second type conductivity formed on said semiconductive substrate to have a larger area than that of said second semiconductive region and spaced therefrom;
a fourth semiconductive type region of said second type semiconductivity formed on said semiconductive substrate spaced from said third region;
a plurality of source regions of said first type conductivity formed on each of said first semiconductive regions to be shallower than the depth of said first semiconductive regions;
gate insulating layers formed on said first to fourth semiconductive regions;
a plurality of gate electrodes formed on said gate insulating layers between said first and said second semiconductive region;
a conductor formed in in a band shape along the boundary of said third semiconductive region on said gate insulating layers such that avalanche carriers flow to said conductor and said first source electrode to prevent destruction of the PSMOS transistor by avalanche carriers;
a first source electrode connected equally to said plurality of source regions and said first and said second semiconductive regions, and further contacting a part of said conductive line;
said first source electrode for connecting said another part of said conductive line to said fourth semiconductive region;
a gate bonding pad formed on the gate insulating layer of said third semiconductive region; and
a drain electrode contacting said semiconductive substrate.

5,298,771

COLOR IMAGING CHARGE-COUPLED ARRAY WITH PHOTOSENSITIVE LAYERS IN POTENTIAL WELLS

David A. Mantell, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1992, Ser. No. 973,811
Int. Cl.[5] H01L *29/161, 29/78, 27/14*
U.S. Cl. 257—183.1 **9 Claims**



1. A photosensitive charge-coupled array, defining a plurality of discrete exposable image areas in a surface thereof, comprising:
a first photosensitive layer generating electron-hole pairs in an area thereof in response to being exposed to light within a predetermined first range of wavelength;
a second photosensitive layer, generating electron-hole pairs in an area thereof in response to being exposed to light within a predetermined second range of wavelength different from the first range of wavelength;
a first boundary layer disposed between the first photosensitive layer and the second photosensitive layer, having a higher band gap energy associated therewith than the first photosensitive layer and the second photosensitive layer; and
means for enabling the shifting of image data in the first photosensitive layer and the second photosensitive layer along the discrete exposable image areas within the array.

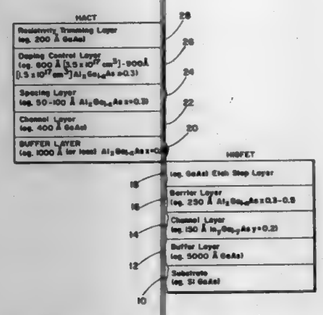
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5,298,772

INTEGRATED HETEROSTRUCTURE ACOUSTIC CHARGE TRANSPORT (HACT) AND HETEROSTRUCTURE INSULATED GATE FIELD EFFECTS TRANSISTOR (HIGFET) DEVICES

Andrzej Peczalski, Eden Prairie; David E. Grider; James F. Detry, both of Bloomington; George A. Kilgore, Long Lake, all of Minn.; William J. Tanski, Glastonbury, Conn.; Thomas W. Grudkowski, Glastonbury, Conn., and Robert N. Sacks, Glastonbury, Conn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1992, Ser. No. 843,470
Int. Cl.[5] H01L *41/08, 29/84*
U.S. Cl. 257—195 **12 Claims**



1. A monolithic IC device comprising:
a semi-insulating semiconductor compound substrate having a flat major surface;
an HIGFET heterostructure deposited on the substrate, comprising:
a buffer layer configured on the substrate consisting essentially of undoped semiconductor;
a channel layer configured on the buffer layer;
a barrier layer configured on the channel layer;
an etch stop layer configured on the barrier layer; and
an HACT heterostructure deposited over the etch stop layer of the HIGFET heterostructure, comprising:
a buffer layer of semiconductor configured on the etch stop layer;
a surface acoustic wave (SAW) charge transport layer configured on the buffer layer;
a charge confinement spacing layer configured on the channel layer;
a doping control layer configured on the spacing layer; and
a trimming layer configured on the doping control layer.

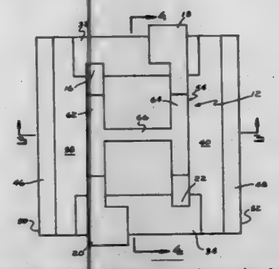
5,298,773

SILICON-ON-INSULATOR H-TRANSISTOR LAYOUT FOR GATE ARRAYS

Richard L. Woodruff, Colorado Springs, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 17, 1992, Ser. No. 929,600
Int. Cl.[5] H01L *27/12, 27/10, 29/78*
U.S. Cl. 257—204 **41 Claims**

1. An integrated circuit gate array device formed within a layer of silicon disposed over an insulator film located on top of a silicon substrate comprising:
a. at least two H-transistors arranged in a column-like design, wherein the column-like design has a top portion, a mid portion, and a bottom portion, wherein each H-transistor comprises:
i. a gate comprised of two substantially parallel, elongated members and an integrally attached cross member;
ii. a channel region, the cross member disposed over the channel region;
iii. a gate insulator region disposed between the cross member and the channel region;
iv. a source region located to one side of the cross member and between the parallel members;
v. a drain region located to the other side of the cross member and between the parallel members; and



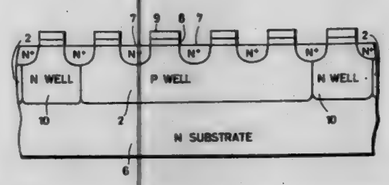
vi. two well regions having a predetermined doping concentration, each well region abutting a parallel, elongated member of the gate;
b. a first region of insulator at substantially the top of the column-like design;
c. a second region of insulator located between adjacent transistors in a column at substantially the midpoint of the column-like design; and
d. a third region of insulator which terminates at substantially the bottom portion of the column-like design.

5,298,774

GATE ARRAY SYSTEM SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Kimio Ueda, and Yasunobu Nakase, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,288, Jan. 3, 1991, abandoned. This application Mar. 5, 1992, Ser. No. 844,920
Claims priority, application Japan, Jan. 11, 1990, 2-5654
Int. Cl.[5] H01L *27/10*
U.S. Cl. 257—206 **6 Claims**



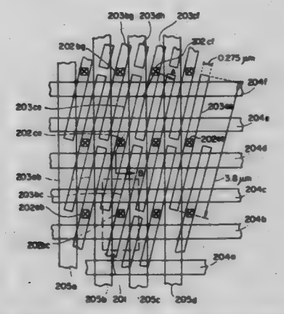
1. A semiconductor integrated circuit device of a gate array system, comprising:
a semiconductor substrate,
a plurality of field effect transistors of a first conductivity type having a plurality of well regions of a certain conductivity type of a first concentration formed separately along a first direction of said substrate, a plurality of regions of an opposite conductivity type of a second concentration formed along a second direction crossing said first direction in said well regions of the certain conductivity type, and a gate electrode formed between the adjacent regions of each pair of said regions of the opposite conductivity type of the second concentration,
a plurality of field effect transistors of a second conductivity type having a plurality of well regions of the conductivity type opposite to said certain conductivity type formed in parallel with said well regions of the certain conductivity type, dividing regions of the certain conductivity type dividing said well regions of the opposite conductivity type into a plurality of small regions of the opposite conductivity type in positions at prescribed intervals along said first direction, a plurality of regions of the certain conductivity type of the second concentration formed along the second direction crossing said first direction in said small divided regions of the opposite conductivity type, and a gate electrode formed between the adjacent regions of each pair of said regions of the certain conductivity type of the second concentration,
a plurality of well terminals formed in parallel with the field effect transistors of the first conductivity type and the field effect transistors of the second conductivity type, and connected to said well regions,
a basic cell being formed by each said field effect transistor of the first conductivity type and the corresponding field effect transistor of the second conductivity type by means of each said well terminal, and a plurality of the basic cells being disposed in an array to constitute a basic cell array.

5,298,775

SEMICONDUCTOR MEMORY DEVICE HAVING STACKED-TYPE CAPACITOR OF LARGE CAPACITANCE

Shuichi Ohya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1991, Ser. No. 660,817
Claims priority, application Japan, Feb. 26, 1990, 2-46153
Int. Cl.[5] G11C *11/24*
U.S. Cl. 257—211 **20 Claims**



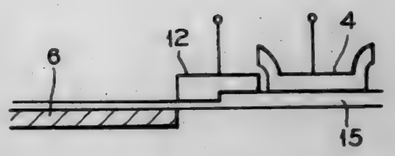
1. In a DRAM having memory cells each including a transistor and stacked-type charge-storage capacitor formed on the surface of a silicon substrate, word lines parallel to an X-axis and bit lines parallel to a Y-axis orthogonal to the X-axis, a semiconductor memory device comprising a storage node electrode of said charge-storage capacitor having a thickness more than ½ of a minimum feature size, said storage node electrode projecting a rectangle on the surface of said silicon substrate, and the major sides of said rectangle being oblique to said X-axis and said Y-axis and further to said transistor so that said rectangle is extended over an adjacent memory cell.

5,298,776

CCD LINE SENSOR

Seiichi Kawamoto; Maki Sato; Tadakuni Narabu; Hisanori Miura, and Masahide Hirama, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,120
Claims priority, application Japan, Mar. 29, 1990, 2-081706
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—222 **4 Claims**



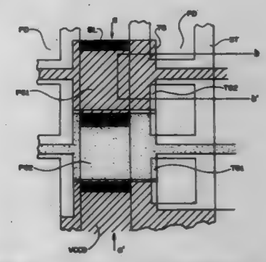
1. A solid state imager element comprising;
a sensor portion;
a register portion;
a read gate portion for reading out a signal charge from said sensor portion and transferring the same to said register portion; and
a potential difference formed in said read gate portion in a direction in which said signal charge is read out and transferred, so that unnecessary charges generated in said read gate portion flow into said register portion.

5,298,777

CCD IMAGE SENSOR OF INTERLACED SCANNING TYPE

Seo K. Lee, Kyungki, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Chungcheongbuk, Rep. of Korea

Continuation of Ser. No. 834,113, Feb. 11, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 97,539
Claims priority, application Rep. of Korea, Feb. 12, 1991, 2373/1991
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—232 **5 Claims**



1. A CCD image sensor of an interlaced scanning type, comprising:
a plurality of uniformly spaced photodetectors which accumulate signal charges in response to incident light, the photodetectors being arranged in series in vertical and alternating odd and even horizontal lines, each photodetector having a transfer gate electrode which causes the output of the accumulated signal charge of the photodetector upon the application of a transfer gate drive voltage to the transfer gate electrode;
a plurality of VCCD regions arranged between the vertical lines of the photodetectors;

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a plurality of channel stop regions for electrically isolating said plurality of photodetectors from one another;

a plurality of gate electrodes formed on said VCCD regions, each of said plurality of gate electrodes being connected simultaneously to the transfer gate electrodes of a plurality of photodetector pairs, each photodetector pairs having a first photodetector located in a common vertical line and a particular odd horizontal line, and a second photodetector located in the common vertical line and an even horizontal line adjacent to the particular odd horizontal line;

a plurality of barrier layers, each forming at least a portion of each of said VCCD regions to define separate subregions in the VCCD regions by forming a desired potential barrier, such that applying a transfer gate drive voltage to the transfer gate electrodes of the photodetector pairs via the gate electrodes causes the first photodetector and the second photodetector in each photodetector pair to output their charge signals into the same subregion of the adjacent VCCD region, thereby causing the signal charges of the first and second photodetectors to be added into a combined signal charge; and

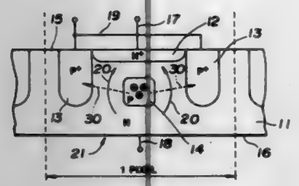
an HCCD region formed under said plurality of VCCD regions, for transferring the combined signal charges of the photodetector pairs from said VCCD regions to an output stage.

5,298,778

SOLID STATE IMAGE PICKUP DEVICE

Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,443
Claims priority, application Japan, May 15, 1992, 4-148595
Int. Cl.[5] H01L *29/80, 27/14*
U.S. Cl. 257—257 **10 Claims**



1. An amplification-type solid state imaging device including a plurality of picture elements arranged in a two-dimensional matrix, each of the plurality of picture elements comprising:

a semiconductor substrate of a first conductivity type having an upper surface and a lower surface;

a sensor region of a second conductivity type surrounded by the substrate;

a source region of the first conductivity type extending downwardly from the upper surface of the substrate and positioned above the sensor region;

a drain positioned below the sensor region; and

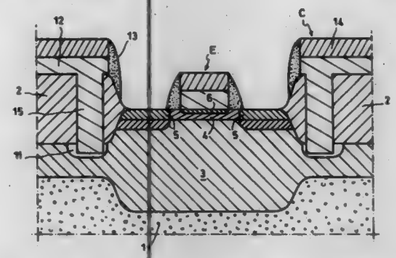
a gate region of the second conductivity type extending downwardly from the upper surface of the substrate and positioned laterally substantially about the source region and the sensor region, the gate region and the sensor region defining a channel region therebetween.

5,298,779

COLLECTOR OF A BIPOLAR TRANSISTOR COMPATIBLE WITH MOS TECHNOLOGY

Alain Nouailhat, Meylan, and Daniel Bois, Saint Ismier, both of France, assignors to France Telecom-Etablissement Autonome de Droit Public, France

Filed Feb. 18, 1992, Ser. No. 836,248
Claims priority, application France, Feb. 18, 1991, 91 01984
Int. Cl.[5] H01L *27/02, 29/04*
U.S. Cl. 257—273 **4 Claims**



1. A bipolar transistor comprising a semiconductor substrate, of a first conductivity type, a retrograde well serving as the collector and having a second conductivity type opposite to the first, a base active region having the first conductivity type, a region serving as an emitter of the second conductivity type, the base active and emitter regions being bordered by insulating regions;

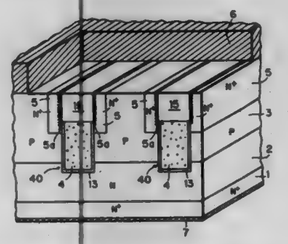
wherein the transistor includes at least one second conductivity type zone serving as a collector contact, said second conductivity type zone being located in a highly doped region of the retrograde will and spaced from the base zone, said collector contact being substantially level with an insulated zone and connected with a trench crossing through the insulating zone, the trench being filled with a layer of polysilicon.

5,298,780

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SAME

Masana Harada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,691
Claims priority, application Japan, Feb. 17, 1992, 4-029561
Int. Cl.[5] H01L *29/06, 21/225*
U.S. Cl. 257—330 **21 Claims**



1. A semiconductor device comprising:

a first semiconductor layer of a first conductivity type having first and second major surfaces;

a second semiconductor layer of a second conductivity type formed on said first major surface;

a third semiconductor layer of the first conductivity type selectively formed on said second semiconductor layer;

a groove extending from a top surface of said third semiconductor layer through said second semiconductor layer into said first semiconductor layer;

a dielectric layer formed at least on an inner wall of said groove which is in face-to-face relation to said second semiconductor layer;

a control electrode formed on said inner wall of said groove through said dielectric layer; and

an insulating layer formed on a part of an inner wall of said groove which is in face-to-face relation to said third semiconductor layer and containing an impurity of the first conductivity type,

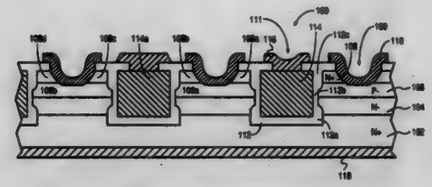
a portion of said third semiconductor layer adjacent to said groove having a uniform impurity concentration in the vertical direction along said groove.

5,298,781

VERTICAL CURRENT FLOW FIELD EFFECT TRANSISTOR WITH THICK INSULATOR OVER NON-CHANNEL AREAS

Adrian I. Cogan, San Jose, and Richard A. Blanchard, Los Altos, both of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Division of Ser. No. 107,725, Oct. 8, 1987, Pat. No. 5,164,325.
This application Jul. 8, 1992, Ser. No. 910,864
Int. Cl.[5] H01L *29/76, 29/94, 31/062*
U.S. Cl. 257—333 **9 Claims**



4. A transistor comprising:

a first semiconductor region of a first conductivity type;

a second semiconductor region of a second conductivity type opposite said first conductivity type formed on said first semiconductor region;

a third semiconductor region of said first conductivity type formed on said second semiconductor region;

a trench extending through said third and second semiconductor regions at least to said first semiconductor region;

an insulating layer formed on the walls of said trench, a portion of said insulating layer adjacent said third semiconductor region being at least five times thicker than a portion of said insulating layer adjacent said second semiconductor region; and

a gate formed in said trench, said gate being insulated from said first, second and third semiconductor regions by said insulating layer.

5,298,782

STACKED CMOS SRAM CELL WITH POLYSILICON TRANSISTOR LOAD

Ravishankar Sundaresan, Garland, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 3, 1991, Ser. No. 709,634
Int. Cl.[5] H01L *27/01, 21/265*
U.S. Cl. 257—393 **20 Claims**

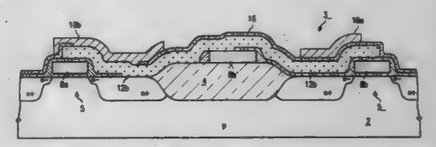
1. A complementary metal-oxide-semiconductor memory cell formed at a semiconductor surface of a body, comprising:

first and second drive transistors, each having source and drain regions formed into said semiconducting surface, and each having a gate electrode overlying said semiconducting surface, said first and second drive transistors being of a first conductivity type;

a first intermediate layer electrode in physical contact with the drain of said second drive transistor and with the gate electrode of said first drive transistor, said first intermediate layer electrode having a portion overlying a portion of said first drive transistor;

a second intermediate layer electrode in physical contact with the drain of said first drive transistor and with the gate electrode of said second drive transistor, said second intermediate layer electrode having a portion overlying a portion of said second drive transistor;

a gate dielectric layer overlying portions of said first and second intermediate layer electrodes;



a first load transistor of a second conductivity type formed of a layer comprising polysilicon, and disposed over the portion of said first intermediate layer electrode that overlies a portion of the first drive transistor, with said gate dielectric layer therebetween; and

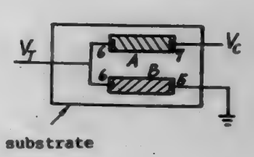
a second load transistor of said second conductivity formed of a layer comprising polysilicon, and disposed over a portion of said second intermediate layer electrode that overlies a portion of the second drive transistor, with said gate dielectric layer therebetween.

5,298,783

COMBINED SEMICONDUCTOR GAS SENSOR

Xinghui Wu, Kunming, China, assignor to Yunnan University, China

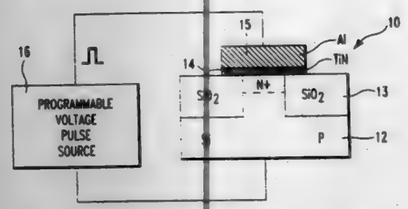
Filed Jun. 24, 1992, Ser. No. 903,781
Claims priority, application China, Sep. 9, 1991, 91108927.6
Int. Cl.[5] H01L *29/66*
U.S. Cl. 257—414 **24 Claims**



1. A combined semiconductor gas sensor for measuring the density of a specific gas, comprising the combination of two portions, which portions are formed on a single substrate and are made of two different gas sensitive materials respectively, wherein the resistances of these two portions vary differently with the density of the specific gas; when said gas sensor is coupled into a detecting circuit, an output signal is led out from the junction of said two portions, wherein one of the portions serves as the load simultaneously, an absolute value of the temperature coefficient of the gas sensitive material constituting the portion serving as the load simultaneously is not greater than an absolute value of the temperature coefficient of the material constituting the other portion.

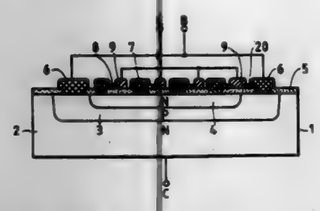
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5,298,784
ELECTRICALLY PROGRAMMABLE ANTIFUSE USING METAL PENETRATION OF A JUNCTION
Jeffrey P. Gambino, Gaylordsville, Conn.; Dominic J. Schepis, Wappingers Falls, and Krishna Seshan, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 27, 1992, Ser. No. 858,835
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—529 20 Claims



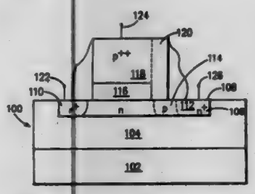
1. An electrically programmable antifuse comprising:
a silicon substrate;
a diode P-N junction formed in said silicon substrate;
isolation means for electrically and thermally isolating said P-N junction in said silicon substrate, said P-N junction being exposed through said isolation means;
a metal diffusion barrier over said P-N junction;
a metal layer over said diffusion barrier; and
programmable pulse generating means connected across said metal layer and said silicon substrate for stressing said P-N junction by a voltage pulse to produce a prescribed current density and creating a prescribed joule heating resulting in metal layer penetration into said P-N junction to thereby program said antifuse to conduct at prescribed voltages.

5,298,785
SEMICONDUCTOR DEVICE
Shinichi Ito, and Jiro Terashima, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 600,172, Oct. 19, 1990, Pat. No. 5,053,847, which is a continuation of Ser. No. 194,467, May 12, 1988, abandoned. This application Apr. 18, 1991, Ser. No. 687,029
Claims priority, application Japan, May 15, 1987, 62-118229; Aug. 6, 1998, 62-196926
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—538 3 Claims



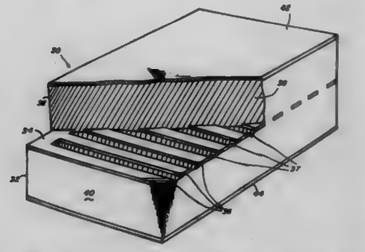
1. A semiconductor device, comprising:
a plurality of bipolar transistors connected in parallel and formed in a common substrate, an insulating film on the substrate, said plurality of bipolar transistors having a collector region in the substrate, a collector electrode coupled to the collector region, a base region in the collector region and at least one base contact electrode contacting the base region through an opening in the insulating film, each of said bipolar transistors including an emitter region in the base region, an emitter contact electrode contacting a respective emitter region through an opening in the insulating film, and an emitter electrode,;
a plurality of emitter ballast resistors of a deposition layer on the insulating film each coupled between a corresponding emitter contact electrode and a corresponding emitter electrode of each of the plurality of bipolar transistors; and
a stabilizing resistor on the insulating film and located between an emitter electrode of a selected one of the plurality of bipolar transistors and the base electrode for reducing parasitic transistor effects in said semiconductor device, said emitter ballast resistors and said stabilizing resistor being of essentially the same material composition and of said deposition layer.

5,298,786
SOI LATERAL BIPOLAR TRANSISTOR WITH EDGE-STRAPPED BASE CONTACT AND METHOD OF FABRICATING SAME
Ghavam G. Shahidi, White Plains; Denny D. Tang, Pleasantville, and Yuan Taur, Bedford, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Continuation of Ser. No. 890,357, May 22, 1992, abandoned, which is a continuation of Ser. No. 622,986, Dec. 6, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 93,515
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—559 10 Claims



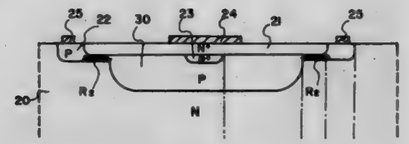
1. A lateral bipolar transistor formed on a silicon-on-insulator structure comprising:
a substrate having a layer of oxide formed thereon and a layer of silicon formed on said oxide layer, said layer of silicon having a substantially planar surface;
a collector region of a first conductivity type extending from said surface of said silicon layer, an emitter region of said first conductivity type extending form said surface of said silicon layer, and an intrinsic base region of a second conductivity type extending from said surface of said silicon layer, said intrinsic base region being contiguous to said emitter region and intermediate said emitter and collector regions;
a layer of insulator formed on said collector region;
a strip polysilicon extrinsic base region of said second conductivity type formed on said insulator layer, said insulator layer being sandwiched between said collector region and said extrinsic base region; and
a silicon edge contact region of said second conductivity type connected to an outside sidewall of said strip extrinsic base region and said surface of said intrinsic base region.

5,298,787
SEMICONDUCTOR EMBEDDED LAYER TECHNOLOGY INCLUDING PERMEABLE BASE TRANSISTOR
Carl O. Bozler, Sudbury, Mass.; Gary D. Alley, Londonderry; William T. Lindley, Lexington, N.H., and R. Allen Murphy, Hudson, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Division of Ser. No. 73,912, Jul. 7, 1987, Pat. No. 5,032,538, which is a continuation of Ser. No. 431,055, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 65,514, Aug. 10, 1979, Pat. No. 4,378,629. This application Apr. 1, 1991, Ser. No. 678,670
Int. Cl.[5] H01L *27/082, 29/00, 27/102, 29/30*
U.S. Cl. 257—592 45 Claims



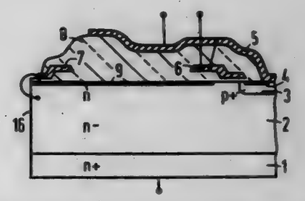
42. A single semiconductor chip integrated circuit comprising a plurality of devices, including devices having metal base layers embedded in the semiconductor, at least some of the interconnections between said devices being extensions of the metal base layers totally embedded within the semiconductor chip.

5,298,788
AVALANCHE DIODE IN A BIPOLAR INTEGRATED CIRCUIT
Jean-Michel Moreau, Grenoble, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France
Filed Jun. 26, 1992, Ser. No. 904,054
Claims priority, application France, Jun. 28, 1991, 91 08418
Int. Cl.[5] H01L *29/90, 27/02*
U.S. Cl. 257—606 4 Claims



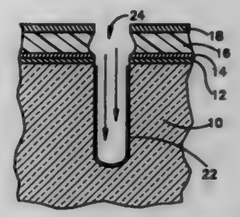
1. An avalanche diode, comprising:
a semiconductor layer of a first conductivity type having a major surface;
a first region of a second conductivity type extending from said major surface;
a second region of the first conductivity type inside said first region and extending from said major surface;
a third region of the second conductivity type beneath said second region;
a fourth region of the second conductivity type formed beneath and bounded by said second region in a direction parallel to said major surface and at least partially surrounding said third region;
first, second and third interfaces being formed, respectively, between said first and second regions, between said second and fourth regions and between said second and third regions;
wherein said first region near said first interface is of a first impurity concentration, said fourth region near said second interface is of a second impurity concentration greater than said first and said third region near said third interface is of a third impurity concentration greater than said second; and
electrodes on the major surface of said layer for making contact with said first and third regions.

5,298,789
SEMICONDUCTOR COMPONENT FOR A HIGH BLOCKING BIAS
Josef M. Gantioler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 29, 1991, Ser. No. 783,812
Claims priority, application European Pat. Off., Nov. 12, 1990, 90121644.0
Int. Cl.[5] H01L *29/780, 29/400*
U.S. Cl. 257—620 3 Claims



3. A semiconductor component comprising: a semiconductor chip having a first zone of a first conductivity type and at least one planar zone of a second conductivity type arranged in a first surface of the first zone; at least one field plate electrically connected to the planar zone and extending in a direction toward an edge region of the semiconductor chip; a channel barrier formed in the edge region of the semiconductor chip; and a region of the first conductivity type having a higher conductivity than the first zone and located in the first surface of the first zone outside of the planar zone, the region extending from under the channel barrier to under the at least one field plate.

5,298,790
REACTIVE ION ETCHING BUFFER MASK
David L. Harmon, Essex; Michael L. Kerbaugh, Burlington; Nancy T. Pascoe, South Burlington, and John F. Rembetski, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 714,796, Jul. 16, 1991, abandoned, which is a division of Ser. No. 504,197, Apr. 3, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,462
Int. Cl.[5] H01L *29/68, 29/06, 29/04*
U.S. Cl. 257—622 13 Claims



1. A structure comprising a semiconductor substrate, a composite mask formed on said substrate,
said composite mask comprising fist and second layers of material disposed on said substrate,

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an opening extending through both layers of mask material and into the substrate as a trench,

said first layer of material being a material that absorbs or is etched by the same reactive ions which etch the substrate material, and having a thickness of i) at least 3 microns, and ii) about 30% of the depth of the trench, such that the material surrounding the opening absorbs or is etched by non-vertically travelling reactive ions, said second layer of material being disposed on said first layer of material and being a material that resists etching by the reactive ions that etch the substrate material,

said trench in said substrate being essentially straight walled and being of essentially uniform width.

5,298,791

THERMALLY CONDUCTIVE ELECTRICAL ASSEMBLY

James Liberty, Hollis, and Peter Jones, Londonderry, both of N.H., assignors to Chomerics, Inc., Woburn, Mass.

Division of Ser. No. 744,568, Aug. 13, 1991. This application Jan. 26, 1993, Ser. No. 8,937

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—707 **10 Claims**



1. An electrical assembly comprising a means for dissipating thermal energy selected from the group consisting of heat sinks and heat spreaders, an electronic component which generates thermally energy and a means for transferring thermal energy from the electronic component to the means for dissipating thermal energy, the means for transferring thermal energy is a thermally conductive polymeric material interposed between the means for dissipating thermal energy and the electronic component and wherein the means for dissipating thermal energy and the means for transferring thermal energy have a means for removing air from between the means for transferring thermal energy and the electronic component selected from the group consisting of throughholes, embossments and grooves.

5,298,792

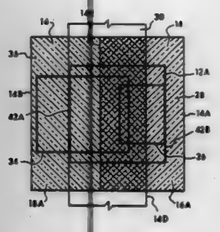
INTEGRATED CIRCUIT DEVICE WITH BI-LEVEL CONTACT LANDING PADS

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 3, 1992, Ser. No. 829,920

Int. Cl.[5] H01L *23/48, 23/46, 29/62, 29/54*

U.S. Cl. 257—758 **15 Claims**



1. An integrated circuit structure for an integrated circuit, said integrated circuit having a predetermined minimum size for said contact landing pad, said structure comprising:

a semiconductor wafer having an active area formed therein;

a first landing pad member formed in a first layer over said active area, wherein an edge portion of said first landing pad member lies in a first level above said semiconductor wafer;

a second landing pad member formed in a second layer at least partially over said first landing pad member, wherein an edge portion of said first landing pad member provides a second edge of said contact landing pad and lies in a second level above said semiconductor wafer separated from the first level;

wherein at least one of said first and second landing pad members electrically contacts said active area, said first landing pad member partially overlaps said second landing pad member and the combined landing pad area of said first and second landing pad members is at least as large as the predetermined minimum size for a contact landing pad in said integrated circuit.

5,298,793

SEMICONDUCTOR DEVICE INCLUDING AN ELECTRODE

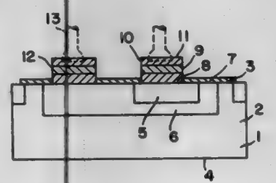
Juturo Kotani; Masahiro Ihara, both of Takatsuki; Hideaki Nakura, Hirakata, and Masami Yokozawa, Yawata, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 647,508, Jan. 29, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 929,472

Claims priority, application Japan, Feb. 8, 1990, 2-29029

Int. Cl.[5] H01L *23/48, 29/44*

U.S. Cl. 257—765 **7 Claims**



1. A semiconductor device comprising a semiconductor substrate and an electrode,

which electrode comprises a first aluminum layer, an aluminum-nickel alloy layer, and a second aluminum layer, wherein said aluminum-nickel alloy layer is interposed between said first and second aluminum layers,

said device further including a copper wire electrically bonded to said electrode,

wherein said semiconductor substrate is connected electrically to said copper wire.

5,298,794

ELECTRICAL ANTICORROSION DEVICE FOR MARINE PROPULSION DEVICE

Naoyoshi Kuragaki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

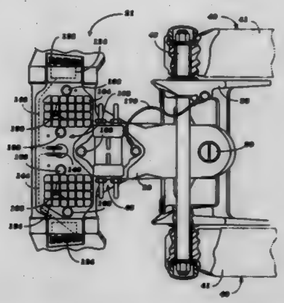
Filed Feb. 10, 1992, Ser. No. 833,090

Claims priority, application Japan, Feb. 8, 1991, 3-39485

Int. Cl.[5] H01B *7/28*

U.S. Cl. 307—95 **20 Claims**

1. An electrical anticorrosion device for a watercraft drive arrangement, comprising: a metallic arrangement to be protected against cathodic corrosion; a mounting bracket for mounting said metallic arrangement; an anode; a reference electrode; a housing unit positioned upon said mounting bracket, wherein said housing unit houses said anode and said reference electrode; a current supply and regulation arrangement; wherein said current supply and regulation arrangement is in electrical communication with said anode, said reference electrode, and said metallic arrangement; and further, wherein said current supply and regulation arrangement is operative to maintain said metallic arrangement at a desired electrical potential in order to protect it from corrosion; and wherein said



anode and said reference electrode each are positioned essentially equidistantly from a point located approximately midway across the lateral width of said metallic arrangement; wherein said anode and said reference electrode each are positioned along a lien which si oriented across the lateral width of said mounting bracket.

5,298,795

CURRENT CONSUMPTION CONTROL DEVICE

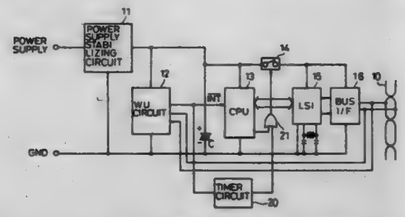
Atsuhiko Suzuki, San Jose, Calif.; Teruhisa Inoue; Kyosuke Hashimoto, both of Hiratsuka, Japan; Osamu Michihira, and Seiji Hirano, both of Hiroshima, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan

Continuation of Ser. No. 738,037, Jul. 30, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,569

Claims priority, application Japan, Aug. 6, 1990, 2-208349

Int. Cl.[5] G06F *1/32*

U.S. Cl. 307—116 **9 Claims**



1. A device for controlling the current consumption of a power supply, comprising:

power supply stabilizing means for stabilizing a voltage generated by said power supply and for producing a stabilized voltage;

transmission control means for transmitting a data transmission signal on a transmission line, said transmission control means being selectively powered by the stabilized voltage;

interface means for connecting said transmission control means and said transmission line, said interface means being selectively powered by the stabilized voltage;

detection means for detecting the data transmission signal on said transmission line and for outputting a detection signal when the data transmission signal is detected, said detection means being supplied with and powered by the stabilized voltage;

openable and closeable interrupting means for supplying the stabilized voltage from the power supply stabilizing means to said transmission control means and to said interface means when said interrupting means is in closed state, and for interrupting supply of the stabilized voltage from the power supply stabilizing means to said transmission control means and to said interface means when said interrupting means is in an open state; and

a central processing unit for controlling the opening and closing of said interrupting means in accordance with the detection signal output by said detection means.

5,298,796

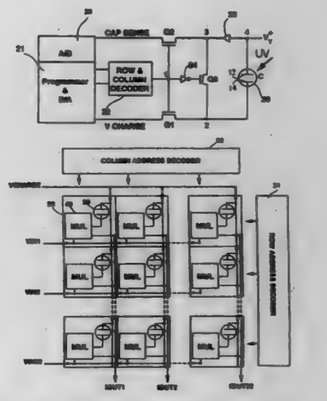
NONVOLATILE PROGRAMMABLE NEURAL NETWORK SYNAPTIC ARRAY

Raoul Tawel, Glendale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 8, 1992, Ser. No. 912,956

Int. Cl.[5] H03K *19/08*

U.S. Cl. 307—201 **3 Claims**



1. A nonvolatile programmable structure of synaptic cells in an integrated circuit array, wherein each synaptic cell fabricated in a silicon wafer comprises an integral nonvolatile analog storage element, said analog storage element comprising a sandwhich structure of two polycrystalline silicon slabs separated by a silicon dioxide barrier and a mask with an opening for flooding one of said polycrystalline slabs with ultraviolet radiation which photo-activates electrons in the silicon conduction band of one polycrystalline layer across said silicon dioxide barrier onto another of said two polycrystalline silicon slabs functioning as a floating gate, said sandwhich structure being isolated from said integrated circuit array by silicon dioxide except for conductors within said integrated circuit array for connecting said two polycrystalline silicon slabs forming a synaptic cell capacitor to an integrated circuit for control of charging said synaptic cell capacitor in response to a programmed voltage and ultraviolet radiation applied through said mask to said one polycrystalline silicon slab, and for separately connecting said two polycrystalline silicon slabs to said programmable array structure, wherein said array is arranged in a number n of X rows and a number m of Y columns, and each of said synaptic cells has a multiplier for receiving a programmed X_i voltage and a programmed X_i input for multiplication by a voltage Y_{ij} stored in said synaptic-cell capacitor, where $i \leqq n$ and $j \leqq m$ to produce an output current I_j of column j of synaptic cells that is the sum of all multiplier output currents of said synaptic cells in column j, said two polycrystalline slabs being separately connected to two MOS

UMI

transistors, a first MOS transistor connected to one of said two polycrystalline slabe for coupling a programmed voltage to said one polycrystalline slab, and a second MOS transistor coupled by a transconductance amplifier to the other of said two polycrystalline slabs for sensing a voltage induced in said synaptic cell capacitor by integration of UV excited photoelectrons in response to said ultraviolet radiation, and including

means for selectively addressing said synaptic cells by row and column number, and for each specifying a voltage charge desired to be stored therein,

a source of ultraviolet radiation for inducing in said synaptic cell capacitor a charge to said programmed voltage specified for each synaptic cell,

a third MOS transistor coupling an output terminal of said transconductance amplifier to said one polycrystalline silicon slab,

programming means for selectively turning on said first and second MOS transistors, while turning off said third MOS transistors for charging said synaptic cell capacitor, and for turning off said first and second MOS transistors while turning on said third MOS transistor when said synaptic cell capacitor has been charged to said programmed voltage applied to said one polycrystalline silicon slab, and

means for inactivating said addressing means and charging means upon completion of programming stored charges in all of said synaptic cells for operation of all cells in producing a set of stable output currents I_j.

5,298,797

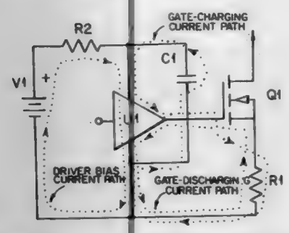
GATE CHARGE RECOVERY CIRCUIT FOR GATE-DRIVEN SEMICONDUCTOR DEVICES

Richard Redl, Onnens, Switzerland, assignor to Toko America, Inc., Mount Prospect, Ill.

Filed Mar. 12, 1993, Ser. No. 31,223

Int. Cl.[5] H03K *17/56*

U.S. Cl. 307—246 **11 Claims**



1. In a circuit wherein a gate-driven semiconductor device is configured with a current sense device connected between a gate voltage reference terminal of said semiconductor device and a first terminal of a voltage source supplying a gate-driving voltage to said semiconductor device, a gate-driving device having an output terminal connected to a gate terminal of said semiconductor device and having a supply terminal through which current flows to or from said output terminal in order to force said semiconductor device to an ON state, the improvement comprising:

a capacitor connected between said gate voltage reference terminal of said semiconductor device and said supply terminal of said gate-driving device; and

a filter element connected between said supply terminal of said gate-driving device and a second terminal of said voltage source.

5,298,798

AMPLITUDE CONTROL DEVICE

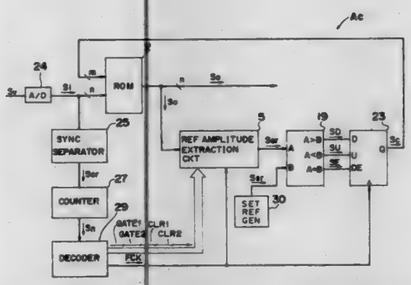
Shigeru Furumiya, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 30, 1992, Ser. No. 922,180

Claims priority, application Japan, Jul. 31, 1991, 3-191600

Int. Cl.[5] H03K *5/08*; H04N *5/52*

U.S. Cl. 307—264 **2 Claims**



1. An amplitude control device for controlling an amplitude of a data signal having an reference amplitude, said device comprising:

an analog-digital conversion means for converting said data signal to an n-bit digital signal;

an amplitude extraction means for extracting said reference amplitude from said n-bit digital signal;

a comparison means for comparing said extracted reference amplitude with a predetermined reference amplitude, and producing a first comparison signal when said extracted reference amplitude is greater than said predetermined reference amplitude, and a second comparison signal when said extracted reference amplitude is smaller than said predetermined reference amplitude;

a counter means for counting up on receipt of said first comparison signal and counting down on receipt of said second comparison signal, and for producing an m-bit digital signal representing said counting result; and

a memory means for storing a table in which said n-bit digital signal and said m-bit digital signal are used as an address for designating a value equal to said n-bit digital signal multiplied by a coefficient determined by said m-bit digital signal.

5,298,799

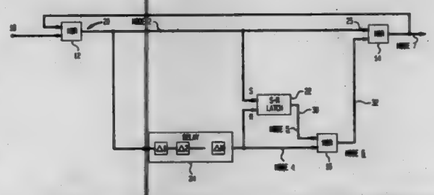
SINGLE-SHOT CIRCUIT WITH FAST RESET

David B. Cochran, Westlake, Ohio, and Kathleen M. Owczarski, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,050

Int. Cl.[5] H03K *3/284*

U.S. Cl. 307—273 **7 Claims**



1. A single shot, clock chopper comprising in combination:

a first gate and a second gate each having a pair of inputs and an output;

means to couple a master clock signal to one input of said first gate;

means coupling said output of said first gate to one input of said second gate;

means coupling said output of said second gate to the other input of said first gate;

delay means for coupling said output of said first gate to another input of said second gate via a third gate having one input coupled to an output of said delay means and an output coupled to said another input of said second gate;

a set-reset latch having a set input, a reset input and an output;

said set input coupled to said means coupling said output of said first gate to one input of said second gate;

said reset input coupled to said output of said delay means; and

said set-reset latch output coupled to another input of said third gate so that a change of state in said output of said first gate sets said set-reset latch, said output of said delay means resets set-reset latch, and a change in output of said set-reset latch changes the output state of said third gate.

5,298,800

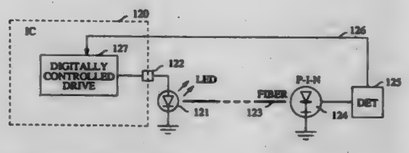
DIGITALLY CONTROLLED ELEMENT SIZING

Alfred E. Dunlop, Murray Hill, N.J.; Thaddeus J. Gabara, North Whitehall Township, Lehigh County, Pa., and Scott C. Knauer, Mountainside, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 724,560, Jun. 28, 1991, Pat. No. 5,194,765. This application Nov. 2, 1992, Ser. No. 970,415

Int. Cl.[5] H03K *3/01*; H01S *3/30*

U.S. Cl. 307—270 **4 Claims**



1. A circuit comprising:

a digitally controlled signal drive module comprising a parallel interconnection of transistors connected to an output terminal of said module, said module being responsive to drive control signals;

signal utilization means responsive to output signals received by said signal utilization means from said signal drive module for producing a responsive signal;

means for determining level of output signals received from said signal drive module using said responsive signal and, in response thereto, developing digital drive signals; and means for developing said drive control signals from said digital drive signals.

5,298,801

TRACK-AND-HOLD CIRCUIT

Pieter Vorenkamp, and Johannes P. M. Verdaasdonk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

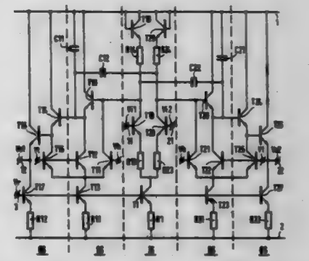
Filed Aug. 31, 1992, Ser. No. 938,921

Claims priority, application European Pat. Off., Sep. 11, 1991, 91202332.2

Int. Cl.[5] G11C *27/02*

U.S. Cl. 307—353 **19 Claims**

1. A track-and-hold circuit comprising an input stage coupled to an input terminal for receiving an input signal (Vi1), an output stage coupled to an output terminal for supplying an output signal (Vo1), and a switching stage coupled between the input stage and the output stage, the switching stage comprising a switching transistor having a base coupled to the input stage, having a collector coupled to a first supply terminal, and having an emitter coupled to the output stage, a differential amplifier having a first input for receiving a hold signal (Vh), having a second input for receiving a tracking signal (Vt), having a common terminal coupled to a second supply terminal by means of a current source, having a first output coupled to the base of the switching transistor, and having a



second output coupled to the emitter of the switching transistor, and a capacitor coupled between the emitter of the switching transistor and one of the supply terminals, characterised in that the input stage comprises a passive impedance coupled between the base of the switching transistor and the first supply terminal, and the input stage is adapted to supply a signal current to the base of the switching transistor, which signal current is related to the input signal applied to the input terminal.

5,298,802

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH A PLURALITY OF LOGIC CIRCUITS HAVING ACTIVE PULL-DOWN FUNCTIONS

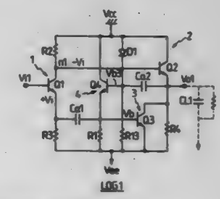
Mitsuo Usami; Noboru Shiozawa, both of Ohme; Toshio Yamada; Hiromasa Katoh, both of Hamura; Kazuyoshi Satoh, Tokorozawa; Tohru Kobayashi, Iruma; Tatsuya Kimura, Ohme; Masato Hamamoto, Ohme; Atsushi Shimizu, Ohme, and Kaoru Koyu, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 557,109, Jul. 25, 1990, which is a continuation-in-part of Ser. No. 330,461, Mar. 30, 1989, Pat. No. 4,999,520. This application May 3, 1993, Ser. No. 56,798

Claims priority, application Japan, Apr. 2, 1988, 63-81645; Apr. 12, 1988, 63-89622; Oct. 28, 1988, 63-274170; Jul. 25, 1989, 1-192005

Int. Cl.[5] H03K *19/013*

U.S. Cl. 307—446 **19 Claims**



1. A logic circuit comprising:

an input terminal;

an output terminal;

a logic portion which receives an input signal supplied to said input terminal, and which generates first and second output signals in accordance with said input signal;

an output portion including:

a first bipolar transistor having its collector-emitter path

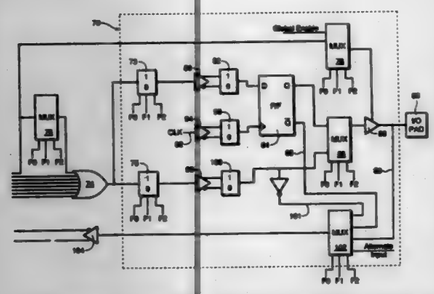
coupled to said output terminal and its base coupled to receive said first output signal, and
a second bipolar transistor having its collector-emitter path coupled to said output terminal, and having a base;
a first capacitance element having a first electrode coupled to receive said second output signal and a second electrode coupled to said base of said second bipolar transistor, wherein a signal supplied to said base of said second bipolar transistor through said first capacitance element has a phase reverse to that of said first output signal supplied to the base of said first bipolar transistor;
a bias circuit having a portion thereof coupled between the base and emitter of said second bipolar transistor and including a third bipolar transistor; and
a second capacitance element, coupled between the output terminal and an emitter of said third bipolar transistor, for feeding back a voltage change of an output signal on said output terminal to said emitter of said third bipolar transistor.

5,298,803

PROGRAMMABLE LOGIC DEVICE HAVING LOW POWER MICROCELLS WITH SELECTABLE REGISTERED AND COMBINATORIAL OUTPUT SIGNALS

Michael W. Starkweather, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jul. 15, 1992, Ser. No. 914,361
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **2 Claims**



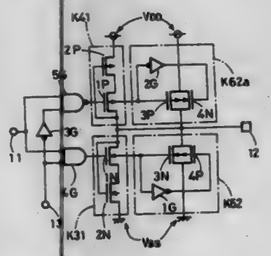
1. A field programmable logic device (FPLD), comprising:
a) a single AND array, receiving external and internal input signals, and outputting product signals in response therefrom;
b) a single OR array, receiving the product signals and outputting sum-of-products signals in response thereto;
c) a plurality of macrocells, having logic signal input lines coming directly form the AND and OR array, and not by way of other macrocells, so that each of the logic signal input lines to each macrocell consists essentially of:
c1) a enabled input line, originating from the OR array, for providing a sum-of-products signal to the macrocell;
c2) a disabled input line, originating from the first input line, for providing to the macrocell the sum-of-products signal from the first input line, and
c3) a product input line, originating from the AND array, for providing to the macrocell a product signal from the AND array;
d) each macrocell further including:
d1) register means for creating a registered signal from the sum-of-products signal originating from the disabled input line;
d2) non-register means for creating a non-registered signal from the sum-of-products signal originating from the enabled input line;
d3) a first multiplexer, receiving the registered and non-registered signal, and outputting a selected signal, where the selected signal is either the registered or non-registered sum-of-product signal;
d4) an input/output (I/O) pad that receives and then outputs the selected signal,
the I/O pad receives an other external signal for inputting to the macrocell over a macrocell external-input line;
d5) a tri-state device, directly receiving the selected signal, the tri-state device having:
a first state that allows outputting of the selected signal, and
a second state that prevents the outputting of the selected signal and allows the other external signal to be inputted over the I/O pad;
d6) a feedback multiplexer,
i) directly electrically coupled to the register means, for receiving a complement of the registered signal,
ii) directly electrically coupled to the non-registered means, for receiving a complement of the non-registered signal
iii) directly electrically coupled to the macrocell external-input line, for receiving the other external signal from the I/O pad, and
iv) for outputting one of the three received signals, now identified as a macrocell feedback signal;
d7) a first control multiplexer, receiving the product signal, and outputting a control signal, where the activation of the first and second states of the tri-state device is controlled by the control signal;
d8) a first control device means, coupled to the first input line, for controlling whether the sum-of-products signal will enter or not enter the macrocell; and
d9) a second control device means, coupled to the disabled input line, for controlling whether the sum-of-products signal will enter or not enter the macrocell.

5,298,804

OUTPUT CIRCUIT WHICH SURPRESSES RINGING

Daisuke Shichinohe, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1991, Ser. No. 788,275
Claims priority, application Japan, Apr. 17, 1991, 3-085165
Int. Cl.[5] H03K *19/092, 19/094*
U.S. Cl. 307—475 **17 Claims**



14. An output circuit comprising:
an input transistor for receiving an input signal;
an output transistor for outputting an output signal conducting a first change from a first logical level to a second logical level and a second change from said second logical level to said first logical level;
a first power source having said first logical level;
a first output drive circuit connected between said output terminal and said first power source and controlled by said input signal for deriving said output signal having a logical level corresponding to said input signal from said output terminal;
wherein, in said second change in the level of said output signal, said first output drive circuit has

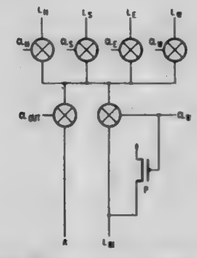
a current drive capability of relatively large dependence on said second change in a region in which the level of said output signal is around said second logical level, and
a current drive capability of relatively small dependence on said second change in a region in which the level of said output signal is around said first logical level,
the current drive capability of said output circuit being decreased monotonically with said second change;
wherein said first output drive circuit comprises:
a first output circuit connected between said output terminal and said first power source and controlled by said input signal, the current drive capability of said first output circuit being decreased monotonically at a relatively large decrease rate with said second change and becoming zero before the level of said output signal reaches said first logical level, and
a second output circuit connected to said first output circuit in parallel and controlled by said input signal, the current drive capability of said second output circuit being decreased monotonically at a relatively small decrease rate with said second change and becoming zero when the level of said output signal reaches said first logical level;
first and second transistors each having a control gate and first and second current electrodes,
said first and second transistors being connected in series with first and second current electrodes thereof between said output terminal and said first power source,
said control electrode of said first transistor being connected to said input terminal,
said control electrode of said second transistor being connected to one of said first current electrodes,
wherein said second current electrode of said first transistor is connected to said first power source,
said first and second current electrodes of said second transistor are connected to said output terminal and said first current electrode of said first transistor, respectively, and
said control electrode of said second transistor is connected to said first current electrode thereof.

5,298,805

VERSATILE AND EFFICIENT CELL-TO-LOCAL BUS INTERFACE IN A CONFIGURABLE LOGIC ARRAY

Tim Garverick, Cupertino; Jim Sutherland, Sunnyvale; Sanjay Popli, Sunnyvale; Venkata Alturi, Sunnyvale; Arthur Smith, Jr., San Carlos; Scott Pickett, Los Gatos; David Hawley, Belmont; Shao-Pin Chen, San Jose; Shankar Moni, Santa Clara; Beajamin S. Ting, Saratoga; Rafael C. Camarota, San Jose; Shin-Mann Day, Sunnyvale, and Frederick Furtek, Menlo Park, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 752,282, Aug. 29, 1991, abandoned.
This application Apr. 8, 1993, Ser. No. 44,921
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **17 Claims**



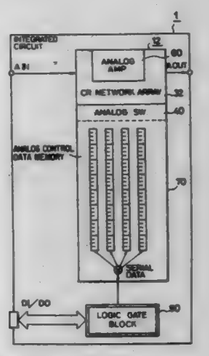
1. A configurable logic array comprising:
a plurality of individually configurable logic cells arranged in a matrix that includes a plurality of rows of configurable logic cells and a plurality of columns of configurable logic cells;
at least one row local bus running between adjacent rows of configurable logic cells, said configurable logic cells in said adjacent rows being selectively connectable thereto;
at least one column local bus running between adjacent columns of configurable logic cells, said configurable logic cells in said adjacent columns being selectively connectable thereto;
logic cell-to-local bus interface circuitry selectively connectable between a selected configurable logic cell and a selected row or column local bus to allow said selected configurable logic cell to either read data from or write data to said selected local bus, and simultaneously and selectively connectable between said selected configurable logic cell and one or more additional local busses; and
direct interconnect means connectable between said selected configurable logic cell and at least one adjacent configurable logic cell such that an output signal provided by said selected configurable logic cell can be directly provided as an input signal to said at least one adjacent configurable logic cell independent of said local row and column busses.

5,298,806

INTEGRATED CIRCUIT AND GATE ARRAY

Norimitsu Sako, Chiba, Japan, assignor to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 9, 1991, Ser. No. 773,220
Claims priority, application Japan, Oct. 12, 1990, 2-274174
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 **14 Claims**



1. A monolithic integrated circuit, comprising:
a first analog circuit for processing an analog signal;
a passive electronic element array for changing circuit parameters of said first analog circuit, the passive electronic array comprising at least one capacitance array;
an analog switch element for switching an analog signal in response to a digital signal to define and change a connection arrangement of said first analog circuit and said passive electronic element array, or to vary circuit parameters defined by said passive electronic element array;
a second analog circuit for defining and changing a circuit arrangement and circuit characteristics of the integrated circuit; and
a digital circuit for controlling, defining and changing at least one of the second analog circuit and the analog switch.

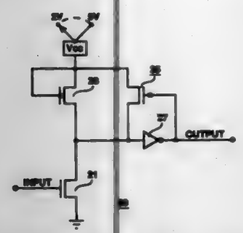
VOL 1160 ISS 5 MR 29 1994 UMI

5,298,807

BUFFER CIRCUITRY FOR TRANSFERRING SIGNALS FROM TTL CIRCUITRY TO DUAL RANGE CMOS CIRCUITRY

Joseph H. Salmon, Placerville, and Clyde L. Johnson, Rancho Cordova, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1991, Ser. No. 813,148
Int. Cl.[5] H03K *19/092, 19/088*
U.S. Cl. 307—475 **5 Claims**



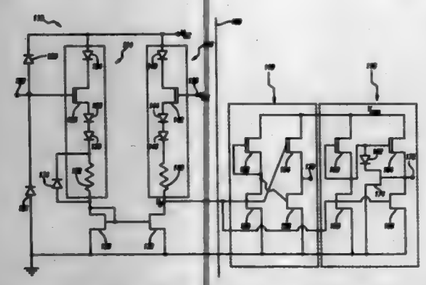
2. A buffer circuit comprising a first N channel field effect transistor comprising a source terminal connected to ground, a gate terminal connected to a source of TTL input signals, and a drain terminal; a W channel field effect transistor having a source terminal connected to the drain terminal of the N channel field effect transistor, a drain terminal connect to a source which furnishes voltage values for two operating ranges, and a gate terminal connected to its drain terminal; an inverter having an input terminal connected to the drain terminal of the N channel transistor, and an output terminal; and a P channel field effect transistor having its source and drain terminals connected between the source which furnishes voltage values for two operating ranges and the input of the inverter, and its gate terminal connected to an output terminal of the inverter.

5,298,808

DIGITAL LOGIC PROTOCOL INTERFACE FOR DIFFERENT SEMICONDUCTOR TECHNOLOGIES

William C. Terrell; Robert N. Deming, both of Thousand Oaks, and Russell S. Hinds, Oxnard, all of Calif., assignors to Vitesse Semiconductor Corporation, Camarillo, Calif.

Filed Jan. 23, 1992, Ser. No. 825,109
Int. Cl.[5] H03K *19/0175*
U.S. Cl. 307—475 **13 Claims**



1. A method for shifting the output logic level of a first digital logic circuit having a first threshold voltage, to an input logic level for a second digital logic circuit having a second threshold voltage, said input logic level corresponding to the same digital value as said output logic level of said first digital logic circuit, said method comprising the steps of:

providing a voltage level equal to said first threshold voltage;

creating a first voltage drop determined by the difference between said first and second threshold voltages;

modulating said first voltage drop proportionally to the difference between the output logic level of said first digital logic circuit and said first threshold voltage;

creating a second voltage drop substantially equal to said first voltage drop;

reducing said provided voltage level by said second voltage drop; and

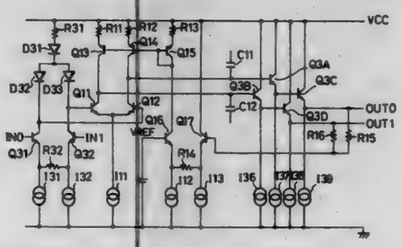
extracting said reduced voltage level as the input logic level to said second digital logic circuit.

5,298,809

BALANCED TYPE DIFFERENTIAL INTEGRATING CIRCUIT

Hiroshi Yamaguchi, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1992, Ser. No. 855,674
Claims priority, application Japan, Jul. 1, 1991, 3-160502
Int. Cl.[5] G06G *7/10*; H03K *5/22*
U.S. Cl. 307—491 **6 Claims**



1. A differential integrating circuit comprising:

a mutual-conductance differential amplifier circuit having two differential output terminals;

first and second capacitors, respectively coupled to outputs of said mutual-conductance differential amplifier circuit, for converting the outputs into integral outputs;

first and second buffers, respectively coupled to said first and second capacitors, for converting said integral outputs into respective voltage signals;

a constant-current circuit for supplying an operating current to said mutual-conductance differential amplifier circuit;

means for detecting an in-phase component of said voltage signals; and

means for adjusting a value of the operating current supplied by said constant-current circuit according to a value of the in-phase component detected.

5,298,810

BICMOS CMOS/ECL DATA MULTIPLEXER

Paul H. Scott, San Jose, and Bertrand J. Williams, Campbell, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 11, 1992, Ser. No. 943,932
Int. Cl.[5] H03K *19/092, 3/01*
U.S. Cl. 307—475 **21 Claims**

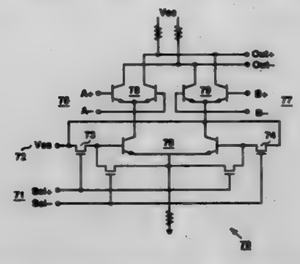
19. A CML circuit for multiplexing CML inputs with CMOS select signals, said CML circuit comprising:

first pair of emitter-coupled transistors of a first conductive type with their collectors coupled to a first voltage, the bases of said first pair receiving a first and inverted first inputs;

second pair of emitter-coupled transistors of said first conductive type with their collectors coupled to said first voltage, the bases of said second pair receiving a second and inverted second inputs;

third pair of emitter-coupled transistors of said first conductive type with the collector of a first transistor of said third pair coupled to the emitters of said first pair and the collector of a second transistor of said third pair coupled to the emitters of said second pair, the emitters of said third pair being coupled to a second voltage;

first MOS transistor coupled in series between the base of said first transistor of said third pair and a current-source voltage, the gate of said MOS transistor receiving a select signal to control the state of said first MOS transistor;



second MOS transistor coupled in series between the base of said second transistor of said third pair and said current-source voltage, the gate of said second MOS transistor receiving an inverted select signal to control the state of said second MOS transistor;

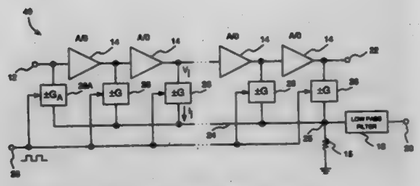
wherein said first and second MOS transistors are alternately turned on by said select signal to switch on one of said first and second pair of emitter-coupled transistors to generate an output and an inverted output at the collectors of one of said first and second pair.

5,298,811

SYNCHRONOUS LOGARITHMIC AMPLIFIER

Barrie Gilbert, Portland, Oreg., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Aug. 3, 1992, Ser. No. 924,325
Int. Cl.[5] G06F *7/556*; G06G *7/24*; H03K *5/02*
U.S. Cl. 307—492 **27 Claims**



1. A logarithmic amplifier (40) comprising:

a plurality of N serially coupled amplifier stages (14) each having an input and an output, wherein N is an integer greater than one, and wherein the input of a first amplifier stage forms a logarithmic amplifier input;

a plurality of N multiplier stages (26) each having a first input coupled to the output of a corresponding amplifier stage, a second input for receiving a control signal, and an output; and

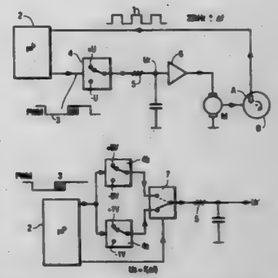
summing means (24) having a plurality of inputs coupled to the outputs of each of the multiplier stages and an output forming a logarithmic amplifier output.

5,298,812

REGULATING CIRCUIT AS FOR CONTROLLING THE SPEED OF A MOTOR

Franz Bigge, Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 779,719
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1989, 3912837
Int. Cl.[5] H03K *5/19*; H03L *7/00*
U.S. Cl. 307—519 **11 Claims**



1. A regulating circuit for controlling the speed of a rotating disc to provide a constant frequency signal from said disc comprising:

a signal pickup device for moving radially along said disc and providing a velocity signal having a frequency indicative of the velocity of said pickup device with respect to said disc whereby said frequency changes by a factor Δf as said pickup device moves radially with respect to said disc;

processor means for receiving said velocity signal and producing a control signal and a pulse width modulated signal having selectable modulation ranges in accordance with said factor Δf;

change-over switch means responsive to said pulse width modulated signal for providing a fine range voltage and a coarse range voltage;

selector switch means responsive to said control signal for providing a regulating signal to control the speed of said rotating disc, said selector switch means passing said fine range voltage when said factor Δf is below a preselected level and passing said coarse range voltage when said factor Δf is above said preselected level, and when said selector switch means is caused to switch between passing said fine range voltage and said coarse range voltage, said processor means is caused to adjust the modulation depth of said pulse width modulated signal such that an abrupt average voltage change is not passed by said selector switch means.

5,298,813

POLAR LEAPFROG FILTER

Hiroshi Tanigawa; Isao Fukai; Hiroshi Kondo, and Tsuneo Tohyama, all of Tsuruoashima, Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,413
Claims priority, application Japan, Apr. 10, 1991, 3-103514
Int. Cl.[5] H03F *34/04, 1/34*
U.S. Cl. 307—520 **3 Claims**

1. A polar leapfrog filter having an input portion and an output portion, said filter comprising:

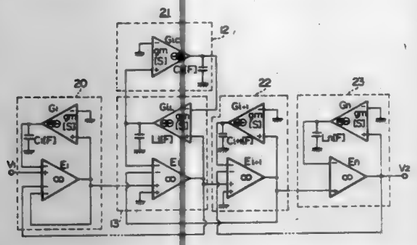
at least one polar network which comprises a first differentiator constituted by a first operational amplifier having input and output terminals, and a first integrator comprising a first variable transconductance amplifier having a

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first capacitor connected to output terminal thereof for providing

negative feedback to said operational amplifier, and a second integrator comprising a second variable transconductance amplifier having a second capacitor connected to output terminal thereof for providing negative feedback to said first integrator;

a second and a third differentiator connected at locations adjacent the input portion of said filter and at a location portion adjacent the output of said filter respectively; and



a fourth differentiator connected at a location following said polar network;

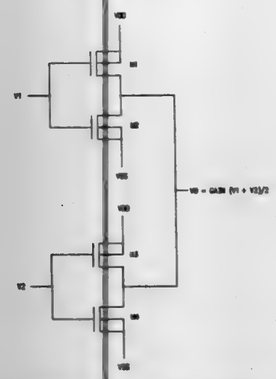
wherein the total number of the circuit units for the filter is selected to be even and equal to the order of said filter; adjacent ones of said circuit units are connected in such a manner that leapfrog type negative feedback is applied therebetween; and all the differentiators except said fourth differentiator are constructed in the form of self negative feedback type.

5,298,814

ACTIVE ANALOG AVERAGING CIRCUIT AND ADC USING SAME

John Caruso, Fremont, Calif., assignor to Micro Power Systems, Inc., Santa Clara, Calif.

Filed Aug. 18, 1992, Ser. No. 931,739
Int. Cl.[5] H03F *3/45*
U.S. Cl. 307—529 **19 Claims**



1. An active analog averaging circuit comprising:

a first transconductance device having an input, an output, and a first transconductance gain value,

a second transconductance device having an input, an output, and a second transconductance gain value,

means for connecting a first analog input signal to said input of said first transconductance device,

means for connecting a second analog input signal to said input of said second transconductance device, and

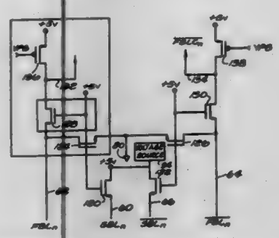
means coupling said outputs for producing a gained average value of said input signals.

5,298,815

CASCODE AMPLIFIER CIRCUITRY FOR AMPLIFYING DIFFERENTIAL SIGNALS

Michael J. Brunolli, Escondido, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Continuation of Ser. No. 314,931, Feb. 24, 1989, abandoned, which is a division of Ser. No. 810,911, Dec. 18, 1985, Pat. No. 4,905,189. This application Apr. 10, 1991, Ser. No. 683,259
Int. Cl.[5] H03F *3/45*; G11C *11/419*
U.S. Cl. 307—530 **16 Claims**



1. In combination,

first and second lines for receiving signals each having first and second logic levels and each representing an inverse of binary information represented by the other,

third and fourth lines,

first and second cascode means for respectively receiving the signals on the first and second lines and for respectively producing amplified signals on the third and fourth lines in accordance with the logic levels of the signals on the first and second lines, each of the first and second cascode means including a transistor with a source, a gate and a drain, the gates of the transistors in the first and second cascode means receiving a constant bias voltage, the sources of the transistors in the first and second cascode being respectively connected to the first and second lines,

first and second current control means respectively coupled to the third and fourth lines and to the drains of the transistors in the first and second cascode means and biased to produce a flow of current at a low amplitude, the first and second current control means being respectively connected to the drains of the transistors in the first and second cascode means,

first and second common mode means respectively coupled to the first and second lines and respectively coupled to the sources of the transistors in the first and second cascode means in a common mode for providing for a substantially constant flow of current through the first and second common mode means,

the transistors providing at their respective sources an impedance which is reduced by the flow of the substantially constant current through the first and second common mode means.

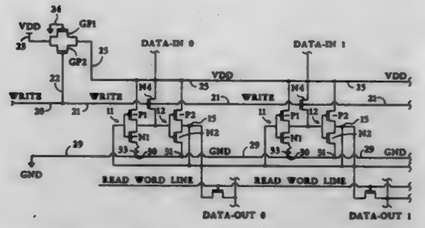
5,298,816

WRITE CIRCUIT FOR CMOS LATCH AND MEMORY SYSTEMS

Cecil H. Kaplinsky, 140 Melville Ave., Palo Alto, Calif. 94301

Filed Mar. 30, 1993, Ser. No. 39,966
Int. Cl.[5] H03K *17/687, 3/01*
U.S. Cl. 307—571 **14 Claims**

1. In an integrated circuit device with plural data storage elements of the type having a first and a second CMOS inverter cross-coupled so that an output of each inverter connects to an input of the other inverter and at least one pass transistor connected between the input of one of said CMOS inverters and a data path, wherein each of said CMOS inverters is coupled to a power supply terminal and to a ground terminal, a write circuit for assisting in the loading of data into said data storage elements comprising



means for restricting current flow from said power supply terminal to said CMOS inverters during a write cycle, while maintaining normal current flow from said CMOS inverters to said ground terminal, and

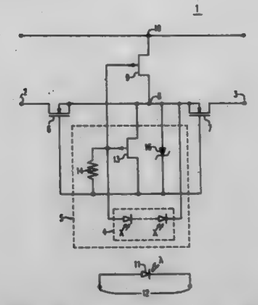
means for restoring normal current flow from said power supply terminal to said CMOS inverters at an end of said write cycle, said normal current flow being substantially larger than said restricted current flow.

5,298,817

HIGH-FREQUENCY SOLID-STATE RELAY

Michael A. Banak, Oak Lawn, Ill., and Andrew P. Sabol, Oley Township, Berks County, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 9, 1993, Ser. No. 15,482
Int. Cl.[5] H03K *17/04*
U.S. Cl. 307—580 **5 Claims**



1. A solid-state relay having first, second, third and fourth terminals and responding to a control signal, CHARACTERIZED BY:

a control circuit, responsive to the control signal;

a first pass transistor, connecting between the first terminal and a first common node and coupling to the control circuit, the conductivity thereof being substantially determined by the control circuit;

a second pass transistor, connecting between the second terminal and the first common node and coupling to the control circuit, the conductivity thereof being substantially determined by the control circuit;

a third pass transistor, connecting between the third terminal and a second common node and coupling to the control circuit, the conductivity thereof being substantially determined by the control circuit;

a fourth pass transistor, connecting between the fourth terminal and the second common node and coupling to the control circuit, the conductivity thereof being substantially determined by the control circuit;

a first shunt transistor, connecting between the first and second common nodes and coupling to the control circuit, the conductivity thereof being substantially determined by the control circuit;

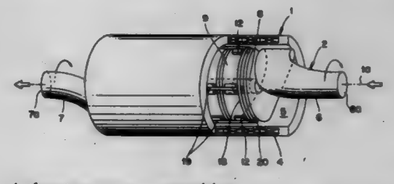
wherein the conductivity of the pass transistors, in response to the control circuit, changes inversely to the conductivity of the first shunt transistor changing in response to the control circuit.

5,298,818

THRUST GENERATOR

Eiichi Tada, 15-2, Komyodai 3-chome, Izumi-shi, Osaka 590-02, Japan

PCT No. PCT/JP91/01250, § 371 Date May 21, 1992, § 102(e) Date May 21, 1992, PCT Pub. No. WO92/05621, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 858,986
Claims priority, application Japan, Sep. 21, 1990, 2-253380
Int. Cl.[5] H02K *44/04*
U.S. Cl. 310—11 **16 Claims**



1. A thrust generator, comprising:

a superconducting solenoid magnet and a power supply device;

a rotatable spiral thrust duct arranged in a hollow interior portion of said superconducting solenoid magnet;

a first electrode fixed in an inner side wall of said thrust duct;

a second electrode arranged in an opposite side wall of said thrust duct;

said thrust duct having an inlet and outlet provided along a central axis of a said superconducting magnet;

said power supply device being connected to a current feeder for supplying current to one of said electrodes; and

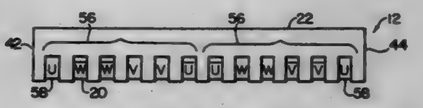
means for rotating said thrust duct by generating a Lorentz's force in said current feeder.

5,298,819

WINDING ARRANGEMENT FOR A TUBULAR LINEAR MOTOR

Masabu Suganuma, Yamato; Keiichi Kohroki, Aichi; Takayuki Mizuno, and Masayukli Kawaguchi, Aichi, all of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 23, 1992, Ser. No. 980,044
Claims priority, application Japan, Nov. 26, 1991, 3-309630
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **7 Claims**



1. A linear motor driven by an electrical current having a number of phases, comprising:

a secondary; and

a primary, having a plurality of coils and thin laminations,

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each lamination having a width with a plurality of notches removed therefrom, a first end and a second end, and a length therebetween, wherein when said laminations are aligned, said notches collectively form channels for receiving said coils;

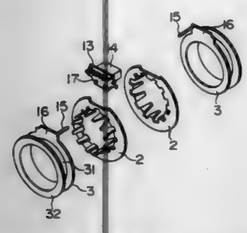
wherein said plurality of coils are arranged in poles, each pole having a discrete number of coils corresponding to the number of phases in the current driving the linear motor, or a multiple thereof, and wherein a percentage of said coils corresponding to the phase closest to said first end, are positioned at said second end of said primary.

5,298,820

MINIATURE MOTOR WITH INTEGRATED STATOR COIL END SUPPORTS

Takanobu Lee; Ikuo Matsushita; Masao Take, and Masahiro Mifune, all of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Nov. 20, 1992, Ser. No. 979,288
Claims priority, application Japan, Nov. 21, 1991, 95300
Int. Cl.[5] H02K *03/46, 15/14, 37/14*
U.S. Cl. 310—40 MM **4 Claims**



1. A miniature motor, comprising:

a rotor having a plurality of axially extending poles disposed on an outer periphery of said rotor in a circumferential direction of said rotor;

a stator having tow axially disposed coils each coil having a winding start and a winding end and two coil bobbins, a first of said axially disposed coils being wound on a first of said coil bobbins and a second of said axially disposed coils being wound on a second of said coil bobbins, each coil bobbin including

a hollow cylindrical coil core having a cylindrical coil core diameter,

an inner flange and an outer flange, each of said inner flange and said outer flange having a diameter which is greater than said cylindrical coil core diameter,

an extended part formed on said inner flange and including a cutaway at a first end of said extended part, said extended part extending radially beyone said diameter of said inner flange,

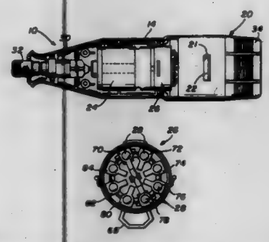
a projection formed on a second end of said extended part, said projection protruding outwardly in an axial direction of said coil core, said projection having an axial length for engaging, in a hooking manner, said winding start and said winding end of one of said coils, each of said first coil bobbin and said second coil bobbin being disposed with said projection directed toward the other of said first coil bobbin and said second coil bobbin with said projection of said first coil bobbin extending above said second coil core of said second coil bobbin, through said cutaway part of said second coil bobbin and with said projection of said second coil bobbin extending above said first coil core of said first coil bobbin, through said cutaway part of said first coil bobbin.

5,298,821

BATTERY-POWERED TOOL

Timothy P. Michel, Naperville, Ill., assignor to S-B Power Tool Company, Chicago, Ill.

Filed Feb. 28, 1991, Ser. No. 662,615
Int. Cl.[5] H02J *7/00*
U.S. Cl. 310—47 **15 Claims**



1. A battery power tool comprising:

a motor having a positive terminal and a negative terminal rigidly extending from one end and a rotatable shaft at the other end;

a first battery set having first and second terminals;

a second battery set having first and second terminals;

said first and second battery terminals being substantially axially aligned with said rigid motor electrical terminals; and

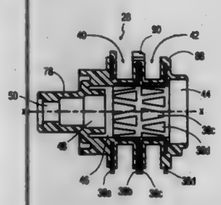
an actuator switch abutting the motor and having arcuate connectors on one side continuously rotatably connected to said rigid motor electrical terminals, said arcuate connectors having a plurality of actuator contacts extending from the other side for selectively contacting said battery terminals to cause said motor to rotate at variable speeds.

5,298,822

STEPPER MOTOR WITH INTEGRATED ASSEMBLY

Edward T. Bosman, Cheshire; Karla C. Pratt, Wolcott; Philip G. Atiyeh, Cheshire, and John F. Rutledge, Plantsville, all of Conn., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 817,034, Dec. 30, 1991. This application Sep. 10, 1992, Ser. No. 943,363
Int. Cl.[5] H02K *37/00*
U.S. Cl. 310—49 R **4 Claims**



1. A stepper motor including a stator having a central axis and at least one winding disposed about the axis for producing a plurality of magnetic poles in the stator, a permanent-magnet rotor having a plurality of magnetic poles and being mounted for rotation about the axis, a housing disposed around the stator, and connector means having externally-accessible terminals electrically connected to the at least one winding, characterized in that:

a. the stator comprises at least one bobbin having first and second sidewalls including respective plates of magnetically-permeable material between which the at least one winding is disposed; and

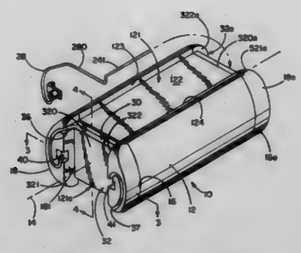
b. the housing comprises magnetically-permeable material and includes a plurality of portions which are deformed into respective regions between the first and second sidewalls of the at least one bobbin to force the housing into contact with the plates and provide a decreased-reluctance magnetic return path for a magnetic field produced by said at least one winding.

5,298,823

MAIN FIELD WINDING AND CONNECTIONS FOR A DYNAMOELECTRIC MACHINE

Tyrone A. Johnsen, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 4, 1992, Ser. No. 940,423
Int. Cl.[5] H02K *11/00, 3/48*
U.S. Cl. 310—71 **17 Claims**



2. A precision wound rotor comprising:

a magnetic core having a longitudinal axis and axially spaced core ends;

a winding end support made of electrically insulating material at one of the core ends; and,

a winding having a plurality of continuously connected turns of wire, with said turns of wire extending around the core and over the winding end support in a generally axial direction, with said turns of wire forming a plurality of end turns extending transverse to the axis across the winding end support and constraining the winding end support against the one of the core ends;

said winding further having at one electrical end thereof an exciter lead portion, whereby the winding may be connected to a source of electrical power;

said exciter lead portion including a crossover section oriented in a direction generally mutually transverse to the axis and to the end turns, with said crossover section being disposed between the end turns and the winding end support, the end turns thereby constraining the crossover section between the end turns and the winding end support.

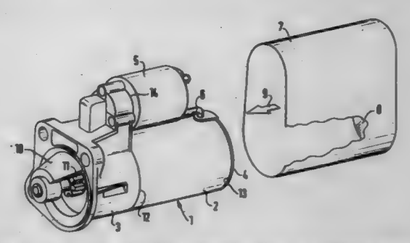
5,298,824

COVERING FOR ELECTRICAL MACHINES

Peter Franz, Diekholzen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP90/00700, § 371 Date Apr. 2, 1992, § 102(e) Date Apr. 2, 1992, PCT Pub. No. WO90/13393, PCT Pub. Date Nov. 15, 1990
PCT Filed Sep. 13, 1990, Ser. No. 852,170
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1989, 3935299
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—89 **12 Claims**

1. An electrical machine, comprising a pole housing with parts attached to said pole housing; and at least one film which is placed around said pole housing and said parts and is firmly



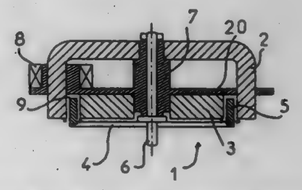
shrunk onto both the pole housing and the parts to form a single protective covering.

5,298,825

SINGLE PHASE ELECTRO-MAGNETIC ACTUATOR WITH LOW OBSTRUCTION

Claude Oudet, Besancon, and Daniel Prudham, Thise, both of France, assignors to Moving Magnet Technologies SA, Besancon, France

PCT No. PCT/FR90/00436, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/16107, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 15, 1990, Ser. No. 651,348
Claims priority, application France, Jun. 16, 1989, 89 08052
Int. Cl.[5] H02K *1/06, 1/27, 21/12*
U.S. Cl. 310—156 **11 Claims**



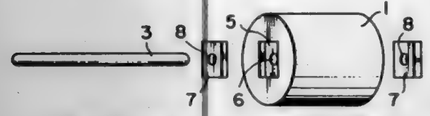
1. A single phase electro-magnetic actuator enclosed in a stator structure and including a rotor arranged inside a brace of said stator structure, said actuator including an initial magnetic circuit which includes 2N poles and at least one excitation coil, and a second magnetic circuit, said magnetic circuits being executed in a material with high magnetic permeability, the rotor displaying a thin magnetized section comprised of 2N pairs of poles which are magnetized across their respective lengths, in staggered direction, the magnetization being substantially uniform and extending along a path Y_A that is measured along the travel path, wherein said initial magnetic circuit is connected to the second magnetic circuit only by non magnetic linkage parts and wherein N is an integer value less than $\pi D/8E$, E being the distance measured between said two magnetic circuits and D being the average diameter of said stator structure.

5,298,826

ROTOR FOR ROTARY ELECTRICAL MACHINERY

Takanobu Lee; Ikuo Matsushita; Masao Take, and Masahiro Mifune, all of Matsudo, Japan, assignors to Mabuchi Motor Co., Ltd., Chiba, Japan

Filed Nov. 20, 1992, Ser. No. 979,286
Claims priority, application Japan, Nov. 21, 1991, 3-095299[U]
Int. Cl.[5] H02K 21/12
U.S. Cl. 310—156 7 Claims



1. A rotor for rotary electrical machinery, comprising:
a permanent-magnet member of a cylindrical shape, said permanent-magnet member being formed of magnetic material powder and a binder resin as primary ingredients, said permanent-magnet member having a central axis and having a recess with a projected contour on a plane of said permanent-magnet member, said plane orthogonally intersecting said central axis of said permanent-magnet member, said recess having an outer contour which is non-circular in shape, said recess being provided on at least one end face of said permanent-magnet member;
a metallic bush with a central hole passing therethrough, said metallic bush having an outer contour corresponding to said outer contour of said recess, said metallic bush being positioned within said recess with a central point of said hole aligned with said central axis of said permanent-magnet member; and
a shaft pressed fitted into said hole of said metallic bush.

5,298,827

PERMANENT MAGNET TYPE DYNAMOELECTRIC MACHINE ROTOR

Takeshi Sugiyama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,523
Claims priority, application Japan, Nov. 26, 1991, 3-337778
Int. Cl.[5] H02K 21/12
U.S. Cl. 310—156 7 Claims



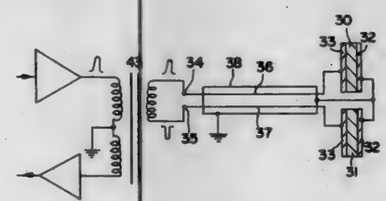
1. A dynamoelectric machine rotor comprising:
a rotary shaft having a central axis;
a magnetic yoke mounted on said rotary shaft for rotation therewith;
a plurality of permanent magnets mounted on said magnetic yoke at a substantially equal radial dimension and substantially equal circumferential intervals with respect to said central axis of said rotary shaft, each of said permanent magnets having magnetic pole faces in a circumferential plane, side surfaces in a plane perpendicular to said central axis of said rotary shaft and a front and a rear skewed surface generally slanted in a direction which does not lie in a plane parallel to said central axis, said magnetic pole faces of said permanent magnets having alternating magnetic polarities in a circumferential direction, and said front and rear skewed surfaces of neighboring permanent magnets of said permanent magnets are substantially in parallel to each other; and
each of said permanent magnets having a trapezoidal cross section, said trapezoidal cross section having a short side and a long side, a length of said shorter side being from 27 to 40 percent of a length of said longer side;
a clamp ring disposed around said magnetic pole faces of said permanent magnets for mechanically maintaining said permanent magnets on said magnetic yoke.

5,298,828

ULTRASONIC ELECTROACOUSTIC TRANSDUCER

George D. Radovanovich, New South Wales, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU90/00489, § 371 Date Jun. 17, 1992, § 102(e) Date Jun. 17, 1992, PCT Pub. No. WO92/08329, PCT Pub. Date May 14, 1992
PCT Filed Oct. 12, 1990, Ser. No. 861,841
Claims priority, application Australia, Nov. 2, 1990, PK3191/90
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—319 4 Claims



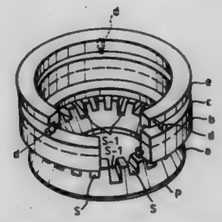
1. An ultrasonic transducer comprising:
(a) at least one pair of transducer elements, said or each pair of transducer elements consisting of a first transducer element and a second transducer element, each transducer element being sandwiched between a respective front electrode and a respective back electrode, said or each first transducer element being polarised positive at its front electrode and negative at its back electrode, said or each second transducer element being polarised negative at its front electrode and positive at its back electrode;
(b) first and second input/output terminals; said first input-/output terminal being connected to the back electrode of said or each first transducer element, said second input-/output terminal being connected to the back electrode of said or each second transducer element; each of said front electrodes being connected to an earth connection point; and
(c) a differential pulse generator having an input, and a pair of outputs and a differential summing device having a pair of inputs and an output, said first input/output terminal being connected to one of the outputs of the differential pulse generator and also to one of the inputs of the differential summing device, said second input/output terminal being connected to the other of the outputs of the differential pulse generator and also to the other of the inputs of the differential summing device;
whereby (i) a voltage pulse applied to the input of the differential pulse generator produces a pair of pulses of opposite polarity at, respectively, the two outputs of the differential pulse generator, each of said pulses of opposite polarity being applied to a respective one of the back electrodes, and (ii) an ultrasound pressure wave incident upon the front electrodes generates a pair of opposite polarity pulses at the back electrodes, each of said pulses at the back electrodes being connected to a respective one of the inputs of the differential summing device, to generate a single pulse at the output of the differential summing device.

5,298,829

VIBRATION WAVE DRIVEN MOTOR

Takayuki Tsukimoto, Kawasaki; Takashi Maeno; Hitoshi Mukohjima, both of Yokohama; Hajime Kanazawa, Tama; Shinichi Koreeda; Ichiro Chiba, both of Kawasaki, and Akio Atsuta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1991, Ser. No. 649,902
Claims priority, application Japan, Feb. 5, 1990, 2-25732
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—323 17 Claims



1. A vibration wave driven motor comprising:
(a) a vibration member having a contact surface, said vibration member generating a travelling vibration wave therein in response to an applied electrical signal;
(b) a contact member having a contact surface which is in contact with the contact surface of said vibration member and arranged to receive the travelling vibration wave from the contact surface of said vibration member, whereby the travelling vibration wave creates relative movement between the vibration member and the contact member;
(c) means for making a contact pressure between the contact surface of said vibration member and the contact surface of said contact member non-uniform; and
(d) means for making the dynamic rigidity of the vibration member non-uniform, said means being provided so as to hamper an unnecessary vibration mode created in the vibration member by said means when the electrical signal is applied to the vibration member.

5,298,830

METHOD OF PREPARING AN IMPREGNATED CATHODE WITH AN ENHANCED THERMIONIC EMISSION FROM A POROUS BILLET AND CATHODE SO PREPARED

Louis E. Branovich, Howell, and Donald W. Eckart, Wall, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1992, Ser. No. 866,773
Int. Cl.[5] H01J 1/14
U.S. Cl. 313—346 R 4 Claims

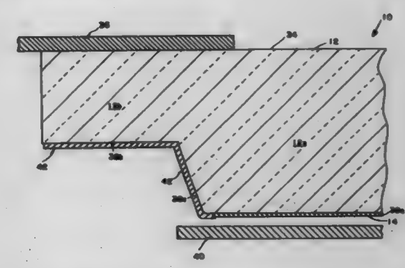
1. A cathode having an enhanced thermionic emission including a porous billet and a sintered mixture of an impregnant with other compounds within such porous billet that react to form an oxygen deficient compound at least as one of their products, wherein the impregnt is $Ba_3Al_2O_6$ and wherein the other compounds within the porous billet that react with the $Ba_3Al_2O_6$ impregnant are Wo_3, Al_2O_3 and $Al_{13}Ba_7$ alloy.

5,298,831

METHOD OF MAKING PHOTOCATHODES FOR IMAGE INTENSIFIER TUBES

Avraham Amith, Roanoke, Va., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 31, 1985, Ser. No. 825,115
Int. Cl.[5] H01J 31/00, 31/26
U.S. Cl. 313—373 6 Claims



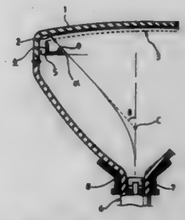
1. A method of making a photoemissive cathode comprising the steps of:
providing a glass faceplate;
forming an electron emissive layer;
bonding the electron emissive layer to the glass faceplate at an elevated temperature and pressure to form a cathode structure; and
cooling the cathode structure at a rate which will maintain stress between the electron emissive layer and the faceplate at a predetermined level, said step including bringing the cathode structure from the elevated bonding temperature to room temperature in a period of time less than twenty minutes.

5,298,832

SHADOW MASK FRAME FOR PREVENTION OF HALATION

Byeong G. Jeong, and Keun B. Lee, both of Kyunggi, Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Oct. 25, 1989, Ser. No. 426,233
Claims priority, application Rep. of Korea, Oct. 25, 1988, 88-13930
Int. Cl.[5] H01J 29/81
U.S. Cl. 313—407 20 Claims



1. A shadow mask frame for prevention of halation in shadow mask type color picture tube having the shadow mask frame supporting a shadow mask to be maintained at a certain gap from a luminescent screen formed on the inner surface of a panel illuminated by electron beams, and having an open portion for limiting the outer boundary of the effective region for the electron beams, comprising:
a bent end portion provided around the periphery of the said open portion of the frame in a predetermined inclination

angle relative to the plane of the frame, the bent end portion being formed toward said panel,

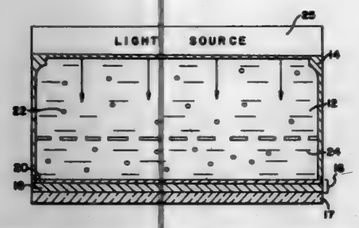
said inclination angle of said bent end portion being approximately the same as, or slightly smaller than, the maximum deflection angle of said electron beam.

5,298,833

BLACK ELECTROPHORETIC PARTICLES FOR AN ELECTROPHORETIC IMAGE DISPLAY

Wei-Hsin Hou, Bethlehem, Pa., assignor to Copytele, Inc., Huntington Station, N.Y.

Filed Jun. 22, 1992, Ser. No. 901,755
Int. Cl.[5] H05B *33/00*
U.S. Cl. 313—483 **15 Claims**



1. In an electrophoretic display, having an electrophoretic dispersion that includes dielectric electrophoretic particles suspended in a liquid medium, an improved electrophoretic particle for said electrophoretic dispersion comprising:

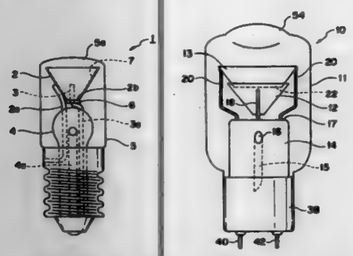
a particle body comprised of a polymer structure wherein said particle body has a density substantially equivalent to said liquid medium, and wherein said particle body is stained to a desired shade of black by a reaction with a metal oxide.

5,298,834

DISPLAY DISCHARGE LAMP

Seiichiro Oda; Satoshi Watanabe; Junichi Ida, and Mitsuhisa Shimada, all of Gyouda, Japan, assignors to Okaya Electric Industrial Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 784,987
Claims priority, application Japan, Oct. 30, 1990, 2-113742[U]; Feb. 8, 1991, 3-058441[U]
Int. Cl.[5] H01J *61/04*
U.S. Cl. 313—622 **5 Claims**



3. A display discharge lamp comprising:

a transparent airtight container filled with a discharge gas;

a negative electrode of an inverted conical configuration disposed in said transparent airtight container, said negative electrode having at least an open upper end;

a positive electrode of an inverted conical configuration disposed in said transparent airtight container, said positive electrode having an open upper end and an open lower end;

a lower end of said positive electrode being disposed in an interior of said negative electrode from said open upper end of said negative electrode; and

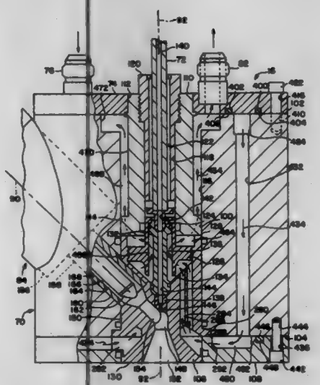
a lower outer periphery of said positive electrode and an upper inner periphery of said negative electrode being separated by a gap.

5,298,835

MODULAR SEGMENTED CATHODE PLASMA GENERATOR

Erich Muehlberger; Stephan E. Meuhlberger, both of San Clemente; Albert Sickinger, Irvine; Don E. Bailey, Moreno Valley, all of Calif.; Masamichi Koga, Kitakyushu, Japan; Koichi Takeda, Kawasaki, Japan, and Tsuyoshi Shinoda, Kitakyushu, Japan, assignors to Electro-Plasma, Inc., Irvine, Calif.

Continuation of Ser. No. 660,167, Feb. 25, 1991, abandoned, which is a continuation of Ser. No. 222,507, Jul. 21, 1988, abandoned. This application Sep. 16, 1992, Ser. No. 946,819
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 **60 Claims**



1. A plasma system comprising the combination of:

a plasma gun positioned in operative relation to a workpiece and providing a supersonic plasma system of substantially inert gas, the plasma gun having a central mixing chamber and a plurality of electrodes of a first polarity surrounding a common electrode of a second polarity opposite the first polarity, each of the plurality of electrodes of a first polarity including an annular chamber extending into the central mixing chamber and means for injecting an inert gas into the annular chamber in a swirling pattern;

an enclosure surrounding the plasma gun and the workpiece; and

means for establishing an ambient pressure of 0.6–0.001 atmospheres within the enclosure.

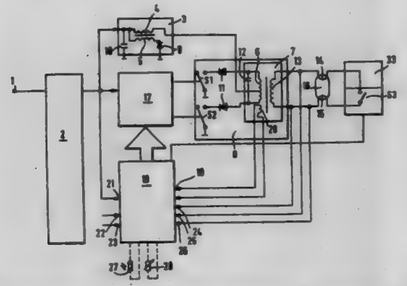
5,298,836

POWER SUPPLY CIRCUIT FOR GAS DISCHARGE LAMPS OPERATING AT A RESONANT FREQUENCY

Peter Backmund, Nuremberg; Gottfried Stockinger, Eckental, and Helmut Losel, Neunkirchen, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Aug. 12, 1992, Ser. No. 928,799
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1991, 4128314
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—219 **13 Claims**

1. A power supply circuit for at least one power consuming lamp which is connected to a power supply, particularly for power consuming lamps such as at least one gas discharge lamp or glow lamp or flashlight lamp, comprising: a pulse width modulator; a push-pull oscillator having electronic switches controlled by said pulse width modulator, and further having a resonant output transformer, having a control winding, a primary winding, and a secondary winding, wherein a resonant capacitor is coupled to said primary winding of the output transformer, and said secondary winding of the resonant output transformer is connected to at least one power consuming lamp; said pulse width modulator having a pulse frequency which is tuned to the resonant frequency of the resonant output transformer of the push-pull oscillator; a control circuit means for monitoring the resonant frequency of the output transformer and responding to a changed resonant



frequency by adjusting the pulse frequency of the pulse width modulator to the changed resonant frequency, said control circuit means monitoring the resonant frequency of the output transformer by monitoring at least one of, (i) deviations from a resonant voltage form through said control winding of the primary circuit of the output transformer, (ii) the input current to the power supply circuit, and (iii) time periods leading to distortions in the sinusoidal oscillations of the resonant frequency; and further wherein an input transformer is connected to the input of said primary winding of the output transformer, said input transformer having a first winding and a second winding, with said first winding of the input transformer being connected in series with said primary winding of the output transformer, and said second winding of the input transformer being connected with a diode and functioning as a free wheeling winding to the supply voltage.

5,298,837

ULTRAVIOLET FLASH DRYER

Bedrich Diestl, Union City, Calif., assignor to Online Energy, Inc., Dublin, Calif.

Filed Sep. 22, 1992, Ser. No. 949,032
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—289 **9 Claims**

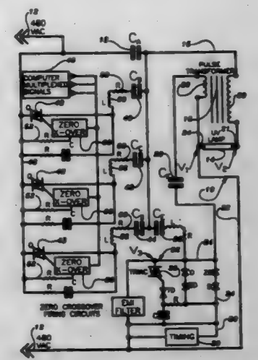
1. A quick start ultraviolet emission unit comprising:

an elongated, electrode-type, mercury-filled, arc lamp having spaced end electrodes;

an electrical power supply means connected to an alternating current power source and to each end electrode of the arc lamp for powering the lamp with an alternating current having a sinusoidal cycle;

pulse generating, circuit means connected to said power supply means for generating a high current, high voltage, electrical pulse added to the alternating current to the lamp during start-up and restart; and

trigger circuit means connected to the pulse generating circuit means for triggering generated high current, high voltage electrical pulses at the peak potential in the sinusoidal cycle of the alternating current from the power supply, wherein the high voltage electrical pulse is of the



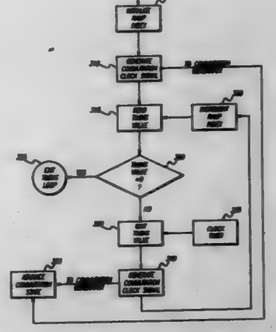
same polarity as the peak potential in the sinusoidal cycle of the alternating current.

5,298,838

SENSORLESS BRUSHLESS DC MOTOR STARTING SYSTEM AND METHOD

David H. Peters, Westminster, and Jeff Harth, Tustin, both of Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Feb. 21, 1991, Ser. No. 659,032
Int. Cl.[5] H02P *5/00*
U.S. Cl. 318—138 **14 Claims**



1. A method of accelerating a sensorless, brushless, DC motor to a desired speed comprising the steps of:

calculating theoretical time intervals of decreasing length between a first predetermined number of successive commutation states of said motor based on a plurality of physical equations of motion for said motor and a magnitude of an applied current;

sequentially supplying to said motor a first set of drive signals corresponding to said first predetermined number of successive commutation states at an increasing rate corresponding to said calculated theoretical time intervals;

maintaining each of said drive signals of said first set of drive signals for a period of time corresponding to said calculated theoretical time intervals;

monitoring an achieved speed of said motor; and

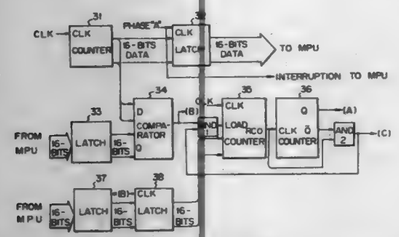
VOL 1160 ISS 5 MR 29 1994 UMI

adjusting said calculated theoretical time intervals to compensate for discrepancies between said achieved speed and said desired speed of said motor.

5,298,839
ELECTRICAL ANGLE CONTROL SYSTEM FOR A BRUSHLESS DC MOTOR IN A MAGNETIC DISK APPARATUS

Kazunori Takeda, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 853,487, Mar. 18, 1992, abandoned. This application Apr. 2, 1993, Ser. No. 41,942
Claims priority, application Japan, Mar. 20, 1991, 3-35425
Int. Cl.[5] H02P *6/02;* **G11B** *5/00*
U.S. Cl. 318—254 **9 Claims**

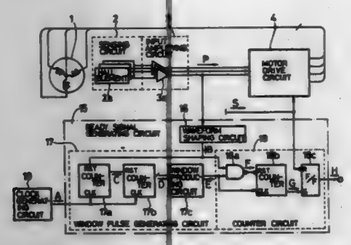


1. A magnetic disc apparatus, comprising:
a spindle motor formed by a brushless DC motor having a relatively high counter electromotive voltage, and rotating a plurality of discs based on a predetermined rotational speed;
an electrical angle control system for controlling an electrical angle of drive current supplied to the spindle motor so as to advance from zero degrees during acceleration at the start of rotation and to return to zero degree during normal rotation;
a voice coil motor for moving a plurality of heads to predetermined position on the disc based on a position signal;
a rotational speed control unit for controlling the rotational speed of the spindle motor; and
a position control unit for generating the position signal to control the position of the head on the disc to the predetermined position through the voice coil motor.

5,298,840
MOTOR CONTROL CIRCUIT AND MOTOR DRIVE SYSTEM USING THE SAME

Motoyasu Yoshino, and Norio Fujii, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 15, 1992, Ser. No. 913,376
Claims priority, application Japan, Jul. 15, 1991, 3-199997
Int. Cl.[5] H02P *5/00*
U.S. Cl. 318—268 **9 Claims**

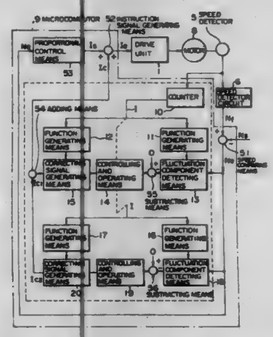


1. A motor circuit which controls a motor so as to rate at a reference rotating speed based on a detection signal dependent upon the rotating speed of the motor and outputs a ready signal representing that the rotating speed of the motor has stabilized within a predetermined allowable range with respect to the reference rotating speed, comprising:
a window pulse generating circuit which generates a window pulse having a width dependent upon a range of the generating period of the detection signal corresponding to the rotating speed in the allowable range; and
a detection circuit which compares the window pulse with the detection signal, detects one of the window pulse and the detection signal when the period of the detection signal falls within a range of the period represented by the window of the window pulse, and outputs said ready signal when the detection continues consecutively a plurality of times.

5,298,841
APPARATUS FOR CONTROLLING THE SPEED OF A MOVING OBJECT

Hiroshi Katayama, Hitachi; Fumio Tajima, Ibaraki; Taizo Miyazaki; Shigeki Morinaga, both of Hitachi; Nobuyoshi Mutoh, Katsuta, all of Japan; Seiichi Narushima, Landsberg am Lech, Fed. Rep. of Germany; Yuji Sato, Mito, Japan; Toshio Nakamoto, Katsuta, Japan; Takashi Takahashi, Katsuta, Japan, and Toshio Osada, Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 687,239
Claims priority, application Japan, Apr. 18, 1990, 2-102460; Sep. 19, 1990, 2-249081
Int. Cl.[5] H02P *5/00*
U.S. Cl. 318—268 **11 Claims**

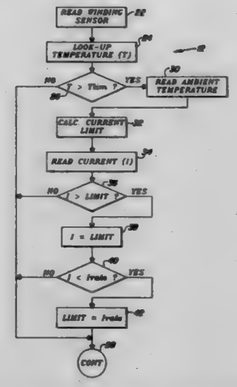


11. An apparatus for controlling the speed of a moving object, comprising a speed detecting means for detecting the speed of the moving object, a speed control means for generating a current instruction or a voltage instruction from a speed instruction signal and a speed detection signal which is obtained from said speed detecting means, and a drive means for varying the speed of the moving object according to the instructions of said speed control means, wherein said speed control means includes:
(a) a step function generating means for generating a step function value;
(b) a fluctuation component detecting means for detecting a speed error fluctuation component by integrating a product of the function value according to said step function generating means and the speed detection signal according to said speed detecting means; and
(c) a correcting signal generating means for generating a speed error correcting signal by multiplying the speed error fluctuation component according to said fluctuation component detecting means by the function value according to said step function generating means.

5,298,842
THERMAL PROTECTION FOR LOCOMOTIVE MAIN TRACTION ALTERNATORS

Laurence D. Vanek, Girard, and Robert G. McGrath, North East, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Apr. 3, 1992, Ser. No. 862,673
Int. Cl.[5] H02K *9/04, 9/24*
U.S. Cl. 318—473 **13 Claims**



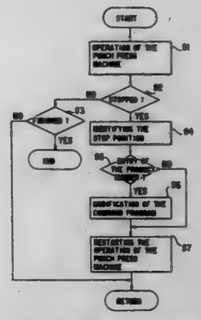
1. A thermal overload protection control method for a locomotive having an alternator, the method comprising the steps of:
(a) providing a sensor temperature;
(b) sensing ambient inlet air temperature to the alternator;
(c) calculating a traction motor current limit to generate a calculated traction motor current limit value, including the steps of,
i. dividing a difference between the stator winding sensor temperature and the alternator ambient air temperature by a calibration factor to generate a first value,
ii. summing the first value and the alternator ambient air temperature to generate a second value,
iii. multiplying the second value and a constant related to a time rate of load reduction to generate a third value, and
iv. substracting the third value from a constant related to a maximum permissible winding temperature to generate a fourth value which is indicative of the calculated traction motor current limit value; and
(d) controlling thermal overload in response to the calculated traction motor current limit value.

5,298,843
METHOD FOR RESTARTING PUNCH PRESS MACHINE AND NUMERICAL CONTROLLER

Keiichiro Miyajima, and Naoki Fujita, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP92/00042, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO92/13302, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 21, 1992, Ser. No. 930,395
Claims priority, application Japan, Jan. 21, 1991, 3-20455
Int. Cl.[5] G05B *19/18, 19/405*
U.S. Cl. 318—567 **8 Claims**

1. A method of restarting an operation of a punch press machine, which is controlled by a numerical controller having a function to repeatedly execute a set of specified machining programs based on different reference points as many times as specified, to thereby perform multiple product machining for machining a plurality of products from a single work, comprising the steps of:
providing the numerical controller with a function of recognizing designation of a product number;
providing the numerical controller with a function of restarting the repeated execution in accordance with the designated product number if the designation of the product number has been recognized upon starting of the execution; and
designating the product number when restarting the operation of the punch press machine.

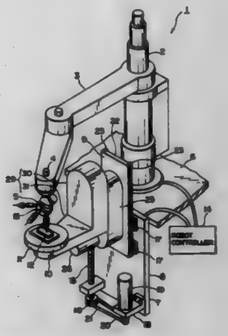


4. A numerical controller for controlling a punch press machine so as to perform multiple product machining wherein a plurality of products are made from a single work, by repeatedly executing a set of specified machining programs based on different reference points as many times as specified, comprising:
means for recognizing designation of a product number; and
means for restarting the repeated execution in accordance with the designated product number if the designation of the product number has been recognized upon starting of the execution.

5,298,844
WORK HOLDING DEVICE

Hideo Nagasaki, Tokyo; Shoichi Hayashi, Chiba; Naruhiko Abe, and Tsuyoshi Inoue, both of Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Filed Feb. 14, 1992, Ser. No. 835,350
Claims priority, application Japan, Feb. 19, 1991, 3-045505
Int. Cl.[5] B25J *19/00*
U.S. Cl. 318—568.11 **3 Claims**



1. A work holding device comprising:
a base plate set in a vertical position;

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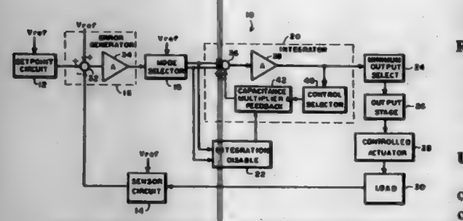
a slide base supported for vertical movement on a front surface of said base plate;
an L-shaped swivel head having a main section extending in parallel to said slide base and an arm section extending horizontally to the front from the main section;
means for selectively rotating said swivel head about an axis which is essentially horizontal and which passes through both of the main section of said L-shaped swivel head and said slide base;
a rotary table supported for rotation on the extremity of the arm section of said swivel head, and
a side base moving means comprising:
a first motor mounted on said base plate,
a screw rod journaled on said base plate,
a first driving toothed pulley fixed to an output shaft of said first motor,
a first driven toothed pulley fixed to one end of said screw rod,
a first timing belt extended between said first driving toothed pulley and the said first driven toothed pulley for establishing a drive connection therebetween, and
a nut fixed to said slide base and threadedly engaged said screw rod;
wherein said swivel head rotating means comprises:
a second motor mounted on said slide base,
a second driving toothed pulley fixed to an output shaft of said second motor,
a second driven toothed pulley fixed to the main section of said L-shaped swivel head coaxially with the axis about which said swivel head is rotatable, and
a second timing belt extended between said second driving toothed pulley and said second driven toothed pulley; and
a table rotating means comprising:
a third motor mounted on said swivel head,
a third driving toothed pulley fixed to an output shaft of said third motor,
a third driven toothed pulley fixed to a shaft of said rotary table, and
a third timing belt extended between said third driving toothed pulley and said third driven toothed pulley.

5,296,845

ANTI-WINDUP PROPORTIONAL PLUS INTEGRAL CONTROLLER

David P. DeBoer, Cedarburg, Wis., and David W. Jiral, Huntington, Ind., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 31, 1991, Ser. No. 785,342
Int. Cl.[5] G05B *11/42*
U.S. Cl. 318—609 **20 Claims**



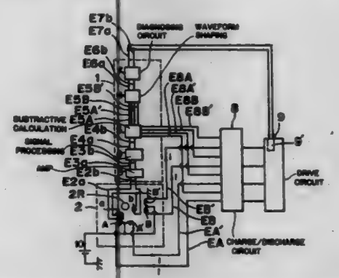
1. A closed loop control system for adjusting the value of a system variable, comprising:
setpoint means for providing a setpoint signal representative of a desired value of the system variable;
sensor means for providing a sensor signal representative of a measured value of the system variable;
error generating means for generating an error signal relating to the difference between said setpoint signal and said sensor signal by a proportionality factor, wherein said error generating means includes proportional control means for varying said proportionality factor;
integrator means for generating a control signal related to the time integral of said error signal;
integration disabling means for causing said integrator means to generate said control signal so that said control signal is proportionally related to said error signal when said error signal exceeds a fixed predetermined level; and
control means responsive to said control signal for adjusting the value of the system variable.

5,298,846

DRIVE UNIT FOR DRIVING A STEPPING MOTOR

Michihiro Shimizu, Takefu, and Yasuhiro Kondo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 15, 1992, Ser. No. 883,475
Claims priority, application Japan, May 16, 1991, 3-111553
Int. Cl.[5] G05B *19/40*
U.S. Cl. 318—685 **11 Claims**



1. A drive unit for driving a stepping motor comprising:
main coil means provided at a stator of the stepping motor;
rotation detecting coil means for detecting terminal voltages of the stepping motor yielded in said main coil means and producing an output;
means for generating voltage waveforms corresponding to the induction components caused by the currents flowing through said main coil means;
subtractive calculation means for subtracting the voltage waveforms from said output of said rotation detecting coil means and for producing an output; and
drive circuit means for driving the stepping motor as a function of the subtractive calculation means output.

5,298,847

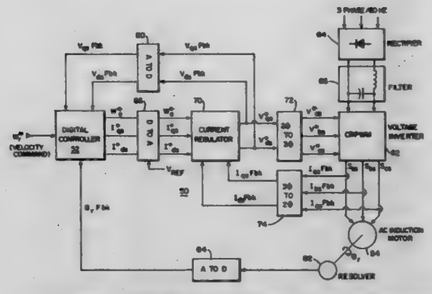
COUNTER EMF DETECTOR FOR USE IN ELECTRIC MOTOR CONTROLLERS

Russel J. Kerkman, Milwaukee County; Brian J. Seibel, Ozaukee County, and Timothy M. Rowan, Milwaukee County, all of Wis., assignors to Allen-Bradley Co., Inc., Milwaukee, Wis.

Filed Apr. 29, 1992, Ser. No. 875,912
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—800 **11 Claims**

1. In an electric motor control system which is subject to control by a current regulator in accordance with a current command vector in the dq frame of reference and in which feedback of the motor stator terminal voltages is used for motor control purposes as an indication of the counter EMF generated within the motor, the improvement comprising:
means for transforming said terminal voltages into V_d and V_q voltage components in the synchronous dq frame of reference;
means for calculating the phase angle of the current command vector in the synchronous dq frame of reference; and

means for operating on said V_d and V_q voltage components to generate a new voltage component V'_d in a new coordinate frame of reference defined by said phase angle, said



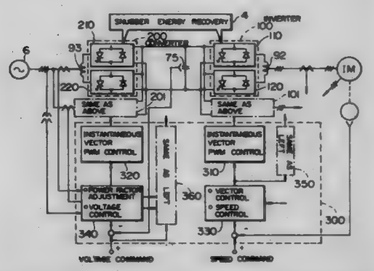
new voltage component corresponding to a torque/slip-related counter EMF which is substantially free from voltage drop elements attributable to stator resistance.

5,298,848

LARGE CAPACITY VARIABLE SPEED PWM SPATIAL VECTOR TYPE SUB-HARMONIC SYSTEM FOR DRIVING AC ELECTRIC MOTOR

Shigeta Ueda; Takashi Ikimi, both of Hitachi; Mitsuyuki Hombu, Katsuta; Noboru Ogawa, Hitachi; Yorito Jifuku, Hitachi, and Kenzo Kamiyama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 797,956
Claims priority, application Japan, Nov. 28, 1990, 2-323155
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—811 **13 Claims**



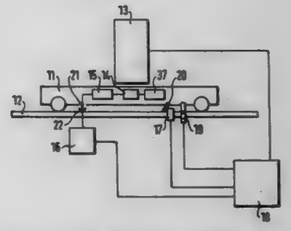
1. A large capacity variable speed driving system for driving an AC motor by an inverter having a capacity of 2000 kVA or more including self-igniting elements for converting DC power into AC power, comprising:
an inverter system including a plurality of unit inverters connected in parallel in a multiplex manner; and
a PWM (pulse width modulation) control device for controlling the output voltage from said inverter system;
wherein said self-igniting elements are GTO thyristors with a switching frequency of 500 Hz or more, and said PWM control device is a spatial vector type sub-harmonic system; and
wherein said spatial vector type sub-harmonic system includes:
means for generating sine-wave three phase instantaneous voltage command signals V_u^*, V_v^* and V_w^*;
means for comparing the magnitudes of the three phase voltage command signals with one another to produce an intermediate value of the three phase voltage command signals;
means for adding a value V_ϕ corresponding to half of the intermediate value, to the three phase instantaneous voltage command signals respectively to produce modulated wave signals V_u^{**}, V_v^{**} and V_w^{**};
means for generating a triangular wave signal e_c at a frequency f_c having a peak value corresponding to $\frac{1}{4}$ of an input DC voltage E_d to said triangular wave signal e_c;
means for generating a second carrier wave e_{c2} by subtracting the signal corresponding to $\frac{1}{4}$ of said input DC voltage E_d from said triangular wave signal e_c;
a first comparator for comparing said modulator wave signals V_u^{**}, V_v^{**} and V_w^{**} with said first carrier wave e_{c1} for each phase to form PWM signals for controlling a first unit converter; and
a second comparator for comparing said modulated wave signals V_u^{**}, V_v^{**} and V_w^{**} with said second carrier wave e_{c2} for each phase to form PWM signals for controlling a second inverter unit.

5,298,849

ARRANGEMENT AND METHOD FOR CHARGING AN ACCUMULATOR OF A TRANSPORTING DEVICE COMPRISING AN INDIVIDUAL ELECTRIC DRIVE

Peter Drexel, Steinenbronn; Rainer Uts; Hans Erne, both of Waiblingen; Stefan Reitmeier, Waiblingen-Hohenacker, and Ulrich Mueller, Korb, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00287, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO91/17599, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 5, 1991, Ser. No. 773,901
Claims priority, application Fed. Rep. of Germany, May 8, 1990, 4014696
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **22 Claims**



1. An arrangement for charging an accumulator of a transporting device having electric drive means and being movable from one station to another in a controlled manner at an external charging station having a machining station, the arrangement comprising
a power coupling for coupling the accumulator in the transport device to a charging means when the transport device is at said external charging station;
external control means for controlling the machining station and the charging, said external control means not being located in the transporting device and including means for detecting occurrence and termination of machining at said machining station;
charge regulating means located in the transporting device and containing a processor, at least one storage unit connected with said processor, means for determining an actual charge of the accumulator, and charging current changing means for changing a charging current passing through the accumulator during charging connected to said processor, wherein said processor is structured to compare an actual charge in the accumulator with at least one charge reference value stored in said at least one storage unit and to act on said charging current changing means so that said charging current changing means

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changes said charging current so that the accumulator receives at least one of the at least one charge reference values stored in said storage unit; and

a signal processing arrangement connected with the power coupling and located in said external charging station, said signal processing arrangement containing a pulse recognition means connected to the power coupling, and to said charge current changing means when the transporting device is in the external charge station, and signal shaping means connected to the pulse recognition means, said pulse recognition means having means for generating a trigger signal in response to a change in said charging current and said signal shaping means having means for receiving said trigger signal, means for producing a reference pulse from each of said trigger signals and means for producing status signals for said external control means indicative of the charge state of the accumulator from said reference pulses.

5,298,850

CHARGE INDICATOR OF BATTERY

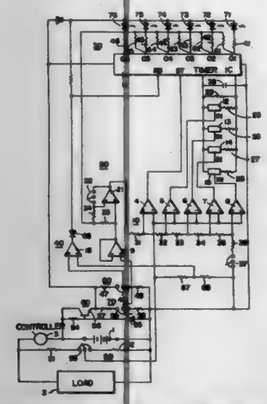
Tomoki Matsui, Kyoto, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Japan

Continuation of Ser. No. 853,065, Mar. 17, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 47,061

Claims priority, application Japan, Mar. 29, 1991, 3-093167

Int. Cl.[5] H02J *7/00*; G01N *27/416*

U.S. Cl. 320—48 **2 Claims**



1. A charge indicator for a battery structured to indicate a residual capacity corresponding to a discharge rate of said battery, comprising:

pulse period setting means for comparing a sensed voltage that corresponds to a terminal voltage of said battery with a voltage that corresponds to a discharge rate of said battery and for outputting a pulse period varying signal;

a pulse period means responsive to said pulse period varying signal that changes a pulse period in discrete levels corresponding to the discharge rate of the battery and outputting an output signal consisting of capacitor discharge pulses with a discharge time that corresponds to said battery discharge rate,

a timer means including a timer IC responsive to said pulses with an output voltage which changes in a stepwise manner corresponding to said residual capacity;

varying means for differentially amplifying the timer output voltage and a corresponding voltage of residual capacity that corresponds to a residual capacity of said battery to change the discharge rate voltage corresponding to said discharge rate of said battery; and

reset means for sending out a reset signal to said timer means to reset said discharge rate voltage to a voltage corresponding to full charge when said sensed voltage exceeds a predetermined value.

5,298,851

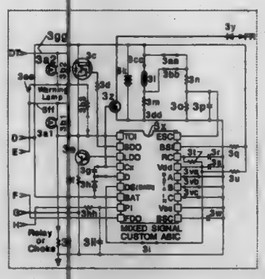
MULTIPLE APPLICATION VOLTAGE REGULATOR SYSTEM AND METHOD

Nicholas F. DeNardis, Marshfield, Wis., assignor to Transpo Electronics, Inc., Orlando, Fla.

Filed May 12, 1992, Ser. No. 881,850

Int. Cl.[5] H02P *9/00*

U.S. Cl. 322—28 **15 Claims**



1. A multiple application voltage regulator system having analog and digital circuit requirements comprising:

a single integrated circuit including:

means for performing both analog and digital circuit functions;

a single voltage comparator for performing any comparator functions required by the voltage regulator system; and

logic gates, a binary counter and plural decoders, the logic gates driven by the binary counter for providing an output waveform to prevent a simultaneous activation of a plurality of the decoders to thereby prevent switching transients.

5,298,852

ARRANGEMENT FOR AND METHOD OF CONTROLLING A THREE-PHASE-GENERATOR IN A VEHICLE

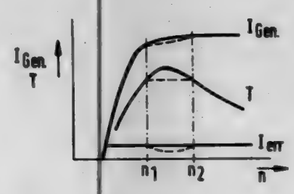
Friedhelm Meyer, Illingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 548,921, Jul. 27, 1990. This application Sep. 8, 1992, Ser. No. 941,967

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843163

Int. Cl.[5] H02J *7/14*; H02P *9/30*

U.S. Cl. 322—29 **1 Claim**



1. A method of regulating a motor vehicle three-phase generator, said three-phase generator having an output voltage and a plurality of generator component parts including an excitation coil through which an excitation current flows during generator operation, said excitation current having a nominal value and said generator being operable in an overexcited range by providing said excitation coil with another value of said excitation current greater than said nominal value, and voltage regulator means connected to said generator to control said output voltage of said generator and being provided with temperature-determining means for determining a generator temperature and with a housing, said method comprising the steps of:

a. determining said generator temperature by said temperature-determining means provided in said voltage regulator means;

b. supporting said housing of said voltage regulator means on one of said generator component parts;

c. reducing said excitation current of said excitation coil of said generator to keep said generator temperature determined in the determining step a) below a predetermined maximum temperature when a generator speed of said generator is between a first generator speed threshold and a second generator speed threshold; and

d. increasing said excitation current of said excitation coil of said generator above said nominal value, when said generator speed exceeds said second predetermined generator speed threshold and is below said first predetermined generator speed threshold.

5,298,853

ELECTRICAL APPARATUS FOR DETECTING RELATIONSHIPS IN THREE PHASE AC NETWORKS

Lubos Ryba, Chodov 14900 CSFR, Bardakova 1566 Praha 4, Czechoslovakia

Filed Dec. 18, 1992, Ser. No. 992,793

Int. Cl.[5] G01R *19/14*

U.S. Cl. 324—86 **12 Claims**

5. Electrical apparatus for detecting relationships in three phase AC networks comprising:

first, second and third voltage terminals;

a first circuit connection between said second voltage terminal and said first voltage terminal including first and third serially connected light emitting diodes;

a second circuit connection between said third voltage terminal and said first voltage terminal including second and fourth serially connected light emitting diodes;

a first transistor including a first circuit connection to said first voltage terminal;

a second circuit connection to said connection between said first and third light emitting diodes and first crosscoupled serial phase shifting means connected between said first transistor and said third voltage terminal;

a second transistor including a first circuit connection to said first voltage terminal;

a second circuit connection to said connection between said second and fourth light emitting diodes and a second crosscoupled serial phase shifting means connected between said second transistor and said second voltage terminal.

5,298,854

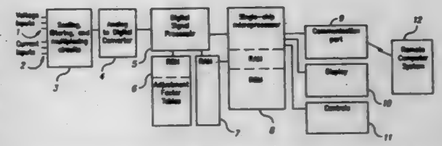
HARMONIC-ADJUSTED WATT-HOUR METER

Alexander McEachern, Oakland, Calif., and William A. Moncrief, Marietta, Ga., assignors to Basic Measuring Instruments, Foster City, Calif.

Division of Ser. No. 840,850, Feb. 25, 1992. This application Oct. 6, 1992, Ser. No. 957,247

Int. Cl.[5] G01R *21/06*

U.S. Cl. 324—142 **7 Claims**



1. A method for measuring electric power consumed by a power consumer, comprising the steps of:

a. measuring time-domain current flowing through the consumer's premises;

b. transforming the time-domain current samples to frequency-domain current;

c. measuring time-domain voltage delivered to the consumer;

d. transforming the time-domain voltage samples to frequency-domain voltage;

e. storing watt adjustment tables;

f. forming a watt signal; and

g. adjusting the watt signal in accord with the stored watt adjustment tables to form an adjusted watt signal having a predetermined relationship to the watt signals.

5,298,855

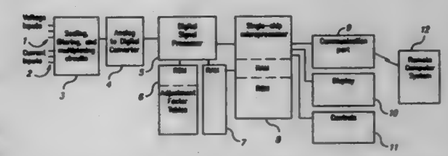
HARMONIC-ADJUSTED POWER FACTOR METER

Alexander McEachern, Oakland, Calif., and W. Mack Grady, Round Rock, Tex., assignors to Basic Measuring Instruments, Foster City, Calif.

Division of Ser. No. 841,392, Feb. 25, 1992, Pat. No. 5,212,441. This application Oct. 6, 1992, Ser. No. 957,356

Int. Cl.[5] G01R *21/06*

U.S. Cl. 324—142 **1 Claim**



1. An instrument for measuring electric power consumed by a power consumer, comprising:

a. first means for measuring time-domain current samples;

b. second means, coupled to receive the time-domain current samples, for transforming the time-domain current samples to frequency-domain current samples;

c. first storage means, coupled to the second means, for storing current adjustment tables;

d. first adjustment means, coupled to receive the frequency-domain current samples and to the first storage means, for adjusting the frequency-domain current samples and for forming an adjusted current having a predetermined relationship to the frequency-domain current samples;

e. third means for measuring time-domain voltage samples;

f. fourth means, coupled to receive the time-domain voltage samples, for transforming the time-domain voltage samples to frequency-domain voltage samples;

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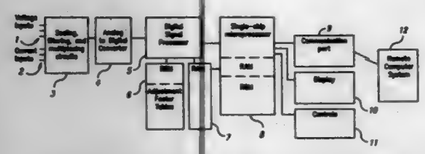
g. second storage means, coupled to the fourth means, for storing voltage adjustment tables;
h. second adjustment means, coupled to receive the frequency-domain voltage samples and to the second storage means, for adjusting the frequency-domain voltage samples for forming an adjusted voltage having a predetermined relationship to the frequency-domain voltage samples; and
i. fifth means for calculating, coupled to receive the adjusted current and the adjusted voltage, for forming an adjusted power factor.

5,298,856

HARMONIC-ADJUSTED POWER FACTOR METER

Alexander McEachern, Oakland, Calif., and W. Mack Grady, Round Rock, Tex., assignors to Basic Measuring Instruments, Foster City, Calif.

Division of Ser. No. 841,392, Feb. 25, 1992, Pat. No. 5,212,441. This application Oct. 6, 1992, Ser. No. 957,274
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 **3 Claims**



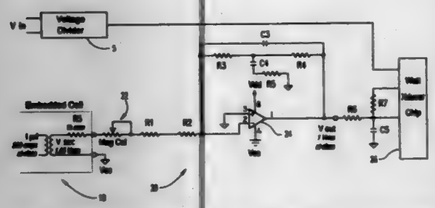
1. A method of measuring electric power consumed by a consumer, comprising the steps of:
a. measuring time-domain watt-hour consumption;
b. measuring time-domain volt-ampere-hour consumption;
c. calculating a frequency-domain power factor including one or more non-fundamental currents comprising a function of a ratio of watt-hours to volt-ampere-hours coupled to receive a data signal from the first means and the second means; and
d. adjusting the power factor in a predetermined manner related to the non-fundamental current.

5,298,857

ELECTRICAL ENERGY METER WITH A PRECISION INTEGRATOR FOR CURRENT MEASUREMENT

John T. Voisine; Christopher L. Anderson, and Robert E. Slaven, all of Lafayette, Ind., assignors to Landis & Gyr Metering, Inc., Lafayette, Ind.

Filed Apr. 6, 1992, Ser. No. 863,855
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 **20 Claims**



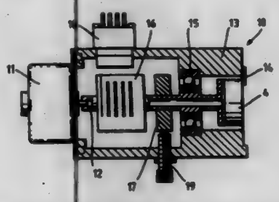
16. A current measurement circuit for an electrical energy meter, comprising:
an inductive current pickup; and
an integrator having an input connected to said inductive current pickup, said integrator including an op amp having inverting and noninverting input terminals and an output terminal;
a purely resistive input impedance connected between said inductive current pickup and said noninverting input of said operational amplifier; and
a bridged-T feedback network between said output and inverting input of said op amp, said bridged-T network having a main integrating capacitor in parallel with a T network having two resistors connected in series and commonly connected to a series resistor-capacitor circuit one end of which is connected to signal ground.

5,298,858

METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF ELECTRICALLY CONDUCTIVE MATERIALS

David J. Harrison, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB90/01082, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO91/01496, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 13, 1990, Ser. No. 828,815
Claims priority, application United Kingdom, Jul. 18, 1989, 8916423
Int. Cl.[5] G01N *27/87, 27/90*; G01R *33/06*
U.S. Cl. 324—235 **12 Claims**



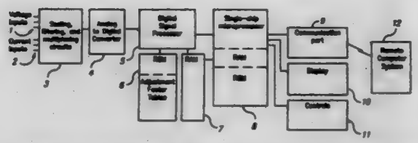
5. Apparatus for non-destructively testing electrically conductive articles for the presence of flaws using eddy currents, the apparatus comprising:
a probe unit locatable on the article under test, said probe unit comprising:
an excitation coil;
a magnetic field detector for detecting incoming field signals, said detector being responsive to low frequency variations of magnetic field; and
rotational drive means for driving the detector along a circular scan path overlying and adjacent to the article under test;
an excitation signal generator for energising the excitation coil with a repetitive square wave excitation signal in synchronism with the motion of the detector along said scan path;
a field signal processor for processing the output of detector, said processor having at least one channel, said at least one channel comprising:
a switching device for gating the incoming field signal from the detector at intervals in synchronism with the excitation signal so as to pass a series of time bands of the field signal, there being one time band for each half-wave portion of the excitation signal; and
an integration circuit for integrating the field signal level within each passed time band of the series;
measurement means for measuring at each of said at least one channel, the integrated signal level for each time band in a respective series; and
means for comparing the integrated signal levels of a series and for indicating variations from a predominant background level.

5,298,859

HARMONIC-ADJUSTED WATT-HOUR METER

Alexander McEachern, Oakland, Calif., and William A. Moncrief, Marietta, Ga., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Feb. 25, 1992, Ser. No. 840,850
Int. Cl.[5] G01R *21/06*
U.S. Cl. 324—142 **5 Claims**



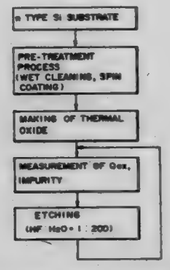
1. An instrument for measuring electric power consumed by a consumer, comprising:
a. means for measuring a voltage and a current signal;
b. means for calculating a watt consumption parameter over a plurality of frequencies, the means for calculating coupled to receive the voltage and current signals; and
c. means for adjusting the watt consumption parameter in a predetermined manner related to a non-fundamental power consumption for forming an adjusted watt signal.

5,298,860

METHOD OF ANALYZING METAL IMPURITIES IN SURFACE OXIDE FILM OF SEMICONDUCTOR SUBSTRATE

Juri Kato, Suwa, Japan, assignor to Seiko Epson Corp., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 796,823
Claims priority, application Japan, Nov. 26, 1990, 2-321763
Int. Cl.[5] G01R *31/26*
U.S. Cl. 324—158 R **6 Claims**



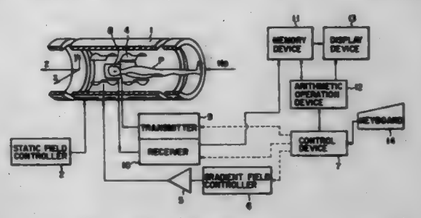
1. A method of analyzing metal impurity in a surface oxide film of a semiconductor substrate, comprising:
(a) applying a d.c. bias voltage V to the semiconductor substrate;
(b) applying LED intermittent light to the surface oxide film in proportion to the width of a semiconductor depletion layer while varying the d.c. bias voltage V applied to the semiconductor substrate;
(c) determining a quantity of oxide charge resulting from a metal impurity of at least one of iron and aluminum existing in the surface oxide film formed on the semiconductor substrate based on a relation between said d.c. bias voltage V applied to the semiconductor substrate and a depletion layer capacitance C determined by detecting a surface photoelectric voltage generated when said LED intermittent light is applied to said surface oxide film; and
(d) using a predetermined correlation between the quantity of oxide charge and a quantity of the metal impurity to determine the quantity of metal impurity of at least one of iron and aluminum in the surface oxide film from the measured quantity of oxide charge in the surface oxide film.

5,298,861

MAGNETIC RESONANCE IMAGING APPARATUS

Hiroshi Sugimoto, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1992, Ser. No. 981,613
Claims priority, application Japan, Nov. 28, 1991, 3-314549
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—306 **15 Claims**



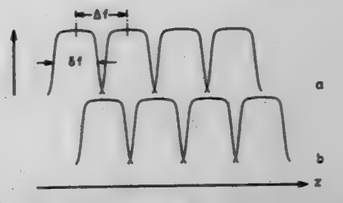
1. A magnetic resonance imaging apparatus comprising:
selective exciting means for selectively exciting at least two side regions, which are located in the vicinity of a region to be imaged including fluids in an object to be examined, and which also include the fluids, with two phases in a rotating coordinate system by using a radio-frequency (RF) pulse;
signal acquiring means for acquiring magnetic resonance (MR) signals from the region to be imaged after the selective excitation performed by said selective exciting means; and
phase detecting means for detecting phases of the acquired MR signals for each of said two phases.

5,298,862

METHOD FOR MUCLEAR MAGNETIC RESONANCE (NMR) TOMOGRAPHY

Jürgen Hennig, Johann-von-Weerth-Strasse 12, D-7800 Freiburg, Fed. Rep. of Germany

Filed Nov. 10, 1992, Ser. No. 974,395
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137217
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **16 Claims**



1. In an improved method for the measurement of nuclear spin resonance in selected regions of a body for the purpose of generating neighboring image slices through the body according to the slice-selective two-dimensional-Fourier transform method, the method consisting of a sequence of phase encoding steps in which, in one phase encoding step, the body is exposed to a homogeneous magnetic field, a selection gradient is applied, and an excitation slice through the body is generated with an RF excitation pulse, and subsequently a phase encod-

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ing gradient and a read gradient are applied, the selection gradient, the phase encoding gradient, and the read gradient being arranged orthogonally to another, so that at least one nuclear resonance echo signal is produced, the RF-excitation pulse having a high frequency excitation profile with a central frequency and a frequency band width δf and the excitation profile of the RF pulse is so chosen that, in combination with the selection gradient, the echo signals from different excitation slices are sequentially generated, for constant phase encoding gradient, with a central frequency difference between RF-excitation pulses generating neighboring excitation slices of $\Delta f \geqq \delta f$ and, subsequently, further phase encoding steps are executed with step wise change of the phase encoding gradient, the improvement comprising the steps of:

choosing at least two high-frequency excitation profiles whose central frequencies differ from each other by a frequency increment which is less than Δf;

selecting at least two phase encoding gradient steps; and

assigning the two phase encoding steps to the two high frequency excitation profiles to generate phase encoding steps of one common image slice.

5,298,863

MAGNETIC RESONANCE IMAGING APPARATUS HAVING A RESONANT CIRCUIT FOR GENERATING GRADIENT FIELDS, AND METHOD FOR OPERATING SAME

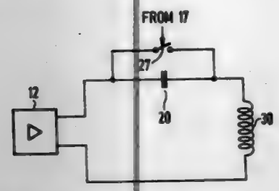
Stefan Nowak; Franz Schmitt, both of Erlangen, and Hubertus Fischer, Bamberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 3, 1990, Ser. No. 621,040

Claims priority, application European Pat. Off., Dec. 1, 1989, 89122188.9

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **18 Claims**



1. In a magnetic resonance imaging apparatus operated by a pulse sequence which drives a gradient amplifier, said pulse sequence including a read-out sequence wherein relatively-perpendicular read-out and phase coding gradients are generated by respective gradient coils connected to said gradient amplifier for location coding per scan following an RF excitation of an examination subject, wherein signals read-out during said read-out sequence are digitized and written in K-space in a raw data matrix, and wherein an image of said examination subject is obtained by at least two-dimensional Fourier transformation of the data in said raw data matrix, the improvement comprising:

at least one of said gradient coils being connected in series with a capacitor to form a series resonant circuit which is connected to said gradient amplifier, said gradient coil and said capacitor constituting series resonant circuit components;

interrupting and charging means for interrupting said series resonant circuit before the beginning of said read-out sequence and for charging one of said series resonant circuit components; and

means for generating a pre-phasing gradient pulse in the direction of said read-out gradient before signals are read-out, said pre-phasing pulse having dimensions so that a maximum of said signals read out during said read-out sequence come to lie in the middle of the K-space in said raw data matrix.

5,298,864

NUCLEAR MAGNETIC RESONANCE SPECTROMETER AND METHOD FOR MEASURING THE NUCLEAR MAGNETIC RESONANCE

Detlef Müller, Malsch, Fed. Rep. of Germany; Jean-Pierre Coutures, Orleans Cedex, France; Francis Taulelle, Bourg-la-Reine, France, and Dominique Massiot, Orléans, France, assignors to Bruker Analytische MeBtechnik GmbH, Fed. Rep. of Germany

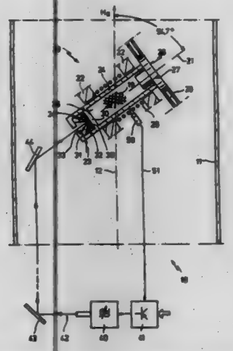
PCT No. PCT/DE90/00588, § 371 Date Mar. 6, 1992, § 102(e) Date Mar. 6, 1992, PCT Pub. No. WO91/18300, PCT Pub. Date Nov. 28, 1991

PCT Filed Aug. 1, 1990, Ser. No. 836,006

Claims priority, application France, Mar. 15, 1990, 90 06217

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—321 **21 Claims**



1. A nuclear magnetic resonance spectrometer, comprising:

sample head means having a first axis arranged parallel to a constant magnetic field and including a sample holder means;

rotor means for receiving a sample under investigation, said rotor means being arranged within said sample holder means and being rotatable about a second axis inclined at an acute angle with respect to said first axis, said rotor means having a surface forming a cavity having only one access opening;

laser means for emitting a laser beam of controlled intensity;

means for directing said laser beam through said access opening and onto said surface of said rotor means for heating up said rotor means; and

control means connected to said laser means for setting said laser beam intensity.

5,298,865

CONNECTING CIRCUIT FOR CONNECTING A LAMBDA PROBE TO A CONTROL APPARATUS OF AN INTERNAL COMBUSTION ENGINE AND TEST METHOD FOR SAID CIRCUIT

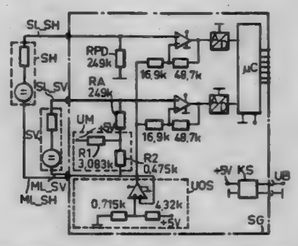
Helmut Denz, Stuttgart; Werner Mezger, Eberstadt; Johannes-Dieter Wichterich, Hemmingen; Ernst Wild, Oberriexingen; Joachim Heimes, Eberdingen; Eugen Joos, Freiberg; Lothar Raff, Remseck, and Eberhard Schnaibel, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 24, 1992, Ser. No. 872,810

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113316

Int. Cl.[5] G01R *31/02*; F01N *3/00*; F02M *7/00*

U.S. Cl. 324—509 **6 Claims**



1. A connecting circuit for connecting a lambda probe to a control apparatus having a control apparatus ground line, the lambda probe having a lambda probe signal line for transmitting a signal of the probe and a lambda probe ground line, the connecting circuit comprising: offset-voltage source means connected to said control apparatus ground line and said lambda probe ground line for raising the potential of said lambda probe ground line to a predetermined value relative to said control apparatus ground line.

5,298,866

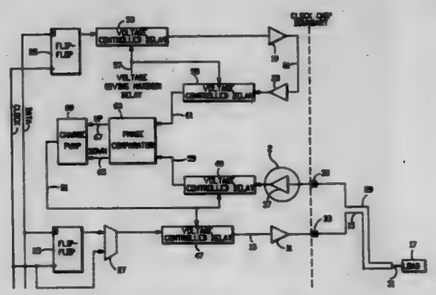
CLOCK DISTRIBUTION CIRCUIT WITH ACTIVE DE-SKEWING

Cecil H. Kaplinsky, 140 Melville Ave., Palo Alto, Calif. 94301

Filed Jun. 4, 1992, Ser. No. 893,450

Int. Cl.[5] G01R *25/04*

U.S. Cl. 328—155 **10 Claims**



1. A clock distribution circuit comprising

a plurality of output drivers connected to receive a clock signal and to distribute said clock signal on a plurality of outward signal paths to a plurality of clock recipients,

comparison means, connected to receive a return signal on a plurality of inward return paths from said plurality of clock recipients and also connected to receive a reference signal, for comparing the phase of said return signal on each of said return paths with the phase of said reference signal, said inward return paths being parallel to and substantially equal in length to corresponding outward signal paths, and

delay means, including a plurality of controllable delay elements located on both said outward signal paths and said inward return paths, for adjusting signal delays on said paths in response to a result of said comparing by said comparison means until the phase of said return signal on each inward return path is substantially equal to the phase of said reference signal, said signal delay on each outward signal path being equal to said signal delay on the corresponding inward return path, whereby said clock signal arrives at said plurality of clock recipients with substantially equal phase,

wherein said comparison means includes a single phase comparator and a single charge pump shared in common with a multiple output drivers, said phase comparator having a pair of inputs connected to receive said return signal and said reference signal, respectively, and having a pair of outputs connected to a corresponding pair of inputs of said charge pump, said comparator providing a pair of digital signals on said pair of outputs representative of whether said return signal leads, lags or is in sync with said reference signal, said charge pump either increasing or decreasing a control voltage on an output thereof in response to said digital signals,

said comparison means further including a multiplexer with an output connected to an input of said single common phase comparator, with multiple inputs connected to multiple return paths associated with said multiple output drivers and responsive to a selection control signal to select one of said multiple inputs for coupling to said output, and

said delay means including voltage storage means corresponding to each input driver for receiving and storing a control voltage from said charge pump, said voltage storage means for a particular output driver being active only when the selected input to said multiplexer corresponds to that output driver.

5,298,867

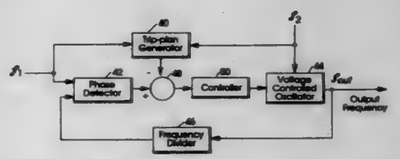
PHASE-LOCKED LOOP WITH CONTROLLED PHASE SLIPPAGE

Lingappa K. Mestha, Cedar Hill, Tex., assignor to Universities Research Association, Inc., Washington, D.C.

Filed Dec. 13, 1991, Ser. No. 807,144

Int. Cl.[5] H03K *7/00*

U.S. Cl. 328—233 **21 Claims**



1. A system for achieving synchronism between a first and second parameter where said second parameter changes with time, said system comprising:

a generator for generating and controlling said second changing parameter;

a detector for detecting a representation of said second changing parameter with a corresponding representation of said first parameter at sample times to produce an actual error therebetween;

a trip-plan generator for use in achieving said synchronism, said trip-plan generator providing a reference error at each said sample time;

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a comparator for comparing the actual error with the reference error; and

means responsive to an output of the comparator for controlling the generator for producing a corrected said second parameter.

5,298,868

GAIN CONTROL AMPLIFIER

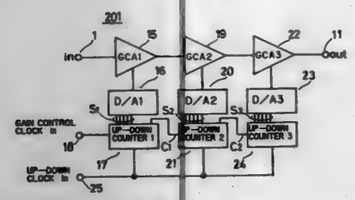
Yoshiaki Nagano, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 956,983

Claims priority, application Japan, Mar. 30, 1992, 4-073716

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—129 **11 Claims**



1. A gain control amplifier, comprising:

an input terminal;

an output terminal;

first to N-th amplifiers each having an input terminal, an output terminal, and a control terminal, where, N is an integer satisfying N≧2; and

control means which provides said control terminals of said first to said N-th amplifiers with a potential which causes one of said first to said N-th amplifiers to vary its gain only when the gains of the other amplifiers are at a maximum or at a minimum,

wherein

said first to said N-th amplifiers are connected in series between said input terminal and said output terminal; and

the gains of said first to said N-th amplifiers are determined by a potential received at said control terminals of said first to said N-th amplifiers.

5,298,869

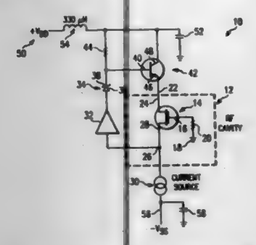
CONSTANT CURRENT AND CONSTANT VOLTAGE REGULATING CIRCUIT FOR COMMON-GATE OR COMMON-BASE TRANSISTOR DEVICES

Leon Jiaich, Plano; Truong V. Nguyen, and R. Daniel Balusek, both of Garland, all of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Oct. 22, 1992, Ser. No. 964,725

Int. Cl.[5] H03F *3/62*

U.S. Cl. 330—286 **8 Claims**



3. A method for maintaining a constant voltage across and constant current through a regulated transistor device, comprising the steps of:

generating a voltage across and current through said transistor device comprising a common-gate transistor;

maintaining a constant current flowing through said transistor device by operating current control means as a current source or sink as necessary to maintain a constant current flow through said transistor device;

maintaining a constant voltage across said transistor device using constant voltage regulation means comprising a zener reference diode and a voltage regulation transistor for responding to voltage difference changes across said transistor device; and

automatically maintaining a constant current passing through and constant voltage difference across said transistor device by associating said current control means with said constant voltage regulation means.

5,298,870

VOLTAGE CONTROLLED RING OSCILLATOR HAVING DIFFERENTIAL AMPLIFIER STAGES

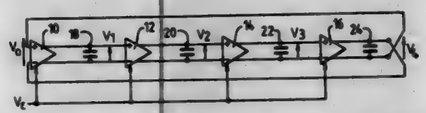
Christopher Cytera, Grenoble, France, and Andrew M. Hall, Bristol, United Kingdom, assignors to Inmos Limited, Bristol, England

Filed Jul. 6, 1992, Ser. No. 908,989

Claims priority, application United Kingdom, Jul. 18, 1991, 9115585

Int. Cl.[5] H03B *5/02, 27/00*

U.S. Cl. 331—45 **30 Claims**



1. A controllable oscillator comprising at least three differential amplification stages, each amplification stage having first and second input terminals and first and second output terminals, the first and second input terminals of each stage being connected to the first and second output terminals of a preceding one of the amplification stages to receive a difference signal therefrom, whereby the amplification stages are connected in a loop, each stage being arranged to introduce a predetermined phase shift between said input and output difference signals, the phase shift of each amplification stage at a preset frequency and the number of amplification stages being selected so that the loop introduces a total phase shift of 360°, the preset frequency being controllable in response to a control signal applied to each amplification stage, wherein each amplification stage comprises first and second n-channel transistors, each having a gate connected to receive a respective one of the output signals from the previous amplification stage and the sources of which are connected together and to a controllable current source and the drains of which are connected via respective load elements to a supply voltage, each load element comprising an n-channel transistor having its gate and drain connected to the supply voltage and its p-well connected to its source, the output signal from each stage being taken across the sources of the n-channel transistors.

5,298,871

PULSE WIDTH MODULATION SIGNAL GENERATING CIRCUIT

Kazunari Shimohara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 996,900

Claims priority, application Japan, Dec. 25, 1991, 3-343410

Int. Cl.[5] H03K *7/08;* **H02P** *6/02*

U.S. Cl. 332—109 **3 Claims**

1. A microcomputer having a signal generating circuit provided on a semiconductor substrate for generating pulse width modulation signals defined by a carrier wave, for the purpose

of controlling a unit to be controlled in accordance with the pulse width modulation signals, said signal generating circuit comprising:

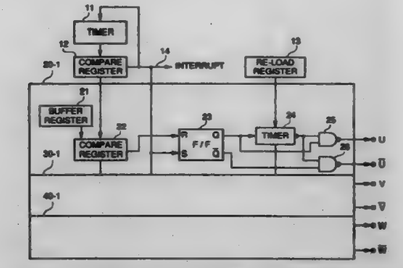
a carrier wave defining timer for outputting a value that varies the same as a waveform providing said carrier wave;

a control register for controlling a period of said carrier wave defining timer;

a reload register for holding a counting value;

control blocks each for generating said pulse width modulation signals on the basis of a value of said carrier wave defining timer and said count value held in said reload register;

each of said control blocks comprising;



a compare register for ceaselessly comparing the value of said carrier wave defining timer with a comparison value, and outputting a coincidence detecting signal in case of detecting a coincidence between a value of said carrier wave defining timer and said comparison value;

a logical circuit set and reset according to said coincidence detecting signal;

a transfer register for transferring said comparison value to said compare register at a predetermined timing;

a one-shot timer set with said count value held in said reload register in synchronism with said set-reset of said logical circuit;

means for generating said pulse width modulation signal according to an output signal of said one-shot timer and an output signal of said logical circuit.

5,298,872

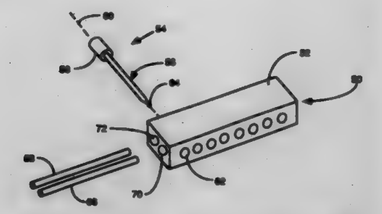
LOW PROFILE HEATER AND SUPPORT ASSEMBLY FOR YIG SPHERES

David Trump, 2939 Agate Dr., Santa Clara, Calif. 95051, and John Dunseth, 44951 Gardenia Way, Fremont, Calif. 94538

Filed Feb. 16, 1993, Ser. No. 17,824

Int. Cl.[5] H01P *1/218;* **H05B** *3/06*

U.S. Cl. 333—202 **12 Claims**



1. A heater structure for a YIG device, comprising:

one or more YIG spheres;

one or more nonferrous support rods having said YIG spheres affixed to the ends thereof;

a heater block having formed thereon one or more guides for said one or more support rods including means for heating said heater block

an elastic member formed of rubber arranged on said heater block; so as to bias said one or more support rods against their guides so as to insure that all said support rods are thermally coupled to said heater block with substantially the same heat transfer efficiency.

5,298,873

ADJUSTABLE RESONATOR ARRANGEMENT

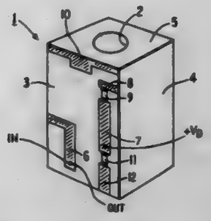
Jouni Ala-Kojola, Oulu, Finland, assignor to Lk-Products Oy, Kempele, Finland

Filed Jun. 25, 1992, Ser. No. 906,217

Claims priority, application Finland, Jun. 25, 1991, 913088

Int. Cl.[5] H01P *7/00*

U.S. Cl. 333—235 **29 Claims**



1. An adjustable resonator arrangement comprising:

a primary resonator operating at a primary resonant frequency,

a secondary resonator capable of operating in one of two selectable resonant frequency states, said secondary resonator being disposed within an electromagnetic field of said primary resonator thus providing signal coupling therebetween wherein

said secondary resonator first of said two selectable resonant frequency states is a resonant frequency sufficiently different from said primary resonant frequency of said primary resonator such that no effect is realized upon said primary resonator operating resonant frequency,

and wherein said second of said two selectable frequency states is a frequency significantly and sufficiently nearer to said primary operating resonant frequency than said secondary resonator first resonant frequency to cause a change in said primary resonator frequency when said secondary resonator is operated at said second selectable resonant frequency state.

5,298,874

RANGE OF MOLDED CASE LOW VOLTAGE CIRCUIT BREAKERS

Robert Morel, Herbeys; Jean-Pierre Nebon, St. Martin le Vinoux; Jean-Pierre Nereau, Seyssinet Pariset, and Philippe Perrier, Le Touvet, all of France, assignors to Merlin Gerin, France

Filed Sep. 28, 1992, Ser. No. 952,256

Claims priority, application France, Oct. 15, 1991, 91 12792

Int. Cl.[5] H01H *75/00*

U.S. Cl. 335—8 **10 Claims**

1. A modular low voltage multipole circuit breaker, comprising:

a plurality of identical single-pole breaking units each comprising a parallelipipedic insulating box having two opposite parallel large side faces and two opposite parallel small side faces, two terminals located at respective opposite parallel small side faces, at least one stationary contact electrically connected to at least one of said terminals, a movable contact cooperable between a first position con-

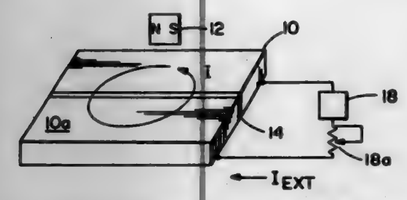
VOL 1160 ISS 5 MR 29 1994 UMI

tacting said stationary contact and a second position separated from said stationary contact;
a molded case for housing said single-pole breaking units, said molded case having two opposite parallel side walls having the same thickness, said single-pole breaking units being sequentially arranged and parallel to each other and parallel to said side walls such that adjacent single-pole



breaking units are spaced apart a distance equal to twice said thickness of said side walls, said single-pole breaking units being spaced apart at a constant pitch; and
a single operating mechanism associated with said multipole circuit breaker common to all and usable on any of said single-pole breaking units for simultaneously operating all single-pole breaking units.

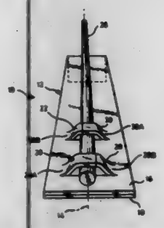
5,298,875
CONTROLLABLE LEVITATION DEVICE
Robert B. Laibowitz, Peekskill, and Gordon J. Lasher, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1991, Ser. No. 703,985
Int. Cl.[5] H01F 7/22
U.S. Cl. 335—216 **26 Claims**



1. Apparatus for levitating a magnetic body, the apparatus including a structure comprised of a material that is superconductive below a critical temperature, the structure including at least one Josephson junction device means for receiving a controlled current flow to establish an amount of magnetic flux penetration into said structure, wherein at a first current flow magnetic flux generated by a magnetic body is excluded from the structure and the magnetic body is levitated above a surface of the structure, and wherein at a second current flow the magnetic flux penetrates the structure such that the levitating magnetic body approaches the surface of the structure.

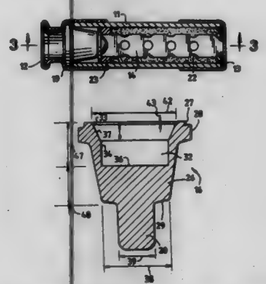
5,298,876
BI-METALLIC SWITCH ELEMENT
Joseph S. Kulik, Allenstown, N.H.; Robert J. Vincent, No. Scituate, R.I., and Simone P. Bazin, Bedford, N.H., assignors to GTE Products Corporation, Danvers, Mass.
Filed Apr. 30, 1993, Ser. No. 56,006
Int. Cl.[5] H01H 61/00, 37/52
U.S. Cl. 337—27 **2 Claims**

1. A bimetallic switch element comprising: an elongated bimetallic member having a longitudinal axis and comprised of a relatively high expansion material and a relatively low expansion material in operative, intimate contact with one another; two spaced apart tunnels formed in a first end of said member and projecting upwardly from said high expansion material, said tunnels being transverse to said longitudinal axis; an elongated, electrically conductive contact wire having one end thereof positioned in said tunnels and another end of said



contact wire projecting beyond a second end of said elongated bimetallic element; each of said tunnels being crimped to said wire, each of said tunnels thereby being separated into two tabs, said tabs being asymmetric with respect to said centerline, and the tabs of the first of said tunnels being asymmetric with respect to the tabs of the second of said tunnels.

5,298,877
FUSS LINK AND DUAL ELEMENT FUSE
Leon Gurevich, Grover, and Edward Haworth, Chesterfield, both of Mo., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Feb. 19, 1993, Ser. No. 20,101
Int. Cl.[5] H01H 85/04
U.S. Cl. 337—164 **15 Claims**

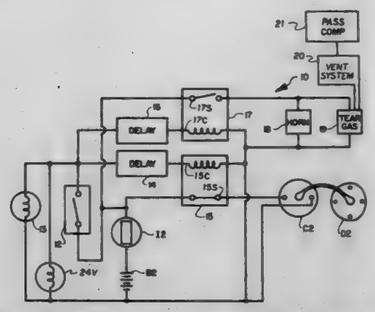


1. A one-piece alloy overload fuse link comprising a body having an opening at one end and a fuse link connector extending from the other end of said body, a bore formed in said body, said bore having an open end a closed end, said body opening forming the bore open end bore formed in said body wherein when there is an overload current said fuse link connector separates from said fuse link body.

5,298,878
ANTI-CAR JACKING DEVICE
Lorenzo L. Smith, 1309 D. St., Woodbridge, Va. 22191
Filed Nov. 2, 1992, Ser. No. 970,138
Int. Cl.[5] B60R 25/10
U.S. Cl. 340—426 **1 Claim**

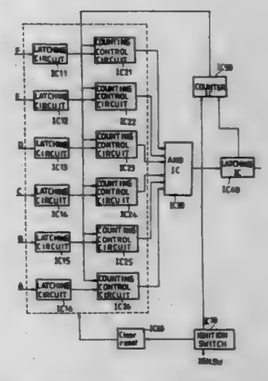
1. A vehicle anti-theft device for use in a vehicle having an ignition switch for supplying positive voltage from an output of the ignition switch to an ignition coil, said vehicle anti-theft device comprising:

a manual switch having a first end and a second end, said first end being wired to the output of the ignition switch, said manual switch providing a connection to said second end thereof when said manual switch is closed;
a visual indicator for indicating that the vehicle associated therewith is stolen, said visual indicator having a connection to said second end of said manual switch to supply power thereto;
a first relay having a first relay coil and a first relay switch, said first relay coil opening said first relay switch when said first relay coil is energized, said first relay switch having a first connection thereof to the output of the ignition switch and a second connection thereof to the input of the ignition coil;
a first delay circuit having an input thereof connected to said second end of said manual switch for providing at an output thereof any voltage located at said input thereof after a first predetermined period of time has elapsed since a voltage is initially detected at said input thereof, wherein said first relay coil is energized when power is supplied thereto by a voltage level at an input thereof connected to said output of said first delay circuit;
whereby said first relay coil is energized after said first predetermined period of time has elapsed since said manual switch is initially closed with the ignition switch on, thereby opening said first relay switch and disabling the ignition coil of the vehicle for as long as said first relay coil remains energized;



a second relay having a second relay coil and a second relay switch, said second relay coil closing said second relay switch when said second relay coil is energized, said second relay switch having a first connection thereof to the output of the ignition switch to supply voltage to a second connection of said second relay switch when the ignition switch is on and said second relay switch is closed;
a second delay circuit having an input thereof connected to said second end of said manual switch for providing at an output thereof any voltage located at said input thereof after a second predetermined period of time has elapsed since a voltage is initially detected at said input thereof, wherein said second relay coil is energized when power is supplied thereto by a voltage level at an input thereof connected to said output of said second delay circuit;
a horn connected to said relay connection of said relay switch;
whereby said second relay coil is energized after said second predetermined amount of time has elapsed subsequent to said manual switch being initially closed, thereby closing said second relay switch and activating said horn for as long as said second relay coil remains energized; and
means for dispensing tear gas, wherein said means for dispensing tear gas is connected to said second connection of said second relay switch for supplying power thereto and activating said means for dispensing tear gas, whereby said means for dispensing tear gas sprays tear gas through a ventilation system of the vehicle to the passenger compartment of the vehicle when activated.

5,298,879
VEHICLE ALARM SYSTEM HAVING A CODED VISUAL RESPONSE
Shih-Ming Hwang, No. 11, Alley 12, Lane 7, Ching-Tyan St., Taipei, Taiwan
Filed Dec. 1, 1992, Ser. No. 983,742
Int. Cl.[5] B60Q 3/00
U.S. Cl. 340—438 **1 Claim**



1. A alarm system for coupling to a vehicle, comprising:
a counter circuit for providing (1) a predetermined sequence of output signals on each of a plurality of outputs, and (2) a timing cycle;
a plurality of input latch circuits, each of said plurality of input latch circuits coupled to a respective one of a plurality of sensors disposed in disparate locations on said vehicle, each one of said plurality of input latch circuits providing an output responsive to being triggered by said respective one of said plurality of sensors detecting a predetermined change in a condition being monitored thereby;
a plurality of counting control circuits, each of said counting control circuits having (1) a first input coupled to a respective one of said plurality of input latch circuits, and (2) at least one second input coupled to a particular one of said plurality of outputs of said counter circuit for selecting a particular count sequence to encode the triggered output from said plurality of input latch circuits;
an AND circuit having a respective input coupled to an output of each of said plurality of counting control circuits;
an output latch circuit having a first input coupled to an output of said AND circuit for receiving said particular count sequence from said triggered one of said plurality of said input latch circuits, said output latch circuit having a second input coupled to a particular one of said plurality of outputs of said counter circuit for providing a timing pulse thereto, said output latch circuit having an output coupled to a visual indicator for repeatedly flashing said indicator a predetermined number of times responsive to said triggered one of said plurality of input latch circuits; and,
means for resetting both said counter circuit and said input latch circuits coupled to an ignition switch of said vehicle.

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5,298,880

ELECTRONIC CONTROL DEVICE

Josef Wischermann, Dreimuehlenstrasse 38, 8000 Muenchen 5, Fed. Rep. of Germany, assignor to Michel Blanchard and Josef Wischermann, both of Munich, Fed. Rep. of Germany, a part interest

Filed May 5, 1992, Ser. No. 878,501

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1991, 9107128[U]

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—439 **4 Claims**



1. An electronic control and acoustic warning device capable of responding to at least two work parameters of an internal combustion engine, said internal combustion engine having an ignition unit which connects said electronic control and acoustic device to a voltage source upon starting of said internal combustion engine, said internal combustion engine having a predetermined operating range, the limits of which define threshold values for said parameters, respectively, said electronic control and acoustic warning device comprising:

a first work parameter sensor switch for detecting said first work parameter, said first work parameter sensor switch having a first end connected to electrical ground, said first work parameter sensor switch being in a closed position when said first work parameter is below said respective threshold value;

a second work parameter sensor switch for detecting said second work parameter, said first and second work parameter sensor switches disposed electrically parallel to each other, said second work parameter switch having a first end connected to electrical ground, said second work parameter sensor switch being in a closed position when said second work parameter is above said respective threshold value;

said ignition unit comprising at least a primary coil, said primary coil connected in series with second ends of said first and second work parameter sensor switches, respectively; and

an acoustic warning device disposed in series between said primary coil and said second ends of said first and second work parameter switches, said acoustic warning device generating an audible warning when either of said first or second work parameter sensor switches are in a closed state.

5,298,881

LOW LIQUID LEVEL MONITORING AND WARNING APPARATUS AND METHOD

Tim J. Bowman, Bexley, Great Britain, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 19, 1992, Ser. No. 854,139

Claims priority, application United Kingdom, Mar. 23, 1991, 91/06211

Int. Cl.[5] B60Q *1/00*; G08B *21/00*

U.S. Cl. 340—450.3 **15 Claims**

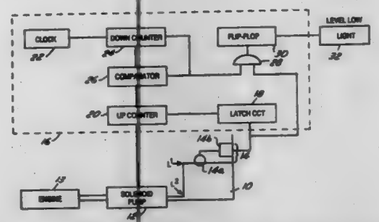
1. A system for detecting the level of a liquid being drawn from an output port of a reservoir, comprising:

pump means, operatively coupled to the reservoir at the output port, for pumping metered volumes of the liquid from the reservoir and generating volume pumping signals representative thereof,

sensing means coupled to the reservoir for generating a first signal responsive to the liquid level falling below a first level in the reservoir spaced operatively above the output port for indicating a reserve level of liquid remaining,

integrator means, operatively coupled to said pump means and said sensing means, for integrating said volume pumping signals and responsive thereto generating, subsequent to receiving said first signal, a composite signal representative of the volume of the liquid remaining in the reservoir above the output port, and

indicator means coupled to said integrator means for displaying said composite signal.



5,298,882

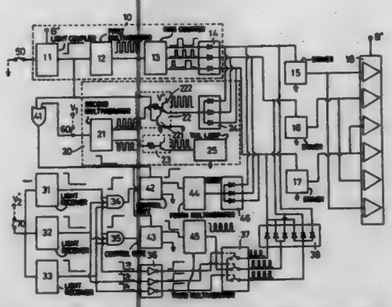
LED DISPLAY COLLISION WARNING CIRCUIT FOR VEHICLES

Ching-Yuan Tsai, No. 3, Alley 3, Lane 246, Hsin Min Rd., Taipei, Taiwan

Filed Feb. 22, 1993, Ser. No. 21,019

Int. Cl.[5] B60Q *1/26*

U.S. Cl. 340—468 **3 Claims**



1. A collision warning circuit for a vehicle comprising:

(a) a door-actuated cyclical lighting and extinguishing circuit coupled to a door switch of said vehicle, said door-actuated cyclical lighting and extinguishing circuit including a light coupler in series connection with said door switch, a first astatic multivibrator in series connection with said light coupler and a ring counter, said ring counter providing output signals to a fist bank of a plurality of diodes, each of said diodes respectively being coupled to a respective one of a plurality of transistor drivers, said transistor drivers being coupled to an LED display, said LED display comprising three groups of display units, said display units being sequentially and cyclically actuated when said door switch of said vehicle is opened;

(b) a brake-actuated alternately flashing circuit coupled to a brake switch of said vehicle, and a second astatic multivibrator, said second astatic multivibrator outputting a pair of complementary output signals, each of said complementary output signals being input to a respective driver circuit, one said driver circuit being coupled to a tail lamp of said vehicle and the other said driver circuit being coupled to said LED display through a second bank of diodes individually coupled to respective ones of said transistor drivers whereby when said brake switch of said vehicle is actuated said LED display and said tail lamp are alternately actuated;

(c) a headlight actuated night distance detection circuit coupled to a headlight switch of said vehicle, said headlight actuated night distance detection circuit including three light reception circuits individually responsive to a predetermined high, mid-range, and low light intensity level, each of said light reception circuits being series connected to a first and second AND gate and a reverser circuit, said reverser circuit being output coupled to an analog switch circuit, said first AND gate coupled to a third astatic multivibrator for output of third multivibrator signals to said analog switch circuit said analog switch circuit providing input signals to a third bank of diodes coupled to said transistor drivers for signal input to said LED display whereby one of one, two and three said groups of display units of said LED display is actuated responsive to said predetermined light intensity level impinging said three light reception circuits form a rearwardly approaching vehicle, said second AND gate being coupled to a fourth astatic multivibrator, an output of said fourth astatic multivibrator being input to a fourth bank of diodes for outputting a signal to said LED display responsive to light intensity below a sensitivity level of said light reception circuits for providing a constant light actuation of said LED display.

5,298,883

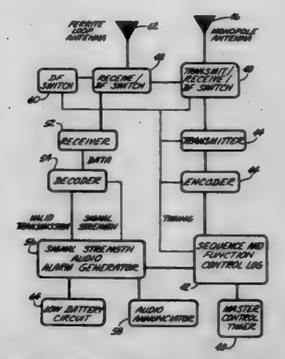
PROXIMITY ALERT SYSTEM

Richard G. Pilney, P.O. Box 11 Smithfield St., Jefferson County, Dilonvale, Ohio 43917, and Ronald E. Ham, 6505 Huckleberry Cove, Austin, Tex. 78742

Filed Jan. 17, 1992, Ser. No. 822,120

Int. Cl.[5] G08B *23/00*; H04B *1/38*

U.S. Cl. 340—573 **11 Claims**



1. A portable proximity alert system, comprising:

a first portable unit including transmitter means for producing a first coded signal, receiver means for receiving and determining the strength of a second coded signal, and first warning means for producing a variable rate proximity warning signal having a frequency variable in proportion to the strength of the second coded signal received by the first portable unit;

a second portable unit including transmitter means for producing the second coded signal, receiver means for receiving and determining the strength of the first coded signal, and second warning means for producing a variable rate proximity warning signal having a frequency variable in proportion to the strength of the first coded signal received by the second portable unit;

wherein each receiver means determines which of a plurality of distance ranges corresponds to the distance between the first and second portable units based on the strength of the corresponding received coded signal; and

wherein the variable rate proximity warning signal produced by each warning means takes on a particular frequency corresponding to the particular distance range determined by the corresponding receiver means to correspond to the distance between the first and second portable units.

5,298,884

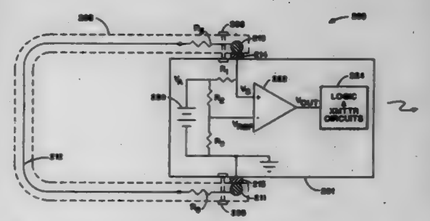
TAMPER DETECTION CIRCUIT AND METHOD FOR USE WITH WEARABLE TRANSMITTER TAG

Jack A. Gilmore, Longmont; Donald A. Melton, Boulder, and Robert A. Null, Lakewood, all of Colo., assignors to BI Incorporated, Boulder, Colo.

Filed Oct. 16, 1992, Ser. No. 962,483

Int. Cl.[5] G08B *19/00*

U.S. Cl. 340—573 **25 Claims**



22. An apparatus for detecting a violation comprising:

a wearable tag;

a coupling means for connecting a strap to said wearable tag;

said strap having an integrated conductor integrated into said strap;

said integrated conductor not being readily accessible to a wearer of said wearable tag;

a closing means for closing said strap around part of said wearer of said wearable tag;

a first tamper means, including:

a first electrode coupled to a first part of said integrated conductor, the first electrode including an anodic metal;

a second electrode coupled to a second part of said integrated conductor, the second electrode including a cathodic metal; and

an electric potential detector coupled to said first and second electrodes, the electric potential detector being able to detect a change in an electric potential between said first and second electrodes;

a second tamper means, including:

a first conductive region of said strap, the first conductive region being in electrical communication with a first part of said integrated conductor;

a second conductive region of said strap, the second conductive region being in electrical communication with a second part of said integrated conductor;

said first electrode being coupled to said first conductive region;

said second electrode being coupled to said second conductive region; and

an impedance detection means for detecting a change in the impedance between said first and second electrodes; and

a third tamper means, including:

a sensing means for sensing when said wearable tag is held near the flesh of said wearer; and

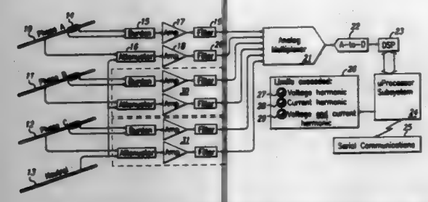
said sensing means comprises means for sensing a change in the capacitance between two spaced-apart electrodes.

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5,298,885
HARMONIC MEASURING INSTRUMENT FOR AC POWER SYSTEMS WITH POLY-PHASE THRESHOLD MEANS

Alexander McEachern, Oakland, and Jamie Nicholson, Foster City, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Aug. 21, 1992, Ser. No. 933,391
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—660 **18 Claims**



1. An apparatus for measuring voltage harmonics and current harmonics on a poly-phase alternating current power system comprising:

a. means for sensing a plurality of harmonic voltage parameters on each phase coupled to the poly-phase alternating current power systems;

b. means for determining when one of the plurality of harmonic voltage parameters exceeds a predetermined voltage threshold coupled to the means for sensing a plurality of harmonic voltage parameters;

c. means for sensing a plurality of harmonic currents on each phase coupled to the poly-phase alternating current power system;

d. means for determining when one of the plurality of the harmonic currents exceeds a predetermined current threshold coupled to the means for sensing a plurality of harmonic currents;

e. means for indicating when either the predetermined voltage threshold is exceeded, the predetermined current threshold is exceeded or both the predetermined voltage threshold and the predetermined current threshold are exceeded simultaneously, the means for indicating coupled to the means for determining when one of the plurality of harmonic voltage parameters exceeds a predetermined voltage threshold and to the means for determining when one of the plurality of the harmonic currents exceeds a predetermined current threshold.

5,298,886
FLUIDIC FLOWMETER EQUIPPED WITH A MICRO FLOW SENSOR

Takashi Ueki; Katsuhito Sakai, and Takeshi Abe, all of Tokyo, Japan, assignors to Tokyo Gas Company Limited, Tokyo, Japan

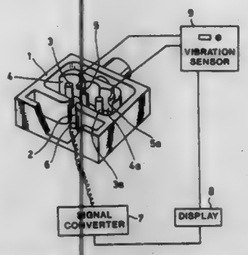
Filed Jun. 13, 1991, Ser. No. 714,678
Claims priority, application Japan, Jun. 14, 1990, 2-157095; Nov. 9, 1990, 2-305852; Nov. 9, 1990, 2-305853; Nov. 30, 1990, 2-341070
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—606 **4 Claims**

1. A fluidic flow meter, comprising: a fluidic element; a flow sensor, said fluidic element for measuring a flowrate higher than a preset flowrate of said flow sensor and said flow sensor for measuring a flow rate lower than a flow rate measurable by said fluidic element; and, abnormality judging circuit means for determining the presence of an abnormality and issuing a warning signal when one of the following conditions is present

only a flowrate signal from said flow sensor is higher than a preset flowrate,

only a flowrate signal from said fluidic element is higher than said preset flow rate,

only a flowrate signal from said flow sensor is lower than said preset flowrate, and

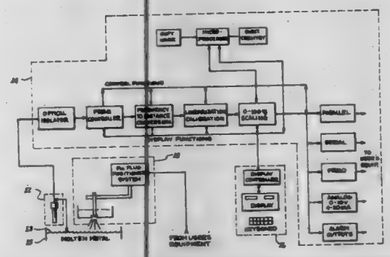


only a flowrate signal from said fluidic element is lower than said preset flowrate.

5,298,887
MOLTEN METAL GAUGING AND CONTROL SYSTEM EMPLOYING A FIXED POSITION CAPACITANCE SENSOR AND METHOD THEREFOR

Roger A. Pepping, Tempe, Ariz., assignor to Sentech Corporation, Tempe, Ariz.

Filed Oct. 4, 1991, Ser. No. 771,210
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—618 **79 Claims**



1. A system for gauging the level of molten metal within at least one container, comprising:

at least one capacitance sensor comprising:

a substantially flat-plate electrode rigidly mounted to said container above the level of said molten metal to establish a variable capacitance between the electrode and the molten metal;

a conductive housing disposed adjacent said electrode, said conductive housing and said electrode being driven to a common potential; and

means for detecting changes in said variable capacitance resulting from changes in the level of said molten metal and producing an electrical output corresponding to said level; and

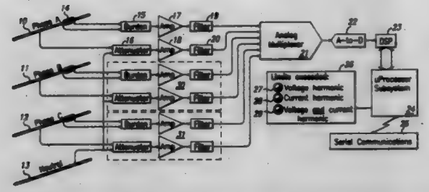
converter circuitry electrically coupled to said electrode and said molten metal for converting said electrical output of said capacitance sensor to a linear output signal; and

display circuitry for displaying said linear output signal as the level of said molten metal.

5,298,888
HARMONIC MEASURING INSTRUMENT FOR AC POWER SYSTEMS WITH LATCHED INDICATOR MEANS

Alexander McEachern, Oakland, and Jamie Nicholson, Foster City, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Aug. 21, 1992, Ser. No. 934,116
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—660 **20 Claims**



1. An apparatus for measuring voltage harmonics and current harmonics on an alternating current power system comprising:

a. means for sensing a harmonic voltage and a harmonic current coupled to the alternating current power system;

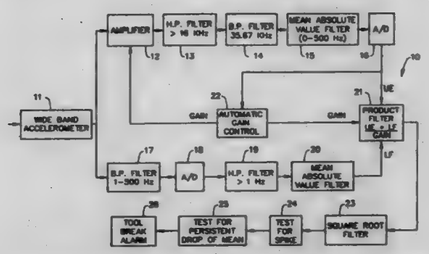
b. means for comparing both the harmonic voltage to a predetermined voltage threshold and the harmonic current to a predetermined current threshold, said means for comparing coupled to the means for sensing; and

c. means for indicating when either the predetermined voltage threshold is exceeded, the predetermined current threshold is exceeded or both the predetermined voltage threshold and the predetermined current threshold are exceeded simultaneously, the means for indicating coupled to the means for comparing.

5,298,889
METAL CUTTING MACHINE TOOL BREAK DETECTION

Edward N. Diei, Cincinnati; Jerry H. Carmichael, West Chester, both of Ohio, and Steven R. Hayashi, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 8, 1992, Ser. No. 895,080
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—680 **18 Claims**



1. A method for determining a metal cutting tool break event during a cutting process, comprising the steps of:

(a) sensing vibrations during the cutting process;

(b) generating a composite electrical vibration signal having a low frequency component and a high frequency component from said sensed vibrations;

(c) processing the composite signal through a high frequency processing path and through a low frequency processing path;

(d) deriving separate digitized UE (ultrasonic emission) and gain signals from the high frequency processing path;

(e) deriving a digitized LF (low frequency) signal from the low frequency processing path;

(f) passing the UE, gain, and LF digitized signals through a product filter which outputs a signal representing the product:

$$\frac{UE*LF}{\text{GAIN}};$$

and

(g) processing the

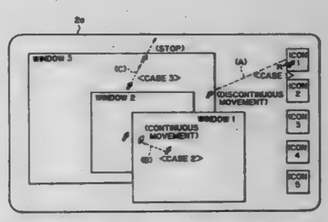
$$\frac{UE*LF}{\text{GAIN}}$$

output signal to determine whether a tool break event has occurred.

5,298,890
DISCONTINUOUS MOVEMENT SYSTEM AND METHOD FOR MOUSE CURSOR

Yoichi Kanamaru, and Toshio Nakamura, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,265
Claims priority, application Japan, Apr. 11, 1990, 2-93953
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—157 **8 Claims**



1. In a display system having a movable cursor, a cursor moving system comprising:

a designated-area management unit for providing display information from which the display system generate a display image on a screen, the display image including a plurality of designated areas; and

a cursor position management unit for determining movement of a cursor on said screen in accordance with manipulations of a pointing device, said cursor position management unit recognizing a current cursor position of the cursor on said screen, and acquiring at regular intervals of time travelling direction and travelling distance information of the cursor to modify the current cursor position so that the cursor continuously travels to a boundary of one of the designated area wherein the cursor is located, said cursor moving system further including:

a cursor position determination unit effective to search for the current cursor position ("current designated area"), and another of the designated areas ("next designated area") which exists in a travelling direction of the cursor; wherein

if the next designated area does not exist in the travelling direction of the cursor, then said cursor position determination unit is effective to inform said cursor position management unit to stop the cursor when it arrives at the boundary of the current designated area,

but if the next designated area does exist, said cursor position determination unit being effective then to determine

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whether the next designated area is separated from the current designated area, and

if separated, then to inform said cursor position management unit, when the cursor arrives at the boundary of the current designated area, of the next cursor position within the next designated area, wherein said cursor position management unit recognizes the next cursor position, and thereafter sequentially modifies the current cursor position so that the cursor discontinuously advances to the next cursor position,

but if the next designated area is not separated from the current designated area, then said cursor position management unit causes the cursor to be continuously moved to the next designated area.

5,298,891

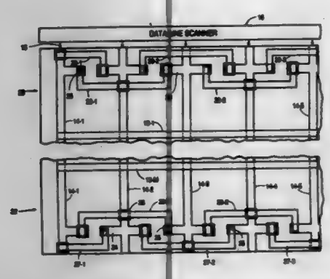
DATA LINE DEFECT AVOIDANCE STRUCTURE

Dora Ptas, South Bound Brook, and Peter M. Freitag, Franklin Park, both of N.J., assignors to Thomson, S.A., Courbevoie, France

Filed Apr. 18, 1991, Ser. No. 687,134

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—93 **6 Claims**



1. A data line avoidance structure for a display device having an array of display elements arranged in rows and columns and a plurality of data lines arranged between said columns, said avoidance structure comprising:

a first plurality of repair lines each of said repair lines individually spanning the ends of adjacent lines to divide said data lines into sets and enable the electrical connection of any two data lines within a set with the spanning repair line, the number of said repair lines being sufficient to divide all of said data lines into sets, each individual repair line being electrically connected to one data line within a set and electrically insulated from the rest of the data lines within said set; and

a second plurality of repair lines individually spanning second sets of data lines, said second sets including a portion of the data lines spanned by said first repair lines and at least one additional line, said second repair lines being electrically connected to said additional data line and electrically insulated from data lines common to said first and second sets.

5,298,892

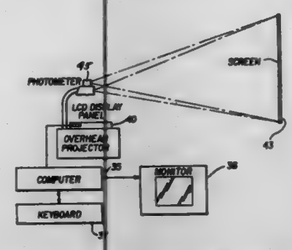
STACKED DISPLAY PANEL CONSTRUCTION AND METHOD OF MAKING SAME

Leonid Shapiro, Lakeside; William K. Bohannon, and Randall S. Farwell, both of San Diego, all of Calif., assignors to Proxima Corporation, San Diego, Calif.

Division of Ser. No. 506,621, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,668, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Apr. 16, 1991, Ser. No. 686,751

Int. Cl.[5] G09G *3/363*

U.S. Cl. 340—784 **9 Claims**



1. A method for adjusting the gamma characteristics of liquid crystal display panel means to optimize substantially the number of discrete optically distinguishable shading levels of a displayed image, said liquid crystal display panel means including a plurality of electrically operable pixel elements, each pixel element being energizable to only a fully on state or a fully off state for exhibiting contrasting pixel images in accordance with the gamma characteristics of the liquid crystal display panel means, comprising:

using the liquid crystal panel means for producing the displayed image repetitively over a large number of successive frames of video information;

generating a plurality of biasing signals, said plurality of biasing signals including a direct current threshold voltage level signal and a direct current saturation voltage level signal for helping to define the gamma characteristics of the liquid crystal display panel means;

energizing individual ones of said plurality of electrically operable pixel elements with said plurality of biasing signals so they can exhibit resulting pixel images when energized with a gray scale drive signal;

quantizing a video signal into a plurality of gray scale drive signals, each individual gray scale drive signal being indicative of one of a multiple number of different luminance levels including a maximum luminance level and a minimum luminance level;

energizing individual ones of said plurality of electrically operable pixel elements with individual ones of said plurality of gray scale drive signals so each resulting pixel image exhibits one of said multiple number of different luminance levels over a large number of luminance levels; and

adjusting said direct current saturation voltage level while energizing said plurality of electrically operable pixel elements with a certain individual one of said plurality of gray scale signals to adjust the gamma characteristics of the liquid crystal panel means to substantially maximize the luminance levels of the individual pixel images;

whereby a more uniform distribution of resulting distinguishable pixel images is produced in accordance with the adjusted gamma characteristics when said plurality of electrically operable pixel elements are energized by said gray scale drive signals to produce a large number of different shading levels.

5,298,893

GRADATION DISPLAY CONTROL APPARATUS FOR CONVERTING COLOR DATA DESIGNATED BY APPLICATION PROGRAM INTO GRADATION DATA

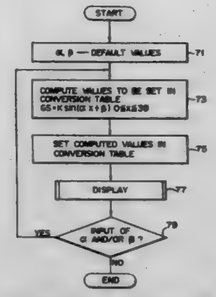
Norihisa Sekine, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 559,345, Jul. 27, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 918,145

Claims priority, application Japan, Jul. 31, 1989, 1-198357

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—63 **5 Claims**



1. A gradation display control apparatus for a personal computer having a flat panel display unit performing a gradation display, comprising:

a parameter storage device for storing and initially setting at least one default parameter to be used in display conversion;

non-linear type converting means for receiving said default parameters and color data and non-linearly converting said color data into gradation data based on a non-linear equation that does not have a linear relationship between its input and its output;

a display driver for driving the display unit to display the non-linearly converted gradation data on the flat panel display unit as part of an overall display;

an input means including a keyboard; and

controlling means for accepting, subsequent to said display driving by said display driver, a change command from said keyboard to change said at least one default parameter to a different parameter, and coupling said different parameter to said converting means and said display driver and new color data to form a new display based thereon, and for continuing to accept change commands subsequently.

5,298,894

UTILITY METER TRANSPONDER/ANTENNA ASSEMBLY FOR UNDERGROUND INSTALLATIONS

David L. Ceray; Brenda Stewart, both of Milwaukee; Lee Karsten, Thiensville; H. Paul Walding, Jr., West Bend, and Joseph A. Zilno, Wales, all of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.

Filed Jun. 17, 1992, Ser. No. 900,220

Int. Cl.[5] G08B *23/00*; H01Q *1/04*

U.S. Cl. 340—870.02 **6 Claims**

1. An assembly for radio frequency communication of data between a utility meter within a subsurface pit enclosure and a collection unit, the pit enclosure having a pit lid with a hole therein and the assembly comprising:

an antenna enclosure having a cap including a stem with a lower end and with an upper end, the stem extending through the hole in the pit lid and the cap closing completely the upper end of the stem and being supported by a top side of the pit lid to suspend the stem in the hole;

means around the lower end of the stem for clamping against an underside of the pit lid to trap a portion of the pit lid between said means and the cap;

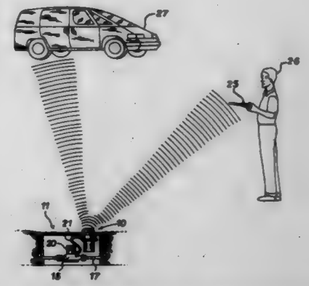
an antenna disposed within the antenna enclosure and projecting above the pit lid for transmitting radio signals to the collection unit;

a transponder enclosure within the pit;

a transponder completely enclosed within the transponder enclosure for converting data signals received from the meter to radio frequency signals for transmission through the antenna;

means for electrically connecting the transponder to the antenna; and

means for sealing and enclosing the antenna enclosure and the transponder enclosure against the environment within the pit enclosure.



5,298,895

DATA COMPRESSION METHOD AND APPARATUS UTILIZING AN ADAPTIVE DICTIONARY

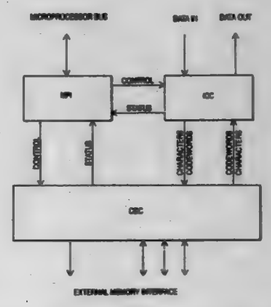
David J. Van Maren, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 19, 1991, Ser. No. 761,783

Claims priority, application United Kingdom, Jan. 19, 1990, 9001315; Feb. 8, 1990, 9002882

Int. Cl.[5] H03M *7/30*

U.S. Cl. 341—51 **18 Claims**



1. A method for compressing user data comprising the steps of:

receiving a stream of user data organized into a plurality of records;

compressing the user data according to a compression algorithm by converting selected data to codewords using a dictionary derived from the user data, the user data so compressed being output from said compression algorithm and defining compressed data, said compression algorithm having a flush operation causing said compression algorithm to output substantially all of the selected

user data undergoing compression up to a time of said flush operation, irrespective of a degree of compression attained;

starting a derivation of at least a second dictionary from the user data during compression thereof; and

carrying out a plurality of said flush operations between the beginning of consecutive dictionaries.

5,298,896

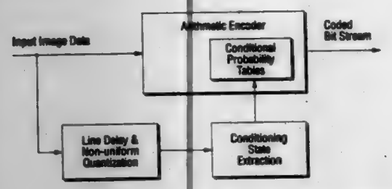
METHOD AND SYSTEM FOR HIGH ORDER CONDITIONAL ENTROPY CODING

Shaw-Min Lei, Tinton Falls; Ming-Ting Sun, Holmdel, both of N.J., and Kou-Hu Tzou, Potomac, Md., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 15, 1993, Ser. No. 31,421

Int. Cl.[5] H03M *7/30*

U.S. Cl. 341—51 **16 Claims**



1. A method for compressing data in a data transmission system, the method comprising the steps of:

generating a reduced number of code tables containing statistical information for translating between first and second sets of data, the first set of data representing source symbols and the second set of data representing corresponding coded bit streams;

temporarily storing the source symbols to obtain a current symbol and its conditional symbols;

generating a reduced number of conditioning states for the source symbols;

non-uniformly quantizing the conditioning symbols to obtain quantized conditioning symbols;

extracting a conditioning state from the reduced number of conditioning states based on the quantized conditioning symbols;

selecting a code table from the reduced number of code tables based on the extracted conditioning state;

determining a code from the selected code table for the current symbol; and

encoding the current symbol based on the determined code to obtain a coded bit stream.

5,298,897

METHOD AND APPARATUS FOR DECODING TWO FREQUENCY (F/SF) DATA SIGNALS

Clarence Harrison; Mark D. Marik, and Roger L. Posthumus, all of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 477,320, Feb. 7, 1990, Pat. No. 5,168,275. This application Jan. 17, 1992, Ser. No. 822,595

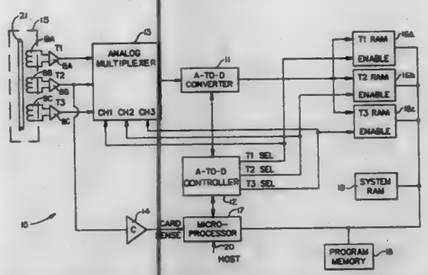
Int. Cl.[5] H03M *5/12*

U.S. Cl. 341—71 **8 Claims**

1. Apparatus for decoding a two-frequency data signal, encoded as a plurality of bit cells, with a first data value being represented by a bit cell having a signal of a first frequency therein, and a second data value being represented by a bit cell having a second frequency which is twice said first frequency therein, said apparatus comprising:

means for obtaining a plurality of samples of said two-frequency data signal for each bit cell thereof;

means, connected to said sample obtaining means, for converting said plurality of obtained samples of said two-frequency data signal for each bit cell into a plurality of multibit digital values for each bit cell; and



means connected to said converting means, for manipulating the plurality of multibit digital values for each bit cell, to thereby decode said two-frequency data signal.

5,298,898

DIGITAL TO ANALOG CONVERTER WITH DIGITAL CORRECTION CIRCUITRY

Rüdiger Brunheim, Villingen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1992, Ser. No. 925,696

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1990, 4002501

Int. Cl.[5] H03M *1/06*

U.S. Cl. 341—118 **3 Claims**

1. A digital to analog converter for converting floating point digital samples comprising a mantissa and an exponent to output analog values comprising:

a source of said floating point digital samples;

digital to analog conversion means for converting fixed point digital samples to analog values;

analog scaling means coupled to an output of said digital to analog conversion means and having an output terminal at which said output analog values are available, said analog scaling means having a control input terminal for providing variable scaling control signals to said scaling means, and said analog scaling means exhibiting processing inaccuracies corresponding to respective control signals;

memory means programmed with digital correction values corresponding to said processing inaccuracies;

means coupling the exponents of said floating point digital values to said control input terminal, and to said memory means for accessing respective correction values;

digital sample scaling means coupled between said source and said digital to analog conversion means for coupling scaled mantissa values of said floating point samples to said digital to analog conversion means, said digital scaling means having a control input terminal for providing variable scaling control signals thereto; and

means for coupling respective correction values from said memory means to the control input terminal of said digital scaling means.

5,298,899

PCM ENCODER AND DECODER USING EXKREMA

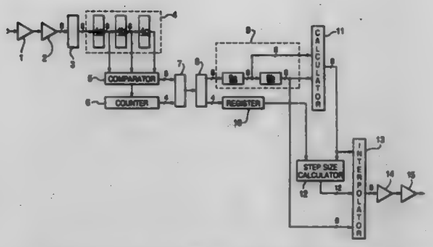
Kwang-Sok Oh, Seoul; Geun-Rae Cho, Buchon, and Jae-Bum Hong, Seoul, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 17, 1992, Ser. No. 899,856

Claims priority, application Rep. of Korea, Dec. 27, 1991, 91-24602

Int. Cl.[5] H03M *1/00, 3/00*

U.S. Cl. 341—132 **22 Claims**



2. An apparatus for encoding/decoding a waveform, comprising:

first filter means for filtering the waveform to provide a filtered signal;

first converter means for converting the filtered signal into pulse code modulation data;

detector means for substituting a data portion below a given level of the pulse code modulation data produced from said first converter means with zero;

buffer means for receiving, as a sample, a series of multiple pulse code modulation data;

comparator means for comparing magnitudes of the series of multiple pulse code modulation data produced from said buffer means so as to detect peak values;

counter means, reset by said peak values, for counting every pulse code modulation sample between the peak values to provide distance values;

multiplexer means for multiplexing between the outputs of said comparator means and said counter means to sequentially generate peak value data and distance value data representing the number of pulse code modulation samples between the peak values;

separation means for separating said peak value data and said distance value data;

first register means for storing a series of said multiple peak value data;

second register means for storing said distance value data between said peak values;

first operation means for performing a subtracting operation between said series of multiple peak values;

second operation means for dividing a difference between said peak values by said distance value data;

interpolator means for producing a reproduced waveform by interpolating the peak value data of said first register means, quotient data of said second operation means, and remainder data of said first operation means;

second converter means for converting the output of said interpolator means into an analog signal; and

second filter means for smoothing the analog signal of said second converter means.

5,298,900

SIGMA-DELTA MODULATOR

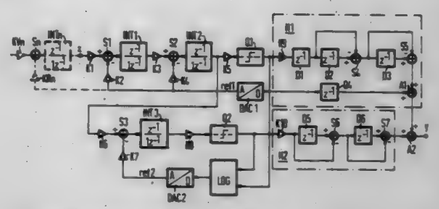
Manfred Mauthe, Aying/Grosshelfendorf, and Rudolf Koch, Oberhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 12, 1993, Ser. No. 30,815

Claims priority, application European Pat. Off., Mar. 12, 1992, 92104317.0

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **4 Claims**



1. A sigma-delta modulator, comprising:

a first integrator receiving a difference between an input signal being weighted by a first coefficient, and a first reference signal being weighted by a second coefficient, said first integrator supplying an output signal;

a second integrator receiving a difference between the output signal of said first integrator being weighted by a third coefficient, and the first reference signal being weighted by a fourth coefficient, said second integrator supplying an output signal;

a first quantizer receiving the output signal of the second integrator being weighted by a fifth coefficient, said first quantizer supplying an output signal;

a first digital/analog converter receiving and converting the output signal of said first quantizer into the first reference signal;

a third integrator receiving a difference between the output signal of said second integrator being weighted by a sixth coefficient, and a second reference signal being weighted by a seventh coefficient, said third integrator supplying an output signal;

a second quantizer receiving the output signal of said third integrator being weighted by an eighth coefficient, said second quantizer supplying an output signal;

a logic circuit receiving and adding together the output signals of said first and second quantizers and supplying an output signal;

a second digital/analog converter receiving and converting the output signal of said logic circuit into the second reference signal; and

a first digital filter connected downstream of said first quantizer, and a second digital filter connected downstream of said second quantizer, said digital filters supplying output signals being added together.

5,298,901

DIGITAL DECODING USING DYNAMICALLY DETERMINED TRACKING THRESHOLD VALUES

Brahim Leknine, Denver; Donald L. Millican, Westminster; Joe K. Jurneke, Brighton, and Douglas A. Gunther, Lakewood, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 12, 1992, Ser. No. 834,648

Int. Cl.[5] H03M *1/12, 1/06*

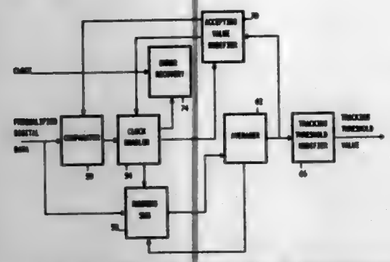
U.S. Cl. 341—155 **33 Claims**

1. A method for decoding an encoded analog signal representing binary data into the equivalent binary representation, comprising:

producing digital inputs from an encoded analog signal, said digital inputs including at least a first digital input;

determining a tracking threshold value independently of the encoding of the analog signal while said digital inputs are being produced; and

decoding the binary state of each of said digital inputs including said first digital input using a digital decoder wherein said digital decoder utilizes said tracking threshold value



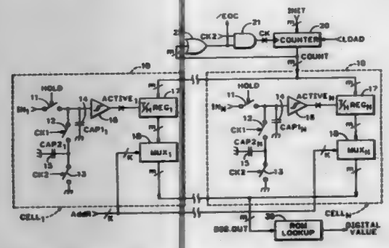
wherein said tracking threshold value is determined using said first digital input before said first digital input is decoded using said digital decoder and with said tracking threshold value determination being substantially independent of any output of said digital decoder.

5,298,902

ANALOG-TO-DIGITAL CONVERTER EMPLOYING MULTIPLE PARALLEL SWITCHING CAPACITOR CIRCUITS

Grigory Kogan, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Dec. 8, 1992, Ser. No. 986,827
Int. Cl.[5] H03M *1/60, 1/00*
U.S. Cl. 341—157 **3 Claims**



1. A multi-channel analog-to-digital converter comprising:

counting means (20) for receiving a clock signal and producing a count signal;

a plurality of analog-to-digital conversion cells (10), each cell containing:

incremental discharge means (11–16) for storing a charge proportional to the voltage value of an analog input signal and discharging the charge in increments upon the occurrence of the clock signal, the incremental discharge means (11–16) producing an active signal after the charge has been stored and before the incremental discharge is complete, and register means (17) for receiving the count signal and the active signal and storing a value of the count signal when the active signal goes inactive, the stored value being the output of the cell;

multiplexing means (18) for selecting among the outputs of the plurality of analog-to-digital conversion cells (10) and supplying the selected output as a digital output signal; and

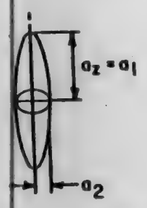
linearizing means (30) for receiving the digital output signal and producing a digital value signal indicative of a voltage level of the analog input signal associated with the analog-to-digital conversion cell (10) selected by the multiplexing means (18).

5,298,903

SYNTHETIC DIELECTRIC MATERIAL FOR BROADBAND-SELECTIVE ABSORPTION AND REFLECTION

William A. Janos, 8381 Snowbird Dr., Huntington Beach, Calif. 92646

Filed May 26, 1982, Ser. No. 382,165
Int. Cl.[5] H01Q *17/00*
U.S. Cl. 342—4 **14 Claims**



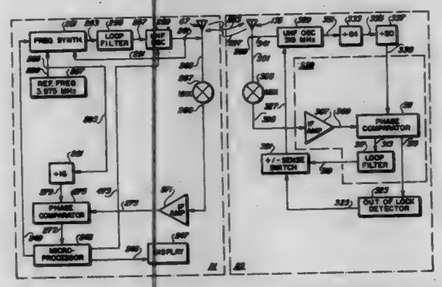
10. A slab of synthetic material loaded with dilute concentrations of conductive spheroidal particles for broadband interaction of a type chosen from the alternatives of absorption and its complement, reflection, of RF energy in a selected band, said particles being Rayleigh scatterers of maximum linear dimension less than the smallest wavelength in said band and having a thickness of conductive material less than the skin depth for the highest frequency to be absorbed, and said slab having a thickness greater than the maximum wavelength of said band in the synthetic material.

5,298,904

DISTANCE MEASURING SYSTEM

Kirk J. Olich, 6209 E. McKellips #424, Mesa, Ariz. 85205

Filed Aug. 4, 1992, Ser. No. 924,641
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—42 **22 Claims**



18. A method for accurately measuring the distance between a point "A" and a remote point "B" comprising the steps of:

positioning a master transceiver at point "A";

locating a remote transceiver at point "B";

generating a first master carrier frequency signal with said master transceiver and transmitting same to said remote transceiver;

generating a fixed remote carrier frequency signal at said remote transceiver;

determining a first frequency difference between said first master carrier frequency signal and said remote carrier frequency signal, where said first master carrier frequency signal is of a lower frequency than said remote carrier frequency signal;

phase-locking said signals to produce a first known phase reference;

transmitting said remote carrier frequency signal with said first known phase reference to said master transceiver;

comparing said first phase-locked remote carrier frequency signal with said first master carrier frequency signal;

regenerating said first known phase difference signal indicative of the measured distance to a particular point on a given waveform cycle;

generating a second master carrier frequency signal and transmitting same to said remote transceiver;

repeating said steps of determining, phase-locking and transmitting said remote carrier frequency signal having a second known phase reference to said master transceiver;

again comparing said phase-locked remote carrier frequency signal having said second known phase reference with said second master carrier frequency signal to generate a second phase difference signal indicative of the measured distance to a particular waveform cycle;

utilizing said generated first and second phase difference signals to compute a digital distance measurement; and

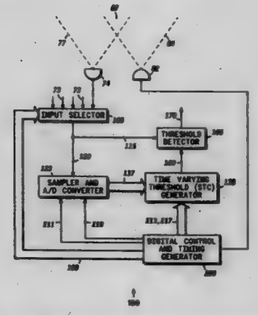
displaying said digital distance measurement for use by the user of the system.

5,298,905

VISIBLE LIGHT DETECTION AND RANGING APPARATUS AND METHOD

Randy L. Dahl, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 897,633, Jun. 12, 1992, Pat. No. 5,221,928. This application Mar. 1, 1993, Ser. No. 24,720
Int. Cl.[5] G01S *13/86*
U.S. Cl. 342—54 **21 Claims**



1. A method for ranging, the method comprising steps of:

(a) initiating a measurement cycle;

(b) receiving an optical signal;

(c) converting the optical signal to an electrical signal;

(d) providing specific successive values of desired sensitivity time control threshold information;

(e) comparing the specific successive values of desired sensitivity time control threshold information to the electrical signal to provide a comparison signal; and

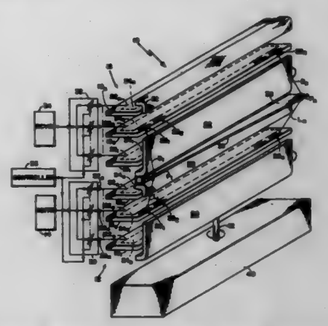
(f) calculating a range from a delay between said step (a) and the comparison signal from said step (e).

5,298,906

ANTENNA ISOLATION FOR CONTINUOUS WAVE RADAR SYSTEMS

John A. Lantagne, Salem, N.H., and Edwin C. Powers, Groveland, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 31, 1993, Ser. No. 40,795
Int. Cl.[5] G01S *7/03*
U.S. Cl. 342—175 **8 Claims**



1. A radio frequency energy radar system adapted to transmit and receive continuous wave (CW) radio frequency energy, comprising:

means, coupled to a source of the CW radio frequency energy, for transmitting and directing CW radio frequency energy produced by source toward a target;

means, spaced from the transmitting means, for receiving portions of the transmitted CW radio frequency energy reflected by the target, such receiving means including a plurality of antenna elements disposed along a path and arranged to provide an antenna pattern having a main lobe antenna pattern directed toward the target and adjacent side lobe antenna pattern; and

means, disposed between the transmitting means and the receiving means, for shielding unwanted portions of the transmitted CW radio frequency energy from passing directly from the transmitting means to the antenna elements of the receiving means, such shielding means terminating along an edge position in a region forward of the antenna elements, the distances between the antenna elements and points along the edge differing from element to element.

5,298,907

BALANCED POLARIZATION DIVERSIFIED CELLULAR ANTENNA

Joseph Klein, Northridge, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.

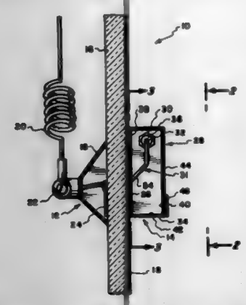
Filed Jun. 29, 1992, Ser. No. 905,796
Int. Cl.[5] H01Q *1/32, 1/50, 21/24*
U.S. Cl. 343—715 **2 Claims**

1. An antenna assembly for use with a vehicle having an electrically nonconductive area separating the interior from the exterior, the vehicle having a cellular telephone transceiver located therein, the assembly comprising:

a. balanced-unbalanced transformer means mounted on the nonconductive area on the interior of the vehicle, said transformer means having a coaxial connector adapted to be connected to the telephone transceiver through a coaxial cable, and said balanced-unbalanced transformer means further include an excitable box radiator including an excitable slot, said horizontal radiator being connected to one surface of said box radiator on a side adjacent the interior of the vehicle and said vertical radiator being

VOL 1160 ISS 5 MR 29 1994 UMI

capacitively coupled to a different surface of said box radiator on a side adjacent the exterior of the vehicle;
b. a horizontal radiator connected to said transformer means for transmitting and receiving cellular telephone signals;
c. vertical radiator means mounted on the nonconductive area on the exterior of the vehicle and capacitively coupled to said balanced-unbalanced transformer means for transmitting and receiving cellular telephone signals, whereby in a receiving mode, horizontally polarized received energy is received by means of said horizontal radiator and is combined in said transformer means with vertically polarized energy received by means of said vertical radiator, the combined energy being applied to said coaxial connector for transmission to a transceiver and whereby, in a transmitting mode, energy received from the transceiver through said coaxial connector is divided by said transformer means into a portion which is applied to said vertical radiator and into a portion which is applied to said horizontal radiator.

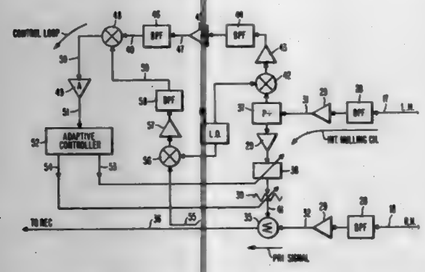


5,298,906

INTERFERENCE NULLING SYSTEM FOR ANTENNAS

Gerald H. Piele, Salt Lake City, Utah, assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 27, 1987, Ser. No. 125,832
Int. Cl.[5] H01Q *21/06, 21/24;* **H04B** *7/10*
U.S. Cl. 342—363 **18 Claims**



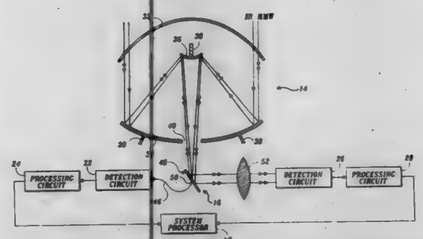
1. An interference nulling system for antennas comprising:
a receiving antenna of the type having a pair of receiving ports for receiving right hand circular polarized signals and left hand circular polarized signals,
converter means in said antenna for converting said circular polarized signals at said ports into linear polarized signals,
a primary signal channel connected to the receiving port for receiving primarily desired data link signals plus some interference signals,
said primary signal channel comprising signal processing means and a summing circuit having an output coupled to a receiver,
an interference nulling channel connected to the other receiving port and to said summing circuit for receiving only interference signals and no data link signals and for applying processed interference signals to an input of said summing circuit and for producing an optimized clean desired data link signal output from said summing circuit substantially free of interference signals,
said interference nulling channel comprising a power divider, adjustable phase control means and adjustable amplitude control means connected in series,
an interference nulling control loop connected between said power divider and said adjustable phase control means and between said power divider and said adjustable amplitude control means having an adaptive controller for adjusting the phase and amplitude of said processed interference signals applied to the input of said summing circuit;
error detecting means connected in series in said nulling control loop and having an error signal output connected to said adaptive controller, and
primary signal channel sampling means coupled to the output of said summing circuit and to an input of said error detecting means for generating an error signal output from said error detecting means which is applied as an input to said adaptive controller indicative of the phase and amplitude of said interference signal in said primary signal channel.

5,298,909

COAXIAL MULTIPLE-MODE ANTENNA SYSTEM

Steven J. Peters, and David C. Vacanti, both of Renton, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 11, 1991, Ser. No. 804,720
Int. Cl.[5] H01Q *21/280;* **G01S** *13/870*
U.S. Cl. 343—720 **22 Claims**



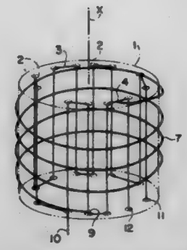
1. A coaxial antenna system for processing electromagnetic radiation falling within first and second frequency ranges, said antenna system comprising:
an antenna including a main reflector, provided with an aperture, and a subreflector, said main reflector of said antenna being for reflecting electromagnetic radiation to said subreflector, said subreflector of said antenna being for reflecting the electromagnetic radiation from said main reflector, the electromagnetic radiation reflected from said subreflector being relatively focused at a first focal plane defined relative to said antenna when in the first frequency range and being less focused at the first focal plane when in the second frequency range;
first interface means, having a front surface and a rear surface, said front surface being disposed nearer said subreflector than said rear surface and being at least partially positioned in the first focal plane, for redirecting the electromagnetic radiation reflected by said subreflector in the second frequency range; and
second interface means, coupled to said first interface means and having an incident surface disposed at said front surface of said first interface means, for receiving electromagnetic radiation in the first frequency range.

5,298,910

ANTENNA FOR RADIO APPARATUS

Ken Takei, and Masami Ohnishi, both of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1992, Ser. No. 834,350
Claims priority, application Japan, Mar. 18, 1991, 03-052191
Int. Cl.[5] H01Q *1/36, 11/08*
U.S. Cl. 343—895 **38 Claims**



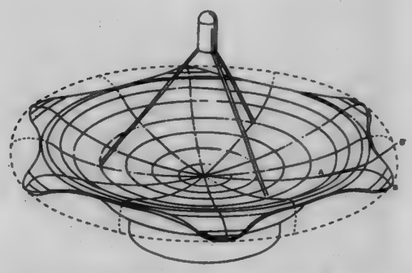
1. An antenna for radio apparatus comprising:
a first conductor taking a helical form;
a second conductor which extends to and fro in sequence substantially in a direction of a center axis of the helical form of said first conductor to take, as a whole, a meandering form which is spaced apart from said first conductor and surrounds said center axis; and
a dielectric member which lies at least between said first and second conductors,
a portion of said first conductor is electrically connected to a portion of said second conductor, said first conductor having at least one open end, said second conductor having at least one open end, and one of a portion of said first conductor and a portion of said second conductor is a feeding point.

5,298,911

SERRATED-ROLL EDGE FOR MICROWAVE ANTENNAS

Ming-Chang Li, 11415 Bayard Dr., Mitchellville, Md. 20721

Continuation of Ser. No. 584,031, Sep. 18, 1990, abandoned. This application Sep. 30, 1991, Ser. No. 767,570
Int. Cl.[5] H01Q *15/140, 19/1*
U.S. Cl. 343—912 **5 Claims**



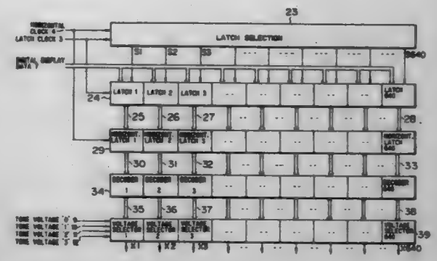
1. A microwave antenna comprises a body, the body comprises a bounded rim which defines an opening for radiating and receiving microwave radiations, wherein the body further comprises a skirt which is disposed at the rim, wherein the skirt comprises a serrated-roll edge, wherein the serrated-roll edge is
a) smoothly and continuously rolled back; and
b) shaped to form a serration, wherein an outer edge of the serration is gradually and smoothly curved.

5,298,912

MULTI-TONE DISPLAY DEVICE

Hiroyuki Mano; Kiyokazu Nishioka, both of Yokohama; Toshio Futami, Mobara, and Kiyoshige Kinugawa, Chiba, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Continuation of Ser. No. 475,849, Feb. 6, 1990, abandoned. This application Feb. 28, 1992, Ser. No. 844,965
Claims priority, application Japan, Mar. 20, 1989, 1-66102
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—88 **20 Claims**



1. An image display device comprising:
a matrix display panel having plural X direction signal lines and plural Y direction signal lines intersecting said plural X direction signal lines at intersecting points, the intersecting points of said matrix being pixels of a display image;
X direction driving means for receiving digital image data and for sequentially scanning said plural X direction signal lines to provide image signals;
Y direction driving means for driving said plural Y direction signal lines in synchronism with the scanning of said plural X direction signal lines to sequentially provide select signals to said plural Y direction signal lines;
A–D converter means for receiving an analog image signal and converting said analog image signal into a digital image signal;
voltage generating means for simultaneously generating a plurality of discrete output signals at respectively different voltage levels, each of said voltage levels being a constant level; and
selector means for selecting one of said constant output signals from said voltage generating means in accordance with an output from said A–D converter means to provide said one of said output signals to said X direction driving means as said image signals.

5,298,913

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE AND DRIVING SYSTEM THEREOF FOR DRIVING THE DISPLAY BY AN INTEGRATED SCANNING METHOD

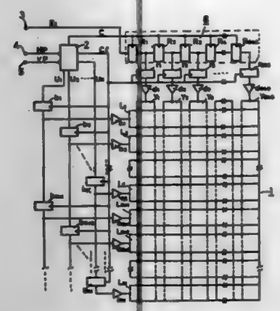
Takazi Numao, Tenri, and Kunihiko Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 569,365, Aug. 15, 1990, abandoned, which is a continuation of Ser. No. 200,514, May 26, 1988, abandoned. This application May 4, 1992, Ser. No. 879,459
Claims priority, application Japan, May 29, 1987, 62-133816
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—97 **6 Claims**

1. A display device for receiving a non-interlaced image signal and displaying the received non-interlaced image signal by an interlaced scanning method, said device taking a specified period to rewrite the picture elements in one horizontal scanning period, said device comprising:
a matrix type liquid crystal display panel containing a ferrodielectric liquid crystal;
M scanning lines disposed on the display panel and divided

into a plurality of groups, each containing K scanning lines, wherein K and M are integers greater than 1; and

supplying means for supplying scanning signals to the M scanning lines to rewrite said non-interlaced image signal, said supplying means including selection means for sequentially outputting K select signals, delay means for successively delaying each of the K select signals, and means for successively applying each sequentially output K select signal, successively delayed, to corresponding scanning lines of each of the plurality of groups,



whereby a scanning signal is outputted to the first scanning line of each group in the first frame, to the second scanning line of each group in the second frame, and to the Kth scanning line of each group in the Kth frame so that picture elements on the M scanning lines are rewritten by K times of scanning, thereby said received non-interlaced image signal being displayed on said display panel at a field frequency within the frame frequency K times larger than that of said received non-interlaced image signal.

5,298,914

CIRCUIT FOR DRIVING A LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR DRIVING SAME

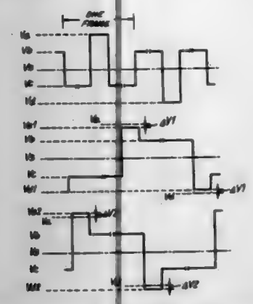
Katsunori Yamazaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 456,123, Dec. 22, 1989, abandoned, which is a continuation of Ser. No. 232,750, Aug. 15, 1988, Pat. No. 5,010,326. This application Jul. 22, 1992, Ser. No. 918,113

Claims priority, application Japan, Aug. 13, 1987, 62-202154; Feb. 9, 1988, 63-27922; Feb. 9, 1988, 63-27923; Feb. 9, 1988, 63-27924; Dec. 22, 1988, 63-324421

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—103 **7 Claims**



1. A method for driving a liquid crystal display to display an image on said liquid crystal display, said liquid crystal display having at least two independent groups of common electrodes arrayed in order and at least two independent groups of segment electrodes arrayed in order, each segment electrode having a first end and a second end, a respective group of said common electrodes intersecting with a respective group of segment electrodes, display dots being formable at the intersection of each said common electrode with each said segment electrode comprising the steps of:

sequentially scanning said common electrodes of said first group of common electrodes by a scanning voltage in order, while simultaneously sequentially scanning said common electrodes of said at least second group of common electrodes by a scanning voltage in order;

applying a selection voltage to selected of said segment electrodes causing illumination of selected display dots at the intersection of a segment electrode and common electrode at which the voltage between said intersecting segment and common electrode is above a predetermined threshold, and

superimposing a correction voltage in accordance with said displayed image to at least one of the scanning and selection voltages applied to the common and segment electrodes defining illuminated display dots located on at least one common electrode positioned at an end portion of each segment electrode of one group of said at least two groups of common electrodes, so that the total voltage applied between said at least one common electrode positioned at said end portion of said segment electrode of said one group of said common electrodes and the selected intersecting segment electrodes at the location of illuminated display dots is different from the voltage applied between the common electrodes not positioned at an end portion of each segment electrode of said one group of said at least two groups of common electrodes and the selected intersecting segment electrodes at the location of illuminated display dots.

5,298,915

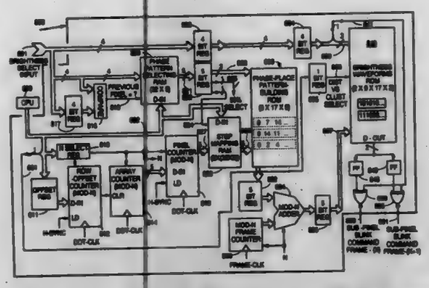
SYSTEM AND METHOD FOR PRODUCING A PALETTE OF MANY COLORS ON A DISPLAY SCREEN HAVING DIGITALLY-COMMANDED PIXELS

Chester F. Bassetti, Jr., Pleasanton, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 558,903, Jul. 27, 1990, Pat. No. 5,122,783, which is a continuation-in-part of Ser. No. 335,622, Apr. 10, 1989, Pat. No. 5,185,602. This application Jun. 16, 1992, Ser. No. 899,267

Int. Cl.[5] G09G *5/04, 5/10, 1/28*

U.S. Cl. 345—149 **8 Claims**



1. An apparatus for controlling a pixel on a digitally commanded display to produce a mixed color, the pixel having a positional value within an array of pixels on the digitally commanded display, wherein the mixed color is formed from specified primary colors, each having a specified brightness, and wherein the pixel comprises a plurality of colored sub-pixels, each of which provides a different one of the specified primary colors, the apparatus including:

programmable control means for controlling each sub-pixel using a frame rate duty cycle approach to produce a programmable number N of time averaged brightnesses over N consecutive frames, such that the sub-pixel is commanded by a pixel drive signal to be either ON or OFF during each frame of the N consecutive frames, the programmable control means comprising:

brightness waveform memory means for storing a plurality of brightness waveforms wherein a command value from one of the plurality of stored brightness waveforms is selected in response to a phase value signal and is supplied as the pixel drive signal to command the sub-pixel to be either ON or OFF;

addressing means for determining the positional value of the pixel within the array and a current frame number, and for supplying the positional value and the current frame number as outputs; and

means for providing the phase value signal as a function of a modulo-N operation on a sum of the positional value and current frame number.

5,298,916

CONTROL BALL ASSEMBLY FOR A COORDINATE INPUT DEVICE

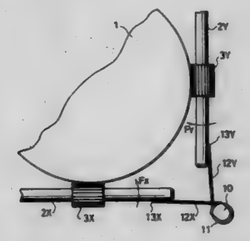
Tadamitsu Sato; Yoshiaki Ootuki, and Shinji Hirano, all of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 842,279

Claims priority, application Japan, Mar. 5, 1991, 3-18706[U]

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—157 **3 Claims**



1. A control ball assembly for a coordinate input device, comprising:

a control ball rotatably disposed in the coordinate input device;

a first shaft rotatably disposed in the coordinate input device, said first shaft contacting said control ball;

a second shaft rotatably disposed in the coordinate input device, said second shaft contacting said control ball; and

a spring connected to the first shaft and the second shaft, said spring biasing both of said first and second shafts against said control ball with forces having an equal magnitude.

5,298,917

DIGITAL IMAGE FORMING APPARATUS

Hiroyuki Deguchi, Osaka; Hirotoshi Tagawa, Kyoto; Toru Taniguchi, Osaka, and Hideyuki Tanaka, Hyogo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

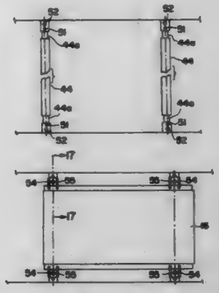
Filed Mar. 5, 1992, Ser. No. 849,220

Claims priority, application Japan, Mar. 8, 1991, 3-043081; Mar. 8, 1991, 3-043082

Int. Cl.[5] G03G *15/00*

U.S. Cl. 346—160.1 **1 Claim**

1. A digital image forming apparatus in which the document table and the document scanner unit of a digital image forming apparatus in which images of a document placed on a document table are read through scanning by a document scanner unit and electrostatic latent images are formed on a photosensitive body in accordance with data for the images of the document by a writing laser scanning unit arranged under the document scanner unit which is accommodated in an upper box body, the writing laser scanning unit is accommodated in a lower box body and the upper box body is opened upwards relative to the lower box body centering around a hinge unit provided at the back side thereof, and comprising a column of which one end is axially supported rotatably on the upper box body, a guide rail provided with a slide groove which, when the upper box body installed on the lower box body is moved in its opening up direction, slidably guides the other end of the column, and is formed a recess engaging with the other end of the column at the opened up position of the upper box body to limit the sliding action of the other end, and energy charging means for elastically charging energy to the column in such direction as the above other end of the column slides in the



direction of the recess along the slide groove, and being further characterized in that the writing laser scanning unit is placed and positioned on a plurality of bar-like members connecting front and back side plates which constitute a frame body installed in parallelism with a drive axis center of the photosensitive body and suitably spaced therefrom in the horizontal direction above the printer unit in the frame body, and the writing laser scanning unit thereof is positioned and fixed by screws on the plurality of bar-like members by means of engaging members which are each provided with a base unit fixed with a screw on the bar-like member, an engaging piece installed at one end of the base unit for pushing and fixing the writing laser scanning unit on the bar-like member, and a positioning piece installed at the other end of the base unit and disengageably engaging with a positioning hole formed at an appointed position of the bar-like member.

5,298,918

ELECTRIC CIRCUIT FOR REDUCING THE ENERGY CONSUMPTION OF A POINTING DEVICE USED IN COMBINATION WITH A DATA PROCESSING SYSTEM

Chiu Yen-Chen, No. 73. LN 15, Hoping Street, Hsinpu, Hasinchu; Chang Chi-Chun, No. 1, R&D 4th Rd., Science-Based Industrial Park, Hasinchu; Hwang Jyn-Guo; Wu Yu-Kun, both of No. 1, R&D 4th Rd., Science-Based Industrial Park, Hasinchu City, and Tai Jui-Chiang, No. 60, LN 635, Hwa-Shin St., Chupei City, Hasinchu, all of Taiwan

Continuation-in-part of Ser. No. 561,544, Aug. 1, 1990, abandoned. This application Nov. 13, 1991, Ser. No. 792,020

Int. Cl.[5] G09G *5/00*

U.S. Cl. 345—163 **7 Claims**

1. An electric circuit for a pointing device comprising:

a movable part;

means for generating a movement signal corresponding to a movement of said movable part;

means for sampling said movement signal;

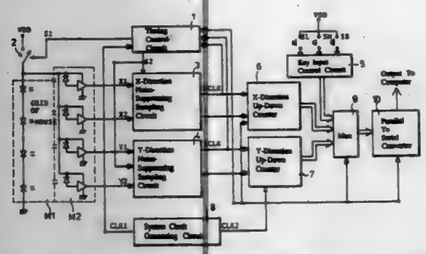
means for distinguishing said movement signal from a noise signal;

said means for distinguishing including means for generating

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a displacement signal only during a non-occurrence of said noise signal during an occurrence of said movement signal;

means for producing a first signal and a second signal based on said displacement signal;



means, responsive to said first signal, for intermittently and variably connecting a voltage to said mans for generating; and

said means for sampling including means for controlling a sampling action based on said second signal.

5,298,919

MULTI-DIMENSIONAL INPUT DEVICE

Mingtai Chang, Harvard, Mass., assignor to Multipoint Technology Corporation, Westford, Mass.

Continuation-in-part of Ser. No. 739,833, Aug. 2, 1991, abandoned. This application Jul. 31, 1992, Ser. No. 922,804

Int. Cl.[5] G06F *3/02*

U.S. Cl. 345—163 **11 Claims**



1. A hand manipulatable input device for providing spatial locational data to a host computer for control of a simulated viewpoint coupled to the input device, the input device comprising:

a chassis including an outer housing sized and configured to be received by a hand of a user in a grasping position;

a first locating member comprising a roller ball supported by the chassis and mounted with a portion of the roller ball projecting from a base of the housing to rotatably contact a planar surface and movable by manipulation of the housing by the hand of the user in simulation of translational movement of the simulated viewpoint in a simulated plane in a simulated space;

a first encoder for detecting movement of the first locating member and for producing output signals proportional to the detected movement of the first locating member and representative of the translational movement along a first set of first and second mutually orthogonal axes in a first plane representative of the simulated plane;

a second locating member comprising a thumbwheel supported by the chassis to rotate in a direction perpendicular to the planar surface and located to be simultaneously manipulatable with said first locating member and mounted with a portion of the thumbwheel projecting from a side of the housing in a location proximate a thumb of the hand in the grasping position and movable by manipulation by the thumb of the hand for indication of elevational translational movement of the simulated viewpoint in a direction perpendicular to the simulated plane;

a second encoder for detecting movement of the second locating member and for producing output signals proportional to the detected movement of the second locating member and representative of the elevational translational movement along a third axis representative of the elevation in the direction perpendicular to the simulated plane, the third axis being orthogonal to the first set of said first and second mutually orthogonal axes.

a third location member comprising a trackball supported by the chassis and located to be simultaneously manipulatable with said first locating member and said second locating member and mounted with a portion of the trackball projecting from a top of the housing in a location proximate two or more fingers of the hand in the grasping position for simultaneous rotation with respect to a second set of three mutually independent axes and spherically rotatably movable by the fingers of the hand of the user in simulation of arbitrary rotational movement of the simulated viewpoint in the simulated space;

a third encoder for detecting movement of the third locating member and for producing output signals proportional to the detected movement of the third locating member and representative of the arbitrary rotational movement about the second set of three mutually orthogonal axes representative of the simulated space; and

a controller for receiving the output signals from the first, second, and third encoders and for determining from the output signals from the encoders spatial positional data comprising three translational coordinates representative of the translational movement within and above and below the simulated plane ad three rotational coordinates representative of the arbitrary rotational movement in the simulated space and for transmitting signals representative of the determined spatial positional data in the simulated space to the host computer.

5,298,920

DISPLAY DEVICE

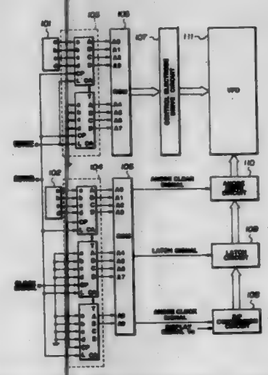
Jiro Shindo, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Continuation of Ser. No. 599,993, Oct. 19, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 24,835

Claims priority, application Japan, Oct. 20, 1989, 1-271745

Int. Cl.[5] G09G *3/00*

U.S. Cl. 345—213 **4 Claims**



1. A deviation adjustable display device comprising:

a first counter for counting a horizontal synchronous signal in response to a vertical synchronous signal to obtain a first counting signal when the counted value reaches a first predetermined initial value;

a first storage section for outputting a signal stored in an address corresponding to said first counting signal;

a second counter for counting a clock signal in response to the horizontal synchronous signal to output a second counting signal when the counter value reaches a second predetermined initial value;

a second storage section for outputting a signal stored in an address corresponding to said second counting signal;

a display section;

a drive section for driving said display section whereby said display section provides a display corresponding to a display signal in response to signals from said first and second storage section; and

preset sections for presetting the initial values of said first and second counters, respectively, whereby a desirable deviation of the display is carried out an image plane of said display section by adjusting each of the initial values of said first and second counters to change the timing of said driving of said display section when the display is not centrally positioned on said display section because of the different timing of the clock signal, the horizontal synchronous signal and the vertical synchronous signal.

5,298,921

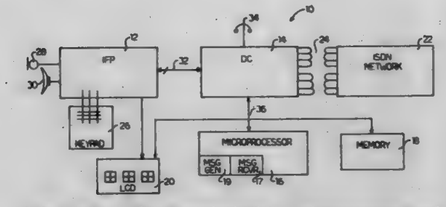
SYSTEM FOR COMMUNICATING WITH EXTERNAL DEVICE REGISTERS VIA TWO-BYTE DATA PACKETS OVER A SERIAL BUS

Dale E. Gulick, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 27, 1990, Ser. No. 589,380

Int. Cl.[5] G06F *3/00, 13/20*

U.S. Cl. 395—325 **21 Claims**



1. In a system of the type including a microprocessor and a device external to said processor, wherein said device has a multiple-bit address and includes a plurality of registers for storing bits of data wherein each said register has a unique multiple-bit address, and wherein said microprocessor is coupled to said external device by a serial bus, a communication system, permitting said microprocessor access to said registers, said system comprising:

message generator means within said microprocessor for generating a register access message comprising first and second multiple-bit bytes, said first byte including a first number of bits containing said multiple-bit address of said external device and a second number of bits identifying said message as a register access message, and said second byte including a single bit identifying said message as a register read or register write message and a third plurality of bits defining the multiple-bit address of the register being accessed;

transmitting means coupled to said microprocessor for transmitting said first and second multiple-bit bytes in series over said serial bus;

receiving means within said external device and coupled to said serial bus for receiving said register access message;

register access means within said external device coupled between said receiving means and said registers for decoding said third plurality of bits and providing an access signal to said accessed register corresponding to the multiple-bit register address defined by said plurality of bits and for receiving or changing contents of said accessed register depending upon status of said single bit in said second byte; and

message generator means within said external device for generating a read response message including said first byte when said register access message is a register read message.

5,298,922

MULTILAYER DATA CARRIER AND METHODS FOR WRITING ON A MULTILAYER DATA CARRIER

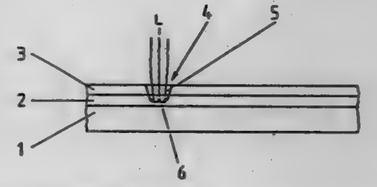
Hansjurgen Merkle; Joseph Lass, both of Munich; Alexander Hierweger, Rottach-Egern; Wolfgang Killar, and Erwin Loh, both of Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft f. Automation v. Organ. MBH, Fed. Rep. of Germany

Filed Dec. 4, 1989, Ser. No. 445,800

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1988, 3840729

Int. Cl.[5] B41J *2/435*

U.S. Cl. 346—1.1 **44 Claims**



1. A data carrier comprising:

overlapping layers of different contrasting colors showing information in humanly identifiable form through local removal of areas of an individual layer and exposure of areas of a deeper layer of a different color by a laser beam, said overlapping layers including

at least one thermal breakdown second layer located under a first colored non-metallic layer configured to be permeable by a laser beam, whereby said at least one thermal breakdown second layer is configured to be broken down at least partly under the effect of a laser beam, and wherein said data carrier is configured so that conversion of energy supplied by the laser beam in said at least one second layer and resulting thermal breakdown of said at least one second layer locally remove said first colored non-metallic layer.

5,298,923

INK JET MISDISCHARGE RECOVERY BY SIMULTANEOUSLY DRIVING AN INK JET HEAD AND EXHAUSTING INK THEREFROM

Tatsuyuki Tokunaga, and Jiro Moriyama, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 501,351, Mar. 28, 1990, abandoned, which is a continuation of Ser. No. 198,733, May 25, 1988, abandoned. This application Jul. 5, 1991, Ser. No. 727,284

Claims priority, application Japan, May 27, 1987, 62-130578; May 27, 1987, 62-130579

Int. Cl.[5] B41J *2/165*

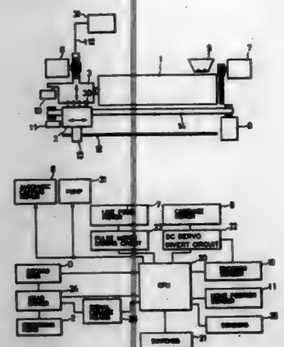
U.S. Cl. 346—1.1 **29 Claims**

1. A method for recovering discharge of ink, the method including the steps of:

providing an ink jet recording apparatus comprising a recording head having a discharge port for discharging ink, an ink path communicating with said discharge port, an energy generating member cooperating with said ink path so as to generate energy for discharging ink in response to a recording drive signal having a reference frequency providing normal ink discharge for recording, and suction

means for sucking ink from said discharge port when said suction means is driven;

driving said recording head for recovery thereof by applying to said energy generating member while driving said suction means a continuously varying recovery drive signal with a frequency 1/10 to 5 times larger than the reference frequency; and



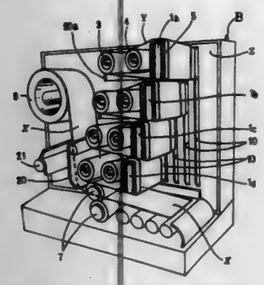
activating the recovery drive signal in response to the drive of said suction means, wherein the recovery drive signal is varied continuously in a single recovery operation so that bubbles of different sizes in said ink path can be eliminated in said single recovery operation.

5,298,924

MULTIPLE PRINTING APPARATUS

Kazuhiko Matsumoto, Shiki, Japan, assignor to Autonics Co., Ltd., Shiki, Japan

Filed Oct. 27, 1992, Ser. No. 967,689
Claims priority, application Japan, Nov. 2, 1991, 3-315386
Int. Cl.[5] B41J *2/325*
U.S. Cl. 346—76 PH **5 Claims**



1. A multiple printing apparatus comprising:

a plurality of printing heads,

means for moving each of said printing heads in vertical direction between printing positions and throw-off positions,

a plurality of said printing positions being arranged at a straight line in series along a direction of relative motion between a printing object and said printing heads,

a plurality of said throw-off positions being disposed at vertically different positions above respectively corresponding printing positions so that said plurality of said throw-off positions are arranged in step-wise fashion,

a plurality of printing medium strips each set on a respective feeding roll and a respective take-up roll, and disposed beneath a respective one of said plurality of printing heads and above said printing object, for transferring a printing image onto the printing object at active state of said respective one of said plurality of printing heads,

control means for selectively controlling each of said printing heads between said printing position and said throw-off position independently of the other printing heads; and

a plurality of assemblies of said feeding roll and said takeup roll being disposed at respectively corresponding throw-off positions in stepwise fashion,

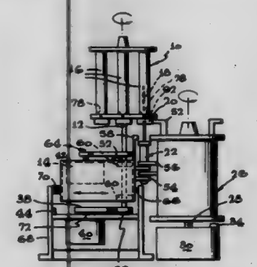
each of said printing medium strips being extended from the feeding roll to the printing positions together with said respective one of said printing heads when the printing heads shift down to the printing positions from the throw-off positions.

5,298,925

LEAD POSITIONER FOR A PENCIL PLOTTER

Richard Freudenberger, Fountain Valley, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Mar. 9, 1992, Ser. No. 848,589
Int. Cl.[5] G01D *15/16*; B43L *13/00*
U.S. Cl. 346—139 R **9 Claims**



1. A lead positioner for a pencil plotter comprising:

a lead stocker containing a plurality of leads for use in a pencil plotter;

a lead actuator mechanism coupled to said lead stocker for releasing said leads into a lead holder; and

shaker means coupled to said lead stocker for imparting a vibrational motion to said lead stocker prior to said lead actuator mechanism releasing said leads to enable said leads to be released individually into said lead holder, said shaker means including a looped cam positioned to engage said lead stocker and means for rotationally driving said cam to cause said cam to have a rotational motion so as to impart said vibrational motion to said lead stocker.

5,298,926

INK JET RECORDING APPARATUS AND METHOD FOR CAPTURING SATELLITE INK DROPLETS AND INK MIST

Hisashi Fukushima, Yokohama; Yasushi Miura, Kawasaki, and Nobuhiko Takekoshi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1991, Ser. No. 752,278
Claims priority, application Japan, Aug. 31, 1990, 2-227930
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—140 R **18 Claims**

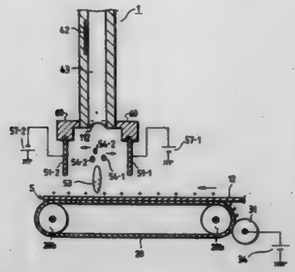
1. An ink jet recording apparatus, comprising:

an ink jet head for discharging an ink using an on-demand type system;

conveying means for conveying a recording medium on which said ink discharged from said ink jet head has been deposited to form an image, said conveying means being provided opposite to said ink jet head; and

a pair of electrodes provided along an ejection path of said ink between said ink jet heat and said conveying means,

wherein said ink is discharged as a droplet during recording and said droplet comprises a relatively large-diametered main droplet which is meant to record and a relatively small-diametered sub-droplet which is not meant to re-



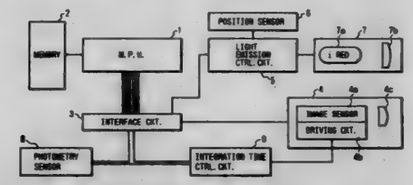
cord, and wherein said sub-droplet is electrically charged and floating in said ejection path and at least one of said pair of electrodes attracts said electrically charged sub-droplet.

5,298,927

VISUAL AXIS DETECTOR HAVING A HIGH SENSITIVITY TO A LIGHT FROM AN EYE

Kazuki Konishi, Tokyo, and Akihiko Nagano, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,493
Claims priority, application Japan, Jan. 8, 1991, 3-11494
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—211 **16 Claims**



14. A visual axis detector comprising:

illumination means for illuminating an eye;

optical means for guiding light from the eye, the light being in a form of a light intensity distribution;

photo-sensing means, having an array of photo-cells, for receiving the light guided by said optical means, and for generating an electrical signal corresponding to the light intensity distribution;

arithmetic operation means for calculating a visual axis of the eye in accordance with the electrical signal generated by said photo-sensing means; and

control means for controlling an accumulation time of said photo-sensing means in accordance with an intensity of light reflected by a portion of the eye.

5,298,928

WATERPROOF CAMERA

Tatsuya Suzuki, and Shunji Matsutani, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

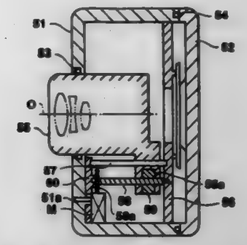
Filed Jul. 29, 1992, Ser. No. 922,050
Claims priority, application Japan, Aug. 2, 1991, 3-194456
Int. Cl.[5] G03B *17/08, 17/04*
U.S. Cl. 354—64 **25 Claims**

1. A waterproof camera comprising:

a lens tube advanceable and retractable in direction of an optical axis;

a camera body for slidably supporting said lens tube in a watertight state; and

a manipulation member, provided on one of said lens tube and said camera body, for causing said lens tube to advance and retract when manipulated and substantially simultaneously forming an air hole through which an interior of said lens tube or said camera body communicates with the outside air in relation to said manipulation.

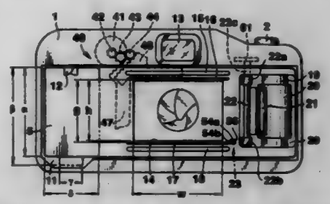


5,298,929

CAMERA

Katsuhiko Tsunefuji, Sagamihara; Masaki Tokui, Kanagawa; Sumio Kawai, Hachioji; Akira Watanabe, Fuchu, and Koji Suzuki, Shiki, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 926,500
Claims priority, application Japan, Aug. 9, 1991, 3-200877; Nov. 25, 1991, 3-309334
Int. Cl.[5] G03B *17/02*
U.S. Cl. 354—159 **26 Claims**



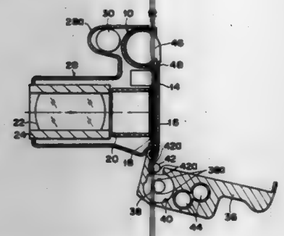
1. A camera for selectively supporting one of a film having perforations along upper and lower edges and a film not having the perforations, comprising:

masking plates for photographic screen size setting that are installed in a camera body to be freely movable between an inside position covering said perforations and an outside position exposing the regions occupied by said perforations;

a perforation detecting means for determining whether perforations are present along the edges of at least the photographic screens of a film loaded in said camera body; and

a masking plate driving means for receiving an output of said perforation detecting means, moving said masking plates to said inside screen size setting when a film is perforated, and moving said masking plate to said outside screen size setting when a film is imperforated.

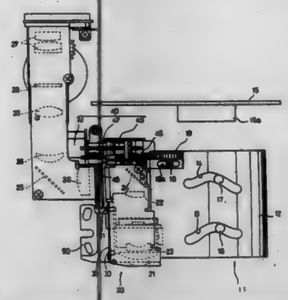
5,298,930
CAMERA AND FILM WINDING MECHANISM THEREOF
Yasuo Asakura; Mutumi Naruse, both of Hachioji; Michiharu Saito, Okaya, and Keita Takahasi, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 21, 1991, Ser. No. 703,626
Claims priority, application Japan, May 25, 1990, 2-136818; May 25, 1990, 2-136819; Aug. 3, 1990, 2-207328; Aug. 24, 1990, 2-223617
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] G03B *1/18*
U.S. Cl. 354—173.1 33 Claims



1. A camera comprising:
a camera body in which an opening is mounted for determining a photographing bundle of rays and for forming a photographing picture, and a patrone containing chamber is located sidewardly adjacent to the opening and is used for containing a patrone to be used for the camera,
a rear cover coupled to the camera body so as to be openable and closable for mounting the patrone into the patrone containing chamber and dismounting the patrone from the patrone containing chamber;
a sprocket which is pivotally supported by the rear cover behind an imaginary plane including the opening of the camera body and which is used for feeding a film, the film being exposed by the photographing bundle of rays passing through the opening, toward the backside of the imaginary plane; and
a spool which is pivotally supported by the rear cover behind the opening and the sprocket and which takes up the film, fed toward the backside by the sprocket, with a photographic-emulsion coating surface of the film being located radially inside on the pool.

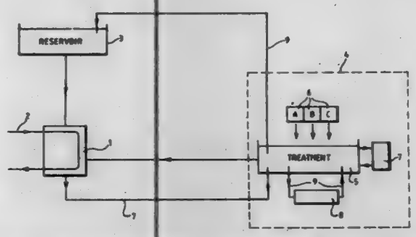
5,298,931
ELECTRONIC STILL CAMERA
Nobuharu Suzuki; Tshei Morisawa, and Makoto Mogamiya, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 416,979, Oct. 4, 1989, abandoned. This application Feb. 13, 1992, Ser. No. 833,614
Claims priority, application Japan, Oct. 4, 1988, 63-250271
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] G03B *13/08*
U.S. Cl. 354—225 19 Claims

1. A camera comprising:
a photographing optical system;
a photographing element located at a surface of said photographing optical system on which an image is formed; and
an erect image finder optical unit disposed separately from said photographing optical system;
said erect image finder optical unit defining a fixed optical path, and wherein the optical path of said erect image finder optical unit is defined within a plane and comprises a forward optical path disposed in parallel to said photographing optical system and at a position close to the optical axis thereof; a rearward optical path disposed at a position spaced from the optical axis of said photographing optical system farther than the forward optical path and on the same side of said photographing optical system; and a deflected optical path for connecting the forward optical path to the rearward optical path, the deflector



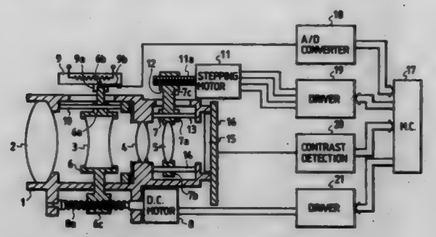
optical path disposed at a position forward of said photographing element,
said photographing optical system comprising a camera body, said erect image finder optical unit comprising a view finder which is integral with and internal of said camera body.

5,298,932
METHOD FOR REPLENISHING PHOTOGRAPHIC DEVELOPER SOLUTIONS
Peter J. Twist, Bucks, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 17, 1992, Ser. No. 931,056
Claims priority, application United Kingdom, Aug. 21, 1991, 9118007
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 9 Claims



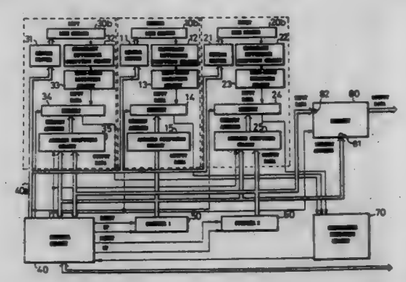
1. A method of replenishing a photographic developer solution in a processing apparatus which comprises a developer tank containing developer tank solution, comprising:
maintaining a quantity of developer-addition solution sufficient for an extended period of time in a developer-addition reservoir;
adding the developer-addition solution to the developer tank solution at a rate higher than the standard replenishment rate for the process being operated to produce overflow from the developer tank,
conveying the overflow from the developer tank to a replenishment station,
adding a replenisher to the overflow in the replenishment station at the end of the extended period to account for chemical consumption during the extended period to produce the developer-addition solution, and returning the developer-addition solution to the developer-addition reservoir.

5,298,933
IMAGE PICKUP APPARATUS
Tatsuo Chigira, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 29, 1992, Ser. No. 875,681
Claims priority, application Japan, May 2, 1991, 3-100743
Int. Cl.[5] G03B *5/00, 13/36;* G02B *7/10*
U.S. Cl. 354—400 19 Claims



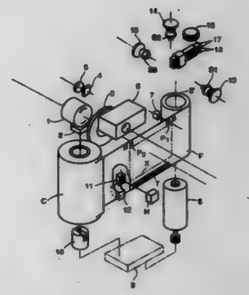
1. An image pickup apparatus comprising:
(A) a lens;
(B) a stepping motor to drive said lens;
(C) first control means for determining a driving frequency of a driving signal of said stepping motor; and
(D) second control means for variably changing a driving waveform of the driving signal in accordance with whether the driving frequency determined by said first control means is equal to or higher than a predetermined frequency or not.

5,298,934
RANGE FINDER FOR PASSIVE TYPE AUTOFOCUSSING DEVICE
Minoru Ishiguro, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan
Continuation-in-part of Ser. No. 958,665, Oct. 8, 1992, and a continuation-in-part of Ser. No. 834,636, Feb. 12, 1992. This application Oct. 15, 1992, Ser. No. 961,544
Claims priority, application Japan, Oct. 16, 1991, 3-296458; Oct. 16, 1991, 3-296459; Oct. 16, 1991, 3-296460; Oct. 16, 1991, 3-296461
Int. Cl.[5] G03B *3/00*
U.S. Cl. 354—402 6 Claims



1. A range finder for a passive type autofocusing device, the range finder comprising:
a first photosensor, a second photosensor, and a third photosensor, said photosensors adapted to pick up a luminance distribution on a scene to be photographed;
secondary difference computing circuits coupled to said photosensors to compute secondary differences of output signals from the respective photosensors;
zero-cross detecting circuits coupled to said secondary difference computing circuits to detect zero-cross points of output signals from the respective secondary difference computing circuits;
zero-cross memory circuits coupled to delecting circuits for storing the zero-cross behavior signals obtained by the respective zero-cross detecting circuits; and
a coincidence detecting circuit coupled to said memory circuits to compare the zero-cross behavior signals stored in the respective zero-cross memory circuits and thereby to detect a coincidence of these zero-cross behavior signals;
wherein said first photosensor is selected as a reference photosensor and the zero-cross behavior signals obtained from said second and third photosensors are successively shifted relative to the zero-cross behavior signal obtained from the reference photosensor until a coincidence of these zero-cross behavior signals is detected by the coincidence detecting circuit;
wherein a pixel location of at least one photosensor where zero-cross data exists is provided with a predetermined width tolerance on both sides of said pixel location so that coincidence can be effectively detected when the zero-cross data from at least one of the other two photosensors fall within said width tolerance of said pixel location; and
wherein a range to the scene to be photographed is computed based on an amount of such shifting.

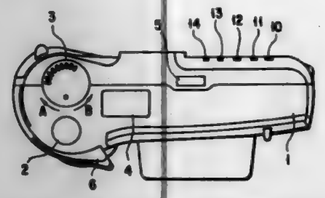
5,298,935
CAMERA PHOTOGRAPHIC LIGHT SOURCE DETERMINING APPARATUS
Toru Nagata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 15, 1993, Ser. No. 5,214
Claims priority, application Japan, Jan. 20, 1992, 4-027551
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—430 44 Claims



1. A camera photographic light source determining apparatus comprising:
(A) photometric means for performing photometry of a plurality of different ranges;
(B) determination means for determining a photometric range of the plurality of different ranges, where a main light source for illuminating an object is present, in response to said photometric means; and
(C) detection means for detecting a type of the main light source in response to said determination means.

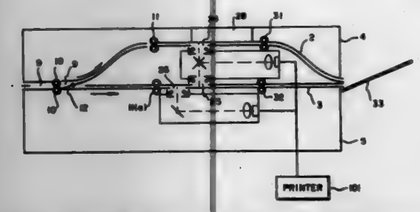
VOL 1160 ISS 5 MR 29 1994 UMI

5,298,936
MODE SELECTING AND DISPLAYING CONTROL APPARATUS FOR CAMERA
Hiroshi Akitake, Sagamihara; Minoru Hara, Tokyo, and Kazuo Yamamoto, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1992, Ser. No. 995,962
Claims priority, application Japan, Jan. 10, 1992, 4-022042
Int. Cl.[5] G03B 17/18
U.S. Cl. 354—471 54 Claims



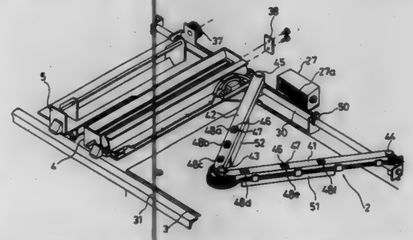
1. A mode selecting and displaying control apparatus for a camera, which selects a mode group from a plurality of photographic mode groups in photographing performed by a camera main body, and selects and displays one mode of a selected mode group, comprising:
manually operable first operation means for selecting one mode group from the plurality of photographic mode groups and starting a mode selecting operation from a selected mode group;
second operation means for selecting one mode from the selected mode group after the mode selecting operation is started upon manual operation of said first operation means;
first display control means for displaying all modes belonging to the selected mode group in accordance with the manual operation of said first operation means;
second display control means for flickering/displaying one mode selected in accordance with an operation of said second operation means; and
third display control means for confirming the mode selecting operation in accordance with a releasing operation of said second operation means, and displaying only a selected mode.

5,298,937
HIGH PRODUCTIVITY METHOD AND APPARATUS FOR SCANNING SIMPLEX OR DUPLEX ORIGINALS
Lawrence B. Telle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 4, 1993, Ser. No. 341
Int. Cl.[5] G03B 27/32; G03G 21/00
U.S. Cl. 355—23 16 Claims



1. A scanning apparatus for simplex and duplex document scanning, said apparatus comprising:
a first and a second document path for transporting the documents to be scanned;
a first scanning station positioned adjacent both document paths for scanning a first surface of documents transported along one of said document paths and a second surface of the documents transported along another document path,
a second scanning station positioned adjacent only one of said document paths for scanning the surface, adjacent to said second scanning station, of documents traveling along said document path, and
means for selectively directing the documents to the first and second document paths for scanning.

5,298,938
SCANNING APPARATUS AIR CONDITIONER
Kenichi Tanabe, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jan. 12, 1993, Ser. No. 3,326
Claims priority, application Japan, Jan. 20, 1992, 4-007435
Int. Cl.[5] G03B 27/52, 27/62
U.S. Cl. 355—30 18 Claims

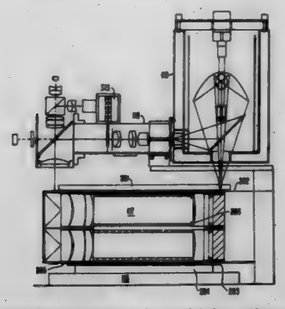


1. An apparatus for planar scanning of an image contained in an original material, comprising:
a transparent plate for retaining an original source;
an optical system disposed in a position beneath said plate, for scanning said original material retained on said plate;
a size-detection arm disposed under said plate, having sensors for measuring a size of said original material retained on said plate;
means for blowing cooling air into a space below said plate; and
means for flow-directional guiding of said cooling air, provided on said size-detection arm.

5,298,939
METHOD AND APPARATUS FOR TRANSFER OF A RETICLE PATTERN ONTO A SUBSTRATE BY SCANNING
Paul A. Swanson, 3585 Millet Ct., San Jose, Calif. 95127; John A. Gibson, 655 Oneida Dr., Sunnyvale, Calif. 94087, and Jeffrey G. Knirck, 868 Jasmine Dr., Sunnyvale, Calif. 94086
Filed Nov. 4, 1991, Ser. No. 788,146
Int. Cl.[5] G03B 27/42
U.S. Cl. 355—53 16 Claims

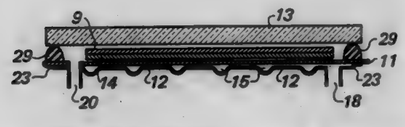
1. A photolithographic system comprising:
an illumination section;
a reticle mount adjacent the illumination section for holding a reticle comprising a pattern for fabrication of the electronic devices;
a unity magnification optical relay system having at least two optical elements for forming an erect and non-reversed image for imaging the reticle onto a substrate, the reticle mount located between the illumination section and the optical relay system;
a substrate mount for holding the substrate on the opposite side of the optical relay system relative to and substantially parallel to the reticle mount during the photolithographic process;
means for substantially locking the reticle mount and the substrate mount together during the entire photolithographic process; and

means for providing relative motion of the interlocked reticle and substrate mounts with respect to the optical relay



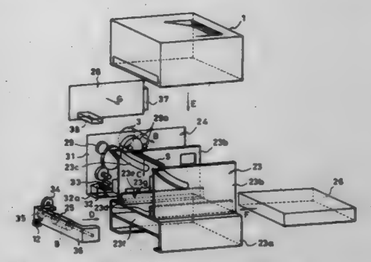
and illumination systems in multiple, adjacent, partially overlapping scans.

5,298,940
RAPID VACUUM HOLD DOWN SYSTEM AND METHOD
Albert H. Ohlig, 487 Esther St., Costa Mesa, Calif. 92627
Filed Jan. 28, 1993, Ser. No. 10,535
Int. Cl.[5] G03B 27/20
U.S. Cl. 355—91 7 Claims



1. Vacuum blanket apparatus for securing the position of a sheet, the apparatus comprising:
a plate disposed to reference the placement of a sheet;
a flexible, substantially gas-impervious membrane disposed to overlay a sheet in position relative to the plate for forming a seal therewith to provide a first region for containing the sheet adjacent one surface of the membrane;
a substantially rigid template having recesses therein oriented in a selected pattern and overlaying the membrane in vacuum-sealing relationship therewith to provide a second region adjacent a surface of the membrane opposite said one surface of the membrane; and
vacuum means including a first conduit communicating with the first region and a second conduit communicating with the second region for initially urging said opposite surface of the membrane into the recesses of the template in response to vacuum applied to the second region via the second conduit to configure the one surface of the membrane to include recesses therein substantially in the selected pattern of the recesses in the template, the vacuum means also evacuating air from the first region via the first conduit to urge the patterned one surface of the membrane and a sheet in contact therewith into contact with the plate, and the vacuum means subsequently admitting air to the second region to release said opposite surface from the recesses in the template thereby to reconfigure the one surface of the membrane without the selected pattern of recesses for urging the substantially smooth one surface of the membrane and a sheet contained in the first region into contact with the plate.

5,298,941
IMAGE FORMING APPARATUS HAVING GROUNDED METAL PLATE SUPPORTING DRIVE TRANSMITTING MEMBERS AND SEPARATING ELECTRICAL EQUIPMENT UNITS
Chitose Tenpaku, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,263
Claims priority, application Japan, Jul. 15, 1991, 3-200091
Int. Cl.[5] G03G 15/00
U.S. Cl. 355—200 6 Claims



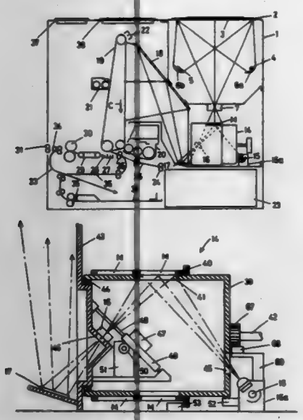
1. An image forming apparatus comprising:
image forming means for forming an image onto a recording material;
a driving source for driving said image forming means;
a plurality of drive force transmitting members for transmitting a drive force from said driving source to said image forming means;
a plurality of electrical equipment units for controlling said image forming means, each of said plurality of electrical equipment units being disposed on a substrate; and
a metal plate interposed between at least two of said plurality of electrical equipment units, wherein said metal plate is grounded and is operable to support said plurality of drive force transmitting members.

5,298,942
COPYING APPARATUS HAVING LIQUID CRYSTAL CELLS
Yoshiaki Ibuchi, Nara; Akira Tamagaki, Soraku; Naoyuki Kamei, and Yoshigumi Maitani, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 30, 1992, Ser. No. 954,394
Claims priority, application Japan, Nov. 20, 1991, 3-304777; Nov. 25, 1991, 3-309359; Nov. 25, 1991, 3-309360; Nov. 27, 1991, 3-312693; Dec. 4, 1991, 3-302675; Dec. 4, 1991, 3-320676
Int. Cl.[5] G03G 15/04, 21/00
U.S. Cl. 355—202 11 Claims

1. An image forming apparatus comprising:
a document table for placing a document to be copied thereon;
first irradiating means for irradiating first light onto the document on the document table and causing image light to be reflected from the same;
a drum including a hollow polyhedron cylinder of which facets have windows;
a liquid crystal cell attached to each window of the drum for receiving image light on the one surface thereof to pick up a document image therein, and for receiving second light on the back surface thereof inside the drum to cause the image to be read out;
second irradiating means for irradiating second light onto the back surface of the liquid crystal cell and reflecting the same;
drum driving means for rotating the drum so that the liquid crystal cell provided on each window of the drum can sequentially receive image light reflected by the document from outside the drum on the one surface thereof and

second light irradiated by the second irradiating means on the back surface thereof;

a photoreceptor for receiving second light reflected by the back surface of the liquid crystal cell from the inside of the drum to form an electrostatic latent image corresponding to a document image;



developing means for developing the electrostatic latent image;

transferring means for transferring the developed image onto a copy paper; and

fixing means for fixing the transferred image.

5,298,943

IMAGE FORMING APPARATUS FOR CORRECTING IMAGE DENSITY DRIFT

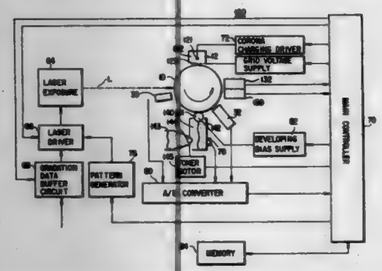
Naoaki Ide, and Rintaro Nakane, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 21, 1992, Ser. No. 964,271

Claims priority, application Japan, Oct. 21, 1991, 3-271665; Sep. 24, 1992, 4-280525

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **9 Claims**



1. An apparatus for forming an image on an image bearing member, comprising:

means for rotating said image bearing member;

means for charging said image bearing member rotated by said rotating means;

means for emitting a light beam to said image bearing member charged by said charging means so as to form a latent image on said image bearing member;

means for repeatedly detecting surface potentials of exposed areas and unexposed areas while said image bearing member is rotated by said rotating means;

means for developing the latent image formed on said image bearing member;

means for applying a developing bias voltage to said developing means;

means for estimating a surface potential of said image bearing member opposed to said developing means based on the surface potentials detected by said detecting means; and

means for setting the developing bias voltage applied by said applying means in accordance with a decay character of the surface potential estimated by said estimating means.

5,298,944

TESTING IMAGE DENSITY TO CONTROL TONER CONCENTRATION AND DYNAMIC RANGE IN A DIGITAL COPIER

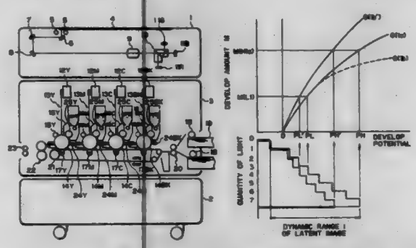
Noboru Sawayama; Takayuki Maruta, and Mitsuo Hasebe, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 827,868, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 545,508, Jun. 29, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 92,940

Claims priority, application Japan, Jun. 30, 1989, 1-168760

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **15 Claims**



1. In an image forming system comprising charging means for uniformly charging a surface of a photoconductive element to a predetermined potential, and exposing means for exposing said surface of said photoconductive element to a light image to electrostatically form a latent image on said surface, a developing system for developing said latent image to produce a toner image, comprising:

sensor pattern forming means for forming two toner image patterns on the photoconductive element, each of said two toner image patterns having a different particular toner density on the photoconductive element;

a photosensor for sensing toner densities of toner deposited on said two toner image patterns; and

control means for determining a difference between the sensed toner densities of toner deposited on the two toner image patterns, for variably controlling an amount of toner to be supplied to a developer and for variably controlling a dynamic range of a latent image such that the toner density difference between said two toner image patterns is maintained at a predetermined difference value, wherein said dynamic range represents a difference between maximum and minimum values of a surface potential of said photoconductive element on which said latent images are formed.

5,298,945

ELECTROPHOTOGRAPHIC PRINTING MACHINE

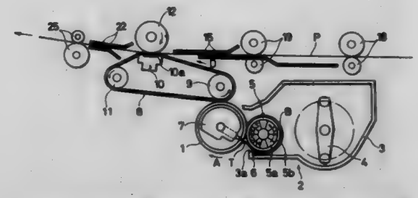
Takasumi Wada, Nara; Kimihide Tsukamoto, and Tomohiro Oikawa, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 946,920

Claims priority, application Japan, Sep. 20, 1991, 3-240977

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **5 Claims**



1. An electrophotographic printing machine comprising:

photoreceptor means including a base having an electrically conductive layer and a photoconductive layer laminated in this order;

toner hold means for holding an electrically conductive toner and applying the electrically conductive toner to be in contact with the photoconductive layer;

voltage application means for applying voltage across the electrically conductive toner and the electrically conductive layer; and

exposure means for exposing a contacting area of the photoconductive layer, the area being in contact with the electrically conductive toner;

wherein a toner image is formed on the photoconductive layer by exposing the photoconductive layer by said exposure means while voltage is being applied across the electrically conductive toner and the electrically conductive layer, thereby forming a toner image on a surface of the photoconductive layer, further comprising:

moving means in contact with the photoconductive layer of said photoreceptor means, with at least a surface in contact with the photoconductive layer thereof being dielectric;

transfer means for transferring the toner image formed on the photoconductive layer of said photoreceptor means to said moving means; and

melt transfer fixing means for melting toner of the toner image that has been transferred to said moving means and further transferring the toner image onto a copying material to be permanently affixed thereto;

wherein said moving means includes a metal belt and a dielectric layer formed on a surface thereof, the dielectric layer being in contact with said photoreceptor means.

5,298,946

COLOR IMAGE FORMING APPARATUS WITH REMOVABLE CARTRIDGE AND EXPOSURE THROUGH SHEET PATH

Satoshi Haneda; Shizuo Morita; Masakazu Fukuchi, and Hideo Satoh, all of Tokyo, Japan, assignors to Konica Corporation, Japan

Filed Dec. 1, 1992, Ser. No. 983,967

Claims priority, application Japan, Dec. 3, 1991, 3-319408; Dec. 9, 1991, 3-324766; Dec. 26, 1991, 3-345201; Dec. 26, 1991, 3-345202

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **17 Claims**

1. An apparatus for forming a color toner image comprising:

a photoreceptor on which a color toner image is formed;

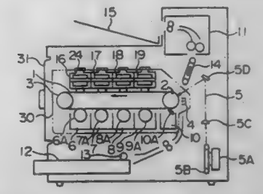
a charging device for charging said photoreceptor to a given electric potential;

an exposure device for exposing said charged photoreceptor with an image light to form a latent image;

a plurality of developing devices for developing said latent image to form a toner image;

a transfer device for transferring said toner image onto a transfer sheet;

a sheet passage at one side of which said photoreceptor is disposed so that said transfer sheet is conveyed through



said sheet passage and is brought into contact with said photoreceptor on said transfer device; and

said exposure device disposed at the other side of said sheet passage so that said image light irradiated from said exposure device crosses said sheet passage and proceeds to said photoreceptor,

said charging device being disposed on said transfer device and used as a transfer electrode to transfer said toner image from said photoreceptor to said transfer sheet.

5,298,947

PROCESS FOR RECORDING IMAGES ON AN ELECTROSTATIC INFORMATION RECORDING MEDIUM WITH DELAYED DISCONNECTION OF CHARGE ACCUMULATION VOLTAGE

Takashi Aono; Minoru Utsumi; Hiroyuki Obata; Kohji Ichimura, and Masayuki Iijima, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

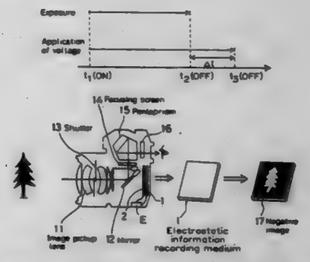
PCT No. PCT/JP90/01497, § 371 Date Jul. 16, 1991, § 102(e) Date Jul. 16, 1991, PCT Pub. No. WO91/07702, PCT Pub. Date May 30, 1991

PCT Filed Nov. 16, 1990, Ser. No. 720,858

Claims priority, application Japan, Nov. 16, 1989, 1-298391; Dec. 22, 1989, 1-333078; Dec. 28, 1989, 1-342248; Jul. 12, 1990, 2-186021; Jul. 12, 1990, 2-186022; Jul. 12, 1990, 2-186023

Int. Cl.[5] G03G *15/00, 5/00*

U.S. Cl. 355—211 **22 Claims**

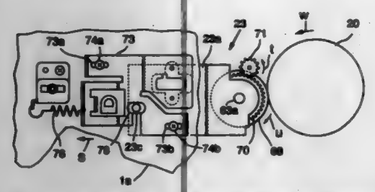


1. An image-recording process wherein a photosensitive member including a photoconductive layer on a support through an electrode layer is located in opposite relation to electrostatic information recording medium including an insulating layer on a support through an electrode layer, and image exposure is then carried out while voltage is applied between the layers of the photosensitive member and the charge-carrying medium to accumulate charges on the electrostatic information recording medium in an imagewise form, characterized in that, after putting off said image exposure, the voltage ap-

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plied between said electrode layers is put off after the lapse of duration, during which carriers generated by said image exposure reach said electrostatic information recording medium.

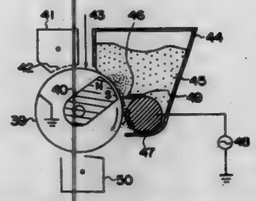
5,298,948
DEVELOPING DEVICE IN AN IMAGE FORMING APPARATUS
Toshiyuki Kurisu, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 20, 1992, Ser. No. 871,296
Claims priority, application Japan, Apr. 26, 1991, 3-096607
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—245 **7 Claims**



1. An image forming apparatus having an image carrier, comprising:
means for providing a latent image on the image carrier;
a developing roller having a shaft for applying a toner to a latent image on the image carrier to develop the latent image by rotation thereof around the shaft;
a first gear mounted on the shaft for transferring a rotational force to the developing roller;
a casing for supporting the developing roller and the first gear;
a support member for supporting the casing such that the casing is movable between a first position where the developing roller closely faces the image carrier and a second position where the developing roller is in a non-contact relationship with the image carrier, the casing being detachably supported on the support member;
urging means for urging the support member toward the second position with a first force; and
a second gear, meshed with the first gear when the casing is supported on the support member, for transferring the rotational force to the first gear and for urging the developing roller toward the first position with a second force greater than the first force.

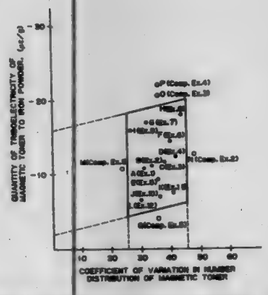
5,298,949
METHOD AND APPARATUS FOR REMOVING A PORTION OF A DEVELOPING MATERIAL DEPOSITED ON A NON-IMAGE AREA OF A SURFACE OF A LATENT IMAGE CARRIER
Hajime Yamamoto, Ibaraki, and Hiroshi Terada, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 14, 1992, Ser. No. 868,338
Claims priority, application Japan, Apr. 16, 1991, 3-083905; May 23, 1991, 3-118270; May 23, 1991, 3-118274; Jun. 3, 1991, 3-130928
Int. Cl.[5] G03G *13/00*
U.S. Cl. 355—246 **13 Claims**

1. An electrophotographic method comprising the steps of:
providing an electrostatic latent image carrier supported for movement in one direction and having a stationary magnet enclosed therein, an electrode roll spaced from the latent image carrier with a gap defined between the electrode roll and the latent image carrier, and a mass of magnetic one component developer;
forming an electrostatic latent image on a surface of the latent image carrier;
magnetically depositing the magnetic one component developer on the surface of the latent image carrier by said stationary magnet; and
causing the electrode roll to remove the one component developer which has been deposited on a non-image area



of the surface of the latent image carrier while allowing the one component developer to remain as deposited on the image area by applying an alternating current voltage to said electrode roll.

5,298,950
IMAGE FORMING APPARATUS
Hirohide Tanikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 618,364, Nov. 21, 1990, abandoned. This application Dec. 30, 1992, Ser. No. 998,866
Claims priority, application Japan, Nov. 22, 1989, 1-302203
Int. Cl.[5] G03G *15/09*
U.S. Cl. 355—251 **16 Claims**



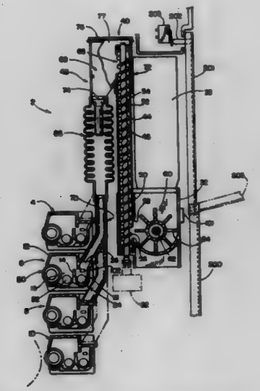
1. An image forming apparatus comprising a developing means comprising a latent image carrying member, a toner carrying member and a toner container, for developing an electrostatic latent image formed on the latent image carrying member, and a transfer means for transferring to a transfer medium a toner image formed on the latent image carrying member;
said latent image carrying member and said toner carrying member being disposed with a given gap;
said toner container holding a magnetic toner, said magnetic toner being fed onto the toner carrying member, wherein;
said magnetic toner comprises a binder resin and a magnetic powder and has a volume average particle diameter of from 7 μm to 10 μm, and the number distribution and quantity of triboelectricity of magnetic toner particles satisfy the following expression:

$$0.1\times A+2\leq -Q\leq 0.1\times A+16$$

wherein A represents a real number of from 25 to 45 calculated as a coefficient of variation of number distribution, $(S/\overline{D}_1)\times 100$,
wherein S represents a standard deviation of the number distribution of magnetic toner particles and $\overline{D}_1$ represents a number average particle diameter (μm), and

Q represents a value of the quantity of triboelectricity (μc/g) of the magnetic toner produced by friction with an iron powder.

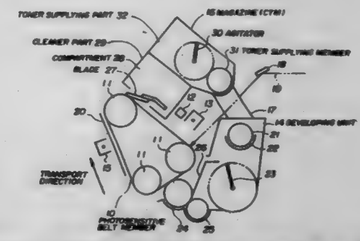
5,298,951
IMAGE FORMING APPARATUS WITH TONER MONITORING SYSTEM
Masami Kai, Kashihara, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Nov. 25, 1992, Ser. No. 981,549
Claims priority, application Japan, Nov. 29, 1991, 3-342484
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **12 Claims**



1. An image forming apparatus, comprising:
a toner container for stocking a toner to be fed to a developing device;
compartment means in a body of the image forming apparatus for receiving and supporting a toner cartridge in operative relationship to said toner container for supplying toner to said toner container;
a rotator provided in the toner container, for discharging the toner from the toner container;
an opening provided in said body of the image forming apparatus for inserting a toner cartridge through said opening for supplying the toner to the toner container;
an openable opening cover for covering the opening;
an opening cover detector for detecting whether the opening cover is open; and
control means for preventing the rotator from rotating when the opening cover detector detects that the opening cover is open.

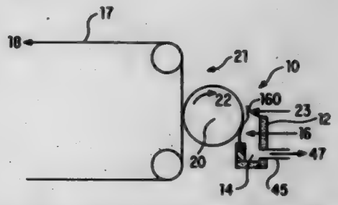
5,298,952
TONER SUPPLYING DEVICE FOR IMAGE FORMING SYSTEM
Masahiko Kamijo, Kawasaki, and Shigemi Kanda, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,770
Claims priority, application Japan, Jul. 15, 1991, 3-173798
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—270 **8 Claims**

1. A toner supplying device for use in an image forming system, said device comprising:
cleaner means for removing toner from a photosensitive medium of the image forming system so as to store the toner of the photosensitive medium in said cleaner means; and
toner supplying means, integrally formed with said cleaner means, having a compartment for storing toner and a mechanism for supplying the toner of the compartment to a developing unit so that a toner image is formed on a copy sheet in accordance with an electromagnetic latent image on the photosensitive medium;
said toner supplying means including agitator means for agitating the toner within the toner supplying means so as to prevent said toner from sticking to an inside wall of the toner supplying means, said agitator means being rotatable around a longitudinal axis of said agitator means, and said



toner supplying means further including an oscillating member with a leading edge portion which comes into contact with an inside portion of said compartment of said toner supplying means when said agitator means is rotated, said oscillating member being arranged so as to transversely extend within said compartment of said toner supplying means, and said oscillating member being oscillated by said agitator means.

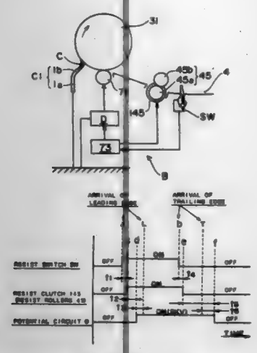
5,298,953
BIASED TRANSFER ROLL CLEANER
Nero R. Lindblad, Ontario, and Bruce E. Thayer, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 27, 1993, Ser. No. 52,979
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—271 **21 Claims**



1. A cleaning apparatus, for use in removal of residual toner and paper particles from the hard, smooth surface of a rotating biased transfer roll in an electrophotographic device, the cleaning apparatus comprising:
a cleaner housing mounted adjacent to the biased transfer roll, the housing comprising a cleaner sump to which a cleaning blade is rigidly mounted and fixedly positioned in interference with the rotating biased transfer roll such that its beam deflection provides the force required to clean the surface of the biased transfer roll and a flexible flap seal, which is mounted to the cleaner housing upstream of the cleaning blade in the process direction.

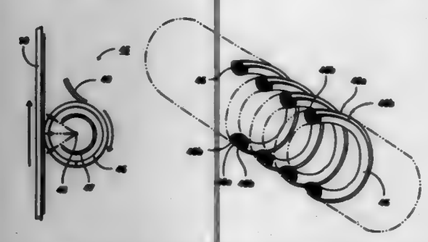
VOL 1160 ISS 5 MR 29 1994 UMI

5,298,954
IMAGE FORMING APPARATUS
Shigeo Fujita, Moriguchi, and Ryuji Wataki, Nara, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Oct. 9, 1992, Ser. No. 958,732
Claims priority, application Japan, Oct. 15, 1991, 3-266447
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **7 Claims**



1. An image forming apparatus comprising:
a developing device for developing an electrostatic latent image formed on a photoreceptor;
a transferring roller for transferring the developed image onto a paper;
electric charge removing means provided at the downstream side of said transferring roller in the paper delivery direction for elastically contacting the photoreceptor when there is no paper, and for removing electric charges from the paper as it is delivered; and
control means for starting to apply voltage to said transferring roller at a time which is earlier by a predetermined time than a time at which the leading edge of the paper arrives at a transferring position, and releasing the application of the voltage to said transferring roller at a time which is later by a predetermined time than a time at which the trailing edge of the paper passes through the transferring position.

5,298,955
BLADE CLEANABLE CORONA POROUS TRANSFER DEVICE
Lloyd F. Bean, and Thomas R. Race, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 29, 1993, Ser. No. 38,363
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **32 Claims**

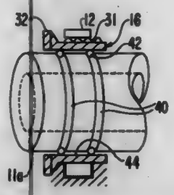


1. An apparatus for transferring a developed image from a moving photoconductive surface to a moving copy sheet, including:
means for charging the copy sheet to attract the developed image from the photoconductive surface to the copy sheet;
rotatable pressing means charging means for pressing the copy sheet into contact with at least the developed image on the photoconductive surface in the region of said charging means to substantially eliminate transfer deletions that are caused by non-contact between the photoconductive surface and the copy sheet; and
flexible cleaning means positioned to clean said rotatable pressings means.

5,298,956
REINFORCED SEAMLESS INTERMEDIATE TRANSFER MEMBER
Joseph Mammino; Donald S. Sypula, both of Penfield; John S. Berkes, Webster; Edward L. Schlueter, Jr., Rochester; Gerald M. Fletcher, Pittsford; Frank J. Bonsignore, Rochester; Shy-Shung Hwang, Penfield; Donald J. Robertson, Fairport; Allen W. Denham, Williamson; Paul J. Brach, Rochester, and Dennis a. Abramsohn, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 7, 1992, Ser. No. 957,140
Int. Cl.[5] G03G *15/16, 15/14*
U.S. Cl. 355—275 **36 Claims**

1. A seamless intermediate transfer member comprising a reinforcing member in an endless configuration, a filler material embedded in the reinforcing member and dispersed particles of an electrical property regulating material at a volume loading to provide conductive pathways above the percolation threshold of said member.

5,298,957
FUSER ROLL APPARATUS HAVING A HEAT STABILIZING COLLAR
George J. Haupt, Williamson, and Robert Pugh, Jr., Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 25, 1992, Ser. No. 981,662
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **16 Claims**

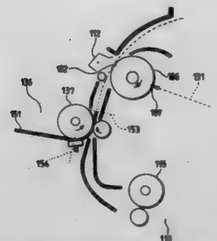


1. Apparatus for minimizing heat transfer between the end of the fuser roll and the fuser bearing, the collar having an outer surface contacting the fuser bearing and an inner surface contacting the fuser roll, at least one of the inner surface and the outer surface of the collar including a plurality of protrusions contacting one of the fuser bearing and the fuser roll to reduce heat transfer between the fuser roll and the fuser bearing

5,298,958
IMAGE FORMING APPARATUS
Kazuhiko Takahashi, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed May 18, 1992, Ser. No. 884,025
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—317 **4 Claims**

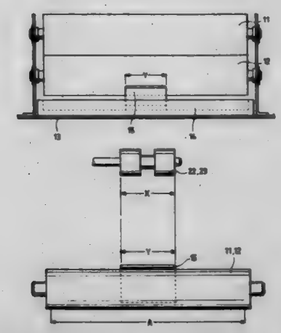
1. An image forming apparatus comprising:
a photoreceptor for rotationally displacing, at a fixed speed, a toner image formed on a surface of said photoreceptor in accordance with image information;

feed rolls for feeding, at a fixed speed, recording paper from selected one of a plurality of paper supply portions to a transfer initiation position through corresponding one of recording paper feed paths;
a timer which starts counting for each of said paper supply portions from a point of time when feeding of recording paper by said feed rolls is started;



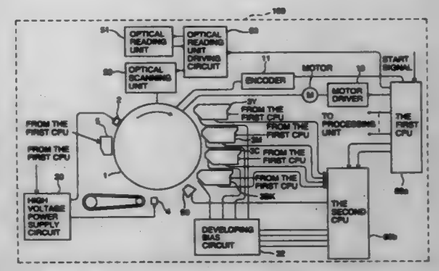
stopping means for making said feed rolls stop when said timer completes counting of a predetermined time; and
feed roll drive means for making rotation of said feed rolls restart in response to initiation of arrival of image information.

5,298,959
IMAGE FORMING APPARATUS WITH RE-FEEDING MEANS
Hironobu Saito, Yokohama; Mitsuhiro Mukaea, Kawasaki, and Ryusei Kominato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1992, Ser. No. 970,824
Claims priority, application Japan, Nov. 8, 1991, 3-293033; Nov. 8, 1991, 3-319651
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—319 **9 Claims**



1. An image forming apparatus, comprising:
image forming means for forming a non-fixed image on a recording sheet;
a fixing rotary member for fixing the non-fixed image to the recording sheet;
a containing portion for containing the recording sheet to which the image was fixed by said fixing rotary member;
re-feeding means for re-feeding the recording sheet contained in said containing portion to said image forming means, said re-feeding means including a separation rotary member for separating the recording sheets contained in said containing portion one by one; and
coating means for coating a parting liquid to said fixing rotary member, said coating means for coating the parting liquid on an area of said fixing rotary member smaller than a fixing area of said fixing rotary member and substantially equal to an area corresponding to said separation rotary member.

5,298,960
TONER ADHESION AMOUNT DETECTING APPARATUS FOR AN IMAGE FORMING APPARATUS
Masakazu Fukuchi, Hachioji; Shizuo Morita, Tachikawa, and Shizuo Kayano, Sagamihara, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed May 11, 1993, Ser. No. 59,285
Claims priority, application Japan, May 27, 1992, 4-160305
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **5 Claims**



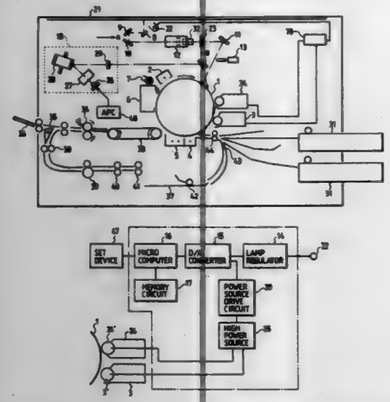
1. A method for determining toner adhesion amounts of a plurality of color toners on a toner image holding means, comprising the steps of:
forming a plurality of reference latent images, each of which is corresponding to a respective component color image of a reference toner image;
developing said reference latent images, each of which is developed with a respective color toner of the plurality of color toners, so that developed reference latent images are superimposed each at a time on the toner image holding means to form said reference toner image;
detecting the toner adhesion amounts of the plurality of color toners by detecting said reference toner image every time when one of said developed reference latent images is superimposed on a same portion of said toner image holding means; and
determining whether said toner adhesion amounts of said plurality of color toners are normal or abnormal according to results of said detecting step.

5,298,961
IMAGE FORMING APPARATUS WITH PARALLEL EXPOSURE PROCESSING
Hatsuo Tajima, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 30, 1992, Ser. No. 859,809
Claims priority, application Japan, Mar. 29, 1991, 3-89154
Int. Cl.[5] G03G *15/04, 15/06, 21/00*
U.S. Cl. 355—202 **7 Claims**

1. An image forming apparatus comprising:
an electrophotographic photosensitive member;
first optical means for forming a first electrostatic latent image on said photosensitive member, said first optical means including a light source for illuminating an original to be recorded, and a focusing optical system for projecting light reflected from the original illuminated by said light source onto said photosensitive member;
second optical means for forming a second electrostatic latent image on said photosensitive member, said second optical means including modulated light emitting means for emitting light modulated in response to a record image

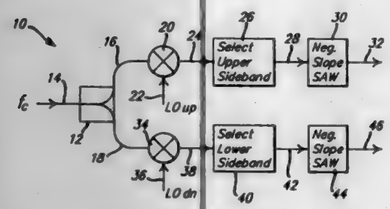
VOL 1160 ISS 5 MR 29 1994 UMI

signal, and optical means for exposing the modulated light on said photosensitive member;
developing means for developing the first and second electrostatic latent images;
adjusting means for changing a luminous intensity of the light source to form a first electrostatic latent image; and
control means for controlling a development bias voltage applied to said developing means to develop the second electrostatic latent image, in correspondence to a change in amount of the luminous intensity of said light source,



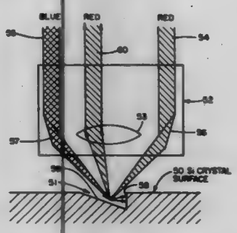
wherein a development bias voltage applied to said developing means to develop a first electrostatic latent image remains constant, regardless of the change in the development bias voltage for the second electrostatic latent image, and
wherein intensity of the light emitted from said modulated light emitting means remains constant, regardless of the change in the luminous intensity of said light source.

5,298,962
PULSE COMPRESSION SIGNAL PROCESSOR UTILIZING IDENTICAL SAW MATCHED FILTERS FOR BOTH UP AND DOWN CHIRPS
Charles E. Nourcier, Lakewood, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 5, 1992, Ser. No. 971,793
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—5 **14 Claims**



1. A pulse compression signal processor for processing a received chirped laser radar return echo signal wherein said echo is centered about a center frequency and has an up chirp component and a down chirp component comprising:
(a) means for splitting said received return echo into a first signal and a second signal;
(b) means for processing said first signal including mixing said first signal with a first local oscillator signal to produce a first resulting signal, extracting an upper sideband component from said first resulting signal and compressing said upper sideband component using a first negative slope matched filter to produce a compressed up chirp component of the received return echo signal; and
(c) means for processing said second signal including mixing said second signal with a second local oscillator signal to produce a second resulting signal, extracting a lower sideband component from said second resulting signal and compressing said lower sideband component using a second negative slope matched filter to produce a compressed down chirp component of the received return echo signal.

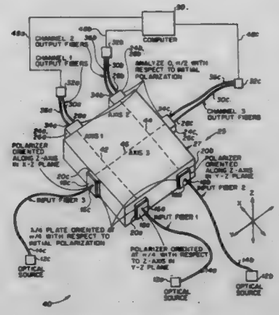
5,298,963
APPARATUS FOR INSPECTING THE SURFACE OF MATERIALS
Kazuo Moriya, and Takayuki Tsuzura, both of Ageo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed Feb. 26, 1992, Ser. No. 842,073
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—31 **9 Claims**



1. A surface inspecting apparatus for measuring and estimating etch pits of a sheet-like object to be inspected, comprising:
a movable stage with the object mounted thereon,
a source of white light for lighting the surface of the object by making a plurality of illumination lights respectively having different wavelengths incident on the surface of said object from respective predetermined different directions,
image pickup means for fetching the image of the object under illumination of said lighting means as image data obtained on the respective different wavelengths,
means for moving said stage in the X-direction which is the longitudinal vertical direction, in the Y-direction which is the left and right side, in the Z-direction which is perpendicular to the plane of said stage and in the θ direction which is the direction of rotation around said Z-direction,
image data processing means comprising a color camera for measuring and estimating said image data for etch pits of the object,
means for reflecting the light of different wave length, and changing the light path and computer means for determining said etch pits by computation.

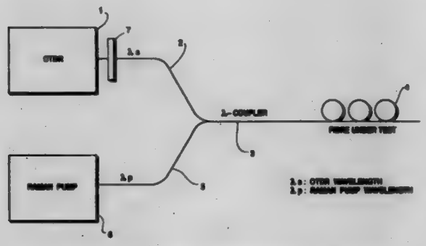
5,298,964
OPTICAL STRESS SENSING SYSTEM WITH DIRECTIONAL MEASUREMENT CAPABILITIES
Bruce N. Nelson, South Boston, and Malcolm C. Smith, Hollliston, both of Mass., assignors to Geo-Center, Inc., Newton Centre, Mass.
Filed Mar. 31, 1992, Ser. No. 861,223
Int. Cl.[5] G01L *1/24*
U.S. Cl. 356—33 **24 Claims**

1. An optical sensing system for measuring applied stress, comprising:
a sensing element comprising a monolithic isotropic material exhibiting stress induced birefringence;
means for establishing a first polarized light beam along a first optical path through the sensing element having a first known directional sensitivity to applied stress;
means for establishing a second polarized light beam along a second optical path through the sensing element having a second known directional sensitivity to applied stress;



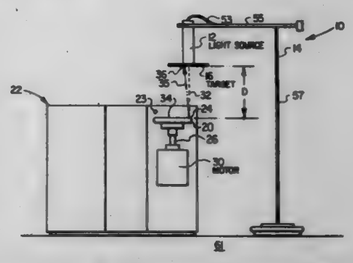
means for establishing a third polarized light beam along a third optical path through the sensing element having a third known directional sensitivity to applied stress;
measuring means for measuring an optical response of each of the first, second, and third optical paths to applied stress; and
determining means, responsive to the measuring means, for determining a magnitude and a direction of the applied stress.

5,298,965
OTDR USING DISTRIBUTED OPTICAL AMPLIFICATION IN OPTICAL WAVEGUIDE UNDER TEST
David M. Spirit, Melton, and Latz C. Blank, Colchester, both of England, assignors to British Telecommunications public limited company, London, England
PCT No. PCT/GB90/00961, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992, PCT Pub. No. WO90/15979, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 22, 1990, Ser. No. 834,293
Claims priority, application United Kingdom, Jun. 22, 1989, 8914364; Jul. 1, 1989, 8915165
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—73.1 **22 Claims**



1. An optical time domain reflectometer comprising:
a source of optical pulses,
means for launching the optical pulses into a waveguide to be tested, and
means for optically pumping the waveguide with cw light to produce gain at the optical pulse wavelength, said gain being distributed over a substantial length of the waveguide including at least a portion of the waveguide closest to the reflectometer.

5,298,966
MEASUREMENT SYSTEM
Michael Berman, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Nov. 10, 1992, Ser. No. 974,135
Int. Cl.[5] G01B *11/26*; G01C *1/00*; B05D *1/00*
U.S. Cl. 356—154 **15 Claims**

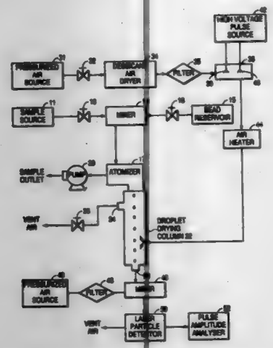


1. Apparatus for the measurement of angular deflection of a spinning surface comprising:
a light source for emitting a beam of light toward said surface to be measured for generating a reflection therefrom;
means for supporting said light source, said support means comprising means for permitting said light source to assume a select orientation;
reflective matter secured to said spinning surface;
a reflection target secured relative to said light source for displaying light reflected from said surface;
means associated with said target for determining the location and movement of said reflected light upon said target during the spin of said spinning surface as an indication of angular deflection thereof;
said select orientation being generally parallel to the pull of gravity; and
wherein said support means comprises a gimbal mounting fixture adapted for securing said light source therein and permitting said light source to depend therefrom and assume an angular orientation parallel with the pull gravity.

5,298,967
MEASUREMENT OF CONCENTRATIONS OF DISSOLVED SOLVENT
David Wells, Arlington, Va., assignor to Pacific Scientific Company, Newport Beach, Calif.
Filed Jun. 2, 1992, Ser. No. 892,026
Int. Cl.[5] G01N *15/02, 30/02, 1/28*
U.S. Cl. 356—336 **18 Claims**

2. A method of measuring minute concentrations of dissolved solids in a liquid comprising mixing a solid seed particle of a known size with said liquid, atomizing said liquid into droplets including a measurement droplet of a known size

containing said seed particle, drying said measurement droplet to a residue particle consisting said seed particle and a shell of



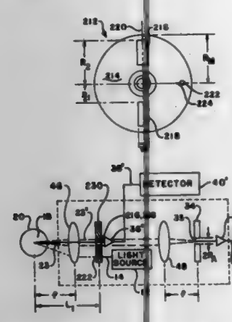
said solid material around said seed particle, and measuring the size of said residue particle.

5,298,968

COMBINED OPTICAL TRAIN FOR LASER SPECTROSCOPY

H. Michael Cheung, Boston Heights, Ohio, assignor to The University of Akron, Akron, Ohio

Division of Ser. No. 723,853, Jul. 1, 1991, which is a continuation-in-part of Ser. No. 403,096, Sep. 5, 1989, Pat. No. 5,028,135. This application Aug. 10, 1993, Ser. No. 105,000
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—338 9 Claims



1. An optical element for selectively masking a light beam passing between a first and a second focusing lens, said element comprising:

a generally flat disc comprising material that is opaque to said light beam, said generally flat disc positioned coaxially between said first and said second focusing lens;

said disc having a radius R_M extending outwardly from a center, said radius being at least at large as the radius of the first focusing lens;

said flat disc further having a first and a second identical slit disposed symmetrically and radially outwardly from said center on a single diameter, said first slit on a first side of said center and said second slit on the other side of said center, said first and second slit having a first end at a radius R_1 from said center and a second end at a radius R_2 from said center, R_2 being larger than R_1, said first and second slit also having a width w; and

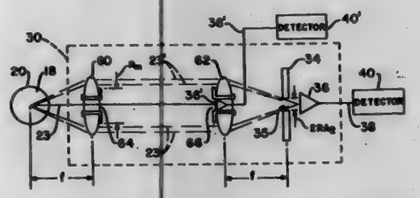
said disc having an eccentrically centered circular aperture having a light source positioned proximate thereto so as to direct a light beam through said circular aperture toward said first focusing lens.

5,298,969

COMBINED OPTICAL TRAIN FOR LASER SPECTROSCOPY

H. Michael Cheung, Boston Heights, Ohio, assignor to The University of Akron, Akron, Ohio

Continuation-in-part of Ser. No. 403,096, Sep. 5, 1989, Pat. No. 5,028,135. This application Jul. 1, 1991, Ser. No. 723,853
The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—340 15 Claims



1. An optical train for simultaneously measuring the intensity and fluctuations of a light beam scattered by a sample contained in a sample cell, said train being disposed upon a base to move smoothly in an arc coplanar to the scattered light beam and receive the light beam along a longitudinal axis thereof, said train comprising in this order from the end of said train which receives said scattered light beam;

a first focusing lens having a radius R_L and focal length f;

an optical masking element comprising a generally flat disc comprising material that is opaque to said light beam, said disc having a radius R_m extending outwardly from a center, said radius being at least at large as the radius R_L; said disc further having first and second identical slits disposed symmetrically and radially outwardly from said center on a single diameter, said first slit on a first side of said center and said second slit on the other side of said center, said first and second slits having a first end at a radius R_1 from said center and a second end at a radius R_2 from said center R_2 being larger than R_1, said first and second slits also having a width w;

a second focusing lens, having a radius at least as large as R_L and a focal length f';

aperture element comprising an opaque plate with an aperture of radius R_A bored concentrically therethrough;

first light detecting means; and

first light analyzing means;

said first focusing lens, optical masking element, second focusing lens, aperture element and first light detecting means being disposed colinearly, in that order, upon the base along the axis of the scattered light beam, such that each is centered upon the light beam, the first focusing lens being located one focal length f from the center of the sample cell, said optical masking element being between said first and second focusing lenses, the second focusing lens being one focal length f' ahead of the aperture element, and the first light detecting means being proximate to the aperture element;

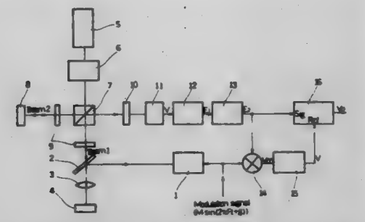
said first light detecting means communicated to said first analyzing means by electrical wiring means, irrelevant of whether said first analyzing means is disposed upon said base.

5,298,970

SAMPLE EVALUATING METHOD BY USING THERMAL EXPANSION DISPLACEMENT

Hiroyuki Takamatsu; Yoshiro Nishimoto, both of Kobe, and Shingo Sumie, Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 672,570, Mar. 20, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,241
Claims priority, application Japan, Mar. 20, 1990, 2-70968; Mar. 20, 1990, 2-70968; Aug. 10, 1990, 2-213052
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—349 6 Claims



1. A method for sample evaluating by measuring thermal expansion displacement on the surface of the sample, which is produced by irradiating the sample with an excitation beam of which intensity is cyclically modulated at a frequency F, comprising the steps of:

irradiating a surface position of the sample which is subjected to thermal expansion by irradiation of the excitation beam with a measuring beam having an optical frequency F1 to produce a reflection beam;

interfering said reflection beam with a reference beam having an optical frequency F2;

photoelectrically converting said interference beam to electric signals E;

obtaining beat wave signals E1 of the electric signals E having a beat frequency Fb where Fb=F1−F2;

binarizing the beat wave signals E1 and converting the beat wave signals E1 to binary signals E2 to prevent changes in reflectivity of said sample due to temperature change and plasma density change of said sample from influencing measurement of thermal expansion displacement; and

extracting components of the frequency Fb−F or Fb+F from the binary signals E2, thereby causing the sample to be evaluated according to the amplitude and phase of the respective component.

5,298,971

LATERAL SHEAR INTERFEROMETER FOR TESTING ASPHERIC SURFACES

June-Jei Huang, and Chi-Hui Chang, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 23, 1992, Ser. No. 950,076
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 2 Claims

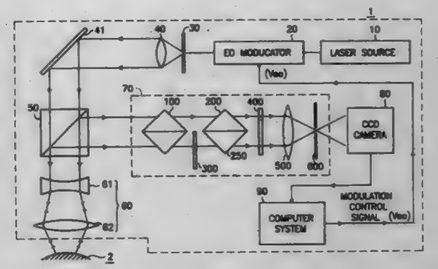
1. A lateral shear interferometer for testing an aspheric surface, comprising:

(a) means for generating a coherent light beam;

(b) means for guiding the coherent light beam to the aspheric surface, the coherent light beam incident upon the aspheric surface being reflected back to form a reflected light beam;

(c) means for guiding the reflected light beam into a beam path;

(d) a lateral shear producing element including at least a pair of cubic prisms disposed with a same orientation relative to the beam path, each of said cubic prisms having at least one semi-reflective plane arranged therewithin such that a ray in the reflected light beam that propagates within a predefined range and incident thereupon with an incident angle θ_i will exit therefrom with a pair of rays having a refraction angle θ_r equal to the incident angle θ_i, said pair cubic prisms being capable of converting rays propagating within the predefined range into a first beam of parallel rays and a second beam of parallel propagating divergently with respect to each other rays, the first beam of



parallel rays and the second beam of parallel rays having lateral shear interferences;

(e) an aperture stop allowing only one of the first beam of rays and the second beam of rays to pass therethrough while rejecting the other; and

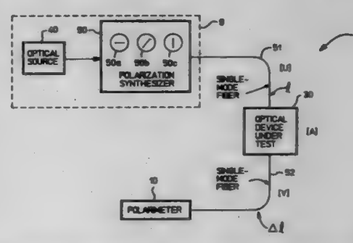
(f) means for analyzing the lateral shear interference pattern formed by the beam of rays passing through said aperture stop.

5,298,972

METHOD AND APPARATUS FOR MEASURING POLARIZATION SENSITIVITY OF OPTICAL DEVICES

Brian L. Heffner, Redwood City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 601,613, Oct. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 468,397, Jan. 22, 1990, abandoned. This application Sep. 6, 1991, Ser. No. 755,931
Int. Cl.[5] G01J *4/04*
U.S. Cl. 356—364 23 Claims



1. A method for calibrating an optical polarization meter to compensate for any polarization distortion caused by optical elements, which polarization distortion leads to transmission loss that is independent of polarization, the method comprising the steps of:

transmitting a first incident polarized light beam from a polarized optical source through the optical elements to the meter;

measuring a set of Stokes parameters of the first incident beam;

computing a first normalized Stokes vector according to the Stokes parameters of the first incident beam;

transmitting a second incident polarized light beam from the

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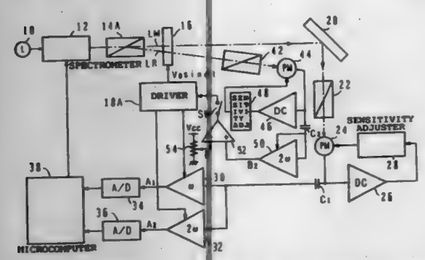
polarized optical source through the optical elements to the meter, the second incident beam having a polarization different from that of the first incident beam;
measuring a set of Stokes parameters of the second incident beam;
computing a second normalized Stokes vector according to the Stokes parameters of the second incident beam;
computing a set of calibration factors according to the normalized Stokes vectors; and
correcting polarization parameters of an unknown light beam as measured by the meter according to the calibration factors to provide a calibrated polarization measurement.

5,298,973

PHASE DIFFERENCE CONTROLLER AND METHOD FOR CONTROLLING PHASE DIFFERENCE

Tomoyuki Fukazawa, Hachioji; Mitsuru Sano, Sagamihara, and Nobuyuki Sakayanagi, Tama, all of Japan, assignors to Jasco Corporation, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,378
Claims priority, application Japan, Jul. 5, 1991, 3-190995
Int. Cl.[5] G01J *4/00*; G02F *1/01*
U.S. Cl. 356—368 **8 Claims**



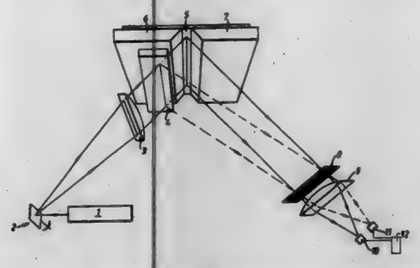
1. A phase difference controller for controlling a phase difference $\delta_0 \sin(\omega t - \Phi)$ between two linearly polarized components, which electrical vectors vibrate in direction perpendicular to each other, of light out of a photoelastic modulator which is forced to vibrate at angular frequency ω by an input voltage $V_0 \sin \omega t$, where δ_0 is amplitude of the phase difference, t is time, Φ is phase and V_0 is amplitude of the input voltage, comprising:
a splitting polarizer (14A) for splitting incident linearly polarized monochromatic light into main light (LM) and reference light (LR), said split main light and reference light passing through the photoelastic modulator, said main light being used as the phase-difference controlled light, said reference light being used for controlling the phase difference;
an analyzer (42) for passing through said reference light from said photoelastic modulator;
a photodetector (44) for detecting said reference light from said analyzer; and
a photoelastic modulator control circuit (18A, 46–50) for outputting the voltage $V_0 \sin(\omega t)$ to the photoelastic modulator and adjusting the amplitude V_0 so that a ratio of amplitude of ac component of angular frequency of 2ω to magnitude of dc component included in an output of said photodetector is maintained constant in order to make the amplitude δ_0 constant.

5,298,974

APPARATUS FOR DETERMINING THE SURFACE TOPOGRAPHY OF AN ARTICLE

Paul J. Chandley, Southport, United Kingdom, assignor to Pilkington plc, United Kingdom

Filed Oct. 17, 1991, Ser. No. 778,275
Claims priority, application United Kingdom, Oct. 17, 1990, 9022477
Int. Cl.[5] G01B *11/30*; G01N *21/00*
U.S. Cl. 356—371 **17 Claims**



1. Apparatus for determining the surface characteristics of a substantially flat article, comprising:
a concentrated light beam source;
scanning means to deflect the light beam from the source so as to produce a line scan with the beam;
a first lens means to collimate the light beam of the line scan;
locating means which defines exposure means, the locating means being arranged to locate the substantially flat article in relation to the exposure means and to enable a section of the surface of the article to be exposed to the collimated light beam through the exposure means;
a grating of constant spacing through which the portion of the collimated light beam specularly reflected by the exposed surface of the article on the locating means is caused to pass;
a second lens means disposed down stream of said grating to focus the collimated light beam passing through the grating onto a sample detector means which generates a signal indicative of the intensity of the light hitting the sample detector means; and
means to generate a base reference signal, wherein the signal from the sample detector means and the base reference signal are processed by a microprocessor to provide an indication of the surface characteristics of the article.

5,298,975

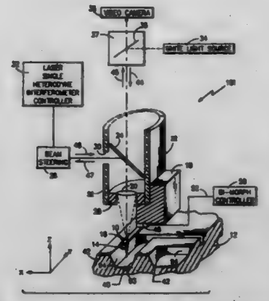
COMBINED SCANNING FORCE MICROSCOPE AND OPTICAL METROLOGY TOOL

Henri A. Khoury, Yorktown Heights; Calvin K. Chi, Elmhurst; Joachim G. Clabes, Yorktown Heights; Philip C. D. Hobbs, Briarcliff Manor; Laszlo Landstein, Ossining; Martin P. O'Boyle, Peekskill; Hemantha K. Wickramasinghe, Chappaqua, and Sandra K. Wolterman, Billings, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1991, Ser. No. 767,300
Int. Cl.[5] G01B *11/02, 11/04*
U.S. Cl. 356—375 **29 Claims**

1. A metrology tool for measuring critical dimensions in a sample comprising:
a) a probe having at least one tip,
b) at least one white light source for directing a white light onto said probe for detecting proximity of said probe to said sample,
c) at least one beam steering means for directing a beam of laser light onto said probe for detecting proximity of said probe to said sample,

d) at least one means for insuring said white light and said beam of laser light reaches said probe in a colinear manner,
e) at least one bimorph piezo for vibrating at least a portion of said probe at the surface of the sample,
f) wherein said vibrating probe reflects said white light to a video system, and said beam of laser light is reflected by



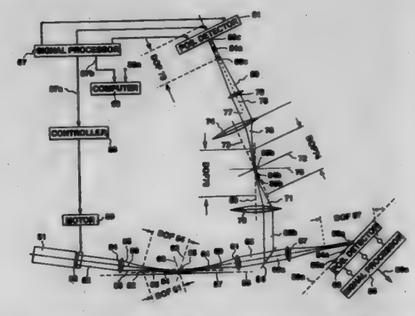
said vibrating probe to at least one heterodyne controller, and therefore a change in vibration of said vibrating probe due to the proximity of said vibrating probe to said sample's surface is viewed through said video system while said heterodyne controller is used to do a continuous measurement of said sample's surface and thereby said critical dimensions of said sample are obtained through said heterodyne controller.

5,298,976

METHOD AND APPARATUS FOR MEASURING SURFACE DISTANCES FROM A REFERENCE PLANE

Arie Shahar, 10 David Street, 56910 Moshav Magshimin, Israel, and Nira Schwartz, 1314 Wellington Pl., Aberdeen, N.J. 07747

Filed Nov. 16, 1992, Ser. No. 976,834
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—375 **20 Claims**



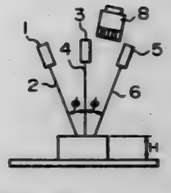
1. A method of measuring the distance of an examined surface from a reference plane, comprising the steps:
(a) directing a parallel beam of radiation along a first optical path which includes first focussing means for focussing the parallel beam as a spot on the examined surface and reflecting it therefrom as a reflected beam;
(b) converting the reflected beam to a parallel beam;
(c) directing a part of the reflected parallel beam through a second optical path which includes second focussing means for focussing the spot on a surface of a first detector located such that the position of the spot on the first detector includes both:
(i) drawback errors caused by variations in reflectivity, scattering, and/or interference in the examined surface; and
(ii) a plane displacement error, representing the distance between the plane of the examined surface and the reference plane;
(d) directing another part of the reflected parallel beam through a third optical path which includes third focussing means for focussing the spot on a surface of a second detector located such that the position of the spot on the second detector includes only said drawback errors (i);
(e) and utilizing the outputs of said first and second detectors for providing a measurement of the distance of the examined surface from the reference plane.

5,298,977

VISUAL INSPECTION METHOD FOR PART MOUNTED ON PRINTED CIRCUIT BOARD

Keiji Shintani, and Hiroo Uchiyama, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 7, 1992, Ser. No. 957,369
Claims priority, application Japan, Oct. 16, 1991, 3-267397
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—376 **6 Claims**



1. A method of inspecting a circuit board on which an electronic part is mounted, comprising the steps of:
directing three light beams having different colors from light sources onto a surface of a circuit board to be inspected at predetermined incident angles so that they are converged to a single light spot;
irradiating said three light beams onto an electronic part mounted on said circuit board;
measuring distances of positions on said electronic part to which said three light beams are irradiated respectively, from said single light spot on the surface of said circuit board; and
computing a height and an inclined angle of said electronic parts in accordance with relationship between said measured distances and said incident angles.

5,298,978

PIPETTE CALIBRATION SYSTEM

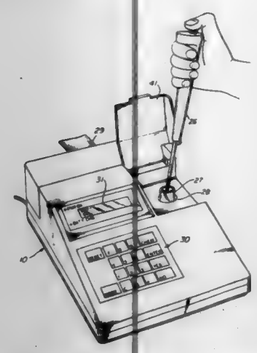
Richard H. Curtis, Gorham, Me., and Ann E. Rundell, West Lafayette, Ind., assignors to Artel, Inc., South Windham, Me.

Filed Feb. 28, 1992, Ser. No. 843,446
Int. Cl.[5] G01B *11/28*; G01N *21/00*
U.S. Cl. 356—379 **30 Claims**

1. A method for determining the volume of a vessel using a photometer, comprising the steps of:
a) positioning a container in a photometer, said container holding a reference solution having maximum absorbance at a first wavelength;
b) measuring the absorbance of said container at said first wavelength and at a second wavelength;
c) calculating the optical pathlength of said container at said

second wavelength from the measured absorbances at said first and second wavelengths;

d) introducing an aliquot of a sample solution into said container from a vessel to be calibrated, said sample solution having maximum absorbance at said second wavelength, and mixing said sample solution with said reference solution to form a mixture;



e) measuring the absorbance of said mixture in said container at said second wavelength; and

f) calculating the volume of the aliquot from the absorbance of said mixture and the optical pathlength of said container, the volume of said aliquot representing the volume of the vessel.

5,298,979

AUTOMATIC DIGITAL WHITE-BALANCING CIRCUIT UTILIZING MEMORY ADDRESSES TO DETERMINE WHERE WHITE-BALANCE CORRECTION IS NECESSARY

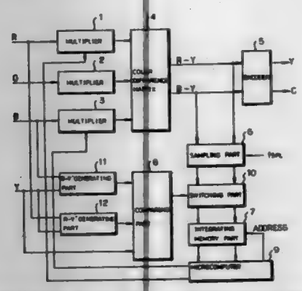
Sung H. Kim, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Sowun, Rep. of Korea

Filed Dec. 11, 1991, Ser. No. 804,735

Claims priority, application Rep. of Korea, Dec. 31, 1990, 90-23084

Int. Cl.[5] H04N *9/73*

U.S. Cl. 348—655 **14 Claims**



1. An automatic white balance circuit, comprising:

means for receiving video signals comprised of a luminance signal and color signals representative of a red color signal, a green color signal and a blue color signal;

multiplier means for multiplying selected ones of said color signals with corresponding ones of multiplying coefficients;

matrix means for generating first color-difference signals in dependence upon the outputs of said multiplier means;

encoder means for encoding said luminance signal and said first color-difference signals;

sampling means for sampling said first color-difference signals in dependence upon a sampling frequency to provide sampled signals;

means for generating second color-difference signals by combining said selected ones of said color signals with said luminance signal;

means for determining whether said second color-difference signals are in a white balance adjusting region to provide a balance enable signal;

integrating memory means for integrating the sampled signals in dependence upon said balance enable signal, and storing the integrated signals in accordance with designated addresses; and

processor means coupled to receive said integrated signals and said balance enable signal, for providing said designated addresses and said multiplying coefficients to control white balance of said video signals.

5,298,980

AUTOMATIC WHITE BALANCE REGULATING DEVICE WITH EXPOSURE DETECTING OPTICAL SENSOR

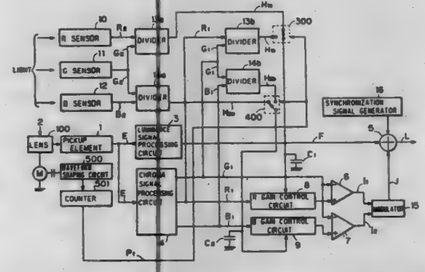
Kohji Shinomiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 644,559, Jan. 23, 1991, Pat. No. 5,185,658. This application Sep. 30, 1992, Ser. No. 954,044

Claims priority, application Japan, Feb. 5, 1990, 2-26802

Int. Cl.[5] H04N *9/73*

U.S. Cl. 348—224 **6 Claims**



1. An automatic white balance regulating device built in an image pickup device for shooting an object and provided with a color temperature sensor system and a camera color signal processing system, comprising:

a plurality of color sensors receiving the light around the place where said image pickup device is set in position to output a plurality of first color signals;

image pickup means for shooting said object to output a plurality of second color signals;

first control signal producing means for producing a first white balance control signal of said color temperature sensor system, using said first color signals;

second control signal producing means for producing a second white balance control signal of said camera color signal processing system, using said second color signals;

system selecting means for selecting said first white balance control signal when zooming in or out is performed by a predetermined amount, and selecting said second white balance control signal when it is not; and

level regulating means for regulating a level of predetermined one of said second color signals in response to said first or second white balance control signal selected by said system selecting means.

5,298,981

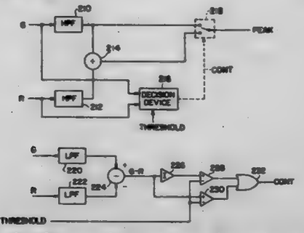
COLOR SIGNAL APERTURE CORRECTION SYSTEM HAVING AUTOMATICALLY SELECTED SOURCE SIGNAL

Robert J. Topper, Hatboro, Pa., and Lee R. Dischert, Medford, N.J., assignors to Panasonic Technologies, Inc., Secaucus, N.J.

Filed Oct. 22, 1992, Ser. No. 964,707

Int. Cl.[5] H04N *9/64, 5/208, 5/14*

U.S. Cl. 348—630 **8 Claims**



1. Video signal processing apparatus that processes at least first and second color information signals to generate an adaptive output peaking signal, said apparatus comprising:

first filtering means for applying a high-pass frequency response characteristic to said first color information signal to generate a first peaking signal;

second filtering means for applying a high-pass frequency response characteristic to said second color information signal to generate a second peaking signal;

comparison means including:

low-pass filtering means for applying respective low-pass frequency response characteristics to said first and second color information signals to generate respective first and second low-pass filtered color information signals;

means for subtracting one of said first and second low-pass filtered color information signals from the other one of said first and second low-pass filtered color information signals to generate a difference signal; and

means for comparing said difference signal, in magnitude, to a predetermined threshold value and for setting said control signal to said first state when the magnitude of the difference signal is less than the threshold value and to said second state when the magnitude of the difference signal is greater than the threshold value; and

selection means for providing said first peaking signal as said output peaking signal when said control signal is in said first state and for providing a combination of the first and second peaking signals as said output peaking signal when said control signal is in said second state.

5,298,982

TELEVISION RECEIVER WITH SWITCHABLE CHROMINANCE SIGNAL FILTER

William A. Lagoni, 4707 W. 81st Pl., Indianapolis, Ind. 46268

Filed Sep. 16, 1992, Ser. No. 946,285

Int. Cl.[5] H04N *9/64, 9/74*

U.S. Cl. 348—713 **10 Claims**

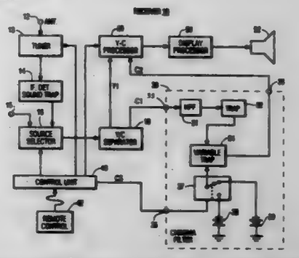
1. A chrominance signal sideband correction filter, comprising:

input means for receiving a selected one of a symmetrical chrominance input signal and a non-symmetrical chrominance input signal;

output means for providing a sideband corrected chrominance output signal;

a fixed high pass filter means coupled between said input and output means for determining a lower portion of the amplitude characteristic of said sideband correction filter;

a variable filter means coupled in cascade with said fixed high pass filter for providing attenuation of an upper sideband of said selected chrominance signal at one of two selectable frequencies for determining an upper portion of the amplitude characteristic of said sideband correction filter; and



frequency control means coupled to said variable filter means for tuning said variable filter means to one of said two selectable frequencies when a symmetrical chrominance input signal is selected and for tuning said variable filter to the other of said two selectable frequencies otherwise.

5,298,983

SMALL, HIGH-RESOLUTION COLOR DISPLAY APPARATUS

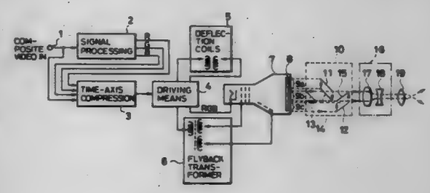
Akira Sano, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 801,929

Claims priority, application Japan, Dec. 12, 1990, 2-401659; Jun. 17, 1991, 3-144716

Int. Cl.[5] H04N *9/24, 9/31, 9/12*

U.S. Cl. 348—557 **19 Claims**



1. A color display apparatus, comprising:

signal-processing means for extracting red, green, and blue signals from a composite video signal;

time-axis compression means, coupled to the signal-processing means, for compressing and combining said red, green, and blue signals and adding synchronizing pulses to create a single RGB video signal in which said red, green, and blue signals appear successively in each horizontal scan period;

a cathode-ray tube coupled to receive said RGB video signal and display said red, green, and blue signals in separate areas as a first monochrome picture, a second monochrome picture, and a third monochrome picture, respectively, said first, second, and third monochrome pictures each having a non-standard aspect ratio;

optical superimposing means for combining red light from said first monochrome picture, green light from said second monochrome picture, and blue light from said third monochrome picture into a single color picture; and

enlarging means for enlarging said single color picture to a standard aspect ratio.

5,298,984

DEVICE FOR POSITIONING THE CATHODE RAY TUBES IN A PROJECTION TELEVISION SYSTEM

Kiyoshi Numata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

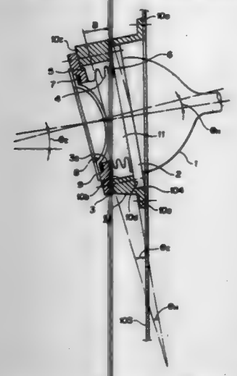
Filed Dec. 16, 1992, Ser. No. 991,340
Claims priority, application Japan, Dec. 18, 1991, 3-353786
Int. Cl.[5] H04N *5/645, 5/655, 5/74*
U.S. Cl. 348—778 7 Claims

1. A cathode ray tube device for a projection apparatus for projecting an image on a screen, comprising

a cathode ray tube, a supporting frame mounted on a rim of a front panel section of said cathode ray tube,

a lens plate in the form of a frame having a center aperture, said lens plate having a projection lens system attached thereto, and

a positioning supporting member detachably mounted on a mounting base plate of said projection apparatus and adapted for positioning said supporting frame and said lens plate with respect to said mounting base plate for detachably supporting said supporting frame and said lens plate by said mounting base plate, said positioning supporting member having a lens plate supporting surface for supporting said lens plate at a tilt angle corresponding to a convergence angle with respect to said mounting base plate and a supporting frame supporting surface for positioning and supporting said supporting frame at a tilt angle



corresponding to a elevation with respect to said lens plate and at a distance corresponding to a back focal length at back of said lens plate.

5,298,985

IMAGE CORRECTION APPARATUS FOR ADJUSTING IMAGES BY DIGITIALLY CONTROLLING ANALOG CORRECTION WAVEFORMS

Susumu Tsujihara, Neyagawa, and Yasuaki Sakanishi, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 19, 1991, Ser. No. 746,979
Claims priority, application Japan, Aug. 29, 1990, 2-229394
Int. Cl.[5] H04N *9/31*
U.S. Cl. 348—745 9 Claims

1. An image correction apparatus comprising:

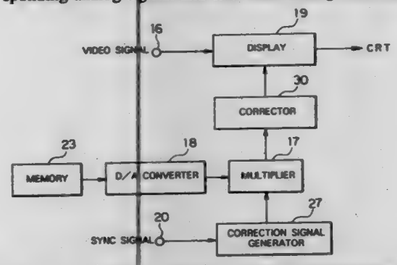
display means for displaying image information;

a plurality of correction means for adjusting an image displayed by said display means;

correction signal generating means for generating a basic analog correction signal;

means for storing digital correction data and generating serial digital correction signals corresponding to said plurality of correction means;

serial data input conversion means for receiving said serial digital correction signals implementing digital-to-analog conversion of said serial digital correction signals into corresponding analog signals and multiplying said corresponding analog signals and said basic analog correction



signal to produce converted analog correction signals corresponding to said plurality of correction means; and

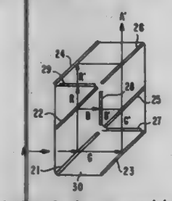
corrector means, receiving said converted analog correction signals, for supplying said converted analog correction signals to the corresponding correction means.

5,298,986

VIDEO PROJECTION APPARATUS

Mitsuru Owada, Kanagawa; Mizuho Tajima, Tokyo, and Yoshitake Nagashima, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 752,202, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 637,804, Jan. 7, 1991, abandoned, which is a division of Ser. No. 147,519, Jan. 25, 1988, Pat. No. 4,989,076. This application Feb. 3, 1993, Ser. No. 13,242
Claims priority, application Japan, Jan. 27, 1987, 62-015291; Jan. 27, 1987, 62-017830; Jan. 27, 1987, 62-017831
Int. Cl.[5] H04N *9/31*
U.S. Cl. 348—762 39 Claims



1. A light modulating device, comprising:

a radiation source for emitting light;

a polarization optical system which splits the light from said radiation source into first and second light beams having their respective planes of polarization mutually crossing at right angles, aligns the planes of polarization of the first and second light beams, and directs the first and second light beams into first and second optical paths substantially parallel to each other; and

a light modulator arranged to cross the first and second optical paths to modulate the intensity of the first and second light beams, wherein said light modulator includes a liquid crystal device.

5,298,987

METHOD FOR INVESTIGATING GROUND STRUCTURE OF PAVEMENT

Hiroshi Tomita, Tokyo, Japan, assignor to Geo Search Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 768,817
Claims priority, application Japan, Oct. 4, 1990, 2-267060
Int. Cl.[5] H04N *7/18*; G06K *9/00*
U.S. Cl. 348—82 7 Claims

1. A method for investigating a ground structure of a paved road, comprising the steps of:

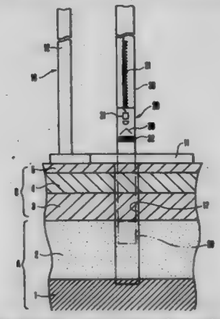
boring an investigation hole with a small diameter which reaches at least a sand layer of a roadbed, penetrating a paved floor of said paved road;

cleaning an inside of said investigation hole which is bored by said boring step;

photographing, in said investigation hole which has been cleaned by said cleaning step, an overall surface of an inner circumferential wall of said investigation hole by an image pickup means for providing an image of said overall surface;

sending said image to a warping microprocessor for providing photograph data of said image;

recording said photograph data in recording means; and



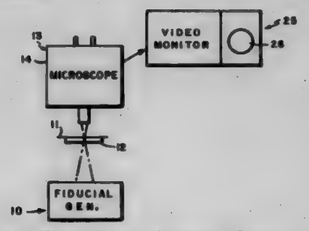
filling up said investigation hole after said photographing step is finished to repair the hole.

5,298,988

TECHNIQUE FOR ALIGNING FEATURES ON OPPOSITE SURFACES OF A SUBSTRATE

Patrick N. Everett, Concord, and William F. Delaney, Millville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 2, 1992, Ser. No. 893,191
Int. Cl.[5] H04N *07/18*
U.S. Cl. 348—87 15 Claims



1. A method for providing alignment of one or more elements on opposite surfaces of a substrate comprising the steps of

generating a fiducial image at an image plane;

displaying a video image of said fiducial on a display screen;

identifying the location of the video image of said fiducial on said display screen;

placing at said image plane a substrate having one or more elements on one surface thereof and having a photoresist material on the opposite surface thereof, said opposite surface lying in said image plane;

displaying a video image of one of said one or more elements on said display screen;

moving said substrate in said image plane until the video image of said one of said one or more elements is located on said display screen at the identified location of the video image of said fiducial;

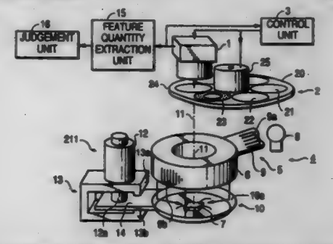
re-generating the fiducial image at said image plane so that the location of said fiducial image is marked in said photoresist material, the location of the fiducial image marked in said photoresist material on said opposite surface corresponding to, and being aligned with, the location of said one element on said one surface of said substrate.

5,298,989

METHOD OF AND APPARATUS FOR MULTI-IMAGE INSPECTION OF BONDING WIRE

Hiroyuki Tsukahara, Atsugi; Yoshitaka Oshima, Isehara, and Masato Nakashima, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 8, 1991, Ser. No. 666,709
Claims priority, application Japan, Mar. 12, 1990, 2-60852; Mar. 19, 1990, 2-69237
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—126 29 Claims



1. A method of inspecting bonding wires as an inspection object on a semiconductor in which a camera captures images of the inspection object while irradiating the inspection object with an illumination light to obtain a video signal which is to be processed to detect defects, said method comprising the steps of:

(a) providing a plurality of light-permeable plates for selective use with the camera, each light-permeable plate having an aperture size with a corresponding focal depth and a thickness with a corresponding focal position;

(b) capturing an image of at least one selected portion of the inspection object with one of the light-permeable plates to obtain image information including an amount of defocus of the first image of the inspection object and a height of the at least one selected portion of the inspection object based on a luminance distribution of the at least one selected portion;

(c) repeating step (b) a predetermined number of times, using different light-permeable plates providing different focal positions and focal depths each time; and

(d) making a comparison between the information for the at least one selected portion at the different focal positions of the inspection object to detect defects.

5,298,990

VIDEO SIGNAL BLOCK FORMING METHOD

Hideki Otaka, Neyagawa, and Tatsuro Juri, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

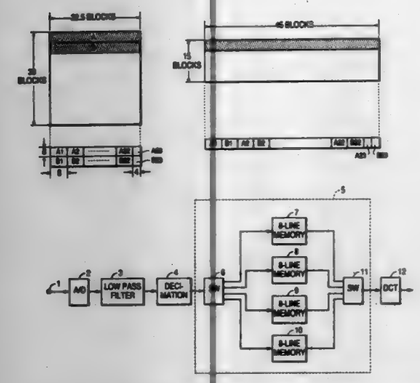
Filed Jul. 19, 1991, Ser. No. 733,210
Claims priority, application Japan, Jul. 20, 1990, 2-193625
Int. Cl.[5] H04N *7/12*
U.S. Cl. 348—420 8 Claims

1. A block forming method for dividing a video signal of (H×V) pixels composed of H horizontal pixels and V vertical pixels into blocks of (m×n) pixels each composed of m horizontal pixels and n vertical pixels, where the number H of horizontal pixels satisfies a condition expressed as $H=k\times m+r$, where k is an integer and where $r<m$, said method comprising the steps of:

dividing said video signal into blocks of (m×n) pixels each composed of m horizontal pixels and n vertical pixels and

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sub-blocks or (r×n) pixels each composed of r horizontal pixels and n vertical pixels; and



gathering m/r pieces of sub-blocks of (r×n) pixels to form a block of (m×n) pixels.

5,298,991

VARIABLE LENGTH CODING APPARATUS AND METHOD FOR MOTION VECTOR

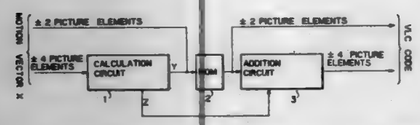
Yoichi Yagasaki; Jun Yonemitsu, both of Kanagawa; Veltman Mark, and Kaisuji Igarashi, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 918,010

Claims priority, application Japan, Aug. 3, 1991, 3-194576

Int. Cl.[5] H04N *7/157*

U.S. Cl. 348—416 **10 Claims**



1. A variable length coding apparatus for coding a motion vector comprising:

a motion vector detecting circuit, supplied with input picture data for a plurality of frames, for detecting a motion vector representing movement between two of said frames; and

a variable length coding circuit for coding said motion vector and for outputting a VLC code,

said variable length coding circuit comprising:

a memory circuit for storing a reference variable length coding table;

a control section for changing a method of accessing said variable length coding table in accordance with reference information concerning said motion vector; and

a variable length coding section for performing variable length coding corresponding to plural different kinds of said reference information concerning said motion vector under the control of said control section.

5,298,992

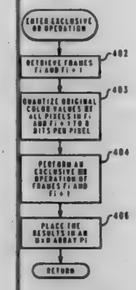
SYSTEM AND METHOD FOR FRAME-DIFFERENCING BASED VIDEO COMPRESSION/DECOMPRESSION WITH FORWARD AND REVERSE PLAYBACK CAPABILITY

Mark A. Pietras, Boynton Beach; Arturo A. Rodriguez, and Andres J. Saenz, both of Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1992, Ser. No. 958,403

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—415 **32 Claims**



1. A method of compressing a video segment allowing both forward and reverse playback from the compressed video segment, the method comprising the steps performed by a computer system of:

mapping a video segment into a time ordered sequence of a plurality of frames, each frame comprising an M×N array of quantized values;

comparing through an exclusive-OR operation the quantized values in corresponding locations of successive frames from the time ordered sequence of frames and placing null and non-null values representing results of the exclusive-OR operation into corresponding locations of an M×N result array;

encoding each successive M×N result array as a stream of non-null values from the M×N result array and location information for null values from the M×N result array; and

writing the stream to an output stage in a time ordered sequence.

5,298,993

DISPLAY CALIBRATION

Albert D. Edgar, Austin, Tex., and James M. Kasson, Menlo Park, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,582

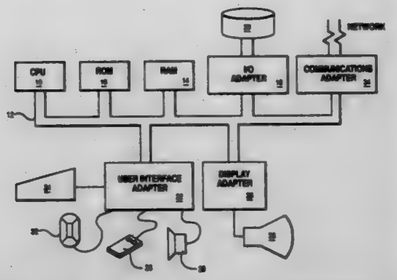
Int. Cl.[5] H04N *17/00*

U.S. Cl. 348—180 **22 Claims**

1. An apparatus for detecting characteristics of a display, comprising:

(a) means for displaying a grid pattern;

(b) means for displaying a grid having a continuous tone field adjacent to the grid pattern; and



(c) means for varying frequency response of the display until the grid pattern and the grid having a continuous tone field have the same brightness.

5,298,994

TELEVISION SIGNAL CONVERTER FOR CONVERTING HIGH DEFINITION TELEVISION (HDTV) SIGNALS TO CONVENTIONAL TELEVISION SIGNALS

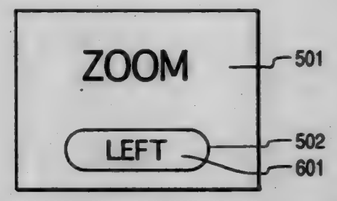
Kohei Watanabe, Tokyo, and Takato Katagiri, Saitama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 6, 1991, Ser. No. 696,247

Claims priority, application Japan, May 9, 1990, 2-117452; May 9, 1990, 2-117453

Int. Cl.[5] H04N *7/01, 5/46*

U.S. Cl. 348—445 **12 Claims**



1. A converter for television signals, said converter comprising:

television signal conversion means for converting a first television signal corresponding to a selected portion of a television picture of a first television system to a second television signal of a second television system, wherein said selected portion of said television picture becomes a full picture on said second television system having an aspect ratio which is different from the aspect ratio of said first television system;

selection position change means for changing the position of said selected portion of the picture of the first television system; and

position display means for displaying textual information about the position of the selected portion of the picture of the first television system on said second television system.

5,298,995

APPARATUS FOR PROVIDING PROPER PLACEMENT AND SIZING OF SUBTITLES GIVEN THE CONVERSION OF THE IMAGE TO THAT OF A WIDER ASPECT RATIO

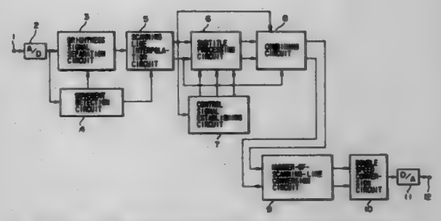
Hiroki Monta, Ibaraki, and Ryuji Matsuura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 859,000

Claims priority, application Japan, Apr. 4, 1991, 3-071518

Int. Cl.[5] H04N *7/01, 11/20, 5/278*

U.S. Cl. 348—458 **12 Claims**



1. An image signal magnifying apparatus comprising:

an image signal input terminal;

an A/D converter, connected to said image signal input terminal, for converting an analog signal to a digital signal;

a movement detection circuit, connected to an output terminal of said A/D converter, for detecting movement of the image signal;

a brightness signal separation circuit, connected to the output terminal of said A/D converter and an output terminal of said movement detection circuit, for separating a brightness signal from the image signal;

a scanning line interpolation circuit, connected to an output terminal of said brightness signal separation circuit and the output terminal of said movement detection circuit, for interpolating scanning lines of said brightness signal;

a control signal establishing circuit, connected to a first output terminal of said scanning line interpolation circuit, for establishing a subtitle processing control signal;

a subtitle processing circuit, connected to first to third output terminals of said control signal establishing circuit and to first and second output terminals of said scanning line interpolation circuit, for extracting subtitle data from the image signal;

a combining circuit, connected to first and second output terminals of said subtitle processing circuit and to said first and second output terminals of said scanning line interpolation circuit, for combining an interpolated signal of the scanning lines with a subtitle extraction signal;

a number-of-scanning-line conversion circuit, connected to first and second output terminals of said combining circuit, for magnifying the image signal having said combined subtitle;

a double speed conversion circuit, connected to first and second output terminals of said number-of-scanning-line conversion circuit, for combining the outputs of said first and second output terminals of said number-of-scanning-line conversion circuit into one signal;

a D/A converter, connected to an output terminal of said double speed conversion circuit, for converting a digital signal into an analog signal; and

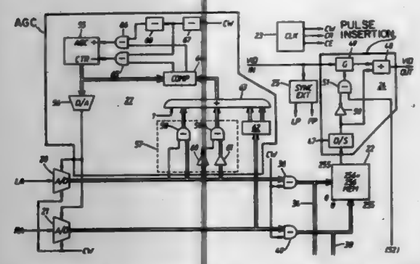
an image signal output terminal connected to an output terminal of said D/A converter.

5,298,996

STEREO SIGNAL MONITORING

David N. Stelling, 88 Devonshire Avenue, Southsea, Portsmouth, Hampshire PO9 9EG, United Kingdom, assignor to Hamlet Video International Limited, Buckinghamshire and David N. Stelling, Hampshire, both of United Kingdom

Filed Sep. 11, 1991, Ser. No. 752,572
Claims priority, application United Kingdom, Mar. 13, 1989, 8905686
Int. Cl.[5] H04N *17/00*
U.S. Cl. 348—180 19 Claims



1. Apparatus for monitoring stereo audio signals associated with a TV video signal by generating a Lissajou figure, said apparatus comprising:

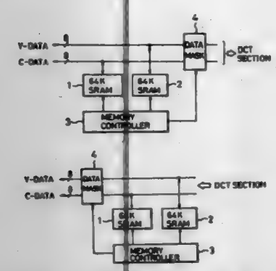
analog-to-digital converter means (20, 21) for converting the two channels of the stereo audio signal to instantaneous values in digital form, a first memory (22) into which bits are written at addresses formed by successive pairs of said instantaneous values in digital form to form a map therein of a display of a Lissajou figure representing the relationship between the two channels, read-out means (26) for reading out the first memory linearly in synchronism with the operation of a monitor (10), and insertion means (24) for inserting the memory output into the TV video signal (VID IN), wherein the readout means (26) read the first memory out diagonally, so as to produce a diamond display on monitor (10).

5,298,997

LINE DATA-BLOCK DATA CONVERTING CIRCUIT

Katsuhiko Masabe, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,542
Claims priority, application Japan, Oct. 1, 1991, 2-53695; Oct. 4, 1991, 2-57788; Aug. 20, 1992, 2-21482
Int. Cl.[5] H04N *07/12*
U.S. Cl. 348—441 6 Claims



1. A converting circuit for converting line data to block data, said block data corresponding to a plurality of pixels, of which only valid pixels are output to a cosine transformation section, said converting circuit being used with a plurality of different system clock frequency modes in NTSC and PAL systems, said converting circuit comprising:

a memory having a capacity of at least $n \times b_{max}$ pixels where b_{max} is equal to a number of valid pixels in a selected frequency mode providing the largest number of valid pixels for one horizontal period with respect to said plurality of different system clock frequency modes and $n \times n$ is equal to the number of pixels in a block;

a memory controller having a read only memory (ROM) tabled for storing a plurality of predetermined addresses equal in number to $n \times b_{max}$ for n horizontal periods;

the memory controller being constructed such that data of $n \times b$ valid pixels are stored in said $n \times b_{max}$ addresses in the memory in n horizontal periods when line data in a frequency mode other than said selected frequency mode are stored in the memory and the number of valid pixels for one horizontal period in said frequency mode other than the selected frequency mode is equal to b;

the memory controller also being constructed such that data of invalid pixels are stored in the memory at a remaining $(n \times b_{max}) - (n \times b)$ addresses of said $n \times b_{max}$ addresses; and

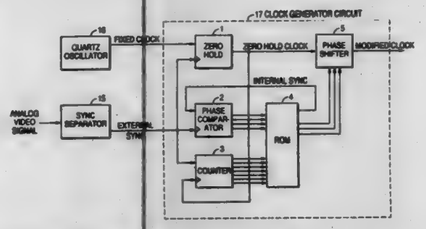
means for inhibiting block data corresponding to data of said invalid pixels from being output to said cosine transformation section upon reading of data stored in said memory.

5,298,998

SYNCHRONOUS CLOCK GENERATOR AND TIME-BASE ERROR CORRECTOR

Shigeru Furumiya, Katano, and Yoshinari Takemura, Settu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 982,373
Claims priority, application Japan, Nov. 27, 1991, 3-312092
Int. Cl.[5] H04N *5/04*
U.S. Cl. 348—537 8 Claims



1. A clock generator circuit comprising:

a zero hold circuit, responsive to each pulse edge of an external sync signal, for generating a zero hold clock signal which is in phase with the external sync signal from a fixed clock signal which is constant in phase and frequency;

a phase comparator circuit for producing phase difference data indicative of a phase difference between the external sync signal and an internal sync signal;

a counter for counting pulses of the zero hold clock signal to obtain count data, the counter being cleared by each occurrence of the external sync signal;

a memory for receiving, as its input address, the phase difference data and the count data and for delivering the internal sync signal to the phase comparator circuit when the count data of the counter reaches a given number which is smaller than a number of pulses in one cycle of the external sync signal in the absence of time-base variations, and for producing a phase control signal determined by the phase difference data and the count data; and

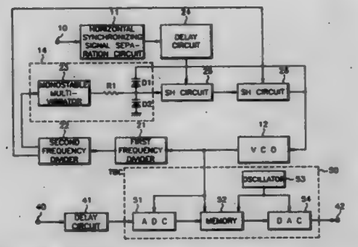
a phase shifter circuit for producing a modified clock signal by phase shifting the zero hold clock signal according to the phase control signal.

5,298,999

JITTER DETECTION CIRCUIT

Yasuyuki Nagano, Osaka, Japan, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 30, 1992, Ser. No. 859,963
Claims priority, application Japan, Jul. 8, 1991, 3-167212
Int. Cl.[5] H04N *5/04*
U.S. Cl. 348—497 20 Claims



1. A circuit for detecting a jitter, comprising:

synchronizing separation means for separating a horizontal synchronizing signal from an image signal;

voltage control oscillator means for generating a frequency of "n" times of said horizontal synchronizing signal, said "n" being an integral number more than 4;

frequency dividing means for dividing the output frequency of said voltage control oscillator means by said "n";

variable oblique wave generating means for generating an oblique wave in dependence upon a phase of the output pulse of said frequency dividing means, wherein a tilt portion of said oblique wave being varied by a control signal; and

sample-hold means for sampling and holding said tilt portion of said oblique wave as a sample pulse of about one horizontal scanning period in dependence upon said horizontal synchronizing signal, and for supplying a sample hold voltage to said voltage control oscillator means as a control voltage and to said variable oblique wave generating means as said control signal, whereby a jitter detection signal is produced from said voltage control oscillator means.

5,299,000

VIDEO WHITE SIGNAL COMPRESSION AND PEAKING

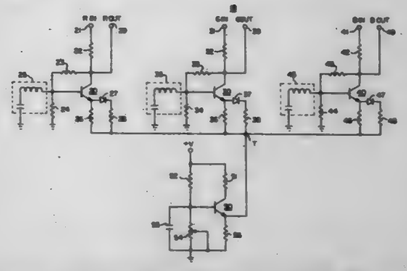
Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Jun. 17, 1992, Ser. No. 900,204
Int. Cl.[5] H04N *5/20, 5/14*
U.S. Cl. 348—627 5 Claims

1. A video signal processor having an input terminal for receiving a video signal and an output terminal for supplying a processed video signal, comprising:

signal attenuation means coupled between said input and said output terminals, said signal attenuation means comprising an inverting amplifier transistor coupled to said input terminal in a negative feedback arrangement for subtracting signals developed across said transistor from said input signal;

threshold means establishing a cutoff level for said signal attenuation means, said signal attenuation means non-linearly attenuating video signals received at said input terminal that exceed said cutoff level and supplying a non-linearly compressed video signal to said output terminal; and



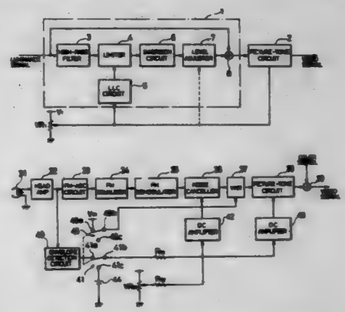
means for selectively bypassing portions of said video signal at said input terminal from said transistor for enhancing the bypassed portions in said processed video signal.

5,299,002

PICTURE QUALITY CORRECTING CIRCUIT FOR VIDEO APPARATUS

Mitsuo Funayama, Yaita, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1992, Ser. No. 834,347
Claims priority, application Japan, May 31, 1991, 3-129734
Int. Cl.[5] H04N *9/64*
U.S. Cl. 348—607 24 Claims



1. A picture quality correcting device comprising:

first horizontal direction noise suppressing means for suppressing noise in the horizontal direction of an image by extracting a noise component from a luminance signal and deducting this noise component from an original luminance signal; and

first frequency characteristic correcting means for correcting the frequency characteristic of the luminance signal by adjusting a high-frequency component according to a control voltage, said first horizontal direction noise suppressing means and said first frequency characteristic correcting means being controlled by an externally supplied control voltage,

the first horizontal direction noise suppressing means being arranged so that the higher the control voltage, the less the amount of noise suppression, and

the first frequency characteristic correcting means being arranged

so that it does not correct the high-frequency component within a specific range of the control voltage, this specified range including a value of the control voltage which serves as the central value for correction;

so that, in a voltage range higher than the specified range, the higher the control voltage, the more the attenuation of the high-frequency component; and

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so that, in a voltage range lower than the specified range, the lower the control voltage, the more the emphasis of the high-frequency component.

5,299,001

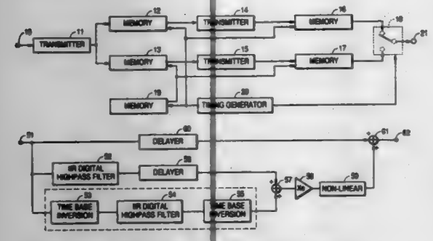
Patent Not Issued For This Number

5,299,003

SIGNAL PROCESSING APPARATUS FOR CHANGING THE FREQUENCY CHARACTERISTICS OF AN INPUT SIGNAL

Atsuo Ochi, Moriguchi; Masayuki Yoneyama, Takatsuki; Yasuo Hamamoto, Neyagawa; Akihiro Takeuchi, Ikoma; Masaaki Kobayashi, Kawanishi, and Haruo Ohta, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 849,332
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—607 8 Claims



1. A signal processing apparatus comprising:

a first transmission circuit having a transmission characteristic of G and an impulse response duration of α for transmission of an input signal;

a first memory circuit having a storage capacity of M ($M \geqq 2 \times \alpha$) for storing an output of the first transmission circuit in a predetermined time sequence and transmitting the same in a reverse time sequence to the predetermined time sequence;

a second transmission circuit having the transmission characteristic of G for transmission of an output of the first memory circuit;

a second memory circuit having the storage capacity of M for storing an output of the second transmission circuit for a length M of time and transmitting the same in a reverse time sequence to a storing time sequence;

a third memory circuit having the storage capacity of M for storing the output of the first transmission circuit after a delay time ranging from α to $(M-\alpha)$ from an action of the first memory circuit and transmitting the same in a reverse time sequence to a storing time sequence;

a third transmission circuit having the transmission characteristic of G for transmission of an output of the third memory circuit;

a fourth memory circuit having the storage capacity of M for storing an output of the third transmission circuit for the period M and transmitting the same in a reverse time sequence to a storing time sequence; and

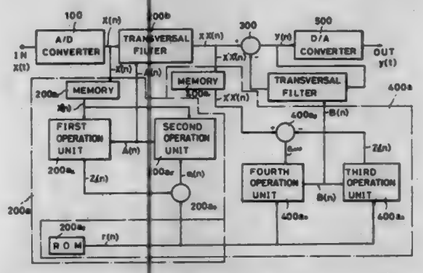
a switch circuit for transmitting an output of the second memory circuit during a part of the period M from a start of an action of the first memory circuit to a start of an action of the third memory circuit and an output of the fourth memory circuit during the other part from the start of the action of the third memory circuit to a start of a succeeding action of the first memory circuit.

5,299,004

GHOST SIGNAL REMOVAL APPARATUS FOR BROADCASTING RECEPTION SYSTEM

Kwang C. Joo, and Woo J. Song, both of Kyungsangbuk-do, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 24, 1992, Ser. No. 996,439
Claims priority, application Rep. of Koren, Dec. 24, 1991, 24179/1991
Int. Cl.[5] H04N *5/213, 5/210*
U.S. Cl. 348—614 9 Claims



1. A ghost signal removal apparatus for a broadcasting reception system comprising:

analog/digital converting means for converting a video signal of a received broadcasting signal into a digital signal;

first filtering means adaptive to a reference signal contained in the digital signal from said analog/digital converting means, for receiving from the digital signal from said analog/digital converting means a ghost signal component appearing at the front of a main video signal;

said first filtering means including:

a first filter coefficient generator for obtaining a first filter coefficient from the digital signal from said analog/digital converting means; and

a first adaptive digital filter for removing from the digital signal from said analog/digital converting means the ghost signal component appearing at the front of the main video signal in accordance with the first filter coefficient from said first filter coefficient generator;

a first memory for storing the reference signal contained in the output signal from said analog/digital converting means;

a first operation unit for convoluting the inputted first filter coefficient and the reference signal stored in said first memory;

a second memory for storing a predetermined reference signal which is the same as a reference signal transmitted from a broadcasting station;

a first subtracter for subtracting an output signal from said first operation unit from the predetermined reference signal stored in said second memory to obtain a first error signal; and

a second operation unit for performing a least mean square algorithm using the reference signal stored in said first memory and the first error signal from said first subtracter to obtain the first filter coefficient;

second filtering means adaptive to a reference signal contained in an output signal from said first filtering means, for removing from a fed-back final video signal a ghost signal component appearing at the rear of the main video signal;

subtracting means for subtracting an output signal from said second filtering means from the output signal from said first filtering means to obtain the final video signal in which the ghost signal has been removed; and

digital/analog converting means for converting an output signal from said subtracting means into an analog signal.

5,299,005

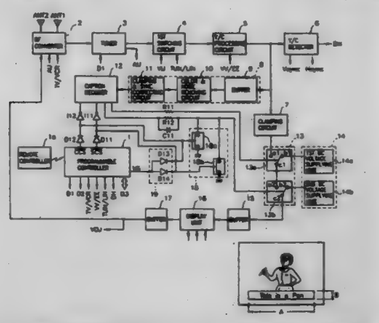
Patent Not Issued For This Number

5,299,006

CAPTION VCR AND METHOD OF DISPLAYING A CAPTION SIGNAL IN THE CAPTION VCR

Seung K. Kim, 3-405, Poongrim Apt. 31-1, Uman-dong, Jangan-gu, Suwon-si, Kyunggi-do, Rep. of Korea

Filed Nov. 27, 1991, Ser. No. 798,760
Claims priority, application Rep. of Korea, Nov. 28, 1990, 19380/1990
Int. Cl.[5] H04N *7/08, 5/278, 5/445*
U.S. Cl. 348—571 10 Claims



1. A caption display apparatus for a VCR, comprising:

programmable controlling means for providing a plurality of control signals necessary to the VCR under control of a user;

radio frequency converting means for receiving an external broadcasting signal and outputting the received broadcasting signal or a desired signal under control of said programmable controlling means;

tuning mean for tuning an output signal from said radio frequency converting means to a broadcasting channel required by the user under control of said programmable controlling means, demodulating the tuned signal to divide it into a video signal and an audio signal and outputting the divided video signal and audio signal;

first switching means for selectively outputting the video signal from said tuning means or an external video signal under control of said programmable controlling means;

luminance/chrominance processing means for video-processing an output signal from said first switching means or a self-video signal to be placed back under control of said programmable controlling means;

luminance/chrominance detecting means for outputting a desired control signal to said programmable controlling means according to whether an output signal from said luminance/chrominance processing means is present and separating vertical and horizontal synchronous signals form the output signal from said luminance/chrominance processing means if the output signal from said luminance/chrominance processing means is present;

clamping means for clamping the output signal from said luminance/chrominance processing means at a constant voltage level;

noise attenuating means for attenuating a noise containing int he output signal form said luminance/chrominance processing means for the purpose of easiness of decoding of a caption signal form the output signal form said luminance/chrominance processing means;

caption decoding means receiving an output signal form said noise attenuating means and detecting the caption signal containing screen data and character data from the output signal from said noise attenuating means under control of said programmable controlling means;

second switching means for selectively outputting on of an output signal form said clamping means and an output signal form a DC voltage supplying means for supplying a desired DC voltage to said second switching means,

wherein said second switching means is under control of said caption decoding means and wherein said DC voltage supplying means supplies a desired DC voltage to said second switching means only when the caption signal from said caption decoding means is applied to said second switching means;

on-screen displaying means for displaying an output signal from said second switching means under said vertical and horizontal synchronous signals of said programmable controlling means and a control of said luminance/-chrominance detecting means; and

third switching means for blocking the output signal from said caption decoding means to said second switching means under control of said programmable controlling means.

7. A method carried out within a VCR of displaying along with a video signal a caption signal representing conversation and other audible sounds associated with the video signal in a caption VCR, comprising the steps of:

(a) luminance/chrominance-processing for video-processing a video signal inputted to the VCR;

(b) clamping the luminance/chrominance-processed video signal at a constant voltage level, then transmitting the clamped video signal to a display unit and continuously displaying the clamped video signal int eh display unit;

(c) simultaneously with the clamping of the luminance/-chrominance-processed video signal, continuously decoding the luminance/chrominance-processed video signal to detect a caption signal form the luminance/chrominance-processed video signal and separating a screen data signal and a character data signal present in a detected caption signal; and

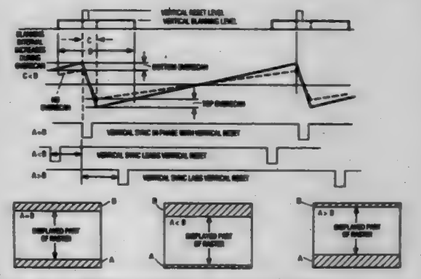
(d) when screen data of a caption signal which identifies a caption area on a screen is detected, displaying the screen data of the caption signal along with the video signal in the display unit, and when the character data of a caption signal is detected, displaying the character data within the caption area.

5,299,007

VERTICAL RESET GENERATION SYSTEM

Timothy W. Saeger, and Karl F. Horlander, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 818,320, Jan. 8, 1992. This application Oct. 19, 1992, Ser. No. 963,446
Int. Cl.[5] H04N *3/223, 5/262*
U.S. Cl. 348—503 16 Claims



1. A video display control system, comprising:

means for displaying a video signal;

means for generating from said video signal a picture having

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a vertical height greater than the displaying height of said display means;

a vertical panning circuit for displaying a selected portion of said picture on said display means by generating a timing interval for delaying vertical reset pulses in phase relative to a vertical synchronizing component of said video signal; and,

means for generating said delayed vertical reset pulses, having a first mode of operation when vertical scanning intervals occur shorter in duration than said timing interval and a second mode of operation when vertical scanning intervals occur not shorter in duration than said timing interval.

5,299,008

VIDEO TONE CORRECTION CONTROL CIRCUIT

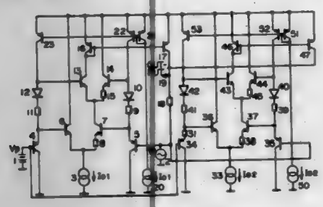
Hideaki Sadamatsu, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 14, 1992, Ser. No. 835,489

Claims priority, application Japan, Feb. 28, 1991, 3-033989

Int. Cl.[5] H04N *5/57*

U.S. Cl. 348—707 **47 Claims**



1. A tone correction circuit comprising:

a constant voltage source;

a first constant current source;

a first differential amplifier including a first transistor having a collector connected to said constant voltage source and an emitter connected to said constant current source, and a second transistor having an emitter connected to the emitter of said first transistor through a first resistance; and

a second differential amplifier including a third transistor having an emitter connected to a collector of said second transistor and a fourth transistor having an emitter connected to the emitter of said third transistor through a second resistance and having a collector connected to said constant voltage source;

wherein a constant voltage is applied to a base of said first transistor, a first signal voltage is applied to a base of said second transistor, a voltage, higher than said constant voltage by a first predetermined voltage, is applied to a base of said third transistor, and a second signal voltage, higher than said first signal voltage by a second predetermined voltage, is applied to a base of said fourth transistor so that a current is output from a collector of said third transistor.

37. A tone correction circuit comprising:

a constant voltage source;

a first constant current source;

a first differential amplifier including a first transistor having a collector connected to said constant voltage source and an emitter connected to said first constant current source, and a second transistor having an emitter connected to the emitter of said first transistor through a first resistance;

a second constant current source;

a second differential amplifier including a third transistor having an emitter connected to a collector of said second transistor and a fourth transistor having an emitter connected to the emitter of said third transistor through a second resistance and a collector connected to said constant voltage source;

a third differential amplifier including a fifth transistor having a collector connected to said constant voltage source and an emitter connected to said second constant current source, and a sixth transistor having an emitter connected to the emitter of said fifth transistor through a third resistance; and

a fourth differential amplifier including a seventh transistor having an emitter connected to a collector of said sixth transistor and an eighth transistor having an emitter connected to the emitter of said seventh transistor through a fourth resistance and a collector connected to said constant voltage source,

wherein a constant voltage is applied to a base of said first and fifth transistors, a first signal voltage is applied to a base of each of said second and sixth transistors, a second signal voltage, higher than said first signal voltage by a first predetermined voltage, is applied to a base of said fourth transistor, and a voltage, higher than said constant voltage by a sum of (i) said first predetermined voltage and (ii) a voltage, obtained by multiplying a sum of said first resistance and said second resistance by a current supplied from said first current source, is applied to a base of said third transistor, whereby said first current source is varied with a sum of the currents from said first and second current source being maintained constant so that currents are output from the collectors of said third and seventh transistors.

5,299,009

AMPLIFIER WITH A TUNED OUTPUT TRANSFORMER

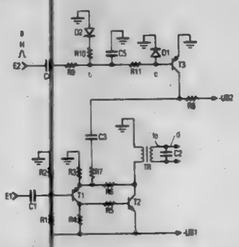
Martin Läufe, and Fritz Ohnemus, both of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jul. 17, 1992, Ser. No. 914,726

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942908

Int. Cl.[5] H04N *3/23*

U.S. Cl. 348—707 **4 Claims**



1. In a reverse feedback amplifier which generates a correction current having two oscillations per line period for eliminating geometric distortions on the screen of a television kinescope, said reverse feedback amplifier including an output transistor, a resonance transformer and a feedback network, an improvement comprising:

means for decreasing the output voltage of said reverse feedback amplifier during the scanning of the center portion of said screen.

5,299,010

CHANNEL DISPLAY DEVICE FOR RECEIVABLE CHANNELS

Tsutomu Nakazawa; Hiroyasu Shindou, and Masaru Tonozuka, all of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 22, 1993, Ser. No. 20,576

Claims priority, application Japan, Feb. 24, 1992, 4-036440

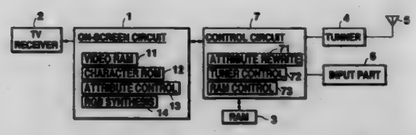
Int. Cl.[5] H04N *9/50*

U.S. Cl. 348—731 **5 Claims**

1. A channel display device for indicating a signal-receiving state of a plurality of television channels, each channel having a respective given carrier frequency and channel number, in response to a determination as to whether or not each channel is signal receivable, the channel display device comprising:

on-screen means having a video RAM in which character codes corresponding to the channel numbers of all television broadcast channels are written at addresses corresponding to display positions of the channel numbers, and for displaying a list of the television broadcast channel numbers on a TV screen in response to data read out of the video RAM;

memory means for storing data showing channel numbers and address data of the video RAM corresponding to the channel numbers when determining whether or not a channel number selected among the list of all channel numbers displayed on the TV screen is signal receivable;



first means for storing first attribute data in a predetermined address in the video RAM in response to the address data of the video RAM corresponding to a channel number stored in the memory means, said first attribute data showing that a channel is undergoing a determination as to whether the channel is signal receivable or not;

tuning means for detecting whether or not a channel at a given carrier frequency is signal receivable in response to channel number data stored in the memory means, and for generating a tuning signal showing that the channel is signal receivable, when it is detected that television signals are received at the given carrier frequency; and

second means for rewriting, in response to the tuning signal for a channel, the first attribute data stored in the predetermined address of the video RAM into a second attribute data showing that the channel for which the tuning signal is generated is television signal receivable.

5,299,011

METHOD OF AND APPARATUS FOR CHANNEL SCANNING

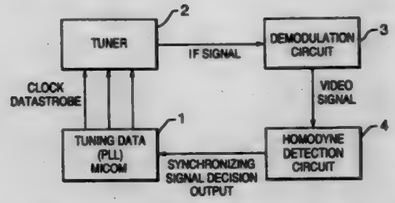
Sung G. Choi, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Sawon, Rep. of Korea

Filed Dec. 27, 1989, Ser. No. 456,861

Claims priority, application Rep. of Korea, May 26, 1989, 89-7180

Int. Cl.[5] H04N *5/50*

U.S. Cl. 348—731 **17 Claims**



1. A method of scanning for a plurality of reception channels in an automatic channel program of video tape recorders and television is a homodyne detector circuit in which frequency data of a specific channel in said plurality of reception channels is transmitted from a microprocessor to a demodulator circuit via a tuner for producing video signals to be delivered to said homodyne detector circuit where a synchronizing signal is detected within a predetermined time period, and applied to a memory of said microprocessor, said method comprising the step of:

receiving frequency data of a first channel for detecting said synchronizing signal from said frequency data for said first channel using a synchronous detection process, said synchronous detection process being performed by:

scanning the first frequency data of said first channel, in a first scanning step for a first predetermined time interval, for detecting said synchronizing signal;

storing information representative of said first channel in said memory if said synchronizing signal is detected during said first scanning step;

decreasing the frequency of said frequency data by a first frequency differential, for scanning, in a second scanning step for a second predetermined time interval, for detecting said synchronizing signal if said synchronizing signal is not detected in said first scanning step;

storing information representative of said first channel in said memory if said synchronizing signal is detected during said second scanning step;

decreasing the frequency of said frequency data by a second frequency differential, for scanning in a third scanning step for a third predetermined time interval, for detecting said synchronizing signal if said synchronizing signal is not detected in said second scanning step;

storing said information representative of said first channel in said memory

if said synchronizing signal is detected during said third scanning step; and scanning for a next channel of said plurality of reception channels to receive frequency data of said next channel for repeating said synchronous detection process until a last channel of said plurality of reception channels is scanned.

5,299,012

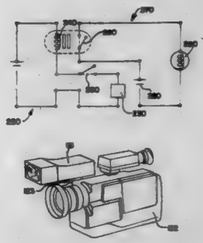
SWITCHING MECHANISM FOR VIDEO LIGHTING APPARATUS

Yuzo Tsuruta, 2-23-9, Azamino, Midori-Ku, Yokohama City, Kanagawa Pref., 225, and Kohichi Matsuki, 2-14-17-201 Mure, Mitaka City, Tokyo 181, both of Japan

Continuation of Ser. No. 601,209, Oct. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 430,528, Nov. 1, 1989, abandoned. This application Mar. 4, 1993, Ser. No. 26,267

Int. Cl.[5] H04H *5/30*

U.S. Cl. 348—370 **5 Claims**



1. A switching mechanism for a video camera lighting apparatus comprising:

signalling means activated by actuation of a video camera operation switch for generating a signal, said signalling means being located in a video camera operation circuit;

receiving means for activating a lighting apparatus upon receiving said signal, said receiving means being located in a lighting apparatus operation circuit;

said signalling means comprises an electromagnetic coil, and said receiving means comprises an electromagnetic switch actuated in response to current flow in said electromagnetic coil, said electromagnetic coil and said electromag-

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netic switch placed in proximate relationship to one another;

wherein a video camera and said signalling means are electrically connected such that the failure of the video camera to operate prevents operation of the lighting apparatus.

5,299,013

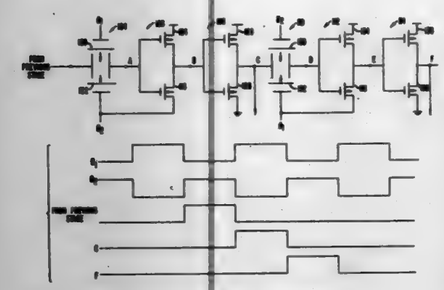
SILICON BUTTING CONTACT IMAGE SENSOR WITH TWO-PHASE SHIFT REGISTER

Weng-Lyang Wang; Way-Chen Wu, both of Saratoga, and Long-Ching Yeh, Sunnyvale, all of Calif., assignors to Dyna Image Corp., Milpitas, Calif.

Continuation of Ser. No. 735,340, Jul. 25, 1991, abandoned. This application Jul. 13, 1993, Ser. No. 90,569

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 348—307 **17 Claims**



1. A photosensor array circuit comprising:

an array of photosensors;

an output line;

a plurality of switches, each switch being coupled between one of said photosensors and said output line; and

a shift register having a plurality of outputs, each of said outputs being coupled to a control input of one of said switches;

said shift register having two clock inputs for two phases of a clock signal with each successive output of said shift register being clocked by alternate ones of said phases such that two of said shift register outputs are clocked in each clock cycle.

5,299,014

TELECINE METHOD AND APPARATUS FOR THE PRODUCTION OF HIGH DEFINITION TELEVISION SIGNALS

Peter W. Stansfield, Hatfield, and Trevor M. Osborne, Arkley, both of Great Britain, assignors to Rank Cintel Ltd., England

Continuation of Ser. No. 675,147, Mar. 26, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,140

Claims priority, application United Kingdom, Mar. 30, 1990, 9007249

Int. Cl.[5] H04N *5/253*

U.S. Cl. 348—100 **6 Claims**

6. Apparatus for scanning photographic or cinematographic film to obtain a high definition video signal, comprising:

a flying spot scanner for scanning frames of said film, said scanner having a cathode ray tube (CRT) raster; said scanner further comprising:

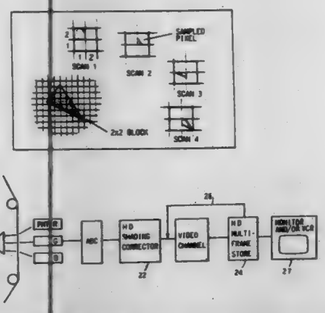
means for dividing the image area to be scanned into a plurality of blocks, each of said blocks comprising n pixels;

means for scanning frames of said film by scanning said image area for each frame with said CRT raster to acquire image data from a first of said pixels of each of said blocks;

adjustment means for adjusting the position of said CRT raster with respect to said image area;

means for rescanning the image area for each frame of film with said CRT raster adjusted by said adjustment means such that on rescanning of the image area image data is acquired from an unscanned pixel of said n pixels of each block of said image area;

means for repeating said adjustment and rescanning for each frame of film until the image area has been scanned n times; and



means for combining the image area acquired from each scan to form a composite non-real time high definition video signal representative of the image stored on said frame of film.

5,299,015

IMAGE PICKUP APPARATUS AND METHOD AND SYSTEM FOR CONTROLLING THE EXPOSURE OF THE IMAGE PICKUP APPARATUS

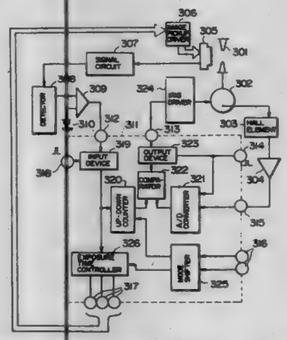
Takuya Imaide, Yokohama; Toshiro Kinugasa, Hiratsuka; Naoki Yamamoto; Tomoyuki Kurashige, both of Yokohama, and Hiroyuki Tarumizu, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering Inc., Yokohama, both of Japan

Filed Mar. 28, 1990, Ser. No. 500,501

Claims priority, application Japan, Mar. 29, 1989, 1-75122; Aug. 23, 1989, 1-214762

Int. Cl.[5] H04N *5/238, 5/30*

U.S. Cl. 348—229 **32 Claims**



1. An exposure control method in a video movie camera having an iris of feedback controlled type, comprising:

generating a desired iris value specified by a user;

detecting a current iris value of said iris during sensing of an image by said video movie camera;

comparing said current iris value with said desired iris value during sensing of the image; and

controlling said iris based on a result of a comparison of said current iris value and said desired value to cause the iris value to be substantially equal to said desired iris value during sensing of the image by said video camera.

5,299,016

TV RECEIVER WITH DEFORMABLE FRONT WINDOW OF CABINET FOR COMPENSATING FOR ASSEMBLY VARIATION

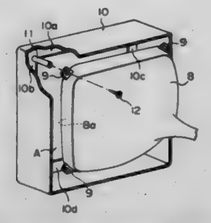
Narumi Hirota, Ibaraki, and Toshiharu Hikida, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 18, 1991, Ser. No. 779,510

Claims priority, application Japan, Oct. 31, 1990, 2-295754

Int. Cl.[5] H04N *5/65*

U.S. Cl. 348—818 **4 Claims**



1. A television receiver comprising a cabinet having a front window frame with a top section, a bottom section and two side sections for accommodating a cathode ray tube therein, wherein at least a portion of each of the top section, the bottom section and the two side sections is formed to be elastically deformable outwardly due to contact between the cathode ray tube and the cabinet when assembling them, and a variation in a dimensional relationship between the cabinet and the cathode ray tube caused by a variation of position of a fastener on the cathode ray tube is compensated by an elastic deformation of said at least one portion of each of the top section, the bottom section and the two side sections.

5,299,017

SCREEN FIXING DEVICE OF PROJECTION TYPE TELEVISION SYSTEM

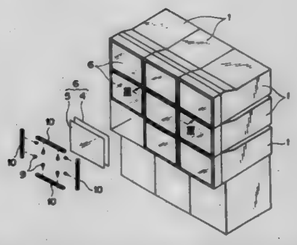
Takashi Furuno, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 794,120

Claims priority, application Japan, Nov. 20, 1990, 2-316528; Dec. 14, 1990, 2-402519

Int. Cl.[5] H04N *5/74, 5/30;* **A47B** *5/00*

U.S. Cl. 348—786 **14 Claims**



1. A screen fixing device for projection units of a projection type television system including a plurality of projection units, each of said projection units having a front opening section which constitutes a front portion of a casing and to which a screen is detachably mounted so as to project an image on the screen from a rear side thereof said screen fixing device comprising:

a front opening frame to which the screen is to be fastened, said front opening frame having a portion extending out from a front surface of the screen and surrounding an outer periphery of the screen,

a stopper piece mounted on the front opening frame so as to support the front opening frame from a back side thereof;

a fixing frame for detachably fixing the screen in abutment against a front surface thereof, said fixing frame having substantially an L-shaped cross section having a first contact piece abutting against the front surface of the screen so as to support the screen from a front side thereof and a second contact piece abutting against a side surface of the front opening frame, said second contact piece having a height extending from the front surface of the screen no greater than a height of the front opening frame extending from the front surface of the screen, said fixing frame being provided with a plurality of through holes open to the fixing frame and the front opening frame and each extending laterally thereof so as to abut and fix the second contact piece of the fixing frame and the front opening frame; and

a fastening member extending through each of the through holes for detachably fixing the fixing frame to the front opening frame of the projection unit.

5,299,018

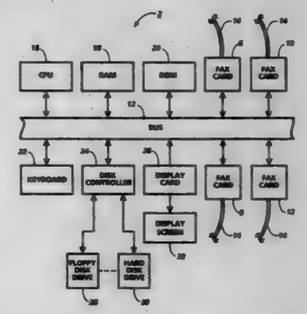
SYSTEM AND METHOD FOR STORING RECEIVED FACSIMILE IMAGE DATA IN COMPUTER MEMORY

Darrell E. Jefferson, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 20, 1992, Ser. No. 856,000

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—261.1 **7 Claims**



1. A memory device storing a data file containing data representative of pixels of an image, that data composed of run length encoded segments, each of which individually represents a number of pixels of the image, the run length encoded segments being organized into a plurality of scan lines, each scan line representative of a specified number of pixels of the image, the data file comprised of:

a file header containing information relating to the dimensions of the data file; and

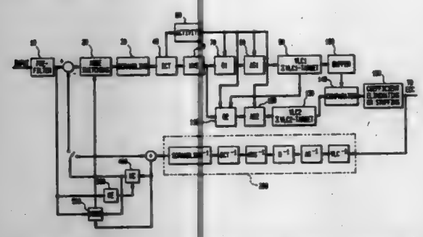
a page of data containing information about the number of pixels to be represented by each scan line, said page of data further containing said plurality of scan lines, each of which ends with an end-of-line character and each which are comprised of explicit run length encoded segments such that the summation of the number of pixels individually represented by the explicit run length encoded segments is no greater than the number of pixels in each scan line;

wherein the difference between the number of pixels in each

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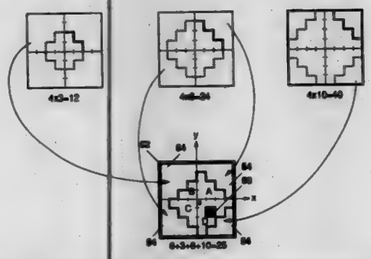
scan line and the summation of the number of pixels individually represented by the explicit run length encoded segments represents an implicit run length encoded segment for that scan line.

5,299,019
IMAGE SIGNAL BAND COMPRESSING SYSTEM FOR DIGITAL VIDEO TAPE RECORDER
Seung K. Pack, and Tae Y. Chung, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea
Filed Dec. 18, 1992, Ser. No. 992,692
Claims priority, application Rep. of Korea, Feb. 28, 1992, 92-3168
Int. Cl.[5] H04N *1/415, 1/46*
U.S. Cl. 358—261.3 **1 Claim**



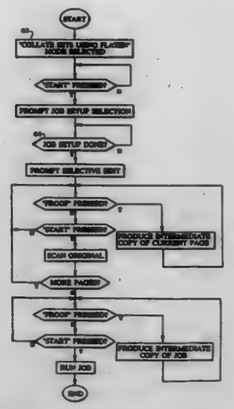
1. An image signal band compressing system comprising:
a mode switching means for processing image data in a unit of block or macro block, the image data being produced from component image signals converted in a ratio of 4:2:0, and the component image signals having a brightness signal Y and color signals Cr and Cb set in a ratio of 4:2:2 in correspondence to an intraframe mode or an interframe mode;
a scrambling means for supplying surplus data of a fluctuating region of the image input and resorting the image input without using additional data, the picture quality-deteriorated portion of the image input being condensated at edges of the image;
a discrete coding transform means for transforming and coding the output of the scrambling means by using discrete coding transform factors;
a human visual unit for processing the output of the discrete coding transform means in correspondence to the sensitivity of the human visual system;
an activity calculating means for calculating an activity and an activity average of the output of the human visual unit in the intraframe process mode or interframe process mode;
a first quantization means for quantizing the output of the human visual unit in a unit of block or macro block, the quantized output having a step size determined by the activity and activity average corresponding to the intraframe or interframe processing mode;
a first adaptive scanning means for comparing the activities between two regions in four scanning areas of 4 pixels×4 lines in a block of 8 pixels×8 lines and executing any one of a horizontal scanning, a vertical scanning and a zigzag scanning;
a first variable length coding means for effecting a variable length coding of the output of the first adaptive scanning means and calculating a difference Beta between the amount of data produced by accumulating the variable length coded data in a unit of fixed length and a target amount of data;
a buffer for temporarily storing the output of the first variable length coding means;
a second quantization means for quantizing the output of the human visual unit in a unit of block or macro block at a step size decided on the basis of the difference β from the first variable length coding means and the activity and activity average from the activity calculating means.
a second adaptive scanning means for comparing the activities between two regions of four scanning areas in the output of the second quantization means and effecting any one of horizontal scanning, vertical scanning and a zigzag scanning;
a second variable length coding means for executing a variable length coding to the output of the second adaptive scanning means and calculating a difference between the amount of data produced by the variable length coding process and a target amount of data;
a comparator for selecting the output of the first variable length coding means when an absolute value $|\beta-\gamma|$ is equal to or less than the absolute value being obtained by subtracting the difference of the second variable length cosign means from the difference of the first variable length coding means and, contrarily, selecting the output of the second variable length coding means when the absolute value is not zero; and,
a factor removing and stuffing-bit appending means for removing factors of data exceeding the fixed length when an overflow is generated on the basis of the difference from the comparator and, contrarily, appending a stuffing bit when an underflow is generated.

5,299,020
METHOD AND APPARATUS FOR GENERATING A SCREENED REPRODUCTION OF AN IMAGE USING STORED DOT PORTIONS
Ephraim A. Cariebach, Ra'anana, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel
Filed Mar. 8, 1991, Ser. No. 666,338
Int. Cl.[5] H04N *1/40, 1/23*
U.S. Cl. 358—298 **29 Claims**



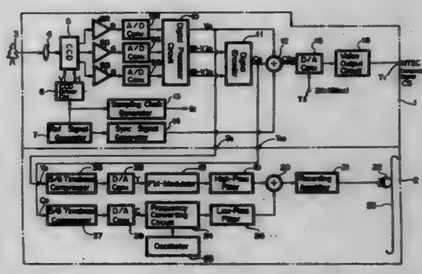
26. Apparatus for generating a screened reproduction of an image comprising:
means for providing a representation of an original containing information representing the input density values of the original;
means for storing information representing a part of at least one printing dot; and
means for exposing a recording medium to record the image by using the stored information to compose complete printing dots depending on the input densities of the representation at the locations of the printing dots,
wherein said printing dot comprises multiple areas,
and wherein said means for storing comprises means for storing of only parts of each of such multiple areas.

5,299,021
COPIER WITH MODE FOR COLLATING OFF A PLATEN
Margaret C. Gartner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 25, 1991, Ser. No. 691,241
Int. Cl.[5] H04N *1/21*
U.S. Cl. 358—401 **10 Claims**



1. A document copier comprising
an exposure platen adapted to receive a multiple-page original document one page at a time;
image-forming means for producing copy pages from electronic bit stream image data;
a memory capable of storing electronic bit stream image data for the plurality of pages of a multiple-page original document;
means for supplying image data from the memory to the image-forming means to produce a plurality of copy sets of the pages stored in the memory;
a scanner adapted to convert images on original document pages received by the platen to electronic bit stream image data and to input the image data to the memory;
means, operable in a first mode, for sending image data to the image-forming means for producing a first copy set as the image data is sent to the memory for storage and, operable in a second mode, for sending image data to the image-forming means only after the entire multiple-page original document has been stored in the memory; and
operator actuatable means for selectively setting said image data sending means in said first mode or said second mode.
10. A document copier comprising:
an exposure platen adapted to receive a multiple-page original document one page at a time;
a memory capable of storing electronic bit stream image data for the plurality of pages of a multiple page original document;
means for supplying image data from the memory to the image-forming means to produce a plurality of copy sets of the pages stored in the memory;
a scanner adapted to convert images on original document pages received by the platen to electronic bit stream image data and to input the image data to the memory, said scanner including image-editing means for receiving special feature instructions adjusting images to be produced on the copy pages produced, said image-editing means being adapted to (a) receive special feature instructions for the entire multiple-page original document before the first page of the document is scanned and (b) receive special feature instructions for designated pages of the multiple-page original document immediately before the associated designated page is scanned;
means, operable in a first mode, for sending image data to the image-forming means for producing a first copy set as the image data is sent to the memory for storage and, operable in a second mode, for sending image data to the image-forming means only after the entire multiple-page original document has been stored in the memory; and
operator actuatable means for selectively setting said image data sending means in said first mode or said second mode.

5,299,022
PORTABLE VIDEO CAMERA AND RECORDING APPARATUS
Fumio Nagumo; Takashi Asaida; Kenji Nakamura, and Yoshio Chiba, all of Kanagawa, Japan, assignors to Sony Corporation, Japan
Filed Oct. 25, 1990, Ser. No. 603,325
Claims priority, application Japan, Oct. 31, 1989, 1-283305
Int. Cl.[5] H04N *9/80*
U.S. Cl. 358—330 **3 Claims**



1. A video tape recorder having a built-in type camera in which a video camera section and a recording section are integrally formed as one body comprising:
said video camera section comprising:
solid state imager means for scanning an input image and for outputting at least two analogue color video signals;
analogue-to-digital converter means for converting said analogue color video signals to digital color video signals, respectively;
first digital procesor means for processing said digital color video signals and outputting a digital component video signal which comprises a digital luminance signal and two digital color difference signals;
second digital processor means for processing said digital color difference signals and outputting a digital composite color signal; and
third digital processor means for processing said digital luminance signal and said digital composite color signal and outputting an analogue composite video signal which is to be supplied to an output terminal; and
said recording section comprising:
first time-base-compressing means for receiving and time-base-compressing said digital luminance signal and outputting a digital time-base-compressed luminance signal;
second time-base-compressing means for receiving and time-base-compressing said digital composite color signal and outputting a digital time-base-compressed composite color signal;
first and second digital-to-analogue converter means for converting said digital time-base-compressed luminance signal and said digital time-base-compressed composite color signal to an analogue time-base compressed luminance signal and an analogue time-base-compressed composite color signal, respectively;
frequency modulating means for frequency-modulating said analogue time-base-compressed luminance signal;
frequency converting means for frequency-converting said analogue time-base-compressed composite color signal;

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adding means for adding the analogue frequency-modulated time-base-compressed luminance signal and the analogue frequency-converted time-base-compressed composite color signal into an analogue time-base-compressed composite video signal; and

transducer means for recording said analogue time-base-compressed composite video signal on a recording medium.

5,299,023

PORTABLE VIDEO CAMERA AND RECORDING APPARATUS

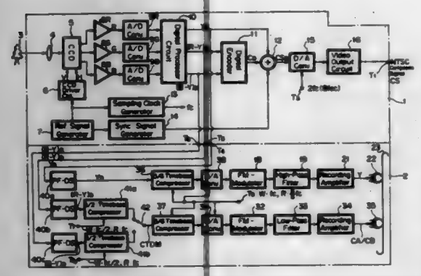
Fumio Nagumo; Takashi Asaida; Kenji Nakamura, and Yoshio Chiba, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 603,325, Oct. 25, 1990. This application Jul. 15, 1992, Ser. No. 913,359

Claims priority, application Japan, Oct. 31, 1989, 1-283305

Int. Cl.[5] H04N *9/80*

U.S. Cl. 358—330 **5 Claims**



1. A video tape recorder having a built-in type camera in which a video camera section and a recording section are integrally formed as one body, comprising:

said video camera section comprising:

solid state imager means for scanning an input image and for outputting at least two analogue color video signals;

analogue-to-digital converter means for converting said analogue color video signals to digital color video signals, respectively;

first digital processor means for processing said digital color video signals and outputting a digital component video signal which comprises a digital luminance signal and two digital color difference signals;

second digital processor means for processing said digital color difference signals and outputting a digital composite color signal; and

third digital processor means for processing said digital luminance signal and said digital composite color signal and outputting an analogue composite video signal which is supplied to an output terminal; and

said recording section comprising;

first time-base-compressing means for receiving and time-base-compressing said digital luminance signal and outputting a digital time-base-compressed luminance signal;

multiplexing means for time-multiplexing said digital color difference signals into a digital time-multiplexed color difference signal;

first digital-to-analogue converter means for converting said digital time-base-compressed luminance signal to an analogue time-base-compressed luminance signal;

second digital-to-analogue converter means for converting said digital time-multiplexed color difference signal to an analogue time-multiplexed color difference signal;

first frequency modulating means for frequency-modulating said analogue time base-compressed luminance signal;

second frequency modulating means for frequency-modulating said analogue time-multiplexed color difference signal;

first transducer means for recording said analogue frequency-modulated time-base-compressed luminance signal on a first track on a recording medium;

second transducer means for recording said analogue frequency-modulated time-multiplexed color difference signal on a second track on said recording medium.

5,299,024

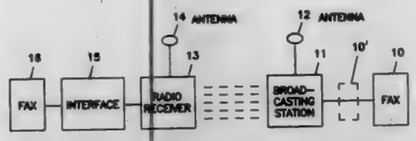
METHOD AND APPARATUS FOR BROADCASTING AND RECEIVING BROADCASTED INFORMATION

Oded Kafri, Beer-Sheva, Israel, assignor to Constanza 330 Ltd., Beer Sheva, Israel

Filed Mar. 19, 1992, Ser. No. 853,802

Int. Cl.[5] H04M *1/40*

U.S. Cl. 358—400 **15 Claims**



1. Apparatus for receiving broadcasted information, which comprises a radio receiver, a fax or modem receiver, and an interface between said radio receiver and said fax or modem receiver, said interface comprising control means for monitoring and analyzing the signals conveyed by the radio receiver to said interface, for activating the fax or modem receiver if said signals constitute a predetermined ring code, for causing the fax or modem receiver to produce call machine handshake signals normally produced by said fax or modem when acting as a called machine, for intercepting said call machine handshake signals without broadcasting them, for producing, in response to said intercepted signals, response handshake signals normally produced by a calling machine, for feeding the response handshake signals to the fax or modem receiver, whereby to carry out a self-handshake procedure; and for transmitting the broadcasted information.

5,299,025

METHOD OF CODING TWO-DIMENSIONAL DATA BY FAST COSINE TRANSFORM AND METHOD OF DECODING COMPRESSED DATA BY INVERSE FAST COSINE TRANSFORM

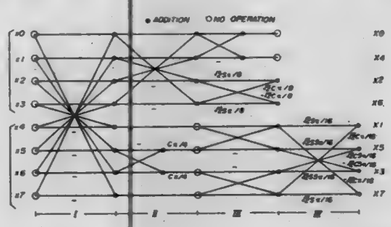
Hisao Shirasawa, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 598,895, Oct. 16, 1990. This application Jun. 25, 1992, Ser. No. 903,226

Claims priority, application Japan, Oct. 18, 1989, 1-269127; Feb. 23, 1990, 2-43710

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—400 **10 Claims**



1. A method of using a fast cosine transformation (FCT) process to encode two-dimensional original image data described in a set of blocks of N×N picture elements, the method comprising the steps of:

a) inputting each block of N×N picture elements from the two-dimensional original image data;

b) using a first N×1 FCT circuit, transforming the N×N picture elements of each block into N×N values of first FCT coefficients, the first N×1 FCT circuit having multiplication factors of prescribed butterfly operations that generate the first FCT coefficients, the multiplication factors being multiplied by $\sqrt{2}$;

c) storing in a transposition memory the N×N values of the first FCT coefficients that are output by the first N×1 FCT circuit;

d) using a second N×1 FCT circuit, transforming the N×N values of the first FCT coefficients supplied from the transposition memory into N×N values of second FCT coefficients, the second N×1 FCT circuit having multiplication factors of prescribed butterfly operations for generating the second FCT coefficients, the multiplication factors being multiplied by $\sqrt{2}$;

e) quantizing each of the N×N values of the second FCT coefficients using one of N×N corresponding values from a quantization table, the N×N corresponding values being multiplied by 2; and

f) entropy-encoding the quantized second FCT coefficients so as to produce compressed image data described in blocks of N×N output values.

5,299,026

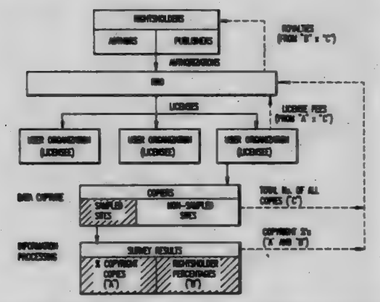
TRACKING THE REPRODUCTION OF DOCUMENTS ON A REPROGRAPHIC DEVICE

Paul S. Vincett, Georgetown; Andrew R. Campbell, Toronto, both of Canada; Joachim Guenther, Webster, and John W. Wagner, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1991, Ser. No. 790,309

Int. Cl.[5] H04N *1/23, 1/40*; G06M *7/00*

U.S. Cl. 358—401 **36 Claims**



1. An apparatus for tracking the reproduction of at least a portion of a copyrighted document reproduced in a reprographic job performed by a reprographic device, without requiring special identifying coding, markings or characters on said document, said apparatus comprising:

recording means for automatically recording the bibliographic source information about the document contained on at least one page of the document, at least a portion of said page being reproduced by a reprographic device;

connecting means for connecting said apparatus to a main portion of a reprographic device;

counting means for counting a total number of reproductions in the reprographic job performed by the reprographic device;

supply means for supplying said number to said recording means, said number being recorded by said recording means; and

control means for controlling said recording means, counting means and supply means.

4. An apparatus for recording at least one of content, ownership and bibliographic source information about a document, at least a portion of which is reproduced in a reprographic job performed by a reprographic device, without requiring special identifying coding, markings or characters on said document, said apparatus comprising:

recording means for automatically recording an image of at least a portion of at least one page of the document from said reprographic device; and

control means for controlling said recording means; and

connecting means for at least one of electrically and mechanically connecting said apparatus to a main portion of said reprographic device.

5,299,027

METHOD AND APPRATUS FOR DECODING AND PRINTING CODED IMAGE, AND FACSIMILE APPARATUS, FILING APPARATUS AND COMMUNICATION APPARATUS USING THE SAME

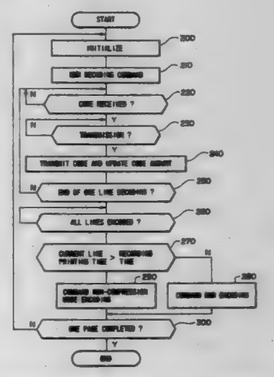
Kozo Nakamura, Hitachiota; Yasushi Yokosuka, Nakaminato, and Yasuyuki Kozima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,032

Claims priority, application Japan, Nov. 30, 1990, 2-329059; May 23, 1991, 3-118346

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—403 **14 Claims**



1. A method of processing a coded signal to obtain a pixel signal for printing, said coded signal having been produced by predetermined coding of an image signal, comprising the steps of:

(a) provisionally decoding the coded signal to reproduce said image signal;

(b) counting an amount of code in at least one line of the coded signal being decoded in step (a);

(c) calculating the time required for decoding the amount of code counted in step (b);

(d) comparing the calculated decoding time with a time required to print pixels obtained by decoding the code counted in step (b); and

(e) converting the image signal obtained in step (a) to another coded signal which is coded using another coding than said predetermined coding, when the calculated decoding time is larger than said printing time.

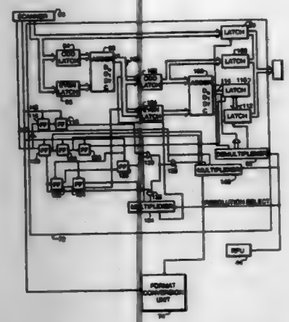
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,028

METHOD AND APPARATUS FOR IMAGE DATA RESOLUTION CONVERSION

Brian J. Kwarta, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1991, Ser. No. 784,350
Int. Cl.[5] H04N *7/12*
U.S. Cl. 358—445 **4 Claims**



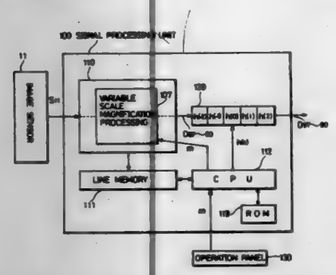
1. An image data conversion apparatus receiving image data, said apparatus comprising:
a first output latch transferring the image data to an output;
a first pair of latches receiving the image data;
a first adder connected to said first pair of latches;
a second pair of latches connected to said first adder; and
a second output latch connected to at least one of said second pair of latches.

5,299,029

IMAGE PROCESSING APPARATUS CAPABLE OF PREVENTING DETERIORATION IN IMAGE QUALITY

Shigeru Moriya, Toyokawa; Kaoru Tada, Aichi, and Hideo Kumashiro, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1991, Ser. No. 808,613
Claims priority, application Japan, Dec. 21, 1990, 2-413369
Int. Cl.[5] H04N *1/40, 1/393*
U.S. Cl. 358—447 **19 Claims**



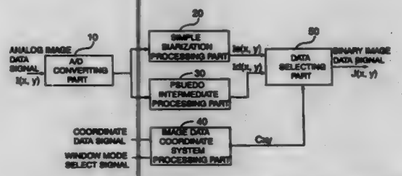
1. An image processing apparatus for processing image data including a plurality of pixel data, comprising:
variable scale magnification means for varying the magnification of an image corresponding to said image data by increasing or decreasing the number of pixel data included in said image data;
first memory means for storing a first weighting coefficient group;
second memory means for storing a predetermined correction factor;
weighting coefficient group determining means for determining a second weighting coefficient group in accordance with said magnification and said correction factor stored in said second memory means;
operation means for operating a third weighting coefficient group from said first weighting coefficient group stored in said first memory means and from said second weighting coefficient group; and
filtering means for correcting said image data by employing a digital filter including said third weighting coefficient group obtained by said operation means.

5,299,030

IMAGE DATA PROCESSING METHOD AND APPARATUS WITH MIXTURE OF SIMPLE BINARIZATION AND PSUEDO INTERMEDIATE TONE

Eun J. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co. Ltd., Rep. of Korea

Filed Dec. 24, 1991, Ser. No. 814,967
Claims priority, application Rep. of Korea, Oct. 30, 1991, 91-19153
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—462 **3 Claims**



1. An image data processing apparatus with a mixture of simple binarization and pseudo intermediate tone, comprising:
(a) an A/D converting part (10) for converting an analog image data signal I(x,y) applied from image sensing means into a digital image data signal;
(b) a simple binarization processing part (20) for comparing the image data signal applied from said A/D converting part (10) with a designated reference value to transform said image data signal applied from said A/D converting part (10) into a binary image data signal Is(x,y) of black level or white level;
(c) a pseudo intermediate tone processing part (30) for comparing said image data signal applied from said A/D converting part (10) with a variable reference value to transform said image data signal applied from said A/D converting part (10) into a binary image data signal Id(x,y) having a gradation component;
(d) an image data coordinate system processing part (40) for detecting a window portion of an image and outputting a control signal Cxy corresponding to a window mode select signal WMS, said image data coordinate system processing part (40) comprising:
(i) a main scan direction window coordinate detecting part (42) for detecting main scan direction window coordinates of an image by inputting coordiante data signals;
(ii) a sub scan direction window coordinate detecting part (44) for detecting sub scan direction window coordinates of an image by inputting said coordinate data signals;
(iii) first and second gate means (46*a*) and (46*b*) of which one input terminal is connected to an output terminal of said main scan direction window coordinate detecting part (42) and another input terminal is connected to an output terminal of said sub scan direction window coordinate detecting part (44);
(iv) first and second buffer means (48*a*) and (48*b*) being respectively connected to said first and said second gate means (46*a*) and (46*b*) and for selecting one of two

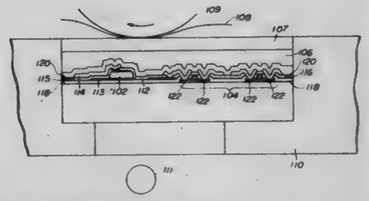
output signals of said first and second gate means (46*a*) and (46*b*) by said window mode select signal WMS; and
(v) first inverting means (49) being connected to one of said first and second buffer means (48*a*) and (48*b*) and for inverting said window mode select signal WMS;
and
(e) a data selecting part (50) for selecting either said binary image data signal Is(x,y) applied from said simple binarization processing part (20) or said binary image data signal Id(x,y) applied from said pseudo intermediate tone processing part (30) by said control signal Cxy applied from said image data coordinate processing part (40), said data selecting part (50) comprising:
(vi) first AND means (83) of which one input terminal is connected to an output terminal of said simple binarization processing part 20 and another input terminal is connected to an output terminal of said image data coordinate system processing part (40);
(vii) second inverting means (82) for inverting the output signal of said image data coordinate system processing part (40); and
(viii) second AND means of which one input terminal is connected to an output terminal of said pseudo intermediate tone processing part (30) and another input terminal is connected to an output terminal of said second inverting means (82).

5,299,031

IMAGE SENSOR AND OPTICAL READING UNIT USING THE SAME

Yasuyuki Shindoh, and Saburo Sasaki, both of Sendai, Japan, assignors to Ricoh Company Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Filed Sep. 7, 1990, Ser. No. 578,690
Claims priority, application Japan, Sep. 13, 1989, 1-237706
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—482 **24 Claims**



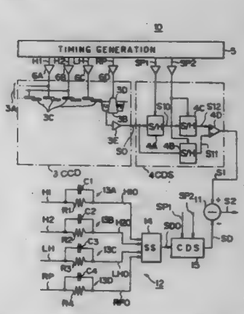
1. An image sensor comprising:
a substrate made of an insulating and transparent material;
a plurality of photoelectric conversion elements which are provided on said substrate and arranged in a predetermined direction, each of said photoelectric conversion elements having a photoelectric member, a first electrode and a second electrode, said photoelectric member being sandwiched between said first electrode and said second electrode;
a driving circuit, which is provided on said substrate and extends in a direction parallel to the direction in which said photoelectric conversion elements are arranged, for driving said photoelectric conversion elements; and
a conductive member, which is adjacent to at least one of said photoelectric conversion elements and said driving circuit, for receiving an external noise, said conductive member being separated from a signal line through which optical signals output from said photoelectric conversion elements are transmitted;
wherein said conductive member is formed at an end portion of said image sensor so as to extend in a direction parallel to the direction in which said photoelectric conversion elements are arranged;
wherein said conductive member has a first conductive film adjacent to said photoelectric conversion elements and a second conductive film adjacent to said driving circuit; and
wherein said first conductive film is formed at a first end of said image sensor so as to extend in a direction parallel to the direction in which said photoelectric conversion elements are arranged, and said second conductive film is formed at a second end portion of said image sensor so as to extend in the longitudinal direction of said image sensor, so that said photoelectric conversion elements and said driving circuit are positioned between said first conductive film and said second conductive film.

5,299,032

IMAGE PICK UP APPARATUS

Susumu Kurita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 826,828
Claims priority, application Japan, Jan. 31, 1991, 3-032081
Int. Cl.[5] H04N *1/04, 3/14, 5/335*
U.S. Cl. 358—482 **3 Claims**



1. An image pick up apparatus having a charge coupled device for generating a video signal comprising:
means for supplying drive pulses to said charge coupled device to drive the same;
differentiation means for differentiating said drive pulses to produce differentiated drive pulse signal components;
producing means for producing a compensating signal corresponding to a noise component of said video signal associated with said drive pulses based on said differentiated drive pulse signal components; and
subtracting means for subtracting said compensating signal from said video signal to suppress said noise component in said video signal.

5,299,033

IMAGE READING AND RECORDING APPARATUS WITH MARKING BOARD AND MOVEABLE SCANNING ARM CONVEYED BY A CABLE AND DRUM ARRANGEMENT

Toshio Watanabe, Fujisawa; Yuuichi Abe, Niimi; Hiroto Morikawa, Niimi, and Hiroshi Takimoto, Niimi, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed May 1, 1992, Ser. No. 877,515
Claims priority, application Japan, May 7, 1991, 3-101302; May 24, 1991, 3-119843
Int. Cl.[5] H04N *1/10, 1/23, 1/393*; B66D *1/00, 1/12*
U.S. Cl. 358—497 **6 Claims**

1. An image recording unit, for use in an image reading and recording apparatus, for producing a hard copy of a picture signal received from an image reading unit of the image read-

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ing and recording apparatus, said image recording unit comprising:

a fixed unit body;

a drive unit mounted on said unit body and including a motor and a transmission gear rotatably driven by said motor;

a recording head mounted on said unit body;

a closure assembly attached to said unit body and movable relative to said unit body between an open position remote from said body and a closed position united with said body;

a recording roller mounted on said closure assembly and forcing a recording sheet against said recording head when said closure unit is disposed in said closed position;

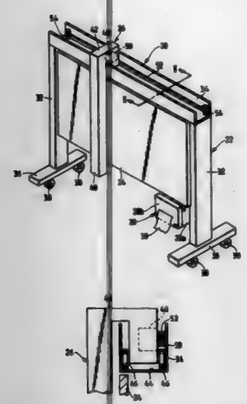
a driven gear fixedly mounted on an end of said recording roller and releasable engaged with said transmission gear for rotating said recording roller when said closure assembly is disposed in said closed position; and

said transmission gear being disposed in such a position that said driven roller is urged by said transmission gear in a direction as to force said recording roller against said recording head when said transmission gear is rotating.

4. An image reading and recording apparatus comprising:

a) a board for receiving information written thereon;

b) a guide rail extending along one side of said board;



c) a reading unit movable along said guide rail for reading the information on said board; and

d) a recording unit for recording a picture signal received from said reading unit, said recording unit being capable of regenerating the information on a reduced scale as a hard copy of said picture signal, wherein said image recording unit comprises

i) a fixed unit body,

ii) a drive unit mounted on said unit body and including a motor and a transmission gear rotatably driven by said motor,

iii) a recording head mounted on said unit body,

iv) a closure assembly attached to said unit body and movable relative to said unit body between an open position remote from said body and a closed position united with said body,

v) a recording roller mounted on said closure assembly and forcing a recording sheet against said recording head when said closure unit is disposed in said closed position, and

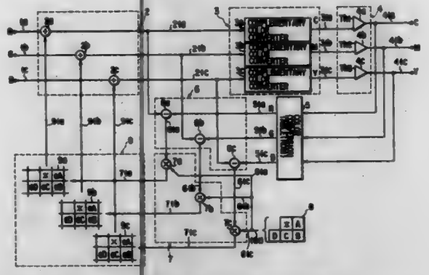
vi) a driven gear fixedly mounted on an end of said recording roller and releasable engaged with said transmission gear for rotating said recording roller when said closure assembly is disposed in said closed position, said transmission gear being disposed in such a position that said driven roller is urged by said transmission gear in a direction as to force said recording roller against said recording head when said transmission gear is rotating.

5,299,034

IMAGE PROCESSING APPARATUS AND IMAGE PROCESSING METHOD FOR REPRODUCING A COLOR IMAGE FROM COLOR SIGNALS HAVING DIFFERENT PHASES

Hiroki Kaano, Yokohama, and Hitoshi Yoneda, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1992, Ser. No. 826,807
Claims priority, application Japan, Mar. 30, 1991, 3-093647
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—518 **11 Claims**



1. An image processing apparatus comprising:

means for inputting analog color information having first red information, first green information and first blue information;

means for converting the input analog color information to digital color information having cyan information, magenta information and yellow information;

means for storing a conversion table which defines a relation between first primary color information of red, green and blue, and second primary color information of cyan, magenta and yellow;

means for reproducing color information having second red information, second green information and second blue information by using said converted digital color information having cyan information, magenta information and yellow information, in accordance with the conversion table stored in said storing means;

means for detecting a difference between said input color information and said reproduced color information; and

means for correcting the analog color information input by said inputting means in accordance with the difference detected by said detecting means so as to convert the corrected analog color information to the digital color information having cyan information, magenta information and yellow information.

5,299,035

HOLOGRAPHIC IMAGING THROUGH SCATTERING MEDIA

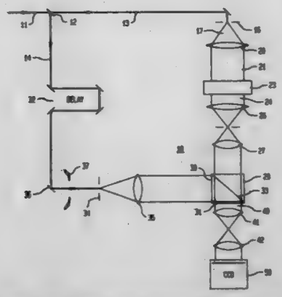
Emmett N. Leith, Canton; David S. Dilworth, Ann Arbor; Hsuan S. Chen, Midland; Ye Chen, Ann Arbor; Joaquin L. Lopez, Ann Arbor, and Janis A. Valdmanis, Ann Arbor, all of Mich., assignors to University of Michigan, Ann Arbor, Mich.

Filed Mar. 25, 1992, Ser. No. 857,546
Int. Cl.[5] G03H *1/02, 1/04, 1/08*
U.S. Cl. 359—9 **31 Claims**

1. A method of imaging an object, the method comprising the steps of:

propagating a first light pulse through an unstable diffusing medium in which the object to be imaged is embedded, the instability of said unstable diffusing medium being characterized by a diffusion characteristic which changes at a substantially predeterminable time rate of change;

combining a light from said first light pulse which has been propagated through said unstable diffusing medium with a second light pulse, said second light beam pulse having a second pulse duration which is very short with respect to said time rate of change of said diffusion characteristic, whereby said diffusion characteristic changes only insignificantly during said second pulse duration, said second pulse duration and said substantially predeterminable time rate of change of said diffusion characteristic being related to one another such that said second pulse duration is decreased as said substantially predeterminable time rate of change of said diffusion characteristic is increased, said second light pulse being timed to combine with an initial portion of said first light pulse propagated through said unstable diffusing medium to form a holographic interference image;



imaging said holographic interference image onto an optical input of a receiving device within a first exposure period having a predetermined duration which is short as compared to the time rate of change of the diffusion characteristic, said first exposure period being selected in response to substantially predeterminable time rate of change of said diffusion characteristic, whereby the diffusion characteristic changes insignificantly during said predetermined exposure period; and

repeating said steps of propagating, combining, and imaging during a second exposure period having a predetermined duration which is short as compared to the time rate of change of the diffusion characteristic, said second exposure period commencing after expiration of an interexposure-delay period following the expiration of said first exposure period, said interexposure delay period having a duration which is significant as compared to the time rate of change of the diffusion characteristic, whereby said diffusion characteristic changes during said interexposure delay period.

5,299,036

LIQUID CRYSTAL PROJECTOR INCLUDING A POLARATION ROTATING ELEMENT

Christophe Nicolas, and Jean-Pierre Huignard, both of Paris, France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 8, 1991, Ser. No. 789,596
Claims priority, application France, Nov. 9, 1990, 90 13942
Int. Cl.[5] G03B *21/00, 21/26;* G02F *1/1335*
U.S. Cl. 359—40 **21 Claims**

1. An image projector comprising:

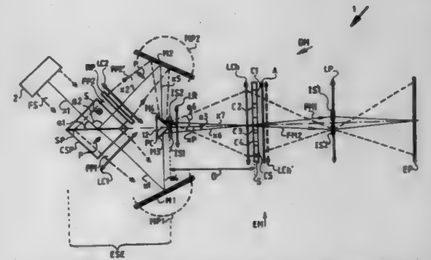
at least one source of light;

a liquid crystal matrix screen;

a polarization direction rotating element;

a polarization separator separating the light into first and second polarized beams having directions of polarization that are orthogonal with respect to each other, the first and second polarized beams being modulated by the liquid crystal matrix screen after one of said first and second polarized beams has passed through the polarization direction rotating element;

first means for achieving at least two reflections for each of said first and second polarized beams, said first means including first and second reflectors for reflecting the first and second polarized beams, respectively, toward an optical axis on which the liquid crystal matrix screen is



centered and third and fourth reflectors for reflecting the first and second polarized beams, respectively, toward the liquid crystal matrix screen; and

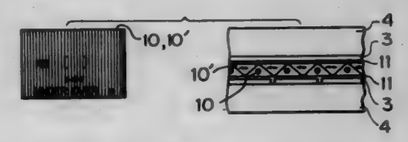
second means for converging the first and second polarized beams on at least a part of the paths of the first and second polarized means between the polarization separator and the liquid crystal matrix screen, so that each of said first and second polarized beams forms an image of the light source between the third and fourth reflectors and the liquid crystal matrix screen.

5,299,037

DIFFRACTION GRATING TYPE LIQUID CRYSTAL DISPLAY DEVICE IN VIEWFINDER

Hajime Sakata, Hiratsuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,252, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 328,766, Mar. 27, 1989, abandoned, which is a continuation of Ser. No. 891,905, Aug. 1, 1986, abandoned. This application Jul. 16, 1993, Ser. No. 92,569
Claims priority, application Japan, Aug. 7, 1985, 60-173790; Aug. 7, 1985, 60-173791
Int. Cl.[5] G02F *1/13;* G02B *5/18;* G03B *17/20*
U.S. Cl. 359—41 **24 Claims**



1. A viewfinder comprising:

a display device having a first material and a second material separated from each other by an interface, at least one of these materials being a material with a refractive index variable by a control means in such a way that in a first state the light from an object simply passes through said display device and that in a second state part of the light from the object is diffracted to display a pattern, and said first and second materials form a diffraction grating in said second state wherein said interface between said first and said second materials determines the shape of said diffraction grating, wherein all diffraction lines are formed in a same direction so that a diffracted light beam expands

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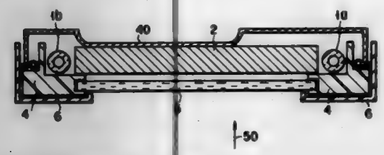
two-dimensionally when the diffraction grating is created, and a portion of the diffracted light generated by said diffraction grating is incident upon an eyepiece of the viewfinder.

5,299,038

LCD WITH HEAT CONDUCTOR FROM LIGHT SOURCE TO SEPARATE PORTION OF LIGHT GUIDE

Hiroshi Hamada; Katsuyuki Kanbara, and Shuichi Abe, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1992, Ser. No. 826,848
Claims priority, application Japan, Jan. 28, 1991, 3-025177
Int. Cl.[5] G02F *1/1335, 1/133*
U.S. Cl. 359—49 **9 Claims**



1. An LCD module comprising:
an LCD panel having a display surface for displaying information;
a light source provided close to one side of the LCD panel;
a light guide plate, provided adjacent to a surface opposite to the display surface of the LCD panel, for guiding light generated by the light source to the display surface of the LCD panel;
a heat conducting plate in contact with a selected portion of said light guide plate preferentially guiding heat generated by the light source to said selected portion of said light guide plate to provide a uniform temperature distribution across the LCD panel, said selected portion being spaced from said light source; and
covering means for covering both the light guide plate and the heat conducting plate and for preventing heat generated by the light source from dissipating.

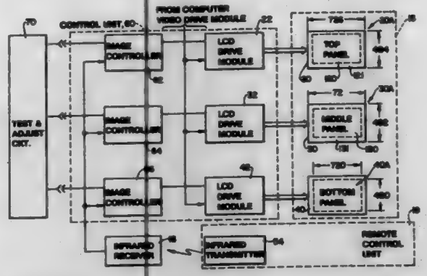
5,299,039

STACKED DISPLAY PANEL CONSTRUCTION AND METHOD OF ALIGNING PIXEL ELEMENTS THEREOF

William K. Bohannon, San Diego, Calif., assignor to Proxima Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 546,238, Jun. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,429, Apr. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,621, Apr. 9, 1990, Pat. No. 5,089,810, which is a continuation-in-part of Ser. No. 472,668, Jan. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,144, Jul. 21, 1988, abandoned. This application Mar. 8, 1991, Ser. No. 667,039
Int. Cl.[5] G09G *3/36*; G02F *1/133*
U.S. Cl. 359—53 **17 Claims**

1. A display apparatus comprising:
stacked liquid crystal display units, said stacked liquid crystal display units including top, intermediate and base liquid crystal display units, said base liquid crystal display unit having a base group of liquid crystal pixel elements arranged in rows and columns defining a base pixel element array; said intermediate liquid crystal display unit having an intermediate group of liquid crystal pixel elements arranged in rows and columns defining an intermediate pixel element array; said intermediate pixel element array including an intermediate central pixel array having a same number of rows and columns as said base group but occupying a substantially smaller area than either said base group or said intermediate group; said top liquid crystal display unit having a top group of liquid crystal pixel elements arranged in rows and columns defining a top pixel element array; said top pixel element array including a top central pixel array having a same number of rows and columns as said base group but occupying a substantially smaller area than said either base group or said intermediate group or said top group; said base liquid crystal unit, said intermediate liquid crystal unit, and said top liquid crystal unit each having different pixel element sizes;



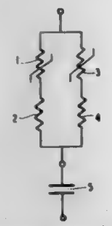
intermediate means for aligning optically a base group of pixel images produced by said base group of pixel elements with an intermediate group of pixel images produced by a selected group of the pixel elements in said intermediate pixel array to merge the base group of pixel images and said intermediate group of pixel images; and
top means for aligning optically said intermediate group of pixel images with a top group of pixel images produced by a selected group of the pixel elements in said top pixel array to merge the intermediate group of pixel images and said top group of pixel images.

5,299,040

METAL-INSULATOR-METAL TYPE ACTIVE MATRIX LIQUID CRYSTAL DISPLAY FREE FROM IMAGE STICKING

Eishi Mizobata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 13, 1991, Ser. No. 714,967
Claims priority, application Japan, Jun. 13, 1990, 2-154574; Feb. 26, 1991, 3-103250
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—58 **9 Claims**



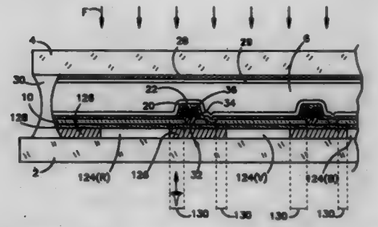
1. A liquid crystal display element which has a lower substrate provided with a lead electrode and a pixel electrode, an upper substrate provided with a transparent counter electrode that opposes said pixel electrode, and a liquid crystal sandwiched between said upper and said lower substrates, said liquid crystal display element comprising: a first metal-insulator-metal element connected in series with a first constant resistor, a second metal-insulator-metal element having higher resistance than that of said first metal-insulator-metal element connected in series with a second constant resistor having lower resistance than that of said first constant resistor, the series connection of said first metal-insulator-metal element and said first constant resistor and the series connection of said second metal-insulator-metal element and said second constant resistor being respectively connected between said lead electrode and said pixel electrode.

5,299,041

ACTIVE MATRIX, HIGH DEFINITION, LIQUID CRYSTAL DISPLAY STRUCTURE

Francois Morin, Lannion; Yannick Chouan, Louannec, and Bruno Vinouze, Port-Blanc, all of France, assignors to France Telecom Etablissement autonome de droit public, France

Filed Jul. 9, 1992, Ser. No. 911,013
Claims priority, application France, Jul. 11, 1991, 91 08752
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—59 **7 Claims**



1. Active matrix, liquid crystal screen structure having a first and a second transparent substrates (2, 4) spaced from one another and between which is interposed a liquid crystal film (6), the first substrate (2) essentially supporting colour filters (124) resistant to high temperatures and separated by black matrixes (126), a first transparent, passivating layer (128) deposited on the entire surface occupied by the filters and the black matrixes, thin film transistors (8, 9) formed on the first passivating layer facing the black matrixes so as to be protected from the ambient light, first, transparent, capacitor plates (10), formed on the first passivating layer facing the colour filters, each first plate being connected to a thin film transistor, electrode rows (14) and columns (12) for controlling said transistors and a second transparent, passivating layer (20) covering the transistors, the first plates, the rows and the columns, the second substrate (4) essentially having the second transparent capacitor plate (28), said second plates facing the first capacitor plates.

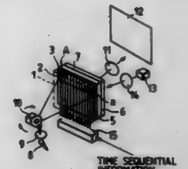
5,299,042

LIGHT-TO-LIGHT CONVERSION METHOD, DISPLAY UNIT USING THE SAME, AND LIGHT-TO-LIGHT CONVERSION ELEMENT INCORPORATED THEREIN

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Ichiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama, and Ryusaku Takahashi, Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 30, 1991, Ser. No. 707,813
Claims priority, application Japan, May 30, 1990, 2-140533; May 30, 1990, 2-140534
Int. Cl.[5] G02F *1/01, 1/133*; H04N *3/14*
U.S. Cl. 359—72 **9 Claims**

1. A display unit, comprising:
a light-to-light conversion element including at least a photoconductive layer and a light modulation layer that are disposed between two transparent electrodes, each of said two transparent electrodes being formed on one transparent substrate, at least one of said two transparent electrodes being a stripe electrode composed of a number of parallel separate stripe electrode members;
means for irradiating said photoconductive layer with an electromagnetic radiation beam having a linear cross-sectional shape while deflecting the electromagnetic radiation beam in a vertical direction to intersect said stripe electrode members, said linear cross-sectional shape of the electromagnetic radiation beam having a length which is capable of intersecting all of said stripe electrode members simultaneously;
means for modulating a readout beam in accordance with information written to said light-to-light conversion element; and



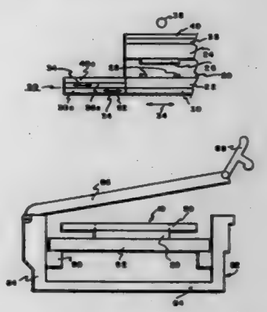
means for displaying said readout beam after said readout beam is modulated by said modulating means;
wherein in one mode, the respective stripe electrode members of said stripe electrode are supplied with time sequential signals containing image information to be inputted to corresponding picture elements in the form of a corresponding set of simultaneous pieces of information, and
wherein in one another mode, while the respective stripe electrode members of said stripe electrode are kept at a same potential level, the electromagnetic radiation beam while being deflected in the vertical direction is irradiated by said irradiating means over said photo conductive layer after it is modulated with image information.

5,299,043

UNDERWATER LIQUID CRYSTAL DISPLAY APPARATUS HAVING IDENTICAL POLARIZERS AND REFLECTOR IN BOTH THE MATTING AND LIQUID CRYSTAL CELL

George W. Taylor, Princeton, N.J., and Andrew Magion, Yardley, Pa., assignors to Merlin Industries, Trenton, N.J.

Filed Feb. 23, 1993, Ser. No. 21,200
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—83 **5 Claims**



1. A display apparatus for underwater use comprising an hermetic enclosure having a transparent window in an outer wall thereof, and a liquid crystal device within said enclosure, said liquid crystal device comprising a matting and a liquid crystal cell separate from said matting and surrounded by said

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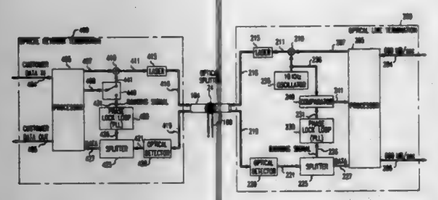
matting, said matting providing a visual background for said cell, said cell including a front surface to be viewed and a rear surface, a front light polarizer disposed in front of the front surface of said cell, a rear light polarizer disposed behind the rear surface of said cell, and a light reflector disposed behind said rear light polarizer and facing frontwards, said matting comprising a laminate including, from a front viewed surface thereof rearwardly, contiguous layers of identical ones of said front and rear polarizers and said light reflector, said cell being switchable between light reflective and light absorbing modes, one of said modes being used as a background of images to be displayed and visually corresponding substantially exactly to the visual background provided said matting, and said front viewable surfaces of said cell and said matting being viewable through said transparent window.

5,299,044

RANGING METHOD FOR USE IN TDMA SYSTEMS ON TREE-AND-BRANCH OPTICAL NETWORKS

Theo W. M. Mosch, Huizen, and Pieter H. van Heyningen, Almere, both of Netherlands, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 24, 1992, Ser. No. 933,795
Int. Cl.[5] H04B *10/08, 10/18, 10/12*
U.S. Cl. 359—110 **28 Claims**



1. Apparatus for use in an optical communications network, the apparatus comprising:
means for receiving a composite data signal that includes a ranging signal and a data signal, the ranging signal comprising a single frequency signal, the data signal being generated by a plurality of sources in a time division multiple access format;
means for separating the ranging signal from the composite data signal; and
means for providing a phase difference between the separated ranging signal and a reference signal at the at least single frequency, the phase difference being proportional to the range to one of the plurality of sources.

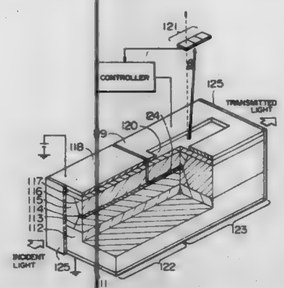
5,299,045

LIGHT DETECTING APPARATUS HAVING A DIFFRACTION GRATING

Yoshinobu Sekiguchi, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1992, Ser. No. 819,387
Claims priority, application Japan, Jan. 12, 1991, 3-013903; Jan. 12, 1991, 3-013904; Jan. 12, 1991, 3-013905
Int. Cl.[5] H04B *10/12;* **H04J** *14/02*
U.S. Cl. 359—130 **28 Claims**

1. A light detecting apparatus comprising:
a semiconductor light waveguide through which light propagates:
a diffraction grating formed in said light waveguide, for diffracting the light propagating through said light waveguide;
an electrode for effecting one of injecting electric current into said light waveguide and applying a voltage to said light waveguide; and
a light detecting means including a plurality of detecting portions for detecting light diffracted by said diffraction grating to outside said light waveguide;
a comparison circuit for comparing quantities of light incident on said plurality of detecting portions and for producing a control signal in accordance with a result of the comparing; and



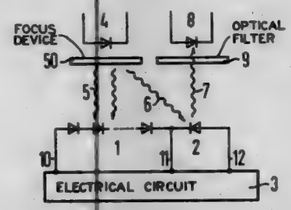
a control circuit for controlling an angle of diffraction of said diffracted light by changing, in accordance with said control signal outputted from said comparison circuit, one of the current injected through said electrode and the voltage applied by said electrode.

5,299,046

SELF-SUFFICIENT PHOTON-DRIVEN COMPONENT

Werner Spaeth, Holzkirchen, and Joachim Meibert, Steinhoering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 490,454, Mar. 8, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 945,596
Claims priority, application European Pat. Off., Mar. 17, 1989, 89104788.8
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—154 **19 Claims**



1. A self-sufficient photon-driven device comprising:
a substrate made of compound semiconductor material;
light-receiving first means monolithically integrated on said substrate for receiving optical energy and optical signals and converting the optical energy and optical signals into tappable electrical energy and electrical signals, said light-receiving first means comprising a plurality of serially-connected photodiodes;
light-transmitting second means also monolithically integrated on said substrate, said light-transmitting second means comprising a light-emitting diode;
means for interconnecting the first and second means so that, when interconnected, said second means is powered solely by said tappable electrical energy, and converts said electrical signals into outgoing optical signals; and
third means including an electrical circuit connected to said interconnection means and between said photodiodes and said light emitting diode for receiving the electrical energy and the electrical signals from the photodiode and

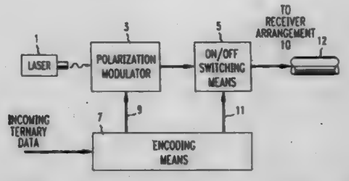
for feeding the electrical signals to said light emitting diode wherein said electrical circuit of said third means comprises modulating means operable to modulate the light emitted by said light emitting diode by chronologically alternating the operation of and short-circuit operation of said light emitting diode.

5,299,047

TERNARY DATA COMMUNICATION USING MULTIPLE POLARIZATIONS

Sanjay Kasturia, and Jack H. Winters, both of Middletown, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 2, 1992, Ser. No. 862,389
Int. Cl.[5] H04B *10/04, 10/06*
U.S. Cl. 359—156 **17 Claims**



1. Apparatus for communicating on an optical fiber, the apparatus comprising:
means for transmitting ternary data as a sequence of ternary symbols, each ternary symbol being transmitted during a symbol period and being representable by an optical signal selected from among the group of optical signals consisting of an intensity other than zero at a first polarization, an intensity other than zero at a second polarization, and zero intensity at the first and second polarizations;
means for detecting separately, for each symbol period, a first optical signal received at the first polarization and a second optical signal received at the second polarization, and outputting first and second output signals respectively representing the first and second optical signals detected at the first and second polarizations during successive symbol periods; and
means for processing the first and second output signals to generate an output data stream corresponding to the transmitted data.

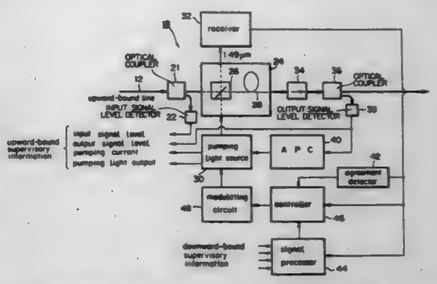
5,299,048

OPTICAL AMPLIFIER AND OPTICAL COMMUNICATION SYSTEM PROVIDED WITH THE OPTICAL AMPLIFIER

Masuo Suyama, Sagamihara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 574,097, Aug. 29, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 987,568
Claims priority, application Japan, Aug. 31, 1989, 1-223172
Int. Cl.[5] H04B *10/02, 10/16*
U.S. Cl. 359—179 **8 Claims**

6. An optical communication system having an optical repeater including an optical fiber amplifier amplifying a signal light beam by propagating the signal light beam and a pumping light beam through a rare-earth-doped fiber in the optical fiber amplifier, wherein said optical amplifier comprises:
a pumping light source emitting a pumping light beam;
means for modulating the pumping light beam with a high-frequency modulating signal having a period shorter than a life span of fluorescence resulting from an excited state in the rare-earth-doped fiber;
means for transmitting first information with the pumping light beam as a carrier, and transmitting second information with the signal light beam, the signal light beam and the pumping light beam propagated in a same direction through the rare-earth-doped fiber with the first information transmitted by the pumping light beam including a supervisory signal for said optical repeater.

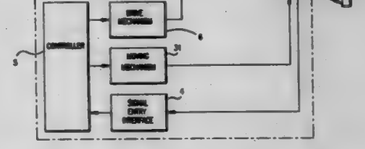


5,299,049

BEAM SHIFTING DEVICE

Takayuki Saito, and Masami Yoneda, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Apr. 30, 1993, Ser. No. 55,016
Claims priority, application Japan, Apr. 30, 1992, 4-137871
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **5 Claims**



1. A beam shifting device for directing a beam toward an object placed in an optical axis, said beam shifting device comprising:
first beam shifting means positioned in said optical axis and being able to turn about a first axis perpendicular to said optical axis for shifting said beam in a first direction;
second beam shifting means positioned in said optical axis and being able to turn about a second axis perpendicular to both said optical axis and said first axis for shifting said beam in a second direction perpendicular to said first direction;
luminous energy distribution detecting means for detecting a distribution of luminous energy of said beam in each of said first and second directions with respect to a plane perpendicular to said optical axis; and
control means for determining deviations of said beam from said optical axis in said first and second directions based on said distributions of luminous energy and for driving said first and second beam shifting means so as to reduce said deviations of said beam in said first and second directions, respectively.

5,299,050

SCANNING OPTICAL SYSTEM

Akira Morimoto, and Masaaki Aoyama, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 16, 1992, Ser. No. 821,782
Claims priority, application Japan, Jan. 16, 1991, 3-073576; Jan. 16, 1991, 3-073577; Jan. 17, 1991, 3-078126; Jan. 17, 1991, 3-078127
Int. Cl.[5] G02B 26/10
U.S. Cl. 359—212 22 Claims



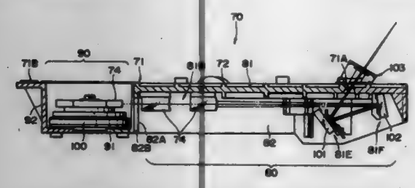
1. A scanning optical system comprising:
a laser light source;
a scanning deflector for deflecting the laser light emitted by said laser light source in a principal scanning plane;
a scanning lens for converging the deflected laser beam on a scanning surface;
a converging lens which first brings the light beam from said laser light source to an image in an auxiliary scanning plane that is perpendicular to said principal scanning plane;
a prism block comprising a slit mirror which coincides with the position at which the light beam is converged by said converging lens, and which reflects the laser beam towards said scanning deflector; and
means for preventing ghosting which is produced on the scanning surface, by reflection of light in the optical system, at a fixed angle with respect to the scanning surface.

5,299,051

HOUSING STRUCTURE FOR OPTICAL SCANNING SYSTEM

Masakazu Hirano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,694
Claims priority, application Japan, Jul. 23, 1991, 3-85736
Int. Cl.[5] G02B 26/10
U.S. Cl. 359—216 12 Claims



1. A housing structure for an optical scanning system arranging a dynamic deflecting means and optical elements with predetermined positional relationship, which comprises:
a first disposition area in which said dynamic deflecting means is disposed; and
a second disposition area which is formed stepwise with respect to said first disposition area through a vertical wall and in which said optical elements are disposed;
wherein said dynamic deflecting means is disposed on an upper surface of said first disposition area, and said optical elements are disposed on a lower surface of said second disposition area, said upper surface of said first disposition area being relatively positioned a step lower than said lower surface of said second disposition area.

5,299,052

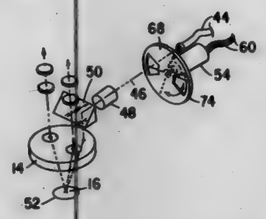
Patent Not Issued For This Number

5,299,053

VARIABLE SHUTTER ILLUMINATION SYSTEM FOR MICROSCOPE

Larry Kleinburg, North Hollywood, and Michael J. Danley, Temple City, both of Calif., assignors to American Cyanamid Company, Wayne, N.J.

Filed Oct. 26, 1990, Ser. No. 604,699
Int. Cl.[5] G02B 26/02, 21/06; A61B 3/08, 3/10
U.S. Cl. 359—227 7 Claims



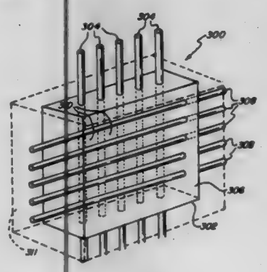
1. In a surgical microscope system having at least one eyepiece for viewing a field of view and having a source of illumination for providing a light beam to illuminate the field of view, the improvement comprising:
a shutter means positioned between the source of illumination and the field of view, said shutter means being constructed for continuously interrupting the light beam being transmitted to the field of view at a frequency greater than the flicker frequency of a human eye, said shutter means comprising a rotatable disk and a motor for rotating said rotatable disk, said rotatable disk having one or more apertures formed therethrough for transmittal of the light beam therethrough, whereby the light beam is partially blocked from reaching the field of view upon rotation of said rotatable disk, and whereby the exposure time of the light beam on the field of view is reduced without creating a humanly perceptible flickering of the light beam.

5,299,054

OPTICAL SWITCH

Allen R. Geiger, Las Cruces, N. Mex., assignor to PetroLaser, Inc., Las Cruces, N. Mex.

Continuation-in-part of Ser. No. 771,818, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 542,537, Jun. 25, 1990, abandoned. This application Apr. 14, 1992, Ser. No. 868,299
Int. Cl.[5] G02F 1/03, 1/33; G02B 6/26
U.S. Cl. 359—251 24 Claims



1. An optical switch, comprising:

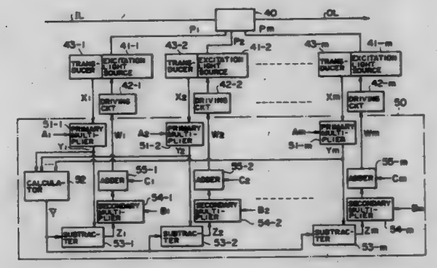
a substrate having an input face and an output face opposite the input face;
a first set of conductors parallel to one another and disposed in a first plane generally parallel to one face of the substrate;
a second set of conductors parallel to one another and disposed in a second plane substantially parallel to the first plane, each of said first set of conductors and each of said second set of conductors being substantially perpendicular to each other; and
a plurality of refractive cells, wherein each refractive cell is defined by a volumetric space between an adjacent pair of said first set of conductors and an adjacent pair of said second set of conductors, further wherein each refractive cell is configured for refracting an input light beam at a select angle.

5,299,055

OPTICAL FIBER AMPLIFIER CIRCUIT COMPRISING A CONTROL CIRCUIT FOR CONTROLLING A PLURALITY OF EXCITATION LIGHT SOURCES

Kenichi Yoneyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,843
Claims priority, application Japan, Aug. 28, 1991, 2-215762
Int. Cl.[5] G02B 6/28; H01S 3/30
U.S. Cl. 359—341 2 Claims



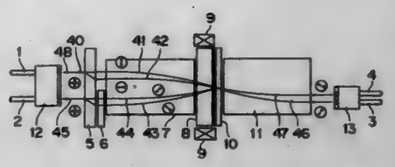
1. An optical fiber amplifier circuit including an optical fiber amplifier for amplifying input light to produce amplified output light and which comprises an optical fiber doped with a rare-earth element and first through m-th excitation light sources for generating first through m-th excitation lights, where m represents a positive integer greater than unity, and for supplying said first through said m-th excitation lights to said optical fiber, said optical fiber amplifier circuit further comprising:
first through m-th driving circuits for driving said first through said m-th excitation light sources, respectively;
first through m-th transducers coupled to said first through said m-th excitation light sources, respectively, each of said first through said m-th transducers being supplied with a part of each of said first through said m-th excitation lights and tansducing said part of each of the first through the m-th excitation light into first through m-th electrical signals having first through m-th signal values; and
a control circuit connected to said first through said m-th transducers and said first through said m-th driving circuits for controlling sad first through said m-th driving circuits in response to said first through said m-th electrical signals by supplying first through m-th control signals to said first through said m-th driving circuits, respectively, said first through said m-th excitation light sources thereby generating said first through said m-th excitation lights having first through m-th output power ratios, said control circuit comprising:
first through m-th primary multipliers connected to said first through said m-th transducers for multiplying said first through said m-th signal values by first through m-th primary factors, respectively, to produce first through m-th primary multiplied signals representative of first through m-th primary multiplied values;
a calculator connected to said first through said m-th primary multipliers for calculating a mean value of said first through said m-th primary multiplied values to produce a mean value signal representative of said mean value;
first through m-th subtracters connected to said first through said m-th primary multipliers, respectively, and connected to said calculator for calculating first through m-th difference between said mean value and said first through said m-th primary multiplied values to produce first through m-th difference signals representative of said first through said m-th differences;
first through m-th secondary multipliers connected to said first through said m-th subtracters for multiplying said first through said m-th differences by first through m-th secondary factors, respectively, to produce first through m-th secondary multiplied signals representative of first through m-th secondary multiplied values; and
first through m-th adders connected to said first through said m-th secondary multipliers, respectively, for calculating first through m-th sums of said first through said m-th secondary multiplied values and first through m-th set values, respectively, to produce first through m-th sum signals, as said first through said m-th control signals, representative of said first through said m-th sums.

5,299,056

OPTICAL PASSIVE COMPONENT ASSEMBLY

Noboru Kurata, Ikoma; Hironori Souda, Hirakata, and Masaaki Tojo, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 5, 1993, Ser. No. 56,535
Claims priority, application Japan, May 6, 1992, 4-113440; Jul. 8, 1992, 4-180842
Int. Cl.[5] G11B 7/00
U.S. Cl. 359—341 16 Claims



1. An optical passive component assembly comprising:
a first fiber group having first and second optical fibers;
a birefringent crystal, opposed to end faces of said first and second optical fibers, for separating incident light into two linearly polarized light beams having respective polarized light planes generally perpendicular to each other;
a half-wave plate for allowing light emitted from said second optical fiber to pass therethrough and for rotating a polarized light plane of incident light;
a first lens for converting incident light into a generally collimated ray;
a magneto-optic crystal for rotating a polarized light plane of incident light by an angle of $\pi/8+N\pi/4$ (N=0, 1, 2, . . .) under an influence of a magnetic field;
an optical filter for reflecting light having a specific wavelength and for allowing light having a wavelength other than said specific wavelength to pass therethrough;
a second lens for converging a collimated ray introduced thereinto;

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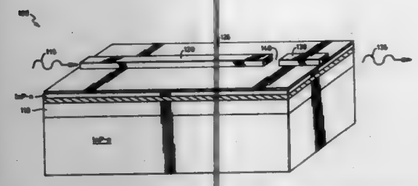
a second fiber group having third and fourth optical fibers, end faces of which are opposed to said second lens; and
said birefringent crystal, said half-wave plate, said first lens, said magneto-optic crystal, said optical filter, said second lens being disposed in this order,
whereby an optical coupling system is constituted between said first and second optical fibers and between said third and fourth optical fibers and one of said first and second optical fibers.

5,299,057

MONOLITHICALLY INTEGRATED OPTICAL AMPLIFIER AND PHOTODETECTOR TAP

William C. Rideout, Townsend, Robert Olshansky, Wayland, and Elliot G. Eichen, Arlington, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 29, 1992, Ser. No. 968,639
Int. Cl.[5] H01S *3/19, 3/096*
U.S. Cl. 359—345 **9 Claims**



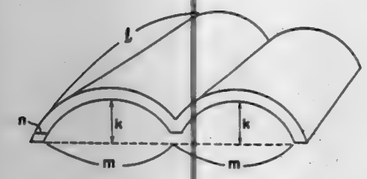
1. An optoelectronic device for amplifying and detecting an optical signal comprising:
a body of semiconductor material having a waveguide structure with a first section including first and second opposed facet surfaces and forward biased for amplifying said optical signal;
said waveguide structure including a second section, electrically isolated from said first section, and reversed biased for detecting said optical signal;
wherein said optical signal is partially absorbed by said second section and partially passed through said second section.

5,299,058

METHOD OF REPRODUCING MIRAGE-LIKE PHENOMENON

Tetsu Tanaka; Isamu Amemiya; Chikanobu Tomikawa, and Koji Aoki, all of Uozu, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/01059, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO92/03809, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 21, 1990, Ser. No. 848,977
Int. Cl.[5] G02B *1/06, 3/12, 27/22*
U.S. Cl. 359—478 **9 Claims**



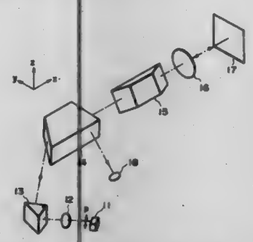
1. A method of reproducing a mirage-like phenomenon, comprising the steps of forming a structure comprising at least two see-through phases wherein the density of a lower phase in contrast with an upper phase is larger than that of the upper phase, the density ratio (A) therebetween is $1<A<50$ and the interface between the lower phase and the upper phase has an even or curved surface, and positioning a real object relative to at least one interface of the structure comprising at least two phases, such that light rays reflected by said real object are transmitted through or reflected at said at least one interface and thereafter arrive at an observation point, thereby enabling a mirage-like image of said real object to be visualized.

5,299,059

PLURAL-BEAM OPTICAL HEAD INCLUDING A UNIAXIAL CRYSTAL RIGHT TRIANGULAR PRISM BEAM DIVIDER

Katsuya Oikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 873,833
Claims priority, application Japan, Apr. 30, 1991, 3-124552
Int. Cl.[5] G02B *27/10, 27/28, 5/30*
U.S. Cl. 359—495 **9 Claims**



1. A plural-beam optical head comprising:
a light source for generating linearly polarized light; and
light beam dividing means for dividing the linearly polarized light from said light source into a plurality of light beams, said light beam dividing means being a substantially right triangular prism formed of a uniaxial crystal, said prism having the hypotenuse side surface thereof as a total reflection surface and having its two side surfaces, which are substantially orthogonal to each other, as an entrance surface and an exit surface, respectively, said prism being disposed so that the direction of the principal axis of the crystal forms an angle other than 0 degrees with respect to all directions which are:
i) normal to the total reflection surface;
ii) normal to an incidence wave surface incident on the total reflection surface;
iii) normal to a reflection wave surface reflected from said total reflection surface;
iv) normal to a plane defined by the normal to the incident wave surface and the normal to the reflection wave surface; and which
v) intersect said plane and said total reflection surface.

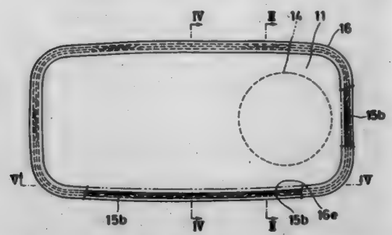
5,299,060

MIRROR DEVICE INCLUDING AN ELASTIC SEAL MEMBER AND A VIBRATOR FOR AN AUTOMOBILE

Keiji Mori, Kariya; Naofumi Fujie, Nagoya; Koji Ito, Kariya, and Kato Katsutoshi, Aisa, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 25, 1991, Ser. No. 673,983
Claims priority, application Japan, Mar. 29, 1990, 2-82458
Int. Cl.[5] B60R *1/06;* **G02B** *5/08, 7/18*
U.S. Cl. 359—514 **6 Claims**

1. A mirror device for a motor vehicle, comprising:
a mirror having a front reflecting surface, a back surface, and an outer circumferential portion;
an elastic seal member mounted to the outer circumferential portion of the mirror, the elastic seal member having circumferential recessed portions defined by spaced walls;
a holder having a surface area opposing the back surface of the mirror, the holder having circumferential convex portions projecting into and spaced from the walls of the recessed portions;



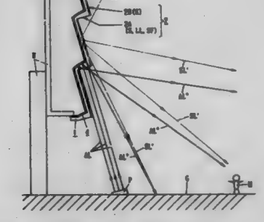
solid material filling the space between the walls of the circumferential recessed portions and the convex portion of the holder fixing the holder to the seal member, the mirror being vibratable relative the seal member and the seal member being vibratable relative to the mirror and the holder member; and
a vibrator mounted to the mirror device for vibrating the mirror.

5,299,061

PSEUDO-LUMINOUS PANEL, OPTICAL COLOR FILTER THEREFOR, AND DISPLAY ELEMENT AND DEVICE USING THE PSEUDO-LUMINOUS PANEL

Yoshimasa Wakatake, Tokyo, Japan, assignor to Masayuki Wakatake, Happy Valley, Hong Kong, a part interest

Filed Nov. 4, 1992, Ser. No. 971,154
Int. Cl.[5] G02B *5/136, 5/28, 5/02;* **G09F** *13/16*
U.S. Cl. 359—547 **11 Claims**



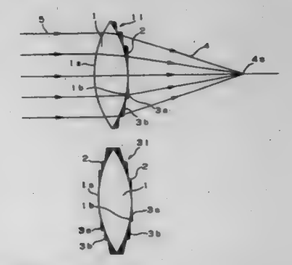
1. A pseudo-luminous panel comprising:
an optical color filter; and
a reflecting film formed over the back face of said optical color filter;
wherein:
the surface of said optical color filter is composed of obliquely downward band-like surface portions and obliquely upward band-like surface portions alternately arranged side by side in a vertical direction;
the back face of said optical color filter is composed of obliquely upward band-like back face portions each on the opposite side from one of said obliquely downward band-like surface portions forming the surface of said optical color filter and obliquely downward band-like back face portions each on the opposite side from one of said obliquely upward band-like surface portions forming the surface of said optical color filter;
said obliquely upward band-like back face portions of said optical color filter are smooth surfaces;
said obliquely downward band-like back face portions of said optical color filter are smooth, irregular or uneven surfaces;
said obliquely downward band-like surface portions forming the surface of said optical color filter are smooth surfaces extending straight in the longitudinal section of said optical color filter; and
said obliquely upward band-like surface portions forming the surface of said optical color filter are rough surfaces.

5,299,062

OPTICAL LENS

Shiro Ogata, Kyoto, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed May 13, 1991, Ser. No. 699,329
Claims priority, application Japan, May 11, 1990, 2-122357
Int. Cl.[5] G02B *27/44, 5/18, 13/18*
U.S. Cl. 359—571 **15 Claims**



1. An optical lens, comprising:
a lens element formed of a first material; and
a corrective layer formed of a second material disposed on a surface of said element, said corrective layer correcting aberrations of said lens element, said corrective layer comprising a blazed grating having a plurality of annuli.

5,299,063

CROSS PROJECTION VISOR HELMET MOUNTED DISPLAY

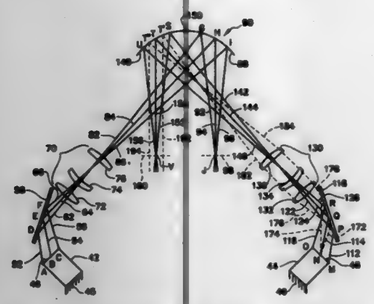
Bernard S. Fritz, and Teresa A. Fritz, both of Eagan, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 10, 1992, Ser. No. 973,875
Int. Cl.[5] G02B *27/14;* **G09G** *3/02;* **H04N** *13/00*
U.S. Cl. 359—631 **8 Claims**

1. A display system for use with a helmet having first and second sides and a partly reflective visor generally across a front side thereof to permit the eyes of a helmet wearer to observe a scene therethrough comprising:
a first image source mounted on the first side of the helmet approximately at the level of the wearer's eyes; and
a first optical relay mounted to receive an image from the

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first image source and direct it across the helmet to a first portion of the visor on the second side of the helmet, the



first portion reflecting the image to a first eye of the wearer.

5,299,064

ZOOM LENS OF REAR FOCUS TYPE

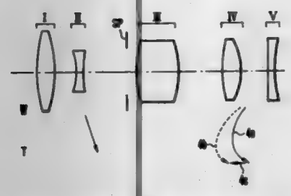
Hiroyuki Hamano, Kanagawa, and Hiroshi Satoh, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 857,996, Mar. 26, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,403

Claims priority, application Japan, Mar. 29, 1991, 3-065835; Mar. 26, 1992, 4-068443

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—684 **12 Claims**



1. A zoom lens comprising: in the order from an object side,
a first lens unit having a positive refractive power;
a second lens unit having a negative refractive power;
a third lens unit having a positive refractive power;
a fourth lens unit having a positive refractive power; and
a fifth lens unit having a negative refractive power,
wherein zooming from a wide-angle end to a telephoto end is performed by moving said second lens unit and said fourth lens unit, and
wherein said zoom lens satisfies the following condition:

$$1.09<\beta_5<1.45$$

wherein β_5 is the lateral magnification of said fifth lens unit with an object at infinity.

5,299,065

OBJECTIVE WITH LARGE APERTURE RATIO

Fumio Watanabe, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

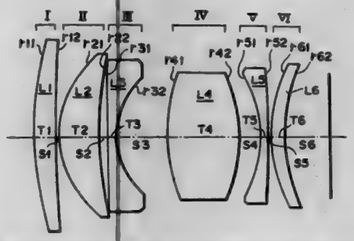
Filed Feb. 22, 1993, Ser. No. 20,770

Claims priority, application Japan, Mar. 5, 1992, 4-048297

Int. Cl.[5] G02B *9/62*

U.S. Cl. 359—759 **6 Claims**

1. An objective lens comprising, respectively from the object:
a first element of a positive lens, at the object end thereof, having a convex surface;
a second element of a positive meniscus lens, at the object end thereof, having a convex surface;
a third element of a negative lens, at the image end thereof, having a concave surface;
a fourth element of a single lens or a cemented lens, at the object end thereof, having a convex surface, wherein the cemented lens includes two or three lenses;
a fifth element of a negative lens, at the object end thereof, having a concave surface; and
a sixth element of a positive lens, at the object end thereof, having a convex surface; and wherein the objective lens satisfies the following three conditional equations, assuming that "f" designates the focal distance of the entire lens system:



$$0.44f<R\ II<0.65f \quad (1)$$

$$0.63f<R\ IV<1.00f \quad (2)$$

$$0.55f<S\ III+D\ IV<0.70f \quad (3)$$

where
R II: the curvature radius of the object-end surface of the second lens element
R IV: the curvature radius of the object-end surface of the fourth lens element S III: a distance between the third and the fourth lens elements
D IV: the thickness of the fourth lens element.

5,299,066

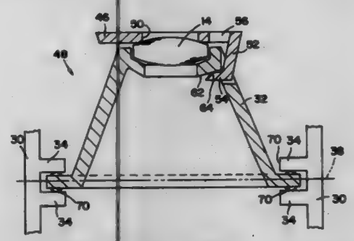
CONICAL LENS MOUNT WITH SNAP-IN LENS CLAMP

Philip A. Rombult, Bradford, Mass., assignor to Miles, Inc., Wilmington, Mass.

Filed Aug. 12, 1992, Ser. No. 929,760

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—819 **6 Claims**



1. A lens mount assembly comprising:
a hollow, truncated generally conical lens mount having means defining a lens seat; and,
a lens clamp ring for clamping engagement with said conical lens mount to hold a lens between the lens seat of said conical lens mount and said lens clamp ring, said lens clamp ring having a plurality of circumferentially spaced, axially extending locking tang means each having an inwardly extending tang and wherein said conical lens mount has a corresponding plurality of circumferentially spaced tang receiving apertures for receiving said lens clamp ring tangs in locking engagement therewith.

5,299,067

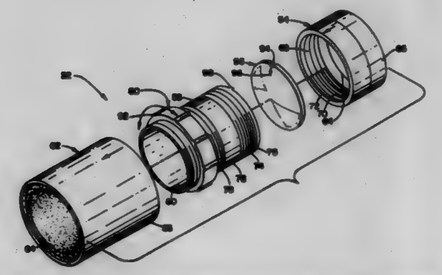
AUXILIARY LENS ATTACHMENT

John R. Kutz, Sykeston, N. Dak., and Mark W. Baumgartner, Holdingford, Minn., assignors to Markxmen Optics, Sykeston, N. Dak.

Filed Dec. 15, 1992, Ser. No. 990,703

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—827 **13 Claims**



1. An auxiliary lens attachment used to attach a lens to an optical instrument, comprising:
an adaptor having a lends receiving portion at a first end, a lens securing portion in a middle and an optical instrument mounting portion at a second end;
means for receiving the lens in the receiving portion of the adaptor;
means for securing the lens in the receiving portion of the adaptor;
means for attaching the securing portion to the mounting portion;
means for mounting the mounting portion to the optical instrument; and
means for adjusting a distance between the mounting and securing portions
wherein an inner surface of the receiving portion includes first threaded grooves, the lens being disposable in the receiving portion at an end of the threaded grooves adjacent a radially inwardly extending flange proximate a first end of the receiving portion, a first end of an outer surface of the securing portion has second threaded grooves which correspond to the first threaded grooves of the receiving portion and which cooperate with the first threaded grooves such that the securing portion is receivable in the receiving portion by threading the securing portion into the receiving portion, the securing portion further includes third threaded grooves at a second end on the outer surface, the mounting portion includes fourth threaded grooves at a first end on an inner surface, the mounting and securing portions are secured together when the third and fourth threaded grooves are threadedly mounted together, the adjustment means includes a sleeve member having fifth threaded grooves on an inner surface of the sleeve member, the sleeve member being threadedly mounted on the third threaded grooves of the securing portion, the fifth threaded grooves of the sleeve member and the fourth threaded grooves of the mounting portion share the third threaded grooves.

5,299,068

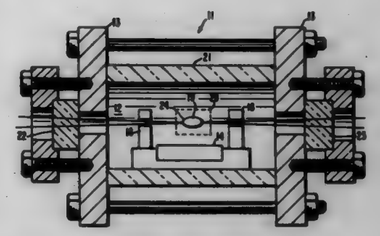
GASEOUS LASER POWER LIMITER INITIATED BY NUCLEAR RADIATION

David B. Cohn, Torrance; Michael J. Nicol, Redondo Beach, and Mitchell B. Haeri, Irvine, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 19, 1990, Ser. No. 511,161

Int. Cl.[5] G02F *1/36*; G02B *5/23*

U.S. Cl. 359—886 **18 Claims**



1. A gas plasma switch comprising:
a chamber containing a gas under pressure;
optically transmissive windows disposed at opposite ends of the chamber that permit passage of light therethrough; and
a radiation source disposed in the chamber and adapted to discharge particles into the chamber that are adapted to pre-ionize the gas disposed in the chamber such that a critical density of particles is created that is adapted to initiate a laser-induced plasma that reflects, absorbs and deflects laser radiation such that its intensity is attenuated.

5,299,069

MAGNETIC TAPE FORMAT FOR RECORDING DIGITAL PICTURE DATA

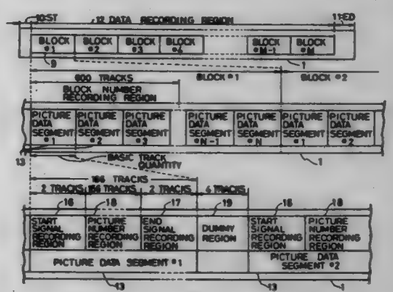
Nobuyuki Kohsaka, and Katsumi Senba, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1991, Ser. No. 707,080

Claims priority, application Japan, May 29, 1990, 2-139416

Int. Cl.[5] G11B *5/02*

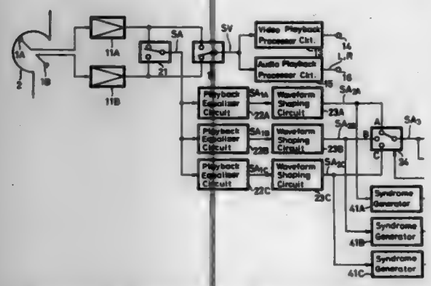
U.S. Cl. 360—18 **7 Claims**



1. A method of recording digital picture data along helical tracks on a magnetic tape, comprising the steps of:
(a) recording each picture data segment including picture data of one frame or one field in a plurality of consecutive tracks;
(b) grouping the picture data segments into blocks, each block including a plurality of picture data segments;
(c) recording block numbers in at least some of the tracks, identifying the respective blocks in the respective tracks, in the respective blocks;

(d) recording picture numbers identifying the respective picture data segments within each block in the tracks which record the picture data segments; and
(e) recording information indicating the number of tracks for one picture data segment in the tracks which record the picture data segment.

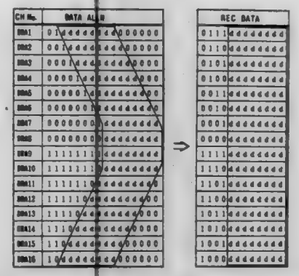
5,299,070
DIGITAL SIGNAL REPRODUCING SYSTEM FOR PROCESSING THE REPRODUCED DIGITAL SIGNAL WITH THE MOST FAVORABLE ERROR RATE
Takao Takahashi, and Noboru Murabayashi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1991, Ser. No. 749,283
Claims priority, application Japan, Aug. 28, 1990, 2-225756
Int. Cl.[5] G11B *5/02*; H03M *13/00*
U.S. Cl. 360—19.1 **20 Claims**



1. Apparatus for reproducing a digital signal from a record medium, comprising:
playback means for playing back a digital signal from said record medium;
plural processing means supplied with the played back digital signal for processing said digital signal, each processing means exhibiting respective characteristics to impart a different error rate to the digital signal processed thereby;
plural error indicating means coupled to said plural processing means for indicating the error rates of the digital signals processed by the respective processing means and for detecting the processed digital signal having a most favorable error rate; and
selecting means coupled to said plural processing means for selecting the processing means which produces the processed digital signal having the most favorable error rate.

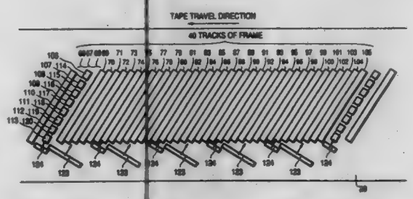
5,299,071
MULTI-CHANNEL DATA RECORDER
Tadashi Fukami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 791,351, Nov. 14, 1991, abandoned.
This application Aug. 5, 1993, Ser. No. 103,728
Claims priority, application Japan, Nov. 27, 1990, 2-327195
Int. Cl.[5] G11B *5/09, 20/14, 20/16*
U.S. Cl. 360—48 **4 Claims**

1. A multi-channel data recorder for use with a digital audio tape recording apparatus in which a multiple-bit word length of an audio input signal is reduced to generate a reduced-length audio word, and range identification data corresponding to an amplitude level of the audio word is generated and combined with said reduced-length audio word and recorded on a tape as a combined word having less bits than the multiple-bit word, the recorder comprising:
means for supplying data words in a plurality of channels, each data word having a length equal to said reduced length audio word;
means for supplying channel identification data in place of the range identification data for addition as most significant bits to said data words and zeros as least significant bits to said data words;
adding means connected to said means for supplying data words and said means for supplying channel identification data for adding individual channel identification to each



data word having said reduced-length to produce data recording words having a number of bits equal to the multiple-bit word; and
means connected to said adding means for supplying said data recording words as input signals to said digital audio tape recording apparatus for recording.

5,299,072
VIDEO AND AUDIO SIGNAL RECORDING APPARATUS WITH EDITING-USE ERASE HEADS
Yoshiho Gotoh, Osaka; Tatsushi Bannai, and Souichiro Fujioka, both of Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 19, 1991, Ser. No. 794,015
Claims priority, application Japan, Nov. 21, 1990, 2-319019; Apr. 1, 1991, 3-068253
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—57 **5 Claims**

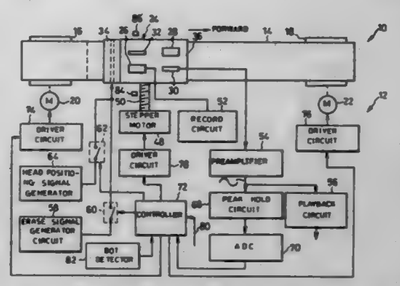


1. A video and audio signal recording apparatus for recording video and audio signals on a recording medium, comprising:
a video signal dividing means for dividing a video signal into a video editorial units each composed of video samples contained within a specific period of time;
an audio signal dividing means for dividing an audio signal into audio editorial units each composed of audio samples contained within said specific period of time;
a recording means for recording the video and audio signals on the recording medium such that the video samples of each video editorial unit are recorded on a plurality of consecutive tracks each having a specific track width to form a video record area, and such that the audio samples of each audio editorial unit are recorded on a single track having said specific track width to form an audio record area, and such that said video and audio record areas are formed alternately with a guarding area therebetween, said guarding area being composed of at least one non-recorded track having said specific track width;
a first erase head having a width which is two times as wide as said specific track width and movable in a track length direction so as to trace a full width of said single track forming said audio record area and a half width of said non-recorded track in said guarding areas adjacent to said audio record area at each of opposite sides of said audio record area for erasing the audio samples recorded in said audio record area; and
a second erase head having a width which is n times as wide as said specific track width, wherein n is an integer larger than two, and movable in the tack length direction so as to trace as full width of each of specific consecutive (n−1) tracks in said video record area and a half width of each of two tracks adjacent to said specific consecutive (n−1) tracks at opposite sides of said specific consecutive (n−1) tracks for erasing the video samples recorded in said video record area.

5,299,073
VIDEO TAPE RECORDER SPEED CONTROL
Martin R. Dorricott, Basingstoke, and John W. Richards, Stockbridge, both of United Kingdom, assignors to Sony United Kingdom Ltd., Staines, United Kingdom
Filed Aug. 28, 1991, Ser. No. 751,110
Claims priority, application United Kingdom, Aug. 31, 1990, 9018998
Int. Cl.[5] G11B *15/52*; H04N *5/78, 7/01*
U.S. Cl. 360—73.12 **22 Claims**

1. A method of controlling tape speed of a video tape recorder so as to reproduce a recorded video signal comprises of a plurality of fields and frames at a predetermined playback speed having a corresponding field repetition frequency and which may differ from a normal playback speed corresponding to the speed at which said video signal was recorded, said method comprising the steps of:
counting incrementally so as to produce a first series and a second series of respective counted values by using a signal having a frequency which is locked to the field repetition frequency of said video signal at said normal playback speed;
restarting said counting of said first series at periodic intervals determined by said predetermined playback speed;
restarting said counting of said second series periodically in accordance with a signal having a frequency which is locked to the field repetition frequency of said video signal being reproduced by said video tape recorder;
comparing said first and second series so as to derive an error signal therefrom; and
controlling said tape speed of said video tape recorder in accordance with said error signal.

5,299,074
SYSTEM FOR POSITIONING A HEAD IN A TRANSVERSE REFERENCE POSITION ON A MULTITRACK DIGITAL MAGNETIC TAPE
Motoyuki Sukigara, Tokyo, and Yoshiaki Sakai, Higashikurume, both of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Jul. 30, 1991, Ser. No. 738,223
Claims priority, application Japan, Jul. 31, 1990, 2-203341
Int. Cl.[5] G11B *5/56*
U.S. Cl. 360—75 **7 Claims**

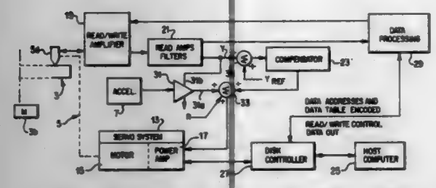


1. In a drive unit having a playback head and an erase head for data transfer with a multitrack data storage tape, the playback head having a gap width less than the width of the tape and being positionable transversely of the tape extending along a transport path in the drive unit, the erase head having a gap spanning the complete width of the tape regardless of the transverse position of the playback head with respect to the tape, a method of positioning the playback head in a transverse reference position on one edge of the multitrack data storage tape in order to enable control over the subsequent positioning of the playback head with respect to a plurality or multiplicity of record tracks on the tape, which method comprises:
(a) recording a transverse head positioning pattern on selected part of the tape by the erase head, the transverse head positioning pattern being recorded throughout the entire width of the tape;
(b) moving the playback head across the width of the tape from an arbitrary position on the tape, in which the playback head is fully opposed to the transverse head positioning pattern on the tape, toward one edge of the tape;
(c) concurrently with step (b), reading the transverse head positioning pattern on the tape by the playback head, with the playback head producing an output which is of full magnitude when the playback head is fully opposed to the transverse head positioning pattern on the tape and which gradually decreases in magnitude when the playback head starts overrunning the edge of the tape;
(d) monitoring the output from the playback head during the travel of the playback head transversely of the tape; and
(e) stopping the travel of the playback head across the width of the tape when the output from the playback head drops in magnitude to a predetermined level.

5,299,075
APPARATUS AND METHOD FOR SHOCK ATTENUATION IN A DISK RECORDING AND/OR REPRODUCTION SYSTEM USING VARIABLE GAIN ACCELERATION SENSOR
D. Mitchel Hanks, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 4, 1992, Ser. No. 893,303
Int. Cl.[5] G11B *21/10*
U.S. Cl. 360—77.02 **16 Claims**

5. A memory storage and access device comprising
a) a disk rotatably mounted on said device and having a surface for storing recordings in tracks;

b) a motor power moveable arm on said device;
c) a transducer mounted on said moveable arm;
d) a control system for controlling said motor and arm to hold the transducer centered at a track on said surface;
e) an accelerometer mounted on said device for sensing acceleration of said device due to impact forces coupled to said device for producing a feed forward control signal coupled to said control system to anticipate the effect of



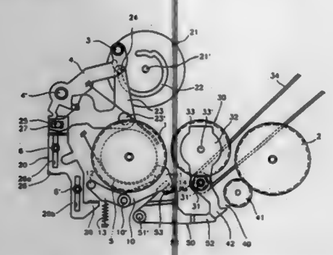
said impact force on said device under all the positions of said transducer and said track, for reducing the amount of positional change of the transducer relative to the center of said track;
f) means for producing a transducer position error signal relative to the center of said track, and
g) means responsive to the position error signal for optimizing the gain of said accelerometer.

5,299,076

BRAKE ACTUATING DEVICE FOR TAPE RECORDER

Il M. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 6, 1991, Ser. No. 803,218
Claims priority, application Rep. of Korea, Dec. 6, 1990, 20045/1990
Int. Cl.[5] G11B *15/18, 15/22, 15/66*
U.S. Cl. 360—85 5 Claims



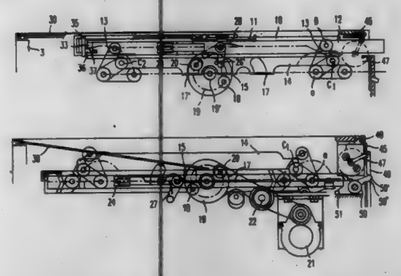
1. A brake actuating device for a tape recorder, comprising:
a supply brake for applying a braking force to a supply reel;
a cam rotatably mounted adjacent to said supply brake;
a cam lever interlocked with said cam;
a slide plate, interlocked with said cam lever and rectilinearly reciprocated, for actuating the supply brake;
reel driving means, rotatably mounted between the supply reel and a take-up reel, for driving the supply reel and the take-up reel, selectively, said reel driving means comprising an input gear, an idler lever pivotably mounted on a shaft upon which said input gear is rotatably mounted, and a center idler gear rotatably mounted on said idler lever so as to be meshed with the input gear;
take-up reel rotation-restraining means for preventing the take-up reel from being interlocked with said reel driving means, said take-up reel rotation-restraining means comprising a one-way gear meshed with a geared portion of the take-up reel, and a ratchet, provided at an end of the idler lever, for restraining the rotation of the one-way gear; and
restricting means for causing the reel driving means not to drive the take-up reel at the time of completion of tape unloading by being interlocked with the take-up reel rotation-restraining means.

5,299,077

DISK PLAYER-RECORDER

Roger Rascle, Plaisance Du Touch, and Jean-Pierre Rousseau, Toulouse, both of France, assignors to Art Tech Gigadisc "ATG", Toulouse, France

Filed Jun. 13, 1991, Ser. No. 714,939
Claims priority, application France, Jun. 15, 1990, 90 07515
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—99.02 13 Claims



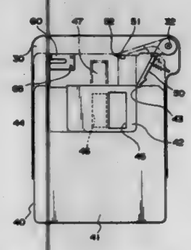
1. A cartridge disk player-recorder in which the cartridge comprises a disk mounted in a cover, said player-recorder comprising:
a frame with an aperture for insertion of the cartridge,
a mechanism for positioning the cartridge in one of a playing and recording position, and a transporter for transporting the cartridge between the aperture and the cartridge positioning mechanism and vice-versa, wherein the transporter includes a cartridge support mounted on the frame by a pivoting parallelogram mechanism, and
a drive mechanism for moving the support, between the aperture and the positioning mechanism, with a substantially sinusoidal motion.

5,299,078

MECHANISM FOR LOCKING A SHUTTER OF A FLOPPY DISK

Hiroshi Mabuchi, Tokyo, and Maki Wakita, Sayama, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1992, Ser. No. 831,480
Claims priority, application Japan, Feb. 22, 1991, 3-014508[U]
Int. Cl.[5] G11B *33/14*
U.S. Cl. 360—99.02 3 Claims



3. A shutter locking mechanism for a floppy disk drive in

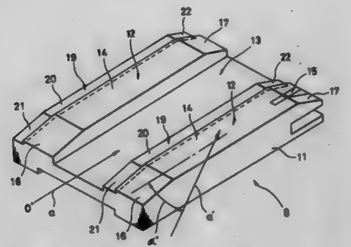
which a carrier holding a floppy disk is led to an unloaded position or a loaded position, and at near to the loaded position a shutter opening lever opens a shutter of the floppy disk to enable the contact/separation of a magnetic head into/from the floppy disk, said shutter locking mechanism comprising:
a pivot secured to the carrier for axially and rotatably supporting the shutter opening lever;
a projecting portion formed at the distal end of the shutter opening lever for fitting to an aperture existing at the shutter opening lever contact side of the shutter only when said floppy disk is in substantially the loaded position, whereby said shutter is held in the open state by said projecting portion fitted into said aperture while said floppy disk is in said loaded state in said floppy disk drive; and
a stopper having one end secured to a part of the carrier corresponding to a corner portion opposite to the corner of the shutter opening lever contact side of the shutter, and an other end of said stopper holding the side of the shutter opposite to the shutter opening lever contact side in the loaded position so as to prevent undesirable movement of the shutter in the opening/closing direction of the shutter; and wherein
the other end of said stopper is formed as a bifurcated claw portion.

5,299,079

FLYING HEAD SLIDER WITH CONTROL GROOVES TO ESTABLISH A UNIFORM FLYING HEIGHT

Masayuki Kuroda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 876,750
Claims priority, application Japan, May 20, 1991, 3-142624
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 1 Claim



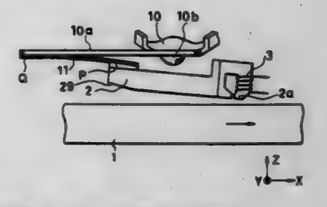
1. In a flying head slider for supporting a magnetic head thereon in close proximity to a recording medium, the slider comprising a support structure having leading and trailing edges relative to the movement of said recording medium; a plurality of slider rails carried by said support structure and spaced from each other with a slider groove defined therebetween, one of said slider rails being adapted to support said magnetic head, and said slider rails exhibiting predetermined length and having respective slider surfaces facing said recording medium; and a plurality of control grooves disposed on one side of said slider rails, respectively, said control grooves being shallower than said slider groove, and said control grooves having groove surfaces facing said recording medium and extending parallel to said slider surfaces of said slider rails, the improvement wherein:
said slider surfaces are provided with slanted portions which taper away from the medium at said leading and trailing edges, said control grooves extend along the whole length of said slider rails including said slanted portions of said slider surfaces at both said leading and trailing edges, and said groove surfaces have slanted portions at said leading and trailing edges and lying parallel to said slanted portions of said slider surfaces.

5,299,080

FLOATING HEAD SLIDER WITH IMPROVED SUSPENSION FOR USE IN MAGNETIC/OPTICAL DISK RECORDING APPARATUSES

Osamu Mizuno, Osaka, and Tohru Nakamura, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 645,185, Dec. 27, 1990, abandoned.
This application Jul. 20, 1993, Ser. No. 93,612
Claims priority, application Japan, Dec. 27, 1989, 1-344445
Int. Cl.[5] G11B *5/48, 13/04*
U.S. Cl. 360—103 9 Claims



1. A floating head assembly comprising:
a slider having:
at least a leading end connected to a recording head; and
a bottom surface facing a recorded surface of a disk-shaped recording medium,
a small gap being provided therebetween from which an air-borne floating force is generated in a direction which extends from the recorded surface toward said bottom surface,
the air-borne floating force being generated by laminar air flow caused by the revolution of said disk-shaped recording medium, and extending in a direction from a flow-in end to a flow-out end beneath the bottom surface and over the recorded surface,
said flow-in end being defined with respect to a first end of said bottom surface where the laminar air flow first makes contact with the slider, and
said flow-out end being defined with respect to a second end of said bottom surface where the laminar air flow exits after travelling across said bottom surface from said flow-in end;
a load beam for abuttingly supporting said slider,
said load beam being abuttedly contacted, via a touch member connected thereto, to a predetermined surface position of said slider for exerting a loading force thereto, in the direction toward the recorded surface; and
a gimbal coupled at a first position thereof to a first end of said load beam and at a second position thereof to one end of said slider,
said gimbal flexibly supporting said slider so as to provide free angular movement in two directions, about a first rotational axis defined by a tangential path of circular or spiral tracks on the recorded surface and about a second rotational axis defined by a radial path of circular or spiral tracks on the recorded surface,
the second position being at a fixed distance closer to the flow-in end than to a center of gravity reference point of said slider, and
the first position being at a fixed distance away from the second position and on an opposite position to the center of gravity reference point of said slider, with respect to this second position;
wherein said touch member, connected to said load beam abuttingly contacting said slider, is provided such that in contact position said touch member is disposed substantially about an axis which passes through the center of gravity reference point and is normal to the recorded surface.

2. A floating head assembly comprising:

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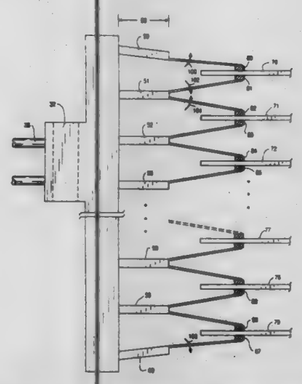
a slider having:
at least a leading end connected to a recording head; and
a bottom surface facing a recorded surface of a disk-shaped recording medium,
a small gap being provided therebetween from which an air-borne floating force is generated in a direction which extends from the recorded surface toward said bottom surface,
the air-borne floating force being generated by laminar air flow caused by the revolution of said disk-shaped recording medium, and extending in a direction from a flow-in end to a flow-out end beneath the bottom surface and over the recorded surface,
said flow-in end being defined with respect to a first end of said bottom surface where the laminar air flow first makes contact with the slider, and
said flow-out end being defined with respect to a second end of said bottom surface where the laminar air flow exits after travelling across said bottom surface from said flow-in end;
a load beam for abuttingly supporting said slider,
said load beam being abuttedly contacted, via a touch member connected thereto, to a predetermined surface position of said slider for exerting a loading force thereto, in the direction toward the recorded surface, and
a gimbal coupled at a first position thereof to a first end of said load beam and at a second position thereof to one end of said slider,
said gimbal flexibly supporting said slider so as to provide free angular movement in two directions, about a first rotational axis defined by a tangential path of circular or spiral tracks on the recorded surface and about a second rotational axis defined by a radial path of circular or spiral tracks on the recorded surface,
the second position being at a fixed distance closer to the flow-in end than to a center of gravity reference point of said slider, and
the first position being at a fixed distance away from the second position and on an opposite position to the center of gravity reference point of said slider, with respect to this second position
wherein said touch member, connected to said load beam abuttingly contacting said slider, is provided such that in contact position said touch member is disposed substantially about an axis which passes a center of the air-borne floating force and which axis is normal to the recorded surface.

5,299,081
MAGNETIC HEAD SUSPENSION ASSEMBLY
Michael R. Hatch, Mountain View; Chak M. Leung, Palo Alto, and Stephen S. Murray, Fremont, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.
Filed Aug. 5, 1992, Ser. No. 926,033
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **6 Claims**



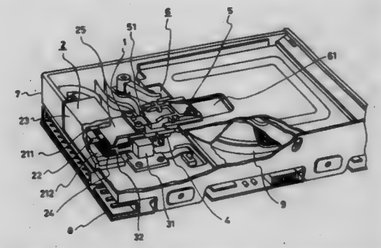
1. A magnetic head suspension assembly for transducing data that is recorded and read out from a surface of a rotating magnetic disk drive comprising:
a load beam formed with a central major section;
a narrow tongue section at the front end of said load beam;
a mount section at the rear end of said load beam for enabling mounting said suspension to an actuator arm;
a leaf spring section between said rear mount section and said major section for providing flexibility to said load beam;
a flexure having a finger with a load dimple formed thereon;
means for joining said flexure to said load beam;
an air bearing slider having leading and trailing ends supported by said flexure for free gimbaling motion about said load dimple; and
an adhesive material disposed between the top non-air bearing surface of said slider and said flexure finger, an aperture formed in said load beam tongue and a hole formed in said flexure finger, said aperture and hole being aligned for passing radiation through said aperture and said hole to said adhesive and thereby secure the slider to the flexure without undesirable distortion or stress.

5,299,082
ACTUATOR ASSEMBLY WITH COMPENSATED OUTER ARMS
Raiu S. Ananth; Robert J. Green, both of San Jose, and Adolf L. Fick, Cupertino, all of Calif., assignors to Maxtor Corporation, San Jose, Calif.
Filed Nov. 10, 1992, Ser. No. 974,130
Int. Cl.[5] G11B *5/012, 5/56*
U.S. Cl. 360—106 **39 Claims**



1. An apparatus for maintaining uniform preload force within a disk drive, said apparatus comprising:
actuator assembly means for providing coupling locations;
a plurality of actuator arms coupled to said actuator assembly means, said plurality of actuator arms for supporting and positioning a plurality of read/write head assemblies;
said plurality of read/write head assemblies coupled to said plurality of actuator arms and said plurality of read/write head assemblies aligned to contact surfaces of a plurality of stacked and evenly spaced platters, said plurality of read/write head assemblies for exerting said preload force on said surfaces of said plurality of stacked and evenly spaced platters; and
outer actuator arms of said plurality of actuator arms located on outer ends of said plurality of actuator arms, said outer actuator arms displaced inward toward adjacent actuator arms, said outer actuator arms for maintaining a uniform preload force across attached read/write head assemblies to compensate for an imbalanced moment force applied to said outer actuator arms.

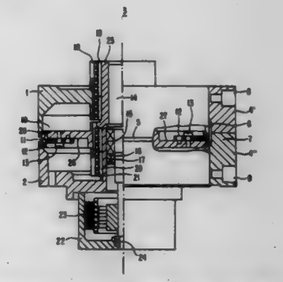
5,299,083
READ/WRITE HEAD POSITIONING MECHANISM FOR FLEXIBLE DISK DRIVE DEVICE
Junji Kawada, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 684,682, Apr. 12, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 995,944
Claims priority, application Japan, Apr. 13, 1990, 2-96204
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 **6 Claims**



1. A disk drive device for reading and writing information on a disk, the device comprising:
a frame;
a carriage slidably mounted on the frame, the carriage having a first end and a second end;
a read/write head coupled to the first end of the carriage for reading and writing information on the disk;
a first E-shaped magnetic circuit having
a first support frame,
a first pair of magnets mounted to the first support frame, and
a first central yoke;
a second E-shaped magnetic circuit having
a second support frame,
a second pair of magnets mounted to the second support frame, and
a second central yoke,
the first and second E-shaped magnetic circuits being in spaced apart relationship, each magnetic circuit having an open end facing the disk;
a coil bobbin coupled to the second end of the carriage; and
a single voice coil coupled to the coil bobbin, the coil bobbin and the single voice coil surrounding the first and second yokes without surrounding the support frames.

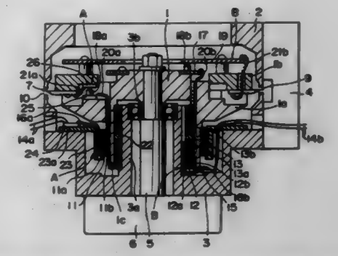
2. A disk drive device for reading and writing information on a magnetic disk, the disk rotating in a first plane, the device comprising:
a frame;
a carriage slidably mounted on the frame, the carriage having a first end and a second end;
a read/write head coupled to the first end of the carriage for reading and writing information on the disk;
a first magnetic circuit having a first support frame, a first magnet, and a first yoke;
a second magnetic circuit having a second support frame, a second magnet, and a second yoke, the first and second magnetic circuits being stacked along an axis which is perpendicular to the first plane, the first and second yokes extending in parallel to each other and to the first plane;
first and second coil bobbins coupled to the second end of the carriage and spaced a distance from each other and aligned in the axis which is perpendicular to the first plane; and
first and second voice coils, one mounted on each coil bobbin, the voice coils being in parallel with each other, each of the voice coils surrounding one of the yokes, the voice coils arranged to propel the carriage along one axis.

5,299,084
ROTARY HEAD DISC FOR A MAGNETIC-TAPE APPARATUS HAVING REPRODUCING HEADS SHIELDED FROM RECORDING HEADS
Gerhard Falk, Rossdorf, and Hartmut Willmann, Gross-Zimmern, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 1, 1992, Ser. No. 861,682
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1991, 4110589
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—107 **16 Claims**



1. A scanning device for a magnetic tape apparatus of the type having a rotary head disc rotatable about an axis of rotation and including a plurality of magnetic recording heads and a plurality of magnetic reproducing heads at the periphery of the disc, wherein the improvement comprises:
the rotary head disc includes two opposing major sides extending transverse to the axis of rotation, and
the reproducing heads are mounted on one of the major sides of the head disc and the recording heads are mounted on the other major side of said head disc, whereby the reproducing heads are separated from the recording heads by the head disc.

5,299,085
COMPACT ROTATING HEAD ASSEMBLY
Jun Sawai, and Hiroshi Kiriyama, both of Kanagawa, Japan, assignors to Sony Corporation, Japan
Filed Apr. 1, 1992, Ser. No. 861,589
Claims priority, application Japan, Apr. 5, 1991, 3-099702
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—108 **4 Claims**



1. A rotating head assembly having an erasing head, a recording head and a reproducing head mounted on a head rotating body, said rotating head assembly comprising:
a plural number of rotary transformers located concentrically around the circumference of a rotational shaft of said head rotating body;
a plural number of substrate boards located in spaced positions in the axial direction of said head rotating body; and

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a signal transmission path for said erasing head and/or recording head and a signal transmission path for said reproducing head routed separately through said rotary transformers in radially spaced positions and through said substrate boards in axially spaced positions;

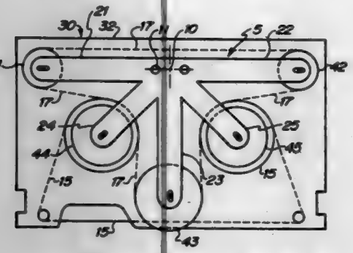
wherein a first rotary transformer of said plural number of rotary transformers is spaced at least partially concentrically outside of a second rotary transformer of said plural number of rotary transformers, wherein said signal transmission path for said erasing head is routed through said first rotary transformer which is located on the outer side of said second rotary transformer and arranged to radially overlap said second rotary transformer.

5,299,086

LOW STIFFNESS SPRING FOR DRAG INDUCTION AND COMPONENT RETENTION IN COMPUTER DATA CARTRIDGES

Leif Skaar; Kenneth Sheppard, and Donald Stanley, all of San Diego, Calif., assignors to Verbatim Corporation, Charlotte, N.C.

Filed Jan. 6, 1993, Ser. No. 1,056
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 **10 Claims**



1. In a data tape cartridge having a plurality of rotating components operably coupled to a length of tape within the cartridge or to a drive belt for the tape within the cartridge, tensioning apparatus comprising:

an element of resilient material mounted in the cartridge and having a plurality of protruding arms including a first pair of arms disposed substantially in opposite directions to communicate with an associated spaced pair of rotating components for the drive belt, and including a second pair of arms protruding from the element in skew relationship to the alignment of said first pair to communicate with an associated spaced pair of rotating components for the tape;

the arms of said element exerting resilient force against the rotating components for the drive belt communicating therewith to control the drag friction of the associated rotating component for altering the tension in the tape, and exerting resilient force against the rotating components for the tape communicating therewith to control axial position of the associated rotating component.

5,299,087

OVERLOAD PROTECTION CIRCUIT

Yvan Fermier, Vidaubun; Michel Ferry, Vallauris; Christian Jacquart, Gattieres, and Pierre Vachee, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

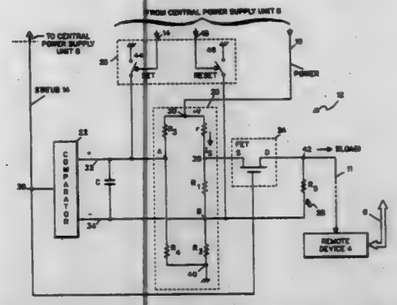
Filed Jul. 17, 1991, Ser. No. 731,593
Claims priority, application European Pat. Off., Aug. 29, 1990, 90480130.5
Int. Cl.[5] H02H *3/093*
U.S. Cl. 361—93 **2 Claims**

1. An overload protection circuit for protecting a device (4) powered from a power supply means (8) providing to the device a supply voltage (V) and a load current I (load), characterized in that it comprises:

overload detecting means (20,22) including:

a resistor bridge (20) having two legs connected in parallel between the supply voltage and a reference voltage (ground) and a first and second output terminals, and generating a fixed voltage on the first output terminal (A) and a variable voltage which depends upon the load current value on the second output terminal (B);

a comparator (22) having first and second inputs connected to the first and second output terminals of the resistor bridge, respectively and an output, said comparator providing on its output a control signal which indicates whether an overload condition exists or not;



switching means (24) having an input receiving the load current, an output connected to the device and a control input responsive to the control signal on the output of the comparator for closing or opening the switching means, whereby the load current is provided to the device or not; and

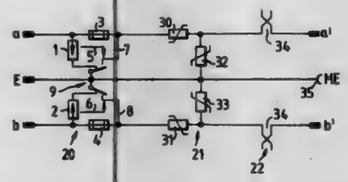
a switching control means (26) coupled to the comparator; said switching control means (26) responsive to control signals, at its input, to provide to the first and second inputs of the comparator control voltages which cause the comparator to generate closing or opening control signals on the control input of the switching means.

5,299,088

PROTECTIVE CIRCUIT AND PROTECTIVE PLUG FOR TELECOMMUNICATION INSTALLATIONS

Robert Hönl, and Klaus-Peter Achtnig, both of Berlin, Fed. Rep. of Germany, assignors to Krone AG, Berlin, Fed. Rep. of Germany

Filed Jul. 30, 1991, Ser. No. 738,185
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1990, 4026004
Int. Cl.[5] H02H *9/06*
U.S. Cl. 361—119 **14 Claims**



4. A protective device for protecting a user from an overcurrent situation for telecommunication installations, comprising: a line connection between a line side and system side; a fuse

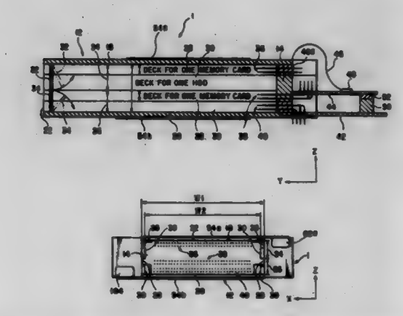
connected into said line connection in series; an earth conductor; a surge arrestor forming a cross path between said line connection and said earth conductor; a heat-sensitive protection device for protecting said surge arrestor, said heat-sensitive protection device causing disconnection of said cross path of said surge arrestor in response to heat exceeding the defined threshold and closing a short-circuit path between said line connection and said earth conductor, on the system side of said fuse, wherein said surge arrestor is supported in a housing and has an earth plate; said heat sensitive device is supported in said housing and has a slider connected to said earth plate by a fusible connection, said heat sensitive device also having a spring biasing said slider away from said earth plate, and disconnecting said slider from said earth plate when said heat exceeds said defined threshold thus disconnecting said cross path, and said slider moving into contact with said earth conductor for said closing of said short-circuit path between said line connection and said earth conductor.

5,299,089

CONNECTOR DEVICE HAVING TWO STORAGE DECKS AND THREE CONTACT ARRAYS FOR ONE HARD DISK DRIVE PACKAGE OR TWO MEMORY CARDS

Nai Hock Lwee, Fremont, Calif., assignor to E. I. DuPont de Nemours & Co., Wilmington, Del.

Filed Oct. 27, 1992, Ser. No. 967,589
Claims priority, application Japan, Oct. 28, 1991, 3-281653; Dec. 24, 1991, 3-106403[U]
Int. Cl.[5] H05K *7/10*; H01R *13/62*; G06F *1/16*
U.S. Cl. 361—684 **25 Claims**



1. A connector device for selectively connecting at least one of a memory card and a hard disk drive package as a data storage device, comprising:

a housing having a pair of opposing side walls defining a storage space of said housing, one end of said housing defining an insertion port for inserting said at least one data storage device into the storage space of said housing, a height of the storage space being divided to define at least upper and lower storage decks within the storage space, the upper and lower storage decks being contiguous and uninterrupted therebetween;

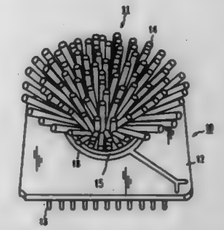
a connector body coupled to the end of said housing opposite the insertion port, said connector body having at least one contact array fixedly disposed in one of the upper and lower storage decks and adapted to connect with a memory card, and said connector body having a structure for presenting at least one of at least two contact arrays in the other storage deck, said at least two contact arrays including one contact array adapted to connect with a memory card and one contact array adapted to connect with a hard disk drive package.

5,299,090

PIN-FIN HEAT SINK

Kevin J. Brady, Millington, and Charles Cole, Wayne, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 29, 1993, Ser. No. 85,232
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—703 **7 Claims**



1. An encapsulated device with a heat sink, which comprises;

a housing encloing an integrated circuit unit, and

said heat sink secured on an outside planar surface of the housing, in which

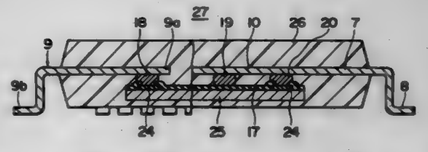
said heat sink comprises a plurality of elongated pins held at one end within a retainer and having a flared-out starburst configuration at the opposite end, said pins being of a material having high thermal conductive characteristics, said pins at said one end having a surface planarized by a means of a substance selected from solder or plastic adhesives for mounting said heat sink on said planar surface of the housing.

5,299,091

PACKAGED SEMICONDUCTOR DEVICE HAVING HEAT DISSIPATION/ELECTRICAL CONNECTION BUMPS AND METHOD OF MANUFACTURING SAME

Akio Hoshi, Isesaki; Yukihiro Sato, Maebashi; Toyomasa Koda, Takasaki; Isao Yoshida, Tokyo, and Kouzou Sakamoto, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Tohbu Semiconductor, Ltd., Saitama, both of Japan

Filed Mar. 19, 1992, Ser. No. 854,028
Claims priority, application Japan, Mar. 20, 1991, 3-082003
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—723 **11 Claims**



1. A packaged semiconductor device comprising:

a semiconductor pellet having an electronic circuit therein and electrode pads on a peripheral portion of a principal surface of said pellet, said electronic circuit having a tendency to generate heat in operation;

a plurality of first bumps provided on said electrode pads and electrically connected thereto;

a plurality of second bumps provided over a central portion of said principal surface of said pellet and means for electrically insulating said second bumps from said electronic circuit and said electrode pads, said second bumps being arranged relatively nearer to said electronic circuit than said first bumps for thermal coupling to said electronic circuit;

a plurality of first electrical connection leads connected to said first bumps;

second lead means connected to at least one of said second bumps for thermal coupling to said electronic circuit to conduct heat generated by said electronic circuit externally for heat dissipation, said second lead means including a tab portion connected to said at least one second bump and heat dissipation leads integral with and extending from said tabl portion; and

a packaging material sealing said pellet, said first bump and said second bumps and parts of said first electrical connection leads and second lead means.

5,299,092

PLASTIC SEALED TYPE SEMICONDUCTOR APPARATUS

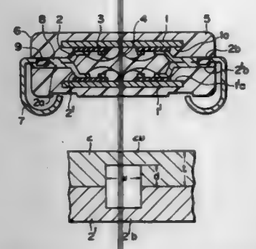
Akihiro Yaguchi, Ibaraki; Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura; Ichiro Anjoh, Koganei, and Junichi Arita, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1992, Ser. No. 886,859

Claims priority, application Japan, May 23, 1991, 3-118351

Int. Cl.[5] H05K *7/00*; H01L *23/28*

U.S. Cl. 361—728 **15 Claims**



1. A plastic sealed type semiconductor apparatus in which at least two semiconductor devices are disposed with a space therebetween such that circuit forming surfaces thereof oppose each other, in which an electric signal lead is electrically connected to each of the circuit forming surfaces, in which the electric signal leads are overlaid on top of one another, and in which a plastic package is formed by sealing with a resin said semiconductor devices and the electric signal leads, wherein an overlaid portion of the electric signal leads has a surface contact portion of the leads and a resin providing portion, and wherein said resin providing portion is a recessed portion formed in such a manner that it passes through the surface contact portion of the leads in the lateral direction thereof.

5,299,093

ELECTRICAL PACKAGING STRUCTURE AND LIQUID CRYSTAL DISPLAY DEVICE HAVING THE SAME

Masanori Takahashi, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,822

Claims priority, application Japan, Oct. 9, 1991, 3-289509

Int. Cl.[5] H05K *7/02*

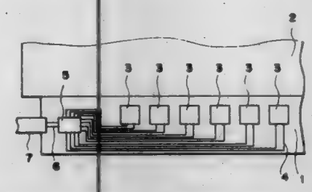
U.S. Cl. 361—760 **11 Claims**

6. The liquid crystal display device having a packaging structure of a chip-on-panel, comprising:

a plurality of driving semiconductor chips;

a display substrate of the liquid crystal display device having said plurality of semiconductor chips arranged thereon;

input wirings disposed on said display substrate and connected to said semiconductor chips; and



a wiring board arranged on said display substrate and receiving said input wirings.

5,299,094

IC CARD INCLUDING MULTIPLE SUBSTRATES BEARING ELECTRONIC COMPONENTS

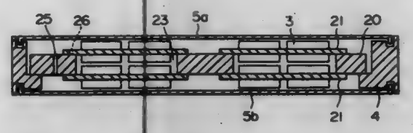
Kiyotaka Nishino, Sanda; Shigeo Onoda, Itami; Takaaki Okidono, and Takashi Arita, both of Kawanishi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,654

Claims priority, application Japan, Jan. 8, 1992, 4-001419

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—784 **5 Claims**



1. An IC card comprising:

a plurality of sub-substrates, each sub-substrate having an obverse surface and a reverse surface and at least one electronic component installed on one of the obverse surface and the reverse surface;

a main substrate having an obverse surface and a reverse surface wherein at least one of said sub-substrates is installed on one of the obverse surface and the reverse surface of said main substrate, said main substrate including at least one opening receiving said electronic component mounted on said sub-substrate and penetrating from the obverse surface to the reverse surface of said main substrate, the reverse surface of said sub-substrate contacting a surface of said main substrate;

a housing containing said main substrate on which said sub-substrate is installed and covering said main substrate; and

electrical connecting means for electrically connecting said electronic component outside of said housing.

5,299,095

APPARATUS FOR DETACHABLY FASTENING AN EQUIPMENT HOUSING TO A PROFILE RAIL

Friedrich Feuerlein, and Helmut Müller, both of Nürnberg, Fed. Rep. of Germany, assignors to Metrawatt GmbH, Nuremberg, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 930,103

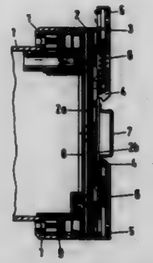
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1991, 4127252

Int. Cl.[5] H05K *7/18*

U.S. Cl. 361—801 **26 Claims**

1. An apparatus for detachably fastening an equipment housing to a profile rail, comprising guide strips, at least one clamp part sliding on said guide strips and engaging the profile rail

mounted on a surface in a clamping position, said at least one clamp part being retained in the clamping position by spring force operating in a given direction and being displaceable into an open position counter to the given direction for loosening, at least one locking part being displaceable relative to the equipment housing and being coupled to said at least one clamp



part, said at least one locking part and said at least one clamp pat occupying at least two positions defining a mutual spacing, said at least one locking pat blocking said at least one clamp part in one of said positions for preventing said at least one clamp part from being displaced into the open position for loosening the equipment housing from the profile rail.

5,299,096

LED MOUNTING HOLDER AND DEVICE FOR MOUNTING LED USING IT

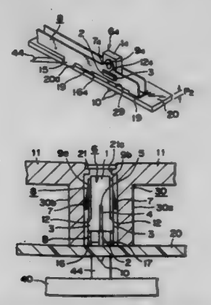
Yoshikazu Ishimatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,285

Claims priority, application Japan, Feb. 29, 1992, 4-079118

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—807 **16 Claims**



1. An LED mounting holder for holding one and more LEDs for mounting within an electronic apparatus, said holder including a metallic plate being formed of an electrically conductive material and comprising: a plurality of holding sections provided at positions on the metallic plate corresponding to positions on a mounting base plate and for respectively receiving a plurality of LEDs; said holding sections holding said LEDs so as to project in a direction towards distal ends of the LEDs facing away from said mounting base plate; a plurality of height position setting sections provided at the positions on the metallic plate corresponding to positions on said mounting base plate for mounting one and more of the LEDs; said height position setting sections setting height positions of the distal ends of the LEDs held by said holding sections; a contacting section of an electrically conductive material for contacting with a main body of the electronic apparatus; and a holder supporting section for holding the metallic plate against said mounting base plate.

5,299,097

ELECTRONIC PART MOUNTING BOARD AND SEMICONDUCTOR DEVICE USING THE SAME

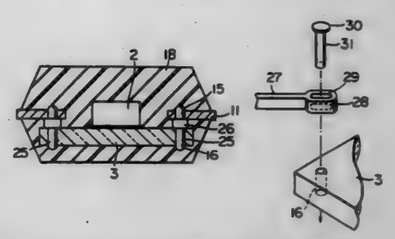
Mitsuhiro Kondo, and Katsumi Sagisaka, both of Oogaki, Japan, assignors to Ibiden Co., Ltd., Gifu, Japan

Filed Mar. 31, 1993, Ser. No. 41,327

Claims priority, application Japan, May 15, 1992, 4-123405

Int. Cl.[5] H05K *7/18*

U.S. Cl. 361—813 **14 Claims**



1. An electronic part mounting board comprising:

a circuit board, for mounting an electronic part, having a conductor circuit adapted to be electrically connected to the electronic part;

a lead frame including a frame disposed about said circuit board, said frame having a plurality of leads extended toward said circuit board from said frame in a manner capable of being electrically connected to said conductor circuit of said circuit board, and a board fixing pin extended from said frame and coupled to said circuit board to support said circuit board with respect to said frame; and

a fitting pin extended through said circuit board and said board fixing pin to couple said circuit board and said board fixing pin.

5,299,098

DISTRIBUTION RACK

Reiner Schüssler; Lutz Biederstedt, both Berlin, Fed. Rep. of Germany, and Markus Springer, Cheltenham, England, assignors to Krone Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Feb. 12, 1993, Ser. No. 17,241

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204558

Int. Cl.[5] H02B *1/01*

U.S. Cl. 361—829 **10 Claims**

1. A distribution rack for telecommunication and data distribution devices, the rack comprising:

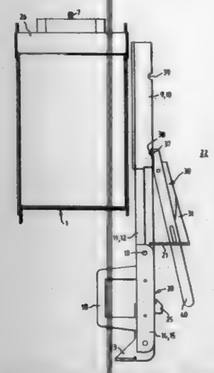
a base portion;

a swing frame positioned on a side of said base portion;

connection means for connecting said base portion to said swing frame, said connection means guiding said swing frame in a retraction movement and a pivotal movement,

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said connection means includes base guides attached to said base portion, and guide rails movable on said base



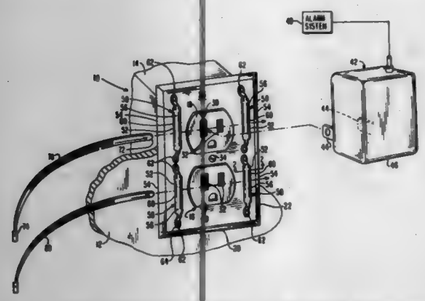
guides, said connection means also includes a swing pivot connecting said swing frame to said guide rails; and termination modules attached to said swing frame.

5,299,099

SAFETY RETAINER FOR AN ELECTRICAL RECEPTACLE

Larry J. Archambault, 11 Prospect Pl., Hillsdale, N.J. 07642

Filed Dec. 30, 1992, Ser. No. 998,417
Int. Cl.[5] H05K *7/00*
U.S. Cl. 361—837 **10 Claims**



1. A safety retainer for retaining an electrical device connected to an electrical receptacle against inadvertent disconnection, the receptacle being of the type having a connector element juxtaposed with a cover plate, the safety retainer comprising:

a cover plate for juxtaposition with the connector element in the receptacle, the cover plate having a peripheral edge, an outer surface, an inner surface and at least one aperture extending between the outer surface and the inner surface, through which aperture the connector element is accessed when the cover plate is juxtaposed with the connector element;

a pair of hold-down retainers integral with the outer surface of the cover plate and located at opposed locations between the aperture and a corresponding portion of the peripheral edge of the cover plate, the hold-down retainers being spaced from the outer surface and the outer surface being unbroken between the aperture and the peripheral edge such that the cover plate is integrated for covering the receptacle; and

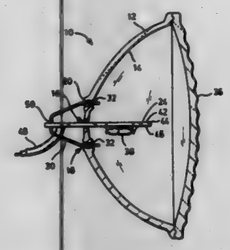
a retainer strap for securement to the hold-down retainers with the retainer strap juxtaposed with the connector element and straddling the electrical device connected to the connector element to retain the electrical device connected to the connector element.

5,299,100

MICROWAVE POWERED VEHICLE LAMP

Alfred H. Bellows, Wayland, and Walter B. Lapatovich, Marlborough, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 29, 1992, Ser. No. 997,821
Int. Cl.[5] F21M *3/00*; **F21V** *23/00*
U.S. Cl. 362—61 **24 Claims**



1. A microwave powered vehicle lamp comprising:

a) a reflector housing having a rear wall defining a rearward portion of an enclosed volume, a first reflector coupling point and a second reflector coupling point,

b) a lens mated with the reflector housing to substantially close a forward side of the enclosed volume,

c) a substantially planar applicator card having microwave conductive channel for delivering microwave power, a first card coupling point, and a second card coupling point wherein the first reflector coupling point and the first card coupling point are pivotally coupled, and the second reflector coupling point and second card coupling point are rigidly coupled by means of a brace,

d) means for delivering microwave power to the applicator card,

e) at least one microwave power applicator supported by the applicator card and electrically coupled to the applicator card to receive microwave power from the applicator card, and

f) a microwave powered light source supported from the applicator card, and positioned to receive microwave power from the microwave applicator and thereby produce light.

5,299,101

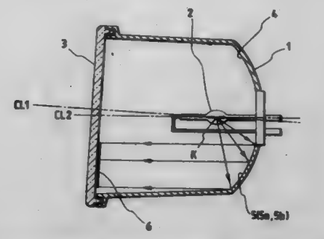
DISCHARGE-TYPE HEADLAMP HAVING REDUCED GLARE

Hiroyuki Serizawa, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,920
Claims priority, application Japan, Feb. 5, 1992, 4-56380
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **4 Claims**

1. In an automotive headlamp having a metal halide discharge lamp bulb as a light source provided in front of a reflector, the improvement wherein:

a reflecting surface of said reflector is divided into a lower reflecting surface and an upper reflecting surface, said lower reflecting surface being substantially a lower half portion of said reflecting surface of said reflector which receives a scattered flux attributable to metal halide sediments of said bulb, the upper reflecting surface being a substantially upper half portion of said reflecting surface of said reflector which receives a nonscattered flux, said lower reflecting surface being further divided into a right reflecting surface including a right half portion of said lower reflecting surface and a left reflecting surface including a left half portion of said lower reflecting surface, said right reflecting surface and said left reflecting surface being inclined at predetermined angles to reflect light fluxes therefrom in respective in left and right directions; and



diffusing lens steps are formed over a predetermined range of a lower half portion of a front lens covering a front opening covering said reflector, said range being determined to diffuse each of said fluxes from said right reflecting surface and said left reflecting surface in both right and left directions.

5,299,102

VEHICLE MARKER LIGHT AND ADVERTISEMENT ILLUMINATOR

George Zimmerman, III, 510 E. 200 South, Logan, Utah 84321

Filed Oct. 2, 1992, Ser. No. 955,601
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—83.3 **10 Claims**

1. A surface illuminator suitable for illuminating a vehicle surface, said illuminator comprising a housing attachable to said vehicle surface, said housing including:

a housing cover which provides protection for the interior of said illuminator and selectively passes light of a particular color, said cover including a transparent insert;

one or more marker bulbs positioned inside said housing such as to emit light through a colored portion of said housing cover; and

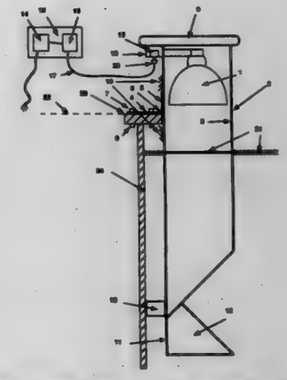
at least one dedicated surface illuminating bulb positioned inside said housing to emit light through said transparent insert of said housing cover, said housing including means separating said one or more marker bulbs and said surface illuminating bulb so as to allow said surface illuminating bulb to act primarily to illuminate at least a portion of said vehicle surface.

5,299,103

PORTABLE UNDERWATER SWIMMING POOL LIGHT

Peter J. Kielland, 310 Selby Ave., Ottawa, Ontario, Canada K1Z6R1

Filed Jul. 24, 1992, Ser. No. 917,966
Claims priority, application Canada, Jul. 29, 1991, 2048103
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—101 **14 Claims**



1. An underwater illumination apparatus for a swimming pool comprising a light transmission shaft having an upper end and an open lower end, means for mounting the light transmission shaft to the swimming pool such that the light transmission shaft is located in a partially submerged position in the swimming pool and proximate a wall of the swimming pool with the upper end located above the pool waterline and the lower end located below the pool waterline, and a light source located above the waterline adjacent to and secured to the upper interior of the light transmission shaft such that it transmits light downward through the light transmission shaft and through an air/water boundary inside the light transmission shaft to the lower end of the light transmission shaft.

5,299,104

SHAVING LIGHT APPARATUS

Theresa A. Parmentier, 6100 Wilderness Ave., Cocoa, Fla. 32927

Filed Mar. 29, 1993, Ser. No. 38,818
Int. Cl.[5] B26B *19/46*
U.S. Cl. 362—115 **3 Claims**

1. A shaving light apparatus, comprising,

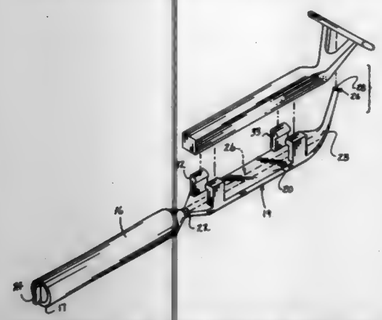
a razor assembly, having a razor handle, and a razor head, with a bifurcated support extending from the razor handle to the razor head, and the bifurcated support having a gap directed through the bifurcated support, and

further including an elongated tubular handle having a handle first end spaced from a handle second end, and the tubular handle oriented symmetrically about a handle axis, with a support plate fixedly mounted to the handle second end, the support plate having a support plate first end spaced from a support plate second end, with the support plate second end mounted to the handle second end, and a support plate planar side wall, wherein the support plate planar side wall includes the handle axis directed medially and coextensively therethrough, and

illumination means contained within the tubular handle and extending from the tubular handle second end through the support plate and through the gap in adjacency to the razor head for providing illumination in adjacency to the

razor head, and securement means for securing the razor handle to the support plate, and

the illumination means includes a fiber optic cable member having a cable member first end spaced from a cable member second end, the cable member is directed through the support plate extending from the support plate first end to the support plate second end, and the fiber optic cable member first end is directed into the tubular handle through the tubular handle second end, and the fiber optic



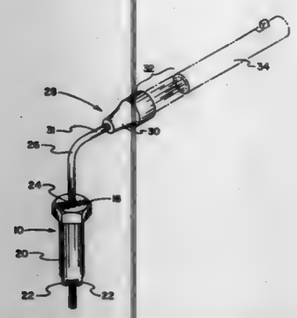
cable member second end is oriented in adjacency to the razor head between the razor head and the support plate in adjacency to the razor head, with the fiber optic cable member directed through the gap, and an on/off switch mounted within the tubular handle, and at least one battery member mounted within the tubular handle, and an illumination bulb mounted within the tubular handle in adjacency to the tubular handle second end in adjacency to the fiber optic cable member first end to direct selective illumination through the fiber optic cable member.

5,299,105

BROKEN TAP EXTRACTION TOOL

Ronald W. Arntzen, 84 Moore Dr., Ketchikan, Ak. 99901

Filed Mar. 8, 1993, Ser. No. 31,097
Int. Cl.[5] B25B *23/18*
U.S. Cl. 362—119 **7 Claims**



1. A new and improved broken tap extraction apparatus for a broken tap in a material undergoing tapping, wherein the broken tap has cutting portions and has noncutting portions located between the cutting portions, said apparatus comprising:

a head portion adapted to receive a torque applying tool,

a shank portion connected to said head portion, said shank portion for receiving and transmitting torque from said head portion,

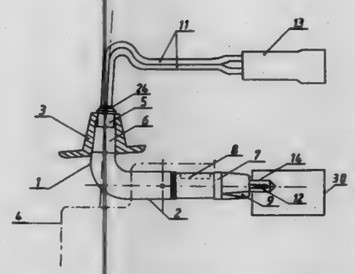
at least two tap engaging portions projecting from said shank portion, said tap engaging portions engaging the noncutting portions of the tap, such that when torque is applied to said head portion, the torque is transmitted to said tap engaging portions for exerting the torque against the noncutting portions of the broken tap for turning the broken tap out of the material undergoing tapping.

5,299,106

MOUNTING SHAFT FOR A VISOR HAVING A LIGHTING FIXTURE

Christian Buchheit, Ham Sous Vasberg, and Jean-Luc Avez, Leuville Sur Orge, both of France, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Oct. 29, 1992, Ser. No. 968,433
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1991, 4135719
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—144 **11 Claims**



1. A mounting shaft for a vehicle sun visor, the shaft including electrical wiring, the mounting shaft comprising:

the mounting shaft being generally of L-shape, having a first shaft arm rotatably mountable in a mounting bracket in a vehicle, and a second shaft arm connected to the first shaft arm and having a free end for forming a hinge axis for a sun visor body;

the mounting shaft comprising an inner L-shaped preform and a separate outer L-shaped supplementary body which surrounds the inner preform; the free end of the second shaft arm is an end part of the preform;

electric wires having opposed ends supported in the mounting shaft; contact elements located at the ends of the wires, the contact elements being arranged to extend generally in the axial direction of and at the free end of the second shaft arm; the contact elements being incorporated over a part of their length at the end part of the preform;

means for holding the contact elements on the end part; and

two half shells formed on the end part of the preform, each half shell including an open cavity for receiving a respective one of the electric wires therein, the half shells being swingable toward each other to enclose the respective electric wires in the half shells.

5,299,107

ILLUMINATED FISH LURING MEANS

Michael P. Ratcliffe, Mississauga; Ralph D. Ratcliffe, Oakville; Timothy R. Ratcliffe, and Wayne A. Ratcliffe, both of Mississauga, all of Canada, assignors to Lure Lite Incorporated, Oakville, Canada

Filed Dec. 9, 1992, Ser. No. 987,693
Int. Cl.[5] F21V *31/00*
U.S. Cl. 362—158 **14 Claims**

1. An electrically powered illuminating fish luring means for use in conjunction with a fishing line, said fish luring means comprising:

a water resistant protective housing having a generally hollow interior, a first datum point, a second datum point,

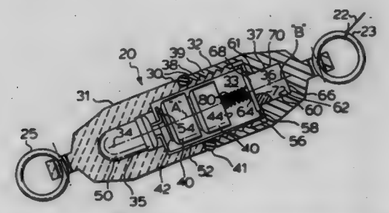
and a first longitudinal axis passing through said first and second datum points;

an electrical power source having a first terminal and a second terminal, said electrical power source being securely retained within said interior of said protective housing;

an electrically powered illuminating means securely retained with said protective housing, said illuminating means having a first lead and a second lead;

a non-positive contact switch means electrically connected in series with said electrical power source and said electrically powered illuminating means for turning on and off said electrically powered illuminating means, wherein said electrical power source, said electrically powered illuminating means, and said switch means are in a complete electrical circuit, and said electrically powered illuminating means is energized by said electrical power source when said switch means is closed;

wherein said non-positive contact switch means has a generally hollow interior defined, in part, by a base at a first end, and a generally peripherally disposed main body portion with a second longitudinal axis generally centrally aligned within said hollow interior, said base being gener-



ally perpendicular to said second longitudinal axis; a first terminal centrally located on said base and a second terminal located on said main body portion and disposed in adjacent and peripheral relation to said base; and a terminal bridge member of nominal size less than the inside diameter of the main body portion adapted to contact said first and second terminals so as to thereby connect said first and second terminals in electrically conductive relation with each other;

wherein said non-positive contact switch means initially becomes closed when said fish luring means is oriented such that said first datum point is lower than said second datum point; and

wherein, subsequently to said non-positive contact switch means becoming initially closed, movement of said terminal bridge member within said hollow interior of said non-positive contact switch means occurs generally across said base in such a manner so as to alternatingly make and break contact with said second terminal and thereby correspondingly intermittently connect said first and second terminals in electrically conductive relation with each other such that said non-positive contact switch means becomes correspondingly opened and closed intermittently.

5,299,108

DISPOSABLE-TYPE FLASHLIGHT

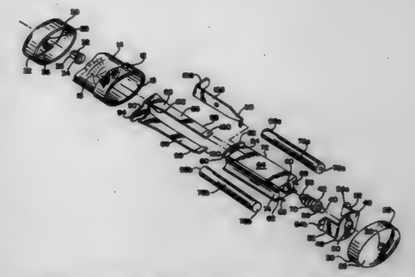
James P. Griffin, 1216 Ash St., St. Charles, Ill. 60174

Filed Jan. 19, 1993, Ser. No. 5,780
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—189 **12 Claims**

1. In a disposable-type flashlight having an electrical circuit including a pair of batteries, a bulb, a switch, a contact member, and a connector strip, an improvement therein comprising:

a core piece having a guide slot formed in an inner space of said piece and a set of spaced apart, slotted flanges formed on a rear end of said piece,

wherein said connector strip is carried in said guide slot and said switch is carried in said flange slots during assembly



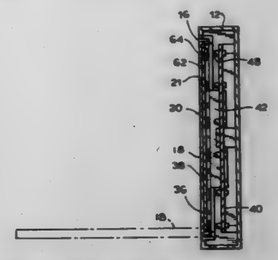
of said flashlight and then positively located by such during operation of said flashlight.

5,299,109

LED EXIT LIGHT FIXTURE

Daniel Grondal, Bethel, Conn., assignor to High Lites, Inc., Waterbury, Conn.

Filed Nov. 10, 1992, Ser. No. 974,092
Int. Cl.[5] F21V *7/02*
U.S. Cl. 362—241 **11 Claims**



1. An emergency light fixture comprising a frame, a cover movably mounted on the frame for movement between an open position and a closed position adjacent the frame, said cover including translucent and non-translucent portions therein, said translucent portions having a predetermined configuration; and an array of light emitting diodes mounted on said frame beneath said cover; said light emitting diodes being positioned in the frame directly beneath the non-translucent portion of the cover and adjacent the translucent portions thereof when the cover is in the closed position; said cover having individual light reflective surfaces respectively associated with each of said light emitting diodes and located on the cover to be directly above the respective diodes within the non-translucent portions of the cover when the cover is in its closed position; and said light emitting diodes being mounted on a board in said frame having a surface facing said cover and said surface being coated with a reflective material.

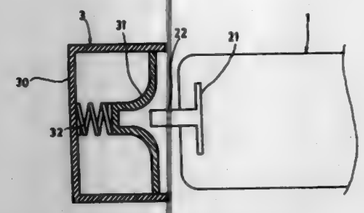
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,110

FLUORESCENT LAMP ASSEMBLY

Lee-Mao Lin, 154, Hsin-Hsing Rd., Hsiao-Tung Li, I-Lan City, Taiwan

Filed Dec. 18, 1992, Ser. No. 992,737
Int. Cl.[5] F21V *1/12*
U.S. Cl. 362—260 1 Claim



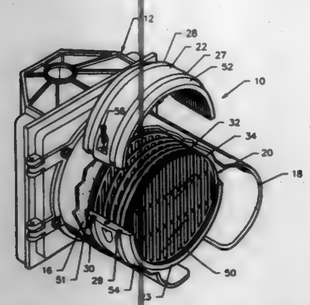
1. A fluorescent lamp assembly comprising:
a) a fluorescent lamp tube including a pair of opposite end portions;
b) a positive conductive pole at one end portion and a negative conductive pole at the other end portion, each conductive pole including a single perpendicular contact pin extending outwardly from the end portion of the lamp tube; and
c) a contact socket for providing electrical connection between each conductive pole and an electric power source, the contact socket including an end cover, a contact plate disposed within the end cover and provided with a central concave portion for engagement by the contact pin, and a spring positioned between the end cover and the contact plate for urging the contact plate into secure engagement with the contact pin.

5,299,111

DEVICE FOR DIRECTING A BEAM OF LIGHT

A. Philip Parduhn, 14501 Wilson Rd., Edmond, Okla. 73013; Michael N. Fiske, 4259 Crestline Rd., Ft. Worth, Tex. 76107, and John D. Schmidt, 7151 Hudson Cemetery Rd., Mansfield, Tex. 76063

Continuation-in-part of Ser. No. 580,701, Sep. 11, 1990, abandoned. This application Sep. 12, 1991, Ser. No. 758,853
Int. Cl.[5] F21V *11/02*
U.S. Cl. 362—290 50 Claims



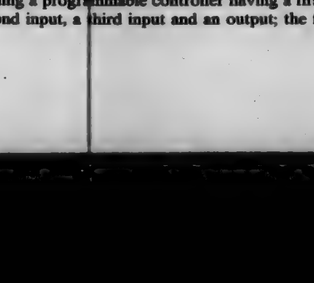
1. A device for directing a beam of light from a light source, comprising:
a hollow housing having a open first end and an open second end parallel to the first end, wherein the interior of the housing defines a channel between the first end and the second end, and wherein at least a portion of the outer contour of the housing is spherical; and
a plurality of spaced apart baffles in the channel of the housing, each baffle comprising an opaque plate with a plurality of apertures, wherein the baffles are positioned parallel to each other and to the first and second ends of the channel, wherein the apertures in the baffles are aligned so as to permit a portion of the light beam from the light source to pass through the channel and whereby the beam of light from the light source is directed to a preselected view range.

5,299,112

SUPPORT BAR FOR ADJUSTABLY MOUNTED ACCESSORIES

Roland C. Nivette, Jr., Lancaster; Steven B. Jackson, Carson, and Christopher L. Tueber, Venice, all of Calif., assignors to Alnic Industries, Sun Valley, Calif.

Filed Sep. 8, 1992, Ser. No. 941,740
Int. Cl.[5] F21S *1/10*
U.S. Cl. 362—431 7 Claims



1. A support bar for receiving adjustably mounted electrical accessories wherein said bar is fixedly mounted relative to a structure and said accessories each include couplable means that can maintain said accessories to said bar, said bar comprising;
an elongated tubular support bar having a common cross section throughout its length, the interior of said support bar divided into an electrical raceway and channel that passes longitudinally through said tubular support bar, said raceway and said channel having a common wall that extends across said support bar wherein said raceway is isolated from said channel and said channel is quadrilateral in cross section, and an entrance opening extends through a portion of said support bar communicating with said channel; and
slidable mounting means to receive said electrical accessories including a non-rotatable channel nut slidably inserted within said channel and a bolt passing through said entrance opening into said channel nut and said mounting means may be locked to said bar to prevent movement thereof.

5,299,113

CONTROL BOARD HAVING DUAL MEANS OF CONFIGURATION

Brent A. England, and Scott A. Merkle, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Apr. 22, 1992, Ser. No. 872,623
Int. Cl.[5] G06F *15/46;* G05B *15/02*
U.S. Cl. 364—140 17 Claims

1. A method of programming operating parameters for a machine's mechanical subsystems, the machine having a user interface, comprising the steps of:
providing a programmable controller having a first input, a second input, a third input and an output; the first input communicating with the user interface and the output communicating with the mechanical subsystems of the machine;
providing a first programmer communicating with the second input of the programmable controller, the first programmer capable of generating a first signal when it is activated;
providing a second programmer communicating with the third input of the programmable controller, the second programmer capable of generating a second signal when it is activated;
monitoring the second and third inputs of the programmable controller;
activating one of the first programmer and the second programmer;



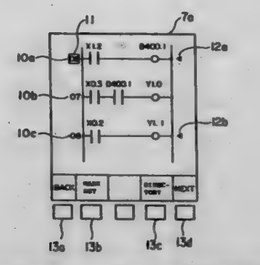
detecting an input signal at one of the second and third inputs;
generating operating parameters in response to the detected signal at one of the second or third inputs;
storing the operating parameters in memory;
detecting a signal at the first input from the user interface;
determining whether the signal at the first input satisfies the operating parameters stored in memory;
generating a control signal if the signal at the first input satisfies the operating parameters stored in memory; and
sending the control signal to the output of the programmable controller to energize the mechanical subsystems of the machine.

5,299,114

SEQUENCE PROGRAM SEARCH METHOD

Yasushi Onishi, and Masashi Hakoshima, both of Minamitsuru, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP91/00582, § 371 Date Dec. 9, 1991, § 102(e) Date Dec. 9, 1991, PCT Pub. No. WO91/17489, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 26, 1991, Ser. No. 776,290
Claims priority, application Japan, May 10, 1990, 2-120529
Int. Cl.[5] G06F *15/46, 9/00*
U.S. Cl. 364—147 4 Claims



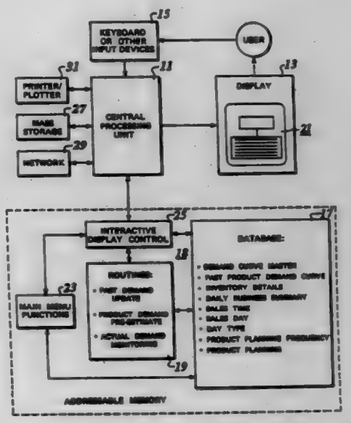
1. A sequence program search method of searching for a net in a sequence program of a programmable controller, comprising the steps of:
(a) setting a mark for a net to be searched;
(b) searching for and displaying a next marked net each time a forward operation key is depressed; and
(c) searching for and displaying a preceding marked net each time a backward operation key is depressed.

5,299,115

PRODUCT DEMAND SYSTEM AND METHOD

Randall K. Fields, Woodland; Paul R. Quinn, Park City, and Barrie R. Tondevold, Murray, all of Utah, assignors to Mrs. Fields Software Group Inc., Park City, Utah

Continuation of Ser. No. 808,982, Dec. 17, 1991, abandoned, which is a continuation of Ser. No. 406,069, Sep. 12, 1989, abandoned. This application Feb. 5, 1993, Ser. No. 15,032
Int. Cl.[5] G06F *15/22, 15/24;* G06G *7/52*
U.S. Cl. 364—401 28 Claims



1. A computer system for regulating production comprising:
an input means for entering product data for at least one product from a production location, the product data including past product demand data, sales time data, sales day data, and product-planning frequencies, the product data existing for a plurality of production time periods, wherein product demand can fluctuate by time of day, day of the week and seasonality of the year;
a past product demand register means for storing the past product demand data for previous time periods retrieved from the input means;
a sales time register means for storing the sales time data for previous time periods retrieved from the input means;
a sales day register means for storing the sales day data for previous time periods retrieved from the input means;
a product-planning frequency register means for storing the product-planning frequency data for various time periods retrieved from the input means;
an output register means for storing a pre-estimated product demand schedule;
an estimation control register means for storing product demand estimation procedures;
a data bus coupled to the register means and to the input means for storing data to and retrieving data from the register means;
a processor coupled to the register means and to the input means, the processor retrieving the product demand estimation procedures from the estimation control register means for generating the pre-estimated product demand schedule from the past product demand data, the sales time data, the sales day data and the product-planning frequency data stored in the register means, the processor storing the pre-estimated product demand schedule in the output register means; and
a display coupled to the processor for displaying the pre-estimated product demand schedule for a selected time period.

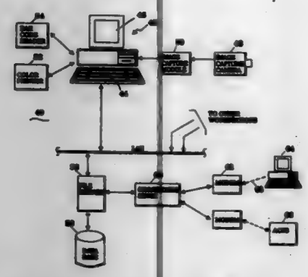
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,116

LOST BAGGAGE INVENTORY AND CLAIM SYSTEM

Bryan K. Owens, Highland Park, and William E. Gonseaux, Cedar Hill, both of Tex., assignors to Baggage Services Network, Inc., Dallas, Tex.

Filed Oct. 2, 1991, Ser. No. 769,967
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—403 **37 Claims**



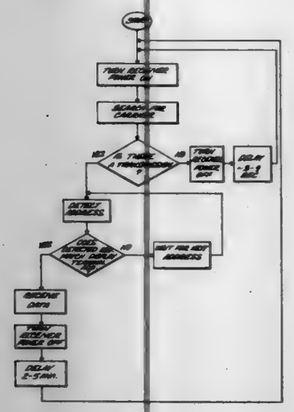
1. A baggage tracing system, comprising:
a plurality of workstations, each programmed for providing for the input of bag data;
a data base associated with said workstations for storing bag data;
each workstation being associated with a bag inventory station for providing bag content data to the respective workstation; and
imaging apparatus for capturing a video image of a lost bag, said video image defining image data stored in association with bag data in said data base.

5,299,117

POWER CONSERVING RECEIVER OPERATION FOR A REMOTE ELECTRONIC DISPLAY SYSTEM

William A. Farabach, San Diego, Calif., assignor to REST Manufacturing, Inc., Carlsbad, Calif.

Continuation of Ser. No. 459,458, Jan. 2, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 933,978
Int. Cl.[5] G06F *15/21*; H04B *1/16*
U.S. Cl. 364—405 **1 Claim**



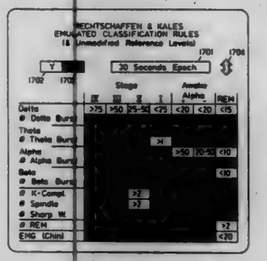
1. An electronic price display system comprising:
a plurality of spatially distributed price display terminals each having assigned to it a unique address;
a wireless transmission network comprising means for transmitting a carrier on which are modulated groups of uniquely addressed data messages of predetermined duration and individual means coupled to each respective display terminals for receiving the carrier;
means when the carrier is present for maintaining each of the individual receiving means active until receipt of the address and message unique to the corresponding display terminal;
means for deactivating each of the receiving means for the remainder of the duration of the group of messages after receipt of the address and message and;
means for varying the order in which the messages are transmitted from group to group.

5,299,118

METHOD AND SYSTEM FOR ANALYSIS OF LONG TERM PHYSIOLOGICAL POLYGRAPHIC RECORDINGS

Wim L. J. Martens, Eindhoven, Netherlands, and Jaap I. Kap, Madison, Wis., assignors to Nicolet Instrument Corporation, Madison, Wis.

Continuation of Ser. No. 67,765, Jun. 26, 1987, Pat. No. 5,047,930. This application Sep. 5, 1991, Ser. No. 755,164
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/42*; A61B *5/04*
U.S. Cl. 364—413.05 **11 Claims**



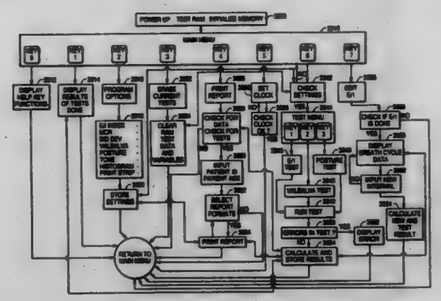
1. A system for analyzing physiological signals obtained from physiological sensors n a subject to determine stages of sleep comprising:
(a) means for receiving time varying physiological signals from the sensors on the subject and for digitizing the signals to provide digital physiological signal data;
(b) means for storing the digitized physiological signal data in correlation with time and making such data available for later long term retrieval;
(c) analysis means receiving the digital physiological signal data for initially analyzing the data on a real time basis to detect patterns therein indicating fluctuations in physiological function using criteria, wherein the analysis means analyses the data to determine the physiological function of sleep to produce an analysis result, and wherein the physiological sensor signals include time varying EEG signal data, and wherein the analysis means includes means for separating the time varying EEG signal data into a plurality of signals corresponding to frequency bands generally conforming to the frequencies of standard EEG waveform components, including frequencies for delta waves, the theta waves, beta waves and sleepspindles;
(d) display means including a display screen for displaying to an operator on the display screen the results of the analysis from the analysis means on a real time basis, wherein the display means displays the results of the analysis as a hypnogram of the stages of sleep as a function of time;
(e) input means receiving commands from the operator for providing new criteria specifications from the operator to the analysis means, wherein the analysis means includes means for reanalyzing the physiological data stored for long term retrieval utilizing the new criteria for determining fluctuations in physiological function, wherein the display means includes means for, during reanalysis, displaying to the operator a matrix of emulated classification rules having characterizing parameters listed on one axis of the matrix and classes on the other axis of the matrix, and for displaying reference levels and rules to the operator in matrix elements for the initial analysis, and wherein the input mans includes means for receiving input from the operator to change the reference level or rules indicated in the elements of the matrix to a level or rule desired by the operator, and the analysis means further includes means for analyzing the data utilizing the new reference levels and rules as modified by the operator to carry out the classification.

5,299,119

AUTONOMIC NEUROPATHY DETECTION AND METHOD OF ANALYSIS

Teri J. Kraf, Point Pleasant, N.J.; William R. Frisbie, Sag Harbor, N.Y., and Allan Rosner, East Patchogue, N.Y., assignors to Qmed, Inc., Clark, N.J.

Continuation-in-part of Ser. No. 376,472, Jul. 6, 1989, abandoned. This application Dec. 14, 1990, Ser. No. 626,710
Int. Cl.[5] G06F *15/42*; G06G *7/60*
U.S. Cl. 364—413.06 **43 Claims**



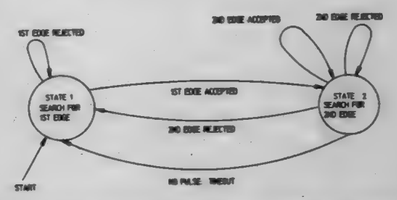
1. Automated apparatus for monitoring heart beat signals generated by the heart of a patient to whom it is attached, comprising:
means for performing continuous real-time analysis of said heart beat signals derived from said patient,
means for storing one or more normative data bases for automated correlation of test result to age-matched values,
means for recognizing normal and abnormal beats,
means for diagnosing each of said abnormal beats,
means for providing audio-visual signals to the patient to instruct said patient in at least one predetermined physical regimen, whereby the patient may perform said at least one predetermined physical regimen without any additional prompting or instruction, and
means for outputting the results of said analysis.

5,299,120

METHOD FOR DIGITALLY PROCESSING SIGNALS CONTAINING INFORMATION REGARDING ARTERIAL BLOOD FLOW

Siegfried Kaestle, Nufringen, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 15, 1989, Ser. No. 408,001
The portion of the term of this patent subsequent to Jan. 29, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.09 **3 Claims**



1. Apparatus for processing a signal of varying amplitude so as to detect systolic edges comprising:
first means for determining if edges in the signal have a MAX1 and MIN1;
second means for determining the maximum absolute value DMIN of the first derivative of edges having MAX1 and MIN1;
third means for determining the time tMIN1 between MAX1 and MIN1;
fourth means for determining the time tDMIN1 between MAX1 and the occurrence of DMIN;
means for accepting an edge as a first edge if MAX1−MIN1> a given value and for determining the MAX1 and MIN1 of a subsequent edge if MAX1–MIN1 is not > said given value;
means for defining the following upper and lower values of windows,

PP_upper = a (MAX1–MIN1), where a > 1,

PP_lower = b (MAX1–MIN1), where b = 0 . . . 1,

tMIN_upper = c (tMIN1), where c > 1,

tMIN_lower = d (tMIN1), where d = 0 . . . 1,

DMIN_upper = e (DMIN1), where e > 1,

DMIN_lower = f (DMIN1), where f = 0 . . . 1,

tDMIN_lower = g (tDMIN1), where g > 1,

tDMIN_upper = h (tDMIN1), where h = 0 . . . 1,

means for determining if a second edge has been subjected to the operation of the first through the fourth means so as to derive MAX2, MIN2, tMIN2 and tDMIN2;
means for determining if the second edge has values within said windows; and
means for storing the values MAX2 and MIN2 if the second edge has values within said windows.

5,299,121

NON-PRESCRIPTION DRUG MEDICATION SCREENING SYSTEM

Albert R. Brill, Sylmar, and Denis Sosnoski, Garden Grove, both of Calif., assignors to Medscreen, Inc., Sylmar, Calif.

Filed Jun. 4, 1992, Ser. No. 893,652
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.01 **4 Claims**

1. A system including a personal computer having an input

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device, a display, a storage device and a processor adapted to execute a computer program loaded from said storage device into a random access memory, said system for assisting a user to select appropriate non-prescription medications, said system comprising:

a) means for prompting the user to input identifying information to uniquely identify the user from the other uses of the system and to input predetermined information for subsequent use by execution by said processor of said computer program causing first prompting information to be displayed on said display;

b) said input device for allowing the user to input said identifying information to uniquely identify the user from other uses of the system, to answer predetermined questions and to input said predetermined information,

c) means for prompting the user to select a main symptom of an illness or injury by execution of said computer program causing second prompting information to be displayed on said display, said input device for allowing the user to select said main symptom;



d) means to generate a list of ingredients of non-prescription medications, wherein said list generation means is a knowledgebase loaded from said storage device in to said random access memory which when executed by said processor, generates predetermined questions which are displayed on said display based upon the inputted identifying information, the inputted predetermined information and the selected main symptom, and uses the user's answers to the predetermined questions to generate said list of ingredients, and wherein said knowledge base determines the existence of potential problems with the customer using non-prescription medications which contain at least one ingredient on said list of ingredients;

e) means using the generated list of ingredients and any determined potential problems to generate a report of recommended non-prescription medications which may be purchased to relieve the symptoms of the selected illness or injury, said generated respect being generated by execution by said processor of said computer program which causes said generated report to appear on said display.

5,299,122

TABLE MANIPULATIONS FOR ENTERPRISE SPECIFIC SEARCH TERMS

Diana S. Wang, Trophy Club, Tex., and Charles M. N. Cree, Boeblingen, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 453,542, Dec. 20, 1989, abandoned. This application Nov. 26, 1991, Ser. No. 800,866

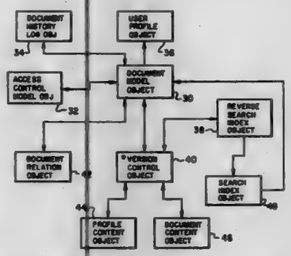
Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.1 **7 Claims**

2. A method of installing a table into a shared library in a document interchange system where said table contains specific information for a user, said method comprising the steps of:

identifying said table to be installed in said shared library; and

identifying said user as an owner of said table to be installed in said shared library; and



identifying said table as having a document type acceptable for installation into said library.

5,299,123

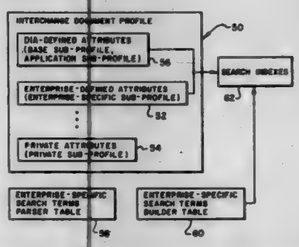
METHOD FOR ALLOWING RETRIEVAL OF DOCUMENTS WITH USER DEFINED SEARCH DESCRIPTORS

Diana S.-F. Wang, Trophy Club, Tex., and Charles M. N. Cree, Boeblingen, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 454,100, Dec. 20, 1989, abandoned. This application Mar. 9, 1992, Ser. No. 847,869

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—419.1 **7 Claims**



1. A method of adding an enterprise specific search term for a plurality of documents in a shared library within a document interchange management system, said method comprising the steps of:

associating a least one of said plurality of documents with a sub-profile in an interchange document profile for said enterprise;

creating an enterprise specific search term and placing it in said sub-profile; and

building a search index containing said enterprise specific search term and storing the search index with the document in said library.

5,299,124

TRANSLATION MACHINE CAPABLE OF ANALYZING SYNTACTIC OF SENTENCE

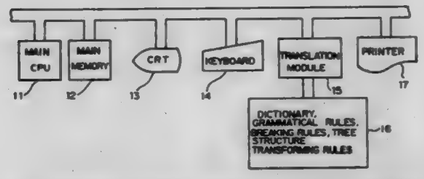
Yoji Fukumochi, Ikoma; Shuzo Kugimiya, Nara; Ichiko Sata, Nara; Tokuyuki Hirai, Nara, and Takeshi Kutsumi, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1992, Ser. No. 819,500

Claims priority, application Japan, Jan. 10, 1991, 3-1494

Int. Cl.[5] G03F *15/38*

U.S. Cl. 364—419.02 **9 Claims**



1. A translation machine which is capable of analyzing a syntactic of a sentence having a complicated or an ambiguous modifying structure of words composing the sentence, said translation machine comprising:

means for consulting dictionaries and for analyzing morphemes of a sentence in a source language input to said translation machine so as to provide a part of speech of said analyzed morpheme;

means connected to said consulting and analyzing means for analyzing said syntactic of said sentence based on said part of speech of said analyzed morpheme by using grammatical rules stored in said dictionary consulting and morpheme analyzing means;

means connected to said syntactic analysis means for transforming said analyzed syntactic into a syntactic of a target language;

means connected to said transforming means for creating a translated sentence of said target language; and

means connected to said syntactic analysis means for determining whether or not said syntactic analysis means fails in said syntactic analysis of said sentence in accordance with a phrase recognition of said input sentence in said source language and a creation of a proper syntactic analysis tree, and for setting breaks to proper locations of said sentence according to breaking rules at a time when said syntactic analysis fails.

5,299,125

NATURAL LANGUAGE PROCESSING SYSTEM AND METHOD FOR PARSING A PLURALITY OF INPUT SYMBOL SEQUENCES INTO SYNTACTICALLY OR PRAGMATICALLY CORRECT WORD MESSAGES

Bruce R. Baker, and Eric H. Nyberg, both of Pittsburgh, Pa., assignors to Semantic Compaction Systems, Pittsburgh, Pa.

Continuation of Ser. No. 564,835, Aug. 9, 1990, abandoned. This application Feb. 8, 1993, Ser. No. 15,290

Int. Cl.[5] G06F *15/40*

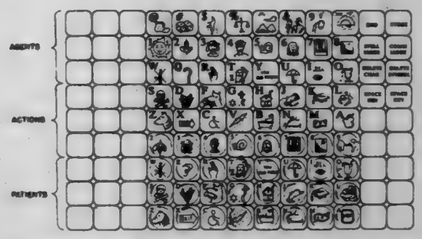
U.S. Cl. 364—419.08 **83 Claims**

1. A natural language processing system for initially parsing each of a plurality of sequences of input polysemic symbols, each sequence including a plurality of input polysemic symbols and accessing a single word, morpheme, or phrase, and subsequently combining each of the single words, morphemes, or phrases into a syntactically or pragmatically correct word message, the system comprising:

input means, segmented into a plurality of syntactical, semantic, or pragmatic segments, each such segment including a plurality of keys, each key including one of said polysemic symbols, for inputting syntactic, semantic, or pragmatic segment information and the corresponding polysemic symbol of an actuated key;

first memory means for storing a plurality of symbol sequences, each of said symbol sequences including a plurality of polysemic symbols and syntactic, semantic, or pragmatic segment information, a word, morpheme, or phrase for each of said plurality of symbol sequences, and grammatical and semantic information corresponding to each word, morpheme, or phrase;

symbol parsing means, operatively connected to said input means and said memory means, for detecting each of a plurality of actuated keys, parsing a plurality of polysemic symbols corresponding to sequentially actuated keys, and comparing said parsed sequence of polysemic symbols and syntactic, semantic, or pragmatic segment information



corresponding to the sequentially actuated keys, to thereby access a previously stored word, morpheme or phrase and corresponding previously stored grammatical and semantic information; and

word combining means, operatively connected to said symbol parsing means, for sequentially accessing each of a plurality of predetermined rules and applying the plurality of predetermined rules to said grammatical and semantic information corresponding to a plurality of words, morphemes, or phrases received from said symbol parsing means to obtain a syntactically or pragmatically correct word message.

5,299,126

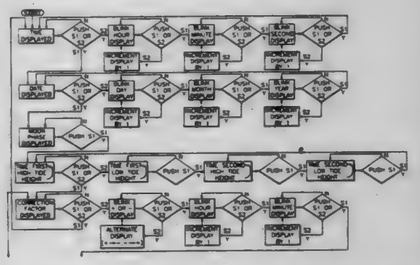
ELECTRONIC TIDE WATCH

Michael Spraker, 34519 Calle Naranja, Capistrano Beach, Calif. 92624

Filed Oct. 23, 1989, Ser. No. 425,282

Int. Cl.[5] G06F *15/20*; **G04B** *19/26*

U.S. Cl. 364—420 **16 Claims**



1. A device for providing future tide times and heights comprising:

(a) a first memory for storing a table of information representative of tide time and tide heights predicted to occur during a predetermined period and at a first geographic area;

(b) an input circuit for inputting time and date information for which corresponding tide time and tide height information is desired;

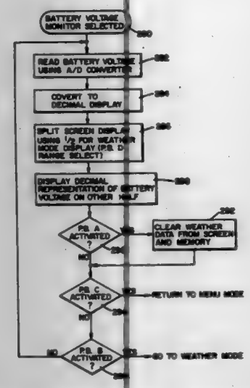
(c) a processing circuit in electrical communications with said first memory and said input circuit for identifying the stored tide time and tide height information corresponding to the input time and date information; and
(d) a display in electrical communication with said processing circuit for illustrating the identified tide time and tide height information.

5,299,127

LIGHTNING STRIKE DETECTION AND MAPPING SYSTEM CAPABLE OF MONITORING ITS POWER SOURCE AND OF DISPLAYING A REPRESENTATION THEREOF ON THE MAPPING DISPLAY

Billie M. Stevens, Jr., Westerville; James M. Gregg, Powell; William J. White, Columbus, and Geoffrey S. Pomeroy, Westerville, all of Ohio, assignors to BF Goodrich Flight Systems, Inc., Columbus, Ohio

Filed Apr. 29, 1992, Ser. No. 876,010
Int. Cl.[5] G06F *15/31*; G01S *3/02*; G01W *1/16*
U.S. Cl. 364—420 **15 Claims**



1. A lightning strike detection and mapping system capable of monitoring its power source for display on a common lightning strike display thereof, said system comprising:
means for detecting signals representative of a lightning strike;
means for processing said detected signals to generate a location signal of the lightning strike;
display means governed by said processing means to display an indication of the lightning strike based on the location signal thereof;
means for monitoring the power source to generate a signal indicative of the level thereof; and
means for driving said display means to display a representation of said power level signal.

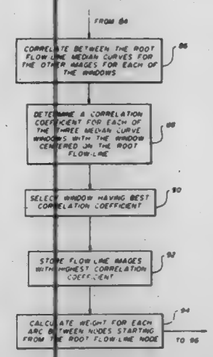
5,299,128

METHOD AND APPARATUS FOR DELINEATING BED BOUNDARIES IN SUBSURFACE FORMATIONS AND FOR PRODUCING INDICATIONS OF THE ANGLE OF DIP THEREOF

Jean-Noël Antoine, Houston, Tex.; Jean-Pierre Delhomme, Boulogne Billancourt, and Hervé Ganem, Villejuif, both of, France, assignors to Schlumberger Technology Corporation, Richfield, Conn.

Filed Oct. 5, 1990, Ser. No. 593,109
Int. Cl.[5] G01V *1/00*; G06K *9/46*
U.S. Cl. 364—422 **22 Claims**

1. A method of delineating boundaries of beds in an earth formation traversed by a borehole, comprising the steps of:
(a) producing from original image data containing information about a physical parameter of the earth formation a data field of flow-lines corresponding to directions of least change of the parameter in the image wherein the original image data is representative of variations of the physical parameter of the formation along the longitudinal direction of the boreholes and along a circumferential segment



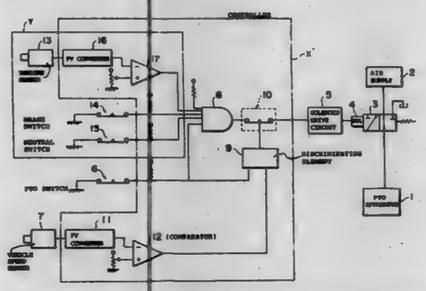
of the borehole wall, which respectively correspond to the longitudinal and the lateral dimensions of said image; and
(b) selecting from the flow-line data field thus produced data corresponding to a subset of said flow-lines which delineate bed boundaries wherein said subset of flow-lines contains data corresponding to dip of the beds.

5,299,129

PTO CONTROL APPARATUS FOR VEHICULAR AUTOMATIC TRANSMISSION

Takaya Uchida, Okazaki, and Toshinori Murahashi, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 22, 1991, Ser. No. 673,301
Claims priority, application Japan, Mar. 26, 1990, 2-73485; Mar. 27, 1990, 2-75573
Int. Cl.[5] G06F *15/50, 7/70*
U.S. Cl. 364—424.1 **9 Claims**



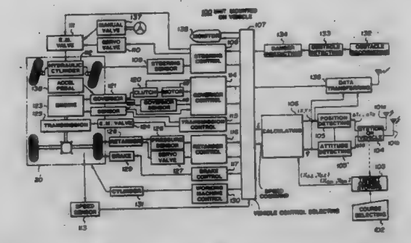
1. A control system of a power take-off apparatus for taking off power from an automatic transmission by meshing a PTO gear with a drive gear of the automatic transmission, comprising:
a PTO switch;
vehicle speed detecting means for detecting vehicle speed; and
control means, to which are inputted an ON signal from said PTO switch and a vehicle-speed signal from said vehicle speed detecting means, for outputting an actuating signal to an actuating unit of the power take-off apparatus;
said control means actuating the power take-off apparatus by outputting the actuating signal to the actuating unit of the power take-off apparatus in response to an input of the ON signal from said PTO switch, and stopping the output of the actuating signal when said vehicle speed detecting means detects that the vehicle speed is greater than a predetermined vehicle speed which is more than zero during output of the actuating signal.

5,299,130

APPARATUS FOR CONTROLLING MOVEMENT OF VEHICLE

Toyoichi Ono, 688-5, Tokunobu, Hiratsuka-shi, Kanagawa-ken 254, Japan, assignor to Toyoichi Ono, Japan

PCT No. PCT/JP89/00459, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 25, 1991, PCT Pub. No. WO90/13856, PCT Pub. Date Nov. 15, 1990
PCT Filed May 1, 1989, Ser. No. 623,659
Int. Cl.[5] G06F *15/50*; G01S *1/20*
U.S. Cl. 364—424.02 **7 Claims**



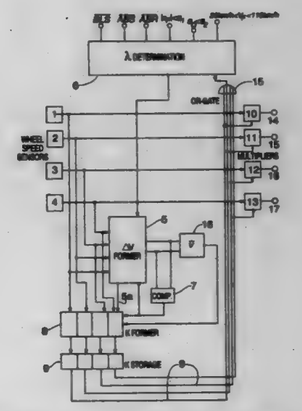
1. An apparatus for controlling the movement of a vehicle, wherein said apparatus includes electric wave transmitting means for transmitting a first electric wave, a second electric wave and a third electric waves in synchronization with each other from predetermined positions on the ground different from each other and an unit mounted on said vehicle and wherein said unit mounted on the vehicle comprises;
a first antenna and a second antenna arranged on the vehicle in parallel with each other with a predetermined distance kept therebetween,
first time difference detecting means for detecting the difference between the time when said first electric wave reaches said first antenna and the time when said second electric wave reaches said first antenna as well as the difference between the time when said first electric wave reaches said first antenna and said third electric wave reaches said first antenna, in response to said first electric wave, said second electric wave and said third electric wave each of which is received by said first antenna,
position detecting means for detecting the position where the vehicle is presently located, based on said time differences detected by said first time difference detecting means,
second time difference detecting means for detecting the difference between the time when said first electric wave reaches said first antenna and the time when said first electric wave reaches said second antenna, in response to said first electric wave received by said first antenna and said second antenna,
attitude angle detecting means for detecting the attitude angle with which the vehicle is moving, based on said time difference detected by said second time difference detecting means
storing means for allowing target courses for the vehicle to be stored therein,
calculating means for calculating a steering angle command for allowing the vehicle to move along one of said target courses, based on the position where the vehicle is presently located, the attitude angle with which the vehicle is moving and the target courses, and
steering control means for controlling a steering angle to be assumed by the vehicle to a certain magnitude in conformity with said steering angle command.

5,299,131

METHOD OF CORRECTING THE ROTATING SPEED OF VEHICLE WHEELS SENSED BY WHEEL SENSORS

Hardy Haas, Schwieberdingen; Manfred Meissner, Unterriexingen; Alfred Sigl, Sersheim; Andreas Schlichenmaier, Zaberfeld; Ulrich Schwabe, Ditzingen; Hans Güttler, Unterheinriet; Norbert Leibbrand, Mühlacker; Jürgen Brauninger, Stuttgart; Dieter Wörner, Pleidelsheim; Jochen Schäfer, Ludwigsburg, and Frank Bedrna, Schönbühlhof, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP88/01028, § 371 Date Jul. 20, 1990, § 102(e) Date Jul. 20, 1990, PCT Pub. No. WO89/04783, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 12, 1988, Ser. No. 466,450
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1987, 3738914; Apr. 15, 1988, 3812570
Int. Cl.[5] G01P *3/42*
U.S. Cl. 364—426.03 **26 Claims**



1. Method for correcting the rotating speed of vehicle wheels, said method comprising the following steps:
measuring the rotating speed of each vehicle wheel,
determining when there is no slippage of said vehicle wheels,
determining the difference in speed between each two vehicle wheels when there is no slippage of said vehicle wheels,
determining the minimum said difference in speed,
determining the average speed of the two wheels which have said minimum difference in speed, wheels other than said two wheels which have said difference in speed being remaining wheels,
determining correction values for each said remaining wheel based on the speed of each said remaining wheel and said average speed, and
correcting the measured speed of each said remaining wheel based on respective said correction values.

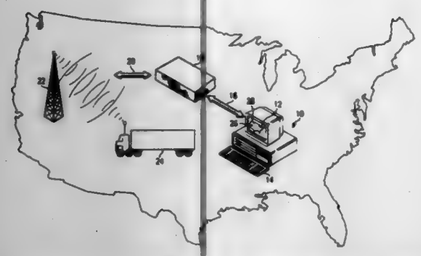
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,132

VEHICLE LOCATING AND COMMUNICATING METHOD AND APPARATUS USING CELLULAR TELEPHONE NETWORK

Larry C. Wortham, Garland, Tex., assignor to By-Word Technologies, Inc., Dallas, Tex.

Continuation of Ser. No. 642,436, Jan. 17, 1991, Pat. No. 5,155,689. This application Jul. 28, 1992, Ser. No. 920,644
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] G01S *3/02*
U.S. Cl. 364—460 **11 Claims**



1. A system for locating and communicating with a vehicle by a cellular telephone system, said cellular telephone system emitting data containing cellular telephone system information, comprising:
- a remote host controller coupled to the cellular telephone system having a display for displaying communications and geographic location data transmitted from the vehicle;
- a cellular transceiver within the vehicle; and
- a controller in the vehicle connected to said cellular transceiver wherein said controller interprets the data received from said cellular telephone system and determines geographic location data transmitted from the cellular telephone system providing communication services to said cellular transceiver said controller further communicating with said remote host controller and transmitting the geographic location data, said remote host controller receiving and processing the geographic location data for determining an approximate geographic location of the vehicle and for displaying the approximate geographic location of the vehicle on said display.

5,299,133

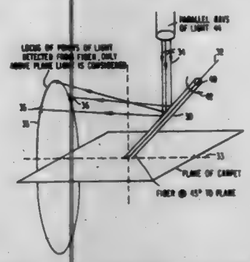
METHOD FOR DETERMINING AND CONTROLLING FIBER LUSTER PROPERTIES

Henry Kobsa, Greenville, Del.; Barry Rubin, Glen Mills, Pa.; Stephen M. Shearer, and David L. Filkin, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 22, 1990, Ser. No. 526,853
Int. Cl.[5] G06F *15/46, 15/70*
U.S. Cl. 364—468 **25 Claims**

MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 284 Pages)

1. A computer based method of determining the luster properties of filamentary fiber comprising:
- a) determining the cross sectional shape of a selected fiber taken along a plane substantially perpendicular to the longitudinal axis of said selected fiber and forming electronic data defining said cross sectional shape;
- b) programming and operating a digital computer to derive from said cross sectional shape defining electronic data a mathematical model of the shape of the peripheral contour of said cross sectional shape;
- c) simulating by means of electronic processing the impingement of light on said selected fiber by simulating the impingement of light on said mathematical model from a selected direction at an angle of impingement of between 0° and 90° to said longitudinal axis;
- d) determining by means of electronic processing from said simulated impingement of light on said mathematical



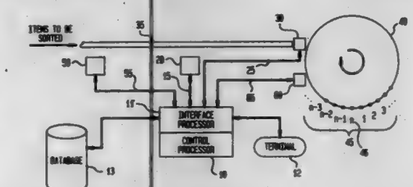
model of said cross sectional shape the distribution pattern of said simulated impinging light after the interaction thereof with said selected fiber; and
- e) correlating said determined distribution pattern with stored subjective data relating such stored data to luster properties and thereby determining the luster properties of said selected fiber from said cross sectional shape.

5,299,134

COMPUTER CONTROL SYSTEM AND METHOD FOR SCANNING AND LOADING ARTICLES ON A CONVEYOR

Bernard Speckhart, Short Hills, N.J.; Craig Davidson, Cardiff by the Sea, Calif., and Paul M. Berson, Mountain Lakes, N.J., assignors to White Conveyors, Inc., Kenilworth, N.J.

Filed Jan. 22, 1991, Ser. No. 643,780
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—478 **37 Claims**



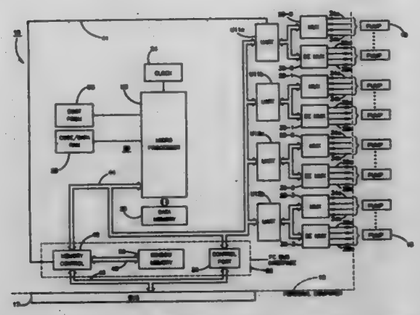
1. A system for identifying and loading articles comprising:
one or more articles to be sorted;
a processor;
a scanner, coupled to the processor, for identifying to the processor the articles to be sorted;
a first conveyor for transporting a sequence of articles loaded thereon;
a loading device, coupled to the processor, for providing to the processor a first signal indicating that the loading device is positioned to receive the one or more articles for loading, for thereafter receiving the one or more articles, for providing to the processor a second signal indicating the receipt of an article by the loading device, for loading the one or more articles to be sorted onto the first conveyor responsive to commands from the processor, the commands being in response to the second signal, and for providing first conveyor position information to the processor;
such that the processor stores article identification information associated with the position at which the article is loaded on the first conveyor.

5,299,135

DIRECT INTERFACE BETWEEN FUEL PUMP AND COMPUTER CASH/REGISTER

Gregory S. Lieto, Muskegon; William O. Richardson, Grand Haven; Thomas A. Kyle, Rothbury, all of Mich., and Craig L. Hockman, North Canton, Ohio, assignors to Bennett Pump Company, Muskegon, Mich.

Continuation of Ser. No. 624,420, Dec. 7, 1990, abandoned. This application Jun. 18, 1993, Ser. No. 80,460
Int. Cl.[5] G06F *15/20*; B67D *5/08*
U.S. Cl. 364—479 **68 Claims**



6. A dispenser system for dispensing a material comprising:
a plurality of material dispensers;
a computer system having a peripheral bus that is adapted to bidirectionally exchanging code with a peripheral device connected with said peripheral bus;
a controller and an internal bus connected with said controller, said internal bus adapted to bidirectionally exchanging code between said controller and another device connected with said internal bus;
first communication means for providing communication between said controller and said material dispensers;
a memory device;
memory control means connected with said memory device, said internal bus and said peripheral bus for granting access of one of said internal bus and said peripheral bus to said memory device, said memory control means adapted to determining which of said internal bus and said peripheral bus has access to said memory means; and
a control port connected with said internal bus and said peripheral bus for communicating access codes between said internal bus and said peripheral bus.

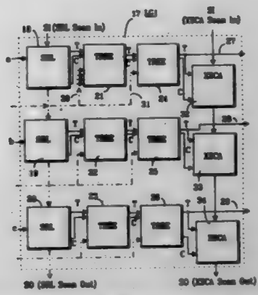
5,299,136

FULLY TESTABLE DCVS CIRCUITS WITH SINGLE-TRACK GLOBAL WIRING

Jacquelin Babakanian, Boca Raton; James W. Davis, Delray Beach; Mark S. Garvin, Boca Raton; Robert M. Swanson, Boca Raton; Nandor G. Thoma, Boca Raton, and David M. Wu, Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 5, 1991, Ser. No. 711,466
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—488 **13 Claims**

1. A differential Cascode Voltage Switch (DCVS) circuit comprising:
first and second groups of DCVS circuit trees; each tree having at least one complementary pair of data signal inputs and at least one complementary pair of data signal outputs; each group containing plural DCVS trees and input interfacing circuit means coupled between said data signal inputs of individual trees int eh respective group and printed circuit conductors connecting data signal sources external to the respective group, said interfacing circuit means applying data signals from said external sources to said tree inputs in complementary paired (dual track) forms;
said printed circuit conductors including at least one discrete conductor forming a single track conductive connection from an output of a said tree in said first group to the said interfacing circuit means in said second group; each said single track conductive connection serving to transfer data signals between said groups only in single-track (non-complementary) form; and
said interfacing circuit means in said second group including



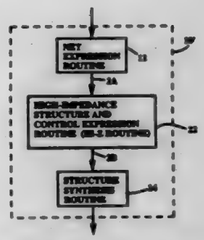
means for converting signals received through each said single track connection from single track to complementary form and means for applying the converted signals in said complementary form to data signal inputs of specific trees in said second group;
whereby data signals generated by trees in said first group are carried in single-ended form over individual said single track connections and applied by said interfacing circuit means in said second group, in dual-track complementary form, to inputs of specific tree circuits in said second group.

5,299,137

BEHAVIORAL SYNTHESIS OF CIRCUITS INCLUDING HIGH IMPEDANCE BUFFERS

Christopher H. Kingsley, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 505,288, Apr. 5, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 970,601
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **23 Claims**



1. A method for synthesizing circuit structures comprising the steps of:
firstly, reducing a series of hardware description language commands to a series of net expressions on a digital computer;
secondly, analyzing said series of net expressions for the presence of high impedance states on said digital computer and producing an associated high impedance control expressions when one or ore high impedance states are found;

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thirdly, synthesizing a circuit specified by said hardware description language commands on said digital computer by utilizing said net expressions and said high impedance control expressions; and

fourthly, transforming said synthesized circuit into a plurality of integrated circuit masks for producing integrated circuits embodying the functionality specified by said hardware description language commands.

5,299,138

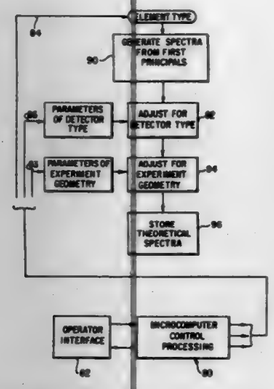
DESK TOP SPECTRUM ANALYZER

Charles E. Fiori, McLean, Va., and Carol R. Swyt, Germantown, Md., assignors to The United States of America as represented by the Secretary of Commerce and The United States of America as represented by the Department of Health and Human Services, both of Washington, D.C.

Filed Aug. 9, 1991, Ser. No. 743,072

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—498 **22 Claims**



1. A spectrum analyzer system comprising:

a spectrum analyzer;

a data interface means for porting spectra data from an x-ray acquisition system to said spectrum analyzer; and

output interface means driven by said spectrum analyzer for providing output data in a desired form;

wherein said spectrum analyzer comprises:

a microcomputer means comprising processing means for processing spectra data according to a selected one of a plurality of control modes and a controlling means for selectively configuring the processing means for processing said spectra data according to said selected control mode,

operator interface means comprising keyboard/mouse means for receiving commands from an operator to set said selected control mode, and display means for displaying at least one of said selected control mode and spectra data processed according to said control mode,

storage means connected to said microcomputer means for storing at least spectra data,

input device means connected to said microcomputer means for receiving said data interface means, and

output device means connected to said microcomputer means for driving said output interface means; and

wherein said display means comprises:

overlay means for forming an overlaid image from a plurality of spectra so that each spectrum of said plurality of spectra is distinguishable,

annotation means for marking points in and labeling said overlaid image, and

display apparatus for displaying said marked and labeled overlaid image to said operator.

5,299,139

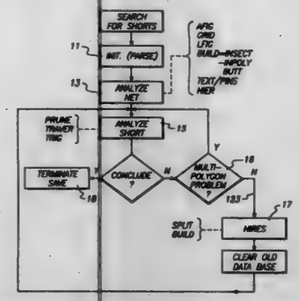
SHORT LOCATOR METHOD

Allen Baisuck, San Jose, Calif., and William W. Hoover, III, Ballston Lake, N.Y., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Jun. 21, 1991, Ser. No. 718,969

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **7 Claims**



1. A computer implemented method for analyzing an electrical node of a circuit layout to locate erroneous connections thereon, the method comprising the steps of:

forming a representation of the area of an electrical node including the erroneous connections therein for analysis;

segregating the area of the electrical node into a plurality of individual polygons oriented in contiguous array within said area wherein said step of segregating includes the substeps of:

identifying all obtuse angles along the perimeter of the area of the electrical node including the erroneous connections therein; and

forming alternate substantially horizontal and vertical divisions of the area of the electrical node at the locations of the obtuse angles in selected sequence along the perimeter of said area to form thereby a plurality of individual polygons in contiguous array; and

analyzing each individual polygon for proper connection to a contiguous polygon commencing from an initial starting point on a polygon within the area of the node.

5,299,140

MEANS AND METHOD FOR MEASUREMENT OF POROUS MATERIALS

Mark D. Ankeny, and Mark Burkhard, both of Albuquerque, N. Mex., assignors to Daniel B. Stephens & Associates, Inc., Albuquerque, N. Mex.

Filed Jun. 23, 1992, Ser. No. 902,386

Int. Cl.[5] G01N *13/00*

U.S. Cl. 364—497 **37 Claims**

20. A method of measuring physical and chemical properties in a porous material comprising:

placing a porous sample in a container;

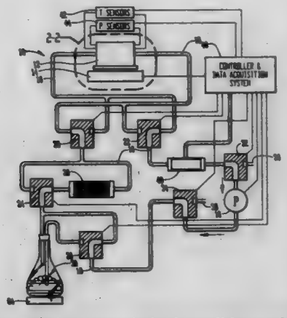
adjusting air flow through the sample;

adjusting humidity of the sample;

measuring parameters related to the sample; and

so that measures related to hydraulic, pneumatic, physical, and chemical properties can be made concurrently, compared over time against one another, and used to derive parameters or characteristics based on the measures, and

so that conditions related to hydraulic, pneumatic, physical, and chemical properties can be adjusted to analyze



effect on and to create desired conditions relative to the sample.

5,299,141

AUTOMATIC FLUID MONITORING AND SAMPLING APPARATUS AND METHOD

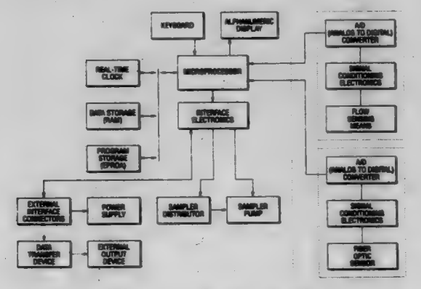
William G. Hungerford, and William D. Dickinson, both of Medina, N.Y., assignors to American Sigma, Inc., Medina, N.Y.

Continuation-in-part of Ser. No. 846,602, Mar. 5, 1992, and Ser. No. 612,832, Nov. 13, 1990, Pat. No. 5,172,332, which is a continuation-in-part of Ser. No. 455,981, Dec. 22, 1989, Pat. No. 5,091,863. This application Sep. 30, 1992, Ser. No. 954,288

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] G01F *11/00*

U.S. Cl. 364—510 **31 Claims**



1. An apparatus for automatically collecting samples from a fluid stream and for monitoring at least one analyte on a real-time basis, according to at least one mode of operation selected by a user, comprising:

means for controlling said apparatus;

a fluid sampling assembly having an inlet for receiving fluid from a fluid stream;

power means for supplying power to said apparatus;

said fluid sampling assembly, said control means and said power means comprising an integral operating unit;

a fiber optic sensor for detecting values of said analyte in said fluid stream and for outputting signals related thereto, said fiber optic sensor being selectively connected to said integral operating unit; and

said control means comprising a microprocessor, program memory and data memory, wherein:

said program memory stores at least one equation for computing values of said analyte;

said microprocessor receives said signals related to said analyte from said fiber optic sensor and utilizes said program memory to calculate values of said analyte based on said signals;

said at least one mode of operation which may be selected by the user includes a first mode of operation in which sampling is triggered by at least one predetermined value of said analyte being monitored;

said data memory stores user-selected input parameters including operating mode selection data and said at least one predetermined value of said analyte;

said microprocessor controls said fluid sampling assembly according to said at least one mode of operation selected by the user, based on a deviation of computed values of said analyte from said user-selected predetermined value of said analyte; and

said data memory stores fluid sampling data and analyte data.

5,299,142

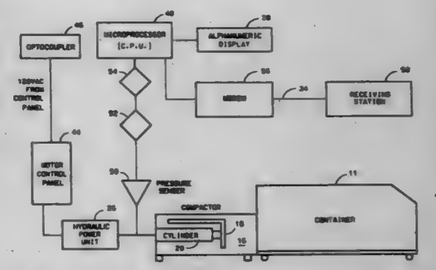
METHOD AND APPARATUS FOR DETERMINING THE FULLNESS OF A WASTE COMPACTOR

Ronald L. Brown, Vernon, Ala., and Rick J. Hemingway, Lawrenceville, Ga., assignors to Marathon Equipment Company, Vernon, Ala.

Filed Apr. 6, 1992, Ser. No. 863,567

Int. Cl.[5] G01N *7/00*

U.S. Cl. 364—558 **31 Claims**



26. The method of determining the percentage fullness of a plurality of compactors, each compactor having a reciprocating ram and a container and means for monitoring the fullness of the container, comprising the steps of:

a) determining the percentage fullness of each container by counting the number of reciprocations of the associated ram and monitoring the hydraulic pressure applied to the ram during each reciprocation;

b) locally indicating the percentage fullness of the container upon the completion of each reciprocation; and

c) transmitting to a remote receiving station for each compactor the percentage fullness and a unique identifier for the associated compactor.

5,299,143

DISPLACEMENT DETECTING APPARATUS

Richard J. Hellings; Masakazu Nakazato; Yoichi Shimoura, and Hideki Yamagata, all of Sagamihara, Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 763,733

Claims priority, application Japan, Sep. 28, 1990, 2-258901

Int. Cl.[5] G01B *7/14*

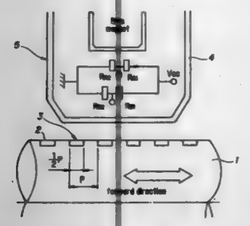
U.S. Cl. 364—561 **15 Claims**

1. An apparatus for detecting the displacement of a piston rod in a cylinder comprising:

a magnetic scale comprising a non-magnetic material embedded in the piston rod with a predetermined pitch interval in the direction of motion of said piston rod,

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a pair of magnetic sensors positioned to output two sine waves with a phase difference of 90° with respect to the pitch interval of said magnetic scale,
means for updating and storing the peak voltages output by said sensors at each pitch interval of the magnetic scale,
means for computing a center voltage of the oscillation from said peak voltages at each pitch interval,
means for computing a coarse displacement from the result of comparing said computed center voltages and said sensor outputs,
means for computing correction coefficients of said sensor outputs from said peak voltages and said center voltages,



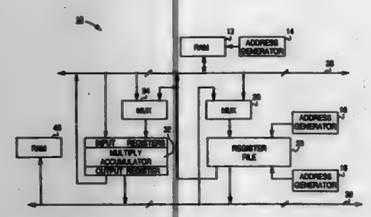
means for compensating said sensor output signal from said correction coefficients to produce two compensated signals,
means for computing and outputting a fine displacement signal from an inverse trigonometric function using said two compensated signals, and
a displacement computing means for outputting a displacement signal comprising means for adding said coarse displacement to said fine displacement signal,
said peak voltage updating and storing means comprising means for memorizing the peak voltages output by the sensors over the entire stroke of the piston rod.

5,299,144

ARCHITECTURE FOR COVARIANCE MATRIX GENERATION

John G. Bartkowiak, and Michael A. Nix, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 17, 1992, Ser. No. 900,000
Int. Cl.[5] G06F *7/38, 15/336*
U.S. Cl. 364—715.01 **14 Claims**



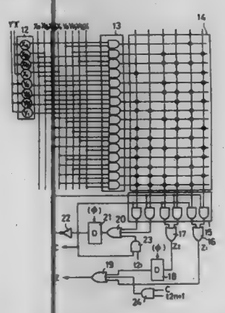
1. An apparatus for generating a first row of a covariance matrix, the apparatus comprising:
a memory containing an array of values representative of a plurality of samples;
a circular buffer coupled to the memory, the circular buffer being configured to provide a predetermined number of memory locations;
a multiply-accumulator coupled to the memory and the circular buffer;
means for transmitting a sequential subset of the array of values from the memory to the multiply-accumulator to generate a first element of the first row of the covariance matrix; and
means for simultaneously transmitting to the multiply-accumulator a first series of sequential subsets of the array of values from the memory, and a second series of sequential subsets of the array of values from the circular buffer, to generate the remaining elements of the first row of the covariance matrix.

5,299,145

ADDER FOR REDUCING CARRY PROCESSING

Yukihiro Yoshida, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,331
Claims priority, application Japan, Sep. 12, 1991, 3-233219
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—746.2 **9 Claims**



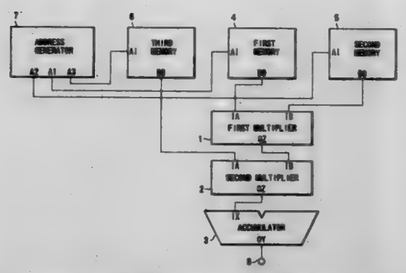
1. An adder for outputting a sum of an addend and an augend of binary logic, comprising:
subdividing means for subdividing an addend and an augend of binary logic into bit groups each having a specified number of bits to be represented by one digit of multi-valued logic;
binary-multivalue conversion circuits for converting one bit group of each of an addend and an augend of binary logic to one digit of each of an addend and an augend of multi-valued logic;
an equal-value circuit, connected to receive said one digit of each of the addend and the augend of multi-valued logic, for converting the received one digit of each of the addend and the augend to data of plural bits, each bit of said data having two states and representing a respective one logical level of the multi-valued logic, so that one bit of data converted from the received one digit of each of the addend and the augend is to be set at one state according to a level thereof; and
addition means, connected to receive said data converted from the one digit of each of the addend and the augend, for executing a logical operation in binary logic between received data so that a result of the logical operation represents a sum of one bit group of the addend and a corresponding one bit group of the augend of binary logic, and for outputting said result of the logical operation in binary logic.

5,299,146

MATRIX ARITHMETIC CIRCUIT

Toshiyuki Kanoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 618,843, Nov. 28, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,508
Claims priority, application Japan, Nov. 28, 1989, 1-306497
Int. Cl.[5] G06F *7/52, 738*
U.S. Cl. 364—754 **2 Claims**



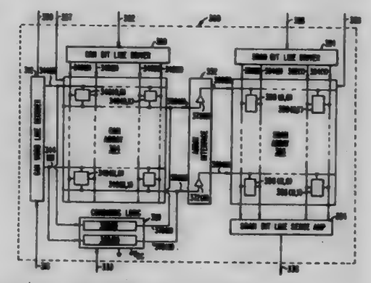
1. A matrix arithmetic circuit, including first, second, and third memories for respectively storing first, second, and third matrices, for performing a matrix multiplication based on the first, second, and third matrices, comprising:
an address generator for generating addresses of said first, second, and third memories to read out matrix elements from said first, second, and third memories at predetermined timings;
a first multiplier exclusive of accumulator means or memory means for multiplying elements of the first matrix with respective elements of the second matrix
a second multiplier for multiplying elements of a resulting product output by said first multiplier with respective elements of said third matrix, wherein said elements of said resulting product are directly supplied from said first multiplier to said second multiplier; and
a single accumulator for accumulating a multiplication result from said second multiplier to obtain a matrix multiplication result.

5,299,147

DECODER SCHEME FOR FULLY ASSOCIATIVE TRANSLATION-LOOKASIDE BUFFER

John C. Holst, San Jose, Calif., assignor to Intergraph Corporation, Huntsville, Ala.

Filed Feb. 22, 1993, Ser. No. 23,783
Int. Cl.[5] G11C *15/00, 13/00*
U.S. Cl. 365—49 **20 Claims**



7. A memory apparatus comprising:
a virtual memory having a plurality of rows of memory cells for storing a corresponding plurality of virtual addresses;
virtual address input means, coupled to said virtual memory, for providing an input virtual address to said virtual memory;
a plurality of match signal lines, each match signal line being coupled to a corresponding one of said plurality of rows of virtual memory cells;
comparing means, coupled to said plurality of rows of virtual memory cells, to said virtual address input means, and to said plurality of match signal lines, for comparing said input virtual address to said plurality of stored virtual addresses and for providing a match signal on a selected match signal line when a stored virtual address in a row of virtual memory cells corresponding to said selected match signal line matches said input virtual address;
a plurality of virtual address activating lines, each virtual address activating line being coupled to a corresponding one of said plurality of rows of virtual memory cells;
address activating means, coupled to said plurality of virtual address activating lines, for providing virtual address activating signals on said plurality of virtual address activating lines for selectively activating said plurality of rows of virtual memory cells;
match signal generating means, coupled in parallel with said virtual memory to said plurality of virtual address activating lines and to said plurality of match signal lines, for selectively generating match signals on said plurality of match signal lines in response to said virtual address activating signals;
a real memory having a plurality of rows of memory cells for storing a corresponding plurality of real addresses;
a plurality of real address activating lines, each a real address activating line being coupled to a corresponding one of said plurality of rows of real memory cells;
detecting means, coupled to said plurality of match signal lines and to said plurality of real address activating lines, for detecting when a match signal is present on one of said plurality of match signal lines and providing a real address activating signal on a corresponding one of said plurality of real address activating lines for selectively activating said plurality of rows of real memory cells.

5,299,148

SELF-COHERENCE RESTORING SIGNAL EXTRACTION AND ESTIMATION OF SIGNAL DIRECTION OF ARRIVAL

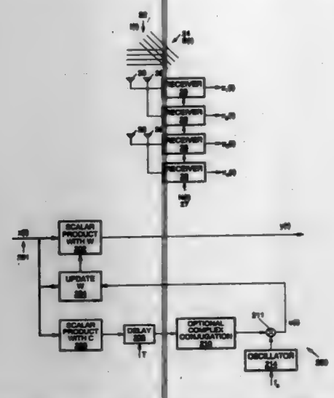
William A. Gardner, Yountville; Stephan V. Schell, Livermore, and Brian G. Agee, San Jose, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 264,256, Oct. 28, 1988, abandoned. This application May 22, 1990, Ser. No. 526,840
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—574 **41 Claims**

1. A processor adapting an array of antennas upon which one or more signals impinges and extracting a signal of interest s(t) therefrom, comprising:
(a) means for receiving on an array of antennas upon which one or more signals impinges, a plurality of input signals represented by a signal input vector x(t) having M components in which each component comprises an electrical signal representing a complex measurement of a self-coherent signal of interest s(t) contained in said input signals together with interference from noise and/or other signals, said signal of interest s(t) having a measure of complex-valued self-coherence;
(b) reference signal means, coupled to an output of said means for receiving, for generating a reference signal vector r(t) from said signal input vector x(t);
(c) weight means for providing and updating a weight vector w having M components from said signal input vector x(t), said weight means having a first input coupled to an output of said means for receiving and a second input coupled to an output of said reference signal means, said weight means including means for preserving phase information of the complex-valued self-coherence of the signal

of interest s(t) when generating an output signal y(t), said means for preserving phase information having a first input coupled to an output of said reference signal means and a second input coupled to an output of said weight means; and

(d) summing means for generating an output signal y(t)



having a measure of self-coherence, said summing means having a first input coupled to an output of said means for receiving and a second input coupled to an output of said weight means;

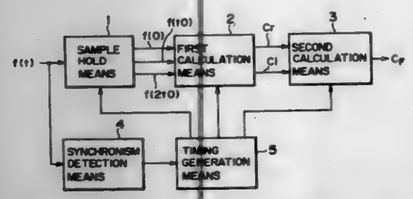
(e) wherein said weight means provides and updates said weight vector w to maximize self-coherence in said output signal y(t).

5,299,149

SYSTEM FOR DETECTING ALTERNATING VOLTAGE AND/OR CURRENT

Noboru Morita, Yokohama, and Makoto Kasunoki, Fukaya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1991, Ser. No. 696,571
Claims priority, application Japan, May 8, 1990, 2-116791
Int. Cl.[5] G06F *15/56*
U.S. Cl. 364—576 **5 Claims**



1. A system for detecting instantaneous values of electrical parameters of an electrical signal as a plurality of sampled values to determine an amplitude of said electrical parameters from said sampled values, said system comprising:

a sample-hold means for sampling and holding values of at least one of said electrical parameters, sampled over a fixed sampling period, as sampled values $f(mt_o)$ and outputting sample signals representing said sampled values;

a CPU outputting a hold command at predetermined time intervals to said sample-hold means and outputting a select command every time said hold command is outputted, said sample-hold means holding a value of one of said electrical parameters at each hold command as said sampled values $f(mt_o)$;

calculation means, receiving said sample signals from said sample-hold means, for determining a real part Cr and an imaginary part Ci of a Fourier coefficient of a fundamental wave component of a positive phase sequence of said one of said electrical parameters and generating electrical signals corresponding to said real and imaginary part, and for generating an amplitude of said one of said electrical parameters from said fundamental wave component, using said signals corresponding to said real and imaginary part and outputting an amplitude signal representing said amplitude, said calculation means including, analog calculation means receiving said sample signals representing said sampled values, for multiplying said sampled values $f(mt_o)$, and switch means connected to said analog calculation means, for outputting said sampled values multiplied by predetermined constants as analog data in response to said select command; and

an analog-to-digital converter to convert said analog data to digital data, and

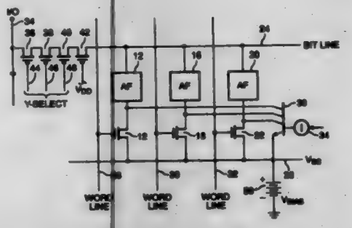
wherein said CPU, forming part of said calculation means, stores said digital data into an internal memory to calculate the real part Cr and the imaginary part Ci of the Fourier coefficient with respect to a fundamental wave of said one of said electrical parameters.

5,299,150

CIRCUIT FOR PREVENTING FALSE PROGRAMMING OF ANTI-FUSE ELEMENTS

Douglas C. Galbraith, Fremont; Michael G. Ahrens, Sunnyvale; Esmat Z. Hamdy, Fremont, and Abdelshafy A. Eltoukhy, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jan. 10, 1989, Ser. No. 295,403
Int. Cl.[5] G11C *17/16*; H01L *27/02*; G06F *7/38*; H03K *19/173*
U.S. Cl. 365—94 **2 Claims**



1. A read only memory array, including:

a plurality of two terminal anti-fuse elements, said two terminal anti-fuse elements being arranged in groups, each of said groups containing a number of said plurality of two terminal anti-fuse elements, have one terminal connected in common to a bit line,

a plurality of select transistors associated with each group of two terminal anti-fuse elements, each of said plurality of select transistors having a source, a drain, and a gate, the individual ones of said plurality of select transistors associated with each group having their sources commonly connected to a source of fixed voltage, said fixed voltage selected to between about 0.5 and 2 volts above ground, each one of said plurality of select transistors having its drain connected to the second terminal of a different two terminal anti-fuse element of said group of two terminal anti-fuse elements, and each one of said plurality of select transistors having its gate connected to one of a plurality of word lines,

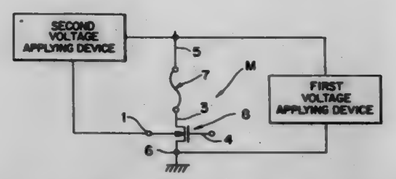
a plurality of transistors connected in series between said bit line and an input/output line, each of said plurality of transistors having a gate coupled to a different one of a plurality of Y-select lines.

5,299,151

METHOD FOR WRITING INTO SEMICONDUCTOR MEMORY

Hiroshi Ishihara, Tenri; Kenichi Tanaka, Nara, and Keizo Sakiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1991, Ser. No. 716,785
Claims priority, application Japan, Jun. 22, 1990, 2-164798
Int. Cl.[5] G11C *19/06*; H01L *27/02*
U.S. Cl. 365—96 **8 Claims**



1. A method of writing into a semiconductor memory including a MOS transistor formed on a surface of a first conductivity type semiconductor substrate and an anti-fuse formed of an insulating film and an upper electrode on a drain of the MOS transistor, said MOS transistor having a source and the drain of a second conductivity type forming respective PN junctions with said semiconductor substrate, wherein the anti-fuse becomes conductive for storing data when a voltage across the drain and the upper electrode causes a dielectric breakdown of the insulating film, the method comprising the steps of:

applying a first voltage across the upper electrode of the anti-fuse and the source of the MOS transistor to cause the dielectric breakdown of the insulating film of the anti-fuse, when the MOS transistor is transistor is turned on; and

applying a second voltage across the upper electrode of the anti-fuse and the semiconductor substrate so that a larger amount of a second current than an amount of a first current required for breaking down the insulating film of the anti-fuse, flows between the upper electrode of the anti-fuse and the semiconductor substrate, said second voltage being of a polarity so as to forward bias the PN junction between the drain and the semiconductor substrate.

5,299,152

ANTI-FUSE MEMORY DEVICE WITH SWITCHED CAPACITOR SETTING METHOD

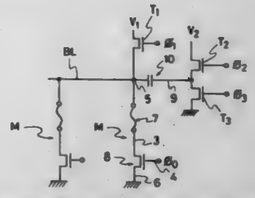
Hiroshi Ishihara, Tenri; Kenichi Tanaka, Nara, and Keizo Sakiyama, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 716,773, Jun. 18, 1991, Pat. No. 5,119,163.
This application Jan. 28, 1992, Ser. No. 827,073
Claims priority, application Japan, Jun. 22, 1990, 2-164797
Int. Cl.[5] G11C *17/16*
U.S. Cl. 365—96 **5 Claims**

1. A method of making a conduction by breaking down an anti-fuse in a semiconductor device that includes a plurality of anti-fuses and a capacitance with one capacitance electrode being connected to first terminals of the anti-fuses, the method comprising the steps of:

turning on a transistor connected between a second terminal of a specific anti-fuse and a basic potential for selecting the specific anti-fuse out of the plurality of anti-fuse;

impressing a first potential which have predetermined potential difference on one capacitance electrode and the first terminal of the specific anti-fuse, and setting the ground level on the other capacitance electrode so as to charge the one capacitance electrode, cutting off the first potential, and impressing a second potential on the other capacitance electrode,



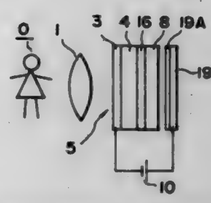
thereby the first potential and the second potential being superposed on one capacitance electrode, applying the superposed potential to the first terminal of the specific anti-fuse to execute a conduction by the breakdown of the specific anti-fuse.

5,299,153

SYSTEM AND MEDIUM FOR RECORDING/REPRODUCING CHARGE LATENT IMAGE

Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa; Hirohiko Shinonaga; Tsutou Asakura, both of Yokohama; Masato Furuya, Yokosuka; Hiromichi Tai, Yokosuka, and Tetsuji Suzuki, Yokosuka, all of Japan, assignors to Victor Company Of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 430,983, Nov. 3, 1989, abandoned. This application Jan. 29, 1992, Ser. No. 826,665
Claims priority, application Japan, Nov. 3, 1988, 63-278228; Mar. 23, 1989, 1-71172; Mar. 24, 1989, 1-72631
Int. Cl.[5] G11C *13/04*; H04N *5/335, 3/14*
U.S. Cl. 365—112 **4 Claims**



1. A system for recording a charge latent image, comprising:

a medium for recording a charge latent image comprised of a laminated body including a transparent electrode, a photoconductive layer, a charge transfer suppressive layer, and a first dielectric layer, wherein said photoconductive layer is between said transparent electrode and said charge transfer suppressive layer, is between said photoconductive layer and said first dielectric layer;

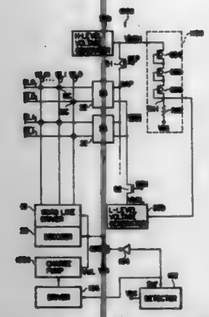
a first electrode having a surface which opposes, in facing spaced relationship, a surface of said first dielectric layer;

means for impressing a voltage between said transparent electrode and said further electrode; and

optical imaging means for projecting optical information from an object through said transparent electrode of said medium.

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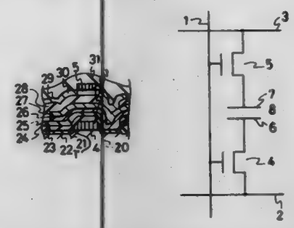
5,299,154
MOS SEMICONDUCTOR DEVICE WITH MEMORY CELLS EACH HAVING STORAGE CAPACITOR AND TRANSFER TRANSISTOR
Yukihito Oowaki, Yokohama; Daisuke Kato, and Daisaburo Takashima, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 2, 1992, Ser. No. 907,645
Claims priority, application Japan, Jul. 2, 1991, 3-161899
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 26 Claims



1. A semiconductor memory system comprising:
an array of memory cells, each of said memory cells including a capacitive element and a data transfer transistor;
bit lines connected to said memory cells;
word lines transverse to said bit lines;
decoder means connected to said word lines, for specifying a selected word line from said word lines;
sense amplifier means connected to said bit lines, for sensing and amplifying a signal voltage read onto a bit line associated with a selected memory cell, said signal voltage being changeable between a first potential defining a bit-line low-level voltage and a second potential being greater than the first potential to define a bit-line high-level voltage; and
low-level voltage generator means connected to said sense amplifier means, for providing as said bit-line low-level voltage a specific voltage which is higher than a source voltage of said memory system to enhance a current cut-off capability of said transistor and to allow said transistor to decrease in a threshold voltage thereof.

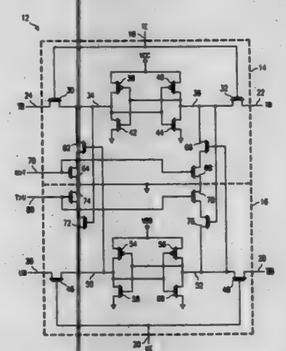
5,299,155
DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH CAPACITOR BETWEEN VERTICALLY ALIGNED FETS
Masahiko Yanagi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 841,522, Feb. 26, 1992, abandoned.
This application Jul. 1, 1993, Ser. No. 84,442
Claims priority, application Japan, Mar. 1, 1991, 3-34870
Int. Cl.[5] G11C *5/02, 5/06*
U.S. Cl. 365—149 2 Claims

1. A dynamic random access memory device for storing two bit information, the dynamic random access memory device being formed on a silicon substrate and comprising:
a first access transistor comprised of a first word line formed on the silicon substrate;
a first bit line making electrical contact with the first access transistor at a first contact region;
a capacitor, the capacitor comprising:
a capacitor first electrode disposed above the first access transistor;
a dielectric film covering the first capacitor electrode; and,
a capacitor second electrode covering the dielectric film;
a second access transistor including a second word line;
a second bit line making electrical contact with the second access transistor at a second contact region;



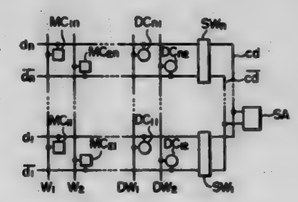
wherein in a vertical direction the capacitor is disposed between the first access transistor and the second access transistor, wherein in the vertical direction the first contact region is aligned with the second contact region, and wherein the first word line and the second word line are electrically connected.

5,299,156
DUAL PORT STATIC RAM WITH BIDIRECTIONAL SHIFT CAPABILITY
Ching-Lin Jiang, Dallas, and Clark R. Williams, Plano, both of Tex., assignors to Dallas Semiconductor Corp., Dallas, Tex.
Continuation of Ser. No. 404,155, Sep. 7, 1989, abandoned, which is a continuation of Ser. No. 203,424, Jun. 7, 1988, Pat. No. 4,873,665. This application Jun. 25, 1990, Ser. No. 542,689
The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.
Int. Cl.[5] G11C *11/419*
U.S. Cl. 365—154 3 Claims



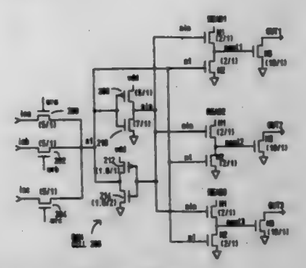
1. An integrated circuit memory, comprising:
first and second pluralities of bitline pairs;
an array of dual storage cells;
each dual storage cell of said array of dual storage cells comprising a first latch connected between a first pair of data nodes and a second latch connected between a second pair of data nodes;
and each dual storage cell of said array of dual storage cells further comprising a first pair of pass transistors connected to said first pair of data nodes and a second pair of pass transistors connected to said second pair of data nodes;
said first pair of pass transistors of each dual storage cell of said array of dual storage cells connected to one pair of said first plurality of bitline pairs, and
said second pair of pass transistors of each dual storage cell of said array of dual storage cells connected to one pair of said second plurality of bitline pairs;
each dual storage cell of said array of dual storage cells connected to receive first and second control signals;
and each dual storage cell of said array of dual storage cells further comprising a transfer circuit
wherein, for each dual storage cell of said array of dual storage cells, the transfer circuit is coupled to said first and second pairs of data nodes and configured
to drive one data node of said second pair of data nodes when said first control signal is activated, which data node driven determined in accordance with logic levels of said first pair of data nodes and
to drive one data node of said first pair of data nodes when said second control signal is activated, which data node of said first pair of data nodes driven determined in accordance with logic levels of said first pair of data nodes.

5,299,157
SEMICONDUCTOR MEMORIES WITH SERIAL SENSING SCHEME
Katsutaka Kimura, Akishima; Takeshi Sakata, Kunitachi, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 9, 1991, Ser. No. 727,114
Claims priority, application Japan, Jul. 9, 1990, 2-179673
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.02 31 Claims



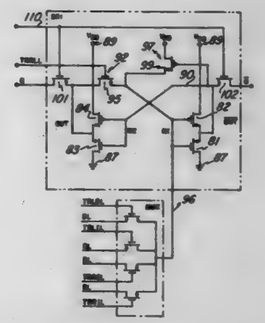
1. A semiconductor memory comprising:
a plurality of word lines;
a plurality of data lines so disposed, with respect to a plan view arrangement, as to intersect said plurality of word lines;
a plurality of memory cells disposed at desired intersections of said plurality of word lines and said plurality of data lines, each memory cell being connected to a corresponding word line and a corresponding data line;
signal sensing means so disposed as to be common to said plurality of data liens; and
a plurality of first signal tranaferring means, each of which having a switching function, for respectively connecting said signal sensing means to said plurality of data lines,
wherein, by selecting one word line from said plurality of word lines, respective signals are read out on said plurality of data lines from memory cells which are connected to said selected word line, and
wherein said respective signals thus read out on said plurality of data lines are successively sensed by said signal sensing means by making successive selections of said plurality of first signal transferring means.

5,299,158
MEMORY DEVICE WITH MULTIPLE READ PORTS
Russell W. Mason, and Jeffry D. Yetter, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 16, 1992, Ser. No. 899,207
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—189.04 4 Claims



1. A memory device comprising:
a plurality of memory cells for storing data;
at least one WRITE port for writing input data values into said plurality of memory cells in response to a WRITE signal; and
a plurality of READ ports for dumping data values stored in said plurality of memory cells to output lines corresponding to said plurality of READ ports in response to a READ signal, each READ port comprising a logic circuit for logically ANDing a value stored in a memory cell to be read with said READ signal and a dump circuit responsive to a logical AND output of said logic circuit for precharging the output line corresponding to said READ port to a predetermined logic level and dumping said value stored in the memory cell to be read to the output line corresponding to said READ port when said logical AND output is true.

5,299,159
SERIAL REGISTER STAGE ARRANGED FOR CONNECTION WITH A SINGLE BITLINE
Anthony M. Ballistreri, Houston, and Andre J. Guillemand, Sugarland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 29, 1992, Ser. No. 905,967
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.04 9 Claims



1. A serial register stage comprising:
a latch circuit having first and second MOS transistor ampli-

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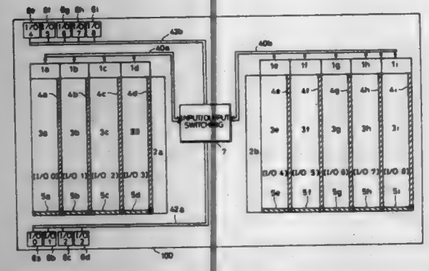
fier circuits, each amplifier circuit including an input node and an output node;
a lead connecting the output node of the first amplifier circuit with the input node of the second amplifier circuit;
a latch disabling circuit for selectively enabling and disabling coupling between the output node of the second amplifier circuit and the input node of the first amplifier circuit; and
a lead for applying an input signal to the input node of the first amplifier circuit.

5,299,160

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF REPAIRING DEFECTIVE BITS

Shigeru Mori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1990, Ser. No. 45,149
Claims priority, application Japan, Jun. 2, 1992, 4-141146
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—200 **27 Claims**



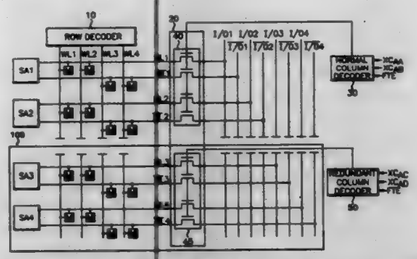
20. A semiconductor memory device that can store an error checking bit and a plurality of data bits, comprising:
a plurality of pads for receiving in parallel said error checking bit and data bits,
a plurality of memory cell array blocks provided corresponding to said plurality of pads, said plurality of memory cell array blocks including an array block for storing a data bit, and an array block for storing said error checking bit,
means for generating an isolating indicating signal for isolating a defective memory cell array block when a defective memory cell array exists in said plurality of memory cell array blocks, and,
connection means provided between said plurality of memory cell array blocks and said plurality of pads for electrically connecting each of said memory cell array blocks and a corresponding pad,
wherein said connection means comprises connection changing means responsive to said isolation indicating signal for dividing memory cell array blocks excluding said defective memory cell array block into a first group including only a memory cell array block for storing a data bit and a second group including memory cell array blocks for storing the remaining data bits and a memory cell array block for storing an error checking bit, and regarding the connection between a memory cell array block of said second group and a pad, changing the connection destination of the memory cell array block of said second group so that the pad corresponding to said defective memory cell array block has one memory cell array block of said second group connected and said pad for an error checking bit is at a non-connected state with a memory cell array block, and electrically isolating said defective memory cell array block from all pads.

5,299,161

METHOD AND DEVICE FOR IMPROVING PERFORMANCE OF A PARALLEL WRITE TEST OF A SEMICONDUCTOR MEMORY DEVICE

Hoon Choi, Teagu, and Dong-Il Shu, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 486,405, Feb. 28, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 794,631
Claims priority, application Rep. of Korea, Dec. 29, 1989, 20103/1989
Int. Cl.[5] G11C *7/00, 29/00*; G06F *11/00*
U.S. Cl. 365—201 **10 Claims**



1. An apparatus for improving performance of a parallel write test in a semiconductor memory comprising:
row decoder means for addressing an array of memory cells;
plural column decoder means, each of said column decoder means having an input for receiving a parallel test signal and each of said column decoder means having a pair of address inputs for receiving a pair of address signals; and
plural gate means for enabling input of data to and output of data from said array of memory cells, each of said plural gate means corresponding to a different one of said plural column decoder means, each of said gate means comprising at least four gate transistors for connecting bit lines of said array of memory cells to a different set of input/output lines;
wherein each of said column decoder means enables each of said gate transistors in a corresponding one of said gate means during a normal mode of operation in response to each of said address signals; and
wherein each of said column decoder means enables all of said gate transistors in all of said gate means in response to said parallel test signal.

5,299,162

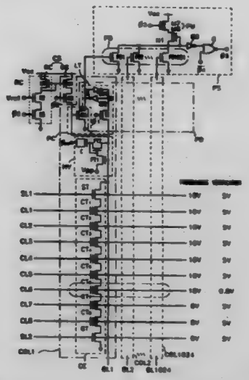
NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND AN OPTIMIZING PROGRAMMING METHOD THEREOF

Jin-ki Kim, Seoul, and Kang-deog Suh, Anyang, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Apr. 30, 1992, Ser. No. 876,460
Claims priority, application Rep. of Korea, Feb. 21, 1992, 92-2689
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **6 Claims**

1. A non-volatile semiconductor memory device comprising:
a memory cell array arranged as a matrix having NAND-structured cell formed by a plurality of serially connected memory cells each of which is formed by stacking a charge storage layer and a control gate on a semiconductor substrate, and capable of electrical erasing by the mutual exchange of a charge between said charge storage layer and said substrate;
data latch means for endowing program data to bit lines of said memory cell array;

high voltage supply means for supplying a predetermined high voltage to said bit lines of said memory cell array in accordance with the status of the data of said data latch means;
current source means for supplying verifying current to said bit lines of said memory cell array in order to confirm the programmed status of data, after programming said data into said memory cell array;



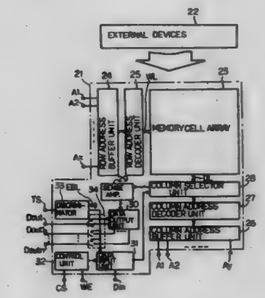
program checking means for inverting the status of data of said data latch means in response to whether or not said verifying current supplied to said bit lines flows through said programmed memory cell when said verifying voltage is supplied to said control gate of said memory cell which is to be verified in said memory cell array; and
program-status detecting means for generating program status detecting signal in response to the inverting operation of the data state of said data latch means by said program checking means.

5,299,163

SEMICONDUCTOR MEMORY DEVICE WITH DISCRIMINATOR FOR DIAGNOSTIC MODE OF OPERATION

Seiichi Mortigami, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 15, 1992, Ser. No. 898,119
Claims priority, application Japan, Jun. 27, 1991, 3-183097
Int. Cl.[5] G11C *13/00*; G06F *11/00*
U.S. Cl. 365—201 **3 Claims**



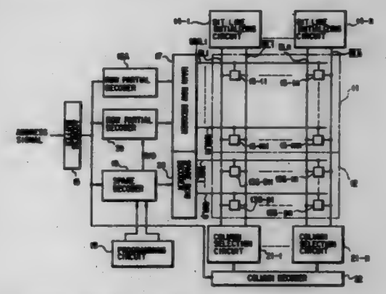
1. A semiconductor memory device having a standard mode for data access and a diagnostic mode for circuit components, said device comprising:
a) a memory cell array accessible in said standard mode with external signals, each of said external signals swinging its voltage level in a predetermined voltage range, and being subjected to a test operation in said diagnostic mode;
b) peripheral circuits for giving an external device access said memory cell array in said standard mode, and for carrying out said test operation in said diagnostic mode; and
c) a discriminator responsive to an instruction signal indicative of said test operation, for enabling said peripheral circuits to carry out said test operation, said instruction signal having an active level outside said predetermined voltage range, said discriminator comprising
c-1) a step-down circuit coupled with a test pin supplied with said instruction signal, and implemented by a first series combination of a load transistor of a first channel conductivity type and a resistive element coupled between a power voltage line and said test pin, said test pin being further coupled with the gate electrode of said load transistor,
c-2) a level discriminating circuit coupled with said step-down circuit for checking said test pin to see whether or not the voltage level at said test pin is outside said predetermined voltage range, and
c-3) a control signal generating circuit associated with said level discriminating circuit, and operative to produce a control signal indicative of said test operation when said level discriminating circuit confirms that the voltage level at the test pin is outside said predetermined voltage range.

5,299,164

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT CIRCUIT

Hideki Takeuchi; Shigeyuki Hayakawa, both of Yokohama, and Tomoaki Yabe, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 23, 1993, Ser. No. 21,515
Claims priority, application Japan, Feb. 24, 1992, 4-36073
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **14 Claims**



1. A semiconductor memory device comprising:
a main memory cell array having memory cells arranged in a matrix form;
main word lines each connected to those of said memory cells of said main memory cell array which are arranged on a corresponding row;
a spare memory cell array having spare memory cells arranged in a matrix form, the spare memory cells of the same number as the memory cells connected to each of said main word lines being arranged on each row of said spare memory cell array;
spare word lines each connected to those of said spare mem-

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ory cells of said spare memory cell array which are arranged on a corresponding row;

spare decoder means having a defective row address programmed therein when at least one of said memory cells of said main memory cell array or at least one of said main word lines becomes defective, comparing the programmed defective row address with an input row address signal to check whether or not the compared addresses coincide with each other, outputting a control signal corresponding to the coincidence/non-coincidence of the compared row addresses, and outputting a first partial decode signal of the input address signal when the compared addresses coincide with each other;

spare row decoder means for receiving the first partial decode signal and selectively driving said spare word lines;

row partial decoder means for receiving the input row address signal and the control signal and outputting a second partial decode signal of the input row address signal when the control signal indicates the non-coincidence of the addresses; and

main row decoder means for decoding the second partial decode signal and selectively driving said main word lines.

5,299,165

SEMICONDUCTOR MEMORY HAVING ONE-TRANSISTOR/ONE-CAPACITOR MEMORY CELLS AND HAVING BOTH IMPROVED NOISE RATIO AND HIGH DENSITY INTEGRATION

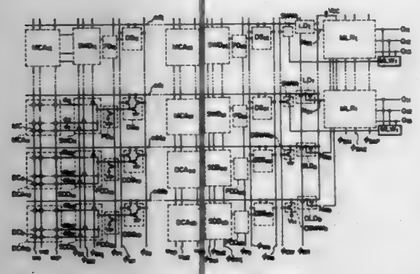
Katsutaka Kimura, Akishima; Takeshi Sakata, Kunitachi, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd, Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,001

Claims priority, application Japan, Oct. 17, 1990, 2-276293; Nov. 28, 1990, 2-322967

Int. Cl.[5] G11C *11/34, 7/00*

U.S. Cl. 365—210 **19 Claims**



1. A semiconductor memory, comprising:

a plurality of word lines;

a plurality of data lines disposed so as to intersect said plurality of word lines;

memory cells each consisting of one transistor and one capacitor and disposed at given cross-points between said plurality or word lines and said plurality of data lines;

a dummy data line provided in common to said plurality of data lines;

a plurality of dummy cells disposed at given cross-points between said plurality of word lines and said dummy data line for generating a reference signal;

signal converting means connected electrically to said plurality of data lines, respectively, and to said dummy data line; and

differential signal detecting means provided for said plurality of data lines, respectively;

wherein said signal converting means associated with each of said plurality of data lines has an output electrically connected to one of differential inputs of said differential signal detecting means, and

wherein said signal converting means, associated with said dummy data line, has an output which is electrically connected to another of the differential inputs of said differential signal detecting means.

5,299,166

DEVICE FOR PREVENTING EXCESS ERASING OF A NAND-TYPE FLASH MEMORY AND METHOD THEREOF

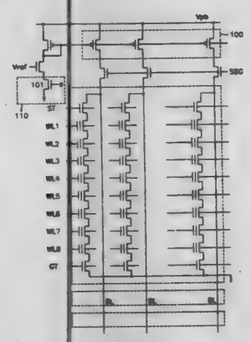
Kang-Deog Suh, Kyungki-do, and Jin-Ki Kim, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Jul. 28, 1992, Ser. No. 920,643

Claims priority, application Rep. of Korea, Aug. 14, 1991, 1991-14096

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—218 **23 Claims**



1. A device for achieving optimum erasure of the memory cells of a NAND type flash EEPROM, comprising:

a bit line;

word lines;

a memory string of cell transistors with gates respectively connected to said word lines and channels cascaded between said bit line and a ground terminal;

high voltage supplying means connectable to said bit line and said memory string, for generating a first high voltage;

a bit line selection transistor with a channel connected between said high voltage supplying means and said memory string, and a gate connected to a bit line selection signal; and

erasing voltage applying means coupled to said bit line selection transistor and said memory, string for applying a first operational voltage to the gate of said bit line selection transistor and an erasing voltage to the gates of said cell transistors during a first erasing operation, and for applying a second operational voltage to the gate of a selected cell transistor from said cell transistors, a third operational voltage to the gates of one group of said cell transistors between said selected cell transistor and said ground terminal, a second high voltage to the gates of another group of said cell transistors between said bit line and said selected cell transistor and to the gate of said bit line selection transistor, and said first high voltage to the drain of said selected cell transistor during a second erasing operation.

5,299,167

BIPOLAR RAM APPARATUS

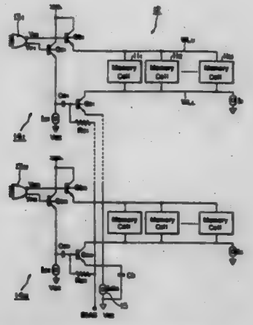
Motoyasu Yano, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jan. 15, 1993, Ser. No. 5,126

Claims priority, application Japan, Jan. 23, 1992, 4-034401

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—204 **3 Claims**



1. A bipolar RAM apparatus comprising:

a memory cell array where a plurality of memory cells connected in parallel between a pair of word lines are arranged in N rows;

N decoders provided for the individual rows of said memory cell array respectively and each serving to select the corresponding row of said memory cells;

N drive transistors for driving, when turned on, the rows of said memory cells individually in response to respective drive outputs of said decoders;

N discharge circuits comprising discharge transistors whose emitters are mutually connected in common between the circuits and whose collectors are connected respectively to the word lines in the individual rows, coupling capacitors for applying inverted signals of the drive outputs at a nonselected time to the bases of said discharge transistors, and resistors for applying a fixed bias voltage to the bases of said discharge transistors; and

a constant current source connected between the emitter common node of said discharge transistors and a reference potential point.

5,299,168

CIRCUIT FOR DETECTING REFRESH ADDRESS SIGNALS OF A SEMICONDUCTOR MEMORY DEVICE

Kyung-Woo Kang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 22, 1993, Ser. No. 50,780

Claims priority, application Rep. of Korea, Apr. 22, 1992, 6728/1992

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—222 **12 Claims**

1. A semiconductor memory device having a self-refresh function, comprising:

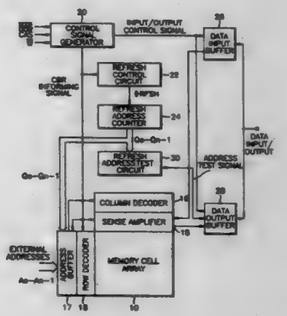
a memory cell array including a plurality of memory cells;

selection means for selecting certain of said memory cells;

a refresh control circuit for generating a refresh clock;

a refresh address counter for successively generating a predetermined plurality of refresh addresses in response to said refresh clock;

means for applying said successive refresh addresses to said selection means; and



a refresh address test circuit which receives said successive refresh addresses to detect whether said predetermining plurality of refresh addresses has been generated.

5,299,169

MULTIPORT MEMORY DEVICE COMPRISING RANDOM ACCESS PORT AND SERIAL ACCESS PORT

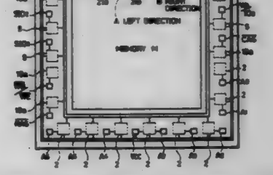
Takayuki Miyamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,262

Claims priority, application Japan, Jun. 25, 1991, 3-152876

Int. Cl.[5] G11C *5/06*

U.S. Cl. 365—230.05 **4 Claims**



1. A dual port memory device including a substantially rectangular semiconductor substrate, a memory cell array having a plurality of memory cells, a random access device that can access in random said plurality of memory cells, and a serial access device that can access in series said plurality of memory cells, said dual port memory device comprising:

a first power supply terminal to receive a first power supply voltage and positioned proximate a first side of said semiconductor substrate;

a second power supply terminal to receive a second power supply voltage and positioned proximate a second side of said semiconductor substrate, opposite said first side;

a first power supply wiring circumscribing an outer periphery of said memory cell array and connected to said first power supply terminal;

a plurality of random data input/output terminals for receiving input/output data by said random access, and a plurality of random data input/output buffers provided corresponding to said plurality of random data input/output terminals; and

a plurality of serial data input/output terminals for receiving input/output data by said serial access, and a plurality of serial data input/output buffers provided corresponding

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to said plurality of serial data input/output terminals; wherein

said memory device is capable of data input/output of a unit of a plurality of bits through said plurality of random data input/output terminals and said plurality of serial data input/output terminals,

said semiconductor substrate has first and second surface regions defined by a line passing through said first and second power supply terminals, wherein said first and second surface regions are mutually exclusive with respect to the line;

all said plurality of random data input/output buffers are connected to said first power supply wiring in said first surface region, and

all said plurality of serial data input/output buffers are connected to said first power supply wiring in said second surface region.

5,299,170

APPARATUS FOR MEASURING PULSE WIDTH USING TWO-PHOTON ABSORPTION MEDIUM

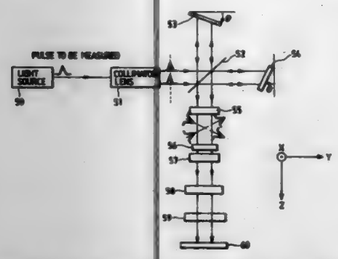
Masaaki Shibata, Atsugi, and Yasuo Tomita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1992, Ser. No. 894,292

Claims priority, application Japan, Jun. 7, 1991, 3-163648; Jul. 19, 1991, 3-204942; Oct. 9, 1991, 3-289298; Jan. 24, 1992, 4-034424

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—345 **20 Claims**



1. A method of measuring a pulse width of a light pulse, comprising the steps of:

incidence of a first light and a second light on a medium having a two-photon absorption effect, said first light and second light being light pulse;

detection of at least said first light of said first and second lights passing through said medium; and

measurement of the pulse width of said first light or said second light of the base of the result of said detection.

5,299,171

TORPEDO DECOY SIGNAL GENERATOR

Philip K. White, Lynn Haven, and Clell A. Dildy, Jr., Panama City, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 20, 1970, Ser. No. 62,782

Int. Cl.[5] H04K *3/00*

U.S. Cl. 367—1 **16 Claims**

1. A signal generator, comprising in combination:

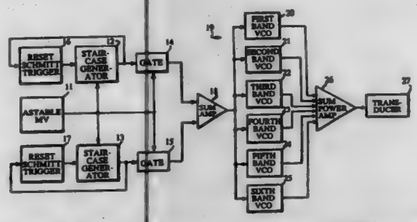
means, having a control input, a reset input, and an output, for generating a first increasing staircase voltage signal that advances by predetermined incremental voltage steps between first predetermined minimum and maximum voltages in response to a control signal timely supplied to the control input thereof;

means, having a data signal input, a control input, and an output, with the data signal input thereof connected to the output of said first increasing staircase voltage signal generating means, for timely gating the predetermined incremental voltage steps of the first increasing staircase voltage signal generated thereby in response to the aforesaid control signal being supplied to the control input thereof;

means connected between the output and the reset input of said first increasing staircase voltage signal generating means for the resetting thereof to said first minimum voltage whenever the first increasing staircase voltage signal generated thereby is advanced to said first maximum voltage;

means, having a control input, a reset input, and an output, for generating a second increasing staircase voltage signal that advances by predetermined incremental steps between second predetermined minimum and maximum voltages in response to the aforesaid control signal being timely supplied to the control input thereof;

means, having a data signal input, a control input, and an output, with the data signal input thereof connected to the



output of said second increasing staircase voltage signal generating means, for timely gating the predetermined incremental voltage steps of the second increasing staircase voltage signal generated thereby in response to the aforesaid control signal being supplied to the control input thereof;

means connected between the output and the reset input of said second increasing staircase voltage signal generating means for the resetting thereof to said second minimum voltage whenever the second increasing staircase voltage signal generated thereby is advanced to said second maximum voltage;

means connected to the respective control inputs of said first and second increasing staircase voltage signals generating means and said gating means for simultaneously supplying said control signal thereto; and

means connected to the outputs of said first and second increasing stairstep voltage signal gating means for adding the first and second increasing stairstep voltage signals gated thereby.

5,299,172

METHOD FOR ADJUSTING CRYSTAL HYDROPHONE OUTPUT

Algernon S. Badger, East Bernard, and Gary J. Craig, Houston, both of Tex., assignors to Halliburton Geophysical Services, Inc., Houston, Tex.

Filed Feb. 3, 1993, Ser. No. 13,052

Int. Cl.[5] H04B *17/00*

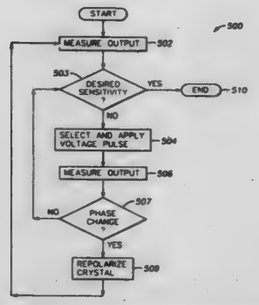
U.S. Cl. 367—13 **25 Claims**

1. A method of precisely fixing the output sensitivity of a polarized crystal hydrophone to a selected sensitivity level, comprising the steps of:

(a) applying a pressure input to the hydrophone while measuring an output produced by the hydrophone;

(b) selecting an input voltage of a first polarity be applied to the hydrophone;

(c) applying the selected input voltage to the hydrophone; and



(d) repeating steps (a) and (b) until the hydrophone manifests a selected sensitivity level.

5,299,173

METHOD AND APPARATUS FOR UNDERWATER SONAR SCANNING

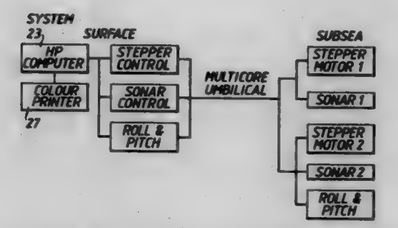
Robert Ingram, Wallsend, United Kingdom, assignor to British Gas plc, United Kingdom

Filed Oct. 31, 1991, Ser. No. 784,324

Claims priority, application United Kingdom, Nov. 1, 1990, 9023726

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—88 **9 Claims**



1. A method of underwater sonar scanning in a sea having a seabed, said method comprising using a sonar head or heads to produce sonar data, the head or heads being mounted on a body immersed in the sea, obtaining, in addition to said sonar data, measurements relating to the position of the body with respect to the seabed and using the measurements in a computer to enable the sonar data to be compensated for the position of the body.

5,299,174

AUTOMATIC CLUTTER ELIMINATION

Steven F. Forestieri, Santa Clara, and Ray S. Spratt, San Jose, both of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 867,038, Apr. 1, 1992, Pat. No. 5,228,009. This application Jan. 26, 1993, Ser. No. 9,279

Int. Cl.[5] G03B *42/06*

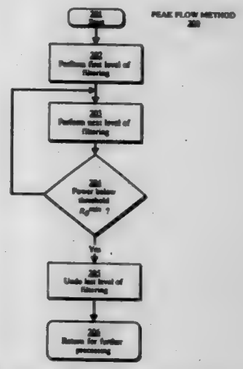
U.S. Cl. 367—135 **33 Claims**

1. A method for automatic clutter elimination from signals comprising the following steps:

a. digitizing a signal to generate n samples;

b. fitting m basis functions to said n samples;

c. iteratively subtracting an i+1 basis function of each of said m basis functions from said n samples and storing the difference in an i+1 difference signal until said i+1 difference signal is less than a threshold; and



d. using said i difference signal for performing a frequency estimate of said signal.

5,299,175

ELECTROACOUSTIC UNIT FOR GENERATING HIGH SONIC AND ULTRA-SONIC INTENSITIES IN GASES AND INTERPHASES

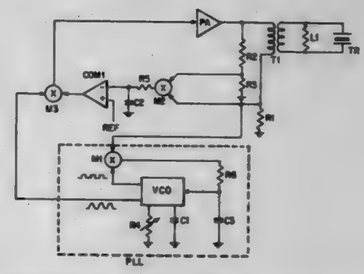
Juan A. Gallego-Juarez; German Rodriguez Corral, both of Madrid; Jose L. San Emetero Prieto, Pozuelo de Alarcon, and Fausto Montoya Vitini, Madrid, all of Spain, assignors to Consejo Superior de Investigaciones Cientificas, Madrid, Spain

Continuation of Ser. No. 928,630, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 720,176, Jun. 5, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,040

Claims priority, application Spain, Oct. 6, 1989, 8903371

Int. Cl.[5] G10K *13/00*; B06B *1/02, 3/04*

U.S. Cl. 367—138 **30 Claims**



1. Electroacoustic unit for generating sonic and ultrasonic energy in gases and interphases consisting of an electromechanical transducer system and an electronic device for controlled generation of an electric power signal in which the electroacoustic unit comprises: a) a transducer system having a transducer element, a mechanical vibration amplifier and a radiator shaped like a plate having a discontinuous profile on both surfaces, said transducer element, said vibration amplifier and said radiator being tuned in order to resonate at a work frequency; and b) an electronic generator having a power amplifier, a PLL (Phase Locked Loop) circuit, a circuit measuring the power signal and a circuit controlling the power signal.

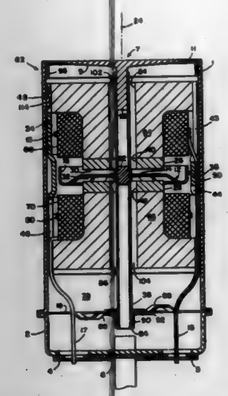
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,176

BALANCED ARMATURE TRANSDUCERS WITH TRANSVERSE GAP

George C. Tibbetts, Camden, Me., assignor to Tibbetts Industries, Inc., Camden, Me.

Filed Dec. 20, 1991, Ser. No. 811,308
Int. Cl.[5] H04R *25/00*
U.S. Cl. 367—175 21 Claims



1. An electromechanical transducer including, in combination,

means forming a magnetic circuit and comprising first and second permanent magnets, a structure substantially connecting a pair of opposite poles of the respective magnets, and a pair of opposed pole faces respectively adjacent the other pair of poles of the magnets, said circuit forming a bias field in a region between the pole faces,

an armature having magnetically permeable first and second parts, the first part extending within said region and having a pair of major faces each opposing one of said pole faces across a working gap, the armature being vibratory in an operative direction to cause the working gaps to vary,

means supporting the armature for vibration in said direction and resiliently tending to restore said first part to a predetermined position in said region,

said second part extending toward said structure to form therewith a low reluctance gap between surfaces having substantial projections in said direction, said low reluctance gap completing respective signal flux conductive paths between said second part and each of said magnets, and

an electrical signal coil located to be coupled to flux changes in a working gap.

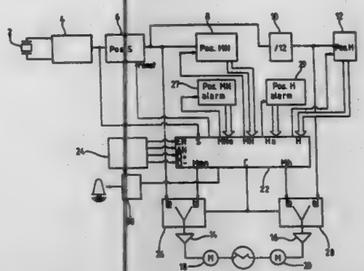
5,299,177

ANALOG TIMEPIECE ABLE TO DISPLAY ADDITIONAL INFORMATION

Daniel Koch, Crémines, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Granges, Switzerland

Filed Aug. 30, 1993, Ser. No. 113,068
Claims priority, application Switzerland, Sep. 25, 1992, 03004/92
Int. Cl.[5] G04B *23/02, 19/24, 19/04*
U.S. Cl. 368—73 3 Claims

1. An analog time piece comprising at least an hour hand and a minute hand, respectively driven by first and second electromechanical means, manual command means and an electronic circuit providing a time base, a counter circuit giving information on at least the hour and the minute, and electronic control means for generating a command signal for the displacement of the hands, said electronic circuit further comprising means for acquiring, processing and providing said control means with information apart from the time of day, said control means being arranged so as to, in response to a signal generated by said command means, cause said hands to indicate an information other than the time of day, wherein the hands are made to indicate said information other than the time of day by being driven to selectively superpose themselves in an angular position corresponding to said information other than the time of day.

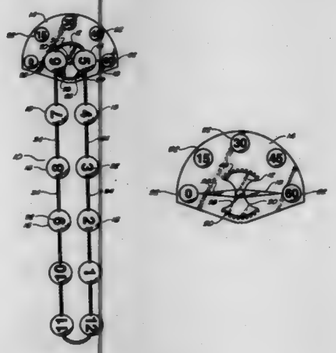


5,299,178

CLOCK

Jaroslav Belik, 1610 Mulcahy, Roseaberg, Tex. 77471

Filed Aug. 6, 1993, Ser. No. 102,886
Int. Cl.[5] G04B *19/20;* G04C *21/00*
U.S. Cl. 368—76 20 Claims



1. A clock comprising:

a motor having a shaft extending outwardly therefrom;

a sprocket affixed to said shaft;

a clock dial positioned adjacent said sprocket, said clock dial having minute indicia displayed thereon;

a plurality of hour members being interconnected together in a form of a continuous band, said continuous band extending over a portion of said sprocket such that said plurality of hour members move relative to a movement of said sprocket; and

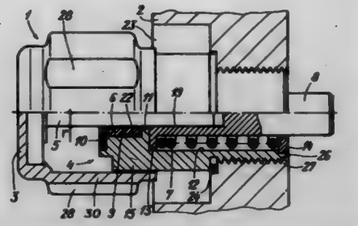
a minute hand interconnected to said sprocket such that said minute hand moves in relation to the movement of said sprocket.

5,299,179

PUSHPIECE FOR A DIVER'S TIMEPIECE

Marc-André Miche, and Gérard Paliz, both of Bienne, Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Jan. 25, 1993, Ser. No. 8,293
Claims priority, application Switzerland, Feb. 7, 1992, 00355/92-3
Int. Cl.[5] G04B *3/04, 37/10*
U.S. Cl. 368—290 6 Claims



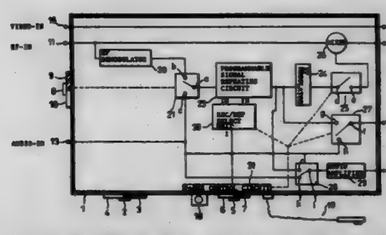
1. A pushpiece for a timepiece comprising a movable head slidingly mounted on a tube fixed to said timepiece, said head partially enveloping such tube and exhibiting a central cylindrical core penetrating into the tube, at least one O ring seal between the tube and the core and a helical return spring urging the movable head towards the exterior, the central core being extended by a cylindrical stem the diameter of which is greater than the diameter of the core, the return spring being arranged between said cylindrical stem and said tube in a manner such that the spring is located in a sealed zone of the pushpiece and the mean diameter of the O ring seal is less than the mean diameter of the return spring.

5,299,180

SOUND REPEATER UNIT ADAPTED FOR USE WITH AN AUDIO INPUT AND AUDIO OUTPUT EQUIPMENT

Pei-Jen Tseng, 4F, No. 17, Alley 4, Land 137, Sec. 5, Min-Sheng E. Rd., Taipei City, Taiwan

Filed Aug. 6, 1992, Ser. No. 925,253
Int. Cl.[5] H04M *15/00;* H04B *1/20*
U.S. Cl. 369—1 9 Claims



1. A sound repeater unit adapted for use with an audio-visual input equipment having a radio frequency output and a television set having a radio frequency input, said audio-visual input equipment further having a control unit with a pause key which is actuated so as to operate the audio-visual input equipment in a paused state, said sound repeater unit comprising:

a radio frequency demodulator means adapted to receive the radio frequency output of the audio-visual input equipment, said demodulator means converting the radio frequency output of the audio-visual input equipment into a corresponding audio frequency signal;

a pause control circuit means adapted to receive an activating signal from the control unit, said pause control circuit means generating a first control signal when the audio-visual input equipment is in a normal operating state and further generating a second control signal when the pause key is actuated so as to operate the audio-visual input equipment in the paused state;

a programmable signal repeating circuit means connected to said demodulator means and said pause control circuit means, said signal repeating circuit means being enabled by the first control signal so as to record continuously the audio frequency signal from said demodulator means while overwriting a previously recorded audio frequency signal, said signal repeating circuit means being enabled by the second control signal so as to output repeatedly a portion of the audio frequency signal, which portion was recorded within a predetermined time period immediately before the pause key was actuated in order to operate the audio-visual input equipment in the paused state;

a radio frequency modulator means connected to and receiving the output of said signal repeating circuit means, said modulator means converting the output of said signal repeating circuit means into a corresponding radio frequency signal;

a mixer means having a first input which is adapted to receive the radio frequency output of the audio-visual input equipment, a second input and an output which is adapted to be connected to the radio frequency input of the television set, said mixer means including a switch means which is controlled by said pause control circuit means so as to disconnect said second input and said modulator means to permit direct transmission of the radio frequency output of the audio-visual input equipment to the television set when the audio-visual input equipment is in the normal operating state and so as to connect said second input and said modulator means in order to enable said mixer means to mix and send the radio frequency output of the audio-visual input equipment and the radio frequency signal from said modulator means to the television set when the pause key is actuated so as to operate the audio-visual input equipment in the paused state;

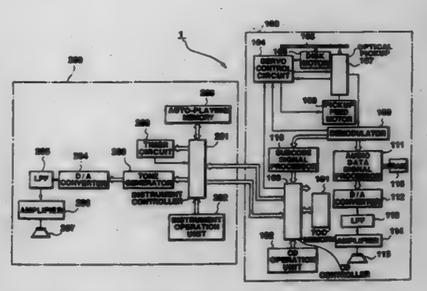
whereby, the television set has a static picture image and a repeating sound output when the audiovisual input equipment is in the paused state.

5,299,181

AUTO-PLAYING APPARATUS

Satoru Koguchi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 574,694, Aug. 28, 1990, Pat. No. 5,148,419. This application Jun. 5, 1992, Ser. No. 894,847
Claims priority, application Japan, Sep. 4, 1989, 1-228678
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 11 Claims



1. An auto-playing apparatus comprising:

input means for inputting auto-playing data;

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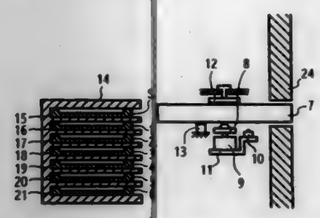
memory means, connected to said input means, for storing the auto-playing data input by said input means;
auto-playing means, connected to said memory means, for reading out the auto-playing data from said memory means to sequentially generate corresponding musical tone signals, and for performing an auto-playing operation;
setting means for setting a storage mode for storing the auto-playing data in said memory means;
instruction means for instructing a start of an auto-playing operation;
a recording medium for recording performance data;
reproduction means, connected to said recording medium, for reproducing the performance data from said recording medium;
detection means, connected to said reproduction means, for detecting position data associated with a present reproduction position of said recording medium which is being reproduced by said reproduction means;
control means, connected to said auto-playing means, to said reproduction means, and to said detection means, for executing (i) a control operation for, when the storage mode is set by said setting means, fetching the position data associated with the present reproduction position of said recording medium when input of the auto-playing data is started at said input means from said detection means, and causing said memory means to store the position data, (ii) a control operation for, when the storage mode is set by said setting means, causing said memory means to store auto-playing data sequentially input by said input means, (iii) a control operation for, when said instruction means instructs to start the auto-playing operation, reading out the position data from said memory means, starting reproduction of said recording medium, comparing the readout position data with present position data of said recording medium which is detected by said detection means, sequentially reading out the auto-playing data from said memory means when a coincidence between the two data is detected, and causing said auto-playing means to start the auto-play operation.

5,299,182

CHANGER-EQUIPPED DISC PLAYER

Kazuhiro Sakiyama, Irumi, Japan, assignor to Nakamichi Corporation, Kodaira, Japan

Continuation of Ser. No. 707,920, May 30, 1991, Pat. No. 5,216,645. This application May 5, 1993, Ser. No. 58,545
Claims priority, application Japan, May 31, 1990, 2-143226; May 31, 1990, 2-143227; May 31, 1990, 2-143230
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—36 **94 Claims**



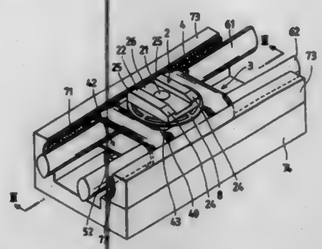
56. A changer-equipped disc player, for storing and playing an n number of discs, comprising:
means for moving one of said discs between a first position, a second position, and a third position;
disc playing means for playing said one of said discs;
said first position permitting ejection and insertion of said one of said discs from and into said means for moving;
said second position permitting loading and unloading of said one of said discs between said means for moving and said disc playing means;
a storage means for storing said discs within said changer-equipped disc player having an n number of holding means for holding said discs;
said n number of holding means including a first holding means through an nth holding means for storing a first through an nth disc, respectively;
transport means for moving said storage means to an n number of storage positions where a selected holding means of said first through n^{th} holding means is positioned at said third position, which is aligned with said second position for purposes of moving contents of said selected holding means;
manual control means for operating said changer-equipped disc player;
system control means for storing and playing discs including a storage control means, responsive to said manual control means, for controlling said means for moving and said transport means;
said storage control means transferring items at said second position to said selected holding means at said third position; and
said storage control means selecting an empty one of said holding means and placing said means for moving in a receptive state for insertion of said discs at said first position for loading said selected holding means at said third position.

5,299,183

OPTICAL DATA RECORD/REPRODUCTION APPARATUS WITH TUBULAR COIL BODY

Shoji Yamaguchi, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,945
Claims priority, application Japan, Jan. 22, 1991, 3-020288
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.14 **19 Claims**



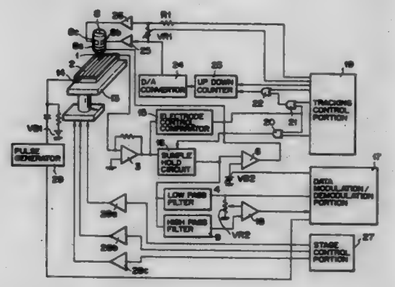
1. An optical data record/reproduction apparatus comprising:
a movable optical head for reading and/or reproducing data from an optical record medium;
drive means for driving said movable optical head along a track direction of the optical record medium, said drive means including a drive coil configured as a tubular coil body having a side wall facing the optical record medium, the drive coil further having an opening formed in said side wall and reinforcing coil walls extending inwardly from said opening;
carriage means for supporting said movable optical head and said drive means, said carriage means being configured to guide the movement of said movable optical head; and
spring means for supporting said movable optical head on said drive means, said spring means being disposed between said movable optical head and said drive means.

5,299,184

INFORMATION PROCESSING APPARATUS WITH HELD DISTANCE CONTROL ON TRACK EDGE DETECTION

Akihiko Yamano, Sagamihara; Katsunori Hatanaka, Yokohama; Kunihiro Sakai, Isehara; Takahiro Oguchi, Ebina, and Shunichi Shido, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1992, Ser. No. 882,930
Claims priority, application Japan, May 15, 1991, 3-139631
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.280 **3 Claims**



1. An information recording/reproducing apparatus for effecting at least one recording and reproduction of information with a probe on a recording medium provided with plural parallel tracks used as reference comprising:
a probe electrode;
means for applying a voltage between said probe electrode and said recording medium;
means for detecting a current flowing to said probe electrode upon said voltage application;
means for controlling a distance between said probe electrode and said recording medium such that the current value detected becomes constant:
means for moving said probe electrode in a direction crossing said tracks for access to a desired track;
means for detecting an edge portion of each of said tracks from a change in the detected current; and
means for holding the distance control provided by said distance controlling means when said edge portion is detected.

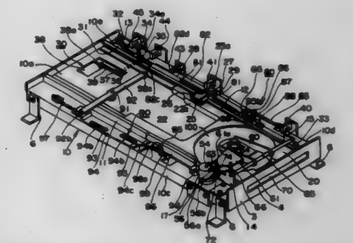
5,299,185

DISC PLAYER FOR PLAYING BOTH NAKED DISC AND CARTRIDGE-ENCASED DISC

Katsuichi Sakurai, Kanagawa; Hideo Kawachi, Tokyo, and Toshiyuki Arai, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,850
Claims priority, application Japan, Jul. 31, 1991, 3-191522
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—75.2 **18 Claims**

1. An apparatus for playing both a naked disc and a disc encased in a cartridge, said disc being of a recording medium, said apparatus comprising:
means defining an inlet opening;
a disc tray movable to take a first position at which said disc tray can receive the naked disc, a second position at which loading of the received naked disc is completed and a third position which is opposite to said first position with respect to said second position, said disc tray being movable between said first and second positions through said inlet opening;
a cartridge carrying mechanism for receiving the cartridge inserted through said inlet opening and carrying said cartridge to a loading position at which loading of said cartridge is completed;
chucking means for chucking said naked disc;
a turn table pivotal between a working position and a rest position, said turn table being capable of driving either one of the loaded naked disc and the disc in the loaded cartridge when assuming said working position;



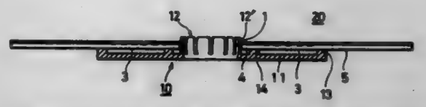
a naked disc detecting means issuing an information as to whether or not said naked disc is on said disc tray at said second position; and
control means for controlling the position of said disc tray in accordance with the information from said naked disc detecting means, said controlling means permitting said disc tray to move to said third position when said naked disc detecting means detects absence of said naked disc on said disc tray at said second position.

5,299,186

DISC PROTECTING COVER

Katsuaki Tsurushima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 29, 1986, Ser. No. 874,178
Claims priority, application Japan, Sep. 29, 1984, 59-148105
Int. Cl.[5] B65D *85/30*; G11B *23/03*
U.S. Cl. 369—291 **8 Claims**



1. A disc protecting cover and a disc, said cover comprising a flat portion having a round profile having a diameter smaller than that of said disc which is provided with a center hole and a signal reading surface portion formed on a part of the surface thereof extending around the center hole, said cover also comprising an engaging portion projecting from a center part of the flat portion and adapted to be inserted into the center hole of the disc to engage with the disc, wherein said flat portion covers the signal reading surface portion of the disc when the engaging portion is inserted into the center hole of the disc to engage with the disc, wherein said flat portion is provided with annular embankments for coming in contact with an outer annular portion provided at the outside of the signal reading surface portion on the disc and with an inner annular portion provided at the inside of the signal reading surface portion of the disc, respectively, and wherein said engaging portion is resiliently compressed when inserted into the center hole of the disc to hold said flat portion against said disc.

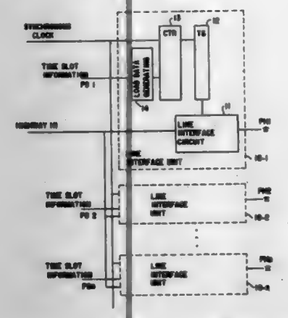
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5,299,187

TIME-MULTIPLEXED HIGHWAY LINE DESIGNATING SYSTEM

Takashi Tabu; Kenichi Okabe, and Masaki Kira, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 21, 1992, Ser. No. 948,044
Claims priority, application Japan, Sep. 19, 1991, 3-239643
Int. Cl.[5] H04Q *11/00*
U.S. Cl. 370—56 12 Claims



1. A time-multiplexed highway line selection system used in a time divisional electronic switching unit, said system comprising:

line interface means provided corresponding to each subscriber line, said line interface means receiving a clock signal, said line interface means including

storing means for storing time slot information specific to each subscriber line, and

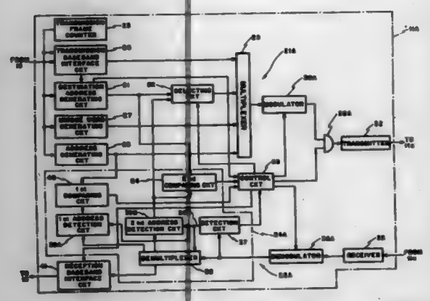
timing generating circuit means, connected to said storing means, for generating from said time slot information a timing for a specific time slot for said subscriber line.

5,299,188

EARTH STATION CAPABLE OF CARRYING OUT COMMUNICATION WITHOUT A CONTROL STATION

Toshinori Hotta, and Yuji Goto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 474,500, Feb. 2, 1990. This application May 4, 1992, Ser. No. 878,200
Claims priority, application Japan, Feb. 3, 1989, 1-24871
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—31 3 Claims



1. A first earth station for use in a satellite communication system including a second earth station, said first and said second earth stations having first and second addresses and being communicable with each other through a satellite by controllably using first and second frequency bands, said first earth station including a terminal for producing a transmission request signal and subsequently an output data signal, transmitting means comprising modulating means for modulating a modulator input signal into a modulated signal and for transmitting said modulated signal as a first transmission data signal via said first frequency band when said transmitting means is supplied with said transmission request signal, and receiving means for receiving a reception data signal from said second earth station via said second frequency band, said first earth station comprising:

primary generating means for generating a primary address signal representative of said first address;

secondary generating means for generating a secondary address signal representative of said second address;

a multiplexer connected to said terminal and said primary and said secondary generating means for multiplexing said output data signal and said primary and said secondary address signals into a multiplexed signal; and

supply means connected to said transmitting means and said multiplexer for supplying said multiplexed signal to said transmitting means as said modulator input signal;

said second earth station receiving said primary and said secondary address signals as primary and secondary received signals and transmitting said primary and said secondary received signals towards said first earth station as a returning data signal;

said first earth station further comprising:

deciding means connected to said transmitting and said receiving means for deciding whether or not said receiving means already receives other earth stations signal when said transmitting means starts to transmit and whether or not said receiving means correctly receives said returning data signal as said received data signal within a predetermined time interval after said transmitting means starts transmission of said first transmission data signal, said deciding means producing a fault signal when said receiving means already receives other earth stations signal when said transmitting means starts to transmit and said receiving means does not detect said each particular address within said predetermined time interval; and

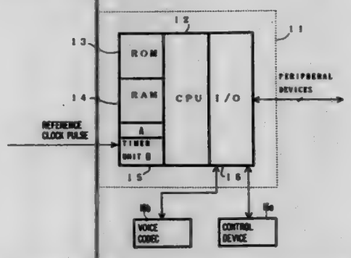
control means connected to said transmitting and said receiving means and said deciding means for controlling said transmitting means in order to stop said transmission in response to said deciding means producing said fault signal.

5,299,189

TDMA PROCESSING APPARATUS

Katsumi Takahashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 859,873
Claims priority, application Japan, Jul. 19, 1991, 3-203619
Int. Cl.[5] H04J *3/02*; G06F *13/00*
U.S. Cl. 370—58.2 10 Claims



10. A communication transmitter/receiver for carrying out a communication service of a TDMA system, said transmitter/-receiver comprising:

a demodulator for subjecting given data to a demodulating process so as to generate a reception burst therefrom;

a modulator for subjecting a transmission burst to a modulating process;

a voice codec for digitally coding a voice signal and converting coded data into a voice signal;

a control device for creating control data and analyzing the control data; and

a TDMA processing apparatus for supplying control signals to peripheral devices respectively in given timing during a TDMA frame period, said TDMA processing apparatus comprising a one-chip microcomputer, which includes:

a timer unit for counting input reference clock pulses so as to make an interrupt request when the count reaches a preset value;

an input/output unit for transmitting the control signals and data to said peripheral devices and receiving data from said peripheral devices;

a read only programming unit for storing therein a program operable to activate said timer unit so as to set a first preset value to said timer unit, said read only programming unit being activated in response to said interrupt request and storing an interrupt-serving program therein which is operable to set a control signal corresponding to said preset value contributing to the generation of said interrupt request to said input/output unit and to set preset values to said timer unit corresponding to the timing or outputting the control signals to be applied to said peripheral devices, said read only programming unit also storing therein a program operable to receive a reception burst from said demodulator in burst reception timing determined by the execution of said interrupt-serving program so as to disassemble said reception burst and assemble a transmission burst on the basis of data supplied from said voice codec and said control device thereby to deliver said assembled transmission burst to said modulator in burst transmission timing determined by the execution of said interrupt-serving program; and

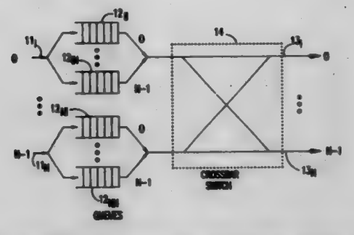
a central processing unit for executing said respective program stored in said read only programming unit.

5,299,190

TWO-DIMENSIONAL ROUND-ROBIN SCHEDULING MECHANISM FOR SWITCHES WITH MULTIPLE INPUT QUEUES

Richard O. LaMaire, Yorktown Heights, and Dimitrios N. Serpanos, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,211
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—58.2 11 Claims



9. A switching system operative to schedule requests from N input ports to N output ports where no two input ports can have a request serviced for the same output port at the same time, where N is a positive integer, and no two output ports can have requests serviced for the same input port at the same time, and further each input port is comprised of N queues, one per each output port, that store requests, said switching system comprising:

(a) a controller storing a request matrix having a plurality of entries, each entry indicating whether there is a request for service between a corresponding pair of one of said input ports and one of said output ports;

(b) said controller further storing a pattern sequence matrix PM having a plurality of entries specifying a sequence of said D diagonal service patterns for each of K consecutive time slots, where D and K are positive integers, said pattern sequence matrix defining a set of D diagonal service patterns on said request matrix with no two elements of the same diagonal request pattern being in the same row and column of said matrix;

(c) means, in said controller, for sequencing said D diagonal service patterns for each time slot of said K time slots, where D is greater than 1, in accordance with the sequence in said pattern sequence matrix PM; and

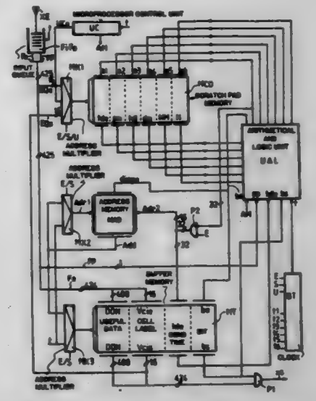
(d) means, responsive to said means for sequencing, for servicing requests in each time slot in accordance with a sequenced set of diagonal service patterns by overlaying each diagonal service pattern on the request matrix and servicing an underlying request indicated on the request matrix if it does not conflict with a request indicated on said request matrix and overlain by a previous diagonal service request pattern in said sequenced set of the diagonal service patterns for said each time slot, with a sequenced set for each time slot being defined by said means for sequencing, said means for servicing repeating the servicing of requests for any subsequent set of K time slots using the same sequence of diagonal service patterns defined in by said means for sequencing.

5,299,191

METHOD AND A SYSTEM OF CONTROL OF ASYNCHRONOUS TIME COMMUNICATION OUTPUTS

Pierre Boyer, 3 Park an Denved, Kerligonan, 22300 Lannion; Yvon Rousaud, Goas Ar Stivel, Servel, and Michel Servel, Le Rhu en Servel, both of F-22300 Lannion, all of France

Division of Ser. No. 627,044, Dec. 13, 1990. This application Dec. 12, 1991, Ser. No. 806,163
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60.1 2 Claims



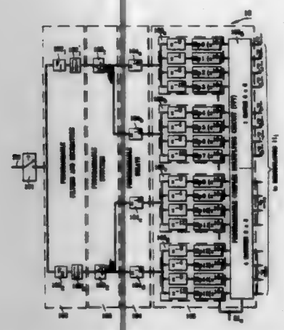
1. A method of controlling the flow of cells in an asynchronous time-division communication system by forming cells received from an in-coming asynchronous time-division multiplex system (XE) into cells delivered to an out-going asynchronous time-division multiplex system (XS), said method comprising the steps of:

storing each received in-coming cell in a buffer memory (MT) and at an address (Add) that corresponds to a real

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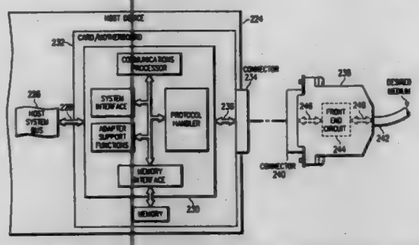
time (t) for re-sending the stored cell over an out-going time-division multiplex system (XS);
comparing a first number of cells (N) of a particular communication with are already stored in said buffer memory (MT) and that have not been re-sent at the time when the next cells relating to the particular communication arrive with a maximal number (NM) which is assigned to the particular communication; and
denying a re-sending of said next in-coming cell if the comparison finds that the first number exceeds the maximal number.

5,299,192
DIGITAL FILTER-TYPE FREQUENCY DEMULTIPLEXING DEVICE
Xiao Y. Guo, Toulouse, and Gérard Maral, Goyrans, both of France, assignors to France Telecom, Paris, France
Filed Dec. 18, 1992, Ser. No. 993,279
Claims priority, application France, Dec. 20, 1991, 91-15931
Int. Cl.[5] H04J *1/02*
U.S. Cl. 370—70 **6 Claims**



1. A device for demultiplexing frequency multiplexed channels in a multicarrier sampled signal having a predetermined useful frequency bandwidth,
said frequency multiplexed channels being defined by respective modulated carriers included in said useful frequency bandwidth and by respective frequency bandwidths which are juxtaposed in said useful frequency bandwidth, the width of each one of said frequency bandwidths of the frequency multiplexed channels being (a) an integer sub-multiple of a maximum channel bandwidth which itself is a sub-multiple of said useful frequency bandwidth and (b) an integer multiple of a minimum channel bandwidth,
said demultiplexing device comprising:
several digital filtering means for respectively separating said frequency multiplexed channels in said multicarrier sampled signal into channel groups in a predetermined number, each of said channel groups being defined by a group bandwidth and comprising frequency-juxtaposed channels among said frequency multiplexed channels having the same bandwidth which is different from the bandwidths of the channels in the other channel groups,
several parallel delay lines in a predetermined number equal to a ratio between said useful frequency bandwidth and said maximum channel bandwidth, each of said channel groups being delayed by a number of respective parallel delay lines among said several delay lines equal to the nearest upper integer of a ratio between a bandwidth of said each of the channel groups and said maximum channel bandwidth,
several parallel identical polyphase networks respectively connected to outputs of said parallel delay lines, each of said polyphase networks comprising several parallel delay line and digital filter combinations in a predetermined manner equal to a ratio between said maximum and minimum channel bandwidths,
said parallel polyphase networks being in a predetermined number equal to the ratio between said useful frequency bandwidth and said minimum channel bandwidth,
said digital filters included in said combinations being deduced from a digital low-pass filter filtering in said minimum channel bandwidth, and
Fourier transform digital processing means connected to outputs of the digital filters of said respective parallel combinations to restore individually said channels.

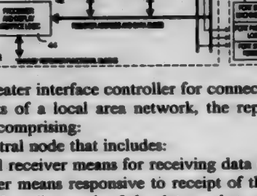
5,299,193
SIGNAL INTERFACE FOR COUPLING A NETWORK FRONT END CIRCUIT TO A NETWORK ADAPTER CIRCUIT
Andre Szczepanek, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 24, 1992, Ser. No. 874,250
Claims priority, application United Kingdom, Feb. 28, 1992, 92/04366
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.1 **13 Claims**



1. A signal interface for coupling a network front end circuit to a network adapter circuit, wherein the network front end circuit communicates with a network, comprising:
a plurality of input signal lines, each operable to conduct an input signal from the front end circuit to the network adapter circuit; and
a plurality of output signal lines, each operable to conduct an output signal from the network adapter circuit to the network front end circuit, wherein selected ones of said input and output signal lines are functional to support both a token ring protocol and "ETHERNET" protocol on the same line, and wherein only input signals are input on said selected input lines and only output signals are output on said selected output lines.

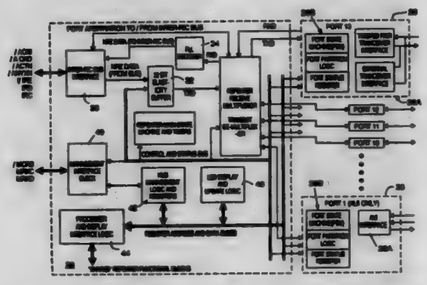
5,299,194
MULTIPLEX TRANSMISSION SYSTEM
Eiji Ichii; Hiroo Moriue, both of Hiratsuka; Hiroaki Sakamoto, Fukuyama; Yoshikazu Nobutoki, Higashihiroshima, and Koji Teruyama, Hiroshima, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan
Filed Nov. 17, 1992, Ser. No. 977,570
Claims priority, application Japan, Nov. 18, 1991, 3-301743
Int. Cl.[5] H04L *12/40*
U.S. Cl. 370—85.3 **5 Claims**

2. A multiplex transmission system comprising:
a plurality of nodes,
common transmission path means for connecting said nodes to each other so as to effect data transmission between said plurality of nodes,
wherein each of said nodes returns a reception recognition signal to said transmission path means when a respective reception node normally receives data transmitted from any one of said nodes for each frame, and
at least one of said nodes including:
first table means for managing the state of each node connected to said transmission path means,
second table means for controlling retransmission of said frame when said reception recognition signal is not returned, and
means for:
registering a corresponding node in said first table means when the reception recognition signal is normally received for receipt of said frame, and



removing said corresponding node from said first table means in the case where the node which does not continuously return said reception recognition signal a predetermined number of times exists even if the frame is transmitted, and
wherein when said frame is transmitted, retransmission of said frame is executed the predetermined number of times until said reception registration signal is returned from all nodes registered in said second table means.

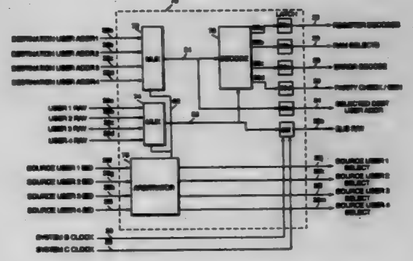
5,299,195
REPEATER INTERFACE CONTROLLER WITH MULTIPLE PORT NODE INTERFACES
Haresh K. Shah, Pleasanton, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Division of Ser. No. 643,208, Jan. 18, 1991. This application Aug. 14, 1992, Ser. No. 930,712
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—85.6 **14 Claims**



1. A repeater interface controller for connecting a plurality of segments of a local area network, the repeater interface controller comprising:
(a) a central node that includes:
central receiver means for receiving data packets,
decoder means responsive to receipt of the data packets for decoding each of the data packets received by the central receiver means to form decoded data packets;
repeater means responsive to receipt of the decoded data packets for repeating each of the decoded data packets to form repeated data packets, and

central transmitter means for transmitting the repeated data packets; and
(b) a plurality of port nodes connected to the central node, each port node being connectable to a corresponding one of the plurality of segments, at least one port node including:
(i) first port receiving means for receiving one or more encoded data packets from an external interface connected to said corresponding segment of the local area network, the first port receiver means including means for supporting one of a plurality of different external interfaces,
(ii) first port transmitter means for transmitting each of the one or more encoded data packets to the central node,
(iii) priority means for identifying the port node that first received one or more data packets as a source port node such that other of the plurality of port nodes cannot transmit data packets received from their corresponding segments to the central node while said port node is identified as the source port node,
(iv) second port receiver means for receiving the repeated data packets from the central node, and
(v) second port transmitter means for transmitting the repeated data packets received from the central node to said corresponding segment when said port node is not identified as the source port node.

5,299,196
DISTRIBUTED ADDRESS DECODING FOR BUS STRUCTURES
James J. Allen, Jr., Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 12, 1992, Ser. No. 974,654
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—85.1 **13 Claims**



1. A communication system comprising:
a plurality of users;
a common data bus connected to said users for conveying data between said users;
each of said users having a unique address on said data bus, each of said users further having means for requesting to use said data bus for communicating with a destination user on said data bus and for outputting the address of said requested destination user;
means, connected to each of said users, for generating and supplying to each of said users a system clocking signal having a bus arbitration cycle during which the use of said data bus is arbitrated between said users requesting access to said data bus and a data transfer cycle during which data is transferred between a selected user and its respective destination user;
means, connected to each of said uaers, for arbitrating the use of said data bus, said arbitrating means comprising:
means for receiving from requesting users, during said bus arbitration cycle, requests to use said data bus for communicating with said respective destination users;

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means for selecting, during said bus arbitaration cycle, one of said requesting users to access said bus; and

means for generating an output indicative of said selected requesting user;

means, connected to each of said users and said arbitrating means, for receiving the addresses of said destination users from said requesting users, for selecting, based upon said selected requesting user output, a destination user to communicate with said selected requesting user over said data bus, and for outputting, during said data transfer cycle, the address of the selected destination user; and

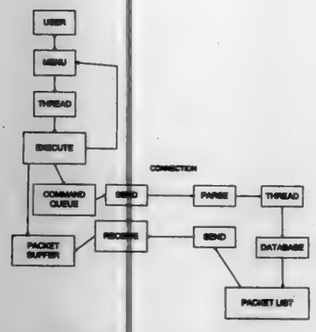
means, connected to said address receiving means, for decoding the address of said selected destination user and for providing one or more outputs for and required by said selected destination user during said bus arbitration cycle, said decoding means outputs being based upon and decoded from said selected destination user address.

5,299,197

COMMUNICATIONS PACKET SERVER PROTOCOL

Roger Schlafly, P.O. Box 1680, Soquel, Calif. 95073

Filed Feb. 11, 1992, Ser. No. 835,159
Int. Cl.[5] H04J *3/24*
U.S. Cl. 370—94.1 **4 Claims**



1. A digital communications system comprising

(a) a database server,

(b) one or more terminals,

(c) an asynchronous communications channel connecting said server to said terminals,

(d) means by which said terminals can send commands to said server,

(e) means by which said server can interpret said commands as database queries,

(f) means by which said server assembles the requested data into packets,

(g) means for said server to dispatch said packets to said terminals,

(h) means for said terminals to process multiple tasks simultaneously,

(i) means for said terminals to associate said packets to said multiple tasks, whereby the communication channel is utilized for said multiple tasks simultaneously,

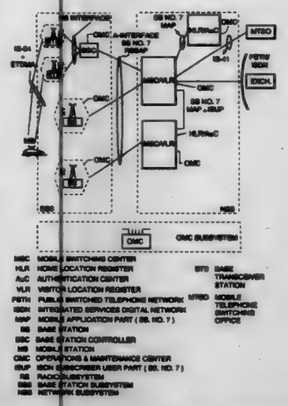
(j) means by which said terminals can properly interpret the packets.

5,299,198

METHOD AND APPARATUS FOR EXPLOITATION OF VOICE INACTIVITY TO INCREASE THE CAPACITY OF A TIME DIVISION MULTIPLE ACCESS RADIO COMMUNICATIONS SYSTEM

Stanley E. Kay, Rockville, Md.; John E. Corrigan, III, Washington, D.C.; Daniel Wendling, Darnestown; Ashok Mehta, Gaithersburg, both of Md., and Michael Parr, San Diego, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 6, 1990, Ser. No. 622,232
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.3 **69 Claims**



1. A method of implementing TDMA communications between a plurality of user stations, including at least one mobile station, and a base station, said method comprising the steps of:

a) establishing, at the base station a pool of available traffic transmission channels, each traffic transmission channel comprising a time slot in a repeating time division multiple access frame at a predetermined carrier frequency,

b) responding, at a user station, to detection of a speech spurt, by transmitting a request for assignment of a traffic transmission channel,

c) in response to receipt of the request of step b) at the base station, searching for an available traffic transmission channel from the pool of available traffic transmission channels,

d) in response to location of an available traffic transmission channel at the base station, transmitting an identification of the located channel to the user station, removing the located channel from the pool of available traffic channels and

e) in response to receipt of the identification of step d) at the user station, initiating transmission of the speech spurt in the located and identified traffic transmission channel of the repeating time division multiple access frame.

5,299,199

CHANNEL RE-ASSIGNMENT METHOD FOR TIME DIVISION MULTIPLE ACCESS (TDMA) TRUNKED SYSTEMS

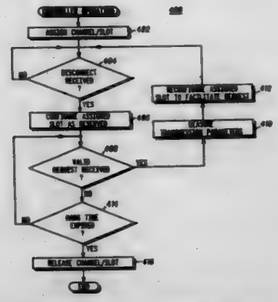
Timothy J. Wilson, Schaumburg, and Kenneth J. Crisler, Wheaton, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1992, Ser. No. 894,396
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.3 **24 Claims**

1. In a radio communication system controller, a method of providing extended use of a communication resource to a plurality of communication units, the method comprising the steps of:

A) assigning a first communication resource to a first of the plurality of communication units to produce an assigned communication resource;

B) temporarily reserving, in response to a predetermined indicia received from the first communication unit during a first communication, the assigned communication resource such that a reserved communication resource is produced;



C) receiving on the reserved communication resource, from a second of the plurality of communication units, a request to transmit a second communication on the assigned communication resource; and

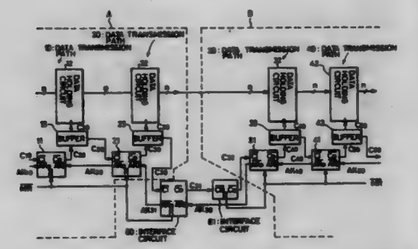
D) re-configuring, in response to the request, the assigned communication resource to allow transmission of the second communication on the assigned communication resource.

5,299,200

ADAPTIVE INTERFACE THAT AUTOMATICALLY ADJUSTS FOR TIMING SKEWS CAUSED BY SIGNAL DELAYS

Futoshi Miyamae, Tenri; Masabu Onozaki, Nara, and Daisuke Azuma, Soraku, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1992, Ser. No. 871,544
Claims priority, application Japan, Apr. 26, 1991, 3-97657
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—100.1 **7 Claims**



1. An interface apparatus for controlling data transmission from a first apparatus to at least one second apparatus, wherein

said first apparatus outputs a first state signal indicating the transmission state of data at the time of data transmission to said at least one second apparatus, and

said at least one second apparatus outputs a second state signal to said first apparatus for indicating a state of reception completion when a reception of data from said first apparatus is completed,

said interface apparatus comprising:

transmission inhibiting signal generation means responsive to said first state signal from said first apparatus for applying, to said first apparatus, a transmission inhibiting signal to inhibit transmission of further data,

state signal holding means responsive to said second state signal from said at least one second apparatus for holding said first state signal and for outputting the first state signal which said holding means has been holding to said at least one second apparatus; and

transmission acknowledging signal generation means responsive to the second state signal from said at least one second apparatus for applying to said first apparatus a transmission acknowledging signal to authorize transmission of further data in place of said transmission inhibiting signal.

5,299,201

METHOD AND APPARATUS FOR ISOLATING FAULTS IN A NETWORK HAVING SERIALLY CONNECTED LINKS

Anthony Carusone, Jr., Tucson, Ariz.; Albert W. Garrigan, Wappingers Falls; Wayne Hunsinger, Endwell, both of N.Y.; Gerald T. Moffitt, San Jose, Calif.; Jordan M. Taylor, Poughkeepsie, and Nandakumar N. Tendolkar, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 577,403, Sep. 4, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 112,173
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—51 **20 Claims**

1. In a system having a plurality of processing units and at least one control unit and at least one intermediate unit for coupling the other units via fiber optic links between each of the units, and wherein

each of said units has a fiber optic link adapter interface which may be actuated to form either a static or dynamic connection between the link adapter interfaces at the ends of each link units for establishing bidirectional communication between the units over the links, and wherein a processor or a control unit can function either as an originating unit or a destination unit in bidirectional communication between units, and in which an originating unit transmits data to a destination unit via an intermediate unit, said originating unit being coupled to said intermediate unit via a first link, said intermediate unit being coupled to said destination unit via a second link, said intermediate unit propagating at least some errors originating on said first link to said second link, with either said first link or said second link possibly having a fault and where faults generate error fault signals which may originate from several link adapters of the system from the plural links of the system simultaneously, and where errors occurring on a source link rating below a threshold are propagated to the destination link such that from the standpoint of the destination unit they are indistinguishable from errors arising on the destination link, and wherein said system has a fault analyzer for receiving a fault signal originating from said link adapters for isolating a link on which a fault

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originates, said fault analyzer providing a correct attribution of errors to a failing link when errors may occur either on a source link or a destination link without mistaking detected threshold crossings caused by cumulative errors occurring over a link, by a method of isolating errors originating on said links including the steps of:

(a) detecting the occurrence of errors on said first link in excess of a first threshold;

(b) detecting the occurrence of errors on said second link in excess of a second threshold greater than said first threshold; and

(c) attributing said errors to said links on the basis of the detection of said errors in excess of said thresholds, by

(1) attributing errors to said first link when errors have been detected in both of said links in excess of the thresholds on both of said links, and

(2) attributing errors to the link having an error detected when errors have been detected in only one of said links in excess of the threshold for the link.

5,299,202

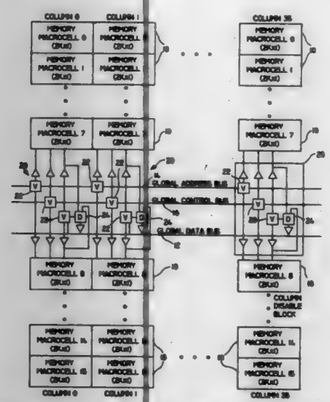
METHOD AND APPARATUS FOR CONFIGURATION AND TESTING OF LARGE FAULT-TOLERANT MEMORIES

Steven Vaillancourt, Carson, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1990, Ser. No. 623,855

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—11.1 **20 Claims**



1. A memory circuit, addressable by a logical memory address that includes a memory page address and a memory word address within a specified page, the circuit comprising:

a plurality of memory modules, wherein predefined sets of the memory modules comprise uniquely addressable memory pages, and each memory module has at least as many bits as there are memory words in a memory page;

a global data bus having as many data lines as there are bits in a data word, connected to the memory modules in a selected configuration, to carry data to and from the modules;

a global address bus connected to the memory modules, to carry a logical address to the modules;

memory module mapping means connected to each of the memory modules, for associating each combination of memory page and bit position within each data word on that page, with a selected memory module that is unique to the combination of memory page and bit position; and

memory circuit testing and configuration means integral with the memory circuit and connected to the memory modules, for automatically testing each of the memory modules and recording, in the memory module mapping means, codes that associate each memory page and bit position combination with a memory module that is unique to the combination of memory page and bit position.

5,299,203

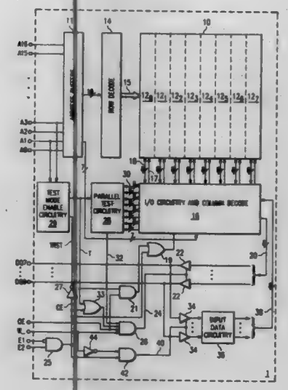
SEMICONDUCTOR MEMORY WITH A FLAG FOR INDICATING TEST MODE

Randy C. Steele, Southlake, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 17, 1990, Ser. No. 570,124

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—221 **21 Claims**



1. An integrated circuit having a normal operating mode and a special operating mode, comprising:

an output terminal;

an output driver, coupled to said output terminal, for presenting data at said output terminal;

a first terminal for receiving a control signal generated externally from said integrated circuit, said control signal indicating with a first digital state that said output driver is to be enabled, and indicating with a second digital state that said output driver is to be disabled;

a second terminal for receiving a mode initiate signal;

special mode enabling circuitry coupled to said second terminal for presenting a special mode enable signal responsive to receipt of said mode initiate signal; and

output control circuitry coupled to said first terminal, to said special mode enabling circuitry, and to said output driver, for disabling said output driver responsive to receipt of said control signal at said second digital state, and for enabling said output driver responsive to said special mode enable signal in combination with receipt of said control signal at said second digital state.

5,299,204

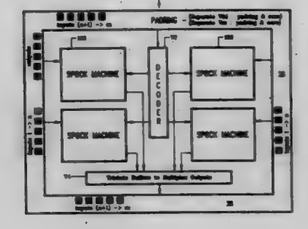
RELIABILITY QUALIFICATION VEHICLE FOR APPLICATION SPECIFIC INTEGRATED CIRCUITS

Sabbas A. Daniel, Campbell, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 446,030, Dec. 5, 1989, abandoned. This application Mar. 31, 1992, Ser. No. 861,372

Int. Cl.[5] G01R *31/28*; H01L *27/08*

U.S. Cl. 371—22.1 **4 Claims**



1. A reliability qualification vehicle for use with an application specific integrated circuit design system, said system including a design library of a plurality of cells and a place and route scheme providing different cell designs and cell interconnection routes to enable a plurality of different integrated circuits to be designed from said cells using said place and route scheme, said vehicle comprising a first integrated circuit employing from said library at least some cells that are representative of the plurality of cells in the library, and using said place and route scheme, such that said cells in said first integrated circuit are designed and interconnected in a manner representative of a predetermined number of said plurality of integrated circuits so that reliability testing of said first integrated circuits will indicate the reliability of other integrated circuits designed using at least some of said cells and employing said place and route scheme, wherein said scheme employs gate arrays so that said first circuit is implemented in gate arrays in a semiconductor medium having a plurality of different layers so that said different layers are substantially uniform throughout the medium, wherein said layers are substantially planar sheets, said first circuit comprising portions of said layers and conductive paths connecting at least some of the portions, said vehicle further comprising a second circuit adjacent to the first circuit and substantially the same as the first circuit such that the two circuits are substantially mirror images across a dividing line between the two circuits, each of the first and second circuits having output pads on a side of such circuit away from the dividing line, so that when the medium is cut along locations adjacent to the output pads to form a chip having the two circuits, or cut, in addition to said locations, along locations between the circuits to form two chips each having one circuit, the output pads of the circuits will be located at or near the edge(s) of the chip(s).

5,299,205

Patent Not Issued For This Number

5,299,206

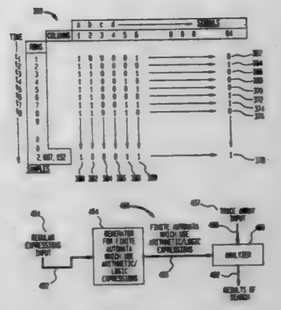
SYSTEM AND METHOD FOR ANALYZING COMPLEX SEQUENCES IN TRACE ARRAYS USING MULTIPLE FINITE AUTOMATA

Arthur J. Beaverson, Maynard, and Charles J. DeVane, Milford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 24, 1991, Ser. No. 781,889

Int. Cl.[5] H04B *17/00*; G06F *7/22*

U.S. Cl. 371—22.1 **15 Claims**



1. A system for searching complex sequences in trace arrays, comprising:

first input means for receiving regular expressions in predetermined groupings, with the regular expressions defining desired patterns to be searched for in a trace array;

generator means connected to the input means for receiving the grouped regular expressions input via the first input means and generating a finite automaton for each of the groupings of regular expressions, with each finite automaton using arithmetic/logic expressions;

second input means for receiving the trace array; and

analyzer means that is connected to the second input means and an output of the generator means, and for searching for predetermined patterns of data in the trace array based on the multiple finite automata which use arithmetic/logic expressions.

10. A method for searching complex sequences in trace arrays, comprising the steps of:

(a) inputting regular expressions in predetermined groupings, with the regular expressions defining desired patterns to be searched for in the trace array;

(b) generating multiple finite automata which use arithmetic/logic expressions, with the each grouping of regular expressions forming a finite automaton;

(c) reading the trace array and searching for predetermined patterns with the multiple finite automata which use arithmetic/logic expressions; and

(d) outputting results of the search.

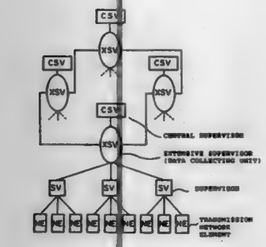
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,207

CENTRALIZED SUPERVISORY SYSTEM FOR TRANSMISSION NETWORK ELEMENTS AND METHOD OF SUPERVISING TRANSMISSION NETWORK ELEMENTS

Yasuo Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 12, 1992, Ser. No. 850,490
Claims priority, application Japan, Mar. 15, 1991, 3-049993; Mar. 15, 1991, 3-049994
Int. Cl.[5] G06F *15/16*
U.S. Cl. 371—29.1 13 Claims



1. A system for centralized supervision of a plurality of interconnected transmission network elements, in a plurality of system zones, comprising:

a plurality of supervisors in each system zone, adapted to be connected respectively to the transmission network elements, for supervising respective statuses of the transmission network elements;

central supervisors, one in each system zone, for managing the transmission network elements based on supervisory data transmitted from said supervisors, each of said central supervisors including means for selecting, initially and in the event of a fault of the system supervisor a system supervisor from among said central supervisors, to supervise all the transmission network elements in all of the system zones; and

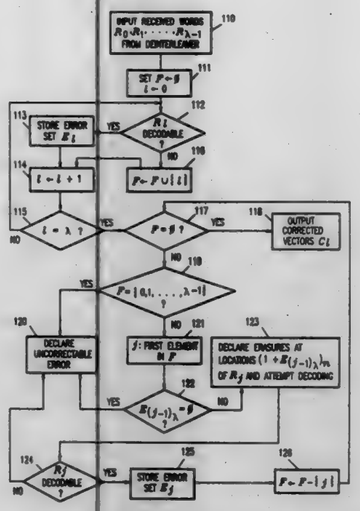
extensive supervisors, each connected between said supervisors in one of the system zones and a corresponding central supervisor, for collecting the supervisory data from said supervisors and transmitting the collected supervisory data to the corresponding central supervisor and also to an adjacent extensive supervisor of an adjacent one of the system zones.

5,299,208

ENHANCED DECODING OF INTERLEAVED ERROR CORRECTING CODES

Miguel M. Blaum, San Jose, Calif., and Henricus C. Van Tilborg, Best, Netherlands, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1991, Ser. No. 792,113
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—38.1 6 Claims



1. A method of enhancing the capability of a decoder to correct multiple burst errors in codewords comprising encoded symbols interleaved with an ECC code, comprising the steps of:

encoding codewords, each n symbols in length, in successive rows to create a series of rectangular blocks, each having λ rows of codewords, n and λ being integers and having values which are relatively prime, and the corresponding symbols of adjacent codewords in the respective rows of each block being aligned columnwise; and

interleaving the symbols of successive codewords by reading them in one continuous diagonal sequence one block at a time to form an array with a toroidal topology in which the symbol at the trailing end of each block is followed by the symbol at the beginning of the succeeding block, so that all burst errors will be continuous from codeword to codeword and block to block, irrespective of where they occur in the array;

decoding all codewords, correcting all correctable errors in all correctable codewords, and flagging only those codewords in which the error correction capability of the code is exceeded;

examining at lest one codeword adjacent in time to each flagged codeword to identify the locations in error therein that have been corrected and successfully decoded;

separating the identified locations in error into sets according to a preselected protocol;

tentatively declaring, as erasures, errors in the flagged codeword at specific locations which are diagonally adjacent in time to different respective sets of said locations in error; and

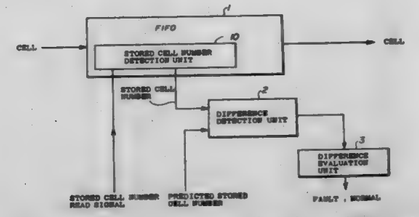
repeating the decoding step in an attempt to now correct and decode the flagged codeword.

5,299,209

APPARATUS AND METHOD FOR DETECTING FAULT IN ATM SWITCH

Masami Murayama; Yasuhiro Aso, and Yoshihiro Uchida, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 18, 1991, Ser. No. 776,781
Claims priority, application Japan, Oct. 19, 1990, 2-280891
Int. Cl.[5] H04J *3/26*
U.S. Cl. 371—67.1 16 Claims



1. An apparatus for detecting a fault in an ATM switch having a switch element positioned at a cross point of an input highway and an output highway, said switch element including an FIFO memory, said apparatus comprising:

first means, coupled to the FIFO memory, for detecting a number of cells stored in the FIFO memory;

second means, coupled to said first means and the FIFO memory, for detecting a difference between the number of cells stored in the FIFO memory and a predicted number of cells which must be stored in the FIFO memory; and

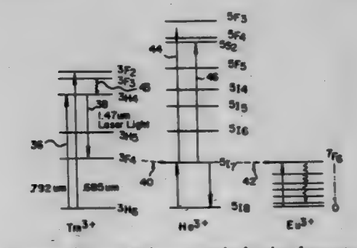
third means, coupled to said second means, for determining whether or not said switch element has a fault on the basis of said difference detected by said second means.

5,299,210

FOUR-LEVEL MULTIPLY DOPED RARE EARTH LASER SYSTEM

Elias Snitzer, and Robert Pafchek, both of Piscataway, N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Apr. 28, 1992, Ser. No. 876,020
Int. Cl.[5] H01S *3/14*
U.S. Cl. 372—6 36 Claims



1. A system for producing an optical gain, the system comprising:

a. a pump light source;

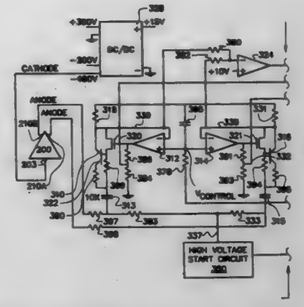
b. a host operably connected to receive energy from said pump light source, said host having a light conducting path doped with thulium, holmium and at least one rare earth from the group consisting of europium and terbium in respective amounts sufficient to produce an optical gain energizing thulium to a $^3H_4$ state to produce an optical gain by a $^3H_4$–$^3F_4$ transition and a gain in a region of 1.47 μm, with subsequent energy transfer from the $^3H_4$ state of the thulium to a $^5I_7$ state of the holmium, and energy transfer from the $^5I_7$ state to the rare earth.

5,299,211

LASER GYRO HIGH VOLTAGE START MODULE AND HIGH VOLTAGE PULSE GENERATOR

Dale F. Berndt, Plymouth, and Joseph E. Killpatrick, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1992, Ser. No. 936,155
Int. Cl.[5] H01S *3/083;* G01C *19/64*
U.S. Cl. 372—94 27 Claims



5. A high voltage starting apparatus for a ring laser gyro comprising:

a. high voltage pulse generator means for converting a direct current low voltage to an alternating current signal wherein the high voltage pulse generator means is connected to the direct current low voltage and has a low voltage alternating current output; and

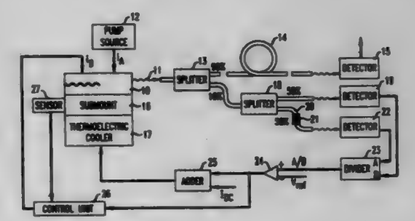
b. a voltage conversion means connected to the low voltage alternating current output wherein the voltage conversion means provides an active current control output and a laser anode supply output.

5,299,212

ARTICLE COMPRISING A WAVELENGTH-STABILIZED SEMICONDUCTOR LASER

Thomas L. Koch, Holmdel, and Sheryl L. Woodward, Lincroft, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 10, 1993, Ser. No. 28,881
Int. Cl.[5] H01S *3/137, 3/10, 3/133*
U.S. Cl. 372—32 8 Claims



1. An article comprising

a) a semiconductor laser and means for causing a first electrical current to flow through the laser such that the laser has a radiation output;

b) means for changing the wavelength of said radiation output;

c) first optical waveguide means adapted for receiving said radiation output; and

d) means, connected to the means of b), for maintaining the wavelength of said radiation output substantially equal to

a desired wavelength, said means comprising second optical waveguide means that comprise an in-line optical waveguide grating and are connected to said first optical waveguide means such that a portion of said received radiation output is coupled into the second optical waveguide means;

CHARACTERIZED IN THAT

e) the means of b) comprise means for causing a second electrical current to flow through the laser such that the wavelength of the radiation output is a function of the second current, and further comprise means for changing the temperature of the laser, in response to a change in the wavelength of the laser.

5,299,213

SOLID STATE LASER APPARATUS

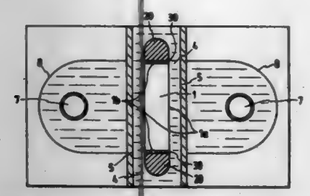
Kazuki Kubo; Takashi Yamamoto, and Shigenori Yagi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 829,553, Feb. 5, 1992, abandoned, which is a continuation of Ser. No. 594,796, Oct. 9, 1990, abandoned. This application Mar. 4, 1993, Ser. No. 26,100

Claims priority, application Japan, Oct. 12, 1989, 1-265596; Oct. 24, 1989, 1-276408

Int. Cl.[5] H01S *3/045*

U.S. Cl. 372—35 **6 Claims**



1. A solid state laser apparatus, comprising:

a pumping light source for supplying a pumping light;

a solid state laser medium having a pair of optically flat surfaces confronting to each other for receiving said pumping light, and side surfaces intersecting said optically flat surfaces along an optical axis, said laser medium having a rectangular cross section;

a thermal insulator adhered to each of said side surfaces of said laser medium; and

means, coupled to said thermal insulators, for shielding said thermal insulators from said pumping light.

5,299,214

HEAT RADIATING COMPONENT AND SEMICONDUCTOR DEVICE PROVIDED WITH THE SAME

Tsutomu Nakamura; Takahiro Iguchi, and Tetsuo Nakai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

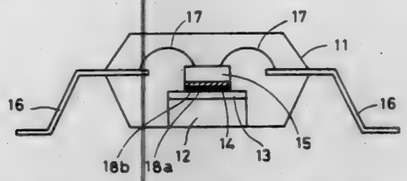
Filed Jun. 26, 1992, Ser. No. 905,241

Claims priority, application Japan, Jul. 1, 1991, 3-160210; Mar. 19, 1992, 4-063473

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—36 **17 Claims**

1. A heat radiating component for carrying a semiconductor element on its surface, said heat radiating component comprising: a substrate base material (12) made of a material selected from the group consisting of metals and ceramics; a polycrystalline diamond layer (13) formed on at least one surface of said substrate base material; a first intermediate bonding layer (18*a*) formed on a surface region of said polycrystalline diamond layer, wherein said first intermediate bonding layer is made of at least one material selected from the group consisting of elements from groups 4*a*, 5*a* and 6*a* of the periodic table and oxides, carbides, nitrides and carbo-nitrides of said elements; a second intermediate bonding layer (18*b*) formed on said first intermediate bonding layer, wherein said second intermediate bonding layer is made of at least one material selected from the group consisting of Mo, Ni, Pd, Pt and Au; and a metal bonding layer (14) formed on said second intermediate bonding layer for receiving said semiconductor element on the surface of said metal bonding layer, wherein said metal bonding layer is made of at least one metal selected from the group consisting



of Au, Ag, Si, Ge, Sn, Pb and In, and wherein said materials for and thicknesses of said metal bonding layer, said first intermediate bonding layer, said second intermediate bonding layer, said polycrystalline diamond layer, and said substrate base material are so selected that an overall thermal expansion coefficient of said heat radiating component has a value within a range of 4×10^{-6} to 6×10^{-5}/° C. at temperatures ranging from room temperature to 400° C.

5,299,215

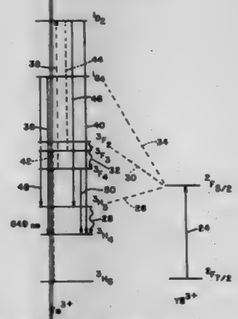
RARE EARTH ION UPCONVERSION LASER SYSTEM

Robert J. Thrash, St. Charles, Ill., and Leo F. Johnson, Bedminster, N.J., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 25, 1991, Ser. No. 765,381

Int. Cl.[5] H01S *3/16*

U.S. Cl. 372—41 **48 Claims**



1. An upconversion laser system for converting relatively long wavelength, substantially single band infrared radiation that is at least quasi-continuous to relatively short wavelength optical radiation, comprising:

an active lasant material that comprises a host, an activator that comprises a concentration of thulium activator ions as a percentage of available rare earth sites in said host is in the range of 0.1 to 10 percent to produce coherent radiation having a shorter wavelength than said infrared radiation, and a sensitizer that comprises a concentration of sensitizer ions in said host for sensitizing said activator in said host to said infrared radiation through at least two successive transfers of energy between said sensitizer and said activator;

an optical cavity for resonating said coherent radiation produced by said lasant material; and

a pumping source for pumping said lasant material that has at least a quasi-continuous output of said single band infrared radiation.

5,299,216

RADIATION-EMITTING SEMICONDUCTOR DIODE

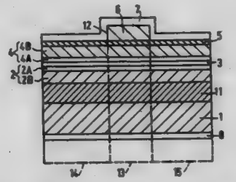
Carolus J. van der Poel; Adriaan Valster, and Michael J. B. Boermans, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1992, Ser. No. 982,216

Claims priority, application European Pat. Off., Nov. 26, 1991, 91203087.1

Int. Cl.[5] H01S *3/025*

U.S. Cl. 372—43 **8 Claims**



1. A radiation-emitting semiconductor diode comprising a semiconductor body with a semiconductor substrate of a first conductivity type on which are present at least in that order a first cladding layer of the first conductivity type, an active layer, and a second cladding layer of a second conductivity type, the active layer and the cladding layers each comprising a mixed crystal of III-V semiconductor materials, while atoms of different elements are present on at least one sublattice, characterized in that the composition of the semiconductor material of the active layer is so chosen that this layer is under compression strain and the atoms of the different elements which are present on the one sublattice have a less orderly distribution at least in the semiconductor material of the active layer.

5,299,217

SEMICONDUCTOR LIGHT-EMITTING DEVICE WITH CADMIUM ZINC SELENIDE LAYER

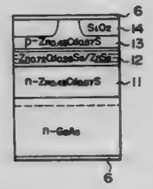
Masahito Migita, Hachioji; Akira Taike, Kokubunji, and Tsukuru Ohtoshi, Hanno, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 774,878

Claims priority, application Japan, Oct. 11, 1990, 2-270393

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **29 Claims**



1. A thin film structure for a semiconductor device, comprising a layer of a semiconductor having a crystal composition of $Cd_xZn_{1-x}S$, where $0<x<1$, and p-type conductivity.

5,299,218

MULTI-TIP SEMICONDUCTOR LASER

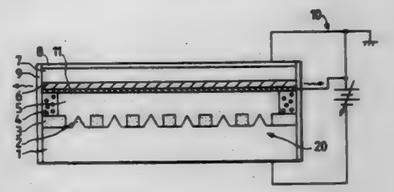
Yuzaburo Ban, Osaka; Touru Saitoh, Tsukuba; Tadasi Narusawa, and Kiyoshi Ohnaka, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 16, 1992, Ser. No. 914,078

Claims priority, application Japan, Jul. 18, 1991, 3-178082

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **21 Claims**



1. A multi-tip semiconductor laser comprising:

(a) a substrate;

(b) a cladding layer;

(c) an active layer formed of alkali-halide crystal on said cladding layer;

(d) at least a field emission tip formed on a surface of said substrate to have a substantially corn shape, said field emission tip being so arranged to confront said active layer;

(e) vacuum space means for providing a space between substrate and said cladding layer with said field emission tip confronting said active layer and for maintaining said space in a vacuum state; and

(f) electrode means for producing an electrostatic field between said field emission tip and the same in response to an external voltage supply such that said field emission tip emits an electron beam toward said active layer.

5,299,219

STRIPE-TYPE LASER DIODE USED AS A LIGHT SOURCE

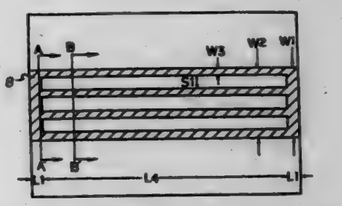
Toshiro Hayakawa, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 21, 1992, Ser. No. 916,439

Claims priority, application Japan, Jan. 13, 1992, 4-4212

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—50 **11 Claims**

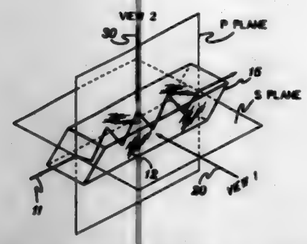


1. In a stripe type laser diode, the improvement comprising:

a first single waveguide having a width of 30 μm or more which devines a light emitting aperture of an emitting facet; and

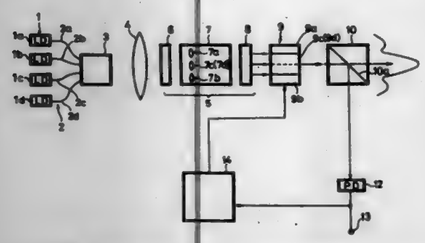
a plurality of internal waveguides connected to the single waveguide and selected in configuration to define an array of independent stripe type laser diodes wherein phase-locking is minimized in the output light.

5,299,220
SLAB LASER
David C. Brown, R.R. #1, Box 356J Brittan Rd., Brackney, Pa. 18812, and David P. Benfey, 412 Boswell Hill Rd., Endicott, N.Y. 13760
Filed Sep. 8, 1992, Ser. No. 941,832
Int. Cl.[5] H01S *3/091, 3/092*
U.S. Cl. 372—71 21 Claims



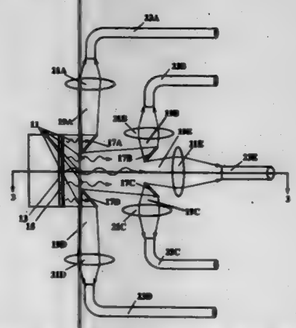
1. A slab laser apparatus comprising:
a slab-shaped lasing medium for producing a beam of coherent light radiation, said slab-shaped lasing medium having a beam entrance end face, a rear beam exiting end face and two oppositely disposed and substantially parallel side faces, said respective beam entrance and rear beam exiting end faces disposed along an axis defining a "p" plane, and said side faces disposed along an axis defining an "s" plane; and
means defining a stable/unstable resonator cavity for said "p" and "s" planes respectively, wherein a light beam entering at the entrance end face of the slab-shaped lasing medium along an axis of the "p" plane, normally reflects back and forth within the slab-shaped medium and exits at the rear end face, said "p" plane resonator cavity comprising a substantially hemispherical, high-reflector resonator, and a substantially flat, partially reflecting, outcoupler, and said "s" plane resonator cavity operating in a single transverse mode comprising a high-reflector resonator, and a negative, partially reflecting outcoupler, said negative, partially reflecting outcoupler including a substantially cylindrical optical component having a variable reflectivity mirror surface.

5,299,221
LASER LIGHT GENERATING APPARATUS
Yuuki Kaneda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 923,954, Sep. 4, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,395
Claims priority, application Japan, Jan. 9, 1991, 3-012842
Int. Cl.[5] H01S *3/094*
U.S. Cl. 372—75 4 Claims



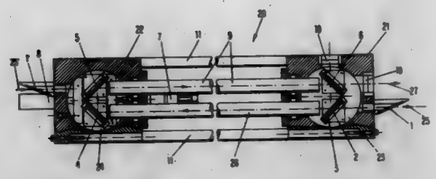
1. A laser light generating apparatus comprising:
an exciting light source for generating a plurality of exciting laser beams;
a laser medium for generating at least two laser beams with radiation of said plurality of exciting laser beams at different positions thereof;
reflecting means for reflecting at least a part of said laser beams generated from said laser medium and constructing a laser resonator with thermal lenses formed within said laser medium; and
phase-compensating means for compensating a phase of a laser beam from said laser resonator.

5,299,222
MULTIPLE DIODE LASER STACK FOR PUMPING A SOLID-STATE LASER
David Shannon, Sunnyvale, and Richard Wallace, Los Altos Hills, both of Calif., assignors to Lightwave Electronics, Mountain View, Calif.
Filed Mar. 11, 1992, Ser. No. 849,667
Int. Cl.[5] H01S *3/094*
U.S. Cl. 372—75 24 Claims



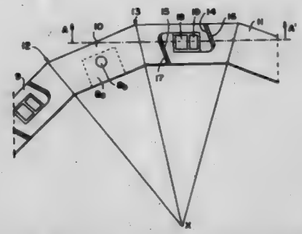
1. Apparatus for pumping a solid-state laser, the apparatus comprising:
a plurality of M diode laser light sources, numbered m=1, 2, . . . , M (M≧2), each emitting a diverging light beam including a selected wavelength λ_P, the light sources being spaced apart from one another in a stack, each light source being oriented to emit a pump light beam in the same direction;
a plurality of N cylindrical lenses numbered n=1, 2, . . . , N (N≧2), with cylindrical lens number n receiving a portion of or all of the light of the light beams emitted by a selected group of the light sources and converting these diverging light beams into light beams with reduced beam divergence in a selected direction;
a plurality of K mirrors numbered k=1, . . . , K, with mirror number k receiving light beams issuing from a selected portion of a cylindrical lens and redirecting these light beams in another direction;
a plurality of K optical fibers numbered k=1, . . . , K, each fiber having a first end and a second end, with fiber number k being positioned adjacent to mirror number k so that the light beams received by mirror number k are redirected toward that fiber; and
light collection optics, positioned to receive the light beams redirected by a mirror and to focus each of these light beams onto the first end of the adjacent optical fiber with a selected light beam spot diameter and with a beam convergence angle whose sine is no greater than the numerical aperture of the fiber,
whereby pump light beams emitted by at least K of the light sources are received by and propagated within the K fibers.

5,299,223
OPTICALLY PUMPED LASER
Peter van der Wal, Boan, Fed. Rep. of Germany, assignor to MAN Technologie AG, Munich, Fed. Rep. of Germany
Filed Feb. 3, 1993, Ser. No. 16,985
Int. Cl.[5] H01S *3/081*
U.S. Cl. 372—94 7 Claims



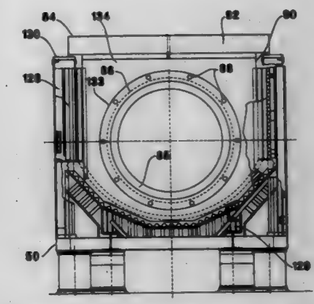
1. An optically pumped far infrared laser comprising:
a vacuum-tight housing filled with laser gas, said housing having means for introducing a pump laser; and
a ring resonator comprised of four mirrors, each said mirror arranged at an angle of 45° relative to the pump laser, and further comprised of at least two waveguides, with at least one of said mirrors having a bore for introducing the pump laser and with a further one of said mirrors serving as an exit mirror for the far infrared wave front.

5,299,224
WALL ASSEMBLY FOR INDUCTION FURNACE
Michel Maubert, Genevilliers, France, assignor to La Carbone Lorraine, Courbevoie, France
Filed Dec. 3, 1991, Ser. No. 801,933
Claims priority, application France, Dec. 21, 1990, 90 16585
Int. Cl.[5] F27D *1/00*
U.S. Cl. 373—71 5 Claims



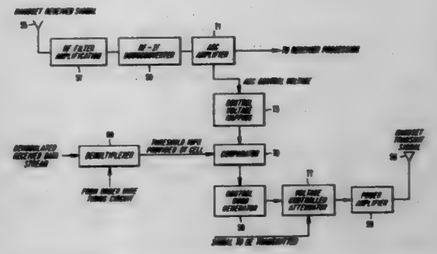
1. A graphite block for an induction furnace in the form of a right prism having a plurality of lateral sides parallel to an axis, said sides formed of a plurality of graphite plates having an inner and an outer surface opposite to each other and two end faces parallel to said axis and perpendicular to said inner and outer surfaces, wherein each end face of a plate is adjacent to an end face of another plate,
each said plate including two longitudinal recesses with one recess near each of said end faces and parallel to said axis, wherein one recess opens into said inner surface and the other recess opens into said outer surface,
the recess opening into said inner surface facing toward the recess opening into the outer surface of an adjacent plate to form a polygonal space over a whole length of said plates,
said end faces being interfitted with each other by graphite keys of oblique surfaces occupying said polygonal space, said keys being divided over their length into two portions, flexible graphite joints being provided outside said polygonal space and inside a gap formed between end faces of adjacent interfitted plates.

5,299,225
GRAPHITIZATION FURNACE
Berch Y. Karagoz, Grand Island; Joseph M. Rua, Tonawanda; Lyman T. Moore, Niagara Falls, all of N.Y.; Larry E. Ledford, Valdese, N.C.; Donald P. Allen, Niagara Falls, N.Y.; Gregory Agnello, Niagara Falls, N.Y., and Thomas E. Fleckenstein, Ransomville, N.Y., assignors to Sigri Great Lakes Carbon Corp., Briarcliff Manor, N.Y.
Filed May 20, 1992, Ser. No. 886,062
Int. Cl.[5] F27D *3/00*
U.S. Cl. 373—115 12 Claims



1. A graphitization furnace for the length-wise graphitization of a column of amorphous cylindrical carbon electrodes, said furnace comprising a corrugated sheet metal shell having an approximately arc-shaped semi-circular lower portion, straight vertical sidewalls and an open top, the whole of said shell having a configuration of a U shaped trough supported by a framework structure on refractory piers, said furnace having at each end head wall structures comprising an end shell, an electrode suitable for supplying sufficient electrical energy to said column to heat said column to a temperature at which said amorphous carbon electrodes are converted to graphite, said furnace shell having its longitudinal axis horizontal to the earth, said refractory piers resting on a foundation on the earth.

5,299,226
ADAPTIVE POWER CONTROL FOR A SPREAD SPECTRUM COMMUNICATIONS SYSTEM AND METHOD
Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 614,816, Nov. 16, 1990, Pat. No. 5,093,840. This application Nov. 19, 1991, Ser. No. 792,869
The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 8 Claims



1. An apparatus for adaptive-power control of a spread-spec-

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trum transmitter of a mobile station operating in a cellular-communications network using spread-spectrum modulation, wherein a base station transmits a first spread-spectrum signal, said mobile station comprising:

AGC means responsive to a received signal, wherein the received signal includes the first spread-spectrum signal and an interfering signal, for generating an AGC-output signal;

correlator means for despreading the AGC-output signal;

power means responsive to processing the received signal with the despread AGC-output signal, wherein said power means includes means for multiplying the received signal with the depread AGC-output signal, for generating a received-power level;

comparator means for generating a comparison signal by comparing the received-power level to a threshold level;

transmitter means for transmitting a second spread-spectrum signal;

an antenna; and

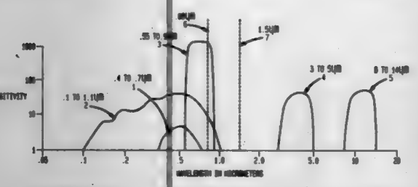
variable-gain means responsive to said comparison signal for adjusting a transmitter power level of the second spread-spectrum signal from said transmitter means.

5,299,227

INDIVIDUAL BEACON IDENTIFICATION SYSTEM

David Rose, Bowie, Md., assignor to American Electronics, Inc., Lanham, Md.

Filed Apr. 13, 1993, Ser. No. 45,186
Int. Cl.[5] H04K *1/00*; H04L *9/00*
U.S. Cl. 375—1 **30 Claims**



1. An individual beacon identification system comprising:

a) light emitting means for providing a continuous transmission of a pulse coded optical radiation output signal utilizing a spread spectrum output signal modulated by a spreading code; and

b) a special purpose detector, placed in a location that is remote from the light emitting means, the detector being adapted for detecting the output signal from the light emitting means and is further adapted to despread the pulse coded optical radiation output signal to allow detection of the pulse coded optical radiation output signal.

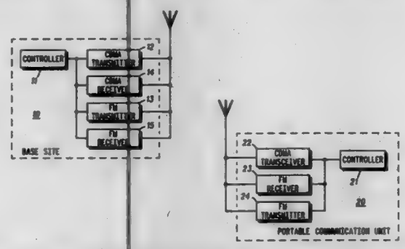
5,299,228

METHOD AND APPARATUS OF REDUCING POWER CONSUMPTION IN A CDMA COMMUNICATION UNIT

Scott M. Hall, Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1992, Ser. No. 997,057
Int. Cl.[5] H04B *15/00*; H04K *1/00*; H04L *27/30*
U.S. Cl. 375—1 **20 Claims**

1. A method of exchanging a communicated signal with a base site by a communication unit within a cellular system comprising: transceiving the communication signal under a broadband format while the communication unit is active; and receiving the communicated signal by the communication unit



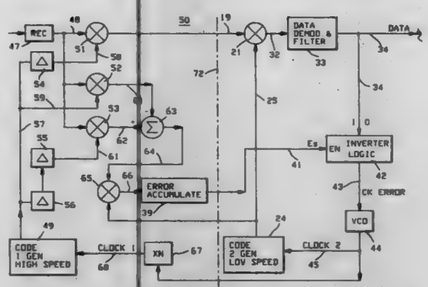
under a narrowband format while the communication unit is idle.

5,299,229

HIGH RATE-LOW RATE PN CODE TRACKING SYSTEM

John W. Zscheile, Jr., Farmington; Alan E. Lundquist, and Samuel C. Kingston, both of Salt Lake City, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 29, 1993, Ser. No. 10,723
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **8 Claims**



1. A high PN code rate receiving system for receiving, recovering and tracking a high rate composite code of two component codes PN1 and PN2, comprising:

high PN code rate recovery means receiving said PN1 and PN2 composite code,

high code rate recovery means and tracking means coupled to the output of said receiving means,

said high code rate tracking means having a high rate PN1 code generator and a high rate early-late error generator,

said high code rate recovery means comprising a high rate mixer coupled to the output of said receiving means and said high rate PN1 code generator to provide a low data rate PN2 code modulated signal,

said high rate early-late error generator comprising a pair of high rate mixers having inputs ports coupled to the output of said receiver and to an output of said high rate PN1 code generator,

said high rate mixers having outputs coupled to input ports of a high speed summing means to provide a tracking error signal at the output port modulated by said low rate PN2 code,

mixer means having input ports coupled to the output port of said summing means and to an output port of a replica source of said PN2 code to provide a tracking error signal at the output of said replica source,

low code rate recovery means and tracking means coupled to said high code rate recovery means and said high code rate tracking means,

said low code rate recovery means and tracking means comprising a low rate PN2 code generator, low code rate recovery means and a low code rate tracking loop,

said low code rate recovery means comprising a low rate mixer coupled to the output of said high rate mixer and to said low rate PN2 code generator to provide a low code rate output signal at the output of said low code rate recovery means,

said low code tracking means comprising error logic circuit means coupled to the output of said low code rate recovery means and to the output of said low rate mixer to provide a low rate clock error signal output, and

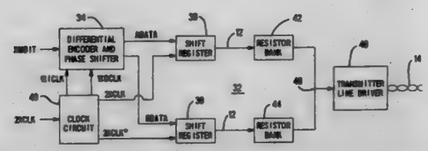
a low rate voltage controlled oscillator (VCO) having an input coupled to said low rate clock error signal output to provide a low rate clock signal on an output which is coupled to said low rate PN2 code generator which generates said PN2 code.

5,299,230

DIGITAL DATA TRANSMISSION SYSTEM WITH PREDISTORTION OF TRANSMITTED PULSES

Kevin A. Jaeger, Glen Ellen, and Gerald L. Somer, Sebastopol, both of Calif., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 21, 1990, Ser. No. 632,433
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] H04L *25/49*
U.S. Cl. 375—60 **16 Claims**



1. In a digital data transmission system of the type comprising a digital data transmitter connected to at least one receiver by a transmission medium, said receiver configured to receive a signal comprising a plurality of pulses, each characterized by a predetermined pulse shape, the improvement comprising:

a digital transversal filter comprising at least one delay line at least one data input terminal, at least one clock input terminal, and a plurality of stages which are clocked by signals applied to the clock input terminal to shift digital data through the delay line, at least selected stages of the delay line each providing a respective output;

a digital data signal source connected to the data input terminal to apply at least one digital data signal comprising a string of bits thereto;

a clock signal source connected to the clock input terminal to apply at least one clock signal thereto;

means for weighting the outputs of the selected stages of the at least one delay line by respective weighting factors;

means for summing the weighted outputs of the selected stages of the at least one delay line to synthesize a summed output; and

means, responsive to the summed output, for transmitting on the transmission medium a plurality of transmitted pulses derived at least ion part from the summed output;

wherein the weighting factors cause a portion of the summed output associated with an individual one of the bits to deviate from the predetermined pulse shape such that the transmitted pulses associated with individual ones of the bits are predistorted to enhance correspondence between (1) the transmitted pulses as received by the receiver after distortion by the transmission medium and (2) the predetermined pulse shape;

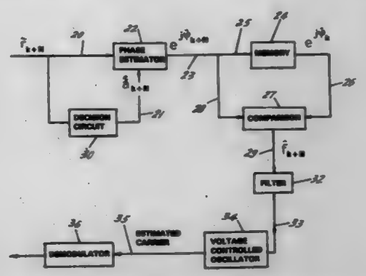
wherein clock signal applied by the clock signal source is effective to cause the plurality of transmitted pulses overlap in time.

5,299,231

METHOD AND DEVICE FOR ESTIMATING THE CARRIER FREQUENCY OF A MODULATED DATA SIGNAL

Franco Guglielmi, Milan, and Arnaldo Spalvieri, Senigallia, both of Italy, assignors to Alcatel Italia SpA, Milan, Italy

Filed Dec. 19, 1991, Ser. No. 810,217
Claims priority, application Italy, Dec. 19, 1990, 22444/A90
Int. Cl.[5] H04L *27/22*
U.S. Cl. 375—97 **5 Claims**



1. A method of estimating the carrier frequency of a modulated data signal, comprising the steps of:

estimating the phase of the signal at two instants in time, said instants being N signal intervals apart, where N is a number of signal intervals; and

calculating the difference between the two estimates wherein:

(a) a first phase estimate of the signal is made at a kth signal interval, in accordance with the equation:

$$e^{j\phi}k = r_k a_k^*;$$

where r_k is the composite complex signal, comprising complex signal data and noise, at the kth signal interval, and a_k^* is the complex conjugate of the signal data at the kth signal interval;

(b) a second phase estimate of the signal is made at a (k+N)th signal interval, in accordance with the equation:

$$e^{j\phi}k+N = r_{k+N} a_{k+N}^*$$

and

where r_{k+N} is the composite complex signal, comprising complex signal data and noise, at the (k+N)th signal interval, and a_{k+N}^* is the complex conjugate of the signal data at the (k+N)th signal interval; and

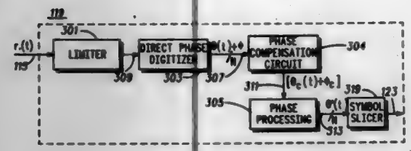
(c) the difference between the two estimates is calculated in accordance with the equation:

$$f_{k+N} = Im\{e^{j\phi}k+N\, e^{-j\phi}k\}$$

where f_{k+N} is an estimate of the carrier frequency of the signal at the (k+N)th signal interval, and Im is the imaginary part of the product $e^{j\phi}k+N\, e^{-j\phi}k$.

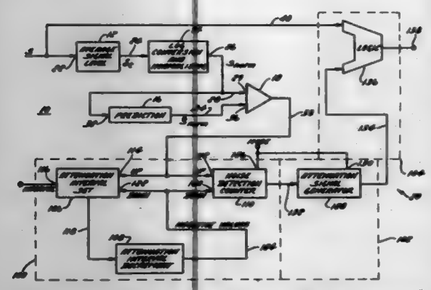
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5,299,232
PHASE COMPENSATION METHOD AND APPARATUS
Christopher P. LaRosa, Lake Zurich, and Michael J. Carney, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 26, 1992, Ser. No. 858,245
Int. Cl.[5] H03D 1/04, 1/06; H03K 5/01, 6/04
U.S. Cl. 375—99 38 Claims



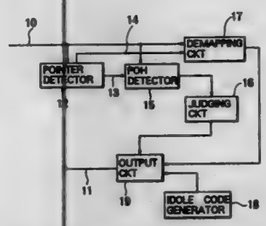
1. A method of phase compensation of a received signal, the received signal having positive and negative zero-crossings and a phase, the received signal input into a voltage limiter causing asymmetrical distortion of the positive and negative zero-crossings of the received signal, the method comprising the steps of:
sampling the phase of the received signal at the positive and negative zero-crossings, forming a corresponding positive-crossing and a negative-crossing phase value;
combining said negative-crossing phase value and said positive-crossing phase value, forming a first difference signal having a magnitude and a sign selected from the group consisting of a positive sign and a negative sign;
forming an estimated error signal responsive to the sign of said first difference signal; and
combining said estimated error signal with said sampled phase selected from the group consisting of said negative zero-crossings and said positive zero-crossings, substantially eliminating said asymmetrical distortion.

5,299,233
APPARATUS AND METHOD FOR ATTENUATION A RECEIVED SIGNAL IN RESPONSE TO PRESENCE OF NOISE
Safdar M. Asghar, and John G. Bartkowiak, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.
Filed May 22, 1992, Ser. No. 887,469
Int. Cl.[5] H03D 1/06; H04B 1/10
U.S. Cl. 375—99 18 Claims



5. An apparatus for attenuating a received signal in response to a presence of noise in said received signal; said presence of noise being indicated by noise detection signals; the apparatus comprising:
a noise detection tracking means for tracking a count of noise detections, said noise detection tracking means establishing an attenuation interval as a predetermined number of sampling intervals, said noise detection tracking means receiving said noise detection signals and generating a noise detection count signal representing a count of noise detections occurring during said attenuation interval less the number of said sampling intervals following said attenuation interval during which no noise detections occur;
an attenuation signal generator means for generating an attenuation signal, said attenuation signal generating means being responsive to said noise detection count signal to set an attenuation factor according to a predetermined relationship between said count of noise detections and said attenuation factor, said attenuation signal being representative of said attenuation factor; and
a logic means for applying said attenuation signal to said received signal to effect said attenuation.

5,299,234
STS-1 SIGNAL PROCESSING METHOD AND DEVICE WHICH CAN PREVENT SUBSEQUENT TERMINAL EQUIPMENT FROM GENERATING UNNECESSARY ALARM
Tatsuhiko Nakagawa, Tokyo, and Kinya Endo, Miyagi, both of Japan, assignors to NEC Corporation, Japan
Filed Sep. 21, 1992, Ser. No. 948,214
Claims priority, application Japan, Sep. 19, 1991, 3-268326
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—112 3 Claims



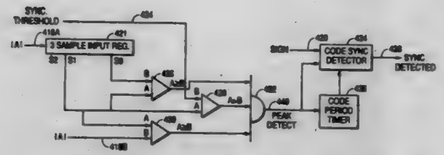
1. A method of processing an STS-1 signal into a DS-3 signal, said STS-1 signal comprising an STS synchronous payload envelope comprising first through M-th subframes, where M represents a plural natural number, each of said first through said M-th subframes comprising an STS path overhead and a payload comprising an information part, a predetermined one of the STS path overheads of said first through M-th subframes being allocated as an STS path signal label part to indicate whether or not said STS synchronous payload envelope is unequipped, the information parts of the payloads of said first through said M-th subframes being used in transporting said DS-3 signal when said STS synchronous payload envelope is not unequipped, said method comprising the steps of:
detecting said STS path signal label part from the STS path overheads of said first through said M-th subframes of said STS synchronous payload envelope of said STS-1 signal as a detected STS path signal label part;
judging whether or not said detected STS path signal label part indicates that said STS synchronous payload envelope is unequipped;
successively extracting the information parts of the payloads of said first through said M-th subframes of said STS synchronous payload envelope from said STS-1 signal as a succession of extracted information parts;
generating an idle code signal representing an idle code prescribed for said DS-3 signal; and
outputting said succession of the extracted information parts as said DS-3 signal when said judging step judges that said detected STS path signal label part indicates that said STS synchronous payload envelope is not unequipped, said outputting step being for outputting said idle code signal when said judging step judges that said detected STS path signal label part indicates that said STS synchronous payload envelope is unequipped.

5,299,235
TIME SYNCHRONIZATION OF A RECEIVER IN A DIGITAL RADIO TELEPHONE SYSTEM
Gustav Larsson, and Karim Jamal, both of Stockholm, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 10, 1991, Ser. No. 757,296
Int. Cl.[5] H04L 7/00
U.S. Cl. 375—114 24 Claims



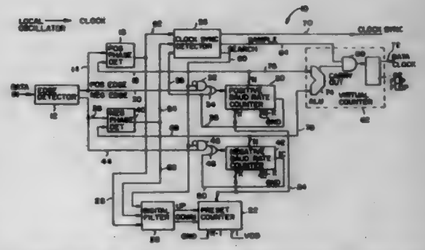
19. A system for time synchronizing and demodulating received data signal in a time division multiple access system wherein a time slot of said received data signal includes at least two known data sequences, wherein said at least two known data sequences include at least one synchronization sequence having good correlation properties and at least one sequence which does not have good correlation properties, said system comprising:
means for calculating, for each of said at least two known data sequences, a predetermined function, and also for calculating at least one sampling points based on said predetermined functions; and
means for demodulating said time slot of said received data signal using one or more of the sampling points.

5,299,236
SYSTEM AND METHOD FOR OBTAINING AND MAINTAINING SYNCHRONIZATION OF A DEMODULATED SIGNAL
Louis Pandula, Sunnyvale, Calif., assignor to Toshiba America Information Systems, Inc., Irvine, Calif.
Filed Nov. 13, 1992, Ser. No. 974,747
Int. Cl.[5] H04L 7/00, 27/06; H03D 1/00; H04J 3/06
U.S. Cl. 375—116 9 Claims



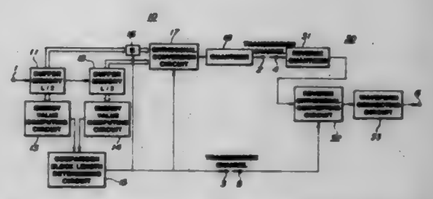
1. A system for detecting an overall pattern in an input signal by detecting a first pattern portion and by subsequently detecting a second related pattern portion, comprising:
comparator means for comparing the input signal with a reference code for detecting when the input signal contains the first pattern portion, and for subsequently detecting when the input signal contains the second related pattern portion,
said comparator means generating a first signal when a detection is observed and generating a second signal when a detection is not observed;
peak detector means, responsive to said comparator means, for generating a pattern signal when said second signal is received from said comparator means before and after receipt of said said first signal; and
signal detector means, responsive to said peak detector means, for counting the number of said pattern signals generated from said peak detector means and for generating a synchronization signal when the number of said pattern signals equals a pre-defined amount of at least two.

5,299,237
ASYMMETRICAL DATA TRACKING DIGITAL PHASE LOCKED LOOP
Glenn M. Head, Dunedin, Fla., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 20, 1991, Ser. No. 810,821
Int. Cl.[5] H03D 3/24
U.S. Cl. 375—120 16 Claims



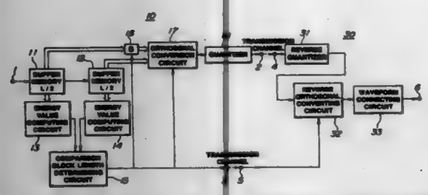
1. In a digital phase locked loop, the improvement comprising:
edge detection means for generating a positive edge signal and a negative edge signal when a data pulse is input thereto;
means for coupling said positive edge signal and negative edge signal to respective baud rate counters, each said baud rate counter generating an output signal; and
each said baud rate counter output signal coupled to counting means for generating a data clock signal midway between said positive edge signal and negative edge signal.

5,299,238
SIGNAL DECODING APPARATUS
Naoto Iwahashi; Masayuki Nishiguchi, both of Kanagawa; Makoto Akune, Tokyo; Kenzo Akagiri, and Yoshihito Fujiwara, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 553,608, Jul. 18, 1990, Pat. No. 5,197,087.
This application Jan. 26, 1993, Ser. No. 9,551
Claims priority, application Japan, Jul. 19, 1989, 1-186603
Int. Cl.[5] H04B 1/66
U.S. Cl. 375—122 8 Claims


82
DELAY
DELAY
DELAY

audio signal samples grouped into time-domain blocks based on a block time length determination and that further includes block time length information representing the block time length determination performed during encoding, comprising:
reverse conversion means including means for grouping the frequency-domain transform coefficients into transform blocks having lengths determined in response to the block time length information used during encoding and means for applying an inverse discrete transform function to each of the frequency-domain transform blocks and generating time-domain signal sample blocks in response to the frequency-domain transform coefficients.

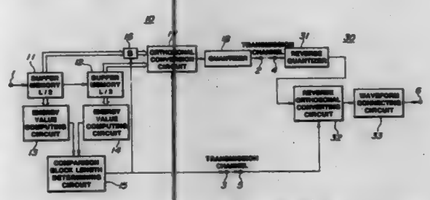
5,299,239
SIGNAL ENCODING APPARATUS
Naoto Iwahashi; Masayuki Nishiguchi, both of Kanagawa; Makoto Akune, Tokyo; Kenzo Akagiri, and Yoshihito Fujiwara, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 553,608, Jul. 18, 1990, Pat. No. 5,197,087. This application Jan. 26, 1993, Ser. No. 9,575
Claims priority, application Japan, Jul. 19, 1989, 1-186603
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **24 Claims**



1. An encoder for encoding sampled values of input audio signals, comprising:
means for detecting values of predetermined properties of sampled values of input audio signals, for adaptively selecting a changeable block length represented by a time period along a time axis in response to detected values of the predetermined properties, and for grouping the sampled values into time-domain signal sample blocks each block having an adaptively selected length; and
means for generating frequency-domain transform coefficients for each adaptively selected block of changeable length of the time-domain signal sample blocks, applying a discrete transform function to said sample blocks, and outputting encoded sampled values of the input audio signals in the frequency-domain.

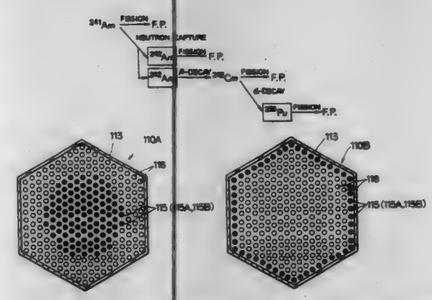
5,299,240
SIGNAL ENCODING AND SIGNAL DECODING APPARATUS
Naoto Iwahashi; Masayuki Nishiguchi, both of Kanagawa; Makoto Akune, Tokyo; Kenzo Akagiri, and Yoshihito Fujiwara, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 553,608, Jul. 18, 1990, Pat. No. 5,197,087. This application Jan. 26, 1993, Ser. No. 9,575
Claims priority, application Japan, Jul. 19, 1989, 1-186603
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **6 Claims**

1. A system for encoding sampled values of an audio signal and subsequently decoding the encoded audio signal, comprising:
means for detecting values of predetermined properties of an input audio signal and adaptively selecting a changeable block length represented as a time period along a time axis in response to the detected values of the predetermined properties and grouped the sampled values into time-domain signal sample blocks;
means for generating frequency-domain transform coefficients for each adaptively selected block length of the time-domain signal sample blocks, applying a discrete transform function to said sample blocks, and outputting encoded sampled values of the input audio signals in the frequency-domain; and



reverse conversion means for grouping the frequency-domain transform coefficients into transform blocks, applying an inverse discrete transform function to each of the frequency-domain transform blocks, and generating time-domain signal sample blocks in response to the frequency-domain transform coefficients.

5,299,241
TRANSURANIUM ELEMENT TRANSMUTING REACTOR CORE
Masao Suzuki, Ebina; Kazuo Arie, Yokohama; Masatoshi Kawashima, Yokohama, and Yoshiaki Sato, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 2, 1991, Ser. No. 739,439
Claims priority, application Japan, Aug. 3, 1990, 2-205253; Sep. 29, 1990, 2-262868
Int. Cl.[5] G21G *1/02*
U.S. Cl. 376—170 **4 Claims**



1. In a transuranium element transmuting fast reactor core in which a fast reactor contains a plurality of fuel assemblies, said fuel assemblies comprising fuel pellets containing a minor actinide elements and a fissionable fuel, the amount of said minor actinide elements being controlled so as to prevent melting of said fuel pellets in said fuel assemblies, the improvement wherein the amount of ^{242}Cm, ^{244}Cm and ^{241}Am in a said fuel assembly satisfy the equation

$$1.2\times10^{2}\times M_{242}+2.8\times M_{244}+1.1\times10^{-1}\times M_{241}<\frac{}{Q_1}$$

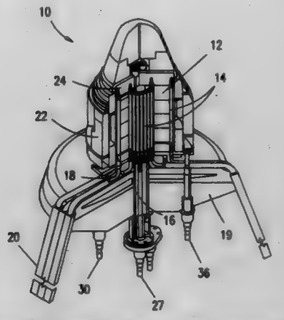
where M_{242}, M_{244} and M_{241} are, respectively, the amounts in grams of ^{242}Cm, ^{244}Cm and ^{241}Am in said fuel assembly and Q_1 is the maximum amount of heat in watts which must be removed to prevent melting of said fuel assembly, and wherein

the amount of minor actinide elements in said fuel assembly satisfies the equation

$$1.2\times10^{2}\times M_{242}{}^{L}+2.8\times M_{244}+1.1\times10^{-1}\times M_{241}{}^{L}<Q_2$$

where $M_{242}{}^{L}$, $M_{244}{}^{L}$ and $M_{241}{}^{L}$ are, respectively, the amounts in grams of ^{242}Cm, ^{244}Cm and ^{241}Am per unit length of said fuel assembly and Q_2 is the amount of heat in watts per unit length which must be removed to prevent melting of said fuel assembly.

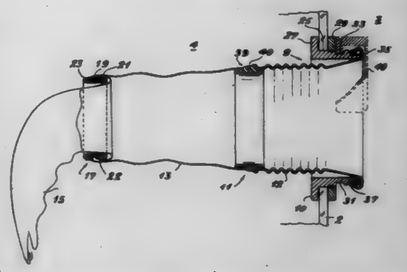
5,299,242
DUAL ANNULAR ROTATING "WINDOWED" NUCLEAR REFLECTOR REACTOR CONTROL SYSTEM
Michael G. Jacox; Robert L. Drexler; Robert N. M. Hunt, and James A. Lake, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Oct. 28, 1992, Ser. No. 967,504
Int. Cl.[5] G21C *7/06*
U.S. Cl. 376—223 **4 Claims**



1. In a nuclear reactor having a core operating in the fast neutron energy spectrum where criticality control is achieved by neutron leakage, a reactor control system comprising:
a) dual annular, rotatable reflector rings, the rings including an inner reflector ring and an outer reflector ring, the reflectors concentrically assembled, surrounding the reactor core, and each reflector ring including a plurality of openings, the openings in each ring capable of alignment with each other;
b) means for independent driving of each of the annular reflector rings such that reactor criticality can be initiated and controlled by rotation of either reflector ring such that the extent of alignment of the openings in each ring controls the reflection of neutrons from the core.

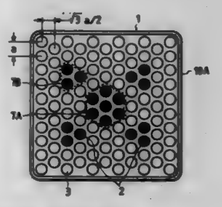
5,299,243
GLOVE HOLDER UNIT FOR A CONFINEMENT ENCLOSURE
Bernard Picco, Pujaut, France, assignor to Cogema-Compagnie Generale Des Matieres Nucleaires, France
Filed Dec. 21, 1992, Ser. No. 994,322
Claims priority, application France, Dec. 24, 1991, 91 16107
Int. Cl.[5] G21F *7/04*
U.S. Cl. 376—287 **15 Claims**

1. Glove holder unit for a confinement enclosure (1), said enclosure having at least one access opening (9) on which is fixed a glove disk (10), the glove holder unit having a sleeve (11) for protecting the arm and forearm fixed to said glove disk (10) and a working glove (15) protecting the hand and provided with means (17) for the detachable assembly with said protective sleeve (11), wherein the protective sleeve (11) comprises at least two parts, a first part (12) provided with bellows and a second part (13) made from a flexible material, the latter part (13) being able to bend within the first part (12), the glove holder unit further comprising means (49) for locking the assembly means (17) of the glove (15) and the protective sleeve (11), said locking means (49) being mobile between a locked



position in which it maintains the assembly means (17) and the glove (15) outside the enclosure (1) and an unlocked position in which it allows the passage of the glove (15) and its assembly means (17) between the interior and exterior of the enclosure.

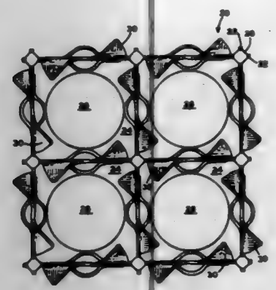
5,299,244
FUEL ASSEMBLY
Koki Yamauchi, Hitachi; Yasunori Bessho, Mito, and Sadayuki Izutsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 7, 1991, Ser. No. 772,440
Claims priority, application Japan, Oct. 5, 1990, 2-266229
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—438 **5 Claims**



1. A fuel assembly comprising
a plurality of fuel rods containing fissile material being arranged at predetermined pitches in first and second directions and being arranged in triangle lattices,
a plurality of water rods group arranged among said fuel rods,
an upper tie plate and a lower tie plate which respectively supports each of an upper end and a lower end of the fuel rod or a water rod in the water rods group, and
fuel spacers for maintaining intervals between the fuel rods,
each of the water rods group including no fuel rod and with a plurality of water rods which are arranged adjacent to each other in triangle lattices having substantially the predetermined pitches of the fuel rods,
the outer diameter of the water rod being smaller than the predetermined pitches, and
the water rods groups being arranged not adjacent to each other and being surrounded with the fuel rods.

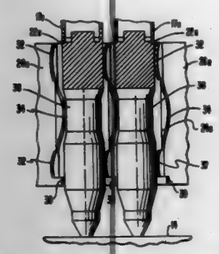
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,245
SPACER GRID FOR A NUCLEAR FUEL ASSEMBLY
Michael E. Aldrich, Forest; David A. Farnsworth, Lynchburg; Charles D. Morgan, Lexington, and Jeffrey S. Tucker, Lynchburg, all of Va., assignors to B&W Fuel Company, Lynchburg, Va.
Filed Nov. 2, 1992, Ser. No. 970,760
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 2 Claims



1. A spacer grid for a nuclear fuel assembly, comprising:
a. a plurality of metal strips that are interleaved on edge to define a plurality of individual cells wherein each cell is sized to receive a single nuclear fuel rod; and
b. a series of grid mixing vanes that extend from one edge of each of said metal strips and are internal to the overall envelope of the spacer grid, said mixing vanes being bent relative to said metal strips in an alternating opposing pattern such that four of said mixing vanes extend into each of the individual cells whereby said mixing vanes direct coolant flow within each individual cell into the gaps between adjacent nuclear fuel rods.

5,299,246
SHAPE-MEMORY ALLOYS IN THE CONSTRUCTION OF NUCLEAR FUEL SPACER GRIDS
William J. Bryan, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Sep. 25, 1992, Ser. No. 950,593
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—462 8 Claims



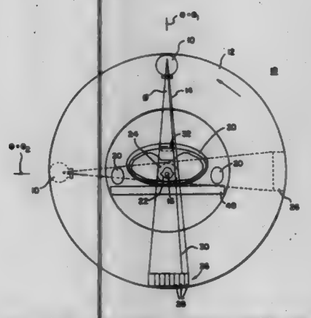
1. A spacer grid for use in a nuclear reactor fuel assembly comprising:
openings for receiving, supporting and spacing a plurality of elongated nuclear fuel rods; and
a plurality of spring members biased into said openings for applying lateral forces against said fuel rods, said spring members comprising a shape-memory metal having a two-way memory characteristic and an overall transformation temperature range substantially above atmospheric temperature and substantially below an operating temperature experienced by said spring members such that said spring members assume a first configuration below said overall transition temperature range wherein said lateral forces are minimized and a second configuration above said overall transition temperature range wherein said lateral forces are maximized.

5,299,247
SIGNAL PROCESSING DEVICE HAVING FREQUENCY-ADAPTIVE SAMPLING
Franciscus P. Widdershoven, and Jan Haisma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 14, 1992, Ser. No. 960,677
Claims priority, application European Pat. Off., Oct. 15, 1991, 91202661.4
Int. Cl.[5] G11C *19/28*; H03K *21/08*
U.S. Cl. 377—60 9 Claims



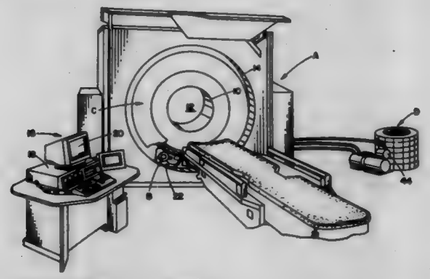
1. A signal processing device comprising sampling means for sampling an input signal in the form of charge carrier packages and a shift register provided with an input region to which a signal sample is provided during operation, and with transport means for transporting the signal sample to an output region of the shift register, characterized in that the shift register comprises a transport channel in which an electron-hole liquid can exist, in that the sampling means are capable of sampling the input signal in the form of electron-hole droplets, and in that the transport means comprises means for generating an acoustic wave and passing the latter through the transport channel.

5,299,248
REDUCED FIELD-OF-VIEW SYSTEM FOR IMAGING COMPACT EMBEDDED STRUCTURES
Norbert J. Pelc, Los Altos, Calif., assignor to Lunar Corporation, Madison, Wis.
Continuation of Ser. No. 860,818, Mar. 31, 1992. This application Apr. 22, 1993, Ser. No. 52,228
Int. Cl.[5] H05G *1/60*
U.S. Cl. 378—5 1 Claim



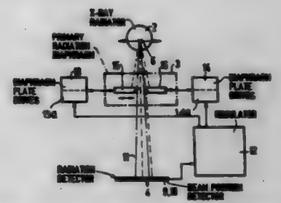
1. A method for generating a tomographic image of an imaged object having a compact structure of a first material contained within a larger body of a second material, the first and second materials having different energy dependent attenuations, comprising the steps of:
(a) collimating the width of a radiation beam to substantially equal the width of the compact structure;
(b) projecting radiation at a first and second energy level through the compact structure;
(c) acquiring a first and second tomographic projection set of attenuations of the x-rays transmitted through the compact structure and intervening portions of the body at the first and second energy at a plurality of angles about the imaged object;
(d) combining the first and second tomographic projection sets to produce a third tomographic projection set dependent substantially on the attenuation only of the compact structure; and
(e) reconstructing an image of the compact structure from the third tomographic projection set.

5,299,249
HEAT TRANSFER TECHNIQUES FOR MOVING THERMAL ENERGY FROM HIGH POWER X-RAY TUBES ON ROTATING CT GANTRIES TO A REMOTE LOCATION
James E. Burke, Villa Park, Ill.; Anton Z. Zupancic, Kirtland, Ohio; Thomas R. Miller, St. Charles, and Patrick P. McNally, Geneva, both of Ill., assignors to Picker International, Inc., Highland Heights, Ohio
Filed Nov. 27, 1992, Ser. No. 982,477
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—15 27 Claims



1. A CT scanner comprising:
a patient receiving region defined within a stationary gantry;
a fluid cooled x-ray tube mounted on a rotating gantry, the rotating gantry mounted to the stationary gantry for rotation about the patient receiving region, the x-ray tube transmitting a beam of x-rays across the patient receiving region;
a radiation detection means for detecting radiation which has traversed the patient receiving region;
an image reconstruction means for reconstructing an electronic image representation from signals generated by the X-ray detection means;
an annular heat transfer means for transferring heat from the x-ray tube cooling fluid to the stationary gantry, the annular heat transferring means including:
an annular radiator mounted to the rotating gantry for rotation therewith, the annular radiator means including a passage therethrough through which the x-ray tube cooling fluid is circulated;
a stationary member disposed adjacent the rotating annular radiator, the stationary member and the rotating radiator defining an air region therebetween;
a wick portion of porous material mounted to the annular radiator in the air region;
a means for wetting the wick material with a working fluid that evaporates cooling the x-ray tube cooling fluid with evaporative cooling;
a remote heat exchange means for circulating a working fluid from the stationary member to a remote location where heat is removed and returning cooled working fluid to the wick material wetting means.

5,299,250
COMPUTER TOMOGRAPHY APPARATUS WITH COMPENSATION FOR FOCUS MIGRATION BY ADJUSTMENT OF DIAPHRAGM POSITION
Siegfried Styrnal, Nuremberg, and Helmut Winkelmann, Ferchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 14, 1992, Ser. No. 990,634
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1992, 4207006
Int. Cl.[5] H05G *1/60*
U.S. Cl. 378—19 3 Claims



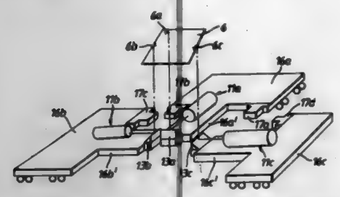
1. A computer tomography apparatus comprising:
an x-ray radiator and a radiation receiver rotatable around an examination volume and around a system axis extending through said examination volume, said x-ray radiator generating an x-ray beam in a plane in a centered position emanating from a focus and incident on said radiation detector having opposite ends, said focus being susceptible to migration during operation causing said x-ray beam to deviate from said centered position along said system axis;
a primary radiation diaphragm having plates disposed for selectively blocking said x-ray beam;
position detector means for monitoring a change in position of said x-ray beam along said system axis due to migration of said focus and for generating electrical signals corresponding to said change said position detector means including two detectors respectively laterally disposed at said opposite ends of said radiation detector for detecting deviations of said x-ray beam from said centered position along said system axis; and
means supplied with said signals for adjusting said diaphragm plates based on said signals for compensating for migration of said focus in the direction of said system axis by maintaining said x-ray beam approximately in said centered position.

5,299,251
EXPOSURE APPARATUS
Nobutaka Kikuiri, Tokyo; Yoriyuki Ishibashi, and Takahiro Murata, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Continuation of Ser. No. 786,746, Nov. 1, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 46,928
Claims priority, application Japan, Nov. 5, 1990, 2-299442
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 13 Claims

1. An exposure apparatus comprising:
a mask holder having means to move a mask held thereon;
a target holder having means to move a target held thereon;
an alignment system including at least two bases each being linearly movable along an axis parallel to the mask, wherein each base has an interference block and a front portion that is narrower than a rear portion of that base,

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and wherein each base carries an alignment sub-system or viewing an alignment mark on the mask to enable the mask holder and target holder to be steered to a proximal exposure position, characterized in that all axes intersect at one point and lie in one plane, each interference block has a blocking part which can be hit by another blocking part, a size of each blocking part is larger than a size of one



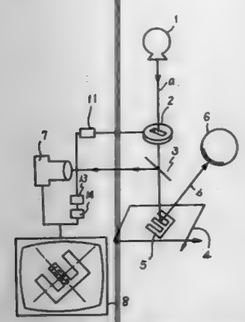
of the narrower front portions corresponding to that blocking part, a shape of each blocking part is the same as the narrower front portion corresponding to that blocking part, and a direction of each blocking part is the same as one of the narrower front portions so that each base can engage with another base or another interference block to prevent collision of the alignment sub-systems.

5,299,252

FLUORESCENT X-RAY FILM THICKNESS MEASURING APPARATUS

Masanori Takahashi, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 44,363
Claims priority, application Japan, Apr. 7, 1992, 4-021183[U]
Int. Cl.[5] G21K *1/02*
U.S. Cl. 378—50 2 Claims



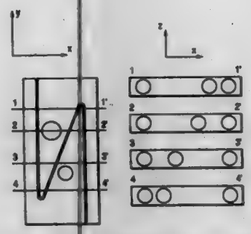
1. A fluorescent X-ray film thickness measuring apparatus for measuring a film thickness of a sample, said film thickness measuring apparatus comprising: a collimator having an aperture for forming a primary X-ray beam having a beam axis and a rectangular cross section; means connected to said collimator for rotating said collimator around the primary X-ray beam axis to a desired angular position; and means for monitoring a portion of the sample comprising means for overlapping a representation of the sample portion with a representation of the orientation of the rectangular cross section of the formed primary X-ray beam.

5,299,253

ALIGNMENT SYSTEM TO OVERLAY ABDOMINAL COMPUTER AIDED TOMOGRAPHY AND MAGNETIC RESONANCE ANATOMY WITH SINGLE PHOTON EMISSION TOMOGRAPHY

Barry W. Wessels, Centerville, Va., assignor to Akzo N.V., Arnhem, Netherlands

Filed Apr. 10, 1992, Ser. No. 866,060
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—163 17 Claims



1. A method of registering SPECT images with CT or MR images, comprising the steps of:

(A) aligning and immobilizing a human torso to be imaged on a support means;

(B) uniquely marking a cross section of the imaged torso by placing at least a portion of said human torso proximate to a contrasting marker means encased in an inert material comprising the support means;

(C) imaging said human torso using two or more imaging techniques to produce at least two images of said human torso to be imaged; and

(D) registering said at least two images of said human torso to be imaged to produce a coherent image of said human torso to be imaged.

5,299,254

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A TARGET RELATIVE TO A REFERENCE OF KNOWN CO-ORDINATES AND WITHOUT A PRIORI KNOWLEDGE OF THE POSITION OF A SOURCE OF RADIATION

Paul Dancer, Saint-Etienne, and Francois Lacoste, Lyon, both of France, assignors to Technomed International, Paris, France

Continuation of Ser. No. 615,449, Nov. 19, 1990. This application Oct. 19, 1992, Ser. No. 963,010
Claims priority, application France, Nov. 24, 1989, 89 15515; Aug. 6, 1990, 90 10040
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—163 53 Claims

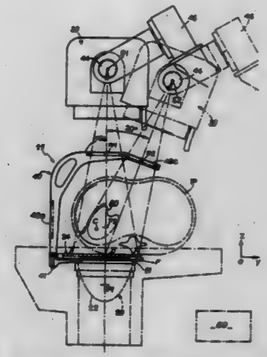
1. A method of determining the position of a target relative to a reference point of a target treatment equipment, comprising the steps of:

emitting radiation from an X-ray source freely movable relative to said target treatment equipment and of unknown position relative thereto for forming an X-ray image of the target, the X-ray radiation being received by an X-ray receiver device of known position relative to said reference point, the X-ray source and X-ray receiver device being disposed on opposite sides of the target, said X-ray source being freely movable and of unknown position relative to said X-ray receiver;

disposing a mask-forming device between the receiver device and the X-ray source, the mask-forming device comprising at least one group of X-ray opaque localization means of known position coordinates relative to said reference point;

positioning the S-R source into a first unknown position relative to said target treatment equipment for which the XR radiation emitted by the XR source simultaneously encompasses the XR receiver device, the target and said at least one group of localization means;

emitting a first quantity of X-ray radiation from the X-ray source to form a first X-ray image of the target and the at least one group of localization means on the X-ray receiver device, and determining the respective first image position coordinates thereof in said first X-ray image;



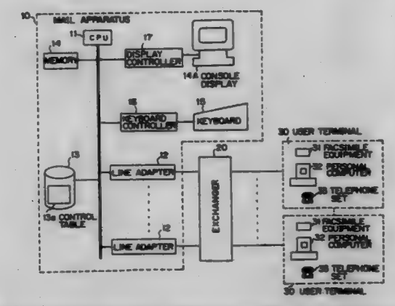
calculating the position coordinates of the target on the basis of the known position coordinates of the at least one group of localization means, and at least some of the first image position coordinates of the at least one group of localization means and the target.

5,299,255

ELECTRONIC MAIL SYSTEM FOR TRANSMITTING INFORMATION VIA COMMUNICATION NETWORK

Hiroshi Iwaki, Yokohama; Akihiro Okada, Zama, and Hideyuki Motoyama, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 12, 1991, Ser. No. 668,244
Claims priority, application Japan, Mar. 12, 1990, 2-058048; Mar. 13, 1990, 2-060021
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 10 Claims



2. In an electronic mail system comprising a mail center and in which electronic mail information, transmitted from terminals connected to a communication network with destinations designated, is received and delivered to designated terminals, an electronic processing device of the mail center comprising:

storage means for storing wrong destinations;

entry means for entering a designated destination in said storage means as a wrong destination when a line is connected between an originating terminal and a terminal designated by said originating terminal as the destination of electronic mail information and said designated terminal performs no prescribed response operation to receive said electronic mail information after recognizing a call; and

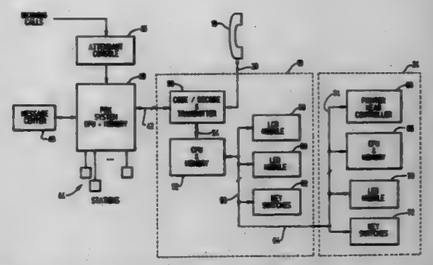
delivery control means for deciding whether or not a destination of said mail information designated by said originating terminal has been entered into said storage means each time electronic mail information is received from the originating terminal, performing a process of delivering the received electronic mail information to the terminal designated by said originating terminal when the designated destination is not found in said storage means and performing no process of delivering the received electronic mail information to said designated terminal when the designated destination is found in said storage; said delivery control means including means for informing said originating terminal that the destination is in error when the destination designated by said original terminal is found in said storage means.

5,299,256

PBX TELEPHONE WITH MESSAGE PRINTER

Liang-Te Hu, Diamond Bar, Calif., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed May 17, 1991, Ser. No. 701,862
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 23 Claims



14. A private branch exchange (PBX) system, comprising:

a central PBX control station;

at least one digital telephone unit connected to said central PBX control station said at least digital telephone unit including a plurality of keys, a handset having an analog transducer for receiving speech input, an encoder used to digitally encode said speech input, a local processor for controlling said digital telephone unit, and an alphanumeric display;

a common message storage facility coupled to said central PBX control station, said common message storage facility for digitally storing voice data transmitted from said at least one digital telephone unit to said common message storage facility; and

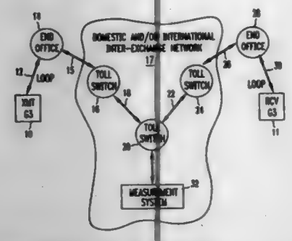
at least one printer, said at least one printer is directly coupled to said local processor of said at least one digital telephone unit for selectively printing information.

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5,299,257
SUBSCRIBER INITIATED NON-INTRUSIVE NETWORK-BASED ANALYSIS OF FACSIMILE TRANSMISSIONS

Richard C. Fuller; Thomas W. Goeddel, both of Fair Haven; R. B. Heick, Red Bank; Martin Herzlinger, Freehold, and Subramanian Krishnamurthy, Middletown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 21, 1992, Ser. No. 839,975
Int. Cl.[5] H04M *11/00, 1/24*
U.S. Cl. 379—100 **32 Claims**

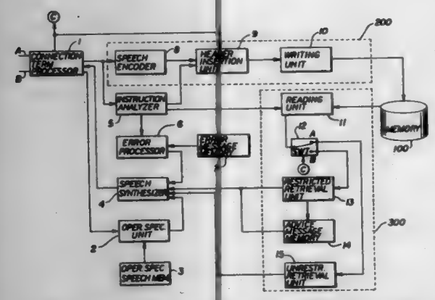


1. A telephone network, comprising:
a facsimile analysis unit in the network for making non-intrusive impairment measurements of facsimile telephone calls handled by the network; and
a means for connecting the facsimile analysis unit to a predetermined facsimile telephone call handled by the network in response to another telephone call placed to the network by a user of the network for making at least one non-intrusive measurement of a selected parameter associated with the predetermined facsimile telephone call to identify an impairment of the predetermined facsimile telephone call.

5,299,258
INFORMATION INPUT/OUTPUT CONTROLLER FOR TELEPHONE LINES

Mihoji Tsumura, and Masato Hata, both of Osaka, Japan, assignors to Ricos Co., Ltd., Osaka, Japan

Filed Feb. 27, 1992, Ser. No. 842,261
Claims priority, application Japan, Feb. 27, 1991, 3-58029
Int. Cl.[5] H04M *15/00*
U.S. Cl. 379—112 **14 Claims**

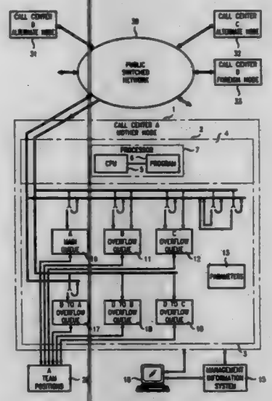


1. An information input/output controller for telephone lines to which is connected a charge line, which incorporates a charging function, and a non-charge line, which does not incorporate a charging function, and which comprises
(a) a memory means for the storage of data,
(b) an input means which converts information input either from said charge line or from said non-charge line to a data format and then writes said data into said memory means along with identification data specifying the line on which said information was received, and
(c) an output means which, on receipt of an information data read request from either said charge line or said non-charge line, reads the requested information data from said memory means and outputs it to said charge line or said non-charge line, while at the same time restricting the output of said information data to said non-charge line in cases where the line indicated by the identification data and the line on which the read request was received are in both cases said non-charge line.

5,299,259
DISTRIBUTING CALLS OVER SERVING CENTERS OF A LARGE CUSTOMER

Mary R. Otto, Lisle, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1991, Ser. No. 766,870
Int. Cl.[5] H04M *7/00, 15/00, 3/42;* **H04Q** *3/64*
U.S. Cl. 379—221 **16 Claims**

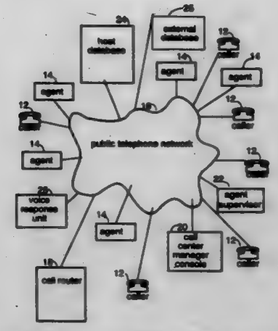


1. A method of serving calls to a customer having a plurality of call distributor (CD) serving centers, comprising the steps of:
receiving, in a first of said centers a call rerouted from a second of said centers;
determining whether an excessive number of calls have been previously rerouted to said first center from an alternate center other than said second center, said excessive number indicating inability to handle additional calls without unacceptable delay in said alternate center, and
if an excessive number of calls has not been rerouted from said alternate center, rerouting said call to said alternate center;
wherein overflow calls are automatically rerouted to an alternate center which is not likely to be overloaded without requiring any call routing control messages, reflecting a level of busyness of a serving center, to be transmitted among said plurality of serving centers.

5,299,260
TELEPHONE CALL HANDLING SYSTEM

Jack Shaio, Cambridge, Mass., assignor to Unifi Communications Corporation, Billerica, Mass.

Continuation of Ser. No. 615,918, Nov. 20, 1990, abandoned.
This application Jul. 29, 1993, Ser. No. 99,809
Int. Cl.[5] H04M *5/06*
U.S. Cl. 379—265 **49 Claims**



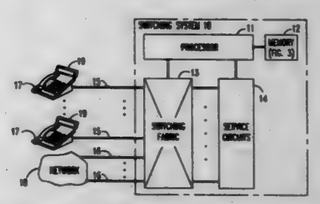
1. A system for automatically handling incoming telephone calls comprising
means for receiving an incoming call arriving at an incoming line,
means for receiving telephony information about said incoming call,
means for assigning said incoming call to be controlled by one of a plurality of possible application programs based upon said information, each said application program including a set of user defined steps for handling an incoming call, said means for assigning including a call discrimination subsystem that is separate and distinct from said application programs,
at least one of said application programs including queries for obtaining further information about said call, and
means for returning control of said incoming call to said call distribution subsystem when said incoming call is controlled by said at least one application program and said at least one application program obtains said further information, said call discrimination subsystem reassigning said call to be controlled by one of a plurality of possible application programs based upon said telephony information and said further information.

5,299,261
ARRANGEMENT FOR EFFECTING SEGMENTATION OF A DIALED NUMBER

Frank J. Bogart, Boulder; Bruce D. Butterfield, Broomfield; David L. Chavez, Jr., Northglean; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 24, 1992, Ser. No. 841,160
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—354 **56 Claims**

1. An arrangement for transforming a first sequence of symbols into a second sequence of symbols in a telecommunications system, comprising:
means for storing information defining, for each call-control symbol sequence that a user may validly input to establish a call, a corresponding second symbol sequence that is different from the call control symbol sequence;
means responsive to receipt from the user of any said call-control symbol sequence that the user may validly input to establish a call, for parsing the received symbol sequence to determine from the information stored in the storing means, prior to selection of a route or an endpoint for the call, the corresponding second symbol sequence; and



means responsive to the determination, for providing the second symbol sequence to an adjunct to use as the received call-control symbol sequence.

5,299,262
METHOD FOR EXPONENTIATING IN CRYPTOGRAPHIC SYSTEMS

Ernest F. Brickell, Albuquerque, N. Mex.; Daniel M. Gordon, San Diego, Calif., and Kevin S. McCurley, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1992, Ser. No. 929,929
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—28 **9 Claims**

ElGamal Signatures
- Common parameters: a large prime p, a generator g of the group $GF(p)$.
- Public key y for prover
- Private key k for prover such that $g^k \equiv y \bmod p$.
- Preprocessing: Prover picks $e \in_r [1, p-1]$ with $\gcd(e, p-1) = 1$, and computes $r \equiv g^e \bmod p$.
- Signature generation: To sign a message m,
  - compute s such that $H(m) \equiv ks + er \bmod (p-1)$.
  - (r, s) is the prover's signature of m.
- Signature verification: check that $g^{H(m)} \equiv y^r r^s \bmod p$.

1. In a cryptographic system, a method for transforming a first signal into a second signal in a manner infeasible to invert, said method comprising the steps of:
(a) prestoring in a computing device a plurality of values g^{x_i} in a plurality of memory locations within said computing device where x_i is selected such that an integer $e = \Sigma a_i x_i$, where a_i is an integer weight such that $0 \leq a_i \leq h$, and h is a positive integer, and g is a fixed signal unique to said cryptographic system;
(b) representing a first randomly generated input digital signal as said integer e;
(c) exponentiating said fixed signal, g, by the said integer e to generate said second signal, $y = g^e$, wherein said step of exponentiating further comprises:
for each integer d with $1 \leq d \leq h$, computing the individual values of $c_d = \pi_{a_i = d} g^{x_i}$, i.e., c_d will be the product of all the said values g^{x_i}, for the said memory locations, i, for which the value a_i is equal to d;
computing the product,

$$\prod_{d=1}^{h} c_d{}^d$$

for the said individual values, c_d to thereby determine a value for said second signal, $y = g^e$.

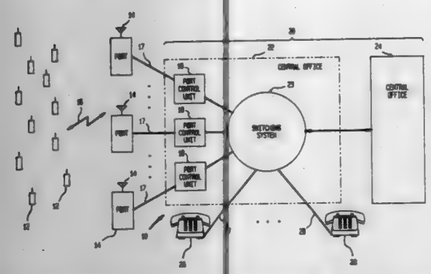
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,263

TWO-WAY PUBLIC KEY AUTHENTICATION AND KEY AGREEMENT FOR LOW-COST TERMINALS

Michael J. Beller, Red Bank, and Yacov Yacobi, Berkeley Heights, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 4, 1993, Ser. No. 26,673
Int. Cl.[5] H04L *9/30, 9/08*
U.S. Cl. 380—30 **37 Claims**



1. A method for achieving mutual identification and session key agreement between a terminal and a server at the start of communication session comprising the steps of

(a) transmitting from the server to the terminal an identity j of the server, public key N_j of the server and a certificate C_j of the server which certificate C_j, if valid, is congruent to $\sqrt{h(j, N_j)} \bmod N_u$ where N_j is a public key of the server, N_u is a public key of a central authority, and h() signifies a one-way hashing function,

(b) at the terminal, verifying that said transmitted certificate C_j received at the terminal satisfies $h(j, N_j)=c_j^2 \bmod N_u$,

(c) at the terminal, choosing a random number $x=(x_L, x_R)$ and obtaining $y=x^2 \bmod N_j$ and transmitting y to said server,

(d) at said server, performing the modular square root operation to obtain $x=(x_L, x_R)=\sqrt{y} \bmod N$ by using secret keys of the server p_j, q_j such that $N_j=p_jq_j$, and transmitting x_L back to the terminal,

(e) transmitting, from the terminal to the server, an identity i of the terminal, a public key P_i of the terminal, and a certificate c_i of the terminal which certificate c_i, if valid, is congruent to $\sqrt{h(i,P_i)} \bmod N_u$, wherein the identity i, the public key P_i and the certificate c_i are encrypted using x_R as a session key,

(f) at the server, verifying that the received certificate c_i satisfies $h(i,P_i)=C_i^2 \bmod N_u$,

(g) computing at the terminal a signature S(m) based on a challenge message m sent by the server by applying an asymmetric signature operation to said challenge message m, and transmitting the signature to the server in encrypted form using x_R as a session key, and

(h) verifying the signature at the server.

5,299,264

SYSTEM FOR SHORT-RANGE TRANSMISSION OF SIGNALS OVER THE AIR USING A HIGH FREQUENCY CARRIER

Larry Schotz, Mequon; Robert T. Buczkiewicz, Germantown, and John A. Lofgren, Milwaukee, all of Wis., assignors to L. S. Research, Inc., Cedarburg, Wis.

Filed Aug. 21, 1991, Ser. No. 748,267
Int. Cl.[5] H04H *5/00*
U.S. Cl. 381—14 **26 Claims**

1. A system for the wireless transmitting over the air of at least two transmitted signals carried by radio waves the system comprising:

a transmitter including;

multiplexing means for multiplexing first and second input signals to produce a multiplexed signal,

first local oscillator means comprising:

a ground;

a varactor including a cathode and an anode wherein said anode is coupled to said ground;

a first ceramic resonator coupled to said ground, said resonator producing a carrier signal of a predetermined carrier frequency of at least 900 MHz determined by the first ceramic resonator;

a first capacitor coupled between said resonator and said cathode of said varactor;

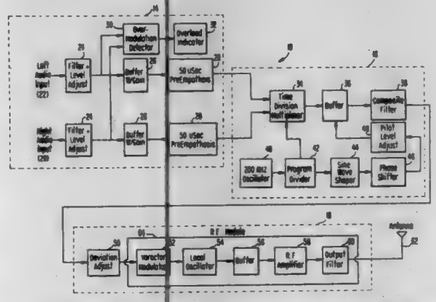
a second capacitor connected in series with a third capacitor, said second and third capacitors coupled between said ground and a junction between said first capacitor and said resonator, said third capacitor being an adjustable capacitor;

a common base Colpitts oscillator having a transistor including a base, a collector, and an emitter, wherein said base is coupled to said ground by a fourth capacitor;

a fifth capacitor coupled between said junction and said collector;

a sixth capacitor coupled between said collector and the emitter of said transistor;

a voltage source coupled to said collector and to said base;



a first filtering circuit coupled between said emitter and said ground; and

a second filtering circuit coupled between said base and said ground,

modulation means for frequency modulating the carrier signal based upon the multiplexed signal to produce a first electric signal,

radiation means for radiating over the air without the use of wires said radio waves carrying said transmitted signals in response to said first electric signal, said radio waves having a frequency of at least 900 MHz, said radiation means comprising a first antenna,

first high impedance buffering means coupled between said first local oscillator means and said first antenna so that said first antenna is prevented from modulating the frequency of said first local oscillator means, said buffering means comprising:

a dual gate gallium arsenide metal oxide semiconductor field effect transistor, having dual gates,

said field effect transistor having a drain and a source, wherein said drain is coupled to said first antenna;

an impedance matching network comprising a capacitor and an inductor coupled between said first local oscillator means and one of said dual gates;

said voltage source coupled to the other of said dual gates; and

said source being coupled to ground through a resistor and a capacitor network; and a receiver including;

converting means for wireless receiving through the air of said radio waves carrying said transmitted signals and for converting said radio waves to a second electric signal, said converting means comprising a second antenna,

second local oscillator means comprising:

a ground;

a varactor including a cathode and an anode where the anode is coupled to the ground;

a second ceramic resonator coupled to said ground, said second ceramic resonator disposed to produce a local signal having a local frequency offset from the carrier frequency and determined by the second ceramic resonator;

a first capacitor coupled between said resonator and said cathode of said varactor;

a second capacitor connected in series with a third capacitor, said second and third capacitors coupled between said ground and a junction between said first capacitor and said resonator, said third capacitor being an adjustable capacitor;

a common base Colpitts oscillator having a transistor including a base, a collector, and an emitter, wherein said base is coupled to said ground by a fourth capacitor;

a fifth capacitor coupled between said junction and said collector;

a sixth capacitor coupled between said collector and the emitter of said transistor; a voltage source coupled to said collector and to said base;

a first filtering circuit coupled between said emitter and said ground; and

a second filtering circuit coupled between said base and said ground,

mixing means for mixing a local signal, having a local frequency, with the second electric signal to lower the frequency of the carrier signal from the second electric signal to produce a third electric signal, where the local frequency is offset from the carrier frequency and is determined by the second ceramic resonator,

demodulation means for demodulating the third electric signal to produce a fourth electric signal, and

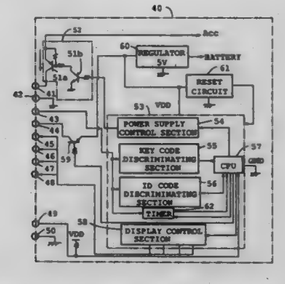
demultiplexing means for demultiplexing the fourth electric signal to produce fifth and sixth electric signals representative of the first and second input signals.

5,299,265

SYSTEM FOR SUPPLYING POWER TO A DETACHABLE GRILLE OF A CAR STEREO

Akira Hayama, and Tsutomu Nishizaka, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 3, 1991, Ser. No. 801,230
Claims priority, application Japan, May 31, 1991, 3-174286
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—86 **2 Claims**



1. A system for supplying power to a detachable grille of a car stereo, said car stereo having a stereo body and a first control unit, said system comprising:

the grille having a second control unit including an identification code thereof;

detector means for detecting attaching of the grille to the car stereo body of the car stereo and for producing an attaching signal;

first supplying means provided in the first control unit and responsive to the attaching signal, said first supplying means for supplying a first power from the car stereo body to the second control unit of the grille and for causing the second control unit to send the identification code to the first control unit;

discriminating means provided in the first control unit and for comparing the identification code of the grille with a reference identification code and for producing a coincide signal when both codes coincide with each other; and

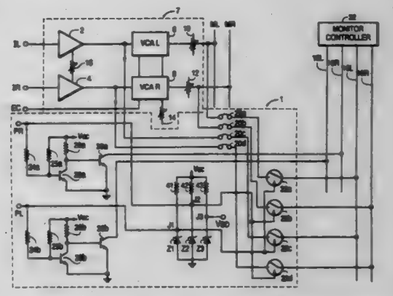
second supplying means responsive to the coincide signal for supplying a second power from the car stereo body to the grille for effecting operation of the grille.

5,299,266

MULTI MACHINE MONITOR FOR TV POST PRODUCTION

John L. Lumsden, Boca Raton, Fla., assignor to Sony Electronics Inc., Park Ridge, N.J.

Filed Mar. 20, 1992, Ser. No. 854,705
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—119 **17 Claims**



1. An apparatus for monitoring a signal line for use in an audio mixer comprising:

an interface for receiving a preview command from an operator, said preview command enabling said operator to monitor said signal line without interfering with signals on a mixing bus; and

control means for receiving said preview command from said interface and for transmitting at least one preview control signal to a line circuit associated with said signal line selected for monitoring;

wherein said line circuit comprises means for selecting a signal for transmission to a monitor upon receipt of said preview control signal and means for activating said monitor upon receipt of said preview control signal for enabling said operator to monitor the selected signal.

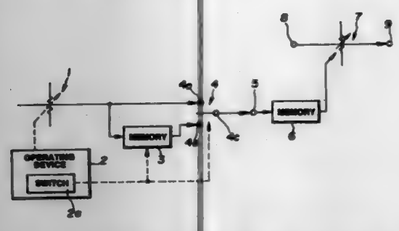
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,267

OPERATING APPARATUS OF AN AUDIO MIXER

Ryuichi Nakamura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 779,270, Oct. 18, 1991, abandoned.
This application Jul. 12, 1993, Ser. No. 89,902
Claims priority, application Japan, Oct. 26, 1990, 2-111569[U]
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—119 9 Claims



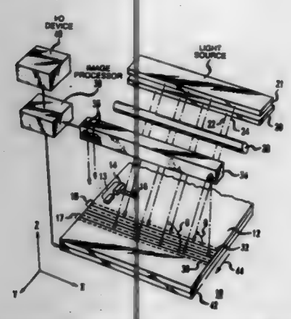
1. An operating apparatus of an audio mixer comprising:
an operating device for continuously adjusting a control amount that controls mixing of audio signals;
storing means for temporarily storing the control amount adjusted by the operating device; and
switching means electrically connected to said operating device and to said storing means, said switching means having at least two states and including a mode control switch mounted on said operating device and being operable by an operator to either of said states to enable the operator to select either a mode in which the control amount adjusted by the operating device is output directly for controlling mixing of the audio signals or a mode in which the control amount temporarily stored in said storing means is output for controlling mixing of the audio signals, said mode control switch also controlling said storing means in read/write modes, so that in the mode in which the control amount is output directly said storing means is in a write mode for temporarily storing the control amount adjusted by the operating device.

5,299,268

METHOD FOR DETECTING THE LOCATIONS OF LIGHT-REFLECTIVE METALLIZATION ON A SUBSTRATE

Israel Amir, Ewing, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 800,670
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 3 Claims



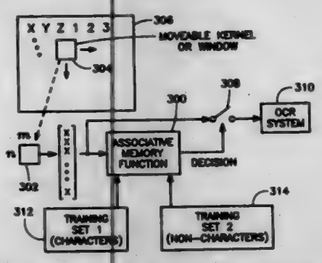
1. A method for detecting the location of light reflective areas of metallization on a first surface of a substrate, comprising the steps of:
separately spanning the substrate first surface with each of a pair of lines of light, each directed at a successive one of first and second strips of area running across the substrate first surface along a first axis parallel to the plane of the substrate, each line of light having an intensity profile (i.e., a variation in intensity from the center of the line, as measured along a second axis lying in a plane normal to the substrate and perpendicular to the first axis), the profiles being separate from each other but, when normalized, spatially intersecting;
sensing, at a location distance from the spatial intersection of the intensity profiles of the lines of light, the intensity of light reflected from a successive one of a plurality of third thin strips of area running across the substrate first surface parallel to the first and second strips; and
mapping the areas of metallization on the substrate first surface in accordance with the ratio of the intensity reflectance for each third strip of area when the substrate first surface is successively spanned by the first and second lines of light.

5,299,269

CHARACTER SEGMENTATION USING AN ASSOCIATIVE MEMORY FOR OPTICAL CHARACTER RECOGNITION

Roger S. Gaborski, and Lori L. Barski, both of Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,477
Int. Cl.[5] G06K *9/34*
U.S. Cl. 382—9 32 Claims



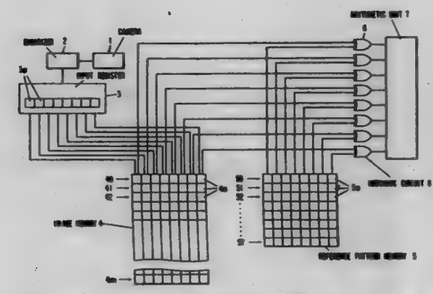
1. Character segmentation apparatus for an optical character recognition system for segmenting individual character images in an image of a document comprising plural characters, prior to performing character identification, said image of a document comprising an array of pixels, said apparatus comprising:
kernel means for capturing, in said image of a document, a sub-image framed within a window having an area corresponding to an area occupied by an individual character of said document, said window being movable in said image of a document in pixel-by-pixel steps whereby said kernel means captures a sub-image for each step of said window;
associative memory means for responding to said sub-image by producing a corresponding one of a set of training images of known characters with which said associative memory has been trained; and
sensor means, responsive to said associative memory means producing said corresponding one of a set of training images of known characters, for determining whether said sub-image is the image of an individual character, and segmenting said sub-image as an unidentified individual character image in response to said sub-image corresponding to the image of an individual character.

5,299,270

METHOD AND APPARATUS FOR SIMULTANEOUS MATCHING OF DISPLACED IMAGE BLOCKS TO A REFERENCE

Nobufumi Tokura, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 680,184, Apr. 3, 1991. This application Jul. 13, 1992, Ser. No. 911,387
Claims priority, application Japan, Apr. 5, 1990, 2-90847
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—30 14 Claims



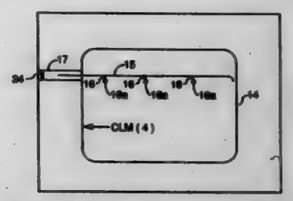
1. A pattern matching apparatus comprising a camera for observing an object to be detected and providing image data comprising a plurality of pixels arranged vertically and horizontally in a plane, said image data comprising a plurality of overlapping pixel blocks representing successive image inspection areas, each block including a plurality of vertical and horizontal lines of pixels, each horizontal line of pixels forming a unit of image data, said blocks displaced from one another horizontally and vertically in the plane,
an image memory for storing in each of a plurality of successive predetermined addresses thereof respective units of image data each having a plurality of pixels input from said camera, a total number of said addresses equal to a total number of horizontal pixel lines of said blocks, said predetermined addresses being divided into address blocks,
said image memory storing in different addresses of said image memory units of image data displaced from one another by a number of pixels,
wherein said image memory stores a first unit of image data in a first address therein, stores a second unit of image data having a non-overlapping relation with said first unit of image data in a second address therein, and stores in successive addresses between said first and second addresses a sequence of units of image data each having a successively smaller number of pixels overlapping with said first unit of image data,
said first unit of image data stored in a first address block representing a first image inspection area, successive units of image data stored in successive address blocks representing successive image inspection areas,
a reference pattern memory for storing in each of a plurality of addresses thereof a unit of reference data having a plurality of pixels of a reference pattern, and
a matching circuit for simultaneously matching pixels of units of image data from an address block of said image memory to the pixels of units of reference data stored in said reference pattern memory.

5,299,271

SYSTEM AND METHOD OF EMBEDDING OPTICAL FIBERS IN HONEYCOMB PANELS

Gregory C. Hildebrand, Rio Linda, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 26, 1993, Ser. No. 33,082
Int. Cl.[5] G02B *6/00, 6/42*
U.S. Cl. 385—12 18 Claims



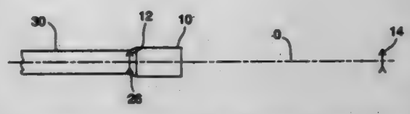
1. A fiber optic inspection system for installation in a structure having walls interconnected to provide a closed structure, and means for optically monitoring an internal condition of said structure without disassembly, the combination comprising:
a groove in one of said walls in the interior of said structure;
a fiber optic connector positioned in said groove, said connector having an end optically accessible from outside said closed structure to enable the application of a source of light therethrough; and
at least one optical fiber secured to said wall within said closed structure, said optical fiber being optically connected to the other end of said connector.

5,299,272

METHOD FOR ATTACHING A GRADIENT INDEX LENS TO AN OPTICAL FIBRE IN THE COURSE OF MAKING AN OPTICAL INSTRUMENT

Michael P. Buchin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.

Filed Jan. 27, 1993, Ser. No. 9,462
Int. Cl.[5] G02B *6/32*
U.S. Cl. 385—34 54 Claims



1. A method of attaching a GRIN lens to an optical fibre in the course of making an optical instrument for use at a working distance, the method comprising the steps of:
providing a test object;
providing a GRIN lens and an optical fibre, each having a proximal face and a distal face;
placing the GRIN lens at the working distance from the test object, and axially aligned therewith;
placing the optical fibre adjacent to, and axially aligned with, the GRIN lens to form an image of the test object at the proximal face of the optical fibre, the distal face of the optical fibre being placed adjacent to the proximal face of the GRIN lens;
moving at least one of the GRIN lens and the optical fibre axially with respect to the other until the image of the test object is in focus to determine an optimum axial spacing between the GRIN lens and the optical fibre; and
attaching the GRIN lens to the optical fibre with the optimum axial spacing between the GRIN lens and the optical fibre.

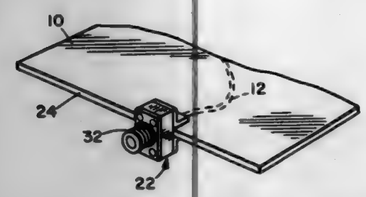
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,273

OPTICAL FIBER TO LAMINATE ADAPTER

David Evans, San Diego, Calif., assignor to Teledyne Ryan Aeronautical, San Diego, Calif.

Filed Nov. 12, 1992, Ser. No. 975,057
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—77 10 Claims



1. A method for coupling an optical fiber embedded in a structure to an optical connector, said structure having a surface, said optical fiber having a first end flush with said surface and a second end, comprising the steps of:
mounting said optical connector on a first portion of a positioning tool, said first portion in movable relation to a second portion of said positioning tool;
disposing said optical connector on said surface, said optical connector in substantial optical alignment with said first end;
securing said second portion of said positioning tool in rigid relation to said structure;
introducing light into said second end of said optical fiber;
connecting a light meter to said optical connector for providing an intensity indication of said light;
refining said optical alignment with said positioning tool until said intensity indication is a maximum; and
attaching said optical connector to said structure.

5,299,274

OPTICAL FIBER LASER FUSION SPLICER

Joseph A. Wysocki, Oxnard; Michael R. Vince, Thousand Oaks; Stephen W. McCahon, Newbury Park, and John T. Kenna, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 25, 1992, Ser. No. 904,249
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—96 23 Claims



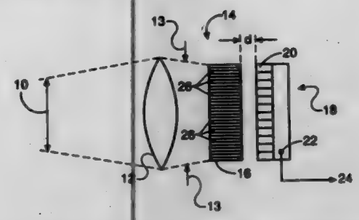
1. An optical fiber fusion splicer, comprising:
means for supporting two optical fibers with their ends in an aligned facing relation along an axis;
means for monitoring the positioning of said fibers in the aligned facing relation;
means for optically heating the two optical fibers uniformly around their circumferences at their facing ends, wherein said means for heating includes:
a controllable optical source for producing a beam coincident with said axis, and
means for optically measuring the power applied to the facing ends of said two optical fibers, and
means for controlling the power input to the means for heating so as to heat the optical fibers at their facing ends with the minimum power sufficient to fuse the facing ends.

5,299,275

OPTICAL FIBER FILTER FOR REDUCING ARTIFACTS IN IMAGING APPARATUS

Todd A. Jackson, Pittsford, and Robert H. Hibbard, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,713
Int. Cl.[5] G02B 6/04, 6/06, 6/42
U.S. Cl. 385—116 18 Claims



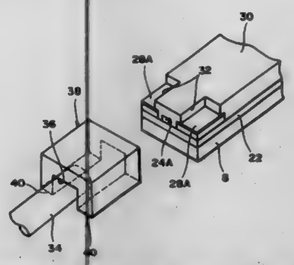
1. An imaging apparatus for generating an image signal from incident image light having its higher spatial frequencies limited to reduce undersampling artifacts, said apparatus comprising:
an image sensor for generating the image signal from an array of photosites; and
an array of optical fibers interposed in the path of the incident image light such that at least some of the optical fibers emit light over adjacent photosites so as to substantially blur the image upon said sensor.

5,299,276

WAVEGUIDE TYPE OPTICAL DEVICE AND METHOD FOR MANUFACTURING THE SAME

Koji Okamura, and Tadao Arima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 9, 1992, Ser. No. 958,975
Claims priority, application Japan, Oct. 11, 1991, 3-263633; Oct. 11, 1991, 3-263634
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—130 14 Claims



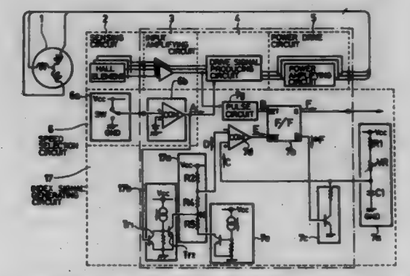
1. A method for fabricating a waveguide optical device comprising the steps of:
forming evenly a core layer with a relatively high index of refraction upon an under clad with a relatively low index of refraction;
forming a first and second thin film layers upon said core layer in a core forming region and a reference plane forming region in the vicinity of the core forming region, respectively, said thin film layers having a sufficiently lower etching rate than the etching rate of said core layer;
etching said core layer with said first and second thin film layers used as masks, thereby forming a core and a reference plane, respectively;
removing said first thin film layer on the core;
forming an outer clad with a relatively low index of refraction of a material having a sufficiently higher etching rate than the etching rate of said second thin film layer so as to cover at least said core; and
partially etching said outer clad to expose at least a part of said reference plane.

5,299,277

FLEXIBLE DISK DRIVE DEVICE

Norio Fujii, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 21, 1992, Ser. No. 916,271
Claims priority, application Japan, Jul. 23, 1991, 3-206303
Int. Cl.[5] H02P 5/168
U.S. Cl. 388—815 9 Claims



1. A flexible disk drive device which maintains a motor at a predetermined rotating speed in response to a speed selection signal and generates an index signal in synchronism with the rotation of the motor, comprising:
means for producing a signal representing a reference rotary position of the motor;
an index signal producing circuit which receives the signal representing the reference rotary position of the motor, initiates outputting of the index signal upon receipt of the signal representing the reference rotary position of the motor, and terminates the outputting of the index signal by comparing a terminal voltage of a capacitor of the index signal producing circuit with a predetermined reference voltage;
an adjusting circuit which sets the termination timing of the outputting of the index signal by adjusting the charge or discharge time constant of the capacitor;
a reference voltage generating circuit which includes a plurality of resistors connected in series between a first line which is a voltage source line and a second line having a lower voltage than the voltage source line, and generates a reference voltage from a node between adjacent resistors in the series; and
a reference voltage switching circuit which changes the reference voltage upon receipt of a speed selection signal representing a different rotating speed from the predetermined rotating speed, wherein the reference voltage is changed so that the pulse width of the index signal corresponds to a predetermined rotating angle of the motor.

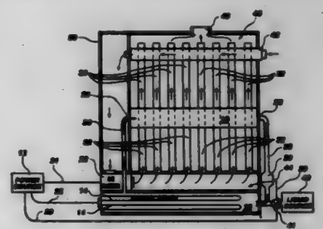
5,299,278

FORCED AIR CIRCULATION ELECTRIC CONVECTION SPACE HEATING SYSTEM UTILIZING HEATED AIR DISCHARGE TO PREHEAT AIR TO BE HEATED

Kenneth E. Heller, Star Rte., Box 290, Fairview, Utah 84629

Filed May 20, 1991, Ser. No. 702,414
Int. Cl.[5] F24H 3/06; H05B 3/82, 1/00
U.S. Cl. 392—358 11 Claims

1. An improved system for heating a space comprising
a first heat exchanger for receiving and heating a liquid, and having at least one heating element for heating in response to a supply of power,
a power source coupled to the heating element for supplying power thereto,
a second heat exchanger having a first flow passage means having an inlet for receiving heated liquid from the first heat exchanger and a second flow passage means in heat exchange relationship with said first flow passage means,
a pump for continuously circulating heated liquid from the first heat exchanger through said first flow passage means of said second heat exchanger and back to said first heat exchanger,
an air blower having an air inlet and an air outlet, said blower having its outlet coupled to said second flow passage means of said second heat exchanger for forcing air through said second flow passage means of said second



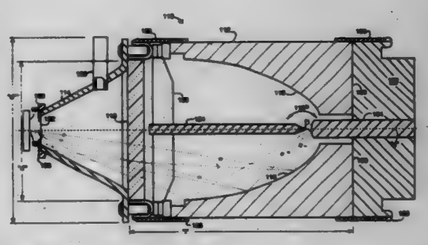
heat exchanger to be heated by heated liquid flowing through said first flow passage thereof for distribution to the space to be heated, and
a third heat exchanger located downstream of said second heat exchanger and having a first flow passage means having an inlet arranged to receive the heated air from the second flow passage means of said second heat exchanger and an outlet discharging the heated air to the space to be heated, said third heat exchanger having a second flow passage having an inlet communicating with incoming cold air from the space to be heated and an outlet communicating with the inlet of said blower whereby the incoming cold air passing through the second flow passage means of said third heat exchanger is preheated by the heated air flowing through said first flow passage means of said third heat exchanger.

5,299,279

SHORT ARC LAMP SOLDERING DEVICE

Roy D. Roberts, Newark, Calif., assignor to ILC Technology, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1992, Ser. No. 983,686
Int. Cl.[5] H01J 61/30, 5, 16
U.S. Cl. 392—421 8 Claims



7. A short-arc lamp, comprising:
a cylindrical body including a first and a second metal band for electrical power input and heat sinking means contact;

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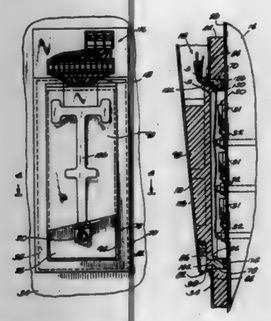
arc generating means disposed near a central axis of the cylindrical body for producing an intense source of light;
ellipsoidal light reflecting means disposed within the cylindrical body and around said central axis for collecting an arc of at least 110° of light from the arc generating means to an external point of focus proximate to the lamp;
a flat sapphire window sealed to the cylindrical body and including a metal oxide doping for reducing ultraviolet emissions from the lamp during operation; and
xenon gas under pressure which is contained by said flat sapphire window.

5,299,280

WIPE ENTRY ARRANGEMENT FOR COMPONENTS IN A PROTECTIVE DAM AREA OF A FOAM INSULATED ELECTRIC WATER HEATER TANK

Darryl L. Ruark, Lugoff, S.C., assignor to AOS Holding Company, Milwaukee, Wis.

Filed Oct. 20, 1992, Ser. No. 963,781
Int. Cl.[5] H05B *1/02*; F24H *1/20, 9/00*; F22B *37/36*
U.S. Cl. 392—449 **11 Claims**



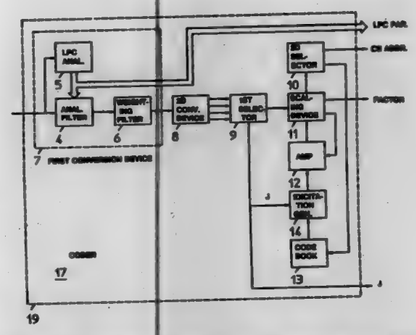
1. A water heater comprising
a tank defining a water chamber and including an outer surface,
an electrical component extending outwardly of said outer surface of said tank,
an outer jacket surrounding and spaced from said tank and having therein an opening affording access to said electrical component,
a dam which is located within said opening, and which completely surrounds said electrical component, said dam bridging the space between said jacket and said tank,
a cap extending over said electrical component and engaging said dam,
electrical wires extending from said component, extending between said cap and said dam, and extending outwardly of the outer jacket, and
insulating material located between said tank and said outer jacket and outside of said dam.

5,299,281

METHOD AND APPARATUS FOR CONVERTING A DIGITAL SPEECH SIGNAL INTO LINEAR PREDICTION CODING PARAMETERS AND CONTROL CODE SIGNALS AND RETRIEVING THE DIGITAL SPEECH SIGNAL THEREFROM

Karel G. Coolegem, The Hague, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Continuation of Ser. No. 580,866, Sep. 11, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 974,361
Claims priority, application Netherlands, Sep. 20, 1989, 8902347
Int. Cl.[5] G10L *9/02*
U.S. Cl. 395—2.28 **14 Claims**



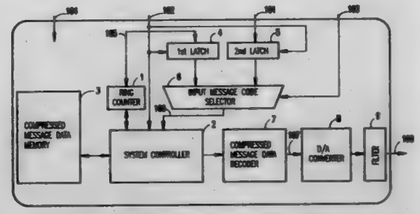
1. Apparatus for converting a residual signal, which is derived from a digital speech signal by passing sequences, each consisting of the same plural number of digital speech signal samples obtained at time intervals which are equal from one sample to the next, sequence by sequence through filter means controlled by parameters obtained by subjecting each said digital speech signal sample sequence to linear predictive coding, into control code signals for transmission over a transmission medium along with said parameters, said apparatus comprising segmentation means for splitting each residual signal produced from a said sample sequence into segments and for generating per segment several first pulse train signals each one of which comprises a fixed number of pulses at time intervals which are equal from one to the next, each one of said several first pulse train signals starting at a difference starting time position within the respective segment, and comprising selection means for selecting a first pulse train signal most related to a corresponding segment of said residual signal, characterized in that
said apparatus further comprises memory means for storing available second pulse train signals, comparing means for comparing a selected first pulse train signal with stored second pulse train signals and for selecting a selected second pulse train signal that exhibits the most correspondence to the selected first pulse train signal, pulses of said second pulse train signals succeeding each other, for comparison in said comprising means at time intervals which are equal from one pulse to the next pulse of said second pulse train signal, and also means for producing each said control code signal from the address, in said memory means, of said selected second pulse train signal and from the time position, within a said segment, of said selected first pulse train signal.

5,299,282

RANDOM TONE OR VOICE MESSAGE SYNTHESIZER CIRCUIT

Kazuhiko Tabei, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1992, Ser. No. 830,226
Claims priority, application Japan, Feb. 8, 1991, 3-017253
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.79 **4 Claims**



1. A message synthesizer circuit comprising:
compressed message data storing means for storing a plurality of compressed message data, each corresponding to a plurality of message codes;
ring counter means for emitting a count data by counting rings in synchronism with a predetermined clock signal with the total number of said plurality of compressed message data corresponding to a maximum count number of said ring counter means;
input means connected to receive an external input message code signal asynchronously with the operation of said ring counter means;
message code selector means connected to receive the count data from said ring counter means and the external input message code signal from said input means for randomly altering an array of count data emitted from said ring counter means, which corresponds to a specific message code signal, to convert said count data into random message code signal;
means for reading out the compressed message data corresponding to said random message code signals from a corresponding area of said compressed message data storing means; and
means for decoding said compressed message data read out from said compressed message data storing means and a means for converting said decoded data from digital into analog form to emit a specific synthesized message.

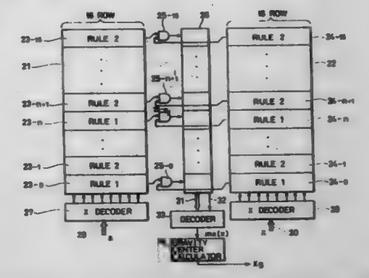
5,299,283

SEMICONDUCTOR DEVICE FOR EXECUTING FUZZY INFERENCE AND METHOD OF OPERATION THEREOF

Takeshi Hamamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1991, Ser. No. 638,722
Claims priority, application Japan, Jan. 29, 1990, 2-19451
Int. Cl.[5] G06G *7/00*; G06F *15/18*; G11C *15/04*
U.S. Cl. 395—3 **8 Claims**

7. A semiconductor memory device for performing fuzzy inference, comprising:
a first memory array including a plurality of content addressable memory cells arranged in rows and columns, for storing first membership function data for first input data as an input variable in order to develop a first bit mapping;
a second memory array including a plurality of content addressable memory cells arranged in rows and columns, for storing second membership function data for second input data as an output variable in order to develop a second bit mapping, said first and second memory arrays having common rows;
first means for reading out data onto respective rows of said first and second memory arrays by supplying said first and second input data on the columns of said first and second memory arrays as retrieval data, respectively, the read out data representing one of either coincidence and noncoincidence between said first input data and said first membership function data and between said second input data and said second membership function data;



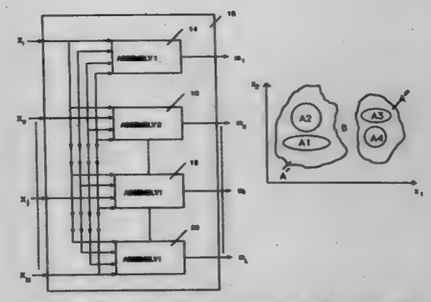
second means, respective to said first means, for detecting a most significant row address among the rows on which data read out by said first means indicate coincidence.

5,299,284

PATTERN CLASSIFICATION USING LINEAR PROGRAMMING

Asim Roy, Tempe, Ariz., assignor to Arizona Board of Regents, acting on behalf of Arizona State University, Tempe, Ariz.

Filed Apr. 9, 1990, Ser. No. 506,243
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—22 **12 Claims**



1. An information processing system for separating a plurality of patterns into a discrete set of classes, each of said patterns having a plurality of input signals disposed therewithin, said system comprising: a pattern class separator having input terminals, output terminals, and a plurality of assemblies, each said assembly being operatively disposed between said input terminals and said output terminals to identify one of said discrete set of classes, each such assembly having threshold element means, summer means, a plurality of junction elements, and a plurality of product and power means, each of said product and power means receiving one or more of said input signals from said input terminals and producing a product therefrom for delivery to one of said junction elements, each of said junction elements receiving either one of said input signals or one of said produced products from one of said product and power means and multiplying said input signal or said produced product by a preselected constant to produce a junction element output, said summer means receiving all of said junction element outputs and totaling them to provide a summer output, said threshold element means receiving said summer output and measuring said summer output against a preselected

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value set therein to determine whether said summer output is a member of said one of said discrete set of classes and producing an assembly output which will have a value of 1 when said output equals or exceeds said preselected value and which will have a value of 0 when said assembly output is less than said preselected value, said value of 1 signifying that said summer output corresponds to said one of said discrete set of classes, said assembly output being transmitted to one of said output terminals of said pattern class separator to create a pattern class separator output.

5,299,285

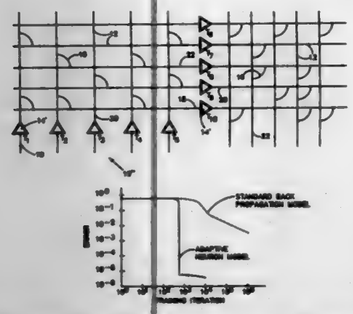
NEURAL NETWORK WITH DYNAMICALLY ADAPTABLE NEURONS

Raoul Tawel, South Pasadena, Calif., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 905,061, Jun. 24, 1992, abandoned, which is a continuation of Ser. No. 473,024, Jan. 31, 1992, abandoned. This application May 27, 1993, Ser. No. 71,206

Int. Cl.[5] G06F *15/18*; G06G *7/19*

U.S. Cl. 395—24 **19 Claims**



1. In a neural network employing a plurality of neurons each associated with a respective conductor in a network of conductors which are selectively interconnected by a plurality of problem-defining synpases each having an adjustable weighting factor whereby each neuron receives a weighted sum of inputs from plural conductors of a previous layer of said network and produces an output to a conductor in a following layer of said network, wherein the neural network is parameterized in an iterative learning process in which problem-defining signals are input to the neurons whereby to produce error signals between actual outputs from the network and expected outputs from the network and said error signals are used to incrementally change each weighting factor, an improvement for reducing the number of iterations required from the neural network to learn how to solve a problem of interest comprising:

in each neuron between an input thereof for receiving said weighted sum of inputs and an output therefor for outputting an output signal value, including a neural conductive element having a variable gain defining said output signal value as a function of (a) said variable gain and (b) said weighted sum of inputs and gain adjustment logic means for dynamically adjusting the variable gain of the neuron independently of the other neurons in the network during a learning process of the neural network.

5,299,286

DATA PROCESSING SYSTEM FOR IMPLEMENTING ARCHITECTURE OF NEURAL NETWORK SUBJECT TO LEARNING PROCESS

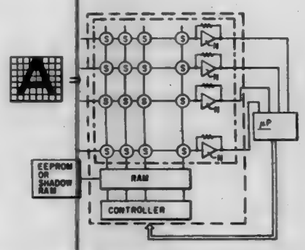
Giuliano Imondi; Giulio Marotta; Giulio Porrovecchio, all of Rieti; Giuseppe Savarese, Naples, and Luciano Talamonti, Rieti, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1992, Ser. No. 828,077

Claims priority, application Italy, Jan. 31, 1991, 00076 A/91

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—27 **6 Claims**



1. A data processing system for implementing the architecture of a neural network having n inputs and n outputs and subject to a learning process, said data processing system comprising:

a plurality of n×n synapses arranged in an array of j rows and i columns;

a plurality of operational amplifiers respectively corresponding to the plurality of rows and defining a set of n neurons;

each of said synapses having

a voltage input terminal,

a current output terminal, and

a terminal for inputing a weighting voltage;

the input terminals of all of said plurality of synapses arranged in a respective column of said array being connected together and defining the n inputs of the neural network;

the output terminals of all of the synapses arranged in a respective row of said array being connected together and providing an input signal to one input of the corresponding one of said operational amplifiers defining a neuron;

a capacitor connected between ground potential and the input terminal for each of said synapses for weighting the synapses by storing the weighting voltage applied thereto;

a random access memory for digitally storing voltage values for weighting all of the synapses;

a plurality of digital-analog converters, one for each column of said array of synapses, said digital-analog converters being connected to said random access memory for converting the digital voltage values for weighting the synapses into analog voltage values, the respective outputs of said digital-analog converters being connected to the weighting terminals of said synapses of a respective column;

an electronic switch disposed in the connection between the weighting terminal of a respective synapse included in said column and the digital-analog converter corresponding thereto;

a plurality of bistable circuits, one for each row of said array, and respectively connected to said electronic switches for each of said synapses included in a row for driving said electronic switches; and

control means operably connected to said plurality of bistable circuits and to said random access memory for driving said bistable circuits and providing commands and data for said random access memory.

5,299,287

INFORMATION PROCESSING SYSTEM

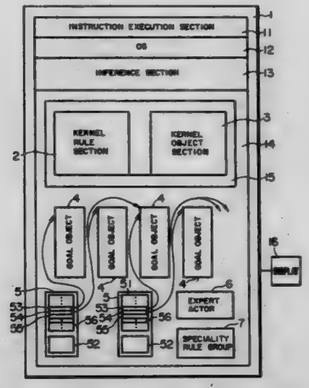
Setsuo Tsuruta, Machida; Kiyomi Kishi, Kawasaki; Kuniaki Matsumoto, Tokyo; Shigenobu Yanai, Katsuta, and Kiminori Nakamura, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Control Systems, Inc., Hitachi and Hitachi Microcomputer Engineering Ltd., Kodaira, all of Japan

Continuation of Ser. No. 759,771, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 357,170, May 26, 1989, abandoned. This application Feb. 21, 1992, Ser. No. 839,072

Claims priority, application Japan, Jul. 1, 1988, 63-162554

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—51 **27 Claims**



1. An information processing system including a computer connected to a memory and a display, for processing information, said computer comprising:

first memory means for storing information representing goals;

second memory means for storing information representing strategies for attaining said goals,

(a) each strategy being a data block whose data items explicitly define properties of said strategy in order to structuralize a plurality of various kinds of knowledge for use of said data items, said properties of said strategy including a name of said strategy and a link to an upper level goal for which said strategy is applicable,

(b) said strategies including a first kind of strategy and a second kind of strategy, both specified by said properties of the strategy,

(b-1) said first kind of strategy including at least one property for defining a sequence of lower level goals, namely, subgoals of said upper level goal for which said first kind of strategy is applicable,

(b-2) said second kind of strategy including at least one property for defining a name of a function to directly execute undecomposed lowest level subgoals for which said second kind of strategy is applicable;

means for processing information to achieve a given goal, based on the information stored in said first and second memory means, by repetitively decomposing said goal into its lower level subgoals until said goal is decomposed into undecomposed lowest level subgoals, interpreting said properties in said first kind of strategy, said properties being a name, a link and a sequence of subgoals, directly executing said undecomposed lowest level subgoals interpreting said properties in said second kind of strategy such as a name of a function where said function is realized by a computer program including rules and outputting or displaying a result of the execution.

5,299,288

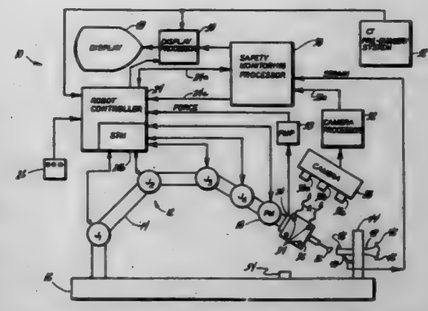
IMAGE-DIRECTED ROBOTIC SYSTEM FOR PRECISE ROBOTIC SURGERY INCLUDING REDUNDANT CONSISTENCY CHECKING

Edward Glassman, New York, N.Y.; William A. Hanson, Mountain View, Calif.; Peter Kazanides, Davis, Calif.; Brent D. Mittelstadt, Placerville, Calif.; Bela L. Musits, Hopewell Junction, N.Y.; Howard A. Paul, Loomis, Calif., and Russell H. Taylor, Ossining, N.Y., assignors to International Business Machines Corporation and Regents of the University of California, Armonk, N.Y.

Division of Ser. No. 523,611, May 11, 1990, Pat. No. 5,086,401. This application Sep. 18, 1991, Ser. No. 761,720

Int. Cl.[5] B23Q *15/14*; A61B *6/00, 17/00*

U.S. Cl. 395—80 **16 Claims**



1. A method of surgically removing a quantity of tissue from a patient, the tissue being removed from a region having a predetermined three dimensional shape, the method comprising the steps of:

representing the three dimensional shape as a volumetric model or as a portion of a volumetric model;

determining a location of the volumetric model relative to the tissue that is to be removed; and

operating a multiple degree of freedom manipulator arm means having a surgical tool coupled thereto such that the tissue is removed, the step of operating including the steps of:

monitoring an output of a force sensor means that is coupled to the surgical tool;

detecting a position of the manipulator arm means;

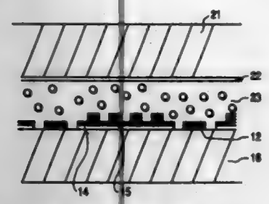
determining a position of the surgical tool relative to the detected position of the manipulator arm means in accordance with a predetermined transformation function;

processing the volumetric model for determining if the determined position of the surgical tool is outside of the volumetric model; and

suspending a further movement of the surgical tool if the surgical tool is determined to be positioned outside of the volumetric model or if the step of monitoring the output of the force sensor means indicates that a sensed force has exceeded a first predetermined threshold.

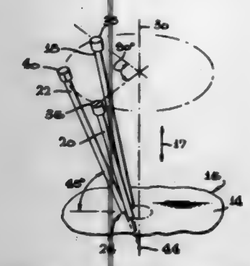
VOL 1160 ISS 5 MR 29 1994 UMI

5,299,289
POLYMER DISPERSED LIQUID CRYSTAL PANEL WITH DIFFRACTION GRATING
Hideki Ouse, Suita; Hiroei Takahara, Neyagawa, and Takaaki Tanaka, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 11, 1992, Ser. No. 896,967
Claims priority, application Japan, Jun. 11, 1991, 3-139113; Jun. 11, 1991, 3-139114; Sep. 25, 1991, 3-245601; Sep. 27, 1991, 3-249012; Sep. 27, 1991, 3-249016; Sep. 27, 1991, 3-249020
Int. Cl.[5] G02F *1/137, 1/13*
U.S. Cl. 359—95 46 Claims



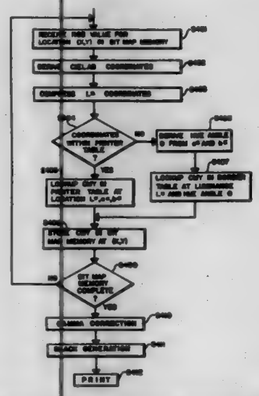
1. A liquid crystal panel comprising:
a first substrate and a second substrate which confront each other, at least one of said substrates being light transmissible;
electrode layers respectively formed on confronting surfaces of said first and second substrates;
a polymer dispersed liquid crystal layer sandwiched between said first and second substrates and comprising a polymer and a liquid crystal material dispersed in said polymer; and
an irregular surface layer having an array of microlenses formed on a surface of an electrode provided on at least one of said first and second substrates;
wherein a difference between a refractive index n_p of said polymer and a refractive index n_r of said irregular surface layer is 0.1 or less;
wherein the irregular sectional surface and polymer dispersed liquid crystal cooperate to form a diffraction grating when the polymer dispersed liquid crystal is in a scattering state and no diffraction grating when the liquid crystal is in a transmissive state.

5,299,290
INK SENSING SYSTEM FOR VECTOR PLOTTERS
Bruce H. Ostermeier, Irvine, Calif., assignor to CalComp Inc., Anaheim, Calif.
Filed Feb. 14, 1992, Ser. No. 834,969
Int. Cl.[5] G06F *3/06*
U.S. Cl. 395—103 17 Claims



1. An ink sensing system for a vector plotter comprising:
a pen adapted to be raised from and lowered to a drawing media surface along a system axis; and
an optical detection system having a focal point on said system axis and below said media surface when said pen is in its lowered position and at said media surface when said pen is in its raised position, said optical detection system including a source of illumination and a detector system to determine, whenever said pen is raised from said media surface, the degree of reflectance from said media surface to indicate the presence or absence of ink on said media surface.

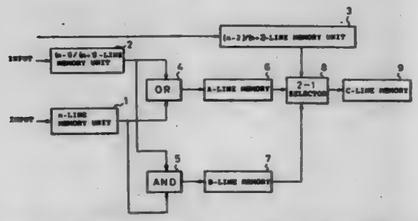
5,299,291
COLOR PRINTING METHOD AND APPARATUS USING AN OUT-OF-GAMUT COLOR TABLE
Brigitte Ruetz, San Bruno, Calif., assignor to Canon Information Systems, Costa Mesa, Calif.
Continuation-in-part of Ser. No. 956,300, Oct. 5, 1992. This application Oct. 28, 1992, Ser. No. 967,055
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—109 37 Claims
MICROFICHE APPENDIX INCLUDED
(43 Microfiche, 1 Pages)



1. A color printer look-up table for providing color primary values corresponding to colors in device-independent color space, the color printer table including color primary values for colors both inside the device gamut and outside the device gamut, wherein for colors outside the device gamut the color primary values are formable by the device and have monotonically increasing lightness from substantially the darkest value in the printer table to substantially the lightest value in the printer table.

5,299,292
REDUCTION PRINTING APPARATUS
Tango Kadowaki, and Hiroyuki Endo, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 4, 1992, Ser. No. 894,135
Claims priority, application Japan, Jun. 4, 1991, 3-132535
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—108 27 Claims

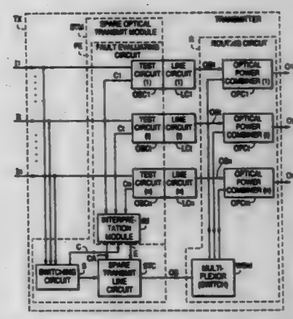
1. An apparatus for reducing the data content of an original image, represented in a binary bit map comprising a plurality of pixels arranged in plural, parallel lines, each line comprising a common number of pixels and the respective pixels of the plural lines being aligned in corresponding columns, oriented substantially transversely with respect to the plural lines, each pixel having a binary bit value of either "1" or "0"in accordance with the original image, the apparatus reducing the data content of the binary bit map relatively to at least one line of pixels, selected as an object line, of the plural lines of pixels of the binary bit map and comprising:
a first selector which selects, from the binary bit map of an original image, at least one object line and first and second lines of binary bit value pixel data which are respectively and successively next adjacent the selected object line in the binary bit map of the original image;
first, second and third memories which respectively store the corresponding binary bit value pixel data of the selected object line and the first and second next adjacent lines of the binary bit map of the original image;
an OR logic circuit, connected to the first and second memories, which performs an OR logic process on the respective binary bit values of the corresponding pixels of the object and first displaced lines of binary bit value pixel data and produces a corresponding, OR-processed line of binary bit values as the output thereof;
an AND logic circuit, connected to the first and second memories, which performs and AND logic process on the respective binary bit values of the corresponding pixels of the object and first displaced lines of binary bit value pixel data and produces a corresponding, AND-processed line of binary bit values as the output thereof;
fourth and fifth memories, respectively connected to the OR logic circuit and the AND logic circuit, which store the respective OR-processed and AND-processed lines of binary bit values output thereby;



a second selector, connected to the third memory, which, in response to the binary bit values of the plural pixels of the line of binary bit value pixel data stored therein, selects the binary bit value of the corresponding pixel of one of the OR-processed line and of the AND-processed line, as stored in the respective corresponding fourth and fifth memories, for each of the common number of plural pixels and produces, as an output, a resultant line of binary bit value pixel print data, the second selector responding to a "0" binary value of a pixel, in the line of binary bit value pixels stored in the third memory, to select the binary bit value of the corresponding pixel of the line of binary bit value pixels stored in the fourth memory as the bit value of the corresponding pixel in the resultant line of binary bit value pixel data and responding to a "1" binary value of a pixel, in the line of binary bit value pixels stored in the third memory, to select the binary bit value of the corresponding pixel of the line of binary bit value pixels stored in the fifth memory as the bit value of the corresponding pixel in the resultant line of binary bit value pixels; and
a sixth memory connected to the second selector for storing the resulting line of binary bit value pixels output by the second selector.

5,299,293
PROTECTION ARRANGEMENT FOR AN OPTICAL TRANSMITTER/RECEIVER DEVICE
Denis J. G. Mestdagh, Brussels, and Ingrid Z. B. Van de Voorde, Dilbeek, both of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands
Filed Mar. 27, 1992, Ser. No. 857,572
Claims priority, application Belgium, Apr. 2, 1991, 09100303
Int. Cl.[5] H04B *10/08*
U.S. Cl. 359—110 12 Claims

1. A protection arrangement for an optical transmitter device having n optical transmitter circuits whose outputs are operatively coupled to respective output terminals of the transmitter device, said protection arrangement including:
a spare optical transmit module operatively connected to inputs of each of said optical transmitter circuits and having an output on which, if any one of said optical transmitter circuits is defective, an optical output signal characteristic of that defective optical transmitter circuit is produced, said optical output signal carrying the same information as carried by an input signal applied to an input of said defective optical transmitter circuit; and
routing means, operatively connected to the outputs of said optical transmitter circuits and to the output of said spare transmit module, for providing said optical output signal from said spare optical transmit module at the respective output terminal to which the output of said defective optical transmitter circuit is operatively coupled;
wherein said spare optical transmit module includes:



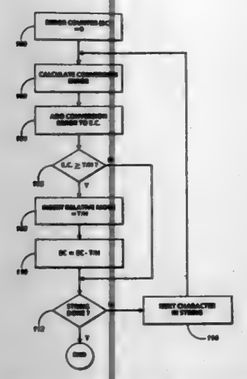
switching means having n inputs operatively connected to respective inputs of said optical transmitter circuits, for switching an input signal associated with said defective optical transmitter circuit to an output of said switching means;
fault evaluating means, operatively connected to said optical transmitter circuits and having an output on which a first control signal indicative of said defective optical transmitter circuit is produced, said first control signal controlling said switching means so that said switching means provides at the output thereof said input signal associated with said defective transmitter circuit; and
a spare transmit circuit which is operatively connected to receive the output of said switching means and generate said optical output signal at an output thereof.

5,299,294
METHOD FOR COMPENSATING FOR FONT RESOLUTION CONVERSION ERROR
Andrew J. McCracken, Winter Springs, and Robert W. J. Wyatt, Apopka, both of Fla., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 1, 1991, Ser. No. 770,800
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—110 5 Claims

1. A method of compensating for error in the position of characters in a character string that can result from printing text data intended for a printer having one resolution on a printer having equivalent fonts, but a different resolution, the method comprising the steps of:
a) determining the conversion error for a character in a string of characters;
b) accumulating the conversion error;
c) determining whether the accumulated conversion error equals or exceeds a predetermined threshold value;
d) positioning the next character in the string from the pres-

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ent character by the amount of the predetermined threshold value and decrementing the accumulated conversion error, provided in step c the accumulated conversion error equaled or exceeded the predetermined threshold value;



e) repeating steps a through d for the next character in the character string; and

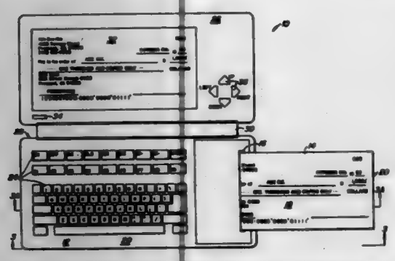
f) printing the error-compensated character string.

5,299,295

METHOD AND APPARATUS FOR ELECTRONICALLY VIEWING, PRINTING, AND REGISTERING CHECKS

Donald Y. Kim, Berkeley; Crispian Soo, and Jon Kim, both of Fremont, all of Calif., assignors to Balenz, Inc., Fremont, Calif.

Filed Mar. 12, 1991, Ser. No. 667,570
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—111 **21 Claims**



1. An electronic checkbook for electronically viewing, printing, and registering checks comprising:

a base member;

data entry means for entering alpha-numeric data into said electronic checkbook;

print means for printing check information data on the face of a check, said print means including a mobile print head moveable in a direction transverse to the face of a check to be printed;

check feed mechanism for feeding individual checks past said print means, said check feed mechanism operating in conjunction with said print means so that, as the check is being fed past said print means, said print means concomitantly prints data on the face of the check; and

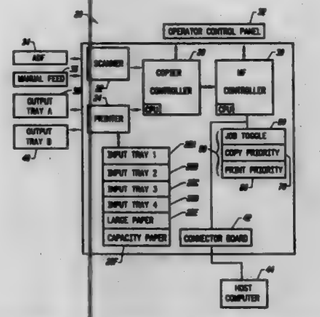
computer means electrically communicating with said data entry means, said print means, and said check feed mechanism to receive, store, and retrieve data entered into said data entry means and to cooperatively drive said print head and said check feed mechanism to produce alpha-numeric printed matter on the face of the check.

5,299,296

MULTI-FUNCTION MACHINE WITH INTERLEAVED JOB EXECUTION

Marco Padalino, Dallas, Tex.; Michael Moore, and Thanh Nguyen, both of San Jose, Calif., assignors to Ricoh Company, Ltd. and Ricoh Corporation, San Jose, Calif.

Continuation of Ser. No. 778,001, Oct. 17, 1991. This application Jun. 4, 1993, Ser. No. 71,929
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—112 **13 Claims**



1. A multi-function machine with interleaved job execution, comprising:

a first functional element for executing a plurality of first priority jobs, said first functional element requiring a first set-up period prior to executing one of said first priority jobs;

a second functional element for executing a plurality of second priority jobs, said second functional element requiring a second set-up period prior to executing one of said second priority jobs, each of said second priority jobs including one or more tasks;

a shared physical resource utilized by said first functional element for executing said plurality of first priority jobs and said second functional element for executing said plurality of second priority jobs;

means for operating said first functional element to execute said plurality of first priority jobs;

means for automatically interrupting said operating means during said first set-up period when said second set-up period is complete; and

means for automatically executing one or more of said tasks on said second functional element in response to said interrupting means so as to exploit said shared physical resource during said first set-up period and thereby interleave the execution of said second priority jobs with the execution of said first priority jobs.

5,299,297

METHOD FOR ENHANCING THREE-DIMENSIONAL INTERFERENCE CHECKING

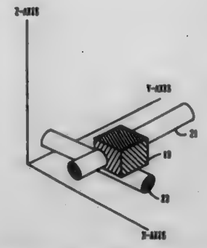
David C. Reynolds, Boulder, and Michael Wong, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1988, Ser. No. 142,896
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—121 **2 Claims**

1. In a graphics system for representing in two dimensions three-dimensional objects oriented in space, said system including steps for determining whether the objects interfere with one another, the improvement comprising the steps of:

assigning a unique index to each object as each object is oriented in the space;

storing the index of each object in a location associated with each subcontinuum of the space occupied by each object; and



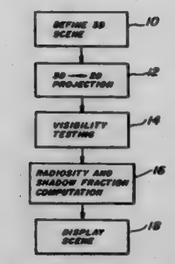
making the determination whether the objects interfere with one another only among those objects having an associated index in the same locations.

5,299,298

ACCELERATED SHADOW TESTING METHOD FOR THREE DIMENSIONAL GRAPHICS RENDERING SYSTEM

Kells A. Elmquist, Lansing, and David W. Arenault, Ithaca, both of N.Y., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 28, 1991, Ser. No. 662,159
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—121 **37 Claims**



1. In a computer graphics renderer, a method for shading and displaying a three dimensional scene as a function of visibility of points on surfaces of objects in the three dimensional scene from a common point, such as a common point on a light source, comprising the steps of:

a) preparing a two dimensional projection of the objects in the scene, including the points on the surfaces of the objects, from the common point, each object and point in the projection defining a projected object and projected point, respectively;

b) superimposing a plurality of substantially parallel boundaries onto the projection, there being a space between each pair of immediately adjacent boundaries, each space defining a scan area, each scan area having a substantially uniform width determined by the size of the space between adjacent boundaries, there being a plurality of scan areas superimposed onto the projection;

c) determining whether any projected points within each scan area are obscured from the common point by any projected object within the same scan area and identifying the projected points determined to be so obscured;

d) recording the visibility of the projected points based upon the result of step (c) in a register;

e) shading the three dimensional scene as a function of the recorded visibility of the projected points; and,

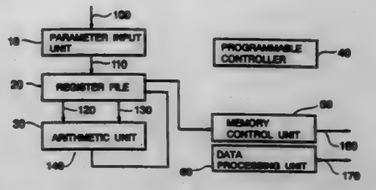
f) displaying the shaded scene on a video display device associated with the graphics renderer.

5,299,299

SCAN LINE FULL FIGURE FILLING DEVICE FOR DISPLAY UNITS AND PRINTERS

Mitsurou Ohuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,187
Claims priority, application Japan, Sep. 6, 1991, 3-226720
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—126 **5 Claims**



1. A figure filling device to fill a figure stored in a memory defined by X-Y coordinates, scan line by scan line, with reference to a specified fill pattern comprising:

a coordinate storage means to store coordinate data for ends of a scan line to be newly filled, coordinate data for ends of a previously processed scan line, and coordinate data for a reference point of a previous pattern,

a pattern coordinate determination means to determine coordinate data for a reference point of a new pattern by processing coordinate data for ends of a scan line to be newly filled, the coordinate data for the ends of the previously processed scan line and the coordinate data for the reference point of the previous pattern stored in said coordinate storage means in filling of a new scan line,

a pattern address determination means to determine the address in the memory corresponding to the coordinate of said reference point of the new pattern,

a scan line address determination means to calculate the address in the memory corresponding to the coordinate of the ends of said newly filled scan line,

a data processing means to read a filling pattern from said pattern address in the memory and scan line data from said scan line address in the memory, to perform predetermined processing using said filling pattern and said scan line data and to write a result to said scan line address, and

an address update means to update said pattern address and said scan line address.

5,299,300

INTERPOLATION PROCESSING OF DIGITAL MAP IMAGERY DATA

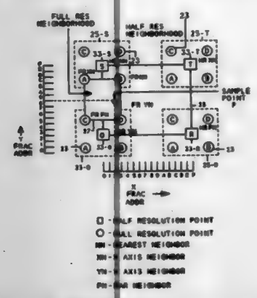
Michael J. Femal, and Kenrick W. Kentz, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 484,098, Feb. 22, 1990, abandoned. This application Jun. 8, 1993, Ser. No. 74,103
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—128 **30 Claims**

1. For use with a video display apparatus having an array of pixels which are controllably energized by video information signals in order to display a video image representative of information stored in memory, a method of generating said video information signals comprising the steps of:

(a) providing a scene memory having a plurality of memory addresses each of which is operative to store video data to be controllably accessed and processed in the course of generating said video information signals;

(b) storing, in memory addresses of said scene memory, imagery video data associated with respective spatial locations of an image to be displayed by the pixels of said video display apparatus, said respective spatial locations having a first spatial resolution within said image to be displayed, and wherein a respective first spatial location may, but does not necessarily, coincide with a spatial location of a pixel of said array, and wherein the imagery video data contents of a respective memory address contains a plurality of image video data components, each respective one of which is associated with a respectively different one of a plurality of second spatial locations within said video image to be displayed, said plurality of second spatial locations having a second spatial resolution, which is higher than said first spatial resolution, and



wherein any of said plurality of second spatial locations may, but does not necessarily, coincide with the location of a pixel of said array, a respective plurality of second spatial locations being distributed around a respective first spatial location;

(c) for a respective pixel of said array, identifying where, within said image to be displayed, its associated spatial location occurs;

(d) accessing video imagery data from a plurality of memory addresses of said scene memory, whose associated respective first spatial locations surround the associated spatial location of said respective pixel; and

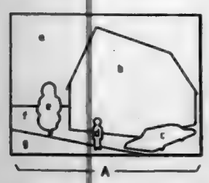
(e) processing the imagery video data accessed in step (d) to produce a respective video information signal through which said respective pixel is energized.

5,299,301

IMAGE DISPLAYING METHOD AND APPARATUS

Makoto Nohmi; Shinichiro Miyaoka, both of Kawasaki, and Motohisa Funabashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 709,959, May 14, 1991, abandoned, which is a continuation of Ser. No. 216,664, Jul. 7, 1988, abandoned. This application Dec. 7, 1992, Ser. No. 989,477
Claims priority, application Japan, Jul. 10, 1987, 62-172503
Int. Cl.[5] G06F *15/66*
U.S. Cl. 395—131 **12 Claims**



1. An image displaying method comprising:

reading from a memory image data indicative of an image to be displayed in a succession of display frames, the image including a plurality of regions, each region including at least a portion of each of a plurality of scan lines, and identity data corresponding to the read image data and identifying the region of the corresponding image data;

receiving an input command indicative of a modification to be made to an entire selected region of the image to be displayed;

comparing the read identity data with the received input command;

when the comparison indicates that a predetermined relationship is satisfied, then during the next display frame modifying all of the scan lines within the entire selected region of the image in accordance with the input command; and

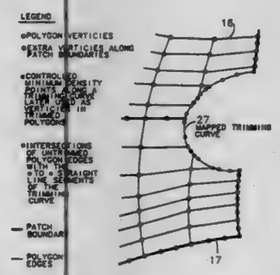
displaying during succeeding display frames the image with the entire selected region modified in accordance with the input command.

5,299,302

METHOD AND APPARATUS FOR TRIMMING B-SPLINE DESCRIPTIONS OF PATCHES IN A HIGH PERFORMANCE THREE DIMENSIONAL GRAPHICS SYSTEM

James G. Fiasconaro, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 526,410, May 18, 1990, abandoned, which is a continuation of Ser. No. 11,667, Feb. 5, 1987, abandoned. This application Aug. 5, 1992, Ser. No. 926,140
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—142 **4 Claims**



1. A method of rendering with a graphics system an image of an object's surface comprising the steps of:

(a) representing an original surface of an original object with a first mapping whose range is an XYZ space containing the original object and whose domain is a two dimensional uv space;

(b) representing a trimming curve in the uv space with a second mapping whose range is the uv space and whose domain is a single dimensional t space, the trimming curve, when mapped into the XYZ space with the first mapping, describing a boundary of a portion of the original surface of the original object that is to be deleted therefrom to form an altered surface of an altered object;

(c) selecting an initial step size in t space;

(d) mapping with the second mapping consecutive values of t differing by the initial step size into consecutive points in uv space along the trimming curve;

(e) determining a distance between each of the consecutive points and its successor in the consecution of consecutive points in uv space mapped in step (d);

(f) adjusting the initial step size in accordance with the inequality between the largest distance determined in step (e) and a preselected distance;

(g) mapping the trimming curve into uv space beginning with a preselected value of t as an initial value and thereafter with successive increments to that initial value by the adjusted step size;

(h) altering the original surface of the original object by removing from the domain of the first mapping points in uv space that are on one side of the trimming curve as mapped into uv space by step g; and

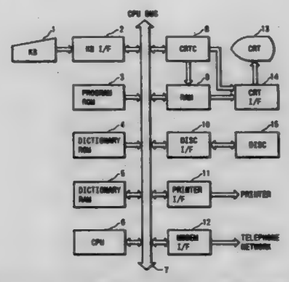
(i) creating a visible image of the altered surface of the altered object by making visible in the graphics system only those pixels corresponding to points remaining on the altered surface of the altered object.

5,299,303

DOCUMENT PROCESSING APPARATUS AND METHOD FOR ARRANGING EACH LINE OF ITEM INFORMATION IN RESPONSE TO INSTRUCTING THE ARRANGING OF THE ITEM INFORMATION STORED IN A MEMORY

Koji Fukunaga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 507,573, Apr. 11, 1990, abandoned. This application Aug. 20, 1993, Ser. No. 109,459
Claims priority, application Japan, Apr. 12, 1989, 1-90848
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—146 **24 Claims**



1. A document processing apparatus comprising:

margin setting means for setting a margin position of document information to define the number of characters which can be included in one line; and

margin changing means for, when document information to form a document is input beyond the margin position, changing the margin position set by said margin setting means to increase the number of characters which can be included in one line so as to store the document information.

5,299,304

METHOD AND APPARATUS FOR IDENTIFYING MULTIPLE STAGE DOCUMENT FORMAT TRANSFORMATIONS

Marvin L. Williams, Lewisville, Tex., and Roselyn H. Yun, Honolulu, Hi., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1991, Ser. No. 685,810
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—148 **6 Claims**

4. A data processing system for identifying the existence of a multiple stage transformation of a first document format into a second document format and implementing that transformation, said data processing system comprising:

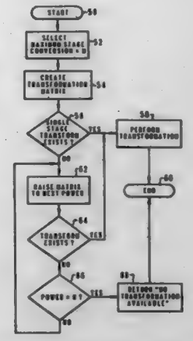
memory;

a matrix stored within said memory having a plurality of rows and columns of zero value cells;

means for associating within said memory an identification of a selected document format with each of said plurality of rows and each of said plurality of columns;

data entry means for entering a value of one into a cell at the intersection of a row of said matrix associated with an identification of a first selected document format and a column of said matrix associated with an identification of a second selected document format for each existing transformation application within said data processing system for directly transforming said fist selected document format into said second selected document format;

processor means for evaluating said matrix at successive powers from one to N for detecting a presence of a non-zero value R in a cell at the intersection of a row of said matrix associated with an identification of a first particular document format and a column of said matrix associated



with an identification of a second particular document format for a desired transformation from said first particular document format into said second particular document format;

means for displaying to a user an indication of the existence of R transformations for transforming said first particular document format into said second particular document format within N stages in response to a presence of said nonzero value R; and

means for transforming said first particular document format into said second particular document format utilizing at least one of said R transformations.

5,299,305

METHOD FOR GENERATING FORMS AND FOR PROCESSING AND TRANSFERRING DATA AMONG THE FORMS

Hidehiro Oomae, Yokohama; Hidenari Makino, Kawasaki; Atsushi Tanaka, Tokyo, and Hideo Sato, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Nuclear Engineering Co., Inc., Hitachi, both of Japan

Filed Oct. 22, 1991, Ser. No. 780,462
Claims priority, application Japan, Oct. 22, 1990, 2-282007
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—149 **8 Claims**

1. A data processing method for generating forms and for processing and transferring data among the forms, comprising computer implemented steps of:

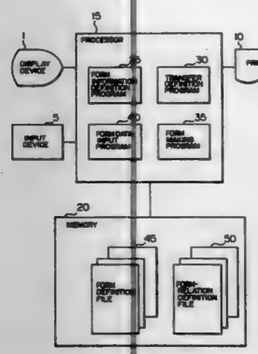
(a) generating a plurality of kinds of mutually-related forms based upon a like plurality of predetermined form definitions, and outputting the generated plurality of forms to a display device;

(b) displaying the plurality of forms output to the display device;

(c) prompting an operator to select an area to be adopted as a data transfer origin area from a plurality of areas of said displayed plurality of forms;

(d) establishing an area to be adopted as a data transfer origin area based on coordinate data of the area selected by the operator in response to step (c);

(e) prompting the operator to select an area to be adopted as a data transfer destination area form the plurality of areas of said displayed plurality of forms;
(f) establishing an area to be adopted as a data transfer destination area based on coordinate data of the area selected by the operator in response to step (e);
(g) storing related information showing a relationship between said data transfer origin area and said data transfer destination area in a memory;
(h) transferring data stored in said data transfer origin area to said data transfer destination area based on said related information and on form-related data relating to said plurality of forms; and
(i) displaying said transferred data in said data transfer destination area of said displayed forms.

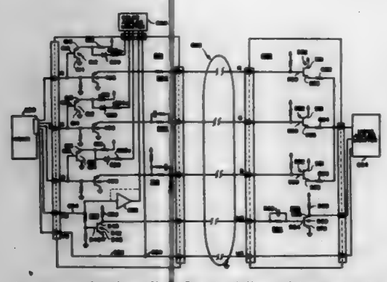


5,299,306

APPARATUS FOR SIMULTANEOUSLY COUPLING COMPUTER VIDEO SIGNALS TO A LOCAL COLOR MONITOR AND A DISTANT MONOCHROME MONITOR

Robert R. Asprey, Harvest, Ala., assignor to Cybex Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 488,710, Mar. 5, 1990, which is a continuation-in-part of Ser. No. 447,010, Dec. 5, 1989, Pat. No. 5,193,200, which is a continuation-in-part of Ser. No. 95,140, Sep. 11, 1987, Pat. No. 4,885,718. This application Oct. 12, 1990, Ser. No. 597,544
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—153 **8 Claims**



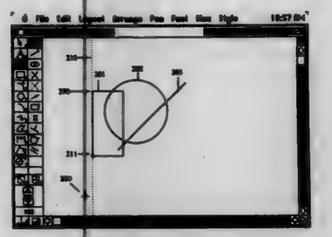
1. A communications link for coupling video output terminals of a computer conveying analog RED, GREEN, and BLUE video signals to an analog color monitor located generally proximate to a computer and to an analog monochrome monitor located up to approximately 300 feet distant from said computer, said communications link comprising:
a first signal conditioning circuit couplable to RED, GREEN, and BLUE video signals at output terminals of said computer, and further comprising:
a plurality of signal splitting means, each responsive to a respective one of said video signals, for providing two discrete sets of said video signals, a first set and a second set, said first set being couplable to an analog color monitor located proximate to said computer,
a shielded, insulated cable up to approximately 300 feet in length having at least three discrete, insulated, closely adjacent conductors, each conductor having a first end and a second end for conveying current signals from said second set, representative of each respective said RED, GREEN, and BLUE video signals, from said first end to said second end,
bias means for applying a D.C. bias to each of said second ends of said three conductors, and
a plurality of current modulation means each responsive to a respective one of said RED, GREEN, and BLUE video signals of said second set from said signal splitting means, and each coupled to a said first end of a respective one of said conductors and powered by said bias means through said conductor, for modulating current flow through said conductors; and
a second signal conditioning circuit coupled to said second end of said three conductors and couplable to an input of said analog monochrome monitor, said second signal conditioning circuit comprising:
at least three current amplification means, one of each coupled to one each of said second end of said conductors, for providing amplified RED, GREEN, and BLUE video signal outputs, and
color-to-monochrome conversion means responsive to each said RED, GREEN, and BLUE signals outputs of said current amplification means, for converting said RED, GREEN, and BLUE signal outputs to a monochrome video signal wherein said RED, GREEN, and BLUE signal outputs, and mixtures thereof, are displayable as a composite of discrete shades of gray on said monochrome monitor.

5,299,307

CONTROLS FOR DRAWING IMAGES ON COMPUTER DISPLAYS

Craig S. Young, Zephyr Cove, Nev., assignor to Claris Corporation, Santa Clara, Calif.

Filed Aug. 17, 1990, Ser. No. 568,983
Int. Cl.[5] G06F *15/60*
U.S. Cl. 395—161 **25 Claims**



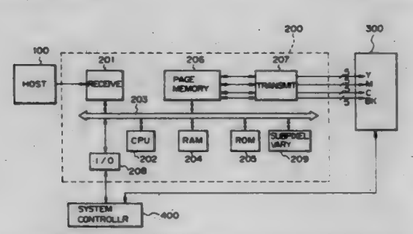
1. In an interactive computer-controlled display system having a processor, a memory means, a display screen coupled to said processor, and a cursor control device coupled to said processor for interactively positioning a cursor on said display screen, wherein a graphic object is displayed on said display screen, a process for generating and manipulating a graphic guide on said display screen comprising the steps of:
maintaining a guide point database comprising information related to a plurality of guide points for said graphic object, said information including the location of each said guide point on said display screen;
comparing the position of said cursor with said location of each said guide point;
displaying a guide line on said display screen if a guide point of said plurality of guide points is located within a predetermined distance of said cursor.

5,299,308

GRAPHIC DATA PROCESSING APPARATUS FOR PRODUCING A TONE FOR AN EDGE PIXEL AND REDUCING ALIASING EFFECTS

Hiroaki Suzuki, Yokohama, and Naofumi Ueda, Urayasu, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Feb. 22, 1991, Ser. No. 659,559
Claims priority, application Japan, Feb. 28, 1990, 2-19566; Jun. 22, 1990, 2-165079; Jun. 22, 1990, 2-165080; Jul. 30, 1990, 2-202190; Jul. 30, 1990, 2-202191; Nov. 13, 1990, 2-306710
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **13 Claims**



1. A graphic data processing apparatus for producing a tone of an edge pixel of vector data in a manner to reduce aliasing effects, the apparatus comprising:
a) dividing means for dividing an edge pixel of vector data into subpixels by using a way of dividing;
b) varying means for varying the way of dividing the edge pixel, in matching relation to an inclination of the vector data; and
c) determining means, including:
1) means for calculating an area ratio by using the subpixels; and
2) means for determining the tone of the edge pixel based on the area ratio.

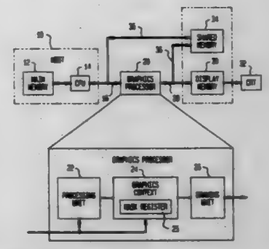
5,299,309

FAST GRAPHICS CONTROL SYSTEM CAPABLE OF SIMULTANEOUSLY STORING AND EXECUTING GRAPHICS COMMANDS

Bor-Chuan Kuo, Hsinchu City; Cheun-Song Lin, Taichung City; Lie-Der Lin, Taipei, and Shu-Wei Wang, Chungli, all of Taiwan, assignors to Industrial Technology Research Institute, Chutung Hsinchu, Taiwan

Filed Jan. 2, 1992, Ser. No. 816,702
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—162 **11 Claims**

1. A graphics control system, comprising
a host computer for generating graphics commands,
a graphics processor for receiving and executing graphics command generated by said host computer,
a display memory for storing display data and a display device for displaying said displayed data,
said graphics processor including a graphics context memory for storing parameters of an image corresponding to a current command, a processing unit for receiving and executing the graphics commands issued by the host computer and for converting the parameters stored in the graphics context memory into display data, and a drawing unit for storing display data in said display memory, and
a shared memory which is directly accessible to said host computer for enabling said host computer to write the parameters of a next graphics command into said shared memory while said graphics processor is executing a current command, said shared memory also being directly accessible to said graphics processor for enabling said graphics processor to receive said parameters of a next graphics command directly from said shared memory,



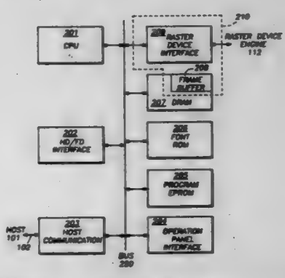
wherein said shared memory also enables said graphics processor to exchange the graphics context parameters of one window contained in said graphics processor with the graphics context parameters of another window stored in said shared memory.

5,299,310

FLEXIBLE FRAME BUFFER FOR RASTER OUTPUT DEVICES

Tetsuro Motoyama, Santa Clara County, Calif., assignor to Ricoh Company, Ltd., Japan and Ricoh Corporation, San Jose, Calif.

Filed Jan. 15, 1992, Ser. No. 821,176
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—165 **26 Claims**



1. An apparatus for constructing a full page bit map for a raster device, said full page map having a plurality of bit positions, said full page bit map having an X dimension and a Y dimension, said bit positions consisting of a plurality of bit-lines that are parallel to said X dimension and a plurality of bit-columns that are parallel to said Y dimension, comprising:
a frame buffer means including a plurality of memory cells for storing said full page bit map, wherein said memory cells have a consecutive linear address sequence, wherein each of said memory cells has n bit positions, and wherein each of said bit-lines is stored in a section of said memory cells having consecutive linear addresses;
scan direction indicating means for indicating an X scan direction along said X dimension, and for indicating a Y scan direction along said Y dimension;
X dimension scan sequence indicating means for indicating first and second scan sequences along said X dimension;
Y dimension sequence indicating means for indicating first and second scan sequences along said Y dimension;

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means for mapping said bit positions in said full page bit map into scan addresses in said frame buffer means, wherein said bit position mapping means maps said bit positions into said scan addresses based on said X and Y scan directions, and said first and second scan sequences along said X and Y dimensions; and

means for scanning said full page bit map stored in said frame buffer means according to said scan addresses, such that said full page bit map is scanned out-line by bit-line in response to said X scan direction in a sequence indicated by said first and second scan sequences along said X and Y dimensions, and said full page bit map is scanned out bit-column by bit-column in response to said Y scan direction in a sequence indicated by said first and second scan sequences along said X and Y dimensions.

5,299,311

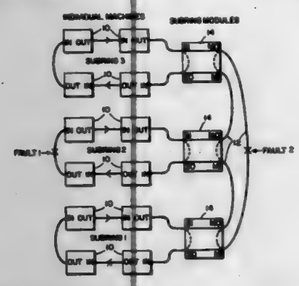
Patent Not Issued For This Number

5,299,312

NETWORK FAULT RECOVERY BY CONTROLLABLE SWITCHING OF SUBNETWORKS

A. Gregory Rocco, Jr., Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 15, 1990, Ser. No. 613,400
Int. Cl.[5] H04L *12/24, 12/26, 12/28, 12/46*
U.S. Cl. 395—200 **25 Claims**



23. A network comprising:

a first subnetwork having a first communication path on which signals propagate;

a second subnetwork having a second communication path on which signals propagate; and

a switchable communication link between the first and second subnetworks, said switchable communication link comprising:

a switch switchable between a first switch position and a second switch position, in the first switch position, the switch connecting the first and second subnetworks such that signals of the first subnetwork and signals of the second subnetwork propagate on the first and second communication paths and, in the second switch position, the switch isolating the subnetworks from each other such that signals of the first subnetwork propagate on only the first communication path and signals of the second subnetwork propagate on only the second communication path,

a detection circuit coupled to the second subnetwork for detecting periodic token signals which propagate on the second communication path to determine the integrity of the second subnetwork when the switch is in the second switch position and the integrity of the first and second subnetworks when the switch is in the first switch position; and

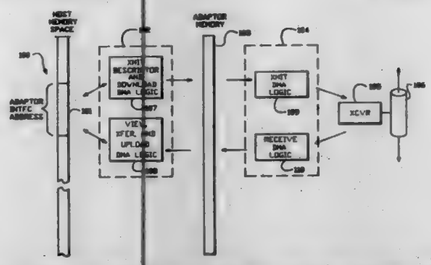
a control circuit coupled to the switch and the detection circuit, said control circuit switching the switch to the second switch position to isolate the first and second subnetworks upon detection of periodic token signals at a frequency below a first threshold frequency and then switching the switch back to the first switch position to reconnect the first and second subnetworks upon detection of periodic token signals on the second subnetwork at a frequency above a second threshold frequency.

5,299,313

NETWORK INTERFACE WITH HOST INDEPENDENT BUFFER MANAGEMENT

Brian Petersen, Los Altos; W. Paul Sherer, Sunnyvale; David R. Brown, San Jose, and Lai-Chin Lo, Campbell, all of Calif., assignors to 3COM Corporation, Santa Clara, Calif.

Filed Jul. 28, 1992, Ser. No. 921,519
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **29 Claims**



1. An apparatus for controlling communication between a host system and a network transceiver coupled with a network, wherein the host system includes a host address space, comprising:

a buffer memory outside of the host address space;

host interface means, sharing the host address space with the host, for managing data transfers between the host address space and the buffer memory in operations transparent to the host system; and

network interface means, coupled with the network transceiver, for managing data transfers between the buffer memory and the network transceiver.

5,299,314

NETWORK ADAPTER USING STATUS INLINES AND DATA LINES FOR BI-DIRECTIONALLY TRANSFERRING DATA BETWEEN LAN AND STANDARD P.C. PARALLEL PORT

Dirk I. Gates, Woodland Hills, Calif., assignor to Xircom, Inc., Calabasas, Calif.

Continuation of Ser. No. 497,341, Mar. 22, 1990, abandoned. This application Sep. 8, 1993, Ser. No. 117,990
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—200 **30 Claims**

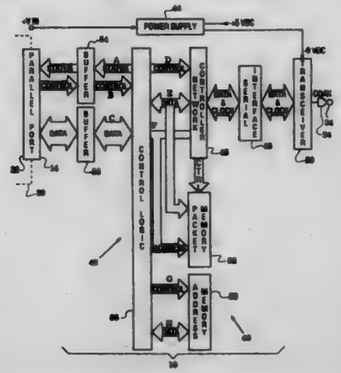
1. A system for functionally connecting a personal computer to a local area network via the computer's standard PC parallel port comprised of an external 25 pin D-shell connector, eight data lines, no more than five control out-lines, and no more than five status in-lines, each such data line, control out-line, and status in-line being electrically connected to a different one of said D-shell connector pins, said system comprising:

a network adapter having first connector means connected to said D-shell connector and second connector means connected to said network;

network interface means in said adapter connected to said second connector means for transmitting data packets to and receiving data packet from said network;

input/output circuit means in said adapter connected between said first connector means and said network interface means, said input/output means including control logic means responsive to signals on said D-shell connector pins connected to said control out-lines for selectively (1) transferring data bytes from said network interface means to said D-shell connector pins connected to said data lines and said status in-lines and (2) transferring data bytes from said D-shell connector pins connected to said data lines to said network interface means;

software driver means executable by said computer for determining whether said parallel port is configured for bidirectional or unidirectional data transfer; and



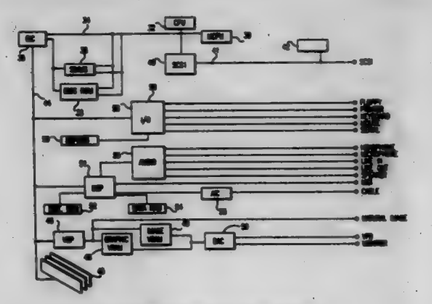
means for configuring said control logic means to transfer data bytes to said pins connected to said data lines when said parallel port is configured for bidirectional data transfer and to said status lines when said parallel port is configured for unidirectional data transfer.

5,299,315

PERSONAL COMPUTER WITH PROGRAMMABLE THRESHOLD FIFO REGISTERS FOR DATA TRANSFER

Arthur L. Chin, Boca Ratos; Serafin J. Eleazar-Garcia, Jr., Boynton Beach; Timothy V. Lee, Boca Ratos; Don S. Keener, Boca Ratos; Gregory J. Moore, Boca Raton, and Eric S. Stine, Delray Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 17, 1992, Ser. No. 947,013
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—250 **6 Claims**



6. A personal computer system comprising:

a high speed data bus;

a microprocessor coupled directly to said high speed data bus;

volatile memory coupled directly to said high speed data bus for volatile storage of data;

storage memory devices for nonvolatile storage of data;

a storage controller coupled directly to said high speed data bus and to said storage memory devices for regulating communications with-said storage memory devices;

an input/output data bus;

an input/output controller coupled directly to said input-/output data bus;

a digital signal processor coupled directly to said input/output data bus;

a video signal processor coupled directly to said input/output data bus; and

a bus interface controller coupled to said high speed data bus and to said input/output data bus for providing communications between said high speed data bus and said input-/output data bus, said bus interface controller providing for arbitration among said microprocessor and said storage controller coupled directly to said high speed data bus for access to said high speed data bus, and providing for arbitration among said input/output controller and said digital signal processor and said video signal processor coupled directly to said input/output data bus and said high speed data bus for access to said input/output data bus,

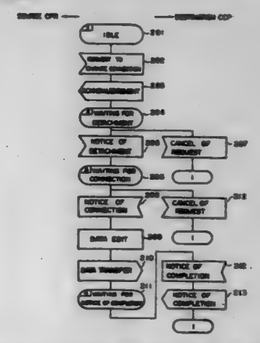
at least one of said storage controller and said input/output controller and said digital signal processor and said video signal processor having a data FIFO register operatively connected between the corresponding one of said input-/output controller and said digital signal processor and said video signal processor and the corresponding one of said busses for passing data therebetween and also having a threshold register for receiving bits indicating a threshold fill level of said FIFO register required before arbitration through said bus interface controller will be sanctioned.

5,299,316

METHOD OF AUTOMATICALLY EDITING DATA FOR MANAGING PROCESSOR THAT CARRIES OUT DISTRIBUTED CONTROL AND A SYSTEM USING THE SAME

Masayoshi Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP89/00656, § 371 Date Feb. 28, 1990, § 102(e) Date Feb. 28, 1990, PCT Pub. No. WO90/00339, PCT Pub. Date Nov. 1, 1990
PCT Filed Jun. 30, 1989, Ser. No. 465,169
Claims priority, application Japan, Jun. 30, 1988, 63-163024
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—325 **33 Claims**



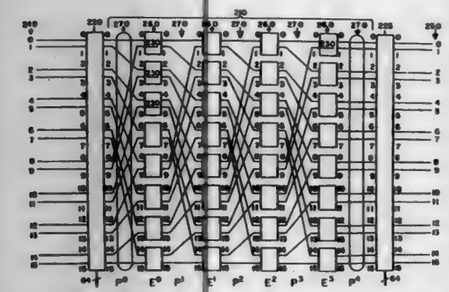
1. A method of automatically editing data for managing processing units hierarchically provided in a system, said system having a management processor having data for managing said processing units, and high-order processing units of said processing units having data for managing low-order processing units of said processing units, said method comprising the steps of:

(a) determining, in a first high-order processing unit,

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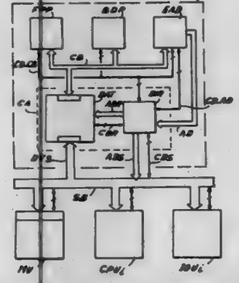
whether a request to change a connection of a request source unit of said low-order processing units is generated;
(b) notifying, from said first high-order processing unit, said management processor when said request source unit generates said request;
(c) sending an acknowledgement signal from said management processor to said request source unit;
(d) sending, after receiving said acknowledgement signal, a disconnect signal, obtained by detaching said request source unit from said system, from said request source unit to said management processor through said first high-order processing unit;
(e) determining, in said management processor, when said request source unit is initially connected to a second high-order processing unit;
(f) editing, in said management processor, the data for managing said request source unit to generate edited data, transferring said edited data to said second high-order processing unit now connected to said request source unit, and notifying said request source unit that the request to change the connection is completed; and
(g) deleting the data for managing said request source unit from said first high-order processing unit.

5,299,317
METHOD AND APPARATUS FOR SIMULATING AN INTERCONNECTION NETWORK
Chien-Yi R. Chen, and Jyan-Ann C. Hsia, both of Syracuse, N.Y., assignors to Syracuse University, Syracuse, N.Y.
Continuation of Ser. No. 414,852, Sep. 29, 1989, abandoned. This application Oct. 2, 1992, Ser. No. 956,444
Int. Cl.[5] H04Q *11/00*
U.S. Cl. 395—325 **10 Claims**



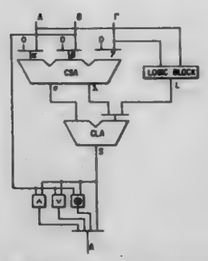
1. In a first multi-stage interconnection network having a plurality of inputs, a plurality of outputs, a plurality of stages of switching elements and a plurality of communication links between successive stages, said first multi-stage interconnection network having a first mapping between its inputs and its outputs, a method of simulating a second multi-stage interconnection network having a second mapping between its inputs and its outputs comprising the steps of:
determining from the first multi-stage interconnection network with first and second algorithms first and second vectors, I_1, O_1, which numerically characterize the first mapping between the inputs and outputs of said first multi-stage interconnection network;
determining from the second multi-stage interconnection network with said first and second algorithms third and fourth vectors, I_2, O_2, which numerically characterize the second mapping between the inputs and outputs of said second multi-stage interconnection network;
determining fifth and sixth vectors, U, V, where $U=O_2 * O_1^{-1}$ and $V=I_1^{-1} * I_2$ where O_1^{-1} and I_1^{-1} are the inverses, respectively, of O_1 and I_1 and * is a two-operand permutation operation which permutes elements of a first operand (e.g., O_2) in accordance with an order specified by a second operand (e.g., O_1^{-1});
using said fifth vector to recorder the plurality of inputs to the first multi-stage interconnection network by applying said plurality of inputs to a like plurality of inputs to a first switching means having a like plurality of outputs which are connected to a like plurality of inputs to a first stage of the first multi-stage interconnection network and connecting said inputs to the first switching means to the outputs of the first switching means in an order determined by said fifth vector; and
using said sixth vector to reenter the plurality of outputs from said first multi-stage interconnection network by applying said plurality of outputs from said multi-stage interconnection network to a like plurality of inputs to a second switching means having a like plurality of outputs and connecting said inputs to the second switching means to the outputs of the second switching means in an order determined by said sixth vector, whereby inputs to said first switching means are mapped to outputs from said second switching means in accordance with said second mapping of said second interconnection network.

5,299,318
PROCESSOR WITH A PLURALITY OF MICROPROGRAMMED UNITS, WITH ANTICIPATED EXECUTION INDICATORS AND MEANS FOR EXECUTING INSTRUCTIONS IN PIPELINE MANNER
Christian Bernard, Les Clayes Sous Bois; Monika Obreska, Elancourt, and Philippe Vallet, Lardy, all of France, assignors to Bull S.A., Paris, France
Filed Nov. 30, 1990, Ser. No. 620,472
Claims priority, application France, Dec. 21, 1989, 89 16952
Int. Cl.[5] G06F *9/30, 9/22*
U.S. Cl. 395—375 **21 Claims**



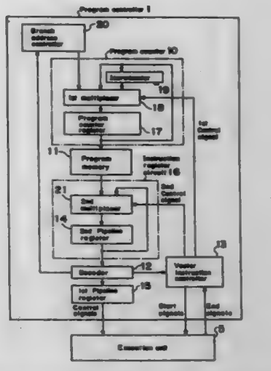
1. A processor for a data processing system including a plurality of microprogrammed processing units (EAD, BDP, FPP), sharing a set of functions of said processor, each unit being assigned to execute a subset of functions of said processor, said units being connected to memory means (CA) containing program instructions to be executed and the operands, at least one of said units being an addressing unit (EAD) for addressing said memory means (CA) for obtaining said program instructions and said operands, wherein each of said processing units (EAD, BDP, FPP) includes a command block means (1) for the execution of specific microprograms, wherein said program instructions each include a plurality of microprograms that can be executed respectively in said units, said command block means (1) of each unit including means (26, 15, 33) for ordering instructions to trigger the execution of the microprogram of a waiting first instruction, wherein each of said microprogram includes a last microinstruction having an end-of-microprogram indication (ST) and an anticipation indication signal (AN); and further wherein at least said addressing unit includes anticipation means (30) for conditioning said command means, said addressing unit containing said microprograms, the last microinstruction of which includes an anticipation indication signal (AN) to determine whether an instruction in standby to be executed can be anticipated by beginning execution thereof prior to completion of a currently executing instruction; said anticipation means (30) being operable to condition said command means (26, 15, 33) to authorize the execution of said microprogram of said instruction in standby when a currently executing microinstruction includes said end-of-microprogram and anticipation indications (ST, AN).

5,299,319
HIGH PERFORMANCE INTERLOCK COLLAPSING SCISM ALU APPARATUS
Stamatis Vassiliadis, Austin, and James E. Phillips, Round Rock, both of Tex., assignors to International Business Machines Corporation, N.Y.
Continuation-in-part of Ser. No. 504,910, Apr. 4, 1990, Pat. No. 5,051,940, and Ser. No. 619,868, Nov. 28, 1990, Pat. No. 5,301,341. This application Mar. 29, 1991, Ser. No. 677,079
Int. Cl.[5] G06F *15/20, 9/40*
U.S. Cl. 395—375 **43 Claims**



1. An apparatus for a 3-1 two's complement and unsigned number notation in an ALU that executes a pair of interlocked instructions comprising:
a carry save adder (CSA) having three inputs for two unique operands and one common operand specified by said pair of interlocked instructions, said CSA having a carry output and a sum output; and
a 2-1 carry-look-ahead adder (CLA) having two inputs coupled to said CSA carry and sum outputs, said CLA having an output for providing a sum equation output based upon inputs to said CLA; and
a pre-CLA adder logical block coupled to operate in parallel with said CSA and having two inputs coupled to two unique inputs of said CSA and having an output coupled, along with a carry output of said CSA, to said CLA; and
a post-CLA adder logical block coupled to receive said sum equation output from said CLA and a common one of the three inputs to the CSA; and wherein
when a true or complement input of two unique and one common input operands specified by the pair of interlocked instructions is an input to the CSA, the CSA produces a carry and sum output; and
the pre-CLA logical block is coupled to operate in parallel with the CSA and to receive the true or complement input of three unique input operands specified by the pair of interlocked instructions; and
the output of the pre-CLA logical block is ORed with the carry from the CSA for providing one input to said CLA combining a carry output of said CSA and said output of said pre-CLA logical block; and
the sum from the CSA is coupled to form a second input to the CLA; and
the sum equation output of the CLA and the common operand input to the CSA are inputs into the post CLA logical block and logically combined for outputting an AND, OR, or EXCLUSIVE-OR signal which is then logically combined with the sum equation from the CLA to provide a conceptual sequential operation for said pair of interlocked instructions.

5,299,320
PROGRAM CONTROL TYPE VECTOR PROCESSOR FOR EXECUTING A VECTOR PIPELINE OPERATION FOR A SERIES OF VECTOR DATA WHICH IS IN ACCORDANCE WITH A VECTOR PIPELINE
Kunitoshi Aono, Hirakata; Masaki Toyokura, Katano; Toshiyuki Araki, Yawata; Akihiko Ohtani, Moriguchi; Hisashi Kodama, Osaka, and Kiyoshi Okamoto, Moriguchi all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 30, 1991, Ser. No. 752,787
Claims priority, application Japan, Sep. 3, 1990, 2-233535
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—375 **2 Claims**



1. A program control type vector processor for executing plural instructions including a vector pipeline instruction, comprising:
a data processor for executing a pipeline operation for vector data comprised of a series of data based on said vector pipeline instruction;
a program controller including a program memory, a program counter and a decoder, said program controller stopping said program counter and outputting a start signal when said vector pipeline instruction is read out from said program memory and is decoded by said decoder, and thereafter, controlling an operation of said data processor according to contents of said vector pipeline instruction;
an address generator for sequentially generating addresses according to a preset sequence in response to said start signal and for outputting an end signal to said program controller when completing generation of a predetermined number of addresses; and
a data memory for storing data and outputting vector data comprised of said series of data based on an address generated by said address generator;
wherein said data processor executes said pipeline operation for the vector data outputted from said data memory under the control of said program controller;
and wherein said program controller detects completion of said pipeline operation performed in response to said vector pipeline instruction a predetermined number of cycles after receiving said end signal, and thereafter, restarts said program counter, sequentially executes instructions following said vector pipeline instruction;

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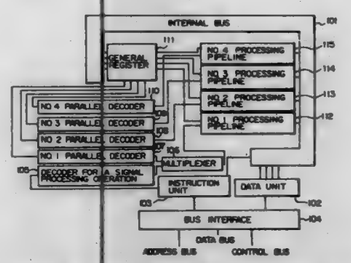
said program controller further comprising:
a branch address controller for generating a branch address in response to a decoded result of said decoder;
a vector instruction controller for controlling respective circuits of said program controller in response to said decoded result of said decoder and said end signal;
an instruction register circuit for temporarily storing data outputted from said program memory in response to a second control signal outputted from said vector instruction controller; and
a first pipeline register for temporarily storing data outputted from said decoder and outputting the stored data to said data memory and said data processor;
said program counter comprising:
a counter register for temporarily storing an address to be outputted to said program memory;
an incrementer for increasing by one an address outputted from said program counter register every one cycle of an operation clock and for outputting the increased address; and
a first multiplexer for selecting either one of outputs of said branch address controller, said program counter register and said incrementer according to a first control signal outputted from said vector instruction controller and for outputting said selected address through said program counter register to said program memory;
said instruction register circuit comprises:
a second pipeline register for temporarily storing data to be outputted to said decoder; and
a second multiplexer for selecting either one of outputs of said program memory and said second pipeline register according to a second control signal outputted from said vector instruction controller and for outputting said selected one through said second pipeline register to said decoder;
wherein when said vector pipeline instruction is decoded by said decoder, said vector instruction controller outputs said start signal to said address generator, controls said first multiplexer to select the output of said program counter register so that said program counter register holding data, and controls said second multiplexer to select the output of said second pipeline register so that said second pipeline register holding said data, thereby controlling said address generator, said data memory and said data processor to sequentially execute respective instructions of said vector pipeline instruction, thereafter, at a timing delayed by predetermined cycles from a timing when receiving said end signal from said address generator, said vector instruction controller detects completion of said pipeline operation performed based on said vector pipeline instruction, and then, said vector instruction controller stops the control of said first and second multiplexers, thereby stopping said holding of said program counter register and said holding of said second pipeline register, and thereafter, said program controller sequentially executes instructions following said vector pipeline instruction;
said address generator comprising a source memory address generator and a destination memory address generator;
said vector instruction controller comprising:
a first start signal generator for setting a start signal for said source memory address generator in response to a vector instruction signal outputted from said decoder when said vector pipeline instruction is decoded by said decoder and for outputting the setting start signal to said source memory address generator, and for resetting said start signal for said source memory address generator in response to said end signal outputted from said address generator;
a second start signal generator including a first shift register having predetermined plural stages of delay circuits for delaying said vector instruction signal and for outputting said delayed vector instruction signal, and a third multiplexer for selecting either one of outputs of said delay circuits of said first shift register according to a vector instruction sort signal of a decoded result which is obtained when said vector pipeline instruction is decoded by said decoder and for outputting the selected one of said outputs of said delay circuits of said first shift register as said start signal for said destination memory address generator;
a first control signal generator including a second shift register having predetermined plural stages of delay circuits for delaying said end signal and for outputting delayed end signal, a fourth multiplexer for selecting either one of outputs of said delay circuits of said second shift register according to said vector instruction sort signal and for outputting said selected one as a delayed end signal, and a signal generating circuit for setting said second control signal in response to said vector instruction signal, and for outputting said set second control signal to said second multiplexer, and for resetting said second control signal in response to said delayed end signal outputted from said fourth multiplexer; and
a second control signal generator for generating said first control signal in response to said second control signal and an address branching control signal of a decoded result which is obtained when an address branching instruction is decoded by said decoder, and for outputting said generated first control signal to said first multiplexer.

5,299,321

PARALLEL PROCESSING DEVICE TO OPERATE WITH PARALLEL EXECUTE INSTRUCTIONS

Hiroshi Iizuka, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 808,909, Dec. 17, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 97,325
Claims priority, application Japan, Dec. 18, 1990, 2-403229; Dec. 21, 1990, 2-405037; Aug. 13, 1991, 3-202770
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 **10 Claims**



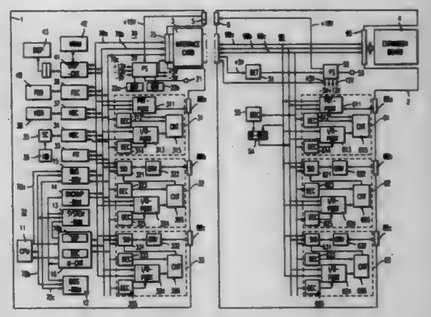
1. A parallel processing device for performing processing operations in response to processing instructions defined by a parallel execute instruction to be executed in parallel, comprising:
an input circuit to receive the processing instructions and data to be processed;
a first decoder connected to said input circuit for decoding the processing instructions and producing a micro instruction for controlling processing corresponding to the decoded processing instructions;
storage circuitry to store at least either one of data to be processed and one of the processing instructions defined by the parallel execute instruction;
an internal bus connected to said input circuit and said storage circuitry for transferring bits of the data to be processed and the processing instructions in parallel from said input circuit to said storage circuitry;
a plurality of second decoders connected to said storage circuitry, each second decoder decoding a respective instruction received from said storage circuitry, and producing a micro instruction for controlling processing corresponding to the instruction decoded therein;
a plurality of parallel pipeline processors, each connected to said storage circuitry and each except one to a respective one of said second decoders, said parallel pipeline processors being connected to said internal bus, whereby each parallel processor except one performs processing operations in response to the micro instruction received corresponding second decoder; and
a multiplexer interconnected to said first decoder, to at least one of said second decoders that is not connected to any of said parallel pipeline processors, and to said parallel pipeline processor that is not connected to said second decoder, said multiplexer selectively connecting either of said first decoder and said second decoder connected thereto to said parallel pipeline processor connected thereto;
whereby the micro instruction received from said first decoder is transferred over said internal bus to said storage circuitry sequentially on an instruction basis to be stored therein.

5,299,322

COMPUTER SYSTEM WITH IMPROVED INTERFACE CONTROL OF AN I/O EXPANSION UNIT

Makoto Arai, and Emiko Iizuka, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 659,260, Feb. 22, 1991, abandoned. This application May 3, 1993, Ser. No. 55,908
Claims priority, application Japan, Feb. 23, 1990, 2-40925; Mar. 30, 1990, 2-84672
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **4 Claims**



1. A computer system comprising:
a computer main frame having at least one input/output control device;
an expansion unit having at least one input/output control device;
interface means for connecting said expansion unit to said computer main frame; and
system configuration control means, incorporated in each of said computer main frame and said expansion unit, for setting at least address data of said input/output control devices included in said computer main frame and said expansion unit.

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DESIGN PATENTS

GRANTED MAR. 29, 1994

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For CLASS	See PATENT NO.
006-631	D 345,463
008-070	D 345,065

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MARCH 29, 1994

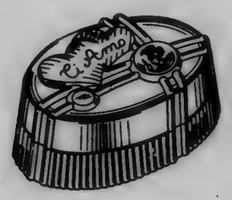
345,443
BRONTOSAURUS SHAPED PASTA
Edward J. Meyers, Jr., Roselle Park, N.J.; Deborah L. Bernardini, Mahopac, N.Y.; Frank Ceglia, and Eileen Fogarty, both of New York, N.Y., assignors to CPC International Inc., Englewood Cliffs, N.J.
Continuation of Ser. No. 459,391, Dec. 29, 1989, abandoned. This application Jan. 15, 1993, Ser. No. 6,186
Term of patent 14 years
U.S. Cl. D1—107



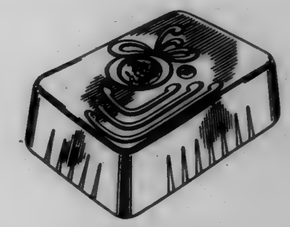
345,444
CHOCOLATE HAVING A LEAF DESIGN
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S.A. Confiserie Leonidas, Brussels, Belgium
Filed Apr. 20, 1992, Ser. No. 871,625
Claims priority, application World Int. Prop. O., Nov. 11, 1991, Dm/021.093
Term of patent 14 years
U.S. Cl. D1—127



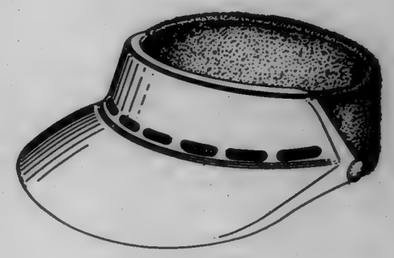
345,445
CHOCOLATE HAVING A HEART DESIGN
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S. A. Confiserie Leonidas, Brussels, Belgium
Filed Apr. 20, 1992, Ser. No. 873,085
Claims priority, application World Int. Prop. O., Nov. 29, 1991, DM/021/249
Term of patent 14 years
U.S. Cl. D1—127



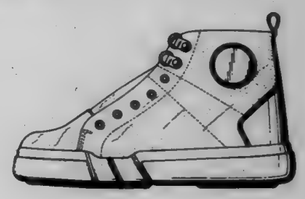
345,446
PIECE OF CHOCOLATE CANDY
Maria Kestekides-Kesdekoglu, Brussels, Belgium, assignor to S. A. Confiserie Leonidas, Brussels, Belgium
Filed Oct. 16, 1992, Ser. No. 573
Claims priority, application Belgium, Apr. 21, 1992, 022 661
Term of patent 14 years
U.S. Cl. D1—127



345,447
SUN VISOR
Joshua Lapaker, Thornhill, and Lawrie McIntosh, Mississauga, both of Canada, assignors to Starline Industries Inc., Ontario, Canada
Filed May 21, 1992, Ser. No. 886,972
Claims priority, application Canada, Dec. 6, 1991, 06-12-91-2
Term of patent 14 years
U.S. Cl. D2—876



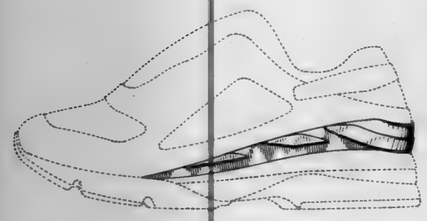
345,448
SHOE
Larry Selbiger, Portland, Oreg., assignor to Deja, Inc., Tigard, Oreg.
Filed Oct. 21, 1992, Ser. No. 620
Term of patent 14 years
U.S. Cl. D2—912



345,449
SAFETY TOE POCKET
Mickey L. Armstrong, 321 SW. 13th St., Perryton, Tex. 79070
Filed Mar. 5, 1991, Ser. No. 665,002
Term of patent 14 years
U.S. Cl. D2—913



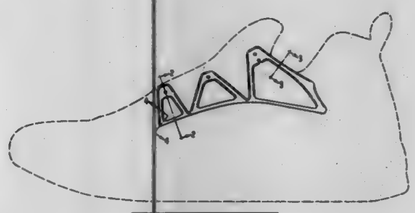
345,450
ELEMENT OF A SHOE
Hirokazu Kusuki; Masahiro Komakiri; Kazuhiko Hori, all of Osaka, Japan, and Tuan Le, San Francisco, Calif., assignors to Mizuno Sports, Inc., South San Francisco, Calif.
Filed Nov. 6, 1992, Ser. No. 1,220
Term of patent 14 years
U.S. Cl. D2—972



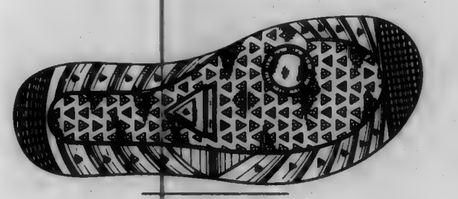
345,451
SHOE UPPER
Tracy L. Teague, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1993, Ser. No. 6,404
Term of patent 14 years
U.S. Cl. D2—970



345,452
LACE ELEMENT FOR A SHOE UPPER
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 4, 1993, Ser. No. 9,028
Term of patent 14 years
U.S. Cl. D2—973



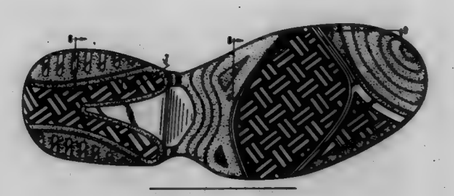
345,453
COMBINED BOOT LAST AND SOLE
Jake B. Carpenter, Manchester Center, Vt., assignor to Burton Corporation USA, Burlington, Vt.
Filed Jan. 28, 1992, Ser. No. 826,952
Term of patent 14 years
U.S. Cl. D2—955



345,454
RUBBER SOLE FOR CROSS-COUNTRY SKI SHOE
Bernt-Otto Hauglin, Royken, Norway, assignor to Rottefella AS, Norway
Filed Mar. 9, 1992, Ser. No. 849,148
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 9109126
Term of patent 14 years
U.S. Cl. D2—957



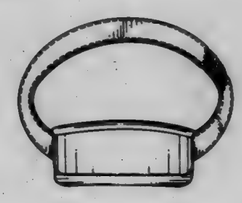
345,455
SHOE OUTSOLE
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 26, 1993, Ser. No. 6,399
Term of patent 14 years
U.S. Cl. D2—953



345,456
DECORATED SOCK
Donna M. Favero, Suthenlin, and Frances A. S. Lynch, Ringgold, both of Va., assignors to Durham Hosiery Mills, Inc., Danville, Va.
Filed May 19, 1992, Ser. No. 885,214
Term of patent 14 years
U.S. Cl. D2—615



345,457
FOOT ELEVATOR
John H. Friend, 10200 Arno Rd., Galt, Calif. 95632
Filed Dec. 21, 1992, Ser. No. 2,837
Term of patent 14 years
U.S. Cl. D2—946



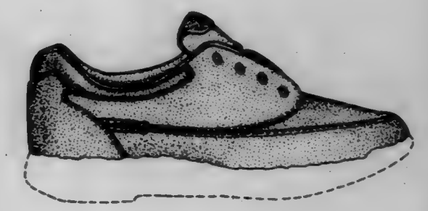
345,458
SHOE UPPER
David Lacoraza, Hyde Park; Susan B. Ryder, Boston, and Paul D. Brown, Hingham, all of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Dec. 22, 1992, Ser. No. 2,868
Term of patent 14 years
U.S. Cl. D2—969



345,459
SHOE UPPER
David Preskar, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jan. 25, 1993, Ser. No. 4,023
Term of patent 14 years
U.S. Cl. D2—969



345,460
SHOE UPPER
Susan B. Ryder, Boston, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jun. 2, 1993, Ser. No. 8,990
Term of patent 14 years
U.S. Cl. D2—969



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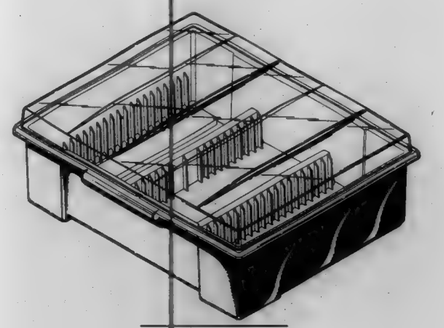
345,461
FIBER OPTIC CANE
Joe H. Hickey, 12981 Blue Lake Dr., West Palm Beach, Fla. 33414
Filed Mar. 17, 1992, Ser. No. 853,166
Term of patent 14 years
U.S. Cl. D3—7



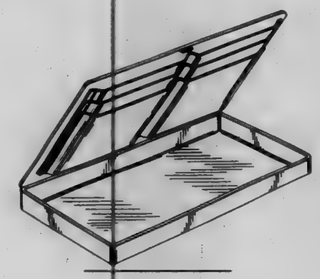
345,462
INFANT CARRIER
Kenny W. Davidson, 4124 Mumford Giltedge Rd., Brighton, Tenn. 38011
Filed Jul. 27, 1992, Ser. No. 920,052
Term of patent 14 years
U.S. Cl. D3—213



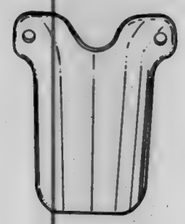
345,463
COMBINATION STORAGE CONTAINER AND LID FOR COMPACT DISCS
James K. Sankey, Hudson; Christopher G. Gallagher, Akron, and Todd M. Bradford, Marshallville, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed Aug. 27, 1992, Ser. No. 935,736
Term of patent 14 years
U.S. Cl. D6—631



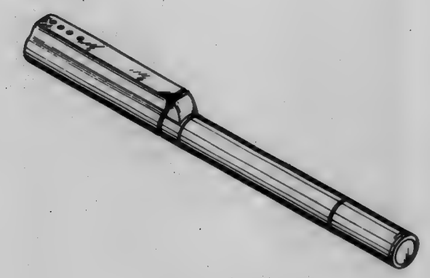
345,464
CONDOM WALLET
Lucas Coronel, P.O. Box 1238, La Quinta, Calif. 92253
Filed May 15, 1992, Ser. No. 884,080
Term of patent 14 years
U.S. Cl. D3—295



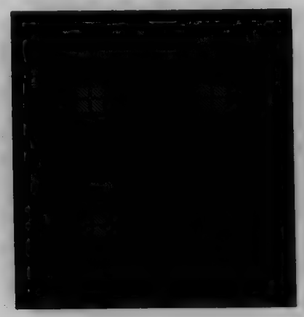
345,465
TOOL HANGER
Al Greig, 152 Franklin St., Bloomfield, N.J. 07003
Filed Feb. 20, 1992, Ser. No. 839,492
Term of patent 14 years
U.S. Cl. D8—70



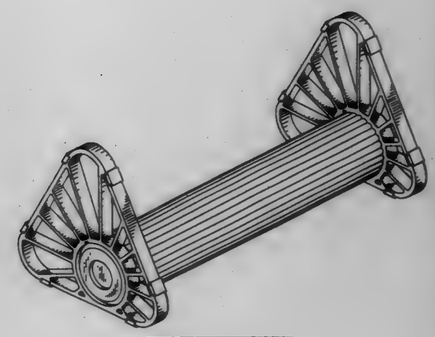
345,466
COMBINED TOOTHBRUSH HANDLE AND TOOTHBRUSH HEAD COVER
Jon R. Brouse, 11832 Beach Club Way, Malibu, Calif. 90265
Filed Jun. 5, 1992, Ser. No. 894,793
Term of patent 14 years
U.S. Cl. D4—108



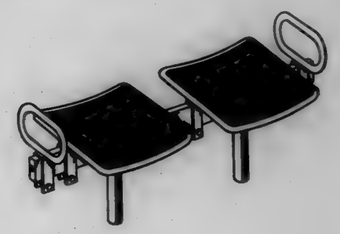
345,467
TARTAN FABRIC
Patrick J. Walsh, Lanarkshire, Scotland, assignor to The Celtic Football & Athletic Co., Ltd., Glasgow, Scotland
Filed Apr. 23, 1990, Ser. No. 513,590
Claims priority, application United Kingdom, Nov. 11, 1989, 600149
Term of patent 14 years
U.S. Cl. D5—46



345,468
FOOTREST
Harry J. McVicker, Sherwood, Oreg., assignor to Grolen Incorporated, Conshohocken, Pa.
Filed Jul. 16, 1992, Ser. No. 915,356
Term of patent 14 years
U.S. Cl. D6—349



345,469
SEATING UNIT
Heinz Wirth, Aalen, Fed. Rep. of Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Fed. Rep. of Germany
Filed Feb. 25, 1992, Ser. No. 839,898
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1991, 9106052
Term of patent 14 years
U.S. Cl. D6—355

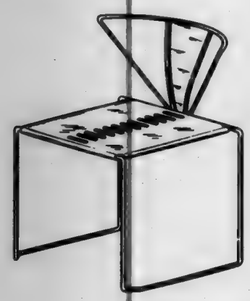


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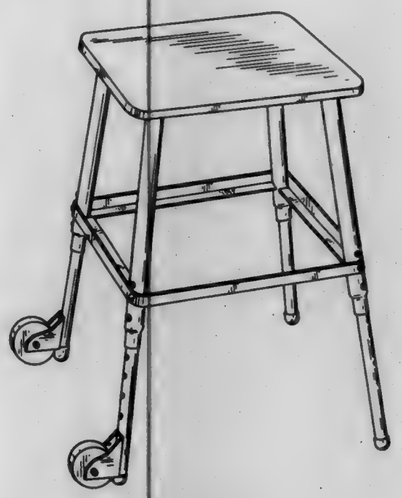
345,470
CHAIR
Tetsuya Narita, Funabashi, Japan, assignor to Okamura Corporation, Yokohama, Japan
Filed Sep. 3, 1991, Ser. No. 753,687
Claims priority, application Japan, May 22, 1991, 3-14632
Term of patent 14 years
U.S. Cl. D6—366



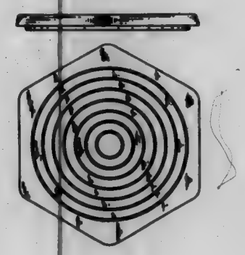
345,471
CHAIR
Kazuhide Takahama, Bologna, Italy, assignor to Simon International, Italy
Filed Mar. 10, 1992, Ser. No. 849,696
Claims priority, application Italy, Sep. 18, 1991, B)910000051
Term of patent 14 years
U.S. Cl. D6—373



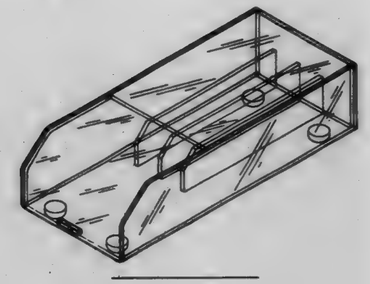
345,472
POWER TOOL STAND
Steven J. Sheftel, Hingham, Mass., assignor to Crawford Products, Inc., West Hanover, Mass.
Filed Dec. 18, 1991, Ser. No. 809,319
Term of patent 14 years
U.S. Cl. D6—429



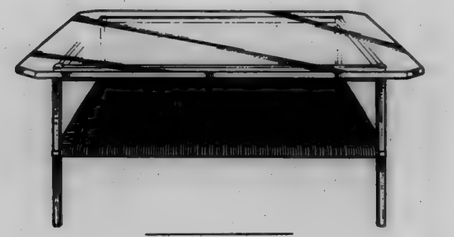
345,473
TURNTABLE DEVICE
Ernst H. Grundmann, Am Sportplatz 36, 4005 Meerbusch 2, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 617,814, Nov. 26, 1990, Pat. No. 5,149,043. This application Jan. 8, 1992, Ser. No. 817,834
Claims priority, application Fed. Rep. of Germany, May 26, 1990, 9006002[U]
Term of patent 14 years
U.S. Cl. D6—455



345,474
COMBINED STORAGE AND RETRIEVAL UNIT FOR TV AND VCR REMOTE CONTROLS
Ernest J. Harris, 6345 Denny Ave. #4, North Hollywood, Calif. 91606
Filed Jul. 31, 1992, Ser. No. 922,086
Term of patent 14 years
U.S. Cl. D6—467



345,475
TABLE
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 15, 1992, Ser. No. 883,713
Term of patent 14 years
U.S. Cl. D6—477



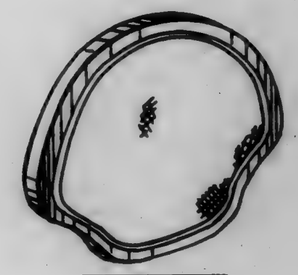
345,476
TABLE BASE
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Feb. 28, 1992, Ser. No. 841,753
Term of patent 14 years
U.S. Cl. D6—495



345,477
CHAIR BACK
Vittorio Infanti, Matawan, N.J., assignor to Infanti Chair Manufacturing Corp., N.Y.
Filed Jul. 20, 1992, Ser. No. 916,418
Term of patent 14 years
U.S. Cl. D6—502



345,478
CHAIR BACK
Vittorio Infanti, Matawan, N.J., assignor to Infanti Chair Manufacturing Corp., New York, N.Y.
Filed Jul. 20, 1992, Ser. No. 916,500
Term of patent 14 years
U.S. Cl. D6—502



345,479
CHAIR BACK
Vittorio Infanti, Matawan, N.J., assignor to Infanti Chair Manufacturing Corp., N.Y.
Filed Jul. 20, 1992, Ser. No. 917,480
Term of patent 14 years
U.S. Cl. D6—502



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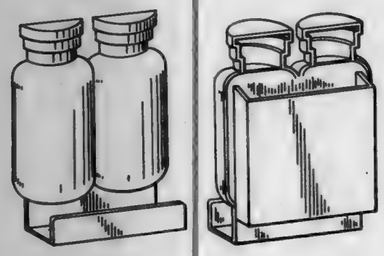
345,480
SHELF FOR A BOOKCASE
Leif Sandegren, Hultsfred, Sweden, assignor to Sanmeco Ab, Hultsfred, Sweden
Filed Feb. 19, 1992, Ser. No. 839,539
Term of patent 14 years
U.S. Cl. D6—511



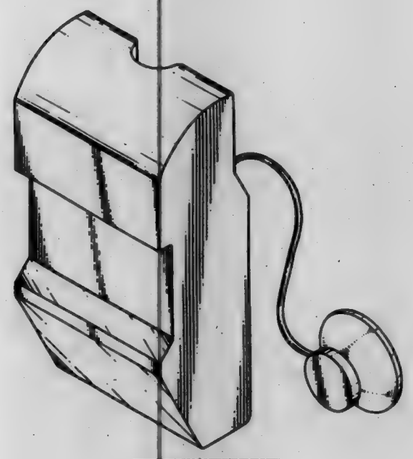
345,481
GRAVITY-FEED DISPENSER FOR MEDICINAL PACKETS
Alan F. Fracalossi, Norton, Mass., assignor to Specialty Promotions, Inc., Norton, Mass.
Filed Apr. 20, 1992, Ser. No. 871,217
Term of patent 14 years
U.S. Cl. D6—515



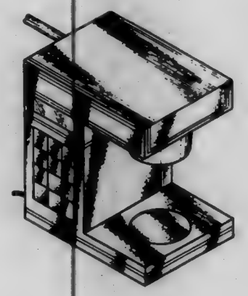
345,482
WALL-MOUNTED STETHOSCOPE HOLDER
Richard Costa, Piscataway, N.J., assignor to PharmaDesign, Warren, N.J.
Filed Mar. 9, 1992, Ser. No. 847,212
Term of patent 14 years
U.S. Cl. D6—567



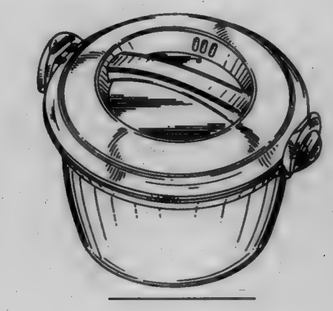
345,483
AUTOMATIC VENETIAN BLIND OPENER AND CLOSER
Mario Tavares, and Stuart Faria, both of 44 Burgby Ave, Brampton, Ontario, Canada L6X 3A4
Filed Dec. 5, 1991, Ser. No. 802,457
Term of patent 14 years
U.S. Cl. D6—580



345,484
AUTOMATIC FILLING COFFEE MAKER
Don R. Mason, 8551 SW. 27th Ave., Ocala, Fla. 32676
Filed May 14, 1992, Ser. No. 882,109
Term of patent 14 years
U.S. Cl. D7—309



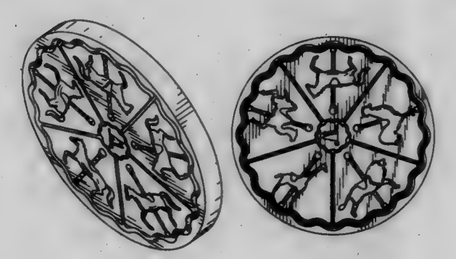
345,485
COOKING VESSEL
Jhi H. Leung, Kowloon, Hong Kong, assignor to Star Industrial Co., Ltd., Hong Kong,
Filed Oct. 25, 1991, Ser. No. 781,354
Claims priority, application United Kingdom, Apr. 26, 1991, 2014437
Term of patent 14 years
U.S. Cl. D7—360



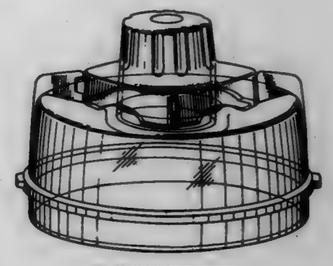
345,486
HANDLE FOR FLATWARE
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,010
Term of patent 14 years
U.S. Cl. D7—401.2



345,487
WAFFLE IRON PLATE
Louis A. Vitantonio, Mentor, Ohio, assignor to Vitantonio Manufacturing Company, Eastlake, Ohio
Filed Oct. 1, 1992, Ser. No. 92
Term of patent 14 years
U.S. Cl. D7—410



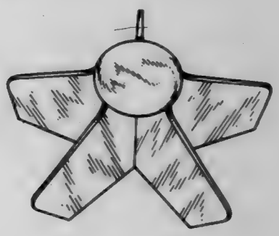
345,488
COVER FOR A BLENDER
Frank P. Barnard, and David Jeanett, both of Olmsted Township, Cuyahoga County, Ohio, assignors to Vita-Mix Corporation, Cleveland, Ohio
Filed Apr. 1, 1992, Ser. No. 862,252
Term of patent 14 years
U.S. Cl. D7—412



345,489
GRILL OR STOVE LIGHTER
Dong-yon Moh, Seoul, Rep. of Korea, assignor to Bultina International Corp., Rep. of Korea
Filed May 12, 1992, Ser. No. 881,894
Term of patent 14 years
U.S. Cl. D7—416



345,490
PIE CUTTING TOOL
T. Ray Broadbent, and J. Samuel Park, both of Salt Lake City, Utah, assignors to The NuPro Company, Salt Lake City, Utah
Filed Oct. 22, 1993, Ser. No. 14,524
Term of patent 14 years
U.S. Cl. D7—673



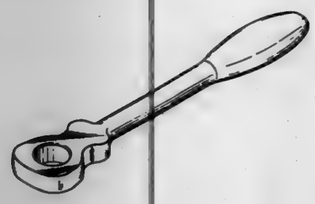
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345,491
BLADE PORTION FOR A SPATULA
Andre Doxey, Shaker Heights, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 10, 1992, Ser. No. 818,968
Term of patent 14 years
U.S. Cl. D7—692

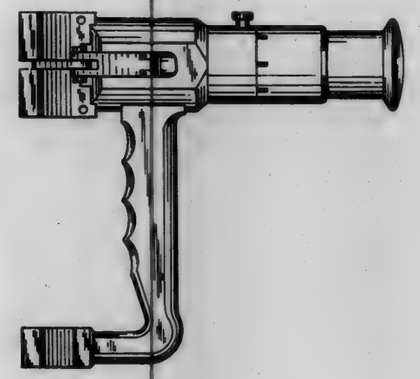


345,492
ROOF SNOW RAKE
Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928
Filed Apr. 2, 1993, Ser. No. 6,609
Term of patent 14 years
U.S. Cl. D8—10

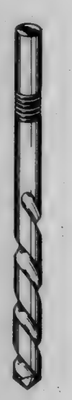
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RATCHET WRENCH HANDLE
Chang-Chuan Lee, 429-6 Chung Cheng Rd, Fu Liao Li, Tsau Tun Town, Nantou Hsien, Taiwan
Filed Jun. 15, 1992, Ser. No. 898,889
Term of patent 14 years
U.S. Cl. D8—25



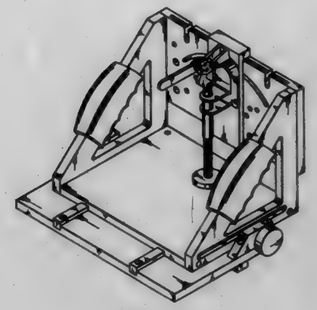
345,494
CORNERBEAD CRIMPER DEVICE
Guy Lallier, 3837 Coco Plum, Cir., Karanda Village 3, Pompano Beach, Fla. 33063
Continuation-in-part of Ser. No. 812,359, Dec. 20, 1991. This application Jun. 19, 1992, Ser. No. 901,509
Term of patent 14 years
U.S. Cl. D8—61



345,495
DRILL BIT FOR RETRIEVING BROKEN BOLTS
Daniel E. Priddy, R#2 Box 421, Stokesdale, N.C. 27357
Filed Dec. 5, 1991, Ser. No. 802,456
Term of patent 14 years
U.S. Cl. D8—70



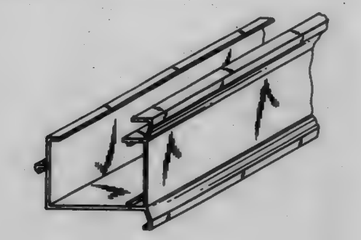
345,496
WORKPIECE HOLD-DOWN DEVICE
Steven A. Erbach, Bellingham, Wash., assignor to Woodstock International, Inc., Bellingham, Wash.
Filed Oct. 28, 1992, Ser. No. 905
Term of patent 14 years
U.S. Cl. D8—72



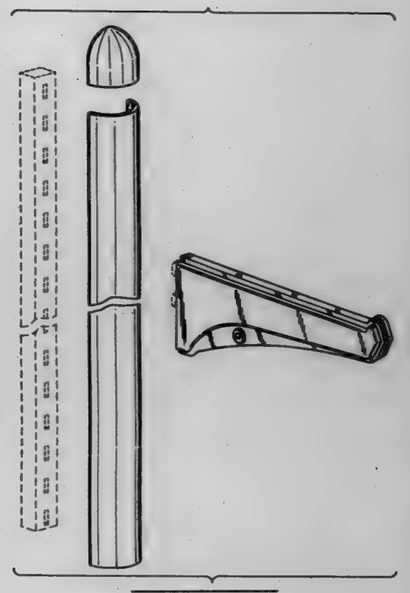
345,497
MAGNETIC CURTAIN HOOK
Garnet J. Miller, 4690 Sydenham St., Philadelphia, Pa. 19140
Filed Aug. 27, 1991, Ser. No. 750,552
Term of patent 14 years
U.S. Cl. D8—367



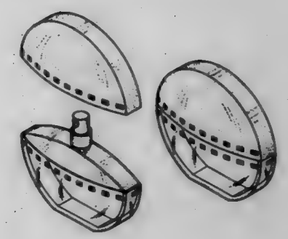
345,498
EXTENDED HEADRAIL
Donald E. Fraser, Owensboro, and Richard N. Anderson, Whitesville, both of Ky., assignors to Hunter Douglas, Inc., Upper Saddle River, N.J.
Filed Mar. 19, 1992, Ser. No. 854,056
Term of patent 14 years
U.S. Cl. D8—377



345,499
COVER FOR A SHELVING UNIT
Eduardo Padilla, 611 E. Blanchard St., El Paso, Tex. 79902
Filed Aug. 2, 1991, Ser. No. 739,868
Term of patent 14 years
U.S. Cl. D8—381



345,500
COMBINED SPRAY CONTAINER AND CAP
Susan R. Wacker, New York, N.Y., assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Jul. 10, 1992, Ser. No. 912,959
Term of patent 14 years
U.S. Cl. D9—300

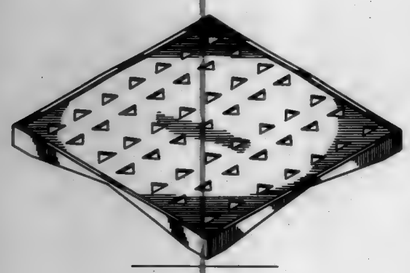


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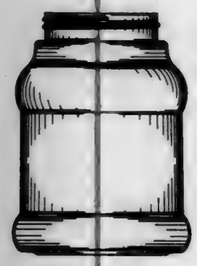
345,501
DEPILATORY ROLL-ON APPLICATOR
George B. Prince, Londonderry Dr., Greenwich, Conn. 06830, assignor to George B. Prince, Greenwich, Conn.
Filed Sep. 23, 1993, Ser. No. 248,201
Term of patent 14 years
U.S. Cl. D9—338



345,502
FAST FOOD CONTAINER INSERT
Robert D. Clar, P.O. Box 24515, Rochester, N.Y. 14624
Filed Jul. 15, 1991, Ser. No. 730,310
Term of patent 14 years
U.S. Cl. D9—456



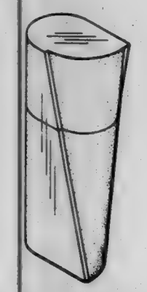
345,503
STORAGE JAR
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 28, 1992, Ser. No. 3,045
Term of patent 14 years
U.S. Cl. D9—500



345,504
COMBINED BOTTLE AND CAP
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,538
Term of patent 14 years
U.S. Cl. D9—529



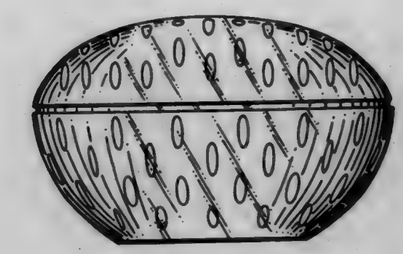
345,505
COMBINED BOTTLE AND CAP
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Jan. 14, 1992, Ser. No. 821,619
Term of patent 14 years
U.S. Cl. D9—529



345,506
BEVERAGE BOTTLE
Jo Lee B. Potts; Joann M. Miller, both of Bradenton; Marvin W. Hodge, and Griscom Bettle, III, both of Sarasota, all of Fla., assignors to Tropicana Products, Inc., Bradenton, Fla.
Filed Sep. 24, 1992, Ser. No. 950,467
Term of patent 14 years
U.S. Cl. D9—543



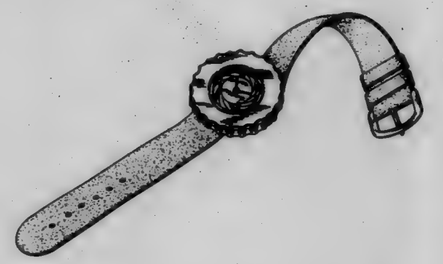
345,507
CREME CONTAINER
Robert Granai, Paris, France, assignor to Guerlain S.A., Paris, France
Filed Nov. 24, 1992, Ser. No. 1,793
Term of patent 14 years
U.S. Cl. D9—551



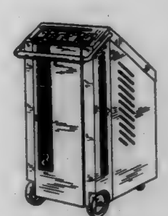
345,508
CLOCK
Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Mar. 25, 1992, Ser. No. 857,594
Term of patent 14 years
U.S. Cl. D10—24



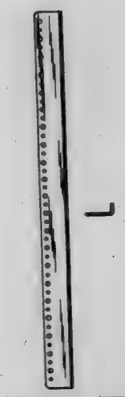
345,509
WRISTWATCH
Annabelle d'Huart, Paris, France, assignor to Sarl Taller Design, Paris, France
Filed Dec. 24, 1991, Ser. No. 813,309
Claims priority, application World Int. Prop. O., Jun. 24, 1991, DM/019,968
Term of patent 14 years
U.S. Cl. D10—32



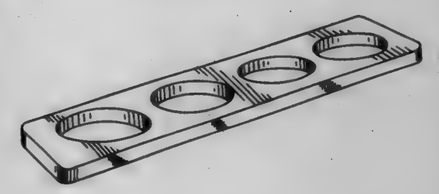
345,510
MOLD TEMPERATURE CONTROLLER
Matsui Osamu, Osaka, Japan, assignor to Matsui Manufacturing Co., Ltd., Osaka, Japan
Filed Jan. 28, 1991, Ser. No. 723,518
Claims priority, application Japan, Mar. 29, 1991, 3-9096
The portion of the term of this patent subsequent to Mar. 15, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—49



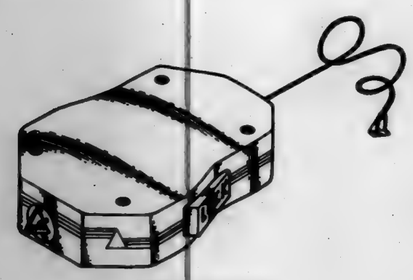
345,511
COMPONENT FURNITURE DRILL HOLE TEMPLATE
Dimitri Petrohilos, London, England, assignor to Adestia Corporation, Norfolk, Va.
Filed Jan. 27, 1992, Ser. No. 825,857
Term of patent 14 years
U.S. Cl. D10—64



345,512
GOLF BALL GAUGE
Reinhard Gaenzle, 408 N. Oleander Dr., Schaumburg, Ill. 60193
Filed Jun. 5, 1992, Ser. No. 893,358
Term of patent 14 years
U.S. Cl. D10—64



345,513
CHALK LINE REEL
Chris J. Syrett, 3798 W. Mansfield Cir., West Jordan, Utah 84084
Filed May 24, 1991, Ser. No. 705,168
Term of patent 14 years
U.S. Cl. D10—65



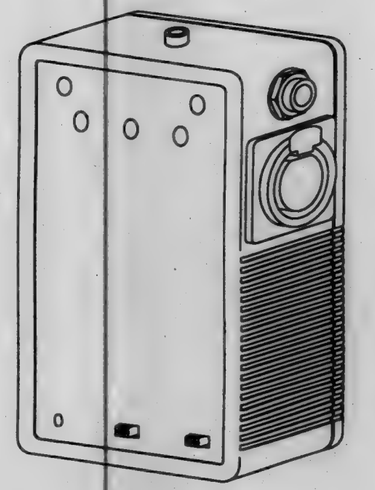
345,514
CUTTING GUIDE AND SQUARE
William J. Donnelly, 419 Euclid Ave., Manasquan, N.J. 08736
Filed Apr. 1, 1993, Ser. No. 6,564
Term of patent 14 years
U.S. Cl. D10—65



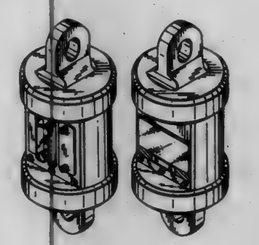
345,515
TAPE MEASURE
Jean-Claude Bordenave, Santeny, France, assignor to Dela-ets Desange-Lair, Alfortville, France
Filed May 15, 1992, Ser. No. 883,728
Claims priority, application World Int. Prop. O., Nov. 18, 1991, DM/021154
Term of patent 14 years
U.S. Cl. D10—72



345,516
HOUSING FOR CABLE CHECKER
Teh L. Wei, 246 MacPherson Road, Betime Building #05-02, Singapore 1334, Singapore
Filed Dec. 21, 1992, Ser. No. 2,829
Claims priority, application United Kingdom, Jun. 25, 1992, 2023901
Term of patent 14 years
U.S. Cl. D10—78



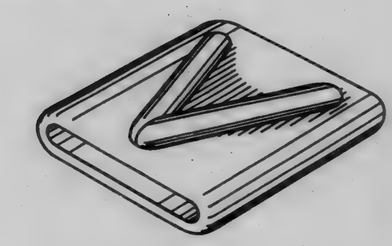
345,517
LOAD WEIGHTING DEVICE
Francis D. M. Badcock, Clovelly Road, Southbourne, Emsworth, Hants P010 8PE, England
Filed Nov. 16, 1992, Ser. No. 1,497
Claims priority, application United Kingdom, Jul. 31, 1992, 2024735
Term of patent 14 years
U.S. Cl. D10—87



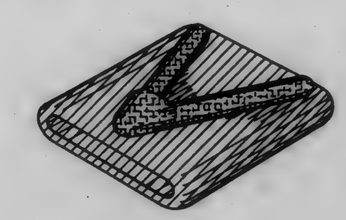
345,518
ANTI-THEFT ALARM FOR BICYCLES
Salvatore P. Merlo, Via Bellini 28/30, 20020 Lainate (Milan), Italy
Filed Apr. 12, 1993, Ser. No. 6,962
Claims priority, application Italy, Nov. 18, 1992, MI92 0000762
Term of patent 14 years
U.S. Cl. D10—106



345,519
DIRECTIONAL INDICATING BAND FOR ATTACHMENT TO FIRE FIGHTING HOSE
Clifford Clement, 193 High St., Somerset, Mass. 02726
Filed Jan. 10, 1992, Ser. No. 818,979
Term of patent 14 years
U.S. Cl. D10—109



345,520
DIRECTIONAL INDICATING BAND FOR ATTACHMENT TO FIRE FIGHTING HOSE
Clifford Clement, 193 High St., Somerset, Mass. 02726
Filed May 14, 1992, Ser. No. 882,678
Term of patent 14 years
U.S. Cl. D10—109



345,521
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,128
Term of patent 14 years
U.S. Cl. D10—126



345,522
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,132
Term of patent 14 years
U.S. Cl. D10—126



345,523
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,133
Term of patent 14 years
U.S. Cl. D10—126



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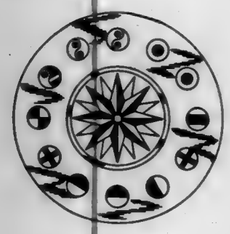
345,524
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed May 31, 1991, Ser. No. 709,138
Term of patent 14 years
U.S. Cl. D10—126



345,525
WATCHFACE
Jean-Louis Dumas, Paris, France, assignor to La Montre Hermes, S.A., Bienne, Switzerland
Filed Sep. 9, 1991, Ser. No. 756,751
Claims priority, application World Int. Prop. O., Mar. 7, 1991, DM/019080
Term of patent 14 years
U.S. Cl. D10—126



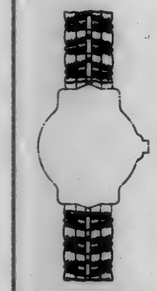
345,526
WATCH DIAL
Akie Ito, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,414
Term of patent 14 years
U.S. Cl. D10—126



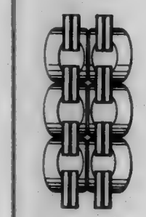
345,527
WATCH DIAL
Akie Ito, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 18, 1991, Ser. No. 809,417
Term of patent 14 years
U.S. Cl. D10—126



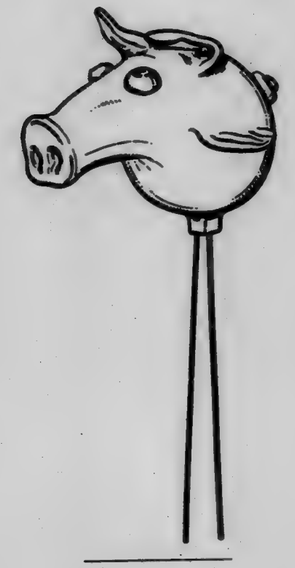
345,528
WATCH BAND PORTION
Joerg Hysek, St-Prex, Switzerland, assignor to Tag-Heuer, S.A., Marin, Switzerland
Division of Ser. No. 803,401, Dec. 5, 1991. This application Nov. 16, 1992, Ser. No. 1,474
Claims priority, application Int'l Pat. Institute, Nov. 16, 1990, DM/020 790
Term of patent 14 years
U.S. Cl. D11—3



345,529
BRACELET LINKS
Agnes Visage, Paris, France, assignor to Christian Dior, S.A., Paris, France
Filed Feb. 5, 1992, Ser. No. 831,522
Claims priority, application France, Aug. 23, 1991, 915202
Term of patent 14 years
U.S. Cl. D11—12



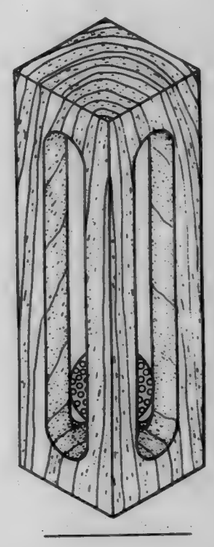
345,530
LAWN ORNAMENT
Thomas Hagey, 1261 Dundas Street S., Cambridge, Ontario, Canada N1R 5S2
Filed Aug. 13, 1992, Ser. No. 929,810
Claims priority, application Canada, Feb. 21, 1992, 21029210
Term of patent 14 years
U.S. Cl. D11—158



345,531
GOLF BALL NOVELTY
J. Thomas Gosenud, 13818 Sutters Mill Rd., Midlothian, Va. 23112
Continuation-in-part of Ser. No. 694,264, Apr. 24, 1991, Pat. No. Des. 334,727. This application Jan. 4, 1993, Ser. No. 3,257
Term of patent 14 years
U.S. Cl. D11—131



345,532
GOLF BALL NOVELTY
J. Thomas Gosenud, 13818 Sutters Mill Rd., Midlothian, Va. 23112
Continuation-in-part of Ser. No. 694,264, Apr. 24, 1991, Pat. No. Des. 334,727. This application Jan. 13, 1993, Ser. No. 3,678
The portion of the term of this patent subsequent to Apr. 13, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—131

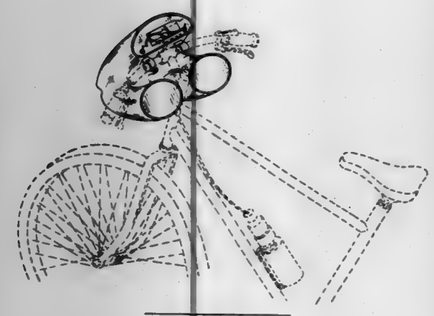


345,533
DOUBLE CHAIN COLLAR KEEPER
Richard H. Sprick, R.R. 3, Box 105, Lake City, Minn. 55041
Filed Aug. 26, 1991, Ser. No. 750,016
Term of patent 14 years
U.S. Cl. D11—213



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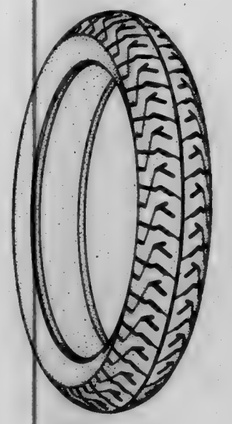
345,534
AUDIO HOUSING ATTACHMENT FOR A BICYCLE
Thomas M. Abboud, 319 S. 69th St., Omaha, Nebr. 68132, and Raymond P. Vigneri, 7718 Westgate Cir., Omaha, Nebr. 68124
Filed Dec. 10, 1992, Ser. No. 2,403
Term of patent 14 years
U.S. Cl. D12—114



345,535
AUTOMOBILE TIRE
Kazunori Shinohara, and Toru Fukuoka, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 22, 1992, Ser. No. 712
Claims priority, application Japan, Apr. 23, 1992, 4-11914
Term of patent 14 years
U.S. Cl. D12—147



345,536
MOTORCYCLE TIRE
Atsushi Tomura, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 29, 1992, Ser. No. 3,129
Claims priority, application Japan, Jun. 30, 1992, 4-19287
Term of patent 14 years
U.S. Cl. D12—147



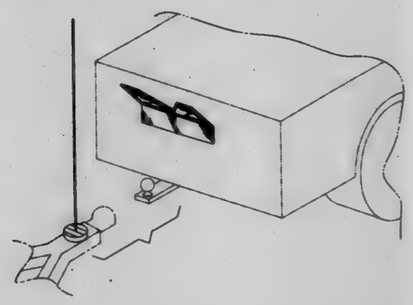
345,537
COMBINED WINDSHIELD WIPER ARM AND AIR FOIL
Michael Bianco, Valparaiso; James Witek, Chesteron, and James Allen, Michigan City, all of Ind., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 21, 1992, Ser. No. 933,412
Term of patent 14 years
U.S. Cl. D12—220



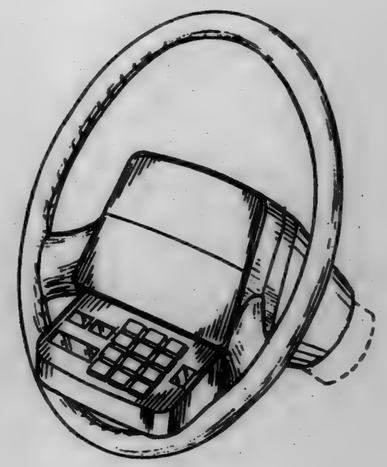
345,538
COMBINED WINDSHIELD WIPER ARM AND AIR FOIL
Michael Bianco, Valparaiso; James Witek, Chesterton, and James Allen, Michigan City, all of Ind., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Aug. 21, 1992, Ser. No. 933,413
Term of patent 14 years
U.S. Cl. D12—220



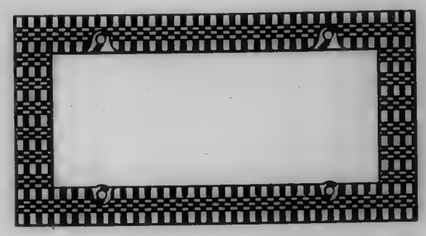
345,539
MAGNETIC TOW HITCH KIT
Paul J. Vaillancourt, 226 Williams Rd., Fitchburg, Mass. 01420
Continuation-in-part of Ser. No. 673,491, Mar. 22, 1991, abandoned. This application Apr. 29, 1991, Ser. No. 692,514
Term of patent 14 years
U.S. Cl. D12—162



345,540
STEERING WHEEL ASSEMBLY WITH COMMUNICATION KEYBOARD
Dillis V. Allen, 1080 Nerge Rd., Ste. 205, Elk Grove Village, Ill. 60007
Filed May 20, 1991, Ser. No. 702,690
Term of patent 14 years
U.S. Cl. D12—176

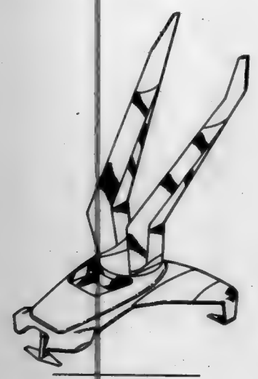


345,541
LICENSE PLATE FRAME
Delbert J. Schmitz, Northridge, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.
Filed Feb. 19, 1992, Ser. No. 838,467
Term of patent 14 years
U.S. Cl. D12—193

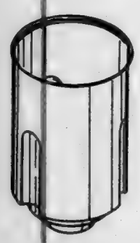


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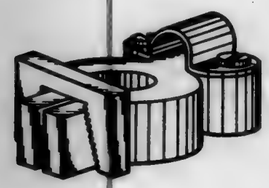
345,542
NAUTICAL CRAFT
Ian J. Duncan, 5 Avenue de la Porte Neuve, 17000 La Rochelle, France
Filed Oct. 26, 1992, Ser. No. 814
Claims priority, application France, Apr. 27, 1992, 92 922820
Term of patent 14 years
U.S. Cl. D12—309



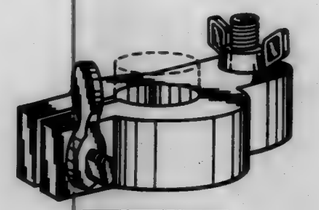
345,543
BATTERY ADAPTOR
John B. Elliott, 225 W. El Norte Parkway, #106, Escondido, Calif. 92026
Filed Aug. 31, 1992, Ser. No. 938,470
Term of patent 14 years
U.S. Cl. D13—119



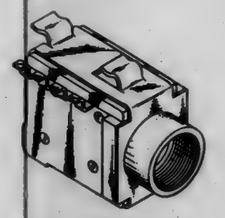
345,544
BATTERY POST CLAMP ASSEMBLY
Jim E. Walters, 11401 Columbia Rd., Boise, Id. 83709
Filed Jan. 8, 1992, Ser. No. 820,943
Term of patent 14 years
U.S. Cl. D13—120



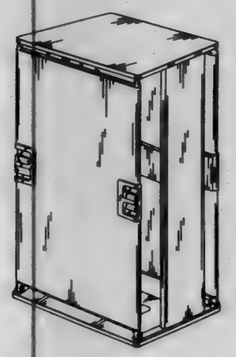
345,545
BATTERY POST CLAMP
Jim E. Walters, 11401 Columbia Rd., Boise, Id. 83709
Filed Jan. 8, 1992, Ser. No. 820,944
Term of patent 14 years
U.S. Cl. D13—120



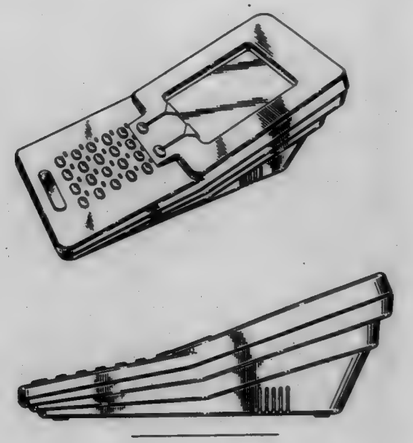
345,546
AUDITORY JACK
Jih-Bin Lin, Chung Ho, and Kee-Haut Nyia, Taipei, both of Taiwan, assignors to Pan-International Industrial Corp., Taipei, Taiwan
Filed Aug. 27, 1992, Ser. No. 935,731
Term of patent 14 years
U.S. Cl. D13—133



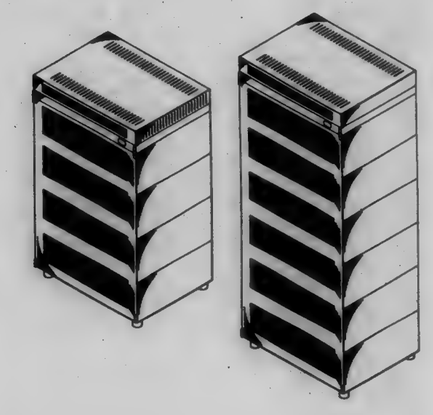
345,547
RACK AND COVER SYSTEM
Collan B. Kneale, Asheville, and Robert E. Steinbugler, Raleigh, both of N.C., assignors to International Business Machines Corporartion, Armonk, N.Y.
Filed Mar. 3, 1992, Ser. No. 844,697
Term of patent 14 years
U.S. Cl. D13—184



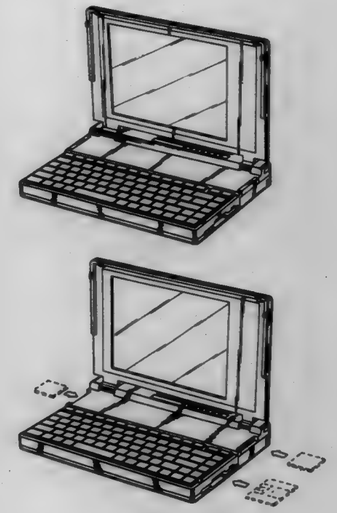
345,548
INTERFACE UNIT WITH KEYPAD AND DISPLAY
Mark J. Giebler, New Scandia; Casey L. Carlson, Edina; Perry S. Dotterman, Maplewood, and Bert A. Munthe, Marine on St. Croix, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 24, 1992, Ser. No. 873,558
Term of patent 14 years
U.S. Cl. D14—100



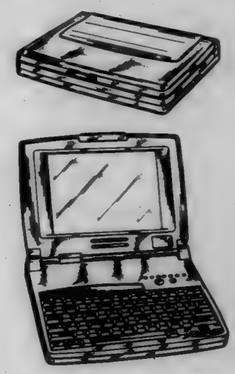
345,549
COMMUNICATION SYSTEM CABINET
Wolfgang Guber, Ludwigsburg, and Friedrich Wotzka, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 9, 1991, Ser. No. 774,120
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1991, M9102601.6
Term of patent 14 years
U.S. Cl. D14—102



345,550
ELECTRONIC COMPUTER
Masaaki Iino, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Nov. 12, 1991, Ser. No. 790,154
Claims priority, application Japan, Jun. 12, 1991, 3-17093
Term of patent 14 years
U.S. Cl. D14—106



345,551
LAPTOP PERSONAL COMPUTER
John Youens, and Michael V. Leman, both of Spring, Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed May 1, 1992, Ser. No. 877,062
Term of patent 14 years
U.S. Cl. D14—106



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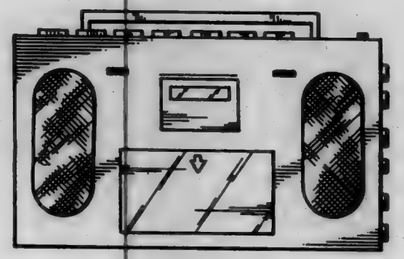
345,552
PERSONAL NOTEBOOK COMPUTER WITH AN INTEGRATED TRACKBALL
Kevin W. Mundt, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Jun. 5, 1992, Ser. No. 893,695
Term of patent 14 years
U.S. Cl. D14—106



345,553
DISC DRIVE
Yasuhiko Andou, Tachikawa, and Yoshiaki Sakai, Higashikurume, both of Japan, assignors to TEAC Corporation, Tokyo, Japan
Filed Aug. 7, 1992, Ser. No. 927,938
Claims priority, application Japan, Mar. 10, 1992, 4-6861
Term of patent 14 years
U.S. Cl. D14—109



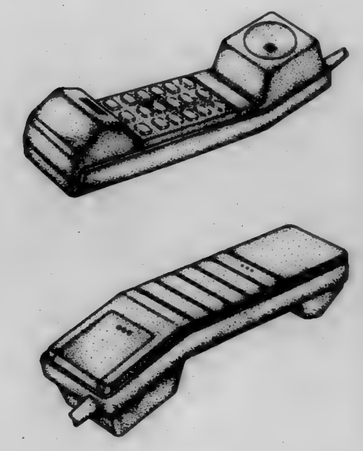
345,554
AUDIO RECORDER/PLAYER FOR VIDEO CASSETTE TAPES
Carmen M. Dones, 6777 Nightwind Cir., Orlando, Fla. 32818-8842
Filed May 1, 1991, Ser. No. 694,035
Term of patent 14 years
U.S. Cl. D14—135



345,555
PORTABLE RADIO TELEPHONE
Takato Yokouchi; Takashi Kajita; Akihiko Kouno, all of Tokyo, and Tadao Nakamura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 15, 1992, Ser. No. 948,762
Term of patent 14 years
U.S. Cl. D14—138



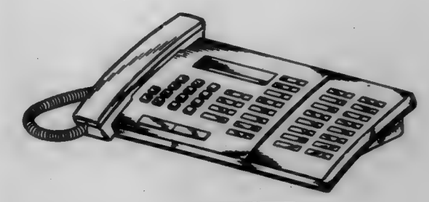
345,556
HOUSING FOR A TELEPHONE HANDSET
Daniel R. Bialkup, Somerset; Carl W. Gomes, II, Ocean, and Michael P. Zambelli, Livingston, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 2, 1992, Ser. No. 1,059
Term of patent 14 years
U.S. Cl. D14—148



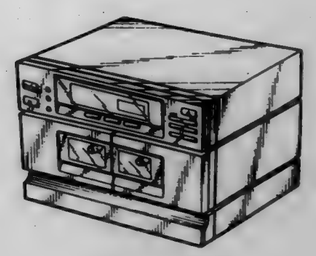
345,557
TELEPHONE SET
Masafuku Akatsu; Akira Abe; Hitoshi Tauchida; Seizo Ohta, and Takeshi Nakatani, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 14, 1992, Ser. No. 912,650
Claims priority, application Japan, Jan. 24, 1992, 4-1794
The portion of the term of this patent subsequent to Dec. 14, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



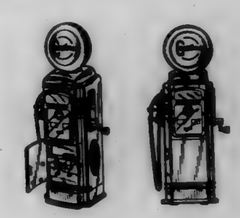
345,558
TELEPHONE STATION WITH AN AUXILIARY UNIT
Stefan Hillenmayer, and Wolfgang Muenscher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich
Filed Oct. 20, 1992, Ser. No. 1,148
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1992, 9203413
Term of patent 14 years
U.S. Cl. D14—151



345,559
COMBINED CASSETTE DECK AND COMPACT DISC PLAYER
Hye C. Lee, Kyungi-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungi-do, Rep. of Korea
Filed May 17, 1991, Ser. No. 697,293
Term of patent 14 years
U.S. Cl. D14—162

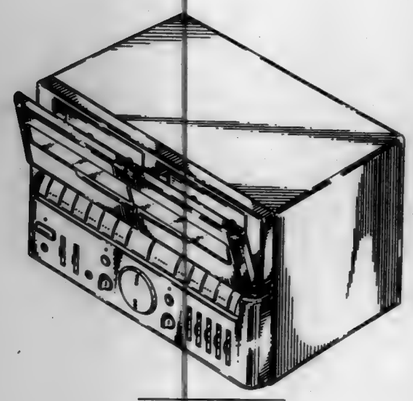


345,560
COMBINED CASSETTE PLAYER AND RADIO
Richard F. M. Peeramann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 7, 1992, Ser. No. 817,684
Term of patent 14 years
U.S. Cl. D14—162



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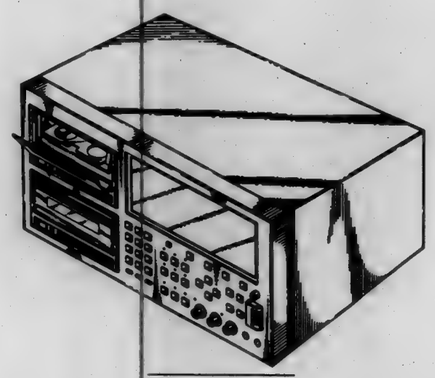
345,561
COMBINED TAPE RECORDER AND AMPLIFIER
Masafumi Ito, Tokyo; Minoru Suba, Hachioji; Haruki Takita, Tokyo, and Hiroyuki Watanabe, Oume, all of Japan, assignors to TEAC Corporation, Japan
Filed Oct. 13, 1992, Ser. No. 404
Claims priority, application Japan, Apr. 14, 1992, 4-11103
Term of patent 14 years
U.S. Cl. D14—162



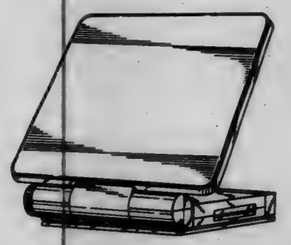
345,562
DIGITAL AUDIO TAPE RECORDER
Takashi Yatabe, Higashimurayama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,871
Term of patent 14 years
U.S. Cl. D14—164



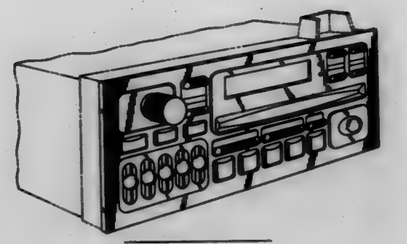
345,563
DATA RECORDER/REPRODUCER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira, and Katsuhiro Takashima, Urawa, all of Japan, assignors to TEAC Corporation, Japan
Filed Oct. 7, 1992, Ser. No. 239
Claims priority, application Japan, Apr. 8, 1992, 4-10369
Term of patent 14 years
U.S. Cl. D14—164



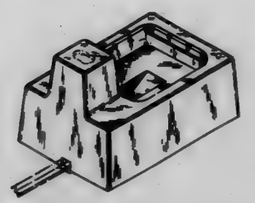
345,564
FLAT ANTENNA FOR RECEIVING SATELLITE BROADCASTING
Tsuyoshi Kadono, and Hiroyuki Nishimura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Feb. 7, 1992, Ser. No. 831,395
Claims priority, application Japan, Nov. 18, 1991, 3-34732
Term of patent 14 years
U.S. Cl. D14—230



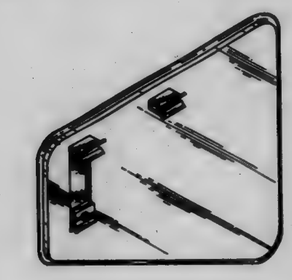
345,565
FRONT PANEL FOR A COMBINED RADIO RECEIVER AND COMPACT DISC PLAYER
James C. Carter, Troy; Robert C. Marguessian, Waterford; Andrew P. Person, Farmington Hills; Michael G. Moore, Rochester; Harlan E. Kifer, Birmingham; Andrew D. Magic, Livonia, all of Mich., and Keizo Watanabe, Iwaki, Japan, assignors to Chrysler Corporation, Highland Park, Mich.
Filed Jan. 13, 1992, Ser. No. 819,946
Term of patent 14 years
U.S. Cl. D14—258



345,566
GLUE POT OR SIMILAR ARTICLE
Peter S. Melendy, Brentwood, N.H.; Robert L. Ornsteen, Key West, Fla., and Richard A. Belanger, Amesbury, Mass., assignors to Adhesive Technologies, Inc., Hampton, N.H.
Filed Jan. 5, 1993, Ser. No. 3,202
Term of patent 14 years
U.S. Cl. D15—144.2



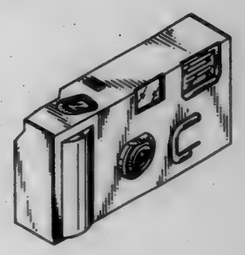
345,567
EYEGLASS BLINDER ATTACHMENT
James P. Deckard, and George W. Steiner, both of 1614 White Cedar La., Williamstown, N.J. 08094
Filed Jan. 28, 1992, Ser. No. 827,811
Term of patent 14 years
U.S. Cl. D16—123



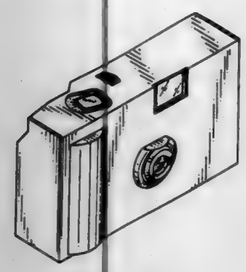
345,568
HANDLE FOR MAGNIFIER LENS
Richard E. Feinbloom, New York, and R. Perry Gordon, New York, both of N.Y., assignors to Designs for Vision, Inc., Ronkonkoma, N.Y.
Filed Jan. 31, 1992, Ser. No. 830,192
Term of patent 14 years
U.S. Cl. D16—136



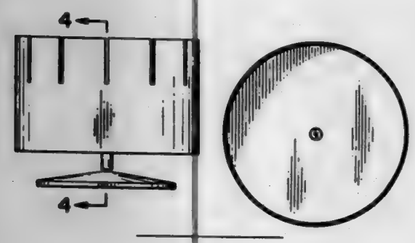
345,569
SINGLE USE CAMERA
Koichi Yasunaga, and Takuya Arai, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 16, 1992, Ser. No. 948,839
Claims priority, application Japan, Mar. 16, 1992, 4-7426
Term of patent 14 years
U.S. Cl. D16—208



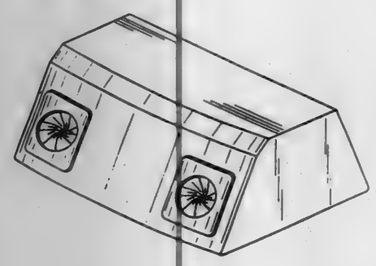
345,570
SINGLE USE CAMERA
Koichi Yasunaga, and Takuya Arai, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 1, 1992, Ser. No. 70
Claims priority, application Japan, Apr. 1, 1992, 4-9630
Term of patent 14 years
U.S. Cl. D16—208



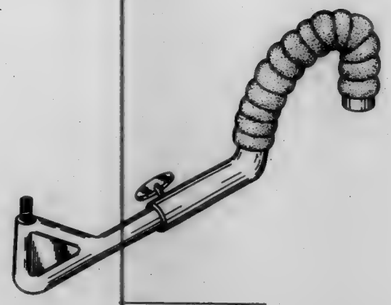
345,571
MOTION PICTURE VIEWER
William M. Hanlon, III, Castro Valley, Calif., assignor to DaMert Co., San Leandro, Calif.
Filed Apr. 3, 1992, Ser. No. 862,284
Term of patent 14 years
U.S. Cl. D16—230



345,572
DAYLIGHT FILM LOADER
Vincent Bowman, 2120 N. Magnolia 3rd Floor, Chicago, Ill. 60614-4012
Filed Feb. 24, 1992, Ser. No. 840,706
Term of patent 14 years
U.S. Cl. D16—237



345,573
VIDEO CAMERA SHOULDER SUPPORT
Pamela J. Reppert, 2405 S. 4th St., Allentown, Pa. 18103
Filed Sep. 12, 1991, Ser. No. 758,098
Term of patent 14 years
U.S. Cl. D16—243

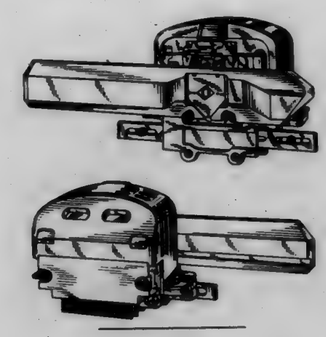


345,574
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Kazuyuki Mizushima, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jun. 29, 1992, Ser. No. 905,627
Claims priority, application Japan, Jan. 8, 1992, 4-212
Term of patent 14 years
U.S. Cl. D17—1

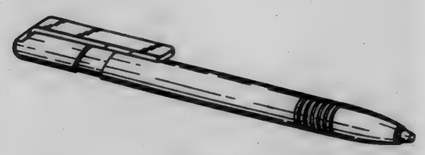
345,575
ELECTRONIC MUSICAL KEYBOARD
Kozo Hisanaga, Hino, and Yukihiko Ida, Higashikurume, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,559
Term of patent 14 years
U.S. Cl. D17—1



345,576
PRINTING HEAD OF A PRINTER FOR A COMPUTER
Yuichi Yamakawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed May 12, 1992, Ser. No. 881,578
Claims priority, application Japan, Nov. 27, 1991, 3-35807
Term of patent 14 years
U.S. Cl. D18—56



345,577
BALL POINT PEN
Hans M. Höhner, Wolfach, Fed. Rep. of Germany, assignor to Klio Eterna Schreibgerate GmbH & Co. KG, Wolfach, Fed. Rep. of Germany
Filed Dec. 7, 1992, Ser. No. 2,336
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1992, 92 04 723
Term of patent 14 years
U.S. Cl. D19—48



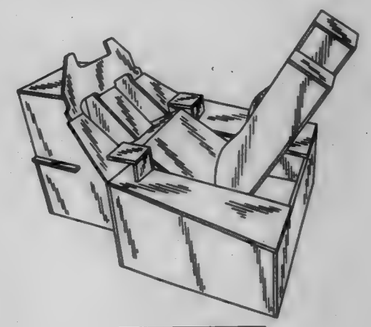
345,578
FOUNTAIN PEN
Joachim Zier, Burger Kunststoff-Spritzgusswerk GmbH, Postfach 1280, D-7730 VS-Villingen, Fed. Rep. of Germany
Filed Dec. 21, 1992, Ser. No. 3,329
Term of patent 14 years
U.S. Cl. D19—48



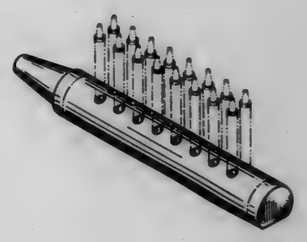
345,579
ANGLED PEN
Valentin Yanez, Jr., 8 Macomb St., Apt. #8, Plattsburgh, N.Y. 12901
Filed Dec. 21, 1992, Ser. No. 2,806
Term of patent 14 years
U.S. Cl. D19—51



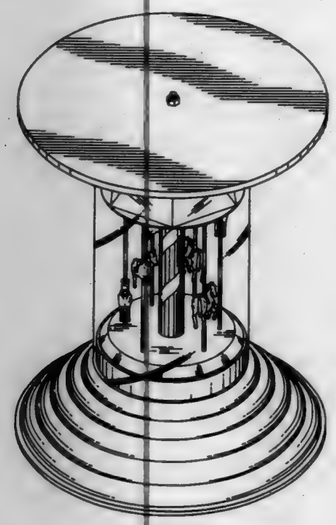
345,580
VIDEO FLIGHT SIMULATOR COCKPIT
Robert L. Carter, Lake Oswego, Oreg.; Gary L. Moffett, and David W. Reeves, both of Vancouver, Wash., assignors to Thrustmaster, Inc., Tigard, Oreg.
Filed Jan. 21, 1993, Ser. No. 3,926
Term of patent 14 years
U.S. Cl. D19—63



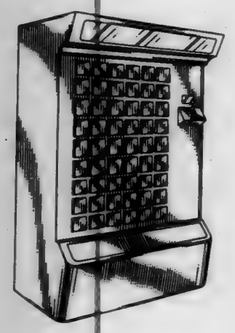
345,581
CRAYON HOLDER
Frank J. Popovits, 11707 S. Carolyn Ln., Alsip, Ill. 60658
Filed Dec. 11, 1992, Ser. No. 2,505
Term of patent 14 years
U.S. Cl. D19—82



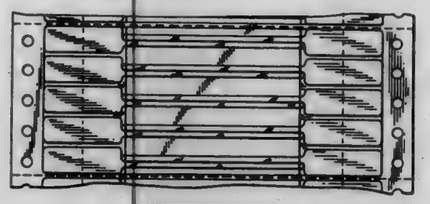
345,582
DISPLAY BASE FOR VENDING MACHINES
Thomas G. Dodgson, P.O. Box 1777, and Douglas C. Dodgson, 9428 271st NW., both of Stanwood, Wash. 98292
Filed Jun. 2, 1992, Ser. No. 892,374
Term of patent 14 years
U.S. Cl. D20—1



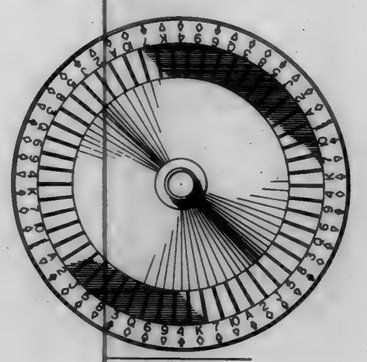
345,583
AUTOMATED VENDING MACHINE
Karl H. Muehlberger, Lakeland, Fla., assignor to Keyosk Corporation, Lakeland, Fla.
Filed Apr. 29, 1992, Ser. No. 875,726
Term of patent 14 years
U.S. Cl. D20—4



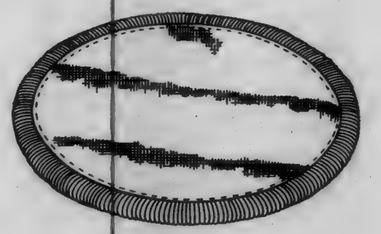
345,584
SHEET OF TAGS
Peter J. Gollon, 15 Eleanor Pl., Huntington, N.Y. 11743
Filed Dec. 20, 1990, Ser. No. 632,740
The portion of the term of this patent subsequent to Feb. 16, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—22



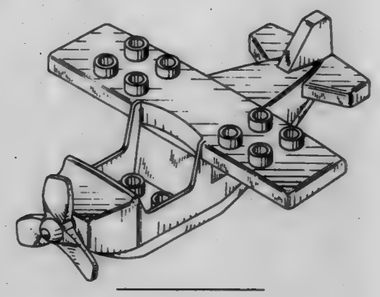
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ROTATABLE GAMING WHEEL
Edward S. Nelly, 727 Honeyspot Rd., Suite 215, Stratford, Conn. 06497
Filed Nov. 12, 1991, Ser. No. 790,704
Term of patent 14 years
U.S. Cl. D21—39



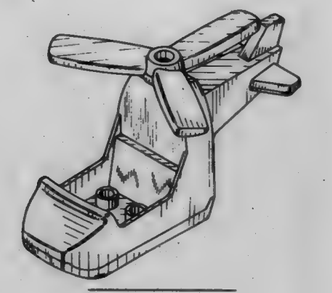
345,586
FLEXIBLE FLYING DISK TOY
Thomas Hanna, Wichita, Kans., assignor to Rose America Corporation, Wichita, Kans.
Filed Oct. 9, 1992, Ser. No. 262
Term of patent 14 years
U.S. Cl. D21—86



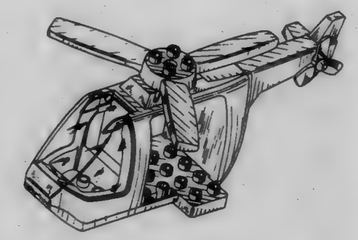
345,587
TOY AIRPLANE
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,908
Term of patent 14 years
U.S. Cl. D21—90



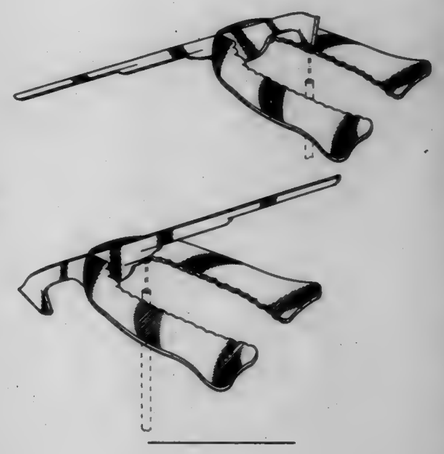
345,588
TOY HELICOPTER
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,911
Term of patent 14 years
U.S. Cl. D21—90



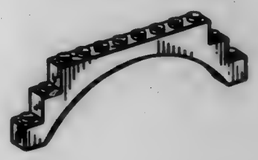
345,589
TOY HELICOPTER
Ib H. Berggreen, Rungsted Kyst, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,918
Term of patent 14 years
U.S. Cl. D21—90



345,590
BALANCING ORNAMENT
Charles M. Cummings, R.R. 3 Box 100, Sealy, Tex. 77474
Filed Jan. 8, 1993, Ser. No. 3,589
Term of patent 14 years
U.S. Cl. D21—102

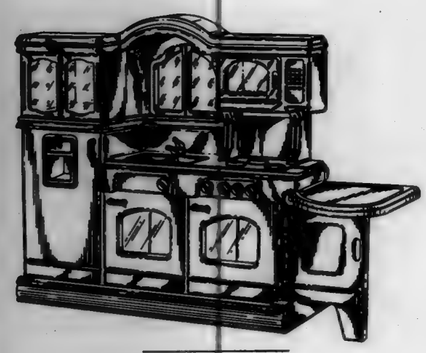


345,591
ELEMENT FOR A TOY BUILDING SET
Daniel A. Krentz, Billund, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Nov. 24, 1992, Ser. No. 1,905
Term of patent 14 years
U.S. Cl. D21—108

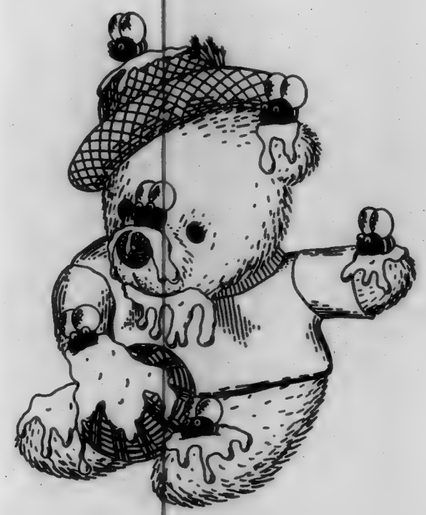


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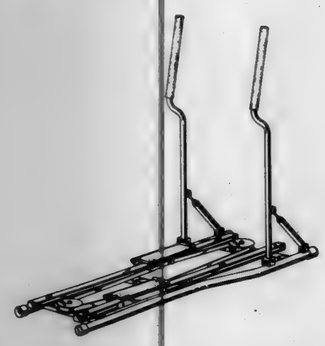
345,592
TOY KITCHEN
Robert L. Houry, Solon, and James F. Mariol, Cincinnati, both of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Feb. 1, 1993, Ser. No. 4,293
Term of patent 14 years
U.S. Cl. D21—121



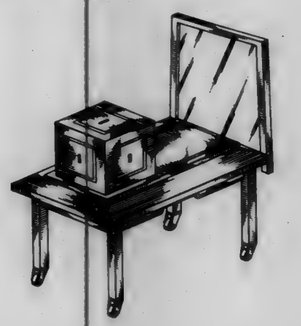
345,594
HONEY BEAR DOLL
Charlene Brown, R.D. #2, Box 2133, Salem, N.Y. 12865
Filed Jan. 31, 1992, Ser. No. 830,263
Term of patent 14 years
U.S. Cl. D21—159



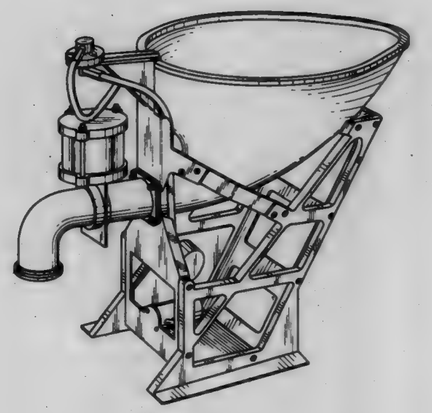
345,593
AEROBIC SKI MACHINE
Kevin Gerschefske, Springfield; Chuck Brazeal, Mansfield, and Rick Byrd, Springfield, all of Mo., assignors to Stamina Products, Inc., Springfield, Mo.
Filed Jun. 5, 1992, Ser. No. 898,353
Term of patent 14 years
U.S. Cl. D21—191



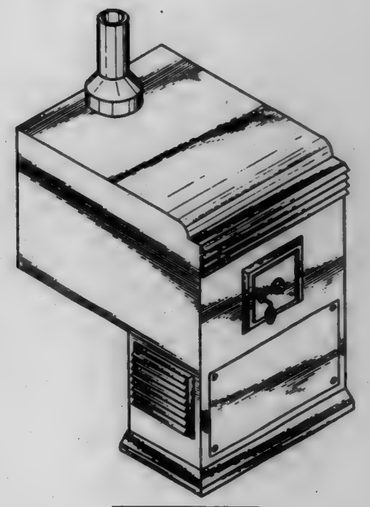
345,595
ILLUSION APPARATUS
Jim Steinmeyer, 222 N. Fairview, Burbank, Calif. 91505
Filed Mar. 23, 1992, Ser. No. 855,930
Term of patent 14 years
U.S. Cl. D21—241



345,596
VACUUM FLUSH TOILET
Steven J. Tyler, Riverside, Calif., assignor to Norcan Aircraft Corporation, Santa Ana, Calif.
Filed Apr. 2, 1992, Ser. No. 862,260
Term of patent 14 years
U.S. Cl. D23—295



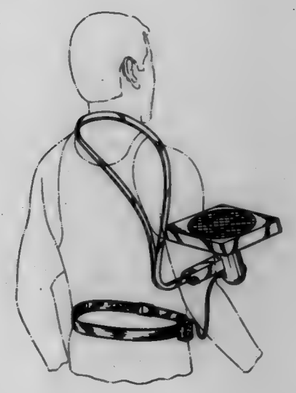
345,598
WINDOW MOUNTED HEAT EXCHANGE UNIT
Michael R. Cartwright, and McKinley James, both of 9711 Movilla Hills Rd., Sand Springs, Okla. 74063
Filed Aug. 7, 1991, Ser. No. 741,166
Term of patent 14 years
U.S. Cl. D23—343



345,597
WATER CLOSET
Herbert V. Kohler, Jr., Kohler; Todd D. Dannenberg, and Mary J. Reid, both of Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 823,648, Jan. 22, 1992. This application Sep. 20, 1993, Ser. No. 14,212
Term of patent 14 years
U.S. Cl. D23—301

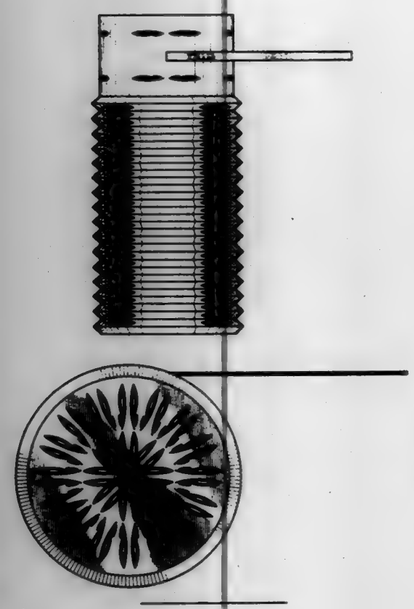


345,599
PORTABLE FAN UNIT
Norman E. Williams, Jr., 3000 S. Randolph St., Apt. 346, Arlington, Va. 22206
Filed Jul. 14, 1992, Ser. No. 912,644
Term of patent 14 years
U.S. Cl. D23—382

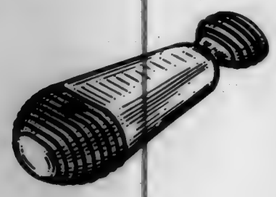


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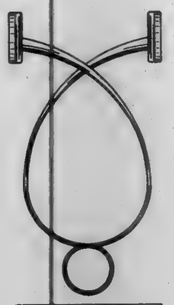
345,600
FIREPLACE BAG FOR FIREPLACE ASHES
Rudolph D. Woolf, 1201 W. Ural St., Carlsbad, N. Mex. 88220
Filed Sep. 21, 1992, Ser. No. 949,005
Term of patent 14 years
U.S. Cl. D23—403



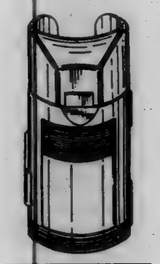
345,601
SOFTGEL CAPSULE
Greg Schurig, Clearwater, Fla., assignor to R. P. Scherer Corporation, Troy, Mich.
Filed Apr. 24, 1992, Ser. No. 874,567
Term of patent 14 years
U.S. Cl. D24—104



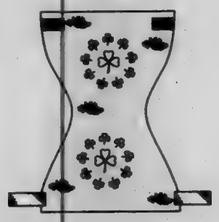
345,602
OPTIC NERVE CLAMP
Patrick H. Metz, Rte. 5, Box 664, Richland Center, Wis. 53581
Filed Feb. 28, 1992, Ser. No. 841,749
Term of patent 14 years
U.S. Cl. D24—143



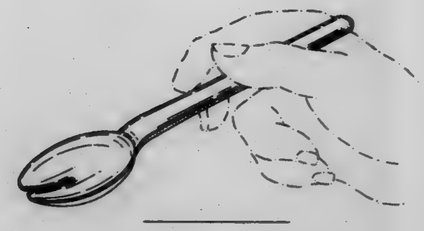
345,603
EYE DROP DISPENSER
Ernest P. Prebble, Liverpool, United Kingdom, assignor to Disposed Limited, Liverpool, United Kingdom
Filed Oct. 31, 1991, Ser. No. 785,700
Claims priority, application United Kingdom, May 2, 1991, 2014524
Term of patent 14 years
U.S. Cl. D24—120



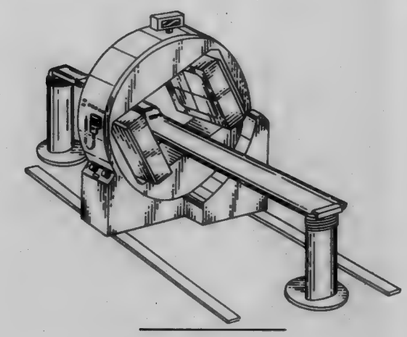
345,604
DISPOSABLE DIAPER
Susan L. Silhan, 41 Scout Trail, Ridge, N.Y. 11961
Filed Oct. 19, 1990, Ser. No. 600,086
Term of patent 14 years
U.S. Cl. D24—126



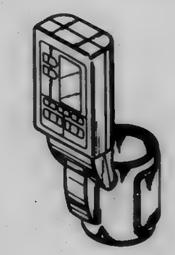
345,605
INSTRUMENT FOR INGUINAL HERNIA SURGERY
Eugene Garrow, 45 Gifford Ave., Jersey City, N.J. 07304
Filed Jul. 1, 1992, Ser. No. 907,214
Term of patent 14 years
U.S. Cl. D24—133



345,606
MEDICAL GAMMA CAMERA GANTRY
Allan J. Perusek, Mentor, Ohio, assignor to Picker International, Inc., Highland Heights, Ohio
Filed Nov. 21, 1990, Ser. No. 617,057
Term of patent 14 years
U.S. Cl. D24—159



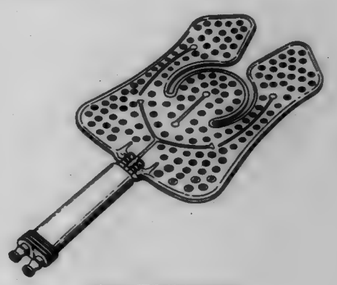
345,607
ELECTRONIC CLINICAL SPHYGMOMANOMETER
Atsushi Sodeoka, Tokyo, and Hiroshi Mochizuki, Nakai, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 2,800
Claims priority, application Japan, Jul. 1, 1992, 4-19372
Term of patent 14 years
U.S. Cl. D24—165



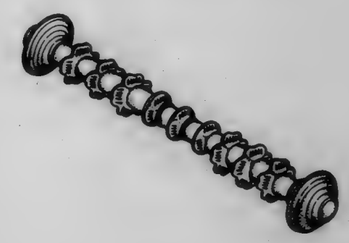
345,608
TEETHER
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 24, 1992, Ser. No. 934,210
Term of patent 14 years
U.S. Cl. D24—194



345,609
THERAPEUTIC FLUID CIRCULATION PAD
Jeffrey T. Mason, Escondido, and Bradley R. Mason, Olivenhain, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Mar. 12, 1992, Ser. No. 851,345
Term of patent 14 years
U.S. Cl. D24—206

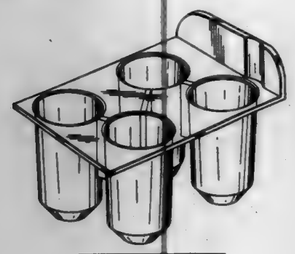


345,610
MASSAGER
Chao M. Shih, P.O. Box 82-144, Taipei City, Taiwan
Filed Apr. 7, 1992, Ser. No. 864,974
Term of patent 14 years
U.S. Cl. D24—211



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345,611
SAMPLE CUP
Ernest W. Long, Concord, Mass., assignor to PB Diagnostic Systems, Inc., Westwood, Mass.
Filed Jul. 22, 1991, Ser. No. 733,254
Term of patent 14 years
U.S. Cl. D24—226



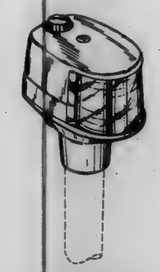
345,612
SELF-SERVE WATER DISPENSER KIOSK
David B. Campbell, Nashua, and Robert E. Levesque, Jr., Wilton, both of N.H., assignors to Spring Water Vending Co., Inc., Nashua, N.H.
Filed Mar. 30, 1992, Ser. No. 860,673
Term of patent 14 years
U.S. Cl. D25—16



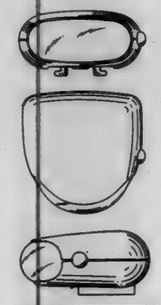
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BEAM
Jan Berghel, Säffle, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Sep. 13, 1991, Ser. No. 759,071
Claims priority, application Sweden, Mar. 27, 1991, 910717
Term of patent 14 years
U.S. Cl. D25—126



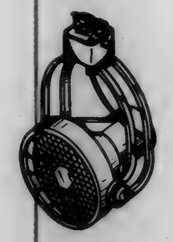
345,614
MARINE BOW/COURTESY LIGHT
Warwick M. Whitley, II, Lynn Haven, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Mar. 30, 1992, Ser. No. 860,360
Term of patent 14 years
U.S. Cl. D26—28



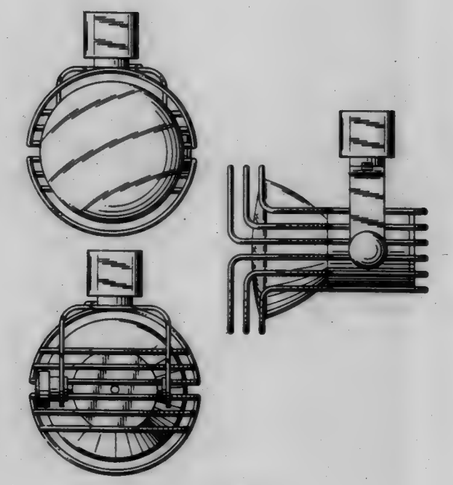
345,615
TAILLIGHT FOR BICYCLE
Masao Tsushi, Osaka, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 4, 1993, Ser. No. 5,432
Claims priority, application Japan, Sep. 9, 1992, 4-26779
Term of patent 14 years
U.S. Cl. D26—28



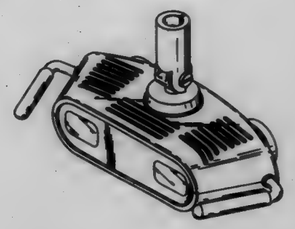
345,616
ADJUSTABLE TRACKLIGHT
Shan C. Lin, No. 2, Lane 111, Ta Chu Road, Lu Chu Hsiang, Taoyuan Hsien, Taiwan
Filed Dec. 31, 1991, Ser. No. 815,356
Term of patent 14 years
U.S. Cl. D26—63



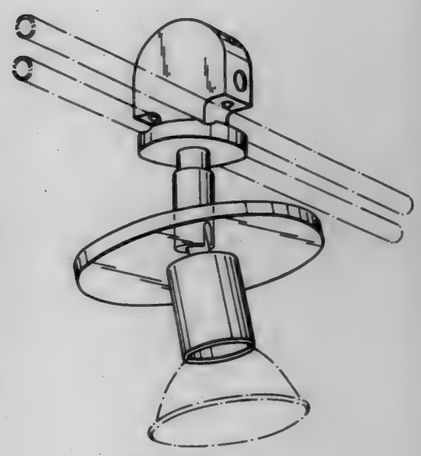
345,617
ADJUSTABLE TRACKLIGHT
Alice M. Jandreits, Chicago, and Geno C. D'Ercoli, Rolling Meadows, both of Ill., assignors to Cooper Industries, Houston, Tex.
Filed Feb. 5, 1992, Ser. No. 830,252
Term of patent 14 years
U.S. Cl. D26—63



345,618
DENTAL OPERATORY LAMP
Donald I. Gonser, and Donald L. Shortledge, both of Lancaster, Pa., assignors to Den-Tal-EZ, Inc., Audubon, Pa.
Filed Mar. 13, 1992, Ser. No. 851,157
Term of patent 14 years
U.S. Cl. D26—63



345,619
SUSPENDED ADJUSTABLE LIGHTING FIXTURE
Rainer Hutz, Grafelfing, Fed. Rep. of Germany, and Martin Schulz, Jardine's Lookout, Hong Kong, assignors to Function Form & Light Ltd., Kowloon, Hong Kong
Filed Jun. 11, 1992, Ser. No. 897,339
Term of patent 14 years
U.S. Cl. D26—64

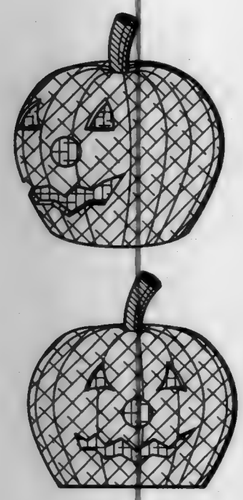


345,620
NOVELTY OIL LAMP
John Campbell, R.R. #3, Box 390, Elwood, Ind. 46036
Filed Jul. 18, 1991, Ser. No. 731,905
Term of patent 14 years
U.S. Cl. D26—99



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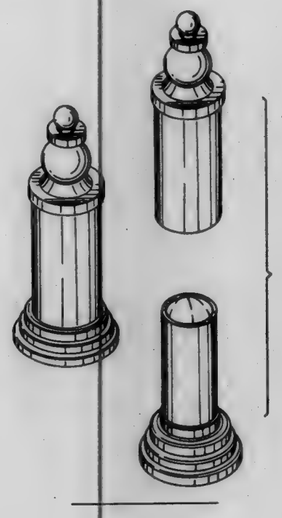
345,621
DECORATIVE LIGHT ENCLOSURE
William E. McLaughlin, II, Box 4356 Woodland Acres R.R. #4, Berwick, Pa. 18603
Filed Jan. 11, 1993, Ser. No. 3,615
Term of patent 14 years
U.S. Cl. D26—127



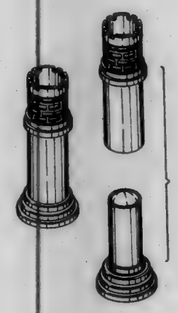
345,622
COSMETIC COMPACT
Tammye Byars, Cordova; Jerry W. Bonnot, Memphis, and John M. B. Ford, Cordova, all of Tenn., assignors to Maybelline, Inc., Memphis, Tenn.
Filed Oct. 21, 1991, Ser. No. 779,603
Term of patent 14 years
U.S. Cl. D28—83



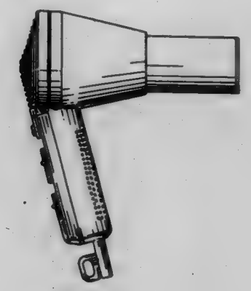
345,623
LIPSTICK CASE
Shen-Shyong Yang, No. 227-17, Tay-Tzyy-Miaw, Tay-Tzyy Tsuen, Ren-Der Shiang, Tainan Hsien, Taiwan
Filed Apr. 29, 1992, Ser. No. 875,136
Term of patent 14 years
U.S. Cl. D28—87



345,624
LIPSTICK CASE
Shen-Shyong Yang, No. 227-17, Tay-Tzyy-Miaw, Tay-Tzyy Tsuen, Ren-Der Shiang, Tainan Hsien, Taiwan
Filed Apr. 29, 1992, Ser. No. 875,137
Term of patent 14 years
U.S. Cl. D28—87



345,625
HAIR DRYER
Rolf Feil, Günzburg, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany
Filed Aug. 26, 1991, Ser. No. 750,008
Term of patent 14 years
U.S. Cl. D28—13



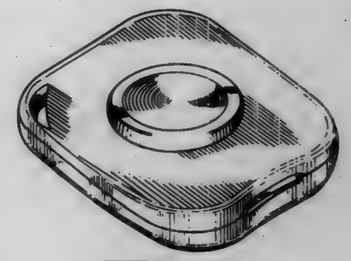
345,626
HAIR CURLER
Stephen J. Izzo, 19 Hochelaga Rd., South Hero, Vt. 05486
Filed May 18, 1992, Ser. No. 884,958
Term of patent 14 years
U.S. Cl. D28—37



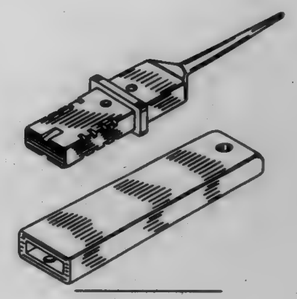
345,627
FOOT SCRUBBER
Kumail Thariani, 205 S. 88th St., Omaha, Nebr. 68114
Filed Mar. 16, 1992, Ser. No. 851,361
Term of patent 14 years
U.S. Cl. D28—63



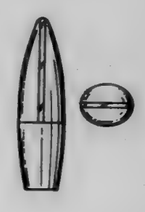
345,628
ENCLOSED NAIL CLIPPER
Edward C. Pacio, 26931 Deerwood Trail, Calabasas Hills, Calif. 91301, assignor to Edward C. Pacio, Calabasas, Calif.
Filed Dec. 13, 1991, Ser. No. 807,574
Term of patent 14 years
U.S. Cl. D28—60



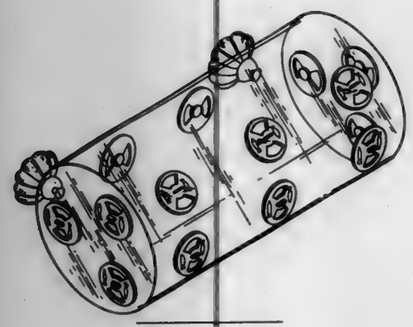
345,629
COMBINED DENTAL PICK AND SHEATH
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Filed Jul. 21, 1992, Ser. No. 916,260
Term of patent 14 years
U.S. Cl. D28—64



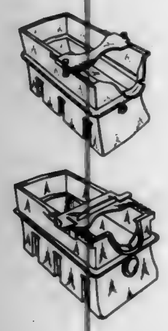
345,630
LIPSTICK CASE
Alain Chevassus, Sceaux, France, assignor to Societe Techpack International (S.A.), Parigne l'Eveque, France
Filed Jan. 31, 1991, Ser. No. 648,366
Claims priority, application France, Jul. 31, 1990, 90 4969
Term of patent 14 years
U.S. Cl. D28—85



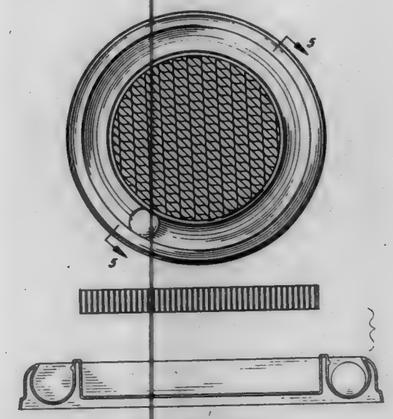
345,631
SMALL FISH AQUARIUM COMPARTMENT
John W. Marshall, and Barbara J. Marshall, both of 113 Euclid Loop, Seffner, Fla. 33584
Filed Jun. 9, 1992, Ser. No. 895,862
Term of patent 14 years
U.S. Cl. D30—106



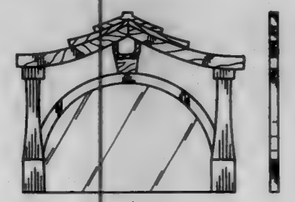
345,632
CONTAINER FOR TREATING ANIMALS
Brian D. McLaughlin, 845 South Orange Dr., Los Angeles, Calif. 90036
Filed Jul. 16, 1992, Ser. No. 915,450
Term of patent 14 years
U.S. Cl. D30—158



345,633
COMBINED ANIMAL SCRATCHING PAD AND TOY
Donald A. McCance, 7907 Lariat Cir., Broken Arrow, Okla. 74014
Continuation-in-part of Ser. No. 962,688, Oct. 1992. This application Apr. 5, 1993, Ser. No. 6,701
Term of patent 14 years
U.S. Cl. D30—160



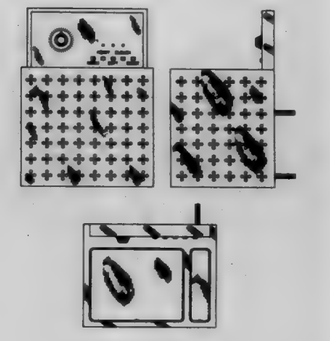
345,634
REFLECTIVE PET TOY
J. Holley Messing, 613 Egan St., Vicksburg, Miss. 39180
Division of Ser. No. 709,425, Jun. 3, 1991, Pat. No. Des. 337,867.
This application May 10, 1993, Ser. No. 8,128
Term of patent 14 years
U.S. Cl. D30—160



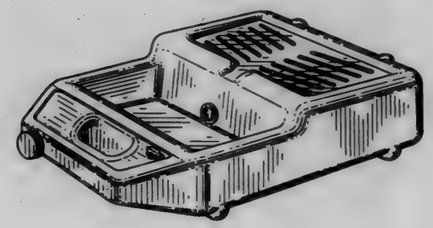
345,635
ANIMAL LITTER TRAY ACCESSORY
Stephen Casmira, 488 Summer St., New Bedford, Mass. 02740
Filed Jun. 15, 1992, Ser. No. 898,733
Term of patent 14 years
U.S. Cl. D30—161



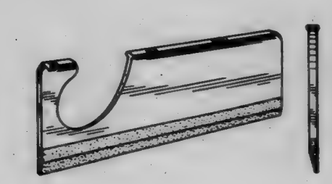
345,636
APPARATUS FOR DISPENSING DETERGENT, BLEACH, AND SOFTENER IN A WASHING MACHINE
Andrew W. Naporano, 553 Washington St., Bound Brook, N.J. 08805
Filed Feb. 7, 1991, Ser. No. 651,925
Term of patent 14 years
U.S. Cl. D32—30



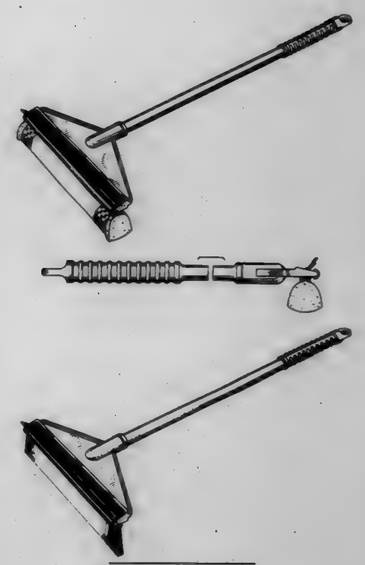
345,637
PARTS WASHER
Larry L. Chrisco, Fairland, and John R. Elmburg, Miami, both of Okla., assignors to Blitz U.S.A., Inc., Miami, Okla.
Filed Jan. 13, 1992, Ser. No. 819,928
Term of patent 14 years
U.S. Cl. D32—35



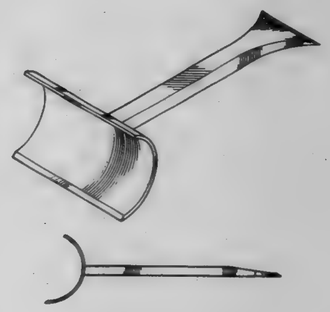
345,638
SQUEEGEE
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Oct. 26, 1992, Ser. No. 813
Term of patent 14 years
U.S. Cl. D32—41



345,639
LONG-HANDLED WINDSHIELD CLEANER
Louis M. Polilak, Bridgewater, N.J., and Michael W. K. Young, Flushing, N.Y., assignors to Injectron Corporation, Plainfield, N.J.
Filed Mar. 28, 1991, Ser. No. 676,734
Term of patent 14 years
U.S. Cl. D32—42



345,640
SNOW SCRAPER
Frank Galati, 90 Rosamull Crescent, Woodbridge, Ontario, Canada L4L 7C7
Filed Jun. 10, 1992, Ser. No. 896,548
Term of patent 14 years
U.S. Cl. D32—49



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WASTE BASKET

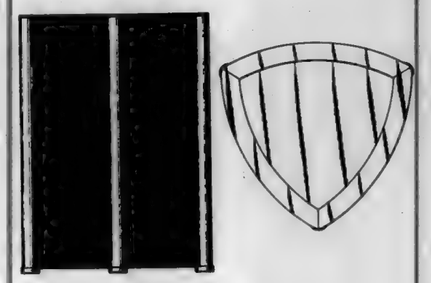
Bernd Brüsing, Ulm/Donau, Fed. Rep. of Germany, assignor to Hans Friedrich Hefendehl, Kierspe, Fed. Rep. of Germany

Filed Jul. 6, 1992, Ser. No. 909,588

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 9200174

Term of patent 14 years

U.S. Cl. D34—1



345,642

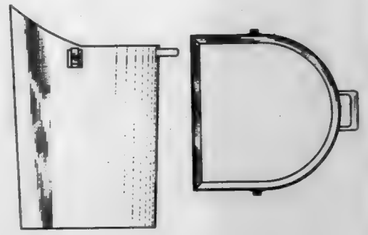
TRASH BAG SUPPORT

Kevin S. Tucker, and Arthur R. Collard, both of 620 Pine St., Hurst, Tex. 76053

Filed Apr. 23, 1992, Ser. No. 872,657

Term of patent 14 years

U.S. Cl. D34—5



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TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF MARCH, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Amatuzio Filter Co.: *See*—
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ABB Stal AB: *See*—
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Iyer, Lokanathan M.; Lyon, Kenneth S.; and Brotherton, Vince, 5,298,645, Cl. 558-267.000.

ABC Group: *See*—
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Abe, Kiyoshi: *See*—
Nakazawa, Tadahisa; Ogawa, Masahide; Abe, Kiyoshi; and Suzuki, Kazuhiko, 5,298,234, Cl. 423-714.000.

Abe, Masanori, to Sony Corporation. Tape cassette. 5,297,753, Cl. 242-198.000.

Abe, Naruhiko: *See*—
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Abe, Shuichi: *See*—
Hamada, Hiroshi; Kanbara, Katuyuki; and Abe, Shuichi, 5,299,038, Cl. 359-49.000.

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Ueki, Takashi; Sakai, Katsuhito; and Abe, Takeshi, 5,298,886, Cl. 340-606.000.

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Abe, Yuuichi: *See*—
Watanabe, Toshio; Abe, Yuuichi; Morikawa, Hiroto; and Takimoto, Hiroshi, 5,299,033, Cl. 358-497.000.

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Absher, Scott. Flexible bag with a removable coupon and a method and apparatus for the manufacture thereof. 5,298,104, Cl. 156-363.000.

Abu Garcia Produktion AB: *See*—
Johansson, Arne; and Henriksson, Bengt-Åke, 5,297,757, Cl. 242-306.000.

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Bioret, Bernard, 5,297,583, Cl. 138-99.000.
Freneix, Gerard, 5,297,917, Cl. 414-786.000.

Achelpohl, Fritz; Brinkmeier, Friedhelm; Winnemoeller, Aloys; and Lotz, Wilfried, to Windmoller & Holscher. Method and apparatus for manufacturing carrier bags of paper. 5,298,007, Cl. 493-226.000.

Acheson, Rees; and Esslinger, Thomas H., to Bortech Corporation. Large bore welding apparatus. 5,298,710, Cl. 219-76.140.

Achtnig, Klaus-Peter: *See*—
Honl, Robert; and Achtnig, Klaus-Peter, 5,299,088, Cl. 361-119.000.

Acorn, Russell G.; Tyler, Michael G.; and Viele, David B., to Medical Graphics Corporation. Algorithm for preacribing an exercise regimen to enhance fat burning and cardiovascular fitness. 5,297,558, Cl. 128-719.000.

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Galbraith, Douglas C.; Ahrens, Michael G.; Hamdy, Esmat Z.; and Eltoukhy, Abdelshafy A., 5,299,150, Cl. 365-94.000.

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Sliwa, John W., Jr.; Ayter, Sevig; Sridhar, Champa G.; Mohr, John P., III; Howard, Samuel M.; and Ikeda, Michael H., 5,297,553, Cl. 128-662.030.

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Adachi, Norio: *See*—
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Adams, Sean M.: *See*—
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Peglion, Jean-Louis; Vilaine, Jean-Paul; Villeneuve, Nicole; and Janiak, Philip, 5,298,503, Cl. 514-212.000.

Adolphson, Bradley K.; and Adolphson, Brett W. Attachable utility devices. 5,297,318, Cl. 24-3.00R.

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Asghar, Safdar M.; and Bartkowiak, John G., 5,299,233, Cl. 375-99.000.
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Fee, Maurice L.; Lyons, Robert B.; and Truman, Michael A., 5,298,751, Cl. 250-338.500.

Aeroquip Corporation: *See*—
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AFA Products, Inc.: *See*—
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Aghajanian, Michael K.: *See*—
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Ahn, Sung T.: *See*—
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Ahrens, Michael G.: *See*—
Galbraith, Douglas C.; Ahrens, Michael G.; Hamdy, Esmat Z.; and Eltoukhy, Abdelshafy A., 5,299,150, Cl. 365-94.000.

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Aihara, Masayuki: *See*—
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Aimone, Paul R.; Kilinski, Bart M.; and Ramthun, Keith D., to Howmet Corporation. Complaint investment casting mold and method. 5,297,615, Cl. 164-519.000.

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Garg, Diwakar; Bonner, Brian B.; Eichelberger, Donald P.; and Berger, Kerry R., 5,298,090, Cl. 148-208.000.
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Ajinomoto Co., Inc.: *See*—
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Iwahashi, Naoto; Nishiguchi, Masayuki; Akune, Makoto; Akagiri, Kenzo; and Fujiwara, Yoshihito, 5,299,239, Cl. 375-122.000.
Iwahashi, Naoto; Nishiguchi, Masayuki; Akune, Makoto; Akagiri, Kenzo; and Fujiwara, Yoshihito, 5,299,240, Cl. 375-122.000.
Akai, Yayo: *See*—
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Akao, Yasuhiko: *See*—
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Akase, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Fuel supplying device for internal combustion gasoline engine. 5,297,531, Cl. 123-549.000.
Akashi, Shunji; Yonezawa, Tsutomu; and Kusayama, Masahiro, to Yoshida Kogyo K. K. Slide fastener. 5,297,319, Cl. 24-405.000.
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Nakamura, Hirotaka, 5,297,860, Cl. 303-113.200.
Akemi, Hitoshi; Kinoshita, Takashi; Otsuka, Saburo; Hosaka, Yoshifumi; and Nakano, Yoshihisa, to Nitto Denko Corporation. Acrylic oily gel bioadhesive material and acrylic oily gel preparation. 5,298,258, Cl. 424-484.000.
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Bentson, Larry D.; Price, Robert J.; Purdy, Mark J.; and Stover, Edward R., to B. F. Goodrich Company, The. Moisture and oxidation resistant carbon/carbon composites. 5,298,311, Cl. 428-216.000.

Beran, Robert L., to Westvaco Corporation. Paper machine deckle support and flushing means. 5,298,127, Cl. 162-353.000.

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Berndt, Dale F.; and Killpatrick, Joseph E., to Honeywell Inc. Laser gyro high voltage start module and high voltage pulse generator. 5,299,211, Cl. 372-94.000.

Bernhardt, Siegfried; Dierks, Uwe; Ulickza, Wolfgang; and Menzel, Dietrich, to Spinnbau GmbH. Apparatus for producing fiber material or the like with a precise feed weight. 5,297,316, Cl. 19-105.000.

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Binder, Dieter; and Weinberger, Josef, to Chemish Pharmazeutische Forschungsgesellschaft m.b.H. Acylals of imidazole-5-carboxylic acid derivatives, and their use as angiotensin (II) inhibitors. 5,298,519, Cl. 514-381.000.

Bindra, Perminder S.; Havens, Ross Downey; Markovich, Voya R.; and Molla, Jaynal A., to International Business Machines Corporation. Interconnection method and structure for organic circuit boards. 5,298,685, Cl. 174-250.000.

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Brandt, Everett G.; Christensen, M. Kathryn; and Sahm, W. Charles, to Caterpillar Inc. Noise suppression enclosure for an engine. 5,297,517, Cl. 123-198.00E.

Brannstrom, Roine; and Molnar, Antal, to ABB Stal AB. Method for cooling of dust separated from the fine gases from a PFBC plant. 5,297,622, Cl. 165-104.160.

Branovich, Louis E.; and Eckart, Donald W., to United States of America, Army. Method of preparing an impregnated cathode with an enhanced thermionic emission from a porous billet and cathode so prepared. 5,298,830, Cl. 313-346.00R.

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Hong, Jae-Bum: *See*—
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Sutherland, Robert L., to Riverwood International Corporation. Carrier for stacked articles. 5,297,725, Cl. 229-117.130.

Sutton, Darrel; Benoit, Michael; and Gagne, Daniel, to B.G.E. Service & Supply Ltd. Extended surface pocket type air filter. 5,298,044, Cl. 55-378.000.

Suyama, Masuo, to Fujitsu Limited. Optical amplifier and optical communication system provided with the optical amplifier. 5,299,048, Cl. 359-179.000.

Suyama, Shuji; and Ishigaki, Hideyo, to Nippon Oil & Fats Co., Ltd. Composition for cross-linking of ethylene-polymer, method for cross-linking ethylene-polymer, and cross-linkable composition. 5,298,564, Cl. 525-263.000.

Suzuki, Akira; Misonoo, Shoji; Fukuda, Kozo; and Ishii, Naoyuki, to EPC Technology Co., L.T.D. Engraving sheet structure. 5,298,307, Cl. 428-141.000.

Suzuki, Akitaka, to Yamaha Hatsudoki Kabushiki Kaisha. Lubricating system for engine. 5,297,511, Cl. 123-196.00R.

Suzuki, Atsuhiko; Inoue, Teruhisa; Hashimoto, Kyosuke; Michihira, Osamu; and Hirano, Seiji, to Furukawa Electric Co., Ltd., The; and Mazda Motor Corp. Current consumption control device. 5,298,795, Cl. 307-116.000.

Suzuki, Harumi; Muksi, Takeshi; and Nakashima, Hitoshi, to Suzuki Motor Corporation. Diagnosing apparatus of evaporation fuel control system of vehicle. 5,297,527, Cl. 123-520.000.

Suzuki, Hideaki: *See*—
Urushizaki, Ichiro; Niitsu, Yoshiro; Maruyama, Hiroshi; Suzuki, Hideaki; Hosoda, Kenji; Honda, Hitomi; and Masuho, Yasuhiko, 5,298,393, Cl. 435-7.100.

Suzuki, Hiroaki; and Ueda, Naofumi, to Ricoh Company, Ltd. Graphic data processing apparatus for producing a tone for an edge pixel and reducing aliasing effects. 5,299,308, Cl. 395-162.000.

Suzuki, Hiroyasu: *See*—
Ikada, Yoshito; Tabata, Yasuhiko; and Suzuki, Hiroyasu, 5,298,243, Cl. 424-85.100.

Suzuki, Kazuhiko: *See*—
Nakazawa, Tadahisa; Ogawa, Masahide; Abe, Kiyoshi; and Suzuki, Kazuhiko, 5,298,234, Cl. 423-714.000.

Suzuki, Koji: *See*—
Tsunefuji, Katsuhiko; Tokui, Masaki; Kawai, Sumio; Watanabe, Akira; and Suzuki, Koji, 5,298,929, Cl. 354-159.000.

Suzuki, Masao; Arie, Kazuo; Kawashima, Masatoshi; and Sato, Yoshiaki, to Kabushiki Kaisha Toshiba. Transuranium element transmuting reactor core. 5,299,241, Cl. 376-170.000.

Suzuki, Masato; Inaba, Hiromi; Nakamura, Kiyoshi; Nakata, Naofumi; Yamani, Hiroaki; and Oonuma, Naoto, to Hitachi, Ltd. Apparatus and methods for detecting number of people waiting in an elevator hall using plural image processing means with overlapping fields of view. 5,298,697, Cl. 187-131.000.

Suzuki, Masayoshi, to Fujitsu Limited. Method of automatically editing data for managing processor that carries out distributed control and a system using the same. 5,299,316, Cl. 395-325.000.

Suzuki, Mitsuo; Karasawa, Hisashi; and Seshimo, Michio, to VKI Technologies, Inc. Beverage extraction device. 5,297,472, Cl. 99-289.00T.

Suzuki Motor Corporation: *See*—
Muksi, Takeshi, 5,297,528, Cl. 123-518.000.
Suzuki, Harumi; Muksi, Takeshi; and Nakashima, Hitoshi, 5,297,527, Cl. 123-520.000.

Suzuki, Nobuharu; Morisawa, Tahei; and Mogamiya, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic still camera. 5,298,931, Cl. 354-225.000.

Suzuki, Osamu; and Ota, Atsuo, to Honda Giken Kogyo Kabushiki Kaisha. Method of correcting target slip ratios with a correction coefficient based on vehicle deceleration. 5,297,859, Cl. 303-102.000.

Suzuki, Satoru; and Yamada, Takehisa, to Fuji Univance Corporation. Hydraulic power transmission joint which is used in vehicles. 5,297,994, Cl. 464-27.000.

Suzuki, Takeshi: *See*—
Okita, Makoto; Shirota, Hiroshi; Tanaka, Masayuki; Kaneko, Toshihiko; Tagami, Katsuya; Hibi, Shigeki; Okamoto, Yasushi; Nomoto, Seiichiro; Suzuki, Takeshi; Chiba, Kenichi; Goto, Masaki; Hashida, Ryoichi; Ono, Hideki; Ohhara, Hideto; Sakurai, Hideki; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,298,649, Cl. 560-56.000.

Suzuki, Tatsuya; and Matsutani, Shunji, to Olympus Optical Co., Ltd. Waterproof camera. 5,298,928, Cl. 354-64.000.

Suzuki, Tetsuji: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; and Takahashi, Ryusaku, 5,299,042, Cl. 359-72.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; Tai, Hiromichi; and Suzuki, Tetsuji, 5,299,153, Cl. 365-112.000.

Suzuki, Yoshiko, to Toyo Ink Manufacturing Co., Ltd. Modified olefin resin and resin composition. 5,298,568, Cl. 525-327.600.

Swanson, Paul A.; Gibson, John A.; and Knirck, Jeffrey G. Method and apparatus for transfer of a reticle pattern onto a substrate by scanning. 5,298,939, Cl. 355-53.000.

Swanson, Robert M.: *See*—
Babakanian, Jacquelin; Davis, James W.; Garvin, Mark S.; Swanson, Robert M.; Thoma, Nandor G.; and Wu, David M., 5,299,136, Cl. 364-488.000.

Swift, Joseph A.; and Schroll, Ross E., to Xerox Corporation. Frame member and assembly for carrying electrical signals and the like. 5,298,681, Cl. 174-48.000.

Swingstage Limited: *See*—
Vandelinde, Henry, 5,297,651, Cl. 182-3.000.

Swyt, Carol R.: *See*—
Fiori, Charles E.; and Swyt, Carol R., 5,299,138, Cl. 364-498.000.

Syers, Charles S. Guided bone and tissue generation device and method to be used during or after dental surgery or jaw surgery. 5,297,563, Cl. 128-898.000.

Sylvester, Gerd: *See*—
Baade, Wolfgang; Obrecht, Werner; Ohm, Christian; Casper, Rudolf; Neurer, Kurt P.; and Sylvester, Gerd, 5,298,577, Cl. 526-65.000.

Sypula, Donald S.: *See*—
Mammino, Joseph; Sypula, Donald S.; Berkes, John S.; Schlueter, Edward L., Jr.; Fletcher, Gerald M.; Bonsignore, Frank J.; Hwang, Shy-Shung; Robertson, Donald J.; Denham, Allen W.; Brach, Paul J.; and Abramsohn, Dennis a., 5,298,956, Cl. 355-275.000.

Syracuse University: *See*—
Chen, Chien-Yi R.; and Hsia, Jyan-Ann C., 5,299,317, Cl. 395-325.000.

Szajewski, Richard P.; and Sowinski, Allan F., to Eastman Kodak Company. Photographic silver halide material with improved color saturation. 5,298,376, Cl. 430-505.000.

Szczepanek, Andre, to Texas Instruments Incorporated. Signal interface for coupling a network front end circuit to a network adapter circuit. 5,299,193, Cl. 370-85.100.

Szejtli, Jozsef: *See*—
Vikmon, Maaria; Szejtli, Jozsef; Szente, Lajos; Gaal, Jozsef; Hermecz: Istvan; Horvath, Agnes; Marmarosi, Katalin; Horvath, Gabor; and Munkacsi, Ireri, 5,298,496, Cl. 514-58.000.

Szente, Lajos: *See*—
Vikmon, Maaria; Szejtli, Jozsef; Szente, Lajos; Gaal, Jozsef; Hermecz: Istvan; Horvath, Agnes; Marmarosi, Katalin; Horvath, Gabor; and Munkacsi, Ireri, 5,298,496, Cl. 514-58.000.

Szente, Roberto N.; Drouet, Michel G.; and Munz, Richard J., to Hydro-Quebec. Plasma torch for the treatment of gases and/or particles and for the deposition of particles onto a substrate. 5,298,714, Cl. 219-121.480.

Tabata, Yasuhiko: *See*—
Ikada, Yoshito; Tabata, Yasuhiko; and Suzuki, Hiroyasu, 5,298,243, Cl. 424-85.100.

Tabei, Kazuhiko, to NEC Corporation. Random tone or voice message synthesizer circuit. 5,299,282, Cl. 395-2.790.

Tabu, Takashi; Okabe, Kenichi; and Kira, Masaki, to Fujitsu Limited. Time-multiplexed highway line designating system. 5,299,187, Cl. 370-56.000.

Tabuchi, Yasuhiko, to Paloma Kogyo Kabushiki Kaisha. Oil-overflow alarming system in frying apparatus. 5,297,474, Cl. 99-344.000.

Tachibana, Shinji: *See*—
Fujii, Tatsuo; Tachibana, Shinji; Oshima, Junji; Shimaoka, Goro; Ishii, Kazuhiko; and Mizutani, Makoto, 5,298,559, Cl. 525-67.000.

Tada, Eiichi. Thrust generator. 5,298,818, Cl. 310-11.000.

Tada, Kaoru: *See*—
Moriya, Shigeru; Tada, Kaoru; and Kumashiro, Hideo, 5,299,029, Cl. 358-447.000.

Tadema, Jan C., to Wiener & Co. Apparatenbouw B.V. Device for processing chocolate mass. 5,297,743, Cl. 241-80.000.

Tagami, Katsuya: *See*—
Okita, Makoto; Shirota, Hiroshi; Tanaka, Masayuki; Kaneko, Toshihiko; Tagami, Katsuya; Hibi, Shigeki; Okamoto, Yasushi; Nomoto, Seiichiro; Suzuki, Takeshi; Chiba, Kenichi; Goto, Masaki; Hashida, Ryoichi; Ono, Hideki; Ohhara, Hideto; Sakurai, Hideki; Souda, Shigeru; Machida, Yoshimasa; Katayama, Kouichi; and Yamatsu, Isao, 5,298,649, Cl. 560-56.000.

Tagawa, Hirotoshi: *See*—
Deguchi, Hiroyuki; Tagawa, Hirotoshi; Taniguchi, Toru; and Tanaka, Hideyuki, 5,298,917, Cl. 346-160.100.

Tagawa, Masayoshi: *See*—
Imakiire, Koichiro; Shiraishi, Keiichi; Kimura, Masanori; and Tagawa, Masayoshi, 5,297,928, Cl. 415-112.000.

Taguchi, Kazushige; Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; and Kishi, Fumio, to Ricoh Company. Ltd. Finisher for an image forming apparatus. 5,291,376, Cl. 53-504.000.

Tahara, Hideyuki; Ito, Hiroshi; Takagi, Masahito; Irie, Yoshio; Tsuboi, Keishi; and Yamaguchi, Shigeru, to Nippon Shokubai Co., Ltd. Biodegradable hydrophilic crosslinked polymer, process for producing it, and uses thereof. 5,298,570, Cl. 525-329.700.

Tai, Hiromichi: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; Tai, Hiromichi; and Suzuki, Tetsuji, 5,299,153, Cl. 365-112.000.

Tai, Wun T.: *See*—
Mitchell, David B.; Curran, Thomas P.; Tai, Wun T.; and Engstrom, Gary G., 5,298,186, Cl. 252-180.000.

Taike, Akira: *See*—
Migita, Masahito; Taike, Akira; and Ohtoshi, Tsukuru, 5,299,217, Cl. 372-45.000.

Taisei Dental Mfg. Co., Ltd.: *See*—
Kubo, Fuminobu; Hino, Hiroyuki; and Shibata, Tsutomu, 5,298,200, Cl. 264-16.000.

Taiyo Fishery Co., Ltd.: *See*—
Tamai, Tadakazu; Murakami, Hiroki; Sato, Nobuyuki; Kimura, Shoji; and Sasamoto, Yasuhiko, 5,298,402, Cl. 435-172.300.

Tajima, Fumio: *See*—
Katayama, Hiroshi; Tajima, Fumio; Miyazaki, Taizo; Morinaga, Shigeki; Mutoh, Nobuyoshi; Narushima, Seiichi; Sato, Yuji; Nakamoto, Toshio; Takahashi, Takashi; and Osada, Toshio, 5,298,841, Cl. 318-568.000.

Tajima, Hatsuo, to Canon Kabushiki Kaisha. Image forming apparatus with parallel exposure processing. 5,298,961, Cl. 355-202.000.

Tajima, Mizuho: *See*—
Owada, Mitsuru; Tajima, Mizuho; and Nagashima, Yoshitake, 5,298,986, Cl. 348-762.000.

Takada, Kunio: *See*—
Aizawa, Kooji; Nii, Katsutoshi; Okada, Ryoji; Yamada, Masayuki; and Takada, Kunio, 5,297,927, Cl. 415-110.000.

Takagi, Masahito: *See*—
Tahara, Hideyuki; Ito, Hiroshi; Takagi, Masahito; Irie, Yoshio; Tsuboi, Keishi; and Yamaguchi, Shigeru, 5,298,570, Cl. 525-329.700.

Takahara, Hirosi: *See*—
Omae, Hideki; Takahara, Hirosi; and Tanaka, Takaaki, 5,299,289, Cl. 359-95.000.

Takahashi, Hiroshi: *See*—
Taguchi, Kazushige; Fujioka, Tetsuya; Takahashi, Hiroshi; Bannai, Kazunori; and Kishi, Fumio, 5,297,376, Cl. 53-504.000.

Takahashi, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. TDMA processing apparatus. 5,299,189, Cl. 370-58.200.

Takahashi, Kazuhiko, to Fuji Xerox Co., Ltd. Image forming apparatus. 5,298,958, Cl. 355-317.000.

Takahashi, Ken M.: *See*—
Hanson, Karrie J.; Miller, Barry; Sapjeta, Barbara J.; Shah, Akshay V.; and Takahashi, Ken M., 5,298,117, Cl. 156-666.000.

Takahashi, Kiyoshi: *See*—
Tanaka, Tohru; Takahashi, Kiyoshi; Hotta, Yasushi; Takeuchi, Yasutomo; and Konnai, Makoto, 5,298,482, Cl. 504-320.000.

Takahashi, Kuniyuki; and Yamazaki, Nobuto, to Kabushiki Kaisha Shinkawa. Wire bonding method and apparatus. 5,297,722, Cl. 228-180.500.

Takahashi, Masaharu; and Momii, Kazuma, to Shin-Etsu Chemical Co., Ltd. Air bag coating composition, air bag and preparation thereof. 5,298,317, Cl. 428-266.000.

Takahashi, Masanori, to Canon Kabushiki Kaisha. Electrical packaging structure and liquid crystal display device having the same. 5,299,093, Cl. 361-760.000.

Takahashi, Masanori, to Seiko Instruments Inc. Fluorescent X-ray film thickness measuring apparatus. 5,299,252, Cl. 378-50.000.

Takahashi, Nobu: *See*—
Ikebe, Hidehito; Sugino, Takuya; Nakajima, Susumu; Kinoshita, Kenichiro; and Takahashi, Nobu, 5,297,532, Cl. 123-564.000.

Takahashi, Ryusaku: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; and Takahashi, Ryusaku, 5,299,042, Cl. 359-72.000.

Takahashi, Saburoh: *See*—
Hosonuma, Akira; Onodera, Teruyuki; Takahashi, Saburoh; Sakashita, Kunio; and Hiroshige, Yoshinori, 5,297,421, Cl. 73-40.000.

Takahashi, Takao; and Murabayashi, Noboru, to Sony Corporation. Digital signal reproducing system for processing the reproduced digital signal with the most favorable error rate. 5,299,070, Cl. 360-19.100.

Takahashi, Takashi: *See*—
Katayama, Hiroshi; Tajima, Fumio; Miyazaki, Taizo; Morinaga, Shigeki; Mutoh, Nobuyoshi; Narushima, Seiichi; Sato, Yuji; Nakamoto, Toshio; Takahashi, Takashi; and Osada, Toshio, 5,298,841, Cl. 318-568.000.

Takahasi, Keita: *See*—
Asakura, Yasuo; Naruse, Mutumi; Saito, Michiharu; and Takahasi, Keita, 5,298,930, Cl. 354-173.100.

Takamatsu, Hiroyuki; Nishimoto, Yoshiro; and Sumie, Shingo, to Kabushiki Kaisha Kobe Seiko Sho. Sample evaluating method by using thermal expansion displacement. 5,298,970, Cl. 356-349.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; Suzuki, Tetsuji; Tatsumi, Fujiko; and Takahashi, Ryusaku, to Victor Company of Japan, Ltd. Light-to-light conversion method, display unit using the same, and light-to-light conversion element incorporated therein. 5,299,042, Cl. 359-72.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Shinonaga, Hirohiko; Asakura, Tsutou; Furuya, Masato; Tai, Hiromichi; and Suzuki, Tetsuji, to Victor Company Of Japan, Ltd. System and medium for recording-/reproducing charge latent image. 5,299,153, Cl. 365-112.000.

Takano, Yoshihito: *See*—
Sawamoto, Jiro; Takano, Yoshihito; and Ezaki, Yuzo, 5,298,255, Cl. 424-423.000.

Takao, Hisashi, to Otsuka Kagaku Kabushiki Kaisha. Pesticidal O,S-dialkyl-O-[4-(1-alkoxy-2,2,2-trifluoroethyl)phenyl]phosphoro(di) thioate derivatives. 5,298,500, Cl. 514-129.000.

Takashi, Morihiko: *See*—
Mohri, Kaneo; Kano, Mitsunari; Matsuda, Toshihiko; Kino, Jiro; Takashi, Morihiko; Konishi, Yoshiharu; and Oizumi, Junichi, 5,298,689, Cl. 178-19.000.

Takashima, Daisaburo: *See*—
Oowaki, Yukihito; Kato, Daisuke; and Takashima, Daisaburo, 5,299,154, Cl. 365-149.000.

Takashina, Shoichi; Hazama, Takashi; Kurooka, Akira; Maruguchi, Norio; Iwasa, Hiroshi; and Saito, Masayoshi, to Fuji Oil Co., Ltd. Method of preventing edible oils and fats from deteriorating. 5,298,271, Cl. 426-312.000.

Takata Corporation: *See*—
Baba, Yoshiyuki; and Nakayama, Yoshikazu, 5,297,813, Cl. 280-743.00R.

Takata, Shigeo; Tani, Hidekazu; Nakamura, Takashi; Hayashida, Noriaki; Kasai, Tomohiko; and Kameyama, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus. 5,297,392, Cl. 62-160.000.

Takata, Toshikazu: *See*—
Sanda, Fumio; Yamauchi, Junichi; Takata, Toshikazu; and Endo, Takeshi, 5,298,631, Cl. 549-334.000.

Takayama, Hajime: *See*—
Hotta, Yoshihiko; Kubo, Keishi; Maruyama, Shoji; Yano, Takashi; and Takayama, Hajime, 5,298,476, Cl. 503-201.000.

Takayama, Ichirou: *See*—
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,298,455, Cl. 437-109.000.

Take, Masao: *See*—
Lee, Takanobu; Matsushita, Ikuo; Take, Masao; and Mifune, Masahiro, 5,298,820, Cl. 310-40.0MM.
Lee, Takanobu; Matsushita, Ikuo; Take, Masao; and Mifune, Masahiro, 5,298,826, Cl. 310-156.000.

Takeda Chemical Industries, Ltd.: *See*—
Fujii, Tatsuo; Tachibana, Shinji; Oshima, Junji; Shimaoka, Goro; Ishii, Kazuhiko; and Mizutani, Makoto, 5,298,559, Cl. 525-67.000.

Takeda Garden Product Co., Ltd.: *See*—
Obayashi, Hisashi; Matsumura, Yasuhiro; and Mochida, Akitoshi, 5,298,241, Cl. 424-76.100.

Takeda, Kazunori, to Fujitsu Limited. Electrical angle control system for a brushless DC motor in a magnetic disk apparatus. 5,298,839, Cl. 318-254.000.

Takeda, Koichi: *See*—
Muehlberger, Erich; Meuhlberger, Stephan E.; Sickinger, Albert; Bailey, Don E.; Koga, Masamichi; Takeda, Koichi; and Shinoda, Tsuyoshi, 5,298,835, Cl. 315-111.210.

Takeda, Yoshihiko: *See*—
Ishiga, Narito; and Takeda, Yoshihiko, 5,298,563, Cl. 525-245.000.

Takegawa, Yujiro, to Tsudakoma Kogyo Kabushiki Kaisha. Method of discharging a weft yarn wound around a drum. 5,297,592, Cl. 139-450.000.

Takei, Ken; and Ohnishi, Masami, to Hitachi, Ltd. Antenna for radio apparatus. 5,298,910, Cl. 343-895.000.

Takei, Manabu, to Casio Computer Co., Ltd. Liquid crystal display device. 5,298,297, Cl. 428-1.000.

Takekoshi, Nobuhiko: *See*—
Fukushima, Hisashi; Miura, Yasushi; and Takekoshi, Nobuhiko, 5,298,926, Cl. 346-140.00R.

Takemura, Yoshinari: *See*—
Furumiya, Shigeru; and Takemura, Yoshinari, 5,298,998, Cl. 348-537.000.

Takeshita, Masatoshi: *See*—
Ichikawa, Masakazu; Yajima, Yusuke; Takeshita, Masatoshi; and Kobayashi, Toshio, 5,298,747, Cl. 250-306.000.

Takeshita, Shuji, to Fujitsu Limited. Thin film circuit substrate and process for the manufacture thereof. 5,298,114, Cl. 156-643.000.

Takeuchi, Akihiro: *See*—
Ochi, Atsuo; Yoneyama, Masayuki; Hamamoto, Yasuo; Takeuchi, Akihiro; Kobayashi, Masaaki; and Ohta, Haruo, 5,299,003, Cl. 348-607.000.

Takeuchi, Esther S., to Wilson Greatbatch, Ltd. Method of pretreating a cathode for attaining a stable voltage upon cell assembly. 5,298,349, Cl. 429-219.000.

Takeuchi, Hideki; Hayakawa, Shigeyuki; and Yabe, Tomoaki, to Kabushiki Kaisha Toshiba. Semiconductor memory device having redundant circuit. 5,299,164, Cl. 365-201.000.

Takeuchi, Setsuyuki, to A.K. Technical Laboratory, Inc. Bottle with ear. 5,297,686, Cl. 215-100.00A.

Takeuchi, Yasutomo: *See*—
Tanaka, Tohru; Takahashi, Kiyoshi; Hotta, Yasushi; Takeuchi, Yasutomo; and Konnai, Makoto, 5,298,482, Cl. 504-320.000.

Takida, Hiroshi: *See*—
Moriyama, Takamasa; Takida, Hiroshi; and Uemura, Tomoyoshi, 5,298,334, Cl. 428-474.400.

Takimoto, Hiroshi: *See*—
Watanabe, Toshio; Abe, Yuuichi; Morikawa, Hiroto; and Takimoto, Hiroshi, 5,299,033, Cl. 358-497.000.

Takimoto, Masaaki; and Yamamoto, Hisataka, to Nippon Paint Co., Ltd.; and Sumitomo Metal Industries Ltd. Anticorrosive coating composition. 5,298,059, Cl. 106-14.170.

Takiron Company, Ltd.: *See*—
Shikinami, Yasuo; and Hata, Kunihiro, 5,298,602, Cl. 528-361.000.

Talamonti, Luciano: *See*—
Imondi, Giuliano; Marotta, Giulio; Porrovecchio, Giulio; Savarese, Giuseppe; and Talamonti, Luciano, 5,299,286, Cl. 395-27.000.

Tamagaki, Akira: *See*—
Ibuchi, Yoshiaki; Tamagaki, Akira; Kamei, Naoyuki; and Maitani, Yoshigumi, 5,298,942, Cl. 355-202.000.

Tamai, Tadakazu; Murakami, Hiroki; Sato, Nobuyuki; Kimura, Shoji; and Sasamoto, Yasuhiko, to Taiyo Fishery Co., Ltd. Cell lines produced by transforming leukocytes of fish with oncogenes and physiologically active substances produced by the cell lines. 5,298,402, Cl. 435-172.300.

Tamrock Oy: *See*—
Rajakallio, Pauli; Kaakkurivaara, Jouko; Hakkinen, Leo; Koskelo, Pekka; and Launiemi, Markku, 5,297,642, Cl. 175-85.000.
Tschurbanoff, Aleksei, 5,297,661, Cl. 191-38.000.

Tamura, Mitsuhisa: *See*—
Iwanaga, Kiyoshi; Tamura, Mitsuhisa; Nakayama, Toshio; Usui, Masahiro; Umida, Hiroyuki; and Nagaoka, Hirooki, 5,298,667, Cl. 568-385.000.

Tanabe, Kenichi, to Mita Industrial Co., Ltd. Scanning apparatus air conditioner. 5,298,938, Cl. 355-30.000.

Tanaka, Atsuo: *See*—
Kawamura, Hiroaki; Ishida, Masatoki; Tanaka, Atsuo; Fujimoto, Terunori; Inui, Tsuneo; and Kondo, Yoshikazu, 5,298,149, Cl. 205-112.000.

Tanaka, Atsushi: *See*—
Oomae, Hidehiro; Makino, Hidenari; Tanaka, Atsushi; and Sato, Hideo, 5,299,305, Cl. 395-149.000.

Tanaka Denshi Kogyo Kabushiki Kaisha: *See*—
Toyofuku, Katsuyuki; Nagamatsu, Ichiro; Shirakawa, Shinji; Iga, Hiroto; Kujiraoka, Takeshi; and Murakami, Kensei, 5,298,219, Cl. 420-507.000.

Tanaka, Hideharu: *See*—
Ogushi, Tetsurou; Kaga, Kunihiko; Tanaka, Hideharu; and Yamanaka, Goro, 5,297,623, Cl. 165-121.000.

Tanaka, Hideyuki: *See*—
Deguchi, Hiroyuki; Tagawa, Hirotoshi; Taniguchi, Toru; and Tanaka, Hideyuki, 5,298,917, Cl. 346-160.100.

Tanaka, Kenichi: *See*—
Ishihara, Hiroshi; Tanaka, Kenichi; and Sakiyama, Keizo, 5,299,151, Cl. 365-96.000.
Ishihara, Hiroshi; Tanaka, Kenichi; and Sakiyama, Keizo, 5,299,152, Cl. 365-96.000.
Onishi, Shigeo; Ayukawa, Akitsu; and Tanaka, Kenichi, 5,298,446, Cl. 437-41.000.

Tanaka, Kenji: *See*—
Isoda, Hideo; Sakuda, Mitsuhiro; Amagi, Yoshihiro; Tanaka, Kenji; Kimura, Kunio; Kobayashi, Michio; Hamaguchi, Tadaaki; and Sawahara, Seiji, 5,298,321, Cl. 428-288.000.

Tanaka Kikinzoku Kogyo K.K.: *See*—
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Zhu, X. Theodore: *See*—
Goronkin, Herbert; Shen, Jun; Tehrani, Saied N.; and Zhu, X. Theodore, 5,298,441, Cl. 437-40.000.
Ziino, Joseph A.: *See*—
Cerny, David L.; Stewart, Brenda; Karsten, Lee; Walding, H. Paul, Jr.; and Ziino, Joseph A., 5,298,894, Cl. 340-870.020.
Zimmerman, George, III. Vehicle marker light and advertisement illuminator. 5,299,102, Cl. 362-83.300.
Zimpro Environmental, Inc.: *See*—
Momont, Joseph A.; Beula, David A.; and Copa, William M., 5,298,174, Cl. 210-761.000.
Zink, Arden K., to Millard Mfg. Corp. Conveyor for raising and lowering containers including means for manually removing containers therefrom. 5,297,668, Cl. 198-724.000.
Zrein, Maan: *See*—
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Zscheile, John W., Jr.; Lundquist, Alan E.; and Kingston, Samuel C., to Unisys Corporation. High rate-low rate PN code tracking system. 5,299,229, Cl. 375-1.000.
Zuhse, Ralf H.: *See*—
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Zuiderveen, Marc D.; Reed, Charles A., Jr.; and Graham, Scott R., to Bissell Inc. Cleaning appliance with agitation member mounting bracket. 5,297,312, Cl. 15-391.000.
Zupan, Peter F., to Wabash National Corporation. Safety coupler-air brake interlock. 5,297,858, Cl. 303-22.600.
Zupancic, Anton Z.: *See*—
Burke, James E.; Zupancic, Anton Z.; Miller, Thomas R.; and McNally, Patrick P., 5,299,249, Cl. 378-15.000.
Zurn, Jorg; Melchiorre, Michele; Lohr, Karsten; and Guldenpfennig, Martin, to Daimler-Benz AG. Process for disintegration and pure-sorted separation of recyclable different plastics of composite structural parts. 5,297,741, Cl. 241-14.000.
3COM Corporation: *See*—
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PATENTS WERE ISSUED ON THE 29TH DAY OF MARCH, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amada Company, Limited: *See*—
Sartorio, Franco, Re. 34,569, Cl. 72-420.000.

Fromkin, Cyrus J. Shoe cubbies. Re. 34,570, Cl. 211-36.000.

Ish, Arthur B., III: *See*—
Johnson, Jeffrey B.; and Ish, Arthur B., III, Re. 34,572, Cl. 482-99.000.

Johnson, Jeffrey B.; and Ish, Arthur B., III, to Vectra Fitness, Inc. Exercise machine with multiple exercise stations. Re. 34,572, Cl. 482-99.000.

Sartorio, Franco, to Amada Company, Limited. Robotized handling device and sheet metal bending system featuring the same. Re. 34,569, Cl. 72-420.000.

Uys, Richard. Ozone generator. Re. 34,571, Cl. 422-186.070.

Vectra Fitness, Inc.: *See*—
Johnson, Jeffrey B.; and Ish, Arthur B., III, Re. 34,572, Cl. 482-99.000.

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CERTIFICATES WERE ISSUED

Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., to Oscar Mayer Foods Corporation. Packaged foodstuff containing a lactate salt. B1 5,017,391, 3-29-94, Cl. 426-129.000.

Argon Associates, L.P.: *See*—
Nussbaum, Otto J., B1 4,860,642, Cl. 454-306.000.

Cerveny, John G.: *See*—
Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., B1 5,017,391, Cl. 426-129.000.

Kennedy, John W., to York Products, Inc. Fastener for truck bed liner. B1 5,150,940, 3-29-94, Cl. 296-39.200.

Lin, Nan J.: *See*—
O'Rell, Dennis D.; and Lin, Nan J., B1 4,228,225, Cl. 429-147.000.

Massachusetts Institute of Technology: *See*—
Rhodes, F. Matthew; and Raffel, Jack I., B1 4,937,475, Cl. 307-465.000.

Milkowski, Andrew L.: *See*—
Anders, Robert J.; Cerveny, John G.; and Milkowski, Andrew L., B1 5,017,391, Cl. 426-129.000.

Nussbaum, Otto J., to Argon Associates, L.P. Personalized air conditioning and method. B1 4,860,642, 3-29-94, Cl. 454-306.000.

O'Rell, Dennis D.; and Lin, Nan J., to W. R. Grace & Co.-Conn. Battery separator. B1 4,228,225, 3-29-94, Cl. 429-147.000.

Oscar Mayer Foods Corporation: *See*—
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Raffel, Jack I.: *See*—
Rhodes, F. Matthew; and Raffel, Jack I., B1 4,937,475, Cl. 307-465.000.

Rhodes, F. Matthew; and Raffel, Jack I., to Massachusetts Institute of Technology. Laser programmable integrated circuit. B1 4,937,475, 3-29-94, Cl. 307-465.000.

Thomas, Keith V. High speed paper drying. B1 4,359,827, 3-29-94, Cl. 34-16.000.

W. R. Grace & Co.-Conn.: *See*—
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York Products, Inc.: *See*—
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Adestia Corporation: *See*—
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Adhesive Technologies, Inc.: *See*—
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Akatsu, Masafuku; Abe, Akira; Tsuchida, Hitoshi; Ohta, Seizo; and Nakatani, Takeshi, to NEC Corporation. Telephone set. 345,557, 3-29-94, Cl. D14-151.000.

Aktiebolaget Electrolux: *See*—
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Bianco, Michael; Witek, James; and Allen, James, 345,538, Cl. D12-220.000.

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Anderson, Richard N.: *See*—
Fraser, Donald E.; and Anderson, Richard N., 345,498, Cl. D8-377.000.

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Bareiss, Raymond E. Combined bottle and cap. 345,505, 3-29-94, Cl. D9-529.000.

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Berggreen, Ib H., to Interlego A.G. Toy helicopter. 345,589, 3-29-94, Cl. D21-90.000.

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Bianco, Michael; Witek, James; and Allen, James, to Cooper Industries, Inc. Combined windshield wiper arm and air foil. 345,538, 3-29-94, Cl. D12-220.000.

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Clement, Clifford. Directional indicating band for attachment to fire fighting hose. 345,520, 3-29-94, Cl. D10-109.000.

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Steinmeyer, Jim. Illusion apparatus. 345,595, 3-29-94, Cl. D21-241.000.
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Trees, Scott C., 8,669, Cl. 87.120.

Bringhurst, Royce S.; Shaw, Douglas V.; and Voth, Victor, to University of California, The Regents of the. Strawberry plant called Sunset. 8,661, 3-29-94, Cl. 49.000.

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Goldstock Breeding Limited: *See*—
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VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Yellow Tayrona. 8,665, 3-29-94, Cl. 78.000.

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CLASSIFICATION OF PATENTS

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261 5,298,687

CLASS 175

61 5,297,638
65 5,297,639
73 5,297,640
5,297,641
85 5,297,642
393 5,297,643

CLASS 177

181 5,298,688

CLASS 178

19 5,298,689

CLASS 180

9.32 5,297,644
68.5 5,297,645
142 5,297,646
143 5,297,647
144 5,297,648
197 5,297,649
204 5,297,650

CLASS 181

135 5,298,691
5,298,692
152 5,298,690
199 5,298,693
286 5,298,694

CLASS 182

3 5,297,651
63 5,297,652
150 5,297,653
153 5,297,654
187 5,297,655
5,297,656

CLASS 184

6.14 5,297,657

CLASS 187

94 5,297,658
118 5,298,695
127 5,298,696
131 5,298,697

CLASS 188

73.31 5,297,659
218 XL 5,297,660

CLASS 191

38 5,297,661

CLASS 192

1.22 5,297,662

CLASS 193

35 MD 5,297,663

CLASS 194

217 5,297,664

CLASS 198

313 5,297,665
380 5,297,666
493 5,297,667
724 5,297,668
782 5,297,669
789 5,297,670
803.12 5,297,671

CLASS 200

11 DA 5,298,698
19 DR 5,298,699
30 R 5,298,700
50 B 5,298,701
82 R 5,298,702
148 F 5,298,704
148 R 5,298,703
513 5,298,705
517 5,298,706

CLASS 203

47 5,298,128

CLASS 204

153.1 5,298,129
5,298,130
5,298,131
5,298,132
180.1 5,298,134
180.8 5,298,133
182.8 5,298,135
192.12 5,298,137
192.38 5,298,136
267 5,298,138
299 EC 5,298,141
299 R 5,298,139
5,298,140
300 EC 5,298,142
301 5,298,143
403 5,298,144
406 5,298,145
5,298,146
424 5,298,147

CLASS 205

50 5,298,148
112 5,298,149

CLASS 206

1.5 5,297,672
147 5,297,673
214 5,297,674
309 5,297,675
315.11 5,297,676
362.4 5,297,677
455 5,297,678
468 5,297,679
499 5,297,680
503 5,297,681
586 5,297,682

CLASS 208

89 5,298,150
95 5,298,151
108 5,298,152
120 5,298,153
139 5,298,154
157 5,298,155
341 5,298,156
400 5,298,157

CLASS 209

17 5,297,683

CLASS 210

168 5,298,158
232 5,298,159
5,298,160
321.78 5,298,161
418 5,298,162
603 5,298,163
604 5,298,164
645 5,298,165
679 5,298,166
703 5,298,167
713 5,298,168
5,298,169
719 5,298,170
739 5,298,171
747 5,298,172
5,298,173
761 5,298,174
776 5,298,175
803 5,298,176

CLASS 211

26 5,297,684
36 Re.34,570
59.4 5,297,685

CLASS 215

100 A 5,297,686
206 5,297,687
344 5,297,688

CLASS 219

69.18 5,298,709
76.14 5,298,710
110 5,298,711
117.1 5,298,712
121.43 5,298,720
121.46 5,298,713
121.48 5,298,714
121.64 5,298,715
121.67 5,298,716
121.68 5,298,717
121.72 5,298,718
121.73 5,298,719
505 5,298,721
532 5,298,723
545 5,298,722
693 5,298,707
728 5,298,708

CLASS 220

3.2 5,297,690
237 5,297,691
318 5,297,692
328 5,297,693
666 5,297,694
697 5,297,695

CLASS 222

83 5,297,696
5,297,697
95 5,297,698
102 5,297,699
146.6 5,297,700
153 5,297,701
185 5,297,702
507 5,297,703
567 5,297,704

CLASS 223

46 5,297,705
96 5,297,706

CLASS 224

42.42 5,297,707
155 5,297,708
281 5,297,709

CLASS 225

2 5,297,710
98 5,297,711

CLASS 226

24 5,297,712

CLASS 227

123 5,297,713
175 5,297,714

CLASS 228

4.1 5,297,715
8 5,297,716
55 5,297,717
102 5,297,718
114 5,297,719
123.1 5,297,720
180.1 5,297,721
180.5 5,297,722
186 5,297,723
219 5,297,724

CLASS 229

117.13 5,297,725
186 5,297,726
227 5,297,727

CLASS 235

380 5,298,724
382 5,298,725
384 5,298,726
462 5,298,727
463 5,298,728
467 5,298,729
476 5,298,730
494 5,298,731

CLASS 236

92 B 5,297,728

CLASS 237

53 5,297,729

CLASS 239

13 5,297,730
14.2 5,297,731
55 5,297,732
85 5,297,733
102.2 5,297,734
120 5,297,735
122 5,297,736
222.17 5,297,737
530 5,297,739
708 5,297,738

CLASS 241

14 5,297,741
16 5,297,740
20 5,297,742
80 5,297,743
81 5,297,744
101.7 5,297,745
242 5,297,746

CLASS 242

4 R 5,297,747
18 R 5,297,748
55.2 5,297,749
55.54 5,297,750
58 5,297,751
107 5,297,752
198 5,297,753
5,297,754
199 5,297,755
270 5,297,756
306 5,297,757
307 5,297,758

CLASS 244

17.11 5,297,759
31 5,297,763
132 5,297,760
140 5,297,761
171 5,297,762
199 5,297,764
209 5,297,765

CLASS 248

309.1 5,297,766
311.2 5,297,767
442.2 5,297,768
550 5,297,769
679 5,297,770
688 5,297,771

CLASS 249

102 5,297,772

CLASS 250

203.4 5,298,732
208.1 5,298,733
5,298,734
214.1 5,298,735
216 5,298,736
221 5,298,737
222.1 5,298,738
227.11 5,298,739
5,298,740
227.23 5,298,741
239 5,298,742
288 5,298,743
5,298,744
292 5,298,745
5,298,746
306 5,298,747
338.1 5,298,748
338.4 5,298,749
338.5 5,298,750
5,298,751
352 5,298,752
364 5,298,753
379 5,298,754
389 5,298,755
390.07 5,298,756
396 R 5,298,757
492.1 5,298,758
5,298,759
492.3 5,298,760
548 5,298,761

CLASS 251

4 5,297,773
57 5,297,774
73 5,297,775
149.1 5,297,776
214 5,297,777
351 5,297,778

CLASS 252

18 5,298,177
49.3 5,298,178
62.54 5,298,179
84 5,298,180
95 5,298,181
106 5,298,182
121 5,298,183
171 5,298,184
174.25 5,298,185
180 5,298,186
337.31 5,298,187
299.63 5,298,188
301.17 5,298,189
301.26 5,298,190
308 5,298,191
311 5,298,192
335 5,298,193
512 5,298,194
547 5,298,195
633 5,298,196
700 5,298,197

CLASS 254

98 5,297,779
114 5,297,780

CLASS 257

13 5,298,762
22 5,298,763
67 5,298,764
77 5,298,765
5,298,766
5,298,767
91 5,298,768
118 5,298,769
139 5,298,770
163.1 5,298,771
195 5,298,772
206 5,298,773
206 5,298,774
211 5,298,775
212 5,298,776
222 5,298,777
237 5,298,778
273 5,298,779
300 5,298,780
313 5,298,781
393 5,298,782
414 5,298,783
529 5,298,784
538 5,298,785
559 5,298,786
592 5,298,787
606 5,298,788
620 5,298,789
622 5,298,790
707 5,298,791
728 5,298,792
765 5,298,793

CLASS 261

16 5,298,198

CLASS 264

2.6 5,298,199
16 5,298,200
22 5,298,201
5,298,202
24 5,298,203
25 5,298,204
5,298,205
40.7 5,298,206
41 5,298,207
51 5,298,208
62 5,298,213
105 5,298,209
112 5,298,210
211.12 5,298,214
211.240 5,298,211
242 5,298,215
249 5,298,216
331.13 5,298,217
571 5,298,212

CLASS 267

140.14 5,297,781
177 5,297,782

CLASS 270

52.5 5,297,783
53 5,297,784

CLASS 271

3 5,297,785
109 5,297,786
171 5,297,787
206 5,297,788
245 5,297,789
273 5,297,790

CLASS 273

77 A 5,297,803
80 R 5,297,791
94 5,297,792
129 V 5,297,793
178 5,297,794
188 R 5,297,795
189.1 5,297,796
203 5,297,797
340 5,297,798
346 5,297,799
429 5,297,800
430 5,297,801
439 5,297,802
459 5,297,816

CLASS 277

25 5,297,804
124 5,297,805
233 5,297,806
235 B 5,297,807

CLASS 280

30 5,297,808
32.6 5,297,809
250.1 5,297,810
280 5,297,811
633 5,297,812
743 R 5,297,813

CLASS 281

45 5,297,814
93 5,297,815

CLASS 285

15 5,297,817
93 5,297,818
5,297,819
137.1 5,297,820
232 5,297,826
253 5,297,821
258 5,297,822
317 5,297,823
322 5,297,824
331 5,297,825
351 5,297,827

CLASS 292

258 5,297,828
289 5,297,829

CLASS 294

65 5,297,830
68.23 5,297,831
81.55 5,297,832
102.2 5,297,833
140 5,297,834
146 5,297,835

CLASS 296

39.2 B1 5,150,940
50 5,297,840
146.15 5,297,843
146.6 5,297,841
146.7 5,297,842
190 5,297,844
191 5,297,845
203 5,297,836
212 5,297,837
214 5,297,838

CLASS 297

117 5,297,839
195.12 5,297,846
217 5,297,847
219.1 5,297,848
344.12 5,297,849
377 5,297,850
452.14 5,297,851
467 5,297,852

CLASS 299

79 5,297,853

CLASS 301

37.37 5,297,854
124.1 5,297,855

CLASS 303

9.61 5,297,856
11 5,297,857
22.6 5,297,858
102 5,297,859
113.2 5,297,860
113.5 5,297,861
116.1 5,297,862

CLASS 307

95 5,298,794
116 5,298,795
201 5,298,796
246 5,298,797
264 5,298,798
270 5,298,800
273 5,298,799
353 5,298,801
446 5,298,802
465 5,298,803
5,298,805
5,298,806
B1 4,937,475
475 5,298,804
5,298,807
5,298,808
5,298,810

491 5,298,809
492 5,298,811
519 5,298,812
520 5,298,813
529 5,298,814
530 5,298,815
571 5,298,816
580 5,298,817

CLASS 310

11 5,298,818
12 5,298,819
40 MM 5,298,820
47 5,298,821
49 R 5,298,822
71 5,298,823
89 5,298,824
156 5,298,825
5,298,826
5,298,827
319 5,298,828
323 5,298,829

CLASS 312

128 5,297,863

CLASS 313

346 R 5,298,830
373 5,298,831
407 5,298,832
483 5,298,833
622 5,298,834

CLASS 315

111.21 5,298,835
219 5,298,836
289 5,298,837

CLASS 317

422 5,297,943

CLASS 318

138 5,298,838
254 5,298,839
268 5,298,840
5,298,841
473 5,298,842
567 5,298,843
568.11 5,298,844
609 5,298,845
685 5,298,846
800 5,298,847
811 5,298,848

CLASS 320

2 5,298,849
48 5,298,850

CLASS 322

28 5,298,851
29 5,298,852

CLASS 324

86 5,298,853
142 5,298,854
5,298,855
5,298,856
5,298,857
5,298,859
158 R 5,298,860
235 5,298,858
306 5,298,861
309 5,298,862
318 5,298,863
321 5,298,864
509 5,298,865

CLASS 328

155 5,298,866
233 5,298,867

CLASS 330

129 5,298,868
286 5,298,869

CLASS 331

45 5,298,870

CLASS 332

109 5,298,871

CLASS 333

202 5,298,872
235 5,298,873

CLASS 335

8 5,298,874
216 5,298,875

CLASS 337

27 5,298,876
164 5,298,877

CLASS 340

426 5,298,878
438 5,298,879
439 5,298,880
450.3 5,298,881
468 5,298,882
573 5,298,883
5,298,884
606 5,298,886
618 5,298,887
660 5,298,885
5,298,888
680 5,298,889
784 5,298,892
870.02 5,298,894

CLASS 341

51 5,298,895
5,298,896
71 5,298,897
118 5,298,898
132 5,298,899
143 5,298,900
155 5,298,901
157 5,298,902

CLASS 342

4 5,298,903
42 5,298,904
54 5,298,905
175 5,298,906
363 5,298,908

CLASS 343

715 5,298,907
720 5,298,909
895 5,298,910
912 5,298,911

CLASS 345

63 5,298,893
88 5,298,912
93 5,298,891
97 5,298,913
103 5,298,914
149 5,298,915
157 5,298,890
5,298,916
163 5,298,918
5,298,919
213 5,298,920

CLASS 346

1.1 5,298,922
5,298,923
76 PH 5,298,924
139 R 5,298,925
140 R 5,298,926
160.1 5,298,917

CLASS 348

82 5,298,987
87 5,298,988
100 5,299,014
126 5,298,989
180 5,298,993
5,298,996
224 5,298,980
229 5,299,015
307 5,299,013
370 5,299,012
415 5,298,992
416 5,298,991
420 5,298,990
441 5,298,997
445 5,298,994
458 5,298,995
497 5,298,999
503 5,299,007
537 5,298,998
557 5,298,983
571 5,299,006
607 5,299,002
5,299,003
614 5,299,004
627 5,299,000
630 5,298,981
655 5,298,979
707 5,299,008
5,299,009
713 5,298,982
731 5,299,010
5,299,011
745 5,298,985
762 5,298,986
778 5,298,984
786 5,299,017
818 5,299,016

CLASS 351

211 5,298,927

CLASS 354

64 5,298,928
159 5,298,929
173.1 5,298,930
225 5,298,931
324 5,298,932
400 5,298,933
402 5,298,934
430 5,298,935
471 5,298,936

CLASS 385

23 5,298,937
30 5,298,938
53 5,298,939
91 5,298,940
200 5,298,941
202 5,298,942
5,298,961
208 5,298,943
5,298,944
210 5,298,945
5,298,946
211 5,298,947
245 5,298,948
246 5,298,949
251 5,298,950
260 5,298,951
270 5,298,952
271 5,298,953
274 5,298,954
5,298,955
275 5,298,956
285 5,298,957
317 5,298,958
319 5,298,959
326 R 5,298,960

CLASS 396

5 5,298,962
31 5,298,963
33 5,298,964
73.1 5,298,965
154 5,298,966
336 5,298,967
338 5,298,968
340 5,298,969
345 5,299,170
349 5,298,970
353 5,298,971
364 5,298,972
368 5,298,973
371 5,298,974
375 5,298,975
5,298,976
376 5,298,977
379 5,298,978

CLASS 398

261.1 5,299,018
261.3 5,299,019
298 5,299,020
330 5,299,022
5,299,023
400 5,299,024
5,299,025
401 5,299,021
5,299,026
403 5,299,027
445 5,299,028
462 5,299,029
5,299,030
482 5,299,031
5,299,032
497 5,299,033
518 5,299,034

CLASS 399

9 5,299,035
40 5,299,036
41 5,299,037
49 5,299,038
53 5,299,039
58 5,299,040
59 5,299,041
72 5,299,042
83 5,299,043
95 5,299,289
110 5,299,044
5,299,293
130 5,299,045
154 5,299,046
156 5,299,047
179 5,299,048
196 5,299,049
212 5,299,050
216 5,299,051
227 5,299,053
251 5,299,054
341 5,299,055
5,299,056
345 5,299,057
478 5,299,058
495 5,299,059
514 5,299,060
547 5,299,061
571 5,299,062
631 5,299,063
684 5,299,064
759 5,299,065
819 5,299,066
827 5,299,067
886 5,299,068

CLASS 360

18 5,299,069
19.1 5,299,070
48 5,299,071
57 5,299,072
73.12 5,299,073
75 5,299,074
77.02 5,299,075
85 5,299,076
99.02 5,299,077
5,299,078
103 5,299,079
5,299,080
104 5,299,081
106 5,299,082
5,299,083
107 5,299,084
108 5,299,085
132 5,299,086

CLASS 361

93 5,299,087
119 5,299,088
684 5,299,089
703 5,299,090
723 5,299,091
728 5,299,092
760 5,299,093
784 5,299,094
801 5,299,095
807 5,299,096
813 5,299,097
829 5,299,098
837 5,299,099

CLASS 362

61 5,299,100
5,299,101
83.3 5,299,102
101 5,299,103
115 5,299,104
119 5,299,105
144 5,299,106
158 5,299,107
189 5,299,108
241 5,299,109
260 5,299,110
290 5,299,111
431 5,299,112

CLASS 364

140 5,299,113
147 5,299,114
401 5,299,115
403 5,299,116
405 5,299,117
413.01 5,299,121
413.05 5,299,118
413.06 5,299,119
413.09 5,299,120
419.02 5,299,124
419.08 5,299,125
419.1 5,299,122
5,299,123
420 5,299,126
422 5,299,128
424.02 5,299,130
424.1 5,299,129
426.03 5,299,131
460 5,299,132
468 5,299,133
478 5,299,134
479 5,299,135
488 5,299,136
489 5,299,137
491 5,299,139
497 5,299,140
498 5,299,138
510 5,299,141
558 5,299,142
561 5,299,143
574 5,299,148
576 5,299,149
715.01 5,299,144
746.2 5,299,145
754 5,299,146

CLASS 365

49 5,299,147
94 5,299,150
96 5,299,151
5,299,152
112 5,299,153
149 5,299,154
5,299,155
154 5,299,156
189.02 5,299,157
189.04 5,299,158
5,299,159
200 5,299,160
201 5,299,161
5,299,162
5,299,163
5,299,164
204 5,299,167
210 5,299,165
218 5,299,166
222 5,299,168
230.05 5,299,169

CLASS 366

75 5,297,864
76 5,297,865
097 5,297,866
349 5,297,867

CLASS 367

1 5,299,171
13 5,299,172
88 5,299,173
135 5,299,174
138 5,299,175
175 5,299,176

CLASS 368

73 5,299,177
76 5,299,178
290 5,299,179

CLASS 369

1 5,299,180
32 5,299,181
36 5,299,182
44.14 5,299,183
44.280 5,299,184
75.2 5,299,185
291 5,299,186

CLASS 370

31 5,299,188
56 5,299,187
58.2 5,299,189
5,299,190
60.1 5,299,191
70 5,299,192
85.1 5,299,193
5,299,196
85.3 5,299,194
85.6 5,299,195
94.1 5,299,197
95.3 5,299,198
5,299,199
100.1 5,299,200

CLASS 371

11.1 5,299,202
22.1 5,299,204
5,299,206
22.3 5,299,205
29.1 5,299,207
38.1 5,299,208
51 5,299,201
67.1 5,299,209
221 5,299,203

CLASS 372

6 5,299,210
32 5,299,212
35 5,299,213
36 5,299,214
41 5,299,215
43 5,299,216
45 5,299,217
5,299,218
50 5,299,219
71 5,299,220
75 5,299,221
5,299,222
94 5,299,211
5,299,223

CLASS 373

71 5,299,224
115 5,299,225

CLASS 374

44 5,297,868

CLASS 375

1 5,299,226
5,299,227
5,299,228
5,299,229
60 5,299,230
97 5,299,231
99 5,299,232
5,299,233
110 5,297,869
112 5,299,234
114 5,299,235
116 5,299,236
120 5,299,237
122 5,299,238
5,299,239
5,299,240

CLASS 376

170 5,299,241
223 5,299,242
287 5,299,243
438 5,299,244
439 5,299,245
462 5,299,246

CLASS 377

60 5,299,247

CLASS 378

5 5,299,248
15 5,299,249
19 5,299,250
34 5,299,251
50 5,299,252
163 5,299,253
5,299,254

CLASS 379

96 5,299,255
5,299,256
100 5,299,257
112 5,299,258
221 5,299,259
265 5,299,260
354 5,299,261

CLASS 380

28 5,299,262
30 5,299,263

CLASS 381

14 5,299,264
86 5,299,265
119 5,299,266
5,299,267

CLASS 382

8 5,299,268
9 5,299,269
30 5,299,270

CLASS 383

99 5,297,870
86 5,297,872

CLASS 384

45 5,297,873
221 5,297,874
419 5,297,875

CLASS 385

12 5,299,271
34 5,299,272
77 5,299,273
96 5,299,274
116 5,299,275
130 5,299,276

CLASS 388

815 5,299,277

CLASS 392

358 5,299,278
421 5,299,279
449 5,299,280

CLASS 395

2.28 5,299,281
2.79 5,299,282
3 5,299,283
22 5,299,284
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27 5,299,286
51 5,299,287
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103 5,299,290
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146 5,299,303
148 5,299,304
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153 5,299,306
161 5,299,307
162 5,299,308
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165 5,299,310
200 5,299,312
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250 5,299,315
275 5,299,322
325 5,298,921
5,299,316
5,299,317
375 5,299,318
5,299,319
5,299,320
5,299,321

CLASS 400

61 5,297,876
76 5,297,877
120 5,297,878
234 5,297,879
568 5,297,871
703 5,297,880

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705	5,297,881		5,298,229	284	5,298,319	7.93	5,298,397	306	B1 4,860,642		5,298,525
	CLASS 401	239.1	5,298,230	285	5,298,322	17	5,298,406	339	5,297,992	473	5,298,526
184	5,297,882	299	5,298,231	288	5,298,320	26	5,298,414		**CLASS 462**	539	5,298,527
202	5,297,883	491	5,298,232		5,298,321	52	5,298,398	6	5,297,993	626	5,298,528
268	5,297,884	580.1	5,298,233	298	5,298,315	69.1	5,298,399			788	5,298,529
	CLASS 403	714	5,298,234	325	5,298,323		5,298,407		**CLASS 464**		**CLASS 521**
231	5,297,885		**CLASS 434**	336	5,298,324	69.8	5,298,400	27	5,297,994	48.5	5,298,530
232.1	5,297,886	47	5,298,236		5,298,325	106	5,298,409	175	5,297,996	184	5,298,531
299	5,297,887	49	5,298,237	349	5,298,326	172.3	5,298,402		**CLASS 470**		**CLASS 522**
306	5,297,888		5,298,238	373	5,298,327	188	5,298,410	67	5,297,997	27	5,298,532
391	5,297,889	70	5,298,240	403	5,298,328	190	5,298,411		**CLASS 473**		**CLASS 523**
398	5,297,890	76.1	5,298,241	432	5,298,329	192	5,298,403	115	5,297,998	106	5,298,533
402	5,297,891	78.36	5,298,242		5,298,330	199	5,298,404		**CLASS 474**	120	5,298,534
406.1	5,297,892	85.1	5,298,243	458	5,298,331	209	5,298,405	19	5,297,999	201	5,298,536
	CLASS 404	89	5,298,244	469	5,298,332	236	5,298,413	24	5,298,000	205	5,298,537
72	5,297,893	94.1	5,298,246	472	5,298,333		5,298,416		**CLASS 482**	404	5,298,538
90	5,297,894	94.63	5,298,239	474.4	5,298,334	240.1	5,298,417	23	5,298,001	443	5,298,548
	CLASS 405	195.1	5,298,247	511	5,298,335	240.2	5,298,418	53	5,298,002		**CLASS 524**
41	5,297,895	400	5,298,248	552	5,298,336	240.27	5,298,419	55	5,298,003	92	5,298,539
52	5,297,896	405	5,298,249	566	5,298,337		5,298,420	99	Re.34,572	94	5,298,540
154	5,297,898		5,298,250	569	5,298,338	320.1	5,298,421		5,298,004	126	5,298,541
219	5,297,899		5,298,251	614	5,298,339		5,298,422		**CLASS 483**	190	5,298,535
259.3	5,297,900	409	5,298,252		**CLASS 429**		5,298,423	1	5,298,006	297	5,298,542
290	5,297,901		5,298,253	13	5,298,340	600	5,298,392		**CLASS 493**	358	5,298,543
	CLASS 407	422	5,298,254	32	5,298,341		**CLASS 436**	226	5,298,007	405	5,298,544
42	5,297,902	423	5,298,255	33	5,298,235	43	5,298,424	313	5,298,008	414	5,298,545
	CLASS 408	435	5,298,256	39	5,298,342		5,298,425	342	5,298,009	423	5,298,546
30	5,297,903	449	5,298,257	44	5,298,343	63	5,298,426	354	5,298,010	425	5,298,547
67	5,297,904	484	5,298,258	53	5,298,344	89	5,298,427	420	5,298,011	445	5,298,549
145	5,297,905	486	5,298,259	59	5,298,345	171	5,298,428		**CLASS 501**	513	5,298,550
	CLASS 409		5,298,260	90	5,298,346	501	5,298,429	117	5,298,468	518	5,298,551
131	5,297,906	488	5,298,261	98	5,298,347	530	5,298,430	119	5,298,470	519	5,298,552
238	5,297,907	489	5,298,262	101	5,298,348		**CLASS 437**	190	5,298,467	579	5,298,553
	CLASS 410	936	5,298,245	147	B1 4,228,225	2	5,298,432	117	5,298,469	725	5,298,554
26	5,297,908		**CLASS 425**	219	5,298,349	8	5,298,433		**CLASS 502**	801	5,298,555
	CLASS 411	116	5,297,897	245	5,298,350	21	5,298,434	64	5,298,473	860	5,298,556
29	5,297,909	132	5,297,946		**CLASS 430**	24	5,298,435	66	5,298,474		**CLASS 525**
	CLASS 414	194	5,297,947	5	5,298,351	29	5,298,436	67	5,298,471	64	5,298,557
225	5,297,910	208	5,297,948		5,298,352	31	5,298,437	192	5,298,472	66	5,298,558
240	5,297,918	297	5,297,949	78	5,298,353		5,298,438	240	5,298,475	67	5,298,559
349	5,297,919	436 R	5,297,950	99	5,298,354	32	5,298,440	244	**CLASS 503**	192	5,298,560
376	5,297,920	556	5,297,951	110	5,298,355	40	5,298,441	245	5,298,476	240	5,298,561
401	5,297,921	593	5,297,952		5,298,356		5,298,442	263	5,298,477	244	5,298,562
416	5,297,922		5,297,953	115	5,298,357		5,298,443	296	**CLASS 504**	245	5,298,563
422	5,297,911		**CLASS 426**	126	5,298,358		5,298,444	327.6	5,298,478	263	5,298,564
462	5,297,912		5,298,263	197	5,298,359		5,298,445	329.5	5,298,479	279	5,298,565
463	5,297,913	5	5,298,264	256	5,298,360	41	5,298,446	329.7	5,298,480	296	5,298,566
574	5,297,914	8	5,298,265	260	5,298,361	43	5,298,447	330.2	5,298,481	327.6	5,298,567
590	5,297,915	52	5,298,267	264	5,298,362	53	5,298,448	419	5,298,482		5,298,568
661	5,297,916	77	5,298,268	280	5,298,364	63	5,298,449	471	5,298,483	329.5	5,298,569
786	5,297,917	93	B1 5,017,391	296	5,298,363	67	5,298,450		**CLASS 505**	329.7	5,298,570
795.4	5,297,923	129	5,298,270	311	5,298,365	70	5,298,451	115	5,298,478	330.2	5,298,571
799	5,297,924	234	5,298,271	321	5,298,366	81	5,298,452	180	5,298,479	419	5,298,572
	CLASS 415	312	5,298,266	326	5,298,367	89	5,298,453	213	5,298,480	471	5,298,573
7	5,297,925	511	5,298,272	372	5,298,368	105	5,298,454	232	5,298,481		5,298,574
90	5,297,926	548	5,298,273	379	5,298,369	109	5,298,455	320	5,298,482	526	5,298,575
110	5,297,927	549	5,298,274	393	5,298,370	126	5,298,456	326	5,298,483	528	5,298,576
112	5,297,928	560	5,298,275		5,298,371	131	5,298,457		**CLASS 508**		**CLASS 526**
121.3	5,297,929	599	**CLASS 427**	401	5,298,372	183	5,298,459	1	5,298,484	65	5,298,577
182.1	5,297,930		5,298,276	429	5,298,373		5,298,460		5,298,485	74	5,298,578
208.1	5,297,931	2	5,298,277	502	5,298,374	184	5,298,461		**CLASS 512**	116	5,298,579
209.2	5,297,932	8	5,298,278	503	5,298,375	187	5,298,458	10	5,298,486	213	5,298,580
	CLASS 416	96	5,298,279	505	5,298,376		5,298,462		**CLASS 514**	232	5,298,581
111	5,297,933	125	5,298,280	507	5,298,377	192	5,298,463	2	5,298,487	262	5,298,582
163	5,297,934	128	5,298,281	510	5,298,378	216	5,298,464	8	5,298,488	286	5,298,583
183	5,297,935	131	5,298,282	512	5,298,379	225	5,298,465	12	5,298,489	317.1	5,298,585
204 R	5,297,936	181	5,298,283	517	5,298,380	228	5,298,466	17	5,298,490		**CLASS 527**
233	5,297,937	203	5,298,284	539	5,298,381		**CLASS 439**		5,298,491	300	5,298,584
237	5,297,938	249	5,298,285	557	5,298,382	64	5,297,966	19	5,298,492		**CLASS 528**
	CLASS 417		5,298,286	567	5,298,383	66	5,297,967	21	5,298,493	10	5,298,587
40	5,297,939	255.2	5,298,287		5,298,384	67	5,297,968	23	5,298,494	15	5,298,588
63	5,297,940	379	5,298,288	569	5,298,385	86	5,297,969	31	5,298,495	21	5,298,589
218	5,297,941	388.4	5,298,289		5,298,386	108	5,297,970	38	5,298,496	126	5,298,592
354	5,297,942	489	5,298,290		5,298,387	125	5,297,971	91	5,298,497	188	5,298,590
437	5,297,944	513	5,298,291		5,298,388	133	5,297,972	111	5,298,498	190	5,298,591
	CLASS 418	543	5,298,292		5,298,389	265	5,297,973	114	5,298,499	277	5,298,593
206	5,297,943	560	5,298,293	619	5,298,390	271	5,297,976	120	5,298,501	313	5,298,594
	CLASS 420	583	5,298,294		**CLASS 431**	320	5,297,974	129	5,298,500	324	5,298,595
463	5,298,218	585	5,298,295	5	5,297,954	358	5,297,975	185	5,298,502	336	5,298,597
507	5,298,219	600	5,298,296	286	5,297,955	504	5,297,977	212	5,298,503		5,298,598
	CLASS 422		**CLASS 428**		**CLASS 432**		**CLASS 441**	221	5,298,504	353	5,298,600
1	5,298,220	1	5,298,297	5	5,297,956	131	5,297,978	226.2	5,298,506		5,298,601
15	5,298,221	34.4	5,298,298	14	5,297,957		**CLASS 446**	255	5,298,505	361	5,298,602
28	5,298,222	34.5	5,298,299	103	5,297,958	16	5,297,979	256	5,298,507	491	5,298,431
54	5,298,223	34.9	5,298,300	138	5,297,959	180	5,297,980	263	5,298,508		**CLASS 530**
73	5,298,224		5,298,301		**CLASS 433**	437	5,297,981	284	5,298,509	326	5,298,596
89	5,298,225	35.7	5,298,302	41	5,297,960	448	5,297,982	304	5,298,510	350	5,298,599
171	5,298,226	40	5,298,303	77	5,297,961		**CLASS 452**	311	5,298,511	351	5,298,603
186.07	Re.34,571	64	5,298,304	89	5,297,962	33	5,297,983	314	5,298,512		5,298,604
	CLASS 423	68	5,298,305	172	5,297,963	136	5,297,984	319	5,298,513	387.9	5,298,605
1	5,298,227	141	5,298,306	218	5,297,964	176	5,297,985	357	5,298,514		**CLASS 534**
210	5,298,228	195	5,298,307		**CLASS 434**		**CLASS 453**	361	5,298,515	556	5,298,606
		204	5,298,308	195	5,297,965	6	5,297,986	369	5,298,516	638	5,298,607
		216	5,298,309		**CLASS 435**		**CLASS 454**	379	5,298,517	693	5,298,608
			5,298,310	5	5,298,391	74	5,297,987	381	5,298,518	748	5,298,609
		229	5,298,311	7.1	5,298,393	75	5,297,988		5,298,519	774	5,298,610
		245	5,298,312		5,298,394	155	5,297,989	388	5,298,520		
		265	5,298,313	7.21	5,298,395	187	5,297,990	406	5,298,521		
		266	5,298,314	7.24	5,298,396	208	5,297,991	418	5,298,522		
		273	5,298,316	7.4	5,298,401			452	5,298,523		
			5,298,317					460	5,298,524		
			5,298,318								

	CLASS 536		**CLASS 546**		**CLASS 554**		**CLASS 560**	307	5,298,661	40	5,297,541
4.1	5,298,611	15	5,298,622	35	5,298,635	16	5,298,647	434	5,298,662		**CLASS 602**
23.2	5,298,612		**CLASS 548**	70	5,298,636	41	5,298,648		**CLASS 568**	28	5,298,013
24.32	5,298,613	101	5,298,623	169	5,298,637	56	5,298,649	14	5,298,663	46	5,298,015
25.5	5,298,614	107	5,298,624	191	5,298,638	240	5,298,650	323	5,298,664		**CLASS 604**
56	5,298,615	406	5,298,625	192	5,298,639	345	5,298,651	342	5,298,665	20	5,298,017
118	5,298,616	439	5,298,626	224	5,298,656		**CLASS 562**	347	5,298,666	21	5,298,018
	CLASS 540	452	5,298,629		**CLASS 556**	444	5,298,652	385	5,298,667	51	5,298,019
141	5,298,617	517	5,298,627	27	5,298,640	590	5,298,653	463	5,298,668	53	5,298,020
454	5,298,618	551	5,298,628	82	5,298,641	597	5,298,654	492	5,298,669	66	5,298,021
	CLASS 544		**CLASS 549**	137	5,298,642	598	5,298,655	617	5,298,670	90	5,298,022
124	5,298,619	57	5,298,630		**CLASS 558**	891	5,298,586		**CLASS 600**		5,298,023
217	5,298,620	334	5,298,631	6	5,298,643		**CLASS 564**	36	5,298,012	93	5,298,024
265	5,298,621	375	5,298,632	70	5,298,644	238	5,298,657		**CLASS 601**		5,298,025
		484	5,298,633	267	5,298,645	251	5,298,658	26	5,297,539		**CLASS 606**
		485	5,298,634	283	5,298,646	271	5,298,659			15	5,298,026
						302	5,298,660				**CLASS 609**
										4	5,298,016

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D1—	107	345,443			345,479		64	345,511		120	345,544	D19—	48	345,577		211	343,610
	127	345,444		511	345,480			345,512			345,545			345,578		226	345,611
		345,445		515	345,481		65	345,513		133	345,546		51	345,579	D25—	16	345,612
		345,446		567	345,482			345,514		184	345,547		63	345,580		126	345,613
D2—	615	345,456		580	345,483		72	345,515	D14—	100	345,548		82	345,581	D26—	28	345,614
	876	345,447		631	345,463		78	345,516		102	345,549	D20—	1	345,582			345,615
	912	345,448	D7—	309	345,484		87	345,517		106	345,550		4	345,583		63	345,616
	913	345,449		360	345,485		106	345,518			345,551		22	345,584			345,617
	946	345,457		401.2	345,486		109	345,519			345,552	D21—	39	345,585			345,618
	953	345,455		410	345,487			345,520		109	345,553		86	345,586		64	345,619
	955	345,453		412	345,488		126	345,521		135	345,554		90	345,587		99	345,620
	957	345,454		416	345,489			345,522		138	345,555			345,588		127	345,621
	969	345,458		673	345,490			345,523		148	345,556			345,589	D28—	13	345,625
		345,459		692	345,491			345,524		151	345,557		102	345,590		37	345,626
		345,460	D8—	10	345,492			345,525			345,558		108	345,591		60	345,628
	970	345,451		25	345,493			345,526		162	345,559		121	345,592		63	345,627
	972	345,450		81	345,494			345,527			345,560		159	345,594		64	345,629
	973	345,452		70	345,465	D11—	3	345,528			345,561		191	345,593		83	345,622
D3—	7	345,461			345,495		12	345,529		164	345,562		241	345,595		85	345,630
	213	345,462		72	345,496		131	345,531			345,563	D23—	293	345,596		87	345,623
	295	345,464		367	345,497			345,532		230	345,564		301	345,597			345,624
D4—	108	345,466		377	345,498		158	345,530		258	345,565		343	345,598	D30—	106	345,631
D5—	46	345,467		381	345,499		213	345,533	D15—	144.2	345,566		382	345,599		158	345,632
D6—	349	345,468	D9—	300	345,500	D12—	114	345,534	D16—	123	345,567		403	345,600		160	345,633
	355	345,469		338	345,501		147	345,535		136	345,568	D24—	104	345,601			345,634
	366	345,470		456	345,502			345,536		208	345,569		120	345,603		161	345,635
	373	345,471		500	345,503		162	345,539			345,570		126	345,604	D32—	30	345,636
	429	345,472		529	345,504		176	345,540		230	345,571		133	345,605		35	345,637
	455	345,473			345,505		193	345,541		237	345,572		143	345,602		41	345,638
	467	345,474		543	345,506		220	345,537		243	345,573		159	345,606		42	345,639
	477	345,475		551	345,507			345,538	D17—	1	345,574		165	345,607		49	345,640
	495	345,476	D10—	24	345,508		309	345,542			345,575		194	345,608	D34—	1	345,641
	502	345,477		32	345,509	D13—	119	345,543	D18—	56	345,576		206	345,609		5	345,642
		345,478		49	345,510												

CLASSIFICATION OF PLANTS

P.—	35.2	8,658		8,660		8,662	70.1	8,664		8,666	87.1	8,668
	49	8,659		8,661		8,663	78	8,665		8,667	87.12	8,669

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,297,481
5,298,337
5,299,142
5,299,306
02 : 5,299,105
04 : 5,297,427
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5,297,748
5,297,755
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